Q & A

Continuous metal vs. step flashing in steep-slope roofing

by **Donald A. Berg, PE**

Q: *We recently reroofed a number of steep-slope buildings for the same owner in a city in the southwestern part of the United States. After completing all of the roofs, the building owner's representative advised us that the continuous metal roof-to-wall flashing we had used at wall junctures was unsatisfactory and had to be replaced with step flashing.*

He had been on the jobsite for each installation, but waited until the end to tell us that the flashing had to be changed. Continuous metal flashing is common in this area and was approved by the architect on the job. What is wrong with using continuous metal flashing?

A: Continuous metal flashing may be used at wall junctures with certain steep-slope, water-shedding materials, such as profiled tile, but requires different installation techniques than step flashing. The *SMACNA* (Sheet Metal and Air Conditioning Contractors' National Association) *Architectural Sheet Metal Manual* describes an installation method.



Continuous metal flashing must be installed prior to installing the shingles. The metal is formed with a hook edge and is cleated on 12-inch (305-mm) centers. The flashing should extend up the wall and onto the roof a minimum of 4 inches (102 mm). Joints in the flashing are to be lapped 6 inches (152 mm) in the direction of flow. Siding material and roofing felt on the wall may serve as counterflashing.

Because the hook edge and cleats tend to raise the shingles above the flashing, the detail is somewhat more vulnerable to wind-driven rain and from moisture trapped in debris that may accumulate at the lower areas of the flashing.

Sealing the shingles to the metal with plastic cement may reduce this shortcoming; however, over time, it may separate from the metal, and the detail may become vulnerable once again.

Step flashing, installed as each course of shingles is applied, is the method described in the *NRCA Steep Roofing Manual.* The overlap of each piece of step flashing should be at least 2 inches (51 mm). The lower edge should be about a ½ inch (13 mm) above the lower edge of the next upslope course of shingles.

The flashing should extend up the wall 4 inches (102 mm) and onto the roof a minumum of 2 inches (51 mm)—4 inches (102 mm) is preferrable in the more severe climate areas.

Flashing pieces are nailed to the wall sheathing with *one nail* in the top corner of each piece of step flashing. Roofing felt and siding on the wall may serve as counterflashing. However, a separately installed counterflashing would seem to provide a more continuous cover for the flashing.

The other part of your question, regarding the inspector waiting until job completion to advise you that the installation was unacceptable, is not really a technical question. However, in my opinion, when an inspector observes a potential problem, it should immediately be brought to the attention of the roofing contractor.

At that time, proper adjustments to the application procedure can readily be made if the inspector's observations are valid. You may wish to consult with your legal advisor about that aspect of the issue.

Q: *A building owner has asked us to look at an EPDM roof that was installed by another roofing contractor. The membrane was fully adhered directly to an existing smooth-surface, built-up roofing system and was blistered over much of the area. I know this is not a proper method of installation, but don't exactly know why. Could you tell me why, so that I can properly advise the owner?*

A: NRCA recommends *against* installing a new roof membrane directly over an existing roof membrane. You have seen one of the reasons why.

A new roof membrane deserves to have a life of its own—a life not dependent upon the condition of the roof it is covering.

In the installation cited, the blistering may have resulted from moisture on or in the old membrane enclosed by the new membrane and adhesive. The heat absorbed by the black EPDM could have warmed the entrapped liquid moisture and expanded it into a vapor that, if unrestrained, could expand to 1,500 times its original volume. Because the membrane is restrained, the actual volume is somewhat less, but still great enough to form noticeable blisters on unadhered locations.

In time, these blisters may grow large enough to leave substantial areas unadhered. Also, if near a seam, the resulting stresses may weaken a seam in the new roof.

If a recover approach (as opposed to the more conservative tear-off) is taken, it is recommended that a coverboard be placed between the new and existing membranes. The coverboard separates the new membrane from the old, and often inhibits telegraphing problems from the existing system into the new roof covering. PR

Each month in this column, Donald A. Berg, PE, NRCA deputy director of technology and research, will answer readers' technical questions. If you have a specific question you would like answered in this column, send it to Q & A, Professional Roofing, *10255 W. Higgins Road, Suite 600, Rosemont, Ill. 60018-5607; or fax (708) 299-1183.*