BY DOUG HORGAN

Photos: Doug Horgan

Steep-Slope to Low-Slope Transitions

At my company we specialize in high-end remodels—typically large additions or extensive interior renovations—on homes throughout the Washington, D.C., metro area. We invest a lot of time in our clients, placing a high priority on maintaining relationships. As a result, our past clients continue to call us for years and we end up doing many little projects in addition to big ones—whatever it takes to service those past clients. With this business model, we have to continually train our crews and subcontractors on best-practice details. Training, as well as overseeing the quality of work, is largely my role. In this article—the first of a number of articles in which I'll discuss common problems we find and the solutions we train on—I'll look at a troublesome area that frequently gets overlooked: the transition between a steep-slope roof and a low-slope roof.

This is a small but vulnerable spot, and we often see it detailed incorrectly on existing work. Valleys are prone to collecting leaves, particularly if someone sets up an antenna at the base of the valley **(1)**. The lower roof unavoidably slows down water drainage, and when the valley is clogged, a significant amount of water coming down that valley will tend to spread out and back up under the shingles. Wind can intensify the problem, pushing the water upward. Snow tends to pile up here as well, and ice damming is likely. Compared with some other regions in the U.S., the D.C. area may not see that much snow. But we've had enough big storms during the last 24 years to make it imperative to detail roofs to manage melt-water and the potential for ice dams **(2)**.

There are two key details for the transition between steep and low slopes: the distance that the lower-roof

membrane laps onto the steeper-sloped roof, and the need for isolation between incompatible materials.

LAP DISTANCE

To protect against water backing up—whether from leaf clogging, ice dams, or even just wind exposure—you need to bring the membrane for the lower roof up about 18 to 24 inches. This is the vertical rise (see illustration, right), which means you are running something like 25 to 36 inches up the roof, depending on the slope **(3)**. Many details call for an 8- to 12-inch vertical, but this just isn't sufficient.

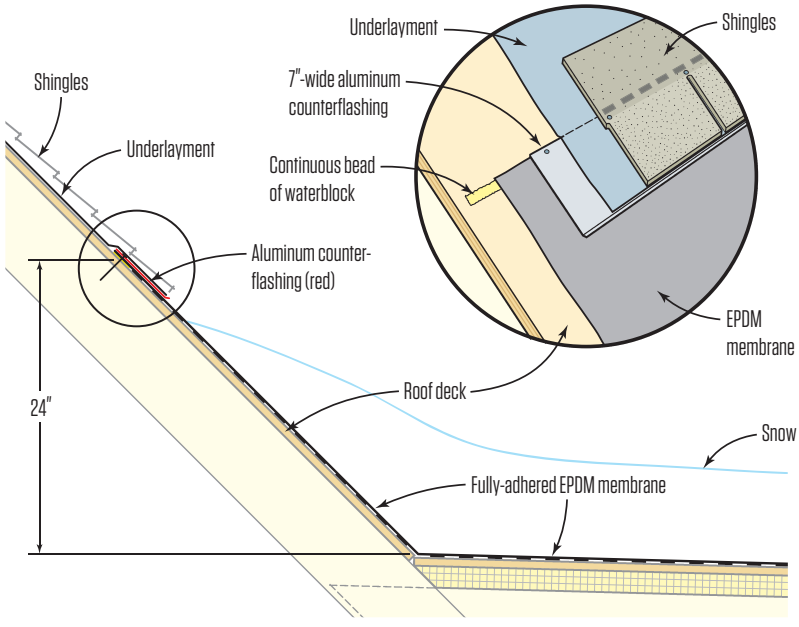
People don't like the look of the exposed membrane, so there is always a temptation to shingle over the lower-roof membrane. In many instances, the lower roof is deep enough that the exposed roofing isn't visible from the ground. But in cases where it is visible, and either the homeowner or an architect doesn't want to see a big exposure, the self-sealing characteristics of EPDM or TPO (the low-slope roof membranes we typically use) will provide some measure of protection. If more protection is needed, to seal around fasteners, we may add a layer of peel-and-stick underlayment. But this leads us to the second issue: the need to isolate incompatible materials.

ISOLATION MEMBRANE

At the roof transition shown in photo **(4)**, roofers had installed peel-and-stick over the EPDM lap. They had the right idea, but the peel-and-stick they used was rubberized asphalt, which reacts with EPDM. They also didn't overlap the two membranes enough, so it wouldn't have been long before a significant leak developed along the entire length of the overlap.

EPDM, TPO, flexible PVC, and uncured Neoprene—any of the common roofing membranes for low-slope roofs—are not compatible with asphalt-based roofing, including most peel-and-stick underlayments. We solve this by installing an aluminum counterflashing, as shown in the illustration. If we do need to shingle over the lap, we may add a peel-and-stick membrane, which has a better chance of self-sealing around any fasteners that might penetrate the membranes.

Steep-Slope to Low-Slope Transition



In the instance shown in photo **(5)**, the installer left the release paper on to provide isolation. The problem with this detail is that I'm not sure what the life of that release paper is—certainly not as long as aluminum's—so this is a middle-road detail, maybe not best practice. But at least there won't be an immediate failure due to the incompatibility of the two membranes.

Photo 5 also shows a sad detail we often see on roof-top decks—a through-roof railing post. It would have been far better to attach the railing to the sidewall. When we come across a through-roof post and can't persuade the owner to change it, we'll make the best of it. But getting this detail right is a subject for a different article.

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