

Stormproof Your Roof

Self-adhering underlayment provides critical protection in vulnerable locations

BY MIKE GUERTIN

I've done enough roof repairs to know that storm water that gets past the shingles and underlayment doesn't penetrate through the roof sheathing. Instead, it leaks through the joints between panels and the places where the panels tie into other building elements and roof planes.

The first and most obvious areas to focus on when preparing a roof for shingles are roof penetrations such as chimneys, plumbing vents, and skylights. A more thorough approach, though, involves protecting leak-prone areas such as rakes, eaves, valleys, and dormers. Some of these stormproofing details are installed before the underlay-

VALLEYS

Roof valleys channel large volumes of water in rainstorms and are prone to snow buildup and ice dams in the winter. Building codes call for shingled valleys to be lined with either roll-roofing or self-adhering membrane. I prefer self-adhering membrane because it seals around nail penetrations much better than roll-roofing membrane.

I like to use 3-ft.-wide membrane for valleys, which provides 18 in. of coverage to each side of the centerline. To be most effective, the bottom end should seal to the fascia board, and the top end should lap over the ridge at the top of the valley. To resist punctures, the middle of the sheet needs to be pressed tight to the valley center. The key to wrangling such a long sheet of flashing membrane is to work from the center of the valley out, adhering one half of the sheet at a time.

Work in two halves. Snap a chalkline 18 in. from the center of the valley. Score the middle of the membrane's backing sheet so that it can be removed in two halves. Tack one edge along the chalkline; then fold the membrane onto itself before removing the backing sheet.



ment and shingles. Others are layered into the underlayment or roofing so that water is redirected to the roof surface.

Because I'm going to all the trouble with these details, some people ask me why I don't just cover the whole roof with self-adhering waterproof underlayment. Call me cheap, but I think I'm getting 98% of the benefit of covering the whole roof with 10% of the material.

Working with sticky stuff

Plastic-surfaced self-adhering membrane is best for the detailed work involved in stormproofing a roof. The plastic folds tight into

and around corners, and the adhesive is more aggressive than that on granular-surfaced self-adhering membranes. Still, there's a definite learning curve to working with this material. Here are a few tips.

Change with the seasons. Your approach to working with these membranes should vary depending on the temperature. In general, the adhesive backing is less sticky—and, therefore, more forgiving—when it's cold out. Long sheets can be lifted up and repositioned if necessary. Misplace a sheet or get it stuck to itself in hot weather, and you might as well kiss it goodbye. Rather than risk it, I work with 4-ft. to 6-ft. lengths in hot weather, and lap end joints by 3 in. to 4 in.



EAVE EDGES

Ice dams can form along eaves. As a precaution, most builders in northern locations install a 3-ft.-wide strip of self-adhering membrane as their first sheet of underlayment. Building codes call for this layer of protection to extend to a point 2 ft. in from the outside wall. For larger overhangs, the membrane might need to extend farther up the roof deck. Traditionally, this underlayment goes on after the drip edge and covers its connection to the roof sheathing.

This placement doesn't keep ice dams that form in gutters from backing up and getting under the lower lip of the drip edge. To prevent this, I lay out the membrane so that about 1/2 in. of a 3-ft.-wide roll overhangs the fascia. Then I install the drip edge over the top of this overlap.

Over the top. With one half of the sheet in place, remove the staples from the first half and repeat the process, making sure to press the membrane into the center of the valley to avoid any bridging. At the top of the valley, fold the membrane over the ridge.

Stick to the line. Snap a chalkline parallel to the eave, 35 1/2 in. from the edge. Leaving the backing sheet in place, unroll the first 5 ft. of membrane so that the top edge follows the chalkline. This allows you to double-check that the fascia overlap is even before you score the backing sheet and stick the rest of the sheet to the roof.



Overlap the fascia for extra protection. After returning to the starting end of the eave and adhering the first 5 ft. of membrane, wrap the leading edge over the rake trim and the lower edge over the fascia, securely bonding both with a J-roller.



FLASH FORWARD

Before installing the starter strips, attach the metal drip edge over the eave flashing, concealing the overlap on the fascia board. For maximum protection, you can add a second strip of self-adhering membrane over the flange of the drip edge.

RAKE EDGES

Although the rake edge isn't terribly vulnerable to leaks when roofing is damaged, rake edges can leak when wind drives rain between the roofing and regular underlayment. From here, water can migrate to holes in the roof underlayment or down the wall between the siding and the sheathing.

I use a length of membrane that extends from over the ridge all the way down the rake, lapping about 3 in. over the eave-edge membrane. I take the same approach with rakes as I do with eaves: Seal the rake edge to the face of the rake boards. Instead of using 3-ft.-wide membrane here, I use 9-in.-wide membrane and form a 3-in. reverse fold on the inside edge to help mechanically block water entry.



Six in. down, 3 in. up. Score the entire length of the membrane backing sheet so that you have a 3-in./6-in. split. After snapping a chalkline 8½ in. from the rake edge of the roof, align the 3-in.-wide part of the membrane to the line, and tack it in place. Pull off the 6-in.-wide strip of backing sheet, pressing the membrane down to the sheathing as you work down the slope of the roof. As on the eave flashing, wrap the remaining ½ in. of membrane over the roof edge (photo below). Again, use a J-roller to get good adhesion to the rake board; the metal rake edge will cover it later.



FLASH FORWARD

As the roofing underlayment is being installed, fold back the 3-in. strip of membrane so that it's sticky side up. The underlayment bonds to the membrane, creating a solid barrier against wind-driven rain.

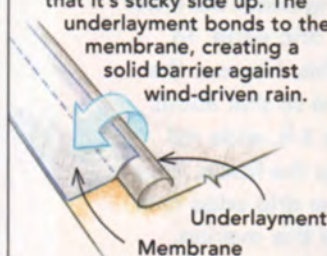



Photo right, facing page: Mike Guerin. Drawings: Dan Thronson

ROOF TO VERTICAL WALLS

Whether it's the front of a dormer or a shed roof intersecting with the main wall of a house, the vertical wall-to-roof joint is simple to seal. Sealing this joint not only keeps out water after storm damage, but it also backs up the metal flashing should it be damaged. Because the bottom edge of the membrane laps onto the shingles, any water that gets underneath can weep onto the roof surface.

The minimum width of membrane I use here is 12 in.—6 in. to the roof and 6 in. to the wall—but 18-in.-wide material is even better. The membrane should be 12 in. to 16 in. longer than the face of the dormer.



One section at a time. Score the backing sheet of the 18-in.-wide membrane into three sections: 5 in., 5 in., and 8 in. The middle 5-in. strip bonds to the roof sheathing and should be attached first. Next, remove the backing sheet from the 8-in. upper piece and, starting in the middle and working your way out, press it tight to the inside corner before lifting the membrane onto the wall.



Stretch for good coverage. Before folding the membrane around to the sidewall of the dormer, make a relief cut $\frac{3}{4}$ in. out from the corner of the dormer. Fold the upper ear back to the wall and the lower ear down to the roof, tacking them in place so that they don't peel away. The membrane will stretch and help to protect the corner.



Reinforce the corner. Cut a 6-in.-long hour-glass-shaped piece of membrane about 3 in. wide at the top and bottom, and 2 in. wide at the center. Bond one end to the sidewall and roof, and stretch it around the corner. When membrane is applied to the sidewall, the patch will have at least a 1-in. overlap.



FLASH FORWARD

When it comes time to install the roofing underlayment and shingles, run them up and under the 5-in. strip that remains at the base of the dormer wall, and then seal the membrane to the shingles. Leaks due to damaged metal flashing or water that gets blown beneath the flashing will be blocked by the membrane and will weep onto the top of the shingles rather than onto the sheathing below.

Size the membrane for the job. I use various widths of membrane, sized depending on the application. For example, W.R. Grace makes Roof Detail Membrane in 9-in. and 18-in. rolls, and York Manufacturing makes HomeSeal in 4-in., 6-in., 9-in., and 12-in. rolls. I often just cut the strips to the width I want from regular 36-in.-wide rolls.

Divide and conquer. Several of the details require that a portion of the backing sheet be left on so that the membrane can be integrated later with the roof underlayment or roofing. Removing the backing sheet in stages also simplifies the installation process at wall-to-roof

intersections and valleys. Grace embeds a thin wire, which it calls Ripcord, into its Roof Detail Membrane at strategic positions, making it easy to split the backing sheet into convenient sections. When I'm working with another brand of underlayment that doesn't have embedded wires or when I want the backing sheet cut at a position where there is no wire, I score the backing sheet with a light pass from a sharp utility knife.

Get a good bond. Concentrated pressure is crucial in getting solid adhesion with these membranes, especially in cold weather. I make

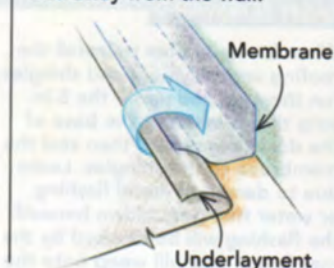
SIDEWALL PROTECTION

Areas where a wall meets the slope of a roof—on the side of a dormer, for instance—can be protected by a combination of roof-to-vertical-wall and rake-edge details. The top and bottom end details vary depending on whether you're flashing a dormer in the middle of a large roof plane or at the junction of a single-story roof (like a garage) meeting a two-story wall.



FLASH FORWARD

Attach the roofing underlayment to the upturned self-adhered membrane, just like along the rake edges. Water will be directed downward and away from the wall.



Full coverage. Sidewall membrane should extend from the bottom-front edge of the dormer up to where the soffit will be installed. To make the work easier, cover this area in two pieces. Follow the same backing-sheet instructions as for the roof-to-vertical-wall installation, but use 12-in.-wide membrane. Rather than adhering the lower 3 in. to the top of the roof shingles, fold it over so that it's sticky side up.

sure the surface I'm bonding to is as clean as possible, and then I use a J-roller made for plastic-laminate work to apply even pressure to the membrane. You also can apply primer to the sheathing to ensure a strong seal.

Remember that whether you cover the entire roof or just seal vulnerable joints, the self-adhering membrane should be installed shingle-style up the roof slope whenever possible. Although the adhesive bond of these membranes is good, a water-draining overlap is better. Stormproofing a roof is cheap insurance and a backup to, but not a replacement for, properly lapped metal or plastic flashing.

Although the roof of the detached garage shown here illustrates many of the important stormproofing details—eave edges, rake edges, valleys, vertical walls, dormer sidewalls, dormer valleys, and panel seams—it is not a complete list. Certain roof-to-wall connections, vents, tubular skylights, and traditional skylight curbs have their own best practices. Visit the Magazine Extras section of our website for videos and information on these topics. □

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BOTTOM OF DORMER VALLEYS

The area where a dormer valley joins the main roof is full of intersecting parts: fascia trim, soffit, and the dormer wall. Despite the complicated joints, the protection for this area is pretty simple. In fact, you can address several of these vulnerabilities with just one piece of membrane. Cut a piece at least 18 in. wider than the soffit is deep, which allows 6 in. to lap onto the dormer wall and at least a foot to extend past the fascia and onto the main roof. The length of this membrane should be about equal to the length of the cut on the fascia board, plus an extra 4 in.

Be sure that the soffit board is not in place. This will allow the membrane to slide up easily and protect the area that the soffit board will close off. If you are doing the framing, it's easy to include an oversize piece to protect this vulnerable area before the dormer roof is attached. Alternatively, if the bottom sheet of dormer roof sheathing that meets at the valley can be removed or left off until this area is wrapped, the work will be much easier.



Coverage that goes beyond the trim. Leaving the lower 4 in. of backing sheet in place, slide the membrane as high up under the soffit and fascia as possible. If there is a 2x sleeper where the dormer's jack rafters hit the main roof, curl the top edge of the membrane up onto this sleeper. Don't press the membrane tight to the area where the dormer's top plate lands on the main-roof sheathing; let it curl back on itself to form a dam to any wind-driven rain that gets under the soffit.



A normal valley, with a twist. When applying membrane to a dormer valley, leave part of the backing sheet in place so that the flashing later can be lapped over the roofing underlayment and roofing shingles.

FLASH FORWARD

When installing shingles, lap the flashing membrane and the roofing underlayment over the top of the course of shingles that is in line with the bottom of the valley. Then continue to shingle the roof above as normal.



JOINTS IN SHEATHING

Severe storms can break or tear off roofing and mechanically attached underlayment, leaving a house vulnerable to water damage. Provided the sheathing remains intact, it will block water from entering the attic, except along panel edges. Seal the panel edges, and you effectively keep out storm water and minimize water damage to the interior. For this job, I cut 3-in.- to 4-in.-wide strips from leftover pieces of self-adhering membrane.

As long as they are unvented, the hips and ridges can be covered the same way as other sheathing seams. For additional protection, apply a 9-in.-wide strip of membrane over the top of the shingles along hips and ridges before installing the cap shingles.