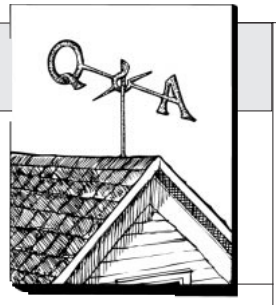


Chimney Flashing for Metal Roofs

Q. *I have to flash a chimney where it penetrates a corrugated metal roof with ridges 8 inches o.c. What's the solution?*

A. *Carl Hagstrom responds:* The evenly spaced ridges of the roofing profile present a real challenge. When visualizing a flashing strategy for the downslope face of the chimney, picture the plane of the roof at the *top* of the ridges, not at the lower, flat portion of the roofing profile. At the sides of the chimney, extend the flashing out past the nearest formed ridge, fold it over the ridge, and then fasten through the flashing at the high point of the ridge with neoprene gasketed roof screws. This goes against the roofing manufacturers' recommendations to place screws in the flats of the roofing, but I've used this approach with success.

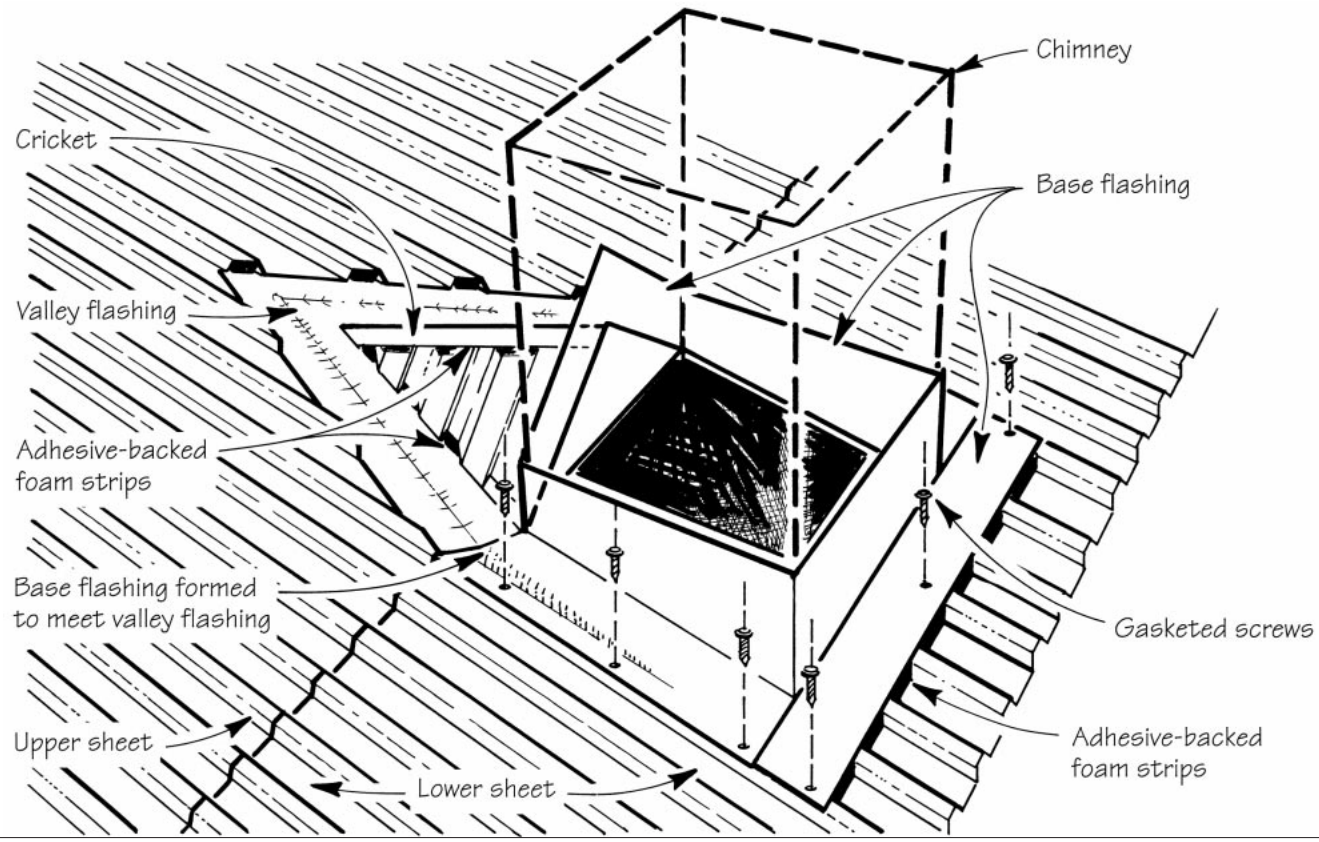
Fill the areas where the base flashing spans the flat portion of the roofing profile with the same closure strips that are used to seal off the metal ridge caps. These are adhesive-backed foam strips that conform to the profile of the metal roofing (see illustration, below).

When the chimney penetrates the roof below the ridge, use a cricket on the up-slope side to divert water around the chimney. The roofing, the cricket valley, and the chimney base flashing all come together at the chimney corners and must overlap in the proper order. First, fasten the lower sheet of roofing in place alongside the chimney, then install the base flashings at the bottom and sides of the chimney. As the side base flashing approaches the valley flashing, it will have to be shaped to lie in the lower, "trough" section of the roofing so that the second sheet of roofing will lie flat. This results in an oddly shaped piece of base flashing, which I form using painted aluminum coil stock and a fuss-'n'-fit approach. It's not the most elegant piece of flashing, but it's leakfree and is suitable for the types of buildings where I install metal roofs.

Next, install the cricket valley flashing so that it overlaps the side base flashing. Finally, lay the upper sheet of roofing over the valley flashing.

The roofing manufacturer can provide steel flat sheets that will match the color of the roof. However, these will most likely be tempered steel (like the roofing), and can be difficult to form,

Flashing Solution for Corrugated Roofs



Chimney flashing over an agricultural metal roof has to follow the plane of the tops of the roofing ridges, not the flat part. Fill the spaces between the flashing and the flat part of the roof with adhesive-backed foam strips. On the up-slope side, break the lower sheet of roofing even with the back of the chimney, and use a cricket and valley flashing to handle water from the upper roof.

even when using a brake. On occasion, I've used painted aluminum coil stock for the flashing material. It's much easier to form and can be painted to match the roofing steel.

Carl Hagstrom is an assistant editor at the Journal of Light Construction.

Painting Exterior Decks

Q. *Some of my customers want their pressure-treated decks painted, but I've had trouble getting paint to adhere well to pressure-treated wood. What's the solution?*

A. *Mark Knaebe responds:* Treated lumber is not the source of your deck-painting difficulties. Clean, dry CCA-treated lumber is actually a better surface to paint than untreated wood of the same species. The real problem is that a paint's performance suffers on a horizontal surface that is exposed to the weather. To make matters worse, deck boards are usually flat-grained, high-density wood that doesn't hold paint as well as edge-grained, low-density wood.

For exterior decks, you're better off using a water-repellent preservative or a penetrating-type semitransparent pigmented stain. Solid-color stains and film-forming paints aren't recommended for horizontal surfaces because they may fail early. Hard enamel paints lack the flexibility to accommodate the movement of exposed wood. Flexible latex paints are not tough enough to stand up to foot traffic.

In contrast to paint, which flakes and peels, stains "erode," or wear away. Stains must be reapplied more often than paint, but it's an easier job because there is no need for extensive scraping and sanding. Also, weathering stain is less of an eyesore than failing paint.

Sheltered porches can be painted with porch and deck enamel. First, treat the deck with a water-repellent preservative (check the label to make sure the product contains a preservative and is paintable). Second, prime the wood with enamel diluted with paint thinner. Last, apply two topcoats of straight enamel. Railings, whether exposed or sheltered, can be painted with latex paints.

Remember, wood to be painted should be dry but not exposed to more than a few weeks of sunlight. The sun's ultraviolet rays damage wood fibers and weaken the wood's ability to hold paint.

Mark Knaebe is a research chemist at the USDA Forest Products Laboratory in Madison, Wis.

Exterior Foam and Condensation

Q. *If I use foam insulation board on the exterior of a wood-framed building, will it cause condensation within the walls?*

A. *Joseph Lstiburek responds:* The biggest factor causing moisture problems in walls is excessive indoor humidity. If your building operates at between 20% and 30% relative humidity (a comfortable level for most people), the walls should be fine with any kind of sheathing.

If indoor humidity rises above 40%, moisture in wall assemblies isn't your only worry. Condensation on windows will probably cause trouble as well, and the mold that starts growing on cold spots can become a health problem for the home's occupants. So your first strategy should always be to reduce indoor humidity.

To be on the safe side, though, it's best to allow for interior humidity approaching 40% or even higher. In that case, exterior insulating foam helps by keeping temperatures within the wall assembly above the dewpoint — and the higher the R-value, the better. For moderate indoor humidities, an R-5 to R-7 layer of foam should be okay, but if you're looking at a hot tub room or similar situation, go for R-10 or higher.

To prevent air from forcing its way between sheets of foam, tape the seams with a gap-sealing builder's tape. These tapes hold well to foil-faced foams or extruded polystyrene, but we haven't found a tape that sticks well to expanded polystyrene (beadboard). If you don't tape the seams, cover the building with housewrap.

In any case, a layer of poly or some vapor-retarding paint on the side of the wall facing the occupied room is a good idea. You should also take care to seal electrical outlets and other penetrations. ■

Building consultant Joseph Lstiburek is the author of the Department of Energy's Moisture Control Handbook.