Weathertight Windows for Wind-Driven Rain

Q. *As a general contractor in the Blue Ridge mountains of southwestern Virginia, we often build vacation homes higher than 4,000 feet altitude, where wind-driven rain is a regular weather feature. On one site, the wind regularly reaches 50 to 80-plus miles per hour and actually blows rain uphill. We have a south-facing window wall full of fixed-glass and awning windows. The wall has 2x6 studs, 1/2-inch OSB sheathing, Tyvek housewrap, and 1x10 horizontal shiplapped pine. With only a 3/8-inch lap on the siding, I can imagine that water might be driven behind it. But how is it getting past the Tyvek and OSB through the wall? Water drips from the interior window head jambs, and with the interior wall paneling removed, it can be seen on top of the sole plate. We had to replace some buckled hardwood flooring after a vicious storm last January, and before we repair it again, we want to make sure the wall won't leak. Are there any methods or materials that you could recommend?*

A. *Patricia Hamilton responds:* We build homes along the Delaware coast, where storms bring heavy rains and winds of 40 to 80 mph on a routine basis, plus the occasional hurricane. We take a few extra precautions to keep our houses dry:

- Use siding with an adequate overlap and avoid diagonal siding patterns. The scant 3/8-inch overlap you mention is most likely contributing to the problem. Avoid vinyl siding, as well as low grades of wood siding (they're more prone to shrinkage and cracking).
- Use the best windows you can buy — Grade 60, if possible. We only use clad windows with integral nailing fins.
- The house should be weatherproof even without its siding. (The siding's job is to hold paint and look good.) Always use housewrap, installing it from the bottom up so that water can't get behind it, and tape all seams.
- Back-caulk your window flanges as you install the windows. Cut a slice in the wrap just above the window and install a piece of tar paper or metal flashing that goes behind the wrap and in front of the flange (see Figure 1). If there is trim above the window, extend the flashing over the trim, and tape the slice in the wrap.
- Under shingle siding, on the sides that get the worst weather (east and northeast for us), install tar paper over the wrap and tape all seams. Sidewall shingles let more water past than bevel siding.
- Watch out for step flashings, since they usually go on after the housewrap. It's important to slice the housewrap and install the step flashings behind it. In tricky areas where valleys channel water up against sidewalls, we lift the housewrap out of the way and install a backup strip of Grace's Ice and Water Shield over the step flashings and behind the housewrap (Figure 2).
- Caulk between the siding and the window trim.
- Hope for a bad storm before the drywall goes up to give your weatherproofing a test run.

Patricia Hamilton is owner of Boardwalk Builders in Rehoboth Beach, Del.

Matching Old Mortar

Q. *In an upcoming remodeling project, we will be uncovering a section of hidden stonework that will need to be repointed to match the existing exposed stonework.*

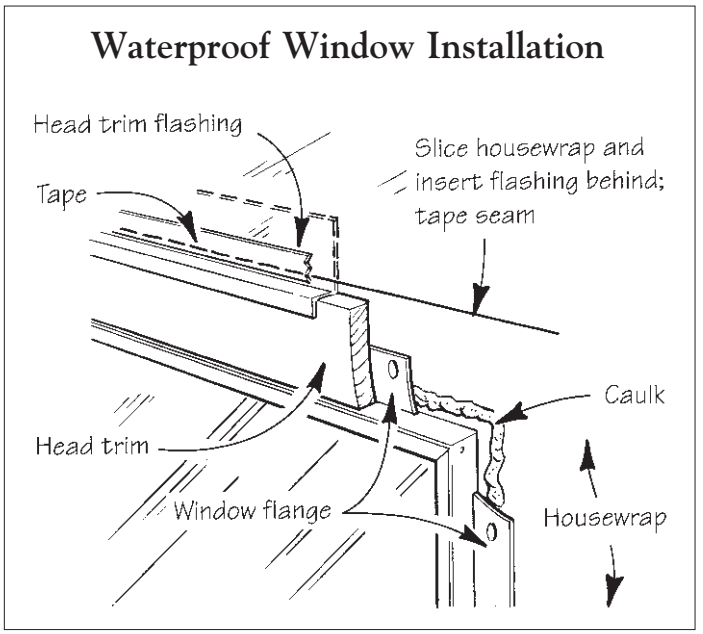

Figure 1. *To prevent leaks from wind-driven rain, the author uses only windows with an integral nailing flange, caulking the flange to the housewrap. Above the window, she slices the housewrap and slides the head flashing behind, then tapes the seam.*

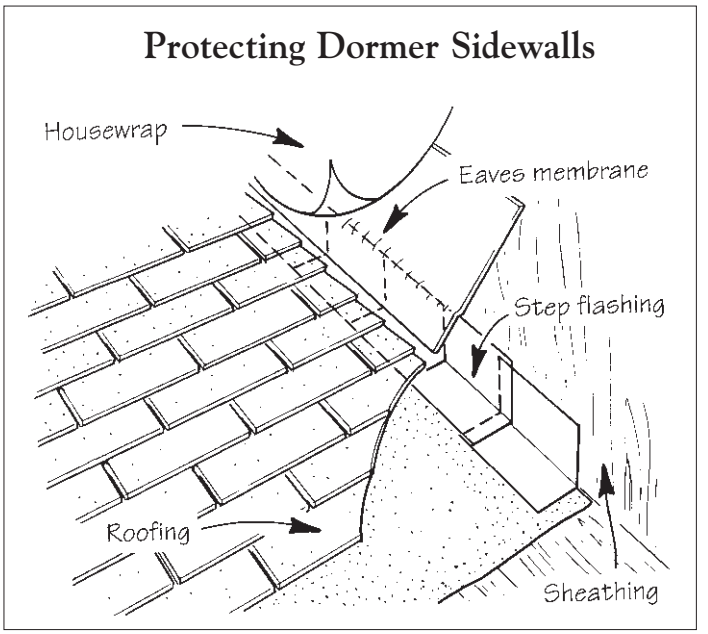

Figure 2. *To protect dormer sidewalls, make sure the step flashings are installed behind the housewrap. At areas where water accumulates, the author lifts the housewrap and adds a strip of self-adhering eaves membrane over the step flashing.*

How do we go about matching the color of the mortar?

A. *Tony Jucewicz responds:* When matching existing mortar, I first try to decide whether a match can be achieved using "standard" mixing ingredients. The pointing mix I use consists of one part Portland cement and three parts sand. Portland cement is available in gray or white, and sand in my area is available in white, yellow, or brown. When gray cement is used in the pointing mix, the color of the sand has little effect on the final color of the mortar. When using white cement, you can control the color with the sand used in the mix. White sand will produce a white mortar, yellow sand a beige mortar, and brown sand a light brown mortar with a reddish tint.

In my area of Pennsylvania, I've had the best success matching the mortar found in older stonework by using white Portland cement and a mixture of brown and yellow sand. Before I begin pointing, I premix all the sand needed for the job. The premixed sand can then be mixed 3 to 1 with the cement.

If you can't match the mortar using readily available materials, you'll have to use solid-color dyes. These are packaged dry and must be mixed in thoroughly when the sand and cement
are dry-mixed. You'll need to make numerous test batches and allow them to dry for about two days before comparing them with the existing mortar. However, after the dry materials for each test batch are thoroughly mixed (and before any water is added), you'll have a close indication of the final color.

Dry dyes tend to be very concentrated: A one- or two-pound bag will tint a full 94-pound bag of cement. If only one or two masons are pointing, a full bag mix is too much mortar to mix at one time. When making smaller batches, you'll need to carefully control the amounts used in the mix to maintain a consistent color. It's important to finish your test samples the same way you'll be finishing the final work: A brushed joint will have a different color than a smooth troweled joint.

Tony Jucewicz is a stonemason in Riegelsville, Pa.

Preventing Drywall Corner Cracks

Q. *I've noticed that whenever I finish drywall, fine cracks start appearing at inside corners a couple of days after the job's done. What is causing the cracks?*

A. *Mel Hines responds:* Assuming that there are no problems with the framing, the most likely cause for the hairline cracks you describe is torn bedding tape. If the finisher allows the corner of his taping knife to cut, or "score" the tape, a hairline crack will often develop.

Caulking or applying another coat of compound to the crack are temporary fixes at best. The corner should be retaped, then finished again. Check the corners of your finishing knife to make sure they're not sharp.

Another possible cause is that too much compound is being applied in one pass. Many finishers will apply compound to one side of an inside corner (covering the tape), and allow this first pass to dry before covering the other side of the corner with compound. If the second pass is too heavy, it may shrink back when it dries, and leave a hairline crack. Sanding this heavy coat until it just covers the tape will usually eliminate the crack. You should apply only enough compound to inside corners so that after it is lightly sanded, it barely conceals the tape.

It's also important to prefill any gaps in the drywall at corner intersections. If the gaps exceed 3/8 inch, fill them with Durabond (U.S. Gypsum Co., 800/552-9785), a low-shrinkage compound that is mixed on site. Durabond is available in grades with setting times from 45 to 90 minutes.

Two other points to keep in mind: If you add water to standard compound, don't exceed the manufacturer's recommendations — generally one pint of water to five gallons of mud. And don't use fiberglass mesh tape at inside corners unless you bed it in Durabond. ■

Mel Hines owns Atlanta/Pro-Serve, a ceiling and wall repair service in Atlanta, Ga.

Got a question about a building or renovation project? Send it to On the House, *JLC*, RR 2, Box 146, Richmond, VT 05477.