LONG-LASTING WOOD ROOFS

by Patricia Hamilton

In a moist climate, ventilation details are key to a durable shingle roof

Our company often builds on prime beachfront property along the coast of Delaware. Many of our projects are located in communities that regulate building styles through restrictive covenants, which often require that cedar shingles be used as the roofing material.

It's true that cedar shingles make an attractive roof, but the high winds in our region mean that we have to view cedar shingles as more than just a pretty face. To prevent wind-driven moisture from turning into roof leaks, flashing must be carefully detailed. Roofs in our area must also be structurally capable of withstanding the racking forces brought on by wind gusts in excess of 90 mph.

Over the years, we've learned to use details that prevent this wet and windy weather from creating callbacks. Although your region may not experience the extreme weather conditions ours does, our techniques should help prevent leaks and premature failure of cedar shingle roofs — no matter where you build.

Figure 1. A 3/8-inch-thick layer of Cedar Breather (inset) laid over solid sheathing and felt paper allows the wood shingles to dry from underneath.

The Problem With Plywood

Wood shingles should not be laid directly over solid sheathing or felt underlayment. Moisture can become trapped between the underside of the shingle and the roof deck, causing cupping and checking and resulting in premature shingle failure (see "Wood Shakes & Shingles," 10/92). Traditionally, spaced sheathing (sometimes called "skip" sheathing) was used, allowing the shingles to dry from both sides.

Because of the high winds in our area, however, we are almost always required to sheathe our roofs with plywood. We use 1/2-inch-thick plywood when rafters are spaced 16 inches on-center, or 5/8-inch plywood when rafters are spaced 24 inches on-center. We quickly dry in the house by covering the sheathing with 30-pound felt paper, overlapping the seams at least 3 inches.

To provide the necessary ventilation on the underside of the shingles, we use a product called Cedar Breather (Benjamin Obdyke, John Fitch Industrial Park, Warminster, PA 18974; 800/346-7655) as an underlayment. The 3/8-inch-thick material comes in 39-inch-wide rolls and costs about $40 per square. Its matrix of synthetic fibers is stiff enough to resist crushing, so it provides continuous airflow between the roof deck and the wood roofing (see Figure 1).

We install Cedar Breather course by course just ahead of the shingles, tacking it in place with 5d galvanized box nails. The seams are butted (not overlapped), and we make cuts using shears.

Shingle Basics

Cedar shingles are available in 16-, 18-, and 24-inch lengths, with recommended weather exposures of 5, 5 1/2, and 7 1/2 inches, respectively (see "Wood Shingle Roof Coverage," below). Whenever possible, I specify 18-inch shingles: It's my feeling that 24-inch shingles are more prone to curling because of the increased exposure.

We use No. 1 blue-label shingles exclusively. Lesser grades are available, but with total roofing costs of over $500 per square, the $25 dollar per square cost difference between the No. 1 and No. 2 shingles represents only a 5% increase in the cost of the roof.

After tacking down a layer of Cedar Breather, we begin installing shingles, starting with a double layer at the eaves. After the starter course is in place, we tack a 5 1/2-inch-wide "exposure guide" on the roof, holding the lower edge of the guide flush with the bottom of the last course shingles (Figure 2). The exposure guide supports the shingles as we lay them in place, and makes it easy to arrange them so the

Wood Shingle Roof Coverage (in sq. ft.) at Varying Weather Exposures

LENGTH	NO. OF BUNDLES	WEATHER EXPOSURE											
		3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	5"	5 1/2"	5 3/4"	6"	6 1/2"	7"	7 1/2"
16"	4	70	75*	80	85	90	100**	—	—	—	—	—	—
18"	4	—	—	72 1/2	77*	81 1/2	90 1/2	100**	—	—	—	—	—
24"	4	—	—	—	—	—	—	—	77*	80	86 1/2	93	100**

*Maximum exposure at a 3/12 to 4/12 roof pitch

**Maximum exposure at a 4/12 or steeper roof pitch

Note: Do not use wood shingles on roof pitches less than 3/12.

Figure 2. Tacking a 1x6 "exposure guide" flush with the bottom of every shingle course makes it easy to position and fasten the next course.

joints are offset at least 1 1/2 inches from joints in the course below. Since wet shingles expand, we leave a 1/4-inch gap between each shingle to accommodate this movement and prevent the shingles from buckling and cracking.

When we're satisfied with the spacing, we nail each shingle using a pair of 5d hot-dipped, zinc-coated box nails located 1 inch in from the edge and 1 to 2 inches above the exposure line. We've found that Maze nails (W.H. Maze Co., 100 Church St., Peru, IL 61354; 800/435-5949) have a more uniform coating than the other brands we've tried. It's important to draw the nail up so the head only touches the wood, without breaking the fibers or distorting the shingle.

Eaves and Rake Details

Since the Cedar Breather is applied over the papered roof deck, we trim the fascia with a 1x2 after the shingles are installed, holding it 3/8 inch above the plywood roof sheathing so it will cover the edge of the Cedar Breather (Figure 3). We typically don't use metal drip-edge for aesthetic reasons, so we overhang the shingles 1 1/2 inches at the eaves and the rakes. Overhangs as small as 1 inch are permissible, but only when a metal drip-edge is used.

When we're building near the ocean, we take extra precautions against wind-driven rain. On these houses, we install a 3-foot-wide course of Ice and Water Shield (W.R. Grace Construction Products, 62 Whittemore Ave., Cambridge, MA 02140; 617/876-1400) under the felt paper at the eaves and along the rake. At $1.35 per linear foot, I consider this inexpensive insurance against any wind-driven rain that might work its way under the shingle overhang.

Down in the Valley

We form our valley flashing on site from 3x10-foot lead-coated copper sheets. Using a 10-foot brake, we fold a hem on each edge and an inverted V in the middle, which directs sideways runoff down the valley (Figure 4, next page).

The valley flashing is held in place with site-fabricated clips that are inserted into the hem and then nailed to the roof sheathing. These clips allow the valley flashing to expand and contract with temperature changes.

For added protection on exposed sites, we also install a 3-foot width of Ice and Water Shield directly to the sheathing on each side of the valley. That way, any nails that penetrate the metal flashing are sealed by the Ice and Water Shield.

As we're installing the "field" shingles, we make a point to cull out plenty of wide shingles for use as cutting stock at the valleys. When we install the valley shingles, we hold the nails back at least 12 inches from the center of the valley.

Figure 3. A 1x2 trim board held 3/8 inch higher than the roof sheathing hides the edge of the Cedar Breather.

Figure 4. The author's crew forms the lead-coated-copper valley flashing with a 10-foot brake (left). The inverted V in the center of the flashing directs runoff down the valley. When attaching valley shingles, nails are held at least 12 inches from the center of the valley (right).

Peak Performance

We use a simple ridge detail to vent our cedar roofs (Figure 5). We hold the plywood sheathing back at the ridge, leaving a 1-inch gap. After the shingles are installed, we cover the ridge with Roll Vent, a synthetic matrix material very similar to Cedar Breather and manufactured by the same company. The 7-inch-wide Roll Vent comes in 20-foot rolls. We center it over the ridge, tack it in place, and then cover it with a 7-inch-wide strip of 30-pound felt.

With the Roll Vent in place, we cap the ridge with 7x18-inch manufactured cedar ridge caps provided by our shingle supplier. The caps are sold in bundles that cover 16 linear feet at a 10-inch exposure. We've had the best luck attaching the ridge caps using 2-inch-long 1/2-inch-crown galvanized staples fired from a pneumatic staple gun. Trying to hand-nail the ridge caps through the mushy Roll Vent material will almost guarantee excessive splitting of the cap shingles.

We provide soffit ventilation with a 2-inch-wide continuous strip of aluminum soffit vent.

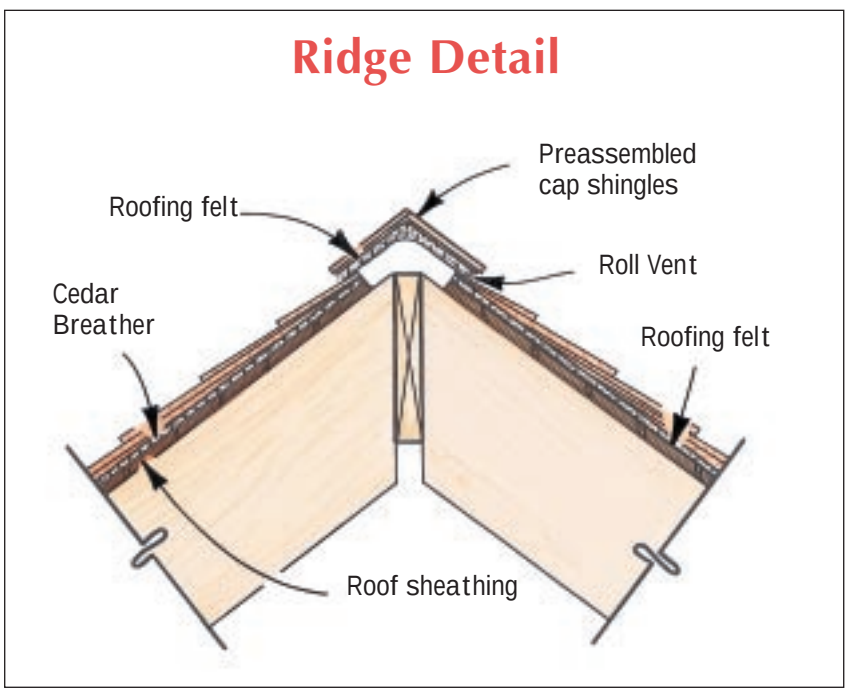

Figure 5. The author creates an inconspicuous ridge vent using Roll Vent, 30-pound felt paper, and preassembled ridge cap shingles. To prevent splitting, the ridge caps are installed with a pneumatic staple gun.

Flashing Facts

We flash chimney penetrations with the same kind of lead-coated copper that we use in the valleys. All flashing is formed on site, and critical joints are soldered, not caulked (see "Flashing a Chimney the Right Way," 11/92). We flash plumbing vents with the solid rubber boots found at most lumberyards.

Extra Measures

When a roof is exposed to extreme weather (a beachfront house, for example), has numerous penetrations, or has a pitch of less than 4/12, we take an added precaution and cover the entire roof deck with Ice and Water Shield. This adds about $55 per square to the cost of the roof, but acts as relatively inexpensive insurance against leaks when a nasty nor'easter decides to come ashore.

Estimating Materials and Labor

For each square of roof area, I include 1 pound of roofing nails, three-fourths of a roll of 30-pound felt, and four bundles of 18-inch shingles (at 5 1/2-inch exposure). I add four bundles for every 100 linear feet of valley (to compensate for cutting waste), and for every 240 linear feet of eaves (for starter course shingles).

I use a spreadsheet to calculate my roofing costs, and have developed a list of line-item costs based on previous jobs. I calculate shingle labor based on shingle bundles rather than by the square, since installation time is more closely related to the number of bundles than to the area of the roof. This way, I can use the same labor rate even if the shingle exposure changes.

Patricia Hamilton *owns Boardwalk Builders in Rehoboth Beach, Del. Photos by the author.*