

Weathertight Windows

by Kyle Dunkley

How a wet-climate builder details the layers to keep out the rain

Building out on Vancouver Island, off the west coast of British Columbia, we get our share of heavy wind and rain. So when it comes to installing windows, we can't take shortcuts. The photos in this article were taken on a siding and window replacement job that we did recently and illustrate the steps we follow. We make sure we get these details right — it assures us that we'll be dealing with a happy building inspector and won't get callbacks from the owners when Mother Nature comes pounding on their windows.

Prepping the Rough Opening

Our building code requires two layers of 30-minute building paper, installed half-lapped in shingle fashion over the entire shell. In addition to 30 minutes of water resistance, the paper must also have high enough vapor permeance to allow for drying. I use Hal-Tex 30-minute paper (halind.com) to cover the building and Hal-Tex 60-minute for my window and door detailing. These are heavy, asphalt-saturated kraft papers with high enough permeance to meet code.

I start with the sills, running a 16-inch-wide strip of 60-minute paper flush with the rough opening and 8 inches past both jambs (1). I use a hammer tacker with 1/4-inch galvanized staples, keeping the staples as close to the top as possible so the field paper can tuck up underneath later. I used to make "bow ties" out of peel-and-stick for the corners, but now I use prefabricated plastic corners made by Grace (the company calls them "Vycorners"). These get tacked into both corners (2).



Next I use a 6-inch-wide peel-and-stick membrane that doesn't require a primer to form a seal to both the bare wood sill and the paper beneath (3), slicing it at the corners to make the turn (4). I use my Speed Square to press the membrane into place, making sure the inside corners are nice and tight and that there are no bubbles or wrinkles. I then double up 2-inch strips of peel-and-stick, using them as drainage spacers (5); if any water gets into the opening, this will allow it to drain. I install these doubled-up strips every 4 inches,



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staying away from the corners so I don't get a buildup on top of the plastic flashings. Finally, I install paper flush with the jambs, starting several inches above the opening and running it to the bottom of the sill paper (6). Now the windows can be installed.

Installing Windows

I always read the window-installation instructions to be sure I don't void the warranty. In a perfect world, the RO would plumb and level and the window perfectly square, but there's always some fudging to be done to get consistent reveals. I drive 2-inch galvanized nails into the center of every other nail hole in the bottom and side flanges (7). I don't nail off the top flange: In the event that the header shrinks or deflects, I don't want to risk cracks in the top flange. When nailing the bottom flange, I drive the nails in snugly but make sure not to compress the drainage gap.

Once the window is nailed off, I use a 3-inch flashing tape, 3M 8067, to seal the flange to the paper along the jambs (8). At the top, I tape the flange directly to the sheathing. The tape provides another level of protection against wind-driven moisture.

At this point I'm ready to start tacking up the field paper. I mark stud locations with light-colored chalk as I go to make sure the siding gets solidly nailed.



Head Flashing

My local lumberyard sells prebent light-gauge sheet-metal drip cap flashing in various colors for all depths of windows. I use this material for both a primary head flashing — installed directly above the window — and as a secondary cap flashing on top of the wood casing.

I cut the flashing to length, leaving enough metal to fashion a 1/2-inch dam at each end and allow for a 1/8-inch projection. Then, after cutting the paper above the window at 45 degrees and folding it up





out of the way, I tuck in the flashing and nail it directly to the sheathing with the same 2-inch nails I used for the window flanges (9). I space it up from the top of the window about $\frac{1}{8}$ inch to prevent any moisture from being trapped, and I project it beyond the top of the window frame about $\frac{1}{4}$ inch.

I fold the paper back down, patch the corner cuts with a flashing tape (10), and trim it at the height of the end dam, using my square as a guide (11).

Trim

The trim on this job is combed spruce, which came primed on four sides. The sill is a 2x4, beveled on both edges at 15 degrees, sitting on top of a 2x6 apron with a matching bevel and a $\frac{3}{4}$ -inch-by- $\frac{3}{4}$ -inch rabbet on the bottom to receive the siding (12). Once we have the windows on site, we measure and cut all the trim packages, then carefully treat all the raw wood surfaces with a good exterior primer (13), followed by top coats (14). We do the painting all at once, racking up the pieces to dry, so that the installation can proceed without interruption. We also prebend all the cap flashings.

I fasten the head trim with 3 $\frac{1}{4}$ -inch double-dipped galvanized casing nails (15). On top I add the secondary cap flashing (16), sealing it to the building paper with flashing tape (17). I then nail on the sill (18); at this point the window is ready for siding installation.

Note the 1 $\frac{3}{4}$ -inch-by- $\frac{3}{4}$ -inch pressure-treated plywood "butter boards" installed along the sides of the window. The siding butts against these strips, where it's bedded in a generous bead of caulk.



To prevent wicking, the siding gets held off the cap flashing by the height of the end dam (19). The 1x4 side trim follows the siding, covering the ends at the butter boards and nearly flushing out with the head trim (20). Foam backer rod and acrylic caulk or

low-expansion spray foam seal the window to the rough opening on the inside.

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