Installing Board-and-Batten Siding

Plan for the windows and doors first

By John Birchard

When I built my own house a dozen years ago, I chose board-and-batten siding for several reasons. It's a commonly used siding in my neck of the woods, where rough-sawn redwood planks have long been used to clad barns and houses. The rhythmic vertical lines of board-and-batten siding complement the upright stance of my two-story house. And because I wanted a rustic look, I used relatively inexpensive, rough-sawn 1x12 boards with tight knots and left them unfinished to weather naturally.

In my innocence, I also thought board-and-batten siding would be pretty easy to install. In some ways it is, but there are many pitfalls on the way to a well-done job. My first project taught me how important it is to consider details like flashing and trim before putting the wood on the wall. Subsequent projects have given me a chance to learn how to plan and execute the work properly while at the same time reaffirming my appreciation for the beauty and durability of board-and-batten siding.

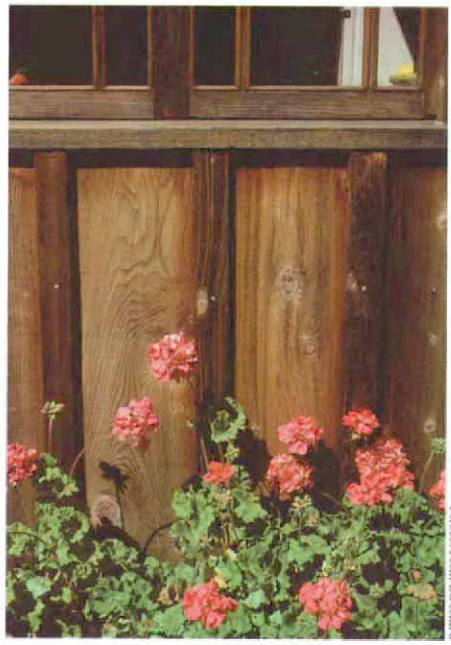


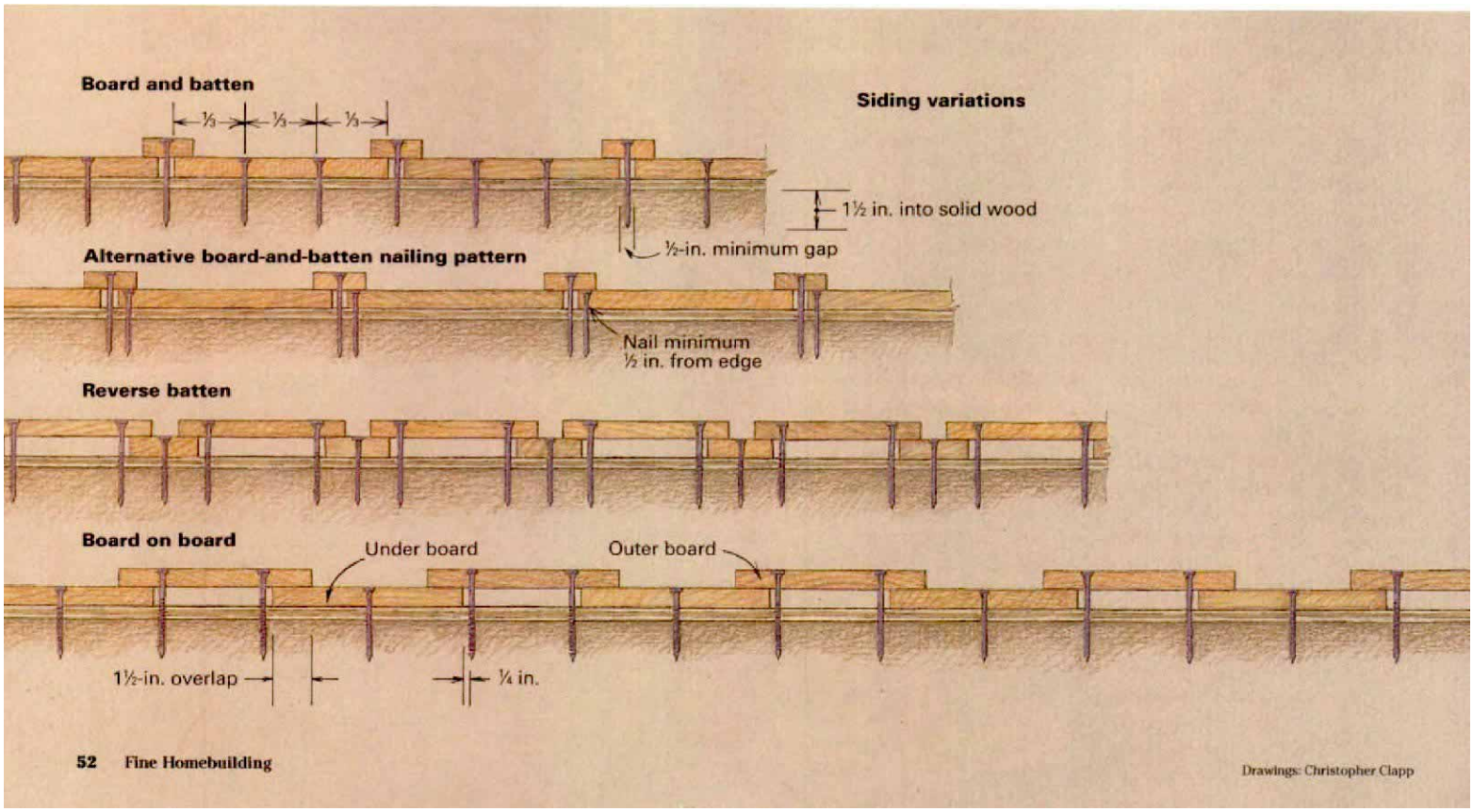
Photo: John Birchard

Left to weather. **Unfinished and rough-sawn redwood boards cover the author's house.**

Patterns, materials and preparation—The name board and batten encompasses several variations on the basic theme of affixing square-edged boards vertically to a wall and then covering the gaps between them with another layer of boards. The most common arrangement is to apply boards first, followed by narrow battens. The common variants are boards over boards and reverse board and batten (drawing below). I have also seen board-and-batten siding used with very narrow strips of wood to side curved walls.

The quality of the material you use is more important in determining the final look of the building than the material's weather-tightness. Siding, building paper, sheathing and flashings all work together to keep out the elements, so a knot or a crack in a board isn't enough to compromise the entire assembly. Knotty, rough-sawn wood will work fine for a stained or unfinished exterior as long as the knots are sound. If you want a refined, painted look, you'll need surfaced, knot-free material.

If you plan to paint it anyway, consider using medium-density-overlay (MDO) plywood in place of the boards. You can cover the nailing patterns with the battens, and because MDO has



Drawings: Christopher Clapp

a smooth, resin-impregnated skin, it doesn't telegraph the typical plywood-grain pattern when painted. If you're building in an area that is prone to earthquakes, this kind of painted plywood wall can be made to satisfy shear-wall requirements while still looking like board-and-batten siding.

In my experience, redwood and red cedar are the two most common wood species used for board-and-batten siding. In other parts of the country, poplar, Southern yellow pine and cypress are used. Boards are typically 6 in. to 12 in. wide. The battens can be as narrow as 2 in.

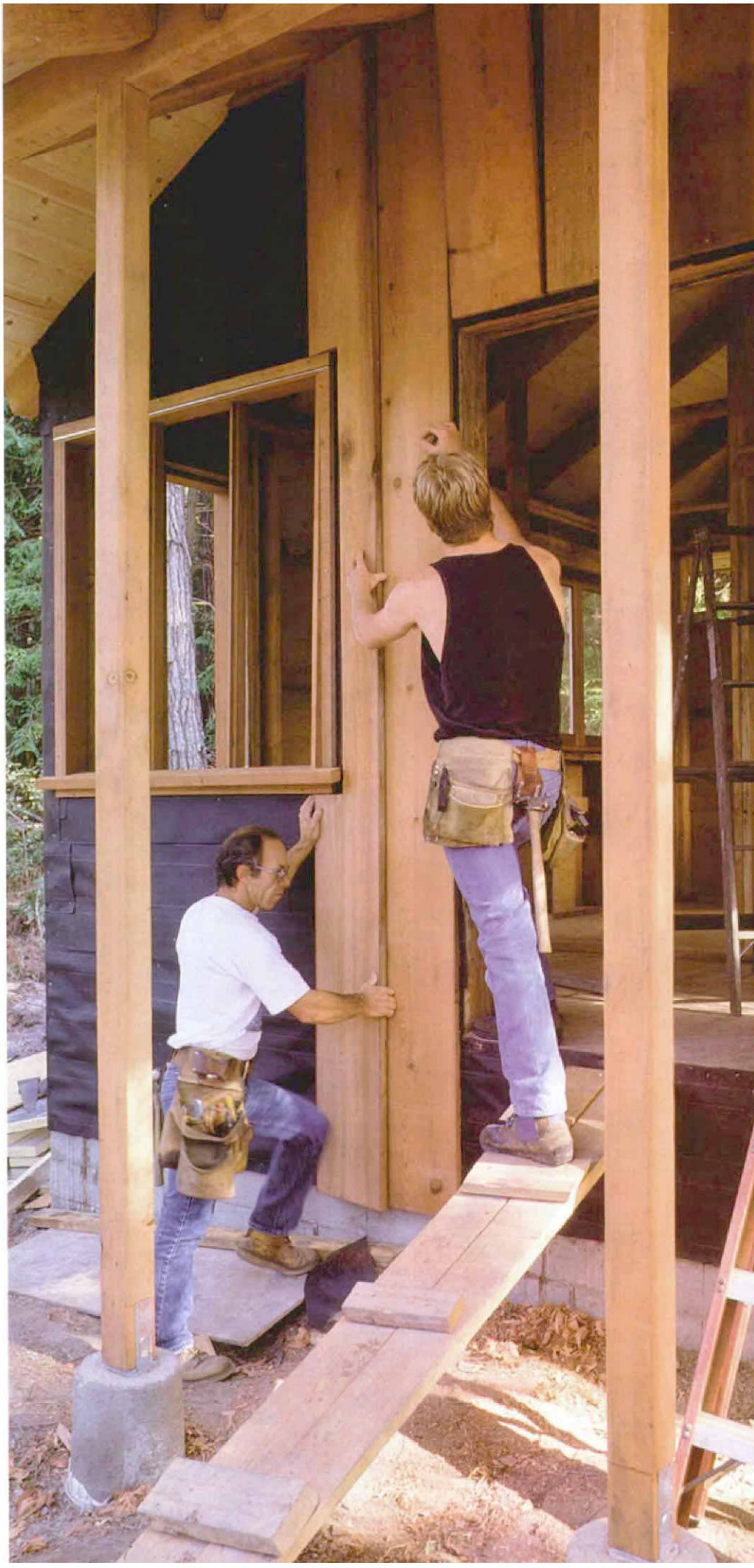
Splits and checks caused by the wood expanding and contracting due to seasonal humidity fluctuations are the curse of board-and-batten siding. The best way to ensure the least number of cracks is to use narrow, dry, vertical-grain material, but it's expensive. Flat-sawn boards will expand and contract twice as much as vertical-grain boards. Using affordable wide, green, flat-sawn boards may cause a few more cracks, but they can be minimized with proper nailing techniques (more on nailing later).

I've used green 1x12 construction heart redwood for all of my board-and-batten projects. To compensate for the greenness of the lumber, I order my siding material early in the project. Then I go through it and set aside the best boards for the prominent sides of the building. Finally, I sticker the boards so that they can air-dry as much as possible before they are applied. I cover the top of the pile to shed rain, and I leave the sides open for air circulation. Boards with splits and large knots are ripped into battens and trim.

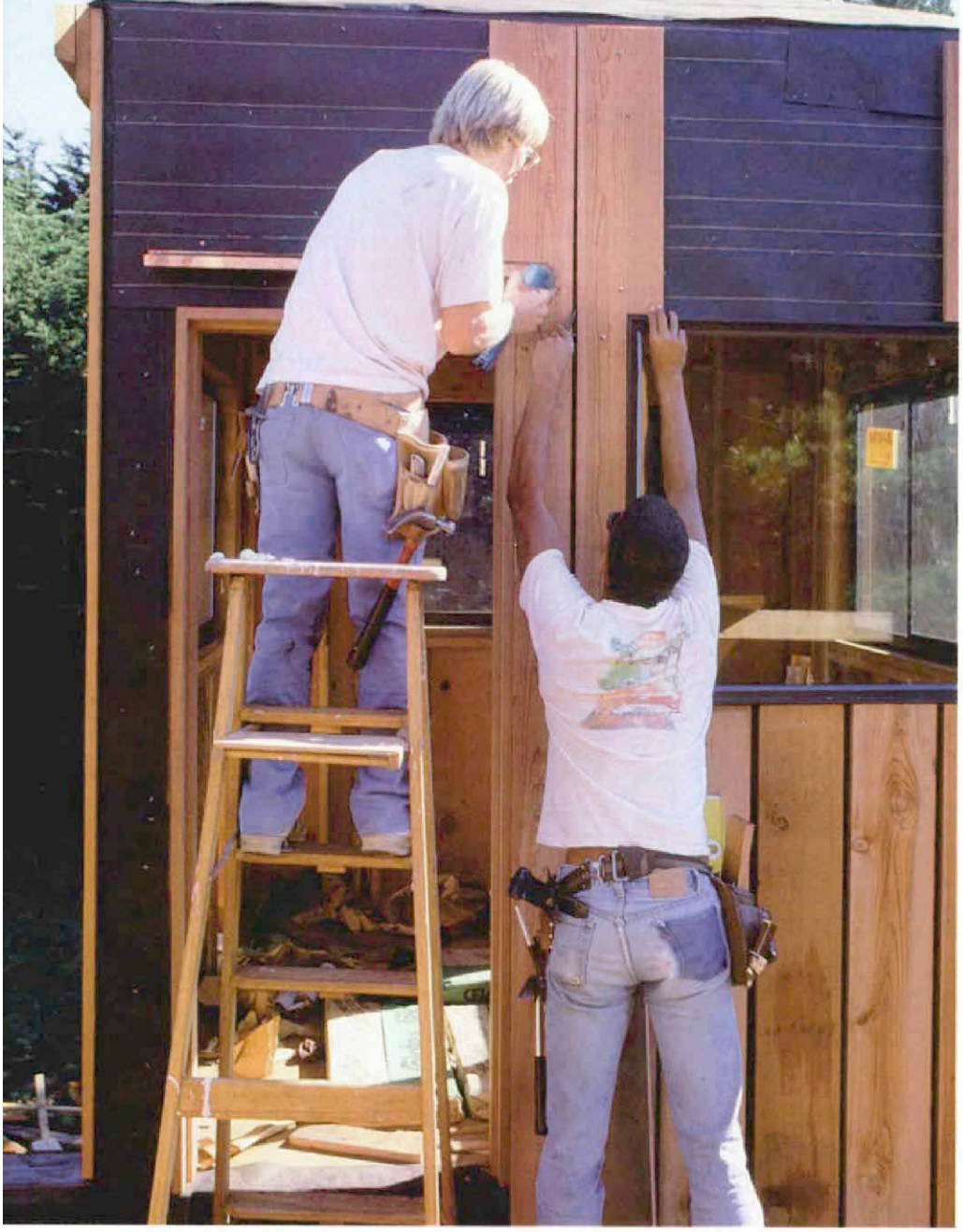
Providing a nail base—Boards should be nailed vertically every 24 in. o.c. In a normal 8-ft, wall, this means that three runs of horizontal blocks are needed between plates. The siding nails must penetrate at least 1½ in. into solid wood. I put the middle row of blocks on edge to double as drywall backing. The other two rows can be flat, making a bigger target and leaving more room for insulation.

Blocking is a job for two carpenters—one to cut the blocks while the other calls out dimensions and installs them. Seeing no reason to lift more than I have to, I prefer to install the blocks after the walls have been raised. I use a pair of 2x4 crutches cut to length to hold the blocks at the right level as they are nailed up.

Another way to anchor board-and-batten siding is to affix horizontal nailers to the outside of the walls. This is the typical fastening method for vertical siding over masonry walls and for post-and-beam buildings. Although I haven't tried it yet, I suppose you could apply horizontal nailers to the outside of a stud wall, thereby eliminating the tedious fitting of hundreds of short blocks. Another plus to this method would be the air space between the back of the boards and the



Putting up the boards. **Varying the gaps between the boards allows them to be placed in a way that avoids notching the battens or the trim pieces. Full boards flank the doorway, allowing a symmetrical pattern at the entry.**



Exposed flashing. **A copper head flashing extends beyond the door jambs and tucks into kerfs in the neighboring boards. A 2x head casing with a beveled top edge will tuck under the flashing. The aluminum window has self-flashing flanges. It will simply be picture-framed with 2x trim. The 1x8 siding used here was screwed to ½-in. plywood, eliminating the blocking.**

sheathing, which would equalize the moisture content of the boards on both sides and cut down on the tendency for the boards to cup.

You can also use plywood sheathing (½ in. or thicker) as a substrate for the siding (and thereby skip the blocking) if you attach the boards and the battens with screws. Screws should extend at least ¼ in. beyond the inside face of the sheathing, and they should be placed in the same pattern shown in the nailing schedule (drawing p. 52). Screws should be set with their heads below the surface, so use a pilot-hole cutter to avoid splitting the material (this device cuts a pilot hole for the screw and a countersink for the head in one operation). Incidentally, galvanized screws can bleed black stains into the wood grain because a little bit of plating is abraded from the screw's head by the bit as the screw is driven, leaving bare steel open to corrosion. You can avoid this problem by spending the extra money for stainless-steel screws (expect to pay about 2½ times more for stainless steel).

Windows, doors and flashing—I tack the door jambs and the windows in place before I put up my housewrap or building paper. I wedge the units into the rough openings until they are plumb and square. As I position the windows in the rough openings, I hold a scrap of my siding material against the wall sheathing as a thickness gauge; the outside edges of the jambs should be flush with this piece. Then I drive a couple of nails as pivots near the top of each side jamb (later it may be necessary to swing the bottoms out to get boards behind the ears of the sills).

Next, I tack my tar-paper splines around the bottom and the sides of the windows. The splines should have perfectly straight edges where they abut the jambs, and they should press tightly against them with their edges curving outward. The blind stops, which are the same thickness as the siding boards, should fit as tightly as possible against the side jambs and be nailed to the framing (top photo, right). Held by the stop against the jamb, the tar paper creates a tight seal without the use of caulks.

Doors and windows that are exposed to the weather need metal top flashing over the heads of their jambs. I prefer a hidden flashing that laps ½ in. over the edge of the window head jamb, then bends inward to the sheathing and up the wall about 3 in. The flashing extends to the outer edges of the blind stops (about 1½ in. past the jamb on either side) so that its ends are away from the space between the rough opening and the jamb. The tar-paper course above the window should lap over the upper leg of the flashing. Then a blind stop is nailed over it with a couple of nails held at least ¾ in. above the fold in the flashing. The head casing hides the blind stop (bottom photo, right). Another way to flash head jambs is with an exposed flashing that runs over the top of the trim.

To install board-and-batten siding around self-flashing aluminum windows, run the building paper over the window flanges, seal any laps with asphalt caulk and notch the boards as needed to fit around the window (photo left).

Flashing the intersection of a gable roof and a sidewall presents a problem with any kind of siding. With board-and-batten siding, the problem is compounded because of the thickness of the battens—you don't want runoff hitting them from the side. *My* favorite solution is to bend tabs on the bottom step flashing so that any water running down the flashing will be directed away from the wall when it hits the vertical tab (top drawing, facing page). The tabs should be soldered where they overlap, and the horizontal tab should be tapered. With this method, you've got to stretch or compress the layout of your boards so that the vertical tab is placed next to the edge of a board, right next to a batten. If necessary, cut a little notch in the batten to fit it.

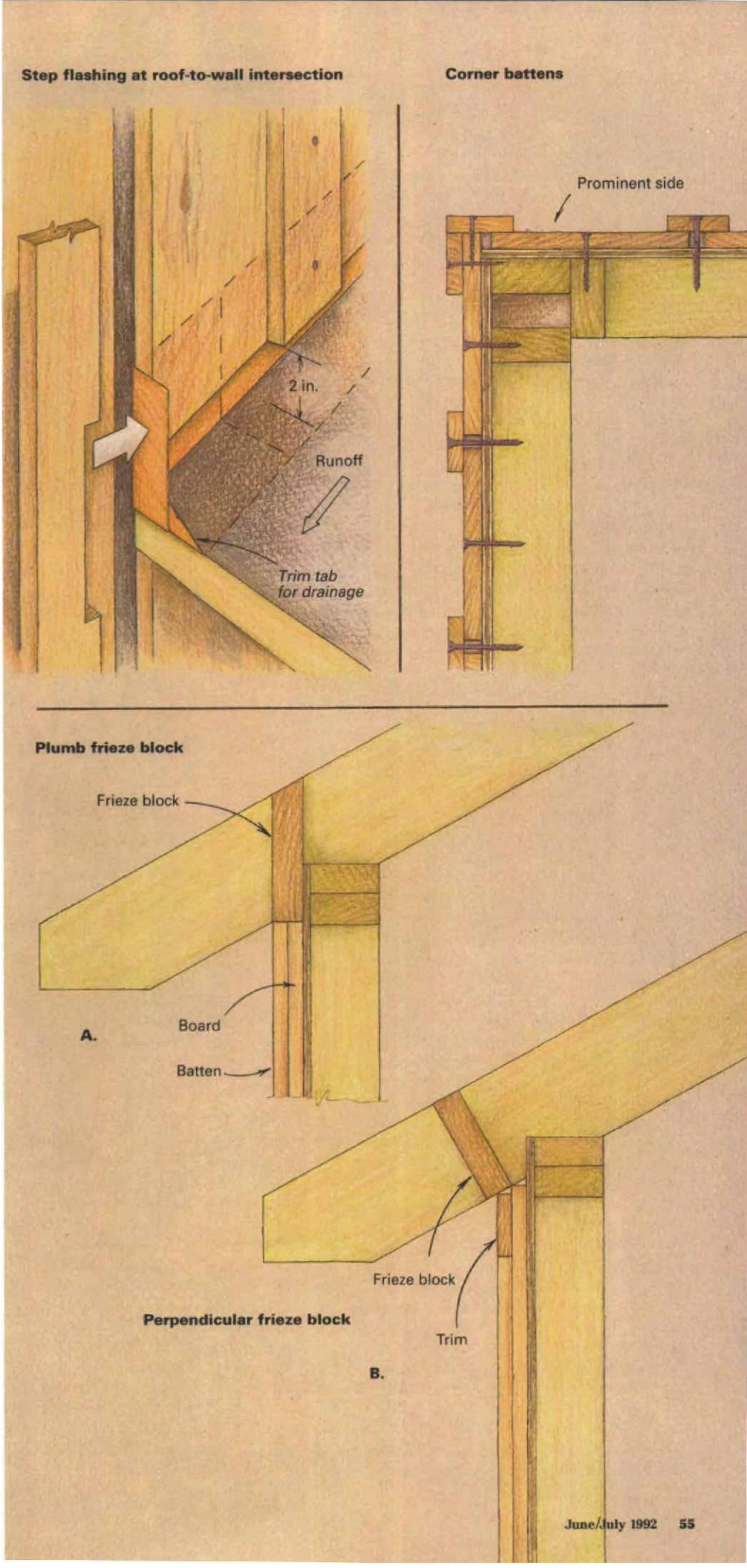
Layout—The intersection of the battens with the casings has a strong visual impact on the outcome of the project. The most unsightly problem is having to notch a batten around a casing or a sill. Crowding battens at corners or too close to window trim is equally unattractive. It's best when battens land on the upper and lower window trim so that the spacing at each end is equal, but often this perfect balance is unobtainable.

Before I start siding, I use a pencil and a short piece of siding board as a gauge block to mark potential layouts of each board on the wall. By adjusting the gaps between boards, ripping a corner board to a different width or by starting at one end of the wall rather than at the other, I can generally avoid problems. The eye easily overlooks slight variations in the widths of the boards between the battens. On a recent job using 1x12 boards and 3-in. battens, I started with ½-in. gaps between boards. By varying the gaps from ½ in. to 1½-in., I was able to stretch or compress the layout enough to avoid trouble.

Flashing and blind stops. **Once the window and the tar-paper splines are in place, blind stops the same thickness as the boards are nailed around the sides and the bottom of the window. The head flashing extends to the edges of the side blind stops (above) and is covered with the top layer of tar paper, a blind stop and the head casing (below).**

At outside corners, the last boards on the most prominent sides of a building should overlap the ends of the boards on the adjoining wall (drawing top right). This puts the joint between the corner battens on the least prominent wall.

At the top—Where the walls meet the roof, several different treatments are possible. For an open eave, with the rafter ends showing, I like to set the rafter frieze blocks plumb so that the boards and the battens can butt into them (drawing right, detail *A*). The top edges of the blocks are beveled at the roof pitch while their bottoms are square. This blocking method eliminates the need for notching the boards and the battens to fit around the rafters. Of course, it is also possible to set your blocking plumb in plane with the wall, which allows the boards and the battens to extend to the underside of the roof decking. This requires a lot of careful



notching, but the results are very clean if the job is done well.

If you set your blocks perpendicular to the rafters, a trim piece applied below the rafters and over the boards can also be used with an open eave to avoid notching (drawing previous page, detail *B).* For a soffited eave, the boards and the battens both can simply butt up to the bottom of the soffit. But more commonly a horizontal trim piece is applied to the wall along the bottom of the soffit where the battens end.

Nailing details—The California Redwood Association (405 Enfrente Dr., Suite 200, Novato, Calif. 94949; 415-382-0662) recommends nailing the boards with one or two nails, depending on the width of the board. For boards less than 8-in. wide, one nail in the center will suffice. Wider boards should be secured with two nails that are equidistant from the edges and each other, dividing the board into thirds (drawing p. 52).

In an attempt to minimize the number of nail heads visible on the siding, some carpenters nail the boards near the edges where they will be covered by the battens. You can do this if you nail *only one edge,* as shown in the alternative board-and-batten nailing pattern. If you nail the boards at both edges, you will restrain them improperly and run the risk of cracking them down the middle (photo top right).

In the drawing on p. 52, the nailing pattern for board on board and reverse board and batten doesn't divide the board into thirds. Instead, the outer boards lap the under boards by 1½ in., and the nails are located about ¼ in. inside the lap. Because the nails securing the outer boards aren't completely embedded, they will flex a bit to accommodate seasonal variations in the dimension of the boards without splitting them.

The battens are secured with nails at the centerline. This holds the edges of the boards flat against the wall while still allowing them to move. The batten should overlap the board by at least ½ in. If the gap between boards is wide—say 1½ in. or so—I predrill the nail holes to avoid splitting the batten. Another way to avoid splitting battens in this situation is to place a nailing strip the same thickness as the boards down the center of the gap to serve as backing.

It's important to nail the battens on as soon as possible after the boards are applied—especially with green lumber—so that the boards won't cup as they dry. If they are allowed to cup (which can happen fast on south-facing walls), you won't be able to flatten the boards out without cracking them.

I've used hot-dipped galvanized nails on several jobs, and for rustic work I don't mind the small amount of staining that occurs eventually around the nail heads. But lately I've been won over by stainless-steel, ring-shanked siding nails because they grip tenaciously, and their slightly tapered heads allow them to be countersunk without crushing the surrounding wood. They are also the only nails I know of that don't corrode or discolor wood siding.

Before I affix the boards to the wall, I snap chalklines to show the center of my nailing base—be it blocking, rim joists or plates. It's best to apply siding before doing the plumbing or electrical work to avoid nailing into a pipe or a cable. If plumbing or wiring is already in place, be sure to put nailing shields over the danger zones.

Wrong. **Installed green with nails at the edges, this cedar 1x12 cracked down the middle as it dried out.**

Photo: John Birchard

Hard-hat country. **Working in tandem, one person on a ladder and another on the ground can install long boards easily with the help of a lever to hold the boards steady.**

Putting them up—Flat-sawn boards should be oriented with the bark side out. This will decrease the incidence of "feathering"—the separating of spring and summer wood that can occur on flat-sawn boards. I know this is contrary to the wisdom that says placing a board with its bark side out will exacerbate the board's tendency to cup and then split. It just doesn't seem to work out that way in practice. Regardless of whether the bark faces in or out, a board on a wall wants to cup outward because the backside retains more moisture than the exposed side. Your best insurance against splitting is correct nailing. To keep the boards from cupping, back-priming them with whatever finish you're using or a water-repellent preservative is also recommended by the lumber associations.

In most cases, two workers, one with a ladder, the other with a hard hat, can apply board-and-batten siding very efficiently with no need to set up and move cumbersome staging. The boards are cut to length, then stood straight up and lifted into nailing position. For long, heavy boards that reach the foundation, I rig a simple lever that the worker on the ground can operate with his foot to hold the board up while the first nail is driven (photo below left). I usually drive the first nail at the highest block—not the top plate. Once the board is hanging, I check it for plumb and then drill pilot holes for the top nails to avoid splitting the board near its end. To ensure holding power, the diameter of the pilot holes should be no larger than three-quarters of the fastener's shank.

Unless the boards are especially brittle, which can happen with kiln-dried material, I don't bother drilling pilot holes anywhere but near the ends. The boards sometimes want to warp away from the building at their ends, so I nail into both the mudsill and the rim joist to counteract this tendency.

If the boards aren't long enough, I make scarf joints by cutting the abutting ends of the boards at 45 °. The upper board laps over the lower one, creating a beveled edge that conducts water away from the joint. Scarf joints should occur over blocking, and the nails should be angled into the blocks through pilot holes. Scarf the battens similarly and stagger the joints so that they don't line up next to each other.

By the way, the Forest Products Laboratory recommends treating the end grain of scarf joints with a water-repellent preservative before the boards are installed on the wall. They also suggest beveling the bottoms of the boards to create a drip edge.

If the windows I'm installing have ears on the sills, I swing them out at the bottom to get the boards in behind. Butt the boards up as tightly as possible to the blind stops, notching them where necessary to accommodate the openings (photo p. 53). Once all the boards are on the wall, I permanently nail the windows into their rough openings.

The battens and the exterior casings occupy the same layer on top of the boards, so the exterior trim must be installed before the battens that will abut either the apron or the head piece. You can use material of the same width for both casings and battens, or the casings can be made noticeably wider, thicker or both.

The nail heads in battens and boards should be set slightly below the surface for maximum holding power. But don't set them more than 1/16 in. Setting the nails deeper allows water to collect in the recesses.

John Birchard is a woodworker in Mendocino, Calif. He is the author of Make Your Own Handcrafted Doors and Windows *and* Doormaking Patterns and Ideas *(Sterling Publishers). Photos by Charles Miller except where noted.*