Adding a Seasonal Porch

A timber-framed, screened-in porch with an awning roof keeps out insects but comes down easily to let in winter sun

by Ken Textor

Safe from bats and bugs. The seasonal porch keeps out afternoon sun in the summer and allows evening enjoyment of the deck. When cool weather arrives, the porch comes down for a sunny southern exposure.

In an age of maintenance-free building, a structure that requires attention at least twice a year may seem out of step. But as I look back, my decision to convert an open deck into a summers-only screened-in porch still makes sense to me.

From the outset, you must believe that it actually gets hot in Maine during the summer. We live in a small clearing in the woods, sheltered by lots of tall, wind-shielding pines. On sunny days, the temperature on our open, south-facing deck regularly reaches well into the 90s, frequently topping 100°F or more.

Of course, by late afternoon it usually cools to the 60s. Unfortunately, the drop in temperature brings out mosquitoes that sometimes are difficult to distinguish from seagulls. In the evening, sorties of moths and formations of deerflies are chased by battalions of bats, ensuring that an open deck remains relatively unusable.

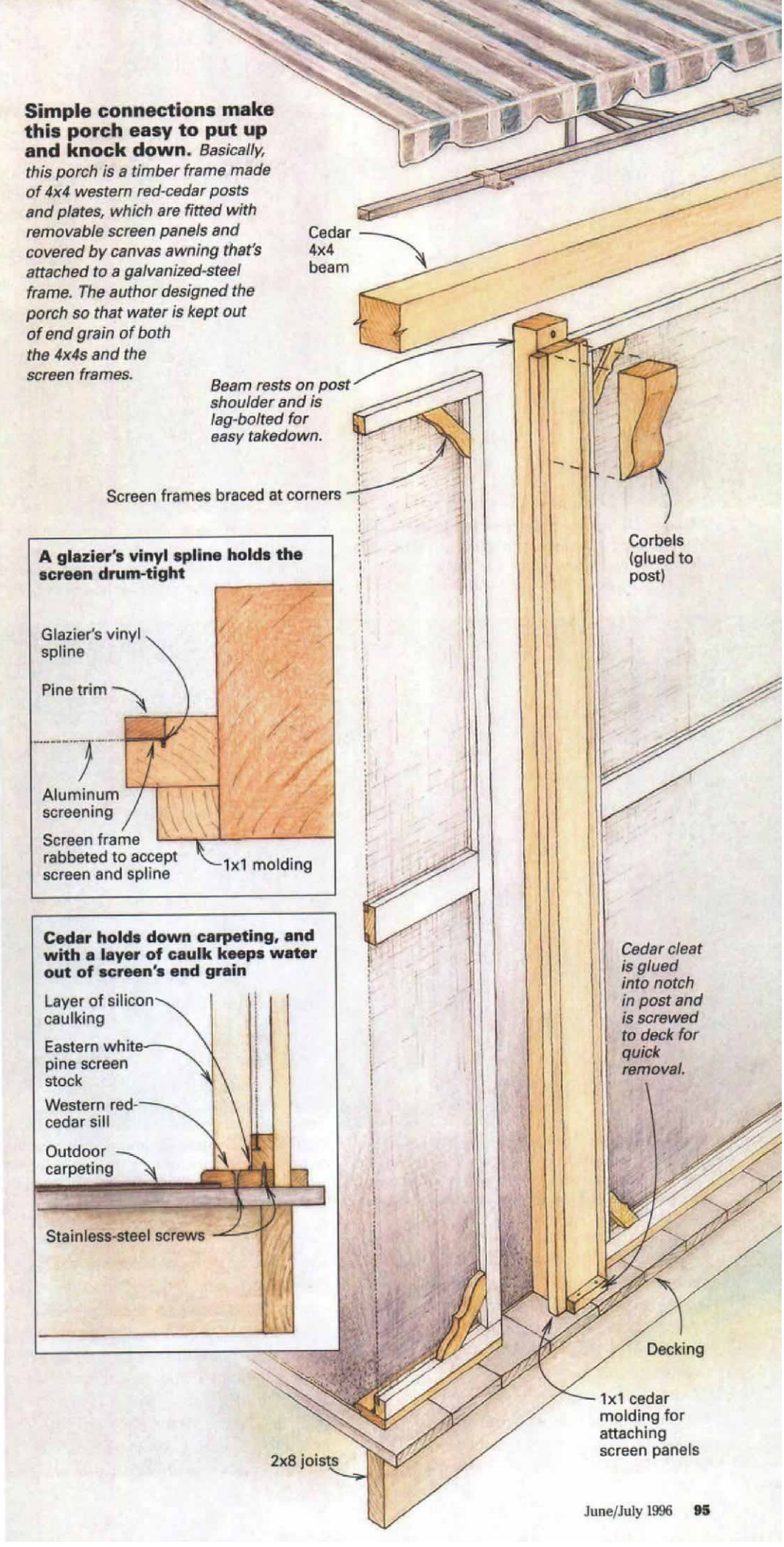
Then there's winter in Maine. It gets cold here. Very cold. To help with heating costs, you need all of the south-facing windows you can get. So shading those windows with a permanent roof over a screened-in porch that's only useful three months out of the year is counterproductive. Besides, such a roof would create a gloomy, sunless living room, which in my house is the south-facing room adjacent to the deck. So the idea of a seasonal screened-in porch was born (photo facing page).

Choosing the right type of beams was the critical first step—I couldn't find a design for such a porch in any architecture book, so I fell back on my own building knowledge, particularly my post-and-beam background and some of my boat-building experience.

The post-and-beam approach seemed the best way to achieve the required basic strength without a lot of studs to clutter the view. A minimum of framing members also would simplify assembly and disassembly. Because the load on these posts and beams would be no more than the weight of the galvanized steel-tubing awning frame and the awning itself, 4x4 top plates and posts would be more than sufficient.

Still, I had to keep everything lightweight for easy assembly and disassembly by one person. I also knew that posts would absorb rainwater along their bottom edges like sponges. So the post-and-beam structure would also have to be highly rot-resistant. These requirements forced me to rule out pressure-treated pine. Although available and inexpensive, it's too heavy and prone to movement during the humidity swings common during summers on the Maine coast.

The need for a light, durable wood led me to cedar. I could've used local northern white cedar, but I settled on western red cedar as the



Drawings: Christopher Clapp

Diagonals and center beam ensure strength. Although it doesn't have to carry a great deal of weight, the seasonal-porch structure does have to be sturdy enough to hold the awning down during high winds and to last through many knockdowns and installations. The author used diagonal beams to brace at outside corners of the top plate and a center beam for added stability.

It's sturdy and lightweight, but it's bulky. Although the two sections of awning frame for the author's porch weigh only about 50 lb. apiece, they are unwieldy because of their size. One person can handle the frame, but it works better with two people on the job. If the frame had been in three sections instead of two, another beam would have been necessary.

best solution. It's more straight-grained than local cedar, and clear 4x4s are readily available in lengths up to 20 ft. California redwood also was a possibility, but it's slightly more expensive than western red cedar and would have taken longer to get delivered.

Diverting water away from the existing deck—The deck I planned to screen in was 12 ft. by 16 ft. The decking was eastern spruce, which made it a good surface for solidly attaching a temporary structure. Spruce holds screws well, an important attribute for the design I had in mind, but it's not very rot-resistant, a point that forced me to adjust the design to keep water from being trapped between the screens and posts and the decking.

To do this, I offset the top plate by 2½ in., creating a small overhang on 4x4 posts, enough to keep the daily summer trickles of dew and drizzly fog from coursing down the screens and posts. Although the posts were securely notched and bolted to the top plate, I added a corbel to help support the top plate and soften the generally boxy look of the frame (drawing p. 95).

At the bottom of the posts, I needed a lip through which I could securely fasten the post to the deck. Rather than use some sort of angle iron or metal bracket, I notched out a space at the bottom of the post. Then I glued and screwed a piece of western red cedar in the notch. In addition to eliminating the potentially ugly angle bracket, the cedar lip also cut down on the amount of water-absorbing end grain surface at the post bottom.

For additional rigidity, I used diagonal beams at the outside corners of the top plates (top photo). I also used a bracing beam down the middle of the structure to stabilize the outer wall top plate and to make one more surface on which the awning frame would rest.

Boat building taught me to avoid iron hardware—As a former boat builder, I decided that all of the bolts, screws and hardware in this project should be nonferrous. From long experience, I knew that even galvanized-iron hardware breaks down and starts to stain badly after a few years of coastal weather. The local hardware store carried a variety of stainless-steel hardware. But if you live away from the coast, a marine catalog can supply what you need.

Boat-building experience also led me to choose a two-part resorcinol glue for all of the joints on the screens and for attaching the corbels to the tops of the posts. Epoxy is a fine waterproof glue. But with most epoxies, you run the risk of joints becoming glue-starved. This condition happens when the two pieces of wood being joined are mated so well that too much of the epoxy is squeezed out under modest clamping pressure, weakening the joint. Resorcinol, however, works best in tight joints.

Screen-making wasn't as simple as it seemed—Construction of the screens seemed like a pretty straightforward process of making frames and putting screens into them. Fortunately, I talked with a local glazier first and learned a little about screens before I made some common mistakes.

The size of the screen area is important. To end up with drum-tight screens, it's important to keep the openings as small as possible. The absolutely largest opening in a screened wall or door should be no bigger than 3½ ft. by 5 ft. Larger than that, it's hard to keep the screen surface from bulging the first time it's bumped.

Screen stock also needs to be strong, light and durable. So I chose eastern white pine, the traditional stock for screen lumber. Western red

cedar seems too brittle, even if I could have found the 5/4 and 6/4 rough stock. (As a general rule, the minimum finished thickness for screen stock should be 1 in. for screened walls, and 1¼ in. for screened doors.)

In constructing the screened walls, I used 1½-in. wide stock around the edges, knowing the screen would gain additional rigidity when screwed into the top beam, posts and deck (photo right). Likewise, the decorative diagonals at the corners of the screened frames would lend rigidity to the post-and-beam structure. I increased the size of the rail, dividing the upper and lower screen to 3 in. to compensate for its general lack of support.

All of the screened-frame and screened-door joints were half laps, which increased the structure's overall strength. Although mortise and tenon is the traditional joint and although modern methods tempted me to use biscuit joints at the corners, the additional strength of the half-laps seemed worth the extra effort.

The rabbet for the screening itself seemed simple enough until the glaziers at Coastal Glass in Bath, Maine, straightened me out again. I was simply going to rout a rabbet ⅝ in. wide and 5/16 in. deep. But to make the screening tight in the opening, glaziers now use a vinyl spline inside the rabbet (top inset drawing, p. 95). With the spline in place and the rabbet trim nailed home, the screen has little give at the edges and tends to remain tight.

To make the additional rabbet for the glazier's vinyl spline, I used a circular saw with a carbon-tipped finish blade in it, set it to the proper depth, set the blade guard against the screen frame and cut the spline groove.

The final step in constructing the screened frames was the addition of a cedar securing lip at the bottom of each frame. This step served three purposes: It gave me a lip, or sill, to use to screw the screen to the deck; it provided a means to hold down the outdoor carpeting; and it kept the screen edge a little farther away from water that might pool during rainstorms. I screwed the cedar lip to the bottom edge of the screen after I set the edge in silicone caulk to keep the pine frame from absorbing water (bottom inset drawing, p. 95).

I ripped 1-in. by 1-in. strips of cedar and mounted them along the inside top and sides of the posts. The screen panels are then screwed into these strips. One final note on screens: I advise against installing the screening yourself. Even professional glaziers have trouble keeping screening tight while they are setting the vinyl spline and stapling everything home. It's definitely a two-man job even for the pros, particularly with large screened surfaces. We chose charcoal-finish aluminum screening over shiny aluminum, nylon or brass.

Big screens need extra bracing and support. Wide screen stock and corner brackets prevent bulging screens, which are further stiffened when the screens are screwed into place. The cedar sill at the bottom of the screen holds down the carpeting and keeps water from the frame.

Of bugs, rugs and awnings—If you build a seasonal screened-in porch, it's wise to work closely with the company that will make and install the awning and its frame. Blackfoot Awning & Canvas in nearby Auburn, Maine, made several trips to the job site to double-check measurements and to discuss exactly how I wanted the awning to fit.

Many custom-awning companies work largely on storefront overhangs. Galvanized-steel frames support these awnings, which are usually laced down. For a screened-in porch, however, loose lacings would allow bugs to sneak inside. Instead, Blackfoot Awning used strips of Velcro where the awning met the wooden top plate. This construction effectively kept out the bugs.

Keeping bugs out also meant that we had to buy indoor-outdoor carpeting to cover the deck. When you buy the carpeting, be sure to ask about shrinkage. Hot sun will make some synthetic carpeting shrink. If so, buy a piece a little bigger than you need and cut it to size only after it's been in the sun a few days.

Finally, be careful to specify that the awning frame be lightweight and easily managed by one person. The welded frame for my porch could have been divided into three sections instead of two, making it easier for me to handle during breakdown and setup. In two sections, each piece is probably no more than 50 lb. But because of their bulk, they're awkward for one person to handle (bottom photo, facing page). If you add extra frame sections, use additional beams to support additional sections.

Knockdown, storage and costs—At the end of the summer season, I decided to knock down my screened-in porch, post-and-beam frame included. Although the frame could survive winter's worst weather, taking it down is so simple that there's really no point in leaving it up.

Knocking the structure down took about three hours. I had some help during the process. But I doubt doing it by myself would have taken much more than an extra half-hour. Two people could have it all down and stored in two hours. Other than the awning frames, no piece weighed more than 15 lb.

The cost of the project was $2,200, including the all-weather carpeting, the awning and the frame. (The awning cost $1,000; the wood cost $550; the carpet cost $150; and miscellaneous glue and hardware cost $150.) The time to build all of the wooden parts worked out to about 14 working days for one person. The lion's share of that time was spent on the screens. There are, however, a few custom wooden screen manufacturers still around. That, of course, would probably double your costs. □

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