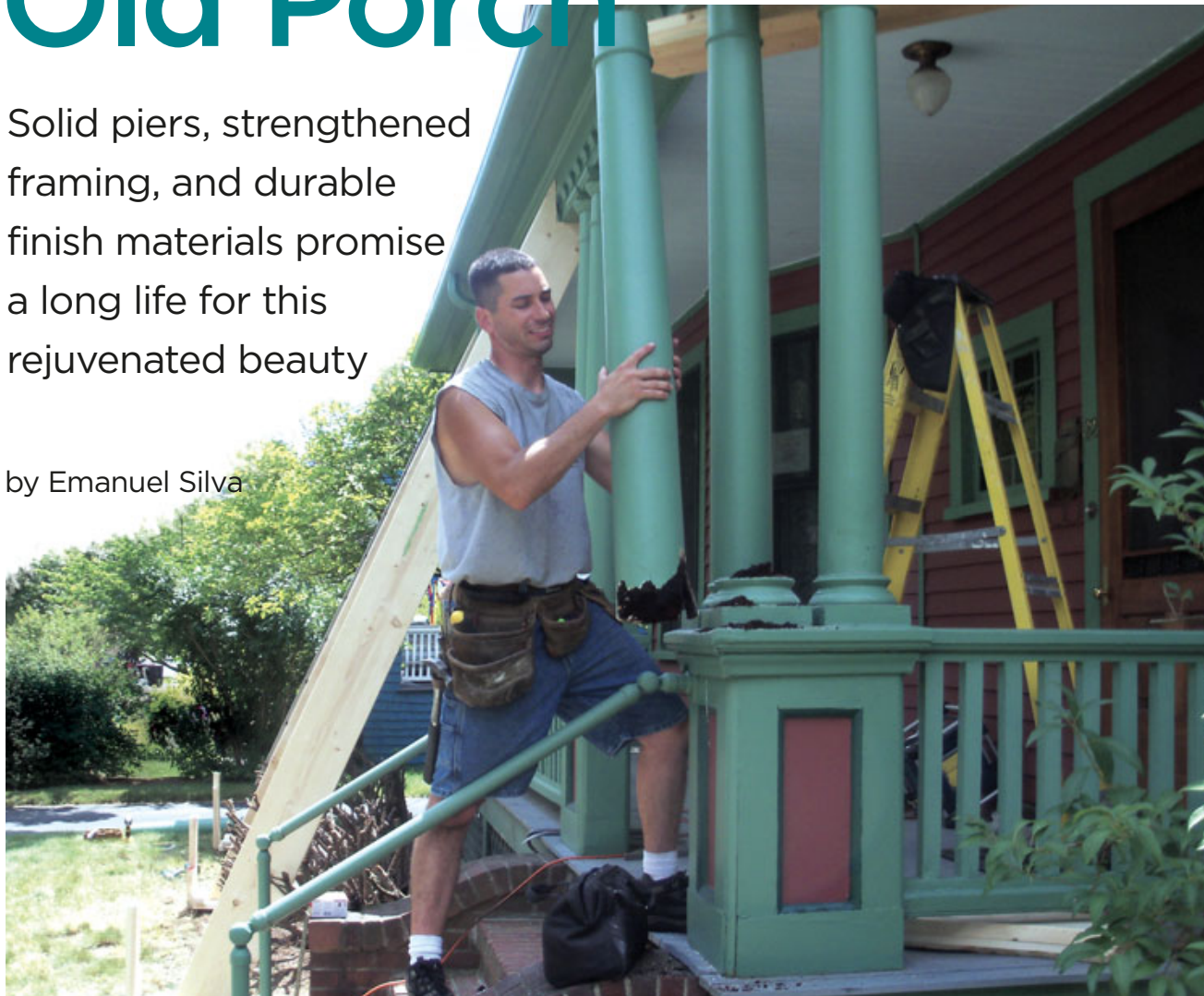


# Restoring an Old Porch

Solid piers, strengthened framing, and durable finish materials promise a long life for this rejuvenated beauty

by Emanuel Silva



I was recently asked to repair the front porch of a 100-year-old house in Medford, Mass. Though handsome, with turned wood columns and nice details, the porch had seen better days. Another contractor had done some work on the deck about 20 years earlier, but because those repairs had trapped water rather than allowing it to drain, there was a lot of rot.

## Demolition and Footings

Fortunately, the roof structure was still completely sound. We supported it securely

with double 2x10 braces, then went to work removing the handrails, columns, and pedestals and pulling up the mahogany deck boards. Most of the decking was sound enough to reuse, but the understructure was badly rotted. We also found that the footings were undersized and only 1½ to 2 feet deep. Since all this had been hidden by the porch skirting, none of it was included in the original scope of work. The homeowner agreed that the problems had to be addressed, so we wrote up a change order and kept moving.

We used the roof and the existing brick

steps — which the homeowner wanted to save — as guides to laying out new footings, although this was complicated by the fact that the steps weren't parallel to the porch. After several attempts at plumbing down from the roof and adjusting the results to the position of the steps, we came up with a layout we could live with.

**Concrete piers.** We established a reliable height reference for the footings and posts by running a level string line between two 2x4s plumbed and fastened to each front corner of the porch. Then we dug the

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footings by hand, 2 feet in diameter and 4 feet deep, flaring the bottoms of the holes outward to give them a bell shape (see “Working With Sonotubes,” *On the Job*, 02/11). Each 12-inch Sonotube was reinforced with four lengths of #5 rebar. I like to keep the rebar about 10 inches down from the top of the footings so it doesn’t interfere with the post anchors.

### Framing and Decking

The existing frame had three crosswise beams set into shallow pockets in the foundation wall running to a 4x6 rim joist (see **Figure 1**). We replaced the undersized rim with a triple 2x10 and added two crosswise beams to the layout, dividing the overall span into fourths rather than the original halves.

Changing the beam spacing meant cutting two additional pockets into the mortared stone foundation wall. Like many old foundation walls, this one was neatly made where exposed to view, but where it was hidden by the porch it was very rough, consisting of small pieces of stone thrown together almost at random. We used a cold chisel to cut the additional 3-inch-deep pockets and deepen the original ones, which extended only an inch or so into the wall. We then reparged the face of the wall around the pockets with cement mortar.

We soaked the cut ends of the doubled 2x10 crossbeams with Jasco Termin-8 wood preservative to prevent rot where they made contact with the masonry. Although the structural load was carried

by the beam pocket, we added metal hurricane clips for good measure.

I used 1/2-inch wedge anchors to attach the 6x6 post bases to the piers (**Figure 2, page 3**). Drilling the required holes took more time than pushing J-bolts into fresh concrete but guaranteed that the bolts would end up exactly where we wanted them, saving us trouble in the long run.

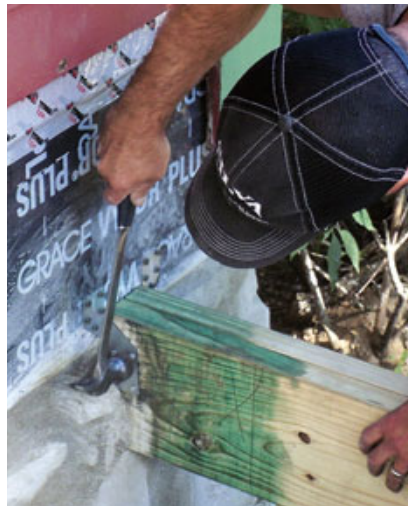
The final step in the framing was building short sections of “knee wall” — basically, low stud walls tied to the deck with metal connectors; later they’d be encased in the finished pedestals.

**Decking.** We were able to reuse about three-quarters of the existing deck boards; both the original boards and the replacements were given a first coat of Benjamin Moore exterior primer. Instead of using one of the various hidden fastener systems for fastening deck boards, I usually apply a couple of dabs of 3M Marine Adhesive to the tops of the joists, press the boards in place, and nail them down with 2-inch finish nails. I’ve been doing this for eight years and have yet to see a board work loose or develop a squeak. I used three tubes of adhesive on this job — cheap insurance at 10 bucks a tube.

### Pedestals and Handrails

The homeowner wanted exact duplicates of the original column and handrails. We used wood for the handrail but assembled pedestals from rotproof cellular PVC. The columns are cast from a fiberglass-reinforced polymer.

**Frame-and-panel pedestals.** The pedestal frames are made from 3/4-inch cellular PVC trim boards, and the panels from 1/2-inch PVC sheet stock (**Figure 3, page 3**). For applications like this, I use Kreg pocket screws along with TrimTight cellular PVC cement (TrimGlue, 877/874-6458, trimtight.com). Using both pocket screws and glue helps ensure that the stock won’t move and open at the joints. The original base caps were made from 2-inch stock, which wasn’t locally available in PVC, so



**Figure 1.** Rotted girders in the old framing (above left) extended just an inch into poorly hewn pockets in the rough stone foundation. The author repointed and parged the existing pockets and cut additional ones for new double 2x10 beams. Cut ends of the pressure-treated lumber were soaked with wood preservative, and metal hangers were added for an extra measure of stability (above). Peel-and-stick membrane protects the hardware and seals the beam pocket (left).



**Figure 2.** With the deck framing resting on temporary supports, the author lays out and installs the post anchors (left), ensuring accurate positioning of the pressure-treated 6x6s (below left). Short sections of knee wall were attached to the front of the deck with metal straps and framing anchors; later they would be enclosed by finished PVC pillars (below).



we glued up the caps from two layers of 5/4 material.

**Built-up handrails.** The existing handrails and balusters were fir, but we glued up the replacements from two layers of 5/4 red cedar, which is durable and machines nicely. I didn't have the 50 or so clamps I would have needed to laminate the cedar boards in the usual way, so I improvised with wood screws (**Figure 4, page 4**). After drilling holes 4 inches apart along the edges of the boards, I coated them with glue and screwed them together. The next day, I removed the screws, ripped off the edges with the screw holes, ran the stock through a portable thickness planer, and routed the edges to match the profile of the original rails.

We glued up the baluster stock in the same way, then ripped the material to width and cut the balusters to length four at a time, using a miter saw with a stop block. After sliding the new pedestals over



**Figure 3.** The author used pocket screws (above left) and cement to assemble the frames of the cellular PVC pedestals (above). The completed pedestals were slipped in place over the framed knee walls, then trimmed with PVC moldings to hide fastener holes (left).

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**Figure 4.** Thick handrail and baluster stock was laminated from 5/4 red cedar. The boards were glued (top left) and screwed (top right) together. After the glue had set overnight, the built-up stock was ripped to width and thickness-planed (above left and right).



**Figure 5.** Preprimed wood balusters were fastened to PVC spacers to create assemblies (above) that fit between the top and bottom rails, which were first pocket-screwed to the pedestals (above right). Last, the PVC pedestal caps were profiled to match the rails (right).

the framed knee walls and fastening them in place, we were able to measure and cut all the handrails to length. I fastened the matching top and bottom rails to the pedestals with pocket screws (**Figure 5**). But rather than installing the balusters individually, we screwed them between pairs of PVC spacers, then fit the baluster sections between the upper and lower rails, which concealed all the pocket screws.

To prevent the handrail and baluster sections from sagging, we screwed short support blocks to the deck underneath the bottom railings. We then caulked all the joints and filled all the holes with Bond & Fill two-part epoxy (877/822-4615, bondfill.com), which is designed for use with PVC trim.

### New Columns

Like the pedestals that support them, the columns are a maintenance-free synthetic. We special-ordered the slightly tapered Tuscan columns — which are molded from a composite material called PermaCast — from HB&G (800/264-4424, hbgcolumns.com). The upper and lower terminations — the base and the capital — are separate pieces. By studying the catalog, we were able to obtain combinations that matched the originals almost perfectly. Each three-piece column cost a little less than \$150.

*Not an exact match.* Installing the columns is supposed to be a matter of cutting them to length, positioning them and making sure they're plumb, then fastening the base and capital to hold them in place. We had one minor problem, though: I could see that an ornamental ring that was an integral part of each column was noticeably higher — and closer to the capital — than the rings on the original columns.

The difference was fairly small — less than 2 inches — but columns can look very strange if they're not properly proportioned. Plus I had promised the homeowner that I would match the old columns. After arguing with myself for a while about whether I could just ignore the difference,



**Figure 6.** A carbide blade in a circular saw was used to trim the bottom ends of the columns to length (left). The tops were trickier: In order to exactly match the original columns, the author had to add a few inches to the top. He did this by inserting a PVC plug (center) — which he screwed in place inside the column, flush with the top — and then adding PVC extension pieces, which he screwed to the plug (right).

I came up with a solution (Figure 6).

Using a jigsaw, I cut a circular piece of  $\frac{3}{4}$ -inch PVC trim stock just large enough to fit snugly into the hollow upper end of the column and fastened it with screws. I then cut two slightly larger disks of the same material, extending the upper end of the column and effectively lowering the position of the ring. It took some time, but I repeated this procedure for the remaining nine columns, confident that I was providing an exact match with the originals.

**Finishing up.** Although the composite material of the columns was very hard, it could be cut with a regular carbide-tooth saw blade. I decided that I didn't completely trust the capital and base alone to fix each column in position, so just to be safe I screwed a couple of small metal framing angles to the bottom of each column (Figure 7). Plumbing the columns was complicated by the fact that they were tapered. I wedged one column temporarily in place and kept adjusting its position until my 4-foot level gave me the same out-of-plumb reading on all sides, then marked the position of the bubble on the vial and used the mark to plumb the remaining columns.

To allow for drainage, I drilled a  $\frac{1}{2}$ -inch hole in the top of each pedestal — centered below the column — so that any water that pools there can escape to the ground. The homeowner is pleased with the final result, and I am, too. The porch looks just like the

century-old original must have when it was new, and with its improved structure and materials, it should continue to look good for many years to come.

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**Figure 7.** Metal framing anchors screwed to the column (above left) provide a strong connection to the pedestal. The tops are secured with screws angled into the roof girder (above). At left, the finished colonnade.