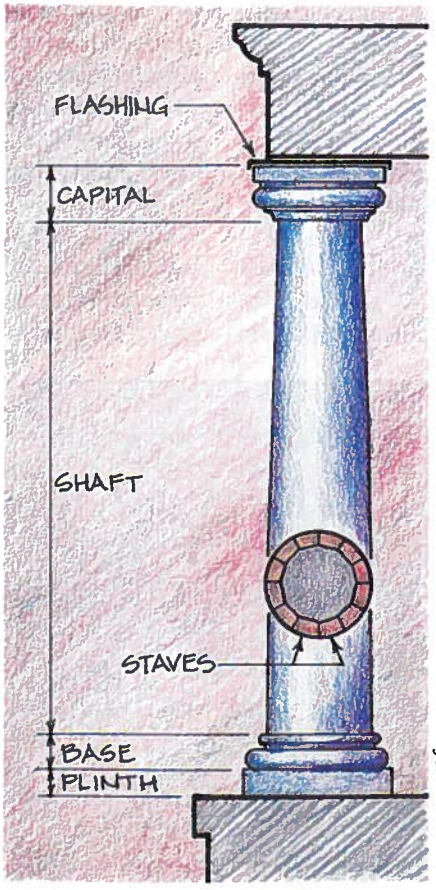
PILLAR TALK

Restoring Columns

by Barbara B. Ryan

Even before we bought the 18th-century manor house that became our bed-and-breakfast inn, it was obvious that one of the four large portico columns was in trouble. The bottom quarter of its 19′ length was rotted, and the staves ranged from partially unglued to totally sprung. Wire strapping betrayed an earlier, not-at-all expert repair (and told us the problem had been around for a while).

For years, rainwater from the portico roof had been running down the pillar. The downspout mounted to the side of the shaft had done a poor job of diverting water from the base; leaks in a faulty gutter elbow (enclosed in the porch roof) had started rot inside the column. Lack of ventilation in the shaft contributed to the damage. The three companions to this "worst case" also looked bad, with their plinths losing paint in large peels that revealed shredded, spongy wood.



Jonathan Poore

So what did a couple of city-bred Yankees know about the care and feeding of plantation-era columns? John Leeke, writing in the October 1982 OHJ, had convinced us that column *repair* is often better than replacement — but how were we to decide whether we had passed the point of no return? We wrote to him describing the conditions and sending photographs of all eight of our sick columns; the four large ones on the major facade, and four fluted six-footers on a side porch. He advised us that repair might be possible on all but the large "worst case" column, and offered to work with our repair crew if necessary.

We considered bringing John from Maine to Durham, North Carolina, but then we learned about Dickinson Restorations. This 11-member firm had masterminded restoration projects for several landmark properties in the Raleigh-Durham area, and had received Historical Preservation Society awards. We decided to turn our problems — and John's counsel — over to Dickinson.

Todd Dickinson corroborated John Leeke's judgment. Many of the turned bases and square plinths showed signs of advanced disintegration and were not worth the time to repair. After examining the exterior and drilling shallow holes to test interior conditions, he advised us to replace the worst column, along with one base on the front portico and all bases on the side porch. Replacements were ordered from A.F. Schwerd.* The plinths specified were cast-aluminum models that stand on small feet — the bottom half of a system for ventilating inside the columns.

*For more information on Schwerd and other related suppliers, see Restoration Products, page 68.

SIDE PORCH

As we waited for the replacement parts to arrive, work started on the small side porch. First, Todd's four-man crew balanced 4×4 timbers vertically on hydraulic jacks, and carefully positioned them under the roof lintel. By jacking an inch or so, they were able to lift each 6′ shaft from its base, and make it easy for two men to angle each column out from under capitals and porch structure.

Once the columns were down, the crew began consolidating and filling with epoxies. Epoxy *consolidants* are syrupy liquids specially formulated to penetrate dry, decayed wood. Strength is restored once they harden. Epoxy *filler* is a paste that can be formed to fill a hole or build up a shape. Two-part fillers are formulated by the manufacturer to produce a good working consistency when they're mixed, and are popular for most do-it-yourself applications. Restoration professionals often custom-make their fillers by thickening liquid epoxies with powders such as microballoons (microscopic glass spheres) or Cab-O-Sil (a silica-based thickener). This process requires careful proportions, though, and the use of a filter mask to avoid lung contamination from the thickeners. Epoxy-treated wood is very resistant to moisture, and if used correctly, will also protect adjacent wood. (See the accompanying article.) Instead of applying consolidant (Abatron's Liquid Wood) to the surface of the punky, termite-weakened wood, the men drilled shallow holes and injected the product many times into each hole. This allowed it to penetrate the end grain and saturate the wood.

Each column was kept wet with the solution for two or three hours, and applied as fast as the wood soaked it up. Consolidant was also added to the end grain at the bottom of each column, where it was wicked up through the damaged areas. Although this method is not recommended for beams or lintels in tension or carrying a shear load, Todd reported that it works well for the compression load to which porch columns are subject.

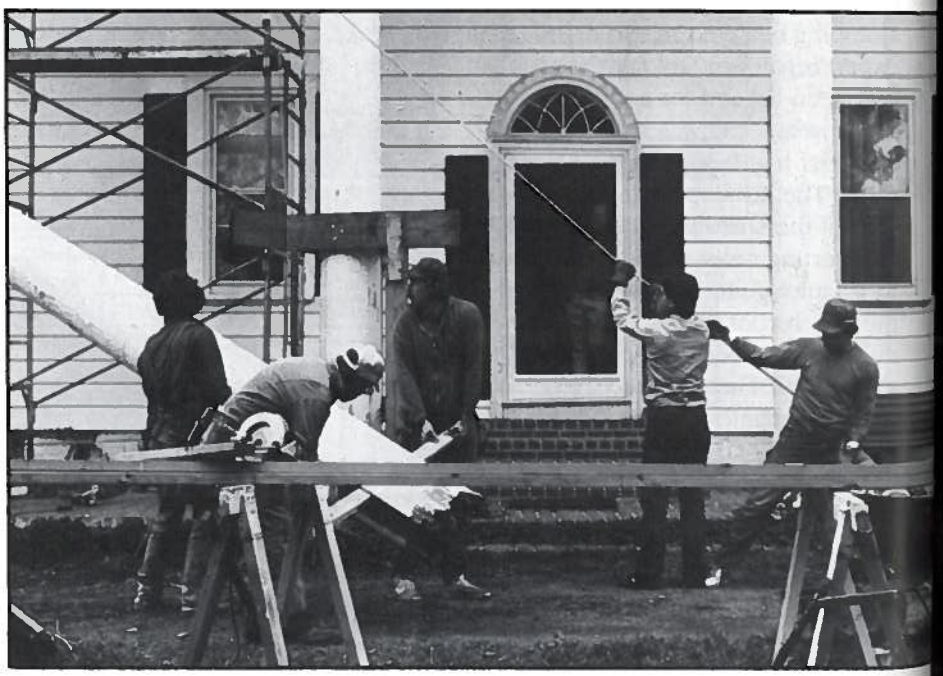
Next, holes and termite cavities were repaired using Abatron's Wood Epox, a white, two-part, epoxy filler. After curing, this filler remains soft and relatively flexible (like wood), and will not loosen or fall out (as might a rock-hard automotive filler meant for metal). Epoxy filler also adheres well to consolidant-treated wood, making solid patches.

The capitals on two of the small columns also proved to be soft, so the crew consolidated them in the same fashion as the shafts. Damage had apparently resulted from more water running off the porch roof, so Todd devised flashings of sheet lead (3⁄16 in.) to cover the projecting top edge of each capital. Lead was chosen because it is long-lived, easy to work, and won't stain (as copper might).

The porch lintel runs in a single, solid piece across the top of each column; it made venting through the porch roof itself impossible, so the crew installed louvered aluminum vents 3″ from the top of each shaft. This completed the airway started with the new plinths, and allowed trapped moisture to escape from the column interiors. Finally, they applied a coat of latex primer and two coats of latex finish paint. (See sidebar, next page.)

FRONT FACADE

The removal process was repeated for the huge, worst-case column on the front facade. After setting up a shoring-type scaffold on the masonry porch floor, protective blocks were positioned under the lintel and the porch roof was



Removing the "worst case": Plunge-cutting the shaft makes room for a 2×4 handle. Then, by rigging with a block-and-tackle, the entire column is lowered to the ground.

jacked up. Next, the shaft was plunge-cut with a chainsaw, and a 2 × 4 was inserted completely through it as a handle. Then a rope was tied to the top quarter of the shaft and run back to a block attached to the scaffold. Once on the ground, the shaft fell apart like a bundle of sticks.

Installing the new column went smoothly. The crew measured three or four times before cutting the new Schwerd shaft, and when it was positioned on its base and plinth, its 19′ length was perfect. The capital (which had stuck to the porch lintel when the column was removed) was found to be soft and punky in two of its three sections, so Todd sawed, planed, and generally sculpted matching new pieces from pressure-treated stock.

The other three columns needed only raising, so neither taking them down nor shoring up the porch was necessary. Instead, the crew bolted 2 × 10s to the bottom of each shaft to provide lifting points. Then, using three 10-ton hydraulic jacks, the columns were gently raised by these "triangles" — porch roof and all — and the round bases were pulled out from under them. Had our capitals been some moulded composition material, we couldn't have risked crushing them with this jacking technique. But they were wood, and able to bear both the force of the columns being lifted from below, and the resistance of the porch roof pressing from above. Once in the air, both columns and bases were reconditioned with the same epoxy techniques used on the side porch.

The entire project took about three weeks. The last phase was the slow job of stripping heavy paint buildup all the way back to the wood. Now our columns are good for at least 30 years. Of course, the perfect paint job on columns and porch make the nearby fanlight and window trim look tired, so another project is looming. That, after all, is the joy of owning an old house.

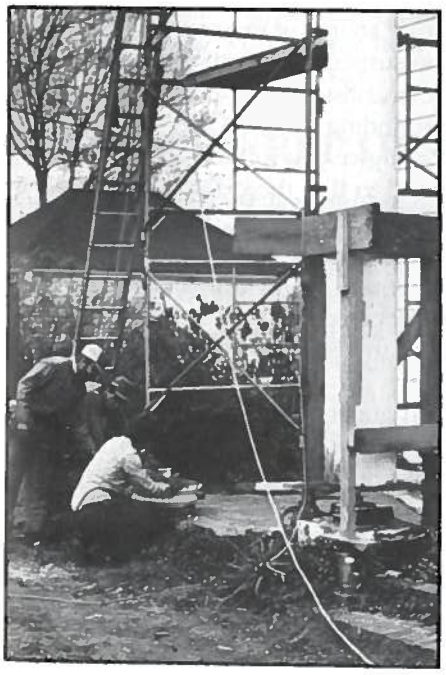
PAINTING COLUMNS

by John Leeke & Todd Dickinson

A major reason for painting the exteriors of columns is to prevent water from penetrating (and rotting) the wood. However, paint also has to function as an important path for water vapor to escape from the interior of the column. Water vapor passes through different types of paint with varying degrees of difficulty. Latex paint lets vapor pass freely. True linseed-oil paint is not quite as permeable. The more common alkyd-resin paints are even less permeable and marine paints block vapor very effectively. Primers are designed to be the interface between wood and the top paint coat (holding the two together). They are not meant to have water-repelling qualities on their own, and will also function as a path for water vapor.

Heavy paint buildup prevents vapor from escaping, and this leads to problems. When moisture levels inside the column are too high, paint will crack or peel down to bare wood. Deterioration of the wood follows if the moisture imbalance is not corrected. The (unpopular) solution is to remove all the paint and start again with the proper coating.

Since humidity levels vary throughout the country, the best paint for columns will vary also. Down South where humidity levels are high, a very permeable coating is needed to allow vapor to move out of a column. Use a primer with two coats of latex. Areas like New England have only moderate humidity. Columns here can get adequate vapor transmission (and will have more protection from exterior water) with a less permeable coating. Use a compatible primer (such as oil) with two coats of linseed-oil paint. For an arid region, such as the Southwest, yet another coating combination might be indicated (such as one with a minimum permeability). Test paintings are always worthwhile because paints that are permeable enough to let vapor out may also let in too much water. Finding the right balance, though, will reduce maintenance and add years of life to a column.



Three four-foot 2× 10s bolted to each column (left), provided a triangular lifting jig for the hydraulic jacks. Electric heaters dried out the column interiors while the bases were patched and consolidated.