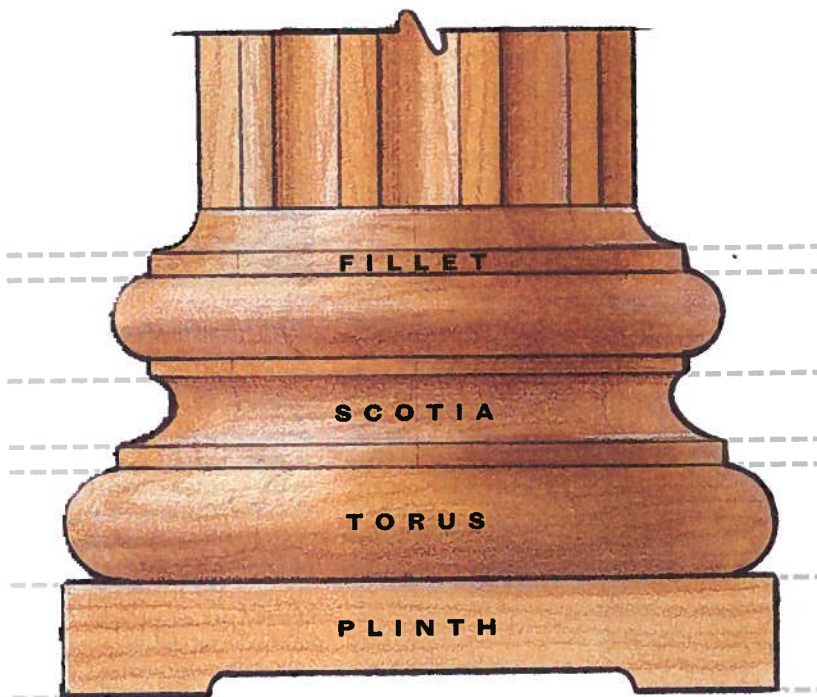


## STEPS FOR FABRICATING WOOD COLUMN BASES

**A**FTER ONLY TWO YEARS IN THE WEATHER, MY FIRST WOOD COLUMN bases were like the singer in the 1960s pop song — they “sure had started something.” The joints cracked open and spread until some were  $\frac{1}{4}$ " wide, thanks to collecting moisture and the wrong kind of adhesive. I see the same problem time and again, even in bases from major column manufacturers. Over the years I've learned how to lick splits in wood bases with construction and materials that give long life and low maintenance. Now I specify these basemaking methods for all my projects — round bases as well as square plinths. They'll work for you too, “when you go one, two, three ...” *by John Leeke*



### I. Copying Bases

IF YOU'RE GOING TO REPRODUCE AN EXISTING base, start with a scale drawing and some sketches. Measure the height of each feature in the profile, such as the torus, fillet, or scotia, and their combined height (see drawing below). With a large pair of calipers, transfer the diameters of the major features to a full-size drawing. Take diameter readings at several places for each feature and calculate their average — old bases are usually distorted. Measure up more than one base too. The idea is to determine the maker's original design.

My most recent column project called for matching a base that was severely decayed. When I'm faced with so little sound wood to use as a model, I simply bandsaw a  $\frac{1}{4}$ " thick profile from the worn-out base — just like a thin slice of pie. First, I lay

**Greek-style columns go right to the floor, but Roman-style columns sit on a base composed of several moulded elements dictated by the particular classical order (Ionic, Doric, Corinthian, and so on).**

# MR. BASE MAN

out the finish dimensions of the base on a full-size drawing, showing a top view and a cross section of the profile. Next I reconstruct the profile, fitting details from the slice into the correct overall shape. From this I make a pattern out of sheet aluminum to be used later during turning. Then I mark up the wood blank that will be turned into the base. (It needs to be about  $\frac{1}{4}$ " taller and wider than the finish dimensions.)

## II. Careful Construction

BASES HAVE A MUCH GREATER RESISTANCE to joint separation if they are built-up of pie-shaped sections (see drawing page 36). A void in the center helps control dimensional changes. It not only allows room for wood expansion, it is part of the ventilation path under the plinth and up the interior of the (hollow) column. Multiple sections share the stresses of wood movement among several adhesive joints. Sections also give better service than a solid block of wood because they expose a minimum of end grain. (Wood end grain is like a microscopic bun-

dle of straws, so it wicks up water readily, but holds paint poorly.) Generally, I use four or five sections for bases up to 16" in diameter, and six to eight sections for bases up to 30" in diameter. Larger bases require more sections, but don't get carried away. Too many joints weaken the base.

Decay-resistant woods, such as redwood and mahogany, perform best for bases. I often use eastern white pine that is selected for heartwood and "tight grain." Plan to obtain materials well ahead of time; planks 3" to 4" thick may have to be special-ordered. Also plan to have the stock thickness planed on both sides. Planks this size will surely come as rough lumber.

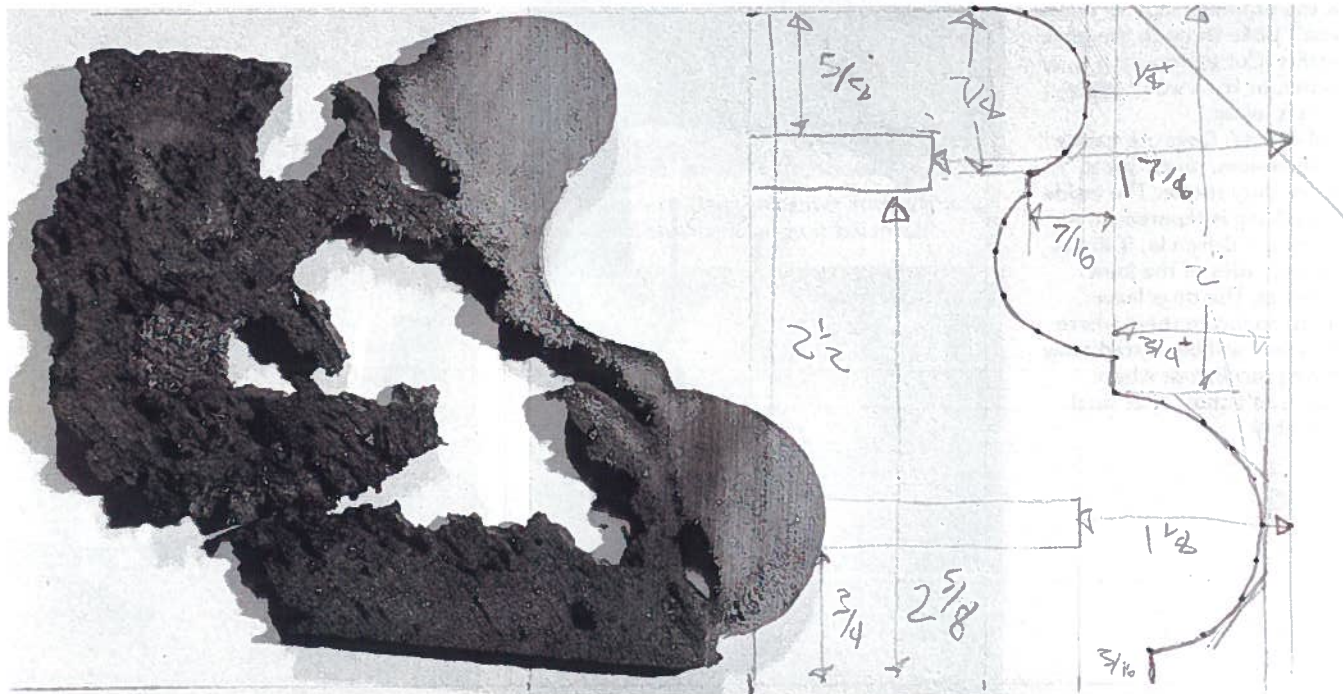
You'll need splines — wood "tongue" reinforcements — to bridge the joints and to hold the sections together. Use two

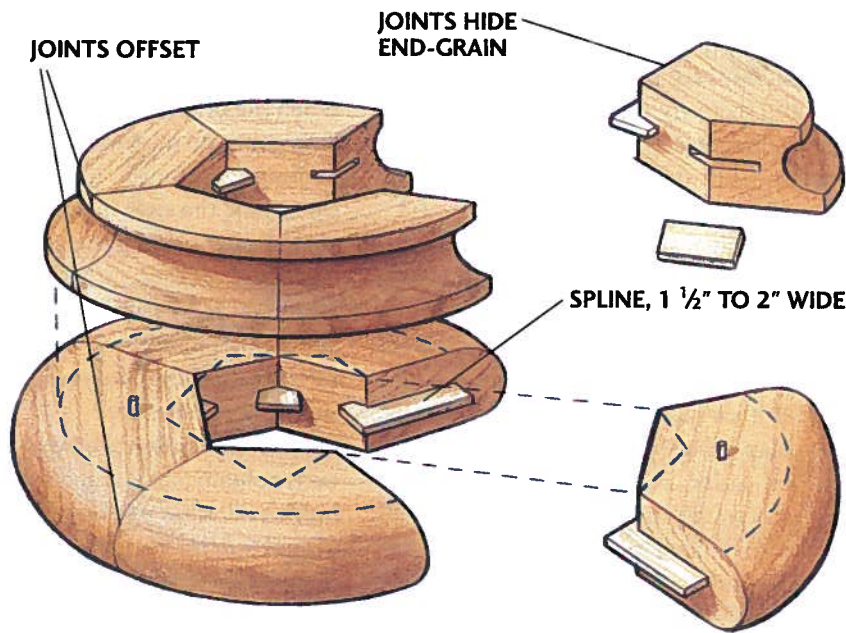
## Designing New Bases

When the original bases are long gone you might have to design new ones.

Determine the style of your columns by studying the classical Orders of Architecture (illustrated in any architectural reference). Pattern books, such as *The American Vignola*, were often used by early column makers, and a reprint will show you how to proportion the various dimensions to match the standard designs.

**RIGHT:** Bases take a beating, and when there isn't enough left to repair, it becomes practical to reproduce them — especially if they can be improved. **BELOW:** Though deformed, this slice of the old base provides enough evidence of the original design to recreate the profile for a new pattern.



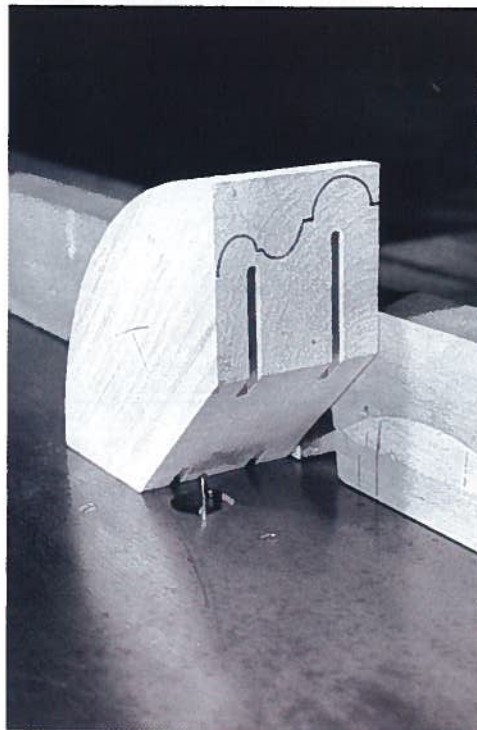


## Building Up Bases

If your base is tall, you may well have to build it up in layers, element by element, like stacked pancakes. Be sure to offset the vertical segment joints; it reduces the opportunity for splits. Also plan the horizontal joints where elements meet so shadows will hide them (exactly the strategy of ancient stone bases). The layers will expand and shrink at different rates, and seams will always show a little. Bed each element with caulk or sealant as you assemble the base. I sometimes use two 8d finishing nails as temporary alignment pins, located in the middle of sections roughly 180° apart. Caulk and column weight will be what holds the base together.

**RIGHT:** Plan spline grooves at the drawing stage so they won't poke through the final profile. Cut them with a router, or try a wood-plate biscuit joiner.

**FAR RIGHT:** Dogs are handy little devices, much like a heavy-duty staple. The inside of each leg is tapered, so as the dog is driven in, it draws the two sides of the joint together. The dogs leave holes, so locate them where the wood will be wasted away during turning, or where they won't show after final assembly.



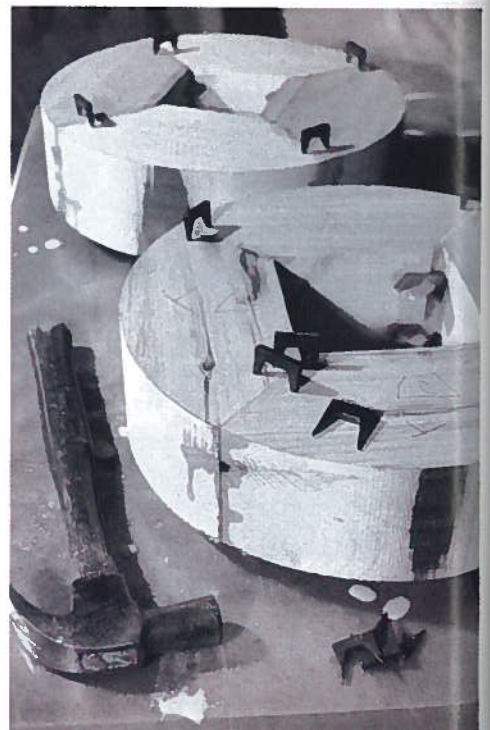
splines per joint if the section is thicker than 3". I like 1/4" marine plywood for spline stock, but many a strong, weatherproof material will work.

### III. Layout the Base

TO BEGIN THE LAYOUT, I CUT A PIE-SHAPED section pattern out of the top-view drawing (see photo page 37). Layout plans the cuts in the plank for correct grain orientation and most efficient use of the wood, while avoiding defects such as knots, checks, and pitch pockets. As I locate each section I trace around the pattern. Since a base is large and will be turned on a lathe, balance is important. I try to eliminate large, heavy knots in the sections, and roughly match wood density.

### IV. From Sections to Blanks

I SAW EACH SECTION OUT OF THE PLANK on a bandsaw, guiding the work by hand and staying just outside of my layout lines. I'm careful to cut the joints as flat and true as possible (adjusting the saw table truly square with the blade helps), but I don't bother setting up a jig to guide the cuts. Precision is not critical because the sections will be joined with a gap-filling adhesive. I cut the grooves for splines with a router.



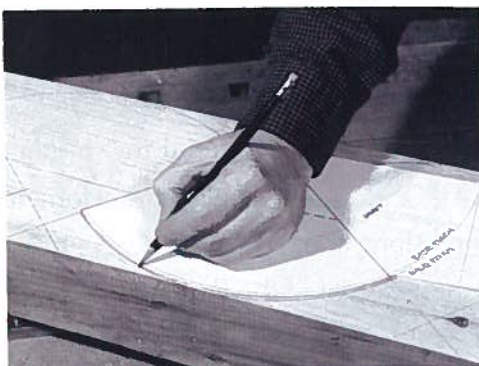
The sections are glued together to make blanks. Two-part epoxy adhesives formulated especially for wood have the three characteristics needed for this work: good gap filling qualities, low clamping pressures, and slight flexibility once cured. Formaldehyde-resorcinol glue is weather-proof, but inelastic. When wood moves, the bond may break. After mixing the ingredients thoroughly, I apply the adhesive with a natural bristle brush to all joint, groove, and spline surfaces. Pinch dogs hold the sections together while the adhesive cures. Drive in dogs on both sides of the blank to keep the pressure on the joint even. Once the epoxy has cured, remove the dogs and excess adhesive from the blank.

Each blank needs to be dressed down on the bottom side to form a truly flat plane. I use my 16" wide joiner. You can ask a wood shop to surface your blanks, or use a hand plane and winding sticks. Next I draw the finish circumference on the top of the blank, centering it well. Then I saw out the circumference on the bandsaw, making the cut just a little full (oversize).

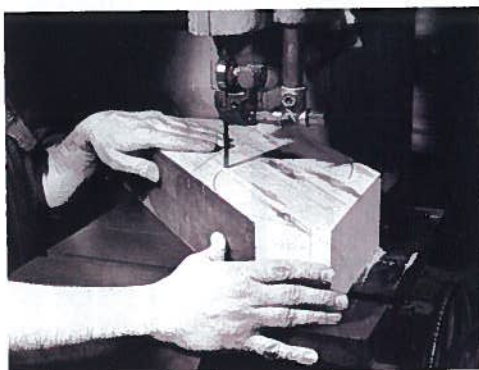
Square plinths are just about complete at this point, but to make round bases you need to shape them on a lathe that can be set up for face-plate turning. My lightweight Delta patternmaker's lathe with a gap bed can turn up to 17" diameter work. To mount the blank I screw a round piece of  $\frac{3}{4}$ " plywood to the bottom. Then the lathe's face plate is screwed to the plywood. I use scraper-type turning tools for this work. They have rounded and angled blades that are sharpened with a slight burr. I begin by flattening the face of the blank and squaring off the edge. Then I measure out and mark the profile features on these surfaces.

I refine the shape until it matches my original or design, using the sheetmetal pattern as a gauge. Then I sand all surfaces lightly with 100-grit paper. Don't polish with finer grits; paint needs a slightly rough surface to form a good bond. What's good music to listen to while finishing column bases? How about "Turn! Turn! Turn!" 🎵

*John Leeke is a preservation consultant helping homeowners, contractors and architects understand and maintain their historic buildings (26 Higgins St. Portland, ME 04103; 207-773-2306).*



I lay out the sections using the top-view drawing. Angles and curves can often be overlapped to make the best use of the wood.



Sections can be cut freehand on the bandsaw because adhesive will make up any slop.



Accurately marking the center and circumference of a base blank keeps it balanced.



In open-face turning the work is supported on just one side of the lathe.

## Shaping Safety

Turning large, heavy objects at high speed is potentially dangerous — if parts or tools spin loose they become violent projectiles. Follow all the safety procedures recommended by the manufacturer of your lathe. If you haven't done face-plate turning before, read a book on the topic and get some experience turning smaller pieces before attempting a large column base. Consider taking a course in turning or calling in an experienced turner to give you help.

## Suppliers

**GARRETT WADE CO. INC.**  
161 Avenue of Americas,  
Dept. OHJ  
New York, NY 10013  
(800) 221-2142  
Pinch dogs, wood turning tools.

**GOUGEON BROTHERS, INC.**  
P.O. Box 908, Dept. OHJ  
Bay City, MI 48707  
(517) 684-7286  
West System epoxy adhesives.