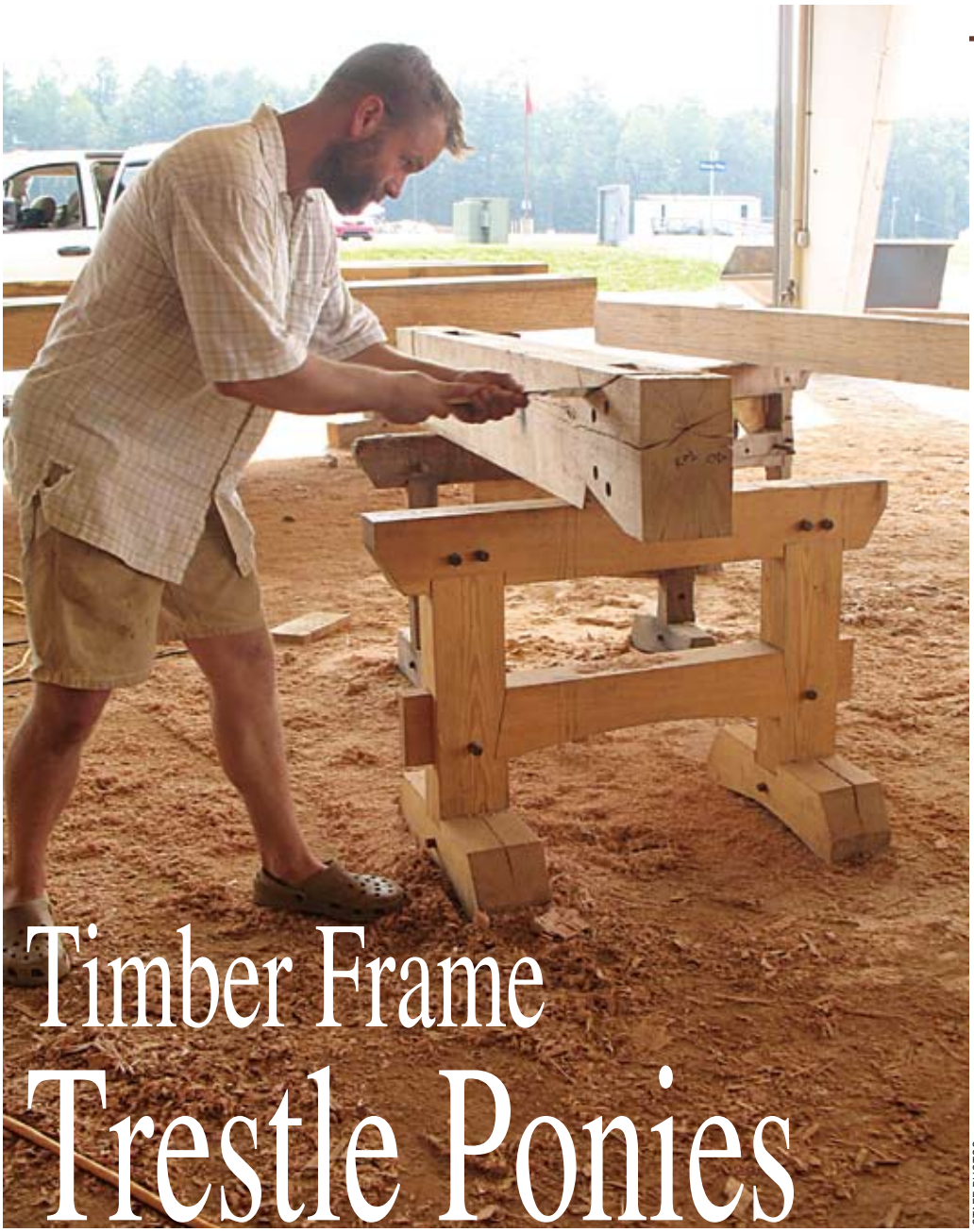


Timber Frame Trestle Ponies

STAFF PHOTOS

Here's a stable and sustainable woodcraft project for the shop.

By Richard Freudenberger

Every August when Stephen Morrison sets up his timber frame display at the Southern Energy and Environment Expo near Asheville, North Carolina, fellow exhibitors marvel at the detail in the impressive wooden frames. The owner of MoreSun Designs does custom woodwork, including timber frames and furniture design, out of his solar-powered workshop in the nearby South Carolina community of Mountain Rest.

But once the Expo starts, folks are more likely to find him at the demonstration site up the hill, carefully crafting tenons or measuring a mortise for fit. The impromptu workshop gives people an opportunity to see firsthand how timber frames are constructed, and it gave me a chance to take a closer look at the hefty trestle horses traditionally used in timber framing.

They're heavy for good reason, as the timbers they support can weigh several hundred pounds—well beyond the comfort range of a spindly sawhorse. Morrison actually uses the sturdy steeds as a training exercise for new students, who put the ponies they've made to good use on subsequent timber frame projects.

The traditional trestle horse is made from red or white oak, though any structural species such as birch, pine, spruce, and others would serve well. You can scout for suitable timber sources at sawmills, at community harvest festivals, or by checking with your county extension agent for local sawyers. You'll need one 3½" x 5½" timber 8' in length, and one measuring 5½" x 5½" at least 40" long. The upper beam measures 3½" wide by 5½" deep, and is 42" in length. Its lower counterpart, the stretcher, is the same width and depth, but shorter by 4½". Both are supported on 3½" x 5½" posts 25½" long overall. Each upright rests on a 5½" x 5½" x 20" base. The working height at the surface of the trestle is 28".

Despite its imposing appearance, this is a simple project that doesn't necessarily require traditional timber-framing tools. You will need a sturdy drill with a ½" chuck, a sharp crosscut handsaw, a ¾" auger or Forstner bit, a straightedge, a combination square, a bevel gauge, and a measuring tape. Access to a band saw will allow you to make the three long curved cuts, and long pipe clamps will make final assembly easier. You'll also want a sturdy framing chisel—the longer the better—and a wooden mallet. Typical cabinet chisels are a bit too delicate for this kind of work.

Make the upper beam first. Lay it out as in the diagram on page 50, marking a midpoint in the center of the piece, then measuring 11½" to each side of that to locate the inner shoulders for the posts. Each post is 5½" wide, so the outer shoulders must be marked to reflect that as well.

The shoulders are 1" deep.

Once you've marked one side, use the square to carry the lines across the beam's lower face, and mark the shoulder outline onto the opposite side. Then, with the beam inverted, cut along the shoulders with your handsaw to a point just shy of the depth line. Make a series of similar cuts about 3/4" apart between the initial two cuts, then carefully clean out the waste with the chisel to make two notches. (Hint: the sharper the chisel, the easier this job will be. You can avoid banging your way through the wood by keeping a fine honing stone handy.)

The posts fit into mortise sockets cut into the beam. They are "blind" and do not extend all the way through the wood. Locate the center, measured from the sides, of each notch, then measure 5/8" to either side of that, and mark lengthwise. Use the auger or Forstner bit to drill 3"-deep bores at each corner, then along the inside perimeter of each mortise. Clean the sockets with the chisel as before, making sure the bottom of the hole is level. Now you can cut the bevels into each end of the beam so there's a good 2" of wood between the lower corners and each notch.

Each post requires three separate cutting operations. At the top, you'll need to make a 1 1/4"-thick by 5 1/2"-wide tenon 3" in depth. The bottom tenons are 3 1/2" deep and 2" thick by only 3 1/2" wide, to fit into mortises in the base. Through-mortises centered 7 1/4" from the lower post shoulders support the stretcher on beveled shoulders cut into each post. The shoulders are 1" deep and the mortises are 5 1/2" long, cut through the 3 1/2" face of each post.

Lay out the mortises after cutting the tenons. On the 3 1/2" face of each post, measure 7 1/4" from the lower post shoulder and mark. Then measure 2 3/4" above and below that mark and 5/8" to each side, and employ your square and straightedge to scribe a rectangle. Use the square again to carry the dimensions around to the opposite 3 1/2" face, and mark a corresponding rectangle on that surface. Make the initial corner and intermediate mortise bores with your bit, being careful to hold it perpendicular to the wood's surface so it doesn't wander beyond its boundaries.

Don't try to make the full 5 1/2" bore in one pass. Instead, aim for a 3" depth, then flip the workpiece over and begin again from the opposite side so the holes meet in the middle. Once you're through, you can rough out the socket, but don't smooth it yet—that can be done after you've cut the beveled shoulders.

They're cut on the same plane as the lower surface of the mortises, to a depth 1" from each inside edge. Each bevel begins at a point 5 1/2" above the shoulder and is cut to meet the shoulder stop.

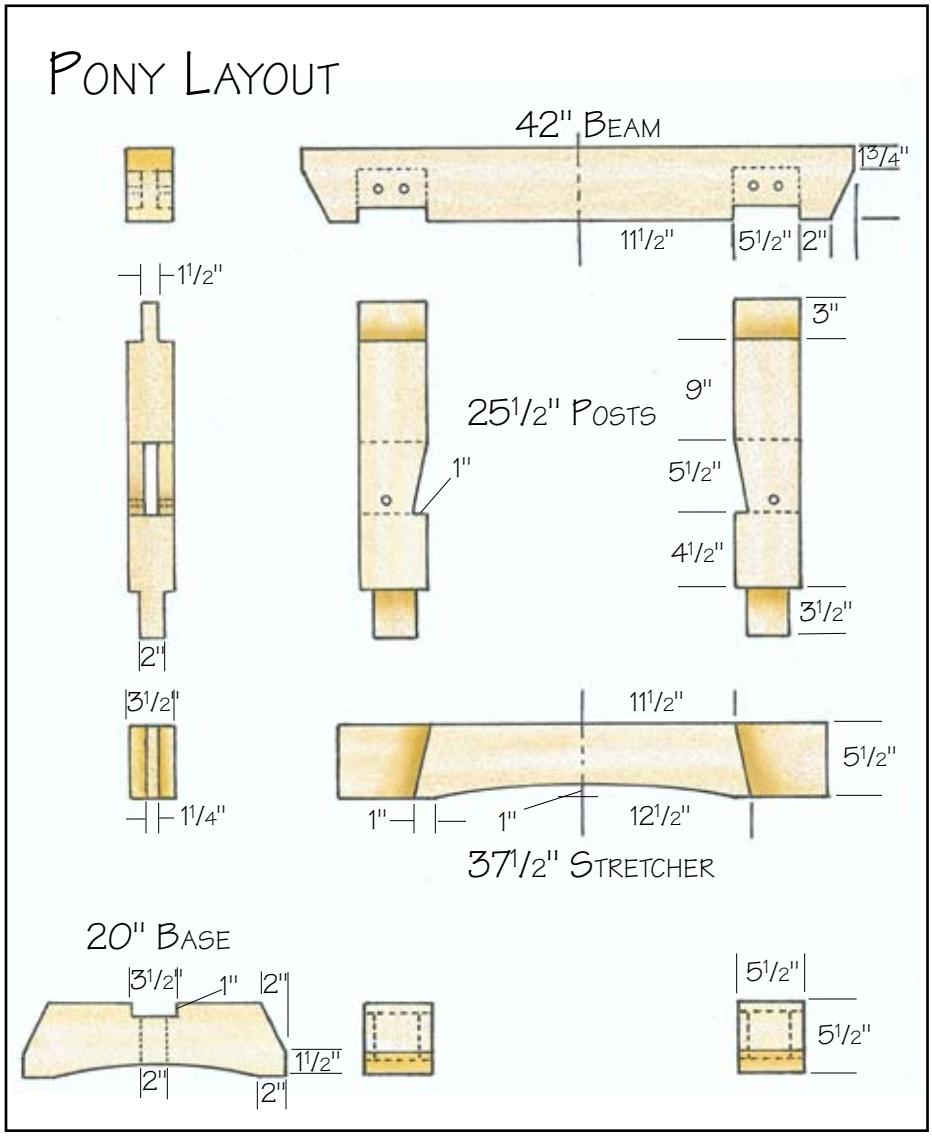
Timber Frame Trestle Ponies

The 37½" stretcher must be laid out to match the shoulders and mortises. Establish the center of the piece and measure 11½" and 12½" to each side, and mark. Use the square to mark two sets of parallel lines onto all four surfaces, then use them to mark the bevel cuts on each face. Locate the center on each 3½" edge and mark ⅝" to each side of that, at both ends of the piece, to mark the tenons.

Once that's done, carefully cut on the bevel lines down to the tenon marks on each side. Then use the lines as a guide to remove the waste from each side at both ends. There is a gentle radius cut into the lower edge of the stretcher, centered between the 11½" points marked previously. At its apex, it takes 1" from the wood, so the stretcher is 4½" deep at that point.

The base pieces are duplicates that can be traced from a plywood template. Cut a scrap of plywood to 5½" x 20" in size. Locate its center point on the long edge and measure 1¾" to each side and mark with a pencil and square. Make two more marks 8" to each side from the center. Then measure and mark 1" from the edge, and connect the inside two marks. On the long edge opposite, mark points 2" from each corner and scribe a mild radius 1" deep between the points. Make two more marks on the short edges 1½" from each corner. Use a handsaw and a band saw to cut the radius, the 1" x 3½" notch, and the beveled corners at the top. Align the template over each base piece and trace its outline with a utility knife or sharp pencil before making the actual cuts. Clean the surface of each notch with a chisel.

The through-mortise in each base piece measures 2" x 3½". The 3½" dimension is measured across the 5½" width of the wood. Lay out each mortise on the surface of the notch, centered within the 3½" x 5½" field. Since the depth of cut with these mortises is only 3½", the bores can be made in one pass once the socket perimeters are established.



These must be full through-mortises to allow moisture to drain if the horses get wet.

At this point you can trial-fit the components. Timber joinery involves no glue. Instead, dowel pins are used to secure the fits. The joins should be as snug as possible, without large gaps. Use your chisel to clean up any surfaces that may prevent a good fit, but be careful not to make a fair-to-middling fit worse.

Once all the pieces are together, use thin wood scraps and pipe clamps to draw the joins snug before drilling the 3/4" bores for the dowel pins. The upper beam uses one pair at each join, centered 2" apart. The stretcher and base post joins use one pin each. The two base pins are 6 3/8" long, while all others are 4 3/8" in length. The ends of the pins can be chamfered slightly to encourage them to pass through the bores without binding. They should be centered so the ends extend slightly, and not so tight that they cannot be driven out easily.

Sand the timber surfaces to remove rough spots, and round over the corners slightly if you wish. Finish the wood with a good mineral oil or commercial water seal, which can be applied liberally if you wipe off the excess. The timber ponies make great workstations owing to their solid stance and can be disassembled in a few moments by simply knocking out the dowel pins.

You can contact MoreSun Designs at 864-647-1669 or www.moresundesigns.com