



# HYBRID Timber



## Combine traditional joinery and modern tools to create an authentic outdoor space

BY TIM HOLTON

**G**rowing up in the rural farm country of Southeastern Pennsylvania, I was always fascinated with barns and their construction. The fact that a structure that big could be supported and last hundreds of years using only traditional joinery methods led me to study and try to replicate some of those methods in my projects later in life.

I'm not in the barn-building business, though, and a business consisting of mostly additions and home renovations isn't the most conducive line of work for this style of carpentry. Still, using just subtle aspects of traditional joinery can really add a unique design element to a project, so I've found ways to sneak them in where possible.

On our latest farmhouse build, the front porch plans originally called for standard pressure-treated 6x6 posts supporting a stick-framed roof. I decided that a true timber-frame porch, complete with mortise-and-tenon joinery, would better fit the style of this build and tie the new building back to its regional roots.

I'm not what you would call a timber-framing purist, mind you, and my education in timber framing comes from what I've learned in books and this very magazine, and what I've figured out on my own. Shown here is a process that blends both traditional and modern tools, giving a timber-frame look at a more efficient pace. □

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Tim Holton is a builder in Cochranville, Pa. Photos by Andy Engel, except where noted.

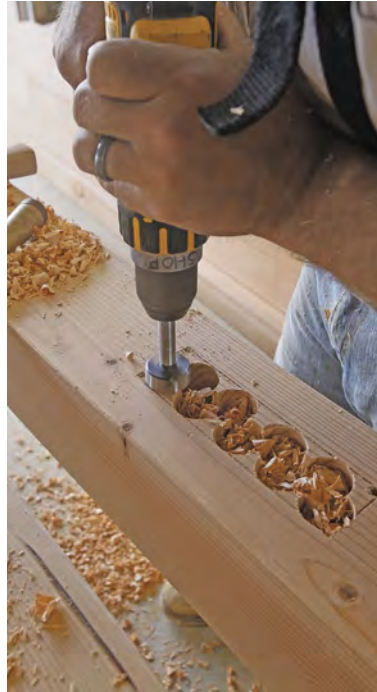
# Frame

## MORTISES, BY HAND AND MACHINE

In this design, I notched the beams to rest on the posts, so the only mortises necessary are for the angled braces. Unless you have specialized timber-framing equipment, such as a chain mortiser, this part of the job takes some time. Although it's not strictly necessary, I also like to rout a recess around each mortise so that the entire end of the brace, not just the tenon, carries the load. This also creates a cleaner-looking joint.



**Start small.** After scoring the perimeter of the mortise, use a small-diameter drill bit to remove material from each of the four corners, which will be out of reach of the larger bit that comes next.



**Clear the waste.** Use a Forstner bit to hog out the mortise and leave a flat bottom. For consistent depth, chuck the bit so that it sticks out only as far as the mortise is deep.



**Chisel it square.** Use a large, heavy chisel and some enthusiastic swings of a mallet to remove the remaining waste wood and square up the four sides of the mortise, making sure the bottom is relatively flat.



**Rout the recesses.** Finally, use a template and pattern bit to rout a shallow recess, sized to match the adjoining timber, around the perimeter of the mortise.



### A MODERN WAY TO MORTISE

Because I do one or two timber-frame projects each year, I was able to justify the purchase of a \$1600 Makita 7104 chain mortiser to speed up the joinery work. The tool is essentially a miniature pivoting chainsaw that rides in a frame that you clamp to the timber, allowing you to plunge-cut a mortise in seconds. The results aren't perfect, though, so if you go this route, plan to do some cleanup with a chisel.

## TWO PATHS TO TENONS

For timbers that are too heavy to move around, I work from sawhorses and cut the tenons with a circular saw and chisel. For smaller pieces, like the angled braces on this job, it's faster to get the work started with a miter saw, and then finish with a circular saw.



**Score with a circular saw.** After marking the shape of the tenon on the sides and end grain of the timber, use those marks to set the depth of cut on your circular saw. Then, score the waste to make it easier to knock loose.

**Clean up with a chisel.** After knocking off the bulk of the kerfed wood, use a wide, sharp, heavy chisel to shave the tenon flat. This task creates a lot of debris, so I like to slide a garbage can right under the beam while I work.

**Taper eases the fit.** After smoothing all sides of the tenon with a grinder and sanding disc to remove any remaining sawkerfs, focus the sanding near the ends of the tenon, giving each face a slight taper. This makes it easy to start the tenons in the mortise pockets, and tighten as they slide all the way in.



### ANGLED BRACES



**Miter-sawn shoulder cuts.** When possible on the shorter pieces, take advantage of the accurate angles and depth of cut on a sliding miter saw to quickly define tenon shoulders. Then, the tenon can be finished up with two passes of a circular saw.

# PIECE BY PIECE

I find that as long as I do my layout and cutting work carefully, I'm rewarded with a fairly straightforward on-site installation. Although there are some variations depending on where on the porch each piece will be installed, there are really only three parts—posts, angled braces, and beams—and I install them in that order.

**Start off plumb.** Because timber frames are typically cut in the shop and assembled on site, it's critical to get the posts set dead plumb. Extra time spent at this stage ensures that all of the joinery comes together as planned.



## FLAT BOTTOMS IN A FLASH



Although you could always use a chisel, I cut the notches where the beams rest on the posts using a slightly different approach. After knocking out the circular-saw waste, I flatten the bottom using a router mounted to an oversize base and armed with a bearing-guided bit.



**Fit the braces.** After coercing the braces into their mortises, pull everything tightly together with a pair of clamps, and then secure the post-to-beam connection with long structural screws driven at an angle.



**Clean holes.** After fitting each angled brace, drill the holes for the 1-in.-dia. oak pegs that will hold them tight. Start each hole with a 1-in. Forstner bit, which leaves clean edges, and then switch to a heavy-duty auger bit for the bulk of the work. Stop the auger bit just shy of going all the way through, then switch back to the Forstner to finish the job from the opposite side.



**Hammer it home.** Working as a team, have one person brace the frame while the other pounds the 10-in.-long, rounded-tip oak peg into place with a mallet. Later, the pegs can be trimmed to length, either flush or slightly proud.



**A stick-framed roof.** Although a timber-framed roof is a common way to top this style of porch, it's not the only way to go. If the roof framing will be concealed, it's easiest to finish up with conventional 2x framing lumber.