



Low Pencil-Post Bed

Traditional form gets a trim in this update to a classic

BY TOM McLAUGHLIN

I love the simple formality of a tall pencil-post bed. So when thinking about a new low-post design in cherry, I looked to the timeless tapered pencil post for inspiration. Scaling down elements gave me a more casual, sturdier bed perfect for a guest room or a child.

Just because this bed is scaled down doesn't mean it skimps on the details. It

features the signature octagonal posts with sweet lamb's tongue transitions from the upper tapers to the lower square. Because the tops of the posts are accessible, I dome them to ease their touch. To maintain the historical elegance of the bed's inspiration, I use slats instead of a box spring, evoking the thinner period mattresses held up only by ropes woven through the bed rails

(those ropes were tightened for support, hence the saying "sleep tight"). Full-size plans for this bed are available at my website, epicwoodworking.com. They include drawings for both slats and a box spring.

Eight tapers, one jig

The posts are one of the major design players of the bed, sharing the stage only

Tapered octagonal posts

SLED FOR OCTAGONAL TAPERS

Angle an auxiliary V-base to cut all eight sides.

Main base, plywood, $\frac{3}{4}$ in. thick by 6 in. wide by 46 in. long

V-base same width as post stock

End stop, 42 in. from front of V-base

Risers for toggle clamps, $2\frac{1}{4}$ in. thick by 4 in. wide by 5 in. long

Toggle clamps

Side stops, plywood, $\frac{3}{4}$ in. thick by 1 in. wide by $3\frac{1}{2}$ in. long

Side stops and toggle clamps located along square section of post.

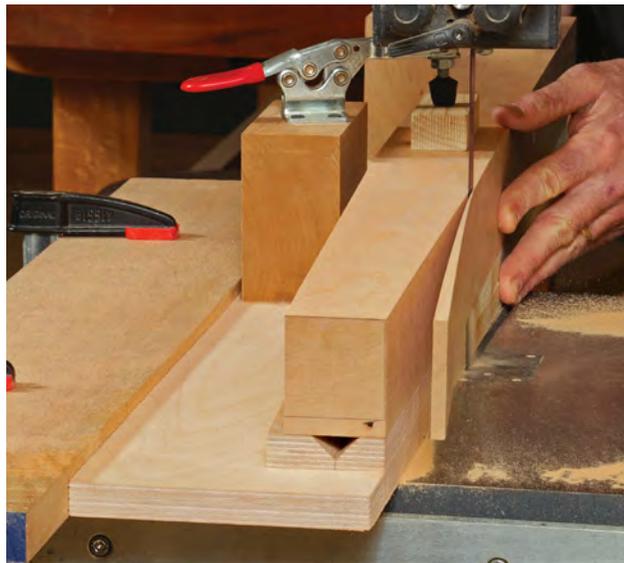
18 in.

V-base, plywood, $\frac{3}{4}$ in. thick by $2\frac{3}{4}$ in. wide by 44 in. long

$\frac{3}{8}$ in.



V-base attaches to main base at an angle to set the taper. The posts ride on the V-base. Because it's skewed to the main base, the amount and angle of the overhang determines the posts' taper. The centered V lets the sled handle both the square and octagonal tapers with the same setup.



Bandsaw the square tapers. Because there's plenty of material below the taper to keep the post flat on the sled, you can rotate the post 90° between passes to cut uniform tapers.



Use V-shaped spacers for the octagonal tapers. To ensure the sled's toggle clamps apply even pressure across the 90° corners, McLaughlin uses an offcut from the V-base.



Chamfers are stop cuts. Don't run the sled all the way through the saw. Rather, stop just shy of your layout line, back the sled out, and cut the shoulders by hand.

Classy midsize bed

Three types of mortise-and-tenons come together for a knockdown bed with traditional touches.

Headboard, $\frac{3}{4}$ in. thick by 19 in. wide by $40\frac{1}{2}$ in. long

Head post, $2\frac{3}{4}$ sq. by 42 in. long

Counterbore for bed bolt, 1 in. dia. by $\frac{5}{8}$ in. deep

Hole for bed bolt shank, $\frac{7}{16}$ in. dia.

HEAD POST TOP VIEW

$\frac{1}{2}$ in. plywood, multiple sheets are fine

Ash slat, $\frac{13}{16}$ in. thick by $2\frac{1}{2}$ in. wide by 38 in. long

Spacer block, $\frac{13}{16}$ in. thick by $\frac{7}{8}$ in. wide by $6\frac{5}{16}$ in. long

Long rail, $1\frac{3}{4}$ in. thick by $5\frac{1}{2}$ in. wide by 75 in. long

Mortise for nut, $\frac{1}{2}$ in. wide by $\frac{7}{8}$ in. long by $1\frac{1}{16}$ in. deep

Mortise for nut starts $2\frac{1}{2}$ in. back from tenon shoulder

Ledger, $\frac{7}{8}$ in. thick by 2 in. wide by 74 in. long

Hole in long rail for bed bolt, $\frac{7}{16}$ in. dia. by 4 in. deep

Tenons on long rail, $\frac{3}{4}$ in. thick by $5\frac{3}{16}$ in. wide by $\frac{9}{16}$ in. long

LONG RAIL TOP AND SIDE VIEW

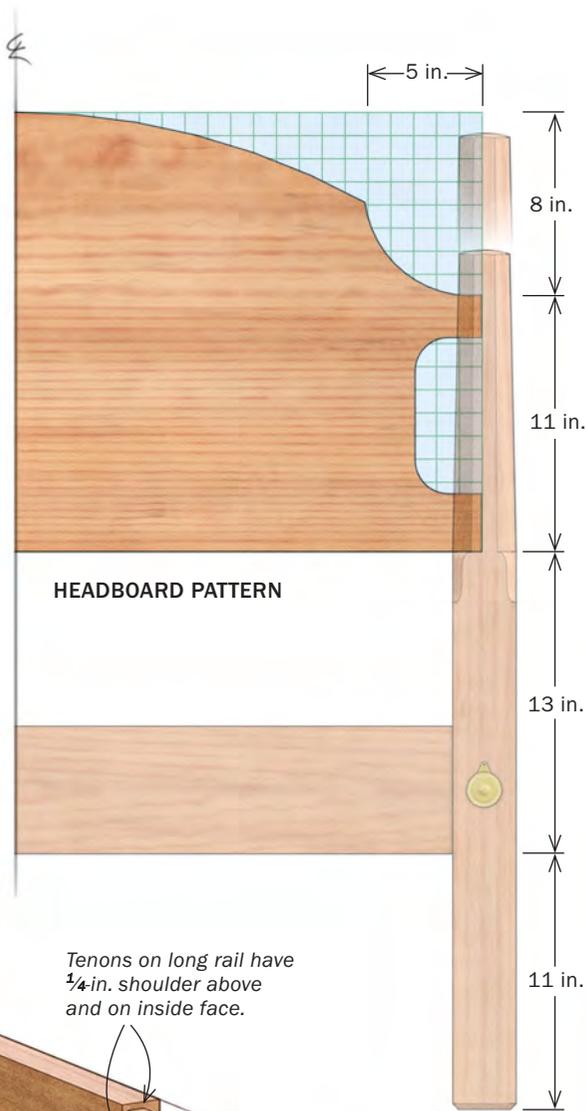
SOURCE OF SUPPLY

HORTON BRASSES

6-in. long, $\frac{3}{8}$ -in. steel bed bolts and nuts (model no. H-736)

$2\frac{1}{8}$ -in. bed bolt cover (model no. H-33-SB)

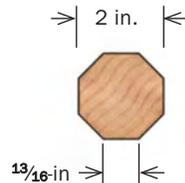
Short rail, $1\frac{3}{4}$ in. thick by $5\frac{1}{2}$ in. wide by $40\frac{1}{2}$ in. long



To purchase plans for this low pencil-post bed, go to epicwoodworking.com.

Upper mortise for headboard, $\frac{3}{4}$ in. wide by $1\frac{13}{16}$ in. long by $1\frac{1}{16}$ in. deep

Dome on posts, $\frac{3}{16}$ in. deep

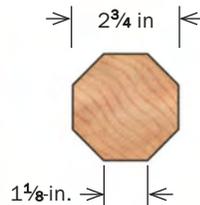


HEAD POST CROSS SECTION AT TOP OF TAPER

Foot post's cross section at top of taper, $2\frac{3}{16}$ in. across with $\frac{15}{16}$ in.-wide facets

Lower mortise for headboard, $\frac{3}{4}$ in. wide by $2\frac{1}{2}$ in. long by $1\frac{1}{4}$ in. deep

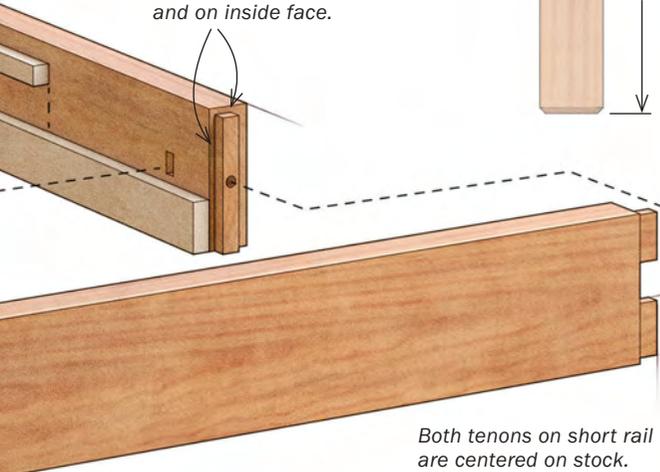
Mortises for headboard are centered on taper.



HEAD POST AND FOOT POST CROSS SECTION AT BOTTOM OF TAPER

Tenons on long rail have $\frac{1}{4}$ in. shoulder above and on inside face.

Taper starts 24 in. from bottom.



Bed bolt

Bed bolt cover

Foot post, $2\frac{3}{4}$ sq. by 37 in. long

Upper tenon on short rail, $\frac{1}{2}$ in. thick by $1\frac{3}{4}$ in. wide by $1\frac{1}{4}$ in. long

Lower tenon on short rail, $\frac{1}{2}$ in. thick by 2 in. wide by $1\frac{1}{4}$ in. long

HEAD POST INSIDE VIEW

HEAD POST FRONT VIEW

SHORT RAIL TOP AND SIDE VIEW

Handwork refines the posts



Saw the shoulders and plane the facets. After cutting free the waste from tapering, use a block plane to clean up the bandsawn surface. Check regularly to make sure you're planing the tapers equally. Use the sled to hold the workpiece.



with the headboard. You'll add detail to the posts later, but to start you need even tapers. For these, I make a special sled.

This sled, with a base, toggle clamps, and stops, is similar to the one in my article "Leg-Tapering Jig" (*FWW* #268), but there are two key differences. First, this jig's for the bandsaw. Second, it has an auxiliary base with a V-groove in it tacked to the main base. The V-base is skewed in relation to the main base at an angle that matches the post's taper.

The V-groove must be centered in the width of the V-base. To accomplish this, I rip the V-base to the same width as the post stock, tilt my tablesaw blade to 45°, set its height to cut slightly more than halfway through the stock, and make a cut with one edge against the fence. A cut with the other edge against the fence completes the V-groove. To cut the tapers, start with the four primary ones, placing each face of the post in turn flat on the V-base. Then, to cut the octagonal tapers, set the 90° corners of the post in the V-groove. The first four tapers are through-cuts, but the octagonal ones are stopped. For these, back the jig out of the bandsaw and cut the taper waste free with a backsaw. Clean up the bandsaw cuts with a handplane.

Next, carve the lamb's tongue and dome the tops of the posts. The carving recalls the bed's traditional roots. The dome is both an aesthetic and tactile addition, considering how low (and touchable) the tops of the posts are.



Shoulder plane and scraper work into the corner. A standard block plane won't cut into the sharp 90° shoulder at the bottom of the taper, so McLaughlin refines the surface there with light cross-grain skewing cuts from a shoulder plane before picking up a scraper.

Different mortise-and-tenons

The bed rails use two types of tenons. To make the bed knockdown, the long rails get wide, short tenons that are left dry and bolted in place during assembly. The short rails, which get glued to the posts, have a pair of tenons that are spaced apart to make room for the bolts.

The bed bolts require a stepped hole in the post. I use a Forstner bit to counterbore for the bolt's head, then follow up with a brad-point bit for the bolt's shank.

That done, I cut the mortises in the post. I cut the deep mortises for the short rails on a hollow-chisel mortiser, but I use a



Lay out the lamb's tongue. This feature is a pair of opposing S-curves. McLaughlin uses a template for easy, repeatable tracing.



Carve close to your lines. McLaughlin uses a standard bench chisel to rough out this detail, flipping the chisel bevel up and down as necessary to maintain control.



Clean up with a rasp, file, card scraper, and sandpaper. Pay attention to make sure that the lamb's tongue remains symmetrical and even, not tilted along the corner of the post. Green tape where the detail meets the taper helps protect the facets during this cleanup.



Lay out a baseline before forming the dome. To cut the dome, McLaughlin takes semi-circular passes with a spokeshave, starting from the perimeter and working in. He then files, scrapes, and sands the surface.



Joinery is mortise-and-tenons



Bed bolts need a stepped hole. Start with a Forstner bit to drill the counterbore before switching to a brad-point bit, which is easy to center using the dimple left by the Forstner.

Posts get a split mortise for the short rails. To avoid the intersecting bed bolt for the long rails while still leaving enough glue surface, McLaughlin makes twin mortises for the short rails.



router to cut the shallow mortises for the long rails. This is for a few reasons. The hollow-chisel mortiser is a quick way to cut deep mortises. While it maxes out at ½-in. bits, that width is fine for these deeper mortises.

The long rails, however, need thicker tenons, and therefore wider mortises. (To read how I cut the tenons on these long workpieces, go to FineWoodworking.com/296.) The tenons need enough meat so they won't crumble around the hole for the bolt. The extra width also adds a little strength to compensate for the tenon's short length. The wide, shallow mortises for these tenons are simpler to cut with a router.

The bulk of the strength in the long rail joint comes from the bed bolt. As a result, it's crucial to locate the holes for the bolt and nut accurately. Instead of finding the locations by measuring, I use the posts and rails themselves, putting each long rail tenon into its mortise, inserting a bed bolt, and tapping it against the tenon to leave a dimple. To lay out the mortise for the nut, I carry a line from the dimple on the end grain onto the inside face of the rail, giving me the mortise's centerline.

This line also helps me locate my jig for drilling the hole in the rail for the bolt. The jig is essentially a shopmade single-hole doweling jig. It has a groove to fit over the long rail's tenon and a centered hole. It's



Rout the shallow mortise for the knockdown joint before squaring it by hand. Because this is a knockdown joint, McLaughlin uses a shallow mortise for easy assembly. He makes it wider than the split mortise, allowing for a beefier tenon to accept the bed bolt.

Bed bolts for knockdown assembly

Fit the post to the long rail to mark for the bed bolt.

The bed bolts have a pointed end, so by putting the post on the rail and then tapping the bolt against the tenon, you'll create a little dimple exactly where the bolt will enter the tenon.



Transfer the bolt location to the face of the rail to lay out the mortise for the nut. This line provides the centerline for the nut mortise. Size the mortise for a snug but easy fit of the nut and make it deep enough that the center of the nut falls in line with the dimple, or the center of the bolt.



preferable to have a steel bushing in the hole to prevent the hole from distorting, but it's not essential as long as your jig is made of hardwood and you're not going to use it for multiple beds.

End with the headboard

The headboard is a two-step process. First is shaping, which is straightforward pattern-routing. Second is making the mortises for it. These require care, since the headboard tenons are entirely unshouldered, and a sloppy fit will have no place to hide. Knife lines, a sharp chisel, and offcuts from shaping help ensure success.

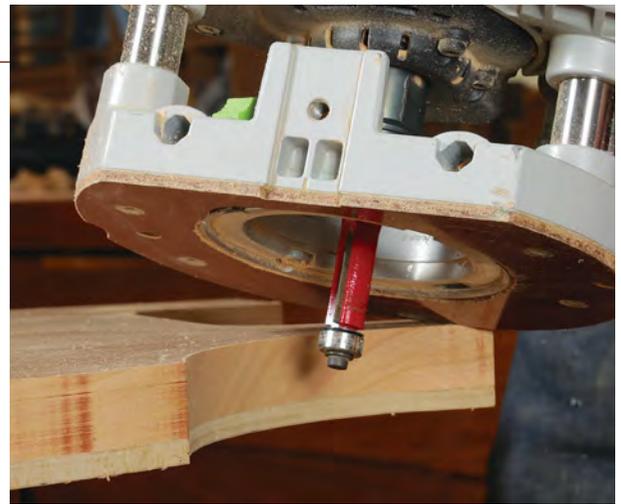
To shape the headboard, I use a half template made from 1/4-in. MDF. I trace it



Drill the rail for the bed bolt. To ensure a straight hole, McLaughlin uses a shopmade guide that slips over the tenon. The guide has a centerline, which he lines up with the line from the bolt's dimple. He temporarily screws the jig to the tenon to avoid slipping.

Headboard adds character

Use the same half template for tracing and routing. Using a half template that you flip across a centerline helps yield a symmetrical shape. Trace the template, remove most of the waste with a jigsaw, and then rout to shape with a flush-trimming bit.



Transfer the tenons to the post. Use a pencil to trace the tenons, but follow up with a knife on the front wall. The headboard's tenons don't have shoulders, and a scribed line will let you do cleaner work with a chisel.



Bore out much of the waste before chiseling. Drill with an undersize bit to leave material for careful chisel work. When paring, stop once you lightly pare down the knife wall.



Use an offcut to size and test the mortise. Set the offcut, saved from jigsawing the headboard, against the front wall to scribe the mortise's back wall. Pare back to this knife line, checking the fit regularly with the offcut.

Assemble now, break down later



Glue up the headboard. Add glue to the short rail's tenons and to the headboard's lower tenons. The upper ones float to accommodate wood movement. Clamp only across the rail to avoid toeing in the posts against the headboard's unshouldered tenons.



Attach the ledger and the slat spacers. Glue these in place. McLaughlin sets the first slat spacer just shy of the mortise for the nut. He then uses a removable spacer, pictured in cherry, a hair wider than the slats to locate the rest of the blocks, which allows for easy, repeatable location of the slats.

onto the panel, flipping it across a centerline to create a symmetrical outline. I jig-saw away most of the waste, staying about $\frac{1}{16}$ in. away from my line. Keep the offcuts; they'll come in handy for sizing the mortises. Now line up the template with the centerline again, securing it with clamps or double-sided tape for pattern-routing.

Next are the mortises. While it's standard practice to mortise a part while it's still square, I cut the mortises for the headboard after tapering the posts. This ensures that the mortises, chiseled by hand, are centered on the narrowing facets and fit snugly around the tenons.

To lay out the mortises, I balance the headboard on a post and trace around the tenons. Then—this is important—I scribe only the front wall with a marking knife. To start the mortise, I bore out much of the waste with a $\frac{5}{8}$ -in. Forstner bit at the drill press, using an offcut from tapering to support the post. Then I pare back to my knife line to create a straight front wall. Next, to get the width exact, I hold an offcut from the headboard against the front wall, knife the back wall, and pare to it. I use the offcut to test the mortise. Leave $\frac{1}{32}$ in. extra space above and below the upper tenon to allow for wood movement, and leave that joint dry at glue-up; the bottom mortise should fit tight and be glued. □

Tom McLaughlin and his wife, Kris, run *Epic Woodworking*, an educational site dedicated to furniture making.

www.finewoodworking.com



Install the long rails one at a time. Loosely bolt the long rails in place corner by corner to allow wiggle room during assembly (left). Once they're all installed, cinch the bolts tight. Then add the slats (below). To even out the pressure on the mattress, McLaughlin lays $\frac{1}{2}$ -in. plywood on top of the slats.

