

# Mission Style Queen Headboard And Side Tables

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Build Plans

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# The Mission Style Headboard & End Table

## The “Don’t Panic” Intro:

If you watched my YouTube build video, I started with rough milled lumber at various widths from 6 inches or 152mm up to 12 inches or 304mm wide. The thickness of the stock varied but was typically more than 1.1 inches thick or 28mm. If you have the equipment to do the surface planing and straight edging, then you’re not scared about milling up your own stock and create any thickness you want. My finished Oak thickness came in at 7/8 inch thick or 22.5mm.

BUT...this is a great project for the beginner or intermediate level woodworker using commonly available 1X3 and 1X6 Oak lumber from your home center / lumberyard. My finished cuts left me with leg and post pieces that were all a consistent 2 ½ inches wide, which is what you get in a 1X3 from the store or you can rip a 1X6 down into those 2 ½ inch widths with your table saw. Tabletops were glued together from wider stock. My instructions that follow are based on those measurements, regardless of the thickness of the material. A table saw and drill are pretty much all you need to do this project. ***YOU GOT THIS!***



## Finished Outer Measurements:

Tables: Table tops are 18” X 18” or 457mm. Outer table frame is 16” X 16” or 406mm. Inner apron and shelf are 14” X 14” or 355.5mm.

Headboard: Queen dimensions – Width is 60” and height is 48”. Upper panel is 24” inches X 60”. Metric translation = 1524mm X 1219 for the outer dimension.

## Safety:

Don’t operate any power tool or use any spray chemical, finish or glue without reading and following all safety instructions included with each product. The Basics? Be sure to have eye protection, dust mask and ear protection as you dive into this project. Stay safe. Keep all your fingers and toes!



# Mission Style Headboard & End Table (Finished Lumber List)



## For Each End Table:

- (3) 8 foot lengths of 1X3 Oak. The actual dimensions of the wood will be  $\frac{3}{4}$  inch thick and 2  $\frac{1}{2}$  inches wide from the lumber store (you can also rip 1X6 down to 2  $\frac{1}{2}$  inches wide)
- (2) 8 foot lengths of 1X6 Oak. The actual dimensions of the wood will be  $\frac{3}{4}$  inch thick and 5  $\frac{1}{2}$  inches wide.

If you mill up rough lumber yourself, the material can be thicker than  $\frac{3}{4}$  inch. All other cut dimensions will apply.

**NOTE:** Buying from a big box home center is a crap shoot on lumber quality. Take the time to check each piece of Oak on a flat surface (like the floor) to make sure the stock is flat, not twisted or curved like a banana. Be a member of the “Flat Wood Society” and buy the good stuff.



## The Basic Queen Headboard:

- (4) 8 foot lengths of 1X3 Oak. Again this is wood that is finish planed and sanded and edged from the lumber store. The finished width will be 2  $\frac{1}{2}$  inches.

- (1) 4 X 8 foot sanded Oak veneer plywood. I chose to use  $\frac{1}{2}$  thick Oak plywood on my project and the panel adds some rigidity. It simply fits in snugly at the back of the headboard.

**NOTE:** This lumber list allows for a solid back panel for the headboard without any center trim or decoration. In my video, I framed in a reclaimed piece of stained glass, but that is not required for this basic design. If you want to add more vertical or boxed in design elements, adjust your lumber list accordingly.

# Mission Style Headboard & End Table (General Design Discussion)

## Core Mission / Craftsman Design Elements:

One of the things I love most about the Mission and Craftsman furniture from the early 1900's is that the designs never go out of style. These basic and beefy designs are still found today at some higher end furniture stores and pull a hefty price from other specialty furniture websites. Much like the clean and simple lines of Scandinavian and Bauhaus furniture also popular today, Craftsman designs (in part) fueled that movement.

One of the core elements of design from this period is the "L" shaped leg, mitering two pieces of flat lumber together to form a wide looking leg. It gives you all the look of a solid leg, but with thinner wood stock. It also provides more structural flexibility on the inside of the leg as you add table tops and shelves.

I've used this core design when building one of my nicest furniture pieces in a replica rocker from noted designer, Charles Limbert. I've also created a sofa table and a dining table with these same leg features.



Since a glued miter joint isn't the best of joinery options, the Mission and Craftsman designs will often feature visible dowels down the length of the leg to strengthen the joint. I've also seen darker colored splines often in walnut used to decorate and strengthen the mitered leg joint as well.

I've used both splines and dowels in my Limbert rocker build and that piece of furniture has been beyond sturdy. You could hoist a bus on that frame. More importantly, the dowels add some visual interest to the design and they're not just there for looks. As you show this furniture piece to your friends and family, it will be obvious that it is not cheesy, made from particle board or covered in a cheap vinyl veneer.

The inside of this leg design allows for some pretty simple and incredibly solid attachment of other furniture design features. In order to give the final shape and dimension to the table frame, an inner table top apron can be doweled or screwed into the legs at the corners, making for an incredibly strong joint. (Picture shown upside down)

To add the table top, it can be doweled into the apron and leg from the underside of the top, or it can be attached via long screws from the underside of the apron.

See the video for all the build details on this leg design.





# Mission Style Headboard & End Table

## Tables – Step 1:

For each table we'll need 8 lengths of 2 ½ inch wide lumber rough cut about 24 inches long. The finished leg length will be 23 inches, so you can take a common 8 foot length of Oak and cross cut your rough pieces at 23 and ¾ inches in length. This allows you the room for the saw blade kerf (blade width) and gives you 4 pieces from the 8 foot length. Your final finish cut length will be 23 inches.

## Tables – Step2:

Set your table saw angle at 45 degrees, using a 60 tooth trim cutting blade. Use a calibration tool to verify the exact 45 degree angle, and you can even cut a couple scrap pieces of wood to ensure the pieces come together to form a perfect 90 degree mitered corner.

Set your rip fence so that your saw blade just cuts through the corner of the wood without removing any of the width of the board. See the video for how this was set up. Rip all 8 pieces being careful to keep body parts away from the blade. Use a push stick that holds the board flat on the table while pushing the board through the end of the cut. Make all your miter cuts at the same time with the same rip fence setting and the boards will all have exactly the same dimensions.

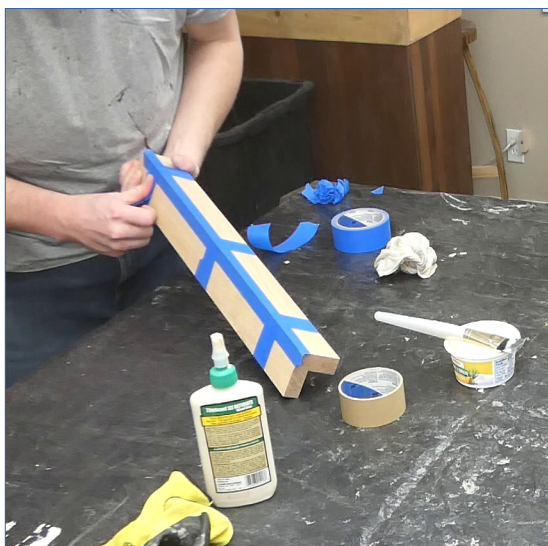


## Tables – Step3:

Using a good wood glue and some painter's tape we will begin the leg assembly. Place 2 of the leg pieces together, aligning the inner sharp edges of the 45 degree cut next to each other.

Place a 2 inch wide piece of tape down the length of both boards so that the folded leg pieces are held together by the tape at the edge of the miter.

Brush wood glue down both open edges of the inner miter and pull the corner together to form the leg. Secure the glued joint by wrapping more painter's tape around leg adding some tension to the tape as you wrap the leg. You should see some glue squeeze out at the inner part of the joint. Wipe off excess glue with a soapy rag. Let dry 8 hours.



## Tables – Step 4:

After the glue fully cures, remove the tape and scrape or sand off any globs of glue that remain. The outer leg corner should be pretty clean thanks to the tape at that joint. Reset your table saw blade at 90 degrees and using a miter gauge on the table saw track, make your final trim cuts on the length of each leg. Lay the leg like on the table like an upside down "V" **for better stability as you cut.**

Using the miter gauge set at 90 degrees, slowly make your final small cuts on both ends of each leg leaving you a finished length of 23 inches.

# Mission Style Headboard & End Table



## Tables – Step 5:

Strengthen the joint with Oak dowels. If you're using standard  $\frac{3}{4}$  inch thick stock, use quarter inch dowels and center the drilled hole  $\frac{3}{8}$  inch in from the edge of the joint. My stock was nearly an inch thick, so I used  $\frac{3}{8}$  inch dowels, but the key is to measure out and center the dowel hole so that it is in the middle of the receiving board as shown in this picture.

Evenly space out the dowels down the length of one side of each leg. For a 23 inch leg, 4 to 5 dowels evenly spaced apart provides good reinforcement. Drill the holes to a depth 2 times the thickness of the board. For  $\frac{3}{4}$  inch stock, drill your holes to a depth of 1.5 inches. Coat the inside of the hole with glue and the outer edge of the dowel and hammer them in with a plastic headed hammer to avoid splitting the dowel. When dry, trim off the excess dowel with a flush cut saw and sand smooth.

## Tables – Step 6:

Make the 14 inch table apron. Cross cut 4 pieces of your 2  $\frac{1}{2}$  inch Oak stock at 14 inches in length. Make sure each piece is exactly the same in length so that it forms a perfect square. Set up your table saw blade again at a true 45 degree angle, and using your miter gauge, cut a mitered edge on each end of the 14 inch board for them to form a square frame.

Glue edges of the miters and secure them with a band clamp. Using painter's tape to hold the joints together will work as well. Check the corners to make sure they are square and let dry.



## Tables – Step 7:

Table top & shelf. We will need to make 2 flat panels by edge gluing wider Oak boards together. With your 1X6 lumber, make the following 90 degree cross cuts:

- (3) pieces at 15 inches in length (for the shelf)
- (4) pieces at 19 inches in length (for the table top)

Calibrate your saw blade at exactly 90 degrees to make a thin rip cut along the edges of each board's length. If you have a jointer, better yet. The 60 tooth trim blade will leave you a decent edge for gluing. Glue and clamp the 2 small tops making sure the edges line up and the assembly stays flat. If clamp pressure makes the surface bow, add another clamp on the opposite side to offset the pressure from the opposing side clamps.

After the 2 flat panels are dry, cut them down to their finished dimensions. **The inner shelf should be 14 X 14 inches square. The table top should be 18 X 18 inches square.** If you are using metric measures, the inner shelf must be the same outer dimension as the table apron.



# Mission Style Headboard & End Table

## Tables – Step 8:

Shelf tabs. Using the leg miter cut off pieces (that look like triangles), cut 4 pieces at 4 inches long. Glue in a 4 inch piece into the bottom corner of each leg, lining up flush with the bottom of the leg. Hold in place with a spring clamp until dry.

These triangular tabs will serve as a platform to hold the 14 inch inner shelf assembly. The shelf will rest on the tabs as it is being glued in place during final assembly.



## Tables – Step 9:

Sanding and Assembly. Before assembling the legs and apron, it's best to do most of your dowel trimming and sanding while all the wood surfaces are exposed. Take your time here.

Start the assembly table top side down, positioning the legs around the top apron. Be sure to leave your 4 inch triangle tabs on the bottom of each leg, which will be up in the air for this first glue step. Glue the apron to each leg and secure with a band clamp or more painter's tape pulling the legs into the apron firmly.

**Before the glue dries, QUICKLY MOVE TO STEP 10.**

## Tables – Step 10:

Carefully flip the table over onto a flat surface and make sure the legs all sit firmly on the work table. Glue the corners of the 14 inch inner shelf and place it on top of the triangle tabs.

Using another band clamp or more painter's tape, wrap the legs around the shelf pulling the legs tightly into the corners of the shelf. Your desired outcome is to have the table resting flat on the level work surface, with the legs tightly holding against the top apron and the lower shelf.

When the glue dries, you have a number of options to secure the apron and shelf to the legs. In the video I chose to use brad nails on the inside of the apron into each leg, and again on the outside of the leg into the lower shelf. On other projects I've also used thinner dowels drilled into the furniture piece or screws to complete this step. Screws and dowels are hidden on the inside of the apron, but visible when securing the shelf.



# Mission Style Headboard & End Table

## Tables – FINAL STEPS:

**Pre Drilling:** With the legs upside down, pre drill a  $\frac{1}{2}$  inch wide counter sunk hole about  $\frac{1}{4}$  inch deep using a forstner bit. Place these holes near the legs as shown in Figure A, but with enough clearance to allow for holding the drill straight up from the hole. This shallow hole will hide the heads of the cabinet screws to be added later. Using scrap wood under the legs to protect your work surface, drill down through the center of each Forstner bit hole with a wood drill bit just wider than the thickness of the cabinet screws. For this  $2\frac{1}{2}$  Oak apron, I'm using  $2\frac{3}{4}$  inch flat headed cabinet screws. With the counter sunk Forstner bit hole, this should allow  $\frac{1}{2}$  inch penetration into the table top.

Place your 18 inch table top on a clean non abrasive surface, good side down. Align the leg structure in the middle of the 18 inch table top, measuring the gaps and adjusting until the legs are centered over the top. Clamp or tape your legs in place so they don't move off center.

Finish the table assembly by screwing in the long cabinet screws through the apron holes and into the table top/ Cabinet screws are self tapping, so will bite into the Oak top nicely. Be careful not to over-torque your screw and strip out the connection. Fully assembled table shown in Figure B.

**Finishing:** Complete one last pass over all surfaces with 320 grit hand sanding. Remove all dust with an air compressor and wipe the surface down with a cotton cloth. Stain color is your choice or choose no stain at all. We finished our tables with a light white stain to fit into a gray painted guest bedroom. It was finish coated with satin polyurethane.

Congratulations! You have now created a solid piece of furniture that will become a family heirloom.

Figure A



Figure B





# Mission Style Headboard & End Table

## The Queen Headboard

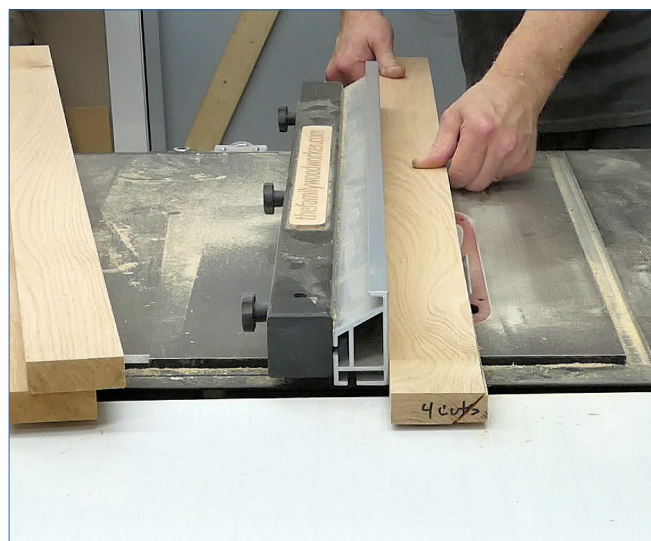
The construction of this standard width, 60 inch Queen headboard is simple by comparison to the tables in that you are really only building one side to a table. It's just a pretty big side with some plywood used as filler at the top. We will be using the same "L" shaped leg construction for the 2 vertical legs with more dowels to support the joint. The cross member supports will be doweled in between the headboard legs and the Oak veneer plywood will fill up the open space behind the legs and cross supports. I'll skip some of the detailed narrative on this build as the construction steps on the legs are exactly the same as the table build above. Let's dive in.

### Headboard – Step 1:

Cut your initial 2 ½ inch wide leg pieces at 48 inches long. If your lumber comes in at exactly 8 feet long and you don't want that extra waste, make your leg height at 47 ¾ inches and get 2 legs out of a single 1X3.

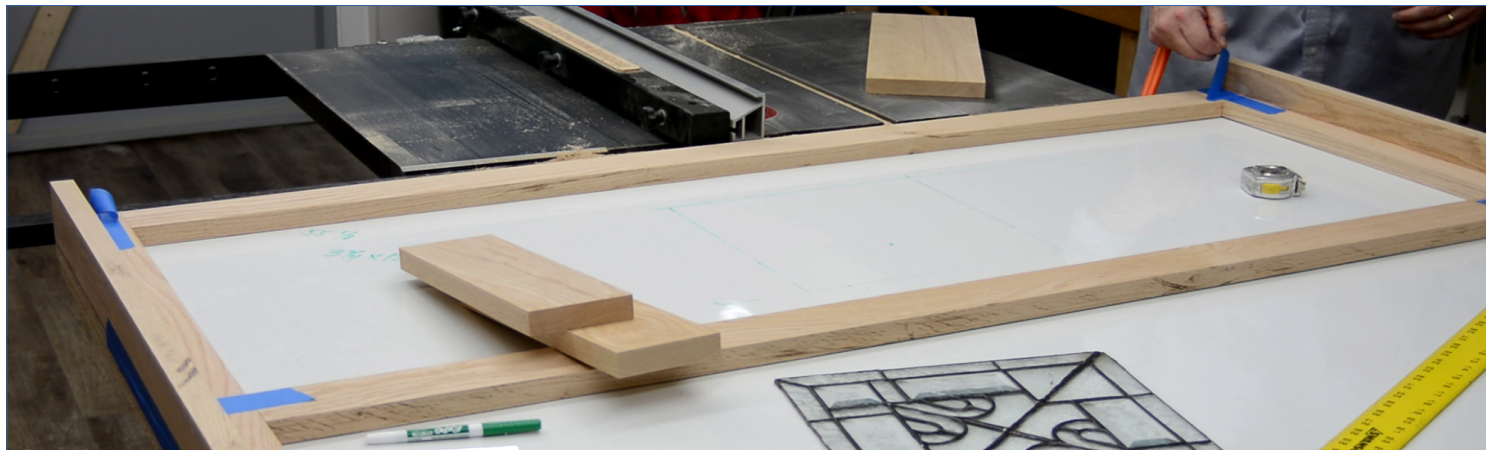
Set your table saw blade at a measured 45 degree angle and make a miter cut along one side of each board, making sure that cut finishes at the very end of the board and keeping the 2 ½ inch total width.

Using painter's tape, glue the 45 degree edges together to make the "L" shaped legs. After dry, evenly space and hammer in Oak dowels down the front length of each leg. SEE STEPS 3,4,5 in the table build above.



### Headboard - Step 2:

With the two 48 inch legs constructed, cut your cross supports for the top of the headboard where your total width of the frame equals 60 inches overall, fitting a Queen bed frame. Using 2 ½ lumber for the leg pieces, your cross support boards should be cut square at 55 inches long. Fitting inside the legs as shown below, the 55 inches plus the two leg widths gets you to an overall headboard width of 60 inches. Do a dry fit to ensure your headboard width fits the steel or other style bed frame. Mark the upper and lower locations for the cross supports. A typical box spring and mattress will rise to 24 inches above the floor, making your actual headboard height start at that 24 inch mark. My upper headboard dimensions overall were 60 inches wide and 24 inches in height at the top of the frame.



# Mission Style Headboard & End Table

## Headboard – Step 3:

Variables and variations. My cut list and overall dimensions are for a standard Queen bed and mattress set. If you are making this design for a Double or King size bed, adjust your frame widths accordingly. Also, your mattress set may be thicker or sit higher off the floor than mine. My mattress sits exactly 24 inches up from the floor, and this is where the bottom of my headboard cross support starts. With a thicker mattress, adjust the headboard location higher up on the legs. With a mattress on a flat frame without a box spring, adjust the height of your legs down. Since you are building this custom, make it fit your needs.

## Headboard – Step 4:

After finalizing the locations of your cross supports, mark the legs with pencil for future alignment. You will need to choose the method you prefer to attach the 55 inch cross supports to the side of each leg. I chose to use thicker Oak dowels at 2 inches long which allows for a pretty solid and flush connection between cross support and leg once glued. You can also choose to use a pocket hole jig from the back side to make that connection between leg and cross support. If you're not comfortable with either of those 2 options, you can also use longer 4 inch screws from the side of the leg via a pre-drilled hole into the cross support.

Screws are the least preferred option in my opinion since they will be visible on the side of the headboard. It's not IKEA where you'll have little woodgrain stickers to cover up the screw head. You could counter sink the heads and add some filler to cover up the hole, but be comfortable with whatever joinery method you choose.



## Headboard – Step “Maybe”:

Not required for this build, but I chose to add a decorative piece of cut/beveled glass to the center of the headboard. It was a 12 inch square which required some additional wood pieces to frame in the glass. You could also use a 12 inch decorative tile or other rigid art piece as a decoration to the center of the headboard here. Not required for the build, and maybe not recommended for a kids room!

The adjustment means you'll have to create some vertical frame pieces, held by dowels or pocket screws at the back.

Finally, instead of cutting a single piece of the Oak plywood to fill in the back of the headboard, I had to cut two pieces to fit on both sides of the center piece.





# Mission Style Headboard & End Table

## Headboard – Step 5:

The final build step is to fit the Oak plywood back panel. Since the plywood edges are rough and unfinished, it's best to cut the panel 2 inches shorter than the total height of your headboard panel. If you've made no alterations to the standard Queen dimensions I had mentioned earlier and you are using standard  $\frac{3}{4}$  inch lumber, your solid panel would be 58  $\frac{1}{2}$  inches long and 22 inches wide. This means the plywood panel would fit tightly between the two legs, sit 1 inch lower than the top of the headboard and 1 inch higher than the bottom of the 24 inch tall headboard. The plywood panel edge would be invisible to the eye unless you pulled the headboard away from the wall. But, don't make that plywood cut until you take that final measurement of your headboard dimensions. Oak plywood is expensive. Make sure you only need to cut it once!



**Final Decoration:** I also chose to add a decorative cap to each headboard post but this is completely optional. The headboard looks great as is without the cap, but I wanted to show what it looks like if you choose to add that decorative flourish. Be sure to check out the build video for more detail on the construction steps and thanks very much for supporting our little YouTube channel!

