

Dawn to Dusk Inc. Octagon Table



Material List: Buy 10ft for the 2x4's and 2x6's. 1 12ft 4x4, and 2 8ft 2x8's.

98 ft 2x4

80 ft 2x6

12 ft 4x4

16 ft 2x8

(8) 3/8 x 7" plated bolts

(16) 3/8 plated washers

(8) 3/8 plated nuts

(72) 5/16 x 3" plated lags

(72) 5/16 plated washers

(300, approximate) #8 x 2 1/2" plated or galv. drywall screw (coarse thread)

Instructions for Building your Octagon Picnic Table:

Please note that I have tried to take out the guesswork for all of my products. They say that a picture is worth a thousand words. Therefore I hope to have eliminated all confusion by having plenty of corresponding photos for each phase of every product.

First cut all of your 2x4 and 2x6 pieces starting with your longest lengths first. Please note that your excess will be enough to make all of your 2x2's.

process all the 2 x 4's for the project. Start out by cutting the following 2 x 4's to their basic length.

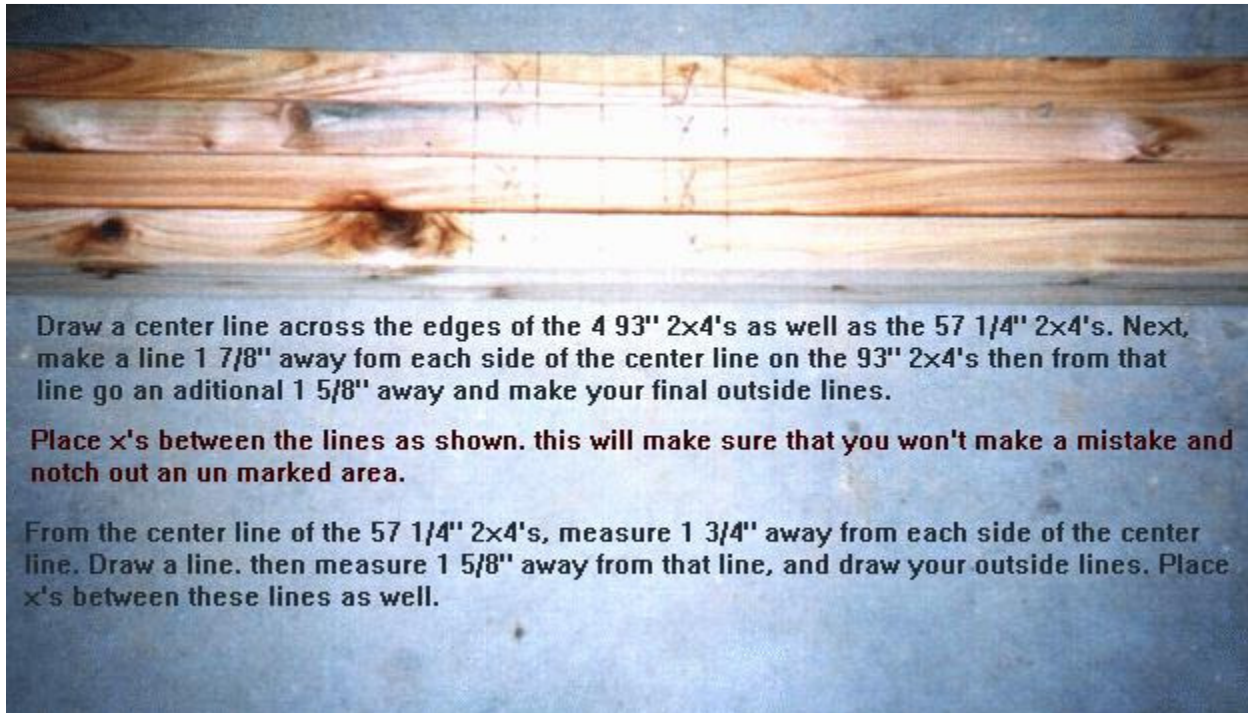
(4) pcs cut at 93" long

- (4) pcs cut at 57-1/4" long
- (12) pcs cut at 20" long
- (4) pcs cut at 10" long
- (8) pcs cut at 10" long, edge cut at 22-1/2 degree angle
- (please read this section before cutting these particular pieces to length)

93" Long Pieces

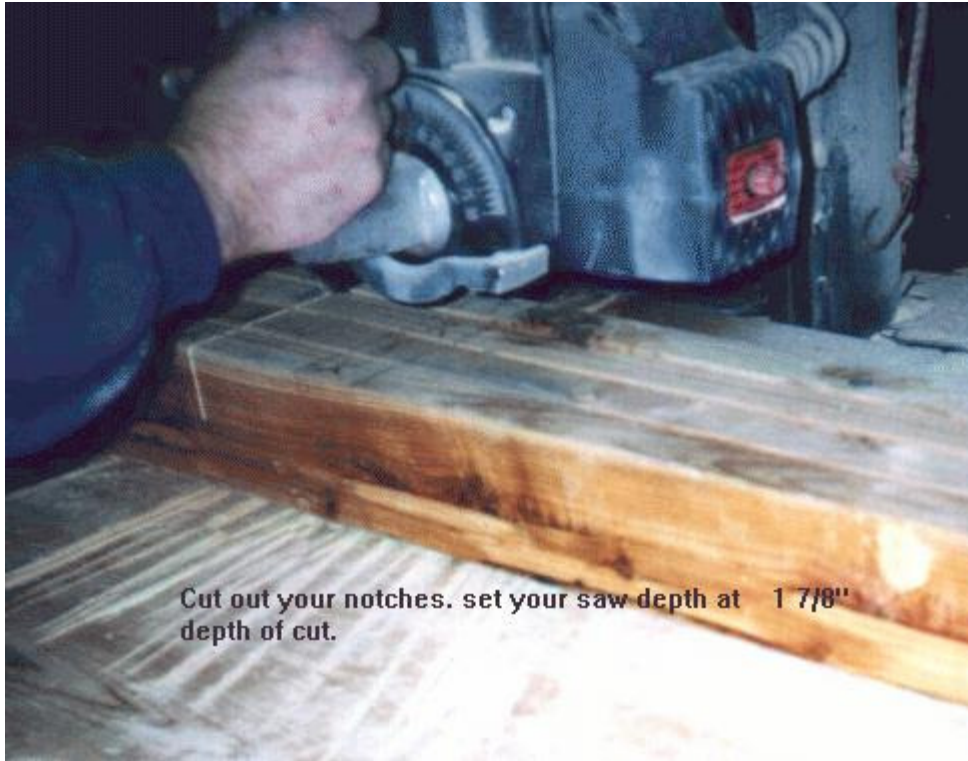
MARKING

First we need to mark out where our notches are to be placed. These notches are to be made so that when they are completed, they will be assembled together to create a cross frame. Mark out (1) of the 2 x 4's and make sure that it is correct. Then you can use it for a pattern for the other 3. **MARKS ARE TO BE MADE ON THE EDGES OF THE 2 x 4's.** Find center of the 2 x 4 and mark it. (should be 46 1/2 in.) measure from both ends of the 2 x 4 to make sure you have everything correct. Next make a mark 1 7/8" from each side of your center mark as shown in the drawing (a1). If you measure the span between your center marks, you should have a measurement of 3 3/4". Next make a mark 1 5/8" from outer most center marks. The 2 x 4 should look like the one in the picture. It is now ready to be notched.

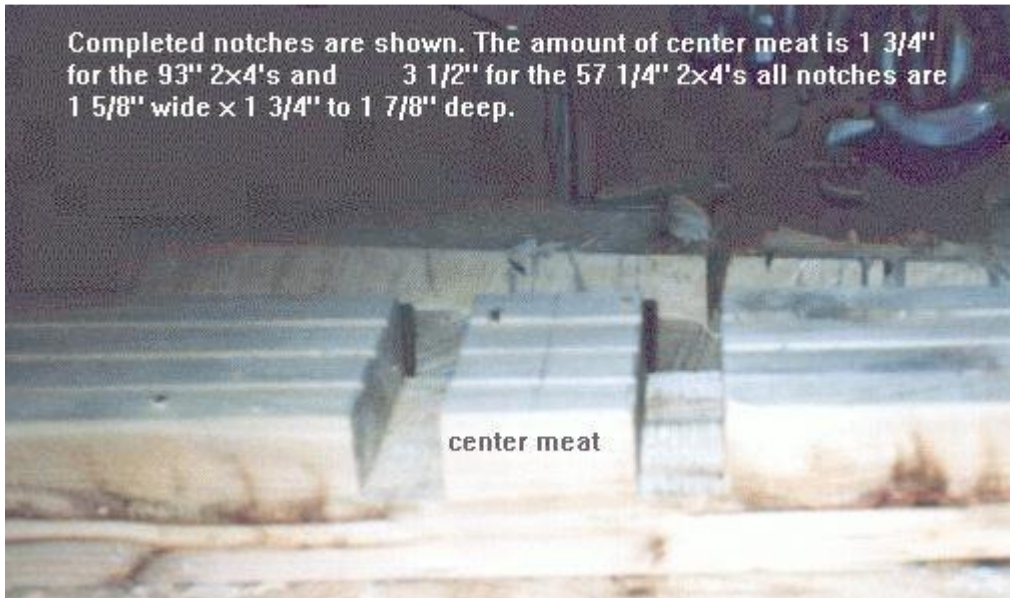


NOTCHING

Set the bottom of your radial arm saw blade 1 3/4" from the edge of the 2 x 4. (If you do not have a radial arm saw you can use a skill saw set at the same depth.) Proceed notching out your 2 x 4's. After you have completed notching, make sure the bottom of your notches are smooth and even. Use a chisel to smooth them out.



Cut out your notches. set your saw depth at $1 \frac{7}{8}$ " depth of cut.



Completed notches are shown. The amount of center meat is $1 \frac{3}{4}$ " for the 93" 2x4's and $3 \frac{1}{2}$ " for the 57 $\frac{1}{4}$ " 2x4's all notches are $1 \frac{5}{8}$ " wide x $1 \frac{3}{4}$ " to $1 \frac{7}{8}$ " deep.

DRILLING

Pick the nicest looking sides to drill, since these will be the most visible sides when completed. Place a center mark 12" from each end of all the 2 x 4's as shown. Use a bit that is bigger in diameter than what a $\frac{3}{8}$ " washer is. (We use a $1 \frac{1}{4}$ " forrester bit.) **ONLY MAKE A RECESS THE THICKNESS OF A WASHER!** (approx. $\frac{1}{16}$ " deep) Next use a $\frac{7}{16}$ " dill bit to place a hole in the center of your recess.





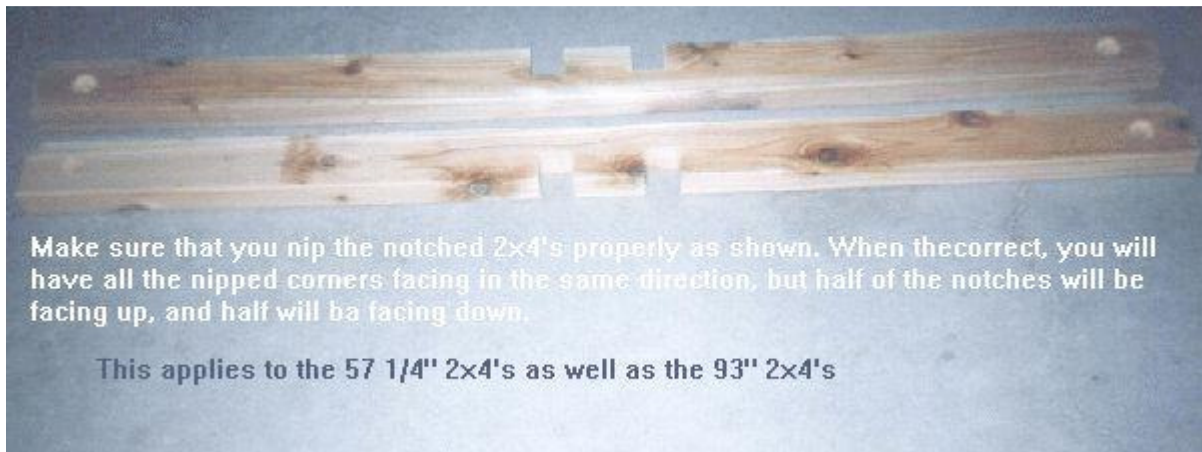
Measure 2 1/2" from the end of the 57 1/4" 2x4, then 1 3/4" from the edge. Drill a recess of 1 1/4" dia and a depth of the thickness of a washer. drill both ends of the same side of th 2x4's

After the 1 1/4" recess is made, drill a 7/16" hole thru the same measurement.

On the 93" 2x4's the same process is done at 12" from the end of the 2x4 and 1 3/4" from the edge. drill both ends of the same side of the 2x4.

NIPPING

Next we need to nip the corners of the 2 x 4's. Make sure you nip 2 of the 2 x 4's with the notches toward you, and 2 of the 2 x 4's with the notches away from you. The nips are made at a 45 degree angle, 1 1/2" from the end as shown. These 2 x 4's are ready for assembly.



Make sure that you nip the notched 2x4's properly as shown. When the correct, you will have all the nipped corners facing in the same direction, but half of the notches will be facing up, and half will be facing down.

This applies to the 57 1/4" 2x4's as well as the 93" 2x4's

57 1/4" Pieces

Again we need to mark out where our notches are to be placed. These notches are to be made so that when they are completed, they will be assembled together to create a cross frame. Mark out (1) of the 2 x 4's and make sure that it is correct. Then you can use it for a pattern for the other 3. **MARKS ARE TO BE MADE ON THE EDGES OF THE 2 x 4's. MARKING** Find center of the 2 x 4 and mark it. (should be 28-5/8 in.) Measure from both ends of the 2 x 4 to make sure you have everything correct. Next make a mark 1-11/16" from each side of your center mark as shown in the drawing (a1). If you measure the span between your center marks, you should have a measurement of 3 3/8". Next make a mark 1-11/16" from outer most center marks. The 2 x 4 should look like the one in the picture. It is now ready to be notched.

NOTCHING

Set the bottom of your radial arm saw blade 1 3/4" from the edge of the 2 x 4. (If you do not have a radial arm saw you can use a skill saw set at the same depth.) Proceed notching out your 2 x 4's. After you have completed notching, make sure the bottom of your notches are smooth and even. Use a chisel to smooth them out.

DRILLING

Pick the nicest looking sides to drill, since these will be the most visible sides when completed. Place a center mark 2-1/2" from each end of all the 2 x 4's as shown. Use a bit that is bigger in diameter than what a 3/8" washer is. (We use a 1-1/4" Forrester bit.) **ONLY MAKE A RECESS THE THICKNESS OF A WASHER!** (approx. 1/16" deep) Next use a 7/16" drill bit to place a hole in the center of your recess.

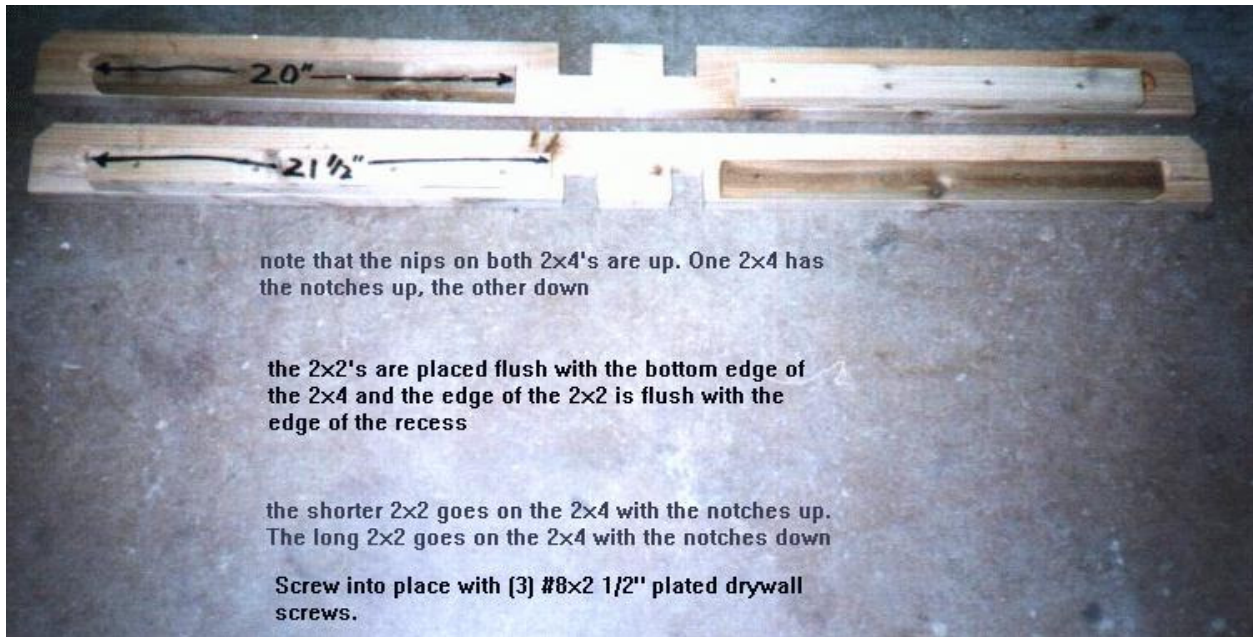
NIPPING

Next we need to nip the corners of the 2 x 4's. Make sure you nip 2 of the 2 x 4's with the notches toward you, and 2 of the 2 x 4's with the notches away from you. The nips are made at a 45 degree angle, 1 1/2" from the end as shown.

Attaching 2 x 2's

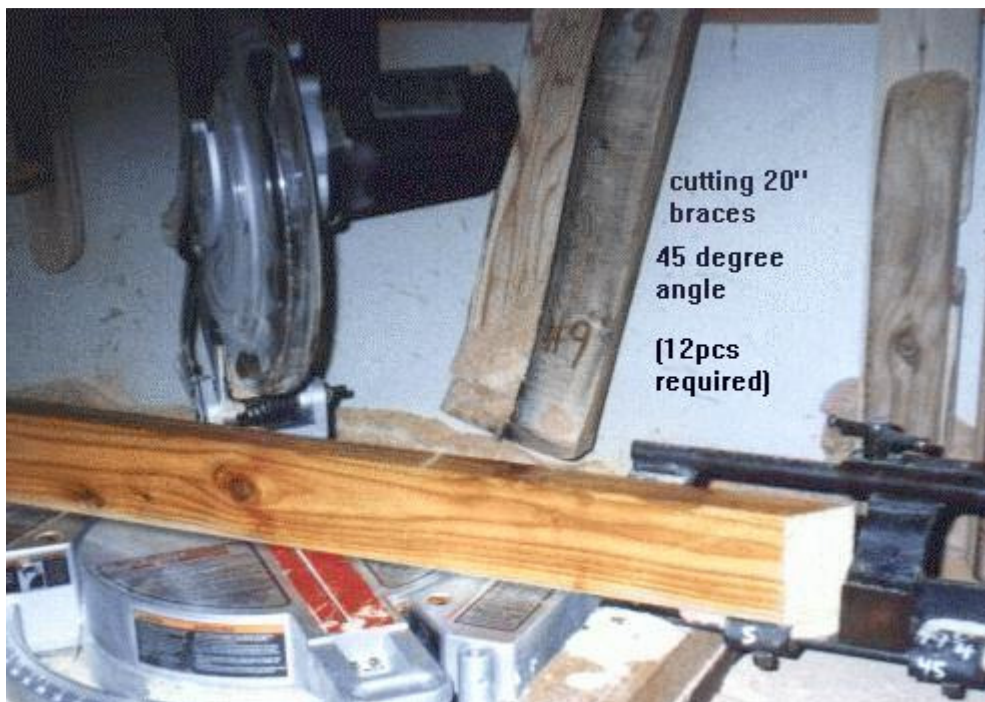
Take the 2x4's with all the nipped corners in the same position. You should notice that you have (2) 2 x 4's with notches up, and (2) 2 x 4's with notches down. Take the (2) 2 x 4's with the notches up and attach the 21-1/2" 2 x 2's as shown, using (3) #8 x 2 1/2" plated drywall screws per 2 x 2. All 2 x 2's line up as close to the recess as possible, as well as flush with the bottom of

the 2 x 4 (bottom of the 2 x 4 is determined by the flat edge, nipped corners at the top.) Now take the other 2 x 4's with the notches down, and attach the 20" 2 x 2's in the same exact manner as the previous 2 x 2's. Each 2 x 4 will end up having (2) 2 x 2's attached to it.



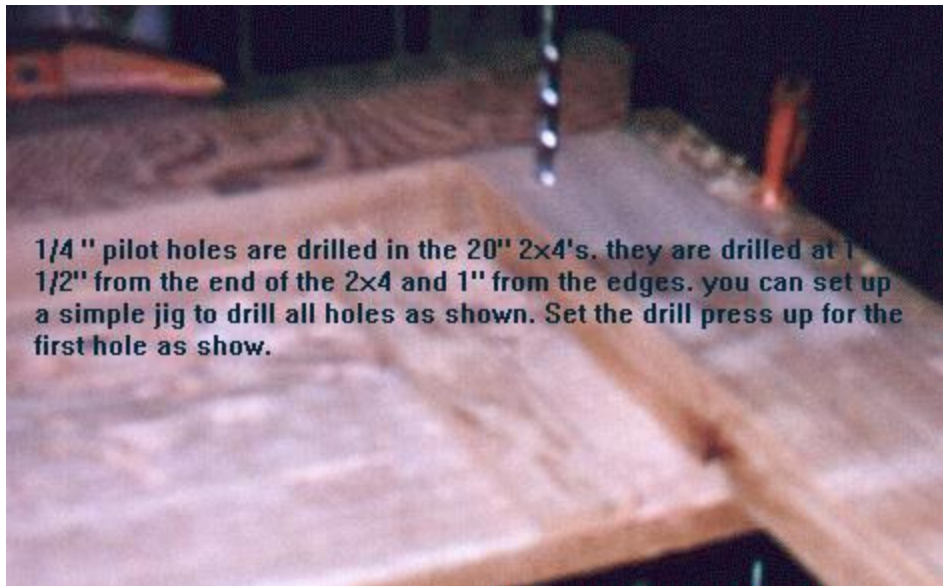
20" 2 x 4's

These 2 x 4's need to be beveled on the ends at a 45 degree angle. This can be done either by using a skill saw at a 45 degree, using a radial arm saw at a 45 degree, marking the edges at a 45 degree and using a handsaw, or band saw.

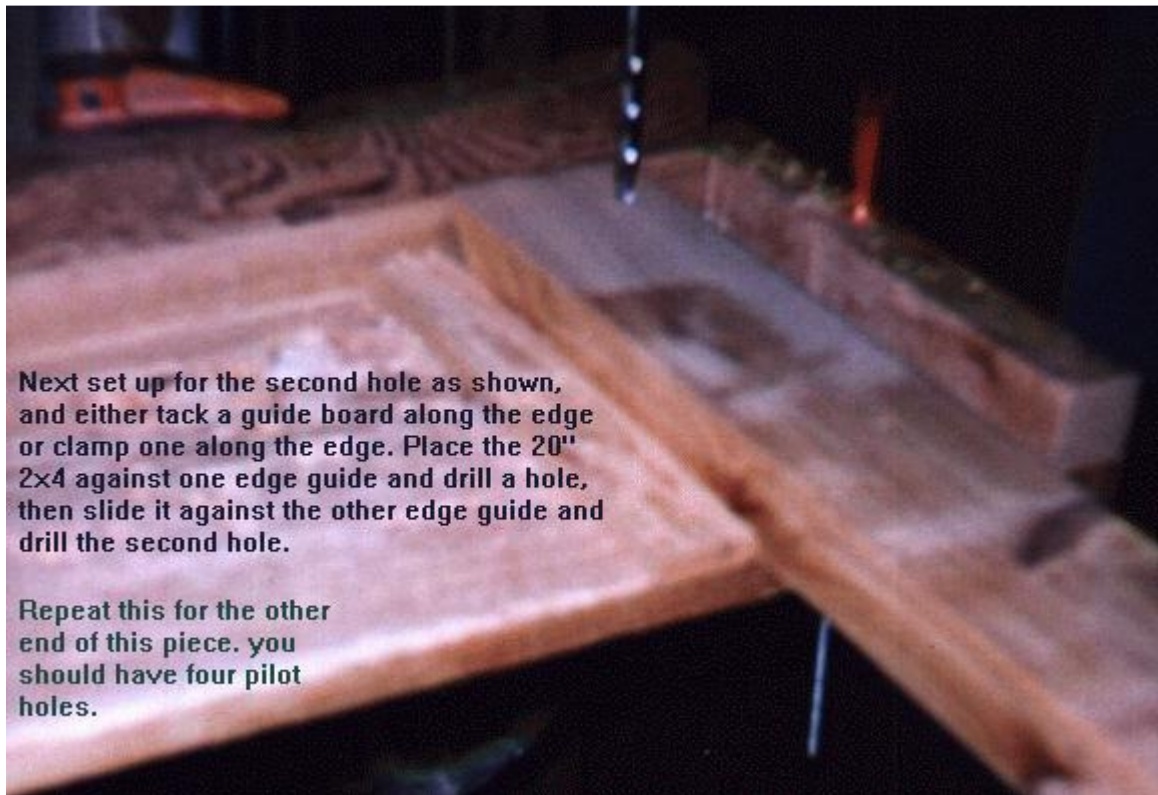


DRILLING

Make center marks as shown. 1 1/2" from end, 1 1/16" from edge. Each end should have (2) markings as shown. Drill all (12) pieces with 1/4" hole.



1/4 " pilot holes are drilled in the 20" 2x4's, they are drilled at 1 1/2" from the end of the 2x4 and 1" from the edges. you can set up a simple jig to drill all holes as shown. Set the drill press up for the first hole as show.



Next set up for the second hole as shown, and either tack a guide board along the edge or clamp one along the edge. Place the 20" 2x4 against one edge guide and drill a hole, then slide it against the other edge guide and drill the second hole.

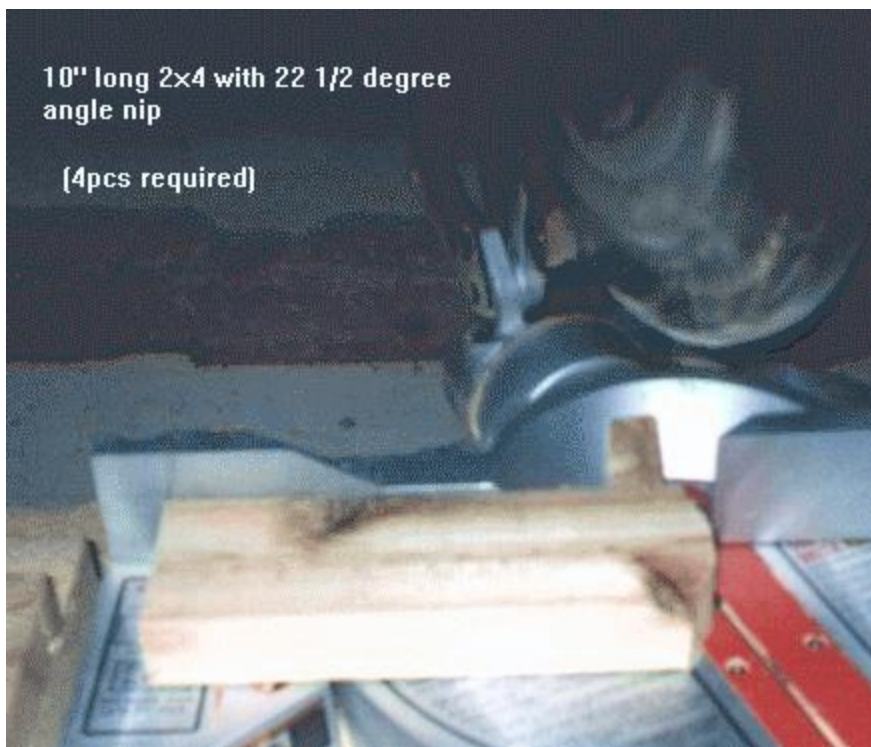
Repeat this for the other end of this piece. you should have four pilot holes.



These pieces are now ready for assembly.

10" 2 x 4's (4) Pieces

Take your 4 10" pieces and nip both corners on 1 end as shown. Nips are at a 22 1/2 degree, just enough to take the corners off.



10" 2 x 4's (8) Pieces

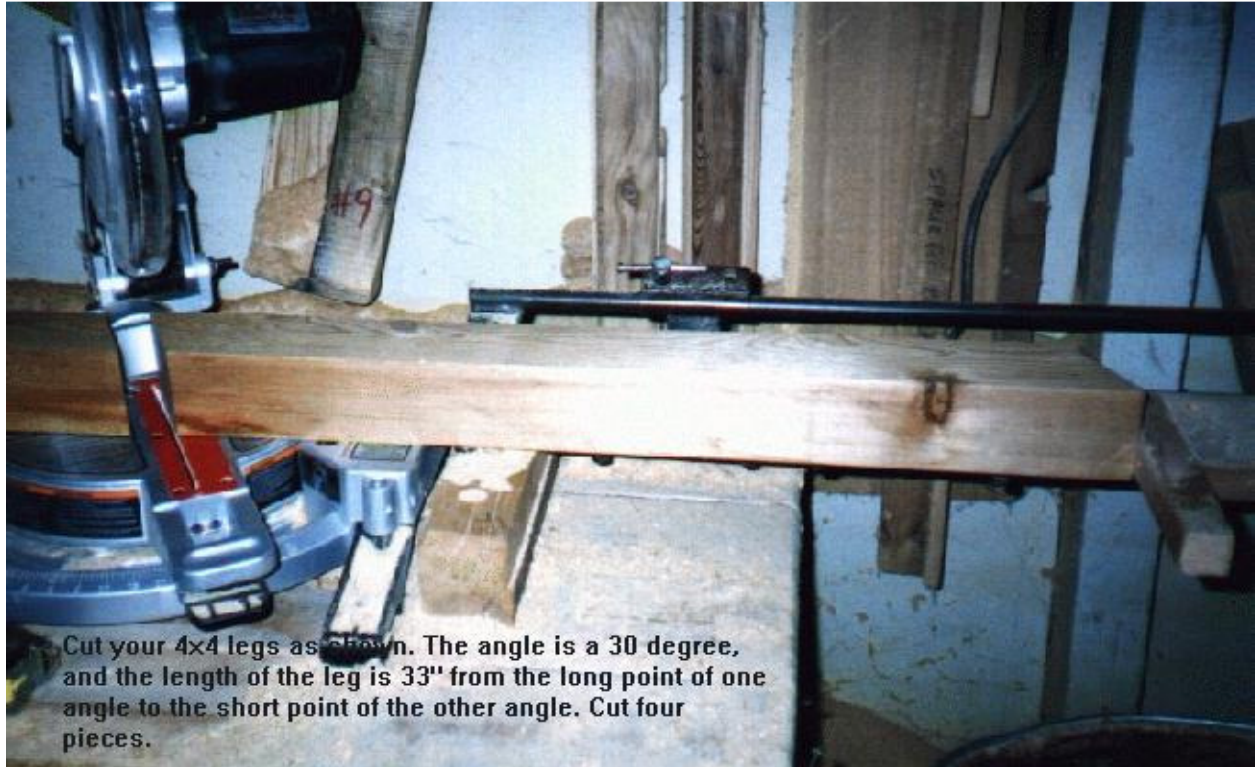
Start with an 8' 2 x 4.

These 2 x 4's need to be beveled on the ends at a 22-1/2 degree angle. This can be done either by using a skill saw at a 22-1/2 degree, using a radial arm saw at a 22-1/2 degree, marking the edges at a 22-1/2 degree and using a handsaw, or band saw. Make the bevel on one end of the 2 x 4. Flip the 2 x 4 over and measure 10". Make your second cut. Now you should have (1) 2x4x 10" measured from long point to long point. Repeat the process until you have (8) pieces.

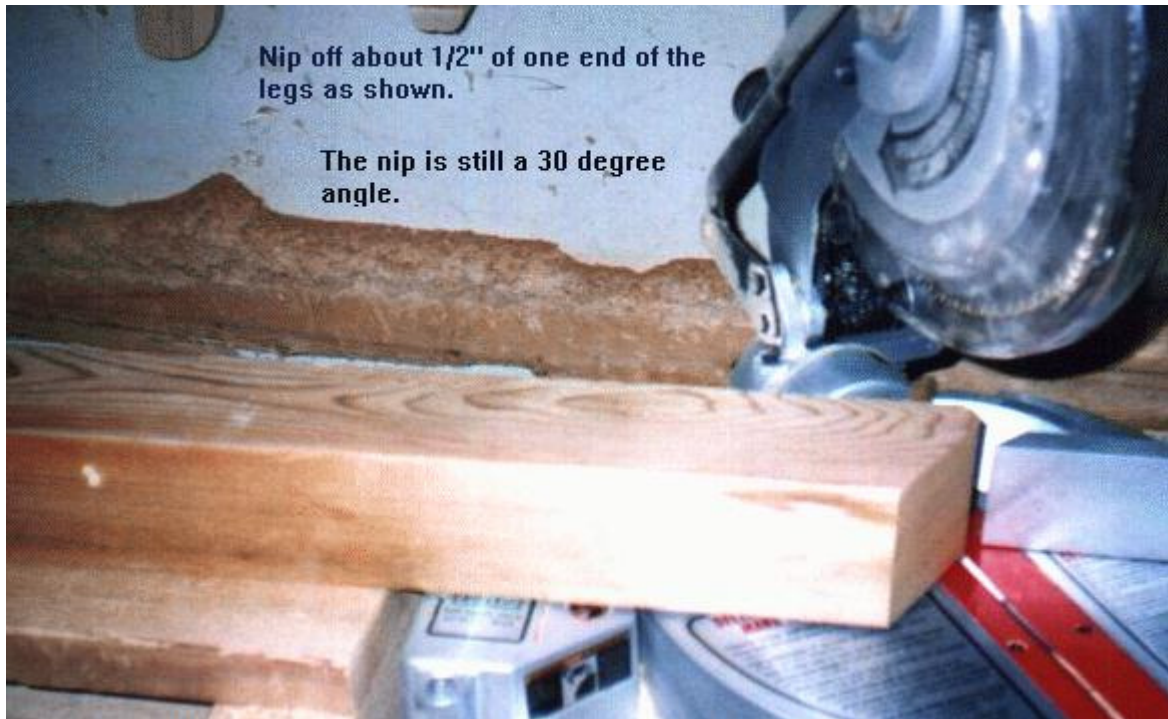
All 2 x 4's are completed and ready for assembly

4 x 4 Legs

Legs are cut at a 30 degree angle, 33" long, from long point to short point as shown.

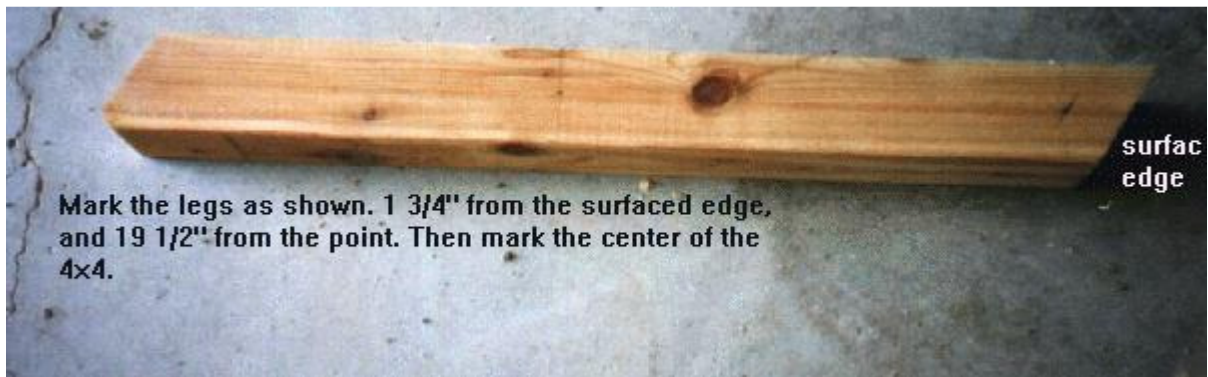


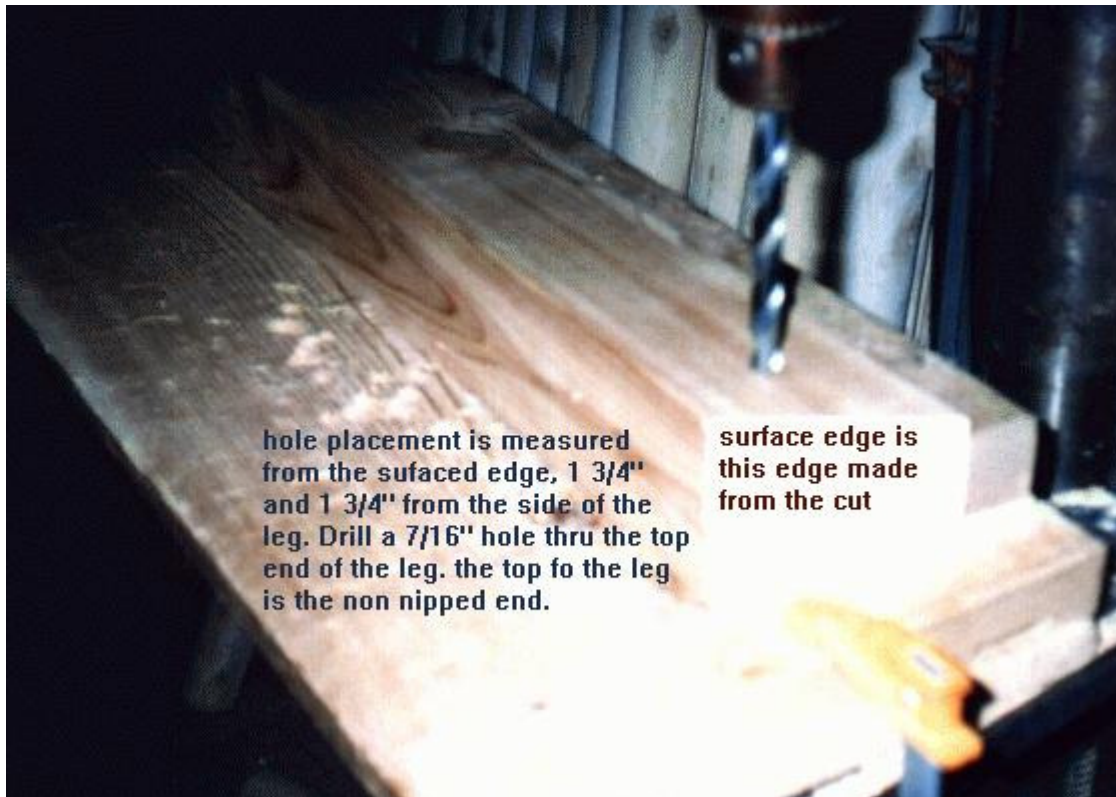
After you have (4) cut, nip the corner edge off of one end only as shown.



DRILLING

Make a center mark as indicated. 1 3/4" from cut edge, 1 3/4" from surfaced edge. make a second mark measured 19 1/2" from the corner, 1 3/4" from surfaced edge. Drill a 7/16" hole at these marks.





The 4 x 4 legs are now ready for assembly.

2 x 6 Processing and Assembly

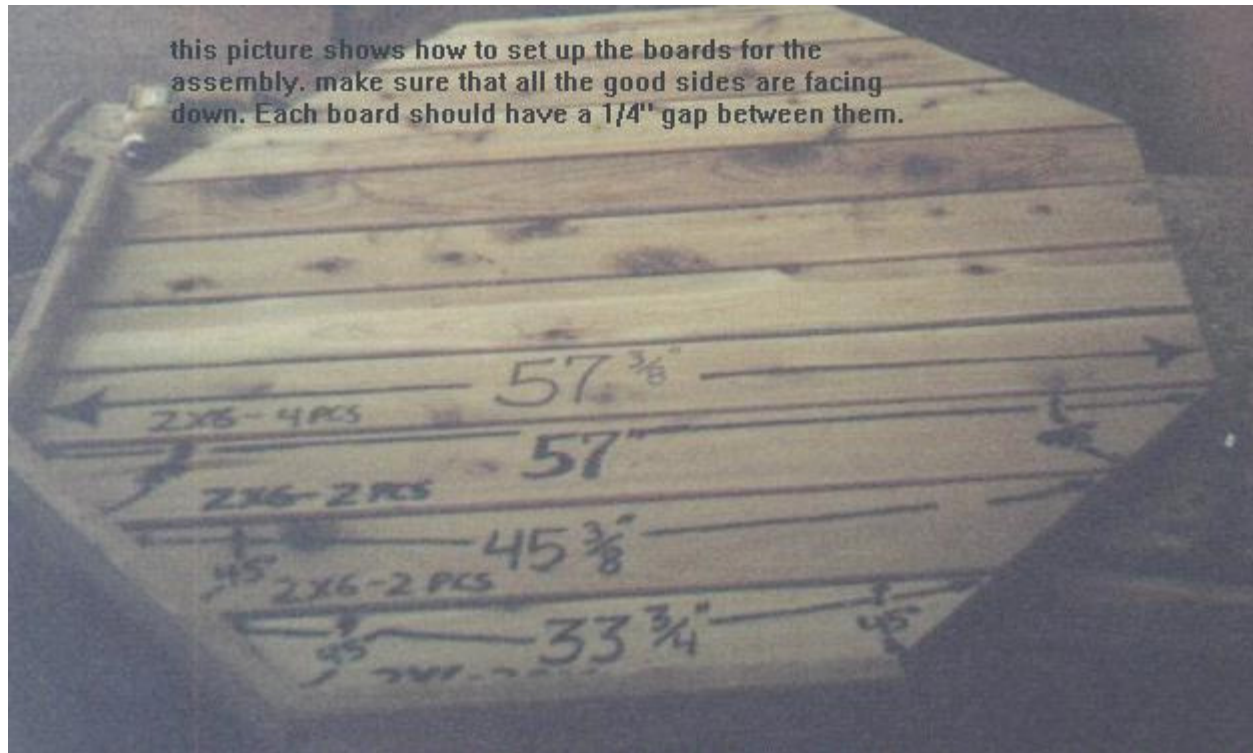
Table Top Pieces

- (4) pcs cut 57-3/8" long
- (2) pcs cut 57" long, at a 45 degree angle from long point to long point
- (2) pcs cut 45-3/8" long, at a 45 degree angle from long point to long point
- (2) pcs cut 33-3/4" long, at a 45 degree angle from long point to long point



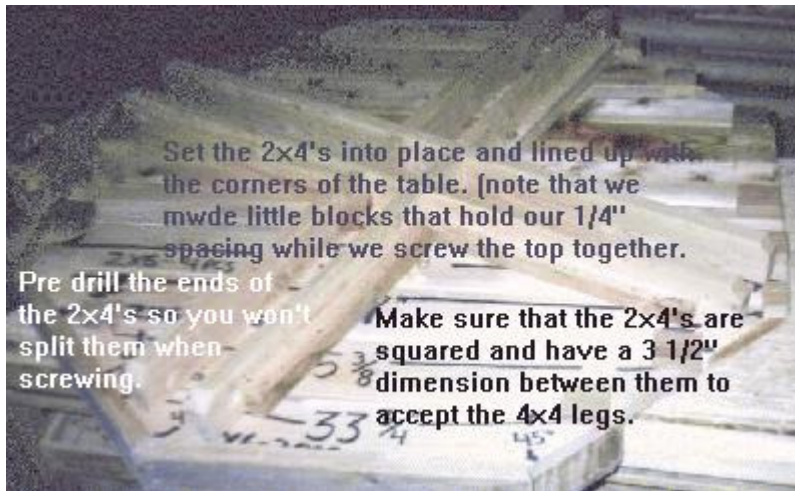
Cut all pieces as shown.

1) Place your cut 2 x 6's onto a workable surface that is large enough for the whole top. Make sure that you place the best looking sides face down. If you do not have a work table large enough, you may want to use the floor. Make sure that your work surface is free from any dirt or debris. The gap between boards is 1/4". When setting up your boards, make sure that the (4) straight cut boards are square with one another. Usually if you put a straight edge against the edges of all (4) boards at the same time, you can tell if they are square. When all (4) board edges are flat against the straight edge at the same time, they are square.



2) Next line up the the angle cut boards. Center them against the longer boards.

3) Take the (2) 57-1/4" 2 x 4's (with the notches and nips in the up position). Place them on top of the laid out 2 x 6's as shown. (from corner to corner) Make sure that the 2 x 2's are facing "out" and against the 2 x 6's. Next, fit the remaining 2 x 4's (with the nips up, and the notches down) into place as shown.



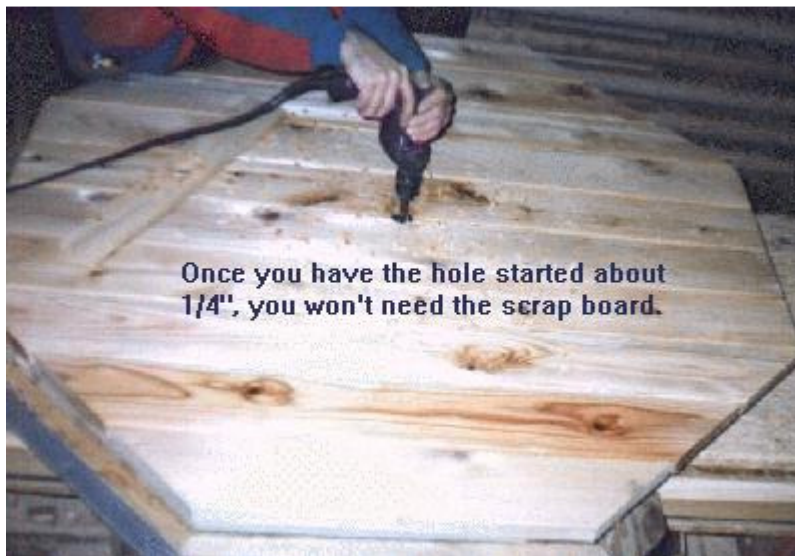
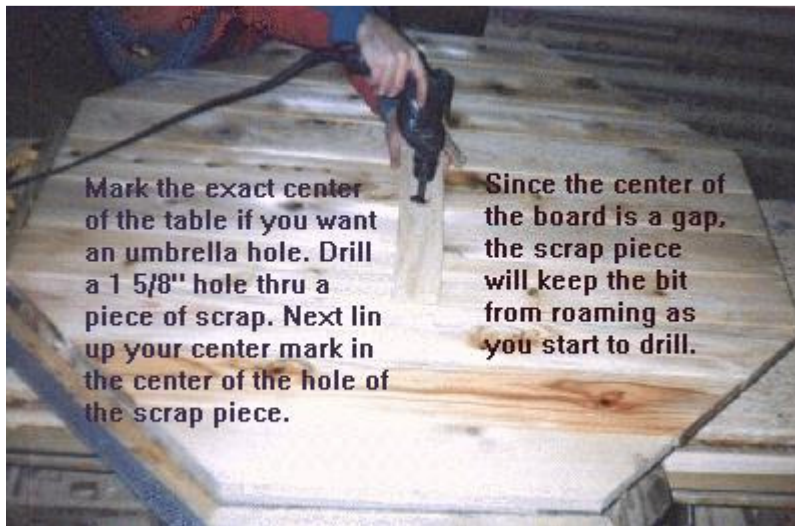
4) Next take either a scrap 4 x 4 or 2 x 4 and place it between the 2 x 4's in each corner as shown. This will hold the proper spacing so the legs will fit in once top is assembled. Square the 2 x 4's as shown. Next tack a couple pieces of scrap across the 2 x 4's and tack them down so that the 2 x 4's will hold their squareness while you finish positioning and securing the 2 x 4's. With the 2 x 4's tacked together, finish centering them onto the 2 x 6's as shown. Each opposite corner should be equal to the other. Note that the other (2) corners may not be equal to your previous corners, but you can equal them to themselves. Once your 2 x 4's are centered, you can begin screwing your top together, using #8 x 2-1/2" plated drywall screws. Start by anchoring the corners. You may want to pre drill pilot holes in certain areas to keep the wood from splitting. We cut the head off of a 12d nail and use that for a pilot bit. Drill a pilot hole at the ends of the 2 x 2's. Secure with a screw. Try to countersink the screw a little bit. Make sure that it doesn't come thru the other side of the 2 x 6. Make sure that you put (2) screws per 2 x 6. After you have secured the 2 x 4's to the 2 x 6's, anchor the edges of the the 2 x 4's. These screws will definitely need a pilot hole drilled for them. To drill the pilot holes as shown, and anchor.



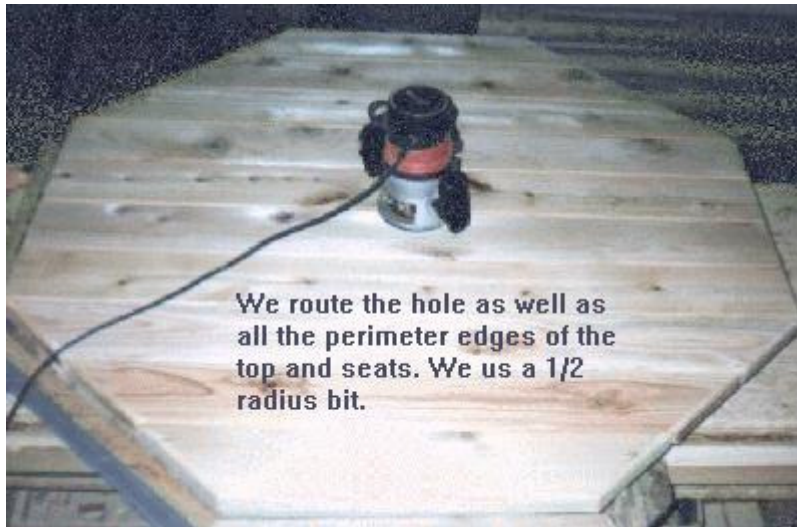
5) Next, place the 19 1/4" angle cut 2 x 2's in place as shown. The edge of one 2 x 2's will be flush with the end of the 2 x 4's. The other ends should meet at a corner point of the table. If they do not, determine which 2 x 2 is long, and trim it down to make the meet of the 2 x 2's at

the approximate center of the corner of the table. Make sure that you pre drill the ends of the 2 x 2's. Anchor with (2) screws per 2 x 6. Place (3) screws in the 2 x 2's that are parallel with the 2x6.

6) Next, you may need to trim the excess corner of the 2 x 2's to create clearance for the assembly process. We here at Dawn to Dusk prefer to make all of our tables with an umbrella hole. If you elect to do so, you will need to drill a 1-5/8" hole thru the center of a piece if 1 x 4, 57-1/2" long. Flip the table top right side up. Place the pattern 1 x 4 over the center of the table and clamp down. DO NOT ATTEMPT TO DRILL THE HOLE WITHOUT A CLAMPED PATTERN IN PLACE! THE DRILL BIT WILL CATCH THE EDGES OF THE TABLE TOP AND WILL RUIN THE (2) CENTER BOARDS AS WELL AS CAUSE POSSIBLE INJURY. The pattern clamped pattern will keep your drill aligned properly.

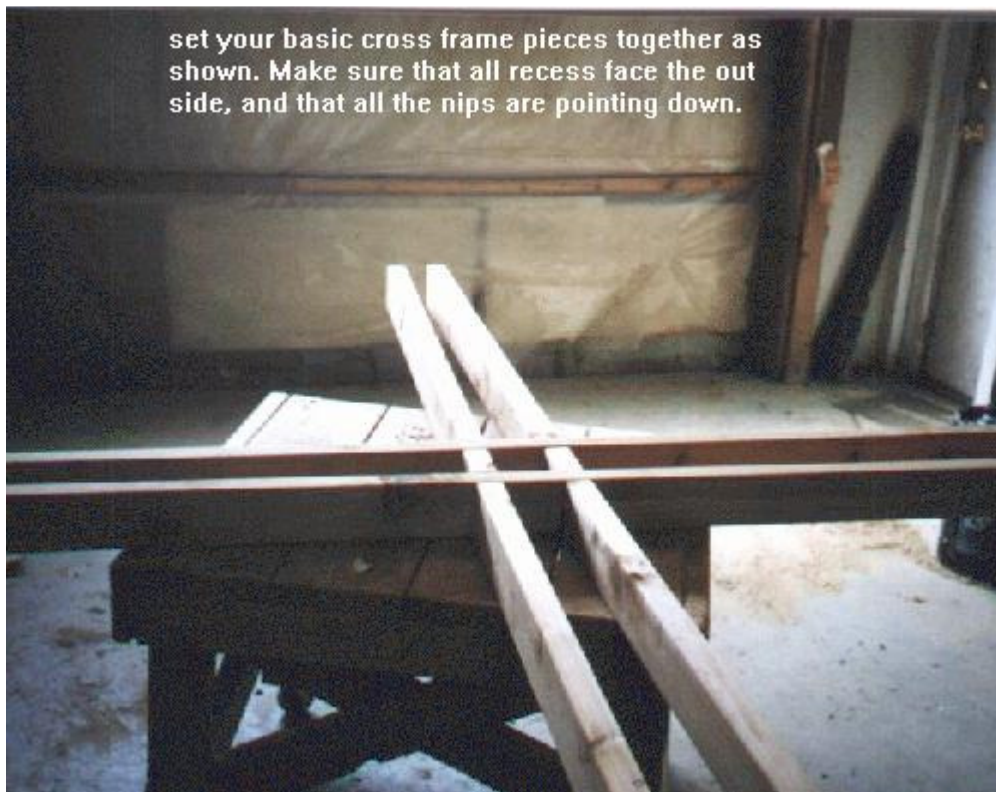


7) Next we router all of our edges and umbrella hole with a 1/2" bull nose bit. After routing we palm sand the edges and table top. Once sanded, the table top is complete and ready for assembly.

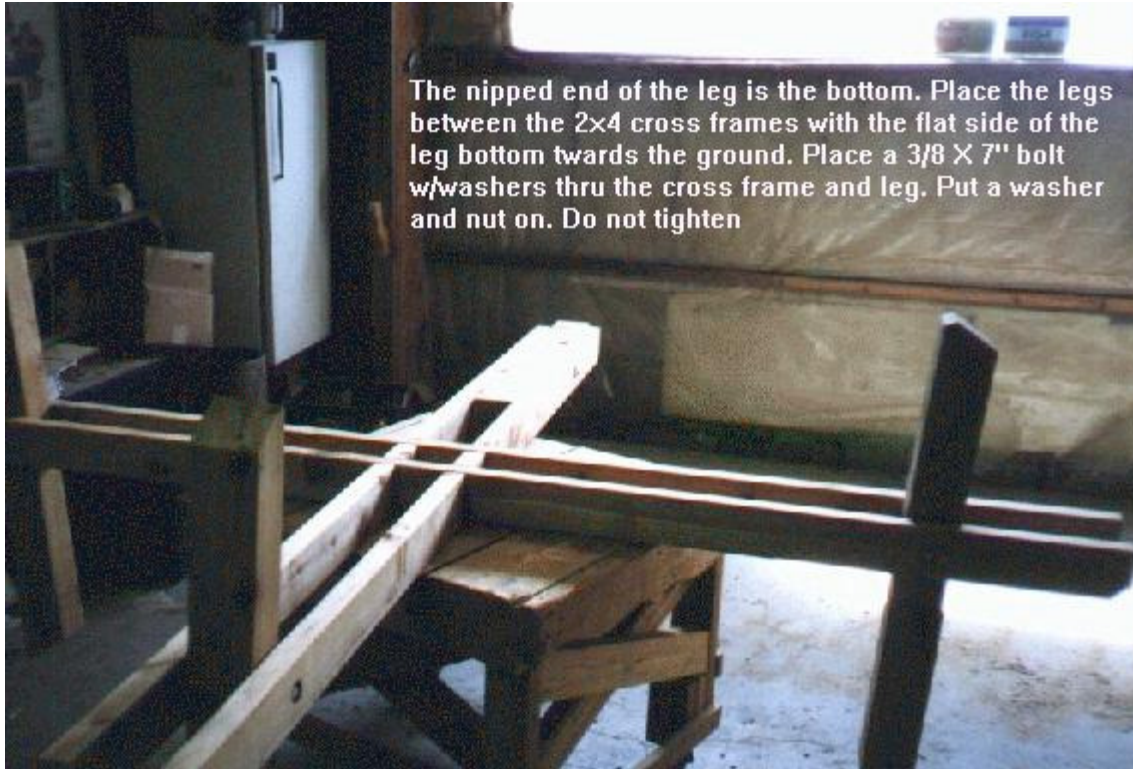


Cross Frame Assembly

1) Assemble the 93" 2 x 4's together as shown. Note that all the nips are facing down and all recess are facing outward.

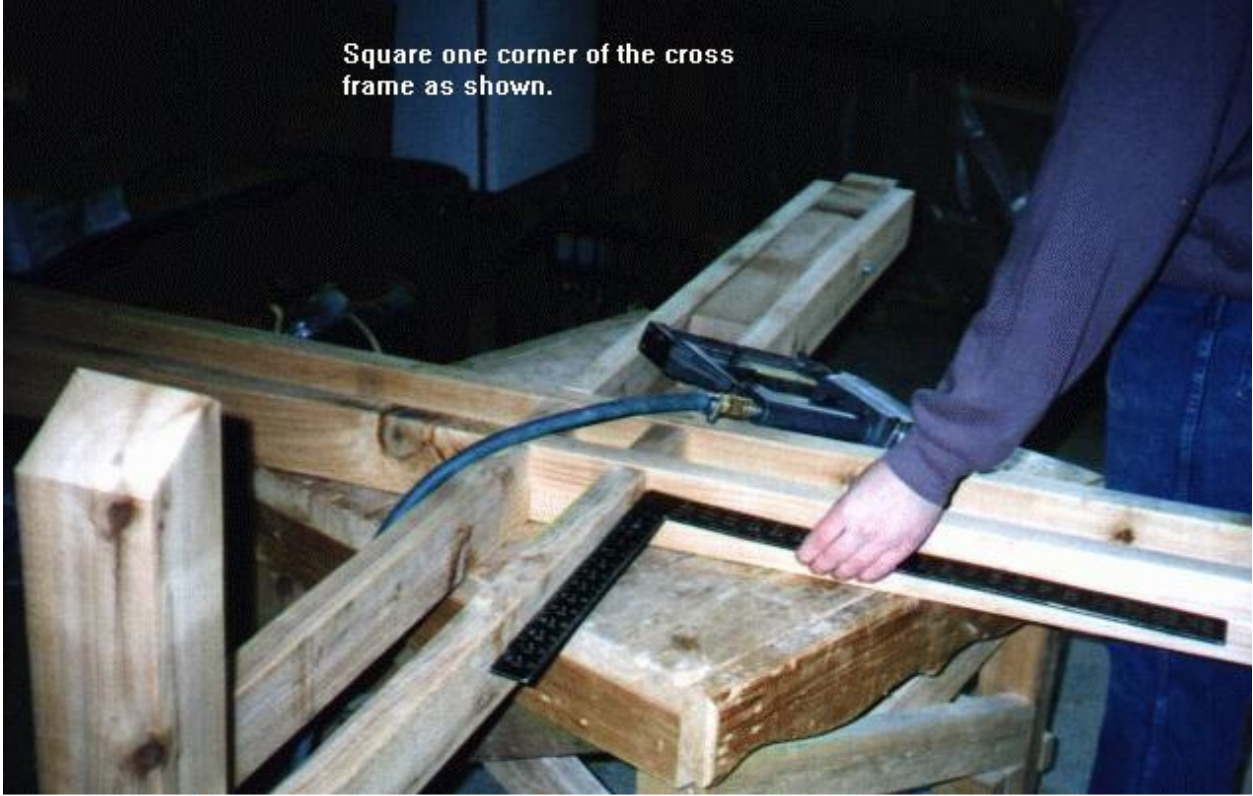


2) Place the legs into place using a 3/8" x 7" plated bolt with (2) 3/8" washers and nut. DO NOT TIGHTEN. Make certain that the nipped end of the leg is at the nipped end of the 2 x 4's. Also make certain that the flat surface of the nipped end of the leg is facing up.

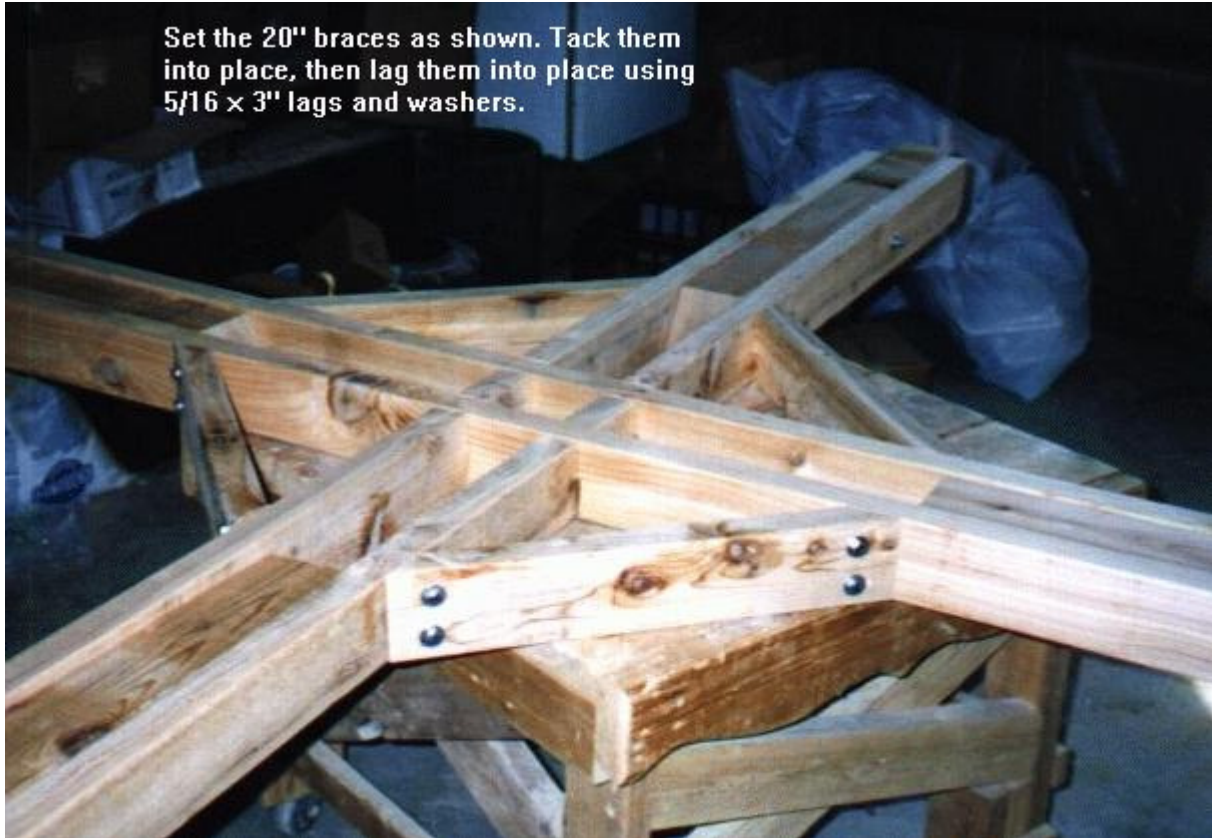


3) Next place a framing square onto the center of one section and adjust the 2 x 4's till square. Place a 20" 2 x 4 into place as shown and tack into place. Check the opposite side for square. it may not be perfectly square, but should be close. Tack in another 20" 2 x 4. The other 2 remaining sides will not square, due to the centers of the notched 2 x 4's being wider than the 4 x 4's. This will not affect the table at all.

Square one corner of the cross frame as shown.



4) Finally, lag all of the 20" 2 x 4's into place using 5/16 x 3" plated lags with 5/16" washers.



The cross frame assembly is now complete and ready for assembly.

SEATS

Materials

- (4) 2 x 6 x 57" pcs cut at 22-1/2 degree angle from long point to long point
- (4) 2 x 6 x 53" pcs cut at 22-1/2 degree angle from long point to long point
- (8) 2 x 8 x 23" pcs

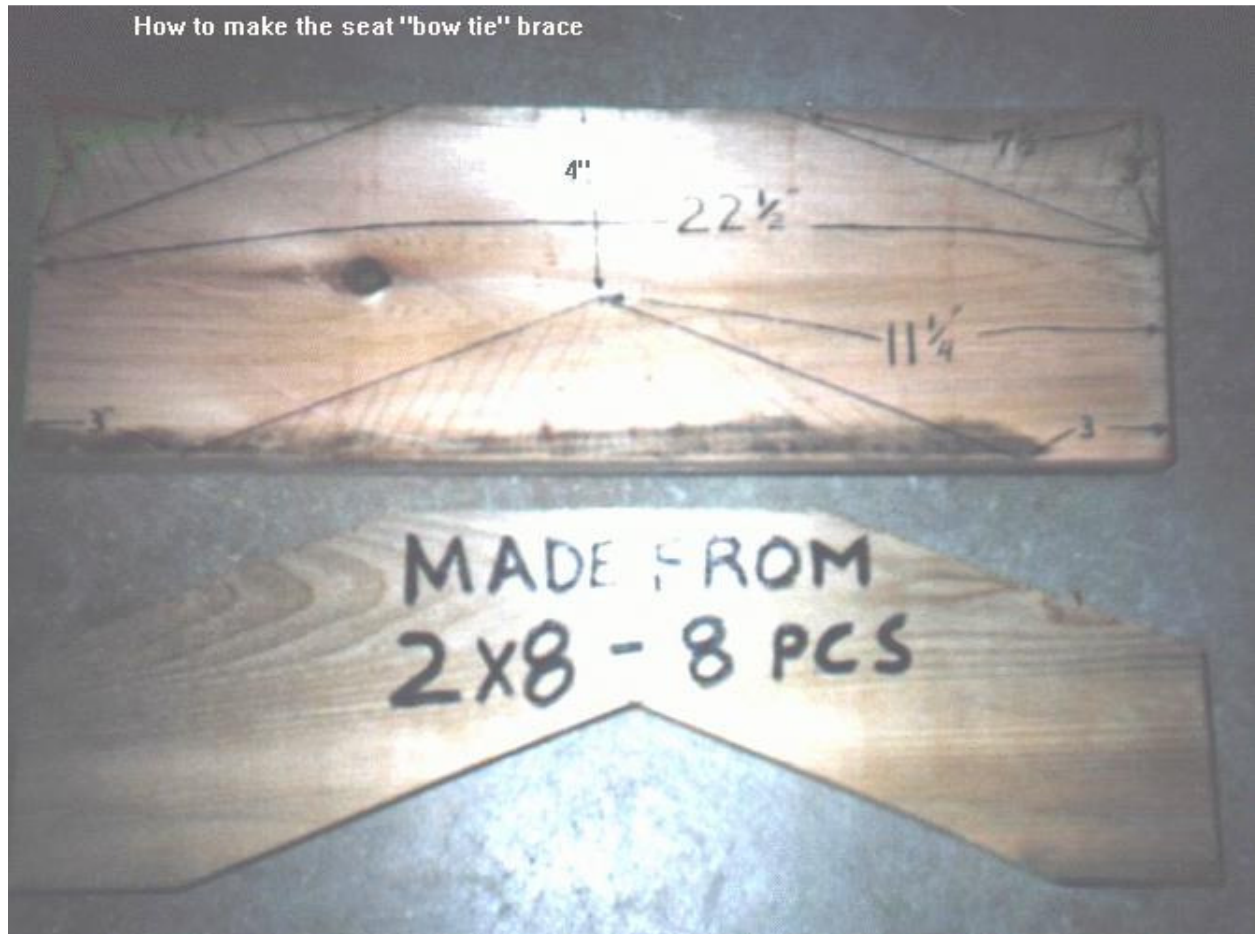


Each seat blank will make 2 pieces. There for 4 blanks will make 8 seat pieces.

Processing into Finished Seats

- 1) Take the 57" 2 x 6's and set a saw up for a straight cut. Next, measure 28-1/4" from the point of one end. Set up a stopper and cut the remaining (7) pieces.

- 2) Set saw up at a 45 degree angle. Nip the square corner of the LONG end of the seat piece as show.
- 3) Take the 53" 2 x 6's and set a saw up for a straight cut. Next, measure 25 3/4" from the point of one end. Set up a stopper and cut the remaining (7) pieces.
- 4) Set saw up at a 45 degree angle. Nip the square corner of the SHORT end of the seat piece as show.
- 5) Make center lines on one of the 2 x 8's as shown. Measure 4" down on the center line and place a mark. Next make marks at the measurements shown. Draw the final cutting lines as shown. 7 1/2" over from top edge, 3" down from top edge. 3" over from bottom edge.



- 6) Cut out the 2 x 8 and using it for a pattern for the other (7) pieces.
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Seat Assembly

- 1) Place 2 of the 28 1/4" pieces together as shown.

Set the 28 1/4" seat pieces together as shown. Make sure that the good side is facing down.

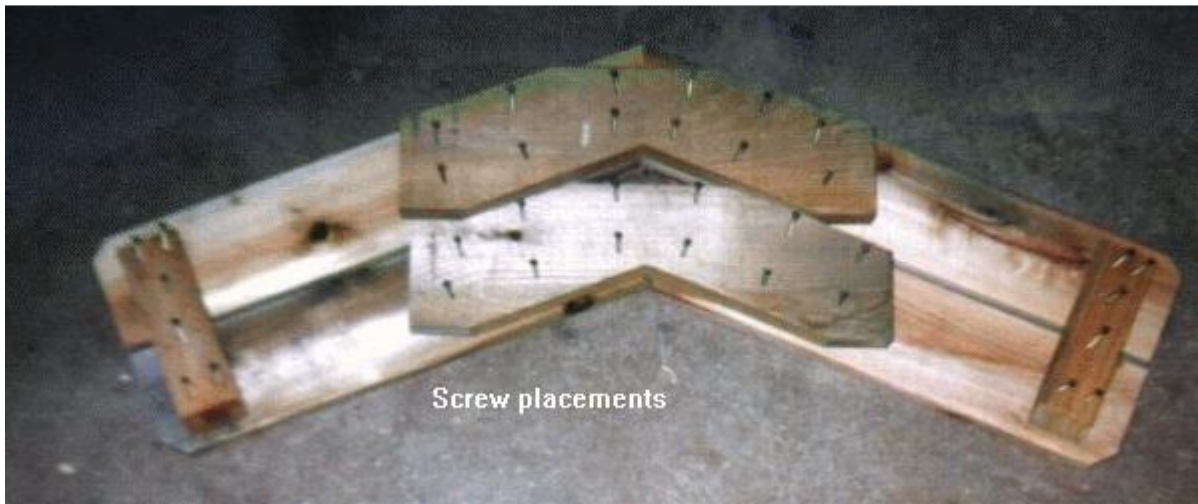


- 2) Place 2 of the 25 3/4" pieces together as shown

Set the 25 3/4" seat pieces together as shown. Make sure that the good side is facing down.



- 3) place a processed 2 x 8 directly over the center of the 2 x 6's. Screw together using (6) #8 x 2 1/2' plated drywall screws per side. (12) per piece

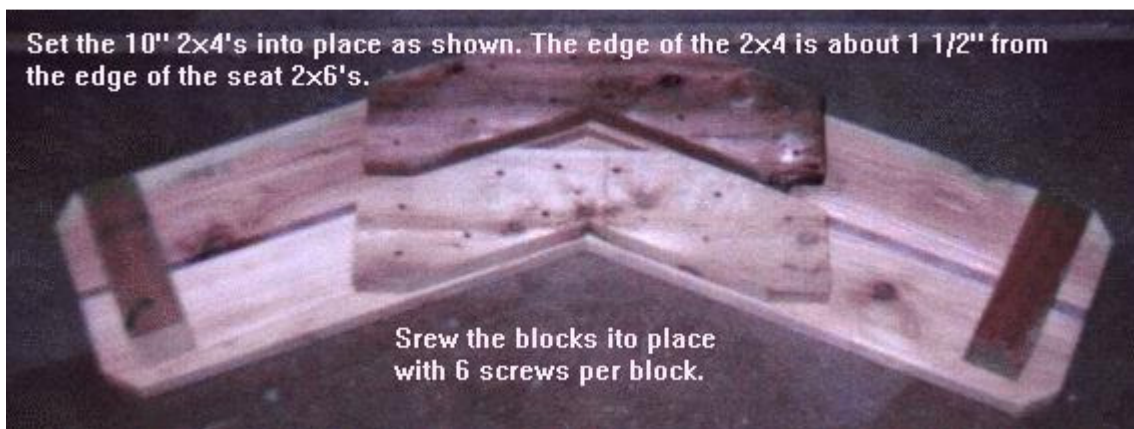




4) Repeat the process for the other pieces. You will end up with (4) pieces that will make up the outer half of the seats.

5) Align the upper half with the lower half as shown. Make sure that the edges of the seats are even.

8) Place (2) of the beveled 10" 2 x 4's into place as shown. Secure with (6) #8 x 2 1/2" plated drywall screws per 2 x 4.



9) Repeat the steps for the remaining three seats.

10) Router the edges of the seats at this time. Sand the seats as well.

11) Flip the seat back over and place the final 2 x 4's into place. The 2 x 4 gets centered onto the 2 x 8's and secured with (6) #8 x 2 1/2" plated drywall screws. You now have all the parts ready for the final assembly.

Final Assembly

1) Place the table upside down on the floor as shown. Make sure that the floor is free of dirt and debris.

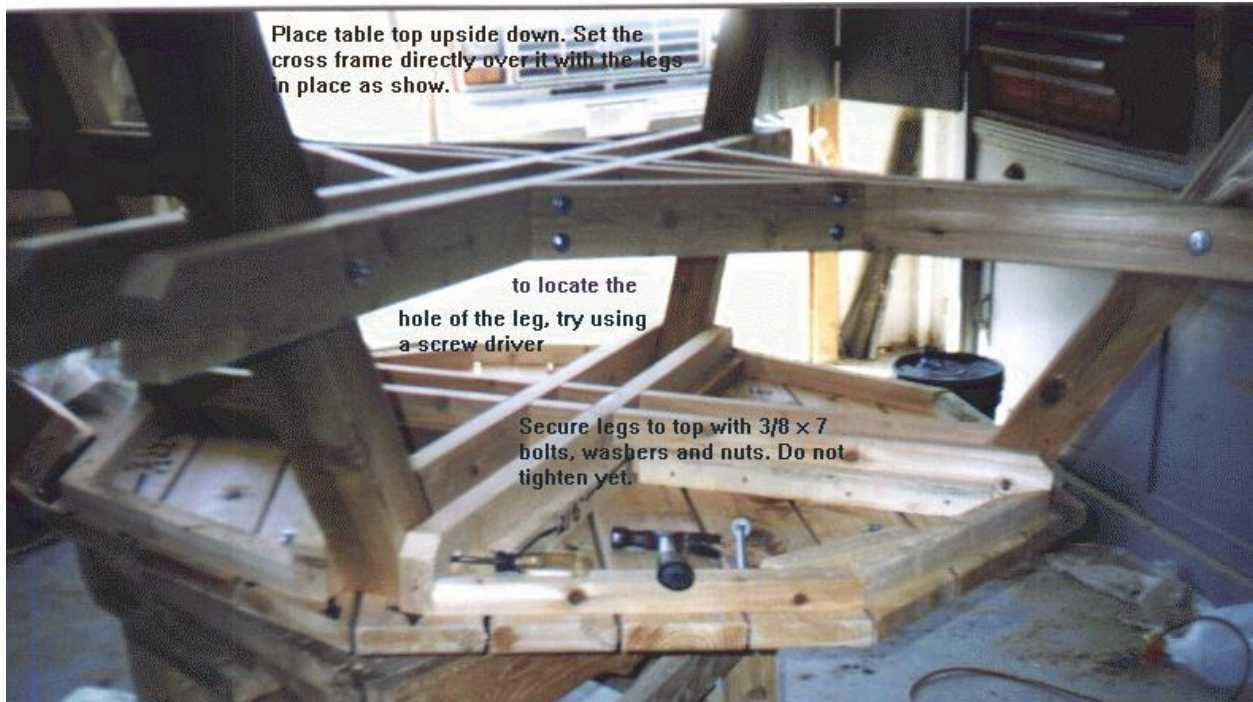
2) Place the cross frame directly onto the table top as shown. Make sure that the nipped side of the cross frame is facing up.

3) Line up the holes for the first leg. Usually this can be done by using a screw driver to locate the leg hole thru the 2 x 4. Place a 3/8" washer onto a 3/8" x 7" bolt. Tap the bolt thru the holes lightly. You may have to wiggle the leg to get the bolt to finish going thru. A lot of times the bolt goes thru the first 2 x 4, thru the leg, but doesn't align with the hole of the outer 2 x 4. If you

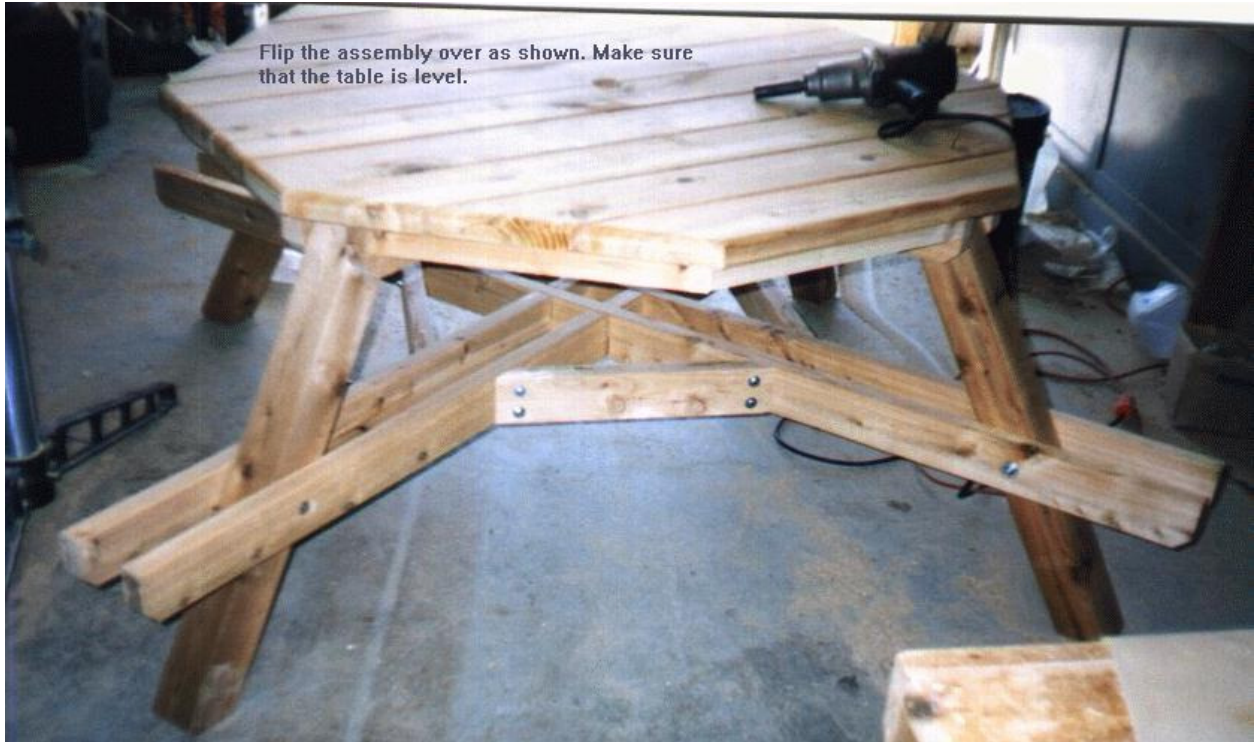
wiggle the leg at the same time you are tapping onto the bolt, you'll find that the last hole will align itself.

4) Pick up on the opposite side to set the opposite leg. Drop the leg between the 2 x 4's. DO not place the bolt yet. Drop the remaining legs into place. Now you can bolt the second leg into place.

5) Bolt the remaining 2 legs into place. Do not tighten the legs yet.



6) Flip the assembly upright.



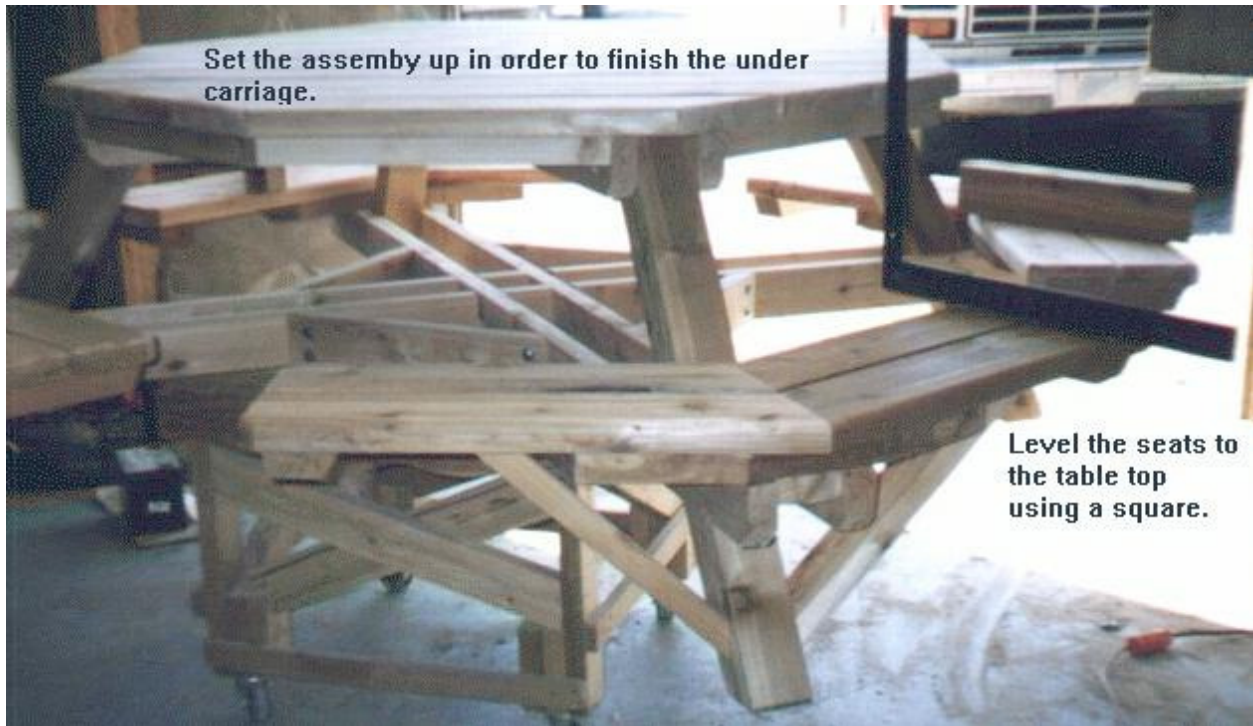
Flip the assembly over as shown. Make sure that the table is level.

- 7) Set the assembly up onto a support to raise it off of the ground.
- 8) Set the seats into place between the 2 x 4 cross frame as shown.



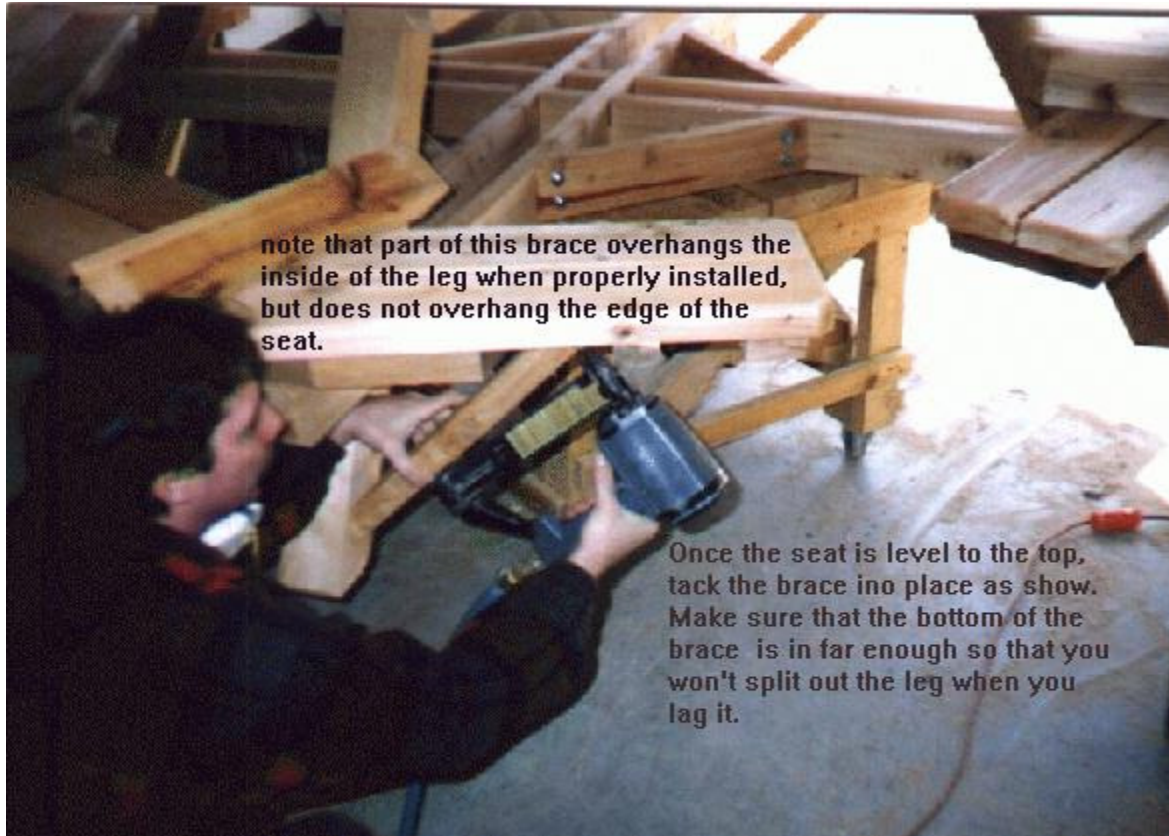
Set the seats into place as shown. Place the 2x4 block between the cross frame, and slide seat inward until the block touches the leg.

After all the seats are set, tighten the 3/8 x 7 bolts.



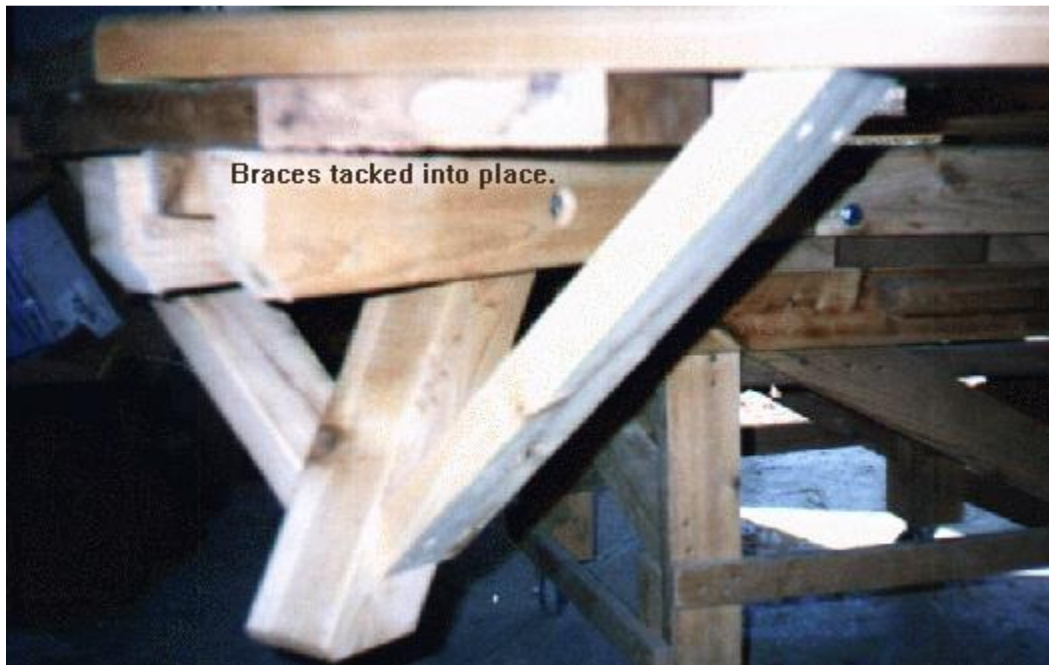
9) Measure from the table top down to the end of the seat as shown. When you get the same measurement for both ends of the seat, then the seat is level with the table top. One easy way to set the seats is to make yourself a jig. We used a piece of 1 x 12 scrap with a couple of 2x4's attached to it. Take the measurement from the table top to the seats and deduct 1/4". Cut (2) 2 x 4's at that measurement and attach them to the outer 2 corners of the 1 x 12. Place the 1 x 12 onto the table top over the corner so that the 2 x 4's are over the ends of the seats. When you get the same gap between the seats and 2 x 4, the seat is level with the table top.

10) Place a 20" 2 x 4 into place as shown. Make sure that the 2 x 4 does not overhang the outer edge of the leg. It will overhang the inner edge of the leg. tack the 2 x 4 into place. Notice that when leveling the seats, they may only rest on one of the 2 x 4's of the cross frame. This will not affect the table since we will be securing it with lags later on. The gap comes from the holes not being 100% centered when drilling.

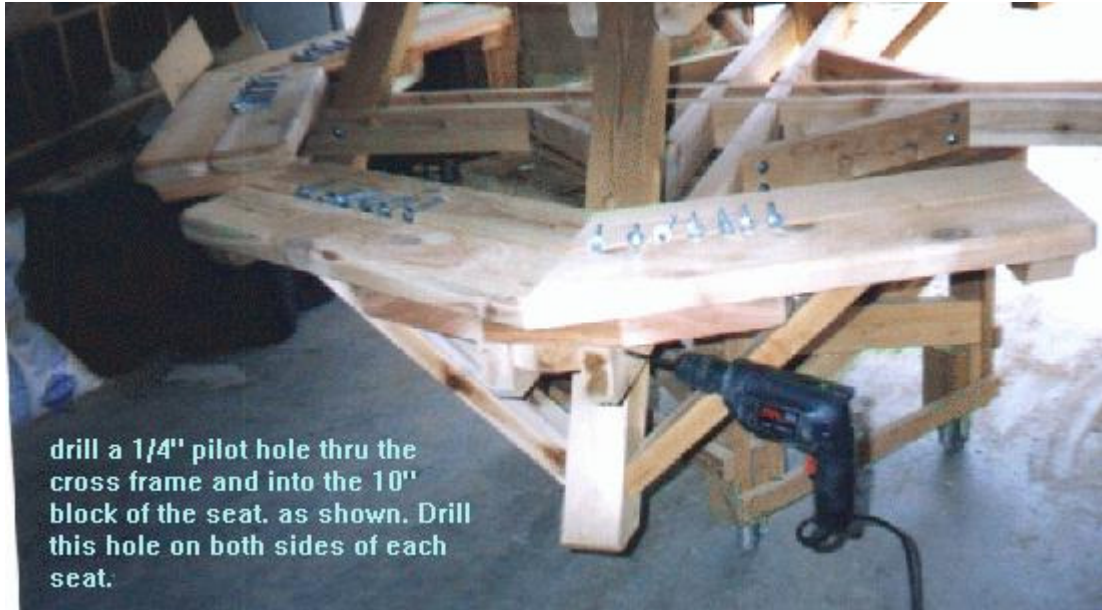


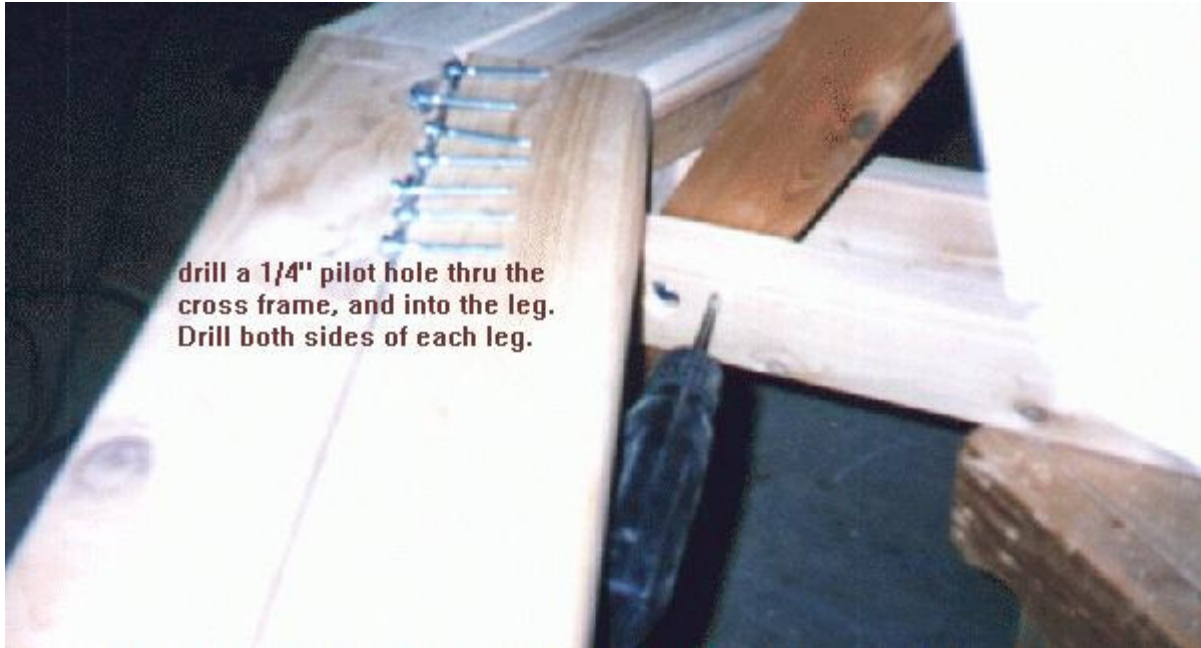
note that part of this brace overhangs the inside of the leg when properly installed, but does not overhang the edge of the seat.

Once the seat is level to the top, tack the brace into place as show. Make sure that the bottom of the brace is in far enough so that you won't split out the leg when you lag it.



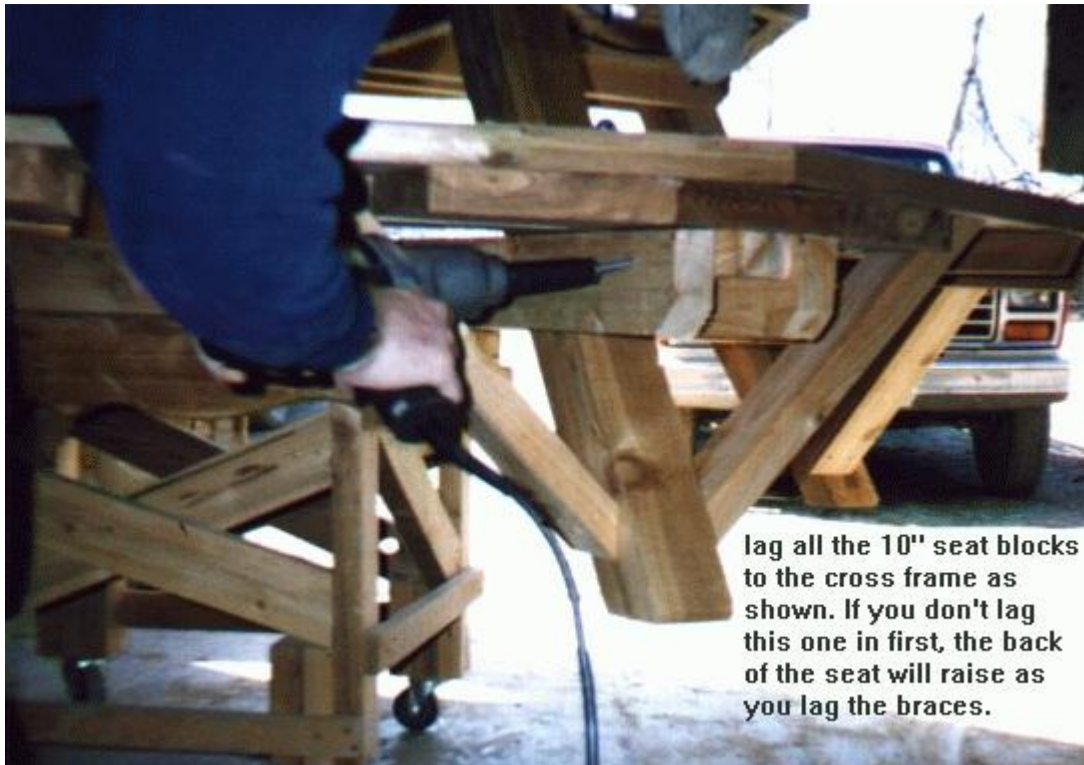
11) Once you have all four seats tacked into place, drill a 1/4" pilot hole through the 2 x 4 cross frame so it hits the 2 x 4 block attached to the seat as shown. Pilot both sides of each seat. Secure with 5/16 x 3" plated lags with washers.





drill a 1/4" pilot hole thru the cross frame, and into the leg. Drill both sides of each leg.

12) After securing the seat to the cross frame, finish lagging all of the 20" 2 x 4's with 5/16 x 3" lags and washers.



lag all the 10" seat blocks to the cross frame as shown. If you don't lag this one in first, the back of the seat will raise as you lag the braces.



Lag the seat braces into place with $5/16 \times 3''$ plated lags and washers



Lag the seat braces into place with $5/16 \times 3''$ plated lags and washers



- 13) Once the seats are fully lagged into place, take the table off of the support and set on a level floor. All four legs should be touching the ground. Tighten up all the 3/8 x 7" bolts at this time.
 - 14) Drill 1/4" pilot holes thru 2 x 4 cross frame as shown and secure with 5/16 x 3" lags. This will help in keeping the table tight.
 - 15) drill 1/4" pilot holes thru the 2 x 4 of table top and into top of legs. Secure with 5/16 x 3" lags and washers.
- Your table is now complete.
-

Recommendations for Finishing

It is recommended that you put some sort of finish on your table. There are (3) basic types of finishing.

- 1) VARNISH
- 2) DECKING STAINS
- 3) PAINTS

Varnish

SOME PROS ABOUT VARNISH

- a) seals up like a counter top enabling easy cleanup of spills and stains
- b) clear finish in satin or high gloss

SOME CONS ABOUT VARNISH

- a) must apply 3 to 4 coats to look good
- b) must sand in between each coat, and remove all dust between coats
- c) usually takes 24 hours to cure between each coat
- d) may be dry to the touch after 24 hours from the last coat, but usually is soft and takes about a week for most brands to cure completely once there are 4 coats
- e) usually requires maintenance every year to look good
- f) will run if put on too thick

Decking Stains

SOME PROS ABOUT DECKING STAINS

- a) can usually be sprayed with a garden sprayer
- b) most brands only require 2 coats
- c) no sanding between coats
- d) maintenance is approximately every other year
- e) can be purchased in colors

SOME CONS ABOUT DECKING STAINS

- a) the finish seeps into the pores of the wood for protection, therefore if you spill things on them, they will stain your product. So if you spill things like mustard, ice cream, coffee, and other items, your product will retain these stains. These types of finish are mainly for protection against the natural elements.
- b) Will darken with each re-coat. Even if you use a light color, each re-coat will get successively darker.
- c) Usually the protective chemicals in them have a foul odor to them, but will dissipate once the product fully cures. Sometimes taking a couple of weeks to dissipate.
- d) If put on improperly, can become permanently tacky in the thick areas, and will not be able to be sanded once a coat has been applied.

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Paints

SOME PROS ABOUT PAINTS

- a) can be purchased in many colors
- b) will protect better against food stains
- c) may last longer between maintenance

SOME CONS ABOUT PAINTS

- a) covers up the natural wood grain
- b) must sand between coats
- c) will show dirt stains easily