

# Custom Corner Entertainment Center



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### Introduction

First I would like to explain that these plans may seem long but as you go you will find out that I explain everything right down to the detail so I hope anyone can understand the directions and build this simple beautiful corner unit.

### Let's discuss the tools needed

- Skil or circular saw (for cutting the plywood)
- Table saw ( for ripping the 2x4"s the long way in half; also I ripped the baseboard down)
- Miter saw ( for some of the finer finish cuts needed)
- Screw gun or drill ( for drilling holes and running in the screws)
- 2'or 4'level ( for keeping everything level)
- Stud finder ( critical for hitting all the studs in the wall with the 3" screws)
- Carpenter square
- Utility knife
- Tape measure
- Misc. drill bits ( 3/8" spade bit for counter sinking the screw heads, 1/8 or 9/64 drill bits for pre drilling everything)
- Other tools would be a bigger spade bit for making the holes for the cords and wires.
- Some sort of table or saw horses would make it a little more comfortable when building.

## Let's discuss the materials needed

- 1- 3/4 inch sheet of 4x8 plywood ( I used a 4x8 3/4" oak veneered plywood)
- 2- 6 ft pieces of decorative trim being at least 1 inch wide to cover plywood ends (I used colonial baseboard ripped down to 1 inch wide)
- 6- 1-1/4"W x 34"L size handrail balusters or spindles ( square or turned will work)
- 3- 2x4x6 spf or pine ( I hand picked out 3 good knot free straight ones)
- 1- small box of 2" phillips head gold screws ( actually used 24-2" screws total)
- 1- small box of 3" phillips head zinc plated screws ( actual size screw 10x3"or 5x75mm, used 16 of these screws)

## Let's build it

Lay the plywood down flat for measuring.

Start at one corner and measure 36" down either side and make a small pencil mark at the 36" mark.



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Using your carpenter square draw a line 11" up at a perfect right angle and stop.

We will call this an 11" inside point.



Now go back and repeat this at the same corner in the other direction.

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Using your 4' level or some sort of straight edge connect the two 11" inside points. This piece is ready to be cut out.



**Note:** If you are using a veneer type plywood take your utility knife and straight edge and make a knife cut on your pencil lines being sure to stay exactly on your lines thus scoring the wood to prevent chipping and splintering the edge as you cut.

You do not need to make a deep cut with the knife the idea is to just score the wood.



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Ok, familiarize your self with the skill saw and be sure the area is clear of clutter and the lighting is good. Always cut with the saw moving on the outside of the line. Do your best to cut next to the line but don't cut the line off. At this point it is nice to have an extra person helping and holding while you cut.



With one shelf cut repeat this procedure on opposite side of plywood by placing the first piece down in the opposite corner and tracing. Note: keep the wood grains going in the same direction if desired. Don't forget to score with your utility knife before cutting.

With the shelves cut the next step is to get the bracing ready. Take one 2x4 and square cut one end to have a nice clean cut end, measure 35" from the square cut end and cut again. (I used my miter saw for these cuts).

Take this 35" 2x4 to your table saw and rip it the long way directly and perfectly in half into two 35" pieces, thus you end up with essentially 2-2x2's 35" long. Repeat this procedure so now you have 4 2x2's 35" long.

### **Attaching the 2x2's**

In the corner where this unit will be attached and built you will need a tape measure to start.

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Determine the height at which you would like your top shelf at or in my case the height of the TV. Measure down from this determined height about 3/4" and mark. Hold your level against the corner and draw a level line horizontally out from the corner approximately 34". Repeat this the other way out of the corner.

Find the studs inside the wall with your stud finder and mark the studs right above your horizontal line, mark the edges of your studs on both sides so you are sure to be hitting the center of the studs with the screws each time. (Note: this is critical for the strength) Also be sure to use a pencil while doing this as pencil marks will wash off later if they are still visible.

You should be able to find at least 2 studs in the wall within the 34" line from the corner.

Now you have at least 4 studs marked on the wall, hold your 2x2 against the corner and up to your line and mark the studs on the first 2x2 for pre drilling. Now pre-drill your stud locations on the first 2x2 using maybe an 11/64 bit. Next take a 3/8 size spade bit and drill into your pre drilled holes a little so the screw heads are counter sunk. (Note: the depth to be counter sunk depends on the style of wood plugs you will be using, if you are just filling these screw head holes with wood filler just counter sink below the surface a little bit).

Now hold your 2x2 back up on the line and using 3" screws attach the first 2x2 to the wall. For the second 2x2 to be attached you will need to shorten it the width of the first 2x2 so it ends up being 34" from the corner and this is easily done by putting this 2x2 in the corner right above or below the first one and scribing a line or tracing a line off the mounted 2x2 giving you exactly the length after cutting this off. After you have the length of this second 2x2 hold it flush against the first 2x2 and repeat this procedure.



Next, at an angle pre-drill a hole and countersink through the second 2x2 attached so as to catch the first 2x2 attached and catching the corner stud in the wall using a 3" screw. On the first 2x2 pre-drill and run another 3" screw catching the stud in the wall at the corner also. These 2x2's should be securely attached to the wall now and you are ready to move on.

**Note:** this is critical and if there is any question about not hitting a stud repeat until you are sure.

### Determine the shelf spacing

The space between your shelves can be customized to your liking. However there is a limit to the maximum and minimum due to the length and type of your balusters or spindles you use. I used the turned spindles or the round fancier ones although the square ones will work also and using the square ones you actually reduce the minimum space between the shelves all together.

**Note:** consider the height of your TV as you may want to set your TV in between the shelves.

I made my spacing at exactly 2' between the shelves. If you want the 2' spacing as I did hook your tape to the top 2x2 and measure down 24 and 3/4 of an inch make a pencil mark. Go back and follow the procedure for attaching your bottom 2x2's (see photo on next page).

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After you have the bottom 2x2's attached I also put a cross member in for extra support under the bottom shelf. The way I did this is by taking a 2x2 cutting it 44" long and then cutting 46 degree angles on each side so it fits nicely between the 2x2's already installed and centered so the distance on each end is the same on the existing 2x2's.

### Scribing the shelf to the wall

Chances are when you put your shelf into the corner it will need to be scribed to fit nice and tight on both sides as no corner is perfect.

The way you do this is to take your pre cut shelf and set it on your 2x2's and push it into the corner and tight against one side. Put your pencil against the wall where the shelf is away from the wall and draw a line down the shelf at the same time keeping your pencil against the wall drawing the contour of the wall on the shelf. If this space is bigger than the width of your pencil put a straight edge against the wall and draw the line next to your straight edge. Now transfer this line over as close to the edge so you are only cutting a very minimal off the edge to make this shelf tight on both sides. Don't forget to score this line before cutting. You should be able to trace this to the bottom shelf and repeat the cut. (Note keep in mind the direction of the wood grain if desirable).

After the shelves are scribed to fit nice put a little bead of wood glue on top of your 2x2's and set the shelves back up and what I did was take my little finish gun and nailed the pieces to the 2x2's. Wipe off any excess glue. Then pre drill with the 1/8 bit and counter sink 4 holes above each 2x2 spacing evenly and run a 2" screw into each hole. You should have 8 screws in each shelf at this point.

### Installing balusters or spindles

If you choose the turned or round spindles this means the spindle is rounded in the middle with square ends. You need to find the center of the rounded part of the spindle. (Note not the center of the entire spindle) Once you have the center of the rounded part.

**Note:** keep in mind the distance between your shelves if you went more or less than 2' spacing.

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Measure back 1' and cut off the end.

Repeat for the other end and now the square parts of the spindle should be exactly the same on both ends with the spindle being exactly 2' long. My spindles have about 3 and 1/8th inches of square before the round part. This distance although will be different with the different styles and designs of turned spindles. Cut one and trial fit before tracing and cutting the rest to be sure they fit nice and tight.

At this point the spindles are cut and ready. They will be attached between the shelves from the wall out to the 11" point as the pictures show. Start in front away from the wall. Apply some glue to both ends of the spindle and place the first spindle at the 45 degree corner and flush to the edge of the shelf. Line up the front corner perfectly with the shelf corner as shown and nail in being careful to keep your nail off to the side a bit as each spindle gets screwed from the top and bottom. Next with my shelf I measured back 2 3/4 of an inch and nailed in my second spindle and again 2 3/4 of an inch and nailed in my third spindle. The space left over to the wall is actually less now but again use your judgment on these spaces and repeat for the other side.

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Being sure to apply glue to each spindle and wiping off excess glue.



Now it's a matter of going back and pre drilling each spindle and running screws in at tops and bottoms of spindles drawing the shelf tightly together. Don't forget to counter sink each screw head again and pre drilling into each spindle also making it easier to run these screws in.

Note: keep each spindle nice and flush with the edge of the shelf and adjust as needed after screwing to keep everything square.

### Applying the trim piece

This trim piece can be a decorative piece or just about anything as long as it's at least an inch wide to cover the unfinished edge of the plywood. At the miter saw take the trim piece and square cut one end then cut about a 12" piece straight off. At the shelf hold this piece in place starting at the wall on either end covering the unfinished part of the plywood out to the 11" point. Draw a line up the back of this trim piece at the 11" corner marking where to cut.

Transfer this mark to the top of the trim piece. At the miter saw move the degrees from 0 to 23 degrees away from the wood. Before cutting move the blade down to the mark on the trim, the very back of the blade should not cut this line off. Adjust as necessary and cut. This piece when trial fitted on the shelf again will be slightly long. The idea is the angle back of the cut or back of the trim should be perfectly at the corner. Do not cut this angle again just slightly cut off the squared end or other end a little at a time until the piece is exactly where you want it. Now nail this piece to the plywood holding it up slightly above the plywood so you have a slight ridge on top all the way across. Now to cut the long piece across the front cut the angle at 22 1/2 degrees and trial fit before cutting the other end so you can adjust the degrees to end up with a nice mitered corner and just repeat this until you are done and happy with each miter. Take your time with this so you get nice tight joints. Keep in mind wood filler can hide small flaws.



### Finishing

If you did not stain and varnish ahead of time now is the time to do this. Do not wait a long time to do this as raw wood can sometimes shrink separating your miters. I usually choose to stain or paint after it is built. Don't be afraid to use some wood filler where necessary, after building this you will be looking at different trim work and will find out that nothing is absolutely perfect.

Keep in mind the weight factor as this shelf will accommodate a lot of weight but everything has its limits and it may be necessary to add a cross member below the top shelf.