

Rustic Log Frame Gazebo Instruction Manual And Notes



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Log Frame Gazebo Plans and Instructions

Here are the plans for the 10 ft log frame gazebo. These plans assume you have some carpentry skills and experience with power tools such as a chainsaw, circular saw, table saw and power drill. These instructions and plans are meant to give you basic ideas on how to build a log frame gazebo and a design that you can follow. You are free to customize your gazebo in any way that you wish. The measurements provided were taken off the actual gazebo after completion and are based on the average size log. The actual measurements will depend on the diameter and straightness of the logs you use and will vary some. **These plans are not warranted and there is no guarantee that they are suitable for any particular application.**

Tools you will want to have on hand:

- Tri Square with bubble level
- Tape Measure
- Chalk Line
- Framing Square
- Carpenters Level
- Plumb Bob
- Wood Chisels
- Draw Knife to remove bark from logs.
- Hand Axe
- Course Wood Rasp
- Framing and Finish Hammer (2½ lb hammer is nice for driving spikes.)
- Hand Saw
- Circular Saw
- Table Saw
- Chain Saw
- Power Drills (1/2" for drilling 1-1/2" holes and also a battery operated 3/8" for driving screws)
- Drill Bits (1 1/2", 3/4", 1/2" and 3/8" paddle bits)
- Ladders (nice to have a step ladder and small extension ladder)
- Log Sawhorse
- Scaffolding material to frame up to stand on and for holding up cupola while attaching rafters.

Materials:

1. 20 – 8' logs. (It's good to get a few extra logs to use to build sawhorses and use in scaffolding and temporary post for cupola. Also if you want to build handrail sections you will need 1 - 8' log cut in half and some smaller diameter pieces for pickets.)
 - a. 8 logs for posts. These should be approximately 7 to 8 inches diameter on the butt end and taper to 5 to 6 inches on the top.
 - b. 8 logs for rafters. These should be 5 to 5 ½ inches on the butt end that meets the cupola and taper to approximately 4 inches on the tails.
 - c. 4 cut in half for to make 8 – 4-foot crossties.
2. Cedar 2x6.
 - a. 8 - 6' (3 – 12') for fascia.
 - b. 1 – 8' cut into 8 - 1' pieces for cupola.
3. 2x4 for secondary rafter framing.
4. 1x4 for batten boards. (approximately 400 linear feet random lengths. This can be the lowest grade available for batten boards. Getting some extra is good as it can be used for temporary bracing for the post and scaffolding.
5. Cedar Shake Shingles
 - a. 2 square (200sqft) medium shakes.
 - b. 1 bundle cedar shingles for first row under course.
 - c. 4 bundles of ridge shingles.
6. Fasteners
 - a. 8 – 8" x ½" J-bolts with washers and nuts for post base.
 - b. 8 metal straps for post tie downs. I purchased 2' x 1 ½" "Strong Tie" earthquake straps at the lumber yard and drilled a ½" hole in the center to fit over the bolt on post base.
 - c. 24 – 8" x 3/8" spikes.
 - d. 5 lb 16d galvanized box nails.
 - e. 5 lb 16d helical casing nails for nailing fascia.
 - f. 5 lb 8d coated sinker nails for batten boards.
 - g. 10lb 6d shake nails for roof.
 - h. 2 lb 1-5/8 drywall screws (useful for attaching 1x4 bracing and such.)
7. 8 80lb sacks of ready mix concrete for footings.

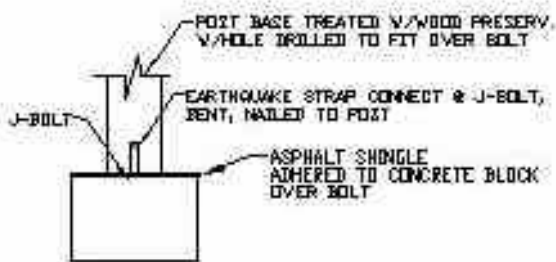
Construction Tips

Footings

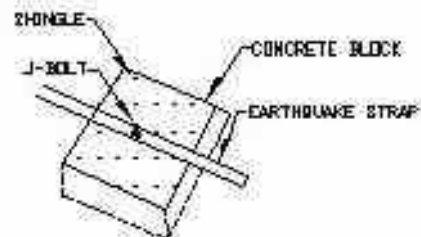


To layout the posts for a 10" octagon first set up 1x4 batter boards at 12 feet. Start at the front at the elevation wanted for the uphill post and use a level to get the grade all the way around. Then put string lines at 10 feet, measured corner to corner and adjust the strings as necessary to make sure it is a perfect square.

Next measure in from the corner of the string line 2' 11-1/8" on each corner and make a mark on the string with a permanent marker pen to get the center for each post base, making the post 4' 1-3/4" apart. Then measure down from the string to get the height for the forms and then used a plumb bob from the mark on the string to get the center for "J" bolt. I made the post bases 12x12x8 inches, which works out with one 80lb sack of concrete. If you are in an area where the ground freezes you will want to make the footings deeper to below the frost line. Before the post is set put down an asphalt roofing shingle to keep the post from making direct contact with the concrete and bolted down an earthquake strap. Put a generous coat of wood preservative on the end grain of the post. After standing up the post the earthquake straps are bent up and nailed into the posts.



1-FOOTING DETAIL
1/2" = 1'



Log Frame

Getting Started

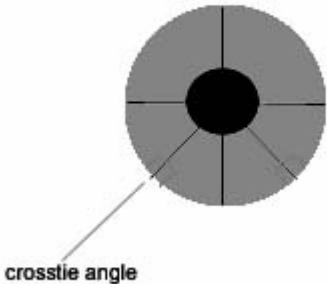
The first thing you will want to build is a good solid log sawhorse. This is useful for holding the logs while you peel the bark, cut the logs to length and make the mortis and tenon cuts. It is good to build your sawhorse at a height so you can straddle the log and sit on it while peeling the bark.

Use a drawknife to peel the bark off the log. I found sitting on the middle of the log over the sawhorse worked well. You can slide the log forward and back and turn it as needed.



Once you have removed the bark from the log while it is on the sawhorse site down the log and determine if there is any crown or bow to the log. Turn the log so the crown is up and mark that as top. Use a framing square to check the ends for square and make any final cuts to length. The large end will be the bottom.

Posts and Crossties

Post Log End  To determine the center of the log measure horizontally across the ends of the log at the widest point and mark the center and then measure vertically to make an x in the center.	Use a tri-square with bubble level or carpenters level to draw a plumb vertical line across the end of the log through the x. Use a square off this line to draw a horizontal line across the log and then use the 45-degree angle of the tri-square to mark the angle for mortis holes for the crossties. Repeat this on both ends of the log. Snap lines with a chalk line the length of the log from these lines. These chalk lines serve as centerlines for plumbing the post when they are stood up. Because of the taper on the post, instead of putting the level against the post, the level is held parallel to these lines.
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To cut the mortis and tenons on the top of the post measure down 1-1/2" and draw a line all the way around the log. To mark the center of the mortis holes check the width of the crosstie you will use on that post and divide in half plus the 1-1/2" for the tenon on the top. So if your crosstie is 5" diameter measure down $1\frac{1}{2}" + 2\frac{1}{2}" = 4"$ and make a mark for the center of the hole. Using a 1-1/2" drill bit, drill a hole 1-1/2" deep, then a 3/8" bit to drill the rest of the way for a pilot hole for the spike. Draw a 1-1/2" circle around the x on the end. Put your circular saw on the end of the log and adjust the depth of the blade to cut just outside of this circle. Cut all the way around the log at the 1-1/2" line you made. Use a chisel to break off the excess wood and a wood rasp to finish the tenon. It is good to drill a 1-1/2" hole in a piece of thin board and make sure it will slide easily onto the tenon. This can also be used as a pattern to mark the circle on the end. Use a hand axe, making small cuts around the log, cut a taper into shoulder around the tenon. With the crown up on the sawhorse, make sure you cut at least a 6/12 angle taper on the top so the rafters will fit tight down on the tenons. Finally, drill a hole on the x on the bottom of the post to fit over the j-bolt. First drill a 3/4" hole the depth to fit over the nut and then a 1/2" hole deeper to fit over the bolt.

To make the crossties, figure the length from the center of the posts 4' 1-3/4" (49-3/4") and subtract the radius of the posts, plus the 1-1/2" tenon on each end. If your posts are 6" then figure 3" from center on each end, minus the 1-1/2" tenon for a 46-3/4" length on the crosstie. Use the same method as above to cut the tenons and the tapers.



To connect the frame together an 8" spike is driven through the post and into the tenon on the crossties.

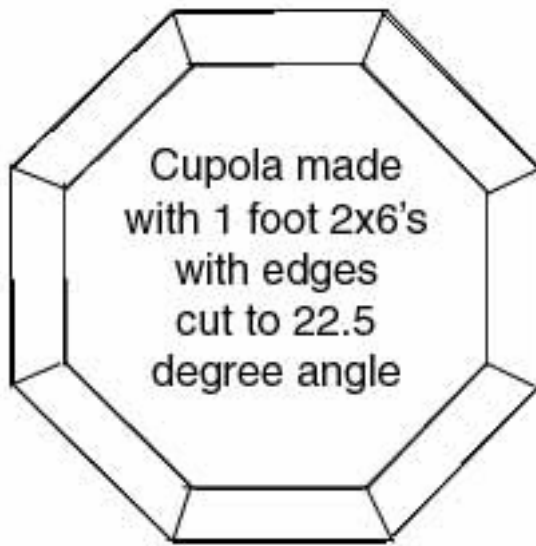


I built one section on the ground with a handrail and spiked it together before I stood it up.

Once that was stood up and braced I worked my way around adding one cross tie and post at a time, and temporary bracing, until I came back around the octagon. Bend the tie down strapping up and nail into the posts. Cut some 2" braces with 45-degree angles and nail from the posts to the crossties.



The Rafters



The first step to building the roof is to make a cupola. Cut 2x6 cedar in 1 foot sections and run those through a table saw with the blade set to a 22.5 degree angle and the fence set so it just cuts the edges of the boards. To assemble the cupola use poly resin wood glue and tack together with a few small casing nails. It is good to pre-drill these so it doesn't split the wood. Cut a piece of $\frac{1}{2}$ plywood into a 13-1/4" octagon, 5-1/2" on each side, and attach to the cupola with drywall screws. Mark the center of the plywood and drill a $\frac{1}{2}$ " hole for a lag bolt to attach to the temporary post.

To raise the cupola, build a scaffolding 4' tall with log posts and then put 2" planks across that in the center of the gazebo. Next measure to the center from post-to-post on the top of the crossties on the front and back and two sides. Stretch string lines across the gazebo to form an x in the center at the level of the top of the crossties. Use a plumb bob down from this x to make a mark on the scaffolding plank directly below, for the exact center of the gazebo. Drill a hole for a lag bolt for the bottom of the temporary post. To determine the length of the post measure down from string lines to the scaffolding and add 2' 2-1/2" for the rise. Mark the center of both ends of the post and drill pilot holes for the lag bolts. Bolt the cupola onto the top of the post through the center hole in the plywood. Raise the post and cupola up and put on the bottom center bolt in from the underside. Put some bracing down to the outside post to hold it plumb.

To cut the rafters choose logs that are about 5-1/2" on the butt end so they fit on the cupola. Site down the logs on the sawhorse and put the crown up. This will be the top of the rafter. Mark the center on the ends and draw a vertical line plumb across both ends. Snap chalk lines the length of the log on the top and the bottom to mark the centerline for cutting the batten boards and to mark the hole for the tenon to go on the post. Turn the log so the end lines are horizontal and mark the butt end of the log with a framing square to a 6/12 angle, long point to the top and cut it. Do the same on the other end with the long point to the bottom. Turn the log so the centerline is up and cut back 22.5 degree from the centerline on each side for the compound angle for the fascia board. Measure down from the bottom of the cupola to the front shoulder of the tenon on the post and then measure the same plus $\frac{3}{4}$ " to center of the tenon on the rafter and drill a 1-1/2" hole at a 6/12 angle. Pre-drill a 3/8" hole the rest of way through.



Set the rafter mortis holes onto the tenons on the posts and rest the butt ends against the cupola. Drive a spike down through the pre-drilled holes and into the tenons and toenail the rafters into the cupola. Remove the temporary post.

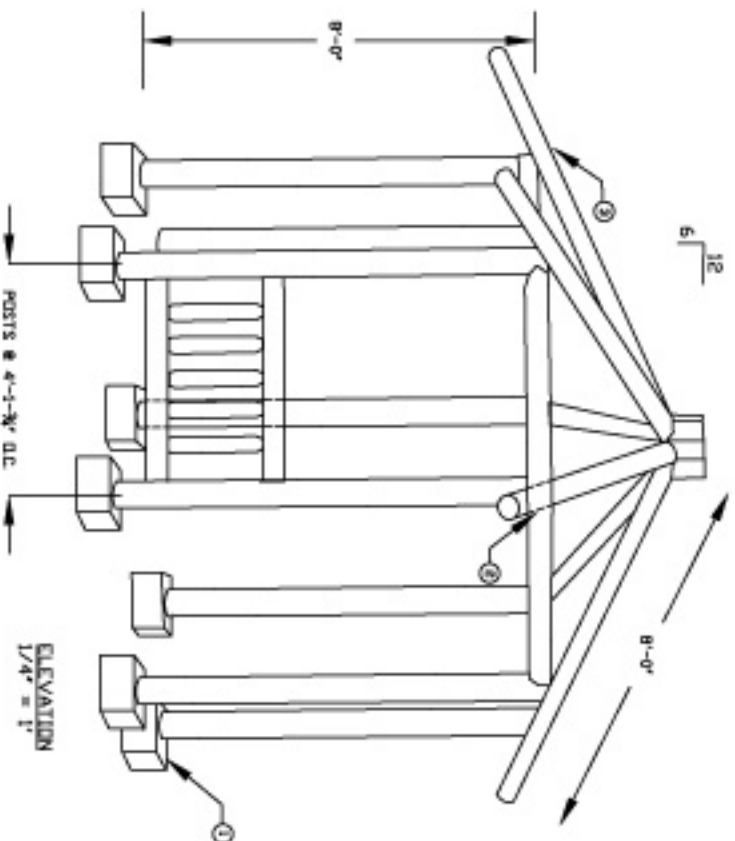
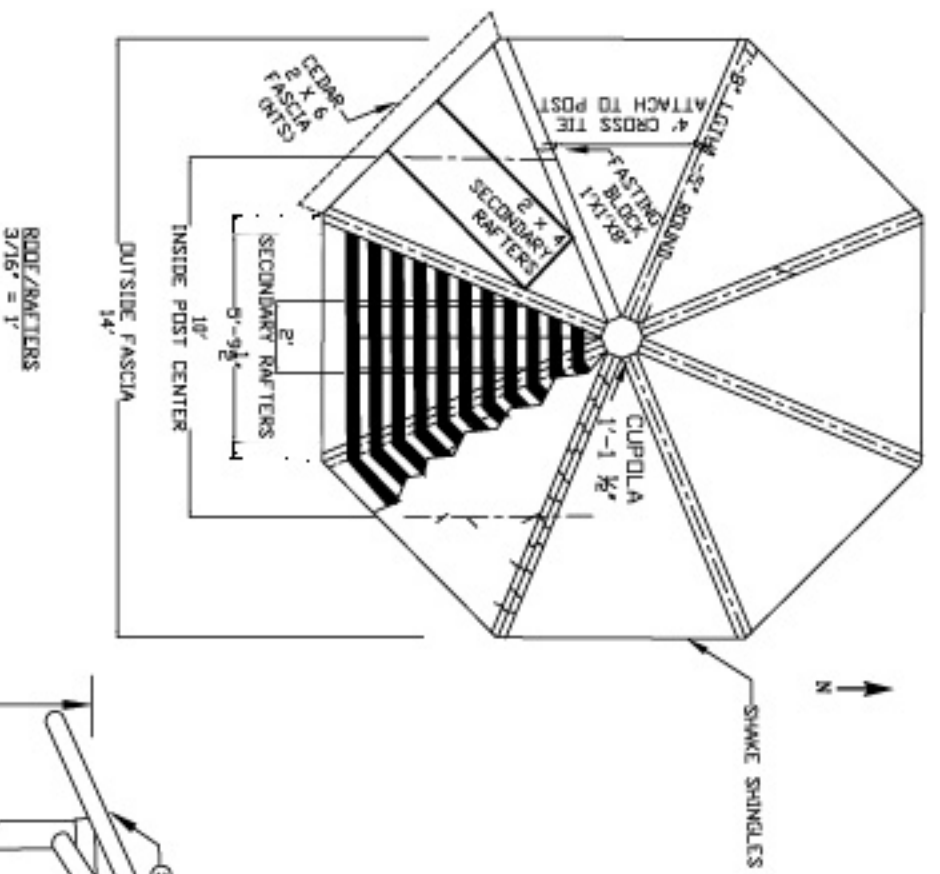


Measure point to point across the rafters and cut the fascia boards with 22.5-degree angles and nail up. Measure back 1' each way from the center to mark 2' for the secondary rafters. Cut a 2' 2x4 block with 22.5-degree angles and nail between the rafters flush with the top. Measure down from the block to the fascia and cut the secondary 2x4 rafters with a 6/12 cut on the bottom and nail in.

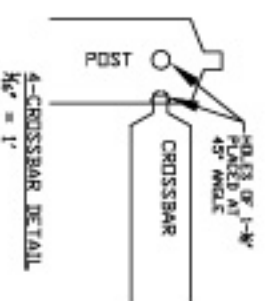
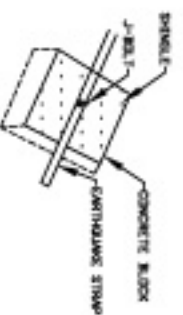
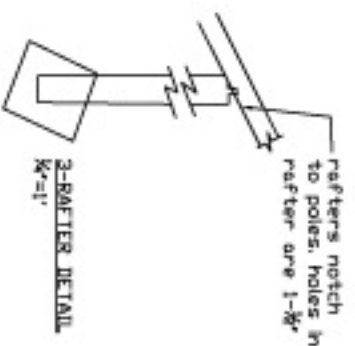
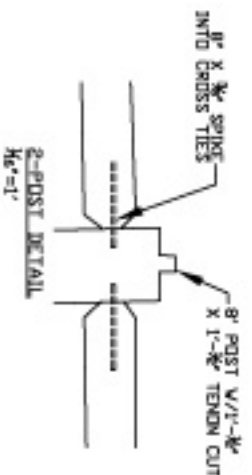
The Roof



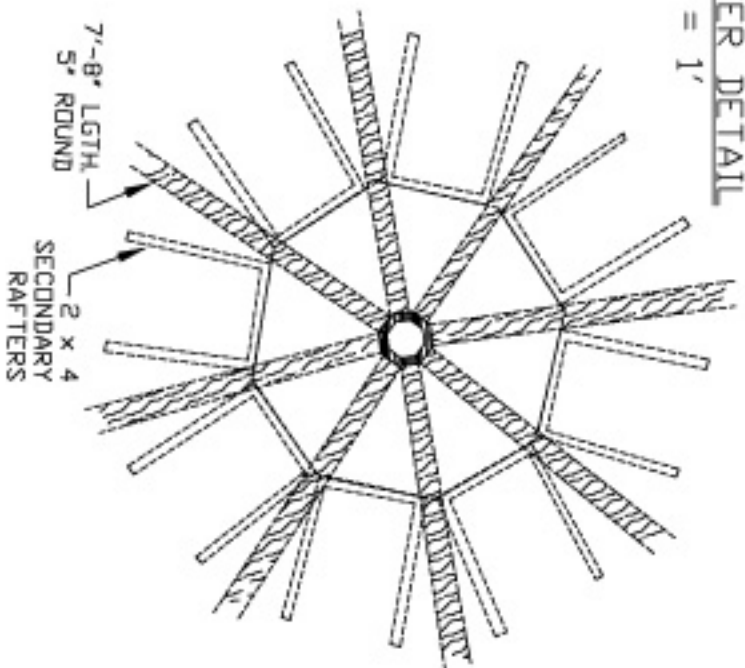
Use 1x4 batten boards, space 3-1/2" apart, nailed across the rafters as a base for the shakes. By setting up a jig with 2 8' 1x4 set in a V shape, these can be cut on the ground. Measure across the rafter's centerline to centerline at the bottom and spread the jig to that width. Attach the 1x4 with drywall screws, with a 1x4 for a spacer between them, across the frame. Once all the boards are in place run a circular saw down the outside of the jig to cut the ends to the angle. Remove the screws and stack them in order. The final step is putting the cedar shakes on the roof. First put a row of thin cedar shingles all the way around as an under course for the first row of shakes. Since no builders felt or shake paper is used in this application, because it would show from the underside, take care to get good overlap on the spaces between the shakes. Use pre-built ridge shakes on the ridges and nail with shake nails. To build the 18" cap for the cupola pick out 8 good shakes about 8" wide and run them through a table saw to rip them 7-1/2". Cut them to 12" in length and mark a center point at the top. Set the blade on the table saw to an angle and use the miter gauge to push them through and cut them into triangles. Draw an 18" octagon on a piece of plywood and tack some pieces of 1x4 around it to make a jig to hold it and put a few small finish nail in to hold it together. Put cedar colored caulking in the seams on the underside and nail to the top of the cupola.



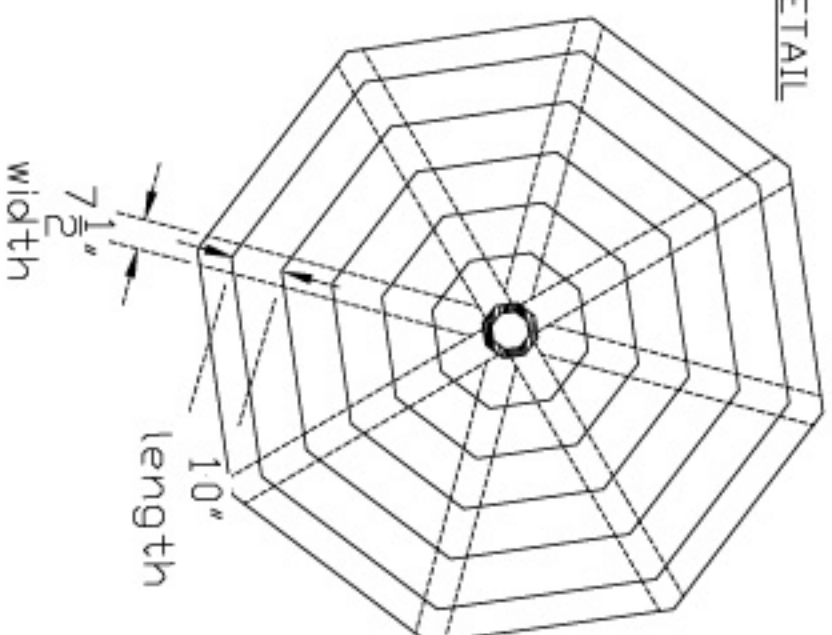
1-POSTING DETAIL
3/4" = 1"



RAFTER DETAIL
1/4" = 1'



SHINGLE DETAIL
1/4" = 1'



CUPOLA DETAIL
1/2" = 1'

CUPOLA IS 1'-1 1/8"

