

## Installation Instructions

As with most building projects there's more than one way to build your storage building. But after building literally hundreds of them I believe I have figured out the easiest and quickest way to do it.

You should know that working with power tools can be dangerous and they should only be used by those competent to do so. Use extreme caution at all times when doing any type of construction.

### Assembly of Building

#### Framing the Floor

After selecting the site for your building and gathering your materials, use the cut-sheet as you go along to guide your cutting of materials.

Cut the 4x4 treated skids the exact length of the building. If you're building is 12' deep, then cut the 4x4's exactly 12'. When you buy lumber it's often about an inch longer than the nominal measurement. If you buy an 8-foot board it'll be about 8'1" long. So you'll need to cut off the extra length.

Lay the 4x4 treated skids on the ground about where the building will be located. Don't worry about getting it square or level just yet. That comes after the next step.

Cut the floor joists the length listed on the Cut-Sheet then position them across the skids approximately 16" apart. (Refer to the drawings if you're unclear about anything.)

Layout your band boards and mark them on 16"-centers for your joists. Nail through the band boards in to the ends of the joists thus framing your floor. Now position the skids so that the joists are hanging over about 16" beyond the skids. (*Cantilever* is the actual term for this construction technique.)

Toenail the joists to the skids. It's really not necessary to nail every joist to the skid. Every other one is sufficient.



Now you'll level and square the framed floor. Measure diagonally across the floor to square it up. Measure diagonally the other direction. Shift the frame until it measures the same both ways and the building will be square.

If you want to set your building on concrete blocks, now is the time to install them. Simply lift up on the frame and place the blocks under the skids. Level the floor whether you're using blocks or not. Simply lift the floor frame where its low and use shims (roofing shingles make great shims), 2x4 treated blocks, or whatever type of blocking you need to get the floor level. Next lay your plywood flooring in place and nail it securely. Be sure to stagger the joints when possible.

### **Building the SideWalls**

This part goes very quickly. Layout your bottom and top plates on 24" centers. It's easiest to frame the wall and attach the siding while everything is lying on the floor. Flush the top of the siding with the top of the 2x4 top-plate and let the siding hang down 2" past the bottom plate. (If your building is wider than 16' you'll not only have a top plate, but you also need to double the plate and stagger the joints).



After you've framed the wall and nailed the siding on, raise it up. If your building is small enough, one person can stand it up and hold it while you nail it in place. The best way to nail it is from the outside of the building. Nail through the siding at the bottom into the band board with 6d common nails. This will snug the siding to the floor and align the wall. Then come back inside and nail through the bottom plate into the floor with 12d nails. Build the wall for the other side exactly the same way and nail it in place. We don't frame the end walls yet.

### **Framing the Roof**

Cut your rafters according to the plans. Cut the number of gussets you need from the Cut-Sheet. Nailing the rafters together is quick and easy. Lay them out on a large table or on the floor. Start with the 2 top rafters that have the 20 degree angle. Where the rafters join, nail a gusset into each rafter with 4 or 5 nails thus forming a truss. The size of the gussets is not critical. What I do is look around and see what I have in scrap plywood (usually 1/2") and use what's available. You've got a lot of flexibility with the gussets. Ideally I like to cut them about 8" wide and 16" long for the 8' and 10' wide models. On the 12' models I'd cut them about 12" wide and about 2' long. But again, you can vary from that somewhat if it'll save you some material costs.



The important thing here is the spread of the truss. Make sure that the distance at the bottom of the truss is exactly the width of the building and that the peak of it is in the center. If you don't use a little care here you could end up with a truss 8'1" and another 7'11" and you'll just have to fight it when you get to the sight. All you have to do here for quality control is place a couple of stop-blocks on the floor exactly 8' apart (or whatever the width of your building is) and draw a line representing the center. Lay your rafters down, slide them to the stop blocks, make sure the peak is matching up with the line you drew, and nail them together. The two rafters with the 20 degree angles form the peak. All other cuts are 22 ½ degrees.

If you have pneumatic nailers this is very quick work, but if you're nailing by hand, it still doesn't take long.

Set the trusses on top of the walls and nail them in place – notice they are directly over the studs.



### Building the End Walls

This takes a little more time and effort but is still very simple. I like to frame the front wall first and go ahead and hang the doors. Read these entire instructions and you'll see that before you do this step you'll want to pre-fab the doors. This is a very clever way to do it. I always build the doors and have them attached to the front siding. A detailed description of how to do this is included later in these instructions.

Make it easy on yourself. Take a 2x4 and temporarily nail it across the front of the floor (on the end floor joist). Hold it even with the bottom of the siding on each side of the building. This will create a ledge for the siding to sit while you nail it up and you don't have to struggle holding the siding while you nail it. This siding on the front will have the doors mounted to it. Install the one with the male protruding past the door first. Set it on the ledge and nail it on the bottom. Then nail into the sidewall, pushing the sidewall in or out to square it up. Then nail your siding into the rafters. (If your building is wider than 8', then you'll probably want to frame the studs on the end walls before installing the siding).

Next place the other sheet of siding with door on the ledge and get them aligned properly. Nail it off in the same manner as the other. Now go inside and install a stud on each side of the door. You will have to cut this stud to length and notch it around the rafter. Notice we do not use bottom plates or top plates on the end walls. Before you install the door header, take a handsaw and finish cutting out the doors (the 4" sections of siding you did not cut when assembling the doors). Do not swing the doors open yet. Install the door header and let it drop down about half an inch below the top of the door. That way it will serve as a doorstop for the doors to close against. Go back outside and nail through the doorjamb into the studs you just installed. Take a hammer and knock the ledger off from under the doors and they will swing freely.



Attach siding with door assemblies on the front.

Install the siding on the back wall in the same manner. Nail the studs to the floor and to the rafters. Of course the siding on the back won't have doors. ( I have built several buildings with doors on the front and back so that a customer would have a drive-thru for a riding lawn mower. It's your building; you can do anything you want.

At this point all the walls have been raised and the siding installed. You can leave the siding on the front and back walls sticking up past the rafters until you get the roof sheathing on. Then you can cut the siding from the roof. There is more than one way to cut the siding. You could do it with a router and a panel cutter bit, you do it with a Skill saw, but I prefer to do it from the roof with a reciprocating saw (also known as a sawz-all).

### **Install the Roof Sheathing (Decking)**

Install the ½" roof sheathing. It doesn't matter where you start. I have fallen into the pattern of starting from the top and working down. Be sure to stagger the joints and nail about every 8 inches. Everything should fit perfectly after you cut the sheathing according to the Cut-Sheet. You will have to pull and push on rafters from time to time to get the margins correct, but this task should go very quickly. Now trim the siding on the ends of the building that was left sticking up, if you haven't done so already.

### **Install the Fly Rafters**

The fly rafters are easy work. Always use 2x6 fly rafters on the front of the building and 2x4 fly rafters on the rear of the building. There is a good reason for this. You don't have to understand it yet but you'll see later on. It allows the roofing shingles to always work out on an even foot. Cut the top fly rafter on a 20 degree angle on one end and 22 ½ degree on the other end according to the Cut-Sheet. The bottom fly rafter is cut 22 ½ degrees on both ends. Go ahead and cut the beveled overhang and get it ready to install.





Sawing the beveled overhang (22 1/2 deg)



Sawing the fly rafters

Nail the 2x6 fly rafters on to the front of the building. Hold the rafter flat ways and toenail through it into the front truss. You might think this is not very substantial, but just wait, when it's all tied together it's more than sufficient and it really makes a cute overhang. Nail the 2x4 fly rafters onto the back in the same manner. Be sure to use 2x6's on the front and 2x4's on the back. It will affect your shingles if you do differently.

Installing the Fly Rafters



Front Fly Rafters Installed

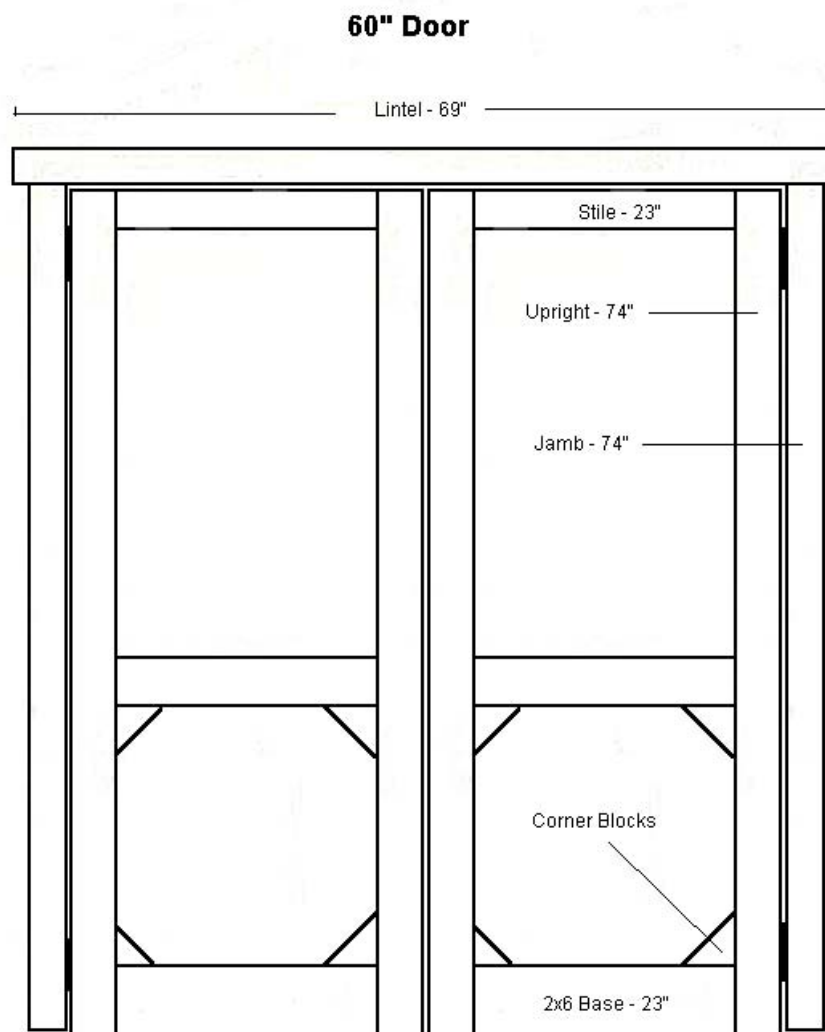


Install the beveled overhang. It's really easy. Cut it the entire length of the building, from outside of the front fly rafters to the outside of the rear fly rafters. Nail it at the top of the siding about every 2 feet. Take a piece of scrap 2x4 and cut a block to fill in gap formed where the fly rafter meets the beveled overhang. This also makes it very easy to install the corner trim.



Now you're ready for the roofing. Roll out the 15# felt underlayment (if you're going to use an underlayment -- some people choose not to, depending on the purpose of the shed) and tack it in place. Then nail the shingles on. Shingling is very simple, but if you've never done it, there's usually a guide printed on every bundle of shingles.

The only thing left to do is cut and install the outside corner trim and install a 4" hasp on the door so you can lock it up. Clean up your debris and the job is done.



8' Wide Models use 48" door – All wider models use the 60" door.

## Doors Made Easy

This is the most complicated part of the building, but if you take it slow and deliberate, you'll soon see that it's not that hard.

On a worktable or on the floor lay out the door parts with the face of the door down. Fasten the stiles and base to the door uprights using corrugated fasteners. This is just a quick and temporary method to hold the pieces together for a short period of time. The strength will come when the siding is nailed to the door.

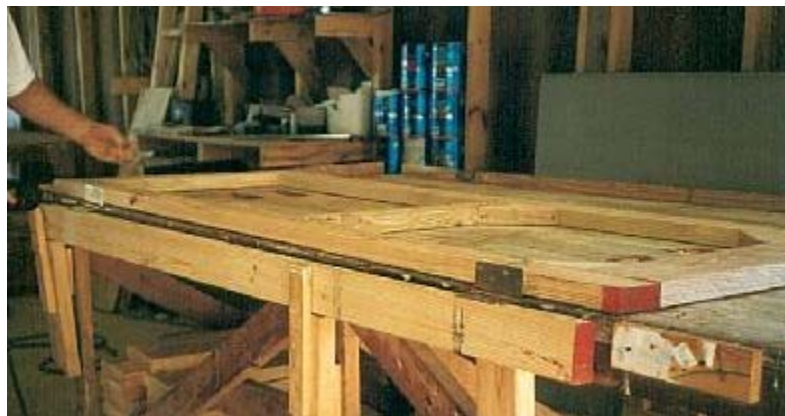


Assemble the door pieces.



Nail the corner blocks in place.

Now go ahead and mount the hinges to the door and to the doorjamb. Use standard 4" butt hinges, one pair per door. An easy way to do this is to build a simple jig on the side of the worktable similar to the drawing below. Drop the jamb down in the slots such that it is edgewise. Leave the door laying flat on the table. With a drill and Phillips screwdriver bit, you can mount the hinges in just a couple of minutes. Important note: The doorjamb should stick up past the top of the door  $\frac{1}{4}$ ". This will allow the proper margin for the doors to swing freely. Set this door aside a minute and build the other one. Keep in mind you are building a left and right door.



Attach the hinges.

With one of the doors still on the table, close the jamb up to the door so that the whole door unit is laying flat on the table. Turn a full sheet of siding face down and lay it on top of your doorframe. Flush the

bottom of the siding with the bottom of the door. Flush the edge of the door with the edge of the siding. This is where you will square up the door if it should be out of square. Nail through the siding into the doorframe and into the jamb.

Now what you have at this point is your door framed up, hinges mounted to the jamb, and all these pieces actually nailed onto a piece of siding.

While everything is still laying on the bench, snap a line with a chalk box, or draw a line with a straight-edge on the back of the siding right between the door jamb and the door frame. Draw another line on the back of the siding flush with the top of the door. With your Skil saw cut along these lines but leaving about three sections about 4" long that you don't cut. What I'm saying is don't cut it out completely. That way the door is not trying to swing open while you handle it and it will keep everything square and intact until erected. Once the siding is erected on the site, you simply take a handsaw and finish cutting these three 4-inch sections and the door will swing perfectly.



Cut through the back of the siding at the top and side of the door.

Now build the other door the exact same way except it is built for the other side. Keep in mind that you have a left door and a right door. The way the siding is installed is very important. On one door the siding will be flush with the edge of the door. You must have the female edge of the siding flush with the door. But on the other door you must turn the siding so that the male edge is toward the center of the door, and the male lip protrudes past the edge of the door. This way when the doors are closed, the female will edge closes over the male lip and will gives a weatherproof seal.





Siding with door mounted.



Finished and ready to paint.

**CUT SHEET (Loading Sheet)**

**BONANAZA 16 X 24**

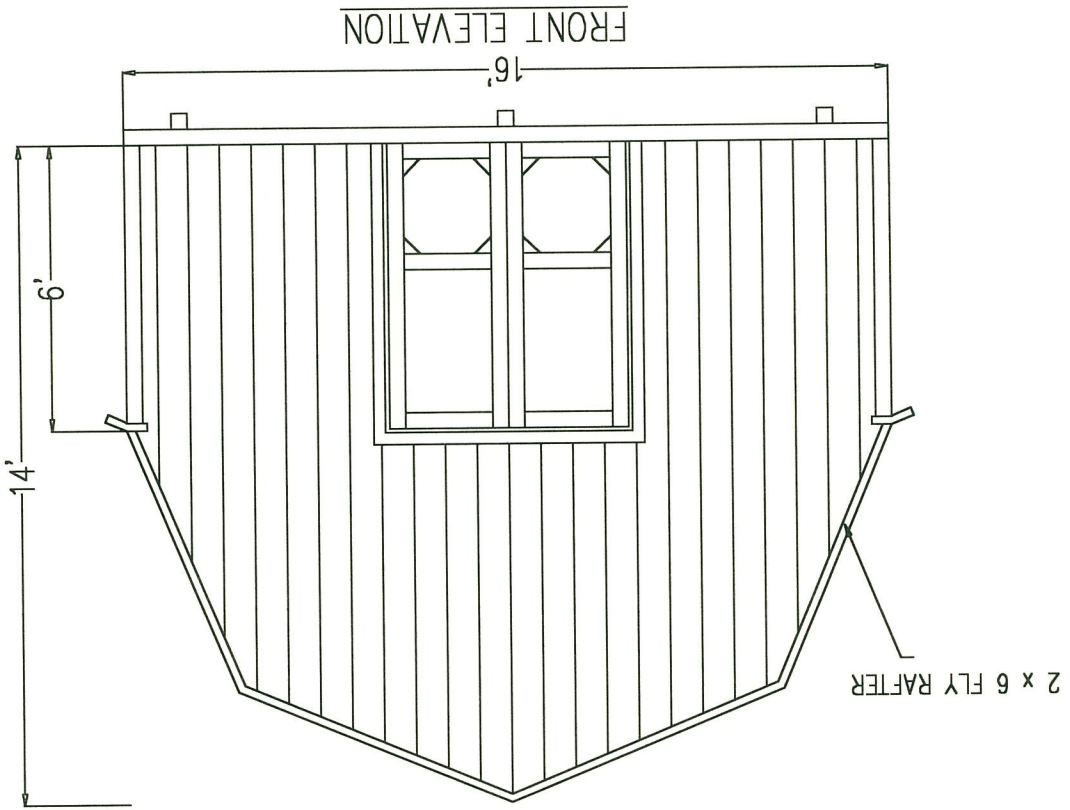
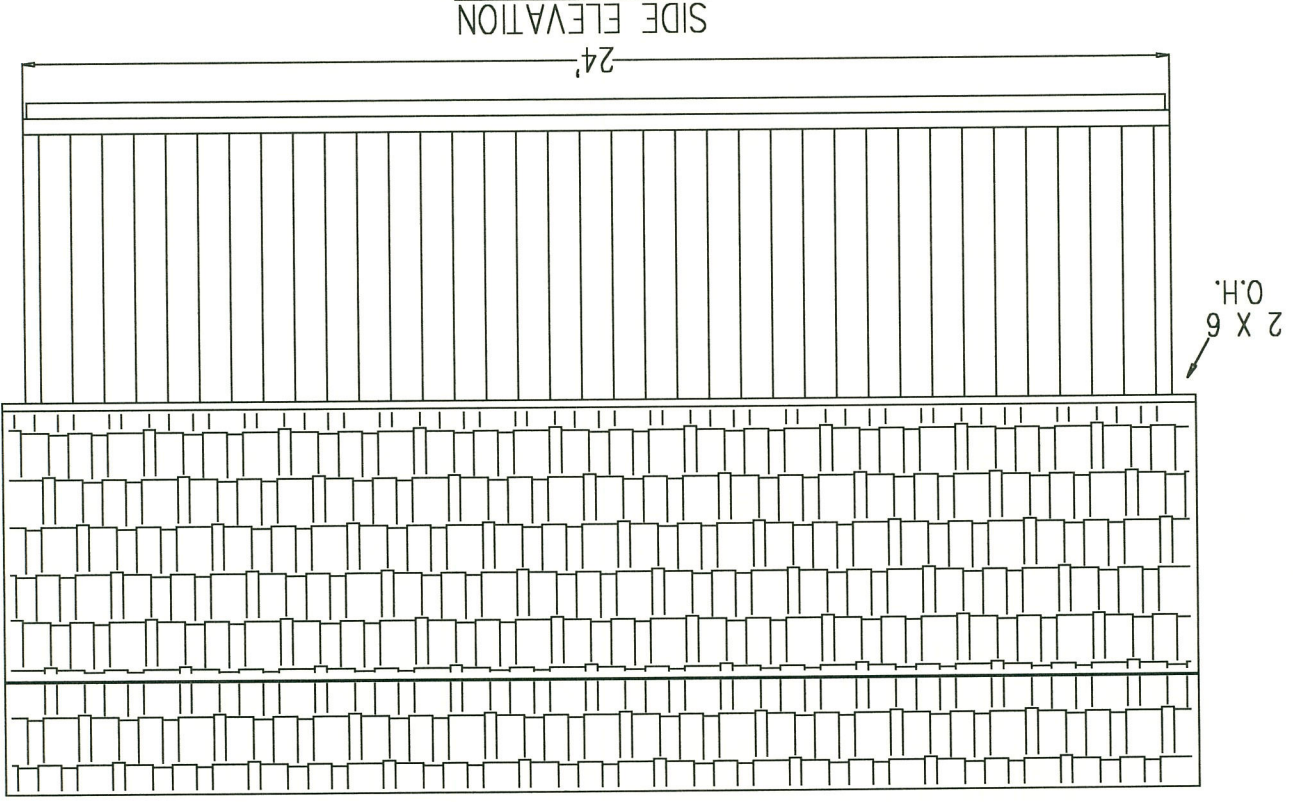
**MODEL EBB-1624**

Quantity	Item	Size	Usage
6	4x4 Treated Pine	12'	Skids
6	2x4 Treated Pine	4'	Skid Splices
4	2x6 Treated Pine	12'	Bands
19	2x6 Treated Pine	189"	Floor Joists
10	3/4" Plywood	4x8	Floor Decking
4	3/4" Plywood	4x4	Floor Decking
12	2x4 Pine	12'	Plates and Double plate
8	2x4 Pine	12'	End Studs
6	2x4 Pine	10'	End Studs
4	2x4 Pine	Pre-cut studs	End Studs
26	2x4 Pine	65 1/2"	Wall Studs
26	2x6 Pine	72"	Rafters (20 deg one end, 22 1/2 deg other end)
26	2x6 Pine	72"	Rafters (22 1/2 deg each end)
12	1/2" siding	4x6	Siding for side walls
12	1/2" siding	4x8	Siding for end walls
2	2x4 Pine	14'	Beveled Overhang (22 1/2 deg)
2	2x4 Pine	12'	Beveled Overhang (22 1/2 deg)
2	2x6 Pine	72 1/2"	Fr Fly Rafters (20 deg one end 22 1/2 deg other end)
2	2x6 Pine	72 1/2"	Front Fly Rafters (22 1/2 deg each end)
2	2x4 Pine	72 1/2"	Rear Fly Rafters (20 deg one end 22 1/2 deg other end)
2	2x4 Pine	72 1/2"	Rear Fly Rafters (22 1/2 deg each end)
12	1/2" Plywood	4x8	Roof Decking
12	1/2" Plywood	2x8	Roof Decking
20	bundles 3-tab shingles		Roofing
2	roll 15# felt		Roof underlayment
3	pc. Z-bar flashing		Flashing
8	1x3	6'	Outside Corner Trim
39	Gussetts		
1	2x4 Pine	69"	Lintel
1	2x4 Pine	60"	Header
1	4" Hasp		
7	lbs 12d common nails		
7	lbs 6d common nails		
6	lbs roof tacks		

**DOOR MATERIALS**

2	2x4 Pine	74"	Jambs
4	2x4 Pine	74"	Uprights
4	2x4 Pine	23"	Stiles
2	2x6 Pine	23"	Base
8	Corner Blocks		
2	Pair 4" Butt Hinges		

16' X 24' BONANZA

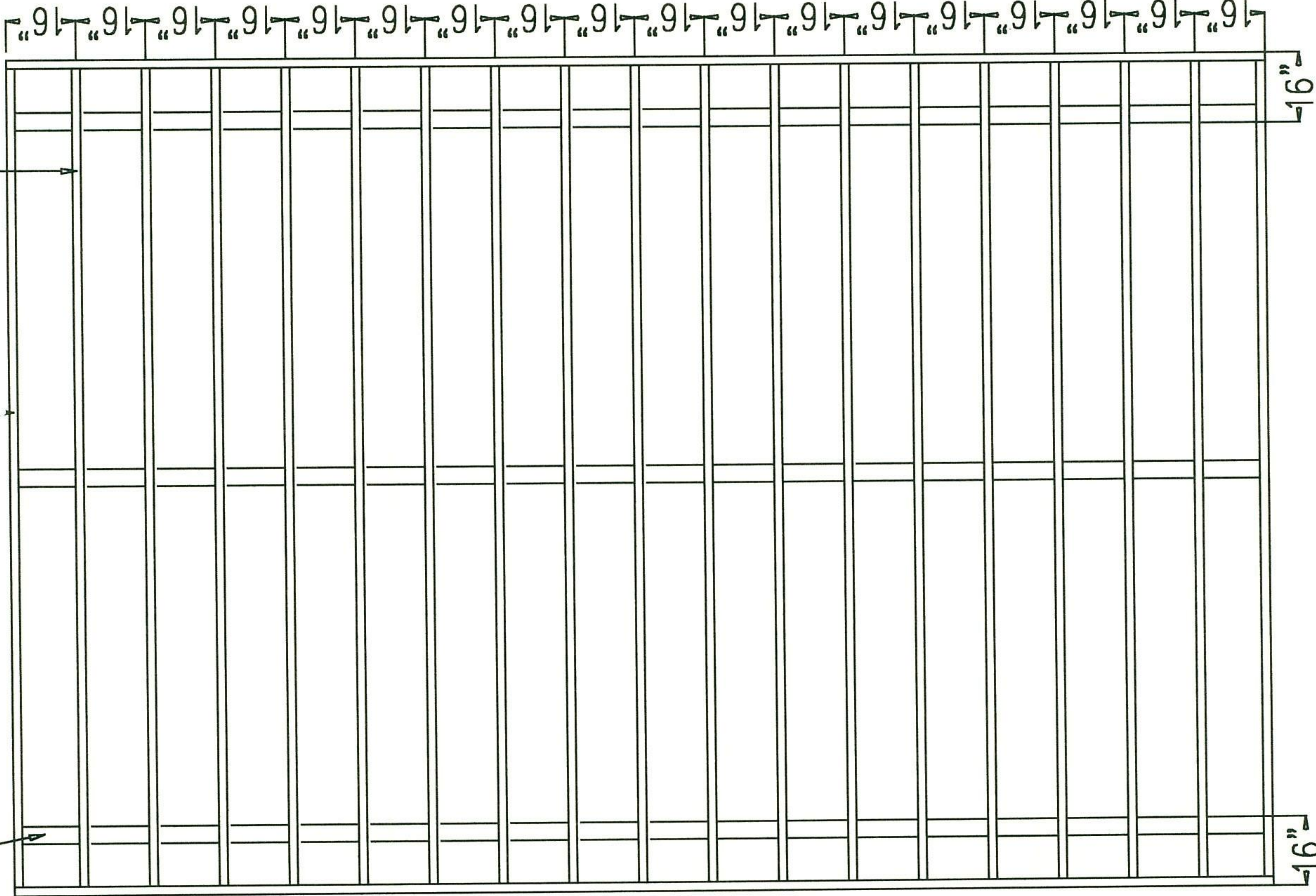




4 X 4  
SKID

2 X 6 BAND

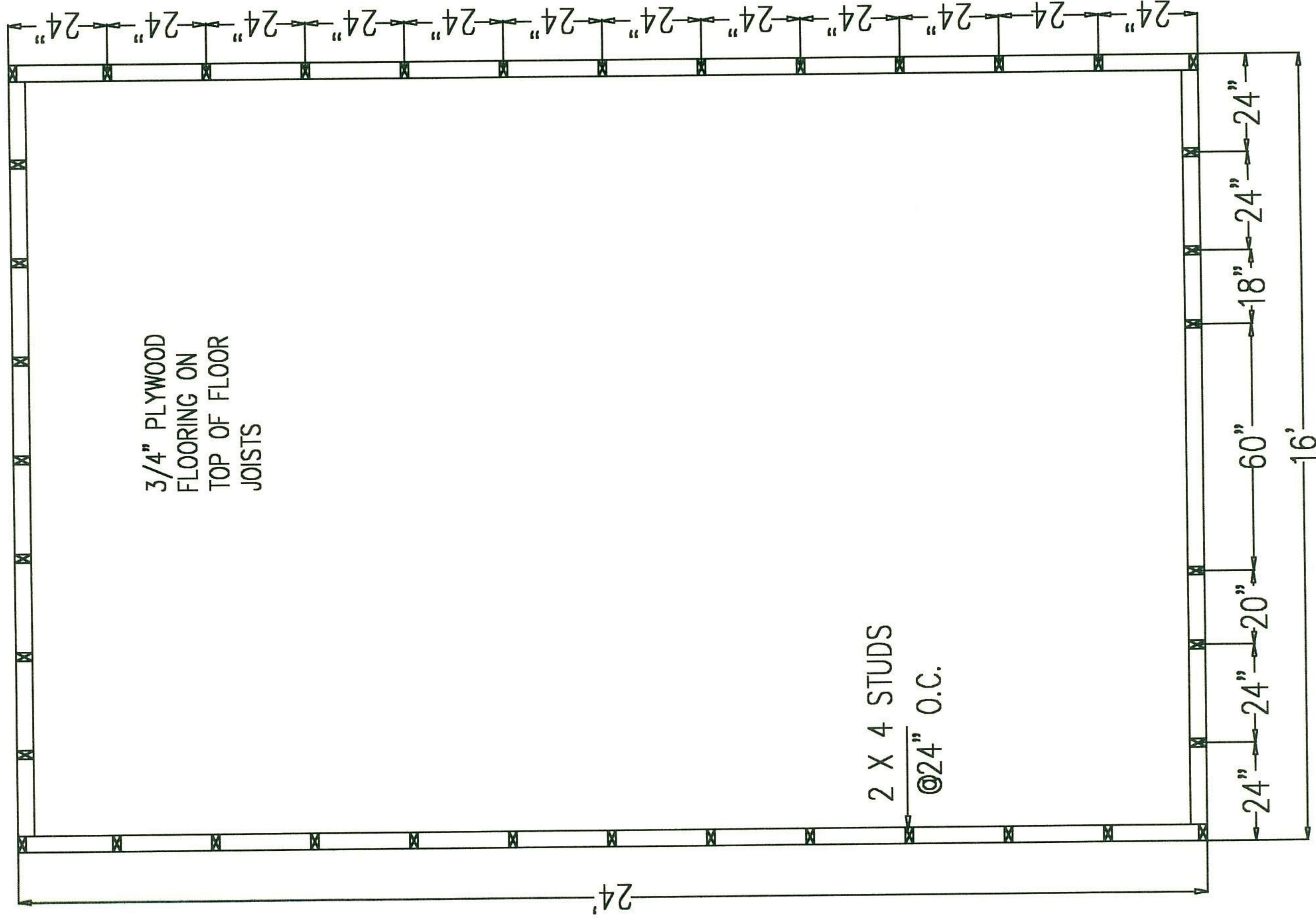
2 X 6 FLOOR JOISTS  
@ 16" O.C.



FLOOR FRAMING

TREATED 4X4 SKIDS  
BELOW JOISTS

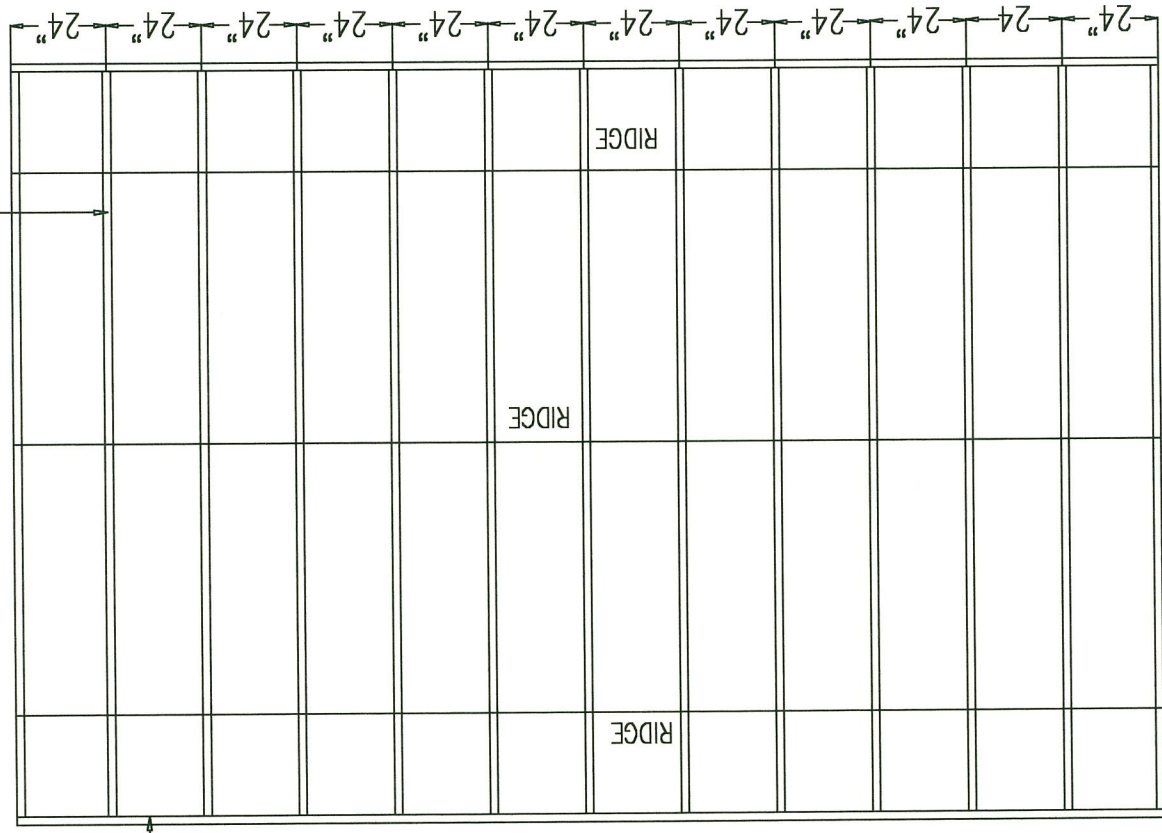
16' X 24' BONANZA



FLOOR PLAN



2 X 6 COMMON RAFTERS  
@ 24" O.C.



ROOF FRAMING

16' X 24' BONANZA

2 X 4  
TRIM

