DISCLAIMER:

READ BEFORE YOU BEGIN! THESE PLANS ARE INTENDED AS A GUIDE ONLY! READ THESE INSTRUCTIONS COMPLETELY THROUGH ONCE AND UNDERSTAND WHAT IS REQUIRED.

We will not be held responsible for any accidents or injuries anyone may sustain. Builder assumes all risks associated with construction work!

We assume some builder competency in the use of tools, safety and equipment.

If you are unsure of any procedures, please contact a professional. The methods in this plan assume a minimum amount of power tools. Also, if you know of alternate methods of construction, feel free to use them!

Using other tools to speed the work process is just fine.

Work safely and wear proper safety equipement such as gloves, ear protection and eye protection.

MATERIALS		
Description	Dimensions	Quantity
Concrete Base		
2x6 Plank	2x6x24'	1
2x6 Plank	2x6x18'	1
2x6 Plank	2x6x16'	1
2x6 Plank	2x6x14'	1
2x6 Plank	2x6x18'	1
Concrete	≈ 5 cu. yds	By Builder
Metal stakes	6"x$\frac{3}{8}$"Ø min.	≈ 50
Wooden Base		
2x6 Plank	2x6x24'	4
2x6 Plank	2x6x8'	31
Plywood Sheet	4x8'x$\frac{3}{4}$"	10
Walls		
2x4 Plank	2x4x8'	100
2x4 Plank	2x4x12'	2
2x4 Plank	2x4x18'	8
Plywood Sheet	4x8'x$\frac{3}{4}$"	30
Roof		
2x8 Rafter Plank	2x8x18'	10
2x8 Rafter Plank	2x8x16'	10
2x8 Rafter Plank	2x8x8'	20
2x4 Purlin Plank	2x4x24'	10
Plywood Sheet	4x8'x$\frac{3}{4}$"	22
4x4 Post	4x4x10'	4

MATERIALS		
Description	Dimensions	Quantity
Optional Run Add-On		
2x4 Plank	2x4x8'	24
2x4 Plank	2x4x10'	2
2x4 Plank	2x4x12'	3
Chicken Wire	By Builder	By Builder
Miscellaneous		
Roofing		
Siding, Paint, Veneer		
Nails, screws, bolts		
Rafter brackets		
Post brackets		
Sealant		
Fencing material		

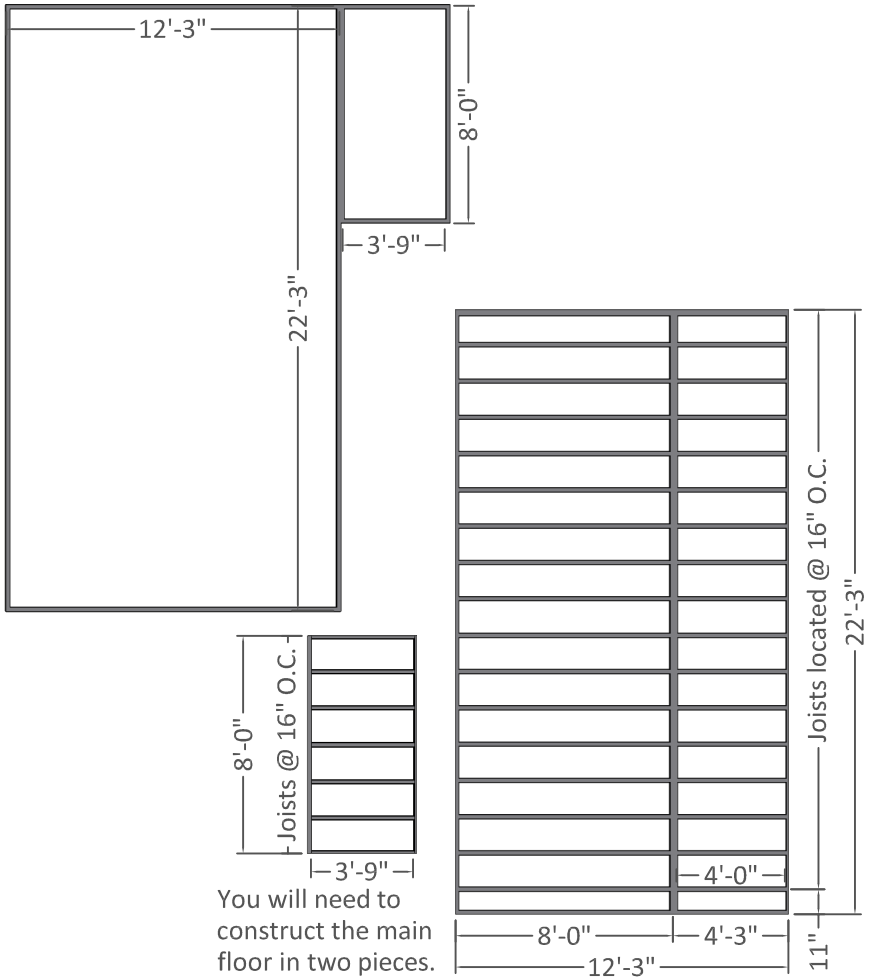
To begin, you need to choose whether you want a concrete slab-style foundation or a wooden joist foundation. Either way, you will need a foundation on which to build the floor.

For this purpose we do RECOMMEND a solid concrete slab as the slab-style foundation would require little maintenance, no repairs and last much, MUCH longer than the joist-style foundation.

However, if you are NOT intending on putting live animals in the structure, a joist-style foundation will be just fine. We recommend using 2x6.

OK, we are going to start with building the joist-style foundation. For those who wish to build a slab-style foundation, you may skip to the next page...

Start by laying out the rim planks and joists as diagrammed below.



You will need to construct the main floor in two pieces.

Once you have the floor joists square and both sections attached securely, you should be able to run the plywood flooring with relative ease. We do NOT recommend using OSB for flooring or roofing. We do recommend at least $\frac{3}{4}$" plywood for the floors, but if you are using the structure for light-duty, you MAY opt to go as thin as $\frac{1}{2}$" (plywood thickness).

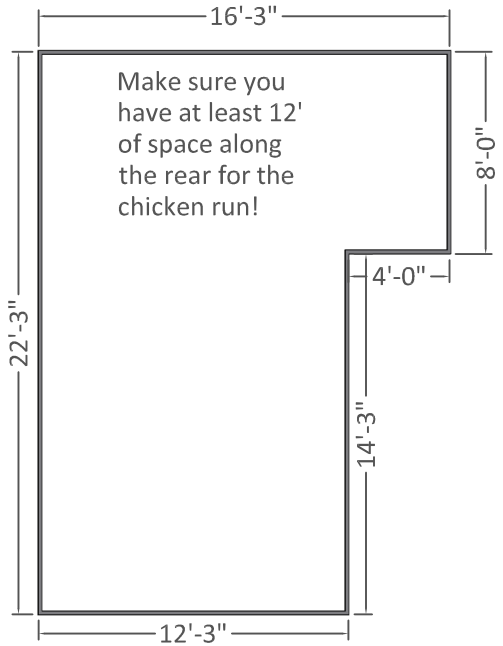
Notes:

For the concrete slab, we are going to diagram what is commonly referred to as a "slab-on-grade". This is nothing fancy, it is simply, constructing a frame out of 2x6 and pouring concrete into the frame. It is called-slab-on-grade because the slab is laid directly on top of the ground with little other preparation.

The important thing is to get a space as level as you can possibly find. For starters, it will help form a nice "seal" around the frame and prevent concrete from seeping through any openings between the frame and the ground.

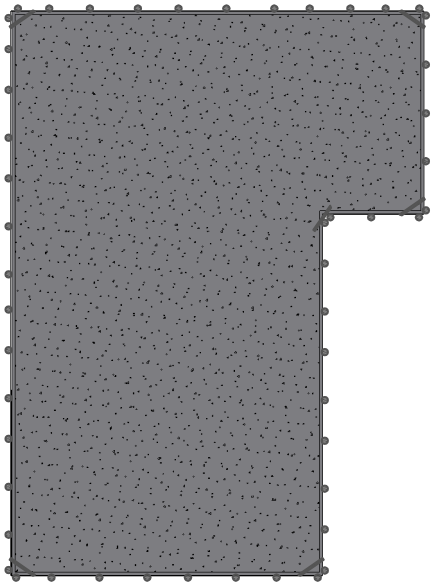
Though, if you wish, a better alternative would be to add about 2" of clean, washed peat gravel before pouring the concrete, it will help drain water away from the slab AND it will help you ensure the slab is even.

So, to get started, choose where the slab is going to go. You will need a large open space, as level as you can find, with at least 6 additional feet of space around the structure.



Now, once you have the frame constructed, take a few minutes and go around the perimeter looking for holes between the ground and the wood frame. You are looking for points where the concrete can seep between the cracks. You will need to pile dirt over the hole and tamp it down a little bit.

Also, go around the frame and tamp stakes around the outside perimeter about every 16-24". Concrete is heavy stuff and reinforcing the outside will make sure the frame does not bow outward when you start filling in the frame. Often, concrete mix manufacturers will have tips and tricks to assist in the pour. Consult your mix manufacturer for instructions on proper use and clean-up of your particular brand.



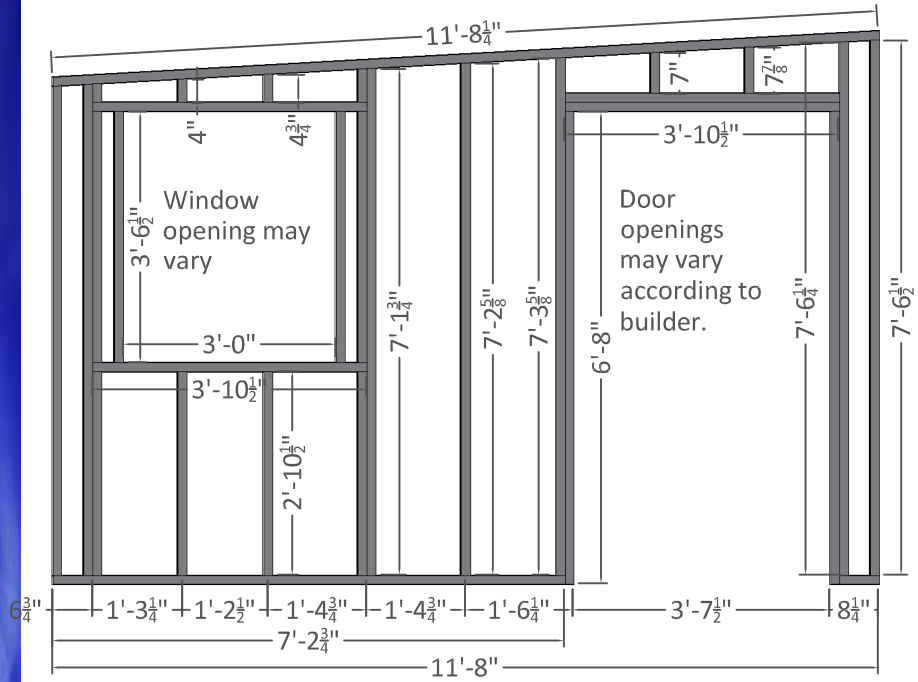
Reinforce the frame with stakes about every 16-24". The layout does not have to be exact, but the closer you are to placing them evenly, the better the weight of the concrete pushing out will be dispersed.

Also, don't forget to really double up on those corners! The corners of the frame are the weakest spots so put a stake on the ends of both planks.

REMEMBER TO SQUARE YOUR FRAME BEFORE REINFORCING WITH STAKES. USE SCRAP PIECES TO ACT AS SUPPORTS ON THE CORNERS AS SHOWN IN THE DIAGRAM AT LEFT.

Refer to the concrete mix manufacturer for proper mixing amounts and cure times! **You will need about 5 cubic yards of concrete to fill this form if you have no underlying gravel. This calculation does not take slope, and general ground variations into account and is an approximation assuming the full frame is filled from bottom to top.**

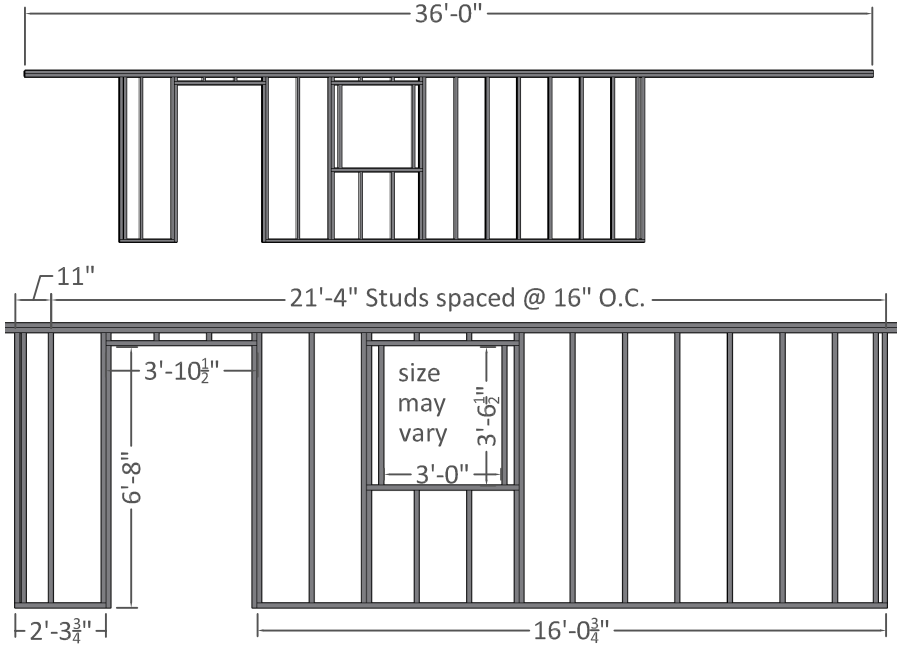
For the front wall, follow the diagram below. Don't forget to miter the top of the planks for the roof pitch. Should you need to alter dimensions, make sure to properly measure new dimensions accordingly!



If you use a wooden foundation, attach the wall to the rim board and make sure you attach the base board to the joists beneath. If you use the concrete slab, make sure to screw into the rim board and use either masonry bits or a Caliber Driven Hammer (such as a RamShot) to attach the wall to the base.

Notes:

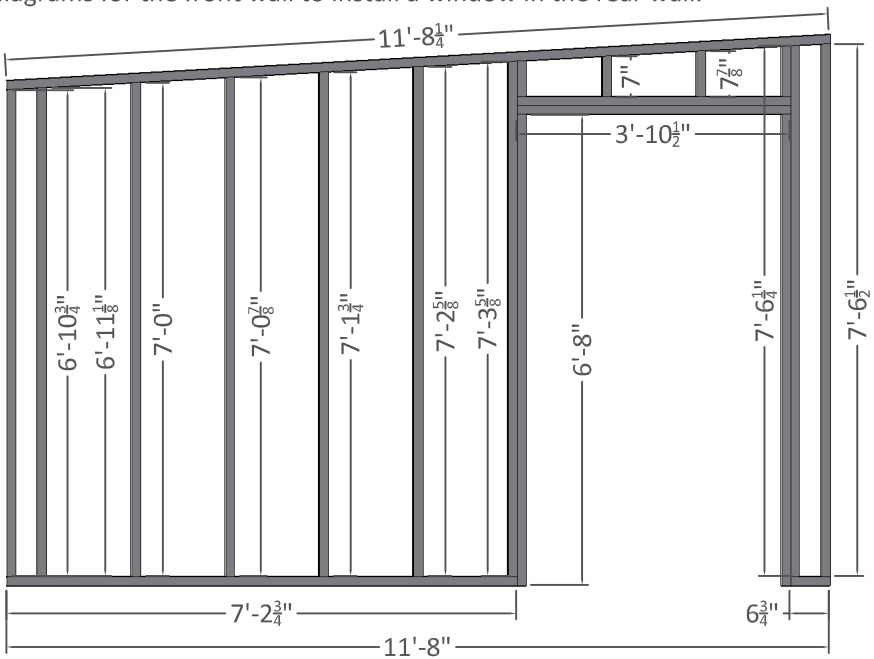
For the short wall, follow the diagram below. You do NOT have to complete the top plate right now, but you will need to overhang at least one plank. You may as well overlap and attach the other while the wall is on the ground.



Attach the short wall to the frame in the same way as you did with the front wall. Make sure the edges are square and the screws or nails go into the rim below. If you are building on a wooden base, make sure to screw or nail to the joists below, not just the flooring.

Notes:

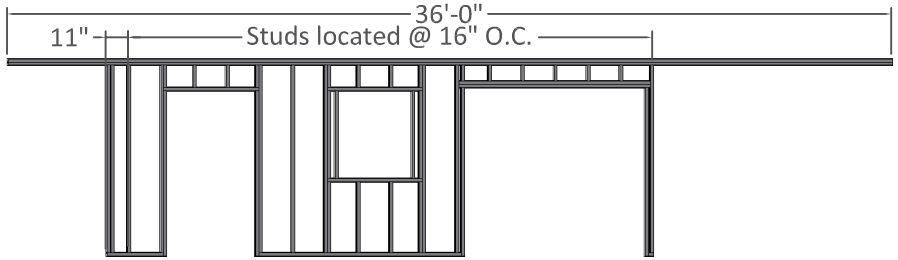
For the rear wall, follow the diagram below. It is much the same as the front wall, just no window opening. IF you want, you may follow the diagrams for the front wall to install a window in the rear wall.

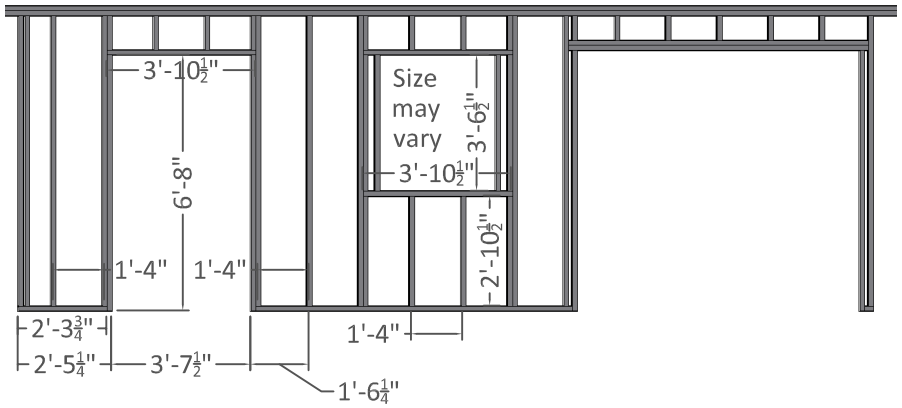


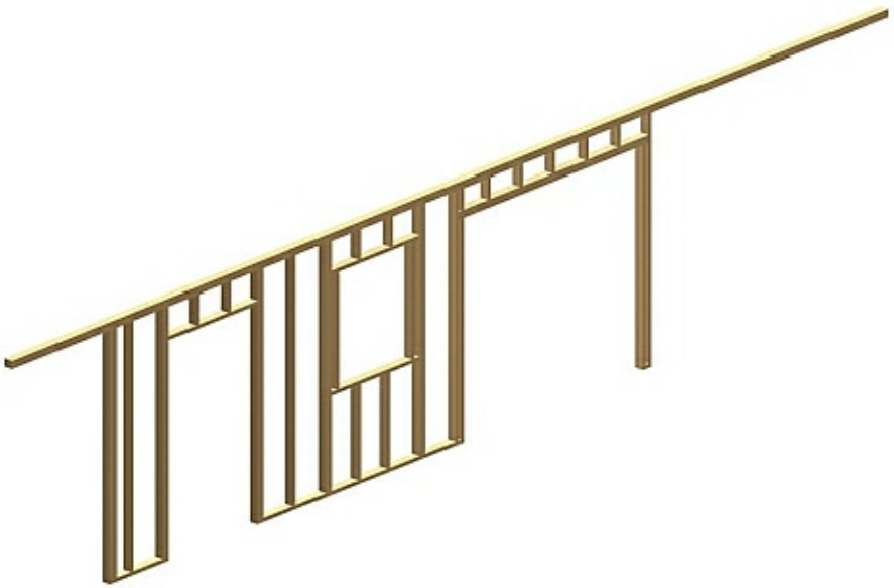
Anchor the rear wall in place, making sure that corners are square and studs are vertical.

Notes:

For this example, we will continue with the tall side wall and attach the jut-out to the tall wall. So, construction is much the same as the short wall.





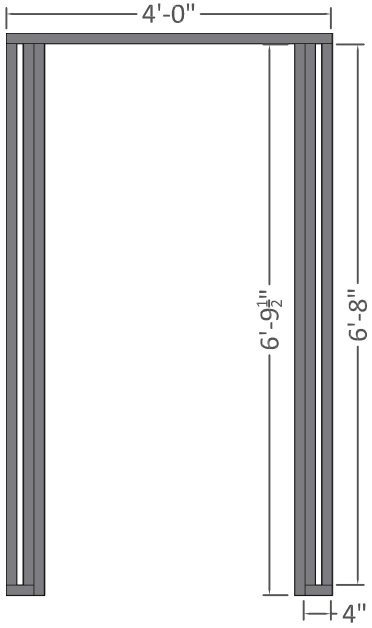


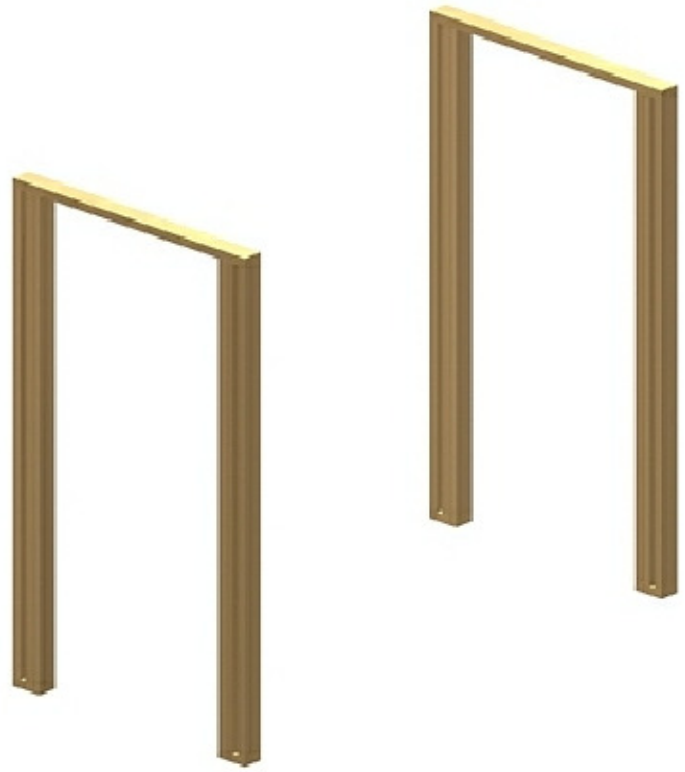
Anchor the tall wall in place to enclose the main structure of the barn.

For those of you wondering what the overhangs are for, they are going to be overhangs for a chicken run off the rear and a cover on the front.

Notes:

OK, now for the jut out. You can go ahead and complete both front and rear walls at the same time, they are exactly the same.

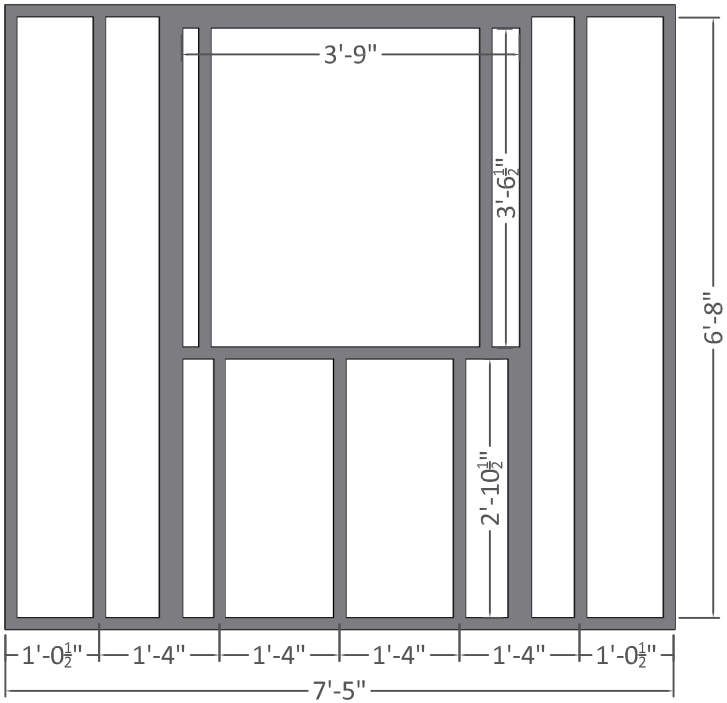


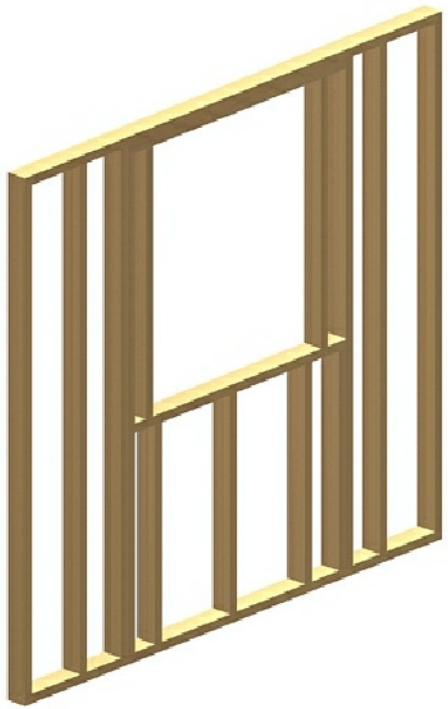


When anchoring the walls to the main structure, make sure that the exterior wall sits against the tall wall properly. The studs should give you a nailer to connect to but still have some overlap so you can sheath the interior should you wish.

Notes:

And now to enclose the remained of the walls.





Enclose the structure and take a step back to review your work! It should look something like the diagram below.

Notes:

OK, the structure is up, but before you decide you want to climb up and get on the roof, you will want to sheath the outside first! Sheathing will give the structure rigidity and strength so sheath the exterior first!

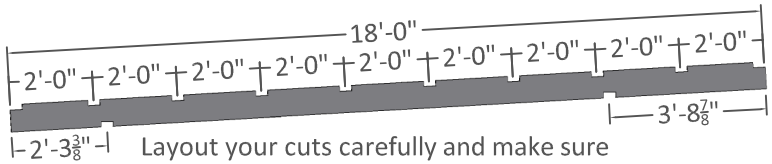
We do NOT dimension sheathing, but if you follow the diagrams and measure your cuts carefully, you shouldn't have any problems.

Start with the short wall first. You may be able to use some of the cutting to fill in around the taller walls later...

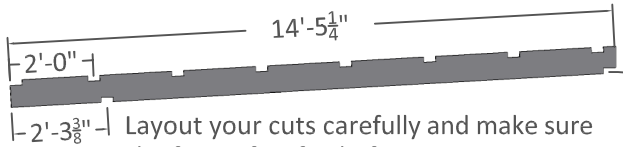
For the rear sheathing, just leave the full sheet up and you can clean up the edges when you get the rafters for the roof up.

Once you have the walls nice and sturdy, you can go ahead and begin cutting the rafters.

There are three types of rafters involved in this plan. Long, short and coop. Essentially they are the same, so once you get the hang of cutting a couple, the rest should follow in suit.

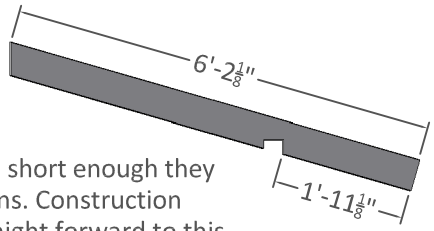


Layout your cuts carefully and make sure the first rafter fits before continuing onto the next. You will need ten (10) of these rafters.

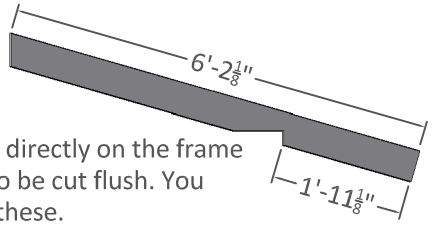


This seat will sit on the tall wall top plate

Layout your cuts carefully and make sure the first rafter fits before continuing onto the next. You will need ten (10) of these rafters.



The coop rafters are short enough they don't need any purlins. Construction should be pretty straight forward to this point. You will need seven (7) of these.



These rafters will sit directly on the frame below so will need to be cut flush. You will need two (2) of these.

Now, before you get too enthusiastic about putting up the rafters, make sure you get some posts under the long overhangs. We recommend you actually anchor them solidly in the ground.

Have an assistant help you locate the post hole and dig your hole about 6" wider on either side of the location. This will give you some wiggle room so you can level the post vertically.

Pour in some washed peat gravel to allow for water to run under the post (this will prevent frost from "buckling" the post). Put the post in the hole and level as necessary.

Put the post in the hole and have your assistant hold it level while you mark where the bottom of the top plate intersects the post. Cut the post off and anchor the post to the top plate with post brackets (available at most hardware stores).

Make sure the post is still level vertically and pour about another 6-8 inches of washed peat gravel back in the hole around the post. Backfill the hole with dirt you dug out of the hole and tamp solidly in place.

Repeat the process for the other three overhangs!

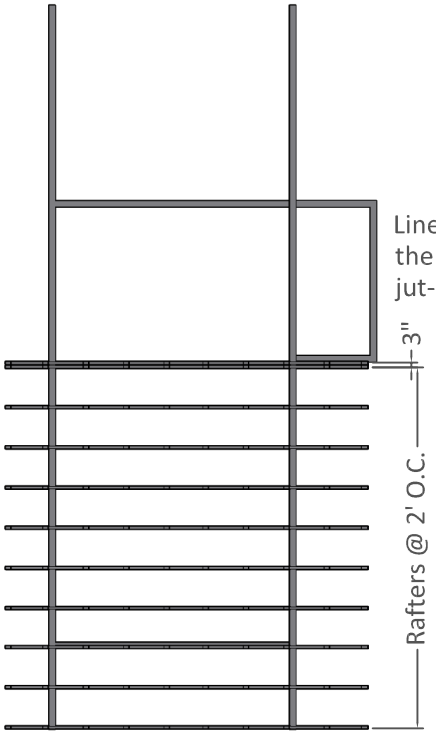
Roof is continued on the next page...

Once the overhangs are sturdy and the frame is supported with sheathing, it's time to get onto the roof.

With help, place the rafters as shown in the diagrams below. You may use rafter hangers to make your job easier. You can also use angle brackets and bolt through the rafters and through the side wall top plates.

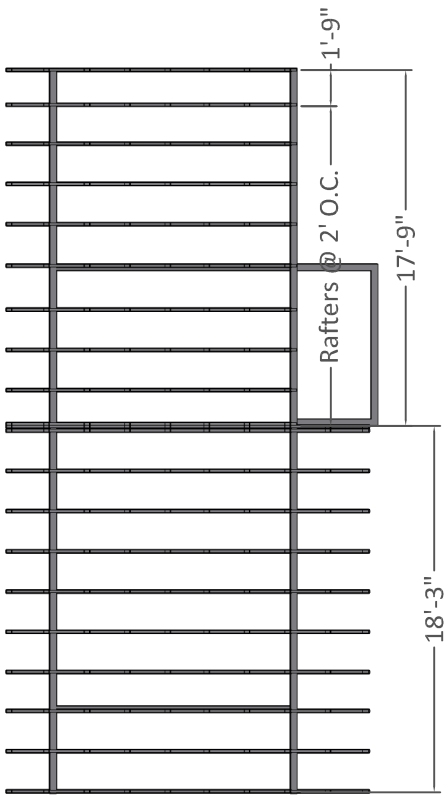
We definitely recommend rafter hangers for their ease of use, but if you are in an area with heavy winds, or are expecting some other shearing forces on the rafters, bolt them down!

Start from the the inside and work your way out, placing rafters one by one. It's a long process, but it will be worth it in the end!

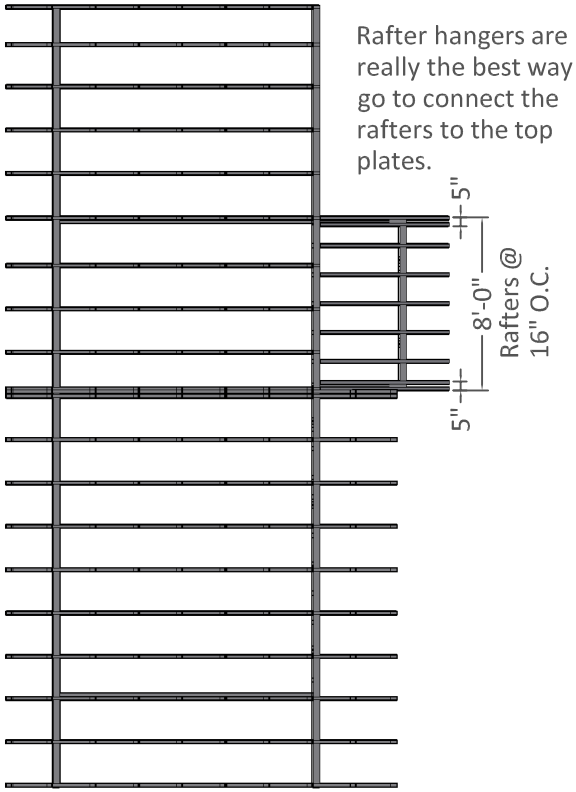


Line your first rafter up with the very outside edge of the jut-out frame.

Short rafters on the other side. They should only fit one way, so you shouldn't need to to worry about lining up the purlin seats.



Continue the roofing with the rafters over the jut-out.

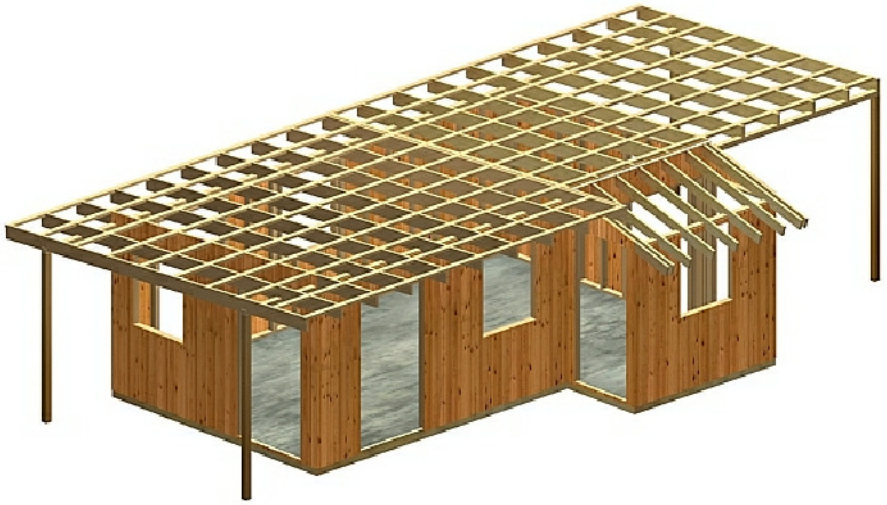


Rafter hangers are really the best way to go to connect the rafters to the top plates.

Once the rafters are in place, the purlins need to go up to keep the longer rafters over the main structure square.

Notes:

Once the rafters are up, finish sheathing the exterior sides before continuing onto the roof sheathing.



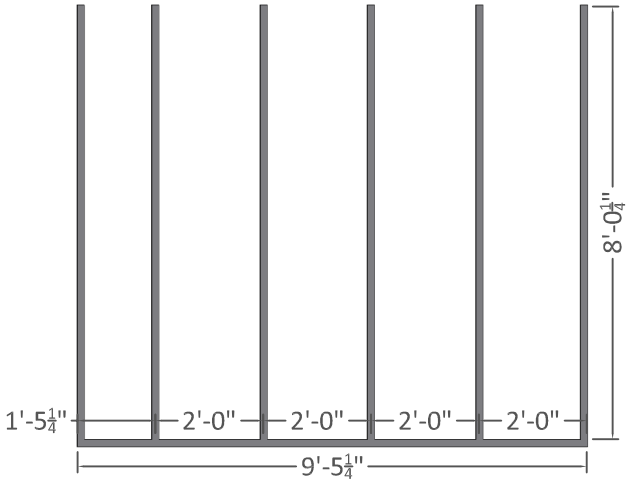
Sheath the roof.

Complete the roofing. Roofing material up to the builder.

Now, the finishing is up to you. Get your doors and windows hung. We recommend sliding doors, but they are totally up to you. Follow manufacturer instructions for the installation of all doors and windows.

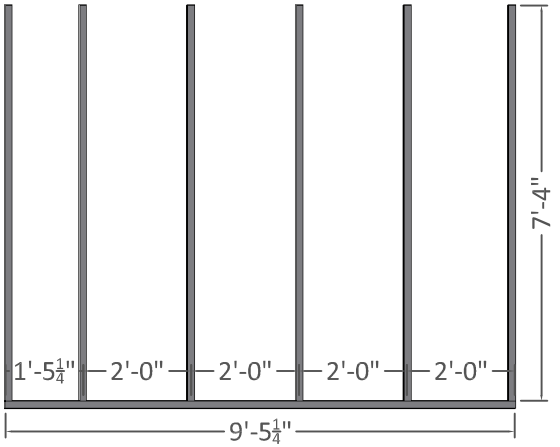
To add a run to the rear of the barn, follow the diagrams below. From what you have already completed, the run should be a cinch! If you are looking at penning larger (non-fowl) animals, you may want to look at fencing the run in instead of framing.

Now, for the tall wall:

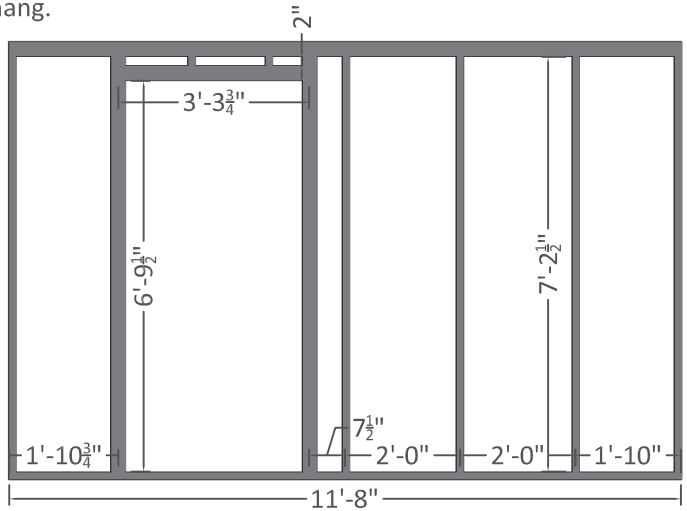


You will notice the lack of a top plate for the frame. This is light enough that you may omit the top plate and tie the wall frame directly to the top plate above. Measure your cuts and make sure the frame fits snug. You may reduce the overall height by 1½" and add a top plate as you see fit. Anchor the exterior studs directly to the posts and the wall.

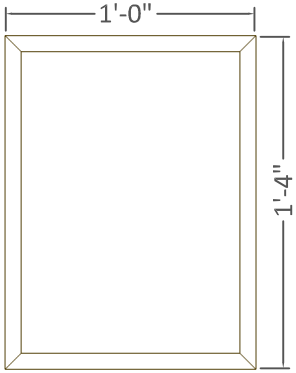
For the short wall:

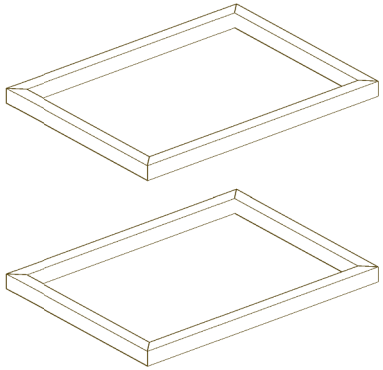


The rear wall is more difficult only because of the fact that it has the opening for the run access. The double top plate should match the overhang.

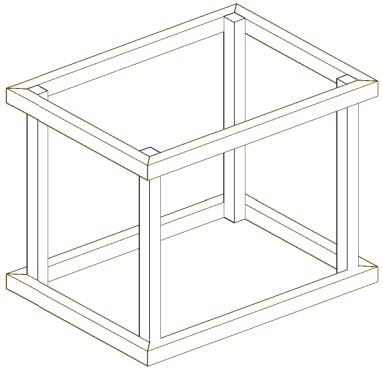


For the nesting box, start with ripping a 2x4x8' plank down the center. You need to make two frames as shown below.

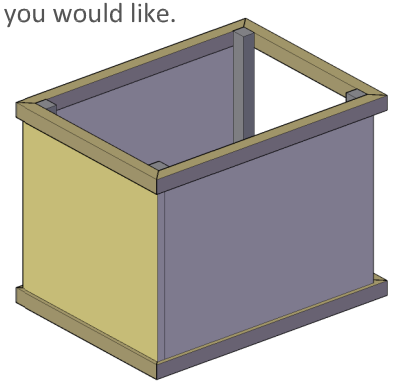


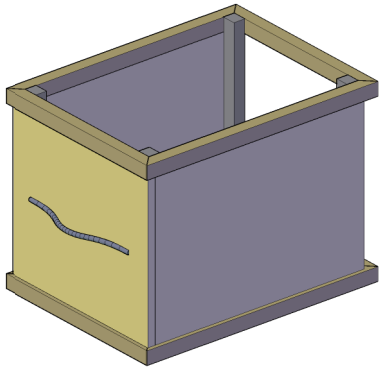


Either purchase some 1x2 post or rip another 2x4x8' plank down the center. Cut as shown and attach to the frame pieces on the inside corners.

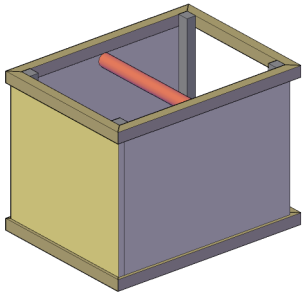


Rip pieces of plywood sheet to wrap around three sides. Be sure to measure and layout the cuts to make and be sure they fit flush. Start with the longest sides, cut a rear piece to cover both ends. Attach a handle if you would like.

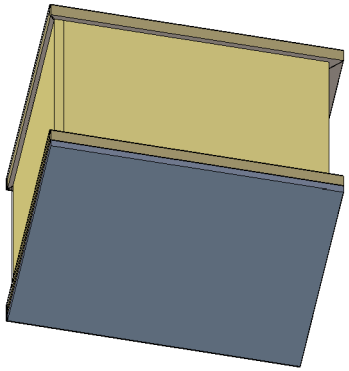


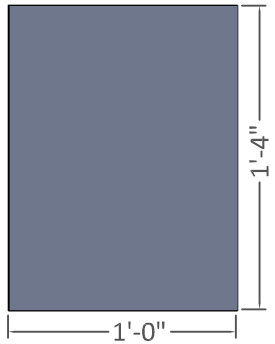


Cut a dowel to just fit snugly inside the nesting box. Use a rubber mallet or dead-blow hammer to tap the dowel in place just below the top rim of the nesting box. Attach the dowel to plywood with screws through the exterior face of the plywood.

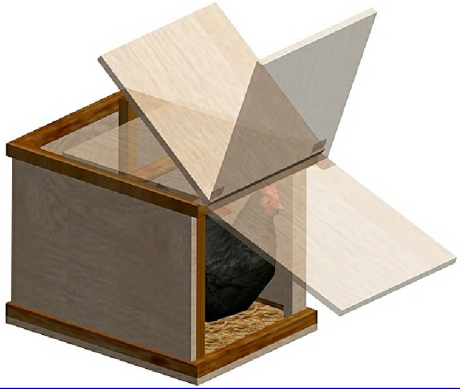


Tip the nesting box on it's top and cut a piece of plywood to fit the bottom. Attach to the frame with screws. Make sure the bottom is cut to fit (even slightly smaller) so the nesting box will fit in the spaces on the completed coop.



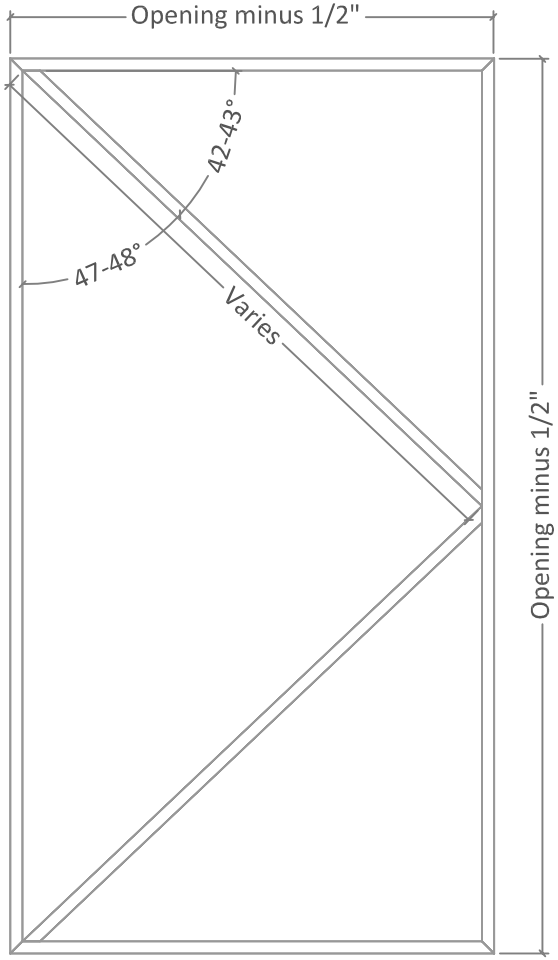


Use a hinge to attach the front piece of plywood to the top, front edge. You will want to attach the hinge to the plywood before attaching the hinge to the nesting box frame. This way you can ensure the nesting box opens and closes properly. Use a hook and eye-pin to lock the nesting box closed.



For the door, construction is relatively simple. If you want to install a latch, that is up to you. We do not show the details because there are special tools involved, most of which the normal person does not have. However, if you DO happen to come across such tools, you will be able to add a doorknob and catch should you desire.

As with the window, this is a very simple door and you do NOT have to construct the door in this way.
If you prefer to purchase a door, make sure the rough opening size is adequate. The frame rough opening in this instance can be anything. Just tweak the dimensions to match your rough opening. **Be sure you subtract $\frac{1}{2}$" from the rough opening to allow for swing!**
1) To begin, we are using 1'4 planks and $\frac{1}{2}$" plywood sheeting. Cut the frame pieces as shown below. You DO NOT have to miter the corners, we just recommend it for aesthetic purposes.



We will show the door in this example with a pattern cut out of the front and back sheeting, but this is not required. It is purely for looks and does not affect the integrity of the door at all.

Before you attach the panel to the door frame, you will want to check the swing in the doorway. We have allowed for $\frac{1}{2}$" swing, but depending on construction methods and accuracy, swing may be affected by as much as 1".

Please ensure the frame will swing in the opening without getting stuck or caught. You should allow more swing once you add the door panels so check after each step to ensure swing is not impeded.

Materials

Description:	Qty:
1x4x6' Planks	5
4x8'x$\frac{1}{2}$" Plywood Sheet	2
Hinges	3

2 Attach the front panel to the door frame, and MAKE SURE THE CORNERS ARE SQUARE and edges are flush. You may even want to sand the corners of the inside swing so they are rounded a little bit.

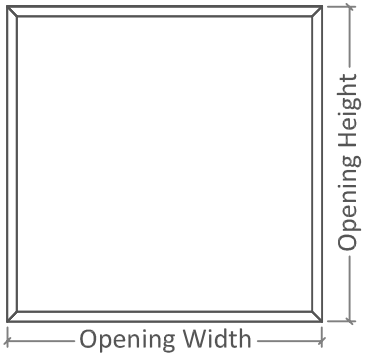
3) Insulate the door with either blow foam or regular R-13 roll insulation will work.

4) Enclose the door with the second panel. You may want to round the edges on this side also.

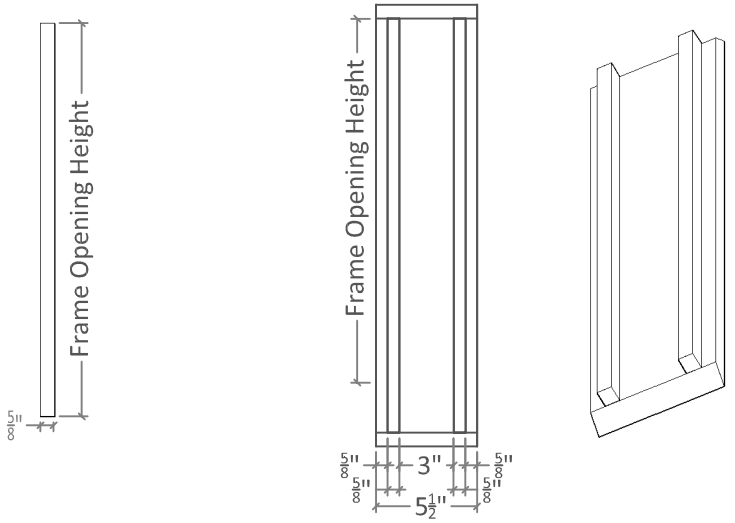
5) A single slide bolt works wonders on the outside and inside to lock the door shut. If you don't want your kids to be able to lock the door, only install the slide bolt on the outside! The slide bolt also offers a grip to pull the door open.

Windows are complicated to design and when at all possible, should be purchased. These details are for a very simple sliding window. You will need, and know how to use, a miter saw, a router (preferably with a guide) or table saw with an adjustable gouging blade (or blade kit, and a square (speed square, carpenter square, either works).

1) Cut and miter 1x6 planks as shown below. DO NOT ASSEMBLE YET!

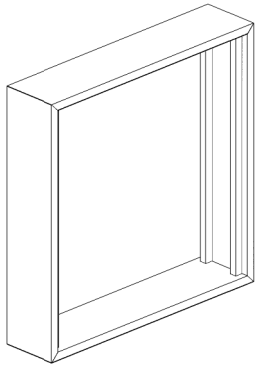


2) Rip a 1x4x8' into strips $\frac{5}{8}$" thick. These will serve many purposes in the future but for now, we just want four of them to match the opening, so either rip and cut one piece or rip an entire board into $\frac{5}{8}$" strips and place the pieces to the side for late.



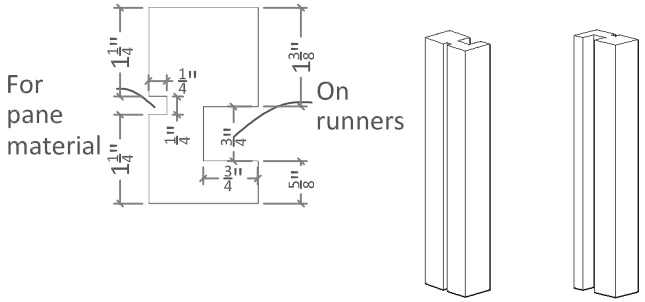
3) Using 1" screws and a level, screw two runners onto one of the exterior frame pieces. Repeat for the second side (see above).

4) Check to make sure the runners will fit inside the frame when assembled. Make any adjustments if necessary. DO NOT ASSEMBLE!

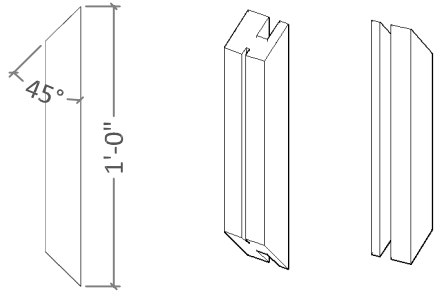


5) Rip a 8'-2x6 down the center lengthwise.

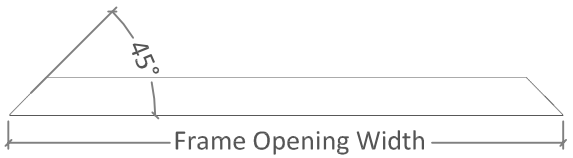
6) Use a router to gouge a $\frac{3}{4}$"x$\frac{3}{4}$" groove down the center of one side. Flip the board over and gouge a $\frac{1}{4}$x$\frac{1}{4}$" groove down the center of the other side (see detail)

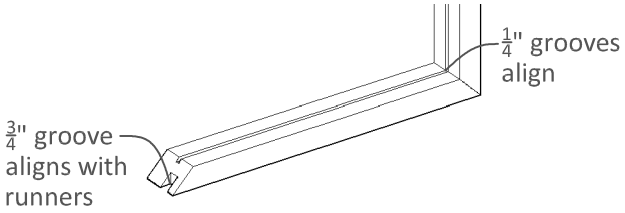


7) Miter the ends. Make sure the narrow ($\frac{1}{4}$x$\frac{1}{4}$") groove is facing inwards! The wide ($\frac{3}{4}$x$\frac{3}{4}$") grooves go out toward the runners, the inside grooves will hold a pane of window material.



8) Rip a 2x6 lengthwise down the middle and miter ends as shown below. Run a $\frac{1}{4}$"x$\frac{1}{4}$" groove down the middle, just as with the 2x6 above. Hold them together and MAKE SURE THE GROOVES ALIGN PROPERLY! You will need to gouge a $\frac{3}{4}$x$\frac{3}{4}$" groove out of the ends.





Materials

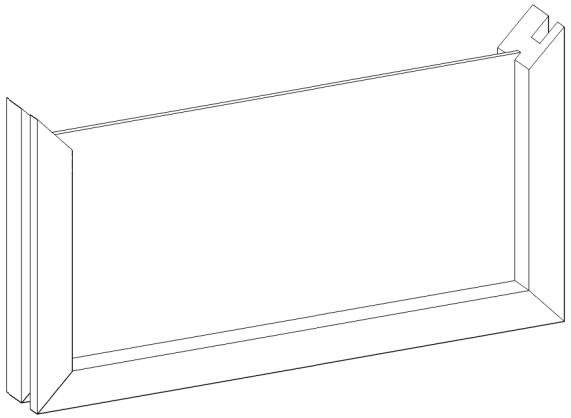
Description:	Qty:
2x6x6' Planks	24
1x6x8' Planks	6
1x4x8' Planks	6

9) Lastly, before construction, you will need to determine what type of pane material you want to use. For a playhouse, we would recommend against using glass and go with clear acrylic or polyvinyl pane.

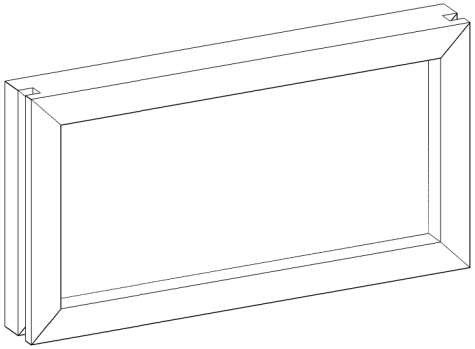
IF YOU DECIDE TO USE GLASS, WE HIGHLY RECOMMEND PURCHASING $\frac{1}{4}$" THICK PROFESSIONALLY CUT PANES. YOU WILL NEED 2 PER WINDOW. ON THIS SET THAT EQUALS 12 PANES OF GLASS TOTAL.

SHOULD YOU DECIDE TO CUT YOUR OWN GLASS, YOU DO SO AT YOUR RISK! USE ALL SAFETY PROCEDURES AND EQUIPMENT WHEN HANDLING GLASS!

10) Assemble the window frame around the pane. Run a bead of epoxy or polyethylene (or equivalent) seal down the frame pieces as you assemble the window to get a good, weather-tight, bond. You could increase rotting and mildew growth if you choose not to.

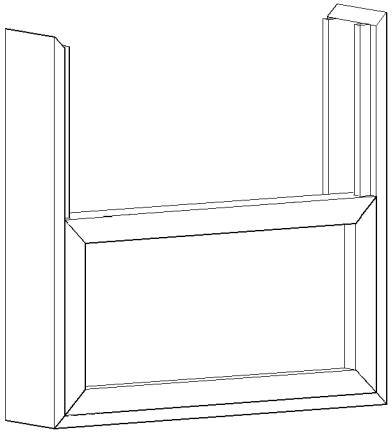


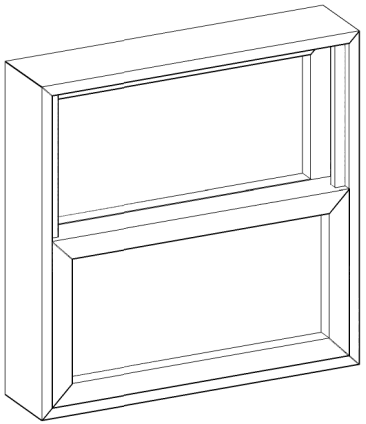
11) Cap off the window with the top piece and connect all pieces with 1" small radius ($\frac{1}{4}$" or smaller) screws. Be sure you don't screw down into the window pane!



12) Repeat for second window.

13) Once you have two window assemblies, two exterior frame pieces with runners on them, and two exterior frame pieces for the top and bottom, carefully assemble the exterior window frames AROUND the window assemblies.





14) Cap off the window assembly, Ensure the windows slide easily and there is about $\frac{1}{16}$-$\frac{1}{8}$" gap between the window assemblies so they will not impede each other's movement.

15) Place the window in the window frame. Screw the exterior frame to the opening provided. You may have to use a soft mallet or a dead-blow hammer to get the window centered in the opening.

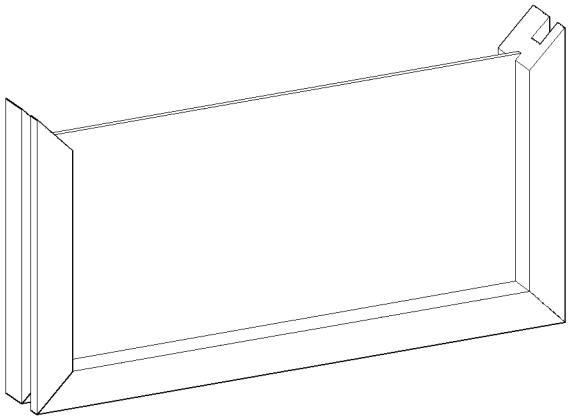
16) How the windows stay up or down is up to the user. We recommend getting a slide bolt and installing at least one on the movable assembly. Which assembly moves or stays stationary is up to the builder.

17) Lastly, before construction, you will need to determine what type of pane material you want to use. For a playhouse, we would recommend against using glass and go with clear acrylic or polyvinyl pane.

IF YOU DECIDE TO USE GLASS, WE HIGHLY RECOMMEND PURCHASING $\frac{1}{4}$" THICK PROFESSIONALLY CUT PANES. YOU WILL NEED 2 PER WINDOW. ON THIS SET THAT EQUALS 12 PANES OF GLASS TOTAL.

SHOULD YOU DECIDE TO CUT YOUR OWN GLASS, YOU DO SO AT YOUR RISK! USE ALL SAFETY PROCEDURES AND EQUIPMENT WHEN HANDLING GLASS!

18) Assemble the window frame around the pane. Run a bead of epoxy or polyethylene (or equivalent) seal down the frame pieces as you assemble the window to get a good, weather-tight, bond. You could increase rotting and mildew growth if you choose not to.



Additional Stuff for the Window Assemblies:

1) Use weather striping along the seam between the window assemblies to keep wind, and weather out as much as possible.

2) We recommend having one stationary, and one movable window. Most often, anchor the exterior window to the top of the assembly and let the interior window slide up and down.

1) Drill a $\frac{1}{4}$" pin hole in the interior, left or right, side of the movable window assembly.

2) While the window is closed, drill into the runner about $\frac{1}{4}$".

3) Keeping the drill bit inside the pin hole, pull the drill bit back out a little, raise the window and drill back in about $\frac{1}{4}$" into the runner. We recommend about 3" increments.

4) Repeat as necessary for how much you wish the window to open. Cut a length of $\frac{1}{4}$" dowel (may need sanding to slide freely) to use as a pin.

5) Add a slide pin to both the top and bottom of the movable window so the windows can be "locked" shut if you wish.

To determine the rafter lengths,

1) Divide the entire span by two (example: If the roof span is 20 feet, divided by 2 = 10 feet, 0 inches.

2) Now add the overhang (example: 18-inch overhang makes the length 11 feet 6 inches).

3) Now, convert the 6 inches of the 11 feet 6 inches into a fraction. It happens to be 0.5 (6 divided by 12). Thus 11 feet 6 inches is now 11.5

4) Suppose you desire an 5/12 roof pitch, or for every 12 inches horizontally, you get 5 inches up and 12 inches vertically. Convert that number by using the rafter conversion chart below or can be found on any framing square.

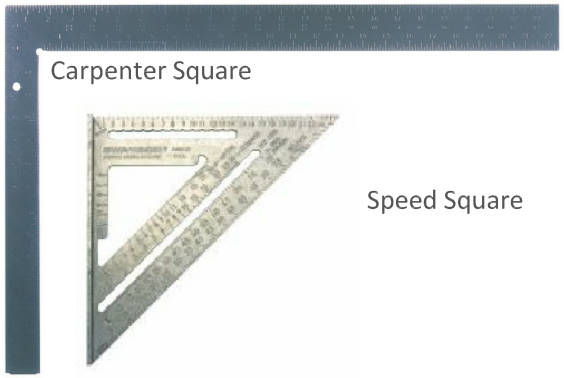
5) For the purpose of this article, the 5/12 roof pitch converts to 1.083 on the rafter conversion chart found on any framing square.Therefore, 11.5 x 1.083 = 12.4545 feet is what the rafter length will be.

6) Obviously, getting to the thousands of an inch is a feat in itself, so lets just round to the nearest $\frac{1}{8}$" which is 12.5 feet or 12'-6".

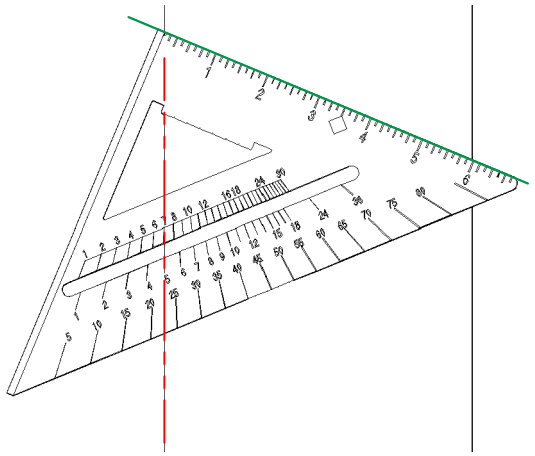
Roof Slope	Factor
Flat	1.0
1:12	1.003
2:12	1.014
3:12	1.031
4:12	1.054
5:12	1.083
6:12	1.118
7:12	1.158
8:12	1.202
9:12	1.250
10:12	1.302
11:12	1.357
12:12	1.414
13:12	1.474
14:12	1.537
15:12	1.601
16:12	1.667
17:12	1.734
18:12	1.803
19:12	1.873
20:12	1.943
21:12	2.015
22:12	2.088
23:12	2.162

If you feel at all uncomfortable constructing roof elements, consult a professional. Also, you will need to be comfortable with heights and please use all safety precautions when placing the rafters. Not every rafter will be directly above a solid surface and there will be open spans beneath them. We recommend use of a ladder and assistant(s) to help you get the rafters into position.

1) If you need to be introduced to the tools most professionals work with when cutting rafters. There are basically two tools used commonly, the speed-square and the carpenter square. Both are shown below.

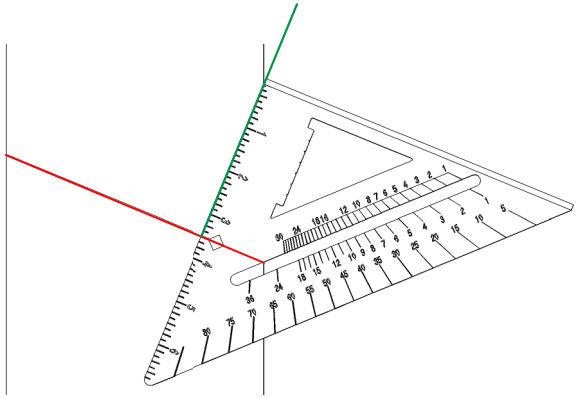


For the speed square, start by lining up your plumb cut by aligning the pivot point on the speed square with the desired pitch. This example is going to use a 5-12 slope but the principle is the same with any slope. See the diagram below.



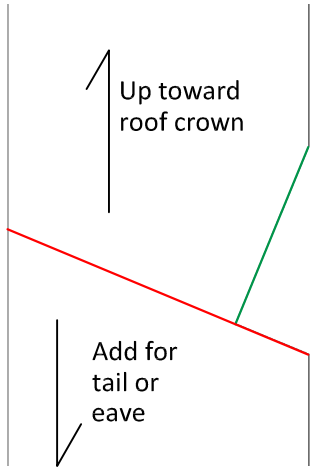
See how the red line lines up with the little notch in the back of the speed square and the number 5 in the "common". The common simply refers to a common rafter. Notice also, how the "HIP/VAL" lines up quite nicely with 7? For a $\frac{5}{12}$ slope, the corresponding hip/valley slope would be 7. Easy peasy.

2) Anyway, mark your line along the GREEN side with all the numbers.To make your seat cut, simply plumb the other side at the length you need and follow the diagram below for a nice $3\frac{1}{2}$" seat cut.



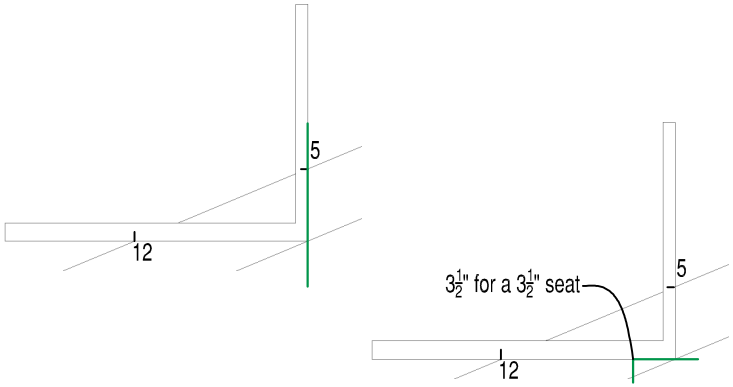
Align the diamond sight so the line cuts the sight down the center and your pivot point is flush against the outside edge of the rafter to be cut.

The RED line represents the mark you just made for plumb. Now again, mark along the green line for your seat cut. See the nice "L" shaped seat? Cut your seat out and it should look something like below.



The previous page contains instructions with a table which will help you measure the overall rafter length.

For a Framing (Rafter) Square it is basically the same principle. Align the 5 and the 12 as shown below. Mark the GREEN line shown in 1 for plumb.



To mark the seat measure the $3\frac{1}{2}$" on the square and mark the plumb at the end as shown above in 2.