

### ***Disclaimer: Read this BEFORE beginning any construction!***

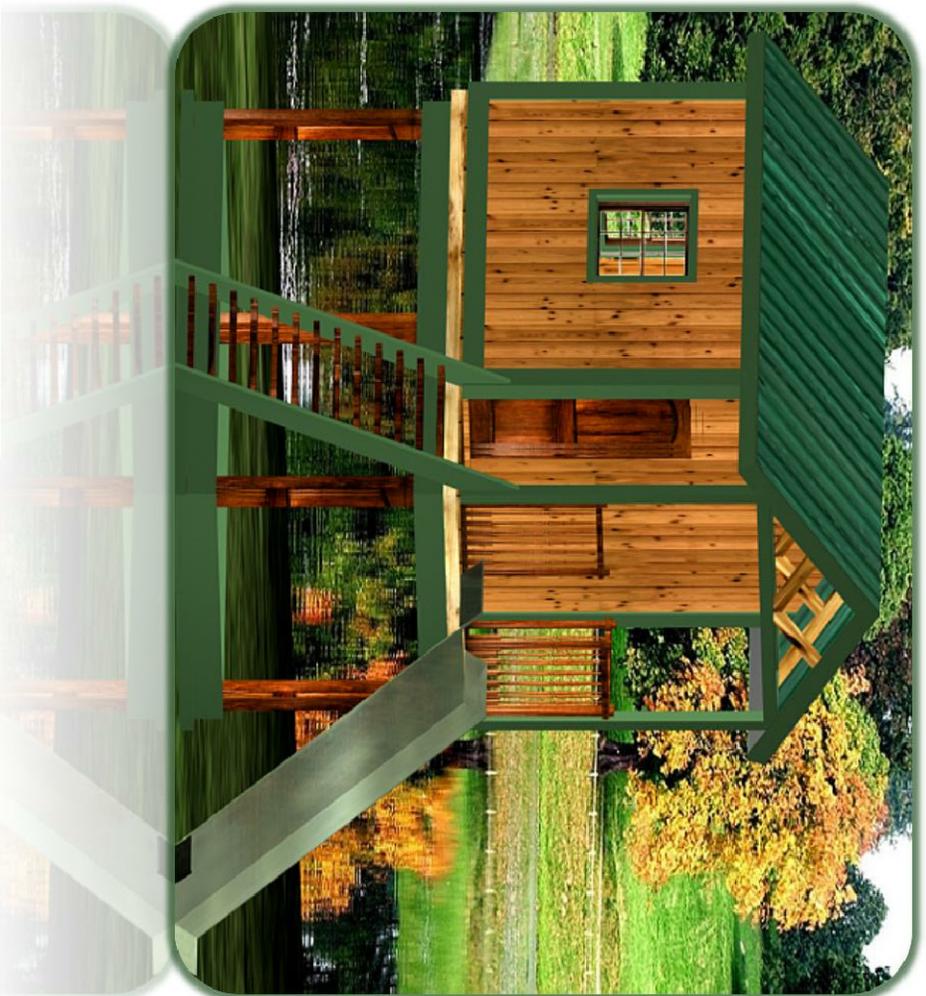
**These plans are intended for use as a guide only!** Adjustments may be needed as circumstances require. Dimensions may be altered at the builder's requirements. Be sure if any alterations occur, that the measurements are adjusted accordingly! If you (the builder) are ever at doubt as to how to construct any structure in these plans, consult a professional. Always use safety equipment when needed and follow manufacturer recommendations for tools, mechanical parts and any components you are not familiar with.

This structure is able to be wired for electricity. Please consult a professional and your local power company before installing any dedicated lines.

This structure is able to be fully completed inside. These plans do NOT include instructions on interior finishing and any such construction practices will be solely at the discretion of the builder. Materials such as insulation, gypsum board and interior furnishing such as counters, tables, etc are not included in these plans.

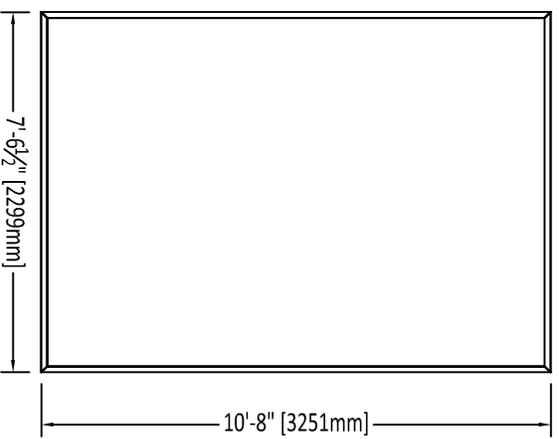
Builder assumes all risks associated with construction! Always use safe construction practices, i.e. sturdy scaffolding when working at heights, safety equipment such as gloves and safety glasses. Make sure all tools are in proper working condition and do NOT use any tools with damaged or frayed cords or broken components.

**These plans are intended as a guide only!** 3-Dimensional Concepts will not accept responsibility for any measurements misrepresented in these plans and field measurements should always be taken, never assumed. The rule-of-thumb, "measure twice, cut once", always applies. Accuracy of such measurements are determined by many factors, not limited to, builder competency and experience, tool repair, and tool type. However, should mistakes be found in these plans, we would very much appreciate hearing about them so they may be corrected. Please forward any questions, comments or concerns to [jeff@3dimconcepts.com](mailto:jeff@3dimconcepts.com). Once you have read through this disclaimer, it is time to start building. Good luck, and work safe!



1) To begin, you will definitely want a sturdy foundation with which to construct the playhouse on top of. Begin with four 6x6x8' (minimum) pressure treated posts. We are going for an ultra-solid foundation for your safety and the safety of your children. If you would like to use larger post, feel free.

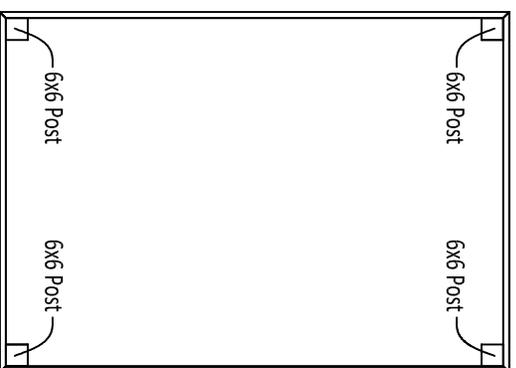
2) Cut a frame out of 2x8 plank as shown below. You will use this frame to hold the posts upright as you construct the remaining foundation.



A 2x8 Wooden Frame  
1 Scale:  $\frac{1}{4}'' = 1'0''$



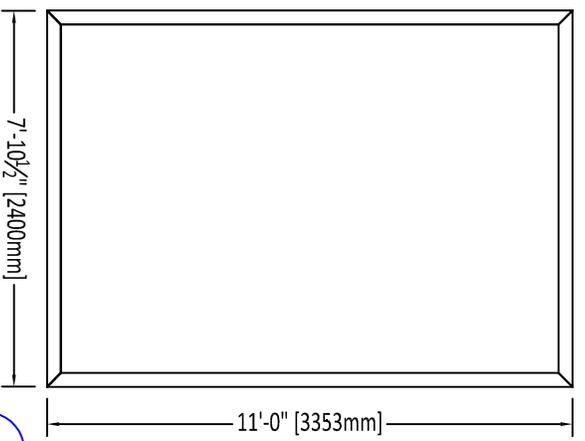
3) Attach the 6x6 foundation posts to the inside corners of the box you just completed. Be sure to use screws or double head nails as you will disassemble the box and move the planks in a few steps.



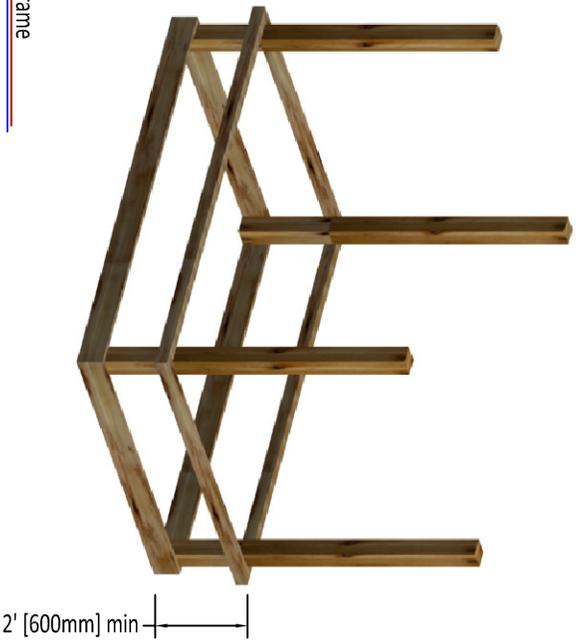
B 6x6 Posts  
1 Scale:  $\frac{1}{4}'' = 1'0''$



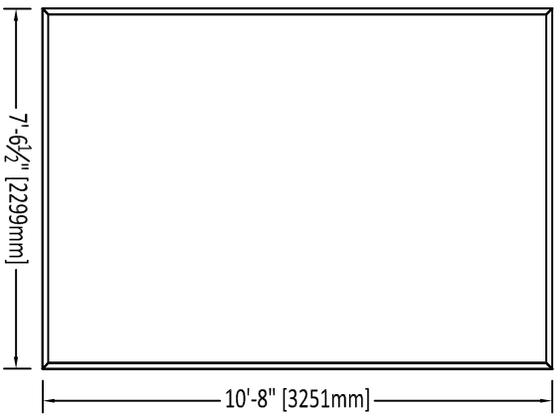
4) Once you have the posts tacked to the wooden frame, cut the 4x4 post frame as shown below. Assemble around the 6x6 support posts a minimum of 2' from ground level. Make absolutely sure the 4x4 posts are level before attaching with screws or nails. Use clamps if necessary.



**A** 4x4 Wooden Frame  
Scale: 1/4" = 1'0"



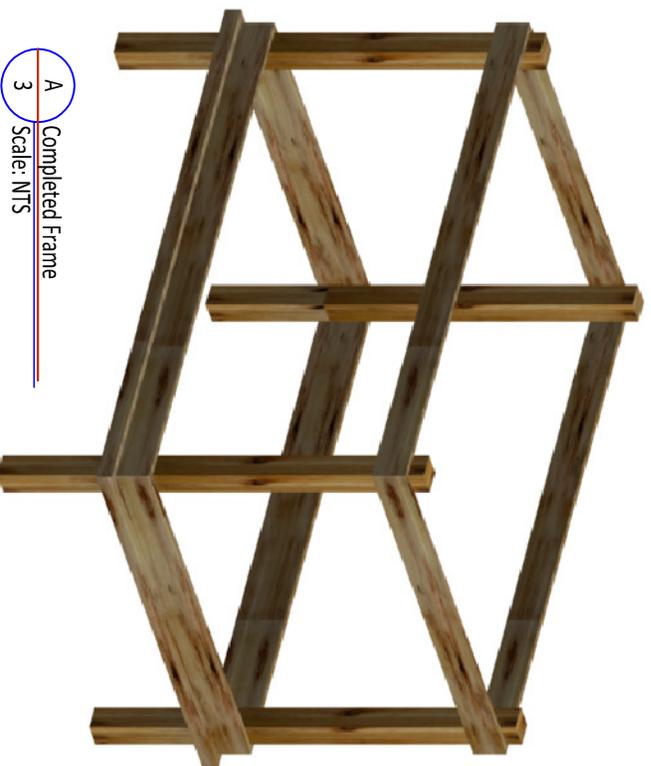
5) Construct another 2x8 wooden frame exactly like the previous frame. This frame, however, will be located 3 1/2" from the top of the 6x6 posts. The floor of the playhouse will sit on this 2x8 frame and be supported by the 6x6 posts.



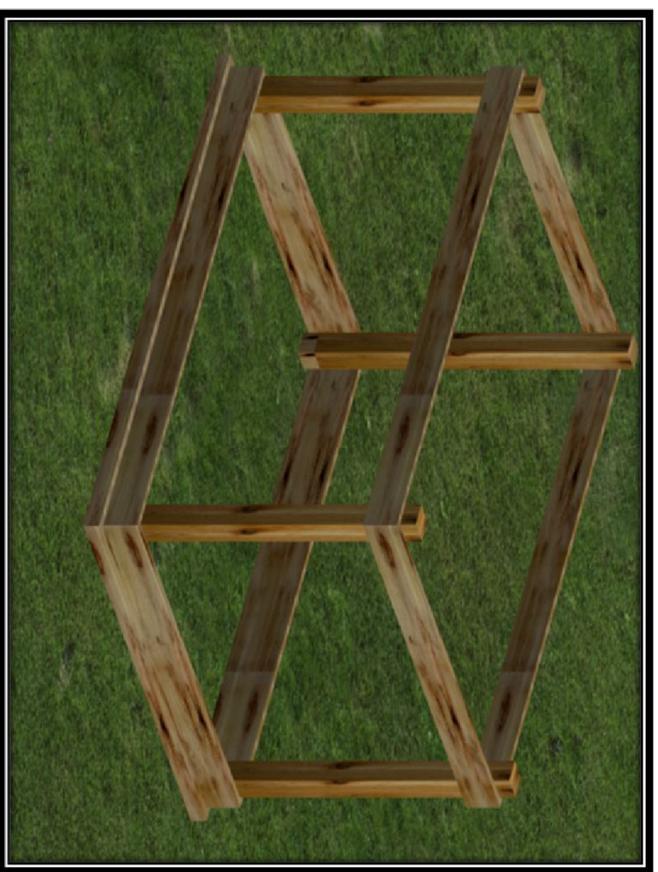
**B** 4x4 Wooden Frame  
Scale: 1/4" = 1'0"



6) Remember how we said to TACK the 2x8 frame on the bottom because it was going to be moved? Well, now the 2x8s will act as the sandbox underneath the playhouse. Un-tack the frame and sit it on top of the 4x4 frame. The result should be the same as shown below.



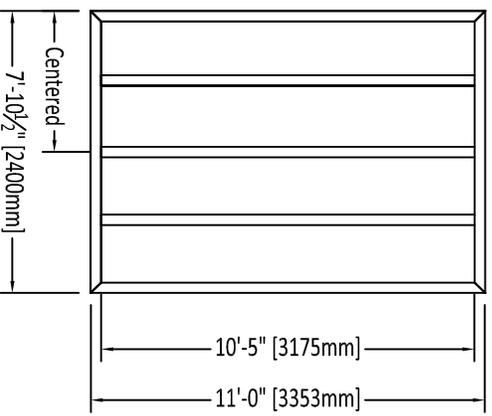
A Completed Frame  
3 Scale: NTS



7) Now you need to locate where your playhouse will be based. You guessed it, the posts are going into the ground to prevent the playhouse from tipping. Sinking a pier foundation is not difficult. Follow the steps below to sink your own pier foundation.

1. Locate the location of the holes. Mark the location directly beneath the posts with paint or some other method (i.e. rocks, cross sticks, use scrap pieces, etc). Just as long as the method you choose will stay in position long enough for you to get around to digging the post holes.
2. Use post hold diggers, or (if you are lucky enough to have one) a tractor and 4' auger to dig your post holes. Make sure the holes are straight up and down or you are going to have fun trying to get the posts into the holes.
3. Make sure the holes are a minimum of 1' deeper than the posts will sink. I.E. if you have 2' of post to sink, make sure the holes are a minimum of 3' deep apiece.
4. Use a tape measure and fill backfill the holes will CLEAN PEAT GRAVEL. Using dirt will only compact and water will not be able to filter through. Fill the hole until right at the depth of your posts. The object is to get the 6x6 posts to "sit" on top of the peat gravel. We use peat gravel to allow water to filter though and because the gravel will not settle with the rate of the ground.
5. Set the structure into the holes and make sure it sits level to the best of your ability. You will probably need to add or remove gravel until you get the bubble within the lines. Be a perfectionist, the more level the structure, the better.
6. Once the structure is level, fill around the posts with more peat gravel within 6" of the top of the hole. Use a tamping bar to tamp dirt from the holes back into place on top of the peat gravel. Make sure the structure feels absolutely solid. It should NOT even budge when pushed forcefully from many angles. Use dirt from the ground around the outside of the sandbox and tamp it into place to seal around the exterior of the sandbox.

1.) Follow the diagrams below to construct the sub-floor of the playhouse. You will be able to sit this sub-floor on the frame of the foundation built earlier.



A  
4  
Wooden Foundation Layout  
Scale:  $\frac{3}{16}$ " = 1'0"



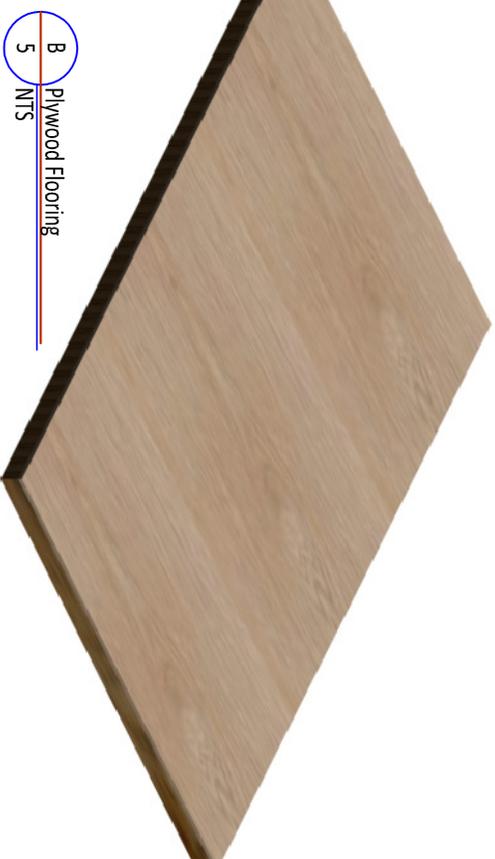
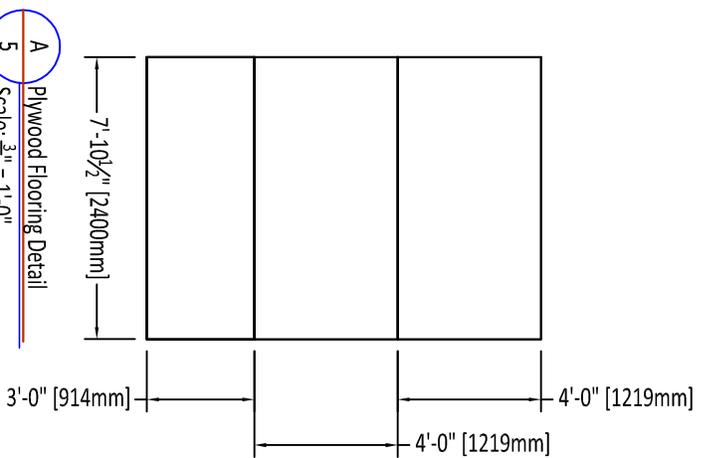
B  
4  
Wooden Foundation  
Scale:  $\frac{3}{16}$ " = 1'0"



## Materials:

Description:	Quantity:
4x4x12' Pressure Treated Post	5
4x4x8' Pressure Treated Post	2

2) For the flooring, simply lay down 3 sheets of cedar or oak plywood (we recommend  $\frac{3}{4}$ " for rigidity). Cedar and oak plywood have very good moisture and insect resistance. Always a good combination when talking about flooring.



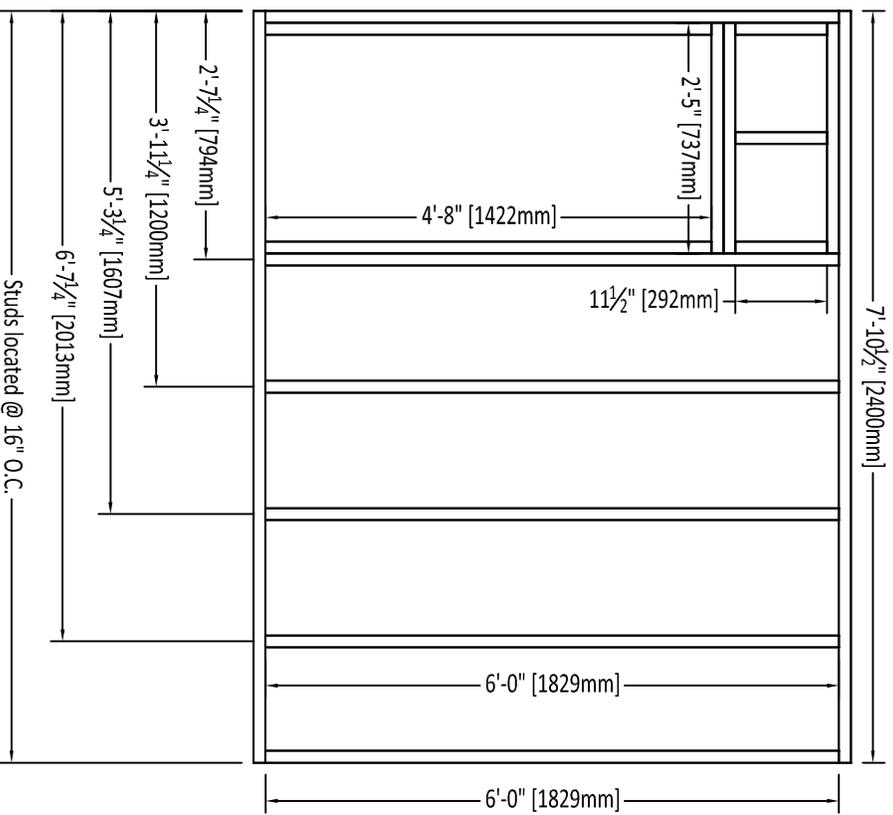
## Materials:

Description: \_\_\_\_\_  
Quantity: \_\_\_\_\_  
4x8' Cedar or Oak Plywood Sheet 3

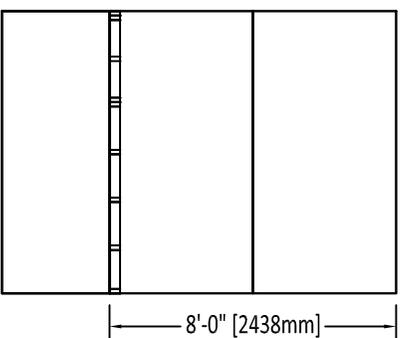
3) For the front wall, we recommend 2x4x6' pine planks. Follow the diagram below. Align the very front edge of the wall with the edge of the middle plywood flooring sheet. This should be located at precisely 8'-0".

Note: Whenever building a structure, it is important to always start by laying out the side pieces, find the center and layout the remaining pieces from the center. Basically start on the outside, go to the center and build outward.

4) For the front wall, construct the wall supports, build the header, and construct the door frame. After each piece is constructed, assemble to form 3A.



A Front Wall Elevation  
6 Scale: 3/4" = 1'-0"



B Front Wall Location Detail  
6 Scale: 3/16" = 1'-0"

**Materials:**

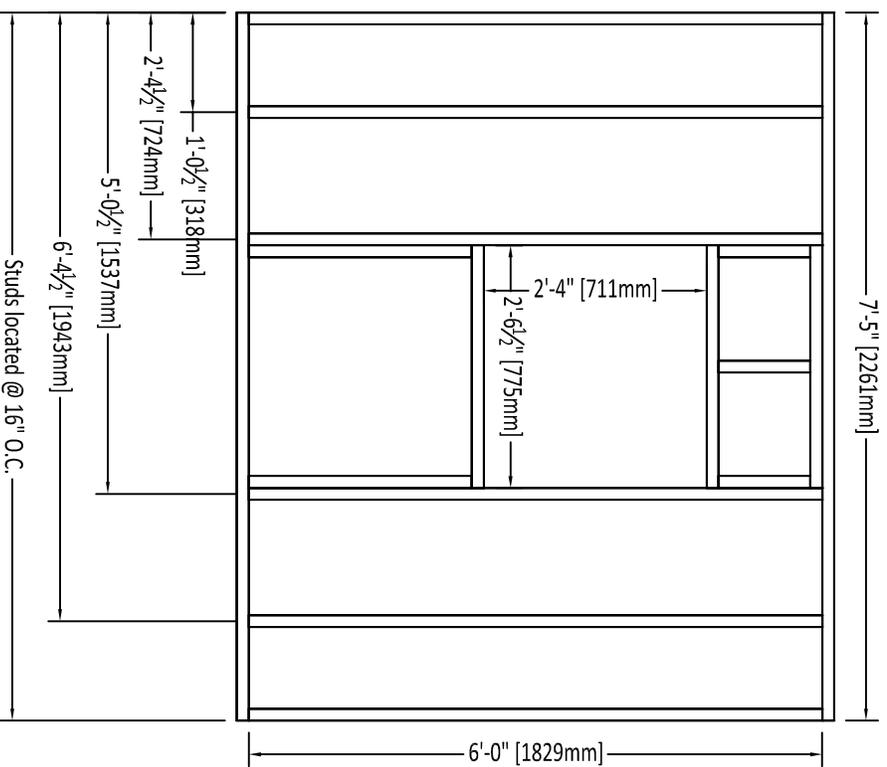
Description:	Quantity:
2x4x10' Plank	10
2x4x8' Plank	2

C Front Wall Diagram  
6 Scale: NTS

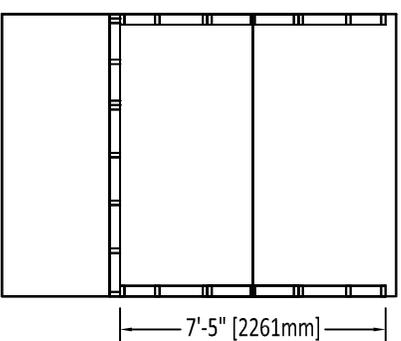


5) For the side wall, we recommend 2x4x6' pine planks. Follow the diagram below. You will need two of these walls.

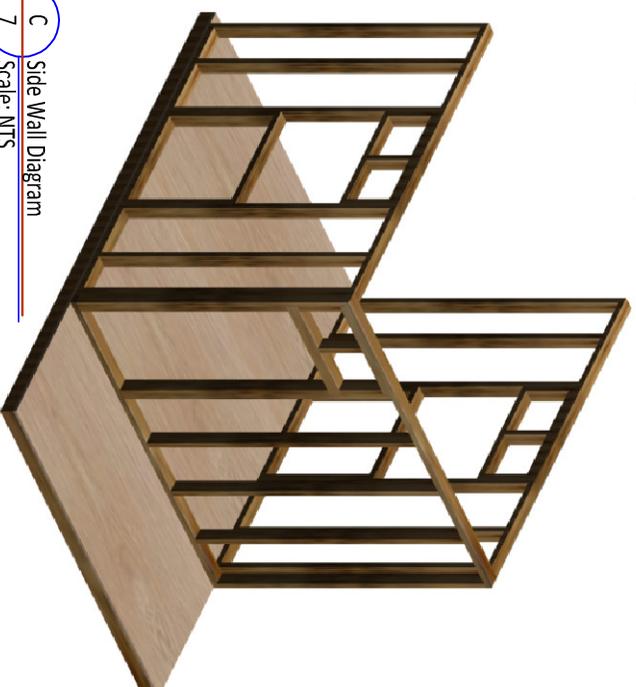
Note: Whenever building a structure, it is important to always start by laying out the side pieces, find the center and layout the remaining pieces from the center. Basically start on the outside, go to the center and build outward.



A Side Wall Elevation  
Scale:  $\frac{1}{2}$ " = 1'-0"



B Side Wall Location Detail  
Scale:  $\frac{3}{16}$ " = 1'-0"

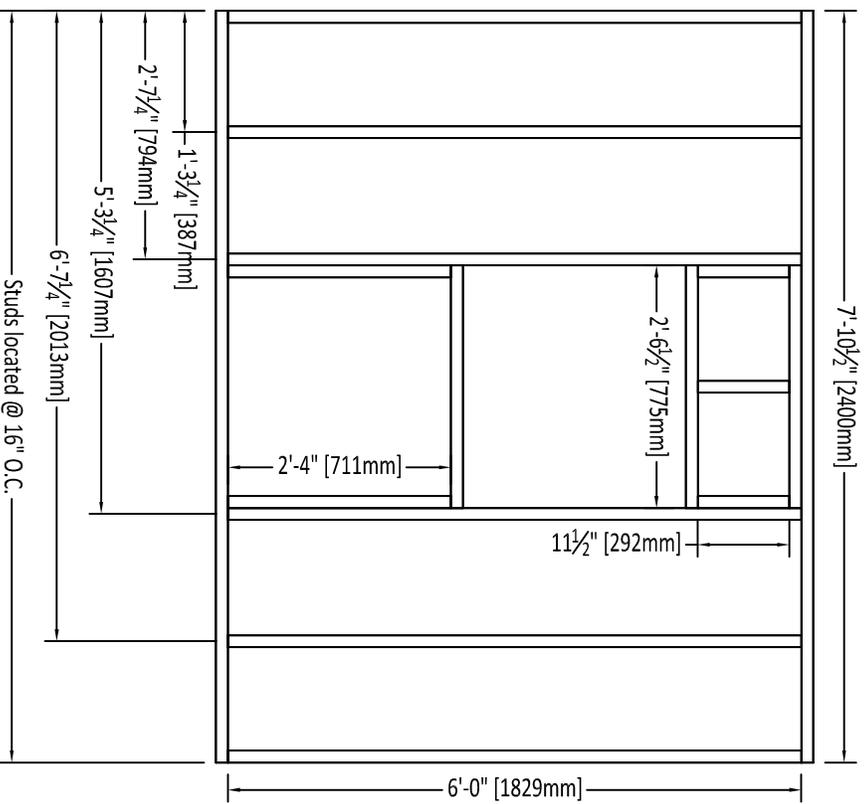


## Materials:

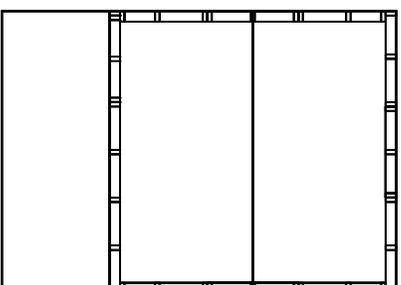
Description:	Quantity:
2x4x10' Plank	20
2x4x8' Plank	4

6) The rear wall is very similar to the side walls. Follow the diagram below.

Note: Whenever building a structure, it is important to always start by laying out the side pieces, find the center and layout the remaining pieces from the center. Basically start on the outside, go to the center and build outward.



A Rear Wall Elevation  
8 Scale:  $\frac{1}{2}'' = 1'-0''$

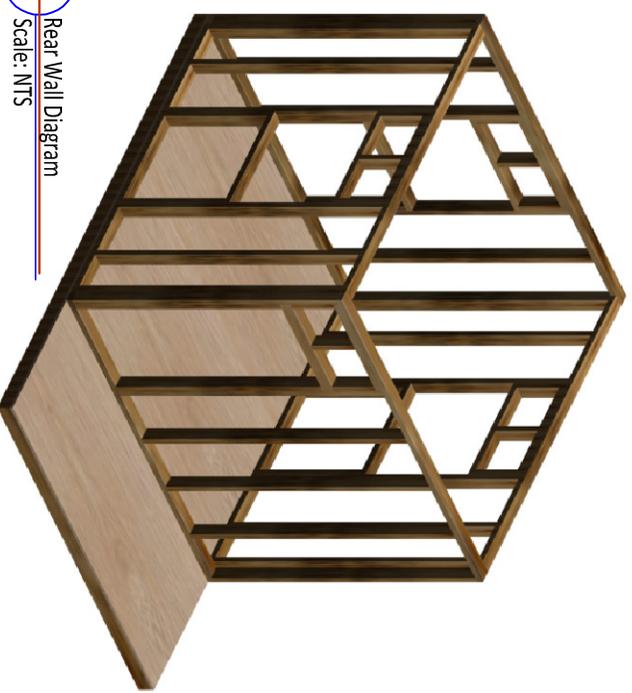


B Rear Wall Location Detail  
8 Scale:  $\frac{3}{16}'' = 1'-0''$

## Materials:

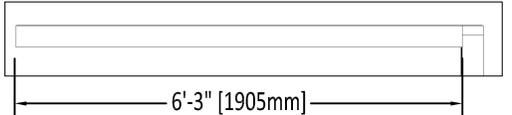
Description:	Quantity:
2x4x10' Plank	10
2x4x8' Plank	2

C Rear Wall Diagram  
8 Scale: NTS

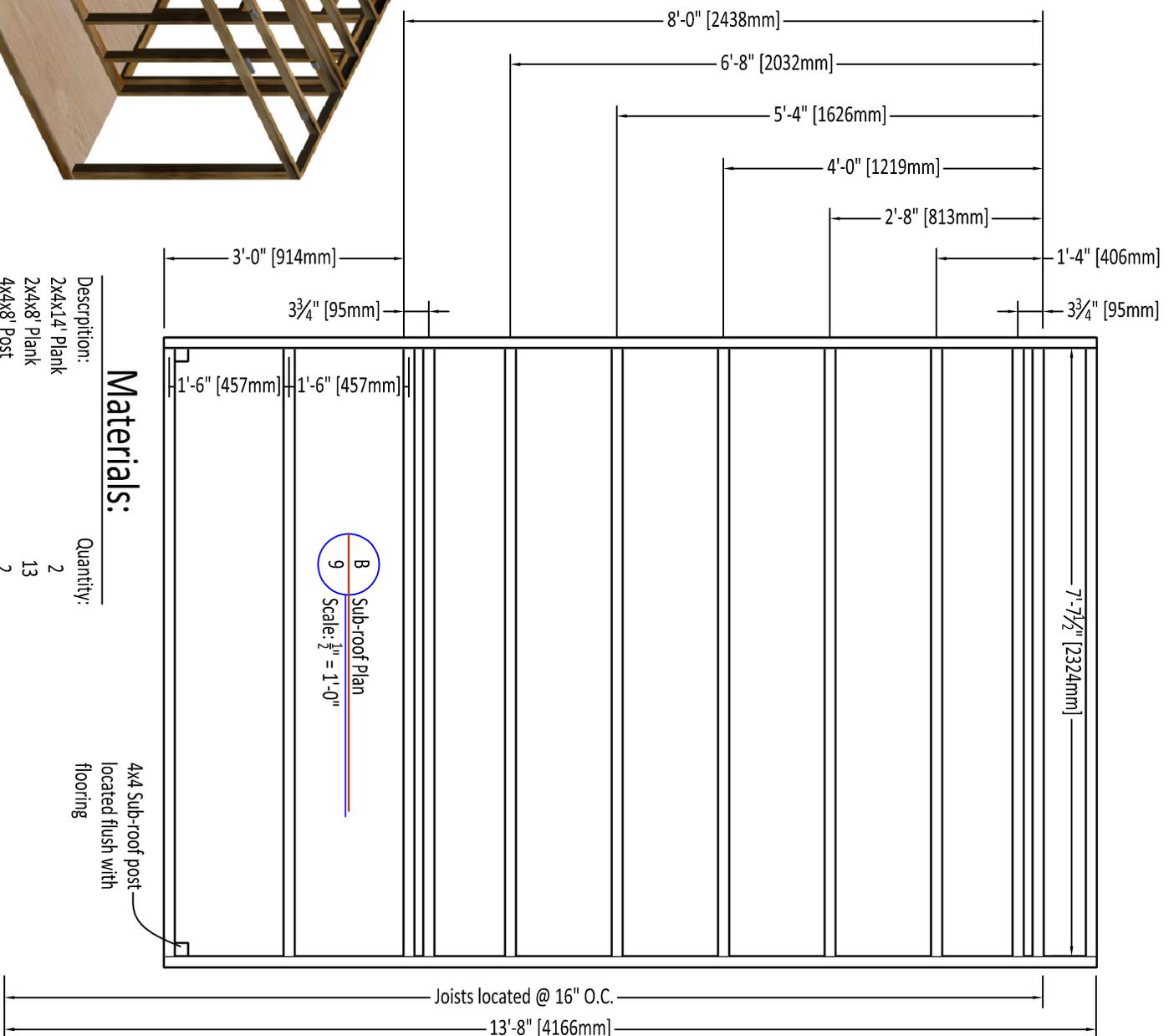


7) Before getting on the roof structure, you will need to tie the top of the roof together. Follow the diagram below for the sub-roof construction.

**A** Sub-roof Post  
 Scale:  $\frac{3}{8}" = 1'-0"$



**B** Sub-roof Plan  
 Scale:  $\frac{1}{2}" = 1'-0"$

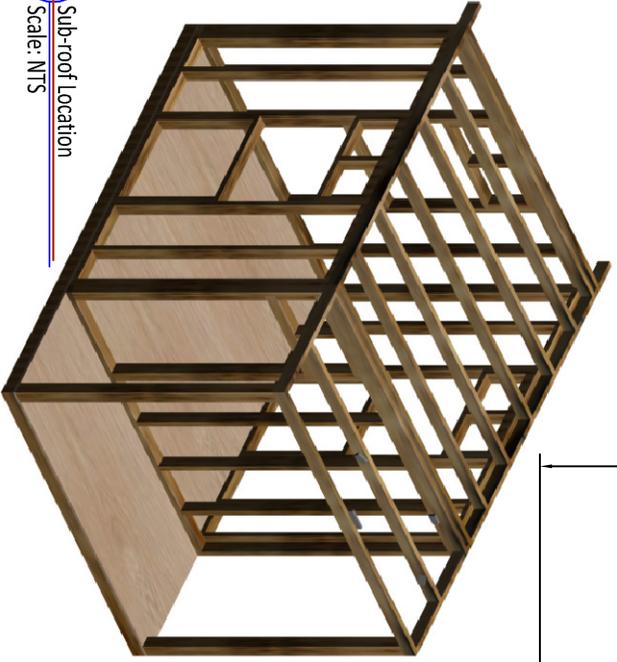


**Materials:**

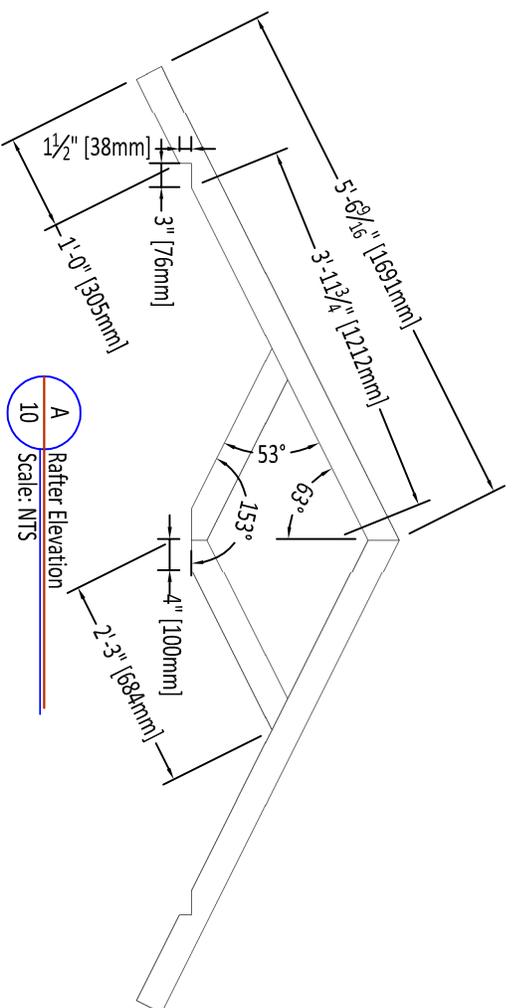
Description:	Quantity:
2x4x14' Plank	2
2x4x8' Plank	13
4x4x8' Post	2

4x4 Sub-roof post located flush with flooring

**C** Sub-roof Location  
 Scale: NTS

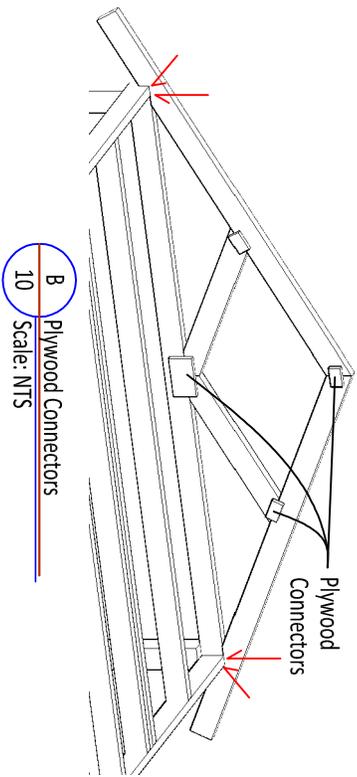


8) For more information on constructing rafters, refer to the appendix at the back of these plans. Rafter lengths and styles may vary according to builder preferences.



A Rafter Elevation  
10 Scale: NTS

9) Use scraps of 3/4" plywood as connectors for the edges of the rafters. Screw the ends of the rafters directly to the sub-roof frame.



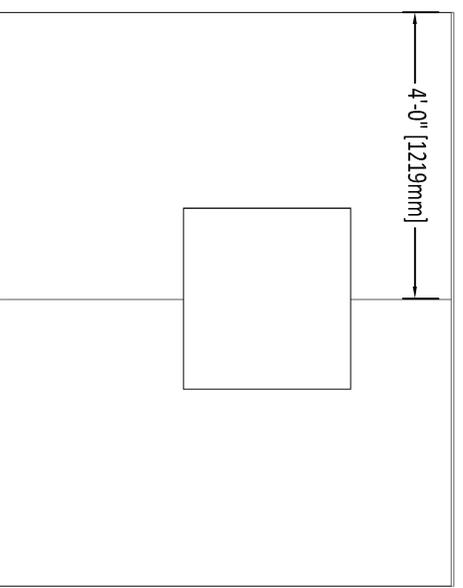
B Plywood Connectors  
10 Scale: NTS

### Materials:

Description:	Quantity:
2x4x6 Plank	30



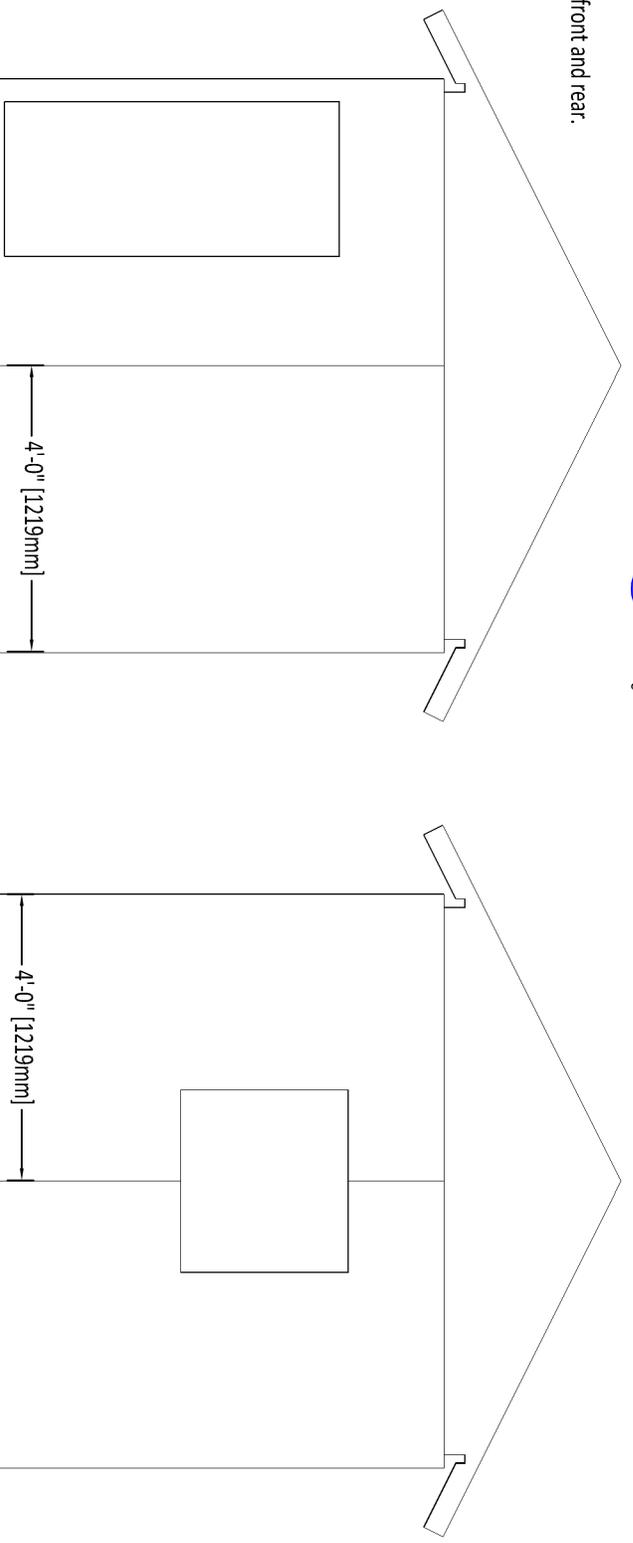
10) Sheathing is time consuming, but can be relatively simple. At the least you will need a circular or jig saw. Measure and layout your cuts. Start with the side sheathing and run the sheathing up right under the rafters. If you wish, miter the top edge so the sheathing is flush with the bottom surface of the rafters.



**A** Side Sheathing  
11 Scale:  $\frac{3}{8}'' = 1'0''$

**Materials:**  
Description: 4x8' Plywood Sheet  
Quantity: 12

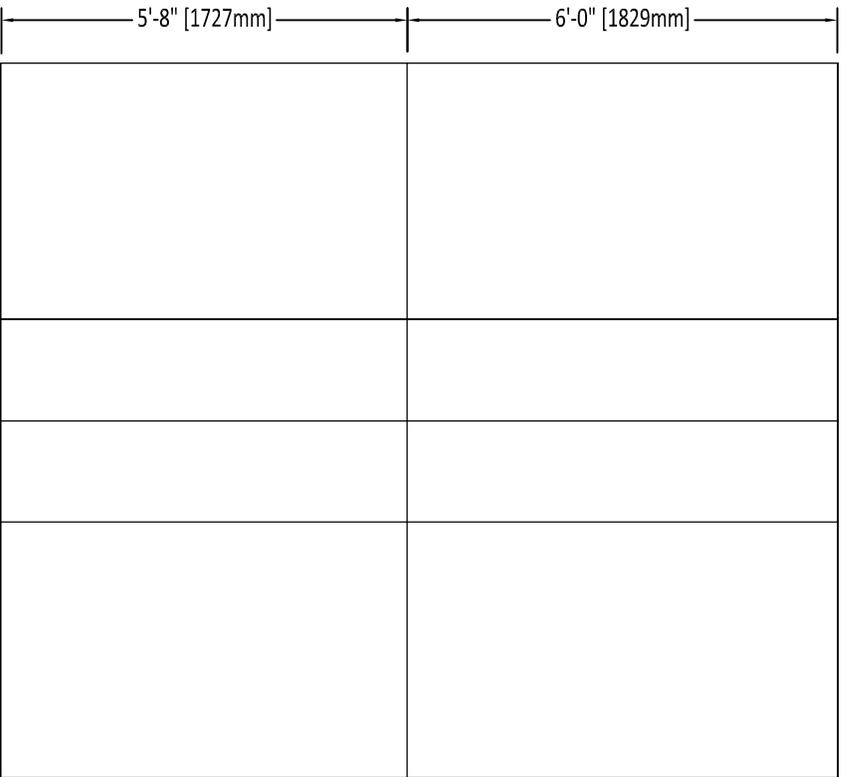
11) Now, front and rear.



**B** Front Sheathing  
11 Scale:  $\frac{3}{8}'' = 1'0''$

**C** Rear Sheathing  
11 Scale:  $\frac{3}{8}'' = 1'0''$

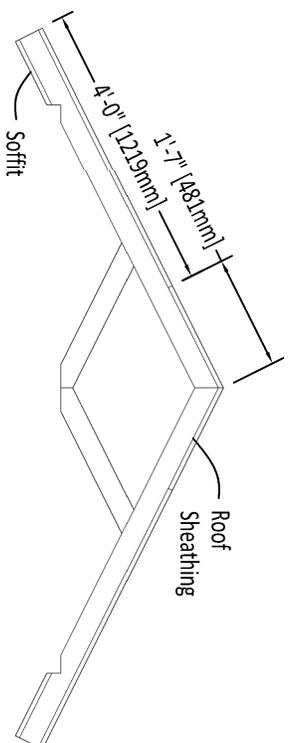
12) And the roof and soffit. The soffit is the piece that covers the bottom of the rafters, preventing insect intrusion.



A Roof Sheathing Plan  
12 Scale:  $\frac{3}{8}'' = 1'0''$

### Materials:

Description: 4x8 Plywood Sheet  
Quantity: 6

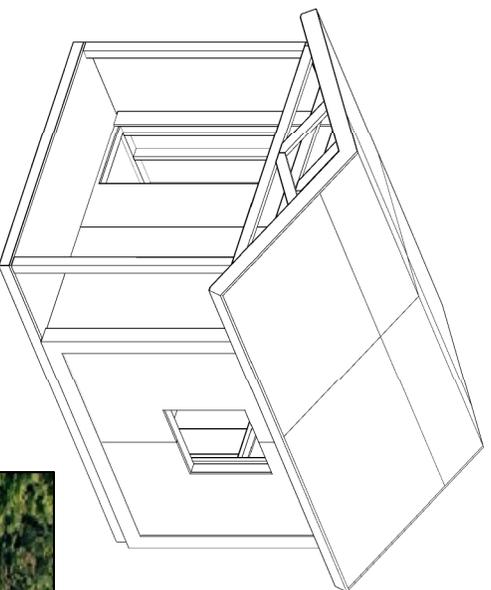


B Roof Sheathing & Soffit  
12 Scale: NTS



C Exterior Sheathing  
12 Scale: NTS

13) Install the trim. Finish up by installing the door, windows, adding veneers and roofing. If you wish, you may insulate and sheetrock (gypsum board) the interior. The rest is entirely up to you.



A Trim Diagram  
13 Scale: NTS

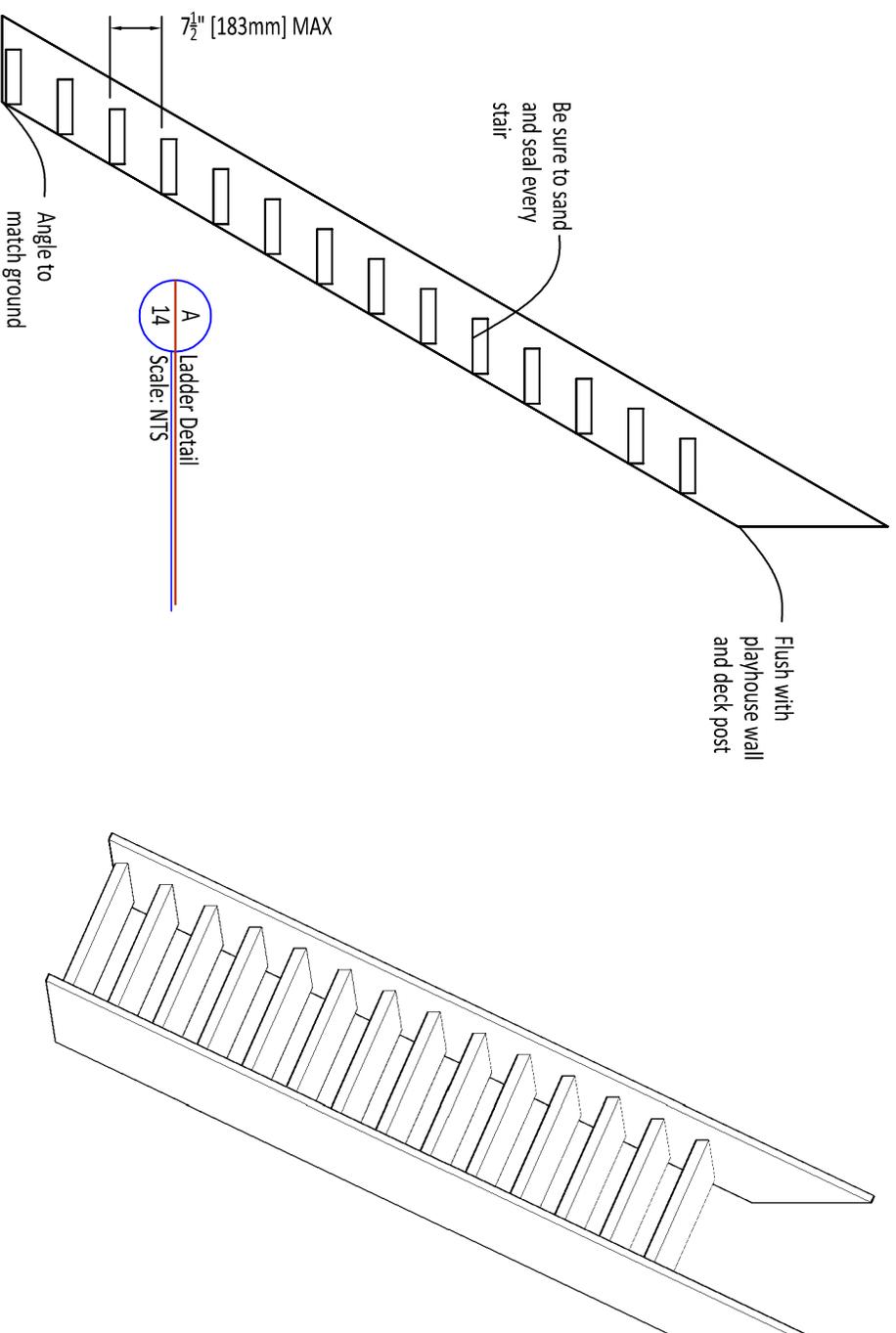
## Materials:

Description:	Quantity:
1x6 Trim Board	Builder
Paint or Veneer or Siding	Builder
Roofing Material	Builder



The ladder is not to difficult. The hardest part will be to align the ladder properly with the wall of the playhouse and the ground. This does NOT have to be a standard stair, as kids will, more than likely, want to climb up them more than walk. Cut some 2x8 (minimum) roughly as shown below.

It is actually very important to remember to sand or use manufactured board for the stairs; after all, we do not want splinters.



This ladder can be straight up if you wish. The important thing is to make sure it extends at least 2' beyond the opening to the house so kids have something to hold onto the entire way up.

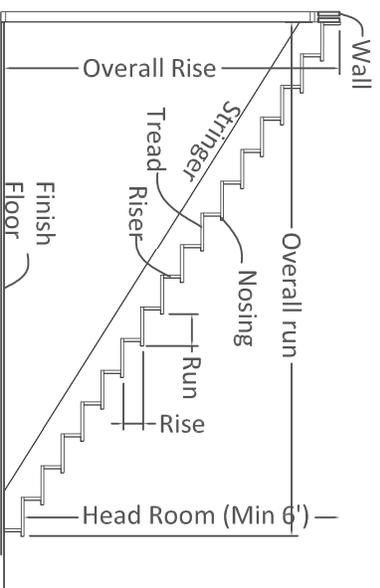
Also, make sure the steps are wide enough (2' minimum) to span the entire opening front deck post to front wall.

Should you wish to construct a full stair, we have included general instructions in the appendix.

For the stairs, you (the builder) have many options. You could build a simple ladder if you wish. We choose to include plans for a full set of stairs, but rather than break them down into a step-by-step process, we are going to use a generic format in outlining how to build stairs. We will list the stair components and leave it up to the builder in determining what type of stair they would like to use.

First, some general rules about stair building. You will want to follow these, especially if you are intending on converting the playhouse to another structure (such as a shed) once the children are grown.

- A) Minimum stair width is 36" Railings may protrude into the stairway a maximum of  $3\frac{1}{2}$ ".
- B) Minimum tread length is 9". It is generally best to shoot for 10-11" tread width.
- C) Maximum riser height (step height) is  $8\frac{1}{4}$ ". For kids, we recommend less, generally around 6-7".
- D) All risers MUST be within  $\frac{3}{8}$ " of the same size excluding the bottom riser (which may be smaller).



As a general rule-of-thumb,

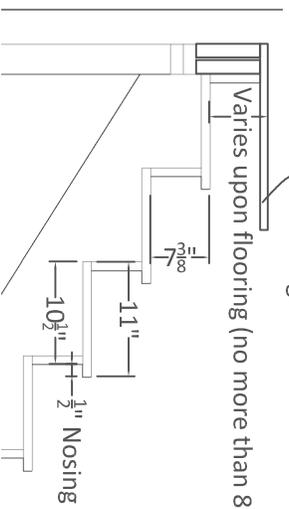
- The rise times the run should approximately equal 75.
- Rise plus run should be between 17 and 18 inches.
- Two times the rise, plus the run should equal 25.

- 1) Determine the width of the stair tread (typically 11", you can use two 1x6s ( $5\frac{1}{2}" \times 2 = 11"$ ).
- 2) Subtract the nosing width, typically  $\frac{1}{2}"$ , so that leaves  $10\frac{1}{2}"$ .
- 3) Using the first "rule of thumb" from above (rise x run = 75), a good rise for a  $10\frac{1}{2}"$  run (from step 2), is 75 divided by  $10\frac{1}{2}" = 7.14$ . As long as the number is never greater than  $8\frac{1}{4}$ , you will be fine.
- 4) Measure the overall rise for the proposed stair. We will use 8' or 96" for this purpose.
- 5) Divide the number by the optimum rise (7.14).  $96" / 7.14 = 13.45$ . There cannot be a partial step, so round to the nearest whole number 13. There will be 13 risers for a 8' overall rise.
- 6) Divide the overall rise (96) by the number or risers (13) =  $7.38"$  or  $7\frac{3}{8}"$ . Each riser will be  $7\frac{3}{8}"$ .
- 7) Layout a 2x10 or 2x12 pattern stringer. Make the first cuts with a circular saw and finish them with a jigsaw, hand saw or reciprocating saw (saws-all) to prevent over-cutting. Try the pattern in place to see how it fits. Use this to cut the other remaining one or two stringers using the pattern.

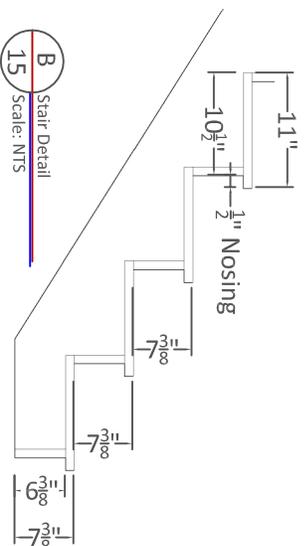
Assuming a 1" tread material thickness...

← Flooring

Varies upon flooring (no more than  $8\frac{1}{4}$ " )



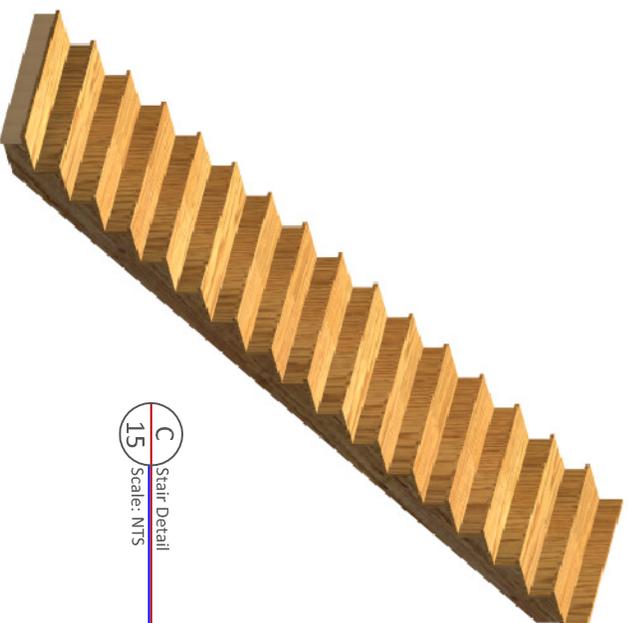
**A** Stair Detail  
Scale: NTS



**B** Stair Detail  
Scale: NTS

**NOTE: YOU WILL WANT TO FINISH ANY SURFACE THE STAIR WILL COME IN CONTACT WITH BEFORE MAKING YOUR MEASUREMENTS!** Otherwise, you will have to cut your finish material AROUND the stairs and that can be a bit of a pain. This includes walls, floors and upper flooring.

Or, at least allow the thickness of your finish materials in your calculations, construct the form so you can use it for the rough carpentry and then take it down to finish the interior and put the stair back into place and finish.



**C** Stair Detail  
Scale: NTS

## Materials

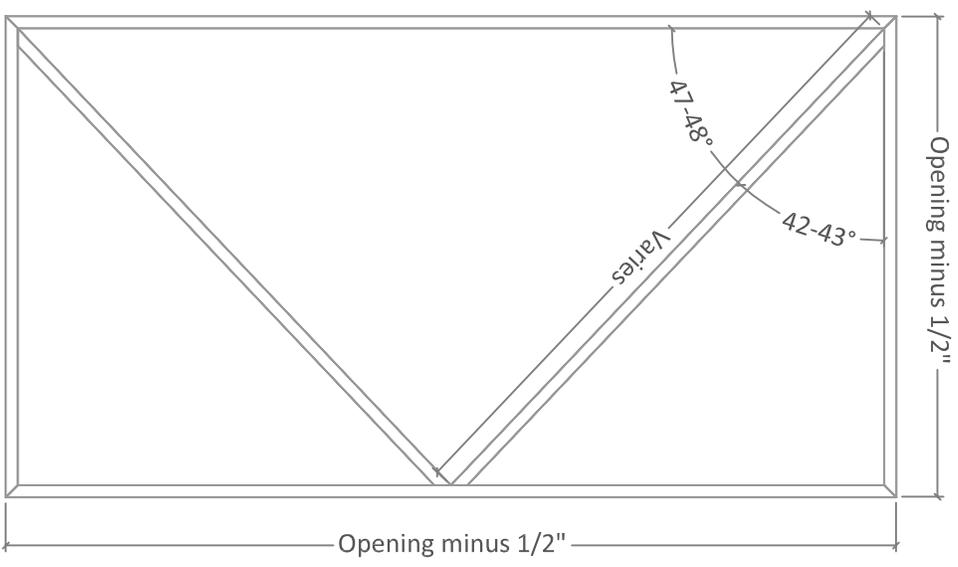
Description:	Qty:
2x10-12 Stringer	Varies
Tread Material	Varies

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 is 2'-6  $\frac{1}{2}$ "x56", minus  $\frac{1}{2}$ " for swing on both the sides and the top and bottom, that leaves a door size of 2'-6"x55  $\frac{1}{2}$ ".

1) To begin, we are using 1'4 planks and  $\frac{1}{2}$ " plywood sheathing. Cut the frame pieces as shown below. You DO NOT have to miter the corners, we just recommend it for aesthetic purposes.



A Rear Sheathing Diagram  
A1 Scale: NTS

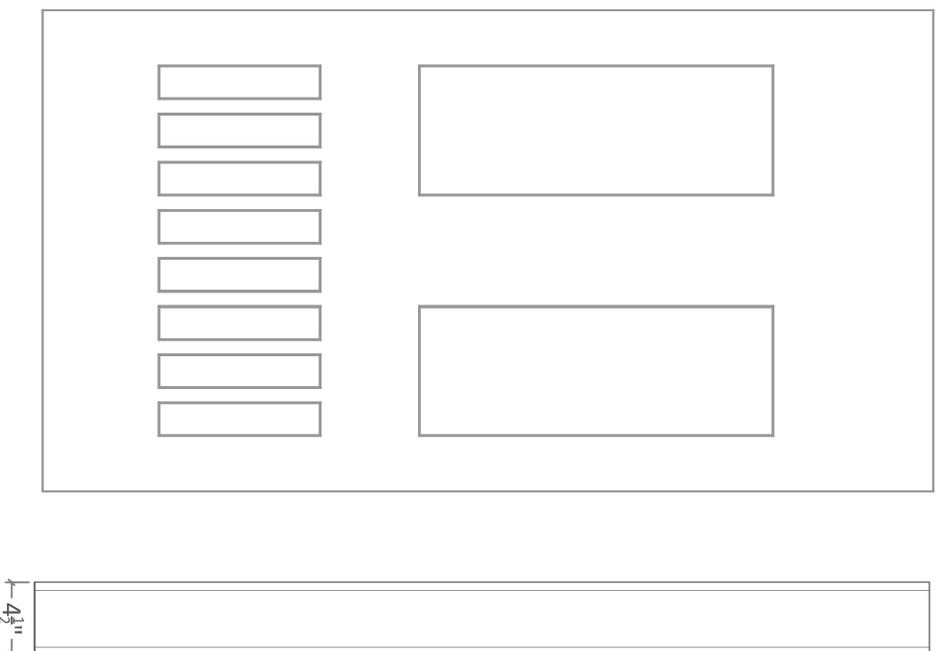
We will show the door in this example with a pattern cut out of the front and back sheathing, but this is not required. It is purely for looks and does not affect the integrity of the door at all.

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 $\frac{1}{2}$ " 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.

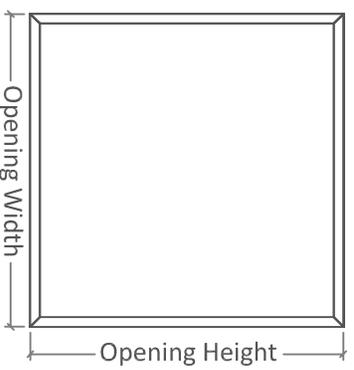
3) Insulate the door with either blow foam or regular R-13 roll insulation will work.

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

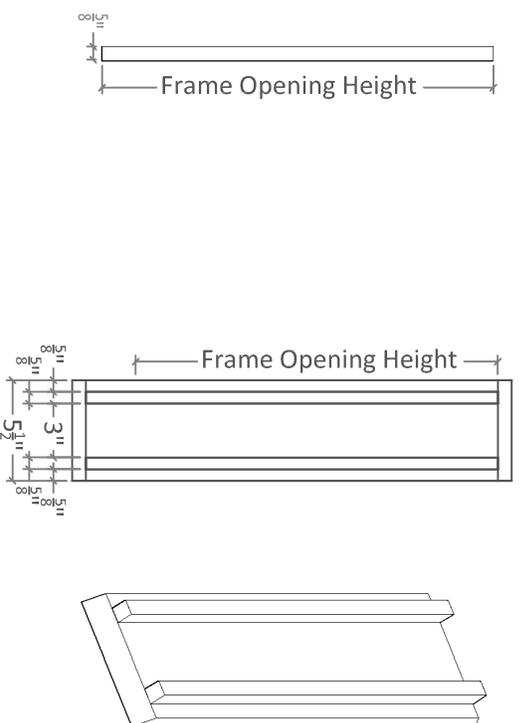
5) A single slide bolt works wonders on the outside and inside to lock the door shut. **If you don't want your kids to be able to lock the door, only install the slide bolt on the outside!** The slide bolt also offers a grip to pull the door open.

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!**

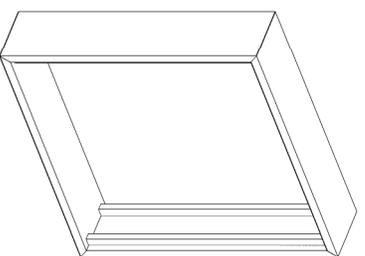


2) Rip a 1x4x8' into strips  $\frac{5}{8}$ " thick. These will serve many purposes in the future but for now, we just want four of them to match the opening, so either rip and cut one piece or rip an entire board into  $\frac{5}{8}$ " strips and place the pieces to the side for later.



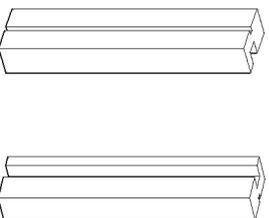
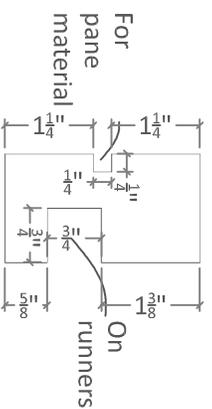
3) Using 1" screws and a level, screw two runners onto one of the exterior frame pieces. Repeat for the second side (see above).

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

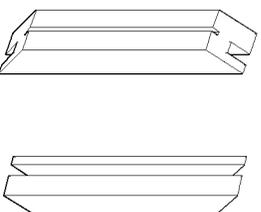
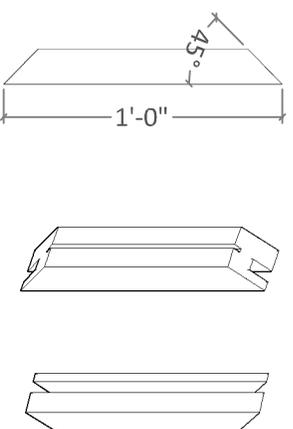


5) Rip a 8'-2x6 down the center lengthwise.

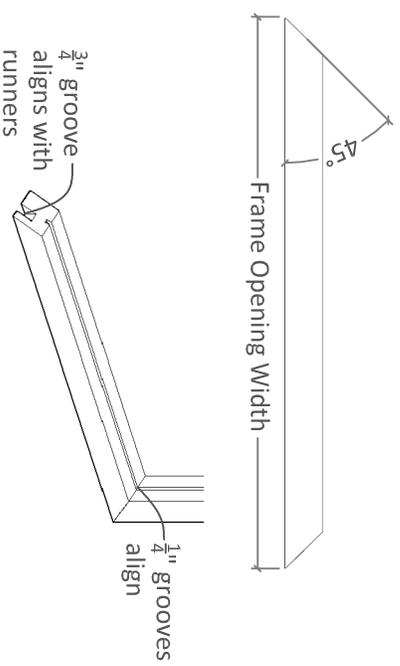
6) Use a router to gouge a  $\frac{3}{4} \times \frac{3}{4}$ " groove down the center of one side. Flip the board over and gouge a  $\frac{1}{4} \times \frac{1}{4}$ " groove down the center of the other side (see detail)



7) Miter the ends. Make sure the narrow ( $\frac{1}{4} \times \frac{1}{4}$ " ) groove is facing inwards! The wide ( $\frac{3}{4} \times \frac{3}{4}$ " ) 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

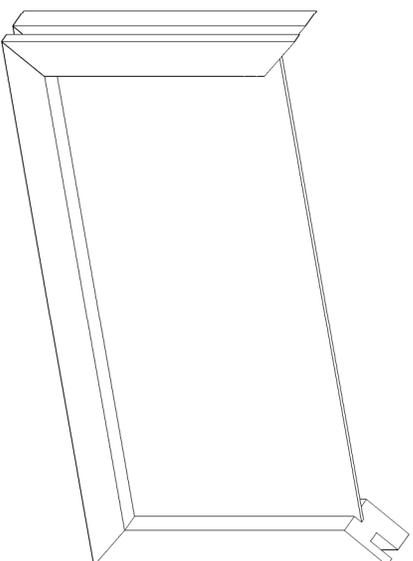
9) Lastly, before construction, you will need to determine what type of pane material you want to use. For a playhouse, we would recommend against using glass and go with clear acrylic or polyvinyl pane.

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.

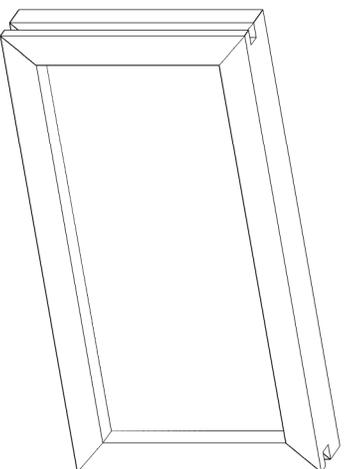
SHOULD YOU DECIDE TO CUT YOUR OWN GLASS, YOU DO SO AT YOUR RISK! USE ALL SAFETY PROCEDURES AND EQUIPMENT WHEN HANDLING GLASS!



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.

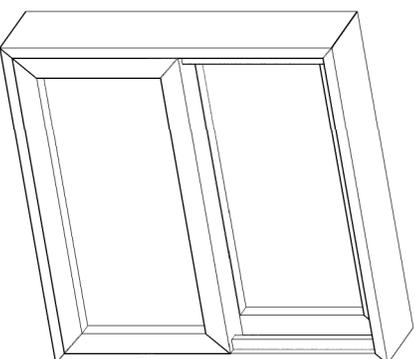
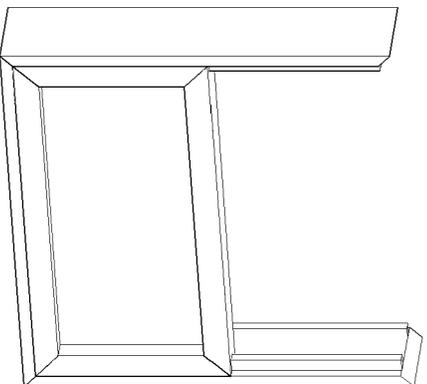


11) Cap off the window with the top piece and connect all pieces with 1" small radius ( $\frac{1}{4}$ " or smaller) screws. Be sure you don't screw down into the window panel!



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.

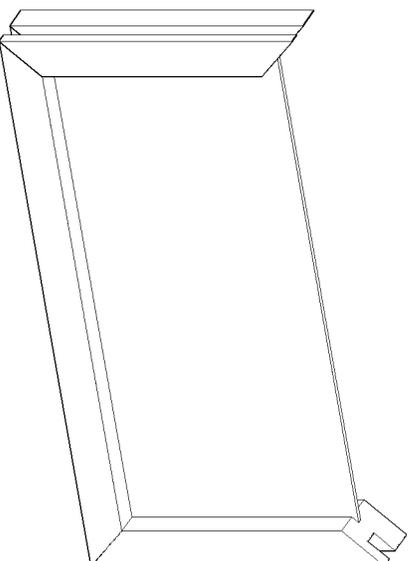
17) Lastly, before construction, you will need to determine what type of pane material you want to use. For a playhouse, we would recommend against using glass and go with clear acrylic or polyvinyl pane.

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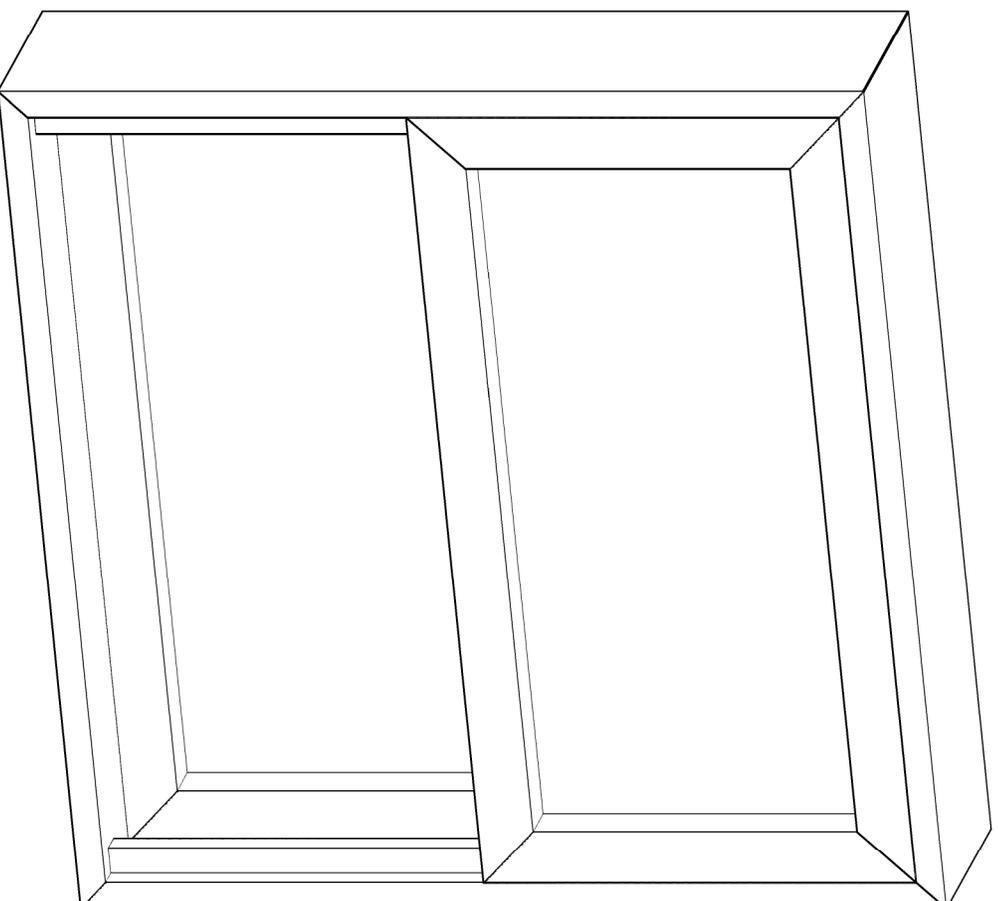


18) Assemble the window frame around the pane. Run a bead of epoxy or polyethylene (or equivalent) seal down the frame pieces as you assemble the window to get a good, weather-tight, bond. You could increase rotting and mildew growth if you choose not to.



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.

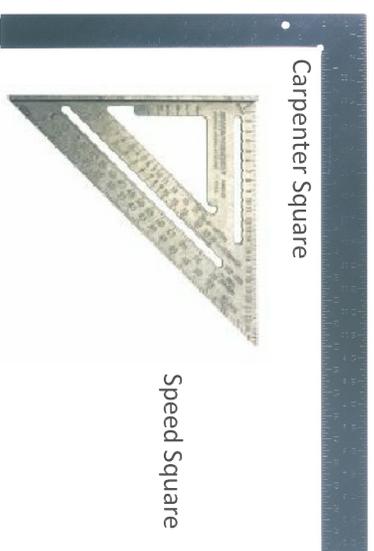


To determine the rafter lengths,

- 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".

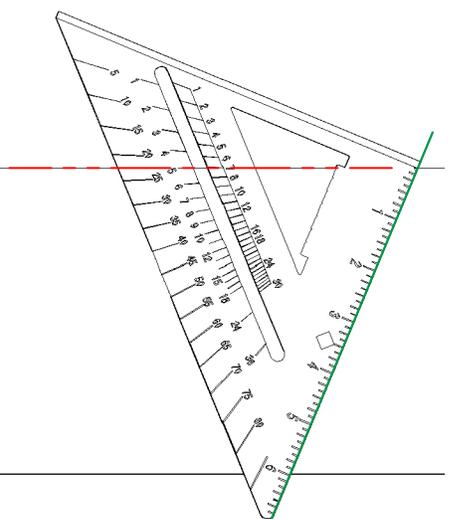
If you feel at all uncomfortable constructing roof elements, consult a professional. Also, you will need to be comfortable with heights and please use all safety precautions when placing the rafters. Not every rafter will be directly above a solid surface and there will be open spans beneath them. We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



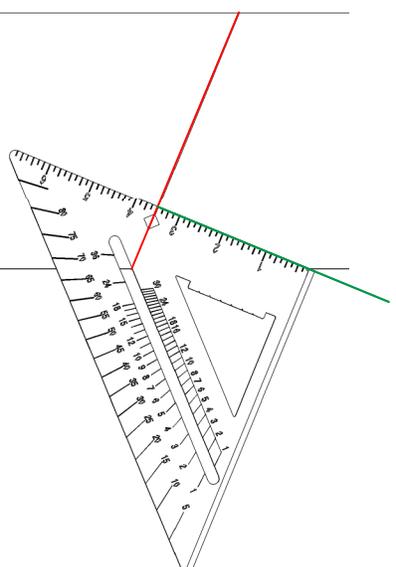
Roof Slope	Factor
Flat	1.0
1:12	1.003
2:12	1.014
3:12	1.031
4:12	1.054
5:12	1.083
6:12	1.118
7:12	1.158
8:12	1.202
9:12	1.250
10:12	1.302
11:12	1.357
12:12	1.414
13:12	1.474
14:12	1.537
15:12	1.601
16:12	1.667
17:12	1.734
18:12	1.803
19:12	1.873
20:12	1.943
21:12	2.015
22:12	2.088
23:12	2.162

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.



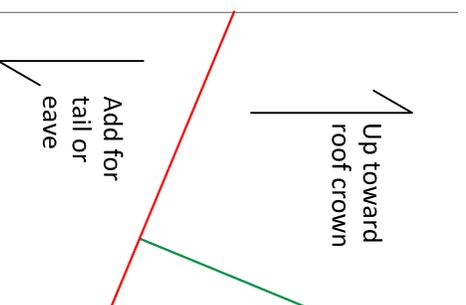
See how the red line lines up with the little notch in the back of the speed square and the number 5 in the "common". The common simply refers to a common rafter. Notice also, how the "HIP/VAL" lines up quite nicely with 7? For a  $\frac{1}{2}$  slope, the corresponding hip/valley slope would be 7. Easy 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.



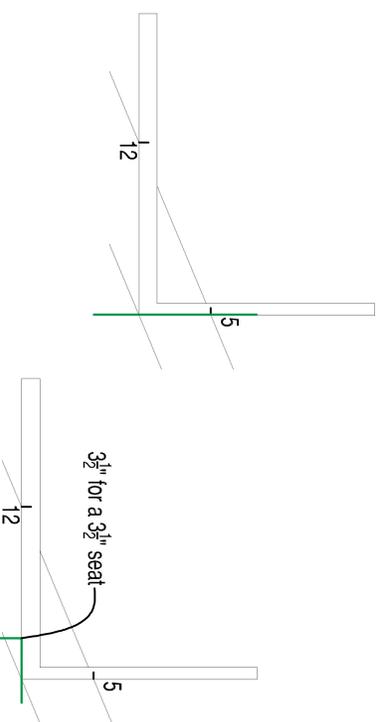
Align the diamond sight so the line cuts the center and your pivot point is flush against the outside edge of the rafter to be cut.

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.