

## Installation Instructions

### 412-SR-12-IN

### **Concrete Pad Mounted Rectangle Shed Kit**

**WARNING:** If the information in these instructions is not followed exactly, weakening or failure of the erected structure may result causing property damage, or personal injury.

A properly sized 3/32" diameter pilot hole must be drilled before you attempt to drive lag screws into lumber members. See Table, below. Driving lag screws into lumber, without first drilling a pilot hole, can prevent the lag screw from driving fully into the wood, can lead to crack formation while driving the lag screw in, or later, as the wood dries naturally. This can result in a weakened pergola structure.

- Thoughtfully engineered Brackets eliminate all wood-joinery skills requirements.
- Skills required: drilling pilot holes and driving screws into lumber, miter saw cutting.
- Easy lift and place U-channels eliminate need for lifting equipment.
   Super-easy assembly work.
- Self-aligning design squares up structure automatically.
- Estimated Assembly Time is less than 5 hours, not including polycarbonate panels.



MADE IN AMERICA

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### **1 GENERAL INFORMATION**

### 1.1 SAFETY AND WARNING INFORMATION

### 1.1.1 Building Permit & Inspection Requirements

We recommend that you consult with your local building permit office and obtain advice and any required building permits and inspection approvals from the local building inspection department or authority over building codes.

#### 1.1.2 Other Cautions

**CAUTION**: Adhere to all safety requirements. Wear safety glasses/goggles when working. Wear safety gloves when handling brackets, hardware, and lumber. Wear hearing protection when using a circular saw, miter saw, table saw, or hammer drill.

INSTALLER: Leave this manual with the consumer, CONSUMER: Retain this manual for future reference.

Proper pilot hole diameter and hole depth for various lag screws and wood types					
Lag Screw Type	Wood Type	Pilot hole drill diameter and hole depth			
¾" X 1-1/2" Lag Screw	Soft Wood	3/32" drill bit diam., 1-1/4" depth			
McMasterCarr.com SKU 92351A546	Hard Wood	3/16" drill bit diam., 1-1/4" depth			
3/8" X 3" Lag Screw	Soft Wood	11/64" drill bit diam., 3" depth			
McMasterCarr.com SKU 92351A636	Hard Wood	¼" drill bit diam., 3" depth			

### 1.2 TOOLS REQUIRED

Listed below, are common tools required for this project. These tools are not included in this kit. Acquire the tools for your project from the "Required for" column in this table.

Description	Tool Purpose	Reference Image
16 ft. Tape Measure	Measure and verify lengths.	
4ft. Framing Level	Verify Level/Plumb	10 The same
Framing Square	Square Corners of deck and walls	Image not available.
Drill Gun	Drill pilot holes for lag screws. Drive lag screws.	
Ratchet Socket Driver	Drive lag screws into Pergola lumber members.	Interestant 1
7/16" Hex Socket	Drive ¼" X 1-1/4" Hex Hd. lag screws.	C C
3/32" Drill Bit	Drill pilot holes for ¼" lag screws in soft wood.	
10" Compound Miter Saw	Cut pots and headers to length	
Circular Saw	Cut OSB and Plywood.	Image not available.
Chalk Snap Line	Mark cut lines in plywood	Image not available.
Pencil	Mark bracket location, mark cut lines	Image no Available.
Hammer	Various.	
Mallet	Various.	Image not Available
8 FT. Step Ladder	All	Image not Available

### 1.3 CONTENTS OF KIT # 412-SR-IN

The contents of this kit are shown in the table below. Before you begin your project, take an inventory of all items that you received from us. If any items are missing, contact us directly via email at <a href="mailto:info@RioOutdoors.com">info@RioOutdoors.com</a>. Include your name and shipping address and your order number, if available. We will respond within 24 hours with a resolution to your problem.

Item SKU #, Description	Item Qty	Item Image
412 Open End Ridge Rafter Bracket SKU# OOE-RR	2	
Truss End U-Channel, Right SKU #TE-UBL	2	
Truss End U-Channel, Left SKU# TE-UBR	2	
Post Top Rafter Tie Bracket SKU# PTRT	10	
Open End Rafter Tie Bracket SKU# OE-RT	4	
412 Ridge Rafter Tie Bracket SKU# PO-RRT	5	
Universal Anchor L Brackets SKU# 1WAB	12	
¼ x 1-1/2" Black Lag Screw	241	

### 1.4 LIST OF MATERIALS THAT YOU WILL SUPPLY

This is the list of required materials which are not included in this kit. You will acquire these items locally for your project. Use this table to help you calculate your total project budget.

**NOTE**: To the total, add your local sales tax also.

Item Description	Item Qty	Lumber Type   Application	Est. Price \$	Ext. Price
2x4 X 8 ft. or 2x6 X 8 ft.	44	Kiln Dried Pine   Walls Verticals/window frames	2x4 = \$3.25 2x6 = \$4.72	2x4 = \$143 2x6 = \$207.68
2x4 X 10 ft. or 2x6 X 10 ft.	4	Kiln Dried Pine   Short Wall Top/ Bottom	2x4 = \$4.24 2x6 = \$6.28	2x4 = \$20.48 2x6 = \$30.24
2x4 X 12 ft. or 2x6 X 12 ft.	4	Kiln Dried Pine   Long Wall Top/ Bottom	2x4 = \$5.12 2x6 = \$7.56	2x4 = \$20.48 2x6 = \$30.24
2x6 X 12 ft.	4	Pressure Treated   Deck Frame Long/ Headers/ Door Frames	\$13.38	\$53.52
2x6 X 10 ft.	10	Pressure Treated   Deck Frame Short	\$10.88	\$108.80
2x6 X 8 ft.	22	Kiln Dried Pine   Rafters/ Headers	\$4.72	\$103.84
2x6 X 10 ft.	2	Kiln Dried Pine   Truss Beams	\$6.28	\$12.56
2x6 X 16 ft.	3	Kiln Dried Pine   Ridge Beam/Roof Skirt	\$10.12	\$30.36
3/4" x 4'x8' Plywood	4	NA   Deck Flooring	\$20.67	\$82.68
½" OSB	19	NA   Walls, Roof Deck	\$16.35	\$310.65
Roof Board Clips	12	At floating joint in roof deck		4
10D x 3" Framing Nails				
OSB nails/Screws				
3/8" x 3" Concrete Screws	12	Anchor deck to concrete pad		
Roofing Nails				
Siding				
Roof (drip edges, tar paper, shingles)				
Price	Total			

### 1.5 GENERAL LUMBER REQUIREMENTS AND INFORMATION

We have designed the post top brackets to provide easy alignment of the headers. Use pressure treated lumber or kiln dried cedar, redwood, etc. for the structure. Verify that the lumber members are not warped, and their girth measurements are to specifications.

#### 1.5.1 Dimensional lumber size requirement

For this deck mounted rectangle shed, the deck and walls frames may be built using 2x4s or 2x6s. The truss beams, truss rafters, ridge beam, and roof rafters must be 2x6 kiln dried lumber. Selecting Lumber members at the lumberyard

The length of lumber delivered to stores can be longer than the labeled length but will never be less than the labeled length dimension. To gain more flexibility, we suggest that you measure each lumber member before adding to your cart at the store. Select lumber members which are slightly longer than the labeled length. Example: if buying 96" length 4x4s. Measure and select members which exceed 96". Some pieces can have lengths as long as 96-3/8". The extra length will provide flexibility if you need to trim the ends for squaring or cleaning purposes.

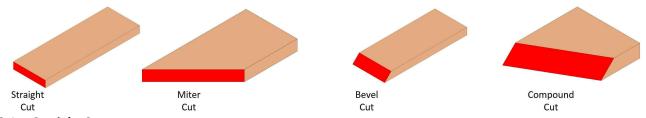
### 1.5.2 Plan ahead to save money and to minimize wood waste.

We provide all the detailed information related to lumber materials for your project. A complete lumber materials list and a detailed cut list are provided. Use the information wisely and make wise judgements about the lengths of raw lumber you purchase.

#### 1.5.3 Lumber Cut Types

Four lumber cut types are encountered during construction of RioOutdoors Pergola Structures. Making precise lumber end cuts is not difficult if the cut miter angle and/or bevel angle for each cut is known, and you employ a compound miter saw. All contruction instructions provided by RioOutdoors contain the exact angle parameters required for every lumber end cut.

Four common lumber end cuts are defined, below.



### 1.5.3.1 Straight Cut

A straight cut is a cut that is perpendicular to the length edge and parallel to the width edge of the lumber board. To make a straight cut, employ a chop saw or miter saw set at zero miter and zero bevel angle position.

#### 1.5.3.2 Miter Cut

A miter cut is a cut that is at an angle (less than or greater than 90°) to the length edge of the lumber board. To make a miter cut, set the horizontal rotation angle (miter angle) to the left or right of center in a miter saw, then cut through the thickness of the lumber board.

#### 1.5.3.3 Bevel Cut

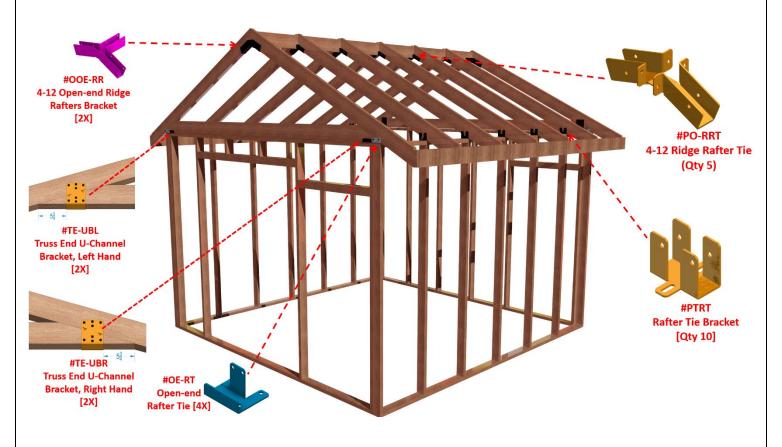
A bevel cut is a cut that is at an angle (less than or greaer than 90°) to the top surface of the lumber board. To make a bevel cut, tilt the miter saw blade to the left or right to a particular angle, then cut through the thickness of the lumber board.

### 1.5.3.4 Compound Cut

A compound cut is created using a compound miter saw and combines a miter cut and a bevel cut in a single cut. A compound cut by setting a miter angle (less than or greater than 90°) to the length edge of the lumber board and, at the same time, setting a bevel angle (less than or greaer than 90°) to the top surface of the lumber board. To make a compound cut, set a particular horizontal rotation angle (miter angle) and vertical tilt angle (bevel angle) in a miter saw, then cut through the thickness of the lumber board.

### 1.6 RECTANGLE SHED STRUCTURE

### 1.6.1 Application Depictions: Brackets

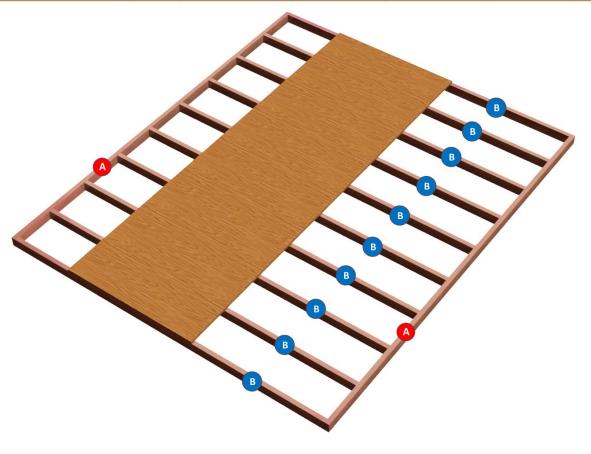


### 1.7 LUMBER CUT LISTS

### 1.7.1 Deck Lumber

Study this table. The "Source Lumber (in.) is defined as the lumber to use to cut these items from. Follow the detailed instructions to cut and prepare all lumber members. Use a 10" power compound miter saw to make all end cuts.

	10 ft. x 12 ft. Rectangle Shed Deck Cut List										
ID	Description	QTY	Source Lumber [Length (in)./Qty]	Lumber Size	Cut Length (in.)	End 1 Cut	End 2 Cut				
A	Deck Frame - Long Edge Members	2	144/2	2x4/2x6	144"	Straight	Straight				
В	Deck Frame - Short Cross Members	10	120/10	2x4/ 2x6	117"	Straight	Straight				



### 1.7.1.1 Deck Lumber Preparation

Two (2) Deck Frame Long Edge members and Ten (10) Deck Frame Short Cross members are required. Both ends of all members must have straight cuts.

Measure and cut two (2) Deck Frame Long Edge members to the required 144" length.

## **Deck Frame Long Member**



**Quantity Required = 2** 

Measure and cut ten (10) Deck Frame Short Cross members to the required 117" Length.

## **Deck Frame Short Cross Members**

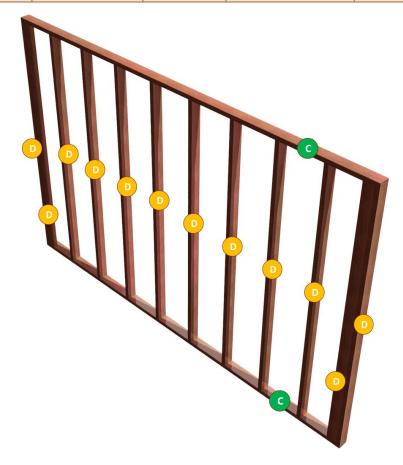


**Quantity Required = 10** 

### 1.7.2 Long Walls Lumber

Study this table. The "Source Lumber (in.) is defined as the lumber to use to cut these items from. Follow the detailed instructions to cut and prepare all lumber members. Use a 10" power compound miter saw to make all end cuts.

10 ft. x 12 ft. Rectangle Shed Long Walls Lumber Cut List										
ID	Description	QTY	Source Lumber [Length (in)./Qty]	Lumber Size	Cut Length (in.)	End 1 Cut	End 2 Cut			
C	Wall Top/ Bottom Members	4	144/4	2x4/ 2x6	144"	Straight	Straight			
D	Wall Vertical Members	24	96/20	2x4/ 2x6	96"	Straight	Straight			



#### 1.7.2.1 Long Wall Lumber Preparation

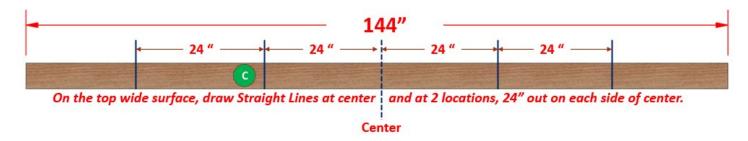
Four (4) Long Wall Top and Bottom members and Twenty Four (24) Long Wall Vertical members are required. Both ends of all members must have straight cuts.

Two of the four Long Wall Top and Bottom members are to be marked with lines and used as the wall top piece. The other two long members do not need specific markings.

Measure and cut four (4) Long Wall Top and Bottom members to the required 144" length. On one wide face of two long members, draw straight lines per the diagram below. These lines will help align the rafter tie brackets that are required to be mounted on the wall top surface.

## **Long Wall Top Member**

Quantity Required = 2 2x4 or 2x6



## **Long Wall Bottom Member**

Quantity Required = 2



Measure and cut twenty four (24) Long Wall Vertical members to the required 96" length.

## **Long Wall Vertical Members**

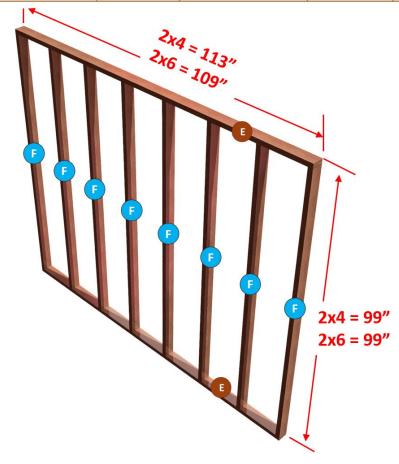


Quantity Required = 24

### 1.7.3 Short (End) Walls Lumber

Study this table. The "Source Lumber (in.) is defined as the lumber to use to cut these items from. Follow the detailed instructions to cut and prepare all lumber members. Use a 10" power compound miter saw to make all end cuts.

10 ft. x 12 ft. Rectangle Shed Short Walls Lumber Cut List										
ID	Description	QTY	Source Lumber [Length (in)./Qty]	Lumber Size	Cut Length (in.)	End 1 Cut	End 2 Cut			
E	Wall Top/ Bottom Members	4	120/4	2x4/ 2x6	113" for 2x4 109" for 2x6	Straight	Straight			
F	Wall Vertical Members	16	96/16	2x4/ 2x6	96"	Straight	Straight			



#### 1.7.3.1 Short End Walls Lumber Preparation

Four (4) Short Wall Top and Bottom members and Sixteen (16) Short Wall Vertical members are required. Both ends of all members must have straight cuts.

Measure and cut four (4) Short Wall Top and Bottom members to 113" length if using 2x4s or 109" length if using 2x6s.

# **Short Wall Top & Bottom Members**

113" for 2x4s 109" for 2x6s

E 2x4 or 2x6

**Quantity Required = 4** 

Measure and cut sixteen (16) Short Wall Vertical members to the required 96" length.

## **Short Wall Vertical Members**

<del>\_\_\_\_\_</del> 96"

2x4 or 2x6

**Quantity Required = 16** 

### 1.7.4 Truss Lumber

Study this table. The "Source Lumber (in.) is defined as the lumber to use to cut these items from. Follow the detailed instructions to cut and prepare all lumber members. Use a 10" power compound miter saw to make all end cuts.

	10 ft. x 12 ft. Rectangle Shed Truss Lumber Cut List										
ID	ID Description QTY Source Lumber Lumber Size Cut Length (in.) End 1 Cut End 2 C										
G	Truss Rafters	4	96/4	2x6	77-1/8"	Miter 21.5 deg	Miter 21.5 deg				
H	Truss Beams	2	120/2	2x6	120	Miter 68.5 deg	Miter 68.5.5 deg				



#### 1.7.4.1 Truss Lumber Preparation

Two (2) Truss Beam members and Four (4) Truss Rafter members are required. Both ends of all members must have miter cuts.

#### **Truss Beams**

- Step 1: Measure and cut Two (2) Truss members to 120" length. Straight cuts on both ends.
- Step 2: See figure below. Measure 14" in from both ends and make a pencil mark on the top edge. Draw a line between this 14" point and the bottom corner.
- Step 3: Use a circular saw or a 12" miter saw to make the miter cuts on both ends along the line you drew. Align blade edge to the outside of the line to maintain the 120" measurement shown in this image.



## **Quantity Required = 2**

### **Truss Rafters**

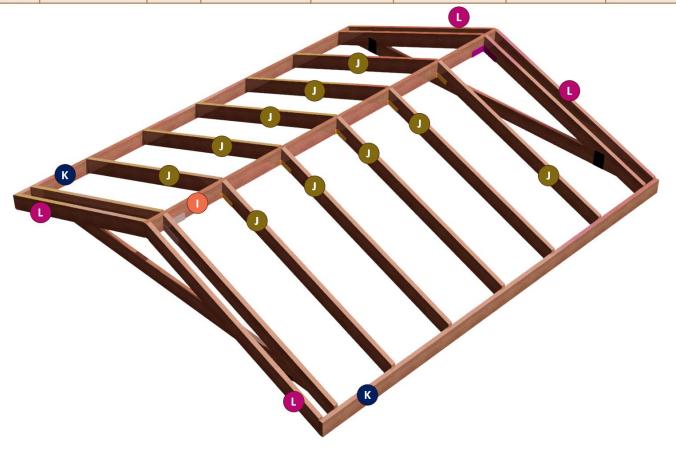
- Step 1: Measure and cut Four (4) Truss Rafter members to 77-1/4" length. Straight cuts on both ends.
- Step 2: See figure below. Measure 2-1/8" in from both ends and make a pencil mark. One mark on the top edge at the left end and one mark on the bottom edge at the right end. Draw a line between these 2-1/8" points and the adjacent corners as cutlines.
- Step 3: Use a 10" miter saw to make the miter cuts on both ends along the line you drew. Align blade edge to the outside of the line to maintain the 77-1/4" measurement shown in this image.



### 1.7.5 Roof Structure Lumber

Study this table. The "Source Lumber (in.) is defined as the lumber to use to cut these items from. Follow the detailed instructions to cut and prepare all lumber members. Use a 10" power compound miter saw to make all end cuts.

	10 ft. x 12 ft. Rectangle Shed Roofing Lumber Cut List										
ID	Description	QTY	Source Lumber [Length (in)./Qty]	Lumber Size	Cut Length (in.)	End 1 Cut	End 2 Cut				
1	Ridge Beam	1	1/192	2x6	156"	Straight	Straight				
0	Rafters	14	96/10	2x6	77-1/8"	Miter 21.5 deg	Miter 21.5 deg				
K	Roof Skirts	2	196/2	2x6	156"	Straight	Straight				
O	Open End Rafters	4	96/4	2x6	79-9/16"	Miter 22 deg	Miter 22 deg				



#### **Roof Structure Lumber Preparation**

One (1) Ridge Beam member, two (2) Roof Skirt members, and fourteen (14) Main Rafter members are required.

### 1.7.5.1 Ridge Beams Preparation

Measure and cut one (1) Ridge Beam member to the required 156" length. Both ends must have straight cuts.

# **Ridge Beam**



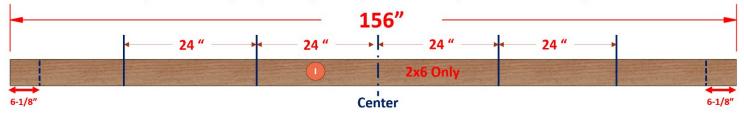
## **Quantity Required = 1**

### 1.7.5.2 Roof Skirts Preparation

Measure and cut two (2) Roof Skirt members to the required 156" length. Both ends must have straight cuts. Draw lines and drill 1/8" pilot holes as instructed below. Before you lift and add these roof skirts to the structure, drive framing nails into the 1/8" pilot holes through the thickness of the board. Nail tips must be flush with back face of the board.

### **Roof Skirts**

On one wide surface, draw Straight Lines at center and at locations, 24" out on each side of center. 5 Lines Required. On the far left and right ends, measure in 6-1/8" and draw a straight line.



Quantity Required = 2

Drill three (3) 1/8" holes for framing nails along each line at center and the lines spaced 24" apart. One hole in the center of the line and one hole spaced up 2" and one hole spaced 2" down from the center hole.

Do not drill holes on the lines that are 6-1/8" from the ends.

### 1.7.5.3 Main Rafters Preparation

Step 1: Measure and cut fourteen (10) Rafter members to 77-1/4" length. Straight cuts on both ends.

Step 2: See figure below. Measure 2-1/8" in from both ends and make a pencil mark. One mark on the top edge at the left end and one mark on the bottom edge at the right end. Draw a line between these 2-1/8" points and the adjacent corners as cutlines.

Step 3: Use a 10" miter saw to make the miter cuts on both ends along the line you drew. Align blade edge to the outside of the line to maintain the 77-1/4" measurement shown in this image.



### 1.7.5.4 End Rafters Preparation

Step 1: Measure and cut four (4) End Rafter members to 79-5/16" length. Straight cuts on both ends.

Step 2: See figure below. Measure 2-1/8" in from both ends and make a pencil mark. One mark on the top edge at the left end and one mark on the bottom edge at the right end. Draw a line between these 2-1/8" points and the adjacent corners as cutlines.

Step 3: Use a 10" miter saw to make the miter cuts on both ends along the line you drew. Align blade edge to the outside of the line to maintain the 79-5/16" measurement shown in this image.



### 1.8 CREATING THE TRUSS ASSEMBLIES

<u>Lumber</u>: Gather lumber members #G and #H. There should be four (4) of #G and two (2) of #H. Each Truss Assembly uses two (2) of #G and one (1) of #H. Build two (2) Truss Assemblies by following these instructions.

Brackets and Screws: Gather brackets and lag screws: Two (2) of #OOE-RT, Two (2) of TE-UBL, and Two (2) of TE-UBR

**Tools**: Gather a drill gun, one 3/32" Drill Bit, a 7/16" hex driver bit or a ratchet and 7/16" socket driver.

1. On a flat and stable ground, lay down one #G and two #H pieces in a loose triangular pattern as shown in the image

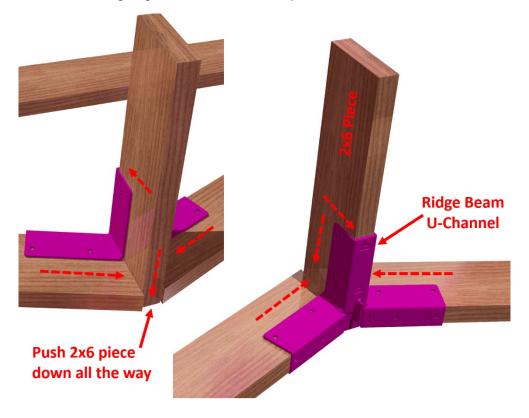


2. Lift lumber members slightly and slide the brackets over the lumber members as shown in these images.

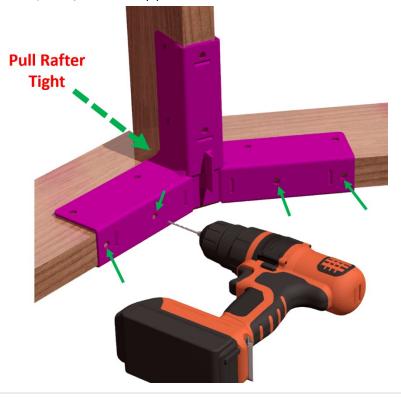


3. Slide a short piece of 2x6 in the Ridge Beam U-channel. Push the 2x6 piece down all the way to the ground and against the U-channel bottom.

Push the rafter members tight against the sides of this 2x6 piece.

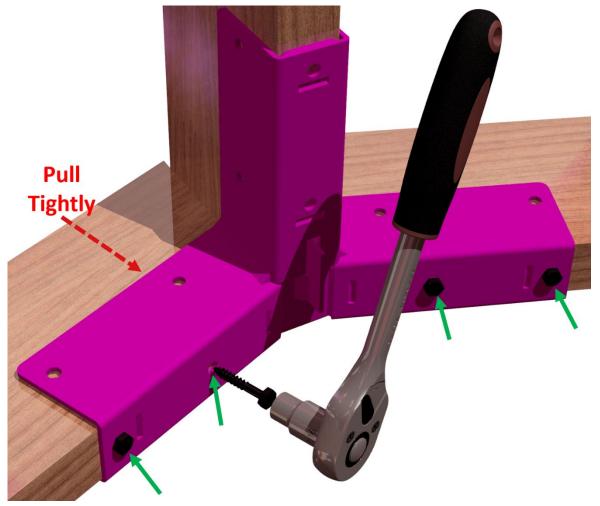


4. Locate four holes at the bottom of the ridge rafter bracket. While pulling each rafter tight against the 2x6 piece and the bottom of the u-channel, drill 3/32" x 2" deep pilot holes at the center these four holes.

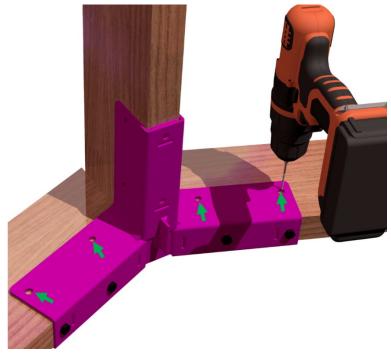


5. While pulling the rafters tight against the U-Channel and 2x6 piece, drive ¼" x 1-1/2" lag screws into the four pilot holes you drilled. Use a rachet and 7/16" socket or a drill and a 7/16" driver bit to drive the lag screw.

Be careful about setting the drill torque correctly. Test by drilling a 3/32" pilot hole into a scrap piece of wood and driving one lag screw. Avoid snapping off the lag screw head.

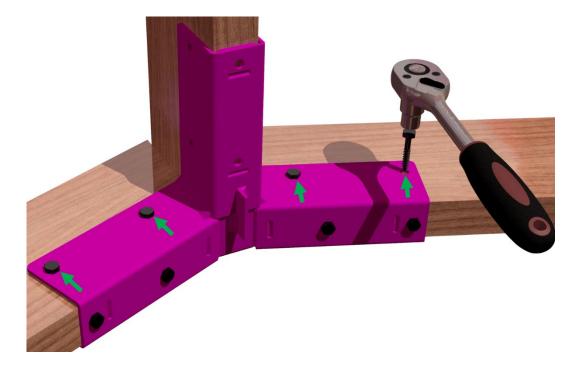


6. Locate four holes on the top face of the U-channels. Drill 3/32" x 1-1/2" deep pilot holes at the center of these four holes.



7. Drive ¼" x 1-1/2" lag screws into the four pilot holes you drilled. Use a rachet and 7/16" socket or a drill and a 7/16" driver bit to drive the lag screw.

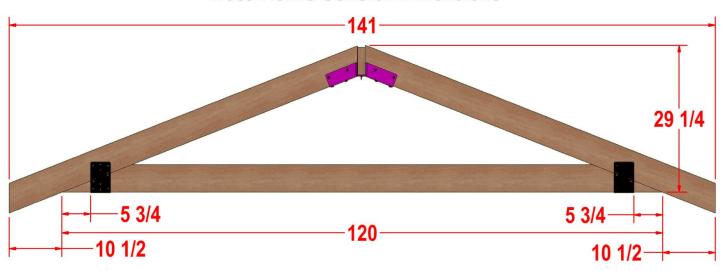
Be careful about setting the drill torque correctly. Test by drilling a 3/32" pilot hole into a scrap piece of wood and driving one lag screw. Avoid snapping off the lag screw head.



8. Verify general dimensions of the Truss Frame

Before proceeding, measure and verify the general dimensions provided in this image.

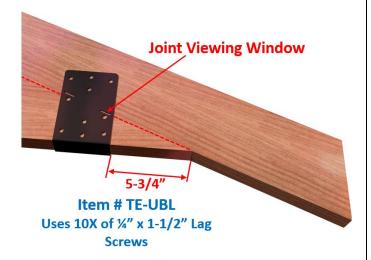
### **Truss Frame General Dimensions**



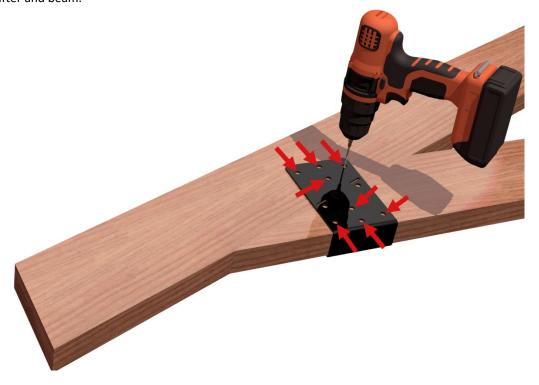
- 9. Slide the truss beam until you achieve the 10-1/2" dimension on both sides. This will indicate that the truss beam is centered within the truss frame structure.
- 10. Slide bracket #TE-UBR until it is located 5-3/4" to the right of the joint between the left side rafter and the truss beam. Slide bracket #TE-UBR until it is located 5-3/4" to the left of the joint between the right side rafter and the truss beam.

HINT: The proper location for #TE-UBR and #TE-UBL can be verified by inspecting through the joint view window. You should see the diagonal joint between the rafter and truss beam along the center of the viewing window in both brackets when these brackets are in their proper positions.





11. Start on the left end of the truss. While pushing the #TE-UBR bracket and truss beam against the left rafter, drill 3/32" x 1-1/2" pilot holes at the center eight (8) holes identified in the figure below. You can drill through the thickness of the rafter and beam.



12. Drive  $\frac{1}{4}$ " x 1-1/2" Lag Screws through the eight (8) pilot holes and tighten them.



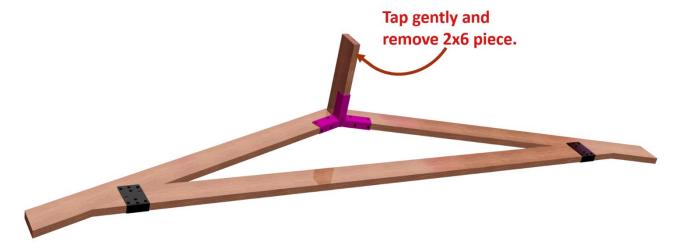
13. On the right end of the truss. While pushing the #TE-UBL bracket and truss beam against the right rafter, drill 3/32" x 1-1/2" pilot holes at the center eight (8) holes identified in the figure below. You can drill through the thickness of the rafter and beam.



14. Drive  $\frac{1}{2}$  x 1-1/2" Lag Screws through the eight (8) pilot holes and tighten them.



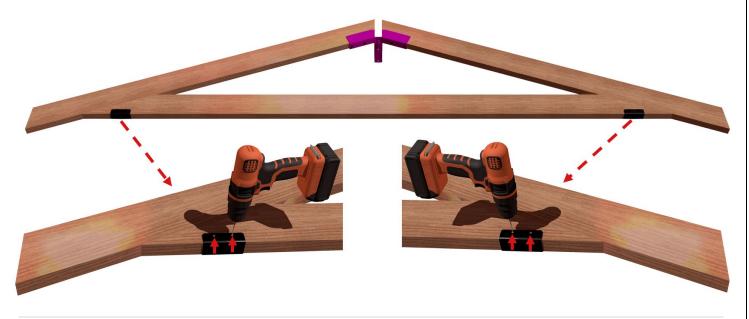
15. Tap the top edge of the 2x6 gently and remove the 2x6 piece.



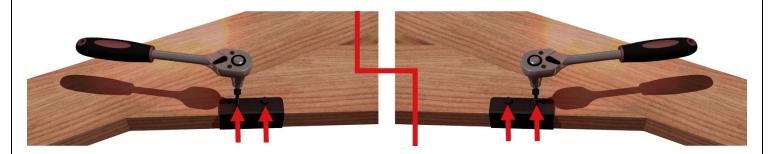
16. Gently lift the peak area of the truss and turn the truss over. Lay it down gently.



17. Locate two holes on the backside of both #TE-UBR and #TE-UBL. Drill 3/32" x 1-1/2" deep pilot holes at the center of these holes.



18. Drive  $\frac{1}{2}$  x 1-1/2" lag screw into the four pilot holes you drilled. Tighten the lag screws.



19. Repeat all steps in Section 1.9 to build a second Truss Assembly.

Note: Treat the truss assemblies with care. Prevent dropping, bumping, or twisting to prevent loosening of joints.

### 1.9 CREATING THE RIDGE BEAM ASSEMBLY

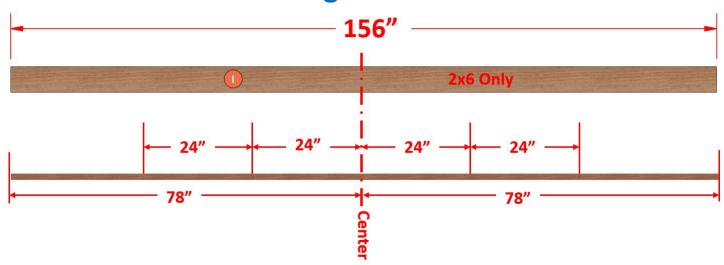
<u>Lumber</u>: Gather lumber member #I. There is only one (1) of #I). Build one (1) Ridge Beam Assembly by following these instructions.

Brackets and Screws: Gather brackets and lag screws: Five (5)) of #PO-RRT, sixty (60) of 1/2" x 1-1/2" lag screws.

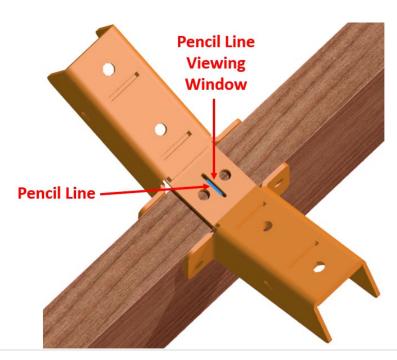
Tools: Gather a drill gun, one 3/32" Drill Bit, a 7/16" hex driver bit or a ratchet and 7/16" socket driver.

- 1. Select one long side of the ridge beam which will be the bottom face when installed on top of the truss assemblies.
- 2. Measure and mark a ½" long pencil line at the center of the long edge face. Measure in 78" from each end to verify that the ridge beam length is 156" and correct.
- 3. Measure outward 24" on each side of center and make another ½" long pencil mark. Repeat and add two pencil marks on each side of the center mark. There should be five (5) pencil marks: one at the center and two on each side of center, spaced 24" apart.

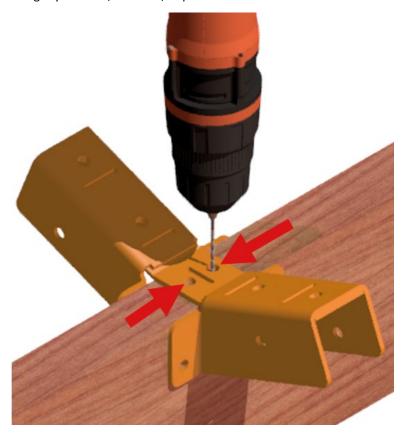
## **Ridge Beam**



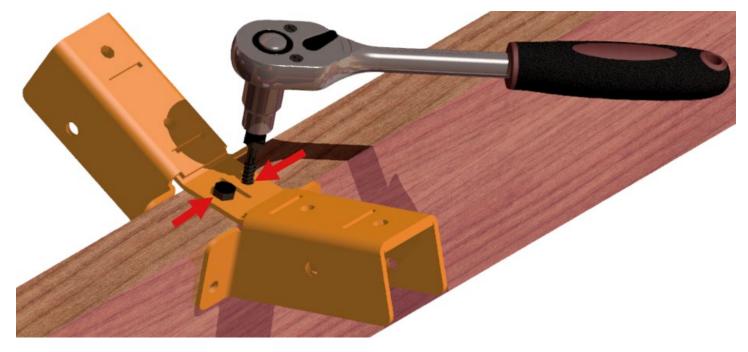
4. Place one #PO-RRT bracket on top of the center pencil mark. Align the pencil line at the center of the "Pencil Line Viewing Window"



5. Hold bracket #PO-RRT tightly. Drill a 3/32" x 1-1/2" pilot hole at the center of two hole identified in the diagram below.



6. Drive a  $\frac{1}{2}$ " x 1-1/2" lag screw into the two pilot holes you drilled. Tighten lag screws.



7. On the side faces of the #PO-RRT bracket, locate two holes (see diagram below). Drill 3/32" x 1-1/2" pilot holes at the center of these holes.



- 8. On the opposite side of the beam, find the same two holes as in step 7. Drill 3/32" x 1-1/2" pilot holes at the center of these holes.
- 9. Drive a 1/x 1-1/2" lag screw through the pilot holes and tighten them. Do this on both sides of the beam.
- 10. Repeat steps 4 through 9 and add four more #PO-RRT at the pencil mark points along the ridge beam.





### 1.10 CREATING THE FLOOR DECK

<u>Lumber</u>: Gather lumber members #A and #B and six (6) pieces of ¾"x 4'x8' plywood. There should be two (2) of #A and ten (10) of #B. Build the floor deck assembly by following these instructions.

**Nails**: Gather framing nails and plastic shims.

**Tools**: Gather a nail gun, a framing hammer, a framing level, and a framing square.

## **Deck Frame Long Member**



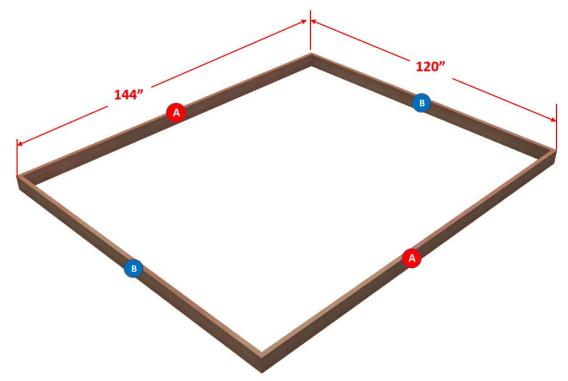
**Quantity Required = 2** 

## **Deck Frame Short Cross Members**



**Quantity Required = 10** 

- 1. Lay two Deck Frame Long Members at their designated locations.
- 2. Lay two Deck Frame Short Members at the two ends of the Deck Frame Long Members.
- 3. Use the framing square to square up the corners of the deck outer frame. The Deck Frame Short members fit within the inner faces of the Deck frame Long Members.
- 4. Measure length and width of the deck frame outer frame. It must measure 12 feet long and 10 feet wide.

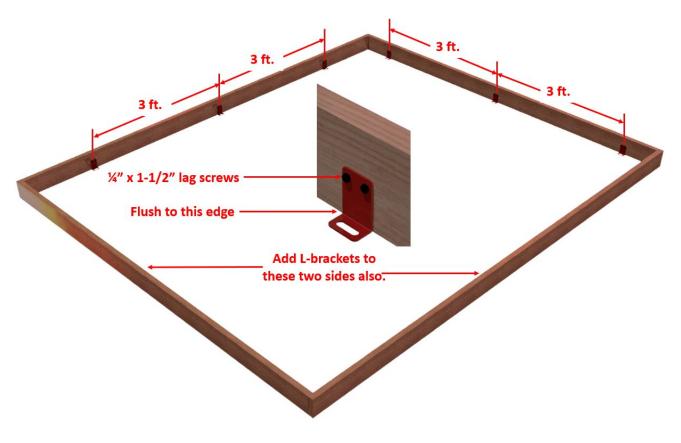


- 5. Nail through the sides of Deck Frame Long members, #A, into the Deck Frame Short Cross members, #B.
- 6. After the four lumber pieces have been nailed together, check the level of all four member and level them. Use plastic shims to adjust the level, if necessary.
- 7. Use the framing square to check and adjust squareness at all four corners.

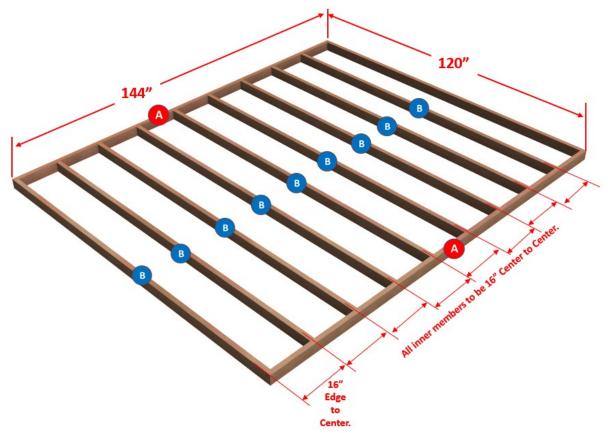
8. Attach L-brackets to the inside surface, at three points, along the length of framing members #A and #B. Locate one bracket at the center and one bracket on each side spaced 3 feet out from the center.



- 9. Vertically position all L-brackets to the long slot face is flush with the bottom surface of the lumber member.
- 10. Drill 3/32" x 1-1/2" holes in the face of the lumber members through two holes in the large face of the L-brackets.
- 11. Drive ¼" x 1-1/2" lag screws and tighten to secure L- brackets to the lumber members.
- 12. Drill pilot holes into the concrete pad through the long slots in the L-brackets. Drive 3/8" x 3" concrete screws into the concrete pad and tighten them.



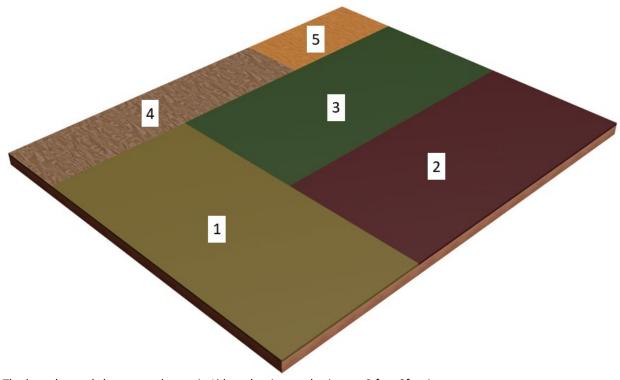
- 13. Place deck cross member #B inside the deck outer frame.
- 14. The first inner cross member #B, from the left end, is to be spaced 16" to its center from the left outer edge of the deck frame
- 15. The remaining cross members #B are to be 16" center to center. This is important to make certain that the deck plywood ends align properly and are fully supported.



16. Mark the 16" on center points on both Long Deck Frame member. Place cross members #B at the marked locations and nail through member #A into members #B.

# 1.10.1.1 Adding Plywood Deck Boards

- 1. Start by adding a full 4'x8' sheet, plywood #1, at the bottom left corner. Align the outer edges of plywood board with outer edges of deck frame.
- 2. Secure plywood #1 to deck frame outer border and cross member using your chosen attachment hardware.
- 3. Next, add plywood #2 and plywood #3 and secure to deck framing, as shown below.



- 4. The last plywood sheet must be cut in ½ length-wise to obtain two 2 ft. x 8ft. pieces.
- 5. Place and align one 2 ft. x 8 ft. piece of plywood at the plywood #4 location. Secure to deck framing.
- 6. Cut the second 2 ft. x 8 ft. piece in half to create a 2 ft. x 4 ft. piece.
- 7. Place one 2 ft. x 4 ft. piece of plywood at the plywood 5 location. Secure to deck framing.

# 1.11 CREATING THE LONG WALLS

<u>Lumber</u>: Gather Long Wall lumber members #C and #D. Each of the two long walls requires two (2) of item #C and twelve (12) of item #D.

Build the long walls on the new floor deck.

**Nails**: Gather framing nails.

**Tools**: Gather a nail gun, a framing hammer, and a framing square.

# **Long Wall Top & Bottom Members**

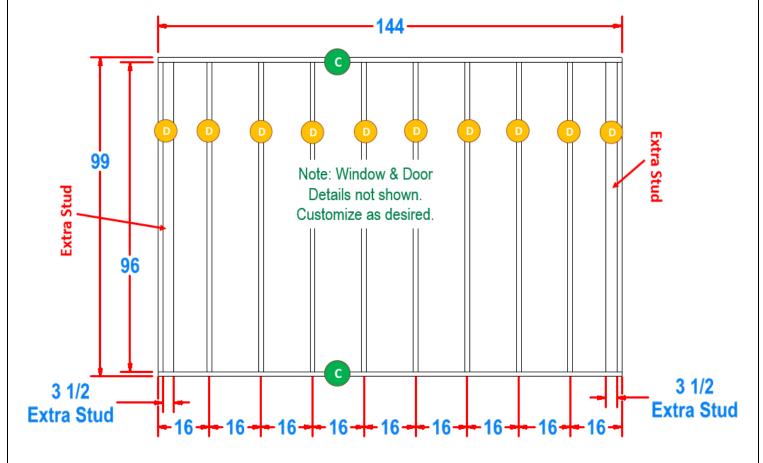


# **Long Wall Vertical Members**



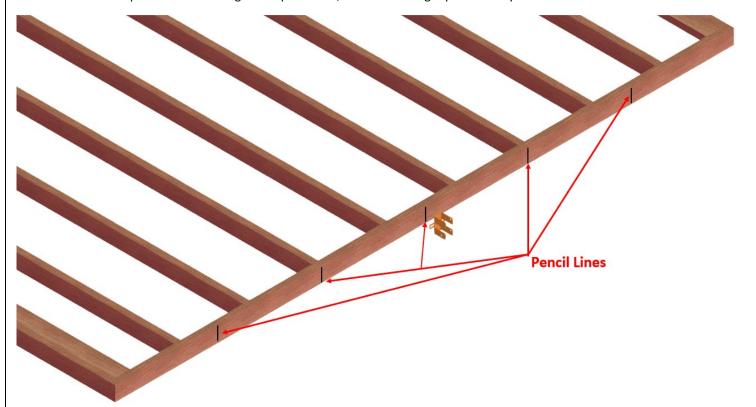
**Quantity Required = 24** 

- 1. Lay two Long Wall Top & Bottom members (#C) parallel to the length of the deck, spaced 8 ft. apart.
- 2. Make certain the piece designated as the TOP piece has 5 pencil lines marked for the rafter tie brackets.
- 3. Starting on one end of one #C, measure, and mark pencil lines every 16 inches along the length of #C.
- 4. Do the same on the second #C. Start measuring from the same side of the deck.
- 5. Place one lumber member #D on the two ends of the #Cs.
- 6. Use the framing square to square up all four corners.
- 7. Drive nails through #C and into #D at all four corners.
- 8. One the left and right ends, add one extra 2x4. This extra 2x4 provides nailing faces when mating the Short Walls to this wall.

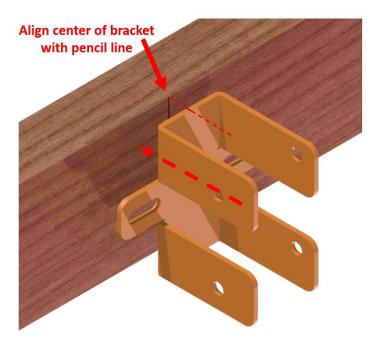


9. Add eight (8) more vertical members #D at the 16" center pencil marks. Drive nails through items #C and into items #D.

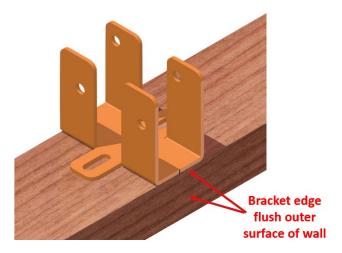
10. On the top surface of the long wall top member, locate the straight pencil lines you drew.



11. Place one #PTRT bracket as shown centered on each pencil line.



12. Position #PTRT Bracket so its outer edge is flush with the outer surface of the wall when it is in its final position.



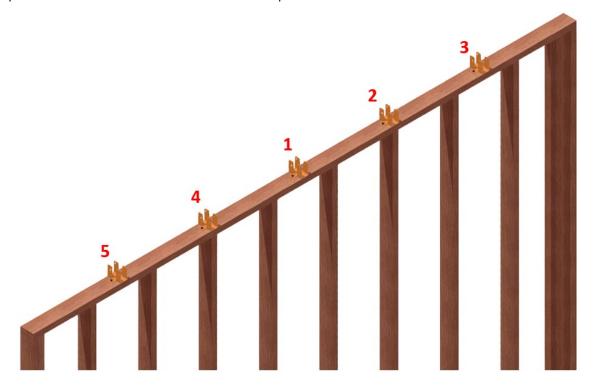
13. Drill pilot holes in the center of the two slots in the bracket's base. Drill 3/32" x 1-1/2" deep pilot holes.



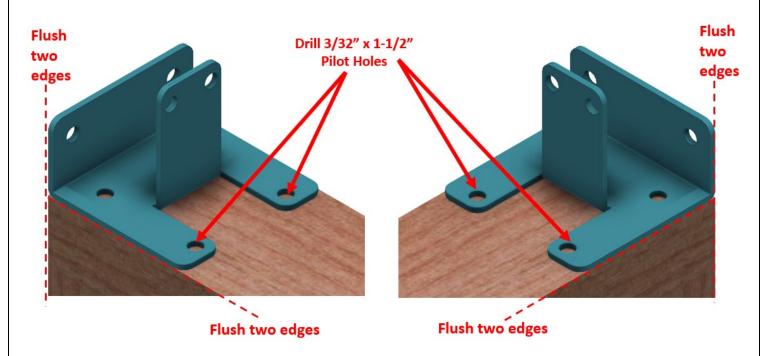
14. Drive one %" x 1-1/2" lag screw into both pilot holes and tighten.



15. Repeat and add 4 more #PTRT brackets at the other pencil lines.

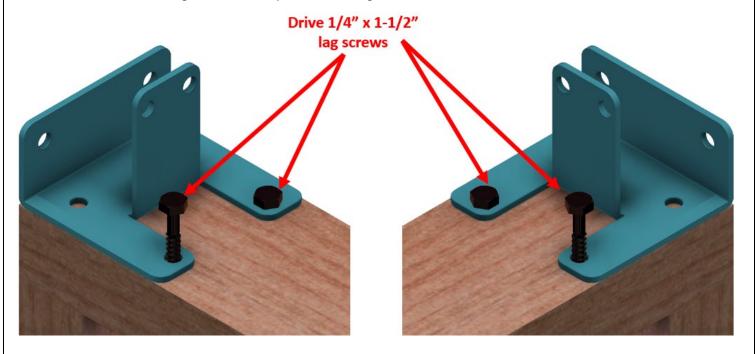


16. On the two ends of the top lumber member, add bracket #OE-RT.



17. Position the brackets so they are flush with the wall edges on three sides. Drill 3/32" x 1-1/2" pilot holes at the center of the holes identified in the image above.

18. Drive  $\frac{1}{2}$  x 1-1/2" lag screws into the pilot holes and tighten.



19. Make two Long Wall assemblies in the same way.



# 1.12 CREATING THE SHORT WALLS

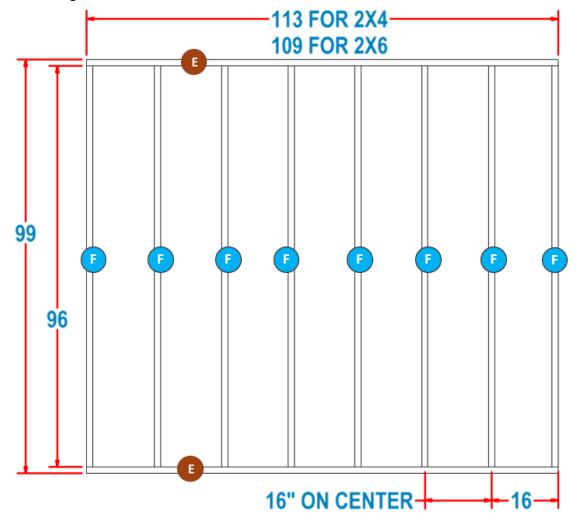
<u>Lumber</u>: Gather Short Wall lumber members #E and #F. Each of the two short walls requires two (2) of item #E and eight (8) of item #F.

Build the short walls on the new floor deck.

Nails: Gather framing nails.

**Tools**: Gather a nail gun, a framing hammer, and a framing square.

- 1. Lay two Short Wall Top & Bottom members (#E) parallel to the length of the deck, spaced 8 ft. apart.
- 2. Starting on one end of one #E, measure, and mark pencil lines every 16 inches along the length of #E.
- 3. Do the same on the second #E. Start measuring from the same side of the deck.
- 4. Place one lumber member #F on the two ends of the #Es.
- 5. Use the framing square to square up all four corners.
- 6. Drive nails through #E and into #F at all four corners.



- 7. Add SIX (6) more vertical members #F at the 16" center pencil marks. Drive nails through items #E and into items #F.
- 8. Make two of this Short Wall assemblies.

# 1.13 ERECTING THE FOUR WALLS

- 1. Start by lifting up the top end of a Long Wall and moving it to its final position. Stand the wall vertically. This wall should be flushed to the outer edge of the floor deck's long edge and flushed on two ends to the floor deck's short edges.
- 2. Brace the wall using four long 2x4s: two braces leaning outwards and two braces leaning inwards. Braces should be temporarily nailed or screwed to the vertical wall members.
- 3. Drive nails through the bottom horizontal member and into the floor deck. Drive two nails in the spaces between vertical members.



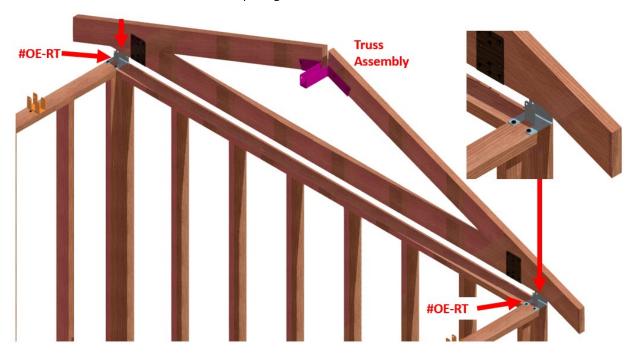
- 4. Lift up the top end of a Short Wall and move it to its final position on one short edge of the deck. Stand the wall vertically. This wall should be flushed to the outer edge of the floor deck's short edge and butted against the end of the long wall which is standing.
- 5. While one person holds the wall steady and prevents tipping, another person should drive 4 nails through the Short Wall's vertical member (which is butted against the long wall), into the long wall members.
- 6. Drive nails through the bottom horizontal member and into the floor deck. Drive two nails in the spaces between vertical members.



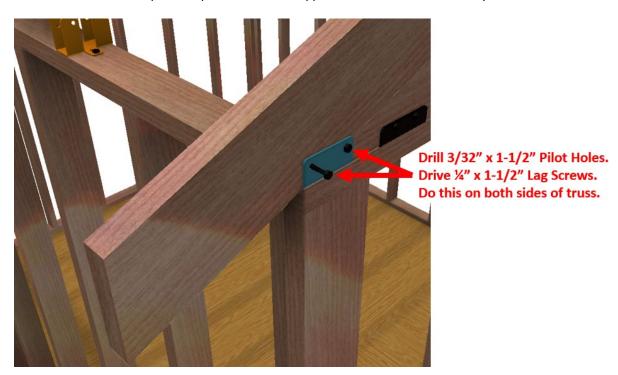
- 7. Add two 2x4 braces to the short wall close to the loose end to prevent the loose end form swaying and tipping.
- 8. Erect the second short wall and attach to the erect long wall using the same procedures as the first short wall. Brace loose end of this short wall.
- 9. Erect the second long wall to close out the walls. Secure the second long wall to both short walls using framing nails along the vertical joints. Drive framing nails into the floor joist and floor outer border to secure the second long wall to the floor.
- 10. Add wall plywood sheathing, if you wish, before adding the roof structure.

# 1.14 ADDING THE TRUSS ASSEMBLIES.

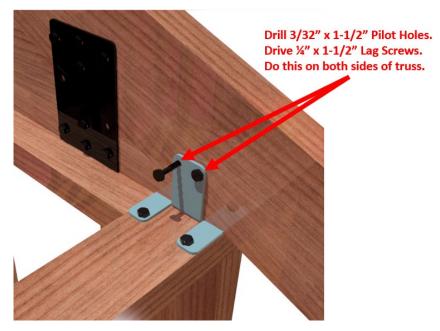
1. Lift and place one truss assembly on top of the wall. The truss beam must sit inside the U-channels in the #OE-RT bracket. Slide and center the truss in the opening.



- 2. One person must the hold the truss steady while a second person adds a brace to prevent the truss from tipping.
- 3. From outside the structure, drill 3/32"x 1-1/2" pilot holes and drive ¼" x ½" lag screws into two holes in the outer face of the #OE-RT bracket. Repeat this procedure on the opposite end of the truss assembly.



4. From the inside of the structure, drill 3/32"x 1-1/2" pilot holes and drive ¼" x ½" lag screws into two holes in the inner face of the #OE-RT bracket. Repeat this procedure on the opposite end of the truss assembly.

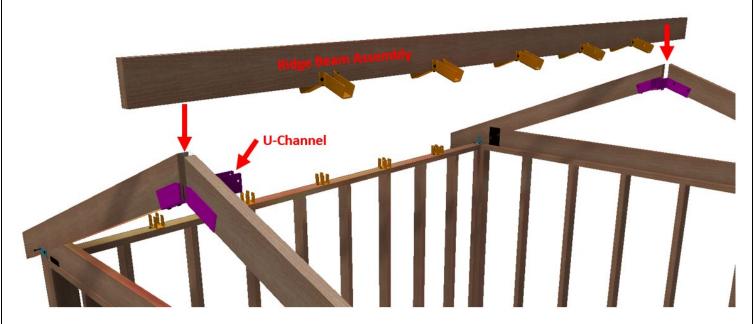


5. Repeat steps 1 to 4 to add the second truss assembly at the opposite end of the structure.

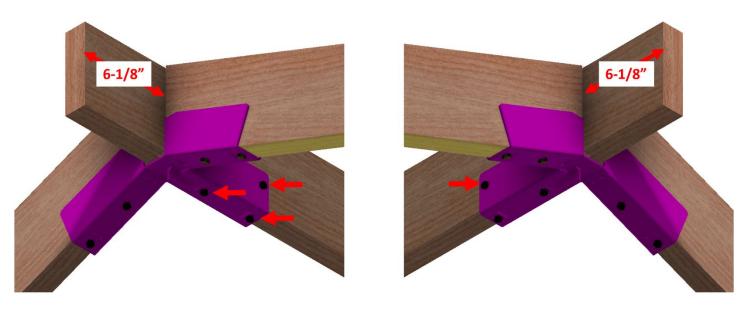


# 1.15 ADDING THE RIDGE BEAM ASSEMBLY

- 1. Make certain that proper bracing members are supporting the two truss assemblies.
- 2. Lift and place Ridge Beam Assembly, in the open U-channels in the truss peak bracket. On each side outside the trusses, 6-1/8" of the ridge beam protrudes out to create the 6-1/8" overhang.

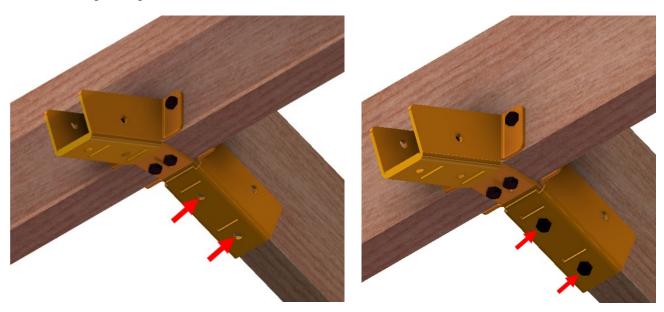


3. At both truss ends, drill  $3/32"x\ 1-1/2"$  pilot holes through four holes into the truss beam and drive  $\frac{1}{4}"x\ 1-1/2"$  lag screws. Tighten the lag screws.

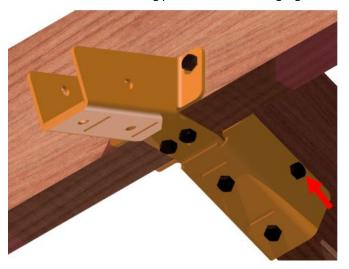


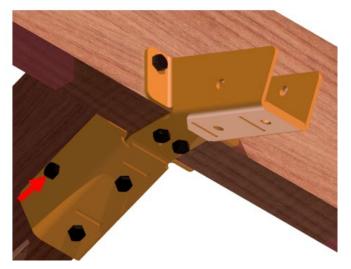
# 1.16 ADDING MAIN RAFTERS

- 1. Add a main rafter between the ridge beam and the wall top rafter tie brackets. Place the main rafter in the U-channel of the #PO-RRT Bracket and into a matching post top rafter tie bracket. Butt rafter against the ridge beam.
- 2. Starting with the holes at the bottom of the #PO-RRT U-channel, drill 3/32" x 1-1/2" pilot holes and drive ¼" x 1-1/2" lag screws. Tighten lag screws.

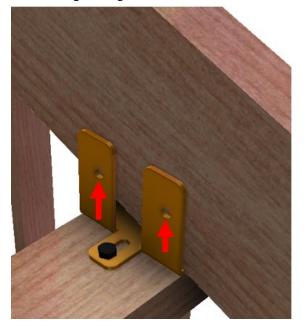


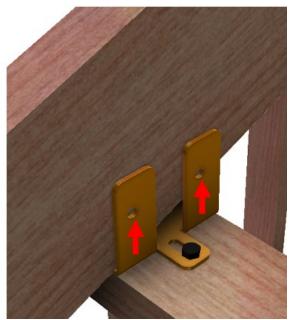
3. Continue drilling pilot holes and driving lag screws into holes on the side face of the #PO-RRT bracket's U-channel.





4. At the long wall top, drill  $3/32" \times 1-1/2"$  pilot holes at holes on both sides of the #PTRT bracket and drive  $\frac{1}{4}" \times 1-1/2"$  lag screws. Tighten lag screws.







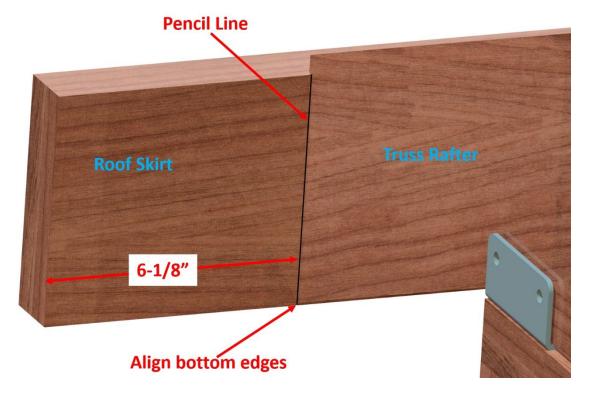


5. Add remaining rafters by following steps 1 to 4.

# 1.17 ADDING ROOF SKIRTS

The step to add the Roof Skirts will require two people working together. One person on each end of the roof skirt is required.

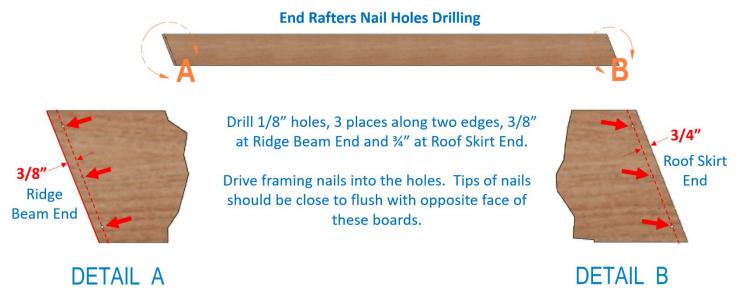
- 1. Identify the pencil lines on the Roof Skirt that are 6-1/8" from the ends of the roof skirt member.
- 2. These two lines align with the outer faces of the truss rafters.
- 3. Align truss rafter outer face with pencil line.
- 4. Align the bottom edge of roof skirt with bottom edge of truss rafter.



- 5. At both ends of the structure, drive framing nails through the roof skirt and into the first rafter that is adjacent to the truss rafter.
- 6. Drive framing nails through roof skirt into all rafters, including the truss rafters.

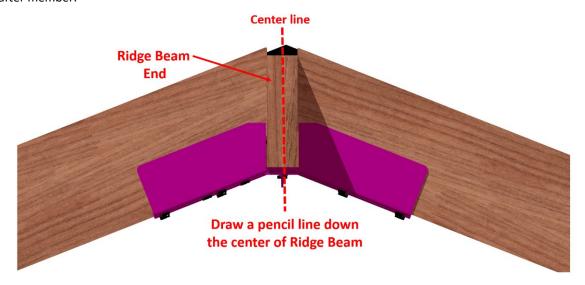
# 1.18 ADDING END RAFTERS

The end rafters are to be nailed to the ends of the ridge beam and to the ends of the roof skirt members. It is recommended that you drill three (3) 1/8" holes on each end spaced 3/8" in from the miter edges. Drive nails into the End Rafter pieces before you lift these rafters up. This will make it quite easy to drive the nails when you are standing on a ladder.



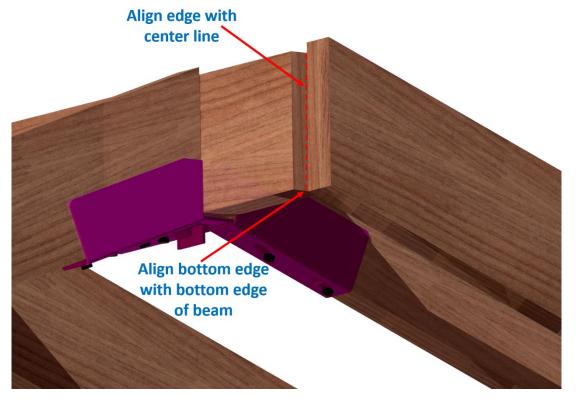
The step to add the End Rafters will require two people working together. One person should be on the ridge beam end and the other person at the roof skirt end.

1. On the ends of the Ridge Beam, draw a pencil line down along the center of the beam. Use this line to align the first end rafter member.

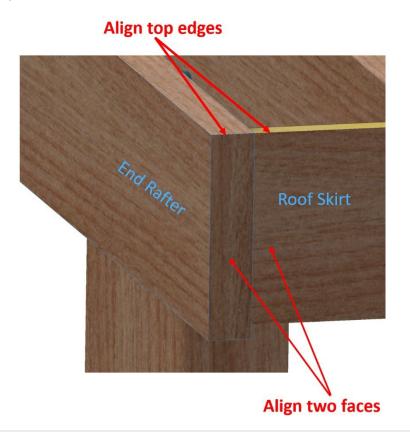


2. Two people should lift the End Rafter on each end and walk up the ladder carefully.

3. At the ridge beam end, align the end of End Rafter with the line drawn at the center of the ridge beam end. Align the bottom edge of End Rafter with bottom edge of Ridge Beam.



4. At the roof skirt end, align the top edge of End Rafter with top edge of roof skirt and align end face of End Rafter with outer face of roof skirt.



- 5. At the Ridge Beam end, drive the center framing nail into the ridge beam.
- 6. At the Roof Skirt end, realign properly and drive center nail into the roof skirt.
- 7. Drive all remaining nails into ridge beam and roof skirt.
- 8. Repeat steps 1 to 7 to add all End Rafters to the structure.

#### 1.19 ADDING ROOF DECK BOARDS

Use ½" OSB or Plywood as the roof deck boards. We recommend using 1-1/2" long roofing nails to attach the roof deck boards to the roof rafters, ridge beam, and roof skirt.

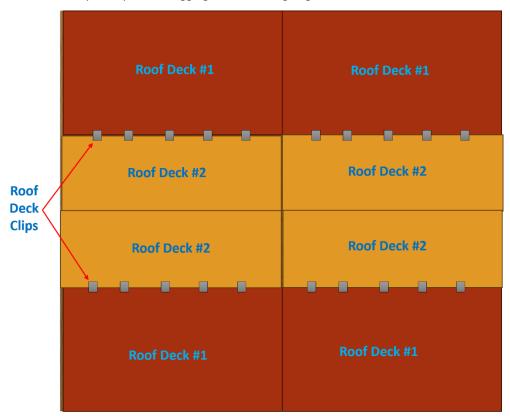
Around the perimeter of each roof deck board, add fasteners every 6". In the middle areas of each roof deck board, add fasteners every 12".

A total of eight (8) full 4' x 8' boards are required for the roof deck.

Cut and prepare four (4) Roof Deck #1 with dimensions of 48" x 79-1/2".

Cut and prepare four (4) Roof Deck #2 with dimensions of 29-1/4" x 79-1/2".

- 1. Roof Deck boards #1 will be added flush with the roof skirts' outer faces and flush with End Rafters' outer faces.
- 2. Roof Deck boards #2 will be added above the Roof Deck #1 boards. Butt the top end of Roof Deck Board #1 with bottom end of Roof Deck #2 boards.
- 3. Make Roof Deck Board #2's outer end flush with the outer face of End Rafters.
- 4. At the joints between roof deck #1 and roof deck #2, add deck board clips in the center where both board edges are floating between the rafters. The clips will prevent sagging of the floating edges.



# 1.20 BUILDING DOOR AND WINDOW ROUGH FRAMES

Doors and Window openings require a rough frame to accommodate the width and height of the doors and frames. It is easiest to first build the doors and window rough frames as freestanding frames then cut openings in the walls and add these frames to those openings.

Create three unique frames per the layout diagrams provided: one (1) 36" x 80" Door Rough Frame, one (1) 72" x 80" Double Door Rough Frame, and one (1) 36" x 48" Window Rough Frame.

# 1.20.1 Building the 36" x 80" Door Rough Frame

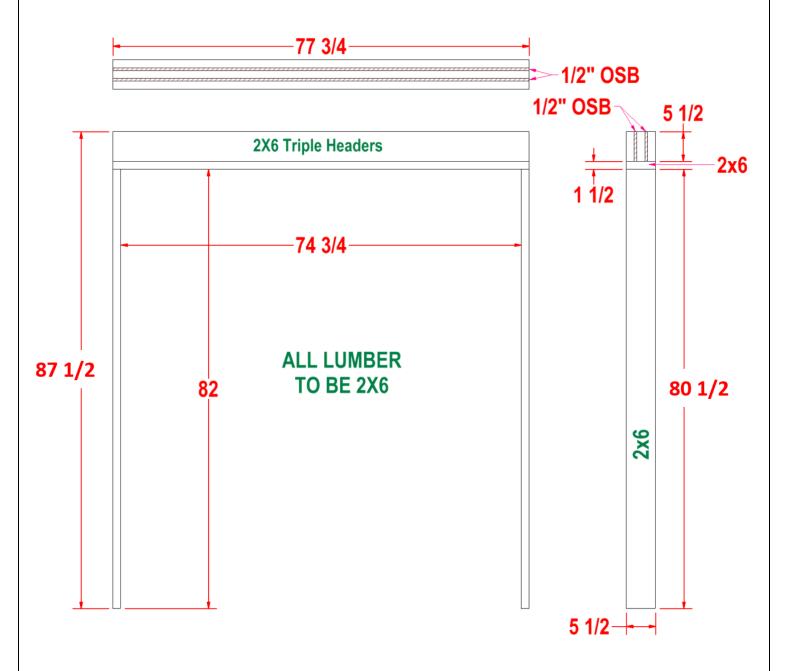
Use the measurements and details provided in the diagram below to build the 36" x 80" Doo r Rough Frame.

# 36" X 80" Door Rough Frame 41 1/8— 1/2" OSB 2X6 HEADERS 87 1/2 80 1/2 82 38 1/8

# 1.20.2 Building the 72" x 80" Double Door Rough Frame

Use the measurements and details provided in the diagram below to build the 72" x 80" Double Door Rough Frame.

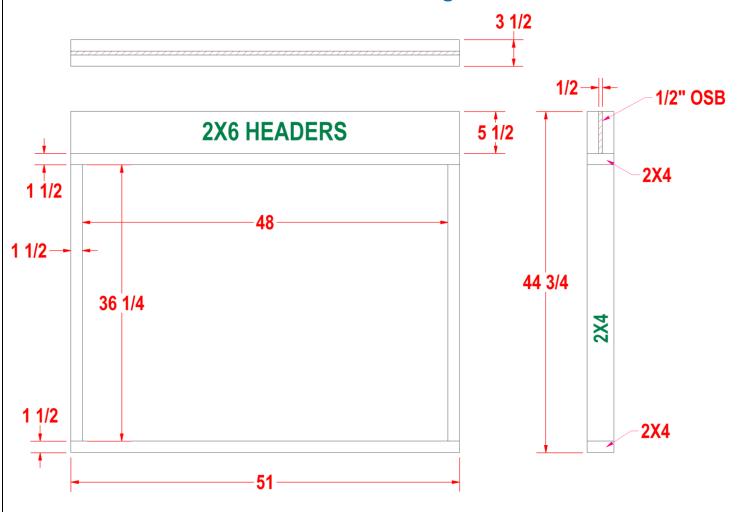
# 72" X 80" Double Door Rough Frame



# 1.20.3 Building the 36" x 48" Window Rough Frame

Use the measurements and details provided in the diagram below to build the 36" x 48" Window Rough Frame.

# 36" X 48" Window Rough Frame



# 1.21 ADDING DOOR AND WINDOW ROUGH FRAMES TO WALLS

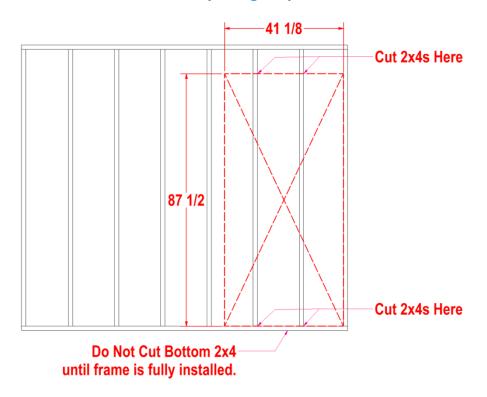
# 1.21.1 36" x 80" Door Rough Frame Addition

Lay down one Short Wall to which you intend to add the 36" x 80" door.

On the right end of the wall, mark the two 2x4s at the 87-1/2" up from the top surface of the bottom 2x4 or 89" up from the bottom surface of the bottom 2x4.

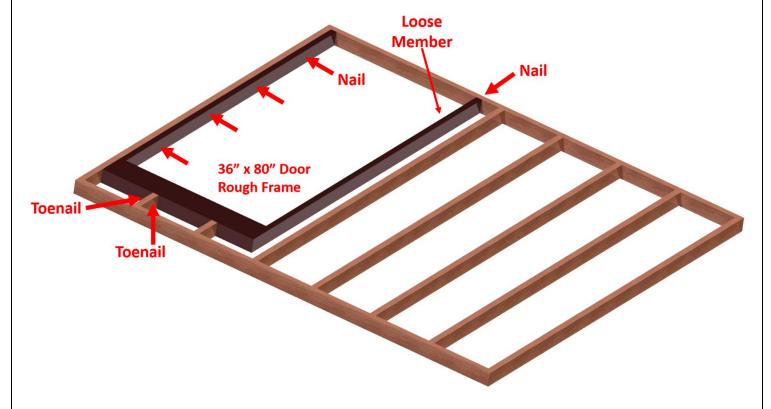
Cut and remove the 2x4 pieces. Cut the 2x4s at the 87-1/2" line first. Then lift the long end of the cut 2x4 to slide them off the framing nails at their bottom ends. Bend the exposed framing nails by hammering on them sideways.

36" X 80" Door Opening Preparation





- 1. Place the 36" x 80" Door Rough Frame at the bottom corner.
- 2. Butt its right member against the wall's end 2x4.
- 3. Butt the bottom ends of the Rough Frame's 2x4s to the wall bottom 2x4.
- 4. Use a square to align the loose 2x4 of the Rough Frame.
- 5. Drive nails through the rough frame's vertical member into the wall's end 2x4.
- 6. Drive nails up through the wall's bottom member and into the loose vertical member of the rough frame.
- 7. At the top of the frame, use stop block 2x4s to hold the short vertical 2x4s steady as you toenail them to the rough frame's 2x6 headers.

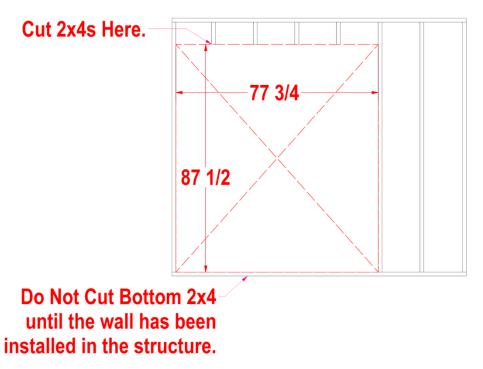


# 1.21.2 72" x 80" Double Door Rough Frame Addition

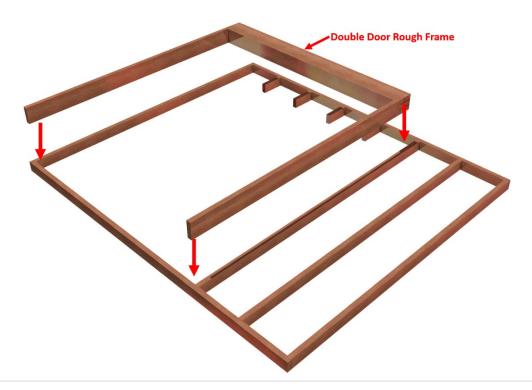
Lay down one Short Wall to which you intend to add the 72" x 80" door.

On the left end of the wall, mark the four 2x4s at the 87-1/2" up from the top surface of the bottom 2x4 or 89" up from the bottom surface of the bottom 2x4.

Cut and remove the 2x4 pieces. Cut the 2x4s at the 87-1/2" line first. Then lift the long end of the cut 2x4 to slide them off the framing nails at their bottom ends. Bend the exposed framing nails by hammering on them sideways.

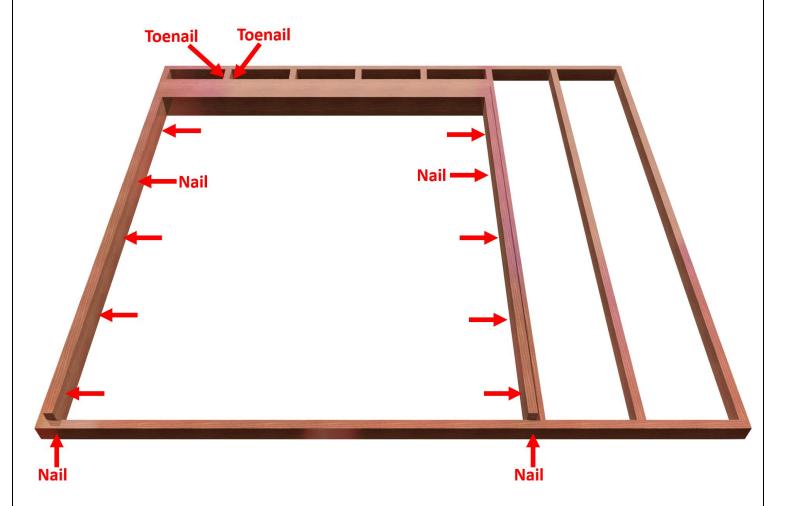


1. Lift and place the double door rough frame into the cut opening in the wall.



- 1. Butt its left member against the wall's left end 2x4.
- 2. This rough frame will fit perfectly next to the right side 2<sup>nd</sup> 2x4.
- 3. Butt the bottom ends of the Rough Frame's 2x4s to the wall bottom 2x4.
- 4. Drive nails through the rough frame's vertical members into the wall's vertical 2x4s on both sides of the rough frame.
- 5. Drive nails up through the wall's bottom member and into the vertical members of the rough frame.
- 6. At the top of the frame, use stop block 2x4s to hold the short vertical 2x4s steady as you toenail them to the rough frame's 2x6 headers.

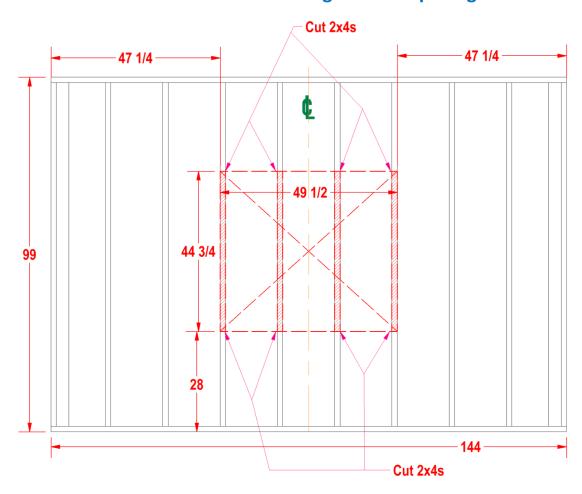
NOTE: This wall is shown with its inside surface facing upward. When installed, the double door opening will be on the right side. The extra thickness of the double door rough frame's 2x6 members must be inside the shed structure.



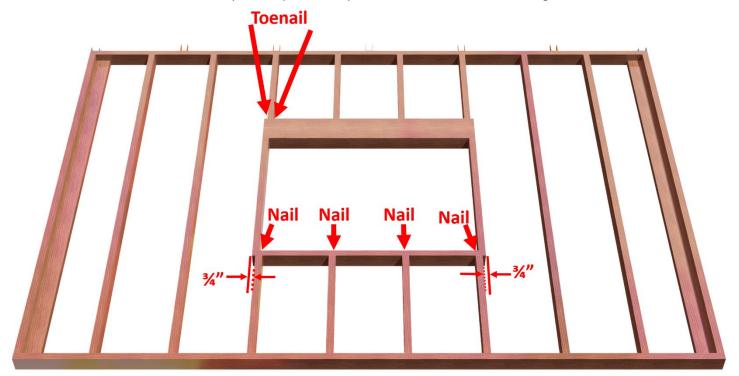
# 1.21.3 36" x 48" Window Rough Frame Addition

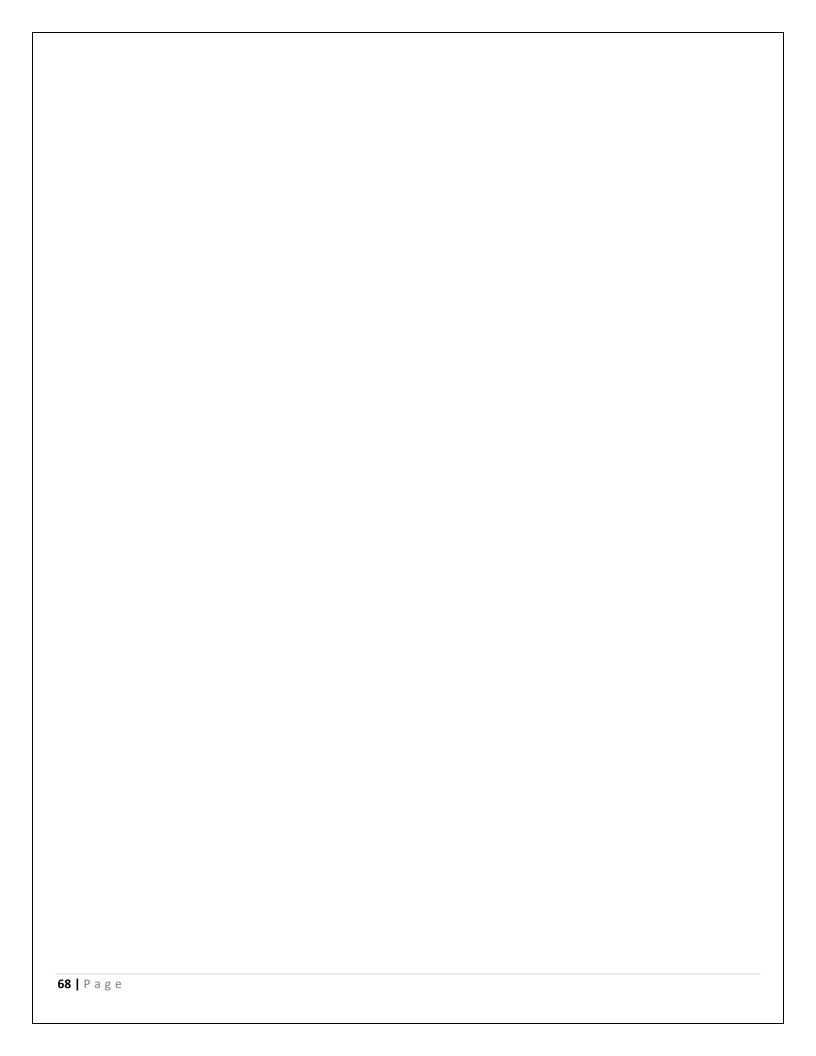
- 1. Lay down one Long Wall to which you intend to add the 36" x 48" Window.
- 2. Identify the middle four vertical 2x4s.
- 3. Measure up 28" and snap a horizontal line across the middle four vertical 2x4s.
- 4. Measure up 44-3/4" from the 28" snap line and snap a horizontal line across the middle four 2x4s.
- 5. Cut and remove the 2x4 pieces between the two snap lines.

# 36" X 48" Window Rough Frame Opening



- 7. Using a framing square, make the cut 2x4s perpendicular to the wall bottom and wall top.
- 8. Drive nails through the window rough frame's bottom member into the four vertical 2x4s below the rough frame.
- 9. Use wood blocks to hold the top 2x4s in place while you toenail them to the window rough frame's 2x6 headers.





# 2 WARRANTY POLICY STATEMENT

RioOutdoors.com extends this 3-Year Warranty to the original purchaser, automatically upon purchase from RioOutdoors.com. The items covered by this warranty and the period of such coverage are set forth in the table below.

Some conditions apply (see below).

The policy is not transferable, amendable, or negotiable under any circumstances.

Part	3 years	Labor Coverage
Welded Steel Brackets	<b>√</b>	Not Included
Painted Finishes	<b>√</b>	Not Included
All hardware	<b>√</b>	Not Included

# 2.1 CONDITIONS

The warranty protects against defects in manufacture only, unless herein specified otherwise.

Any part(s) found to be defective during the warranty period as outlined above will be repaired or replaced at RioOutdoors.com's option provided that the defective part is returned, if requested by RioOutdoors.com. Alternatively, RioOutdoors.com may at its own discretion fully discharge all its obligations under the warranty by refunding the verified purchase price of the product to the original purchaser.

RioOutdoors.com is not responsible for results or costs of workmanship of installers in the negligence of their construction work.

At all times RioOutdoors.com reserves the right to inspect reported complaints on location in the field claimed to be defective prior to processing or authorizing of any claim. Failure to allow this upon request will void the warranty.

All claims must be completed and must provide full details as requested by RioOutdoors.com to receive consideration for evaluation. Incomplete claims may be rejected.

All pergola brackets must be installed according to all manufacturers' instructions as per the installation instruction manual by RioOutdoors.com.

All Local and National required codes must be met.

Repair/replacement parts purchased by the consumer from RioOutdoors.com after the original coverage has expired will carry a 90-day warranty, valid with a receipt only. Any item shown to be defective will be repaired or replaced at our discretion. No labor coverage is included with these parts.

#### 2.2 EXCLUSIONS

This 3-Year Warranty does not extend to rust or corrosion of any kind due to corrosive chemicals (i.e., chlorine, salt, air, etc.), physical damage to painted surfaces during installation or later.

Malfunction, damage, or performance-based issues of all components as a result of environmental conditions, location, chemical damages, installation error, installation by an unqualified installer, abuse, misuse, use of improper tools, acts of God, weather related problems from hurricanes, tornados, earthquakes, floods, lightning strikes/bolts or acts of terrorism or war, which result in damage are not covered under the terms of this 3-Year Warranty.

RioOutdoors.com has no obligation to enhance or modify any part once manufactured (i.e., as products evolve, field modifications or upgrades will not be performed on existing pergolas).

Any parts showing signs of abuse or misuse will not be covered under the terms of this warranty policy and may void this warranty. This includes parts with rusted or corroded surface or welds which have not been reported as rusted or corroded within three (3) months of installation/purchase.

Parts which show evidence of being used while damaged, or with problems known to the purchaser and causing further damage will void this warranty.

Parts where the RioOutdoors.com logo has been altered, deleted, removed, or made illegible will void this warranty.

Minor movement, expansion and contraction of the steel parts is normal and is not covered under the terms of this warranty.

Freight damages for parts are not covered under the terms of the warranty.

Products made or provided by other manufacturers and used in conjunction with the RioOutdoors.com parts without prior authorization from RioOutdoors.com may void this warranty.

#### 2.3 LIMITATIONS OF LIABILITY

The original purchaser's exclusive remedy under this warranty, and RioOutdoors.com's sole obligation under this warranty, express or implied, in contract or in tort, shall be limited to replacement, repair, or refund, as outlined above. IN NO EVENT WILL RioOutdoors.com BE LIABLE UNDER THIS WARRANTY FOR ANY INCIDENTAL OR CONSEQUENTIAL COMMERCIAL DAMAGES OR DAMAGES TO PROPERTY. TO THE EXTENT PERMITTED BY APPLICABLE LAW, RioOutdoors.com MAKES NO EXPRESS WARRANTIES OTHER THAN THE WARRANTY SPECIFIED HEREIN. THE DURATION OF ANY IMPLIED WARRANTY IS LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY SPECIFIED ABOVE. IF IMPLIED WARRANTIES CANNOT BE DISCLAIMED, THEN SUCH WARRANTIES ARE LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some U.S. states do not allow limitations on how long an implied warranty lasts or allow exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Customers located outside the U.S. should consult their local, provincial, or national legal codes for additional terms which may be applicable to this warranty.

#### 2.4 HOW TO OBTAIN WARRANTY SERVICE

Customers should contact RioOutdoors.com by email at <a href="info@RioOutdoors.com">info@RioOutdoors.com</a>. Please include a brief description of the problem and your address, email, and telephone contact information. A representative will contact you to make arrangements for a warranty service.

Warrantor:

RioOutdoors.com United States

Thank you for choosing RioOutdoors.com.

