RioOutdoors.com

# Installation Instructions

## 4S-Lean-To 10 x 10

## 4x4 Surface Mounted Lean-To 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.

*Figure 1:10 ft. x 10 ft. Concrete Mounted Lean-To with Solid Roof*

Customized and prepared for: ***Chris Sawyer***

- 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

A properly sized 3/32” diameter pilot hole must be drilled before you attempt to drive lag screws into this pergola’s 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 or 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.

| **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** |
| ¼” X 1-1/2” Lag Screw **McMasterCarr.com SKU 92351A546** | Soft Wood | 3/32” drill bit diam., 1-1/4” depth |
| | Hard Wood | 3/16” drill bit diam., 1-1/4” depth |
| 3/8” X 3” Lag Screw **McMasterCarr.com SKU 92351A636** | Soft Wood | 11/64” drill bit diam., 3” depth |
| | Hard Wood | ¼” drill bit diam., 3” depth |

# Table of Contents

# 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.

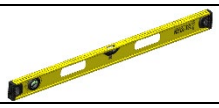
### 1.1.2 Other Cautions

**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.

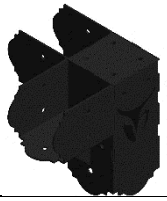
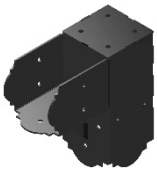
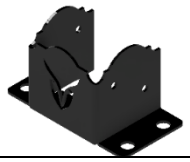
## 1.2 TOOLS REQUIRED

Listed below, are common tools required for pergola projects. These tools are not included in this kit. Your pergola project may not require all tools. Select and acquire the tools for your project from the "Required for" column in this table.

| Description | Tool Purpose | Required for | Reference Image |
|---|---|---|---|
| Tape Measure | Measure and verify lengths. | All structures |  |
| 4ft. Framing Level | Verify Level/Plumb | All structures |  |
| Hammer Drill Gun | Drill pilot holes for lag screws. Drive lag screws. Drill holes in Concrete. | All structures |  |
| Ratchet Socket Driver | Drive lag screws into Pergola lumber members. | All structures |  |
| 7/16" Hex Socket | Drive ¼" X 1-1/4" Hex Hd. lag screws. | All structures |  |
| 3/32" Drill Bit | Drill pilot holes for ¼" lag screws in soft wood. | All structures |  |
| 1/8" Drill Bit | Drill pilot holes for #10D nails | All structures |  |
| 11/64" Drill Bit | Drill pilot holes for 3/8" x 4" Screw for gussets | All structures |  |
| ½" Masonry Drill Bit | Drill ½" Holes in Concrete for Anchors | Concrete Mounted Structures |  |
| 10" Compound Miter Saw | Cut pots and headers to length | All structures |  |
| Crescent Wrench | Tighten down nut on concrete anchors. | Concrete Mounted Structures | Image not available. |
| Wood Chisel | Cutout Notches in Headers & OSB Fillers | Lean To | Image not available. |
| Hammer | Various. | All structures |  |

## 1.3 CONTENTS OF KIT # 4S-LT-810

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 info@RioOutdoors.com. 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 |
|---|---|---|
| **4x4 Post-Top/Floor 2-way Elbow Bracket SKU# 4C2L** | **2** |  |
| **4x4 Post-Top/Floor 1-way Elbow Bracket SKU# 4C1L** | **2** |  |
| **4x4 Post Anchor Bracket SKU# 4LC** | **4** |  |
| **Post Top Rafter Tie Bracket SKU# PTRT** | **16** |  |
| **Open End Rafter Tie Bracket SKU# OE-RT** | **4** |  |
| **¼ x 1-1/2” Black Lag Screw** | **180** |  |

## 1.4 BUY LIST

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.

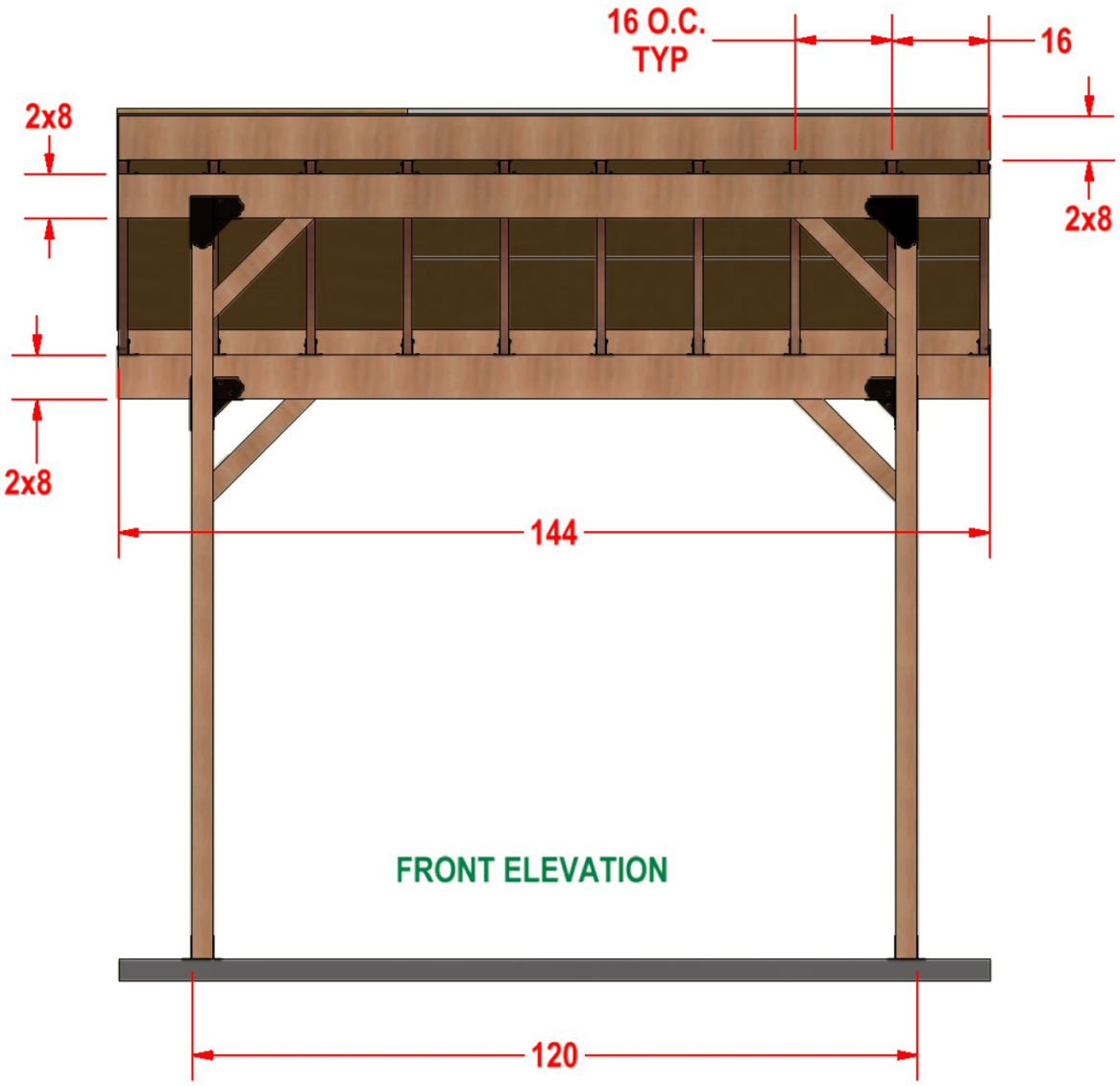
***NOTE**: When selecting 4x4s for post applications, it is critical that you measure the girth of the 4x4 before buying. Measure the girth of the 4x4 in both directions and select pieces that measure exactly 3.50" x 3.50". Most 4x4s will measure 3.50" x 3.50", however, due to manufacturing errors, some 4x4s can be a lot larger than specification. 4x4s that are too wide may prevent the elbow tubes from sliding over the post.*

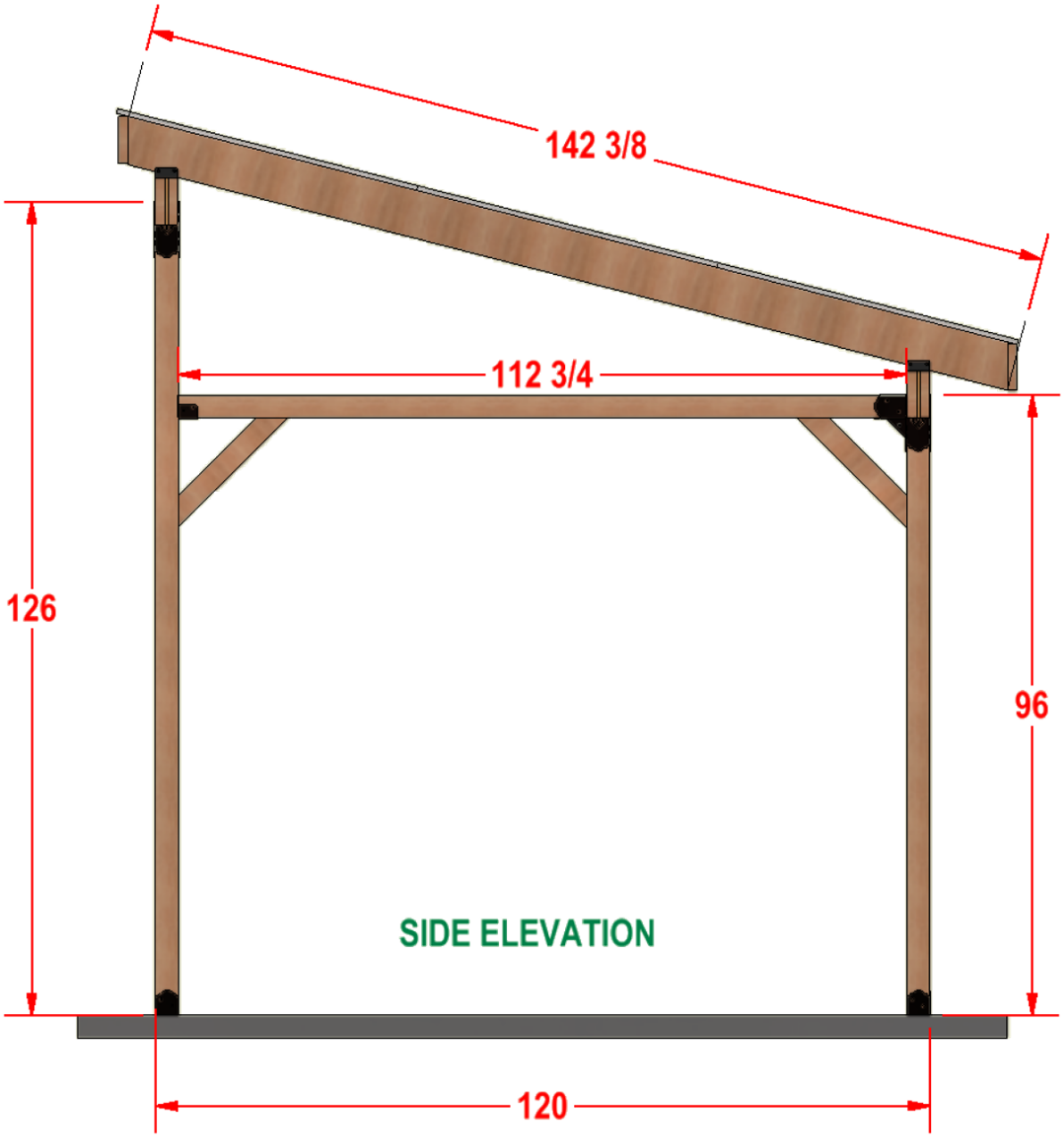
| Item Description | Item Qty | Plain Pressure Treated | Extend Price |
|---|---|---|---|
| 4x4 Post Lumber PT (8 ft.)<br>Posts' girth measurements must be 3.50" x 3.50". Verify measurements before using as posts. | 2 | 18.63 | 37.26 |
| 4x4 Cross Support Lumber PT (12 ft.) | 2 | 22.98 | 45.96 |
| 4x4 Gussets Lumber PT (8 ft.) | 2 | 10.68 | 21.36 |
| 2x8 Header Lumber PT (12 ft.) | 4 | 17.98 | 71.92 |
| 2x8 Rafter & Roof Skirts Lumber PT (12 ft.) | 12 | 17.98 | 215.76 |
| ½" x 4x8 OSB | 5 | 16.23 | 81.15 |
| Screw for Gussets (3/8" x 4" Exterior Grade) | 32 | | |
| Roofing Nails to attach OSB to rafters 1-1/2" (1 lbs.) | 2 | 4.98 | 9.96 |
| Roofing Shingles/ Metal Panels | 1 | 200 | 200 |
| Drip Edges (10 ft.) | 5 | 10.44 | 52.5 |
| Facia (1-1/4" x 6" x 12 ft.) | 4 | 22.46 | 89.84 |
| White Trimming Nails (box of 255) | 1 | 7.98 | 7.98 |
| | | Price Total | $833.69 |

***Note**: All lumber must be Pressure Treated Ground Contact (PT) type.*

## **1.5** 4X4 LEAN-TO DIMENSIONS

The diagrams below provide the elevation profiles for this Lean-To structure.




142 3/8
112 3/4
126
96
120
SIDE ELEVATION

## 1.6 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.

### 1.6.1 Dimensional lumber size requirement

For this deck mounted rectangle pergola, 4x4 lumber is required for the posts and the headers. The rafters may be 2x6 or 2x8 pressure treated lumber. The lattice top members are to be pressure treated or cedar 2x2s.

### 1.6.2 Selecting Lumber members at the lumberyard

Due to intolerances in manufacturing processes, variations do occur in the lumber lengths and girth. Measure the width of the lumber in both directions. Use only exactly 3-1/2" x 3-1/2" sized lumber for posts and headers.

Cedar lumber is known to be cut at 3-9/16" x 3-9/16". While our brackets are designed to allow up to 3-5/8" x 3-5/8" lumber, it is recommended that you shave some material off of cedar lumber to allow it to fit easily into the closed tubes.

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.

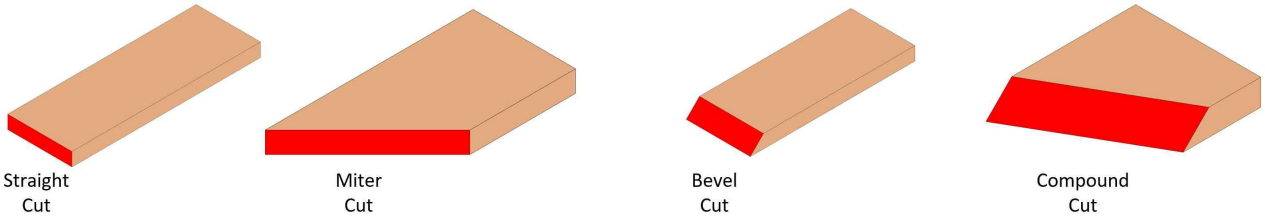
### 1.6.3 Plan ahead to save money and to minimize wood waste.

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.

### 1.6.4 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.




#### 1.6.4.1 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.

#### 1.6.4.2 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.

#### 1.6.4.3 Bevel Cut

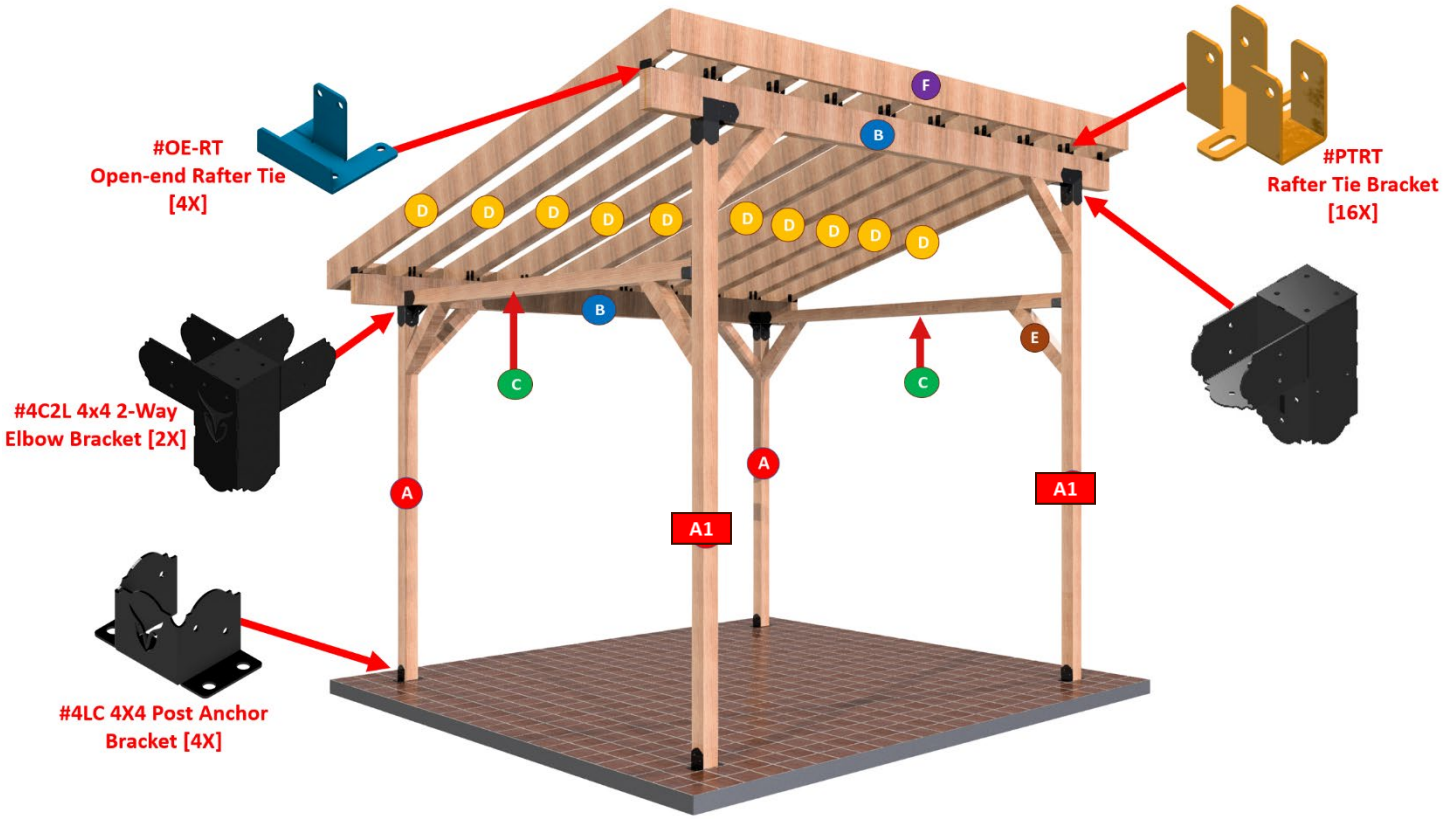
A bevel cut is a cut that is at an angle (less than or greaer than 90°) to the top surface of the lumber board. To make a bevel cut, tilt the miter saw blade to the left or right to a particular angle, then cut through the thickness of the lumber board.

#### 1.6.4.4 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.

## 1.7 10 X 10 LEAN-TO STRUCTURE LUMBER

### 1.7.1 Applications Depictions: Brackets and Lumber




### 1.7.2 Main Cut List

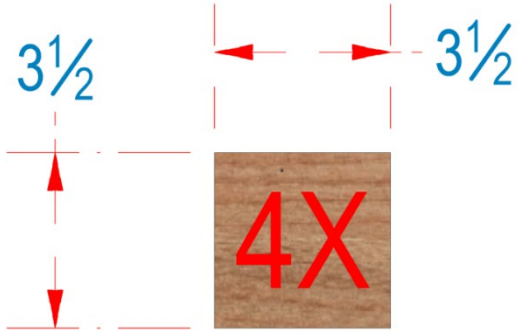
Study this table. The "Source Lumber (in.) is defined as the lumber to use to cut these items from. Follow the detailed instructions to cut and prepare all lumber members. Use a 10" power compound miter saw to make all end cuts. To cut the OSB Spacers, use a circular saw.

| 10 ft. x 10 ft. Lean-To Structure Cut List | | | | | | | |
|---|---|---|---|---|---|---|---|
| ID | Description | QTY | Source Material [Length (in)./Qty] | Lumber Size | Cut Length (in.) | End 1 Cut | End 2 Cut |
| A | Posts, Short | 2 | 96/2 | 4x4 | 96 | Straight | Straight |
| A1 | Posts, Long | 2 | 144/2 | 4x4 | 126 | Straight | Straight |
| B | 2X Headers (2X8) | 4 | 144/4 | 2x8 | 144 | Straight | Straight |
| B1 | ½" OSB MID SPACER | 2 | ½" X 48 X 96 OSB/1 | NA | 7-1/4" X 8" | Straight | Straight |
| B2 | ½" OSB END SPACER | 4 | ½" X 48 X 96 OSB/1 | NA | 7-1/4" X 8" | Straight + Notch | Straight |
| C | 4X4 Cross Supports | 2 | 144/2 | 4x4 | 112-3/4 | Straight | Straight |
| D | Rafters | 10 | 144/10 | 2x8 | 144 | Miter 14° | Miter 14° |
| E | 4x4 Gussets | 8 | 96/2 | 4x4 | 24 | Miter 45° | Miter 45° |
| F | 2X Roof Skirts (2x8) | 2 | 144/2 | 2x8 | 144 | Straight | Straight |

## 1.8 LUMBER MEMBERS PREPARATION

### 1.8.1 Posts, Item A

**Two (2)** Short Posts of identical lengths are required. Both ends of the posts must have straight cuts. Measure each post member. If length of post member is longer than required, cut down to 96” length.




**4x4 Post Size**

## Short Posts Preparation

Post members that are longer than the specified 96” length must be cut down to 96” length.

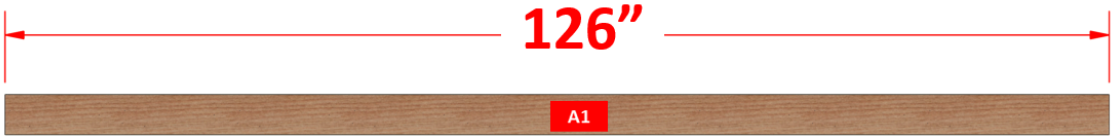

**Required Qty = 2**

### 1.8.2 Long Posts, Item A1

**Two (2)** Identical Long Post members are required. Both ends of the Long Posts must have straight cuts. Measure and cut to length two pieces to 126” length.

## Long Posts Preparation

Measure, mark and cut two posts to 126” Length.

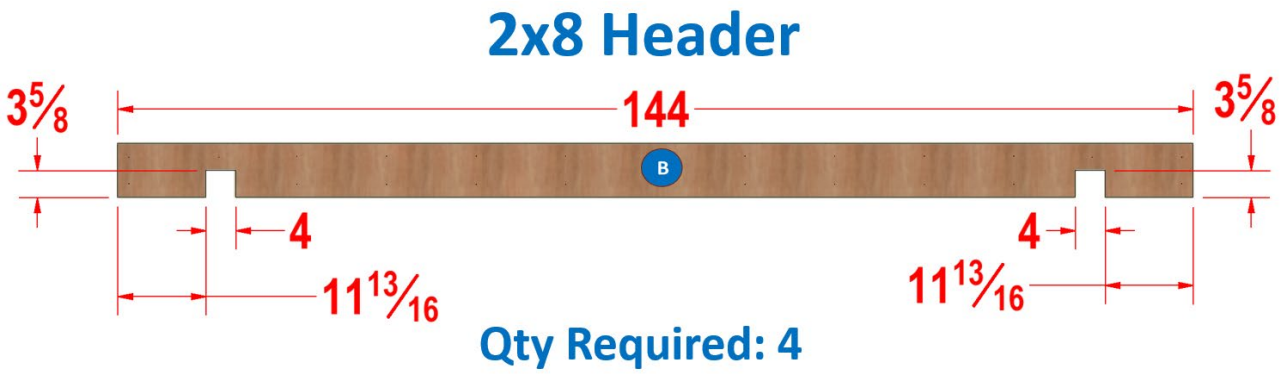



**Required Qty = 2**

### 1.8.3 2x8 Headers, Item B

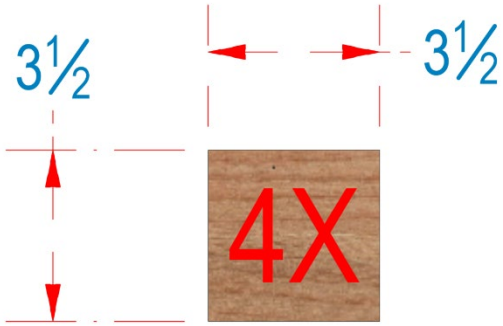
**Four (4)** 2x8 Header members are required. Both ends of the 2x8 Front Headers must have straight cuts.

1. Measure and cut four pieces to the required 144” length.
2. On both ends, using the measurements given below, measure, mark, and draw lines for the two rectangle cutouts.
3. Cut the two rectangle cutouts precisely. If you cut it a bit larger, it is acceptable. However, do not cut smaller than specified.



### 1.8.4 4x4 Cross Supports, Item C

**Two (2)** 4x4 Cross Support members are required. Both ends of the Cross Supports must have straight cuts. Measure and cut two pieces to the required 112-3/4” length.




**Cross Support Size**

## 4x4 Cross Support Preparation

Measure, mark and cut two posts to 126” Length.


**Required Qty = 2**

### 1.8.5 2x8 Rafters, Item D

**Ten (10)** identical Rafter members are required. First, measure, mark, and cut all ten rafter members to the required length of 142-1/2”. Next, add 14o miter cuts to both ends of all rafters, as shown below.

**NOTE:** The reason for cutting down a 144” long rafter to 142-1/2” is to create a true 12” long roof which can be fully covered by adding one 8 ft. long and one 4 ft. wide roof deck piece. Do not forget that you will be adding a roof skirt on both ends of these rafters which increase the roof length.

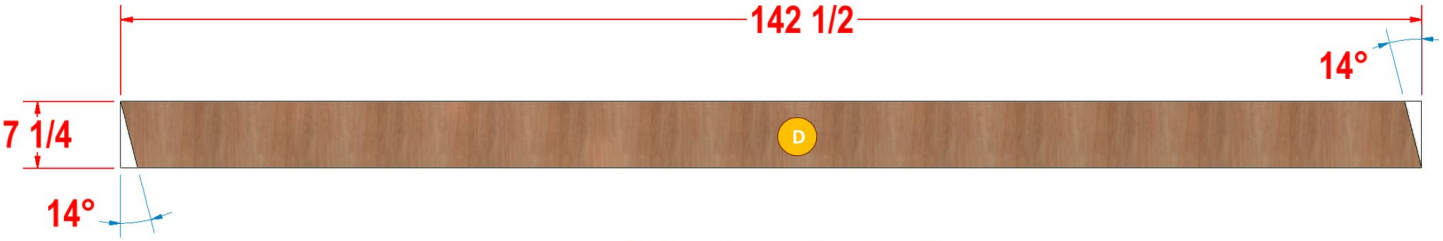
**STEP 1**

Measure, mark and cut 10 pieces to 142-1/2” length with straight cuts on both ends.

**STEP 2**

On both ends of the ten rafter members, add a 14° miter cut.

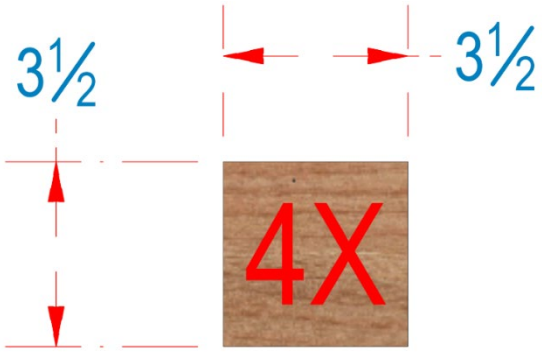
## 2x8 Rafters




**Qty Required: 10**

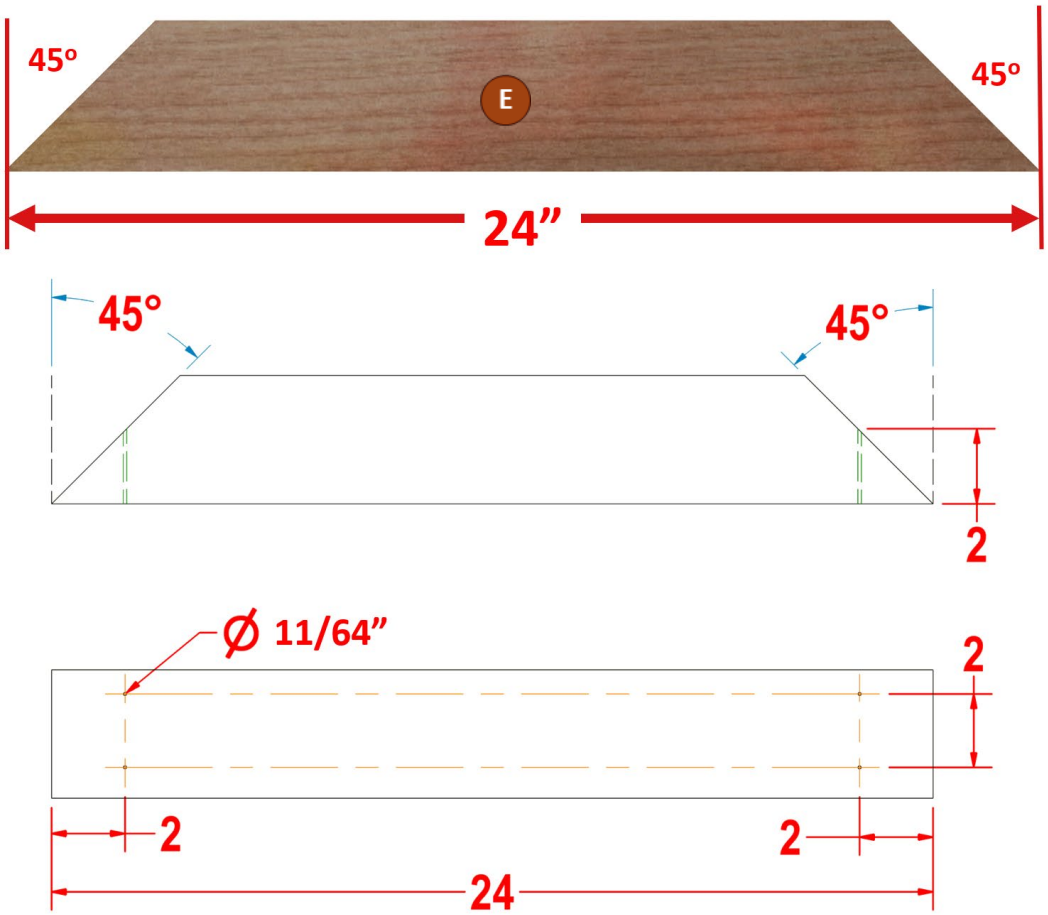
### 1.8.6 4x4 Gussets, Item E

**Eight (8)** identical 4x4 Gusset members are required. Both ends of the gusset must have 45 degree miter cuts. Measure and cut eight pieces to the required 24” length. Apply the 45 degree miter cuts to both ends. Drill 3/32” x 2” pilot holes at locations shown below.




**4x4 Gusset Size**

## 4x4 Gusset



### 1.8.7 Roof Skirts Preparation, Item F

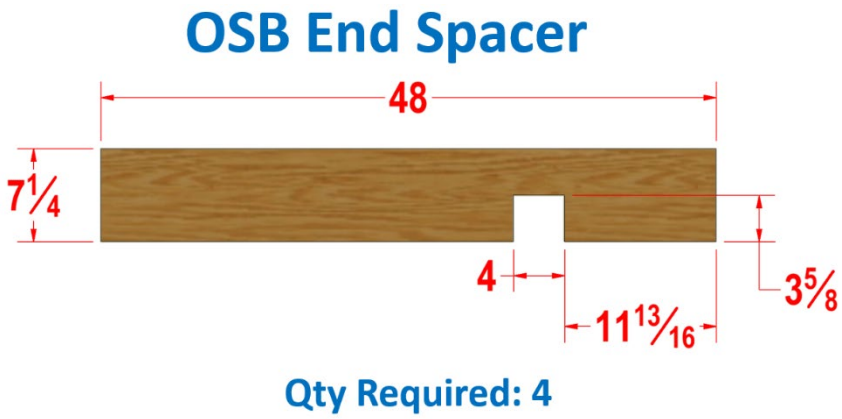
Measure and cut two (2) Roof Skirt members to the required 144” length. Both ends must have straight cuts.

### 1.8.8 OSB Mid Spacer Preparation

Out of ½" thick OSB, cut two (2) pieces using the dimensions provided below. Use a circular saw to cut directly on top of the snapped lines.


### 1.8.9 OSB End Spacer Preparation

Out of ½" thick OSB, cut four (4) pieces using the dimensions provided below. Use a circular saw to cut directly on top of the snapped lines. To make the rectangle cutout, cut perpendicular to the length of the board first, then use a wood chisel to cut parallel to the length of the board and remove the rectangle piece.



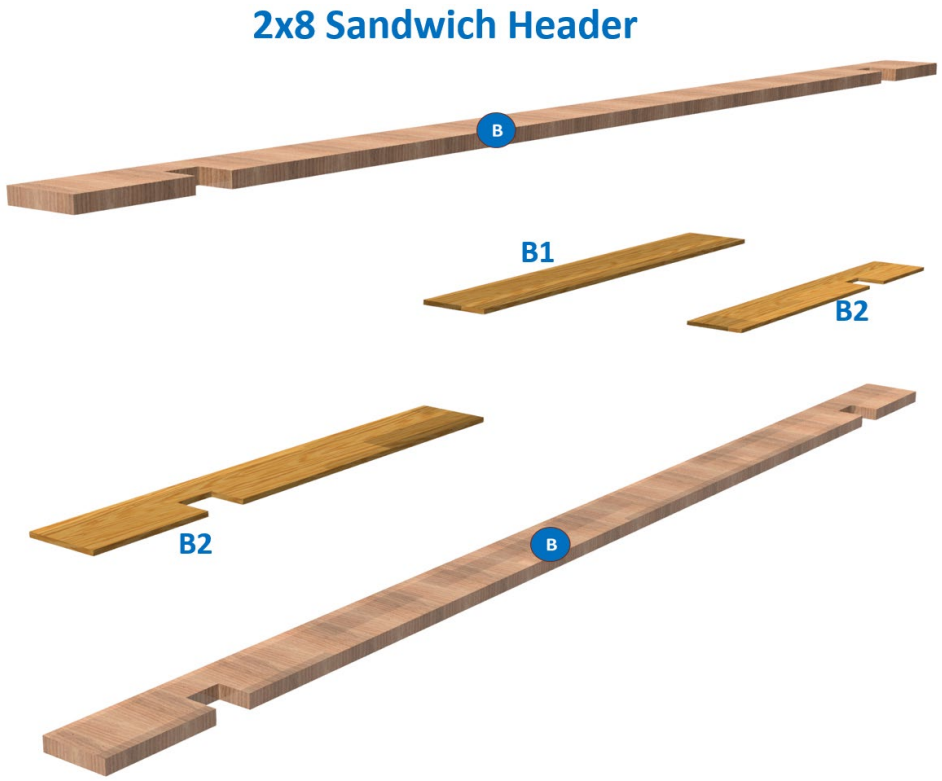
## 1.9 CREATING THE 2X8 SANDWICH HEADER

**Lumber & OSB**: Gather2x8 Sandwich Header lumber members #B and sandwich filler OSB pieces #B1 and #B2. Build the sandwich header on firm, flat, and level ground.

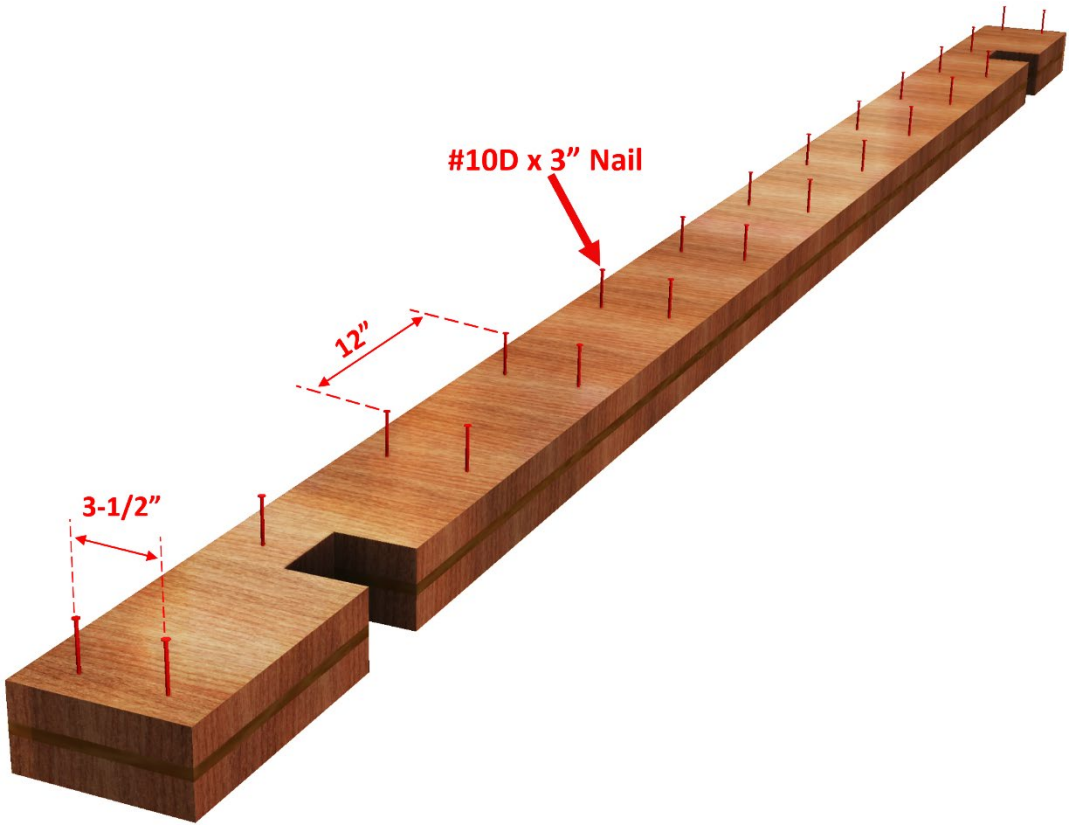
**Nails**: Gather #10D x 3" nails.

**Tools**: Gather a nail gun or a framing hammer, a drill gun, and 1/8" drill bit.

1. On a flat and level ground, lay one 2x8 Sandwich Header member #B.
2. Place Sandwich Filler OSB pieces (B1 and B2) on top of the first #B with the cutouts in the header piece aligned with the cutout in the OSB filler (B2).
3. Place a second 2x8 Sandwich Header member #B on top of the OSB fillers. Align cutouts in all pieces. Make outer edges flush in all pieces. Clamp together.



4. Measure and mark nail driving points on the top face per dimensions provided below.
5. At nail driving points, drill 1/8” x 3” deep pilot holes.
6. Drive nails downward through the top #B, through the OSB filler, and into the bottom #B.



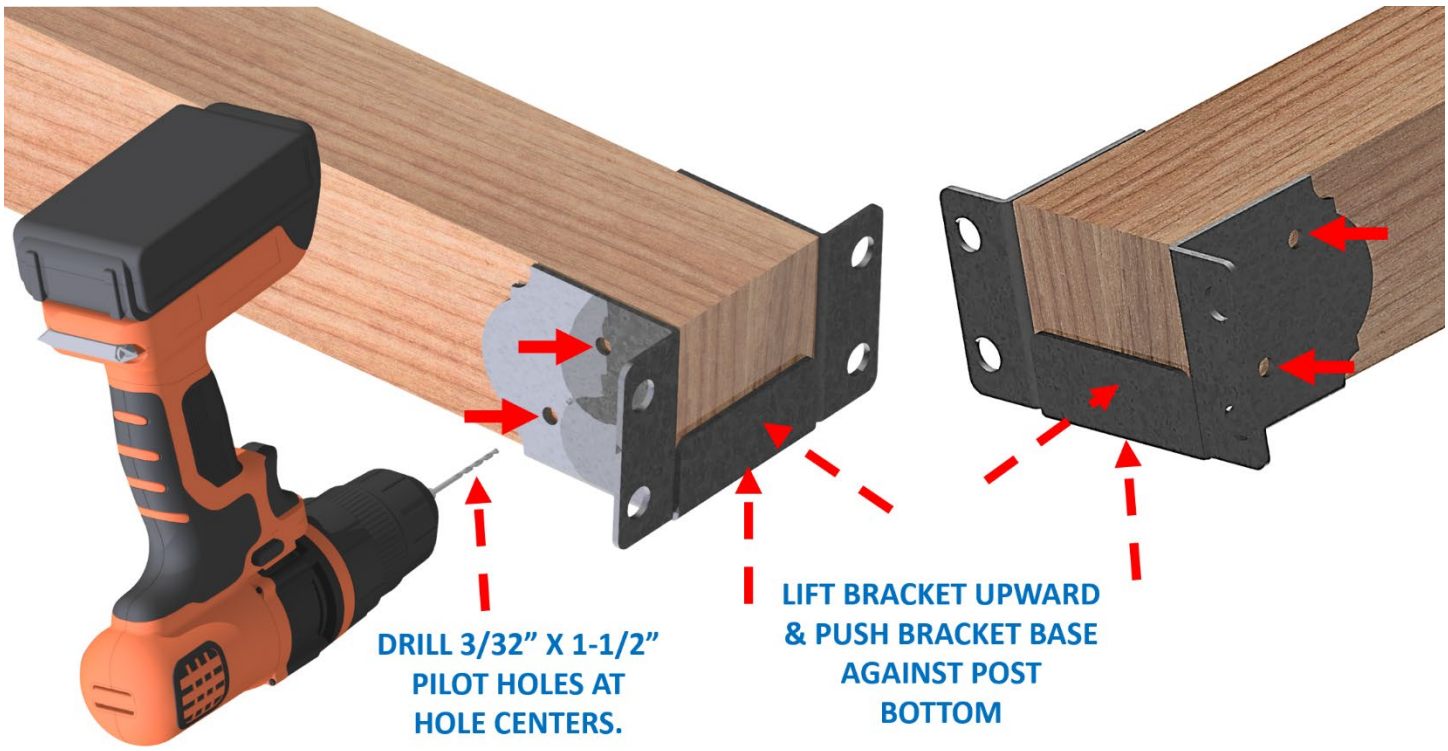

7. Flip the sandwich header over to expose the underside.
8. Mark nail driving points on the #B surface offset away from nails on the first side. Drill 1/8” x 3” pilot holes at nail drivng points, and drive #10D x 3” nails through.

## 1.10 CREATING THE POST ASSEMBLIES

### 1.10.1 Adding Floor Anchor Bracket

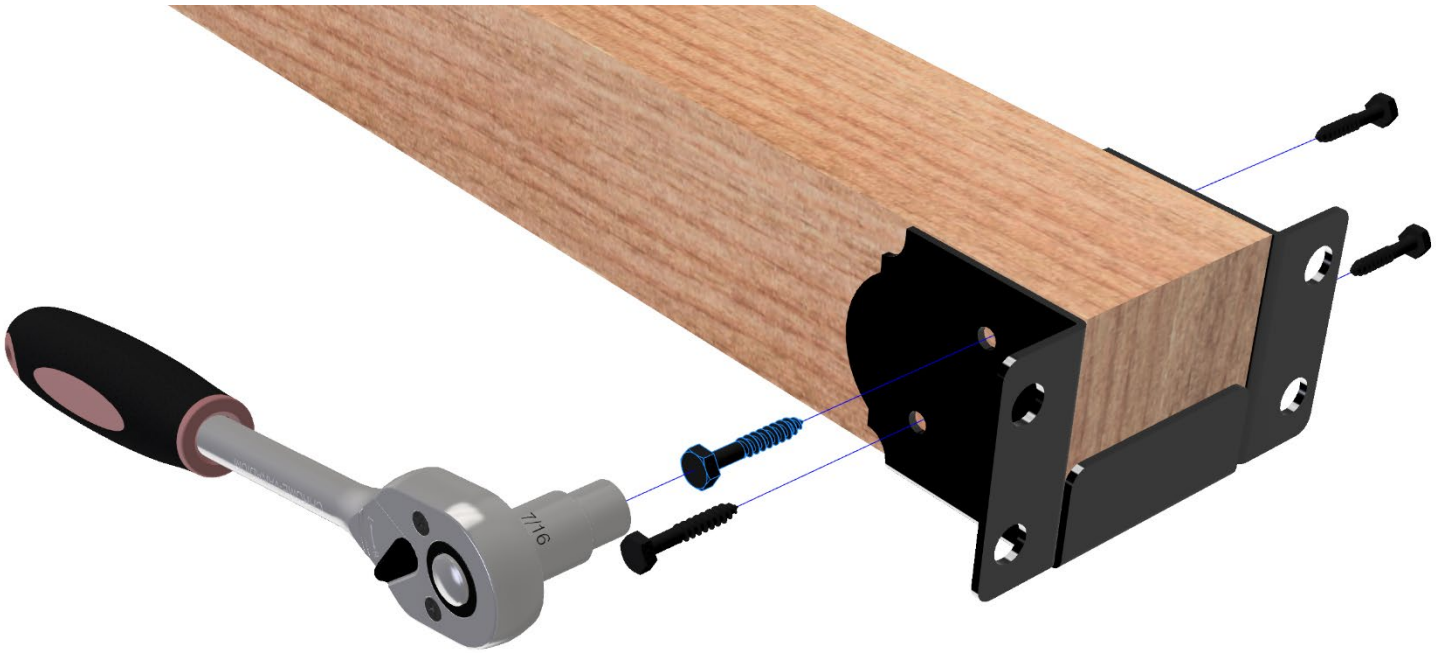
1. Lay a post on the ground.
2. Lift one end of the post up and slide a floor anchor bracket, as shown below, all the way over the post end.

3. Insert a 3/32” drill bit in the drill chuck. The drill bit should extend out 1-1/2” from the drill chuck tip. When drilling pilot holes, drill in until the tip of the chuck touches the wood surface. This will provide the 1-1/2” required pilot hole depth.




4. Locate four 5/16” diameter holes, two holes in each opposing face of the floor anchor’s side faces.
5. While holding the floor anchor tightly against the post end, drill 3/32 X 1-1/2” pilot holes through the center of four 5/16” holes.

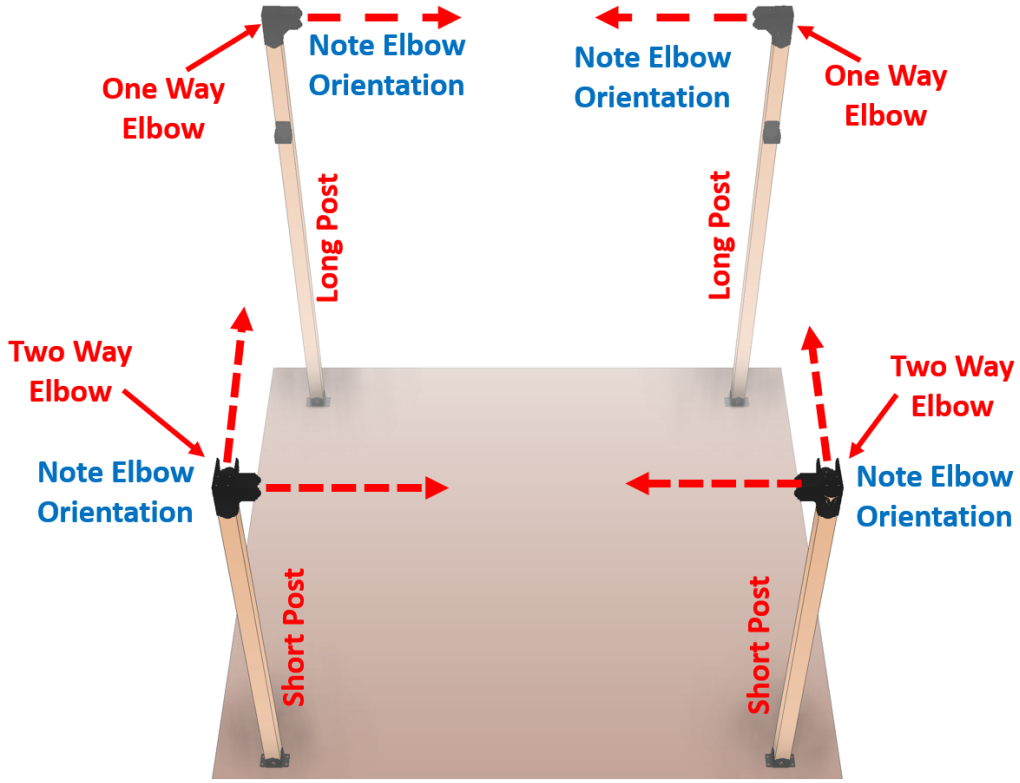
6. Using a ratchet driver and a 7/16” socket or a drill gun with a 7/16” drive bit, drive one ¼” x 1-1/2” Lag Screw each through all four pilot holes you drilled. If using a drill gun, be careful. Test drive one screw to set the proper drill torque setting to prevent screw heads from breaking off when you tighten the lag screw.




7. Tighten all lag screws.
8. Repeat steps 1-7 and add a floor anchor bracket to all remaining posts.

### 1.10.2 Adding post top Elbow Brackets

Two short posts #A with post top #4C2L elbow brackets and two long posts #A1 with post top #4C1L brackets are required. Before you begin, note which direction the floor anchor brackets' open end and logo are facing. The logo end of floor anchor brackets on all posts must face the same direction. It is preferable to have the logo side on the entry side of this structure.




**The logo in all post anchor brackets must face the same direction.**
**Take care to orient post anchor brackets and post top elbows as shown on all posts.**

When adding the 90-degree elbow bracket to the post tops, make certain that the floor anchor open face and elbow directions are properly oriented per the diagram below.

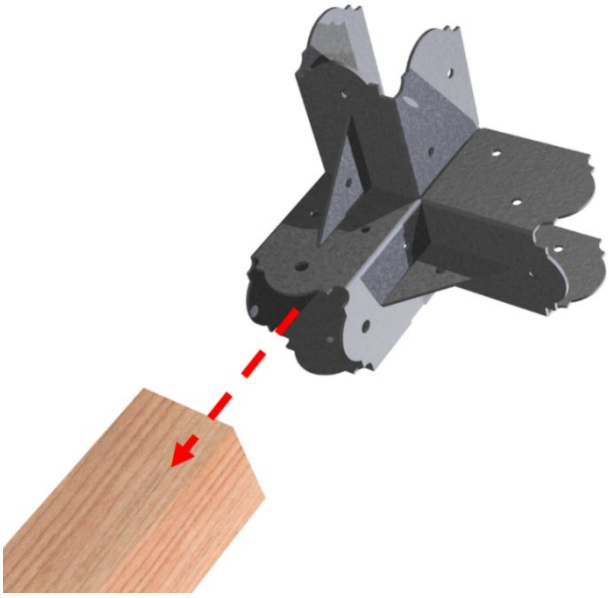
Make certain that the #4C1L One-Way Elbows are installed on the top of the "Long Posts" and the #4C2L Two-Way Elbows are installed on the top of the "Short Posts".

Make certain that the elbow arms are oriented in the proper directions per the diagram above.

### 1.10.2.1 Adding #4C2L 2-Way Elbow Brackets to Short Posts

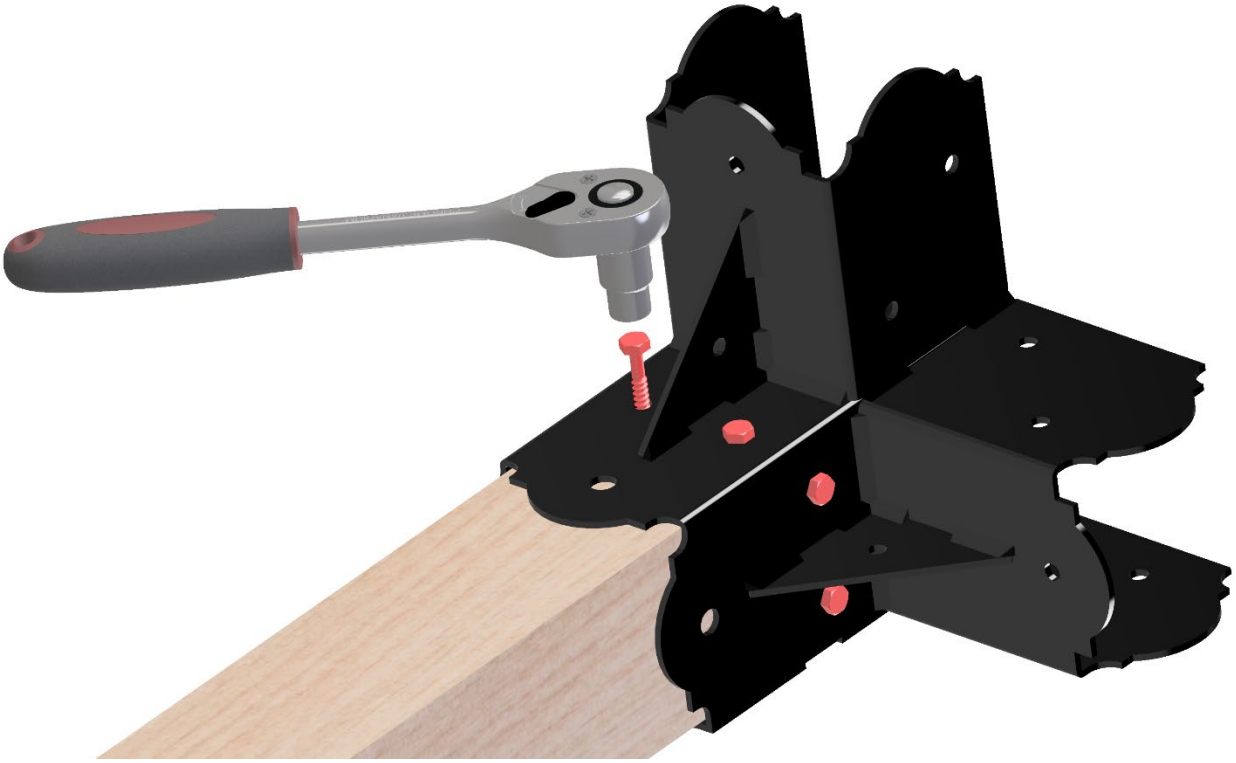
**Perform these steps with the post laying down on the ground.**

1. Slide a 2-way #4C2L 90-degree elbow bracket's tube over the 4x4 Short Post top after aligning the header receiver U-channels in the proper directions. Push the bracket all the way down on top of the post. If you feel resistance, tap lightly on top of the elbow bracket with a mallet until it slides all the way.
   **Make certain that the elbow bracket is sitting all the way down on the post top.**



2. Insert a 3/32" drill bit in the drill chuck. The drill bit should extend out 1-1/2" from the drill chuck tip. When drilling pilot holes, drill in until the tip of the chuck touches the wood surface. This will provide the 1-1/2" required pilot hole depth.
3. Identify the four 5/16" holes which are on the sides of the gussets in the elbow bracket.
4. Drill 3/32" X 1-1/2" deep pilot holes at the center of four 5/16" Holes. Locate pilot holes at the center of each 5/16" hole.

5. Using a ratchet driver and a 7/16” socket or a drill gun with a 7/16” drive bit, drive one ¼” x 1-1/2” Lag Screw each into all four pilot holes you drilled. If using a drill gun, be careful. Test drive one screw to set the proper drill torque setting to prevent screw heads from breaking off when you tighten the lag screw. Tighten down each screw.

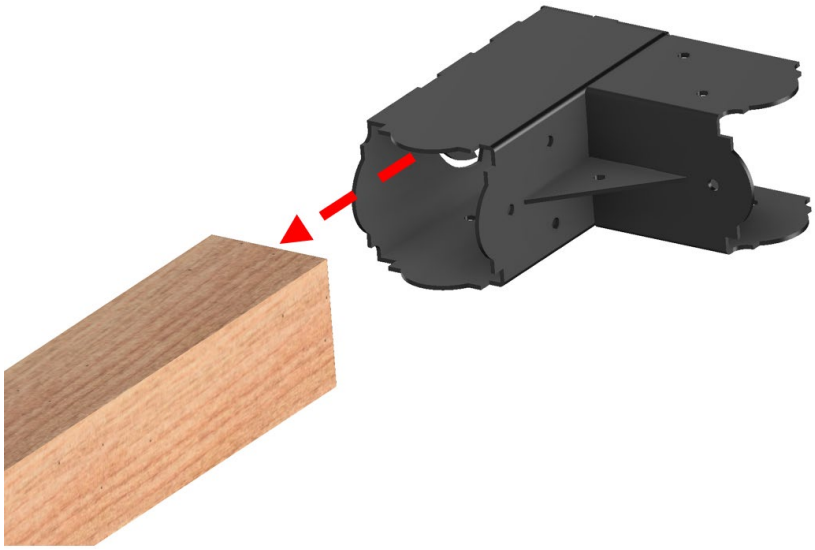


6. Repeat steps 1 through 5 for all post top brackets while making certain that the elbow orientation and open face of floor anchor facing direction are correct.

### 1.10.2.2 Adding #4C1L 1-Way Elbow Brackets to Long Posts

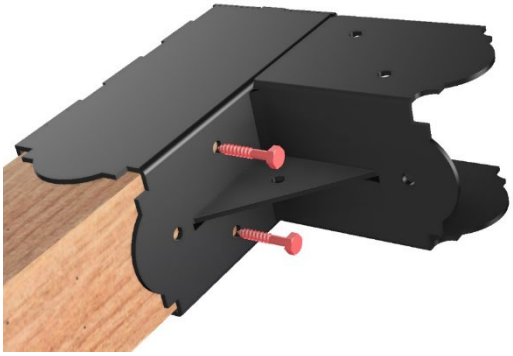
**Perform these steps with the post laying down on the ground.**

1. Slide a 1-way #4C1L 1-Way Elbow bracket's tube over the 4x4 Long Post top after aligning the header receiver U-channels in the proper direction. Push the bracket all the way down on top of the post. If you feel resistance, tap lightly on top of the elbow bracket with a mallet until it slides all the way.
   **Make certain that the elbow bracket is sitting all the way down on the post top.**



2. Insert a 3/32" drill bit in the drill chuck. The drill bit should extend out 1-1/2" from the drill chuck tip. When drilling pilot holes, drill in until the tip of the chuck touches the wood surface. This will provide the 1-1/2" required pilot hole depth.
3. Identify the four 5/16" holes which are on the sides of the gussets in the elbow bracket.
4. Drill 3/32" X 1-1/2" deep pilot holes at the center of two 5/16" Holes identified in the image below. Locate pilot holes at the center of each 5/16" hole.

5. Using a ratchet driver and a 7/16” socket or a drill gun with a 7/16” drive bit, drive ¼” x 1-1/2” Lag Screws into both pilot holes you drilled. If using a drill gun, be careful. Test drive one screw to set the proper drill torque setting to prevent screw heads from breaking off when you tighten the lag screw. Tighten down each screw.



6. Rotate the post 90 degrees to expose two 7/16” holes on the side of the 1-way elbow bracket.
7. Drill 3/32” x 1-1/2” pilot holes at the center of these two holes.

8. Drive ¼” x 1-1/2” Lag Screws into both pilot holes you drilled, tighten.

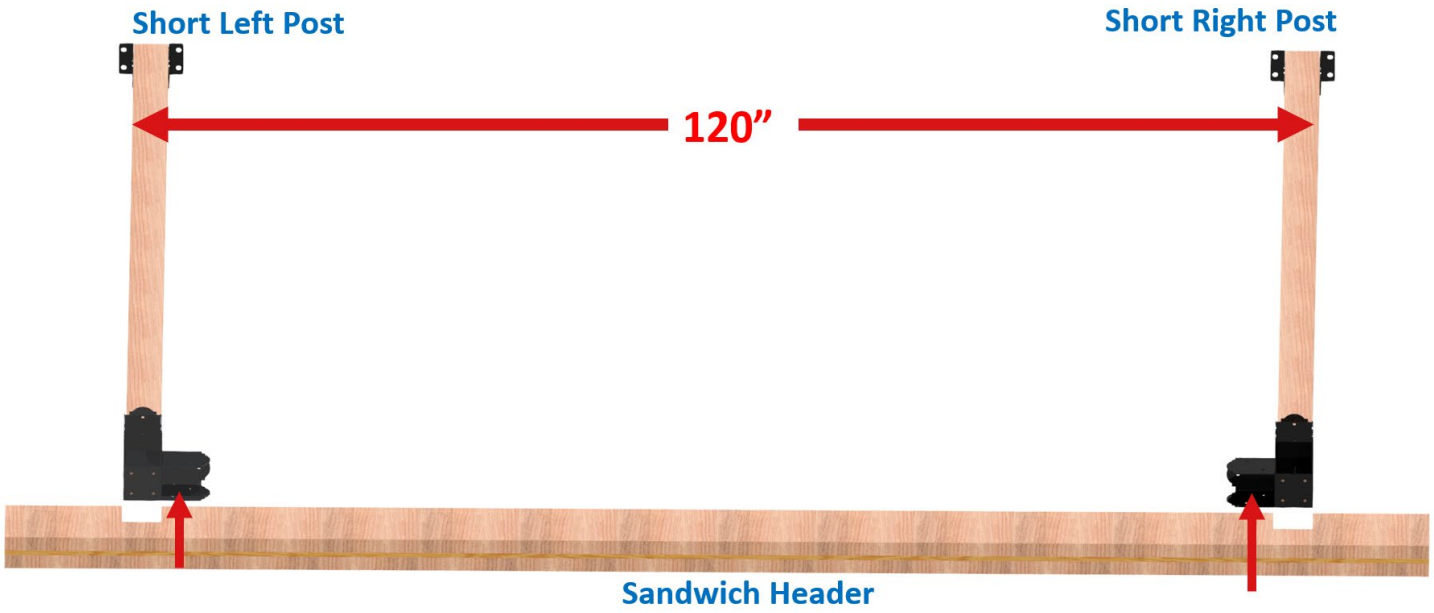
9. Repeat steps 1 through 8 to add a #4C1L 1-Way Elbow to the second Long Post while making certain that the elbow orientation and floor anchor orientation are correct.

## 1.11 ADDING HEADERS

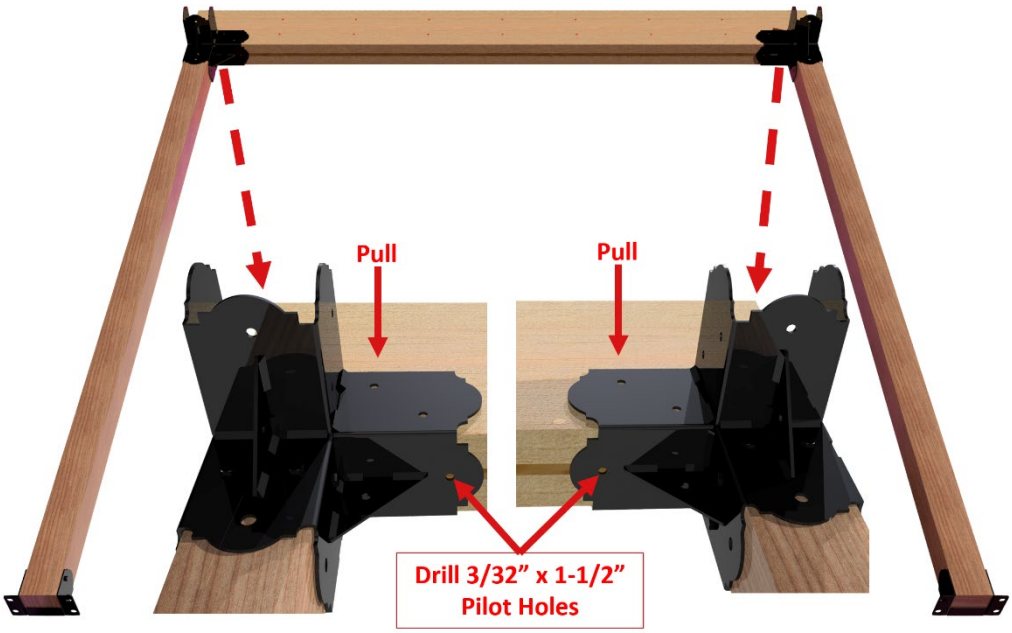
Build the Short wall and long wall on the floor, first. It is much easier to add the headers to the post top elbows and rafter brackets to the top of the headers while the two walls lay on the floor.

### 1.11.1 Adding the Sandwich Header to Short Wall

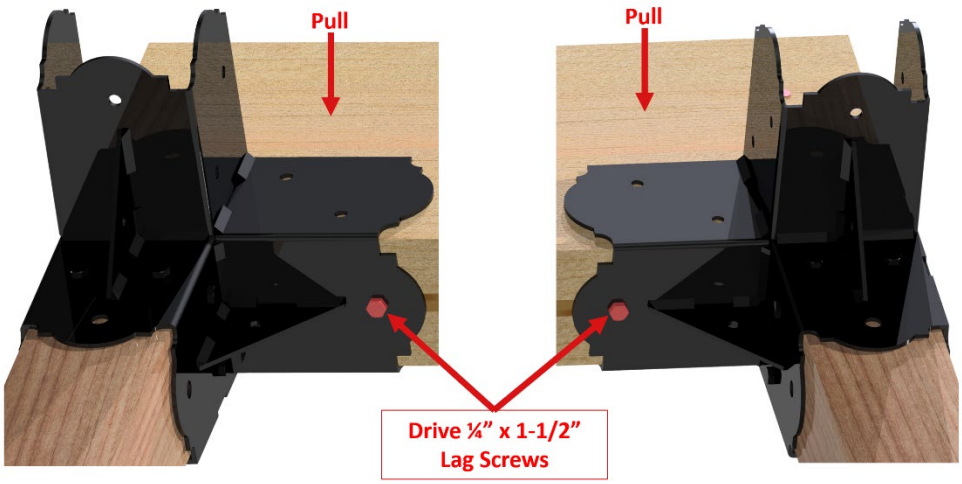
1. Lay down the Short left post and Short right post on a level ground, separate them about 120” apart, as shown below.
2. Slide the sandwich header inside the post top elbow’s U-channels. The top of the elbows will slide into the cutouts.



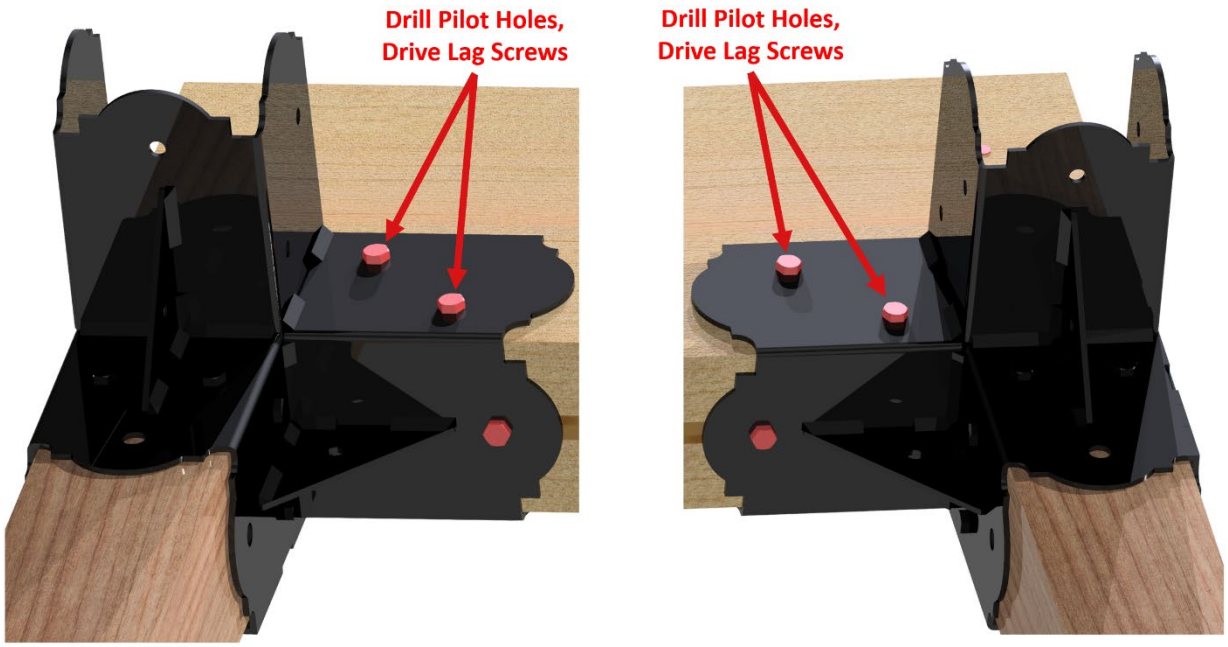

3. Push the posts towards the middle of the header to pinch the header between the two post top brackets.
4. While pulling the header towards the U-channel bottom and pulling the header tight against the post top bracket, sideways, drill a 3/32” x 1-1/2” deep pilot hole at the center of two holes located on the bottom faces of the U-channels.



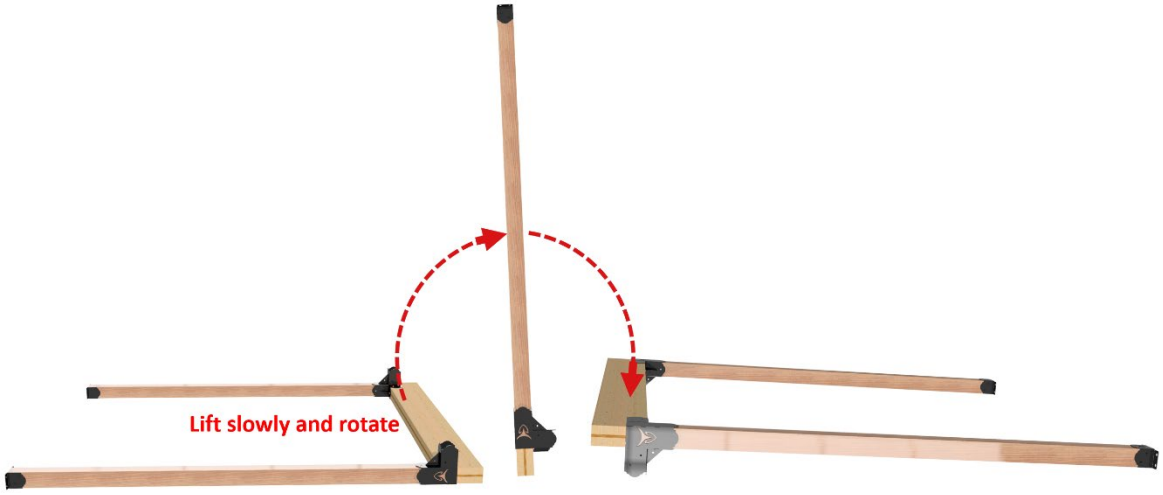
5. While pulling on the header, drive one ¼” x 1-1/2” lag screw into the pilot holes and tighten.



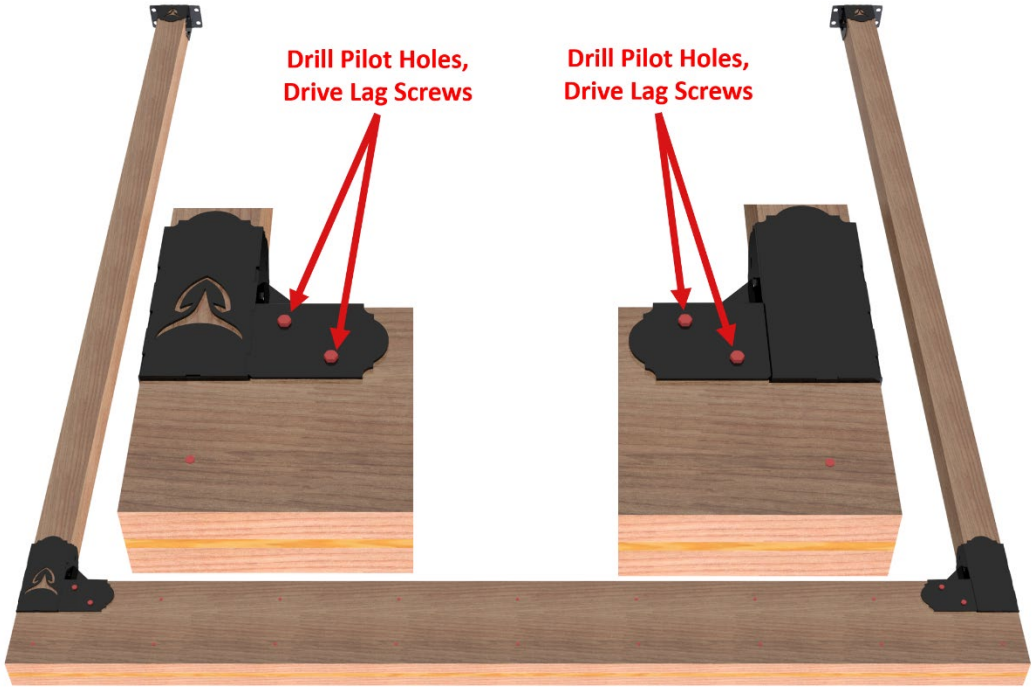

6. On the top faces of the U-channels, drill 3/32” x 1-1/2” deep pilot holes at the center of two holes in each bracket. Note, hole positions may be different in the brackets you receive. However, the same procedure will apply.
7. Drive ¼” X 1-1/2” Lag Screws into the pilot holes and tighten down.



8. Lift the bottom ends of the posts upward, slowly. Flip the wall assembly over to expose the underside.

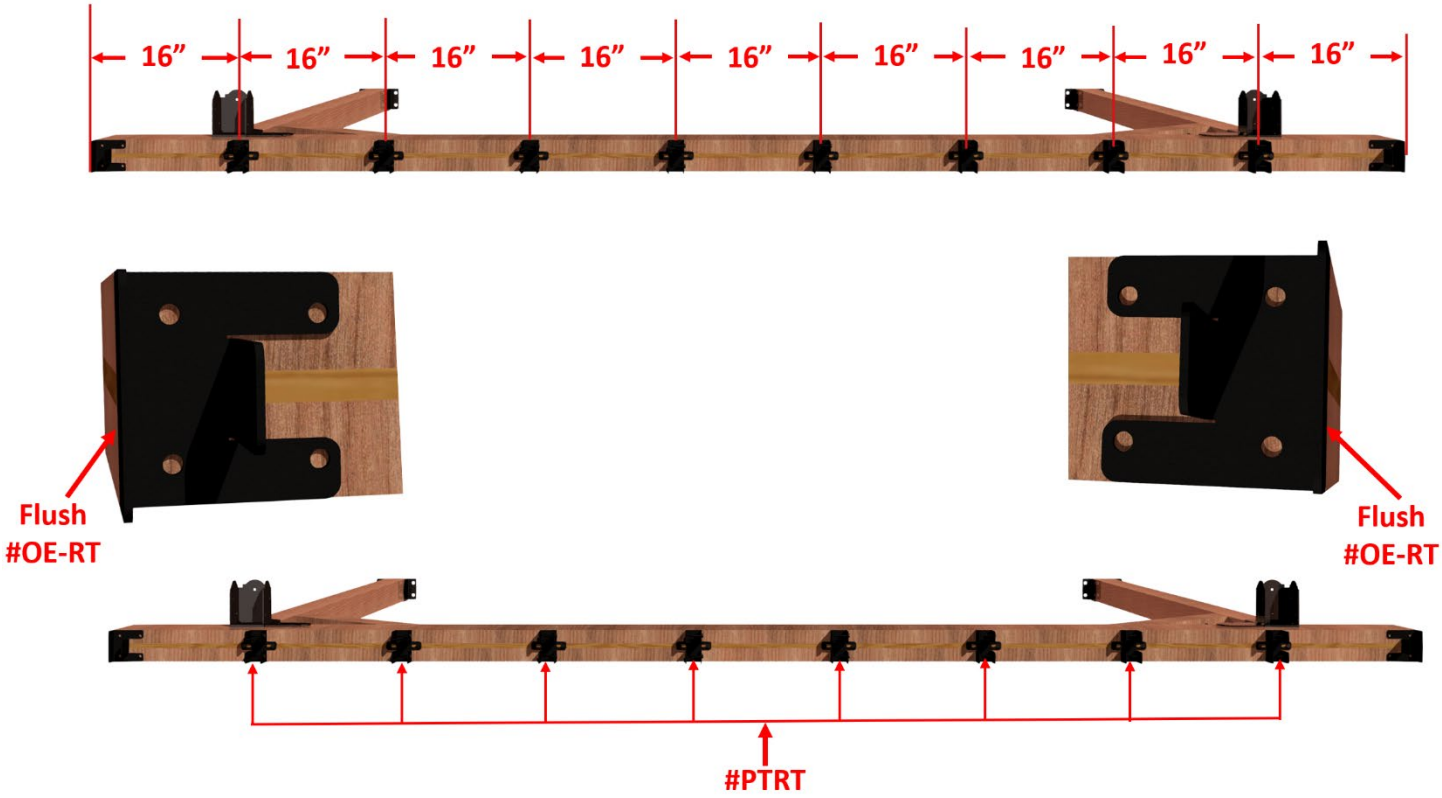



9. On the faces of the U-channels are two holes. Drill 3/32” x 1-1/2” pilot holes at the center of these holes and drive ¼” x 1-1/2” lag screws. Tighten the lag screws.



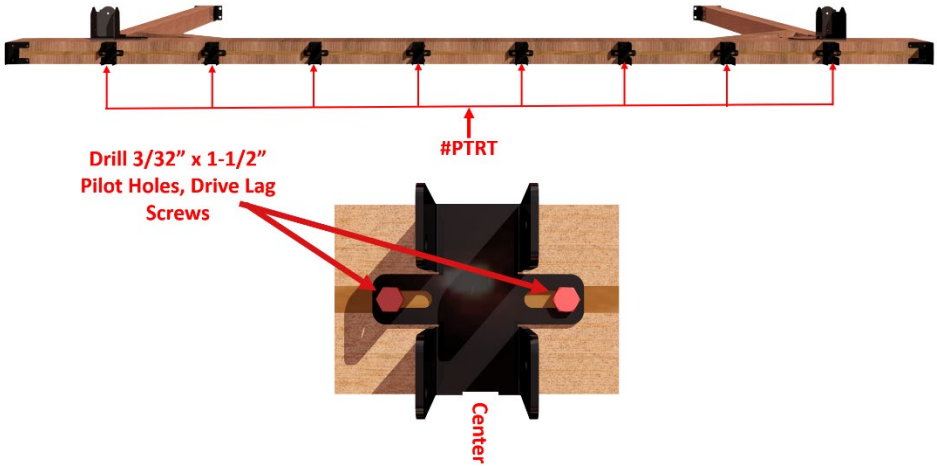
### 1.11.2 Adding Rafter Tie Brackets to Short Wall Top

1. On the top face of the 2x8 double header in the Short Wall, measure 16” from left end and make a pencil mark every 16” all the way to the right end. The pencil marks will be the center locations for the rafter tie brackets.



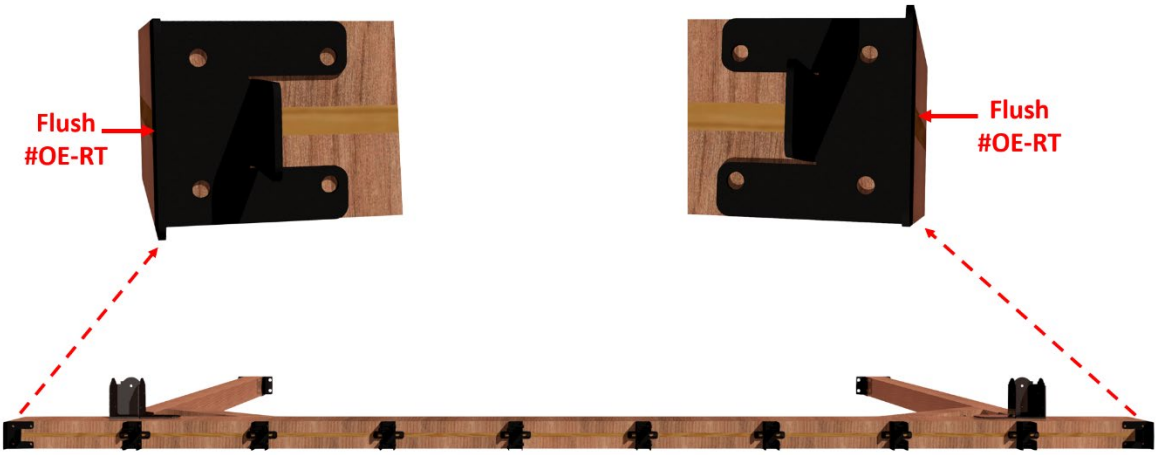

2. At the left and right ends of the header, two #OE-RT Open End Rafter Tie brackets will sit flush with outer edges of the sandwich header.

3. The #PTRT brackets’ centers align with the pencil marks you made. Position the #PTRT brackets flush with the inner and outer faces of the 2x8 Sandwich Header.




4. Drill 3/32” x 1-1/2” Pilot holes at the center of the slot ends in the #PTRT brackets. Drive ¼” x 1-1/2” Lag Screws into pilot holes and tighten down.

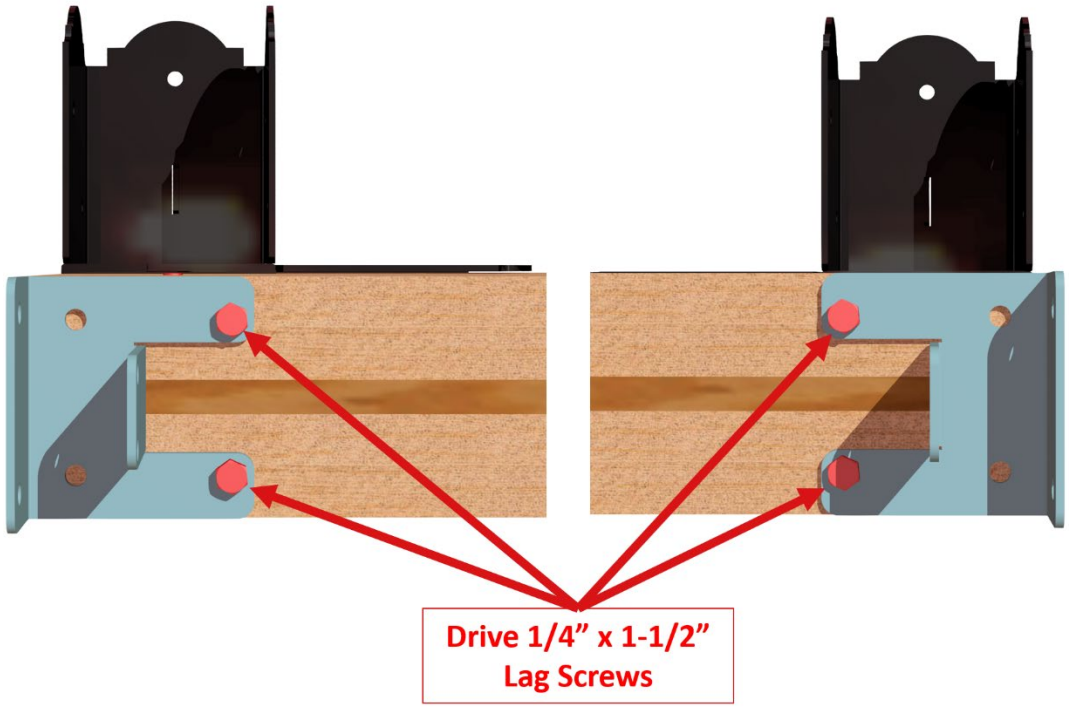
5. Position the #OE-RT bracket so it is flush with the end and flush to the other two sides of the 2x8 Sandwich Header.




6. Drill 3/32” x 1-1/2” deep pilot holes at the center of two holes in each bracket.

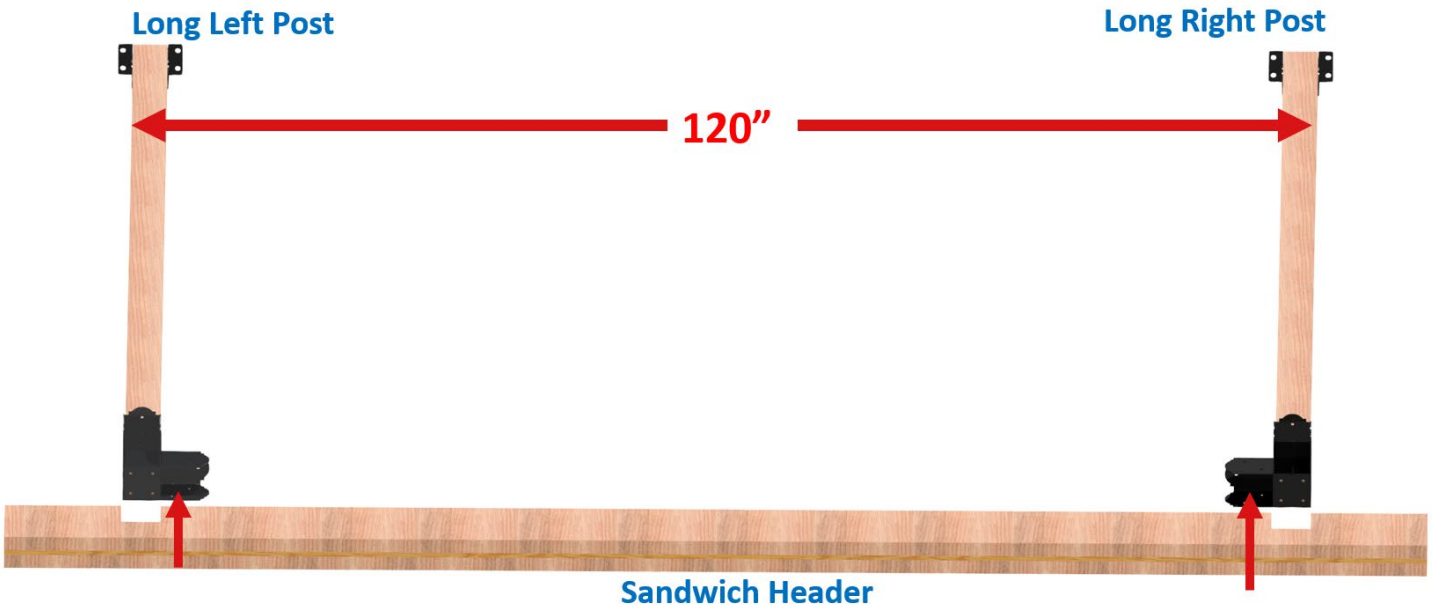
7. Drive one ¼” x 1-1/2” Lag Screw into both pilot holes and tighten.

8. Repeat steps 6 to 8 to mount an #OE-RT bracket on the other end of the Sandwich Header.

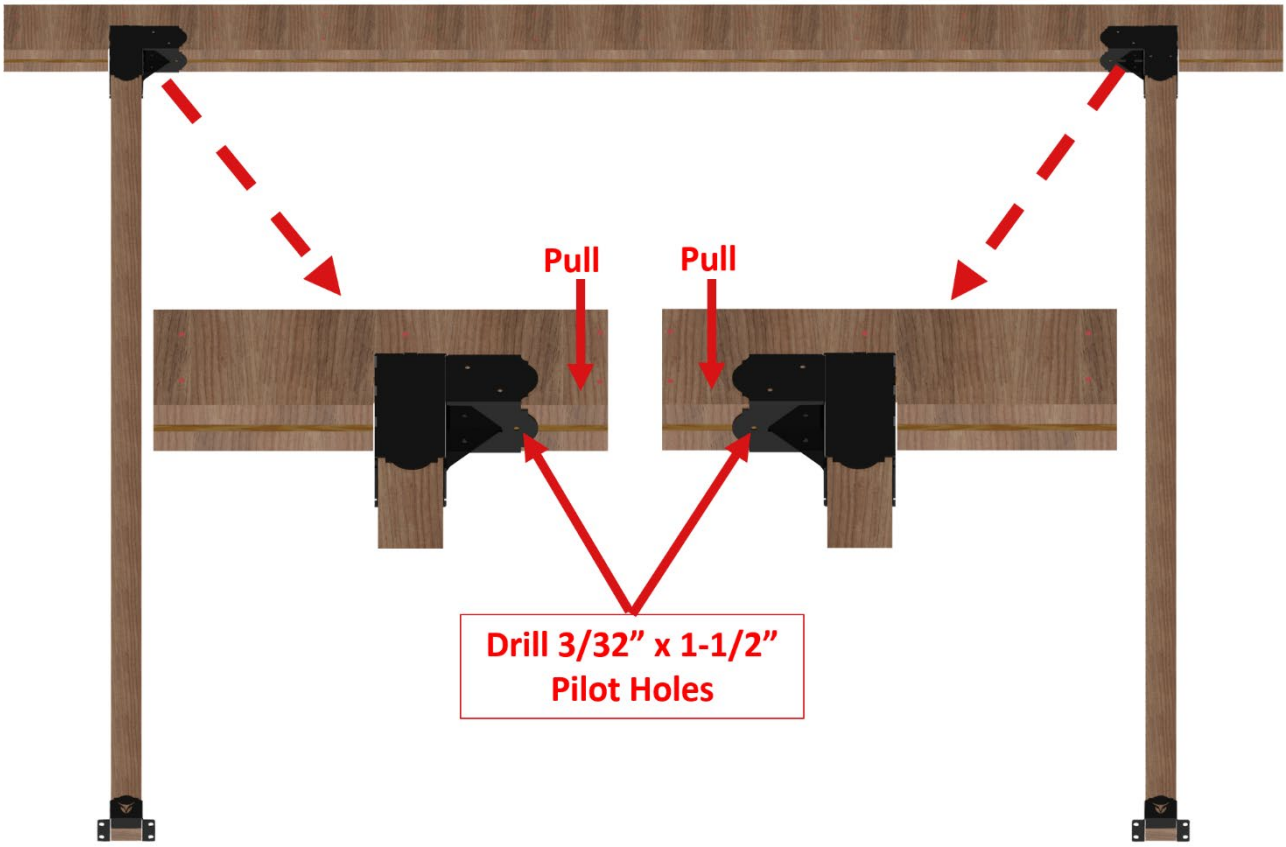


### 1.11.3 Adding the Sandwich Header to Long Wall

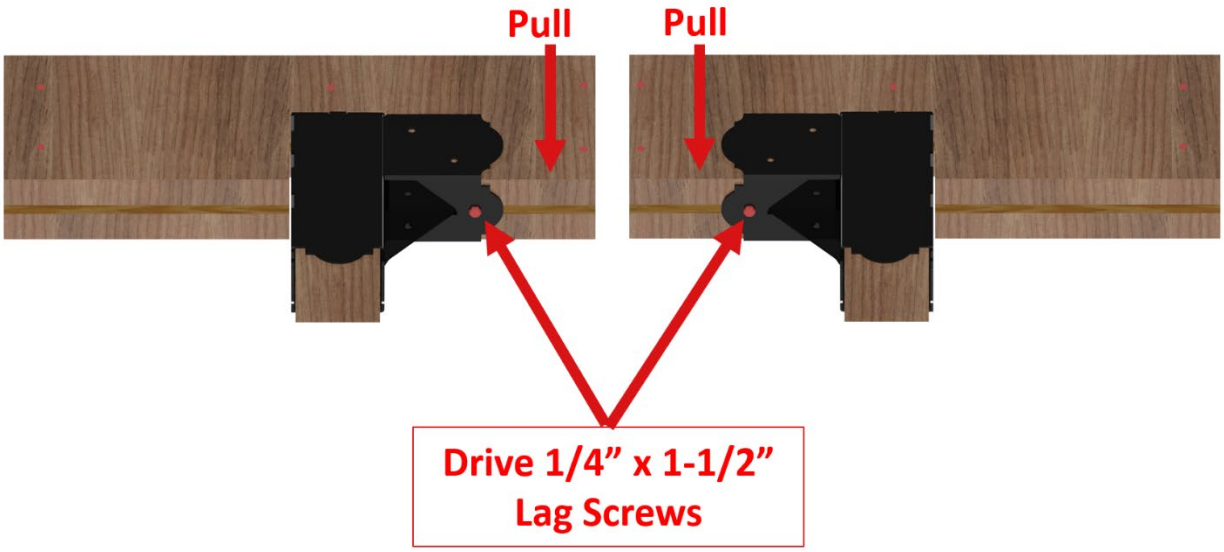
1. Lay down the Long left post and long right post on a level ground, separate them about 120” apart, as shown below.



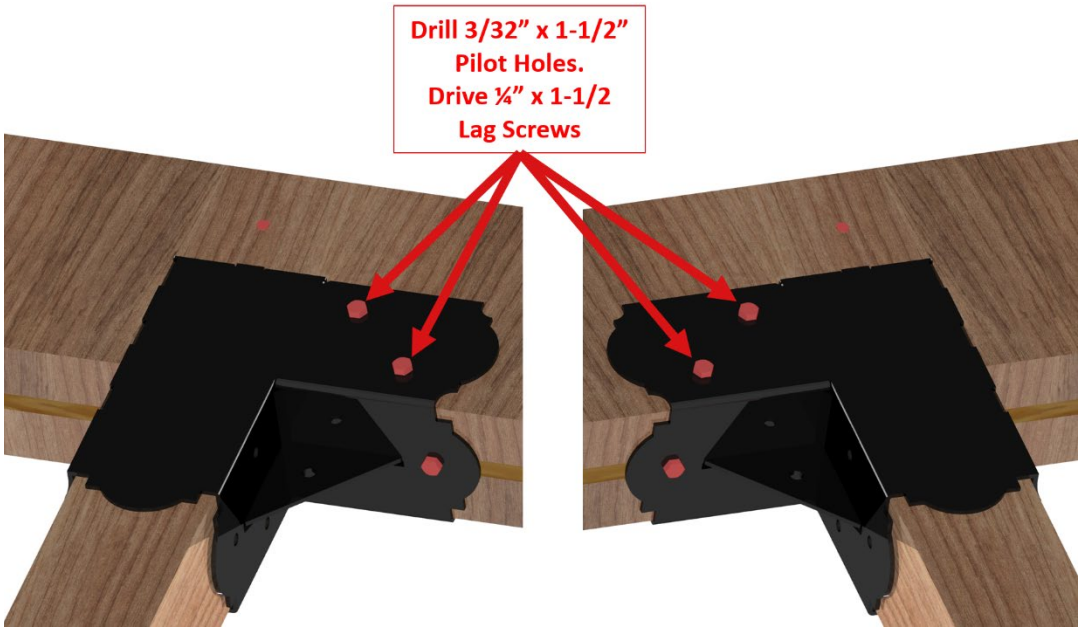

2. Slide the sandwich header inside the post top elbow’s U-channel. The top of the elbows will slide into the cutouts.
3. Push the posts towards the middle of the header to pinch the header between the two post top brackets.
4. While pulling the header towards the U-channel bottom and pulling the header tight against the post top bracket, sideways, drill a 3/32” x 1-1/2” deep pilot hole at the center of two holes located on the bottom faces of the U-channels.



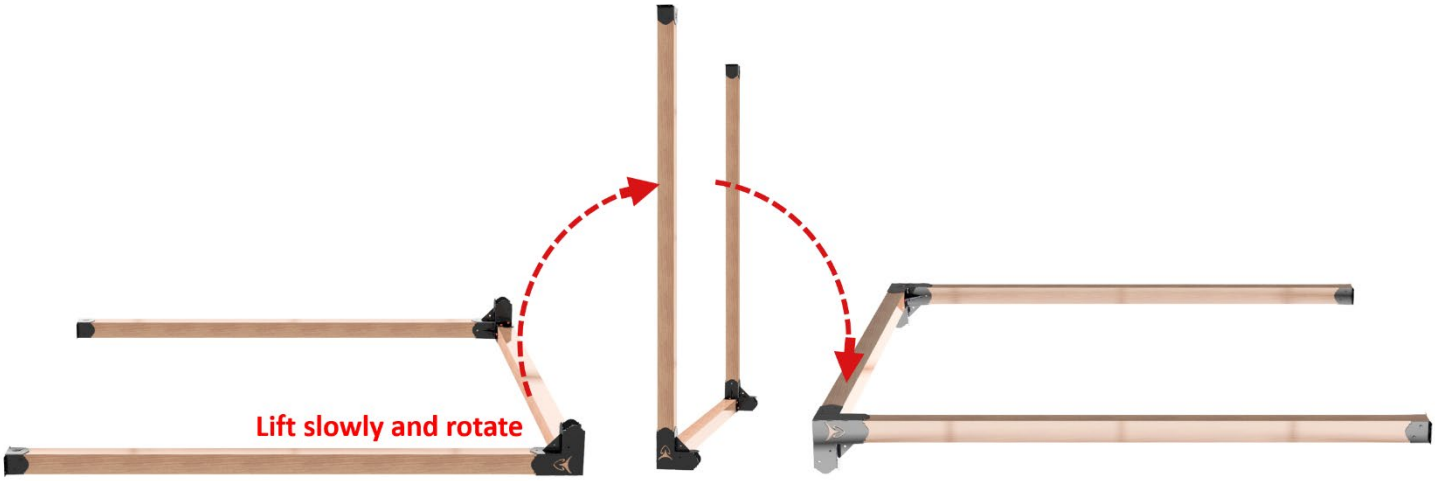
1. While pulling on the header, drive one ¼” x 1-1/2” lag screw into the pilot holes and tighten.



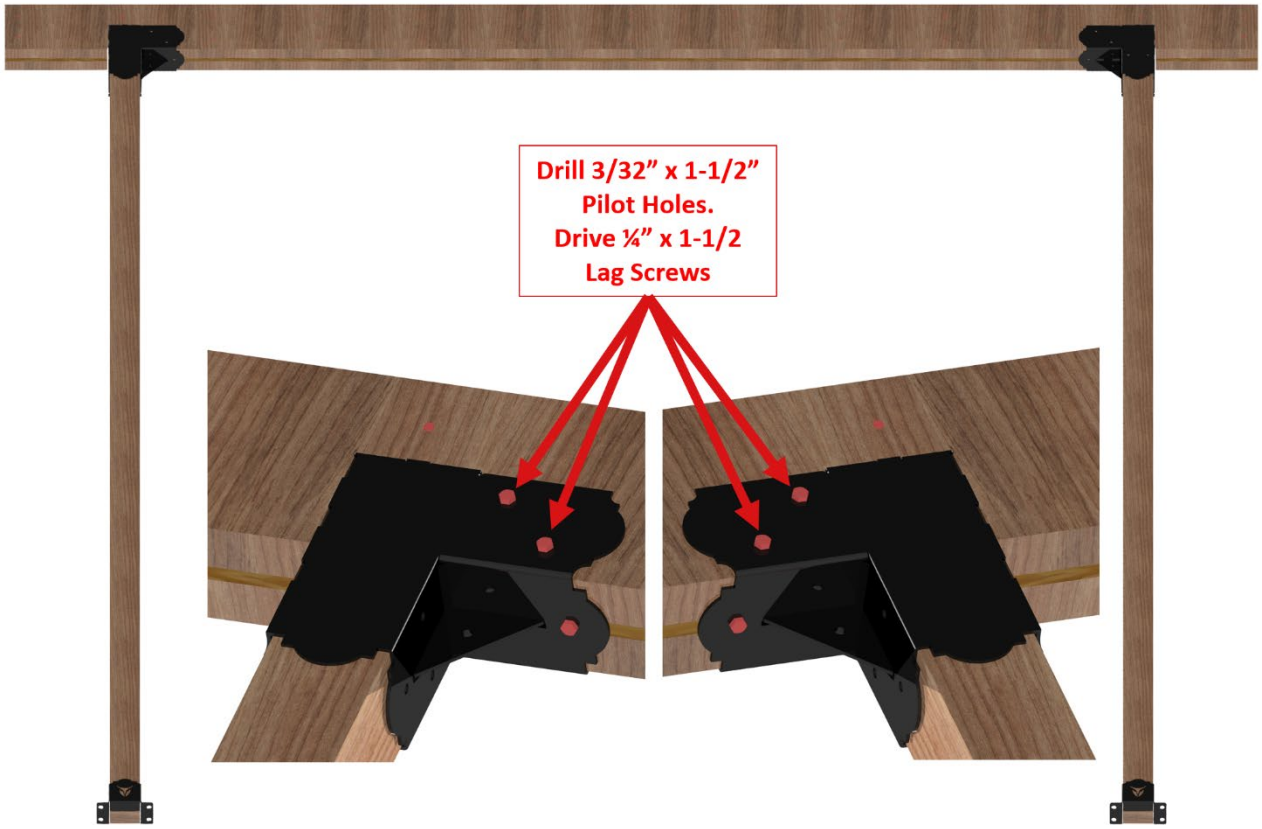

2. On the top faces of the U-channels, drill 3/32” x 1-1/2” deep pilot holes at the center of two holes in each bracket. Note, hole positions may be different in the brackets you receive. However, the same procedure will apply.
3. Drive ¼” X 1-1/2” Lag Screws into the pilot holes and tighten down.



4. Lift the bottom ends of the posts upward, slowly. Flip the wall assembly over to expose the underside.

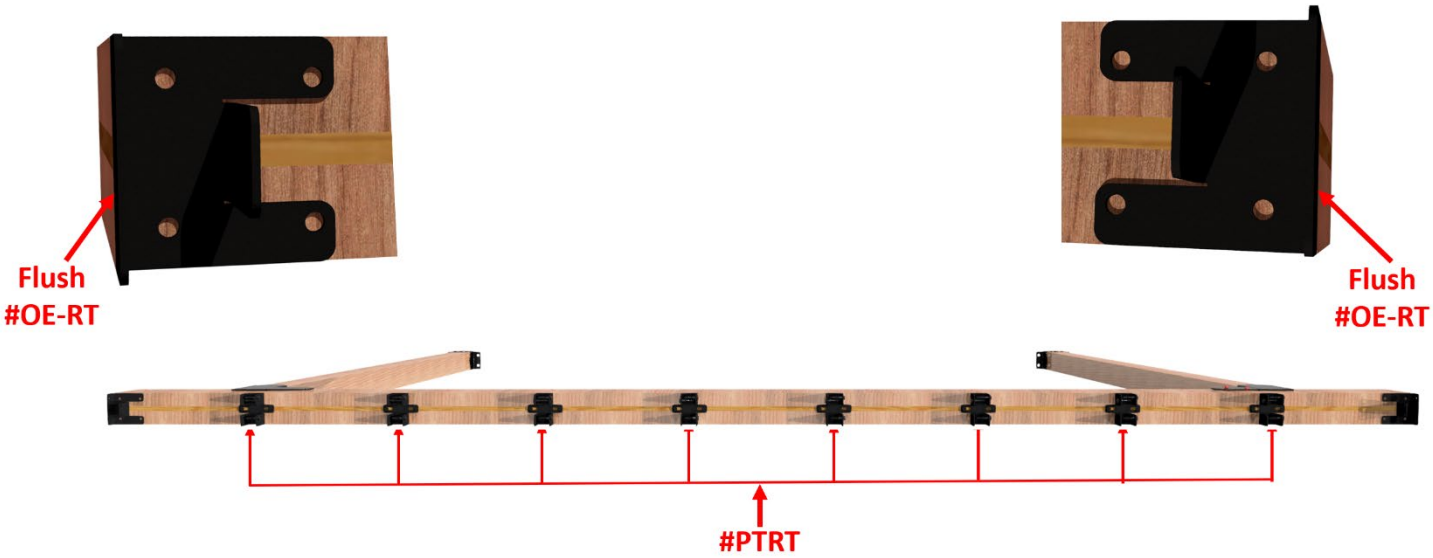



5. On the faces of the U-channels are two holes. Drill 3/32” x 1-1/2” pilot holes at the center of these holes and drive ¼” x 1-1/2” lag screws. Tighten the lag screws.

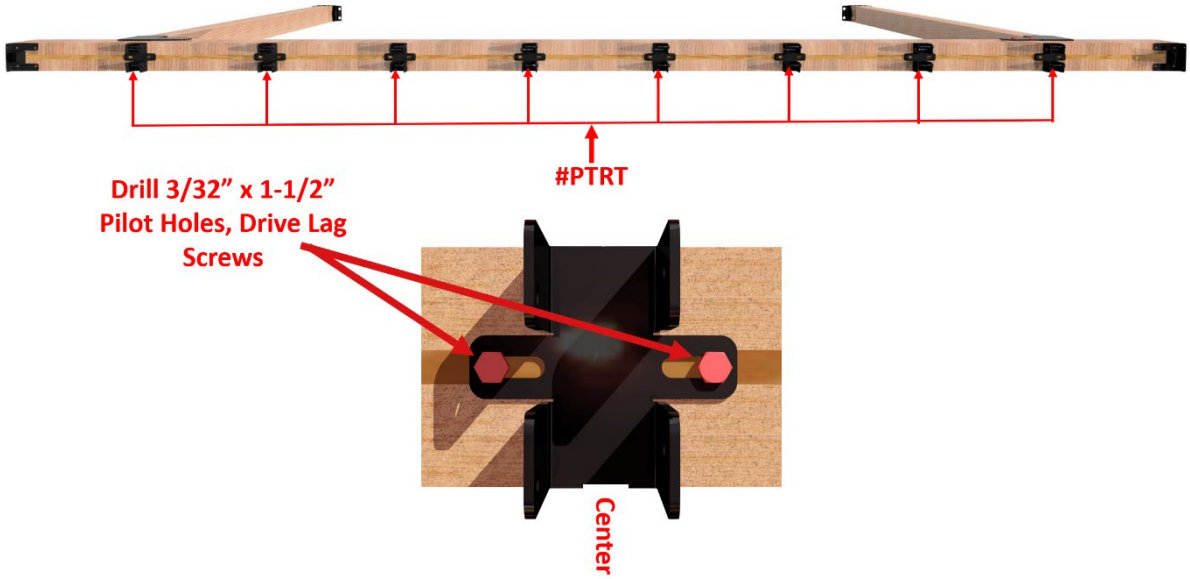


### 1.11.4 Adding Rafter Tie Brackets to Long Wall Top

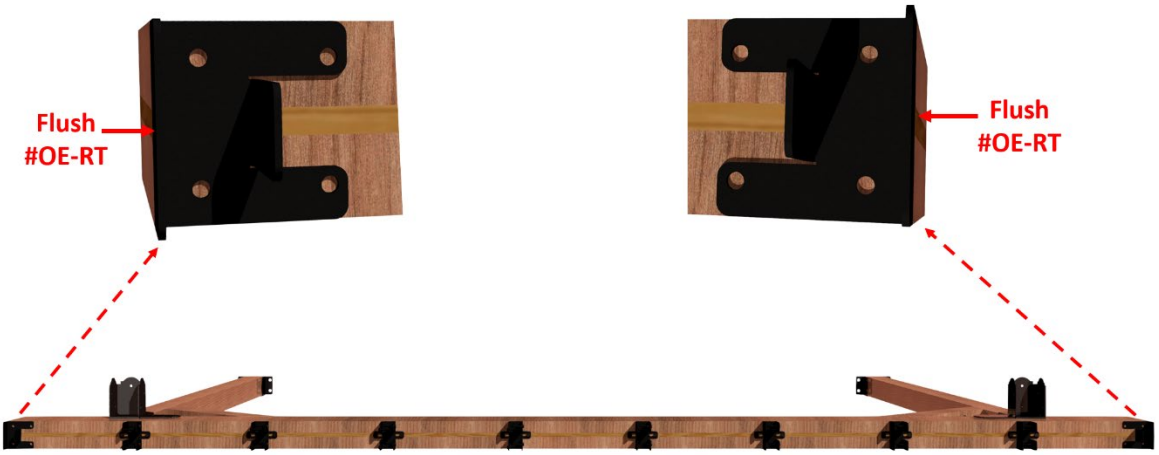
1. On the top face of the 2x8 double header in the Long Wall, measure 16” from left end and make a pencil mark every 16” all the way to the right end. The pencil marks will be the center locations for the rafter tie brackets.


2. At the left and right ends of the header, two #OE-RT Open End Rafter Tie brackets will sit flush with outer edges of the sandwich header.
3. The #PTRT brackets’ centers align with the pencil marks you made. Position the #PTRT brackets flush with the inner and outer faces of the 2x8 Sandwich Header.
4. Drill 3/32” x 1-1/2” Pilot holes at the center of the slot ends in the #PTRT brackets. Drive ¼” x 1-1/2” Lag Screws into pilot holes and tighten down.

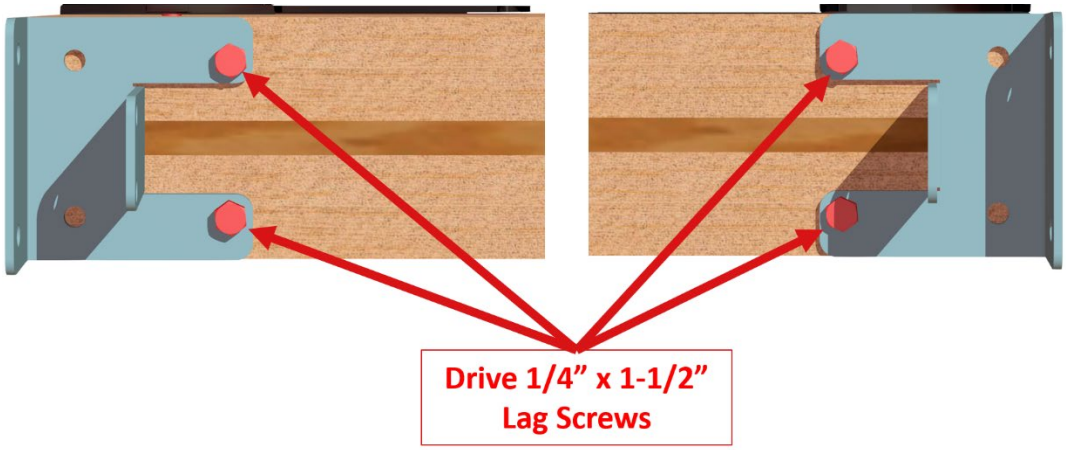


5. Position the #OE-RT bracket so it is flush with the end and flush to the other two sides of the 2x8 Sandwich Header.




6. Drill 3/32” x 1-1/2” deep pilot holes at the center of two holes in each bracket.

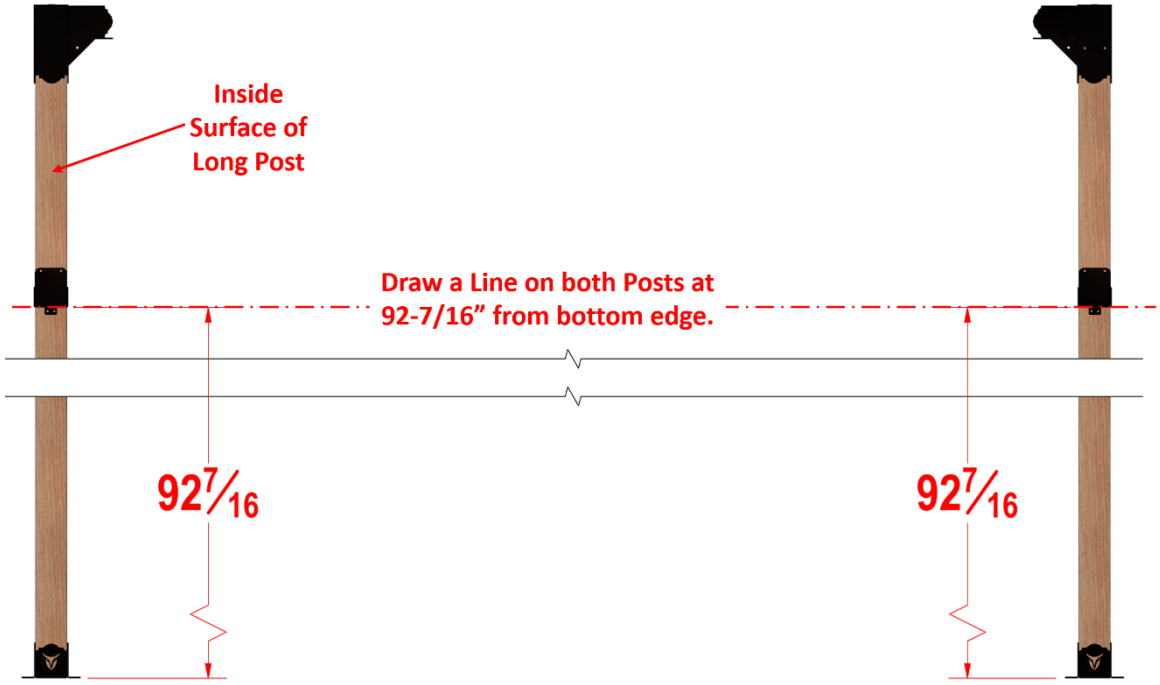
7. Drive one ¼” x 1-1/2” Lag Screw into both pilot holes and tighten.



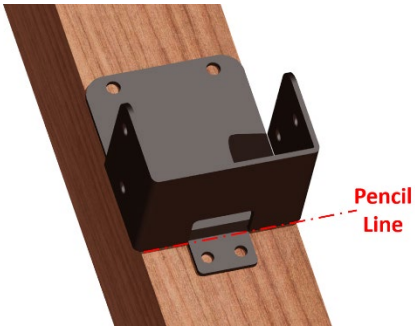

8. Repeat steps 6 to 8 to mount an #OE-RT bracket on the other end of the Sandwich Header.

## 1.12 ADDING 4X4 CROSS SUPPORT BRACKETS TO THE LONG WALL

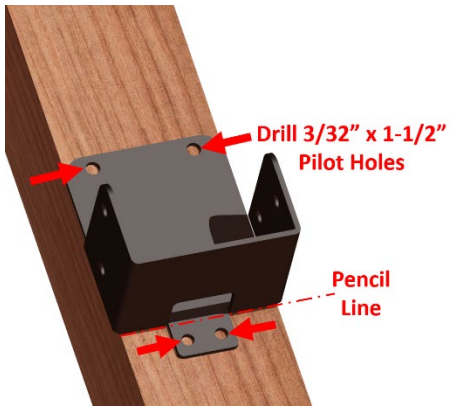
1. On the inside surface of the long posts, measure up 92-7/16” from the floor level of the floor anchor brackets at the bottom of the long posts. Draw a horizontal pencil line at this point across the 4x4s.

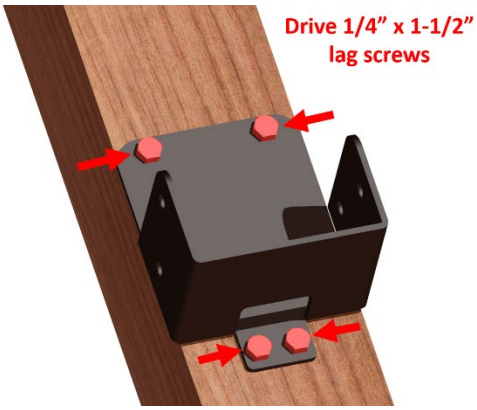



2. Place one 4x4 Cross Tie Bracket with its bottom edge lined up with the line you drew on the 4x4 Long post.
3. Make side edges of the Cross Tie Bracket flush with the side face of the 4x4 long posts.




4. Drill 3/32” x 1-1/2” pilot holes in the middle of four holes, identified below.
5. Drive ¼” x 1-1/2” Lag Screws into the pilot holes and tighten.

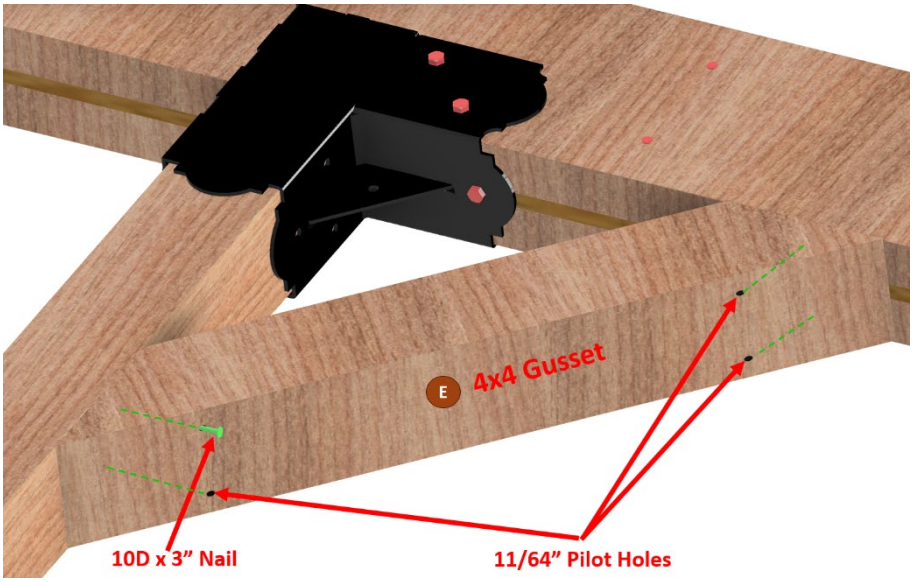


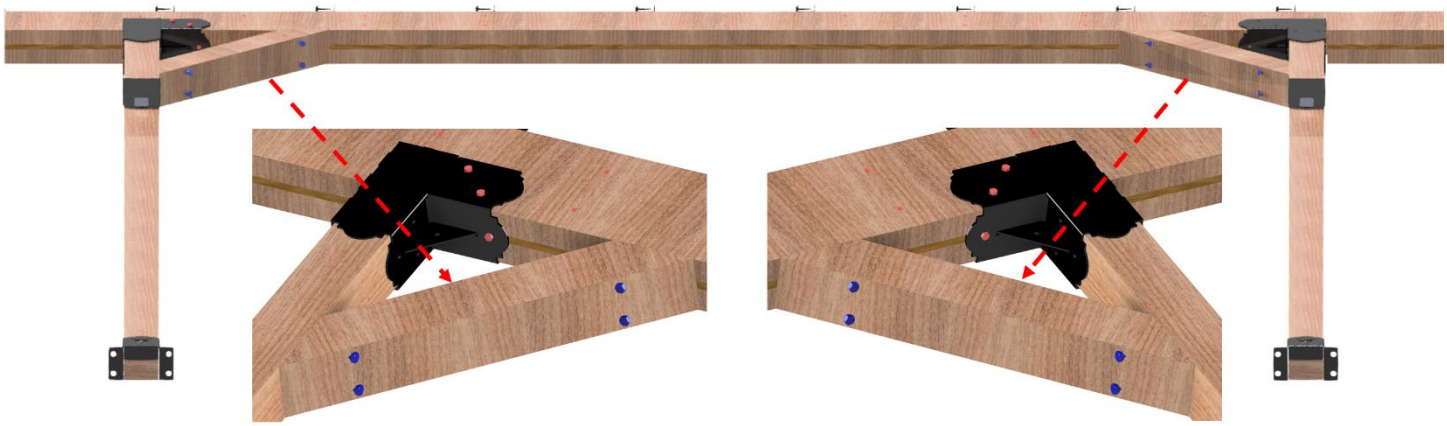
## 1.13 ADDING GUSSETS TO SHORT AND LONG WALLS

The 4x4 corner gussets are to be mounted using 3/8” x 4” long Lag Screws. To make driving the lag screws easy, you must drill 11/64” holes as instructed in the gussets. Furthermore, before driving the screws:

1. Place the gussets in the corners in their final position at each corner between the post and header.
2. Insert a #10D X 3” nail into the holes fully and hammer an indent into the posts and headers.




3. Remove the nail and 4x4 gusset and drill 11/64” x 2” deep pilot holes at the nail indentations in the posts and header.
4. Place 4x4 Gusset in the corner and position it correctly.
5. Drive a 3/8” x 4” lag screw into each pilot hole (4 required) and tighten.



6. Follow steps 1 to 5 to add corner gussets to the short and long walls.

## 1.14 STANDING THE LONG WALL

Employ two 2x8 x 12 ft. pieces as temporary braces to help stabilize the wall once it is standing.

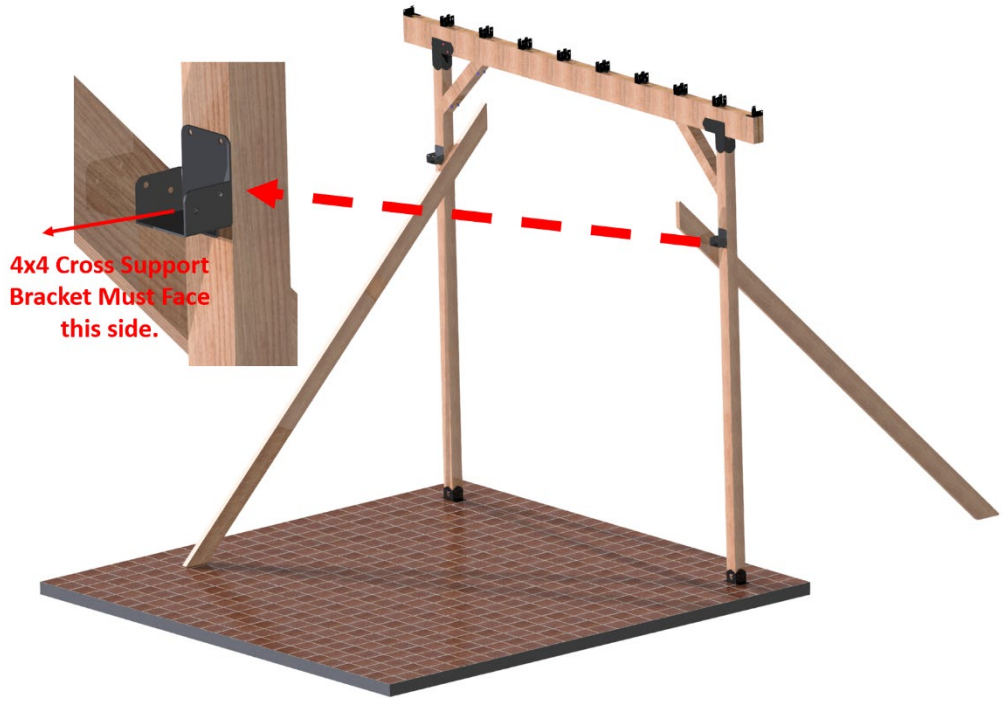
Two people should work to lift, rotate, and make the Long Wall upright.

1. Move the Long Wall close to its final position on the concrete pad. Make certain that the 4x4 Cross Support bracket's open U-channel will be facing the short wall when the long wall is standing.

2. One person, each, should stand at the two ends of the sandwich header.

3. Working together, start lifting the header. Once the header is at shoulder height, grab the post firmly and continue lifting the wall as you walk towards the post bottom end.

4. When the wall is vertical, one person should hold the wall while the second person adds the 2x8 braces to stabilize the wall. Add braces as shown in the image below. Add more braces if you deem it safer to do so.



## 1.15 STANDING THE SHORT WALL

Employ two 2x8 x 12 ft. pieces as temporary braces to help stabilize the wall once it is standing.

Two people should work to lift, rotate, and make the Long Wall upright.

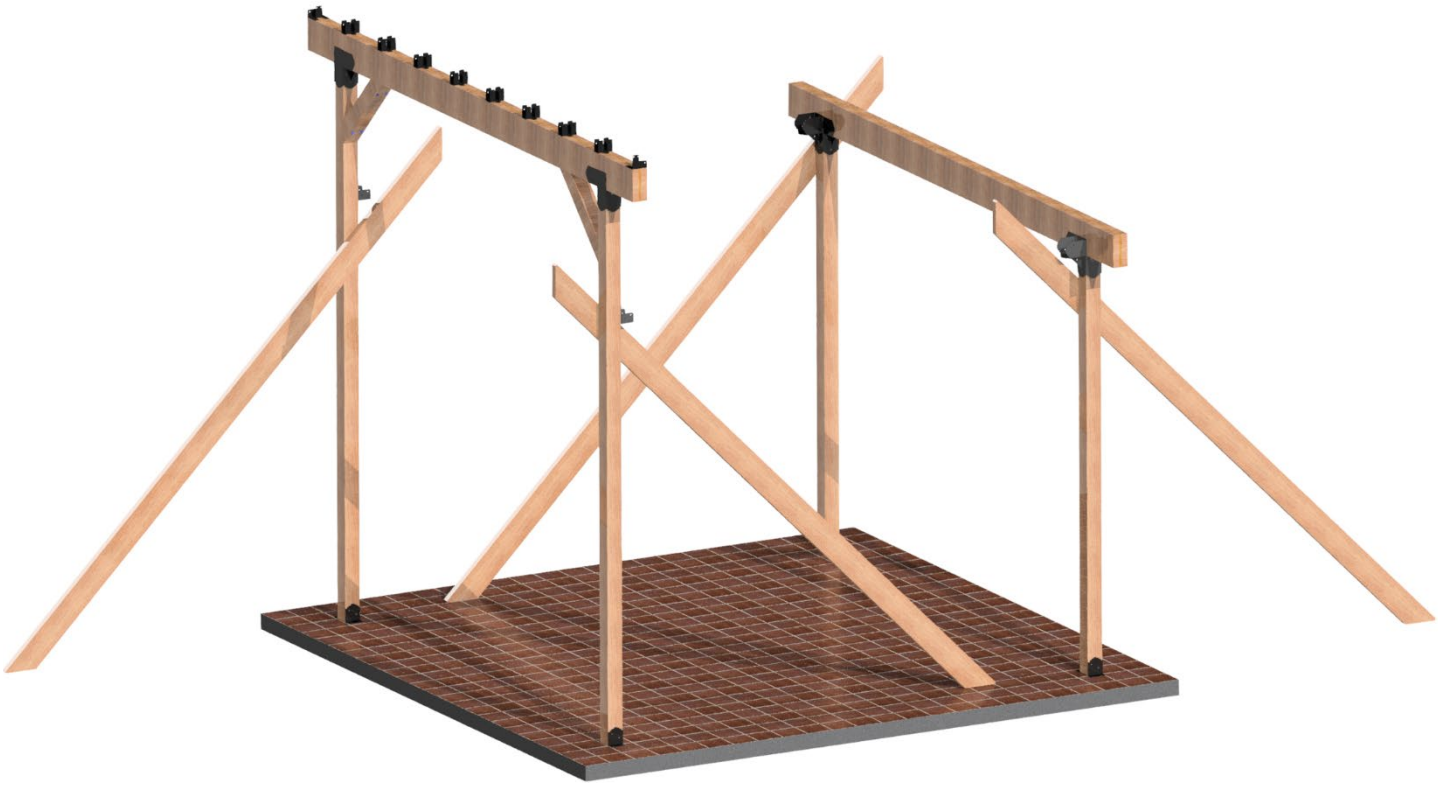
5. Move the Short Wall close to its final position on the concrete pad. Make certain that the post top elbow bracket's open U-channel will be facing the long wall when the short wall is standing.

6. One person, each, should stand at the two ends of the sandwich header.

7. Working together, start lifting the header. Once the header is at shoulder height, grab the post firmly and continue lifting the wall as you walk towards the post bottom end.

8. When the wall is vertical, one person should hold the wall while the second person adds the 2x8 braces to stabilize the wall. Add braces as shown in the image below. Add more braces if you deem it safer to do so.

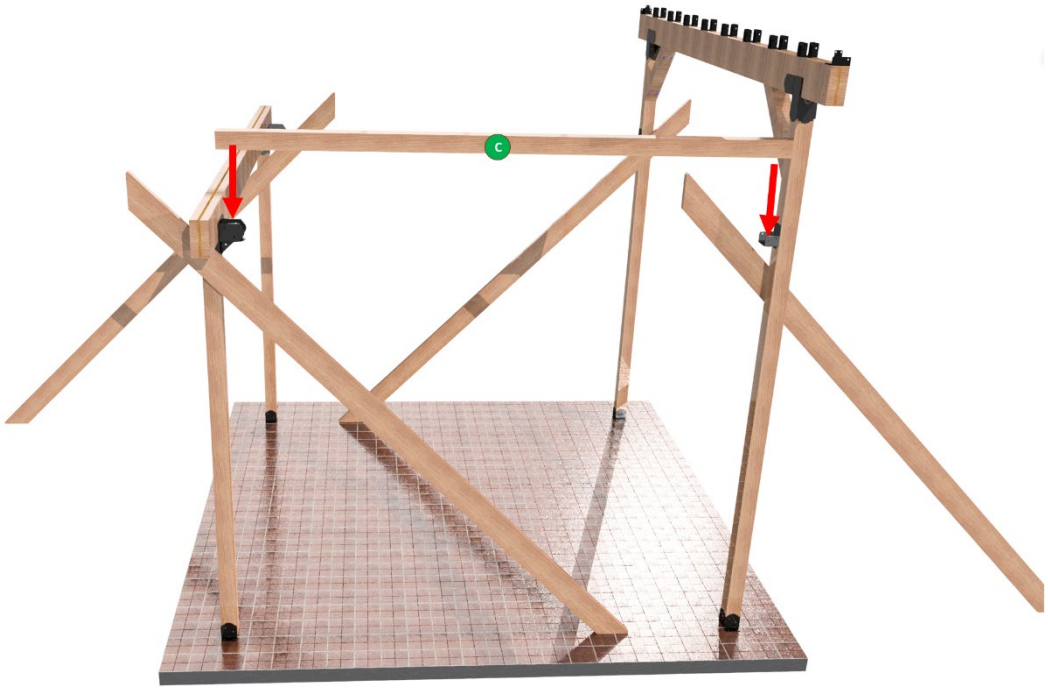
9. Adjust position of the Short Wall and Long Walls to achieve the desired 10 ft. depth distance when you measure from the outside of the Long Wall to the outside of the short wall.



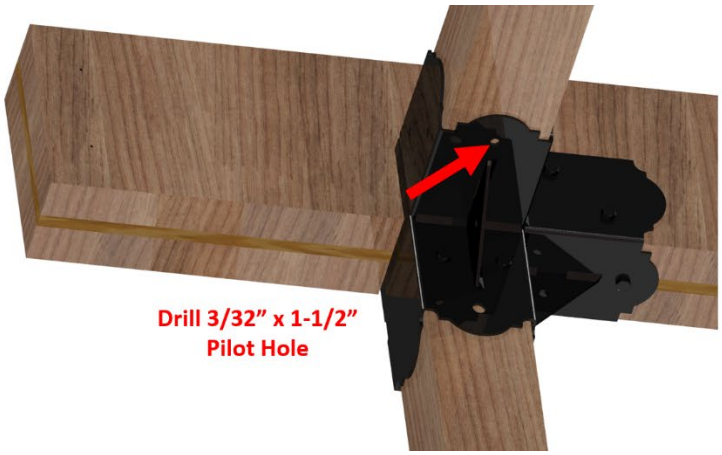
## 1.16 ADDING THE 4X4 CROSS SUPPORTS

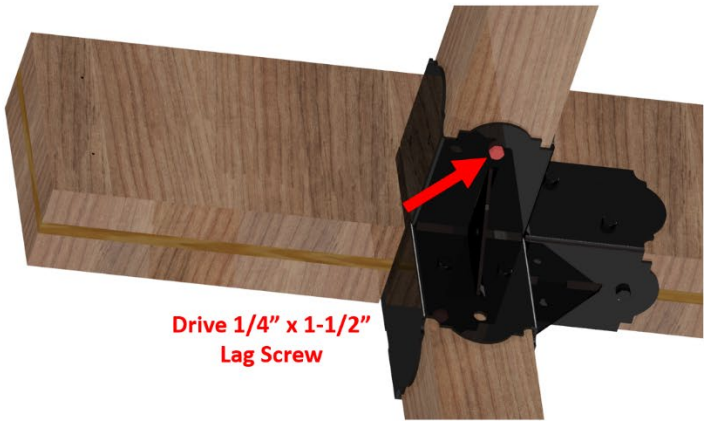
Two people should work to lift and place the 4x4 cross support into the Short Wall top elbow's U-channel and the cross support bracket U-channel in the Long Wall.

1. Place 4x4 cross support #C inside the U-channels.

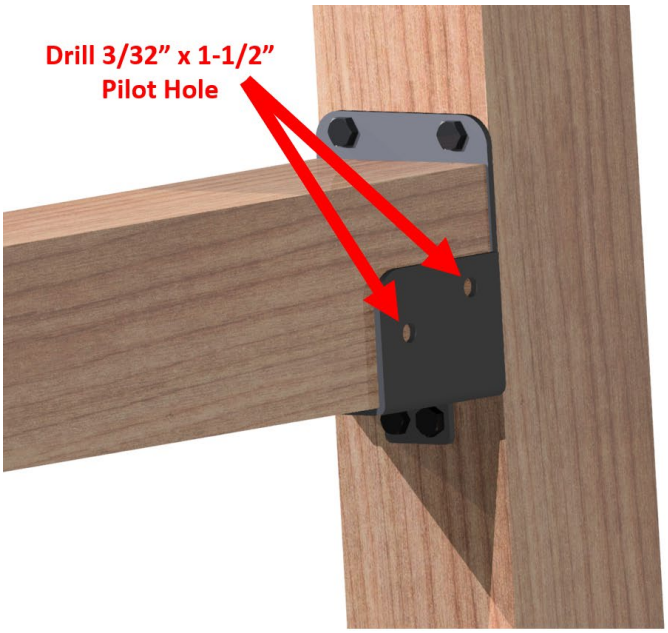



2. Pinch the 4x4 cross support between the two walls tightly.
3. At the short wall end, locate a hole at the bottom of the U-channel. In the middle of this hole, drill a 3/32" x 1-1/2" pilot hole into the 4x4 cross support.
4. Drive one ¼" x 1-1/2" Lag Screw and tighten.



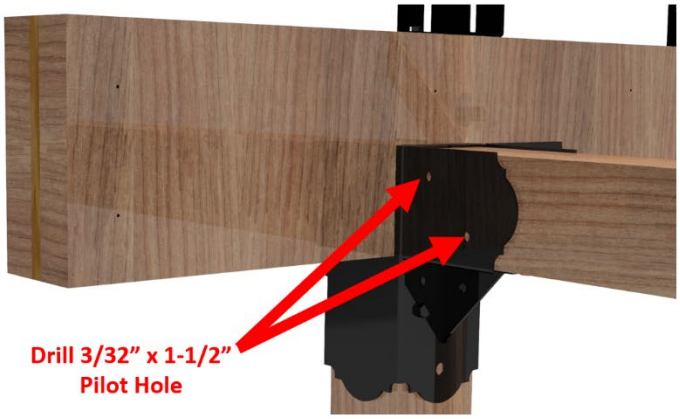



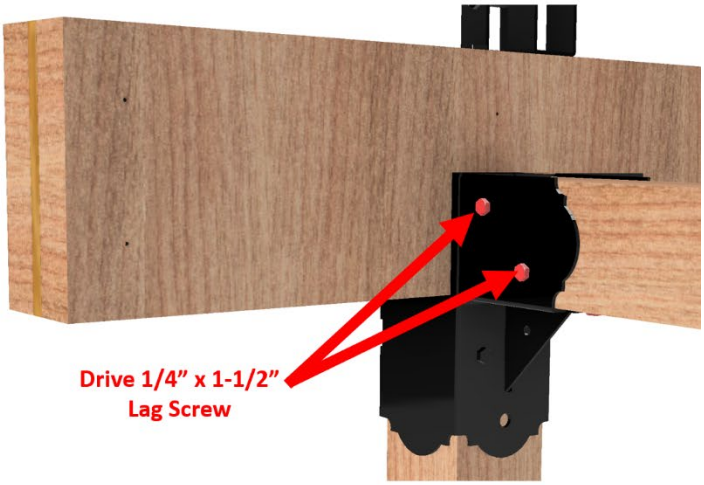
5. At the long wall end, locate two holes on the side wall of the Cross Support Bracket.
6. Pull the long wall tight against the 4x4 cross support member.
7. Drill 3/32” x 1-1/2” pilot holes at the center of these holes and drive ¼” x 1-1/2” Lag Screw, tighten.
8. Repeat steps 5 to 7 and add lag screws to the other side of the Cross Support Bracket.





9. Go back to the short wall end of the 4x4 cross support.
10. Locate two holes on the side of the U-channel. Drill 3/32” x 1-1/2” pilot holes and drive ¼” x 1-1/2” Lag Screw. Tighten the screws.




11. Repeat step 10 on the other side of the Short Wall top elbow U-channel.
12. Repeat steps 1 to 11 to add the second 4x4 Cross Support member #C.

## 1.17 LEVELING AND POSITIONING

**Remove the temporary braces at this time.**

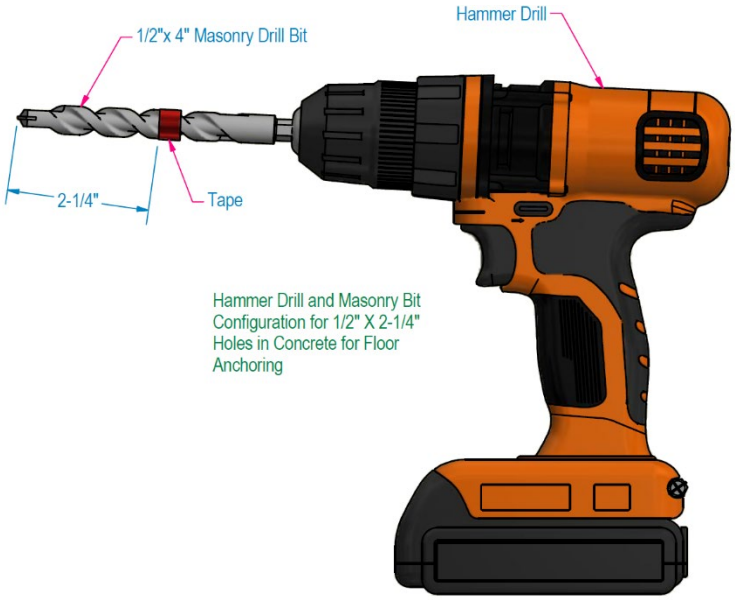
1. Check the level of the Short Wall Header. Place a 4 ft. level on top of the Short Wall Header. If necessary, adjust the post heights by inserting plastic shims under the Post Anchor bracket.
2. Next, check the level of the 4x4 cross supports on both sides. Add plastic shims under the front or rear wall posts to achieve level.
3. Finally, check the level of the long wall header and adjust.
4. When all headers are level, check and adjust the posts to make them all vertically plumb.
5. Double check the levels of all the headers again.
6. When satisfied with the level of all headers and the plumb of all posts, it is time to attach the floor anchors to the concrete pad.

## 1.18 ATTACHING FLOOR ANCHOR BRACKETS TO CONCRETE

**Hardware**: Gather the sixteen (16) ¾" x 2-3/4" Concrete Wedge Anchors.

**Tools**: Gather a hammer drill gun and 1/2" masonry drill bit, a hammer, and a crescent wrench.

1. Apply tape to the drill bit to mark the 2-1/4" depth required for the **Vibration Resistant Hammer-On Stud Anchor** you will be using to anchor the bracket to the concrete footing or pad.



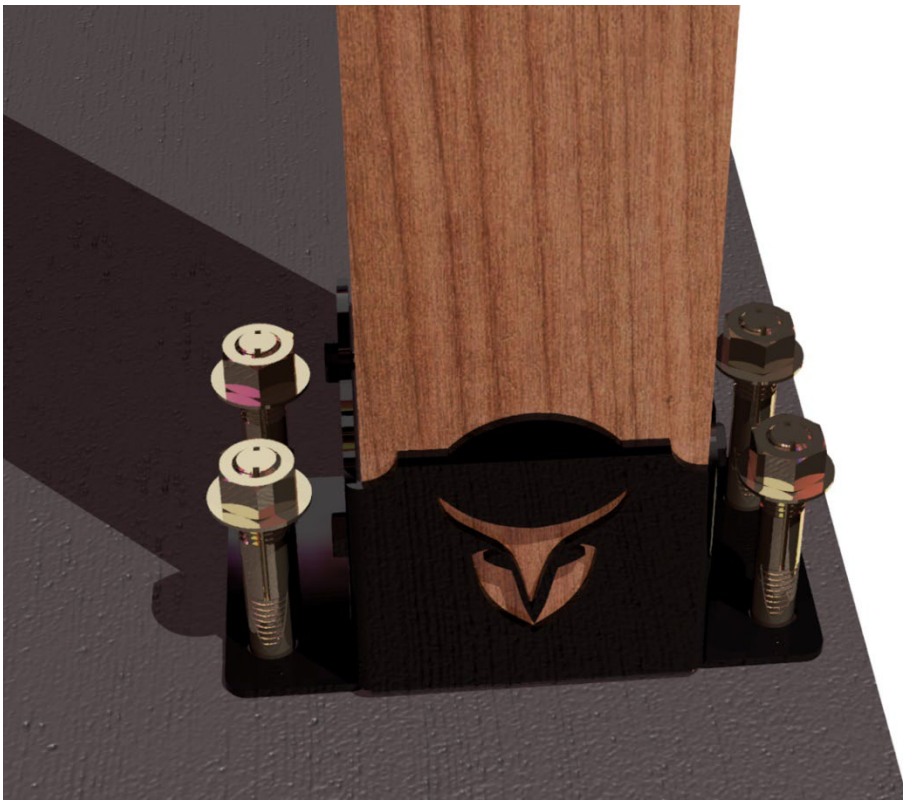

2. Drill into the concrete through the four holes in the bracket bottom plate and into the concrete using a hammer drill and ½" masonry drill bit. If there are plastic shims under the holes, drill through the shims.

   *Drill minimum 2-1/4" deep. Do not drill less than 2-1/4" depth as the anchor will not pinch the bracket down fully if the hole is shallow*. Drilling deeper than required is better.

3. Using compressed air, blow out the drilling dust out of all holes.

4. Rotate the ¾” nut position so its top surface is slightly lower than the top surface of the concrete anchor bolt.

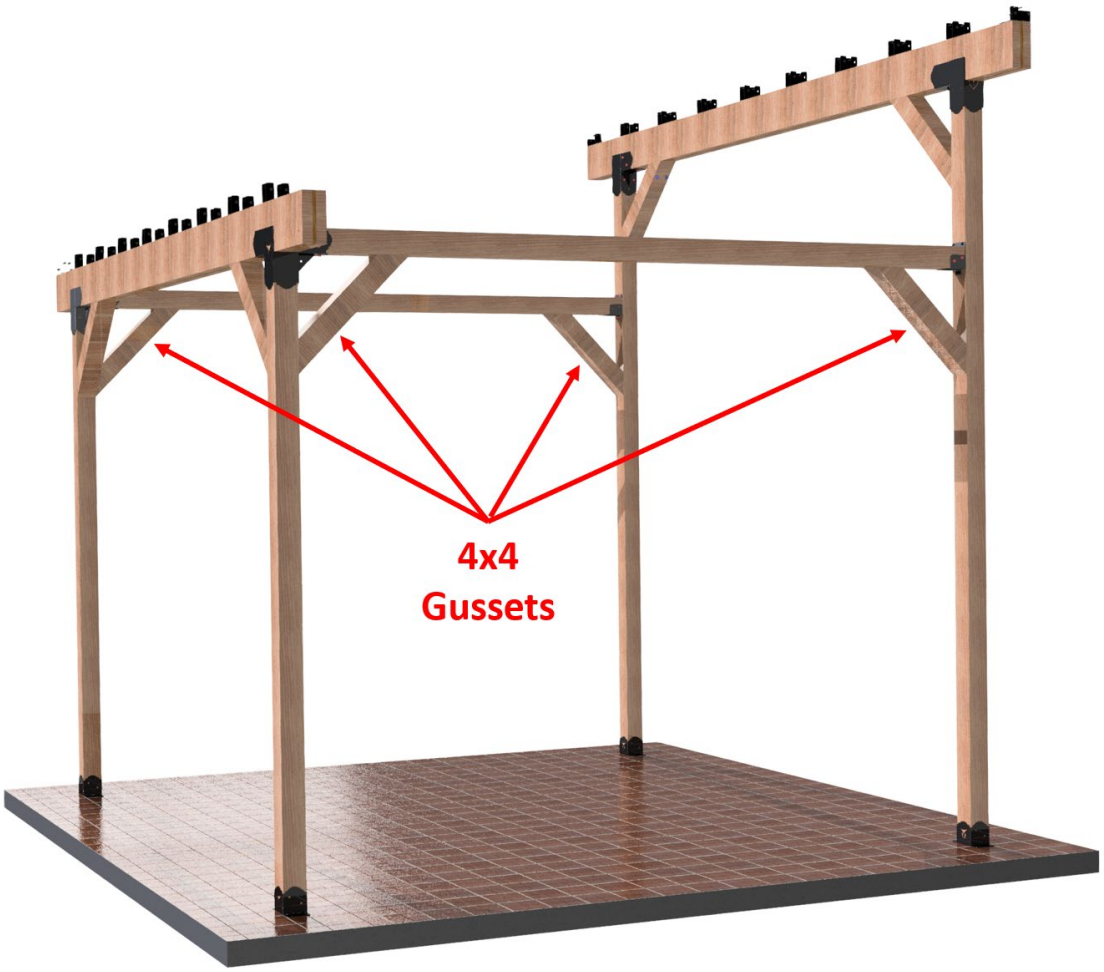

5. Hammer in one concrete anchor (1/2” X 2-3/4”) into each hole you drilled until the washer is pinched between the nut and the anchor bracket.



6. Tighten down the nuts using a crescent wrench.
7. Repeat steps 2-6 for all Floor Anchor Brackets.

## 1.19 ADDING 4X4 GUSSETS UNDER THE 4X4 CROSS SUPPORTS

Follow instructions in section 1.13 to add 4x4 Gussets under the 4x4 Cross Support members.



## 1.20 ADDING RAFTERS

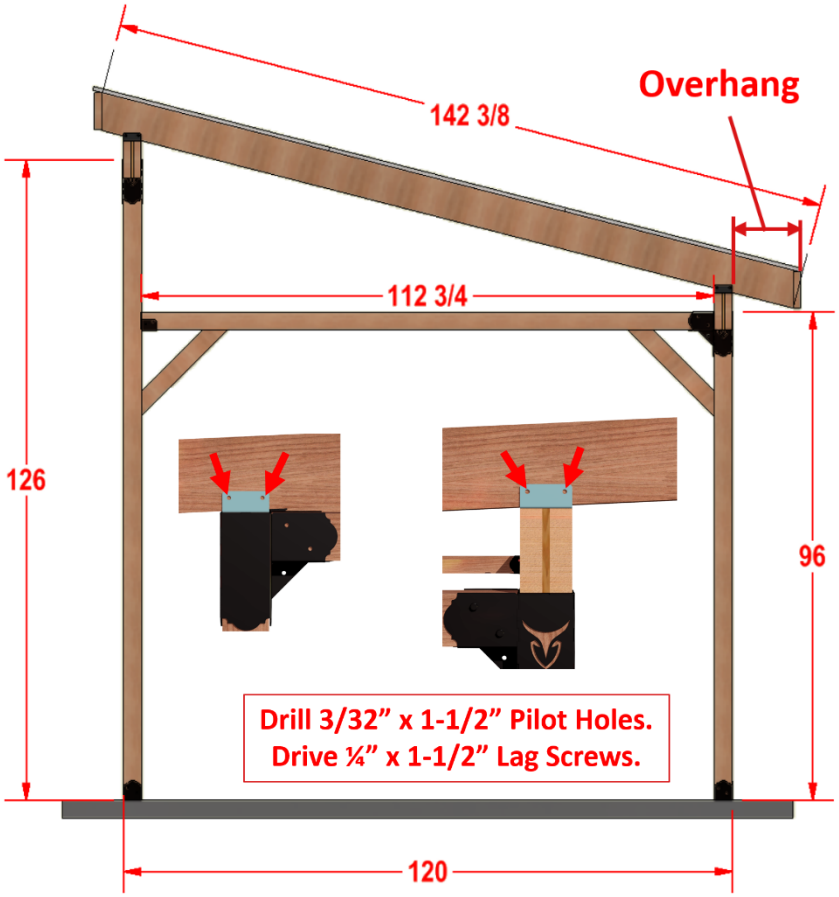
**Lumber**: Gather ten (10) Rafter Members #D.


**Hardware**: Gather ¼" x 1-1/2" lag screws.

**Tools**: Gather a drill gun and 3/32" drill bit, a ratchet, and a 7/16" socket.

### 1.20.1 Installing the Open End Rafters

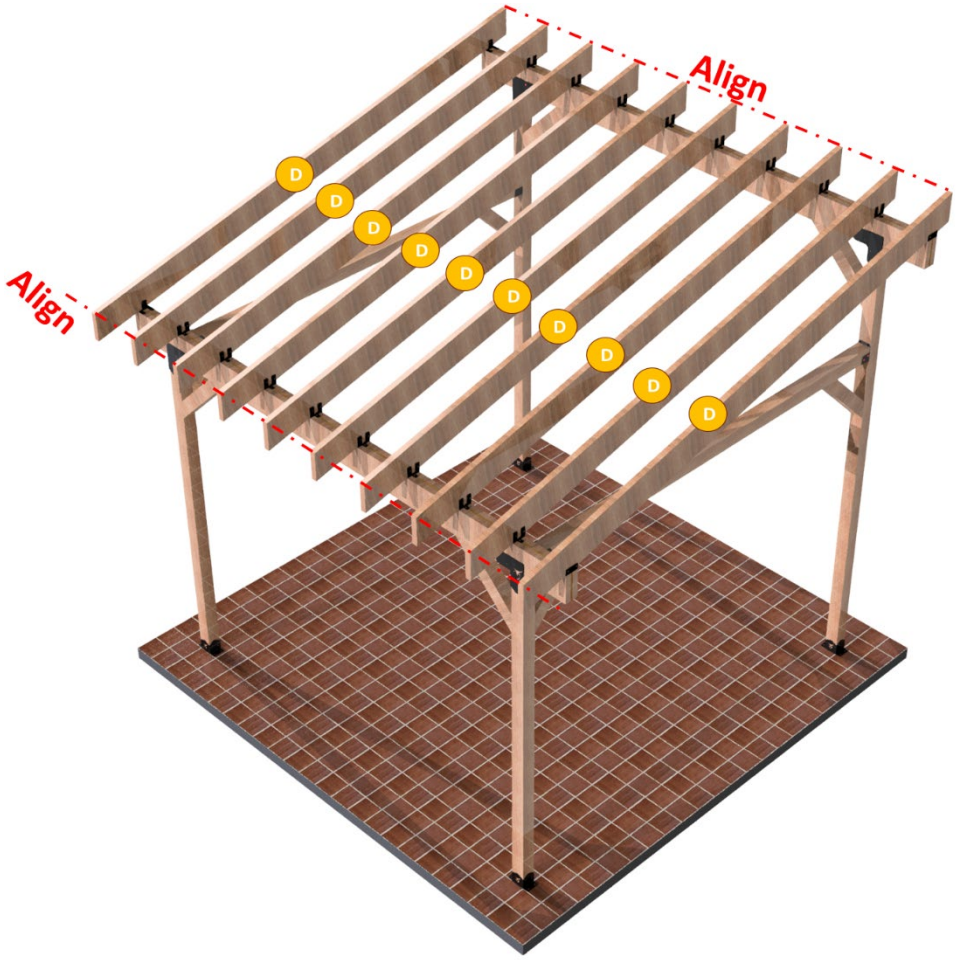
1. Lift and place one rafter inside the U-channels of the #OE-RT brackets on one side of the Lean To.
2. The rafter is 142-1/2" long. Adjust the front overhang and rear overhangs per your preference. If you want 12" overhang, subtract 1-1/2" for the depth of the roof skirt and adjust the rafter overhand to 10-1/2".
3. On both sides of the U-channels in the #OE-RT brackets, locate two holes.
4. Drill 3/32" x 1-1/2" pilot holes at the center of these holes.
5. Drive ¼" x 1-1/2" Lag Screws into the pilot holes and tighten.



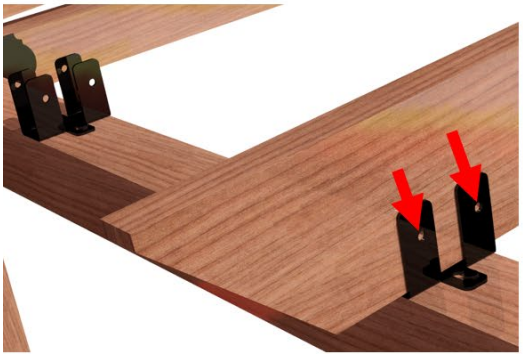

6. Repeat steps 1 to 5 to add a second rafter to the opposite end of the Lean To.

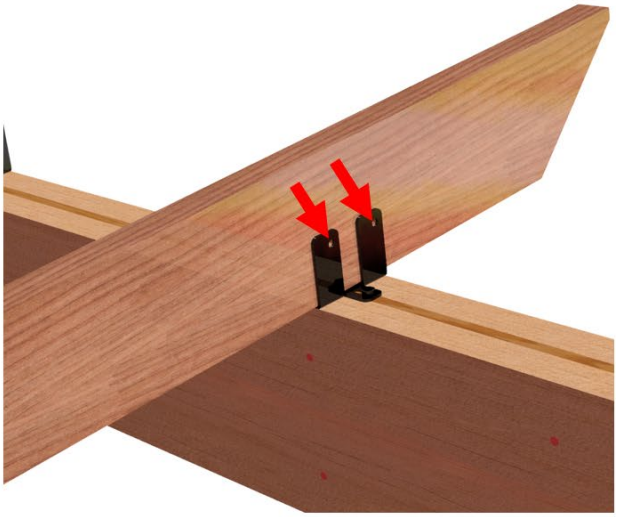
### 1.20.2 Installing the Middle Rafters

1. Slide one rafter member #D inside the U-channels of the center #PTRT brackets.
2. Slide the rafter member until both its front and rear end are aligned with the ends of the open end rafters.



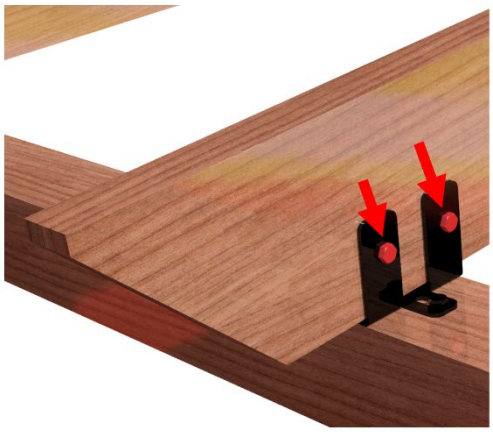
3. On both sides of the rafter, locate two holes in each #PTRT bracket.
4. Drill 3/32” x 1-1/2” pilot holes at the center of these holes.

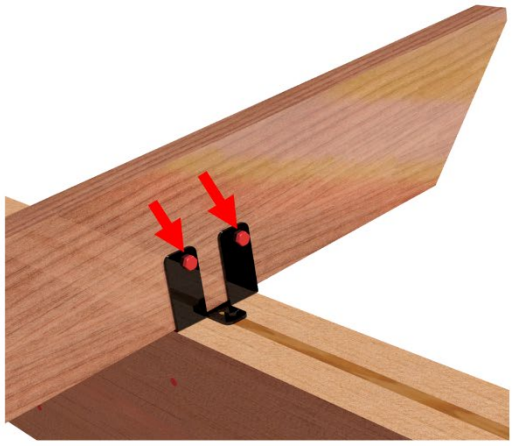




**Drill 3/32” x 1-1/2” Pilot Holes.**
**Drive ¼” x 1-1/2” Lag Screws.**

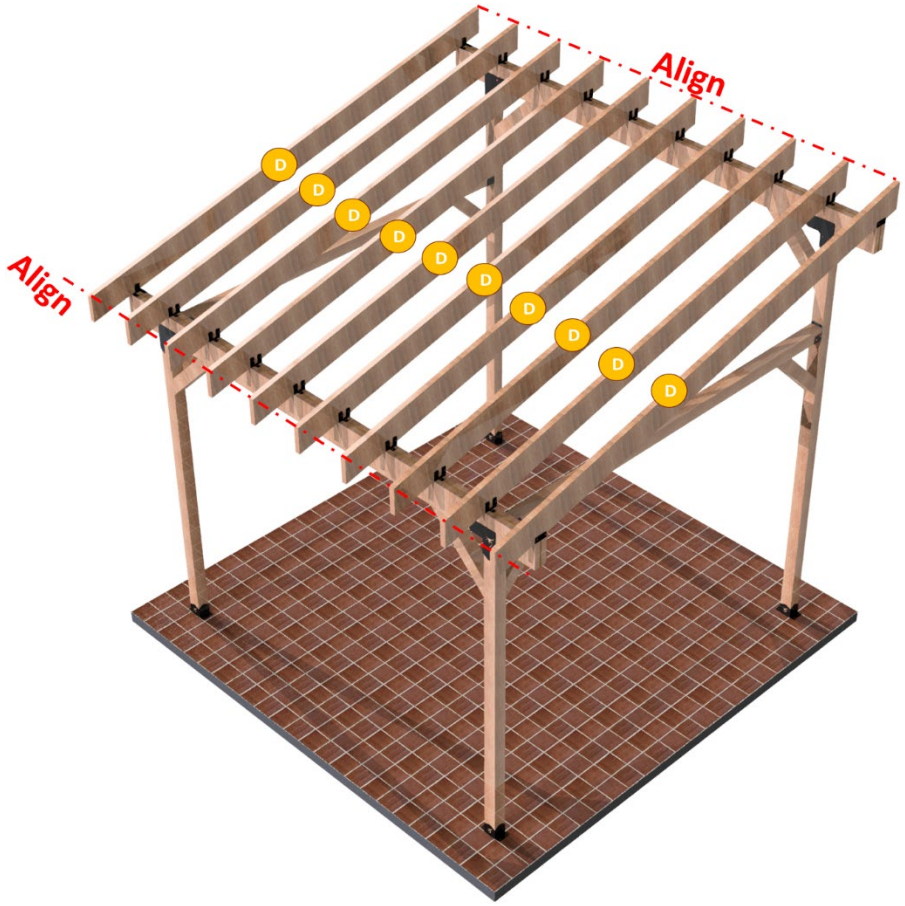
5. Drive ¼” x 1-1/2” Lag Screws into the pilot holes. Tighten lag screws.





**Drive ¼” x 1-1/2” Lag Screws.**

6. Repeat procedures 1 to 5 to add the remaining rafters.

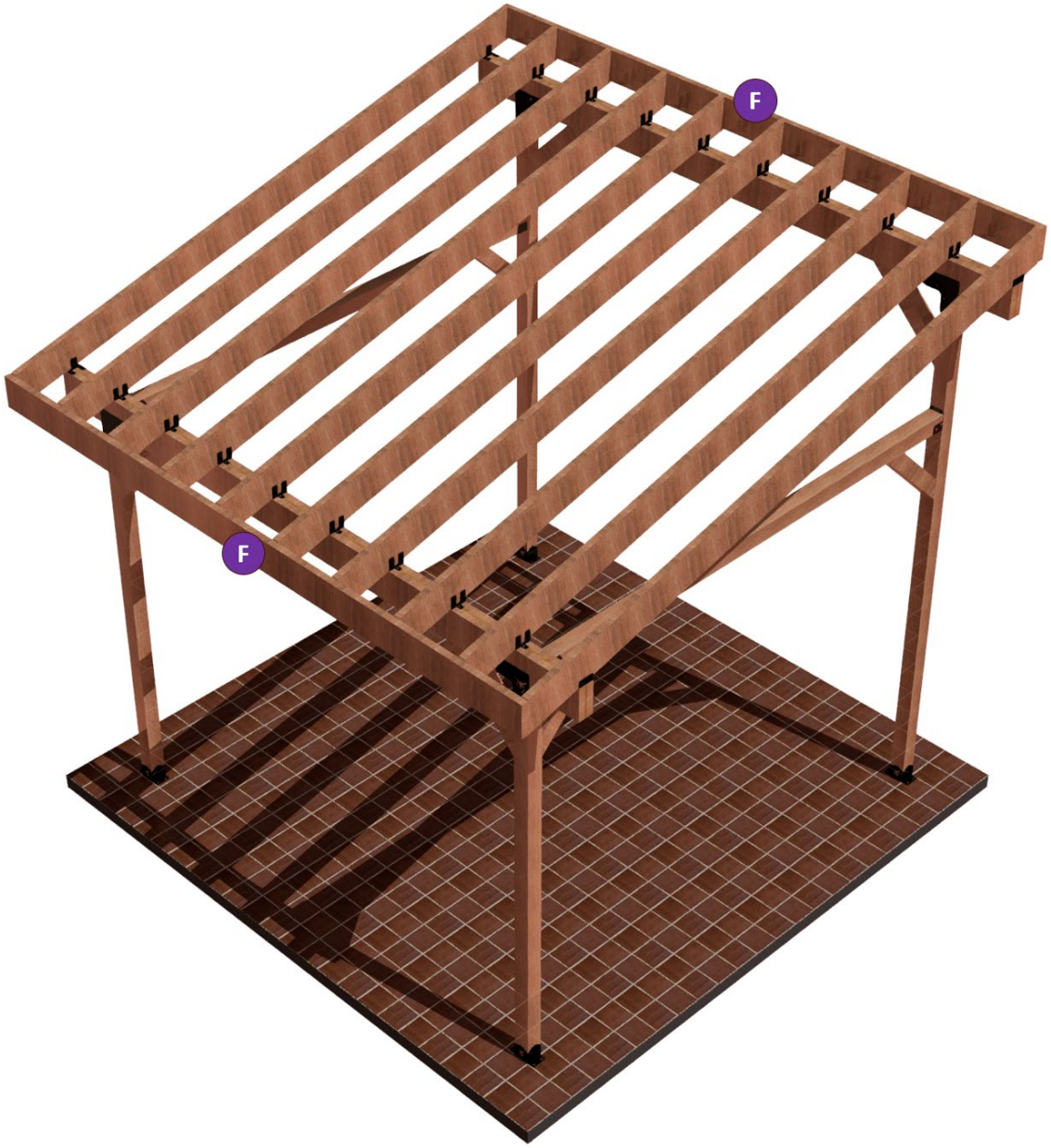


## 1.21 ADDING ROOF SKIRTS

Two roof skirts, #F are required. One mounts on the low end of the rafters, and one mounts on the high end of the rafters.

Prior to attaching the roof skirts to the rafter ends, drill two 1/8” pilot holes through the roof skirts (3/4” in from each end and spaced 4” apart vertically. Tap in #10D x 3” nails into the pilot holes until the nail tip is flush with the inner face of the roof skirt.

Two people should work together to install the roof skirts. One at each end of the roof skirt equipped with a hammer. Prior to hammering nails into the ends of the middle rafters, drill two 1/8” pilot holes through the roof skirt near the middle of the rafter thickness and spaced 4” apart vertically. Hammer in two #10D x 3” nails to attach the roof skirts to all rafters.



## 1.22 ADDING ROOF DECK

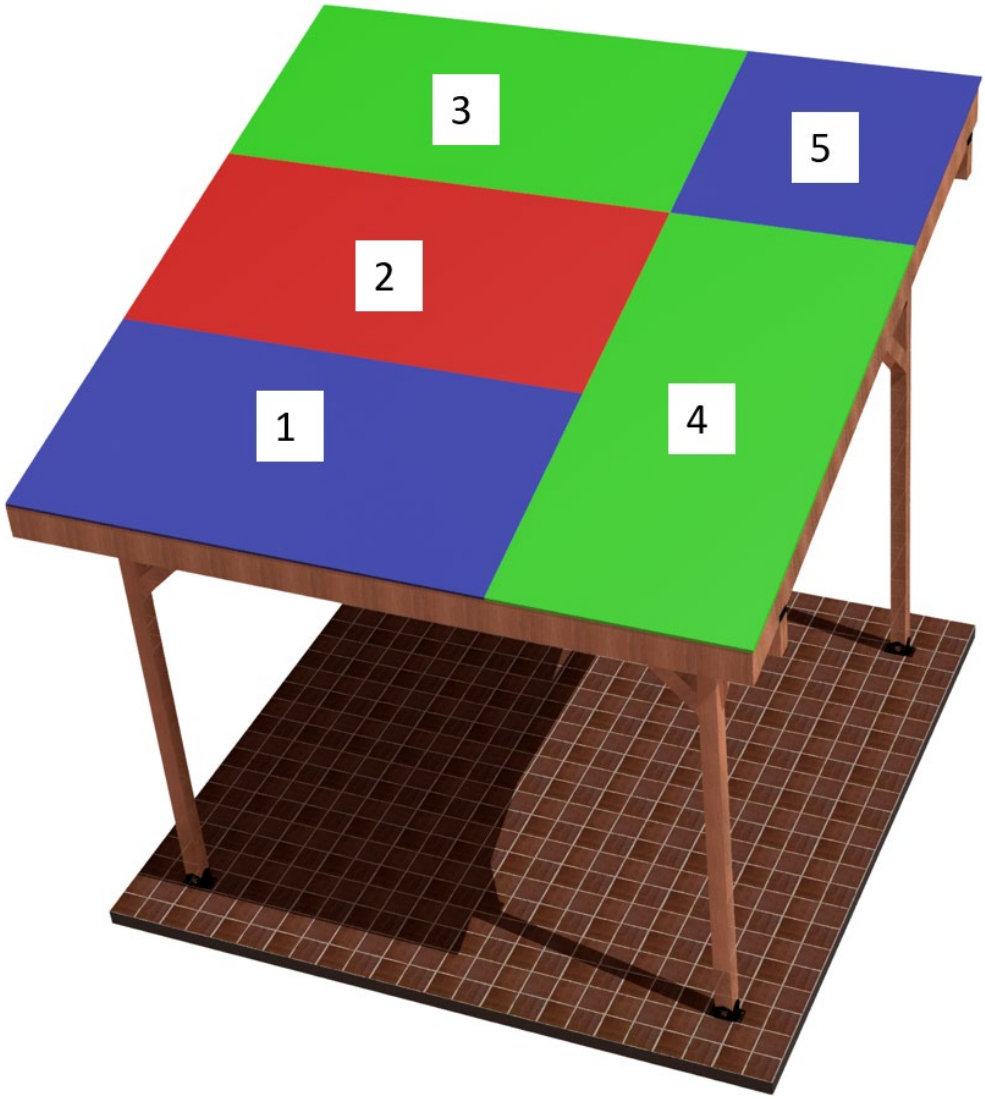
The roof deck is designed to measure 12 ft. x 12 ft. A total of 4-1/2 sheets of ½" OSB (4' x 8') are required to completely cover the roof area.

Start laying a full sheet on the left bottom corner of the roof.

Lay the OSB boards as shown in the diagram below. 3 full sheets on the left side, one full sheet on the far right side bottom and a half sheet on the far right top area.

Attach the OSB boards to the rafters and roof skirts using 1-1/2" roofing nails. Place nails every 9" around the perimeter of the board and every 12" in the middle areas of the board.

WARNING: DO NOT STEP ON THE ROOF BOARDS UNTIL THE BOARD HAS BEEN ATTACHED TO THE ROOF STRUCTURE WITH AT LEAST 8 ROOFING NAILS! Failure to heed this warning can lead to severe injury.



# 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 | ✓ | Not Included |
| Painted Finishes | ✓ | Not Included |
| All hardware | ✓ | 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 info@RioOutdoors.com . 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.

RioOutdoors.com