

# How To Build A Shed



Big Idea Designs

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## Read This First

**Using the "How To Build a Shed" Instructions:** There are many styles of sheds and even more details that can be added to customize your shed. These instructions cover most of the styles sold by lcreatables.com. It works best to browse through the whole manual and find the parts that relate to the shed you are building. Then go through and study those areas in more detail.

**Printing Plans To Scale:** The plans have been drawn to scale. To retain this scale when printing the plans you must make sure that the page size is set to print the same as it was created when making the PDF. If you are viewing the Construction Drawings in Adobe Reader you will select File on the top menu bar, click Print, make sure that the Page Sizing and Handling button is selected and then select Actual size in the Size Options section.

To save paper you may print only the pages you need to take to the construction site by opening the instruction manual in Adobe Reader, Selecting File, Print, and under Pages to Print select either Current Page or put in a page range under Pages.

**Material Size and Designations:** The material list reflects the common lumber sizes that can be purchased at local lumber yards. The Plans show the length each piece of lumber should be cut to in order to build the respective part. This is done to make it easier to purchase the materials. For instance you cannot buy a board that is 3'-5" long to build a door header. You will purchase the lumber in the common size sold and then cut the lumber to the sizes shown on the plans.

## How the Plans Identify Parts and Materials

The material lists provided with these plans are close to exact. You may consider purchasing a few extra of each of the boards so if there are any mistakes or you simply build it differently than shown on the plan you will not need to run to the lumber yard for a single board. But it is our experience that during the course of construction you will visit the lumber yard several times for items that were forgotten or you simply want to add to the shed design.

Material call outs on the plans are done with a letter and number. The materials list for these callouts are on the most relevant page. For instance the callout for wall studs is W1 and the material list for it is on the wall framing plans. The wall section may have a note showing the wall studs as W1 so you will need to refer to the wall framing plans to see what W1 means and how many to purchase. This is to avoid duplicating the material lists. The Material list uses the same notation so you can easily find where a particular part goes on the plans.

**FOUNDATION PLANS:** The optional foundation framing plans have their own Foundation and Floor Framing materials lists. If you use an optional foundation you will not use the material list in the main plans for the skid foundation.

**DOOR PLANS:** The Home Built Door plans have their own materials list to help avoid purchasing too much material when pre-hung doors are used. If you plan on building your own doors then make sure to order the materials shown on the door plans.

### TYPICAL MATERIAL LABELS

W = Wall materials

R = Roof materials

F = Foundation and Floor materials

D = Door materials

T = Trim materials

P = Post materials

## Abbreviations

These are the definitions for the abbreviations on the shed plans

O.C. or o.c. = On Center

On center spacing is the distance from the center of the framing board being installed to the center of the next framing board. The on center spacing for walls is typically 16" and the spacing for roofs is typically 24"

O.S.B = Oriented Strand Board

O.S.B. is a 4'x8' sheet that is similar to plywood. O.S.B is used everywhere for sheeting walls and floors and roofs.

T.&G. = Tongue and Groove

Tongue and Groove is the way the edges of some O.S.B and siding boards are cut so that they can fit together and hold each other. A groove is cut into the edge of one side of the board and a tongue is cut into the opposite edge. The tongue fits into the groove when the boards are installed next to each other.

P.T. = Pressure Treated or simply Treated

Pressure treated lumber has been soaked in a chemical that helps it resist rotting. It is required by building codes that all lumber coming in direct contact with soil or concrete be pressure treated.

**Pre-Hung Doors Ordering:** When you order a pre-hung door there are several options that need to be chosen to make sure you get the door you want.

1. Make sure you order the proper size. Verify with the door shop that the door they are building will fit into the rough opening you intend to build. For example a 3068 door means that the door slab is 3'-0" wide by 6'-8" tall. The rough opening should be 3'-2" wide and 6'-10 1/2" tall. Double doors rough openings are 3 inches wider than the door opening and have the same 6'-10 1/2" height.
2. Make sure you have the swing of the door going the right direction.
3. If it is a double door you will need to pick a side that is operable and a side that will lock to the jamb.
4. Holes for Knobs. You need to choose how many holes for knobs and deadbolts
5. Jamb size: Pick the size of jamb. If you are putting in drywall and 1/2" siding on a 2x4 wall it will be different than just siding.
6. Threshold: Choose whether or not you want a threshold with the door and then what color you want it to be.
7. Brick Mold: The door shop can add brick mold on the exterior side of the door jamb to give you built in trim. This is helpful if you are planning on adding an additional siding like lap siding or stucco..

**Ordering Windows:** Window companies typically make windows when they are ordered, even the stock sizes. With most window companies the cost is determined by the square footage size, with all other parts of the window being equal (style, materials etc.) You can contact a local window company to order the window or do it through a lumber yard or home store, who will get it from a local window company.

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## SHED BUILDING STEPS QUICK REFERENCE

The items below are the order in which to build your new shed. Each of the steps below is described in detail later in this manual.

### 1. Build The Shed Foundation: Page 9

- a. Dig rail beds Level (or prepare for other types of foundations)
- b. Install gravel and make level
- c. Level and square the rails temporarily

### 2. Frame The Shed Floor Joist System: Page 10

- a. Layout the shed floor rim joists
- b. Separate joists and crown the boards
- c. Install the floor joists
- d. Attach the floor joists and make the entire framing unit square

### 3. Install Floor Sheeting: Page 13

- a. Test fit the floor sheeting
- b. Attach the floor sheeting

### 4. Build The Roof Rafters: Page 29

- a. Cut out the rafter members for one rafter or truss assembly.
- b. Use the Shed floor to set the rafter members on and check for proper fit of angles and size.
- c. Attach blocks to the shed floor to create a jig to make the remaining rafter assemblies on.
- d. Build the remaining roof rafters. Make sure that the end rafters only have gussets on one side.

### 5. Frame The Shed Walls: Page Error! Bookmark not defined.

- a. Mark the wall locations
- b. Cut the wall plates
- c. Layout the wall plates
- d. Prepare the wall studs
- e. Nail the wall studs to the plates
- f. Nail remaining studs on

### 6. Frame Door And Window Openings: Page 16

- a. Build the door and or window headers and window sills
- b. Nail the king studs to the header
- c. Nail the wall plates to the opening assembly
- d. Install the remaining wall studs
- e. Install trimmer boards.
- f. WINDOWS: Use the same steps for a door opening to make the header
  - i. Mark the height of the window
  - ii. Measure and cut the remaining pieces
  - iii. Transfer the wall layout
  - iv. Nail the pieces together

### 7. Standing The Shed Walls: Page 20

- a. Stand the first wall
- b. Stand the second and third walls
- c. Stand the fourth wall
- d. Install the double top plates on all shed walls

**8. Install Siding on the Storage Shed: Page 21**

- a. Install wall sheathing / siding
- b. Straighten the wall and make sure the walls are plumb before nailing the wall off.
- c. Prepare the door opening. The siding is held back around openings for home built doors.

**9. Set Roof Rafters or Trusses: Page 24**

- a. Mark the rafter or truss locations on the top plates
- b. Set the rafters or trusses
- c. Cut the siding at the top of the rafter
- d. Install the fascia
- e. Install the barge rafters
- f. Install blocking behind the siding joints

**10. Install Roof Sheeting: Page 26**

- a. Sheet the roof
- b. Install the remaining sheets

**11. Install Trim: Page 39**

- a. Install fascia trim
- b. Install soffit trim
- c. Install corner trim
- d. Trim window and vent trims, when used
- e. NOTE: Door trim is installed after door is installed

**12. Install Roofing (<http://www.icreatables.com/how-to-build-shed/shed-build-roofing-install.html>)**

- a. Install building paper and drip edges
- b. Install starter strip
- c. Install shingles
- d. Install ridge cap

**13. Build Door (See Door Plans)**

- a. Cut interior panel and install rails to it.
- b. Cut and install exterior sheet siding.
- c. Install Trim

**14. Install Door (See Door Plans)**

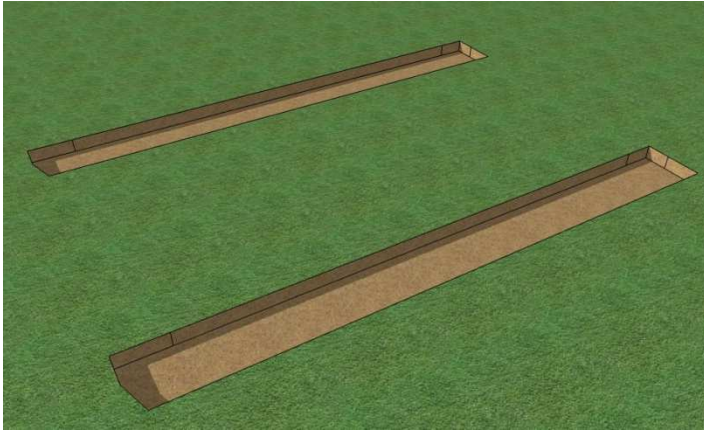
- a. Hold door up to its install location and check for fit.
- b. Install trim around door.
- c. Hang door.
- d. Install door locking hardware.

**15. Paint Shed**

- a. Caulk joints if desired.
- b. Paint using 1/2" nap roller to get the paint into the joints and siding texture.

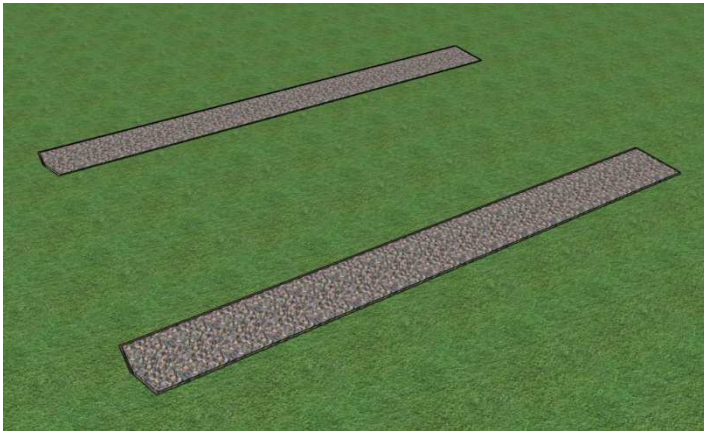
# SHED BUILDING BASICS

## How to Build a Shed Rail Foundation



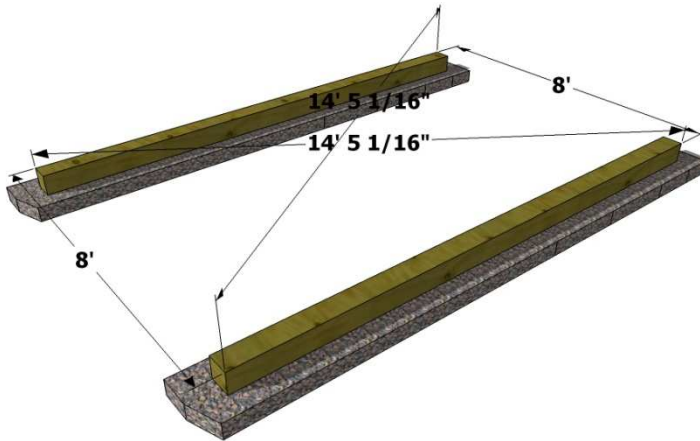
### 1 - DIG THE FOUNDATION BED HOLES

1. The treated rails should be set on crushed gravel base.
2. Prepare the ground by digging down at least 3 inches deep and 12 inches wide.
3. Make sure you are on undisturbed soil.



### 2 - INSTALL GRAVEL BASE

1. Fill the hole with 4 inches of gravel. Level the gravel.
2. Repeat for the other foundation rail (s).



### 3 - LEVEL AND SQUARE THE RAILS - Set the rails on top of the gravel beds. Make sure all the rails are level with each. Square them by measuring diagonally from corner to corner and moving the rails until the diagonal and distances apart are the same.

Note: If you are using 4x6 wood rails the shorter dimension of the rail, 3 1/2", should be touching the ground so that the shed floor is 5 1/2" from the ground.

## **BUILDING A SHED FLOOR WITH STEEL STUDS**

A shed floor / foundation can be built using steel floor joists or pressure treated wood joists set directly on the gravel bed in place of the untreated wood floor joists and wood rail foundation. It is constructed by installing a bed of gravel and setting the joists directly on top of it. This floor system will lower the shed floor height.

### **MATERIALS: Replace the floor materials with the following**

JOISTS: 6" 16 gauge steel C studs

RIM JOIST: 6" 16 gauge steel Track.

GRAVEL: 1/2" or smaller

FLOOR DECKING: 3/4" Heavy-Duty Tongue & Groove Treated Louisiana Pacific Pro Struct Floor Decking with Smart Finish. (treated wood is used because the floor decking is closer to the ground)

### **GRAVEL BED INSTALLATION**

Create a gravel bed about 3" to 4" deep. Make the gravel bed level using a long 2x4 board to rake across the top. Set a level on top of the board periodically to check for level. The gravel provides drainage away from the joists and makes it easier to create a level platform.

### **JOIST INSTALLATION**

1. Layout the floor joist locations on the rim joists.
2. Install the floor joists on the rim joist on their respective marks.
3. Set the floor joist system on top of the gravel bed.
4. Square up the floor joist system.
5. Install floor decking

### **FASTENERS**

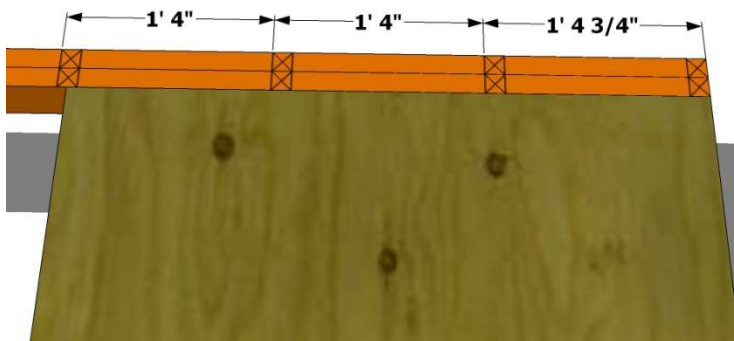
#### **Steel joist to steel joist**

100 Screws - Interior metal framing screw(drill / pan) 2.25 mm

#### **plywood to joist**

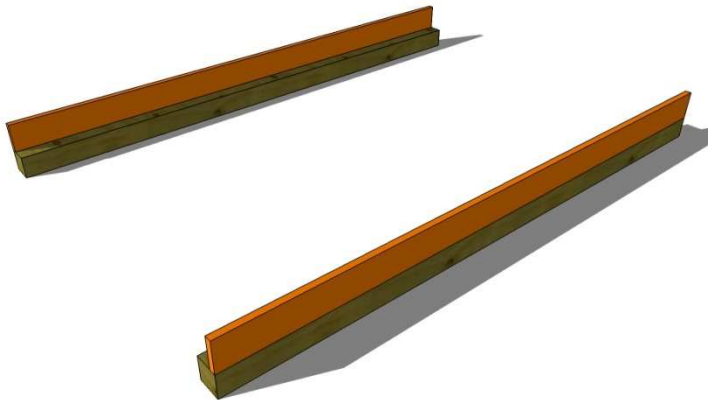
208 Screws - Drive Straight #10 x 1-1/2 in. 1 lb. Fine Zinc-Plated Steel Wafer-Head Phillips Self-Drilling Screws with wings (109-Pack)

## How To Frame The Shed Floor Joist System



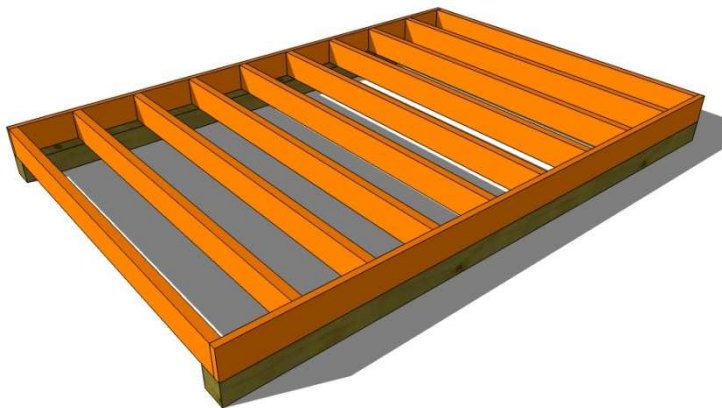
### 1 - LAYOUT THE SHED FLOOR RIM JOISTS -

Cut the rim joists to the length shown on the plans. Put the two rim joists next to each other on edge with the crowned edges up. Tack the rim joists together using two 8d nails. Use the layout dimensions from the Floor Framing Plan to mark the floor joist layout on both of the rim joists at the same time. Put a "X" mark on the side of each joist location line to show which side of the line the joist goes so you don't get confused when attaching the floor joists. Transfer the marks down onto the side of the boards.



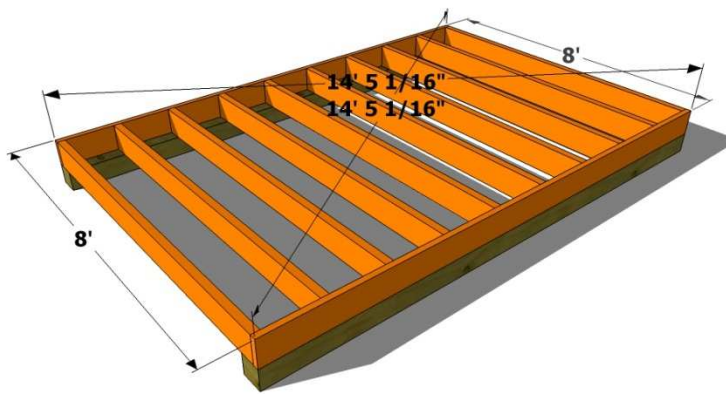
### 2 - SEPARATE and CROWN THE BOARDS -

Separate the rim joists and put one at each end on top of the foundation rails. CROWN the boards.



### 3 - INSTALL THE FLOOR JOISTS -

Cut each joist to the length shown on the Floor Framing Plan. Set each joist between the rim joists on its respective mark. Crown each joist before nailing it to the rim joist. Start by installing the two end joists and then work from one end to the other, nailing each joist to the rim joist on their respective layout marks. Put 3 - 12d nails through the rim joist into each floor joist.

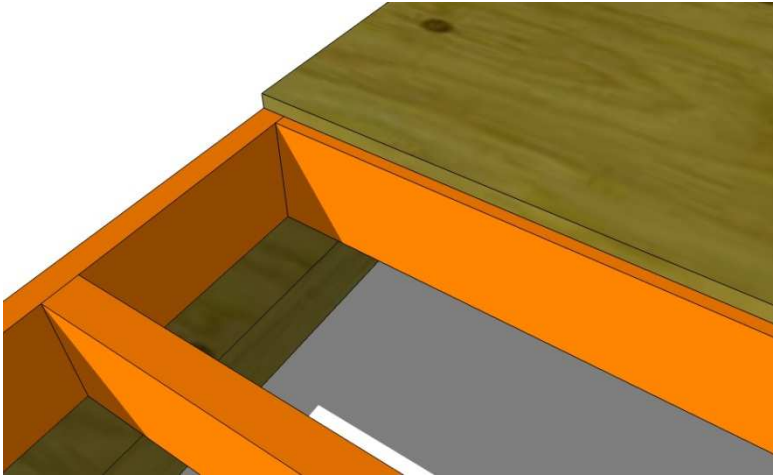


#### 4 - ATTACH THE FLOOR JOISTS AND SQUARE

1. Attach the Rim Joists to the foundation rails by using the A23 clip every 4 feet or less and 3 8d nails toe on the joists that do not have the A23 clips.
2. Square up the newly framed floor joists before sheeting them. See the sheet 1.2 for more information on how to square a floor.

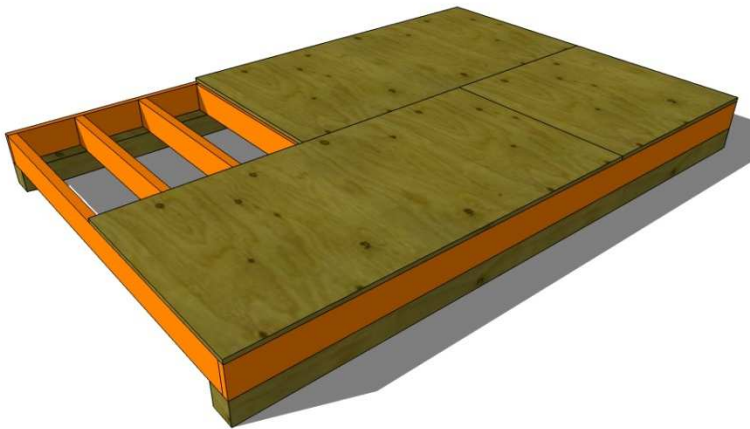
## How To Install Floor Sheeting

The floor sheeting is installed with the long dimension of the O.S.B. or plywood running perpendicular to the floor joists. The tongue edge of the sheeting should be on the edge of the shed, over the rim joist, and the groove edge facing towards the center of the shed.



### 1 - TEST FIT THE FLOOR SHEETING

1. Lay the first sheet on the joists with the tongue edge over the rim joist. Start at the same end of the floor that you began the layout of the floor joists.
2. One short edge of the floor sheeting should be flush with the floor joists and the short edge in the middle of the floor should split on top of intermediate floor joists.
3. The long edge with the groove will be in the middle of the floor.
4. If it fits correctly then mark each joist where the edge of the sheeting meets it so you will know where to stop the glue. Remove the sheeting and get ready to attach the sheeting to the joists. If it does not fit then check that your framing is square and joist layout correct.

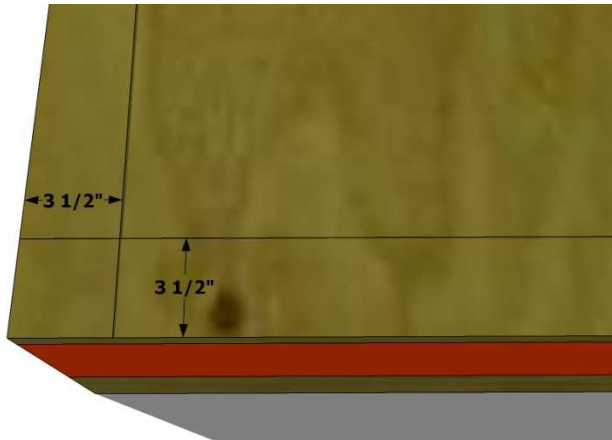


### 2 - ATTACH THE FLOOR SHEETING

1. Apply a bead of construction adhesive to the tops of the floor joists.
2. Lay the floor sheeting on top of the joists and align the edges.
3. Attach the floor sheeting along at least two of the edges and then mark the joist locations in the center of the sheet so you will know where to nail. Attach the floor sheeting to the floor joists using an 8d nail every 6" along the edges and 12" in the middle of the floor sheeting.
4. After two of the edges are attached you will mark the locations of the floor joists below so you can install the nails in the field.
5. Install one row of floor sheeting before starting a new row. The second row should start with a staggered layout with 4' overlaps when possible, this greatly increases the strength of the floor. Make sure the tongue-and-groove joints are tight.
6. Trim any sheeting overhanging the joists ends after the sheeting is nailed off.
7. (The last sheet in the image to the left has been left out to show joists under sheeting)

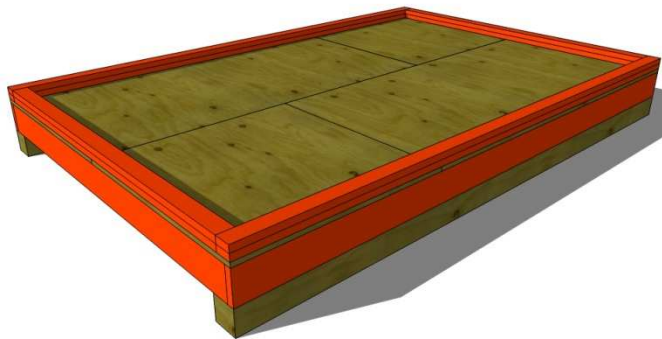
## HOW TO FRAME SHED WALLS

(If you are building the wall on the shed floor and standing them up as you go it is easiest to build the long shed walls first and then the shorter walls can be built in between them. Or if they are light enough you can pull them off the floor and bring them back when all the walls are framed.) Refer to the nailing schedule for the proper nail to connect different wood sizes and types.



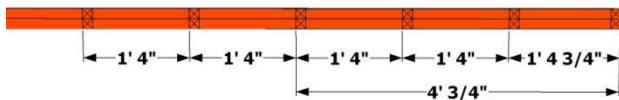
**1 - MARK THE WALL LOCATIONS**-The first step in building walls is to locate where they will go.

1. Measure in from the exterior edge of the floor the width of the walls, either 3 1/2" or 5 1/2" depending on your wall thickness, and use a pencil to mark the inside of the wall location.
2. Mark the whole wall line using a chalk line between the pencil marks.



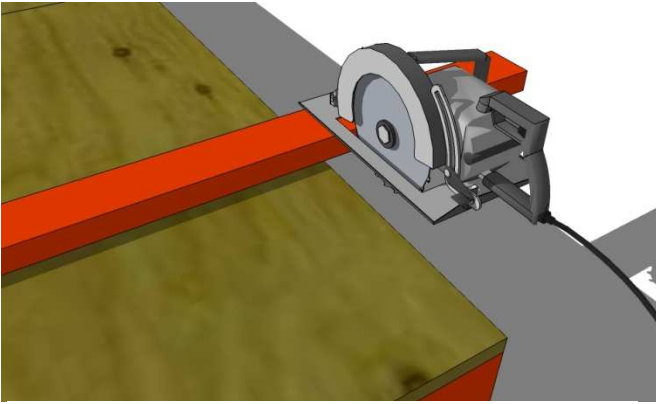
**2 - CUT THE WALL PLATES -**

1. Cut the top and bottom plates to length.
2. Verify the length of the walls from the plans and double check by measuring the wall lines drawn in the last step.
3. Set all 8 plates on the floor in sets of 2 in their respective location and verify that they will line up properly with each other and the lines on the floor.



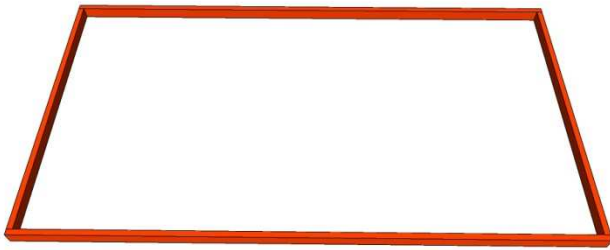
**3 - LAYOUT THE WALL PLATES -**

1. Put each of the sets of plates next to each other on edge with the crowned edges up.
2. Make sure the ends are flush.
3. Hold the plates together and use the layout dimensions from the Wall Framing Plans to mark the wall stud layout on both of the wall plates at the same time.
4. Mark the windows and door openings first and then mark the regular stud layout marks.
5. Mark the stud locations with an "X" on the side of each wall stud location line to show which side of the line the wall stud goes on so you don't get confused when attaching the wall studs.



#### 4 - PREPARE THE WALL STUDS

1. Verify the stud length of your wall studs on the wall framing plans and cut them to length, if necessary.
2. Set the wall studs between the top and bottom plates.
3. Line the stud ends up with their respective layout marks on the top and bottom plates.
4. Crown the wall studs. (See the board crowing tutorial in the Glossary.)



#### 5 - NAIL WALL STUDS TO THE PLATES

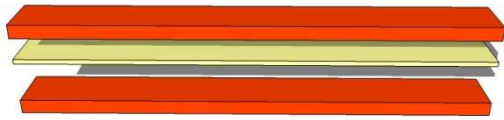
1. If there are no openings, door or window, on the wall then proceed by installing the two end studs. Use 2 - 12d nails into each stud end for 2x4 walls and 3 - 12d nails for 2x6 walls.
2. If a door or window needs to be installed on the wall then see the section on How to Frame a Door or Window Opening and install the opening framing before installing the wall studs.



#### 6 - NAIL REMAINING STUDS ON

1. Install the studs in between the end studs.

## How To Frame Shed Door Openings



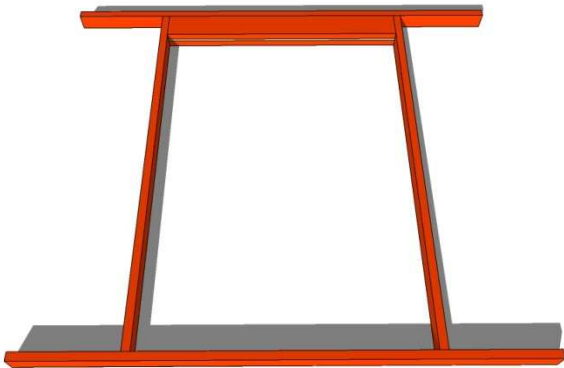
### 1 - BUILD THE DOOR AND OR WINDOW HEADERS AND WINDOW SILLS

1. Cut a piece of 7/16" O.S.B. a half inch smaller than the dimensions of the header boards.
2. Sandwich the O.S.B. between the two header boards
3. Nail all three pieces together using 2 - 12d nails every 8 inches. Make sure that the edges of the 2x boards are flush with each other. Nail from one side of the header.



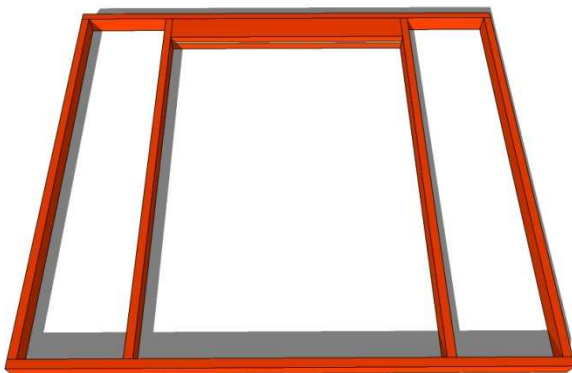
### 2 - NAIL THE KING STUDS TO THE HEADER - The King studs are the studs that attach to the header.

1. Make the top of the wall stud flush with the top of the header and nail it to the header. One King stud is nailed on each end of the header.



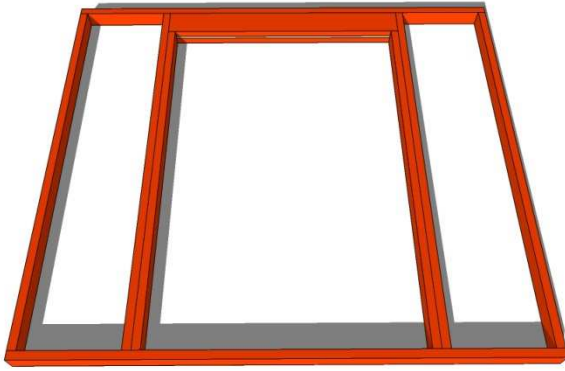
### 3 - NAIL THE WALL PLATES TO THE OPENING ASSEMBLY

1. The plates should have been marked for the opening location when all the wall plates were marked during the How To Frame Shed Walls Section.
2. Align the Header and King stud assembly with the marks on the top and bottom plates.
3. Nail the plates to the header and king studs.



### 4 - INSTALL THE REMAINING WALL STUDS

1. Install the remaining wall studs the same as described in the How To Frame Shed Walls Section.

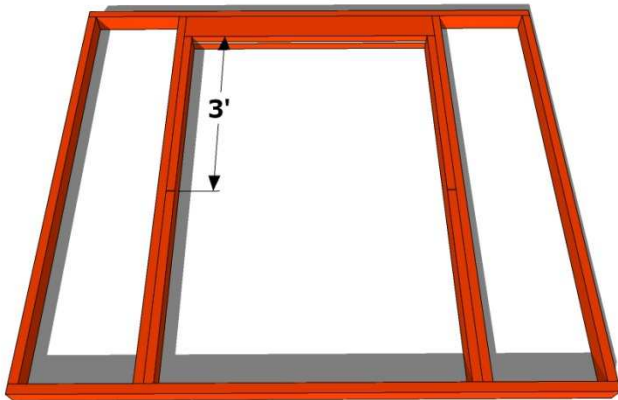


**5** - INSTALL THE TRIMMER BOARDS - The trimmers are the boards that go under the header to support it.

1. Cut the trimmer boards to their length. They should fit snugly between the bottom plate and the bottom of the header board.
2. Nail them to the king stud using 1 -12d nail at 12" o.c.
3. Make sure to nail from the opening side of the board so that any errant nail ends do not poke into your window or door opening.

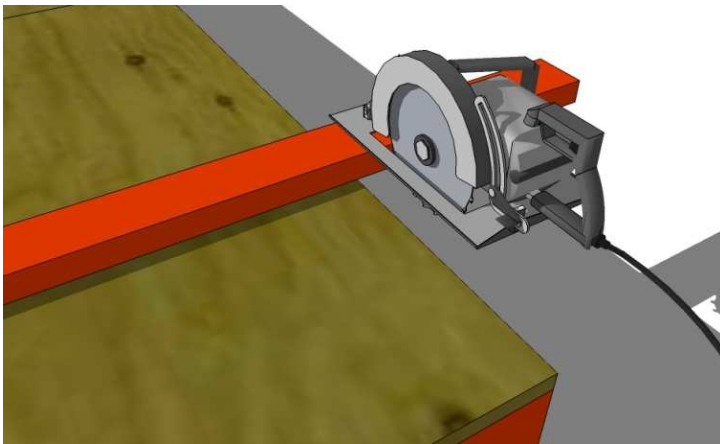
## How To Frame Shed Window Openings

To build a window opening you will first use the same steps outlined in framing a door opening. Make sure to make the header to the width of the window you intend to install in the opening.



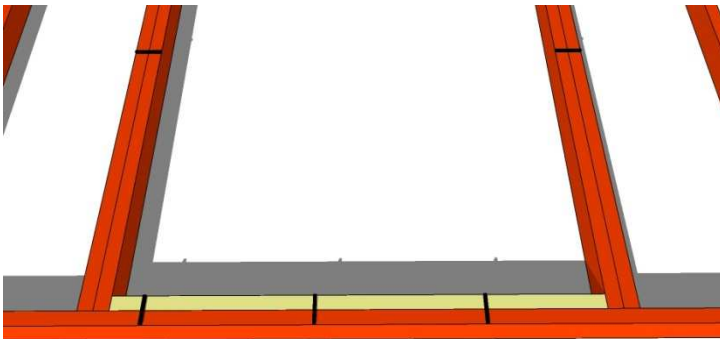
### 1 - MARK THE HEIGHT OF THE WINDOW

1. Verify the rough opening height of the window and mark the trimmer studs on each side of the window opening.



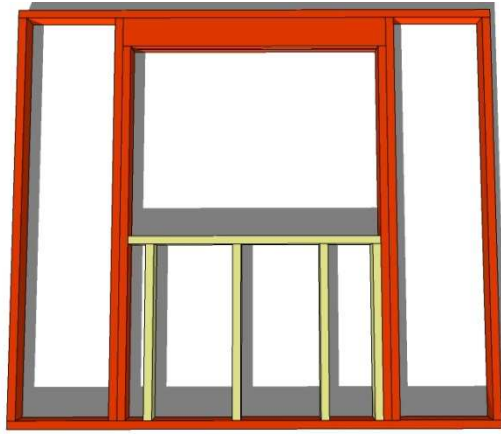
### 2 - MEASURE AND CUT THE REMAINING PIECES

1. Cut out the window sill and the two trimmers. Remember to subtract 3" from the floor to bottom of window height to account for the window sill and the wall bottom plate.



### 3 - TRANSFER THE WALL LAYOUT -

1. Put the window sill on the bottom plate of the wall and transfer the stud layout location marks onto the window sill.



#### 4 - NAIL THE PIECES TOGETHER

1. Move the window sill board up to the marks on the trimmers and nail it on to the trimmers by toe nailing.
2. Place the cripple studs under the window sill. Nail them on at their respective layout marks. Make sure that the window sill board does not move from the marks on the trimmers when installing the cripples.
3. Install the cripple boards under the ends of the window sill if the gap is over 2".

## Standing The Shed Walls



### 1 - STAND THE FIRST WALL

1. Start by standing one of the shed walls that go to the edges of the shed floor.
2. Align the bottom plate with the wall lines that you drew on the floor and the ends of the walls with the edge of the floor.
3. Nail the bottom plate to the floor framing using 2-12d nails at 16" o.c.. Make sure that the nails go into the floor joists below the floor sheeting when possible.



### 2 - STAND SECOND AND THIRD WALLS

1. Stand one of the two walls that are adjacent to the first wall and align it with the marks on the floor and the edge of the shed floor.
2. Nail the bottom plate to the floor framing as described above
3. Nail the corners of the walls to each other, Use 1 nail every 12 inches from floor to ceiling.
4. Repeat step 2 with the third wall.



### 3 - STAND THE FOURTH WALL

1. Stand the fourth wall and align it with the marks on the floor and the edge of the shed floor.
2. Nail the bottom plate to the floor framing as described above
3. Nail the corners of the walls to each other, Use 1 nail every 12 inches from floor to ceiling.

NOTE: The walls will be wobbly until you attach the siding and build the roof.



### 4 - INSTALL THE DOUBLE TOP PLATES ON ALL SHED WALLS - (Note some plans do not have double top plates on all 4 walls.)

1. The double top plates must overlap from the short walls to the long walls to help tie the shed walls together.
2. Install the double top plates on the shorter walls first, overlapping onto the long walls.
3. Install the double top plate in the space between the first overlapping plates to bring the tops of the walls to the same height.

## How to Install Siding on the Storage Shed

NOTE: overlap bottom by at least 1 1/2". Some shed owners prefer for the siding to go down further to fully cover the floor framing.



**1 - INSTALL WALL SHEETING/SIDING** - The siding or O.S.B. sheathing should be installed starting at the same end of the wall that you laid out the studs from to keep everything on the 1'-4" layout. The vertical joints between sheets should be on the center of 2x wall boards.

1. Start by aligning the sheet so that the vertical edge is flush from top to bottom with the corner of the shed. TIP: Install 2 12d nails below the bottom to hold the sheet while you align it.
2. Make sure that the sheathing overhangs the bottom plate at least 1 1/2" on the and is held down from the top of the top plate 1/2".
3. Install 2 nails along the long corner edge, see (1)'s in the image to the left.



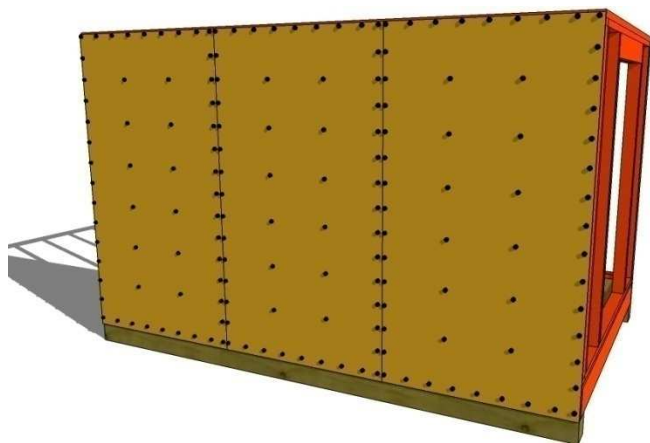
### 2 - STRAIGHTEN THE WALL

1. With one long edge of the sheathing nailed on push or pull on the wall so that the other three edges of the sheathing become square with the wall stud framing. Make the top edge reveal even, check that the long edge that is not nailed on is evenly splitting the wall stud from top to bottom.
2. Install a nail, see (2), on one of the edges of the sheathing opposite the first two nails. This third nail will lock the wall in place.
3. You can double check for level by putting a level on one of the vertical edges of the sheathing. But if all 4 edges of the sheathing are square with the wall framing then the levelness of the wall is due to other factors, like the floor being out of level.



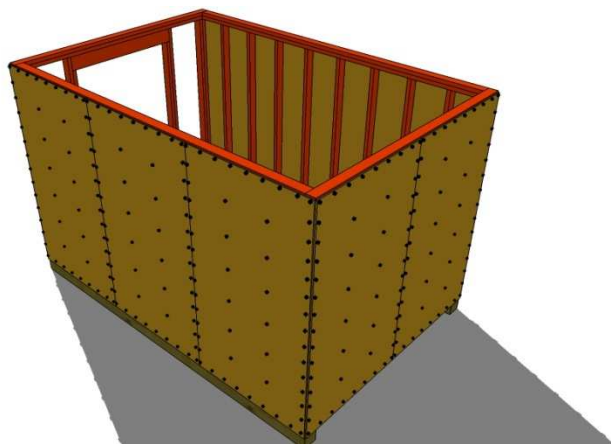
### 3 - INSTALL THE REMAINING NAILS

1. Install nails every 6 inches along the edges and every 12 inches into the studs in the center of the sheet.



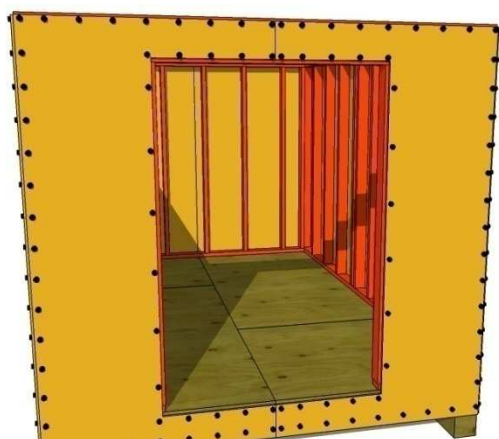
#### 4 - INSTALL REMAINING SHEETING ON FIRST WALL

1. Continue installing the sheathing along the wall.
2. Cut the last sheet at the end of the wall so the edge is flush with the corner.
3. Nail the boards using the same nailing pattern as before.
4. GABLE WALLS NOTE: If the sheathing is taller than the gable walls then let the sheathing run long, up to where the roof rafters will be, so that you can cut it at the angle of the rafter after it the rafter has been set.



#### 5 - INSTALL SHEETING ON REMAINING WALLS

1. Install sheets on the remaining walls that do NOT have a door opening.

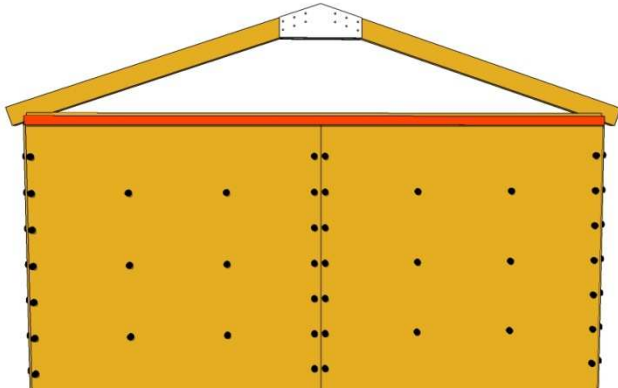


#### 6 - PREPARE THE DOOR OPENING

1. Before installing the wall sheathing around the door, you will want to remove the bottom plate of the wall in the door opening by using a hand saw or reciprocating saw.
2. HOME BUILT DOOR: If you are installing a home built door you will need to hold the sheathing or siding back from the door opening 1".
3. PRE-HUNG DOOR: If you are installing a pre hung door you will install the sheathing or siding flush with the door opening.

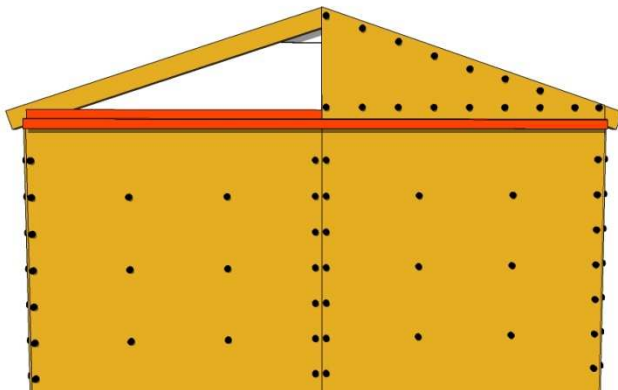
## How To Connect Horizontal Siding Joints

Horizontal joints between siding panels require a metal flashing. The typical flashing used is called a "Z" metal because of its shape. It goes behind the upper panel, horizontally between the upper and lower panels and then down the outer face of the lower panel.



### 1 - INSTALL Z METAL

1. Set the "Z" metal flashing on top of the lower siding panel.
2. Make sure that the flashing sits so that the lower edge is on the outer face of the lower siding panel and will be behind the upper panel when it is installed.



### 2 - INSTALL UPPER SIDING PANEL

1. Set the upper siding panel on top of the "Z" metal.



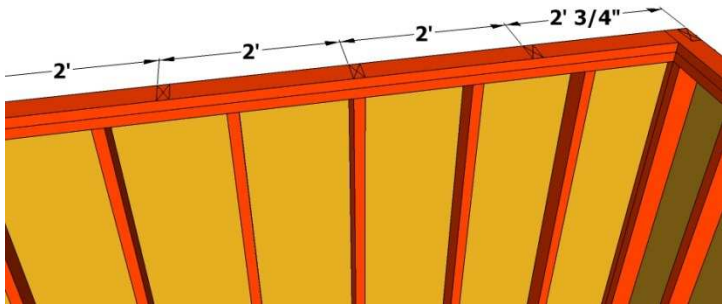
### 3 - ALTERNATE EXAMPLE OF Z METAL

1. Tall wall siding joints are installed the same way as described above.

# HOW TO LAYOUT AND SET RAFTER AND TRUSSES AND SHEET THE ROOF

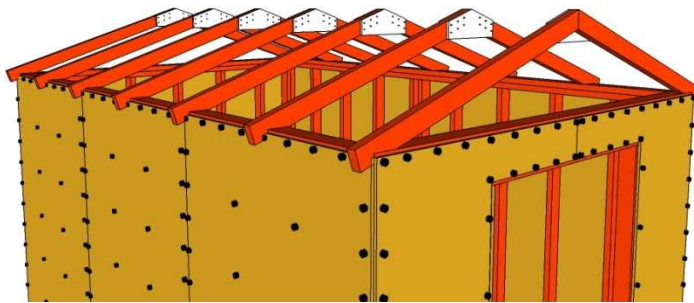
## How To Set Roof Rafters or Trusses

After you have built the rafters or roof trusses you will set them on the shed walls. See the other sections in these instructions to learn How To Build Rafters or Trusses. (These instructions are common to most rafter types.)



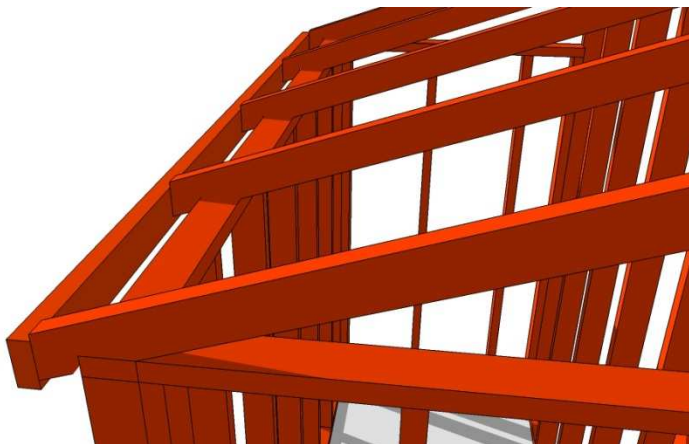
### 1 - MARK THE RAFTER or TRUSS LOCATIONS ON THE TOP PLATES

1. Mark the rafter or truss locations on the top plates according to the roof framing plans.
2. Make sure that you layout the locations on both walls from the SAME end of the shed.



### 2 - SET THE RAFTERS or TRUSSES

1. Set the two end rafters on the top plates and on their respective marks.
2. NAIL the rafters to the top plates using 3-8d nails on each end.
3. Stretch a piece of string, tight, between the two rafters.
4. Set each rafter on its respective top plate mark, align it with the string and nail it on.
5. Install hurricane ties when required by local building codes or shown on the plans.

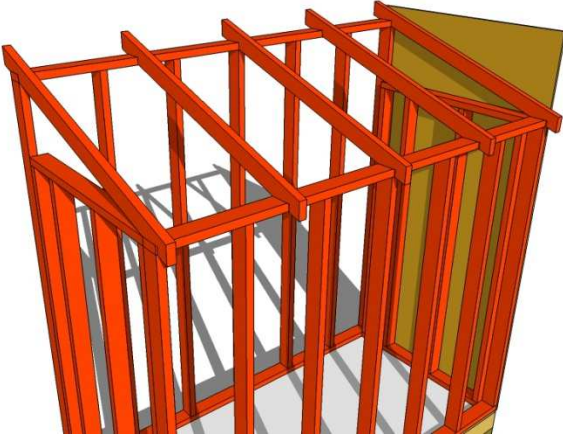


### 3 - INSTALL THE FASCIA (Siding has been removed for clarity) REMEMBER to extend the fascia past the gable trusses if you have gable end overhangs.

1. Mark the 24" on center truss layout on the fascia boards. Make sure that the layout is from the same end of the shed as you laid out on the top plates.
2. Hold the fascia board against the rafter tails. Hold it down so that the roof sheeting will sit flat from the top of the rafters to the top of the fascia.
3. Nail the fascia to the ends of the rafters.
4. NOTE: If you have barge rafters, you will leave the sub fascia running long on the gable ends and cut them off after the barge rafters

## Covering the Gable Trusses with Siding.

There are two ways to install siding over the gable end trusses.



**1 - INSTALL "Z" METAL FLASHING WHERE NECESSARY.** Z metal is a flashing used between horizontal joints on the siding.

1. Cut the metal flashing to fit the entire length of the top of the siding panels
2. Install blocking behind the horizontal siding joint.
3. Nail the flashing to the wall studs and blocking on the UPPER leg of the flashing. (do NOT nail the flashing through the lower edge on the outside of the shed.

**2 - SET THE UPPER SIDING SHEET AND INSTALL IT (WHEN USED)**

1. Do ONE of the following:
2. For sheds with no gable overhang follow STEP 3 below
3. For sheds with a gable overhang follow STEP 4 below.

**3 - SHEDS WITH NO ROOF OVERHANG**

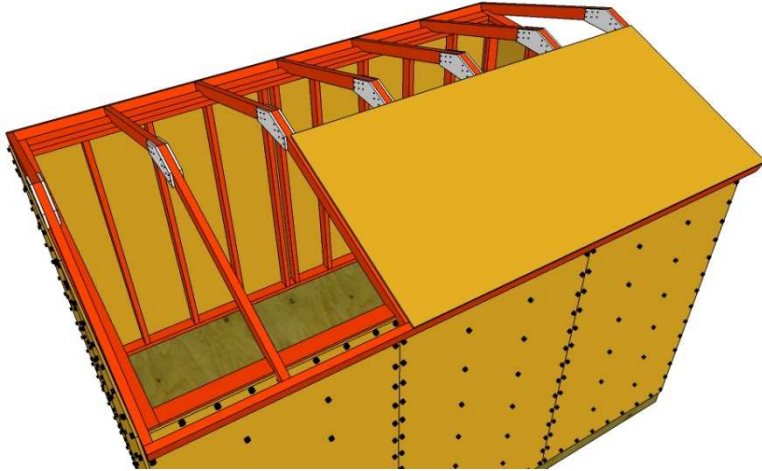
1. CUT THE SIDING FLUSH WITH THE TOP OF THE ROOF DECKING
2. Allow the siding to run long above the rafters and/or cut it off flush with the TOP of the roof decking AFTER the roof sheeting is installed.
3. Allow the siding to run above the angle on the gable ends (or cut it 1/2" taller than the top of the rafters so the roof sheeting will be flush with the top of the siding sheet after the roof sheeting is installed.)
4. Transfer the line of the rafters or trusses to the outside of the shed.
5. Set the saw blade to the depth that is the same as the siding or O.S.B. thickness.
6. Cut along the line.

**4 - SHEDS WITH GABLE END ROOF OVERHANG - BARGE RAFTER**

1. CUT THE SIDING FLUSH WITH THE TOP OF THE RAFTER
2. For sheds with a gable overhang the siding will go to the top of the rafters so the roof sheeting can run out past the face of the rafter. So it needs to be cut off BEFORE the roof is sheeted.

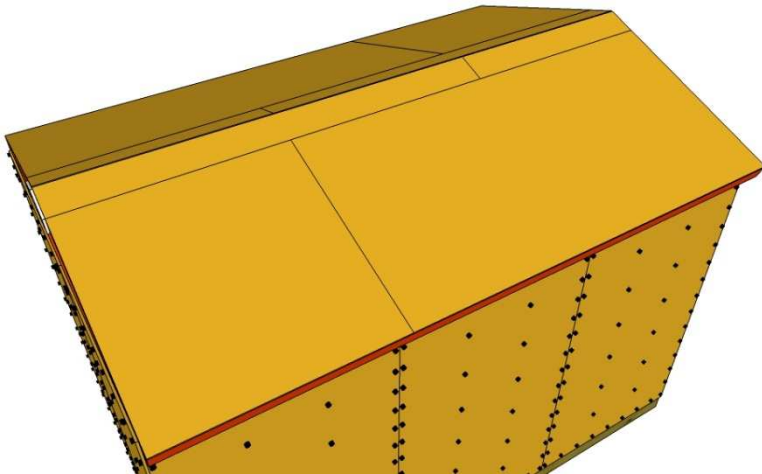
## How to Install Roof Sheeting

(Remember to Overhang roof sheeting when using barge rafters, see "How To Install Barge Rafters" below.)



**1 - SHEET THE ROOF** - Install the roof sheeting using the layout shown on the plans.

1. The sheeting is installed across the roof starting at the eaves and working your way up to the roof peak.
1. Start at the same end of the roof that you laid out the roof trusses from, make sure that the inside end of the roof sheeting is exactly on the center of a roof truss/rafter, you will trim the edge overhanging the gable end after the roof is fully sheathed.
2. The nailing pattern for roof sheeting is every 6" o.c. along the edges and 12" o.c. in the field.

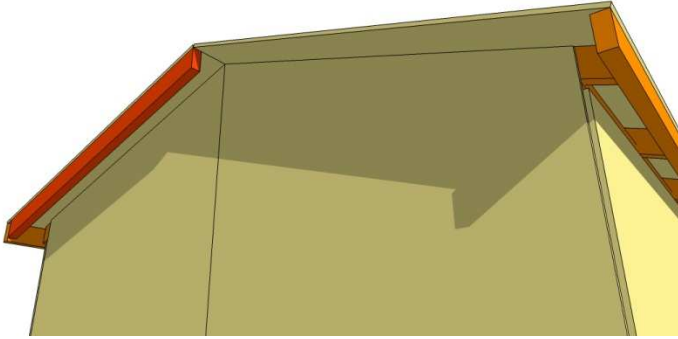


**2 - INSTALL THE REMAINING SHEETS**

3. Install the remaining sheets with a 1/8" gap between sheets.
4. Use a 8d nail to temporarily create the gap between the sheets until you nail it on.
5. Start the second row with a half sheet, or nearest size to half, of O.S.B. so that the joints are staggered.
6. Rip down the sheets for the top row and then install them.
7. Install the other side of the shed roof using the same steps.

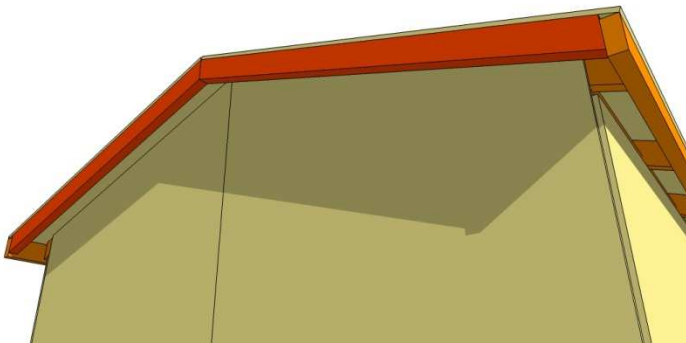
## How To Install Barge Rafters

1. Barge rafters are rafters that overhang the roof on the gable ends. (Shown in orange) If your shed has barge rafters on the gable ends they will be installed after the gable end siding and roof sheathing are installed. (Barge rafters may be installed before the roof sheathing but this instruction describes installation after installing roof sheathing. For overhangs 12 inches or less the barge rafter can be supported using perpendicular blocking between the gable rafter and the barge rafter. Barge rafters are installed after the roof rafters are installed. This instruction will describe the installation after the roof sheathing is installed but they can be installed after the roof sheathing is installed.



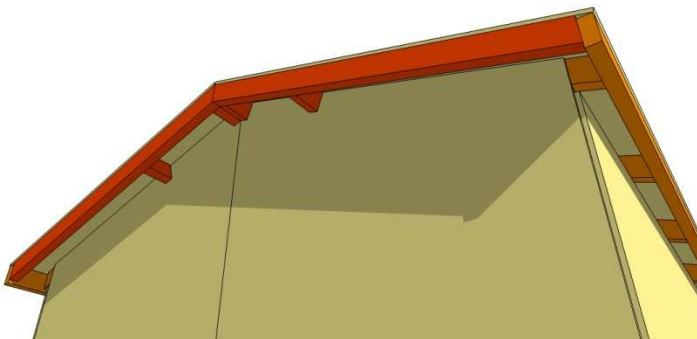
### 1 - CUT AND TEST FIT THE BARGE RAFTERS

1. Cut the roof sheathing to the length of the roof overhang on the gable ends.
2. Cut and test fit the first barge rafter. It will be installed on the **UNDERSIDE** of the roof sheathing. It should be installed with the ends at equal distances from the siding. It should be flush with the end of the roof sheathing. It should fit nicely against the fascia board and any adjacent barge rafters at the peak(s).



### 2 - NAIL THE BARGE RAFTERS IN PLACE

1. Hold the barge rafter in place and nail through the roof sheathing into the barge rafter to hold it in place. Nail the fascia to the end of the barge rafter.



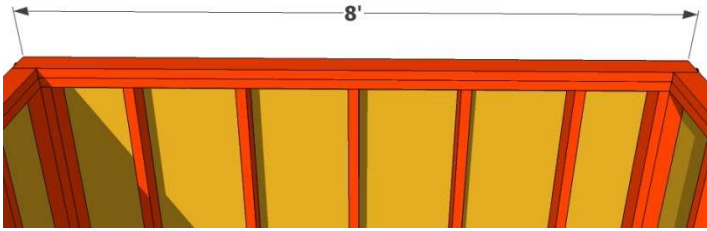
### 3 - INSTALL BLOCKING BEHIND BARGE RAFTERS

1. Install blocking every 4 feet along the barge rafter, preferably at each joint in the roof sheathing.
2. Cut the blocks so they fit snugly between the siding and the back side of the barge rafter.
3. Hold the blocks in place and nail through the fascia into the blocks and toenail the blocking to the siding on the shed. Nail through roof sheathing into blocking. Do not use too many nails as small wood blocks may split.

# HOW TO BUILD DIFFERENT SHED ROOF RAFTER STYLES

## How To Build Shed Rafters With Birds Mouths - For Roof Spans 8' and Under

### Cut Out The First Rafter Set



#### 1 - VERIFY THE WALL TO WALL DISTANCE

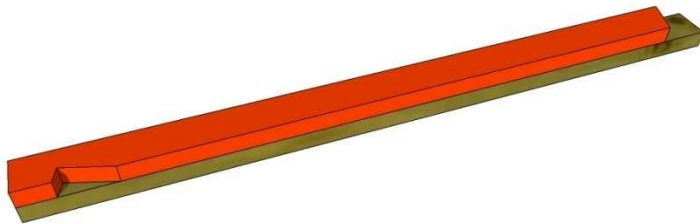
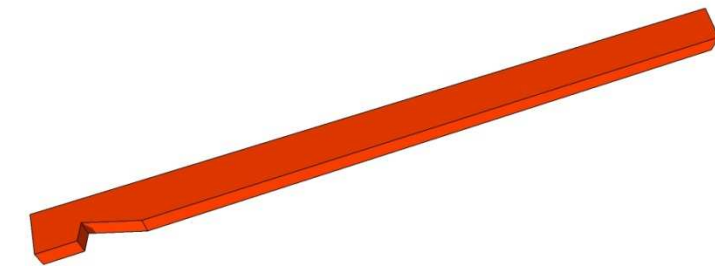
1. Measure the wall to wall distance to make sure it is the same as the plans. If it is different then you will need to adjust the cut lengths shown on the plans accordingly, longer distance wall to wall will require a longer rafter and a shorter distance will require a shorter rafter length.

#### 2 - MARK AND CUT THE RAFTER

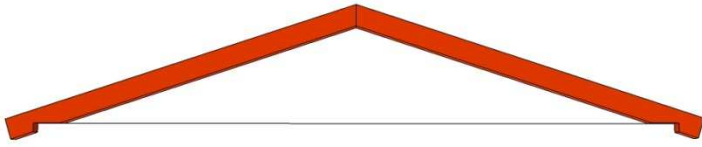
1. Use the lengths and angles shown on the plans to make the first two rafters. Smaller Shed plans have templates showing birds mouth cuts and ridge angles. Larger Shed plan trusses use a bottom chord.
2. Cut the birds mouth and ridge angle out.
3. Make sure to not cut into the part of the wood on the rafter that will NOT be removed, as this may weaken the rafter. This can be achieved by using a hand saw to finish the cuts or by using a wood chisel.

#### 3 - USE THE FIRST RAFTER AS A TEMPLATE

1. Lay the first rafter on a second board and trace the angles and cuts to mark the second board.
2. Cut out the second rafter.



## Mark The Top Plate Representation On The Floor or Work Surface



### 1 - MARK THE WALL LOCATIONS ON THE SHED FLOOR

1. Use the shed floor edge or draw a straight line on a flat working surface that is large enough to lay the whole truss assembly on.
2. Place marks on the line to show the locations of the wall inside edges and outside edges.
3. Find the center of the line and measure up from the line and place a mark at the roof peak location.

### 2 - ASSEMBLE THE RAFTER ON THE GROUND

1. Set the rafters or top and bottom chords on the edge of the shed floor or line as if they were resting on the top of the shed walls.
2. Align the ends of the boards so that they meet the marks.
3. Make any necessary adjustments to make sure that the peak is touching the mark, that the birds mouths are flat against the top plate line, that the overhangs are the proper distance apart.

## Make A Rafter Jig On The Shed Floor

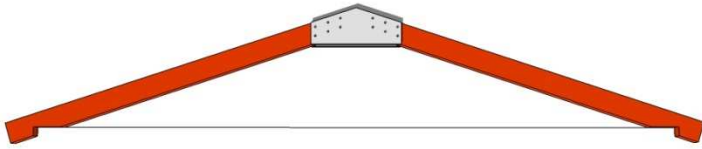
### 1 - MAKE A JIG TO HELP ASSEMBLE THE RAFTERS

1. Attach two blocks at each end and to the sides of each rafter member to hold them in place using screws.

### 2 - CUT THE REMAINING RAFTERS OUT

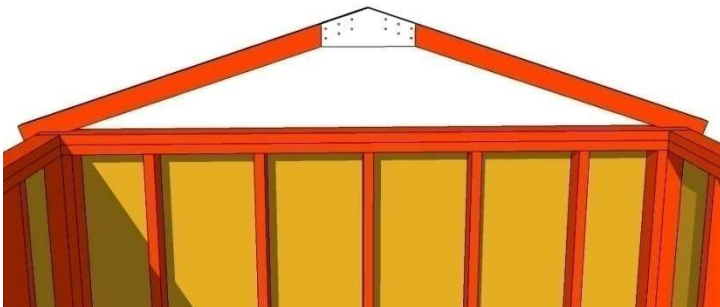
1. After verifying that the first rafter assembly is correct use the first cut board as the template for all the remaining rafters so the marks will be the same for every set of rafters.

## Install Rafter Gussets



### 1 - INSTALL GUSSET PLATES

1. Cut pieces of 7/16" O.S.B. sheathing to use as gussets to sandwich the joints.
2. Nail the gussets over the truss or rafter connections.
3. Use 6d nails spaced at 3 in o.c. along the edges and 3/4" from the edges.
4. Install gusset(s) on both sides of the rafters except for the gable ends which will only have a gusset on one side. TIP: the gussets can be cut square at first and then trimmed to the appropriate angle after they have been installed on the truss or rafter by following the angle of the top chord.

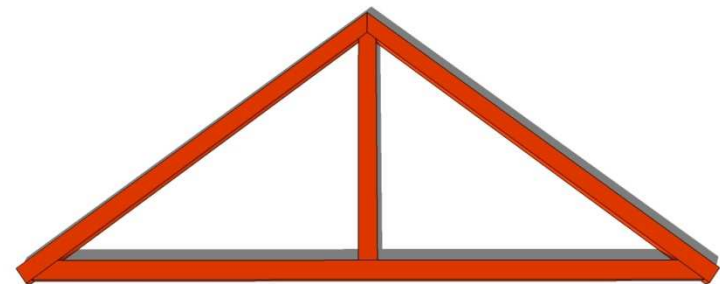
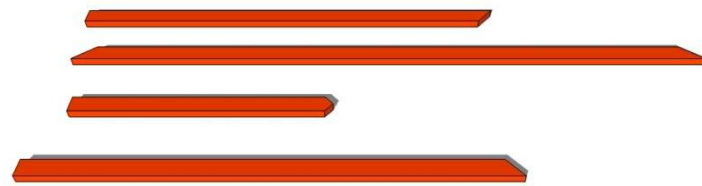
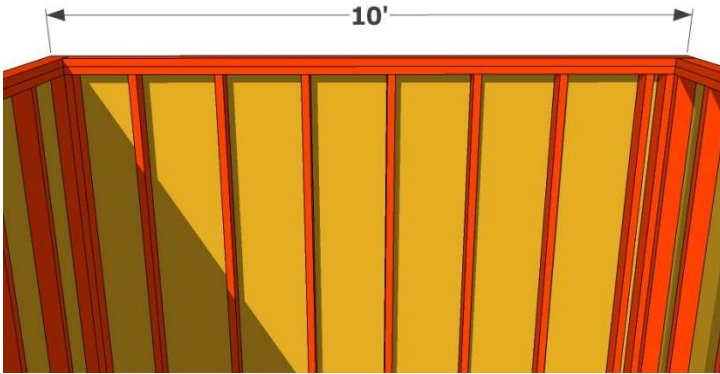


### 2 - TEST FIT THE TRUSS or RAFTER ASSEMBLY

1. Set the assembled truss or rafter onto the floor framing of the shed and verify that it fits correctly.
2. The Birds mouths should touch the chalk lines marking the inside of the walls on the shed floor and overhang 1/2" on the outside of the shed to go past the sheathing or siding. Note, even the width of the saw blade will keep the birds mouth seat from sitting flush with the top plates.
3. Build the remaining rafters to match the first rafter after you are satisfied with the rafter assembly.

## How To Build Rafters With a Bottom Chord - For Roof Spans 10' and Larger

Adding a bottom chord to the a rafter increases it the strength of the roof and keeps the walls of the shed from bowing outward with the increased weight bearing capacity of a larger roof. The King Post further strengthens the whole assembly. Note: The steps to build the rafters are the same no matter what the roof pitch is.



### 1 - VERIFY THE WALL TO WALL DISTANCE -

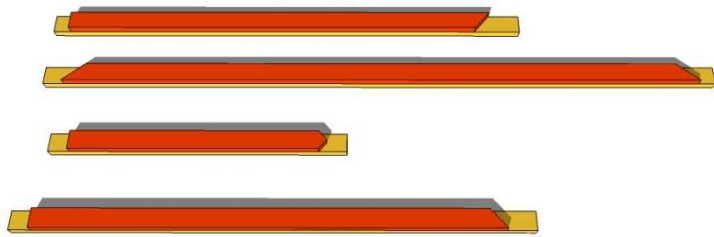
1. Measure the wall to wall distance to make sure it is the same as the plans. If it is different then you will need to adjust the cut lengths shown on the plans accordingly, longer distance wall to wall will require a longer rafter and a shorter distance will require a shorter rafter length.

### 2 - MARK AND CUT THE RAFTERS

1. Use the lengths and angles shown on the plans to make the first rafter and bottom chord. Some plans have templates showing the angle cuts which you can use to trace the cut lines onto the rafter.
2. Make the proper marks on a rafter boards.
3. Cut the angles and remove the wood. Make sure to not cut into the part of the wood on the rafter that will NOT be removed, as this may weaken the rafter. This can be achieved by using a hand saw to finish the cuts or by using a wood chisel.

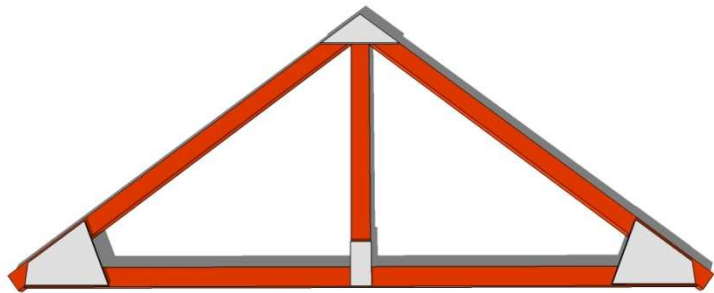
### 3 - VERIFY PROPER FIT

1. Find or Draw a straight line on a flat working surface that is large enough to lay the whole truss assembly on.
2. Mark three marks on the line, one representing each end of the tops of the shed walls at the appropriate distance from each other and the third in the center between the two marks.
3. Set the rafters and the bottom chord on the line and marks as if they were resting on the top of the shed walls. Check for accuracy.



#### 4 - USE THE FIRST RAFTER AS A TEMPLATE

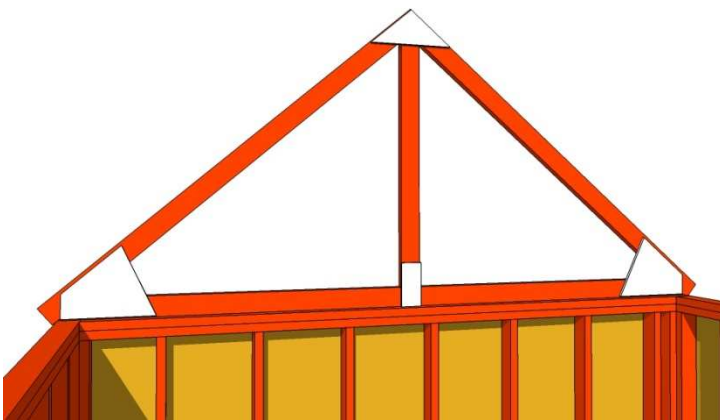
1. Lay the first rafter on a second board and trace the angles and cuts to mark the second board.
2. Cut out the second rafter. Use the first cut board as the template for all the remaining rafters so the marks will be the same for every set of rafters.



#### 5 - INSTALL GUSSET PLATES

1. Cut pieces of 7/16" O.S.B. sheeting to use as gussets to sandwich the joints.
2. Nail the gussets over the truss or rafter connections.
3. Use 6d nails spaced at 3 in o.c. along the edges and 3/4" from the edges.
4. Install gusset(s) on both sides of the rafters except for the gable ends which will only have a gusset on one side.

TIP: the gussets can be cut square at first and then trimmed to the appropriate angle after they have been installed on the truss or rafter by following the angle of the top chord.



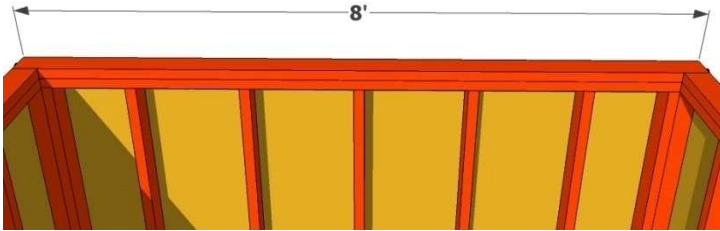
#### 6 - TEST FIT THE TRUSS or RAFTER ASSEMBLY

1. Set the assembled truss or rafter onto the top plates of the shed and verify that it fits correctly. The bottom outer edges of the bottom chord/rafter should be flush with the top plates on the walls, NOT the siding or O.S.B..
2. Build the remaining rafters to match the first rafter after you are satisfied with the rafter assembly.

**7 - INSTALL THE REMAINING TRUSSES -** Use The How To Set Rafters Or Trusses instructions in this manual.

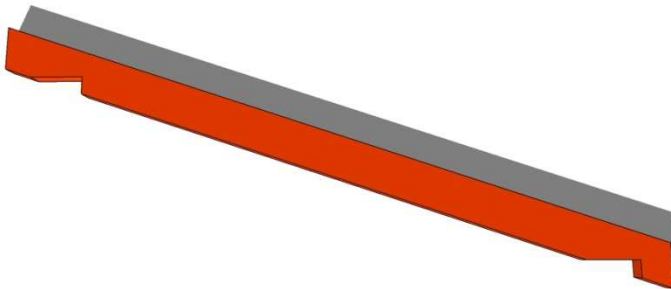
**8 - SHEET THE ROOF -** See the How To Install Roof Sheeting instructions section in this manual to learn how to install roof sheeting.

## How To Build a Lean To Shed Roof Rafter (Lean To, Modern and Horse Barn Shed Styles)



### 1 - VERIFY THE WALL TO WALL DISTANCE -

1. Measure the wall to wall distance to make sure it is the same as the plans. If it is different then you will need to adjust the cut lengths shown on the plans accordingly, longer distance wall to wall will require a longer rafter and a shorter distance will require a shorter rafter length.



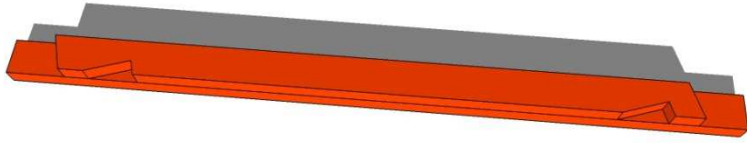
### 2 - MARK AND CUT THE RAFTER

1. Use the lengths and angles shown on the plans to make the first rafter. Some plans have templates showing birds mouth cuts which you can use to trace the cut lines onto the rafter.
2. Make the proper marks on a rafter board.
3. Cut the birds mouth angles and remove the wood. Make sure to not cut into the part of the wood on the rafter that will NOT be removed, as this may weaken the rafter. This can be achieved by using a hand saw to finish the cuts or by using a wood chisel.



### 3 - TEST FIT THE RAFTER

1. Set the assemble rafter onto the top plates of the shed and verify that it fits correctly. BIRDSMOUTHS should touch the top plates at the start of the cut on the inside of the shed and overhang 1/2" on the outside of the shed to go past the sheeting or siding. If it is not flush with the top plates then adjust the cut by shaving off the part of the seat that makes it not sit flat. Note, even the width of the saw blade will keep the birds mouth seat from sitting flush with the top plates.



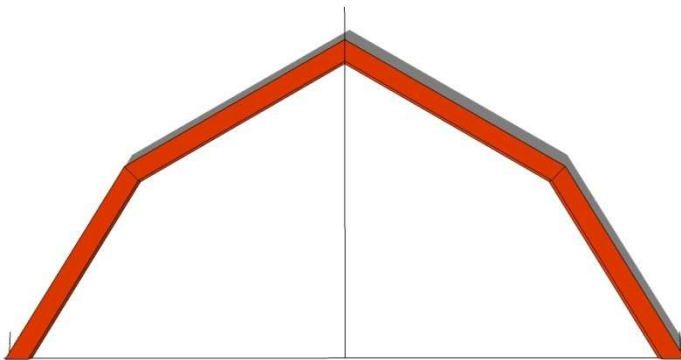
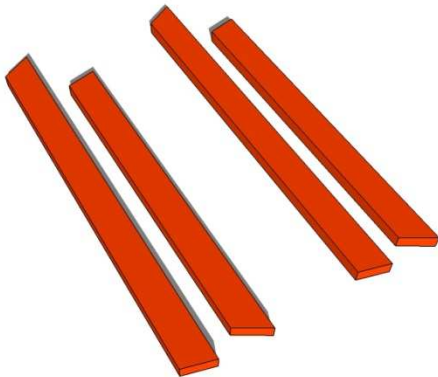
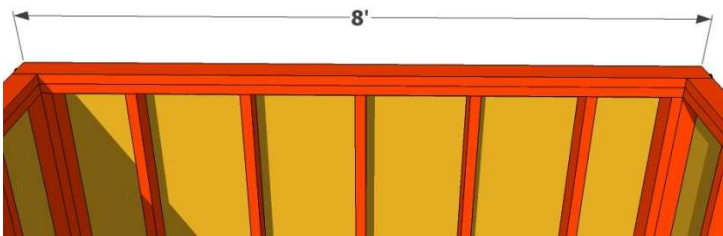
#### **4** - MAKE THE REMAINING RAFTERS

1. Lay the rafter that has the birds mouths cut out on each of the other rafters and trace the birds mouth onto each one.
2. Cut out the birds mouths on each of the rafters.

## How To Build a Gambrel Roof Truss

Our plans designate the parts of the shed with a Letter and Number combination so that we can refer to them in the plans and this instruction manual. The notation is as follows:

- R1 - Gable End Rafter. These are the rafters on the overhangs.
- R1.1 - The upper rafter
- R1.2 - The Lower Rafter
- R1.3 - The Rafter Dummy Tails
- F1.1 - The Loft Floor Joists



### 1 - VERIFY THE WALL TO WALL DISTANCE

1. Measure the wall to wall distance to make sure it is the same as the plans. If it is different then you will need to adjust the cut lengths shown on the plans accordingly, longer distance wall to wall will require a longer rafter and a shorter distance will require a shorter rafter length. Gambrel roof rafters are difficult to lengthen because there are multiple boards that may be adjusted. It is recommended to lengthen or shorten just the upper or lower rafters if necessary.

### 2 - MARK AND CUT THE RAFTER BOARDS

1. Use the lengths and angles shown on the plans to make the first four rafters.

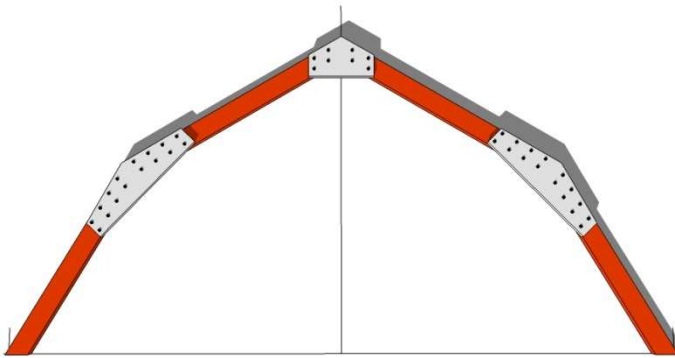
### 3 - VERIFY THAT THE TRUSSES WILL FIT TOGETHER PROPERLY

1. Find or Draw a straight line on a flat working surface that is large enough to lay the whole truss assembly on.
2. Mark two marks on the line, one representing each end of the tops of the shed walls at the appropriate distance from each other.
3. Set the rafters or top and bottom chords on the line as if they were resting on the top of the shed walls.
4. Align the ends of the boards so that they meet the marks.



#### 4 - USE THE FIRST RAFTER AS A TEMPLATE

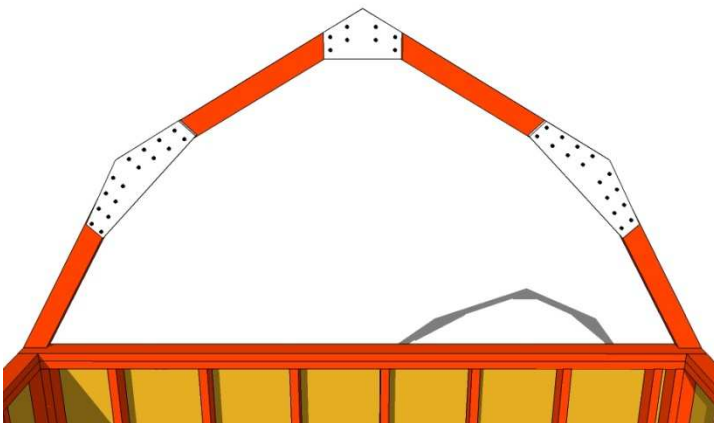
1. Lay the first rafter on a second board and trace the angles and cuts to mark the second board.
2. Cut out the second rafter.
3. Use the first cut board as the template for all the remaining rafters so the marks will be the same for every set of rafters.



#### 5 - INSTALL GUSSET PLATES

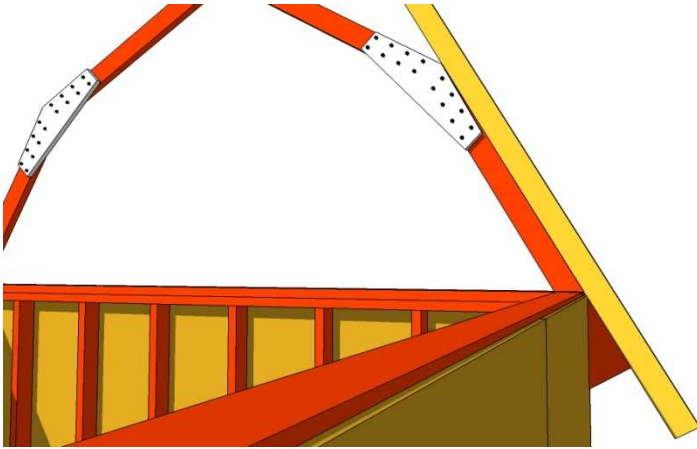
1. Cut pieces of 7/16" O.S.B. sheeting to use as gussets to sandwich the joints.
2. Nail the gussets over the truss or rafter connections. USE 6d nails spaced at 3 in o.c. along the edges and 3/4" from the edges.
3. Install gusset(s) on both sides of the rafters except for the gable ends which will only have a gusset on one side.

TIP: the gussets can be cut square at first and then trimmed to the appropriate angle after they have been installed on the truss or rafter by following the angle of the top chord.



#### 6 - TEST FIT THE TRUSS or RAFTER ASSEMBLY

1. Set the assembled truss or rafter onto the top plates of the shed and verify that it fits correctly. The bottom outer edges of the R2 rafters should be flush with the top plates on the walls, NOT the siding or O.S.B..
2. Build the remaining rafters to match the first rafter after you are satisfied with the rafter assembly.

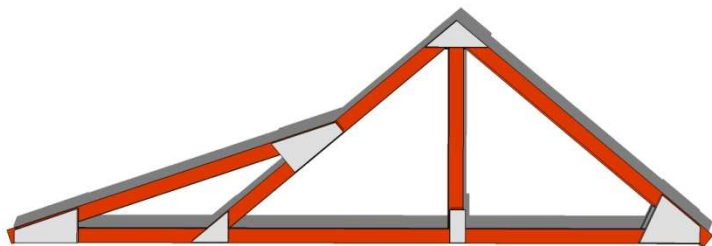


## 7 - INSTALL THE DUMMY RAFTERS

1. Cut out one dummy rafter, R1.3, and test fit it. Line it up with the R1.2 rafter by using a straight piece of wood or level set on the top of both rafters.
2. Mark where the dummy rafter will sit using a pencil and then use 8d nails to nail it in place. Be careful to not split the wood. It will be made more secure when you nail on the roof sheathing.
3. Check each dummy rafter as it is installed that it is on the same plane as the other dummy rafters so that the roof fascia creates a straight line when it is installed.

**8 - SHEET THE ROOF** - See the How To Install Roof Sheeting instructions section in this manual to learn how to install roof sheathing.

## How To Install Shed Porch Rafters and Beam



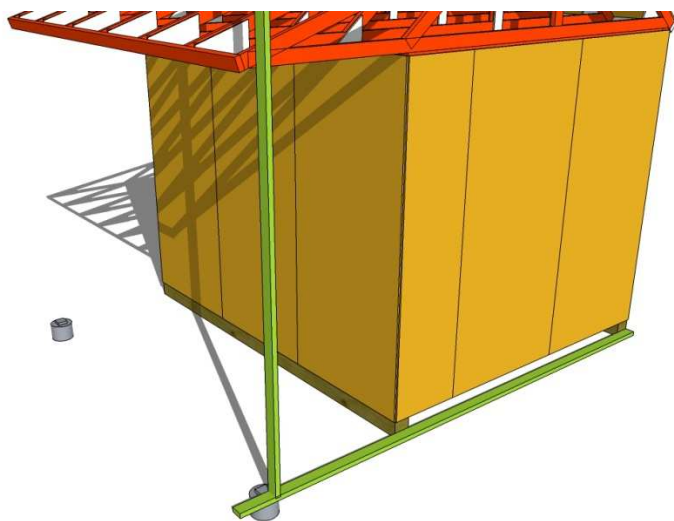
### 1 - BUILD RAFTERS

1. The rafters are built using the same technique described in the How To Build Shed Rafters With Bottom Chord section of this manual with changes necessary for the longer bottom chord and shed roof top chord.
2. Cut the pieces out and set up a jig on the shed floor and assemble the rafters.



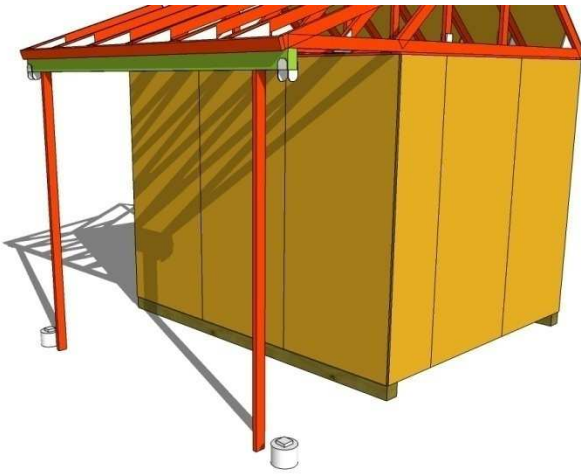
### 2 - SET THE RAFTERS ON THE SHED

1. Set the rafters on the shed per the How To Build Shed Rafters With Bottom Chord instructions.
2. Install the roof fascia boards.
3. Sheet the side of the roof that does not have the porch to temporarily brace the rafters.



### 3 - INSTALL THE POST BASES

1. Locate the post bases using a straight board laid along the side of the shed gable walls. To make sure they are square with the shed.
2. Double check the location by using a long straight board on the side of the rafter starting from the face of the beam location on the porch rafter.
3. Install the post base with either a pre-cast or poured concrete base. (It is recommended to use poured bases that go into the soil at least 12 inches or to below the frost line.



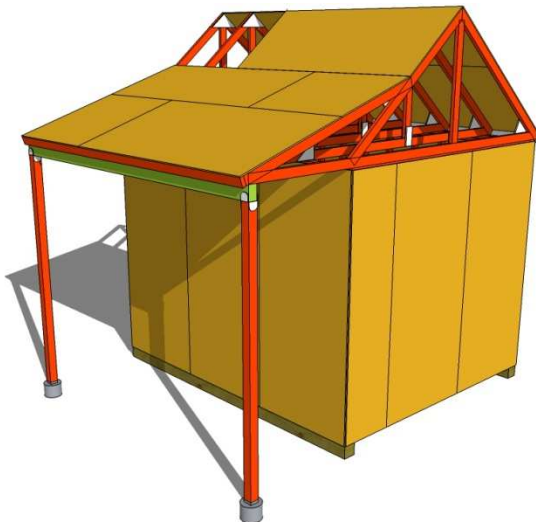
#### 4 - TEMPORARILY SET THE BEAM

1. Locate the post cap locations on the beam and nail the post caps to the beam.
2. Set the beam using temporary supports down to the ground.
3. Make the supports longer than needed by about 4 inches.
4. Rest the top of the support against the bottom of the beam. Hit the bottom of the support with a hammer so it pushes the beam up tight against the bottom of the rafters.



#### 5 - INSTALL THE POSTS AND BEAM

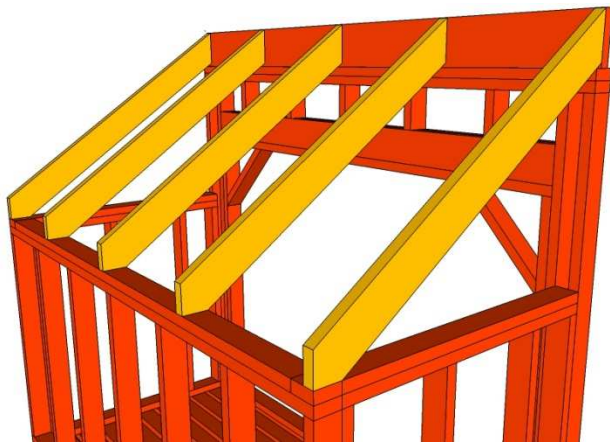
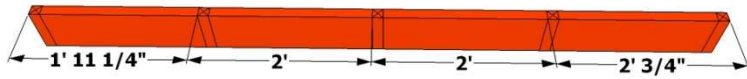
1. Measure the length needed for the posts. Cut the posts to length. TIP: It is recommended to cut the posts so they are about 1/8" longer than the opening so that when they are installed they are tight.
2. Set the posts in place. They should be tight but not so tight that they lift the roof framing.



#### 6 - SHEET THE ROOF

1. Sheet the roof starting following the How To Sheet a Roof instructions in this manual.
2. Start at the fascia and work your way up the roof, staggering the sheets as you go.

## How To Set a Ridge Beam



### 1 - LAYOUT THE RIDGE BEAM

1. Cut the ridge beam to length.
2. Layout the locations where the rafter boards will rest against the ridge beam.
3. Transfer the marks down each side of the ridge beam. Make sure that the marks are laid out from the same end of the shed as the marks on the wall top plates.

**2 - SET THE RIDGE BEAM** - Ridge beams are either set on top of a fully supporting wall or supported at each end. This depends on the shed you are building. Either way you will need someone to hold the beam while you set the rafter boards.

1. For firewood shed plans you will set the beam on top of the wall.
2. For regular gable roofs you will set the beam on top of the post on each of the gable walls.
3. The beam is toe nailed onto the ridge board. Install 1- 12d nail at 12" o.c. on each side of the beam.

### 3 - NAIL THE RAFTERS ON

1. Set the rafter birds mouth on its mark on the wall and then on its corresponding mark on the ridge beam.
2. Nail it in place using 12d nails through the face of the ridge beam and into the end of the rafter.
3. Make sure that the ridge beam remains straight as you work your way down the beam.

### 4 - FIREWOOD SHED FRONT RAFTERS

1. Toenail to attach the rafter to the ridge board.
2. Then nail the horizontal blocking to the side of the rafter.
3. Then toenail the horizontal blocking to the shed wall .
4. Then face nail the fascia to the rafter and blocking ends.

## HOW TO INSTALL TRIM, SOFFIT AND FASCIA

Trim is installed over the siding to cover up butt joints, corner siding connections, and any wall opening such as doors, windows, and vents. Trim is installed over roof sub fascia on some overhang designs to cover the sub fascia and cover the joints created when soffit is installed. Not all roof overhang designs need trim on them. Check with the roof overhang design details to verify what roof trim, if any, you will be installing. See the Roof overhang details in the details section of this manual.

### Why measurements for trim are not on the plans.

- It is more important to have the trim reveals look even and get the joint covered and the trim connections to line up than it is to have it an exact length.
- Trim thicknesses and widths vary. This will change the lengths of the pieces cut.
- If measurements are on the plans and the trim is even 1/8" off it will be noticeable visually. It is more important to have it look good than to be an exact measurement. This means that you will need to measure the length of the shed part to be trimmed and cut the trim to that length.

### What Order is Trim Installed on a Shed?

Trim is typically installed in the following order:

**1 - Fascia:** The fascia trim is installed first for several reasons. First, since the roofing often sits on top of the top edge of the fascia and fascia trim having the fascia trim installed will allow you to install the roofing and get the shed dried in. You may then come back later and install the soffit. Second, many overhang designs do not use soffit.

**2 - Soffit:** The Soffit is installed after the fascia. It is installed behind the fascia so having the fascia up will make it easier to measure and fit the soffit.

**3 - Corners:** The corner trim is installed after the soffit because the top ends need to butt up to the underside of the soffit. If you are using an Open Soffit you can install the corner trim anytime after the siding and roof are on.

**4 - Wall Openings:** Windows and Vents trims are installed as one of the last items on the shed but they can be trimmed any time after the siding is installed.

**5 - Doors:** The trim around the door should be installed after the door is installed to make sure the gap between the door and the trim is even. Doors are typically trimmed last because the door is often the last part of the shed to be built or installed. This is because the door is not a structural part of the shed and no other part of the shed relies on the door being built to finish the shed, other than the door itself.

Note that these are suggested or typical orders of installation and the order may be changed by on site conditions.

### What Fasteners to use to Install Trim

**Soffit, Fascia, Corner Trim:** Use 8d galvanized nails or 2 1/2" exterior screws.

**Door Trim:** Use 2 1/2" Exterior Screws.

## How To Measure, Cut and Install a Trim Piece

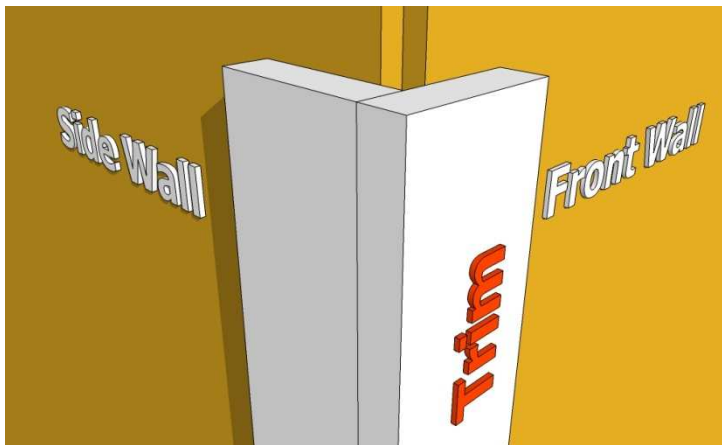


### 1 - MEASURE, MARK and CUT THE TRIM

1. Cut a piece of trim 2 inches, or more, longer than is needed.
2. Hold the piece of trim up to the spot it will be installed and adjust its location so it is exactly where you want it to be installed.
3. Mark the cut location by taking a utility knife and pressing the blade into the corner of the trim where it needs to be cut. (A pencil can be used but the knife blade makes a much more accurate mark on the wood.)
4. Move the trim piece to your saw and cut it on the waste side of mark.
5. Hold the piece(s) where they will be installed and check for proper fit.
6. NOTE: Some pieces of trim, like eve fascia or soffit it may be easier to measure the size of the trim piece using a tape measure.

## How to Install Corner Trim

Install the corner trims after the soffit and fascia trim are installed. The corner trim needs to butt up to the underside of the soffit or roof decking.

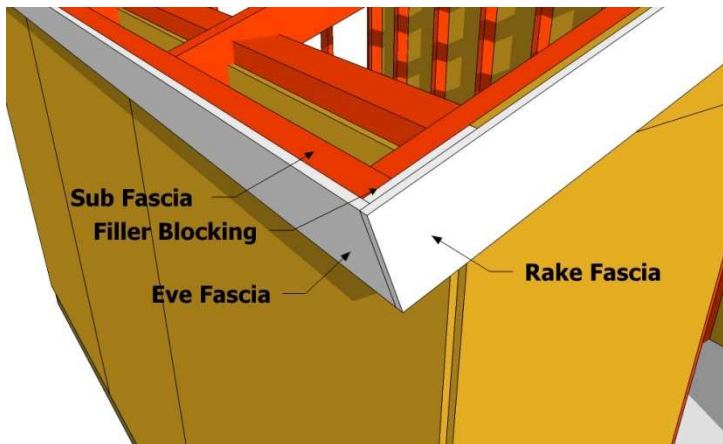


### 1 - CORNER TRIM

1. Corner trim is installed so that you do not see the joint between the two pieces from the "Front" of the shed. This is done by having the trim that is on the "front" of the shed overlap the trim that is on the "side" of the shed.
2. Measure and cut the soffit side wall piece first. It will go from the bottom of the roof soffit to the bottom of the wall siding.
3. Hold the soffit side corner trim up to its install position and hold a piece of scrap trim on the gable wall corner of the shed to help you align both pieces.
4. Nail on the SOFFIT SIDE wall piece.
5. Cut the GABLE wall corner trim slightly longer than necessary with the top angled the same angle as the roof pitch and the bottom an inch or more longer than is necessary. Hold it up in place, flush with the edge of the soffit side wall trim and mark the cut location on the bottom with a utility knife.
6. Install the trim on the other corners of the shed in the same order so that when looking at the sides of the shed the trim looks symmetrical.

## How to Install Fascia

Fascia designs vary depending on the design of the shed overhangs and your personal choice. The Rake Fascia may be installed directly onto the siding or onto the rafter lookouts depending on the shed roof design.

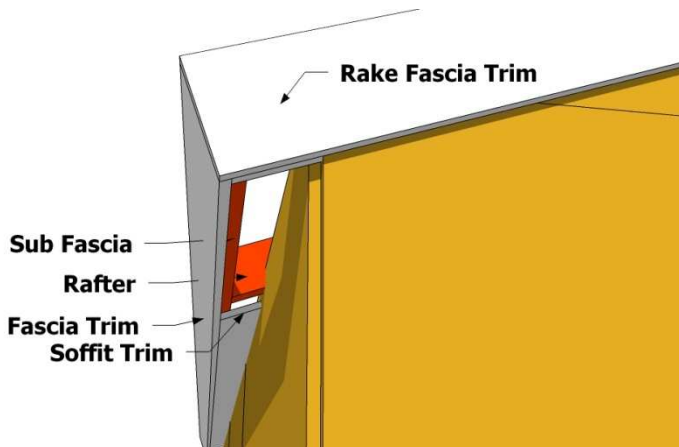


### 1 - FASCIA TRIM

1. Fascia trim is installed so that rake fascia overlaps the eve fascia.
2. Cut the Fascia Trim pieces to length as described in the How To Measure, Cut and Install a Trim Piece instructions above.
3. Hold the trim pieces on the sub fascia or siding in their install location. Line the edges up flush with each other.
4. Nail or screw the trim pieces to each other and to the shed using 8d galvanized nails or exterior screws.
5. Install the trim on the other rake and eve in the same manner.

## How to Install Soffit

The Soffit Trim is installed under the eaves of the roof to cover the rafters from below. The eve overhang design may be different than shown below but the process of installing the soffit is the same.

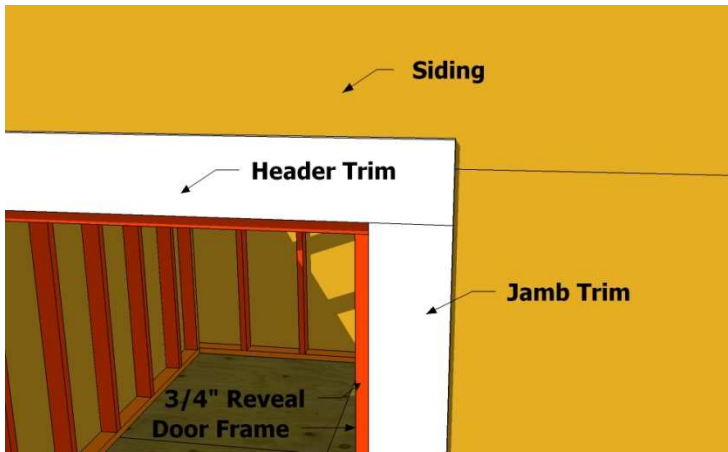


### 1 - SOFFIT TRIM

1. Cut the soffit trim pieces to length as described in the How To Measure, Cut and Install a Trim Piece instructions above.
2. Hold the trim pieces on the rafter or lookout bottoms in their install location. Make sure there is a good fit, trim as needed.
3. Nail or screw the soffit trim pieces to the shed using 8d galvanized nails or exterior screws.
4. Install the soffit trim on the other rakes and eaves in the same manner.

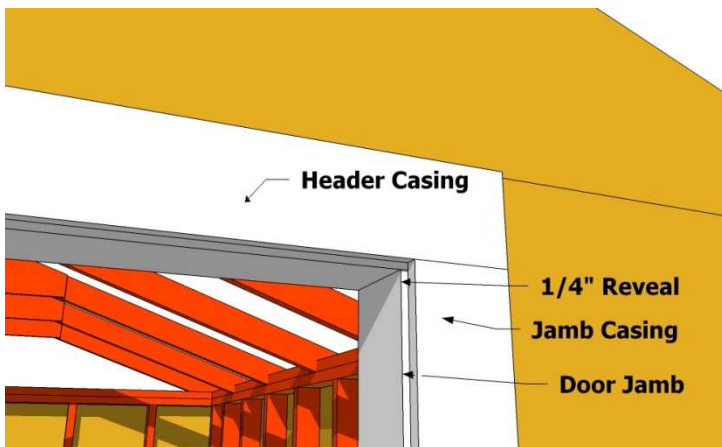
## How to Install Trim Around Doors

**Home Built Doors:** Home built door openings are trimmed before the door is hung because the door hinges attach to the trim. **Factory Built Doors:** Factory built doors or pre-hung doors as they are also called, are trimmed after the door is hung so that the joint between the door jamb and shed can be covered.



### 1 - HOME BUILT DOOR

1. The trim pieces should align flush with the edge of the siding that is held 3/4" back from the 2x4 door frame on the shed. This is so that the door will fit in the opening.
2. Check for good fit by holding the pieces of trim in their locations to make sure they will all fit together. Start at the top right corner holding the two pieces on the wall and then let the right jamb trim go while still holding the header trim in place and lift the left jamb into place to check for a good fit.
3. Nail the Header Trim on first and then nail on the Jamb trim pieces using 8d galvanized nails or exterior screws.



### 1 - FACTORY BUILT DOOR

1. After hanging the door you will need to install the trim to cover the connection between the door jamb and the shed door rough opening.
2. The trim pieces should be held back from the inside corner of the jamb 1/4".
3. Check for good fit by holding the pieces of trim in their locations to make sure they will all fit together. Start at the top right corner holding the two pieces on the wall and then let the right jamb trim go while still holding the header trim in place and lift the left jamb into place to check for a good fit.
4. Nail the Header Trim on first and then nail on the Jamb trim pieces using 8d galvanized nails or exterior screws.

## CUSTOMIZING YOUR SHED

### How To Install A Loft Floor

Loft floors can be installed in many styles and sizes of sheds. If you are installing a loft floor it may be helpful to install the floor before installing the roof as it will allow you to use the loft as a platform to work from. The floor platform is built by installing floor joist either on top of the wall plates or by attaching them to the sides of the wall studs and adding additional wall stud support below. NOTE: IF YOU INTEND TO INSTALL JOISTS BY ATTACHING THEM TO THE WALL STUDS YOU MUST BE SURE TO LAY OUT THE WALL FRAMING FROM THE SAME END OF THE SHED. IE. BOTH WALLS NEED TO BE LAID OUT FROM THE REAR OF THE SHED.



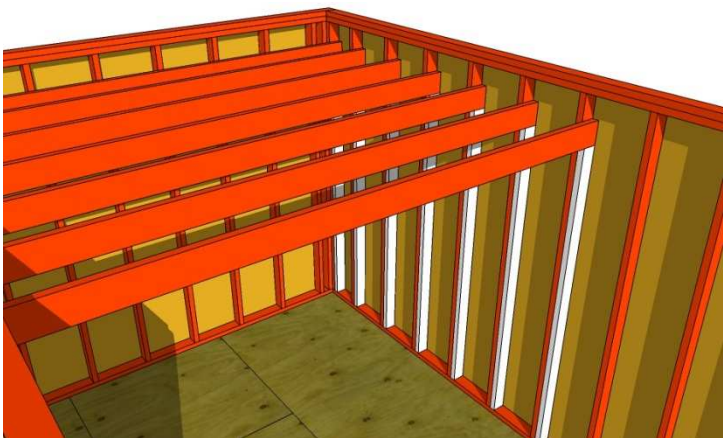
#### 1 - MARK THE BOTTOM OF JOIST HEIGHT

1. Measure up from the floor to the height shown on the plans or your desired height and mark where the bottom of the joists will be.
2. Make sure that your joists will fit above the line.



#### 3 - CUT AND INSTALL THE SUPPORT BOARDS

1. Cut a support board to length and test fit it the support boards next to their respective wall studs.
2. Make sure that the tops line up with the mark designating the bottom of the loft floor joists and are resting firmly on the wall bottom plate.
3. Nail the support boards to the wall studs using 12d nails at 12 in. o.c.



#### 4 - SET THE LOFT FLOOR JOISTS

1. Set the loft floor joists on top of the support boards and nail the ends to the side of the wall studs using 3 - 12d nails at each end.
2. Check each one for level before nailing it on.

**5 - INSTALL THE FLOOR SHEETING** - See the How To Install Floor Sheeting section in this manual to learn how to install the loft floor sheeting.

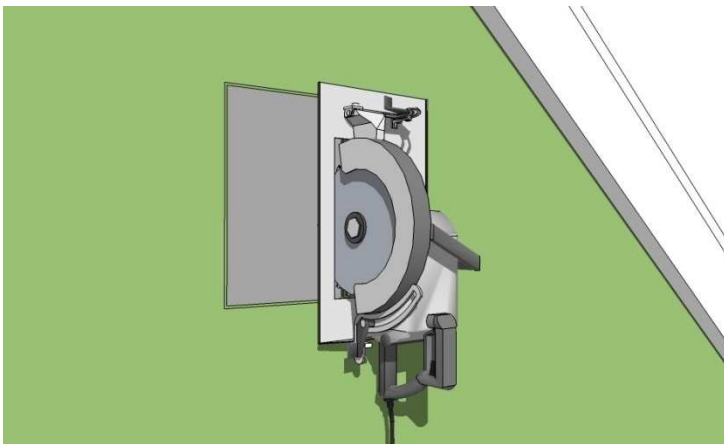
## How To Install A Gable Vent

Gable vents are purchased as an assembled and ready to install unit. They are installed by cutting a hole in the wall and attaching the vent over the hole. You want to purchase a gable vent that has a flush back side so that it will fit over any size hole that is smaller than the nailing flange on the vent. The flush back side will also allow you to install the vent over any truss members that may be present behind the siding. These vents are available at most home stores and specific colors and sizes can be ordered at the contractors desk if they do not stock it.



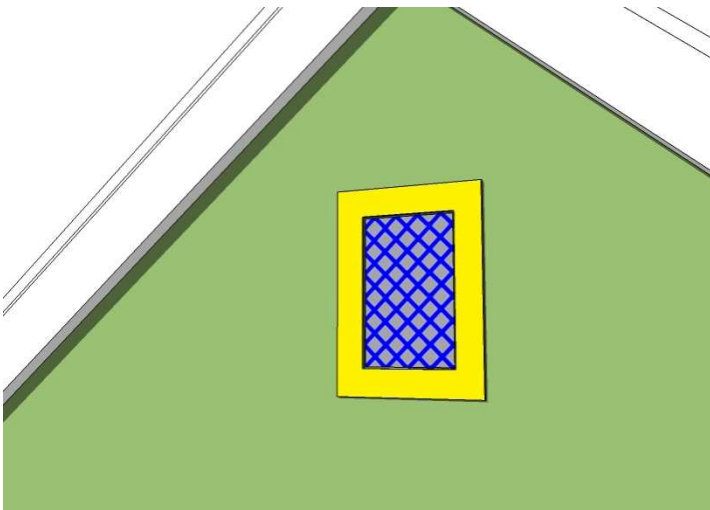
### 1 - LOCATE THE OPENING

1. Mark the vent opening on the wall and make sure that the hole is small enough so the nailing flanges on the vent will be able to be supported by the siding after the hole is cut. Verify the manufactures recommended opening size.



### 2 - CUT THE HOLE

1. If there is framing behind the siding where the vent will go make sure that you set the saw depth to 1/2" and only cut the 1/2" O.S.B. or Siding.
2. The vent should be designed to go over any framing behind the siding because it has a flat back.



### 3 - ATTACH THE VENT/FLANGE ASSEMBLY

1. Apply a quality paintable silicone sealant to the back of the nailing flange and then align the vent over the hole.
2. Attach the vent over the hole by screwing through the nailing flanges and into the T1-11 siding or O.S.B. Apply a bead of sealant along the top edge of the flange to wall connection.



#### 4 - INSTALL THE TRIM OR SIDING

1. If you are installing the vent directly to the exterior side of T1-11 siding or similar product then you will attach trim over the nailing flange. If you are using siding over O.S.B. then install siding over the nailing flange. And up to the edge of the vent.
2. Apply a thick bead of Paintable Silicone sealant on all the edges of the trim or siding, both where it touches the wall of the shed and the vent.
3. If you are using a two part vent make sure that the silicone does not interfere with the top trim that will snap on over the trim or siding.



#### 5 - INSTALL THE TRIM CAP (IF USED)

1. Snap the vent trim on over the trim or siding.

## How To Install Soffit Vents

**1** - SOFFIT VENTS -Soffit vent designs vary depending on the type of soffit installed.

1. OPEN SOFFIT: For open soffits with blocking between the rafters you will drill 3 - 2" holes in the blocking. Install screen material behind the holes using a staple gun.
2. BOXED EVE SOFFITS: Either drill holes and install screen behind the hole or insert pre made vent covers for the 2" holes. You may also cut slots and install screen material behind the hole or a pre made vent.

## ATTACHED LEAN TO POST AND BEAM SHEDS

Attached Post and Beam Lean To Sheds are built by attaching the shed to an existing structure and building the front of the shed using posts with header beam on top of them. The roof rafters attach to the existing structure on one end and sit on the beam on the other.

There are several ways to install post bases. This describes placing the post bases on a jig and then pouring the concrete around the bolt on the base. You may also install the concrete footings first and then drill in the post base using a roto hammer. Or use a pre cast post base which is not as permanent as a poured footing.

### FIND AND MARK THE POST LOCATIONS

1. Put a mark on the Existing Structure wall at ground level. This is your First Wall Mark. The wall marks will mark both the vertical location and the horizontal location along the wall.
2. Measure down the wall the length of the shed and place a Second Wall Mark. Find the height of the Second Wall Mark by using a straight board with a level on top of it to mark the vertical location of the second mark. Have a helper hold the bottom of the straight board on the first mark and when it is level place a horizontal cross mark across the Second Wall Mark.
3. Place a stake in front of the Second Wall Mark by measuring the diagonal from the First Wall Mark to the post location in front of the Second Wall Mark and move the stake to match the diagonal shown on the plans. Make sure to keep the exact distance from the wall and diagonal when moving the stake.
4. Place a stake at the second post in front of the First Wall Mark in the same way you placed the first one and double check the distance between the two stakes. The distance should match the distance between the two wall marks. Adjust the locations until all the dimensions match what is shown on the plans.

### DIG THE HOLES

1. Dig holes for the concrete footings. Make sure you are deep enough to be below local frost depths.
2. Remember that your stake was at the outer corner

**INSTALL THE POST BASES** Build a square wood jig to hold the post bases while you pour the concrete.

1. Cut two 2x4 boards to the length of the shed, the same as the distance between the First and Second Wall Marks. These are called the Wall Length Boards. Cut two more 2x4 boards to about 6 inches longer than the distance from the Existing Structure to the post locations. The second set of boards are called the Post Base Boards.
2. Measure from one end of each Post Base Boards and mark the dimension from the Existing Structure to the face of the post.
3. Screw the Wall Length Boards between the two boards. One will be about 12 inches to the inside of the Post Marks on the wall side. The second board will be flush with the end of the boards.
4. screw the post bases to the Post Base Boards about a quarter inch from the marks. They are just a little narrower than the post and this insures that they do not hang over. Make sure that both bases are at the same locations on their respective boards.
5. Set the Wall Length Board that is flush with the ends of the Post Base Boards against the wall and align it with the First and Second Wall Marks. make sure it is at the height you want the post bases to be at and level the board. Use wood stakes driven into the ground to hold it in place. You can use screws through the stakes.

6. Square the Jig up. Measure diagonally from the wall marks to the marks on the Post Base Boards. When the diagonals are equal install stakes next to the boards and make the jig level both from the wall out and between the two post bases. Screw the stakes to the jig.
7. DOUBLE CHECK ALL YOUR MEASUREMENTS. (Diagonals, distance from wall, height above ground etc.)

#### POUR THE CONCRETE

1. Mix and pour the concrete footings to the bottom of the post bases.

#### SET AND CUT THE POSTS

1. Set the posts onto the post bases and attach the post base to the post using Galvanized Screws or Bolts.
2. Stabilize the posts using temporary angle braces that are screwed to the sides of the posts in at least two directions. Make sure that the posts are plumb, straight up and down.
3. Find the height of the bottom of the beam on one of the posts. Mark the location and cut the post at the mark.
4. Use a STRAIGHT board that is long enough to reach from one post to the other and set it on top of the post that is cut to length.
5. Put a level on top of the board and make the board level.
6. Mark the second post where the bottom of the level board touches the second post.
7. Cut the second post so it is the same height as the first post.
8. Use the straight board to temporarily attach the two posts to each other at the exact distance apart from each other shown on the plans. The straight board can be screwed to the posts about 12 inches down from the tops.

#### SET THE BEAM

1. Install the post caps on the posts using galvanized screws or bolts.
2. Cut the beam to length while on the ground.
3. Nail the beam together if using LVL's
4. Set the beam on the post caps and center it in its proper location.
5. Attach the post caps to the beam using galvanized screws or bolts.

#### MARK THE LEDGER BOARD LOCATION

1. Find the height of the Ledger Board Mark by measuring up from the First and Second Wall marks and marking the horizontal height of the Ledger Board location. Check that the two marks are level with each other using a long straight board with a level on it. Mark the line.
2. Find the horizontal location along the line on the wall by using a straight board with a level on it. Have a helper hold the bottom of the straight board on the First Wall Mark. Put the level on the side of the board, when it is plumb place a vertical cross mark across the horizontal Ledger Board Location mark. Repeat with the Second Wall mark.
3. Double check the distance between the two marks on the Ledger Board Mark.

#### CUT AND TEST A RAFTER

1. Cut a rafter according to the plans and the instructions described in the How To Build Shed Rafters With Birds Mouths section of this manual.
2. Set the rafter on the beam and test its fit up to the wall. Have a helper hold the Ledger Board on the wall There should be a 1 1/2" gap at the peak so the ledger board will be able to fit.

3. Check that the seat cut on the rafter is setting flush or close to it and that the ridge of the rafter is flush with the ledger board. You may need to slightly move the ledger board up or down to make the cuts flush. It is tough to get perfect because even the width of the saw blade can make a difference. Get it as close as possible. It should be very close to the line you marked originally.

#### ATTACH THE LEDGER BOARD

1. Install flashing behind the ledger board so that any water that goes behind the ledger board will go out in front of siding installed below the ledger board.
2. Hold the board in place horizontally between the First and Second Wall Marks and vertically on the line and attach the ledger board to the wall using Lag Bolts per the plans.

#### CUT AND SET THE RAFTERS

Cut the remaining rafters out.

Mark the rafter layout on the Ledger Board and the Beam. Start the layout from the same end.

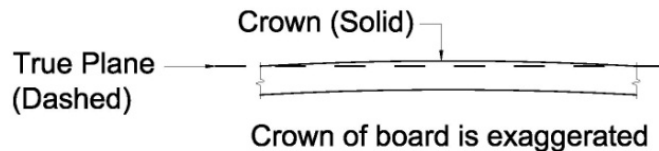
Set each rafter on its respective layout marks and attach it to the Beam and Ledger Board using the hangers shown on the plans.

## ATTACH TREATED BOTTOM PLATE TO CONCRETE SLAB

1. You will snap the inside of the walls locations on the slab, inside the bolt perimeter. Make sure it is square. The diagonal is 28' 1/2".
2. Layout the plates wall stud locations on the treated plate and one top plate.
3. Stand the treated plate on its edge and align the treated plate with the marks on the slab while setting it next to the bolts. Use a pencil to scribe up both sides of the bolts on the plate.
4. Measure in from the line to the center of the bolt and transfer that dimension to the board at each bolt.
5. Use a 3/4" drill bit to drill the holes on the bottom plate.
6. Set the plate over the bolts to make sure they all line up and the plate aligns with the interior of the wall line on the floor. Adjust if necessary.
7. Remove the plate off the bolts and use it to frame the wall.
8. Stand the wall and set it over the bolts.
9. Use washers and nuts to attach the wall to the bolts in place.

## FRAMING TIPS

### How to Crown a Board

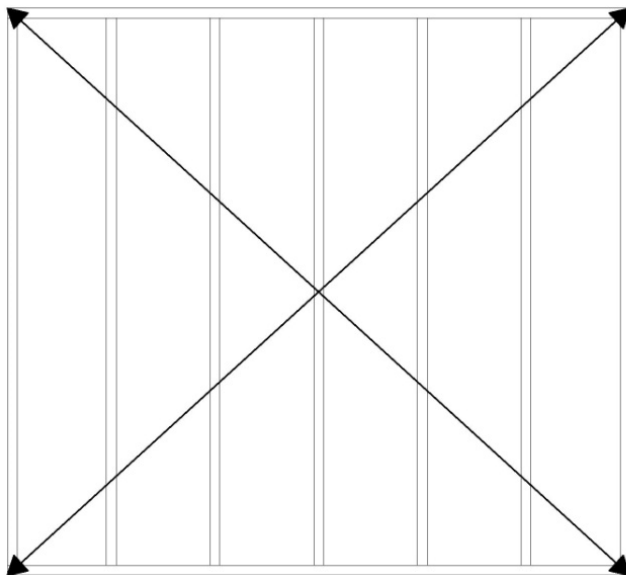


#### CROWNING A BOARD

The crown of a board is the deflection or bow in the board. To see the crown look down the narrow edge of the board to see the bow in it. Set the board down with the crown on the upper edge.

All boards have a crown, some crowns are just easier to see than others. If the board has too much of a crown it should not be used. Making all the crowns in the same direction makes it easier to install siding or drywall and helps the wall look straighter without waves in and out between studs.

### Steps To Square a Wall or Floor



Any time you build a wall or floor you must make it square before installing the sheathing.

1. Attach the floor rim boards to the rim joists or the wall studs to the wall plates.
2. Nail One of the floor rim joist boards or wall top plates to the floor using a 8d nail at each end.
3. Measure the diagonals from corner to corner.
4. Make the two measured distances equal by pushing inward on the unattached corner with the longer diagonal measurement.
5. When the measurements are equal the floor or wall framing is square and ready to be sheathed so it stays square.
6. Tack nail the rim joist that you moved to the floor so it cannot move while sheathing the wall.
7. Sheet the wall with O.S.B. sheathing or T1-11 siding, depending on what your shed plans call for. Nail sheathing 12" on center in the middle of the sheet and 6" on center along the edges.

## Understanding Shed Wall Heights:

Shed wall heights vary by plan.

--7'-7" wall height allows a regular factory built door to be installed with a 2x6 header above it and no additional blocking above the door. This wall height makes it possible to install the T1-11 siding without a joint at the top that requires additional blocking and "Z" metal flashing on eve sides of the shed. It requires cutting of framing studs to 7' 2-1/2" The gable walls will still need a siding joint and blocking behind it.

--8'-1" wall height allows a regular factory built door to be installed with a 2x6 header and then additional blocking above it. This wall height is used when framing walls with pre-cut 92 5/8" framing studs. This reduces the amount of cutting of the framing studs but requires blocking to be installed at the top of the 8' sheets of T1-11 siding.

--6'-5" wall height is used when building a shorter home built door and the shed plans call for 2x4 headers. It reduces the materials needed to frame the shed.

--6'-7" wall height is used when building a shorter home built door and the shed plans call for 2x6 headers. It reduces the materials needed to frame the shed.

## Understanding Doors and Windows

**DOOR OPENING FRAMING** - The construction plans show door rough openings. For purchased Pre-Hung doors the rough opening is larger than the door so that the door jamb has space to be installed. For Home Built doors the rough opening becomes the actual opening size when the door is hung. Some shed plans have the option for both a Pre-Hung doors or Home Built doors.

**VERIFY DOOR AND WINDOW OPENINGS** - Some door and window manufacturers rough opening requirements may vary from the plans. It is the owners/builders responsibility to verify that the rough openings are framed to fit the doors and windows that you plan to install before framing the walls. It is recommended to have the doors and/or windows on site before framing the walls so that the opening sizes can be site verified.

**HOME BUILT DOORS** - Our home built door plans are designed to overlap the shed wall on the outside. The siding on the shed must be left back 1" from the door opening to allow for this overlap. See door construction plans. If the siding has already been installed to flush with the opening you can set a circular saw to the siding depth and run it up the cut line 1 inch back from the door opening.

**PRE-HUNG DOORS** - Pre-hung doors come with the door slab hung on a door jamb. The whole assembly is inserted into and attached to the rough opening of the shed. The shed trim covers the gaps between the door jamb and the shed framing.

## WINDOWS

Most window manufacturers make the windows after they are ordered. This means that different sizes are easily purchased. It is likely that your local home store does not stock the size of window you need. It is best to order the windows through the home stores door and window specialist or to contact a local window manufacturer's representative. They will ask for your rough opening size and the type of operation, (how it opens), desired.

## How Many Nails And Fasteners Are Needed To Build A Shed

This table will help you figure out how many nails are needed when framing different parts of a shed. FIRST determine what you are framing, ie a wall or floor etc. SECOND count how many of the members are being used, ie. 6 pieces of wall sheathing. THIRD read How Many Nails Used To Install. FOURTH multiply the number of nails by the number of pieces of wall sheathing. FIFTH read the How Many Nails In A Box table to determine the size of box to purchase.

| NAILING SCHEDULE (Use Common Nails for framing and box nails for trim) |                                                                   |                                                                                                                 |
|------------------------------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| CONNECTION TYPE                                                        | NAIL TO USE                                                       | NAILING PATTERN                                                                                                 |
| Roof Sheathing                                                         | 8d 2-1/2" vinyl coated                                            | 6in. on center along the edges and 12in. on center in the field (center of the sheet)                           |
| Gussets on Trusses and Rafters                                         | 6d 2"                                                             | 2in. on center and 1/2" from edges                                                                              |
| Wall Sheathing or Siding                                               | 8d 2-1/2" galvanized                                              | 6in. on center along the edges and 12in. on center in the field (center of the sheet)                           |
| 2x4 Wall Plate to Wall Stud                                            | 12d 3 1/4" vinyl coated                                           | 2 nails                                                                                                         |
| 2x4 Wall Plate to Floor Framing                                        | 12d 3 1/4" vinyl coated                                           | 2 nails every 16 in. Try to nail through floor into floor joists.                                               |
| Trim Boards                                                            | 6d 2" stainless steel                                             | 2 nails every 16in. "split-less" ring shank stainless are better and will not rust as easily as the galvanized. |
| Rim Board to Floor Joist                                               | 12d 3 1/4" vinyl coated                                           | 3 nails                                                                                                         |
| Rim Board to Foundation Rail                                           | 8d 2-1/2" vinyl coated                                            | 1 nail 6in. o.c.                                                                                                |
| Floor Joist to Wood Foundation Rails                                   | 8d 2-1/2" galvanized                                              | 3 nails, Toe Nailed                                                                                             |
| Roof Rafters/Trusses To Top Plates                                     | 8d 2-1/2" vinyl coated                                            | 3 nails                                                                                                         |
| Roof Purlins to Rafters (2x4)                                          | 12d 3 1/4" vinyl coated                                           | 2 nails, Face Nailed                                                                                            |
| Roof Purlins to Rafters (1x4)                                          | 8d 3 1/4" vinyl coated                                            | 2 nails, Face Nailed                                                                                            |
| 2x6 Floor Boards                                                       | 3" Deck Screws                                                    | 2 nails                                                                                                         |
| Asphalt roofing and Drip Edge                                          | 1 1/4" long, 12 gauge, 3/8" head                                  | 5 nails                                                                                                         |
| Corrugated Roofing                                                     | 1 1/2" x 1/4" Hex washer head fitted with Neoprene bonded washers | Verify with roofing manufacturer                                                                                |

| HOW MANY NAILS USED TO INSTALL |     |
|--------------------------------|-----|
| 4X8 Sheet                      | 52  |
| Roofing - Per Square           | 320 |
| Trim- per 10 foot piece        | 11  |
| Trusses 50 per truss           | 50  |
| Floor Joists 6 per joist       | 6   |
| Wall Frame 5 per lf.           | 5   |

| HOW MANY NAILS IN BOX |        |      |
|-----------------------|--------|------|
| Quantities per pound  | 5lb.   | 1lb. |
| 8d nails Sinkers      | 725    | 150  |
| 8d nails Galvanized   | 530    | 100  |
| 12d nails             | 405    | 80   |
| Roofing Nail          | 1090   | 218  |
| 6d Trim nails         | 690    | 167  |
| 4d Trusses            | (1lb.) | 527  |

## Shed Foundations

Sheds are typically built on top of the ground without a foundation that goes into the earth to below the frost depth in the area it is being built. Alternate foundations are provided for the most common shed sizes.

Materials lists for alternate foundations are found on the alternate foundation plans.

## Tools and Materials Needed to Build a Shed

### TOOLS

Shovel  
Level, 4' works best  
Hammer  
Ladder  
Pencil  
Tape Measure  
Framing square  
Chalk Line  
Utility knife  
Circular saw  
Electric Drill with screw driver bit  
Grabber Screws (to build the door)

NAILS (see nailing schedule)

LUMBER (see materials lists on plans pages)

### PAINT

Caulking  
Primer  
Paint roller and Roller cover  
Paint roller pan  
2" Paint brush  
Roofing Tools  
Tin snips to cut drip edge  
Door gate hardware per owner