

Designing a Traditional Pole Barn Structure

Reference Number: **KB-01069**

Last Modified: **June 8, 2022**

The information in this article applies to:



QUESTION

I am an experienced Chief Architect software user and would like to create a structurally detailed pole barn type building in my program version. How can I do this?



ANSWER

Chief Architect is designed to allow you to quickly model conventionally framed structures. A pole structure, however, does not fall into the category of conventional framing, so when building a pole barn, we need to use the program's framing and CAD tools creatively.

Note: This article assumes that the reader is familiar with and comfortable using default settings, creating and using custom layers, creating custom wall types, and using the manual framing and CAD editing tools.

There are a number of distinct tasks involved in this project:


- To prepare to draw the structure
- To draw the perimeter walls and doors
- To place the posts and add the slab
- To frame the doors
- To create the girts
- To build the roof
- To create the roof trusses

- To create the lower truss blocking
- To create the upper truss blocking
- To generate the subfascia
- To draw the purlins
- To create 3D views

Before starting work on any drawing, it is important to set up the correct default settings, particularly for the structural aspects of the plan.

As you set up your defaults, you can also set up defaults for door styles and materials for roofing, casing, doors and other items; however only structural defaults are discussed in this example.

To prepare to draw the structure

1. Select **Edit> Default Settings**  from the menu to open the **Default Settings** dialog.
 - To expand a category in the tree list and view its subcategories, click the arrow to the left of its name.
 - To open the defaults dialog for a line item, click on its name and then click the **Edit** button, or simply double-click on its name.
 - Some defaults - notably, Dimensions - have multiple Saved Defaults. Each Saved Default's name is included in the name of its defaults dialog, and will be noted in the steps that follow.
2. In the **1/4" Scale Dimension Defaults** dialog, on the LOCATE OBJECTS panel:
 - Click the radio button beside **Wall Dimension Layer**.
 - Click the radio button beside **Primary Wall Side**.
 - Check the box beside **Rough Opening**.

3. In the **Auto Exterior Dimension Defaults** dialog, on the LOCATE OBJECTS panel:
 - Click the radio button beside **Wall Dimension Layer**.
 - Click the radio button beside **Primary Wall Side**.
 - Check the box beside **Rough Opening**.

4. In the **Exterior Door Defaults** dialog, specify the type of exterior man-door that you would like.

In this example, the **E11** door from the Library is used.

5. In the **Garage Door Defaults** dialog, specify the type of garage door that you would like.
 - In this example, the **Garage Door CHD09** from the Library Browser is used.
 - The **Door Height** is set at 10' and the **Door Width**, at 12'.
 - On the FRAMING panel, specify all **Rough Opening** values as 0".

6. In the **1st Floor Defaults** dialog:
 - On the STRUCTURE panel, specify the desired **Rough Ceiling** height, which determines the wall's top plate height and also the height of the roof trusses' bottom chords. In this example, 12' is used.
 - Also on the STRUCTURE panel, check the box beside **Monolithic Slab Foundation**.
 - On the MOLDINGS panel, use the **Delete** button to remove the Molding profiles assigned to this floor.

7. On the FOUNDATION panel of the **Foundation Defaults** dialog:

- Click the radio button beside **Monolithic Slab**.
- Specify the desired **Slab Thickness**. In this example, 4" is used.
- Click the **Edit Default Slab Footing** button and specify the desired Footing size. In this example, the default 16" x 8" footing is used.



8. In the **Framing Defaults** dialog:

- On the **BEAMS** panel, click **Edit Roof Beam Defaults**. In this example, the **Depth** is set to 11 7/8", the **Width** is 3 1/2" and the **Type** is LVL. This is the equivalent of two 1 3/4" LVL members laminated together.
- On the **POSTS** panel, click **Edit Post Defaults** to specify the desired **Post Size**. In this example, both widths are set to 7 1/2" and the **Type** is Lumber.
- Also on the **POSTS** panel, specify the **Post Footings**. In this example the **Thickness** is 48", the **Width** is 24" and the radio button beside **Round** is selected.
- On the **ROOF** panel, do not make any specifications at this time. We will discuss Roof defaults when we actually build the roof.
- On the **TRUSSES** panel, specify the desired **Member Depth** values. In this example, the **Top Chord**, Bottom Chord and **Webbing** are set at 5 1/2" and **Require Kingpost** is checked.


9. In the **Exterior Wall Defaults** dialog:

- On the **WALL TYPES** panel click the **Define** button to open the **Wall Type Definitions** dialog. Create a new custom wall type with three layers for our default exterior walls. Give the new wall type a short, descriptive name such as "Pole Structure - 8".
- Layer 1 is the exterior siding. Specify the desired **Material** and **Thickness**. In this example, 3/4" of Slate Corrugated Metal roofing is used.
- Layer 2 will be for the girts. Set the **Thickness** as 1 1/2" and the **Material** as

"Opening (no material)". Specify Layer 2 as the Main Layer so that trusses can be placed above that layer.

- Layer 3 is for the posts. The **Material** should be "Opening (no material)". The **Thickness** will be equal to the default Dimensions of our posts - in this example, 7 1/2".
 - In the Wall Settings section, set **Foundation to Exterior of Layer** to layer 3.
 - Because the structure will be manually framed, consider specifying a pale **Fill** color or even solid white for the framed layers so the framing members can be easily seen.
 - For more information about the **Wall Type Definition** dialog, see article **KB-02944 - Defining a New Wall Type** in the [Related Articles](#) section.
10. When finished setting defaults, click the **Done** button at the bottom of **Default Settings** dialog.
11. Select **Build> Roof> Build Roof**  from the menu. On the ROOF panel of the **Build Roof** dialog:
- Specify the desired **Pitch**. In this example, 6:12 is used.
 - Check the box beside **Trusses (no Birdsmouth)**.
 - Specify the desired **Roof Overhang** values. In this example, the **Eave Overhang** is 18" and the **Gable Overhang** is 2 1/2".
 - Uncheck **Automatic Birdsmouth Cut** and set the **Raise Off Plate** value to 8".
12. Confirm that the **Working Layer Set** and **1/4" Scale Default Set** are set in your **Active Defaults** .

If you plan to design pole structures in the future, now is a great time to save your default settings for use as a template plan.

To create a pole structure template plan, select **File> Templates> Save As Template**  from the menu. Give the file a short, descriptive name such as "Pole Structure Template", and save it in the Chief Architect Templates directory, or the location of your choice.


The program will ask if you want to make your new template your default template for new plans. Unless you expect that most of your new projects will be pole structures, click **No**.

Once the defaults are set up, the structure can be drawn.



To draw the perimeter walls and place doors

1. Select **Build> Wall> Straight Exterior Wall** , then click and drag to draw shape of the perimeter.

In this example, a simple 24' x 40' rectangular structure is used. Dimensions were previously set to locate the **girts** wall layer.


2. Click in the room to select it, then click the **Open Object**  edit button. In the **Room Specification** dialog:


- On the **GENERAL** panel, select Slab from the **Room Type** drop-down list.
- On the **STRUCTURE** panel, uncheck **Flat Ceiling Over This Room**.

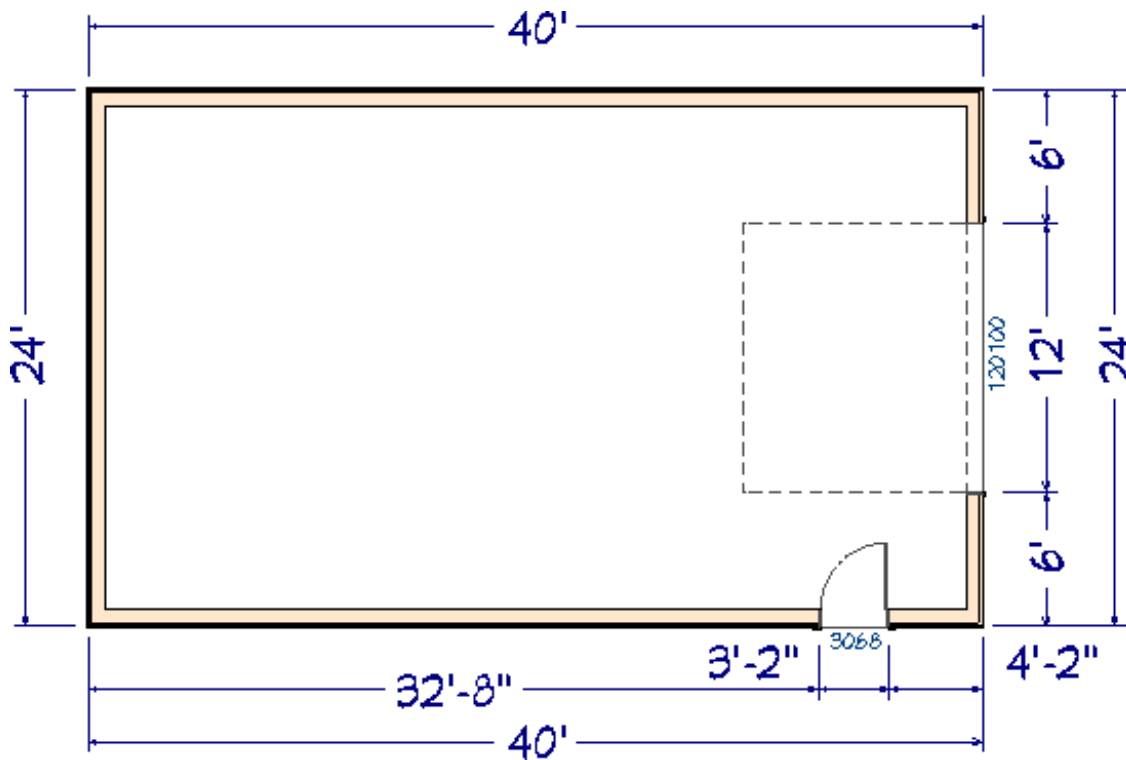
3. Select **Build> Door> Hinged Door** , from the menu, then click on a wall to place a door. Starting in X11, barn doors can be added without using a library object by going to **Build> Door> Barn Door** .

Click on the door near the exterior edge, then use the Temporary Dimension to position it the desired distance from the corner.




In this example, a 3068 door is placed 4' 2" from the lower right interior corner.



4. Select **Build> Door> Garage Door**  from the menu, then click on the left wall to place a garage door at that location.






With the garage door still selected, click the **Center Object**  edit button, then click inside the room to center the door along the wall.




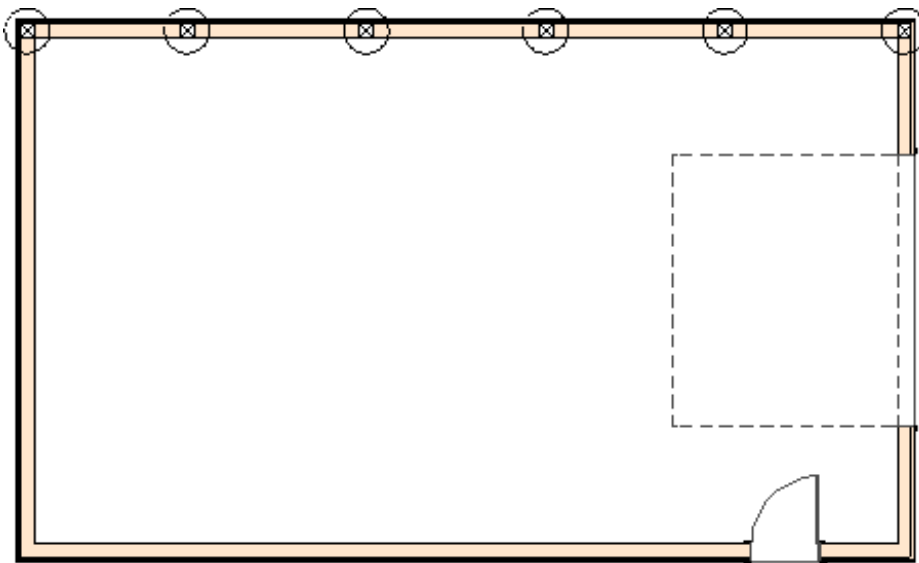
To place the posts and add the slab

1. **Zoom**  in on one of the corners on the right side of the structure, select **Build> Framing> Post with Footing**  and click to place a post with a footing close to the intersection of the two walls.
2. Hold **Shift** and click both the post and footing as a group selection, then use the **Point to Point Move**  edit tool to position the post precisely in the corner of the 7 1/2" main wall layer.

This is easiest if **Object Snaps**  are enabled - particularly **Endpoint Snaps** .

3. With only the post selected, click the **Open Object**  edit button. On the **GENERAL** panel of the **Framing Specification (Post)** dialog:
 - Remove the check-mark from **Raise/Lower**.
 - Click the radio button to **Lock** the **Total Height**, then specify the desired **Top Height**. In this example, the Top Height is 13' 2" (or 158"), which is 14" above the bottom chord of the roof trusses.
 - **Lock** the **Top**, then specify the desired **Bottom Height**. In this example, the Bottom Height is set at -48" so that it extends from the top of the floor, through the 4" slab and 44" into the footing.
4. On the **LINE STYLE** panel of the **Framing Specification (Post)** dialog box verify that the Layer is set to **Framing, Posts**.
5. On the **FILL STYLE** panel of the **Framing Specification (Post)** dialog, Select **Solid** from the **Fill Pattern** drop-down list and set the **Color** to White.
6. On the **MATERIALS** panel you can create a green treated lumber material for the poles. In this example, we copied the material, **CA-B Pressure Treated Lumber**, and blended a green color with it.
7. With the **Select Objects**  tool, click on the footing to select it, then click the **Open Object**  edit button. On the **GENERAL** panel of the **Slab Specification** dialog:
 - Specify the desired **Elevation at Top**. In this example, -4" is used.
 - Specify the desired **Thickness**. In this example, 48" is used.
8. Hold **Shift** and click to select the post and footing and click the **Transform/Replicate Object**   edit button. In the **Transform/Replicate Object** dialog:
 - Check the box beside **Copy** and specify 5 copies.

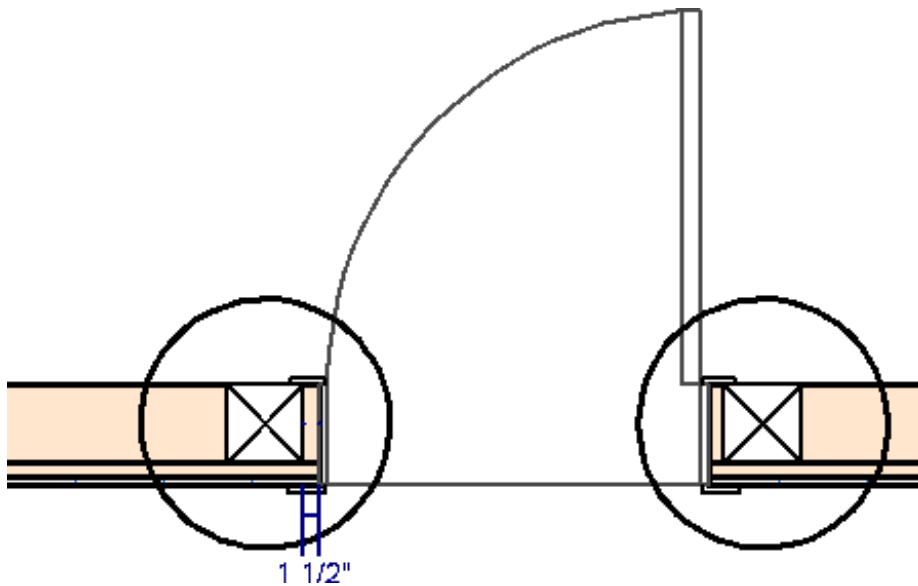
- Check the box beside **Move** and specify the **X Delta** value as -96". This will produce copies at 96" intervals to the left along the X axis.
 - Click **OK** to close the dialog and make the specified copies of the post and footing.
9. Notice that the fifth copy of the post and footing are located beyond the structure. Use the **Point to Point Move**  edit tool to position them at the nearest wall intersection, as in step 2, above.





10. Repeat the steps above as needed to produce posts with footings around the perimeter of the structure.

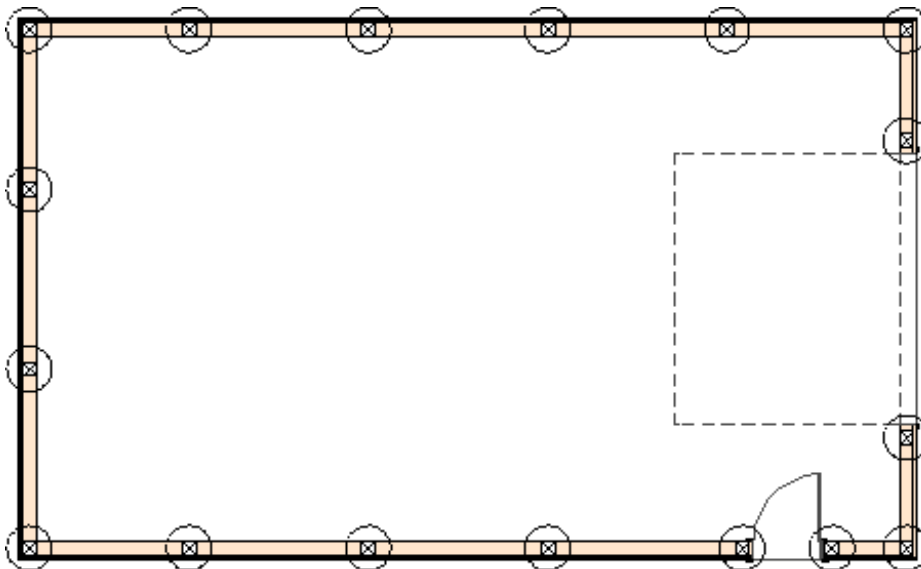
Be sure to pull the post layout from the same end of the structure so that the roof trusses will align properly later.


11. Position posts on either side of the man door, leaving room for the 1 1/2" trimmers.



- To set their position, draw CAD Lines to serve as reference.
- Use the **Copy/Paste**  and **Point to Point Move**  edit tools to make a copy of a post and footing on each side of the door.


12. Use the same process to place posts on either side of the garage door, leaving 3" for double trimmers.




13. Select **Build> Floor> Build Foundation**  from the menu, then click **OK** to build a monolithic slab foundation using the default settings that were created earlier.

With the poles laid out, trimmers and headers for the doors can be added. Using the method described here, you can also build jamb furring if you wish.


To frame the doors

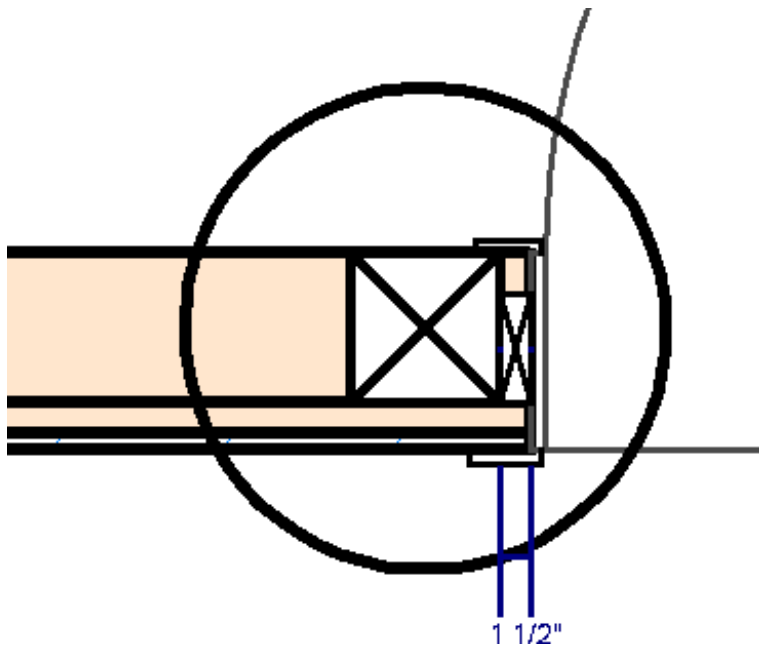
1. **Zoom**  in on the man-door, then:







- Click on the post on the left-hand side of the door to select it.
- Create a copy of the selected pole directly to its left using any method that you choose.

2. Click on the newly copied pole to select it, then click the **Open Object**  edit button. On the **GENERAL** panel of the **Framing Specification (Post)** dialog:

- Change **Width 1** to 5 1/2" and **Width 2** to 1 1/2"
- Remove check-mark from **Raise/Lower**.
- Set the **Bottom Height** to 0" and then lock it.
- Change the **Top Height** so that it is equal to the door height plus its rough opening. In this example, a Top Height of 82" is used.
- On the **LINE STYLE** panel, click **Define** button under the **Layer** heading and place the trimmer on a new custom layer, **Framing, Door Trimmers**.
- Click **OK** to close the dialog and apply your changes.

3. With the post - now a trimmer - still selected, click the **Point to Point Move**  edit button and move it to the outside edge of the nearest post, which is acting as the king stud.






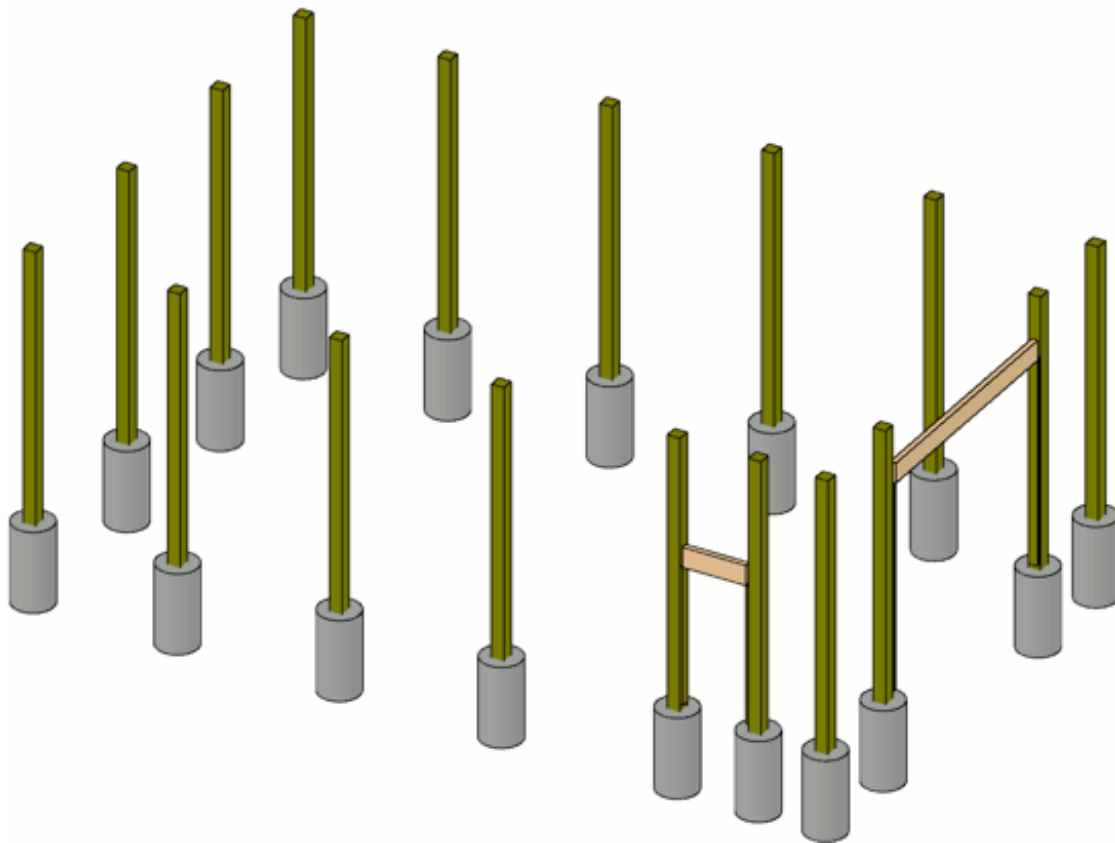
4. With the trimmer still selected, click the **Copy/Paste**  edit button, then use the **Reflect About Object**  edit tool to make a copy that lines up with the edge of the post on the other side of the door.
5. Repeat the steps above to make trimmers for the garage door.
 - To change the orientation of the trimmer, reverse its Width 1 and Width 2 values rather than rotate it.
 - Specify a **Top Height** of 122".
 - Make a copy of the first trimmer next to the original to create a double trimmer configuration.
6. Hold **Shift** and select the two trimmers and use **Copy/Paste**  and **Reflect About Object**  to create the trimmers for the other side of the garage door.
7. Select **Build> Framing> General Framing**  from the menu, then draw a framing member between the two posts on either side of the garage door to create a header.
8. Click on the header to select it and click the **Open Object**  edit button. On the

GENERAL panel of the **Framing Specification (General Framing)** dialog:

- Lock the **Depth** and set the **Bottom Height** to 122".



Note: In this example, the Depth is 11 7/8".

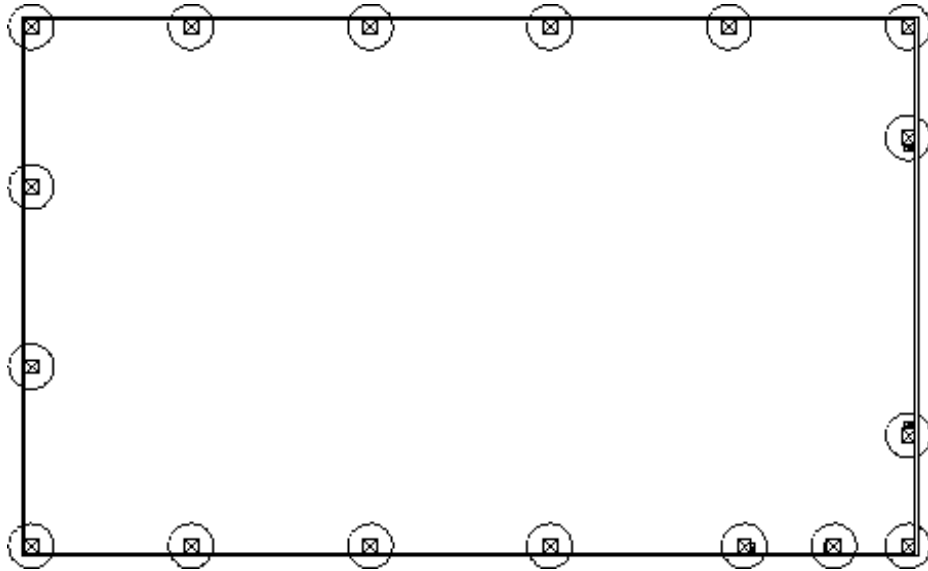
- Specify the **Width** as 3 1/2". This thickness is the equivalent of two 1 3/4" LVL members laminated.
 - Click the **Type** drop-down list and select LVL.
 - On the **LINE STYLE** panel, click the **Define** button under the **Layer** heading and place the beam on a new custom layer: **Framing, Headers**.
 - Click **OK** to close the dialog box and apply your changes.
9. Once it is resized, use the **Point to Point Move**  edit tool to position the header exactly along the exterior edge of the trimmers.
10. Use the same process to create a header over the man-door.
- Although not required structurally, in this example the man-door header is also using LVL. The **Depth** is 11 7/8", the **Bottom Height** is 82", and the **Width** is 3 1/2".
 - After the header piece is created, position it on the outermost edge of the trimmers with the **Point to Point Move**  edit tool.
11. Select **3D> Create Orthographic View> Framing Overview**  to see the results so far.






Once the poles and door framing is complete, girts can be added. The base girts can serve as the form for the concrete floor if you wish.


To create the door-level girts

1. Return to floor plan view and select **Tools> Layer Settings> Display Options**  from the menu to open the **Layer Display Options** dialog:
 - Create a layer called **Framing, 2 X 6 TRT Girt (Base)**.
 - Create another layer called **Framing, 2 X 6 FIR Girt**.
 - Turn off the display of the **Framing, Headers** and **Walls, Normal** layers.
 - Lock the **Footings, Post** layer but leave it set to display.
 - Click **OK** to close the dialog and apply your changes.
2. Select **Build> Framing> General Framing**  from the menu, then click and drag to draw a framing member along the length of each wall.




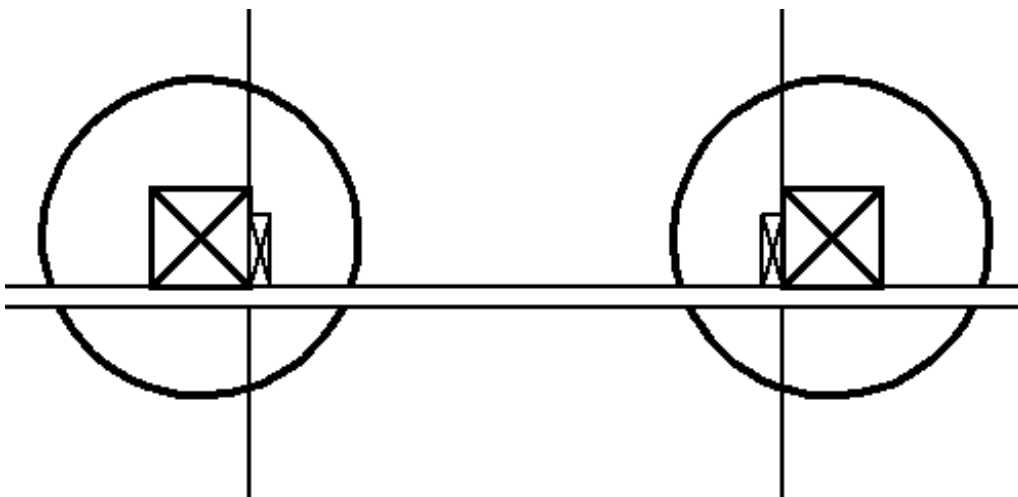
- Position these base girts so they are located just outside of the posts.
 - The girt ends should line up so that they lap (or interlock) on the corners.
3. Hold **Shift** and click to group-select the four girts and click the **Open Object**  edit button. In the **Framing Specification (General Framing)** dialog:
- On the **GENERAL** panel, set the **Depth** to 5 1/2", then **Lock** the **Depth** and set the **Top Height** to 0".
 - On the **LINE STYLE** panel, place the girts on the new **Framing, 2 X 6 TRT Girt (Base)** layer.
 - On the **MATERIALS** panel, select a Pressure Treated Lumber material from the Library Browser.
 - Click **OK** to close the dialog and take a moment to confirm that all four girts are still positioned correctly.
4. With the four base girts still selected, click the **Transform/Replicate Object**  edit button and:
- Check the box beside **Copy** and specify 1 copy.
 - Check the box beside **Move** and specify 24" as the **Z Delta** value.

5. The newly created girts will be selected. Click the **Open Object**  edit button to open the **Framing Specification (General Framing)** dialog:
 - On the **GENERAL** panel, confirm that the **Top Height** is set at 24".
 - On the **LINE STYLE** panel, click the **Define** button under the Layer heading to open the **Layer Display Options** dialog. Turn off the display of the **Framing, 2 X 6 TRT Girt (Base)** layer, and click **OK**.
 - Select **Framing, 2 X 6 FIR Girt** from the **Layer** drop-down list.
 - On the **MATERIALS** panel, specify the material as regular Fir Framing.
 - Click **OK** to close the dialog and apply your changes.


6. With the four untreated girts still selected, use the **Transform/Replicate Object**  edit tool to make additional girt rows as needed at the desired Z Delta interval.
 - In this example, 3 more copies are made at 24" intervals in the Z Delta.

To clip the girts at the doors

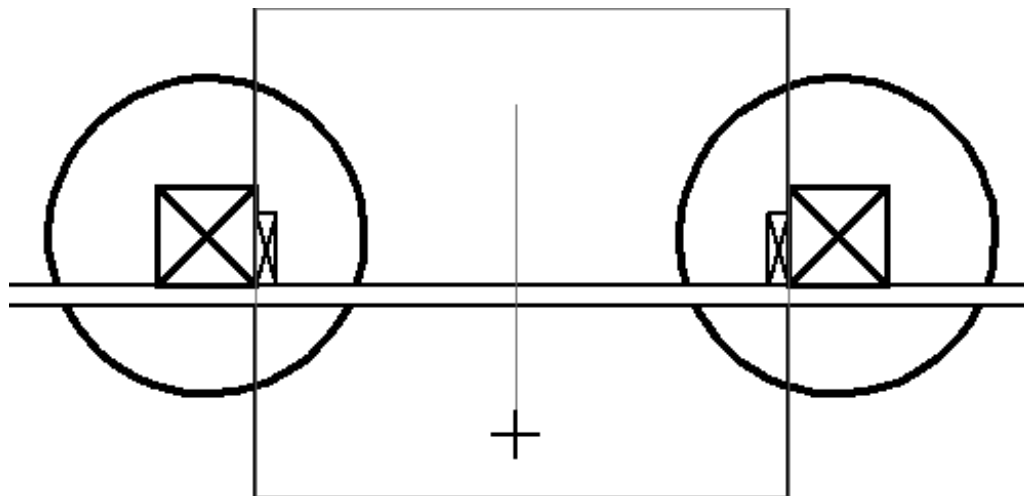
1. In floor plan view, select **CAD> Lines> Draw Line**  from the menu, then click and drag to draw CAD lines on either side of the man-door.



- Position the CAD lines where the girts should be cut to allow access through the door.
- In this example, the girts are clipped 1 1/2" from the door so a continuous vertical furring strip of that width can be applied to the trimmers.

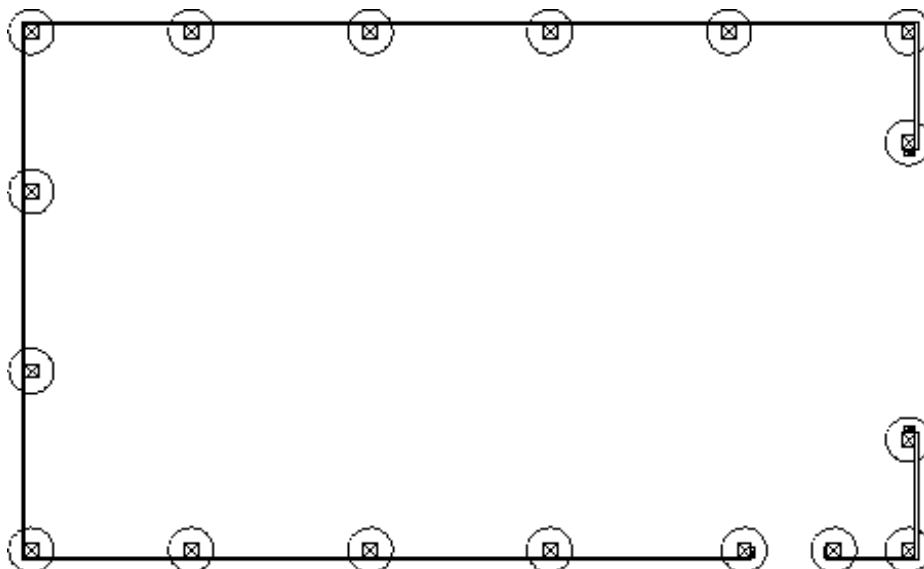
2. Hold **Shift** and select the two CAD lines, then click the **Trim Objects**  edit button.

- Click and drag a cut line between the two CAD lines that crosses the girts.






- When you release the mouse button, the girts will be trimmed to the outside of the two CAD lines and the CAD lines can be deleted.

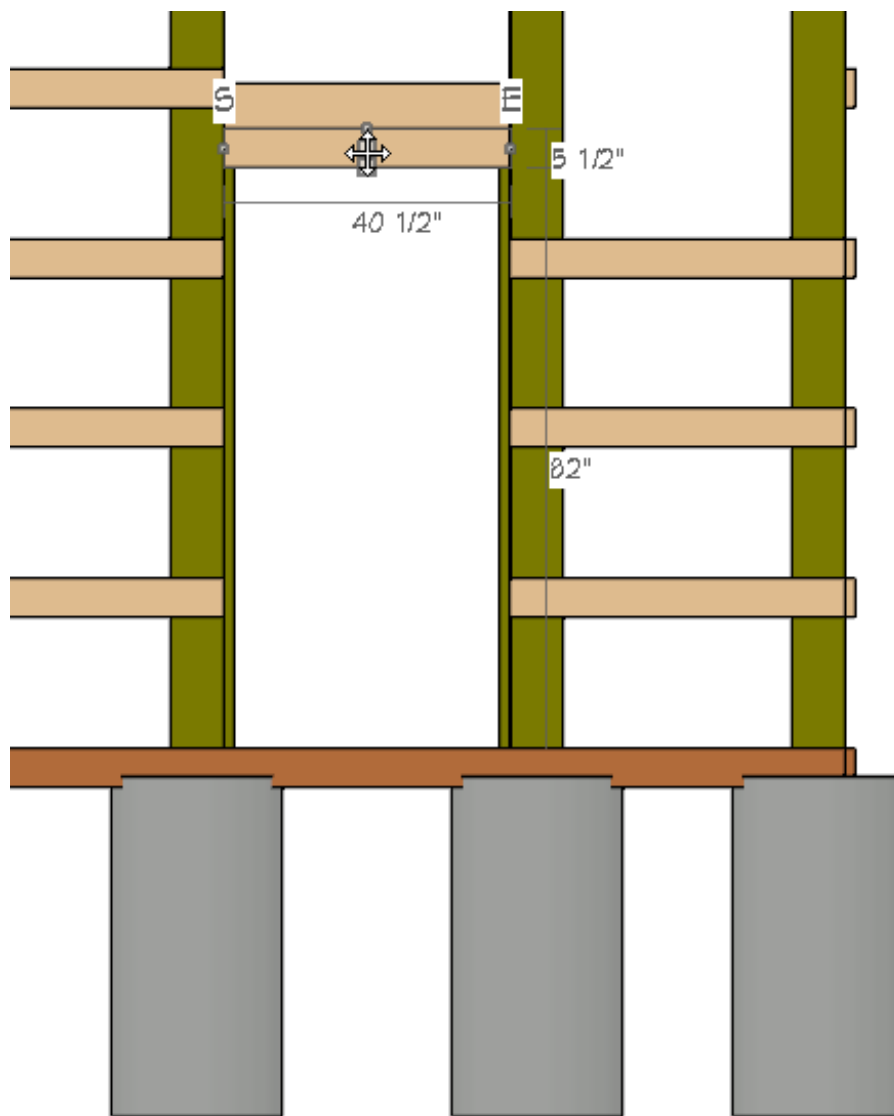
3. Repeat these steps to cut the girts around the garage door.



Additional girts can now be added to reach the top of the 12' high walls.


To add girts above the door levels

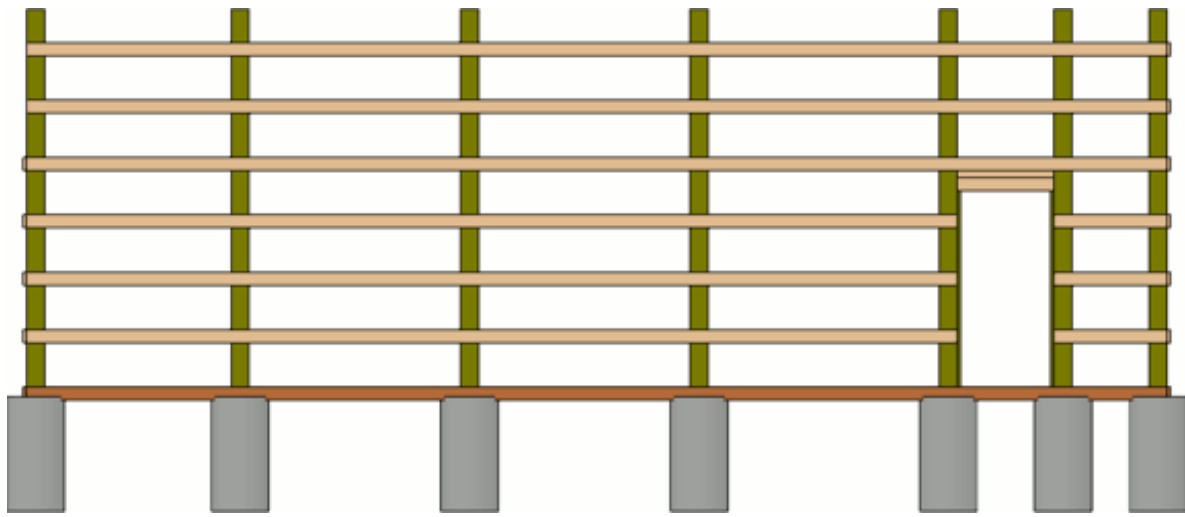
1. Select **Edit> Default Settings**  from the menu and open the **Layer Set Defaults** dialog.
 - Click the **Backclipped Sections** drop-down and select **3D Framing Set** from the list.
 - Click the **Define** button to the right of the **Backclipped Sections** drop-down and in the **Layer Display Options** dialog, turn on the **Framing, 2 X 6 TRT Girt (Base)** and **Framing, 2 X 6 FIR Girt** layers in this layer set.
 - Click **OK** to return to the **Layer Set Defaults** dialog, then click **OK** to close it, and then click **Done** in the **Default Settings** dialog.
2. Create a **Backclipped Cross Section**  of the exterior of the man-door wall.
 - Notice that the **3D Framing Set** is active instead of the usual **Section View Set** layer set.
3. Select the top-most girt on the right side of the man-door.
 - Click the **Open Object**  button and change the **Bottom Height** to 82" and click **OK**.
 - Use the edit handles to move the girt to the left, in front of the header. Then resize it to fit between the posts.






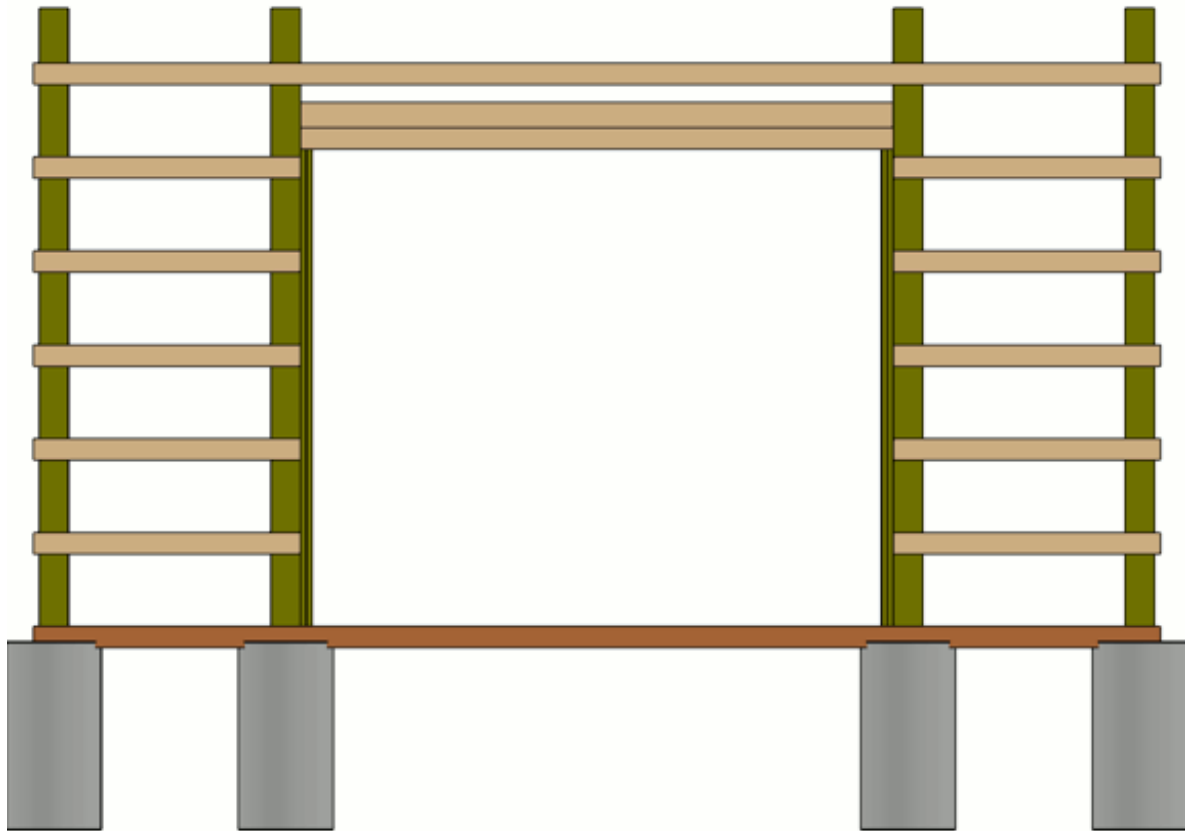
4. Select the top-most girt on the left side of the wall and use its edit handles to extend it to the outside of the corner pole on the right.

If you have trouble precisely placing the Girts, turn off the Snap Grid and then use the Point to Point move tool.


5. With the top girt still selected, use the **Transform/Replicate Object**  tool to create two more copies in the Z delta at 24" intervals.

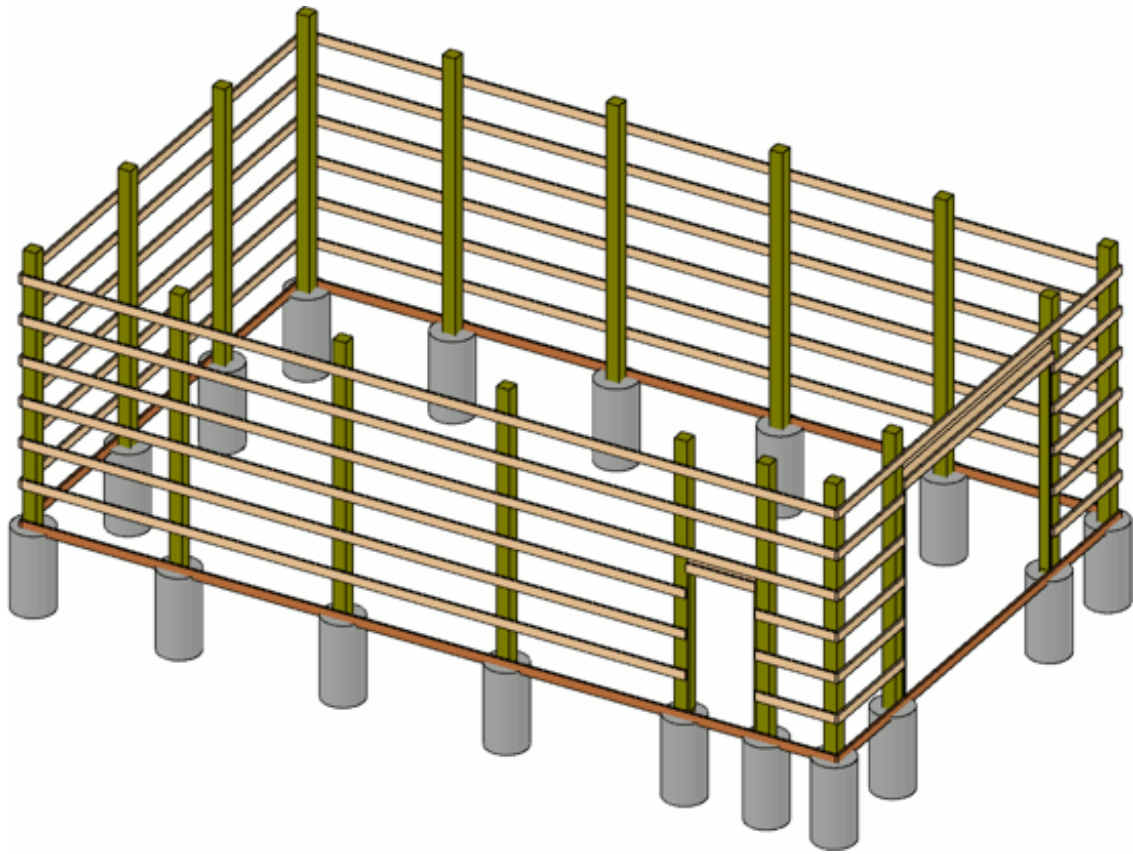


6. Close this view and then create a new **Backclipped Cross Section**  camera arrow through the garage door wall from exterior to interior.
7. Hold **Shift** and select the two highest girts on each side of the door and use the **Transform/Replicate Object**  edit tool to create two copies at 24" intervals in the Z delta.
8. Select one of the highest girts and click the **Open Object**  edit button to set the **Bottom Height** to 122".
9. Use the edit handles to move the girt in front of the door header, and resize it to fit between the posts.
10. Select the remaining highest girt and use its edit handles to extend it to the outside of the opposite corner pole.




11. Close this view and create an **Orthographic Framing Overview** .

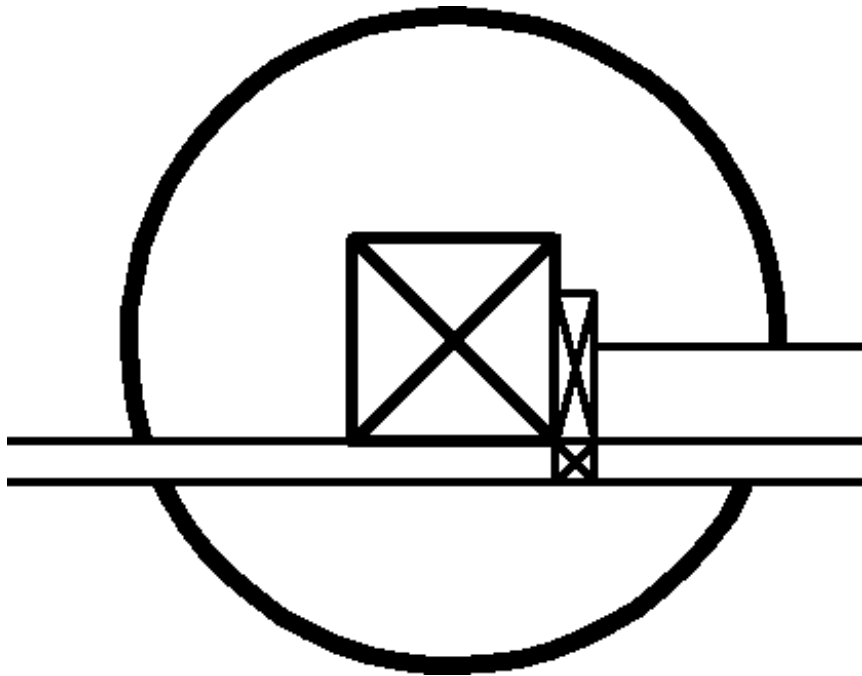
- Hold **Shift** and select the highest girts in each of the two walls that do not have doors.
- Use the **Transform/Replicate Object**  edit tool to create two copies at 24" intervals in the Z Delta.





As part of the process of drawing the girts, the horizontal door furring has been created. Vertical furring should also be added.


To finish the door furring

1. Return to floor plan view and select one of the man-door trimmers.
2. Use the **Transform/Replicate Object**  edit tool to create one copy directly in front of the original - in this example, $-1\frac{1}{2}$ " in the Y Delta.
3. Use this new furring strip's edit handles to resize it and create a $1\frac{1}{2}$ " X $1\frac{1}{2}$ " vertical furring strip in the girt layer of the wall.




4. Use the **Copy/Paste**  and **Point to Point Move**  edit tools to create the furring strip on the other side of the door.
5. Select one of the garage door trimmers and repeat the process described above, replicating the trimmer along the X Delta rather than the Y.

To build the roof

1. Open the **Layer Display Options**  dialog and:
 - Turn on the display of the **Walls, Normal** layer.
 - Turn off the display of the **Footings, Post** layer.
 - Hold down the **Shift** key and click to group-select the **Framing** layers and Lock them.
2. Specify the two end walls in the plan as **Full Gable Walls** on the **ROOF** panel of the **Wall Specification** dialog.
 - In this example, the wall with the Garage door and the wall opposite it are

specified as Full Gable Walls.


3. Select **Build> Roof> Build Roof**  from the menu. On the **OPTIONS** panel of the **Build Roof** dialog:
 - Check the box beside **Boxed Eave**.

4. On the **STRUCTURE** panel under the **Roof Layers** heading:
 - Click **Edit** next to **Surface** and change the surface(1:) thickness to 3/4" and the sheathing(2:) to 1/2".
 - Specify the material for both the surface and sheathing layers, in this example, the surface material is Grey Standing Seam metal roofing and the sheathing layer set to Insulation Foam.
 - Click **OK** to return to the **Build Roof** dialog.
 - Remove the check from **Use Room Ceiling Finish**.

5. Still on the **STRUCTURE** panel under the **Roof Size** heading:
 - Set the **Rafter** to 1 1/2" X 5 1/2".
 - Set the **Ridge** to 1 1/2" X 5 1/2".
 - Set the **Gable Fascia** to 1/8" X 7 1/4".
 - Set the **Eave Fascia** to 1/8" X 7 1/4".

6. On the **GUTTER** panel of the **Build Roof** dialog, **Delete** the gutter.



7. On the **MATERIALS** panel of the **Build Roof** dialog, specify materials for the Ridge Cap and Fascia components.

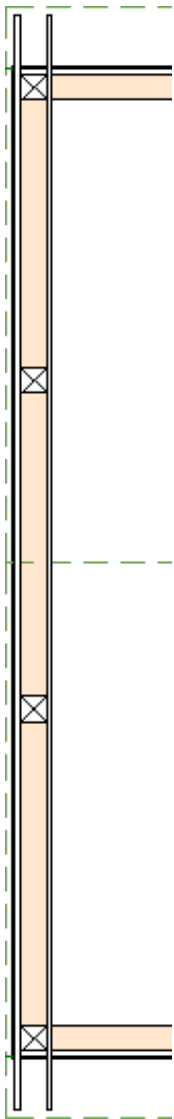
- In this example, the Ridge Cap material is Color - Contract.
 - The Fascia color is Color - White.
8. On the **ROOF** panel of the **Build Roof** dialog:
- Check the box beside **Build Roof Planes**.
 - Click **OK** to close the dialog and generate a roof over your structure.
9. Open the **Layer Display Options**  dialog and lock the **Roof Planes** layer so that you can build and edit roof framing without the roof planes interfering with your work.




To create the roof trusses

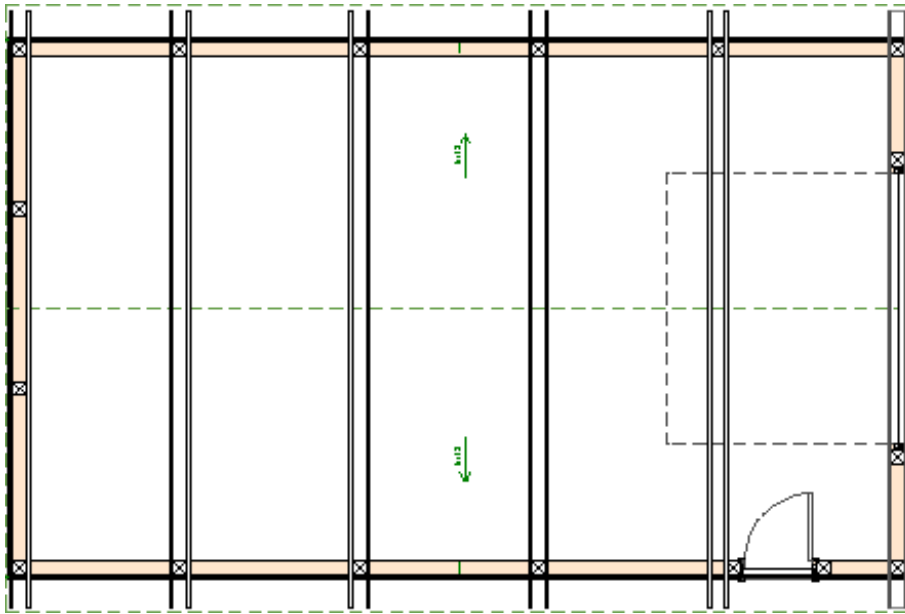
1. Select **Build> Framing> Roof Truss**  from the menu, then click and drag to draw a roof truss near the gable wall opposite the garage door wall.


If you locked the **Framing, Roof Trusses** layer as suggested above, a message box will ask if you want to turn the layer on, and another will ask if you want to unlock the layer. Click the **Yes** button in both.

2. Click on the roof truss to select it, then use the **Move**  edit handle to position it against the poles within the left gable wall.
3. With the truss selected, use the **Transform/Replicate Object**  edit tool to make one copy -9" in the X Delta, which will put it on the outer edge of the posts, above the girts.

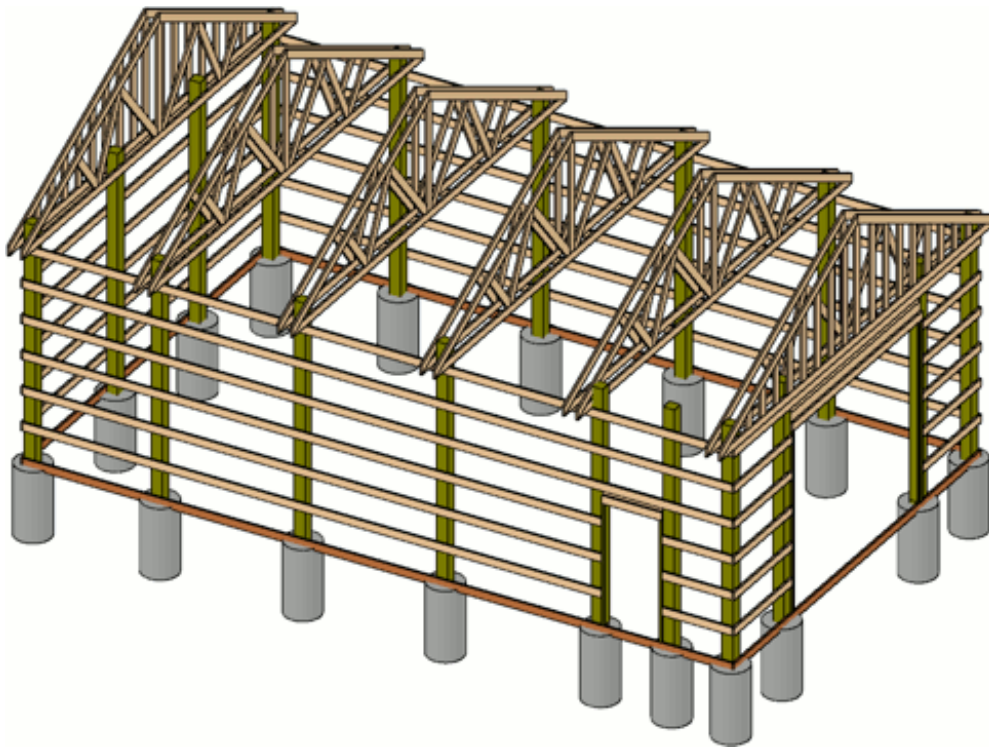


- 9" is the total thickness of the posts (7 1/2") plus the thickness of the truss (1 1/2").
 - If your outer truss does not sit above the girts, it is likely that your custom wall type does not have its girts layer set as the Main Layer.
4. Hold **Shift** and select the two trusses, then use the **Copy/Paste**  and **Point to Point Move**  edit tools to create identical copies on the opposite end of the structure.
 5. With the two newly created trusses still selected, use the **Transform/Replicate Object**  edit tool to create four copies at -96" intervals in the X Delta.



6. Select the outermost truss on the left-hand side of the building and click the **Open Object**  edit button. On the **GENERAL** panel of the **Roof Truss Specification** dialog:
 - Check the box beside **End Truss**.
 - Check the box beside **Force Truss Rebuild**.
 - Click **OK** to close the dialog and implement the change.

7. Select the outermost truss on the right-hand side of the building and use the same steps to convert it to a Gable **End Truss**.





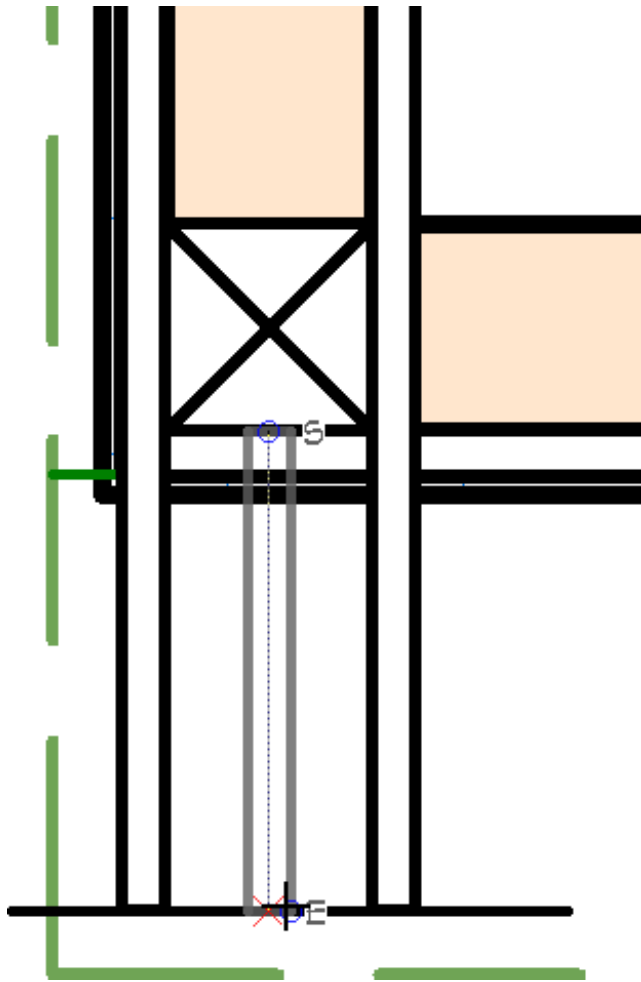
Both upper and lower blocking for the roof trusses can now be created.


To create lower truss blocking


1. Open the **Layer Display Options** dialog and lock the **Framing, Roof Trusses** layer so that you can add blocking without difficulty.

You may wish to lock or turn off the display of additional layers, such as "Walls, Normal," to make drawing truss blocking easier.

2. Click **CAD> Lines> Draw Line** , and draw a line along the ends of the trusses as a reference.
3. Select **Build> Framing> General Framing**  from the menu, then click and drag to draw a framing member in the space between the roof trusses over the back gable wall. Position it between the corner post and the eave edge.



4. Click on the framing member to select it and use its edit handles to:
 - Adjust its length as needed so it butts against the post and aligns with the ends of the trusses.
 - Increase its width so it touches trusses on either side.
 - When you are finished, you can **Delete**  the CAD line.

5. Click on the framing member to select it and click the **Open Object**  edit button. On the **GENERAL** panel of the **Framing Specification (General Framing)** dialog:
 - Set the **Depth** to 1 1/2" and **Lock** it.
 - Set the **Bottom Height** to 144" and then **Lock** it.
 - Select the **Lock Start** radio button.

- Verify that the **Width** is 7 1/2".

6. On the **LINE STYLE** panel of the **Framing Specification (General Framing)** dialog:

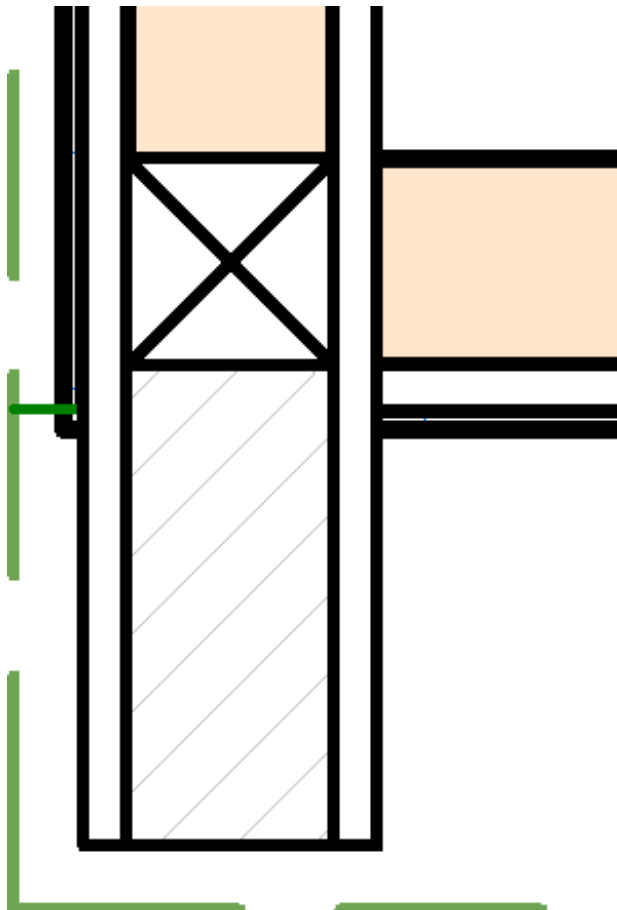
- Click the **Define** button under the Layer heading and place the framing member on the a new **Framing, Lower Roof Blocking** layer.






Put a check-mark in the **Framing, Roof Blocking** layer to display this layer and remove the Lock so that you can modify items on this layer, and then click **OK**.

- Under the **Drawing Group** heading, select **1 - Front** from the drop down menu.

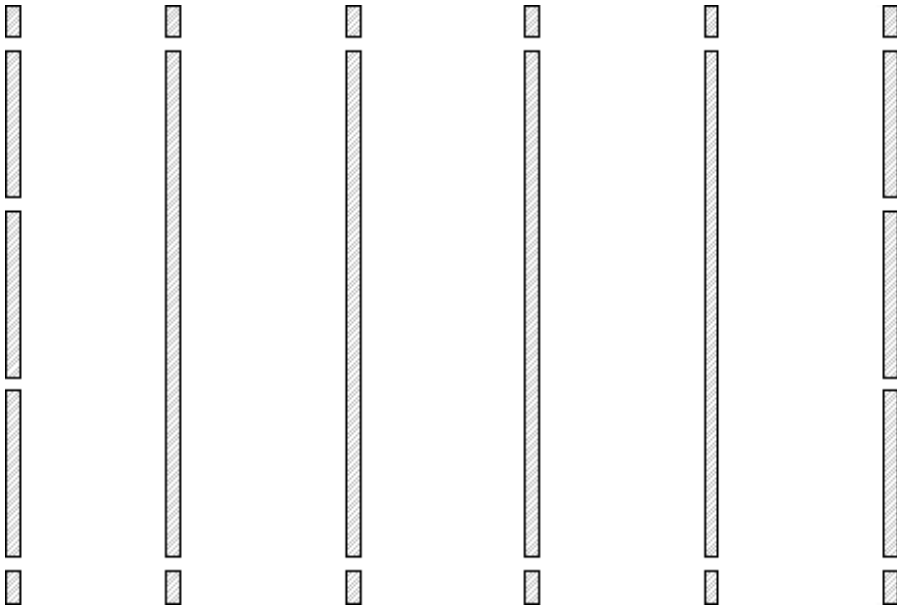
7. On the **FILL STYLE** panel of the **Framing Specification** dialog:

- Select **Angle Hatch** from the **Fill Pattern** drop-down list.
- Specify a light grey color for the **Color**.
- Click **OK** to close the dialog and apply your changes.






8. With the framing member still selected, use the **Copy/Paste**  and **Point to Point Move**  edit tools to position an exact copy on the other side of the pole.
9. Use the newly copied framing member's edit handles to resize it so it reaches the next pole.
10. Repeat this process to create five lower truss blocks over the back gable wall.
11. Hold **Shift** and group select the five lower truss blocks created thus far and use the **Copy/Paste**  and **Reflect About Object**  edit tools to make copies of these blocks between the trusses at the opposite wall.
12. With the newly copied lower truss blocks selected:
 - Hold **Shift** and click on the middle block that crosses the roof ridge to remove it from the selection set.
 - Click on one of the blocks adjacent to the middle block to remove it from the selection set, as well.
13. Then, with three blocks still selected, use the **Transform/Replicate Object**  edit tool to create four more copies at -96" on the X Delta.
14. Use these new blocks' edit handles to extend them across the structure, from post to post.
15. Edit the blocks over the garage wall so they bump against the posts rather than draw over them.

This is what the lower blocking will look like with all other layers turned off:




To create the upper roof truss blocking



1. Open the **Layer Display Options**  dialog and turn off the **Framing, Roof Blocking** layer.
2. Select **Build> Framing> Rafter**  from the menu, then click and drag to draw a rafter between the eave and the ridge of the roof.
 - This rafter will serve as the first upper roof truss block and its exact position is not important right now.
 - You may be prompted to turn on the display of and unlock the **Framing, Roof Rafters** layer, and you will want to do so.
3. Select the rafter and click the **Open Object**  edit button. On the **GENERAL** panel of the **Framing Specification (Rafter)** dialog:
 - Specify the **Depth** to be 1 1/2".
 - Specify the **Width** to be 7 1/2", which is the thickness of the poles.



4. On the **LINE STYLE** panel:
 - Click the **Define** button under the Layer heading and create a new **Framing, Upper Roof Blocking** layer, then click **OK**.
 - Under the **Drawing Group** heading, select **1 - Front** from the drop-down menu.


5. On the **FILL STYLE** panel:
 - Select Angle2 Hatch from the **Fill Pattern** drop-down list.
 - Specify a dark grey color for the **Fill Color**.
 - Click **OK** to close the dialog and apply your changes.

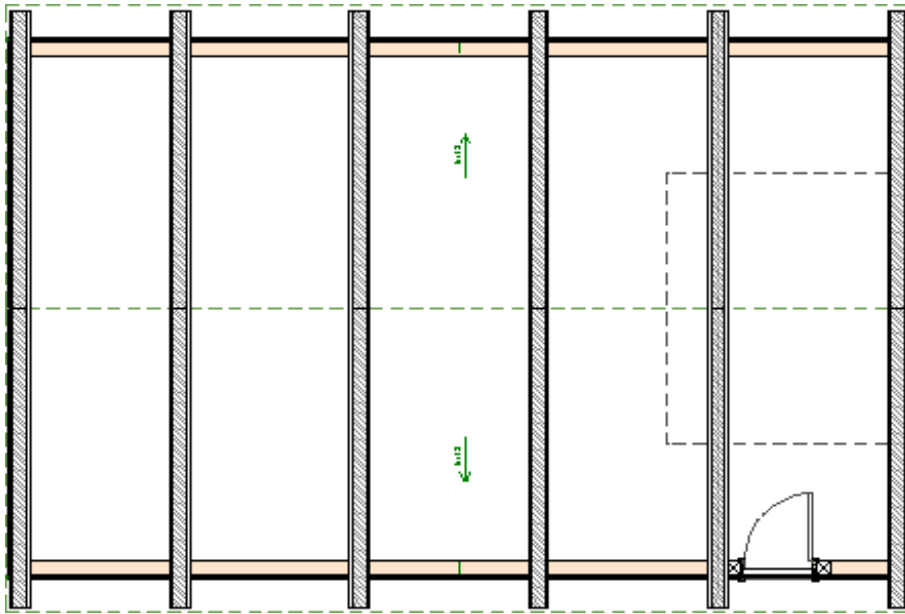
6. With the new upper block selected, use the **Point to Point Move**  edit button to position the new upper truss blocking member between the two trusses in the back gable wall.

7. Using its edit handles, move the upper truss block's eave end so it lines up with the truss ends.


8. With the upper block still selected, use the **Copy/Paste**  and **Reflect About Object**  edit tools to make a copy of the block on the other side of the roof ridge.


9. Hold **Shift** and select the two upper blocks on the left side of the structure and use the **Copy/Paste**  and **Reflect About Object**  edit tools to make copies of the blocks over the opposite wall.

10. With the two upper blocks on the right side of the structure selected, use the **Transform/Replicate Object**  edit tool to create four copies at -96" intervals in the X Delta.

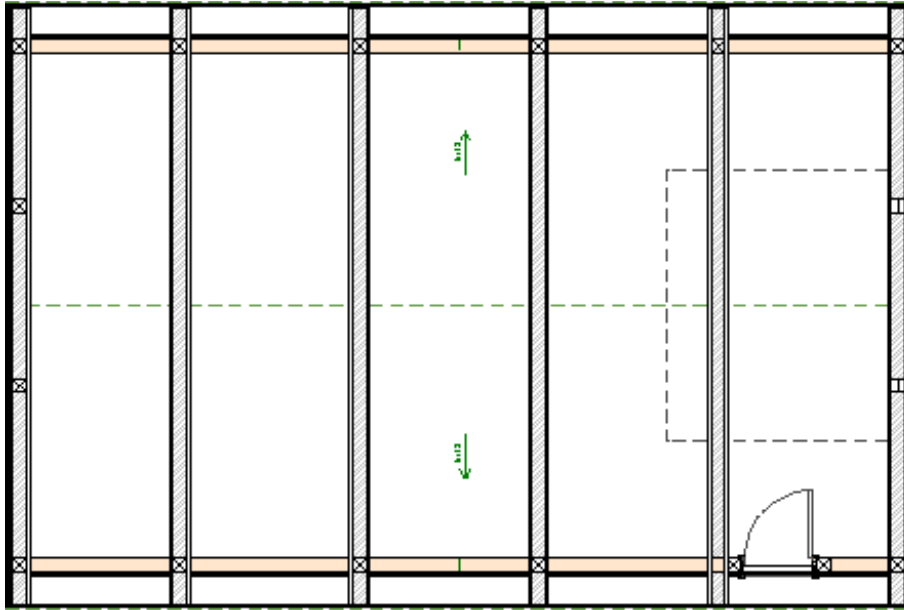


To generate the sub-fascia



1. Open the **Layer Display Options**  dialog and:
 - Unlock the **Roof Planes** layer.
 - Turn off the **Framing, Upper Roof Blocking** layer.

2. Select **Build> Roof> Edit All Roof Planes**  from the menu. On the STRUCTURE panel of the **Roof Plane Specification** dialog:
 - Check the box beside **Build Roof Framing**.
 - Set the **Rafter Spacing** to equal the full length of the structure to prevent additional rafters from generating. In this example, 480" is specified.
 - Verify that **Trim to Soffits** is checked.
 - Uncheck the box beside **Lookout**.
 - Verify that **Gable Fascia** is checked and change **Width** to 1/8" and the **Depth** to 5 5/8".
 - Verify that **Eave Fascia** is checked and change the **Width** to 1/8" and the **Depth** to 5 5/8".

- Click **OK** to close the dialog and build fascia.



To draw the purlins


1. Select **Build> Framing> Roof Blocking**  from the menu.
2. Click and drag to draw a Roof Blocking member between the pair of trusses over the back gable wall and the pair of trusses over the garage door wall.
 - Position the Roof Blocking, or purlin, in the overhang area of the trusses.
3. Select the purlin and click the **Open Object**  edit button.
4. On the Line Style panel, click the **Define** button under the Layer heading and:
 - Turn off the display of the Framing, Roof Blocking layer.
 - Create a new layer called **Framing, Roof Purlins** select it and click **OK** to place the purlins on this layer.
5. On the **FILL STYLE** panel:

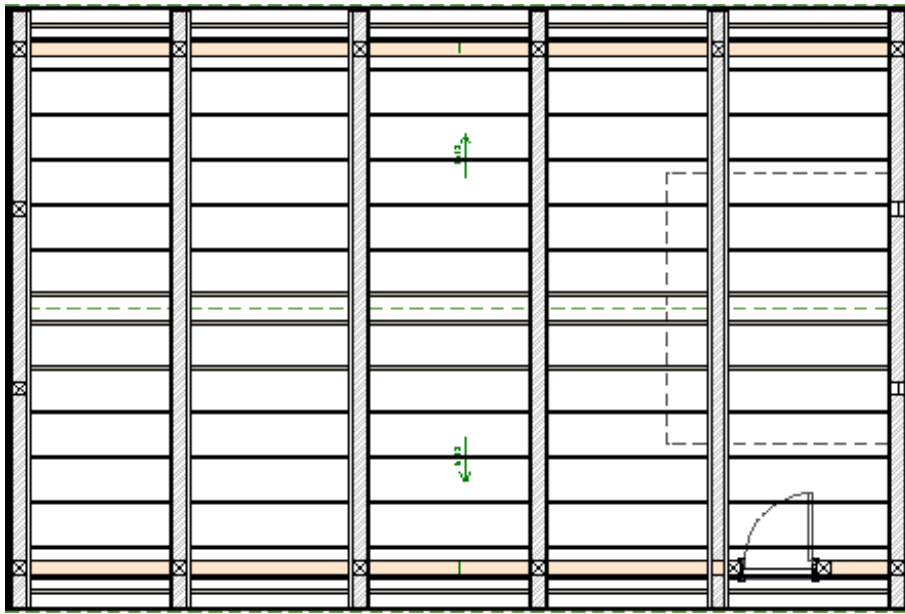
- Select **Solid** from the **Fill Pattern** drop-down list.
- Select a pale brown **Fill Color**.
- Click **OK** to exit the dialog saving the changes.

6. Position the purlin 8" inside the Eave Sub Fascia.


Note: Dimensions do not locate framing members by default though temporary dimensions will locate them. To enable manual dimensioning of framing, click Edit> Default Settings, open the dimension defaults, and on the Locate Object panel, put a check next to Sides or Centers under the Framing heading.

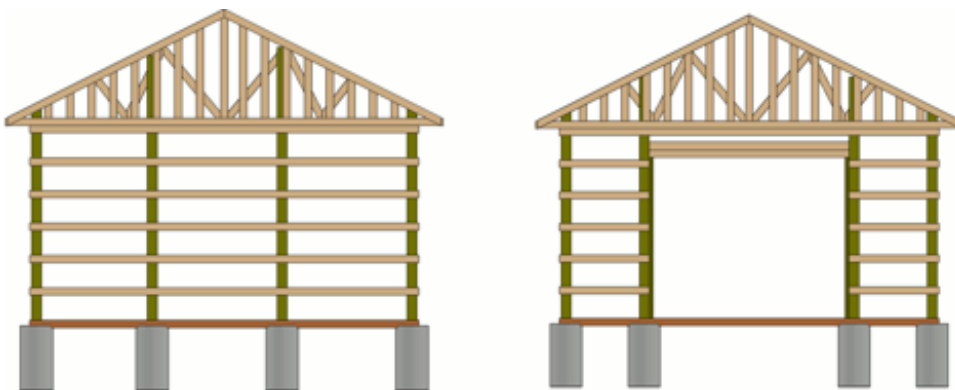


7. Use the **Multiple Copy**  edit tool to make six copies of the purlin in the direction of the roof ridge. Note that the default **Multiple Copy Interval** is 24" for Rafters.
8. Repeat these steps to create purlins on the opposite side of the roof.



To extend the end poles

1. Create an exterior **Backclipped Cross Section**  view of one of the gable walls.
2. Click on one of the poles in the gable wall to select it near its top edge, then use the edit handles to extend it upward to the top chord of the trusses.
3. When all posts reach the height of the truss top chords, select close the view.
4. Repeat this process on the opposite gable wall.



To create 3D views

3D views of the structure can be produced using any of the 3D tools. Bear in mind that by default, the Framing layers are turned off in the layer sets assigned to all camera views aside from Framing Overviews. If you want the posts and other items to display in a particular type of 3D view, create the view and then open the Layer Display Options dialog and turn on the desired layers.

Related Articles

[📄 Changing an Object's Layer \(/support/article/KB-00645/changing-an-object-s-layer.html\)](/support/article/KB-00645/changing-an-object-s-layer.html)

[📄 Defining a New Wall Type \(/support/article/KB-02944/defining-a-new-wall-type.html\)](/support/article/KB-02944/defining-a-new-wall-type.html)



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