

Creating a Barrel Roof

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The information in this article applies to:



QUESTION

How do I build a barrel roof, or curved roof, in Home Designer Pro?

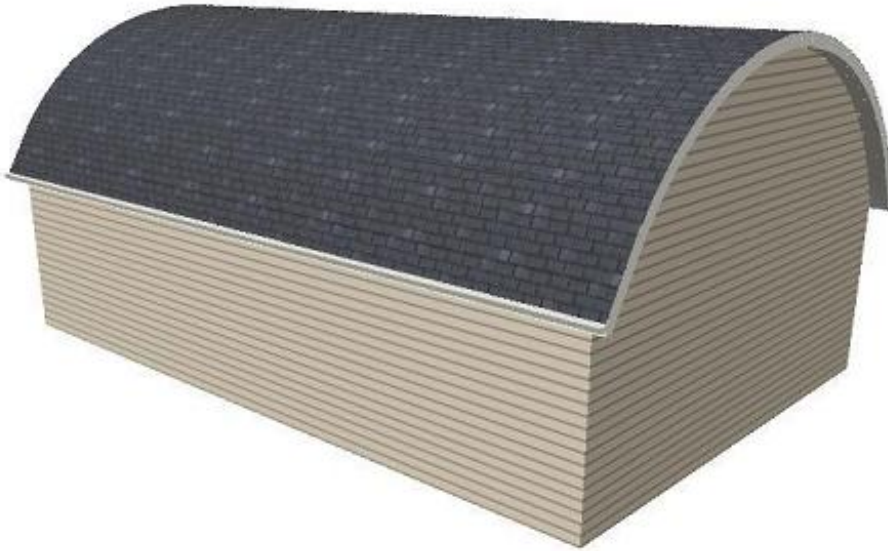
Note: In Home Designer Pro, curved roofs must be created using multiple small roof planes, however, the ability to model actual Curved Roof Planes is a feature currently available in the Chief Architect Premier (<http://www.chiefarchitect.com/products/premier/>) version of the software.

A free trial version of Chief Architect Premier can be requested from the website at: <http://www.chiefarchitect.com/products/trial.html>
(<http://www.chiefarchitect.com/products/trial.html>)

Instructions for creating curved roof planes can be located in the Chief Architect website's Knowledge Base.

BEFORE YOU BEGIN

Although the process for creating a barrel, or curved roof, is easier to quickly accomplish using the Chief Architect Premier version of the software, you can still create this style in Home Designer Pro using the manual roof tools.





- This Article explains:
 - How to use the cad tools to create a grid for calculating roof pitches.
 - How to use that information to create a Barrel Style Roof
- This article assumes:
 - The user is proficient in the use of Home Designer Pro and its CAD tools.
 - The user understands how to draw a roof plane manually.

ANSWER

Step 1: Creating the Structure


To begin, you first need to create your structure:

1. Launch Home Designer Pro and start a **New Plan**  using the Default style template.
2. Next, select **Build> Wall> Straight Exterior Wall** , and in a clockwise fashion, draw a completely enclosed rectangular structure.

For the purposes of this example, you will start your project by opening a new plan and building a structure (using program defaults) that is 40' wide by 26' deep.




In Home Designer Pro version 9.0 and newer, the ceiling height by default will be 109 1/8".

3. If needed, you can use temporary dimensions to precisely position the walls. For more information on this process, see the Related Articles section at the end of this article.
4. Finally, select **File> Save** , and choose to save the .plan file with a descriptive name in an easy to find location on your computer, such as Documents.



Step 2: Creating a Cross Section/Elevation View:

Next, we will want to take a Cross Section/Elevation camera view of your newly created structure. To do this:

1. Select **3D> Create Orthographic View> Cross Section/Elevation**  and then create a view from the LEFT-HAND-SIDE of the structure.

Note: The camera angle is important for understanding X, Y, and Z


coordinates, which you will need later to help automate your grid creation.

2. Next, select **3D> Delete Surface**  to completely remove the wall layers throughout the plan.
3. Switch to the **CAD Toolbar Configuration**  by selecting its button on the toolbar.


Alternately, you can also select **Tools> Toolbars> Customize Toolbars**, then selecting the **TOOLS** panel, highlight **CAD Defaults**, and then **Close** the Toolbar Customization dialog.

4. From the menu, select **Edit> Edit Behaviors> Edit Object Parts** .

Polyline-based objects are composed of lines and arcs that are connected end to end. The individual edges of open and closed polylines can be selected and edited independently of the object's other edges when Edit Object Parts is enabled.

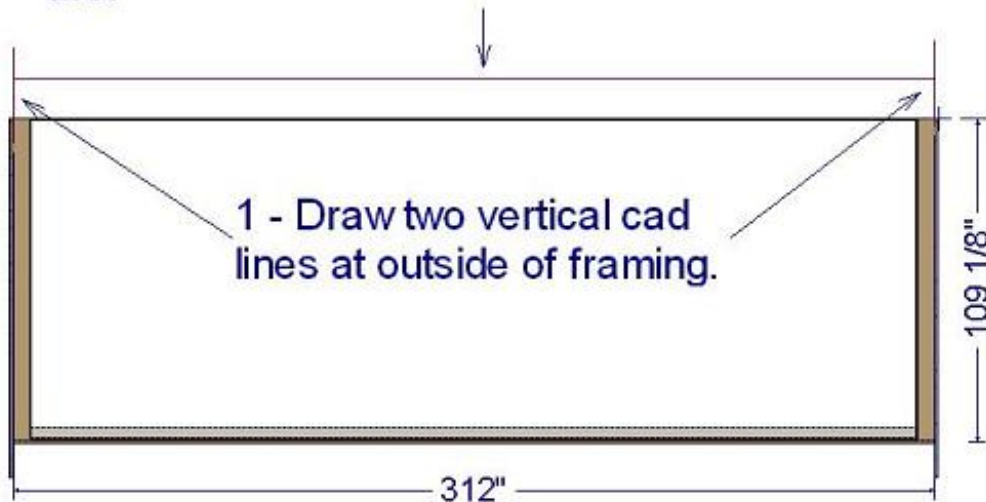
5. Next, **CAD> Lines> Draw Line**  to draw two lines vertically on the outside of the framing layer of each of the side walls.

These will represent the framing width of the structure, and will be used later in creation of your Rise/Run Grid.

6. With the **Draw Line**  tool still active, draw a new line horizontally, above the walls and between the two vertical lines.

This will be used to represent the Wall Top Height and the Chord of the Arc you will create to model your Barrel Roof. Ultimately, this line will become the Arc itself. Your Cross Section/Elevation View should now be similar to that displayed below.




2 - Draw one horizontal cad line between the two vertical lines to represent a temporary baseline height and to form the chord of the arc.



You know that the Chord of the Arc will be 26' (or 312"). You have yet to determine the Roof Ridgeline Height and the Arc Radius for your Barrel Roof.

Step 3: Setting up the Grid

Now that you have started your plan, created a Cross Section/Elevation view, and drawn in your reference lines, you are ready to begin setting up the grid.

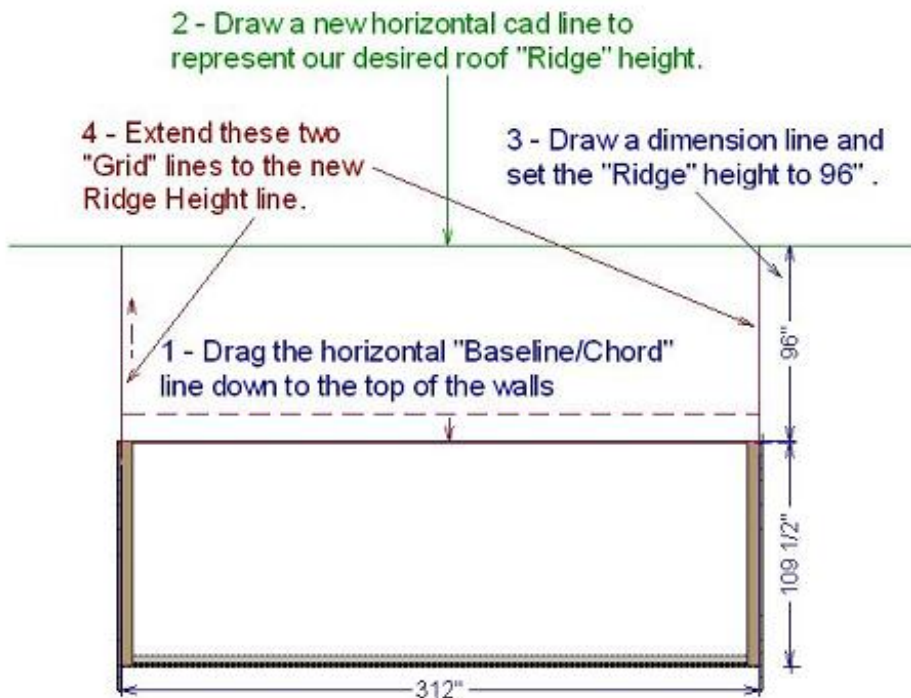
1. First, use the **Select Objects**  tool to select the horizontal CAD line and use its Move edit handle to drag it down to flush with the top of the walls.
2. Next, use the menu to select **CAD> Lines> Draw Line**  and draw a new horizontal cad line at some distance above the original horizontal CAD line.
3. Now, select **CAD> Dimensions> End to End Dimension** , and create a dimension line between the lines representing the "Ridge Height" and the "Wall Top / Chord".

You will use this dimension to set the Ridge Height to 8' (or 96").





4. Extend the two "Grid" lines to the new "Ridge" height line.

This line will represent the underside of the rafter framing at the "Ridge". The actual roof "Ridge" height will be approximately 96" plus the "Vertical Rafter Depth" of the first Roof Plane.

Your plan should now look like the image below.



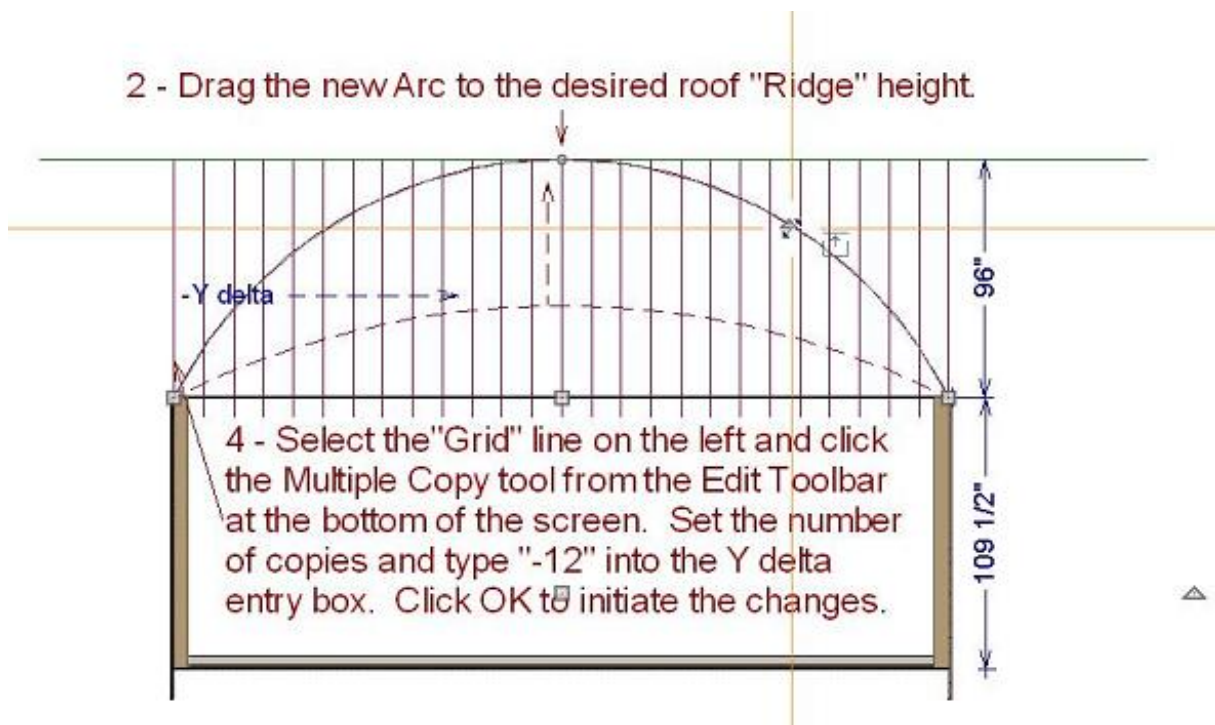
Step 4: Creating the Arc and the "Run" grid:

1. Using the **Select Objects**  tool, select the "Wall Top / Chord" CAD line, then click on the **Change Line/Arc**  edit tool.
2. Select the triangular edit handle located in the arc itself, then drag the Arc up the screen and snap it to the "Ridge" line.
3. Next, use the **Select Objects**  tool to select the "Grid" line on the left, then click on the **Transform/Replicate**  edit tool from the Edit Toolbar at the bottom of the screen.

- Place a check mark next to **Copy**, and set the number of copies to 22.
- Check **Move** and set the "Y" Delta - Move Distance to negative (minus) -12".


Since your "Run" distance will always be 12", you don't need to record this information.

- Click **OK** to perform the action and close the Transform/Replicate Object dialog, and your Cross Section/Elevation View should now look like the image below.





Step 5: Creating the "Rise" grid:

Now you are ready to create your "Rise" grid.

- Using the **Select Objects**  tool, select the "Ridge" line and use the End Handle on the left and drag it from left to right to shorten it.

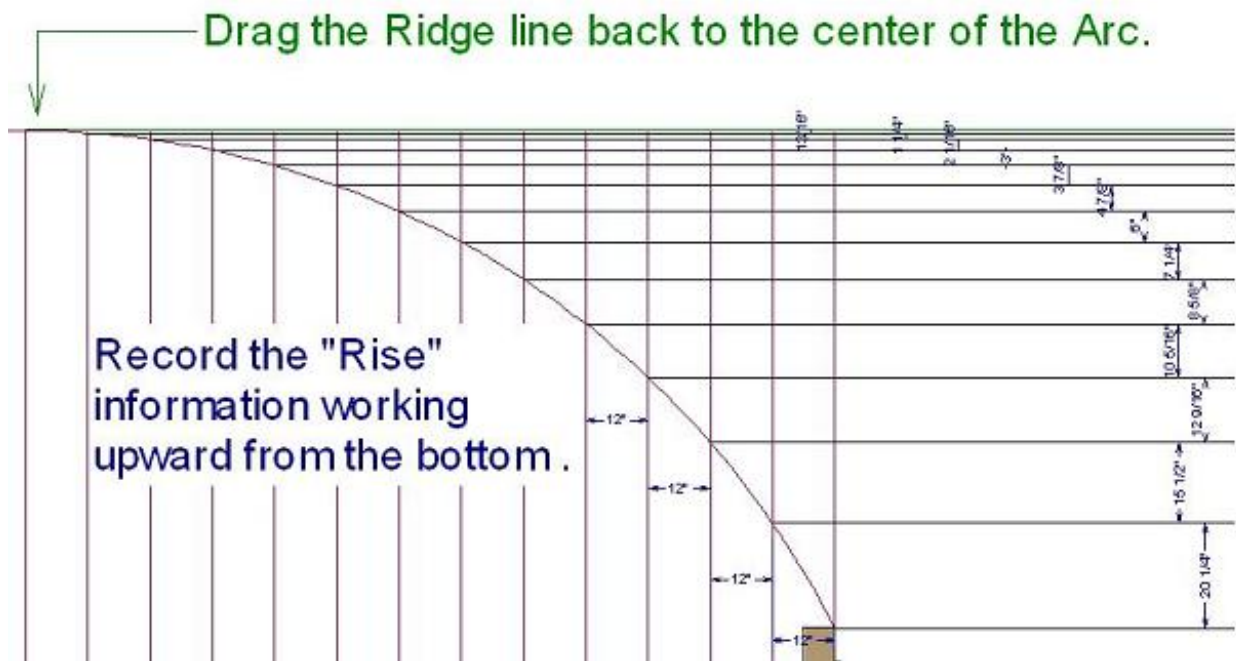
Snap it to the center of the Arc.

- Next, select **CAD> Lines> Draw Line**  and draw horizontal lines to the right from the intersection points of the "Run" grid and the "Arc"

- Repeat this process for all of the intersections.
- Select **CAD> Dimension> Manual Dimension** , and draw dimensions working upward from the wall top.

These will be your "Rise" dimensions.

Note: You need to record the "Rise" information for each roof segment, working from the bottom-up, for input when you create your Roof Planes.



Rise Information:

- 01 = 20 1/4"
- 02 = 15 1/2"
- 03 = 12 9/16"
- 04 = 10 5/16"
- 05 = 8 5/8"
- 06 = 7 1/4"

07 = 6"

08 = 4 7/8"

09 = 3 7/8"

10 = 3"

11 = 2 1/16"

12 = 1 11/16"

13 = 13/16"

Milestone Reached:

Nearly all of the work you have completed to this point, has been drawn in CAD. The information you gathered will now be used to create your Barrel Roof. Before you get started drawing Roof Planes, make the following changes:

1. Close the Cross Section/Elevation view and return to the plan.

If prompted, elect to NOT save the camera as you already have the information you need to create your roof.

2. Select **Edit> Edit Behaviors> Edit Object Parts**  to uncheck this feature, turning it back off and returning us to the standard edit behavior.

3. Next, return to the **Default Toolbar Configuration** .

Step 6: Creating the Roof Planes

To begin, you will draw only one side of the Roof, and use special tools to create the other side.

1. In floor plan view, from the menu, select **Build> Roof> Build Roof**  to display the Build Roof dialog.


You will be using the "Rise" information you gathered earlier to set each individual Roof Plane "Ridge" Height.

2. In the Build Roof dialog:

- Set the Pitch to **20 1/4"** in 12".
 - Set the Eave overhang to **8"**.
 - Set the Gable overhang to **12"**.
-
- Click **OK** to implement the changes and exit the dialog without actually building the roof.


It is important that the Roof Pitch for any given Roof Plane be set prior to drawing that Roof Plane.

Draw the first Roof Plane:

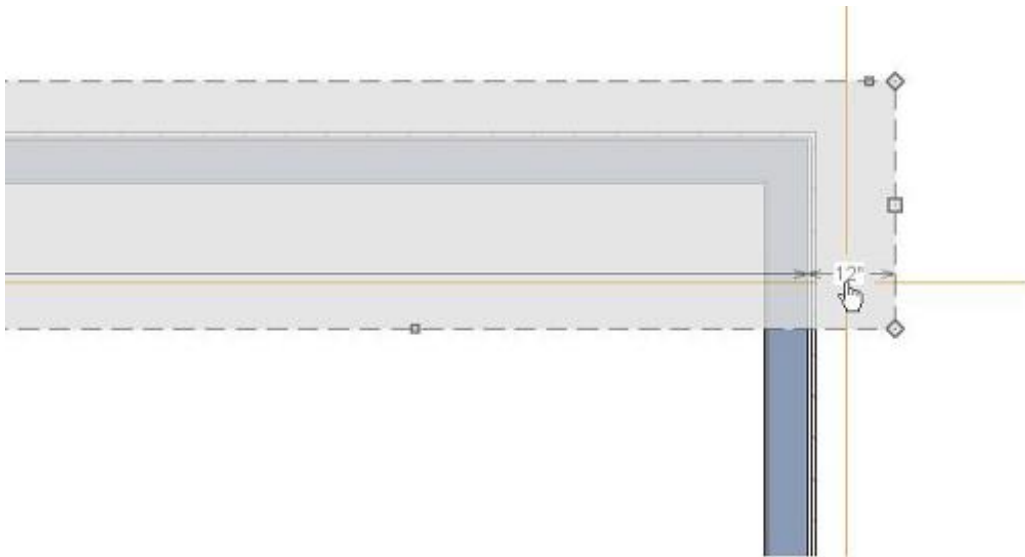
1. Select **Build> Roof> Roof Plane** , then click and drag out the first roof plane, being sure to draw the Roof Plane's Baseline on the outer edge of the Framing Layer of the wall defining the rear of the structure.

If you are unfamiliar with what a Baseline is, within Home Designer Pro, click on the Help menu, and select Launch Help.

In the space provided on the Index tab, type in the keyword of Baseline. Once you see it displayed, click on the subheading underneath it of Roofs, then click on the Display button to read the software's Reference Manual information on this feature.



Using the **Select Objects**  tool, select the "Ridge" edge of the Roof Plane, and use the Temporary Dimension to position it 12" away from the Baseline.

2. Select one side of the new Roof Plane and drag it over its corresponding "Gable End" then use the Temporary Dimension to set the overhang to 12".





3. Do the same to the other side of the Roof Plane and its "Gable End" (Figure 07).

Draw the second Roof Plane:



1. From the menu, select **Build> Roof> Build Roof** .
2. In the Build Roof dialog, set the Pitch to 15 1/2" then click **OK** to implement the change and exit the dialog.
3. Select **Build> Roof> Roof Plane** , and draw the second Roof Plane - Be sure to draw the new Roof Plane "Baseline" on the Ridge edge of the first Roof Plane.
4. Select the "Ridge" edge of the new Roof Plane and use the Temporary Dimension to position it 12" from the "Ridge" edge of the first Roof Plane.
5. Set the "Gable End Overhangs" to 12"

Draw the third Roof Plane:

1. From the menu, select **Build> Roof> Build Roof** .
2. In the Build Roof dialog, set the Pitch to 12 9/16"

3. Click **OK** to implement the change and exit the dialog.
4. Select **Build> Roof> Roof Plane** , and draw the third Roof Plane - Be sure to draw the new Roof Plane "Baseline" on the Ridge edge of the second Roof Plane.
5. Select the "Ridge" edge of the new Roof Plane and use the Temporary Dimension to position it 12" from the "Ridge" edge of the second Roof Plane.

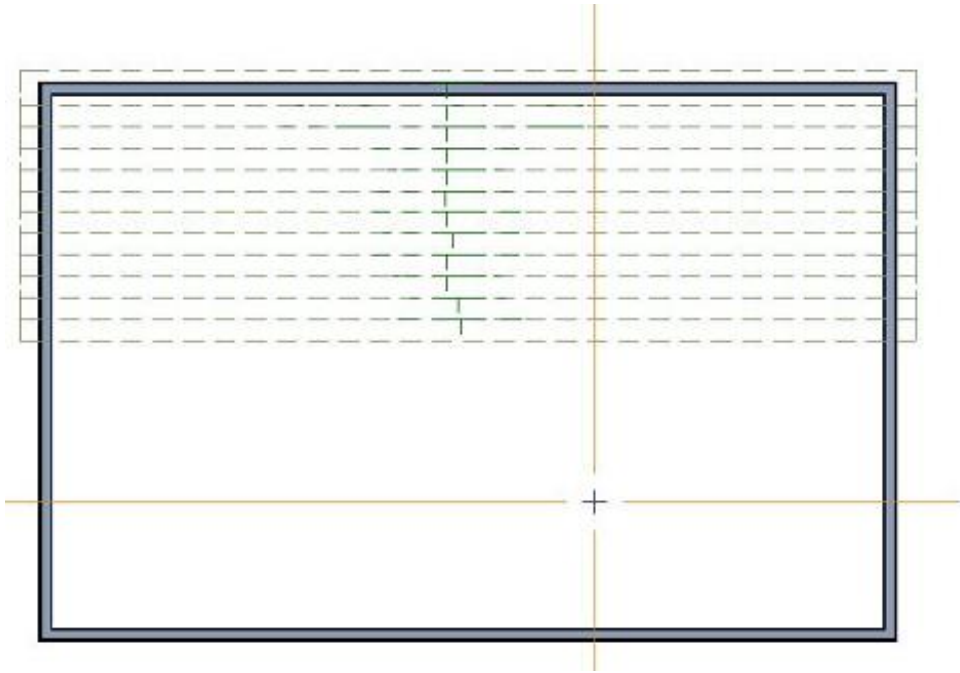
Draw the fourth Roof Plane:

1. From the menu, select **Build> Roof> Build Roof** .
2. In the Build Roof dialog, set the Pitch to 10 5/16".
3. Click **OK** to implement the change and exit the dialog.
4. Select **Build> Roof> Roof Plane** , and draw the fourth Roof Plane - Be sure to draw the new Roof Plane "Baseline" on the Ridge edge of the third Roof Plane.
5. Select the "Ridge" edge of the fourth Roof Plane and use the Temporary Dimension to position it 12" from the "Ridge" edge of the third Roof Plane.
6. Set the "Gable End Overhangs" to 12" (Figure 8).

Complete one side of the Roof:


- o Continue this process of changing the Pitch in the Build Roof Dialog first, then drawing each Roof Plane manually, and use the Temporary Dimensions to set the "Gable Overhangs" and Ridge edge of the new Roof Planes until the last Roof Pitch in your list has been used.

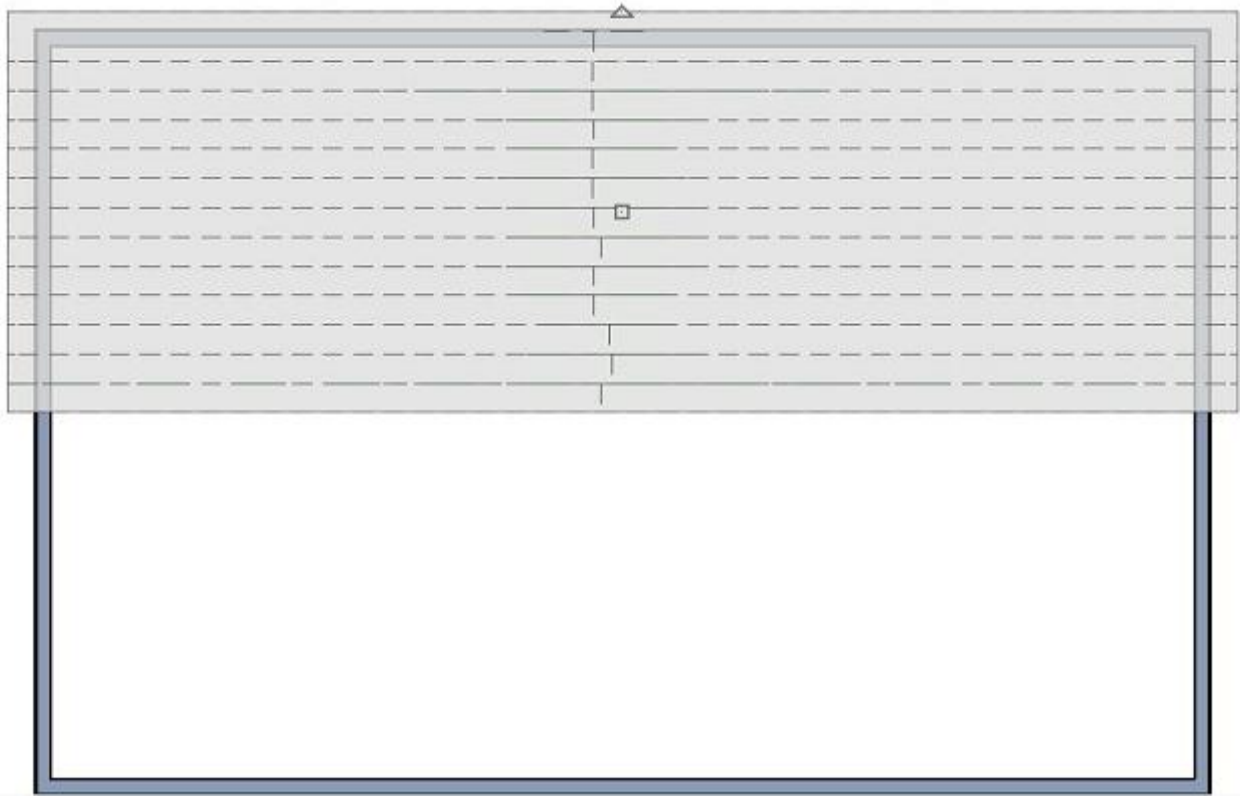
You will be at the Peak of the roof when you finish.





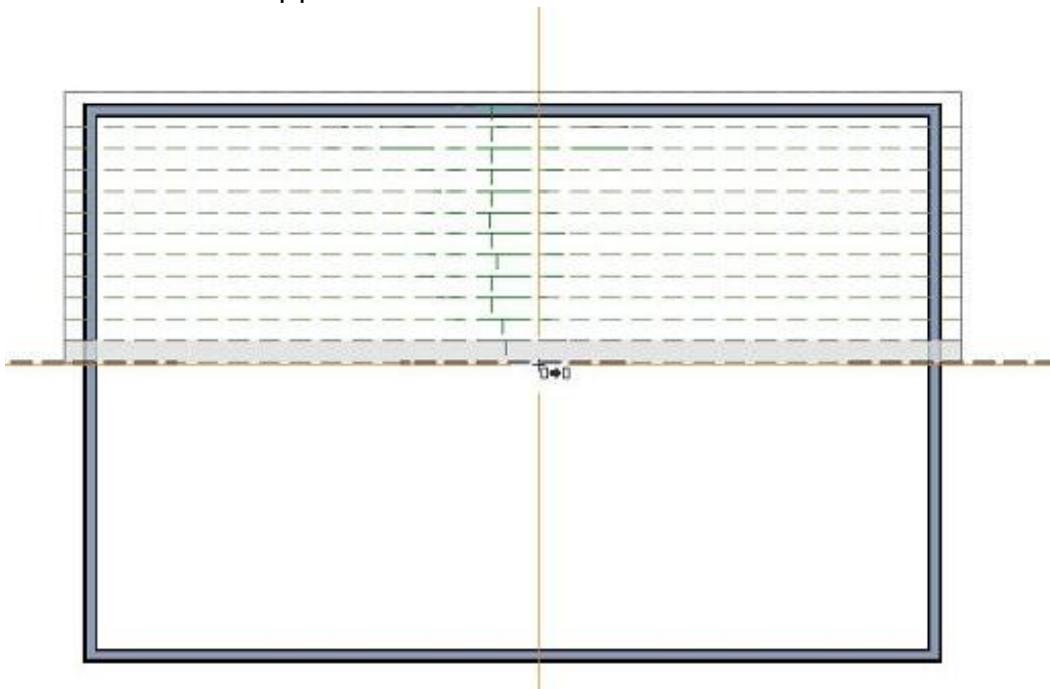
Again, please note that it is important that the Roof Pitch for any given Roof Plane be set before drawing that Roof Plane.


Step 7: Completing the Roof

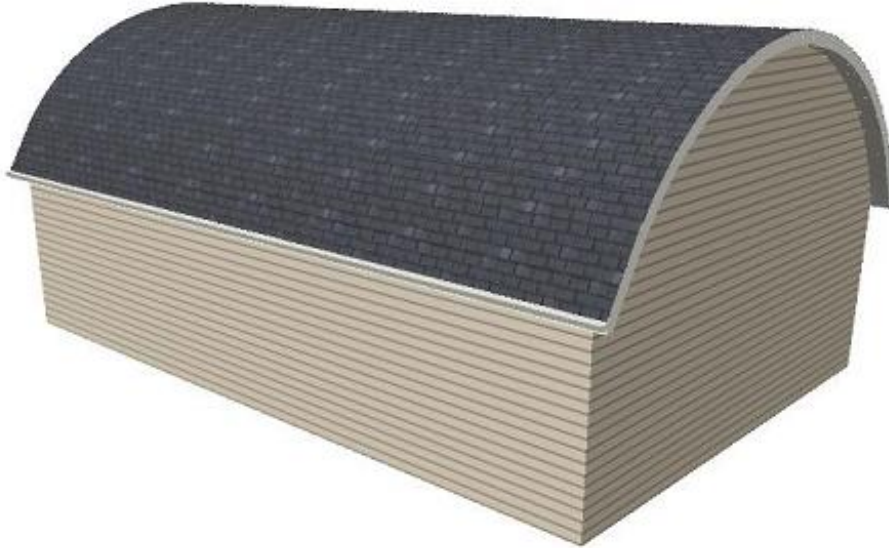
1. Select **Build> Roof> Roof Plane**  to activate this tool, then hold down the **Shift** key on your keyboard, then click and drag to draw a marquis around all the Roof Planes to group select them.



2. Click on the "Copy/Paste"  edit tool at the bottom of the screen.
3. You will notice that the edit tools have changed, so next you need to click on the **Reflect About Object**  edit tool.
4. Move the cursor to the Ridge Edge at the Peak of the Roof and Click on the dashed line that appears in bold.



5. Your roof is now complete, so select **3D> Create Perspective View> Full Overview**  to see the results.



Related Articles

-  [Creating a Curved Barrel Roof \(https://www.chiefarchitect.com/support/article/KB-00649/creating-a-curved-barrel-roof.html\)](https://www.chiefarchitect.com/support/article/KB-00649/creating-a-curved-barrel-roof.html)
-  [Joining a Barrel Roof to a Flat Roof Plane \(https://www.chiefarchitect.com/support/article/KB-00684/joining-a-barrel-roof-to-a-flat-roof-plane.html\)](https://www.chiefarchitect.com/support/article/KB-00684/joining-a-barrel-roof-to-a-flat-roof-plane.html)
-  [Setting Exact Wall Dimension Lengths \(/support/article/KB-00245/setting-exact-wall-dimension-lengths.html\)](/support/article/KB-00245/setting-exact-wall-dimension-lengths.html)