Chief Architect
Architectural Home Design Software

Creating a Parallel Chord Roof Truss

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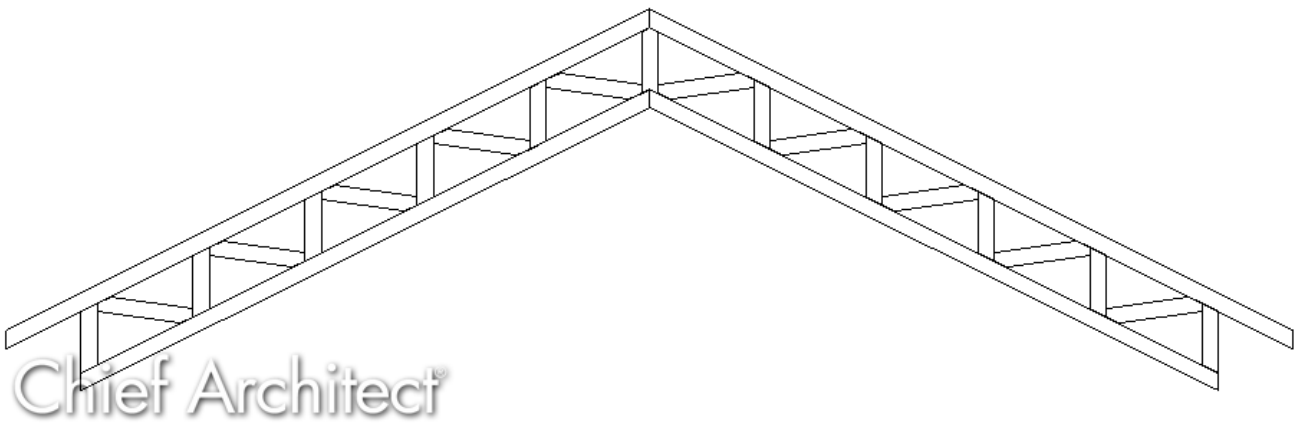
Last Modified: **September 19, 2023**

The information in this article applies to:

PREMIER | PRO

QUESTION

How do I create a parallel chord roof truss?



ANSWER

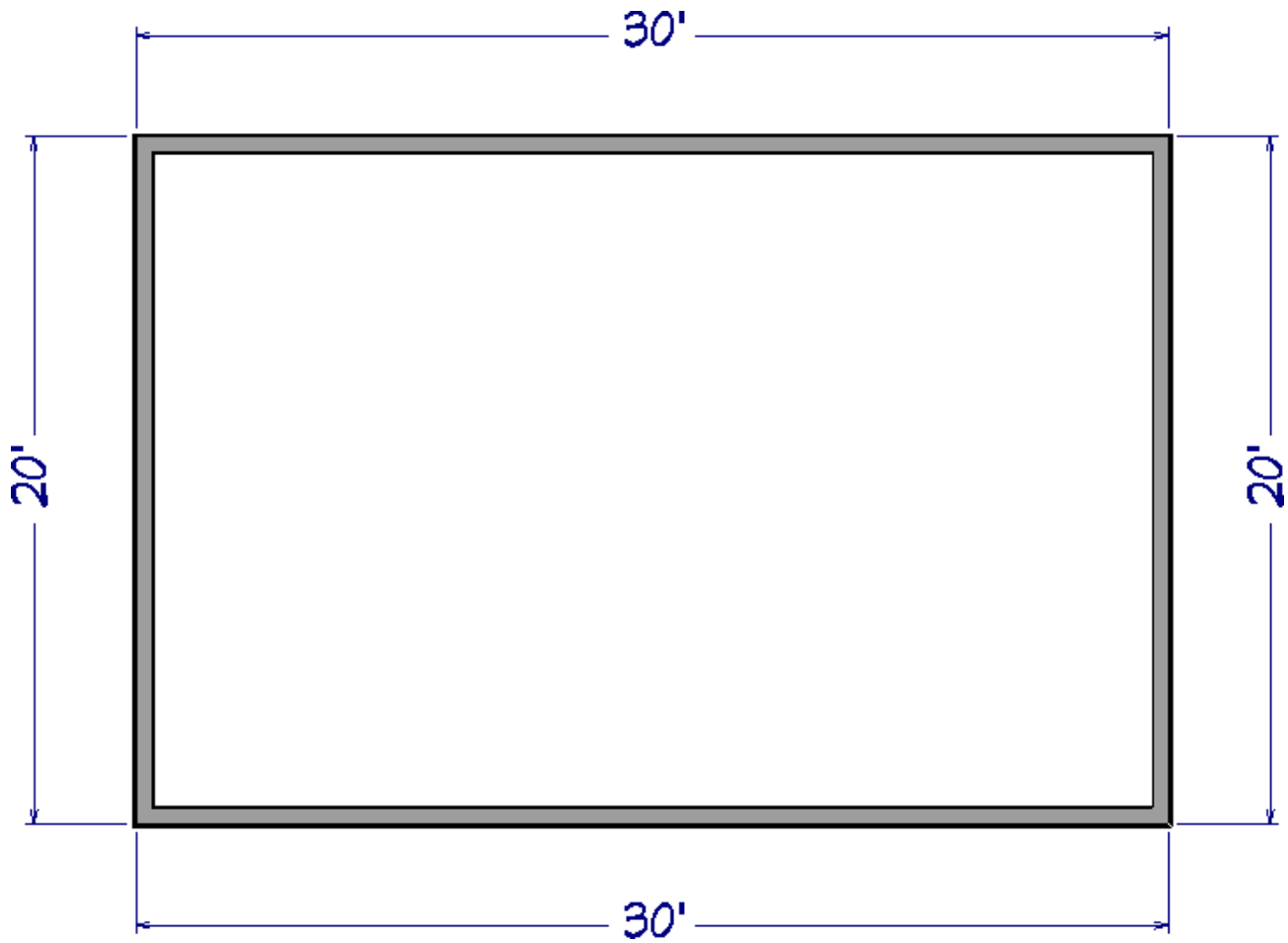
In a parallel chord truss, the top and bottom chords of the truss follow the same slope.

In Chief Architect, roof trusses generate between roof and ceiling planes, so to create these types of roof trusses, a vaulted ceiling must be created with the same slope as the roof directly above it.

To build the structure and roof

1. **Open** the plan that you would like to create parallel chord roof trusses within.

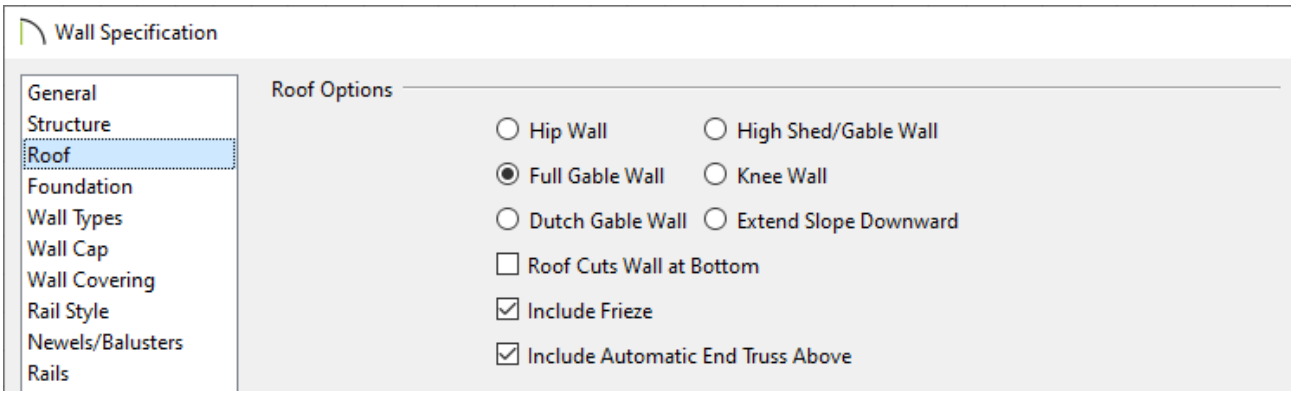
   In this example, a simple 20' x 30' rectangular plan is used.



2. If you haven't established a gable roof yet, use the **Select Objects** tool to select the walls that you would like to make gable walls, then click the **Open Object** edit button.

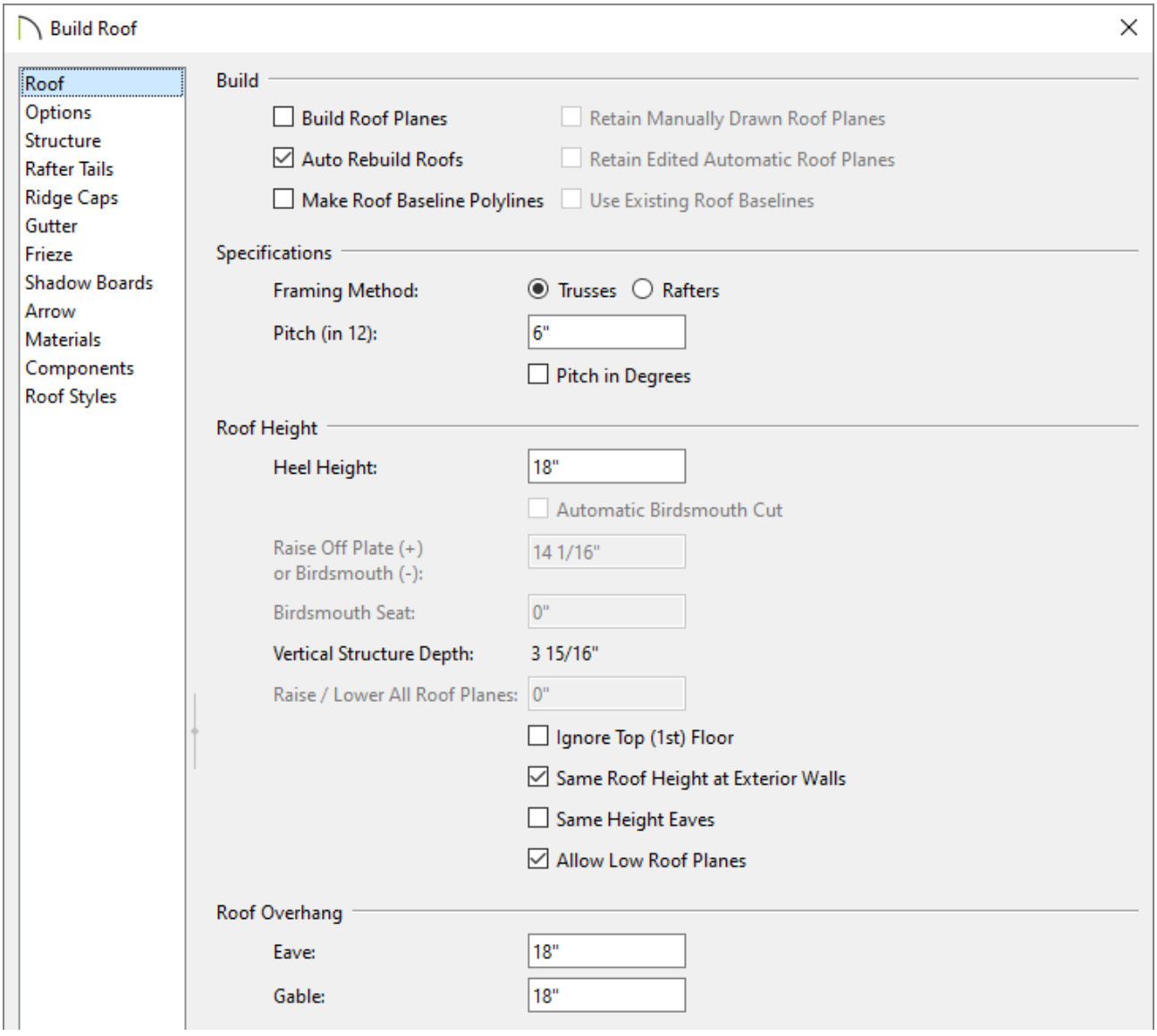
   In this example, the left and right walls were selected and opened to specification.

3. On the ROOF panel of the **Wall Specification** dialog, select the **Full Gable Wall** option, then click **OK**.



Note: You can also use the Change to Gable Wall(s) edit tool to convert hip walls to gable walls without having to open the Wall Specification dialog.

4. Select **Build> Roof> Build Roof** and on the Roof panel of the **Build Roof** dialog that displays:



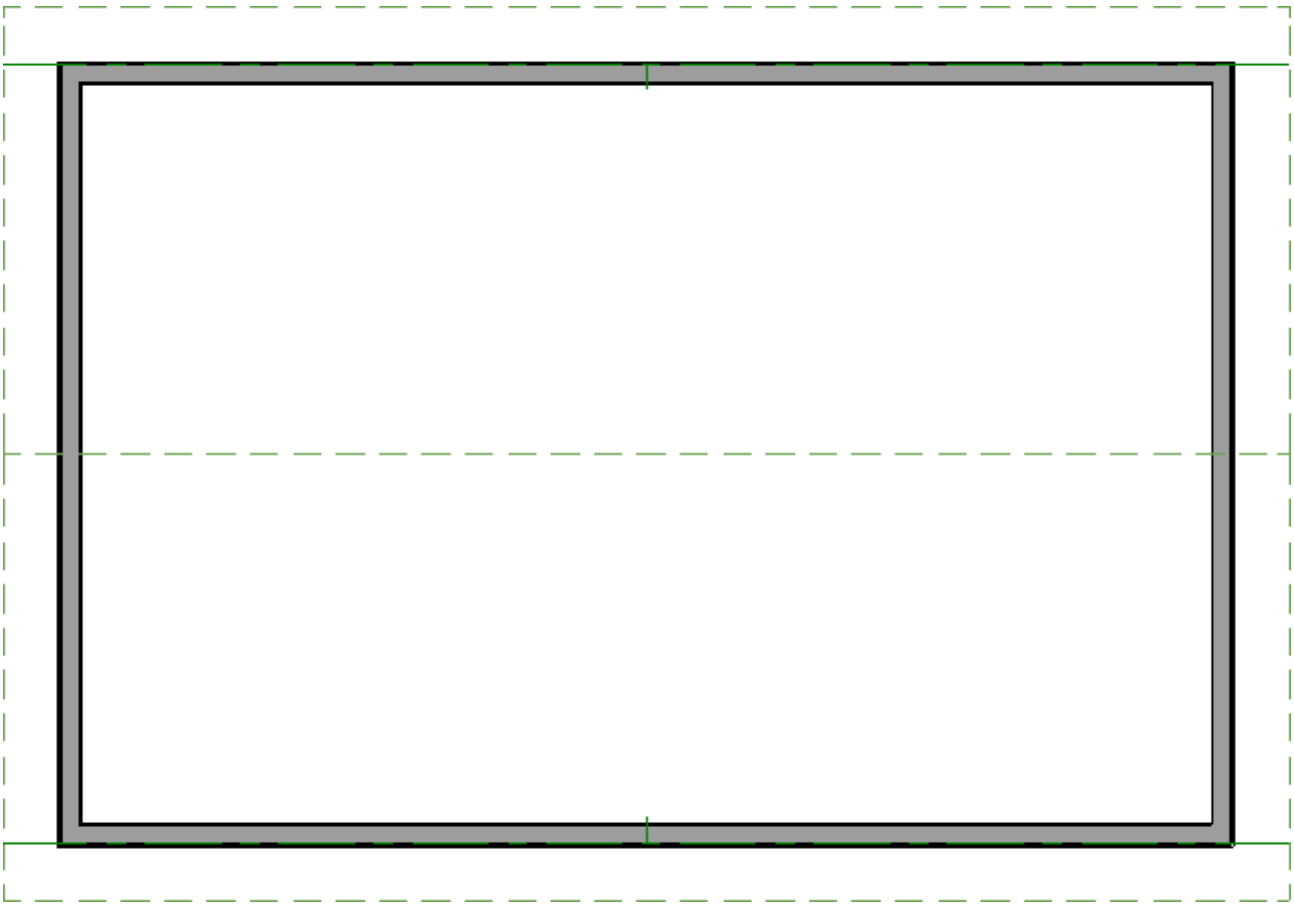
- Check **Build Roof Planes** or **Auto Rebuild Roofs**.
- Select the **Trusses** Framing Method.

  In X14, Home Designer Pro 2023, and prior versions, check the Trusses (no Birdsmouth) box instead.
- Set the desired **Pitch (in 12)**.

  In this example, a 6" in 12 pitch is used.
- Set the **Heel Height** to your liking.

  In X14, Home Designer Pro 2023, and prior versions, you must uncheck Automatic Birdsmouth Cut to define a raised heel.

  In this example, the value of 18" is used. This will raise the roof 18" from the vaulted ceiling, allowing space for the parallel chord trusses.
- Click **OK** to build the roof.



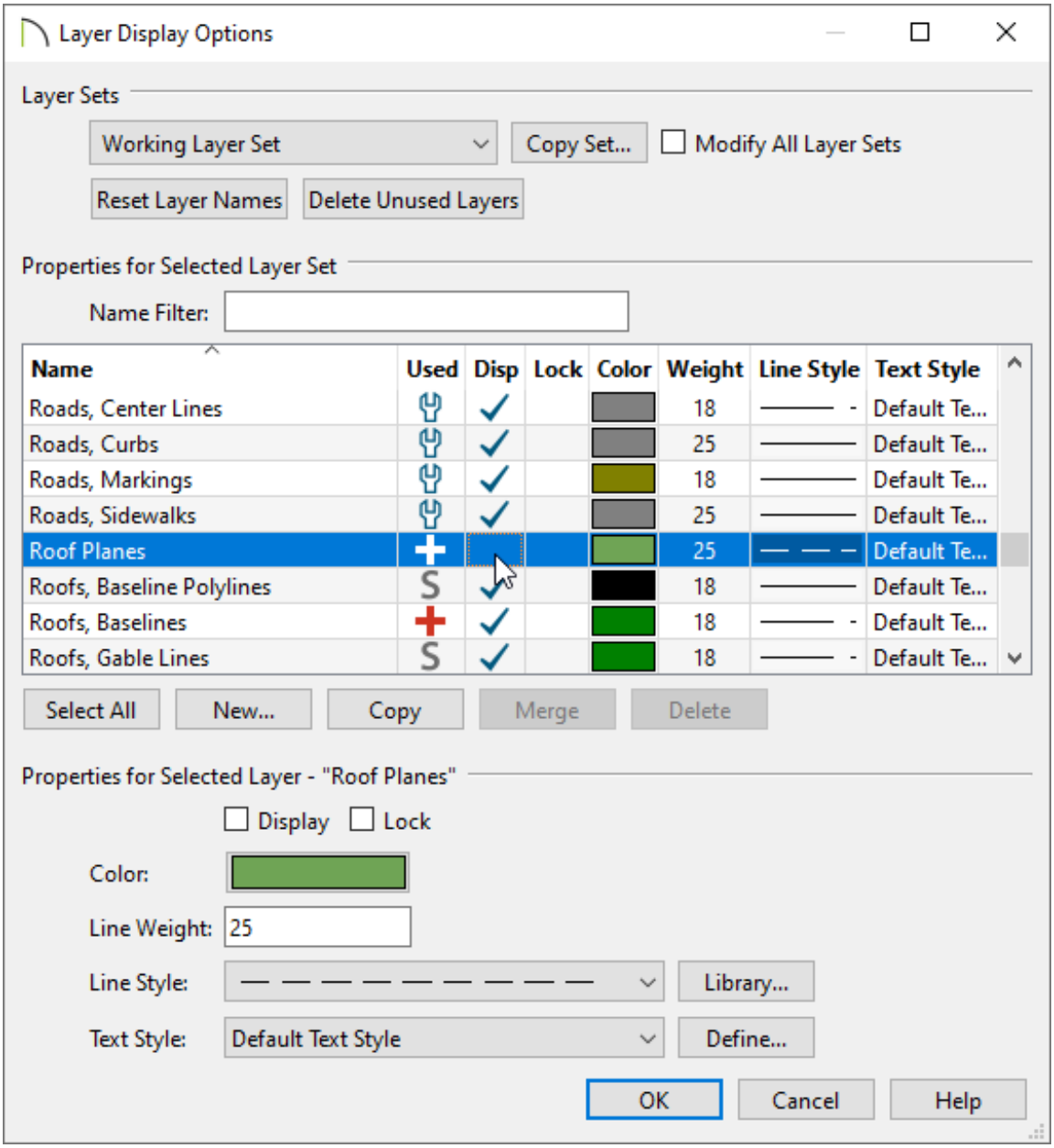
To build the ceiling

1. Using the **Select Objects** tool, click in the room that will have a vaulted ceiling to select it, then click the **Open Object** edit button.

2. On the STRUCTURE panel of the **Room Specification** dialog, uncheck **Flat Ceiling Over This Room**, then click **OK**.

3. To make it easier to draw ceiling planes, select **Tools> Layer Settings> Display Options** and in the **Layer Display Options** dialog for the active layer set:

   In Home Designer Pro, navigate to **Tools> Display Options** instead.



- Scroll down to the "Roof Planes" layer and remove the check in the **Disp** column or from the **Display** checkbox.

- Click **OK** to close the dialog and turn off the display of the roof planes in the plan.

4. Select **Build> Roof> Ceiling Plane** from the menu.

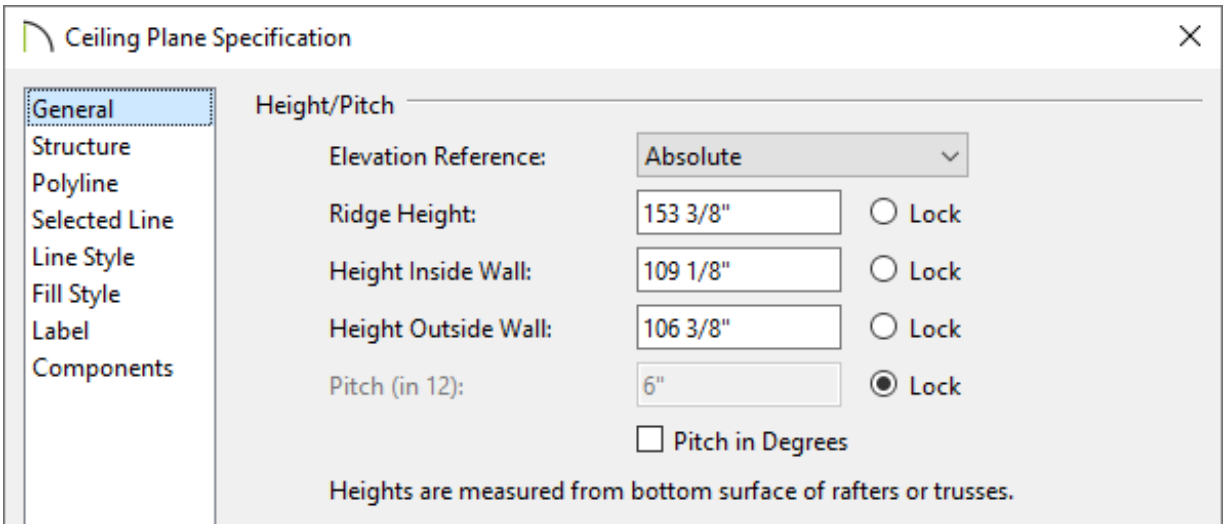
   - Click and drag a baseline along the outside of a wall defining the room that will have a vaulted ceiling.

   - When the baseline is complete, click once in the room to set the ceiling planes ridge.

5. Click on the ceiling plane to select it, then use the edit handles that display to stretch it across the room to the inside surfaces of the gable walls.

   In this example, two ceiling planes will form a ridge in the center of the room, so make sure the ridge edge of this plane does not extend past the middle of the room.

6. With the ceiling plane still selected, click the **Open Object** edit button and on the GENERAL panel of the **Ceiling Plane Specification** dialog:



- Specify the **Pitch** to match the roof that was generated in the section above. If the Pitch field is grayed out, select the Lock radio button next to Height Inside Wall.

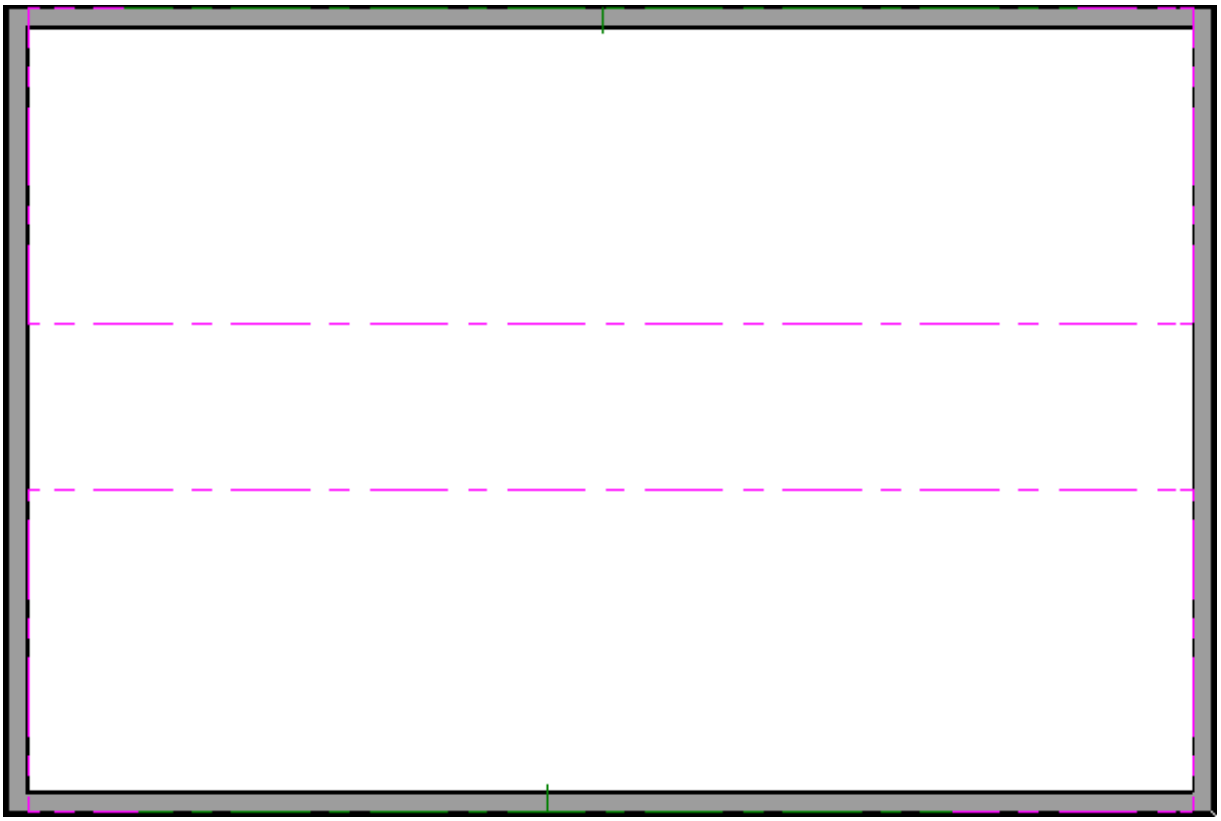
  In this example, 6" in 12 is used.

- Now lock the **Pitch** and set the **Height Inside Wall** value to match the Top of Plate value.

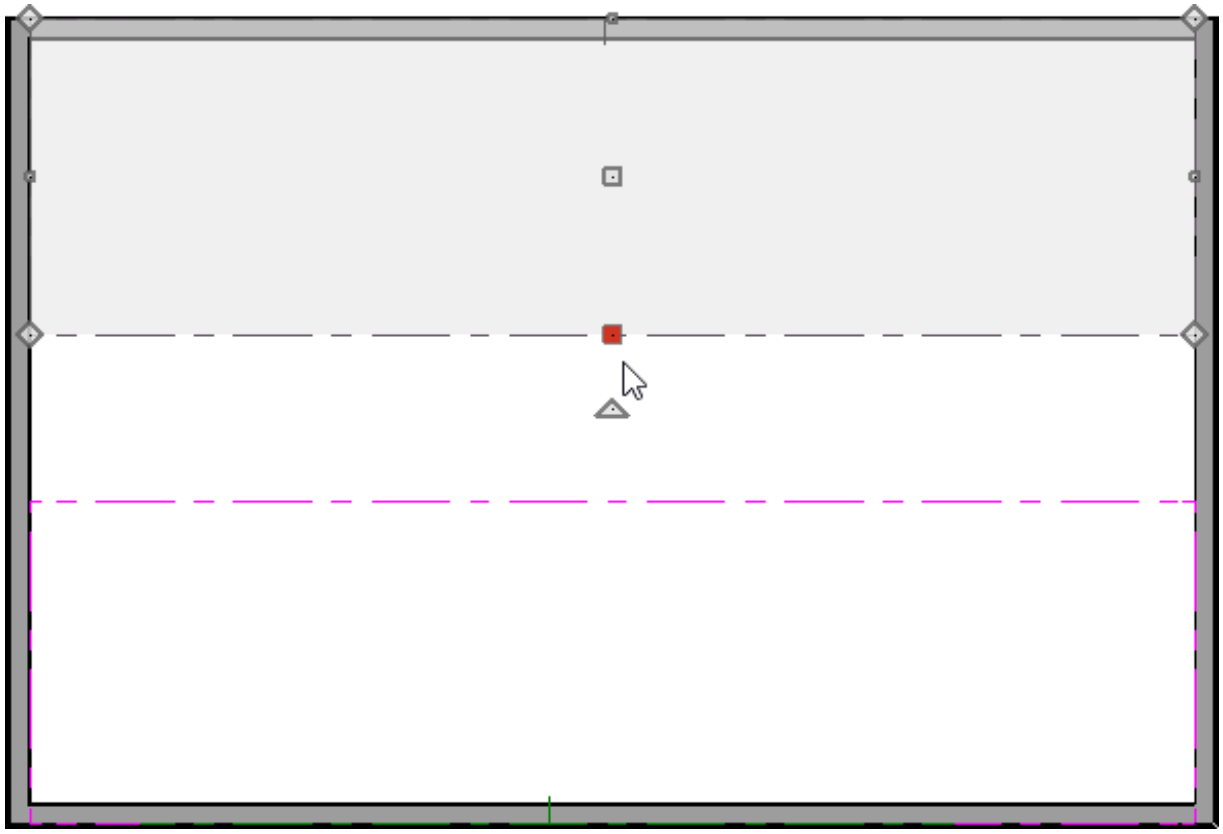
In this example, a value of 109 1/8" is specified, which matches the room's height.

- Click **OK** to close the dialog and apply the change.

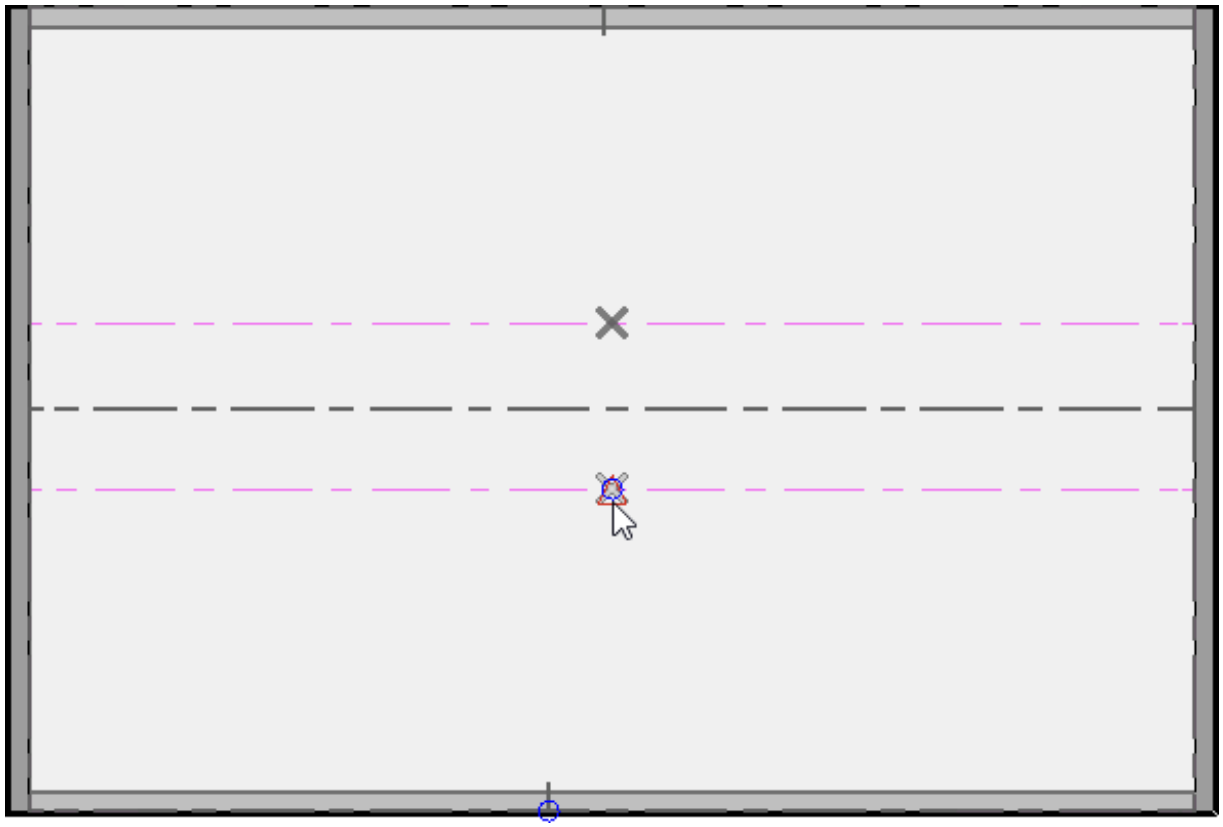
7. Repeat steps 4 through 6 to create a second ceiling plane opposite the first.



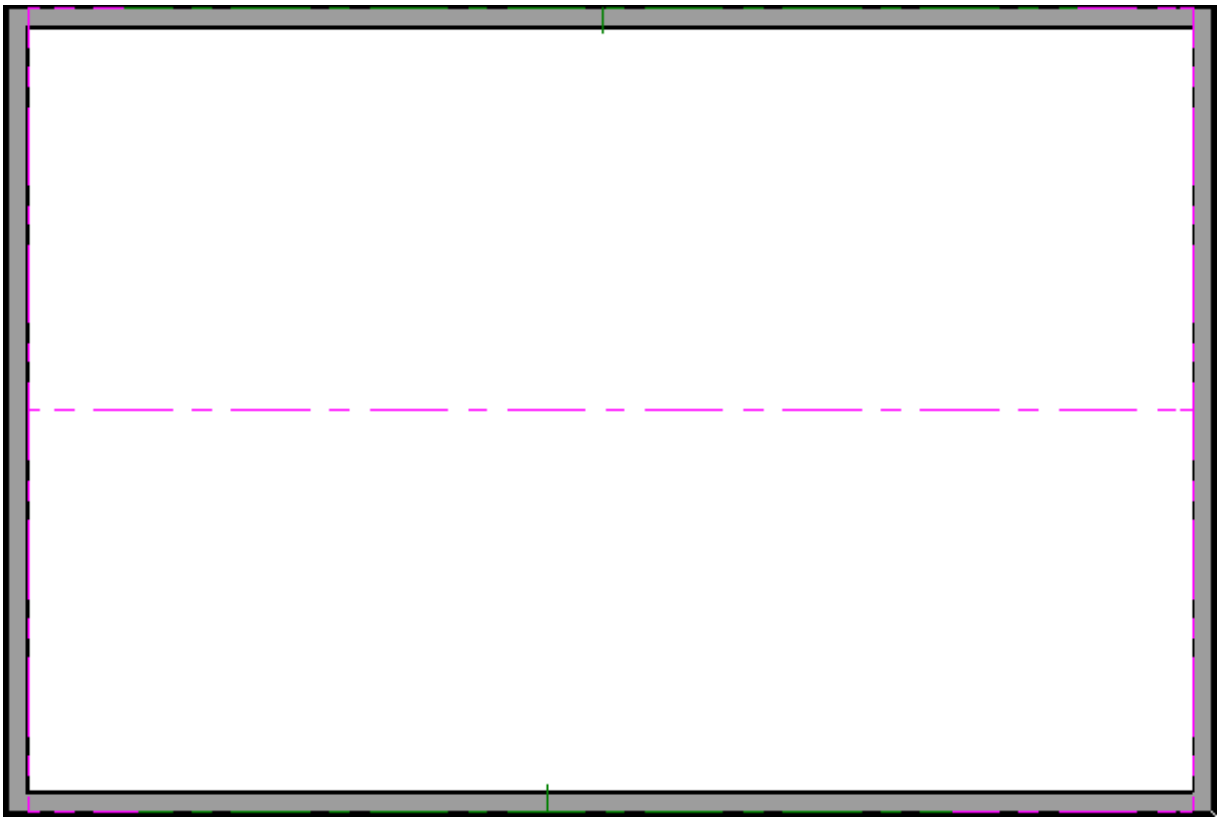
8. Click on the ridge edge of one of the ceiling planes.



9. Click the **Join Roof Planes** edit button then click the ridge edge of the other ceiling plane.



10. The two ceiling planes will join along the selected edges.



If you wish, you can toggle the display of the "Roof Planes" layer back on using the Layer Display Options dialog or the Active Layer Display Options (ALDO) side window.

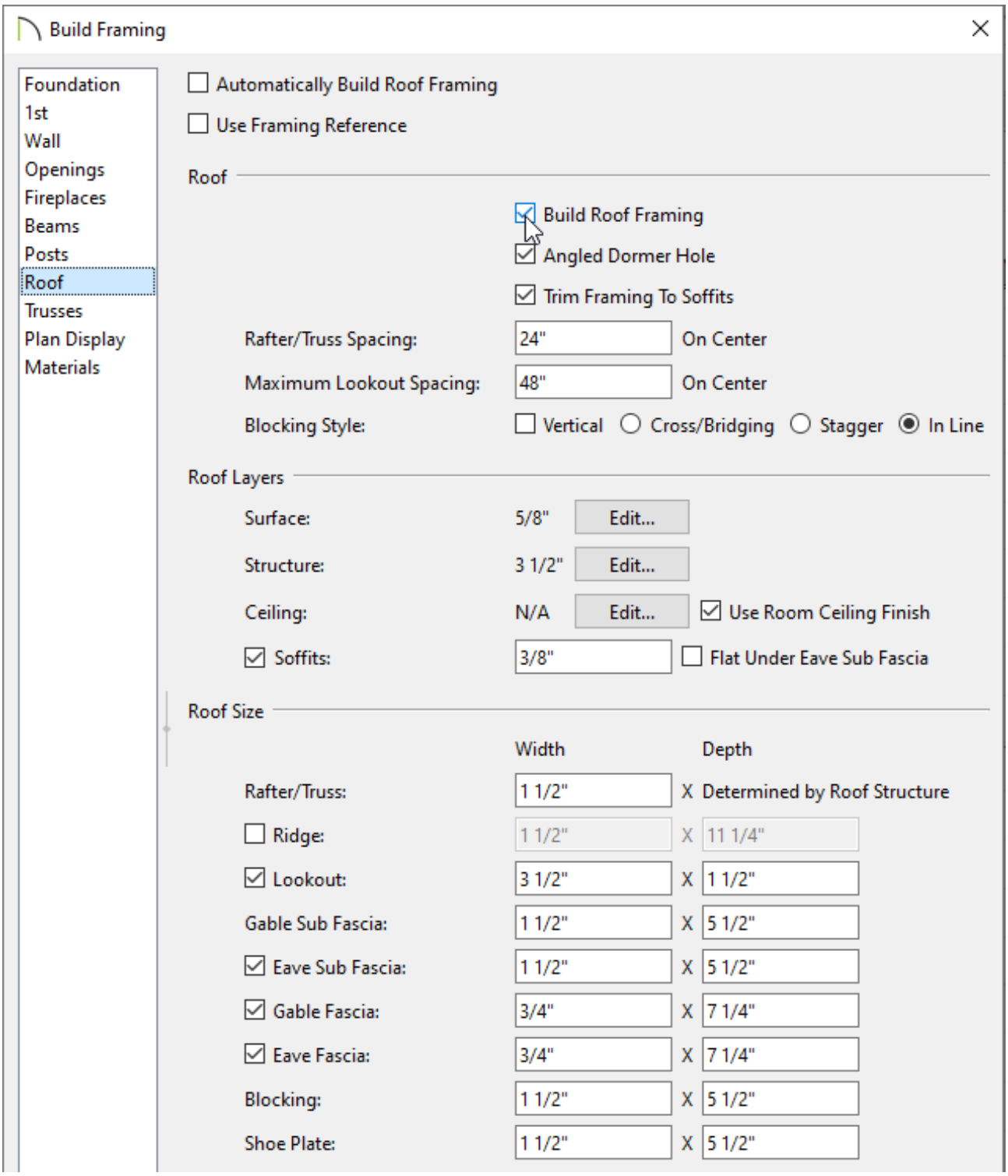
With both the ceiling and roof planes in place, you can now create roof trusses.

To create parallel chord roof trusses automatically*

*Applies to Chief Architect Premier X15, Home Designer Pro 2024, and newer versions.

1. Select **Build> Framing> Build Framing** from the menu.

2. In the **Build Framing** dialog that appears:



- On the Trusses panel, ensure that the Member Depth, Maximum Horizontal Span, and other options are set to your liking.

  In this example, we changed the Maximum Horizontal Span for both the Top and Bottom Chord to 30".

- On the Roof panel, verify that the settings here are also to your liking, then check the **Build Roof Framing** box.

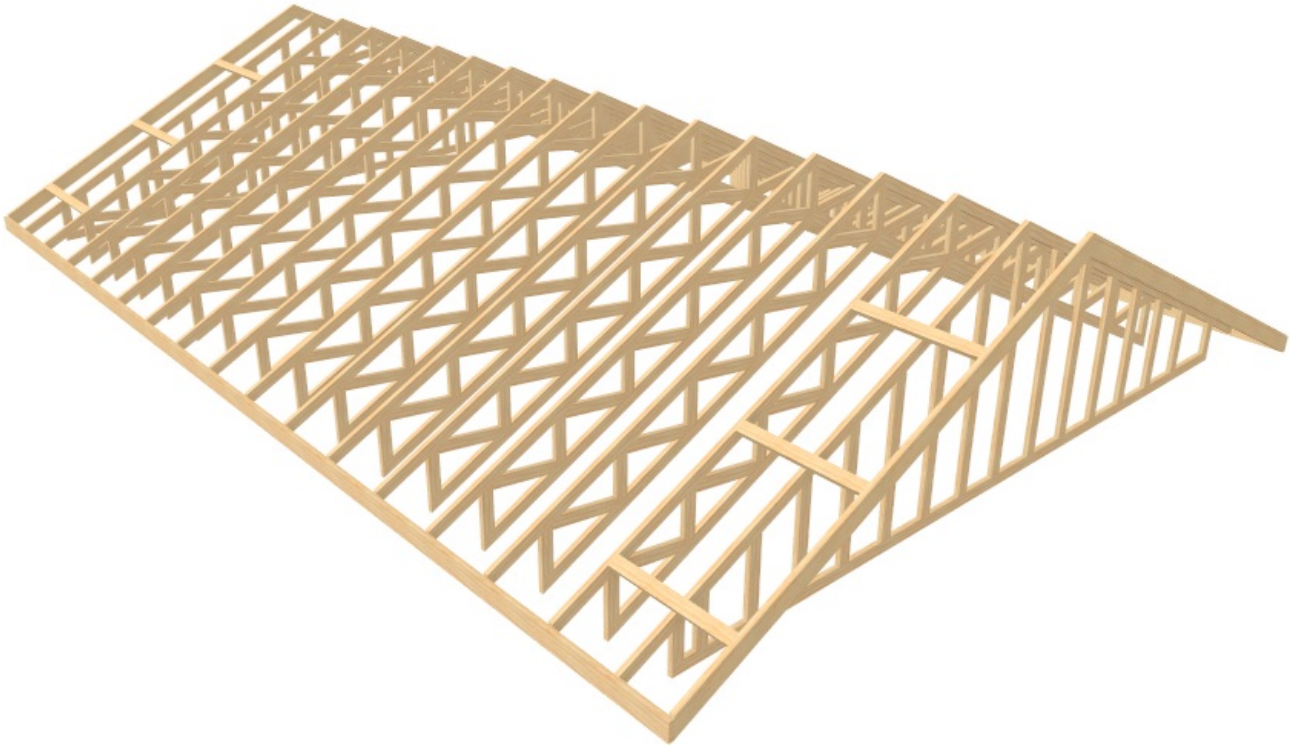
- Click **OK** to generate automatic trusses, along with any other automatic framing

components, such as blocking and fascia boards, if desired.

You may be prompted to choose whether or not to display roof framing layers in the active view. Whichever choice you choose will not affect the generation of the framing components.

> The trusses located on each end of the structure will be reduced gable end trusses. If you don't want these types of trusses to be built automatically, open the two gable walls up to specification, select the Roof panel, and uncheck the "Include Automatic End Truss Above" box. Once you regenerate the roof framing, end trusses will no longer be built.

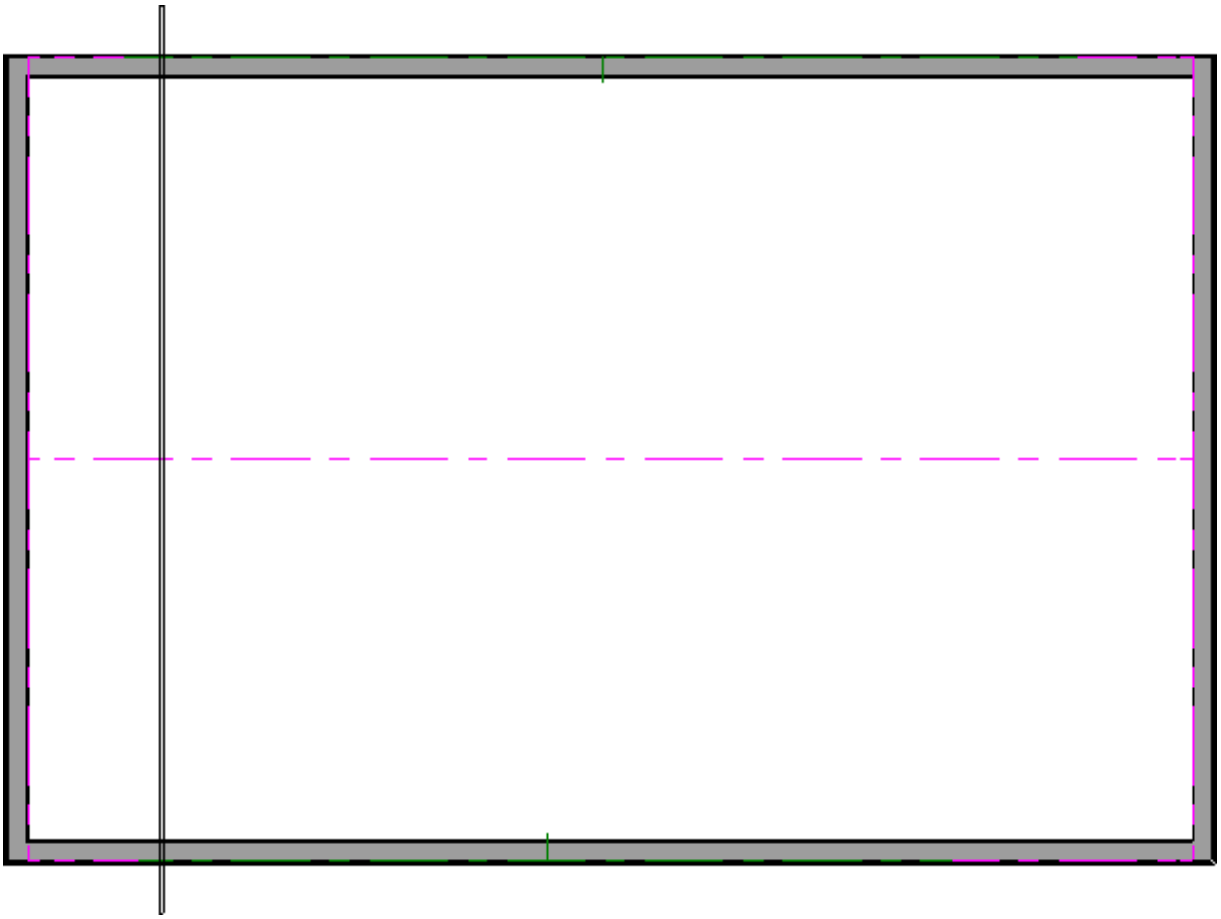
3. Create a **Perspective Framing Overview** to see the results.



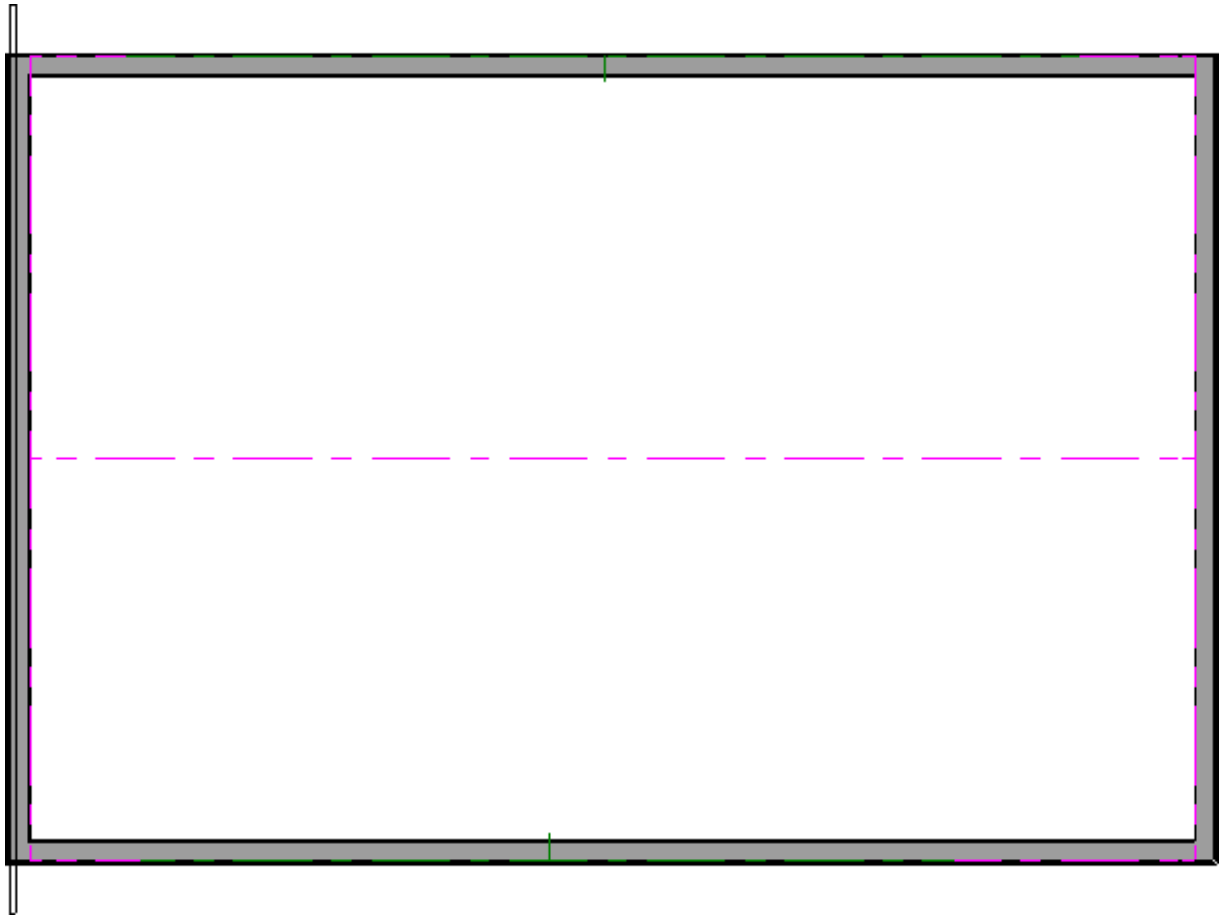
To create parallel chord roof trusses manually

1. Select **Build> Framing> Roof Truss** from the menu.

2. Click and drag to draw a roof truss perpendicular to the ridge line of the roof and ceiling planes.



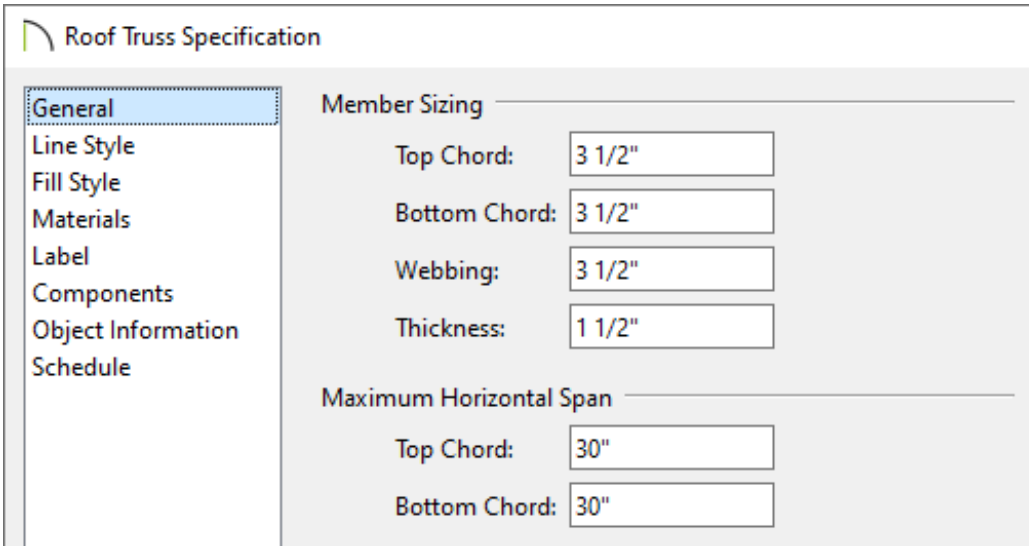
3. Click on the truss to select it and move it so that the exterior edge of the truss is aligned with the exterior edge of the framing layer of the wall.



4. With the truss in place, select it, then click the **Open Object** edit tool.

5. On the GENERAL panel of the **Roof Truss Specification** dialog that displays, change the **Maximum Horizontal Span** for both the **Top** and **Bottom Chords**, then click **OK**.

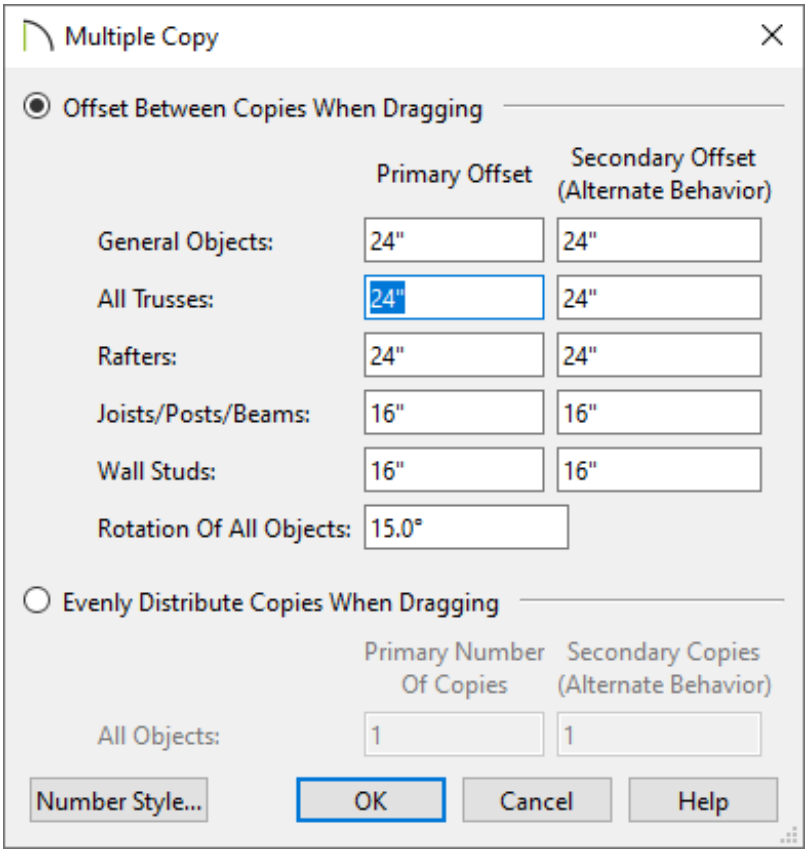
   In this example, 30" is specified for both.



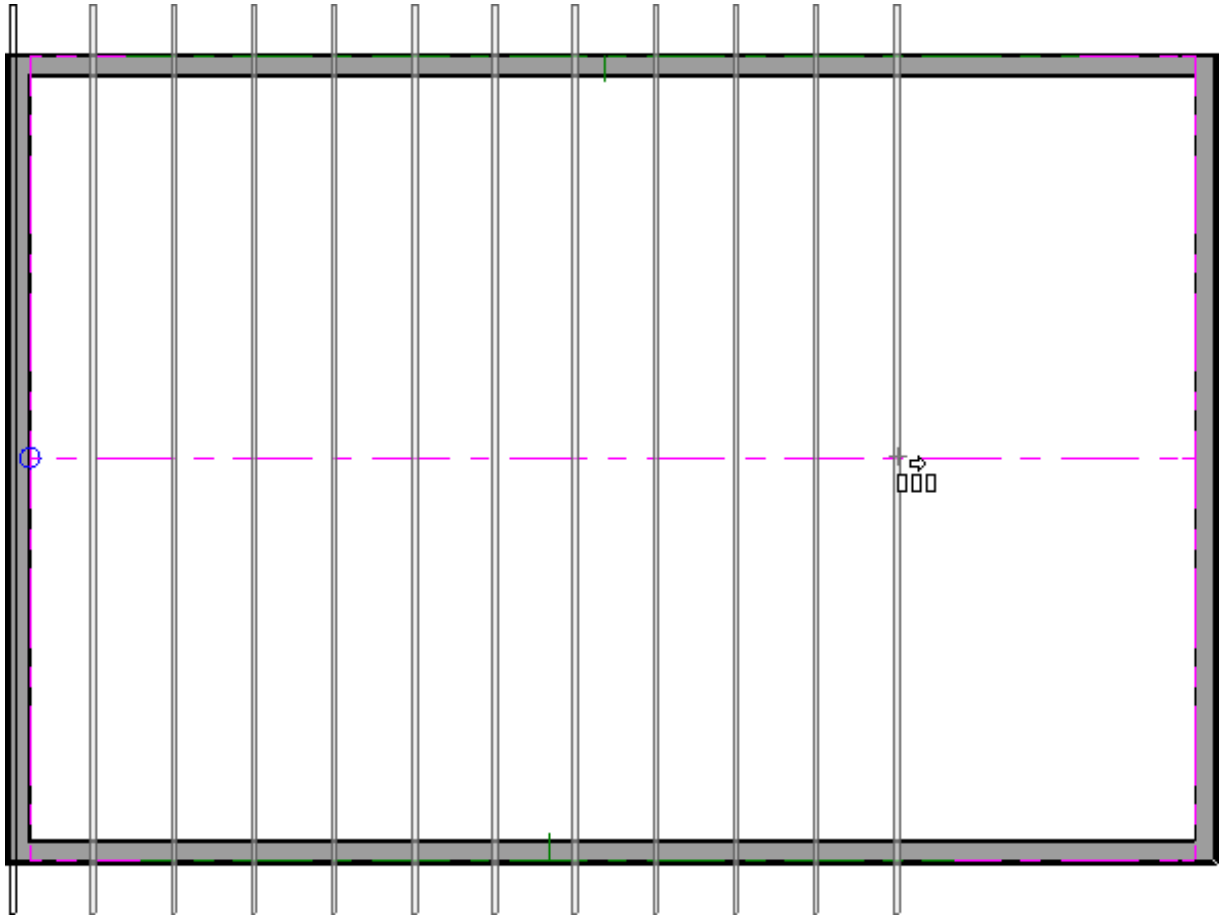
6. With the truss still selected, click the **Multiple Copy** edit button, then click the **Multiple Copy Interval** button to open the **Multiple Copy** dialog. Verify that **Offset Between Copies When Dragging** is selected and that the **Primary Offset** specified for **All Trusses** equals the desired O.C. truss spacing, then click **OK**.

   In this example, the default Primary Offset value of 24" is used.

   > **Note:** Multiple Copy is not available in Home Designer Pro. Instead, use the Transform/Replicate edit tool. As an example, if you wanted to create 6 copies all separated a certain distance from each other, you would check the Copy box, set the Number of Copies to 6, then check the option for Move and set the X Delta to be 24". Negative values can also be set for each of the deltas if needed.



7. Hover over the main Move edit handle on the truss until you see the **Multiple Copy** cursor display, then click and drag across the structure to create copies 24" apart.



The trusses located on each end of the structure will be a full size trusses. If you wish to have end trusses instead, group select the trusses on each end, open them up to specification, check the "End Truss" and "Force Truss Rebuild" boxes, then click OK.

8. Create a **Framing Overview** to see the results.

Now, additional framing components, such as lookouts and fascia boards, can be generated automatically using the Build Framing dialog.

Related Articles

- Creating a Log Truss (/support/article/KB-02781/creating-a-log-truss.html)
- Creating a Vaulted Ceiling and Scissor Trusses (/support/article/KB-00068/creating-a-vaulted-ceiling-and-scissor-trusses.html)
- Creating an Attic Truss (/support/article/KB-00933/creating-an-attic-truss.html)

- Creating an Energy Heel Truss (/support/article/KB-00032/creating-an-energy-heel-truss.html)
- Creating Roof Trusses (/support/article/KB-00981/creating-roof-trusses.html)

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