Building an A-Frame Structure

Reference Number: **KB-00452**
Last Modified: **January 30, 2024**

This article also applies to the following legacy products:
Pro | Architectural | Suite

QUESTION

How can I build an a-frame structure?

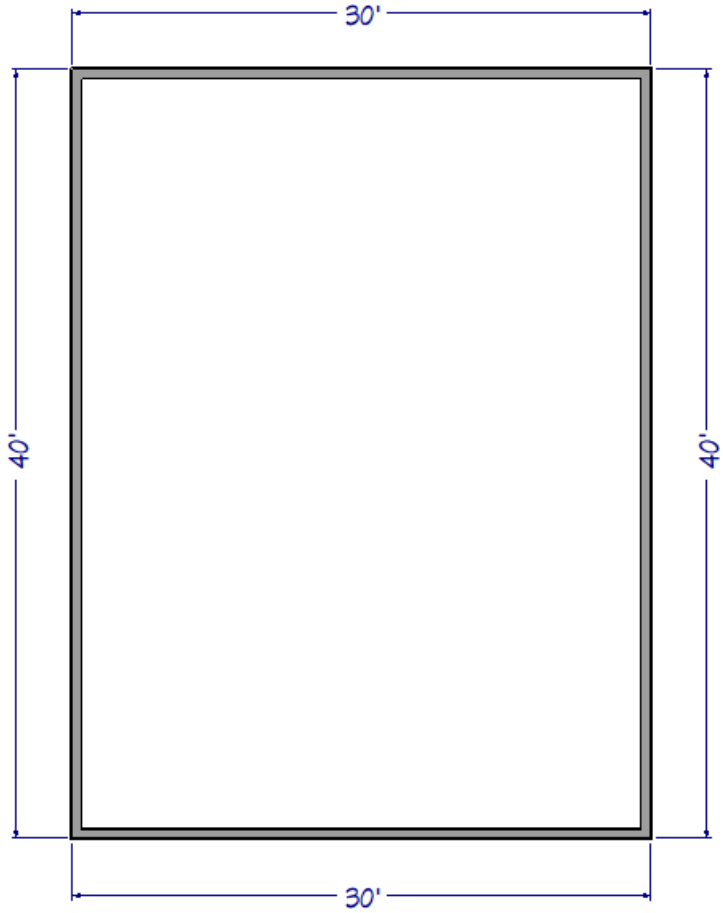
ANSWER

Building an a-frame structure requires making several roof modifications, including a higher than normal pitch value.

For this example, we will walk you through creating a basic a-frame structure in a new plan created using the Default style template. Once you understand this process, you can then take that knowledge and apply it to your own design.

To build the structure

1. Use the **Straight Exterior Wall** tool to draw a basic 30' x 40' rectangular structure.

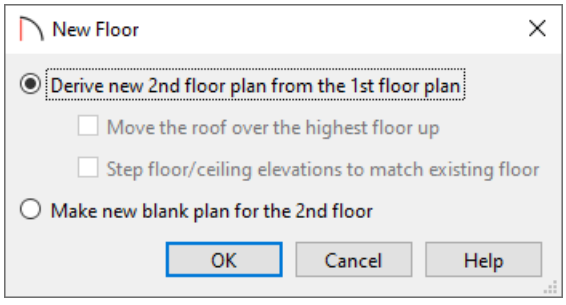


2. On the first floor, use the **Select Objects** tool to select one of the 30' exterior walls, then click on the **Change to Gable Wall** edit tool located in the Edit toolbar.

   You can also **Open** the wall up to specification and select the **Full Gable Wall** option located on the ROOF panel.

3. Repeat Step 2 to change the opposite 30' wall to be a Full Gable wall as well.

4. Navigate to **Build> Floor> Build New Floor** from the menu, and in the **New Floor** dialog, select **Derive new 2nd floor plan from the 1st floor plan**, then click **OK**.



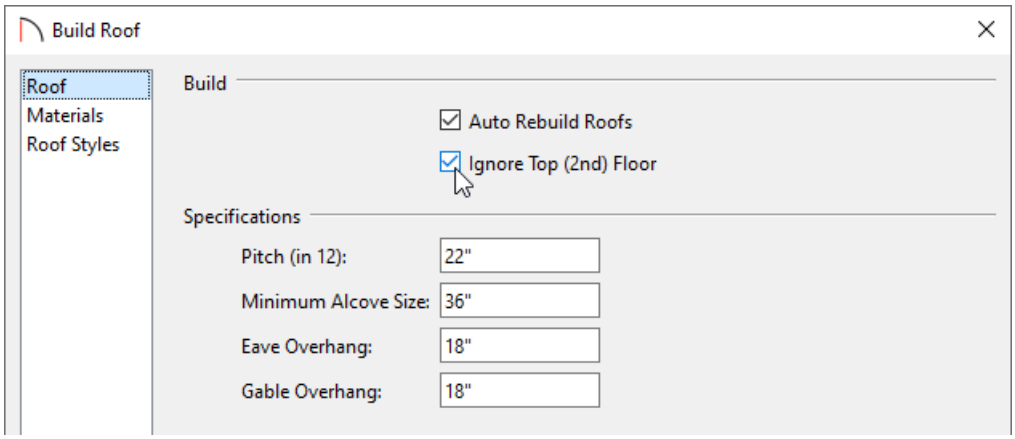
5. The **2nd Floor Defaults** dialog will display. Click **OK** to build the second floor without making any changes.

Once you have created a fully enclosed structure with multiple floors, you are ready to build the roof.

To build the roof

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

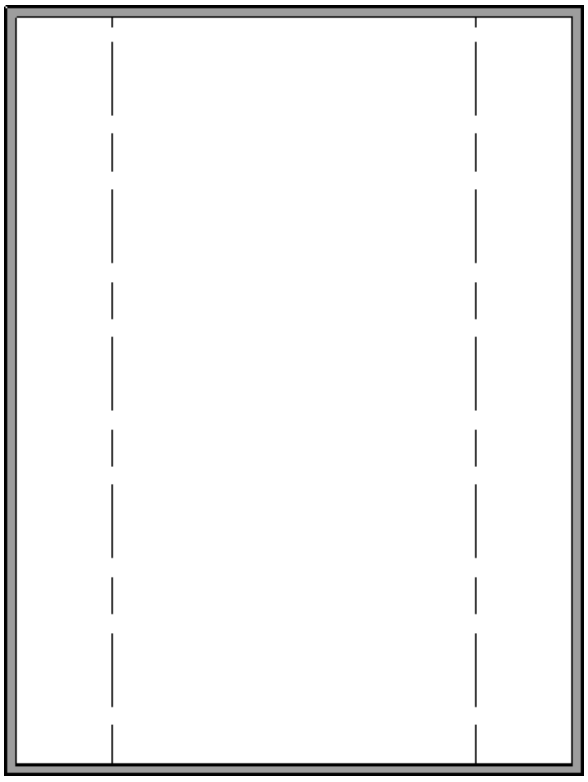
2. On the Roof panel of the **Build Roof** dialog:



   - Check the **Ignore Top (2nd Floor)** box.
   - Increase the **Pitch (in 12)** to an appropriate value for an a-frame structure.

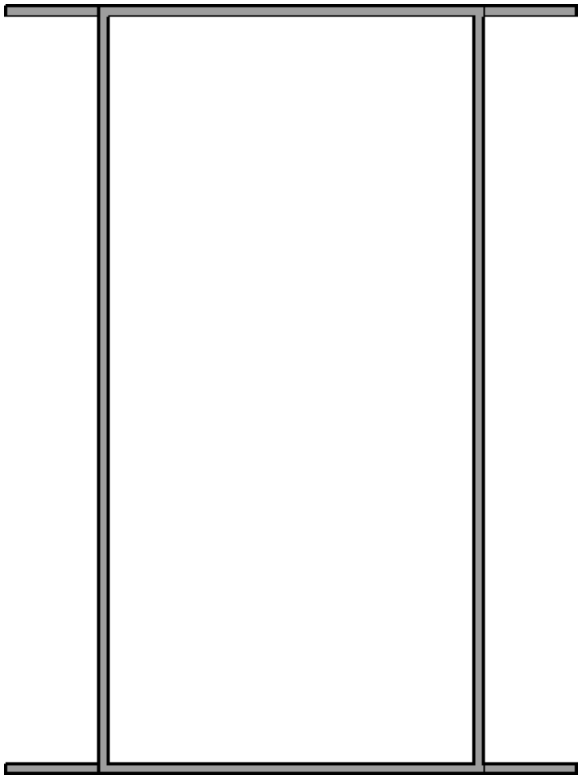
     In this example, we set the Pitch (in 12) to 22".

3. Click **OK** to build the roof using the new pitch, and notice the dashed lines that now display on the second floor, which represent ceiling break lines.



4. Using the **Select Objects** tool, select each of the 40' walls and move them inwards until they meet the ceiling break lines.

   In this example, the 40' walls on the second floor were moved 5' (60") inwards.

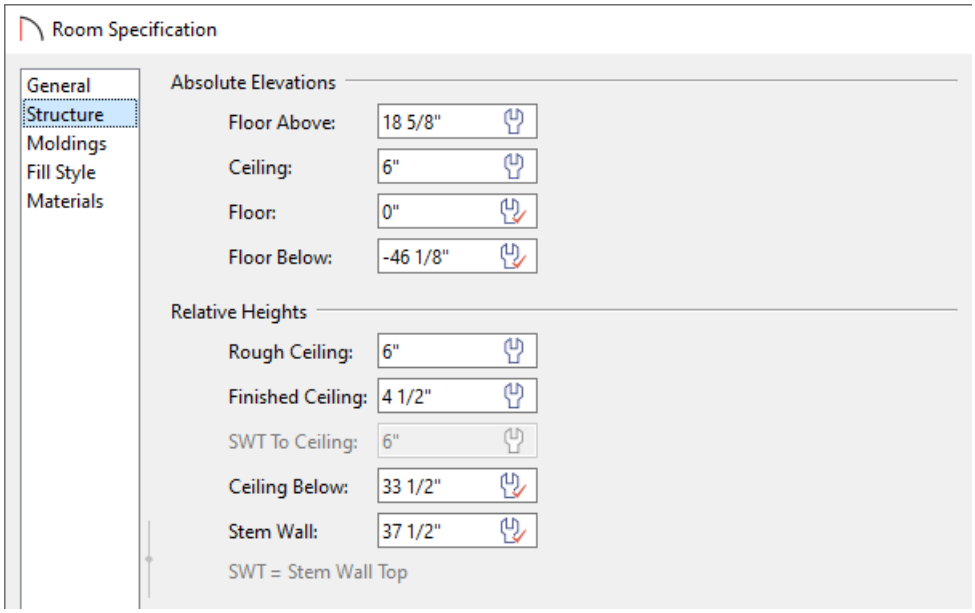


5. *(Optional)* If you don't want a flat ceiling for the second floor, select the room on the second floor using the **Select Objects** tool, then click the **Turn Off Ceiling** edit tool located on the Edit toolbar.

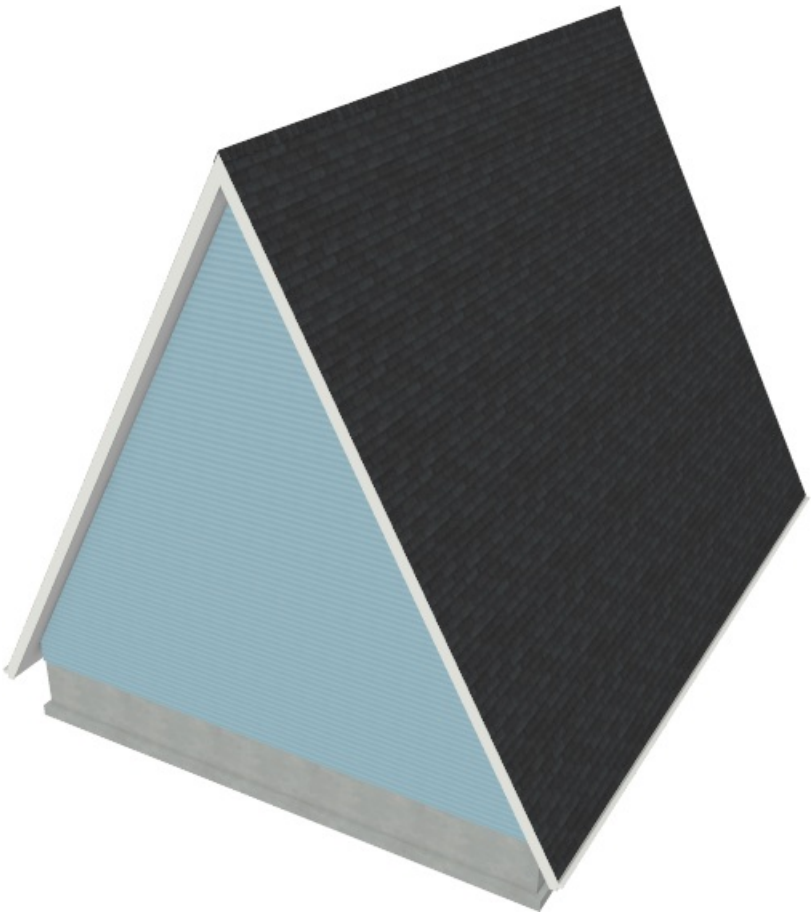
   You can also **Open** the room up to specification and uncheck the **Flat Ceiling Over This Room** box located on the STRUCTURE panel.

6. Navigate to the first floor, use the **Select Objects** tool to select the room here, then click on the **Open Object** edit tool.

7. On the STRUCTURE panel of the **Room Specification** dialog, lower the **Ceiling** to **6"**, then click **OK**.



8. Take a **Camera** view to see the results.



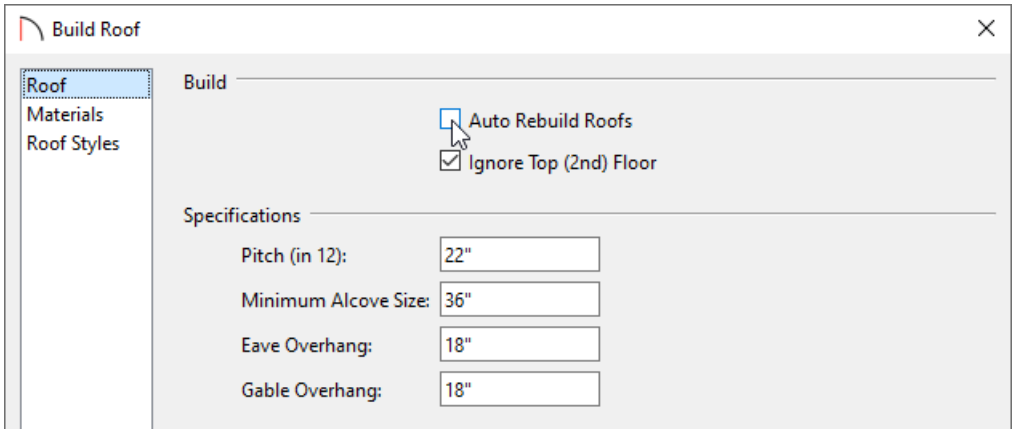
If you do not see a gable roof at this point, or the roof is too high, either the ceiling was not lowered in the room on the first floor, or Auto Rebuild Roofs is disabled.

With the a-frame established, you will now want to disable the automatic generation of your roof planes and reset the ceiling height for the first floor back to the default, or preferred, value.

To disable automatic roof generation and reset the ceiling height for the first floor

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

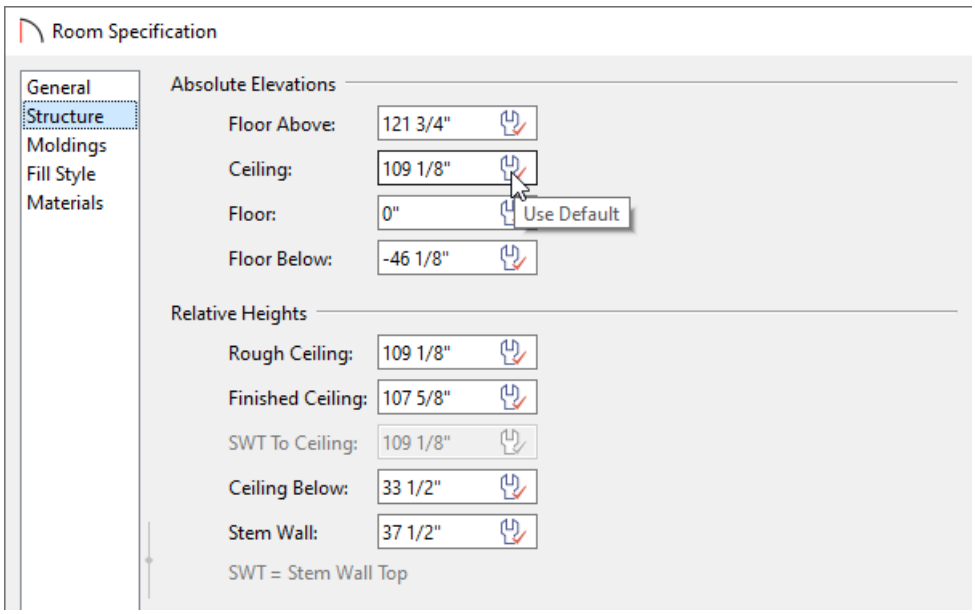
2. In the **Build Roof** dialog that displays, uncheck the **Auto Rebuild Roofs** box, then click **OK**.



3. Now that roofs will no longer regenerate, return to the floor plan view, use the **Select Objects** tool to select the room on the first floor again, then click on the **Open Object** edit tool.

4. On the STRUCTURE panel of the **Room Specification** dialog, click once on the wrench icon next to **Ceiling** to use the default ceiling value, then click **OK**.

> **Note:** If the 30' walls located on the second floor are protruding through the roof, they may not have been moved inward an appropriate distance. Please refer to Step 4 in the section above.



5. You are now ready to customize your design by adding interior walls, fixtures, furniture, etc.

> Lofts are quite common in a-frame structures. To learn how to design a loft in your design, please see the "Using Open Below Rooms to Define an Opening to a Lower Floor" resource in the Related Articles section below.

Related Articles

- Automatically Building a One and a Half Story Roof (/support/article/KB-00358/automatically-building-a-one-and-a-half-story-roof.html)
- Automatically Building the Basic Roof Styles (/support/article/KB-00359/automatically-building-the-basic-roof-styles.html)
- Resources for Creating a Complex Roof Plan (/support/article/KB-00158/resources-for-creating-a-complex-roof-plan.html)
- Specifying Roof Pitches (/support/article/KB-00127/specifying-roof-pitches.html)
- Troubleshooting why Roof Planes Fail to Generate (/support/article/KB-00115/troubleshooting-why-roof-planes-fail-to-generate.html)

Using Open Below Rooms to Define an Opening to a Lower Floor (/support/article/KB-00210/using-open-below-rooms-to-define-an-opening-to-a-lower-floor.html)

© 2003–2025 Chief Architect, Inc. All rights reserved // Terms of Use (https://www.chiefarchitect.com/company/terms.html) // Privacy Policy (https://www.chiefarchitect.com/company/privacy.html)