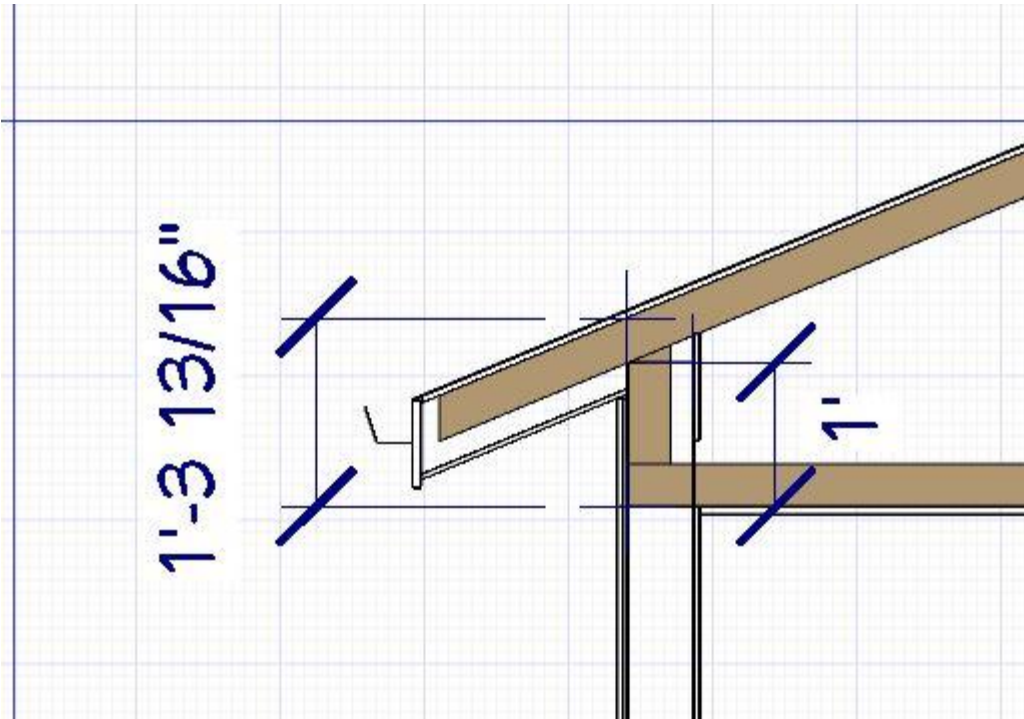


Helping to Understand Heel Heights in Chief Architect

To expand on how to control the heel height, first you need to decide what size truss chords that you want displayed when you build a truss. The Chief degaults are 2 x 4. If you plug a number into the raise/lower setting Glenn mentioned, you need to understand that Chief will add that setting to the vertical rafter depth (truss top chord) to arrive at the total heel height of the truss. The heel height is measured from the top of a wall's outside main layer to the top edge of the top chord vertically above it.

If I have a roof with a 5:12 pitch and I want a 12" heel height, the setting that I need to put in the raise/lower box in the roof dbx is the desired heel height minus the vertical rafter depth (VRD) of the top chord. For a 2 x 4 top chord at a 5:12 pitch, the VRD is 3-13/16". Therefore, the setting to put in the raise/lower box is 8-3/16". If you don't do it this way, and just plug in 12" in the raise/lower box, you'll end up with a heel height of 15-13/16". In this case, Chief's 12" measurement is from the top of the wall (outer main layer) to the bottom of the top chord directly above it.

I created myself a table of vertical rafter depths for various 2x sizes and for pitches from 1 to 12. I often refer to this when setting up the spec's for roofs in my projects.



Build Roof

Roof

Options
Framing
Rafter Tails
Ridge Caps
Gutter
Frieze
Shadow Boards
Arrow
Materials
Roof Styles

Build

☐ Build Roof Planes ☐ Retain Manually Drawn Roof Planes
☐ Auto Rebuild Roofs ☐ Retain Edited Automatic Roof Planes
☐ Make Roof Baseline Polyline ☐ Use Existing Roof Baselines
☐ Rebuild Walls/Floors/Ceilings
☐ Build Fascia And Roof Trim

Specifications

Pitch (in 12): ☒ Trusses (no Birdsmouth)

Roof Overhang

Eave:
Gable:

Roof Height

Raise/Lower From Ceiling Height: ☐ Ignore Top (1st) Floor
☒ Same Roof Height at Exterior Walls
☐ Same Height Eaves
☒ Allow Low Roof Planes

Build Framing

Foundation

1st
Wall
Openings
Fireplaces
Beams
Posts
Roof
Trusses
Materials

Roof Trusses

Member Depth

Top Chord:
Bottom Chord:
Webbing:

Maximum Horizontal Span

Top Chord:
Bottom Chord:

Options

Ceiling Step: ☐ Require Kingpost

Floor/Ceiling Trusses

Member Depth

Top Chord:
Bottom Chord:
Webbing:

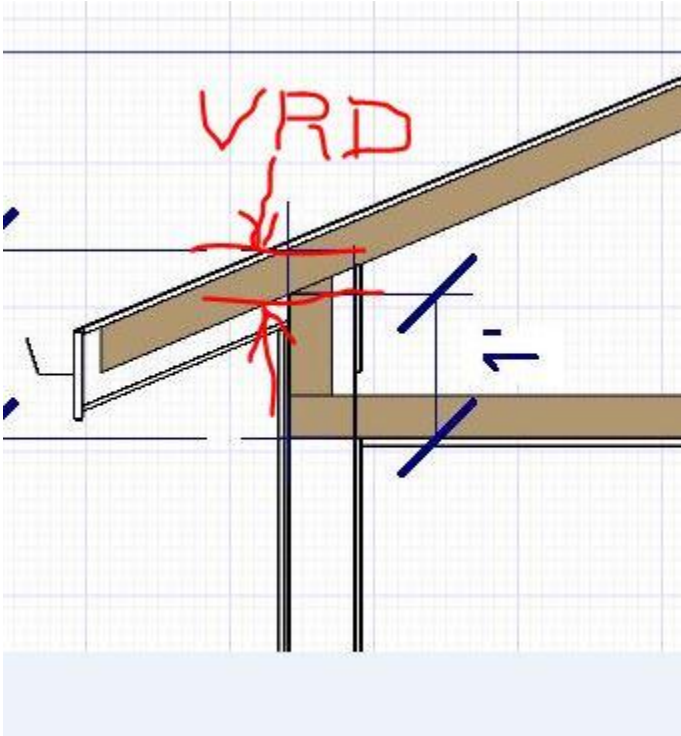
Options

Maximum Horizontal Span: ☐ Vertical Web

Vert. Rafter Depths

Roof Pitch	2x4	2x6	2x8	2x10	2x12
1:12	3 1/2	5 1/2	7 1/4	9 5/16	11 5/16
2:12	3 9/16	5 9/16	7 3/8	9 3/8	11 3/8
3:12	3 5/8	5 11/16	7 1/2	9 9/16	11 5/8
4:12	3 11/16	5 13/16	7 5/8	9 3/4	11 7/8
5:12	3 13/16	5 15/16	7 7/8	10	12 3/16
6:12	3 15/16	6 1/8	8 1/8	10 5/16	12 9/16
7:12	4 1/16	6 3/8	8 3/8	10 11/16	13
8:12	4 3/16	6 5/8	8 1/4	11 1/8	13 1/2
9:12	4 3/8	6 7/8	9 1/16	11 9/16	14 1/16
10:12	4 9/16	7 3/16	9 7/16	12 1/16	14 5/8
11:12	4 3/4	7 7/16	9 13/16	12 9/16	15 1/4
12:12	4 15/16	7 3/4	10 1/4	13 1/16	15 15/16

Even when using Roof Baseline Polyines (RBP), you still need to understand what Chief does under the hood when using them. In my example of using a 5:12 pitch with trusses checked and the top chord being a 2 x 4, Chief will build the RBP at 112'-15/16" if the entry in the Raise/Lower from Ceiling Height (RLCH) is left at the default '0' value. I should have clarified that in my example I have the ceiling height (rough) set at 109'-1/8". Therefore, getting back to the vertical rafter depth (VRD) part of how to position a roof, for a 2 x 4 at 5:12, the VRD = 3'-13/16" [i.e., Chief built the RBP to the top of the top chord above the outer main layer at the top of the wall $109'-1/8" + 3'-13/16" = 112'-15/16"$]. The graphic below is shown only to show the VRD of the top chord of the truss. The extra 12" wouldn't be shown if I redid the graphic.



Without knowing what goes on under Chief's 'hood', an inexperienced Chief user is going to be burning up some extra time to get their roofs positioned at the proper elevation. The only other simple way (but this takes a little time to do) to get your roof planes at the desired elevation is doing what Scott suggested take a section through the wall/roof connection and use CAD and dimensioning as required to see how much you need to move the roof to get it at the desired heel height.

Maybe it would be nice if Chief had a simple little graphic that would be accessible in the menu on the left side of the Build Roof dbx that would show users how Chief does this magic, similar to the graphic we get in the structure dbx when selecting and opening a room's specification. Maybe we would need two graphics, one for trussed roofs and one for raftered roofs with birdsmouths. Obviously, there could be a many configurations that couldn't all be addressed with the graphics, but the idea would be just to show the user something simple to help them see what happens with the settings.

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☐ Build Fascia And Roof Trim

Specifications

Pitch (in 12): 5"
☒ Trusses (no Birdsmouth)

Roof Overhang

Eave: 18"
Gable: 18"

Roof Height

Raise/Lower From Ceiling Height: 0"
☐ Ignore Top (1st) Floor
☒ Same Roof Height at Exterior Walls
☐ Same Height Eaves
☒ Allow Low Roof Planes

☒ Automatic Birdsmouth Cut

Raise Off Plate (+) or Birdsmouth (-): 0"
Birdsmouth Seat: 0"
Vertical Rafter Depth: 10"

Options

Segment Angle at Curved Wall: 15.0°
Minimum Alcove Size: 36"

Number Style... OK Cancel Help

Handwritten: Roof Graphic

Maybe this should be addressed better in the manual (or Help) ... the information is there but you need to do some digging to put it all together. Searching in Help for Roof Plane and/or Baseline will yield some good information. I find that there should have been at least one more graphic shown (and the equation) for a trussed roof. Actually, the rafter graphic shown might have looked better if the rafter was shown with the complete birdsmouth cut shown. Maybe I am getting a little picky about this ... sooner or later, if users spend enough time working with this stuff they will learn what goes on when Chief auto builds roofs after all the settings have been plugged in.

The Baseline

The pitch direction and initial height of any roof plane - manual or automatic - is determined by its Baseline.

The Baseline of the roof plane is normally located over the outer main layer of the wall and is used as the pivot point for the roof plane when the pitch is changed.

The Baseline height is determined by the following formula:

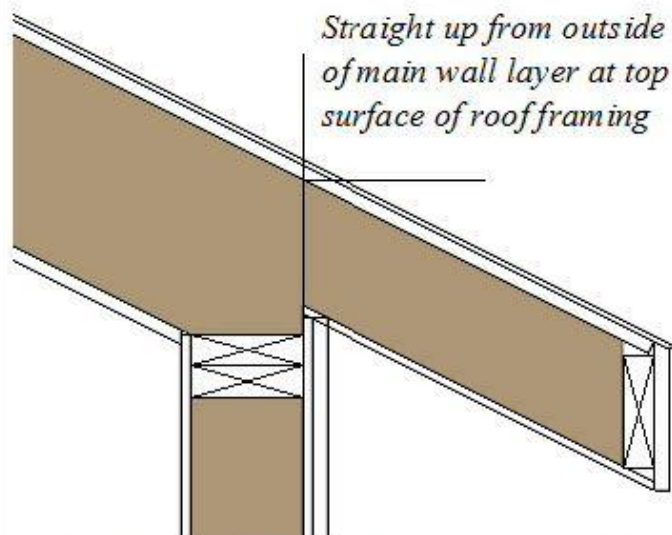
Elevation of the wall top plate

+ Vertical Rafter **Depth**

- Vertical Birdsmouth **Depth**

= Baseline Height

In a cross section, the Baseline is located directly above the outer surface of the main wall layer, at the top surface of the roof framing.



Location of Roof Baseline in cross-section

A roof Baseline displays as a separate line within its roof plane when the "Roofs, Baselines" layer is turned on. In 3D views, it can only be seen if the roof plane is selected.

A Baseline has a tick mark at its center point which indicates the direction that the roof plane slopes upward. If the upslope tick is pointing the wrong direction, either rotate the entire roof plane or delete it and draw a new one.

When drawing the Baseline of a roof plane, here are some things to consider:

- A Baseline does not have to be drawn over a wall, although it often is.
- A Baseline drawn along a wall should be drawn over the outer edge of the wall's main layer. It tries to snap to that layer.
- The elevation of the top plate is defined by the ceiling height in the room. If the roof plane is not drawn over a wall, it's height is based on the default ceiling height value for the current floor.
- If a Baseline is drawn over the top of any other roof plane, the Baseline height equals the height of the existing roof plane at the point where you started drawing.

Once drawn, a Baseline can be selected in floor plan view and edited independent of the roof plane. See [Editing Roof Baselines](#).