


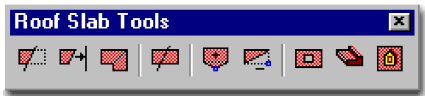

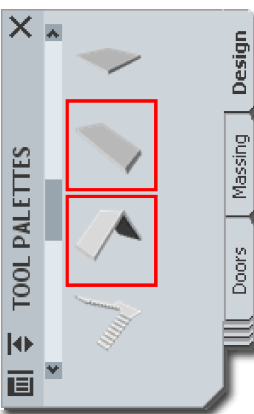
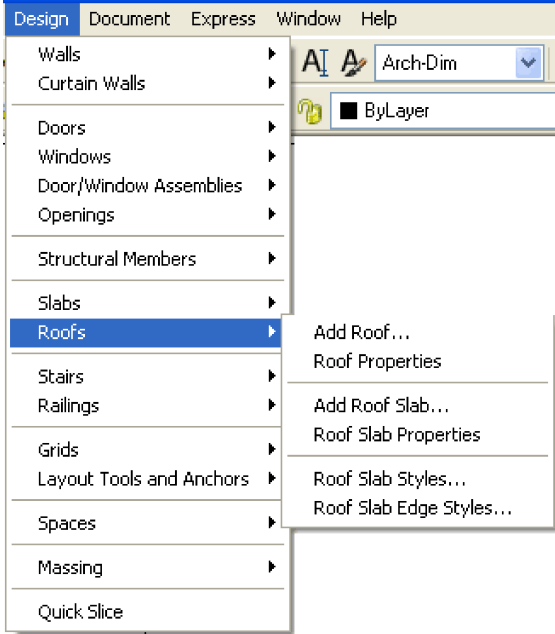


PART 8

ROOFS - ROOF SLABS - ROOF SLAB EDGES

Contents:

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<h1>1</h1> <h2>Roofs - Roof Slabs Access</h2>	1-8 ROOFS - ROOF SLABS
<p>How do I get this toolbar?</p> <p>You can also acquire access to some of these commands from the Alternate Design pull-down menu. From the Design pull-down menu, pick Roofs > and cascade to their respective command options - see image below, right. This toolbar is an optional tool and is not needed to use this guide but may help.</p>	
<p>Roof Slab Tools Toolbar</p> <p>For Editing Roofs, there are many tools to select from and you may find them a little more difficult to find in ADT 4 than in the previous two releases. This is because a lot of these editing tools are now available via right-click object-specific pop-up menus or through the Properties Palettes. A great deal of Roof Editing can also be achieved by working with Grips. Illustrated to the right is the Roof Slab Tools toolbar that provides access to the tools discussed in Part 9 of this guide.</p>	
<p>Roofs and Roof Slabs pull-down menu and Tool Palette</p> <p>Alt.Menu Design> Roofs</p>  <p>Keyboard Roof or RoofSlab</p> <p>Links Adjusting to the New Interface for AutoCAD and ADT Users- for how to activate the Design pull-down menu</p>  <p>In the first release of Architectural Desktop, the Roof Object was the only solution we had for creating roofs but it soon became evident that roofs can easily become far more complex than any routine can handle so a new Object was introduced in ADT 3.0 called a Roof Slab. Though the Roof Slab offers greater flexibility in design options, it can also be more difficult to work with and thus I continue to recommend that designers start with the Roof Object whenever possible and then convert it to a Roof Slab Object if that option is required. Of course there are times when it is obvious that using the Roof Slab Object is the right choice from the beginning, such as flat roofs and thus you should simply become versed in both types and pick the best option based on experience.</p> <p>Roof objects do not have Styles but Roof Slabs do. Roof Slabs have another level of complexity involving a sub-Style called a Roof Slab Edge Style that can be attached to produce custom Soffit and Fascia conditions.</p>	 <p>On the command line, you can type "Roof" or "RoofSlab" when you want access to many of the Roof and Roof Slab creation options. For direct access to an option within the Roof or Roof Slab command-line menu, you can type the primary command plus the option you want direct access to. For example, if you want to Add a Roof, you can type "RoofAdd" or if you want to Modify a Roof Slab, you can type "RoofSlabProps" or "-RoofSlabModify".</p> <p>Below is the command line read-out for "Roof" and "Roof Slab":</p> <p>Command: ROOF Roof [Add/Convert/Properties/Edit]:</p> <p>Command: ROOFSLAB Roof slab [Add/Convert/Modify/Properties/Styles/Edit/edGes/Hole/Dormer]:</p>

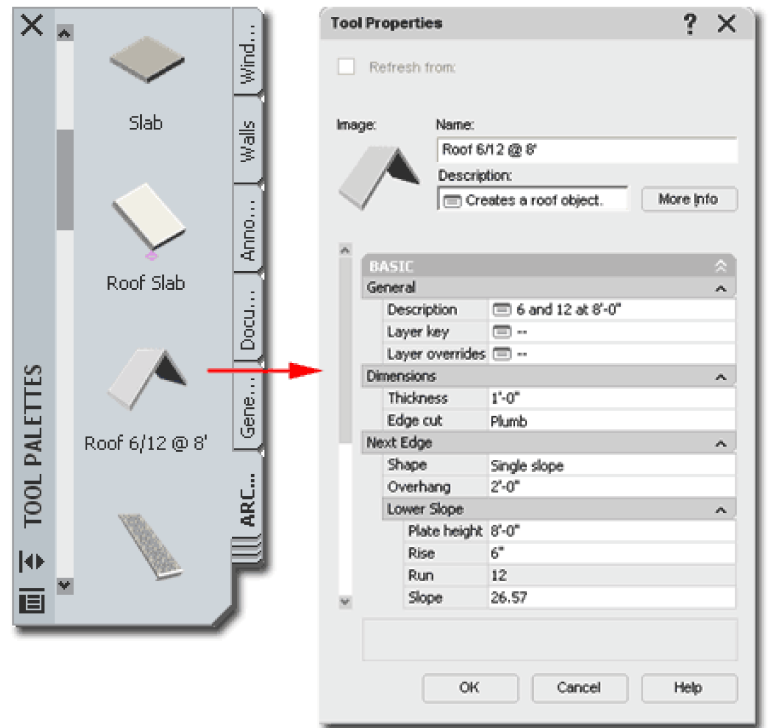
2 Loading Roof Slab Styles

Roof Styles

Roof Objects (not Roof Slab Objects) do not have Styles so you cannot use the Style Manager to Import specific Roof Configurations. Should you want to acquire the settings applied to one Roof for a new Roof, you can use the " **Match**" option on the command line - see **RoofAdd > Match**.

Illustrated to the right I show another way that you can configure Roof Objects to behave more like they have Styles. By using the **Tool Palette Icons**, you can Copy the Generic Roof Icon and create new ones that hold specific settings that you typically use such as Thickness, Edge cut, Overhang, Plate height, Rise and so forth. To distinguish your Roofs, you can use names that indicate what they will create and you can use the Description field to elaborate on the Name.

See [Tool Palettes Overview](#) in Part i - Introduction for more information on how to work with Tool Palettes and Icons.



Opening Roof Slab Style templates in the Style Manager

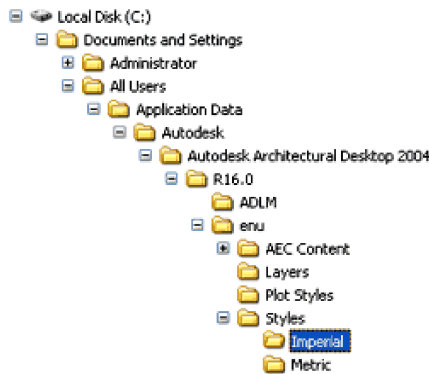
Alt. Menu **Design> Roofs> Roof Slab Styles...**



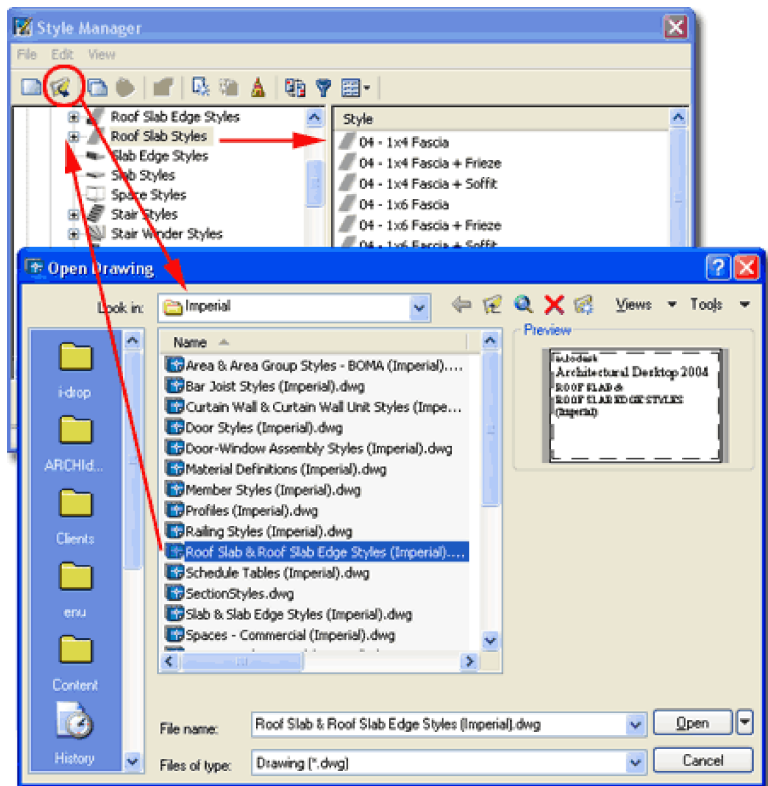
Keyboard **RoofSlabStyle**

Links [Roof Slab Styles](#) - for how to create a Roof Slab Style
[Copying Wall Styles in the Style Manager](#) - for more information on how to copy Styles from the Style Manager

ADT comes with a short list of predefined **Roof Slab Styles** that you can access through the **Style Manager** or by using the **Content Browser Window** (Architectural Desktop Design Tool Catalog... Roof Slabs and Slabs). Much like Slabs, Roof Slabs can be quite simple and you may not need any of the predefined Styles but since you are likely to want Materials, custom Fascias, custom Soffits and unique Display Properties, you will probably want to reverse engineer these Styles to create your own permutations.



The **Roof Slab Object** is nearly identical to the Slab Object and thus you may soon be wishing for more features for such things as material components, framing options and better construction tools for intersections, skylights and dormers. One of the primary problems with the Roof Slab Object is that it, like



For local installations of ADT, you are likely to find the **Imperial** or **Metric Roof Slab Styles** in the **Styles Folder** as illustrated to the left. The full path

the Roof Object, measures the Overhang distance from the Baseline (a perimeter edge at the planar justification point) or Pivot Point so if you draw a Roof Slab along the inside face of stud or structure, you have to add the thickness of the Wall. Unlike the Roof Object, however, when you use the RoofSlabConvert option, you can specify where you want the Baseline/Pivot Point relative to the Wall. After creation, there are several options for working with the Pivot Point and Baseline locations but the Overhang value is always measured from the Baseline.

Be aware that all of the predefined Roof Slab Styles come with Roof Slab Edge Styles already assigned; hence the "Fascia" and "Soffit" references in their Names. Even the "Plumb Cut" and "Square Cut" Roof Slab Styles have Roof Slab Edge Style assignments.

Roof Slab Edge Styles

Alt.Menu **Design> Roofs> Roof Slab Edge Styles...**



Keyboard **RoofSlabEdgeStyle**

Links [Modify Roof Slab - Properties Palette](#) - for how to apply them to Roof Slabs.

[Roof Slab Edge Styles](#) - for the full story on how to create and use your own custom Roof Slab Edge Styles.

To access and import **Roof Slab Edge Styles**, you can use the same Style file discussed above for Roof Slab Styles. Each of the Roof Slabs Styles comes with Roof Slab Edge Styles so you actually get both when you import the Roof Slab Styles.

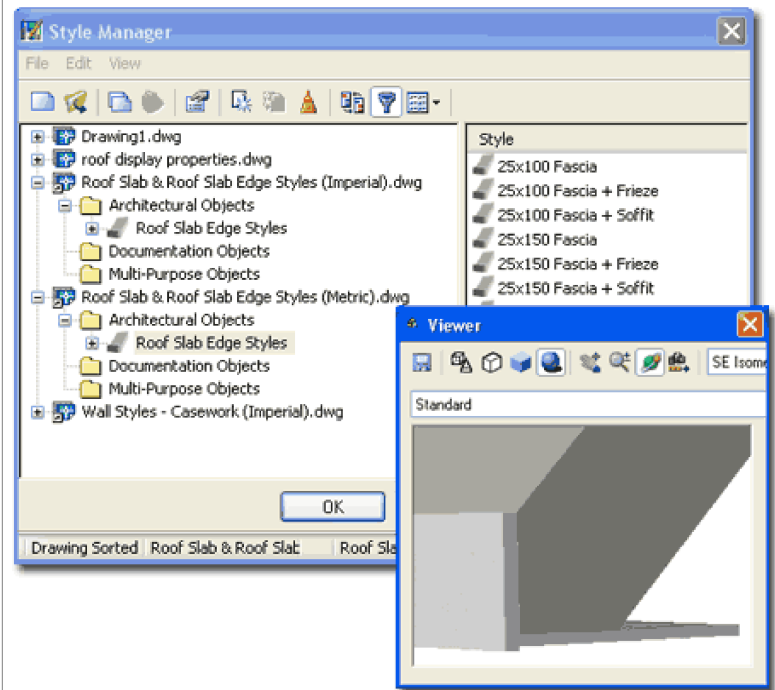
Roof Slab Edge Styles provide the option for designing the edge condition around the perimeter of a Roof Slab. The general term for these edge conditions is "**Fascia**" and "**Soffit**" but you can do just about anything you want around the edge as long as it can be created by extruding a profile shape along the full length of one or more edges. Slabs, for example, use a "Soffit" to create a perimeter footing detail and that could actually be used on a Roof Slab as well. You can apply different Roof Slab Edges along one Roof Slab but you may not always like the automatically mitered corners they produce. One Roof Slab Edge Style can store two Profiles; one for the Fascia component and one for the Soffit component. Read more under [Roof Slab Edge Styles](#) below.

Illustrated to the right I show the **Metric** list of Roof Slab Edge Styles.

to this location may vary but typically it is as illustrated. On a Network based installation of ADT, these Styles should be on a captured drive (like "G:\offices standards") or similar location with a folder name that indicates Styles. Consult your CAD or IT manager if you cannot locate the Styles Folder.

Roof Slab & Roof Slab Edge Styles (Imperial).dwg

Roof Slab & Roof Slab Edge Styles (Metric) .dwg

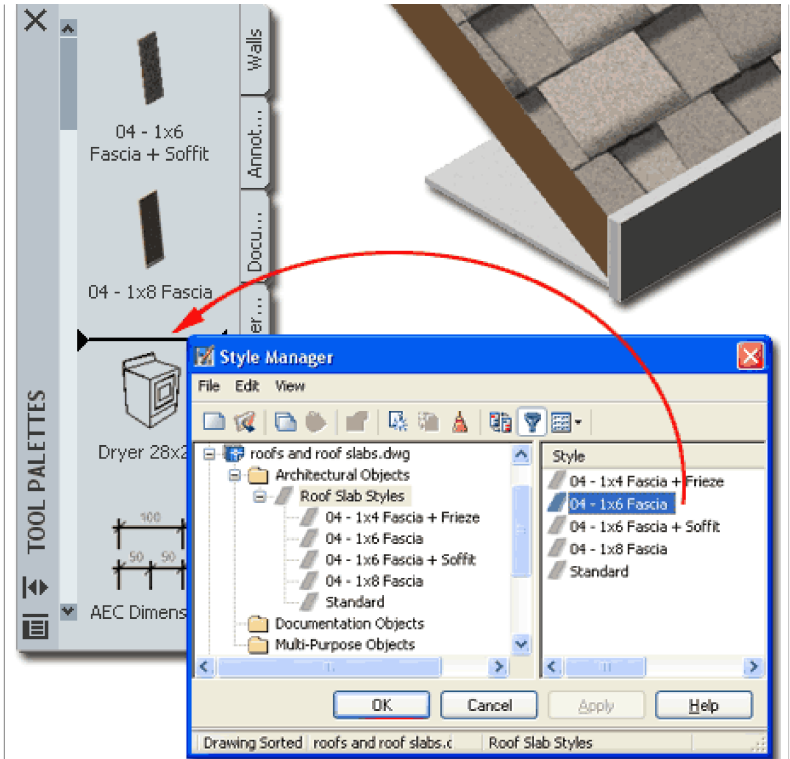


Getting the most out of the Roof Slab Styles

Links [Style Manager](#) - for more reading on Styles

Because Roof Slab Styles can have Roof Slab Edge Styles as a Property, you will need to transfer any of the predefined Roof Slab Styles to a Tool Palette in order to take advantage of these Properties. If you don't turn the Style into a Palette Icon, you will not get the default Properties as designed for that particular Roof Slab Style.

Illustrated to the right I show how you can drag-n-drop a Roof Slab Style from the Style Manager right on to any active Tool Palette. Once you have completed this process, you can right-click on the new icon and check the Properties. You should find that under the Dimensions section of the Tool Properties Palette that a Baseline edge has been set along with an Edge Style Location path to where this Edge Style is being imported from.



3 Adding Roofs

3-8 ROOFS - ROOF SLABS

Add Roof - Properties Palette

Alt.Menu **Design> Roofs> Add Roof...**



Keyboard **RoofAdd**

Since Roof Objects don't have Styles, you must make all of your design decisions on the Properties Palette - illustrated to the right.

The good news about these options is that you can always edit them later using the same Properties Palette so don't be afraid to experiment while learning to use this object on projects. Of the set of options, the most significant is the **Shape** which offers three different types that can affect your Roof in very dramatic ways. For most roof conditions, I find that I start off with a **Single Slope** and make adjustments after getting it laid out in Plan View. You should be aware that ADT typically defaults to a Hip Roof but it is very easy to turn a Hip into a Gable after creation.

Description - use this note field to add text based notes about the Roof if you find that it will help others. You could, for example, explain that the Roof slope may vary or need site confirmation.

Thickness - use this value field to specify how high you want your Fascia to measure. Despite the term "thickness" this option is really not a measure of thickness but of the fascia height. Be very careful with this value since an **Edge cut** that is **Square** will produce a different roof thickness than one that has an Edge cut of **Plumb**. Plumb cuts produce thinner roofs in section. I make an extra effort to point out this potential problem because it caught me off guard on several occasions when [mixing Roofs and Roof Slabs](#) and I couldn't figure out why the thickness didn't match. For Roof Slabs, the term "thickness" is a true cross-sectional measurement.

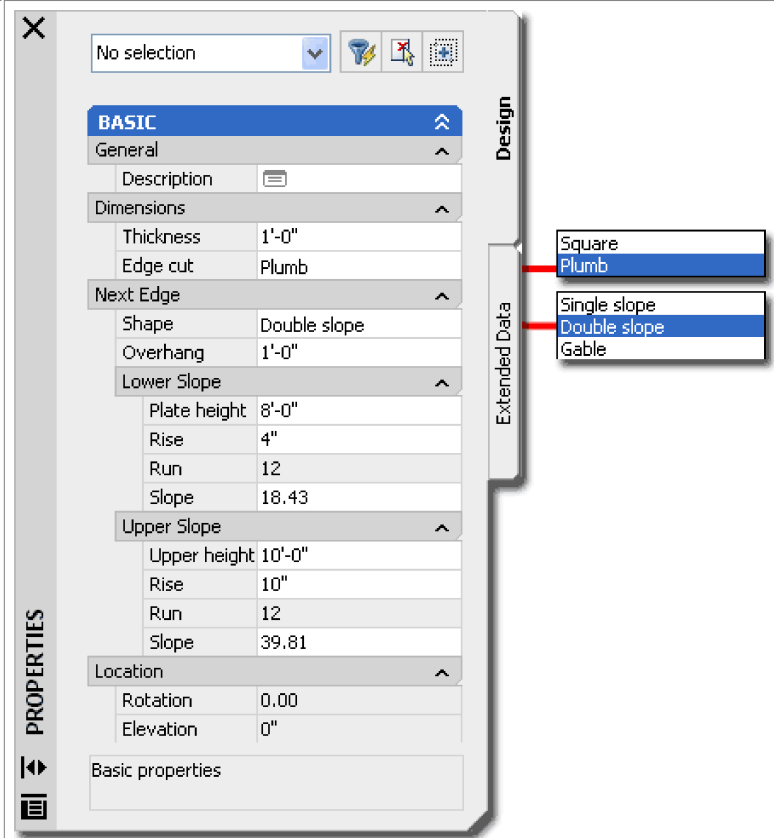
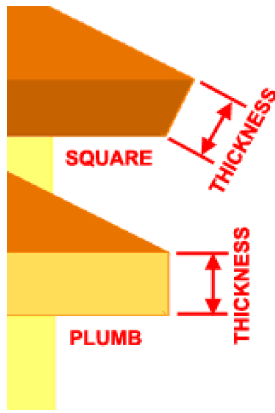


Plate Height - use this value field to specify how far above the World Coordinate Plane you want the eave of your roof to be placed. This value represents the plate height which is typically measured to the inside face of stud or wall that the roof members would rest on. If you draw your roof along the



Edge cut - use this drop-down list to choose between **Square** and **Plumb** fascia cuts. A Square cut is perpendicular to the slope of the roof while a Plumb cut is always perpendicular to the ground and offers a more common cut when mounting gutters along the edge. See comments under Thickness for how this affects the true thickness of the roof object.

Shape - use this drop-down list to choose between **Single slope**, **Double slope** and **Gable** options.

You can preset the type of Shape you wish to create before drawing your Roof or you can make changes while drawing your Roof. You can, for example, start by using a Single slope for the first two points picked on the screen and then set this option to Gable for the third point to force the second side to become a Gable instead of the default Hip. For the fourth point, you will most likely want to set this value back to Single slope - see below for graphic examples. For Double Slope Roofs, you will find that you will have a set of " **Lower Slope**" and " **Higher Slope**" options.

- **SingleSlope** - a planar roof with no variation from top/ridge to fascia. Can also be used to create shed and flat roofs.
- **DoubleSlope** - a bi-planar roof with the potential for slope change between the top/ridge and the fascia. Can also be used to create sloped flat-top roofs.

Overhang - use this value field to specify how far out you want the bottom edge of the roof to extend beyond the perimeter edge or eave. If you draw your Roofs along the inside face of stud, you will need to include the width of the walls.

Adding Single Slope Roofs

Alt.Menu **Design> Roofs> Add Roof...**



Keyboard **RoofAdd**

To **Add a Roof Object**, you can either **trace the exterior corners** of your building **or** the **interior corners**. Given that the Overhang value is measured from the traced edge and given that when you use the RoofConvert tool the exterior of the Wall is used, it is clear that the original design intent for this Object was to work along the exterior; but that's not how roofs are typically framed so you may have to employ a little extra thinking when designing your roofs.

exterior of your walls, the bottom of the roof will be measured to the height specified here so you can either calculate the adjusted height or draw along the inside of your walls to get a proper height. If you use the [RoofConvert](#) command and select Walls the Plate Height will automatically be calculated based on the Wall's height and the roof eave will be set to the exterior. For Upper and Lower Double Slope Roofs, the Plate Heights can be used to set the Lower Plate along the Wall and an Upper Height for the Slope Change. This means that you must use a higher Upper Height on Double Slope Roofs in order to observe any slope change.

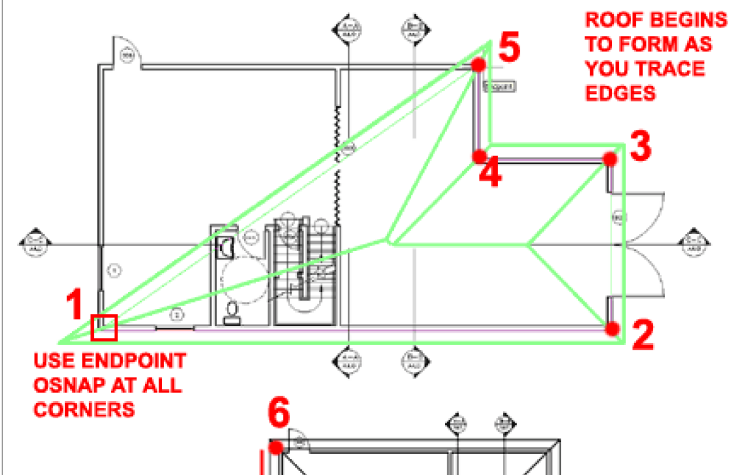
Rise - use this value field to specify the desired rise or change in height relative to the default Run value (12 inches for Imperial Units). If you don't know the rise value, you can use the Slope value field instead. For Double Slope Roofs, you can use different Upper and Lower Rise values to create double sloped roof shapes.

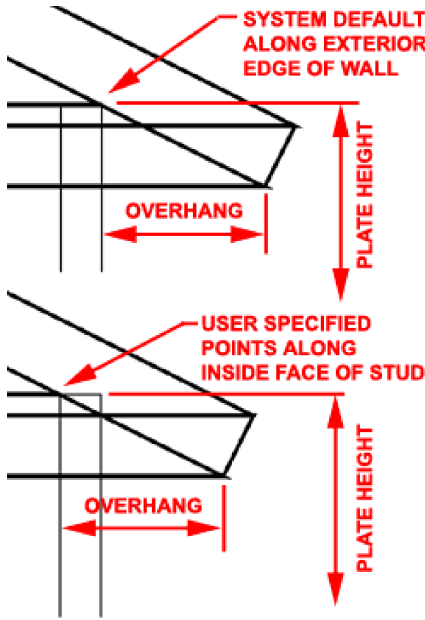
Run - always locked but serves as a unit of measure to specify a Rise against (12 inches for Imperial Units).

Slope - use this value field as another way of measuring the Rise / Run of a Roof based on degrees. 0 degrees can be used to create flat roofs. 90 degrees appears to cause errors and 89 degrees seems to be the current limit depending on the design of your roof.

Tip:

As with all of ADT's Add [object] Properties Palettes, you can change values while creating a Roof object. This means that you can change slope as you work around the edges of a Roof or toggle Shape from Single Slope to Gable and back.





Illustrated to the right I show a simple scenario using the default approach to Adding a Roof Object by OSNAPping along the exterior Wall Endpoints (or Intersection, etc. but I find Endpoints most suitable for this task). As illustrated, once you have three or more points, you should begin to see a Roof Object emerge and as you add more points, the roof will change form. When you have reached the last point (numbered "6" in the illustration), use the Enter key on the keyboard to close the Roof Object and close

the Properties Palette.

Illustrated to the left I show the difference between Adding a Roof along the Exterior (Default) edge of Walls versus the Interior Face of Stud. In standard construction practice, a Rafter would rest on the inside face of stud with a notch cut at the top plate so this would be the more appropriate solution for a Section but the problem is that the Overhang value is measured from the edge (or Eave Component) so you will need to add the width of the Walls to produce a correct overhang value.

You do not need Walls or anything else to Add a Roof object, you can simply pick away on the screen and define a Roof by the points you pick. Typically, I create Roofs over an Xref of a building's Walls so that my Roof drawing is separate from the building Walls. By keeping the Roof separate from other files I have a much smaller and easier to manage file that I use for a Roof Plan and Roof Framing Plan.

Notice that you can make changes on the Properties Palette while drawing your Roof - see Adding a Gable Roof below.

Adding a Double Slope Roof

Alt.Menu Design> Roofs> Add Roof...



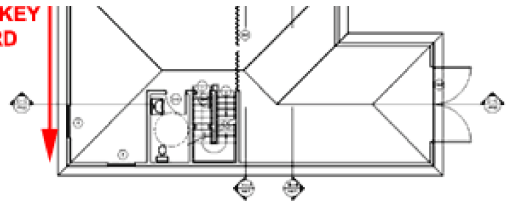
Keyboard RoofAdd

The Double Slope Shape option allows you to work in exactly the same way as you can with a Single Slope Shape. The DoubleSlope Shape activates a second set of variables on the Properties Palette that control the location, by plate height, Rise and Slope of the Upper roof.

In the illustration to the right, I show what a Double Slope Roof looks like when traced over a simple rectangular building shape.

To see similar results, make sure to set an Upper Height value that is greater than the Plate Height.

HIT "ENTER" KEY ON KEYBOARD TO CLOSE



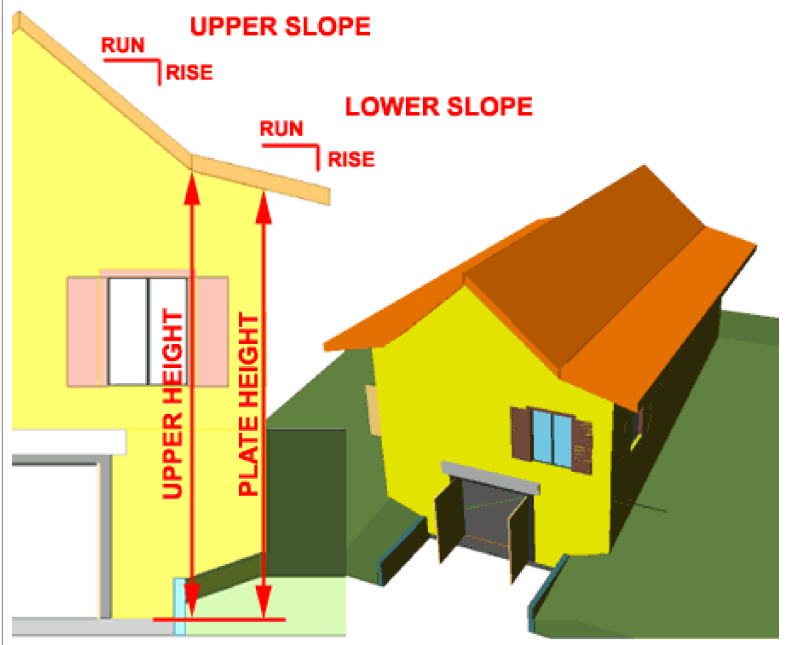
You do not need Walls or anything else to Add a Roof object, you can simply pick away on the screen and define a Roof by the points you pick. Typically, I create Roofs over an Xref of a building's Walls so that my Roof drawing is separate from the building Walls. By keeping the Roof separate from other files I have a much smaller and easier to manage file that I use for a Roof Plan and Roof Framing Plan.

Notice that you can make changes on the Properties Palette while drawing your Roof - see Adding a Gable Roof below.

Note:

I often find that it is easier to add the default Roof first and then use the Properties Palette and Grip Editing after creation to change the Roof design.

I also find that I typically start most of my roof designs with the Roof Object and then Convert it to a Roof Slab as the design goes beyond what this object can produce. Since the Roof Object remains as a cohesive single entity it is much easier to manage than the Roof Slab Object.



Adding a Gable Roof

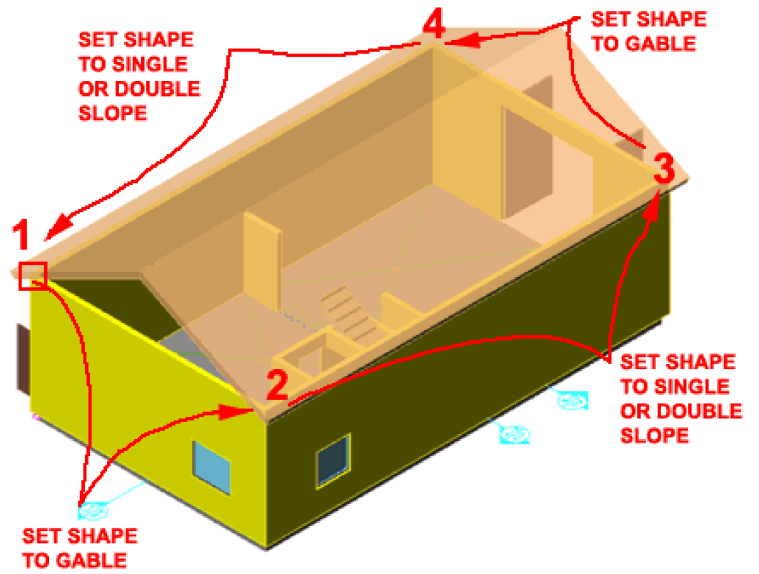
Links [Add Roof - Properties Palette](#) - for information on where to access the Shape drop-down list

To take advantage of the **Gable Shape** option on the Properties Palette, you need to understand how and when to switch it on and off. In the illustration to the right, I show the process of Adding a Roof Object and where I have set the Shape to Gable and then back to Single Slope while tracing the perimeter of my building. Remember to toggle the Gable Shape Off for each roof segment that you want as a normal sloped roof.

The trick therefore is to set the Shape to Gable before picking the next point to form a Gable end.

Note:

The Gable Shape option cannot be left on to form roof designs such as the common four gable ends design. If you attempt to produce such a roof design, you will find that you get that "dreaded circle of death". Read below for tricks and consider using Roof Slabs for such design needs.



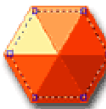
Convert to Roof

Menu N.A.

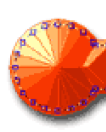


Keyboard **RoofConvert**

The **Convert To Roof** routine allows you to create a Roof object by either selecting a 2D **Polyline** building perimeter or by selecting a set of building **Walls**. If you, for example, select a perimeter Pline you should find that you will get the exact same Roof as you would if you used the Add Roof Properties Palette, using default settings, and picked the same points that defined the Pline used to Convert to Roof. If you choose to select your Walls, make sure that you select "No" to the " Erase layout geometry? [Yes/No] <Y>: "



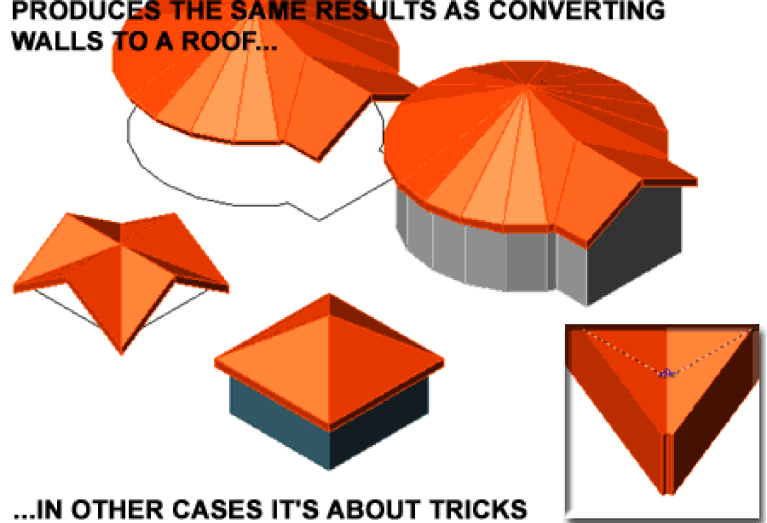
question, otherwise you can actually lose your Walls.



Using the Pline method is one of my personal favorites because of how quickly you can make adjustments to the Pline and re-use it for the Convert to Roof

routine. At times you have to experiment a bit to get the Roof right and if you have to pick all of those points around the exterior perimeter over and over, it gets rather frustrating.

IN MOST CASES CONVERTING A PLINE TO A ROOF PRODUCES THE SAME RESULTS AS CONVERTING WALLS TO A ROOF...



...IN OTHER CASES IT'S ABOUT TRICKS

Though not as valuable to know now, in ADT 2 there were no other Roof options so we found tricks to create other types. Illustrated above, is a trick we discovered to create double gable-ends on a square; simply notch the corners on your pline square, convert it to a Roof and Grip Stretch the four unique top vertex points out. This type of Roof can now be done correctly with Roof Slabs, but I thought I'd share that trick anyway.

4 Modifying Roofs

4-8 ROOFS - ROOF SLABS

Modify Roof - Properties Palette

Alt. Menu **Design> Roofs> Roof Properties**



Keyboard **RoofProps** or **-RoofModify**

Mouse **Double right-click** on Roof Object

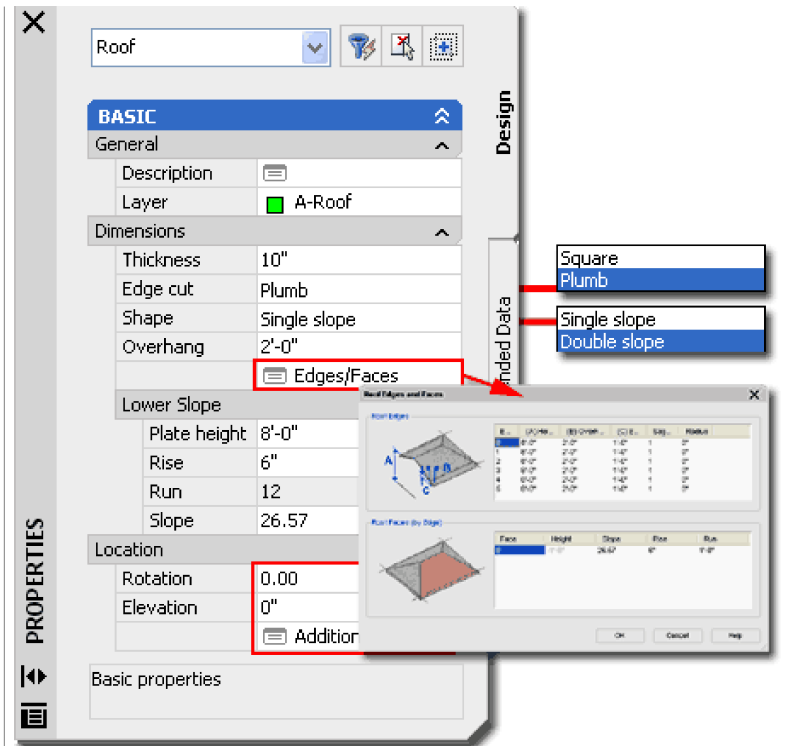
Links [Add Roof dialog box](#) - for detailed explanation of options

When **Modifying** Roof Objects, you will find that the **Properties Palette** is nearly identical to the Add version with the exception of four new options: **Edges/Faces** dialog, **Rotation**, **Elevation** and **Additional information** dialog. This means that you can easily start with a Single Slope Roof, for example, and use the Properties Palette at a later point in time to change it to a Double Slope.

Edges/Faces - this dialog box provides the option to work on each edge and face individually with options for Height, Overhang, Eave Height, Segments and Radius as well as Slope, Rise and Run. See discussion below.

Rotation - this value field provides a means for rotating a Roof Object in Plan View much like using the Rotate Command.

Elevation - this value field provides the option for moving a Roof Object up or down in Elevation regardless of what the Plate Height value is set to.



Additional information - this dialog box provides the means for checking and changing physical coordinate values and rotation angle. I find this a great tool for fixing accidental Edits rather than actually using it to Move or Rotate a Roof Object.

Note:

If any value fields have the words ***varies*** in them, changing the field will change all of the Roof.

Roof Properties - Edge and Faces

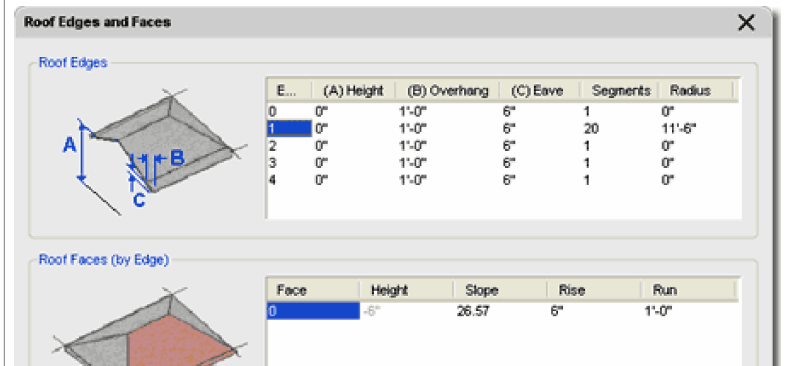
Alt. Menu **N.A.**

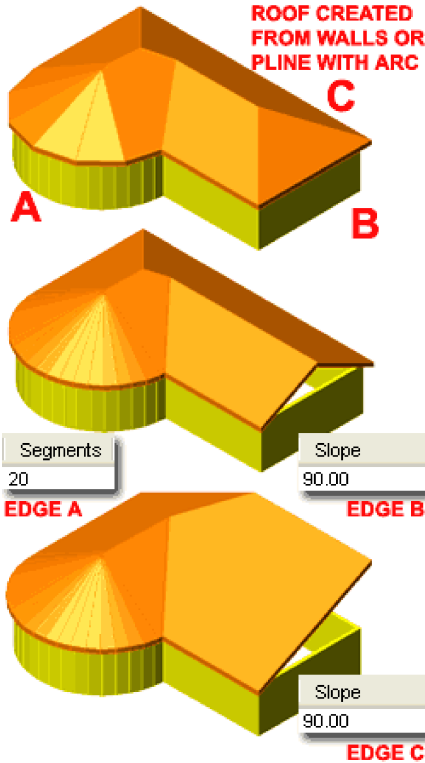


Keyboard **RoofEditEdges**

Mouse Select Roof Object, right-click, select Edit Edges/Faces...

Links [Modify Roof - Properties Palette](#) - for another place to access this dialog





ROOF CREATED FROM WALLS OR PLINE WITH ARC

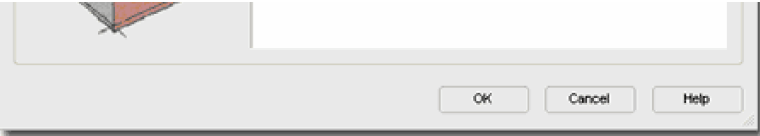
Under the **Dimensions** section of the **Roof Properties** Palette, you should find that you have access to all of the changeable features of a Roof. In the **Roof Edges** area, you should see a number of **Edges** equal to the number of sides to your Roof (in plan view). The **Edges** start with the number zero (**0**), so that can make it a little confusing. For each Edge, you can make unique adjustments to the **Height, Overhang, Eave, Segments** and **Radius** (if it applies). In addition to the Edge adjustments, you can select an Edge and work with its corresponding Face in the **Roof Faces (by Edge)** area.

Edge - it is virtually impossible to figure out which edge is where unless you can identify it by a known slope or other value. I recommend using the Edit Roof Edges/Faces button instead.

(A) Height - in typical cases, the Height matches the plate but on Gable ends, the Height is zero (0") as per the graphic on this tab. You can reverse a Gable end to a Hip by setting the Height to the true plate height and by changing the matching Face Slope to the desired slope (something other than 90 degrees).

(B) Overhang - this is the same value as that on the Add and Modify Roof Properties Palette.

(C) Eave - to access, double click on the (C) Eave column label. This deactivates the Slope option on the Roof Face since it is another way to measure slope.



Segments - this option handles the number of segments a curved roof uses to approximate a curve. You will have more than one segment as a number and the option to change this value when having created a Roof by converting a **Pline** with an **Arc** in it. Use the [RoofConvert](#) command.

Radius - this option controls the radius of roofs that have Segments in them. See comments for Segments above. Depending upon the roof design, reducing the radius may not be possible but increasing it should be possible. This value can also be controlled by using Grips.

Face - there is usually a single face per Edge but on double sloped roofs, there are two Faces per Edge. By picking in the blank space below a Face value, you automatically add another Face to your Edge allowing you to make one Edge a double slope or as many varying slopes as you like.

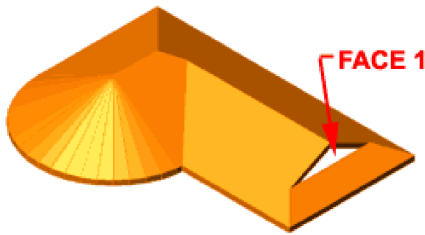
Roof Modify - Edges and Faces

Alt. Menu **N.A.**



Keyboard **RoofEditEdges**

Mouse Select Roof, Right Click, Select Edit Edge/Faces... and Select the Edge(s) you want to Edit.



Face	Height	Slope	Rise	Run
0	-6"	26.57	6"	1'-0"
1	1'-4"	90.00	0"	1'-0"

FACE ADDED BY PICKING IN BLANK SPACE

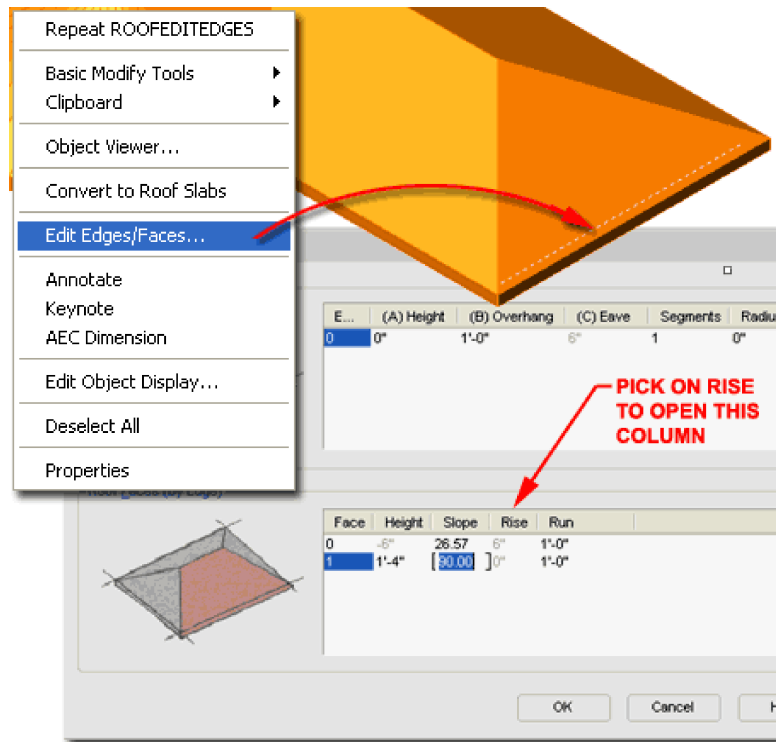
To make the task of accessing and working on individual Roof Edges easier, you can use the **RoofEditEdges** command or object specific pop-up menu option. When you select a roof with this tool, pick near the bottom fascia or along the top plate where the roof should hit a Wall. When you select in the right location, you should notice a single

line highlight as illustrated to the right. You can select more than one edge at a time.

Read comments above for overview of options on this dialog box.

Illustrated to the right and left I show how you can create a **second face** for a single slope edge by picking in the blank area under the **Face column** (usually noted as 0). I also show that I have changed the **Slope** value of this new Face (noted as 1) to **90 degrees** which forces it to become a gable instead of a hip. By adjusting the Height of the second Face, I have created a unique roof edge that most use Roof Slabs to create.

Knowing how to change the Slope of any Face allows you to change Hips to Gables and vise-versa.

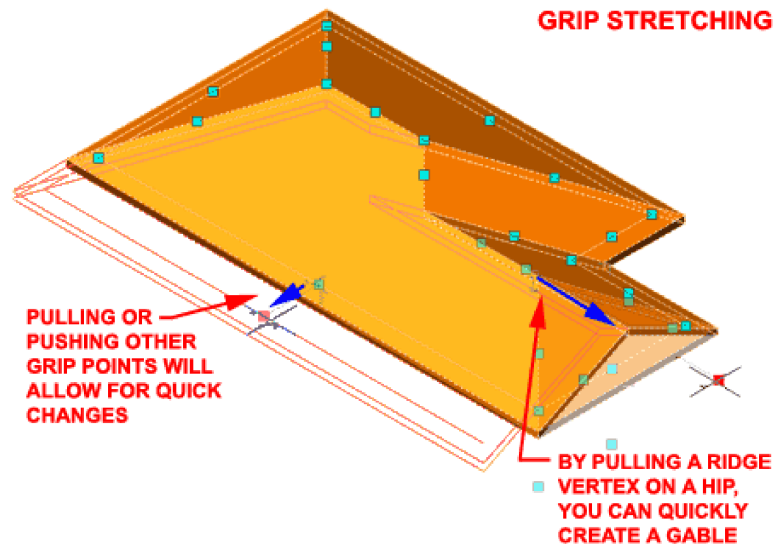


Roof Modify using Grips

Grip Editing in Plan or Isometric Views provides a very powerful method for working with Roofs. I typically do most of my Grip Editing in Isometric Views because it is easier to see the numerous Grips and their effect upon the design.

Illustrated to the right I show how easy it is to take the Hip peak Grip and Stretch it out to form a Gable. When attempting this technique, make sure to have Ortho on and don't OSNAP to any other objects; simply Stretch the Grip well out beyond the edge and the transformation will occur.

Another approach to Adding Roofs, is to simply let ADT take the default route by tracing or Converting the Walls and then you can



From Roof Objects to other Objects

- Links
- [RoofLine](#) - for more information on using the RoofLine command on Walls to get them to automatically project up into Roofs - this is one of the best time-saving commands in ADT.
 - [RoofSlabConvert](#) - for information on how to convert Roofs to Roof Slabs.

At some point in your work with Roofs, you may come to a point where you don't know what to do next. In some cases it's a simple matter of knowing the tools you have available to you and in other cases it's a matter of knowing how to attack the problem with a new object.

In the illustration to the right a sample scenario where getting the Walls to come up and meet the Roof is a simple problem that can be solved with the RoofLine tool. I also show another problem that involves something the Roof Object just can't do: wrap under itself. In cases like this, it's time to Convert the Roof Object into a Roof Slab Object

Auto-projecting Walls to the Roof

To get Walls to automatically run up and match Roof Edges, Select one or more Wall Objects, right-click, select Roof/Floor Line and cascade over to Modify Roof Line on the object-specific pop-up menu. On the command line, use the Auto project option to make the Walls automatically read the Roof Object and project up.

Command: **_AecRoofLine**

RoofLine [Offset/Project to polyline/Generate polyline/Auto project/Reset]: **A**

select walls: (**pick your wall(s)**)

select roof: (**pick your roof**)

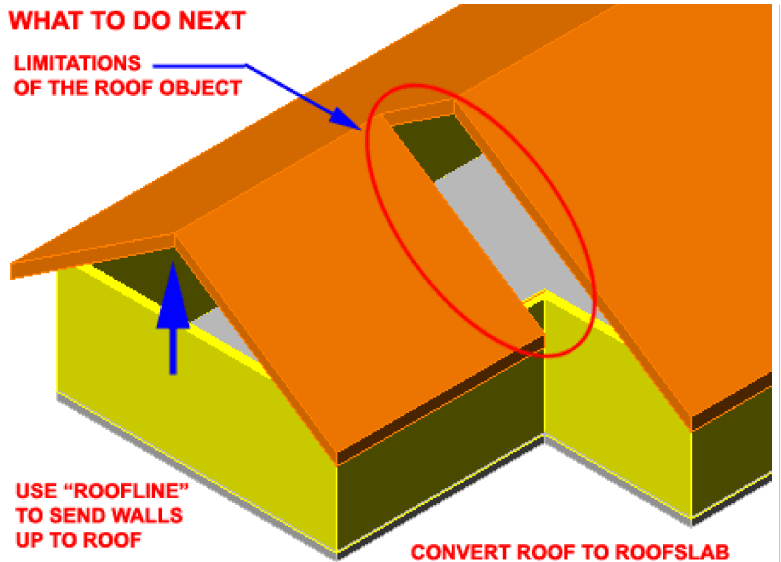
Read more about projecting Walls under [Part 3 - Walls Tools](#)

WHAT TO DO NEXT

LIMITATIONS OF THE ROOF OBJECT

USE "ROOFLINE" TO SEND WALLS UP TO ROOF

CONVERT ROOF TO ROOFSLAB USING THE "ROOFSLABCONVERT" COMMAND



5 Roof Display Props

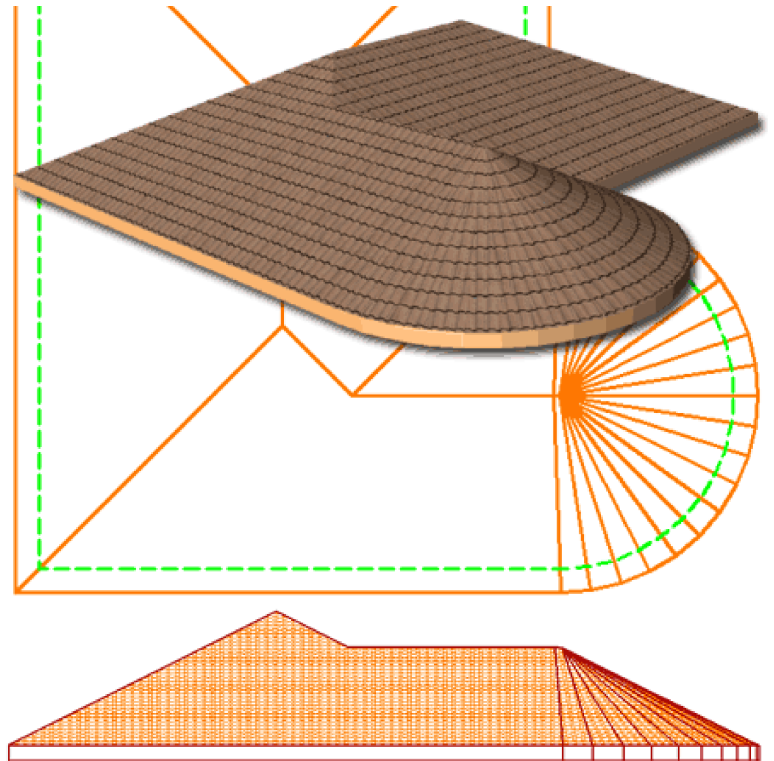
5-8 ROOFS - ROOF SLABS

Roofs Display Property Overview

If I haven't mentioned it enough already, Roof Objects don't have Styles so you only have the Display Properties to work with for display changes and you will find that there are only two Display Components to work with: Roof and Eave.

Illustrated to the right I show the Plan, Elevation and Model Views of a simple Roof Object. As you can see there isn't much to work with but that is often a delight when compared to some of the more radical Objects in ADT. For the Plan Display Representation, I set the Eave Display Component to a Green Color with a Dashed Linetype to show the edge of the Walls Below. Unfortunately, you cannot turn off the radiating lines on a curved roof without affecting the rest of the roof so that may pose a problem for your CD's.

The Elevation View takes advantage of the Hatch Component via the Material that you also see in the Perspective View. To prevent the Hatch and Mapped Tile Pattern from wrapping around the fascia and under the the Roof, you can set the "Surface Hatch Placement" to "Top" only.



Object Display - Roof Materials and Display Properties

Links [Object Style Properties - Materials Overview](#) - for an expanded step-by-step explanation of Materials
[Display Representations by Object](#) - for information on how to use the Style Manager to access these properties.

YOU CAN ALSO ACCESS DISPLAY PROPERTIES BY SELECTING AN OBJECT, RIGHT-CLICKING ON YOUR MOUSE AND USE THIS POP-UP MENU OPTION



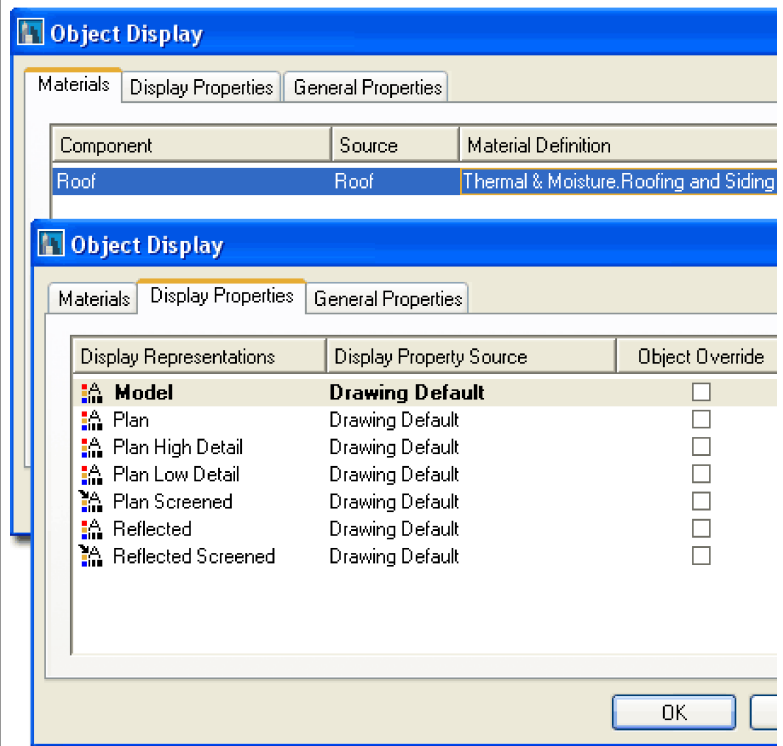
There are two ways that you can access the Display Properties of Roof Objects: one way is through the Display Manager and the other way is illustrated to the left - **select** the specific **object**, **right click** on your mouse to invoke the object-specific

pop-up menu and select **Edit Object Display...**

Since Roof Objects do not have Styles this is the only place you can access the Materials and the Display Properties. Illustrated to the right I show how the Materials tab offers one Component that you can use to control the hatching and linework for your Roof Objects in Plan and/or Elevations and Sections. This is where you get a Spanish Tile Pattern in Elevations, Sections and Renderings, for example.

To the right I also show the default list of Display Representations on the Display Properties tab. All of these Display Representations offer the same two Display Components, Roof and Eave, so you should not find these difficult to understand or work with - see further discussion below.

The subject of **Materials** is one of the most expansive and confusing topics in Architectural Desktop because it requires a complete comprehension of the product in order to take full advantage of this feature; from object styles to display representations. This subject will be discussed under [Part 1 - Display](#) and in the Presentation eGuide.



Roofs in Plan

Menu **Format> Display Manager...**

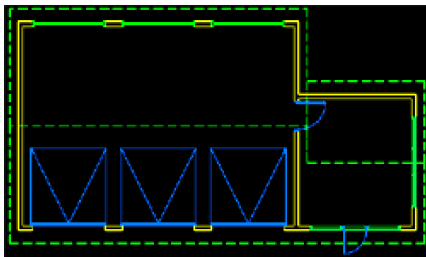


Keyboard **DisplayManager**

Keyboard **DisplayProps [Attach]**

Mouse Select Object, right-click, select Edit Object Display...

[Part 1 - Display - Object Display Properties Overview](#) - for more information on how to access the Display Properties of this Object.



As with the other Objects in ADT, I feel that the Plan View is the most important to focus on. With Roofs and Roof Slabs, however, it can probably be argued that Elevations are actually where you get the

biggest return on the investment of using these Objects because, let's face it, you can draw a roof plan with regular AutoCAD lines a lot faster.

Roof Objects do not have a **Cutting Plane** setting nor do they respect the Global Cutting Plane value as set by the Display Configurations.

Roofs in Model, Elevation and Section

Roofs use the Model Display Representation for Elevation and Section Views and you will not find anything other than the same Roof and Eave Display Components found for Plan. To create other display results, you will need to work with the Material assignment found on the Materials tab of the Object Display dialog box.

6

Roofs - Customizing and Tricks

Arched Roofs

Links [Barrel Vaults](#) - for another possible approach to solving arched roofs.

Arched Roofs can be a surprisingly difficult problem to deal with in ADT because there aren't any straight forward tools to help you create them. As you can tell by working with both Roofs and Roof Slabs, the planar form is basically all that you have to work with; hence the term "slab".

Illustrated to the right I show a trick you might want to know about if you are determined to create a Roof that simulates an arch form. By starting with a simple gable Roof, you can use the [RoofEditEdges](#) command to modify one face at a time and break it up into smaller faces that each have greater amounts of slope. My illustration is a little crude because I didn't bother to calculate the exact heights and slopes that would make it look more balanced but if you do the work you can get something fairly reasonable. To be honest, however, I don't have that level of patience and prefer to use create this type of roof design by using a RoofSlabConvert trick - [Roof Slab Tools - customizing and tricks](#).

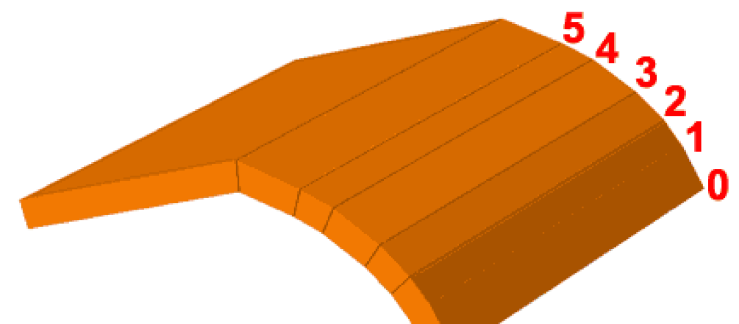
PLAN

Display Component	Visible	By Material	Layer	Color	Linetype	Linewd
Roof	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock	ByBlock
Eave	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	green	HIDDEN2	0.25 mm

Note:

Notice that when you use the Reflected Display Configuration, that Roofs display in Plan View. To change this, you may wish to turn Off both Display Components or change the Roof Display Component to Dashed. The Eave Display Component should be turned Off in most cases for Reflected Plans and generally I don't show Roofs in Reflected work at all unless I am illustrating soffit lighting or other roof-related ceiling work.

6-8 ROOFS - ROOF SLABS



Roof Faces (by Edge)

Face	Height	Slope	Rise	Run
0	0"	50.00	1'-2 5/16"	1'-0"
1	1'-0"	40.00	10 1/16"	1'-0"
2	1'-6"	30.00	6 15/16"	1'-0"
3	2'-0"	20.00	4 3/8"	1'-0"
4	2'-6"	10.00	2 1/8"	1'-0"
5	2'-6"	5.00	1 1/16"	1'-0"

Curved Roofs

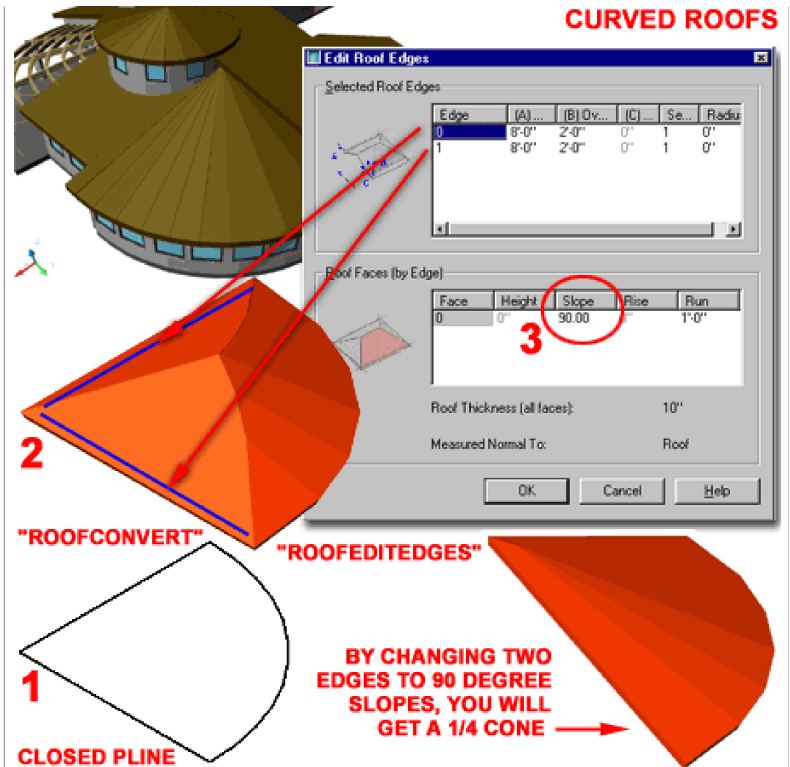
Links [Roof Properties - Dimensions tab](#) - for more information on the Edit Roof Edges dialog box options.

Creating Curved Roofs is actually fairly easy if you use a **Closed Polyline** shape as the source for conversion as illustrated to the right. If you wish to create a true cone, you can use a Polygon to convert (not a circle).

Illustrated to the right I show a quarter cone that was created by using a quarter circle drawn as a Closed Pline. This Pline was then converted into a Roof object by using the "**RoofConvert**" command. In the illustration to the right, I show what happens when the conversion has been processed and since the result is not a quarter cone, I show that I had to use the Edit Roof Edges dialog box to change the slope of two sides to 90 degrees.

To Edit Roof Edges, use the "**RoofEditEdge**" command and **select the edges** that do not have the correct slope (illustrated with a blue line). On the Edit Roof Edge dialog box, you should see a Slope option for each Edge (see number 3, right). Change the **Slope to 90 degrees** for each edge and the result should be similar to that illustrated in the lower right.

Finally, you can create a more smooth curved roof by editing the curved edge and changing the Segments value on the Edit Roof Edges dialog box to a number high enough to meet your desired appearance.



Mixing Roofs and Roof Slabs

Links [Mixing Roofs and Roof Slabs](#) - for a caution about the differences.

[Using Mass Groups to create Roof Groups](#) - for a trick on using Mass Groups to combine Roofs and Roof Slabs into a unified single entity.

See links above for more information on some potential problems for mixing these two Objects and for some tricks on how to merge them into a new single Object.

7 Adding Roof Slabs

7-8 ROOFS - ROOF SLABS

Add Roof Slab - Properties Palette

Alt.Menu **Design> Roofs> Add Roof Slab...**



Keyboard **RoofSlabAdd**

The **Add Roof Slab** Properties Palette provides the ability to choose Styles, Modes (for how to draw), Slope, Thickness, Base Height, Overhang, four Justification methods and (like the Add Wall Properties Palette) two methods for Closing - Ortho Close and Polyline Close.

Style - a drop-down list offering a list of currently loaded Roof Slab Styles. Type RoofSlabStyle or use the Content Browser to load other Styles.

Mode:

Direct - this method allows you to pick the perimeter points for your Roof Slab at the exact 3D points in space where you want your Roof Slab to sit. This means that if you pick points along the top of a set of Walls that have the same plate height, you will get a perfectly flat Roof Slab. If you want a Roof Slab at a slope, you will have to pick points that define the slope; this is why the Slope options are not accessible.

Projected - this method is much like the Add Roof routine where you pick points along a 2D plane but you actually get a "projected" slope.

In both the Direct and Projected Modes, the first two points picked establish the fascia.

A - Thickness - is the actual roof slab mass thickness as illustrated by the letter "A". The question is, do you include finishing materials or set it just for the framing (lumber) dimension. I prefer to work with the framing sizes.

B - Vertical Offset - this value basically moves the Roof Slab up and down parallel with the wall or perpendicular to the ground but can be confusing when mixed with the Thickness Offset value on the Design Rules tab. The Pivot Point is affected.

C - Horizontal Offset - this should be an easy one to comprehend; you are just moving the Roof Slab back and forth on the plate line. The Pivot Point is affected.

Justify - Top, Center, Bottom and Slopeline are designed to work with the **Direct Mode** but you can get some limited functionality out of these justifications for the Projected Mode (see [comments below](#)). Since Direct Mode allows you to pick the specific 3D points that define a Roof Slab and its slope, the Justification options allow you to determine where the Roof Slab should be positioned (along the z-axis) relative to those picked points. This is much like deciding to create a Roof based upon the Top, Bottom or Centerline along a Rafter or Fascia board. **Slopeline** is determined by the **Offset Thickness** value on the Design Rules tab of a Roof Slab's Style.

Base Height - height from Z=0 for the pivot point. Using the Bottom Justification, I like to think of this as the Plate Height along the top of my Walls.

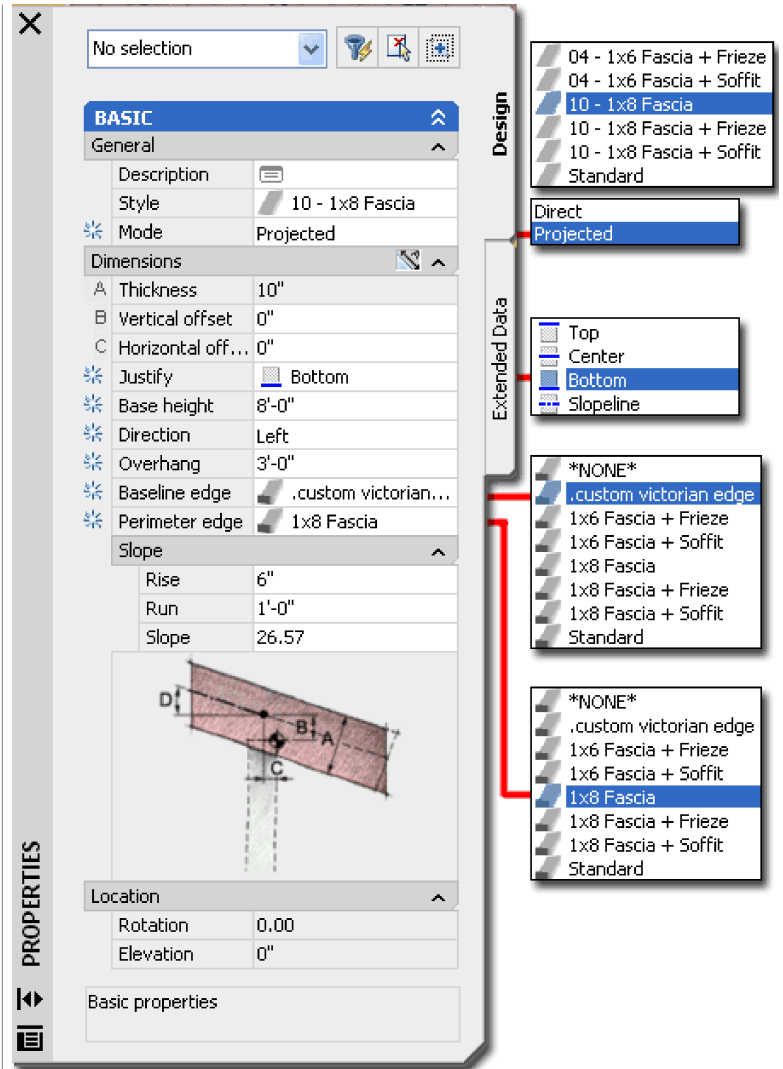
Direction - this option affects the direction of your roof when you use the **Ortho Close** option (command line only) and only works if you use Ortho Close after having picked a second point. The second point establishes the front of your roof (or fascia) thus allowing ADT to calculate a Left or Right direction of "closure".

Overhang - the distance from the insertion point (where you pick) out to the Roof Slab's edge (not including any fascia boards, gutters, etc.).

Baseline Edge - a drop-down list offering access to all [Roof Slab Edge Styles](#) in the current drawing file. Use these Edge Styles to define a profile shape along the Baseline Edge side (a.k.a. fascia or front) of your Roof Slab. This is how you add a gutter, for example. You can also set this information at a later time using the Modify Properties Palette.

Perimeter Edge - a drop-down list offering everything discussed for option "Baseline Edge", but for all of the remaining sides. I don't like this option because it will add the Edge Style to edges you may not want and Edge Style attached to; like the ridge between two roofs. I prefer to use the Modify Properties Palette for this work.

Rise - Run - Slope - you can input Rise and Run numbers that will automatically calculate an Slope angle for you or you can

**Special Options on the Command Line:**

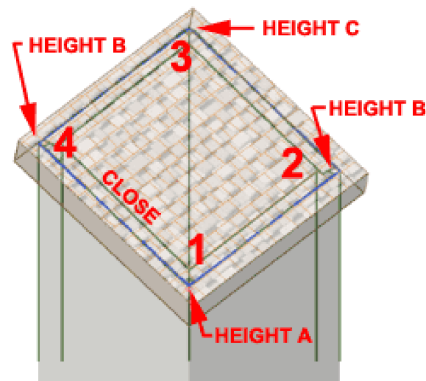
Ortho close - if used after picking a second point this button will create a rectangular roof based upon the dimension of the first two points (basically a square with extra for soffit, etc. as per the Style). It can also be used after a 3rd point has been picked but then the Direction options become invalid (this is a nice quick way to finish a Roof Slab though). The Direction of the Roof Slab will be based upon the direction established by your second picked point and the Direction buttons (see Direction description). If used after picking three or more points this button simply calculates what it will take to create an orthogonal closure from the last point picked relative to the first point picked.

Close - only available if three or more points have been picked and simply closes a Slab shape to form a polyhedron much like Close on a Polyline.

specify an angle. Adjustment or change in slope occurs around the Pivot Point as established upon creation of the Roof Slab or by adjustment on the Pivot Point value fields. The Pivot Point can also be modified directly on the Roof Slab Modify Properties Palette.

Add Roof Slab - Direct Mode & Projected Mode

When Adding Roof Slabs, you may find the Mode and Direction options a little confusing so I have illustrated the difference to the right by using the Ortho Close technique after drawing the first two points for the two example Roof Slabs.



The **Direct Mode** method of Adding a Roof Slab assumes that you know the pitch by the virtue of the 3rd point you pick. If you don't pick a 3rd Point in Space that happens to be higher on the Z-axis than the 2nd point, there will be no slope change. Using the Left or Right Direction options really make no sense for this

type of Roof Slab creation since the Directions apply to the command-line "Ortho Close" option and together these two options only work after the second point has been selected (not the third or more points). In other words, you can't select the third point to establish the Slope so use this whole combination of options only when you want no Slope Roof Slabs.

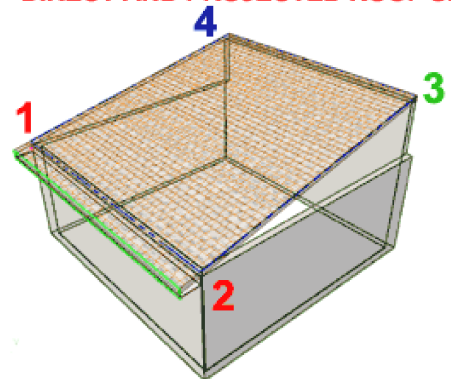
The Direct Mode method can be extremely useful when you need to add a new Roof Slab whose exact angle or slope is not known but can be derived from points along other objects. You can also use this method to create compound roof pitches (slope in two directions) if you have the Wall Slopes already calculated - see illustration to the left.

The **Projected Mode** method of Adding a Roof Slab works much like the Roof routine and allows you to specify the Slope and Base Height before picking your points. This means that you can pick two points anywhere in space to establish the baseline (fascia) and either use the command-line "Ortho Close" or continue picking points. Just like the Direct Mode method, the first two points will establish the Fascia. If you want a square Roof Slab, simply use the Direction options (Left or Right) together with the command-line "Ortho Close" option after having picked the 2nd Point and the job will be complete.

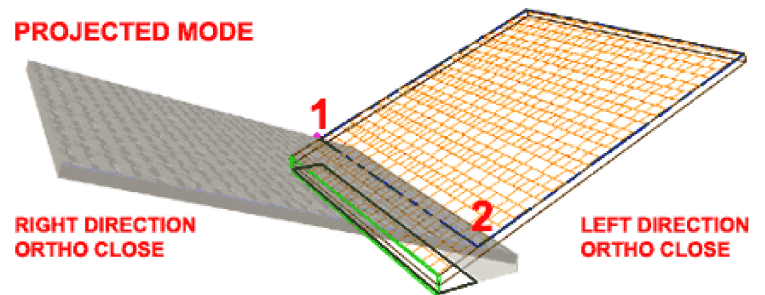
Notice that for both Roof Modes you can always use the command-line option "Close" after having picked a 3rd Point. For me, I never bother with the Direction Options or the "Ortho Close" since using a 3rd Point not only establishes the direction but also the length and the slope (when using the Direct Mode). I always draw Roof Slabs using the Direct Mode in Isometric since I need so see and OSNAP to the points that define it and I generally draw Roof Slabs using the Projected Mode in Plan where the command-line "Ortho Close" tends to work rather well after the 3rd point has been picked - for some reason it doesn't work in isometric modes though.

DIRECT AND PROJECTED ROOF SLABS

DIRECT MODE



PROJECTED MODE



**RIGHT DIRECTION
ORTHO CLOSE**

**LEFT DIRECTION
ORTHO CLOSE**

Add Roof Slab - Justifications

As stated under the Add Roof Slabs - Properties Palette, the Justification options are designed for use with the Direct Mode of adding a Roof Slab. This technique requires that you actually pick points in space that define the plane of the roof, including the slope. Though the Direct Mode method is nice at times, I don't find it to be the most common approach to creating roofs so that makes the Justification options a bit of a problem.

Top, Center, Bottom and Slopeline Justifications all work as expected when using the Direct Mode to create Roof Slabs but the don't work as expected when using the Projected Mode. Illustrated to the right I show the "expected solutions" for Bottom, Center and Top Justifications and below I discuss the results you get when using these with the Projected Mode.

Justifications - Projected Mode

Top - does not work correctly - to get this feature to work better, you must either make manual adjustments to the Offsets or design a Roof Slab Style with a Fixed Thickness and an equal amount of Offset on the [Design Rules tab of the Roof Slab Style dialog box](#).

Center - never works correctly

Bottom - works correctly when no Offset is specified on the Design Rules tab.

Slopeline - works correctly both with and without Fixed Thickness and Offset values.

Convert to Roof Slabs

Menu N.A.



Keyboard **RoofSlabConvert**

Mouse Select a Roof Object, right-click and select Convert to Roof Slabs

Links [Roof Slab Properties - Edges tab](#)

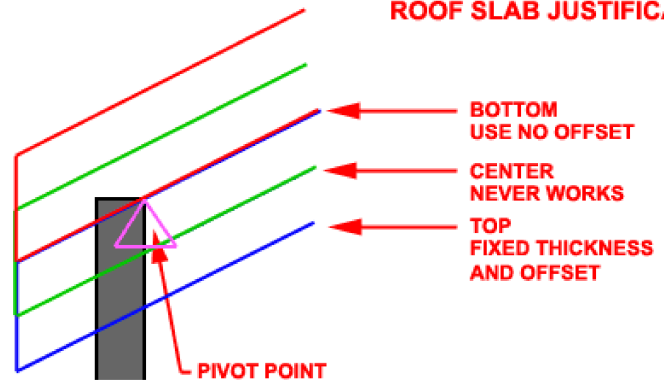
[FacetDev](#) - this variable can be set to control the faceting of curved slabs when Converted from curved Plines. Set before converting. Lower numbers = better curves.

The **Convert to Roof Slabs** tool can be used to convert **Plines**, **Walls** or **Roofs** to Roof Slabs. In my own experience working with both Roofs and Roof Slabs, I have found that I get the best results by first using Roof Objects that I then Convert to Roof Slabs Objects. The reason for this technique has to do with the ease of generating a Roof Object and the Grip options for reshaping it. As a job moves from Design Development to more accurate Construction Documents, I use this Convert option so I can add Roof Slab Edges, cut Holes for Skylights, Trim intersections and much more. Unfortunately you cannot convert Roof Slab Objects back to Roof Objects so be aware that this is a one-way process and you may want to keep your original Roof Object around in case you need to revert back to an earlier phase (since the Roof Object is kept on a separate Layer this is simply a matter of turning a Layer On or Off)

Tips on Converting:

One of the main things to understand about Converting to Roofs/Roof Slabs is the difference between how these two routines work. The Convert to Roof routine was designed to handle a full space, like that created by the perimeter walls of a building. The Convert to Roof Slabs routine was designed to convert a

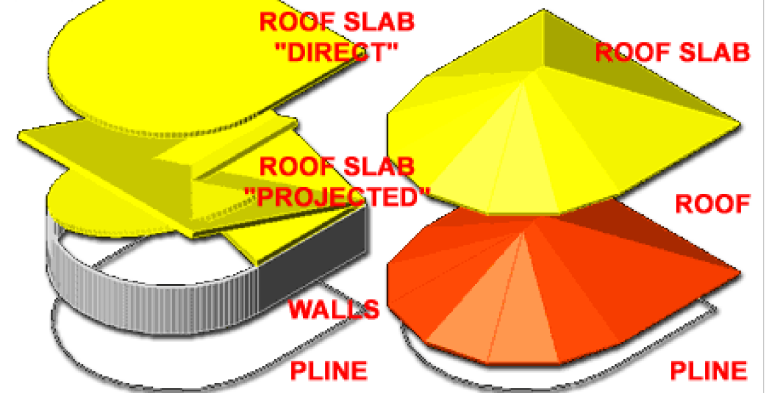
ROOF SLAB JUSTIFICATIONS



Note:

In most cases we tend to build roofs from the inside face of a wall along the top plate using the Bottom Justification. If you use this Justification with the Projected Mode, you should not have any problems unless the Roof Slab Style has a preset Offset value on the [Design Rules tab](#) of the Roof Slab Style dialog box. Guess what, all of the predefined style in the Content Browser have preset Offset values so watch out for those Styles.

CONVERT TO ROOF SLAB OPTIONS AND PATHS



If you can begin with a Roof object you will probably find that method far faster. Use the Convert to Roof routine first and then convert that Roof object to a Roof Slab.

Use the Direct option or a Roof Slab Style with a slope of 0 degrees to create flat roofs.

The pivot point on closed Pline shapes occurs at the first point picked to create the Pline and the slope is established by the direction of the second point. If the second point is an Arc, the slope will be established by the direction of the Arc but won't slope off of the Arc.

single object, like one Wall. It can be used to convert many walls, for example, but each wall produces a unique slab. One of the biggest problems between the two, is that Roof Slabs usually don't come together as one nice roof but several overlapping slabs and often end up sloping from the wrong direction; particularly on curved walls.

8 Modifying Roof Slabs

Modify Roof Slab - Properties Palette

Alt.Menu **Design> Roofs> Roof Slab Properties**

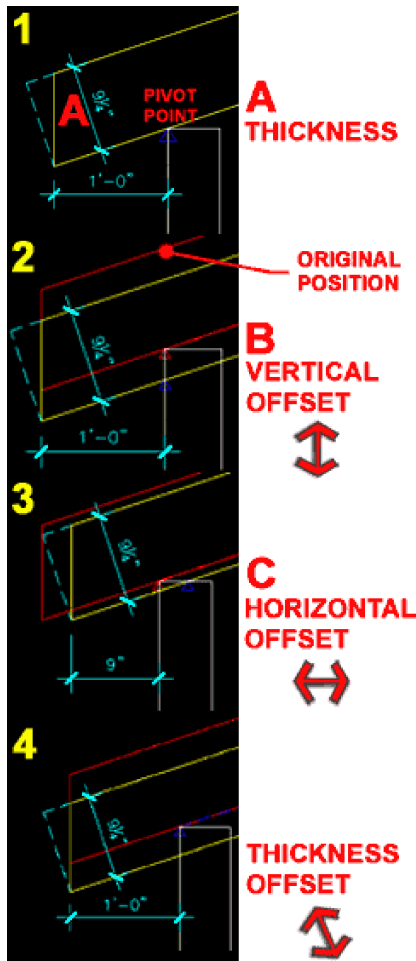


Keyboard **RoofSlabProps** [-RoofSlabModify]

Mouse Double pick on a Slab Object with the left mouse

Links [Tool Palettes](#) - for information on setting Defaults within the icon buttons for faster productivity

For **Modifying Roof Slabs** you can use the ubiquitous **Properties Palette** which will offer most of the same options and settings found on this Palette when Adding Roof Slabs. One of the more interesting and useful options you will find on the Properties Palette is the Edges dialog, illustrated right, which will allow you to work on each edge so you can attach things like **Fascia** boards, gutters and **Soffit** trim.



Style - allows you to change the selected Roof Slab to any other Roof Slab Style currently loaded in your drawing file.

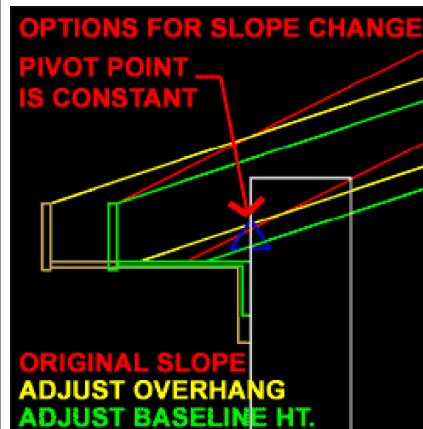
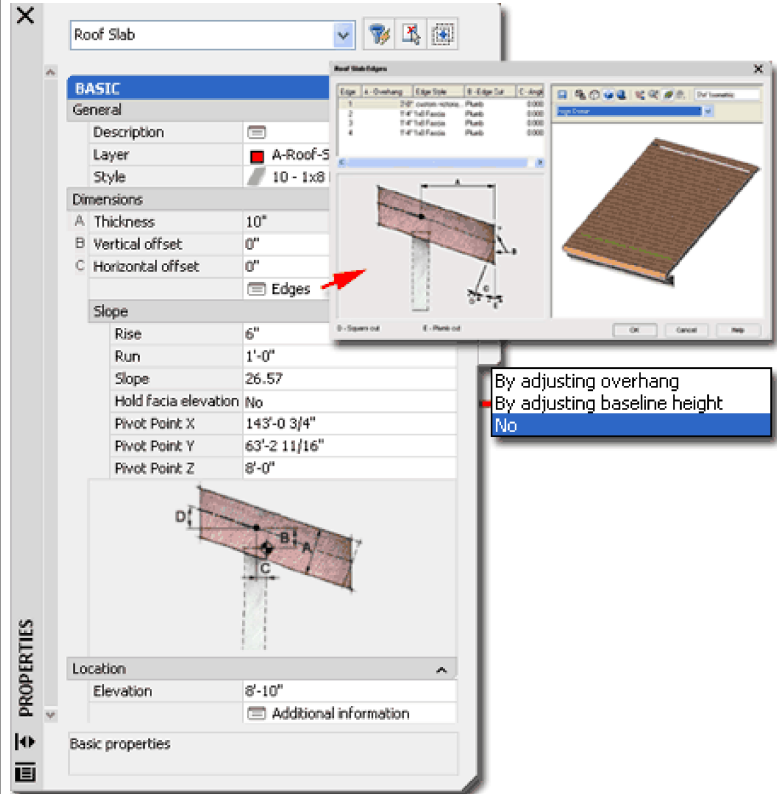
A - Thickness - this option will not be available if it has been set as "Has Fixed Thickness" under the Design Rules tab of the Roof Slab Style.

B - Vertical Offset - this value basically moves the Roof Slab up and down parallel with the wall or perpendicular to the ground but can be confusing when mixed with the Thickness Offset value on the Design Rules tab because that value controls the vertical origin of the offset.

C - Horizontal Offset - this should be an easy one to comprehend; you are just moving the Roof Slab back and forth on the plate line. This option is also

affected by the Thickness Offset on the Design Rules tab - see comments for B - Vertical Offset.

8-8 ROOFS - ROOF SLABS



Elevation - this value field provides the option for moving a Roof Slab Object up or down in Elevation regardless of what the Plate Height value is set to.

Additional information - this dialog box provides the means for checking and changing physical coordinate values and rotation angle. I find this a great tool for fixing accidental Edits rather than actually using it to Move or Rotate a Roof Slab Object.

Note:

Notice that there is no option to change the Justification here so you may find yourself having to use Move, Rotate and other AutoCAD command to make this type of change.

Edges - this cell, when picked, activates the [Roof Slab Edges dialog box](#) illustrated in the upper right and discussed below. Use this tool to Add or Modify edges for such things as fascia boards and gutters.

Rise - Run - Slope - see [Add Roof Slab](#) Properties Palette above.

Hold fascia elevation - this drop-down list offers three choices for holding the Fascia Elevation fixed on the Vertical axis. Use " **By Adjusting Overhang**" when you are trying to keep the seat cut the same (note: this actually only works correctly if you move the pivot point to the inside of your plate). Use " **By Adjusting Baseline Height**" when you want to keep the same exact fascia and overhang but are willing to drop the Roof Slab (or rafter) down to achieve this result (a deeper seat cut). Use " **No**" when you just want the Roof Slab to pivot naturally off the Pivot Point with no formulaic interference.

Pivot Point X, Y and Z - a very important modification option because it allows you to move the point at which your Roof Slab pivots with respect to any change in the Slope. Suppose, for example, that you have calculated the ridge of your roof from a particular Wall but you are uncertain about where the fascia should end up - you can move the Pivot Point to the calculated ridge and set the slope from there to assist you in finding out where the fascia will actually sit. You may also find it necessary to move the Pivot Point to match how you expect your Rafters to be seated on a Plate.

Roof Slab Properties - Edges tab

Links [Roof Slab Edge Styles](#) - for the whole story on Edge Styles and how to make them.
[Edit Roof Slab Edges](#) - for another quick way to get to this option.

On the **Roof Slab Edges dialog box** , you can assign overhang values, fascias, soffits and rafter cut angles. If you specified an Overhang value on the Properties Palette when you added this Roof Slab, you will see that Overhang value set here for Edge number 1. To identify Edges, you should see a line with a highlight color in the right preview pane as illustrated. By holding the Shift-key down, you can Select a whole set of Edges and make common settings rather than doing the work one-at-a-time.

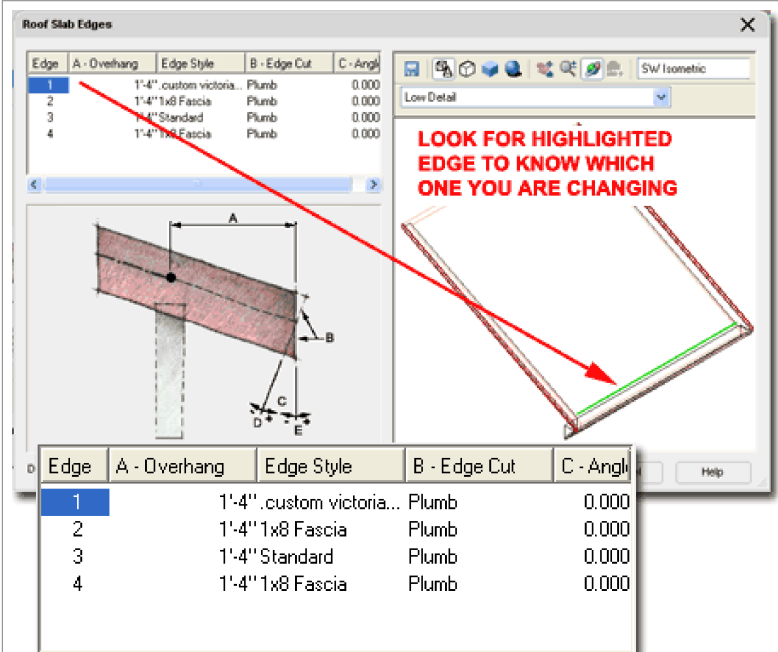
To Add or Remove Edges you can use the [Add or Remove Vertex tools](#).

Overhang - this value is measured from the baseline edge so if you created your Roof Slab based on points selected along the inside face of stud or structure, be sure to add the width of the Walls for a proper Overhang value.

A - Edge Style - this drop-down list will provide access to the "Standard", "NONE" or any Roof Slab Edge Styles available in the current drawing file. You typically do not want any Edge Style for Edges that meet other Roofs or Walls. "Standard" is actually an Edge Style where "NONE" guarantees that no edge changes might occur through inadvertent Roof Slab Edge Style changes. At times you may wish to add an Edge Style just to assign a unique Material to that portion of your Roof Slab design.

B - Edge Cut - the drop-down list offers two options: Plumb and Square. The Plumb cut is perpendicular to the ground plane and is a typical cut for conditions where gutters are attached. The Square cut is perpendicular to the Roof Slab itself.

C - Angle - this value field provide the means for adjusting the Angle relative to the Edge Cut setting (Plumb or Square) for even greater flexibility in the cut angle. This is also where any unusual Roof Slab Cut angles are stored if you combine the UCS icon with the [Roof Slab Cut](#) tool.



Edit Roof Slab Edges

Menu **N.A.**

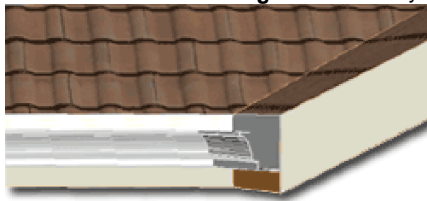


Keyboard **RoofSlabEdgeEdit**

Mouse Select Roof Slab, right-click, Select Edit Edge/Faces... and Select the Edge(s) you want to Edit.

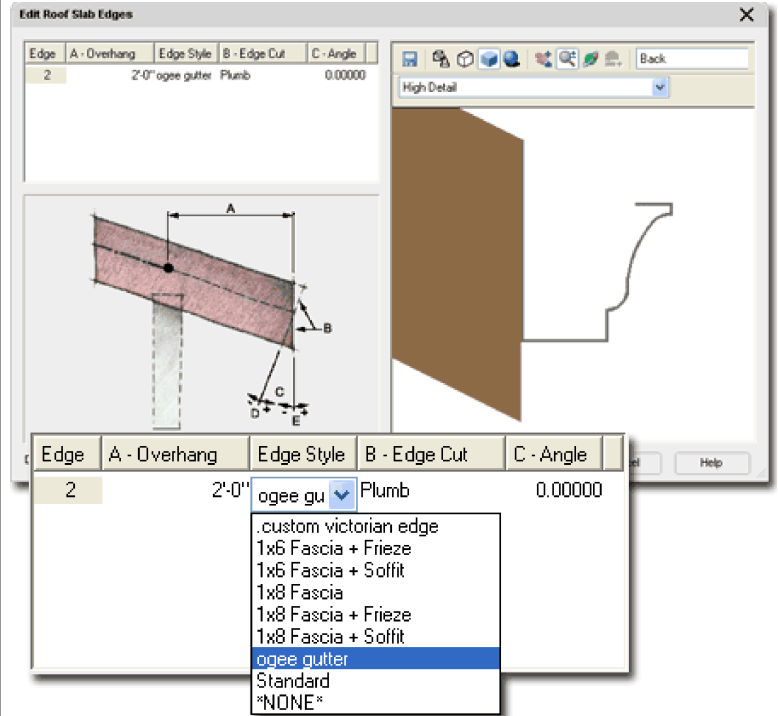
Links [Roof Slab Properties - Edges tab](#)

The **Roof Slab Edit Edges** tool offers you direct access to the Edges tab of the Roof Slab Properties dialog box. When using this tool, you need to select one or more Roof Slab Edges by picking near them or directly on the perimeter line (usually displayed as a blue dashed line). If you have a rather complex Roof Slab with many edges, this is a great way to isolate just those edges that you wish to edit so you don't have to hunt for their index number on the Roof Slab Edges dialog box.



You cannot select edges of different Roof Slabs.

See comments on [Roof Slab Properties - Edges tab](#).



Roof Slab Grip Points

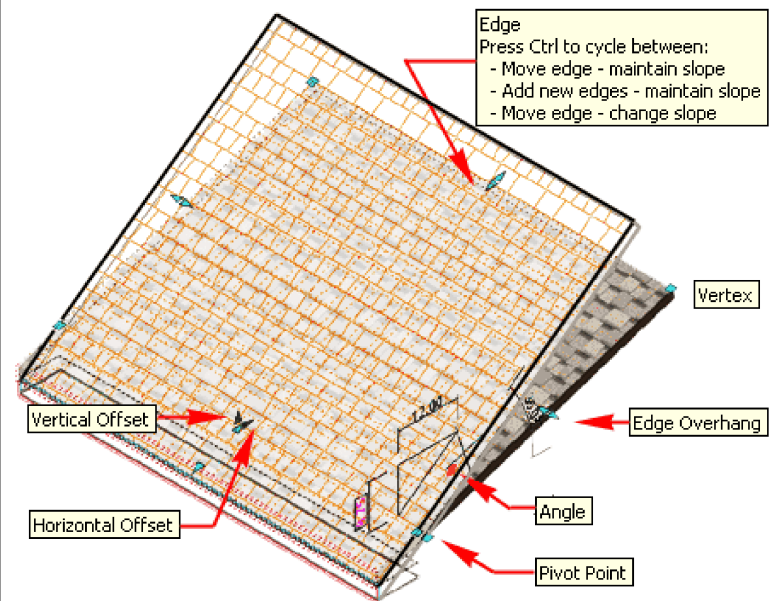
Roof Slabs have the same set of Grip Points that Slabs do. Illustrated to the right I show an Isometric View of a simple Roof Slab Object where you can see most of the numerous Grip Points. Of the set, my favorites are the Angle, Edge and Edge Overhang.

For the **Angle Grip**, after you have selected this Grip and made it Hot (Red), you can use the **Tab key** on your Keyboard to cycle through the three options for changing the values: **Rise**, **Run** or **Angle**.

For the **Edge Overhang**, make sure that you use the appropriate Grip Point since this value is the Overhang and not the Roof's Edge which has a Grip that can be in nearly the same position if no Overhang exists.

For the **Edge Grip**, notice that you can use the **Ctrl key** on your Keyboard to change what this Grip actually does to your Roof Slab. After Selecting the Grip and making it Hot, you can use the Ctrl key. If you wait a second while holding the mouse still over the Grip, you will get a pop-up indicating which of the three modes you are in. The Add new edges mode, add edges to the sides so it's not quite like adding Vertex Points along the front. The Move edge and change slope mode allows you to OSNAP to other Objects, like a Ridge Line of another Roof Slab, while calculating the new slope. This is a neat feature but roofs are rarely framed by arbitrary slopes so be careful about using it.

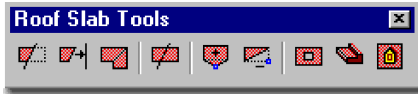
See [Modify Roof Slab - Properties Palette](#) - for information on the other Grip Points.



Roof Slab Tools

Menu **N.A.**

Like Slabs, Roof Slabs have a whole suite of tools for such tasks as Extending, Trimming, Cutting Holes and creating Dormers. Read Part 9 - Roof Slab Tools for more information on Modifying Roof Slabs.



Mouse Select Roof Slab, right-click to access menu illustrated right.

Links [Part 9 - Roof Slab Tools](#) - for the whole story on the editing tools for Roof Slabs

9 Roof Slab Style Properties

9-8 ROOFS - ROOF SLABS

Style Manager - Roof Slabs

Alt.Menu **Design> Roof Slabs> Roof Slab Styles...**



Keyboard **RoofSlabStyle**

Links [Object Style Management](#) - for more information on Object Styles

For **Roof Slab Styles**, you can use the **Style Manager** to load, modify, delete and create new Roof Slab Styles.

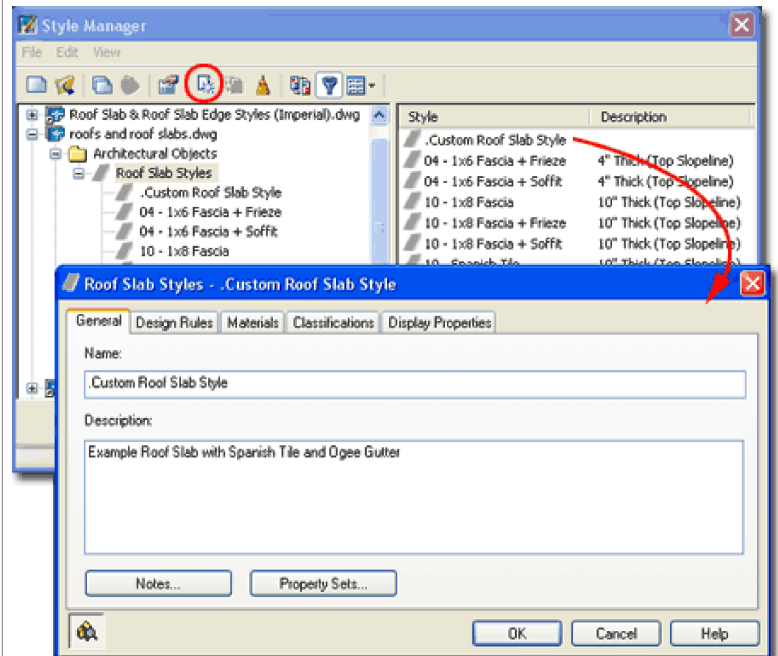
Though you can easily create New Roof Slab Styles from Scratch using the **New button**, you may want to use the **Copy/Paste** technique instead because it is far easier to Modify Settings of an existing Object Style than it is to create one from Scratch. In some cases, you may even miss specific settings that can come back to haunt you much farther down the road on a project - things like Display Representations or Data for Schedules.

Illustrated to the right I show the process of creating a **New Roof Slab Style** that I have Named "**Custom Roof Slab Style**". By **double-clicking** on this new style, I show that I have also activated the **Roof Slab Styles Properties** dialog box where all of the custom settings can be made for the size, shape and look of this particular object style.

The **General** tab provides access to the **Name** and **Description** fields for a Style; plus access to the attachment of **Notes** and [Property Sets](#).

Roof Slab Styles - Design Rules tab

On the **Design Rules** tab of the **Roof Slab Styles** dialog box, illustrated to the right, you will find a checkbox that locks the **A - Thickness** value field on the Properties Palette and two Thickness options.



HOW THICKNESS OFFSET WORKS AND CAN CREATE ERRORS WITH PROJECTED MODE

SEE COMMENTS

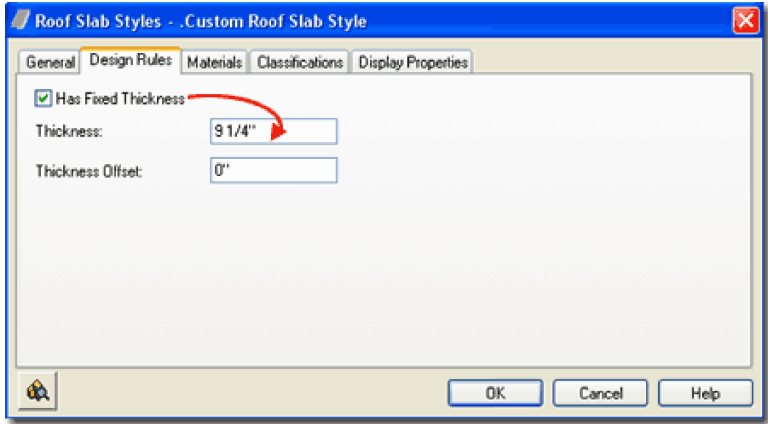
BOTTOM JUSTIFICATION USING PROJECTED MODE



Has Fixed Thickness - check this box to lock in a Roof Slab Style's Roof thickness value so that it can't be changed except through the Style. When you check this to fill in a value for Thickness, you will also be deactivating the A - Thickness value field on the Properties Palette.

Thickness - use this value field to set the Fixed Thickness value.

Thickness Offset - use this value field to control the Baseline position of a Roof Slab relative to the Pivot Point and measured perpendicular to the roof plane (i.e., same as thickness). This does not affect the Pivot Point like **B - Vertical Offset** does; i.e., the pivot point remains fixed at the original insertion point unless otherwise modified. When you modify this value you also reposition the vertical origin of the Thickness Value (somewhat pointless), Horizontal Offset and Vertical Offset allowing you to make adjustments in a triangular fashion; e.g., move a Roof Slab from 3 units up perpendicular to the slope (Thickness Offset), over 2 units (Horizontal Offset) and down 2 units (Vertical Offset).



Note:
In the graphic illustration to the left I show how the Thickness Offset value affects the position of the Baseline. The problem is that if you don't work with Direct Mode when Adding Roof Slabs, the Thickness Offset value seems to get translated into the hypotenuse of the triangle I show as dashed red lines and this translates to a nasty bit of error in the position of the roof.

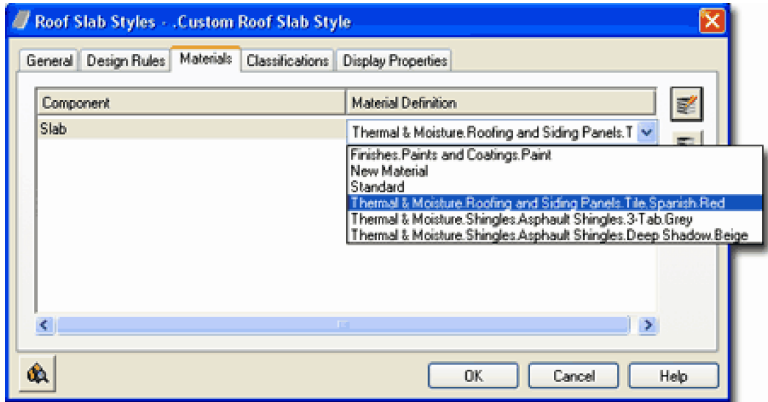
Roof Slab Styles - Materials tab

Links [Object Style Properties - Materials Overview](#) - for an expanded step-by-step explanation of Materials

The subject of **Materials** is one of the most expansive and confusing topics in Architectural Desktop because it requires a complete comprehension of the product in order to take full advantage of this feature; from object styles to display representations. This subject will be discussed under [Part 1 - Display](#) and in the Presentation eGuide.

Illustrated to the right I show that Roof Slabs will offer one predefined **Component** (Slab) and that the **Material Definition** Name will be set to "Standard" when you create a Style from scratch. If you have imported any of the Architectural Desktop Roof Slab Styles from the Object Style Library, you should find that you will be able to use the Material Definitions that come with those objects - as illustrated to the right where I am selecting Spanish Tiles.

Though you are not required to use Material Definitions in Architectural Desktop, you are likely to find it difficult to avoid using them since most of the predefined Styles use them. Materials have thrown a monkey wrench into the whole Display System because they can actually take over control of how your linework appears in Plan View for Construction Documents (discussed below under Display Properties). The best thing to do when learning about Material Definitions is to match how most of the predefined Roof Slab Styles have been configured; i.e., reverse engineer the ADT Styles.

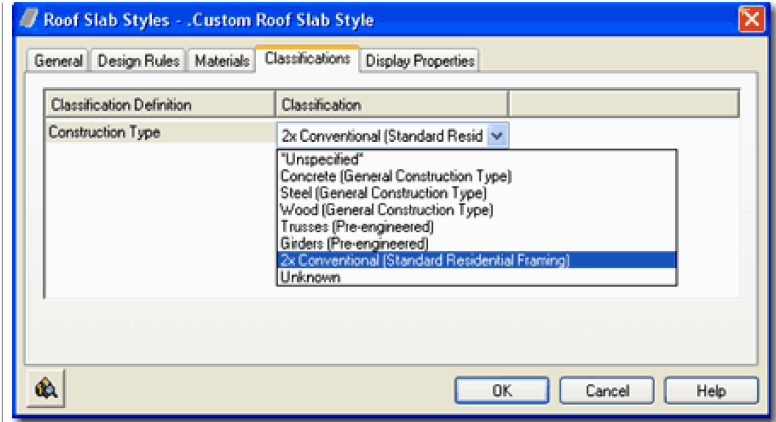


Roof Slab Styles - Classifications tab

Links [Object Style Properties - Classifications Overview](#) - for an expanded step-by-step explanation of Classifications

The subject of **Classifications** is thankfully no where near as complicated as that of Materials so the only real question you will need to consider is if you need to use them. Classifications offer another way to separate Object Styles into categories that can be used in **Schedules** and even in **Display Representation Sets** (as "Show" or "Hide").

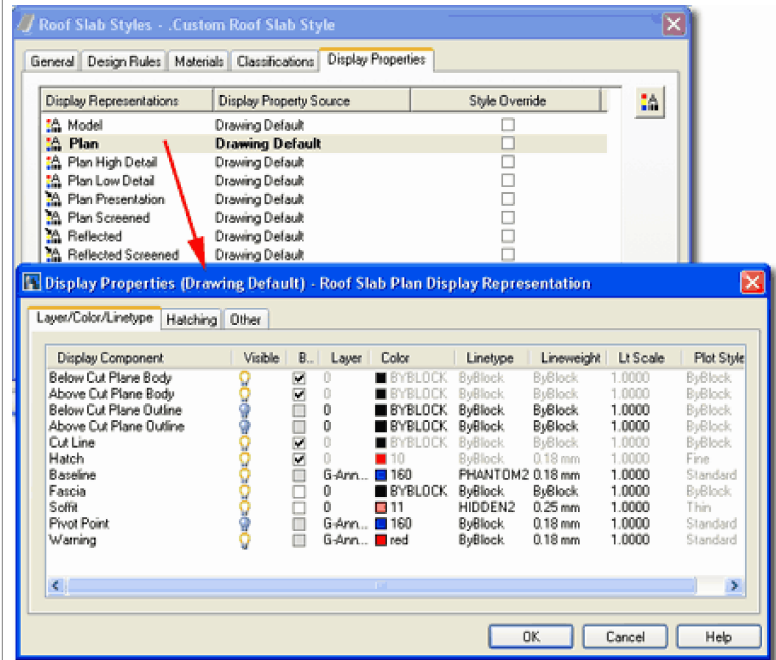
Illustrated to the right I show that I have one **Classification Definition** (see **Format** pull-down menu) with a list of **Classification Names** or Types. Generally you will not have any options on this Tab but if you have created at least one Classification Style that has been set to "Apply To" Roof Slab Styles, you will be able to use it here. The range of use is really up to your imagination but it is fairly obvious that Classifications can be quite handy in Schedules. This topic will be discussed further under Part 18 - Schedules. You can also read a bit more about how to create Classification Definitions in [Part 1 - Display](#).



Roof Slab Styles - Display Properties tab

Links [Object Style Display Properties Overview](#) - for the full story on Display Properties for Style
[Object Display Property Overrides - Object and Style Based](#) - for an explanation of the differences between using Display Properties via the Styles versus the Edit Object Display... option.

The **Display Properties** tab of the **Roof Slab Styles** dialog box, illustrated right, provides access to the display characteristics of the components of your Roof Slab objects; from Visibility to Cut Plane Height overrides. This is also where you would go to have Roof Slabs change color or Materials, for example, when you switch from one Display Configuration to another. See the discussion on Roof Slab Display Properties below for more information on this subject.



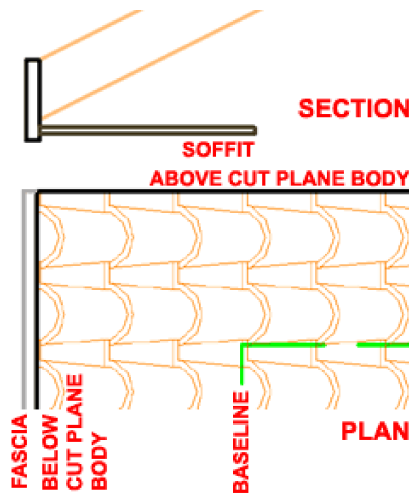
YOU CAN ALSO ACCESS DISPLAY PROPERTIES BY SELECTING AN OBJECT, RIGHT-CLICKING ON YOUR MOUSE AND USE THIS POP-UP MENU OPTION



Illustrated to the left, is another way to access the **Display Properties** tab; select the specific **object**, **right click** on your mouse to invoke the object-specific pop-up menu and select **Edit Object Display...** Just be aware that when you use this approach, you

can actually set an Object Override as opposed to a Style Override. Object Overrides can be extremely useful because they allow you to add hatch patterns or change colors of any single object within a Style Family but they can also be problematic because they lock you out from more centralized, Style level, controls.

Roof Slab - Display Properties - Component Layers



Illustrated to the right I show how you can do some minor changes to the **Plan Display Representation** of a Roof Slab Style to achieve a more "AutoCAD-like" level of control over the **Color, Linetype, Lineweight** and so on of certain Components. By removing the **By Material** checkmarks from the Below and Above Cut Plane Body Display Components, you can use the ByBlock setting to acquire the freedom to

set the Color by Layer or by manual override.

By activating the Baseline Display Component and assigning it unique display characteristics, like the "HIDDEN2" Linetype, this Component can be used to represent edge of Walls Below as in classic Roof Plan drawings.

By following similar techniques for the Fascia, you can lighten the display for more detailed items such as gutters and trim.

Also illustrated to the right, I show that I have turned the Visibility of the Soffit Off because I do not want this potentially confusing line to appear under my Baseline.

Display Properties (Drawing Default) - Roof Slab Plan Display Representation

Display Component	Visible	B..	Layer	Color	Linetype	Lineweight	Lt Scale	Plot Style
Below Cut Plane Body	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock	ByBlock	1.0000	ByBlock
Above Cut Plane Body	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock	ByBlock	1.0000	ByBlock
Below Cut Plane Outline	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock	ByBlock	1.0000	ByBlock
Above Cut Plane Outline	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock	ByBlock	1.0000	ByBlock
Cut Line	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock	ByBlock	1.0000	ByBlock
Hatch	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10	ByBlock	ByBlock	0.18 mm	1.0000	None
Baseline	<input type="checkbox"/>	<input type="checkbox"/>	G-Ann...	green	HIDDEN2	0.50 mm	1.0000	Standard
Fascia	<input type="checkbox"/>	<input type="checkbox"/>	3	ByBlock	ByBlock	ByBlock	1.0000	ByBlock
Soffit	<input type="checkbox"/>	<input type="checkbox"/>	11	HIDDEN2	0.25 mm	1.0000	1.0000	Thin
Pivot Point	<input type="checkbox"/>	<input type="checkbox"/>	G-Ann...	160	ByBlock	0.18 mm	1.0000	Standard
Warning	<input type="checkbox"/>	<input type="checkbox"/>	G-Ann...	red	ByBlock	0.18 mm	1.0000	Standard

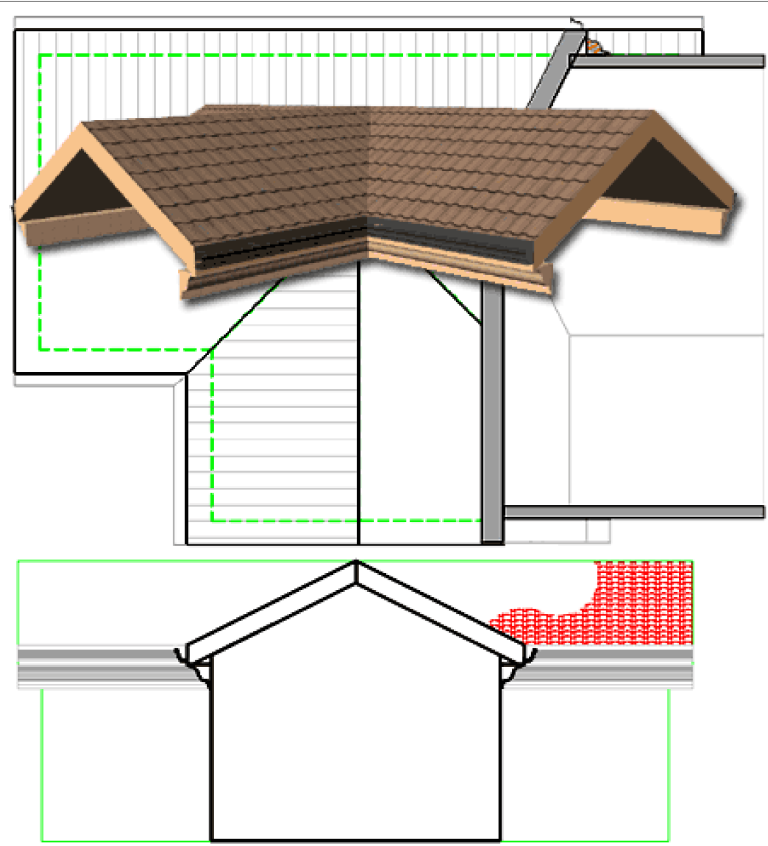
10 Roof Slab Display Properties

10-8 ROOFS - ROOF SLABS

When working with the Display Properties of Slab Objects, you may soon discover that most of them are more appropriate for Roof Slab Objects than Floor Slabs. The Slab Object is basically a derivative of the Roof Slab instead of a completely new Object Type and thus you may find that it does not really deliver on the features you would expect for something like a concrete slab. One of the more frustrating aspects of working with the Display Properties of this object is that you often cannot get the Slab Edge Styles to display as you typically would for Construction Documents; Fascias, for example, often don't display at all in Plan View when they are used as a Curb.

Illustrated to the right I show a few mixed design options for a Slab and a Wall Style with a "T" base footing. Though you can add a "T" footing to a Slab as an Edge Style, using a Wall Style should prove to be far more appropriate. What I do show as a viable footing option is a typical perimeter slab edge using the Soffit option. I also show a curb condition that can either be part of a Soffit Profile or as a separate Fascia option.

For me, getting a Slab to look correct in Plan View for Construction Documents is the most important task and then I worry about the Section View. From the Section View, I typically use the 2D Linework as a rough sketch that I detail manually using AutoCAD tools and commands.



Roof Slabs in Plan

Menu **Format> Display Manager...**



Keyboard **DisplayManager**

Keyboard **DisplayProps [Attach]**

Mouse Select Object, right-click, select Edit Door Style... or Edit Window Style... or Edit Object Display...

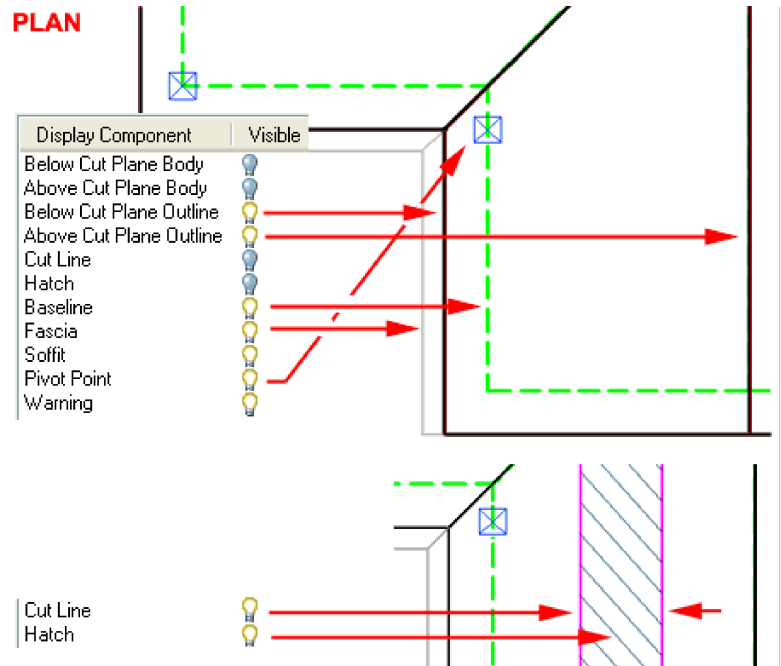
Links [Part 1 - Display - Object Display Properties Overview](#) - for more information on how to access the Display Properties of this Object.

In **Plan View**, you will need to think of your **Roof Slab** as a 3D object that **Slopes** through a planar cutting plane in order to make sense of the Above and Below Display Component options (assuming your roof isn't flat, of course). By working with the Cut Plane Height on the Other tab of the Display Properties dialog box, you can control where an imaginary plane will cut through your Roof Slab and thereby establish which lines will be Above and which will be Below.

The **Hatch** Display Component applies to the portion of the Roof Slab Body that is sectioned by this imaginary Cut Plane and the outline of this body cut is controlled by the **Cut Line** Display Component - see illustration, lower right. If using the "By Material" option, make sure the "Plan Hatch" Display Property is Visible on the Material Definition Properties dialog.

For the Above and Below linework, you can use the **Above** and **Below Cut Plane Body** and **Outline Display Components**. The Body represents the 3 dimensional form and controls the **Surface Hatch Material Display** so if you turn the Visibility of this Component Off, you will also be turning the Surface Hatch Off (a little confusing isn't it). The Outline represents a 2 dimensional form and does not appear to control any hatching options. You will notice the difference in Plan View when you have Fascia edges that are Square to steep slopes; the Body Display Components will show both the top and bottom outlines of the fascia but the Outline will only show the top outline. You can use both and emphasize the top face of a Roof Slab or turn the Body off to make a more simple representation.

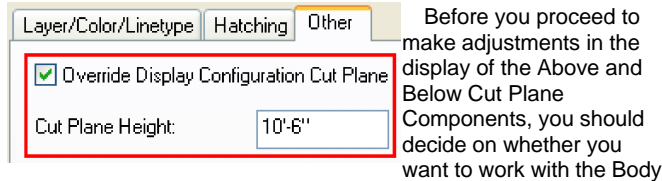
PLAN



Illustrated to the right I show a slightly modified version of the default **"Medium Detail"** Display Configuration which uses the **"Plan" Display Representation** for most Objects. In order to illustrate how you can use the Baseline and Fascia Display Components, I unchecked the "By Material" option to take direct control and set the Baseline to a Green Dashed Linetype (representing an outline of Walls below) and used a thin Gray Color for the Gutter. These types of settings can also be controlled through the Material Definition but sometimes it's faster to just ignore or bypass the Materials.

Roof Slab Above and Below the Cutting Plane

[Part 1 - Display - Object Display Properties Overview](#) - for more information on how to access the Display Properties of this Object.



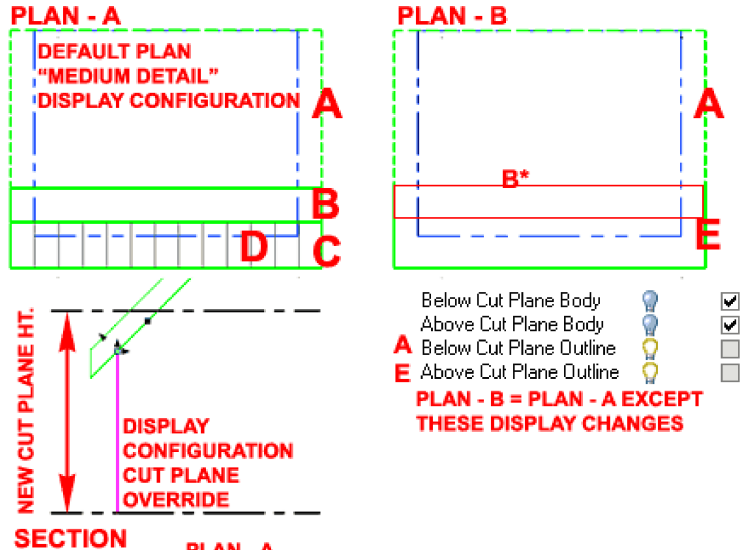
Before you proceed to make adjustments in the display of the Above and Below Cut Plane Components, you should decide on whether you want to work with the Body or Outline Components (mixing them is another possibility) - see comments above for a description of what these Display Components do.

The Plan View Representation for Roof Slabs is affected by the Global Cut Plane setting as set on the current Display Configuration. In most drawings this value is set to 3'-6" Imperial or 1400mm Metric by default and thus most Roof Slabs would be above this height. Logic would suggest that the lines of a Roof Slab should thus be dashed by default given that they are all Above the Cut Plane but that's not what you will find in the ADT template files.

If you take a look at the Display Components of a Roof Slab for most of the Display Representations, you will find that the Above and Below Cut Plane Body Display Components are controlled "By Material" so you have to explore the current Material Definition's Display Properties in order to see what's really going on for the Above and Below Cut Plane Body linework. For the Above and Below Cut Plane Outlines, there is no "By Material" option so working with these Components can prove to be easier since you don't need to worry about how a Material Definition affects the linework.

If you take a look at the **Material Display Properties** for the current Roof Slab Style, you will find that it has a " **3D Body** " **Display Component** that correlates to the Above and Below Cut Plane Body Display Components of the Roof Slab Style Display Properties. Since one Material Display Component controls two different Display Components of the Roof Slab, you will need to deactivate one if you want to differentiate the Above and Below Body linework. In other words, don't use "By Material" for either the "Below Cut Plan Body" or the "Above Cut Plane Body" Display Component.

In the illustration to the right I show two Plan View scenarios involving the Above and Below Cut Plane Display Components. For both, I have used the "Override Display Configuration Cut Plane" option on the Other tab to control the height between Above and Below linework.



SECTION

PLAN - A ROOF SLAB DISPLAY PROPERTIES

Display Component	Visible	B	L	Color	Linetype
Below Cut Plane Body	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	BYBLOCK	ByBlock
Above Cut Plane Body	<input type="checkbox"/>	<input checked="" type="checkbox"/>	0	BYBLOCK	ByBlock
Below Cut Plane Outline	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock
Above Cut Plane Outline	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	HIDDEN2
Cut Line	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock
Hatch	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0	10	ByBlock
Baseline	<input type="checkbox"/>	<input type="checkbox"/>	G...	160	PHANTOM2
Fascia	<input type="checkbox"/>	<input type="checkbox"/>	0	BYBLOCK	ByBlock
Soffit	<input type="checkbox"/>	<input type="checkbox"/>	0	11	HIDDEN2
Pivot Point	<input type="checkbox"/>	<input type="checkbox"/>	G...	160	ByBlock
Warning	<input type="checkbox"/>	<input type="checkbox"/>	G...	red	ByBlock

Display Component	Visible	L	Color
Plan Linework	<input type="checkbox"/>	0	BYBLOCK
2D Section/Elevation Line	<input type="checkbox"/>	0	BYBLOCK
3D Body	<input type="checkbox"/>	0	BYBLOCK
Plan Hatch	<input type="checkbox"/>	0	BYBLOCK
Surface Hatch	<input type="checkbox"/>	0	9
Section Hatch	<input type="checkbox"/>	0	BYBLOCK
Sectioned Boundary	<input type="checkbox"/>	0	red
Sectioned Body	<input type="checkbox"/>	0	9

PLAN -- A & PLAN - B MATERIAL DEFINITION DISPLAY PROPERTIES

Plan - A uses the **Above Cut Plane Outline (A)** Display Component to create a simple dashed outline. This Display Component uses no Materials so you can set the desired linework appearance right on the Display Properties dialog as illustrated by the "Hidden2" Linetype setting. The **Below Cut Plane Body (C)** has been displayed and uses a **Material Definition**. On the Display Properties dialog for the current Roof Slab Material Definition, I show that the **3D Body (B,C)** Display Component controls the appearance of this linework but since it represents the "body", you automatically get the Cut Line regardless of how this Display Component has been set on the Roof Slab Display Properties dialog. The Hatch is controlled by the **Surface Hatch (D)** Display Component on the Material Definition's Display Properties and is part of the 3D Body Display Component.

Plan - B uses the same general settings as Plan - A, except that the Below Cut Plane Body has been replaced by the **Below Cut Plane Outline (E)** Display Component. This produces a cleaner outline with no option for a Surface Hatch. If desired, you can activate the display of the **Cut Line (B*)** by turning this Display Component **On** and deactivating the "By Material" setting.

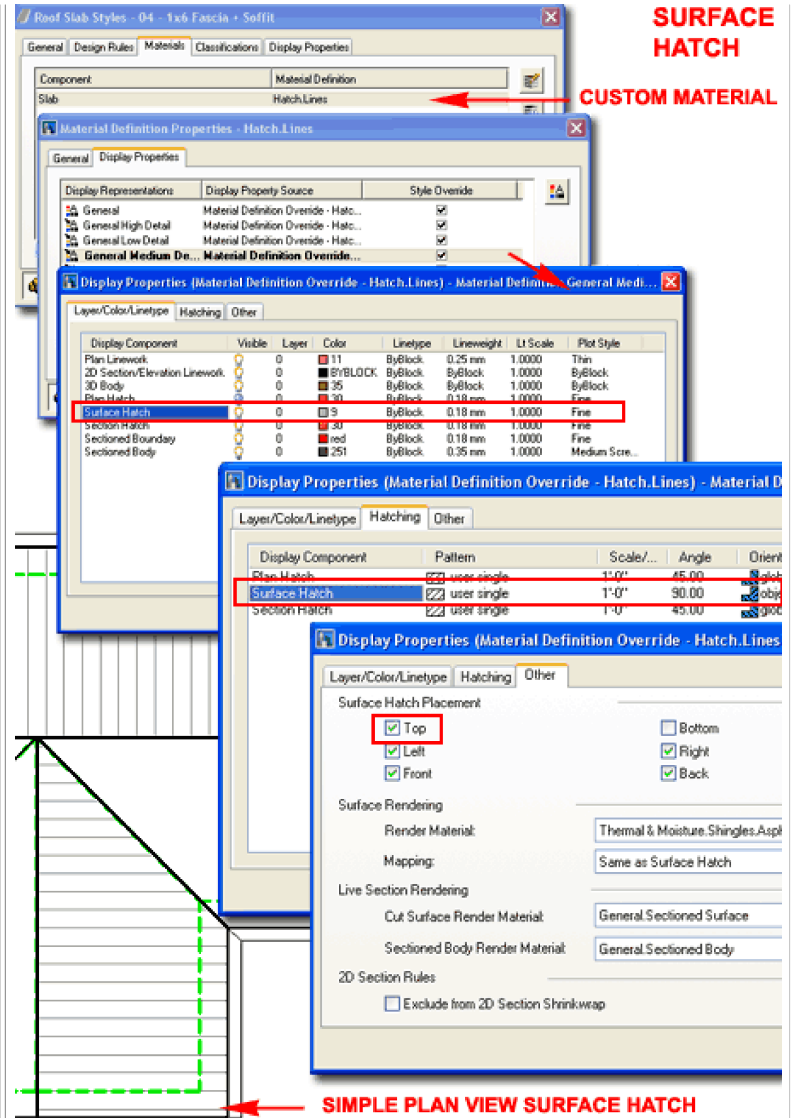
Roof Slab Hatch in Plan

Links [Part 1 - Object Style Properties - Materials Overview](#) - for more information on working with Material Definition Styles and their Display Properties.

For setting and controlling Hatch Patterns on sloped Roof Slabs, you must use Material Definitions because the Hatch Display Component is for Plan View only; as in a sectional plan view. The biggest problem with Surface Hatching Roof Slabs in Plan View is that you cannot control it like you can on 2D Elevations and Sections so you basically have to accept that the patterns will fill the entire surface area of a Roof Slab (not very attractive when using Spanish tiles or other highly ornate patterns). The only control you have over the span of Surface Hatch Patterns is the Cut Plane and the Roof Slab Above and Below Cut Plane Body Display Components. If you attempt to use these Display Components to control your Surface Hatch, however, all you get is a linear cut off that doesn't read like a fade-off and you will see the line or lines of the cut plane since they are displayed by the Body Components.

In the illustration right, I show that for the current **Roof Slab Style**, I have set a **custom Material Definition** that I named "Hatch.Lines". On the **Material Definition Properties dialog box** for this custom Material Definition, I show that for the current **Display Representation**, "General Medium Detail", I have accessed the **Style Override Display Properties dialog box** to confirm that the **Surface Hatch Display Component** is **Visible** on the **Layer/Color/Linetype** tab. On the same dialog box, under the **Hatching** tab, I also show that I have set a simple 'user single' **Pattern** for the Surface Hatch Display Component and set the Angle to 90 degrees relative to the Object. And finally, on the **Other** tab of the same dialog box, I show that I have confirmed that the **Surface Hatch Placement** is set to display for **Top**.

Note: The Surface Hatch Display Component will not display if you have the 3D Body Display Component turned Off.



Slab Hatch in Section

Links [Display Properties - 2D Section/Elevation Styles - Component Layers](#) - for information on working with the 2D Section Display Properties for controlling Hatch Patterns on Sections.

For 2D Sections of Roof Slab Objects, you can use the **Material Definition Style's Display Representation Properties** to work on the **Section Hatch Display Component**. For this Display Component, you can use just about any Hatch Pattern and Scale but I did find one pattern that did not work: Solid. This appears to be a bug in the software but you can work around this problem by using the 2D Section/Elevation Styles to control how you want the **Shrinkwrap Hatch** (turned Off by default) - see Part 15 - Sections for more information on this topic.

11

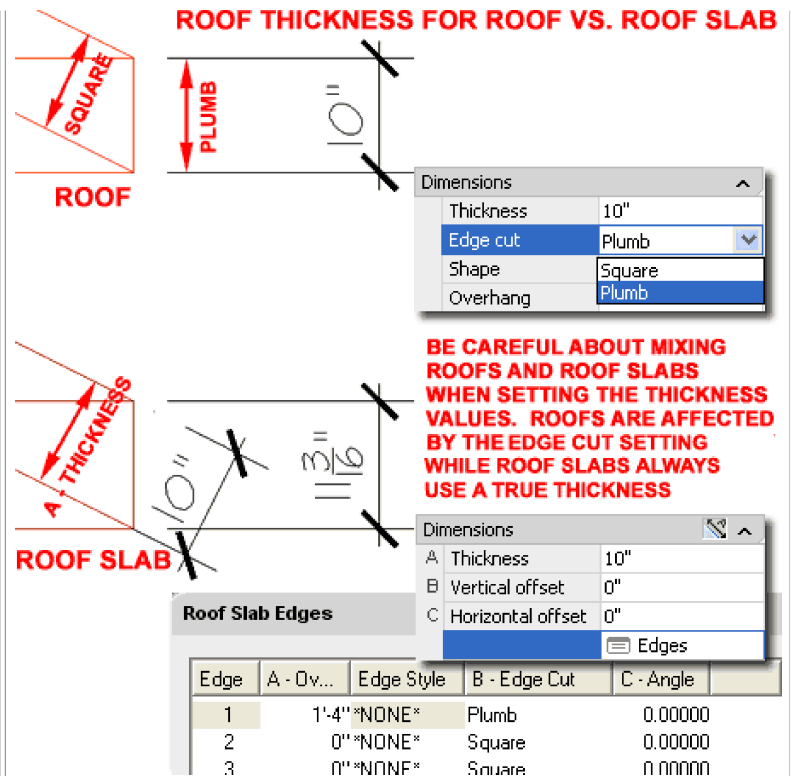
Roof Slabs - Customizing and Tricks

Mixing Roofs and Roof Slabs

Though it may seem obvious when highlighted, the illustration to the right did catch me off guard when cranking out some design work on a recent project where I used Roofs and Roof Slabs, where appropriate, for various solutions.

The **Thickness** Value for **Roofs** is measured relative to the "Edge Cut" while the **A - Thickness** Value for **Roof Slabs** is always true regardless of the "Edge Cut". In other words, Roofs measure the fascia height while Roof Slabs measure the rafter depth. It's quite crazy isn't it.

If you want to mix the two Roof Styles and match the thickness as well as the fascia heights, you'll have to do a little trigonometry.



Using Mass Groups to create Roof Groups

Links [Working on Complicated Roof Designs](#) - for a lengthy explanation and example of how to work with Mass Groups to create a single roof group out of many roofs and slabs.

[Mass Groups](#) - for the whole story on using Mass Groups, Mass Elements and Boolean operators. Architectural Desktop 3 Pre-design eGuide.

If you tend to mix different objects for your roof solutions, such as **Roofs** and **Roof Slabs**, you may discover that there are some unpleasant aspects of having disjointed objects; ideally a Roof would be composed of Roof Slabs while remaining one Roof object.

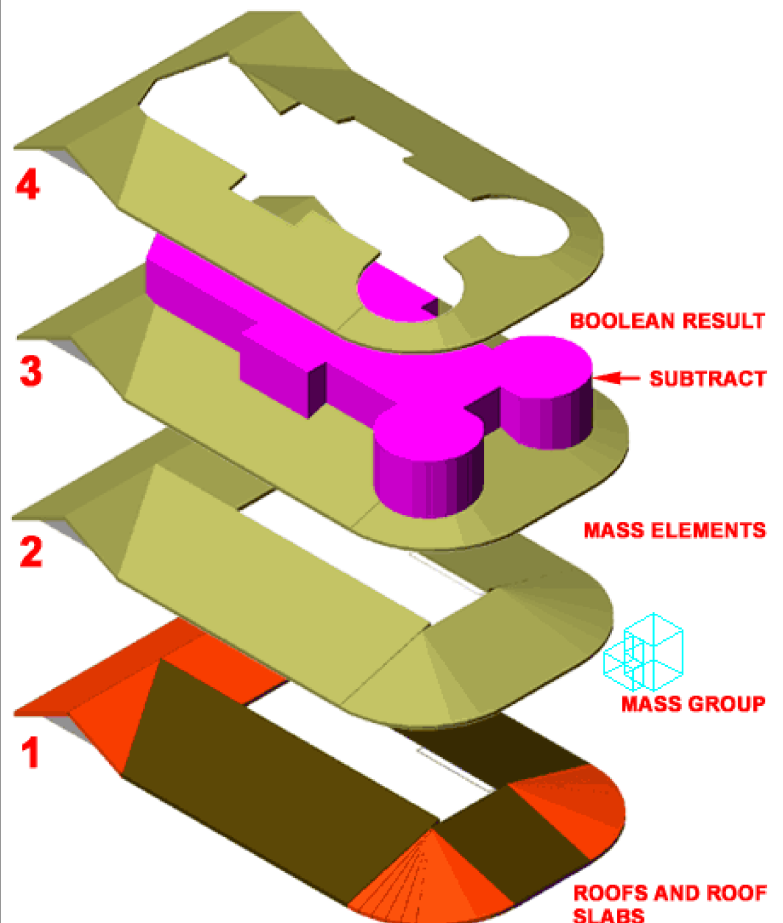
Another unfortunate aspect of using Roof objects is that they are very limited in editing options and you cannot, for example, use Boolean operators on them to create skylights or other openings.

Illustrated to the right I show the process in which you can use a **Mass Group** from the **Concept pull-down menu** ([Architectural Desktop 4 Pre-design eGuide](#)) to group all selected ADT objects into one cohesive group object. One of the greater benefits of using this technique is that, as illustrated in steps 3 and 4, you can introduce other ADT objects, such as Mass Elements, and create Boolean Subtractions. I have used this technique a lot to create openings for 2nd story Walls on multi-story buildings where the 1st floor has a wrap-around roof.

There are some drawbacks to this technique as well such as not having the ability to differentiate colors for Soffit and Fascia elements and having to manage more layers but overall I find this a valuable option for design solutions.

Comment: Update Links when material is ready.

USING MASS GROUPS TO GROUP ROOF OBJECTS



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Roof Slab Edge Styles

12-8 ROOFS - ROOF SLABS

Style Manager - Roof Slab Edges

Alt.Menu **Design> Roof Slabs> Roof Slab Edge Styles...**



Keyboard **RoofSlabEdgeStyle**

Links [Roof Slab Styles - Defaults tab](#) - where they are set in the Roof Slab Styles dialog box.

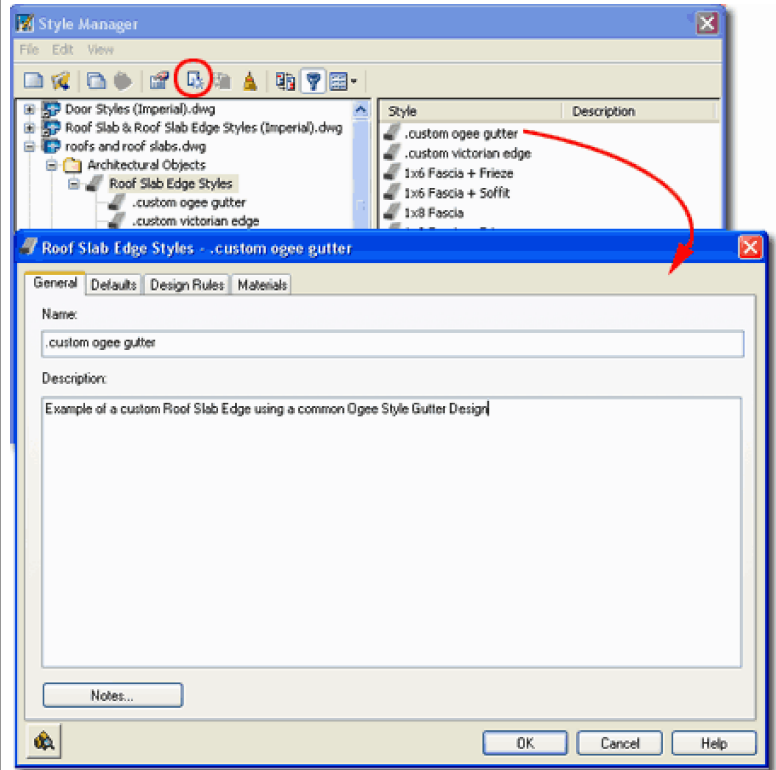
For **Roof Slab Edges Styles**, you can use the **Style Manager** to load, modify, delete and create new Roof Slab Edge Styles.

Since Roof Slab Edge Styles are rather simple and don't have Display Property settings, starting from Scratch when making a new one is as viable as using the Copy/Paste option that I recommend for most other Object Styles. Assigning Materials is probably the biggest obstacle you will have to deal with when working with the Roof Slab Edge Styles dialog box.

Illustrated to the right, I show the process of creating a **New** Roof Slab Edge Style that I have Named ".custom ogee gutter". By **double-clicking** on this new style, you will invoke the **Roof Slab Edge Styles** dialog box - as illustrated.

The **General** tab provides access to the **Name** and **Description** fields for a Style; plus access to the attachment of Notes but no Property Sets since these will be attached to Roof Slabs.

I used the name ".custom ogee gutter" to demonstrate how to create a simple Roof Slab Edge Style that creates the look of a standard gutter. You can expand on this information to create extremely sophisticated Soffit and Fascia design options.



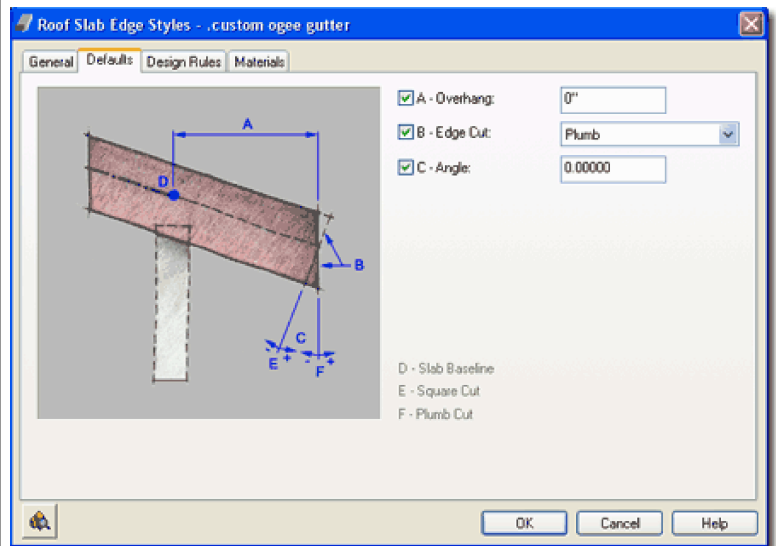
Roof Slab Edge Styles - Defaults tab

On the **Defaults** tab of the **Roof Slab Edge Styles** dialog box, you can set an overhang distance, a plumb or square cut and any angle for the cut. **Be aware** that these settings only apply to Fascias and only when you pre-assign a Roof Slab Edge Style to a Roof Slab Style; this can only be done as an **Icon Property on the Tool Palettes**. When Adding Roof Slab Edge Styles to a Roof Slab that has already been created, these settings will be ignored but can be set as part of the Roof Slab's Edge Settings. If this sounds like gibberish, it does have an element of that since this is more of a legacy option that made more sense in earlier releases of ADT.

A - Overhang - this will set an Edge Slab Style overhang distance measured from the pivot point out. If you specify the actual Overhang value you want on a particular Roof Slab Style here, you can use it to control the Overhang of a Roof Slab Style by pre-assigning this Edge Slab Style as a Property on the Tool Palette.

B - Orientation - a drop-down list offering a Plumb or Square rafter cut on the tail ends. Plumb will give you a cut perpendicular to the ground (or parallel to the wall). Square will give you a cut perpendicular to the rafter slope. See comments for Overhang.

C - Angle - use this value to create any angle cut you want. These angles work in conjunction with the Orientation so you can create a 45 degree cut off of a Plumb cut. You can also use positive or negative degrees where negative degrees cut the rafters back on the bottom. Positive degrees cut the rafters back at the top. See comments for Overhang.



Roof Slab Edge Styles - Design Rules tab

Links [Profiles](#) - for how to create Profiles

The **Design Rules** tab of the **Roof Slab Edge Styles dialog box** holds all of the settings that create the amazing Fascia and Soffit results. You can even be creative about the terms Fascia and Soffit and how they actually apply to your Roof Slab Edges. You can, for example, make a Fascia Profile that includes the Soffit should that be a desirable option.

Fascia - on/off checkbox. The the Display of this option can also be turned on or off on the [Display Properties Layer/Color/Linetype tab](#) of the Roof Slab Style dialog box.

Profile - drop-down list for selection of any currently loaded Profiles. Though you can use any profile you will want one designed for the right task with an appropriate Insertion Point. See discussion below.

A - Auto-Adjust to Edge Height - check box (on/off). If checked, the size of your Fascia Profile will automatically be determined by the Roof Slab Thickness as determined by a Plumb or Square cut. The scale maintains aspect ratio so your fascia profile grows or shrinks in both X and Y directions simultaneously. This is a nice option but should not be used for Profiles that have been designed to match actual construction dimensions (like gutters).

Soffit - on/off checkbox. The the Display of this option can also be turned on or off on the [Display Properties Layer/Color/Linetype tab](#) of the Roof Slab Style dialog box.

Profile - drop-down list for selection of any currently loaded Profiles. Though you can use any profile you will want one designed for the right task with an appropriate Insertion Point. See discussion below.

B - Auto-Adjust to Edge Overhang Depth - check box (on/off). If checked, the size of your Soffit Profile will automatically be determined by a number of various controls; primarily the distance from the Roof Slab Baseline to the Fascia. You can make changes to the size and position of the Soffit Profile by working with **D - Horizontal Offset from Roof Slab Baseline** and **F - "X" Direction**. The scale maintains aspect ratio so your Soffit profile grows or shrinks in both X and Y directions simultaneously.

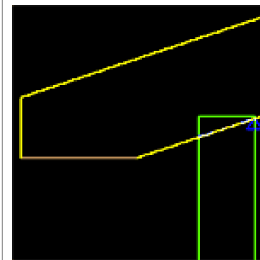
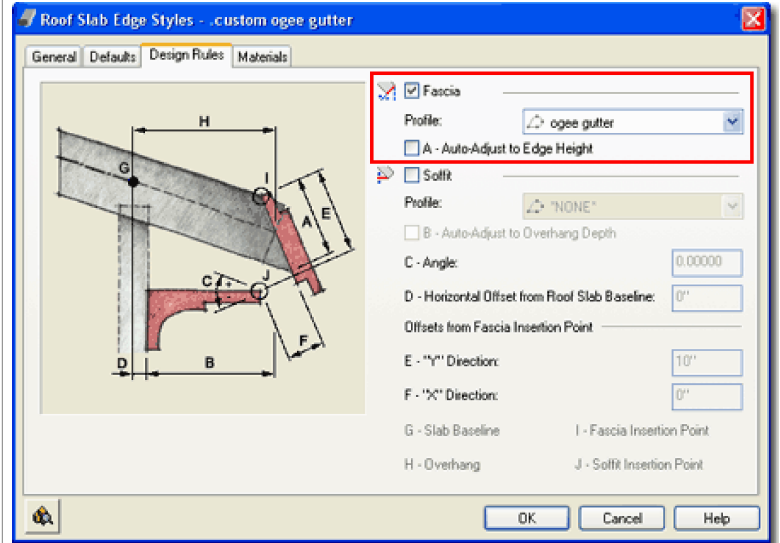
C - Angle - pivots the Soffit Profile or line (if you use *NONE*) up or down from the outer bottom corner of the Roof Slab. This is an interesting option for a simple rafter cut, try something like -15 degrees with a *NONE* Soffit Profile.

D - Horizontal Offset from Roof Slab Baseline - this will move the Soffit Profile out and away from the Roof Slab Baseline or in (by using a negative number). You can use this to compensate for a Baseline that isn't on the outside edge of a Wall, for example. This will affect the Soffit Profile scalar size if Auto-Adjust is on.

Roof Slab Edge Styles - Fascias and Soffits

Links [AEC Profiles](#) - how to make and manage Profile Styles
[Roof Slab Styles - Defaults tab](#) - adjusting Vertical Offset of Roof Slab (**B1**)

Illustrated to the right I show some quick sketches of a gutter and fascia board and a soffit trim assembly. The dialog box and



E - "Y" Direction - this value allows you to position a Soffit Profile vertically based on a distance from the outer top corner of a Roof Slab (see **E** below, right). Used with a Soffit Profile of *NONE* can create a nice cut on the bottom of your rafters.

F - "X" Direction - this value allows you to move the Soffit Profile horizontally with respect to the outer bottom corner of the Roof Slab. I don't believe that you'll see anything change if you use the *NONE* Profile but on an actual Soffit Profile it will move it back towards the Wall. If you have Auto-Adjust on and also work with the D - Horizontal Offset from Roof Slab Baseline value, you can squeeze your profile into a tiny dot; i.e, you have the ability to compress it from two side offset values.

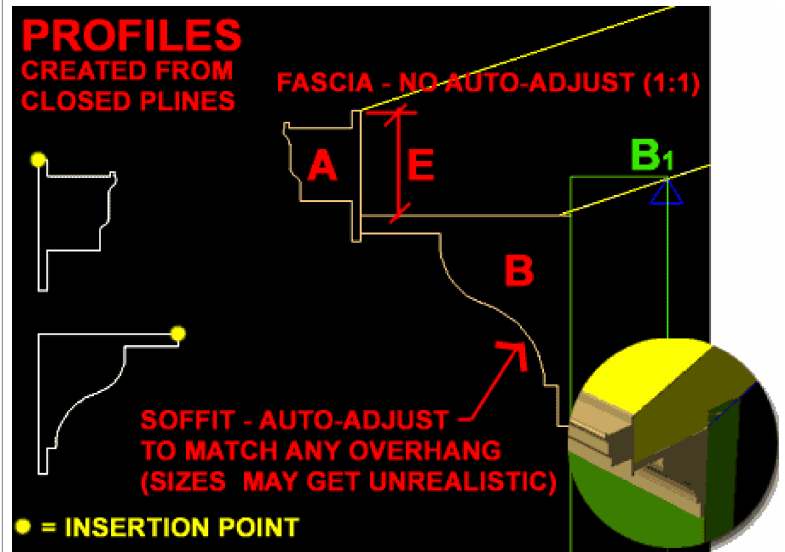
values used to create this image come from the **Design Rules tab** discussed above, right.

To create your own Fascias and Soffits, you will need to draw these items in profile or cross-section with the Pline command. The shape you create must be contiguous and closed. The orientation illustrated must also be used; i.e., they must face right. Use the Profile command to Define these items and use appropriate Insertion Points (see yellow dots, left). The fascia object is attached to the top of your Roof Slab so if you want a gutter or other item down a bit, you can copy my example or simply select an insertion point above your Pline object. The Soffit object must be a separate Profile Style.

Once created, you can attach them to your Roof Slab Style as discussed above under the Profile drop-down lists.

In the illustration to the right, I left the custom gutter and fascia board in a 1:1 ratio and thus made sure to have **A - Auto-Adjust to Edge Height** off. For the Soffit, I wanted it to work for a variety of different overhangs, so I set **B - Auto-Adjust to Edge Overhang Depth** on. This can create unrealistic proportions but saves a lot of time. I also used the Offset from Fascia insertion option, **E - "Y" Direction**, to cut the rafter tails 6" (152mm) from the top.

I made the gutter solid because there's no way to easily cap the gutters and I find that open gutters are more noticeable than solid ones. It all depends on what you plan on doing with your efforts; render or cut detailed sections.

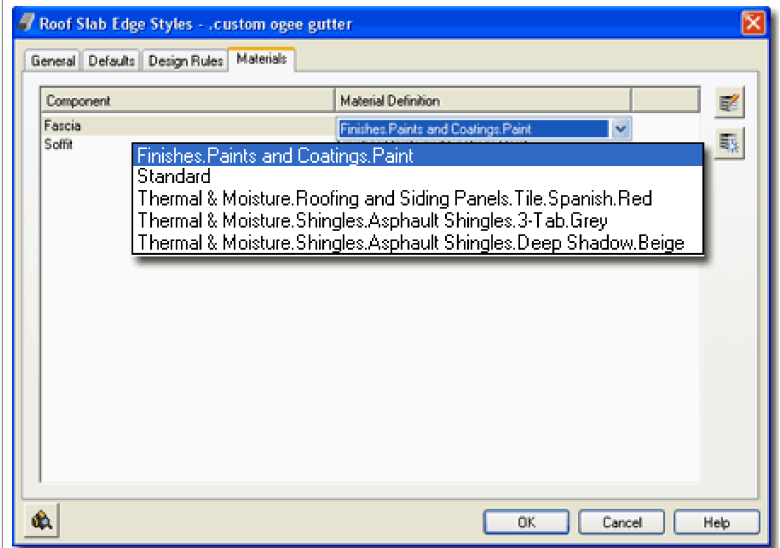


Roof Slab Edge Styles - Materials tab

Links [Object Style Properties - Materials Overview](#) - for an expanded step-by-step explanation of Materials

As with the Material subject under other Object Styles, I leave this massive subject to a different part of this and other guides but what is a bit unusual about the Materials for Roof Slab Edge Styles is that these are essentially sub-materials that are actually applied inside the Display Properties of Roof Slabs Styles. To make matters worse, my tests on the use of Materials for Linework in Plan found that the Materials don't work to control this Property so if you want to change the Plan Linework Color set it directly as a Fascia or Soffit Property on the Roof Slab Style Display Properties dialog instead of the Roof Slab Edge Style's Material.

Illustrated to the right I show that Roof Slab Edge Styles will offer two predefined **Components** (Fascia and Soffit) and that the **Material Definition** Name will be set to "Standard" when you create a Style from scratch. If you have imported any of the Architectural Desktop Roof Slab Styles from the Object Style Library, you should find that you will be able to use the Material Definitions that come with those objects - as illustrated to the right where I am selecting Paint for my example gutter.



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