

3d Profiler and Profile Manager

The 3D Profiler is a technology as well as a series of objects and tools. All the objects and tools rely on profiles or shapes to function. Profiles can be anything from standard steel sections to ornate stonework to timber mouldings. In their simplest form the profiles can be swept along 3d paths. The Profiler Tool provides a number of tools to help create these 3d paths.

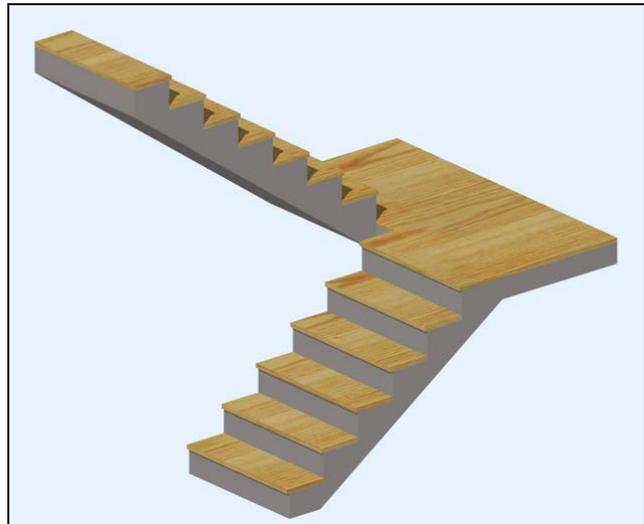
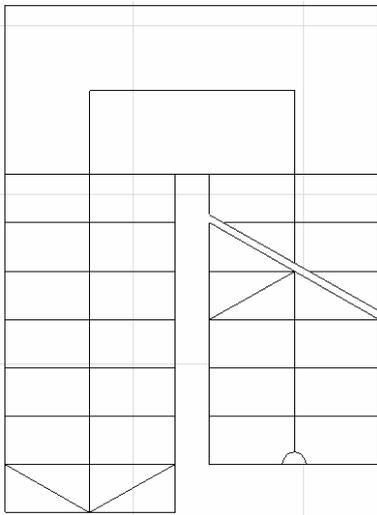
For more specific requirements (eg beams, portal frames) a number of specialist objects exist.

All the objects refer to the same library of profiles. The system contains a large number of built in profiles and the user is free to create as many additional profiles as they require.

3d Profiler – Creating Paths

Create 3d Path

The 3D Profiler Tool is simple to use and is best explained by the following example. We will use the Profiler to extrude a 3D handrail around a staircase.

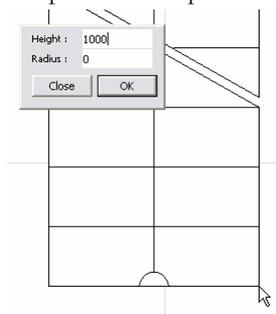


Step 1:

Select 'Create 3D Path' from the '3D Profiler' menu.

Step 2:

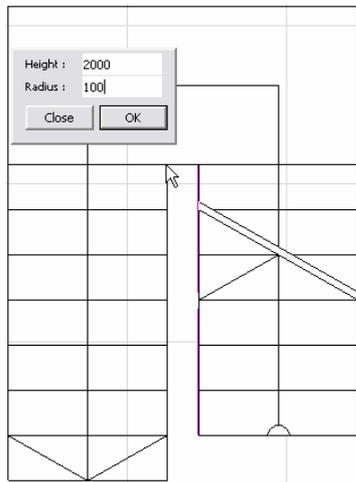
Select the start point for the profile and the following pop-up box will appear:



This pop-up box allows you to set the height of each point and the radius between the two sections of the path as each point is placed. In this example we will set the height to 1000mm and 0mm for the radius, as it is the start of the path.

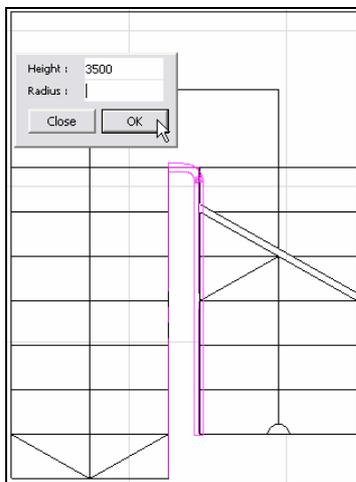
Step 3:

We then select the next point on the path and set the height and radius at that point. The solid line shown up the inside of the stairs indicates the path.



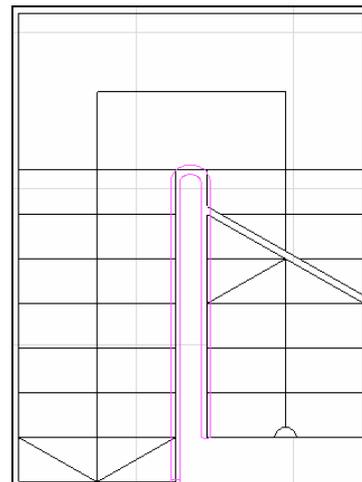
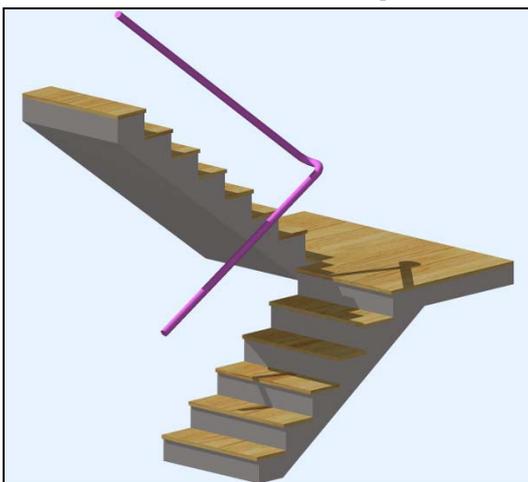
Step 4:

Continue selecting points (as required) and specify heights and radii for each point. As you can see, as you are specifying the points the centreline and outline of the profile is shown, including any radii specified. To finish the path select the last point and specify the height and radius at that point, then click the last point again to exit the tool. Again we will select 0mm for the radius as it is the end of the path.



Step 5:

You can then select the placed object and edit the settings and change the profile shape, size and colour. Your end result should look something like this.

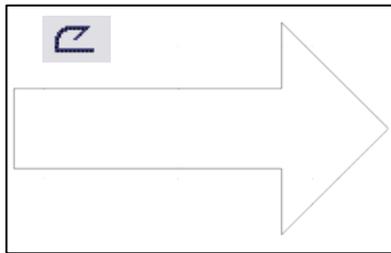


Note: If you don't have a path to follow as in this example you can use the standard ArchiCAD entry methods of X, Y, R and A to enter your path points on-the-fly.

Create Path from Plan

Step 1:

Draw the proposed path of your profile in plan using the Polyline tool. In the example shown the path will be a closed path in the shape of an arrow.

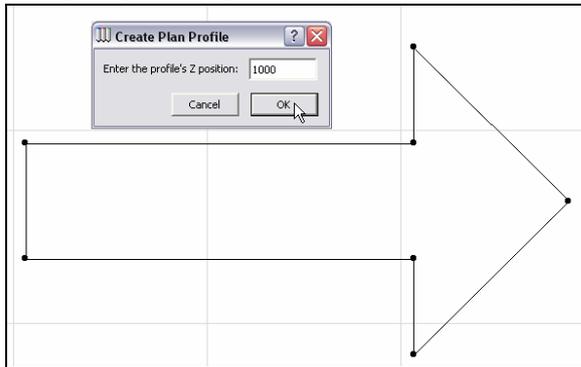


Step 2:

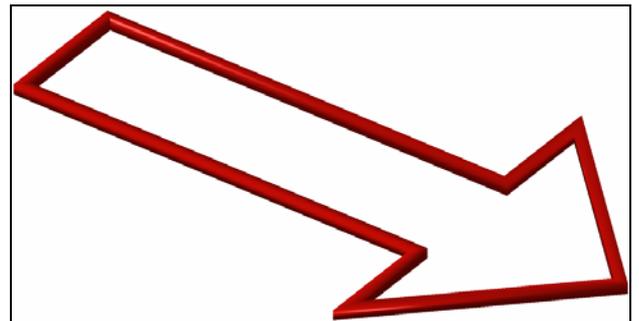
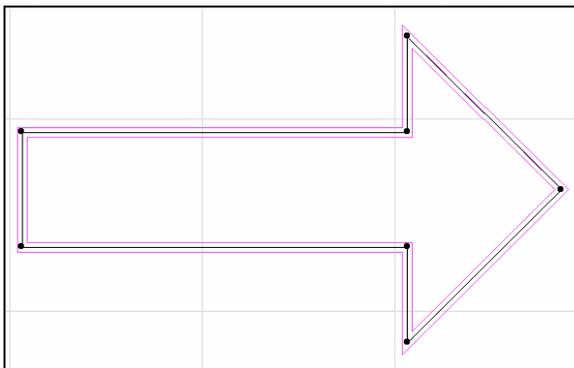
Select your polyline path and then select 'Create Path from Plan' from the '3D Profiler' tool.

Step 3:

You will now be prompted to input the 'Z' position of your profile. This height will be assigned to all points.



A profile will now extrude along the path you specified in plan as shown below.

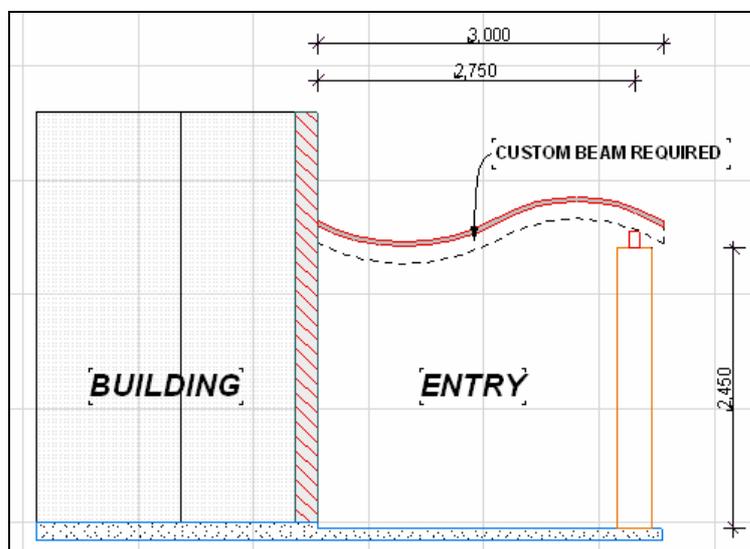


Once created the placed object can be edited through the object settings and/or using the dynamic hotspots. The profile can be edited along with the path itself.

Create Path from Elevation

Step 1:

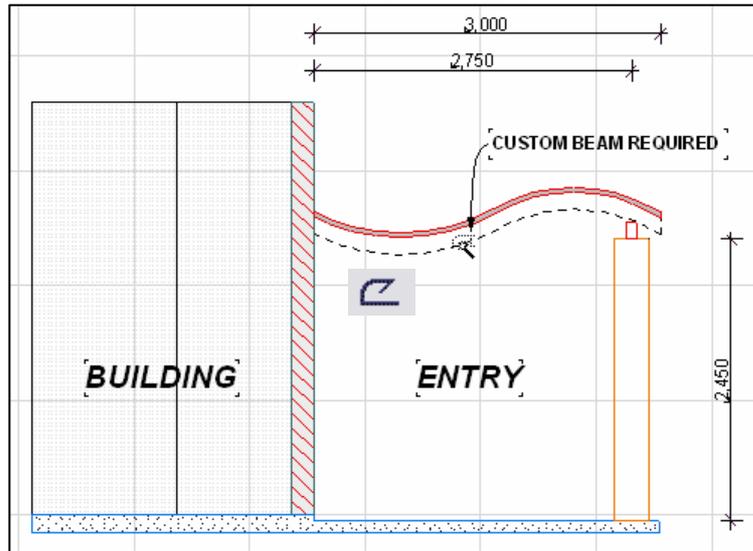
Shown here is a typical situation where the profiler can be used to profile by elevation. From this cross-section view the path the profile should follow can be determined.



Step 2:

Using the Polyline Tool you can trace a copy of your required beam contour.

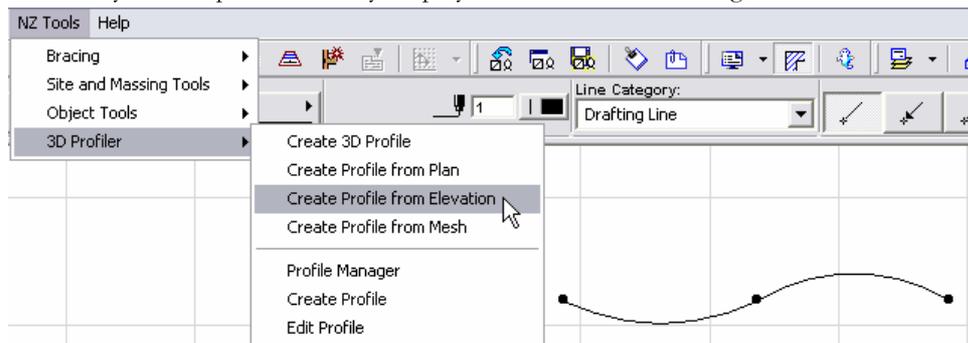
Once you have done this you can now 'cut and paste' the polyline to your floor plan window.



Step 3:

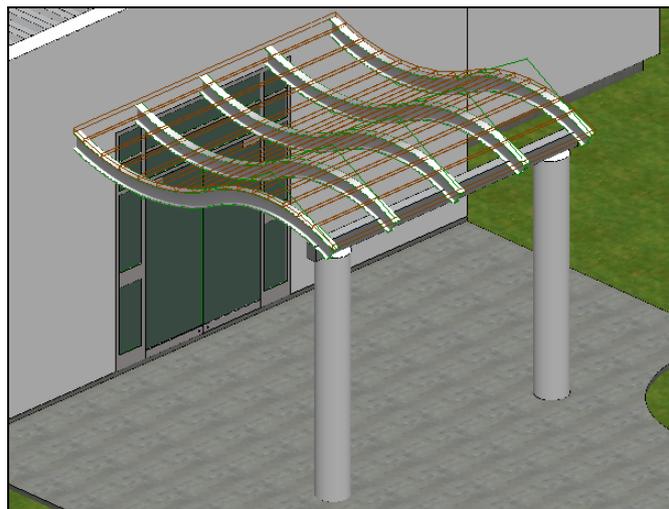
With your polyline in place on your floor plan you now need to select it and choose to 'Create Path from Elevation' from the 3D Profiler menu.

This will automatically create a path based on your polyline and rotate it to its original orientation.



Step 4:

Now that you have created a profile from elevation you can move the object into place and replicate it to suit your model.



Once created the placed object can be edited through the object settings and/or using the dynamic hotspots. The profile can be edited along with the path itself.

Create Path from Mesh

Creating a profile from mesh will apply any of your available profiles to the perimeter of a mesh. The profile will trace the X and Y locations of the mesh perimeter and will also trace the 'Z' height no matter how undulating it is.

Step 1:

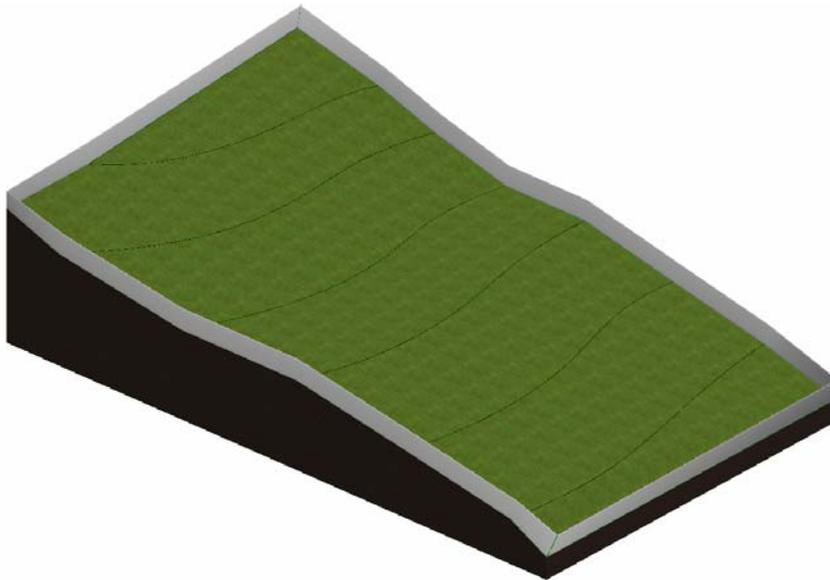
In this example I have created a 'Site' mesh. On this site we will use the 'Profiler' to create a boundary fence. First select your mesh and choose 'Create Path from Mesh' from '3D Profiler' menu.

Step 2:

Your default profile will now trace the perimeter of your selected mesh. You can now pick the profile and enter the 'Profiler' settings through the 'Object Tool'. Here you can now adjust the profile used to something more suitable. We are going to create a fence so it is best that the profile is square and set to the desired height of our fence. Note that the 'Placement Point' will also be important when indicating how the fence will orientate itself in relation to the mesh.

Step 3:

Once you are happy with your profile choose 'ok' and look at the result.

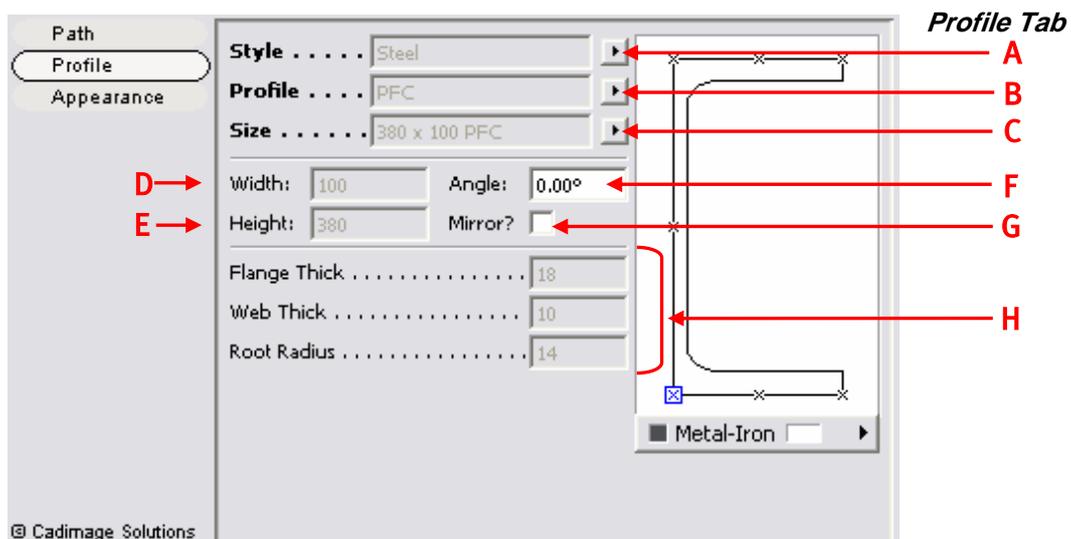


Once created the placed object can be edited through the object settings and/or using the dynamic hotspots. The profile can be edited along with the path itself.

Profiler Objects

Main Profile Interface

All the profile objects contain the same Profile Editing Interface as described below.



A: Selects the style of profiles to choose from.

B: Sets the shape of the profile

C: Selects the size of the profile, either from presets if available or custom option.

D: Sets the width of the profile if 'Size'(C) is set to 'Custom'.

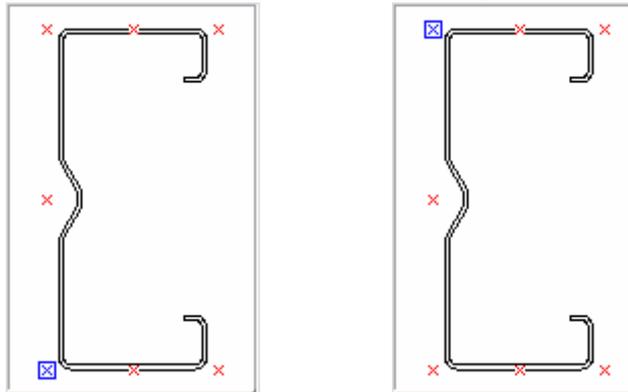
E: Sets the height of the profile if 'Size'(C) is set to 'Custom'.

F: Set a roll angle for the profile.

G: Mirrors the profile currently set

H: Sets additional properties of 'System' profiles if capable.

The image of the profile has a series of hotspots that can be clicked to change the point of the profile that is attached to the path. The blue hotspots highlights the current hotspot.

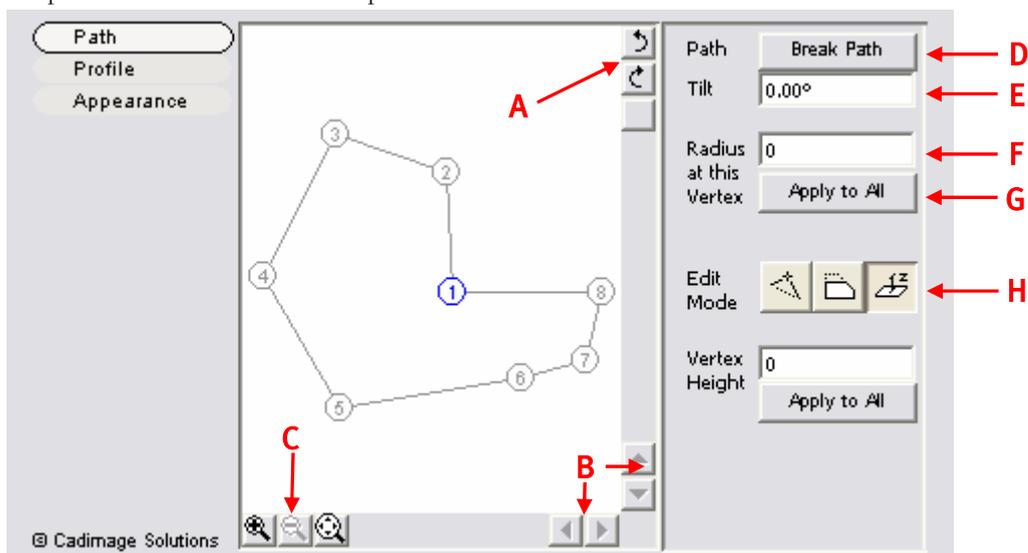


Profiler Object

The following dialog box is used to set the properties of the Profiler Tool. These settings can be accessed using the Object Tool and selecting the Profiler Object from within the 'Tools Library v9' folder.

Path Tab

The path tab provides a plan view of the profile path. Within this tab the user can open or close the path, change the radius on a point-by-point basis or for the whole path. The interface also contains editing controls that affect how the path can be edited in the floor plan and 3d windows.



A: Cycles forward and backwards through the vertices of the path shown on screen. (alternatively you can simply click a point to edit it.)

B: Scrolls the viewing window up, down, left and right when zoomed in.

C: Zoom In, Out and 'Fit to Window'.

D: Breaks the path from the currently active vertex.

E: Tilts the whole path of the profile by the angle input.

F: Applies a radius to the currently active vertex.

G: Applies a radius to all vertices.

H: Changes the editing mode from standard to offset or elevate mode.

Editing Modes

The three buttons for edit mode (H) determine the editing mode of the path in the floor plan and 3d windows.

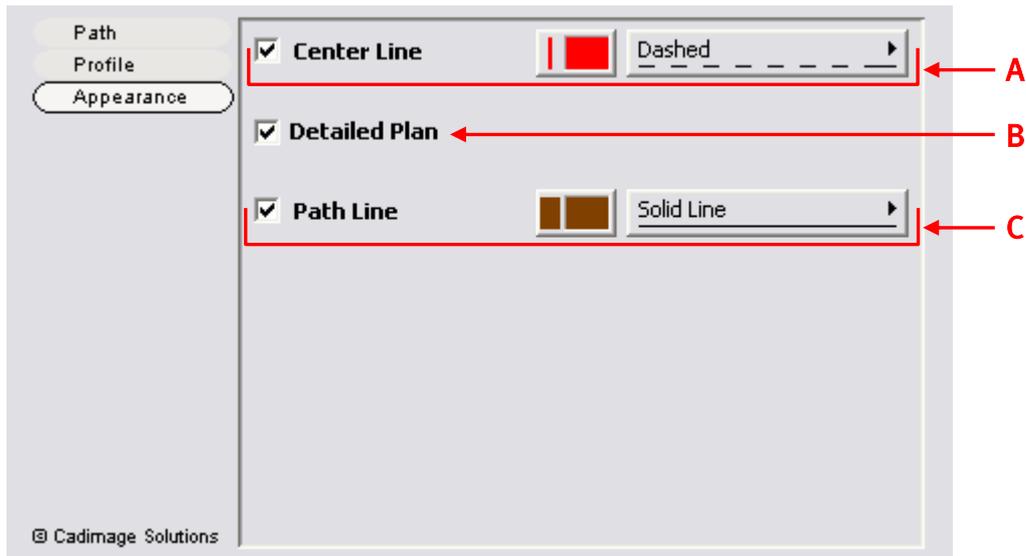
The first option allows the path points to be dynamically edited in the plan (xy) plane. In this mode all path points have a dynamic hotspot to allow adjustment. Every edge mid-point also contains a dynamic hotspot that allows additional path points to be created on the fly. If a point is dragged on top of another path point all path points in between will be removed.

The second option allows edges to be extended and reduced. All edges contain a dynamic hotspot at their mid-point allowing the edge to be extended or reduced.

The third option allows the points to be edited in the vertical plane (z.)

All the above editing can be performed in both the floor plan and 3d windows.

Appearance Tab



A: Show the center line of the profile. Pen and Linetype

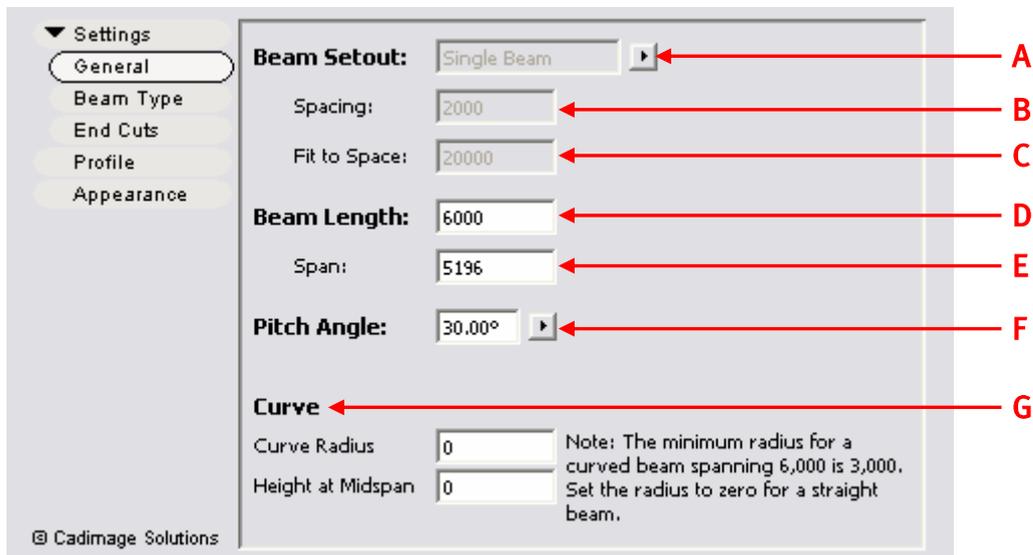
B: Shows the profile in plan.

C: Shows the path line used by the profiler. Pen and Linetype

Profiler Beam

The Profiler Beam allows you to create your own customised beam using profiles from the library. This includes adjustable profile, shape and spacing.

Beams can be standard, tapered or multi-section. Multi-section beams allow multiple sections of differing sizes to be created as a single object.



A: Selects the beam setout method.

B: Sets the spacing of the beams. Not available with Single Beam.

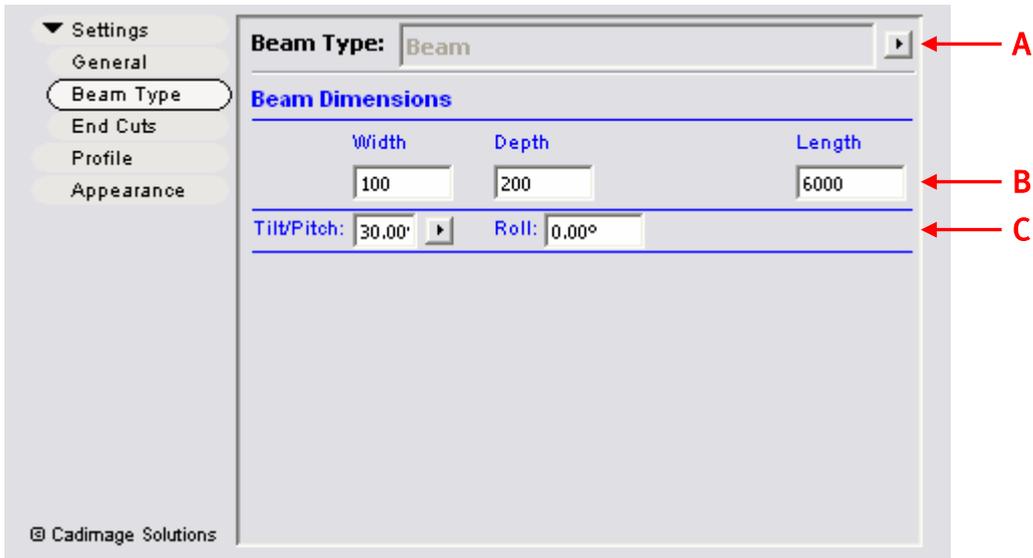
C: Fits the beam spacings to a given dimension. Not available with Single Beam.

D: Sets the overall length of the beam.

E: Sets the span length of the beam. (For angled Beams)

F: Sets the angle of the Beam

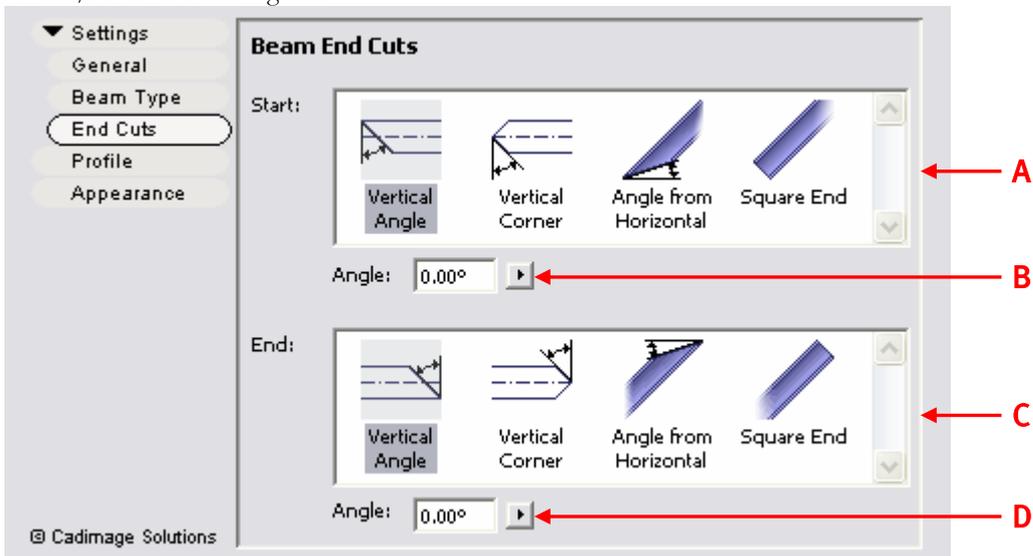
G: Curves the beam and sets midspan height



A: Sets the beam type: Beam, Tapered Beam or Multi Section

B: General Beam Dimensions of segment.

C: Tilt/Pitch of Beam segment



A: Start of Beam end cut

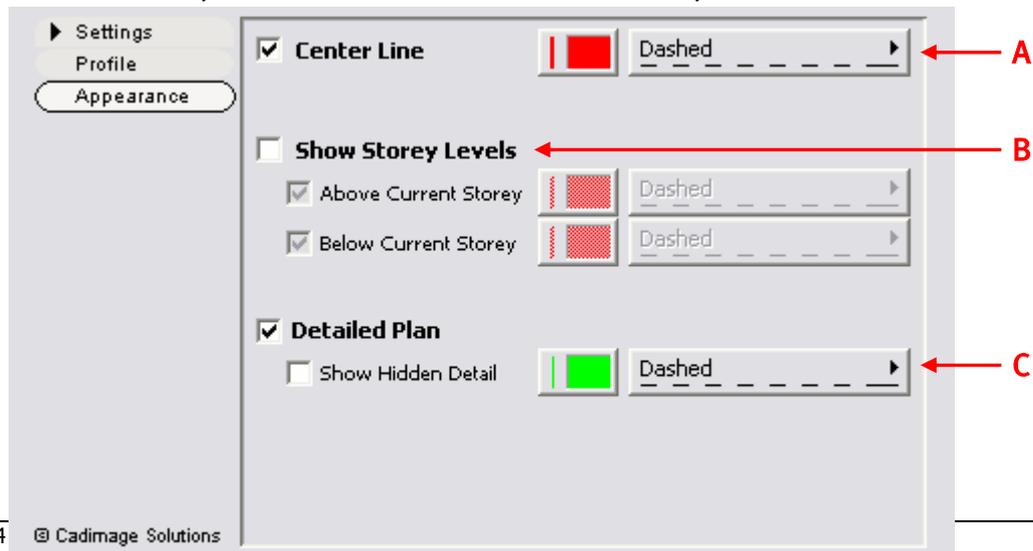
B: Angle of End cut if not square

C: End of Beam end cut

D: Angle of End cut if not square

Appearance Tab

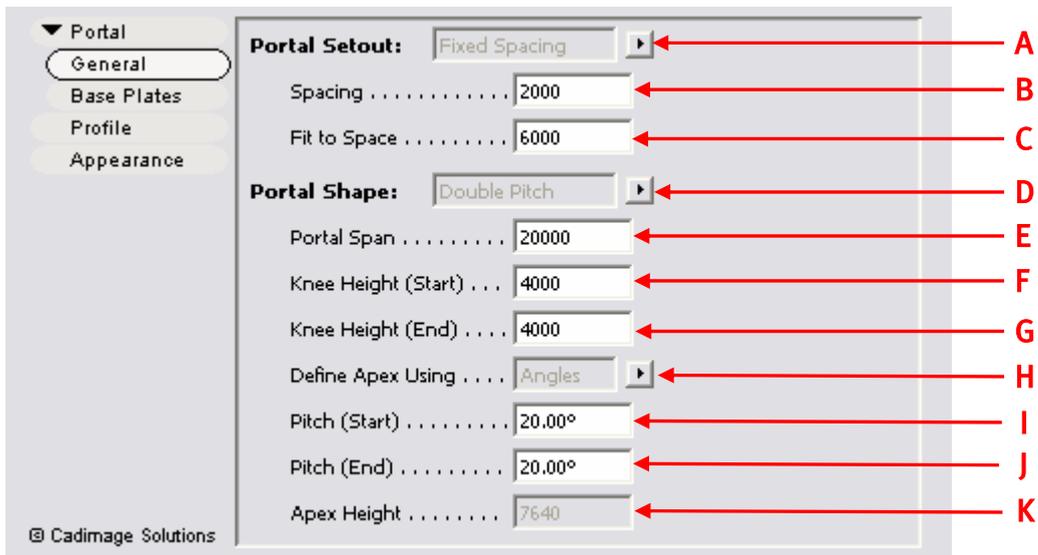
This tab is similar to the main Profiler Object however, where beams extend through multiple stories you can set the colour and visibility of the beam above and below the current story.



- A: Show Center line on plan
- B: Show beam on Storey above and/or below
- C: Detailed on plan shows true shape of beam segments

Profiler Portal Frame

This object creates a standard portal frame which is created using one of the profiles in the library. Multiple portals can be easily created as a single object.

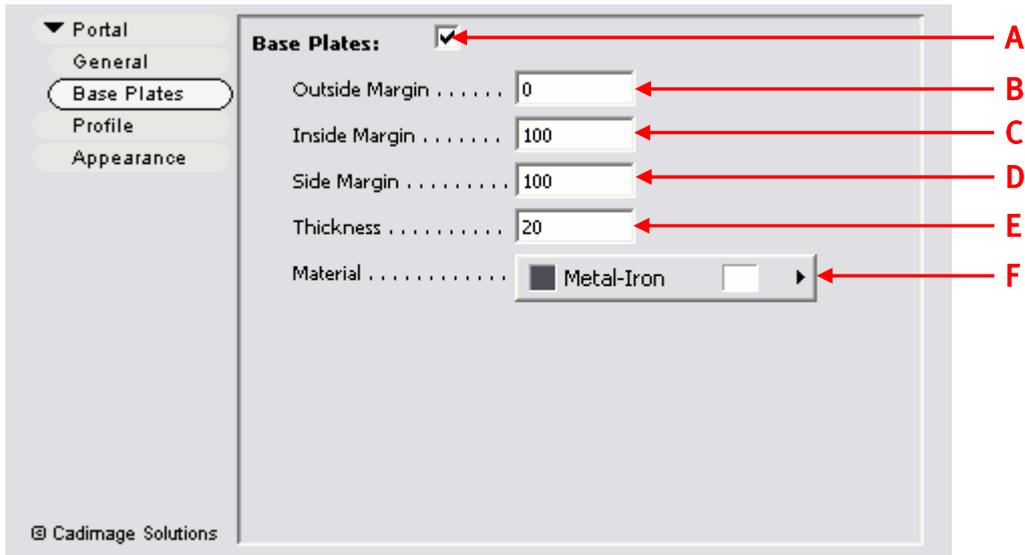


- A: Selects the portal frame setout method.
- B: Sets the spacing of the portals. Not available with Single Portal.
- C: Spaces the portals over a given dimension. Not available with Single Portal.
- D: Single or double pitch portal frame
- E: Sets the overall span of the portal frame.
- F: Knee Height (Start)
- G: Knee Height (End)
- H: Set how Apex is defined (either using angles or offsets)

I: Start Pitch (if using angle) or Apex Offset from Start (if using offsets)

J: End Pitch (if using angle) or Apex Offset from End (if using offsets)

K: Height to Apex (calculated if using angles)



A: Puts base plates on

portal legs

B: Extension of base plate from external edge of profile

C: Extension of base plate from internal edge of profile

D: Extension of base plate from side edges of profile

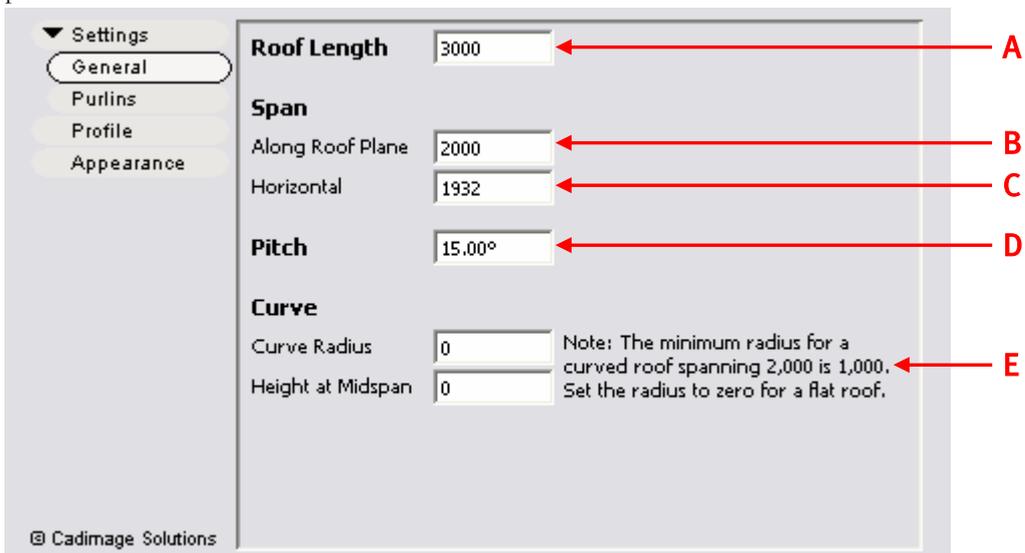
E: Thickness of base plates

F: Material of base plates

Refer to the Profiler object 'Appearance Tab' for details on this objects 'Appearance Tab' settings.

Profiler Rafters and Purlins

The rafter and purlin object allows a series of profiled rafters and purlins to be created. The rafters and purlins can have custom cut shapes on each end, and different profiles, sizes and colours can be specified for the rafters and purlins.



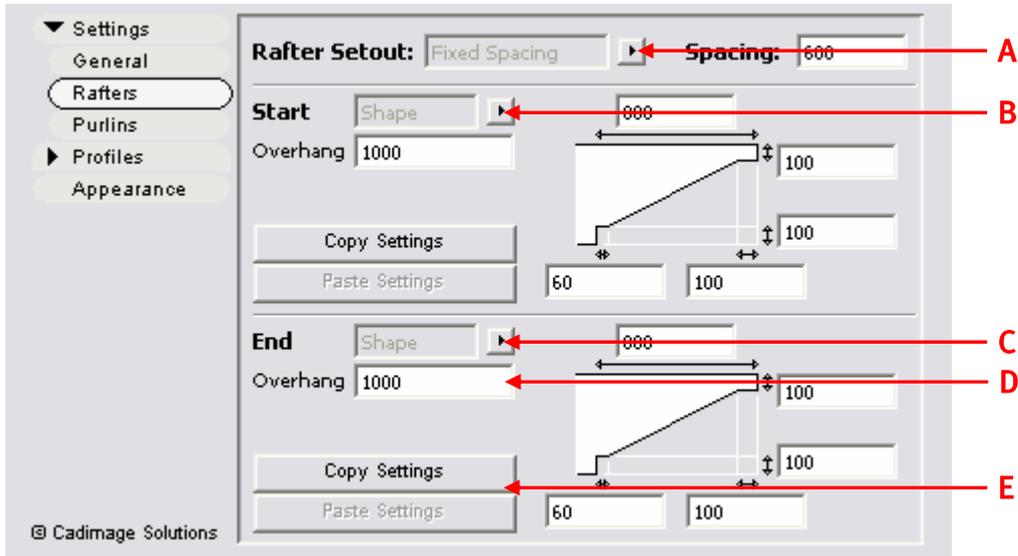
A: Roof Length in Plan

B: Span of roof plane (true length)

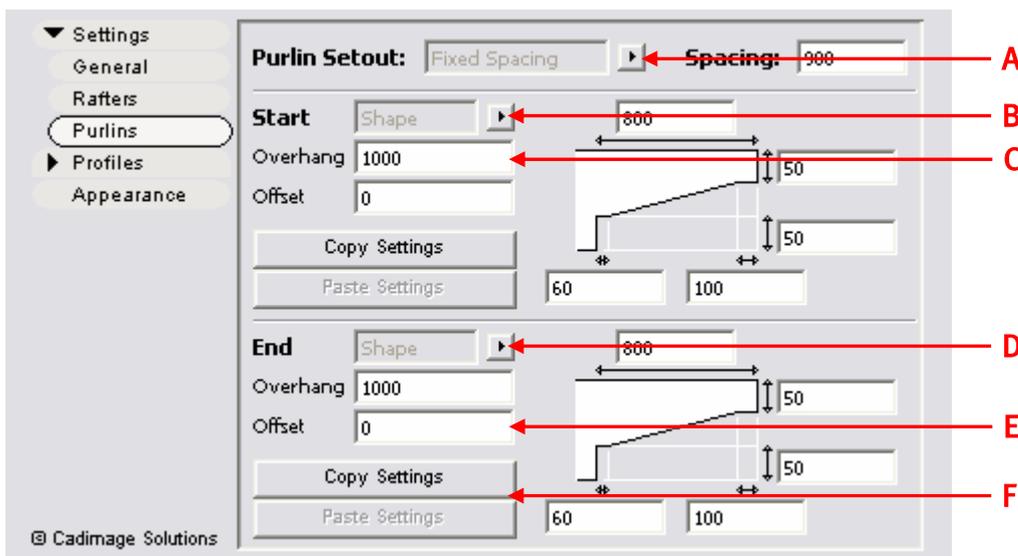
C: Plan span of roof plane

D: Roof pitch

E: Curve radius and height at midspan



- A:** Sets the Rafter setout method
- B:** Shape at Start of Rafter
- C:** Shape at End of Rafter
- D:** Sets the overhang of the rafters.
- E:** Copy the current settings and paste the currently copied settings



- A:** Sets the Purlin setout method
- B:** Shape at Start of Purlin
- C:** Sets the overhang of the purlins past the last rafters
- D:** Shape at End of Purlin
- E:** Sets the offset of the purlins to the apex and lower edge of the rafters length
- F:** Copy the current settings and paste the currently copied settings

Refer to the Profiler object 'Appearance Tab' for details on this objects 'Appearance Tab' settings.

Profiler Manager

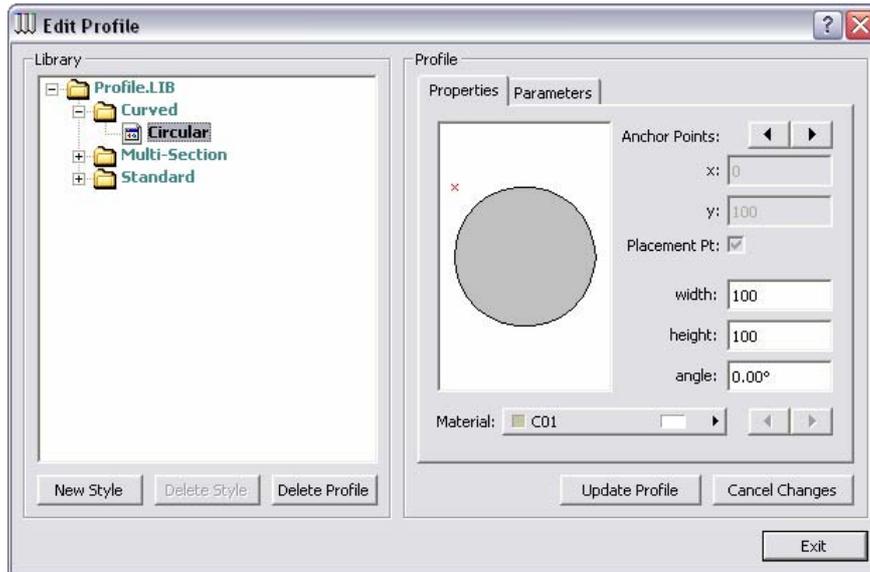
Managing Profiles

Over time you may create a lot of useful custom profiles. In order to keep these manageable and tidy the 3d Profiler also includes a 'Profile Manager'.

The 'Profile Manager' can be found under your '3d Profiler' menu.

The Profile Manager allows you to create and delete 'Style' Folders. You can organize profiles by simply 'Dragging and Dropping' between different 'Style' folders.

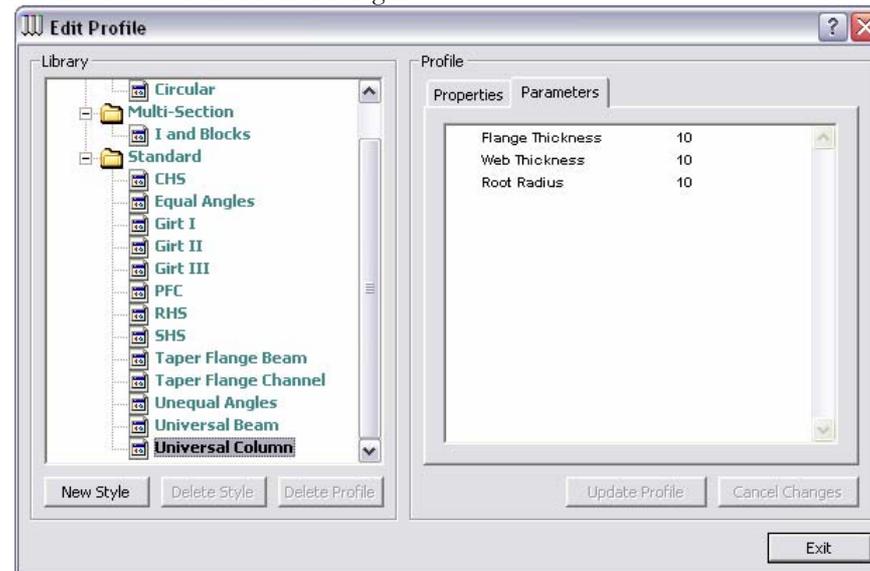
The Profile Manager also allows you to configure the default size and anchor point for the profiles. This means that if the standard default sizes, colours and anchor points don't suit the profiles common uses you can easily make changes and have the defaults set to your preference.



System Profiles [Parametric Profiles]

Some of the built in profiles have been developed as parametric profiles. These profiles are parameter driven not only by width and height/depth, but other parts can also be controlled via parameters (eg an I-beam has parameters controlling the flange and web thicknesses.)

If a profile is a System profile and has built in parameters the default sizes of these parameters can be set within the Parameters tab of the Profile Manager.



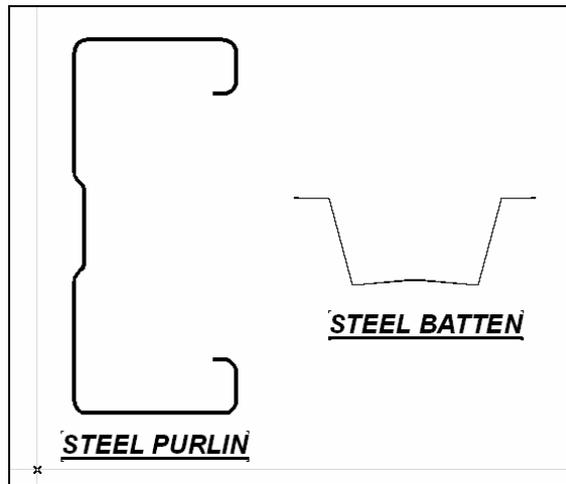
Creating Profiles

The profiler tool also allows you to create your own profiles. In a lot of cases specific profiles need to be made for specialized areas. The following section will explain how to create your own profile.

Step 1:

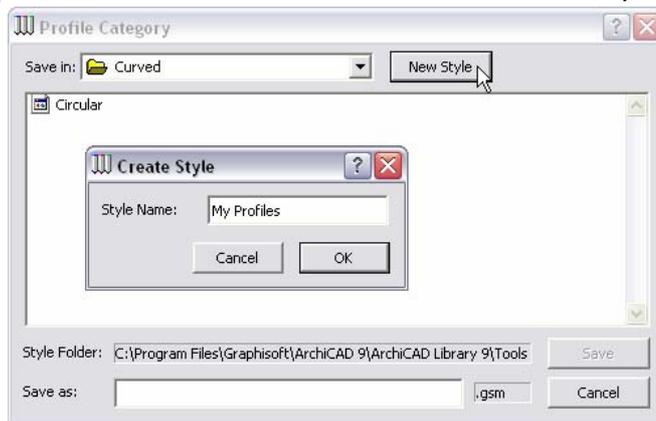
The first step is to create an accurate template for your profile shape to be made from. This must be done with a 'Fill'. A profile can be made from multiple pieces of fill if it is required and each piece of the resulting profile can be edited individually if needed.

In these examples only one fill has been used for each profile. You can also place hotspots to indicate points to use when using Profiler.



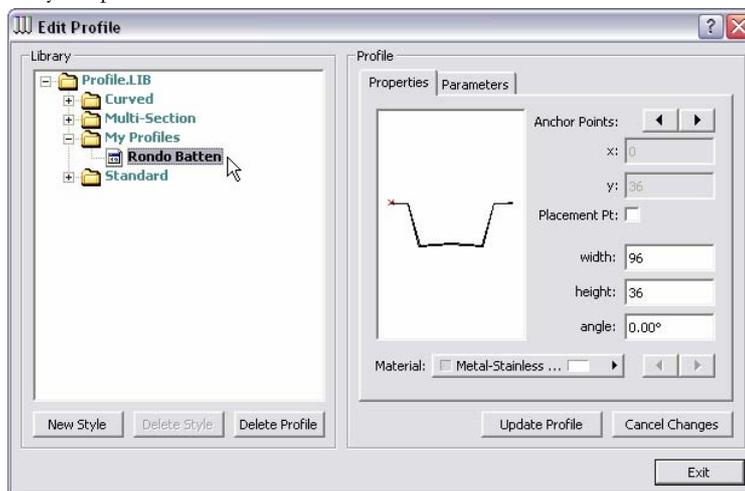
Step 2:

Select your fill and choose 'Create Profile' from the '3D Profiler' menu. You will now be required to give your profile a name and save it. You need to also define which 'Style' to save your new profile in.

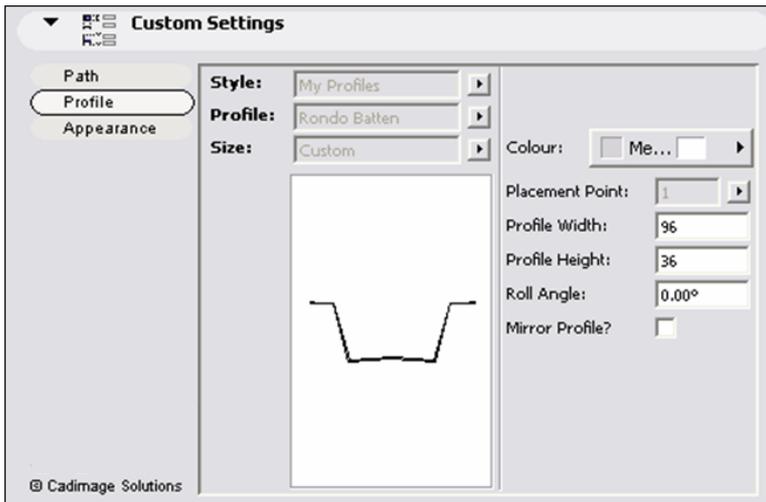


Step 3:

Once you have saved your profile it will then be available under the profile menu. If you created your own category for your profiles this will need to be selected first.



Once chosen you will now be able to adjust all the usual settings profiler has to offer on your own profile. Your new profile is now stored as a library part and will be available every time you load your Tools Library v9. Your profile can also be used with all the objects that use the Profiler technology.



Further Examples

Applying Profiles

The range of components that can be assembled using the profiler is almost unlimited. Here are just a few examples.

Profile A: Custom building components

Profile B: Shaped trims and Scotia

Profile C: Furniture mouldings

Profile D: Cabling and piping

Profile E: Hardware and fittings

Profile F: Foundations

