Tip Sheet

ArchiCAD 12
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Creating a Custom Curtain Wall Frame – Part 2

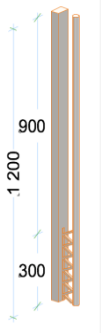
Creating a custom web or repeating feature for the Curtain Wall frames may be something that you are interested in.

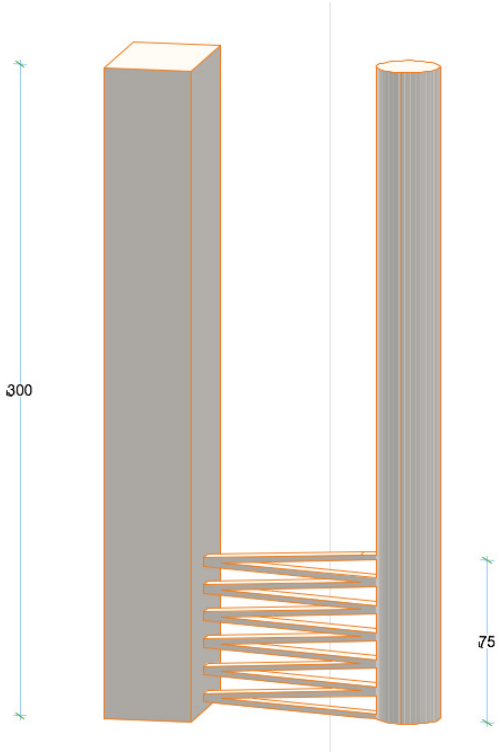
In the previous TIP Sheet example (**Creating a Custom Curtain Wall Frame** from February 2009) we placed a simple solid web of glass or nickel between the two frame profiles. It is however possible to create a more complex shape using the following information.

Some key points before starting:

1 For clean repetitions it seems that the continuous frame parts vs web relationship is 1:4, the examples adjacent show a 300mm high frame with a 75mm web part or 1200mm + 300mm combination. You can create a full size library part and reduce its height accordingly (to eliminate distortion).

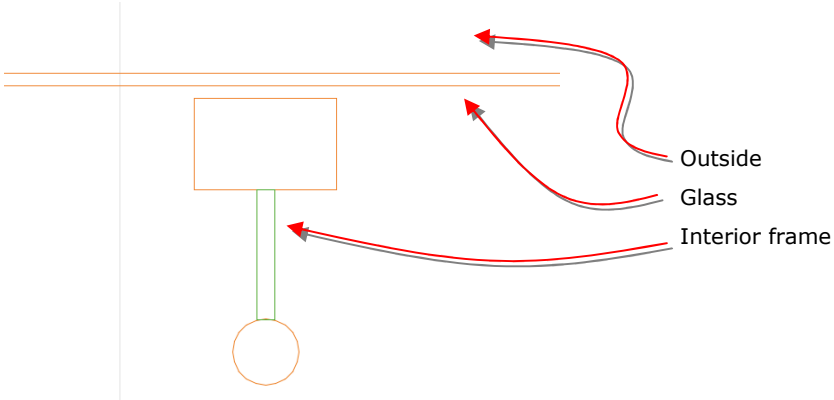
A good reason for creating the larger variant is the ability to model the web at a 1:1 scale and set the final height to match the panel heights in your curtain wall scheme settings.





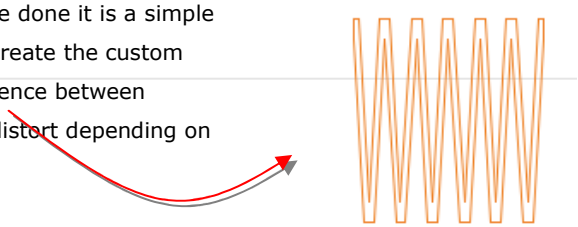
2 It pays to set your materials at the initial modelling stage to ensure the individual components can be set as different colours etc. if required.

3 When creating the frame, its orientation in plan is crucial as the global settings are transferred into the curtain wall. Simply put, the top side will be adjacent to the glass as the bottom edge extends into what would be the interior side of the wall.



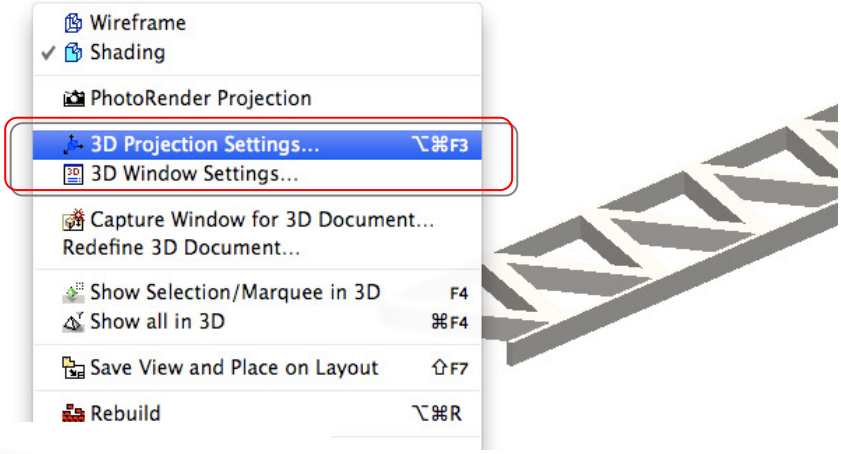
Creating the all important repeating feature

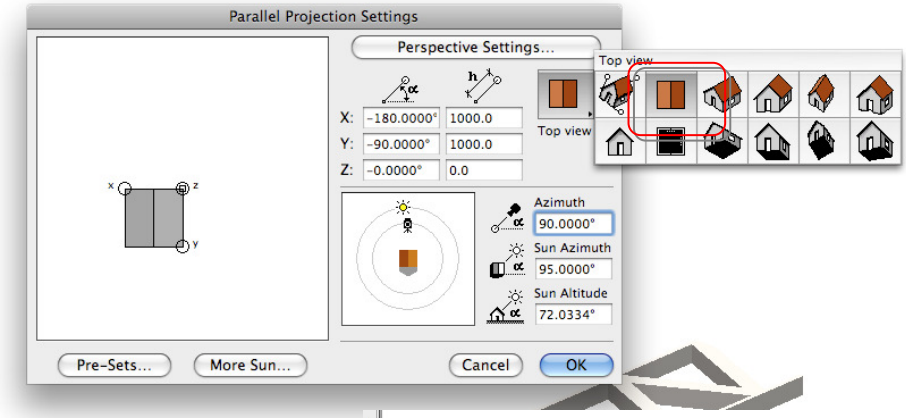
Using the slab tool we can create a large variety of shapes and this is what will be used for the feature web. It is a good idea to draw your shape first to confirm your requirements. Once done it is a simple matter of using the Magic Wand (holding down the **Space Bar**) to instantly create the custom shape in a slab. Below are two examples of profiles you might use, the difference between the two is that one is drawn at a 1:1 ratio whereas the other is designed to distort depending on the panel heights for the curtain wall scheme.



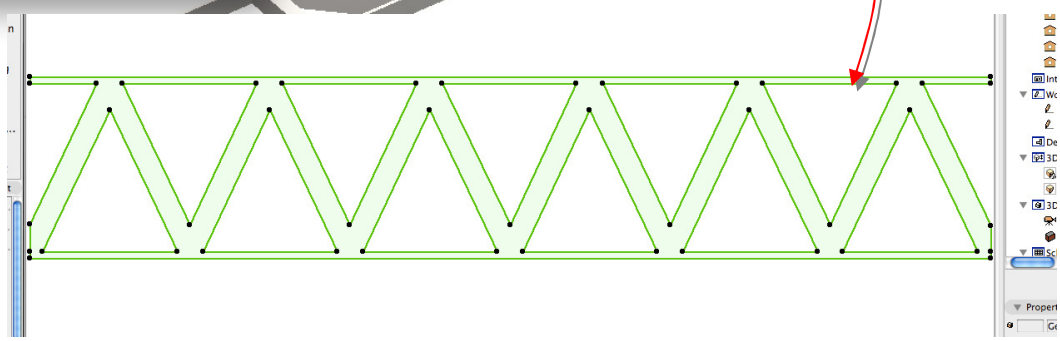
The next step is to transform the slab into a vertical object and it is here that a bit of basic object editing is required using the long way of creating an object (you will use this tehnique twice).

Select the slab and press **F5** (for PC) or **F4** (on the Mac) to view the selected slab in the 3D window. Right mouse click in space and select 3D projection settings, within the dialog that appears select the **Parallel Projection Settings** and **Top View** as per the image below. Ensure that the view angles match as below.

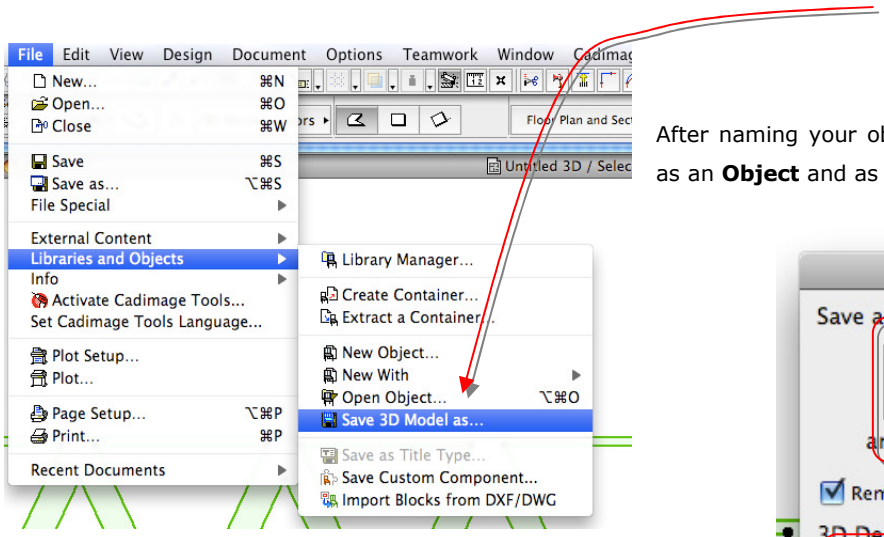




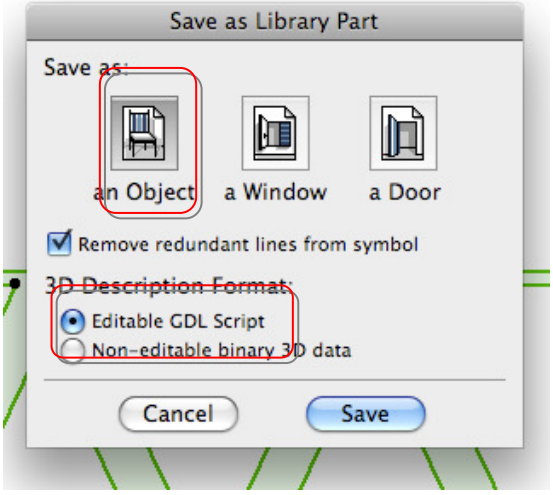
Back in the 3D window after pressing OK Select All (**Ctrl + A** PC or **⌘ + A** Mac) and you should end up with a screen looking something like this.



With the slab still selected go **File>Libraries and Objects** and select **Save 3D Model as...**

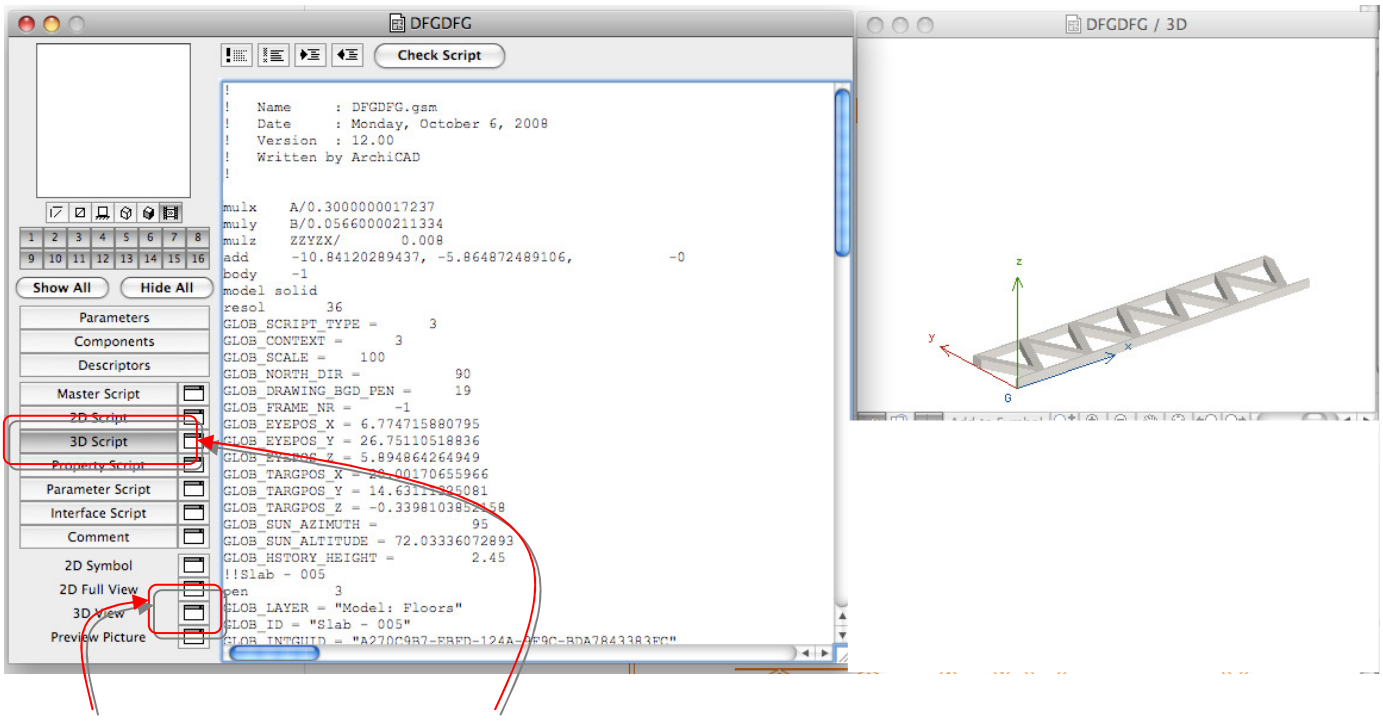


After naming your object make sure you select the option to save as an **Object** and as **Editable GDL Script**



Back in plan now (close the 3D window), select the object tool and place the newly created part (it will/*should* automatically be ready to place), select it then head to **File>Libraries and Objects** and select **Open Object**.

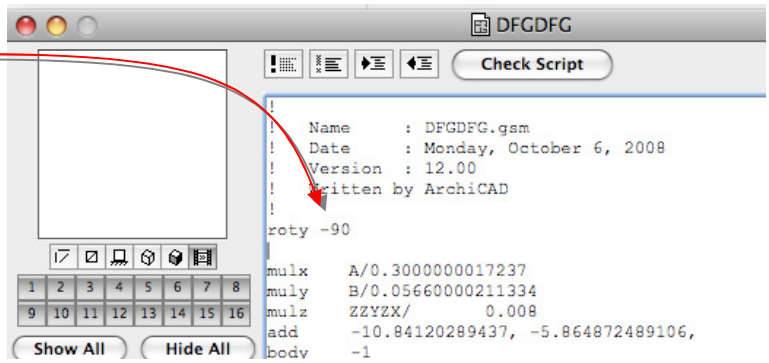
There are two transformations required in this step (these may be slightly different to your model so be sure to check the 3D window regularly for confirmation). Firstly, we need to stand the slab up and secondly, adjust its position in relation to the origin.

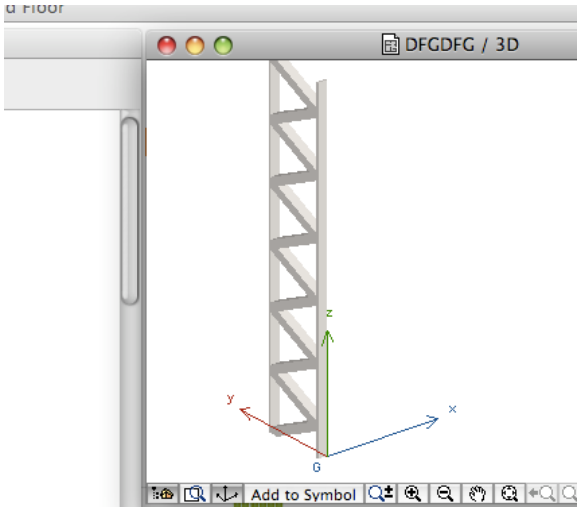


Click on the **3D View** button and also the **3D Script** to open the dialog up as below.

It the text window now enter **roty -90**

Click back to the 3D window and notice the slab is now standing up (see picture on the next page).

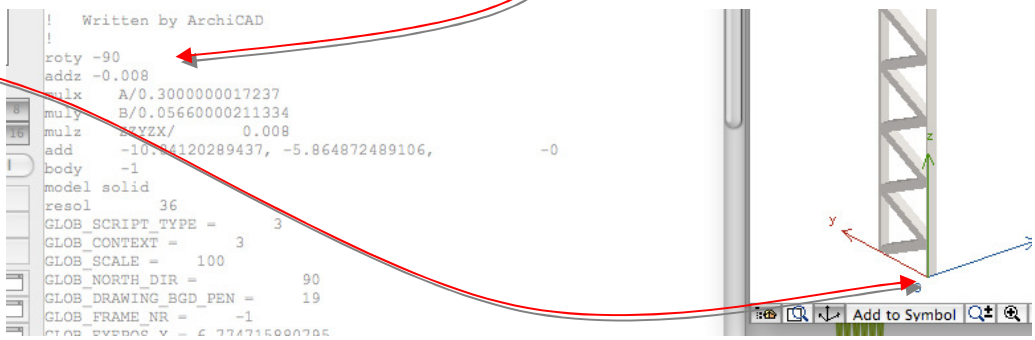




The next step will adjust the position of the slab so that it is back 'inside' the axis markers as per the original. Below the last text entry now type **addz -0.008** (IMPORTANT: 0.008 is equal to 8mm or the thickness of your original slab so if yours is different be sure to enter the correct value).

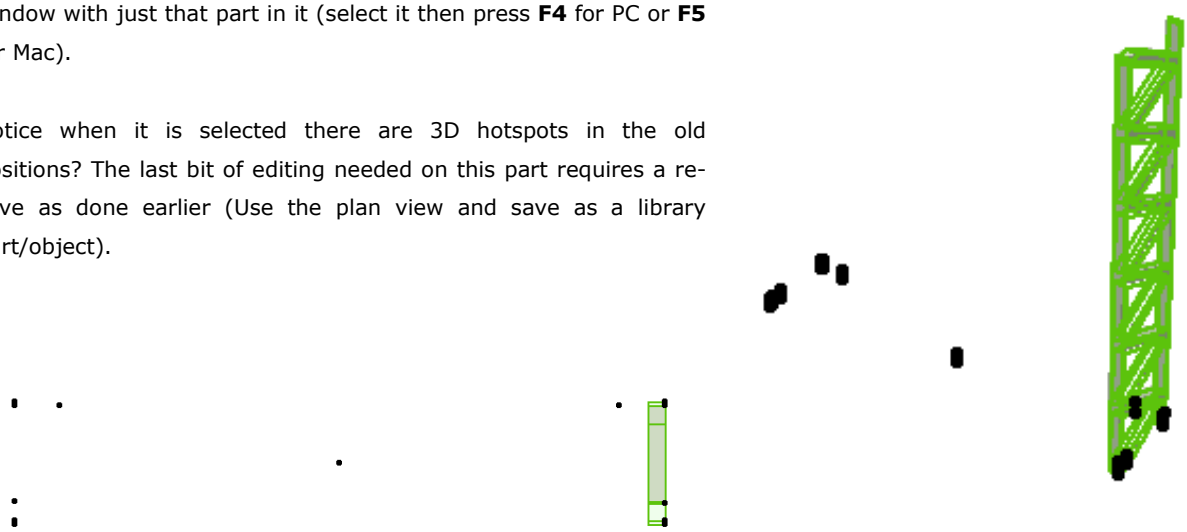
Now you can see the adjusted position of the part.

Close the window being sure to **Save** it on exit.



In theory, your newly modified part will have been updated in ArchiCAD (if not place it again) so now we need to open the 3D window with just that part in it (select it then press **F4** for PC or **F5** for Mac).

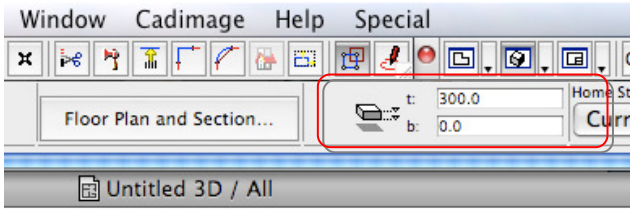
Notice when it is selected there are 3D hotspots in the old positions? The last bit of editing needed on this part requires a re-save as done earlier (Use the plan view and save as a library part/object).

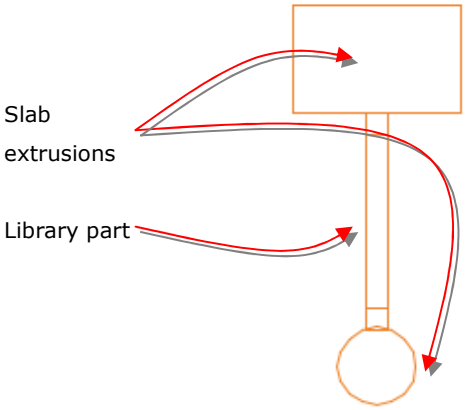


This time your plan view should be correct, this is what you will see in a true plan view of your final curtain wall frame.

The Final Stages

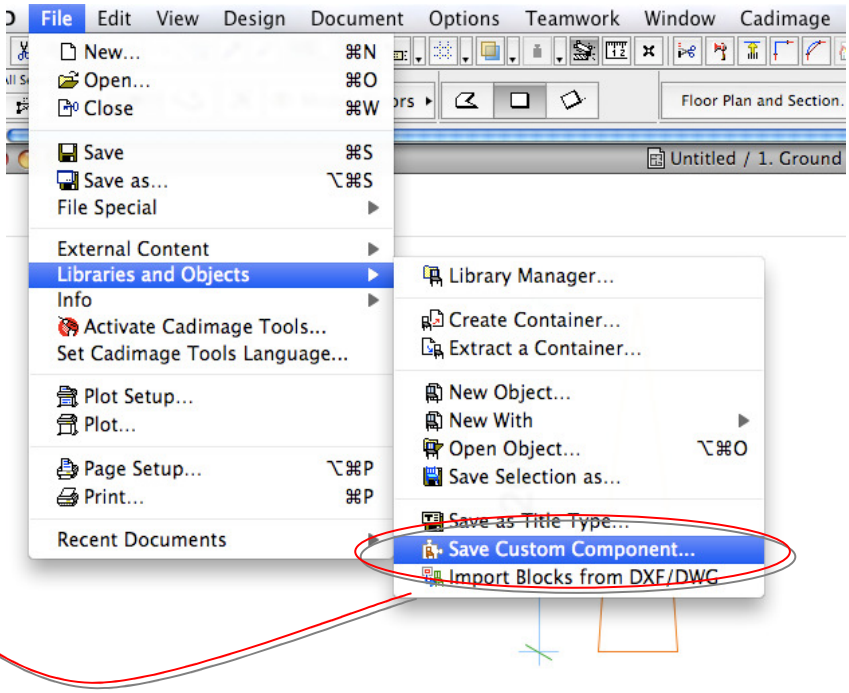
Finally, we are at the point where the repeated module can be created for use with the curtain wall tool. Using slabs and the newly created web you can model some shapes/extrusions in plan remembering that the continuous elements need to be four times the height of the repeated web object (refer to the first examples). To make things easy to remember, place your object at **b:0.0** and start your extrusions at 0 height also (the web piece must always be at the base for it to work properly). As long as your example looks similar to this one (in layout terms) there shouldn't be any problems.



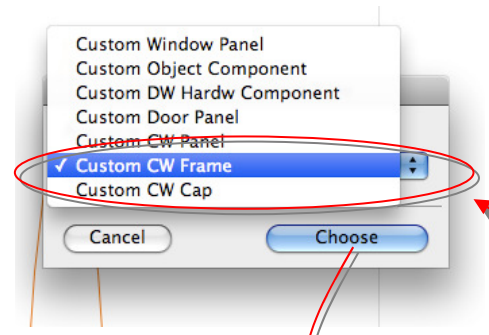


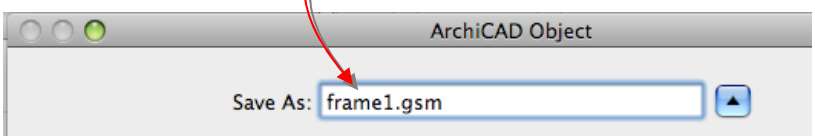
The very last thing to do once you are happy with the design is to save the component as outlined in the beginning.

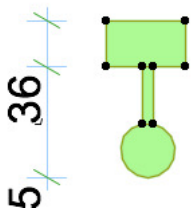
Head to **File>Libraries and Objects>Save Custom Component...**

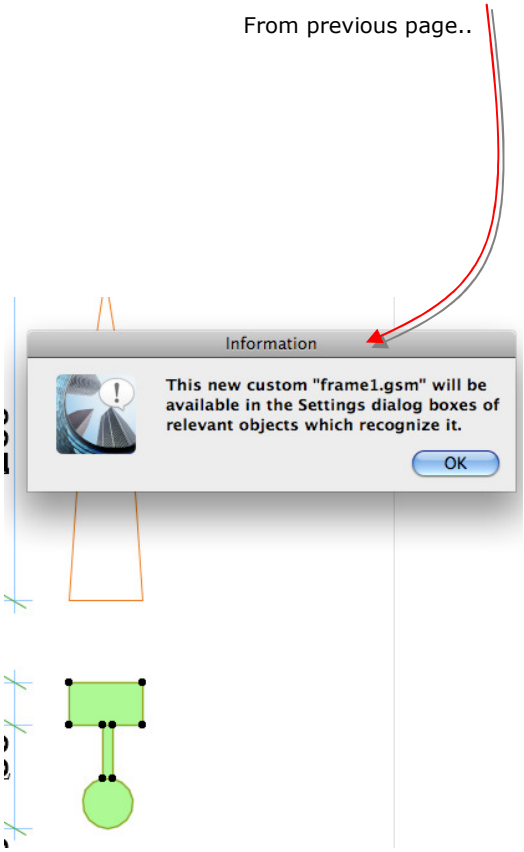


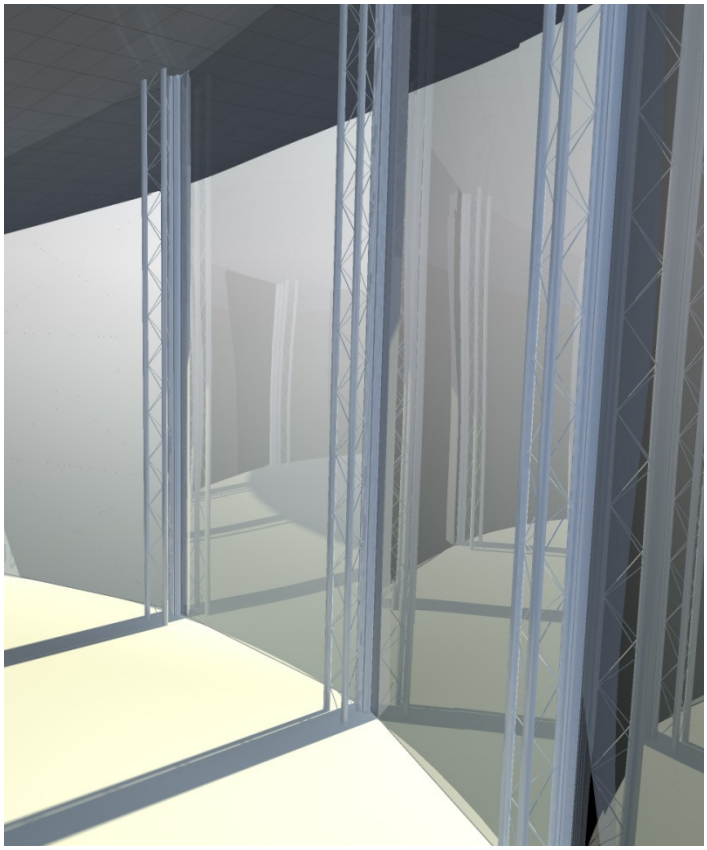
In the dialog box that appears, select the **Custom CW** (Curtain Wall) **Frame**.





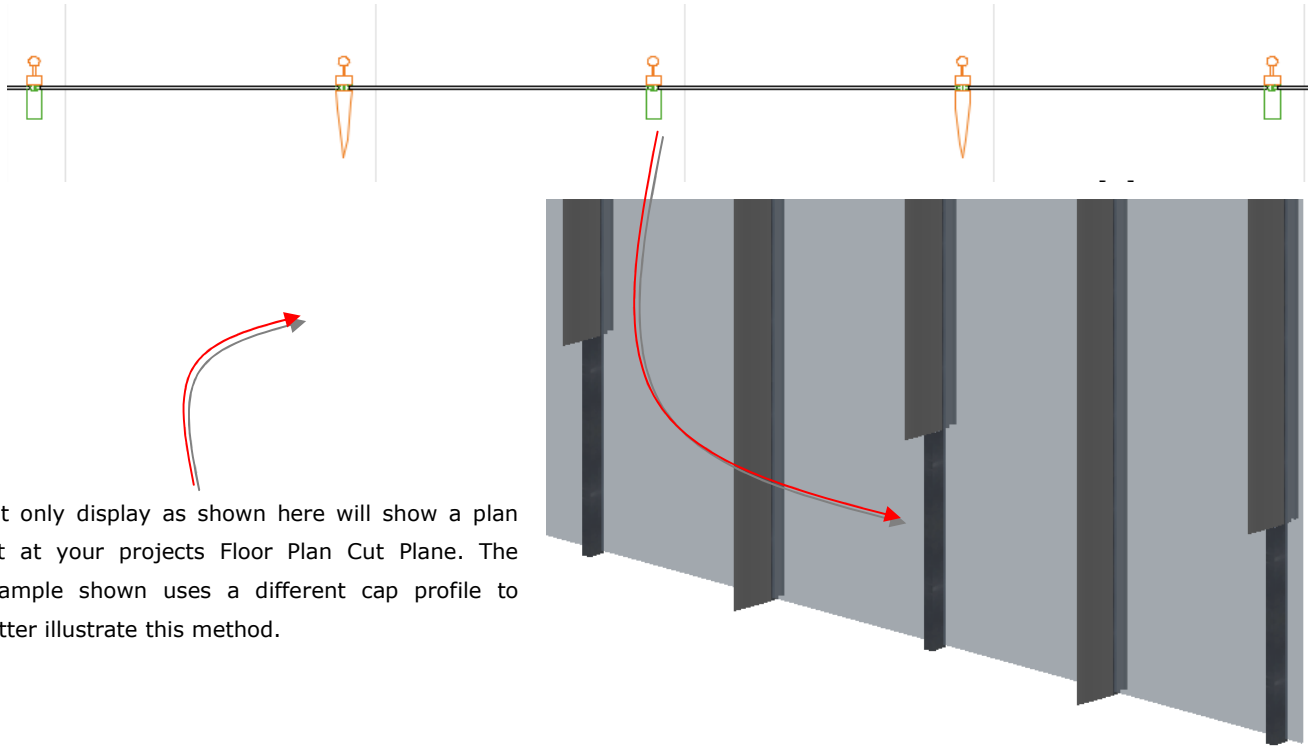




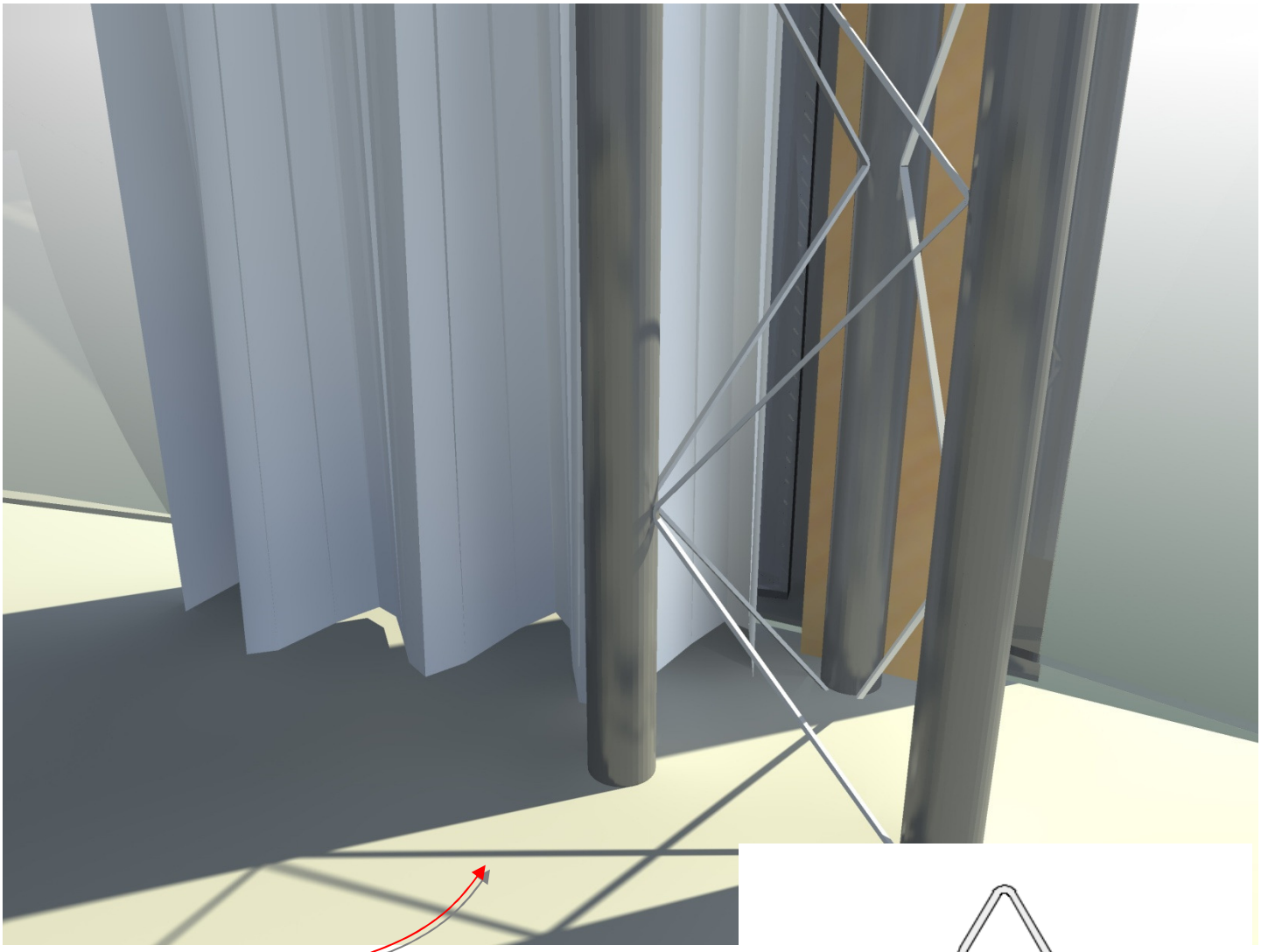
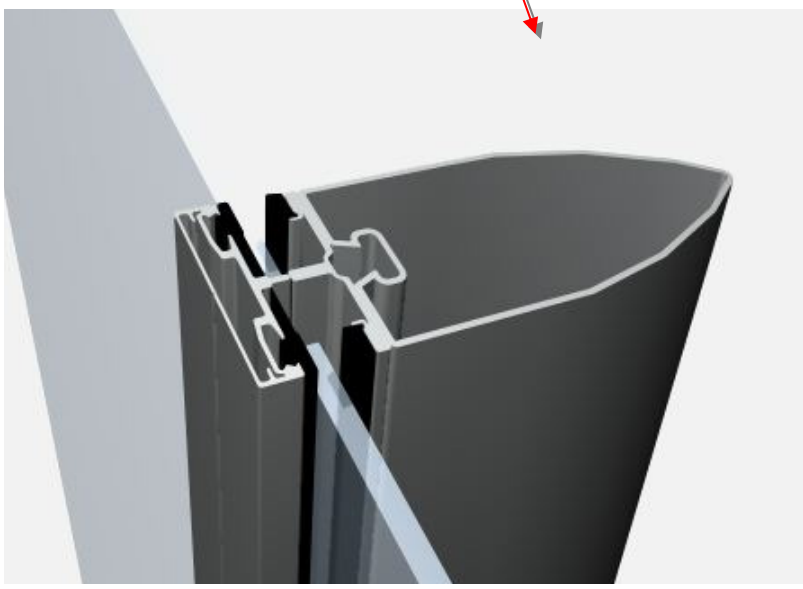
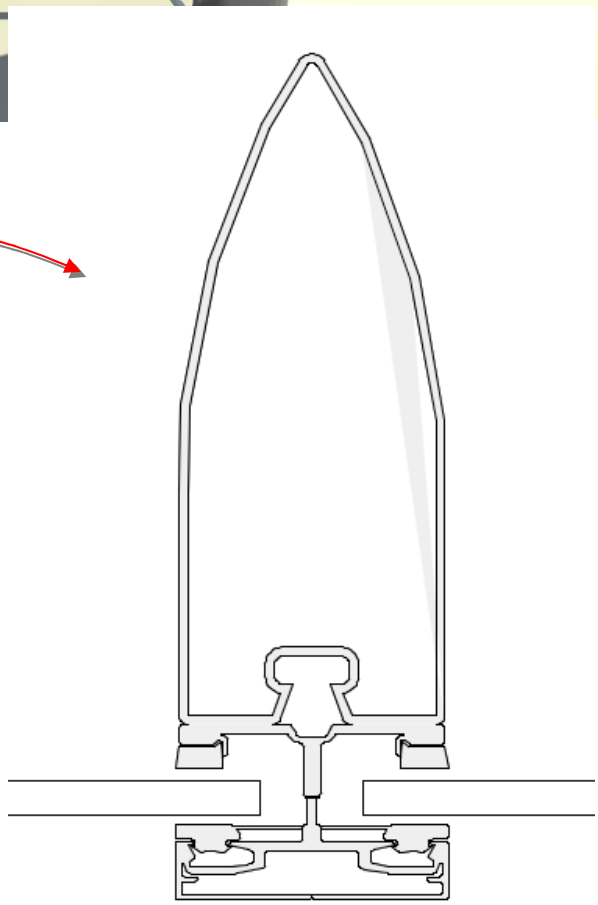


Make sure you save the part to a place everyone can access it (for multi-user situation) possibly in your office library.

The picture examples shown on the following page show two differently focused web and frame combinations. It is worth mentioning that the more complicated your cap or frame becomes, the more likely you will run into display issues. For example the extrusion shown should be created with as few arcs/nodes as possible to prevent system performance from being hindered. Details such as this could be used on just one level of frames with simpler profiles mimicking just the exterior being used above and/or below. This idea combined with using "Cut Only" display option would allow good 2D representation while not impairing the 3D appearance in any way.



Cut only display as shown here will show a plan cut at your projects Floor Plan Cut Plane. The example shown uses a different cap profile to better illustrate this method.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