

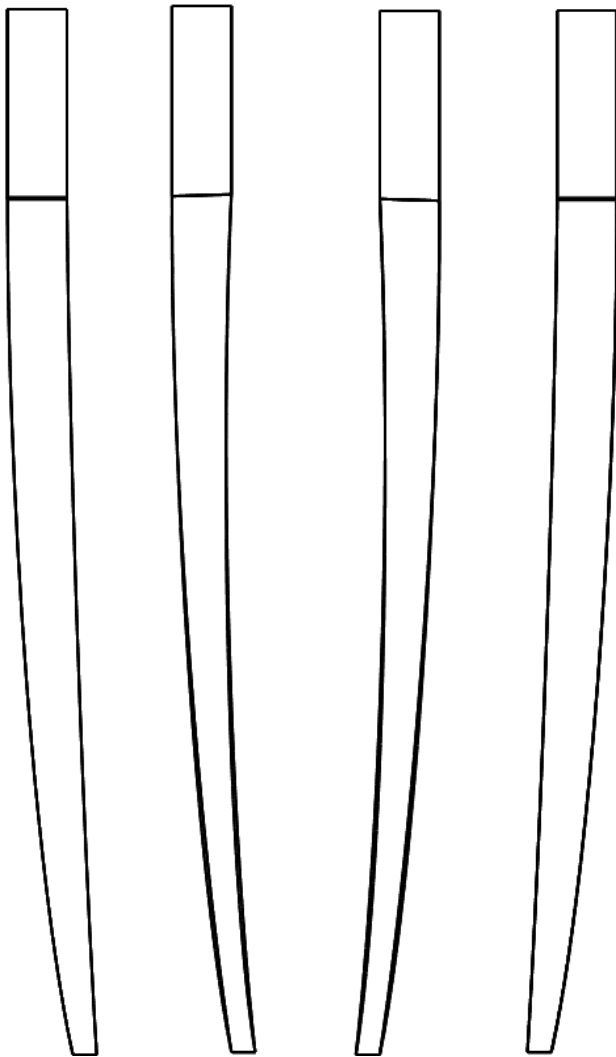
Table Leg Tutorial- Making Solids from Surfaces

Very often we come across shapes that look very simple at first glance, but turn out to have a subtle yet complex shape.

The combination of Solids and Surfaces in the Ashlar-Vellum modeling software allows for a very easy yet powerful method for dealing with these kinds of situations.



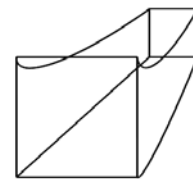
TABLE LEG VIEWS



FRONT RIGHT LEFT BACK



TRIMETRIC



Top

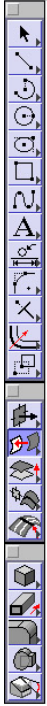
The basic approach to this method is simple.

- Start by completely defining the shape with a 3D wireframe “cage”, then use surfaces to “cover” that wireframe until you create a completely closed “air-tight” volume of surfaces.
- Once that is done, you can use a special tool that will “stitch” the surfaces together and form a true solid object from them.

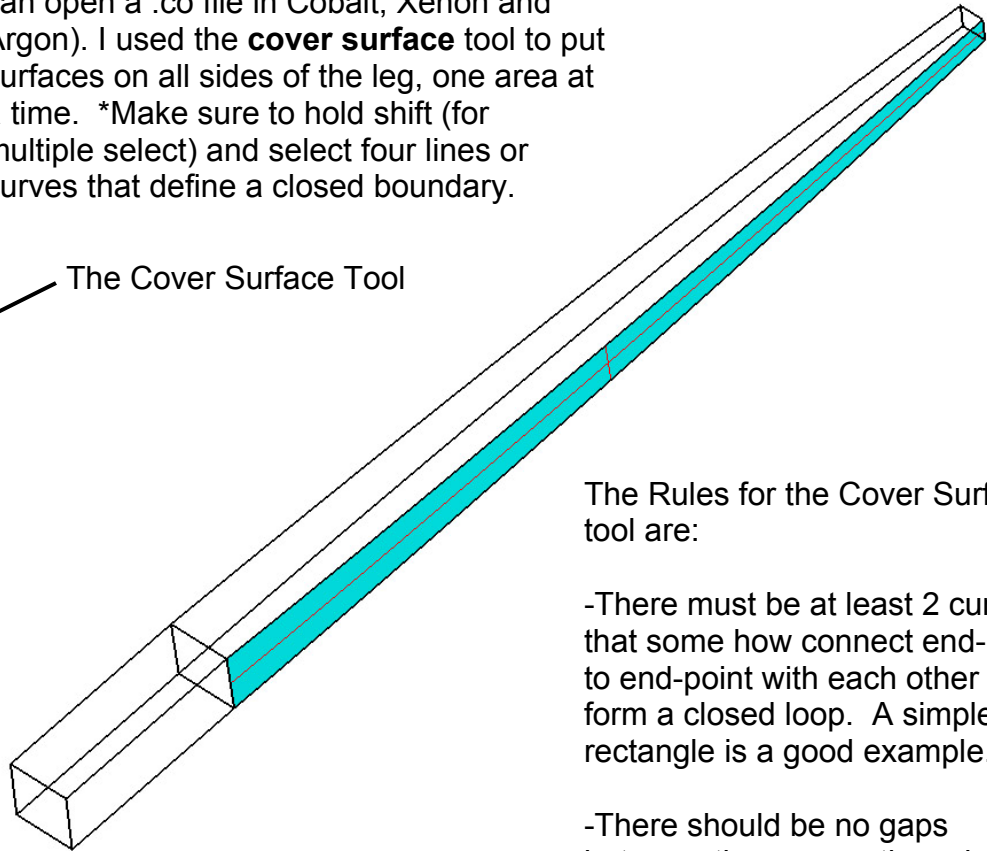
The advantage of this approach is that you have very precise control of the shape since the surfaces will match the wire frame you create exactly.



Open the file table_leg_wireframe.co (you can open a .co file in Cobalt, Xenon and Argon). I used the **cover surface** tool to put surfaces on all sides of the leg, one area at a time. *Make sure to hold shift (for multiple select) and select four lines or curves that define a closed boundary.

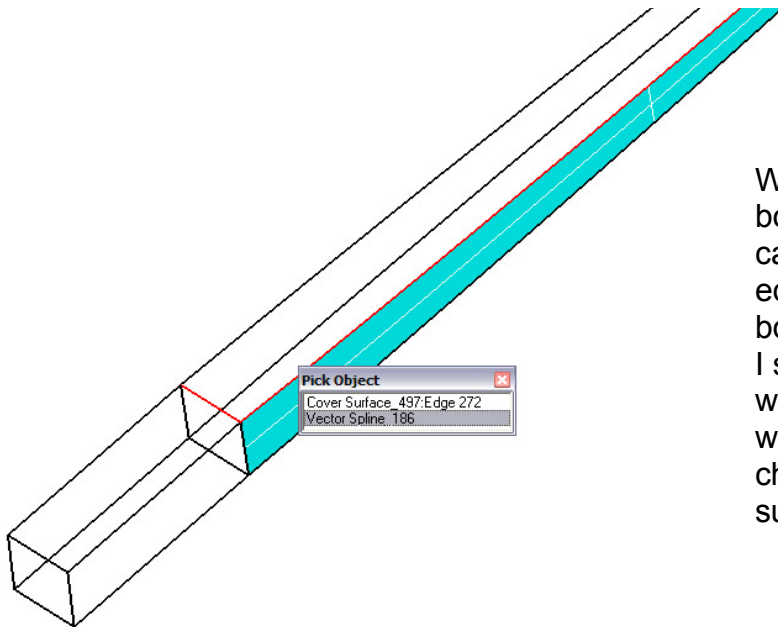


The Cover Surface Tool



The Rules for the Cover Surface tool are:

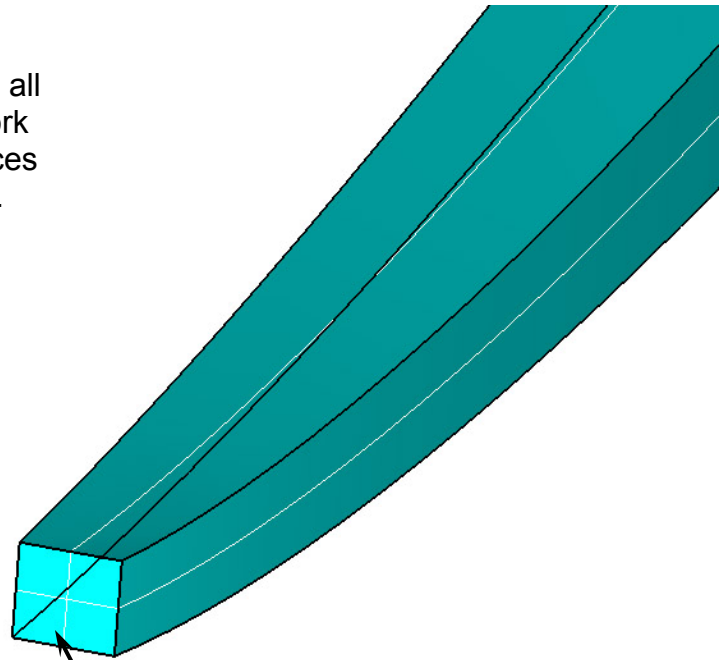
- There must be at least 2 curves that some how connect end-point to end-point with each other and form a closed loop. A simple rectangle is a good example.
- There should be no gaps between the curves; they should touch at their end-points.



When you are selecting the boundaries for the surfaces, you can select either curves or the edges of existing surfaces as the boundary.

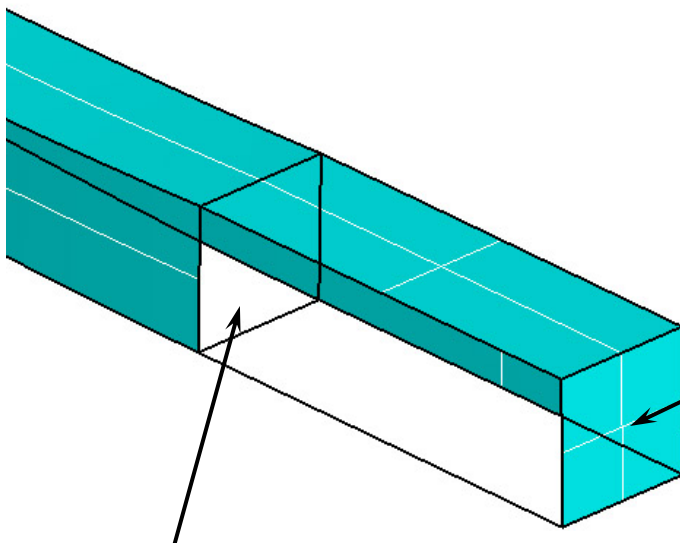
I suggest choosing curves. This way the surfaces are linked to the wire frame and if you make a change to the wire frame then the surfaces will update.

Keep working your way around the wire frame shape, placing a cover surface on all facets. Think of it as creating a patchwork quilt. You are creating patches of surfaces that will eventually create a closed body.



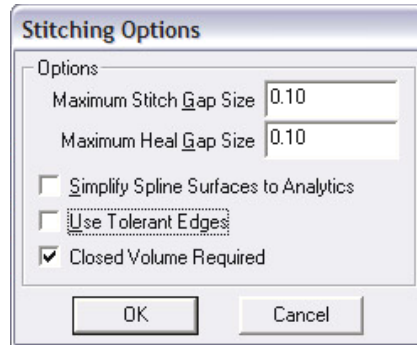
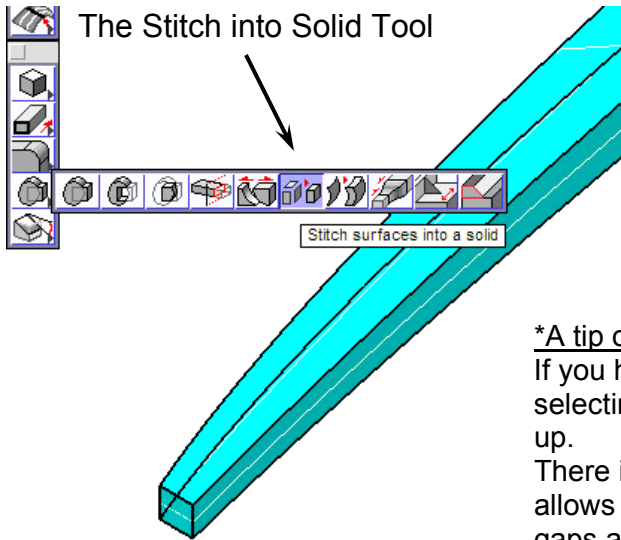
Make sure you don't miss any surfaces, such as the ends that need to be capped.

Remember that the goal is to create a completely closed volume so that it can be stitched into a solid. Stitching basically means that you start with a hollow shape made from surfaces (there should be no gaps) that are then filled with material to make it a single solid body.



Also make sure you don't put any surfaces on the interior of the object.

Once the entire shape is surfaced, you are ready to "stitch" it into a solid.

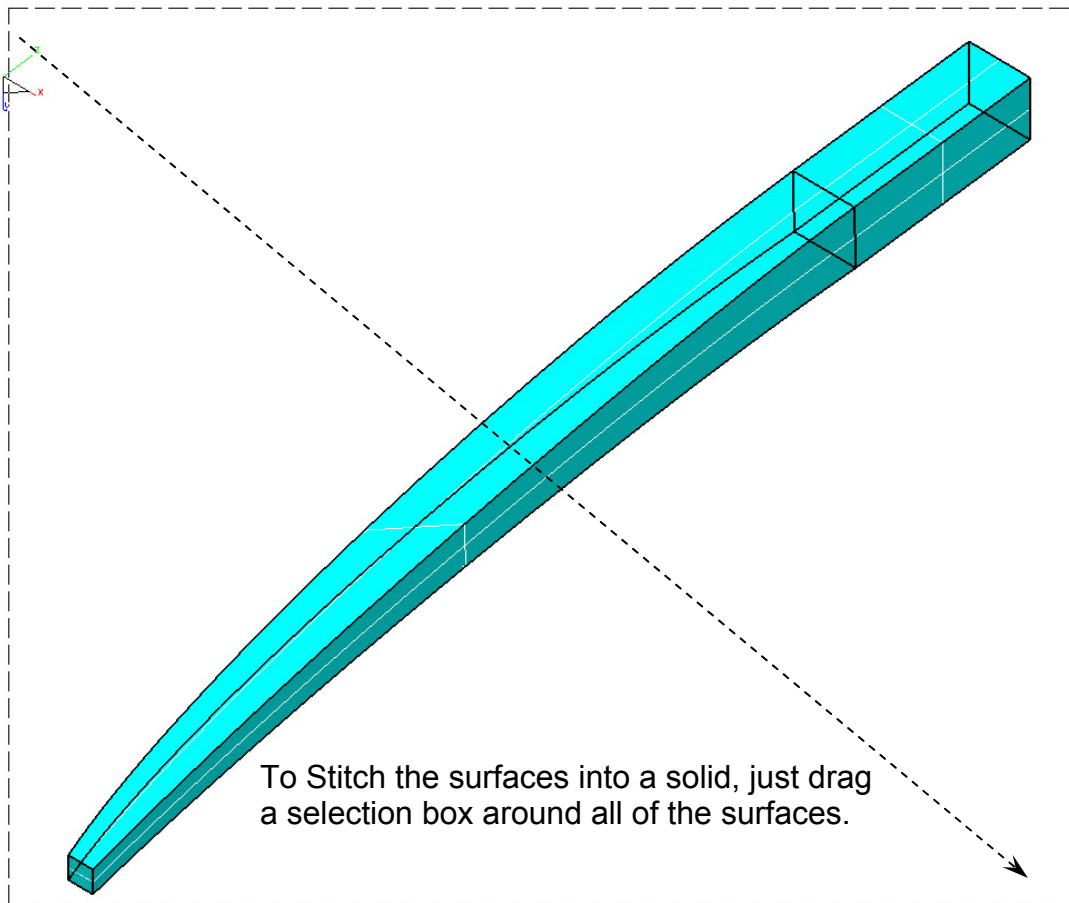


***A tip on Stitching:**

If you hit the **control key** (option on the Mac) after selecting the Stitch tool, some advanced options will come up.

There is an option called **Use Tolerant Edges** which allows the system alter the edges of the model to close gaps and create a solid. This increases the reliability of the stitch tool and makes it work in more situations.

However, it can sometimes cause problems later on when you try to round the edges for example. You should usually try to stitch your objects with this option off first. If it doesn't work, then turn this option on and try again.



The table leg should now be a solid. You can use the edit object box to verify that it is indeed a solid, just read the description it displays of the selected object.

