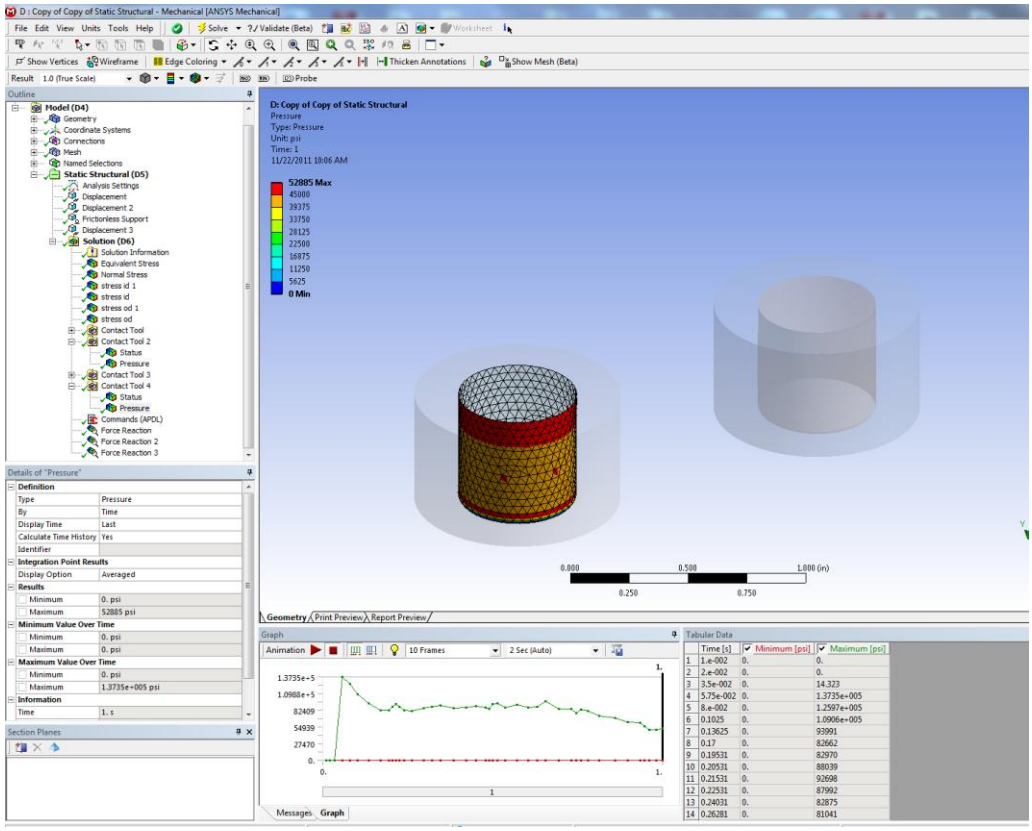
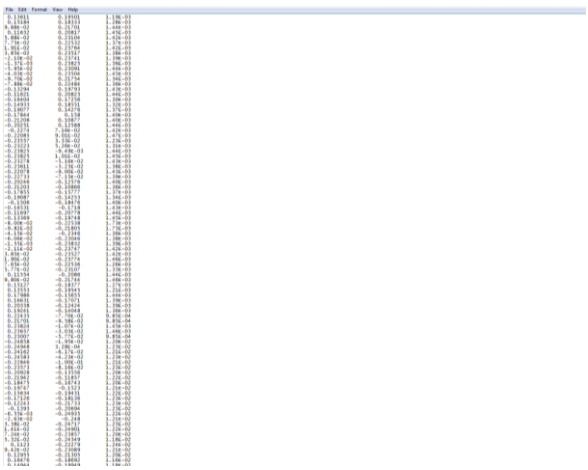
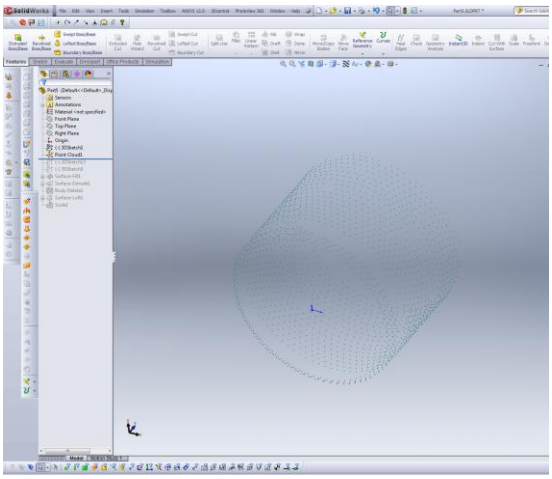
OBTAINING SURFACE AREA OF PARTICULAR RESULT (NON-SCRIPTING)

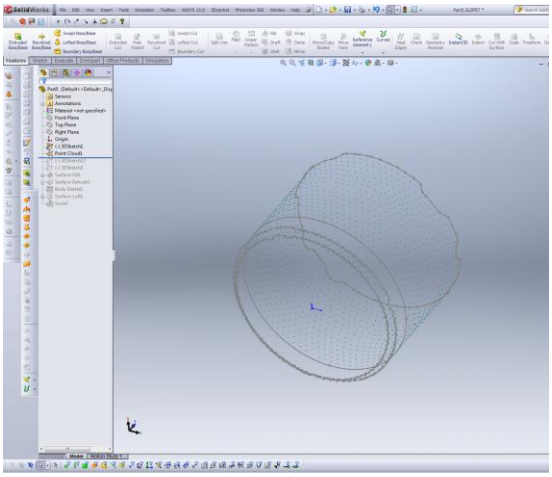
NOTE: DOES NOT EXPORT DEFORMED SHAPE, BUT AFFECTED AREA OF ORIGINAL SHAPE

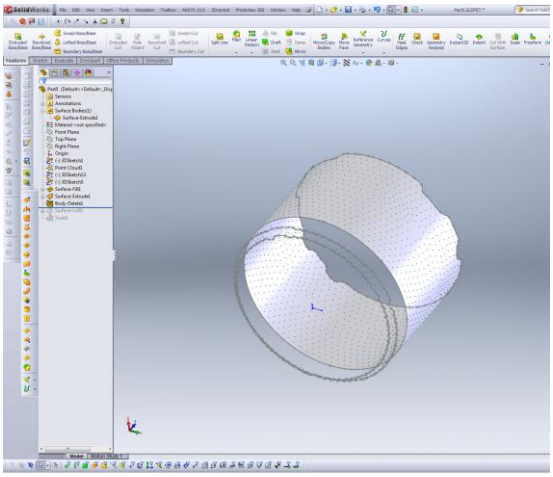
1. Run the study as usual
2. Choose solution type/surface location in Solution to the geometry
3. Right click-> Export to .xls
4. Open .xls, Sort data from lowest to highest on solution callout (i.e. stress)
5. Delete rows in the desired range of solution
6. Delete all columns and rows which do not contain x y z data
7. Insert a column between each column of x y z data
8. Save as .xls, then change the extension to .txt. If this doesn't work, save as .prn and change extension to .txt
9. In SolidWorks, go to Open -> .txt All points should be in a cloud form
10. Go to Tools -> Scan to 3D -> Curve Wizard -> Boundary Creation Method (critical step). Start with a very small delta and curvature slider bar all to the left. Slowly increase the delta to get the best resolution.
11. Leave default 3D sketch created alone, Create a separate 3D sketch for each curve generated, the curves should be the boundaries of the area of interest
12. For open loops, close by adding lines/splines). You can also use points in the cloud to guide the lines. For intersecting geometry, trim accordingly. After this, insert a fit spline to the entire boundary to smooth it out.
13. Create surface lofts/extrusions/etc. between boundaries to create the surfaces
14. Double check importing units. Scale by 25.4 if inch data is imported as mm
15. Go to Tools -> Measure and retrieve the surface area

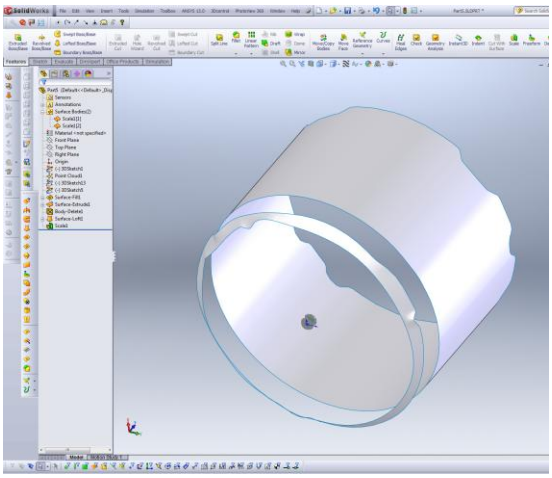


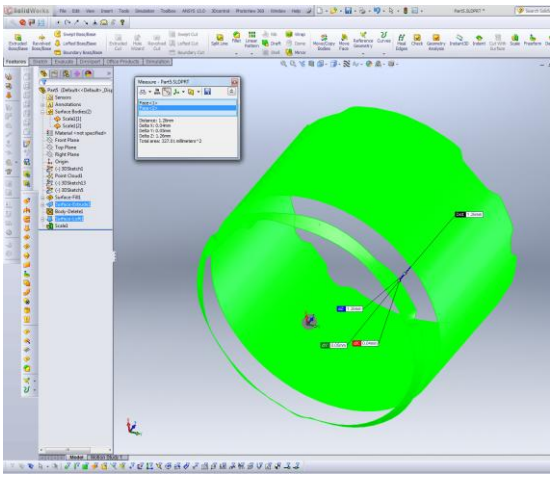






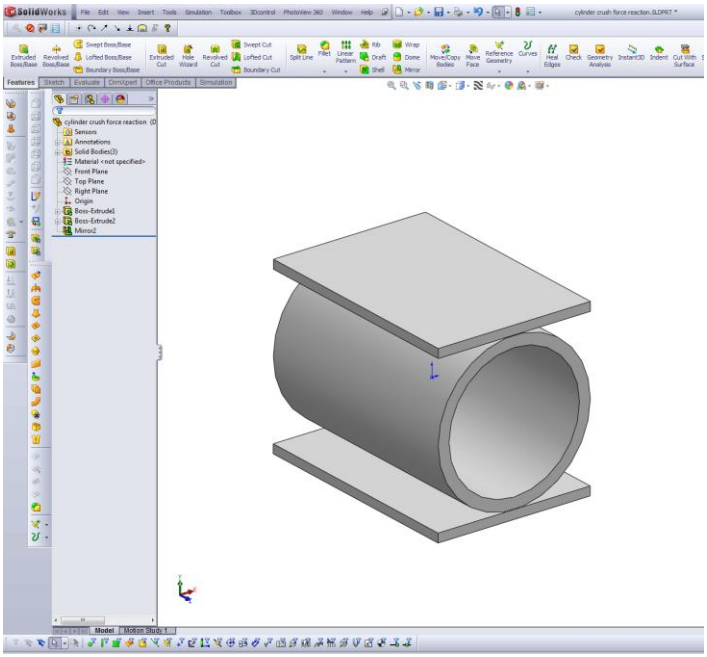
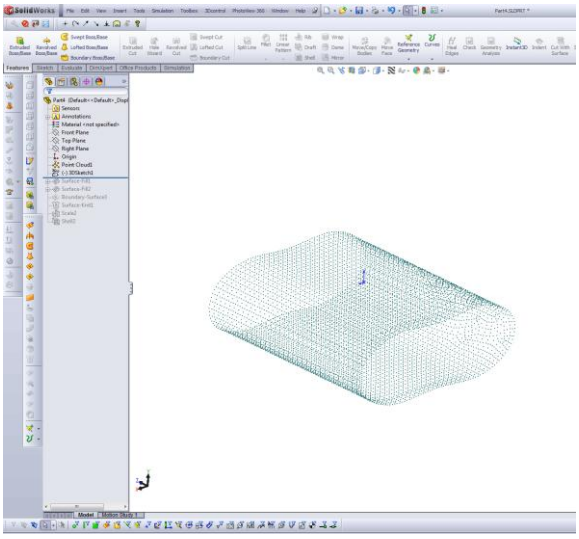
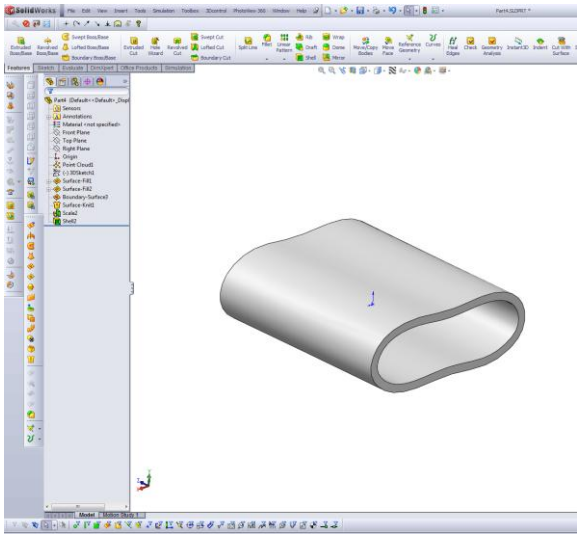






DEFORMED SHAPES

This technique can be used for deformed shapes. It does require more work up front:

1. You must create the X, Y, and Z displacement results and export.
2. Each axis will has to be adjusted by adding the original coordinate and displacement in excel.
3. All of the adjusted points need to be put in a new file.

However, the simpler the part the easier to render. This method can be more smooth and accurate than trying to export/import STL geometry. Usually STL is comprised of mesh-like triangles