

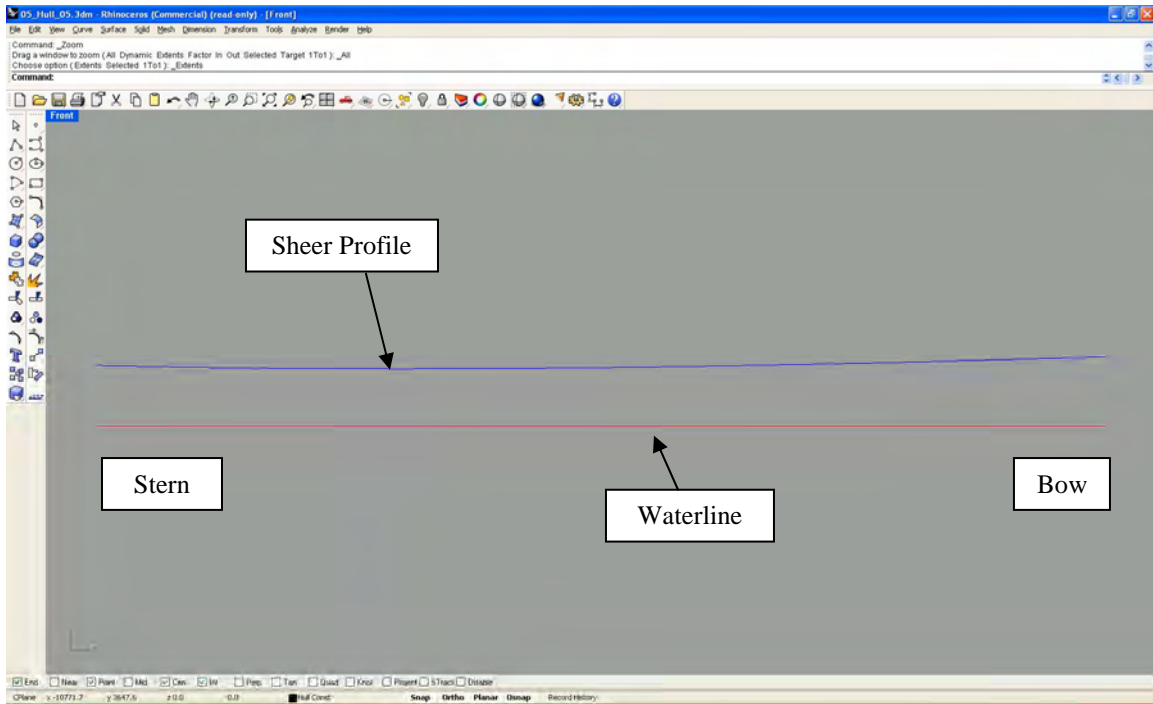
Hull Fairing with Rhinoceros 4.0 3D Modeling Software

by

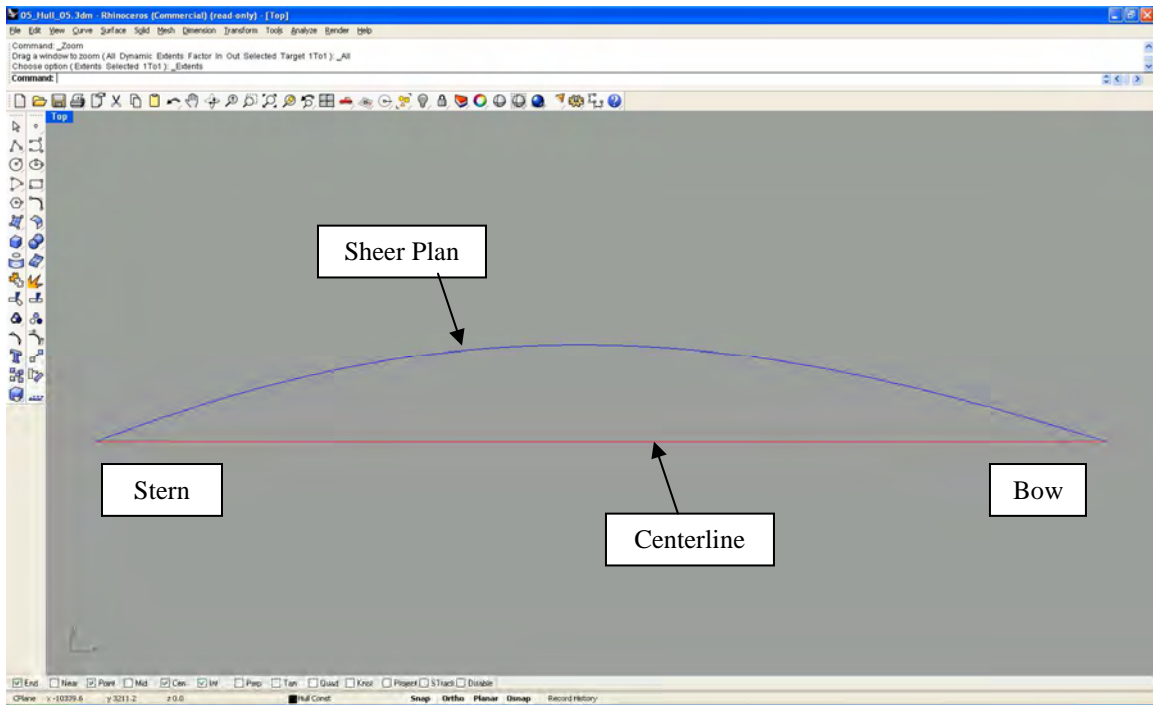
Paul R. Kotzebue, PE

1. This is an example of fairing the 3d hull surface for a double ended 40 square meter sailing yacht. It is not intended to be a tutorial per se.
2. It is assumed the reader understands how to create fair 2d curves in Rhino using available commands and curvature graph analysis.
3. The method described requires that the initial 2d curves be compatible with the desired hull form. Getting this right takes practice and experience.

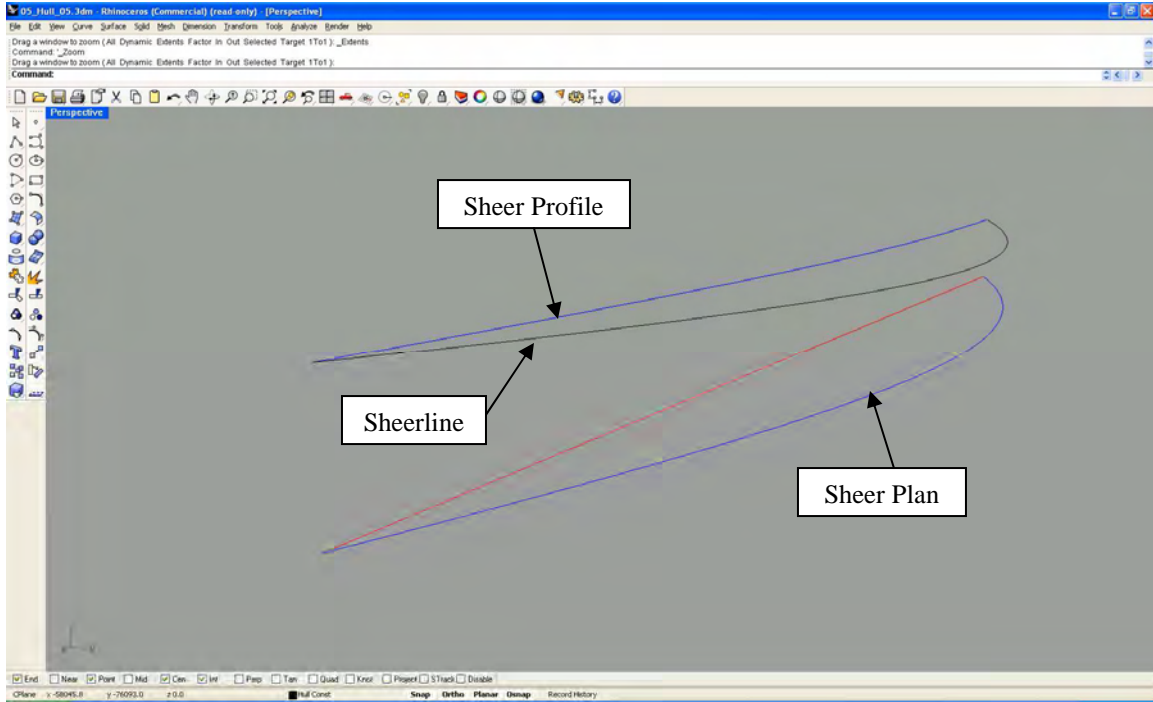
STEP 1: Create Sheer Profile curve in front view.



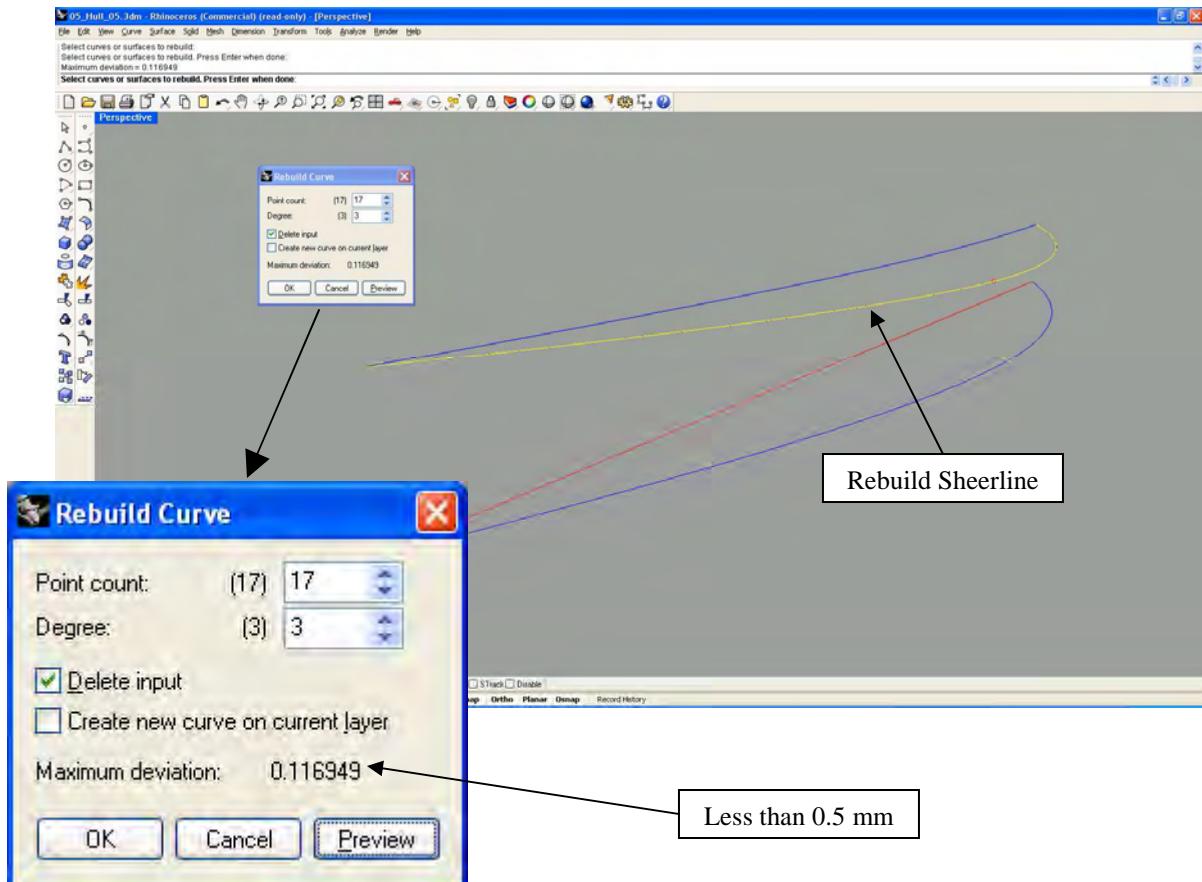
STEP 2: Create Sheer Plan curve in top view.



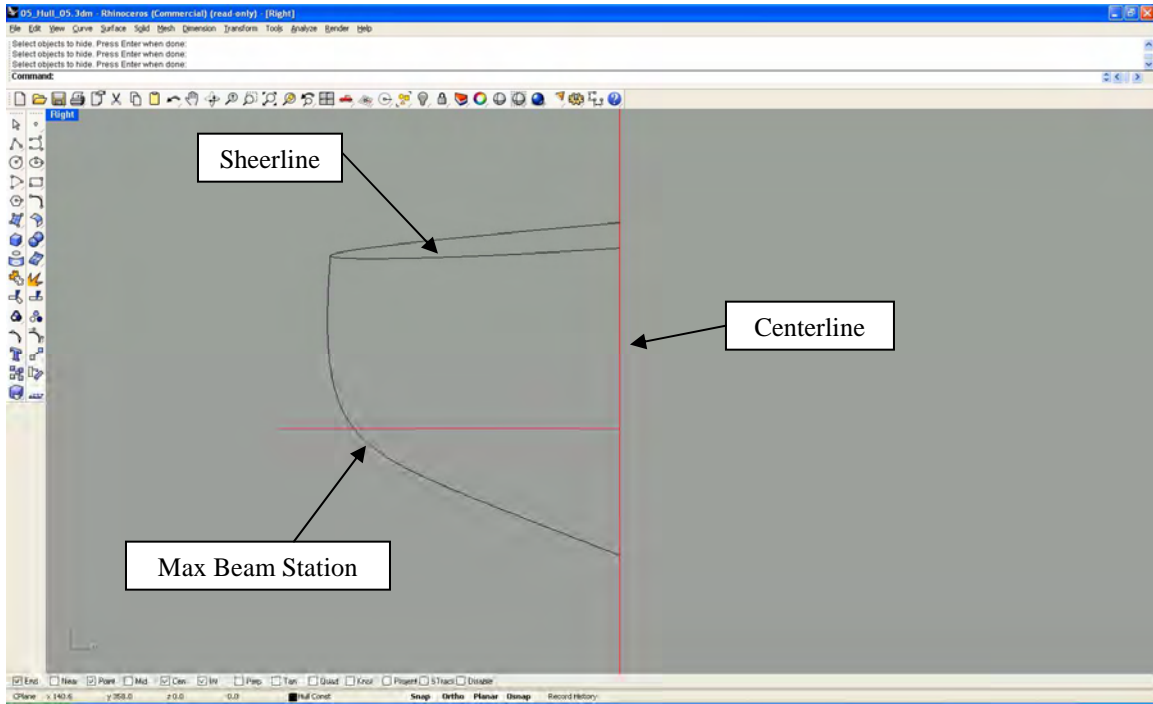
STEP 3: Use "Crv2View" (Curve From 2 Views) command to create Sheerline curve from Sheer Profile and Sheer Plan curves.



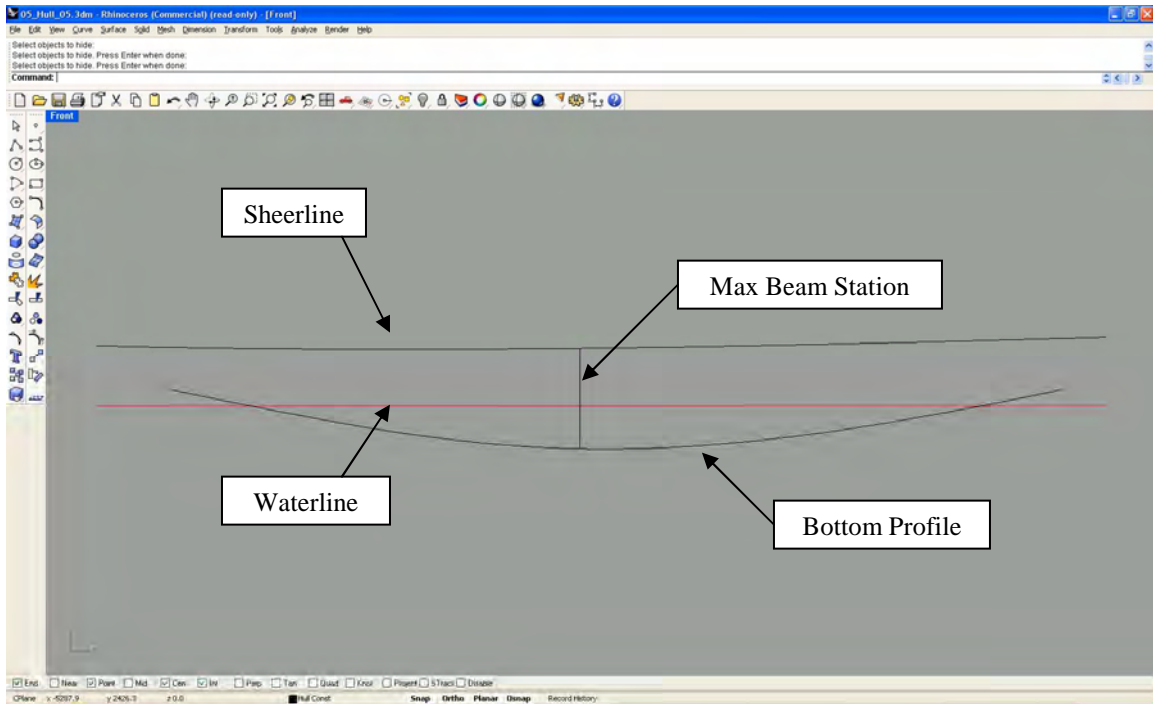
STEP 4: Rebuild Sheerline with maximum deviation of 0.5 mm or less.



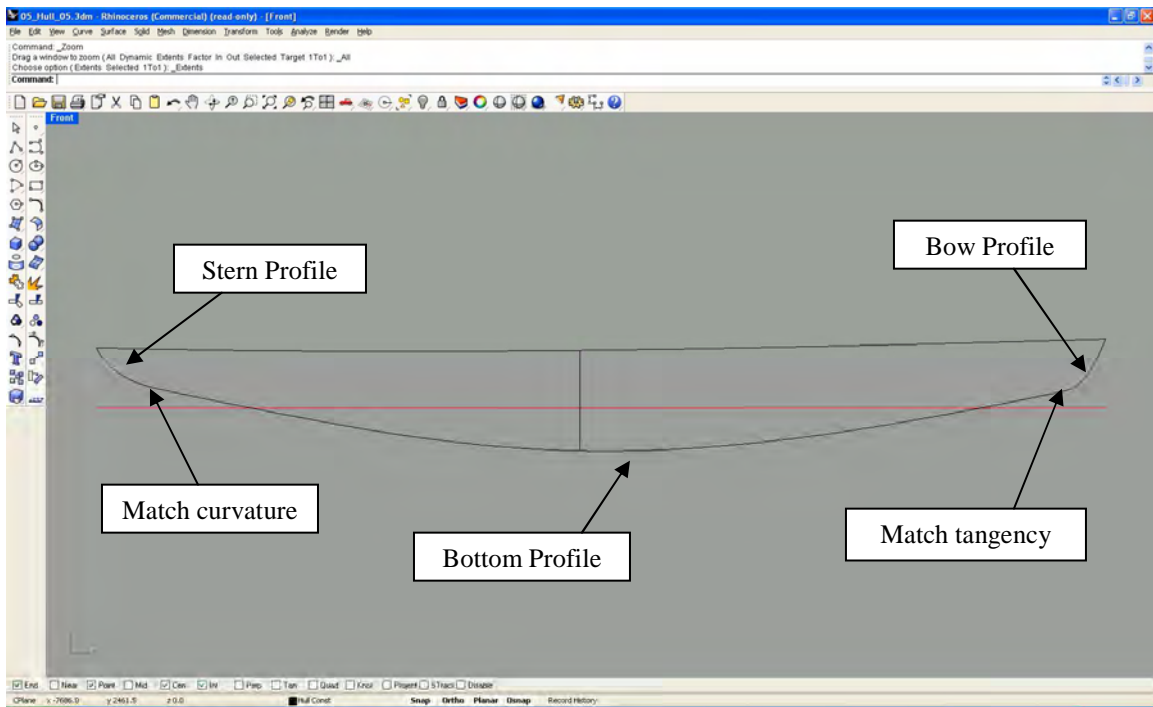
STEP 5: Create Max Beam Station curve at longitudinal location of maximum beam in right view.



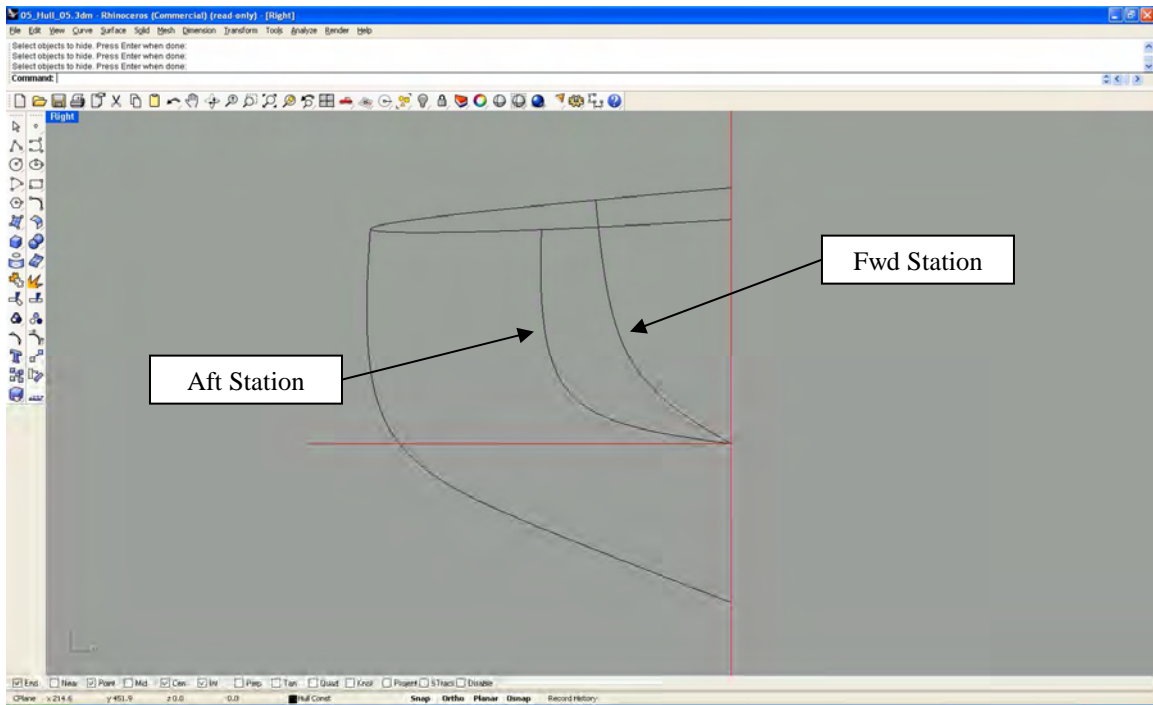
STEP 6: Create Bottom Profile curve in front view.



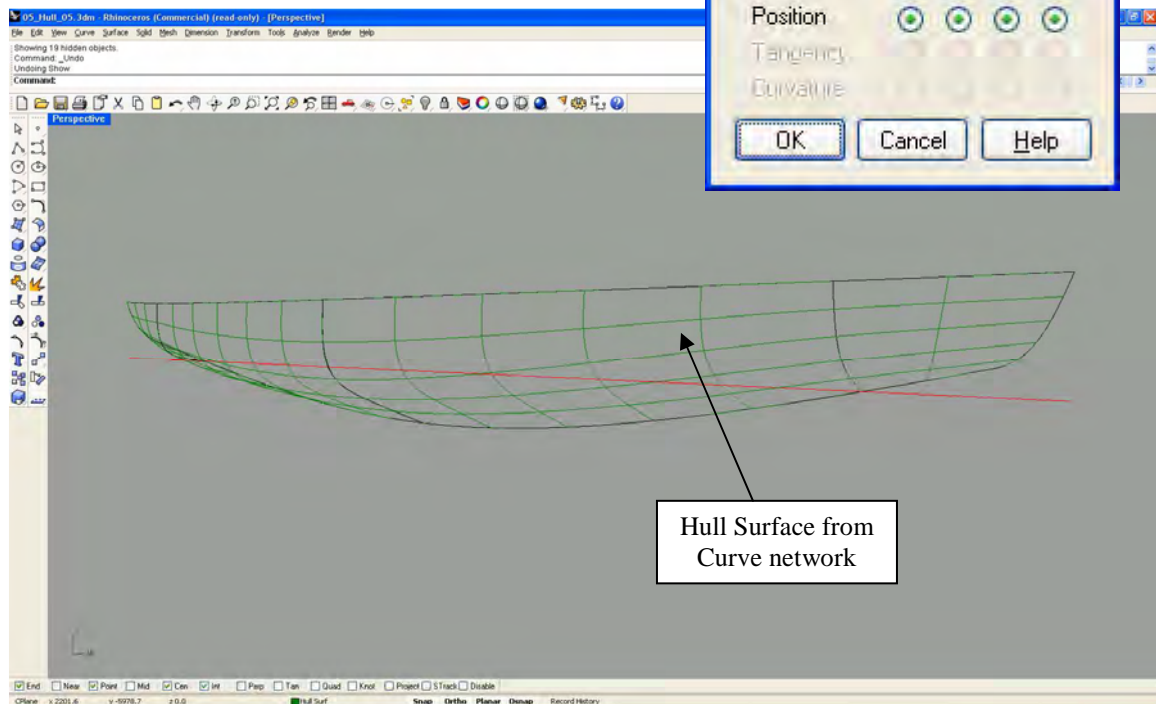
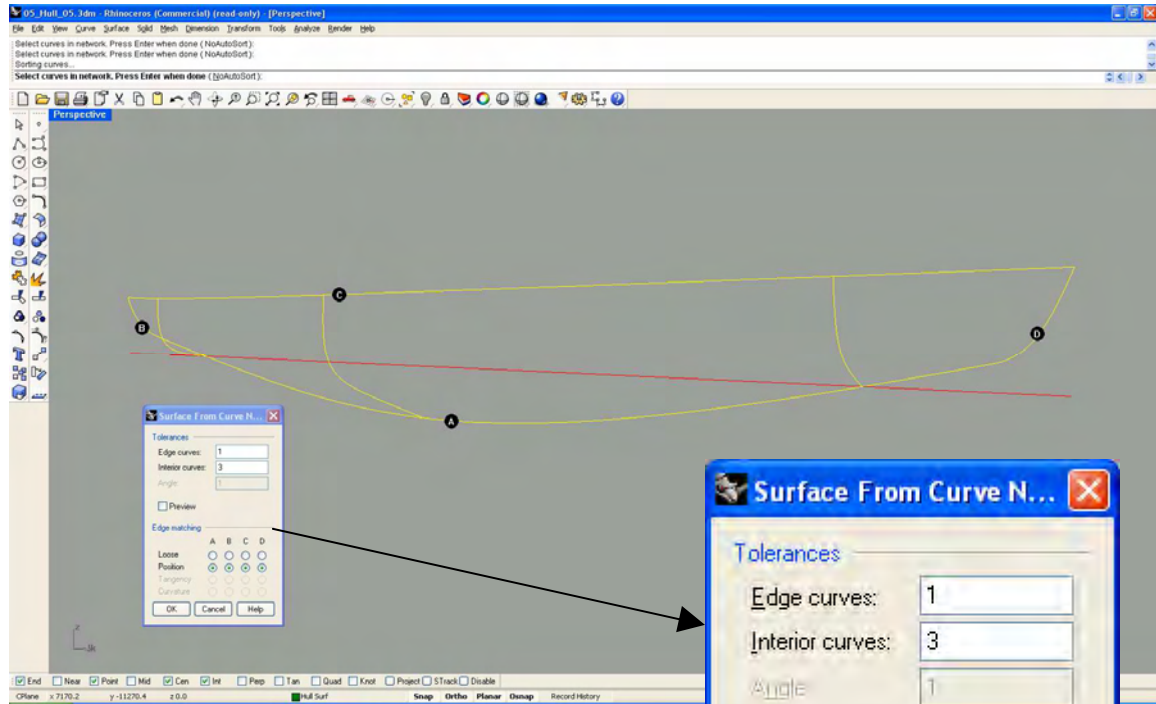
STEP 7: Create Bow Profile and Stern Profile curves in front view. Use "Match" command to match Bow Profile tangency Stern Profile curvature with Bottom Profile curve.



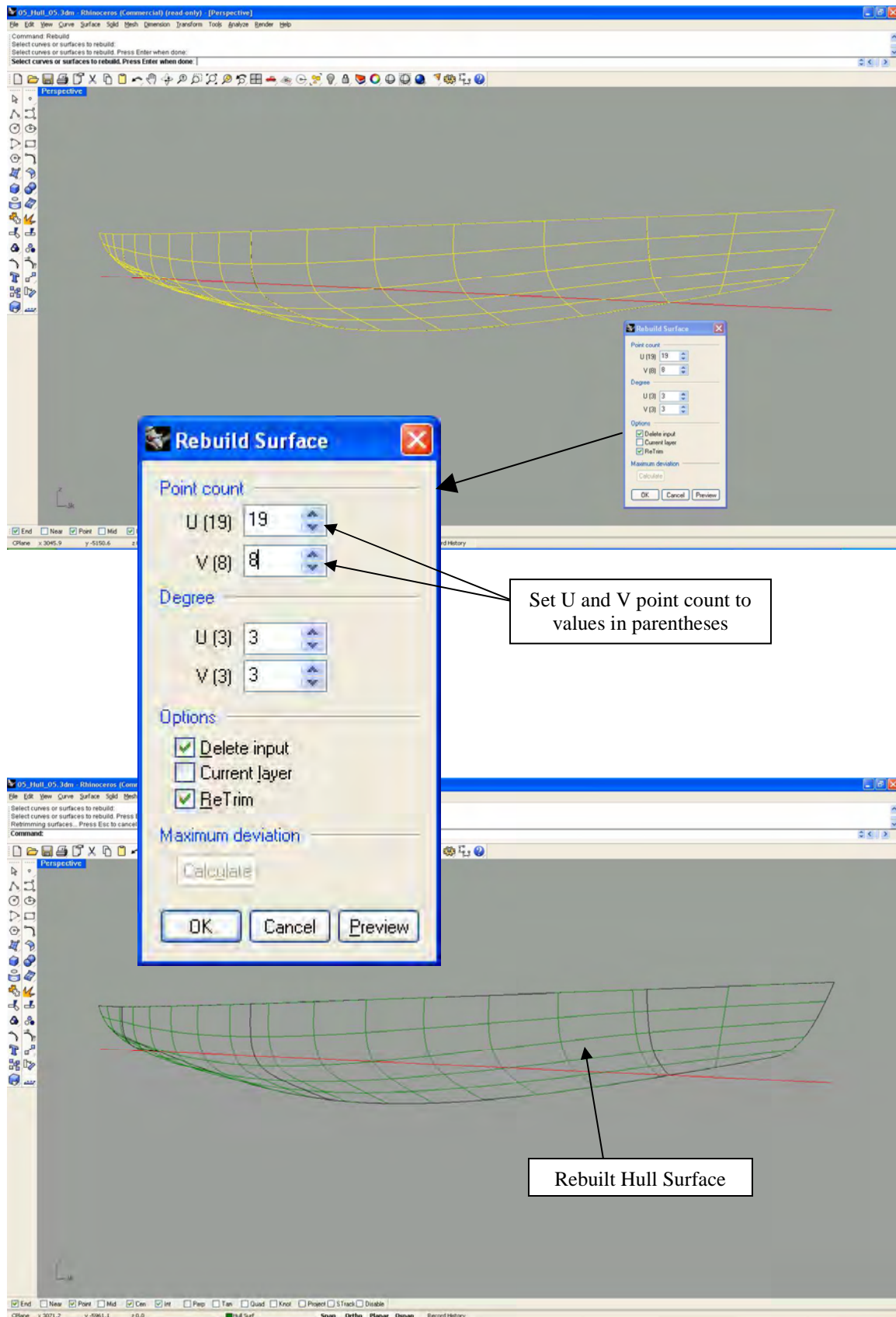
STEP 8: Create Fwd Station and Aft Station curves at forward and aft ends of waterline in right view.



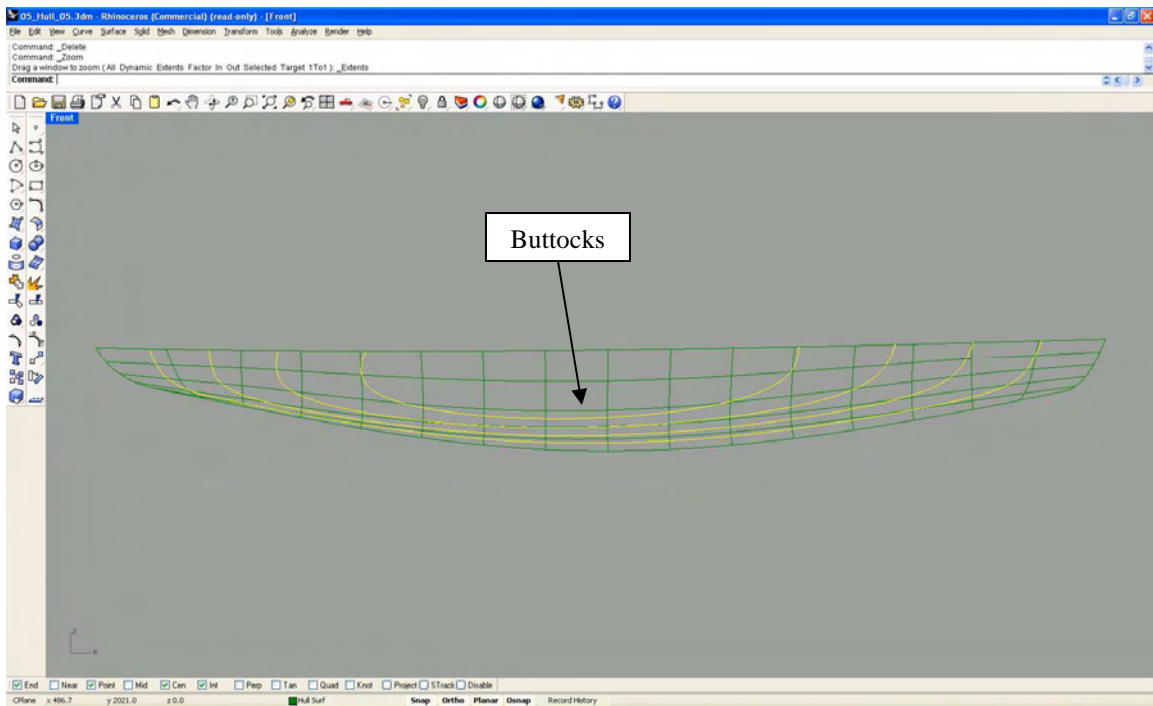
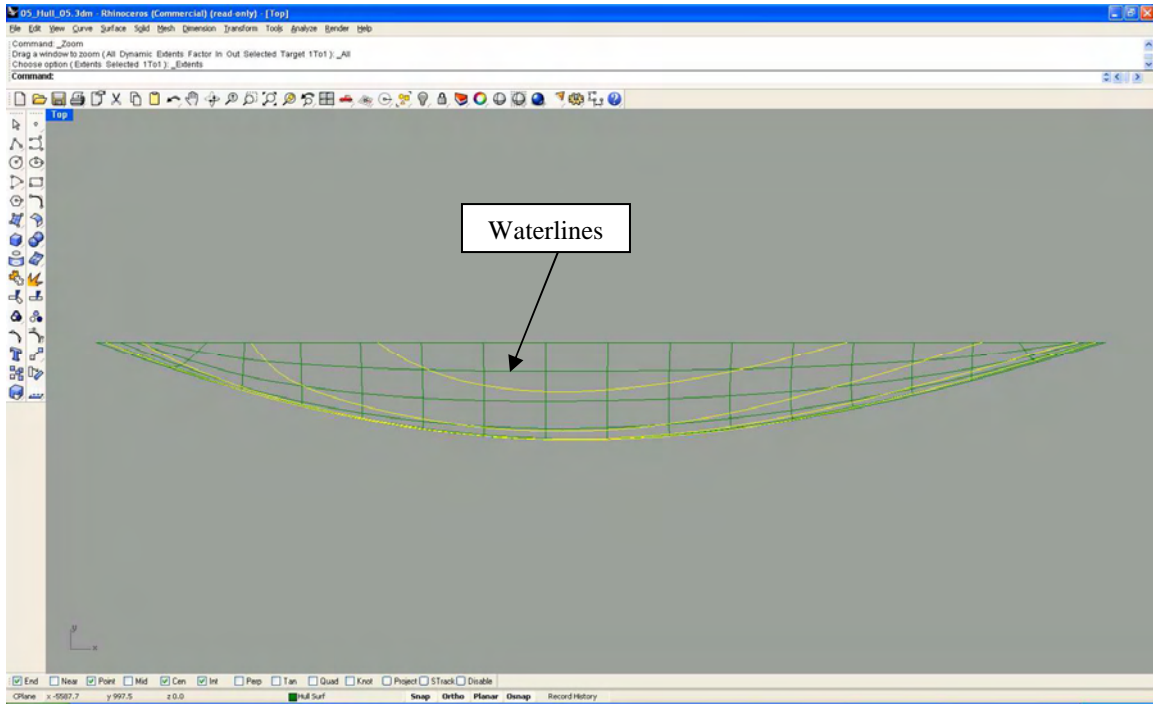
STEP 9: Use "NetworkSrf" (Curve Network) command to create the hull surface. Select the Stern Profile, Aft Station, Max Beam Station, Fwd Station, Bow Profile, Sheerline, and Bottom Profile curves.

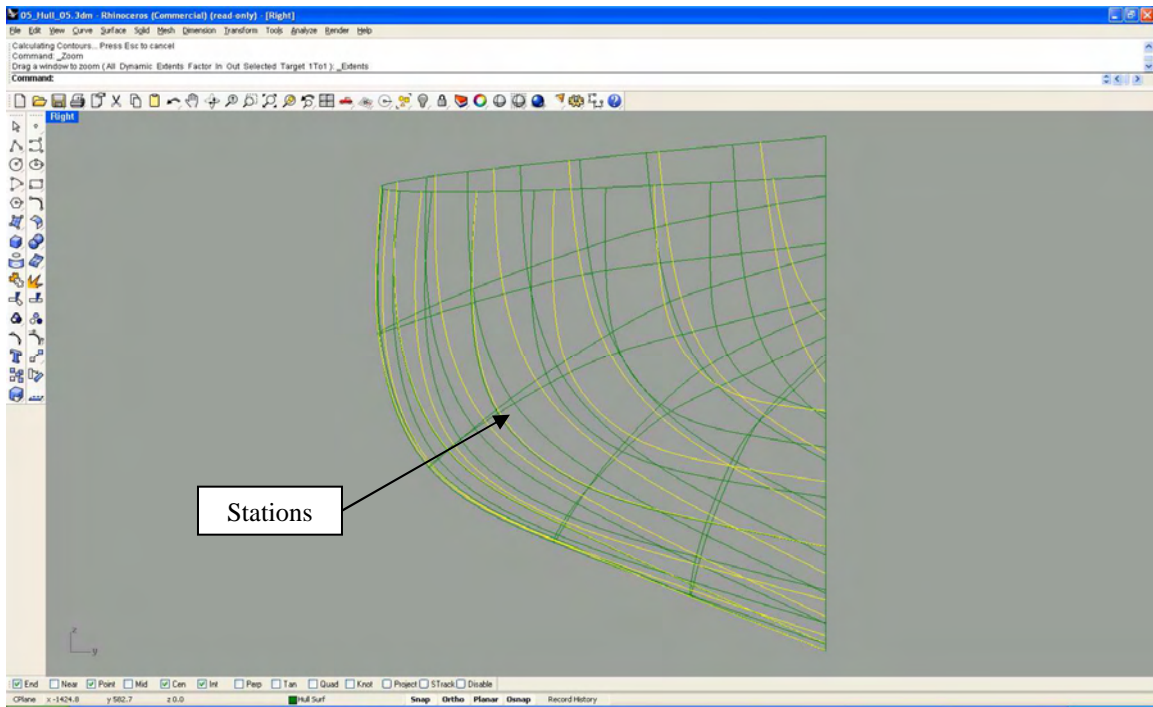


STEP 10: Rebuild Hull Surface with the same U and V point count.



STEP 11: Use the "Contour" command to check waterlines, buttocks, and stations for shape and fairness.





STEP 12: Check hydrostatic properties of hull surface. Adjust curves and create another hull surface as required to optimize shape, fairness, and hydrostatics. Make sure tangency of Bow Profile and curvature of Stern Profile curves are matched to Bottom Profile curve. The lines plan on the following page was produced using the hull surface created in this example.

