Given, a 6 ft. diameter 50 ft. long drilled shaft constructed in the following soil profile:

Layer one: 0’ – 25’ cohesive soil with undrained shear strength $c_u$ of 1500 psf. The unit weight is 115 pcf; the saturated unit weight is 125 pcf. The water table is at a depth of 15’. Be sure to exclude the appropriate side resistance.

Layer two: 25’ – 60’ cohesive soil with undrained shear strength $c_u$ of 3000 psf. The saturated unit weight is 125 pcf.

**Part One**
Calculate the nominal resistance using the relationships shown in the Drilled Shaft Manual:

1. Hand calculations – clearly show the calculations for side friction and tip resistance.

2. Use the spread sheet

3. Compare the results of hand calculations to spreadsheet values – please give me your comments if you see major disparities. Use the spreadsheet results for part two.

**Part Two**
Develop a load settlement curve (at least 4 points) for this drilled shaft. One of the points will be for the failure threshold value (pg. 13-31). Use the normalized curves discussed in class on pg. 13-30 and do the best you can interpolating values on the curve.
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Develop a load settlement curve (at least 4 points) for this drilled shaft. One of the points will be for the failure threshold value (pg. 13-31). Use the normalized curves discussed in class on pg. 13-30 and do the best you can interpolating values on the curve.