Spring 2014

Question 1:

1. We have 2 soil samples from same layer of clay and we apply UU test on them. Sample 1 is taken from depth= 2m while sample 2 is taken from depth = 6 m. which sample will have a larger total stress mohr circle if same $σ3 applied.$

Answer : sample 2 because as depth increases undrained shear increases and thus radius increases.

1. What soil properties are needed to determine undrained shear strength if we don’t want to use UU test

OCR and PI

Question 2:

Normally consolidated clays previous ( decrease water content)

And also memorize increase water content for overconsolidated clays

Question 3:

Previous: sand and clay layers with capillarity rise (draw effective stress graph) remember to shift at the capillarity.

Question 4:

Given direct shear test. $τ\_{fail}=1000 N \left(from graph\right)$

$$σ\_{applied}=1200 N$$

Also curve that shows volume of sample decreasing while being sheared

1. What is the type of sand ( loose or dense)

Loose sand because it compacted and didn’t swell in shearing

1. Find phi prime if c prime = 0

Apply formula

Question 5:

Given curve for t50 find Cv

Then use Cv to find settlement

Atleast solve one problem by hand for t50 before the exam because the log scale is tricky.

Question 6:

Given total stress and pore pressure(negative)

Draw mohr circle for total and effective stress then determine graphically phi prime.

Explain why this is over consolidated clay and why there is negative pore occurs.