TEXAS A&M UNIVERSITY
CVEN 365: Introduction to Geotechnical Engineering
Professor Briaud

Assignment #1
Weight-Volume Relationships

Due 2/2/2004 at 8:00 AM

Any late assignment will receive a grade of zero. Not turning in an assignment before the end of the course will result in a failing grade in the course.

1. A sample of clay is 75mm in diameter and 150mm in height; its weight is 13.25N. The water content is 20%. Assume that Gs = 2.65 and calculate the following:
   - Total unit weight,
   - Dry unit weight,
   - Degree of saturation,
   - Porosity

2. A sand has the following boundary void ratios: \( e_{\text{max}} = 0.6, \ e_{\text{min}} = 0.4 \). Calculate the settlement of a 10m high embankment made of this sand if the relative density goes from 40% to 90%.

3. A soil is compacted in a mold. The volume of the mold is \( 9.46 \times 10^{-4} \text{ m}^3 \). The weight of compacted soil in the mold is 18.91 N and the water content is 8%. Assume that Gs is 2.65 and calculate the dry unit weight and the degree of saturation.

4. Find the relationship between the dry unit weight, the water content, the degree of saturation, and the specific gravity of solids for a soil.

5. Demonstrate that \( S \ e = G \ s w \).