

The University of Iowa
Department of Civil & Environmental Engineering
Fall Semester, 2002
53:030 Soil Mechanics Write-up Guidelines for Lab Experiments 1–4

Following the completion of Lab Assignment No. 4, you will have performed four different types of tests on two different soils: Soil FI-10 is the fine-grained soil treated in Labs 2–4, and soil FI-6 is the cohesionless soil treated in Labs 1 and 2. In particular, the tests you performed are as follows:

- a. Solid specific gravity measurement for the sandy soil (sample FI-6).
- b. Grain size distributions on both the coarse (FI-6) and fine (FI-10) grained soils.
- c. *Liquid* and plastic limit tests on the fine-grained soil (FI-10).
- d. *Shrinkage limit* test on soil FI-10.

For the write-up of these four labs you are to assume the role of engineers working in a fictitious geotechnical engineering/soils testing company with an appropriate name of your choosing (the more creative, the better). Assume that the two soil samples (FI-6) and (FI-10) have been forwarded to your company and that the client [Ms. Hapi Campor of the Pavementus Supremus Corporation (PSC)] has requested that your company perform the tests of Labs 1–4 so that you can classify and identify the soil for them. Since the client PSC is considering using these soils as highway pavement subgrade materials, and also as subgrade materials beneath low-rise construction to be built on shallow foundations, they also request your recommendations regarding their relative suitability.

Your individual write-ups will consist of a cover letter to the client and a brief report. In the cover letter you should:

- state which tests were performed,
- briefly summarize the results of the tests,
- announce your classifications/identifications of the two soil types, and
- state the suitability of these soils as construction materials for the applications of interest to PSC.

Keep the tone of the letter brief, courteous and professional (its good for business) and bear in mind that doing consistently good and accurate work for the client is even better for business.

All of the finer supporting details of your work will appear in a **brief** report, the purpose of which is to present the results of the tests you performed. When presenting large amounts of quantitative data, it is helpful to the reader (insofar as is possible) to present important data in graphs and tables rather than in text. Thus, good reports will make use of clear, concise tables and figures with explanative titles and labeled axes. Additional items that generally go into the main body of the report are:

1. Brief introductory and concluding sections.
2. Appropriate titles and subtitles so that readers can quickly find and identify those sections they might be interested in.

3. References to the experimental procedure followed. (Normally one would refer to the ASTM testing procedure for a given test. Instead, you'll refer to the procedures in your lab handouts which will be included in appendices devoted to experimental procedures.)
4. References to sample computations for each test, as necessary, which will go into a report appendix.
5. Labeled plots and tables of experimental results as necessary. (*i.e.* for this report, plot the measured grain-size distributions, the flow curves, *etc.*, and the volume versus water content.
6. Discussion and text that give the report a smooth sensible flow.

Regarding length of the report, make it **concise** and **relevant**. Include in the main report any and all of the information that the client might be genuinely interested in. But don't put in so much detail that information of most pressing interest to the client will be lost. Such extraneous details, if they need to be included at all, should go into an additional appendix to the report. For this report, you should have four appendices, one for each set of experiments performed. In each appendix, you should have: (1) the lab procedure; (2) the raw data; and (3) sample computations. The reports will be graded based on the following:

Letter (10 points)	
statement of tests performed (1)	brief summary of test results (1)
soil classifications (2)	appearance (1)
statement of their suitability (2)	
other things (3)	
Presentation Style (18 points)	
Title page (1)	Table of Contents (1)
Summary table - (FI-10) (2)	Summary table - (FI-6) (2)
Appendices 4 @ 2 each (8)	Quality of writing/presentation (4)
Lab 1 (10 points)	
Measurement of G_s (10)	
Lab 2 (20 points)	
GSD plot for soil FI-6 (10)	GSD plot for soil FI-10 (10)
Lab 3 (20 points)	
Flow curve (4)	LL measurement (4)
PL measurement (4)	Activity index (3)
Mineral identification (3)	verbal discussion (2)
Lab 4 (10 points)	
SL measurement (5)	Plot of volume versus w for FI-10 soil (5)
Labs 1–4 (12 points)	
Soil classifications, identifications and general discussion (12)	

If you require additional guidance for writing your reports and letters, formats for writing short technical reports and business letters can be found in a variety of guides to technical writing available in the Engineering Library. You might also briefly consult with Mr. Scott Coffel, 2226 SC, Engineering Technical Writing Center. One of your objectives in writing up this lab assignment and those that follow should be to develop your own successful style of technical reporting.

Finally, it is encouraged that lab reports be written by **lab groups**, and so teamwork will be essential. [Learning to work successfully in groups is an art to be mastered, and one that will greatly expand career advancement opportunities.] Toward this end, each member of the group is expected to contribute their fair share, on average, to each report. This means that people should avoid being either “slackers” who don’t carry their share, or “heroes” who do far more than their fair share, leaving nothing for the remainder of the group to do. To assure that all members are satisfied and have participated in each report, the names and signatures of each group member should appear on the title page of each group lab report. Good Luck!