

## Part 533 – Geotechnical Engineering

### Subpart A – General

#### 533.0 General

A. Soils are used as construction materials and foundations for engineering structures. A wide range of soil properties and conditions affect their performance and use.

B. For engineering purposes, soils are grouped according to their predicted engineering behavioral characteristics. This classification is used by engineers and geologists to accurately define soil properties based on a soil's particle-size and plasticity characteristics. These soil groups, as well as the various index properties of a soil provides a preliminary understanding of the behavior of soils under various engineering conditions. It is the role of a geotechnical engineer or other qualified personnel to develop and implement a soil testing program that can provide the information for design criteria for construction activities and other guidelines related to the engineering performance of soils. Typically, the geologist or other technical personnel performs the geotechnical site investigations in an effort to gather information on soil properties and conditions that are relevant to the design.

#### 533.1 Responsibilities

A. Director, Conservation Engineering Division (CED), is responsible for—

- (1) Establishing soil mechanics testing standards.
- (2) Inspection of NRCS soil mechanics testing facilities that are national, regional, or multistate in scope.
- (3) Jointly developing annual and long-range plans of the kinds of activities that can be accomplished and priorities of national benefit.
- (4) Working jointly to develop guidelines for soil survey criteria that requires engineering interpretations.

B. The co-director of the National Design, Construction, and Soil Mechanics Center-Soil Mechanics Laboratory (NDCSMC-SML) directs the inspection of State soil mechanics testing facilities and other soil mechanics testing facilities under contract or agreement with NRCS and jointly develops annual and long-range plans of the kinds of activities that can be accomplished and priorities of national benefit.

C. The State conservation engineer (SCE) is responsible for—

- (1) All geotechnical site investigations and the collection of samples.
- (2) Evaluating workload and staff capabilities regarding geotechnical engineering expertise and develops an operational plan that defines the scope of assistance or staffing needed and the training required.
- (3) Assisting in engineering interpretation for soil survey activities in the State and works closely with the responsible soil scientist. This authority may be delegated to a staff engineer who has been assigned leadership in geotechnical engineering or to a geologist or field engineer with sufficient training and experience.

D. NRCS engineers and geologists—

- (1) Participate in making soil potential ratings that indicate the relative quality of a soil for a particular use as compared with other soils in a given area. Soil scientist, engineers, and others provide guidance in interpreting soil survey data and in establishing procedures for

- preparing potential ratings. For nonagricultural uses, experts from other agencies or institutions are invited to participate in determining corrective measures, costs, and continuing limitations to determine the types of corrective measures that are appropriate, with final acceptance by NRCS.
- (2) Act as advisors in providing leadership in making soil potential ratings. In this advisory capacity, they assist in the work, make recommendations, and assist in correcting deficiencies and procedures.
  - (3) Keep informed on the development and use of engineering interpretations for soil surveys. All engineering interpretation for soil survey activity must be prepared in accordance with established guidelines and criteria. Engineering training programs must include appropriate instruction.
  - (4) Assist in soil survey engineering interpretations and participate in the following decisions:
    - (i) Decide whether engineering interpretations are adequately defined for a given use.
    - (ii) Establish criteria and guidelines for making geotechnical engineering interpretations.
    - (iii) Verify the quality of geotechnical engineering interpretations for published soil surveys, special reports, or special planning efforts.
    - (iv) Examine the method of presentation of soil interpretations and reports on engineering uses of soil.
    - (v) Provide training of soil scientists and engineers to make engineering interpretations.
- E. Soil scientists are responsible for engineering interpretations in soil survey reports and other forms and documents as outlined in the National Cooperative Soil Survey. These interpretations, reports, and narrative sections are written to describe soil properties. Ranges within soil mapping units are established based on correlated data, as well as field and laboratory observations.
- F. The NDCSMC-SMLs provide assistance to CED for a variety of activities of national benefit, including—
- (1) Training engineers, geologists, and other technical personnel in soil mechanics. This includes short-term staff position assignments.
  - (2) Renovating or modernizing specialized testing techniques and equipment.
  - (3) Developing and updating technical references in soil mechanics.
  - (4) Maintaining a testing database and preparing correlations for design reference.
  - (5) Laboratory testing for correlation of test results.
  - (6) Investigating behavior and performance of soil as related to engineering use.