
Construction Involvement

Design Manual
Chapter 200
Geotechnical Design
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The purpose of this section is to outline areas where the Soils Design Section may be involved in construction and document the required communications. Soils Design Section construction involvement includes:

- Reviewing contractor submittals such as contractor furnished borrow, temporary shoring, etc., and
- Providing recommendations and/or clarification for constructability issues related to soil problems such as identification of soils, remediation of problem areas, etc.

Soils Design Section involvement may also be requested by the Office of Construction & Materials (typically Earthwork or Structures) or the Resident Construction Engineer (RCE) office, and possibly the District Office.

Quick Tips:

- Constructability issues brought to the Soils Design Section's attention are given top priority in order to not delay construction.
- Although Soils Design Section involvement varies, it commonly comes at the request of the Office of Construction & Materials or the Resident Construction Engineer office.

Potential Construction Issues

Early recognition of possible problems and the use of Soils Design Section personnel to advise on soils related issues will reduce the potential for detrimental situations. Constructability issues brought to the attention of the Soils Design Section are given top priority in order to not delay construction. For constructability issues related to problem soils, a Soils Design Section representative will commonly make a site visit (Field Construction Review) to evaluate the soil conditions, to evaluate engineering implications to the final design, and to determine potential remedial procedures. A representative from Office of Construction & Materials frequently accompanies the Soils Design Section representative. The items below summarize some of the construction issues that might be related to soils in subgrades, embankments, and below structures.

Earthwork

Variability of On-site Materials: Transition of rock to soil, identification of and variations in suitable vs. unsuitable soils, backslope or foreslope conditions/configurations, unstable fill or cut sections.

Contractor Furnished Borrow: Review contractor borrow and alternate borrow submittals and information. The Soils Design Section will review material suitability for the intended purpose, commonly in conjunction with Office of Construction and Materials, but not the design, permitting, etc., of these borrows and borrow sites.

Unstable Subgrades: Recommendations on the need and construction of sand blankets, core-outs, and/or other measures.

Unstable Slopes: Recommendations for backslope drains, flattening or benching slopes, stability berms.

Groundwater Seepage: Recommendations for new or additional backslope drains and possibly longitudinal drains, and/or other drainage measures.

Settlement Monitoring: Review of settlement plate data, and determining when construction of embankments or structures can continue.

Structures-Foundations

Pile Installation: The Soils Design Section may get involved during pile installation if piles do not achieve design requirements, are driven deeper than anticipated (overdrive), encounter early refusal, or have pile driving resistances that are different than anticipated. In addition, the Soils Design Section may provide guidance and recommendations regarding predrilling of shallow rock, protective pile tips, and vibration monitoring.

Drilled Shafts: The Soils Design Section (and others) will review the contractor's installation plan and shaft constructability methods (dry vs. wet). Soils Design Section personnel may also be called upon to evaluate rock socket length. For projects where cross-hole sonic logging (CSL) or load testing is performed, the Soils Design Section will review the test results, including the confirmation boring, and participate in determining the acceptance of the shaft construction or design.

Spread Footings in Bedrock: Possible on-site review of the rock quality in limestone, shale, or other rock bearing stratum, especially if it is fractured or otherwise questionable. A review by the Soils Design Section is typically not required if footings are supported on solid limestone unless the top-of-rock near bearing level is variable.

Submittal Review

During the initial stages of construction, the Soils Design Section can be involved in the review of contractors' design and installation submittals for compliance with the requirements and intent of the plans and specifications. Outlined below are some of the submittals typically reviewed by the Soils Design Section during construction.

MSE Wall Submittal: The Soils Design Section will review the contractor's design, block and reinforcement materials, and installation submittals.

Intermediate Foundation Improvements (IFIs) Submittal: The Soils Design Section will review the contractor's design, layout and installation submittals.

Wick Drain Submittal: When requested by the RCE Office, the Soils Design Section will review the contractor's installation plan and wick drain submittals.

Temporary Shoring: The Soils Design Section will review the soils related information and analysis associated with the design of the temporary shoring system, including the soil parameters used in design and global stability analysis.

Value Engineering (VE) Proposals: The Soils Design Section will review the soils related portions of VE Proposals and provide input, recommendations, etc. on the soil related aspects of the Proposals, but not the pay related and similar items.

Communications

Although Soils Design Section involvement varies, it commonly comes at the request of the RCE through the Office of Construction & Materials. Any observations/recommendations provided during site visits performed by the Soils Design Section are documented either by the Soils Design Section or the Office of Construction & Materials (see Example: [Field Construction Review](#)). If documented by the Soils Design Section, the documentation is commonly sent via email to the Office of Construction & Materials, which in turn forwards it to the RCE, who, in turn, is responsible for forwarding the information to the contractor.

Chronology of Changes to Design Manual Section:

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1/15/2014	NEW
	New