

# **STATE POOLED-FUND STUDY: DEVELOPMENT OF GEOTECHNICAL PROCEDURES MANUAL**

## **DESCRIPTION OF WORK**

### OBJECTIVE

The objective of this effort is to develop a manual that provides detailed technical guidance on Geotechnical procedures and selection, management, quality, and cost control of products/services from Geotechnical consultants and drillers. The project will also include development of a web enabled template with an implementation plan and a user interface application that will allow State Departments of Transportation (DOT) to adopt the manual in a form that is most suitable to their needs.

### BACKGROUND INFORMATION

This activity, identified in the Federal Highway Administration (FHWA) Geotechnical Tactical Roadmap as a high priority initiative, will develop a manual that will provide State DOT's with a standard for "best practice." Currently, there are a number of State DOT's that have either outdated, incomplete or no procedures manuals for design, construction and inspection of geotechnical features (structural foundations, earth retaining structures and earthworks) for structures and roadway. In addition, with increasingly less geotechnical design work being done in-house, there is a need for a policy manual or procedural guideline that addresses the technical oversight of consultant project work.

The development of national guidance in geotechnical procedures and operations will increase the probability of good design and construction practices and reduce the risk of construction claims and time delays, and additional project costs. This effort will be completed by a Contractor and will reference existing successful DOT in-house procedures manuals, management systems and available State and Federal Geotechnical publications. The web-enabled template will allow for continuous updating and improving of portions of the manual.

### SCOPE OF WORK

In order to accomplish the objectives of this effort, the following tasks shall be accomplished:

#### **Task 1 – Information Gathering**

Conduct a comprehensive literature review including gathering existing procedures manuals, technical guidelines, and specifications from State DOT's and FHWA Direct

Federal agency. The literature review will also include gathering pertinent technical publications from FHWA and other relevant sources.

## **Task 2 – Outline/Bibliography**

Prepare a working Table of Contents for the proposed manual using information obtained in Task 1. As a minimum, the Table of Contents shall cover the follow broad subject titles:

1. Introduction/Purpose
2. Project Initiation/Scope of Study
3. Subsurface Investigations/Sampling
4. Soil and Rock Properties Determination
5. Scour/Hydraulics Considerations
6. Engineering Analysis/Design
7. Geotechnical Reporting
8. Guide for Specification Writing
9. Construction
10. Quality Assurance
11. Consultant Oversight

As part of the oversight of consultant work, this effort will include an update of the FHWA publication “Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications,” reprinted in August 1988. In addition, there shall be an annotated bibliography of those references that will be used in developing the manual.

### Technical Note

A team of technical specialists will be established to oversee the review the manual outline and drafts. The team will consist of focused group of geotechnical specialists selected from the participating State DOT’s and FHWA. Comments and recommendations from reviewers will be submitted through the Technical Working Group (TWG) and FHWA Technical Liaison.

## **Task 3 – 50% Draft Manual**

Prepare an initial draft consisting of a few key chapters of the manual for review by the Technical Working Group (TWG). The chapters that will be required under this task will be determined by the TWG during a kick-off meeting with the selected Contractor. The key chapters should be comprehensive including any photos, sketches, tables and graphics required for completeness. The initial draft manual will be prepared in dual units of measure, SI units presented first followed by English in parenthesis.

#### **Task 4 – Complete Draft Manual**

Prepare a comprehensive and practical manual providing technical guidance for design, construction and Consultant oversight of Geotechnical features including project initiation, subsurface investigations and sampling, laboratory testing and selection of design parameters, analysis and design procedures, reporting and specification writing, and construction quality assurance. Sufficient photos, sketches, tables and graphics should be included to assist highway engineers to understand the aspects of Geotechnical engineering.

This task will also define flow and layout for the web based document. At this stage, the manual shall be in a format to allow reviewers to access documents on-line and follow working links to all pages.

#### **Task 5 – Final Draft Manual**

Revise the complete draft of the manual to reflect the TWG's review comments. The manual shall be web ready and the user interface and implementation plan will be complete.

Upon completion of the manual, it is anticipated that a series of presentations will be made to project sponsors at the regional geotechnical conferences to introduce the document and provide user training.