PREFACE
Overview

This Geotechnical Design Manual has been prepared to provide policies, guidance and procedures for geotechnical services in project development and design for the New York State Department of Transportation. This manual provides

- guidance for decisions in geotechnical designs within the project development process,
- references, policies and standards that need to be considered, and
- commentary discussing good geotechnical engineering practice.

Although this manual provides guidance on design procedures, many subjects presented only summarize basic criteria and best practices. A complete geotechnical analysis and design to produce safe, economical and maintainable infrastructure is the responsibility of the geotechnical designer.

Applicability

This manual applies to projects constructed under contracts with the New York State Department of Transportation. Designers are required to consult the manual for policies, guidance, details and interpretation of the geotechnical design specifications.

Policy

The NYSDOT Geotechnical Design Manual (GDM) establishes standard policies and procedures regarding geotechnical work performed for NYSDOT. The manual covers geotechnical investigations, analysis, design and reporting for earthwork and structures for highways. The purpose of the geotechnical investigation and design recommendations is to furnish information for an optimum design, which will minimize over-conservatism (to keep costs in check) as well as to minimize under-design (to eliminate potential failures).

It should be understood that any geotechnical investigation and design will involve inherent uncertainty and risk. Further, it would be impractical to provide a rigid set of procedures for the variety of geotechnical challenges faced in New York State. Therefore, this manual does not attempt to address all possible geotechnical problems and leaves many areas where practical experience, local knowledge or familiarity with the geotechnical conditions and practices must be used. It is intended that the procedures discussed in this manual will establish a reasonable and uniform set of policies and procedures while maintaining sufficient flexibility to permit the application of engineering judgment and innovation to the solution of geotechnical problems.

This manual references publications which present specific engineering design and construction procedures or laboratory testing procedures. Each chapter contains a listing of associated references for the subject area of the chapter. Among the commonly referenced materials are the publications of the American Association of State Highway Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), and the American Society for Testing and Materials (ASTM). Relative to testing and design procedures, the methods presented by AASHTO and FHWA are often followed.
Figures presented in the manual have been redrafted from the original published figures.

Acknowledgements

This NYSDOT Geotechnical Design Manual is a conclusion of a long-standing draft developed in 1996, a result of research and review of other State Department of Transportation’s Geotechnical Design Manuals, along with reprocessing and adapting Chapters to specific New York State soils, processes and procedures. We extend a thanks to the other State Departments (SCDOT, ODOT, MDT) for their work and cooperation, especially Tony Allen of WSDOT for a majority of his leading work which provided the basic framework and foundational information for this manual.

Revisions

It is intended that the GDM will be periodically updated as required to clarify geotechnical practice in NYSDOT and to include new information. In the revision process, each Chapter will be addressed separately (the most recent revision of an individual Chapter will be posted on the Departments website).

Comments from all users of the GDM are encouraged. Any comments or questions about the NYSDOT Geotechnical Design Manual should be directed to:

New York State Department of Transportation
Director, Geotechnical Engineering Bureau
50 Wolf Road
Albany, NY 12232