

Chapter 3
**QUALITY CONTROL/QUALITY
ASSURANCE**

GEOTECHNICAL DESIGN MANUAL

January 2022

Table of Contents

<u>Section</u>		<u>Page</u>
3.1	Introduction.....	3-1
3.2	Geotechnical Engineering Quality Control	3-1
3.3	Geotechnical Engineering Quality Assurance	3-2
3.4	References	3-2

CHAPTER 3

QUALITY CONTROL/QUALITY ASSURANCE

3.1 INTRODUCTION

SCDOT has established a “design quality” process that shall be used on all projects designed for SCDOT. The processes are detailed in a Preconstruction Advisory Memorandum (PAM) and a Preconstruction Design Memorandum (PCDM). For the current designations GECs shall contact the RPG/GDS responsible for the project. “Design quality” for SCDOT is comprised of two components, Quality Control and Quality Assurance. Sheahan, Zdinak and DiMaggio (2016) have defined both Quality Control and Quality Assurance, these definitions are provided in Chapter 2.

3.2 GEOTECHNICAL ENGINEERING QUALITY CONTROL

A formal internal geotechnical engineering Quality Control (QC) plan shall be established for all phases of the geotechnical engineering process and shall be made available to SCDOT upon request. As part of this process, SCDOT has developed Quality Control Documents. These QC Documents are meant to supplement the QC process currently used by the GEOR. The first-line geotechnical engineer is expected to perform analyses with due diligence and a self-prescribed set of checks and balances. The geotechnical Quality Control plan should include milestones in the project development where analysis, recommendations, etc. are reviewed. The review shall be conducted by a geotechnical engineer of higher seniority. In addition, depending on the complexity of the project a third reviewer may be required. This reviewer should, preferably, have limited knowledge of the project being designed, so as to have a “fresh set of eyes” on the project. Formal documentation of the Quality Control process shall be detectable upon review of geotechnical calculations, reports, etc. At a minimum, the SCDOT QC Documents shall be included as an Appendix within the Geotechnical Engineering Report. The GEOR should further note that the same QC Documents will be used for all submittals to SCDOT, in this way all comments made on the project will be contained in the same place. The QC Documents are available on the SCDOT Website at: <https://www.scdot.org/business/design-quality.aspx>.

The GEOR should note that if an Site-Specific Response Analysis (SSRA) is being performed and a Peer review is required, the qualifications of the Peer Reviewer shall be submitted along with the Quality Control Documents. See Chapter 12 for the Peer review requirements.

Further, all engineering work shall be performed under the direct supervision of a Professional Engineer (P.E.) licensed by the South Carolina State Board of Registration for Professional Engineers and Surveyors in accordance with Chapter 22 of Title 40 of the 1976 Code of Laws of South Carolina, latest amendment.

3.3 GEOTECHNICAL ENGINEERING QUALITY ASSURANCE

SCDOT has also developed Quality Assurance Documents that will be used by the OES/GDS Quality Assurance Engineer or designated representatives per PCDM-23. PCDM-23 is available on the SCDOT website, under Business, Construction Standards, Preconstruction Design Memorandums. The Quality Assurance Documents are only for the use of SCDOT or designated representatives. Any GEOR who submits the Quality Assurance Documents in lieu of the Quality Control Documents, shall be required to submit the correct documents. Until the correct Quality Control Documents are submitted the project will not have a Quality Assurance review conducted.

Two types of comments shall be submitted per PCDM-23, compliance comments or recommendations. Compliance comments are related to established design criteria and standards and the policies contained in this GDM. Compliance comments must be resolved in writing and shall be accompanied by the corrected document for verification by the Quality Assurance Engineer. Any responses presented without the accompanying corrected document will be returned without comment. Recommendations made by the Quality Assurance Engineer shall consist of enhancements to the project or may consist of improvements to the plans that will provide additional clarification. Recommendations do not require resolution; however, response shall be issued by the GEOR for record keeping purposes.

3.4 REFERENCES

Sheahan, J. Zdinak, A., and DiMaggio, J., (2016), Geotechnical Engineering Circular No. 14 – Assuring Quality in Geotechnical Reporting Documents, (Publication No. FHWA-HIF-17-016), Office of Bridges and Structures, Federal Highway Administration, U.S. Department of Transportation, Washington D.C.