GEOTECHNICAL ENGINEERING FOR DESIGN AND CONSTRUCTION

Include a project geotechnical engineer throughout subsurface construction to assure quality.

Geotechnical Engineers provide professional services to address the effect geological and ground water conditions have on the built environment. To be effective, these services should begin during initial project planning and continue through the completion of subsurface construction. The Geotechnical Engineer's recommendations should be based on an evaluation of the history of the site, the proposed construction, and site-specific conditions that are determined by a subsurface investigation, analysis, and evaluation by qualified professionals. Because the recommendations are based on the engineer’s experience and statistical sampling of subsurface site conditions, the same geotechnical engineer, or their qualified representative, should also be involved during construction. This would ensure that the subsurface conditions that were inferred or assumed during design are those encountered in the field.

It is recommended and usually required by law that the services of a Geotechnical Engineer be retained for projects with foundations or subgrades. The final geotechnical report should be included in the documents, identified to be for reference only.

On many projects the Geotechnical Engineer is retained by the Owner.

Geotechnical engineering services could include, but are not limited to the following:

- **Design Coordination**
  - Involvement during the early design phases so that an appropriate scope of geotechnical services (site investigation, analysis, and construction phase services) can be developed.

- **Site Investigation**
  - Development and supervision of the site investigation to determine soil conditions that might be encountered during construction. The number, location and depth of borings and/or other method(s) of investigation should be determined by the design team and Owner to give a reasonable understanding of the nature of the subsurface conditions. Even then it should be understood that conditions between borings may vary significantly.

- **Analysis**
  - Performing appropriate laboratory tests of samples recovered from the investigation.
o Determination of recommended design parameters and construction requirements that should be applied to the development of foundations, retaining walls, shoring, pavements, dams, stabilization, remediation and other structural and environmental applications involving soil, rock and water.

o The Geotechnical Engineer should review the construction plans and specifications pertaining to the geotechnical recommendations, to ensure that these recommendations have been interpreted and applied correctly and to possibly review constructability or potential savings of construction cost and time.

- Construction Phase Services
  o Observation and testing during construction including: footing subgrades, pier inspection, installation of deep foundations, soil remediation, grading and compaction control testing, ground modification, pavements, or other soils- or foundation-related construction.
  o Geotechnical Engineers should be contracted to provide on-site observation and testing to confirm that the conditions encountered are consistent with the design recommendations. However, it should be made clear that the recommendations in the geotechnical report are directed toward the Owner and design professionals and do not create a contractual obligation for the Contractor.

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