

## Chapter 9 – Design Guides

### 9.15 GEOTECHNICAL GUIDE

#### A. PROCEDURES FOR NEW PROJECTS

1. ALL geotechnical services shall be coordinated through the PM.
2. Geotechnical Engineering can be performed by the following methods:
  - a. OGS Geotechnical Section performs work (selective projects, troubleshooting).
  - b. OGS Geotechnical Section coordinates work assignment through use of one of the OGS Geotechnical Term Consultants (provides clear understanding of OGS's expectations).
  - c. A/E or E/A Consultant Terms or Stand-Alone Contracts may have Geotechnical Engineers as part of their team to perform services. Coordinate services required with the PM, who shall consult with the OGS Geotechnical Section for available historical information in the OGS Files.
3. The Designer or the PM is responsible for getting a Geotechnical Engineer involved in the project.
  - a. This involvement shall occur during the project's initial development. Under the new building code the Structural Engineer cannot provide structural recommendations prior to identification of the seismic site class by the Geotechnical Engineer. This restriction applies to all new buildings or structures, additions to existing building, enclosures for utility services, and even modifications within existing building envelopes for some situations.
  - b. A Subsurface Investigation must be performed. **The scope of this investigation shall be determined by the Geotechnical Engineer** and, at a minimum, shall include the following:
    - 1) Research of Existing/Historical Data: OGS Geotechnical Section has existing soil information for all agencies (correctional, state hospitals, DOT facilities, etc). Through review of this information, required costs and drilling methods can be better defined.
    - 2) If drilling is required:
      - a) At least one (1) test boring or probe shall extend to glacial till or bedrock.
      - b) If a thick deposit of clay and/or silt underlies the site, OGS recommends that a seismic cone be considered.
      - c) If conventional methods are employed, an automatic hammer is required by OGS for the advancement of the split spoon.
      - d) A Geotechnical Engineer or Geologist shall monitor all work, record the conditions encountered in the field and visually classify all recovered soil samples.
    - 3) Preliminary Report: A letter report shall be prepared describing the subsurface conditions encountered. This letter report shall be prepared by the Geotechnical Engineer and, at a minimum, shall include the following:
      - a) Brief description of the site and its overall condition.

- b) The work performed and the methods utilized for the investigation (type of rig, laboratory tests performed, etc).
  - c) A brief description of the subsurface conditions, including the depth to groundwater, Seismic Site Class, and the preparation of final subsurface exploration logs and Test Boring Location Plan.
  - d) A brief description of any red flags that should be considered regarding the site location. Example – high water table or very soft soils at deeper depths indicate a basement level should not be considered.
  - e) The results of any laboratory tests performed.
  - f) A site plan showing the locations of all test borings, test pits, cones, and any other tests performed as part of the subsurface investigation.
- 4) Final Geotechnical Report (if required): A Geotechnical Engineering Report shall be prepared by the Geotechnical Engineer.
- a) This report cannot be finalized until the following information is provided by the Architect and Structural Engineer:
    - (1) Building’s footprint and finished floor elevation
    - (2) Building type and framing methods
    - (3) Height and location of retaining walls, if any
    - (4) Maximum column and/or wall loads
  - b) Various intermediate stages in this process will require the interaction of the Geotechnical Engineer and the Structural Engineer or Architect in order to determine the direction the design is to take.
  - c) The Geotechnical Engineering Report shall, at a minimum, include the following:
    - (1) All items included in the above-mentioned letter report
    - (2) Foundation recommendations – Type of foundation, all design parameters, capacities, etc. required for its design
    - (3) All parameters required for the design of below grade/basement walls and/or retaining walls
    - (4) Pavement and floor slab design
    - (5) Waterproofing, damp proofing, and underdrain systems if required
    - (6) Construction recommendations as well as the recommended sequence of construction
  - d) Review of the Geotechnical Engineering Report with Division of Construction’s EIC or Construction Manager prior to the start of construction.
- 5) Record Information: Regardless of the methods used to obtain the geotechnical information, a copy of all soil related information (reports, subsurface logs, cone profiles, etc.) shall be provided to the OGS Geotechnical Section for inclusion in the permanent Geotechnical files.

End of Geotechnical Guide