

DIVISION 02 EXISTING CONDITIONS

02 32 00 Geotechnical Investigations

PART 1: GENERAL

1.01. Scope of Standard

- A. This standard provides general guidance concerning the specific preferences of Texas State University-San Marcos for the preparation of a geotechnical report and guidelines for the resulting foundation design.
- B. Texas State University-San Marcos recognizes that project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification, it is expected that these guidelines will govern the design and specifications for Texas State University-San Marcos projects.

1.02. General Requirements

- A. Review copies of any available geotechnical reports at or near the location(s) of proposed construction. The scope of work for the geotechnical engineer retained to provide the investigation and report shall be based on the available information and preliminary design information for the proposed structure(s), including layout, column or continuous loadings, loading types and conditions, subgrade depth, and/or any other information that would make the recommendations included in the final report more specific to the design.
- B. Coordinate with Texas State University-San Marcos Utilities plans to determine all current or future obstructions that may affect the foundation design. This coordination effort shall be initiated as soon as possible before beginning design work to assure that obstructions are accounted for in the design.
- C. Maximum foundation loads shall include all proposed or current loading, as well as any anticipated loading due to renovations or additions to the structure(s). Coordinate with Texas State University-San Marcos.
- D. Coordinate all work on campus. This shall include Parking & Traffic, Texas State University-San Marcos Police Department, any other entities who might be affected by work.

PART 2: PRODUCTS

2.01. Geotechnical Report

- A. The geotechnical report shall be prepared and sealed by a registered geotechnical engineer with five (5) years of continuous related work in the San Marcos area.
- B. All geotechnical work and recommendations shall be supervised by a professional engineer registered in the state of Texas.
- C. As a minimum, the geotechnical report shall test, study, discuss, indicate on drawings, and/or present in charts, tables, or graphs the following:
 1. Background information.
 - a). The general topography of the site as it affects the foundation design and construction, including surface conditions, site irregularities, or other elements that could affect the foundation design.
 - b). The general geology of the site with particular emphasis on the main geological formations underlying the proposed structure(s).
 - c). The location of utilities or other known obstructions.
 - d). The previous known construction history at or near the site and, where applicable, any known problems or failures attributable to the site conditions and subgrade.
 - e). Any special conditions, such as faults, seasonal fluctuations, erosion, etc.
 - f). Test methods.
 2. Boring location plan.
 3. Generalized subsurface profiles, indicating stratigraphic and structural relationships.
 4. General foundation construction requirements including loading capabilities and construction limitations.
 5. Evaluation of groundwater conditions, including the anticipated effects on construction, the performance of the completed structure(s), and the recommended method(s) for handling groundwater during construction and in the completed structure(s).
 6. 25, 100, and 500 year flood plains.
 7. Recommendations for earthwork, subgrade preparation, and fill placement and compaction.
 8. The acceptability of on-site materials for construction.
 9. Excavation procedures.
 10. Any other items that could effect construction or the long-term performance of the foundation.

D. As applicable to specific project requirements, the geotechnical report shall test for, study, discuss, indicate on drawings, and/or present in charts, tables, or graphs the following:

1. Lateral earth pressures, both active and passive.
2. Temporary construction procedures and support systems.
3. Dewatering procedures and equipment.
4. Subgrade drainage.
5. Trench safety.
6. Subgrade stabilization.
7. Piling, drilled shafts, and sheet piling.

a). Provide Pressure Meter Reading on Pier Shafts.

E. The number, depths, and locations of borings shall be determined based on the proposed structure and in coordination with the geotechnical engineer retained.

2.02. Miscellaneous Materials

- A. Polyethylene sheeting shall be used below all slabs-on-grade. The sheeting shall be a minimum of 6 mils and overlapped a minimum five (5) feet at joints.
- B. For structures that will be subject to high plasticity soils, use a foundation isolation system.
- C. Provide a subgrade drainage system at the perimeter of all foundation elements that will have occupied spaces on one side and exposed earth on the other side. The system may be required to drain into water-recovery system. Subgrade drainage shall be as recommended by the geotechnical report and shall include the following:
 1. Drainage pipe, draining to a well-point system or free drainage.
 2. Course filter material in a drainage trench surrounding the drainage pipe.
 3. Drainage fabric surrounding the drainage pipe and course filter material.
 4. Drainage backfill over the drainage trench, to a depth as recommended by the geotechnical report
 5. Other methods and products as recommended by the geotechnical engineer and as approved by Texas State University-San Marcos.

PART 3: EXECUTION

3.01. Excavation

- A. Photo document site prior to commencement of work.
- B. Protect adjacent structures.
- C. Blasting is not permitted. (Unless authorized by systems office).
- D. Provide protection at open excavation work and trenches.

3.02. Foundation Design - The foundation drawings shall include the following as a minimum:

- A. Limits of the required work.
- B. Existing and final contours coordinated with established benchmarks.
- C. Locations, inverts, gradients, and dimensions of new utilities and trenches where related to the foundation elements.
- D. Locations of existing utilities or obstructions to remain or be demolished as a part of the foundation work.
- E. Plan and details of all foundation elements.
- F. Subgrade drainage.
- G. Any specialized construction detailing.

END OF SECTION 02 32 00