**SECTION 02200**

**GEOTECHNICAL REPORT**

## 1. GENERAL

1.1 All work included under this heading shall be subject to the General Conditions of the entire operation. This Contractor is required to refer especially thereto.

1.2 This is a preliminary or draft copy of the Geotech findings, issued with Addendum 3.

## 2. WORK INCLUDED

2.1 This Contractor shall furnish all labor and materials to complete all excavation and/or fill as required by the drawings and/or herein specified, including the following:

a. Protection against damage of all walls, walks, streets, buildings, adjacent to or on the premises

b. General excavations in or adjacent to the building to grades, lines, and levels as indicated for foundations, footings, floor slabs, column footings, grade beams, etc., as required.

c. Excavation and/or fill to subgrades indicated for new exterior sidewalks.

d. Filling and backfilling for all work herein as required to bring work to finished grades including furnishing of any extra material as required.
   (1) Where excavation is made below depth required for footings, foundations or any bearing work, fill to required grade with concrete.

   (2) Provide free draining granular fill under all floor slabs on grade with a FA-A or MA-1 gradation or approved equal.

e. Pipe and conduits to remain on the site shall be supported and protected.

f. Water shall be diverted and/or pumped out of all areas requiring fill.

g. Provide all required shoring, bracing, planking, and cribbing as required and provide removal of same.

i. Removal of old footings, foundations, pipelines, etc., which interfere with the progress of the work and are located at all new footing locations.

k. Provide 6" topsoil over all fill areas indicated to be grass areas. Fine grade with rake, removing stones and debris.

l. The General Contractor shall include the cost to have a Geotech present at the site to test the moisture and compaction as specified in this report.

## 3. GENERAL EXCAVATION

3.1 All Excavations shall be made to the proper depth in accordance with requirements of O.S.H.A. with proper allowance made for fill, floor slabs, forms, centers, and sheath piling. Bottoms of piers and footings shall be clean, clear of loose material, approximately level and lower sections true to size. Trench bottoms shall be evenly pitched as required.

3.2 Excavations greater than five feet in depth shall have sloped embankments and/or shoring for protection from cave-ins in accordance with current O.S.H.A. requirements.

3.3 All footing shall be carried to the depth below the finished grade indicated on the drawings.

3.4 Work that is excavated to a greater extent than required and which is within the bearing area of the footings shall be filled with concrete.

3.5 When such occurs in pipe trenches, provide brick or concrete piers as required to support pipes at required elevations.

3.6 Soils may vary somewhat in consistency both vertically and horizontally and "soft spots" may occur between boring locations. All excavations for footings shall be left open and protected from disintegration and inclement weather until inspected by the Architect prior to placement of concrete.

3.7 This Contractor shall notify the Architect before proceeding with the work when any unusual or questionable soil condition is encountered during construction.

3.8 Additional Exploratory operations: Additional test borings or other exploratory operations may be performed by the Contractor, at the Contractor's option; however, no additional payment will be authorized for such additional operations.

## 4. SUB-SURFACE SOIL DATA/EXCAVATION:

4.1 Results of sub-surface soil investigations indicated are for the information of the Contractor. However, the Architect assumes no responsibility for variations in soil characteristics, or for the continuity of noted strata or formations. Soil reports were taken by GSI 4503 East 47$^{th}$ Street South, Wichita, Kansas 67210. The following is the draft information from that report. Once the complete and final report has been completed it will be shared with the successful contractor.

4.2 In preparing the site for construction, surface vegetation and topsoil containing a significant percentage of organic matter should be removed from the areas beneath structures and any other areas that are to be paved, cut or receive fill. The removal depth for this site is expected to be approximately 6 inches. However, the removal depth should be monitored during stripping and adjusted as required. This material should either be removed from the site or stockpiled for later use in landscaping of unpaved or non-structural areas.

4.3 Prior to fill placement, the top 9 inches of the ground surface in fill areas should be scarified, moisture conditioned and recompacted to eliminate a plane of weakness along the contact surface.

4.4 General structural fill should be used for mass site grading, landscaping applications or as utility trench backfill outside of building areas. General structural fill may also be used to within 9 inches of the base of any granular cushion beneath floor slabs and to within 9 inches of the base of any vehicular pavements. In the former applications, low volume change materials are required immediately below the floor slabs or pavements. General structural fill may comprise cohesive or granular material but should be free from organic matter or debris. Granular materials used as general structural fill should be well graded, have a maximum particle size of 1.5 inches, and meet KDOT freeze/thaw durability and sulfate soundness requirements. Cohesive materials used as general structural fill should have a liquid limit of less than 50. If free of organic matter or debris, the on-site soils may be reused as general structural fill within the areas outlined above.

4.5 Low volume change (LVC) material as specified for use below floor slabs and pavements must consist of granular material or cohesive soil with a liquid limit (LL) less than 40 and a plasticity index (PI) between 10 and 20. Granular material used as LVC must have sufficient cohesion to form a compactable, uniform and stable subgrade. This typically translates to a material with greater than 15 percent fines (percent passing the No. 200 sieve). However, silty gravel (such as KDOT AB-3) or limestone screenings are also acceptable LVC materials. Granular materials with less than 15 percent fines may be used within confined areas such as within foundation stem walls. If free of organic matter or debris, the on-site soils may be considered LVC material as defined in this section.

4.6 Fill materials should be placed in loose lifts not to exceed 9 inches and be compacted to a minimum of 95 percent of the maximum dry unit weight obtained from ASTM D698 (Standard Proctor). Moisture content at the time of compaction should be controlled to between optimum and 4 percent above optimum moisture content. Granular fill materials which produce a definable moisture-density curve when tested according to ASTM D698 should be compacted to a minimum of 95 percent of the maximum dry unit weight obtained from ASTM D698. Granular fill materials which do not produce a definable moisture-density curve should be compacted to a minimum of 75 percent relative density (ASTM D4253, *"Maximum Index Density and Unit Weight of Soils Using a Vibratory Table"* and ASTM D4254, *"Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density"*). Granular materials should be placed at a moisture content that will achieve the desired densities. Please note that relative density and standard Proctor tests measure different parameters and are not interchangeable.

4.7 The soils generally appear suitable for use as low volume change material and may be used for direct support of floor slabs and pavements if properly moisture conditioned and recompacted. However, due to the sandy composition of the soils, exposed subgrade may deteriorate under construction traffic and may require active maintenance, stabilization, or a layer of crushed aggregate to provide a suitable working surface for construction activities.

4.8 The three test boring logs follow.

**End of Written Section 02200**