

**U.S. Department of Veterans Affairs
Washington, DC**

**Preliminary
Geotechnical Subsurface Investigation
Proposed VA National Cemetery
250 Acres St. Joe Property
Apalachee Parkway and March Road
Tallahassee, Leon County, Florida**

August 2011





1915 North 12th Street
Toledo, OH 43604-5305
T 419-324-2222
F 419-241-1808
www.ttlassoc.com

August 22, 2011

TTL Project No. 7524.04

U.S. Department of Veterans Affairs
c/o Mr. Michael E. Griffin
Vertical Integration, Inc.
3000 Bayport Drive, Suite 150
Tampa, Florida 33607

**Preliminary
Geotechnical Subsurface Investigation
Proposed VA National Cemetery
250 Acres St. Joe Property
Apalachee Parkway and March Road
Tallahassee, Leon County, Florida**

Dear Mr. Griffin:

Following is the report of the geotechnical subsurface investigation performed by TTL Associates, Inc. (TTL) for the referenced project conducted for Vertical Integration, Inc. (Vertical Integration) on behalf of U.S. Department of Veterans Affairs (VA). This study was performed in accordance with TTL Proposal No. 7524.03R2, dated April 21, 2011. The project was authorized with a Subcontract Agreement between TTL and Studley, Inc., the prime contractor, which was fully executed and provided to TTL via email on June 15, 2011.


This report contains the results of our study, our engineering interpretation of the results with respect to the project characteristics, and our preliminary recommendations for design and construction of double-depth gravesites, foundations, floor slabs, and pavements.


Soil samples collected during this investigation will be stored at our laboratory for 90 days from the date of this report. The samples will be discarded after this time unless you request that they be saved or delivered to you.

Should you have any questions regarding this report or require additional information, please contact our office.

Sincerely,

TTL Associates, Inc.


Christopher P. Iott, P.E.
Geotechnical Engineer


Curtis E. Roupe, P.E.
Vice President

V:\Toledo\VA\Leon County FL\7524.04 Geotech - 250 Acre Site\7524.04 Geotech Rpt VA Cemetery 250 Acres St Joe Property Leon Co FL.doc

8/22/11

**PRELIMINARY
GEOTECHNICAL SUBSURFACE INVESTIGATION
PROPOSED VA NATIONAL CEMETERY
250 ACRES ST. JOE PROPERTY
APALACHEE PARKWAY AND MARCH ROAD
TALLAHASSEE, LEON COUNTY, FLORIDA**

FOR

**U.S. DEPARTMENT OF VETERANS AFFAIRS
811 VERMONT AVENUE, NW
WASHINGTON, DC**

SUBMITTED

**AUGUST 22, 2011
TTL PROJECT NO. 7524.04**

**TTL ASSOCIATES, INC.
1915 NORTH 12TH STREET
TOLEDO, OHIO 43604
(419) 324-2222
(419) 321-6257 FAX**



TABLE OF CONTENTS

Page No.

1.0 Introduction	1
2.0 Investigative Procedures	2
3.0 Proposed Construction.....	4
4.0 General Site and Subsurface Conditions	5
4.1 General Site Geography and Geology	5
4.2 General Site Conditions	6
4.3 General Soil Conditions.....	7
4.4 Groundwater Conditions.....	8
5.0 Preliminary Design and Construction Recommendations.....	9
5.1 Double-Depth Gravesites.....	9
5.2 Shallow Building Foundations.....	10
5.3 Retaining Walls and Below-Grade Walls	12
5.4 Seismic Considerations.....	14
5.5 Subgrades.....	15
5.5.1 Existing Subgrade	15
5.5.2 Modified Subgrade	15
5.6 Floor Slabs	16
5.7 Flexible (Asphalt) Pavement	16
5.8 Rigid (Concrete) Pavement.....	17
5.9 Pavement Drainage	18
5.10 Corrosion Considerations	18
5.11 Groundwater Control and Drainage.....	19
5.12 Excavations and Slopes	20
5.13 Site and Subgrade Preparation.....	20
5.14 Fill.....	23
6.0 Qualification of Recommendations	24

PLATES

Plate 1.0 Test Boring Location Plan

FIGURES

Logs of Test Borings
Legend Key
Tabulation of Test Data
Grain Size Distribution
Atterberg Limits Results
Sulfate and Chloride Content Determination Results

1.0 INTRODUCTION

This preliminary geotechnical subsurface investigation report has been prepared for the proposed VA National Cemetery to be constructed at the 250 Acres St. Joe Property, located south of the intersection of Apalachee Parkway (US Route 27) and March Road, and north of Old St. Augustine Road, in Tallahassee, Leon County, Florida. This report summarizes our understanding of the proposed construction, describes the investigative and testing procedures, presents the findings, discusses our evaluations and conclusions, and provides our preliminary design and construction recommendations for double-depth gravesites, foundations, floor slabs, and pavements.

This study was performed in accordance with TTL Proposal No. 7524.03R2, dated April 21, 2011. The project was authorized with a Subcontract Agreement between TTL and Studley, Inc., the prime contractor, which was fully executed and provided to TTL via email on June 15, 2011.

The purpose of this preliminary investigation was to evaluate the subsurface conditions and laboratory data relative to the design and construction of double-depth gravesites, foundations, floor slabs, and pavements at the referenced site. This investigation included 50 test borings, field and laboratory soil testing, a geotechnical engineering evaluation of the test results, and review of available geologic and geographic information.

This report includes:

- A description of the subsurface soil and groundwater conditions encountered in the borings.
- Preliminary design recommendations for building foundations, floor slabs, and pavements related to the proposed development.
- Preliminary recommendations concerning soil- and groundwater-related construction procedures such as site preparation, excavation for double-depth gravesites, earthwork, foundation and pavement construction, and related field testing.

A Phase I Environmental Site Assessment (ESA) and a National Environmental Policy Act (NEPA) Environmental Assessment (EA) were performed by TTL and are presented under separate covers.

2.0 INVESTIGATIVE PROCEDURES

This subsurface investigation included 50 test borings drilled during the period of July 25 through 29, 2011. The borings, designated as B-1 through B-50, were drilled in a grid pattern across the site. The borings were located in the field in accordance with an aerial photograph provided by Vertical Integration and were completed by a local drilling contractor, Gannett Fleming, of Largo, Florida, under the direction of TTL's geotechnical engineer. The approximate locations of the borings, as well as the approximate locations of the existing development are shown on the Test Boring Location Plan (Plate 1.0).

The test borings were performed in general accordance with geotechnical investigative procedures outlined in American Society for Testing and Materials (ASTM) Standards D 1452 and D 5434. The majority of the test borings performed during this investigation were drilled with a track-mounted drilling rig utilizing solid-stem augers. Sixteen of the borings were performed by hand methods using a manually-operated bucket auger due to difficult track-rig access, generally in wooded areas. With the exception of Boring B-1, which was terminated at a depth of 10 feet below existing grade, the borings were extended to the planned termination depth of 8 feet. The boring method for each of the borings is presented on the logs of test borings.

During auger advancement in the machine-drilled borings, soil samples were collected continuously over 2-foot intervals. In these borings, split-spoon (SS) samples were obtained by the Standard Penetration Test (SPT) Method (ASTM D 1586), which consists of driving a 2-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely through a distance of 30 inches. The sampler was driven in four successive 6-inch increments with the number of blows per increment being recorded. The sum of the number of blows required to advance the sampler the second and third 6-inch increments is termed the Standard Penetration Resistance (N-value) and is presented on the Logs of Test Borings attached to this report. The samples were sealed in jars and shipped to our laboratory for further classification and testing.

During auger advancement in the hand auger borings, auger (AU) samples were collected whenever there was a change in soil type or coloration. The samples were sealed in jars and shipped to our laboratory for further classification and testing.

Topsoil samples were obtained from selected borings for organic content testing as described below. Additionally, bulk samples were obtained from the cuttings produced from the augers in the upper 4 feet of selected borings for corrosivity testing as described below.

Soil conditions encountered in the test borings are presented in the Logs of Test Borings, along with information related to sample data, SPT results, water conditions observed in the borings, and laboratory test data. It should be noted that these logs have been prepared on the basis of laboratory classification and testing as well as field logs of the encountered soils.

All recovered samples of the subsoils were visually or manually classified in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487 and D 2488). Selected samples were tested in our laboratory for moisture content (ASTM D 2216). Dry density determinations and unconfined compressive strength tests by the constant rate of strain method (ASTM D 2166) were performed on selected intact cohesive samples. Unconfined compressive strength estimates were performed on selected intact cohesive samples using a calibrated hand penetrometer. Atterberg limits tests (ASTM D 4318) were performed on three selected samples (two of which were determined to be non-plastic), and particle size analyses (ASTM D 422) were performed on eleven selected samples to determine soil classification properties. These test results are presented on the Logs of Test Borings, Tabulation of Test Data sheets, Grain Size Distribution sheets, and Atterberg Limits Results sheet attached to this report.

Eight samples were selected for corrosivity testing, including pH analysis (ASTM D 4972), sulfates content determination (EPA 9056), and chlorides content determination (EPA 9056). These test results are summarized in Section 5.10 of this report. Additionally, the pH results are presented on the Tabulation of Test Data sheets, and analytical results of the sulfates content and chlorides content determinations are attached to this report.

Organic content determinations by the loss-on-ignition (LOI) method (ASTM D 2974) were performed on five selected topsoil samples. These test results are presented on the Tabulation of Test Data sheets attached to this report.

Experience indicates that the actual subsoil conditions at a site could vary from those generalized on the basis of test borings made at specific locations. Therefore, it is essential that a geotechnical engineer be retained to provide soil engineering services during the site preparation, excavation, and foundation phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction.

3.0 PROPOSED CONSTRUCTION

It is our understanding that the project consists of development as a VA National Cemetery of a 250-acre site located on the south side of Apalachee Parkway (US Route 27), from approximately 1,200 feet west to 1,200 feet east of the intersection with March Road, in Tallahassee, Leon County, Florida. The site extends south to Old St. Augustine Road, and is designated the St. Joe Property.

It was indicated that the cemetery will include double-depth gravesites, roads, buildings, monuments, and other structures. No information was provided regarding the locations of the roads or structures, or loads associated with the structures. We have assumed that structural loads will be light in magnitude. Based on the requested boring depth of 8 feet, we have assumed that double-depth graves will extend less than 8 feet below grade. It is also assumed that final site grades will approximate existing site grades.

4.0 GENERAL SITE AND SUBSURFACE CONDITIONS

4.1 General Site Geography and Geology

The Lafayette, Florida United States Geological Survey (USGS) Topographic Quadrangle (dated 1999) indicates that surficial topography in the site vicinity is gently rolling with a topographic high area in the northeastern portion of the site. From the high point (170 feet above mean sea level (amsl)) in the northeastern portion of the site, the site topography slopes downward to the northwestern portion of the site (approximately 70 feet amsl), to the northeast corner of the site (approximately 120 feet amsl), to the southwestern portion of the site (approximately 100 feet amsl), and to the southeastern portion of the site (approximately 70 feet amsl).

Two ponds are located in the middle portion of the southern half of the site. Ponds and Timber Lake are located just west of the site. A forested wetland complex is located in the southeastern portion of the site.

According to the USGS, the site vicinity is included in the Tallahassee Hills Physiographic Province. According to the Surface Stratigraphy of the Floridian Peninsula Map (dated 1994), the site is underlain by quartz sands, clayey sands and clays of Pliocene-Pleistocene age, underlain by the Miocene-aged Citronella and Tamiami Formation, including the Hawthorn Group, composed of massive impermeable clay and dolomite units. Interbedded with these impermeable units are sands, sandy clays and fractured carbonate units. This formation is underlain by Ocala and Suwannee Limestones.

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey, the site contains four soil types, identified as: Albany loamy sand, Lynchburg fine sandy loam, Orangeburg fine sandy loam, and Pelham fine sand.

The Orangeburg fine sandy loam soils comprise the majority of the site, including almost the entire northern portion and the western portion of the southern half of the site. These soils are characterized as well drained soils with a moderately high to high permeability and a depth to the water table of more than 80 inches below grade. The Pelham fine sand soils are located in the southeastern portion of the site, in the general area of the low-lying wet area. These soils are characterized as poorly drained soils with a moderately high to high permeability and a depth to the water table of 0 to 6 inches below grade, which might be expected from a low-lying wet area. The Albany loamy sand soils are located in the southeastern portion of the site, around a pond at

the site and at the edge of the low-lying wet area. These soils are characterized as somewhat poorly drained soils with a moderately high to high permeability and a depth to the water table of 12 to 30 inches below grade. The Lynchburg fine sandy loam soils are located in the middle portion of the south half of the site, and are characterized as somewhat poorly drained soils with a moderately high to high permeability and a depth to the water table of 12 to 18 inches.

Based on the National Karst Map, the site is mapped in an area where fissures, tubes, and caves are generally greater than 1,000 feet long, and greater than 250 feet in vertical extent, in moderately to steeply dipping beds of carbonate rock. Mapped karst areas at the site are located in the southwestern portion of the northern half of the site, as well as around the ponds in the southern portion of the site. Karst is mapped over approximately 9 acres of the 250 acre site.

The mapped sinkhole nearest to the site is located approximately 2 miles north. Six sinkholes, all of which are indicated to be less than 10 feet in width, are mapped within 4 miles of the site. Additional information and mapping of karst at the site is presented in the TTL NEPA EA report presented under separate cover.

4.2 General Site Conditions

The site consists of 250 acres located south of Apalachee Parkway (US Route 27), east of residential development, north of Old St. Augustine Road, northwest of forested low-lying wet area, and southwest of residential development. At the time of this investigation, the site consisted of unimproved pasture and wooded land, and included one vacant/abandoned residential structure in the north-central portion of the site. Two ponds and a forested wetland complex are located in the southeastern portion of the site. Additional information regarding the wetland areas is presented in the Phase I ESA report prepared by TTL and submitted under separate cover.

As mentioned in the previous section, the ponds in the southeastern portion of the site, as well as an area in the southwestern portion of the northern half of the site represent karst areas. Karst features are not uncommon in the area of Tallahassee Florida.

In 29 of the 50 borings, topsoil was indicated at the surface varying in thickness from approximately 2 to 7 inches, with an average of approximately 3 inches. The topsoil generally ranged in thickness from 2 to 3 inches. Where topsoil was not indicated in the borings, they generally encountered sandy soils containing trace roots near the surface. Organic contents for “topsoil” samples obtained from the topsoil zone/near-surface soils in five selected borings

ranged from approximately 3 to 7 percent. Soils containing 5 percent or less organic matter indicate “trace” organics, whereas samples with more than 5 percent organic matter are indicated “with” organics. Two of the 5 tested topsoil samples contained more than 5 percent organic matter.

4.3 General Soil Conditions

Based on the results of our field and laboratory tests, the subsoils encountered at the surface or underlying the topsoil predominantly consisted of granular soils to depths ranging from 1 foot below existing grade to termination at a depth of 8 feet. The granular soils consisted of silty sand (SM) and clayey sand (SC). Trace roots were observed in many of the recovered granular soil samples, generally in the upper 2 to 4 feet, particularly where topsoil was not indicated at the surface. These organic contents should not be detrimental to the proposed development. SPT N-values ranged from 1 to 9 blows per foot (bpf), indicating **very loose** to **loose** compactness. SPT N-values ranging from 12 to 19 bpf, indicating medium dense compactness, were determined for isolated samples. Moisture contents generally ranged from approximately 8 to 14 percent.

Cohesive soils were encountered underlying the topsoil in two borings and the upper profile sands in 35 additional borings, representing approximately three-quarters of the borings. The cohesive soils were generally encountered at depths on the order of 1 to 4 feet below existing grade, and generally extended to boring termination at a depth of 8 feet. The cohesive soils consisted of sandy lean clay (CL). SPT N-values generally ranged from 1 to 8 bpf, indicating **very soft** to medium stiff consistency. SPT N-values generally ranging from 9 to 19 bpf, indicating stiff to very stiff consistency, were determined for approximately 40 percent of the cohesive SS samples, generally below a depth of 4 feet. Moisture contents for the cohesive soil samples ranged from approximately 12 to 22 percent.

The four tested sandy lean clay (CL) samples contained a silt-and-clay fraction (fines) on the order of 51 to 54 percent. Soils with 50 percent or more fines are considered cohesive soils (silts and clays) in accordance with the Unified Soil Classification System. Due to the fraction of sands and gravels approximately equal to the fines fraction, some samples visually classified as sandy lean clay may be clayey or silty sand, and vice versa. Additional gradation testing would be required to confirm the soil classification. This testing is not considered warranted since this is a preliminary investigation, and the recommendations for sandy clays and silty/clayey sands are generally similar.

Additional descriptions of the stratigraphy encountered in the borings are presented on the Logs of Test Borings.

4.4 Groundwater Conditions

Groundwater was not encountered during drilling or observed upon completion of drilling operations in any of the borings. Selected borings were left open for extended groundwater readings after completion of drilling, but groundwater was not observed in any of these borings. Instrumentation was not installed to observe long-term groundwater levels.

Based on the limited data available, such as the soil coloration and characteristics, as well as the moisture conditions encountered in the borings, it is our opinion that the “normal” groundwater level may be generally encountered at depths beyond those explored for this investigation. However, this investigation did not include research of possible hydrological influences at the project site.

It should be noted that groundwater elevations can fluctuate with seasonal and climatic influences. As mentioned in Section 4.1, the predominant soil types mapped at the site in the Leon County Soil Survey include Albany loamy sand, Lynchburg fine sandy loam, Orangeburg fine sandy loam, and Pelham fine sand. The Orangeburg fine sandy loam soils comprise the majority of the site, including almost the entire northern portion and the western portion of the southern half of the site. Within these soils, high water tables are indicated at depths greater than 6 feet below grade. The remaining soil types are located in the southeastern portion of the site, in areas of ponds or low-lying wet areas. Within these soils, apparent high water tables are indicated at depths ranging from 0.5 to 2.5 feet below grade, generally during November to April. Such high water conditions were not encountered during our preliminary investigation, performed in July 2011. As such, the groundwater conditions may vary at different times of the year from those encountered during this investigation.

5.0 PRELIMINARY DESIGN AND CONSTRUCTION RECOMMENDATIONS

The following conclusions and preliminary recommendations are based on our understanding of the proposed construction and on the data obtained during the field investigation. If the project information or location as outlined is incorrect or should change significantly, a review of these preliminary recommendations should be made by TTL. **These preliminary recommendations are subject to additional geotechnical exploration and analysis for final design.** These recommendations are also contingent on satisfactory completion of the recommended site and subgrade preparation and fill placement operations described in the following sections.

5.1 Double-Depth Gravesites

The soils encountered at the site consist of native granular and sandy cohesive soils. These materials are considered generally suitable for the proposed double-depth gravesites.

Temporary excavations for the gravesites are anticipated to predominately be extended through granular soils and sandy, relatively low-strength cohesive soils, which should be sloped no steeper than 1 horizontal to 1 vertical (1H:1V) in accordance with Occupational Safety and Health Administration (OSHA) criteria. **Temporary sheet piling may be required to maintain open gravesite excavations and to limit the extent of excavations that would otherwise require sloped banks.** Additional excavation recommendations are presented in Section 5.12.

It should be noted that the “normal” groundwater level is anticipated at depths beyond those explored for this investigation (greater than 8 to 10 feet below existing grades). As such, gravesite excavations are not generally anticipated to encounter groundwater. However, if excavation occurs during a seasonally wet period, or gravesite excavations approach low-lying wetland areas and/or the existing ponds at the site, groundwater management may be required. Additional recommendations regarding groundwater management are presented in Section 5.11.

Consideration should be given to buoyancy to evaluate whether the caskets and crypts will remain stable under high water conditions. If the weights of the caskets or crypts alone are not enough to resist uplift pressures associated with high water conditions, it may be necessary to tie the caskets/crypts to a ballast slab or provide additional fill over the gravesites.

5.2 Shallow Building Foundations

The soils encountered at the anticipated foundation bearing depth (minimum 12 inches to meet building code requirements) are expected to consist of predominantly **very loose to loose** native granular soils. Additionally, zones of sandy, relatively low-strength cohesive soils may be encountered at the foundation bearing elevation. While these soils are considered generally suitable for support of shallow foundations, they will require densification to provide adequate bearing and reduce the risk of excessive settlement.

Some of the recovered soil samples contained trace roots. Foundation bearing materials should contain trace or less organics. If more than trace (more than 5 percent) organics are present at the foundation bearing elevation, they will require removal and replacement with new engineered fill.

Where granular soils or sandy cohesive soils are present, we recommend **prior to excavation for any footings** that the entire building footprint (including 10 feet beyond the proposed building lines) be proof-rolled/compacted with a heavy vibratory drum roller as described in Section 5.13. This general site compaction may provide sufficient in-place densification of the loose materials such that subgrades exposed upon excavation to footing bearing elevation will be suitably firm for the allowable bearing pressure recommended below. If the excavated subgrade reveals loose materials at footing bearing elevation, additional in-place modification must be performed using a backhoe-mounted vibratory compactor (hoe-pac) or similar equipment to achieve a consistent bearing stratum.

It should be noted that vibratory compaction may be detrimental to the footing subgrade depending on the depth of groundwater below the subgrade. If seasonal high water conditions are present such that vibratory compaction is detrimental to the subgrade, lowering the water level through sump and pump, augmented with multiple wellpoints, may be required to facilitate footing excavation, as well as to help in modifying the granular soils in place. If the groundwater level can not be suitably lowered, compaction by “static” methods or removal and replacement with new engineered fill would be required.

Suitable compaction/bearing of granular and sandy cohesive foundation soils can be verified as:

- Exhibiting a compacted (in-situ) dry density of at least 100 percent of the maximum dry density determined by Standard Proctor (ASTM D 698) laboratory compaction,

- A dynamic cone penetrometer (DCP) reading of at least 8 blows per increment (average over three increments), or
- Other methods to demonstrate an equivalent SPT N-value of 10 bpf or greater.

If bearing soils can not be modified in-place, or if other unsuitable foundation soils are encountered, over-excavation should extend through these materials to suitable bearing soils. Additionally, the base of the over-excavation should be widened one foot for every foot of depth and centered along the footing. The over-excavated areas should be backfilled with dense-graded aggregate, placed in controlled lifts, and compacted to not less than 100 percent of the maximum dry density as determined by ASTM D 698 (Standard Proctor). Alternatively, the over-excavated areas could be backfilled with flowable controlled-density fill having a minimum compressive strength of 300 pounds per square inch (psi). Undercut depths should be limited to one footing width.

Following the satisfactory completion of the site preparation and footing excavation inspections outlined in this section of the report, the proposed structure may be supported on a conventional shallow spread foundation system consisting of wall (strip) and/or column (square) footings. Shallow foundations may be designed utilizing a net allowable bearing pressure of 2,000 pounds per square foot (psf) for strip and square footings. In using a net allowable soil pressure, the weight of the footings, backfill over the footings or floor slabs need not be included in the structural loads for dimensioning footings. The bearing materials should be field-verified as being native granular soils or sandy cohesive soils that have been properly modified in-place to achieve compactness/density as described above, cohesive soils with a minimum unconfined compressive strength of 2,000 psf, or properly placed and compacted new engineered fill.

We strongly recommend that the bearing surface at the bottom of all footing excavations be inspected during construction by a TTL geotechnical engineer or qualified representative. Inspection should be performed to verify that the exposed soil conditions at the bearing elevations are consistent with the subsurface conditions encountered in the test borings and have been suitably modified in-place. Additionally, the presence of our engineer will help facilitate the timely remediation of unsuitable soil conditions. If the results of DCP, hand penetrometer, or other strength tests indicate the exposed soil conditions are not suitable for the design bearing pressure, it may be necessary to increase the footing size to accommodate the lower bearing strengths or to over-excavate and backfill with engineered fill or flowable fill.

All exterior footings and footings in unheated areas should be constructed at a minimum depth of 12 inches below finished exterior grades. Interior footings may bear at a convenient depth below the floor slab, provided they are supported on compacted native soils as described above, or properly placed and compacted new engineered fill. Wall (strip) footings should be at least 18 inches wide and column (square) footings should be at least 30 inches square, regardless of sizing based on design loads and the allowable bearing pressure. It should be noted that use of trench footings (i.e., without forming) is not expected to be feasible in most areas due to the predominantly granular nature of the bearing soils, along with the potential need for in-place densification. Forming of footings and backfilling around CMU or poured foundation walls should be anticipated.

We recommend that the foundation excavations be concreted as soon as practical after they are excavated and that water not be allowed to pond in any excavation. If it is necessary to leave the bearing surface open for any extended period of time, we recommend that a thin mat of lean concrete be placed over the bottom of the excavation to reduce damage to the surface from weather or construction. Foundation concrete should not be placed on frozen or saturated subgrade.

It should be noted that the borings performed for this investigation generally extended to a depth of 8 feet below existing grade. Therefore, bearing capacity and settlement evaluations were limited to the conditions encountered within the depths of the borings. For relatively light structure loads that result in foundation sizes approximating the minimum sizes presented above, if the above bearing pressure is utilized and proper foundation inspection techniques are provided, the total settlement associated with each structure should not exceed 1 inch and differential settlement should not exceed $\frac{3}{4}$ inch. When final structure locations are determined, additional borings should be performed within the structure footprints to evaluate bearing pressures and associated settlement. Borings extending deeper than those performed for this investigation may be required where moderate to heavy structural loads are anticipated. Moderate to heavy foundation loads may require deep foundation systems.

5.3 Retaining Walls and Below-Grade Walls

Based on the granular soils and sandy cohesive soils encountered at the site, we have assumed that the retained soil for retaining walls and below-grade walls will consist of these soils. Additional geotechnical exploration should be performed during the final design process where walls are planned to confirm that the recommendations below apply based on the soil conditions at the planned wall locations.

For below-grade walls that are restrained from rotation and are considered rigid and non-yielding, lateral earth pressures should be assumed for “at-rest” conditions. An at-rest lateral earth pressure coefficient (k_o) of 0.50 should be used for determining the lateral pressure acting on the walls. For granular soils and cohesive soils, soil unit weights of 120 pounds per cubic foot (pcf) and 130 pcf, respectively, should be utilized for design. For retaining structures or below-grade walls that are not restrained at the top of the wall, an active lateral earth pressure coefficient (k_a) of 0.33 may be used for design. Alternatively, for granular soils, equivalent fluid weights of 60 and 40 pcf may be used for at-rest and active case designs, respectively. For cohesive soils, equivalent fluid weights of 65 and 45 pcf may be used for at-rest and active case designs, respectively. These values are based on the assumption that the native soils will constitute the major portion of the backfill area behind the walls. If lower lateral earth pressures are preferred for structural design considerations, a select granular backfill material should be specified, and earth pressure coefficients can be adjusted accordingly.

A passive earth pressure coefficient (k_p) of 3.0 may be utilized for the portion of the footing that is below a depth of 12 inches. We recommend a maximum passive earth pressure for the toe of the retaining wall of 200 pounds per square foot per foot of depth bearing in native soils below finish grade on the toe side of the wall. These values are based on footings poured in intimate contact with medium dense sands and sandy clays. It should be noted that some wall/foundation movement or horizontal displacement is needed to mobilize the full passive pressure of the soil. Because of this consideration, some design methods incorporate a higher required factor of safety (e.g., F. S. = 2.0) when using passive pressure contribution to stability, as compared to sliding resistance on the base only (typically, F.S. = 1.5).

It should also be noted that these earth pressures do not include hydrostatic pressures that may result from elevated groundwater conditions. We recommend at least a 2-foot zone of free-draining granular material be placed immediately behind the wall and a foundation drain with a sump and pump system discharging to a sewer system be incorporated at the base of the drainage zone to alleviate hydrostatic conditions on the wall. It may be prudent to incorporate a backup system should the main system cease to operate. Otherwise, below-grade walls could incorporate hydrostatic pressures on the walls. Effective soil unit weights of 60 pcf for granular soils and 70 pcf for cohesive soils may be utilized in calculation of lateral soil pressures below the design groundwater depth.

In addition, the earth pressures indicated above are based on a level backfill condition behind the retaining wall. In areas where appreciable sloping backfill is required near the top of the wall, surcharge loading or equivalent higher earth pressure coefficients should be evaluated, based on

backfill material, backfill slope, and proximity to the wall. In general, 50 percent of the vertical surcharge load should be used for lateral loading in the design of the wall.

Typically, bearing pressures on retaining wall footings are higher at the toe than at the heel, with the potential for minor differential settlement that may lead to slight rotation of the wall. In addition, under active loading conditions, the top of the wall will move or rotate slightly. Depending on actual bearing pressures and mobilized earth pressure, these movements may give an appearance of excessive rotation or instability of a vertically constructed wall. For an active loading condition with a well-compacted granular backfill, this rotation is expected to be on the order of $0.001 H$, where H is the free-standing height of the wall. For clay backfill, this rotation is likely to be on the order of $0.01 H$, or greater than 1 inch for a 10-foot high wall. For this reason, we do not recommend clay backfill.

5.4 Seismic Considerations

We have reviewed seismic design parameters in accordance with International Building Code (IBC) criteria. It should be noted that the IBC seismic site characterization is based on the upper 100 feet of the geologic profile. The borings performed for this investigation were extended to depths on the order of 8 to 10 feet below existing grade. Therefore, our analysis is limited to characterization based on the encountered overburden soil profile only.

Based on the SPT N-values determined for the encountered soils at the site, the average SPT N-value was calculated to be less than 15 blows per foot (bpf). This strength is indicative of a Site Class E, “soft soil”, designation in accordance with IBC Table 1613.5.2 criteria.

If a Site Class E designation will be restrictive to structural design, it may be prudent to perform deeper SPT borings for seismic site class evaluations, as part of the final geotechnical subsurface investigation, to determine if a better site class designation is appropriate. However, there is no guarantee that such testing would yield a more favorable site class designation.

An alternate method to evaluate seismic site class incorporates shear wave velocity. Development of a shear wave velocity profile is typically performed in conjunction with cross-hole seismic testing, which would require additional boreholes and specialized testing equipment. It should be noted that cross-hole seismic testing is comparatively costly, and, like the deeper SPT borings, there is no guarantee that such testing would yield a more favorable site class designation.

5.5 Subgrades

5.5.1 Existing Subgrade

The subgrades that would result upon the satisfactory completion of the site preparation as described in Sections 5.13 and 5.14 of this report are considered generally acceptable for support of the proposed pavements and floor slabs. Based on field and laboratory data developed during this investigation, the subgrade soils consist of predominantly native granular soils. However, zones of native cohesive soils may also be encountered at subgrade elevations. Laboratory analyses for representative samples, as well as visual descriptions of the upper profile indicate that the cohesive subgrade soils may be generally classified as Group A-4 or A-6 in accordance with the American Association of State Highway and Transportation Officials (AASHTO) system of soil classification. Laboratory analyses for representative samples and visual descriptions of the upper profile indicate that the granular subgrade soils may be generally classified as Group A-3 or A-4 in accordance with the AASHTO system of soil classification. The granular soils are considered good to fair as subgrade materials. The cohesive soils are considered fair to poor as subgrade materials because they have relatively low permeabilities and a high percentage of silt and clay particles, which makes them susceptible to moisture.

At the time of this investigation, the moisture contents in the upper 4 feet of the granular subgrade soils generally ranged from approximately 6 to 14 percent. Moisture contents in the upper 4 feet of the cohesive subgrade soils ranged from approximately 12 to 22 percent. These moisture contents are estimated to vary from below to significantly above the expected optimum moisture contents for these soils. Therefore, some remedial action should be expected to be required to adjust the moisture contents of the existing materials and achieve proper compaction of the subgrade, especially during wet seasonal periods.

5.5.2 Modified Subgrade

If soils are dry of optimum, water should be uniformly mixed into the subgrade. If soils are wet of optimum, lowering the moisture content by scarification and aeration (discing and exposure to sun and wind) may be required. However, this may not be feasible if construction occurs during wet seasonal conditions. Very moist to wet soils will “pump” under the operation of heavy equipment, resulting in deep rutting and perhaps rendering the operation of grading and paving equipment difficult or impossible.

Therefore, other methods of subgrade modification may be required in areas of high moisture content. Modification may be achieved by undercutting and replacement with granular subbase (possibly in combination with a geotextile separation layer or geogrid reinforcement), mixing stone into the subgrade, or treating the subgrade with lime or cement. The method of subgrade modification should be determined at the time of construction (See Section 5.12, “Site and Subgrade Preparation”).

5.6 Floor Slabs

It is recommended that all floor slabs be “floating”, that is, fully ground supported and not structurally connected to walls or foundations. This is to reduce the possibility of cracking and displacement of the floor slabs because of differential movements between the slab and the foundation. Such movements could be detrimental to slabs that are rigidly connected to the foundations. There may be certain areas where it will be difficult or impractical to make the slab floating. In such areas, it may be necessary to increase the slab thickness and reinforcement to prevent the foundation from cracking the slab and settling independently.

For properly prepared subgrade materials consisting of granular soils, a modulus of subgrade reaction (k) of 165 pounds per cubic inch (pci) may be used for floor slab design. Where cohesive subgrade soils are present, they must be undercut to a depth of 12 inches below subgrade elevation and replaced with new granular engineered fill in order for the k-value of 165 pci to be applicable. Otherwise, a k-value of 150 pci should be utilized for cohesive subgrade soils.

It is recommended that the floor slab be supported on a minimum 6-inch layer of relatively clean granular material such as sand and gravel or crushed stone. This is to help distribute concentrated loads and provide more uniform subgrade support beneath the slab.

5.7 Flexible (Asphalt) Pavement

Based on the results of the gradation analyses, as well as visual classification of the recovered samples, we recommend a subgrade CBR value of 7 percent for the Group A-3 or better granular soils. Cohesive soils may be encountered at subgrade elevations and, where cohesive subgrade soils are present, they must be undercut to a depth of 12 inches below subgrade elevation and replaced with new granular engineered fill in order for the CBR value of 7 percent to be applicable. Otherwise, a CBR value of 6 percent should be utilized for Group A-6 or better cohesive subgrade soils. The above CBR values are based on subgrade compacted to at least

100 percent of the maximum dry density as determined by ASTM D 698 (Standard Proctor) or verified as stable through proof rolling.

It should be noted that we are not privy to the design traffic loads or intended design life. The subgrade support recommendations indicated herein should be reviewed by the site engineer in conjunction with the design traffic criteria to determine the required pavement sections. In any case, we recommend the light-duty pavement cross-section consist of at least 3 inches of asphalt underlain by 6 inches of aggregate base for even the lightest-duty pavements based on our experience regarding environmental exposure and reasonable serviceability. For the same reason, we recommend the heavy-duty pavement cross-section (at a minimum, for any heavy equipment or large trucks) consist of at least 4 inches of asphalt underlain by 8 inches of aggregate base.

All paving operations should conform to Florida Department of Transportation (FDOT) specifications. The pavement and subgrade preparation procedures outlined in this report should result in a reasonably workable and satisfactory pavement. It should be recognized, however, that all flexible pavements need repairs or overlays from time to time as a result of progressive yielding under repeated traffic loads for a prolonged period of time, as well as exposure to weather conditions.

5.8 Rigid (Concrete) Pavement

For properly prepared subgrade materials consisting of granular soils, a modulus of subgrade reaction (k) of 165 pounds per cubic inch (pci) may be used for rigid pavement design. Where cohesive subgrade soils are present, they must be undercut to a depth of 12 inches below subgrade elevation and replaced with new granular engineered fill in order for the k-value of 165 pci to be applicable. Otherwise, a k-value of 150 pci should be utilized for cohesive subgrade soils.

A concrete pavement section is recommended in the loading-unloading areas, areas of repetitive turning, site exit and entrance aprons, and trash enclosure areas (including where the truck parks while servicing the container). This section should consist of a minimum of 6 inches of reinforced, air-entrained concrete with a minimum compressive strength of 3,500 pounds per square inch (psi) underlain by a minimum of 6 inches of a dense-graded granular base. The pavement section should be supported on a subgrade compacted to not less than 100 percent of the maximum dry density as determined by ASTM D 698 (Standard Proctor) or verified as stable

through proof rolling. All paving operations should conform to Florida Department of Transportation (FDOT) specifications.

5.9 Pavement Drainage

Based on the poorly-drained nature of the cohesive subgrade soils, it is anticipated that surface water infiltration may collect in the aggregate base course. Without adequate drainage, water will remain in the base for extended periods of time, creating localized wet, soft pockets. The presence of these pockets will increase the likelihood that pavement distress (cracking, potholes, etc.) will develop. Drainage features may include grading the subgrade surface to slope downward to the outside edge of pavements and/or providing longitudinal edge drains connected to storm sewers or other outlets. A system of “finger drains” could also be installed near catch basins within the pavement areas to collect surface water.

5.10 Corrosion Considerations

Corrosion characteristics were evaluated for bulk soil samples obtained from the cuttings produced from the augers in the upper approximately 4 feet of selected borings. These samples were tested for pH, chloride content, and sulfate content. The results of the corrosivity tests are summarized as follows:

Table 5.10. Corrosivity Test Results				
Boring Number	Approximate Sample Depth (feet)	pH	Chloride Content (mg/kg)	Sulfate Content (mg/kg)
B-1	0.2 – 4	5.1	UC	US
B-17	0.3 – 4	5.5	UC	12
B-21	0 – 4	5.3	UC	US
B-28	0 – 4	4.9	UC	US
B-30	0 – 4	4.8	UC	US
B-32	0 – 4	4.7	UC	US
B-39	0 – 4	4.9	UC	US
B-40	0.3 – 4	4.5	UC	US

UC – Undetectable chloride content at report limit of 100 mg/kg.

US – Undetectable sulfate content at report limit of 10 mg/kg.

This range of pH is characterized as very strongly acid to strongly acid soil reaction by the USDA Soil Conservation Service. Typically, soils with a pH range between 5 and 9 are not considered to represent a significant corrosion risk to buried structural concrete or underground utilities. Five of the eight tested samples exhibited pH values below 5.

We recommend that the structural engineer and/or civil engineer review the above data with respect to design of buried structural concrete and underground utilities for this project. If potential corrosion is considered problematic for “normal” design of these structures, options to address potential corrosion could include the use of Type II Portland cement. For underground utilities, plastic pipes (e.g. PVC) for storm sewers, sanitary sewers and water lines could be used in lieu of ductile iron, CMP or concrete. In any case, state and local building codes must be followed.

The chloride content for the tested samples was determined to be undetectable at the report limit of 100 mg/kg. The sulfate content for all but one of the tested samples was determined to be undetectable at the report limit of 10 mg/kg. One tested sample exhibited a sulfate content of 12 mg/kg. These data do not indicate a significant corrosion risk to underground structures.

Based on the composite of the data from the tested samples, it is our opinion that the on-site soils do not represent a significant corrosion risk to buried structural concrete or underground piping. However, we recommend that these data be reviewed by the pipe manufacturers, as the susceptibility to corrosion is a function of the type of pipe material used.

5.11 Groundwater Control and Drainage

As stated previously, groundwater was not encountered during drilling or observed upon completion of drilling operations in any of the borings. Based on the soil coloration and characteristics, as well as the moisture conditions encountered in the borings, it is our opinion that the “normal” groundwater level may be generally encountered at depths beyond those explored for this investigation. It should be noted that, in the low-lying wet areas in the southeastern portion of the site and in the immediate vicinity of the on-site ponds, the water table may approach the ground surface. Additionally, these areas are indicated in the Leon County Soil Survey to exhibit water tables within 15 inches of the soil surface for 3 to 6 months in most years.

It is our experience that adequate control of groundwater seepage or surface water run-off into shallow excavations above the groundwater table should be achievable by minor dewatering systems, such as pumping from prepared sumps. However, during wet seasonal periods and in the vicinity of the existing ponds, excavations that extend below the water table will likely require multiple wellpoints in addition to sump-and-pump operations to facilitate construction dewatering. In the event excessive seepage is encountered during construction, TTL may be notified to evaluate whether other dewatering methods are required.

5.12 Excavations and Slopes

The sides of temporary excavations for double-depth gravesites, building foundations, utility installations, and other construction should be adequately sloped to provide stable sides and safe working conditions. Otherwise, the excavation must be properly braced against lateral movements. **Temporary sheet piling may be required to maintain open gravesite excavations and to limit the extent of excavations that would otherwise require sloped banks.** In any case, applicable Occupational Safety and Health Administration (OSHA) safety standards must be followed.

The soils encountered during this investigation predominantly consist of OSHA Type C soils (granular soils and sandy, relatively low strength cohesive soils), for which side slopes of temporary excavations must be no steeper than 1½ horizontal to 1 vertical (1½H:1V). There may be isolated areas of OSHA Type A soils (cohesive soils with unconfined compressive strengths of 3,000 pounds per square foot (psf) or greater) or OSHA Type B soils (cohesive soils with unconfined compressive strengths greater than 1,000 psf but less than 3,000 psf), for which side slopes of temporary excavations must be no steeper than ¾H:1V and 1H:1V, respectively.

For situations where a higher strength soil is underlain by a lower strength soil and the excavation extends into the lower strength soil, the slope of the entire excavation is governed by that required by the lower strength soil. In all cases, flatter slopes may be required if lower strength soils or adverse seepage conditions are encountered during construction.

For permanent excavation slopes, we recommend that grades be no steeper than 3H:1V without a more extensive geotechnical evaluation of the proposed construction plans and site conditions.

5.13 Site and Subgrade Preparation

As mentioned previously, based on the National Karst Map, the site is mapped in an area where fissures, tubes, and caves are generally greater than 1,000 feet long, and greater than 250 feet in vertical extent, in moderately to steeply dipping beds of carbonate rock. Mapped karst areas at the site are located in the southwestern portion of the northern half of the site, as well as around the ponds in the southern portion of the site. Karst is mapped over approximately 9 acres of the 250 acre site. Again, much of the karst area is located in pond areas, which may be avoided for the proposed development.

The mapped sinkhole nearest to the site is located approximately 2 miles north. Six sinkholes, all of which are indicated to be less than 10 feet in width, are mapped within 4 miles of the site. Additional information and mapping of karst at the site is presented in the TTL NEPA EA report presented under separate cover.

Karst is not uncommon in the area of Tallahassee Florida. **We have assumed the owner accepts the risks involved with development in an area of potential karst activity.**

Prior to proceeding with construction operations, all topsoil, root mat, trees, vegetation, and other deleterious non-soil materials should be removed from the proposed construction areas. **Some wooded areas are present on the site. Significant site clearing operations should be anticipated in these areas.**

Suitable topsoil may be stockpiled for later use in landscape areas. In 29 of the 50 borings, topsoil was indicated at the surface varying in thickness from approximately 2 to 7 inches, with an average of approximately 3 inches. The topsoil generally ranged in thickness from 2 to 3 inches. Where topsoil was not indicated in the borings, they generally encountered sandy soils containing trace roots near the surface. **Since the site consists of pastureland and wooded areas, topsoil thicknesses may vary across the site. Organic contents for “topsoil” samples obtained from the topsoil zone/near-surface soils in five selected borings ranged from approximately 3 to 7 percent. We recommend that the vegetative cover be stripped as part of the subgrade preparation in structure and pavement areas.** Dark soils having the appearance of topsoil but exhibiting only root “hairs” or trace organics less than approximately two or three percent may not require stripping for the full depth of the darkly colored zone. Additionally, there may be areas where stripping of soils with organics in excess of the thicknesses referenced in the borings is encountered. The actual amount of required stripping should be determined in the field by a geotechnical engineer or qualified representative.

It should be noted that the Leon County Soil Survey indicates that the predominant mapped Orangeburg fine sandy loam soils in the northern half of the site and in the western portion of the southern half of the site exhibit good suitability as a source of topsoil. However, the remaining mapped soils in the middle and eastern portions of the southern half of the site were indicated to exhibit fair to poor suitability as a source of topsoil, due to the sandy and/or wet nature of the soils. Additionally, three of the five tested “topsoil” samples contained relatively low organic contents. Therefore, the on-site topsoil may require augmentation with imported topsoil.

Upon completion of the stripping and clearing, the areas intended to support new fill, floor slabs, and pavements should be carefully inspected by a geotechnical engineer. At that time, the engineer may require proof rolling/compaction of the granular subgrade soils utilizing a vibratory smooth drum roller. Where cohesive subgrades are encountered, proof rolling should be performed utilizing a 20- to 30-ton loaded truck or other pneumatic-tired vehicle of similar size and weight. The roller or truck should make a minimum of two passes in each of two perpendicular directions covering the proposed development area, with additional passes as necessary to achieve required compaction and/or subgrade stabilization.

The purpose of proof rolling the cohesive subgrades is to locate any weak, soft, or excessively wet soils that may be present at the time of construction. The purpose of vibratory compaction for the granular soils is to densify zones of loose materials that are encountered in the upper portion of the soil profile, thereby providing more uniform subgrade support. We recommend a roller with a minimum dead weight on the drums of 8 tons, vibrating at 30 Hz or greater, and traveling at speeds not exceeding approximately 4 feet per second (about 3 miles per hour). These operational criteria should provide sufficient dynamic compaction energy to alleviate loose soil conditions within the zone of influence for subgrade support. **If seasonal high groundwater levels are present at the time of construction, vibratory compaction may be detrimental to the prepared subgrade. Therefore, compaction by additional passes of the roller under “static” operation would be required.** Installation of site stormwater utilities early in the site grading activities will also help to alleviate any “perched” water conditions and achieve a more stable subgrade.

Any unsuitable materials observed during the inspection and proof-rolling operations should be undercut and replaced with compacted fill or stabilized in place utilizing conventional remedial measures such as discing, aeration, and recompaction. Once the site has been proof rolled, inspected, and stabilized, the proof-rolled or inspected subgrades should not be exposed to wet conditions. It should be recognized that, during periods of wet weather, the silty and clayey soils that will be exposed at design subgrades will tend to pond water for short periods of time, with the potential to deteriorate the prepared subgrade.

The results of the inspection and proof-rolling operations will be partially dependent on construction operations, the moisture content of the soil, and the weather conditions prevalent at the time. If pumping or rutting is encountered and difficulty is experienced in the operation of construction equipment, TTL should be notified in order to determine which method of subgrade modification may be best suited for the conditions encountered. Should such conditions be experienced, we may recommend that a small test area be used to determine the necessary depth

of undercutting and stone replacement or other remedial action necessary to achieve a stable subgrade condition.

5.14 Fill

Material for engineered fill or backfill required to achieve design grades may consist of any non-organic soils having a maximum dry density as determined by the Standard Proctor (ASTM D 698) of 90 pounds per cubic foot (pcf) or greater. On-site soils may be used as engineered fill materials provided that they are free of organic matter, debris, excessive moisture, and rock or stone fragments larger than 3 inches in diameter. Depending on seasonal conditions, the on-site soils may be wet of optimum and may require scarification and aeration to achieve satisfactory compaction. If the construction schedule does not allow for scarification and aeration activities, it may be more practical or economical to utilize imported granular fill.

Fill should be placed in uniform layers no more than 8 inches thick (loose measure) and adequately keyed into stripped and scarified soils. All fill within the building areas and pavement subgrades should be compacted to not less than 100 percent of the maximum dry density as determined by ASTM D 698 (Standard Proctor).

The subgrade soils the site consist of predominantly native granular soils. However, zones of native cohesive soils may also be encountered. The contractor should be prepared to use a sheepsfoot roller to provide effective compaction of the cohesive subgrade soils. For granular soils or engineered fill consisting of granular materials, a vibratory smooth-drum roller would provide effective compaction of these materials. In narrow utility or footing excavations, the on-site cohesive soils may be difficult to compact; therefore, a clean granular material may be required in these areas.

Scarified subgrade soils and all fill material should be within 3 percent of the optimum moisture content to facilitate compaction. Furthermore, fill material should not be frozen or placed on a frozen base. It is recommended that all earthwork and site preparation activities be conducted under adequate specifications and properly monitored in the field by a qualified geotechnical testing firm.

6.0 QUALIFICATION OF RECOMMENDATIONS

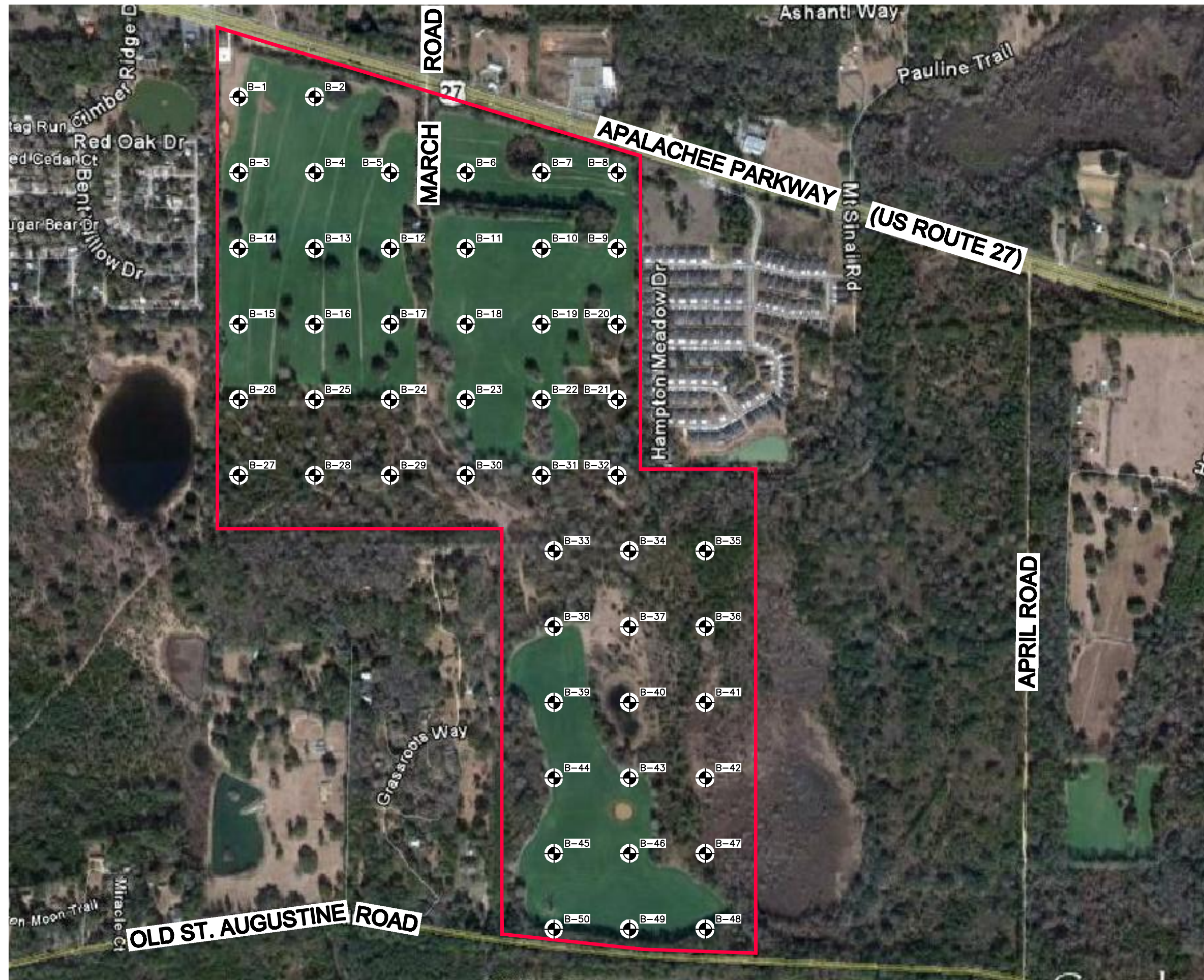
Our preliminary evaluation of double-depth gravesite, foundation, and pavement design and construction conditions has been based on our understanding of the site and project information and the data obtained during our field investigation. The general subsurface conditions were based on interpretation of the subsurface data obtained in widely-spaced borings. Regardless of the thoroughness of a subsurface investigation, there is the possibility that conditions between borings will differ from those at the boring locations, that conditions are not as anticipated by the designers, or that the construction process has altered the soil conditions. Therefore, experienced geotechnical engineers should observe earthwork and foundation construction to confirm that the conditions anticipated in design are noted. Otherwise, TTL assumes no responsibility for construction compliance with the design concepts, specifications, or recommendations.

The design recommendations in this report have been developed on the basis of the previously described project characteristics and subsurface conditions. If project criteria or locations change, a qualified geotechnical engineer should be permitted to determine whether the recommendations must be modified. The findings of such a review will be presented in a supplemental report.

The nature and extent of variations between the borings may not become evident until the course of construction. If such variations are encountered, it will be necessary to reevaluate the recommendations of this report after on-site observations of the conditions.

Due to the lack of information regarding structure and pavement locations, as well as the widely spaced borings performed for this preliminary investigation, additional geotechnical exploration should be performed for the proposed development. The findings of such an investigation will be presented in a supplemental report. Based on the results of final design investigation, the preliminary recommendations of this report will be reviewed and modified, as necessary.

Our professional services have been performed, our findings derived, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied. TTL is not responsible for the conclusions, opinions, or recommendations of others based on this data.



LEGEND

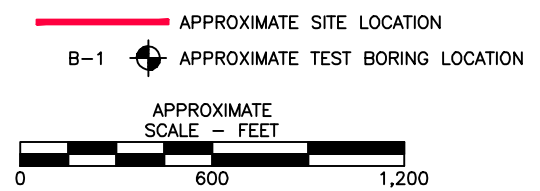



PLATE 1.0
TEST BORING LOCATION PLAN
PROPOSED VA NATIONAL CEMETERY
250 ACRES ST. JOE PROPERTY
TALLAHASSEE, LEON COUNTY, FLORIDA

PREPARED FOR
U.S. DEPARTMENT OF VETERANS AFFAIRS
WASHINGTON, D.C.

DRAWN	CLW/08-18-11	CHECKED	CPI/08-18-11
REVISED		APPROVED	
JOB NO.	7524.04		
DRAWING NUMBER	752404-01G		



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-01

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Very Loose Brown SILTY SAND (SM)	SS 1	100	0-1-2-2 (3)	NP		
	2.5			SS 2	100	2-1-0-1 (1)	NP		14
			Moist Very Soft Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	0-0-1-1 (1)	NI		
	5.0			SS 4	100	0-1-2-1 (3)	NT		
	7.5		-Soft	SS 5	100	2-2-2-2 (4)	NT		
	10.0		Bottom of hole at 10.0 feet.						

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL		
									▲ SPT N VALUE ▲		
									20	40	60
	0.0		TOPSOIL - 2 Inches								
			Moist Loose Brown SILTY SAND (SM)	SS 1	100	2-2-3-1 (5)	NP		▲		
	2.5		Moist Soft to Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-1-1-2 (2)	0.69	95	▲	● 18	
	5.0		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	2-4-5-7 (9)	NI		▲		
	7.5			SS 4	100	4-4-5-6 (9)	NT		▲		
	8.0		Bottom of hole at 8.0 feet.								

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings[illegible]



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-04

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Loose Brown SILTY SAND w/Trace Roots (SM)						
				SS 1	100	2-4-3-2 (7)	NP		10
	2.5		-Very Loose						
				SS 2	100	1-2-1-1 (3)	NP		▲
			-Loose						
	5.0			SS 3	100	1-2-3-4 (5)	NP		▲
			6.0'						
			Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)						
				SS 4	100	3-3-3-4 (6)	NT		▲
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-06

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/25/11

COMPLETED 7/25/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND (SM)	AU 1	100		NP		
	1.5'		Moist Red/Brown SANDY LEAN CLAY (CL)						
	2.5								
	5.0			AU 2	100		NI		13
	7.5								
	8.0'		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-07

PAGE 1 OF 1

CLIENT	U.S. Department of Veterans Affairs	PROJECT NAME	Proposed VA National Cemetery - 250 Acres Site
PROJECT NUMBER	7524.04	PROJECT LOCATION	Tallahassee, Leon County, FL
DRILLING CONTRACTOR	Gannett Fleming MM RM	RIG NO.	Hand Auger
DRILLING METHOD	Hand Auger	GROUND ELEVATION	
DATE STARTED	7/25/11	COMPLETED	7/25/11
LOGGED BY	KKC	CHECKED BY	CPI
NOTES			
GROUND WATER LEVELS:		AT TIME OF DRILLING	None
		AT END OF DRILLING	None
		0hrs AFTER DRILLING	Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL	MC	LL	SPT N VALUE
	0.0								20	40	60	80
			Moist Brown SILTY SAND w/Trace Roots (SM)	AU 1	100		NP					8
			1.0'									
			Moist Red/Brown SANDY LEAN CLAY (CL)									
	2.5											
	5.0			AU 2	100		NI					
	7.5											
			8.0'									
			Bottom of hole at 8.0 feet.									



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-08

PAGE 1 OF 1

CLIENT	U.S. Department of Veterans Affairs	PROJECT NAME	Proposed VA National Cemetery - 250 Acres Site
PROJECT NUMBER	7524.04	PROJECT LOCATION	Tallahassee, Leon County, FL
DRILLING CONTRACTOR	Gannett Fleming MM RM	RIG NO.	Hand Auger
DRILLING METHOD	Hand Auger	GROUND ELEVATION	
DATE STARTED	7/25/11	COMPLETED	7/25/11
LOGGED BY	KKC	CHECKED BY	CPI
NOTES			
GROUND WATER LEVELS:		AT TIME OF DRILLING	None
		AT END OF DRILLING	None
		0hrs AFTER DRILLING	Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Trace Roots (SM)	AU 1	100		NP		
			1.0'						
	2.5		Moist Red/Brown SANDY LEAN CLAY (CL)	AU 2	100		NI		12
	5.0								
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-09

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 4 Inches						
			Moist Loose Red/Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	2-2-3-1 (5)	NP		10
			Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	2-1-1-1 (2)	NI		14
			Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	2-2-3-4 (5)	NI		
				SS 4	100	3-4-4-4 (8)	NT		
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-10

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 3 Inches						
			Moist Very Loose Red/Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-3-1-1 (4)	NP		▲
			Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-1-3-3 (4)	NI		▲
			Moist Loose Orange/Brown CLAYEY SAND (SC)	SS 3	100	3-3-4-4 (7)	NP		9
				SS 4	100	3-3-3-4 (6)	NP		▲
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-11

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 3 Inches						
			Moist Loose Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-4-1-1 (5)	NP		▲
	2.5		-Very Loose	SS 2	100	1-1-1-1 (2)	NP		▲
			Moist Soft to Medium Stiff Light Brown SANDY LEAN CLAY (CL)	SS 3	100	1-3-1-2 (4)	1.00		▲ 18
	5.0		Moist Stiff Light Brown SANDY LEAN CLAY (CL)	SS 4	100	2-4-5-6 (9)	NT		▲
	7.5								
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-12

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Red/Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	2-3-3-3 (6)	NP		14
	2.5		Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-2-2-2 (4)	NI		
	5.0		Moist Medium Stiff to Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	3-3-5-6 (8)	1.50		
	7.5			SS 4	100	3-3-5-6 (8)	NT		
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-13

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲
	0.0		Moist Loose Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	4-3-2-1 (5)	NP		10
	2.0		Moist Very Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-1-1-1 (2)	NI		
	2.5		-Soft	SS 3	100	0-2-2-3 (4)	NI		
	5.0		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 4	100	3-5-6-7 (11)	NT		
	6.0								
	7.5								
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-14

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Red/Brown SILTY SAND (SM)	SS 1	100	2-3-2-2 (5)	NP		▲
	2.5		-Very Loose	SS 2	100	1-1-1-1 (2)	NT		▲
			Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	1-2-1-2 (3)	NI		▲
	5.0		Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 4	100	2-2-3-3 (5)	0.78	106	▲ 13 ●
	7.5		Bottom of hole at 8.0 feet.						
	8.0								



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-15

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Red/Brown SILTY SAND (SM)	SS 1	100	2-4-5-6 (9)	NP		▲
	2.5		Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	3-4-4-5 (8)	0.56	101	▲ 19
	5.0		Moist Loose Yellow/Brown SILTY SAND (SM)	SS 3	100	3-4-4-4 (8)	NP		▲
	7.5			SS 4	100	2-2-3-3 (5)	NP		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-16

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	2-3-3-3 (6)	NP		11
	2.5		Moist Medium Stiff to Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	2-2-4-5 (6)	1.75		▲
	5.0		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	5-6-6-7 (12)	1.50		▲
	7.5			SS 4	100	4-4-5-6 (9)	NT		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-17

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 3 Inches						
			Moist Loose Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-2-3-2 (5)	NP		▲
	2.5		-Very Loose Red/Brown	SS 2	100	1-2-2-2 (4)	NP		▲
			Moist Medium Dense Red/Brown CLAYEY SAND (SC)	SS 3	100	4-5-7-8 (12)	NP		▲
	5.0		Moist Very Stiff Orange/Brown SANDY LEAN CLAY (CL)	SS 4	100	11-14-14-10 (28)	2.75		16 ● ▲
	7.5								
	8.0		Bottom of hole at 8.0 feet.						

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	
									<div style="text-align: center;">PL MC LL</div> <div style="text-align: center; margin-top: -10px;">20 40 60 80</div> <hr/> <div style="text-align: center;">▲ SPT N VALUE ▲</div> <div style="text-align: center; margin-top: -10px;">20 40 60 80</div>
	0.0								
			TOPSOIL - 2 Inches						
			Moist Loose Red/Brown CLAYEY SAND (SC)	SS 1	100	1-7-3-1 (10)	NP		10 ●
	2.5		Moist Very Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-1-1-2 (2)	Nl		▲
			Moist Loose Red/Brown CLAYEY SAND (SC)	SS 3	100	3-2-3-4 (5)	NP		▲
	7.5			SS 4	100	3-3-3-4 (6)	NP		▲
			Bottom of hole at 8.0 feet.						

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

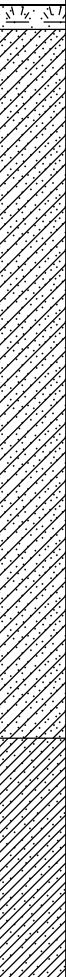
LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL			
									▲ SPT N VALUE ▲			
	0.0								20	40	60	80
			TOPSOIL - 2 Inches 0.2' Moist Very Loose Red/Brown CLAYEY SAND (SC) -Loose 6.0' Moist Stiff Red/Brown SANDY LEAN CLAY (CL) 8.0' Bottom of hole at 8.0 feet.	SS 1	100	1-2-1-1 (3)	NP		▲			
	2.5			SS 2	100	3-3-3-5 (6)	NP		▲			
	5.0			SS 3	100	3-3-3-5 (6)	NP		▲	18		
	7.5			SS 4	100	5-4-6-5 (10)	1.50		▲			

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Medium Dense Brown CLAYEY SAND (SC) 0.2'	SS 1	100	2-8-5-2 (13)	NP		10
	2.5		Moist Very Loose Brown CLAYEY SAND (SC) 2.0'	SS 2	100	1-1-1-0 (2)	NP		▲
	5.0		Moist Very Soft Red/Brown SANDY LEAN CLAY (CL) 4.0'	SS 3	100	0-1-1-2 (2)	NI		▲
	7.5		Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL) 6.0'	SS 4	100	3-3-5-4 (8)	NT		▲
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-21

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/25/11

COMPLETED 7/25/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Trace Roots (SM)	AU 1	100		NP		
			1.0'						
			Moist Red/Brown CLAYEY SAND (SC)	AU 2	100		NP		
	2.5								
			-Orange/Brown						
	5.0			AU 3	100		NP		
	7.5								13
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-23

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 3 Inches						
			Moist Very Loose Brown CLAYEY SAND (SC)	SS 1	100	2-2-1-1 (3)	NP		▲ 12
	2.5		-Red/Brown	SS 2	100	1-1-1-1 (2)	NP		▲
	5.0		-Loose	SS 3	100	2-2-3-4 (5)	NP		▲
			Moist Medium Dense Red/Brown CLAYEY SAND (SC)	SS 4	100	4-6-7-7 (13)	NP		▲
	7.5								
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-24

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲
	0.0		TOPSOIL - 3 Inches						
			Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 1	100	2-5-4-3 (9)	3.00		12
	2.5		-Stiff to Very Stiff	SS 2	100	5-6-7-8 (13)	4.50		▲
	5.0		-Very Stiff	SS 3	100	7-8-9-8 (17)	NT		▲
			Moist Medium Dense Red/Brown CLAYEY SAND (SC)	SS 4	100	8-10-9-8 (19)	NP		▲
	7.5								
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-25

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 7 Inches						
			0.6'						
			Moist Very Loose Brown SILTY SAND (SM)	SS 1	100	1-2-2-1 (4)	NP		▲
			2.0'						
	2.5		Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-2-3-3 (5)	1.05	99	▲ 22
			4.0'						
			Moist Stiff to Very Stiff Brown SANDY LEAN CLAY (CL)	SS 3	100	6-6-7-10 (13)	3.00		▲
	5.0			SS 4	100	6-6-7-10 (13)	NT		▲
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-26

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Loose Brown SILTY SAND (SM)	SS 1	100	3-5-4-3 (9)	NP		▲
	2.5		Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	2-3-3-3 (6)	NI		▲ 15
	5.0		Moist Loose Red/Brown CLAYEY SAND (SC)	SS 3	100	3-3-5-5 (8)	NP		▲
	7.5			SS 4	100	5-4-4-4 (8)	NP		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-27

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/25/11

COMPLETED 7/25/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Trace Roots (SM)						
				AU 1	100		NP		
	2.5		-Red/Brown						
				AU 2	100		NP		18
	5.0								
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-28

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/25/11

COMPLETED 7/25/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Trace Roots (SM)	AU 1	100		NP		
			1.0'						
			Moist Brown CLAYEY SAND w/Trace Roots (SC)	AU 2	100		NP		13
	2.5		-Red/Brown						
	5.0			AU 3	100		NP		
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-29

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 3 Inches						
			Moist Loose Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-4-3-2 (7)	NP		▲
			Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-2-1-2 (3)	NI		▲ 13
			Moist Stiff to Very Stiff Brown SANDY LEAN CLAY (CL)	SS 3	100	3-5-6-8 (11)	3.25		▲
			-Very Stiff	SS 4	100	5-8-10-15 (18)	NT		▲
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-30

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/25/11

COMPLETED 7/25/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Roots (SM)						
				AU 1	100		NP		13
			1.5'						
	2.5		Moist Red/Brown CLAYEY SAND w/Trace Roots (SC)	AU 2	100		NP		14
	5.0			AU 3	100		NP		
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-31

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/25/11

COMPLETED 7/25/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND (SM)	AU 1	100		NP		
	2.5		Moist Red/Brown SANDY LEAN CLAY (CL)	AU 2	100		NI		17
	5.0								
	7.5								
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-32

PAGE 1 OF 1

CLIENT	U.S. Department of Veterans Affairs	PROJECT NAME	Proposed VA National Cemetery - 250 Acres Site
PROJECT NUMBER	7524.04	PROJECT LOCATION	Tallahassee, Leon County, FL
DRILLING CONTRACTOR	Gannett Fleming MM RM	RIG NO.	Hand Auger
DRILLING METHOD	Hand Auger	GROUND ELEVATION	
DATE STARTED	7/25/11	COMPLETED	7/25/11
LOGGED BY	KKC	CHECKED BY	CPI
NOTES			
GROUND WATER LEVELS:		AT TIME OF DRILLING	None
		AT END OF DRILLING	None
		24hrs AFTER DRILLING	None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL	MC	LL	▲ SPT N VALUE ▲
	0.0								20	40	60	80
			Moist Brown SILTY SAND w/Trace Roots (SM)	AU 1	100		NP					
			1.5'									
	2.5		Moist Red/Brown CLAYEY SAND w/Trace Roots (SC)	AU 2	100		NP					
	5.0											14
	7.5											
			8.0'									
			Bottom of hole at 8.0 feet.									



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-34

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/26/11

COMPLETED 7/26/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND (SM)	AU 1	100		NP		
			1.5'						
	2.5		Moist Red/Brown CLAYEY SAND (SC)	AU 2	100		NP		
	5.0								12
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-35

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/26/11

COMPLETED 7/26/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Trace Roots (SM)	AU 1	100		NP		17
	1.5'		Moist Red/Brown CLAYEY SAND (SC)	AU 2	100		NP		
	2.5		Moist Red/Brown SANDY LEAN CLAY (CL)	AU 3	100		NI		
	3.5'								
	5.0								
	7.5								
	8.0'		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-36

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/26/11

COMPLETED 7/26/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND w/Trace Roots (SM)						
			1.5'	AU 1	100		NP		9
	2.5		Moist Brown CLAYEY SAND (SC)	AU 2	100		NP		9
			-Orange/Brown						
	5.0			AU 3	100		NP		
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-37

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 1	100	2-2-2-2 (4)	NI		▲
	2.5		Moist Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	3-3-5-5 (8)	NI		▲ 17
	5.0			SS 3	100	4-4-4-5 (8)	NI		▲
	7.5		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 4	100	5-5-5-5 (10)	NT		▲
	8.0		Bottom of hole at 8.0 feet.						

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲
	0.0								20 40 60 80
			TOPSOIL - 2 Inches						
			Moist Loose Red/Brown CLAYEY SAND (SC)	SS 1	100	4-3-3-3 (6)	NP		▲
	2.5		Moist Medium Dense Red/Brown CLAYEY SAND (SC)	SS 2	100	5-6-7-7 (13)	NP		▲
	5.0		Moist Very Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	8-11-13-14 (24)	>4.5		▲
	7.5		Moist Medium Dense Red/Brown CLAYEY SAND (SC)	SS 4	100	12-13-12-10 (25)	NP		9 ● ▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-39

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 3 Inches						
			Moist Very Loose Red/Brown CLAYEY SAND (SC)	SS 1	100	1-3-1-2 (4)	NP		▲
	2.5		-Loose	SS 2	100	2-4-5-6 (9)	NP		▲
			Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	4-6-6-8 (12)	1.75		▲ 19
	5.0			SS 4	100	4-6-6-8 (12)	NT		▲
	7.5								
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-40

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/26/11

COMPLETED 7/26/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲
	0.0		Moist Brown/Gray SILTY SAND w/Trace Roots (SM)	AU 1	100		NP		12
			1.5'						
	2.5		Moist Light Brown CLAYEY SAND (SC)	AU 2	100		NP		14
			-Brown						
	5.0			AU 3	100		NP		
	7.5								
			8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-41

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Hand Auger

GROUND ELEVATION

DRILLING METHOD Hand Auger

GROUND WATER LEVELS:

DATE STARTED 7/26/11

COMPLETED 7/26/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

24hrs AFTER DRILLING None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL MC LL 20 40 60 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Dark Gray SILTY SAND w/Trace Roots (SM)	AU 1	100		NP		
			-Light Gray	AU 2	100		NP		11
	2.5		Moist Light Gray CLAYEY SAND (SC)	AU 3	100		NP		
	5.0								
	7.5								
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-42

PAGE 1 OF 1

CLIENT	U.S. Department of Veterans Affairs	PROJECT NAME	Proposed VA National Cemetery - 250 Acres Site
PROJECT NUMBER	7524.04	PROJECT LOCATION	Tallahassee, Leon County, FL
DRILLING CONTRACTOR	Gannett Fleming MM RM	RIG NO.	Hand Auger
DRILLING METHOD	Hand Auger	GROUND ELEVATION	
DATE STARTED	7/26/11	COMPLETED	7/26/11
LOGGED BY	KKC	CHECKED BY	CPI
NOTES			
GROUND WATER LEVELS:		AT TIME OF DRILLING	None
		AT END OF DRILLING	None
		24hrs AFTER DRILLING	None

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Brown SILTY SAND (SM)	AU 1	100		NP		
			1.3'						14
	2.5		Moist Red/Brown CLAYEY SAND (SC)	AU 2	100		NP		
	5.0			AU 3	100		NP		
	7.5		8.0'						
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-43

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Very Loose Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	2-2-1-1 (3)	NP		
	2.5		Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	1-1-2-2 (3)	0.25	100	19
	5.0		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	4-4-5-6 (9)	NI		
	7.5			SS 4	100	4-5-6-6 (11)	NT		
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-44

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	1-6-3-3 (9)	NP		11
	2.5		-Very Loose Red/Brown	SS 2	100	1-2-2-2 (4)	NP		▲
	5.0		Moist Loose Red/Brown CLAYEY SAND (SC)	SS 3	100	2-3-3-4 (6)	NP		▲
	7.5		Moist Medium Dense Red/Brown CLAYEY SAND (SC)	SS 4	100	5-5-6-7 (11)	NT		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-45

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Brown SILTY SAND w/Trace Roots (SM)	SS 1	100	1-3-2-2 (5)	NP		▲
	2.5		Moist Soft Red/Brown SANDY LEAN CLAY (CL) (w/Trace Roots in SS-2 Sample)	SS 2	100	1-1-2-1 (3)	NI		▲ 18
	5.0			SS 3	100	2-2-2-3 (4)	NI		▲
	7.5		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 4	100	5-6-6-7 (12)	NT		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-46

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		Moist Very Loose Brown SILTY SAND (SM)	SS 1	100	2-2-2-1 (4)	NP		9
	2.5		Moist Soft to Medium Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	2-1-2-2 (3)	1.00		▲
	5.0		Moist Loose Red/Brown CLAYEY SAND (SC)	SS 3	100	2-3-3-3 (6)	NP		▲
	7.5			SS 4	100	3-4-4-6 (8)	NP		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-47

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲
	0.0		TOPSOIL - 5 Inches						
			Moist Loose Gray/Brown SILTY SAND (SM)	SS 1	100	2-3-3-1 (6)	NP		▲
			Moist Very Loose Brown/Gray CLAYEY SAND (SC)	SS 2	100	2-1-2-3 (3)	NP		▲ 13
			Moist Very Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	4-7-12-12 (19)	>4.5		▲
			Moist Hard Red/Brown SANDY LEAN CLAY (CL)	SS 4	100	12-16-15-11 (31)	NT		▲
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-48

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Very Loose Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-2-2-1 (4)	NP		▲
	2.5		Moist Medium Stiff to Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	2-2-5-5 (7)	2.50		▲ 19
	5.0		Moist Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	3-5-5-6 (10)	NT		▲
	7.5			SS 4	100	7-7-7-7 (14)	2.00		▲
	8.0		Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-49

PAGE 1 OF 1

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL

DRILLING CONTRACTOR Gannett Fleming MM RM

RIG NO. Track Rig

GROUND ELEVATION

DRILLING METHOD SSA

GROUND WATER LEVELS:

DATE STARTED 7/29/11

COMPLETED 7/29/11

AT TIME OF DRILLING None

LOGGED BY KKC

CHECKED BY CPI

AT END OF DRILLING None

NOTES

0hrs AFTER DRILLING Backfilled w/Cuttings

ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲ 20 40 60 80
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-4-2-2 (6)	NP		▲
			Moist Soft Red/Brown SANDY LEAN CLAY (CL)	SS 2	100	2-2-2-2 (4)	NI		▲
			Moist Stiff to Very Stiff Red/Brown SANDY LEAN CLAY (CL)	SS 3	100	4-6-6-7 (12)	3.25		16
				SS 4	100	4-5-5-4 (10)	NT		▲
			Bottom of hole at 8.0 feet.						



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

BORING NUMBER B-50





















PAGE 1 OF 1

CLIENT	U.S. Department of Veterans Affairs	PROJECT NAME	Proposed VA National Cemetery - 250 Acres Site
PROJECT NUMBER	7524.04	PROJECT LOCATION	Tallahassee, Leon County, FL
DRILLING CONTRACTOR	Gannett Fleming MM RM	RIG NO.	Track Rig
DRILLING METHOD	SSA	GROUND ELEVATION	
DATE STARTED	7/29/11	COMPLETED	7/29/11
LOGGED BY	KKC	CHECKED BY	CPI
NOTES			
GROUND WATER LEVELS:		AT TIME OF DRILLING	None
		AT END OF DRILLING	None
		0hrs AFTER DRILLING	Backfilled w/Cuttings







ELEVATION (ft)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	UNCONF. COMP. STR. (tsf)	DRY UNIT WT. (pcf)	PL 20 MC 40 LL 80 ▲ SPT N VALUE ▲
	0.0		TOPSOIL - 2 Inches						
			Moist Loose Brown CLAYEY SAND w/Trace Roots (SC)	SS 1	100	2-3-2-2 (5)	NP		12
	2.5		Moist Very Soft Brown SANDY LEAN CLAY w/Trace Roots (CL)	SS 2	100	0-1-1-2 (2)	NI		17
	5.0		Moist Very Loose Red/Brown CLAYEY SAND (SC)	SS 3	100	1-1-2-2 (3)	NP		
	7.5			SS 4	100	1-1-3-4 (4)	NP		
	8.0		Bottom of hole at 8.0 feet.						

LEGEND KEY

Unified Soil Classification System Soil Symbols

	GW - WELL GRADED GRAVEL Includes Gravel-Sand mixtures, little or no fines.		GP - POORLY GRADED GRAVEL Includes Gravel-Sand mixtures, little or no fines.		GM - SILTY GRAVEL Includes Gravel-Sand-Silt mixtures.		GC - CLAYEY GRAVEL Includes Gravel-Sand-Clay mixtures.
	SW - WELL GRADED SAND Includes Gravelly Sands, little or no fines.		SP - POORLY GRADED SAND Includes Gravelly Sands, little or no fines.		SM - SILTY SAND Includes Sand-Silt mixtures.		SC - CLAYEY SAND Includes Sand-Clay mixtures.
	ML - SILT Includes Silt with Sand and Sandy Silt.		CL - LEAN CLAY Includes Sandy Lean Clay and Lean Clay with Sand and Gravel.		MH - ELASTIC SILT Includes Sandy Elastic Silt and Elastic Silt with Sand.		CH - FAT CLAY Includes Sandy Fat Clay and Fat Clay with Sand.
	CL-ML - SILTY CLAY Includes Clayey Silt of low plasticity.		OL - ORGANIC SILT and ORGANIC CLAY of low plasticity.		OH - ORGANIC SILT and ORGANIC CLAY of medium to high plasticity.		Pt - PEAT Includes humus, swamp and other soils with high organic content.
	FILL MATERIAL - Includes controlled and non-controlled soil and non-soil materials.		TOPSOIL		ASPHALT - Bituminous Asphalt		CONCRETE - Includes broken concrete rubble.

Sample Symbols

	SS - Split Spoon		ST - Shelby Tube		RC - Rock Core		GS - Geoprobe Sleeve
			AU - Auger Cuttings		GB - Grab		

Notes:

1. Exploratory borings were drilled during the period from July 25 through 29, 2011. Machine-drilled borings were advanced using solid-stem augers. Hand auger borings were advanced using a manually-operated bucket auger.
2. These logs are subject to the limitations, conclusions, and recommendations in the report and should not be interpreted separate from the report.
3. Boring locations were established in the field by Gannett Fleming based on an aerial photograph provided by Vertical Integration.

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-1	SS-2	2.0-4.0	1	13.7														
	Topsoil						2.8											
	Bulk							5.1										
B-2	SS-2	2.0-4.0	2	17.6	95.1	1,390												
B-3	SS-3	4.0-6.0	5	16.0		*2,000												
B-4	SS-1	0.0-2.0	7	10.2					0	0	13	55	26	6	NON-PLASTIC			SM
B-5	SS-2	2.0-4.0	10	17.8		*5,000												
	SS-3	4.0-6.0	17			*6,000												
B-6	AU-2	1.5-8.0		12.5														
B-7	AU-1	0.0-1.0		8.4														

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-8	AU-2	1.0-8.0		11.6														
B-9	SS-1	0.0-2.0	5	10.0					0	0	20	45	27	8	NON-PLASTIC			SM
	SS-2	2.0-4.0	2	14.0					0	0	18	30	37	15				
B-10	SS-3	4.0-6.0	7	9.4														
B-11	SS-3	4.0-6.0	4	18.3		*2,000												
B-12	SS-1	0.0-2.0	6	14.5					0	0	20	40	27	13	NON-PLASTIC			SM
	SS-3	4.0-6.0	8			*3,000												
B-13	SS-1	0.0-2.0	5	9.8														
B-14	SS-4	6.0-8.0	5	12.8	106.2	1,560												

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-15	SS-2	2.0-4.0	8	18.6	100.6	1,125												
B-16	SS-1	0.0-2.0	6	10.9														
	SS-2	2.0-4.0	6			*3,500												
	SS-3	4.0-6.0	12			*3,000												
B-17	SS-4	6.0-8.0	28	16.5		*5,500												
	Topsoil						6.5											
	Bulk							5.5										
B-18	SS-1	0.0-2.0	10	9.9														
B-19	SS-3	4.0-6.0	6	17.9														
	SS-4	6.0-8.0	10			*3,000												
B-20	SS-1	0.0-2.0	13	10.4														
	Topsoil						2.6											

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-21	AU-3	3.5-8.0		13.2														
	Bulk							5.3										
B-22	SS-2	2.0-4.0	8	14.4														
	SS-3	4.0-6.0	11	16.0					0	0	15	34	31	20				
B-23	SS-1	0.0-2.0	3	11.7					0	0	19	40	21	20	NON-PLASTIC			SM
B-24	SS-1	0.0-2.0	9	12.4		*6,000												
	SS-2	2.0-4.0	13			*9,000												
B-25	SS-2	2.0-4.0	5	22.0	99.2	2,095												
	SS-3	4.0-6.0	13			*6,000												
B-26	SS-2	2.0-4.0	6	14.9														
B-27	AU-2	1.5-8.0		17.6					0	0	14	41	30	15	NON-PLASTIC			SM

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-28	AU-2	1.0-2.5		13.4														
	Bulk							4.9										
B-29	SS-2	2.0-4.0	3	13.2														
	SS-3	4.0-6.0	11			*6,500												
B-30	AU-1	0.0-1.5		12.8														
	AU-2	1.5-3.5		14.4														
	Topsoil						7.1											
	Bulk							4.8										
B-31	AU-2	2.0-8.0		16.7														
B-32	AU-2	1.5-8.0		14.3														
	Bulk							4.7										
B-33	AU-1	0.0-1.0		15.7					0	0	30	44	20	6	NON-PLASTIC			SM

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-34	AU-2	1.5-8.0		12.2														
B-35	AU-1	0.0-1.5		16.9														
B-36	AU-1	0.0-1.5		9.5														
	AU-2	1.5-3.0		8.7														
B-37	SS-2	2.0-4.0	8	17.3					0	0	6	44	32	18	29	18	11	CL
B-38	SS-3	4.0-6.0	24			*9,000+												
	SS-4	6.0-8.0	25	8.9														
B-39	SS-3	4.0-6.0	12	18.8		*3,500												
	Topsoil						2.8											
	Bulk							4.9										

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-40	AU-1	0.0-1.5		12.3														
	AU-2	1.5-2.5		14.1														
	Bulk							4.5										
B-41	AU-2	1.5-2.5		11.4														
B-42	AU-2	1.3-4.1		13.8														
B-43	SS-2	2.0-4.0	3	19.1	100.1	505												
B-44	SS-1	0.0-2.0	9	10.6					0	0	5	61	23	11	NON-PLASTIC			SM
B-45	SS-2	2.0-4.0	3	18.3														
B-46	SS-1	0.0-2.0	4	9.3														
	SS-2	2.0-4.0	3			*2,000												

*Unconfined compressive strength derived from a calibrated hand penetrometer

PROJECT: Proposed VA National Cemetery –250 Acre Site – Leon County, FL	TTL Associates, Inc.	PROJECT NO: 7524.04
-------------------------------------------------------------------------	----------------------	---------------------

TABULATION OF TEST DATA

Boring Number	Sample Number	Sample Interval Depth (Feet)	Standard Penetration (Blows per Foot)	Natural Moisture Content (% of Dry Weight)	In-Place Dry Density (Pounds per Cubic Foot)	Unconfined Compressive Strength (Pounds per Square Foot)	Organic Content (Percent)	pH	Particle Size Distribution (%)						Atterberg Limits (%)			Unified Soil Classification
									Gravel	Coarse Sand	Medium Sand	Fine Sand	Silt	Clay	Liquid Limit	Plastic Limit	Plasticity Index	
B-47	SS-2	2.0-4.0	3	13.5														
	SS-3	4.0-6.0	19			*9,000+												
B-48	SS-2	2.0-4.0	7	18.6		*5,000			0	0	9	38	30	23				
	SS-4	6.0-8.0	14			*4,000												
B-49	SS-3	4.0-6.0	12	15.9		*6,500												
B-50	SS-1	0.0-2.0	5	12.4														
	SS-2	2.0-4.0	2	17.0														

*Unconfined compressive strength derived from a calibrated hand penetrometer



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

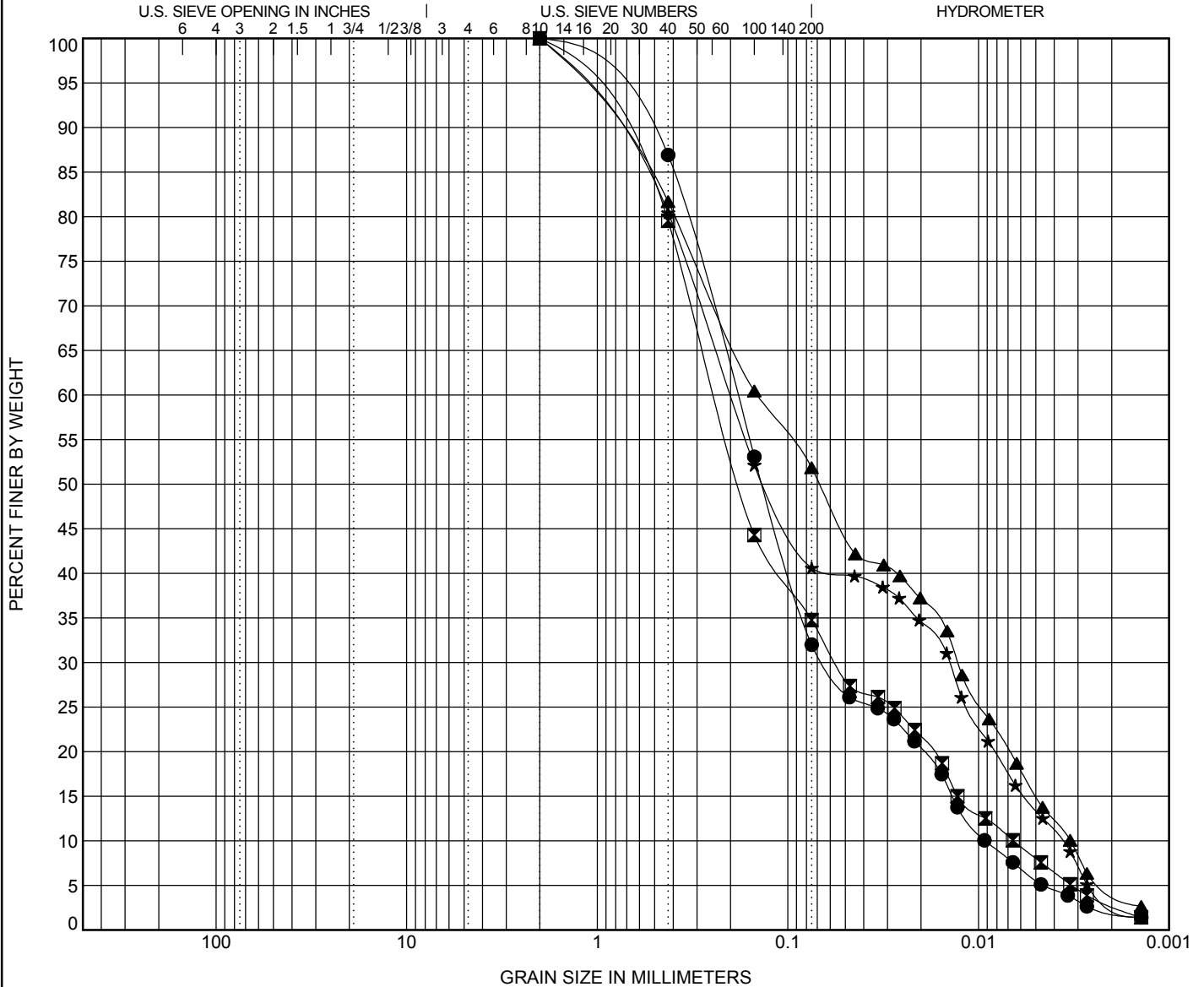
GRAIN SIZE DISTRIBUTION

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL





TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

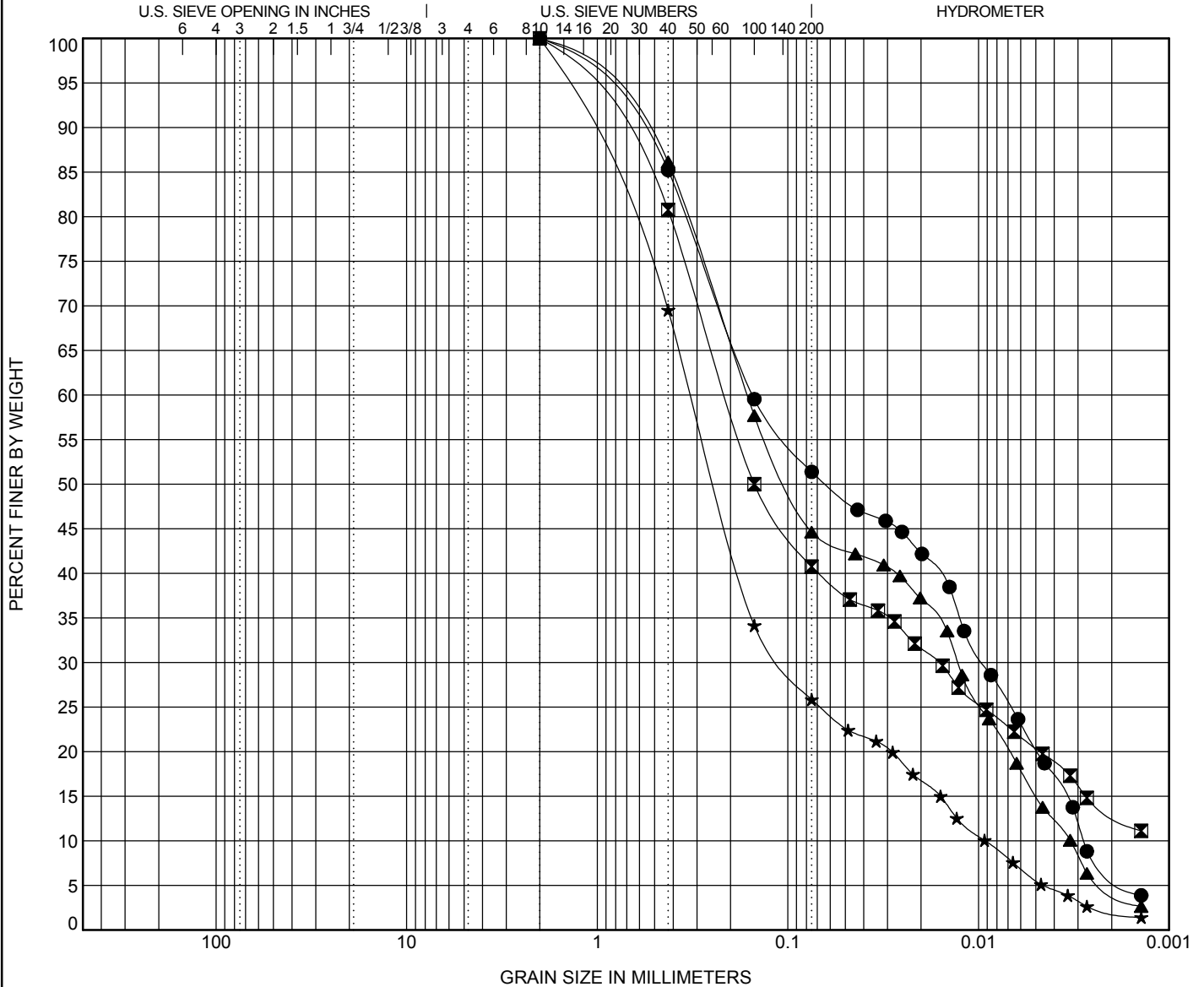
GRAIN SIZE DISTRIBUTION

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL





TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

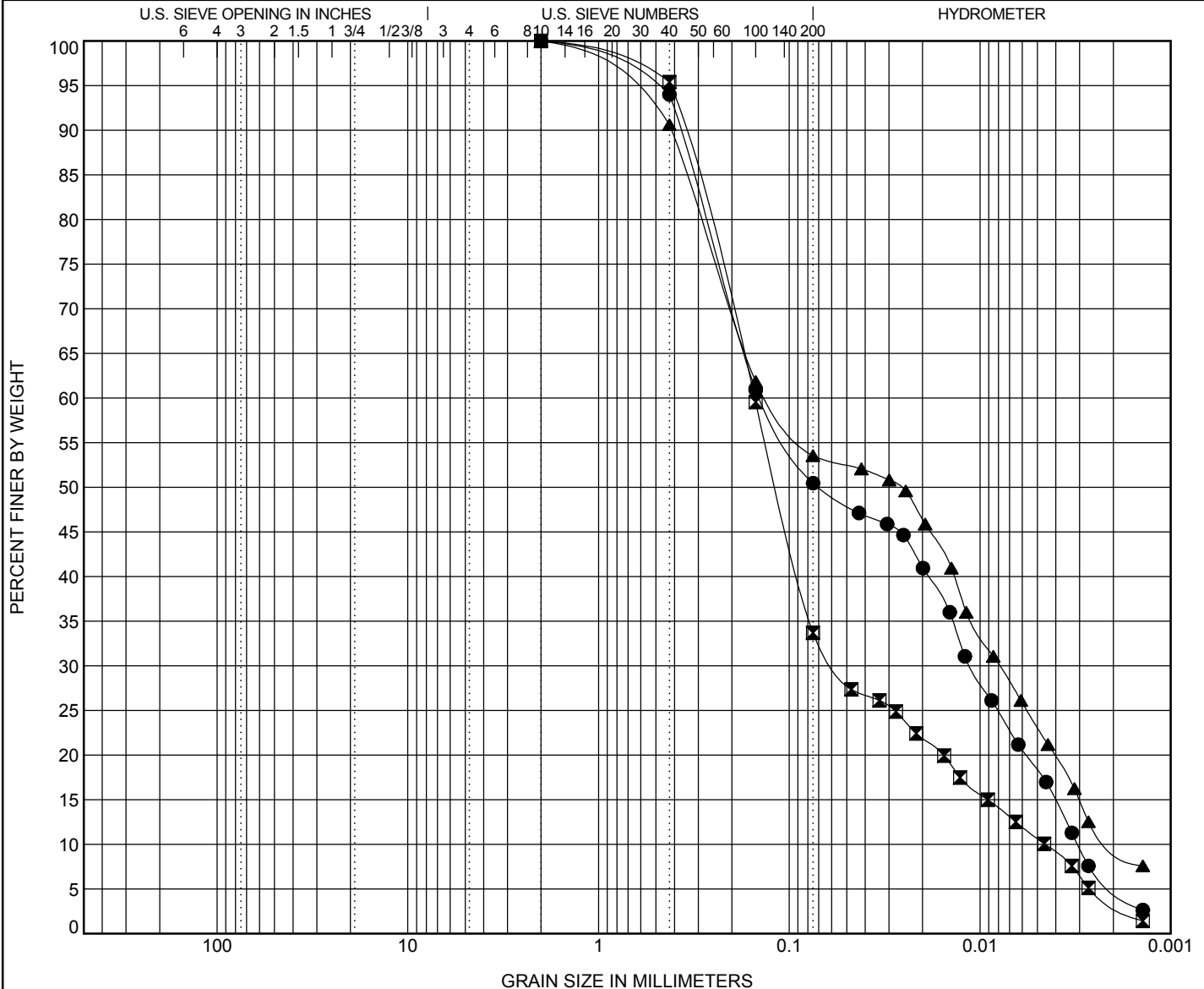
GRAIN SIZE DISTRIBUTION

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			USCS Classification	LL	PL	PI	Cc	Cu
●	B-37	2.0	SANDY LEAN CLAY (CL)	29	18	11	0.3	45.9
☒	B-44	0.0	SILTY SAND (SM)	NP	NP	NP	4.7	33.3
▲	B-48	2.0	SANDY LEAN CLAY (CL)				0.3	66.6

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-37	2.0	2	0.141	0.011	0.003	0.0	49.5	32.2	18.3
☒	B-44	0.0	2	0.152	0.057	0.005	0.0	66.3	23.0	10.7
▲	B-48	2.0	2	0.129	0.008	0.002	0.0	46.5	30.4	23.1



TTL Associates, Inc.
1915 N 12th Street
Toledo, Ohio 43624
Telephone: 419-324-2222
Fax: 419-241-1808

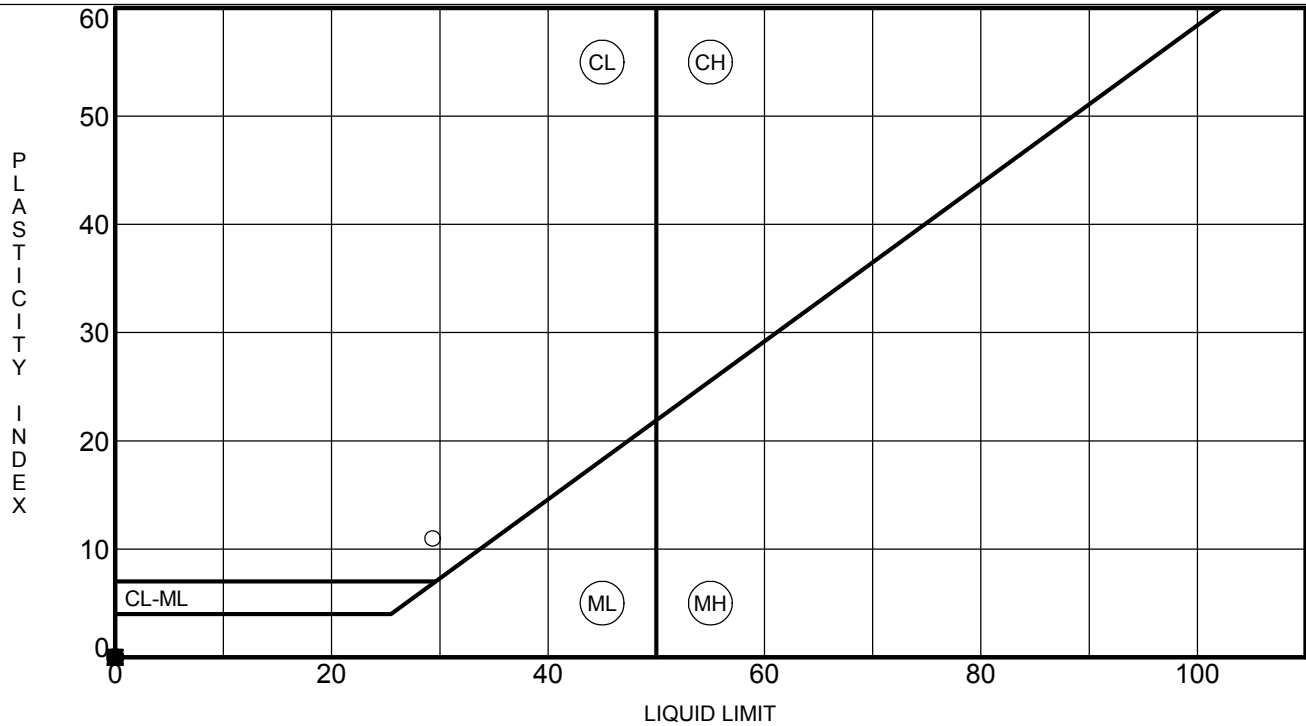
ATTERBERG LIMITS' RESULTS

CLIENT U.S. Department of Veterans Affairs

PROJECT NAME Proposed VA National Cemetery - 250 Acres Site

PROJECT NUMBER 7524.04

PROJECT LOCATION Tallahassee, Leon County, FL



Client Identification:	TTL Associates, Inc.	Sample Description:	B-1	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	1	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-001		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	8.0		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-001		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 13:51	-2079956117
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 13:51	-2079956114



Analytical Laboratory Report
Laboratory Project Number: 45830
Laboratory Sample Number: 45830-002

Order: 45830
Page: 3 of 10
Date: 08/18/11

Client Identification:	TTL Associates, Inc.	Sample Description:	B-17	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	2	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-002		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	14		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-002		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:06	-2079956103
2. Sulfate	12		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:06	-2079956100

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584

Client Identification:	TTL Associates, Inc.	Sample Description:	B-21	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	3	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-003		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	10		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-003		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:21	-2079956089
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:21	-2079956086

Client Identification:	TTL Associates, Inc.	Sample Description:	B-28	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	4	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-004		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	13		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-004		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:36	-2079956075
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:36	-2079956072



Analytical Laboratory Report
Laboratory Project Number: 45830
Laboratory Sample Number: 45830-005

Order: 45830
Page: 6 of 10
Date: 08/18/11

Client Identification:	TTL Associates, Inc.	Sample Description:	B-30	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	5	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-005		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	12		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-005		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:52	-2079956061
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 14:52	-2079956058

1914 Holloway Drive
11766 E. Grand River
8660 S. Mackinaw Trail

Holt, MI 48842
Brighton, MI 48116
Cadillac, MI 49601

T: (517) 699-0345
T: (810) 220-3300
T: (231) 775-8368

F: (517) 699-0388
F: (810) 220-3311
F: (231) 775-8584

Client Identification:	TTL Associates, Inc.	Sample Description:	B-32	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	6	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-006		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	14		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-006		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 15:07	-2079956047
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 15:07	-2079956044

Client Identification:	TTL Associates, Inc.	Sample Description:	B-39	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	7	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-007		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	9.6		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-007		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 15:22	-2079956033
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 15:22	-2079956030

Client Identification:	TTL Associates, Inc.	Sample Description:	B-40	Chain of Custody:	103435
Client Project Name:	VA Cemetery Leon Co, FL-250 Acres	Sample No:	8	Collect Date:	08/10/11
Client Project No:	7524.04	Sample Matrix:	Soil/Solid	Collect Time:	15:45
Sample Comments:	Soil results have been calculated and reported on a dry weight basis unless otherwise noted.				
Definitions:	Q: Qualifier (see definitions at end of report) NA: Not Applicable NN: Parameter not included in NELAC Scope of Analysis.				

Dry Weight Determination (ASTM D 2974-87)				Aliquot ID: 45830-008		Matrix: Soil/Solid		Analyst: BMG	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Percent Moisture (Water Content) (NN)	17		%	0.1	1.0	08/15/11	MC110815	08/16/11	MC110815

Inorganic Anions by IC (EPA 0300.0/EPA 9056)				Aliquot ID: 45830-008		Matrix: Soil/Solid		Analyst: CML	
Parameter(s)	Result	Q	Units	Reporting Limit	Dilution	Prep Date	Prep Batch	Analysis Date	Analysis Batch
1. Chloride	U		mg/kg	100	1.0	08/16/11 16:16	PW11H16B	08/17/11 15:38	-2079956019
2. Sulfate	U		mg/kg	10	1.0	08/16/11 16:16	PW11H16B	08/17/11 15:38	-2079956016

Definitions/ Qualifiers:

- A:** Spike recovery or precision unusable due to dilution.
B: The analyte was detected in the associated method blank.
E: The analyte was detected at a concentration greater than the calibration range, therefore the result is estimated.
J: The concentration is an estimated value.
M: Modified Method
U: The analyte was not detected at or above the reporting limit.
X: Matrix Interference has resulted in a raised reporting limit or distorted result.
W: Results reported on a wet-weight basis.
***:** Value reported is outside QA limits

Exception Summary:

