Geotechnical Engineering Report

Carver Road Self Storage
Griffin, Spalding County, Georgia

June 10, 2022
Terracon Project No. 49225094

Prepared for:
Storage Solutions of Georgia, Inc.
Powder Springs, Georgia

Prepared by:
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Atlanta, Georgia

June 10, 2022

Storage Solutions of Georgia, Inc.
480 Schofield Drive
Powder Springs, Georgia 30328

Attn: Mr. Pat Baumgartner
P: (678) 772 2307
E: Patrick.baumgar@gmail.com

Re: Geotechnical Engineering Report
Carver Road Self Storage
450 Carver Road
Griffin, Spalding County, Georgia
Terracon Project No. 49225094

Dear Mr. Baumgartner:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. P49225094, dated April 11, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations and floor slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

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Environmental ■ Facilities ■ Geotechnical ■ Materials

REPORT TOPICS

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

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INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed storage facility development to be located at 450 Carver Road in Griffin, Spalding County, Georgia. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Excavation considerations
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC
- Pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of 10 test borings to depths ranging from 10 to 30 feet below existing site grades.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of readily available geologic and topographic maps as well as provided documents, plans, etc.

Item	Description
Parcel Information	The project is located at 450 Carver Road in Griffin, Spalding County, Georgia. Approximate size of the property is 7 acres. Approximate Coordinates: 33.237887 °N / -84.296714 °W See **Site Location**
Existing Improvements	Undeveloped.

Item	Description
Current Ground Cover	Grass covered open field.
Existing Topography (from provided conceptual site plan)	The site generally slopes downward from a NE to SW direction. Ground surface elevations within the site range from about 956 to 932 feet.
Geology	The site is located in the Piedmont physiographic province of Georgia.

PROJECT DESCRIPTION

Our current understanding of the project conditions is as follows:

Item	Description
Information Provided	Our understanding of the project is based upon email correspondence with you and our recent site visit. The following file was provided via email: ■ *IMG-0800.jpg* ■ *Pat layout 3.20.2022.pdf* ■ *Screen Shot 2022-02-25 at 8.22.50 PM.png* ■ *Screen Shot 2022-02-25 at 8.24.56 PM.png* ■ *Site plan design basics.docx* ■ *504 Carver Road Self Storage_CONCEPT 6 2 22.pdf*
Project Description	The site is intended to be developed as a storage facility with associated paved areas and a detention pond.
Proposed Structure	The project includes five storage buildings with a total footprint of about 103,200 square feet. The buildings will be slab-on-grade (non-basement) single story structures.
Building Construction	Anticipated to be steel-framed structures. Slab-on-grade.
Finished Floor Elevation (FFE)	FFE ranging from 940 to 948 feet.
Maximum Loads (assumed)	■ Columns: 150 kips ■ Walls: 3 kips per linear foot (klf) ■ Slabs: 100 pounds per square foot (psf)
Grading/Slopes	Based on the provided conceptual site plan, up to ±7 feet of cut and fill will be necessary to establish proposed finished floor elevations.
Below-Grade Structures	None anticipated (basements, underground detention, etc.)
Free-Standing Retaining Walls	None anticipated but may become necessary as design progresses.
Pavements	We assume both rigid (concrete) and flexible (asphalt) pavement sections should be considered. Traffic information has not been provided.

GEOTECHNICAL CHARACTERIZATION

Site Geology

The project site is located in the Piedmont Physiographic Province of Georgia which is characterized by medium to high grade metamorphic rocks and scattered igneous intrusions. The term metamorphic describes rocks that have been subjected to high temperatures and/or pressures, usually deep within the earth's crust. These high temperatures and pressures cause the textural and mineralogical characteristics of the original rock to be altered and can also cause certain rock types to fully melt, becoming what is known as magma. Magma is less dense than the surrounding solidified rock and tends to move upward through fractures and joints, displacing the surrounding rock. This rock type is known as an igneous intrusion. Metamorphic rocks are predominant in this region but, due to erosion and uplift, both of these rocks will eventually become exposed at the land surface.

The subsurface bedrock in this region has undergone differing rates of weathering, which often produces a considerable variation in depth to competent rock over short horizontal distances. It is also not unusual for lenses and boulders of hard rock and zones of partially weathered rock to be present within the soil mantle above the general bedrock level. The typical residual soil profile consists of clayey soils near the surface, where soil weathering is more advanced, underlain by sandy silts and silty sands, which often consist of saprolites (native soils which maintain the original fabric of the parent rock). Generally, the soil becomes harder with depth to the top of parent crystalline rock or "massive bedrock" which occurs at depth.

The boundary between soil and rock is typically not sharply defined. A transitional zone termed "partially weathered rock" is normally found overlying bedrock. Partially weathered rock (PWR) is defined for engineering purposes as residual material with a standard penetration resistance exceeding 100 blows per foot (bpf).

Based on information from the USGS website, the primary bedrock beneath this site is Precambrian to Paleozoic-aged mica schist. Amphibolite and gneiss may also be present.

Fill soils are those soils that have been placed or reworked by man in conjunction with past construction grading, underground utility installation, farming or other previous activity at the site. Fill can be composed of different soil types from various sources and can contain debris from building demolition, organics, topsoil, trash, etc. The engineering properties of the fill depend primarily on its composition, density, and moisture content. Additionally, some materials, where it is difficult to determine if they are fill, are deemed as possible fill.

Typical Subsurface Profile

Based on the results of the borings, subsurface conditions on the project site can be generalized as follows:

Description	Approximate Depth to Bottom of Stratum	Material Encountered	Consistency/Density
Stratum 1	1.5 to 2 inches	Topsoil	---
Stratum 2	3 feet	Fill[1] – Sandy CLAY (CL) Silty SAND (SM)	Medium Stiff Loose
Stratum 3	Below boring termination depth (10 to 30 feet)	Residuum- Sandy CLAY (CL) Silty Clayey SAND (SC-SM)	Medium Stiff to Very Stiff Loose to Medium Dense

1. Encountered in borings B-3, B-7, B-8 and B-10

Specific conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in situ, the transition between materials may be gradual. Details for each of the borings are presented on the boring logs included in the **Exploration Results** section of this report.

Groundwater

The boreholes were observed while drilling and after completion for the presence and level of groundwater. Groundwater was observed between about 10 ½ to 18 feet in all of the borings with the exception of B-9 where groundwater was not encountered while drilling. Relatively stabilized groundwater depths were measured in five borings (B-4, B-6, B-7, B-8 and B-10) at depths ranging from about 8 ½ to 15 ½ feet the day after drilling. The remaining borings were backfilled immediately after drilling completion as drill crew left the site on the day of exploration as such a delayed water reading after 24 hours of exploration activities was not measured in these borings. Groundwater depths could be shallower if stabilized groundwater reading was recorded. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. In addition, perched water can develop over low permeability soil or rock strata. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

Infiltration testing

The infiltration rate testing was performed using Aardvark Model 2840 Permeameter. The Aardvark Permeameter is a constant-head device, meaning that the depth of water in a test borehole does not change during the measurement period. As a result, the measurement conditions remain constant during the measurement period. The rate of water supplied to the borehole corresponds to the soil infiltration rate from the bottom and side surfaces of the test borehole. The Aardvark Permeameter estimates soil hydraulic conductivity using the amount of supplied water measured at equal time intervals. This is equivalent to the amount of water that is transmitted by soil. The measurement ends when the reservoir flow rate (soil-water infiltration rate) is consistent over several consecutive readings. Soil hydraulic conductivity then can be calculates using the steady flow rate.

Please refer to the infiltration rate testing report included in **Exploration Results** section of this geotechnical engineering report prepared by our sub-contractor AES regarding methodology, results and limitations. The results of the test are summarized below:

Test Number	Existing Ground Elevation[1] (feet)	Proposed Test Elevation[1] (feet)	Proposed Test Depths (inches)	Actual Test Depths (inches)	Infiltration Rate, K (in/hr)
I-1	936	864	72	72	0.32
I-2[2]	936	864	72	72	0.00
I-3	936	864	72	72	0.81

1. Approximate elevations interpolated from provided topographic map
2. Dense material encountered at the test depth

Maps showing the test locations are shown in the **Exploration Plan** section.

GEOTECHNICAL OVERVIEW

The site appears suitable for the proposed construction based upon geotechnical conditions encountered in the borings and our current understanding of the proposed development.

Based on the geotechnical engineering analyses and subsurface exploration we recommend that the proposed structures be supported on a spread footing foundation system as discussed herein.

Below the surficial topsoil, existing fill soils were encountered in four borings to a depth of about 3 feet below the existing site grades. Below the fill soils, Piedmont residual soils were encountered in the borings to termination depth of the borings.

Groundwater was observed between about 10 ½ to 18 feet in the borings for the short duration that they were allowed to remain open. Based on anticipated finished grades, we do not anticipate groundwater to adversely impact construction.

Support of foundations, floor slabs and pavements on or above existing fill materials is discussed in this report. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

To take advantage of the cost benefit of not removing the entire amount of undocumented fill, the owner must be willing to accept the risk associated with buildings over the existing fills following any recommended reworking of the material.

Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The **Shallow Foundations** section addresses support of the buildings bearing on existing fill or residual soil or structural fill. The **Floor Slabs** section addresses slab-on-grade support of the buildings.

Both rigid and flexible pavement systems need to be considered for this site. The **Pavements** section addresses the design of pavement systems.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in preparation of specifications. Recommendations include quality criteria necessary, to appropriately prepare the site.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project and identified in this report.

Site Preparation

We anticipate construction will be initiated by stripping vegetation, and loose, soft or otherwise unsuitable material. Stripped materials consisting of vegetation and organic materials should be wasted off site or used to vegetate landscaped areas or exposed slopes after completion of grading operations. Stripping depths between our boring locations and across the site could vary considerably; as such we recommend actual stripping depths be evaluated by Terracon during construction to aid in preventing removal of excess material.

If found, former utility lines and utility backfill should be removed from beneath the planned structures, and the resulting excavations should be properly backfill as outlined herein. These field conditions should be evaluated at the time of construction by the Geotechnical Engineer.

The micaceous silty sand soils encountered in the borings will be sensitive to disturbance from construction activity and water seepage. If precipitation occurs prior to or during construction, the near-surface silty soils could increase in moisture content and become more susceptible to disturbance. Construction activity should be monitored and curtailed if the construction activity is causing subgrade disturbance. Terracon can help with monitoring and developing recommendations to aid in limiting subgrade disturbance.

After stripping, proofrolling should be performed with heavy rubber tire construction equipment such as a fully loaded tandem-axle dump truck. A Terracon Geotechnical Engineer or their representative should observe proofrolling to aid in locating unstable subgrade materials. Proofrolling should be performed after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade and to reduce the amount of undercutting / remedial work required. Unstable materials identified should be stabilized as directed by the engineer based on conditions observed during construction. Undercut and replacement and densification in-place are typical remediation methods.

Existing Fill

As noted in **Geotechnical Characterization**, four borings (B-3, B-7, B-8 and B-10) encountered existing fill to a depth of about 3 feet. We have no records to indicate the degree of compaction achieved during placement. If such records (density test, etc.) exist, they should be provided to us for evaluation. Since this is a pre-graded site, undocumented fill soils can be anticipated in other portions of the development.

Support of footings, floor slabs and pavements on or above existing fill soils, is discussed in this report. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated without completely removing the existing fill but can be reduced by following the recommendations contained in this report.

If the owner elects to construct the footings, floor slabs or pavements on the existing fill, the following protocol should be followed. Initial site preparation should be performed as noted in the previous section. Once the planned grading has been completed, the entire area should again be proofrolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. If encountered, these materials should be remediated as directed by the Geotechnical Engineer.

Due to the inherent variability of undocumented fill soils, he areas where exiting fill soils are present will likely need some amount of remedial work. Reworking will likely consist of a combination of undercutting and replacement and in-place densification. Again, after clearing and grubbing has been performed, we recommend that all at-grade areas and areas to be filled be thoroughly proofrolled with a heavy rubber-tired piece of construction equipment prior to the placement of any new fill materials. This important step is to help characterize the condition of the existing fills that might be left in-place. Materials assessed to be unstable (exhibit pumping, rutting, etc.) should be further densified, or undercut and replaced with engineered fill.

Excavation Conditions

After comparison of the boring data and the anticipated finished grade elevation, we do not expect that materials requiring difficult excavation techniques will be encountered during mass grading operations. The existing fill and residual soils found above finished floor levels should be excavatable with conventional earthmoving equipment.

Fill Material Types

Engineered fill should consist of approved materials, relatively free of organic material, debris and particles larger than about 3 inches. For planning purposes, soils for use as engineered fill material should conform to the following specifications:

Soil Type [1,2,3]	USCS Classification	Acceptable Location for Placement
Fine Grain	CL and ML (LL<45, PI<25)	All locations and elevations
Granular	SP, SM, SC, and SW	All locations and elevations
On-Site Soils	CL, SC-SM and SM	All locations and elevations

1. Controlled compacted fill should consist of materials that are relatively free of organic matter, debris, and particles larger than about 3 inches. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. A large portion of the existing fill is expected to be suitable for reuse as new fill provided it is free of organics, debris, and unsuitable materials. Terracon should field evaluate existing fill materials for use.
3. All fill should have a maximum dry density of at least 95 pounds per cubic foot (pcf) as determined by the standard Proctor test (ASTM D 698).
4. Any materials proposed as fill from off-site sources should be tested for compliance with these criteria before being hauled to the site.

Fill Compaction Requirements

Structural and general fill should meet the following compaction requirements.

Item	Structural Fill	General Fill
Maximum Lift Thickness	■ 8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used ■ 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used	Same as Structural fill
Minimum Compaction Requirements [1,2]	■ 98% of max. dry density within 1 foot of floor slab subgrade and finished pavement subgrade ■ 95% of max. dry density below foundations and more than 1 foot below floor slabs and finished pavement subgrade	92% of max.
Moisture Content Range [1,2,3]	Fine Grain Soils: -2% to +3% of optimum Granular: -3% to +3% of optimum	As required to achieve minimum compaction requirements

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).
2. Fill should be tested for compaction and moisture content during placement. Should the results of the in-place density tests indicate that the specified moisture or compaction requirements have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
3. Moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without pumping when proofrolled.

Grading and Drainage

Adequate positive drainage should be provided during construction and maintained throughout the life of the development to prevent an increase in moisture content of the foundation, pavement and backfill materials.

Gutters and downspouts that drain water a minimum of 10 feet beyond the footprint of the proposed structures are recommended. This can be accomplished through the use of splash-blocks, downspout extensions, and flexible pipes that are designed to attach to the end of the downspout. Flexible pipe should only be used if it is daylighted in such a manner that it gravity-drains collected water. Splash-blocks should also be considered below hose bibs and water spigots.

Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of floor slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

Surface water should not be allowed to pond on the site and soak into the soil during construction. Construction staging should provide drainage of surface water and precipitation away from the building and pavement areas. Any water that collects over or adjacent to construction areas should be promptly removed, along with any softened or disturbed soils. Surface water control in the form of sloping surfaces, drainage ditches and trenches, and sump pits and pumps will be important to avoid ponding and associated delays due to precipitation and seepage.

Groundwater was encountered in the borings at depths ranging from about 10 ½ to 18 feet during our exploration. Groundwater depths could be shallower if stabilized groundwater reading was recorded in all of the boring locations. Groundwater will likely be encountered during utility installation. If groundwater is encountered during construction, some form of temporary dewatering may be required. Conventional dewatering methods, such as pumping from sumps, should likely be adequate for temporary removal of any groundwater encountered during excavation at the site.

All excavations should be sloped or braced as required by Occupational Safety and Health Administration (OSHA) regulations to provide stability and safe working conditions. Temporary excavations will probably be required during grading operations. The grading contractor, by his contract, is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in the **Earthwork** section, the proposed structures can be supported by a shallow, spread footing foundation system bearing on existing fill or residual soils or structural fill extending to residual soils. Design recommendations for shallow foundations for the proposed structures are presented in the following paragraphs.

Design Parameters – Compressive Loads

Item	Description
Maximum Net Allowable Bearing pressure [1, 2]	2,500 psf
Required Bearing Stratum [3]	Structural fill / residual soils
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 16 inches
Ultimate Coefficient of Sliding Friction [4]	0.35 (granular material)
Minimum Embedment below Finished Grade [5]	Exterior footings in unheated areas: 18 inches Exterior footings in heated areas: 18 inches Interior footings in heated areas: 12 inches
Estimated Total Settlement from Structural Loads [2]	Less than about 1 inch
Estimated Differential Settlement [2, 6]	About ½ of total settlement

Item	Description

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Values assume that exterior grades are no steeper than 5% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be over-excavated and replaced per the recommendations presented in **Earthwork**.
4. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
5. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
6. Differential settlements are as measured over a span of 40 feet.

The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The weight of the foundation concrete below grade may be neglected in dead load computations. Interior footings should bear a minimum of 12 inches below finished grade. Finished grade is the lowest adjacent grade for perimeter footings and floor level for interior footings.

Footings, foundations, and masonry walls should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. The use of joints at openings or other discontinuities in masonry walls is recommended.

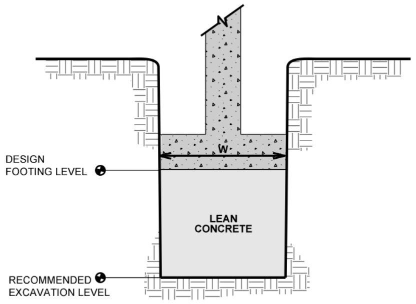
Foundation excavations should be observed by the Geotechnical Engineer. If the soil conditions encountered differ from those presented in this report, supplemental recommendations will be required.

Foundation Construction Considerations

As noted in the **Earthwork** section, soils exposed in footing excavations should be evaluated by the Geotechnical Engineer or their representative. Where footings will bear on existing fills, they should be thoroughly evaluated at the time of excavation with hand auger borings and Dynamic Cone Penetrometer (DCP) tests to evaluate if the encountered materials are sufficient to support the design bearing pressure.

The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soils at bearing level become excessively dry, disturbed or saturated, or frozen, the affected soil should be removed prior to placing concrete. Place a lean concrete mud-mat over the bearing soils if the excavations must remain open over night or for an extended period of time. It is recommended that the Geotechnical Engineer be retained to observe and test the soil foundation bearing materials.

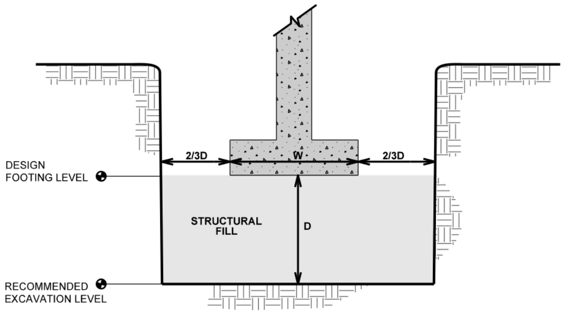
If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



LEAN CONCRETE BACKFILL

NOTE: EXCAVATIONS ARE SHOWN VERTICAL; HOWEVER, THE SIDEWALLS SHOULD BE SLOPED AS NECESSARY FOR SAFETY

Over-excavation for structural fill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well-graded granular material placed in lifts of 8 inches or less in loose thickness and compacted to at least 95 percent of the material's maximum standard Proctor dry density (ASTM D-698). The overexcavation and backfill procedure is described in the figure below.



OVER-EXCAVATION / BACKFILL ZONE

NOTE: EXCAVATIONS ARE SHOWN VERTICAL; HOWEVER, THE SIDEWALLS SHOULD BE SLOPED AS NECESSARY FOR SAFETY

SEISMIC CONSIDERATIONS

Seismic Site Classification

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is a required component in determining the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site subsurface profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7-16 and the International Building Code (IBC) 2018.

The 2018 International Building Code (2018 IBC) requires a site soil profile determination extending a depth of 100 feet for seismic site classification. Subsurface explorations at this site were extended to a depth of about 30 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Based on the standard penetration resistance values from the soil borings drilled at the site, it is our professional opinion that the Seismic Site Classification at this site is a “D”.

FLOOR SLABS

Depending upon the finished floor elevation, unsuitable, weak, soft to medium stiff soils may be encountered at the floor slab subgrade level. These soils should be replaced with structural fill so the floor slab is supported on at least 2 feet of compacted suitable residual soils or structural fill.

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support [1]	Minimum 12 inches of approved on-site or imported soils placed and compacted in accordance with the **Earthwork** section of this report.[2,3]
Subbase	4-inch compacted layer of free draining, granular subbase material
Estimated Modulus of Subgrade Reaction [3]	100 pounds per square inch per inch (psi/in) for point loads

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.
2. We recommend subgrades be maintained at the proper moisture condition until floor slabs are constructed. If the subgrade should become desiccated prior to construction, the affected material should be removed or the materials scarified, moistened, and recompacted. Upon completion of grading operations in the building areas, care should be taken to maintain the recommended subgrade moisture content and density prior to construction of the building floor slabs.
3. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.

A subgrade prepared and tested as recommended in this report should provide adequate support for lightly loaded floor slabs.

The use of a vapor retarder should be considered beneath concrete slabs on grade that will be covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Floor Slab Construction Considerations

On most project sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed due to utility excavations, construction traffic, desiccation, rainfall, etc. As a result, the floor slab subgrade may not be suitable for placement of base rock and concrete and corrective action may be required.

We recommend the area underlying the floor slab be rough graded and then thoroughly proofrolled with a loaded tandem axle dump truck prior to final grading and placement of base rock. Attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the affected material with properly compacted fill. All floor slab subgrade areas should be moisture conditioned and properly compacted to the recommendations in this report immediately prior to placement of the base rock and concrete.

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

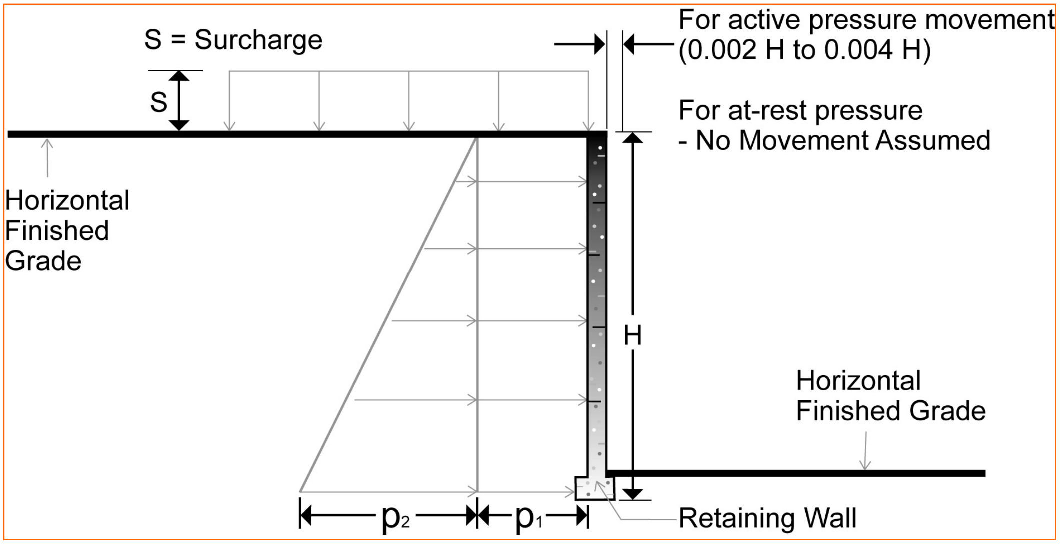
The Geotechnical Engineer should observe the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

LATERAL EARTH PRESSURES

Design Parameters

The lateral earth pressure recommendations herein are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. The following recommendations can be considered for walls such as one-level basement walls, retaining/loading dock walls or cast-in-place site retaining walls less than 15 feet in height. These recommendations are not applicable to the design of modular block - geogrid reinforced (mechanically stabilized earth (MSE)) backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment. However, we would be pleased to develop recommendations for the design of such wall systems upon request.

Structures with unbalanced backfill levels on opposite sides should be designed for earth pressures at least equal to values indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown in the diagram below. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The “at-rest” condition assumes no wall movement and is commonly used for basement walls, loading dock walls, or other walls restrained at the top. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls (unless stated).



Lateral Earth Pressure Design Parameters			
Earth Pressure Condition	**Coefficient for Backfill Type**[4]	**Surcharge Pressure**[5,6,7] **p_1 (psf)**	**Effective Fluid Pressure**[4,6,7,8,9] **p_2 (psf)**
Active (K_a)[1]	Sandy Silt/Silty Sand- 0.36	(0.36)S	(45)H
At-Rest (K_o)	Sandy Silt/Silty Sand - 0.53	(0.53)S	(65)H
Passive (K_p)[2,3]	Sandy Silt/Silty Sand – 2.8	---	---

1. For active earth pressure, wall must rotate about base, with top lateral movements 0.002 H to 0.004 H, where H is wall height.
2. For passive earth pressure to develop, wall must move horizontally to mobilize resistance. Therefore, the total calculated passive pressure should be reduced by one-third to one -half for design purposes.
3. Ignore passive pressure in frost zone
4. Uniform, horizontal backfill, compacted to at least 95% of the ASTM D 698 maximum dry density, rendering a maximum unit weight of 120 pcf.
5. Uniform surcharge, where S is surcharge pressure.
6. Loading from heavy compaction equipment and dynamic loading are not included.
7. No safety factor is included in these values.
8. To achieve "Unsaturated" conditions, follow guidelines in **Subsurface Drainage for Below-Grade Walls** below.
9. No hydrostatic pressure acting on wall.

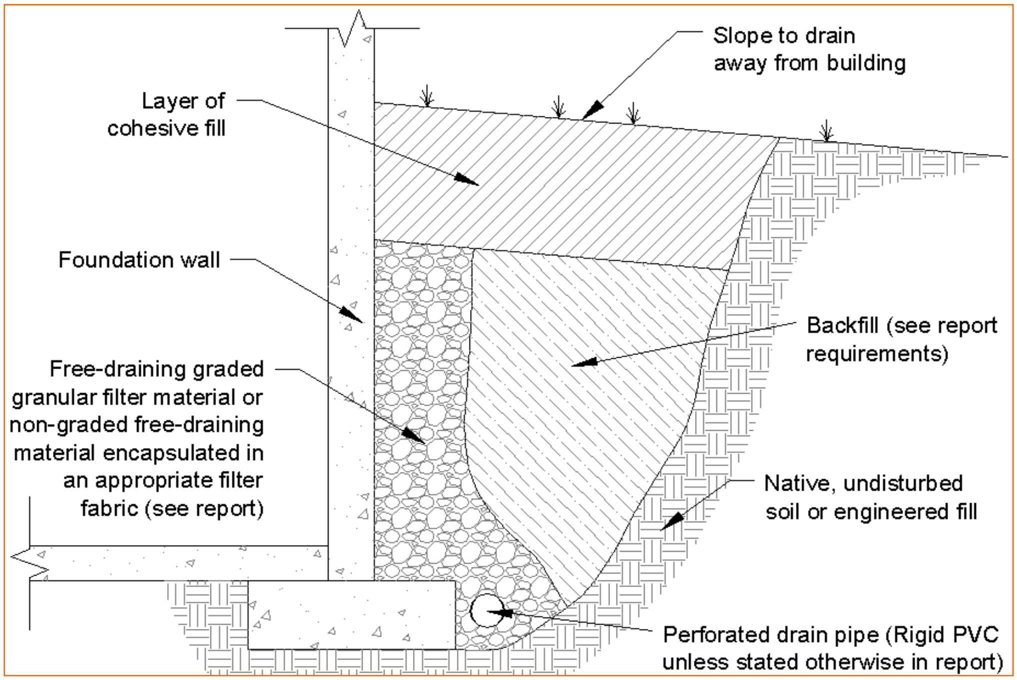
Backfill placed against structures should consist of sands, silty sands or sandy silts, which are the predominant native soils in this region. To calculate the resistance to sliding, a value of 0.35 should be used as the ultimate coefficient of friction between the footing and the underlying soil.

Heavy equipment should not operate within a distance closer than the exposed height of retaining walls to prevent lateral pressures more than those provided.

Dampproofing of the walls below the ground surface is also recommended to aid in preventing seepage of water into the structure during situations of heavy rains.

Subsurface Drainage for Below-Grade Walls

A perforated rigid plastic drain line installed behind the base of walls and extends below adjacent grade is recommended to prevent hydrostatic loading on the walls. The invert of a drain line around a below-grade building area or exterior retaining wall should be placed near foundation bearing level. The drain line should be sloped to provide positive gravity drainage to daylight or to a sump pit and pump. The drain line should be surrounded by clean, free-draining granular material having less than 5% passing the No. 200 sieve, such as No. 57 aggregate. The free-draining aggregate should be encapsulated in a filter fabric. The granular fill should extend to within 2 feet of final grade, where it should be capped with compacted cohesive fill to reduce infiltration of surface water into the drain system.



As an alternative to free-draining granular fill, a pre-fabricated drainage structure may be used. A pre-fabricated drainage structure is a plastic drainage core or mesh which is covered with filter fabric to prevent soil intrusion, and is fastened to the wall prior to placing backfill.

PAVEMENTS

Subgrade Preparation

On most project sites, the site grading is accomplished relatively early in the construction phase. Fills are placed and compacted in a uniform manner. However, as construction proceeds, excavations are made into these areas, rainfall and surface water saturates some areas, heavy traffic from concrete trucks and other delivery vehicles disturbs the subgrade and many surface irregularities are filled in with loose soils to improve trafficability temporarily. As a result, the pavement subgrades, initially prepared early in the project, should be carefully evaluated as the time for pavement construction approaches.

We recommend the moisture content and density of the top 12 inches of the subgrade be evaluated and the pavement subgrades be proofrolled within two days prior to commencement of actual paving operations. Areas not in compliance with the required ranges of moisture or density should be moisture conditioned and recompacted. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the materials with properly compacted fills. If a significant precipitation event occurs after the evaluation or if the surface becomes disturbed, the subgrade should be reviewed by qualified personnel immediately prior to paving. The subgrade should be in its finished form at the time of the final review.

After proofrolling and repairing subgrade deficiencies, the entire subgrade should be scarified and developed as recommended in the **Earthwork** section of this report to provide a uniform subgrade for pavement construction. Areas that appear severely desiccated following site stripping may require further undercutting and moisture conditioning.

Pavement Design Considerations

Traffic patterns and anticipated loading conditions were not available at the time that this report was prepared. However, we anticipate that traffic loads will be produced primarily by automobile traffic (200 cars per day) and occasional delivery and trash removal trucks (5 trucks per week). The thickness of pavements subjected to heavy truck traffic should be determined using expected traffic volumes, vehicle types, and vehicle loads and should be in accordance with local, city or county ordinances.

Pavement thickness can be determined using AASHTO, Asphalt Institute and/or other methods if specific wheel loads, axle configurations, frequencies, and desired pavement life are provided. Terracon can provide thickness recommendations for pavements subjected to loads other than personal vehicle and occasional delivery and trash removal truck traffic if this information is provided.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to parking lots and drives should slope down from pavement edges at a minimum 2%;
- The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote proper surface drainage;
- Install pavement drainage surrounding areas anticipated for frequent wetting (e.g., garden centers, wash racks);
- Install joint sealant and seal cracks immediately;
- Seal all landscaped areas in, or adjacent to pavements to reduce moisture migration to subgrade soils;
- Place compacted, low permeability backfill against the exterior side of curb and gutter; and,
- Place curb, gutter and/or sidewalk directly on low permeability subgrade soils rather than on unbound granular base course materials.

Estimates of Minimum Pavement Thickness

Traffic information was not available during the preparation of this report. We have assumed 200 cars per day, 5 trucks per week, and 20-year design life. Based on this assumption, at minimum, we recommend the following typical pavement sections be considered. Revision to these pavement thicknesses should be performed if traffic loading will be different than assumed.

Asphalt (AC) Pavement			
Material	**Light Duty[1] Thickness (inches)**	**Heavy Duty[2] Thickness (inches)**	**GDOT**
Subgrade	Upper 12 inches of existing soil or engineered fill	Upper 12 inches of existing soil or engineered fill	98% of Standard Proctor MMD, -2 to +3% OMC
Aggregate Base	6	8	GAB, Section 815 and 310
Asphalt Binder Course	-	1¾	SP19 - Section 400, 424, 824 and 828
Asphalt Surface Course	2	1¼	SP9.5 - Section 400, 424, 824 and 828

1. Automobiles only.
2. Combined automobiles and trucks.

The graded aggregate base should be compacted to a minimum of 98 percent of the material's modified Proctor (ASTM D-1557, Method C) maximum dry density. Where base course thickness exceeds 6 inches, the material should be placed and compacted in two or more lifts of equal thickness.

The listed pavement component thicknesses should be used as a guide for pavement systems at the site for the traffic classifications stated herein. These recommendations assume a 20-year pavement design life. If pavement frequencies or loads will be different than that specified Terracon should be contacted and allowed to review these pavement sections.

Asphalt concrete aggregates and base course materials should conform to the Georgia Department of Transportation (GDOT) "Standard Specifications for Construction of Transportation System".

Portland Cement Concrete (PCC) Pavement			
Material	**Light Duty[1] Thickness (inches)**	**Heavy Duty[2] Thickness (inches)**	**Reference**
Subgrade	Upper 12 inches of existing soil or engineered fill	Upper 12 inches of existing soil or engineered fill	GDOT: 98% of Standard Proctor MMD, -2 to +3% OMC
Aggregate Base	4	4	GDOT: GAB, Section 815 and 310
PCC	5	6 ½	ACI

1. Automobiles only.
2. Combined automobiles and trucks.

We recommend a Portland cement concrete (PCC) pavement be utilized in entrance and exit sections, dumpster pads, loading dock areas, or other areas where extensive wheel maneuvering are expected. The dumpster pad should be large enough to support the wheels of the truck which will bear the load of the dumpster.

Although not required for structural support, the base course layer is recommended to help reduce potentials for slab curl, shrinkage cracking, and subgrade “pumping” through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

Portland cement concrete should be designed with proper air-entrainment and have a minimum compressive strength of 4,000 psi after 28 days of laboratory curing. Adequate reinforcement and number of longitudinal and transverse control joints should be placed in the rigid pavement in accordance with ACI requirements. The joints should be sealed as soon as possible (in accordance with sealant manufacturer’s instructions and ACI requirements) to minimize infiltration of water into the soil.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section.

We recommend drainage be included at the bottom of the GAB layer at the storm structures to aid in removing water that may enter this layer. Drainage could consist of small diameter weep holes excavated around the perimeter of the storm structures. The weep holes should be excavated at the elevation of the GAB and soil interface. The excavation should be covered with

No. 57 stone which is encompassed in Mirafi 140 NL or approve equivalent which will aid in reducing fines from entering the storm system.

Pavement Maintenance

The pavement sections provided in this report represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Preventive maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment. Preventive maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements. Prior to implementing any maintenance, additional engineering observation is recommended to determine the type and extent of preventive maintenance. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either substantiate or modify our conclusions in writing.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet) [1]	Location
8	20 to 30	Buildings
2	10 to 15	Detention Pond
3 (infiltration tests) [2]	6	Detention Pond

1. Below ground surface.
2. Hand auger borings.

Boring Layout and Elevations: Unless otherwise noted, Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit and approximate elevations were obtained by interpolation from the provided conceptual site plan. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures: We advanced the borings with an ATV-mounted rotary drill rig using hollow stem augers. Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings.

A CME automatic SPT hammer was used to advance the split-barrel sampler in the borings performed on this site. A greater efficiency is typically achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. Published correlations between the SPT values and soil properties are based on the lower efficiency cathead and rope method. This higher efficiency affects the standard penetration resistance blow count (N) value by increasing the penetration per hammer blow over what would obtained using the cathead and rope method. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the

Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

Carver Road Self Storage ■ Griffin, Spalding County, Georgia
June 10, 2022 ■ Terracon Project No. 49225094

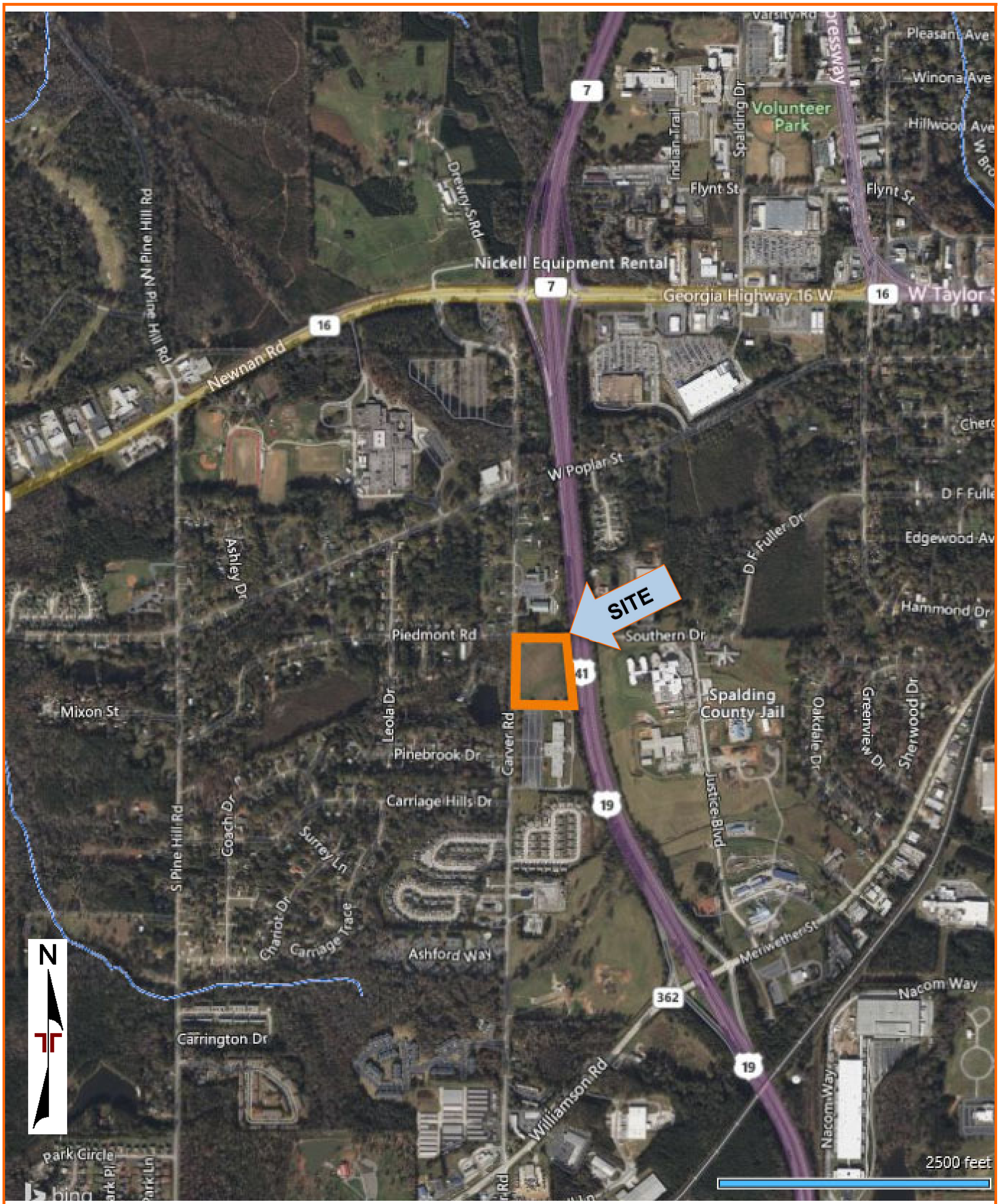


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Carver Road Self Storage ■ Griffin, Spalding County, Georgia

June 10, 2022 ■ Terracon Project No. 49225094

Terracon GeoReport

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

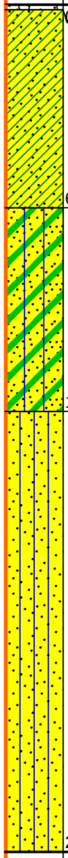
Page 1 of 1

PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: **Carver Road**
Griffin, GA

GRAPHIC LOG



LOCATION See Exploration Plan

Latitude: 33.2387° Longitude: -84.2960°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
0.2	**TOPSOIL**, 2 Inches					
	RESIDUUM - SANDY CLAY (CL), with fine gravel, red-brown, stiff - trace roots			☒	18	3-5-6 N=11
	- very stiff	5		☒	18	9-7-9 N=16
6.0	**SILTY CLAYEY SAND (SC-SM)**, with fine gravel and mica, fine to coarse grained, orange-brown, medium dense			☒	18	6-9-10 N=19
		10		☒	18	6-8-9 N=17
12.0	**SILTY SAND (SM)**, with fine gravel and mica, fine to coarse grained, white-tan, medium dense			☒	18	3-5-6 N=11
		15	▽			
	- loose	20		☒	18	2-3-5 N=8
			▨			
25.0		25		☒	18	4-4-5 N=9
	Boring Terminated at 25 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *16 Feet 1 Inch While Drilling*

▨ *Cave In At 23 Feet*

2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-04-2022	Boring Completed: 05-04-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-2

PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: **Carver Road**
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2386° Longitude: -84.2966°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
0.1	**TOPSOIL**, 1.5 Inches					
3.0	**RESIDUUM - SANDY CLAY (CL)**, trace roots fine gravel, red-brown, stiff			☒	18	3-4-6 N=10
	SILTY CLAYEY SAND (SC-SM), with fine gravel and mica, fine to medium grained, orange-brown, medium dense			☒	18	4-6-8 N=14
		5		☒	18	6-8-9 N=17
		10		☒	18	7-9-10 N=19
		15		☒	18	5-6-9 N=15
	-tan-white		▽	☒	18	4-5-7 N=12
		20				
		25		☒	18	3-4-6 N=10
			▨			
30.0		30		☒	18	5-6-5 N=11
	Boring Terminated at 30 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18 Feet 1 Inch While Drilling*

▨ *Cave In At 26 Feet 3 Inches*

2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-04-2022	Boring Completed: 05-04-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-3

PROJECT: **Carver Road - Griffin**

CLIENT: **Storage Solutions of Georgia Inc**
Powder Springs, GA

SITE: **Carver Road**
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2386° Longitude: -84.2972°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
	0.2 **TOPSOIL**, 2 Inches					
▨	**POSSIBLE FILL - SANDY CLAY (CL)**, with roots and fine gravel, red-brown, medium stiff			☒	18	2-3-4 N=7
	3.0					
▨	**RESIDUUM - SILTY CLAYEY SAND (SC-SM)**, with fine gravel and mica, fine to coarse grained, orange-brown, medium dense			☒	18	4-5-7 N=12
		5				
				☒	18	6-7-7 N=14
		10		☒	18	5-7-8 N=15
		15	▽	☒	18	3-5-6 N=11
	- tan-white, loose	20		☒	18	4-4-5 N=9
			▨			
	25.0	25		☒	18	3-3-4 N=7
	Boring Terminated at 25 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *15 Feet 4 Inches While Drilling*

▨ *Cave In At 22 Feet 1 Inch*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-04-2022	Boring Completed: 05-04-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-4

Page 1 of 1

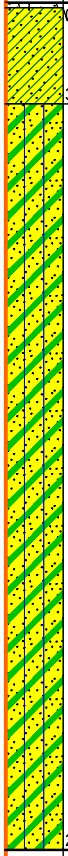
PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: Carver Road
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2383° Longitude: -84.2961°



GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
	0.2	**TOPSOIL**, 2 Inches					
		RESIDUUM - SANDY CLAY (CL), trace roots and fine gravel, red-brown, stiff			☒	18	4-4-5 N=9
	3.0	**SILTY CLAYEY SAND (SC-SM)**, fine gravel and mica, fine to medium grained, orange-brown, medium dense			☒	18	3-6-7 N=13
			5		☒	18	8-9-9 N=18
			10		☒	18	5-7-8 N=15
			15	▼	☒	18	4-5-5 N=10
		- tan-brown, loose	20	▨	☒	18	2-3-4 N=7
		- medium dense			☒	18	4-6-7 N=13
	25.0	***Boring Terminated at 25 Feet***	25				

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

15 Feet 7 Inches While Drilling

▼ *15 Feet 7 Inches After 24 Hours*

▨ *Cave In At 20 Feet 9 Inches*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-03-2022	Boring Completed: 05-03-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-5

Page 1 of 1

PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: Carver Road
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2382° Longitude: -84.2966°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
	0.2	**TOPSOIL**, 2 Inches					
		RESIDUUM - SANDY CLAY (CL), trace mica and fine gravel, red-brown, stiff			☒	18	4-3-4 N=7
	3.0						
		SILTY CLAYEY SAND (SC-SM), with fine gravel and mica, fine to medium grained, orange-brown, medium dense			☒	18	3-5-6 N=11
			5				
					☒	18	5-7-8 N=15
					☒	18	8-8-9 N=17
			10				
					☒	18	4-6-7 N=13
			15				
				▽			
		- tan-white			☒	18	3-5-6 N=11
			20				
				▨			
					☒	18	5-7-7 N=14
			25				
					☒	18	5-6-7 N=13
	30.0		30				
		Boring Terminated at 30 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 Feet 9 Inches While Drilling*

▨ *Cave In At 23 Feet 2 Inches*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-04-2022	Boring Completed: 05-04-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-6

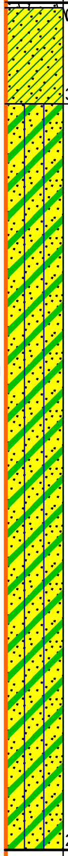
PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE:
Carver Road
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2380° Longitude: -84.2972°



GRAPHIC LOG / DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
0.2	**TOPSOIL**, 2 Inches					
	RESIDUUM - SANDY CLAY (CL), trace roots and fine gravel, red-brown, stiff			☒	18	2-3-5 N=8
3.0	**SILTY CLAYEY SAND (SC-SM)**, with fine gravel and mica, fine to coarse grained, orange-brown, loose			☒	18	2-4-5 N=9
		5				
	- medium dense			☒	18	3-5-6 N=11
	- red-brown			☒	18	5-6-8 N=14
		10				
			▼	☒	18	4-5-7 N=12
		15	▽			
	- loose			☒	18	2-2-3 N=5
		20				
			▨			
25.0				☒	18	2-3-5 N=8
		25				
	Boring Terminated at 25 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *15 Feet 3 Inches While Drilling*

▼ *14 Feet 7 Inches After 24 Hours*

▨ *Cave In At 21 Feet 3 Inches*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-03-2022	Boring Completed: 05-03-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-7

PROJECT: Carver Road - Griffin

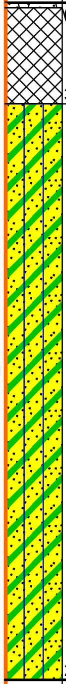
CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: **Carver Road**
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2378° Longitude: -84.2961°

GRAPHIC LOG



DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
0.2	**TOPSOIL**, 2 Inches					
3.0	**FILL - SILTY SAND (SM)**, with fine to coarse quartz fragments and roots, fine to medium grained, brown, loose			☒	18	5-3-4 N=7
	RESIDUUM - SILTY CLAYEY SAND (SC-SM), with fine gravel and mica, fine to coarse grained, orange-brown, loose	5		☒	18	2-3-5 N=8
	- medium dense			☒	18	4-4-6 N=10
		10		☒	18	4-5-7 N=12
			▼ ▽			
	- loose	15		☒	18	3-4-4 N=8
			▨			
20.0		20		☒	18	2-2-4 N=6

Boring Terminated at 20 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *11 Feet 3 Inches While Drilling*

▼ *10 Feet 9 Inches After 24 Hours*

▨ *Cave In At 17 Feet 3 Inches*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-03-2022	Boring Completed: 05-03-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-8

PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: Carver Road
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2377° Longitude: -84.2966°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
	0.1	**TOPSOIL**, 1.5 Inches					
	3.0	**FILL - SILTY SAND (SM)**, trace roots and fine gravel, fine to coarse grained, brown, loose			☒	18	2-3-4 N=7
	8.0	**RESIDUUM - SILTY CLAYEY SAND (SC-SM)**, trace fine gravel and mica, fine to coarse grained, orange-brown, loose			☒	18	2-4-5 N=9
		- medium dense	5		☒	18	4-5-7 N=12
	12.0	**SANDY CLAY (CL)**, with fine gravel and mica, orange-brown, stiff	10	▼ ▽	☒	18	5-5-6 N=11
	20.0	**SILTY CLAYEY SAND (SC-SM)**, with fine to coarse gravel and mica, fine to coarse grained, orange-brown, loose	15	▨	☒	18	2-3-2 N=5
			20		☒	18	2-3-4 N=7
		Boring Terminated at 20 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *10 Feet 9 Inches While Drilling*

▼ *9 Feet 3 Inches After 24 Hours*

▨ *Cave In At 16 Feet 8 Inches*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-02-2022	Boring Completed: 05-02-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	

BORING LOG NO. B-9

Page 1 of 1

PROJECT: Carver Road - Griffin

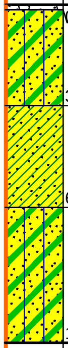
CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: Carver Road
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2374° Longitude: -84.2972°

GRAPHIC LOG



DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
0.2	**TOPSOIL**, 2 Inches					
3.0	**RESIDUUM - SILTY CLAYEY SAND (SC-SM)**, trace roots, fine to coarse rock fragments, fine to coarse grained, brown, loose			☒	18	2-3-3 N=6
6.0	**SANDY CLAY (CL)**, trace fine gravel, orange-brown, stiff	5		☒	18	3-4-6 N=10
10.0	**SILTY CLAYEY SAND (SC-SM)**, with fine gravel and mica, fine to coarse grained, orange-brown, medium dense	10	▨	☒ ☒	18 18	3-5-7 N=12 4-6-7 N=13

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

None Encountered While Drilling

▨ *Cave In At 7 Feet 1 Inch*

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-02-2022

Boring Completed: 05-02-2022

Drill Rig: CME-550

Driller: MDS Midway - Casey

Project No.: 49225094

BORING LOG NO. B-10

PROJECT: Carver Road - Griffin

CLIENT: Storage Solutions of Georgia Inc
Powder Springs, GA

SITE: Carver Road
Griffin, GA

LOCATION See Exploration Plan

Latitude: 33.2373° Longitude: -84.2965°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY ()	FIELD TEST RESULTS
	0.2	**TOPSOIL**, 2 Inches					
▨	3.0	**FILL - SILTY SAND (SM)**, trace roots and fine gravel, fine to medium grained, brown, loose			☒	18	3-4-4 N=8
▨	6.0	**RESIDUUM - SANDY CLAY (CL)**, trace mica and fine gravel, fine to medium grained, orange-brown, stiff	5		☒	18	3-5-6 N=11
▨		**SILTY CLAYEY SAND (SC-SM)**, with fine gravel and mica, fine to medium grained, orange-brown, medium dense			☒	18	5-6-8 N=14
			10	▼ ▽	☒	18	4-6-7 N=13
				▨			
	15.0	- loose	15		☒	18	2-4-5 N=9
		Boring Terminated at 15 Feet					

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hollow Stem Auger

Abandonment Method:
Backfilled with soil cuttings

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

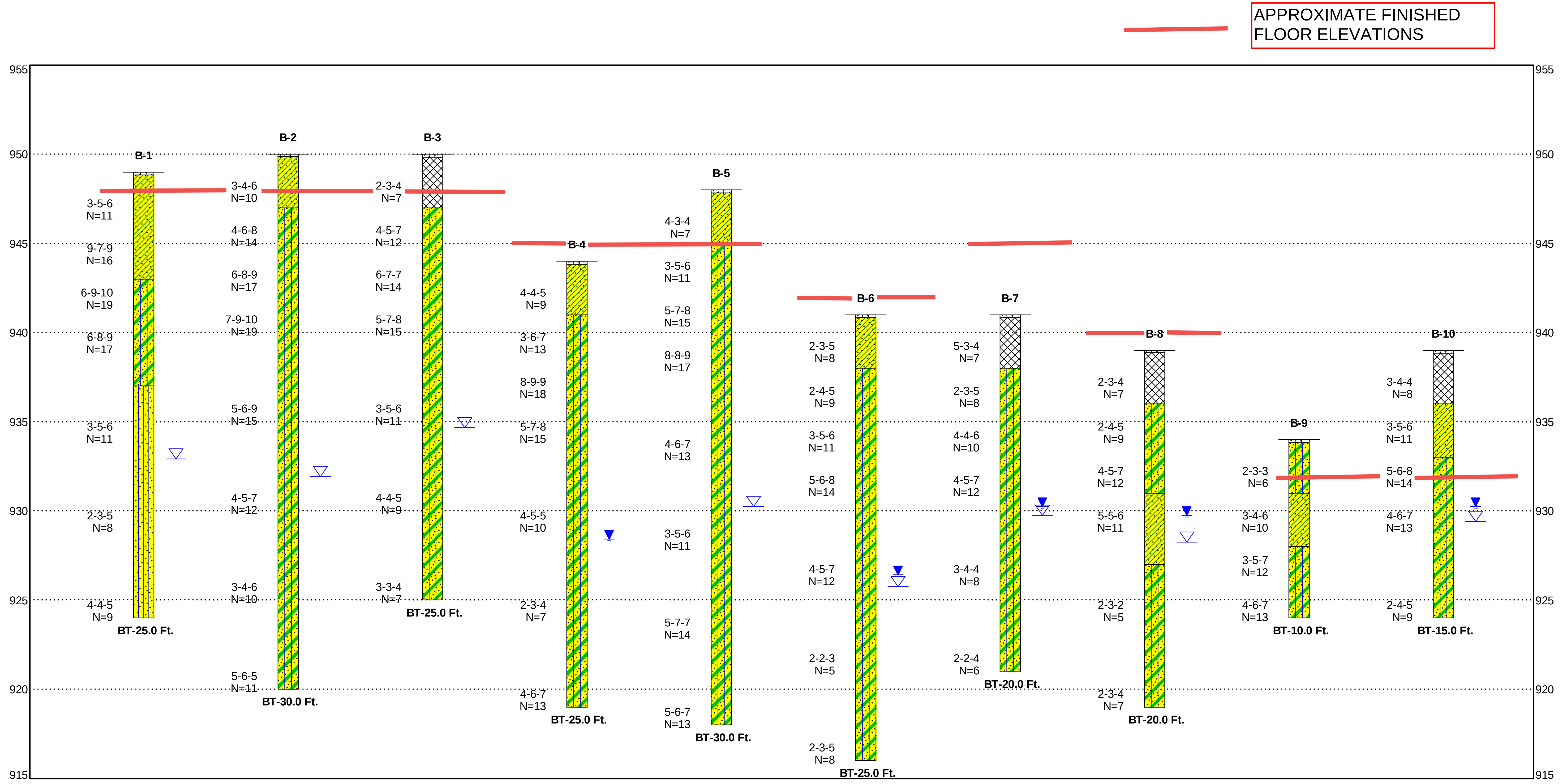
▽ *9 Feet 7 Inches While Drilling*

▼ *8 Feet 9 Inches After 24 Hours*

▨ *Cave In At 13 Feet 1 Inch*

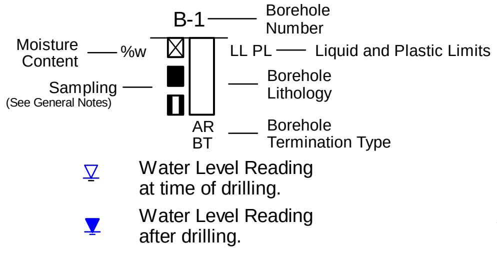
Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

Boring Started: 05-02-2022	Boring Completed: 05-02-2022
Drill Rig: CME-550	Driller: MDS Midway - Casey
Project No.: 49225094	



▨ Topsoil ▨ Sandy Lean Clay ▨ Silty Clayey Sand ▨ Silty Sand ☒ Fill

Explanation



NOTES:
See Exploration Plan for orientation of soil profile.
See General Notes in Supporting Information for symbols and soil classifications.
Soils profile provided for illustration purposes only.
Soils between borings may differ
AR - Auger Refusal
BT - Boring Termination

Project No.: 49225094

Date: 6/2/2022

Scale: NTS

Terracon
2105 Newpoint Pl, Ste 600
Lawrenceville, GA

SUBSURFACE PROFILE

Subsurface Profile
CARVER ROAD - GRIFFIN
CARVER ROAD
GRIFFIN, GA

Applied Environmental Sciences, Inc.

May 10, 2022

Terracon Consultants, Inc.
2105 Newpoint Place, Suite 600
Lawrenceville, Georgia 30043

ATTN: Mohammad Kayser, P. E.
Senior Engineer | Geotechnical Services

RE: Infiltration Rate Testing
Carver Road Tract
450 Carver Road
Griffin, Spalding County, Georgia
AES Project No.: 222402.1

Dear Mr. Kayser:

Applied Environmental Sciences, Inc. (AES) has completed Infiltration Rate Testing on the above-referenced site. This report contains information regarding testing methodology and the results of the investigation.

Background

The Carver Road Tract (hereinafter referred to as the Project Site) consists of a vacant land parcel located to the east of Carver Road in the City of Griffin, Spalding County, Georgia. The Project Site study area consists of three proposed stormwater infiltration areas located on the Project Site (See Figure 1).

Methodology and Boring Hole Preparation

Saturated hydraulic conductivity (Ksat) is an indicator of water flow rate in soil and is a key parameter for studying water flow through a soil profile. The infiltration rate testing was completed utilizing an Aardvark Model 2840 Permeameter. The Aardvark permeameter is constant-head, meaning that the depth of water in a test borehole does not change during the measurement period. As a result, the measurement conditions remain constant during the measurement period. The rate of water supplied to the borehole corresponds to the soil infiltration rate from the bottom and side surfaces of the test borehole. The Aardvark permeameter estimates soil hydraulic conductivity using the amount of supplied water measured at equal time intervals. This is equivalent to the amount of water that is transmitted by soil. The measurement ends when the reservoir flow rate (soil-water infiltration rate) is consistent over several consecutive readings. Soil hydraulic conductivity then can be calculated using the steady flow rate.

AES conducted the infiltration rate testing on May 2, 2022. Three test locations were selected on-site by the design team within the proposed stormwater infiltration areas. Hand augurs utilized to install borings to 72-inches at test locations I-1 and I-2. Auger refusal was encountered due to dense parent material at I-3. Care was taken to minimize smearing of the borehole sidewalls. The borehole sidewalls were brushed in order to further reduce potential smearing. Following the brushing, a planer auger was utilized to remove loose materials accumulated in the bottom of the boreholes prior to testing.

Results

Test Number	Test Depth (in)	Soil Texture / Type	Results / Ksat (in/hr)
I-1	72	Sandy Loam / Residual	0.32
I-2*	72	Sandy Loam / Residual	0.00
I-3	60	Sandy Loam / Residual	0.81
*Dense parent material encountered at test location/depth.			

Limitations

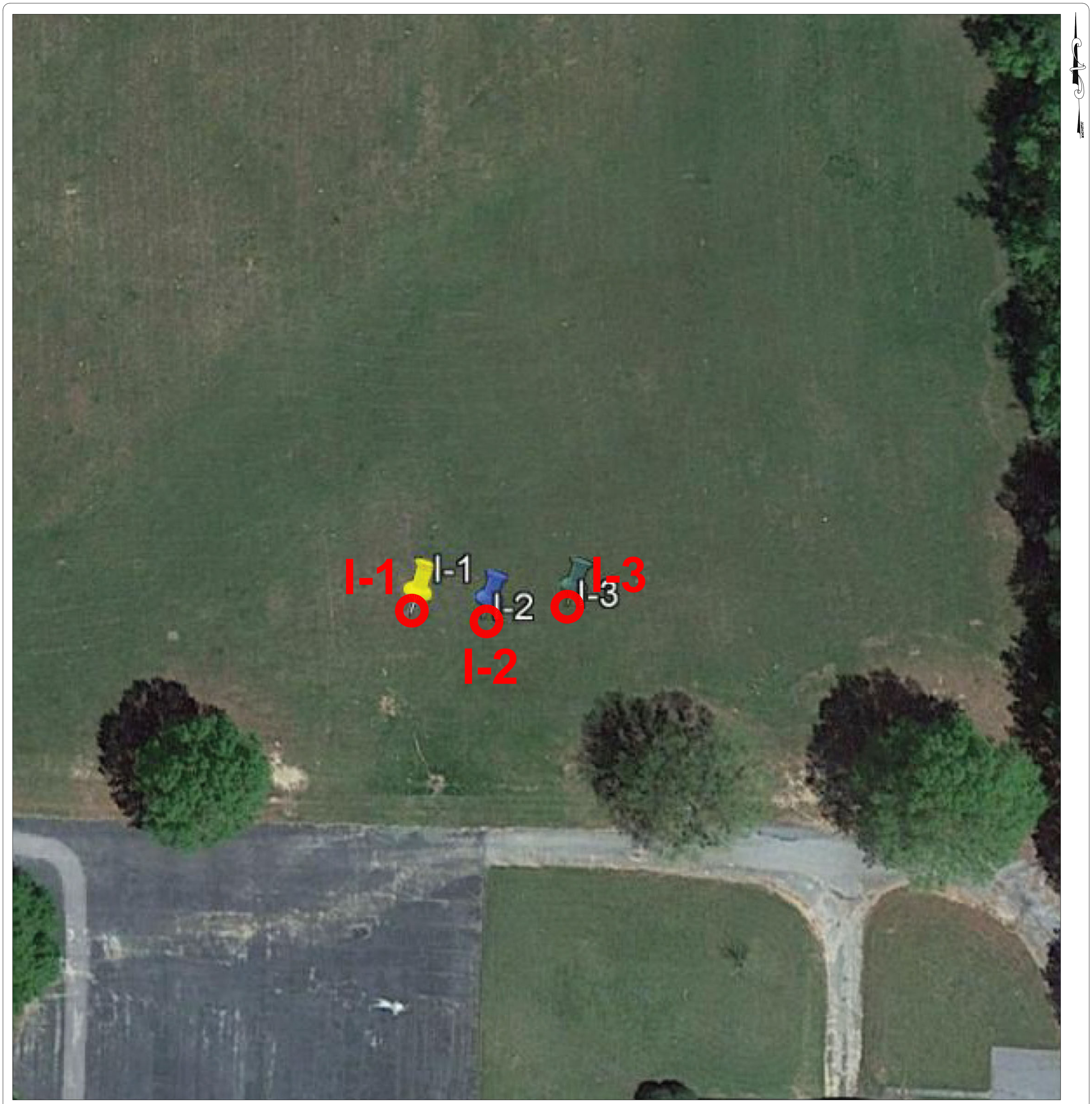
Test results reflect soil permeability conditions at the time of the investigation and are null and void if infiltration areas are cut or filled after the time of testing. No guarantee is given or implied as to the performance of any particular stormwater infiltration system.

We appreciate the opportunity to be of service to you on this project and look forward to working with you in the future. Please contact us at your convenience if you have any questions or if we can be of continued service.

Sincerely,

APPLIED ENVIRONMENTAL SCIENCES, INC.

M. Brannon Miles
President



○ PERMEABILITY TEST LOCATION / NUMBER

* BASE MAP PROVIDED BY TERRACON

SCALE: 1" = 60'	STUDY TYPE: PERMEABILITY TESTING	AES JOB No.: 222402.1
DATE: 4-27-22	CHECKED BY: MBM DRAWN BY: SFP	REVISED:

FIGURE 1: PERMEABILITY TEST LOCATION PLAN
Carver Road Tract
450 Carver Road
Griffin, Spalding County, Georgia
CLIENT: Terracon Consultants, Inc.

AES

Applied Environmental Sciences, Inc.
90-F Glenda Trace, #327 Newnan, Georgia 30265
(678) 262-4020 (678) 262-4024 (fax) www.aesciences.net

SUPPORTING INFORMATION

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING

☒ Split Spoon

WATER LEVEL

▽	**Water Initially Encountered**
▽	**Water Level After a Specified Period of Time**
▽	**Water Level After a Specified Period of Time**
▨	**Cave In Encountered**

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
UC	**Unconfined Compressive Strength**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or $[Cc<1$ or $Cc>3.0]$ [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or $[Cc<1$ or $Cc>3.0]$ [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	$PI > 7$ and plots on or above “A”		CL	Lean clay [K, L, M]
			$PI < 4$ or plots below “A” line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above “A” line		CH	Fat clay [K, L, M]
			PI plots below “A” line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add “with cobbles or boulders, or both” to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add “with sand” to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add “with organic fines” to group name.

[I] If soil contains ≥ 15% gravel, add “with gravel” to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add “with sand” or “with gravel,” whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add “sandy” to group name.

[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add “gravelly” to group name.

[N] $PI \geq 4$ and plots on or above “A” line.

[O] $PI < 4$ or plots below “A” line.

[P] PI plots on or above “A” line.

[Q] PI plots below “A” line.