REPORT OF PRELIMINARY SUBSURFACE EXPLORATION AND GEOTECHNICAL EVALUATION

TMS NOS. 001000-02-008 AND 00100-02-010
AMICKS FERRY ROAD AND LAKE TIDE DRIVE
CHAPIN, SOUTH CAROLINA
ECS PROJECT No.: 38:1616

Prepared For

THE EDUCATIONAL GROUP, INC.

Prepared By

MAY 8, 2017

ECS SOUTHEAST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities
SC Registered Engineering Firm 3240
NC Registered Engineering Firm F-1078
NC Registered Geologists Firm C-406

May 8, 2017

Mr. Al Berry
President
The Educational Group, Inc.
PO Box 10
Peak, South Carolina 29122

Reference: Report of Preliminary Subsurface Exploration and Geotechnical Evaluation
TMS Nos. 001000-02-008 and 00100-02-010
Amicks Ferry Road and Lake Tide Drive
Chapin, South Carolina
ECS Project No.: 38:1616

Dear Mr. Berry:

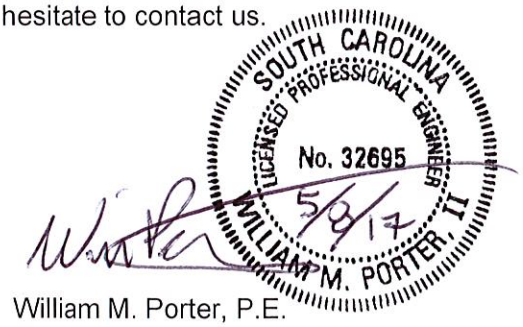
As authorized by your acceptance of our Proposal Number 38-1022-P, dated February 13, 2017, ECS Southeast, LLP (ECS) has completed the preliminary subsurface exploration and geotechnical evaluation for the referenced site. This report contains the results of our subsurface exploration, as well as our preliminary recommendations regarding the geotechnical design and construction aspects of the project.

We appreciate the opportunity to be of service to you during the design phase of this project and look forward to our continued involvement during the construction phase. If you have any questions concerning the information and recommendations presented in the accompanying report, or if we can be of further assistance, please do not hesitate to contact us.

Sincerely,

ECS SOUTHEAST, LLP represented by;

Joshua C. Latham, P.E.
Senior Project Engineer



William M. Porter, P.E.
Branch Manager
South Carolina License No. 32695

Donald L. Anderson, P.E.
Principal Engineer



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1.0 EXECUTIVE SUMMARY

The proposed 24 +/- acre project site is designated as part of TMS 001000-02-008 and 00100-02-010 on the Lexington County Tax Map. The project site is located northwest of the intersection of Amicks Ferry Road and Lake Tide Drive in Chapin, South Carolina. We understand the proposed project will include mass grading, site development, and construction of a new elementary school for School District Five of Lexington and Richland Counties. Based on information available from Google Earth, elevations generally range from approximately 420 to 438 feet above mean sea level.

Approximately 8 to 12 inches of cultivated soil was encountered at the existing ground surface in the borings performed. Residual soils were encountered beneath the surficial materials and extended to the termination depths or partially weathered rock in the borings performed. The residual soils sampled by the borings generally consisted of sandy silt (ML). N-values recorded in these soils typically ranged from 4 to 59 blows per foot (bpf).

Partially weathered rock (PWR) was encountered beneath the residual soils at a depth of approximately 16.5 feet below the existing ground surface in borings B-7 and B-8. Partially weathered rock is a transitional material between soil and rock, which retains the relic structure of the rock and exhibits N-values greater than 100, but still can be penetrated by the power auger.

Relatively soft near surface natural soils are present on the site. As such, the near surface natural soils should be densified in-place after clearing, grubbing, and removal of the surficial materials but prior to placement of new fill or other at-grade construction. Soft subgrade materials that cannot be adequately densified in-place will require undercutting and replacement with new engineered fill. Undercutting to a depth of approximately 3 feet below existing grade may be required in isolated areas.

It appears that lightly to moderately loaded structures can be supported by shallow foundations. At this time, a preliminary design foundation bearing pressure of 3,000 pound per square foot (psf) is recommended for foundations bearing on suitable in new engineered fill or approved residual soils. Provided the site preparation and fill recommendations outlined herein are implemented, concrete slabs-on-grade can be designed using a modulus of subgrade reaction of 100 pounds per cubic inch (pci). A preliminary IBC seismic Site Class “C” is recommended for this site.

Specific information regarding the subsurface exploration procedures, the site and subsurface conditions at the time of our exploration, and our conclusions and recommendations concerning the geotechnical design and construction aspects of the project are discussed in detail in the subsequent sections of this report. Please note this Executive Summary is an important part of this report but should be considered a ***“summary”*** only and is not intended to be used exclusive of the entire report. The subsequent sections of this report constitute our findings, conclusions, and recommendations in their entirety.

2.0 PROJECT INFORMATION

The proposed 24 +/- acre project site is designated as part of TMS 001000-02-008 and 00100-02-010 on the Lexington County Tax Map. The project site is located is located north of the intersection of Amicks Ferry Road and Lake Tide Drive in Chapin, South Carolina. We understand the proposed project will include mass grading, site development, and construction of a new elementary school for School District Five of Lexington and Richland Counties. Based on information available from Google Earth, elevations generally range from approximately 420 to 438 feet above mean sea level.

At the time of this report, no structural loading information was available. Additionally, we have not been provided with site grading information or finished floor elevations for the proposed structure.

3.0 EXPLORATION PROCEDURES

3.1 Soil Test Borings

Sixteen (16) soil test borings were drilled on the project site as shown on the Testing Location Plan in the Appendix. The borings were extended to a depth of approximately 20 feet below the existing ground surface. The boring locations provided by you are indicated on the Testing Location Plan and should be considered approximate. Borings logs are included in the Appendix.

The soil test borings were performed using an ATV mounted (CME 550) drill rig equipped with an auto-hammer spilt-spoon driving assembly. The auto-hammer generally delivers more energy downhole to the sampler than the standard cat-head driving assembly, therefore, the recorded standard penetration test (SPT) N-Values are lower than the N_{60}-Values recorded from using the cat-head assembly. Although the differences in energy will vary, it is common to assume the auto hammer delivers about 1.3 times the energy of the cat-head assembly. The N-values recorded in the field using the auto-hammer assembly are reported on the Boring Logs in the Appendix.

Representative soil samples were obtained by means of the split-barrel (split-spoon) sampling procedure in accordance with ASTM D 1586. In this procedure, a 2-inch O.D., split-barrel sampler is driven into the soil a distance of 18 inches by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler through a 12-inch interval is termed the Standard Penetration Test (SPT) N-value and is indicated for each sample on the boring logs. This value can be used as a qualitative indication of the in-place relative density of cohesionless soils. In a less reliable way, it also indicates the consistency of cohesive soils. This indication is qualitative, since many factors can affect the standard penetration resistance value and prevent a direct correlation with drilling crews, equipment and procedures. Split-spoon samples were obtained at 2½-foot intervals within the upper 10 feet of the borings and at 5-foot intervals thereafter.

After recovery, each sample was removed from the sampler and visually classified. Representative portions of each sample were then sealed in air tight containers and brought to our laboratory for visual classification in general accordance with the Unified Soil Classification System (USCS as described in ASTM D 2487).

3.2 Refraction Microtremor (ReMi) Survey

A Refraction Microtremor (ReMi) survey was performed on the project site using two (2) ReMi array traverses. The data was gathered in the field using standard refraction seismic equipment to measure site characteristics using ambient vibrations (microtremors) as a seismic source. Data was collected using a 24-channel exploration seismograph, with 16 geophones at 10-foot spacing. Ten unfiltered 30-second records were recorded along the array.

The data was processed using proprietary SeisOpt® ReMi™ software to reveal a one-dimensional shear-wave (S-wave) velocity image of the subsurface materials beneath the array. The survey also provided the average shear wave velocity to a depth of 100 feet that was used to help assess the seismic Site Class in accordance with the International Building Code 2015 (IBC 2015). The ReMi array locations indicated on the Testing Location Plan and should be considered approximate. The ReMi testing results are presented in the Appendix.

4.0 SITE AND SUBSURFACE CONDITIONS

4.1 Site Observations

This site is an open grassed field with intermittent trees clustered in the eastern portions of the site. The site was noted to have rolling grades with estimated 1 to 3 percent slopes with a depression in the central portion of the site. This site is bordered by Amicks Ferry Road to the south and residential or wooded lots to the north, east, and west.

4.2 Area Geology

The project site is located in the Piedmont Physiographic Province of South Carolina. The soils in the Piedmont Province typically consist of residuum (weathered in-place soils) derived from the parent bedrock which typically consists of amphibolite-grade metamorphic rocks. The residuum can be found in both weathered and unweathered states. Although the surficial materials normally retain the structure of the underlying parent bedrock, they typically have a much lower density and exhibit strengths and engineering properties of soil. In a mature weathering profile of the Piedmont Province, the soils are generally found to be finer grained near the surface where more extensive weathering has occurred. With increased depth, the particle size becomes more granular and gradually changes to partially weathered rock and ultimately to unweathered bedrock. The mineral composition of the parent rock and the environment in which the weathering occurs is largely responsible for the residual soil's engineering properties.

4.3 Subsurface Conditions

4.3.1 Soil Test Borings

Surficial Materials: Approximately 8 to 12 inches of cultivated or plow zone soils was encountered at the existing ground surface in the borings performed. The cultivated soils typically classified as disturbed fine sandy organic silt and clay (OL/OH) with appreciable amounts of organic matter. The plow zone soils are typically distinguished from the underlying natural soils by their dark color and varying amounts of fibrous organic matter. The thickness of the cultivated soil will vary across the site.

Residual Soils: Residual soils were encountered beneath the surficial materials and extended to partially weathered rock or the termination depths of the borings performed. The residual soils sampled by the borings generally consisted sandy silt (ML). N-values recorded in these soils typically ranged from 4 to 59 blows per foot (bpf).

Partially Weathered Rock: Partially weathered rock (PWR) was encountered beneath the residual soils at a depth of approximately 16.5 feet below the existing ground surface in borings in borings B-7 and B-8. Partially weathered rock is a transitional material between soil and rock, which retains the relic structure of the rock and exhibits N-values greater than 100, but still can be penetrated by the power auger.

4.3.2 Groundwater Conditions

Groundwater was not encountered within the termination depths of the borings performed, but cave-in was noted at depths ranging from approximately 10 to 17 feet below the existing ground surface. Groundwater elevations should be expected to vary depending on seasonal fluctuations in precipitation, surface water absorption characteristics, and other factors not readily apparent at the time of our exploration, and may be higher or lower than inferred from the recent test boring data.

5.0 PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

The preliminary recommendations provided in this report are based upon our understanding of the information provided to us during this study, our past experience with similar conditions, and the results of our field testing. Once plans for the proposed development are finalized, a building specific geotechnical exploration (e.g. soil test borings, test pits, etc.) should be performed to provide final geotechnical design and construction recommendations for the project.

5.1 Site and Subgrade Preparation

Prior to the start of fill placement or at-grade construction, existing vegetation, rootmat, topsoil, deleterious materials, and any other soft or unsuitable materials should be removed from the areas of proposed construction. The clearing and stripping operations should extend at least 5 to 10 feet beyond the planned limits of the new structures, pavements and fill embankments.

After removal of existing deleterious surface and subsurface materials, and prior to fill placement or other at-grade construction, the exposed subgrade soils should be evaluated by an experienced geotechnical engineer or his authorized representative. The evaluation should include proofrolling with an approved piece of equipment, such as a loaded dump truck, having an axle weight of at least 10 tons to identify soft, loose or yielding subgrade materials.

Unsuitable subgrade materials may require in-place stabilization, or excavation and replacement with engineered fill. Undercutting, stabilization, and/or redensification prior to mass grading may also be required. The most appropriate remedial activity to repair subgrades should be determined in the field by ECS at the time of proofrolling.

Relatively soft near surface natural soils are present on the site (borings B-1 and B-7). As such, the near surface natural soils should be densified in-place after clearing,

grubbing, and removal of the surficial materials but prior to placement of new fill or other at-grade construction. Soft subgrade materials that cannot be adequately densified in-place will require undercutting and replacement with new engineered fill. Undercutting to a depth of approximately 3 feet below existing grade may be required in the areas of borings B-1 and B-7.

The preparation of fill and excavated subgrades should be observed on a full-time basis by a representative of ECS. These observations should be performed by an experienced geotechnical engineer, or his representative, to ensure that unsuitable materials have been removed and that the prepared subgrade is suitable for support of the proposed construction and/or new engineered fills.

The residual soils encountered in the borings should generally be able to be excavated with conventional earth moving equipment such as pans/scrapers, loaders, bulldozers and backhoes.

5.2 Engineered Fill

Fill placed for support of the proposed structure and pavements, and for backfill of undercut areas and utility lines within expanded structure and pavement limits should consist of engineered fill. Engineered fill should be an approved material, free of organic matter and other deleterious materials, and have a Liquid Limit (LL) and a Plasticity Index (PI) less than 40 and 20, respectively. We also recommend that fills within structural areas have a standard Proctor (ASTM D 698) maximum dry density of at least 95 pounds per cubic foot (pcf).

Mass engineered fill placed within the building and pavement areas should be placed in lifts and moisture conditioned to within their working range of optimum moisture content, and compacted to a minimum of 95 percent of their standard Proctor maximum dry density, as determined in accordance with ASTM D 698. The upper one foot of soil supporting structures, pavements, and slabs-on-grade should be compacted to a minimum of 98 percent of the maximum dry density obtained in accordance with ASTM D 698.

Similarly, isolated non-structural areas of engineered fill, such as trench line backfill, should be placed in lifts not exceeding 6 inches and moisture conditioned as mentioned above. The working range of optimum is typically within approximately 3 percent of the optimum moisture content.

On site residual soils should typically be suitable for re-use as engineered fill. If encountered, excavated existing fill may also be suitable for re-use as new fill provided it is not too wet or contain detrimental materials, and should be further evaluated for suitability at the time of construction.

Prior to the commencement of fill operations and/or utilization of off-site borrow materials, the contractor should provide representative samples of the soil materials to ECS to assess the material's suitability for use as engineered fill, and to develop moisture-density relationships in accordance with the recommendations provided herein. Samples should be provided to the geotechnical engineer at least 5 days prior to their use to allow for the appropriate laboratory testing to be performed.

The maximum loose lift thickness depends upon the type of compaction equipment use. The table below provides maximum loose lifts that may be placed based on compaction equipment utilized.

LIFT THICKNESS RECOMMENDATIONS

Equipment	Maximum Loose Lift Thickness, in.
Large, Self-Propelled Equipment (CAT 815, CAT CS56, etc.)	8
Small, Self-Propelled or Remote Controlled (Rammax, etc.)	6
Hand Operated (Plate Tamps, Jumping Jacks, Wacker-Packers)	4

ECS recommends that fill operations be observed and tested by an engineering technician to document that if compaction requirements are being met. The testing agency should perform a sufficient number of tests to document that compaction is being achieved. For mass grading operations we recommend a minimum of one density test per 2,500 SF per lift of fill placed or per 1 foot of fill thickness, whichever results in more tests. When dry, the majority of the site soil should provide adequate subgrade support for fill placement and construction operations. When wet, the soil may degrade quickly with disturbance from construction traffic. Good site drainage should be maintained during earthwork operations to prevent ponding water on exposed subgrades.

We recommend at least one test per 1 foot thickness of fill for every 100 linear feet of utility trench backfill. Where fill will be placed on existing slopes, we recommend that benches be cut in the existing slope to accept the new fill. Fill slopes should be overbuilt and then cut back to expose compacted material on the slope face. While compacting adjacent to below-grade walls, heavy construction equipment should maintain a horizontal distance of 1(H):1(V). If this minimum distance cannot be maintained, the compaction equipment should run perpendicular, not parallel to, the long axis of the wall.

The pavement and building areas should be well defined during fill placement by maintaining grade controls. Filling operations should be observed on a full-time basis by ECS to document that the recommended degree of compaction is achieved. The elevation and location of the in-place density tests should be accurately identified at the time of fill placement. Areas which fail to achieve the required degree of compaction should be re-compacted and re-tested until the recommended compaction is achieved. Failing test areas may require moisture adjustments or other suitable remedial activities in order to achieve the required compaction.

Fill materials should not be placed on frozen, frost-heaved or wet soils. Such materials should be removed prior to fill placement. Borrow fill materials should not contain wet or frozen materials at the time of placement. Wet or frost-heaved soils should also be removed prior to placement of granular sub-base materials, foundation or slab concrete, and asphalt pavement materials.

If difficulties are encountered during the site grading operations, or if the actual site conditions differ from those encountered during our subsurface exploration, the geotechnical engineer should be notified immediately.

5.3 Preliminary Foundation Design

Provided the foundation subgrades are prepared in strict accordance with the **Site and Subgrade Preparation** and **Engineered Fill** sections of this report, our preliminary findings indicate the proposed building can be supported on conventional shallow foundations bearing in new engineered fill or residual soils. Isolated column and continuous wall footings can be proportioned for a maximum net allowable soil bearing pressure of 3,000 pounds per square foot (psf). The net allowable soil bearing pressure refers to that pressure which may be transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure.

Footings should bear at a depth to provide adequate frost cover protection and develop the recommended soil bearing pressure. We recommend foundations bear at a minimum depth of 18 inches below the adjacent ground surface. To reduce the possibility of foundation bearing failure and excessive settlement due to local shear or "punching" failures, we recommend that continuous footings have a minimum width of 18 inches and isolated column footings have a minimum lateral dimension of 30 inches.

It is very important that the final footing subgrades be evaluated by ECS personnel to document that the bearing soils are capable of supporting the recommended net allowable bearing pressure and suitable for foundation construction. These evaluations should include visual observations, hand rod probing, and dynamic cone penetrometer (ASTM STP 399) testing, or other methods deemed appropriate by the geotechnical engineer at the time of construction, in each column footing excavation and at intervals not greater than 25 feet in continuous footing excavations.

Exposure to the environment may weaken the soils at the foundation bearing elevation if the foundation excavations remain exposed during periods of inclement weather. Therefore, foundation concrete should be placed the same day the foundations are excavated. If the bearing soils are softened by water or exposure to the environment, the softened soils must be removed from the foundation excavation bottoms prior to placement of concrete. If the excavation must remain open overnight, or if inclement weather is imminent while the bearing soils are exposed, we recommend that a 2 to 3-inch thick "mud-mat" of "lean" concrete be placed over the exposed bearing soils before the placement of reinforcing steel.

5.4 Preliminary Floor Slab Design

Provided the slab subgrades are prepared in strict accordance with the **Site and Subgrade Preparation** and **Engineered Fill** sections of this report, a preliminary modulus of subgrade reaction value of 100 pci is appropriate. We recommend slabs-on-grade are underlain by a minimum of 4 inches of granular material having a maximum aggregate size of 1½ inches and no more than 2 percent fines. Prior to placing the granular material, the floor subgrade soil should be properly compacted, proofrolled, and free of standing water, mud and frozen soil.

A granular capillary break layer can often eliminate the need for a moisture/vapor retarder and can assist in more uniform curing of concrete. If a moisture/vapor retarder is used, special attention should be given to the surface curing of the slabs to minimize uneven drying of the slabs and associated cracking and/or slab curling. The use of a blotter or cushion layer above the vapor retarder can also be considered for project specific reasons. Please refer to ACI

302.1R96 Guide for Concrete Floor and Slab Construction and ASTM E 1643 "Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs" for additional guidance on this issue.

We recommend that slabs-on-grade be isolated from the foundation footings so settlement of the foundations will not induce shear stresses in the floor slab. Also, in order to reduce the crack width of shrinkage cracks that may develop near the surface of the slab, we recommend mesh reinforcement be placed in the floor slab. The Wire Reinforcement Institute recommends the mesh reinforcement be placed 2 inches below the slab surface or upper one-third of slab thickness, whichever is closer to the surface. Adequate construction joints, contraction joints and isolation joints should also be provided in the slab to reduce the impacts of cracking and shrinkage. Please refer to ACI 302.1R96 Guide for Concrete Floor and Slab Construction for additional information regarding concrete slab joint design.

5.5 Preliminary Seismic Site Class Determination

South Carolina has adopted the International Building Code (IBC 2015), and the IBC 2015 requires that a seismic Site Class be assigned for new structures. The seismic Site Class for a site is determined by calculating a weighted average of the shear wave velocities of subsurface materials to a depth of 100 feet. Based on the average shear wave velocity data obtained to a depth of 100 feet below the existing ground surface from the refraction microtremor survey, the soil profile type in the area of the performed array fall in the range of seismic Site Class "C" as defined in IBC 2015. The shear wave velocity profiles generated from the ReMi testing are shown in the Appendix of this report.

5.6 Site Drainage

Positive drainage should be provided around the perimeter of structures to minimize the potential for moisture infiltration into the foundation and slab subgrade soils. We recommend that landscaped areas adjacent to these structures be sloped away from the construction and maintain a fall of at least 6 inches for the first 10 feet outward from the structures. The parking lots, sidewalks, and any other paved areas should also be sloped to divert surface water away from the proposed building.

The proper diversion of surface water during site grading and construction will help reduce the potential for delays associated with periods of inclement weather. Please note that the need for construction dewatering should be determined at the time of construction. If grading operations are performed during the wet seasons (i.e. fall and winter) the use of gravity flow ditches may be necessary to divert precipitation and surface water away from the construction areas. The proper diversion of surface water is especially critical since portions of the site soils are expected to be moisture sensitive. Based upon our past experience, the use of "crowning" large areas of exposed soils should be useful to help divert surface water from the prepared subgrades.

5.7 Construction Considerations

It is imperative to maintain good site drainage during earthwork operations to help maintain the integrity of the surface soils. The surface of the site should be kept properly graded to enhance drainage of surface water away from the proposed construction areas during the earthwork

phase of this project. We recommend that surface drainage be diverted away from the proposed building and pavements areas without significantly interrupting its flow. Other practices would involve sealing the exposed soils with a smooth-drum roller at the end of the day's work to reduce the potential for infiltration of surface water into the exposed soils.

The key to minimizing disturbance problems with the soils is to have proper control of the earthwork operations. Specifically, it should be the earthwork contractor's responsibility to maintain the site soils within a workable moisture content range to obtain the required in-place density and maintain a stable subgrade. Scarifying and drying operations should be included in the contractor's price and not be considered an extra to the contract. In addition, construction equipment should not be permitted to randomly run across the site, especially once the desired final grades have been established. Construction equipment should be limited to designated lanes and areas, especially during wet periods to minimize disturbance of the site subgrades.

6.0 CLOSING

The general subsurface conditions utilized in our preliminary site evaluation have been based on the subsurface data indicated by the widely spaced soil test borings. The borings performed at this site represent the subsurface conditions at the location of the borings only. Due to the prevailing geology, changes in the subsurface conditions can occur over relatively short distances that have not been disclosed by the results of the borings performed. Consequently, there may be undisclosed subsurface conditions that require special treatment or additional preparation once these conditions are revealed during construction. Final site and civil design will warrant additional geotechnical exploration in order to provide final geotechnical design parameters. It is recommended that the final geotechnical exploration include additional soil test borings.

The discovery of any site or subsurface conditions during construction which deviate from the data outlined in this exploration should be reported to us for our evaluation. The assessment of site environmental conditions for the presence of pollutants in the soil, rock, and groundwater of the site was beyond the scope of this exploration.

The recommendations outlined herein should not be construed to address moisture or water intrusion effects after construction is completed. Proper design of landscaping, surface and subsurface water control measures are required to properly address these issues. In addition, proper operation and maintenance of building systems is required to minimize the effects of moisture or water intrusion. The design, construction, operation, and maintenance of waterproofing and dampproofing systems are beyond the scope of services for this project.

APPENDIX

Site Location Diagram

Testing Location Plan

Reference Notes for Boring Logs

Boring Logs

ReMi Test Results

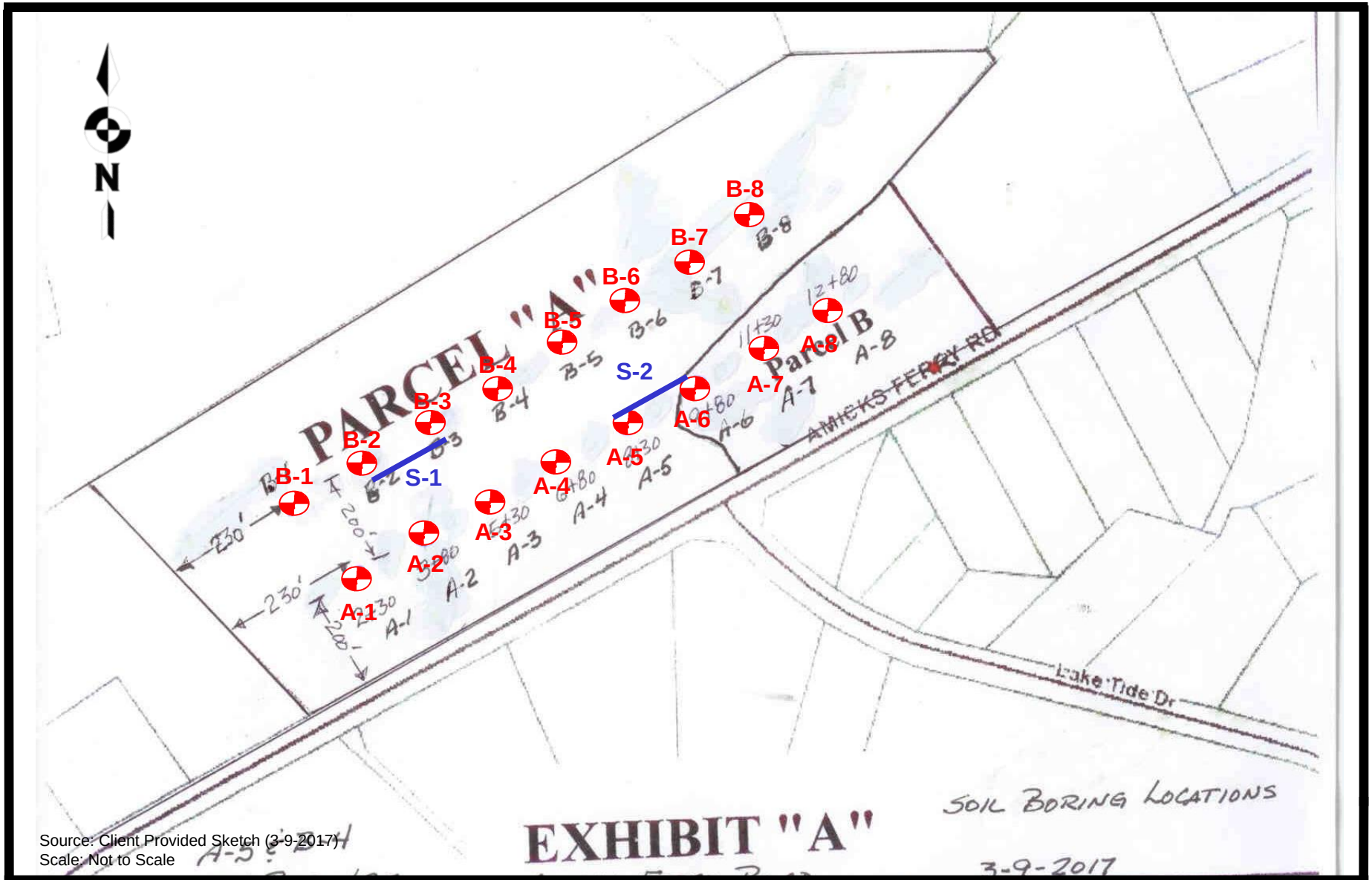


SITE LOCATION DIAGRAM

TMS NO. 001000-02-008 AND 00100-02-010

THE EDUCATIONAL GROUP, INC.
CHAPIN, SC

ENGINEER	
SCALE	NTS
PROJECT NO.	38:1616
SHEET	1 OF 1
DATE	4/26/2017



Source: Client Provided Sketch (3-9-2017)
Scale: Not to Scale

LEGEND

- Boring Location (Approximate)
- A/B-# Boring Number
- ReMi Survey Location (Approximate)
- S-# ReMi Survey Number

Testing Location Plan
TMS No. 001000-02-008 and 00100-02-010
Chapin, South Carolina
ECS Project No.: 38:1616

REFERENCE NOTES FOR BORING LOGS

MATERIAL[1,2]	
	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	FILL[3] MAN-PLACED SOILS
GW	**WELL-GRADED GRAVEL** gravel-sand mixtures, little or no fines
GP	**POORLY-GRADED GRAVEL** gravel-sand mixtures, little or no fines
GM	**SILTY GRAVEL** gravel-sand-silt mixtures
GC	**CLAYEY GRAVEL** gravel-sand-clay mixtures
SW	**WELL-GRADED SAND** gravelly sand, little or no fines
SP	**POORLY-GRADED SAND** gravelly sand, little or no fines
SM	**SILTY SAND** sand-silt mixtures
SC	**CLAYEY SAND** sand-clay mixtures
ML	**SILT** non-plastic to medium plasticity
MH	**ELASTIC SILT** high plasticity
CL	**LEAN CLAY** low to medium plasticity
CH	**FAT CLAY** high plasticity
OL	**ORGANIC SILT or CLAY** non-plastic to low plasticity
OH	**ORGANIC SILT or CLAY** high plasticity
PT	**PEAT** highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION		
DESIGNATION		**PARTICLE SIZES**
Boulders		12 inches (300 mm) or larger
Cobbles		3 inches to 12 inches (75 mm to 300 mm)
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")		<0.074 mm (smaller than a No. 200 sieve)

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, Q_P[4]	**SPT[5] (BPF)**	**CONSISTENCY[7] (COHESIVE)**
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Medium Stiff
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT[5]	**DENSITY**
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

RELATIVE AMOUNT[7]	COARSE GRAINED (%)	FINE GRAINED (%)
Trace	<5	<5
Dual Symbol *(ex: SW-SM)*	10	10
With	15 - 20	15-25
Adjective *(ex: "Silty")*	25 - <50	30 - <50

WATER LEVELS[6]		
	WL	Water Level (WS)(WD)
		(WS) While Sampling
		(WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

[1] *Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.*

[2] *To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.*

[3] *Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-**FILL**)].*

[4] *Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).*

[5] *Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).*

[6] *The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.*

[7] *Minor deviation from ASTM D 2488-09.*

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CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-1	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

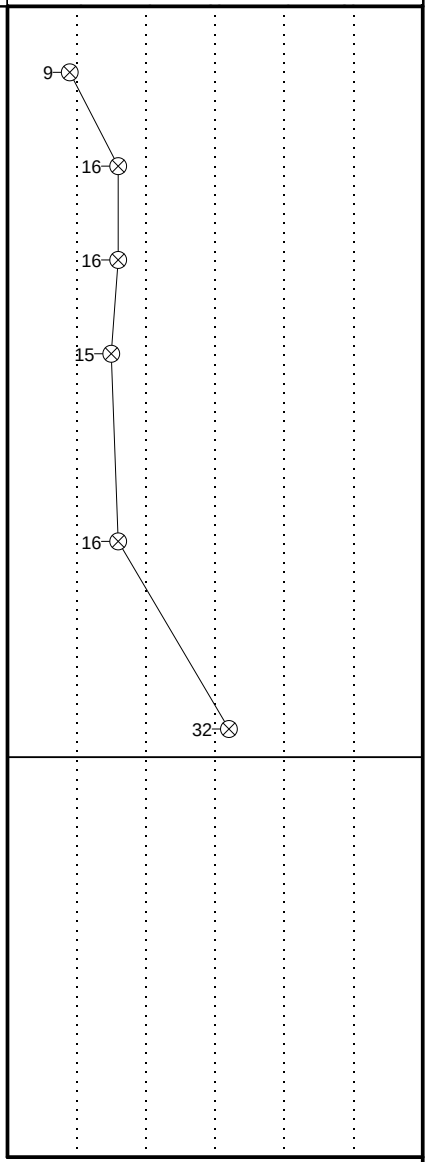
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]		
	S-1	SS	18	18	(ML) SANDY SILT, red to brown, moist, stiff to hard		3 4 5
	S-2	SS	18	18			4 6 10
5	S-3	SS	18	18			5 8 8
	S-4	SS	18	15			5 6 9
10	S-5	SS	18	18			8 8 8
15	S-6	SS	18	18			9 12 20
20					END OF BORING @ 20'		
25							
30							



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 14'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-2	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

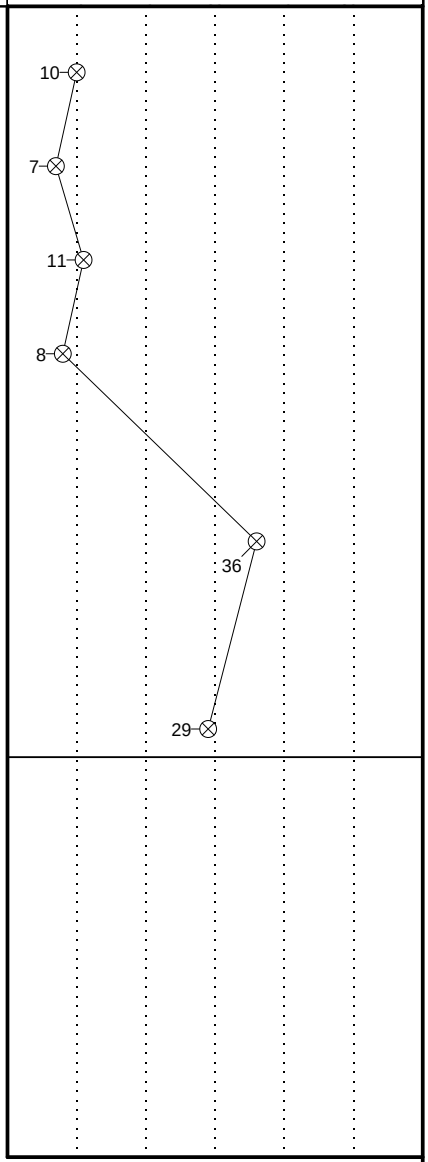
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS; BOTTOM OF CASING; LOSS OF CIRCULATION; SURFACE ELEVATION)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, red to brown, moist, medium stiff to stiff			4 6 4
	S-2	SS	18	18				3 3 4
5	S-3	SS	18	15				4 5 6
	S-4	SS	18	18				3 4 4
10					(ML) SANDY SILT, tan to light gray, moist, very stiff to hard			
	S-5	SS	18	18				10 16 20
15								
	S-6	SS	18	18				9 12 17
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☒	BORING STARTED 04/13/17	CAVE IN DEPTH @ 12'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-3	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

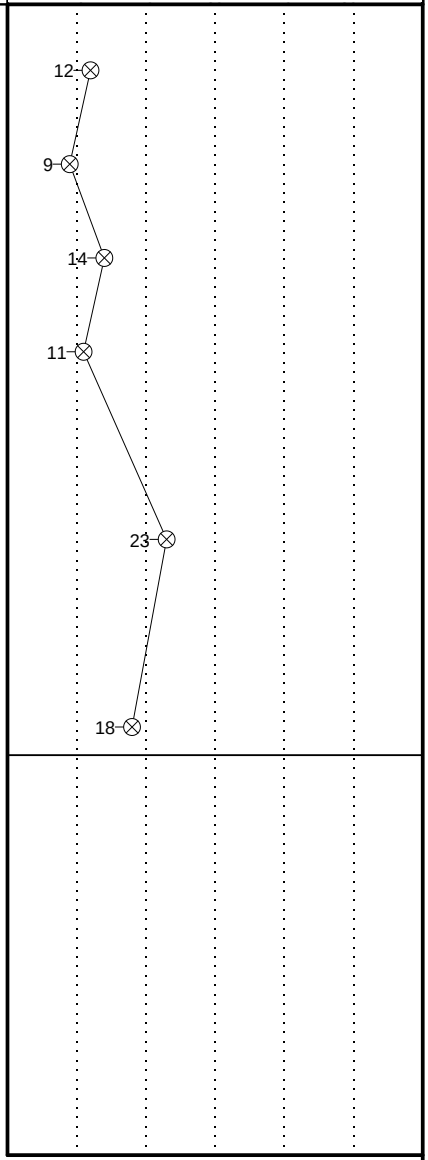
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]		
	S-1	SS	18	18	(ML) SANDY SILT, red to brown, moist, stiff to very stiff		3 6 6
	S-2	SS	18	18			4 4 5
5							
	S-3	SS	18	15			5 6 8
	S-4	SS	18	16			4 6 5
10							
	S-5	SS	18	18			5 10 13
15							
	S-6	SS	18	18			7 9 9
20					END OF BORING @ 20'		
25							
30							



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 17'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-4	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

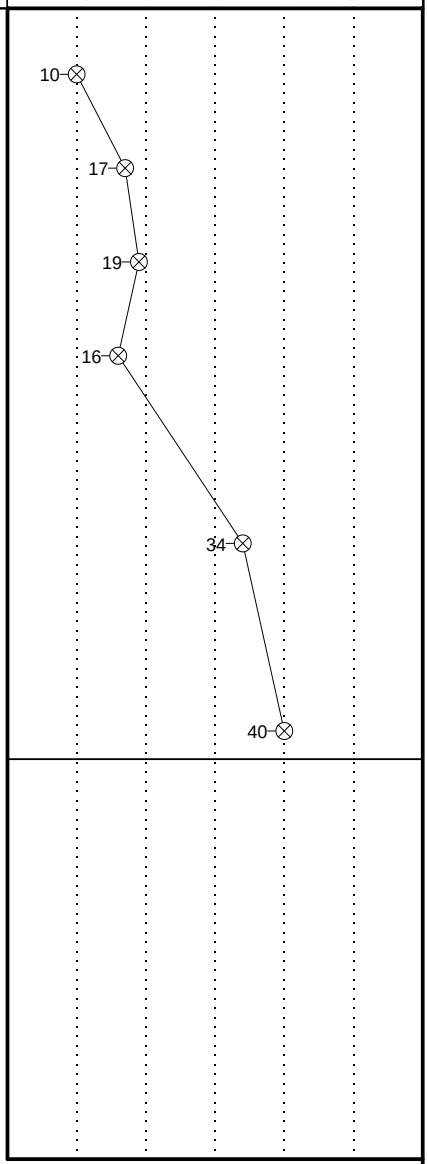
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, contains roots, tan to red, moist, stiff			5 6 4
	S-2	SS	18	18	(ML) SANDY SILT, red to brown, moist, very stiff to hard			6 8 9
5	S-3	SS	18	15				7 9 10
	S-4	SS	18	18				5 8 8
10								
	S-5	SS	18	18				12 14 20
15								
	S-6	SS	18	17				9 16 24
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 13'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-5	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

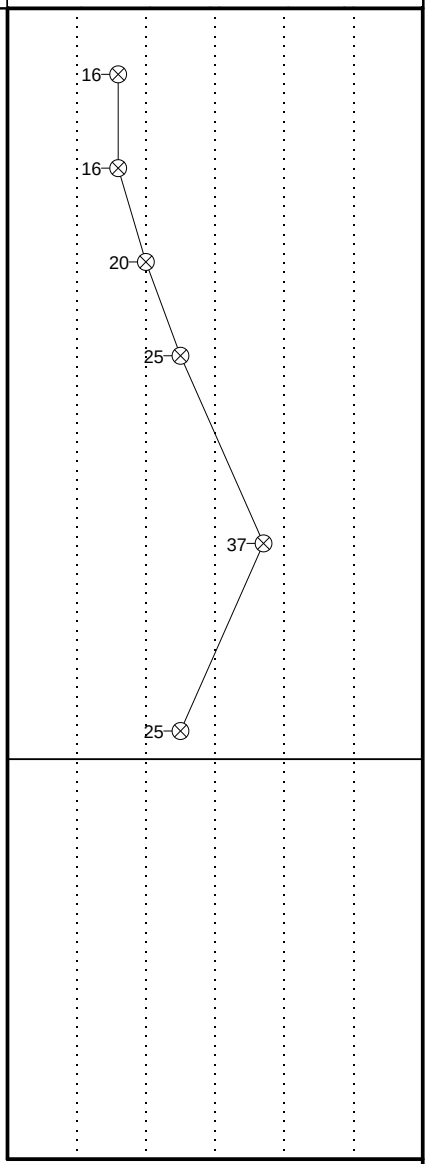
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION | SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, contains roots, red to brown, moist, very stiff			4 7 9
	S-2	SS	18	15	(ML) SANDY SILT, red to brown, moist, very stiff to hard			5 8 8
5	S-3	SS	18	16				6 9 11
	S-4	SS	18	17				7 8 17
10	S-5	SS	18	18				10 16 21
15	S-6	SS	18	18				8 11 14
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 16'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-6	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

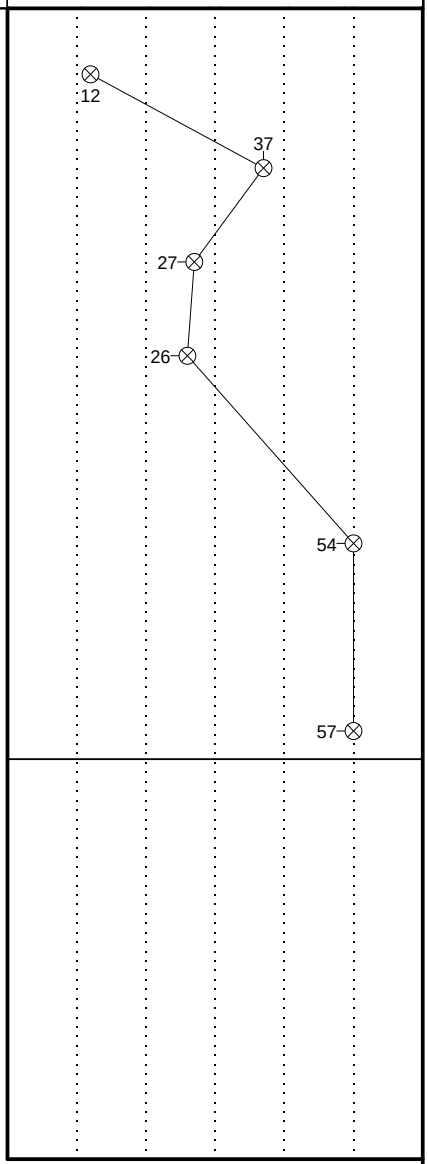
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS; BOTTOM OF CASING; LOSS OF CIRCULATION; SURFACE ELEVATION)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, contains rock fragments, red to brown, moist, stiff to hard			4 6 6
	S-2	SS	18	0.5				12 17 20
5	S-3	SS	18	18				9 13 14
	S-4	SS	18	18				10 9 17
10					(ML) SANDY SILT, tan to light brown, moist, very hard			
	S-5	SS	18	16				15 20 34
15	S-6	SS	18	14				19 26 31
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 16'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-7	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT^2

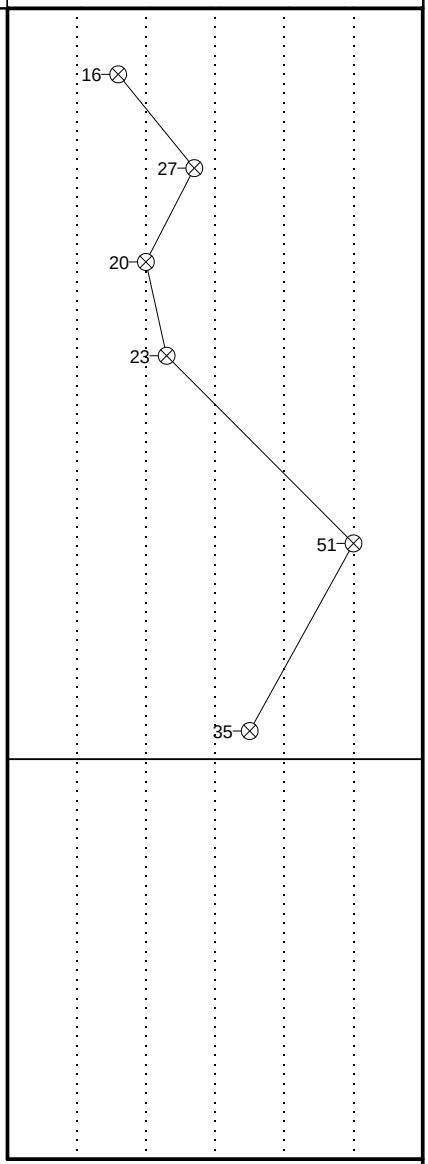
ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DESCRIPTION OF MATERIAL — ENGLISH UNITS
BOTTOM OF CASING | LOSS OF CIRCULATION
SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	17	(ML) SANDY SILT, red to brown, moist, very stiff			6 8 8
	S-2	SS	18	18				8 11 16
5								
	S-3	SS	18	15				7 10 10
	S-4	SS	18	18				8 10 13
10					(ML) SANDY SILT, tan to light brown, moist, hard to very hard			
	S-5	SS	18	18				16 20 31
15								
	S-6	SS	18	15				12 15 20
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 15'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	A-8	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

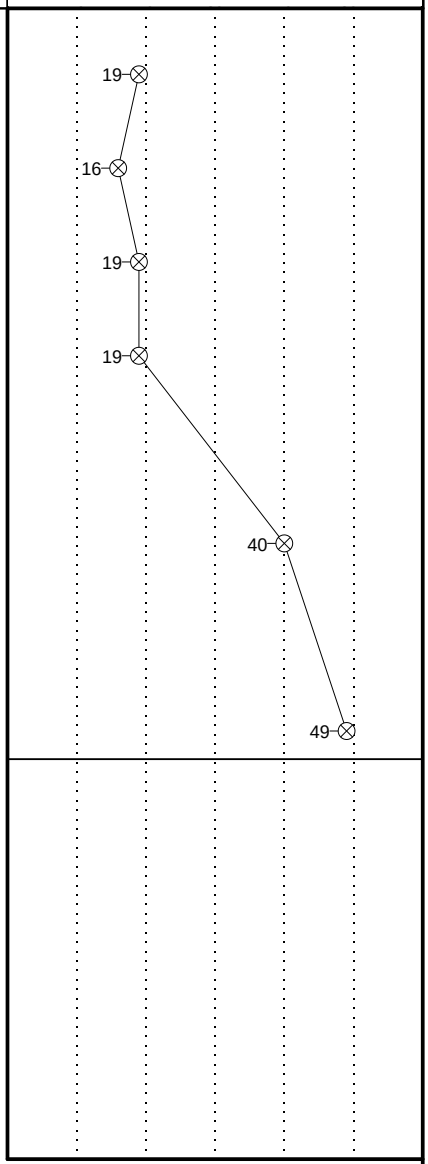
STANDARD PENETRATION BLOWS/FT

ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION

SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	10	(ML) SANDY SILT, contains roots, red to brown, moist, very stiff			5 9 10
	S-2	SS	18	16	(ML) SANDY SILT, red to brown, moist, very stiff			7 8 8
5	S-3	SS	18	18				7 9 10
	S-4	SS	18	15				6 8 11
10					(ML) SANDY SILT, tan to light brown, moist, hard			
	S-5	SS	18	16				7 10 30
15								
	S-6	SS	18	18				16 19 30
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 14'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-1	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

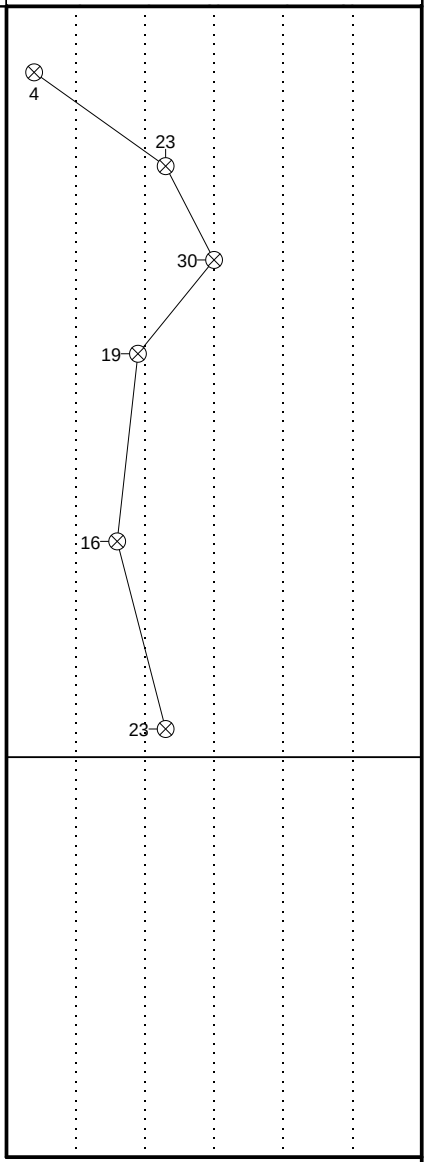
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS; BOTTOM OF CASING; LOSS OF CIRCULATION; SURFACE ELEVATION)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	9	(ML) SANDY SILT, contains roots, tan to red, moist, soft			2 2 2
	S-2	SS	18	18	(ML) SANDY SILT, red to brown, moist, very stiff			6 10 13
5	S-3	SS	18	12				9 15 15
	S-4	SS	18	18				7 10 9
10	S-5	SS	18	18				7 6 10
15	S-6	SS	18	18				8 10 13
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 16'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-2	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

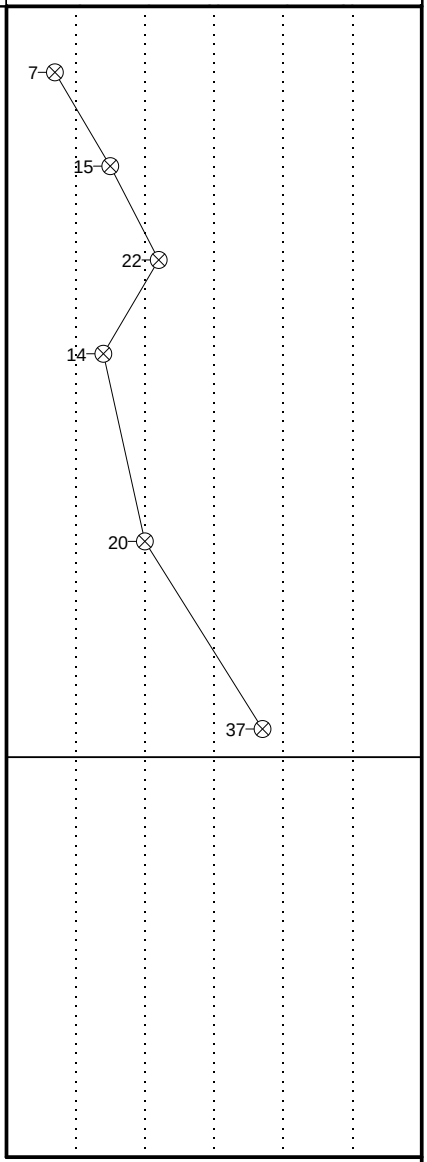
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC% ———

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]		
	S-1	SS	18	18	(ML) SANDY SILT, contains roots, light tan, moist, medium stiff		2 3 4
	S-2	SS	18	18	(ML) SANDY SILT, red to brown, moist, stiff to hard		4 6 9
5	S-3	SS	18	18			8 10 12
	S-4	SS	18	18			6 6 8
10	S-5	SS	18	18			7 9 11
15	S-6	SS	18	18			10 16 21
20					END OF BORING @ 20'		
25							
30							



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 14'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-3	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

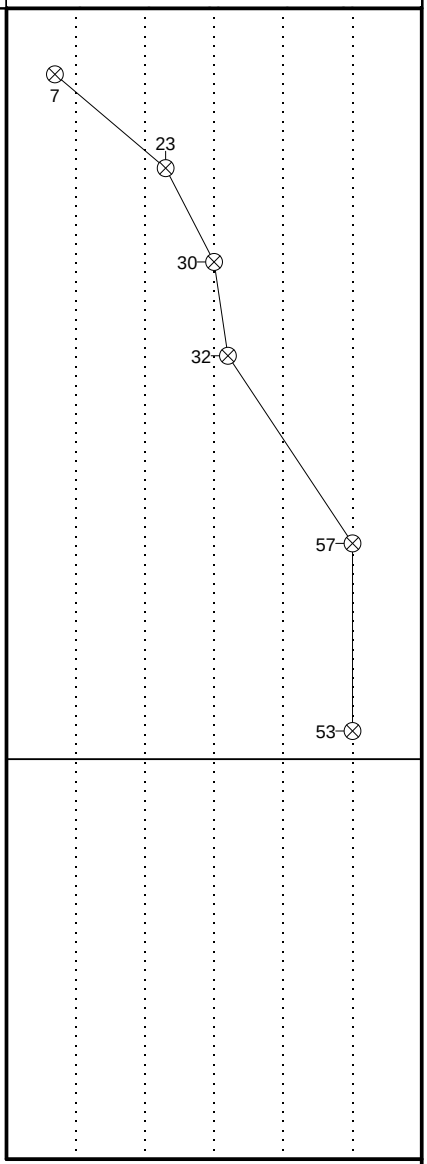
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, tan to brown, moist, medium stiff			3 3 4
	S-2	SS	18	18	(ML) SANDY SILT, red to brown, moist, very stiff to hard			7 10 13
5	S-3	SS	18	18				8 14 16
	S-4	SS	18	18				13 14 18
10					(ML) SANDY SILT, tan to light gray, moist, very hard			
	S-5	SS	18	17				16 20 37
15								
	S-6	SS	18	18				19 20 33
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 10'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-4	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

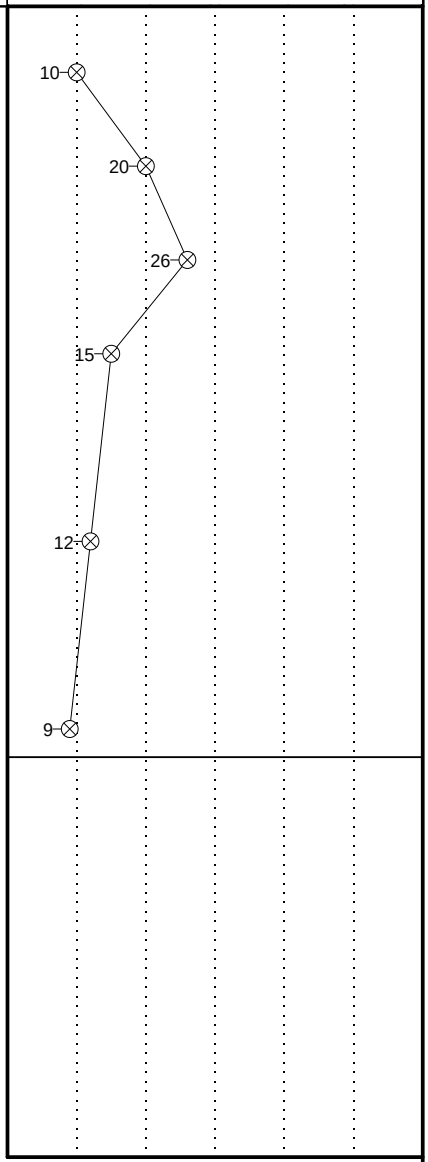
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]		
	S-1	SS	18	18	(ML) SANDY SILT, red to brown, moist, stiff to very stiff		4 4 6
	S-2	SS	18	18			7 9 11
5	S-3	SS	18	18			9 12 14
	S-4	SS	18	18			4 6 9
10	S-5	SS	18	18			5 6 6
15	S-6	SS	18	18			3 4 5
20					END OF BORING @ 20'		
25							
30							



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 16'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-5	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

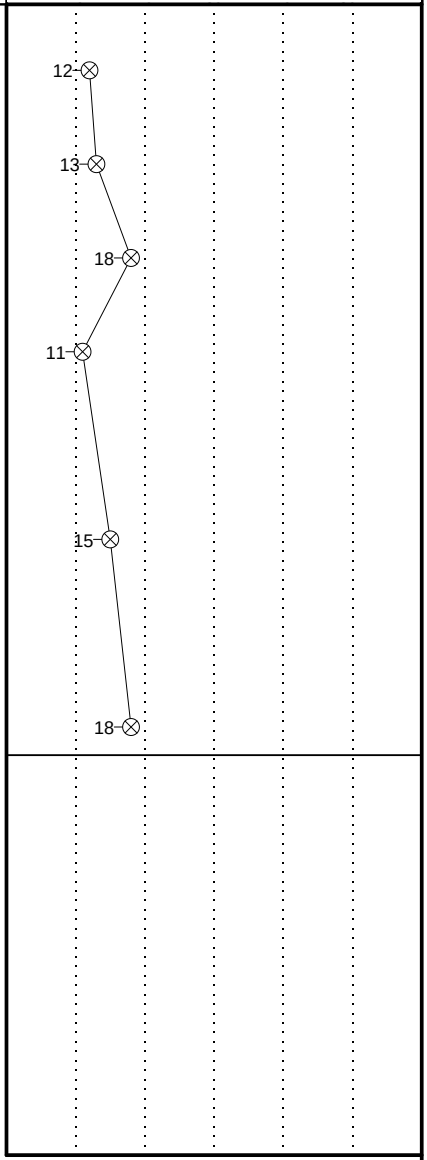
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION | SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, red to light brown, moist, stiff to very stiff			4 6 6
	S-2	SS	18	18				4 5 8
5	S-3	SS	18	18				6 9 9
	S-4	SS	18	18				6 5 6
10	S-5	SS	18	18				4 6 9
15	S-6	SS	18	18				5 8 10
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 13'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-6	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC% ———

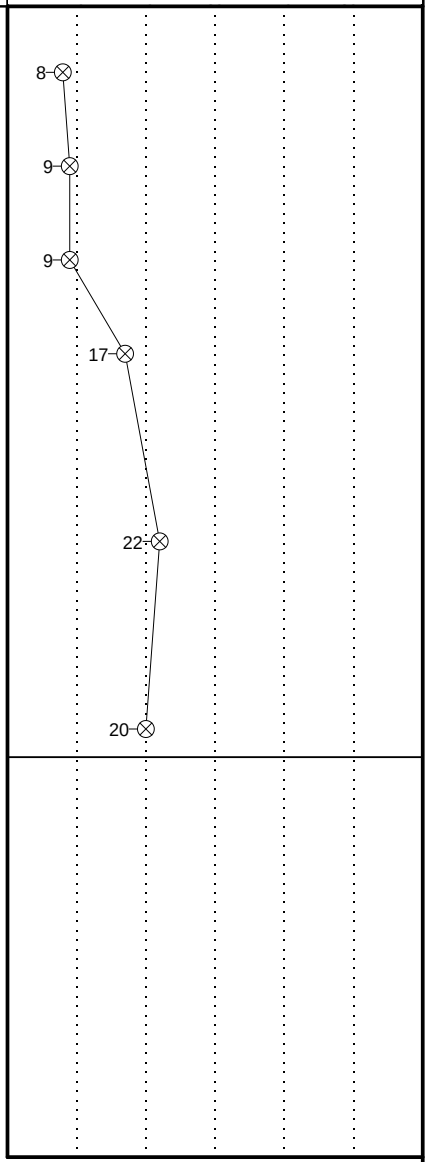
PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

ENGLISH UNITS

BOTTOM OF CASING | LOSS OF CIRCULATION | SURFACE ELEVATION

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	16	(ML) SANDY SILT, tan to red, moist, medium stiff to stiff			3 3 5
	S-2	SS	18	18				3 4 5
5	S-3	SS	18	16				5 5 4
	S-4	SS	18	17	(ML) SANDY SILT, red to brown, moist, very stiff			6 8 9
10	S-5	SS	18	16				8 10 12
15	S-6	SS	18	18				7 9 11
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 17'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-7	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

CALIBRATED PENETROMETER TONS/FT^2

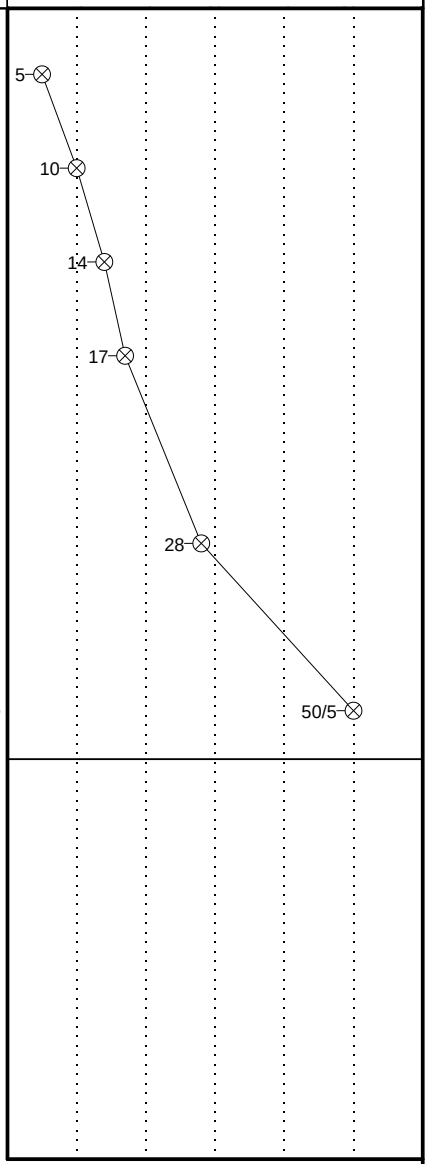
ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

STANDARD PENETRATION BLOWS/FT

BOTTOM OF CASING | LOSS OF CIRCULATION | SURFACE ELEVATION | ENGLISH UNITS

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [12"]			
	S-1	SS	18	18	(ML) SANDY SILT, tan to red, moist, medium stiff to stiff			2 2 3
	S-2	SS	18	18				3 4 6
5	S-3	SS	18	18				5 7 7
	S-4	SS	18	17	(ML) SANDY SILT, tan to light gray, moist, very stiff			6 8 9
10	S-5	SS	18	18				10 13 15
15	S-6	SS	5	4	(ML) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, tan to light gray, moist			50/5
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 16'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA

CLIENT	Job #:	BORING #	SHEET
The Educational Group, Inc.	38:1616	B-8	1 OF 1

PROJECT NAME	ARCHITECT-ENGINEER
TMS No. 001000-02-008 and 00100-02-010	

SITE LOCATION: Amicks Ferry Road and Lake Tide Drive, Chapin, South Carolina

NORTHING | EASTING | STATION

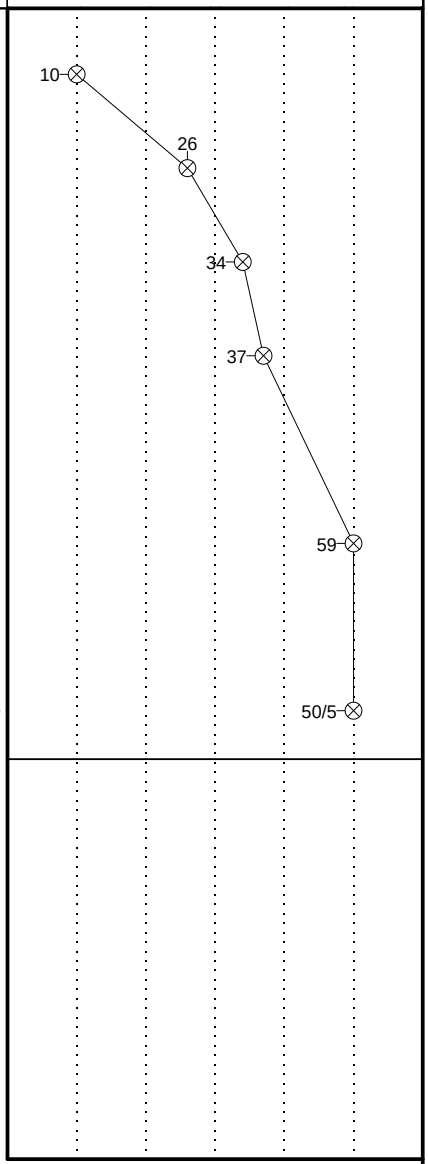
CALIBRATED PENETROMETER TONS/FT^2

ROCK QUALITY DESIGNATION & RECOVERY
RQD% – — – REC%

PLASTIC LIMIT% | WATER CONTENT% | LIQUID LIMIT%

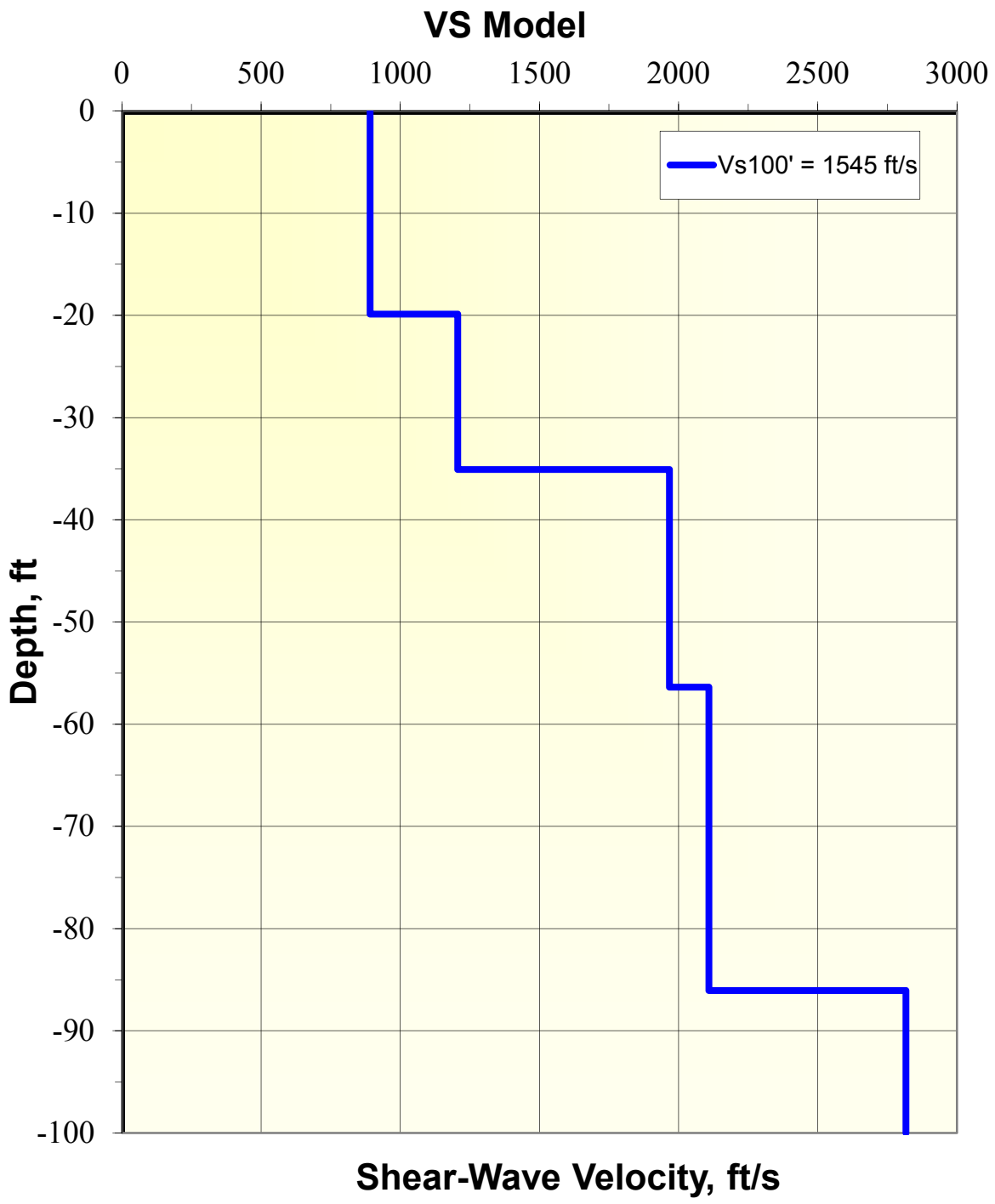
STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL (ENGLISH UNITS)	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Cultivated Soil Depth [8"]			
	S-1	SS	18	18	(ML) SANDY SILT, tan to red, moist, stiff to very stiff			4 5 5
	S-2	SS	18	12				7 10 16
5					(ML) SANDY SILT, tan to light gray, moist, hard to very hard			
	S-3	SS	18	18				12 14 20
	S-4	SS	18	14				13 16 21
10								
	S-5	SS	18	16				17 20 39
15								
	S-6	SS	5	4	(ML) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, tan to light gray, moist			50/5
20					END OF BORING @ 20'			
25								
30								



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

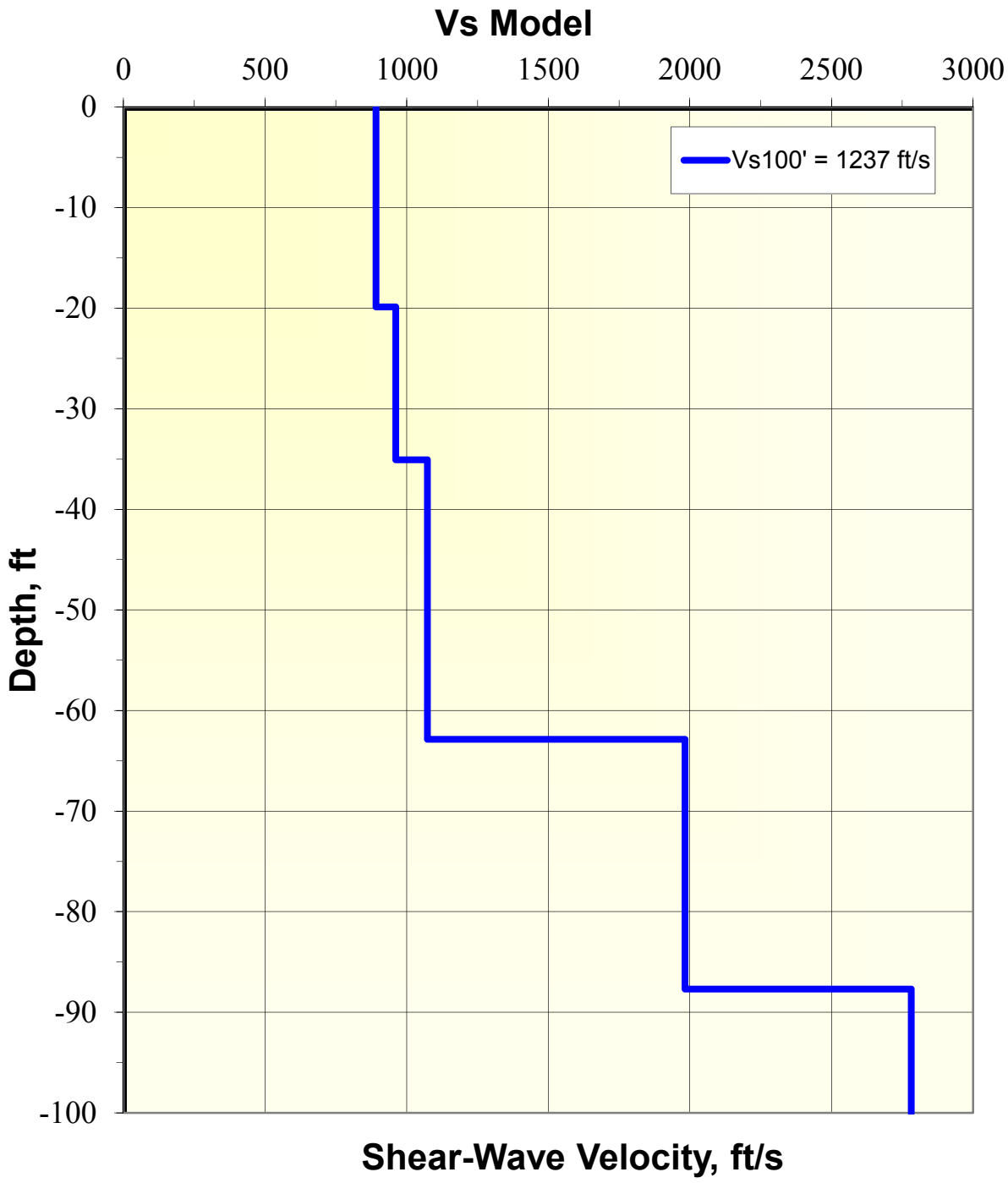
WL NE WS ☐ WD ☐	BORING STARTED 04/13/17	CAVE IN DEPTH @ 14'
WL(SHW) WL(ACR)	BORING COMPLETED 04/13/17	HAMMER TYPE Auto
WL	RIG CME 550 FOREMAN Southern Drill	DRILLING METHOD HSA



Shear Wave Velocity Model – ReMi Survey

ReMi Test Results
S-1
Site Class 'C'

TMS No. 001000-02-008 and
00100-02-010
Chapin, South Carolina
ECS Project No.: 38:1616



Shear Wave Velocity Model – ReMi Survey

ReMi Test Results
S-2
Site Class 'C'

TMS No. 001000-02-008 and
00100-02-010
Chapin, South Carolina
ECS Project No.: 38:1616