



ECS Southeast, LLC

Geotechnical Engineering Report

Pruitt Harrisburg – Nursing Home Expansion

Harrisburg, Cabarrus County, North Carolina

ECS Project No. 08:16127

April 10, 2025





ECS SOUTHEAST, LLC

NC Engineering License No. F-1519

Geotechnical • Construction Materials • Environmental • Facilities

April 10, 2025

Mr. Don Curry
The Curry Engineering Group, PLLC
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Fuquay-Varina, North Carolina 27526

ECS Project No. 08:16127

Reference: Geotechnical Engineering Report
Pruitt Harrisburg – Nursing Home Expansion
Harrisburg, Cabarrus County, North Carolina

Dear Mr. Curry:

ECS Southeast, LLC (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering recommendations for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to you during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design and construction phase to confirm subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us at (704) 525-5152.

Respectfully submitted,

ECS Southeast, LLC

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EXECUTIVE SUMMARY

The below information summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the Executive Summary should not be utilized in lieu of reading the entire geotechnical report.

This report contains the results of our subsurface exploration and geotechnical engineering recommendations for the proposed nursing home expansion located in Harrisburg, Cabarrus County, North Carolina.

- Existing fill was encountered at 6 of the 14 boring locations and extended to depths ranging from approximately 3 to 5 ½ feet below existing grades. Organic laden existing fill (OL classification) was encountered to a depth of approximately 3 feet below existing grade at the location of Boring B-05. Records of the previous site activities and fill placement were not provided to us; therefore, the fill is considered undocumented. ECS does not typically endorse supporting new construction on undocumented existing fill. However, the complete removal and replacement of existing fill is not anticipated to be feasible or desirable at the project due to the proximity of the existing construction. If the Owner is willing to accept the risk of supporting the building addition on the existing fill, and comprehensive construction phase subgrade evaluations are performed to confirm existing fill is satisfactory to support the new construction, the building addition may be supported on the existing fill. Some localized subgrade repairs, including shallow undercutting, should be expected to establish suitable foundation and slab subgrades. Alternatively, to reduce the risk associated with existing undocumented fill, foundations may be extended together through the existing fill to bear on low-plasticity residual soils or a ground improvement system (i.e. aggregate piers) may be implemented.
- Potentially expansive and moisture sensitive Fat CLAY (CH) soils were encountered at 3 of the 14 boring locations and extended to depths ranging from approximately 3 to 8 feet below existing grades. MH soils with a Plasticity Index (PI) greater than 30 and CH soils should not be used for direct support of foundations, floor slabs, or pavements. A minimum separation of 2 feet should be provided between high plasticity, potentially expansive MH soils (PI > 30) and CH soils and pavement subgrade elevations.
- Partially Weathered Rock (PWR) was encountered at 11 of the 14 boring locations at beginning depths ranging from approximately 2 ½ to 9 ½ feet below existing grades. Auger refusal material (i.e. possible rock) was encountered at 11 of the 14 boring locations at depths ranging from approximately 3½ to 11 feet below existing grades. Depending on final site grades, difficult excavation may be encountered during mass grading, utility installation, and/or foundation excavation.
- Lower consistency, near surface soils (N-value of 6 bpf or less) were encountered at 8 of the 14 boring locations and extended to depths ranging from approximately 2 ½ to 7 ½ feet below existing grades. Depending on existing fill and high plasticity soil remediation, and construction phase testing (i.e., proofrolling, DCP testing), lower consistency/loose soils may require undercutting, moisture conditioning, and/or compaction prior to fill placement or construction of pavements and structures.
- Based on the results of subsurface exploration, the proposed structure can be supported on conventional shallow foundations bearing on low plasticity residual, approved existing fill soils, or newly placed Engineered Fill using a net allowable bearing pressure of 2,000 psf. Alternatively, the building can be supported by shallow foundations following the implementation of a ground improvement system (i.e. aggregate piers).
- A Seismic Site Class "C" is appropriate based upon the average N-value method.

The purpose of this study was to provide subsurface exploration and geotechnical information for the design of the proposed building addition for the existing Pruitt Nursing Home located in Harrisburg, Cabarrus County, North Carolina. The recommendations developed for this report are based on the project information supplied by the Client. Our services were provided in accordance with our proposal No. 08:31135P dated February 13, 2024, as authorized by Ms. Wendy Loeffler on March 4, 2025, and includes the Terms and Conditions of Services outlined within the agreement.

- Information on site conditions including surface drainage, geologic information, and special site features.
- Description of the field exploration and laboratory tests performed.
- Final logs of the soil borings and records of the field exploration.
- Recommendations regarding foundation options for the structures and settlement potential.
- Recommendations regarding slab-on-grade construction and design.
- Seismic site classification per North Carolina Building Code based on the average N-value method.
- Light and heavy-duty pavement sections recommendations.
- Evaluation of the on-site materials for reuse as Engineered Fill.
- Recommendations for minimum soil cover during frost heaving, compaction requirements for fill and backfill areas, and slab-on-grade construction.
- Recommendations regarding site preparation and construction observations and testing.

2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The site is currently developed with a one-story nursing home structure and associated paved parking and drive areas. The site is bordered by Roberta Road to the east, residential buildings and homes to the north and west, and undeveloped, wooded land to the south. Based on client provided topographic information and Cabarrus County GIS topographic information, existing ground surface elevation within the planned building and pavement expansion areas range from approximately 583 to 591 feet, generally sloping down from the southeast towards the northwest.

Based on the review of available historical aerial photography, since at least 1938, the site primarily consisted of open and manicured greenspace within the northern and eastern portions of the site and wooded land to the south. The site remained in a similar condition until 2001 when construction of the existing nursing home began and was concluded in 2002. The site has remained in a generally similar condition since that time. The previous use discussion is not considered a comprehensive or in-depth review of the site history, rather a quick overview of available aerial imagery.

2.2 PROPOSED CONSTRUCTION

Based on the provided concept plan and Client correspondence, ECS understands that two (2) building additions will be constructed as part of a 59-bed expansion at the existing nursing home. We understand that the new structure finished floor elevation (FFE) will match the existing FFE of 585.5 feet. Additionally, new paved parking/drive areas and a stormwater management pond are planned. Estimated maximum cut and fill depths of approximately 5 and 2 feet, respectively, are anticipated. The following information explains our understanding and assumptions for the proposed structure additions.

PROJECT UNDERSTANDING	
SUBJECT	DESIGN INFORMATION / ASSUMPTIONS ⁽¹⁾
Number of Stories	One-story
Usage	Nursing Home
Framing	Wood/Brick ⁽¹⁾
Column Loads	50 kips maximum ⁽¹⁾
Wall Loads	2 to 3 kips per linear foot (klf) maximum ⁽¹⁾

Notes:

- (1) If any of these assumptions are incorrect, ECS must be notified in order to reassess and update our recommendations, if necessary

3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedure. Our scope of work included drilling fourteen (14) soil test borings. The borings were field located using GPS technology and existing site features as reference, and their approximate locations are shown on the Boring Location Diagram in Appendix A. The topographic data and elevations noted on the boring logs and referenced in this report were estimated from Client provided topographic information and Cabarrus County GIS and should be considered approximate. The users of the reported elevations do so at their own risk.

3.1 SUBSURFACE CHARACTERIZATION

The site is located in the Piedmont Physiographic Province of North Carolina. The native soils in the Piedmont Province consist mainly of residuum with underlying saprolites weathered from the parent bedrock, which can be found in both weathered and unweathered states. In a mature weathering profile of the Piedmont Province, the soils are generally found to be finer grained at the surface where more

extensive weathering has occurred. The particle size of the soils generally becomes more granular with increasing depth and gradually changes first to weathered and finally to unweathered parent bedrock.

The natural geology within portions of the site has been modified in the past by construction activities, placement of man-placed fill, and/or disturbance of near-surface soils. The quality of disturbed near surface soils and man-made fills can vary significantly, and it is difficult to assess the engineering properties of existing fills. Furthermore, there is no specific correlation between N-values from standard penetration tests performed in soil test borings and the degree of compaction of existing fill soils; however, a qualitative assessment of existing fills can sometimes be made based on the N-values obtained and observations of the materials sampled in the test borings.

The following sections provide generalized characterizations of the subsurface materials. Please refer to the subsurface cross sections in Appendix A and boring logs in Appendix B for more detailed information.

GENERALIZED SUBSURFACE CONDITIONS			
Approximate Depth (ft)	Stratum	Description	Ranges of SPT ⁽¹⁾ N-values (bpf)
0 to 0.3	N/A	Varying amount of surficial organic laden soils ⁽²⁾	N/A
0.1 to 3	I	Fill – Sandy Organic SILT (OL). ⁽³⁾	9
0.1 to 5.5	II	FILL – Sandy Fat CLAY (CH), and Sandy Lean CLAY (CL). ⁽³⁾	6 to 16
0.1 to 11	III	RESIDUUM – Clayey SAND (SC), Sandy Lean CLAY (CL), Fat CLAY (CH), Silty SAND (SM), and Sandy SILT (ML).	3 to 80
2 to 13.8	IV	Partially Weathered Rock (PWR) – Sampled as Silty SAND and Clayey SAND. ⁽⁴⁾⁽⁵⁾⁽⁶⁾	100+ (50/5" to 50/1")

Notes:

- (1) Standard Penetration Testing in blows per foot (bpf).
- (2) **Surficial materials are driller reported and should not be used for material takeoffs.**
- (3) Existing fill was encountered at 6 of the 14 boring locations and extended to depths ranging from approximately 3 to 5 ½ feet below existing grades.
- (4) Partially Weathered Rock (PWR) is defined as residual material exhibiting SPT N-values greater than 100 bpf.
- (5) PWR was encountered at 10 of the 14 boring locations with beginning depths ranging approximately 2½ to 9½ feet below existing grades.
- (6) Auger refusal material (i.e. possible rock) was encountered at 11 of the 14 boring locations at depths ranging from approximately 3½ to 11 feet below existing grades.

3.2 GROUNDWATER OBSERVATIONS

Groundwater measurements were attempted at the termination of drilling and prior to demobilization from the site. Groundwater was encountered at Borings B-03, B-08, B-09, B-12, and B-14 at depths ranging from approximately 0.3 to 8.5 feet below existing grades at the time of drilling. Groundwater was not apparent in the remaining borings at the time of drilling to the depths explored. Cave-in depths were measured at the boring locations with cave-in depths ranging from approximately 3 to 9.5 feet below existing grades. Cave-in of a soil test boring can be caused by groundwater hydrostatic pressure, weak soil layers, and/or drilling activities. We anticipate the observed shallow water condition is potentially perched and/or laterally flowing water on restrictive subsurface materials.

Based upon our interpretation of the subsurface data and site topography, we believe the site is underlain by two types of groundwater: perched and a water table aquifer. Perched groundwater is distinguished differently from the water table aquifer. The definition below can be referenced:

“Perched water is typically of limited quantity, replenished or recharged very slowly. When encountered in an excavation, perched water will typically drain off very quickly, with limited continuous flow or bleeding, unless a source of recharge, such as a leaking utility is present.”

From: *Construction Dewatering and Groundwater Control – New Methods and Applications, 3rd Addition*

A water table aquifer is distinguished from a perched groundwater table based on the water table aquifer’s recharge ability, which may be limitless but can be lowered temporarily through adequate dewatering techniques such as deep wells and well points. Perched groundwater is often alleviated in excavations by pumping from sump pits and French drains.

Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, restrictive soil and rock strata, construction activities, and other factors.

ECS performed a Seasonal High Water Table (SHWT) determination at Boring B-14 as presented in the report “Seasonal High Water Table Determination” (ECS Project No. 49:25464), dated March 27, 2025. The SHWT determination report is included in Appendix D for reference.

3.3 LABORATORY TESTING

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration. Classification, moisture content, percent fines (-200 wash), and Atterberg limit tests were performed. The results are included on the boring logs in Appendix B and Laboratory Testing Summary in Appendix C.

Each sample was visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System, USCS). After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

4.0 DESIGN RECOMMENDATIONS

4.1 FOUNDATIONS

4.1.1 Conventional Shallow Foundations

Existing fill was encountered at Borings B-01 through B-06 within the building footprint and extended to depths ranging from approximately 3 to 5 ½ below existing grades. Organic laden existing fill (OL classification) was encountered to a depth of approximately 3 feet below existing grade at the location of Boring B-05. Records of the previous site activities and fill placement were not provided to us; therefore, the fill is considered undocumented. We typically do not endorse supporting new construction on existing undocumented fill; however, the complete removal and replacement of existing fill within portions of the proposed building addition is not anticipated to be feasible or desirable at the project due to the proximity

of the existing construction. Provided existing organic laden Sandy SILT (OL) fill is remediated, the owner accepts the risk of constructing on undocumented fill and the fill, is thoroughly tested at the time of construction (i.e. proofrolling, DCP testing, test pits, etc.), the proposed structure addition can be supported by conventional shallow foundations bearing on low plasticity residual soils, newly placed Engineered Fill, or property evaluated and approved existing fill. Some localized subgrade repairs, including shallow undercutting, should be expected to establish suitable foundation and slab subgrades. Alternatively, the risk may be reduced by full depth removal of existing fill and replacement with Engineered Fill or implementing a ground improvement system (i.e. aggregate piers). The foundations may be designed using the following parameters for shallow foundations:

FOUNDATION RECOMMENDATIONS		
Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure ⁽¹⁾	2,000 psf	
Acceptable Bearing Soil Material	Low Plasticity Residual Soils and/or Newly Placed Engineered Fill	
Minimum Width	24 inches	18 inches
Minimum Footing Embedment Depth (below slab or finished grade) ⁽²⁾	18 inches	18 inches
Minimum Exterior Frost Depth (below final exterior grade)	12 inches	12 inches
Estimated Total Settlement ⁽³⁾	1 inch or less	1 inch or less
Estimated Differential Settlement ⁽⁴⁾	½ inch or less	½ inch or less

Notes:

- (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
- (2) For bearing considerations.
- (3) Based on assumed structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
- (4) Based on assumed maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

Potential Undercuts: Following evaluation and/or remediation of existing fill, lower-consistency/loose soils, and/or high plasticity soils, we anticipate the majority of the materials at the foundation bearing elevation should be acceptable for support of the proposed structures. If soft or unsuitable soils are observed at the footing bearing elevations at the time of footing construction, the unsuitable soils should be removed and replaced. Undercut areas should be backfilled with lean concrete ($f'c \geq 1,000$ psi at 28 days) or compacted crushed aggregate up to the original design bottom of footing elevation.

Depending on final site grades, there is the possibility that foundations and slabs may be excavated within PWR and may bear on both PWR (and/or rock) and soil materials. Footings and floor slabs should not be allowed to bear on dissimilar materials such as soil and PWR/rock. To that end, difficult excavation may be needed to create a minimum cushion of 1 foot between the foundation bottoms and underlying PWR/rock materials using compacted soil, crushed stone, or quarry screening materials. Additionally, we

recommend a minimum 1-foot separation between bottom of slab/pavements base course and underlying PWR/rock materials.

Adjacent Existing Structures: The new shallow foundations will be constructed adjacent to portions of the existing structure. In such instances, care must be taken to not compromise the foundation bearing conditions of existing foundations. The structural engineer should consider the bearing elevation and geometry of the existing foundations when proportioning the new foundations. Furthermore, depending on the proximity of the proposed structure to the existing structure, the Contractor should be prepared to shore, brace, underpin, etc. existing foundations to mitigate the risks associated with excavations near the existing structure. Regardless, construction activities and the influence of new loadings may result in localized distress of existing exterior finishes.

4.1.2 Ground Improvement

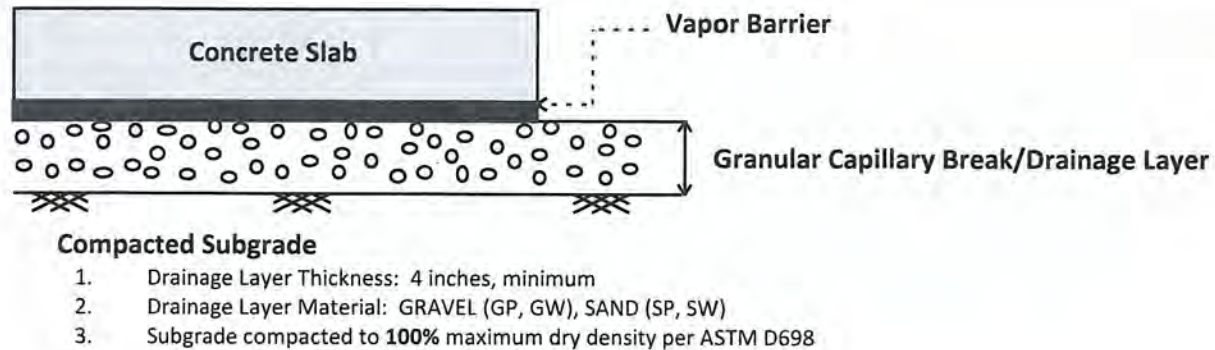
Due to the existing undocumented fill and as an alternative to full depth removal and replacement of existing fill, a ground improvement system consisting of aggregate piers extending through the existing fill can be considered for support of the structure additions. After installation of an appropriate ground improvement system, conventional shallow foundations and slabs-on-grade may be constructed on the ground improvement elements and improved subgrade soils. Depending on structural design, load transfer pads may be necessary with this option.

For preliminary planning purpose, we anticipate that an allowable bearing pressure on the order of 3,000 to 4,000 psf may be feasible for shallow foundations bearing on a ground improvement system. However, the bid documents should specify a minimum allowable bearing pressure and allowable total and differential settlement tolerances provided by a specialty ground improvement design-build contractor. The total and differential settlement tolerances should be defined by the Structural Engineer based on the building tolerances. ECS would be pleased to work with the design team to develop a ground improvement specification for this project if desired.

The ground improvement system should be designed and installed by a qualified design-build contractor and the proposed soil improvement plan should be reviewed by ECS before construction begins. The design-build contractor should also be made aware of changes in site grades required to achieve final site grades and should plan construction sequencing accordingly. Where significant site fills are required the ground improvement designer should specify if the fill should be placed before or after ground improvement installation and should define if any waiting period is required between fill placement, ground improvement installation, and building construction.

4.2 SLABS ON GRADE

Provided subgrades and Engineered Fill are prepared as discussed herein and existing fill soils are evaluated and/or remediated, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). We assume the slabs will bear on low plasticity residual soils, newly placed Engineered Fill, approved low-plasticity existing fill, or a ground improvement system. The following graphic depicts our general soil-supported slab recommendations:



Soft, yielding soils, and/or moisture sensitive soils may be encountered in some areas. Those soils should be removed and replaced with compacted Engineered Fill in accordance with the recommendations included in this report.

Subgrade Modulus: Provided the Engineered Fill and Granular Drainage Layer are constructed in accordance with our recommendations, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 90 pci (lbs per cubic inch). The modulus of subgrade reaction value is based on a 1 foot by 1 foot plate load test basis.

Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the Structural Engineer and/or the Architect may choose to eliminate the vapor barrier.

Slab Isolation: Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a turn down footing/monolithic slab configuration, the slab should be designed with appropriate reinforcement and load transfer devices (if required) to preclude overstressing of the slab.

4.3 SEISMIC DESIGN CONSIDERATIONS

Seismic Site Classification: The North Carolina Building Code (NCBC) requires site classification for seismic design based on the upper 100 feet of a soil profile. The Standard Penetration Resistance (N-value) method was used in classifying this site. The seismic site class definitions for the weighted average of SPT N-values in the upper 100 feet of the soil profile are shown in the table on the following page.

SEISMIC SITE CLASSIFICATION		
Site Class	Soil Profile Name	$\bar{N}$ value (bpf)
A	Hard Rock	N/A
B	Rock	N/A
C	Very Dense Soil and Soft Rock	>50
D	Stiff Soil Profile	15 to 50
E	Soft Soil Profile	<15

Based upon our subsurface findings, a Seismic Site Class of "C" is appropriate for the site.

4.4 PAVEMENT

Subgrade Characteristics: ECS does not recommend supporting pavements on existing undocumented fill. Bearing the pavements on the existing fill soils is a risk-based decision that only the Owner can make. The risk for premature distress and increased repairs associated with leaving the existing fill beneath pavement can be reduced, but not eliminated, by incorporating geosynthetics into the pavement section and/or increasing the thickness of the pavement section. ECS cannot be responsible for premature distress of the pavements if the Owner elects to support the pavements on undocumented fill. Low plasticity residual soils and newly placed Engineered Fill are considered suitable for support of pavements, although moisture conditioning during earthwork operations (i.e wetting and/or drying) should be expected.

Design Considerations: We were not provided traffic loading information, so we have assumed loadings typical of this type of project. We have estimated a CBR value of 4, assumed 20-year life, and assumed equivalent single axle loadings of approximately 10,000 and 85,000 ESALs for light-duty and heavy-duty pavements, respectively. It is important to note that the design sections shown below do not account for construction traffic loading or the use/placement of construction dumpsters.

RECOMMENDED PAVEMENT SECTIONS			
MATERIAL	FLEXIBLE PAVEMENT		Portland Cement Concrete (PCC) Pavement
	Heavy Duty	Light Duty	
Portland Cement Concrete ($f'_c = 4000$ psi, air entrained)	-	-	6 inches
Asphalt Surface Course (\$9.5B) ⁽¹⁾	3 inches	2 inches	-
Aggregate Base Course ⁽²⁾	8 inches	6 inches	6 inches

(1) Multiple lifts required to achieve noted thickness.

(2) Aggregate base course material shall be compacted to a minimum compaction of 100% of its Modified Proctor value (ASTM 1557/AASHTO T180).

In general, heavy-duty sections are areas that will be subjected to delivery trucks, buses, or other similar vehicles including main drive lanes of the development. Light duty sections are appropriate for limited passenger vehicle traffic and automobile parking areas. Additionally, the above noted light and heavy-duty pavement sections are capable of supporting an 85,000-pound emergency vehicle (i.e. firetruck) on a periodic basis.

Vehicles servicing front-loading trash dumpsters frequently impose concentrated front-wheel loads on pavements during loading. This type of loading typically results in rutting of bituminous pavements and ultimate pavement failures and costly repairs. Therefore, we suggest that the pavements in centralized dumpster pickup areas, utilize a Portland Cement Concrete (PCC) pavement section. Such a PCC section would typically consist of 8 inches of 4,000 psi, air entrained concrete over not less than 6 inches of compacted aggregate base course. Appropriate steel reinforcing (if required) and jointing should also be incorporated into the design of PCC pavements.

We emphasize that good base course drainage is essential for successful pavement performance. Water buildup in the base course may result in premature pavement failures. The subgrade and pavement should be graded to provide effective runoff to either the outer limits of the paved area or to catch basins so that standing water will not accumulate on the subgrade or pavement.

It should be noted that these design recommendations may not satisfy local jurisdictional or North Carolina Department of Transportation traffic guidelines. Roadways constructed for public use and to be dedicated to the local jurisdiction or State for repair and maintenance must be designed in accordance with the appropriate jurisdictional requirements.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping trees and vegetation, rootmat, topsoil, and soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits, and 5 feet beyond the toe of Engineered Fills. Existing utilities, if present, should be abandoned and removed or grouted in place. ECS should be retained to observe that topsoil and unsuitable surficial materials have been removed prior to the placement of Engineered Fill or construction of structures.

5.1.2 Proofrolling

Prior to fill placement or other construction on subgrades, the subgrades should be observed by ECS. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g. fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying localized yielding materials.

Where proofrolling identifies areas that are unstable or “pumping”, those areas should be repaired prior to the placement of any subsequent Engineered Fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed unstable materials, and to assist in selecting appropriate remedial actions to stabilize the subgrade.

5.2 EARTHWORK OPERATIONS

5.2.1 Existing Fill

Existing fill and/or disturbed near-surface soils were encountered at Borings B-01 through B-06 within the proposed building footprint and extended to depths ranging from approximately 3 to 5 ½ feet below existing grades. Organic laden existing fill (OL classification) was encountered to a depth of approximately 3 feet below existing grade at the location of Boring B-05. Records of the fill placement were not provided to us; therefore, the fill is considered undocumented. If available, records of the previous sitework (i.e., proofrolling, compaction testing, etc.) should be obtained and provided to us for review and updates to our recommendations, if warranted.

Undocumented fill poses risks associated with undetected deleterious inclusions within the fill and/or deleterious materials at the virgin ground/fill interface that are covered by the fill. Deleterious materials can consist of significant amounts of organics derived from organic rich strippings, rubbish, construction, or demolition debris, shot rock, stumps and roots and logs. If these materials are covered over by or are within undocumented fill, the organic materials tend to decompose slowly in the anaerobic conditions in or under the fill. Decomposition can occur over periods ranging from several years to several decades. As the organic materials decompose, a void is created which can create soft conditions and even subsidence in areas above the organics. Additionally, nested debris or rock materials may contain voids and result in

ground subsidence. Where these types of conditions exist under or within undocumented fill, they are sometimes in discreet pockets that can go undetected by normal subsurface exploration techniques. If desired, additional exploration, including test pit excavations, supplemental soil borings, and laboratory testing be performed to further explore the extents and composition of existing fill.

Structures: We typically do not endorse supporting new construction on existing fill. However, the complete removal and replacement of existing undocumented fill within portions of the building addition is not anticipated to be feasible or desirable at the project due to the proximity of the existing construction. Provided the owner accepts the risk of constructing on undocumented fill, organic laden existing fill is remediated, and existing fill appears stable and satisfactory at the time of construction, the proposed structure additions may be constructed on existing low plasticity fill. Alternatively, a ground improvement system (i.e. aggregate piers) could be implemented in conjunction with conventionally reinforced structural slabs or post-tensioned foundation and slab systems. Some localized subgrade repairs, including shallow undercutting and/or reworking of the existing fills, should be expected to establish suitable foundation and slab subgrades.

5.2.2 Expansive and Moisture Sensitive Soils

Potentially expansive, high plasticity, moisture sensitive soils are those materials classified as Elastic SILT (MH) with a plasticity index greater than 30 and Fat CLAY (CH). Potentially expansive and moisture sensitive Fat CLAY (CH) soils were encountered at 3 of the 14 boring locations and extended to depths ranging from approximately 3 to 8 feet below existing grades. Moisture sensitive soils will degrade quickly when disturbed and/or with elevated moisture content and are generally not considered suitable for re-use as Engineered Fill.

Expansive, high plasticity, moisture sensitive soils consisting of MH soils (PI > 30) and CH soils are not recommended for direct support of foundations, slabs-on-grade, or pavements. MH (PI > 30) and CH soils encountered within proposed structural areas should be undercut and replacement with low plasticity Engineered Fill to a minimum depth of 2 feet below foundations and subgrade elevations in slabs and pavement areas. Upon completion of the undercut, the resulting subgrade soils should be evaluated for stability prior to the placement of Engineered Fill. Alternatively, chemical (lime) stabilization may be considered to improve/modify high plasticity, moisture sensitive soils in lieu of undercut and replacement and/or for re-use as Engineered Fill. If lime stabilization is selected, quicklime or hydrated materials in accordance with ASTM C977 should be utilized. ECS recommends additional sampling and laboratory testing be performed to further explore the extents and plastic properties of the on-site potentially expansive moisture sensitive soils.

5.2.3 Below Grade Excavation

Based on the results of the soil test borings, Partially Weathered Rock (PWR) was encountered at 11 of the 14 boring locations beginning at depths ranging from approximately 2 ½ to 9 ½ feet below existing grades. Auger refusal material (i.e. possible rock) was encountered at 11 of the 14 boring locations at depths ranging from approximately 3 to 11 feet below existing grades. The approximate depths and elevation of the PWR and/or auger refusal encountered are summarized in the following table:

SUMMARY OF PWR AND AUGER REFUSAL DEPTHS ⁽¹⁾				
Location	Approximate Depth to Top of PWR (feet)	Approximate Elevation of Top of PWR (feet) ⁽²⁾	Approximate Depth to Auger Refusal (feet)	Approximate Elevation of Auger Refusal (feet)
B-01	-	-	5.5	579
B-02	8	576	11	573
B-03	8	576	10	574
B-04	-	-	10.5	574
B-05	7	578	8	577
B-06	2.5	583	3	582
B-07	5.5	580	7.5	578
B-08	8	578	-	-
B-09	9.5	577	11	576
B-10	3	581	4	580
B-11	4	581	5	580
B-12	8	580	-	-
B-13	-	-	-	-
B-14	2	575	7.6	569

(1) Approximate depths noted are referenced from existing grades.

(2) Approximate elevations estimated from Client provided topographic information and Cabarrus County GIS.

We anticipate the fill and residual soils encountered at the boring locations may be excavated with conventional construction equipment such as bulldozers, backhoes, and trackhoes. However, depending on final site grading and utility depths, difficult excavation may be encountered during mass grading operations, and/or foundation and utility excavation. The civil designer should consider PWR in their design.

Smaller equipment may have difficulty excavating PWR. A larger trackhoe or bulldozer equipped with a single-tooth ripper may be required to excavate these materials. Some PWR, especially in confined excavations, may require blasting or impact hammering to efficiently excavate. We recommend that unit rates for mass rock and trench rock be included in the bid package to limit disputes in the event that rock-like materials are encountered.

As a general guide, we recommend the following definitions be used to define rock:

General Excavation

Rip Rock: Material that cannot be removed by scrapers, loaders, pans, dozers, large excavators (with minimum ISO curling forces of 45,000 lbs), or graders; and requires the use of single-tooth ripper mounted on a crawler tractor having a minimum operation weight of 85,000 pounds and draw bar pull rated at not less than 56,000 pounds.

Blast Rock: Material which cannot be excavated with a single-tooth ripper mounted on a crawler tractor having a minimum draw bar pull rated at not less than 56,000 pounds or by a frontend crawler loader with a minimum horsepower rating of 190 hp and operating weight 45,000 pounds and occupying an original volume of at least one (1) cubic yard.

Trench Excavation

Blast Rock: Material which cannot be excavated with a backhoe having a bucket curling force rated at not less than 25,700 pounds and occupying an original volume of at least one-half (1/2) cubic yard.

As noted in the Subsurface Characterization section of this report, the weathering process in the Piedmont can be erratic and significant variations of the depths of the more dense materials can occur in relatively short distances. In some cases, isolated boulders or rock seams may be present in the soil matrix.

5.2.4 Lower Consistency/Loose Soils

Lower consistency, near surface soils (N-value of 6 bpf or less) were encountered at 8 of the 14 boring locations and extended to depths ranging from approximately 2 ½ to 7 ½ feet below the existing grades. Depending on final site grades, existing fill remediation, high plasticity soil remediation, and construction phase testing (i.e. proofrolling and Dynamic Cone Penetrometer testing), lower consistency/loose soils, if encountered, may require selective undercutting, moisture conditioning, and/or compaction prior to fill placement, or construction of pavements and structures.

5.2.5 Engineered Fill

Prior to placement of Engineered Fill, representative bulk samples (about 50 pounds) of on-site and/or off-site borrow should be submitted to ECS for laboratory testing, which will typically include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships (i.e., Proctors) for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Engineered Fill Materials: Materials for use as Engineered Fill should consist of inorganic soils classified as CL, ML, SM, SC, SW, SP, GM, or GC, or a combination of these group symbols, per ASTM D2487. These materials should be free of organic matter, debris, and should contain no particle sizes greater than 4 inches in the largest diameter. Open graded materials and gravels (GW and GP), which contain void space in their mass, should not be used in Engineered Fills unless properly encapsulated with filter fabric. Engineered Fill material should have the index properties in the table below:

ENGINEERED FILL INDEX PROPERTIES	
Subject	Property
Building and Pavement Areas	LL < 50, PI < 30
Maximum Particle Size	4 inches
Maximum Organic Content	5% by dry weight
Minimum Dry Unit Weight (ASTM D698)	90 pounds per cubic foot

ENGINEERED FILL COMPACTION REQUIREMENTS	
Subject	Requirement
Compaction Standard	Standard Proctor, ASTM D698
Required Compaction (greater than 24 inches below finished soil subgrade)	95% of Maximum Dry Density

ENGINEERED FILL COMPACTION REQUIREMENTS	
Subject	Requirement
Required Compaction (within 24 inches of finished soil subgrade)	100% of Maximum Dry Density
Moisture Content	-3 to +3 % of the soil's optimum value
Loose Thickness (maximum) ⁽¹⁾	8 inches prior to compaction

(1) Thinner lifts may be required depending on compaction equipment utilized.

Unsatisfactory Materials: Unsatisfactory fill materials include materials which do not satisfy the requirements for Engineered Fill, as well as topsoil and organic materials (OH, OL), Elastic SILT (MH), Fat CLAY (CH), and materials with a maximum dry density of less than 90 pcf per ASTM D698.

On-Site Borrow Suitability: Soils that meet the definition of Engineered Fill are present on the site including soils classified as Lean CLAY (CL), Clayey SAND (SC), Sandy SILT (ML), and Silty SAND (SM); however, moisture conditioning (i.e. wetting and/or drying) should be anticipated.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for buildings, pavements, and slopes, etc., at the time of fill placement. Grade controls should be maintained throughout the filling operations. Filling operations should be observed on a full-time basis by ECS to determine that the minimum compaction requirements are being achieved.

Compaction Equipment: Compaction equipment appropriate for the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be used for fine-grained soils (Clays and Silts). A vibratory smooth drum roller should be used for compaction of coarse-grained soils (Sands) as well as for sealing compacted surfaces.

Fill Placement: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and frozen or frost-heaved soils should be removed prior to placement of Engineered Fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned. Where fill materials will be placed to widen existing embankment fills, or placed up against sloping ground, the soil subgrade should be scarified, and the new fill benched or keyed into the existing material. Fill material should be placed in horizontal lifts.

5.2.6 General Construction Considerations

Because the site has been previously developed and filled, we emphasize the importance of comprehensive subgrade evaluations prior to Engineered Fill placement and/or other construction activities. These evaluations may include proofrolling the subgrade soils, performing hand auger borings, and excavation of test pits within previously disturbed, filled, and built-over areas. The mentioned evaluations would help in identifying areas of soft, loose, otherwise unsuitable materials, or buried debris, which would require remedial activities. We recommend a contingency for unforeseen conditions in the earthwork phase of construction.

Adjacent Existing Structures: The new shallow foundations will be constructed adjacent to portions of the existing structure. In such instances and depending on the proximity of the proposed structure to the existing structure, the Contractor should be prepared to shore, brace, underpin, etc. existing foundations to mitigate the risks associated with excavations near the existing structure. Regardless, construction activities and the influence of new loadings may result in localized distress of existing exterior finishes.

Moisture Conditioning: During the cooler and wetter periods of the year, delays and additional costs should be anticipated. At these times, reduction of soil moisture may need to be accomplished by a combination of mechanical manipulation and the use of chemical additives, such as lime or cement, in order to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including structural and pavement areas. It would be advisable to designate a haul road and construction staging area to limit the areas of disturbance and to prevent construction traffic from excessively degrading sensitive subgrade soils and existing pavement areas. Haul roads and construction staging areas could be covered with excess depths of aggregate to protect those subgrades. The aggregate can later be removed and used as Engineered Fill provided it meets project specifications.

Surface Drainage: Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of at least 1 percent to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each workday, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

Excavation Safety: Excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The Contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The Contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the Contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our Client. ECS is not assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

5.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the foundation bearing level. Therefore, foundation concrete should be placed the same day that excavations are made, and the bearing capacity has been verified. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 2 to 3-inch thick "mud mat" of "lean" concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: Following remediation of high plasticity soils and existing fill, most of the soils at the foundation bearing elevations are anticipated to be acceptable for support of the proposed

structures. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

Slab Subgrade Observations: Prior to placement of a drainage layer, the subgrade should be prepared in accordance with the recommendations found in Section 5.1.2 Proofrolling.

5.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes; however, due to the presence of PWR and auger refusal materials (i.e. possible rock), difficult excavation may be encountered at utility excavations. PWR and/or rock materials encountered at utility subgrade excavations should be undercut an additional 6-inches and replaced with bedding material to reduce potential point load stress. The pipe subgrades should be observed and probed for stability by ECS. Loose or unsuitable materials encountered should be removed and replaced with suitable compacted Structural Fill, or pipe stone bedding material.

Utility Backfilling: Granular bedding material should be at least 4 inches thick, but not less than that specified by the civil engineer's project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for Engineered Fill and Fill Placement.

6.0 CLOSING

ECS has prepared this report to guide the geotechnical-related design and construction aspects of the project. We performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation expressed or implied, and no warranty or guarantee is included or intended in this report.

The description of the proposed project is based on information provided to ECS by the Client. If any of this information is inaccurate or changes, either because of our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so we can review our recommendations and provide additional or alternate recommendations that reflect the proposed construction.

We recommend that ECS review the project plans and specifications so we can confirm that those plans/specifications are in accordance with the recommendations of this geotechnical report.

Field observations, and quality assurance testing during earthwork and foundation installation are an extension of, and integral to, the geotechnical design. ECS should be retained to apply our expertise throughout the geotechnical phases of construction, and to provide consultation and recommendation should issues arise.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

Appendix A - Drawings and Reports

Site Location Diagram

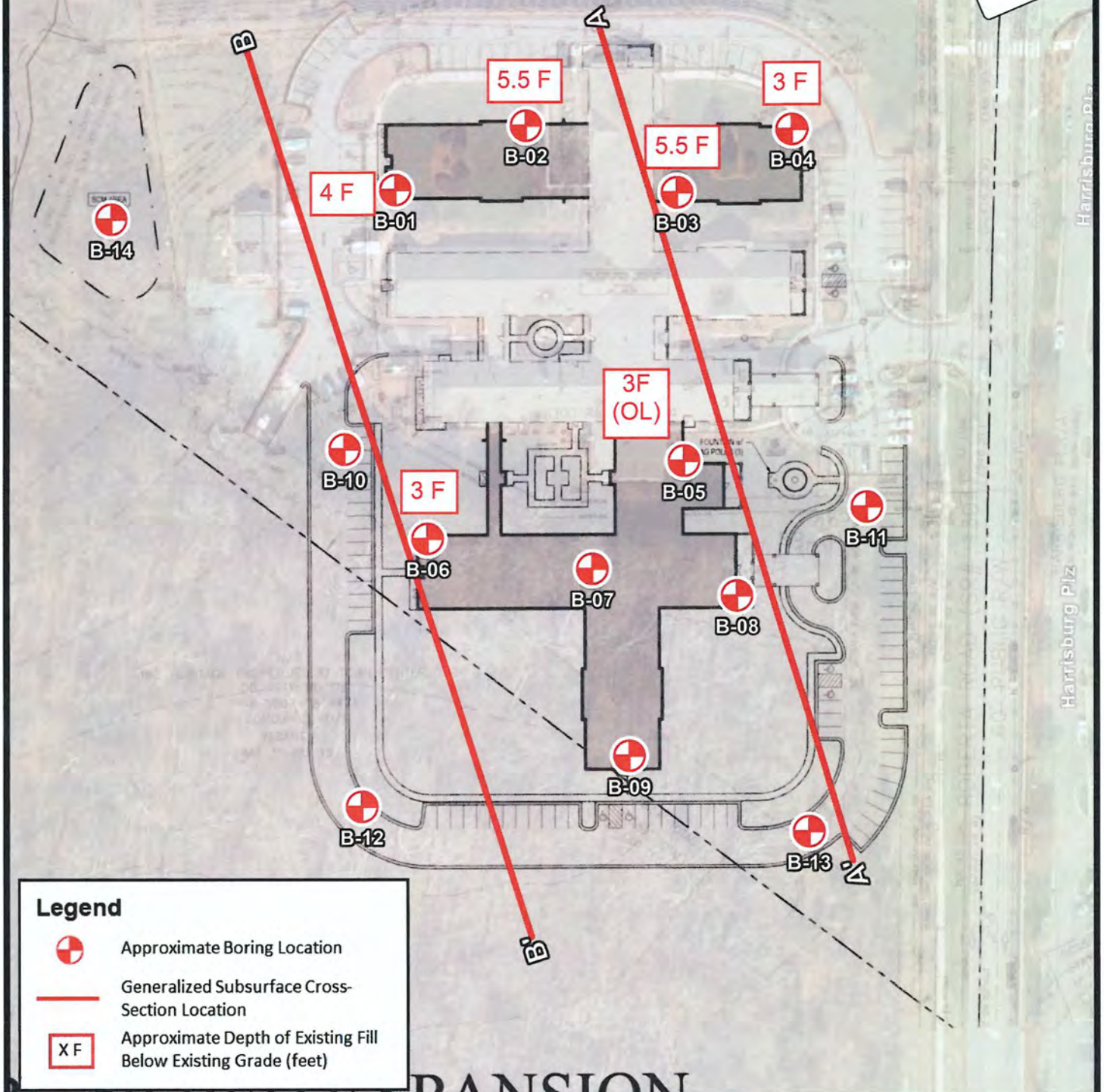
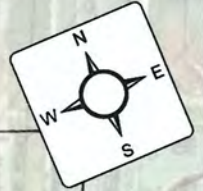
Boring Location Diagram(s)

Subsurface Cross-Section(s)



SITE LOCATION DIAGRAM
Pruitt Harrisburg - Nursing Home Expansion
Harrisburg, Cabarrus County, North Carolina
The Curry Engineering Group, PLLC

ENGINEER CJC
SCALE 1" = 1500'
PROJECT NO. 08:16127
SHEET 1
DATE 4/10/2025



Legend



Approximate Boring Location



Generalized Subsurface Cross-Section Location



Approximate Depth of Existing Fill Below Existing Grade (feet)



BORING LOCATION DIAGRAM

Pruitt Harrisburg - Nursing Home Expansion

Harrisburg, Cabarrus County, North Carolina

The Curry Engineering Group, PLLC

ENGINEER
CJC

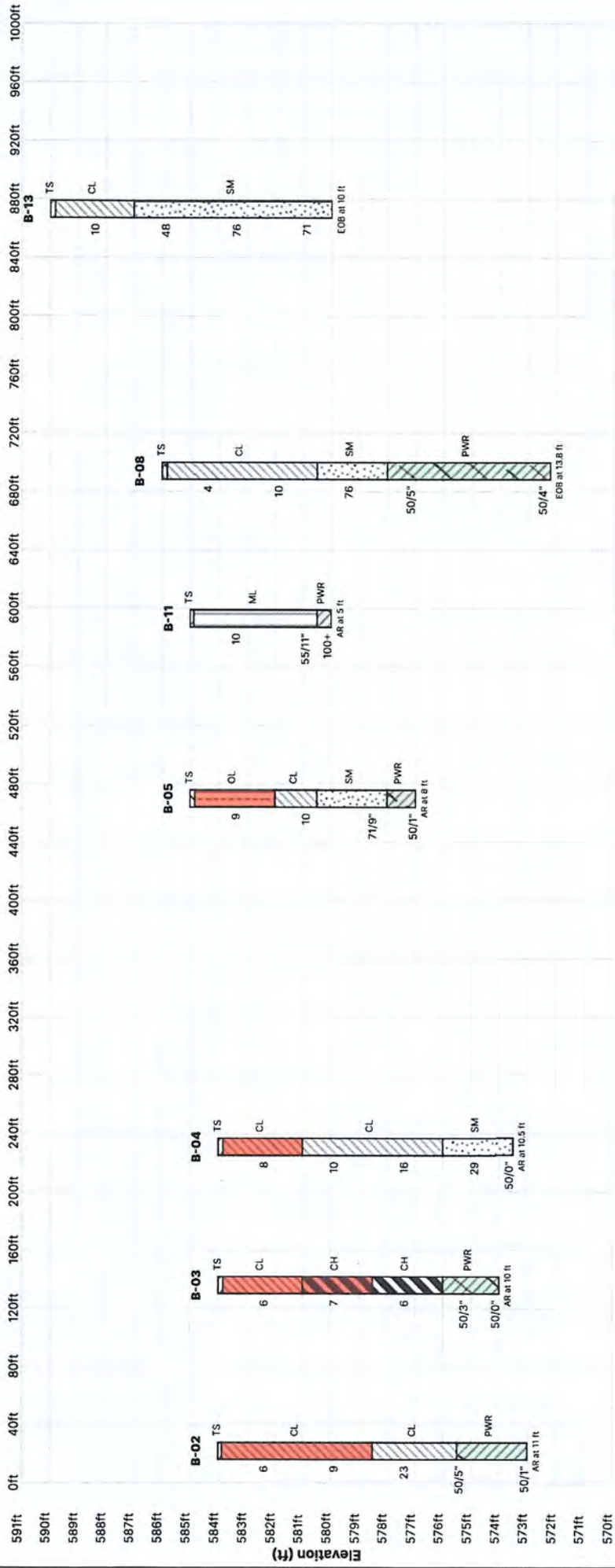
SCALE
1" = 100'

PROJECT NO.
08:16127

SHEET
2

DATE
4/10/2025

Generalized Subsurface Cross Section A-A'

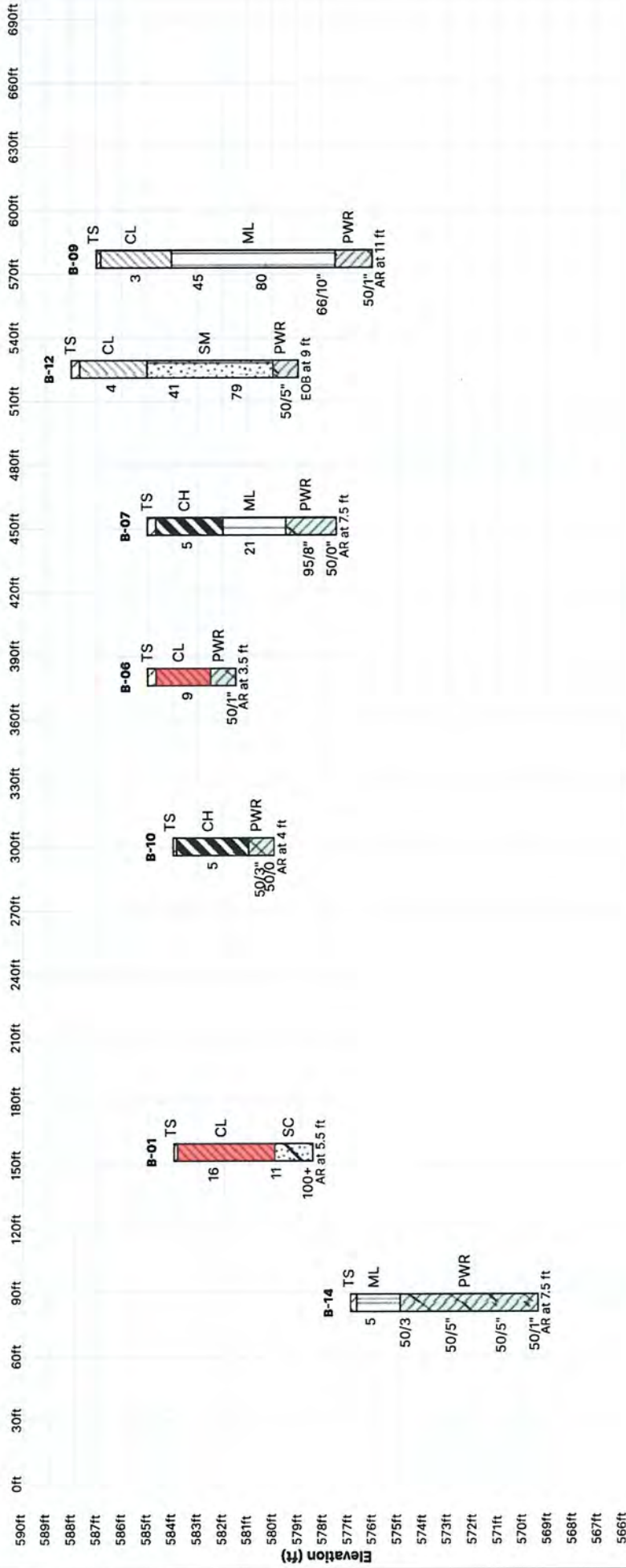


CLIENT:	The Curry Engineering Group, PLLC		PROJECT:	Pruitt Harrisburg - Nursing Home Expansion	
DRAWN DATE:	4/10/2025		PROJECT NO.:	08:16127	
CHECKED DATE:	4/10/2025		SCALE:	NTS	

Notes: 1 - EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL 2 - SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION. 3 - STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586). 4 - TOPOGRAPHIC INFORMATION IS BASED ON PUBLICLY AVAILABLE DATA (GOOGLE OR Cesium). THE TOPOGRAPHIC LINE SHOWN BETWEEN BORINGS IS FOR VISUAL REFERENCE ONLY. PLEASE REFER TO THE REFERENCE NOTES FOR BORING LOGS FOR SYMBOLOLOGY MEANING AND ADDITIONAL INFORMATION.	Plastic Limit	Water Content	Liquid Limit	WL (First Encountered)	Fill
	X	●	Δ	WL (Completion)	Possible Fill
	▀	▀	▀	WL (Estimated Seasonal High Water)	Probable Fill
	○	○	○	WL (Stabilized)	WR/Rock



Generalized Subsurface Cross Section B-B'



CLIENT:	The Curry Engineering Group, PLLC	PROJECT:	Pruitt Harrisburg - Nursing Home Expansion
DRAWN DATE:	4/10/25	PROJECT NO.:	08:16127
CHECKED DATE:	4/10/25	SCALE:	NTS

Notes: 1 - EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL 2 - SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION. 3 - STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586). 4 - TOPOGRAPHIC INFORMATION IS BASED ON PUBLICLY AVAILABLE DATA (GOOGLE OR Cesium). THE TOPOGRAPHIC LINE SHOWN BETWEEN BORINGS IS FOR VISUAL REFERENCE ONLY. PLEASE REFER TO THE REFERENCE NOTES FOR BORING LOGS FOR SYMBOLOLOGY MEANING AND ADDITIONAL INFORMATION.	Plastic Limit	Water Content	Liquid Limit	WL (First Encountered)	Fill
	X	●	Δ	WL (Completion)	Possible Fill
	▀	▀	▀	WL (Estimated Seasonal High Water)	Probable Fill
	○	○	○	WL (Stabilized)	WR/Rock



Appendix B – Field Operations

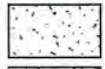
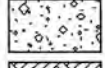
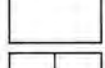
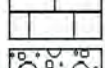
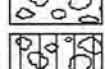
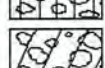
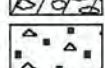
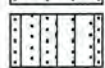
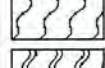
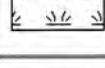
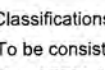
Reference Notes

Exploration Procedures

Boring Logs

REFERENCE NOTES FOR BORING LOGS

MATERIAL^{1,2}

	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	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, QP ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
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

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

GRAVELS, SANDS & NON-COHESIVE SILTS

SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS⁶

	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

FILL AND ROCK

			
FILL	POSSIBLE FILL	PROBABLE FILL	ROCK

¹Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

²To 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.

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

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

⁵Standard 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). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

⁶The 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.

⁷Minor deviation from ASTM D 2488-17 Note 14.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-17.



SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling

Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 18-24 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced* and an additional SPT is performed
- One SPT typically performed for every two to five feet. An approximate 1.5 inch diameter soil sample is recovered.



**Drilling Methods May Vary*— The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-01		SHEET: 1 OF 1								
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling												
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION								
LATITUDE: 35.329477		LONGITUDE: -80.648767		STATION:		SURFACE ELEVATION: 584		BOTTOM OF CASING								
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD %  REC%  SPT  TCP  ModCal  RQD %  RECOVERY 	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT	
					Topsoil [1.5"]											
	S-1	SS	18	18	FILL - (CL) SANDY LEAN CLAY - gray, contains roots and rock fragments, moist, stiff.		580		3, 7, 9 16							
5	S-2	SS	18	18	(SC) Residuum, CLAYEY SAND - brownish gray, moist, medium dense.				3, 5, 6 11							
	S-3	SS	0	0	AUGER REFUSAL AT 5.5ft					50/0in 100+						
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																
 WL (First Encountered):		GNE		BORING STARTED:		03/13/2025		CAVE IN DEPTH: 4.1ft								
 WL (Completion):		GNE		BORING COMPLETED:		03/14/2025		HAMMER TYPE: Manual								
 WL (Seasonal High Water):				EQUIPMENT:		LOGGED BY:		DRILLING METHODOD:								
 WL (Stabilized):				SIMCO 2800		RF		Hollow Stem Auger								
GEOTECHNICAL BOREHOLE LOG																

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-02		SHEET: 1 OF 1									
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling													
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION									
LATITUDE: 35.329498		LONGITUDE: -80.648431		STATION:		SURFACE ELEVATION: 584		BOTTOM OF CASING									
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD % SPT TCP ModCal	REC % TCP ModCal	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT	
					Topsoil [1.5"]												
	S-1	SS	18	18	FILL - (CL) SANDY LEAN CLAY - gray and brown, contains roots.				2, 2, 4 6			41	19	20.1		53.4	
	S-2	SS	18	18			580		3, 4, 5 9								
5	S-3	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - brownish gray, moist, very stiff.				3, 6, 17 23								
	S-4	SS	5	5	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - dark gray.		575		50/5in 50/5"								
10	S-5	SS	1	1					50/1in 50/1"								
AUGER REFUSAL AT 11ft																	
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																	
WL (First Encountered):				GNE		BORING STARTED:				03/14/2025		CAVE IN DEPTH:				7.8ft	
WL (Completion):				GNE		BORING COMPLETED:				03/14/2025		HAMMER TYPE:				Manual	
WL (Seasonal High Water):						EQUIPMENT:		LOGGED BY:		DRILLING METHOD:							
WL (Stabilized):						SIMCO 2800		RF		Hollow Stem Auger							
GEOTECHNICAL BOREHOLE LOG																	

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-03		SHEET: 1 OF 1									
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling													
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION									
LATITUDE: 35.329273		LONGITUDE: -80.648166		STATION:		SURFACE ELEVATION: 584		BOTTOM OF CASING									
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD% 	REC% 	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT	
5					Topsoil [2.0"]												
	S-1	SS	18	18	FILL - (CL) SANDY LEAN CLAY - grayish brown, contains roots, moist.		580		2, 2, 4 6								
	S-2	SS	18	18	FILL - (CH) SANDY FAT CLAY - grayish brown, contains mica and roots, moist.				2, 2, 5 7								
	S-3	SS	18	18	(CH) Residium, FAT CLAY - dark brownish gray, moist, firm.				2, 2, 4 6								
	S-4	SS	9	9	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS CLAYEY SAND - dark gray, moist.		575	▽	5, 50/3in 50/3"								
	S-5	SS	0	0													
					AUGER REFUSAL AT 10ft				50/0in 50/0"								
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																	
▽ WL (First Encountered):				8.5 ft		BORING STARTED:				03/14/2025		CAVE IN DEPTH:				6.7ft	
▽ WL (Completion):				GNE		BORING COMPLETED:				03/14/2025		HAMMER TYPE:				Manual	
▽ WL (Seasonal High Water):						EQUIPMENT:		LOGGED BY:		DRILLING METHOD:							
▽ WL (Stabilized):						SIMCO 2800		RF		Hollow Stem Auger							
GEOTECHNICAL BOREHOLE LOG																	

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-04		SHEET: 1 OF 1			
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling							
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION			
LATITUDE: 35.329302		LONGITUDE: -80.647864		STATION:		SURFACE ELEVATION: 584		BOTTOM OF CASING			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD% REC% SPT TCP ModCal			LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT
										RQD %	RECOVERY						
					Topsoil [2.0"]												
	S-1	SS	18	18	FILL - (CL) SANDY LEAN CLAY - dark brown, contains roots, moist.				2, 4, 4 8	8							
	S-2	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - dark brownish gray, contains roots, moist, stiff to very stiff.		580		2, 4, 6 10	10							
	S-3	SS	18	18					3, 6, 10 16	16							
	S-4	SS	18	18	(SM) SILTY SAND - grayish brown, moist, medium dense.		575		11, 16, 13 29	29							
	S-5	SS	0	0													
					AUGER REFUSAL AT 10.5ft				50/0lin 50/0"								

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

 WL (First Encountered): GNE		BORING STARTED: 03/14/2025		CAVE IN DEPTH: 8ft	
 WL (Completion): GNE		BORING COMPLETED: 03/14/2025		HAMMER TYPE: Manual	
 WL (Seasonal High Water):		EQUIPMENT: SIMCO 2800		LOGGED BY: RF	
 WL (Stabilized):				DRILLING METHOD: Hollow Stem Auger	

GEOTECHNICAL BOREHOLE LOG

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-05		SHEET: 1 OF 1												
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling																
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION												
LATITUDE: 35.328797		LONGITUDE: -80.648384		STATION:		SURFACE ELEVATION: 585		BOTTOM OF CASING												
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD %		REC %		LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT		
										SPT		TCP							ModCal	
										RQD %		RECOVERY								
					Topsoil [2.0"]		585			0	20	40	60	80	100					
	S-1	SS	18	18	FILL - (OL) SANDY ORGANIC SILT - gray, contains roots, moist.				3, 3, 6 9	0	10	20	30	40	50					
	S-2	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - grayish brown, contains roots, moist.				3, 3, 7 10	0	10	20	30	40	50					
5					(SM) SILTY SAND - light brown, moist, medium dense.		580			0	10	20	30	40	50					
	S-3	SS	15	15					8, 21, 50/3in 71/9"	0	10	20	30	40	50					
	S-4	SS	1	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - light grayish brown.				50/1in 50/1"	0	10	20	30	40	50					
					AUGER REFUSAL AT 8ft															
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																				
WL (First Encountered):				GNE		BORING STARTED:				03/13/2025		CAVE IN DEPTH:				5.7ft				
WL (Completion):				GNE		BORING COMPLETED:				03/13/2025		HAMMER TYPE:				Manual				
WL (Seasonal High Water):						EQUIPMENT:		LOGGED BY:		DRILLING METHOD:										
WL (Stabilized):						SIMCO 2800		RF		Hollow Stem Auger										
GEOTECHNICAL BOREHOLE LOG																				

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-06		SHEET: 1 OF 1									
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling													
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION									
LATITUDE: 35.328843		LONGITUDE: -80.649001		STATION:		SURFACE ELEVATION: 585		BOTTOM OF CASING									
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD% SPT 0 20 40 60 80 100	REC% TCP 0 10 20 30 40 50	ModCal 0 20 40 60 80 100	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT
					Topsoil [4.0"]		585										
	S-1	SS	18	18	FILL - (CL) SANDY LEAN CLAY - grayish brown, contains roots and wood, moist.				1, 2, 7 9								
	S-2	SS	1	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - brownish gray, moist.				50/1in 50/1"								
					AUGER REFUSAL AT 3.5ft												
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																	
WL (First Encountered):				GNE		BORING STARTED:				03/13/2025		CAVE IN DEPTH:				3ft	
WL (Completion):				GNE		BORING COMPLETED:				03/13/2025		HAMMER TYPE:				Manual	
WL (Seasonal High Water):						EQUIPMENT:		LOGGED BY:		DRILLING METHOD:							
WL (Stabilized):						SIMCO 2800		RF		Hollow Stem Auger							
GEOTECHNICAL BOREHOLE LOG																	

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-07		SHEET: 1 OF 1			
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling							
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION			
LATITUDE: 35.328672		LONGITUDE: -80.648674		STATION:		SURFACE ELEVATION: 585		BOTTOM OF CASING			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD%		REC%		LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT		
										SPT		TCP							ModCal	
										0 20 40 60 80 100		0 20 40 60 80 100							0 20 40 60 80 100	
										0 10 20 30 40 50		0 20 40 60 80 100							0 20 40 60 80 100	
5					Topsoil [4.0"]		585													
	S-1	SS	18	18	(CH) Residuum, SANDY FAT CLAY - brownish gray, moist, firm.				2, 2, 3 5					72	20	31.8		58.6		
	S-2	SS	18	18	(ML) SANDY SILT - grayish brown, moist, very stiff.				4, 6, 15 21											
	S-3	SS	14	12	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - grayish brown, moist.		580		7, 45, 50/2in 95/8"											
	S-4	SS	0	0	AUGER REFUSAL AT 7.5ft				50/0in 50/0"											

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

WL (First Encountered):	GNE	BORING STARTED: 03/13/2025	CAVE IN DEPTH: 5ft
WL (Completion):	GNE	BORING COMPLETED: 03/13/2025	HAMMER TYPE: Manual
WL (Seasonal High Water):		EQUIPMENT: SIMCO 2800	LOGGED BY: RF
WL (Stabilized):			DRILLING METHOD: Hollow Stem Auger

GEOTECHNICAL BOREHOLE LOG

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-08		SHEET: 1 OF 1		
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling						
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION		100%
LATITUDE: 35.328523		LONGITUDE: -80.648387		STATION:		SURFACE ELEVATION: 586		BOTTOM OF CASING		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD %		REC %		LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT		
										SPT	TCP	ModCal	SPT						TCP	ModCal
										0	10	20	30						40	50
5					Topsoil [2.0"]		585													
	S-1	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - dark brownish gray, contains roots, moist, soft.				1, 2, 2 4											
	S-2	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - dark brownish gray, moist, stiff.				3, 4, 6 10											
	S-3	SS	18	18	(SM) Residuum, SILTY SAND - brownish gray, contains mica, moist, very dense.		580		12, 26, 50 76											
	S-4	SS	11	11	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - dark gray, contains mica, moist.		575		45, 50/5in 50/5"											
10																				
	S-5	SS	4	4	END OF BORING AT 13.8ft				50/4in 50/4"											

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

WL (First Encountered): 13.5 ft		BORING STARTED: 03/14/2025		CAVE IN DEPTH: 9.5ft	
WL (Completion): 8.4 ft		BORING COMPLETED: 03/14/2025		HAMMER TYPE: Manual	
WL (Seasonal High Water):		EQUIPMENT: SIMCO 2800		LOGGED BY: RF	
WL (Stabilized): 4.4 ft				DRILLING METHOD: Hollow Stem Auger	

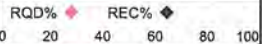
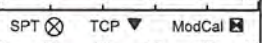
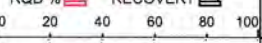
GEOTECHNICAL BOREHOLE LOG

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-09		SHEET: 1 OF 1			
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling							
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION			
LATITUDE: 35.328318		LONGITUDE: -80.648757		STATION:		SURFACE ELEVATION: 587		BOTTOM OF CASING			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD% REC%		LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT				
										SPT	TCP						ModCal			
										RQD %	RECOVERY									
										0	20	40	60	80	100					
										0	10	20	30	40	50					
										0	20	40	60	80	100					
					Topsoil [2.0"]															
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY - brownish gray, moist, soft.		585		1, 1, 2 3											
	S-2	SS	18	18	(ML) SANDY SILT - brownish gray, moist, hard to very hard.				10, 15, 30 45											
5																				
	S-3	SS	18	18			580	▼	18, 30, 50 80											
	S-4	SS	16	16				▼	14, 16, 50/4in 66/10"											
10																				
	S-5	SS	1	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - brownish gray, contains mica, moist.				50/1in 50/1"											
					AUGER REFUSAL AT 11ft															

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

WL (First Encountered): 8.5 ft	BORING STARTED: 03/14/2025	CAVE IN DEPTH: 7.4ft
WL (Completion): 6.5 ft	BORING COMPLETED: 03/14/2025	HAMMER TYPE: Manual
WL (Seasonal High Water):	EQUIPMENT:	LOGGED BY:
WL (Stabilized):	SIMCO 2800	RF
GEOTECHNICAL BOREHOLE LOG		

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-10		SHEET: 1 OF 1								
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling												
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION								
LATITUDE: 35.329059		LONGITUDE: -80.649101		STATION:		SURFACE ELEVATION: 584		BOTTOM OF CASING								
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD%  REC%  SPT  TCP  ModCal  RQD %  RECOVERY 	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT	
					Topsoil [1.5"]											
	S-1	SS	18	18	(CH) Residuum, FAT CLAY - grayish brown, contains roots, moist, firm.				2, 2, 3 5		65	18	34.3		62.8	
	S-3	SS	3	3	(PWR) PARTIALLY WEATHERED ROCK											
		SS	0	0	SAMPLED AS SILTY SAND - brownish gray, moist.		580		50/3in 50/3"							
					AUGER REFUSAL AT 4ft				50/0in 50/0							
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																
WL (First Encountered):				GNE		BORING STARTED:				03/13/2025		CAVE IN DEPTH: 3.2ft				
WL (Completion):				GNE		BORING COMPLETED:				03/13/2025		HAMMER TYPE: Manual				
WL (Seasonal High Water):						EQUIPMENT:		LOGGED BY:		DRILLING METHOD:						
WL (Stabilized):						SIMCO 2800		RF		Hollow Stem Auger						
GEOTECHNICAL BOREHOLE LOG																

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-11		SHEET: 1 OF 1			
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling							
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION		100%	
LATITUDE: 35.328586		LONGITUDE: -80.648033		STATION:		SURFACE ELEVATION: 585		BOTTOM OF CASING		100%	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD% / REC%				LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT
										RQD%		REC%						
										SPT	TCP	ModCal						
										RECOVERY								
					Topsoil [1.5"]		585											
	S-1	SS	18	18	(ML) Residuum, SANDY SILT - grayish brown, contains roots, moist, stiff.				3, 5, 5 10	10								
	S-2	SS	17	17					3, 5, 50/5in									
	S-3	SS	0	0	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - grayish brown, contains mica, moist.		500		55/11" 50/0in 100+	100+								
					AUGER REFUSAL AT 5ft													

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

WL (First Encountered): GNE		BORING STARTED: 03/14/2025		CAVE IN DEPTH: 4ft	
WL (Completion): GNE		BORING COMPLETED: 03/14/2025		HAMMER TYPE: Manual	
WL (Seasonal High Water):		EQUIPMENT:		LOGGED BY:	
WL (Stabilized):		SIMCO 2800		RF	
				DRILLING METHOD:	
				Hollow Stem Auger	

GEOTECHNICAL BOREHOLE LOG

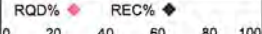
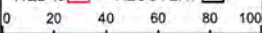
CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-12		SHEET: 1 OF 1			
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling							
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION			
LATITUDE: 35.328420		LONGITUDE: -80.649374		STATION:		SURFACE ELEVATION: 588		BOTTOM OF CASING			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD%  REC%  SPT  TCP  ModCal  RQD %  RECOVERY 	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT
					Topsoil [4.0"]										
	S-1	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - grayish brown, contains roots, moist, soft.				1, 1, 3 4						
					(SM) SILTY SAND - brownish gray, moist, dense to very dense.		585		8, 11, 30 41						
5	S-2	SS	18	18											
									23, 33, 46 79						
	S-3	SS	18	12			580								
					(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - brownish gray, moist.				50/5in 50/5"						
	S-4	SS	5	5											
					END OF BORING AT 9ft										

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

 WL (First Encountered): 0.33 ft		BORING STARTED: 03/14/2025		CAVE IN DEPTH: 5.9ft	
 WL (Completion): GNE		BORING COMPLETED: 03/14/2025		HAMMER TYPE: Manual	
 WL (Seasonal High Water):		EQUIPMENT:		LOGGED BY:	
 WL (Stabilized):		SIMCO 2800		RF	
				DRILLING METHOD:	
				Hollow Stem Auger	

GEOTECHNICAL BOREHOLE LOG

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-13		SHEET: 1 OF 1								
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling												
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION								
LATITUDE: 35.328058		LONGITUDE: -80.648438		STATION:		SURFACE ELEVATION: 590		BOTTOM OF CASING								
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD%  REC%  SPT  TCP  ModCal  RQD %  RECOVERY 	LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT	
5					Topsoil [2.0"]		590									
	S-1	SS	18	18	(CL) Residuum, SANDY LEAN CLAY - grayish brown, contains mica and roots, moist, stiff.			3, 4, 6 10	10			43	18	21.1		50.6
	S-2	SS	18	18	(SM) SILTY SAND - grayish brown - light gray, contains mica, moist, dense to very dense.			13, 20, 28 48		48						
	S-3	SS	18	18				19, 31, 45 76		76						
	S-4	SS	18	18				23, 33, 38 71		71						
					END OF BORING AT 10ft		500									
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL																
 WL (First Encountered):				GNE		BORING STARTED: 03/14/2025				CAVE IN DEPTH: 5.1ft						
 WL (Completion):				GNE		BORING COMPLETED: 03/14/2025				HAMMER TYPE: Manual						
 WL (Seasonal High Water):						EQUIPMENT:		LOGGED BY:		DRILLING METHOD:						
 WL (Stabilized):						SIMCO 2800		RF		Hollow Stem Auger						
GEOTECHNICAL BOREHOLE LOG																

CLIENT: The Curry Engineering Group, PLLC				PROJECT NO.: 08:16127		BORING NO.: B-14		SHEET: 1 OF 1			
PROJECT NAME: Pruitt Harrisburg - Nursing Home Expansion - GEO				DRILLER/CONTRACTOR: Presley Drilling							
SITE LOCATION: 6300 Roberta Road, Harrisburg, North Carolina, 28075								LOSS OF CIRCULATION		100%	
LATITUDE: 35.329628		LONGITUDE: -80.649399		STATION:		SURFACE ELEVATION: 577		BOTTOM OF CASING			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DISTANCE	SAMPLE RECOVERY (IN)	DESCRIPTION OF MATERIAL	STRATIGRAPHY	ELEVATION (FT)	WATER LEVELS	BLOWS/6" (TCP/MC/SPT-N)	RQD %		REC %		LIQUID LIMIT	PLASTICITY INDEX	MOISTURE CONTENT (%)	QP (TSF)	FINES CONTENT		
										SPT		TCP							ModCal	
										0 10 20 30 40 50		0 10 20 30 40 50							0 10 20 30 40 50	
	S-1	SS	24	24	Topsoil [3.0"]				1, 1, 4, 13, 5	5										
	S-2	SS	9	9	(ML) Residuum, SANDY SILT - grayish brown, contains roots and mica, moist, firm.		575		30, 50/3in 50/3											
					(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND - light gray, contains mica, moist.				50/5in 50/5*											
5	S-3	SS	5	5					50/5in 50/5*											
	S-4	SS	5	5					50/5in 50/5*											
	S-5	SS	1	1			570		50/1in 50/1*											
					AUGER REFUSAL AT 7.5ft															

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

WL (First Encountered): GNE		BORING STARTED: 03/13/2025		CAVE IN DEPTH: 5ft	
WL (Completion): GNE		BORING COMPLETED: 03/13/2025		HAMMER TYPE: Manual	
WL (Seasonal High Water):		EQUIPMENT: SIMCO 2800		LOGGED BY: RF	
WL (Stabilized): 2.7 ft		DRILLING METHOD: Hollow Stem Auger			

GEOTECHNICAL BOREHOLE LOG

Appendix C – Laboratory Testing

Laboratory Testing Summary

Laboratory Testing Summary

[illegible]

Notes: See test reports for test method, ^ASTM D2216-19, *ASTM D2488, **ASTM D1140-17, #ASTM D2974-20e1 < See test report for D4718 corrected values

Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Pruitt Harrisburg - Nursing Home Expansion
Client: The Curry Engineering Group, PLLC

Project No.: 08:16127
Date Reported: 4/10/2025



Office / Lab

Address

Office Number / Fax

ECS Southeast LLC - Charlotte

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Charlotte, NC 28217

(704)525-5152

(704)357-0023

Tested by	Checked by	Approved by	Date Received
BMartin	JBradshaw	JBradshaw	3/24/2025

Appendix D – Other Information

GBA - Geotechnical Engineering Report Information Sheet
Other Information

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer

will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the “Findings” Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site’s subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report’s Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals’ misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals’ plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note*

conspicuously that you’ve included the material for information purposes only. To avoid misunderstanding, you may also want to note that “informational purposes” means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled “limitations,” many of these provisions indicate where geotechnical engineers’ responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a “phase-one” or “phase-two” environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer’s services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer’s recommendations will not of itself be sufficient to prevent moisture infiltration.* Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists.*



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March 27, 2025

Mr. Don Curry
The Curry Engineering Group, PLLC
205 S. Fuquay Avenue
Fuquay Varina, North Carolina 27526

Reference: Seasonal High Water Table Determination
Pruitt Harrisburg – Nursing Home Expansion
Harrisburg, Cabarrus County, North Carolina
ECS Project No: 49:25464

Dear Mr. Curry:

ECS Southeast, LLC (ECS) is pleased to submit this report of the Seasonal High Water Table Determination (SHWT) for the Pruitt Harrisburg – Nursing Home Expansion site located in Harrisburg, Cabarrus County, North Carolina. This report summarizes our findings for the site.

PROJECT UNDERSTANDING

The subject site is located at 6300 Roberta Road in Harrisburg, Cabarrus County, North Carolina. The site is occupied by an existing building, associated parking area, greenspace, and heavily wooded portions. ECS understands the proposed improvements will include a one story 59-bed expansion of the existing facility, associated parking, and stormwater control management (SCM) area.

The proposed Geotechnical Boring Plan was utilized as a background for the attached Figure 1. The soil investigation was conducted by reviewing split spoons during Geotechnical drilling.

SCOPE OF SERVICES

ECS conducted a study/investigation of the soils to identify the depth of the seasonal high water table, if present. The properties and characteristics of the soils retrieved from the boring were observed and recorded in field notes. The properties include texture, depth, the presence of restrictive horizons, depth to seasonal high water table, coarse fragments, etc. The assessment was conducted in accordance with current soil science practices and technology.

SEASONAL HIGH WATER TABLE STUDY

Below is a summary of the soils retrieved from the borings.

SHWT – 14 – The surface layer to a depth of approximately 4 inches Below Ground Surface (BGS) was dark brown fine sandy clay loam with weak, fine, sub-angular blocky to granular structure. The consistence was slightly sticky, slightly plastic, and friable. The sub-surface layer from approximately 4 inches to approximately 24 inches BGS was yellowish brown clay loam (mixed saprolite colors were present) with moderate, medium, angular blocky structure. The consistence was very sticky, very plastic, and very firm. The sub-surface layer from approximately 24 inches to approximately 90 inches BGS was multi-colored sandy clay loam to sandy loam saprolite and rock fragments.

FINDINGS

*Indicators of SHWT commonly refer to the presence of soil mottling of chroma 2 or less, typically the result of reduced iron. Chroma 2 mottles also indicate horizons within the soil profile that are potentially restrictive (perched SHWT) with respect to water movement through the soil profile, which has resulted in subsequent reduction of iron. SHWT can be inconclusive in soils containing fill and/or having past disturbance. Saturated hydraulic conductivity or permeability testing may be required to determine conductivity rates of potentially restrictive or perched horizons. Installation of piezometers may be required for more accurate determination of actual SHWT.

SHWT – 14 – Indicators of a SHWT were identified at a depth of approximately 8 inches BGS and continued to auger refusal, which was met at approximately 90 inches (7.5 feet). Restrictive characteristics included poor soil structure, mixed mineralogy (expansive) clay lenses, very dense saprolite, and rock. Water was measured at approximately 32 inches (~2.7 feet) BGS after a 24-hr reading.

The type of stormwater management facility designed is based on the depth of the SHWT or confining layer. The information above may be potentially utilized to determine the type of stormwater management facility best suited for this site according to the most recent version of the North Carolina Division of Water Quality Stormwater Best Management Practice Manual.

CLOSING

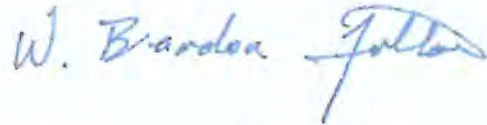
ECS is pleased to offer our professional services and look forward to assisting in any of your site analysis needs in the future. If you have any questions or require further assistance, please contact us at 704-525-5152.

Respectfully,

ECS SOUTHEAST, LLC



Betsy Murphy
Environmental Assistant Project Manager
bmurphy@ecslimited.com
615-218-9495



W. Brandon Fulton, LSS, PSC, PWS
Environmental Principal
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704-525-5152

Attachment: Figure 1 – SHWT Boring Location Map





Client: THE CURRY
ENGINEERING GROUP,
PLLC

Project: PRUITT HARRISBURG –
NURSING HOME
EXPANSION

HARRISBURG,
CABARRUS COUNTY,
NORTH CAROLINA

Title: SEASONAL HIGH
WATER TABLE
STUDY



CABARRUS COUNTY,
NORTH CAROLINA

Drawn By: WBF
Checked By: BLM

Approved By: WBF
Date: 3/27/2025

ECS Project No:
49:25464

FIGURE 1



Legend

 = SHWT Boring Location