



ECS Southeast, LLP

Preliminary Geotechnical Engineering Report

Rea Road High School

Charlotte, Mecklenburg County, North Carolina

ECS Project Number 08:13768

September 12, 2019





ECS SOUTHEAST, LLP

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September 12, 2019

Mr. Tim Ames
Charlotte-Mecklenburg Schools (CMS)
3301 Stafford Drive
Charlotte, North Carolina 28208

ECS Project No. 08:13768

Reference: Preliminary Geotechnical Engineering Report
Rea Road High School
Rea Road
Charlotte, Mecklenburg County, North Carolina

Dear Mr. Ames:

ECS Southeast, LLP (ECS) has completed the preliminary subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our Proposal No. 08:23409P dated May 28, 2019. This report presents our understanding of the geotechnical aspects of the project, the results of the field exploration and laboratory testing conducted, and our preliminary design and construction recommendations.

It has been our pleasure to be of service to you during the preliminary design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify the assumptions of subsurface conditions made 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.

Respectfully submitted,

ECS Southeast, LLP



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EXECUTIVE SUMMARY

This report contains the results of our preliminary subsurface exploration at the proposed site located along Rea Road north of the existing Old Providence Elementary School in Charlotte, Mecklenburg County, North Carolina. We understand the site will include the construction of a new high school, three-story parking garage, associated parking and drive areas, and a football stadium. The results of our preliminary exploration and geotechnical recommendations are summarized as follows:

- The subsurface conditions disclosed by the borings generally consisted of existing fill, residual soils, Partially Weathered Rock, and auger refusal to the explored depths of the borings.
 - Existing fills were encountered below surficial materials at Borings B-20 and B-26 to depths of approximately 3 to 8 feet below existing grades. Existing fills generally consisted of Sandy CLAY (CL).
 - Residual soils were encountered below the surficial materials and/or existing fill and consisted of Elastic SILT (MH), Sandy SILT (ML), Silty SAND (SM), Sandy CLAY (CL), Plastic CLAY (CH), and Clayey SAND (SC).
 - Partially Weathered Rock (PWR) was encountered below the surficial materials and/or residual soils at depths ranging from the surface to approximately 17 feet below existing ground surface with auger refusal at depths ranging from approximately 5 to 19 feet below ground surface.
- Moisture sensitive soils (MH/CH) were encountered at the surface in 18 out of the 36 borings performed. MH soils with a Plasticity Index (PI) greater than 30 and CH soils should not be used for direct support of project foundations, slabs-on-grade, or pavements without remediation.
- Partially weathered rock (PWR) was encountered in the upper 10 feet in 29 of the 36 borings performed. Depending on the depth of the foundations and planned utilities, difficult excavation into PWR should be anticipated.
- For the parking garage, ground improvement or a deep foundation system may be required to support the structure. For the high school and football stadium, spread footings may be appropriate with maximum column foundation loads of 100 to 200 kips. At this time, a preliminary design bearing capacity of 2,000 to 4,000 psf for foundations bearing on firm residual soils appears feasible. Foundations bearing on new structural fill should consider a maximum design bearing capacity of 3,000 psf.
- Depending upon the project grading requirements, a seismic Site Class 'C' or 'D' may be appropriate.

Specific information regarding the subsurface exploration procedures, the site and subsurface conditions at the time of our exploration, and our conclusions and recommendations concerning the geotechnical design and construction aspects of the project are discussed in detail in the subsequent sections of this report. Please note this Executive Summary is an important part of this report but should be considered a "summary" only. The subsequent sections of this report constitute our findings, conclusions, and recommendations in their entirety. The recommendations provided in this report are preliminary. Final design and construction recommendations for the geotechnical aspects of the project should be developed by ECS once the actual site grading and structural loading information is available.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to provide general subsurface conditions at the site and to evaluate those conditions with regard to foundation and floor slab support, along with general site development. The preliminary recommendations developed for this report are based on limited project information supplied by CMS. This report contains the results of our subsurface exploration and laboratory testing programs, site characterization, engineering analyses, and recommendations to assist in planning the project.

1.2 SCOPE OF SERVICES

Our scope of services for this phase of work included a preliminary subsurface exploration with soil test borings, engineering analysis, and preparation of this report with our recommendations. Overall, thirty-six (36) widely spaced soil test borings were performed at locations selected by ECS.

This preliminary report discusses our exploratory and testing procedures, presents our findings and evaluations and includes the following.

- Information on site conditions including geologic information and special site features.
- Description of the field exploration and tests performed.
- Final logs of the soil borings and records of the field exploration and laboratory tests in accordance with the standard practice of geotechnical engineers.
- Seismic site classification per the average-N method of the North Carolina Building Code (NCBC).
- Preliminary recommendations regarding foundations and slab-on-grade construction.
- Evaluation of the on-site soil, rock, and groundwater characteristics encountered in the soil borings.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The site is located along Rea Road north of the existing Old Providence Elementary School in Charlotte, Mecklenburg County, North Carolina as shown in the Site Vicinity Map (Figure 2.1.1) below, and included in the Appendix.



Figure 2.1.1 Site Vicinity Map

2.2 SITE HISTORY/CURRENT SITE CONDITIONS

Based on the Google Earth historical imagery and our site visit, the site is developed with an elementary school in the southern portion, various athletic fields in the middle, and undeveloped and wooded in the northern portion. The previous use discussion is not considered a comprehensive or in-depth review of the site history, rather a cursory overview of available aerial imagery.

2.3 PROPOSED CONSTRUCTION

We understand that the project will include the construction of a new high school, three-story parking garage, associated parking and drive areas, and a football stadium.

2.3.1 Structural Information/Loads

The following information explains our assumptions regarding the structures and their loads:

Table 2.3.1.1 Design Assumptions

SUBJECT	DESIGN INFORMATION / EXPECTATIONS
Framing	Steel/Masonry with Brick Veneer
Maximum Assumed Column Loads	100 to 200 kips – High School/Stadium 450 to 650 kips – Parking Garage
Maximum Assumed Wall Loads	6 kips per linear foot (klf)

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms and to evaluate subsequent field and laboratory data to assist in the determination of preliminary geotechnical recommendations.

3.1.1 Test Borings

The subsurface conditions were explored by drilling thirty-six (36) widely-spaced soil test borings across the site. An ATV-mounted SIMCO 2400 drill rig with a manual hammer was utilized to drill the soil test borings using hollow stem auger techniques. Borings were generally advanced to depths ranging from approximately 12.1 to 30 feet below the current ground surface.

Boring locations were identified in the field by ECS personnel using handheld GPS techniques and existing landmarks as reference prior to mobilization of our drilling equipment. The approximate as-drilled boring locations are shown on the Boring Location Diagram in the Appendix. Ground surface elevations noted on our boring logs were estimated from Google Earth and should be considered accurate only to the degree implied by the method used to obtain them.

Standard penetration tests (SPTs) were conducted in the borings at regular intervals in general accordance with ASTM D 1586. Small representative samples were obtained during these tests and were used to classify the soils encountered. The standard penetration resistances obtained provide a general indication of soil shear strength and compressibility.

3.2 REGIONAL/SITE GEOLOGY

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. Although the surficial materials normally retain the structure of the original parent bedrock, they typically have a much lower density and exhibit strengths and other engineering properties typical of soil. 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 mineral composition of the parent rock and the environment in which weathering occurs largely control the resulting soil's engineering characteristics. The residual soils are the product of the weathering of the parent bedrock.

It is apparent that the natural geology has been modified in the past by grading that included the placement of fill materials. The quality of man-made fills can vary significantly, and it is often 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.

3.3 SUBSURFACE CHARACTERIZATION

The following sections provide generalized characterizations of the soil and rock strata encountered during our subsurface exploration. For subsurface information at a specific location, refer to the Boring Logs in Appendix B.

Table 3.3.1 Subsurface Stratigraphy

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT ⁽¹⁾ N-values (bpf)
0 to 0.5 (Surface cover)	n/a	Drillers reported topsoil thicknesses of about 1 to 5 inches across the site. Deeper topsoil or organic laden soils may be present in wooded areas. ⁽²⁾	N/A
0.5 to 8	I	FILL – Sandy CLAY (CL). ⁽³⁾	8 to 12
0.5 to 30	II	RESIDUAL – Sandy SILT (ML), Elastic SILT (MH), Sandy CLAY (CL), Plastic CLAY (CH), and Silty SAND (SM).	6 to 66
0.5 to 19.5	III	Partially Weathered Rock (PWR) – Sampled as Silty SAND (SM). ⁽⁴⁾	50+

- Notes:
- (1) Standard Penetration Test
 - (2) Since mechanical clearing was used to gain access to a portion of the boring locations, some of the surficial organic laden soil may have been removed at the boring locations. Our experience indicates that organic laden soil depths in wooded areas may be greater than reported.
 - (3) Fill was encountered in Borings B-20 and B-26.
 - (4) Partially weathered rock is defined as a material with 100+ blows per foot.

3.4 GROUNDWATER OBSERVATIONS

Groundwater measurements were attempted at the termination of drilling and prior to demobilization from the site. Groundwater was encountered in Borings B-16, B-17, B-27, and B-28 approximately 8 to 23.5 feet below the existing grounds surface (bgs). Cave-in depths were attempted to be measured at each of the boring locations with cave-in depths ranging from approximately 3 to 26.2 feet. Cave-in of a soil test boring can be caused by groundwater hydrostatic pressure, weak soil layers, and/or drilling activities (i.e. drilling fluid circulation or advancement of bit).

Fluctuations in the groundwater elevation should be expected depending on precipitation, run-off, utility leaks, and other factors not evident at the time of our evaluation. Normally, highest groundwater levels occur in late winter and spring and the lowest levels occur in late summer and fall. Depending on time of construction, groundwater may be encountered at shallower depths and locations not explored during this study. If encountered during construction, engineering personnel from our office should be notified immediately.

4.0 LABORATORY SERVICES

The laboratory testing performed by ECS for this project consisted of selected tests performed on samples obtained during our field exploration operations. The following paragraphs briefly discuss the results of the completed laboratory testing program. Classification and index property tests were performed on representative soil samples obtained from the test borings in order to aid in classifying soils according to the Unified Soil Classification System and to quantify and correlate engineering properties.

A geotechnical staff professional visually classified each soil sample from the test borings on the basis of texture and plasticity in accordance with the Unified Soil Classification System (USCS) and ASTM D-2488 (Description and Identification of Soils-Visual/Manual Procedures). After classification, the staff professional then grouped the various soil types into the major zones noted on the Boring Logs in the Appendix. The group symbols for each soil type are indicated in parentheses following the soil descriptions on the boring logs. The stratification lines designating the interfaces between earth materials on the boring logs are approximate; in situ, the transitions may be gradual.

4.1 Laboratory Testing

In addition to visual classification, ECS performed six (6) natural moisture content tests and three (3) Atterberg limits test on selected soil samples obtained from within the borings. The laboratory testing was performed in general accordance with the applicable ASTM standards. The results of the laboratory testing are presented on the respective Boring Logs included in the Appendix.

5.0 PRELIMINARY SITE CONSTRUCTION RECOMMENDATIONS

The results of the exploration indicates the site is adaptable for the proposed construction. The considerations provided in this report are based upon widely spaced test locations; therefore, specific recommendations for design and construction are not provided. Once the final project requirements are known, additional testing should be performed at specific structure locations and final design and construction recommendations provided.

5.1 FOUNDATIONS & FLOOR SLABS

Parking Garage

We assume the parking garage will be concrete framed with maximum column loads in the range of 450 to 650 kips. Depending on the finished floor elevation, ground improvement such as stone columns or a deep foundation system may be required to support the parking garage.

High School/Football Stadium

We assume the high school and football stadium will have maximum column loads of 100 to 200 kips. Spread footings may be appropriate to support these structures. At this time, a preliminary design bearing capacity in the range of 2,000 to 4,000 psf for foundations bearing on firm residual soils appears feasible. Foundations bearing on new structural fill should consider a maximum design bearing capacity of 3,000 psf. The actual design bearing pressure should be determined by ECS once the actual site grading and structural loading information is available.

Slabs-on-grade can be adequately supported on undisturbed residual soils or on new properly placed structural fill provided the site preparation and fill recommendations outlined herein are implemented. Additionally, it appears that the existing fill soils were placed with compactive effort and are likely suitable for slab-on-grade bearing provided they are found to be stable at the time of construction.

Further discussions with the design team are necessary to develop more specific bearing pressure, settlement, floor slab, and any potential groundwater recommendations. Final design and construction recommendations should be based on actual structural loading information, finished grades, etc.

5.2 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. Three methods are utilized in classifying sites, namely the shear wave velocity (v_s) method; the unconfined compressive strength (s_u) method; and the Standard Penetration Resistance (SPT N-value) method. Based on the SPT N-values obtained within the drilled depth of borings and depending on the site plan, a seismic Site Class "C" or "D" may be considered appropriate for this project. The final site grades will heavily influence the Site Class used in design.

The seismic site class definitions for the weighted average of SPT N-value in the upper 100 feet of the soil profile are shown in the following table:

Table 5.2.1: Seismic Site Classification

Site Class	Soil Profile Name	SPT Resistance, N-bar	N value (bpf)
A	Hard Rock	Not Applicable	N/A
B	Rock	Not Applicable	N/A
C	Very dense soil and soft rock	N-bar > 50	>50
D	Stiff Soil Profile	15 ≤ N-bar ≤ 50	15 to 60
E	Soft Soil Profile	N-bar < 15	<15

5.3 EARTHWORK CONSIDERATIONS

5.3.1 Existing Man-Placed Fill

Existing fill was encountered below surficial material at Borings B-20 and B-26 and extended to depths of approximately 3 to 8 feet below existing grades. Standard penetration resistances in the existing fill ranged from 8 to 12 blows per foot (bpf). ECS was not provided with the test records (such as previous surface exploration, proofrolling, compaction testing etc.) at the time of this report; therefore, the existing fill should be considered undocumented.

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 amount of organics derived from organic rich stripping, rubbish, construction or demolition debris, stumps and roots, and logs. These deleterious inclusions can result in the premature distress of new grade supported construction if not removed. Where these types of conditions exist under or within undocumented fill, they are sometimes in discreet pockets that can go undetected by soil test borings.

Based on our evaluation of the existing fill, we anticipate the risk of supporting slabs and pavements on the existing fill is relatively low provided the fill is thoroughly evaluated at the time of construction and found to be stable. Otherwise, the risk can be mitigated by removing the existing fill and replacing it with new structural fill.

5.3.2 High Plasticity Soils

Elastic SILTS (MH) and Plastic CLAYS (CH) were encountered across the site at various depths. Soils classified as MH/CH are fine-grained and have a Liquid Limit greater than 50 percent. Additionally, MH/CH soils are moisture sensitive soils and tend to shrink and swell with moisture variations.

MH soils with a plasticity index greater than 30 and CH soils should not be used for direct support of project foundations, slabs-on-grade, or pavements. MH soils (PI's greater than 30) and CH soils encountered within proposed structural areas should be undercut and replaced with low plasticity engineered fill to a minimum depth of 2 feet below foundations, slabs, and pavement areas. Upon completion of the removal, the resulting subgrade soils should be evaluated for stability prior to placement of engineered fill. Once building locations, loading conditions, elevations, etc. have been established, ECS can further refine our recommendations regarding the moisture sensitive soils.

High plasticity soils are not suitable as retaining wall or below grade wall backfill.

5.3.2 Below Grade Excavation

Based on the results of the soil test borings, PWR and Auger Refusal materials (i.e. rock) were encountered within the majority of the borings. Depending on the depth of the foundations and utilities, difficult excavation into PWR should be anticipated. Partially weathered rock/rock should be taken into consideration by the site civil designer when developing foundation, storm drainage, and utility plans.

We would like to point out that our experience indicates rock in a weathered, boulder, and/or massive form varies erratically in location and depth within the Piedmont Geologic Province, of which Mecklenburg County is part. Due to the variability of the Piedmont soils, there is always a potential that these materials could be encountered at shallower depths between the boring locations. The depth to, and thickness of weathered rock, rock lenses or seams, and bedrock, can vary dramatically in short distances and between boring locations; therefore, weathered rock and/or bedrock should be anticipated during construction at locations or depths, between boring locations, not encountered during this exploration. The following table summarizes the locations and depths where PWR may be encountered.

Table 5.3.3.1: Partially Weathered Rock (PWR) Encountered

Location	Depth of PWR* (ft)	Location	Depth of PWR* (ft)	Location	Depth of PWR* (ft)
B-1	5.5	B-13	3	B-25	3
B-2	8	B-14	3	B-26	8
B-3	8	B-15	5.5	B-27	12
B-4	3	B-16	17	B-28	--
B-5	3	B-17	12	B-29	3
B-6	8	B-18	0	B-30	3
B-7	5.5	B-19	5.5	B-31	5.5
B-8	3	B-20	12	B-32	5.5
B-9	3	B-21	5.5	B-33	22
B-10	12	B-22	8	B-34	5.5
B-11	12	B-23	8	B-35	8
B-12	5.5	B-24	3	B-36	5.5

*Depth to top of Partially Weathered Rock.

Typically, in mass excavation for general site work, materials with an N-value of 50 blows per 3 to 6 inches of penetration can be excavated with moderate to heavy effort using appropriately sized equipment, such as a large track-hoe (e.g., Caterpillar 330 with rock teeth or a D-8 bulldozer with a single ripping tooth). In confined excavations such as foundations, utility trenches, etc., removal of PWR may require use of heavy duty backhoes, pneumatic spades, or blasting. Material that exhibits less than 3 inches of penetration per 50 blows and material causing auger refusal will likely require jack hammering, blasting or drilling to facilitate removal. Due to the apparent quality of the refusal materials and local geology, we anticipate that blasting will be required in excavations that extend below the depths/elevations indicated as "Auger Refusal" in our boring logs.

Rock materials will normally require blasting for removal in all types of excavations. Any blasting in foundation excavations must be done carefully to prevent damage to the bearing materials and nearby buildings or roadways/utilities. The gradation of the material removed by ripping or blasting will likely be erratic.

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, or graders; and requires the use of a single-tooth ripper mounted on a crawler tractor having a minimum 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 (Caterpillar D-8 or equivalent) or by a Caterpillar 977 front-end loader or equivalent; 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 (Caterpillar Model 225 or equivalent), and occupying an original volume of at least one-half (1/2) cubic yard.

6.0 CLOSING

ECS has prepared this report of findings, evaluations, and preliminary recommendations to guide geotechnical-related design and construction aspects of the project.

The description of the proposed project is based on limited information provided to ECS. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted immediately in order that we can review the report in light of the changes.

We also recommend that ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX

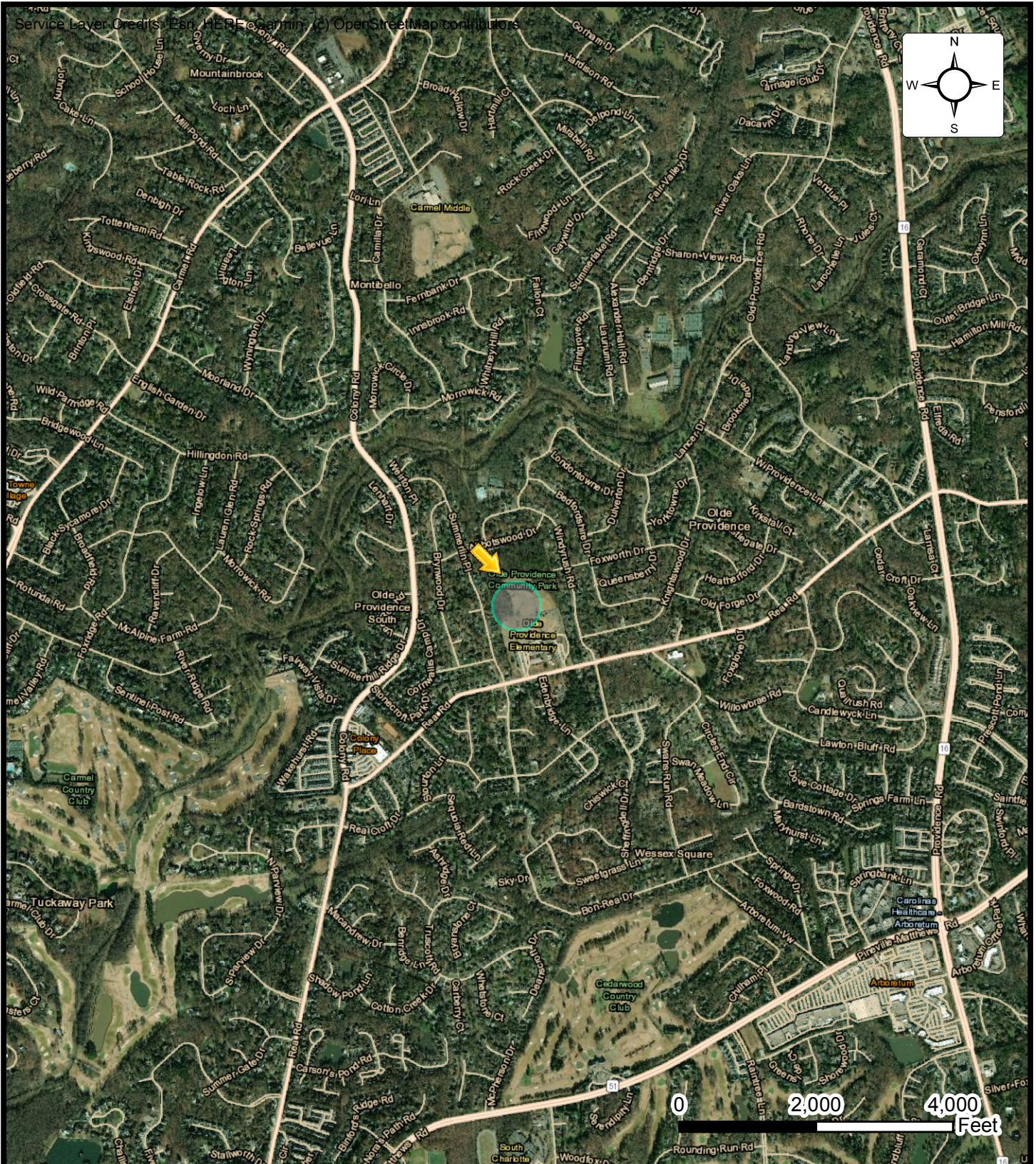
Site Vicinity Map

Boring Location Diagram

Reference Notes for Boring Logs

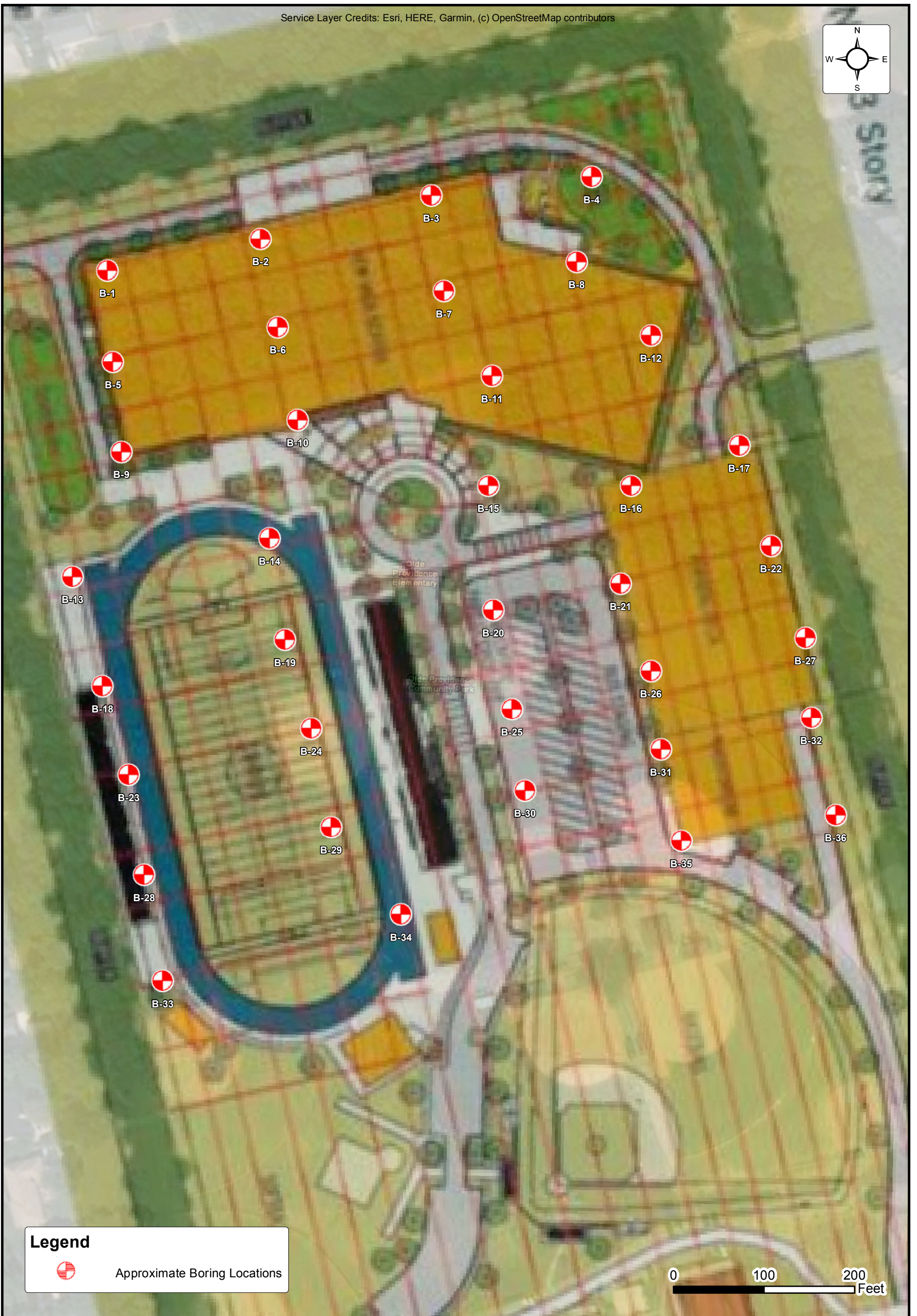
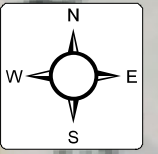
Boring Logs

Laboratory Testing Summary



Site Location Diagram
CMS REA ROAD HIGH SCHOOL
CHARLOTTE, NORTH CAROLINA
CHARLOTTE-MECKLENBURG SCHOOLS (CMS)

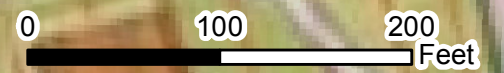
ENGINEER MFP
SCALE 1" = 2000'
PROJECT NO. 08:13768
FIGURE 1
DATE 9/10/2019



Legend



Approximate Boring Locations



Boring Location Diagram

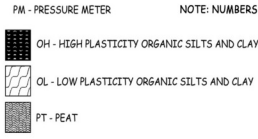
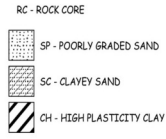
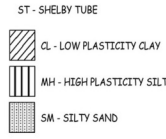
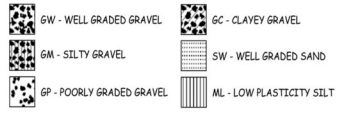
**CHARLOTTE-MECKLENBURG
SCHOOLS (CMS)**



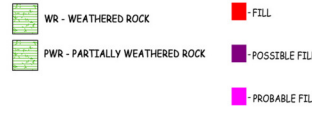
**CMS REA ROAD
HIGH SCHOOL**
REA ROAD, CHARLOTTE,
NORTH CAROLINA

ENGINEER MFP
SCALE 1" = 100'
PROJECT NO. 08:13768
FIGURE 2
DATE 9/12/2019

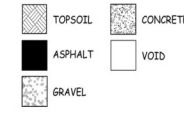
SOIL CLASSIFICATION LEGEND



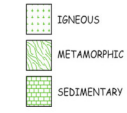
NOTE: NUMBERS IMMEDIATELY TO THE LEFT OF THE BORING PROFILE ARE SPT-N VALUES.



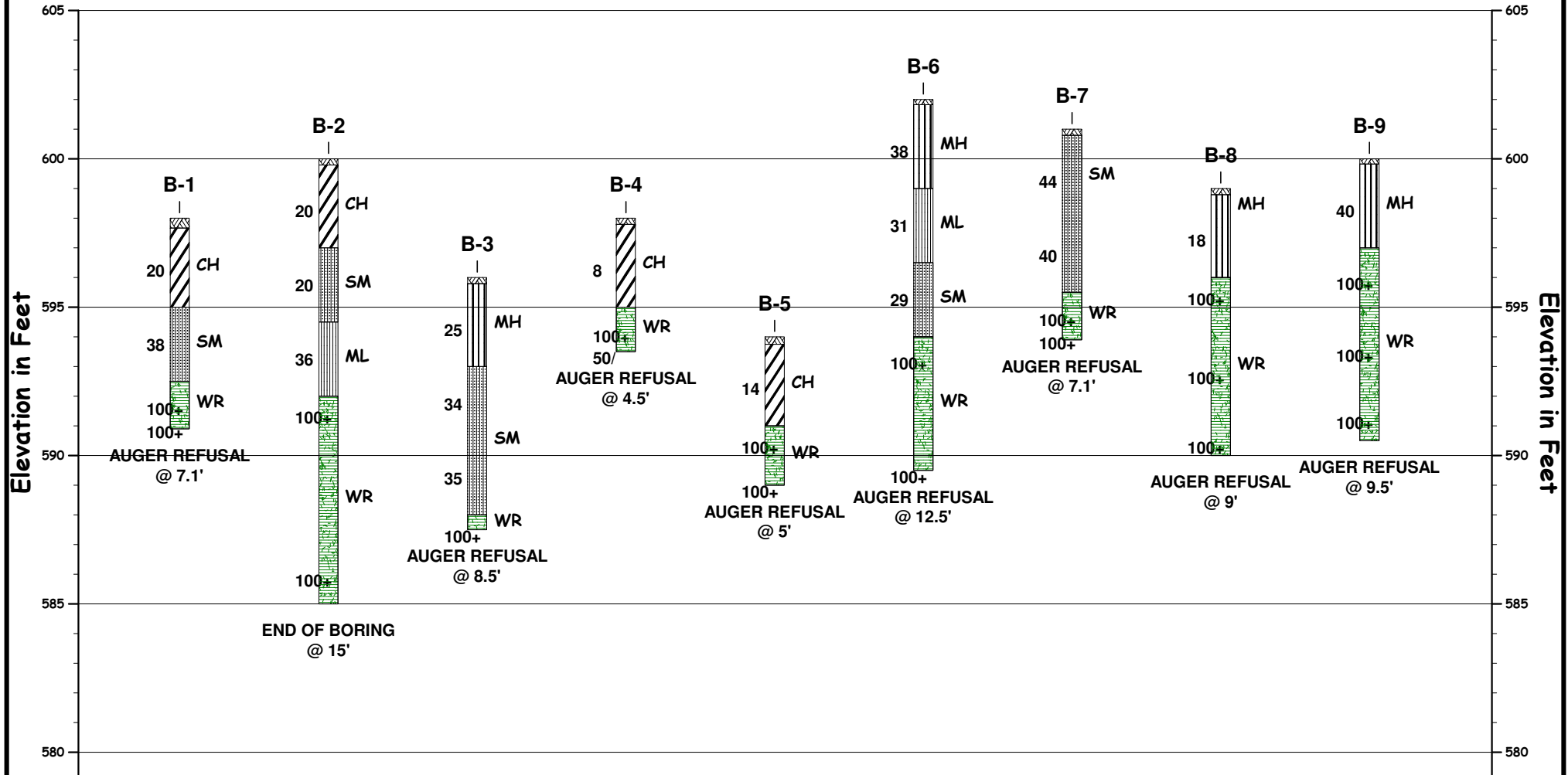
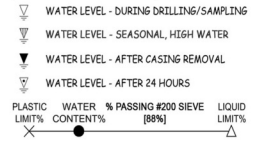
SURFACE MATERIALS



ROCK TYPES



SYMBOL LEGEND



NOTES:
 1 SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
 2 PENETRATION TEST RESISTANCE IN BLOWS PER FOOT (ASTM D1586).

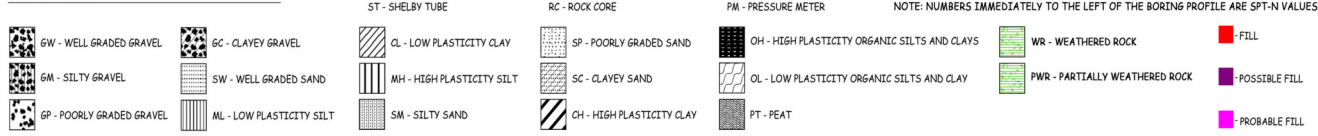


Subsurface Soil Profile

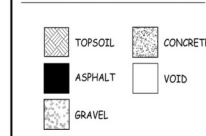
CMS Rea Road High School
Charlotte-Mecklenburg Schools (CMS)
Charlotte, Mecklenburg County, NC

PROJECT NO.: 13768 | DATE: 9/9/2019 | VERTICAL SCALE: 1"=5'

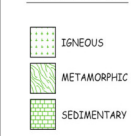
SOIL CLASSIFICATION LEGEND



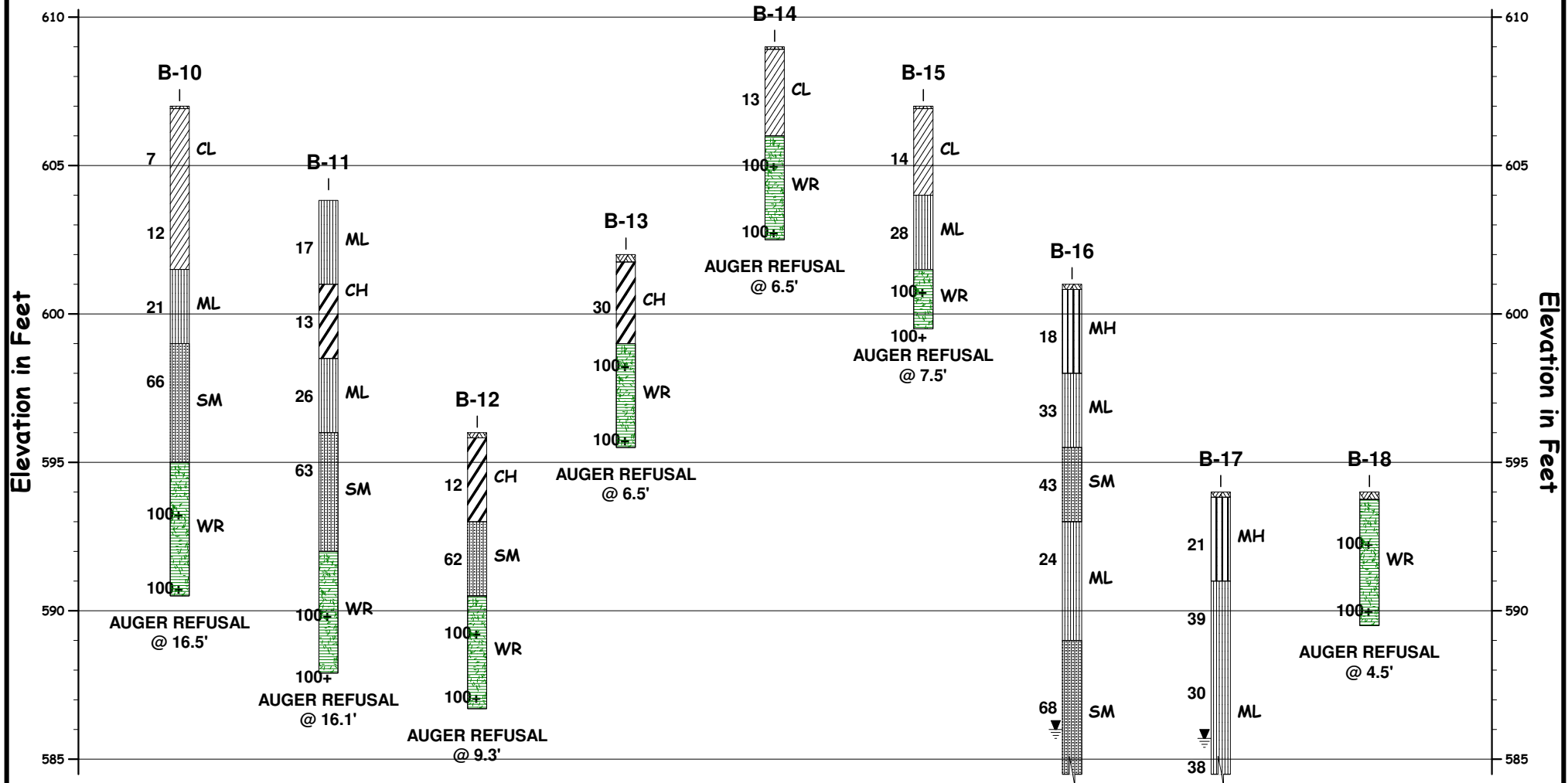
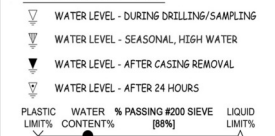
SURFACE MATERIALS



ROCK TYPES



SYMBOL LEGEND



NOTES:
 1 SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
 2 PENETRATION TEST RESISTANCE IN BLOWS PER FOOT (ASTM D1586).

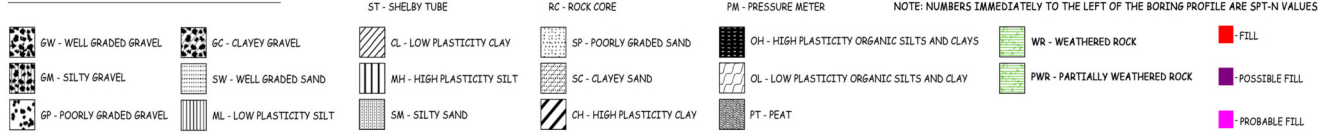


Subsurface Soil Profile

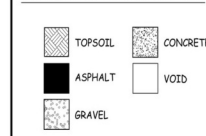
**CMS Rea Road High School
 Charlotte-Mecklenburg Schools (CMS)
 Charlotte, Mecklenburg County, NC**

PROJECT NO.: 13768 DATE: 9/11/2019 VERTICAL SCALE: 1"=5'

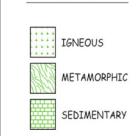
SOIL CLASSIFICATION LEGEND



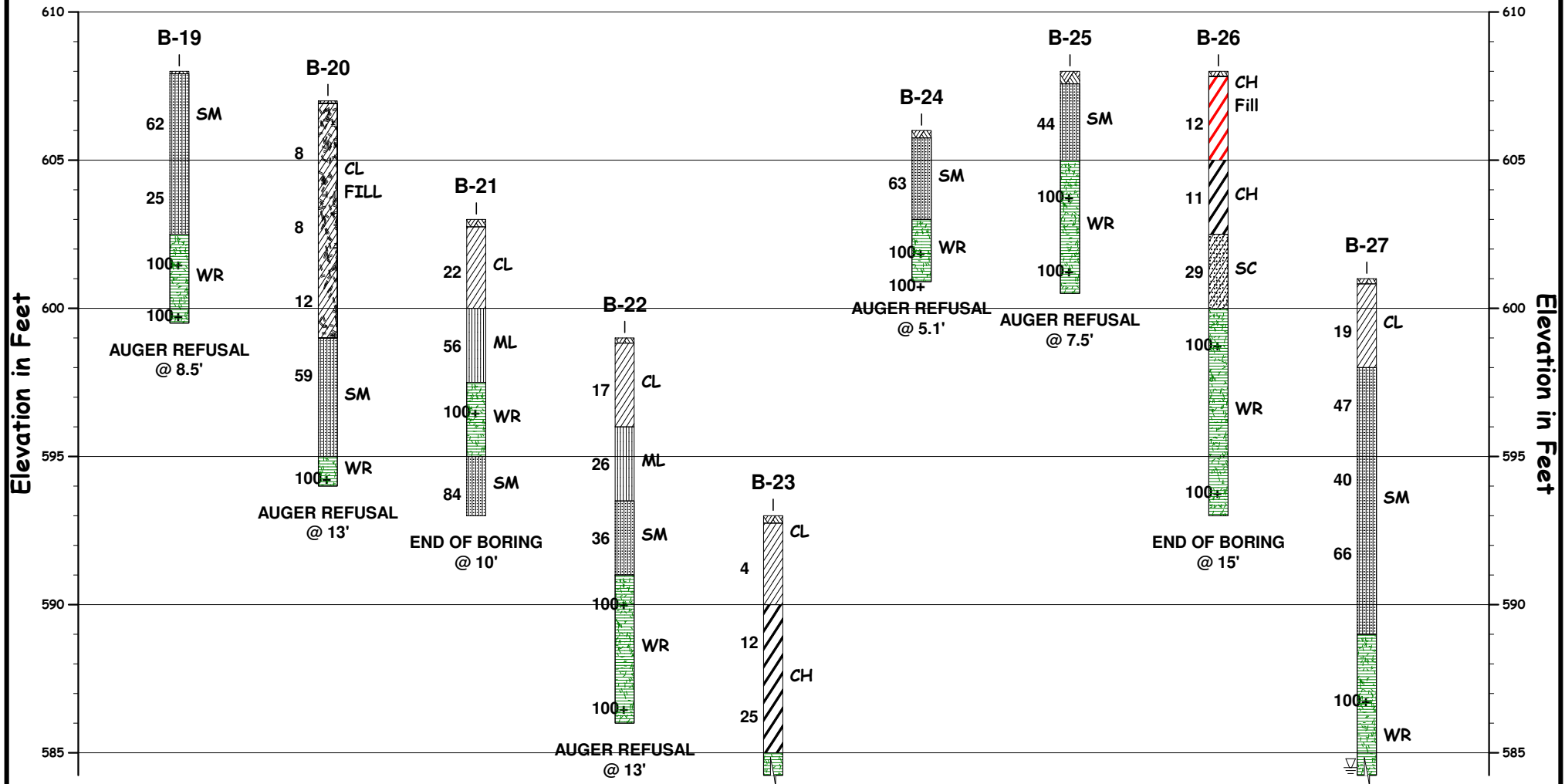
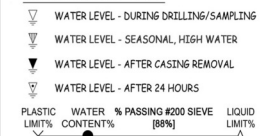
SURFACE MATERIALS



ROCK TYPES



SYMBOL LEGEND



NOTES:
 1 SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
 2 PENETRATION TEST RESISTANCE IN BLOWS PER FOOT (ASTM D1586).

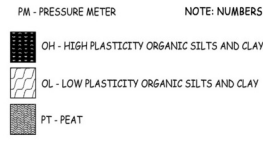
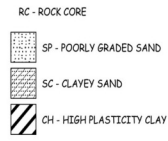
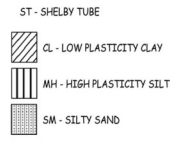
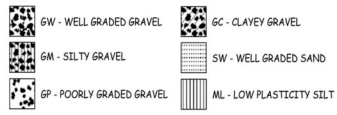


Subsurface Soil Profile

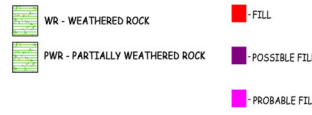
CMS Rea Road High School
Charlotte-Mecklenburg Schools (CMS)
Charlotte, Mecklenburg County, NC

PROJECT NO. :13768 | DATE:9/11/2019 | VERTICAL SCALE:1"=5'

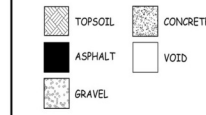
SOIL CLASSIFICATION LEGEND



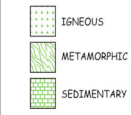
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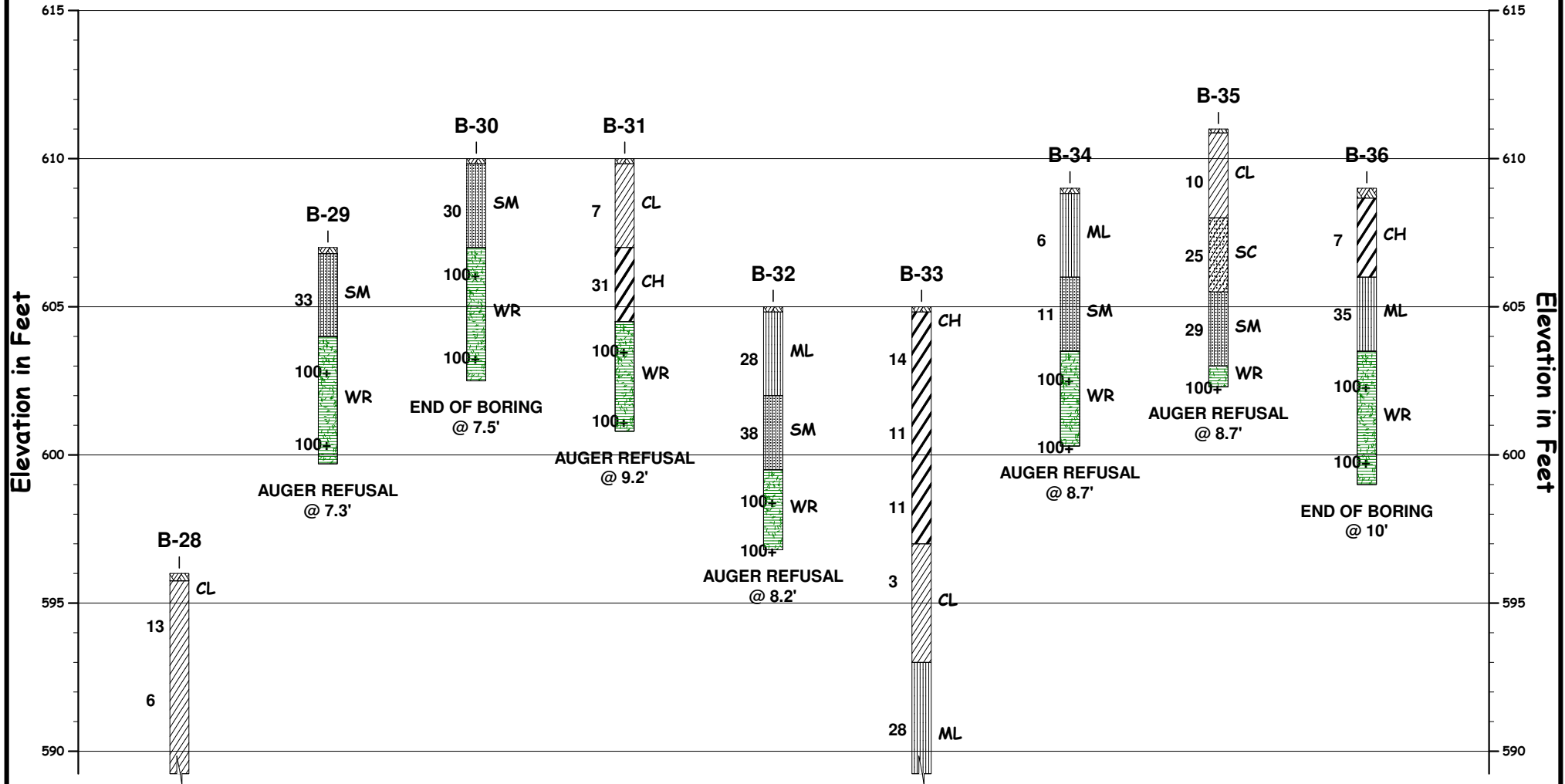
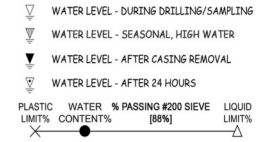
SURFACE MATERIALS



ROCK TYPES



SYMBOL LEGEND




NOTES:
 1 SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION.
 2 PENETRATION TEST RESISTANCE IN BLOWS PER FOOT (ASTM D1586).



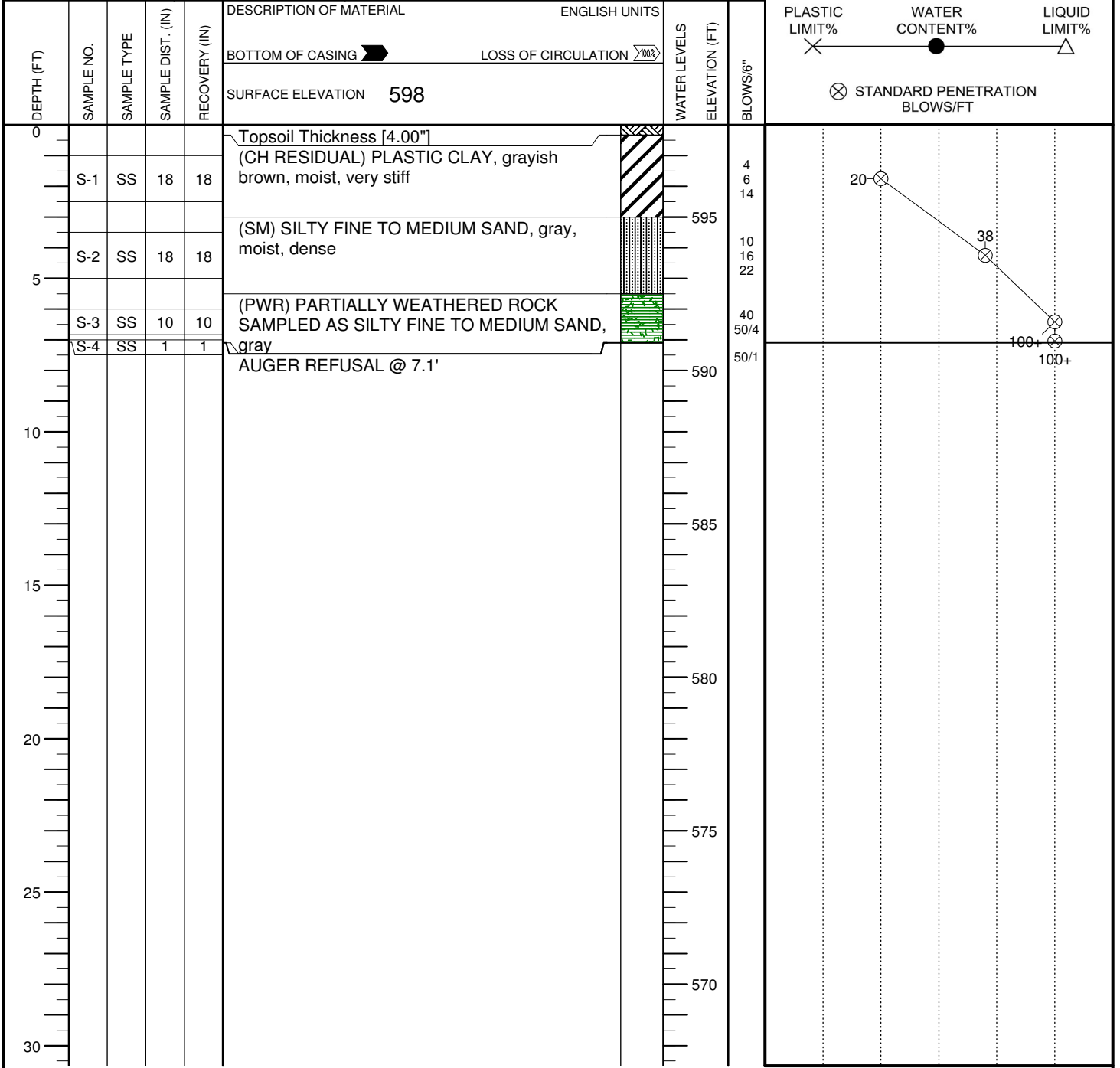
Subsurface Soil Profile

**CMS Rea Road High School
 Charlotte-Mecklenburg Schools (CMS)
 Charlotte, Mecklenburg County, NC**

PROJECT NO.: 13768 DA: 09/09/2019 VERTICAL SCALE: 1"=5'

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-1	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School	ARCHITECT-ENGINEER			

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% X ● ▲ ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885725.39	EASTING 518163.93	STATION	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/23/19	CAVE IN DEPTH 5.1
WL(SHW)	WL(ACR)	GNE	BORING COMPLETED	08/23/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-2	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885738.83	EASTING 518219.33	STATION
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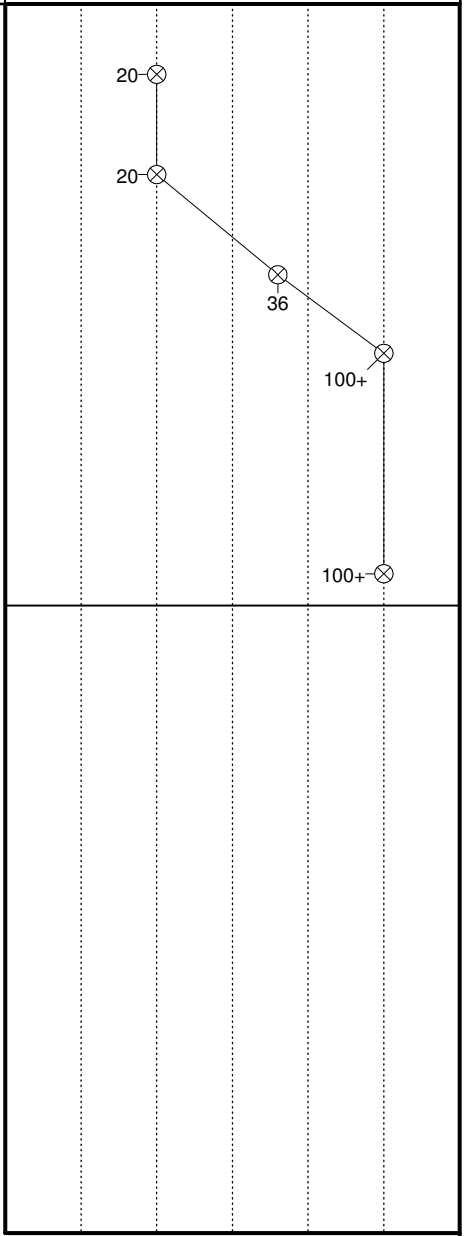
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.50"] (CH RESIDUAL) PLASTIC CLAY, brown, moist, very stiff		600	
5	S-1	SS	18	14	(SM) SILTY FINE TO MEDIUM SAND, contains slight mica, gray, moist, medium dense		595	
10	S-2	SS	18	18	(ML) SANDY SILT, contains slight mica, gray, moist, hard		590	
15	S-3	SS	18	16	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, contains slight mica, gray		585	
	S-4	SS	5	5				
	S-5	SS	17	16				
15.0	END OF BORING @ 15.0'							



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/21/19	CAVE IN DEPTH 11.9
WL(SHW)	WL(ACR) GNE	BORING COMPLETED 08/21/19	HAMMER TYPE Manual
WL	RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-3	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

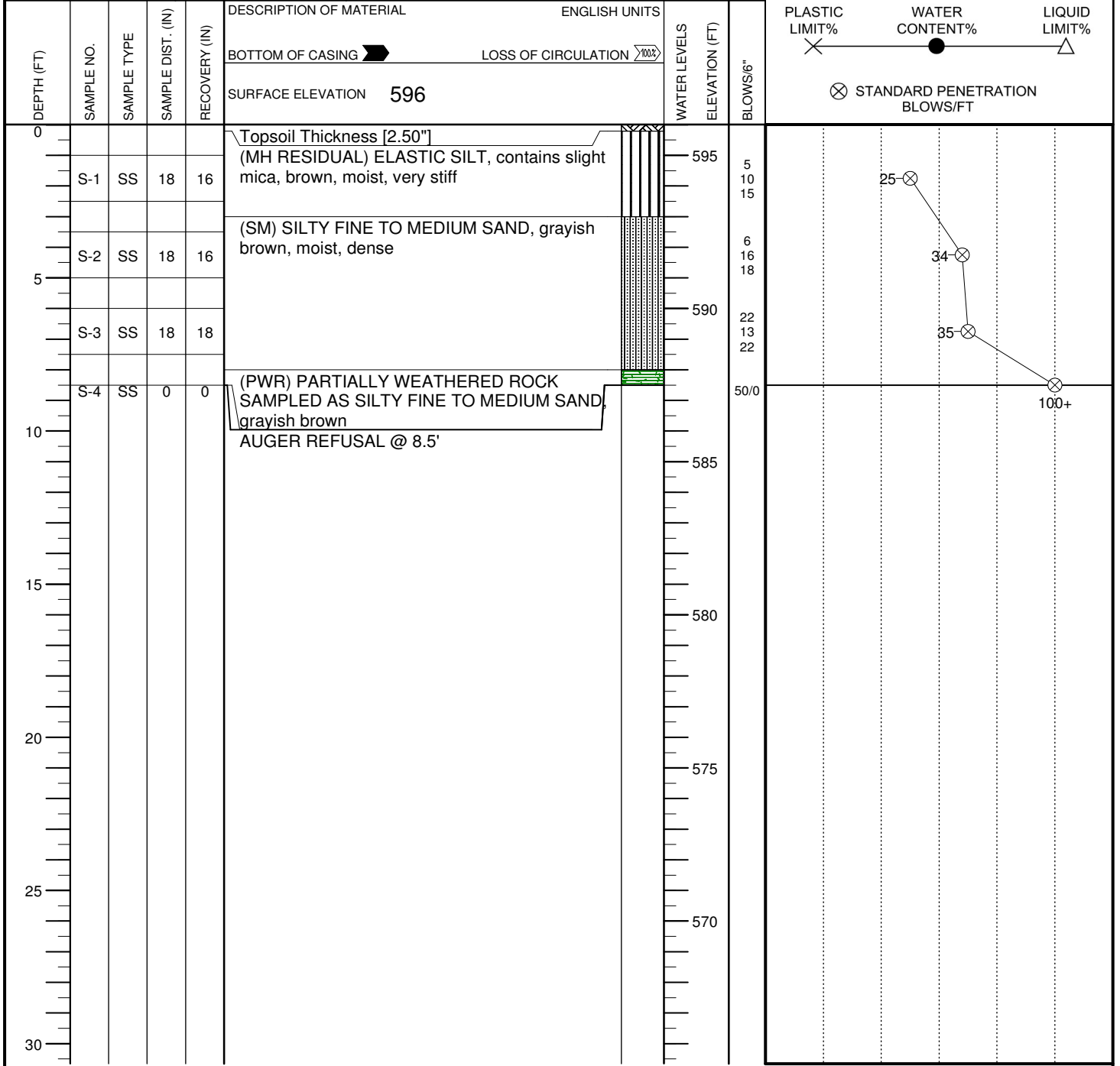
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885753.97	EASTING 518276.73	STATION

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -


PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

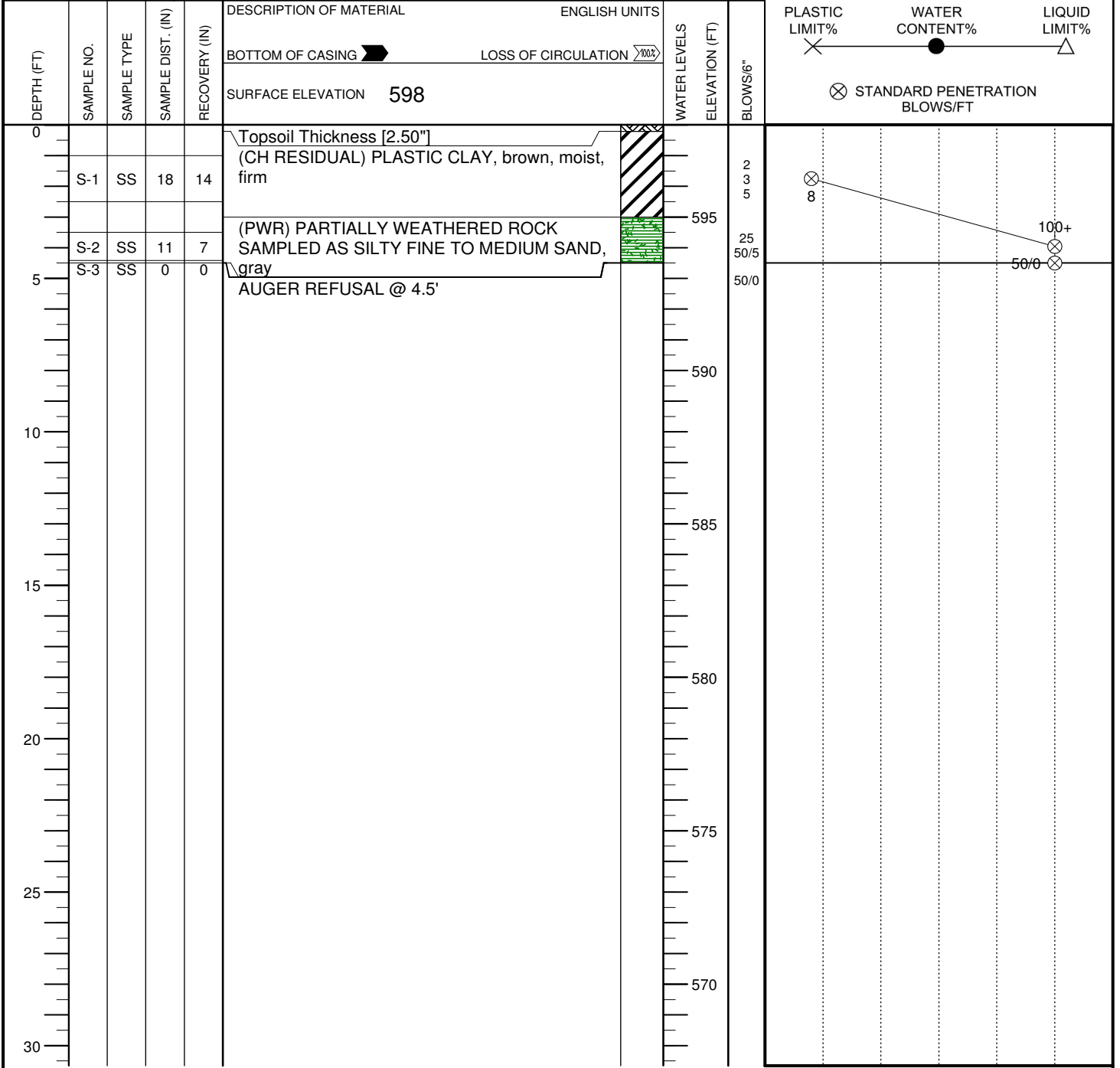


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.


WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/21/19	CAVE IN DEPTH	6.3
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/21/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-4	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% X ● ▲ ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885760.31	EASTING 518329.70	STATION	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/21/19	CAVE IN DEPTH 3.0
WL(SHW)	WL(ACR) GNE		BORING COMPLETED	08/21/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-5	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885695.54	EASTING 518172.40	STATION
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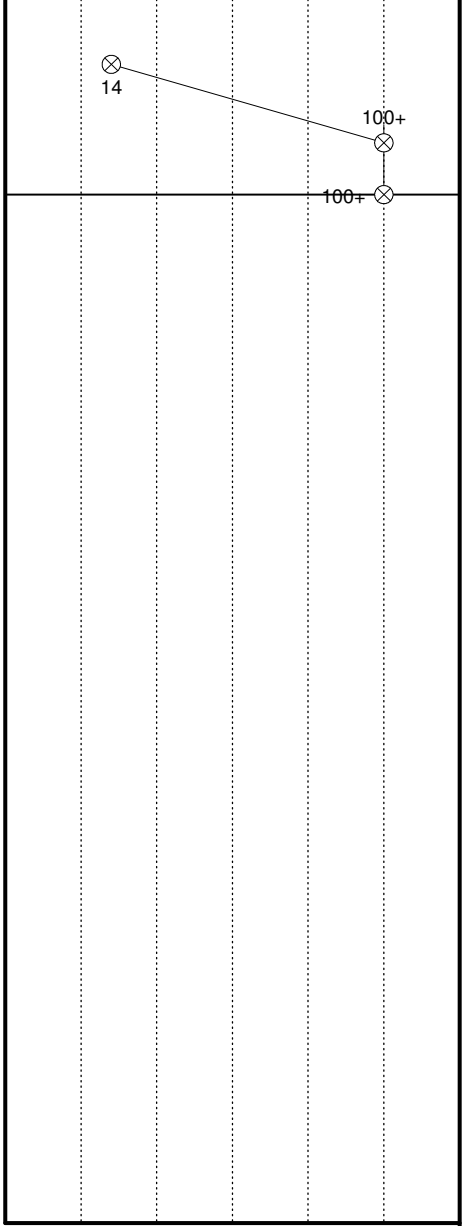
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					BOTTOM OF CASING LOSS OF CIRCULATION SURFACE ELEVATION 594			
0	S-1	SS	18	18	Topsoil Thickness [3.00"] (CH RESIDUAL) PLASTIC CLAY, brown, moist, stiff		359	
5	S-2	SS	5	2	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, gray		590	
5	S-3	SS	0	0	AUGER REFUSAL @ 5.0'		590	
10							585	
15							580	
20							575	
25							570	
30							565	



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

<input checked="" type="checkbox"/> WL GNE WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/21/19	CAVE IN DEPTH 3.1
<input checked="" type="checkbox"/> WL(SHW) <input checked="" type="checkbox"/> WL(ACR) GNE	BORING COMPLETED 08/21/19	HAMMER TYPE Manual
<input checked="" type="checkbox"/> WL	RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-6	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885710.54	EASTING 518226.64	STATION
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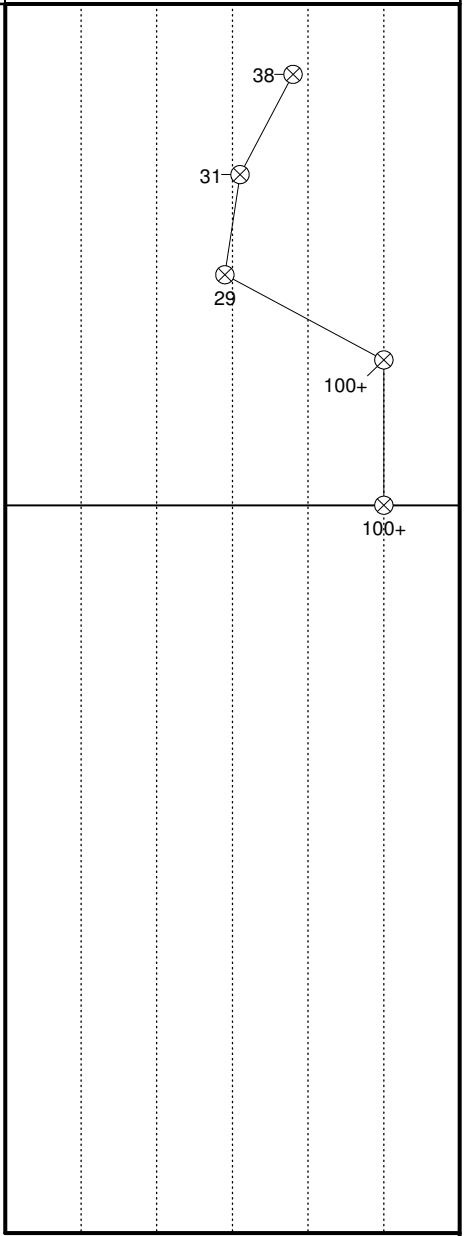
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING	LOSS OF CIRCULATION		
0					Topsoil Thickness [2.00"] (MH RESIDUAL) ELASTIC SILT, grayish brown, moist, hard			
7	S-1	SS	18	18	(ML) SANDY SILT, gray, moist, hard		600	7
13	S-2	SS	18	16	(SM) SILTY FINE TO MEDIUM SAND, gray, moist, medium dense		595	13
12	S-3	SS	18	16	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, gray		590	12
9	S-4	SS	9	9			590	9
10	S-5	SS	0	0	AUGER REFUSAL @ 12.5'		590	10



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

∇ WL GNE WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/21/19	CAVE IN DEPTH 10.1
∇ WL(SHW) ∇ WL(ACR) GNE	BORING COMPLETED 08/21/19	HAMMER TYPE Manual
∇ WL	RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-7	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885723.21	EASTING 518280.97	STATION
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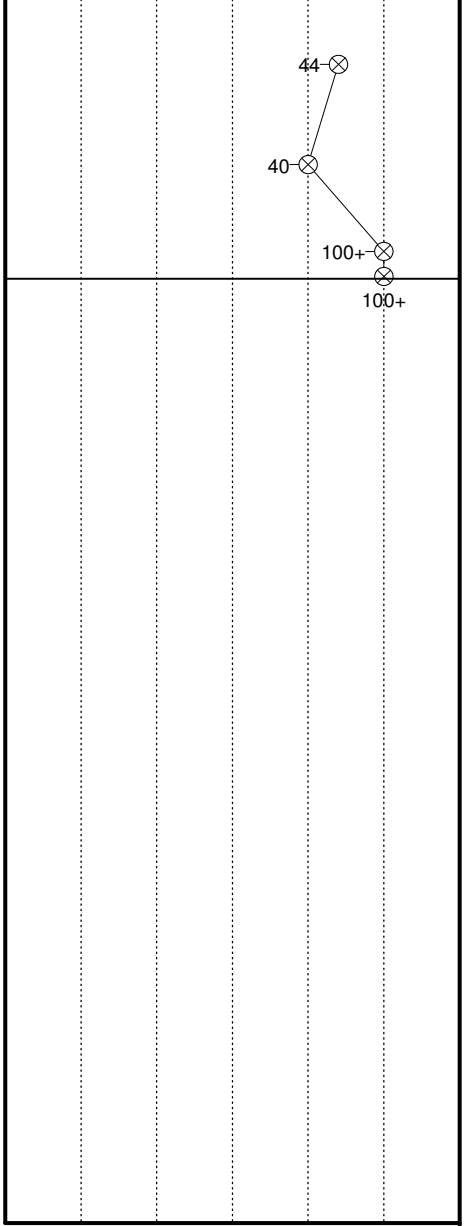
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.50"]		600	4
1-4	S-1	SS	18	16	(SM RESIDUAL) SILTY FINE TO MEDIUM SAND, trace clay, gray, moist, dense			14
4-14	S-2	SS	18	14	(SM) Residuum, SILTY FINE TO MEDIUM SAND, gray, moist, dense			30
14-20	S-3	SS	10	7	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, gray		595	16
20-20	S-4	SS	1	0	AUGER REFUSAL @ 7.1'			20
20-17							595	17
17-50/4								50/4
50/4-50/1								50/1
50/1-10								
10-15								
15-20								
20-25								
25-30								
30-30								



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/21/19	CAVE IN DEPTH	5.8
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/21/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-8	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885734.37	EASTING 518336.09	STATION
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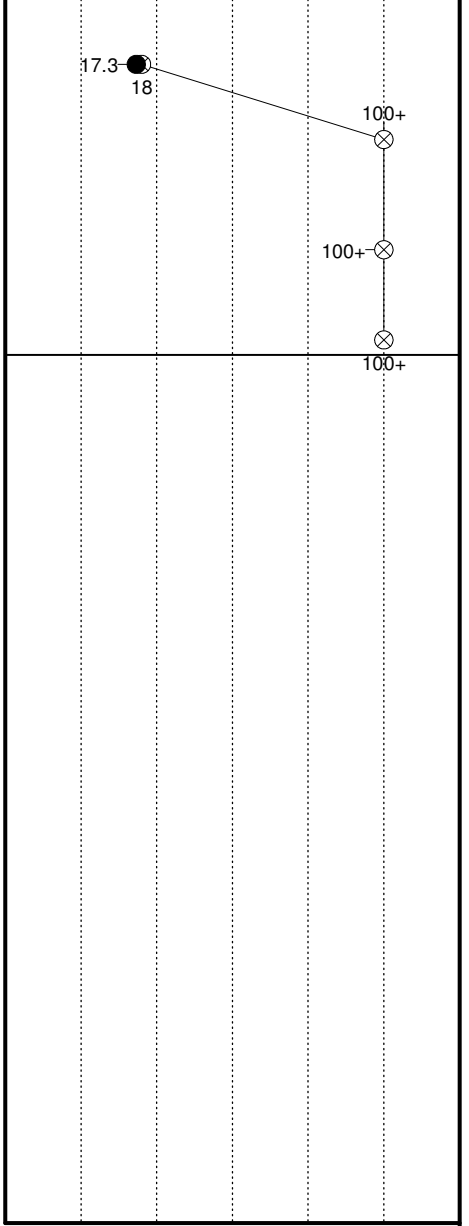
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.50"] (MH RESIDUAL) ELASTIC SILT, brown, moist, very stiff			
1	S-1	SS	18	18				
2	S-2	SS	3	3	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, gray			
3	S-3	SS	9	7				
4	S-4	SS	3	2				
9.0					AUGER REFUSAL @ 9.0'			



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/21/19	CAVE IN DEPTH	6.3
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/21/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-9	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885662.54	EASTING 518177.62	STATION
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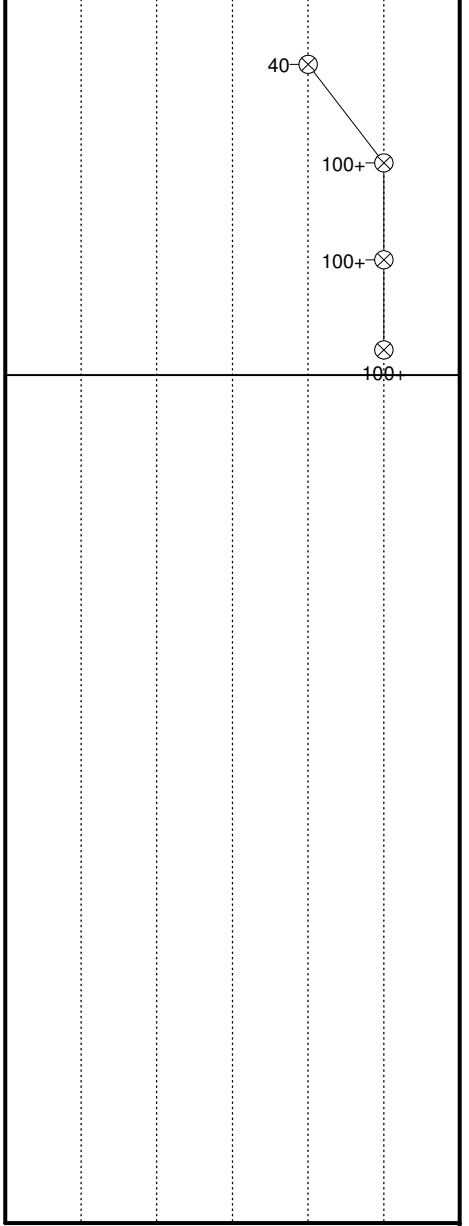
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.00"] (MH RESIDUAL) ELASTIC SILT, contains slight mica, brown, moist, hard		600	
5	S-1	SS	18	18	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, contains slight mica, gray		595	
	S-2	SS	17	16			590	
	S-3	SS	15	12			585	
	S-4	SS	9	9			580	
10					AUGER REFUSAL @ 9.5'		575	
15							570	
20								
25								
30								



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/21/19	CAVE IN DEPTH	7.9
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/21/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-10	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

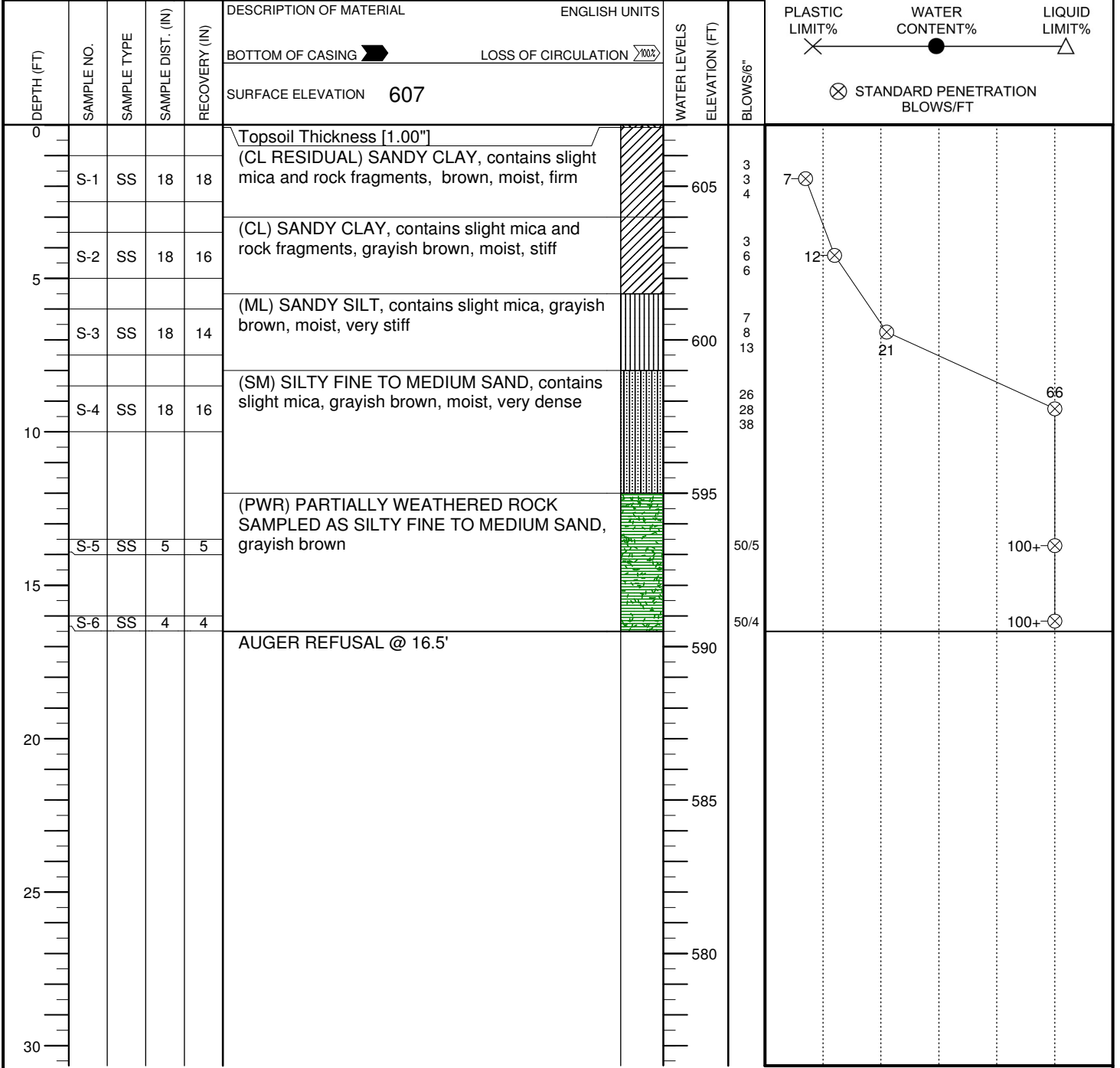
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885677.63	EASTING 518236.47	STATION

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____


PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



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

WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/21/19	CAVE IN DEPTH	14.1
WL(SHW)	WL(ACR) GNE		BORING COMPLETED	08/21/19	HAMMER TYPE	Manual
WL			RIG	ATV	FOREMAN	Cody Presley
					DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-11	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

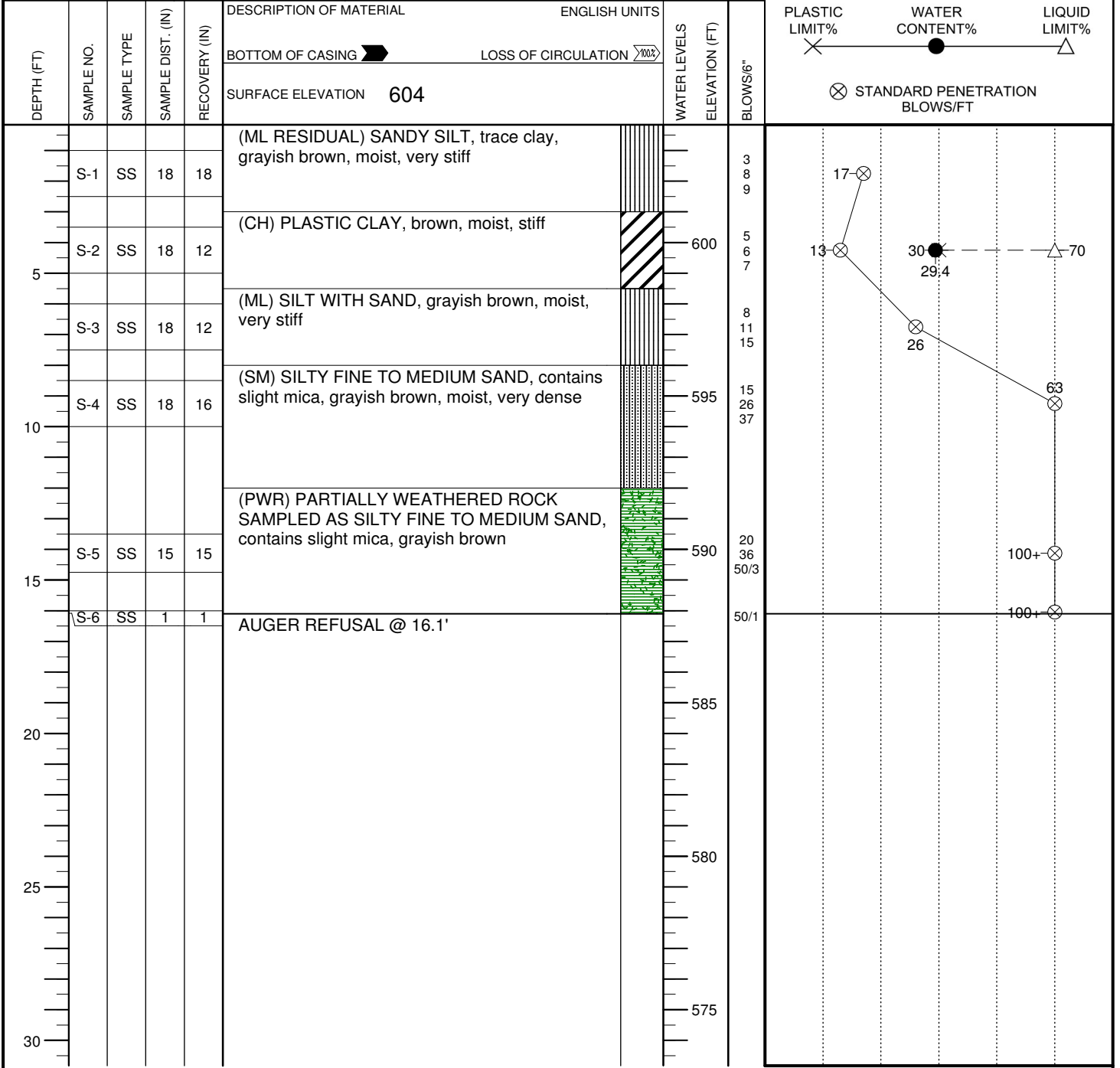
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885694.20	EASTING 518299.26	STATION

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -


PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



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

∇ WL GNE WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/21/19	CAVE IN DEPTH 14.3
∇ WL(SHW) ∇ WL(ACR) GNE	BORING COMPLETED 08/21/19	HAMMER TYPE Manual
∇ WL	RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-12	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

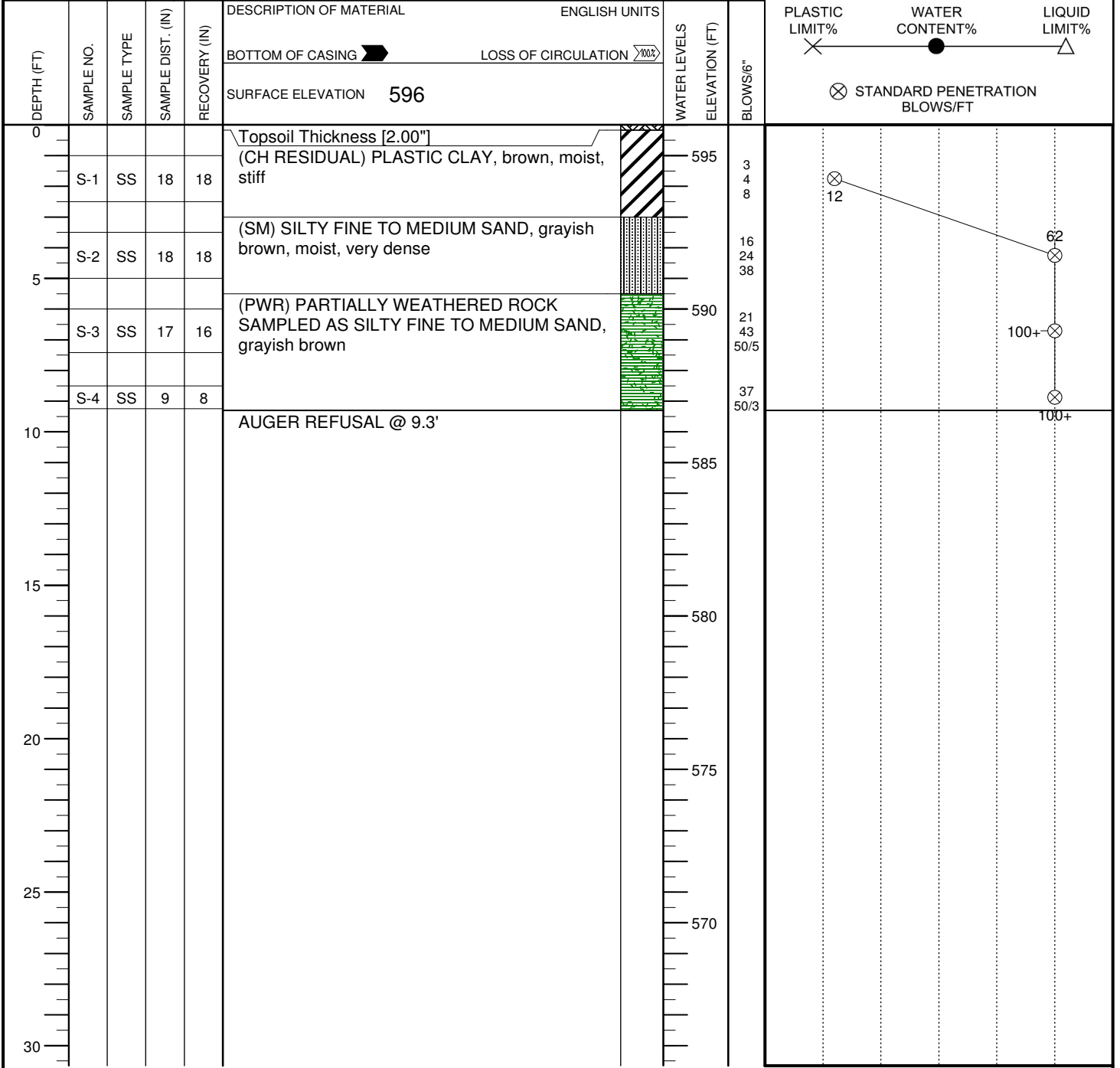
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885705.35	EASTING 518353.48	STATION

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____


PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



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

WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED 08/21/19	CAVE IN DEPTH 6.6
WL(SHW)	WL(ACR) GNE		BORING COMPLETED 08/21/19	HAMMER TYPE Manual
WL			RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-13	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

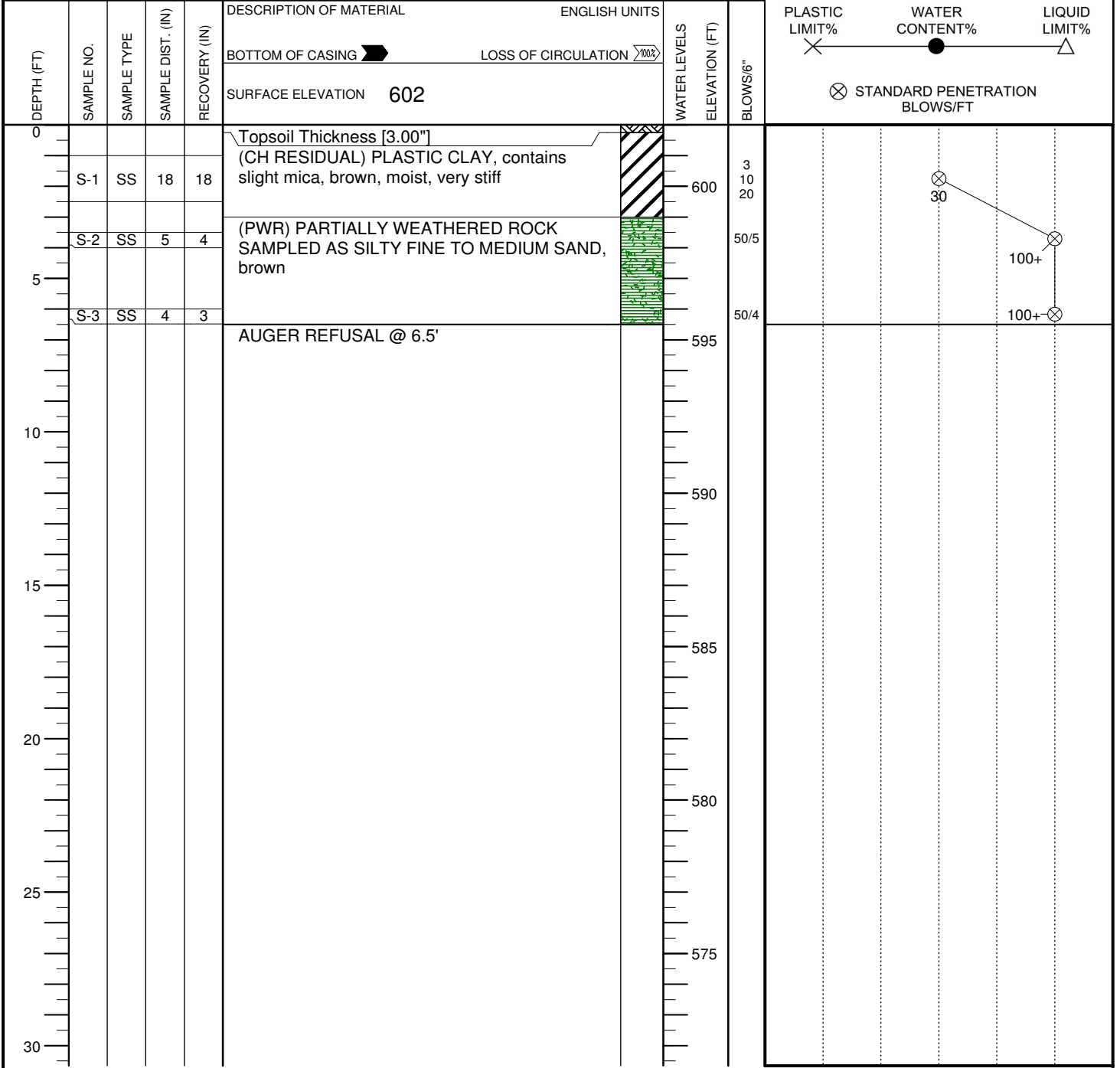
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885622.71	EASTING 518162.91	STATION

○ CALIBRATED PENETROMETER TONS/FT²


ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

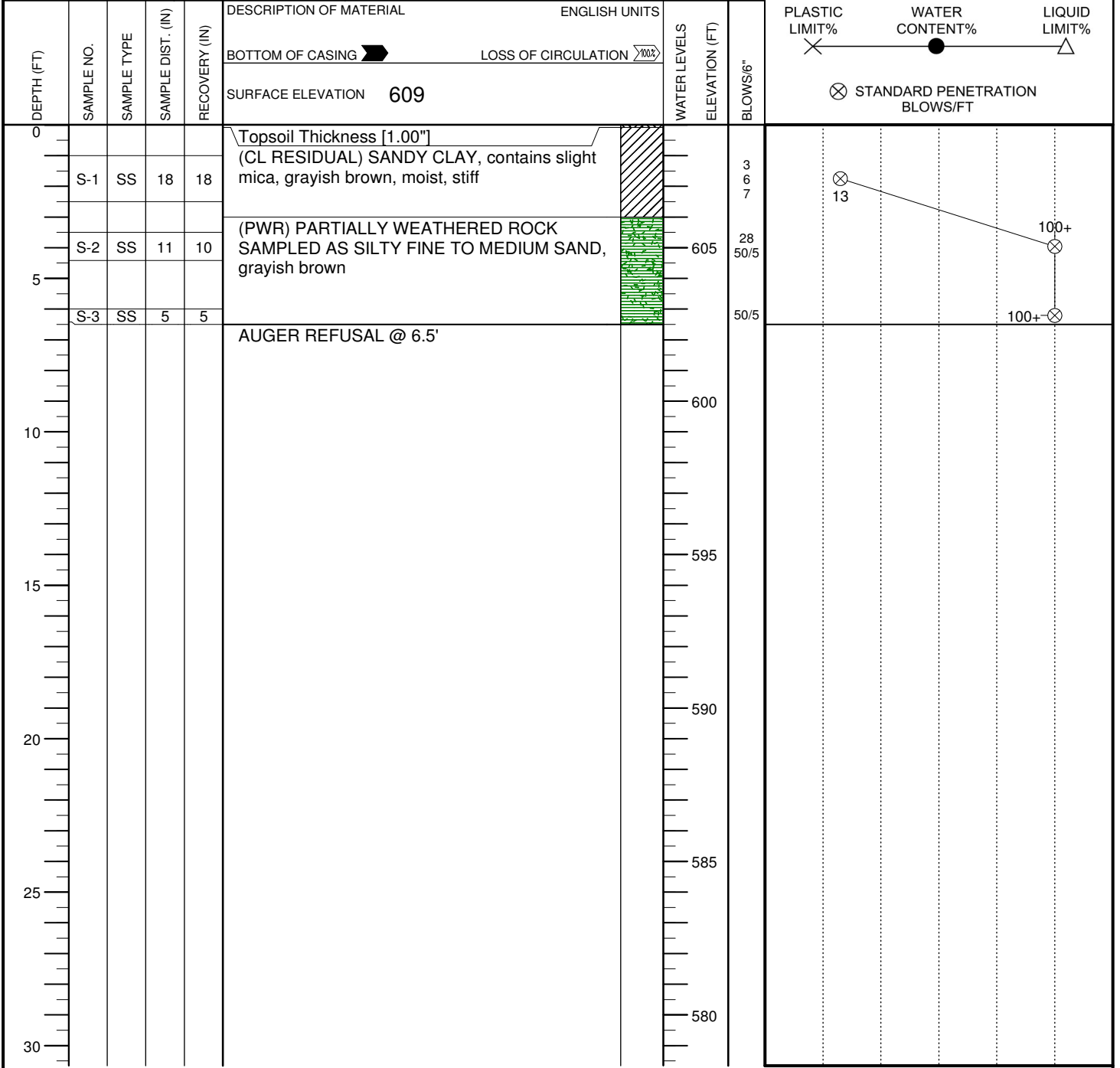
⊗ STANDARD PENETRATION BLOWS/FT



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/23/19	CAVE IN DEPTH 4.1
WL(SHW)	WL(ACR) GNE		BORING COMPLETED	08/23/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-14	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School	ARCHITECT-ENGINEER			

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% X ● ▲ ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885636.90	EASTING 518226.44	STATION	

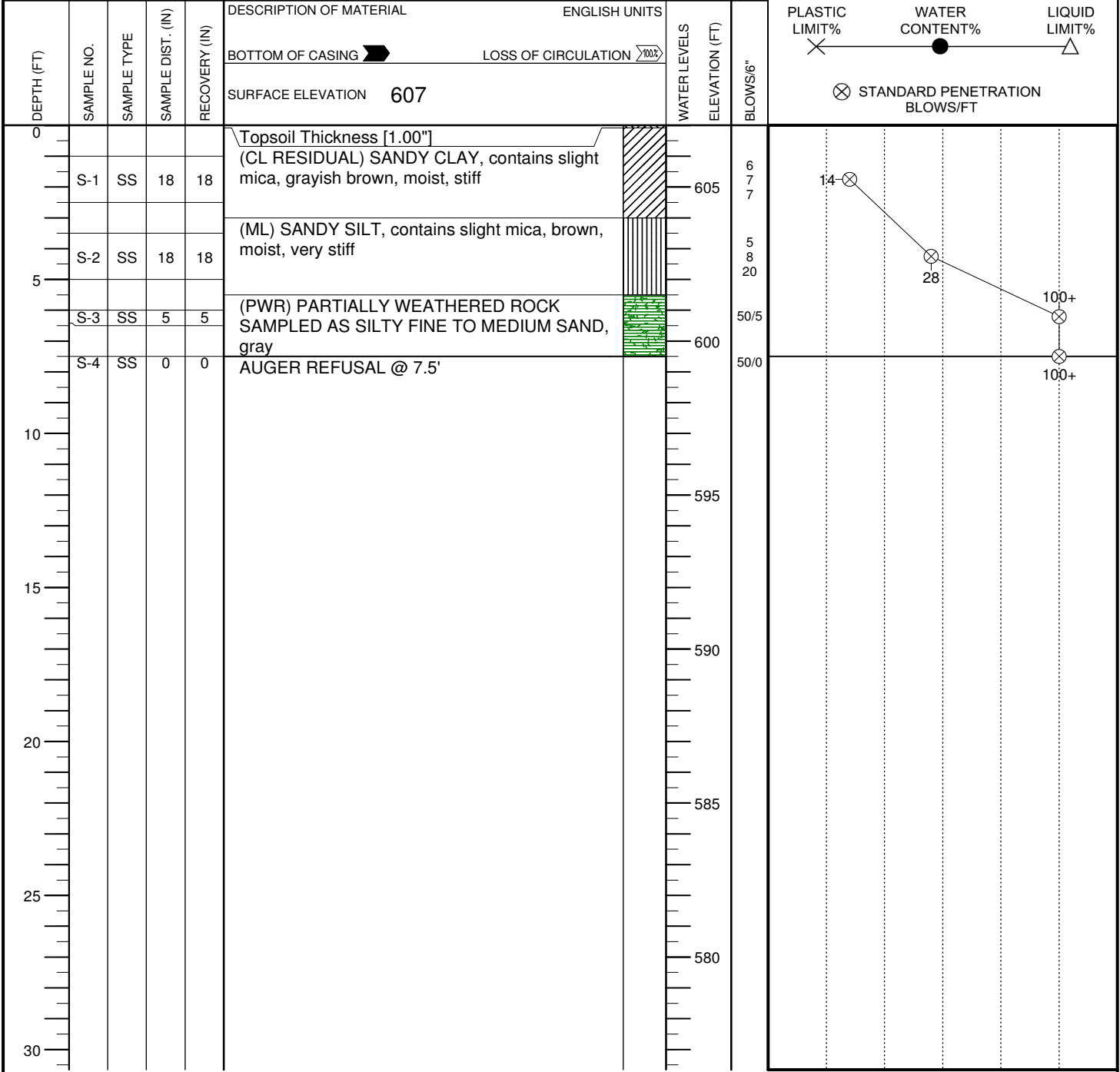


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 5.3
WL(SHW)	WL(ACR) GNE		BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley
				DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-15	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885650.36	EASTING 518295.52	STATION	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/22/19	CAVE IN DEPTH 5.1
WL(SHW)	WL(ACR)	GNE	BORING COMPLETED	08/22/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-16	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885655.24	EASTING 518337.88	STATION
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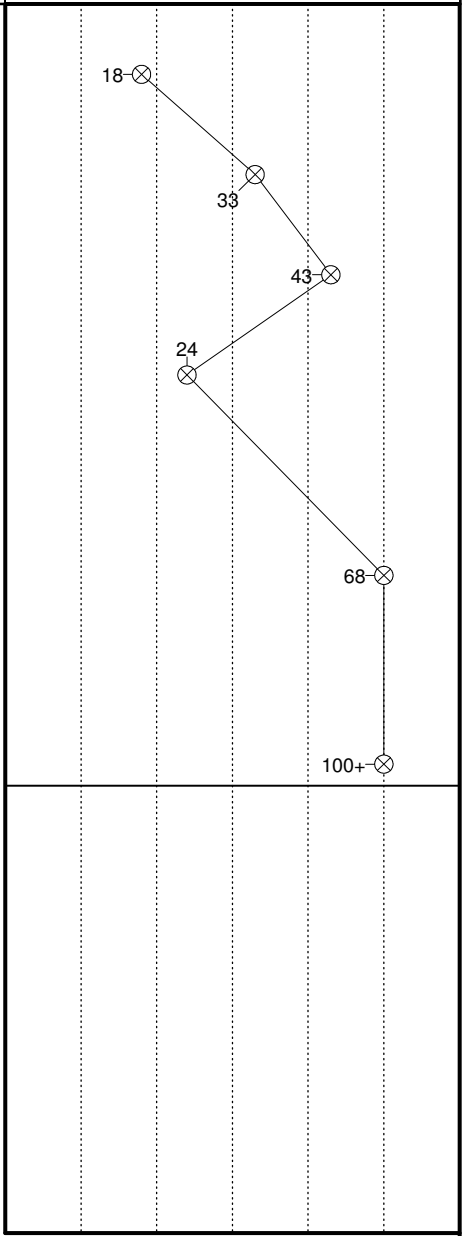
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness [2.00"] (MH RESIDUAL) ELASTIC SILT, grayish brown, moist, very stiff		600	5
1	S-1	SS	18	18				7
2					(ML) SANDY SILT, grayish brown, moist, hard			11
3	S-2	SS	18	8				14
4					(SM) SILTY FINE TO MEDIUM SAND, grayish brown, moist, dense			19
5	S-3	SS	18	4			595	14
6					(ML) SANDY SILT, grayish brown, moist, very stiff			19
7	S-4	SS	18	18				24
8					(SM) SILTY FINE TO MEDIUM SAND, grayish brown, moist, very dense			7
9							590	9
10								15
11	S-5	SS	18	9				17
12					(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown			18
13							585	50
14								
15	S-6	SS	11	5				50
16								50/5
17					AUGER REFUSAL @ 19.5'			
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

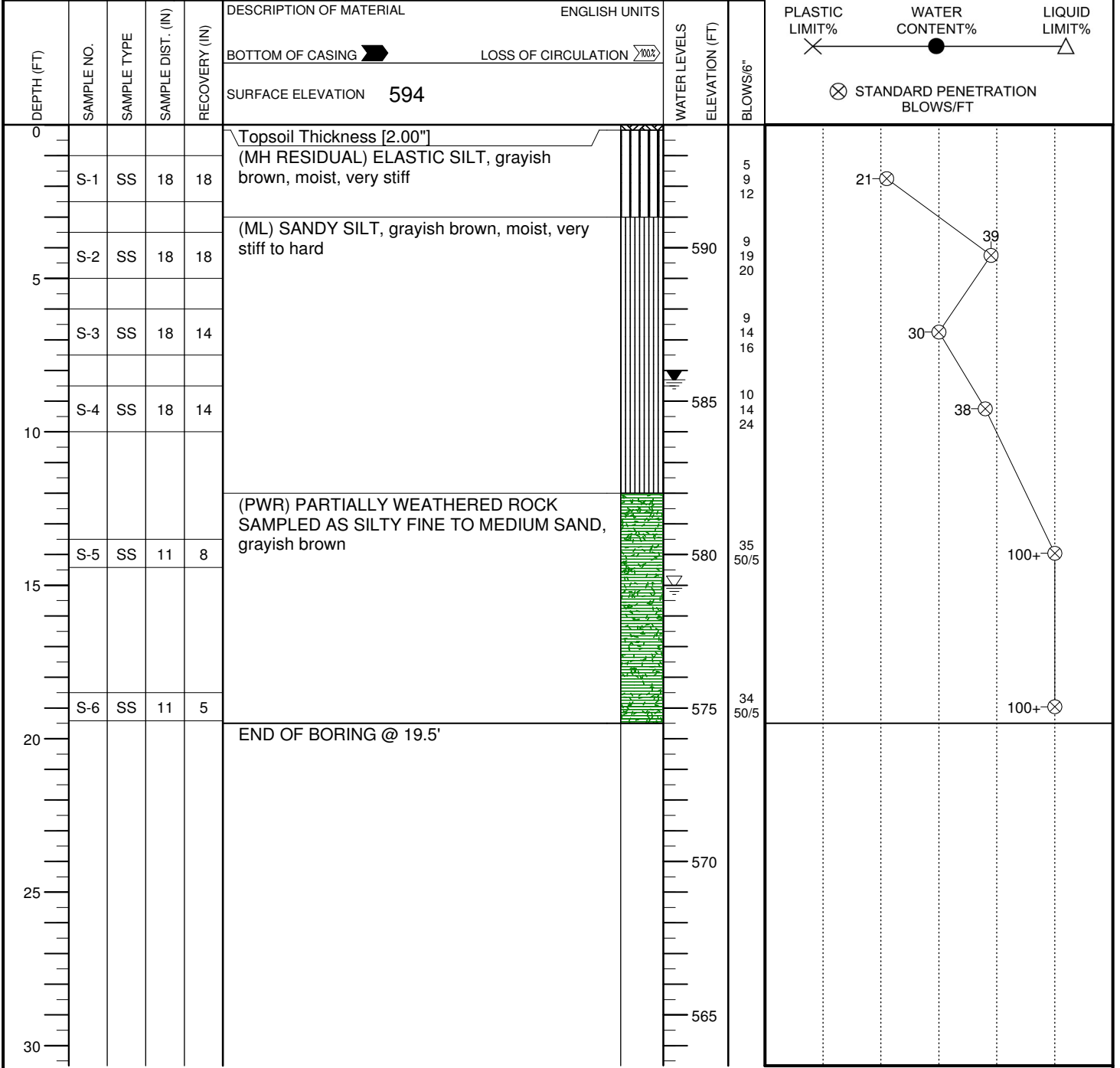
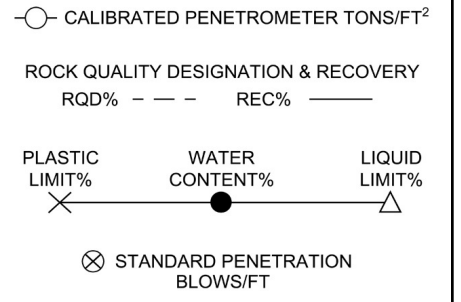


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.


WL 18.5	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 15.1
WL(SHW)	WL(ACR) 15.0	BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL		RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-17	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885669.63	EASTING 518389.14	STATION



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL 15.0	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/20/19	CAVE IN DEPTH 13.7
WL(SHW)	WL(ACR) 8.3		BORING COMPLETED	08/20/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-18	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School	ARCHITECT-ENGINEER			

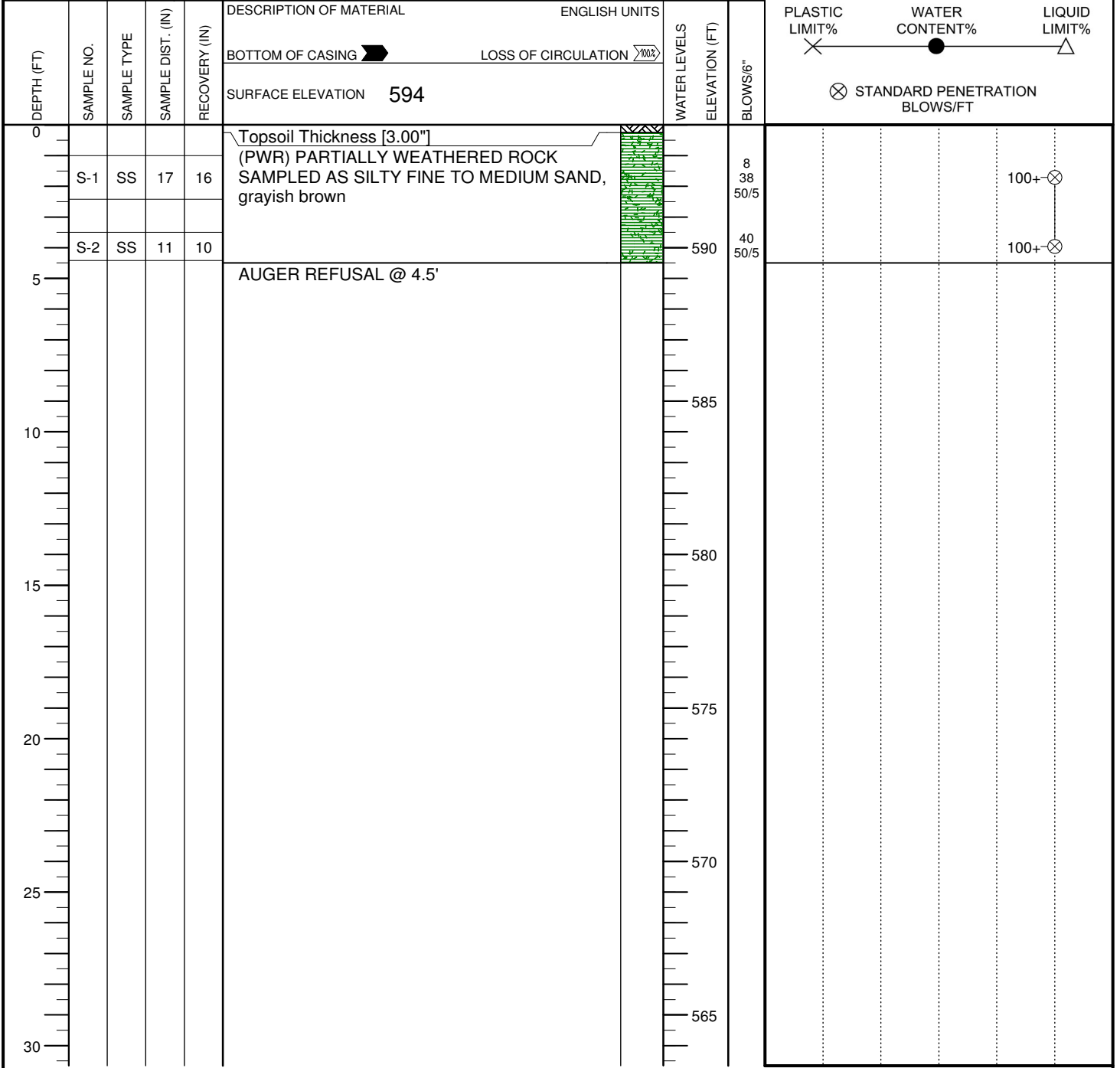
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885587.31	EASTING 518170.27	STATION

○ CALIBRATED PENETROMETER TONS/FT²


ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

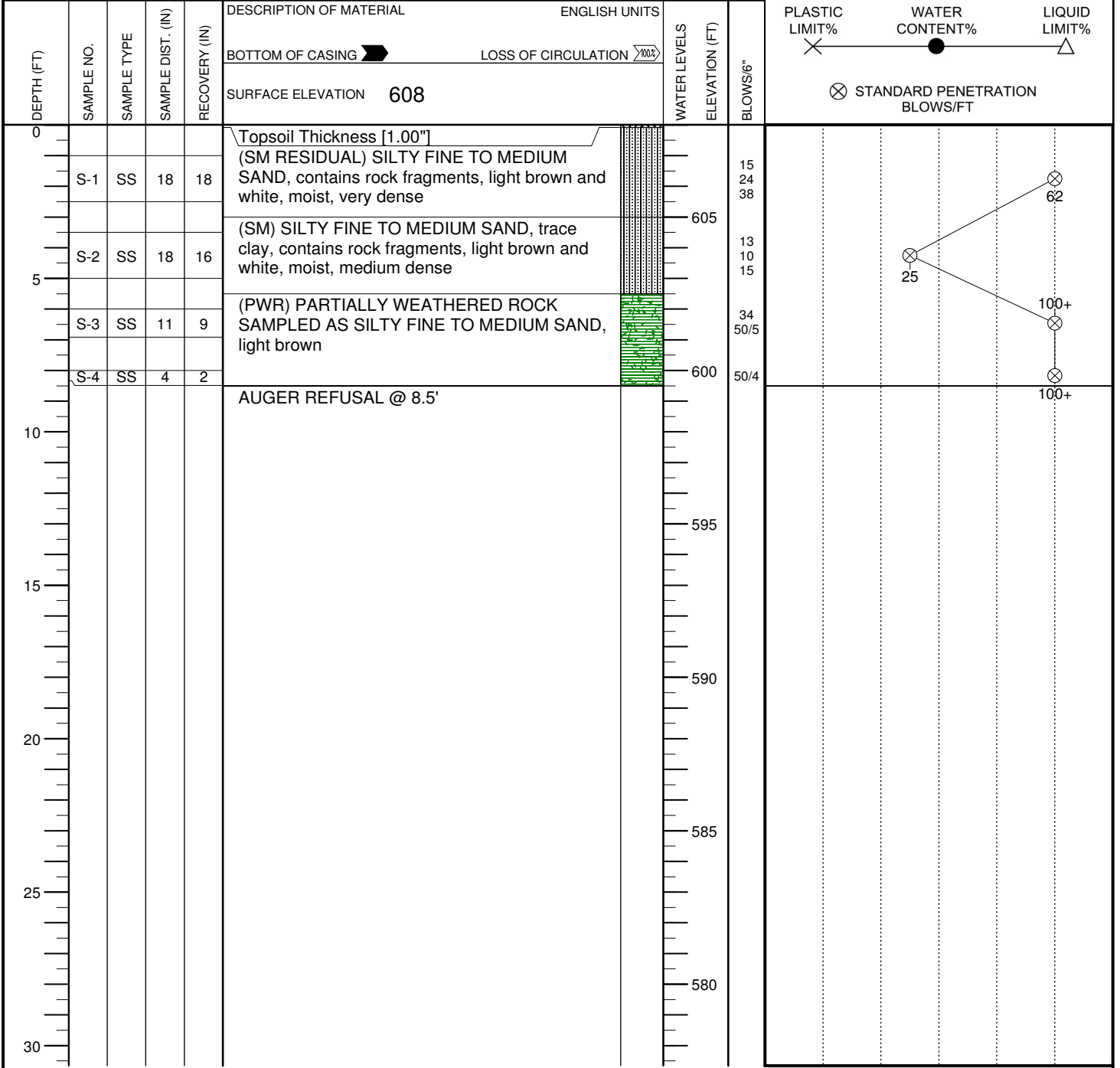
⊗ STANDARD PENETRATION BLOWS/FT



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/23/19	CAVE IN DEPTH 3.9
WL(SHW)	WL(ACR) GNE		BORING COMPLETED	08/23/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-19	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% X ● ▲ ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885604.05	EASTING 518233.53	STATION	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/22/19	CAVE IN DEPTH 6.1
WL(SHW)	WL(ACR) <input checked="" type="checkbox"/>	GNE	BORING COMPLETED	08/22/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-20	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885622.19	EASTING 518300.27	STATION
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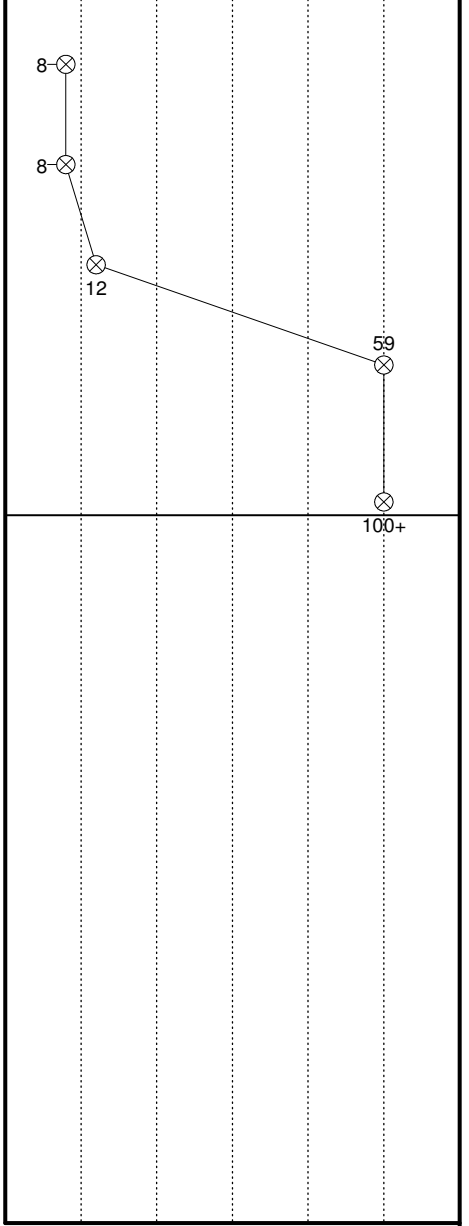
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [1.00"] (CL FILL) SANDY CLAY, trace organics, grayish brown, moist, firm		605	8
5	S-1	SS	18	18				8
	S-2	SS	18	16	(CL FILL) SANDY CLAY, trace organics, contains wood, grayish brown, moist, stiff		600	12
	S-3	SS	18	14				
10	S-4	SS	18	14	(SM RESIDUAL) SILTY FINE TO MEDIUM SAND, grayish brown, moist, very dense		595	59
15	S-5	SS	4	2	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown AUGER REFUSAL @ 13.0'		590	100+
20							585	
25							580	
30								



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/22/19	CAVE IN DEPTH	10.9
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/22/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-21	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885630.13	EASTING 518341.89	STATION
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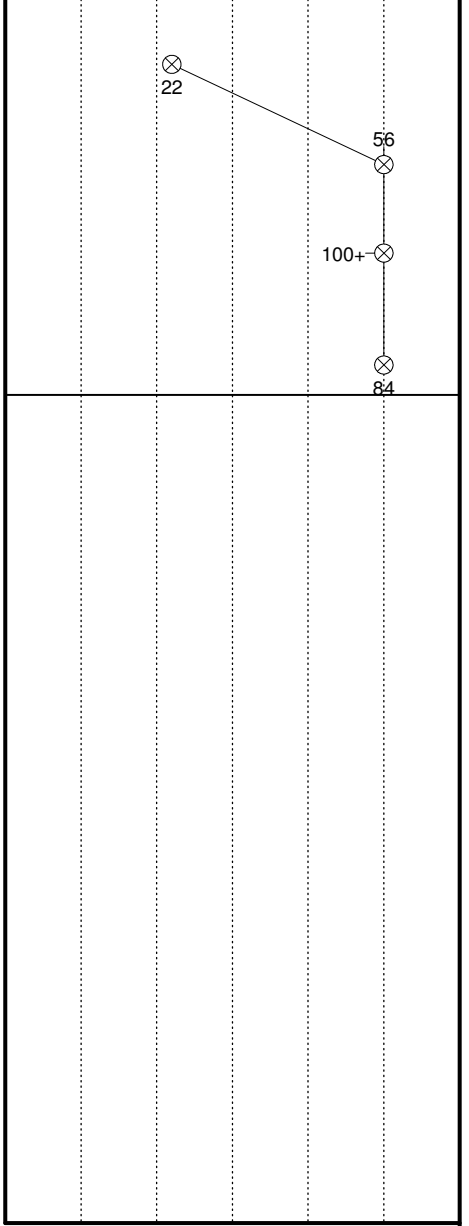
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness [3.00"] (CL RESIDUAL) SANDY CLAY, grayish brown, moist, very stiff			
5	S-1	SS	18	18	(ML) SANDY SILT, grayish brown, moist, very hard			
10	S-2	SS	18	18	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown			
15	S-3	SS	11	10	(SM) SILTY FINE TO MEDIUM SAND, contains rock fragments, grayish brown, moist, very dense			
20	S-4	SS	18	16	END OF BORING @ 10.0'			



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

WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/22/19	CAVE IN DEPTH 6.1
WL(SHW)	WL(ACR)		BORING COMPLETED	08/22/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-22	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

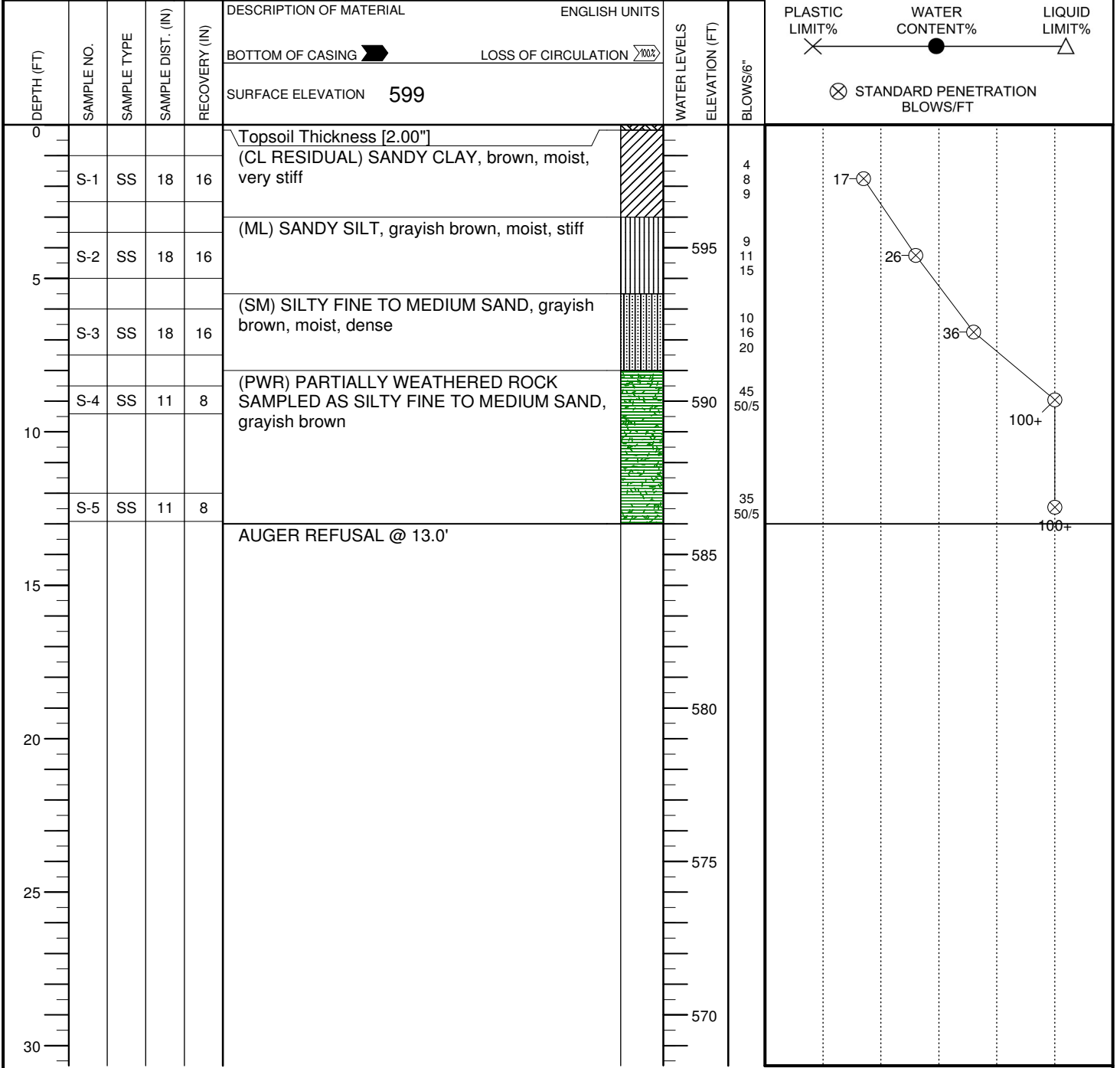
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885642.90	EASTING 518395.53	STATION

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



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

WL GNE WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/20/19	CAVE IN DEPTH 10.9
WL(SHW) WL(ACR) GNE	BORING COMPLETED 08/20/19	HAMMER TYPE Manual
WL	RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-23	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885558.36	EASTING 518181.11	STATION
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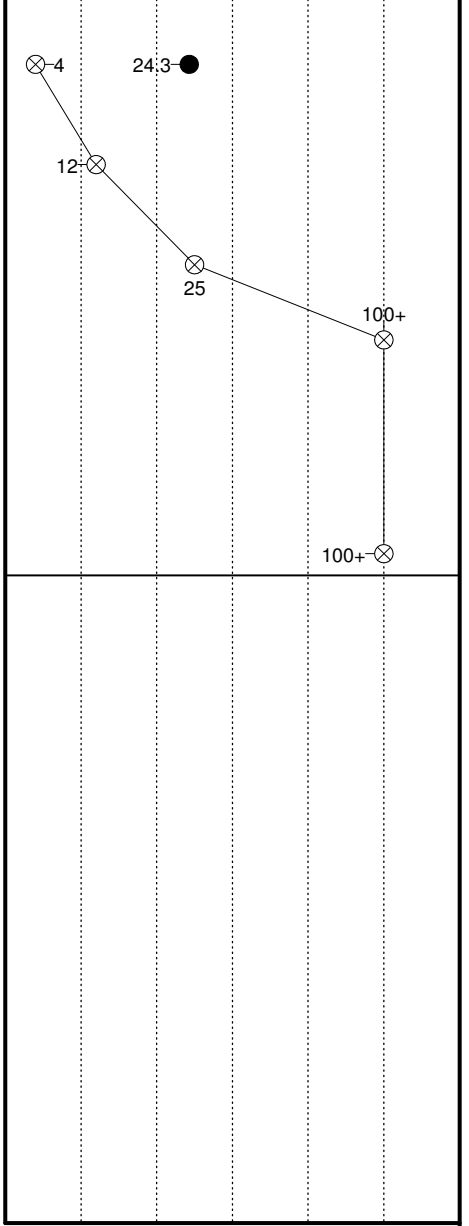
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING	LOSS OF CIRCULATION			
					SURFACE ELEVATION	593			
0					Topsoil Thickness [3.00"] (CL RESIDUAL) SANDY CLAY, contains slight roots and mica, grayish brown, moist, soft			590	
5	S-1	SS	18	18	(CH) PLASTIC CLAY, contains rock fragments, grayish brown, moist, stiff to very stiff			585	
	S-2	SS	18	18				580	
	S-3	SS	18	18				575	
10	S-4	SS	3	3	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown			570	
15	S-5	SS	11	9				565	
					END OF BORING @ 14.5'				



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

WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/23/19	CAVE IN DEPTH	11.1
WL(SHW)	WL(ACR) GNE		BORING COMPLETED	08/23/19	HAMMER TYPE	Manual
WL			RIG	ATV	FOREMAN	Cody Presley
					DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-24	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC



NORTHING 3885571.95	EASTING 518242.08	STATION
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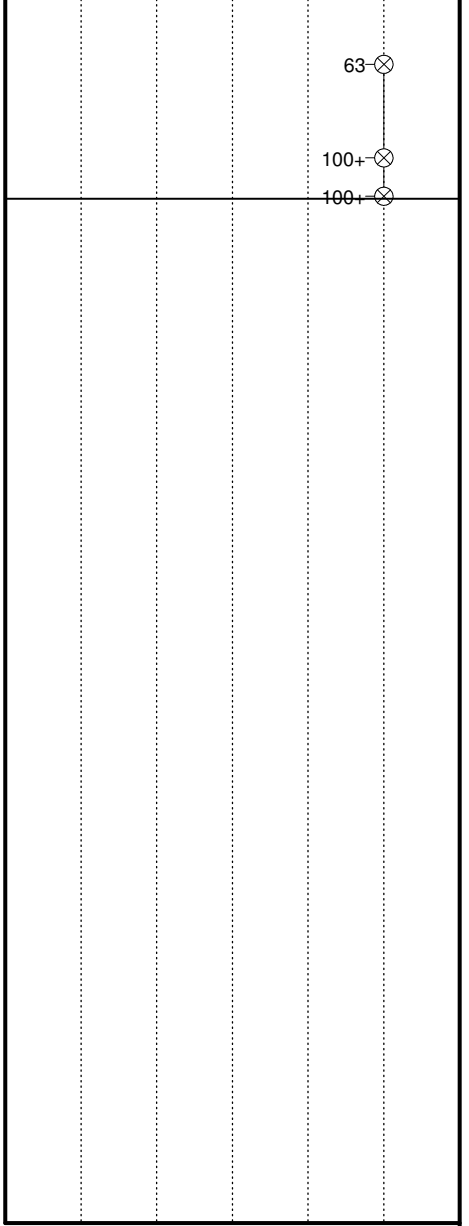
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					BOTTOM OF CASING  LOSS OF CIRCULATION 			
					SURFACE ELEVATION 606			
0					Topsoil Thickness [3.00"]			
0-3	S-1	SS	18	16	(SM RESIDUAL) SILTY FINE TO MEDIUM SAND, contains slight mica, grayish brown, moist, very dense		605	13 25 38
3-5	S-2	SS	14	14	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, contains slight mica, grayish brown		600	12 12 50/2 50/1
5	S-3	SS	1	1	AUGER REFUSAL @ 5.1'			
10							595	
15							590	
20							585	
25							580	
30								

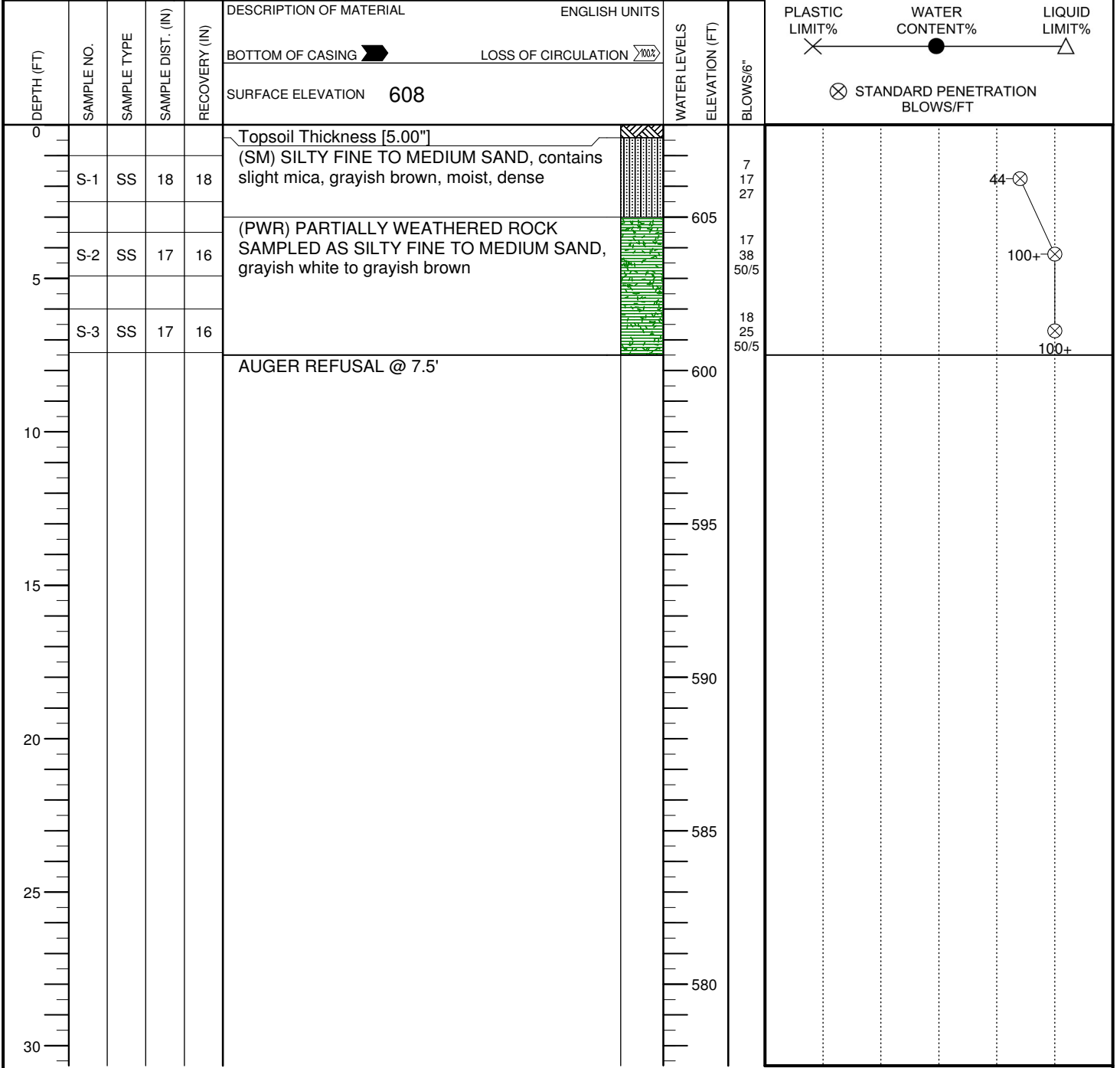


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL GNE WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 3.0
WL(SHW) WL(ACR) GNE	BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL	RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-25	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% ✕ ● ▲ ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885592.45	EASTING 518305.26	STATION	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/22/19	CAVE IN DEPTH 5.2
WL(SHW)	WL(ACR)	GNE	BORING COMPLETED	08/22/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-26	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885605.06	EASTING 518349.26	STATION
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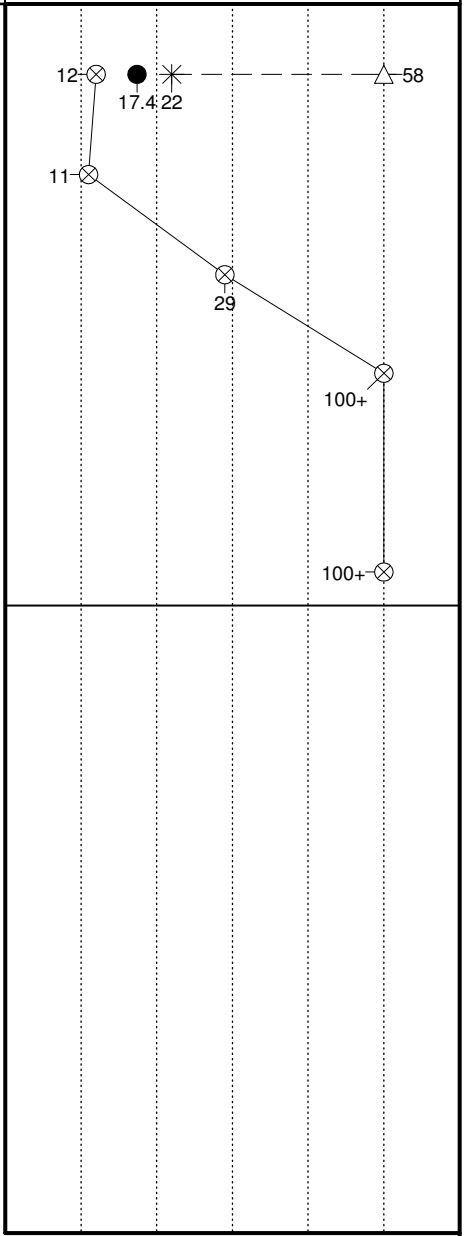
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness [2.00"] (CH FILL) PLASTIC CLAY, grayish brown, moist, stiff			
5	S-1	SS	18	18	(CH RESIDUAL) PLASTIC CLAY, grayish brown, moist, stiff			
10	S-2	SS	18	18	(SC) CLAYEY SAND, contains slight mica, grayish brown, moist, medium dense			
15	S-3	SS	18	18	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, gray			
20	S-4	SS	17	15				
25	S-5	SS	16	16				
30					END OF BORING @ 15.0'			



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/22/19	CAVE IN DEPTH	11.3
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/22/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-27	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885617.78	EASTING 518401.72	STATION
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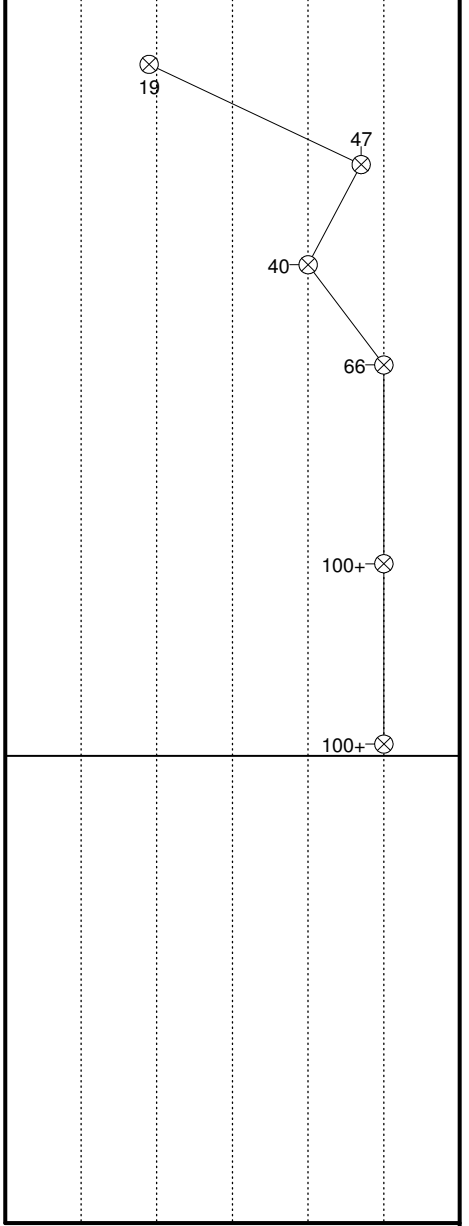
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.00"] (CL RESIDUAL) SANDY CLAY, grayish brown, moist, very stiff			600	
5	S-1	SS	18	18	(SM) SILTY FINE TO MEDIUM SAND, gray, moist, dense to very dense			595	
	S-2	SS	18	14				590	
	S-3	SS	18	14	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, contains slight mica, gray			585	
	S-4	SS	18	16				580	
	S-5	SS	17	16				575	
15	S-6	SS	5	5					
20	END OF BORING @ 19.0'								



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

WL 16.5	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED 08/20/19	CAVE IN DEPTH 18.0
WL(SHW)	WL(ACR) 16.9		BORING COMPLETED 08/20/19	HAMMER TYPE Manual
WL			RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-28	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885530.89	EASTING 518186.93	STATION
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○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness [3.00"] (CL RESIDUAL) SANDY CLAY, grayish brown, moist, stiff to firm		595	4
1	S-1	SS	18	16				6
2	S-2	SS	18	16	(CL) SANDY CLAY, grayish brown, moist, soft		590	3
3	S-3	SS	18	14				3
4	S-4	SS	18	18	(SC) CLAYEY SAND, gray, wet, very loose		585	2
5					(CH) PLASTIC CLAY, grayish brown, moist, very stiff		580	1
6	S-5	SS	18	16				4
7					(SM) SILTY FINE TO MEDIUM SAND, contains slight mica, gray, moist, medium dense		575	9
8	S-6	SS	18	14				8
9					(SM) SILTY FINE TO MEDIUM SAND, contains slight mica, gray, moist, very dense		570	10
10	S-7	SS	18	14				5
11								8
12	S-8	SS	18	16				7
13								6
14								7
15								13
16								23
17								42
18								65
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30					END OF BORING @ 30.0'			

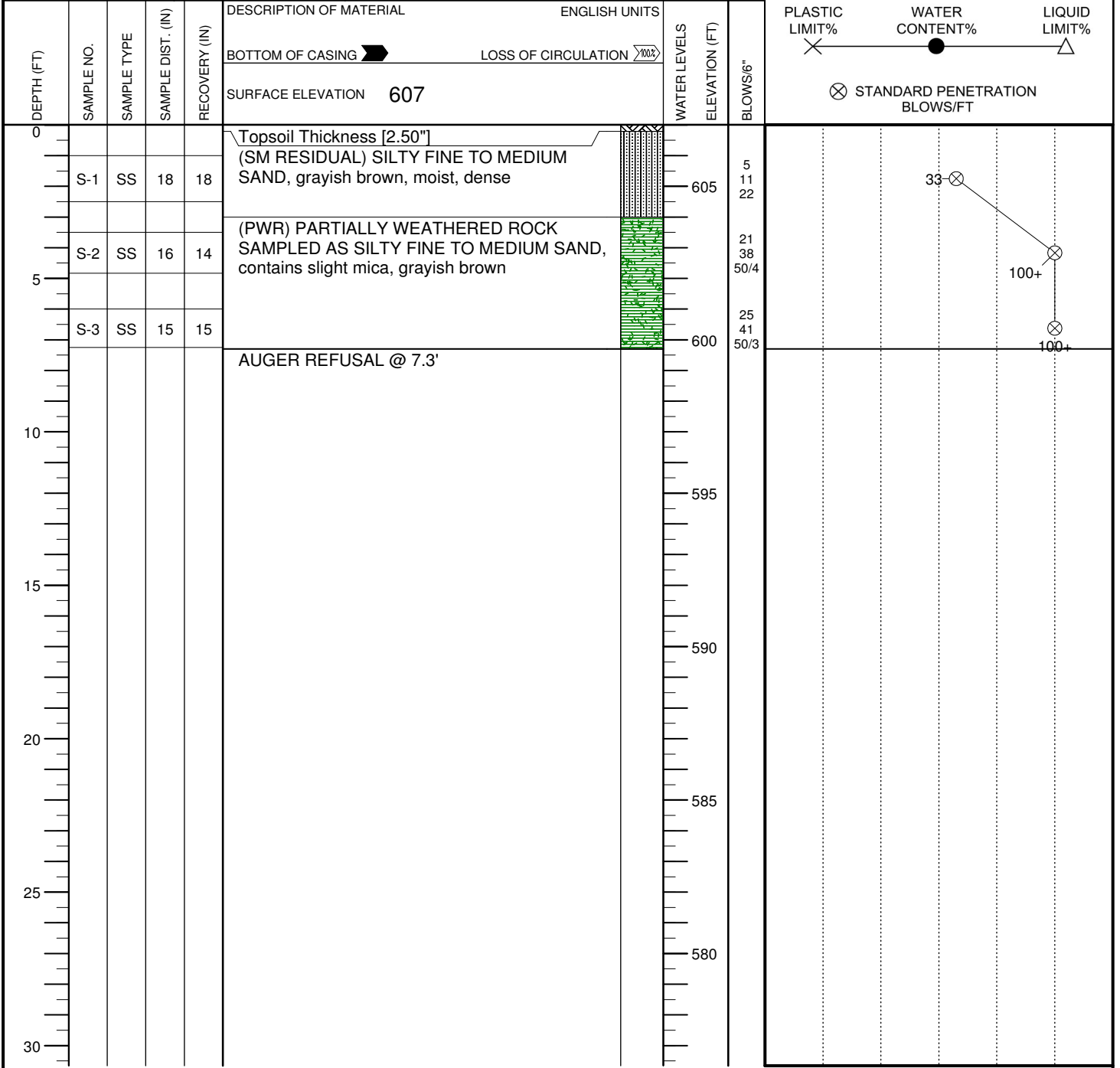


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL 8.0	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/23/19	CAVE IN DEPTH 22.2
WL(SHW)	WL(ACR) 15.8	BORING COMPLETED 08/23/19	HAMMER TYPE Manual
WL		RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA


CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-29	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School	ARCHITECT-ENGINEER			

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC			○ CALIBRATED PENETROMETER TONS/FT ² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% _____ PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% X ● ▲ ⊗ STANDARD PENETRATION BLOWS/FT
NORTHING 3885542.23	EASTING 518251.82	STATION	



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

<input checked="" type="checkbox"/> WL GNE WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/23/19	CAVE IN DEPTH 5.3
<input checked="" type="checkbox"/> WL(SHW) <input checked="" type="checkbox"/> WL(ACR) GNE	BORING COMPLETED 08/23/19	HAMMER TYPE Manual
<input checked="" type="checkbox"/> WL	RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-30	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

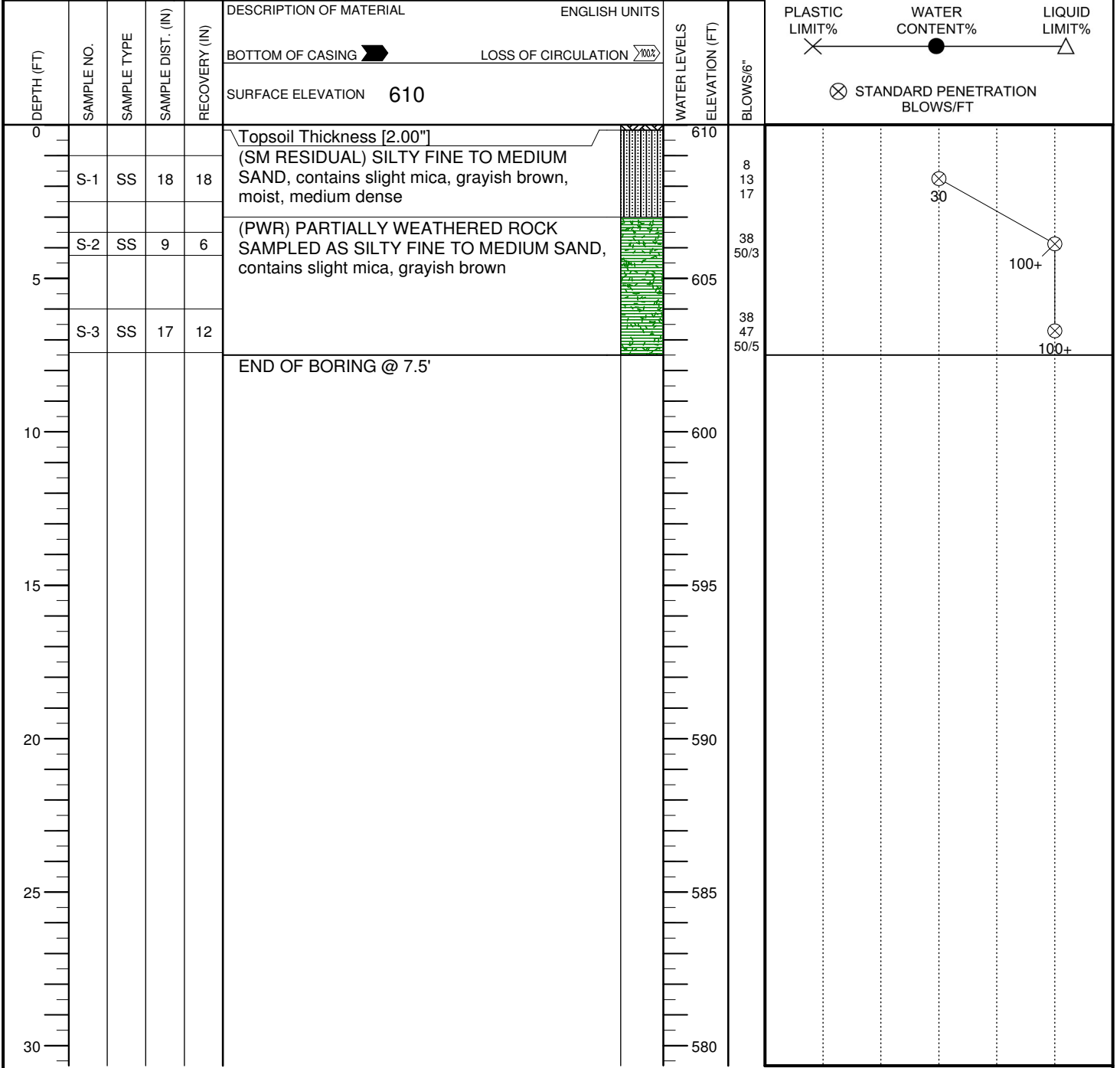
NORTHING 3885554.15	EASTING 518316.49	STATION
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○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/23/19	CAVE IN DEPTH 5.6
WL(SHW)	WL(ACR) <input type="checkbox"/>	GNE	BORING COMPLETED	08/23/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-31	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885573.78	EASTING 518358.84	STATION
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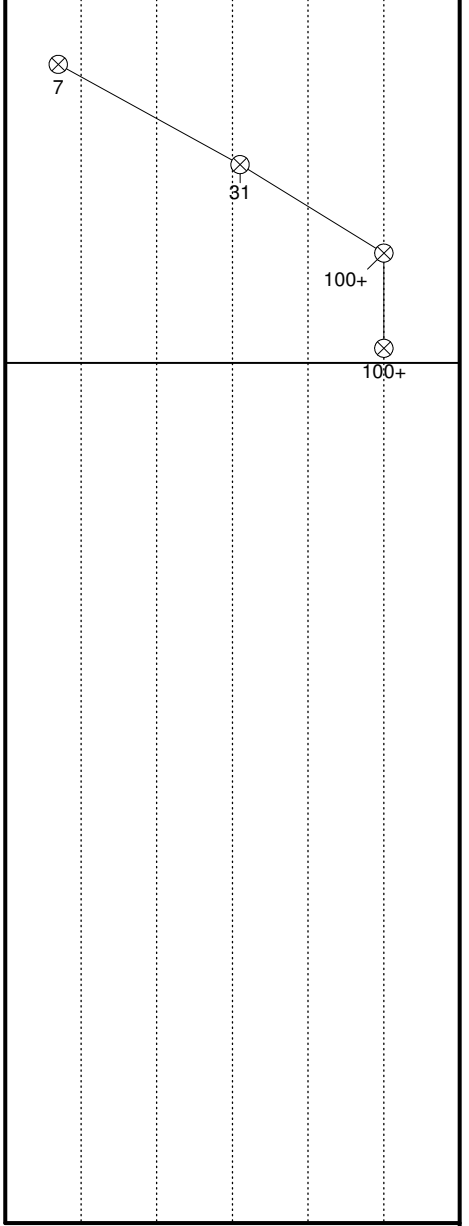
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.00"] (CL RESIDUAL) SANDY CLAY, brown, moist, firm		610	
2	S-1	SS	18	18	(CH) PLASTIC CLAY, trace sand, grayish brown, moist, hard		605	
5	S-2	SS	18	18	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown		50/5	
8	S-3	SS	11	8				
9.2	S-4	SS	8	6	AUGER REFUSAL @ 9.2'		50/2	



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 6.9
WL(SHW)	WL(ACR) GNE	BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL		RIG ATV FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-32	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School	ARCHITECT-ENGINEER			

SITE LOCATION
Charlotte, Charlotte, Mecklenburg County, NC

NORTHING 3885587.97	EASTING 518411.33	STATION
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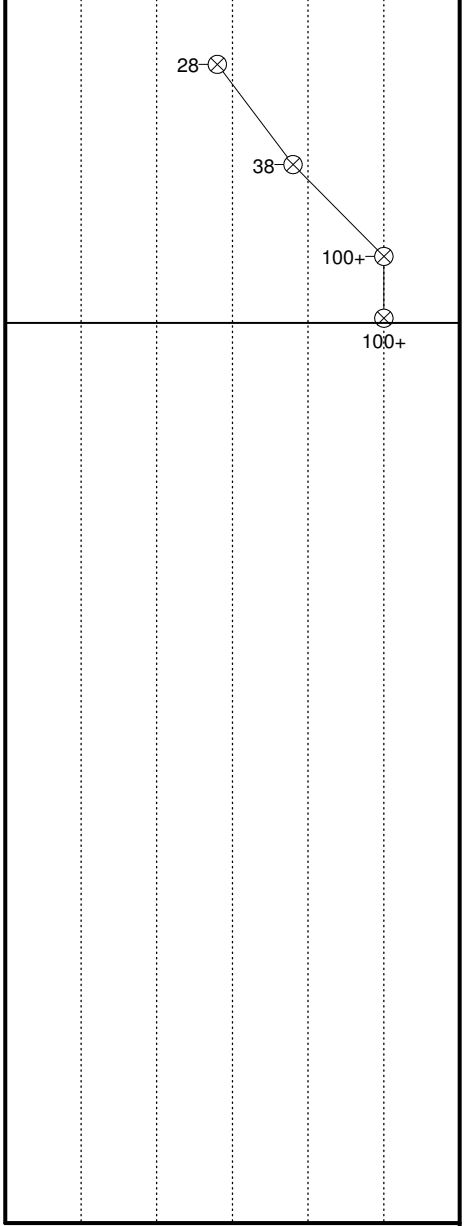
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% - - -

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.00"]		605	
11	S-1	SS	18	8	(ML RESIDUAL) SANDY SILT, trace organics, brown, moist, very stiff			11
12								12
16								16
13	S-2	SS	18	7	(SM) SILTY FINE TO MEDIUM SAND, trace organics, brown, moist, dense			13
21								21
17								17
23	S-3	SS	13	4	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, brown			23
43								43
50/1								50/1
50/2	S-4	SS	2	2	AUGER REFUSAL @ 8.2'			50/2
595								
590								
585								
580								
575								

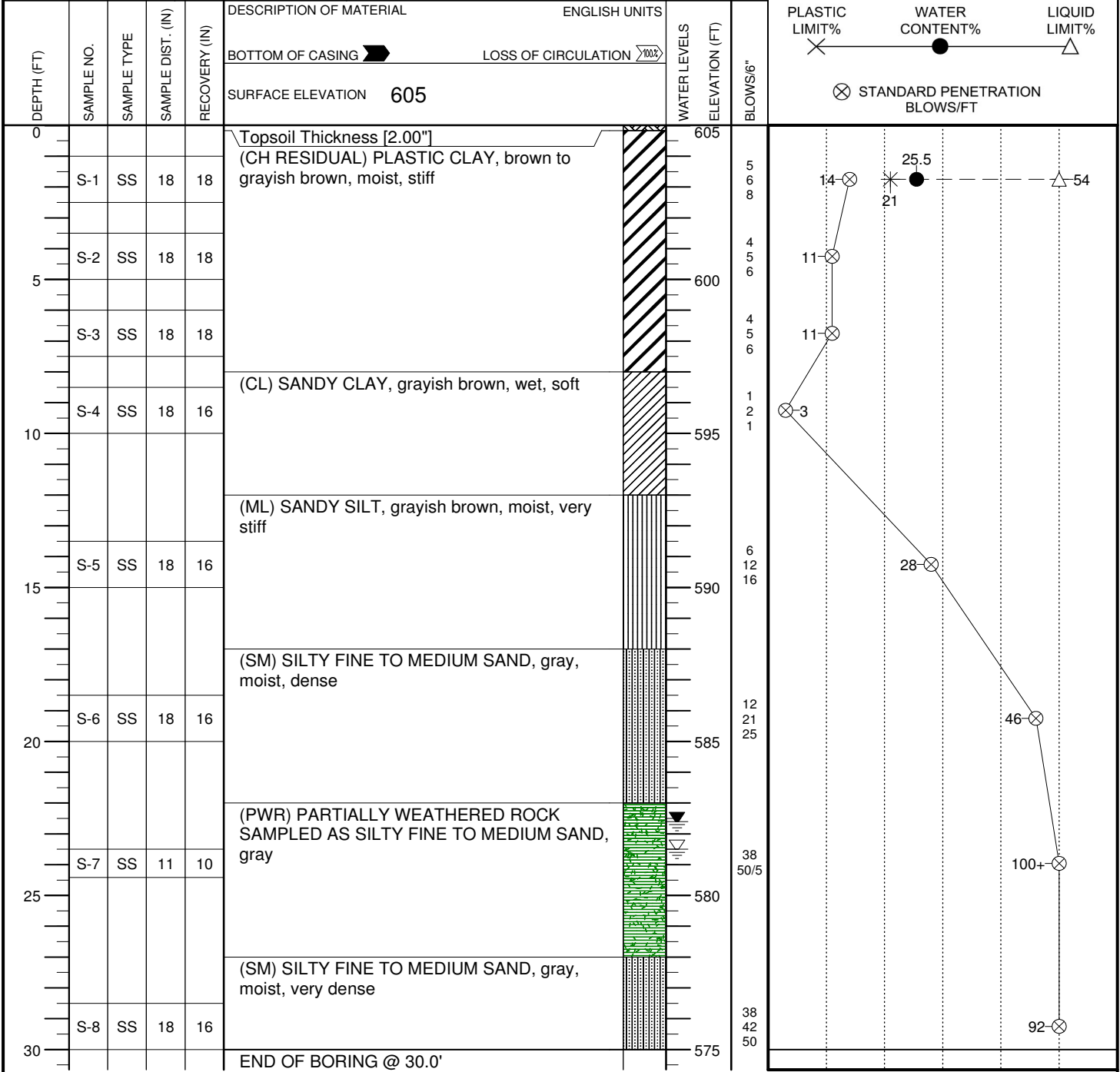
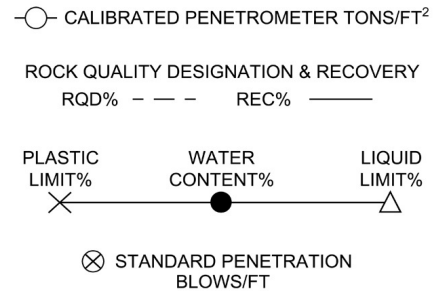


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.


WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED	08/20/19	CAVE IN DEPTH	6.2
WL(SHW)	WL(ACR) GNE	BORING COMPLETED	08/20/19	HAMMER TYPE	Manual
WL		RIG	ATV	FOREMAN	Cody Presley
				DRILLING METHOD	2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-33	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885497.48	EASTING 518202.74	STATION



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.					
WL 23.5	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED	08/23/19	CAVE IN DEPTH 26.2
WL(SHW)	WL(ACR) 22.6		BORING COMPLETED	08/23/19	HAMMER TYPE Manual
WL			RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-34	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885512.63	EASTING 518269.19	STATION

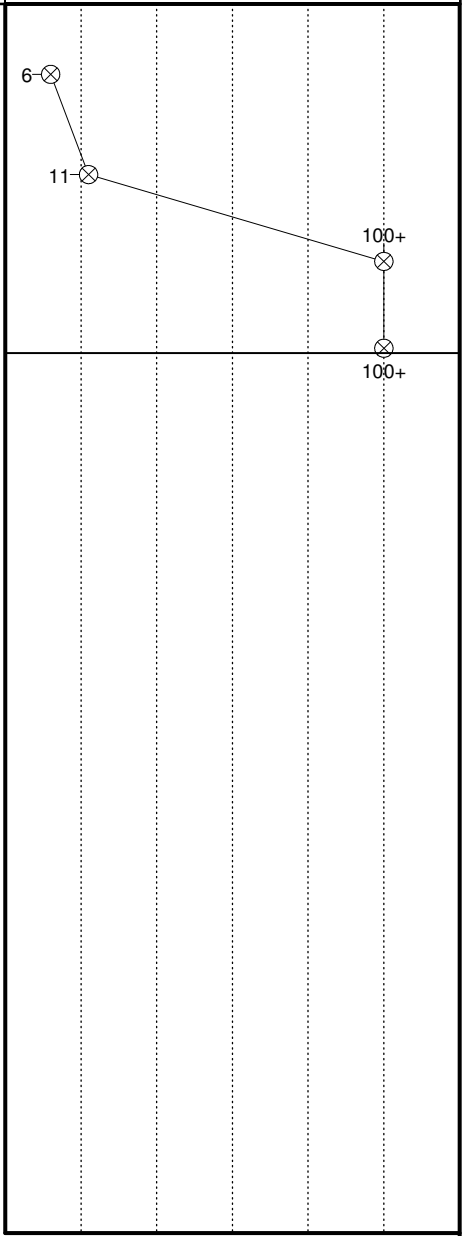
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%


⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [2.00"]			
	S-1	SS	18	18	(ML RESIDUAL) SANDY SILT, contains slight mica, brown, moist, firm		609	6
	S-2	SS	18	18	(SM) SILTY FINE TO MEDIUM SAND, contains slight mica, brown, moist, medium dense			11
	S-3	SS	10	7	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown			100+
	S-4	SS	2	0	AUGER REFUSAL @ 8.7'			100+



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 6.3
WL(SHW)	WL(ACR) GNE	BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL	RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-35	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

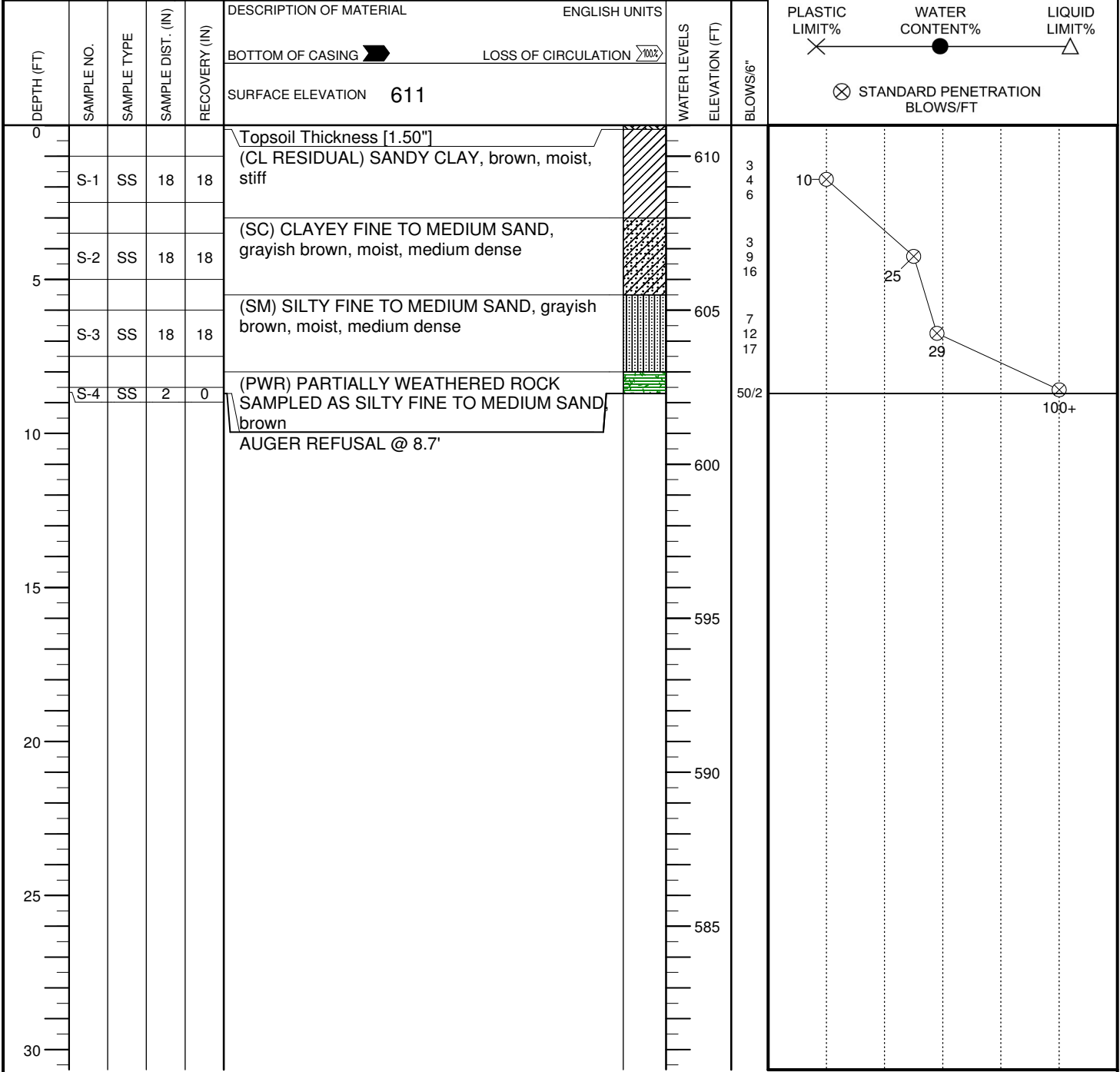
SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885539.10	EASTING 518370.49	STATION

○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____


PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT



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

WL GNE	WS <input type="checkbox"/>	WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 6.3
WL(SHW)	WL(ACR)	GNE	BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL	RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA	

CLIENT Charlotte-Mecklenburg Schools (CMS)	Job #: 08:13768	BORING # B-36	SHEET 1 OF 1	
PROJECT NAME CMS Rea Road High School		ARCHITECT-ENGINEER		

SITE LOCATION Charlotte, Charlotte, Mecklenburg County, NC		
NORTHING 3885546.56	EASTING 518405.30	STATION

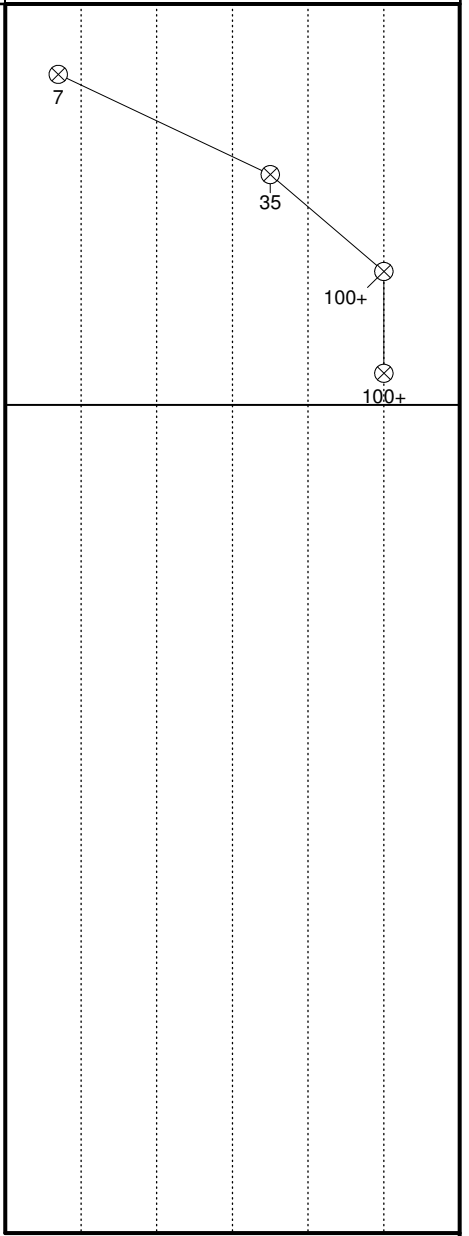
○ CALIBRATED PENETROMETER TONS/FT²

ROCK QUALITY DESIGNATION & RECOVERY
RQD% - - - REC% _____

PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%

⊗ STANDARD PENETRATION BLOWS/FT

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"
0					TOPSOIL THICKNESS [4.00"] (CH RESIDUAL) PLASTIC CLAY, brown, moist, firm			
1-5	S-1	SS	18	18	(ML) SANDY SILT, brown, moist, hard		605	7
5-10	S-2	SS	18	12	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY FINE TO MEDIUM SAND, grayish brown		600	35
10-11	S-3	SS	16	14				100+
11-15	S-4	SS	17	16				100+
15-30					END OF BORING @ 10.0'			



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

WL GNE	WS <input type="checkbox"/> WD <input checked="" type="checkbox"/>	BORING STARTED 08/22/19	CAVE IN DEPTH 6.9
WL(SHW)	WL(ACR) GNE	BORING COMPLETED 08/22/19	HAMMER TYPE Manual
WL	RIG ATV	FOREMAN Cody Presley	DRILLING METHOD 2.25 HSA

Laboratory Testing Summary

Sample Source	Sample Number	Start Depth (feet)	End Depth (feet)	Sample Distance (feet)	MC1 (%)	Soil Type ²	Atterberg Limits ³			Percent Passing No. 200 Sieve ⁴	Moisture - Density (Corr.) ⁵		CBR Value ⁶	Other
							LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
B-8	S-1	1.0	2.5	1.5	17.3									
B-11	S-2	3.5	5.0	1.5	29.4	CH	70	30	40					
B-23	S-1	1.0	2.5	1.5	24.3									
B-26	S-1	1.0	2.5	1.5	17.4	CH	58	22	36					
B-28	S-1	1.0	2.5	1.5	16.1									
B-33	S-1	1.0	2.5	1.5	25.5	CH	54	21	33					

Notes: 1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method
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 (ASTM D 2974)

Project No.: 08:13768
Project Name: CMS Rea Road High School
PM: Laura E. Hill
PE: Stephen J. Geiger
Printed On: September 12, 2019

