ECS Southeast, LLP

Report of Subsurface Exploration

Pharr Mill Road Industrial

Harrisburg, Cabarrus County, North Carolina

ECS Project No. 08:15166

August 3, 2022

ECS SOUTHEAST, LLP
"Setting the Standard for Service"
Geotechnical • Construction Materials • Environmental • Facilities

August 3, 2022

Ms. Brooke Bures
Trammell Crow Company
888 16th Street, NW, Suite 555
Washington, DC 20006

ECS Project No. 08:15166

Reference: Report of Subsurface Exploration
Pharr Mill Road Industrial
Harrisburg, Cabarrus County, North Carolina

Dear Ms. Bures:

ECS Southeast, LLP (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 Trammell Crow Company 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.

Respectfully submitted,

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EXECUTIVE SUMMARY

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

- Moisture sensitive, potentially expansive Fat CLAY (CH) and/or Elastic SILT (MH) were encountered at approximately half of the boring locations and extended to depths ranging from approximately 3 to 12 feet below existing ground surface. Moisture sensitive soils will degrade quickly when disturbed and/or with elevated moisture. Expansive soils (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. For preliminary planning purposes, a minimum separation of 2 feet should be provided between MH soils (PI>30) and CH soils and the bottom of foundations, slab, and pavement subgrade elevations.

- Partially Weathered Rock (PWR) was encountered at approximately two-thirds of the boring locations beginning at depths ranging from approximately 8.5 to 42 feet below existing grades. Auger Refusal (i.e., possible rock) was encountered at approximately half of the boring locations at depths ranging from approximately 8.5 to 38.5 feet below existing grades. Depending on final site grades, difficult excavation may be encountered during mass grading, utility installation, and/or foundation excavation. The site civil designer should take the PWR and auger refusal material depths into consideration when determining site, pavement, and utility elevations.

- Based on the results of the subsurface exploration, the proposed structures can be supported on conventional shallow foundations bearing on low plasticity residual soils, PWR, or newly-placed Structural Fill using an allowable bearing pressure of 2,500 psf.

- Based upon our evaluation, a Seismic Site Class "**C**" may be used for the site based on the average N-value method.

The above 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.

1.0 INTRODUCTION

The purpose of this study was to provide subsurface exploration and geotechnical information for the design of the proposed industrial development located southeast of the intersection of Pharr Mill Road and Mulberry Road in Harrisburg, Cabarrus County, North Carolina. The recommendations developed for this report are based on the project information supplied by Trammell Crow Company.

Our services were provided in accordance with our Proposal No. 27666P, dated April 14, 2022, as authorized by Ms. Brooke Bures, and includes the Terms and Conditions of Service outlined within the agreement.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the geotechnical aspects of the project. The report includes the following items:

- Information on current site conditions, surface drainage features, and surface topographic conditions.
- Description of the field exploration and laboratory tests performed.
- Final logs of the soil borings and records of the field exploration and laboratory tests performed.
- 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 section recommendations.
- Lateral earth pressure coefficients for below grade walls and recommendations regarding estimated soil parameters to be used for site retaining wall design.
- Evaluation of the on-site soil characteristics encountered in the soil borings with respect to the suitability of the on-site materials for reuse as Structural 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.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION/CURRENT SITE USE/PAST SITE USE

The project site is located southeast of the intersection of Pharr Mill Road and Mulberry Road in Harrisburg, Cabarrus County, North Carolina as shown below and on the Site Location Diagram in Appendix A. According to the Cabarrus County Online Geographic Information Systems (GIS) website, the approximate 161.9-acre site is identified as Parcel Identification Numbers (PINs) 55177993000000, 55179854430000, and 55270917400000.

The site currently consists of agricultural/grassland and densely wooded areas with two single family residences and approximately four barn/shed structures. A power line easement crosses the northern portion of the site in a generally west to east direction. An existing pond and associated earth dam is located within the central portion of the site. Based on Client provided topographic information, various knolls, ridges, ravines, and drainage features are present across the site with existing ground surface elevations ranging from approximately 532 feet to 689 feet.

Based on our review of historical aerial imagery, the site existed primarily as woodland with grassland areas to the northwest and south of the site as early as 1956 and four structures appeared to be present on the site. Between 1965 and 1983, a structure on the east side of the dirt road running through the center of the site was razed and a structure was constructed on the west side of the road. By 2001, a single-family residence was constructed in the western portion of the site. The powerline easement appeared to be constructed in the northern portion of the site between 2001 and 2006. Between 2008 and 2009, it appears that some clearing occurred in the central and eastern portions of the site. The site has generally remained in its current condition since at least 2008, with vegetation maturing. 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

We understand that the site will be developed with three (3) industrial warehouse structures, truck courts, associated paved parking and drive areas, and three (3) stormwater management ponds. A grading plan was not provided to us at the time of this report. However, based on provided preliminary topographic information and preliminary proposed finished floor elevations (FFEs), maximum cut and fill depths of approximately 31 and 45 feet, respectively, are anticipated.

2.2.1 Structural Information/Loads

The following information explains our understanding of the structures and their loads:

DESIGN ASSUMPTIONS	
SUBJECT	**DESIGN INFORMATION / ASSUMPTIONS**
Usage	Industrial/Warehouse
Framing	Concrete tilt-panel and steel
Column Loads	175 kips (maximum)
Wall Loads	7 kips per linear foot (klf) (maximum)

2.2.2 Structure Finished Floor Elevations

The following information explains our understanding of the preliminary finished floor elevations.

PRELIMINARY FINISHED FLOOR ELEVATIONS				
STRUCTURE DESCRIPTION	**PROPOSED FOOTPRINT (SQUARE FEET)**	**PROPOSED FINISHED FLOOR ELEVATION (FEET)**	**APPROXIMATE MAXIMUM CUT DEPTH (FEET)**	**APPROXIMATE MAXIMUM FILL DEPTH (FEET)**
Building 1	855,000	615	19	45
Building 2	260,000	596	20	32
Building 3	404,200	592	31	42

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 fifty-five (55) soil borings. The borings were located using GPS technology. 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 the Client provided preliminary topographic information 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 following sections provide generalized characterizations of the subsurface conditions. 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	Surficial organic laden materials consisting of organic laden soils. (2)	N/A
0 to 42	I	RESIDUAL – Sandy SILT (ML), Elastic SILT (MH), Silty SAND (SM), Clayey SAND (SC), Lean CLAY (CL), and Fat CLAY (CH).	7 to 66
0 to 49.8	II	PATIALLY WEATHERED ROCK (PWR) sampled as Sandy SILT (ML) and Silty SAND (SM). (3)	100+ (50/5" to 50/0")

Notes:
(1) Standard Penetration Testing in blows per foot (bpf).
(2) Surficial materials are driller reported. Since mechanical clearing was used to gain access to 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 generally range from 6 to 12 inches or greater, depending on the amount of vegetation.
(3) PWR is defined as residual material exhibiting SPT N-value greater than 100 bpf.

3.2 GROUNDWATER OBSERVATIONS

Groundwater measurements were attempted at the termination of drilling and prior to demobilization from the site. Groundwater was encountered at Boring B-25 at a depth of approximately 23.5 feet below existing ground surface at the time of drilling. Groundwater was not apparent in the remaining borings at the time of drilling. Cave-in depths were measured at each of the boring locations with cave-in depths ranging from approximately 3 to 38.5 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. Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, restricting soil and rock strata, construction activities, and other factors.

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. Additionally, Standard Proctor (laboratory compaction characteristics) tests, expansion index tests, and California Bearing Ratio (CBR) 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

Provided subgrades and structural fills are prepared as recommended in this report, the proposed structures can be supported by conventional shallow foundation systems bearing on low plasticity residual soils or newly placed Structural Fill. The foundation design may consider the following parameters:

FOUNDATION RECOMMENDATIONS [5]		
Design Parameter	**Column Footing**	**Wall Footing**
Net Allowable Bearing Pressure [1]	2,500 psf	
Acceptable Bearing Soil Material	Low Plasticity Residual Soils, PWR, or Newly-Placed Structural 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 between columns	½ inch or less

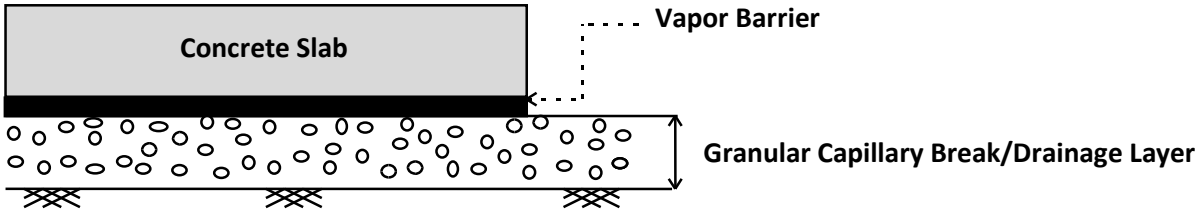
Notes:
(1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
(2) For bearing considerations.
(3) Based on assumed structural loads. When structural loading determined, ECS must be contacted to update foundation recommendations and settlement calculations.
(4) Based on maximum column/wall loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.
(5) A grading plan and structural loading were not provided at the time of this report; therefore, our foundation recommendations should be considered preliminary.

Potential Undercuts: The majority of the soils at the foundation bearing elevation are anticipated to be acceptable for support of the proposed structures after the remediation of potential moisture sensitive soils. If soft or unsuitable soils are observed at the footing bearing elevations at the time of footing construction, the unsuitable soils should be undercut 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 grading and structure foundation elevations, 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, undercut or difficult excavation may be needed to create a minimum cushion of 1 foot between the footing bottoms and underlying PWR/rock materials. Additionally, we recommend a minimum 1-foot separation between bottom of slab/pavement base course and underlying PWR/rock materials.

4.2 SLABS ON GRADE

Provided subgrades and Structural Fill are prepared as discussed herein, the proposed floor slabs can be constructed as Ground Supported Slabs (or Slab-On-Grade). The following graphic depicts our soil-supported slab recommendations:



1. Drainage Layer Thickness: 4 inches
2. Drainage Layer Material: GRAVEL (GP, GW), SAND (SP, SW)
3. Subgrade compacted to 100% maximum dry density per ASTM D698

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

Subgrade Modulus: Provided the Structural 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 100 pci (lbs per cubic inch). The modulus of subgrade reaction value is based on a 1 foot by 1 foot plate load test basis.

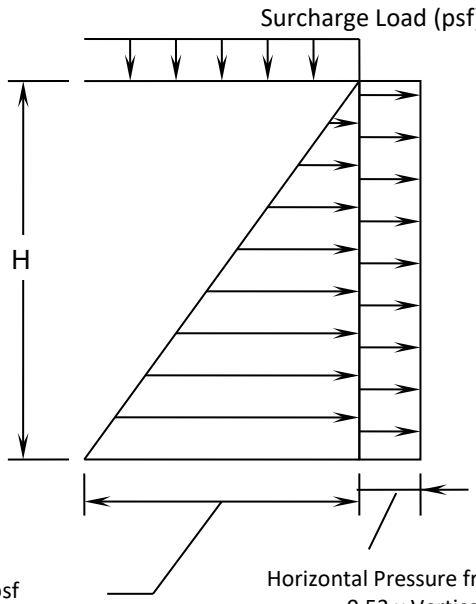
Vapor Barrier: Before the placement of concrete, a vapor barrier may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor barrier is used, special attention should be given to surface curing of the slab to reduce 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 suitable reinforcement and load transfer devices to preclude overstressing of the slab.

4.3 BELOW GRADE RETAINING WALLS

Permanent below grade walls (i.e. loading deck and stemwall foundation walls) should be designed to withstand lateral earth pressures and surcharge loads from soil, adjacent building foundations, or pavement areas. These recommendations apply to a “drained” condition which is where there is drainage material behind below grade walls that prevents hydrostatic water pressures on the back of the below grade wall. To accomplish a drained condition, drainage materials such as free draining gravel, geocomposite drainage panels, weep holes and an underslab drainage system should be used. We recommend that walls that are restrained from movement at the top be designed for a linearly increasing lateral earth pressure. The following Figure depicts the suggested lateral earth pressure condition for a “drained below-grade wall” with restrained wall tops:

This diagram is not suitable for the design of Support of Excavation or temporary shoring systems.



Surcharge loads imposed within a 45-degree slope of the base of the wall should be considered in the below grade wall design. The influence of these surcharge loads on the below grade walls should be based on an at-rest pressure coefficient, k_0, of 0.53 in the case of restrained walls.

4.4 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 SPT 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 following table:

SEISMIC SITE CLASSIFICATION		
Site Class	**Soil Profile Name**	**$\overline{N}$ 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 interpretation of the subsurface conditions, a Seismic Site Class of "**C**" as shown in the preceding table may be utilized for each building.

4.5 PAVEMENT CONSIDERATIONS

Based on our past experience with similar developments and subsurface conditions, we present the following pavement sections, provided the recommendations contained in this report are implemented and pavements are supported on low plasticity residual soils or newly placed Structural Fill. Based on limited laboratory testing, we have developed the preliminary pavement sections recommended below using AASHTO guidelines using an estimated average CBR value of 4.

Traffic loading was not provided; therefore, preliminary traffic loading information for an average range of tractor-trailer trucks per day was evaluated. Based on assumed average daily traffic of 75, 150, and 300 semi-trucks per day for 5 days per week, the provided preliminary pavement recommendations are based upon a 10-year life, 15-year life, and a 20-year life. Estimated equivalent single-axle load (ESAL) values for the noted design periods are presented in the table below. The importance of understanding the actual traffic conditions cannot be over-stated. It has been our experience that warehouse/distribution operations are variable from user to user and the assumptions considered for the preliminary sections provided herein may be inaccurate. Consequently, ECS should be provided with specific traffic conditions and preliminary sections be re-evaluated prior to establishing the design pavement sections.

ECS should be allowed to review the preliminary recommendations and make revisions based upon the actual traffic design criteria for the project. It is important to note that the design sections do not account for construction traffic.

Estimated ESAL Values			
	75 Tractor Trailer Trucks/Day	**150 Tractor Trailer Trucks/Day**	**300 Tractor Trailer Trucks/Day**
10 yr Design Life	450,000	900,000	1,800,000
15 yr Design Life	675,000	1,350,000	2,700,000
20 yr Design Life	900,000	1,800,000	3,600,000

Heavy-Duty Asphalt Pavement Sections:

75 Tractor Trailer Trucks/ Day			
Pavement Material	**10 yr Design Life (450,000 ESALS)**	**15 yr Design Life (675,000 ESALS)**	**20 yr Design Life (900,000 ESALS)**
	Thickness (inches)	**Thickness (inches)**	**Thickness (inches)**
Asphalt Surface Course (S9.5C)	2	2	2
Asphalt Intermediate Course (I19.0C)	3	3	3
Aggregate Base Course (ABC)	8	9	10
Total Thickness	13	14	15

150 Tractor Trailer Trucks/ Day			
Pavement Material	**10 yr Design Life (900,000 ESALS)**	**15 yr Design Life (1,350,000 ESALS)**	**20 yr Design Life (1,800,000 ESALS)**
	Thickness (inches)	**Thickness (inches)**	**Thickness (inches)**
Asphalt Surface Course (S9.5C)	2	2	2
Intermediate Asphalt Course (I19.0C)	3	3	4
Aggregate Base Course (ABC)	10	11	10
Total Thickness	15	16	16

300 Tractor Trailer Trucks/ Day			
Pavement Material	**10 yr Design Life (1,800,000 ESALS)**	**15 yr Design Life (2,700,000 ESALS)**	**20 yr Design Life (3,600,000 ESALS)**
	Thickness (inches)	**Thickness (inches)**	**Thickness (inches)**
Asphalt Surface Course (S9.5C)	2	2	3*
Intermediate Asphalt Course (I19.0C)	4	4	4
Aggregate Base Course (ABC)	10	12	10
Total Thickness	16	18	17

*Note: Multiple asphaltic concrete lifts required to achieve recommended thickness.

Light-Duty Asphalt Pavement Section:

Employee Parking Areas (Passenger Vehicle Only)	
Pavement Material	**Light-Duty (10,000 ESALS)**
	Thickness (inches)
Surface Asphalt Course (S9.5B or S9.5C)	2
Aggregate Base Course (ABC)	6
Total Thickness	8

Heavy-Duty Portland Cement Concrete (PCC) Pavements:

Concrete Pavements Section Recommendations			
Design Life	**75 Tractor Trailer Trucks/Day**	**150 Tractor Trailer Trucks/Day**	**300 Tractor Trailer Trucks/Day**
	Portland Cement Concrete Thickness (inches) *		
10 years	7	8	9
15 years	7 ½	8 ½	9 ½
20 years	8	9	10

*Note: Assumes minimum of 6 inches ABC layer below Portland Cement Concrete (PCC).

In general, heavy-duty sections are areas that will be subjected to tractor trailer trucks, or other similar vehicles including main drive lanes of the development. Light duty sections are appropriate for passenger vehicular traffic and automobile parking areas. Additionally, the above noted light and heavy duty pavement sections are capable of supporting an 80,000 pound emergency vehicle (e.g. fire truck) 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 ultimately pavement failures and costly repairs. Therefore, we suggest that the pavements in trash pickup areas Portland Cement Concrete (PCC) pavement section. Such a PCC section would typically consist of 6 inches of 4,000 psi, air-entrained concrete over not less than 6 inches of compacted aggregate base course. Appropriate steel reinforcing and jointing should also be incorporated into the design of PCC pavements.

Good base course drainage is essential for successful pavement performance. Water buildup in the base course may result in premature pavement distress. 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 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 jurisdictional or State for repair and maintenance must be designed in accordance with the appropriate jurisdictional requirements.

4.6 CUT AND FILL SLOPES

ECS was not provided a grading plan at the time of this report; however, based on the provided topographic information and preliminary proposed finished floor elevations (FFEs), maximum cut and fill depths of approximately 31 and 45 feet, respectively, are anticipated within the proposed building pads. Once grading plans are finalized, ECS should be provided the opportunity to review the drawings and revise our recommendations, if needed.

We recommend that permanent cut slopes with less than 15 feet crest height through undisturbed residual soils be constructed at 2:1 (horizontal: vertical) or flatter. Permanent fill slopes less than 15 feet tall may be constructed using Structural Fill at a slope of 2.5:1 or flatter. However, a slope of 3:1 or flatter may be desirable to permit establishment of vegetation, safe mowing, and maintenance. Taller slopes may require flatter inclinations and/or benching incorporated at regular intervals. The surface of cut and fill slopes should be properly compacted. To aid in obtaining proper compaction on the slope face, the fill slopes should be overbuilt with properly compacted Structural Fill and then excavated back to the proposed grades. Permanent slopes should be protected using vegetation or other means to prevent erosion.

A slope stability analysis should be performed on cut and fill slopes exceeding 15 feet in height to determine a slope inclination resulting in a factor of safety greater than 1.4. Upon finalization of site civil drawings, ECS should be contacted to perform slope stability analyses and determine if further exploration is necessary.

The outside face of building foundations and the edges of pavements placed near slopes should be located an appropriate distance from the slope. Buildings or pavements placed at the top of fill slopes should be placed a distance equal to at least 1/3 of the height of the slope behind the crest of the slope. Buildings or pavements near the bottom of a slope should be located at least 1/2 of the height of the slope from the toe of the slope. Slopes with structures located closer than these limits or slopes taller than the height limits indicated should be specifically evaluated by ECS and may require approval from the building code official.

Temporary slopes in confined or open excavations should perform satisfactorily at inclinations of 2:1. Excavations should conform to applicable OSHA regulations. Appropriately sized ditches or other appropriate storm water controls should run above and parallel to the crest of permanent slopes to divert surface runoff away from the slope face. To aid in obtaining proper compaction at the slope face, the fill slopes should be overbuilt with properly compacted Structural Fill and then excavated back to the proposed grades.

4.7 SETTLEMENT MONITORING

Based on the provided preliminary FFE's, fill depths of up to approximately 45 feet are anticipated. The placement of new fill will result in settlement of the subgrade soils and within the newly placed fill soils. To limit post construction settlement resulting from fill placement, we recommend a settlement monitoring period between fill placement and structure construction.

Settlement hubs should be placed within areas receiving more than 15 feet of fill to monitor compression of the fill and residual materials. The frequency of monitoring should be on a weekly basis, but this should be adjusted as necessary by ECS based upon fill placement rates and settlement rates. Typically, the settlement rates will accelerate during the fill placement, and decrease shortly after stopping any fill placement. ECS anticipates the settlement will take between 30 and 60 days to reach substantial completion after the end of fill placement. This timeline assumes rapid fill placement, and much of the settlement may occur during placement as site work will most likely take several months. The delay period may be terminated as soon as settlement reaches substantial completion as determined by ECS.

The timeline presented above is not intended to indicate a minimum or required hold period. A minimum of two weeks of settlement monitoring, post fill placement is required to demonstrate settlement has reached a tolerable settlement rate. Upon reaching a tolerable settlement rate, foundation construction may begin. If the construction phasing will not allow for 30 to 60 days of settlement monitoring, additional recommendations can be provided such as increasing the soil compaction requirement to 100 percent of the soil's maximum dry density and/or using granular soils as Structural Fill within deeper fill areas.

4.8 SITE RETAINING WALLS

Based on the site topography, we anticipate site retaining walls may be required. Site retaining walls can be designed as cast in place or mechanized stabilized earth (MSE) walls.

4.8.1 Cast In Place Walls

Unlike below grade walls, site retaining walls are free to deflect at their tops (not restrained). The "Active" (K_a) soil condition should be used along with a triangular distribution of earth pressures. In addition, site retaining walls should be designed to withstand lateral earth pressures exerted by the backfill and any surcharge loads within the "Critical Zone." The Critical Zone is defined as the area between the back of

the retaining wall structure and an imaginary line projected upward and rearward from the bottom back edge of the wall footing at a 45-degree angle.

The lateral earth pressures developed behind site retaining walls are a function of backfill soil type, backfill slope angle, and any surcharge loads. For the design of site retaining walls, we recommend the soil parameters provided below.

RETAINING WALLS BACKFILL IN CRITICAL ZONE	
Soil Parameter	**Estimated value**
Coefficient of Earth Pressure at Rest (K_o)	0.53
Coefficient of Active Earth Pressure (K_a)	0.36
Retained Soil Moist Unit Weight (γ)	120 pcf
Cohesion (C)	0 psf
Angle of Internal Friction (ϕ)	28°
Friction Coefficient [Concrete on Soil] (μ)	0.34

FOUNDATION SOILS (NATURAL SUBGRADES OR STRUCTUAL FILL)	
Soil Parameter	**Estimated value**
Allowable Net Soil Bearing Pressure	2,500 psf
Minimum Wall Embedment Below Grade	24 inches
Coefficient of Passive Earth Pressure (K_p)	2.77
Angle of Internal Friction (ϕ)	28°
Soil Moist Unit Weight (γ)	120 pcf
Cohesion (C)	0 psf

Wall Backfill: Soils used as backfill within the critical zone behind site retaining walls should have USCS classifications of Sandy SILT (ML), Clayey SAND (SC), Silty SAND (SM), or coarser, with a maximum of 65% fines (i.e. percent passing No. 200 sieve) and a minimum angle of internal friction of 28 degrees when compacted to a minimum of 95% of its maximum dry density per ASTM D698. Soils not meeting these criteria should be removed from the critical zone of the walls.

Foundation Drains: Below grade walls should be provided with a foundation drainage system to relieve hydrostatic pressures which may develop in the wall backfill. This system should consist of weep holes through the wall and/or a 4-inch perforated, closed joint drain line located along the backside of the walls above the top of the footing. The drain line should be surrounded by a minimum of 6 inches of AASHTO Size No. 57 Stone wrapped with an approved non-woven filter fabric, such as Mirafi 140-N or equivalent.

Wall Drains: Site retaining walls should be drained so that hydrostatic pressures do not build up behind the walls. Wall drains can consist of a 12-inch wide zone of free draining Gravel, such as AASHTO No. 57 Stone, employed directly behind the wall and separated from the soils beyond with a non-woven filter fabric. For walls in excess of 10 feet in height, thicker wall drains should be considered. Alternatively, the wall drain can consist of a suitable geocomposite drainage board material. The wall drain should be hydraulically connected to the foundation drain.

Limitations: The lateral earth pressures and design recommendations presented in this section are intended for use with reinforced concrete or reinforced masonry retaining walls. The recommendations presented above are not applicable to Mechanically Stabilized Earth (MSE) Walls.

4.8.2 Mechanically Stabilized Earth (MSE) Wall Design

Site retaining walls may be constructed as MSE walls. The performance of the MSE Walls is highly dependent upon sound design and construction practices. The design of the MSE Walls shall consider internal, external and global stability. The following table summarizes the recommended minimum factors of safety (FS) for static design criteria, as recommended by the National Concrete Masonry Association (NCMA).

MINIMUM RECOMMENDED FACTORS OF SAFETY FOR MSE WALLS	
Failure Mode	**Estimated value**
Base Sliding	1.5
Overturning	2.0
Internal Sliding	1.5
Tensile Overstress	1.5
Pullout	1.5
Connection	1.5
Internal Compound Stability	1.3
Bearing Capacity	2.0
Global Stability	1.3 to 1.5

The results of the required internal and geotechnical stability analyses are highly dependent upon the engineering properties of the retained, and foundation zone materials. Consequently, the design of the MSE Walls requires the assignment of specific engineering properties to the, retained and foundation zone soils. Required for design are the soil's total in-place unit weight and peak effective friction angle and cohesion. However, cohesion is typically ignored except for the foundation zone materials.

Maintaining the integrity of the reinforced zone is critical to wall performance. Below grade utilities should be situated outside the reinforced zone to limit potential conflicts between the reinforcement and below grade structures. The wall designer should contemplate the location and use of any below grade utilities during the design process and should coordinate with the Civil Engineer where possible to relocate the utilities outside of the reinforced zone.

The wall designer should specify allowable backfill material including unit weight, relative compaction and shear strength requirements as well as a testing frequency to verify compaction and design shear strength properties. Soils used as backfill within the retaining walls should have USCS classifications of Silty SAND (SM) or more granular with a maximum of 45% fines (i.e. passing No. 200 Sieve size) and minimum angle of internal friction of 28 degrees when compacted to a minimum of 95% of its maximum dry density per ASTM D698. In addition, the Liquid Limit and Plasticity Index of MSE wall backfill should be limited to 30 and 10, respectively. The material properties presented assume site retaining walls will be relatively short (i.e. less than 10 feet of exposed wall height). More stringent backfill recommendations may be recommended for taller walls, including restricting fines content to 35% or lower, increasing minimum soil shear strength to 30 degrees or more, and limiting the Plasticity Index to less than 6.

The preceding paragraphs and tables are intended to provide a general overview of the design and construction of the MSE Walls. Specific guidance regarding the design and construction of MSE Walls can be found in the current edition of the NCMA Design Manual for Segmental Retaining Walls. The information provided above does not relieve the MSE Wall designer from any aspect of the design responsibility including selection of shear strength parameters, internal wall stability, external wall stability, global stability or settlement estimates.

MSE walls in the Charlotte region are frequently incorporated into the project through a delegated design delivery approach. However, for geotechnically complex project sites, we recommend the Owner engage the wall designer and incorporate wall design and construction documents into the bid package. This method allows the wall designer to coordinate with the rest of the design team and incorporate applicable modifications into the wall design. If desired, ECS would be pleased to perform MSE wall design.

4.9 RECOMMENDATIONS FOR ADDITIONAL TESTING

ECS recommends additional subsurface exploration and analysis is performed to provide more detailed geotechnical recommendations for this project.

- Additional subsurface exploration including test pits and/or seismic refraction testing to further explore the extents and rippability of the PWR and auger refusal materials.
- Additional laboratory testing including moisture content, and/or Atterberg limit tests may be considered to further explore the characteristics of the slab and pavement subgrade, planned cut, and potential moisture sensitive soils.

5.0 SITE CONSTRUCTION RECOMMENDATIONS

5.1 SUBGRADE PREPARATION

5.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping vegetation, rootmat, topsoil, remnants of previous construction, and soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits, and 5 feet beyond the toe of structural 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 Structural 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 Structural 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.

5.1.3 Temporary Dewatering

Based upon our subsurface exploration and experience on sites in nearby areas of similar geologic setting, we anticipate construction dewatering at this site will be mainly limited to removing accumulated rainwater and/or perched/laterally flowing water infiltration from footing and below grade excavations. Additionally, temporary dewatering may be required within low-lying areas and ravine/frainage features within the site to facilitate site preparation and fill placement.

We anticipate that temporary dewatering operations, if required, can be handled by the use of conventional submersible pumps directly in the excavation or temporary trenches to direct the flow of water and to remove water from excavations and drainage features. If temporary sump pits are used, we recommend they be established at an elevation 2 to 4 feet below the bottom of the working surface, excavation subgrade, or bottom of footing. A perforated 55-gallon drum or other temporary structure could be used to house the pump. For deeper and mass excavations, trenches, well points, and/or French drains may be necessary. Groundwater, if encountered, should be controlled a minimum of 2 feet below the exposed working surface.

If dewatering operations are performed at the site, ECS recommends that the dewatering operations be performed in accordance with Local, State and Federal Government regulatory requirements for surface water discharges. ECS would be pleased to provide consulting on those requirements, if requested.

5.2 EARTHWORK OPERATIONS

5.2.1 Expansive and Moisture Sensitive Soils

Moisture sensitive, potentially expansive Fat CLAY (CH) and/or Elastic SILT (MH) soils were encountered at Borings B-1, B-3, B-4, B-6, B-10, B-20, B-21, B-22, B-25, B-27, B-28, B-31, B-33, B-34, B-39, B-41, B-42, B-43, B-44, B-47, B-50, B-53, and B-55 and extended to depths ranging from approximately 3 to 12 feet below the existing ground surface. Moisture sensitive soils will degrade quickly when disturbed and/or with elevated moisture content.

High plasticity, expansive, moisture sensitive soils (CH soils) should not be used for direct support of slabs, foundations, and pavements. MH soils (PI>30) and CH soils encountered within proposed structural areas should be undercut and replaced with low plasticity Structural Fill to a minimum depth of 2 feet below subgrade elevations in slab and foundation areas. Upon completion of the undercut, the resulting subgrade soils should be evaluated for stability prior to the placement of Structural 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 Structural Fill. If lime stabilization is selected, quicklime materials should be utilized.

Based on limited laboratory testing performed, the on-site MH soils tested have PI values ranging from 17 to 36 and Expansion Index values ranging from 3 to 41; therefore, these soils have very low to low shrink-swell potential; therefore, the majority of the on-site MH soils are generally considered to be acceptable for the direct support of foundations, slabs, and pavement provided moisture is controlled and they are stable at the time of construction. However, depending on final site grades and conditions observed at the time of construction, some remediation of high plasticity and/or moisture sensitive soils should be anticipated.

5.2.2 Partially Weathered Rock and Rock

Based on the results of the soil test borings, Partially Weathered Rock (PWR) was encountered at 36 of the 55 boring locations and auger refusal (i.e. possible rock) was encountered at 25 of the 55 boring locations. The depth of 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 Depth to Auger Refusal (feet)**	**Location**	**Approximate Depth to Top of PWR (feet)**	**Approximate Depth to Auger Refusal (feet)**
B-1	8	18.5	B-28	8	17
B-2	42	-	B-29	3	8.5
B-3	42	-	B-31	8	13.5
B-4	42	-	B-32	17	23.5
B-5	17	23.5	B-34	12	18.5
B-6	32	38.5	B-37	8	-
B-8	12	18.5	B-39	5.5	13.5
B-12	5.5	8.5	B-40	8	13.5
B-13	12	16	B-41	5.5	8.5
B-14	8	13.5	B-42	8	12
B-15(2)	3	13.5	B-45	3	8.5
B-16	3	13.5	B-47	12	-
B-17	5.5	13	B-50	5.5	8.5
B-18	17	-	B-51	<1	16.5
B-19	5.5	12.5	B-52(2)	<1	11
B-22	37	-	B-53	12	-
B-24	27	-	B-54	8	13.5
B-26	8	-	B-55	17	-

(1) Approximate depths noted are referenced from existing grades.
(2) Various intermittent strata of PWR were encountered.

Depending on site grading and utility plans, difficult excavation could be encountered during mass grading operations and/or footing and utility excavation. The site civil designer should consider PWR and auger refusal (i.e., possible rock) depths when determining site grades and utility depths/locations. Once site grading and utility plans are determined ECS recommends performing additional testing to explore the excavation characteristics of PWR and/or rock materials in areas of concern.

In mass excavation for general site work, dense soils and PWR can usually be removed by ripping with a single-tooth ripper attached to a large crawler tractor or by breaking it out with large front-end loader. In confined excavations such as foundations, utility trenches, etc., removal of PWR may require use of heavy-duty backhoes, pneumatic spades, or blasting. Rock excavation techniques such as blasting should be anticipated for materials exhibiting auger refusal.

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 or by a frontend crawler loader with a minimum horsepower rating of 190 hp and operating weight of 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 think rock seams may be present in the soil matrix.

5.2.3 Structural Fill

Prior to placement of Structural 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.

Structural Fill Materials: Materials for use as general Structural 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 Structural Fills unless properly encapsulated with filter fabric. Structural Fill material should have the index properties in the table below:

STRUCTURAL 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

STRUCTURAL 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
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 Structural 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. Chemical (lime) stabilization may be considered to improve MH and CH soils for re-use as Structural Fill.

On-Site Borrow Suitability: Natural deposits of soils that meet the definition of Structural Fill are present on the site including residual soils classified as Sandy SILT (ML), Lean CLAY (CL), Clayey SAND (SC), and Silty SAND (SM); however, selective mining (i.e. soil exchange) may be necessary to obtain these soils based on the depths they were encountered. Excavated partially weathered rock (PWR) and/or rock materials may require processing (i.e. crushing and/or screening) to use as site Structural Fill depending on the resulting rock fragment size (i.e. greater than 4 inches nominal diameter) and ability of compaction equipment to break down the PWR/rock materials.

For preliminary planning purposes, we anticipate limited quantities of soils meeting the requirements of select backfill materials within reinforced zones of MSE walls are present on-site.; therefore, an off-site import borrow source should be anticipated and identified.

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 suitable to the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be suitable for the fine-grained soils (Clays and Silts). A vibratory steel 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 Structural 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.

5.2.4 General Construction Considerations

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 (quicklime) 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 Structural 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 1 percent or greater 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 lower-consistency/loose and high plasticity soils, 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 acceptable for support of utility pipes; however, depending on final site grades 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 Structural 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.

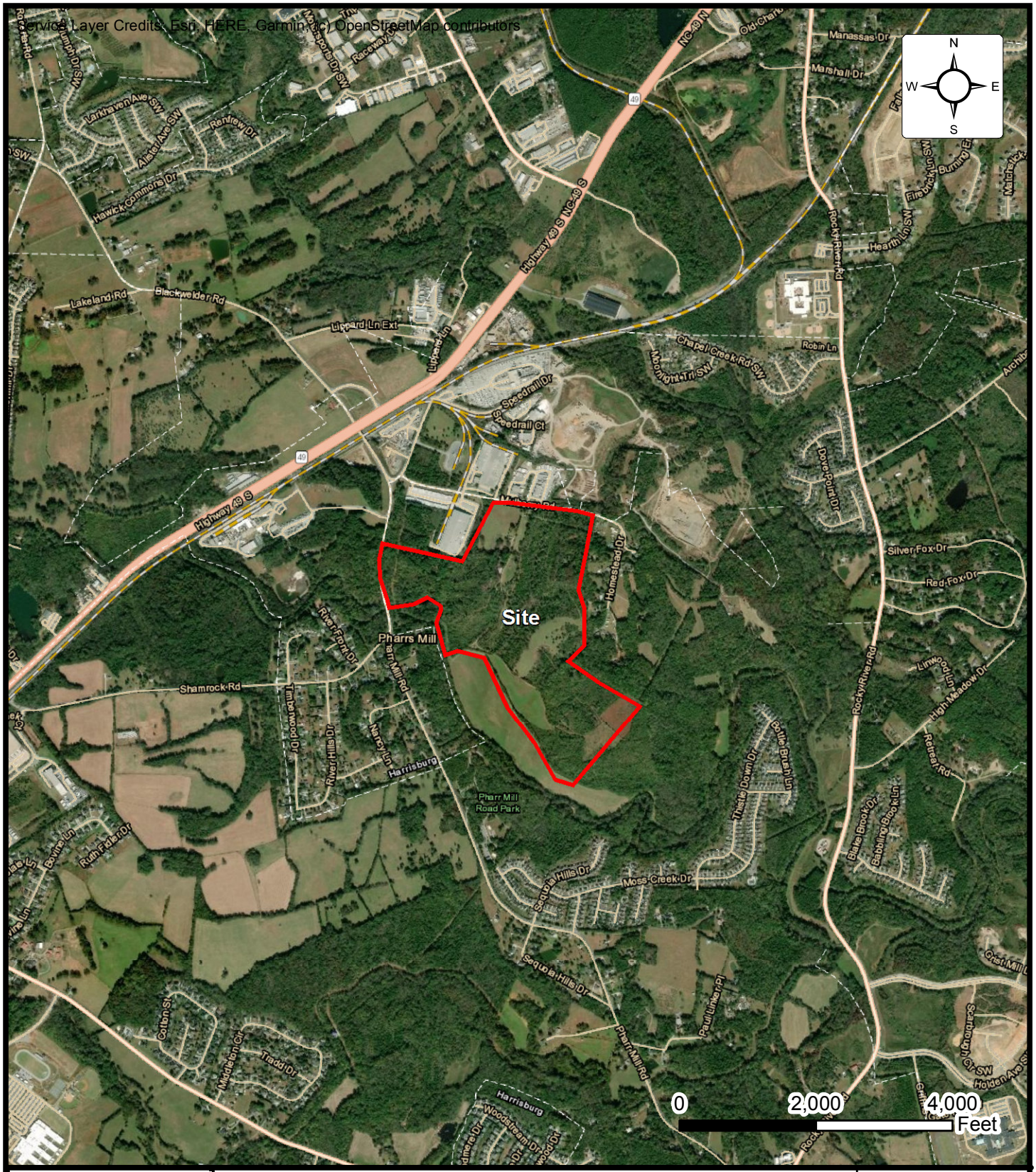
ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A – Diagrams & Reports

Site Location Diagram

Boring Location Diagram

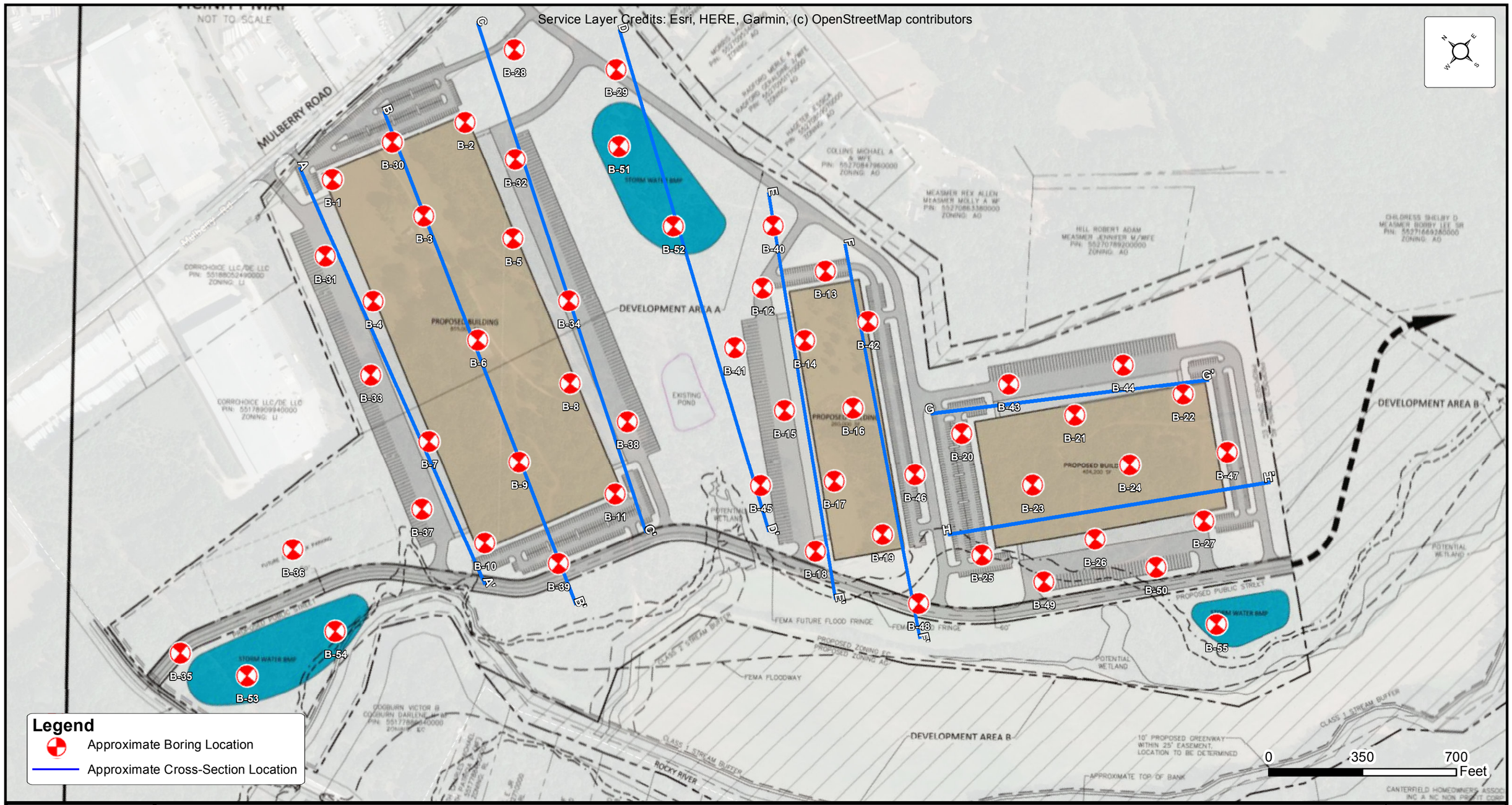
Subsurface Cross-Sections A-A’ through H-H’



SITE LOCATION DIAGRAM
PHARR MILL ROAD INDUSTRIAL
HARRISBURG, CABARRUS COUNTY, NORTH CAROLINA

TRAMMELL CROW COMPANY

ENGINEER	CJC
SCALE	AS NOTED
PROJECT NO.	08:15166
FIGURE	1
DATE	8/3/2022



Legend

- Approximate Boring Location
- Approximate Cross-Section Location

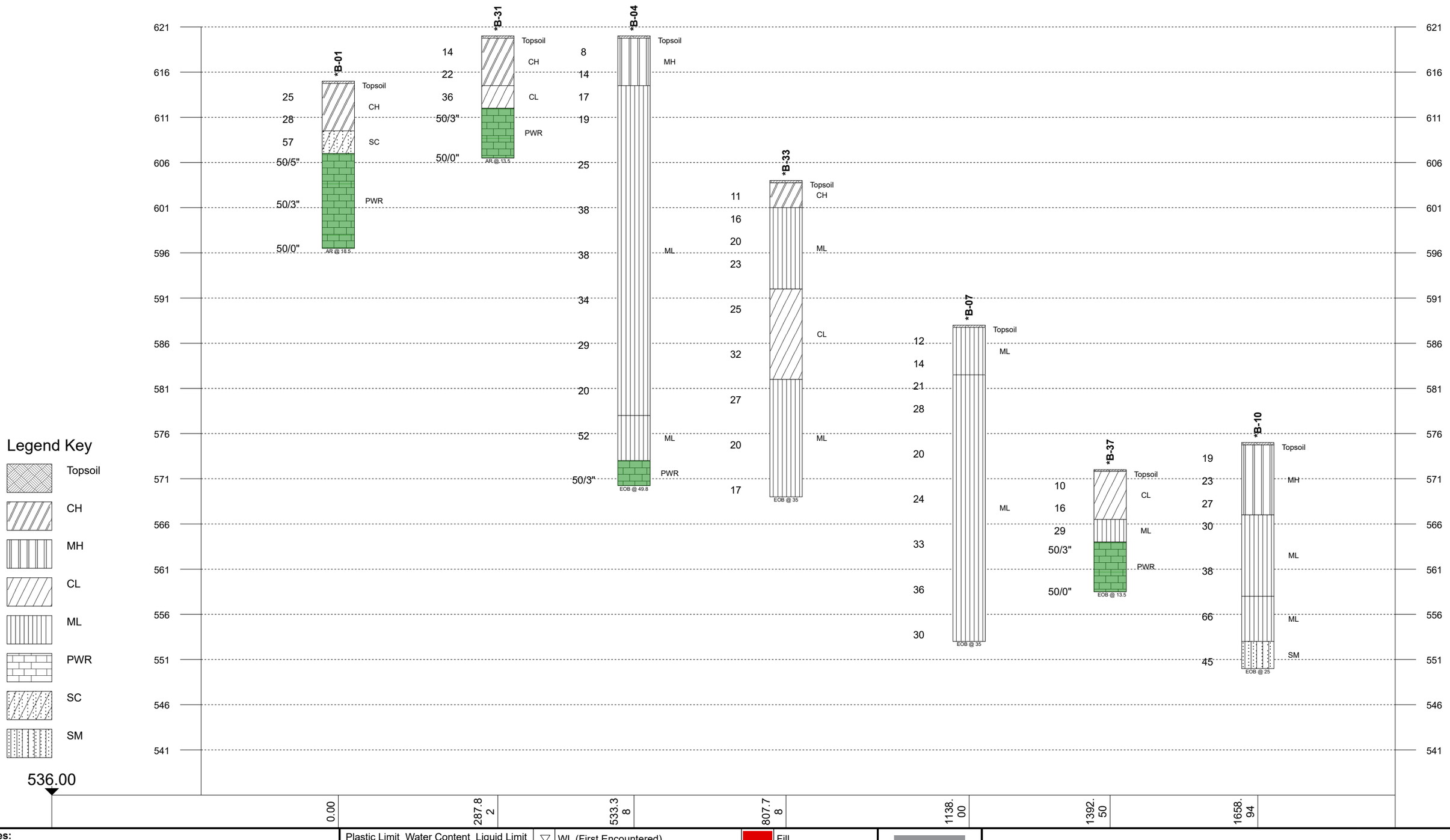
BORING LOCATION DIAGRAM

PHARR MILL ROAD INDUSTRIAL

HARRISBURG, CABARRUS COUNTY, NORTH CAROLINA

TRAMMELL CROW COMPANY

ENGINEER	CJC
SCALE	AS NOTED
PROJECT NO.	08:15166
FIGURE	2
DATE	8/3/2022



Notes:

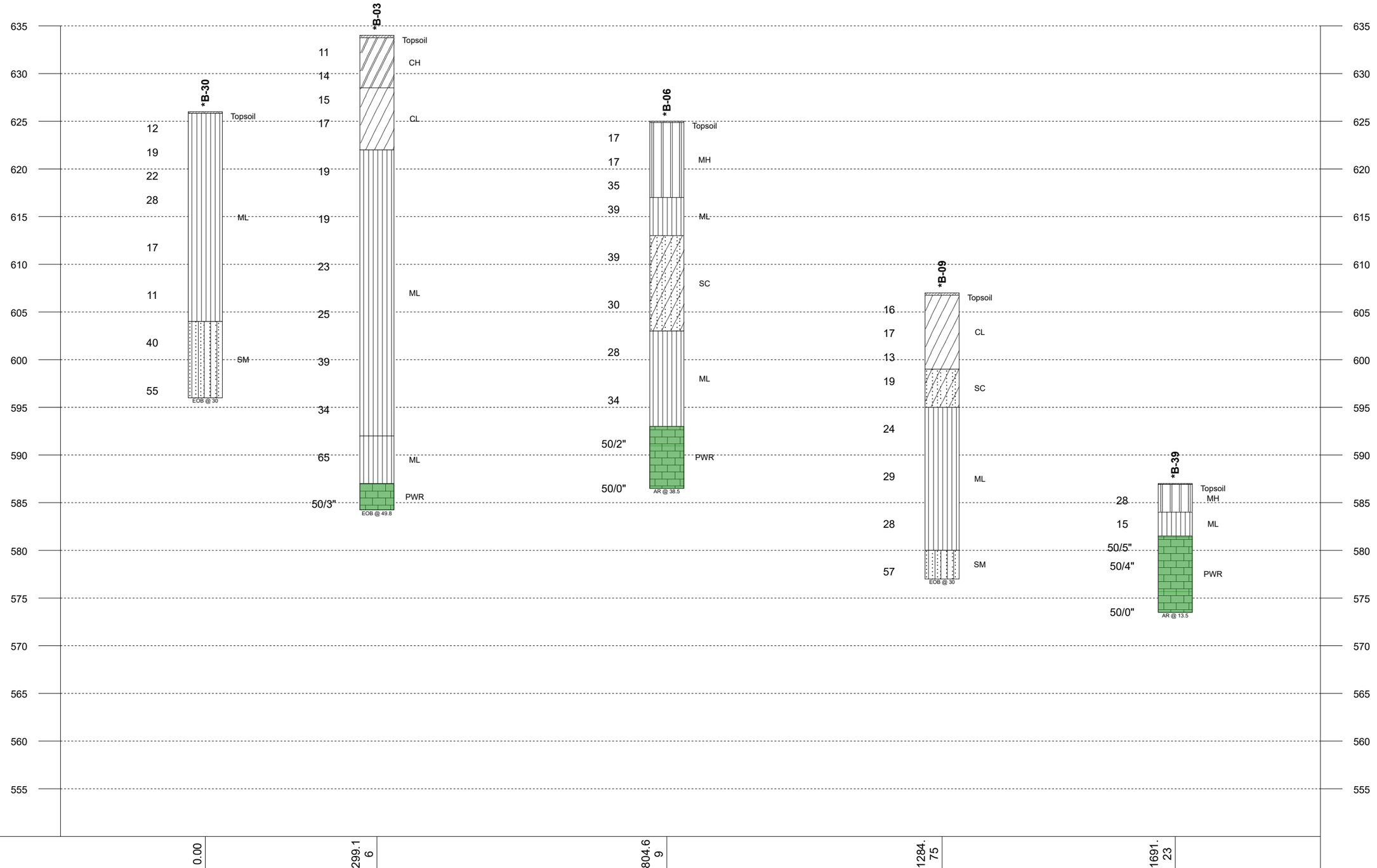
1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X——●——△ [FINES CONTENT %]	WL (First Encountered)	Fill	
	WL (Completion)	Possible Fill	
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill	
LOSS OF CIRCULATION	WL (Stabilized)	Rock	

SUBSURFACE CROSS SECTION A-A'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Notes:

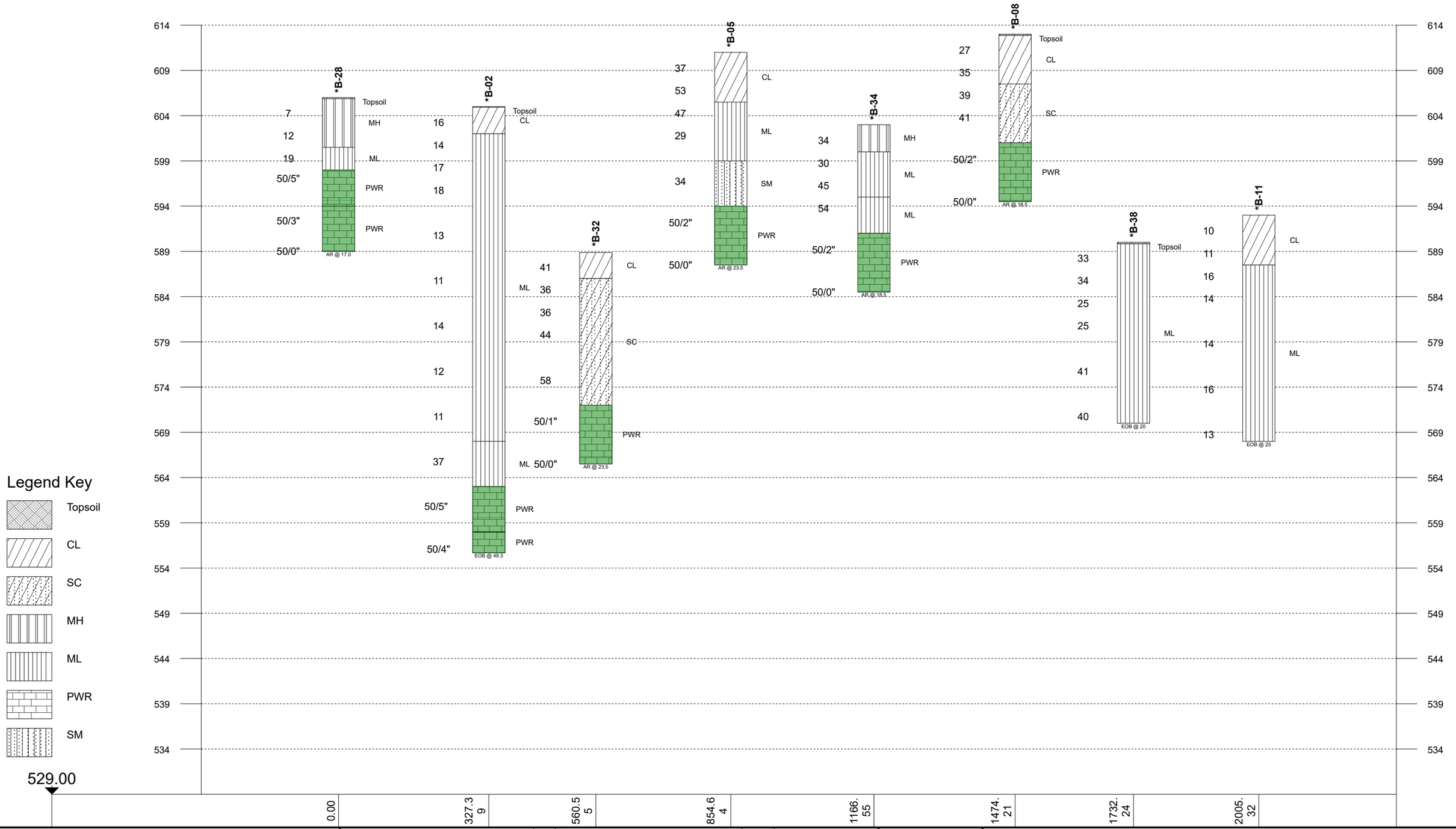
1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit (X——●——△)	WL (First Encountered)	Fill
[FINES CONTENT %]	WL (Completion)	Possible Fill
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill
LOSS OF CIRCULATION	WL (Stabilized)	Rock

SUBSURFACE CROSS SECTION B-B'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Legend Key

- Topsoil
- CL
- SC
- MH
- ML
- PWR
- SM

529.00

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit
X———●———△
[FINES CONTENT %]

BOTTOM OF CASING
100% LOSS OF CIRCULATION

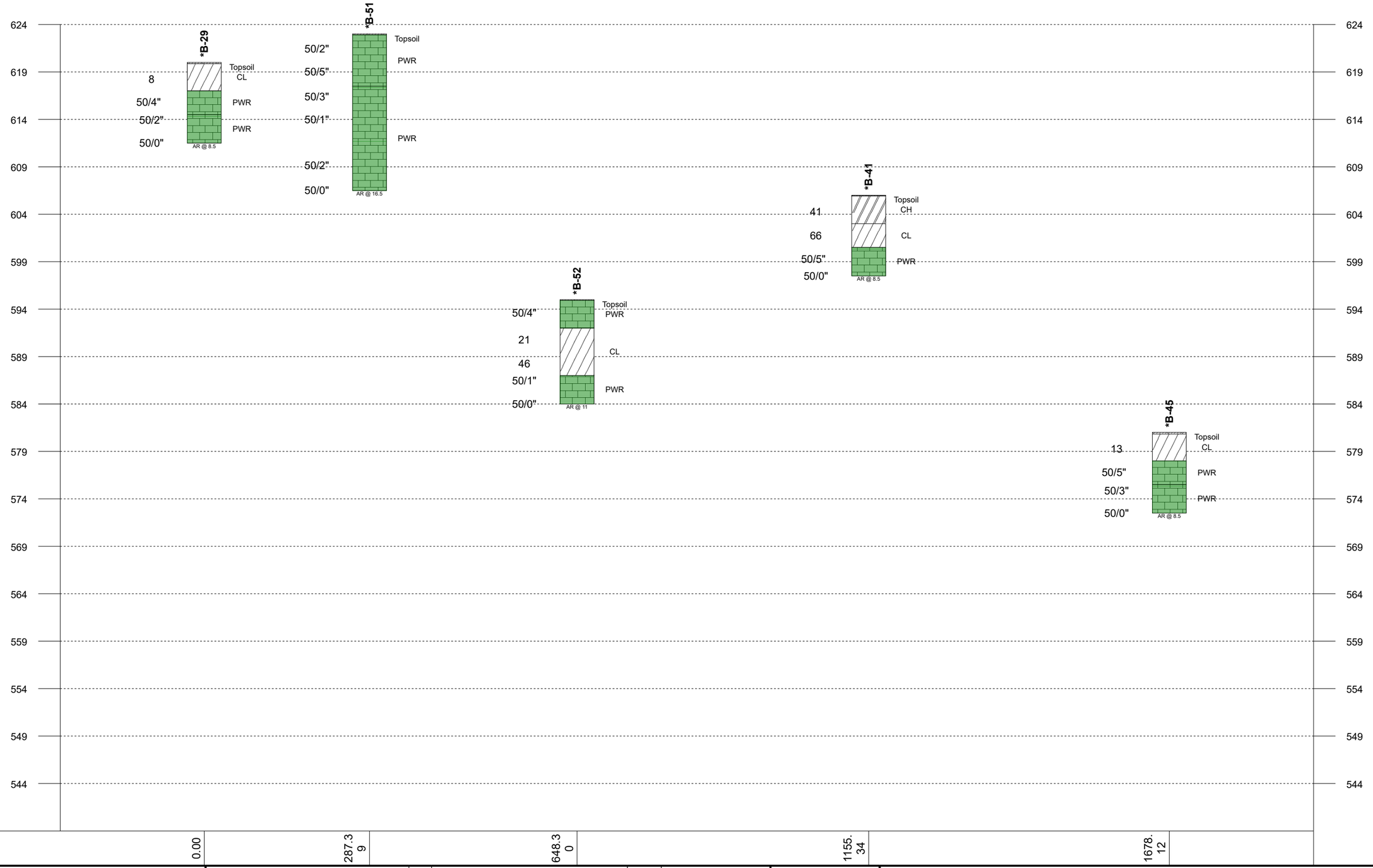
WL (First Encountered)
WL (Completion)
WL (Seasonal High Water)
WL (Stabilized)

Fill
Possible Fill
Probable Fill
Rock

SUBSURFACE CROSS SECTION C-C'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Legend Key

- Topsoil
- PWR
- CL
- CH

539.00

Notes:

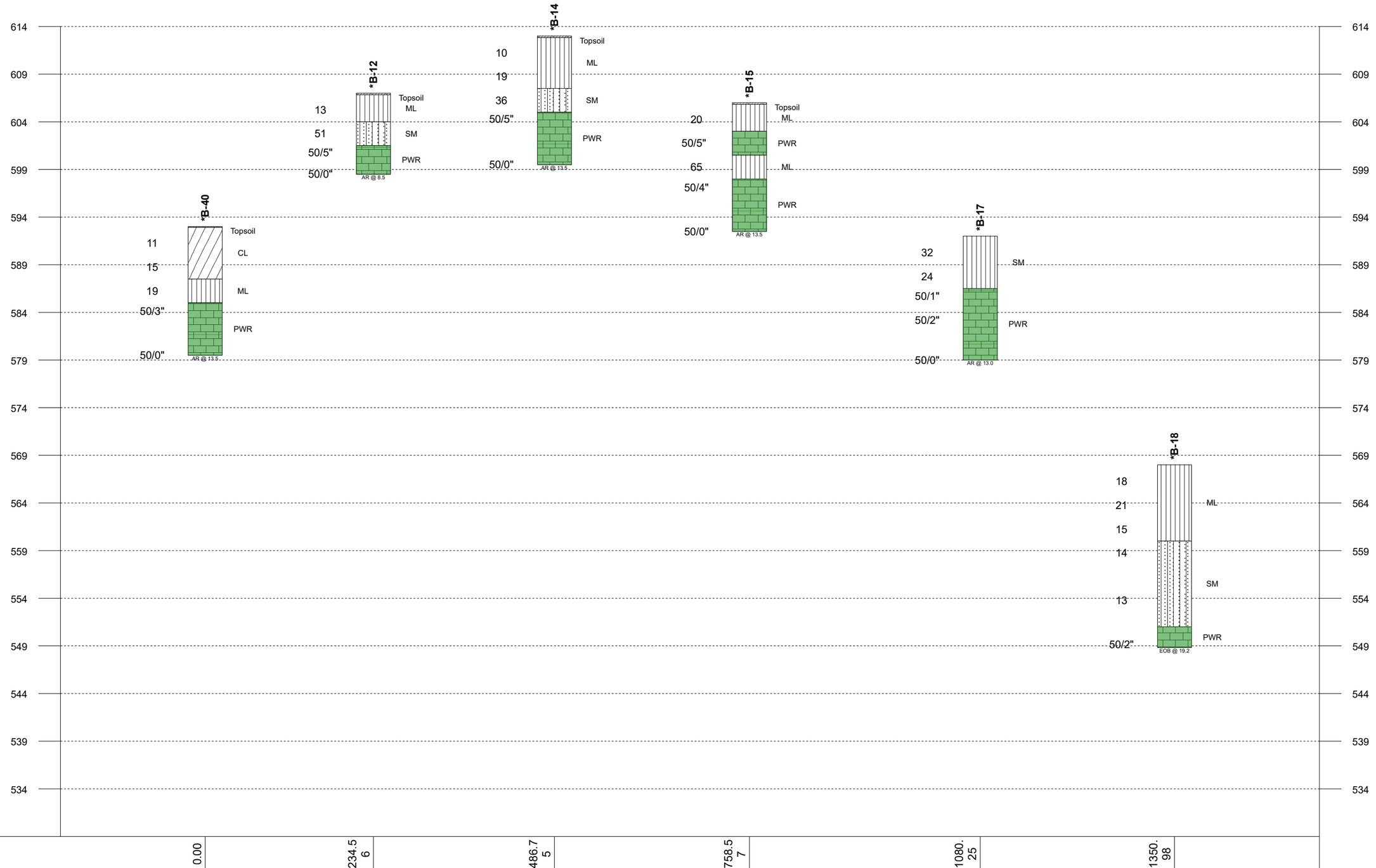
1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X—●—△	WL (First Encountered)	Fill	
[FINES CONTENT %]	WL (Completion)	Possible Fill	
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill	
LOSS OF CIRCULATION	WL (Stabilized)	Rock	

SUBSURFACE CROSS SECTION D-D'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Legend Key

- Topsoil
- ML
- SM
- PWR
- CL

529.00

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit
X———●———△
[FINES CONTENT %]

BOTTOM OF CASING
100% LOSS OF CIRCULATION

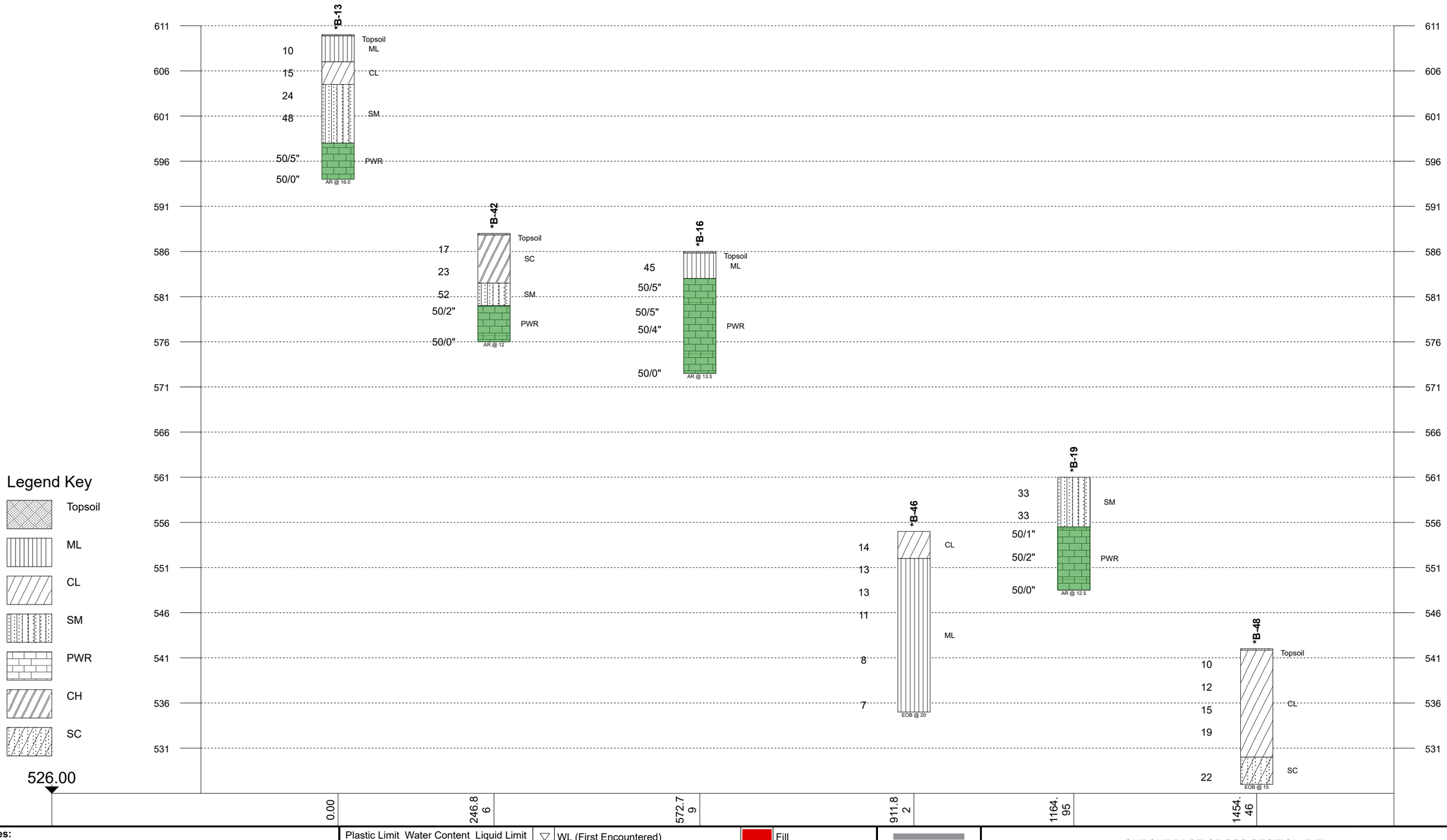
WL (First Encountered)
WL (Completion)
WL (Seasonal High Water)
WL (Stabilized)

Fill
Possible Fill
Probable Fill
Rock

SUBSURFACE CROSS SECTION E-E'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Legend Key

- Topsoil
- ML
- CL
- SM
- PWR
- CH
- SC

526.00

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

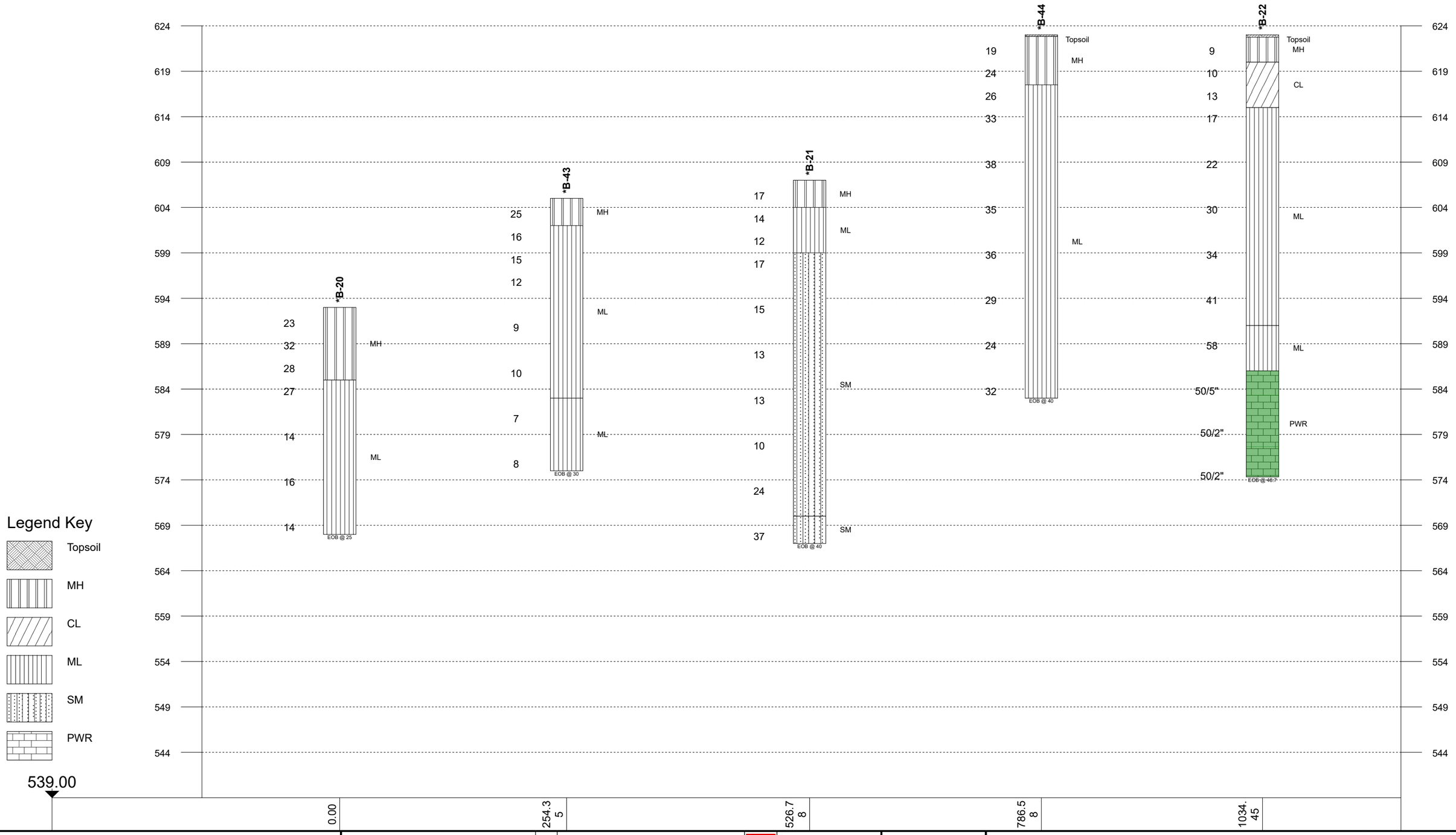
Plastic Limit Water Content Liquid Limit X——●——△			
[FINES CONTENT %]			
BOTTOM OF CASING	WL (First Encountered)	Fill	
LOSS OF CIRCULATION	WL (Completion)	Possible Fill	
	WL (Seasonal High Water)	Probable Fill	
	WL (Stabilized)	Rock	

ECS

SUBSURFACE CROSS SECTION F-F'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Legend Key

- Topsoil
- MH
- CL
- ML
- SM
- PWR

539.00

Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X——●——△ [FINES CONTENT %]	WL (First Encountered)	Fill	
	WL (Completion)	Possible Fill	
BOTTOM OF CASING	WL (Seasonal High Water)	Probable Fill	
100% LOSS OF CIRCULATION	WL (Stabilized)	Rock	

ECS

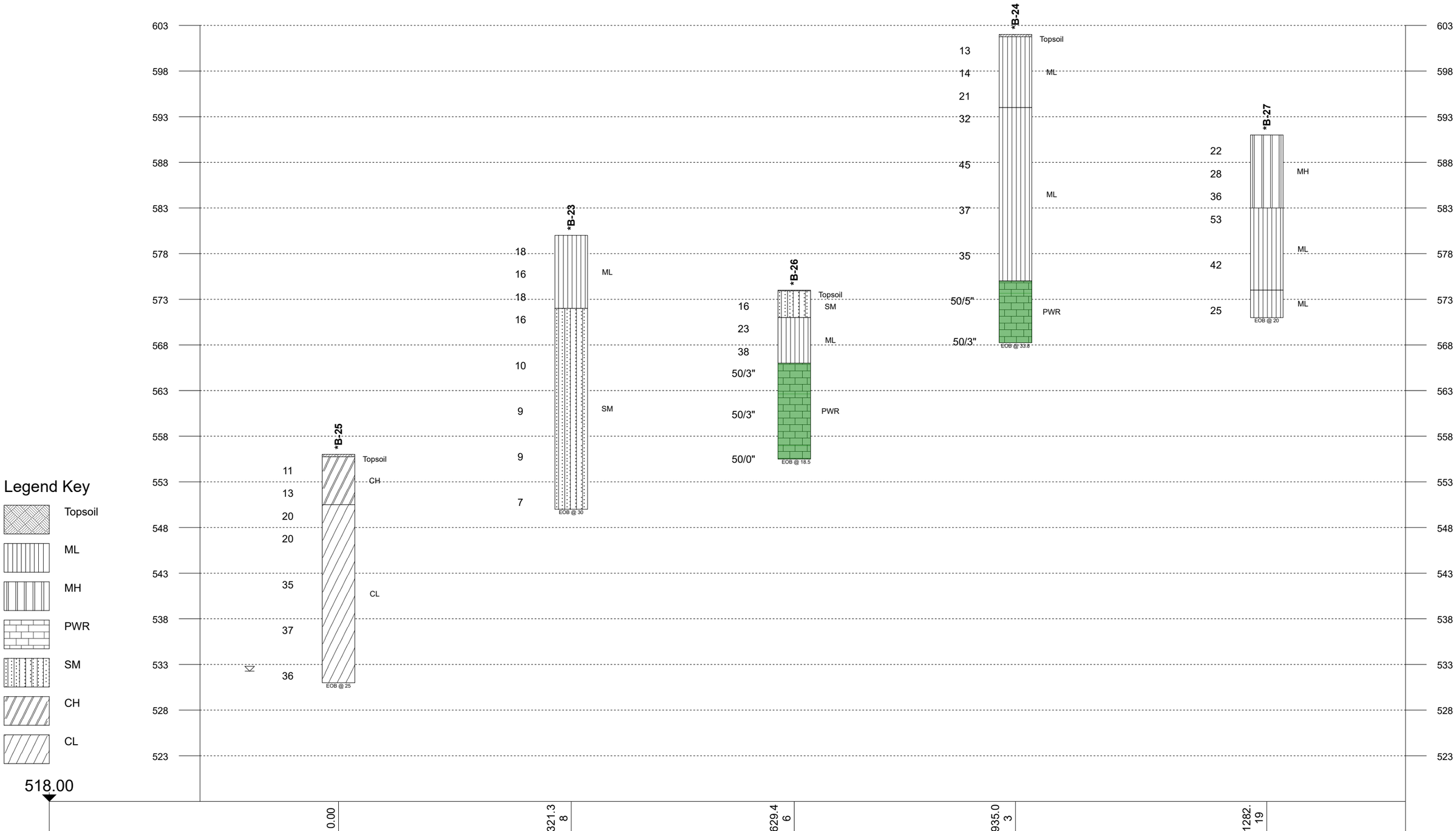
SUBSURFACE CROSS SECTION G-G'

Pharr Mill Road Industrial

Trammell Crow Company

Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022



Notes:

1- EOB: END OF BORING AR: AUGER REFUSAL SR: SAMPLER REFUSAL.
2- THE NUMBER BELOW THE STRIPS IS THE DISTANCE ALONG THE BASELINE.
3- SEE INDIVIDUAL BORING LOG AND GEOTECHNICAL INFORMATION.
4- STANDARD PENETRATION TEST RESISTANCE (LEFT OF BORING) IN BLOWS PER FOOT (ASTM D1586).

Plastic Limit Water Content Liquid Limit X——●——△	WL (First Encountered)		Fill
[FINES CONTENT %]	WL (Completion)		Possible Fill
BOTTOM OF CASING	WL (Seasonal High Water)		Probable Fill
100% LOSS OF CIRCULATION	WL (Stabilized)		Rock

SUBSURFACE CROSS SECTION H-H'

Pharr Mill Road Industrial
Trammell Crow Company
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075

Project No: 08:15166 Date: 08/03/2022

APPENDIX B – Field Operations

Reference Notes

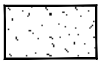
Subsurface Exploration Procedure

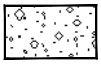
Boring Logs

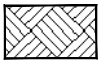
REFERENCE NOTES FOR BORING LOGS

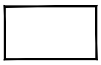
MATERIAL[1,2]

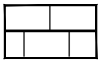

ASPHALT


CONCRETE


GRAVEL

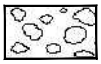

TOPSOIL

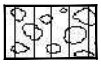

VOID


BRICK

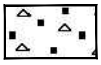

AGGREGATE BASE COURSE

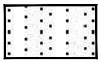

GW **WELL-GRADED GRAVEL**
gravel-sand mixtures, little or no fines

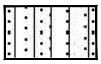

GP **POORLY-GRADED GRAVEL**
gravel-sand mixtures, little or no fines


GM **SILTY GRAVEL**
gravel-sand-silt mixtures

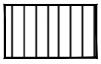

GC **CLAYEY GRAVEL**
gravel-sand-clay mixtures

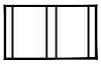

SW **WELL-GRADED SAND**
gravelly sand, little or no fines


SP **POORLY-GRADED SAND**
gravelly sand, little or no fines


SM **SILTY SAND**
sand-silt mixtures

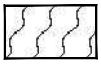

SC **CLAYEY SAND**
sand-clay mixtures

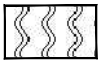

ML **SILT**
non-plastic to medium plasticity

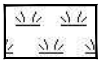

MH **ELASTIC SILT**
high plasticity


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, Q_P[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

GRAVELS, SANDS & NON-COHESIVE SILTS

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

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

WATER LEVELS[6]

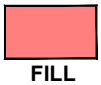

WL (First Encountered)


WL (Completion)


WL (Seasonal High Water)


WL (Stabilized)

FILL AND ROCK


FILL


POSSIBLE FILL


PROBABLE FILL


ROCK

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

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

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

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

[5]Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

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

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

[8]Percentages 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:

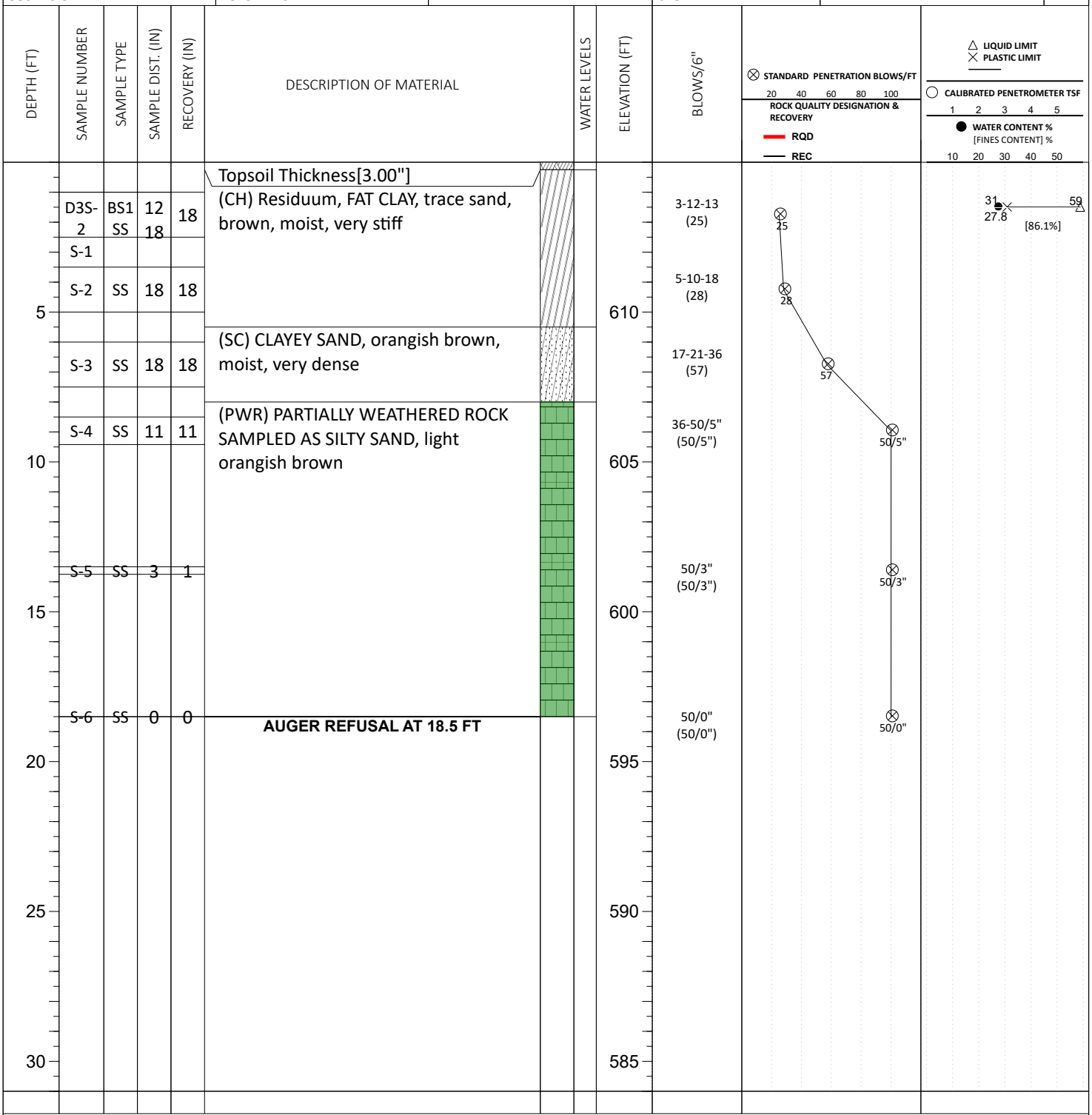
- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)

- Auger is advanced* and an additional SPT is performed
- One SPT test is typically performed for every two to five feet

- Obtain two-inch diameter soil sample

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

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-01**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **580216.8**	EASTING: **1519211.6**	STATION:	SURFACE ELEVATION: **615**
			BOTTOM OF CASING



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **16.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-02**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **579974.7**	EASTING: **1519694.3**	STATION:	SURFACE ELEVATION: **605**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[1.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, contains slight mica, reddish brown, moist, very stiff			4-7-9 (16)
	S-2	SS	18	18	(ML) SANDY SILT, reddish brown, moist, stiff and very stiff			3-6-8 (14)
5	S-3	SS	18	18			600	3-7-10 (17)
	S-4	SS	18	18				5-6-12 (18)
10							595	
	S-5	SS	18	18				6-7-6 (13)
15							590	
	S-6	SS	18	18				3-6-5 (11)
20							585	
	S-7	SS	18	18				3-6-8 (14)
25							580	
	S-8	SS	18	18				4-6-6 (12)
30							575	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

CONTINUED ON NEXT PAGE

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**	CAVE IN DEPTH: **33.00**	
WL (Completion)	BORING COMPLETED: **Jun 14 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-02**	**2 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579974.7	**1519694.3**		**605**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	18	(ML) SANDY SILT, reddish brown, moist, stiff and very stiff		570	4-4-7 (11)
40	S-10	SS	18	18	(ML) SANDY SILT, brown, moist, hard		565	9-13-24 (37)
45	S-11	SS	17	14	(PWR) PARTIALLY WEATHERED ROCK SAMPLED SILTY SAND, contains rock fragments, dark brown		560	1-21-50/5" (50/5")
50	S-12	SS	10	10	(PWR) PARTIALLY WEATHER ROCK SAMPLED AS SANDY SILT, brownish gray		555	25-50/4" (50/4")
					END OF BORING AT 49.3 FT			
55							550	
60							545	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC

LIQUID LIMIT

PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**	CAVE IN DEPTH: **33.00**	
WL (Completion)	BORING COMPLETED: **Jun 14 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-03**	**1 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579868.4	**1519328.4**		**634**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(CH) Residuum, FAT CLAY, reddish brown, moist, stiff			3-5-6 (11)
	S-2	SS	18	18				5-6-8 (14)
5							629	
	S-3	SS	18	18	(CL) LEAN CLAY, dark reddish brown, moist, stiff to very stiff			6-6-9 (15)
	S-4	SS	18	18				8-7-10 (17)
10							624	
	S-5	SS	18	18	(ML) SANDY SILT, light brown, moist, very stiff to hard			10-9-10 (19)
15							619	
	S-6	SS	18	18				7-9-10 (19)
20							614	
	S-7	SS	18	18				10-12-11 (23)
25							609	
	S-8	SS	18	18				13-10-15 (25)
30							604	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

11 14 15 17 19 19 23 25

31 27.3 63 [94.6%] 26.5 27.1

CONTINUED ON NEXT PAGE

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **27.50**	
WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-03**	**2 of 2**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

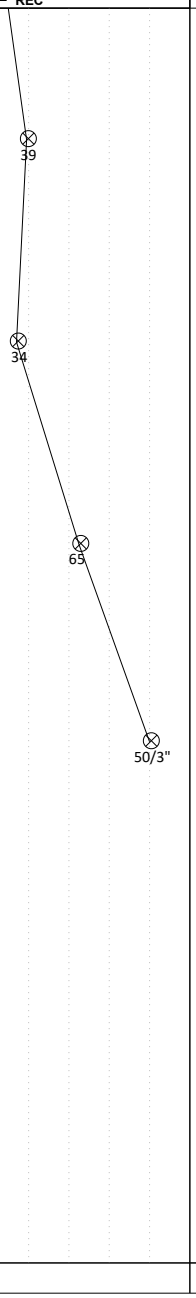
LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579868.4	**1519328.4**		**634**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	18	(ML) SANDY SILT, light brown, moist, very stiff to hard		599	15-20-19 (39)
40	S-10	SS	18	18			594	12-18-16 (34)
45	S-11	SS	18	18	(ML) SANDY SILT, light grayish brown, moist, very hard		589	6-25-40 (65)
50	S-12	SS	15	15	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, light brown		584	4-29-50/3" (50/3")
55					**END OF BORING AT 49.8 FT**		579	
60							574	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)



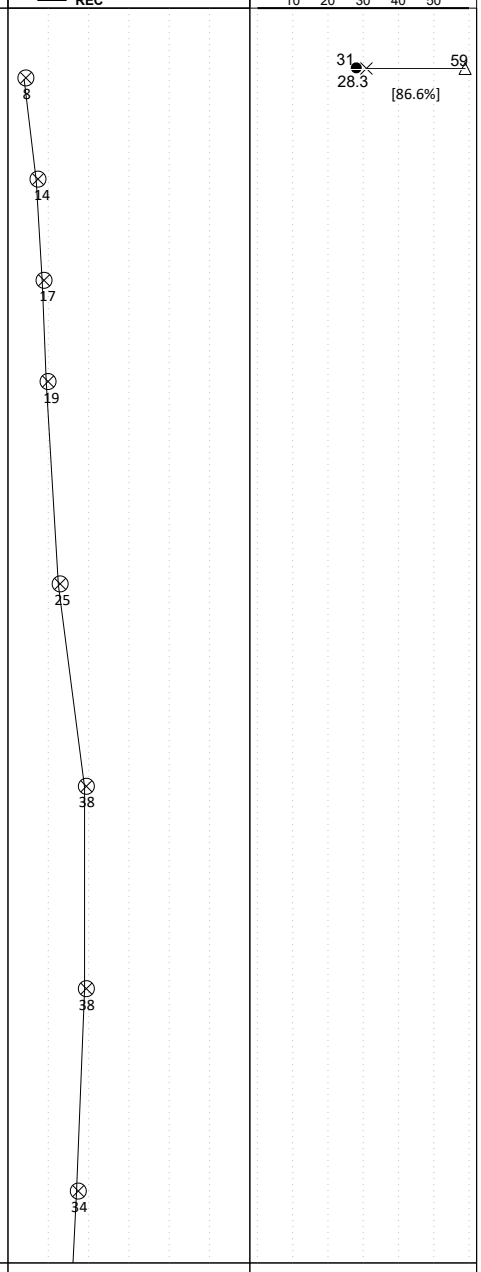
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **27.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-04**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579807.5	**1518962.0**		**620**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[3.00"]			
	D3S-1	BS1 SS	12 18	18	(MH) Residuum, ELASTIC SILT, reddish brown, moist, firm to stiff			3-4-4 (8)
	S-1							
	S-2	SS	18	18				5-6-8 (14)
5							615	
	S-3	SS	18	18	(ML) SANDY SILT, orangish brown and brown, moist, very stiff to hard			9-7-10 (17)
	S-4	SS	18	18				11-9-10 (19)
10							610	
	S-5	SS	18	18				13-11-14 (25)
15							605	
	S-6	SS	18	18				15-21-17 (38)
20							600	
	S-7	SS	18	18				13-22-16 (38)
25							595	
	S-8	SS	18	18				11-19-15 (34)
30							590	



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **36.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

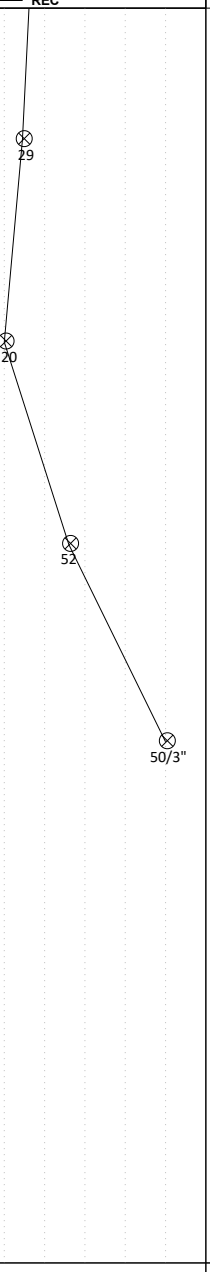
CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-04**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579807.5	**1518962.0**		**620**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	18	(ML) SANDY SILT, orangish brown and brown, moist, very stiff to hard		585	10-17-12 (29)
40	S-10	SS	18	18			580	8-9-11 (20)
45	S-11	SS	18	18	(ML) SANDY SILT, light brown, moist, very hard		575	5-16-36 (52)
50	S-12	SS	15	15	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, light brown		570	18-40-50/3" (50/3")
					END OF BORING AT 49.8 FT			
55							565	
60							560	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50



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

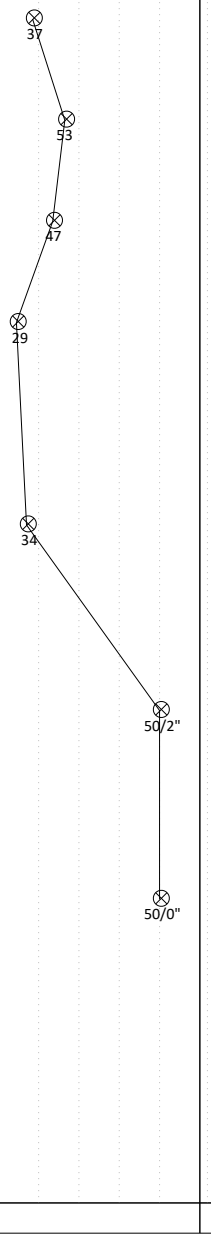
WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **36.00**	
WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-05**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **579559.8**	EASTING: **1519477.5**	STATION:	SURFACE ELEVATION: **575**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(CL) Residuum, LEAN CLAY, contains slight rock fragments, brown, moist, hard to very hard			
	S-1	SS	18	18				12-16-21 (37)
	S-2	SS	18	18				17-25-28 (53)
5							606	
	S-3	SS	18	18	(ML) SANDY SILT, brown to yellowish brown, moist, hard to very stiff			15-21-26 (47)
	S-4	SS	18	18				17-17-12 (29)
10							601	
	S-5	SS	18	18	(SM) SILTY SAND, contains slight rock fragments, grayish brown, moist, dense			13-14-20 (34)
15							596	
	S-6	SS	8	8	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, contains slight rock fragments, yellowish brown			43-50/2" (50/2")
20							591	
	S-7	SS	0	0	**AUGER REFUSAL AT 23.5 FT**			50/0" (50/0")
25							586	
30							581	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC
LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)



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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 21 2022**	CAVE IN DEPTH: **13.00**	
WL (Completion)	BORING COMPLETED: **Jun 21 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-06**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579415.9	**1519103.0**		**593**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[1.50"]			
	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, reddish brown to orangish brown, moist, very stiff to hard			8-7-10 (17)
	S-2	SS	18	18				8-8-9 (17)
5							620	
	S-3	SS	18	18				10-13-22 (35)
	S-4	SS	18	18	(ML) SANDY SILT, orangish brown, moist, hard			18-13-26 (39)
10							615	
	S-5	SS	18	18	(SC) CLAYEY SAND, light brown to reddish brown and light brown, moist, dense to medium dense			11-14-25 (39)
15							610	
	S-6	SS	18	18				12-15-15 (30)
20							605	
	S-7	SS	18	18	(ML) SANDY SILT, grayish brown, moist, very stiff to hard			17-16-12 (28)
25							600	
	S-8	SS	18	18				20-13-21 (34)
30							595	

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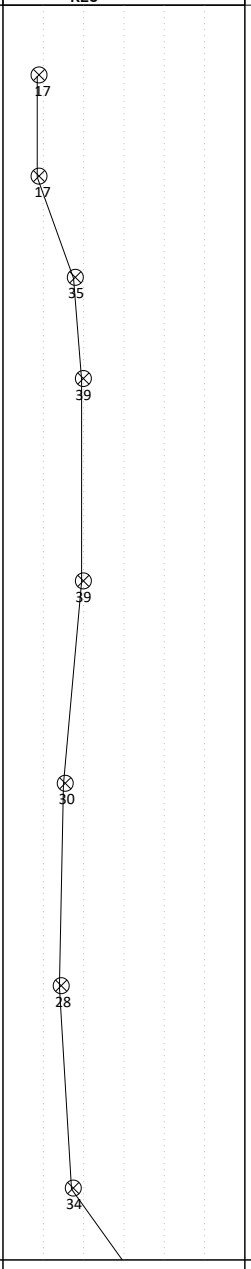
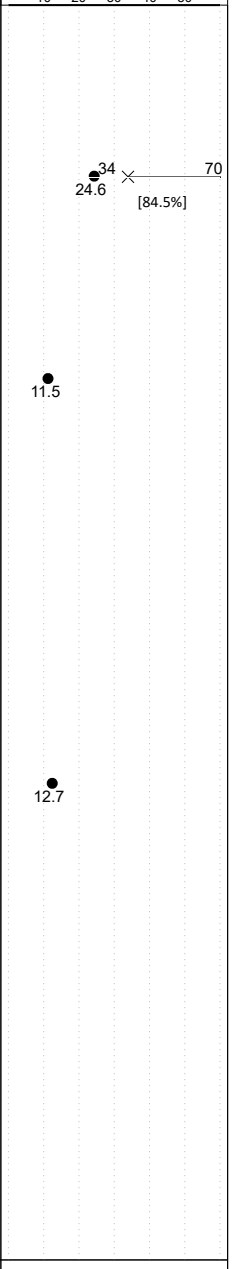
STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC



LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **21.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-06**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579415.9	**1519103.0**		**593**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	8	8	(ML) SANDY SILT, grayish brown, moist, very stiff to hard (PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, grayish brown		590	42-50/2" (50/2")
40	S-10	SS	0	0	**AUGER REFUSAL AT 38.5 FT**		585	50/0" (50/0")
45							580	
50							575	
55							570	
60							565	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100) — 50/2", 50/0"

ROCK QUALITY DESIGNATION & RECOVERY — RQD, REC

LIQUID LIMIT / PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **21.50**	
WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-07**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **579311.5**	EASTING: **1518697.0**	STATION:	SURFACE ELEVATION: **588**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]		
	S-1	SS	18	18	(ML) Residuum, SILTY SAND, trace clay, reddish brown to orangish brown, moist, stiff		5-6-6 (12)
	S-2	SS	18	18			3-5-9 (14)
5						583	
	S-3	SS	18	18	(ML) SANDY SILT, contains slight rock fragments, brownish gray and pinkish gray, moist, very stiff and hard		5-8-13 (21)
	S-4	SS	18	18			7-12-16 (28)
10						578	
	S-5	SS	18	18			5-10-10 (20)
15						573	
	S-6	SS	18	18			3-8-16 (24)
20						568	
	S-7	SS	18	18			12-18-15 (33)
25						563	
	S-8	SS	18	18			14-17-19 (36)
30						558	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

CONTINUED ON NEXT PAGE

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **32.50**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-07**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579311.5	**1518697.0**		**588**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT (20 40 60 80 100) / ROCK QUALITY DESIGNATION & RECOVERY (RQD, REC)	LIQUID LIMIT / PLASTIC LIMIT / CALIBRATED PENETROMETER TSF (1 2 3 4 5) / WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)
					(ML) SANDY SILT, contains slight rock fragments, brownish gray and pinkish gray, moist, very stiff and hard					
35	S-9	SS	18	18			553	12-15-15 (30)	30	
					END OF BORING AT 35 FT					
40							548			
45							543			
50							538			
55							533			
60							528			

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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **32.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-08**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

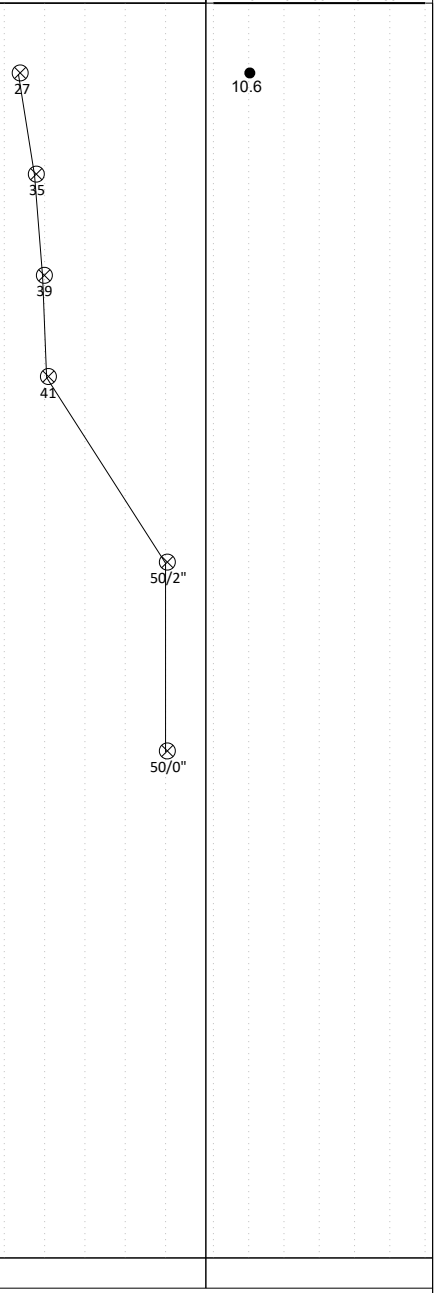
LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579049.1	**1519200.8**		**613**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[1.50"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, dark brown to reddish brown, moist, very stiff to hard			20-15-12 (27)
	S-2	SS	18	18				10-10-25 (35)
5							608	
	S-3	SS	18	18	(SC) CLAYEY SAND, yellowish brown and bluish gray, moist, dense			17-14-25 (39)
	S-4	SS	18	18				21-28-13 (41)
10							603	
	S-5	SS	8	8	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS CLAYEY SAND, yellowish brown and bluish gray			40-50/2" (50/2")
15							598	
	S-6	SS	0	0	**AUGER REFUSAL AT 18.5 FT**			50/0" (50/0")
20							593	
25							588	
30							583	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)



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

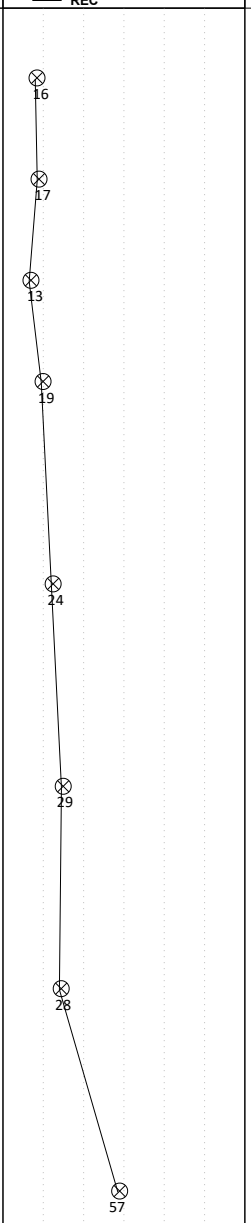
▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 21 2022**	CAVE IN DEPTH: **10.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 21 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-09**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **579005.4**	EASTING: **1518854.0**	STATION:	SURFACE ELEVATION: **607**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, orangish brown, moist, very stiff to stiff			5-8-8 (16)
	S-2	SS	18	18				6-7-10 (17)
5	S-3	SS	18	18			602	3-5-8 (13)
	S-4	SS	18	18	(SC) CLAYEY SAND, orangish brown, moist, medium dense			5-9-10 (19)
10							597	
	S-5	SS	18	18	(ML) SANDY SILT, trace clay, orangish brown to grayish brown, moist, very stiff			6-12-12 (24)
15							592	
	S-6	SS	18	18				5-14-15 (29)
20							587	
	S-7	SS	18	18				6-10-18 (28)
25							582	
	S-8	SS	18	18	(SM) SILTY SAND, contains rock fragments, grayish brown, moist, very dense			21-19-38 (57)
30					**END OF BORING AT 30 FT**		577	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC



LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

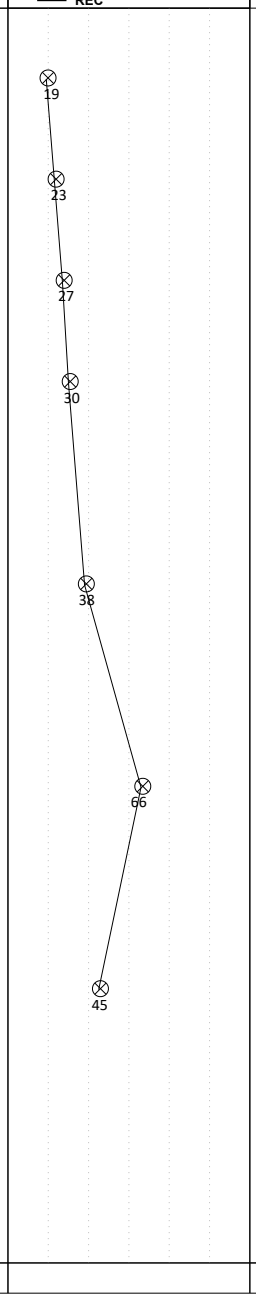
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

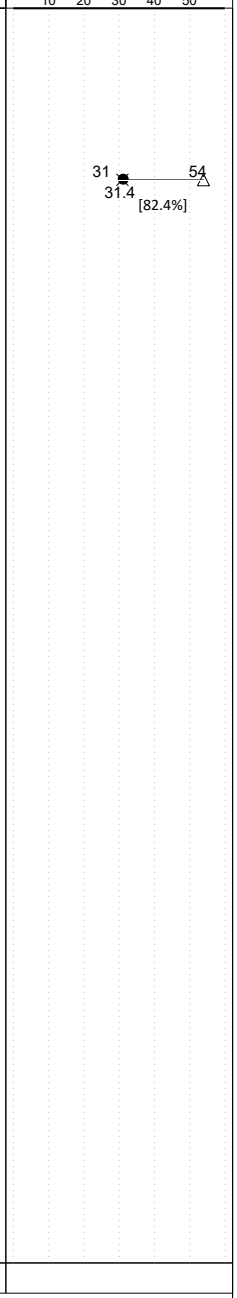
WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**		CAVE IN DEPTH: **28.50**
WL (Completion)	BORING COMPLETED: **Jun 08 2022**		HAMMER TYPE: **Automatic**
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-10**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
578908.3	**1518541.5**		**575**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, reddish brown, moist, very stiff			6-10-9 (19)
	S-2	SS	18	18				8-11-12 (23)
5							570	
	S-3	SS	18	18				15-13-14 (27)
	S-4	SS	18	18	(ML) SANDY SILT, orangish brown to grayish brown, moist, very stiff to hard			20-15-15 (30)
10							565	
	S-5	SS	18	18				21-20-18 (38)
15							560	
	S-6	SS	18	18	(ML) SANDY SILT, gray, moist, very hard			21-36-30 (66)
20							555	
	S-7	SS	18	18	(SM) SILTY SAND, grayish brown, moist, dense			15-20-25 (45)
25					**END OF BORING AT 25 FT**		550	
30							545	





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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **21.50**	
WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-11**	**1 of 1**

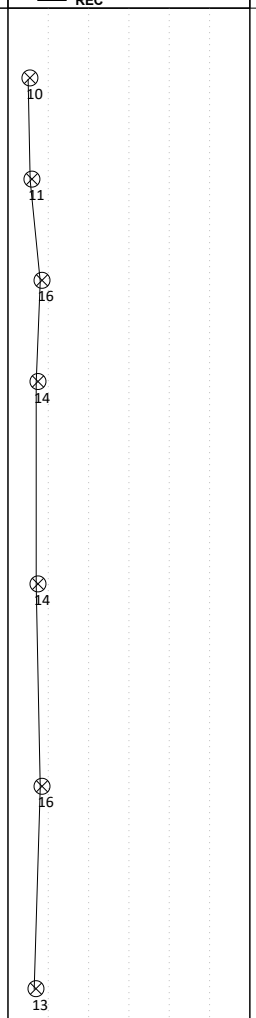
PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

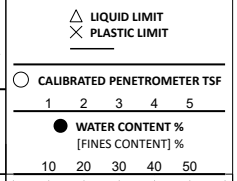
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
578654.7	**1518994.0**		**593**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, contains slight mica, brownish red to orangish brown, moist, stiff			5-5-5 (10)
	S-2	SS	18	18				4-5-6 (11)
5	S-3	SS	18	18	(ML) SANDY SILT, orangish brown to grayish brown, moist, very stiff to stiff		588	3-7-9 (16)
	S-4	SS	18	18				4-6-8 (14)
10	S-5	SS	18	18			583	4-7-7 (14)
15	S-6	SS	18	18			578	3-8-8 (16)
20	S-7	SS	18	18			573	5-6-7 (13)
25					**END OF BORING AT 25 FT**		568	
30							563	





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

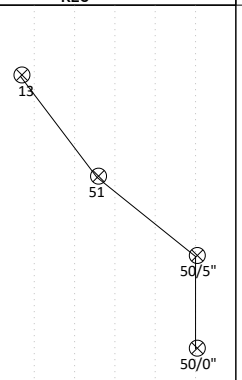
WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **13.50**	
WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

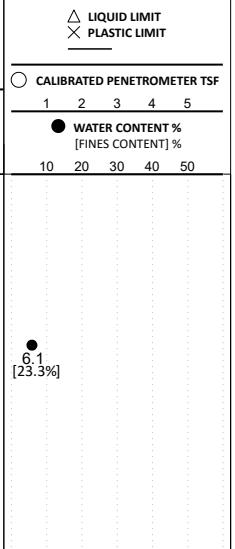
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-12**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
578728.4	**1519936.3**		**607**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(ML) Residuum, SANDY SILT, contains mica, orangish brown, moist, stiff			3-6-7 (13)
	S-2	SS	18	18	(SM) SILTY SAND, contains mica, grayish brown, moist, very dense			8-21-30 (51)
5	S-3	SS	5	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, grayish brown		602	50/5" (50/5")
	S-4	SS	0	0	**AUGER REFUSAL AT 8.5 FT**			50/0" (50/0")
10							597	
15							592	
20							587	
25							582	
30							577	



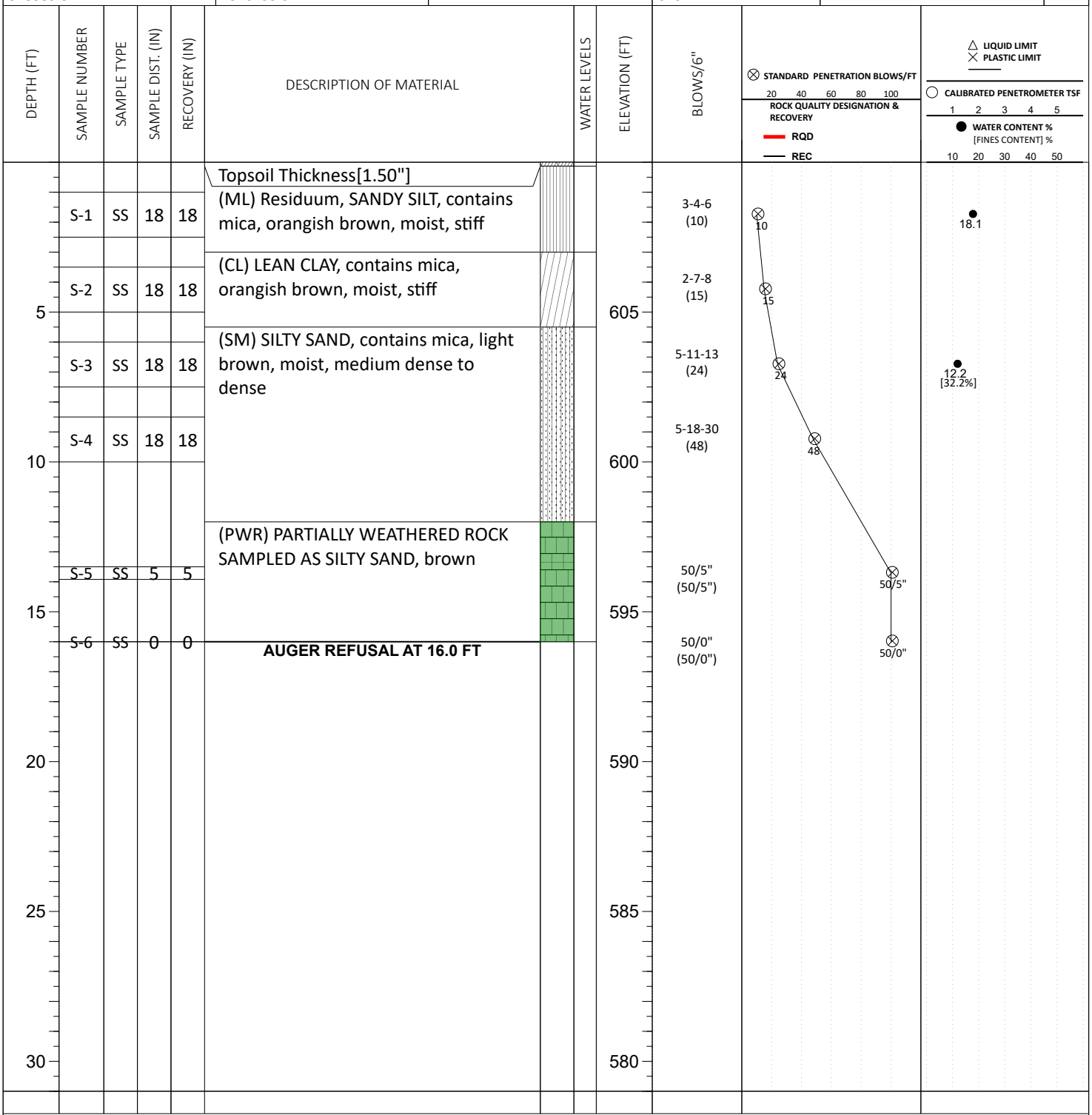


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**	CAVE IN DEPTH: **5.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 14 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-13**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **578589.3**	EASTING: **1520135.3**	STATION:	SURFACE ELEVATION: **610**
			BOTTOM OF CASING

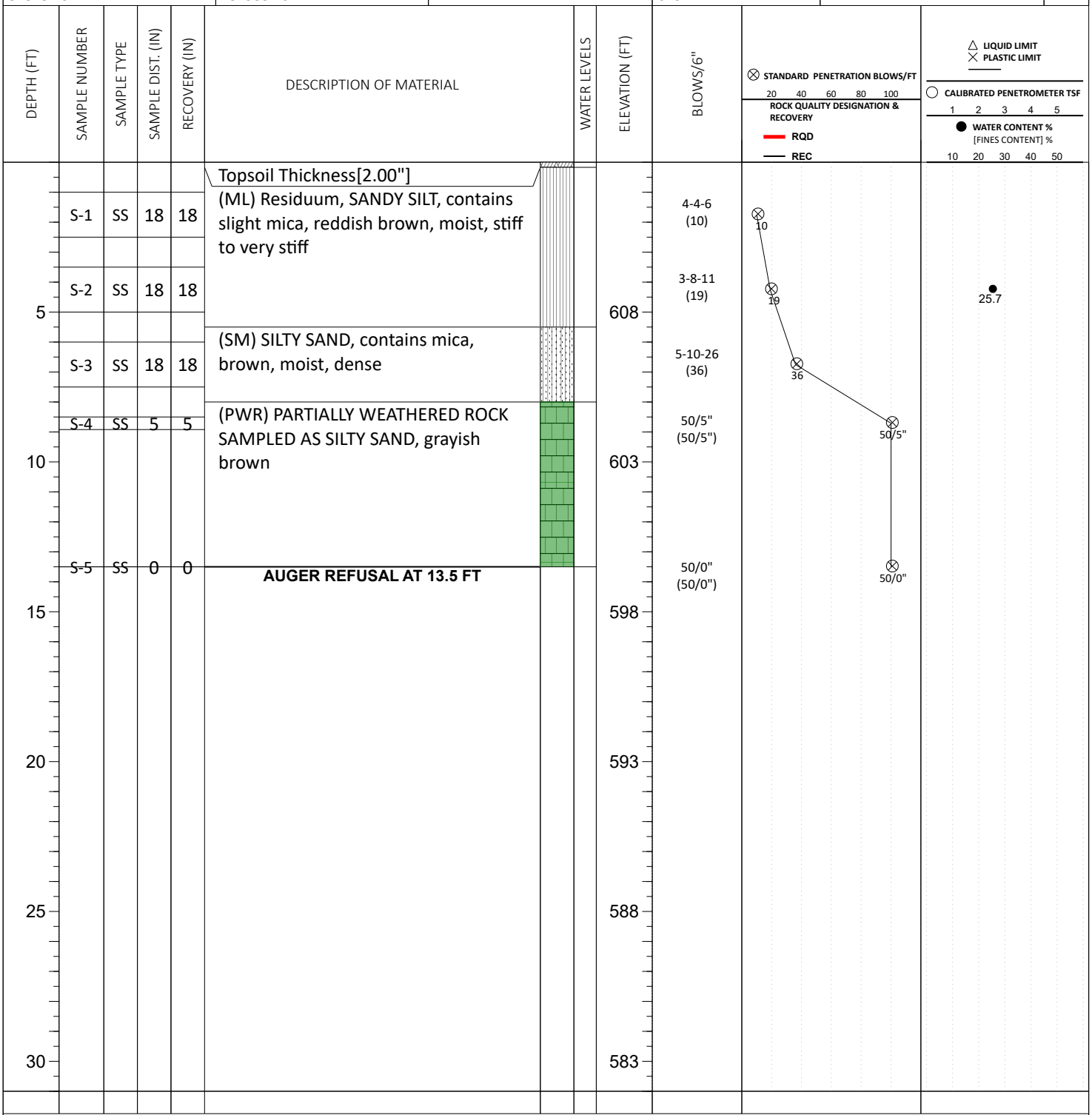


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**		CAVE IN DEPTH: **7.00**
▼ WL (Completion)	BORING COMPLETED: **Jun 13 2022**		HAMMER TYPE: **Automatic**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-14**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **578481.0**	EASTING: **1519887.0**	STATION:	SURFACE ELEVATION: **613**
			BOTTOM OF CASING



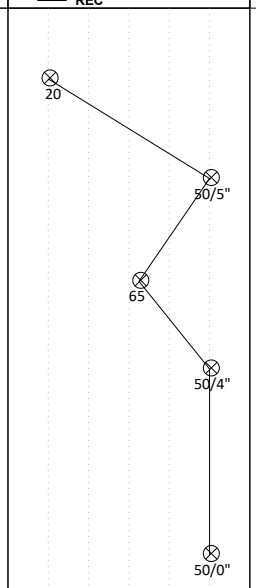
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

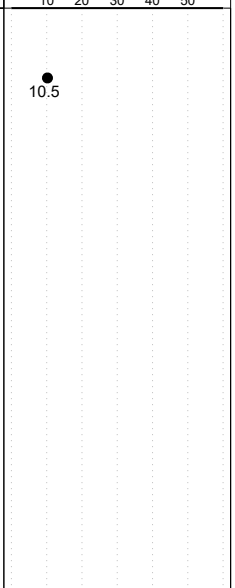
WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**		CAVE IN DEPTH: **8.00**
WL (Completion)	BORING COMPLETED: **Jun 13 2022**		HAMMER TYPE: **Automatic**
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-15**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **578370.3**	EASTING: **1519638.8**	STATION:	SURFACE ELEVATION: **606**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(ML) Residuum, SANDY SILT, light brown, moist, very stiff			5-8-12 (20)
	S-2	SS	17	17	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, light orangish brown			3-16-50/5" (50/5")
5							601	
	S-3	SS	18	18	(ML) SANDY SILT, light brown, moist, very hard			18-25-40 (65)
	S-4	SS	10	10	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, grayish brown			18-50/4" (50/4")
10							596	
	S-5	SS	0	0	**AUGER REFUSAL AT 13.5 FT**			50/0" (50/0")
15							591	
20							586	
25							581	
30							576	





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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**	CAVE IN DEPTH: **9.00**	
WL (Completion)	BORING COMPLETED: **Jun 13 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

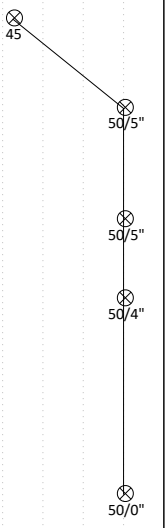
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-16**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **578182.4**	EASTING: **1519810.1**	STATION:	SURFACE ELEVATION: **586**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]		
	S-1	SS	18	18	(ML) Residuum, SANDY SILT, brown, moist, hard		16-15-30 (45)
	S-2	SS	11	11	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, light orangish brown		18-50/5" (50/5")
5						581	
	S-3	SS	17	17			21-34-50/5" (50/5")
	S-4	SS	4	4			50/4" (50/4")
10						576	
	S-5	SS	0	0	**AUGER REFUSAL AT 13.5 FT**		50/0" (50/0")
15						571	
20						566	
25						561	
30						556	

WATER LEVELS

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC



LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**	CAVE IN DEPTH: **9.00**	
WL (Completion)	BORING COMPLETED: **Jun 13 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-17**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

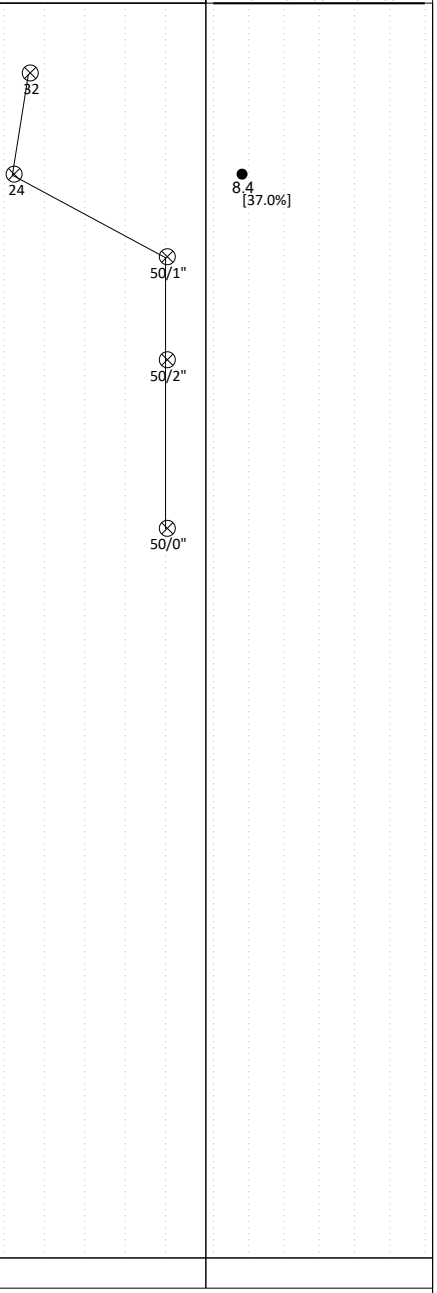
LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
578059.2	**1519557.1**		**592**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(SM) Residuum, SILTY SAND, dark brown, moist, medium dense to dense			9-15-17 (32)
	S-2	SS	18	18				8-12-12 (24)
5							587	
	S-3	SS	7	7	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, brown			32-50/1" (50/1")
	S-4	SS	8	8				48-50/2" (50/2")
10							582	
	S-5	SS	0	0	**AUGER REFUSAL AT 13.0 FT**			50/0" (50/0")
15							577	
20							572	
25							567	
30							562	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

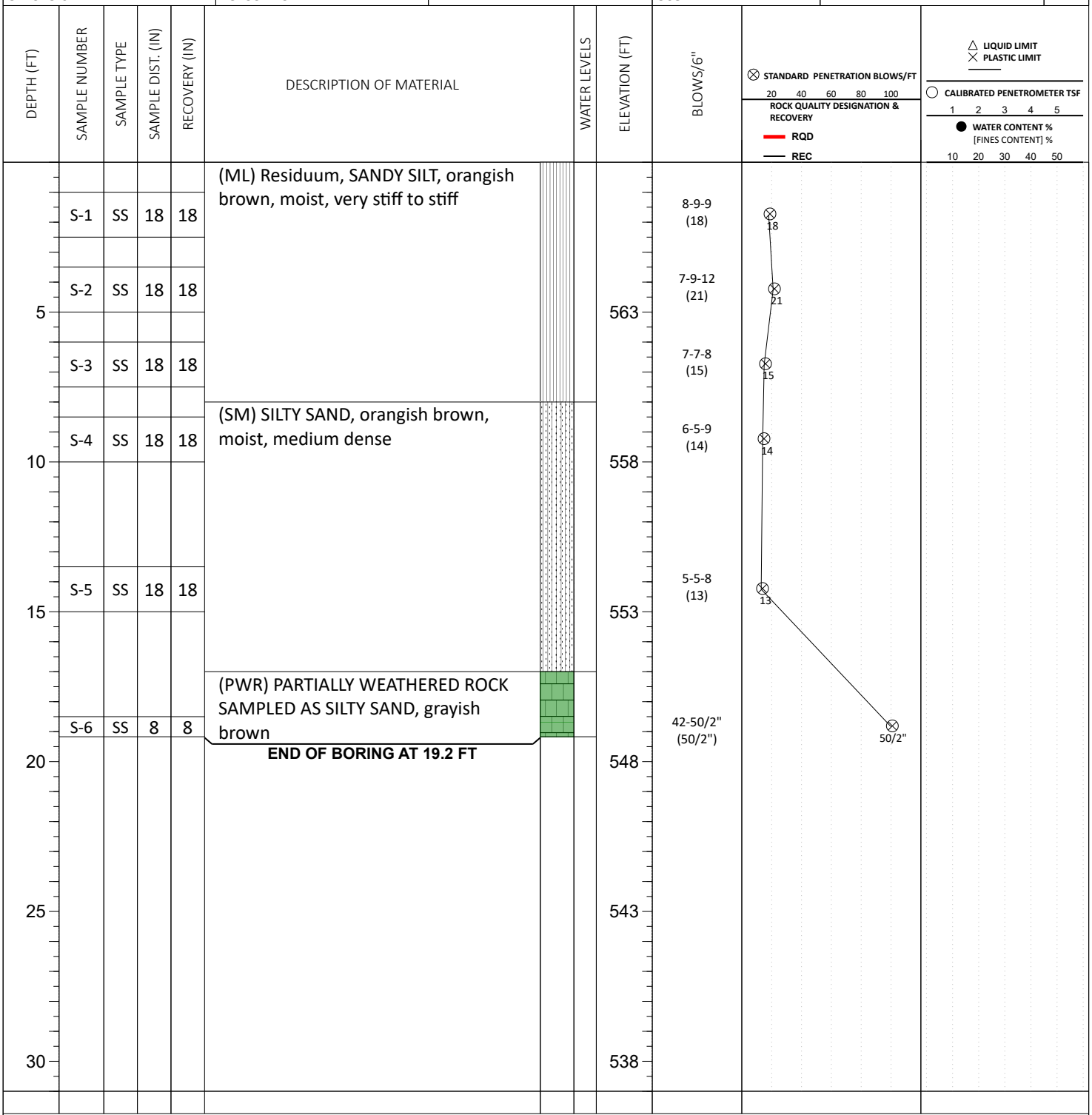


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **5.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-18**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577945.6**	EASTING: **1519311.3**	STATION:	SURFACE ELEVATION: **568**
			BOTTOM OF CASING



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

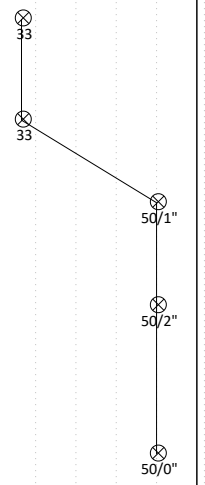
▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**		CAVE IN DEPTH: **11.50**
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**		HAMMER TYPE: **Automatic**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-19**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577793.2**	EASTING: **1519521.1**	STATION:	SURFACE ELEVATION: **561**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(SM) Residuum, SILTY SAND, brown, moist, dense			11-13-20 (33)
	S-2	SS	18	18				9-12-21 (33)
5	S-3	SS	7	7	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, orangish brown		556	37-50/1" (50/1")
	S-4	SS	8	8				42-50/2" (50/2")
10	S-5	SS	0	0	**AUGER REFUSAL AT 12.5 FT**		551	50/0" (50/0")
15							546	
20							541	
25							536	
30							531	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC
LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)



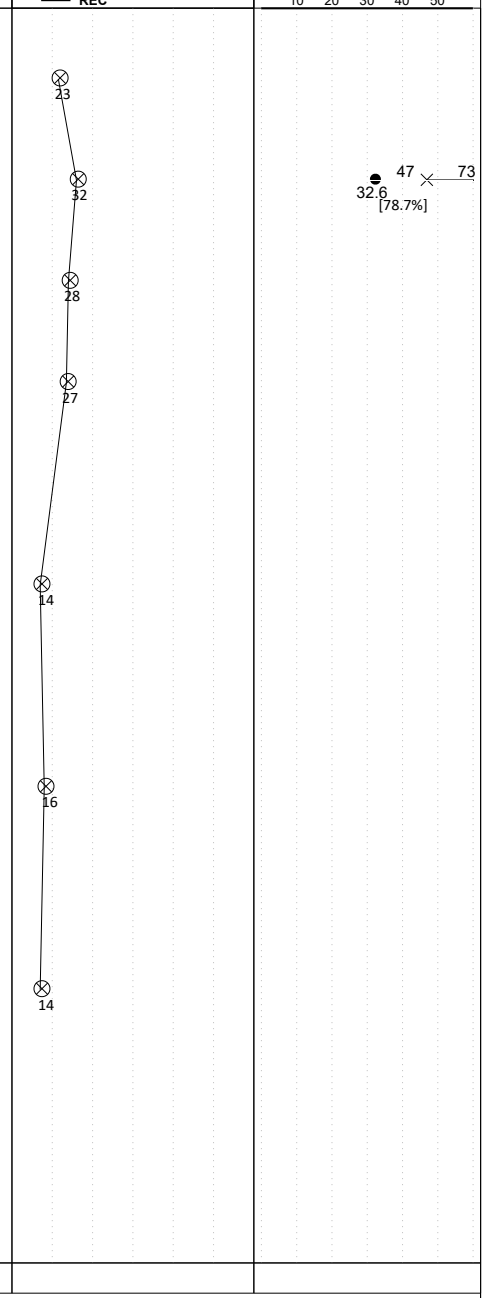
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **9.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-20**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577809.9	**1519998.9**		**593**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(MH) Residuum, ELASTIC SILT, with sand, contains mica, reddish brown, moist, very stiff to hard			
	S-1	SS	18	18				7-10-13 (23)
	S-2	SS	18	18				12-12-20 (32)
5							588	
	S-3	SS	18	18				9-11-17 (28)
					(ML) SANDY SILT, contains mica, orangish brown to reddish brown, moist, very stiff to stiff			
	S-4	SS	18	18				9-12-15 (27)
10							583	
	S-5	SS	18	18				6-5-9 (14)
15							578	
	S-6	SS	18	18				5-8-8 (16)
20							573	
	S-7	SS	18	18				5-5-9 (14)
25					**END OF BORING AT 25 FT**		568	
30							563	



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **13.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-21**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577531.1**	EASTING: **1520323.6**	STATION:	SURFACE ELEVATION: **607**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, contains mica, reddish brown, dry, very stiff		607	6-7-10 (17)
5	S-2	SS	18	18	(ML) SANDY SILT, contains mica, orangish brown, moist, stiff		602	5-5-9 (14)
	S-3	SS	18	18				5-6-6 (12)
10	S-4	SS	18	18	(SM) SILTY SAND, trace clay, contains mica, light orangish brown, moist, medium dense and loose		597	7-8-9 (17)
15	S-5	SS	18	18			592	5-5-10 (15)
20	S-6	SS	18	18			587	4-5-8 (13)
25	S-7	SS	18	18			582	4-6-7 (13)
30	S-8	SS	18	18			577	4-5-5 (10)

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] %
(10 20 30 40 50)

21.3
20.6 [59.1%]
35 40

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **27.50**	
WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-21**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577531.1**	EASTING: **1520323.6**	STATION:	SURFACE ELEVATION: **607**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	18	(SM) SILTY SAND, trace clay, contains mica, light orangish brown, moist, medium dense and loose		572	8-9-15 (24)
40	S-10	SS	18	18	(SM) SILTY SAND, contains mica, light orangish brown, moist, dense		567	10-12-25 (37)
					END OF BORING AT 40 FT			
45							562	
50							557	
55							552	
60							547	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
24
37

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

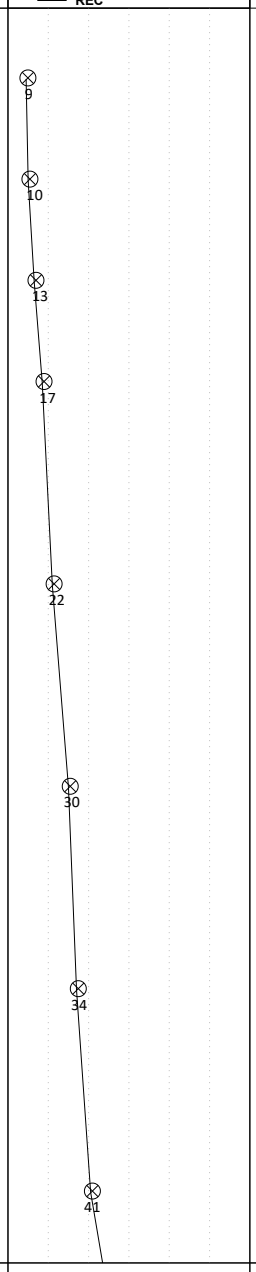
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

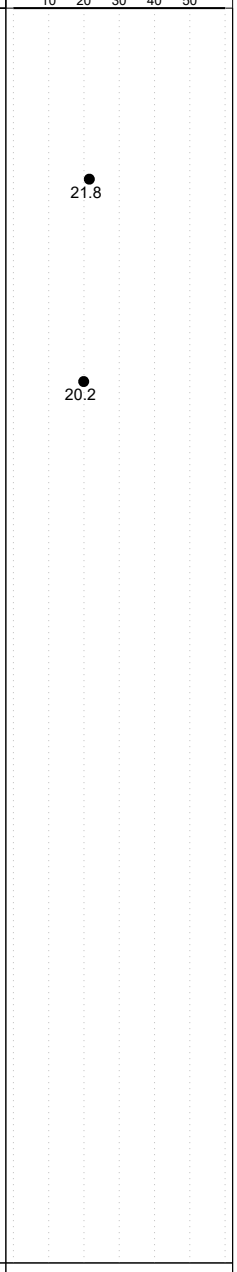
WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **27.50**	
WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-22**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577273.1	**1520643.3**		**623**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, contains slight mica, reddish brown, moist, stiff			3-4-5 (9)
	S-2	SS	18	18	(CL) LEAN CLAY, contains roots, brown, moist, stiff			6-5-5 (10)
5	S-3	SS	18	18			618	6-7-6 (13)
	S-4	SS	18	18	(ML) SANDY SILT, contains mica, brown to yellowish brown and gray, moist, very stiff to hard			7-9-8 (17)
10	S-5	SS	18	18			613	11-10-12 (22)
15	S-6	SS	18	18			608	15-12-18 (30)
20	S-7	SS	18	18			603	10-15-19 (34)
25	S-8	SS	18	18			598	15-21-20 (41)
30							593	





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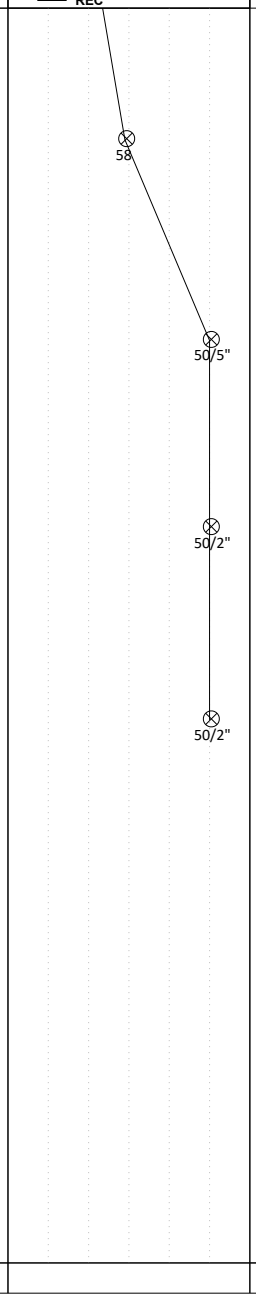
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

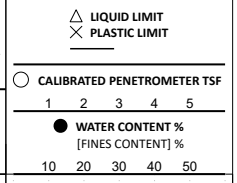
WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **28.50**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-22**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577273.1**	EASTING: **1520643.3**	STATION:	SURFACE ELEVATION: **623**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	18	(ML) SANDY SILT, contains mica, brown to yellowish brown and gray, moist, very stiff to hard (ML) SANDY SILT, contains slight mica, yellowish grayish brown, moist, very hard		588	19-22-36 (58)
40	S-10	SS	17	17	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, contains slight mica, yellowish brown and orange to yellowish brown and gray		583	26-50-50/5" (50/5")
45	S-11	SS	8	8			578	31-50/2" (50/2")
50	S-12	SS	2	2	**END OF BORING AT 48.7 FT**		573	50/2" (50/2")
55							568	
60							563	





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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **28.50**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-23**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577483.9	**1520021.4**		**580**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(ML) Residuum, SANDY SILT, contains mica, orangish brown to grayish brown, moist, very stiff			
	S-1	SS	18	18				6-6-12 (18)
	S-2	SS	18	18				4-7-9 (16)
5							575	
	S-3	SS	18	18				5-5-13 (18)
					(SM) SILTY SAND, contains mica, yellowish brown and red to orangish brown, moist, medium dense to loose			
	S-4	SS	18	18				6-8-8 (16)
10							570	
	S-5	SS	18	18				4-4-6 (10)
15							565	
	S-6	SS	18	18				3-4-5 (9)
20							560	
	S-7	SS	18	18				3-3-6 (9)
25							555	
	S-8	SS	18	18				3-4-3 (7)
30					**END OF BORING AT 30 FT**		550	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

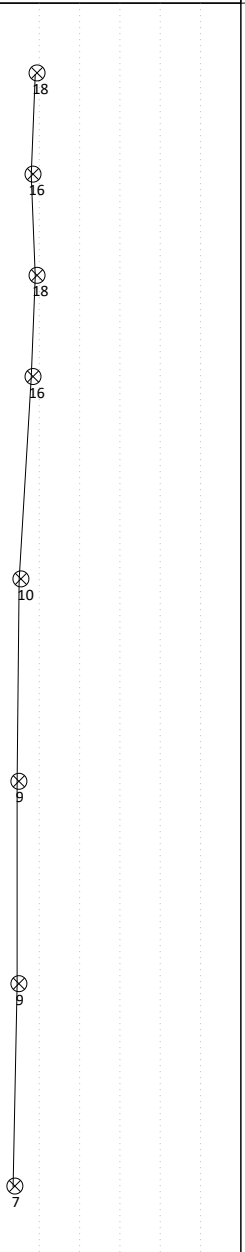
ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC

LIQUID LIMIT

PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **18.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-24**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577255.6**	EASTING: **1520312.8**	STATION:	SURFACE ELEVATION: **602**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(ML) Residuum, SANDY SILT, contains mica, reddish brown to orangish brown, moist, stiff to very stiff			3-6-7 (13)
	S-2	SS	18	18				5-7-7 (14)
5	S-3	SS	18	18			597	10-9-12 (21)
	S-4	SS	18	18	(ML) SANDY SILT, contains mica, orangish brown, hard			6-12-20 (32)
10							592	
	S-5	SS	18	18				4-15-30 (45)
15							587	
	S-6	SS	18	18				10-13-24 (37)
20							582	
	S-7	SS	18	18				9-15-20 (35)
25							577	
	S-8	SS	17	17	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, contains mica, orangish brown			26-20-50/5" (50/5")
30							572	

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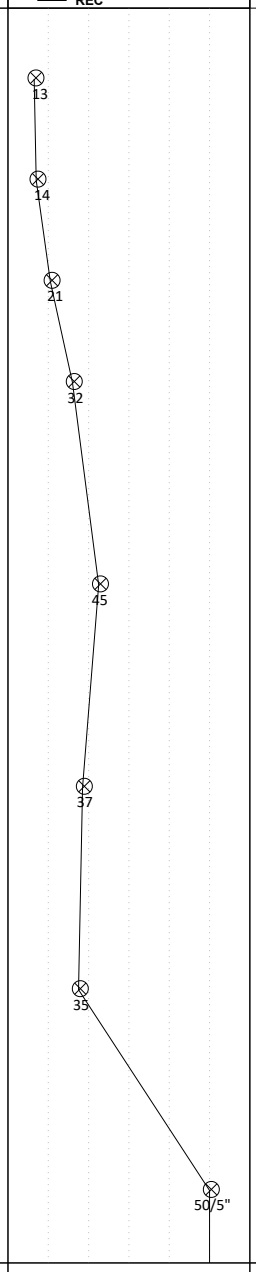
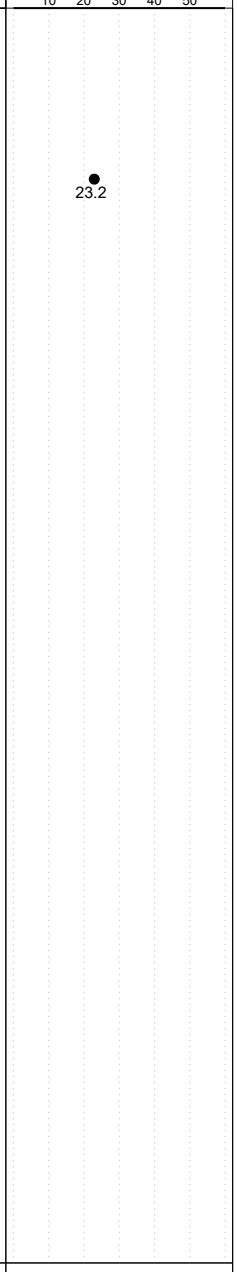




THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **22.00**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-24**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577255.6	**1520312.8**		**602**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	3	3	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, contains mica, orangish brown		567	50/3" (50/3")
					END OF BORING AT 33.8 FT			
40							562	
45							557	
50							552	
55							547	
60							542	

STANDARD PENETRATION BLOWS/FT: 20 40 60 80 100

ROCK QUALITY DESIGNATION & RECOVERY: RQD, REC

LIQUID LIMIT, PLASTIC LIMIT

CALIBRATED PENETROMETER TSF: 1 2 3 4 5

WATER CONTENT % [FINES CONTENT] %: 10 20 30 40 50

50/3"

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **22.00**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-25**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
577460.7	**1519700.9**		**556**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[3.00"]		556	
	S-1	SS	18	18	(CH) Residuum, FAT CLAY, trace sand, reddish brown and black to orangish brown and grayish brown, moist, stiff			4-5-6 (11)
	S-2	SS	18	18				5-7-6 (13)
5							551	
	S-3	SS	18	18	(CL) LEAN CLAY, trace sand, orangish brown and grayish brown, moist, very stiff to hard			7-9-11 (20)
	S-4	SS	18	18				15-10-10 (20)
10							546	
	S-5	SS	18	18				15-15-20 (35)
15							541	
	S-6	SS	18	18				17-16-21 (37)
20							536	
	S-7	SS	18	18		▽		20-15-21 (36)
25					**END OF BORING AT 25 FT**		531	
30							526	

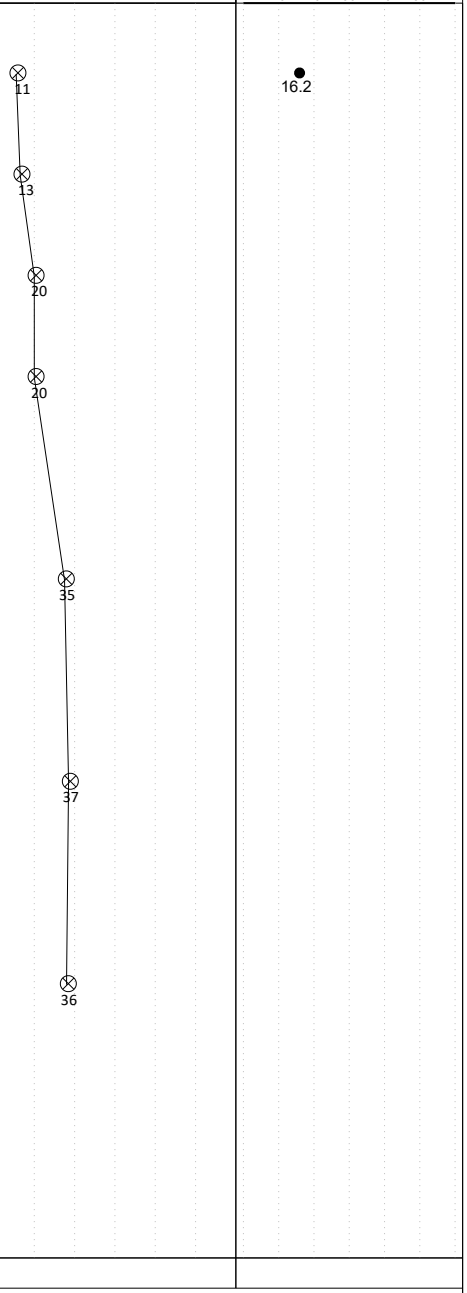
STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC

LIQUID LIMIT △ PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)

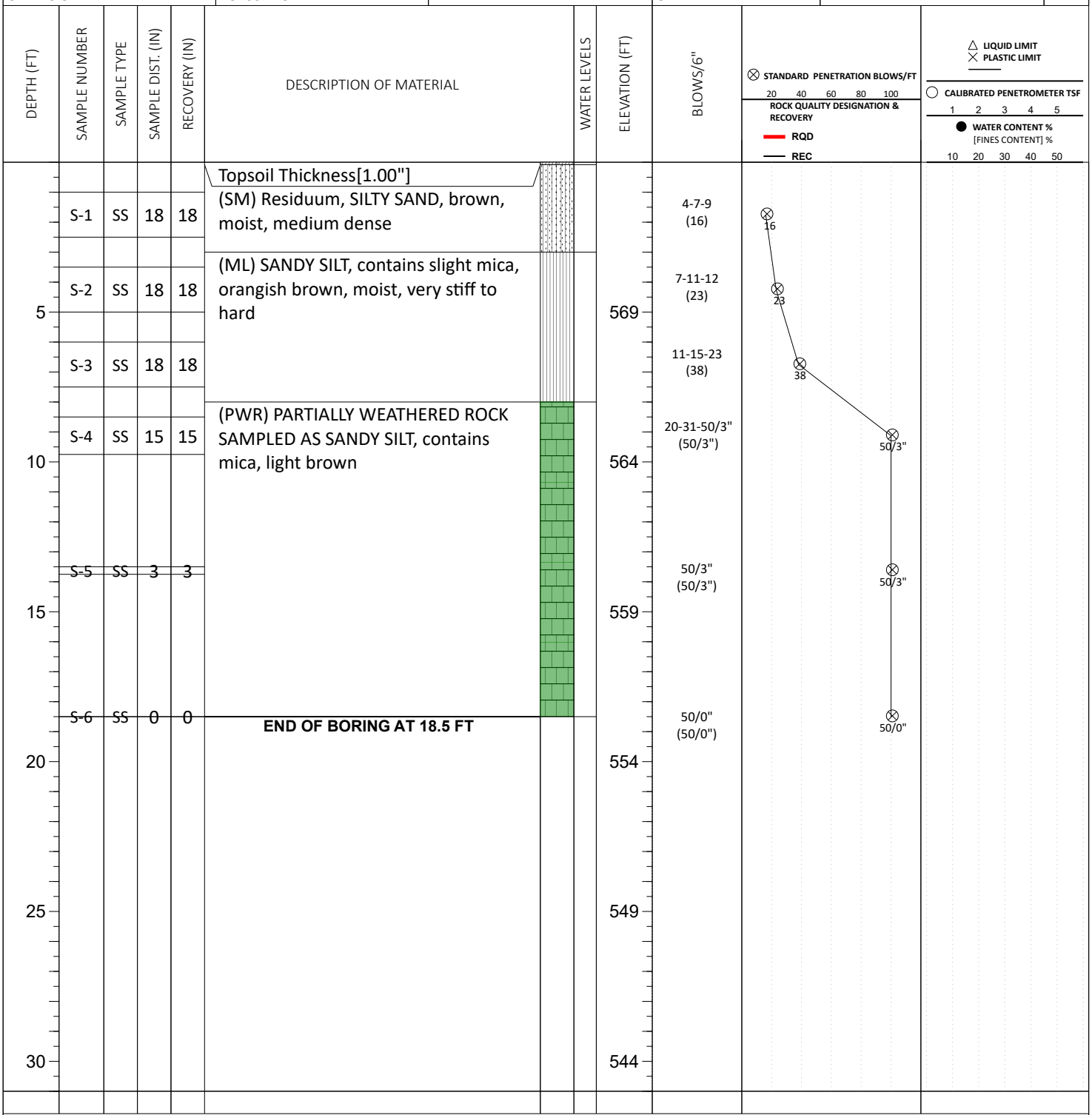


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **23.50**	BORING STARTED: **Jun 09 2022**		CAVE IN DEPTH:
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**		HAMMER TYPE: **Automatic**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-26**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577175.8	**1520017.8**		**574**



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**		CAVE IN DEPTH: **8.50**
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**		HAMMER TYPE: **Automatic**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-27**	**1 of 1**

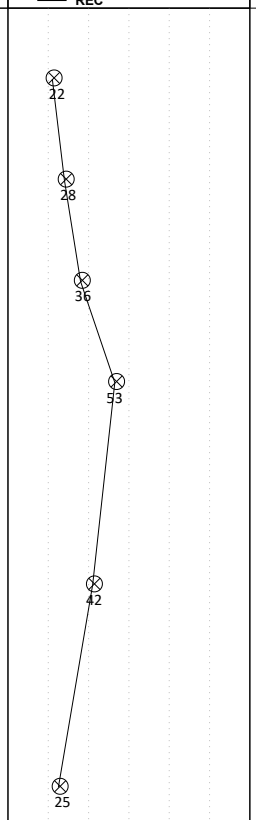
PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

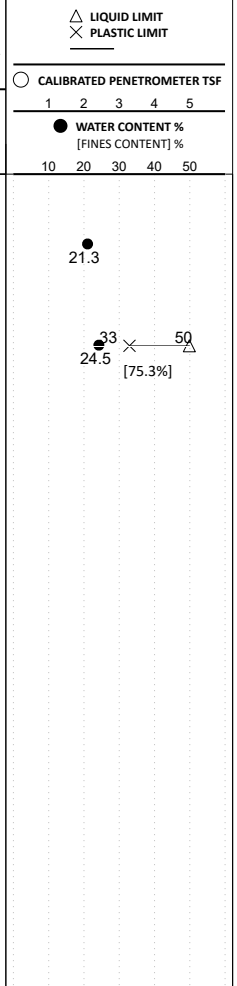
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
576909.0	**1520332.2**		**591**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(MH) Residuum, ELASTIC SILT, with sand, contains mica, reddish brown, moist, very stiff to hard		591	
	S-1	SS	18	18				9-10-12 (22)
	S-2	SS	18	18				10-13-15 (28)
5							586	
	S-3	SS	18	18				10-15-21 (36)
					(ML) SANDY SILT, contains mica, orangish brown, moist, very hard to hard			
	S-4	SS	18	18				21-25-28 (53)
10							581	
	S-5	SS	18	18				15-20-22 (42)
15							576	
					(ML) SANDY SILT, contains mica, yellowish gray, moist, very stiff			
	S-6	SS	18	18				11-10-15 (25)
20					**END OF BORING AT 20 FT**		571	
25							566	
30							561	





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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **17.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

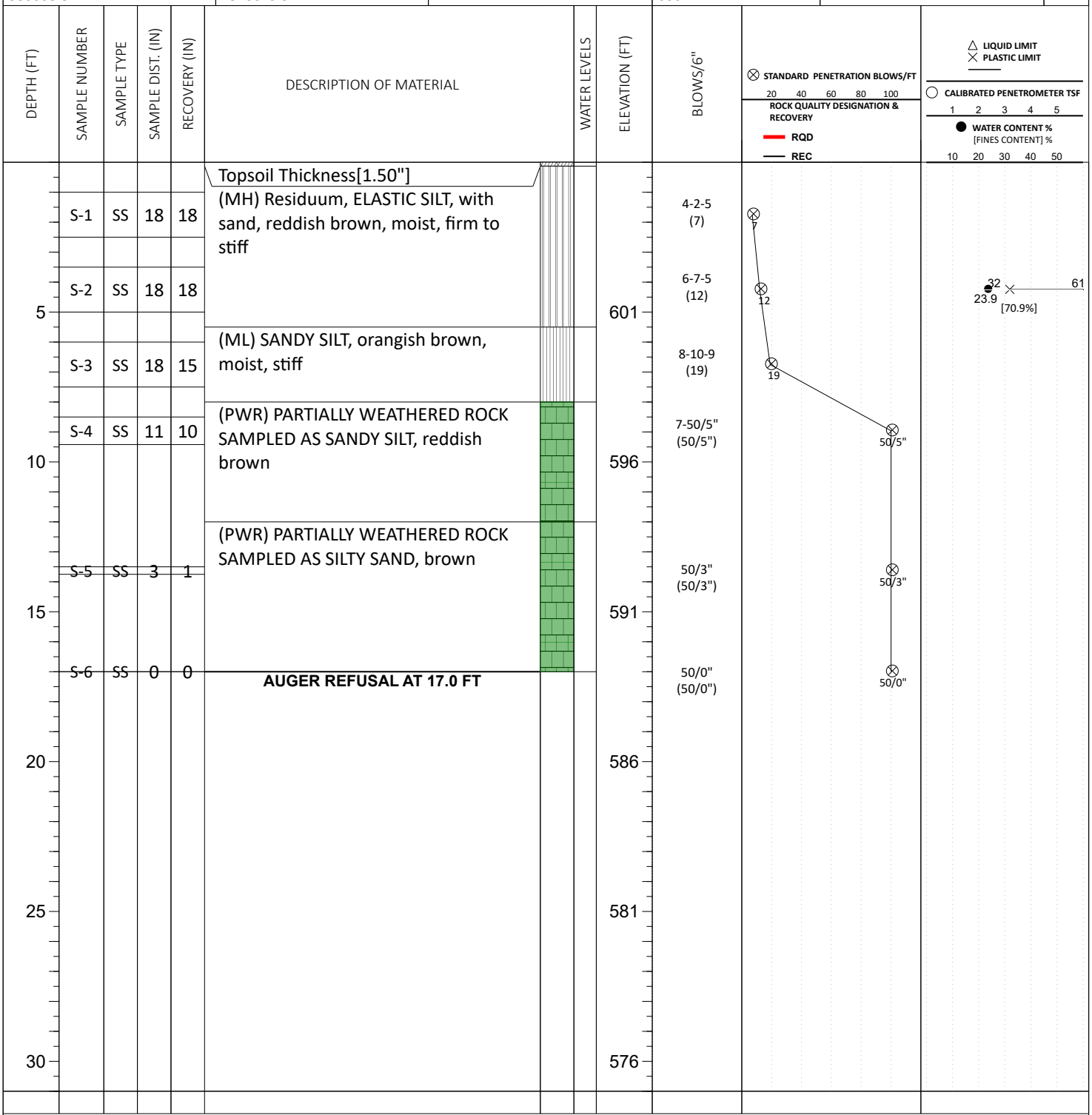
CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-28**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
580008.8	**1520019.9**		**606**	



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**	CAVE IN DEPTH: **10.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 14 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-29**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579671.7	**1520207.5**		**620**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[1.50"]			
	S-1	SS	18	15	(CL) Residuum, LEAN CLAY, orangish brown, moist, firm			3-4-4 (8)
	S-2	SS	16	12	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS LEAN CLAY, orangish brown			6-10-50/4" (50/4")
5	S-3	SS	2	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, gray		615	50/2" (50/2")
	S-4	SS	0	0	**AUGER REFUSAL AT 8.5 FT**			50/0" (50/0")
10							610	
15							605	
20							600	
25							595	
30							590	

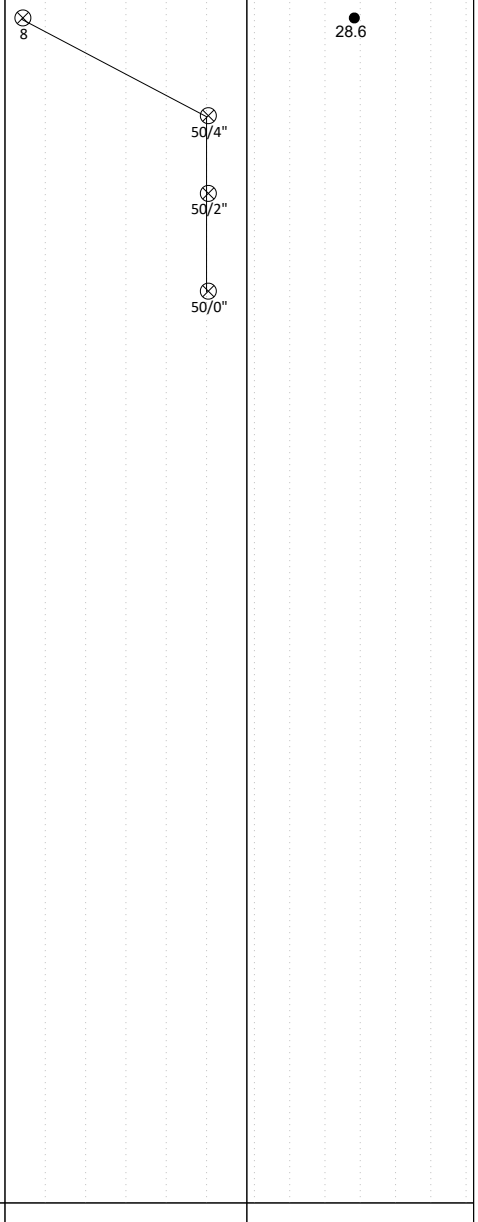
STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

ROCK QUALITY DESIGNATION & RECOVERY — RQD, REC

LIQUID LIMIT / PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**	CAVE IN DEPTH: **3.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 14 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-30**	**1 of 1**

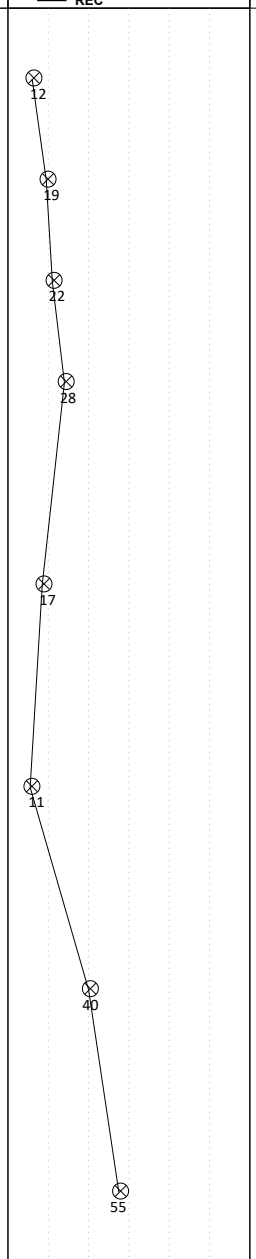
PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

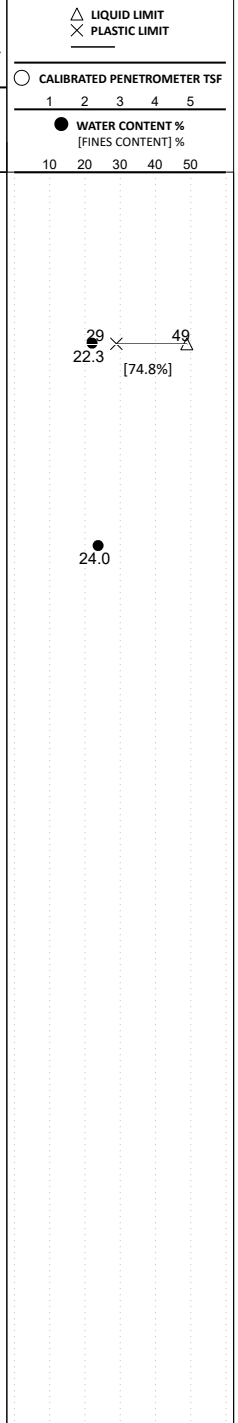
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
580135.6	**1519462.8**		**626**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(ML) Residuum, SILT, with sand, dark reddish brown to dark brown, moist, stiff to very stiff			5-6-6 (12)
	S-2	SS	18	18				7-9-10 (19)
5	S-3	SS	18	18			621	7-10-12 (22)
	S-4	SS	18	18				15-13-15 (28)
10							616	
	S-5	SS	18	18				3-8-9 (17)
15							611	
	S-6	SS	18	18				2-4-7 (11)
20					(SM) SILTY SAND, contains rock fragments, gray, moist, dense to very dense		606	
	S-7	SS	18	18				5-14-26 (40)
25							601	
	S-8	SS	18	18				4-10-45 (55)
30					**END OF BORING AT 30 FT**		596	





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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **17.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

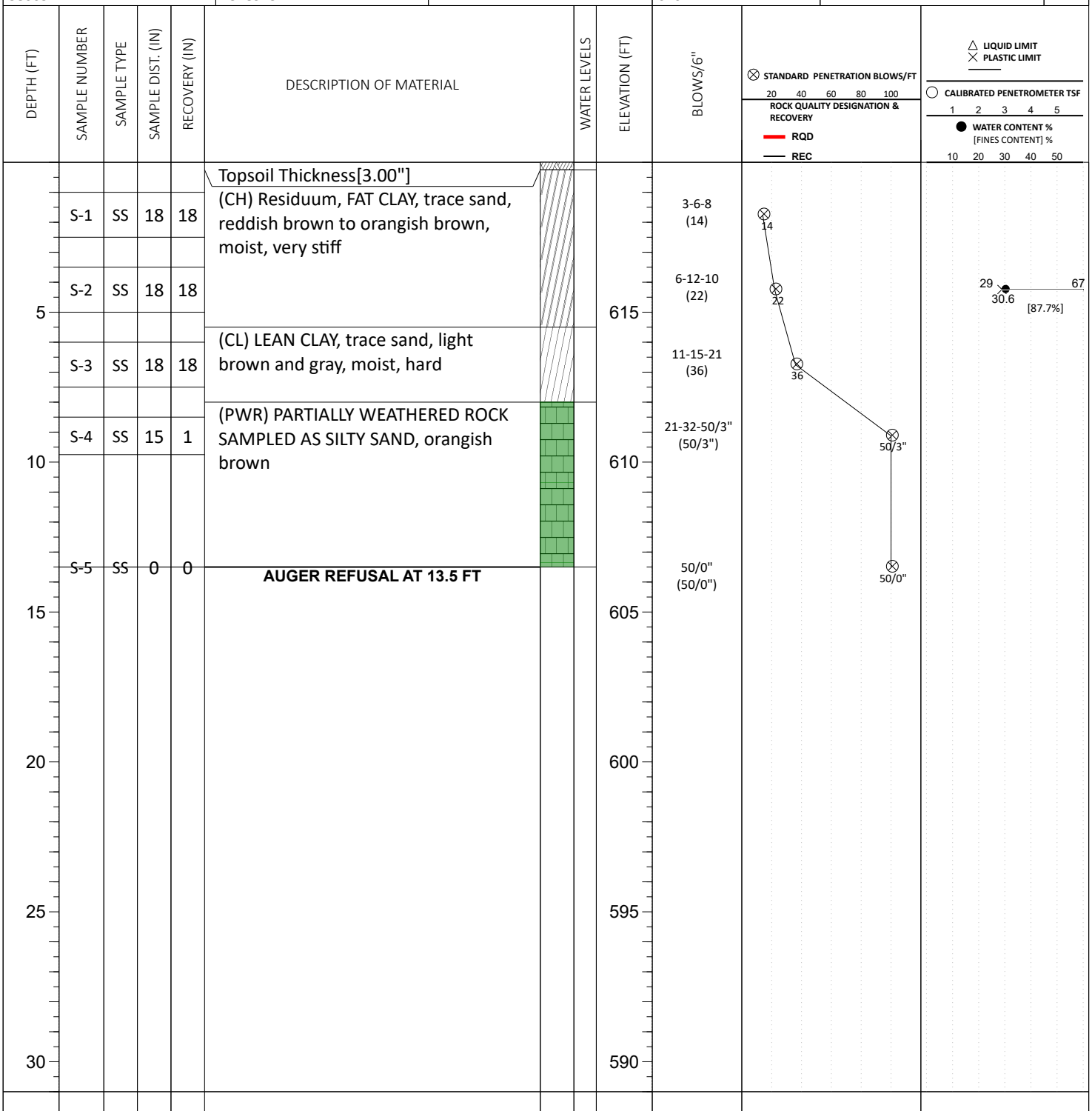
CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-31**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
580052.7	**1518975.2**		**620**	



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **13.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

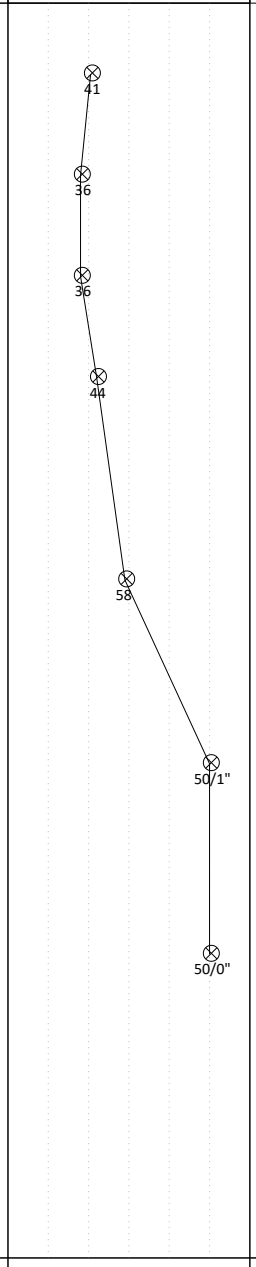
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-32**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579742.0	**1519708.4**		**589**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, brown, moist, hard			20-15-26 (41)
5	S-2	SS	18	18	(SC) CLAYEY SAND, brown to orangish brown to grayish brown, moist, dense to very dense		584	12-17-19 (36)
	S-3	SS	18	18				15-16-20 (36)
10	S-4	SS	18	18			579	12-19-25 (44)
	S-5	SS	18	18				20-26-32 (58)
15							574	
	S-6	SS	7	7	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS CLAYEY SAND, grayish brown			46-50/1" (50/1")
20							569	
	S-7	SS	0	0	**AUGER REFUSAL AT 23.5 FT**			50/0" (50/0")
25							564	
30							559	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)



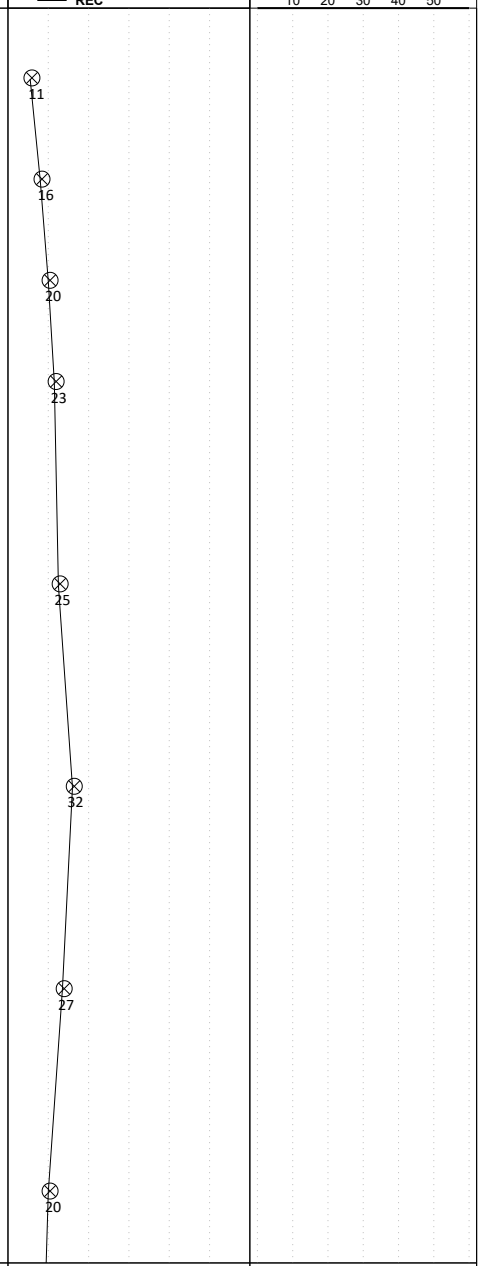
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

WL (First Encountered) **GNE**	BORING STARTED: **Jun 21 2022**	CAVE IN DEPTH: **10.50**	
WL (Completion)	BORING COMPLETED: **Jun 21 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-33**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579638.0	**1518746.2**		**604**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(CH) Residuum, FAT CLAY, gray, moist, stiff			4-6-5 (11)
	S-2	SS	18	18	(ML) SANDY SILT, gray to orangish brown, moist, very stiff			6-7-9 (16)
5	S-3	SS	18	18			599	8-9-11 (20)
	S-4	SS	18	18				10-12-11 (23)
10							594	
	S-5	SS	18	14	(CL) LEAN CLAY, trace sand, contains slight mica, orangish brown to reddish brown, moist, very stiff to hard			13-15-10 (25)
15							589	
	S-6	SS	18	14				13-17-15 (32)
20							584	
	S-7	SS	18	18	(ML) SANDY SILT, contains slight rock fragments, gray, moist, very stiff			10-14-13 (27)
25							579	
	S-8	SS	18	18				8-9-11 (20)
30							574	



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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **31.00**	
WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 551**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-33**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **579638.0**	EASTING: **1518746.2**	STATION:	SURFACE ELEVATION: **604**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT (20 40 60 80 100) / ROCK QUALITY DESIGNATION & RECOVERY (RQD, REC)	LIQUID LIMIT / PLASTIC LIMIT / CALIBRATED PENETROMETER TSF (1 2 3 4 5) / WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)
					(ML) SANDY SILT, contains slight rock fragments, gray, moist, very stiff					
35	S-9	SS	18	12	**END OF BORING AT 35 FT**		569	6-8-9 (17)	17	
40							564			
45							559			
50							554			
55							549			
60							544			

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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **31.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 551**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-34**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579251.1	**1519432.9**		**603**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, contains slight rock fragments, orangish brown, moist, hard		603	12-15-19 (34)
5	S-2	SS	18	18	(ML) SANDY SILT, reddish brown and light brown, moist, very stiff to hard		598	10-15-15 (30)
	S-3	SS	18	18				15-19-26 (45)
10	S-4	SS	18	18	(ML) SANDY SILT, contains slight rock fragments, light brown, moist, very hard		593	22-24-30 (54)
15	S-5	SS	8	8	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS LEAN CLAY, trace sand, contains slight rock fragments, grayish brown		588	45-50/2" (50/2")
20	S-6	SS	0	0	**AUGER REFUSAL AT 18.5 FT**		583	50/0" (50/0")
25							578	
30							573	

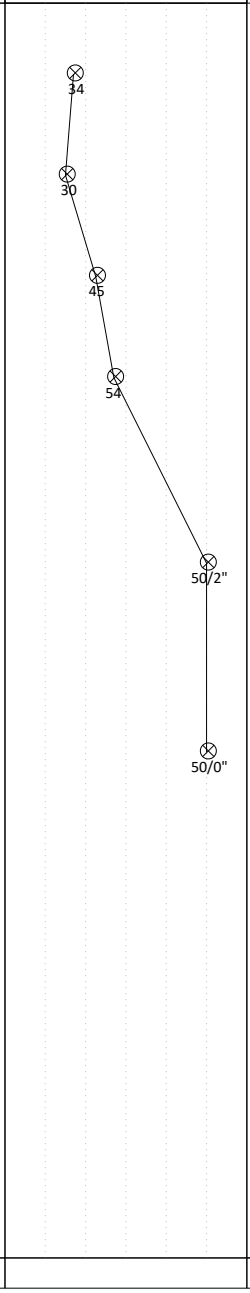
STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

ROCK QUALITY DESIGNATION & RECOVERY — RQD, REC

LIQUID LIMIT, PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)



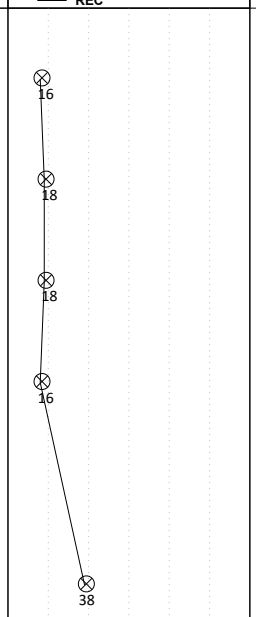
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

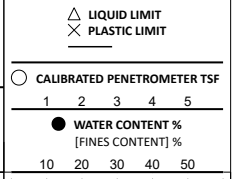
▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 21 2022**	CAVE IN DEPTH: **11.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 21 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-35**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579512.4	**1517495.1**		**580**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(ML) Residuum, SANDY SILT, orangish brown, moist, very stiff			
	S-1	SS	18	18				8-7-9 (16)
	S-2	SS	18	18				8-8-10 (18)
5							575	
	S-3	SS	18	18				7-9-9 (18)
	S-4	SS	18	18				8-10-6 (16)
10							570	
					(SM) SILTY SAND, grayish brown, moist, dense			
	S-5	SS	18	18				10-15-23 (38)
15					**END OF BORING AT 15 FT**		565	
20							560	
25							555	
30							550	





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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **9.00**	
WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-36**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
579440.9	**1518061.2**		**590**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, with sand, orangish brown, moist, very hard and hard		590	15-25-28 (53)
5	S-2	SS	18	18			585	20-17-31 (48)
	S-3	SS	18	18				12-22-22 (44)
10	S-4	SS	18	18			580	8-15-30 (45)
15	S-5	SS	18	18	**END OF BORING AT 15 FT**		575	10-22-31 (53)
20							570	
25							565	
30							560	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC

LIQUID LIMIT △ PLASTIC LIMIT ×

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % ● [FINES CONTENT] % (10 20 30 40 50)

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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **8.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

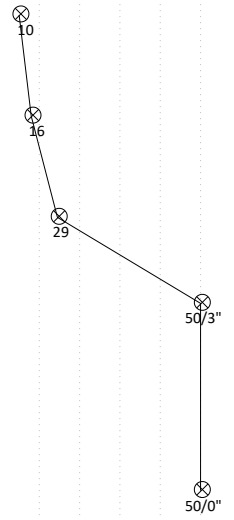
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-37**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579169.0	**1518486.1**		**572**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, trace organics, reddish brown to medium brown, moist, stiff to very stiff			3-5-5 (10)
	S-2	SS	18	18				6-7-9 (16)
5							567	
	S-3	SS	18	18	(ML) SANDY SILT, trace organics, brown, moist, very stiff			8-19-10 (29)
	S-4	SS	9	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, orangish brown			29-50/3" (50/3")
10							562	
	S-5	SS	0	0	**END OF BORING AT 13.5 FT**			50/0" (50/0")
15							557	
20							552	
25							547	
30							542	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC



LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 08 2022**	CAVE IN DEPTH: **12.50**	
WL (Completion)	BORING COMPLETED: **Jun 08 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-38**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
578792.7	**1519229.7**		**590**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(ML) Residuum, SANDY SILT, brown to orangish brown to grayish brown, moist, very stiff to hard			15-13-20 (33)
	S-2	SS	18	18				10-12-22 (34)
5							585	
	S-3	SS	18	18				9-12-13 (25)
	S-4	SS	18	18				10-10-15 (25)
10							580	
	S-5	SS	18	18				13-20-21 (41)
15							575	
	S-6	SS	18	18				9-12-28 (40)
20					**END OF BORING AT 20 FT**		570	
25							565	
30							560	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)

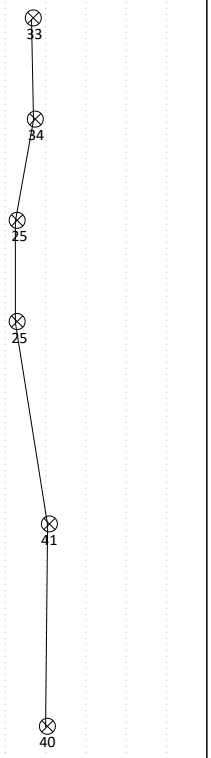
ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC

LIQUID LIMIT

PLASTIC LIMIT

CALIBRATED PENETROMETER TSF (1 2 3 4 5)

WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)

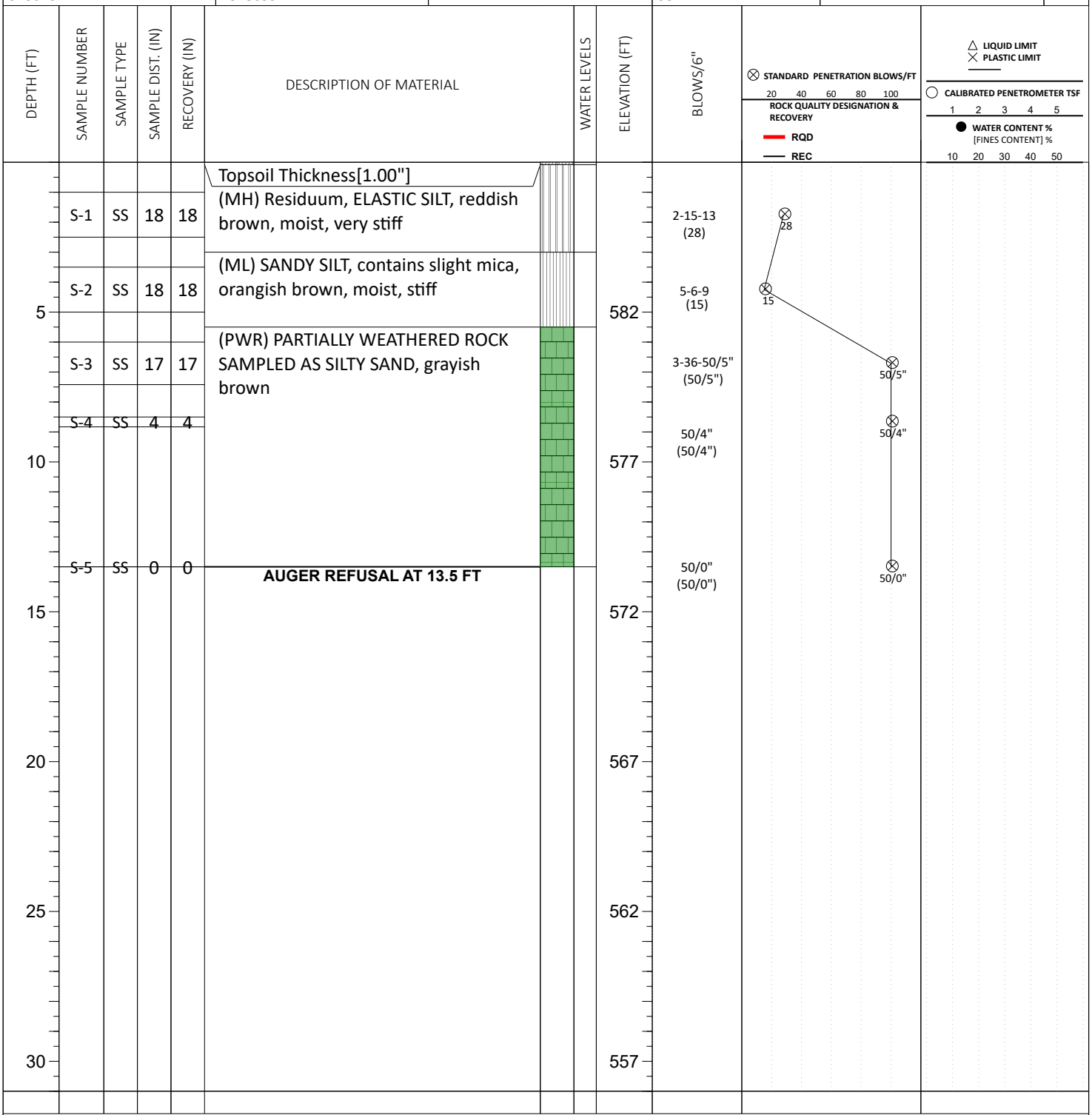


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 21 2022**	CAVE IN DEPTH: **11.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 21 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-39**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **578648.7**	EASTING: **1518659.2**	STATION:	SURFACE ELEVATION: **587**
			BOTTOM OF CASING



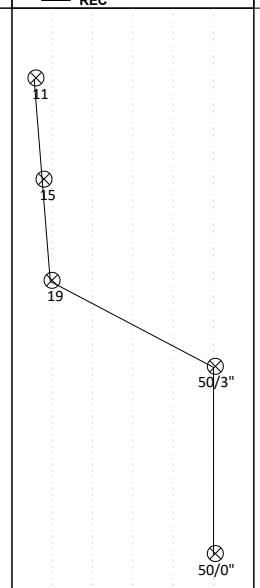
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

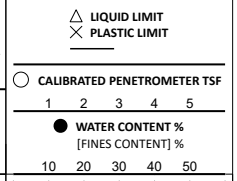
▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**		CAVE IN DEPTH: **11.00**
▼ WL (Completion)	BORING COMPLETED: **Jun 17 2022**		HAMMER TYPE: **Automatic**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-40**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **578846.5**	EASTING: **1520138.9**	STATION:	SURFACE ELEVATION: **593**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[1.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, brown, moist, stiff			4-4-7 (11)
	S-2	SS	18	18				6-7-8 (15)
5							588	
	S-3	SS	18	15	(ML) SANDY SILT, contains mica, brown, moist, stiff			5-7-12 (19)
	S-4	SS	9	8	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, grayish brown			13-50/3" (50/3")
10							583	
	S-5	SS	0	0	**AUGER REFUSAL AT 13.5 FT**			50/0" (50/0")
15							578	
20							573	
25							568	
30							563	





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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**		CAVE IN DEPTH: **5.50**
▼ WL (Completion)	BORING COMPLETED: **Jun 14 2022**		HAMMER TYPE: **Automatic**
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

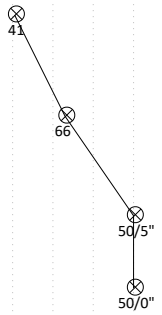
GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-41**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
578664.3	**1519698.6**		**606**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[1.00"]			
	S-1	SS	18	18	(CH) Residuum, FAT CLAY, orangish brown and gray, moist, hard			8-15-26 (41)
	S-2	SS	18	18	(CL) LEAN CLAY, contains slight rock fragments, light brown, moist, very hard			17-26-40 (66)
5	S-3	SS	17	17	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS CLAYEY SAND, light orangish brown		601	15-31-50/5" (50/5")
	S-4	SS	0	0	**AUGER REFUSAL AT 8.5 FT**			50/0" (50/0")
10							596	
15							591	
20							586	
25							581	
30							576	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC



LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**	CAVE IN DEPTH: **6.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 13 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-42**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
578346.3	**1520091.8**		**588**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	D3S-3	BS1 SS	12 18	18	Topsoil Thickness[2.00"] (SC) Residuum, CLAYEY SAND, dark reddish brown, moist, very stiff		588	5-6-11 (17)
	S-1							
	S-2	SS	18	18	(CL) LEAN CLAY, trace sand, orangish brown, moist, very stiff			8-10-13 (23)
5							583	
	S-3	SS	18	18	(SM) SILTY SAND, contains slight rock fragments, orangish brown, moist, very dense			6-21-31 (52)
	S-4	SS	2	2	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, orangish brown			50/2" (50/2")
10							578	
	S-5	SS	0	0	**AUGER REFUSAL AT 12 FT**			50/0" (50/0")
15							573	
20							568	
25							563	
30							558	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY — RQD — REC
17, 23, 52, 50/2", 50/0"

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)
15, 29, 11.5, [44.7%]

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**	CAVE IN DEPTH: **12.00**	
WL (Completion)	BORING COMPLETED: **Jun 13 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-43**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577794.2	**1520252.8**		**605**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, contains slight mica, reddish brown, moist, very stiff		605	7-12-13 (25)
5	S-2	SS	18	18	(ML) SANDY SILT, contains slight mica, orangish brown, moist, very stiff to stiff		600	7-7-9 (16)
	S-3	SS	18	18				5-8-7 (15)
10	S-4	SS	18	18			595	5-4-8 (12)
	S-5	SS	18	18			590	3-3-6 (9)
20	S-6	SS	18	18			585	3-4-6 (10)
25	S-7	SS	18	18	(ML) SANDY SILT, contains slight mica, orangish brown, moist, firm		580	4-4-3 (7)
30	S-8	SS	18	18			575	4-5-3 (8)
					END OF BORING AT 30 FT			

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **17.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-44**	**1 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577513.5	**1520582.8**		**623**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	D3S-4	BS1 SS	12 18	18	Topsoil Thickness[2.00"] (MH) Residuum, ELASTIC SILT, contains slight mica, reddish brown, moist, very stiff		623	4-8-11 (19)
	S-1							
	S-2	SS	18	18				5-9-15 (24)
5							618	
	S-3	SS	18	18	(ML) SANDY SILT, contains slight mica, reddish orange, moist, very stiff and hard			9-10-16 (26)
	S-4	SS	18	18				11-15-18 (33)
10							613	
	S-5	SS	18	18				15-18-20 (38)
15							608	
	S-6	SS	18	18				9-16-19 (35)
20							603	
	S-7	SS	18	18				6-13-23 (36)
25							598	
	S-8	SS	18	18				8-10-19 (29)
30							593	

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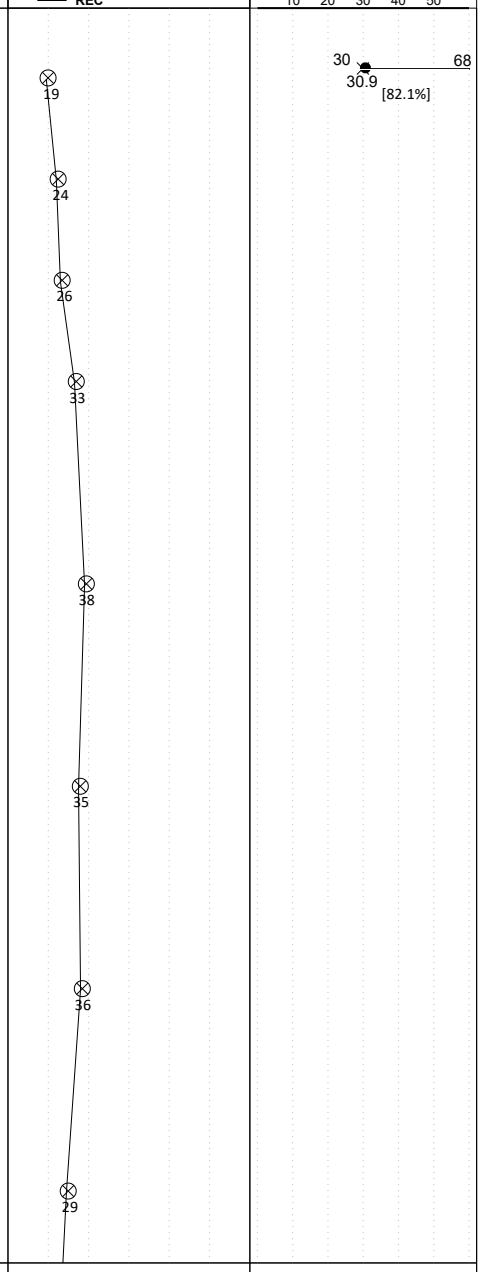


THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **38.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-44**	**2 of 2**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
577513.5	**1520582.8**		**623**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
35	S-9	SS	18	18	(ML) SANDY SILT, contains slight mica, reddish orange, moist, very stiff and hard		588	7-11-13 (24)
40	S-10	SS	18	18			583	6-15-17 (32)
					END OF BORING AT 40 FT			
45							578	
50							573	
55							568	
60							563	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **38.50**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-45**	**1 of 1**

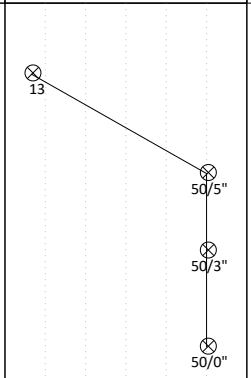
PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
578260.2	**1519367.0**		**581**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, brown, moist, stiff			2-4-9 (13)
5	S-2	SS	17	17	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS LEAN CLAY, yellowish brown		576	26-15-50/5" (50/5")
	S-3	SS	3	3	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, yellowish brown			50/3" (50/3")
10	S-4	SS	0	0	**AUGER REFUSAL AT 8.5 FT**		571	50/0" (50/0")
15							566	
20							561	
25							556	
30							551	



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 13 2022**	CAVE IN DEPTH: **3.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 13 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-46**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

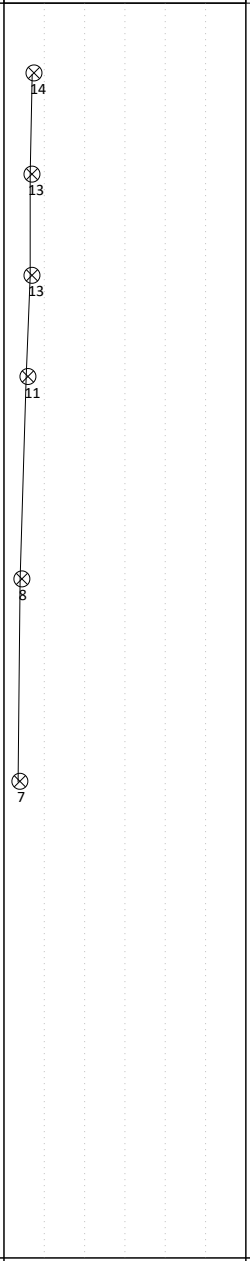
LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
577845.9	**1519768.7**		**555**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, trace sand, brown, moist, stiff		555	6-5-9 (14)
5	S-2	SS	18	18	(ML) SANDY SILT, reddish brown, moist, stiff to firm		550	5-5-8 (13)
	S-3	SS	18	18				5-6-7 (13)
10	S-4	SS	18	18			545	4-5-6 (11)
15	S-5	SS	18	18			540	3-4-4 (8)
20	S-6	SS	18	18	**END OF BORING AT 20 FT**		535	3-3-4 (7)
25							530	
30							525	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 10 2022**	CAVE IN DEPTH: **12.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 10 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-47**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **577006.6**	EASTING: **1520583.3**	STATION:	SURFACE ELEVATION: **606**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(MH) Residuum, ELASTIC SILT, contains slight mica, orangish brown, moist, stiff			6-10-11 (21)
	S-2	SS	18	18	(ML) SANDY SILT, contains slight mica, orangish brown, moist, stiff			8-10-13 (23)
5							601	
	S-3	SS	18	18	(ML) SANDY SILT, contains slight mica, orangish brown, moist, hard			14-15-22 (37)
	S-4	SS	18	48				10-23-25 (48)
10							596	
					(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, brown			
	S-5	SS	17	17				15-25-50/5" (50/5")
15							591	
	S-6	SS	3	3	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, light orangish brown			50/3" (50/3")
20							586	
	S-7	SS	0	0	**END OF BORING AT 23.5 FT**			50/0" (50/0")
25							581	
30							576	

STANDARD PENETRATION BLOWS/FT (20 40 60 80 100)
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC
LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF (1 2 3 4 5)
WATER CONTENT %
[FINES CONTENT] % (10 20 30 40 50)

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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **23.50**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-48**	**1 of 1**

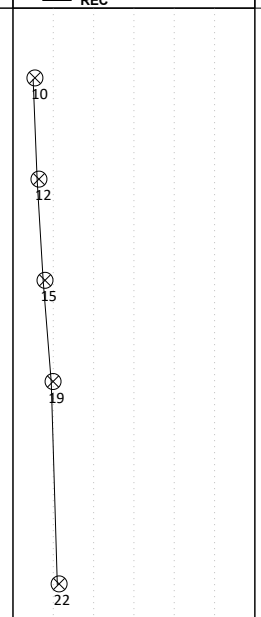
PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

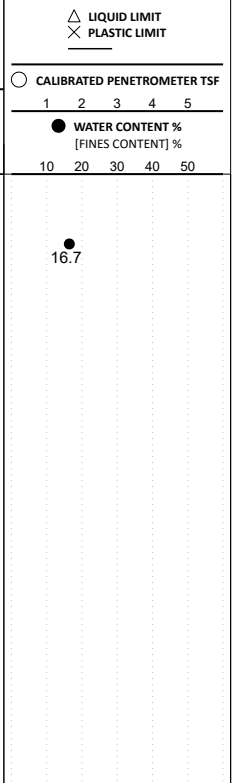
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
577525.2	**1519411.4**		**542**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[2.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, trace sand, dark reddish brown to medium brown, moist, stiff to very stiff			3-4-6 (10)
	S-2	SS	18	18				5-6-6 (12)
5	S-3	SS	18	18			537	7-8-7 (15)
	S-4	SS	18	18				9-9-10 (19)
10					(SC) CLAYEY SAND, orangish brown, moist, medium dense		532	
	S-5	SS	18	18				7-7-15 (22)
15					**END OF BORING AT 15 FT**		527	
20							522	
25							517	
30							512	





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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **12.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-49**	**1 of 1**

PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
577218.7	**1519773.3**		**552**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, trace sand, dark reddish brown, moist, stiff to very stiff			3-7-8 (15)
	S-2	SS	18	18				5-7-10 (17)
5							547	
	S-3	SS	18	18				9-8-10 (18)
	S-4	SS	18	18				12-10-15 (25)
10							542	
	S-5	SS	18	18				10-9-11 (20)
15					**END OF BORING AT 15 FT**		537	
20							532	
25							527	
30							522	

STANDARD PENETRATION BLOWS/FT (15, 17, 18, 25, 20)

ROCK QUALITY DESIGNATION & RECOVERY — RQD, REC

LIQUID LIMIT: 44

PLASTIC LIMIT: 24

WATER CONTENT %: 20.4

[FINES CONTENT] %: [71.0%]

CALIBRATED PENETROMETER TSF

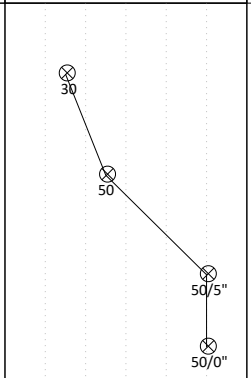
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

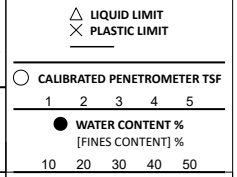
▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **13.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-50**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
576935.6	**1520094.7**		**575**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(CH) Residuum, FAT CLAY, reddish brown, moist, very stiff			4-14-16 (30)
	S-2	SS	18	18	(CL) LEAN CLAY, reddish brown, moist, hard			7-9-41 (50)
5							570	
	S-3	SS	17	17	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS CLAYEY SAND, reddish brown			14-18-50/5" (50/5")
	S-4	SS	0	0	**AUGER REFUSAL AT 8.5 FT**			50/0" (50/0")
10							565	
15							560	
20							555	
25							550	
30							545	





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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **8.50**	
WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-51**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579478.2	**1519995.0**		**623**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT (20 40 60 80 100) / ROCK QUALITY DESIGNATION & RECOVERY (RQD, REC)	LIQUID LIMIT / PLASTIC LIMIT / CALIBRATED PENETROMETER TSF (1 2 3 4 5) / WATER CONTENT % [FINES CONTENT] % (10 20 30 40 50)
					Topsoil Thickness[1.25"]					
	D3S-5 S-1	BS1 SS	12 14	10	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS CLAYEY SAND, light brown			8-13-50/2" (50/2")	50/2"	22 34 12.5 [46.4%]
	S-2	SS	11	10				10-50/5" (50/5")	50/5"	
5							618			
	S-3	SS	15	15	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, contains mica, brown			7-9-50/3" (50/3")	50/3"	
	S-4	SS	13	10				6-10-50/1" (50/1")	50/1"	
10							613			
	S-5	SS	8	1				10-50/2" (50/2")	50/2"	
15							608			
	S-6	SS	0	0	**AUGER REFUSAL AT 16.5 FT**			50/0" (50/0")	50/0"	
20							603			
25							598			
30							593			

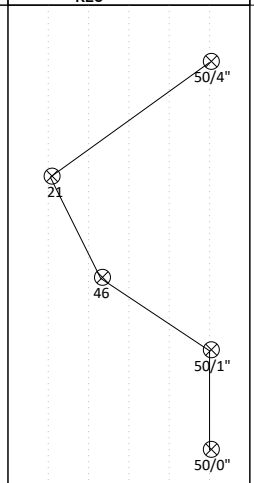
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

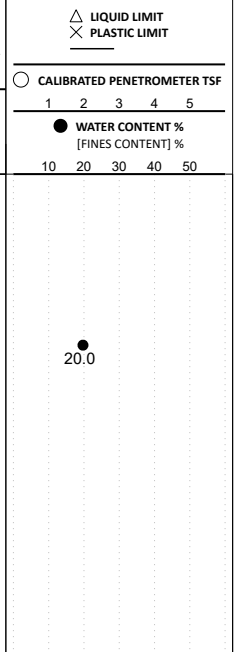
WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**	CAVE IN DEPTH: **8.00**	
WL (Completion)	BORING COMPLETED: **Jun 14 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-52**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579130.8	**1519897.4**		**595**

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[1.00"]			
	S-1	SS	10	8	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SANDY SILT, yellowish brown			6-50/4" (50/4")
	S-2	SS	18	18	(CL) LEAN CLAY, orangish brown to grayish brown, moist, very stiff to hard			5-8-13 (21)
5							590	
	S-3	SS	18	12				7-26-20 (46)
	S-4	SS	1	1	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, grayish brown			50/1" (50/1")
10	S-5	SS	0	0	**AUGER REFUSAL AT 11 FT**		585	50/0" (50/0")
15							580	
20							575	
25							570	
30							565	





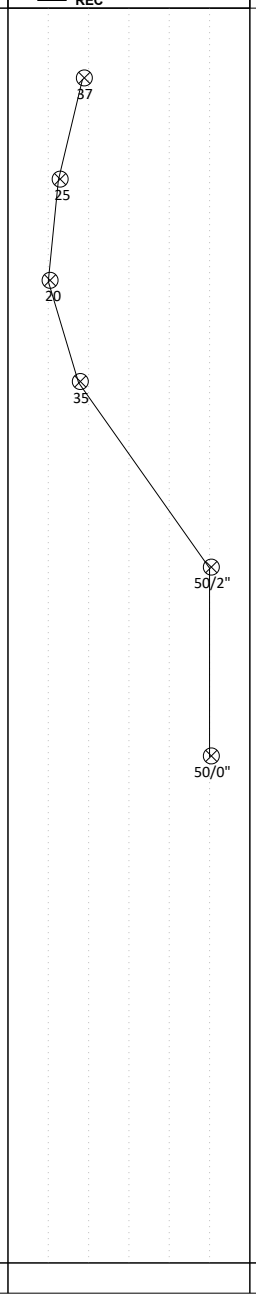
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

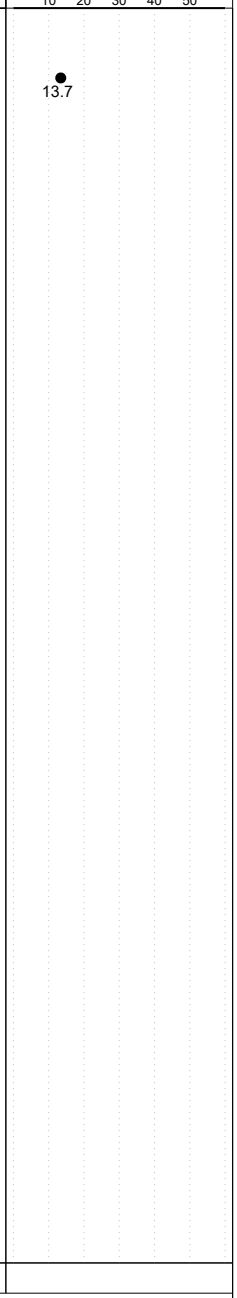
WL (First Encountered) **GNE**	BORING STARTED: **Jun 14 2022**		CAVE IN DEPTH: **6.00**
WL (Completion)	BORING COMPLETED: **Jun 14 2022**		HAMMER TYPE:
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-53**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**			LOSS OF CIRCULATION
NORTHING: **579269.8**	EASTING: **1517590.7**	STATION:	SURFACE ELEVATION: **565**
			BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0					(CL) Residuum, LEAN CLAY, trace sand, dark brown, moist, hard to very stiff		565	
	S-1	SS	18	18				10-10-27 (37)
	S-2	SS	18	18				10-12-13 (25)
5							560	
	S-3	SS	18	18				8-8-12 (20)
					(CH) FAT CLAY, trace sand, dark gray, moist, hard			
	S-4	SS	18	18				9-12-23 (35)
10							555	
					(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, light brown			
	S-5	SS	8	1				42-50/2" (50/2")
15							550	
	S-6	SS	0	0	**END OF BORING AT 18.5 FT**			50/0" (50/0")
20							545	
25							540	
30							535	





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

WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **11.00**	
WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

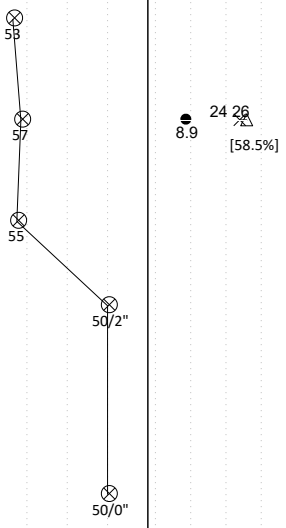
CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-54**	**1 of 1**
PROJECT NAME:	DRILLER/CONTRACTOR:		
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**		
SITE LOCATION:			LOSS OF CIRCULATION
Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075			
NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:
579124.0	**1517928.6**		**557**

BOTTOM OF CASING

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
0	S-1	SS	18	18	(ML) Residuum, SAND SILT grayish brown, moist, very hard			10-22-31 (53)
5	S-2	SS	18	18			552	17-28-29 (57)
	S-3	SS	18	18	(SM) SILTY SAND, light brown, moist, very dense			22-20-35 (55)
10	S-4	SS	8	8	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, light brown		547	48-50/2" (50/2")
15	S-5	SS	0	0	**AUGER REFUSAL AT 13.5 FT**		542	50/0" (50/0")
20							537	
25							532	
30							527	

STANDARD PENETRATION BLOWS/FT
20 40 60 80 100
ROCK QUALITY DESIGNATION & RECOVERY
RQD
REC

LIQUID LIMIT
PLASTIC LIMIT
CALIBRATED PENETROMETER TSF
1 2 3 4 5
WATER CONTENT %
[FINES CONTENT] %
10 20 30 40 50



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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 17 2022**	CAVE IN DEPTH: **7.50**	
▼ WL (Completion)	BORING COMPLETED: **Jun 17 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **JMS13**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

CLIENT:	PROJECT NO.:	BORING NO.:	SHEET:
Trammell Crow Company	**08:15166**	**B-55**	**1 of 1**

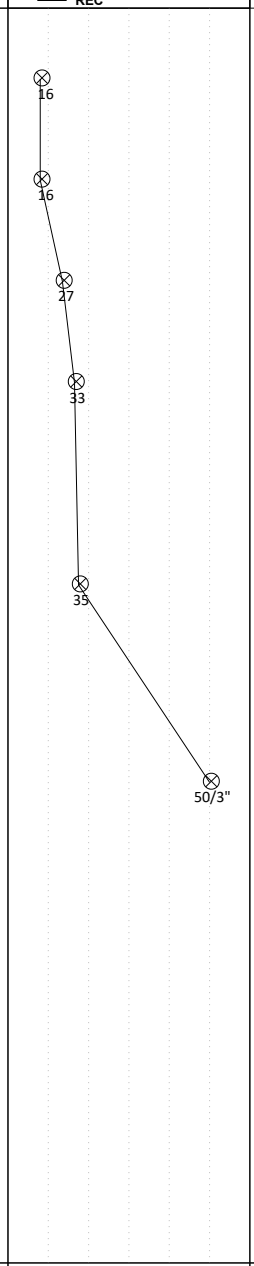
PROJECT NAME:	DRILLER/CONTRACTOR:
Pharr Mill Road Industrial - GEO	**Capital Drilling Inc.**

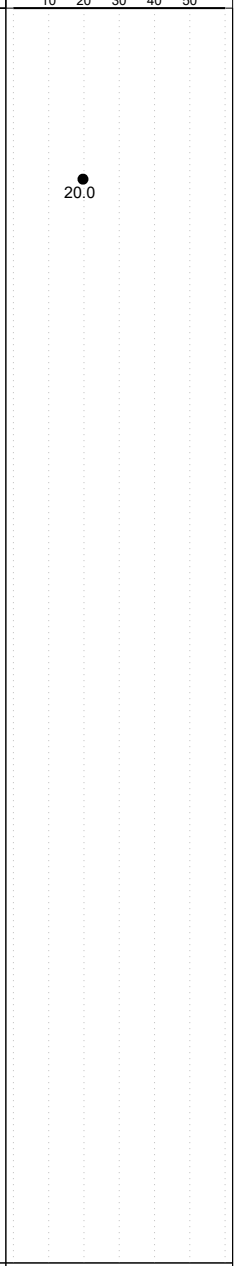
SITE LOCATION: **Pharr Mill Rd & Mulberry Rd, Harrisburg, North Carolina 28075**

LOSS OF CIRCULATION

NORTHING:	EASTING:	STATION:	SURFACE ELEVATION:	BOTTOM OF CASING
576623.7	**1520066.7**		**567**	

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"
					Topsoil Thickness[3.00"]			
	S-1	SS	18	18	(CL) Residuum, LEAN CLAY, reddish brown, moist, very stiff			6-7-9 (16)
	S-2	SS	18	18				9-7-9 (16)
5							562	
	S-3	SS	18	18	(CH) FAT CLAY, gray, moist, very stiff to hard			11-12-15 (27)
	S-4	SS	18	18				11-14-19 (33)
10							557	
	S-5	SS	18	18	(SM) SILTY SAND, dark gray, moist, dense			15-14-21 (35)
15							552	
	S-6	SS	15	15	(PWR) PARTIALLY WEATHERED ROCK SAMPLED AS SILTY SAND, dark gray			26-30-50/3" (50/3")
20					**END OF BORING AT 19.8 FT**		547	
25							542	
30							537	





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

▽ WL (First Encountered) **GNE**	BORING STARTED: **Jun 09 2022**	CAVE IN DEPTH: **18.00**	
▼ WL (Completion)	BORING COMPLETED: **Jun 09 2022**	HAMMER TYPE: **Automatic**	
▼ WL (Seasonal High Water)	EQUIPMENT: **ATV CME 550**	LOGGED BY: **SMS6**	DRILLING METHOD: **2.25 HSA**
▽ WL (Stabilized)			

GEOTECHNICAL BOREHOLE LOG

APPENDIX C – Laboratory Testing

Laboratory Testing Summary

Laboratory Compaction Characteristics (Proctor) Results

California Bearing Ratio (CBR) Test Results

Expansion Index (EI) Test Results

Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-01	D3S-2	1-2	27.8	CH	59	31	28	86.1	96.5	27.1			
B-03	S-2	3.5-5	27.3	CH	63	31	32	94.6					
B-03	S-4	8.5-10	26.5										
B-03	S-6	18.5-20	27.1										
B-04	D3S-1	1-2	28.3	MH	59	31	28	86.6	83.8	32.7			
B-06	S-2	3.5-5	24.6	MH	70	34	36	84.5					
B-06	S-4	8.5-10	11.5										
B-06	S-6	18.5-20	12.7										
B-08	S-1	1-2.5	10.6										
B-10	S-2	3.5-5	31.4	MH	54	31	23	82.4					

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: Pharr Mill Road Industrial
Client: Trammell Crow Company

Project No.: 08:15166
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-12	S-2	3.5-5	6.1	SM	NP	NP	NP	23.3					
B-13	S-1	1-2.5	18.1										
B-13	S-3	6-7.5	12.2	SM	NP	NP	NP	32.2					
B-14	S-2	3.5-5	25.7										
B-15	S-1	1-2.5	10.5										
B-17	S-2	3.5-5	8.4	SM	NP	NP	NP	37.0					
B-20	S-2	3.5-5	32.6	MH	73	47	26	78.7					
B-21	S-1	1-2.5	21.3										
B-21	S-3	6-7.5	20.6	ML	40	35	5	59.1					
B-22	S-2	3.5-5	21.8										

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: Pharr Mill Road Industrial
Client: Trammell Crow Company

Project No.: 08:15166
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Office / Lab	Address	Office Number / Fax
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Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-22	S-4	8.5-10	20.2										
B-24	S-2	3.5-5	23.2										
B-25	S-1	1-2.5	16.2										
B-27	S-1	1-2.5	21.3										
B-27	S-2	3.5-5	24.5	MH	50	33	17	75.3					
B-28	S-2	3.5-5	23.9	MH	61	32	29	70.9					
B-29	S-1	1-2.5	28.6										
B-30	S-2	3.5-5	22.3	ML	49	29	20	74.8					
B-30	S-4	8.5-10	24.0										
B-31	S-2	3.5-5	30.6	CH	67	29	38	87.7					

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: Pharr Mill Road Industrial
Client: Trammell Crow Company

Project No.: 08:15166
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Laboratory Testing Summary

Sample Location	Sample Number	Depth (feet)	^MC (%)	Soil Type	Atterberg Limits			**Percent Passing No. 200 Sieve	Moisture - Density		CBR (%)		#Organic Content (%)
					LL	PL	PI		<Maximum Density (pcf)	<Optimum Moisture (%)	0.1 in.	0.2 in.	
B-36	S-1	1-2.5	18.1	CL	39	23	16	72.4					
B-42	D3S-3	1-2	11.5	SC	29	15	14	44.7	117.6	14.4			
B-44	D3S-4	1-2	30.9	CH	68	30	38	82.1	86.8	30.0	3.7	3.5	
B-48	S-1	1-2.5	16.7										
B-49	S-1	1-2.5	20.4	CL	44	24	20	71.0					
B-51	D3S-5	1-2	12.5	SC	34	22	12	46.4	106.8	17.8	6.1	5.8	
B-52	S-2	3.5-5	20.0										
B-53	S-1	1-2.5	13.7										
B-54	S-2	3.5-5	8.9	ML	26	24	2	58.5					
B-55	S-2	3.5-5	20.0										

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

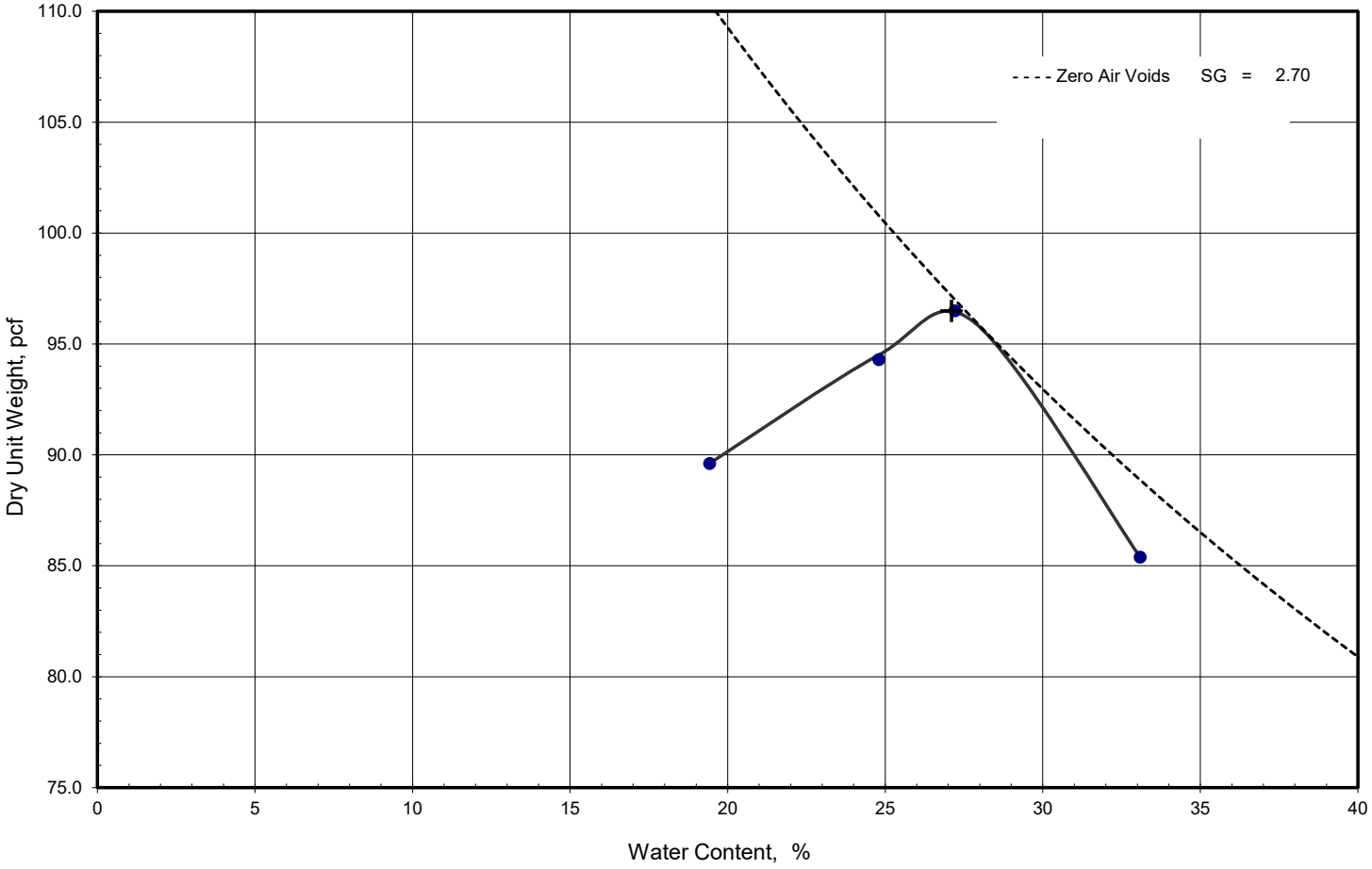
Definitions: MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company

Project No.: 08:15166
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Compaction Characteristics of Soil
Using Standard Effort



Optimum Moisture Content		**27.1**	%
Maximum Dry Unit Weight		**96.5**	pcf
Cumulative material retained on:	3/4 in. sieve	-	%
	3/8 in. sieve	-	%
	#4 sieve	-	%

Preparation	ASTM moist preparation	
Type of rammer	Manual - 5.5lbf (24.5N)	
Test Specfication / Method	ASTM D698-12e2-method A	
Specific gravity - D854 water pycnometer	2.70	Historical
Coarse Aggregate Specific Gravity -	2.70	Historical

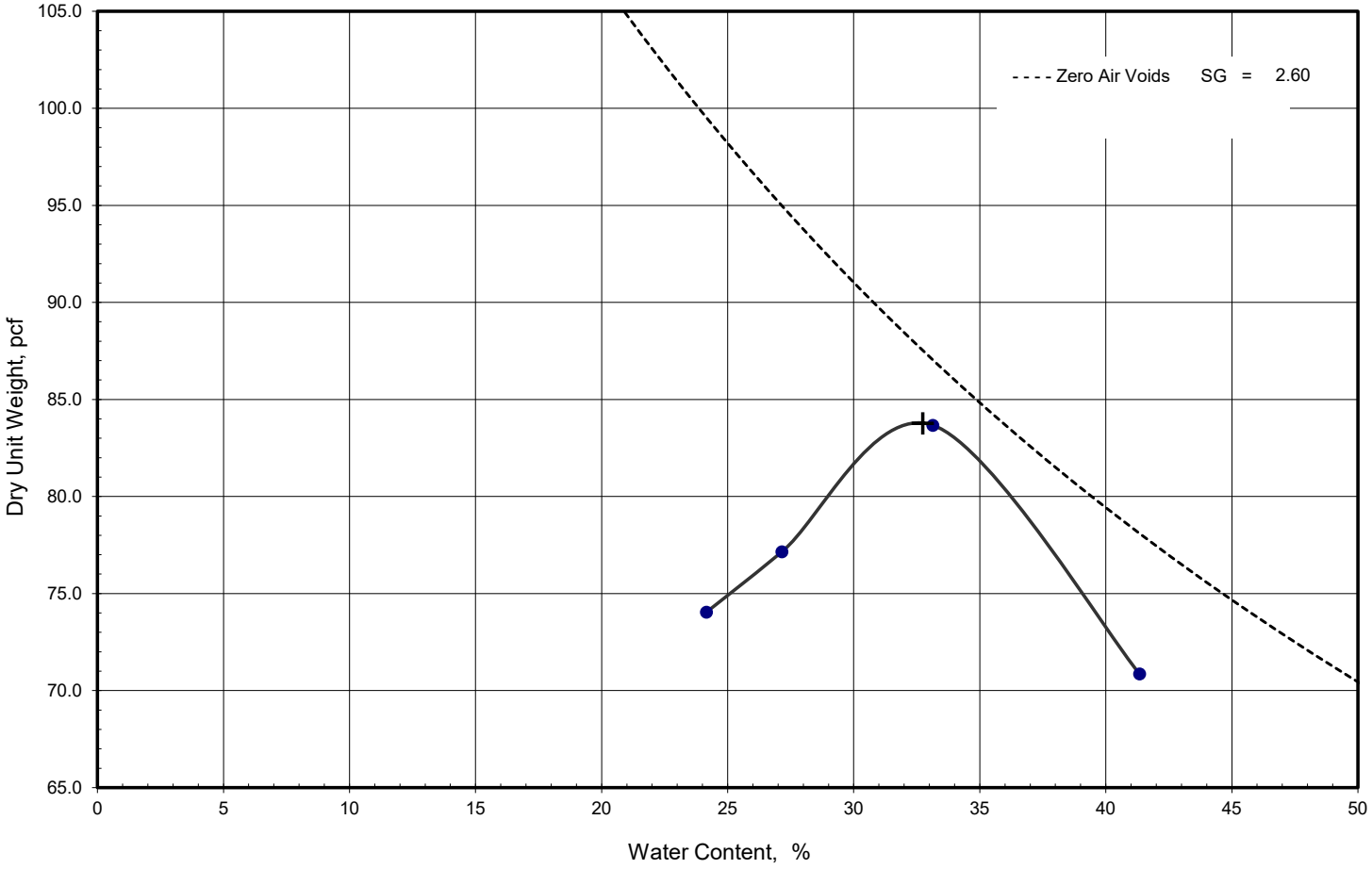
Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Brown Fat CLAY	27.8	59	28	86.1	CH	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-01
Test Reference/No.:

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-2
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Compaction Characteristics of Soil
Using Standard Effort



Optimum Moisture Content		**32.7**	%
Maximum Dry Unit Weight		**83.8**	pcf
Cumulative material retained on:	3/4 in. sieve	-	%
	3/8 in. sieve	-	%
	#4 sieve	-	%

Preparation	ASTM moist preparation	
Type of rammer	Manual - 5.5lbf (24.5N)	
Test Specfication / Method	ASTM D698-12e2-method A	
Specific gravity - D854 water pycnometer	2.60	Historical
Coarse Aggregate Specific Gravity -	2.60	Historical

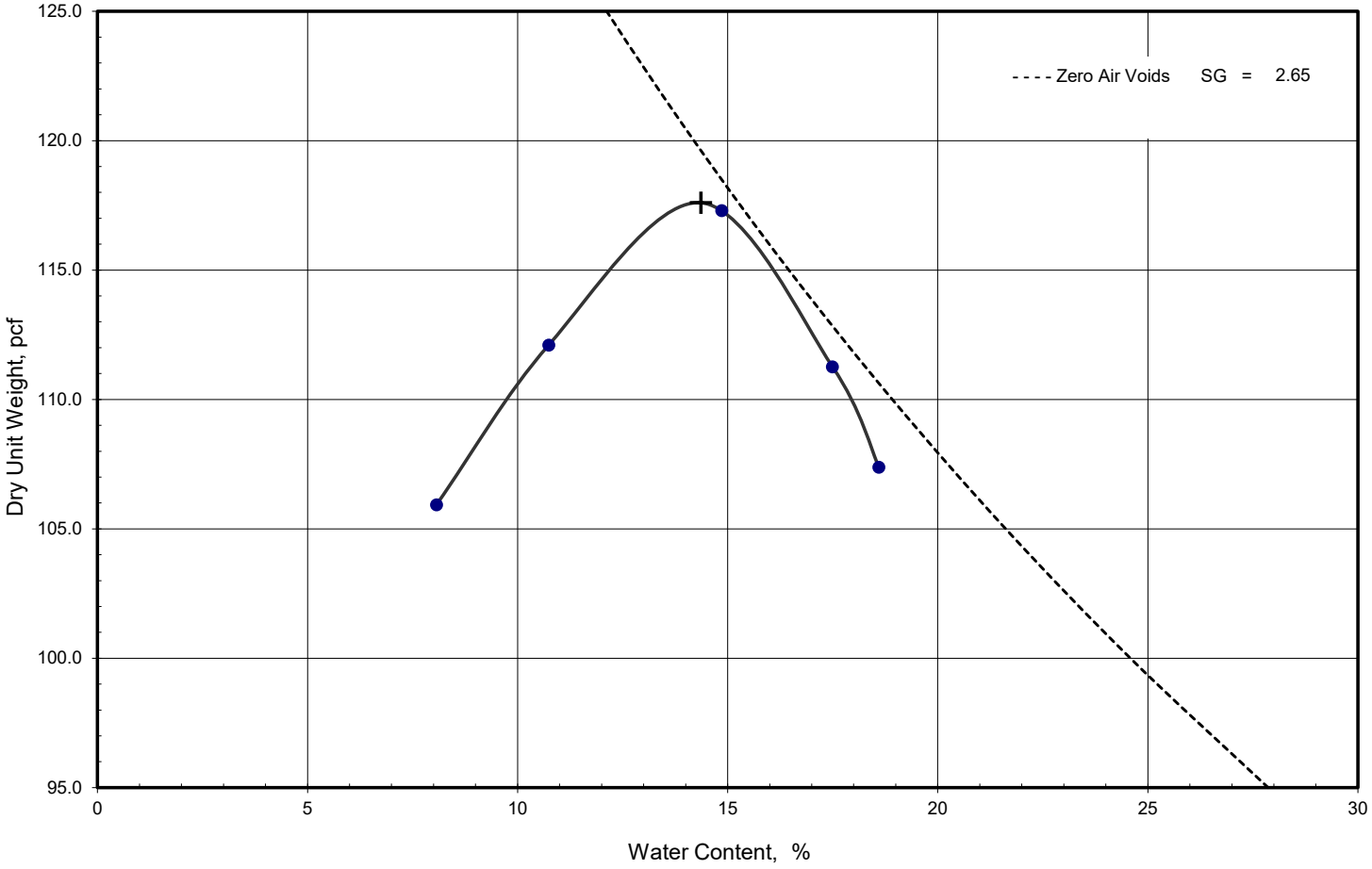
Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Reddish Brown Elastic SILT	28.3	59	28	86.6	MH	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-04
Test Reference/No.:

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-1
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive □ Suite D □ Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Compaction Characteristics of Soil
Using Standard Effort



Optimum Moisture Content		**14.4**	%
Maximum Dry Unit Weight		**117.6**	pcf
Cumulative material retained on:	3/4 in. sieve	0.0	%
	3/8 in. sieve		%
	#4 sieve		%

Preparation	ASTM moist preparation	
Type of rammer	Manual - 5.5lbf (24.5N)	
Test Specfication / Method	ASTM D698-12e2-method A	
Specific gravity - D854 water pycnometer	2.65	Historical
Coarse Aggregate Specific Gravity -	2.65	Historical

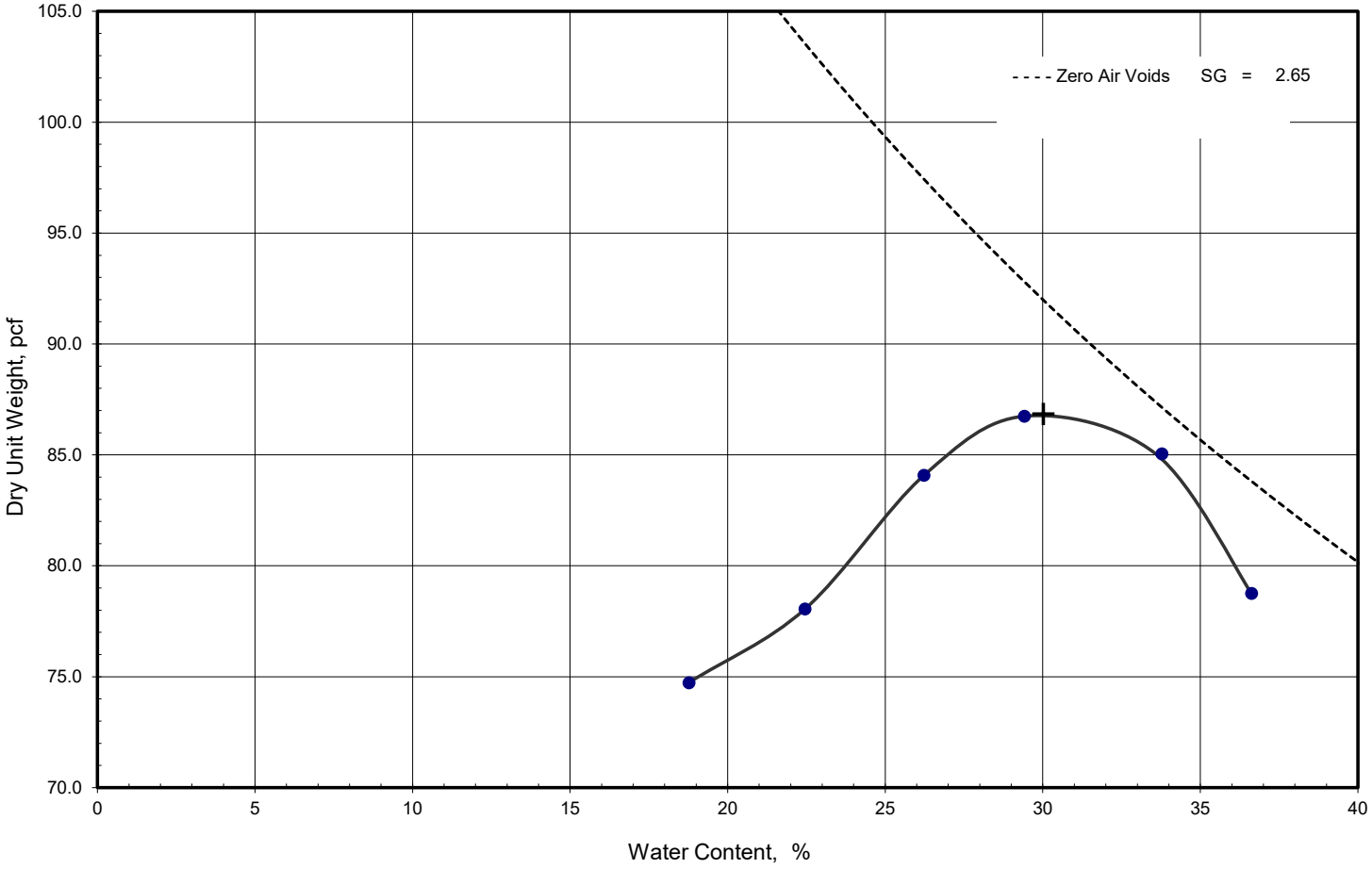
Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Brown Clayey SAND	11.5	29	14	44.7	SC	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-42
Test Reference/No.:

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-3
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive □ Suite D □ Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Compaction Characteristics of Soil
Using Standard Effort



Optimum Moisture Content		**30.0**	%
Maximum Dry Unit Weight		**86.8**	pcf
Cumulative material retained on:	3/4 in. sieve	-	%
	3/8 in. sieve	-	%
	#4 sieve	-	%

Preparation	ASTM moist preparation	
Type of rammer	Manual - 5.5lbf (24.5N)	
Test Specfication / Method	ASTM D698-12e2-method A	
Specific gravity - D854 water pycnometer	2.65	Historical
Coarse Aggregate Specific Gravity -	2.65	Historical

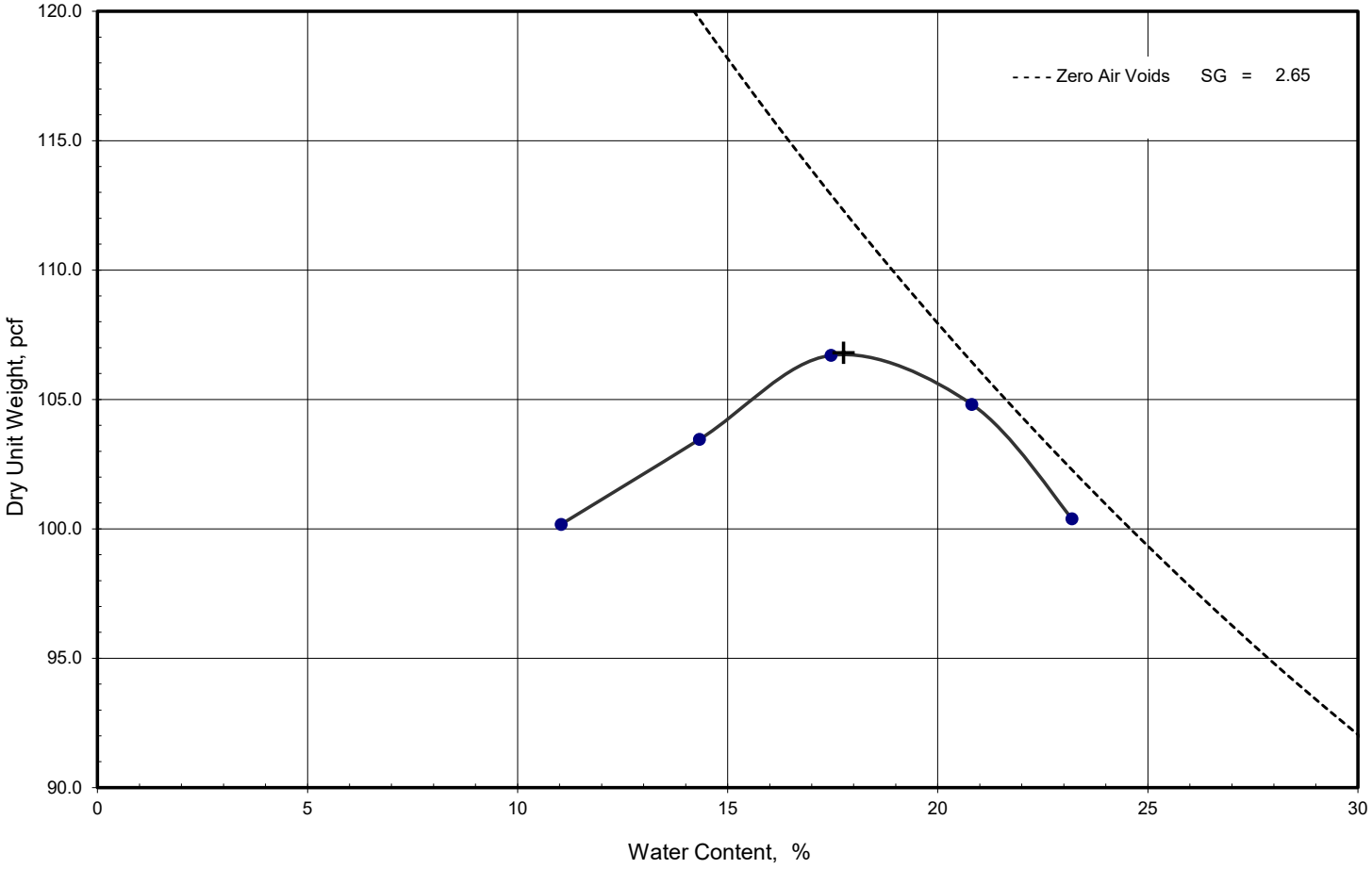
Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Reddish Brown Elastic SILT, with sand	30.9	68	38	82.1	MH	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-44
Test Reference/No.:

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-4
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

Laboratory Compaction Characteristics of Soil
Using Standard Effort



Optimum Moisture Content		**17.8**	%
Maximum Dry Unit Weight		**106.8**	pcf
Cumulative material retained on:	3/4 in. sieve	-	%
	3/8 in. sieve	-	%
	#4 sieve	-	%

Preparation	ASTM moist preparation	
Type of rammer	Manual - 5.5lbf (24.5N)	
Test Specfication / Method	ASTM D698-12e2-method A	
Specific gravity - D854 water pycnometer	2.65	Historical
Coarse Aggregate Specific Gravity -	2.65	Historical

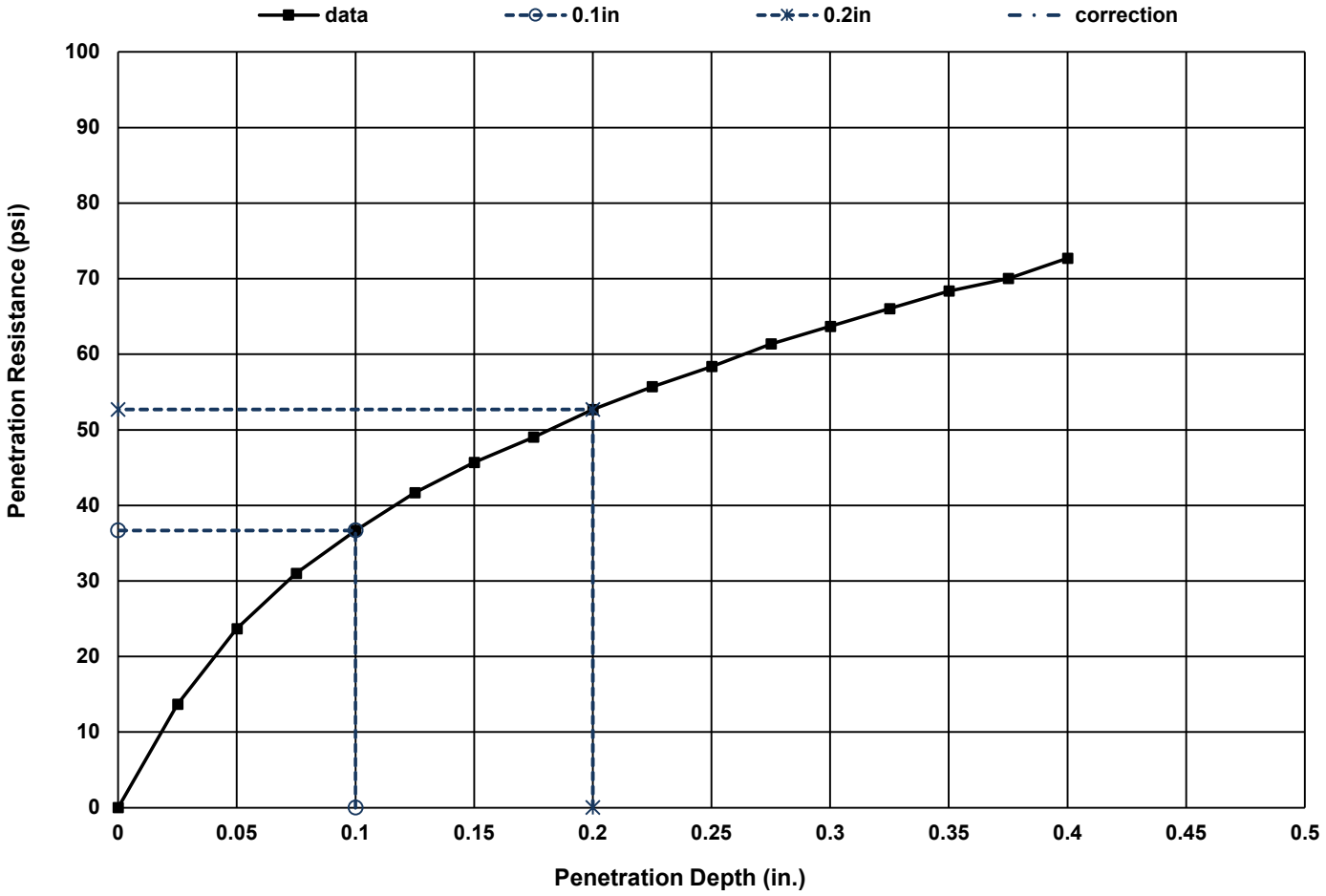
Soil Description	Nat. Moist. %	Liquid Limit	Plasticity Index	%< #200	USCS	AASHTO
Light Brown Clayey SAND	12.5	34	12	46.4	SC	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-51
Test Reference/No.:

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-5
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive □ Suite D □ Charlotte, NC 28217	(704)525-5152 (704)357-0023

California Bearing Ratios (CBR) of Laboratory-Compacted Soils



TEST RESULTS (ASTM D1883-16)

Molded			Soaked			CBR (%)		Linearty Correction (in.)	Surcharge (lbs.)	Swell (%)
Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.1 in.	0.2 in.			
93.6	107.8	21.8	85.4	98.4	33.5	3.7	3.5	0.00	10	0.11

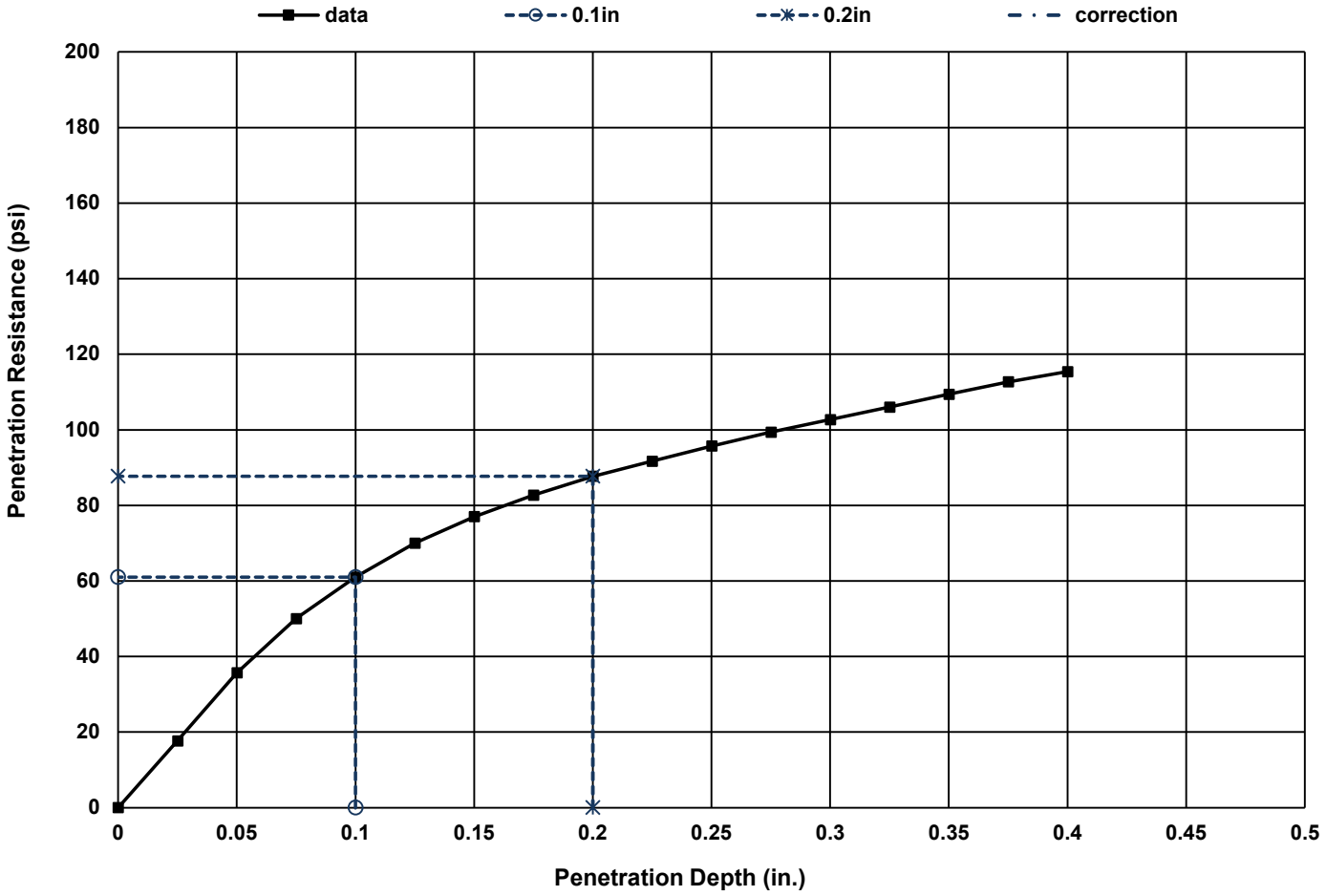
Material Description	AASHTO	USCS	MAX. Dens. (pcf)	Optimum Moisture (%)	LL	PI	% Fines	% Gravel
Reddish Brown Elastic SILT (MH), with sand		MH	86.8	30	68	38	82.1	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-44
Test Reference/No.: 1

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-4
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

California Bearing Ratios (CBR) of Laboratory-Compacted Soils



TEST RESULTS (ASTM D1883-16)

Molded			Soaked			CBR (%)		Linearty Correction (in.)	Surcharge (lbs.)	Swell (%)
Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.1 in.	0.2 in.			
106.1	99.3	17.1	100.8	94.4	21.8	6.1	5.8	0.00	10	1.22

Material Description	AASHTO	USCS	MAX. Dens. (pcf)	Optimum Moisture (%)	LL	PI	% Fines	% Gravel
Light Brown Clayey SAND (SC)		SC	106.8	17.8	34	12	46.4	

Project: Pharr Mill Road Industrial
Client: Trammell Crow Company
Sample / Source B-51
Test Reference/No.: 1

Project No.: 08:15166
Depth (ft.): 1 - 2
Sample No.: D3S-5
Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

EXPANSIVE CHARACTERISTICS OF SOILS

ASTM D 4829 - 19

Moisture

Ring Weight (g)	Soil & Ring Weight (g)	Tare Weight for Moisture (g)	Wet Soil and Tare (g)	Dry Soil and Tare (g)	Moisture (%)	Dry Density (lb/cf)	Saturation (%)
367.7	735.0	187.50	293.50	281.00	13.4%	99.202	51.7%

Initial Mass of Sample	
Mass retained on No. 4 sieve	
Retained percent on No. 4 sieve	

Sample Preparation	Air-Dried
Specific Gravity	2.65
Specific Gravity Method	Assumed

Compaction Data

Molded Dry Density	99.20
Molded Moisture	13.37%
Moisture at 50% Saturation	12.93%
% Saturation Moisture	51.69%

Expansion Data

Initial Dial Gage Reading (in.)	0.0210
Final Dial Gage Reading (in.)	0.1310
Sample Thickness (in.)	1.1
Percent expansion	10.00%

Elapsed Time (hr.)	

Measured Expansion Index	**100**
Expansion Index Range	**91-130**
Potential for Expansion	**High**

Significance of Expansion Index

Expansion Index Range	Significance
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

LL	59	**PI**	28
%<40		**%<200**	86.1
USCS	CH	**AASHTO**	

Material Description
Brown Fat CLAY (CH)

Project: Pharr Mill Road Industrial

Client: Trammell Crow Company

Sample / Source: B-01

Project No.: 08:15166

Depth (ft): 1 - 2

Sample No.: D3S-2

Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

EXPANSIVE CHARACTERISTICS OF SOILS

ASTM D 4829 - 19

Moisture

Ring Weight (g)	Soil & Ring Weight (g)	Tare Weight for Moisture (g)	Wet Soil and Tare (g)	Dry Soil and Tare (g)	Moisture (%)	Dry Density (lb/cf)	Saturation (%)
367.3	728.7	187.50	293.50	281.00	13.4%	97.601	49.7%

Initial Mass of Sample	
Mass retained on No. 4 sieve	
Retained percent on No. 4 sieve	

Sample Preparation	Air-Dried
Specific Gravity	2.65
Specific Gravity Method	Assumed

Compaction Data

Molded Dry Density	97.60
Molded Moisture	13.37%
Moisture at 50% Saturation	13.45%
% Saturation Moisture	49.70%

Expansion Data

Initial Dial Gage Reading (in.)	0.0021
Final Dial Gage Reading (in.)	0.0048
Sample Thickness (in.)	1.0
Percent expansion	0.27%

Elapsed Time (hr.)	24

Measured Expansion Index	**3**
Expansion Index Range	**0-20**
Potential for Expansion	**Very Low**

Significance of Expansion Index

Expansion Index Range	Significance
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

LL	59	**PI**	28
%<40		**%<200**	86.6
USCS	MH	**AASHTO**	

Material Description
Reddish Brown Sand SILT (MH)

Project: Pharr Mill Road Industrial

Client: Trammell Crow Company

Sample / Source: B-04

Project No.: 08:15166

Depth (ft): 1 - 2

Sample No.: D3S-1

Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

EXPANSIVE CHARACTERISTICS OF SOILS

ASTM D 4829 - 19

Moisture

Ring Weight (g)	Soil & Ring Weight (g)	Tare Weight for Moisture (g)	Wet Soil and Tare (g)	Dry Soil and Tare (g)	Moisture (%)	Dry Density (lb/cf)	Saturation (%)
367.4	776.8	187.50	326.00	315.50	8.2%	115.866	48.8%

Initial Mass of Sample	
Mass retained on No. 4 sieve	
Retained percent on No. 4 sieve	

Sample Preparation	Air-Dried
Specific Gravity	2.65
Specific Gravity Method	Assumed

Compaction Data

Molded Dry Density	115.87
Molded Moisture	8.20%
Moisture at 50% Saturation	8.41%
% Saturation Moisture	48.77%

Expansion Data

Initial Dial Gage Reading (in.)	0.1610
Final Dial Gage Reading (in.)	0.1860
Sample Thickness (in.)	1.0
Percent expansion	2.43%

Elapsed Time (hr.)	24

Measured Expansion Index	**24**
Expansion Index Range	**21-50**
Potential for Expansion	**Low**

Significance of Expansion Index

Expansion Index Range	Significance
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

LL	29	**PI**	14
%<40		**%<200**	44.7
USCS	SC	**AASHTO**	

Material Description
Brown Clayey SAND (SC)

Project: Pharr Mill Road Industrial

Client: Trammell Crow Company

Sample / Source: B-42

Project No.: 08:15166

Depth (ft): 1 - 2

Sample No.: D3S-3

Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

EXPANSIVE CHARACTERISTICS OF SOILS

ASTM D 4829 - 19

Moisture

Ring Weight (g)	Soil & Ring Weight (g)	Tare Weight for Moisture (g)	Wet Soil and Tare (g)	Dry Soil and Tare (g)	Moisture (%)	Dry Density (lb/cf)	Saturation (%)
367.6	714.5	187.50	304.50	289.50	14.7%	92.603	48.5%

Initial Mass of Sample	
Mass retained on No. 4 sieve	
Retained percent on No. 4 sieve	

Sample Preparation	Air-Dried
Specific Gravity	2.65
Specific Gravity Method	Assumed

Compaction Data

Molded Dry Density	92.60
Molded Moisture	14.71%
Moisture at 50% Saturation	15.17%
% Saturation Moisture	48.46%

Expansion Data

Initial Dial Gage Reading (in.)	0.0840
Final Dial Gage Reading (in.)	0.1270
Sample Thickness (in.)	1.1
Percent expansion	4.10%

Elapsed Time (hr.)	24

Measured Expansion Index	**41**
Expansion Index Range	**21-50**
Potential for Expansion	**Low**

Significance of Expansion Index

Expansion Index Range	Significance
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

LL	68	**PI**	38
%<40		**%<200**	82.1
USCS	MH	**AASHTO**	

Material Description
Reddish Brown Elastic SILT (MH), with sand

Project: Pharr Mill Road Industrial

Client: Trammell Crow Company

Sample / Source: B-44

Project No.: 08:15166

Depth (ft): 1 - 2

Sample No.: D3S-4

Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

EXPANSIVE CHARACTERISTICS OF SOILS

ASTM D 4829 - 19

Moisture

Ring Weight (g)	Soil & Ring Weight (g)	Tare Weight for Moisture (g)	Wet Soil and Tare (g)	Dry Soil and Tare (g)	Moisture (%)	Dry Density (lb/cf)	Saturation (%)
365.5	760.1	189.50	282.50	274.50	9.4%	110.444	48.4%

Initial Mass of Sample	
Mass retained on No. 4 sieve	
Retained percent on No. 4 sieve	

Sample Preparation	Air-Dried
Specific Gravity	2.65
Specific Gravity Method	Assumed

Compaction Data

Molded Dry Density	110.44
Molded Moisture	9.41%
Moisture at 50% Saturation	9.73%
% Saturation Moisture	48.36%

Expansion Data

Initial Dial Gage Reading (in.)	0.0910
Final Dial Gage Reading (in.)	0.1430
Sample Thickness (in.)	1.1
Percent expansion	4.95%

Elapsed Time (hr.)	24

Measured Expansion Index	**50**
Expansion Index Range	**21-50**
Potential for Expansion	**Low**

Significance of Expansion Index

Expansion Index Range	Significance
0-20	Very Low
21-50	Low
51-90	Medium
91-130	High
>130	Very High

LL	34	**PI**	12
%<40		**%<200**	46.4
USCS	SC	**AASHTO**	

Material Description
Light Brown Clayey SAND (SC)

Project: Pharr Mill Road Industrial

Client: Trammell Crow Company

Sample / Source: B-51

Project No.: 08:15166

Depth (ft): 1 - 2

Sample No.: D3S-5

Date Reported: 8/3/2022

Office / Lab	Address	Office Number / Fax
ECS Southeast LLP - Charlotte	1812 Center Park Drive Suite D Charlotte, NC 28217	(704)525-5152 (704)357-0023

APPENDIX D – Other Information

GBA Important Information About This Geotechnical Engineering Report

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, clients can benefit from a lowered exposure to the subsurface problems 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 below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs 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. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project 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.*

This Report May Not Be Reliable

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

- for a different client;
- for a different project;
- 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, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been 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 your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment 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 from project start to project finish, so the individual can provide 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 judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed 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 full-time 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 on hand quickly 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 observation.

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 informational 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, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. 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. 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 relate any 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 yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

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, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled 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.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

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