

Report of Geotechnical Exploration Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019

PREPARED FOR

Walbridge Aldinger, LLC 777 Woodward Avenue, Suite 300 Detroit, Michigan 48226

PREPARED BY

S&ME, Inc. 658 Grassmere Park Drive, Suite 100 Nashville, Tennessee 37211

April 1, 2022



April 1, 2022

Walbridge Aldinger, LLC 777 Woodward Avenue, Suite 300 Detroit, Michigan 48226

Attention: Mr. Joseph Parisi

Reference: Report of Geotechnical Exploration

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019

Dear Mr. Parisi:

S&ME, Inc. (S&ME) is pleased to submit the following *Report of Geotechnical Exploration* performed for the planned Ford Blue Oval City TVA 500 kV Substation project located on TN-222 in Stanton, Tennessee. Our services were provided in general accordance with our Change Order No. X through our contract for our Proposal No. 218019, dated November 29, 2021, as authorized by Mr. Joseph Parisi of Walbridge Aldinger, LLC on January 20, 2022.

This report describes our understanding of the project and the subsurface conditions encountered and presents our preliminary conclusions and recommendations for site preparation, foundation, and pavement support. We appreciate the opportunity to serve as the geotechnical engineering consultant during this phase of the project. Please contact us with questions regarding this report, or if we may be of further assistance.

Sincerely,

S&ME. Inc.

Simone Metzger, P.E. Project Engineer / Manager TN Reg. No. 116603 smetzger@smeinc.com Jeffrey A. Doubrava, P.E. Vice President / Principal Engineer TN Reg. No. 114351 jdoubrava@smeinc.com

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Table of Contents

1.0	Introduction	
1.1	Purp	pose
1.2	Proje	ect Information
1.3	Scop	pe of Study and Report Format
2.0	Field Explora	ation4
2.1	Gene	eral
2.2	Cone	e Penetration Test (CPT) Soundings
2.3	Soil '	Test Borings
2.4	Pres	suremeter Testing
2.5	2D N	Multi-Channel Analysis of Surface Waves (MASW) Survey
2.6	Field	d Resistivity Testing
3.0	Laboratory T	Testing
4.0	Geology	
4.1		tivated Materials
4.2	Allu	ıvial Materials
4.3	Loes	ss Deposits
4.4	Mari	ine Sediments
5.0	Subsurface C	Conditions
5.	.1.1 Surfa	-ace
5.	.1.2 Culti	ivated Materials
5.	.1.3 Loess	s Deposits
5.	.1.4 Mari	ine Sediments
5.	.1.5 Grou	und water
6.0	Test Results	
6.1	Labo	oratory Test Results9
6.2	2D N	MASW Results10

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



6.2.1	Geophysical Methodology Limitations	10
6.3	Field Resistivity Test Results	11
6.4	Pressuremeter Test Results	11
7.0 Conclu	sions and Recommendations	11
7.1	Site Assessment	11
7.2	Site Preparation	13
7.3	Fill Placement and Compaction	13
7.3.1	Structural Soil Fill	13
7.4	Site Degradation during Construction	14
7.4.1	Lime Modification	14
7.4.2	Soil Cementing	15
7.5	Excavation, Shoring, and Bracing	15
7.6	Settlement and Settlement Monitoring	15
7.6.1	Fill-Induced Settlement	15
7.6.2	Settlement Monitoring	16
7.7	Foundations	17
7.7.1	Shallow Foundations	17
7.7.1.1	Embedded Spread Foundations (2,000 psf)	18
7.7.1.2	Shallow Foundations (2,500 psf)	18
Uplift Loadi	ng of Shallow Spread Foundations Bearing in Cohesive Soil	19
7.7.2	Shallow Foundations with Ground Improvement using Aggregate Piers (3,000 psf)	20
7.7.2.1	Mat Foundations	20
7.7.2.2	Construction Considerations	21
7.7.3	Shallow Augered Foundation Recommendations	21
7.7.3.1	Construction Considerations	25
7.8	Seismic Site Response Analysis	26
7.8.1	Subsurface Conditions and Soil Model	26
7.8.1.1	Seismic Site Class and Soil Model	26
7.8.2	Ground Motions	27
7.8.2.1	Site Hazard	27

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



	7.8.2.2	Target Spectrum (B/C Boundary)	27
	7.8.2.3	Ground Motions	27
	7.8.3	Methodology	28
	7.8.4	Results	30
8.0	Follow-	Up Services	31
9.0	Limitati	ons	31
Lis	t of Table	es	
	Report at a G	lance	1
	Table 6-1 - Te	st Summary	9
	Table 7-1 - Fil	l Induced Settlement	15
	Table 7-2 – Sh	allow Foundation Recommendations	17
	Table 7-3 - Al	lowable Uplift Capacities of Spread Footings for Substation Structures	20
	Table 7-4 - G ϵ	eneralized Subsurface Profile and Recommended Engineering Design Paran	neters22
	Table 7-5 – Al	llowable Compression Load and Uplift for Soft Areas*	23
	Table 7-6 – Al	lowable Compression Load for Firm Areas	23
	Table 7-7 – Al	llowable Uplift for Firm Areas	23
	Table 7-8 - La	teral Design Parameters (Soft to Firm Profile)	24
	Table 7-9 - La	teral Design Parameters (Firm Profile)	24
	Table 7-10 – <i>A</i>	Allowable Lateral Load for Soft to Firm Areas	25
	Table 7-11 – <i>F</i>	Allowable Lateral Load for Firm Areas	25
	Table 7-12 - B	ase Model Properties	26
	Table 7-13 - S	elected NGA West2 Records	28
	Table 7-14 - S	ummary of Design Acceleration Parameters	30

Appendix

April 1, 2022 iv

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Report at a Glance

Key geotechnical findings based on our current understanding of the proposed project are presented below. These findings are presented as an overview and should not be used in place of the more detailed recommendations presented in the remainder of this report.

Category	Key Geotechnical Finding
	The site is generally consistent with other sites in the area and amenable to the proposed development. Specific geotechnical issues identified on this site that should be considered include:
Site Development Challenges	 Moisture conditioning for proper compaction of site soils during mass grading and utility backfill operations.
Chanenges	 Remediation of upper cultivated materials throughout the fields and possibility of localized uncontrolled fill materials.
	 Control and/or mitigation of perched groundwater during construction. Remediation of soft/loose loess soil.
Subsurface Conditions	Generally, much of the site is comprised of up to $1 \frac{1}{2}$ feet of cultivated materials underlain by loess materials derived from wind deposits and marine sediments. The materials were predominately firm to stiff, sandy and clayey silt. Transitions between strata were noted to be less clayey and more sandy with depth. Ground water was encountered approximately 5 to 29 feet below existing grade.
Seismic Design	Site Class D
Foundation Types	 Embedded spread foundations for the tubular pull-off structures with an allowable bearing capacity of 2,000 psf. Shallow spread foundations for lightly loaded structures such as the switch house and circuit breaker structures and with an allowable bearing capacity of 2,500 psf. Shallow spread foundations with ground improvement (aggregate piers) where an allowable bearing capacity of 3,000 psf is required. Shallow augered foundations for the bus support, switch support, and small equipment structures.
Slab Support	General: soil support on-grade.
Use of Site Soil as Fill	Site soils are suitable for use as structural fill; moisture conditioning should be expected
Excavation Conditions	Conventional earthmoving equipment should be able to excavate to the anticipated depths.
Construction Dewatering	Construction dewatering may be required for local perched water and surface water infiltration. Additionally, depending on the depth of the pits across the site, dewatering may be required within isolated areas.
Site Impacts	Multiple water ditches and/or creeks present across the site. Soils in these areas may require remediation.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Category	Key Geotechnical Finding					
Remedial Grading	Clayey site soils are highly susceptible to loss of strength at elevated moisture contents. If site soils increase in moisture content during construction, remedial grading may be required.					
Schedule/Cost Considerations	 Soil Moisture Content – Depending upon weather conditions preceding grading, drying of site soils may be required to achieve a compactable soil moisture content. Late fall and winter weather conditions are typically not conducive to drying soils and the risk of schedule delays and additional costs will be increased for construction during these times. Remedial Grading – Cultivated materials may require removal and replacement if construction occurs during wet seasons. Deep Fill Settlements – Fills in excess of 5 feet may cause settlements greater than an inch; each area should be evaluated relative to fill depths and structural loads relative to total and differential settlement tolerances. Site Impacts – Water ditches may be encountered and require remediation during site grading. 					

1.0 Introduction

1.1 Purpose

The purpose of our work was to explore the subsurface soil conditions at the site, evaluate those conditions, and provide recommendations for site preparation, foundation, and pavement support. This report provides the following:

- A summary of the project and provided information.
- A summary of current site conditions, topography, and area geology.
- A summary of the field exploration methods.
- A summary of the subsurface conditions encountered in the soundings and test borings.
- A summary of the laboratory test methods and results.
- Site Assessment.
- Recommendations for site preparation, including subgrade preparation, excavation, structural fill
 placement, and groundwater control.
- Recommendations for design of shallow and deep soil foundation support (piles), including the allowable skin friction and lateral soil pressure, recommendations regarding the allowable soil bearing pressure.
- Recommendations for soil input values for FAD tools analysis including Modulus of Deformation (from
 pressuremeter test) and empirically correlated strength and unit weights based on N-values. Laboratory
 strength testing may be performed for an additional fee.
- Recommended seismic site classification in accordance with the 2018 International Building Code (IBC).
- Site-specific Seismic Response Analysis (SSRA).
- An Appendix with Site Location Plan, Test Location Plan, and individual records for each test boring, CPT sounding, MASW tests, Resistivity test, and laboratory test.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



1.2 Project Information

Project information was provided in November 18, 2021 e-mails between Mr. Keith Johnson of Walbridge Aldinger, LLC (Walbridge) and Ms. Simone Metzger, P.E. of S&ME. Appended to an e-mail was the "Soil Boring RFP (Stanton)", prepared by the Tennessee Valley Authority (TVA), which presented the requested scope of work along with the boring coordinates and layouts in pdf and dwg formats. Additional plans and structural information were provided during February and March conversations and e-mails between various project team members. Included in a March 3, 2022 email from Mr. Rob Evans with TVA to Ms. Simone Metzger of, S&ME were two drawings titled *Preliminary Site Sketch*, prepared by TVA, one showing the initial arrangement and a second showing the final arrangement and four drawings showing details for the foundations for the transformer and radiator bank, support structures, three phase tubular pull-off structure, and power circuit breaker.

Based on the provided information, we understand a new 500 kV Substation will be constructed for TVA to serve the Ford Blue Oval plant. The substation will be located on a nearly 40-acre tract situated east of TN-222 across from the existing fire station in Stanton, Tennessee. Based upon our experience on similar TVA 500 kV Substations, we anticipate the structures include: Breaker Support, Transmission Pull-Off, Switch House, and Maintenance Building structures.

A grading plan was not provided; however, we have access to general topographic information for the project from the site survey for the Blue Oval Project provided by SSOE. Further, we understand the yard elevation is planned to be 318.6 feet. Based on this, maximum cuts and fills are on the order of 20 and 13 feet, respectively. Detailed information regarding structural loading and grading plans were not provided however, based on experience with other 500 kV Substations designed by TVA we expect maximum loads on isolated shallow spread footings and shallow augured foundations will not exceed about 100 kilo-pounds (kips). Earthquake loading was not provided.

Review of available aerial images on Google Earth and our site reconnaissance indicate the site is currently comprised of agricultural land generally sloping toward to the east. A tree line on the south and southwest side of the site is present. There are several ditches present throughout the site.

1.3 Scope of Study and Report Format

We have been requested to provide a geotechnical exploration for the subject project. The project information and assumptions detailed above should be reviewed and confirmed by the appropriate team members. Modifications to our proposed scope of services may be required if the actual conditions vary from the project information and assumptions described herein.

This geotechnical exploration included a site reconnaissance, field and laboratory testing, and engineering analysis. The following sections of this report present discussions of the field exploration, site conditions, laboratory test results, and conclusions and recommendations. Following the text of this report, figures, and sounding and boring logs are provided in the Appendix.

The scope of services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, or subsurface water. Any statements

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

2.0 Field Exploration

2.1 General

Our field exploration was conducted between January 25 and March 1, 2022 and included a site reconnaissance by members of our engineering staff, 28 cone penetration test (CPT) soundings (which includes 5 offsets where shallow refusal was encountered, 59 soil penetration test (SPT) borings (which includes 6 offsets to obtain undisturbed samples), and 2 field resistivity profiles, and eight 2D MASW profiles. Test locations were provided by TVA. Due to limiting site features such as cultural areas, ditches, tree lines, etc., our final profile locations and lengths of some of the originally proposed 2D MASW profile locations were altered and boring B-60, located outside of the proposed construction area was not performed. Pressuremeter testing was performed in borings B-35 and B-38 at depths of 5, 15, 25, and 35 feet. Test Location Plans show the approximate sounding, boring, and geophysical testing locations and are provided in the Appendix.

The test locations were located and marked in the field by members of our engineering staff utilizing a commercial-grade, hand-held global positioning system (GPS) unit loaded with pre-established locations from provided plans overlaid into Google Earth. Ground surface elevations for the test locations were estimated by interpolating between contours on the provided topographic survey. Based on the methods used to establish the locations and elevations of the tests, this information should be considered approximate.

2.2 Cone Penetration Test (CPT) Soundings

The soundings were advanced as cone penetration rest (CPT) soundings using a 40-ton track-mounted vehicle to hydraulically advance the electronically instrumented cone penetrometer in general accordance with ASTM D5778, the Standard Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils. During penetration, the tip resistance, pore water pressure and sleeve friction were measured and recorded during penetration. Using theoretical and empirical correlations, the CPT data is used to determine soil stratigraphy and estimate soil strength parameters. The method produces a nearly continuous record of soil data. For the CPT soundings, soil samples are not obtained. Soil classification is made on a basis of comparison of the tip resistance, sleeve resistance, and pore pressure values to values measured at other locations in known soil types, using experience with similar soils and exercising engineering judgement.

2.3 Soil Test Borings

The test borings were initially advanced by mechanically twisting 2 ¼-inch diameter hollow stem augers (HSA) into the ground with a tracked rig in general accordance with ASTM D6151, the *Standard Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling*. After heaving sands were encountered, rotary drilling processes were used to advance the hole and a heavy drilling fluid was circulated in the bore holes to stabilize the sides and flush the cuttings.

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



Soil samples were obtained with a standard 1.4-inch inside diameter (ID), 2-inch outside diameter (OD) split-spoon sampler at selected intervals in general accordance with ASTM D1586, the *Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of* Soils. The sampler was first seated 6 inches and then driven an additional foot with blows of the 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded and is designated the "standard penetration resistance" (N-value) with units of blows per foot (bpf). The N-value provides a general indication of in-situ soil conditions and has been correlated with certain engineering properties of soils. An automatic trip drop hammer was used for the standard penetration resistance testing. The automatic hammer generally has a higher efficiency than a manual hammer, and may yield lower N values. The hammer efficiency for the rig used to perform the soil test borings is 86.5%. The consistency and density descriptions for the soil are based on the field values without any adjustments or "corrections".

The soil samples obtained during our field activities were visually classified by members of our engineering staff in general accordance with ASTM D2488, the *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. Subsurface water level readings were taken in selected borings during drilling and upon completion of the soil drilling process. Upon completion of drilling and sampling, each borehole was backfilled with soil cuttings and a borehole closure device. Delayed subsurface water level measurements were obtained where we could safely leave borings open overnight. Upon completion of drilling or delayed water readings, each borehole was backfilled with soil cuttings and a borehole closure device. There were several areas where water was encountered near the surface. This is likely from the mud rotary process and in the case of delayed readings, from the mud sealing the hole during times of the rain events that occurred during our exploration. We do not think it is indicative of the water table and have removed these readings from the logs so that it will not be misinterpreted.

2.4 Pressuremeter Testing

Pressuremeter testing was performed in borings B-35 and B-38 at depths of 5, 15, 25, and 35 feet. We utilized Roctest's TEXAM^e pressuremeter equipment to perform strain-controlled tests at these locations.

2.5 2D Multi-Channel Analysis of Surface Waves (MASW) Survey

Between February 8 and 16, 2022, we conducted a two-dimensional (2D) Multi-Channel Analysis of Surface Waves (MASW) seismic survey along the accessible portions of the requested transects to assist the geotechnical exploration program by identifying shear wave velocity variations associated with soil stiffness within the underlying materials at the site.

We collected a total of eight (8) 2D MASW profiles ranging from about 700 to 1,270 feet in length (Lines MASW-1 through MASW-8). A Geometrics Geode seismograph with a "landstreamer" equipped with twenty-four (24) 4.5 Hz vertical geophones. The geophones were set at a spacing of 5 feet with a spacing of 10 feet between successive measurements. A PEG-40 truck mounted accelerated weight drop was used as the energy source. Data processing was conducted using the Geogiga Technology Corp. Seismic ProTM software (SURFACE PLUS module) and Golden Software's Surfer® program was used to grid and plot the final 2D MASW models. Elevations used for our 2D MASW models were based on one meter Lidar Data obtained from USGS Digital Elevation Model (DEM) rather

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



than actual field survey measurements performed by S&ME, and as such, should be considered estimated. Approximate locations were located near the boring locations and are shown on the Test Location Plans in the Appendix.

2.6 Field Resistivity Testing

On February 1, 2022, we performed field resistivity measurements at the requested location in general accordance with ASTM G57 "Standard Test Method for Field Measurement of Soil Resistivity using the Wenner Four-Electrode Method" using an Advanced Geosciences Incorporated, Inc. (AGI) R8 SuperSting™ resistivity meter, which is calibrated annually by the manufacturer. The resistivity survey consisted of collecting two linear profiles (one in the north-south and one in the east-west orientation) at the requested site locations. Each profile used electrode ("a") spacings of 1, 2, 3, 5, 7, 10, 20, 30, 50, 70, 100, 200, and 300 feet with the east-west profile consisting of an additional measurement at 400 feet. The eighteen-inch stainless steel electrodes used for the surveys were inserted 6 to 12 inches into the ground, and soil conditions were noted at the survey location. The results of the soil resistivity survey are provided in the attached tabulated spreadsheet, "Soil Resistivity Data Sheet − Wenner Four-Electrode Method," which presents the "a" spacing (feet and cm), electrode depth (inches), and associated calculated resistance (ohms), apparent resistivity (ohm/cm and ohm/ft), and injected current (mA). Approximate traverse locations were located near the boring locations and are shown on the Test Location Plans in the Appendix. Field data sheets are included in the Appendix as well.

3.0 Laboratory Testing

Laboratory tests were performed on representative soil samples obtained during the field exploration phase of this project. Natural moisture content, Atterberg limits, and grain size analyses tests were performed on selected SPT, bulk, and undisturbed Shelby tube soil samples. These tests were used to help confirm our visual-manual classifications and evaluate the soil's volume change potential.

Laboratory plasticity testing indicated that samples of the soil which were tested had liquid limits (LL) ranging from 22 and 42 percent and plasticity indices (PI) ranging from 8 to 16 percent. Grain size analysis indicated 33.8 to 98.3 percent passed the No. 200 sieve.

Six standard Proctor moisture-density relationship tests were performed in accordance with ASTM D698 on bulk samples of soil and six and unconfined compressive strength tests were performed on relatively undisturbed Shelby tube specimens. Samples these tests were obtained from offsets to Borings B-32, B-33, B-35, B-37, B-55, and B-57.

The resulting soil descriptions from the index testing are shown on the Test Boring Records in the Appendix.

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



4.0 Geology

4.1 Cultivated Materials

Cultivated materials are derived from farming or forestry activities where the upper few feet are plowed, harrowed, or turned over seasonally for planting. Cultivated materials are generally similar in composition to the residual materials beneath them, with the exception they typically contain more silt or sand and may contain significant organic content. They are typically moisture sensitive and can be difficult to properly compact during grading operations. The engineering properties of cultivated materials are usually poor and can vary significantly depending on their depth, organic content, and moisture content.

4.2 Alluvial Materials

Materials which have been eroded, transported, and deposited in and adjacent to water courses are termed "alluvium". Alluvial materials differ significantly from the residual material source and can vary from clays to gravel depending on the depositional environment. Alluvial materials frequently are soft or loose, and differing soil types and consistencies/relative densities can occur in relatively short horizontal and vertical distances. Although none of the borings performed to date have encountered alluvial materials, we expect some alluvium will be encountered in and/or around the creeks and/or ditches throughout the property.

4.3 Loess Deposits

The USGS Geologic Map of Tennessee – West Sheet, dated 1966 indicates this site is underlain by Pleistocene aged Loess deposits. Loess deposits are predominantly clayey and sandy silts, gray to brown. These deposits have maximum thicknesses of about 100 feet along bluffs of the Mississippi River but thin out eastward. The engineering properties of Loess materials can change rapidly in short horizontal and vertical distances.

4.4 Marine Sediments

Below the aforementioned Loess deposits, marine sediments are present. The marine sediments are generally comprised of clays and silts with interbedded sand layers that can be several hundred feet deep and generally increase in depth toward western Tennessee. Water high in calcite can act as a cementing agent to create post depositional features, such as layers of cemented sand.

5.0 Subsurface Conditions

The subsurface descriptions below are of a generalized nature to highlight the major subsurface stratification features and material characteristics. The sounding and boring logs included in the Appendix should be reviewed for specific information at individual test locations. The depth and thickness of the subsurface strata indicated on the sounding and boring logs were generalized from and interpolated between sounding and boring locations. The transition between materials may be more gradual than indicated on the sounding and logs.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Information on actual subsurface conditions exists only at the specific sounding and boring locations and is relevant to the time the exploration was performed. Variations may occur and should be expected between sounding and boring locations. The stratification lines were used for our analytical purposes and, unless specifically stated otherwise, should not be used as the basis for design or construction cost estimates.

The CPT soundings generally encountered firm to stiff clay underlain by loose to dense sands. Soundings refused between about 15 and 38 feet below the existing ground surface except for locations B-09, B-17, B-29, B-51A, B-67, and B-69, which were terminated at the planned depths of 40 feet below the existing grounds surface. The CPT refusals are due to isolated medium-dense to dense layers and not bedrock.

5.1.1 Surface

A surficial layer of topsoil with roots ranging in thickness from about 1 to 10 inches was encountered in borings B-10, B-16, B-18, B-20, B-26, B-28, B-30, B-34, B-35, B-37, B-40, B-42, B-44, B-45, B-46, B-47, B-49, B-50, B-52, B-54 through B-50, B-66, and B-68. Topsoil was not measured at our CPT sounding locations.

5.1.2 *Cultivated Materials*

Beneath the topsoil, where encountered, and from the surface in the remaining soil test borings, cultivated soil was encountered to depths of 1 to 3 feet below the existing ground surface. The cultivated soil generally consisted of brown lean clay with varying amounts of organics throughout. N values ranged from 3 to 9 blows per foot (bpf), indicating soft to stiff soil consistencies.

5.1.3 Loess Deposits

Underlying the cultivated materials, borings and soundings encountered loess deposits to depths ranging from 6 to 26 feet below the existing ground surface. The loess generally consisted of brown silty and sandy lean clays. N values ranged from weight of hammer (WOH) to 37 bpf, indicating very soft to hard soil consistencies. More typically, the loess consisted of firm to stiff soil consistencies. Weight of hammer (WOH) designations are recorded when the weight of the drill rods and 140 pound hammer cause the sampler to advance through the designated interval with no applied blows from the hammer.

5.1.4 Marine Sediments

Beneath loess, marine sediments were encountered to boring termination or auger refusal depths. The marine sediments encountered generally consisted of clays and silts overlying poorly graded sands, sands with silt, silty sands, and clayey sands. N values in the silts and clays ranged from 3 to 26 bpf, indicating soft to very stiff consistencies. N values in the sands ranged from 6 bpf to 50 blows per 3 inches indicating loose to very dense soil densities. The sands were typically more dense with depth.

5.1.5 Ground water

Ground water was measured in our soil test borings at depths ranging from about 4- to 40-feet below the existing ground surface at the time of drilling. Soil test boring holes generally caved between depths of 8 and 29 feet

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



below the existing ground surface. There were several areas where water was encountered near the surface. This is likely from the mud rotary process and in the case of delayed readings, from the mud sealing the hole during times of the rain events that occurred during our exploration. We do not think it is indicative of the water table and have removed these readings from the logs so that it will not be misinterpreted. Ground water in the CPT soundings was measured at depths ranging from 5 to 25 feet below the existing ground surface. Based on our exploration, we expected stabilized ground water levels to range between elevations 295 and 300 feet and perched water to be encountered between elevations 300 and 320 feet.

6.0 Test Results

6.1 Laboratory Test Results

The moisture contents of selected split-spoon samples ranged from approximately 6.5 to 31.0 percent. A summary of the index testing, maximum dry density and optimum moisture from the standard Proctor testing, and unconfined compressive strengths are show in the tables below. Laboratory test results are contained in our Appendix.

Table 6-1 - Test Summary

Boring ID	Sample Type	Bottom Depth (ft)	Moisture Content (%)	Moist Unit Weight (pcf)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Unconfined Compressive Strength (psf)	USCS Symbol
B-26	SS	18.5-20	23.6				29	18	11			CL*
B-32A	Bulk	2-10	24.0		108.7	16.3	32	20	12	98.1		CL
B-32A	UD	15-17	10.1	123.4			22	10	12	36.7	1364	GC
B-33A	Bulk	2-10	23.2		107.4	18.3	34	21	13	98.3		CL
B-33A	UD	15-17	13.9	128.5			24	10	14	33.8	1510	SC
B-35A	Bulk	2-10	28.0		108.7	15.6	30	20	10	90		CL
B-35A	UD	5-7	26.4	119.8			34	19	15	92.9	1433	CL
B-37A	Bulk	2-10	27.8		107.5	17.1	32	19	13	94.5		CL

April 1, 2022

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Boring ID	Sample Type	Bottom Depth (ft)	Moisture Content (%)	Moist Unit Weight (pcf)	Maximum Dry Density (pcf)	Optimum Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Percent Passing #200 Sieve	Unconfined Compressive Strength (psf)	USCS Symbol
B-37A	UD	5-7	26.4	118.4			42	18	24	89.6	3699	CL
B-55A	Bulk	2-10	26.7		108.7	16.3	28	18	10	94.5		CL
B-55A	UD	5-7	23.8	122.1			35	20	15	88.2	1446	CL
B-57A	Bulk	2-10	34.7		108.2	16.3	29	21	8	91.3		CL
B-57A	UD	5-7	27.8	117.8			33	17	16	97.5	829	CL

^{*}Based on visual descriptions where index tests were not performed.

6.2 2D MASW Results

The following summarizes the results of the geophysical survey performed at the site:

- The 2D MASW profiles presented in Figures 2K, 2L and 3 in the Appendix indicate seismic velocity (Vs) variations across the surveyed areas that generally range from approximately 400 to 2,500 feet/second (ft/s).
- Seismic profile depths are determined during post-processing and extend to approximately 60 to 90 feet below ground surface (bgs).
- Based on the borings collected relatively adjacent to the 2D MASW profiles, the shallow cultivated zone/loess
 materials appear to generally range between about 400 ft/s and 1,100 ft/s and the underlying marine soils
 appear to generally range between about 600 and 2,500 ft/s with an apparent significant change in stiffness at
 about 1,300 ft/s (presented as yellow).
- The approximate location of the borings used for our interpretations are overlain on the geophysical profiles for reference.

6.2.1 Geophysical Methodology Limitations

Regardless of the thoroughness of a surface wave seismic survey, there is always a possibility that actual conditions may not match the interpretations. Accordingly, the possibility exists that not all features at a project site will be detected using the surface wave seismic method due to either a lack of contrast in material stiffness or the occurrence of features outside the lateral limits and below the depth of penetration. As with most surface geophysical methods, resolution decreases with depth. As such, the size and/or contrast of geologic layers and/or features compared to the imaged subsurface media must be significant enough to produce the anticipated response. Lithologic variations may also appear more gradual than actual conditions. Site activity such as drilling

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



activities, etc. can cause noise/interference in the seismic data sets. Depth limitations are also associated with the MASW method, source, and surface/subsurface conditions. In conclusion, the geophysical results should be considered accurate only to the degree implied by the method used and the method's limitations and data coverage.

6.3 Field Resistivity Test Results

The apparent resistivity ranged from approximately 179.20 ohm-ft. (5461.92 ohm-cm) to 747.76 ohm-ft (22791.84 ohm-cm) along the N-S line and approximately 185.61 ohm-ft. (5657.26 ohm-cm) to 1046.53 ohm-ft (31898.23 ohm-cm) along the E-W line. The full results of the soil resistivity survey are presented on the Soil Resistivity Data Sheets in the Appendix which presents the "a" spacing (feet and cm), electrode depth (inches), calculated resistance (ohms), apparent resistivity (ohm-cm and ohm-ft) and injected current (mA).

6.4 Pressuremeter Test Results

The Presiometer modulus, E, ranged from 167 to 1,415 psi in borings B-36 and B-38. The results of the pressuremeter testing and interpretation are presented on the TEXAM Pressuremeter Test Sheets in the Appendix.

7.0 Conclusions and Recommendations

The conclusions and recommendations presented in this report are based on the preceding project information, and the results of this exploration. Actual subsurface conditions may vary between the boring locations. If it becomes apparent during construction that encountered conditions vary substantially from those presented herein, this office should be notified at once. At that time, the conditions can be evaluated and the recommendations of this report modified, in written form, if necessary. Also, if the scope of the project should change significantly from that described herein, we should be notified and these recommendations should be reevaluated.

These recommendations are based on the current plan, our understanding of the foundation types, dimensions, and loads, and where the equipment will be located.

7.1 Site Assessment

Based on the subsurface data collected during this geotechnical exploration and our experience with similar projects, it is our professional opinion that the site is adaptable for the proposed construction. However, the following items will likely affect construction costs and schedule:

• Deep fills can cause excessive settlements, particularly in areas where heavier loads are planned. For example, fills of 5 to 10 feet can induce settlements on the order of 3/4 to 2 inches, depending on the subsurface conditions across the site. Based on the subsurface information we anticipate much of the settlements induced by the weight of the new fill will be relatively elastic and should primarily occur during the fill placement or shortly thereafter.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



- Generally, we anticipate the planned structures can be supported by a combination of shallow foundations, mat foundations, embedded spread foundations, shallow augered foundations, and shallow foundations with ground improvements (i.e. aggregate piers), and/or deep foundations. Remediation (undercut / backfill) of soft to firm soils may be required for shallow foundations. A lower allowable bearing capacity and higher settlements are expected in the soft to firm soils encountered in the vicinity of borings B-25 through B-27.
- We recommend new fill be placed prior to the installation of the foundations to reduce the potential of negative skin friction on the piles (down drag) on the shallow augered foundations and excessive settlement in the shallow foundations.
- The near-surface conditions following the stripping of surface materials could potentially impact the development budget and/or schedule. The strength characteristics of fine-grained soils (i.e. silts and clays), especially the cultivated materials, are typically sensitive to moisture conditions. A loss of strength will occur in these type soils with an increase in moisture content. Higher compaction in the upper 2 feet of soils to 100 percent of the maximum dry density as determined by the standard Proctor or use of lime or cement stabilization should assist in limiting water infiltration and degradation of the surface materials. Additional discussion regarding lime stabilization and soil cementing are provided later.

If grading is performed during wet, cool periods, significant remedial repair of the near-surface soils may be required prior to fill placement. Typically, the amount of remedial repair is not as extensive if grading occurs during hot, dry periods. However, even if grading occurs during summer months, remedial repair of soft subgrades should be expected, especially following inclement weather.

- Some remediation should be expected from high traffic areas following inclement weather or periods of
 high temperatures with wind as these materials have a tendency to degrade when their moisture contents
 deviate from their optimum moisture levels. We recommend qualified, experienced earthwork technicians
 working under the direction of our Geotechnical Engineers be present during the site grading to assist
 with assessing the materials.
- Perched water was encountered relatively shallow, typically within the upper 5- to 29-feet in our CPT soundings and test borings. Temporary and/or permanent dewatering efforts may be required depending on final grades along with planned pit configurations and depths.

Below are the recommendations for site preparation, structural fill criteria, fill placement guidelines, seismic site class, seismic site-specific response analyses, and foundation construction recommendations. Based on the subsurface conditions encountered during this exploration, the subject site is adaptable for the planned construction.

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



7.2 Site Preparation

Initially, surface materials including grass, roots, topsoil, or other organic materials should be stripped to prepare the site for construction. The stripping, clearing, and grubbing should extend at least 10 horizontal feet beyond the construction limits, or as practical. Any materials suitable for reuse as topsoil may be stockpiled and subsequently reused in landscaped areas, if suitable for that purpose. Otherwise, these materials should be wasted from the site.

After initial site preparation is complete, the stability of the exposed subgrade in areas to receive fill and/or atgrade areas should be thoroughly assessed by a member of our engineering staff. This evaluation can consist of, but not be limited to, random probing with a small diameter steel rod, observation of a proofroll, and/or shallow test pits/hand auger borings. A proofroll consists of repeated passes from a loaded tandem-axle dump truck, offroad haul truck, and/or similar piece of heavy, rubber-tired equipment through the subject area.

Firm, loose, or yielding areas should be anticipated. There is typically a stiffer upper crust underlain by firm or loose loess materials. Depending on final grades and weather conditions, some over-excavation of these materials should be anticipated. We recommend contract documents contain provisions for the compaction, removal, and/or replacement of lower consistency surficial soils should they be encountered. Areas noted to pump, rut, or deflect under the applied loading should generally be undercut to firm, suitable soils and replaced with properly compacted structural fill. Our personnel can assist with recommendations for remedial activities during site grading.

Additionally, alluvial materials encountered in the ditches and/or drainage features should be evaluated prior to fill placement. It is unlikely these materials will be stable or suitable for re-use as structural fill. Filter fabric and/or stone may be needed to stabilize these areas prior to fill placement under structures. In non-structural areas, bridging lifts may be used to facilitate fill placement above marginal materials without excessive undercutting/backfilling operations. Bridge lifts are typically 2- to 3-foot thick lifts of soil pushed out over soft or marginal materials. The upper surface of the lift is thoroughly compacted until minimal movement is observed. Subsequent fill lifts should follow the recommendations below. Bridge lifts should only be done at the recommendation of the Geotechnical Engineer.

7.3 Fill Placement and Compaction

7.3.1 Structural Soil Fill

We anticipate fills on the order of 11 feet will be required to establish final site grades. This fill should be placed prior to the construction of foundations. Fill operations should not begin until representative soil samples are collected and tested (allow 3 days for sampling and testing). The test results will be used to evaluate whether the proposed fill soils meet appropriate specifications and for quality control during grading.

We recommend structural soil fill be defined as inorganic, natural soil with maximum particle sizes of 4 inches, maximum gravel content of 20 percent, and plasticity index (PI) of less than 30. Structural soil fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Structural fill should have a maximum dry density of

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



at least 90 pcf as determined by the standard Proctor test (ASTM D 698). Each lift should be compacted to at least 95 percent of the maximum dry density as determined by the standard Proctor method. The moisture content should be controlled to within 2 percentage points of optimum moisture content.

We recommended the upper 2 feet of fills be compacted to 100 percent of the maximum dry density as determined by the standard Proctor to assist in limiting water infiltration and degradation of the surface materials. In addition to meeting the compaction requirement, fill material should be satisfactorily stable under movement of the loaded construction equipment (i.e. a proofroll). Moisture conditioning (drying or wetting) should be expected depending on the weather and temperature during grading activities

It is important that the fill be uniformly well compacted. Accordingly, fill placement should be observed by a qualified field technician working under the direction of our geotechnical engineer. In addition to this visual evaluation, the technician should perform in-place field density tests to confirm whether the contractor's means and methods are capable of achieving the recommended compaction. The frequency of tests should be determined by our geotechnical engineer at the time of construction.

7.4 Site Degradation during Construction

Subgrade surfaces that are stable at the time of grading can become unstable during wet weather and/or as heavy construction equipment traffic moves over the prepared surface. Subgrade damage can be reduced by maintaining positive surface drainage during grading operations and construction to prevent water from ponding on the surface. Additionally, the surface should be rolled smooth to enhance drainage if precipitation is expected. Subgrades damaged by construction equipment should be promptly repaired to avoid further degradation in adjacent areas and to prevent water ponding. Construction traffic should be limited to specific areas during grading to help avoid degrading subgrades throughout the site, particularly after precipitation events. The geotechnical engineer should be contacted to provide recommendations for treatment if the soils become excessively wet or dry, or frozen. Lime modification and soil cementing are two methods to provide some longer-term protection of the subgrades during construction. Geogrid can also be used as an alternate for subgrade stabilization where fills in excess of 5 feet are expected. Our field engineers can assist with subgrade stabilization options during construction.

7.4.1 Lime Modification

Typically, about 5 to 8 percent hydrated lime, by weight or volume, is spread and blended into the soil utilizing a mechanized rotary tiller. The amount of lime may need to be adjusted depending on the plasticity and moisture content of the soils. Depending on the plasticity and moisture content of the soils and the amount of lime added, substantial improvements in reducing the plasticity and moisture content and improving the stability of the materials are typically achieved within 4 to 24 hours. Lime modified soils should have new Proctor tests performed as the maximum dry density and optimum moisture content of the modified materials may change by several pounds or percent, respectively. Timing of the lime modification is critical as inclement weather can negate improvements if the area is not properly sealed or covered following the modification. Following lime modification, compact the soils to 100 percent of its maximum dry density and protect by placing a minimum of 4

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



inches of dense grade aggregate (DGA) compacted to 100 percent of its maximum dry density as determined by the standard Proctor test.

7.4.2 Soil Cementing

Typically, soil cementing is done by incorporating about 5 to 8 percent cement, by volume or weight, into the upper 12 to 16 inches of the soil subgrade utilizing a mechanized rotary tiller. Typically, the cement hydrates within about 12 to 24 hours creating a stable working platform and helps limit degradation of the surface during construction. Sometimes, higher plasticity or very wet materials may require additional cement. Our field staff can assist with assessing the soil conditions and providing additional guidance. Further, we can provide soil cement mix designs to help optimize the blended mixture for the intended use.

7.5 Excavation, Shoring, and Bracing

Based on the boring data obtained during the exploration, we expect conventional excavation techniques (self-loading scrapers or pusher assisted scrapers) can be used to excavate overburden soils during construction. Areas of excavation should meet the requirements of the most current Occupational Safety and Health Administration (OSHA) 29 CFR Part 1926. Site excavation safety shall be solely the responsibility of the contractor and his contractors. Cemented sands, if encountered, are typically thin and can be excavated as described above.

7.6 Settlement and Settlement Monitoring

7.6.1 Fill-Induced Settlement

Fills of up to about 13 feet will be placed during mass grading. Stress increase due to fill placement will result in settlement of the underlying soils. We have estimated the total settlement due to fill placement in addition to the time for settlement to complete for various fill heights. Different results were computed based on expected conditions. The results are summarized in Table 7-1 below.

Fill Height (ft)	Location/Condition	Estimated Settlement (inches)	Estimated Time to Complete (days)
5	B-25 through B-27 – Soft to firm soils	1	60
10	encountered near the ground surface overlying stiff soils	2	60
5	B-28, B-29, B-35 through B-39, B-45	3/4	60
10	through B-49, B-55 through B-59 – Firm soils overlying stiff soils	1 1/4	60

Table 7-1 - Fill Induced Settlement

Where deep fills are anticipated, we recommend the settlement be monitored by using settlement plates and steel rods. Settlement plates and steel rods can provide an estimate of the amount of vertical displacement that has

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



occurred, and can provide an indication of when movement has decreased or stopped by careful and regular monitoring of the devices over an extended period of time. Settlement plates can be used to monitor the settlement of the loess and marine soils due to the placement of fill.

7.6.2 Settlement Monitoring

Where fills in excess of 8 feet are anticipated, we recommend the settlement be monitored by using settlement plates and steel rods. Settlement plates and steel rods can provide a measurement of the amount of vertical displacement that has occurred, and can provide an indication of when movement has decreased or stopped by careful and regular monitoring of the devices over an extended period of time.

The plates should be placed directly on top of the existing ground surface after grubbing. The settlement plates, which are typically steel or plywood and no less than 3 feet square, are connected to a jointed vertical steel or cast iron pipe that is extended as the fill is placed. The pipe is isolated from the fill with a second outer pipe that is also brought up with fill placement. The inner pipe is typically steel, while the outer pipe is typically PVC. The inner pipes are monitored using conventional surveying techniques from a reference located outside the area influenced by the fill. The settlement plate locations can be determined prior to site grading.

Settlement of the upper fill interval can be monitored by driving steel rods flush with the ground surface in near proximity to the settlement plates once fill placement has been completed. As with the settlement plates and inner pipe, the steel rods are monitored using conventional surveying techniques from a reference located outside the area influenced by the fill. The elevation of the settlement plates and steel rods should be carefully measured by a surveyor licensed in the state of Tennessee.

We recommend the settlement plates be measured twice weekly during fill placement or as practical. The settlement plates need to be carefully read each time an extension is added. Upon completion of fill placement, we recommend the settlement plates and steel rods be monitored on twice weekly basis until five consecutive readings indicate measurable settlement has stopped. S&ME should be retained to evaluate the data collected from the settlement monitoring devices. We recommend construction of the building walls and slabs in deep fill areas not commence until the settlement data indicates primary settlement is complete.

For a surcharge, the settlement monitoring points should be established on a 100- to 200-foot grid, prior to preload fill placement. The monitoring points should be read daily during fill placement and the settlement monitoring data should be forwarded to us daily for review. The data should be referenced to a benchmark at least 100 feet away from the pre-load area and in a location that will not be disturbed by the ongoing construction Once the necessary surcharge-induced settlement is indicated to have occurred, as determined by the Geotechnical Engineer, then the surcharge can be removed.

Prior to fill placement, a baseline reading should be taken recording the elevation of the top of the plate, the ground surface elevation next to the plate, and the elevation of the top of the riser pipe. At each additional reading, the top of the riser pipe and the ground surface elevation next to the pipe should be recorded. Anytime an additional section of riser pipe will be added, the top of the riser pipe should be read twice, once before the

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



new section is added and again after the new section is added. Each reading should be surveyed to the nearest hundredth of a foot.

7.7 Foundations

Based on the provided project information and our experience with similar TVA projects, we expect two primary types of foundations will be utilized for this project; shallow spread foundations and shallow augered foundations. Foundation recommendations will be driven by upper soft and firm soils present on this site. Due to the potential for excessive settlements expected from deeper fills, firm soils encountered in the upper 30 feet throughout the central and east portions of the site, we recommend a localized approach to the foundation recommendations. In areas where fills are on the order of 10 feet on the east side of the site, we recommend settlement monitoring be performed to confirm primary settlements have occurred prior to foundation construction. Settlement monitoring should be considered as a part of the construction sequencing. Further detail on settlement monitoring is included in the Earthwork section.

7.7.1 Shallow Foundations

We anticipate shallow spread foundations will be used to support the switch house and circuit breaker structures (detail on sheet HC-126949). Embedded spread foundation support is anticipated for the pull-off structures (detail on sheet HC-126991). Based on the discussion and load scenarios provided for the planned structures within the Substation, we understand an allowable bearing capacity of 3,000 psf is desired. Based on the subsurface conditions encountered during our exploration, allowable bearing capacities of 2,000 to 2,500 psf are suitable for design and construction of shallow foundations across the site. If allowable bearing capacities of 2,000 to 2,500 psf are not sufficient, we recommend a ground improvement program using aggregate piers be implemented to increase the bearing capacity to 3,000 psf. Table 7-2 summarizes our foundation recommendations.

Table 7-2 – Shallow Foundation Recommendations

Allowable Bearing Capacity (psf)	Description	Need to Remediate Soft to Firm Soils at Foundation Locations
2,000	Embedded spread foundation for tubular pull-off structures	Some remediation may be required at isolated locations.
2,500	Shallow foundations for switch house, circuit break structures, smaller equipment.	Wide spread remediation should be planned and budgeted for.
3,000	Shallow foundations supported by ground improvements such as aggregate piers.	Remediation through ground improvement.

A mat foundation is planned for the transformer and radiators (detail on sheet LC-120316). Shallow augered foundations are usually used for the bus support (detail on MC-58190), switch support, and small equipment structures (detail on Sheet HC-68591).

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



7.7.1.1 Embedded Spread Foundations (2,000 psf)

We understand a spread foundation embedded 10 feet with dimensions of 14 feet by 14 feet is planned for the tubular pull-off structures. The following structural loads for the pull-off structure drilled shaft foundations were used in our analyses:

- Compression 500 kips
- Shear 29 kips
- Moment 1045 kip-ft

The structural loading assumptions described previously will need to be reviewed and confirmed by TVA. Seismic loading was not provided and is not incorporated into our analysis. Modifications to our recommendations may be required if the actual conditions vary from the aforementioned information and/or estimates.

From the provided loads, we understand the maximum contact pressure to be on the order of 2,000 ksf. As noted above, if an allowable bearing capacity of 2,000 psf is not sufficient, we recommend a ground improvement program using aggregate piers be implemented to increase the bearing capacity to 3,000 psf. We estimate that properly designed and constructed footings bearing in compacted fill or firm or better loess or marine soils should experience total and differential settlements of less than about 1 inch and ½ inch, respectively.

Lateral capacity of footings includes a lateral bearing pressure and coefficient of friction as described in the 2018 IBC Section 1806. Where footings are cast neat against the sides of excavations in existing loess or marine soils, or newly placed, properly compacted fill soils, an allowable lateral bearing pressure of 100 psf per foot depth below natural grade may be used in computations. An allowable sliding resistance of 130 psf may be used for clays similar to those described as soil Class 5 in Table 1806.2. An increase of one-third in the allowable lateral capacity may be considered for transient load combinations, including wind or earthquake loading, unless otherwise restricted by design code provisions.

We estimate that properly designed and constructed footings supported on the recommended materials should experience total and differential settlements of less than about 1 inch and ½ inch, respectively. The ultimate uplift capacity for individual spread footings is dependent on their depth of embedment, dimensions, and the properties of the surrounding soil. We recommend an allowable uplift capacity of 180 kips. Uplift capacities were estimated based on the weight of the foundation element and soil above the foundation. The allowable uplift capacity of each proposed structure should consider the total number of spread footing(s) supporting the structure. A factor of safety of 3 was used to determine the allowable uplift and moment capacities.

7.7.1.2 Shallow Foundations (2,500 psf)

Shallow foundations bearing on stiff or better consistency loess or marine soils or well-compacted structural fill are recommended for support of the proposed substation structure(s). After the site is properly prepared in accordance with our previous recommendations, foundations bearing in compacted fill or stiff or better loess or marine soils may be sized for a maximum allowable soil bearing pressure of 2,500 pounds per square foot (psf). We expect stiff or better consistency soils will be encountered on the west side of the site and in the deeper new fills, depending on the depth of the shallow foundations. As noted above, if an allowable bearing capacity of 2,500

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



psf is not sufficient, we recommend a ground improvement program using aggregate piers be implemented to increase the bearing capacity to 3,000 psf.

Even if the design loads would allow smaller sizes, we recommend all isolated spread foundations be a minimum of 24 inches wide to reduce the possibility of a localized punching shear failure. Foundations for the substation structures should be designed to bear at least 18 inches below finished exterior grade to develop the design bearing pressure and to protect against frost heave and shrink/swell volume changes.

Lateral capacity of footings includes a lateral bearing pressure and coefficient of friction as described in the 2018 IBC Section 1806. Where footings are cast neat against the sides of excavations in existing loess or marine soils, or newly placed, properly compacted fill soils, an allowable lateral bearing pressure of 100 psf per foot depth below natural grade may be used in computations. An allowable sliding resistance of 130 psf may be used for clays similar to those described as soil Class 5 in Table 1806.2. An increase of one-third in the allowable lateral capacity may be considered for transient load combinations, including wind or earthquake loading, unless otherwise restricted by design code provisions.

Settlement of the foundation soils resulting from loads of the proposed structure were estimated based on the subsurface conditions, anticipated foundation loads, remedial activities, laboratory test results, our experience, and engineering judgment. We estimate that properly designed and constructed footings supported on the recommended materials should experience total and differential settlements of less than about 1 inch and ½ inch, respectively.

Some remediation such as over-excavation should be anticipated in areas where soft to firm soil was encountered near the foundation bearing elevation. Where lighter loads are expected, such as one of the storage building, it may be advantageous to design for a lower allowable bearing pressure of 2,000 psf so as to limit both the time and cost of remediation during construction. We recognize a lower allowable bearing pressure may not be practical for some of the larger loads and remediation may be preferred in those areas.

In areas where deep fills are planned, a higher allowable bearing pressure may be possible depending on the depth of fill and anticipated size of foundations. Once the primary settlement from the mass fill has occurred, the new fill layer may be thick enough to take on most of the load such that the deeper firm soils will be less influenced by the load than prior to the fill placement.

Uplift Loading of Shallow Spread Foundations Bearing in Cohesive Soil

The ultimate uplift capacity for individual spread footings is dependent on their depth of embedment, dimensions, and the properties of the surrounding soil. Table 7-3 provides allowable uplift capacities for the various spread footings proposed to support the substation structures. A factor of safety of 3 was used to determine the allowable uplift capacities.

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



Table 7-3 - Allowable Uplift Capacities of Spread Footings for Substation Structures

Proposed Structure	Approximate Foundation Dimensions	Approximate Foundation Thickness (ft)	Depth to Top of Foundation (ft)	Allowable Uplift Capacity (kips)
Circuit Breaker	10 ft by 10 ft	1.5	3	25
			2	8
Alternate Foundation	6 ft by 6 ft	1.5	3	11
			4	15

Note: Uplift capacities were estimated based on the weight of the foundation element and soil above the foundation. The allowable uplift capacity of each proposed structure should consider the total number of spread footing(s) supporting the structure.

7.7.2 Shallow Foundations with Ground Improvement using Aggregate Piers (3,000 psf)

To help improve the soil conditions at the foundations to use an allowable bearing capacity of 3,000 psf, we recommend utilizing aggregate piers. Aggregate piers, which have been in use since the late 1980's, are a series of very stiff compacted aggregate elements. The systems were developed as a practical alternative to deep foundations and the traditional over-excavation and replacement method of strengthening sub-soils for settlement control and bearing capacity improvement.

The aggregate pier system should be designed based on the loading and settlement criteria specified by the structural engineer. Proprietary design manufacturers / contractors must provide design support and installation criteria and should be held fully responsible for the design. An aggregate pier system will reinforce the existing soft and firm materials on this site to support the shallow footings construction. The aggregate piers should extend into sufficiently stiff to dense materials for support of the planned design. Often, aggregate piers can be used to provide a net allowable bearing pressure on the order of 3,000 psf to 5,000 psf, depending on the site conditions and the proprietary system being used. We expect aggregate piers to be between 15 to 20 feet long depending on final grading and site conditions.

We recommend that a licensed specialty contractor design and install the aggregate piers. S&ME should be retained to review the proposed design and to observe and document the installation of the aggregate piers as they are a critical foundation support mechanism. Further, we recommend representative subgrade modulus tests (i.e. load test) be conducted to confirm the design prior to the start of production piers. Also, each pier should be exposed at the bottom of the foundation excavation prior to concrete placement. If uplift is a concern, the aggregate pier system can be outfitted with a bottom plate and series of bars that connect into the foundation system for uplift resistance.

7.7.2.1 Mat Foundations

We expect a mat on the order of 35 feet by 35 feet will be used to support the transformer and radiator banks. From our conversations, we understand the maximum contact pressure to be on the order of 600 ksf. We recommend the site is properly prepared in accordance with our previous recommendations and foundations

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



bearing in compacted fill or stiff or better loess or marine soils. Settlement of the foundation soils resulting from loads of the proposed structure were estimated based on the subsurface conditions, anticipated foundation loads, remedial activities, laboratory test results, our experience, and engineering judgment.

We estimate that properly designed and constructed footings supported on the recommended materials should experience total and differential settlements of less than about 1 inch and $\frac{1}{2}$ inch, respectively. Embedment of the mat foundation will be minimal and should be neglected for lateral capacity. Uplift capacities should be based on the weight of the foundation element. For floor slabs supported by in-situ soils or properly compacted structural fill, we recommend a wide area subgrade modulus, K_{ws} of up to 12 pci for sustained loadings. These subgrade modulus values only apply to slabs supported by unimproved soils.

7.7.2.2 Construction Considerations

Foundation subgrade observations should be performed by an S&ME geotechnical engineer, or their qualified representative, so that the recommendations provided in this report are consistent with the encountered site conditions.

Where unacceptable materials are encountered at the foundation bearing elevation, the material should be excavated (i.e., undercut) to the recommended, suitable design bearing material or remediated at the geotechnical engineer's direction. We recommend undercut excavations for foundations bearing in soil be replaced with new structural soil fill, flowable fill, or dense graded crushed stone aggregate. The actual undercut depths should be determined at the time of construction based on observations and testing by S&ME. Undercut excavations for foundations bearing in soil should extend laterally beyond the perimeter of the foundations of the proposed structures a minimum distance equal to the depth of the undercut below the structure's foundation bearing elevation.

Foundation excavations should be opened, evaluated, remedial work performed, and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained during construction (especially in terms of maintaining dry foundation excavations). Footings should be poured "neat" to the excavation so that water cannot collect behind forms before backfilling. A 2- to 3-inch thick mudmat of lean concrete may be used to protect the exposed support materials if the opened excavations cannot be backfilled with concrete the same day they are opened. Soil or dense-graded aggregate backfill for foundations should be placed in accordance with the recommendations for structural soil fill and dense-graded aggregate placement previously discussed in this report.

7.7.3 Shallow Augered Foundation Recommendations

Based on the provided project information and our experience with previous TVA substation projects, we expect that augered foundations will be utilized for the bus support, switch support, and small equipment structures. Depending on the location at the site, foundations will bear mostly within the firm or better fine-grained loess or marine soils or newly placed, well-compacted structural soil fill. Foundations may bear in soft soils, particularly in the vicinity of borings B-25 through B-27. The foundations will develop their capacity from both end-bearing and skin resistance (i.e., adhesion along the pile wall) in the firm or better soils. Where we anticipate piles to terminate

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



in soft soils, the end bearing was neglected. The skin resistance to a depth of 1 pile diameter was neglected due to disturbance. Table 7-4 shows our generalized profile based on the boring logs, anticipated site development, and our recommended engineering design parameters for use in determining the ultimate load capacity of the augered foundations founded in the cohesive soils.

Table 7-4 - Generalized Subsurface Profile and Recommended Engineering Design Parameters

Depth Interval (ft)	Soil Origin	Soil Type	γm (pcf)	Cu (psf)	Φ′ (deg)
0 to 10	New Fill	Clay	115	1,500	0
0 to 20	Soft to Firm Loess (encountered in the vicinity of borings B-25 through B-27)	Clay	105	500	0
0 to 30	Firm Loess or Marine Soils (encountered from the surface and below the soft soils)	Clay	110	700	0
0 to 20 20 to 30	Stiff Loess or Marine Soils (from the surface on the west side of the site, more typically underlying the firm soil interval)	Clay	115	1,500	00

Note: γ_m – moist unit weight, C_u – undrained shear strength, Φ' – effective friction angle

Tables 7-5 and 7-6 provides the allowable bearing capacities for various augered foundation diameters and embedment depths. A factor of safety of 3 was applied to the ultimate end bearing and for lateral analysis from the pushover load and a factor of safety of 2 was applied to the ultimate skin friction.

The actual net ultimate uplift capacity for individual augered foundations is dependent on their length of embedment and length of reinforcing. Tables 7-5 and 7-7 provides allowable uplift capacities for various augered foundation diameters and embedment lengths. A factor of safety of 2 was used to determine the allowable uplift capacities. The contribution of the upper depth equivalent to the diameter of the foundation should not be considered in computations of shaft uplift resistance. Augered foundation group capacity should be checked by the Geotechnical Engineer, based on the number of augered foundations per group and foundation spacing. Note, the provided allowable uplift capacities do not include the weight of the concrete in the foundation.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Table 7-5 – Allowable Compression Load and Uplift for Soft Areas*

Foundation		Allowable Capacity (kips)								
Diameter (in)	Embedment Depth, 5 ft	Embedment Depth, 6 ft	Embedment Depth, 7 ft	Embedment Depth, 8 ft	Embedment Depth, 10ft	Embedment Depth, 12 ft				
30	6.5	8.5	10.5							
36				13.0	18.0	23.0				
42				13.0	19.0	24.5				
48				12.5	19.0	25.5				
54				12.5	19.5	27.0				

^{*}vicinity of borings B-25 through B-27

Table 7-6 – Allowable Compression Load for Firm Areas

Foundation		Allowable Capacity (kips)									
Diameter (in)	Embedment Depth, 5 ft	Embedment Depth, 6 ft	Embedment Depth, 7 ft	Embedment Depth, 8 ft	Embedment Depth, 10ft	Embedment Depth, 12 ft					
30	14.0	16.5	19.5								
36				26.5	33.0	38.5					
42				31.5	39.0	46.0					
48				36.0	44.5	53.5					
54				40.5	50.5	60.5					

Table 7-7 – Allowable Uplift for Firm Areas

Foundation		Allowable Capacity (kips)									
Diameter (in)	Embedment Depth, 5 ft	Embedment Depth, 6 ft	Embedment Depth, 7 ft	Embedment Depth, 8 ft	Embedment Depth, 10ft	Embedment Depth, 12 ft					
30	5.5	8.0	10.5								
36				14.0	19.5	25.0					
42				14.5	21.0	27.5					
48				14.5	22.0	29.5					
54				14.5	23.0	31.5					

For our lateral load analysis, we used the computer program LPILE 2012, by Ensoft, Inc. LPILE can be used to analyze the response of single, laterally loaded shafts but does not analyze whether the shaft is structurally capable of handling the moments and shear stresses generated within the shaft. The software requires, as input, quantitative data related to strength and deformation behavior of the subsurface materials, the structural

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



properties of the shaft, and an understanding of shaft/soil interaction during lateral loading. Tables 7-8 and 7-9 summarizes the LPILE input parameters used in our analysis.

Table 7-8 - Lateral Design Parameters (Soft to Firm Profile)

Material	Depth Interval (ft)		rameters			
		LPile Soil Model	Total Unit Weight ^A (pcf)	Friction Angle (deg)	Cohesion (psf)	ε50
Newly placed fill	0 to 4	Stiff clay w/o free water	115	-	1,500	0.008
Soft to firm loess	4 to 20	Soft clay	105	-	500	0.02

^AEffective unit weights in LPile analysis should reflect groundwater depth

Table 7-9 - Lateral Design Parameters (Firm Profile)

Material	Depth Interval (ft)		LPile Parameters							
		LPile Soil Model	Total Unit Weight ^A (pcf)	Friction Angle (deg)	Cohesion (psf)	ε50				
Firm loess	0 to 20	Soft clay	110	-	700	0.01				

^AEffective unit weights in LPile analysis should reflect groundwater depth

We evaluated the geotechnical response of laterally loaded shafts for a variety of cases using LPILE. The shear load on the pile was increased until a failure deflection of 10% of the pile diameter was reached. A factor of safety of 3 was applied to get an allowable lateral load. A summary of the LPile computed allowable lateral loads are presented in Table 7-10 and 7-11 below. We assumed an elastic module corresponding to the drilled shafts being constructed using 4,000 psi concrete. The structural capacity of the piles has not been considered in our analyses, and the reported moment and shear distributions must be evaluated by the structural engineer.

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



Table 7-10 – Allowable Lateral Load for Soft to Firm Areas

Foundation		Allowable Lateral Load (kips)							
Diameter (in)	Embedment Depth, 5 ft	Embedment Depth, 6 ft	Embedment Depth, 7 ft	Embedment Depth, 8 ft	Embedment Depth, 10ft	Embedment Depth, 12 ft			
30	5.0	6.0	7.0						
36				9.5	12.0	14.0			
42				11.0	13.5	16.0			
48				12.5	15.5	18.0			
54				14.0	17.0	20.0			

Table 7-11 – Allowable Lateral Load for Firm Areas

Foundation		Allowable Lateral Load (kips)								
Diameter (in)	Embedment Depth, 5 ft	Embedment Depth, 6 ft	Embedment Depth, 7 ft	Embedment Depth, 8 ft	Embedment Depth, 10ft	Embedment Depth, 12 ft				
30	2.5	3.0	4.0							
36				5.5	7.0	9.0				
42				6.5	8.5	10.5				
48				7.0	9.5	12.0				
54				8.0	10.5	13.0				

7.7.3.1 Construction Considerations

The shallow augered foundations will be installed by augering and casing a hole to a predetermined depth, installing the structural reinforcing, and filling the hole to finished grade with concrete. We recommend soil cuttings from the augered foundation excavations be inspected for unsuitable materials. Where unsuitable conditions are encountered at the planned bearing elevation, the augered hole should be deepened so as to bear in suitable materials.

The bottom of the hole should be free of all mud, water, and loose debris prior to placement of concrete. Temporary steel casing may be required during construction of the augered foundations to prevent sidewall collapse when installed through zones of coarse-grained soil. If water is encountered in the hole, water should be removed to a depth of no more than 2 inches from bottom of the excavation prior to the placement of concrete.

S&ME should be retained to observe the installation of the foundations to make sure the recommendations provided in this report are implemented during construction.

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



7.8 Seismic Site Response Analysis

The following sections discuss the assumptions, methodologies, and results of our seismic site response analysis (SSRA). We performed the SSRA using the program DEEPSOIL $v7.0^1$ in general accordance with the IBC 2018 and ASCE 7-16.

7.8.1 Subsurface Conditions and Soil Model

Subsurface conditions were based on the results of geotechnical exploration as discussed in the section above.

7.8.1.1 Seismic Site Class and Soil Model

Shear-wave velocity (Vs) data were collected at the site via using the Multi-Channel Analysis of Surface Waves (MASW) method at array location SW-1. The measured Vs profile is shown in Figure 3 in the Appendix. The MASW-measured velocities were used to calculate an average shear-wave velocity to a depth of 100 ft below the ground surface (i.e., V_{S100}) of about 1,150 ft/second. Therefore, a Seismic Site Class D was assigned in accordance with Section 20.1 of ASCE 7-16.

A general summary of the subsurface information and shear-wave velocity profile used as our DEEPSOIL "base" model are presented in Table 7-12 below and Figure 3 of the Appendix. The input parameters for the shear modulus reduction and damping ratio relationships such as plasticity index (PI), unit weights, at-rest earth pressure coefficient (K_0), and shear strength values were based on published data and our experience. Groundwater was set at 20 feet deep. The input ground motions were applied at a depth, H (i.e., the assumed depth to the B/C boundary), of 400 feet.

Table 7-12 - Base Model Properties

Layer	Thickness (ft)	General Material Type	Vs (ft/sec)	Unit Weight (pcf)	Plasticity Index	Friction Angle (deg)	Undrained Shear Strength (psf)
1	8	Loess	1,050	110	8		2,000
2	11	Marine soils – silty sand	1,200	115	0	36	
3	16	Marine soils - clay	825	115	15		4,000
4	40	Danasaaad	1,250	120	0	40	
5	25	Dense sand	1,500	125	0	40	

¹ DEEPSOIL v7.0 is a one-dimensional site response analysis program that can perform nonlinear and equivalent linear site response analyses with and without pore water pressure control. Hashash, Y.M.A., Musgrove, M.I., Harmon, J.A., Groholski, D.R., Phillips, C.A., and Park, D. (2019). *DEEPSOIL 7.0, User Manual*. University of Illinois at Urbana-Champaign, Urbana, IL.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Layer	Thickness (ft)	General Material Type	Vs (ft/sec)	Unit Weight (pcf)	Plasticity Index	Friction Angle (deg)	Undrained Shear Strength (psf)
6	300		1,750	125	0	40	
3		B/C Boundary	2,500	155			

7.8.2 Ground Motions

7.8.2.1 Site Hazard

The earthquake hazard associated with the site was deaggregated using the 2014 update (version 4.2.0) of the USGS Unified Hazard Tool website to determine the modal magnitude and site-to-source distance of the earthquake contributing to the peak ground surface acceleration. Considering a 2 percent probability of exceedance (2% PE) in 50 years, the modal magnitude and site-to-source distance are approximately 7.8 and 75 km, respectively (corresponding to the New Madrid seismic zone). The deaggregation plot is presented in Figure 4 of the Appendix.

7.8.2.2 <u>Target Spectrum (B/C Boundary)</u>

The B/C boundary Risk-Targeted Maximum Considered Earthquake (MCE_R) response spectrum for a 1% risk of structural collapse in 50 years was defined as the target spectrum using spectral accelerations values at 5 Hz (S_{MS}) and 1 Hz (S_{M1}) assuming a Site Class B in accordance with IBC 2018 and ASCE 7-16. The S_{MS} and S_{M1} parameters are 0.759 g and 0.238 g, respectively. These values were used to generate a Site Class B MCE_R response spectrum consistent with Figure 11.4-1 of ASCE 7-16, which served as our target acceleration response spectrum (ARS). The target spectrum is presented in Figure 5 of the Appendix.

7.8.2.3 Ground Motions

A set of seven earthquake records were selected from the NGA-West2 database as seed motions for spectral matching. The selected motions generally possess a similar spectral shape as the B/C boundary target spectrum, correspond to events having a similar magnitude and distance as the design event, and were recorded on materials generally consistent with the B/C boundary (i.e., V_{S30} of 2,500 ft/s or 760 m/s). Table 7-13 presents the details of these selected earthquake records.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



Table 7-13 - Selected NGA West2 Records

Record Sequenc e Number	Earthquake Name	Yea r	Station Name	Magnitu de	Mechanism	R _{jb} (km)	R _{rup} (km)	V ₅₃₀ (m/sec)
774	Loma Prieta	198 9	Hayward City Hall - North	6.93	Reverse oblique	55.0	55.1	735
1256	Chi-Chi, Taiwan	199 9	HWA002	7.62	Reverse oblique	53.3	56.9	789
1319	Chi-Chi, Taiwan	199 9	ILA015	7.62	Reverse oblique	83.0	85.4	783
1763	Hector Mine	199 9	Anza - Pinyon Flat	7.13	Strike slip	90.0	90.0	725
3895	Tottori, Japan	200 0	HYG007	6.61	Strike slip	99.6	99.6	761
6031	El Mayor-Cucapah, Mexico	201 0	Anza - Pinyon Flat	7.2	Strike slip	124.4	124.4	725
6744	Niigata, Japan	200 4	SITH07	6.63	Reverse	145.9	145.9	705

SeismoMatch² was used to spectrally match the NGA-West2 records listed in Table 19 to the target ARS. SeismoMatch is a computer program developed by SeismoSoft, Inc. capable of adjusting earthquake accelerograms to match a specific target response spectrum. The program adds adjustment wavelets to the seed acceleration time history to generate a modified time history. The spectral matching focused on a period range of 0.01 to 5 seconds.

The mean of the spectrally matched motions is shown with the B/C boundary target spectrum on Figure 5 of the Appendix and the acceleration time histories, before and after spectral matching, are shown in Figures 6 and 7 of the Appendix. Each of the modified motions reasonably fit the target spectrum while generally maintaining the original record characteristics.

7.8.3 *Methodology*

The site-specific acceleration response spectrum (ARS) was developed using the one-dimensional site response analysis program DEEPSOIL v7.0. Both the nonlinear (NL) and equivalent linear (EL) analysis options available in DEEPSOIL were used to simulate the earthquake wave propagation from the assumed bedrock (B/C boundary) to the ground surface. The required inputs are the soil profile information, base rock acceleration time histories, and dynamic soil properties. The measured shear-wave velocity profiles were used to generate the "base" site

² Seismosoft. (2018). SeismoMatch (2018 Version) - A computer program for spectral matching of earthquake records.

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



response model. The dynamic soil properties were modeled using the Darendeli (2001)3 shear modulus versus strain (i.e. modulus reduction) and damping versus strain relationships.

The spectrally matched time histories were applied as input rock-motions at the base of the model. To assess the sensitivity of ground surface response to uncertainty in the soil properties, we performed multiple analyses. Each of the variations was simulated with both EL and NL analyses options following the guidelines provided by Matasovic and Hashash⁴. A total of 98 analyses (i.e., 49 EL and 49 NL analyses) were performed using different shear-wave velocity profiles, modulus and damping reduction curves, and acceleration time histories. The sensitivity analyses consisted of:

- Seven spectrally matched acceleration time histories;
- Two variations for depth to the BC boundary (i.e., the "base" model of 400 ft and an alternate model of 500 ft);
- Two variations for depth to the CD boundary (the "base" model of 40 feet and an alternate model of 60 feet)
- Three shear wave velocity profiles (i.e., the "base" model and ±20% from the "base" model); and
- Three shear strength profiles (i.e., the "base" model, 20% higher strengths, and 20% lower strengths). Since the selected DEEPSOIL model (i.e., General Quadratic Model or GQ/H model) modifies the modulus reduction and damping curves to match the implied shear strength to the estimated shear strength of each soil layer, the ±20% strength variation results in a variation of the damping and shear modulus reduction curves, especially at the higher strain region.

Each time history was applied to each of the model profile variations. A site-specific MCE_R response spectrum for a 1% risk of structural collapse in 50 years (with an equivalent viscous damping ratio of 5%) was generated for each of the analytical iterations. The 5% damped site-specific design ARS at the ground surface for each iteration is equal to two-thirds of the MCE_R ARS as defined in Section 21.3 of ASCE 7-16.

Per ASCE 7-16, the site-specific spectral response acceleration for the short period (S_{DS}) is 90 percent of the maximum spectral acceleration (S_a) from the site-specific spectrum, at any period between 0.2 and 0.5 seconds, inclusive. The site-specific spectral response acceleration for the 1.0 second period (S_{D1}) is the maximum value of the product, T x S_a , where T is period and S_a is the site-specific acceleration, for periods from 1.0 to 5.0 seconds. The site-specific PGA_M is taken as the MCE_R (before two-thirds reduction) spectral acceleration at the 0.01 second period (0.01 second is the smallest period for which the output spectral acceleration is available from DEEPSOIL analysis).

³ Darendeli, Mehmet B. (2001). Development of a New Family of Normalized Modulus Reduction and Material Damping Curves. Ph.D. Dissertation. The University of Texas at Austin, August 2001.

⁴ Matasovic, N. and Hashash, Y. (2012). Practices and Procedures for Site-specific Evaluations of Earthquake Ground Motions. (No. Project 20-05 (Topic 42-03)).

Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019



7.8.4 Results

Figure 8 in the Appendix shows example EL and NL analysis results for our "base" profile as well as the average surface response spectrum for each analysis procedure. The EL results show a very "flat" response at small periods – which is a typical limitation of this model when high levels of strain occur. Therefore, only the NL results were included in the computing the site average response spectrum.

Figure 9 shows the average surface response spectrum based on the NL results for each model variation, as well as the calculated overall average response spectrum. Based on the results of our analyses and the observed sensitivity of the ground surface response to the soil parameter variations, the base profile appears to be a representative and appropriate average response spectrum.

Figure 10 shows the computed strain in the soil profile versus depth for each model variation. Our base model shear wave velocity profile is shown as well for reference. The maximum strains for the models ranged from about 0.1 to 0.15 percent. The maximum shear strain occurs a depth of about 35 feet for most of the models.

The base profile response spectrum was then modified in general accordance with Chapter 21 of ASCE 7-16 to develop the design ARS. The combined and code-limited site-specific design ARS is shown as the red line on Figure 11 of the Appendix. The light blue line on Figure 11 represents the 80 percent limited code-based spectra.

Section 11.4.8 of ASCE7-16 requires that an SSRA be performed for structures on Site Class D or E with a mapped spectral acceleration S_1 greater than 0.2 seconds (with some exceptions as noted in the code). Since the value of S_1 for this site is 0.303, the general procedure does not apply for this site; however, we still computed and show the general procedure results to determine the 80 percent limit for the site-specific design spectrum.

As illustrated in Figure 11, the short period spectral acceleration parameter, S_{DS} , and the long period spectral acceleration parameter, S_{D1} , have decreased compared to the general procedure results. The resulting site specific and code-limited, design response accelerations from the SSRA are presented in Table 7-14. The site-specific analysis indicates that Seismic Design Category D (IBC 2018 Section 1613.2.5) should be considered for Risk Categories I-IV.

Table 7-14 - Summary of Design Acceleration Parameters

	IBC 2018 / ASCE 7-16 Design Response Accelerations									
Site-Specific Procedure					General Procedure (Site Class D)					
Sds	Sdi	PGАм	Seismic Des	Seismic Design Category			PGАм	Seismic Des	ign Category	
(g)	(g)	(g)	RC I-III	RC I-III RC IV		(g)	(g)	RC I-III	RC IV	
0.58	0.32	0.43	D	D	0.65	0.40	0.54	D	D	

Ford Blue Oval City
TVA Substation
Stanton, Tennessee
S&ME Project No. 218019



8.0 Follow-Up Services

Field observations, monitoring, and Quality Assurance testing during site grading, foundation, and paving activities are an important extension of the geotechnical design. We recommend that we be allowed to continue our involvement in the project through these phases of construction.

Competent personnel under the general administrative supervision of our geotechnical engineering team familiar with the design requirements and considerations of this project should perform Quality Assurance observations and testing related to earthwork. We recommend that qualified geotechnical personnel observe proofrolling and associated undercutting (as required), evaluate foundation excavation and subgrades, evaluate the materials to be used as fill, and test the compaction of fill and backfill. The monitoring of the earthwork activities should be performed on a full-time basis.

9.0 Limitations

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other representation or warranty either expressed or implied, is made.

We relied on project information given to us to develop our conclusions and recommendations. If project information described in this report is not accurate, or if it changes during project development, we should be notified of the changes so that we can modify our recommendations based on this additional information, if necessary.

Our conclusions and recommendations are based on limited data from a field exploration program. Subsurface conditions can vary widely between explored areas. Some variations may not become evident until construction. If conditions are encountered which appear different than those described in our report, we should be notified. This report should not be construed to represent subsurface conditions for the entire site.

Unless specifically noted otherwise, our field exploration program did not include an assessment of regulatory compliance, environmental conditions or pollutants or presence of any biological materials (mold, fungi, and bacteria). If there is a concern about these items, other studies should be performed. S&ME can provide a proposal and perform these services if requested. S&ME should be provided the opportunity to review the final plans and specifications to confirm that earthwork, foundation, and other recommendations are properly interpreted and implemented. The recommendations in this report are contingent on S&ME's review of final plans and specifications followed by observation and monitoring of earthwork and foundation construction activities.

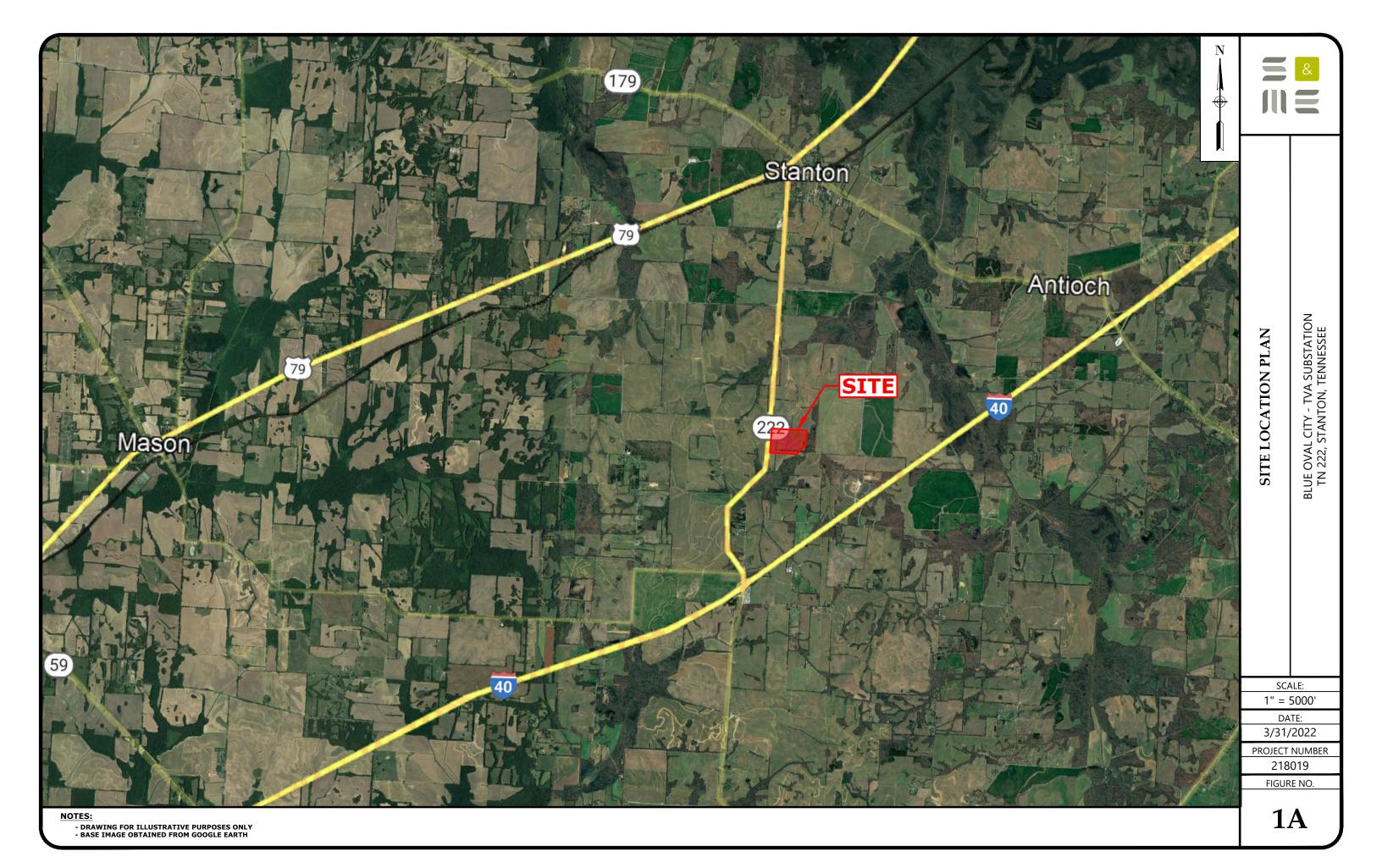
The recommendations in this report are only applicable to areas within the vicinity of our exploration and should not be used for other areas or for structures not specifically addressed in this report.

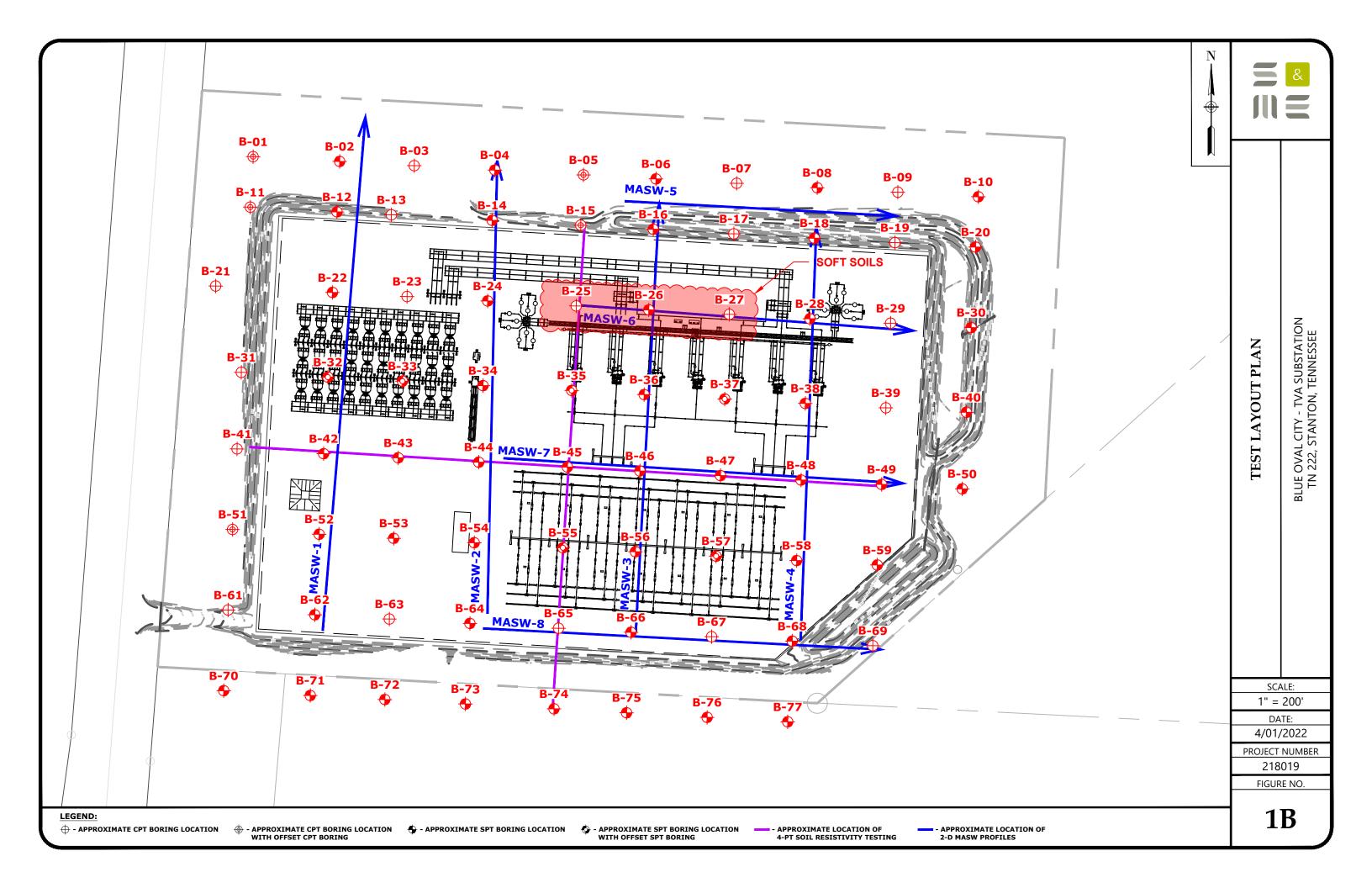
Report of Geotechnical Exploration

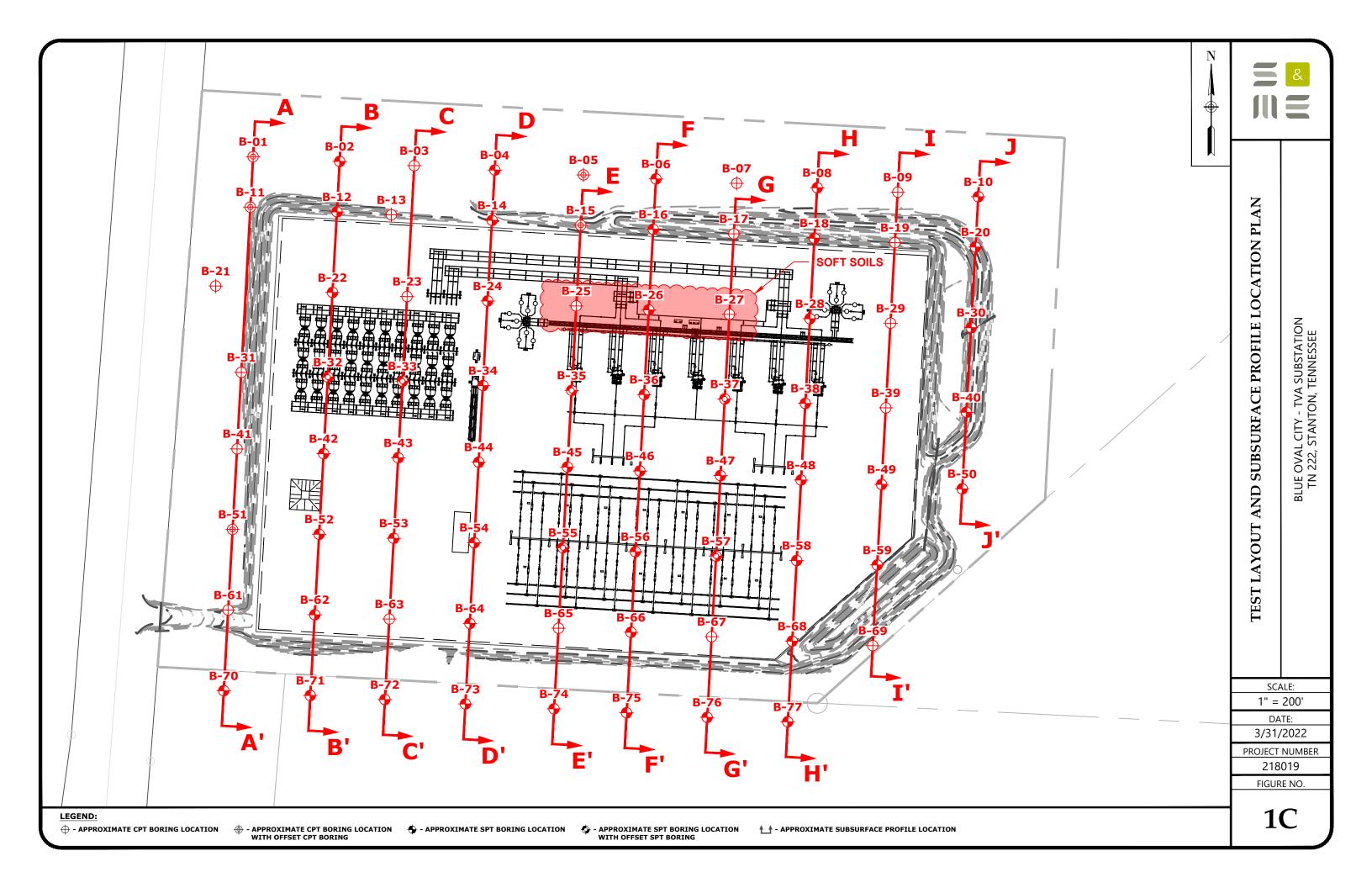
Ford Blue Oval City TVA Substation Stanton, Tennessee S&ME Project No. 218019

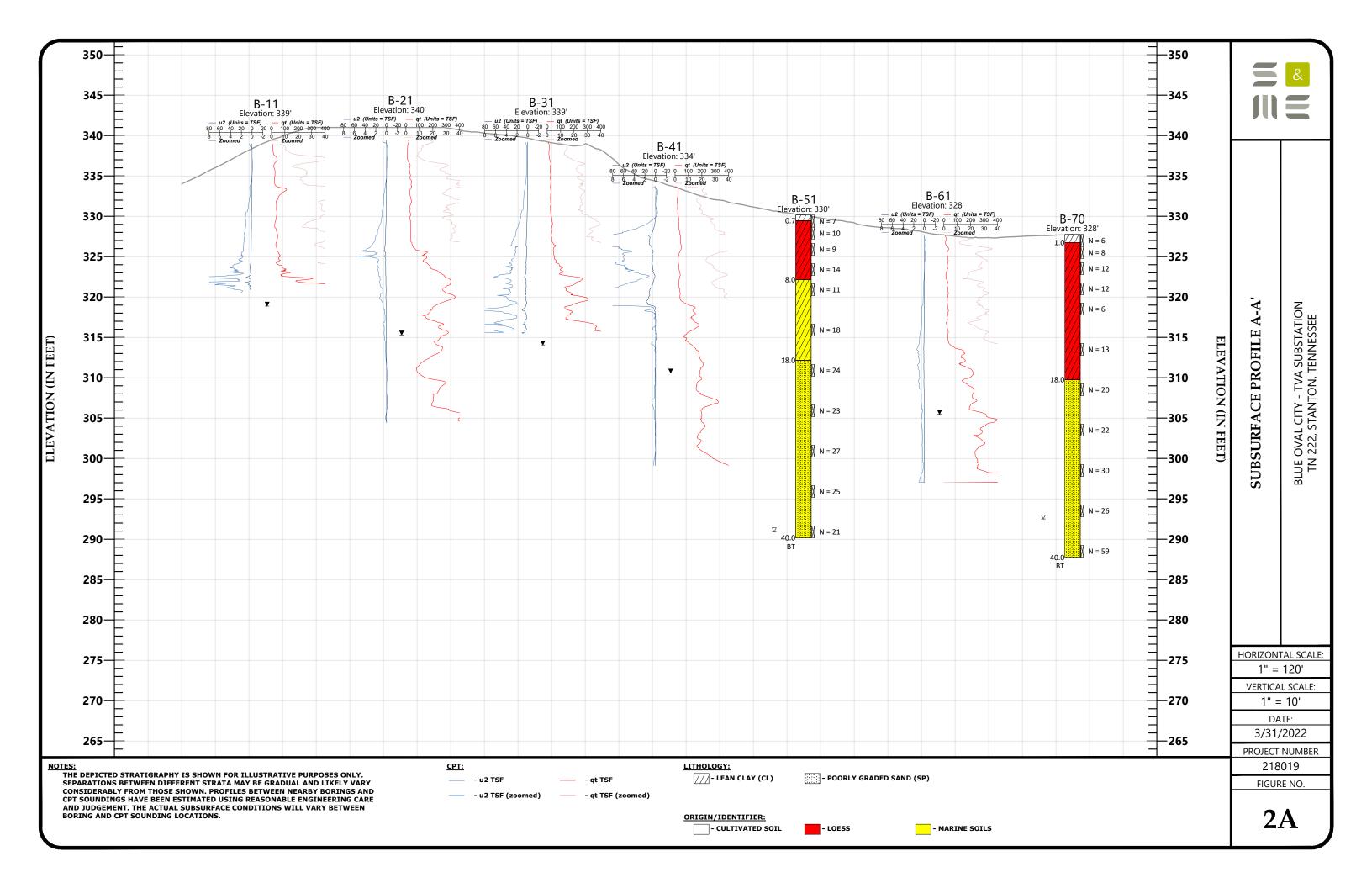


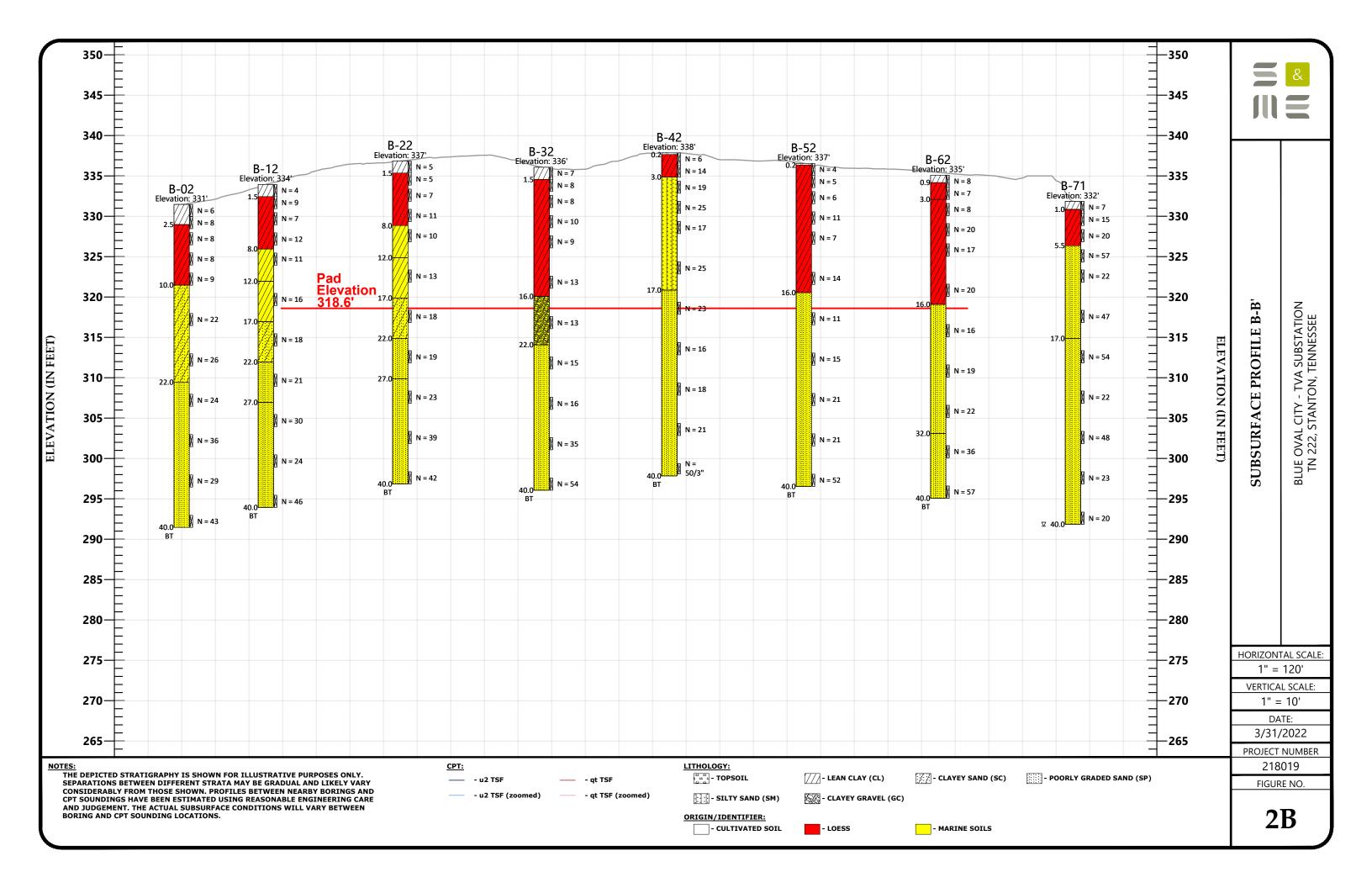
Appendix

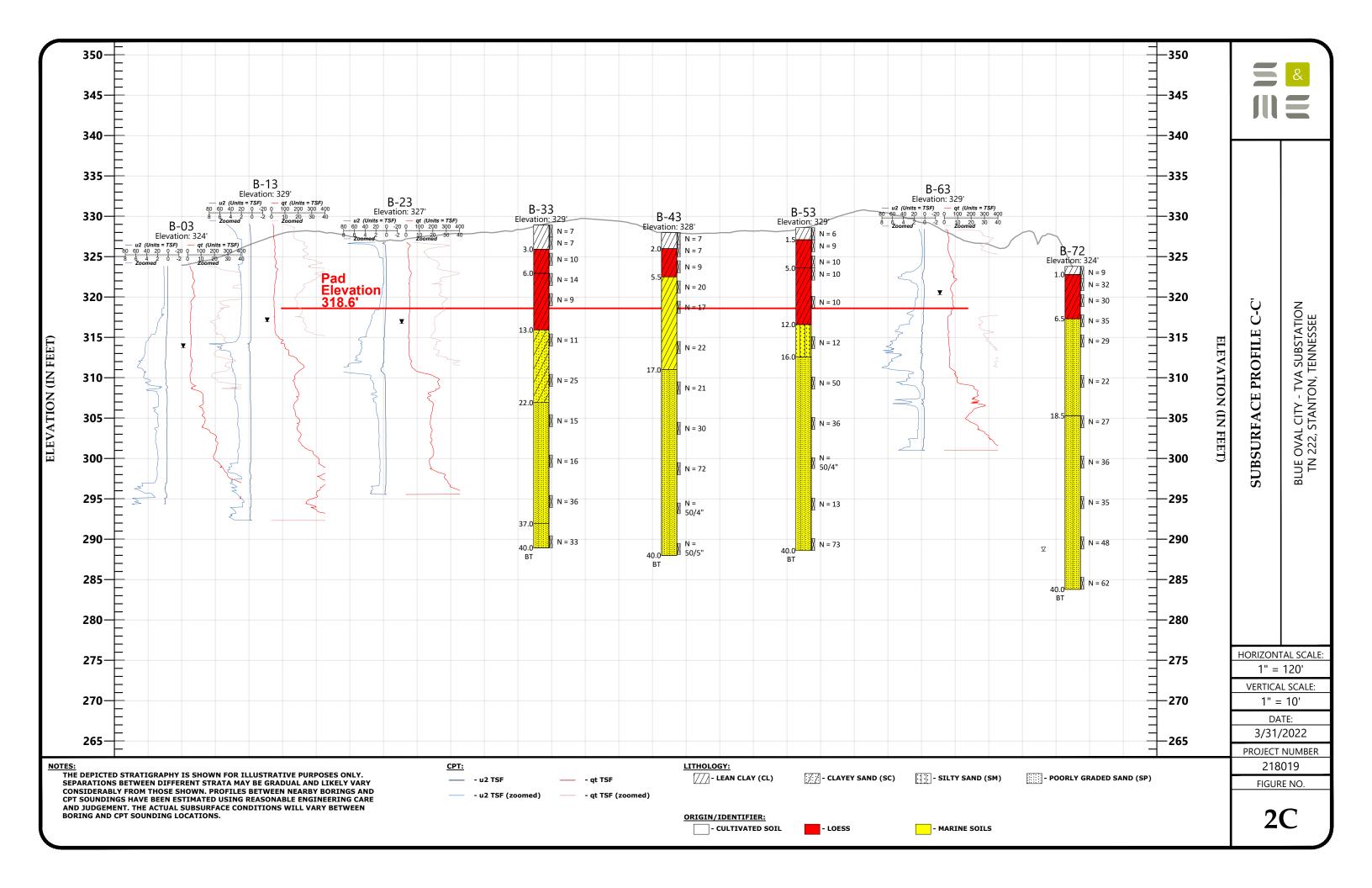


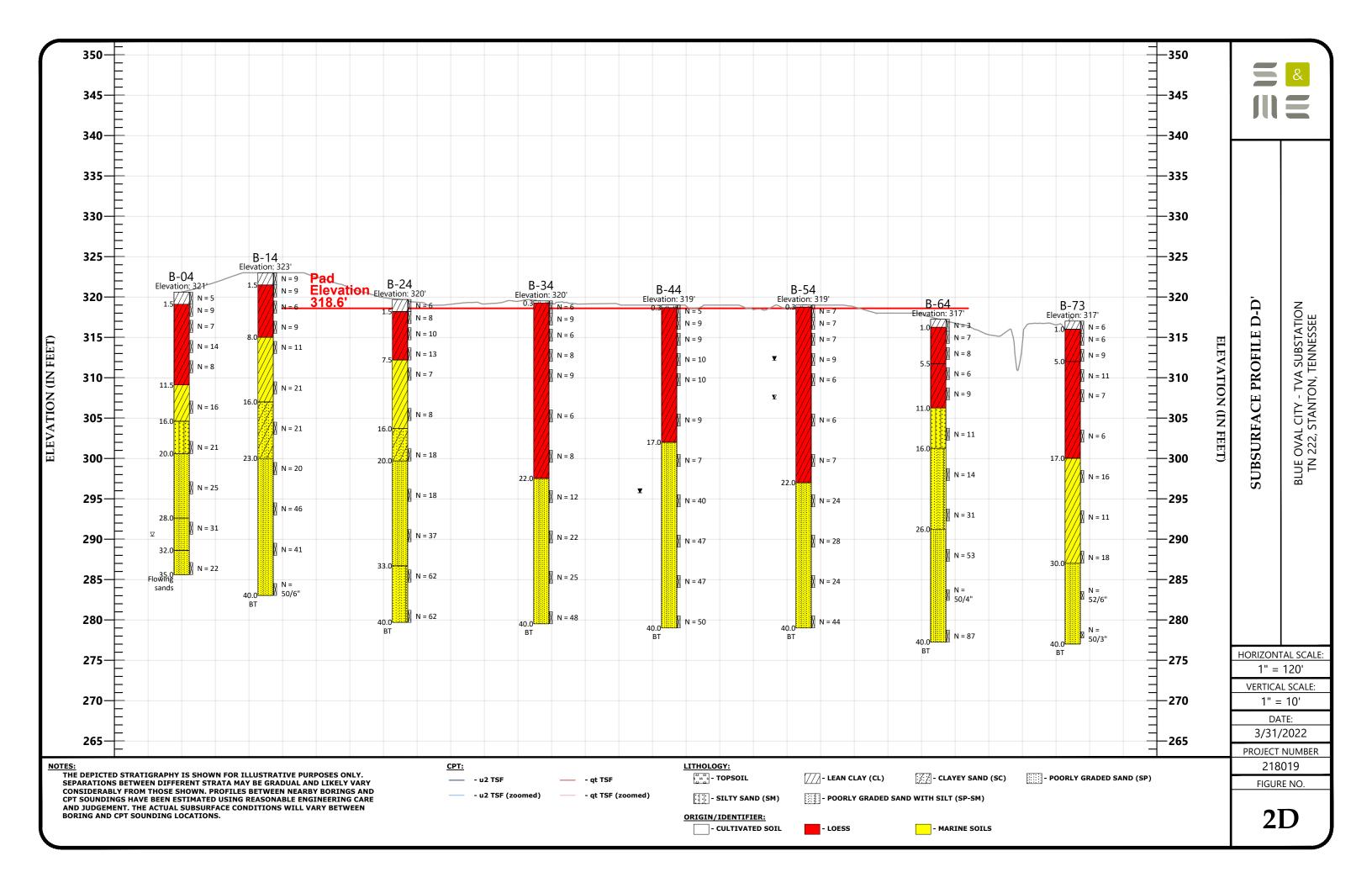


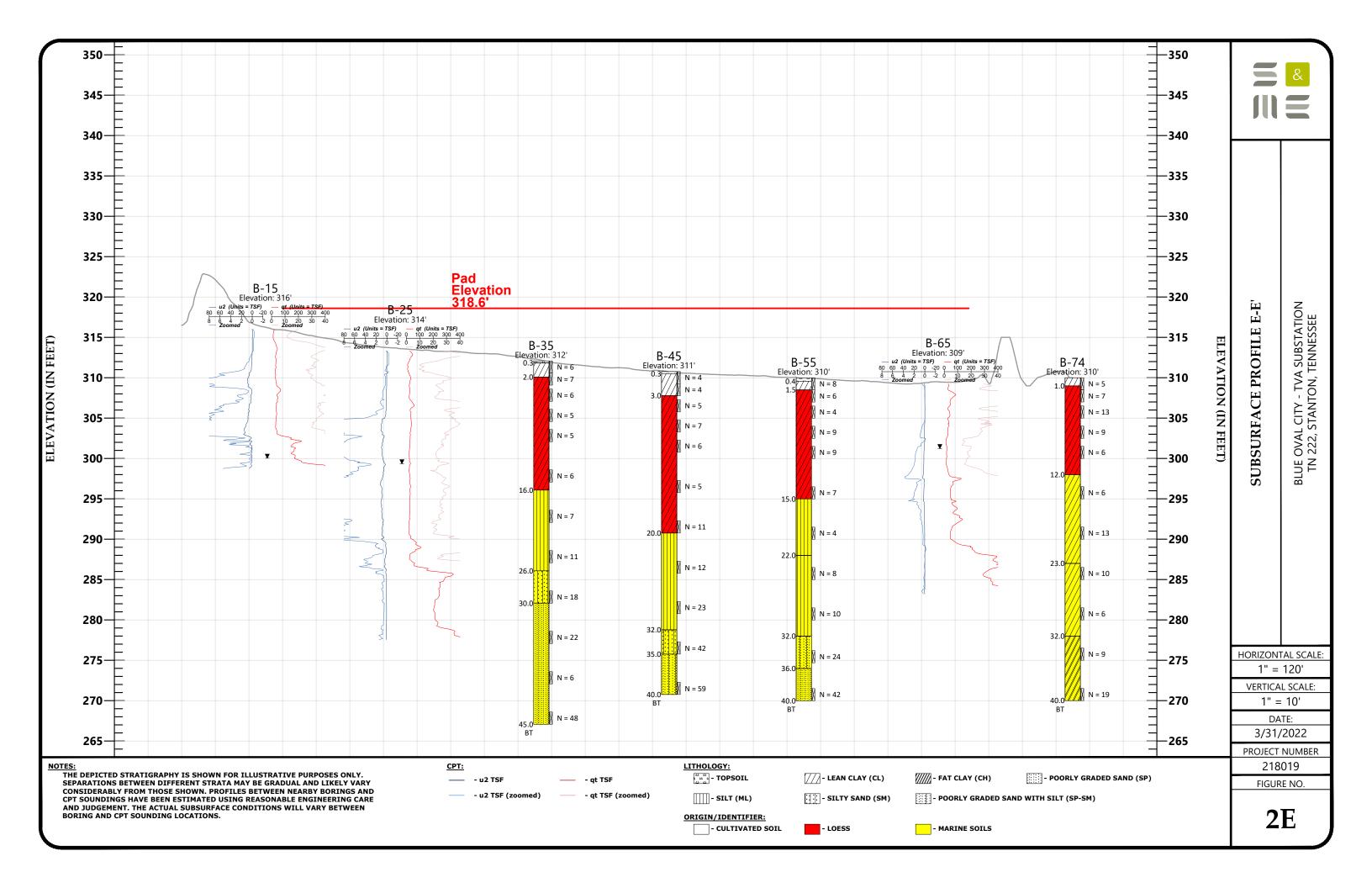


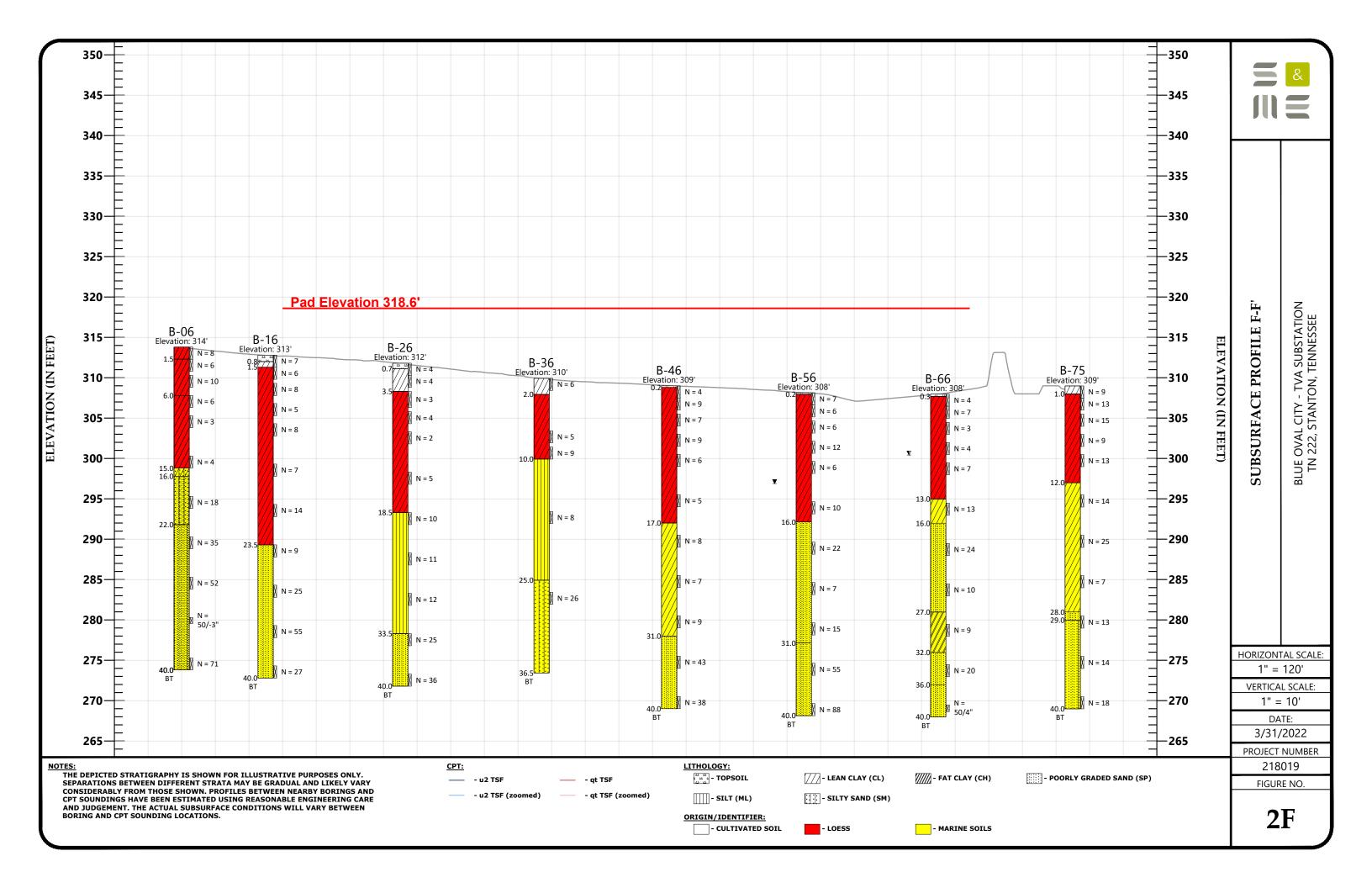


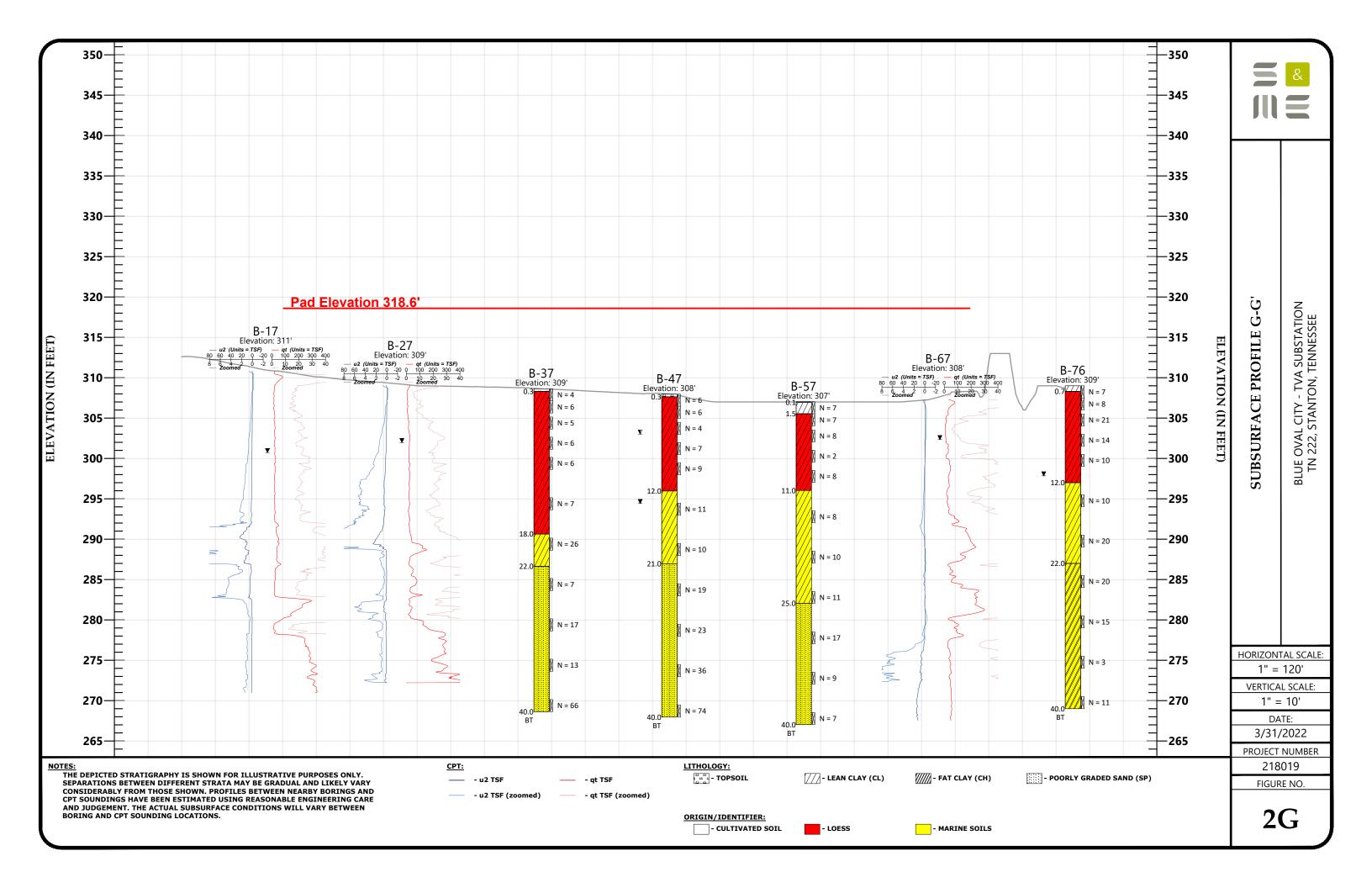


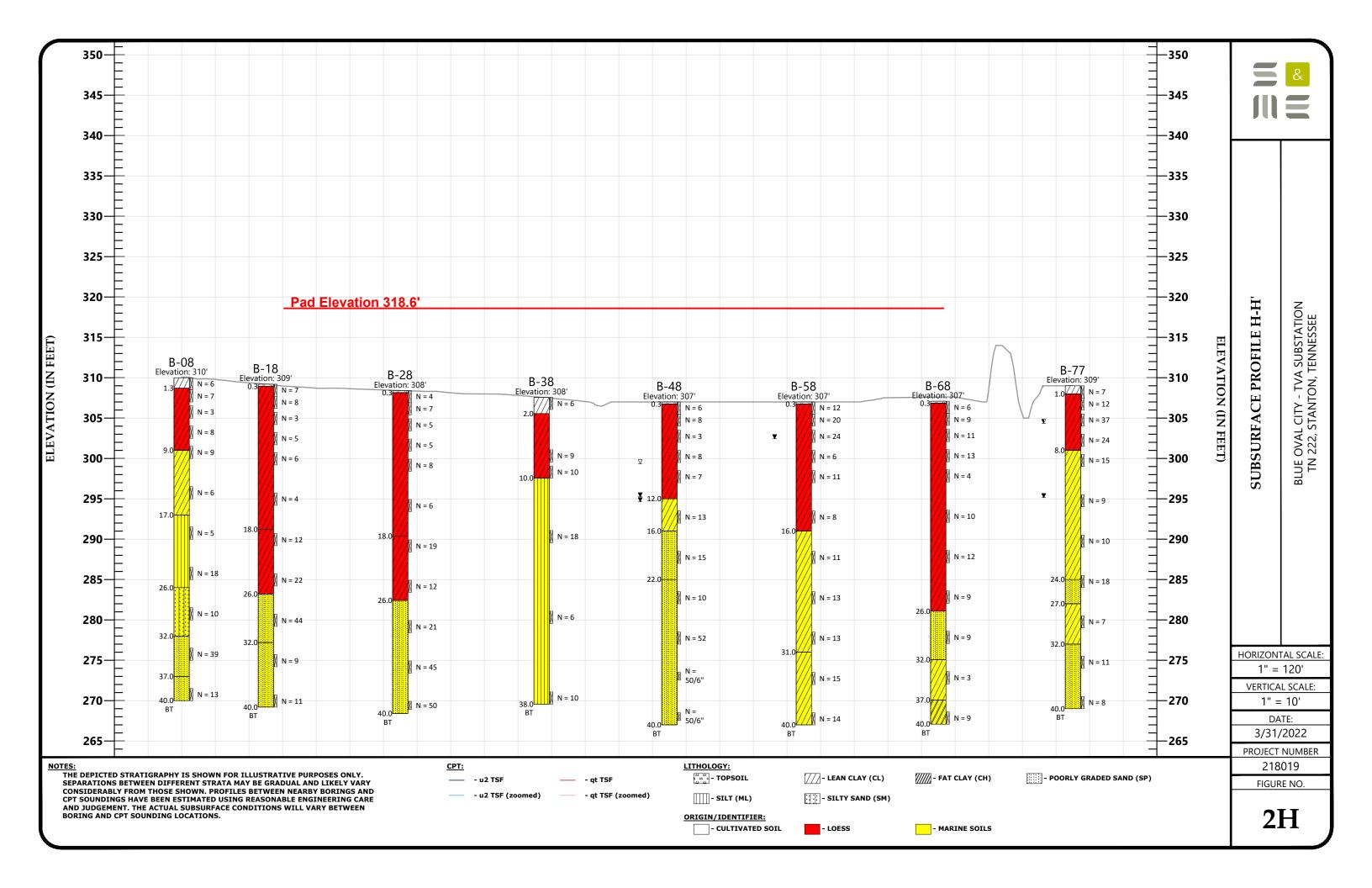


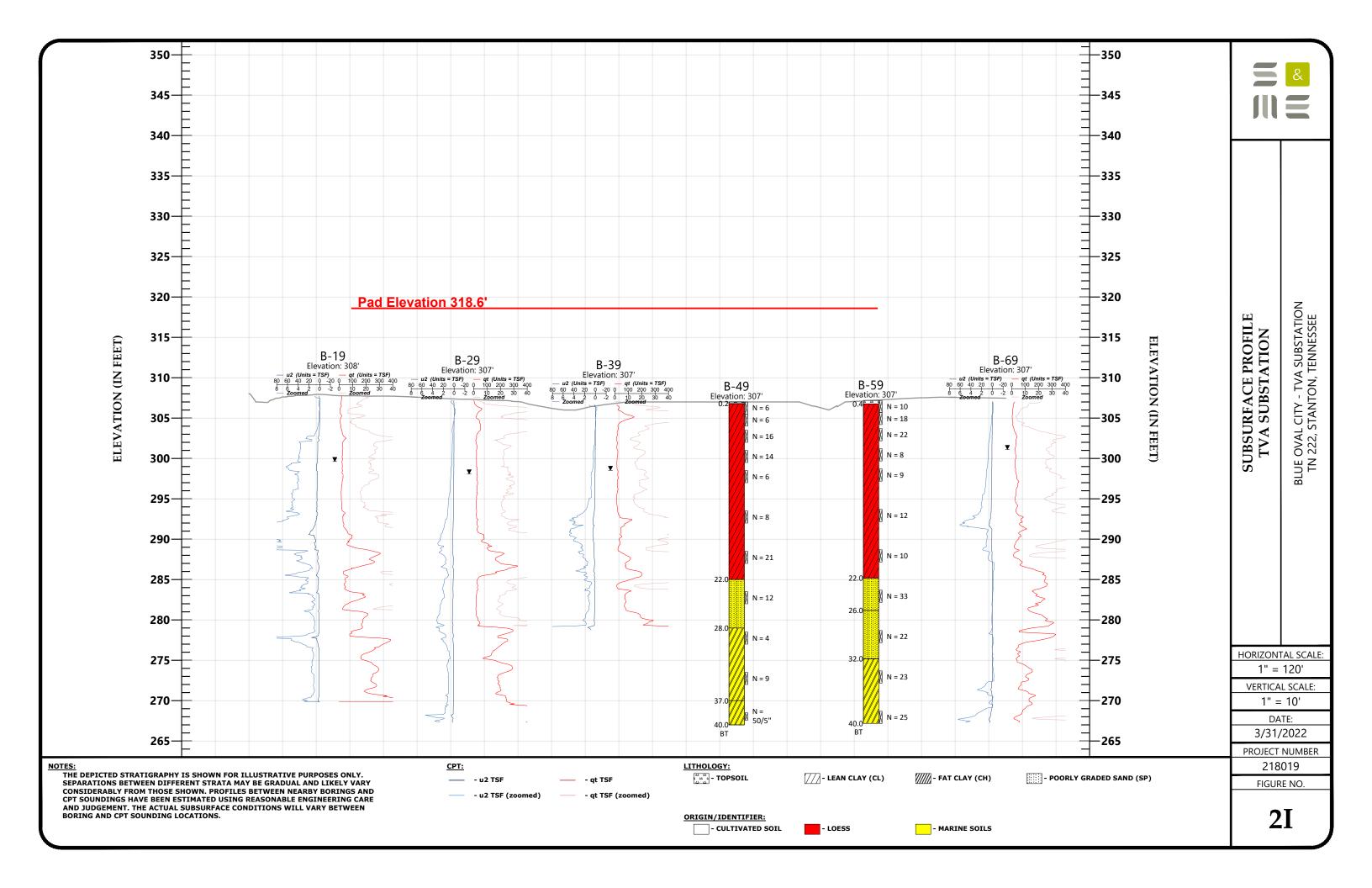


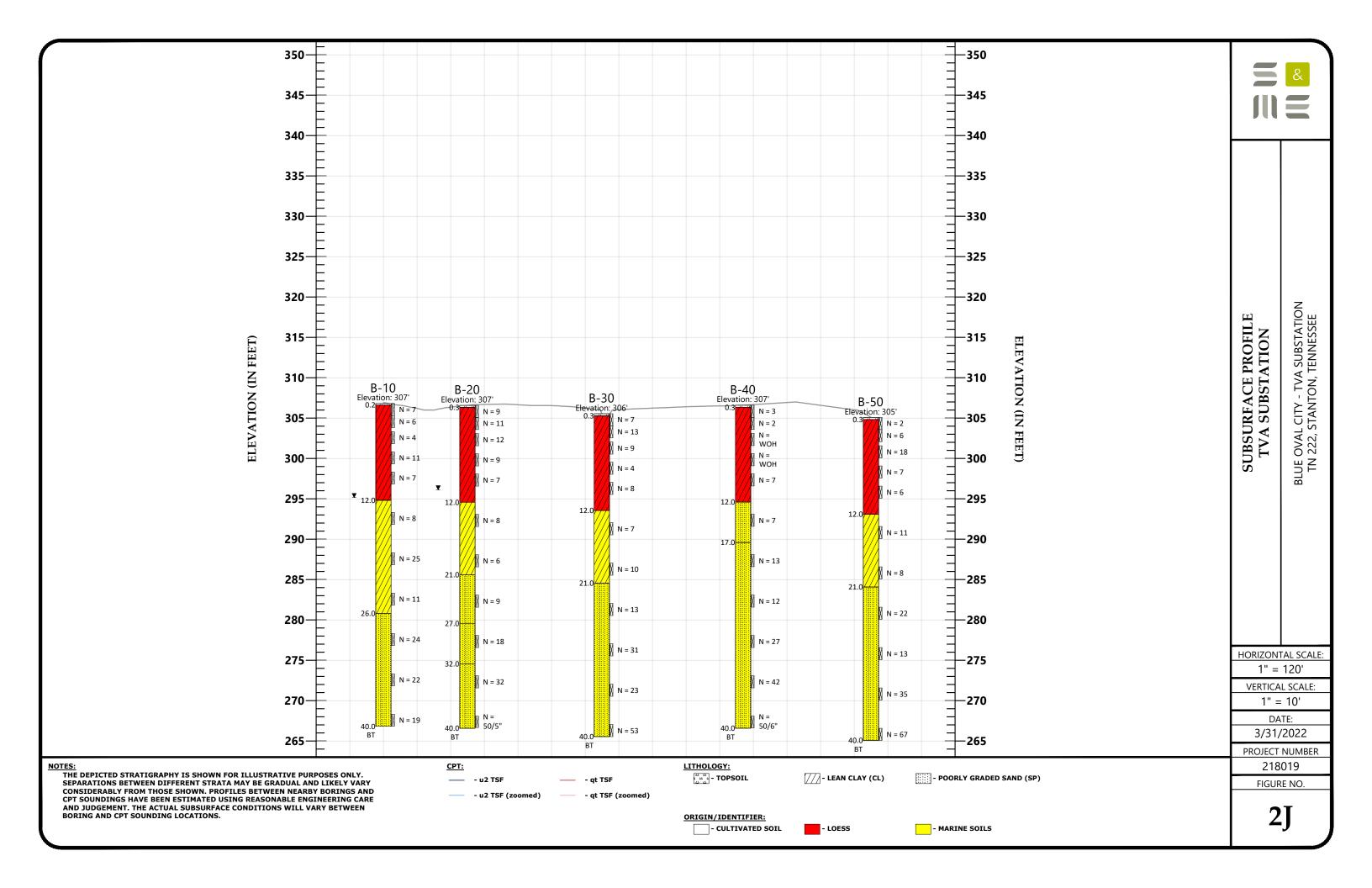


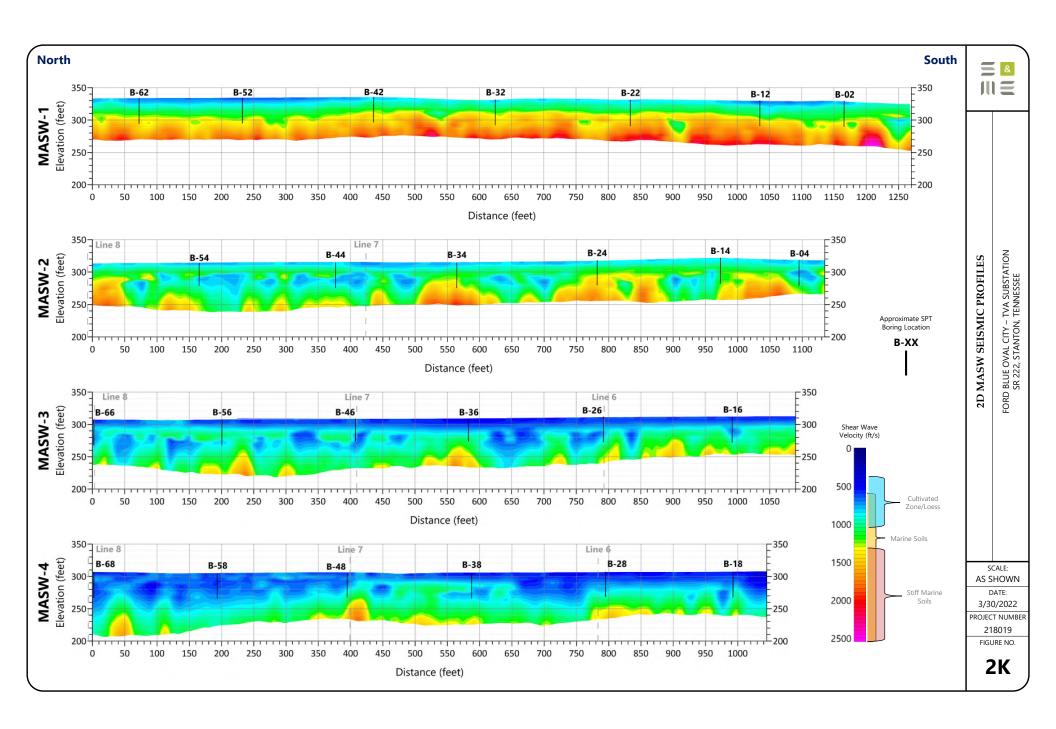


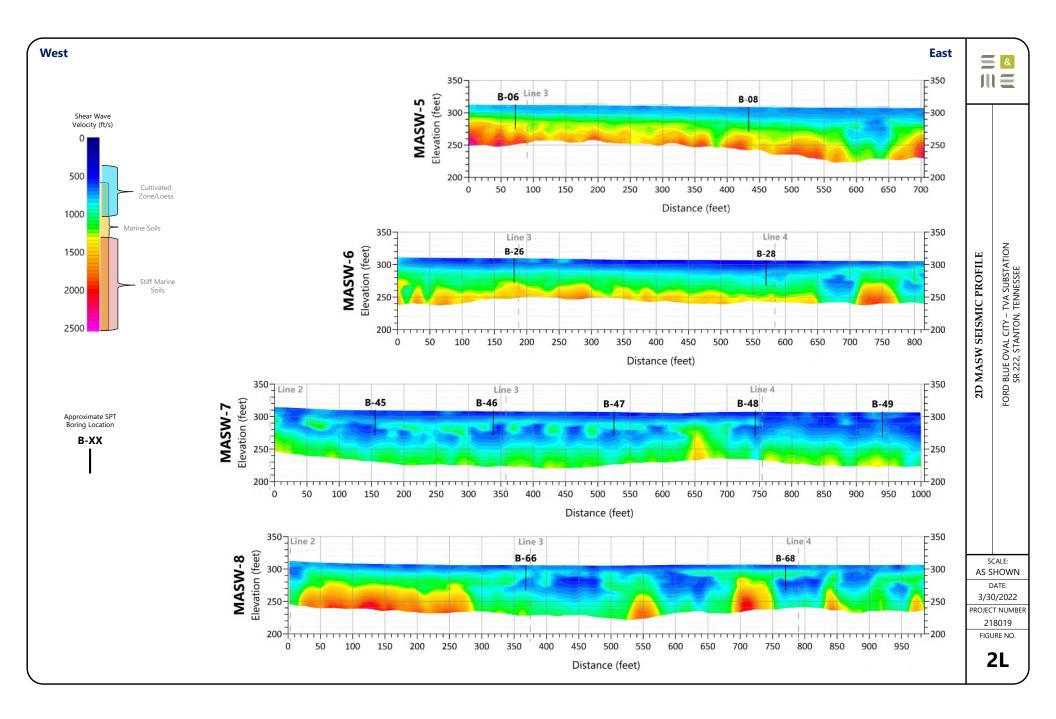












FIELD TESTING PROCEDURES

Cone Penetrometer Test (CPT) Sounding

The cone penetrometer test soundings (ASTM D 5778) were performed by hydraulically pushing an electronically instrumented cone penetrometer through the soil at a constant rate. As the cone penetrometer tip was advanced through the soil, nearly continuous readings of point stress, sleeve friction and pore water pressure were recorded and stored in the on-site computers. Using theoretical and empirical relationships, CPT data can be used to determine soil stratigraphy and estimate soil properties and parameters such as effective stress, friction angle, Young's Modulus and undrained shear strength.

The consistency and relative density designations, which are based on the cone tip resistance, q_t for sands and cohesive soils (silts and clays) are as follows:

SANDS	<u>S</u>	SILTS AND CLAYS					
Cone Tip Resistance, q _t (tsf)	Relative Density	Cone Tip Resistance, q _t (tsf)	Consistency				
<20	Very Loose	<5	Very Soft				
20 – 40	Loose	5 – 10	Soft				
40 – 120	Medium Dense	10 – 15	Firm				
		15 – 30	Stiff				
120 – 200	Dense	30 –60	Very Stiff				
>200	Very Dense	>60	Hard				

CPT Correlations

References are in parenthesis next to the appropriate equation.

General

```
p_a = atmospheric pressure (for unit normalization)
```

 q_t = corrected cone tip resistance (tsf)

f_s = friction sleeve resistance (tsf)

 $R_f = 100\% * (f_s/q_t)$

 u_2 = pore pressure behind cone tip (tsf)

 u_0 = hydrostatic pressure

 $B_q = (u_2-u_0)/(q_t-\sigma_{v0})$

 $Q_t = (q_t - \sigma_{v0}) / \sigma'_{v0}$

 $F_r = 100\% * f_s/(q_t - \sigma_{v0})$ $I_c = ((3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2)^{0.5}$

$$N_{60} = (q_t/p_a)/[8.5(1-l_c/4.6)]$$
 (6)

(6) Jefferies, M.G. and Davies, M.P., (1993), "Use of CPTu to estimate equivalent SPT N60", ASTM Geotechnical Testing Journal, Vol. 16, No. 4

CPT Soil Classification Legend

(SBT- Fr Normalized)

Material Description	
Sensitive, Fine Grained Sc	oils
Organic Soils, Peats	
Clays-Clay to Silty Clay	
Silt Mixtures-Clayey Silt to Sil	ty Clay
Sand Mixtures-Silty Sand to Sa	ndy Sil
Sands-Clean Sand to Silty S	Sand
Gravelly Sand to Sand	
Very Stiff Clay to Clayey Sa	and
Very Stiff Fine Grained So	ils

Robertson's Soil Behavior Type (SBT), 1990											
Group #	Description	ı	lc								
Group #	Description	Min	Max								
1	Sensitive, fine grained	N	/A								
2	Organic soils - peats	3.60	N/A								
3	Clays - silty clay to clay	2.95	3.60								
4	Silt mixtures - clayey silt to silty clay	2.60	2.95								
5	Sand mixtures - silty sand to sandy silt	2.05	2.60								
6	Sands - clean sand to silty sand	1.31	2.05								
7	Gravelly sand to dense sand	N/A	1.31								
8	Very stiff sand to clayey sand (High OCR or cemented)	N	/A								
9	Very stiff, fine grained (High OCR or cemented)	N	/A								

Soil behavior type is based on empirical data and may not be representative of soil classification based on plasticity and grain size distribution.

Relative Density and Consistency Table											
SANDS		SILTS and CLAYS									
Cone Tip Stress, qt (tsf)	Relative Density	Cone Tip Stress, qt (tsf)	Consistency								
Less than 20	Very Loose	Less than 5	Very Soft								
20 - 40	Loose	5 - 15	Soft to Firm								
40 - 120	Medium Dense	15 - 30	Stiff								
120 - 200	Dense	30 - 60	Very Stiff								
Greater than 200	Very Dense	Greater than 60	Hard								

TEST BORING LOG LEGEND

FINE AND COARSE GRAINED SOIL INFORMATION

COARSE GRAINED SOILS (SANDS AND GRAVELS)

N Relative Density

0-4 Very Loose

5-10 Loose

11-30 Medium Dense

31-50 Dense

Over 50 Very Dense

FINE GRAINED SOILS

(CLAYS AND SILTS)

N Consistency

0-2 Very Soft

3-4 Soft

5-8 Firm

9-15 Stiff

16-30 Very Stiff

Over 30 Hard

PARTICLE SIZE

Boulders Greater than 300 mm (12")

75 mm—300 mm (3-12") Cobbles **Gravel** 4.75 mm—75 mm (3/16-3")

Coarse Sand 2 mm-4.74 mm

Medium Sand .425 mm—2 mm

Fine Sand 0.075 mm—0.425 mm

Silts and Clays Less than 0.075 mm

The STANDARD PENETRATION TEST as defined by ASTM D 1586 is a method to obtain a disturbed soil sample for examination and testing and to obtain relative density and consistency information. A standard 1.4-inch I.D. / 2.0-inch O.D. split barrel sampler is driven three 6-inch increments with a 140 lb. hammer falling 30 inches. The hammer can either be of a trip, free-fall design, or actuated by a rope and cathead. The blow counts required to drive the sampler the final two 6-inch increments are added together and designated the N-value defined in the above tables.

ROCK PROPERTIES

ROD

Percent RQD Quality

0-25 Very Poor

25-50 Poor

50-75 Fair

75-90 Good

90-100 Excellent

ROCK HARDNESS

Very Hard Rock can be broken by heavy hammer blows.

Rock cannot be broken by thumb pressure, but can be broken by moderate Hard

Moderately Hard Small pieces can be broken off along sharp edges by considerable thumb

pressure; can be broken with light hammer blows.

x100

Soft Rock is coherent but breaks very easily with thumb pressure at sharp edges and crumbles with firm hand pressure.

Very Soft Rock disintegrates or easily compresses when touched; can be hard to very

KEY

Undisturbed Sample



Standard Penetration Test Sample



Rock Core Sample

Core Diameter (I.D.)

<u>Inches</u> 1-7/16

NQ 1-7/8

HQ 2-1/2

RQD=

Sum of 4" and Longer Rock Pieces Recovered x100 (Rock Quality Length of Core Run Designation)

Length of Rock Core Recovered REC= (Recovery)

Length of Core Run

SOIL PROPERTY SYMBOLS

N Standard Penetration, BPF

NMC Natural Moisture Content, %

LL Liquid Limit, %

Plastic Limit, %

Plasticity Index, %

Pocket Penetrometer Value, TSF

Unconfined Compressive Strength, TSF

Dry Unit Weight, PCF

Fines Content





Cone Penetration Test

B-01

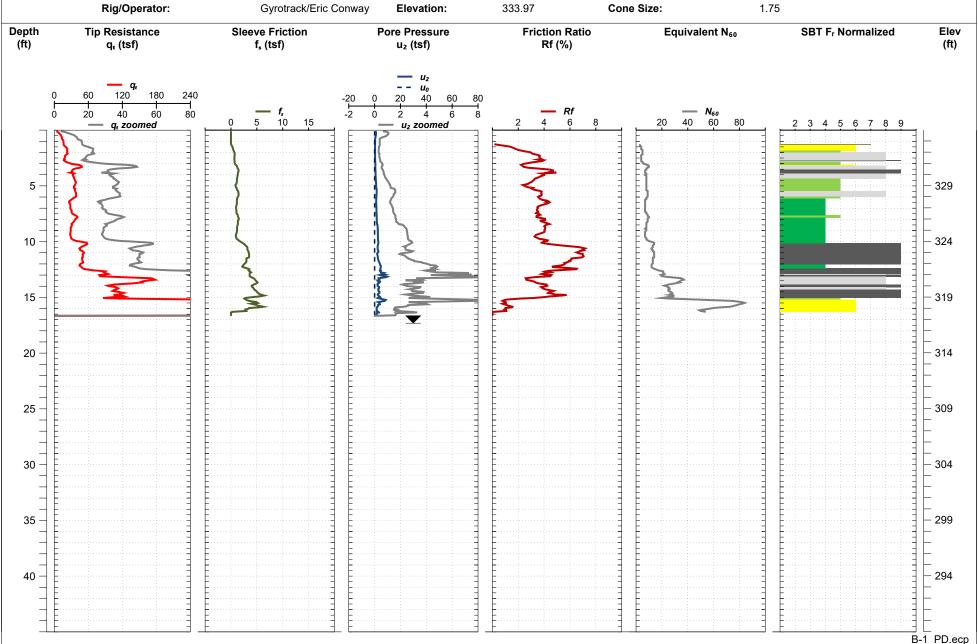
Date:

Estimated Water Depth:

25-Jan-2022 17.0 ft Latitude: Longitude: 35.418959 -89.40620 Total Depth:
Termination Criteria:

16.6 π

Maximum Reaction Force





Cone Penetration Test

B-01A

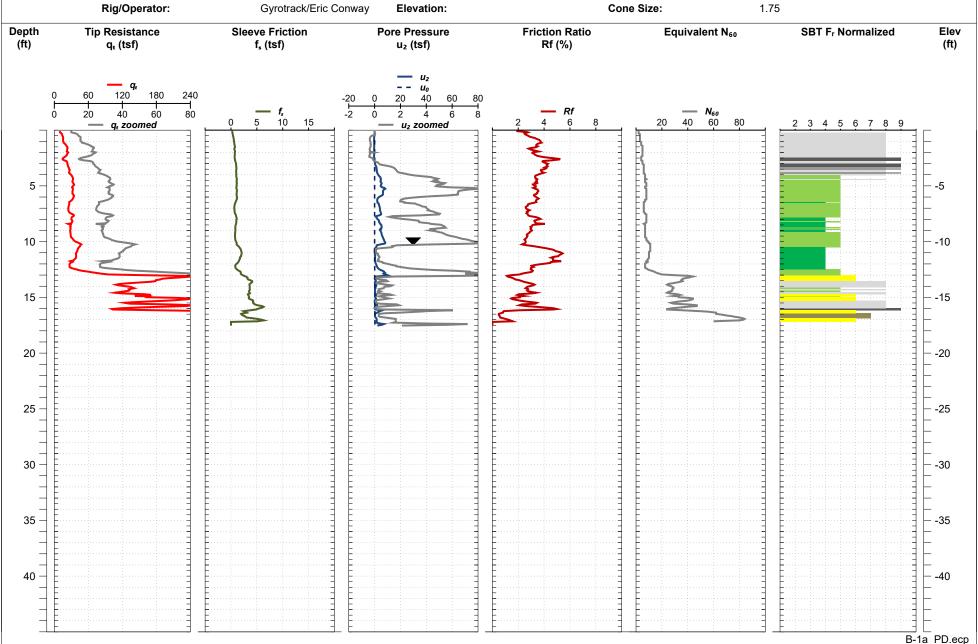
Date:

Estimated Water Depth:

26-Jan-2022 10.0 ft Latitude: Longitude: Total Depth:

Termination Criteria:

Maximum Reaction Force



PROJECT:				R 222, St	I City - TV tanton, Te oject No.			BORING LOG: B-02 Sheet 1 of 2						
DATE DRILLED: 01	1/28/202	2				N: 331 ft		NOTES:						
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88								
DRILLER: S&ME					BORING D	DEPTH: 40.0 ft		1						
HAMMER TYPE: /	Automati	c ha	mmer		CLOSURE:	Cuttings								
DRILLING METHO						BY: Alf Futrell		LATITUDE: 35.418947 LONGITUDE: -89.40548						
SAMPLING METH	OD: SS			ı		PROJECT COORDII	NATE SYST	TEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet						
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA · N-value)	STANDARD PENETRATION TEST DATA					
0		ouc		М		CLAY (CL), some silt, few roots, f	irm,	3-3-3				=		
_		ted Zc		SS-1	brown,	, slightly moist to moist	l l	N = 6 V= 1.2	•			-		
- - -	2.5	Cultivated Zone		SS-2	LEAN C	CLAY (CL), trace sand, firm to stil		3-3-5 N = 8	•			_ _ _		
				Ę .		with gray, moist		V= 2.5] -		
 _ 5				SS-3			l l	2-3-5 N = 8	•			327 -		
		Loess		SS-4			I	3-3-5 N = 8	•			- - -		
-				SS-5			I	3-3-6 N = 9	•			322 –		
10 —	10.0					/ SAND (SC), medium dense, ora , slightly moist	ange					- - - - -		
15 —		oils		SS-6				′-9-13 N = 22	•			317 —		
- - - - -		Marine Soils		M			I .	-11-15 N = 26				 		
20 —	22.0			SS-7					•			312		
CDOUNDWATER		_	ATE /=:	NAF	DEPTH	DE244	DIC			1	1			
GROUNDWATER			ATE/TI	IVIE	(FT)	REMA)) fort			0			
ATD END OF DRILLING	□ □ □ 01/2 □ □ □ 01/2					not encountered - hole of 1 hour reading - dry hole					&			
AFTER DRILLING	▼ 01/2					24 hour reading - dry cav				41				
AFTER DRILLING	T	•				j								

PROJECT:				R 222, St	l City - TV anton, Te			BORING LOG: B-02 Sheet 2 of 2					
DATE DRILLED: 01	1/28/202	2				N: 331 ft		NOTES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S&ME					BORING D	PEPTH: 40.0 ft							
HAMMER TYPE: /	Automati	c har	mmer		CLOSURE:	Cuttings							
DRILLING METHO	D: HSA					SY: Alf Futrell	ı	LATITUDE: 35.418947 LONGITUDE: -89.40548					
SAMPLING METH	OD: SS		ı			PROJECT COORDINAT	E SYSTE	FEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet					
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	D	COUNT ATA N-value)	△ % Fines				
25 —				SS-8		Y GRADED SAND WITH CLAY (SP), n dense to dense, tan orange and moist		0-14 = 24	•			307 -	
30	HC	Marine Soils		SS-9				.3-23 = 36		•		302 -	
35 —				SS-10	wet b	elow 35 feet		3-16 = 29	•			297 -	
40	40.0			SS-11	Boreho	ole terminated at 40.0 feet	- 1	19-24 = 43		•		292 -	
_								+		+			
GROUNDWATER		D	ATE/T	IME	DEPTH (FT)	REMARKS							
ATD □ 01/27/2022 END OF DRILLING □ 01/27/2022				not encountered - hole cave 1 hour reading - dry hole ca	2 ft			&					
AFTER DRILLING	▼ 01/2	28/2	022			24 hour reading - dry cave a	t 28.2	feet					
AFTER DRILLING													



Cone Penetration Test

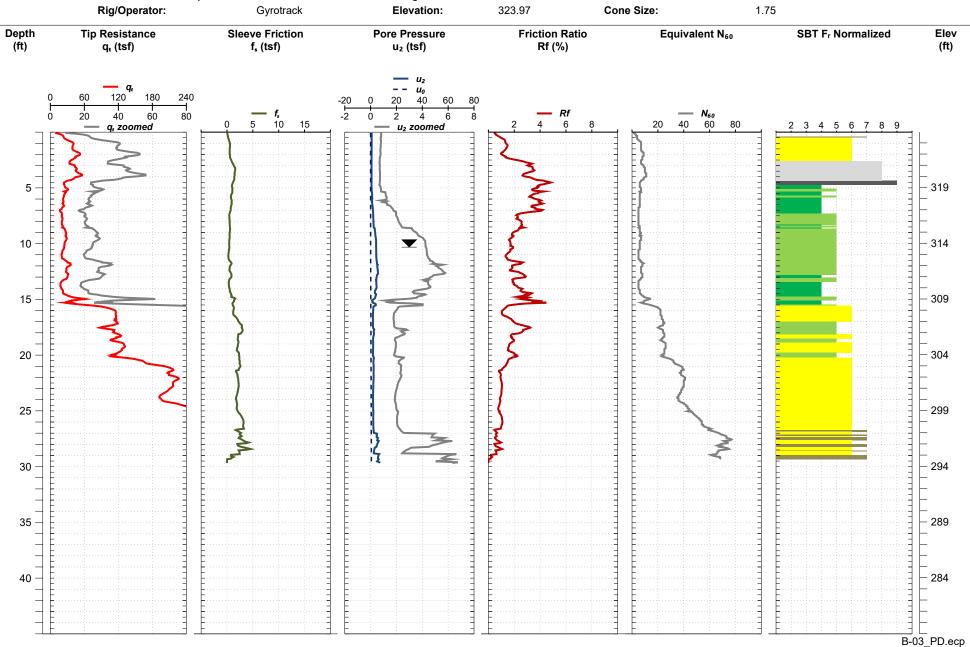
B-03

Date:

Estimated Water Depth:

26-Jan-2022 10.0 ft Latitude: Longitude: 35.418936 -89.40486 Total Depth:
Termination Criteria:

29.7 ft Maximum Reaction Force



PROJECT:				R 222, St	al City - TV tanton, Te roject No.		В	BORING LOG: B-04 Sheet 1 of 2						
DATE DRILLED: 02	2/02/202	2			ELEVATIOI		NOTES:							
DRILL RIG: Diedi			ck)		DATUM:									
DRILLER: S&ME		(,			EPTH: 35.0 ft								
HAMMER TYPE: /		c har	mmer		CLOSURE:									
DRILLING METHO		Cilai	IIIIIEI			Y: Talecia Dyson	LATITUD	LATITUDE: 35.418925 LONGITUDE: -89.40419						
SAMPLING METH					1		SYSTEM - NAI	TEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet						
DEPTH (feet)	DTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	1	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAR 20	A % Fines ○ NMC ├── PLLL 40 60	80	ELEVATION			
0	1.5	Cultivated Zone		SS-1 SS-2	moist LEAN C	LAY (CL), some silt, firm, brown, LAY (CL), few silt, trace sand, firm brown, mottled, moist to very	2-2-3 N = 5 PPV= 1.8 3-4-5 N = 9 PPV= 0.8	•			- - - - - -			
5		Loess		SS-3 SS-4			3-3-4 N = 7 PPV= 2.0 5-6-8 N = 14 PPV= 2.2	•			316 — - - - - - -			
10 —	11.5			SS-5			2-3-5 N = 8 PPV= 2.0	•			- 311 – - - -			
15 —	16.0	S		SS-6	orange	LAY WITH SAND (CL), very stiff, red , moist	6-7-9 N = 16 PPV= 1.0	•			 306 			
20 —	HC 20.0	Marine Soi		SS-7	orange	AND (SM), few clay, medium dense, , very moist Y GRADED SAND (SP), orange, moist	9-11-10 N = 21	•			301			
			·		DEPTH		1			ı				
ATD END OF DRILLING	✓ 02/✓ 02/	02/2		ME	(FT) 30.0	hole cave 20.0 ft (1 hr)				&				
AFTER DRILLING	•								11					
AFTER DRILLING	T													

PROJEC					Blue Ova R 222, St S&ME Pt	tanton,	Ten		В	BORING LOG: B-04 Sheet 2 of 2						
DATE DRI	LLED: 02/	02/	2022	2					321 ft	'	NOTES:					
DRILL RIG	: Diedri	ch [)-50	(tra	ck)		DATUM	: NA	AVD88							
DRILLER:				•			BORING	DEI	PTH: 35.0 ft							
	R TYPE: A	utor	natio	har	nmer		CLOSUR									
	METHOD			71141					Talecia Dyson		LATITUD	E: 35.42	18925	LONG	ITUDE:	-89.40419
	G METHO								PROJECT COORE	DINATE SY	STEM - NAD	1983 StatePl	ane Tenn	essee FIPS	4100 Feet	
DEPTH (feet)	NOT	Origin/Identifier (SECONER SAMPLE N				1	ILE NO. MATERIAL DESCRIPTION (SPT					STANDARD PENETRATION TEST BLOW COUNT DATA (SPT N-value) STANDARD PENETRATION TEST NMC H PLLL 20 40 60 8				
_							POO	RLY (GRADED SAND (SP), orange	e, moist						₹ -
25 —						SS-8					9-11-14 N = 25	•				296 -
30 —			28.0	Marine Soils		SS-9	POO	RLY(GRADED SAND (SP), orange	e, wet	9-13-18 N = 31		•			291 -
	Flowing san at 35.0 fee	nds	32.0			SS-10	dens	se to	GRADED SAND (SP), mediundense, orange and gray, vewet terminated at 35.0 feet		6-8-14 N = 22	•				286 -
40 —																281 -
- - - -											-					- - - -
GROUNE	OWATER				ATE/TI	ME	DEPTI (FT)		REM	1ARKS						
ATD	NILLINIC		02/0				30.0		ala anua 20 0 ft /4 l \						&	
END OF DR AFTER DRII		T	02/0	12/2	U22		+	h	ole cave 20.0 ft (1 hr)							
AFTER DRII		T						+								
														-	_	_



Cone Penetration Test

B-05

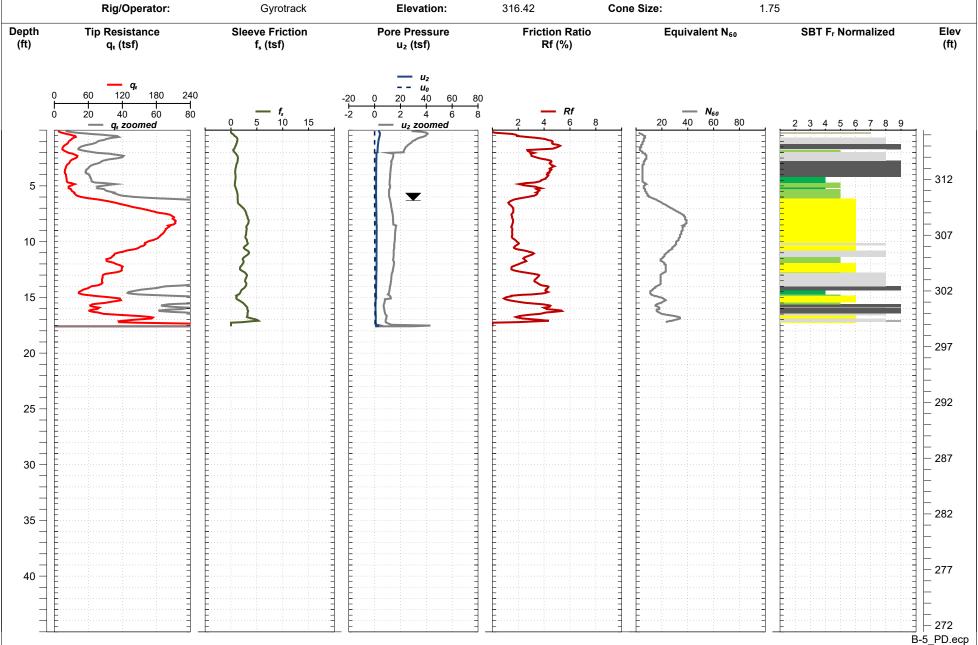
Date:

Estimated Water Depth:

26-Jan-2022 6.0 ft

Latitude: Longitude: 35.418913 -89.40345 **Total Depth: Termination Criteria:**

Maximum Reaction Force





Cone Penetration Test

B-05A

Date:

Estimated Water Depth:

28-Jan-2022

20.0 ft

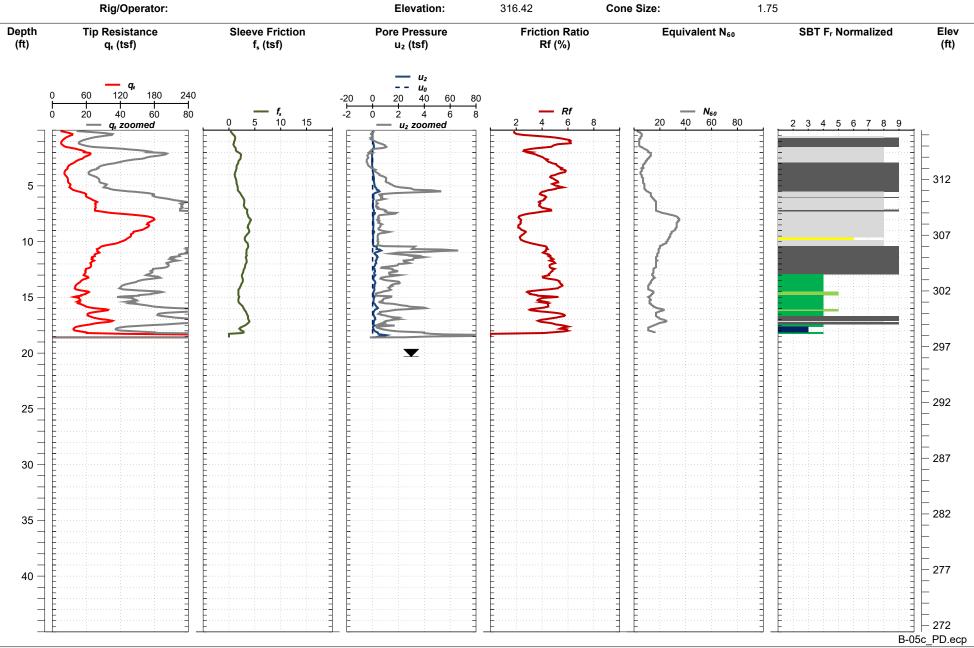
Latitude:

Longitude:

Total Depth:

Termination Criteria:

18.6 ft



PROJECT: Ford Blue Oval					-		В	BORING LOG: B-06						
			3		roject No.			S	Sheet 1 of 2					
DATE DRILLED: 02	/06/202	2			ELEVATIO	N: 314 ft	NOTES:							
DRILL RIG: Diedr	ich D-50	(trad	ck)		DATUM:	NAVD88								
DRILLER: S&ME					BORING D	EPTH: 40.0 ft								
HAMMER TYPE: A	utomati	c har	nmer		CLOSURE:	Cuttings								
DRILLING METHO						Y: Talecia Dyson	LATITUD	LATITUDE: 35.418903 LONGITUDE: -89.40285						
SAMPLING METHO	OD: SS					PROJECT COORDINATE	SYSTEM - NAI	TEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet						
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAI	A % Fines NMC PLLL 40 RD PENETRATION	TEST DATA	ELEVATION			
0	1.5	Cultivated Zone		SS-1 SS-2 SS-3	\very m LEAN C \brown LEAN C	LAY (CL), some silt, firm, brown, oist LAY (CL), some silt, some sand, and gray, moist LAY (CL), some silt, some sand, firm brown and gray, moist to very	3-3-5 N = 8 5-3-3 N = 6 PPV= 1.2 6-5-5 N = 10	•			- - - - - - 309 –			
10 —	6.0	Ldeesss		\$\$-4 \$\$-5		LAY (CL), some silt, trace sand, soft brown to gray, very moist	- 3-2-4 N = 6 PPV= 1.0 1-1-2 N = 3	•			 304			
15 —	15.0 16.0			SS-6	orange	AND (SM), medium dense, tan to brown, very moist Y GRADED SAND (SP), orange, moist	2-1-3 N = 4 PPV= 0.8	•			- - - - - - 299 - - -			
20 -	22.0	Malkilaeißeißoils		SS-7			7-9-9 N = 18	•			- - - - 294 - - -			
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS								
ATD END OF DRILLING		06/2 06/2			V-1	not encountered not encountered (1 hr)				&				
AFTER DRILLING	Y													
AFTER DRILLING						L								

PROJECT:				R 222, St	City - TV anton, Te oject No. 2			BORING LOG: B-06 Sheet 2 of 2						
DATE DRILLED: 02	/06/202	2			ELEVATION		I	NOTES:						
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM: N	IAVD88		1						
DRILLER: S&ME					BORING D	EPTH: 40.0 ft		1						
HAMMER TYPE: /	utomati	c ha	mmer		CLOSURE:	Cuttings								
DRILLING METHO						Y: Talecia Dyson		LATITUDE: 35.418903 LONGITUDE: -89.40285						
SAMPLING METH	OD: SS					PROJECT COORDINA	TE SYST	EM - NAD 1	1983 StatePl	lane Tenne	essee FIPS	4100 Feet		
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE NO	I	MATERIAL DESCRIPTION		W COUNT DATA ' N-value)	STANDAR 20	∆ % ○ N	Fines	80	ELEVATION	
25 -				SS-8	POORLY	GRADED SAND (SP), orange, mo GRADED SAND WITH SILT (SP-SM n dense to very dense, orange, ve o wet	vi), ery 12	-17-18 N = 35 -		•			289 -	
30 -		Marine Soils		SS-9				I-20-32 N = 52			•		284 -	
35				SS-10				18-50/-3" = 50/-3"					279 -	
40 —	40.0 40.0			SS-11	Boreho	le terminated at 40.0 feet		3-28-43 N = 71				•	274 —	
													- - - - - - -	
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARK	(S							
ATD \$\simeq\$ 02/06/2022 END OF DRILLING \$\simeq\$ 02/06/2022 AFTER DRILLING \$\simeq\$ 02/06/2022 AFTER DRILLING \$\simeq\$ 02/06/2022				not encountered not encountered (1 hr)						& =				



Cone Penetration Test

B-07

Date:

Estimated Water Depth:

28-Jan-2022

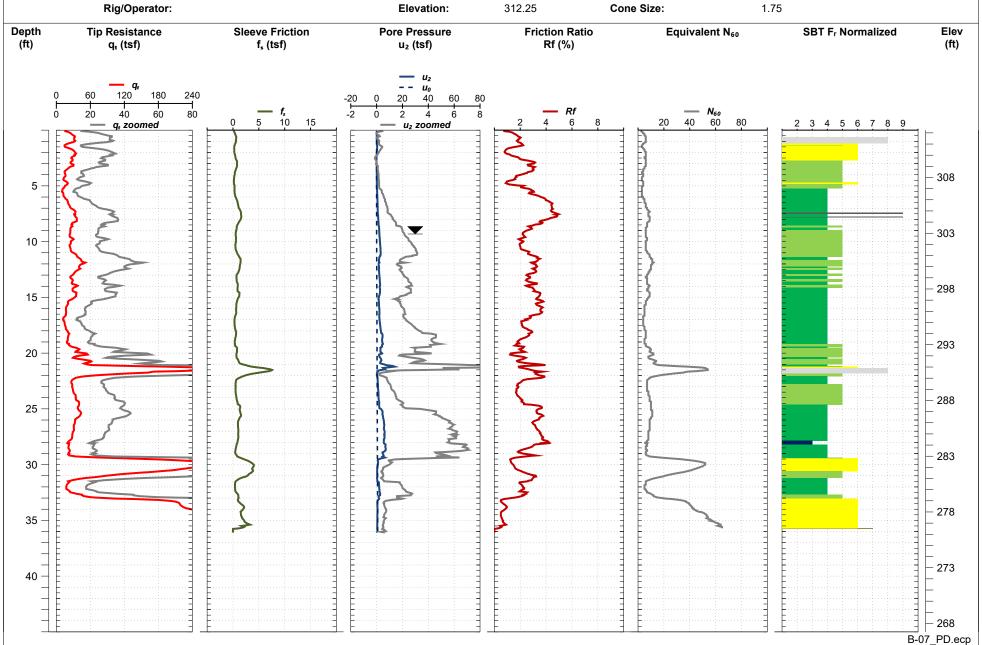
9.0 ft

Latitude: Longitude: 35.418892 -89.40217

Total Depth:

36.1 ft

Termination Criteria:



PROJECT:				R 222, St	l City - TV anton, Te			В		LOG: B				
DATE DRILLED: 02	2/07/202	2			ELEVATION		NO	OTES:						
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM: N	IAVD88								
DRILLER: S&ME					BORING D	EPTH: 40.0 ft								
HAMMER TYPE:	Automati	c hai	mmer		CLOSURE:	Cuttings		1						
DRILLING METHO		rota	ry		LOGGED B	Y: Eric Conway	LA	LATITUDE: 35.418881 LONGITUDE: -89.40150						
SAMPLING METH	IOD: SS	1	1		1	PROJECT COORDINAT	E SYSTEM	TEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet						
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW CO DAT. (SPT N-v	Ά	△ % Fines			ELEVATION		
0		/ate		\/	LEAN C	LAY (CL), firm, brown, very moist	2-3-	-3					-	
_	1.3	Cultivate d Zone		SS-1			N =		•				-	
_				SS-2	I	LAY (CL), some silt, soft to firm, gray, moist	3-4- N =		•				- - - -	
-				\Box			1-2-						-	
5 —		Loess		SS-3			N =	3	•				306	
-				SS-4			2-2- N =		•				- - - -	
- - -	9.0			SS-5		LAY (CL), trace sand, firm to stiff, and brown, moist	1-4- N =		•				301 -	
10 —				SS-6	orange	and brown, moist	2-2- N =						296 -	
- 15 — - - - - -	17.0	Marine Soils				SILT (ML), firm to stiff, brown and ery moist		-					- - - - - - -	
20 —				SS-7			2-2- N =	5	•				291 —	
		_	AT- '-	D.A.F.	DEPTH					ı				
GROUNDWATER		D	ATE/TI	IVIE	(FT)	REMARKS						&		
ATD END OF DRILLING	∡											X		
AFTER DRILLING	•										111			
AFTER DRILLING	▼												1	

PROJEC	T:				R 222, St	l City - TV anton, Te		BORING LOG: B-08 Sheet 2 of 2							
DATE DRI	LLED: 02/	07/202	2				N : 310 ft	1	NOTES:						
DRILL RIG	: Diedri	ch D-50	(tra	ck)		DATUM: N	NAVD88								
DRILLER:	S&ME					BORING D	EPTH: 40.0 ft								
HAMMER	TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings								
DRILLING			rota	ry		LOGGED B	Y: Eric Conway		LATITUDE: 35.418881 LONGITUDE: -89.40150						
SAMPLIN	G METHO	D: SS			I	1	PROJECT COORDINA	TE SYST	EM - NAD	1983 StatePla	ane Tennessee F	IPS 4100 Feet	1		
DEPTH (feet)	NOT	ES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	l l	MATERIAL DESCRIPTION		W COUNT DATA N-value)	△ % Fines					
_ _ _ _ _ 25 —					SS-8	l l	SILT (ML), firm to stiff, brown and ery moist	5	-7-11 I = 18	•					
_ _ _		26.0					AND (SM), loose, gray and yellow very moist						- - - - -		
30 —			Marine Soils		SS-9				5-4-6 I = 10	•			- 281 - - - - -		
		32.0	Ma		SS-10	dense t	Y GRADED SAND (SP), medium to dense, yellow brown and gray, n grained, wet		-17-22 I = 39		•				
- - - - -		37.0			M		Y GRADED SAND (SP), trace silt, very moist		0-5-8 I = 13						
40		40.0			SS-11	Boreho	lle terminated at 40.0 feet			•			- - - - - - - - -		
	T														
ATD END OF DR	GROUNDWATER DATE/TIME TD \$\sigma\$ ND OF DRILLING \$\subseteq\$			DEPTH (FT)	REMARK	S				&					
AFTER DRIL		Y													



Cone Penetration Test

B-09

Date:

28-Jan-2022

10.0 ft

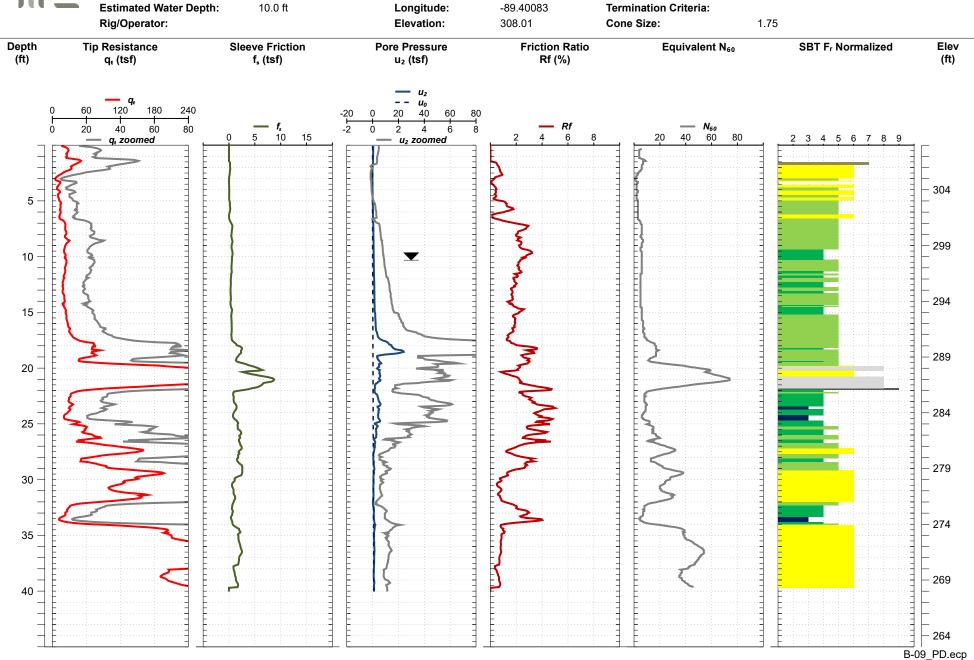
Latitude: Longitude:

35.418870 -89.40083

Total Depth:

Termination Criteria:

40.0 ft



PROJECT: Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019									BORING LOG: B-10 Sheet 1 of 2							
DATE DRILLED: 0	2/19/202	2				N: 307 ft	NOTES:	}								
DRILL RIG: Died	lrich D-50	(tra	ck)		DATUM:	NAVD88										
driller: S&ME					BORING D	DEPTH: 40.0 ft		-								
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	Cuttings										
DRILLING METHO	DD: Mud	rota	ry			BY: Talecia Dyson		LATITUDE: 35.418858 LONGITUDE: -89.40016								
SAMPLING METH	HOD: SS			1		PROJECT COORDIN	TEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet									
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA N-value)	STANDA 20	∆ % ○ N	LLL	ST DATA	ELEVATION			
0	0.2		. علام . علام	SS-1		IL, 2 inches CLAY (CL), soft to stiff, brown and		2-3-4 N = 7	•] -			
				33-1	gray, m			N = 7 4-3-3					-			
_				SS-2			I	N = 6	•							
-				h			I .	2-2-2 N = 4					_			
7				SS-3			I .	V= 0.2	•				302 —			
5 — —																
_		Loess		Ь			I .	4-5-6 11					-			
4				SS-4				l = 11 V= 1.5	•							
				ľ									_			
-				Ь				3-3-4					_			
_				SS-5				N = 7	•							
10 —													297 — —			
_	_												-			
	12.0												_			
-						CLAY (CL), some sand, some silt, for stiff, orange and gray, moist	firm						_			
								3-3-5					-			
				SS-6				N = 8 V= 1.5	•				-			
15 —							''	. 2.5					292 —			
]		<u>s</u>														
		Marine Soils											_			
-		Jarin											-			
		_					12	-13-12					1 -			
_				SS-7			N	l = 25					-			
20 —				Δ									287 —			
													_ _			
GROUNDWATER DATE/TIME				IME	DEPTH REMARKS											
ATD						(FT) KEIWAKKS						&				
END OF DRILLING																
AFTER DRILLING AFTER DRILLING	▼ 02/	20/2	2022		11.4	24 hour reading										
ALLEN DIVIELLING													ı			

PROJECT: Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019											BORING LOG: B-10 Sheet 2 of 2								
DATE DRILLED: 02/19/2022							ELEVATION: 307 ft					NOTES:							
DRILL RIG: Diedrich D-50 (track)							DATUI	M : N	IAVD88										
							BORIN	IG D	EPTH: 40.0 ft										
		utom	natio	har	nmer				Cuttings										
									Y: Talecia Dysc	on		LATITUDE	: 35.4	18858	LONG	ITUDE:	-89.40016		
SAMPLING N					,						SYSTE	FEM - NAD 1983 StatePlane Tennessee FIPS 4100 Feet							
DEPTH (feet)	NOT	TES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER			MATERIAL DESCR	RIPTION	D	COUNT ATA N-value)	STANDAR 20	∆ % ○ N	Fines	80	ELEVATION		
25 -		2	26.0			SS-8	to	very	LAY (CL), some san stiff, orange and gr	ay, moist	N	-5-6 = 11 /= 1.8	•				282 -		
30				Marine Soils		SS-9	medium dense, gray and orange, moist to very moist			1	11-13 = 24	•				277 -			
35						SS-10 SS-11					N 14-	9-13 = 22 - - - - - - - - - - - - - - - - - -					272 -		
40		2	40.0			<u>/ \</u>	Во	reho	le terminated at 40	0.0 feet /		-					267 		
GROUNDWATER DATE/TIME			ME	DEPTH (FT) REMARKS															
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING					11		24 hour readin							&					
		_																	



Cone Penetration Test

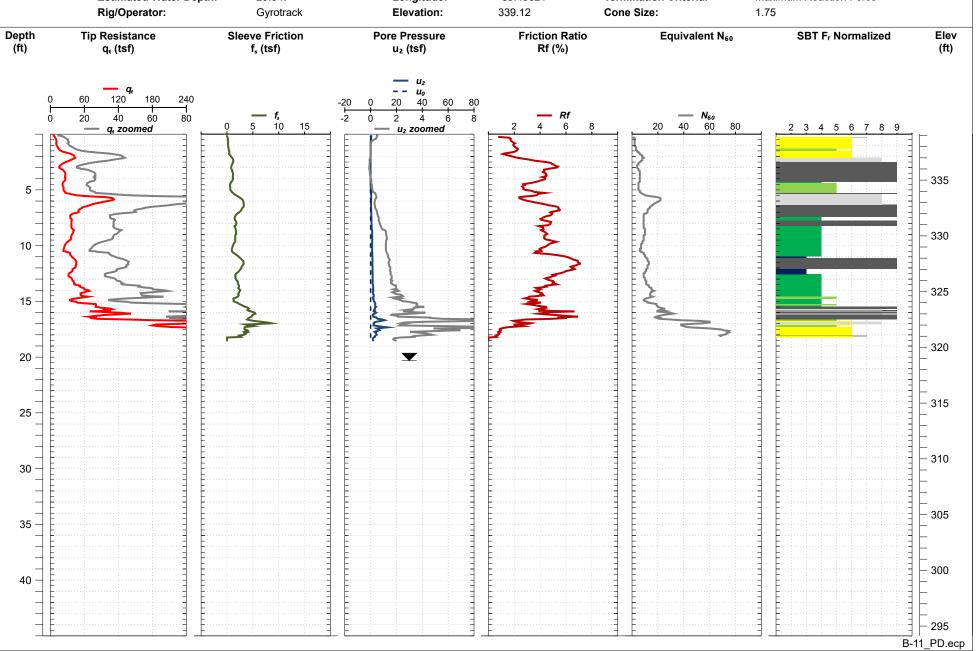
B-11

Date:

Estimated Water Depth:

25-Jan-2022 20.0 ft Latitude: Longitude:

35.418615 -89.40621 339.12 Total Depth: Termination Criteria:





Cone Penetration Test

B-11A

Date:

Estimated Water Depth:

20.0 ft

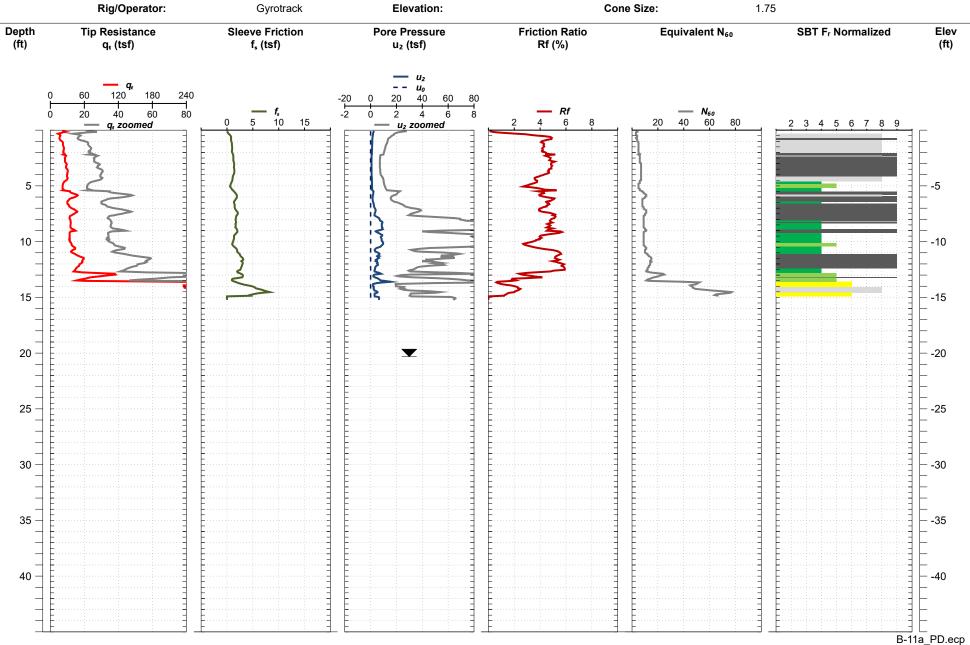
26-Jan-2022

Latitude: Longitude: **Total Depth:**

Termination Criteria:

15.2 ft Maximum Reaction Force

1.75



PROJECT:				R 222, St	l City - TV tanton, Te oject No.			В	ORING	LOG :			
DATE DRILLED: 01	1/27/202	2				N: 334 ft		NOTES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S&ME					BORING D	PEPTH: 40.0 ft		-					
HAMMER TYPE: ,		c hai	mmer		CLOSURE:								
DRILLING METHO		Cilai				SY: Alf Futrell		LATITUD	E: 35.4	18603	LONG	ITUDE:	-89.40549
SAMPLING METH						PROJECT COORDINAT	TE SYST	EM - NAD) 1983 StateP	lane Tenne	essee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	1	MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STANDAF	∆ % ○ N	Fines	REST DATA	ELEVATION
0		ted a		М	LEAN C	CLAY (CL), some roots, soft, brown,	2	2-2-2					_
_	1.5	Cultivated Zone		SS-1	moist t	o very moist		N = 4 V= 1.5	•				
- - - - - - 5 - -	1.5	Loess		\$\$-2 \$\$-3 \$\$-4		ELAY (CL), with silt, firm to stiff, moist to very moist	3 N PP 2 N	V= 1.5 3-4-5 N = 9 V= 1.2 2-3-4 N = 7 V= 1.0 5-5-7 I = 12 V= 1.5	•				329 -
	8.0						' ''	V- 1.J					
10 —				SS-5		ELAY (CL), trace sand, stiff, orange slightly moist	N	3-4-7 I = 11 V= 2.5	•				324
15 —	17.0	Marine Soils		SS-6	slightly	' SAND (SC), medium dense, orang	N PP	-6-10 I = 16 V= 1.0	•				319
20 —	22.0			SS-7				5-9-9 = 18	•				314 —
GROUNDWATER		D.	ATE/TI	ME	DEPTH	REMARK	s						
ATD	□ □ 01/				(FT)	not encountered - hole cav		.7 feet				8	
END OF DRILLING	S 01/					1 hour reading - dry hole ca	ave 28.	7 ft					
AFTER DRILLING	▼ 03/					24 hour reading - dry hole			eet				
AFTER DRILLING	▼												

PROJECT:				R 222, St	l City - TV anton, Te			BOR		LOG: B-		
DATE DRILLED: 01	/27/202	2				N: 334 ft	NO	TES:				
DRILL RIG: Diedi	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME			-		BORING D	EPTH: 40.0 ft						
HAMMER TYPE: /		c ha	mmer		CLOSURE:							
DRILLING METHO						Y: Alf Futrell	LAT	ITUDE:	35.41	.8603 L C	ONGITUDE:	-89.40549
SAMPLING METH			,			PROJECT COORDINAT	E SYSTEM	- NAD 198	3 StatePla	ne Tennessee	FIPS 4100 Feet	_
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW CO DATA (SPT N-va	UNT	20	∆ % Fine ○ NMC ⊢ PLL		ELEVATION
25 —	27.0 HC SS-					Y GRADED SAND (SP), medium light orange tan, slightly moist	7-9-1 N = 2	- 1	•			309
30 -						Y GRADED SAND (SP), medium to dense, light tan, moist	7-14-1 N = 3			>		304 -
35				SS-10			6-10-1 N = 2		•			299 -
40	40.0			SS-11	Boreho	ole terminated at 40.0 feet	10-18- N = 4			•		294 -
				l	DEPTH	T						
GROUNDWATER	-					REMARK						
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	□ □ 01/28/2022 □ □ 01/28/2022 □ □ 03/01/2022					not encountered - hole cav 1 hour reading - dry hole ca 24 hour reading - dry hole	ave 28.7 ft					

Cone Penetration Test

B-13

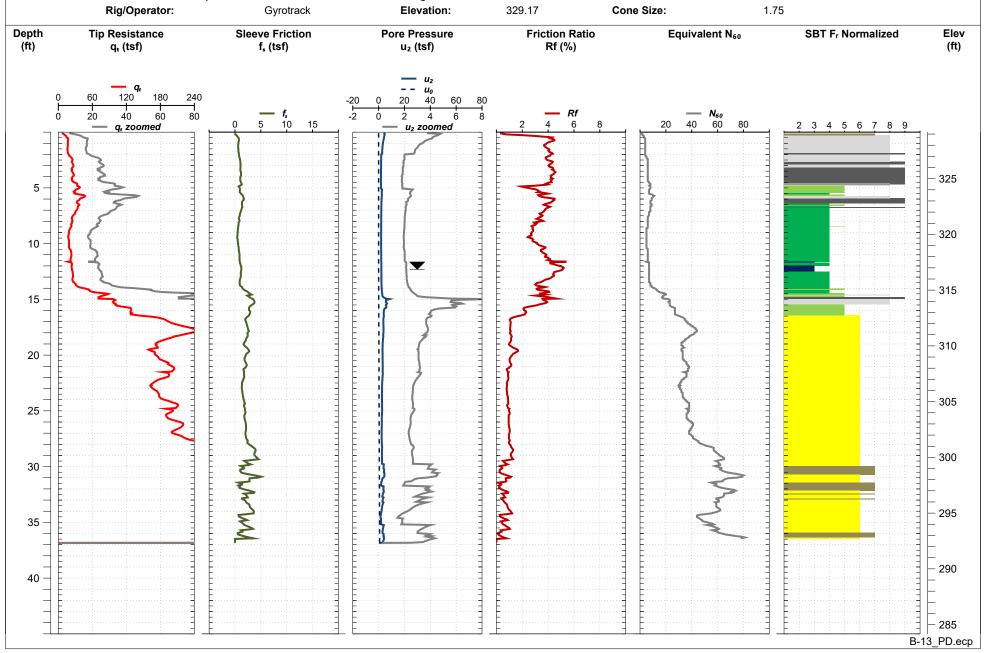
Date:

Estimated Water Depth:

26-Jan-2022 12.0 ft

Latitude: Longitude: 35.418596 -89.40504

Total Depth: Termination Criteria:



PROJECT:				R 222, St	I City - T\ tanton, Te			ВС		LOG: B-1		
DATE DRILLED: 02	2/02/202	2				N : 323 ft	NC	TES:				
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME					BORING D	DEPTH: 40.0 ft						
HAMMER TYPE: /	Automati	c hai	mmer		CLOSURE:	: Cuttings						
DRILLING METHO						BY: Talecia Dyson	LAT	TITUDE	35.41	18582 LO	NGITUDE:	-89.40420
SAMPLING METH			,			PROJECT COORDINATE	SYSTEM	- NAD 1	983 StatePl	ane Tennessee	FIPS 4100 Feet	t
DEPTH (feet) NO	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	l l	MATERIAL DESCRIPTION	BLOW CC DATA (SPT N-va	DUNT	STANDAR 20	D PENETRATION	S	ELEVATION
0	1.5	Cultivated		SS-1	LEAN C	CLAY (CL), some silt, stiff, brown, loist	0-3-0 N = 9 PPV= 1	9 _	•			323 -
_ _ _				SS-2		CLAY (CL), some silt, firm to stiff, , mottled, moist to very moist, black g		5	•			
		Loess		SS-3			3-3-3 N = 0 PPV= 3	6	•			318 -
- - - -	8.0			SS-4			3-4-3 N = 9 PPV= 3	9	•			-
10 —				SS-5		CLAY (CL), with sand, stiff to very d brown, very moist	4-5-6 N = 1 PPV= 2	.1 -	•			313
- - - -												- - - -
_ _ _ 15 _		Marine Soils		SS-6			5-10-: N = 2 PPV= :	1	•			308
_ - - -	16.0	×				/ SAND (SC), medium dense, orange , very moist						- - -
20 —				SS-7			7-8-1 N = 2		•			303 -
-												
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS		_				
ATD END OF DRILLING AFTER DRILLING		02/2	022			not encountered 1 hour reading - not encoun 432 hour reading - wet cave		- eet				
AFTER DRILLING	▼ 02/	_0, 2				is a reading wet cuve	ZZ.J 1					

PROJECT:					R 222, St	_	/A Substation ennessee 218019		В		LOG: B-1		
DATE DRILLED	: 02/0	2/2022	2				N : 323 ft	<u>'</u>	NOTES:				
DRILL RIG: D	iedricl	n D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&I	ME					BORING D	DEPTH: 40.0 ft						
HAMMER TYP		omatio	c hai	mmer		CLOSURE:	Cuttings						
DRILLING MET							BY: Talecia Dyso	n	LATITUD	E: 35.41	18582 LO I	NGITUDE:	-89.40420
SAMPLING ME								COORDINATE S	YSTEM - NAD	1983 StatePl	ane Tennessee F	IPS 4100 Feet	
DEPTH (feet)	NOTES	3	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRI		BLOW COUNT DATA (SPT N-value)	STANDAR	D PENETRATIO		ELEVATION
30-	25 -		SS-9 SS-10	POORL dense wet	Y SAND (SC), mediun , very moist Y GRADED SAND (SF to very dense, orang	P), medium ge, very moist to	4-8-12 N = 20		•		298 -		
1													
GROUNDWAT	TER		D	ATE/TI	IME	DEPTH (FT)		REMARKS					
ATD	□ 02/02/2022					(F1)	not encountere					8	
END OF DRILLING	G Z	Z 02/0)2/2	022			1 hour reading	- not encounte					
AFTER DRILLING		▼ 02/2	20/2	022			432 hour reading	ng - wet cave a	t 22.5 feet				
AFTER DRILLING	1												



Latitude:

Cone Penetration Test

B-15

Date:

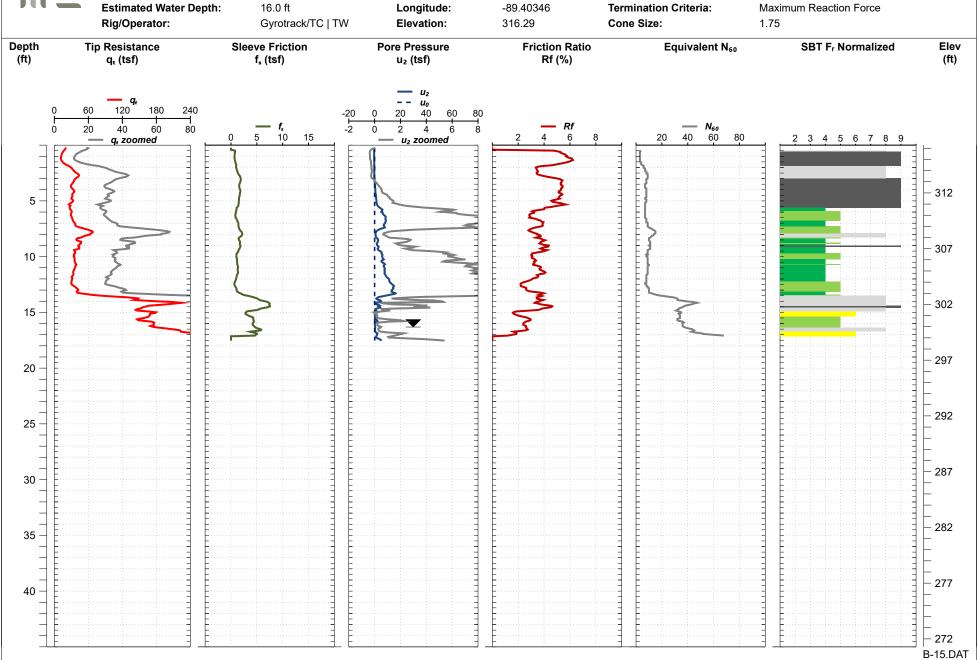
Estimated Water Depth:

27-Jan-2022

16.0 ft

35.418570 -89.40346

Total Depth: Termination Criteria:





Cone Penetration Test

B-15A

Date:

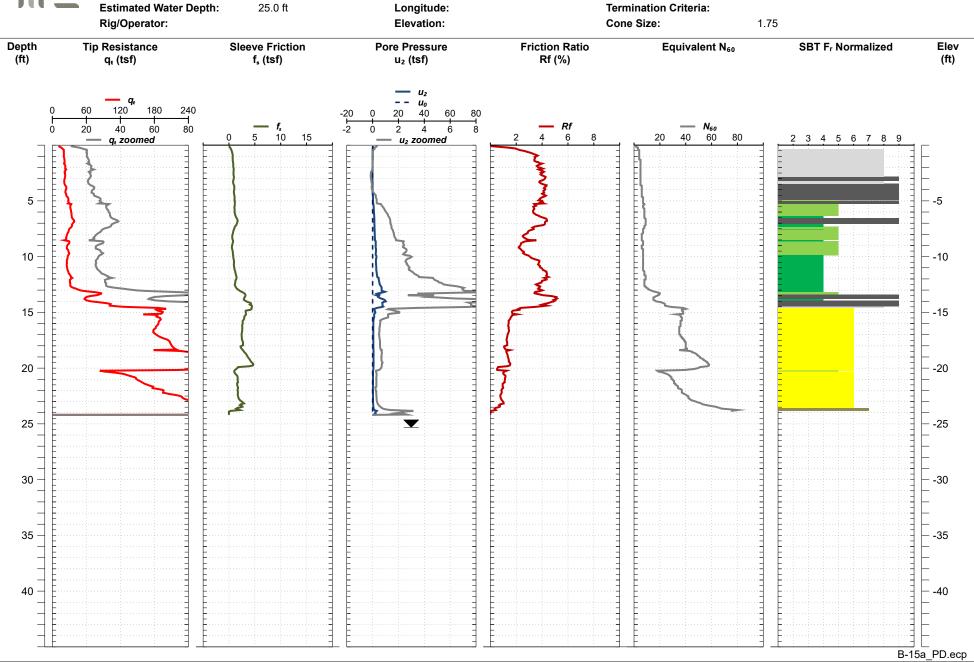
28-Jan-2022

Latitude: Longitude:

Total Depth:

24.2 ft

Termination Criteria:



PROJECT:					l City - TV tanton, Te	A Substation	E	ORING	G LOG	: B-16		
			3		oject No.				Sheet	1 of 2		
DATE DRILLED: (02/07/202	2			ELEVATIO	N: 313 ft	NOTES					
DRILL RIG: Die	drich D-50	(tra	ick)		DATUM:	NAVD88						
DRILLER: S&M	E				BORING D	EPTH: 40.0 ft						
HAMMER TYPE:	Automati	ic ha	mmer		CLOSURE:	Cuttings						
DRILLING METH						Y: Eric Conway	LATITUE	DE: 35.	.418560	LONGIT	UDE: -8	9.40285
SAMPLING MET						PROJECT COORDINATE	E SYSTEM - NAI) 1983 State	ePlane Ten	nessee FIPS 41	.00 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		Δ° Ο Η	% Fines NMC PLLL		ELEVATION
0		0	alte alte		TORSO	U. 40 '	2.4.2	20) 40 	60	80	
_	0.8		s alls a	SS-1		IL, 10 inches	2-4-3 N = 7	•				-
_	1.5			\mathbb{H}	moist	LEAN CLAY (CL), firm, brown, very	2-3-3					-
				SS-2	SANDY brown,	LEAN CLAY (CL), firm, gray and	N = 6	•				=
_				Ц	Diowii,	moist						-
_				M			4-4-4 N = 8					_
_ 5_				SS-3			PPV= 1.8	$ \bullet $				308 –
5 —				Γ								-
				М			3-2-3 N = 5					-
_				SS-4			PPV= 0.8					-
_												_
				М			2-3-5 N = 8					_
				SS-5			PPV= 2.0	•				303 –
10 —												-
-		Loess										-
_		٩										-
_												_
_				М			3-3-4					-
_				SS-6			N = 7 PPV= 1.8	•				-
15 —												298 – -
												-
_												_
=												-
				Ь			5-6-8					=
				SS-7			N = 14 PPV= 3.0	•				-
20 —				Ш			11 7 - 3.0					293 –
												_
												_
GROUNDWATE	DUNDWATER DATE/TIME				DEPTH (FT)	REMARKS						
ATD	UNDWATER DATE/TIME										&	
END OF DRILLING	T											
AFTER DRILLING AFTER DRILLING	Y				+							
						1				144		

PROJECT:				R 222, St	l City - TV anton, Te			ВО	RING	LOG: heet 2			
DATE DRILLED: 02	2/07/2022	2				N : 313 ft		NOTES:					
DRILL RIG: Diedr	rich D-50	(tra	ck)		DATUM: N	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE: /	Automatio	c har	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Eric Conway		LATITUDE:	35.41	L8560	LONG	ITUDE:	-89.40285
SAMPLING METH	OD: SS					PROJECT COORDINA	TE SYST	EM - NAD 19	983 StatePl	ane Tenne	essee FIPS	4100 Feet	T
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	l l	MATERIAL DESCRIPTION		V COUNT DATA N-value)	STANDAR 20	∆ % ○ N	Fines	80	ELEVATION
_		Loess			SANDY brown,	LEAN CLAY (CL), firm, gray and moist							-
	23.5	1		SS-8	dense t	Y GRADED SAND (SP), medium to very dense, tan gray to brown, in to coarse grained, wet	l l	3-4-5 N = 9 V= 0.8	•				288
30		Marine Soils		SS-9				10-15 = 25	•				283 -
35		Marir		SS-10				-25-30 = 55			•		278 -
40 —	40.0			SS-11	Boreho	le terminated at 40.0 feet		i-7-20 = 27	•				273 -
													- - - - - - -
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARK	S						
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	ING ¥											&	



Cone Penetration Test

B-17

Date:

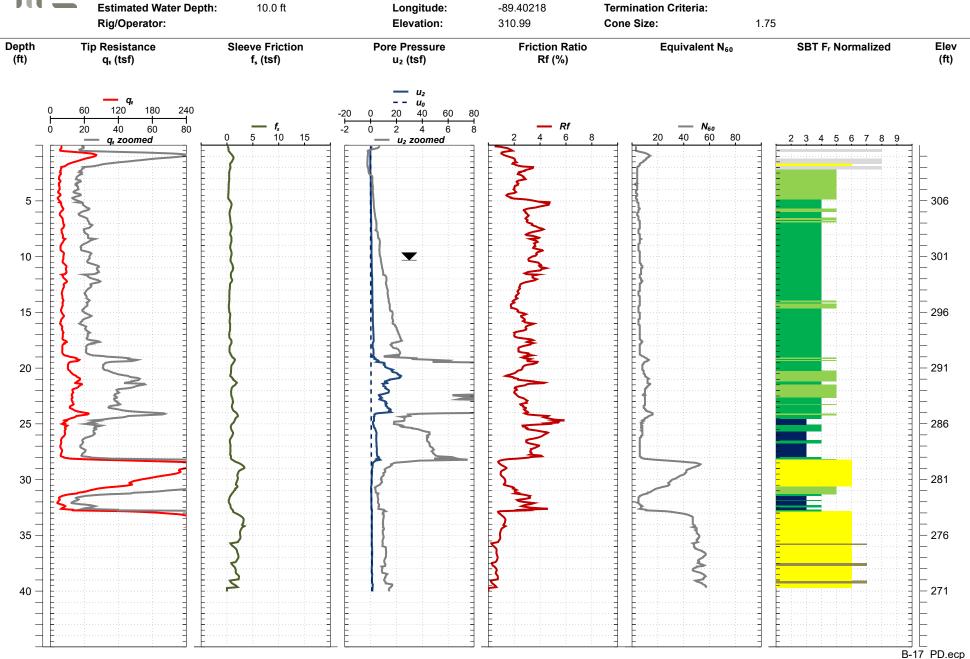
28-Jan-2022

Latitude:

35.418548 -89.40218 **Total Depth:**

40.0 ft

Termination Criteria:



PROJECT:					_		'A Substation ennessee		В	ORIN	G LOG	: B-18		
					roject N						Sheet	1 of 2		
DATE DRILLED	: 02/18/202	2			ELEVAT	101	N : 309 ft	N	OTES:					
DRILL RIG: Di	iedrich D-50	(tra	ck)		DATUM	1: 1	NAVD88							
DRILLER: S&I	ME				BORIN	G D	EPTH: 40.0 ft							
HAMMER TYP	E: Automati	c hai	mmer		CLOSU	RE:	Cuttings							
DRILLING MET							Y: Talecia Dyson	LA	TITUD	E: 35	.418537	LONG	ITUDE: -	89.40151
SAMPLING ME		1014	. ,		12000		PROJECT COORDINATE	SYSTEN	1 - NAD	1983 Stat	ePlane Ter	nnessee FIPS	4100 Feet	
		<u>.</u>								STAND	ARD DEN	ETRATION T	TEST DATA	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE (RECOVE			MATERIAL DESCRIPTION	BLOW C DAT (SPT N-v	Ά	20	4 0 H	% Fines NMC PLLL	80	ELEVATION
0	0.3		عالد عالد	\/	TOF	PSO	IL, 3 inches	2-2-	-5					-
				SS-1			LAY (CL), some silt, some sand, soft	N =		•				-
_				Θ	to f	irm	, brown and gray, moist	PPV=	1.0					_
				SS-2				3-4-	-4	•				1 -
				\square				N =	8					-
-				\Box				1-2-						_
				SS-3				N =	3	•				305 —
5 —				\triangle										_
_									2					_
				\bigvee				2-2- N =] -
_				SS-4				PPV=		•				-
														_
				Ь				2-3-	-3					_
-				SS-5				N =		•				300 —
10 —								PPV=	0.2					-
_		۰,												_
_		Loess												-
		-												_
_														_
								1-2-						-
_				SS-6				N =						_
45				33-0				PPV=	0.0					_
15 - -														1 -
_														-
														_
_	10.0													_
	18.0				LEA	N C	LAY (CL), some silt, some sand, stiff	1			+			1 -
					to v		stiff, brown and gray, moist	3-6- N =						
				SS-7				PPV=		•				290 —
20 —														1 –
-														-
GROUNDWAT	FR		ATE/TI	MF	DEPT		REMARKS						'	
ATD		U.	A11/11	171L	(FT))	REIVIARES						&	
END OF DRILLING										-			α	
AFTER DRILLING														
AFTER DRILLING	•					•								

PROJECT:				R 222, St	l City - TV anton, Te oject No.			ВС	DRING SI	LOG: heet 2			
DATE DRILLED:	: 02/18/202	22				N: 309 ft	'	NOTES:					
DRILL RIG: Di	edrich D-50) (tra	ck)		DATUM: N	NAVD88							
DRILLER: S&I	ME				BORING D	EPTH: 40.0 ft		-					
HAMMER TYP	E: Automat	ic ha	mmer		CLOSURE:	Cuttings							
DRILLING MET						Y: Talecia Dyson		LATITUDE	35.41	8537	LONG	ITUDE:	-89.40151
SAMPLING ME	THOD: SS					PROJECT COORDINA	TE SYST	EM - NAD	1983 StatePla	ane Tenne	essee FIPS	4100 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	l l	MATERIAL DESCRIPTION		N COUNT DATA ' N-value)	STANDAR	∆ % ○ N	Fines	80	ELEVATION
25 —	25.6	Loess		SS-8		LAY (CL), some silt, some sand, sti stiff, brown and gray, moist	7 N	-9-13 I = 22 -V= 3.5	•				285 -
30 —	26.0			SS-9		Y GRADED SAND (SP), dense, gray ange, moist	14	-17-27 I = 44		•			280 -
35 —	32.0	Marine Soils		SS-10		Y GRADED SAND (SP), loose, gray ange, moist		2-4-5 N = 9	•				275 -
40 —	40.0)		SS-11	Boreho	le terminated at 40.0 feet	I	3-5-6 I = 11	•				270
-													
GROUNDWAT		D	ATE/T	ME	DEPTH (FT)	REMARK	S						
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING												8	



Cone Penetration Test

B-19

Date:

28-Jan-2022

8.0 ft

Latitude:

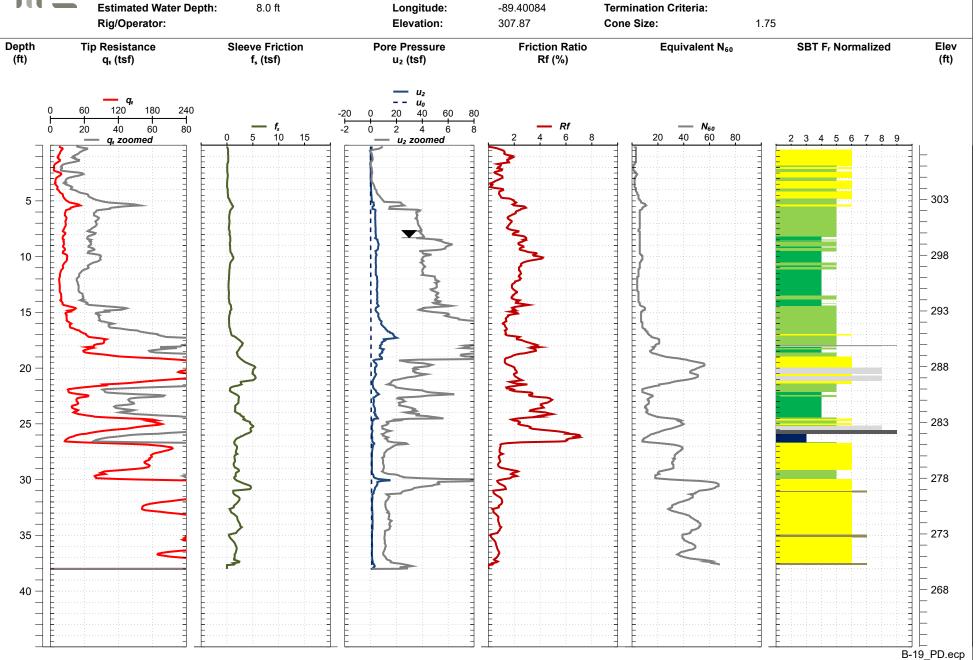
35.418526 -89.40084

Total Depth:

38.0 ft

Longitude:

Termination Criteria:



								_						
PROJECT:					-		'A Substation ennessee		BC	DRING	LOG	: B-20		
			3	S&ME P							Sheet	1 of 2		
DATE DRILLED: 02	2/19/202	2			ELEVA	TIOI	N: 307 ft	NO	TES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUI	M : N	NAVD88							
DRILLER: S&ME					BORIN	NG D	EPTH: 40.0 ft							
HAMMER TYPE: /	Automati	c hai	mmer		CLOSU	JRE:	Cuttings							
DRILLING METHO	D : Mud	rota	ry				Y: Talecia Dyson	LAT	ITUDE	: 35.	418515	LONG	ITUDE: -	89.40017
SAMPLING METH	OD: SS		1				PROJECT COORDINATE	SYSTEM	- NAD 1	1983 State	Plane Ter	inessee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE (RECOVE			MATERIAL DESCRIPTION	BLOW CO DATA (SPT N-va		STANDA 20	Δ	% Fines NMC PLLL	80	ELEVATION
0	0.3		مالاد مالاد	SS-1	LE	AN C	IL, 3 inches LAY (CL), some silt, few sand, firm brown and gray, moist	2-3-6 N = 9 PPV= 1)	•				- - -
- - - -				SS-2				5-5-6 N = 1 PPV= 2	1	•				- - -
5 - 5		s					3-5-7 N = 1 PPV= 2	2	•				302 — - -	
- - - -		Loess		SS-4				3-4-5 N = 9 PPV= 0	,	•				- - -
10 —				SS-5				3-3-4 N = 7 PPV= 1	, -	•				297 —
-	12.0				LE	AN C	LAY (CL), with silt, some sand, firm,		-					_ - - -
- - -				SS-6	or	ange	and gray, moist	2-3-5 N = 8 PPV= 1	3 -	•				
15 — — — —		Marine Soils		<u>/ </u>					_					
20 —		Ma						2-3-3 N = 6	: L	•				287 —
	21.0				loc	ose, c	Y GRADED SAND (SP), some silt, orange and gray, moist							- - -
GROUNDWATER		D	ATE/TI	ME		PTH T)	REMARKS							
ATD END OF DRILLING	▼												&	
AFTER DRILLING	▼ 02/2	20/2	022		10	0.2	24 hour reading			$\overline{}$		4 1		
AFTER DRILLING	▼	, –												

PROJECT:				R 222, St	l City - TV anton, Te			В		LOG: B-20 heet 2 of 2		
DATE DRILLED	: 02/19/202	2				N: 307 ft	l e	NOTES:				
DRILL RIG: D	iedrich D-50	(tra	ck)		DATUM: N	NAVD88						
DRILLER: S&	ME				BORING D	PEPTH: 40.0 ft		-				
HAMMER TYP	E: Automati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING MET						SY: Talecia Dyson		LATITUDE	35.41	18515 LON	IGITUDE:	-89.40017
SAMPLING M	ETHOD: SS				1	PROJECT COORDINA	TE SYST	EM - NAD	1983 StatePla	ane Tennessee FI	PS 4100 Feet	Ţ
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA N-value)	STANDAR 20	D PENETRATIO △ % Fines ○ NMC ├─ PLLL 40 60		ELEVATION
25 —	27.0			SS-8		Y GRADED SAND (SP), some silt, orange and gray, moist	l l	1-4-5 N = 9 -	•			282 -
30 -	32.0	Marine Soils		SS-9	l l	Y GRADED SAND (SP), little silt, m dense, gray, moist		0-10-8 I = 18	•			277 -
35 —				SS-10	POORL' very m	Y GRADED SAND (SP), dense, gray oist	7-	13-19 I = 32		•		272 -
40	40.0			SS-11	Boreho	ole terminated at 40.0 feet		28-50/5" = 50/5" - -				267 -
GROUNDWAT	TED		ATE /T	ME	DEPTH	DEMARI	/S					
ATD END OF DRILLIN AFTER DRILLING	□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □		ATE/T 1	IIVIE	(FT) 10.2	REMARI 24 hour reading	\3				&	

& Date:

Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019

Cone Penetration Test

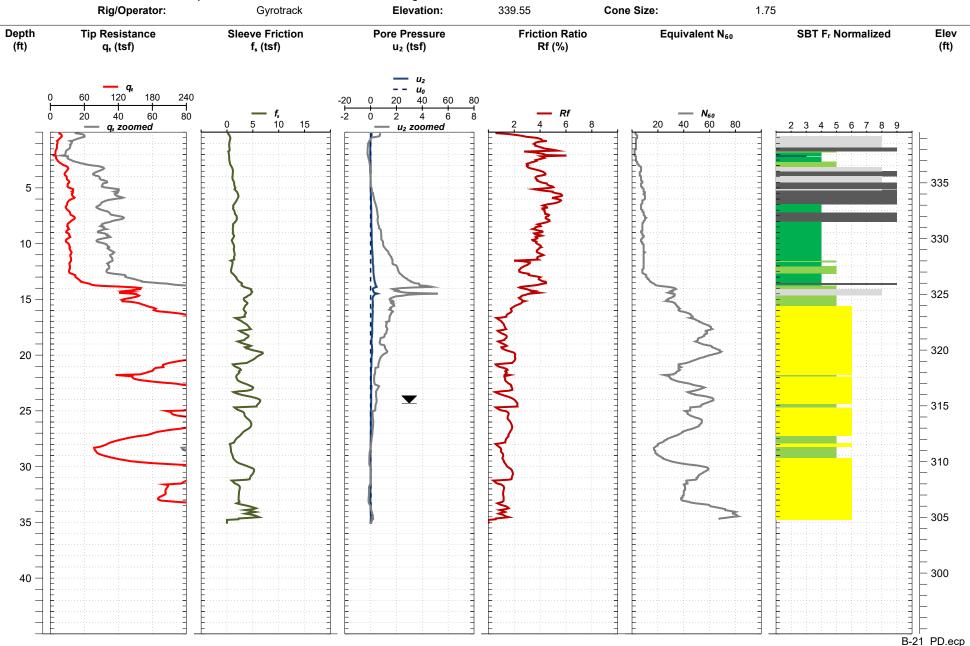
B-21

Date: 25-Jan
Estimated Water Depth: 24.0 ft

25-Jan-2022 24.0 ft Latitude: Longitude:

35.418070 -89.40648 339.55 Total Depth:
Termination Criteria:

35.1 ft Maximum Reaction Force



PROJECT:			S	R 222, St	l City - TV anton, Te			В	ORIN		G: B-22 et 1 of 2		
DATE DRILLED: 01	./28/202	2				N: 337 ft	I	NOTES:					
DRILL RIG : Diedr	rich D-50	(tra	ck)		DATUM:	NAVD88		1					
DRILLER: S&ME					BORING D	DEPTH: 40.0 ft		1					
HAMMER TYPE: /	Automati	c har	nmer		CLOSURE:			1					
DRILLING METHO						BY: Alf Futrell		LATITUD	E: 35	.41805	4 LONG	GITUDE:	-89.40550
SAMPLING METH						PROJECT COORDIN	ATE SYST	EM - NAD) 1983 Stat	ePlane To	ennessee FIP:	S 4100 Feet	,
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA · N-value)	STAND	2 (H	NETRATION Services NMC PLLL 0 60	TEST DATA	ELEVATION
0		pa:		\ /	LEAN C	CLAY (CL), some silt, trace roots,		2-2-3					╡ .
1	4.5	Cultivated Zone		SS-1		rown, moist		N = 5	•				
	1.5	Ö		SS-2		CLAY (CL), with silt, firm to stiff, and gray, moist		PV= 1.8 2-2-3 N = 5	•	0			
-				\Box			PP	PV= 1.0					_
5 - -		Loess		SS-3				3-3-4 N = 7 PV= 1.0	•				332 -
				SS-4			N	4-5-6 N = 11 PV= 2.2	•	0			- - -
10 —	8.0			SS-5	LEAN C brown,	CLAY (CL), little sand, stiff, orange , moist	N	2-4-6 N = 10 PV= 2.8	•				327 —
	12.0				LEAN C	CLAY (CL), stiff, orange brown, mc	pist						_
		Marine Soils		SS-6			N	3-5-8 N = 13 PV= 2.5	•				322 -
- - - -	17.0	2				CLAYEY SAND (SC), medium denso brown, moist							- - - -
20 -				SS-7			I .	3-8-10 N = 18	•				317 –
_													-
	22.0				DEDTU	T							
GROUNDWATER			ATE/TI	ME	DEPTH (FT)	REMAR							
ATD END OF DRILLING	□ □ 01/2 □ □ 01/2					not encountered - hole ca 1 hour reading - dry hole						&	
AFTER DRILLING	= 03/0					24 hour reading - dry hole			et				
AFTER DRILLING	_										11		

PROJECT:				R 222, St	l City - TV anton, Te			В		LOG: B-22 heet 2 of 2		
DATE DRILLED:	01/28/202	22				N: 337 ft	,	NOTES:				
DRILL RIG: Die	edrich D-50) (tra	ck)		DATUM:	NAVD88						
DRILLER: S&N	ЛЕ				BORING D	PEPTH: 40.0 ft						
HAMMER TYPE	: Automat	ic ha	mmer		CLOSURE:	Cuttings						
DRILLING MET	HOD: HSA					BY: Alf Futrell		LATITUD	E: 35.41	18054 LON	GITUDE:	-89.40550
SAMPLING ME	THOD: SS					PROJECT COORDINAT	E SYSTI	EM - NAD	1983 StatePl	ane Tennessee FI	PS 4100 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		V COUNT DATA N-value)	STANDAR	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	N TEST DATA	ELEVATION
25 —	27.6			SS-8	dense,	Y GRADED SAND (SP), medium light tan orange and brown, n grained, moist		-9-10 = 19	0 •			312 -
30	27.0 <u>НС</u>	Marine Soils		SS-9	dense	Y GRADED SAND (SP), medium to dense, light tan, fine to medium d, very moist	6-:	10-13 = 23	•			307-
35 —				SS-10				-15-24 = 39	0	•		302-
40	40.0			SS-11	Boreho	ole terminated at 40.0 feet	I .	-17-25 = 42		•		297 -
-												_
	FD		ATE '-	10.45	DEPTH							
GROUNDWAT						REMARKS		1 f ·			0	
ATD END OF DRILLING	✓ 01/28/2022 F DRILLING ✓ 01/28/2022					not encountered - hole cave 1 hour reading - dry hole ca					&	
AFTER DRILLING	<u>▼</u> 01/					24 hour reading - dry hole ca			et	41		,
AFTER DRILLING	▼	/ 2					c.ut					

Cone Penetration Test

B-23

Date:

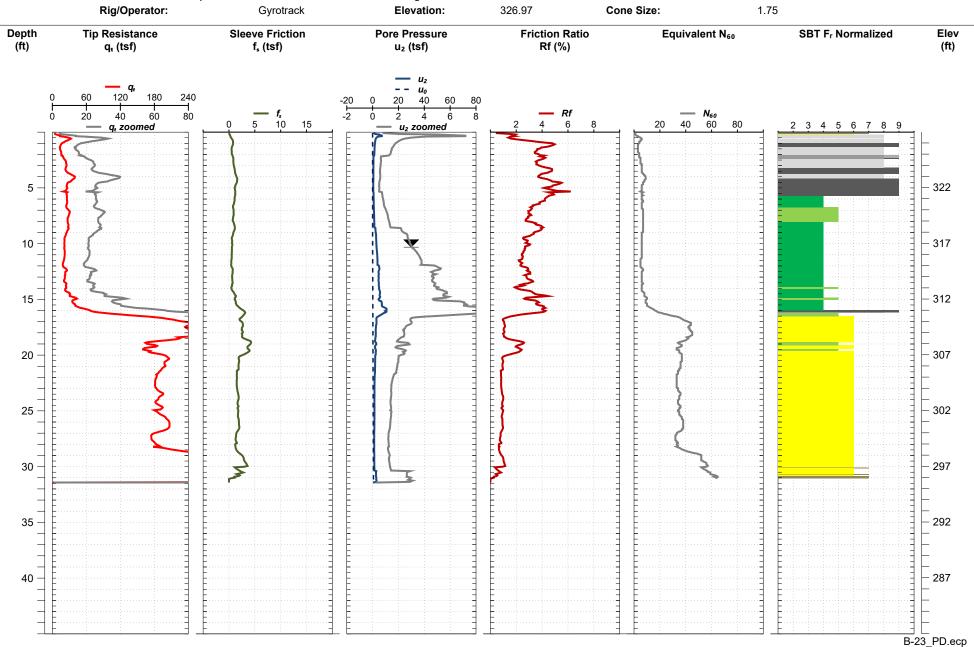
Estimated Water Depth:

26-Jan-2022 10.0 ft

Latitude: Longitude: 35.418044 -89.40488

Total Depth: Termination Criteria:

31.4 ft Maximum Reaction Force



PROJECT:				R 222, St	Il City - TV tanton, Te roject No.			В		LOG: B-2 heet 1 of		
DATE DRILLED: 02	/04/202	2				N : 320 ft	NC	OTES:		-		
DRILL RIG : Diedr	ich D-50	(trad	ck)		DATUM:	NAVD88						
DRILLER: S&ME		`			BORING D	PEPTH: 40.0 ft						
HAMMER TYPE: A	utomati	c har	mmer		CLOSURE:							
DRILLING METHOI						Y: Talecia Dyson	LAT	TITUD	E: 35.43	18033 LO	NGITUDE:	-89.40421
SAMPLING METHO		rotai	· ,			PROJECT COORDINATE	SYSTEM	- NAD	1983 StatePl	ane Tennessee I	IPS 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW CO DATA (SPT N-v	Α .	STANDAR	D PENETRATIO △ % Fines ○ NMC ├─ PLLL 40 60		ELEVATION
0	4.5	Cultivated Zone		SS-1		CLAY (CL), trace sand, few silt, trace firm, red brown, moist	2-2 N = 0	6	•			= - -
5-	7.5	SS-2 SS-3 SS-4			stiff, re	ELAY (CL), few sand, few silt, firm to d brown, mottled, moist	PPV= : 4-4 N = 6 PPV= : 2-4 N = 1 PPV= : 5-5 N = 1 PPV= : 3-3 N = : PPV= :	4 8 1.2 6 10 1.2 8 13 1.2	•			315 -
10 —				SS-6			3-3- N = 1 PPV= 1	5	•			310
20 -	20.0	Marine Soils		SS-7	brown,	Y SAND (SC), medium dense, orange very moist Y GRADED SAND (SP), medium to dense, orange brown to light et	6-8-1 N = 1	- 1	•			300 -
GROUNDWATER			ATE/TI	ME	DEPTH	REMARKS						
ATD	□ 02/0				(FT)	wet cave at 18 feet					8	
END OF DRILLING	V 02/0					1 hour reading - wet cave at	18 feet					
AFTER DRILLING	v 02/:					312 hour reading - wet cave		et				
AFTER DRILLING	▼ 02/2					360 hour reading - dry cave				J		

PROJECT:					R 222, St	anton, Te			В		OG: B-24		
DATE DDILLE	D 02/04/	(2022				oject No.			NOTES:	Sn	eet 2 of 2		
DATE DRILLE				-l.\		ELEVATION			-				
DRILL RIG:		J-50	(trac	CK)		DATUM: N							
DRILLER: S							EPTH: 40.0 ft						
HAMMER TY						CLOSURE:			LATITUDE	35.418	RO33 LONG	iTUDE: -	89.40421
DRILLING ME SAMPLING N			otai	ry		LOGGED B	Y: Talecia Dyson PROJECT COORE	DINATE SYS					05.10121
DEPTH (feet)	NOTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		OW COUNT DATA PT N-value)	STANDARD	PENETRATION △ % Fines ○ NMC H PLLL 40 60	TEST DATA	ELEVATION
30		33.0	Marine Soils		SS-9 SS-10	POORL' very de	Y GRADED SAND (SP), mediu to dense, orange brown to lig et Y GRADED SAND WITH SILT (Sense, orange, very moist	SP-SM),	6-8-10 N = 18				295
GROUNDWATER DATE/TIME ITD □ 02/05/2022 ND OF DRILLING □ 02/05/2022 FFER DRILLING □ 02/18/2022				DEPTH (FT)	wet cave at 18 feet 1 hour reading - wet ca 312 hour reading - we					&			
AFTER DRILLIN	DRILLING ▼ 02/18/2022						360 hour reading - dry				JI		



Cone Penetration Test

B-25

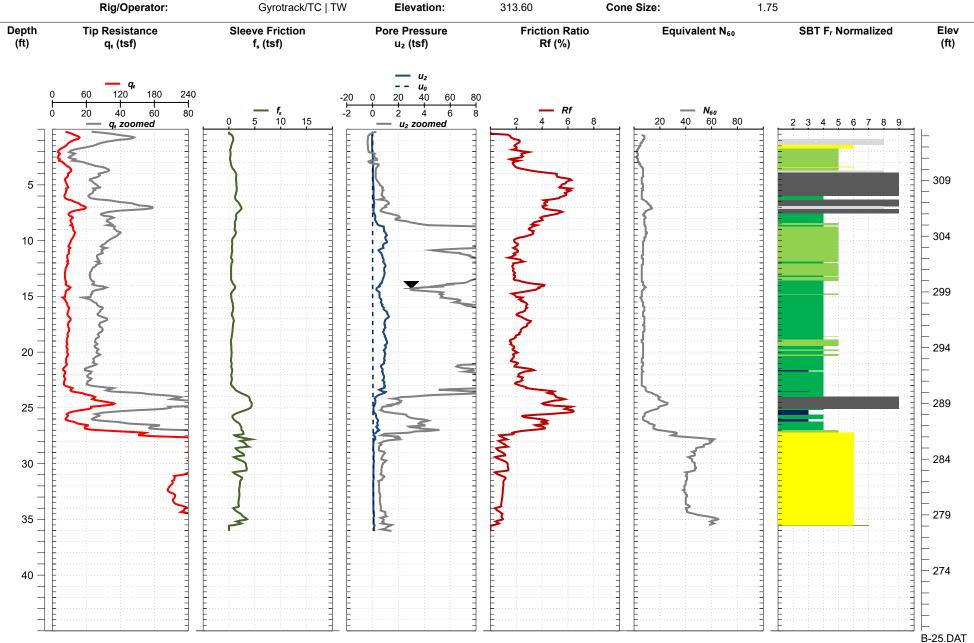
Date:

Estimated Water Depth:

27-Jan-2022 14.0 ft

Latitude: 35.418020 Longitude: -89.40347

Total Depth: Termination Criteria:



PROJECT:				R 222, S	tanton, Te		E	BORIN		G: B-26		
				S&ME P	roject No.				She	et 1 of 2		
DATE DRILLED: 02	2/07/202	2			ELEVATIO	N: 312 ft	NOTES	:				
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	IAVD88						
DRILLER: S&ME					BORING D	EPTH: 40.0 ft						
HAMMER TYPE: /	Automati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING METHO	D : Mud	rota	ry		LOGGED B	Y: Eric Conway	LATITUI	DE: 3	35.4180	10 LON 0	GITUDE: -	89.40287
SAMPLING METH	OD: SS					PROJECT COORDINATE	SYSTEM - NA	D 1983 S	tatePlane	Tennessee FIP:	S 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)			ENETRATION △ % Fines ○ NMC H PLLL 40 60	TEST DATA	ELEVATION
0	0.7		alta alta	\ /	TOPSO	L, 8 inches	2-2-2					-
]	0.7	Je	e alle s	SS-1		LAY (CL), soft, brown, moist	N = 4	•				_
+		Cultivated Zone		\forall			2-3-1					_
7		ivate		SS-2			N = 4	•] -
+	3.5	Cult					2.1.2					-
]						LAY (CL), very soft to firm, brown	3-1-2 N = 3					-
_				SS-3	gray, m	oist		•	0			307 -
5 —				\square] -
_				П			3-2-2					-
7				SS-4			N = 4	•				_
-												_
7							2-1-1] -
-				SS-5			N = 2	•	0			-
10				\triangle								302 –
-		Loess										_
		Ľ										-
_												-
_												-
				М			2-2-3 N = 5					_
4				SS-6			11 - 3	•				297 –
15 —												
_												
												_
-												_
	18.5						4-4-6					1 -
+		ent		SS-7	brown,	SILT (ML), stiff to very stiff, gray and moist	N = 10	•	НОН			
20 —		edim		Δ			PPV= 1.5					292 –
+		Marine Sediment										_
7		Mari] -
		<u> </u>			DEPTH				<u> </u>			
GROUNDWATER		D	ATE/TI	ME	(FT)	REMARKS			-			
ATD END OF DRILLING	▼								+		&	
AFTER DRILLING	•]	41		
AFTER DRILLING	•											

PROJECT:					Blue Ova SR 222, S S&ME P	tanton,	Tei			В	ORING	LOG: heet 2			
DATE DRILLE	D: 02,	/07/20	22			1		: 312 ft		NOTES:					
DRILL RIG:	Diedri	ich D-5	0 (tra	ick)		DATUM	ı: N	AVD88							
DRILLER: S	&ME					BORING	G DE	EPTH: 40.0 ft							
HAMMER TY	YPE: A	utoma	ic ha	mmer	-	CLOSUF	RE:	 Cuttings							
DRILLING MI								f: Eric Conway		LATITUD	E: 35.4	18010	LONG	ITUDE:	-89.40287
SAMPLING N	METHC	D: SS		_				PROJECT COORDINATE	SYST	EM - NAD	1983 StateP	ane Tenn	essee FIPS	4100 Feet	
DEPTH (feet)	NOT	res	Origin/Identifier	GRAPHIC	SAMPLE N			MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STANDAR 20	∆ % ○ N	Fines	80	ELEVATION
25		22	SS-8 Warine Sediment SS-9 SS-10					SILT (ML), stiff to very stiff, gray and moist	N PP	3-4-7 = 11 V= 2.2 	• 0				287 -
35		40.	Marine Soils		SS-10	den. wet	se to	GRADED SAND (SP), medium o dense, gray, medium grained,	N 18	11-14 = 25 -17-19 = 36	C				277 -
GROUNDWA	ATER		D	ATE/T	IME	DEPT		REMARKS							_
ATD END OF DRILLI AFTER DRILLIN AFTER DRILLIN	ING IG	✓ ✓ ✓		, 1		(FT)								8	



Cone Penetration Test

B-27

Date:

Estimated Water Depth:

28-Jan-2022

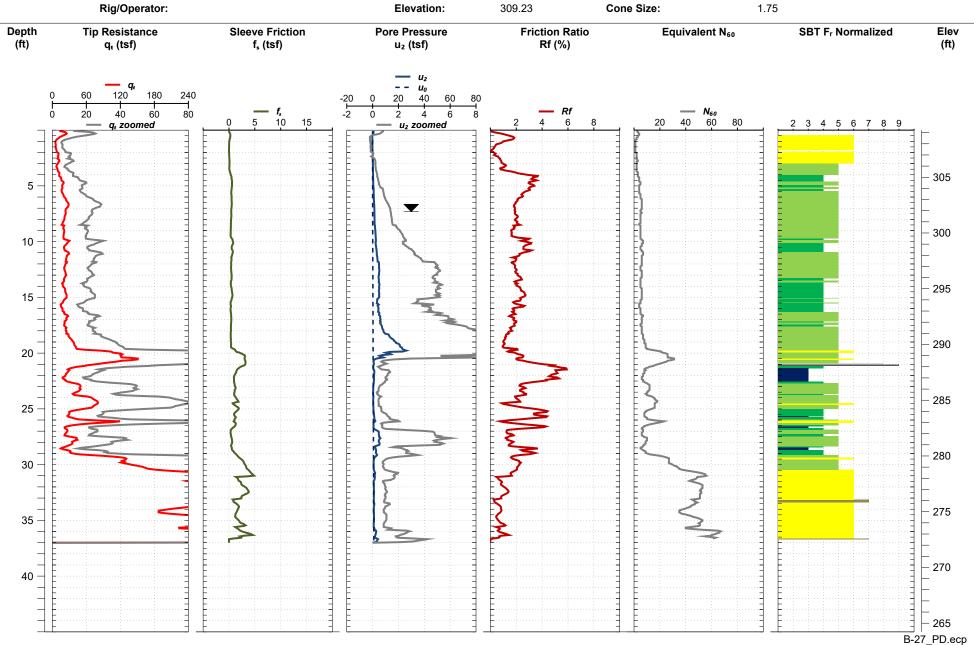
7.0 ft

Latitude: Longitude:

35.417999 -89.40220

Total Depth: Termination Criteria: 37.0 ft

309.23



PROJECT:					al City - TV tanton, Te	A Substation	В	ORING	G LOG: B-2	28	
					roject No.				Sheet 1 of	2	
DATE DRILLED: 02	/18/202	2			ELEVATIO		NOTES	:			
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88					
DRILLER: S&ME					BORING D	EPTH: 40.0 ft					
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings					
DRILLING METHO						Y: Talecia Dyson	LATITUE	DE: 35.	.417988 LO	NGITUDE:	-89.40153
SAMPLING METHO	OD: SS					PROJECT COORDINATE	SYSTEM - NAI) 1983 State	ePlane Tennessee	FIPS 4100 Feet	
NO	TES	iffier						STANDA	ARD PENETRATI	ON TEST DAT	
(feet)		/Iden	GRAPHIC	SAMPLE I	l l	MATERIAL DESCRIPTION	BLOW COUNT DATA		△ % Fines	5	ELEVATION
٥٥		Origin/Identifier	8	(NECOVE	,		(SPT N-value)	20	⊢ PLLl		ELE
0	0.3		ماند ماند	\	TORSO	IL, 3 inches	2-2-2	i	1 1	<u> </u>	
	0.5			SS-1	LEAN C	LAY (CL), some silt, some sand, soft	N = 4	•			
-				Θ	to firm	, brown, moist	2-3-4				_
7				SS-2			N = 7 PPV= 1.2	•			_
-							3-3-2				
7				SS-3			N = 5	•			
_ 5 —											304
							4.0.0				_
7				SS-4			1-3-2 N = 5	•			_
_				33-4							
-											
]				M			2-3-5 N = 8				
-				SS-5			PPV= 1.2	$ \bullet $			299 –
10 —		S									_
		Loess									
-											
7											
				М			2-3-3 N = 6				
				SS-6			PPV= 1.0				294 –
15 - -											_
_											
_											
	18.0						_				
-				М		LAY (CL), some silt, some sand, stiff stiff, brown, moist	5-8-11				_
7				SS-7			N = 19 PPV= 1.8	•			289 —
20 —											
-											
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS					
ATD	\Box				,				=	8	K
END OF DRILLING AFTER DRILLING											
AFTER DRILLING	NG 💌								J		
·		_	_	·	·		·		-		

PROJECT:					R 222, St	l City - TV tanton, Te oject No.			ВС	DRING	LOG: B heet 2			
DATE DRILL	. ED: 02,	/18/202	2				N: 308 ft	•	NOTES:					
DRILL RIG:	Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: 9	S&ME					BORING D	PEPTH: 40.0 ft							
HAMMER T		utomati	c hai	nmer		CLOSURE:	Cuttings							
DRILLING N							SY: Talecia Dyson		LATITUDE	35.41	17988	LONG	TUDE:	-89.40153
SAMPLING	METHO	D: SS					PROJECT COO	RDINATE SYS	TEM - NAD	1983 StatePl	ane Tenness	see FIPS 4	4100 Feet	
DEPTH (feet)	NO	ΓES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		OW COUNT DATA PT N-value)	STANDAR 20	D PENETR. △ % FI ○ NM H PL- 40	ines IC	80	ELEVATION
- - - - 25 -		26.0	Loess		SS-8		ELAY (CL), some silt, some s stiff, brown, moist	and, stiff	5-6-6 N = 12	•				284
30-			26.0 Warine Sois SS-10			Y GRADED SAND (SP), med to dense, brown and gray, i	moist	6-10-11 N = 21	•				279 -	
35		40.0			SS-10	Boreho	ole terminated at 40.0 feet		N = 45		•			274 -
	WATER			ATF /=-	NAT.	DEPTH			_					- - - - - - - -
GROUNDW	VAIEK	∇	D.	ATE/TI	IVIE	(FT)	RE	MARKS					Q.	
ATD END OF DRILI AFTER DRILLI AFTER DRILLI	NG	Y											8	



Cone Penetration Test

B-29

Date:

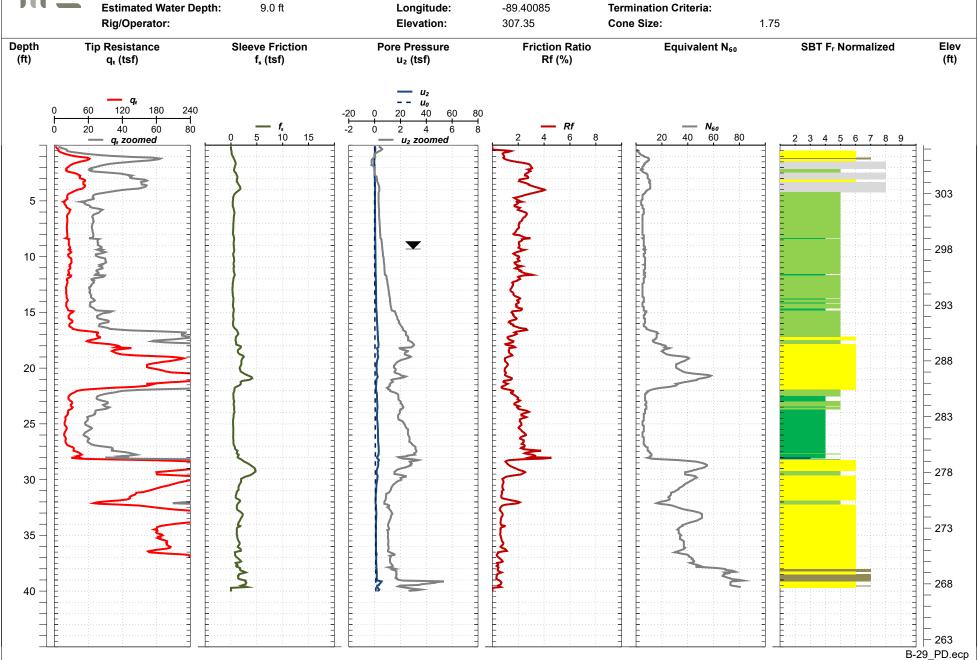
Estimated Water Depth:

28-Jan-2022

Latitude: Longitude:

35.417977 -89.40085 **Total Depth:**

40.0 ft



PROJECT:				R 222, St	I City - TV tanton, Te oject No.			В	ORI			B-30 of 2		
DATE DRILLED: 02	2/19/202	2			ELEVATIO		<u> </u>	NOTES:						
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM: N	NAVD88								
DRILLER: S&ME					BORING D	EPTH: 40.0 ft								
HAMMER TYPE: /	Automati	c hai	mmer		CLOSURE:	Cuttings								
DRILLING METHO						Y: Talecia Dyson		LATITUD	E: 3	35.417	7966	LONG	ITUDE:	-89.40018
SAMPLING METH	OD: SS		1			PROJECT COORDINAT	E SYSTE	M - NAD	1983 S	tatePlar	ne Tenne	ssee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	D	/ COUNT DATA N-value)		IDARD		Fines MC	80	ELEVATION
0	0.3		عالد عالد	М		IL, 3 inches	- ∕ I	-2-5	_					_
_				SS-1		LAY (CL), some silt, few sand, soft brown and gray, moist		= 7 /= 0.5	•					- -
7				SS-2				-7-6	•					
_								= 13 /= 1.5						-
_				SS-3			3.	-4-5	•					-
5 -							N	= 9						301 -
-		SS					PP\	/= 1.2						-
-		Loess		SS-4				-2-2 = 4	•					_
								/= 0.5						
-								2.5						-
7				SS-5				-3-5 = 8	•					
10 —							PP\	/= 0.8						296 –
-														-
7	12.0													
_	12.0				LEAN C	LAY (CL), some sand, some silt, firm	1							_
_					to stiff,	orange and gray, moist								_
_				7				-3-4 = 7						
_ 15 —				SS-6			PP\	/= 0.8	•					291 —
														_
_		Soils												
-		Marine Soils												-
		Ma												
				$ \sqrt{} $				-4-6 = 10						
-				SS-7				/= 1.0	•					286 —
20 —	21.0				/BOORIN	V CDADED CAND (CD) little cilt	\neg							
_	21.0				mediur	Y GRADED SAND (SP), little silt, n dense to very dense, gray and								
						, very moist								
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS								
ATD END OF DRILLING	Z									-			&	
AFTER DRILLING	T									-				
AFTER DRILLING	•													

PROJECT:				R 222, St	l City - TV anton, Te			ВС	DRING S	LOG: I heet 2			
DATE DRILLED: ()2/19/202	22			ELEVATION	N: 306 ft	<u>'</u>	NOTES:					
DRILL RIG: Died	drich D-50) (tra	ck)		DATUM: N	NAVD88							
DRILLER: S&M	E				BORING D	EPTH: 40.0 ft							
HAMMER TYPE:	Automat	ic ha	mmer		CLOSURE:	Cuttings							
DRILLING METH						Y: Talecia Dyson		LATITUDE	35.42	17966	LONG	ITUDE:	-89.40018
SAMPLING MET	HOD: SS		T			PROJECT COOR	DINATE SYST	EM - NAD 1	1983 StatePl	ane Tenne	ssee FIPS	4100 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I	MATERIAL DESCRIPTION		W COUNT DATA 「N-value)	STANDAR 20	A 9 PENETI	Fines MC	80	ELEVATION
25	40.0	Marine Soils		SS-9 SS-10 SS-11	mediur	Y GRADED SAND (SP), little s in dense to very dense, gray , very moist	and I PI	7-6-7 N = 13 PV= 2.8 P-9-22 N = 31 P-12-11 N = 23 P-25-28 N = 53		•	•		281
GROUNDWATE	R	D	ATE/T	IME	DEPTH (FT)	REN	MARKS						
ATD	<u> </u>											&	
END OF DRILLING AFTER DRILLING	Y												
AFTER DRILLING	T												
					-1	1							-

& Date:

Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019

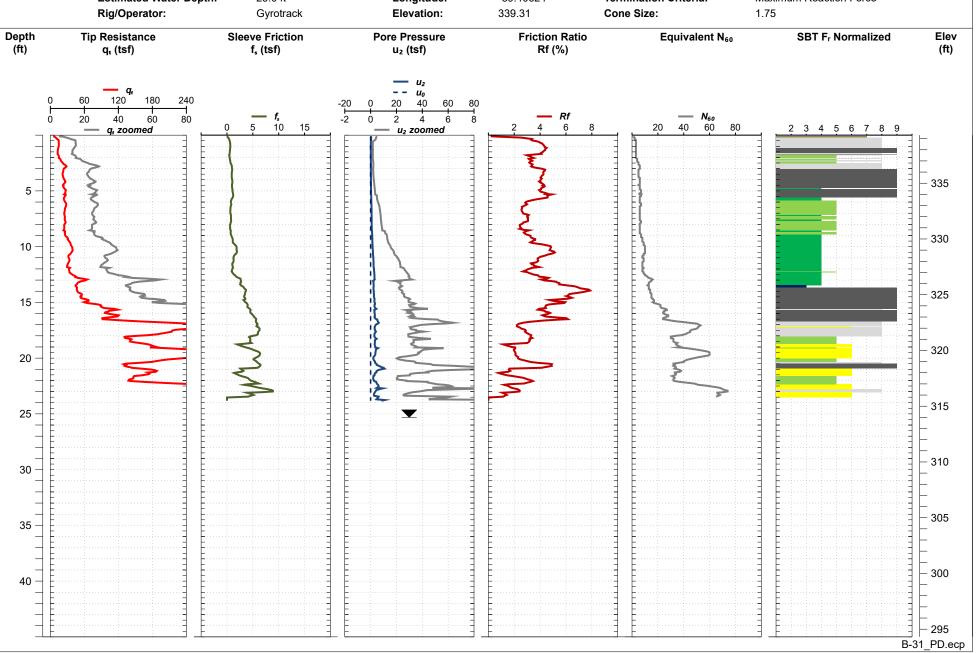
Cone Penetration Test

B-31

Estimated Water Depth:

25-Jan-2022 25.0 ft Latitude: Longitude:

35.417489 -89.40624 Total Depth: Termination Criteria:



PROJECT:							-	A Substation nnessee		В	ORING	LOG	: B-32		
				3			ect No.					Sheet	1 of 2		
DATE DRILL	ED: 01/28	3/202	2					N: 336 ft		NOTES:					
DRILL RIG:	Diedrich	D-50	(trad	ck)		DA	ATUM: N	JAVD88							
DRILLER: S						ВС	ORING D	EPTH: 40.0 ft							
HAMMER T		omati	c har	nmer		CI	OSURF:	Cuttings							
DRILLING M								Y: Talecia Dyson		LATITUD	E: 35.	417477	LONG	ITUDE: -	89.40552
SAMPLING									ORDINATE S	SYSTEM - NAC	1983 State	Plane Ten	nessee FIPS	4100 Feet	
Ι	NOTES		ntifier	≌						BLOW COUNT	STANDA	ARD PENE	ETRATION 1	TEST DATA	N O
DEPTH (feet)			Origin/Identifier	GRAPHIC	SAMPLE (RECOVE			MATERIAL DESCRIPTION	DN	DATA (SPT N-value)	20	$_{H}^{\circ}$	% Fines NMC PLLL	00	ELEVATION
0			_								20	40	60	80	- −
-			Cultivated Zone		SS-1		1	LAY (CL), some silt, trace very moist	e sand, firm,	2-3-4 N = 7	•				_
		1.5	Cult		\mathbb{H}		LEANIC	LAY (CL), some sand, fir	m to stiff	3-4-4] -
					SS-2		orange	brown and gray, moist		N = 8	•				1 -
_							moist								
					M					2-3-5 N = 8					332 —
_ 5_					SS-3										-
5 —] -
					М					4-4-6 N = 10					-
_					SS-4					11 10	•				_
_			Loess		П					3-4-5					
			רן		SS-5					N = 9	•				327 —
10 —															-
_															_
_															-
										3-5-8] -
					SS-6					N = 13	•				322 —
15 —															-
		16.0					OL AVEN	OD 4) (5) 14(17) (64) (6) () II						
_								GRAVEL WITH SAND (Gred brown, moist	iC), medium						-
] -
			oils							6-6-7					1 -
_			Marine Soils		SS-7					N = 13	•				317 —
20 —			Maı												
_															_
		22.0													-
		22.0					DEPTH								
GROUNDW		7 02 //		ATE/TI	IVIE	_	(FT)		REMARKS					Q	
ATD END OF DRILL		□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □						not encountered - 1 hour reading - no	ot encounte	ered				&	
AFTER DRILLI	NG 💌	G ▼ 02/06/2022						24 hour reading - o							
AFTER DRILLI	NG 👤														

PROJECT:				R 222, St	l City - TV anton, Te			В		LOG: B-32 heet 2 of 2		
DATE DRILLED: 01	1/28/202	2			_	N: 336 ft		NOTES:				
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME		-	-		BORING D	EPTH: 40.0 ft						
HAMMER TYPE: A	Automati	c hai	mmer		CLOSURE:	Cuttings						
DRILLING METHO						Y: Talecia Dyson		LATITUDE	35.41	.7477 LON	GITUDE:	-89.40552
SAMPLING METH			,			PROJECT COORDINA	TE SYST	EM - NAD	1983 StatePla	ane Tennessee FII	PS 4100 Feet	_
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	0	V COUNT DATA N-value)	STANDARI	△ % Fines ○ NMC ⊢ PLLL 40 60	N TEST DATA	ELEVATION
25				SS-8		Y GRADED SAND (SP), medium to very dense, gray and orange,	N	5-7-8 = 15	•			312 -
30	<u>НС</u>	H Marine Soils		SS-9				= 16	•			307 -
35				SS-10			N	14-21 = 35 - -		•		302 -
40 —	40.0			SS-11	Boreho	ole terminated at 40.0 feet		20-34 = 54 - -		•		297 -
GROUNDWATER	ROUNDWATER DATE/TIME					REMARK	(S					_
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	D					not encountered - 1 hour reading - not encou 24 hour reading - dry cave	ıntered	eet			& 	

PROJECT:				R 222, St	l City - TV/ canton, Ter oject No. 2			В	ORING	LOG: E heet 1			
DATE DRILLED: 02	2/01/202	2			ELEVATION		'	NOTES:					
DRILL RIG: Diedi	rich D-50	(tra	ck)		DATUM: N	AVD88							
DRILLER: S&ME					BORING DE	EPTH: 40.0 ft							
HAMMER TYPE: /		r hai	mmer		CLOSURE:								
DRILLING METHO		c man				: Talecia Dyson		LATITUD	E: 35.43	17467	LONGI	TUDE:	-89.40490
SAMPLING METH						PROJECT COOF	RDINATE SYS	STEM - NAD	1983 StatePl	ane Tennes	ssee FIPS 4	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I	MATERIAL DESCRIPTION		.OW COUNT DATA PT N-value)	STANDAR	D PENETF △ % F ○ NN H PL 40	Fines MC	80	ELEVATION
0	3.0	Cultivated Zone		SS-1 SS-2		AY (CL), some sand, some own, moist to very moist	silt,	3-3-4 N = 7 3-3-4 N = 7	•				- - - - - - -
5-	6.0			SS-3	brown, i	AY (CL), some silt, trace sa moist	and, stiff,	2-4-6 N = 10	• 0				324 –
10 —	0.0	Loess		SS-4 SS-5	I	AY (CL), some silt, few san wn, moist		5-6-8 N = 14 PPV= 2.0 3-4-5 N = 9	•				- - - - - - - - 319
-	13.0			M		SAND (SC), some clay, med ed brown, moist	dium	6-5-6 N = 11					- - - - - - - -
15 —		Marine Soils		SS-6					•				314
20 —		Ma		SS-7				5-9-16 N = 25	0				309
	22.0												
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	RE	MARKS						
ATD	□ 02/0					not encountered - ho	le cave at 2	24.3 ft				8	
END OF DRILLING	3 02/0	01/2	022			1 hour reading - dry o	cave at 24.3	3 feet					
AFTER DRILLING	▼ 02/0	02/2	022			24 hour reading - dry	cave at 24	.3 feet					
AFTER DRILLING	▼												

			S	R 222, St	l City - TVA Substation anton, Tennessee oject No. 218019	В	ORING L Sh	eet 2 of 2		
DATE DRILLED: ()	2/01/202	2			ELEVATION: 329 ft	NOTES:				
DRILL RIG: Died			ck)		DATUM: NAVD88					
DRILLER: S&MI					BORING DEPTH: 40.0 ft					
HAMMER TYPE:		c hai	mmer		CLOSURE: Cuttings					
DRILLING METH		Cilai	iiiiiici		LOGGED BY: Talecia Dyson	LATITUD	E: 35.417	7467 LONG	ITUDE: -	89.40490
SAMPLING METI			,		PROJECT COORDINATE	SYSTEM - NAC) 1983 StatePlar	ne Tennessee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDARD	PENETRATION △ % Fines ○ NMC	80	ELEVATION
25-	SS-9 SS-9 SS-10 SS-11			SS-9	POORLY GRADED SAND (SP), medium dense to dense, orange and tan, moist to very moist POORLY GRADED SAND (SP), dense, orange and tan, wet Borehole terminated at 40.0 feet	4-6-9 N = 15 6-8-8 N = 16 10-17-19 N = 36				299 -
										_
GROUNDWATER ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	2 02/	01/2 01/2	022	ME	not encountered - hole cave 1 hour reading - dry cave at 24 hour reading - dry cave at	24.3 feet			& &	

PROJECT:					ll City - TV tanton, Te	'A Substation		ВС	ORING	G LO	G: B-34		
					roject No.					Shee	t 1 of 2	<u>.</u>	
DATE DRILLED: 02	/22/202	2				N : 320 ft	NC	OTES:					
DRILL RIG : Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson	LAT	TITUDE	: 35	.41745	6 LON	GITUDE:	-89.40422
SAMPLING METHO						PROJECT COORDINA	TE SYSTEM	- NAD 1	.983 Stat	ePlane Te	ennessee FIP	S 4100 Feet	,
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW CO DATA (SPT N-v	Α	STAND	Δ C H	∆ % Fines ○ NMC ⊢ PLLL	N TEST DATA	ELEVATION
0	0.3	0	ماند ماند	\	TORSO	II 2 inches	2-3-	, +					╡ -
_	0.3			SS-1		IL, 3 inches LAY (CL), some silt, firm to stiff,	N = 0	- 1	•				_
_				Θ	brown,	moist	3-4-						_
				SS-2			N = 9		•				1 -
_								F					-
							2-3- N = 0	6					
_				SS-3			PPV=	1.2	•				315 —
5 — —				_] -
				\square			3-4-	- 1					1 -
_				SS-4			PPV=	- 1	•				-
-				\square			2-4-						-
				SS-5			N = !	9	•				310 —
10								-					
_		Loess						-					
		3											
_													_
							2-3-	3					1 -
				SS-6			N = (6	•				- 205
15 —				Δ				-					305 —
								L					
_													_
													- -
_							4.2	_					-
]				SS-7			4-3- N = 8		•				
_ 20 <i>-</i> -				33-7									300 —
_				_									-
													-
	22.0												
GROUNDWATER		D.	ATE/TI	ME	DEPTH (FT)	REMARI	(S						l
ATD	<u> </u>											&	
END OF DRILLING AFTER DRILLING	T												,
AFTER DRILLING	•												1

PROJECT:				R 222, St	l City - TV anton, Te			В		L OG: B-34 neet 2 of 2		
DATE DRILLED:	02/22/20)22				N : 320 ft		NOTES:				
DRILL RIG: Die	edrich D-5	50 (tra	ck)		DATUM:	NAVD88						
DRILLER: S&N	ЛE				BORING D	EPTH: 40.0 ft						
HAMMER TYPE	: Automa	itic ha	mmer		CLOSURE:	Cuttings						
DRILLING MET			ry		LOGGED B	Y: Talecia Dyson		LATITUDE	35.41	7456 LON	GITUDE:	-89.40422
SAMPLING ME	THOD: SS	5				PROJECT COORDINA	ATE SYST	EM - NAD	1983 StatePla	ine Tennessee FIF	S 4100 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		V COUNT DATA N-value)	STANDARI 20	D PENETRATION △ % Fines ○ NMC	N TEST DATA	ELEVATION
25	Marine Soils S2-					Y GRADED SAND (SP), medium to dense, orange, moist to very	N 7-	5-5-7 = 12	•			295 -
35 —		Mar		SS-10			I .	-11-14 = 25	•			285 —
40-	40	0.0		SS-11	Boreho	ole terminated at 40.0 feet	l l	-20-28 I = 48		•		280 -
GROUNDWAT	FR		ATE/T	IMF	DEPTH	REMARI	KS					
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	\Box		ail/II		(FT)	REWARI					&	

DDOLEGE			Ford I	Rlue Ov	al City	- T\/	A Substation	т					
PROJECT:					tanto	n, Te	nnessee	E	ORII)G: B-3 eet 1 of		
DATE DRILLED: 02	2/06/202	2			ELEVA	ATION	V: 312 ft	NOTES	:				
DRILL RIG: Diedi	rich D-50	(tra	ck)		DATU	M: N	IAVD88						
DRILLER: S&ME					BORII	NG D	EPTH: 45.0 ft						
HAMMER TYPE: /		c har	mmer		CLOSI	URF:	Cuttings						
DRILLING METHO							Y: Talecia Dyson	LATITUE	E:	35.4174	144 LO I	NGITUDE	: -89.40349
SAMPLING METH							PROJECT COORDINATE	SYSTEM - NAI) 1983 S	tatePlane	Tennessee F	IPS 4100 Fe	et
DEPTH (feet)	DTES	Origin/Identifier	GRAPHIC	SAMPLE I (RECOVE			MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		IDARD F	△ % Fines ○ NMC ⊢ PLLL 40 60		ELEVATION
0	0.3	ō	عائد عائد	I \/			L, 3 inches	2-3-3					
_		Cultivated Zone		SS-1		EAN C noist	LAY (CL), firm, brown and gray,	N = 6 PPV= 0.5	•	+			_
	2.0	Cu		SS-2			LAY (CL), with silt, some sand, firm, and gray, mottled, very moist to	2-4-3 N = 7	•				
				Ę.	w	ret		PPV= 1.0					_
_								2-3-3	•				308 -
5—				Д				N = 6		-			
-								PPV= 0.2					-
_				SS-4				2-2-3					_
-				∭ ⁵⁵⁻⁴				N = 5 PPV= 0.2	•				_
				Γ									
-		SS		П				3-2-3					_
		Loess		SS-5				N = 5 PPV= 0.2	•				303 —
10 —													
-													=
-													
				Μ				2-3-3 N = 6					298 –
				SS-6					•				_
15 —													
_	16.0				SI	ILT (M	L), some clay, firm to stiff, gray,			+			_
							d, very moist			1			
-													-
		Soils						3-3-4					
_		Marine Soils		SS-7				N = 7	•	+			293 —
20 —		Ma		\triangle				PPV= 1.5					
													-
		<u> </u>				PTH				1			
GROUNDWATER			ATE/TI	IME		FT)	REMARKS						0
ATD	□ 02/						not encountered	- or od		4			&
END OF DRILLING AFTER DRILLING	▼ 02/	02/2	UZZ				1 hour reading - not encount	.erea		+			
AFTER DRILLING	•											II E	
i													

PROJECT:						_	/A Substation		В	ORING	LOG: B-	35	
				S		anton, Te oject No.				S	heet 2 oj	f 3	
DATE DRILLE): 02/0	6/202	2				N: 312 ft	'	NOTES:				
DRILL RIG:	Diedric	h D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S8	kМЕ					BORING D	DEPTH: 45.0 ft						
HAMMER TY	PE: Aut	tomati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING ME			rota	ry		LOGGED E	BY: Talecia Dyson		LATITUD			ONGITUDE:	-89.40349
SAMPLING M	IETHOD	: SS			I		PROJECT CO	OORDINATE SY	YSTEM - NAD	1983 StatePl	ane Tennessee	FIPS 4100 Feet	1
DEPTH (feet)	NOTES	5	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	ON	BLOW COUNT DATA (SPT N-value)	STANDAR 20	∆ % Fine ○ NMC ├ PLL		ELEVATION
						SILT (N	IL), some clay, firm to st	iff. grav.				<u> </u>	╡ -
_							d, very moist	, 8 1,					
_ _ _ 25 —					SS-8				4-5-6 N = 11 PPV= 3.0	•			288 -
- - -		26.0					AND (SM), medium der ay, very moist	nse, orange					- - -
-					M				5-5-13 N = 18				283 –
30 —		30.0			SS-9	dense,	Y GRADED SAND (SP), lo orange gray and red, ve		PPV= 2.5				- - - -
- - -			Marine Soils			wet							_ _ _ _
35 —			Mari		SS-10				9-11-11 N = 22	•			278 – - -
- - -													- - - -
- - -					SS-11				5-3-3 N = 6	•			273 –
40 —					<u>/ \</u>								- - -
- - -									42 22 25				- - -
					\	T ====	T		13-23-25 N = 48				
GROUNDWA				ATE/T	IME	DEPTH (FT)		REMARKS					
ATD END OF DRILLIN		□ 02/0 □ 2/0 □ 2/0 □ 2/0 □ 3/0					not encountered	ot oncounts	rod			8	
END OF DRILLING AFTER DRILLING		▼ 02/0	JZ/Z	.UZZ			1 hour reading - n	ot encounter	eu			11 -	
AFTER DRILLING		▼											

PROJECT:				R 222, St	-	VA Substation ennessee 218019			ВО	RING L	OG: B			
DATE DRILLED: (02/06/202	22				N: 312 ft	<u> </u>		NOTES:					
DRILL RIG: Died	drich D-5	0 (tra	ck)		DATUM:	NAVD88								
DRILLER: S&M	 E		-		BORING I	DEPTH: 45.0 ft								
HAMMER TYPE:		ic hai	nmer			: Cuttings								
DRILLING METH						BY: Talecia Dysor	1		LATITUDE:	35.417	7444	LONGIT	UDE:	-89.40349
SAMPLING MET				1		PROJECT	COORDINATE S	YSTE	M - NAD 19	83 StatePlar	ne Tennes:	see FIPS 4:	100 Feet	Ţ
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIF	PTION	D	COUNT ATA N-value)	TANDARD	PENETR △ % F ○ NM ⊢ PL- 40	ines IC	ST DATA	ELEVATION
		Marine		X SS-12		LY GRADED SAND (SP)					•			268 –
45 —	45.0	0 ≅ ×		Ц	dense wet	, orange gray and red	, very moist to							
						ole terminated at 45.	0 feet							
_														-
7														_
_														
-														263 -
50 —														
_														
_														-
_														
_														258 -
- 55														
-														_
_														
														_
_														
_														253 -
60 —														-
-														-
=														
_														_
														248 -
-														-
65 — —														
GROUNDWATE	R	D.	ATE/T	IME	DEPTH		REMARKS							
ATD	□ □ 02,				(FT)	not encountered							&	
END OF DRILLING	▼ 02,	/02/2				1 hour reading -		red						
AFTER DRILLING AFTER DRILLING	Y									\blacksquare				
					1							. 4 4		

PROJEC	T:				R 222, S	itar	City - TVA Substation nton, Tennessee ect No. 218019		В	OR			B-36 1 of 2		
DATE DRI	LLED: 02,	/08/202	2			T	EVATION: 310 ft		NOTES:						
DRILL RIG	: Diedr	ich D-50	(tra	ck)		D/	ATUM: NAVD88								
DRILLER:	S&ME			-		ВС	ORING DEPTH: 36.5 ft								
HAMMER	R TYPE: A	utomati	c hai	mmer		CL	OSURE: Cuttings								
DRILLING						_	OGGED BY: Eric Conway		LATITUD	E:	35.41	7433	LONG	ITUDE:	-89.40288
SAMPLIN	G METHO	DD: SS					PROJECT COORDINATE	SYSTE	M - NAD	1983	StatePla	ne Tenn	essee FIPS	4100 Feet	1
DEPTH (feet)	NO ⁻	ΓES	Origin/Identifier	GRAPHIC	SAMPLE (RECOVE		MATERIAL DESCRIPTION	D	/ COUNT DATA N-value)	STA	20	△ % ○ N	Fines	80	ELEVATION
0		2.0	Cultivated		SS-1		LEAN CLAY (CL), with silt, firm, brown, moist LEAN CLAY (CL), with clay, trace sand, firm		-4-2 I = 6	•	0				- - - -
5 —	pressuren	neter test	SS				to stiff, gray and brown, moist to very moist								
- - - - - -			Loess		SS-2 SS-3			2 2	-2-3 I = 5 -4-5 I = 9	•	C	1			- - - - - - - - -
10 —		10.0					SILT (ML), some sand, firm, orange brown, very moist								300
15 — - - - - - -	pressurem	eter test	Marine Soils		SS-4			1	-3-5 I = 8	•	0				295 —
20 —															
GROUNE	OWATER		D	ATE/TI	IME		DEPTH REMARKS								_
ATD		□ 02/					not encountered				\dashv			&	
END OF DR		▼ 02/					not encountered								
AFTER DRII		Y				\perp					4			IE	
AL LEN DKII	LLIIVU	-					1							-	

PROJEC	Т:					-	/A Substation ennessee		В	ORIN	G LO	G: B-36	5	
						oject No.					Shee	t 2 of 2	2	
DATE DRI	LLED: 02,	/08/20)22			ELEVATIO	N: 310 ft		NOTES:					
DRILL RIG	: Diedr	ich D-5	50 (tra	ck)		DATUM:	NAVD88							
DRILLER:	S&ME					BORING D	DEPTH: 36.5 ft							
HAMMER	TYPE: A	utoma	itic hai	mmer		CLOSURE:	Cuttings							
DRILLING						LOGGED E	BY: Eric Conway		LATITUD		5.41743		IGITUDE:	-89.40288
SAMPLIN	G METHO	D: SS	<u> </u>		1		PROJECT COORDINA	E SYST	EM - NAD	1983 Sta	tePlane Te	ennessee Fl	PS 4100 Feet	
DEPTH (feet)	NOT	ΓES	Origin/Identifier	GRAPHIC	SAMPLE N		MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STAND 2	<u> </u>	√ % Fines ○ NMC ⊢ PLLL	N TEST DATA	ELEVATION
							IL), some sand, firm, orange browr	,						_
-						very m	oist							
_														
_ 25 —	pressuren	neter 25	.0											
-	test					SILTY S very m	AND (SM), medium dense, gray,							-
_						1017111	0131	7-	12-14					
_					SS-5			N	I = 26	0	•			
-					\square									
			Soils											
-			Marine Soils											200
30 —			Σ											280 -
-														
_														
-														-
7														_
35 —	pressuren	neter te	st											275 –
_		36	5.5											
_		30				Boreho	ole terminated at 36.5 feet	7						
_														_
-														-
_														
40 —														270 –
_														
_														
-														-
-														
GROUND	WATER		D	ATE/T	IME	DEPTH (FT)	REMARK	<u> </u>						
ATD			2/08/2			, ,	not encountered						8	
END OF DR AFTER DRIL		Y 02	2/08/2	022			not encountered							
AFTER DRIL		T												
												_		_

PROJECT:				R 222, St	Il City - TV tanton, Te roject No.		E		LOG: B-3			
DATE DRILLED: 02	/16/202	2			ELEVATIO	N: 309 ft	NOTES	i:				
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM: N	IAVD88						
DRILLER: S&ME					BORING D	EPTH: 40.0 ft						
HAMMER TYPE: A	utomati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING METHO		rota	ry		LOGGED B	Y: Talecia Dyson	LATITUI	DE: 35.4	17422 LC	NGITUI	DE: -89.	40221
SAMPLING METH	OD: SS					PROJECT COORDINATE	SYSTEM - NA	D 1983 StateF	Plane Tennessee	FIPS 4100	Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		A % Fine: ○ NMC □ PLL1 40 6	s		ELEVATION
0	0.3		alte alte	\ /		L, 4 inches	2-2-2					-
4				SS-1		LAY (CL), some silt, few sand, soft brown, moist	N = 4	•				-
-				SS-2		orown, moist	2-2-4 N = 6	•				- - -
							2-2-3					-
_ _ 5_				SS-3			N = 5	•				304 –
-												_
7				\bigvee			3-3-3 N = 6					-
=				SS-4								-
-		S		П			3-2-4					_
7		Loess		SS-5			N = 6 PPV= 0.8	•				- 299 –
10 —												-
-												- -
												-
+				\square			3-3-4					_
7				SS-6			N = 7 PPV= 1.2	•				- 294 –
15 —				<u>/_</u> V								=
_												-
4												-
	18.0											-
-				\square		LAY WITH SAND (CL), very stiff, and gray, moist	20-17-9					_
_		Soils		SS-7	0.011.	and 8.011 moist	N = 26 PPV= 2.8					- 289 –
20 —		Marine Soils										-
4		Ma										-
	22.0											-
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS						
ATD	\Box				(-1)						&	
END OF DRILLING	T											
AFTER DRILLING AFTER DRILLING	T											

PROJECT:				R 222, St	l City - TV anton, Te			В	ORING	LOG: B-			
DATE DRILLED: 0	2/16/202	22				N: 309 ft	 	NOTES:					
DRILL RIG : Died	drich D-50) (tra	ck)		DATUM: N	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE:	Automat	ic ha	mmer		CLOSURE:	Cuttings							
DRILLING METHO						SY: Talecia Dyson		LATITUD	E: 35.42	17422 I	ONGIT	UDE: -	89.40221
SAMPLING METH	HOD: SS					PROJECT COORDINAT	TE SYST	EM - NAD	1983 StatePl	ane Tennesse	e FIPS 41	00 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STANDAR	D PENETRA △ % Fir ○ NMC ⊢ PL 40	ies ; ·LL	ST DATA	ELEVATION
25	30 — SS-1				dense,	Y GRADED SAND (SP), loose to very tan and orange, moist	10 N	3-3-4 N = 7 D-10-7 = 17 5-6-7 = 13	•				274 -
													- - -
GROUNDWATER		D	ATE/T	IME	DEPTH (FT)	REMARK	s						
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	✓ ✓ ✓ ✓				V-1							& =	

PROJEC	T:				Blue Ova R 222, S S&ME P	tanton	, Ten				В	ORI			B-38 1 of 2		
DATE DRI	LLED: 02,	/07/202	2			T		308 ft		ı	NOTES:						
DRILL RIG	: Diedr	ich D-50	(tra	ck)		DATUN	/ 1: NA	AVD88									
DRILLER:	S&ME					BORIN	G DEI	PTH: 38.0 ft									
HAMMER	R TYPE: A	utomati	c hai	mmer		CLOSU	RE: C	Cuttings									
DRILLING						1		Eric Conway	/		LATITUD	E:	35.42	17411	LONG	ITUDE:	-89.40154
SAMPLIN	G METHO	DD: SS			1			PROJEC	T COORDINATE	SYSTE	M - NAD	1983	StatePl	ane Tenn	essee FIPS	4100 Feet	
DEPTH (feet)	NO [*]	ΓES	Origin/Identifier	GRAPHIC	SAMPLE I			MATERIAL DESCR	RIPTION	D.	COUNT ATA N-value)	STA	NDAR	∆ % ○ N	Fines	TEST DATA	ELEVATION
0 - -		2.0	Cultivated Zone		SS-1	LE <i>A</i>		Y (CL), with silt, f	firm, brown, very		-2-4 = 6	•					- - - -
- - - - 5 -	pressuren		Ş		ı			Y (CL), with silt, 1 ad gray, very mois									303-
- - - - -		10.0	Loess		SS-2 SS-3					N 2-	-4-5 = 9 -4-6 = 10	•					
10 —								H SAND (ML), firn very moist	n to stiff, brown								293
15 — — — — — — — — — — — — — — — — — — —	pressuren	neter test	Marine Soils		SS-4						8-10 = 18		•				
20 —																	
GROUNE	OWATER		D	ATE/TI	IME	DEP [*]			REMARKS								
ATD END OF DF AFTER DRII AFTER DRII	LLING	✓ 02/0 ✓ 02/0 ✓				,	n	ot encounter ot encounter								8	
		1														_	_

PROJEC	T:				R 222, St	-	VA Substation ennessee 218019		В	ORING	LOG: heet 2			
DATE DRI	LLED: 02,	/07/202	22			ELEVATIO	N: 308 ft		NOTES:					
DRILL RIG	i: Diedr	ich D-50) (tra	ck)		DATUM:	NAVD88							
DRILLER:	S&ME					BORING [DEPTH: 38.0 ft							
HAMMER	R TYPE: A	utomat	ic ha	mmer		CLOSURE	: Cuttings							
DRILLING						LOGGED I	BY: Eric Conway		LATITUDI		17411	LONGIT		-89.40154
SAMPLIN	G METHO	DD: SS	1				PROJECT COOR	DINATE SYST	EM - NAD	1983 StateP	lane Tenne	essee FIPS 410	00 Feet	1
DEPTH (feet)	NO	ΓES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA · N-value)	STANDAR 20	∆ % ○ N	LLL	BO	ELEVATION
25 —	pressuren	neter test					ITH SAND (ML), firm to stiff, ay, very moist	brown						283
- - - - - - 30 –			Marine Soils		SS-5				3-2-4 N = 6	•				278 -
35 —	pressuren	neter test							-					273 -
		38.0)		SS-6	Boreh	ole terminated at 38.0 feet		5-5-5 N = 10	•				268
-									_					- - - - - - - -
GROUNE	WATER		D	ATE/TI	ME	DEPTH	RFA	/IARKS						1
ATD		□ 02/				(FT)	not encountered						8	
END OF DF			'08/2				not encountered							
AFTER DRI		Y				+								
AFTER DRI	LLING	▼												



Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019

Cone Penetration Test

B-39

Date:

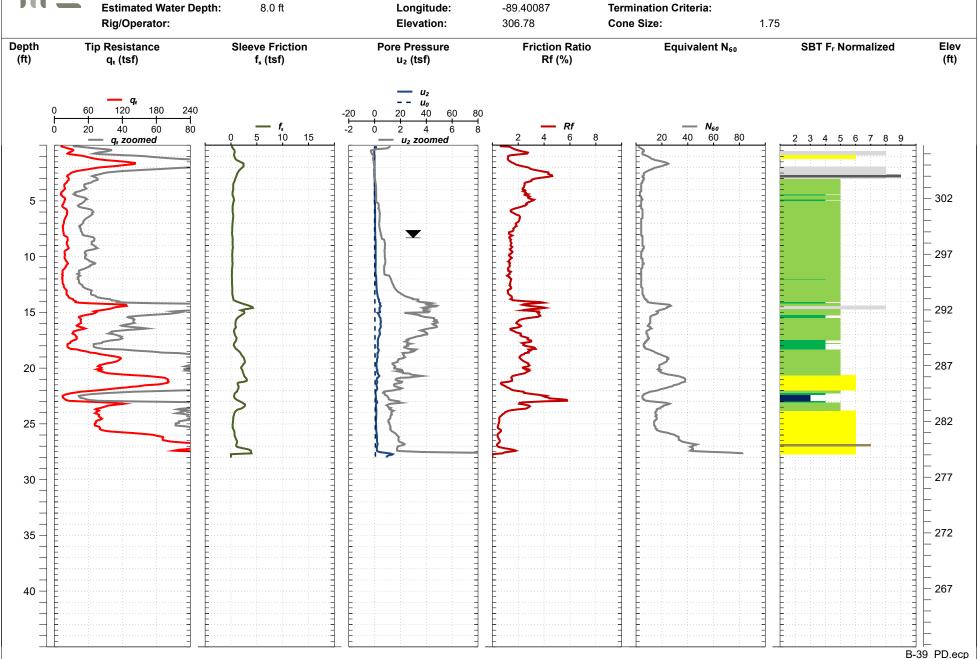
28-Jan-2022

Latitude:

35.417400 -89.40087

Total Depth:

28.0 ft



PROJECT:						R 222, S	al City - T\ tanton, Te roject No.			В	ORING	G LOG : Sheet			
DATE DRILL	.ED: 03/	01/	2022	2				N : 307 ft	I	NOTES:					
DRILL RIG:	Diedri	ch [)-50	(tra	ck)		DATUM:	NAVD88		1					
DRILLER: 5	S&ME						BORING D	DEPTH: 40.0 ft		1					
HAMMER 1		utor	natio	r hai	mmer			Cuttings		1					
DRILLING N								BY: Talecia Dyson		LATITUD	E: 35.	.417389	LONGI	TUDE:	-89.40020
SAMPLING					. ,		12000	PROJECT COORDIN	NATE SYST	EM - NAD) 1983 State	ePlane Teni	nessee FIPS 4	1100 Feet	
DEPTH (feet)	NOT	ES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I	MATERIAL DESCRIPTION		W COUNT DATA · N-value)	STANDA 20	Δ °, Ο Η	Fines NMC PLLL 60	80	ELEVATION
0			0.3		عادد عادد	\ /		IL, 3 inches		2-1-2					1 -
_						SS-1		CLAY (CL), few silt, few sand, very firm, brown, very moist	у	N = 3					
						\forall	3010 10	mm, brown, very moist		2-1-1 N = 2					_
-						SS-2			'	N - Z					_
										0-0-0					-
_						SS-3				N = 0					-
- 5						∑ 33-3									302 —
_				۱,0											_
				М				0-0-0 N = 0					-		
_				SS-4				N - 0							
-															_
										2-3-4] -
-						SS-5			I .	N = 7	•				-
10 —						\triangle			PF	PV= 0.2					297 –
-															_
															1 -
-			12.0				I	Y GRADED SAND (SP), some clay t, loose, gray, very moist	у,						-
_										3-4-3					_
_						SS-6				N = 7 PV= 1.2	•				
15 —						Δ			PF	v= 1.2					292 -
-															_
			47.0	Marine Soils											_
-			17.0	rine			POORL	Y GRADED SAND (SP), medium							-
				Ma				to very dense, gray, very moist							
-						П			I	4-5-8					_
						SS-7			I	N = 13 PV= 3.2	•				287 –
20 —						<u>/ </u>									-
	-														_
GROUNDY	GROUNDWATER DATE/TIME				ATF/TI	ME	DEPTH	REMAI	RKS						
ATD					,		(FT)	, , , , , , , , , , , , , , , , , , ,						&	
	TD ND OF DRILLING ▼														
AFTER DRILLI		Y													
AFTER DRILLI	ING	▼													

PROJECT:				R 222, St	l City - TV anton, Te oject No.			ВС	DRING	LOG: B heet 2		
DATE DRILLED:	03/01/202	2				N: 307 ft	<u>'</u>	NOTES:				
DRILL RIG: Die	drich D-50	(tra	ck)		DATUM: N	NAVD88						
DRILLER: S&N	1E				BORING D	EPTH: 40.0 ft						
HAMMER TYPE	: Automati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING METH		rota	ry		LOGGED B	Y: Talecia Dyson		LATITUDE			LONGITUDE	
SAMPLING MET	HOD: SS					PROJECT C	OORDINATE SYS	TEM - NAD :	1983 StatePla	ane Tenness	see FIPS 4100 F	eet
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO		MATERIAL DESCRIPTI	ON	DW COUNT DATA PT N-value)	STANDAR 20	D PENETR.	С	ELEVATION
25 —	25 -			SS-8		Y GRADED SAND (SP), to very dense, gray, ver	ry moist	4-6-6 N = 12	•			282 -
30		Marine Soils		SS-9				0-12-15 N = 27	•)		277-
35 —		2		SS-10				4-17-25 N = 42		•		272 -
40	40.0			SS-11	Boreho	le terminated at 40.0	N	-31-50/6" = 50/6" -				267 -
- - - - - -												- - - -
		D	ATE/TI	ME	DEPTH (FT)		REMARKS					0
GROUNDWATER DAT TD \(\times \) ND OF DRILLING \(\times \) FTER DRILLING \(\times \) FTER DRILLING \(\times \)												

Date:

Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019

Cone Penetration Test

Total Depth:

B-41

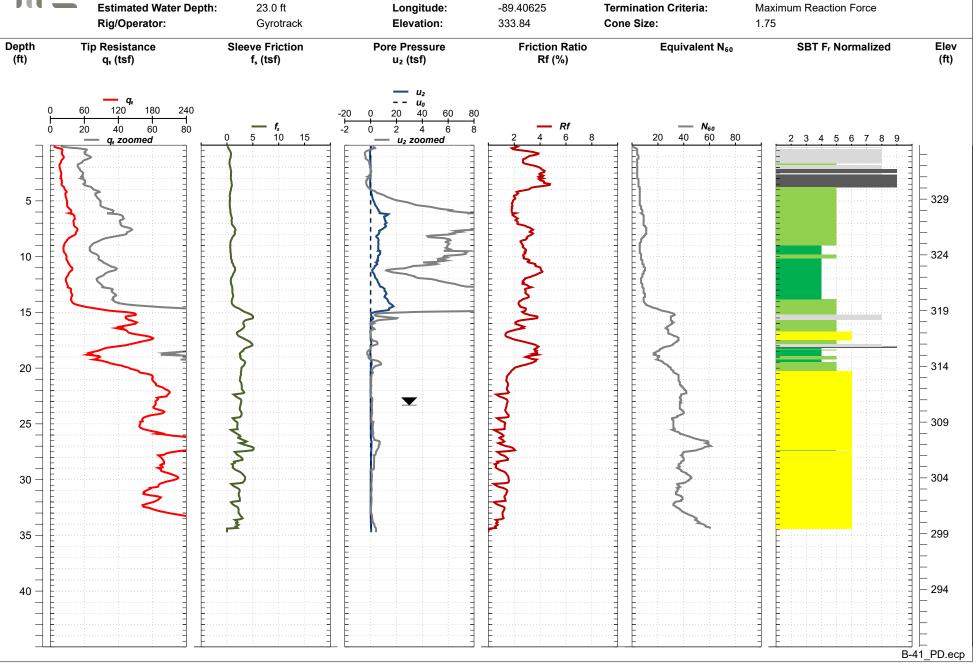
25-Jan-2022

23.0 ft

Latitude: Longitude: 35.416967 -89.40625

Termination Criteria:

34.7 ft Maximum Reaction Force



PROJECT:				R 222, St	I City - TV tanton, Te oject No.			ВС		LOG: I Sheet 1			
DATE DRILLED: 0	1/31/202	2				N: 338 ft	N	OTES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson	LA	TITUDE	35.4	16955	LONG	ITUDE:	-89.40553
SAMPLING METH	IOD: SS			ı		PROJECT COORDINAT	E SYSTEN	/ - NAD :	1983 StateF	lane Tenne	ssee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	1	MATERIAL DESCRIPTION	BLOW C DAT (SPT N-	ГА	STANDAI	A % I O NI H PL	Fines MC	80	ELEVATION
0	0.2	Loess	.312312.	SS-1 SS-2	LEAN C	IL, 3 inches LAY (CL), with silt, firm to stiff, slightly moist	3-3 N = PPV= 3-5	6 1.8 -9	•				- - - - - -
- - - - 5-	3.0			SS-3		AND (SM), medium dense, brown ay, mottled, moist to very moist, taining	N = 6-9- N =	10	•				
_ _ _ _				SS-4			12-12 N = PPV=	25	•)			_
10 —				SS-5			4-8 N =		•				328
- - - - - - - 15 - -		Marine Soils		SS-6			5-11 N =		•)			323 -
20 -	17.0			SS-7		Y GRADED SAND (SP), medium orange, slightly moist	7-11 N =		•				318 -
GROUNDWATER	UNDWATER DATE/TIME				DEPTH	REMARKS		·					1
ATD	DINDWATER DATE/TIME □ 01/31/2022				(FT)	not encountered - hole cave		feet				&	
END OF DRILLING	T 01/3					1 hour reading - dry cave at	22.2 fee	et_					
AFTER DRILLING	▼ 02/0					24 hour reading - dry cave a							
AFTER DRILLING	T												

PROJECT:					R 222, S		/A Substation ennessee 218019		ВОІ		LOG: B		
DATE DRILLED	: 01/31,	/2022	2				N: 338 ft		NOTES:				
DRILL RIG: D	iedrich	D-50	(tra	ck)		DATUM:	NAVD88		-				
DRILLER: S&	ME					BORING D	DEPTH: 40.0 ft		-				
HAMMER TYP	E: Auto	matio	c har	mmer		CLOSURE	: Cuttings		_				
DRILLING MET							BY: Talecia Dyson		LATITUDE:	35.41	.6955	LONGITUD	E: -89.40553
SAMPLING MI	THOD:	SS		,			PROJECT COORD	INATE SYST	EM - NAD 19	83 StatePla	ane Tenness	see FIPS 4100 F	eet
DEPTH (feet)	NOTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	RY)	MATERIAL DESCRIPTION	(SPT	N COUNT DATA ' N-value)	20	D PENETRA	С	ELEVATION
25 —					SS-8		Y GRADED SAND (SP), mediur orange, slightly moist	5	-6-10 I = 16	•			313 -
30 —	Marine Soils			SS-9				-7-11 I = 18	•			308	
35 —					SS-10				10-11 I = 21	•			303 -
40 —		40.0			SS-11	Boreho	ole terminated at 40.0 feet		33-50/3" = 50/3"				298 —
- - - - - - - -													- - - - - -
GROUNDWAT	OUNDWATER DATE/TIME					DEPTH	REM	ARKS					
ATD	☑ 01/31/2022					(FT)	not encountered - hole		2.2 feet				&
END OF DRILLIN	G 🗷	01/3	31/2	022			1 hour reading - dry car	ve at 22.2	feet				
AFTER DRILLING		02/0)1/2	022			24 hour reading - dry c						
AFTER DRILLING												,,,,	

PROJECT:				R 222, St	I City - TV tanton, Te oject No.			В		LOG: B-4 heet 1 of		
DATE DRILLED: 02	/05/202	2				N : 328 ft		NOTES:				
DRILL RIG: Diedr	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME			-		BORING D	EPTH: 40.0 ft						
HAMMER TYPE: /	utomati	c hai	mmer		CLOSURE:	Cuttings						
DRILLING METHO						Y: Talecia Dyson		LATITUD	E: 35.43	16945 LO	NGITUDE:	-89.40491
SAMPLING METH			,			PROJECT COORDINA	TE SYST	EM - NAD	1983 StatePl	ane Tennessee F	IPS 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	1	MATERIAL DESCRIPTION	0	V COUNT DATA N-value)	STANDAR	∆ % Fines ○ NMC ⊢ PLLL 40 60		ELEVATION
0	2.0	Cultivated Zone		SS-1	LEAN C	LAY (CL), firm, brown, moist	N	2-3-4 N = 7 3-3-4	•			=
	2.0	Loess		SS-2 SS-3	LEAN C brown,	LAY (CL), trace sand, firm to stiff, moist	3	N = 7 3-4-5 N = 9	•			- - - -
5 — - - - - -	5.5			SS-4	LEAN C	LAY WITH SAND (CL), very stiff, red, moist	/-	-9-11 = 20	•			323
10 —	<u>HC</u>			SS-5				-7-10 = 17	•			- - - - - - 318 -
		Soils						10.13				- - - - - -
15 —		Marine Soils		SS-6			I .	10-12 = 22	•			313 -
20 -	17.0			SS-7		edium dense to very dense, tan ange, moist to very moist	I .	-9-12 = 21	•			308 -
CROUNDWATER	NDWATER DATE/TIME					DEBAS DE	76					
ATD	NDWATERDATE/TIME \searrow 02/01/2022					not encountered - hole cay		7 ft			8	
END OF DRILLING AFTER DRILLING	▼ 02/ ▼ 02/	01/2	022			not encountered - hole cave 1 hour reading - dry cave a 24 hour reading - dry cave	it 7.7 fe	et				
AFTER DRILLING	▼											

PROJECT:				R 222, St	l City - TV anton, Te oject No. 2			ВС	DRING S	LOG: B heet 2			
DATE DRILLED: 02	/05/202	2			ELEVATION		'	NOTES:					
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM: N	IAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson		LATITUDE	35.42	16945	LONGIT	UDE:	-89.40491
SAMPLING METHO	DD: SS					PROJECT COO	RDINATE SYS	TEM - NAD 1	1983 StatePl	ane Tenness	see FIPS 41	00 Feet	r
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		OW COUNT DATA T N-value)	STANDAR 20	D PENETR. △ % FI ○ NM H PL- 40	ines C	ST DATA	ELEVATION
25	30 - SS-9 SS-10		M	and ora	edium dense to very dense nge, moist to very moist le terminated at 40.0 feet	13. N	1-13-17 N = 30			•		298 -	
GROUNDWATER	•					RE	MARKS						
ATD	022		(FT)	not encountered - ho	ole cave at 7	.7 ft				&			
END OF DRILLING	D OF DRILLING ▼ 02/01/2022					1 hour reading - dry	cave at 7.7 f	eet					
AFTER DRILLING	= 02/	02/2	022			24 hour reading - dry							,
AFTER DRILLING	T												1

PROJECT:				R 222, St	Il City - TV tanton, Te roject No.			BOR		OG: B-4 4 et 1 of 2		
DATE DRILLED: 02	/23/202	2			ELEVATION		NOTE	ES:				
DRILL RIG : Diedr	ich D-50	(tra	ck)		DATUM: N	NAVD88						
DRILLER: S&ME					BORING D	EPTH: 40.0 ft						
HAMMER TYPE: A	lutomati	c hai	mmer		CLOSURE:	Cuttings						
DRILLING METHO						Y: Talecia Dyson	LATIT	UDE:	35.4169	34 LON	IGITUDE:	-89.40424
SAMPLING METHO	OD: SS					PROJECT COORDINATE	SYSTEM -	NAD 1983	StatePlane	Tennessee FI	PS 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUI DATA (SPT N-valu	NT		ENETRATIO △ % Fines ○ NMC H PLLL 40 60	n test data	ELEVATION
0	0.3		عائد عائد	\ /	TOPSO	IL, 4 inches	3-2-3					319 –
4				SS-1	LEAN C	LAY (CL), some silt, some sand, firm brown, moist	N = 5 PPV= 0.8	. •	0			_
5		Loess		\$\$-2 \$\$-3 \$\$-4 \$\$-5			4-4-5 N = 9 PPV= 0.8 3-4-5 N = 9 PPV= 2.0 3-4-6 N = 10 PPV= 1.8 3-5-5 N = 10 PPV= 1.2		0			314 -
15 —	17.0	Marine Soils		SS-6 SS-7		Y GRADED SAND (SP), loose to orange, moist to very moist	3-4-5 N = 9 PPV= 0.8 2-3-4 N = 7	•	0			304 -
GROUNDWATER		D	ATE/TI	ME	DEPTH	REMARKS	1	-				_
ATD	\Box		-,		(FT)				\dashv		8	
END OF DRILLING	Z											
AFTER DRILLING	▼ 03/0				23.0	144 hour reading						
AFTER DRILLING	▼ 03/0	03/2	022		23.0	192 hour reading						

PROJECT:					R 222, S	_	/A Substation ennessee 218019		ВО		OG: B-4 eet 2 of		
DATE DRILLED:	02/23/	2022	2				N: 319 ft		NOTES:				
DRILL RIG: Di	edrich D)-50	(tra	ck)		DATUM:	NAVD88		-				
DRILLER: S&N	ИE		-	-		BORING D	DEPTH: 40.0 ft		-				
HAMMER TYPI	E: Auton	natio	c har	nmer		CLOSURE:	: Cuttings		-				
DRILLING MET							BY: Talecia Dyson		LATITUDE:	35.416	934 LO	NGITUDE:	-89.40424
SAMPLING ME	THOD:	SS			1		PROJECT COORD	INATE SYST	EM - NAD 19	83 StatePlan	e Tennessee I	FIPS 4100 Feet	
DEPTH (feet)	NOTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		V COUNT DATA N-value)	20	PENETRATIO △ % Fines ○ NMC ├── PLLL 40 60		ELEVATION
25 —					SS-8		Y GRADED SAND (SP), loose to orange, moist to very moist	11	-18-22 I = 40		•		294
30 -	30			SS-9				-23-24 I = 47	0	•		289 —	
35 —					SS-10			I	-22-25 = 47		•		
40 —		40.0			SS-11	Boreho	ole terminated at 40.0 feet		-25-25 I = 50	0	•		
GROUNDWAT	ER		D	ATE/T	IME	DEPTH	RFM	ARKS					-
ATD	DUNDWATER DATE/TIME					(FT)	ALIV.			\blacksquare		8	
END OF DRILLING AFTER DRILLING AFTER DRILLING	TD ND OF DRILLING TER DRILLING					23.0	144 hour reading 192 hour reading						

PROJECT:				R 222, St	tanton, Te		E		LOG: B-45 Sheet 1 of 2		
DATE DRILLED: 0	2/06/202				roject No.		NOTES		Sheet 1 0j 2		
DATE DRILLED: 0						N: 311 ft		•			
DRILL RIG: Died		(tra	ck)		DATUM:						
DRILLER: S&ME					BORING D	DEPTH: 40.0 ft					
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	<u> </u>					
DRILLING METHO		rota	ry		LOGGED E	BY: Talecia Dyson	LATITUE				39.40350
SAMPLING METH	IOD: 55	Ι.				PROJECT COORDINATE	SYSTEIVI - NAI				
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	1	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAI	A % Fines O NMC H PLLL 40 60	80	ELEVATION
0	0.3	a	عالد عالد	I \/		IL, 3 inches	2-2-2				-
-		Cultivated Zone		SS-1	LEAN C	CLAY (CL), some silt, soft, brown, oist	N = 4	•			-
_		vated		M	,		2-2-2 N = 4				_
-	3.0	Culti		SS-2							- -
				Ę .		CLAY (CL), few silt, little sand, firm to	2-2-3				-
-				SS-3	stiff, br	own and gray, very moist to wet	N = 5	•			_
5—				\square							306 –
-							2.2.4				_
7				SS-4			3-3-4 N = 7	•			-
_				33-4			PPV= 1.0				-
7											-
				Ы			2-2-4 N = 6				_
				SS-5			PPV= 0.8	•			- 301 –
10 —											- 301
_		SS									_
_		Loess									_
-											-
							2-2-3				_
_				SS-6			N = 5	•			-
- 15				S3-0			PPV= 1.0				296 –
-											-
											-
-											_
											_
-				Ь			4-5-6				_
				SS-7			N = 11 PPV= 2.0	•			-
20 —	20.0				SILT W	ITH SAND (ML), stiff to very stiff,	1				291 –
		oS at			1	ery moist to wet					_
-		Marine Soils									-
GROUNDWATER	GROUNDWATER DATE/TIME				DEPTH	REMARKS				,	•
					(FT)	not encountered				&	
END OF DRILLING	, , ,					1 hour reading - not encount	ered				
AFTER DRILLING	•								11		
AFTER DRILLING	T								J		

PROJECT	Γ:				R 222, St	-	/A Substation ennessee 218019		В	ORING S	LOG: l heet 2			
DATE DRII	LED: 02	/06/20)22			ELEVATIO	N : 311 ft	·	NOTES:					
DRILL RIG	: Diedr	ich D-5	50 (tra	ack)		DATUM:	NAVD88							
DRILLER:	S&ME					BORING D	DEPTH: 40.0 ft							
HAMMER	TYPE: A	utoma	itic ha	mmer		CLOSURE:	Cuttings							
DRILLING				ary		LOGGED E	BY: Talecia Dyson		LATITUD	E: 35.43	16922	LONGITU	DE: -	89.40350
SAMPLING	G METHO	DD : SS	<u> </u>	_	I		PROJECT C	OORDINATE SY	'STEM - NAD	1983 StatePl	ane Tenne	ssee FIPS 4100	0 Feet	
DEPTH (feet)	NO	TES	Origin/Identifier	GRAPHIC	SAMPLE N		MATERIAL DESCRIPTI	ON	LOW COUNT DATA SPT N-value)	STANDAR	A % I O Ni H PL 40	MC LL	OATA	ELEVATION
25 —					SS-8		ITH SAND (ML), stiff to ery moist to wet	very stiff,	4-5-7 N = 12 PPV= 4.2	•				286 -
30 —		32	ö Marine Soils		SS-9				3-10-13 N = 23	•				281 -
35		35			SS-10		AND (SM), dense, gray,		19-20-22 N = 42		•			276 –
-		40	.0		SS-11		ense, orange and red, v		16-27-32 N = 59			•		- - - - - - - - - - - - - - - - - - -
40					_	Boreho	ole terminated at 40.0 f	eet						- - - - - - -
GROUND	ROUNDWATER DATE/TIME				IME	DEPTH (FT)		REMARKS						1
ATD END OF DR						(F1)	not encountered 1 hour reading - n	ot encounter	ed					
	ID OF DRILLING ▼ 02/06/2022													

PROJECT:					-	TVA Substation Tennessee	E	BORING	G LOG: B	3-46		
			,			. 218019			Sheet 1	of 2		
DATE DRILLED:	02/28/202	2				ON: 309 ft	NOTES	:				
DRILL RIG: Die	edrich D-50	(tra	ck)		DATUM	: NAVD88						
DRILLER: S&N	лE				BORING	DEPTH: 40.0 ft						
HAMMER TYPE	: Automati	c hai	mmer		CLOSUR	E: Cuttings						
DRILLING METH						BY: Talecia Dyson	LATITUI	DE: 35.	.416912	LONGITU	DE: -8	89.40290
SAMPLING MET			,			PROJECT COORDINAT	E SYSTEM - NA	D 1983 State	ePlane Tennes	see FIPS 4100	0 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE (RECOVE		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		ARD PENETR △ % F ○ NM H PL- 0 40	ines IC LL	r data	ELEVATION
0	0.2		. باد. باد.	. /	TORS	COIL 2 inches	212	Ť	i i	<u> </u>	<u> </u>	309 —
_	0.2			SS-1	LEAN	GOIL, 2 inches I CLAY (CL), little sand, some silt, soft ff, brown and gray, slightly moist to	2-1-3 N = 4 PPV= 1.0	•				_
_				SS-2	mois	t	3-4-5 N = 9	•				
_				Ë			PPV= 1.2					
				SS-3			3-3-4	•				_
5 —				И			N = 7 PPV= 1.0					304 —
_				L								_
				SS-4			2-4-5 N = 9	•				_
_							PPV= 1.2					-
_		Loess		L			2-3-3					_
_		2		SS-5			N = 6 PPV= 1.0	•				_
10 —							117 1.0					299 —
_												_
_												_
_												-
_				Ы			3-2-3					_
_				SS-6			N = 5	•				-
15 —												294 —
_												_
_	17.0				1544	I CLAV MITH CAND (CL) Firm to stiff						=
_						I CLAY WITH SAND (CL), firm to stiff, ge and gray, moist						=
_		ils		\Box			4-4-4					=
_		Marine Soils		SS-7			N = 8	•				_
20 —		Marii										289 —
-												-
												_
GROUNDWATE	ROUNDWATER DATE/TIME			ME	DEPTH (FT)	REMARKS						
ATD					(F1)						&	
END OF DRILLING		20 /2	022							4 = 1		
AFTER DRILLING AFTER DRILLING	▼ 02/2	<u> </u>	.UZZ									
					- 1					~ ~ ~		

PROJECT:					l City - TV anton, Te	A Substation		В		LOG: B-46		
				S&ME Pr	oject No.	218019		NOTES	Si	heet 2 of 2)	
DATE DRILLED: (N: 309 ft		NOTES:				
DRILL RIG: Die		(tra	ck)		DATUM: N							
DRILLER: S&M	E				BORING D	EPTH: 40.0 ft						
HAMMER TYPE:	Automati	c hai	mmer		CLOSURE:							
DRILLING METH		rota	ry		LOGGED B	Y: Talecia Dyson		LATITUDI				9.40290
SAMPLING MET	HOD: 55					PROJECT COORDINA	AIE SYSII	EIVI - NAD				
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE NO	l l	MATERIAL DESCRIPTION		V COUNT DATA N-value)	STANDAR	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	80	ELEVATION
25	30 — 31.0 Sign Sign Sign Sign Sign Sign Sign Sign		SS-8 SS-9 SS-10	POORLY	LAY WITH SAND (CL), firm to stiff and gray, moist of GRADED SAND (SP), dense, and gray, very moist	4 N PP' 9- N	-3-4 l = 7 -4-5 l = 9 V= 4.5 -20-18 = 38				284 —	
GROUNDWATER DATE/TIME			IME	DEPTH (FT)	REMARI	KS				8	- - - -	
END OF DRILLING	T		000									
AFTER DRILLING AFTER DRILLING	▼ 02/2	28/2	022		1							
AL LEN DIVIELLING					1							

PROJECT:				R 222, S	Il City - TV tanton, Te roject No.		E	BORING LOG: B-47 Sheet 1 of 2					
DATE DRILLED: 02	/16/202	2			ELEVATIO		NOTES						
DRILL RIG : Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S&ME		•			BORING D	EPTH: 40.0 ft							
HAMMER TYPE: A	utomati	c ha	mmer		CLOSURE:								
DRILLING METHO						Y: Talecia Dyson	LATITUI	DE : 35.41	L6900 LON 0	GITUDE:	-89.40222		
SAMPLING METH			,			PROJECT COORDINATE	SYSTEM - NA	D 1983 StatePl	ane Tennessee FIP:	S 4100 Feet			
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	1	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	TEST DATA	ELEVATION		
0	0.3		عادد عادد		TOPSO	IL, 4 inches	3-3-3			<u> </u>	=		
	0.3			SS-1	LEAN C	LAY (CL), few sand, some silt, soft	N = 6	•					
4				Ы	to stiff,	brown, moist	PPV= 1.8				-		
				SS-2			2-2-4	•					
\dashv							N = 6				-		
4				SS-3			2-1-3 N = 4	•					
_ 5 <i>-</i>	A			33-3			PPV= 0.5				303 -		
3-		,,									-		
		Loess		М			3-3-4 N = 7	_					
-				SS-4			PPV= 2.0	•			-		
1													
-				П			3-4-5				-		
7				SS-5			N = 9 PPV= 2.0	•			-		
10 —											298 –		
-											-		
	12.0												
+						LAY (CL), some sand, some silt, stiff, and gray, moist					-		
7	•					<i>5 p</i>	3-5-6] -		
_				SS-6			N = 11 PPV= 2.5	•					
15 —				Д			PPV- 2.5				293 —		
		ر د											
4		Marine Soils									-		
7		arine									_		
-		Σ					4-5-5						
4				SS-7			N = 10	•					
20 —				S 33 /			PPV= 2.5				288 -		
	21.0				POORL	Y GRADED SAND (SP), medium					-		
1					dense t	to very dense, tan and orange, very					1 -		
					moist								
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS							
ATD END OF DRILLING	▼ 02/2	16/2	022		4.7	1 hour reading				&			
AFTER DRILLING	= 02/				13.3	96 hour reading			41				
AFTER DRILLING	•								J				

PROJECT:					R 222, St	e Oval City - TVA Substation 22, Stanton, Tennessee ME Project No. 218019 ELEVATION: 308 ft				BORING LOG: B-47 Sheet 2 of 2						
DATE DRILLED: (02/16/	2022)					'	NOTES:							
DRILL RIG: Die	drich [D-50	(tra	ck)		DATUM:	NAVD88									
DRILLER: S&M	E		-			BORING D	EPTH: 40.0 ft									
HAMMER TYPE:	Autor	matic	har	nmer		CLOSURE:	Cuttings									
DRILLING METH							S Y: Talecia Dysoi	n	LATITUD	E: 35.41	16900	LONGI	TUDE:	-89.40222		
SAMPLING MET	HOD:	SS					PROJECT	COORDINATE S	YSTEM - NAD	1983 StatePl	ane Tennes	ssee FIPS 4	4100 Feet	1		
DEPTH (feet)	NOTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRI	PTION	BLOW COUNT DATA (SPT N-value)	STANDAR	D PENETF △ % F ○ NN ⊢ PL 40	Fines MC	80	ELEVATION		
30		40.0	Marine Soils		SS-9 SS-10 SS-11	dense t	y GRADED SAND (SP to very dense, tan ar	nd orange, very	7-9-10 N = 19 12-11-12 N = 23 12-17-19 N = 36					283 -		
1																
GROUNDWATE	R		D	ATE/TI	ME	DEPTH (FT)		REMARKS								
ATD	\Box												&			
END OF DRILLING	T	02/1	6/2	022		4.7	1 hour reading									
AFTER DRILLING		02/2	0/2	022		13.3	96 hour reading	5								
AFTER DRILLING	•															

PROJECT:				R 222, St	I City - TV tanton, Te roject No.			В	ORIN		G: B-4 et 1 of 2			
DATE DRILLED:					ELEVATION			NOTES:						
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM: N	NAVD88								
DRILLER: S&ME					BORING D	EPTH: 40.0 ft								
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	Cuttings								
DRILLING METHO						Y: Talecia Dyson		LATITUD	E: 35	.4168	89 LON	IGITUDI	E: -89.4	0155
SAMPLING METH						PROJECT COORDINAT	E SYSTE	M - NAD	1983 Stat	tePlane '	Tennessee F	PS 4100 F	eet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I	MATERIAL DESCRIPTION	D	COUNT ATA N-value)	STAND 20		ENETRATIO △ % Fines ○ NMC ├── PLLL 40 60		ATA	ELEVATION
0	0.3		عائد عائد	\ /	TOPSO	IL, 3 inches	4-	-3-3						307 –
_	0.0			SS-1	LEAN C	LAY (CL), some silt, few sand, soft	_ N	= 6	•					_
-				SS-2	to firm,	, brown and gray, moist	2-	/= 1.0 -3-5	•	0				- - -
_								= 8 -1-2						_
-				SS-3				= 3	•					_
- 5				\bigcap 33-3			PP\	/= 0.5						- 302 –
_		ν												-
		Loess		₩				-3-5 = 8						_
-	∇			SS-4					•	0				-
_				_										_
				\square				-3-4 = 7						-
_				SS-5			"	- /	•					-
10 —														297 –
-														_
_	12.0				151110									_
-						LAY WITH SAND (CL), little silt, stiff, and gray, moist								-
7							5-	-5-8						_
				SS-6			N	= 13	•)				_
15 —				Δ										292 –
_	16.0	S												_
-		Marine Soils				Y GRADED SAND (SP), some clay, t, medium dense, orange and gray,								=
7		larin			very m	oist								-
_		2		_			ρ.	-7-8						_
_				SS-7				= 15	•					_
20 —														287 –
-														-
_	22.0													-
			·		DEPTH						1			-
GROUNDWATER			ATE/TI	ME	(FT)	REMARKS							0	
ATD END OF DRILLING	□ □ □ 03/0	JT/2	:022		7.4								&	
AFTER DRILLING	▼ 03/0				11.5	5 hour reading					11			
AFTER DRILLING	▼ 03/0	03/2	022		12.1	48 hour reading								

PROJECT:					R 222, St	POVAL City - TVA Substation 22, Stanton, Tennessee ME Project No. 218019 ELEVATION: 307 ft				BORING LOG: B-48 Sheet 2 of 2						
DATE DRILLED:								1	NOTES:							
DRILL RIG: Die	edric	h D-50	(tra	ck)		DATUM:	NAVD88									
DRILLER: S&N	ЛE					BORING D	DEPTH: 40.0 ft									
HAMMER TYPE		tomat	ic ha	mmer		CLOSURE	: Cuttings									
DRILLING MET							BY: Talecia Dysoi	n	LATITUD	E: 35.43	16889	LONGI	TUDE:	-89.40155		
SAMPLING ME	THOE	SS SS					PROJECT	COORDINATE S	YSTEM - NAD	1983 StatePl	ane Tenne	ssee FIPS 4	1100 Feet			
DEPTH (feet)	NOTE	s	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I .	MATERIAL DESCRI	PTION	BLOW COUNT DATA (SPT N-value)	STANDAR 20	A % IO PENETION A % IO NIN H PL	Fines MC	80	ELEVATION		
35-		40.0	Marine Soils		SS-8 SS-9 SS-10	dense,	LY GRADED SAND (SP. orange, very moist		2-5-5 N = 10			•		282 -		
GROUNDWATER DATE/TIME				DEPTH (FT)		REMARKS										
ATD		2 03/	01/2	022		7.4							&			
END OF DRILLING	j :	T			-			-								
AFTER DRILLING AFTER DRILLING		▼ 03/				11.5	5 hour reading	7								
AFTER DRILLING	-	* U3/	U3/2	UZZ		12.1	48 hour reading	5								

PROJECT:					R 222, St	e Oval City - TVA Substation 222, Stanton, Tennessee kME Project No. 218019 ELEVATION: 307 ft				BORING LOG: B-49 Sheet 1 of 2						
DATE DRILLE	ED: 02/	18/202	2			ELEVATIO	N: 307 ft		NOTES:							
DRILL RIG:	Diedri	ch D-50	(tra	ck)		DATUM:	NAVD88									
DRILLER: S	&ME					BORING D	EPTH: 40.0 ft									
HAMMER TY	YPE: At	utomati	c ha	mmer		CLOSURE:	Cuttings									
DRILLING M	IETHOD	: Mud	rota	ry			SY: Talecia Dyson		LATITUD	E: 35.4	116878	LONG	TUDE:	-89.40088		
SAMPLING I	METHO	D: SS					PROJECT COOR	DINATE SY	STEM - NAD	1983 State	Plane Tenn	essee FIPS	4100 Feet	1		
DEPTH (feet)	NOT	ES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I	MATERIAL DESCRIPTION		LOW COUNT DATA SPT N-value)	STANDA 20	∆ % ○ 1	Fines NMC PLLL 60	80	ELEVATION		
0 —		0.2		.1/1/.	V		IL, 2 inches	1.5	2-3-3					T -		
					SS-1		LAY (CL), little silt, some san stiff, brown and gray, moist		N = 6 PPV= 0.5	•						
					SS-2				3-3-3	•						
									N = 6							
_					\square				PPV= 0.5					-		
					SS-3				3-7-9	•				303 -		
5 —					\square				N = 16 PPV= 1.5							
-					SS-4				4-7-7 N = 14	•				-		
_					\triangle				PPV= 2.5] -		
									2-3-3							
_					SS-5				N = 6	•				298 —		
- 10					∑ 33-3				PPV= 0.8							
-			ν											-		
			Loess													
-																
-					\square				4-4-4							
					SS-6				N = 8	•						
15 —																
_														-		
_														-		
									8-10-11					1 -		
_					SS-7				N = 21	•				288 -		
20 —					\square											
		22.0												-		
CROUNDY	/ATED	22.0		ATC /7:	NAT.	DEPTH	255	AADKC								
GROUNDW ATD	AIEK	∇	ט	ATE/TI	IVIE	(FT)	KEN	MARKS					&			
END OF DRILL	ING	∡											α			
AFTER DRILLIN	NG	v 02/	18/2	022												
AFTER DRILLIN	NG	▼														

PROJECT:					R 222, St	ILE Oval City - TVA Substation 222, Stanton, Tennessee EME Project No. 218019 ELEVATION: 307 ft				В	ORING		B-49 2 of 2			
DATE DRILLE	D : 02/	18/2	.022)			1				NOTES:					
DRILL RIG: [Diedri	ch D	-50	(tra	ck)		DATUM:	: NA	VD88							
DRILLER: S8	&ME			-			BORING	DEI	PTH: 40.0 ft							
HAMMER TY		ıtom	atic	har	nmer		CLOSUR									
DRILLING ME									Talecia Dyson		LATITUD	E: 35.4	16878	LONG	ITUDE:	-89.40088
SAMPLING N				0 001					PROJECT COORDINATE	SYST	EM - NAD) 1983 StateF	Plane Tenn	nessee FIPS	4100 Feet	
DEPTH (feet)	NOT	ES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER			MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STANDAI	Δ % ()	Fines NMC PLLL 60	80	ELEVATION
30		2	8.0 7.0	Marine Soils		SS-9 SS-10	FAT C orang	CLAY t	GRADED SAND (SP), some silt, dense, tan, moist (CH), few sand, soft to stiff, gray, WITH SAND (CH), very hard, noist	N 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3-7-5 = 12 1-3-1 N = 4 V= 0.8 1-4-5 N = 9					283
- - - - -																-
GROUNDW/	ATER			D	ΔTF/T	MF	DEPTH		REMARKS							1
GROUNDWATER DATE/TIME ATD END OF DRILLING AFTER DRILLING AFTER DRILLING ■ 02/18/2022 AFTER DRILLING ■ 02/18/2022			(FT)		NEWARKS						&					
														P 4	_	

						1 -1.			1					
PROJECT:	SR 222							A Substation nnessee	E	BORING				
					S&ME I	1			NOTES		Sheet	1 0J 2		
DATE DRILLE	ED : 03/0	1/202	2			ELE	VATION	I: 305 ft	NOTES	:				
DRILL RIG:	Diedric	h D-50	(tra	ck)		DAT	ſUM: N	IAVD88						
DRILLER: S	S&ME					BOR	RING D	EPTH: 40.0 ft						
HAMMER T	YPE: Aut	tomati	c hai	mmer		CLO	SURE:	Cuttings						
DRILLING M	IETHOD:	Mud	rota	ry		LOG	GED B	Y: Talecia Dyson	LATITUI	DE: 35.	416867	LONGIT	UDE: -	89.40021
SAMPLING I	METHOD	: SS						PROJECT COORDINATE	SYSTEM - NA	D 1983 State	ePlane Tenr	nessee FIPS 41	00 Feet	1
DEPTH (feet)	NOTES	5	Origin/Identifier	GRAPHIC	SAMPLE (RECOVE			MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	-	Ф Д 1 О 1 Н	Fines NMC PLLL 60	ST DATA	ELEVATION
0 -		0.3		عادد عادد	М			L, 3 inches	2-1-1					
_					SS-1		LEAN C	LAY (CL), some silt, little sand, very very stiff, brown and gray, moist	N = 2					_
					М		3011 10	retry settly strown and gray, moise	1-3-3 N = 6					_
-					SS-2				" "					_
					Ľ				6-8-10					_
-					SS-3				N = 18					301 —
- 5-									PPV= 1.8					_
_			S											_
			Loess		П				2-3-4 N = 7					_
_					SS-4				14 - 7	•				_
														_
_					Ь				3-3-3					_
-					SS-5	.			N = 6	•				296 —
10 —					Ц									_
-														_
_		12.0												_
		12.0				F	LEAN C	LAY WITH SAND (CL), some silt, firm						_
							to stiff,	orange and gray, moist						_
-					abla				4-5-6 N = 11					
_					SS-6				PPV= 1.2	•				291 –
15 —														_
			ls											_
			Marine Soils											_
-			larin											_
			2						3-4-4					_
_					SS-7				N = 8	•				286 —
- 20					∑ 33-7									-
20 =		21.0				/	POOPIN	' GRADED SAND (SP), medium						-
		21.0					dense t	o dense, orange and gray, very	1					-
	_				moist									
GROUNDW	/ATER		D	ATE/TI	ME		DEPTH (FT)	REMARKS						
ATD		Z					. ,						&	
END OF DRILL		Z												
AFTER DRILLIN	TER DRILLING \blacksquare TER DRILLING \blacksquare													
!!												> 4 4		

PROJECT:					R 222, St	Oval City - TVA Substation 2, Stanton, Tennessee #E Project No. 218019 ELEVATION: 305 ft					LOG: B-5				
DATE DRILLE	D: 03/01	1/202	2			ELEVATIO	N : 305 ft	'	NOTES:						
DRILL RIG:	Diedrich	D-50	(tra	ck)		DATUM: N	NAVD88								
DRILLER: S8	&ME					BORING D	PEPTH: 40.0 ft								
HAMMER TY	PE: Aut	omati	c har	mmer		CLOSURE:	Cuttings								
DRILLING ME			rota	ry		LOGGED B	Y: Talecia Dyson		LATITUDI			NGITUDE:	-89.40021		
SAMPLING M	IETHOD:	: SS					PROJECT COORDIN	ATE SYST	EM - NAD	1983 StatePla	ane Tennessee F	IPS 4100 Feet			
DEPTH (feet)	NOTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		V COUNT DATA N-value)	STANDARI 20	△ % Fines ○ NMC ⊢ PLLL 40 60		ELEVATION		
25 — — — —					SS-8		Y GRADED SAND (SP), medium to dense, orange and gray, very	I	5-7-15 N = 22						
30 -		Marine Soils			SS-9			l l	5-7-6 = 13 -	•			276 -		
35 -					SS-10			l l	-18-17 =35 -		•		271-		
40		40.0			SS-11	Boreho	ole terminated at 40.0 feet	I	-33-34 = 67 -			•	266 		
GROUNDWA	ROUNDWATER DATE/TIME				ME	DEPTH (FT)	REMAR	KS							
AFTER DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING AFTER DRILLING				(F1)						& =					

PROJECT:				R 222, St	I City - TV tanton, Te roject No.		В		LOG: B-51 heet 1 of 2						
DATE DRILLED:	02/20/202	2			ELEVATIOI		NOTES:								
DRILL RIG: Die			ck)		DATUM:										
DRILLER: S&N		(0.0				EPTH: 40.0 ft									
HAMMER TYPE		c nai	mmer		CLOSURE:		LATITUD	E: 35.4°	16418 LONG	GITUDE: -8	39.40626				
DRILLING MET					LOGGED	Y: Talecia Dyson PROJECT COORDINATE									
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAR	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	TEST DATA	ELEVATION				
0	0.7	cultivat ed Zone		М	LEAN C	LAY (CL), firm, brown, moist	2-3-4				_				
		0		SS-1		LAY (CL), little sand, some silt, firm brown and gray, slightly moist	N = 7 PPV= 1.0	•			-				
_				SS-2			3-4-6	•			-				
_							N = 10 PPV= 1.2				-				
5—		Loess		SS-3			3-3-6 N = 9 PPV= 1.5	•			326 				
- - - -	8.0			SS-4			5-7-7 N = 14 PPV= 1.5	•			- - -				
10 —				SS-5		LAY (CL), some sand, some silt, stiff stiff, red brown, slightly moist	3-5-6 N = 11 PPV= 3.0	•			- 321 - - - -				
15—		Marine Soils		SS-6			8-8-10 N = 18	•			- - - - 316 - -				
20 —	18.0	Ma		SS-7		r GRADED SAND (SP), few silt, n dense, red orange, moist	- 5-10-14 N = 24	•			311 – - - - - - -				
											_				
GROUNDWAT			ATE/TI	ME	DEPTH (FT)	REMARKS									
ATD END OF DRILLING AFTER DRILLING	DRILLING ▼ 02/20/2022				39.0	1 hour reading - dry cave in a 24 hour reading - dry cave at									
AFTER DRILLING	▼														

PROJECT:				R 222, St	l City - TV anton, Te oject No.			ВС		L OG: B-51 neet 2 of 2			
DATE DRILLED: 02	2/20/202	2				N: 330 ft	I	NOTES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88		-					
DRILLER: S&ME		-	-		BORING D	EPTH: 40.0 ft		-					
HAMMER TYPE: /	Automati	c hai	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson		LATITUDE	35.41	.6418 LON 0	GITUDE:	-89.40626	
SAMPLING METH			,		1	PROJECT COORDIN	IATE SYST	EM - NAD :	1983 StatePla	ne Tennessee FIP	S 4100 Feet	1	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		N COUNT DATA N-value)	STANDARI 20	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	I TEST DATA	ELEVATION	
30-	HC HC 40.0	Marine Soils		SS-9 SS-10 SS-11	mediur	Y GRADED SAND (SP), few silt, in dense, red orange, moist	11 N	-11-16 I = 27 -11-16 I = 27 -9-12 I = 21				306	
							-				- - - - -		
GROUNDWATER	OUNDWATER DATE/TIME					DEPTH REMARKS							
GROUNDWATER DATE/TIME ATD □ 02/20/2022 END OF DRILLING □ 02/19/2022 AFTER DRILLING □ 02/20/2022					(FT) 39.0	1 hour reading - dry cave 24 hour reading - dry cav	in at 28.				&		
AFTER DRILLING	▼	, -				, , , ,	e at 28.3 feet						



Cone Penetration Test

B-51A

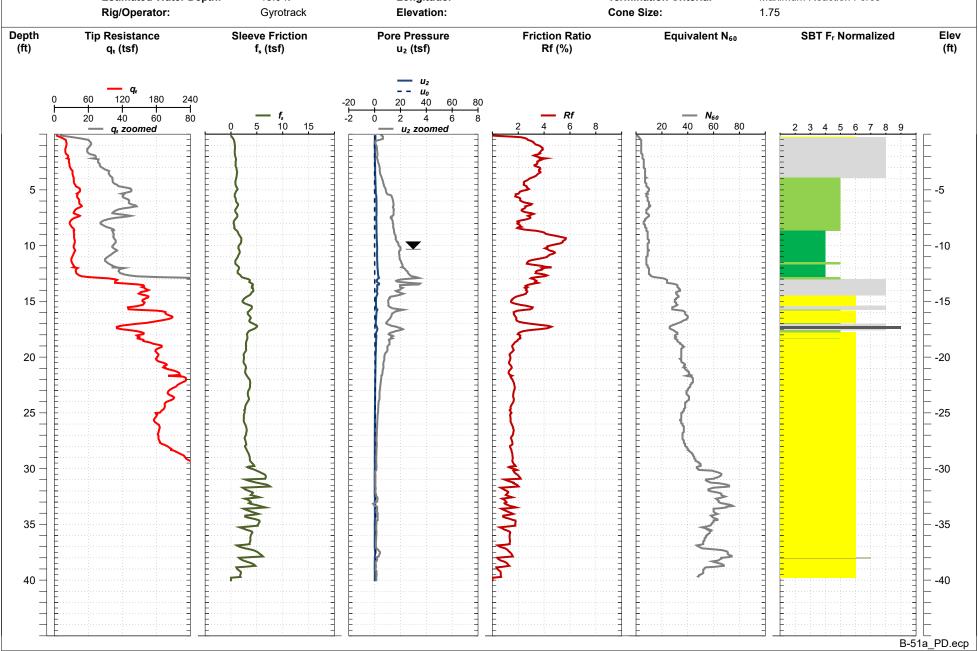
Date:

Estimated Water Depth:

25-Jan-2022 10.0 ft Latitude: Longitude: Total Depth:

Termination Criteria:

40.1 ft Maximum Reaction Force



PROJECT:				R 222, St	I City - TV tanton, Te		E	BORING		: B-52		
DATE DRILLED: 0	3/01/202	2			ELEVATIO		NOTES	:				
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME	=				BORING D	EPTH: 40.0 ft						
HAMMER TYPE:		c ha	mmer		CLOSURE:	Cuttings						
DRILLING METHO		- 114				Y: Talecia Dyson	LATITUI	DE: 35.4	116406	LONG	ITUDE:	-89.40554
SAMPLING METH						PROJECT COORDINATE	SYSTEM - NA	D 1983 Statel	Plane Ten	nessee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		Δ'	% Fines NMC PLLL 60	rest data	ELEVATION
0	0.2		.312312.	1	TOPSO	IL, 2 inches	2-2-2					- 1
1				SS-1	LEAN C	LAY (CL), some silt, little sand, soft	N = 4	•				
-				SS-2	to stiff,	brown, moist	PPV= 0.5 2-2-3 N = 5	•	0			- - -
				Ę			PPV= 1.0					_
-				SS-3			3-2-4	•				-
5 —				<u>/ </u>			N = 6 PPV= 1.0					332
=				SS-4			4-5-6 N = 11	• 0)			- - -
10 —		Loess		SS-5			2-3-4 N = 7	•				327 -
- - - - - - - - 15 -	16.00			SS-6			3-6-8 N = 14 PPV= 3.8	• 0				322 -
20 —	16.0	Marine Soils		SS-7		Y GRADED SAND (SP), medium to very dense, orange, moist	5-5-6 N = 11	•				317 -
GROUNDWATER		D	ATE/TI	ME	DEPTH	REMARKS						
ATD	□ □ 03/0				(FT)	not encountered - dry cave in	n at 29 feet				&	
END OF DRILLING	▼ 03/0					not encountered	. 4. 25 1000					l
AFTER DRILLING	▼ 03/0					not encountered						
AFTER DRILLING	•											, 1

PROJECT:					R 222, St	l City - TV anton, Te			В		LOG: B-		
DATE DRILLED:	03/01	/2022	2				N : 337 ft	I	NOTES:				
DRILL RIG: Die	edrich	D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&M			-			BORING D	DEPTH: 40.0 ft						
HAMMER TYPE		matio	: har	mmer		CLOSURE:	Cuttings						
DRILLING METH			- Tiai				BY: Talecia Dyson		LATITUD	E: 35.4	16406 L (ONGITUDE:	-89.40554
SAMPLING MET							PROJECT COORDIN	IATE SYST	EM - NAD	1983 StateP	lane Tennessee	e FIPS 4100 Feet	
DEPTH (feet)	NOTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STANDAR 20	∆ % Fine ○ NMC ⊢ PLI		ELEVATION
25 —					SS-8		Y GRADED SAND (SP), medium to very dense, orange, moist		5-6-9 I = 15	0•			312 —
30 -		НС	Marine Soils		SS-9				10-11 = 21	•			307 —
35 -			V		SS-10				-9-12 = 21	0			302
40		40.0			SS-11	Boreho	ole terminated at 40.0 feet	I	21-31 = 52		•		297
1													
GROUNDWATE	ROUNDWATER DATE/TIME					DEPTH	REMAR	SK2					1
ATD						(FT)	not encountered - dry ca		9 fact			Q	
END OF DRILLING							not encountered - dry ca	ve iii at Z	ی اددا			8	
AFTER DRILLING							not encountered						
AFTER DRILLING	•		-/-										

PROJECT:				R 222, St	Il City - TV tanton, Te roject No.		В		LOG: B-53 Sheet 1 of 2		
DATE DRILLED: (02/01/202	2			ELEVATIO:		NOTES:				
DRILL RIG: Die			ck)		DATUM:						
DRILLER: S&M		•	,		BORING D	EPTH: 40.0 ft					
HAMMER TYPE:		c hai	mmer		CLOSURE:						
DRILLING METH		C Hai	- IIIIICI			Y: Talecia Dyson	LATITUD	E: 35.4	16396 LON 0	GITUDE: -	89.40492
SAMPLING MET						PROJECT COORDINATE	SYSTEM - NAC) 1983 StateP	lane Tennessee FIP:	S 4100 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAR 20	A % Fines ○ NMC H PLLL 40 60	TEST DATA	ELEVATION
0		ated		\/	I	LAY (CL), with silt, firm, brown,	3-2-4				_
	1.5	Cultivated Zone		SS-1 SS-2		LAY (CL), with silt, trace sand, firm brown and gray, mottled, moist	N = 6 3-4-5 N = 9	•			- - - - -
5 —	5.0			SS-3	I	LAY (CL), some sand, stiff, red	N = 10 5-4-6 N = 10	•			324 – -
- - - -		Loess		SS-4	brown,	moist					- - - - -
10 —				SS-5			3-4-6 N = 10	•			319 – 319 – - -
	12.0					AND (SM), medium dense, orange ay, moist	3-4-8				- - - -
 _ 15 _	16.0			SS-6			N = 12	•			314 – - - -
- - -		Marine Soils			I	Y GRADED SAND (SP), dense to very orange and gray, moist to very					- - - - -
20 —				SS-7			9-18-32 N = 50		•		309 – - - - -
7] -
					DEPTH						J
GROUNDWATE			ATE/TI	ME	(FT)	REMARKS					
ATD FND OF DRILLING		_				not encountered - hole cave 1 hour reading - cave in at 2!				&	
AFTER DRILLING	O OF DRILLING					24 hour reading - cave in at 2	25.9 feet		41		
AFTER DRILLING	RILLING ▼ 02/02/2022					J					

PROJECT:				R 222, St	l City - TV anton, Te oject No.			ВО	RING LOG Sheet	: B-53	
DATE DRILLED: 0	2/01/202	2				N: 329 ft	I	NOTES:			
DRILL RIG: Died	lrich D-50	(tra	ck)		DATUM:	NAVD88					
DRILLER: S&ME					BORING D	PEPTH: 40.0 ft					
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	Cuttings					
DRILLING METHO					LOGGED B	SY: Talecia Dyson		LATITUDE:	35.416396	LONGITUD	E: -89.40492
SAMPLING METH	IOD: SS					PROJECT COORDIN	ATE SYST	EM - NAD 19	83 StatePlane Ter	inessee FIPS 4100 I	eet
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		N COUNT DATA 'N-value)	Δ	% Fines NMC PLLL 60 80	ELEVATION
25	<u>нс</u>	oils		SS-8 SS-9		Y GRADED SAND (SP), dense to v orange and gray, moist to very	9- N	0-50/4" = 50/4"	•		304 -
35 —		Marine Soils		SS-10				4-6-7 I = 13	•		294 -
40-	40.0			SS-11	Boreho	ole terminated at 40.0 feet		-27-46 I = 73		•	289 -
GROUNDWATER		D	ATE/TI	ME	DEPTH	REMAR	RKS				
ATD	□ 02/0	01/2	022		(FT)	not encountered - hole ca	ave 25.9				&
END OF DRILLING AFTER DRILLING	ND OF DRILLING					1 hour reading - cave in a 24 hour reading - cave in					
AFTER DRILLING	▼ 02/0	UZ/Z	.022			24 Hour reading - cave III	at 23.3 l	CEL			

PROJECT:				R 222, St	I City - TV tanton, Te oject No.			В		LOG: B-5 heet 1 of		
DATE DRILLED: 02	2/28/202	2				N: 319 ft	'	NOTES:				
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME					BORING D	DEPTH: 40.0 ft		1				
HAMMER TYPE: /	Automati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING METHO						BY: Talecia Dyson		LATITUD	E: 35.41	16385 LO	NGITUDE:	-89.40425
SAMPLING METH	OD: SS					PROJECT COORDINA	ATE SYST	EM - NAD	1983 StatePl	ane Tennessee F	IPS 4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA 「N-value)	STANDAR	D PENETRATIO △ % Fines ○ NMC ⊢ PLLL 40 60		ELEVATION
0	0.3		2)(c 2)(c	\/		IL, 3 inches		2-3-4				319 –
_				SS-1		CLAY (CL), some silt, few sand, firn red brown, slightly moist to moist		N = 7 PV= 1.0	•			
_				 	to still,	rea brown, slightly moist to mois						
-				SS-2			I	4-3-4 N = 7				-
								PV= 0.2				
-				SS-3				2-3-4	•			-
5—				\triangle				N = 7				314 -
-								2.4.5				-
7	▼			\bigvee			I .	3-4-5 N = 9				_
-				SS-4			PF	PV= 1.2				
_												
-				М				2-2-4 N = 6				-
7				SS-5			I .	N = 6 PV= 1.5	•			_
10												309 -
_		Loess										
-	7	으										-
												_
								3-3-3				
_				SS-6			I .	s-s-s N = 6	•			
- 15				∑ 33-0			PF	PV= 0.5				304 -
-												-
_												
-				Ы			I .	2-3-4				-
				SS-7			I .	N = 7 PV= 1.0	•			_
20 —												299 –
-	22.0											-
GROUNDWATER		ח	ATE/TI	MF	DEPTH	REMAR	KS.				•	
ATD	\Box		/ 11	.,,,	(FT)	KLIVIAK					8	
END OF DRILLING	▼ 02/2	28/2	022		11.4	2 hour reading						
AFTER DRILLING	▼ 03/0				6.6	24 hour reading				1		
AFTER DRILLING	_											

PROJECT	Γ:					R 222, S	tanton, T	VA Substation ennessee		В		.OG: B-54		
DATE DRII	U.F.D. 0.2	/20/2	2022))		S&ME P	roject No.	218019 N : 319 ft		NOTES:	Sn	eet 2 of 2		
					ok)		DATUM:			-				
DRILL RIG		ICH D	-30	(tra	LK)									
DRILLER:								DEPTH: 40.0 ft		_				
HAMMER								: Cuttings		LATITUDE	35.416	5205 IONO	GITUDE:	-89.40425
DRILLING SAMPLING				ota	ry		LOGGED	BY: Talecia Dyson PROJECT CO	ORDINATE SYS					-05.40425
DEPTH (feet)	NO			Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BL	OW COUNT DATA PT N-value)		D PENETRATION △ % Fines ○ NMC H PLLL 40 60		ELEVATION
35 —		2	40.0	Marine Soils		SS-9 SS-10 SS-11	dense	LY GRADED SAND (SP), me to dense, yellow and oral	nge, very	7-10-14 N = 24 				284 - 284 - 279 - 2
GROUND	WATER			D	ATE/T	ME	DEPTH (FT)	i	REMARKS					l
AFTER DRIL	ROUNDWATER DATE/TIME D D D D D D D D D D						11.4	2 hour reading 24 hour reading					&	
AFTER DRIL	OF DRILLING ▼ 02/28/2022 ER DRILLING ▼ 03/01/2022													

PROJECT:				R 222, St	I City - TV tanton, Te roject No.			В	ORING	LOG: heet 1			
DATE DRILLED: 02	2/06/202	2			ELEVATION		1	NOTES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM: N	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE: /	Automati	c har	nmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson	<u> </u>	LATITUD	E: 35.4	16372	LONG	ITUDE:	-89.40351
SAMPLING METH					<u> </u>		COORDINATE S	YSTEM - NAD	1983 StatePl	lane Tenne	essee FIPS	4100 Feet	_
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIP	TION	BLOW COUNT DATA (SPT N-value)	STANDAR	∆ % ○ N	Fines	80	ELEVATION
0	0.4	4)	alta alta	И		IL, 5 inches		2-4-4					╡ .
	1.5	Cultivate d Zone		SS-1	LEAN C	LAY (CL), some silt, fi	rm, brown,	N = 8	•				
- - - -	1.5	ع 9		SS-2		LAY (CL), few silt, littl own and gray, mottle		PPV= 0.8 2-2-4 N = 6 3-1-3	•				- - - -
_				SS-3				N = 4	•				
5 -								PPV= 1.2					305 -
				SS-4				4-4-5 N = 9 PPV= 1.2	•				-
		Loess		SS-5				4-5-4 N = 9 PPV= 2.5	•				300 –
-													- - - - - -
15 —	15.0			SS-6	I	L), some sand, soft, or	orange and	2-4-3 N = 7 PPV= 2.0	•				
- - - - -		Marine Soils						2-2-2					- - - - -
20 —		Marir		SS-7				N = 4 PPV= 0.5	•				290 -
	22.0												
GROUNDWATER		D.	ATE/TI	MF	DEPTH		REMARKS						
ATD	□ □ 02/				(FT)	not encountered						&	
END OF DRILLING	SE 02/					not encountered							
AFTER DRILLING	▼	-, -											
AFTER DRILLING	•												

PROJECT:				R 222, St	l City - TV anton, Te oject No. 2			В	ORING S	LOG: E heet 2			
DATE DRILLED: 02	/06/2022	2			ELEVATION		1	NOTES:					
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM: N	IAVD88							
DRILLER: S&ME					BORING DI	EPTH: 40.0 ft							
HAMMER TYPE: A	utomatic	c hai	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson		LATITUD	E: 35.43	16372	LONGI	TUDE:	-89.40351
SAMPLING METHO	OD: SS		ı			PROJECT CO	ORDINATE SY	STEM - NAD	1983 StatePl	ane Tennes	ssee FIPS 4	1100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	l l	MATERIAL DESCRIPTION	N	LOW COUNT DATA SPT N-value)	STANDAR 20	D PENETF △ % F ○ NN ⊢ PL 40 L	Fines MC	80	ELEVATION
30	32.0 36.0	Marine Soils		SS-8 SS-9 SS-10	POORLY medium	GRADED SAND WITH Si n dense, yellow brown, v GRADED SAND (SP), de	ILT (SP-SM), wet	3-3-5 N = 8 PPV= 2.0 2-2-8 N = 10 PPV= 2.0 8-11-13 N = 24	•				285 -
GROUNDWATER	□ 02/0	06/2		ME		not encountered	REMARKS					8	
END OF DRILLING AFTER DRILLING	▼ 02/0)6/2	022		-	not encountered (1	. hr)						
AFTER DRILLING	Y												

PROJECT:				R 222, S	al City - T\ tanton, To roject No.			В	ORIN		G: B-5 0		
DATE DRILLED: 0	2/28/202	2			T .	N: 308 ft	NO	OTES:					
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88							
driller: S&ME					BORING D	DEPTH: 40.0 ft							
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE	: Cuttings							
DRILLING METHO	D: Mud	rota	ry			BY: Talecia Dyson	LA	TITUDE	: 3	5.41636	52 LON	IGITUDE:	-89.40291
SAMPLING METH	IOD: SS					PROJECT COORDINATE	SYSTEM	- NAD	1983 St	atePlane 1	Tennessee Fl	PS 4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N		MATERIAL DESCRIPTION	BLOW CO DAT. (SPT N-v	Ά		, (-	© NETRATIO	N TEST DATA	ELEVATION
0	0.2		.3/23/2.	I \ /I	TOPSO	IL, 2 inches	2-3-		_				_
_				SS-1		CLAY (CL), some silt, little sand, firm , brown and gray, moist	N =		•	0			
				M		,	3-3- N =		•				
_				SS-2					•				_
				Б			3-2-						_
				SS-3			N = PPV=		•	0			304 —
5 —													
				L			4-5-	-7					
				SS-4			N = 1		•				_
7		S		\square			PPV=	2.0					_
_		Loess		L			2-3-	.a					_
_				SS-5			N =	6	•	0			299 –
_ 10 —							PPV=	0.8					
-													_
	•] -
_													-
_													
				М			4-4- N = 1						
-				SS-6			''		•				294 –
15 - -													
_	16.0				POORL	Y GRADED SAND (SP), some clay,	+						_
]						o medium dense, gray, moist to							
					very	IOISt							
-		Soils		\Box			8-10-						_
_		Marine Soils		SS-7			N = 2	22	C	•			289 —
20 —		Ž											
_													
GROUNDWATER		D	ATE/T	IME	DEPTH	REMARKS							
ATD	\Box		_, -, -,	-	(FT)							8	
END OF DRILLING	T												
AFTER DRILLING AFTER DRILLING	▼ 03/	01/2	2022		11.0	24 hour reading							
ALLEN DIVIENING	1 -									J			

PROJECT:				R 222, St	l City - TV anton, Te			В		L OG: B-56 neet 2 of 2		
DATE DRILLED: 02	/28/202	2			_	N: 308 ft	,	NOTES:				
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME					BORING D	PEPTH: 40.0 ft						
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings						
DRILLING METHO						SY: Talecia Dyson		LATITUDE	35.41	.6362 LON 6	GITUDE:	-89.40291
SAMPLING METHO	DD: SS		1			PROJECT COORDINA	TE SYSTI	M - NAD	1983 StatePla	ne Tennessee FIP	S 4100 Feet	_
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	0	/ COUNT OATA N-value)	STANDARI	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	80	ELEVATION
25	31.0	Marine Soils		SS-8 SS-9	loose ti	Y GRADED SAND (SP), some clay, o medium dense, gray, moist to oist Y GRADED SAND (SP), very dense,	4	-4-3 = 7	•			284
35 -		Mar		SS-10	I	, very moist	N 22-	27-28 = 55 - - - - - - - - - - - - - - - - - -		•		274 -
40	40.0			SS-11	Boreho	ole terminated at 40.0 feet		-	Φ			269 —
GROUNDWATER		D	ATE/T	ME	DEPTH (FT)	REMARK	S			_		
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	DF DRILLING R DRILLING 03/01/2022					24 hour reading					&	

							_				
PROJECT:				R 222, St	tanton, Te		ı		LOG: B-57 heet 1 of 2		
DATE DRILLED: 02	/16/202	າ			roject No. ELEVATIO		NOTES		11000 1 0) 2	•	
DRILL RIG: Diedr			ck)		DATUM:						
DRILLER: S&ME	1011 10-30	(tia	CKJ			EPTH: 40.0 ft					
HAMMER TYPE: A DRILLING METHO					CLOSURE:	Y: Talecia Dyson	LATITU	DE : 35.4	16351 LON	GITUDE:	-89.40224
SAMPLING METH		TOta	ı y		LOGGED	PROJECT COORDINATE	SYSTEM - NA	AD 1983 StateP	lane Tennessee FIF	S 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	г	A % Fines ○ NMC ⊢ PLLL 40 60	N TEST DATA	ELEVATION
0	0.1	Cultivated		SS-1 SS-2	LEAN C organic LEAN C	IL, 1 inch LAY (CL), some silt, few sand, trace ss, firm, brown, moist LAY (CL), some silt, few sand, very firm, brown, moist	2-3-4 N = 7 PPV= 2.5	•			- - - - - -
5-				SS-3		, ,	N = 7 3-4-4 N = 8 PPV= 2.0	•			303 -
		Loess		SS-4			2-1-1 N = 2	•			- - - - -
10 -	11.0			SS-5			3-3-5 N = 8	•			298 - - - - - - -
15 —		siis		SS-6		LAY WITH SAND (CL), some silt, firm brown and orange, moist	2-3-5 N = 8	•			293 -
20 -		Marine Soils		SS-7			4-4-6 N = 10	•			288 -
		<u> </u>									
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS					
ATD	∇									&	
END OF DRILLING AFTER DRILLING	T										
AFTER DRILLING	T								- 11		
						l .			-		-

PROJECT:				R 222, St	l City - TV anton, Te oject No.			В		LOG: B-5 heet 2 of		
DATE DRILLED: 02,	/16/202	2				N: 307 ft	N	IOTES:				
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM: N	NAVD88						
DRILLER: S&ME					BORING D	EPTH: 40.0 ft						
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings						
DRILLING METHO		rota	ry		LOGGED B	Y: Talecia Dyson	L	ATITUDE	35.41	16351 LO	NGITUDE:	-89.40224
SAMPLING METHO	D: SS		1	Г		PROJECT COORDINATE	SYSTE	M - NAD	1983 StatePl	ane Tennessee I	IPS 4100 Feet	
DEPTH (feet)	res	Origin/Identifier	GRAPHIC	SAMPLE N		MATERIAL DESCRIPTION	1	COUNT ATA -value)	STANDAR 20	D PENETRATIO		ELEVATION
- - - - -	25.0			SS-8		LAY WITH SAND (CL), some silt, firm brown and orange, moist	9-!	5-6 : 11	•			283 -
25	25.0	Marine Soils		SS-9 SS-10		Y GRADED SAND (SP), loose to m dense, gray and orange, very	N =	10-7 - 17 	•			278 -
40 -	40.0			SS-11	Boreho	le terminated at 40.0 feet	N:	3-4 = 7 = 1.2	•			268
GROUNDWATER		D	ATE/T	IME	DEPTH (FT)	REMARKS		-				
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	DRILLING V				(FT)						8 =	

			Fau-l 1	Dlu- O	م ام	·:	IA Cubatatian					_		
PROJECT:				R 222,	Star	nton, Te	A Substation		BORIN)G: B-5 et 1 of			
DATE DOULED.	02/01/202			S&ME		ect No.		NOTE	S:	3116	et 1 0j			
DATE DRILLED:			1.)				N: 307 ft							
DRILL RIG: Die		(tra	CK)		-		NAVD88							
DRILLER: S&N	1E				ВС	DRING D	EPTH: 40.0 ft							
HAMMER TYPE	: Automati	c hai	mmer				Cuttings							
DRILLING METH		rota	ry		LC	GGED B	Y: Talecia Dyson	LATITU		5.4163		NGITU		89.40157
SAMPLING MET	HOD: 55	Π.					PROJECT COORDINATI	SYSTEM - N						
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE (RECOVI			MATERIAL DESCRIPTION	BLOW COUN DATA (SPT N-value	T e)		△ % Fines ○ NMC ⊢ PLLL 40 60		r data 30	ELEVATION
0	0.3		مالاد مالاد	SS-1		LEAN C	IL, 3 inches LAY (CL), little silt, little sand, firm stiff, brown and gray, slightly moist st	3-5-7 N = 12 PPV= 0.5	•					- - -
- - -				SS-2	!			4-8-12 N = 20		•				- -
- - 5-	•	:		SS-3	1			11-12-12 N = 24 PPV= 2.5		•				303 —
				SS-4	ı			3-3-3 N = 6 PPV= 0.8	•					
10 —		Loess		SS-5	i			4-5-6 N = 11 PPV= 2.0	•					- 298 - -
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	нс			SS-€	i			3-4-4 N = 8 PPV= 0.5	•					- - - - - 293 –
15 — - - - -	16.0			<u>/ </u>			LAY WITH SAND (CL), little silt, stiff, d orange, moist							- - - -
20 —		Marine Soils		SS-7	,			2-4-7 N = 11 PPV= 1.0	•					288 — - - - - - -
														-
GROUNDWATE	R	D	ATE/TI	IME	[DEPTH (FT)	REMARKS							
ATD	\Box			-	\blacksquare	-							&	
END OF DRILLING AFTER DRILLING	▼ 03/0	าว /ว	<u> </u>		+	4.3	48 hour reading							
AFTER DRILLING	▼ 03/0	<i>U3/2</i>	UZZ		+	4.3	+o nour reaulig							
							l .			J		4 4		

PROJECT	:					R 222, St		Tenr			В	ORING	LOG: heet 2			
DATE DRILL	LED: 03,	/01/	/2022	2			ELEVATIO	ON:	307 ft		NOTES:					
DRILL RIG:	Diedr	ich I	D-50	(tra	ck)		DATUM:	NA'	VD88							
DRILLER:	S&ME			-			BORING	DEP	PTH: 40.0 ft		1					
HAMMER 1	TYPE: A	uto	matio	c har	nmer		CLOSURE	E: C:	uttings							
DRILLING N									Talecia Dyson		LATITUD	E: 35.43	16340	LONG	ITUDE:	-89.40157
SAMPLING	METHO	DD:	SS		,				PROJECT COORDINATE	SYST	EM - NAD	1983 StatePl	ane Tenn	essee FIPS	4100 Feet	_
DEPTH (feet)	NO ⁻	ΓES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER			MATERIAL DESCRIPTION		W COUNT DATA · N-value)	STANDAR	∆ % ○ N	Fines	80	ELEVATION
35			31.0	Marine Soils		SS-9 SS-10	LEAN	CLA	Y WITH SAND (CL), little silt, stiff, range, moist Y (CL), little sand, stiff, gray, moist	PF PF	4-6-7 = 13 4-6-7 = 13 = 13 = 2.5 5-7-8 = 15 = 15 = 2.5					283 - 283 - - 278 - - 278 - - 273 - - 268 - - - - - - - - - - - - - -
GROUNDV	WATER			D	ATE/TI	ME	DEPTH (FT)		REMARKS							
ATD		∇					. ,								&	
END OF DRIL		T							- 1							
AFTER DRILL			03/0	03/2	022		4.3	48	8 hour reading							
AFTER DRILL	ING	•														

PROJECT:				R 222, St	I City - TV tanton, Te oject No.			В		LOG: B-5		
DATE DRILLED: 02	/18/202	2			ELEVATIO	N: 307 ft		NOTES:				
DRILL RIG: Diedr	ich D-50	(tra	ck)		DATUM: N	NAVD88						
DRILLER: S&ME					BORING D	EPTH: 40.0 ft						
HAMMER TYPE: A	utomati	c ha	mmer		CLOSURE:	Cuttings						
DRILLING METHO		rota	ry		LOGGED B	Y: Talecia Dyson		LATITUD	E: 35.43	16329 LO	NGITUDE	: -89.40090
SAMPLING METHO	OD: SS					PROJECT COORDINAT	TE SYST	EM - NAD	1983 StatePl	ane Tennessee I	IPS 4100 Fe	et
DEPTH (feet)		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	(Y)	MATERIAL DESCRIPTION	(SPT	W COUNT DATA 'N-value)	STANDAR 20	△ % Fines ○ NMC ⊢ PLLL 40 60		ELEVATION
- - - - -	0.4		alk alk	SS-1 SS-2	LEAN C	IL, 5 inches LAY (CL), some silt, some sand, firr stiff, brown and gray, slightly mois it	m N st PP	2-3-7 N = 10 PV= 1.2 5-9-9 N = 18 PV= 3.2	•			- - - - - - - -
5 — —				SS-3			6 N PP	i-9-13 N = 22 VV= 3.0	•			303
- - - - -				SS-4			PP 2	5-4-4 N = 8 VV= 0.8 2-3-6	•			
10 -		Loess		SS-5			1	N = 9 PV= 2.0	•			298 -
				SS-6			N	5-5-7 I = 12 V= 2.0	•			293 -
20 —				SS-7				4-5-5 I = 10	•			288 -
	22.0											
GROUNDWATER			ATE/TI	MF	DEPTH	REMARK	<u> </u>					
ATD	abla		A1L/ 11	141F	(FT)	REIVIARA						&
END OF DRILLING AFTER DRILLING AFTER DRILLING	Y									1		
					1							

PROJECT:					R 222, St	l City - TV tanton, Te oject No.			ВС	DRING SI	LOG: I heet 2			
DATE DRILLE	ED: 02,	/18/202	2				N: 307 ft	'	NOTES:					
DRILL RIG:	Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S	&ME					BORING D	PEPTH: 40.0 ft							
HAMMER T	YPE: A	utomati	c hai	nmer		CLOSURE:	Cuttings							
DRILLING M							SY: Talecia Dyson		LATITUDE	: 35.41	6329	LONG	ITUDE:	-89.40090
SAMPLING I	METHO	D: SS			1		PROJECT COO	RDINATE SYS	TEM - NAD 1	.983 StatePla	ane Tenne	ssee FIPS	4100 Feet	
DEPTH (feet)	NO	res	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		OW COUNT DATA 'T N-value)	STANDAR 20		Fines MC	80	ELEVATION
25 -		26.0			SS-8	tan and	Y GRADED SAND (SP), very d gray, moist Y GRADED SAND (SP), som n dense, gray, very moist	1	9-17-16 N = 33		•			283 -
30 —		32.0	Marine Soils		SS-9		AV(CII) l'III-		12-13-9 N = 22	•				278 -
35 —					SS-10	moist	AY (CH), little sand, very sti	F	8-9-14 N = 23 PV= 4.5	•				273 -
40		40.0			SS-11	Boreho	ole terminated at 40.0 feet	F	7-11-14 N = 25 PV= 4.5	•				268 -
GROUNDW	/ATER		D	ATE/TI	ME	DEPTH (ET)	RE	MARKS						
ATD END OF DRILL AFTER DRILLIN AFTER DRILLIN	LING NG	✓ У У		,		(FT)		-					&	

Cone Penetration Test

B-61

Date:

Estimated Water Depth:

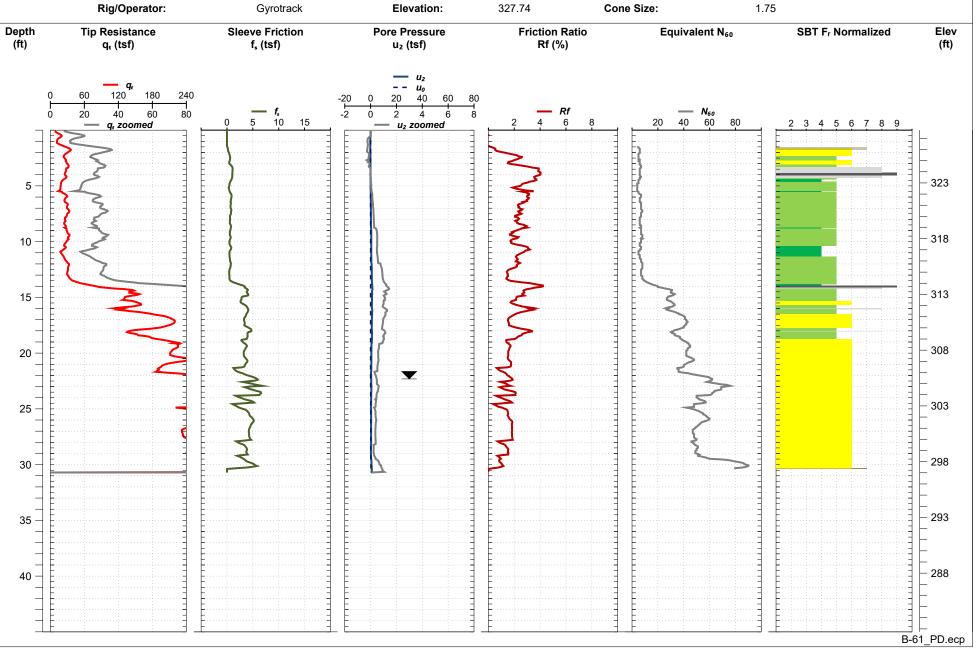
22.0 ft

25-Jan-2022

Latitude: Longitude:

35.415869 -89.40628 Total Depth:
Termination Criteria:

30.7 ft Maximum Reaction Force



PROJECT:			SR	222, St	City - TV anton, Te oject No.			В		LOG: B-6		
DATE DRILLED: 02	/01/202	2				N: 335 ft		NOTES:				
DRILL RIG : Diedr	ich D-50	(tra	ck)	ı	DATUM: N	IAVD88						
DRILLER: S&ME				ı	BORING D	EPTH: 40.0 ft						
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings						
DRILLING METHO						Y: Talecia Dyson		LATITUD	E: 35.42	15857 LO	NGITUDE:	-89.40556
SAMPLING METHO	OD: SS					PROJECT COORDINAT	E SYSTE	M - NAD	1983 StatePl	ane Tennessee I	IPS 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier		SAMPLE NO	I	MATERIAL DESCRIPTION	D	COUNT ATA N-value)	STANDAR	D PENETRATIO △ % Fines ○ NMC ├─ PLLL 40 60		ELEVATION
0	0.9	Cultivate d Zone	X	SS-1 SS-2		LAY (CL), firm, brown, moist LAY (CL), few sand, few silt, firm, moist	N	-6-2 = 8 -3-4 = 7	•			= - - - - -
- - - - 5-	3.0			SS-3		LAY (CL), some sand, firm to very ange brown, slightly moist		-3-5 = 8	•			331 -
			X	SS-4			I	.0-10 = 20	•			- - - -
10 —		Loess	X	SS-5				-8-9 = 17	•			326 -
 15	16.0		X	SS-6				8-12 = 20	•			321 -
20 -		Marine Soils	X	SS-7		Y GRADED SAND (SP), few clay, n dense, orange brown, moist	I	-8-8 = 16	•			316 -
					DEPTH							
GROUNDWATER			ATE/TIM	1E	(FT)	REMARKS						
ATD END OF DRILLING	✓ 02/ ✓ 02/	01/2	022			not encountered - cave in a 1 hour reaing - cave in at 22	2.5 feet				8	
AFTER DRILLING AFTER DRILLING	▼ 02/	U2/2	U22			24 hour reading - cave in at	22.5 fe	et				
, TEN DINIELINO					1						•	

PROJECT:				R 222, St	l City - TV anton, Te			ВС		L OG: B-62 neet 2 of 2		
DATE DRILLED: 02	2/01/202	2				N : 335 ft		NOTES:				
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88		-				
DRILLER: S&ME		`				DEPTH: 40.0 ft						
HAMMER TYPE: /		r ha	mmer		CLOSURE:							
DRILLING METHO		c ma	iiiiiici			BY: Talecia Dyson		LATITUDE	: 35.41	.5857 LON 0	GITUDE:	-89.40556
SAMPLING METH						PROJECT COORDINA	ATE SYST	EM - NAD 1	1983 StatePla	ne Tennessee FIP	S 4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		N COUNT DATA N-value)	STANDARI	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	80	ELEVATION
25	HC 32.0	Marine Soils		SS-8 SS-9	POORL	Y GRADED SAND (SP), few clay, m dense, orange brown, moist Y GRADED SAND (SP), very dense, and tan, moist	9 N	-9-10 I = 19 -	•			311
35 —	40.0			SS-10	Boreho	ole terminated at 40.0 feet	16	-23-34 I = 57				301 —
					DEPTH							
GROUNDWATER	DWATER DATE/TIME □ 02/01/2022					REMARK						
ATD END OF DRILLING AFTER DRILLING	▼ 02/0	01/2	022			not encountered - cave in 1 hour reaing - cave in at 2 24 hour reading - cave in a	22.5 fee				&	
AFTER DRILLING	T				1							

Cone Penetration Test

B-63

Date:

Estimated Water Depth:

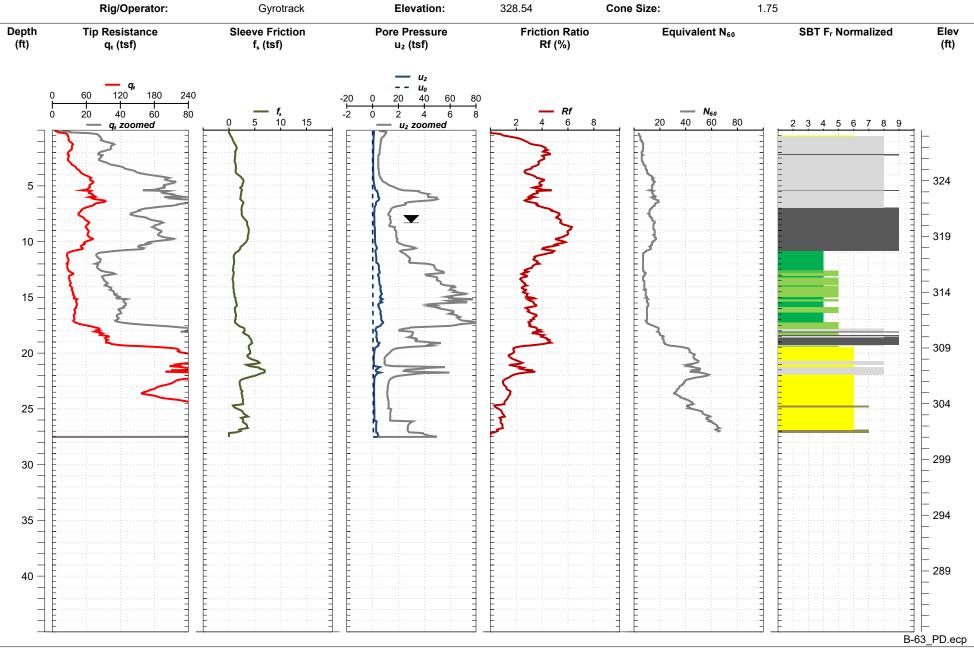
26-Jan-2022 8.0 ft

Latitude: Longitude:

35.415846 -89.40494 328.54

Total Depth: Termination Criteria:

Maximum Reaction Force



					nton, Tennessee			Sheet 1 of 2		
DATE DRILLED: 0	2/05/202	າ	S&ME		ect No. 218019 EVATION: 317 ft	NOTES		Sileet 1 0j 2		
			-l-\							
DRILL RIG: Died		(tra	CK)		ATUM: NAVD88					
DRILLER: S&ME				ВС	DRING DEPTH: 40.0 ft					
HAMMER TYPE:				_	OSURE: Cuttings			45005		
DRILLING METHO		rota	ry	LO	OGGED BY: Talecia Dyson	LATITUI				9.40426
SAMPLING METH	1 0D : 33				PROJECT COORDINAT	E STSTEIVI - NA				
DEPTH (feet)	OTES	Origin/Identifier	GRADHIC GRECOV		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		A % Fines O NMC H PLLL 40 60	80	ELEVATION
0	1.0	Cultivat ed Zone	SS-	1	LEAN CLAY (CL), some silt, soft, brown, moist LEAN CLAY (CL), trace roots, some silt,	3-1-2 N = 3 PPV= 0.8	•			- - -
			SS-	2	firm, brown, moist to very moist	3-3-4 N = 7 2-3-5	•			- - -
5—	5.5		SS-	3		N = 8 PPV= 0.5	•			- 313 – - -
- - - -		Loess	SS-	4	LEAN CLAY (CL), little sand, firm to stiff, brown, moist	2-3-3 N = 6 PPV= 0.5	•			- - - -
10 —			SS-	5		3-4-5 N = 9	•			- 308 - - -
	11.0				SILTY SAND (SM), little clay, medium dense, red brown, moist					- - - -
15 —			SS-	6		4-5-6 N = 11	•			303 –
- - - -	16.0	Marine Soils			POORLY GRADED SAND WITH SILT (SP-SM) medium dense to dense, orange, moist to very moist	,				- - - -
20 —			SS-	7		6-6-8 N = 14	•			 298
										- - -
GROUNDWATER		D	ATE/TIME	T	DEPTH (FT) REMARKS					
ATD	✓ 02/ ✓ 02/				not encountered - cave in at 1 hour reading - wet cave at				&	
F[[]] ()F [] [[] [[] [[] [[] [[] [[] [[UZ/									
END OF DRILLING AFTER DRILLING	▼ 02/	18/2	022		312 hour reading - wet cave	at 22 feet		4		

PROJECT:					R 222, St	al City - TVA Substation itanton, Tennessee		BOR		OG: B-64		
DATE DRILLE	:D: 02/	ns /202				roject No. 218019 ELEVATION: 317 ft	NOT	ΓES:	3/10	eet 2 of 2		
DRILL RIG:	-	-		ck)		DATUM: NAVD88						
		.11 D-30	(па	CK)								
DRILLER: S						BORING DEPTH: 40.0 ft						
HAMMER TY						CLOSURE: Cuttings	LATI	TUDE:	35.415	835 LONG	GITUDE: -	89.40426
DRILLING M SAMPLING N			rota	ГУ		LOGGED BY: Talecia Dyson PROJECT COORDINAT						
DEPTH (feet)	NOTE	:s	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	MATERIAL DESCRIPTION	BLOW COU DATA (SPT N-val	JNT	ANDARD 20	PENETRATION △ % Fines ○ NMC H PLLL 40 60	80	ELEVATION
25 —		26.0			SS-8	POORLY GRADED SAND WITH SILT (SP-SM) medium dense to dense, orange, moist to very moist POORLY GRADED SAND (SP), very dense,	11-15-1 N = 31		•			293 — — — — — — —
30 —					SS-9	orange, very moist to wet	12-18-3 N = 53			•		288
35 —					SS-10		16-41-50 N = 50/4					283 -
40		40.0			SS-11	Borehole terminated at 40.0 feet	20-41-4 N = 87				•	278 -
						DEPTH						
GROUNDW. ATD END OF DRILLI AFTER DRILLIN AFTER DRILLIN	DRILLING ▼ 02/18/2022					not encountered - cave in at 1 hour reading - wet cave at 312 hour reading - wet cave 360 hour reading - wet cave	22 feet 22 feet at 22 fee				&	



Cone Penetration Test

B-65

Date:

Estimated Water Depth:

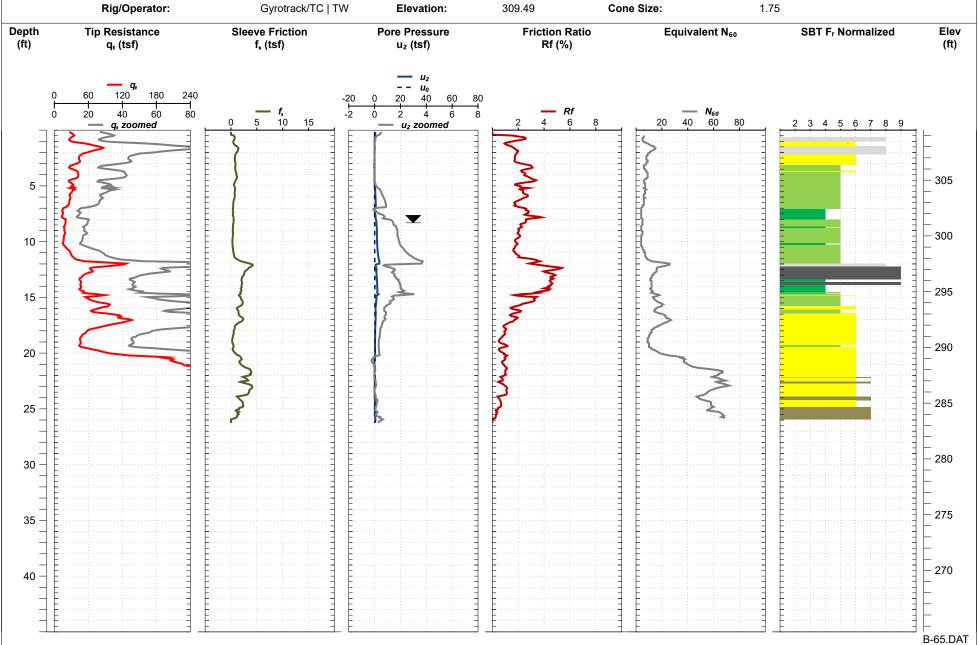
27-Jan-2022

8.0 ft

Latitude: Longitude: 35.415823 -89.40353

Total Depth: Termination Criteria:

Maximum Reaction Force



DATE DRILLED: 02/16/2022 DRILLER: SEAME BORING DEPTH: 40.0 ft HAMMER TYPE: Automatic hammer CLOSURE: CULTings DRILLING METHOD: SAMPLING METHOD: SS NOTES SAMPLING METHOD: SS NOTES SAMPLING METHOD: SS NOTES SAMPLING METHOD: SS NOTES SAMPLE NO. (RECOVERY) SAMPLE NO. (RECOVERY) SS-1 SS-	PROJECT:				R 222, St	I City - TV tanton, Te oject No.			ВО		. OG: B-66 eet 1 of 2		
DRILLIER S&ME BORING DEPTH: 40.0 ft	DATE DRILLED: 02	2/16/202	2					ТОМ	ΓES:				
ADDITION METHOD: SAMPLING METHOD: SAMPLING METHOD: STATEMENT STANDARD PINETRATION	DRILL RIG : Diedi	rich D-50	(tra	ck)		DATUM: N	NAVD88						
DRILLING METHOD: STANDARD PINTED STANDARD PINTED NOTE STANDA	DRILLER: S&ME					BORING D	PEPTH: 40.0 ft						
DRILLING METHOD: LOGGED BY: Talecia Dyson LATTUDE: 35.4.159.13 LONGITUDE: 89.40292	HAMMER TYPE: /	Automati	c ha	mmer		CLOSURE:	Cuttings						
NOTES								LATI	TUDE:	35.41	5813 LON	GITUDE:	-89.40292
13.0 SS-1 TOPSOIL, 3 inches LEAN CLAY (CL), some silt, few sand, very soft to firm, brown, moist PV=1.5 SS-2 N=4 N=7 PPV=0.2 N=3 PPV=0.2 N=4 PPV=0.5 N=3 PPV=0.5 N=7 PPV=0.5 N=13 PPV	SAMPLING METH	OD: SS					PROJECT COORDINATE	SYSTEM -	NAD 19	83 StatePla	ne Tennessee Fl	PS 4100 Feet	Ţ
13.0 SS-1 TOPSOIL, 3 inches LEAN CLAY (CL), some silt, few sand, very soft to firm, brown, moist PV=1.5 SS-2 N=4 N=7 PPV=0.2 N=3 PPV=0.2 N=4 PPV=0.5 N=3 PPV=0.5 N=7 PPV=0.5 N=13 PPV	DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC			MATERIAL DESCRIPTION	DATA	TNU		△ % Fines ○ NMC ├─ PLLL		
SS-1 IEAN CLAY (CL), some silt, few sand, very soft to firm, brown, moist PPV=1.5	0	0.3		عادد عادد	<u> </u>	TOPSO	II 3 inches	2-2-2	-				=
SS-2 4-3-4 N=7 PPV= 0.2 2-1-2 N=3 PPV= 0.2 1-2-2 N=4 PPV= 0.5 SS-5 SS-6 LEAN CLAY WITH SAND (CL), some silt, stiff, brown and gray, moist 15 16.0 SS-6 POORLY GRADED SAND (SP), loose to medium dense, gray and orange, moist POORLY GRADED SAND (SP), loose to medium dense, gray and orange, moist SS-7 SS-7 SS-7 SS-8 288 GROUNDWATER DATE/TIME DEPTH REMARKS 288 ATD SS CO2/16/2022 7.3 1 hour reading		0.5			SS-1	LEAN C	LAY (CL), some silt, few sand, very	N = 4	•				
SS-3 SS-3	_				\forall	soft to	firm, brown, moist	PPV= 1.	.5				
SS-3 PV= 0.2	4				SS-2			I					-
SS-5 SS-4					Ë			1					
SS-5 SS-4	_				M 55-3			2-1-2	•				-
12-2 N = 4 PPV= 0.5	5—							N = 3					303 -
SS-4 PV= 0.5 SS-4 PV= 0.5 SS-5 SS-6 SS-7 S	-							PPV= 0.	.2				-
SS-5 SS-5	7		ess		\square			1			,] -
SS-5 SS-6 SS-7	-	7	으		SS-4				-		,		
SS-5 SS-6 SS-7	7												_
13.0 LEAN CLAY WITH SAND (CL), some silt, stiff, brown and gray, moist SS-6 POORLY GRADED SAND (SP), loose to medium dense, gray and orange, moist SS-7					М			1					
SS-6 LEAN CLAY WITH SAND (CL), some silt, stiff, brown and gray, moist SS-6 POORLY GRADED SAND (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (Fr) Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, gray and orange, gray and orange, gray and gray an	4				SS-5								-
SS-6	10												298 –
SS-6	-								\vdash				
SS-6]												
16.0 SS-6 brown and gray, moist N = 13 PPV = 2.2 POORLY GRADED SAND (SP), loose to medium dense, gray and orange, moist SS-7 S	+	13.0											-
SS-6 POORLY GRADED SAND (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, moist Poorly Graded Sand (SP), loose to medium dense, gray and orange, gray and orange, gray and orange, gray and orange, gray and	7							6-6-7					
16.0 Sign of the property	_				SS-6	Drown	and gray, moist			•0			
GROUNDWATER DATE/TIME DEPTH (FT) REMARKS ATD SIND OF DRILLING O2/16/2022 7.3 1 hour reading	15 —				\square			FFV- 2.	_				293 —
SS-7 medium dense, gray and orange, moist 9-13-11 N = 24		16.0											
SS-7	-		slic										-
SS-7	7		ne Sc				0-7						
SS-7	+		Marii					0.43.44	. -				-
GROUNDWATER DATE/TIME PETH (FT) REMARKS ATD SEND OF DRILLING SEND 02/16/2022 7.3 1 hour reading]				V 65.7			I					
GROUNDWATER DATE/TIME DEPTH (FT) REMARKS ATD SEND OF DRILLING SEND 02/16/2022 7.3 1 hour reading	20				∑ 33-7								
ATD END OF DRILLING OZ/16/2022 7.3 1 hour reading	_												_
ATD END OF DRILLING OZ/16/2022 7.3 1 hour reading													
ATD END OF DRILLING OZ/16/2022 7.3 1 hour reading							I						
END OF DRILLING ▼ 02/16/2022 7.3 1 hour reading			D	ATE/TI	ME		REMARKS						
			1 <i>6 /</i> 2	ດລວ		7 2	1 hour roading					8	
AFTER DRILLING ▼			10/2	UZZ		/.5	T Hour readilik				41		
	AFTER DRILLING	T											

PROJECT:				R 222, St	l City - TV anton, Te oject No.				BOF	RING LO	OG: B eet 2 d			
DATE DRILLED: 02/	16/2022	2			ELEVATION	N: 308 ft		ПОЛ	ES:					
DRILL RIG: Diedric	ch D-50	(tra	ck)		DATUM: N	NAVD88								
DRILLER: S&ME					BORING D	EPTH: 40.0 ft								
HAMMER TYPE: Au	ıtomatio	c har	nmer		CLOSURE:	Cuttings								
DRILLING METHOD	:				LOGGED B	Y: Talecia Dys	on	LATI	TUDE:	35.4158	813	LONGITU	JDE:	-89.40292
SAMPLING METHO	D: SS					PROJEC	CT COORDINATE S	SYSTEM -	NAD 198	3 StatePlane	e Tenness	ee FIPS 410	00 Feet	
DEPTH (feet)	ES	Origin/Identifier	GRAPHIC	SAMPLE NO		MATERIAL DESC	RIPTION	BLOW COU DATA (SPT N-val	INT	20	A % Fii O NM0 H PL 40	nes C LL	T DATA	ELEVATION
						Y GRADED SAND (S								_
25 —	27.0			SS-8	mediur	n dense, gray and	orange, moist	5-5-5 N = 10		• 0				283
30 —	27.0	Soils		SS-9	FAT CLA gray, m	AY (CH), few sand, oist	trace gravel, stiff,	3-4-5 N = 9 PPV= 2.	5)				- - - - 278 -
-	32.0	Marine Soils		SS-10		Y GRADED SAND (S ravel, medium der	SP), some clay, nse, orange, moist	4-8-12 N = 20		•				
35	36.0			<u>/ </u>		Y GRADED SAND (S ry moist	SP), very dense,							273 - - - - - - - -
40 —	40.0			SS-11	Boreho	ole terminated at 4	0.0 feet /	36-50/4 N = 50/4						268 -
-							, , , , , , , , , , , , , , , , , , , ,							- - - - - - - - -
GROUNDWATER		D	ATE/TI	ME	DEPTH (ET)		REMARKS	-						
ATD END OF DRILLING	✓ 02/1 ▼ 02/1				7.3	1 hour reading								



Cone Penetration Test

B-67

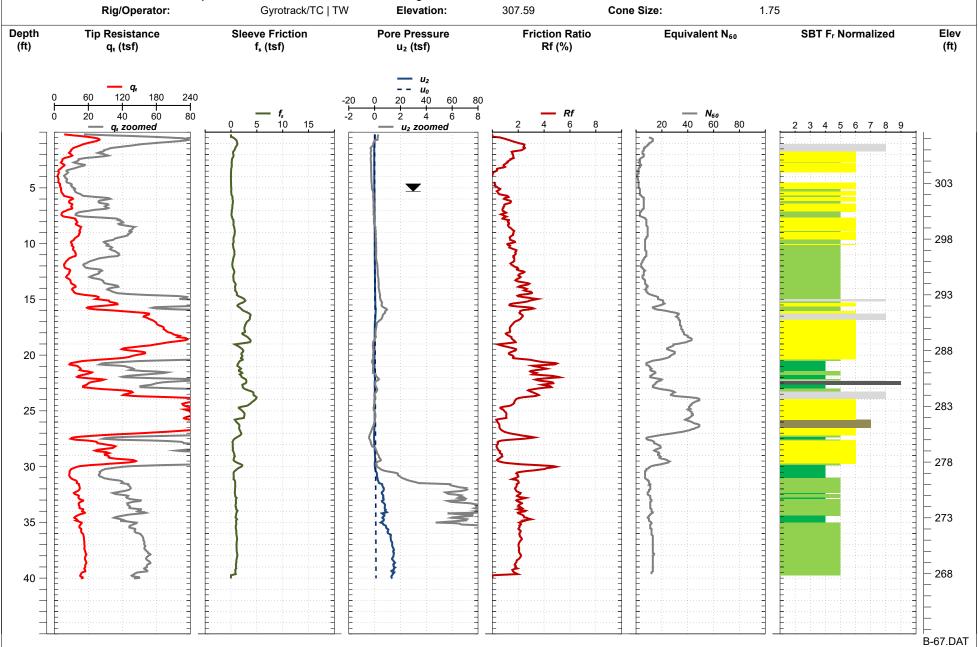
Date:

Estimated Water Depth:

27-Jan-2022 5.0 ft Latitude: Longitude: 35.415802 -89.40225 Total Depth:
Termination Criteria:

40.0 ft Maximum R

Maximum Reaction Force



PROJECT:				R 222, St	l City - TV anton, Te			В		LOG: B-6			
DATE DRILLED: 02	2/18/202	2			ELEVATIO	N: 307 ft	'	NOTES:	:				
DRILL RIG: D-50					DATUM:	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft							
HAMMER TYPE: A	Automati	c ha	mmer		CLOSURE:	Cuttings							
DRILLING METHO						Y: Talecia Dyson		LATITUD)E: 35.4	15791 LC	NGITUI	DE: -89	9.40158
SAMPLING METH	OD: SS			1		PROJECT COORDINA	TE SYST	EM - NAD) 1983 StateP	lane Tennessee	FIPS 4100) Feet	
DEPTH (feet)	DTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA `N-value)	STANDAR 20	A % Fines ○ NMC ☐ PLLI 40 6	s		ELEVATION
0	0.3		عالام عالاه	\	TOPSO	IL, 3 inches		2-3-3					-
_				SS-1	LEAN C	LAY (CL), some silt, some sand, so		N = 6	•				_
_				\forall	to stin,	brown and gray, moist		5-4-5 N = 9					-
-				SS-2				IN - 9	•				-
								4-5-6					_
-				SS-3				N = 11	•				303 -
5 —				Д									-
_								4-7-6					=
-				SS-4				N = 13	•				=
													_
-								2 2 2					_
7				SS-5				2-2-2 N = 4	•				298 –
- 10 —				∑ 33-3									-
_		ν											-
		Loess											-
-													-
7													_
				М				3-5-5 N = 10					- 293 –
				SS-6			'	• 10					293 -
15 — —													-
													-
_													_
_													-
+				Ь				4-6-6					-
7				SS-7			ľ	N = 12	•				288 – -
20 —													-
_													_
													=
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARK	(S						
ATD	\Box				V-1					=		&	
END OF DRILLING AFTER DRILLING	T												
AFTER DRILLING	T				<u> </u>								

PROJECT:				R 222, St	l City - TV anton, Te oject No.			В	ORING	LOG: heet 2			
DATE DRILLED: (02/18/202	2			-	N: 307 ft	_	NOTES:					
DRILL RIG: D-5	0				DATUM: N	NAVD88							
DRILLER: S&M	E				BORING D	EPTH: 40.0 ft							
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	Cuttings							
DRILLING METH						Y: Talecia Dyson		LATITUD	E: 35.4	15791	LONG	ITUDE:	-89.40158
SAMPLING MET	HOD: SS					PROJECT COORDINAT	E SYST	EM - NAD	1983 StateP	lane Tenne	essee FIPS	4100 Feet	
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N		MATERIAL DESCRIPTION	1	V COUNT DATA N-value)	STANDAR	∆ % ○ N	Fines	80	ELEVATION
25 —	26.0	Loess		SS-8		LAY (CL), some silt, some sand, soft brown and gray, moist	3	3-4-5 N = 9	•				283 -
30 -	26.0			SS-9		Y GRADED SAND (SP), trace clay, orange and gray, very moist		1-4-5 N = 9	•				278-
35 —	32.0	Marine Soils		SS-10	LEAN C	LAY (CL), some sand, soft, orange, oist		?-2-1 N = 3	•				273 -
- - - - - - - - -	37.0 40.0			SS-11	FAT CLA	AY (CH), some sand, stiff, gray, moist	3	3-4-5 N = 9	•				
40 -					\Boreho	le terminated at 40.0 feet							
GROUNDWATE	R	D	ATE/T	ME	DEPTH (ET)	REMARKS							_
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	▼ ▼ ▼				(FT)							&	



Cone Penetration Test

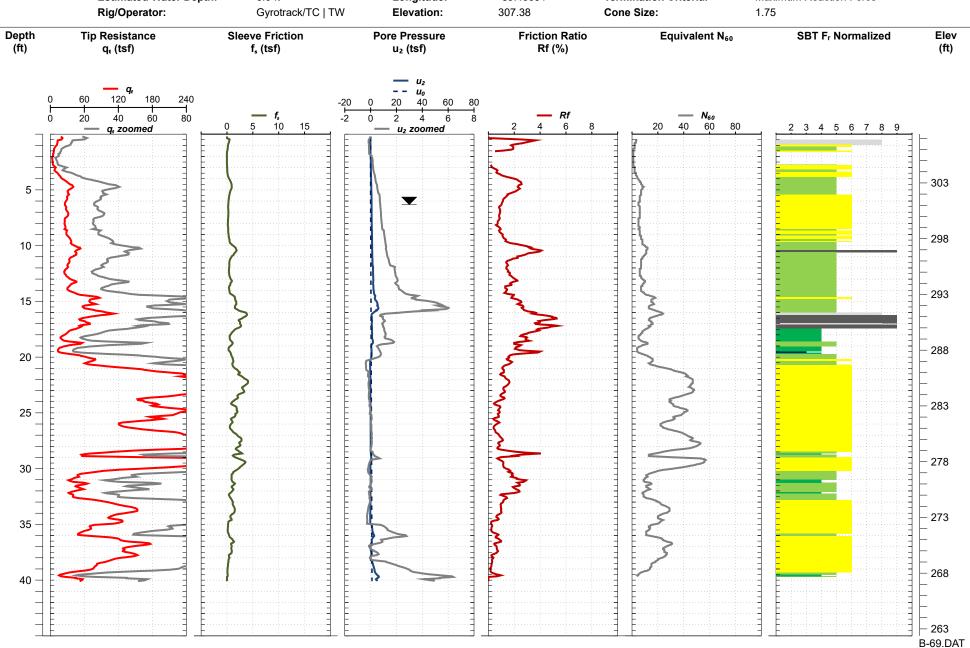
B-69

Date:

Estimated Water Depth:

27-Jan-2022 6.0 ft Latitude: Longitude: 35.415779 -89.40091 Total Depth:
Termination Criteria:

40.1 ft Maximum Reaction Force



PROJECT:				R 222, S	tanton, Te		В	BORING LOG: B-70 Sheet 1 of 2					
DATE DRILLED: 02	/20/202	2		S&IVIE P	roject No.	218019 N: 328 ft	NOTES:		oneer 1 oj 2	•			
DRILL RIG: Diedi			ck)		DATUM:								
DRILLER: S&ME		(0.0	,			EPTH: 40.0 ft							
HAMMER TYPE: /	\utomati	c hai	mmer		CLOSURE:								
DRILLING METHO		Cilai	IIIIIEI			Y: Talecia Dyson	115319 LON	GITUDE: -	89.40629				
SAMPLING METH					1	PROJECT COORDINATE	SYSTEM - NAI) 1983 StateF	Plane Tennessee FIF	S 4100 Feet			
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVEI		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDA	A % Fines NMC PLLL 40 60	N TEST DATA	ELEVATION		
0		Cultivat ed Zone		M		LAY (CL), some silt, little sand, firm,	3-3-3				-		
	1.0	Cul		SS-1		dry LAY (CL), some silt, some sand, firm brown red, slightly moist	N = 6 PPV= 2.5	•			- - -		
_				SS-2			3-3-5 N = 8				-		
_							PPV= 1.5				-		
-				SS-3			3-6-6	•			-		
5—				Δ			N = 12 PPV= 1.8				323 -		
											_		
-				SS-4			4-5-7 N = 12	•			_		
							PPV= 2.0				-		
-							2-2-4				_		
7		SS		SS-5			N = 6	•			_		
10 —		Loess					PPV= 1.8				318 –		
-											_		
7											-		
_											_		
_											-		
				M			2-4-9 N = 13				_		
45				SS-6			PPV= 1.2				313 –		
15 - -				_							-		
_											-		
_											-		
_	18.0										_		
+				М	l l	Y GRADED SAND (SP), medium to very dense, red and orange,	6-10-10				_		
7		Marine Soils		SS-7	slightly	moist to very moist	N = 20	•			308 –		
20		ırine									- 306		
_		Ž									-		
											_		
GROUNDWATER		D.	ATE/TI	ME	DEPTH (FT)	REMARKS					1		
ATD	☑ 02/				35.0					&			
END OF DRILLING		20/2				1 hour reading - dry cave in a							
AFTER DRILLING AFTER DRILLING	▼ 02/	21/2	UZZ			24 hour reading - dry cave at	24.3 IEEL		- 11				
						1				4 4			

PROJECT:	ROJECT: Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019							В		LOG: B-70 heet 2 of 2		
DATE DRILLED: 0	2/20/202	 2				N: 328 ft	ı	NOTES:		10012 0, 2		
DRILL RIG: Died					DATUM:							
		(tra	CKJ									
DRILLER: S&ME						PEPTH: 40.0 ft						
HAMMER TYPE:		c hai	mmer		CLOSURE:			LATITUDE	3 5.41	5319 LONG	GITUDE: -8	39.40629
DRILLING METHO SAMPLING METH					LOGGED	SY: Talecia Dyson PROJECT COORDINA						33.40023
	NOTES ⅓			SAMPLE N		MATERIAL DESCRIPTION	BLOW D	COUNT ATA N-value)	STANDARD PENETRATION TEST DATA			
		Origi	GRAPHIC				(3711)	v-value)	20	⊢ PLLL 40 60	80	ELEVATION
25 -	нс			SS-8 SS-9	dense	Y GRADED SAND (SP), medium to very dense, red and orange, moist to very moist	9-1	9-13 = 22 - - - - - - - - - - - - - - - - - -				 303
30 —		Marine Soils		SS-10			1	8-18 = 26	•			298 - - - - - - - - 293
35 — — — — — — — — — — — — — — — — — — —	40.0			SS-11				21-38 = 59		•		
-						ole terminated at 40.0 feet		-				- - - - - -
GROUNDWATER		D	ATE/T	ME	DEPTH (FT)	REMARI	KS					
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	□ □ 02/2 □ □ 02/2 □ □ 02/2 □ □ □	20/2	022		35.0	1 hour reading - dry cave i 24 hour reading - dry cave					& &	

PROJECT:	Ford E S	В	BORING LOG: B-71 Sheet 1 of 2								
DATE DRILLED: 02	2/20/202	2			oject No. ELEVATIO		NOTES				
DRILL RIG : Diedr	rich D-50	(tra	ck)		DATUM: N	IAVD88					
DRILLER: S&ME		•			BORING D	EPTH:					
HAMMER TYPE: /	\utomati	c hai	mmer		CLOSURE:						
DRILLING METHO		C Hai	IIIIICI			Y: Talecia Dyson	LATITUE	DE: 35.4	15307 LON	GITUDE:	-89.40557
SAMPLING METH						PROJECT COORDINATE	SYSTEM - NAI	0 1983 StateP	lane Tennessee FIP	S 4100 Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N	1	MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAR 20	A % Fines NMC PLLL 40 NMC 60	N TEST DATA	ELEVATION
0	1.0	Cultivat ed Zone		SS-1		LAY (CL), firm, brown, slightly moist LAY (CL), some silt, little sand, firm	3-3-4 N = 7 5-7-8	•			- - - -
		Loess		SS-2	to very	stiff, red brown, dry	N = 15 PPV= 1.2	•			_
 _ 5	5.5			SS-3			N = 20 PPV= 1.2	•			327 -
				SS-4		Y GRADED SAND (SP), some silt, n dense to very dense, red orange,	23-33-24 N = 57		•		- - - -
10 —				SS-5			4-10-12 N = 22 PPV= 4.5	•			322 -
		Marine Soils		<u>√</u> /			4-13-34				- - - - - -
15 — - - -	17.0			SS-6			N = 47		•		317 -
20 –	17.0			SS-7	dense t	Y GRADED SAND (SP), medium o very dense, orange pink, slightly o very moist	10-23-31 N = 54		•		312 —
	HC	-									
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS					
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING		20/2 20/2			40.0	1 hour reading - dry cave in a 24 hour reading - dry cave at					

PROJECT: Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019									BORING LOG: B-71 Sheet 2 of 2							
DATE DRILLI	ED: 02/	/20/202	2			ELEVATION		'	NOTES:							
DRILL RIG:	Diedri	ch D-50) (tra	ck)		DATUM: N	NAVD88									
DRILLER: S	S&ME					BORING D	EPTH:									
HAMMER T		utomat	ic ha	mmer		CLOSURE:	Cuttings									
DRILLING M							Y: Talecia Dyson		LATITUDE	35.41	15307	LONG	ITUDE:	-89.40557		
SAMPLING	METHC	D: SS		,			PROJECT COO	RDINATE SY	STEM - NAD	1983 StatePl	ane Tennes	ssee FIPS	4100 Feet			
DEPTH (feet)	NOT	ES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I	MATERIAL DESCRIPTION		LOW COUNT DATA SPT N-value)	STANDAR	D PENETF △ % F ○ NN ⊢ PL 40	Fines MC	80	ELEVATION		
30 - 35 - 40 - 40		40 <u>,C</u>	Marine Soils		SS-9 SS-10	dense t	Y GRADED SAND (SP), med to very dense, orange pink to very moist	s, slightly	7-10-12 N = 22 - 10-21-27 N = 48 - 7-11-12 N = 23 - 3-8-12 N = 20 -					307		
			<u> </u>													
GROUNDW	/ATER		D	ATE/TI	IME	DEPTH (FT)	RE	EMARKS								
ATD		□ 02/				40.0							&			
END OF DRILL		Y 02/	20/2	022			1 hour reading - dry	cave in at 2	1.7 feet							
AFTER DRILLII AFTER DRILLII		Y					24 hour reading - dr	y cave at 21	/ teet							
AFTEK DKILLII	DVI	<u> </u>														

DDO IFCT:	OIFCT: Ford Blue Oval City - TVA Substation							BORING LOG: B-72						
PROJECT:				R 222, St	tanton, Te roject No.	ennessee	В	2 2						
DATE DRILLED: 02	/20/202	2			ELEVATIO	N: 324 ft	NOTES:							
DRILL RIG : Diedr	ich D-50	(tra	ck)		DATUM:	NAVD88								
DRILLER: S&ME					BORING D	EPTH: 40.0 ft								
HAMMER TYPE: A	utomati	c hai	mmer		CLOSURE:	Cuttings								
DRILLING METHO						Y: Talecia Dyson	LATITUD	E: 35.41	15297 LO I	NGITUDE:	-89.40495			
SAMPLING METH	OD: SS		,		<u>'</u>	PROJECT COORDINATE	SYSTEM - NAD	1983 StatePl	ane Tennessee F	IPS 4100 Feet				
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAR	D PENETRATIO △ % Fines ○ NMC ⊢ PLLL 40 60		ELEVATION			
0	1.0	Cultivat ed Zone		SS-1	I	LAY (CL), some silt, some sand, stiff, own, dry	3-4-5 N = 9	•			-			
	1.0			SS-2	LEAN C	LAY (CL), some silt, some sand, very hard, red brown, dry			•		- - - - - - -			
_ _ 5 — _		Loess		SS-3			N = 30 PPV= 3.5		•		319 -			
- - - -	6.5			SS-4		Y GRADED SAND (SP), little silt, m dense to dense, red and orange,	16-17-18 - N = 35		•		- - - -			
10 —				SS-5			6-14-15 N = 29	•	•		314 —			
15 —		Marine Soils		SS-6			6-10-12 N = 22	•			309 -			
20 –	<u>НС</u> 18.5	_		SS-7		Y GRADED SAND (SP), medium to very dense, orange, slightly moist moist	- 8-13-14 N = 27	•						
	, ,													
GROUNDWATER			ATE/TI	ME	DEPTH (FT)	REMARKS					l			
ATD END OF DRILLING AFTER DRILLING	= 02/	20/2 20/2 21/2	022		35.0	1 hour reading - dry cave in a 24 hour reading - dry cave at			1					
AFTER DRILLING	_										1			

PROJECT: Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee S&ME Project No. 218019								BORING LOG: B-72 Sheet 2 of 2						
DATE DRILLED: 02	/20/202	2				V: 324 ft		NOTES:		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, -			
DRILL RIG : Diedr			ck)		DATUM: N									
DRILLER: S&ME		`			BORING D	EPTH: 40.0 ft								
HAMMER TYPE: /	Automati	c hai	mmer		CLOSURE:									
DRILLING METHO		Cilai	· · · · · · · · · · · · · · · · · · ·			Y: Talecia Dyson								
SAMPLING METH			,			PROJECT COORDINAT	E SYSTE	M - NAD	1983 StatePl	ane Tennesse	e FIPS 4100 F	Feet		
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	l l	MATERIAL DESCRIPTION	D	/ COUNT DATA N-value)	STANDAR	△ % Find NMC	es	ELEVATION		
25- - - - - - - - - - - - - - - - - - -	40.0	Marine Soils		SS-9 SS-10	dense t	GRADED SAND (SP), medium o very dense, orange, slightly moist moist	8-1 N	16-20 = 36 - - 12-23 = 35 - - 21-27 = 48 - - -				299 -		
<u> </u>														
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS								
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	□ □ 02/20/2022 □ □ 02/20/2022 □ □ 02/21/2022				35.0	(F1)								

PROJECT:			S	R 222, S	al City - TV tanton, Te roject No.			В		LOG: B-7		
DATE DRILLED: 02	2/20/202	2				N : 317 ft		NOTES:	:			
DRILL RIG: Died	rich D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER: S&ME					BORING D	PEPTH: 40.0 ft						
HAMMER TYPE: /	Automati	c har	nmer		CLOSURE:	Cuttings						
DRILLING METHO	D: Mud	rota	ry			BY: Talecia Dyson		LATITUD	DE: 35.4	15286 LO	NGITUD	E: -89.40428
SAMPLING METH	OD: SS					PROJECT COORDINAT	E SYSTE	M - NA	0 1983 StatePl	lane Tennessee	FIPS 4100 F	eet
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE I		MATERIAL DESCRIPTION		/ COUNT OATA N-value)	STANDAR 20	A % Fines ○ NMC ├ PLLL 40 66	·	ELEVATION
0	1.0	Cultivat ed Zone		SS-1	brown, LEAN C	LAY (CL), some silt, little sand, firm slightly moist LAY (CL), some sand, few silt, firm	N	-3-3 I = 6 /= 1.2	•			
- - - -				SS-2	to stiff,	red brown, moist	N	-3-3 I = 6 V= 0.2	•			
 5 -	5.0			SS-3		CLAY (CL), some sand, few silt, firm red brown, moist	N	-4-5 I = 9 /= 1.2	•			313-
				SS-4			N	-5-6 = 11 /= 1.5	•			- - -
10 —		Loess		SS-5			N	-4-3 I = 7 V= 2.0	•			308 -
- - - - -												-
- - - 15 -				SS-6			N	-3-3 I = 6 V= 2.0	•			303 -
- - - -	17.0					LLY LEAN CLAY WITH SAND (CL), sti stiff, orange and gray, slightly mois						-
20 —		Marine Soils		SS-7			N	-7-9 = 16 /= 1.5	•			298 - - - - - -
								_				
GROUNDWATER		D	ATE/TI	ME	DEPTH	REMARKS						-
ATD	\Box			<u>-</u>	(FT)		-					&
END OF DRILLING	A											
AFTER DRILLING	T										II :	
AFTER DRILLING	T									J	11 -	

PROJECT:					R 222, St	I City - TV tanton, Te roject No.			В	DRING	LOG: B			
DATE DRILLED: 02	2/20/	/2022	2			ELEVATION			NOTES:					
DRILL RIG: Diedi	rich (D-50	(tra	ck)		DATUM: N	NAVD88							
DRILLER: S&ME			•	•		BORING D	PEPTH: 40.0 ft							
HAMMER TYPE: /	Autoi	matic	haı	mmer		CLOSURE:			-					
DRILLING METHO							BY: Talecia Dyson		LATITUDI	35.42	15286	LONG	ITUDE:	-89.40428
SAMPLING METH							PROJECT COOR	DINATE SYS	FEM - NAD	1983 StatePl	ane Tenness	see FIPS	4100 Feet	1
DEPTH (feet)	OTES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA Γ N-value)	STANDAR 20	D PENETRA	ines C	80	ELEVATION
25 -					SS-8 SS-9		LLY LEAN CLAY WITH SAND (stiff, orange and gray, slight	tly moist	7-6-5 N = 11 PV= 1.8 7-9-9 N = 18	•				293 -
30 -		30.0	Marine Soils		SS-10	POORLY orange	Y GRADED SAND (SP), very o , moist	3:	5-52/6" = 52/6"					
35		40.0			SS-11				5-50/3" = 50/3"					278 -
- - - - - - - - -						\ <u>Boreho</u>	ole terminated at 40.0 feet		_					- - - - - - -
GROUNDWATER			D	ATE/TI	ME	DEPTH (FT)	REN	MARKS						
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	✓ ✓ ✓ ✓					V.17							8	

PROJECT:			Ford F	Blue Ova	l City - TV	'A Substation		ODING	10C. D. 7/	1	
PROJECT.				R 222, S	tanton, Te	nnessee			LOG: B-74 heet 1 of 2		
DATE DRILLED: 02	/20/202	2			ELEVATIO	N: 310 ft	NOTES	:			
DRILL RIG: Diedr	rich D-50	(tra	ck)		DATUM: N	NAVD88					
DRILLER: S&ME					BORING D	EPTH: 40.0 ft					
HAMMER TYPE: A	Automati	c hai	mmer		CLOSURE:	Cuttings					
DRILLING METHO		rota	ry		LOGGED B	Y: Talecia Dyson	LATITUE				-89.40354
SAMPLING METH	OD: SS		1			PROJECT COORDINATE	SYSTEM - NAI	D 1983 StatePl	ane Tennessee FIF	S 4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)		△ % Fines ○ NMC ⊢ PLLL		ELEVATION
0				,				20	40 60	80	
-	1.0	Cultivat ed Zone		SS-1		LAY (CL), some silt, firm, brown and ghtly moist	2-3-2 N = 5	•			-
7				\mathbb{H}		LAY (CL), some silt, little sand, firm brown and gray, slightly moist	PPV= 0.5				_
				SS-2	to still,	brown and gray, slightly moist	3-4-3	•			-
_				Ц			N = 7 PPV= 0.5				
				М				_			306 -
_ +				SS-3			3-4-9 N = 13	•			-
5 — —							PPV= 1.8				-
-		Loess		П			6-3-6				-
7		Loe		SS-4			N = 9	•			
							PPV= 1.2				_
7				Ь			2-2-4				_
				SS-5			N = 6 PPV= 0.8	•			301 -
10 —				Ц			117 0.0				-
-	12.0										-
7						LAY (CL), some sand, some silt, firm] -
					to stin,	orange and gray, moist	2 2 4				-
_				SS-6			2-2-4 N = 6	•			296 –
- 15				∑ 33-0			PPV= 2.2				
-											_
		Soils									
-		Marine Soils									-
7		Ma									
_				\square			5-7-6 N = 13				291 –
-				SS-7			PPV= 2.0	•			-
20 —											-
-											-
											_
GROUNDWATER		D	ATE/TI	ME	DEPTH (FT)	REMARKS					
ATD	\Box				(17)					&	
END OF DRILLING	T										
AFTER DRILLING AFTER DRILLING	Y										
						1				1	•

PROJECT:				R 222, St	l City - TV anton, Te			В	ORING	LOG: B heet 2			
DATE DRILLED: (02/20/202	2				N: 310 ft	'	NOTES:					
DRILL RIG: Die	drich D-50	(tra	ck)		DATUM:	NAVD88							
DRILLER: S&M	E				BORING D	PEPTH: 40.0 ft							
HAMMER TYPE:	Automati	c hai	mmer		CLOSURE:	Cuttings							
DRILLING METH						BY: Talecia Dyson		LATITUD	E: 35.43	15274	LONGI	TUDE:	-89.40354
SAMPLING MET	HOD: SS					PROJECT COORD	INATE SYS	TEM - NAD	1983 StatePl	ane Tenness	see FIPS 4	100 Feet	_
DEPTH (feet)	NOTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		OW COUNT DATA T N-value)	STANDAR 20	D PENETR. △ % FI ○ NM ⊢ PL- 40	ines C	80	ELEVATION
25	23.0 32.0	Marine Soils		SS-9 SS-10	FAT CLA stiff, gr.	ELAY (CL), some sand, some sile orange and gray, moist CLAY WITH SAND (CL), some sile orange and gray, moist orang	ry P	7-6-4 N = 10 PV= 0.5 2-3-3 N = 6 2-3-6 N = 9 PV= 0.8					286 - - - - - - - - - - - - - - - - - - -
GROUNDWATE	R	D	ATE/TI	ME	DEPTH (FT)	REM	ARKS	- 1				,	
ATD	\Box											&	
END OF DRILLING	T												
AFTER DRILLING AFTER DRILLING	Y				+								
	1 1				1	1					7 4 4		1

PROJECT:				R 222, St	I <mark>l City - TV</mark> tanton, Te roject No.			В	ORING S	LOG: l heet 1			
DATE DRILLED: 0	2/20/202	2			ELEVATION	N: 309 ft	'	NOTES:					
DRILL RIG: Died	drich D-50	(tra	ck)		DATUM: N	NAVD88							
DRILLER: S&ME					BORING D	EPTH: 40.0 ft		-					
HAMMER TYPE:	Automati	c hai	mmer		CLOSURE:	Cuttings							
DRILLING METHO						SY: Talecia Dyson		LATITUD	E: 35.42	15264	LONG	ITUDE:	-89.40294
SAMPLING METH	HOD: SS		1			PROJECT COORDINAT	E SYST	EM - NAD	1983 StatePl	ane Tenne	ssee FIPS	4100 Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	1	W COUNT DATA N-value)	STANDAR 20		Fines MC	80	ELEVATION
0	1.0	Cultivat ed Zone		SS-1 SS-2 SS-3	brown, LEAN C	LAY (CL), little sand, some silt, stiff, slightly moist LAY (CL), some silt, little sand, stiff, and gray, slightly moist to moist	PP	2-4-5 N = 9 V= 1.0 1-5-8 I = 13 V= 1.5	•				- - - - - - - - - - - -
5		Loess		\$\$-4			N PP 5 N PP	I = 15 V= 2.2 5-4-5 N = 9 V= 1.5	•				304
10 -	12.0			SS-5	to very	LAY (CL), some sand, with silt, firm stiff, orange brown and gray,	PP	V= 2.5	•				299 - - - - - - - - -
- - - 15 - - - - -		Marine Soils		SS-6	slightly	moist	N	5-5-9 I = 14 V= 2.0	•				
20 -		2		SS-7			N	13-12 I = 25 V= 4.2	•				289
GROUNDWATER	R	D.	ATE/TI	ME	DEPTH (FT)	REMARKS	;						
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	✓ ✓ ✓ ✓				(FT)							&	

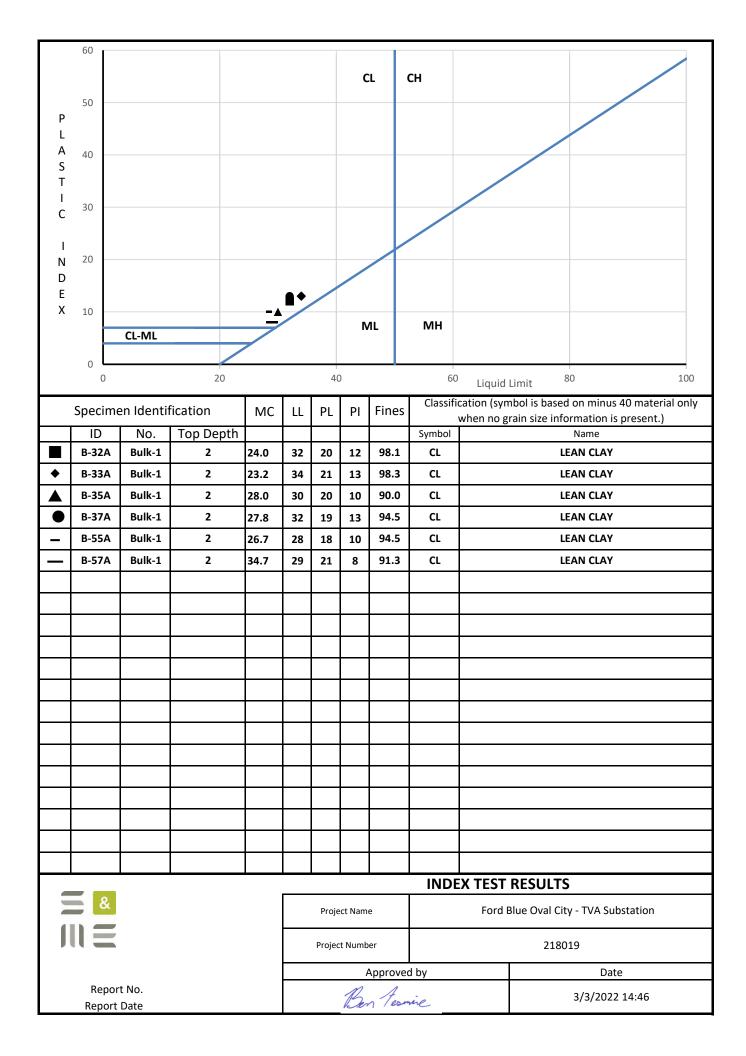
PROJECT:				R 222, St	l City - TV anton, Te			В	ORING	LOG: l heet 2			
DATE DRILLED: 0	2/20/202	2			ELEVATION	N : 309 ft		NOTES:					
DRILL RIG: Died	drich D-50	(tra	ck)		DATUM: N	NAVD88							
DRILLER: S&M	Ξ				BORING D	EPTH: 40.0 ft							
HAMMER TYPE:	Automati	c ha	mmer		CLOSURE:	Cuttings							
DRILLING METHO		rota	ry		LOGGED B	Y: Talecia Dyson		LATITUDE		15264	LONGITUI		39.40294
SAMPLING METH	HOD: SS		T			PROJECT COORDII	NATE SYST	EM - NAD	1983 StatePl	ane Tenne	ssee FIPS 4100	Feet	
DEPTH (feet)	OTES	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA [*] N-value)	STANDAR	D PENETI	ИC		ELEVATION
30-	28.0 29.0	Marine Soils		SS-9 SS-10 SS-11	POORL's mediur	LAY (CL), some sand, with silt, firstiff, orange brown and gray, moist Y GRADED SAND (SP), with silt, in dense, gray and gray, moist Y GRADED SAND WITH SILT (SP) in dense, gray, moist	-SM), PF	2-3-4 N = 7 -4-7-6 N = 13 -4-5-9 N = 14 PV = 2.5					284
													_
GROUNDWATER		D	ATE/T	IME	DEPTH (FT)	REMA	RKS					0_	
ATD END OF DRILLING	▼											Č	
AFTER DRILLING	T												
AFTER DRILLING	•												

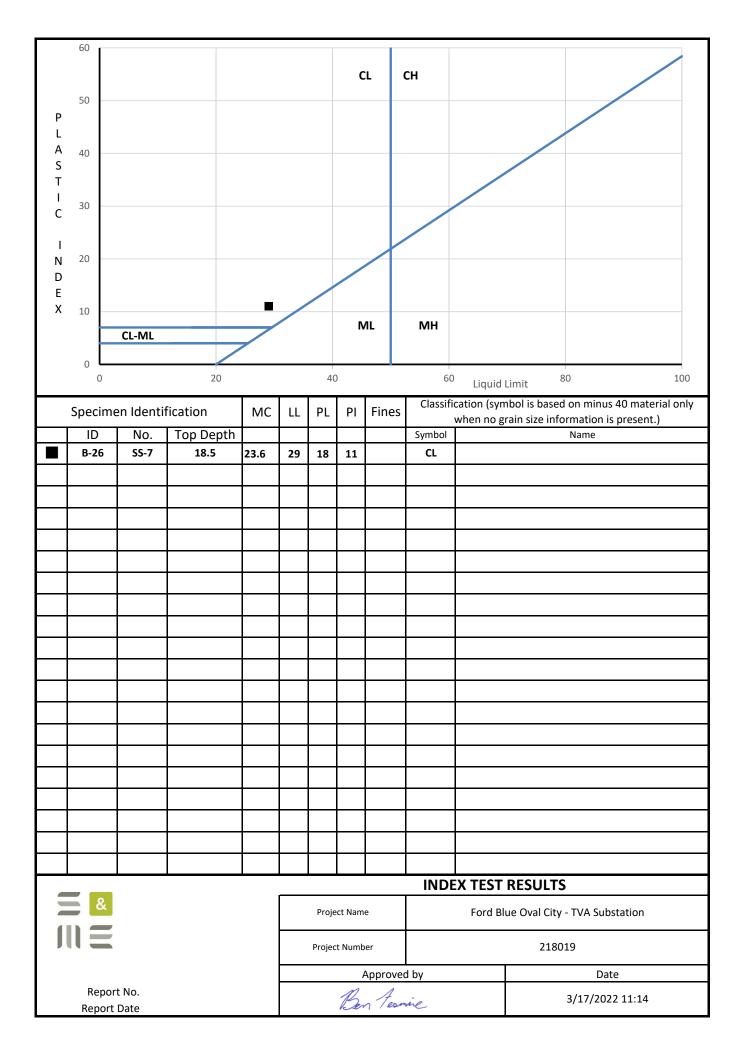
						1				
PROJECT:			SR 222, St	anton, Te		В		LOG: B-76 heet 1 of 2		
DATE DRILLED: 02	/19/2022			oject No.		NOTES:		1001 2		
DRILL RIG: Diedr				DATUM:						
DRILLER: S&ME	1011 10 30 (truck)			EPTH: 40.0 ft					
	utomotio	h a na na a								
HAMMER TYPE: A DRILLING METHO				CLOSURE:	Y: Talecia Dyson	LATITUD	E: 35.41	15252 LONG	SITUDE:	-89.40226
SAMPLING METHO		otal y		LOGGED	PROJECT COORDINATE	SYSTEM - NAG) 1983 StatePl	ane Tennessee FIPS	4100 Feet	
DEPTH (feet)	TES	Origin/Identifier GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION	BLOW COUNT DATA (SPT N-value)	STANDAR 20	D PENETRATION △ % Fines ○ NMC ⊢ PLLL 40 60	TEST DATA	ELEVATION
0		Zone	SS-1	brown LEAN C	LAY (CL), some silt, few sand, firm, and gray, slightly moist LAY (CL), some silt, little sand, firm stiff, brown and gray, slightly moist	3-4-3 N = 7 PPV= 1.2	•			309 -
			SS-2	,	,	4-4-4 N = 8 PPV= 1.0	•			- - - - -
5 — - -		Loess	SS-3			6-9-12 N = 21 PPV= 2.2				304 -
		ГО	SS-4			N = 14 4-4-6	•			- - - -
10 -	▼		SS-5			N = 10	•			299
- - - - - - 15 –	12.0		SS-6		LAY (CL), some sand, some silt, stiff stiff, orange and gray, moist	3-4-6 N = 10	•			- - - - - 294 -
- - - - - -		Marine Soils				8-9-11				- - - - - - - -
20	22.0		SS-7			N = 20 PPV= 1.8	•			289
GROUNDWATER		DATE/1	TIME	DEPTH	REMARKS					
ATD END OF DRILLING AFTER DRILLING AFTER DRILLING	✓			10.9	24 hour reading				&	,
VI I LIV DVITTINO	-								4	1

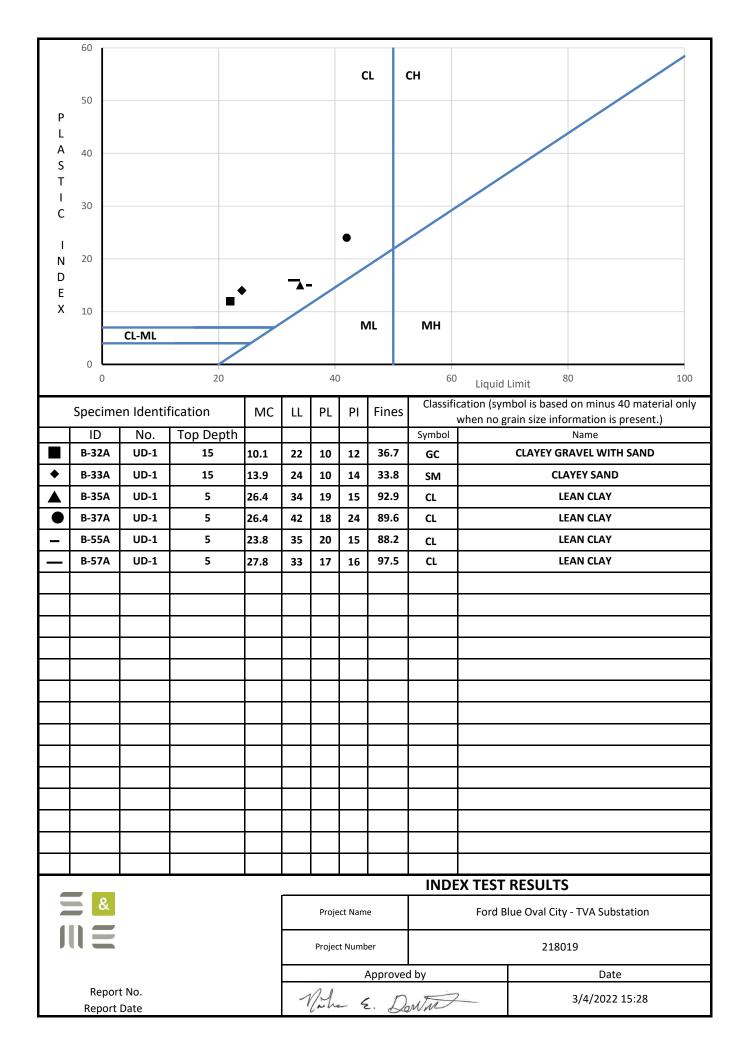
PROJECT	:					Blue Ova R 222, St S&ME Pi	anton,	Ter			В	ORING		B-76 2 of 2		
DATE DRILL	LED: 02,	/19/	/2022	2					: 309 ft		NOTES:					
DRILL RIG:	Diedr	ich	D-50	(tra	ck)		DATUM	: N	AVD88							
DRILLER:	S&ME			-			BORING	DE	PTH: 40.0 ft		-					
HAMMER 1		uto	matic	har	nmer				Cuttings		-					
DRILLING N									: Talecia Dyson		LATITUD	E: 35.4	15252	LONG	ITUDE:	-89.40226
SAMPLING									PROJECT COORDINATE	SYST	EM - NAD	1983 StateP	lane Tenn	essee FIPS	4100 Feet	
DEPTH (feet)	NO	TES		Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER	I		MATERIAL DESCRIPTION	1	W COUNT DATA N-value)	STANDAF	∆ % ○ N	Fines NMC PLLL 60	80	ELEVATION
25			40.0	Marine Soils		SS-8 SS-9 SS-10	brov	νη, ν	e terminated at 40.0 feet	4 N	-10-10 I = 20 -5-10 I = 15 N = 3					284 -
GROUNDV	NATER			D	ATE/TI	ME	DEPTH	1	REMARKS	-						
ATD		∇			•		(FT)	+							8	
END OF DRIL	LING	7														
AFTER DRILL			02/2	20/2	022		10.9) [24 hour reading	_						
AFTER DRILL	ING	•														

PROJECT:					tantor	ı, Te	/A Substation ennessee 218019		В	ORIN	I G LO Shee	G: B-7 et 1 of			
DATE DRILLED: 02	/19/202	2			ELEVA	TIOI	N: 309 ft	•	NOTES:						
DRILL RIG: Died	rich D-50	(tra	ck)		DATU	M : N	NAVD88								
DRILLER: S&ME					BORIN	IG D	DEPTH: 40.0 ft								
HAMMER TYPE: /	Automati	c ha	mmer		CLOSI	JRE:	: Cuttings								
DRILLING METHO							BY: Talecia Dyson		LATITUD	E : 3	5.41524	1 LC	NGITU	DE: -	89.40159
SAMPLING METH							PROJECT COORDINA	TE SYS	STEM - NAD	1983 St	atePlane T	ennessee	FIPS 4100) Feet	
DEPTH (feet)	TES	Origin/Identifier	GRAPHIC	SAMPLE I (RECOVE			MATERIAL DESCRIPTION		OW COUNT DATA PT N-value)		(∆ % Fine ○ NMC ⊢ PLL	s		ELEVATION
0	1.0	Cultivat ed Zone		SS-1	br LE	own AN C	CLAY (CL), some silt, little sand, firm and gray, slightly moist CLAY (CL), some silt, little sand, firm d, brown and gray, slightly moist		4-3-4 N = 7 PPV= 1.5	•					309 — - - -
- - - -				SS-2	to	naro	a, prown and gray, slightly moist		4-5-7 N = 12 PPV= 1.0	•					- - - -
 5 -	7	Loess		SS-3					10-15-22 N = 37 PPV= 3.0		•				304 –
- - - -	8.0			SS-4					10-12-12 N = 24 PPV= 2.0		•				- - -
10 —				SS-5	to		CLAY (CL), some sand, some silt, sti , stiff, orange and gray, slightly moi st	st	4-7-8 N = 15 PPV= 2.0	•					299 —
- - - - -	•			SS-6					4-4-5 N = 9	•					- - - - -
15 — - - - -		Marine Soils							PPV= 2.2						294 — - - - - -
				SS-7					4-4-6 N = 10	•					- - - - - - - - -
-															- - -
GROUNDWATER		D	ATE/T	IME	DEF (F		REMARK	S							
ATD	∇													&	
END OF DRILLING	2 02/				4.		1 hour reading								
AFTER DRILLING AFTER DRILLING	▼ 02/	20/2	.022		13	.6	24 hour reading								
, i let Dittelling											J		44		

PROJECT	:				R 222, St	-	VA Substation ennessee 218019		В		LOG: B-77		
DATE DRIL	LED: 02/2	19/2022	2				IN: 309 ft		NOTES:				
DRILL RIG:	Diedric	h D-50	(tra	ck)		DATUM:	NAVD88						
DRILLER:	S&ME					BORING I	DEPTH: 40.0 ft		1				
HAMMER	TYPE: Au	tomatio	hai	mmer		CLOSURE	: Cuttings						
DRILLING I			rota	ry		LOGGED	BY: Talecia Dyson		LATITUD				-89.40159
SAMPLING	METHO	D: SS					PROJECT COORDIN	IATE SYST	EM - NAD	1983 StatePla	ane Tennessee FI	PS 4100 Feet	
DEPTH (feet)	NOTE	:S	Origin/Identifier	GRAPHIC	SAMPLE N (RECOVER		MATERIAL DESCRIPTION		W COUNT DATA `N-value)	STANDARI	△ % Fines ○ NMC ⊢ PLLL 40 60	N TEST DATA	ELEVATION
25 —		24.0			SS-8	to verto mo	CLAY (CL), some sand, some silt, y y stiff, orange and gray, slightly m ist LY GRADED SAND (SP), little silt, um dense, orange and gray, moist	noist 10	0-12-6 N = 18	•			- - - - 284 -
- - - - - -		27.0			SS-9		CLAY (CL), some sand, firm, gray, y moist	:	2-3-4 N = 7	•			- - - - - - - - - -
30		32.0	Marine Soils		<u></u>	I	LY GRADED SAND (SP), loose to im dense, gray, very moist	PF	PV= 0.5				279
35 —					SS-10	medic	ini dense, gray, very moist		5-4-7 N = 11	•			274
40 —		40.0			SS-11	Boreh	ole terminated at 40.0 feet		3-6-2 N = 8	•			269
- - - -													- - - - - - - -
GROUND	WATER		D	ATE/T	IME	DEPTH (FT)	REMAR	RKS	-				
ATD END OF DRIL AFTER DRILL AFTER DRILL	LLING	▼ 02/1 ▼ 02/2 ▼ 02/2				4.4	1 hour reading 24 hour reading					& & & 	







	1				1		
8	ASTM	D6013- S	Standard Test Me	thade for	Report Number		
			ribution (Gradation		Report Date	3/3/2	
$\mathbb{M} \equiv$			Sieve Analysis	J., C. COC	Test Date	3/3/2	022
			, 0.0107		Sample Date		
Project Number	218019						
Project Name	Ford Blue O	val City - T\	/A Substation				
Client Name	Walbridge A	Aldinger LLC	;				
Client Address	777 Woodw	ard Ave. Su	ite 300, Detroit, MI				
KeyLAB ID	NASH20220	03020			Sample Type	Al	J
Location ID	B-32A				Sample Top De	pth 2	
Sample Reference	Bulk-1				Sample Base D	epth 10)
Description	Medium Bro	wn and Ligl	nt Brown, Sitly Clay		Method	ASTM D691	3 Method B
Classification	LEAN CLAY	′					
3"	1.5" 1'3/4"	3/8" #4	#10 #20 #	#40 #60 #100	#200		
100%				• • • •	-		
90%							
900/							
80%							
Percent Passing (%)							
is 60%							
sse do 76							
t 50% +							
93 40% -							
30%							
20%							
10%							
0%		<u> </u>					
100.00		10.00	1.00	0.1	10	0.01	0.00
			Millimeters				
			ACTNA DADTICI E	CIZE DEFINITION	NC		
Cobbles	/ 3/	00 mm (12")	ASTM PARTICLE :) and > 75 mm (3")		ım Sand	< 2.00 mm and > 0.4	125 mm (#10)
Gravel			I > 4.75 mm (#4)		Sand	< 0.425 mm and >	
Coarse Sand			d >2.00 mm (#10)	•	& Clay	< 0.075	
Maximum Pa		0.25 mm		parse Sand	0.0	Fine Sand	1.5
	Gravel	0.0		dium Sand	0.4	Silt & Clay	98.1
L	iquid Limit	32		astic Limit	20	Plastic Index	12
	1						
Descr	iption of Sand	d & Gravel F	Particles:	Rou	unded ⊠	Angular 🗆	 1
	Hard & Durak					thered & Friable	
'	riaid & Durak	JIE 🔼	3011	_	vvea	thered & mable	ı
References / Comme	ents / Deviatio	ons:					
rieferences, commi							
	This rer	oort shall not	be reproduced, except in j	full, without the w	vritten approval o	f S&ME. Inc	
	τερ		22. op. oudeed, except ur	y	approvat of		
	В	Fesmire		<u>BI</u>	<u>Fesmire</u>	Ben Fe	some
	Te	ested by		Ар	proved by	Signa	ture

658 Grassmere Park Dr., Suite 100, Nashville, TN 37211

	•				_		
8	ASTM	I DEQ13. Sta	ndard Test Met	hade for	Report Number		
			oution (Gradatio		Report Date	3/3/2022	
$\mathbb{M} \equiv$	l artiolo		Sieve Analysis	,,, 0, 00,10	Test Date	3/3/2022	2
					Sample Date		
Project Number	218019						
Project Name	Ford Blue C	Oval City - TVA	Substation				
Client Name	Walbridge A	Aldinger LLC					
Client Address	777 Woodv	ward Ave. Suite	300, Detroit, MI				
KeyLAB ID	NASH2022	203025			Sample Type	AU	
Location ID	B-33A				Sample Top De	epth 2	
Sample Reference	Bulk-1				Sample Base D	Pepth	
Description	Medium Bro	own Silty Clay			Method	ASTM D6913 M	lethod B
Classification	LEAN CLA						
3"	1.5" 1'3/4"	' 3/8'' #4	#10 #20 #	40 #60 #100	#200	<u> </u>	
100%	 	• • • • • • • • • • • • • • • • • • • •			+		\neg
90%							
							-
80%							
₹ 70% -							
<u>a</u>							_
Percent Passing (%) 50% • • • • • • • • • • • • • • • • • • •							
t Pa 50%							
Sent Solve							
40%							_
30%							
20%							_
100/							
10%							
0%							
100.00		10.00	1.00	0.1	10	0.01	0.00
			Millimeters				
			ACTM DARTICLE (TIZE DEFINITION	NC		
Cobbles		200 mm (12") ar	ASTM PARTICLE S nd > 75 mm (3")		ım Sand	< 2.00 mm and > 0.425	mm (#40)
Gravel		< 75 mm and >			Sand	< 0.425 mm and > 0.425	
Coarse Sand		4.75 mm and >			R Clay	< 0.425 mm and > 0.	073111111
Maximum P		0.25 mm		arse Sand	0.0	Fine Sand	1.2
IVIAXIIIIUIII F	Gravel	0.23 11111		lium Sand	0.5	Silt & Clay	98.3
						•	
_	iquid Limit	34	Pli	astic Limit	21	Plastic Index	13
Descr	ription of San	nd & Gravel Part	ticles:	Rou	ınded 🗵	Angular 🛘	
	Hard & Dura	able 🗵	Soft []	Wea	thered & Friable	
References / Commo	ents / Deviat	ions:					
	This re	eport shall not be	reproduced, except in f	ull, without the w	vritten approval o	f S&ME, Inc.	
			,,,			Ben Feson	ine
	E	BFesmire			<u>Fesmire</u>	Var / UST	
ĺ	7	Tested by		Ap	proved by	Signature	?

Nashville

658 Grassmere Park Dr., Suite 100, Nashville, TN 37211

					I=				
8	ASTM	D6913: Stan	ndard Test Met	thods for	Report Number	NASH_22000	288		
			ution (Gradatio		Report Date	3/3/2022			
$\mathbb{M} \equiv$			eve Analysis	,	Test Date	3/3/2022			
			-		Sample Date				
Project Number	218019	· • · · · · · · · · · · · · · · · · · ·							
Project Name		val City - TVA S	ubstation						
Client Name	Walbridge Al		200 Datasit MI						
Client Address KeyLAB ID	NASH20220	ard Ave. Suite 3	700, Detroit, ivii		Sample Type	AU			
Location ID	B-35A	3023			Sample Type Sample Top Dept				
Sample Reference	Bulk-1				Sample Top Depl				
Description		Gray, Lean Clay	,		Method ASTM D6913 Metho				
Classification	LEAN CLAY				Mediad Activided				
3"	1.5" 1'3/4"	3/8'' #4	#10 #20 #	#40 #60 #100	#200				
100%			1	+ + + +	1				
90%			———	•					
80%									
3 70%			-						
60% •									
Percent Passing (%) 40% - 40% - 40%									
50%									
93 40%									
									
30%									
20%									
10%									
	$\overline{+}$								
100.00		10.00	1.00	0.1	0	0.01	0.00		
			Millimeters						
			ASTM PARTICLE S						
Craval		00 mm (12") and			ım Sand	< 2.00 mm and > 0.425 i			
Gravel Coarse Sand		75 mm and > 4 1.75 mm and > 2		1	Sand દ્ર Clay	< 0.425 mm and > 0.0 < 0.075	/5 mm		
Maximum Pa		9.5 mm		parse Sand	3.7	Fine Sand	1.4		
Maximan	Gravel	2.6		dium Sand	2.3	Silt & Clay	90.0		
ا	iquid Limit	30		lastic Limit	2.3	Plastic Index	10		
	195.5						. •		
Descr	intion of Sand	I & Gravel Partic	 cles:	Rou	ınded 🗆	Angular ⊠			
	Hard & Durab			X		nered & Friable			
References / Comme	ents / Deviatio	ns:							
	This rep	ort shall not be re	eproduced, except in p	full, without the и	vritten approval of S				
	RF	- esmire		BI	<u>Fesmire</u>	Ben Fesnin	e		

Approved by

658 Grassmere Park Dr., Suite 100, Nashville, TN 37211

Signature

Tested by

8	ASTM	D6013: St	andard Test Met	hade for	Report Number	NASH_22	
			ibution (Gradatio		Report Date	3/3/2	
$\mathbb{M} \equiv$	I untidio		Sieve Analysis	,,, 0, 00,10	Test Date	3/3/2	022
			Cicro / manyere		Sample Date		
Project Number	218019						
Project Name	Ford Blue O	Oval City - TV	A Substation				
Client Name	Walbridge A	Aldinger LLC					
Client Address	777 Woodw	ard Ave. Suite	te 300, Detroit, MI				
KeyLAB ID	NASH20220	03022			Sample Type	AL	J
Location ID	B-37A				Sample Top Dep	oth 2	
Sample Reference	Bulk-1				Sample Base De	epth	
Description	Gray with B	rown Lean Cl	ay		Method	ASTM D6913	3 Method B
Classification	LEAN CLAY	<i>(</i>					
3"	1.5" 1'3/4"	3/8'' #4	#10 #20 #	40 #60 #100	#200		
100%							
90%							
900/							
80%							
Percent Passing (%) 40% 40%							
ig 60% -							
ass.							
₩ 50% 							
93 40% -							
30%			+ + + + + + + + + + + + + + + + + + + +				
20%							
10%							
0%							
100.00		10.00	1.00	0.1	.0	0.01	0.00
			Millimeters				
			ACTNA BABTICI E C	TIZE DEFINITION	NG		
Cabbles	1 2	00 mm (12")	ASTM PARTICLE S		NS m Sand	< 2.00 mm and > 0.4	12F mm (#40)
Cobbles Gravel			and > 75 mm (3") > 4.75 mm (#4)		Sand	< 2.00 mm and > 0.4 < 0.425 mm and >	
Coarse Sand			>2.00 mm (#10)		3and ₹ Clay	< 0.425 mm and >	
Maximum P		4.75 mm		arse Sand	1.4	Fine Sand	1.6
Waxiiiaiiii	Gravel	0.8		lium Sand	1.7	Silt & Clay	94.5
1	iquid Limit	32		astic Limit	19	Plastic Index	13
	iquia Emilic	32		ustre Emilie	13	r lastic macx	13
Dosser	intion of Can	d & Gravel Pa		Pou	ınded 🗆	Angular 🗵	1
	Hard & Dural						
	naiu & Duiai	ble 🗆	Soft ∑	Ω	vveat	hered & Friable 🛛	
References / Commo	ents / Deviatio	ons:					
References / Commit	ents / Deviation	<i>J</i> 113.					
	This ro	nort shall not h	e reproduced, except in f	iull without the w	ritton approval of	S&IME Inc	
	THIS TEL	JOH SHALL HOLDE	е гергойисей, ехсерт ит р	uu, wunout ine w	millen approval of		
	В	3Fesmire		ВІ	<u>Fesmire</u>	Ben Fer	mie
		ested by			proved by	Signat	
	1	csieu by		Aρ	pioved by	Signal	ui C

658 Grassmere Park Dr., Suite 100, Nashville, TN 37211

	•						•				
&	ASTM	D6013	: Standard	Toet Mot	hade for	Report Number	er N	NASH_22000290			
					on) of Soils	Report Date		3/3/2022			
$\mathbb{M} \equiv$	l artiolo		ng Sieve <i>l</i>	•), O. OOo	Test Date		3/3/2022			
						Sample Date					
Project Number	218019										
Project Name	Ford Blue O	val City -	TVA Substa	tion							
Client Name	Walbridge A	ldinger L	.LC								
Client Address	777 Woodw	ard Ave.	Suite 300, De	etroit, MI							
KeyLAB ID	NASH20220	03024				Sample Type		AU			
Location ID	B-55A					Sample Top D	Depth	2			
Sample Reference	Bulk-1					Sample Base	Depth				
Description	Brown, Ligh	t Brown,	and Gray Lea	an Clay		Method	AST	M D6913 Method B			
Classification	LEAN CLAY	′									
3"	1.5" 1'3/4"	3/8''	#4 #10		40 #60 #100	#200					
100%											
90%											
900/											
80%											
Percent Passing (%)											
80 60%											
sse											
50%											
93 40%											
30%											
20%											
10%											
0%											
100.00		10.00	_	1.00	0.1	.0	0.01	0.00			
			LN	Aillimeters							
			ACTA	A DADTICLE (CIZE DEFINITION	NC					
Cobbles	/ 3/	00 mm (1	2") and > 75		SIZE DEFINITION	m Sand	< 2.00 mm	and > 0.425 mm (#40)			
Gravel			and > 4.75 mi			Sand		nm and > 0.075 mm			
Coarse Sand			and >2.00 mr			પ્ર Clay	(0.423 11	< 0.075			
Maximum Pa		4.75 mr			arse Sand	1.2	Fir	ne Sand 1.8			
	Gravel	0.7			lium Sand	1.8		: & Clay 94.5			
Li	iquid Limit	28			astic Limit	18		ic Index 10			
	4										
Descr	iption of Sand	d & Grave	el Particles:		Rou	ınded ⊠	Angul	lar 🗆			
	Hard & Durak			Soft []		eathered & Friab				
'	riard & Durak		J	3010 [_	VVC	atriered & Friac				
References / Comme	ents / Deviatio	ons:									
reperences, comme	erris, Bertatte	3113.									
	This rer	oort shall r	not he reproduc	red excent in t	full, without the w	ritten annroval	of S&ME Inc				
	THIS TEP	JOIL SHALL II	iot be reproduc	eu, except iii j	au, wurout the w	писен арргочас		1 1			
	В	Fesmire			<u>BI</u>	Fesmire	E.	Den Fermie			
	T	ested by				proved by		Signature			

Nashville

658 Grassmere Park Dr., Suite 100, Nashville, TN 37211

	8				۲۹۸	ГМГ	160,	12.	Sta	andar	rd Tr	set	M	oth	n o d	le f	for	⊩	_		Numb	er				NAS		22000		
										butio								Н	_		Date		1					/2022		
Ш										Sieve	•				., 、	•	50115	Т	est	Da	te						3/3/	/2022		
								_										S	am	ple	Date									
Projec	t Numbe	r		218	019																									
Projec	t Name									Subst	tation						_													
Client	Name					ge Ald																								
	Address								Suite	e 300, [Detro	it, N	11												_					
KeyLA			_)2203	021											+			Туре		_					٩U		
Location				B-57														+		_	Top [-	_					2		
	e Refere	nce		Bulk														Sample Base Depth												
Descri						own L	ean	Cla	ıy									Method ASTM D6913 Meth					etho	d B						
Classif	fication				AN CI			_					_					l					<u> </u>							
	100%	3)'' •	1.5	1'3	/4''	3/8"		#4	#10	0	#20) 	#40	0 #0	60 ←	#100	#	200) 										
		Н	+	+	+	_	+	Н	\blacksquare	\rightarrow	_	-	¥	-									+	H	+		+	+-	-	
	90%		\parallel		土		Ш	Д	#	#		Щ	\parallel	\parallel									#		\parallel		土			
	80%	₩	+	\vdash	+		+	\mathbb{H}	+	+++		\mathbb{H}	\dashv	$\dashv \vdash$	+			+	+	+		-	+	\parallel	\dashv	\vdash	+	+-	-	
©	70%		\pm				\parallel	Ш	\pm			Ш	\parallel	\pm				\parallel	\parallel				\parallel	Ħ	+			\pm		
) g(70 70	\parallel	+	\vdash	+	_		\mathbb{H}	+			\parallel	$\!$	\dashv	+			\parallel	+	-			+	\parallel	+	\vdash	+	+	-	
ıssir	60%	\blacksquare	+	+	+		+	#	++	++		$\parallel \parallel$	+	+	+			+	+	+			+	\dagger	+		+	+	-	
It P	50%	П	\prod	\prod	丰		\prod	\blacksquare	#	#		\prod	Ŧ	\blacksquare								\parallel	I	\blacksquare		#	1			
Percent Passing (%)	102/	\mathbb{H}	+	+	+	_	+	\forall	++	++		H	+	+	+			+	+				+	H	+	\vdash	+	+	-	
Pe	40%		\parallel		1		Ш	Ш	#			Ш	Ħ	\parallel				#	Ħ				\parallel	İ	\parallel		#			
	30%	₩	+	+	+	-	+	\mathbb{H}	++	++		#	+	\dashv	+			+	+				+	+	+	\vdash	+	+	-	
	20%		\parallel	\parallel				Щ	廿			Ш	廿					#					\parallel	İ	\pm					
		\mathbb{H}	1	\vdash	1	_	$\overline{\parallel}$	\mathbb{H}	+	1		\parallel	$\!$	1	+			\parallel	\parallel				#	\parallel	\mathbb{H}	\square	4	1		
	10%	H	+	+	+	_	-	#	+	++		$\parallel \parallel$	+	+	+			+	+				+	\parallel	+	\parallel	+	+		
	0%	Щ	\coprod		工		Щ	Ш				Щ	Ц					Ц	\coprod				\perp				工	\perp		
	10	0.00				1	10.00					.00		7			0.1	10					0.01						0.00	,
											Milli	met	ers	<u>_</u>																
										ΤΖΔ	ΓΝΛ ΡΔ	RTI	CLI	E SI:	7F Г)FF	INITIO	NS	:						_					
	Cobb	les			T	< 300) mn	n (1	2") a	nd > 7				T			Mediu			nd		< 1	2.00	m	-m	and	d > ().425	mm	(#40)
	Grav									4.75 r			<u> </u>	T			Fine	S	and	ł		_						> 0.0		
	Coarse	Sar	ıd			< 4.7	75 m	ım a	and >	>2.00 r	mm (#	<i>‡</i> 10)					Silt 8	& (Clay	у						<	< 0.07	75		
	Maxin	num	ı Pa	rticle	e Siz	e !	9.5 r	mm	1				(Coa	rse	Sar	nd		2.8						Fi	ne S	Sand	1	1.3	3
					Grave		1.9	9					M	ediu	um	Sar	nd		2.7						Sil	t &	Clay	t	91.	,3
			Lic	quid	l Limi	t	29	9						Plas	stic	Lin	nit		21					PΙ	ast	tic Ir	ndex	į.	8	
		De						ave	l Par	rticles:							Rou	ıno	ded	l	X				_	ılar	ľ			
			H	lard	& Di	urable	ş	X			S	oft									We	eathere	ed &	Ł Fi	rial	ble	ļ			
Refere	ences / C	Com	me	nts /	' Dev	iation	ıs:																							
					Thi	s repoi	rt shc	ıll n	ot be	reprodi	uced, e	?xce	pt ii	n ful	ll, wi	tho	out the w	vrit	ten	арі	proval	of S&M	1E, In	_		_	—		—	
						RF:	esmir	ro									R'	F۵	sm	nire	2				1	g Ser	1/	1 esmi	ne	

Approved by

658 Grassmere Park Dr., Suite 100, Nashville, TN 37211

Signature

Tested by

8	ASTM D6913: Standard Test Methods for	Report Number				
	Particle-Size Distribution (Gradation) of Soils	Report Date				
	Using Sieve Analysis	Test Date	3/4/2022			
	Oshing Oleve Analysis	Sample Date				
Project Number	218019					
Project Name	Ford Blue Oval City - TVA Substation					
Client Name						
Client Address						
KeyLAB ID	KNOX202203020	Sample Type	UD			
Location ID	B-32A	Sample Top Depth	15			
Sample Reference	UD-1	Sample Base Depth	17			
Description	GM (SILTY GRAVEL with SAND) red	Method	ASTM D6913 Method B			
Classification	CLAYEY GRAVEL WITH SAND					
1000/ - 3"	1.5" 1"3/4" 3/8" #4 #10 #20 #40 #60 #100	#200				
100%						
90%						
80%						
70%	 					
80 60%	<u> </u>					
) as						
50%						
35 40%						
30%						
20%						
4004						
10%						
0%						
100.00	10.00 1.00 0.1 Millimeters	0	.01 0.00			
	Winneters					
	ASTM PARTICLE SIZE DEFINITION	JS				
Cobbles			.00 mm and > 0.425 mm (#40)			
Gravel			0.425 mm and > 0.075 mm			
Coarse Sand		k Clay	< 0.075			
Maximum Pa	rticle Size 0.85 mm Coarse Sand	'	Fine Sand 61.8			
	Gravel 100.0 Medium Sand		Silt & Clay 36.7			
Li	quid Limit 22 Plastic Limit	10	Plastic Index 12			
Descri	ption of Sand & Gravel Particles: Rou	nded 🗆	Angular ⊠			
	Hard & Durable ⊠ Soft □	Weathered	-			
References / Comme	nts / Deviations:					
	This report shall not be reproduced, except in full, without the w	ritten approval of S&ME,	Inc.			
	,, , , , , , , , , , , , , , , , ,	,, -, -, -, -, -,				
	dbaker <u>N</u>	<u>Dewitt</u>	Nohe E. Down			
	Tested by Ap,	proved by	Signature			
	Knoxville	1413 Topside Road, Louisville, TN 37777				

8	ASTM D6913: Standard Test Methods for	Report Number				
	Particle-Size Distribution (Gradation) of Soils	Report Date				
	Using Sieve Analysis	Test Date	3/4/2022			
<i>7</i> 11 —	Oshing Oleve Analysis	Sample Date				
Project Number	218019					
Project Name	Ford Blue Oval City - TVA Substation					
Client Name						
Client Address						
KeyLAB ID	KNOX202203021	Sample Type	UD			
Location ID	B-33A	Sample Top Depth	15			
Sample Reference	UD-1	Sample Base Depth	17			
Description	SM (SILTY SAND) red	Method	ASTM D6913 Method B			
Classification	CLAYEY SAND					
100%	1.5" 1"3/4" 3/8" #4 #10 #20 #40 #60 #100	#200				
100% 90% 100.00	10.00 1.00 0.1 Millimeters		01 0.00			
	ASTM PARTICLE SIZE DEFINITION	ııc				
Cobbles			.00 mm and > 0.425 mm (#40)			
Gravel			0.425 mm and > 0.075 mm			
Coarse Sand	< 4.75 mm and >2.00 mm (#10) Silt 8	k Clay	< 0.075			
Maximum Pa		0.4	Fine Sand 64.2			
	Gravel 0.9 Medium Sand	0.7	Silt & Clay 33.8			
Li	quid Limit 24 Plastic Limit	10	Plastic Index 14			
Descri	ption of Sand & Gravel Particles: Rou	nded 🗆	Angular ⊠			
1	Hard & Durable ⊠ Soft □	Weathered	I & Friable □			
References / Comme	nts / Deviations:					
	This report shall not be reproduced, except in full, without the w	ritten approval of S&ME,				
	dbaker <u>N</u>	<u>Dewitt</u>	Noha E. Down			
	Tested by Ap	proved by	Signature			
	Knoxville	1413 Topside Road, Louisville, TN 37777				

&	ACTM DC042: Standard Toot i	Mathada far	Report Number				
	ASTM D6913: Standard Test I Particle-Size Distribution (Grad		Report Date				
	Using Sieve Analys	•	Test Date	3/4/2022			
	Using Sieve Analys	013	Sample Date				
Project Number	218019						
Project Name	Ford Blue Oval City - TVA Substation						
Client Name							
Client Address							
KeyLAB ID	KNOX202203022		Sample Type	UD			
Location ID	B-35A		Sample Top Depth	5			
Sample Reference	UD-1		Sample Base Depth	7			
Description	ML (SILT) brown		Method	ASTM D6913 Method B			
Classification	LEAN CLAY						
100% 3"	1.5" 1"3/4" 3/8" #4 #10 #20	#40 #60 #100	#200				
100%							
90%							
80%							
3 70% 4 1 1 1 1 1 1 1 1 1 1							
is 60%							
Lass Lass							
Percent Passing (%) 40% 40%							
2 40% +							
30%							
30%							
20%							
10%							
1070							
100.00	10.00 1.00	0.1		0.01 0.00			
100.00	Millimete		v	0.00			
	ASTM PARTIC	CLE SIZE DEFINITION	1S				
Cobbles	< 300 mm (12") and > 75 mm (3")			2.00 mm and > 0.425 mm (#40)			
Gravel	< 75 mm and > 4.75 mm (#4)		Sand	< 0.425 mm and > 0.075 mm			
Coarse Sand	< 4.75 mm and >2.00 mm (#10)		¿ Clay	< 0.075			
Maximum Pa		Coarse Sand	2.1	Fine Sand 1.8			
		Medium Sand	1.6	Silt & Clay 92.9			
Li	quid Limit 34	Plastic Limit	19	Plastic Index 15			
	ption of Sand & Gravel Particles:		nded 🗆	Angular 🗵			
1	Hard & Durable ⊠ Soft		Weathere	ed & Friable 🔲			
Deference / C	nts / Dovintions						
References / Comme	rits / Deviations:						
	This report shall not be recorded as	at in full without the	ritton approval of COM	IE Inc			
	This report shall not be reproduced, excep	n in Juli, Without the W	ntieri approval of S&M				
	dbaker	N	Dewitt	Noha E. Down			
	Tested by		proved by	Signature			
	·	$A\rho_l$	•	-			
	Knoxville		1413 Topside Road, Louisville, TN 37777				

&	ACTM DC042: Standard Toot Mathada fo	Report Number					
	ASTM D6913: Standard Test Methods fo Particle-Size Distribution (Gradation) of Sc	Report Date					
	Using Sieve Analysis	Test Date	3/4/2022				
	Using Sieve Analysis	Sample Date					
Project Number	218019	•	•				
Project Name	Ford Blue Oval City - TVA Substation						
Client Name							
Client Address							
KeyLAB ID	KNOX202203023	Sample Type	UD				
Location ID	B-37A	Sample Top Depth	5				
Sample Reference	UD-1	Sample Base Depth	7				
Description	ML (SILT) brown	Method	ASTM D6913 Method B				
Classification	LEAN CLAY						
3"	1.5" 1"3/4" 3/8" #4 #10 #20 #40 #60 #1	00 #200					
100%							
90%							
	+++++++++++++++++++++++++++++++++++++++						
80%							
70%							
g coo	+++++++++++++++++++++++++++++++++++++++						
888i. 4							
 1 50% +							
Percent Passing (%) 40% 40%							
a 40%							
30%	+++++++++++++++++++++++++++++++++++++++						
20%							
20 /0 1							
10%	+++++++++++++++++++++++++++++++++++++++						
0%							
100.00	10.00	0.10	0.01 0.00				
	Millimeters						
6.111	ASTM PARTICLE SIZE DEFIN		2.00 1.0.425 (#40)				
Cobbles Gravel	< 300 mm (12") and > 75 mm (3") N < 75 mm and > 4.75 mm (#4)		2.00 mm and > 0.425 mm (#40) < 0.425 mm and > 0.075 mm				
Coarse Sand		Silt & Clay	< 0.423 min and > 0.073 min < 0.075				
Maximum Pa		2.6	Fine Sand 1.9				
IVIGATITUTIT F	Gravel 1.5 Medium Sand	4.4	Silt & Clay 89.6				
1;	iquid Limit 42 Plastic Limit	18	Plastic Index 24				
LI	ridsuc Lilliu	10	riasucinuex 24				
Dagari	intion of Sand & Gravel Particles	Rounded	Angular 🖼				
	iption of Sand & Gravel Particles:		Angular ⊠				
'	Hard & Durable ⊠ Soft □	weatnere	ed & Friable 🔲				
References / Comme	ants / Daviations:						
nejerences / Comme	III.S / DEVIULIOIIS.						
	This was set shall not be assessed as 1 1 1 1 1 1 1 1 1	the written 1 CCC.	IF Inc				
	This report shall not be reproduced, except in full, without	ne written approval of S&M					
	dbaker	<u>NDewitt</u>	Nohe E. Dortan				
	Tested by	Approved by Signature					
	Knoxville	1413 Topside Road, Louisville, TN 37777					

&	ACTM DC042: Ctandord To	at Mathada far	Report Number				
	ASTM D6913: Standard Tes		Report Date				
	Particle-Size Distribution (Gr Using Sieve Anal	•	Test Date	3/4/2022			
	Using Sieve Ana	iysis	Sample Date				
Project Number	218019		•				
Project Name	Ford Blue Oval City - TVA Substation						
Client Name							
Client Address							
KeyLAB ID	KNOX202203024		Sample Type	UD			
Location ID	B-55A		Sample Top Depth	5			
Sample Reference	UD-1		Sample Base Depth	7			
Description	CL (LEAN CLAY) gray with light brown		Method	ASTM D6913 Method B			
Classification	LEAN CLAY						
3"	1.5" 1'3/4" 3/8" #4 #10	#20 #40 #60 #100	#200				
100%							
90%							
	+++++++++++++++++++++++++++++++++++++++						
80%							
70%							
bu cook							
assir.							
50%	+++++++++++++++++++++++++++++++++++++++						
Percent Passing (%) 40% 40%							
30%							
20%							
10%							
0%							
100.00	10.00 1.0		0	0.01 0.00			
	Millin	neters					
	ACTAA DAL	DTICLE CIZE DEFINITION	16				
Cobbles	< 300 mm (12") and > 75 mm	RTICLE SIZE DEFINITION		2.00 mm and > 0.425 mm (#40)			
Gravel	< 75 mm and > 4.75 mm (#4			< 0.425 mm and > 0.075 mm			
Coarse Sand	< 4.75 mm and > 2.00 mm (#*		k Clay	< 0.075			
Maximum Pa		Coarse Sand	4.6	Fine Sand 2.1			
	Gravel 0.8	Medium Sand	4.3	Silt & Clay 88.2			
Li	quid Limit 35	Plastic Limit	20	Plastic Index 15			
	•						
Descri	ption of Sand & Gravel Particles:	Rou	nded 🗆	Angular ⊠			
	•	oft 🗆		ed & Friable			
	Tara & Darable 🔝 Se		Weathere	d a mable			
References / Comme							
s ₁ = = = = = = = = = = = = = = = = = = =							
	This report shall not be reproduced, ex	xcent in full, without the w	ritten approval of S&M	E. Inc.			
	rnis report shak not be reproduced, ex	ecept ar juit, without the w	Tetter approvat of South	·			
	dbaker	N	<u>Dewitt</u>	Noha E. Down			
	Tested by		proved by	Signature			
	·	Αρι	•	-			
	Knoxville		1413 Topside Road, Louisville, TN 37777				

8	ASTM D6913: Standard Test Methods for	Report Number				
	Particle-Size Distribution (Gradation) of Soils	Report Date				
I III =	Using Sieve Analysis	Test Date	3/4/2022			
711 —	Osing Oleve Analysis	Sample Date				
Project Number	218019					
Project Name	Ford Blue Oval City - TVA Substation					
Client Name						
Client Address						
KeyLAB ID	KNOX202203025	Sample Type	UD			
Location ID	B-57A	Sample Top Depth	5			
Sample Reference	UD-1	Sample Base Depth	7			
Description	CL (LEAN CLAY) brown	Method	ASTM D6913 Method B			
Classification	LEAN CLAY					
100%	1.5" 1'3/4" 3/8" #4 #10 #20 #40 #60 #100	#200				
10070						
90%						
80%						
3 70% 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
8ii 60%						
Las Las						
Percent Passing (%) 40% 40%						
40% +						
30%						
20%						
10%						
100.00	10.00 1.00 0.1	0 0	.01 0.00			
	Millimeters					
	<u> </u>					
	ASTM PARTICLE SIZE DEFINITION					
Cobbles			.00 mm and > 0.425 mm (#40)			
Gravel Coarse Sand			< 0.425 mm and > 0.075 mm < 0.075			
Coarse Sand Maximum Pa	l l	었 Clay				
iviaximum Pa	article Size 0.85 mm Coarse Sand Gravel 0.1 Medium Sand	0.2 1.0				
1:	quid Limit 33 Plastic Limit	1.0	Silt & Clay 97.5 Plastic Index 16			
L'	quia Littiit 33 Plastic Limit	17	riasucinuex 10			
Dagani	ntion of Sand & Cravol Particles:	undad 🗖	Angular 🖾			
	'	ınded □ Weathered	Angular ⊠			
'	Hard & Durable Soft □	vveatnered	d & Friable			
References / Comme	nts / Deviations:					
rejerences / Comme	no, permions.					
	This report shall not be reproduced, except in full, without the w	ritten approval of S&ME	Inc			
	report shak not be reproduced, except an fait, without the w	approvat of James,				
	dbaker <u>N</u>	<u>IDewitt</u>	Noha E. Down			
		proved by	Signature			
	Knoxville	1413 Topside Road, Louisville, TN 37777				

Form No. TR-D698-2 Revision No.: 1

Revision Date: 07/25/17



24.0%

TNP

32

20

12

100.0%

100.0%

100.0%

100.0%

99.6%

99.3%

98.1%

2.650

TNP

0.0%

108.7

16.3%

MDD

Opt. MC

Quality Assurance

	S&ME, Inc Nashville:	658 Grassmere P	ark Drive, Ste. 10	0, Nashville, TN 372	.11
S&ME Project #:	218019			Report Date:	3/7/2022
Project Name:	Ford Blue Oval City -	- TVA Substation		Test Date(s):	2/28/2022-3/7/2022
Client Name:	Walbridge Aldinger,	LLC			
Client Address:	777 Woodward Aver	nue, Suite 300; Det	roit, Michigan		
Boring #:	TP-32A	Sample #:	1	Sample Date:	2/23/2022
Location:	-	Type:	Bulk	Depth:	2-10'
6 1 5 1		111 1			

Sample Description: Medium Brown and Light Brown, Silty Clay

108.7 PCF. Maximum Dry Density

Optimum Moisture Content 16.3%

ASTM D 698 --Method A Soil Properties Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Natural Moisture 112.0 Content Specific Gravity of Soil 110.0 Liquid Limit Plastic Limit Plastic Index 108.0 % Passing Dry Density (PCF) 3/4" 3/8" 106.0 #4 #10 #40 104.0 #60 #200 102.0 Oversize Fraction **Bulk Gravity** 100.0 % Moisture 10.0 12.0 14.0 16.0 20.0 22.0 18.0 % Oversize

Corrected for Oversize Fraction (ASTM D 4718) Moisture-Density Curve Displayed: Fine Fraction 🗵 Sieve Size used to separate the Oversize Fraction: #4 Sieve 区 3/8 inch Sieve □ 3/4 inch Sieve Manual Rammer 🗵 Mechanical Rammer Moist Preparation □ Dry Preparation 区 References / Comments / Deviations: Specific gravity and moisture content of oversize fraction are estimated values.

Moisture Content (%)

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Ben Fesmire Technical Responsibility

Signature

CS Project Manager Position

3/7/2022

Date

Form No. TR-D698-2 Revision No. : 1

Revision Date: 07/25/17



Quality Assurance

	S&ME, Inc Nashville:	658 Grassmere Pa	ark Drive, Ste. 100), Nashville, TN 372	11
S&ME Project #:	218019			Report Date:	3/7/2022
Project Name:	Ford Blue Oval City -	TVA Substation		Test Date(s):	2/28/2022-3/7/2022
Client Name:	Walbridge Aldinger,	LLC			
Client Address:	777 Woodward Aver	nue, Suite 300; Detr	oit, Michigan		
Boring #:	TP-33A	Sample #:	1	Sample Date:	2/23/2022
Location:	-	Type:	Bulk	Depth:	2-10'

Sample Description: Medium Brown Silty Clay

Maximum Dry Density 107.4 PCF.

Optimum Moisture Content 18.3%

ASTM D 698 -- Method A Soil Properties Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Natural Moisture 23.2% Content 109.0 Specific **TNP** Gravity of Soil Liquid Limit 34 107.0 Plastic Limit 21 Plastic Index 13 105.0 % Passing Dry Density (PCF) 3/4" 100.0% 103.0 3/8" 100.0% #4 100.0% #10 100.0% 101.0 #40 99.7% #60 99.2% 99.0 #200 98.3% 97.0 Oversize Fraction **Bulk Gravity** 2.650 95.0 % Moisture TNP 13.0 15.0 17.0 19.0 21.0 23.0 25.0 % Oversize 0.0% MDD 107.4 Moisture Content (%) Opt. MC 18.3%

ASTIN D 2210. Laboratory Determination of Water (Moisture) Content of Soil and Nock by Mass

ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Ben Fesmire
Technical Responsibility

Signature

CS Project Manager

3/7/2022 Date

Form No. TR-D698-2 Revision No. : 1

Revision Date: 07/25/17



Quality Assurance

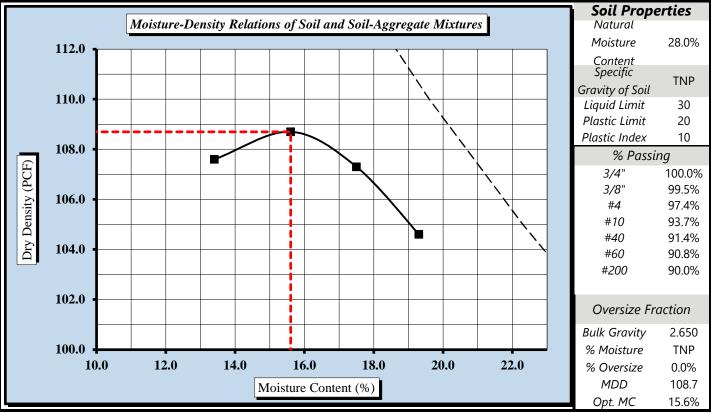
	S&ME, Inc Nashville:	658 Grassmere Pa	ark Drive, Ste. 100	0, Nashville, TN 372	.11
S&ME Project #:	218019			Report Date:	3/7/2022
Project Name:	Ford Blue Oval City -	- TVA Substation		Test Date(s):	2/28/2022-3/7/2022
Client Name:	Walbridge Aldinger,	LLC			
Client Address:	777 Woodward Aver	nue, Suite 300; Detr	oit, Michigan		
Boring #:	TP-35A	Sample #:	1	Sample Date:	2/23/2022
Location:	-	Type:	Bulk	Depth:	2-10'
6 1 5 1 11	D 1.1 C	. 61			

Sample Description: Brown with Gray, Lean Clay

Maximum Dry Density 108.7 PCF.

Optimum Moisture Content 15.6%

ASTM D 698 -- Method A



Moisture-Density Curve Displayed: Fine Fraction ⊠ Corrected for Oversize Fraction (ASTM D 4718) □
Sieve Size used to separate the Oversize Fraction: #4 Sieve ☑ 3/8 inch Sieve □ 3/4 inch Sieve □
Mechanical Rammer □ Manual Rammer ☑ Moist Preparation □ Dry Preparation ☑

References / Comments / Deviations:

Specific gravity and moisture content of oversize fraction are estimated values.

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Ben Fesmire
Technical Responsibility

Signature

CS Project Manager

3/7/2022 Date

Form No. TR-D698-2 Revision No.: 1

Revision Date: 07/25/17



27.8%

TNP

32

19

13

100.0%

100.0%

99.2%

97.8%

96.1%

95.6%

94.5%

2.650

TNP

0.0%

107.5

17.1%

% Moisture

% Oversize

MDD

Opt. MC

23.0

Quality Assurance

	S&ME, Inc Nashville:	658 Grassmere Pa	ark Drive, Ste. 100), Nashville, TN 372	11
S&ME Project #:	218019			Report Date:	3/8/2022
Project Name:	Ford Blue Oval City -	- TVA Substation		Test Date(s):	2/28/2022-3/8/2022
Client Name:	Walbridge Aldinger,	LLC			
Client Address:	777 Woodward Aver	nue, Suite 300; Detr	roit, Michigan		
Boring #:	TP-37A	Sample #:	1	Sample Date:	2/23/2022
Location:	-	Type:	Bulk	Depth:	2-10'
6 1 5 1 11	6 1.1 5	. 61	•	•	·

Sample Description: Gray with Brown Lean Clay

Maximum Dry Density 107.5 PCF.

Optimum Moisture Content 17.1%

ASTM D 698 -- Method A Soil Properties Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Natural Moisture 110.0 Content Specific Gravity of Soil Liquid Limit Plastic Limit 108.0 Plastic Index % Passing Dry Density (PCF) 3/4" 3/8" 106.0 #4 #10 #40 #60 #200 104.0 Oversize Fraction **Bulk Gravity**

Corrected for Oversize Fraction (ASTM D 4718) Moisture-Density Curve Displayed: Fine Fraction 🗵 Sieve Size used to separate the Oversize Fraction: #4 Sieve 区 3/8 inch Sieve □ 3/4 inch Sieve □ Mechanical Rammer Manual Rammer ⊠ Moist Preparation □ Dry Preparation 区

19.0

References / Comments / Deviations: Specific gravity and moisture content of oversize fraction are estimated values.

17.0

Moisture Content (%)

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

15.0

ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

13.0

Ben Fesmire Technical Responsibility

Signature

CS Project Manager

21.0

3/8/2022 Date

Position

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.

102.0

11.0

Form No. TR-D698-2 Revision No.: 1

Revision Date: 07/25/17

Quality Assurance

	S&ME, Inc Nashville:	658 Grassmere Pa	ark Drive, Ste. 10	0, Nashville, TN 372	11
S&ME Project #:	218019			Report Date:	3/8/2022
Project Name:	Ford Blue Oval City -	TVA Substation		Test Date(s):	2/28/2022-3/8/2022
Client Name:	Walbridge Aldinger,	LLC			
Client Address:	777 Woodward Aver	nue, Suite 300; Detr	oit, Michigan		
Boring #:	TP-55A	Sample #:	1	Sample Date:	2/23/2022
Location:	-	Type:	Bulk	Depth:	2-10'
6 1 5 1	B 11 1 . B		~ 1		

Sample Description: Brown, Light Brown, and Gray Lean Clay

108.7 PCF. Maximum Dry Density

Optimum Moisture Content

16.3%

ASTM D 698 -- Method A Soil Properties Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Natural Moisture 26.7% Content Specific 108.0 **TNP** Gravity of Soil Liquid Limit 28 Plastic Limit 18 106.0 Plastic Index 10 % Passing Dry Density (PCF) 3/4" 100.0% 104.0 3/8" 100.0% #4 99.3% #10 98.1% #40 96.3% 102.0 #60 95.8% #200 94.5% 100.0 Oversize Fraction **Bulk Gravity** 2.650 98.0 % Moisture TNP 13.0 15.0 17.0 19.0 21.0 23.0 % Oversize 0.0% MDD 108.7 Moisture Content (%) Opt. MC 16.3% Corrected for Oversize Fraction (ASTM D 4718)

Moisture-Density Curve Displayed: Fine Fraction 🗵 Sieve Size used to separate the Oversize Fraction: #4 Sieve 区 3/8 inch Sieve □ 3/4 inch Sieve □ Manual Rammer 🗵 Mechanical Rammer Moist Preparation □ Dry Preparation 区 References / Comments / Deviations: Specific gravity and moisture content of oversize fraction are estimated values. ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Ben Fesmire Technical Responsibility

Signature

CS Project Manager Position

3/8/2022 Date

Form No. TR-D698-2 Revision No.: 1

Revision Date: 07/25/17





Quality Assurance

	S&ME, Inc Nashville:	658 Grassmere Pa	ark Drive, Ste. 100	0, Nashville, TN 372	11
S&ME Project #:	218019			Report Date:	3/8/2022
Project Name:	Ford Blue Oval City -	TVA Substation		Test Date(s):	2/28/2022-3/8/2022
Client Name:	Walbridge Aldinger,	LLC			
Client Address:	777 Woodward Aver	nue, Suite 300; Detr	oit, Michigan		
Boring #:	TP-57A	Sample #:	1	Sample Date:	2/23/2022
Location:	-	Type:	Bulk	Depth:	2-10'

Sample Description: Light Brown Lean Clay

> Maximum Dry Density 108.2 PCF. **Optimum Moisture Content** 16.3%

ASTM D 698 -- Method A Soil Properties Moisture-Density Relations of Soil and Soil-Aggregate Mixtures Natural Moisture 34.7% 110.0 Content Specific **TNP** Gravity of Soil Liquid Limit 29 108.0 Plastic Limit 21 Plastic Index 8 % Passing Dry Density (PCF) 106.0 3/4" 100.0% 3/8" 100.0% #4 98.1% #10 95.3% 104.0 #40 92.6% #60 92.0% #200 91.3% 102.0 Oversize Fraction **Bulk Gravity** 2.650 100.0 % Moisture TNP 10.0 12.0 14.0 16.0 20.0 22.0 18.0 % Oversize 0.0% MDD 108.2 Moisture Content (%) Opt. MC 16.3%

Corrected for Oversize Fraction (ASTM D 4718) Moisture-Density Curve Displayed: Fine Fraction 🗵 Sieve Size used to separate the Oversize Fraction: #4 Sieve 区 3/8 inch Sieve □ 3/4 inch Sieve □ Manual Rammer 🗵 Mechanical Rammer Moist Preparation □ Dry Preparation 区 References / Comments / Deviations: Specific gravity and moisture content of oversize fraction are estimated values. ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Ben Fesmire Technical Responsibility Signature

CS Project Manager Position

3/8/2022 Date

Form No. TR-D2166-01

Revision No.: 1
Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS



ASTM D2166

S&ME, In	c Knoxville: 1413 Topside Road, Lo	uisville, TN 37777	
218019		Report Date:	3/4/2022
Ford Blue Oval City	y - TVA Substation	Test Date(s):	3/1/2022
Walbridge Aldinge	er		
Detroit, MI			
B-32A	Sample No. UD-1	Sample Date:	2/1/2022
		Depth:	15-17 feet
	218019 Ford Blue Oval City Walbridge Aldinge Detroit, MI	218019 Ford Blue Oval City - TVA Substation Walbridge Aldinger Detroit, MI	Ford Blue Oval City - TVA Substation Walbridge Aldinger Detroit, MI B-32A Sample No. UD-1 Sample Date:

Sample Description: GC (CLAYEY GRAVEL WITH SAND) Red

Unconfined Compressive Strength 2.0 1.0 0.0 5.0 Strain, %

Failed Specimen



Type of Sample: Intact
Source of Moisture Sample: Test Specimen

Liquid Limit: 22
Plasticity Index: 12
Height to Diameter Ratio: 1.6
Rate of Strain (%/min.): 0.50
Strain at Failure: 2.1

Initial Dry Unit Weight: 109.7 pcf Initial Water Content: 12.5% Unconfined Compressive Strength, q_u: 1.364 KSF Undrained Shear Strength, s_u: 0.682 KSF

References / Comments / Deviations:

Specimen does not meet height to diameter ratio requirements of ASTM D2166.

ASTM D4318, 6913, 2487

N. DeWitt

Technical Responsibility

Nohe E. Dontal

Laboratory Services Manager

3/4/2022

Form No. TR-D2166-01

Revision No.: 1
Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS



ASTM D2166

218019		Report Date:	3/4/2022
			J/ T / 2022
ord Blue Oval City - TVA Substati	on	Test Date(s):	2/28/2022
Valbridge Aldinger			
Petroit, MI			
-33A Sam _l	ole No. UD-1	Sample Date:	2/1/2022
		Depth:	15-17 feet
)	Valbridge Aldinger Petroit, MI -33A Samp	Valbridge Aldinger Petroit, MI -33A Sample No. UD-1	Valbridge Aldinger Detroit, MI -33A Sample No. UD-1 Sample Date: Depth:

Sample Description: SC (CLAYEY SAND) Red

Unconfined Compressive Strength 3.0 2.0 1.0 0.0 5.0 Strain, %

Failed Specimen



Type of Sample: Intact
Source of Moisture Sample: Test Specimen

Liquid Limit: 24
Plasticity Index: 14
Height to Diameter Ratio: 2.0
Rate of Strain (%/min.): 0.50
Strain at Failure: 3.1

Initial Dry Unit Weight: 112.6 pcf Initial Water Content: 14.1%
Unconfined Compressive Strength, qu: 1.510 KSF
Undrained Shear Strength, su: 0.755 KSF

References / Comments / Deviations:

ASTM D4318, 6913, 2487

N. Dewitt
Technical Responsibility

Nohe E. Downe

Laboratory Services Manager

3/4/2022

Form No. TR-D2166-01 Revision No. : 1

Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS



ASTM D2166

	S&ME, Inc	Knoxville: 1413 Topside Road, Lo	uisville, TN 37777	
Project No.:	218019		Report Date:	3/4/2022
Project Name:	Ford Blue Oval City	- TVA Substation	Test Date(s):	3/1/2022
Client Name:	Walbridge Aldinger			
Client Address:	Detroit, MI			
Boring No.:	B-35A	Sample No. UD-1	Sample Date:	2/15/2022
			Depth:	5-7 feet

Sample Description: CL (LEAN CLAY) Brown

Unconfined Compressive Strength 3.0 2.0 1.0 0.0 5.0 Strain, %

Failed Specimen



Type of Sample: Intact
Source of Moisture Sample: Test Specimen

Liquid Limit: 34
Plasticity Index: 15
Height to Diameter Ratio: 2.0
Rate of Strain (%/min.): 0.88

Strain (%/min.): 0.88

Strain at Failure: 1.7

References / Comments / Deviations:

Initial Dry Unit Weight: 94.4

Unconfined Compressive Strength, qu:

Undrained Shear Strength, su:

ASTM D4318, 6913, 2487

N. DeWitt

Technical Responsibility

Nohe E. Down

1.433

0.716

Laboratory Services Manager

3/4/2022

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.

Initial Water Content: 26.9%

KSF

KSF

Form No. TR-D2166-01

Revision No.: 1
Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS



ASTM D2166

	S&ME, Inc	c Knoxville: 1413 Topside Road, Lo	uisville, TN 37777	
Project No.:	218019		Report Date:	3/4/2022
Project Name:	Ford Blue Oval City	· - TVA Substation	Test Date(s):	3/1/2022
Client Name:	Walbridge Aldinge	r		
Client Address:	Detroit, MI			
Boring No.:	B-37A	Sample No. UD-1	Sample Date:	2/2022
			Depth:	5-7 feet

Sample Description: CL (LEAN CLAY) Brown

Unconfined Compressive Strength 7.0 6.0 4.0 1.0 1.0 5.0 5.0 10.0 Strain, %

Failed Specimen



Type of Sample: Intact
Source of Moisture Sample: Test Specimen

Liquid Limit: 42
Plasticity Index: 24
Height to Diameter Ratio: 2.0
Rate of Strain (%/min.): 0.50
Strain at Failure: 1.7

Initial Dry Unit Weight: 92.7 pcf Initial Water Content: 27.7% Unconfined Compressive Strength, q_u: 3.699 KSF Undrained Shear Strength, s_u: 1.850 KSF

References / Comments / Deviations:

ASTM D4318, 6913, 2487

N. DeWitt

Technical Responsibility

Nohe E. Dontal

Laboratory Services Manager

3/4/2022

Form No. TR-D2166-01 Revision No. : 1

Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS



ASTM D2166

S&ME, In	c Knoxville: 1413 Topside Road, Lo	uisville, TN 37777	
218019		Report Date:	3/4/2022
Ford Blue Oval City	y - TVA Substation	Test Date(s):	3/1/2022
Walbridge Aldinge	er		
Detroit, MI			
B-55A	Sample No. UD-1	Sample Date:	2/2022
		Depth:	5-7 feet
	218019 Ford Blue Oval City Walbridge Aldinge Detroit, MI	218019 Ford Blue Oval City - TVA Substation Walbridge Aldinger Detroit, MI	Ford Blue Oval City - TVA Substation Walbridge Aldinger Detroit, MI B-55A Sample No. UD-1 Sample Date:

Sample Description: CL (LEAN CLAY) gray with light brown

Unconfined Compressive Strength 3.0 2.0 1.0 0.0 Strain, %

Failed Specimen



Type of Sample: Intact
Source of Moisture Sample: Test Specimen

Liquid Limit: 35
Plasticity Index: 15
Height to Diameter Ratio: 2.0

Rate of Strain (%/min.): 0.50
Strain at Failure: 1.7

References / Comments / Deviations:

Initial Dry Unit Weight: 98.7

Unconfined Compressive Strength, qu:

Undrained Shear Strength, su:

ASTM D4318, D6913, D2487

N. DeWitt
Technical Responsibility

Nohe E. Douter

1.446

0.723

<u>Laboratory Services Manager</u>

3/4/2022

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.

Initial Water Content: 23.7%

KSF

KSF

Form No. TR-D2166-01 Revision No.: 1

Revision Date: 08/16/17

UNCONFINED COMPRESSIVE STRENGTH OF COHESIVE SOILS



ASTM D2166

S&ME, Inc K	noxville: 1413 Topside Road, Lo	uisville, TN 37777	
218019		Report Date:	3/4/2022
Ford Blue Oval City - TV	'A Substation	Test Date(s):	2/28/2022
Walbridge Aldinger			
Stanton, Tennessee			
B-57A	Sample No. UD-1	Sample Date:	2/2022
		Depth:	5-7 feet
	218019 Ford Blue Oval City - TV Walbridge Aldinger Stanton, Tennessee	218019 Ford Blue Oval City - TVA Substation Walbridge Aldinger Stanton, Tennessee	Ford Blue Oval City - TVA Substation Walbridge Aldinger Stanton, Tennessee B-57A Sample No. UD-1 Sample Date:

Sample Description: CL (LEAN CLAY) brown

Unconfined Compressive Strength 2.0 Compressive Strength, KSF 1.0 0.0 10.0 0.0 5.0 Strain, %

Failed Specimen



Type of Sample: Intact **Test Specimen** Source of Moisture Sample:

> Liquid Limit: 33 Plasticity Index: 16 Height to Diameter Ratio: 2.0

Rate of Strain (%/min.): 0.88

Strain at Failure: 3.1

References / Comments / Deviations:

Initial Dry Unit Weight: 92.0

Unconfined Compressive Strength, qu:

Undrained Shear Strength, su:

ASTM D4318, 6913, 2487

N. DeWitt Technical Responsibility Noha E. Down

0.829

0.415

Laboratory Services Manager

3/4/2022

This report shall not be reproduced, except in full, without the written approval of S&ME, Inc.

Initial Water Content: 28.0%

KSF

KSF

Soil Resistivity Data Sheet Wenner Four-Electrode Method



Project: Ford Blue Oval City - TVA Substation **Project #:** 218019

Project Location: Stanton, TN Station/Orientation: Test A (N-S)

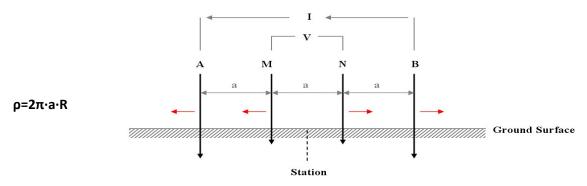
Date: 2/1/2022 **Time:** 8:00 AM

Weather & Temperature: Sunny, 40s

Soil Conditions: Moist

On-Site Personnel: Jill Guthrie, Adam Gostic

Additional Notes: Site contraints limited spacing to a 300 ft a-spacing



"a" Spacing (feet)	"a" Spacing (centimeters)	Electrode Depth (inches)	Resistance (Ω)	ρ Apparent Resistivity (Ω·cm)	ρ Apparent Resistivity (Ω·ft)	Injected Current (mA)	Comments
1	30.48	4	48.52	9292.16	304.86	100.00	
2	60.96	4	28.38	10870.22	356.63	50.00	
3	91.44	6	18.73	10761.06	353.05	50.00	
5	152.40	6	11.07	10600.19	347.78	50.00	
7	213.36	8	7.31	9796.98	321.42	50.00	
10	304.80	12	4.25	8139.26	267.04	100.00	
20	609.60	12	1.43	5461.92	179.20	100.00	
30	914.40	12	0.97	5561.51	182.46	100.00	
50	1524.00	12	0.74	7114.67	233.42	100.00	
70	2133.60	12	0.69	9213.83	302.29	100.00	
100	3048.00	12	0.61	11663.08	382.65	100.00	
200	6096.00	12	0.47	17829.76	584.97	100.00	
300	9144.00	12	0.40	22791.84	747.76	100.00	

Soil Resistivity Data Sheet Wenner Four-Electrode Method



Project: Ford Blue Oval City - TVA Substation **Project #:** 218019

Project Location: Stanton, TN Station/Orientation: Test B (E-W)

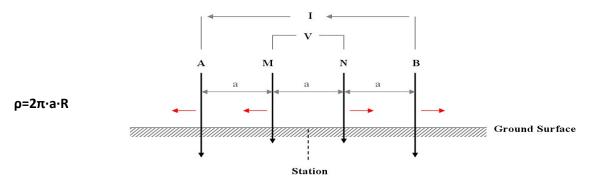
Date: 2/1/2022 **Time:** 1:00 PM

Weather & Temperature: Sunny, 40s

Soil Conditions: Moist

On-Site Personnel: Jill Guthrie, Adam Gostic

Additional Notes: Site contraints limited spacing to a 300 ft a-spacing



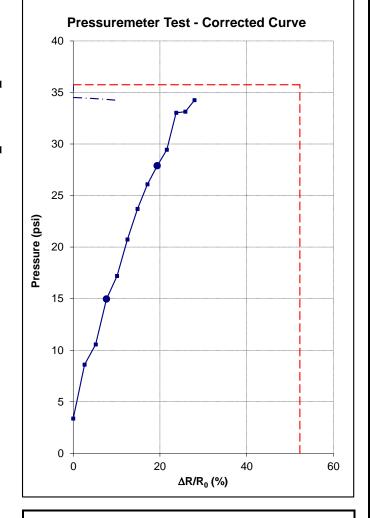
"a" Spacing (feet)	"a" Spacing (centimeters)	Electrode Depth (inches)	Resistance (Ω)	ρ Apparent Resistivity (Ω·cm)	ρ Apparent Resistivity (Ω·ft)	Injected Current (mA)	Comments
1	30.48	4	45.02	8621.87	282.87	50.00	
2	60.96	4	26.65	10207.59	334.89	50.00	
3	91.44	6	19.02	10927.67	358.52	50.00	
5	152.40	6	11.24	10762.97	353.12	50.00	
7	213.36	8	7.58	10157.60	333.25	100.00	
10	304.80	12	4.30	8227.35	269.93	100.00	
20	609.60	12	1.48	5657.26	185.61	100.00	
30	914.40	12	0.99	5662.62	185.78	100.00	
50	1524.00	12	0.78	7478.54	245.36	100.00	
70	2133.60	12	0.69	9307.67	305.37	100.00	
100	3048.00	12	0.62	11938.85	391.69	100.00	
200	6096.00	12	0.47	18189.80	596.78	100.00	
300	9144.00	12	0.43	24538.42	805.07	100.00	
400	12192.00	12	0.42	31898.23	1046.53	100.00	

Project name: 218019 P110S - TVA Substation

Borehole name: B-36 02/08/2022 Test date: (mm/dd/yyyy) B-36: 5' Test number: Probe size: Ν

Use of a slotted casing: No Test depth: 5.00 ft Manometer height above ground: 2.00 ft Poisson's coefficient: 0.33 Fluid density: 1.110

Raw Readings		Corrected Readings			
Pressure	Volume	Pressure	Volume	∆R/R ₀	
psi	in³	psi	in³	%	
0	0.0	3	0.0	0.00	
7	6.1	9	6.1	2.61	
9	12.2	11	12.2	5.17	
15	18.3	15	18.2	7.66	
17	24.4	17	24.3	10.10	
22	30.5	21	30.4	12.49	
25	36.6	24	36.5	14.82	
28	42.7	26	42.6	17.11	
31	48.8	28	48.7	19.36	
32	54.9	29	54.8	21.57	
36	61.0	33	60.9	23.73	
37	67.1	33	67.0	25.86	
38	73.2	34	73.1	27.96	



Calibrations References: Low Cal Membrane

Soil Description: (CL) Lean Clay Drilling method: Mud Rotary

Notes:

Test Results	
Pressiometer modulus E:	167 psi
Ultimate pressure P _L :	36 psi
Ratio E / P _L :	4.68
Yield pressure P _F :	28 psi
Ratio P _L / P _F :	1.28

Project name: 218019 P110S - TVA Substation

Borehole name: B-36

Test date: (mm/dd/yyyy) 02/09/2022

Test number: B-36: 15'

Probe size: N

Use of a slotted casing:

Test depth:

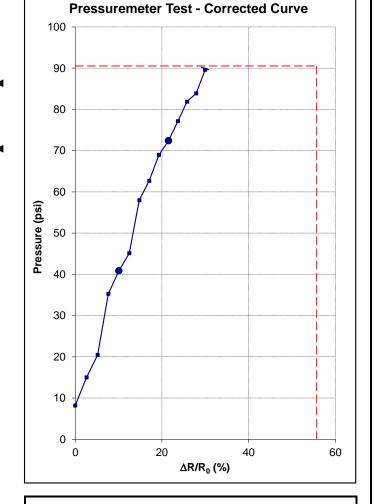
Manometer height above ground:

Poisson's coefficient:

15.00 ft
2.00 ft
0.33
Fluid density:

1.110

Raw Re	adings	Cor	rected Readi	ngs
Pressure	Volume	Pressure	Volume	∆R/R ₀
psi	in³	psi	in³	%
0	0.0	8	0.0	0.00
8	6.1	15	6.1	2.61
15	12.2	20	12.1	5.16
30	18.3	35	18.2	7.63
36	24.4	41	24.2	10.07
41	30.5	45	30.3	12.45
55	36.6	58	36.4	14.77
60	42.7	63	42.4	17.06
67	48.8	69	48.5	19.30
71	54.9	72	54.6	21.50
76	61.0	77	60.7	23.67
80	67.1	82	66.7	25.79
83	73.2	84	72.8	27.89
88	79.3	90	78.9	29.94
-		1		
		I.		



Remarks

Calibrations References: Low Cal Membrane

Soil Description: (ML) Silt Drilling method: Mud Rotary

Notes:

Test Results	
Pressiometer modulus E:	426 psi
Ultimate pressure P _L :	91 psi
Ratio E / P _L :	4.70
Yield pressure P _F :	72 psi
Ratio P _L / P _F :	1.25

300

250

200

Pressure (psi)

100

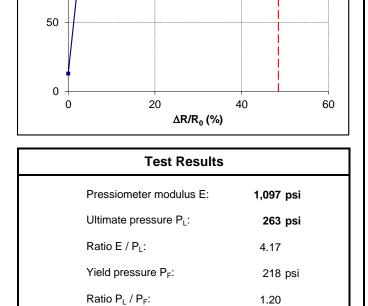
Project name: 218019 P110S - TVA Substation

Borehole name: B-36 02/09/2022 Test date: (mm/dd/yyyy) B-36: 25' Test number: Probe size: Ν

Use of a slotted casing: No Test depth: 25.00 ft Manometer height above ground: 2.00 ft Poisson's coefficient: 0.33 Fluid density: 1.110

Pressuremeter Test - Corrected Curve

Raw Re	eadings	Corrected Readings			
Pressure	Volume	Pressure	Volume	∆R/R ₀	
psi	in³	psi	in³	%	
0	0.0	13	0.0	0.00	
74	6.1	86	5.8	2.48	
120	12.2	130	11.6	4.96	
146	18.3	157	17.6	7.41	
164	24.4	174	23.6	9.83	
179	30.5	188	29.7	12.20	
192	36.6	200	35.7	14.52	
211	42.7	218	41.7	16.79	
220	48.8	227	47.8	19.03	
226	54.9	233	53.9	21.24	
240	61.0	246	59.9	23.39	
248	67.1	254	66.0	25.52	



Remarks

Calibrations References: Low Cal Membrane Soil Description: (ML) Silt, some Sand

Drilling method: Mud Rotary

Notes:

Project name: 218019 P110S - TVA Substation

Borehole name: B-36
Test date: (mm/dd/yyyy) 02/09/2022
Test number: B-36: 35'
Probe size: N

Use of a slotted casing:

Test depth:

Manometer height above ground:

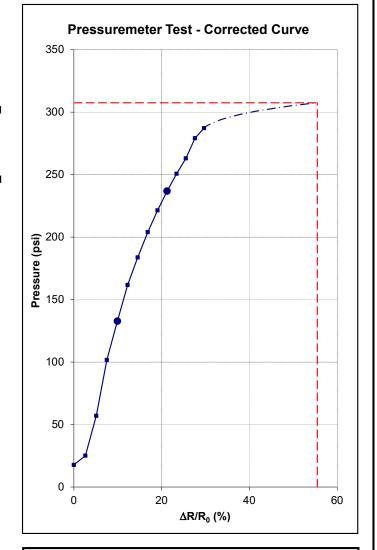
Poisson's coefficient:

0.33

Fluid density:

No
25.00 ft
2.00 ft
2.03 ft
1.110

Raw Readings		Corrected Readings			
Pressure	Volume	Pressure	Volume	ΔR/R ₀	
psi	in³	psi	in³	%	
0	0.0	18	0.0	0.00	
9	6.1	25	6.1	2.61	
41	12.2	57	12.0	5.11	
87	18.3	102	17.9	7.52	
119	24.4	133	23.9	9.91	
148	30.5	162	29.8	12.25	
171	36.6	184	35.8	14.56	
192	42.7	204	41.8	16.82	
210	48.8	221	47.8	19.05	
226	54.9	237	53.9	21.24	
239	61.0	251	59.9	23.39	
252	67.1	263	65.9	25.51	
268	73.2	279	72.0	27.59	
276	79.3	287	78.0	29.64	
		-			
		 			
		 			
		 			
		1			
		 			
		•			



Remarks

Calibrations References: Low Cal Membrane

Soil Description: (SM) Silty Sand Drilling method: Mud Rotary

Notes: Ballon on test cylinder torn on removal from ground

Test Results	
Pressiometer modulus E:	1,415 psi
Ultimate pressure P _L :	308 psi
Ratio E / P _L :	4.60
Yield pressure P _F :	237 psi
Ratio P _L / P _F :	1.30

60

50

Project name: 218019 P110S - TVA Substation

Borehole name: B-38
Test date: (mm/dd/yyyy) 02/07/2022
Test number: B-38: 5'
Probe size: N

Use of a slotted casing:

Test depth:

Manometer height above ground:

Poisson's coefficient:

0.33

Fluid density:

No

5.00 ft

2.00 ft

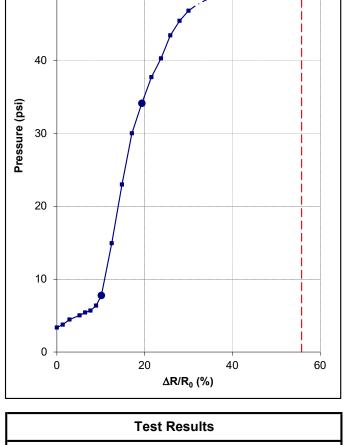
0.33

Fluid density:

1.110

Pressuremeter Test - Corrected Curve

Raw Readings		Corrected Readings			
Pressure	Volume	Pressure	Volume	ΔR/R₀	
psi	in³	psi	in³	%	
0	0.0	3	0.0	0.00	
1	3.1	4	3.0	1.32	
3	6.7	4	6.7	2.88	
4	12.2	5	12.2	5.18	
5	15.3	5	15.2	6.44	
5	18.3	6	18.3	7.68	
6	21.4	6	21.3	8.91	
8	24.4	8	24.4	10.12	
16	30.5	15	30.4	12.50	
25	36.6	23	36.5	14.82	
32	42.7	30	42.6	17.11	
37	48.8	34	48.6	19.35	
41	54.9	38	54.7	21.55	
44	61.0	40	60.8	23.72	
47	67.1	43	66.9	25.85	
49	73.2	45	73.0	27.94	
50	79.3	47	79.1	30.00	
		 			



Remarks

Calibrations References: Low Cal Membrane Soil Description: (CL) Lean Clay, with Silt

Drilling method: Mud Rotary

Notes:

Test Results	
Pressiometer modulus E:	436 psi
Ultimate pressure P _L :	52 psi
Ratio E / P _L :	8.43
Yield pressure P _F :	34 psi
Ratio P _L / P _F :	1.52

250

200

150

100

50

Pressure (psi)

Project name: 218019 P110S - TVA Substation

Borehole name: B-38
Test date: (mm/dd/yyyy) 02/07/2022
Test number: B38: 15'
Probe size: N

Use of a slotted casing:

Test depth:

Manometer height above ground:

Poisson's coefficient:

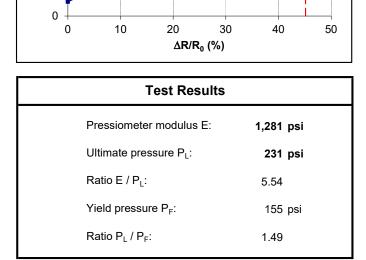
15.00 ft
2.00 ft
0.33

Fluid density:

1.110

Pressuremeter Test - Corrected Curve

	adings	Corrected Readings		
Pressure	Volume	Pressure	Volume	$\Delta R/R_0$
psi	in³	psi	in³	%
0	0.0	8	0.0	0.00
5	6.1	12	6.1	2.62
23	12.2	29	12.1	5.14
55	18.3	60	18.0	7.59
92	30.5	96	30.1	12.36
117	36.6	120	36.1	14.66
136	42.7	139	42.1	16.92
153	48.8	155	48.1	19.15
168	54.9	170	54.1	21.34
181	61.0	183	60.2	23.49
193	67.1	194	66.2	25.61
202	73.2	203	72.3	27.70



Remarks

Calibrations References: Low Cal Membrane

Soil Description: (ML) Silt, with Sand

Drilling method: Mud Rotary

Notes:

350

300

250

Pressure (psi) 150

100

50

Project name: 218019 P110S - TVA Substation

Borehole name: B-38
Test date: (mm/dd/yyyy) 02/08/2022
Test number: B-38: 25'
Probe size: N

Use of a slotted casing:

Test depth:

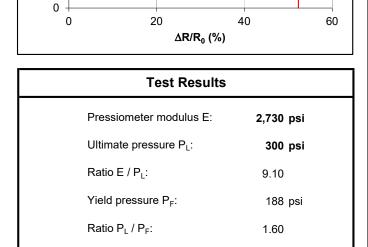
Manometer height above ground:

Poisson's coefficient:

1.110

Pressuremeter Test - Corrected Curve

Raw Readings		Corrected Readings		
Pressure	Volume	Pressure	Volume	ΔR/R₀
psi	in³	psi	in³	%
0	0.0	13	0.0	0.00
2	6.1	14	6.1	2.62
4	12.2	15	12.2	5.18
11	18.3	21	18.3	7.67
60	24.4	70	24.1	10.02
112	30.5	121	30.0	12.32
151	36.6	159	35.9	14.60
181	42.7	188	41.9	16.84
203	48.8	210	47.9	19.06
220	54.9	226	53.9	21.25
234	61.0	241	59.9	23.40
246	67.1	252	66.0	25.52
		<u> </u>		
		<u> </u>		



Remarks

Calibrations References: Low Cal Membrane

Soil Description: (ML) Silt, with Sand

Drilling method: Mud Rotary

Notes:

Project name: 218019 P110S - TVA Substation

Borehole name: B-38
Test date: (mm/dd/yyyy) 02/08/2022
Test number: B-38: 35'
Probe size: N

Use of a slotted casing:

Test depth:

Manometer height above ground:

Poisson's coefficient:

1.110

Raw Readings		Corrected Readings		
Pressure	Volume	Pressure	Volume	ΔR/R₀
psi	in³	psi	in³	%
0	0.0	18	0.0	0.00
4	6.1	20	6.1	2.62
6	12.2	21	12.2	5.18
12	18.3	26	18.3	7.67
51	24.4	66	24.2	10.04
76	30.5	89	30.2	12.39
96	36.6	109	36.2	14.70
116	42.7	128	42.2	16.96
131	48.8	143	48.2	19.19
145	54.9	156	54.2	21.38
157	61.0	168	60.3	23.53
168	67.1	179	66.3	25.65
178	73.2	189	72.4	27.73

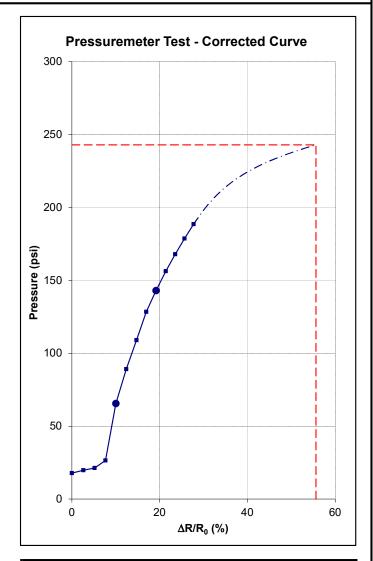


Calibrations References: Low Cal Membrane

Soil Description: (ML) Silt, with Sand

Drilling method: Mud Rotary

Notes:

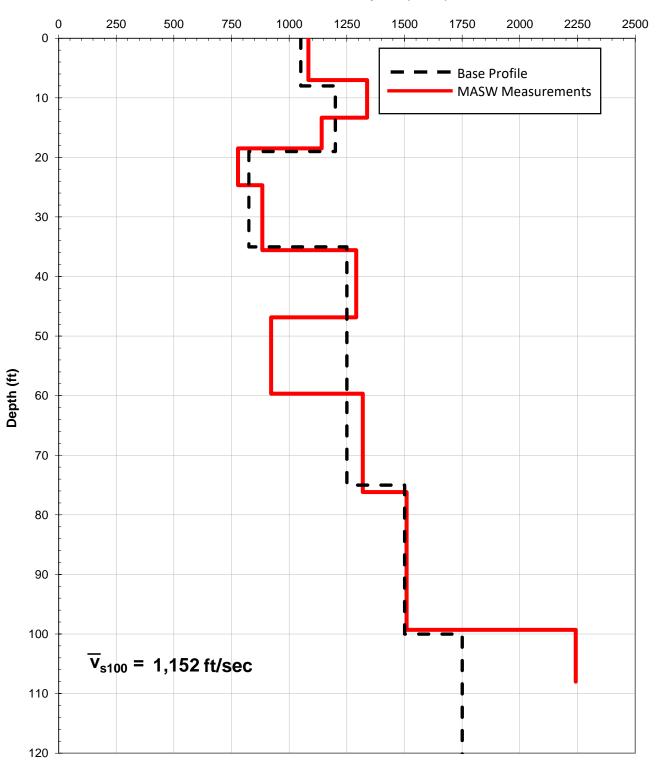


Test Results	
Pressiometer modulus E:	1,292 psi
Ultimate pressure P _L :	243 psi
Ratio E / P _L :	5.32
Yield pressure P _F :	143 psi
Ratio P _L / P _F :	1.70



Shear Wave Velocity Profile SW-1 Ford Blue Oval City - TVA Substation SR 222, Stanton, Tennessee **S&ME Project: 218019**

Shear Wave Velocity, Vs (ft/sec)





SHEAR WAVE VELOCITY PROFILES

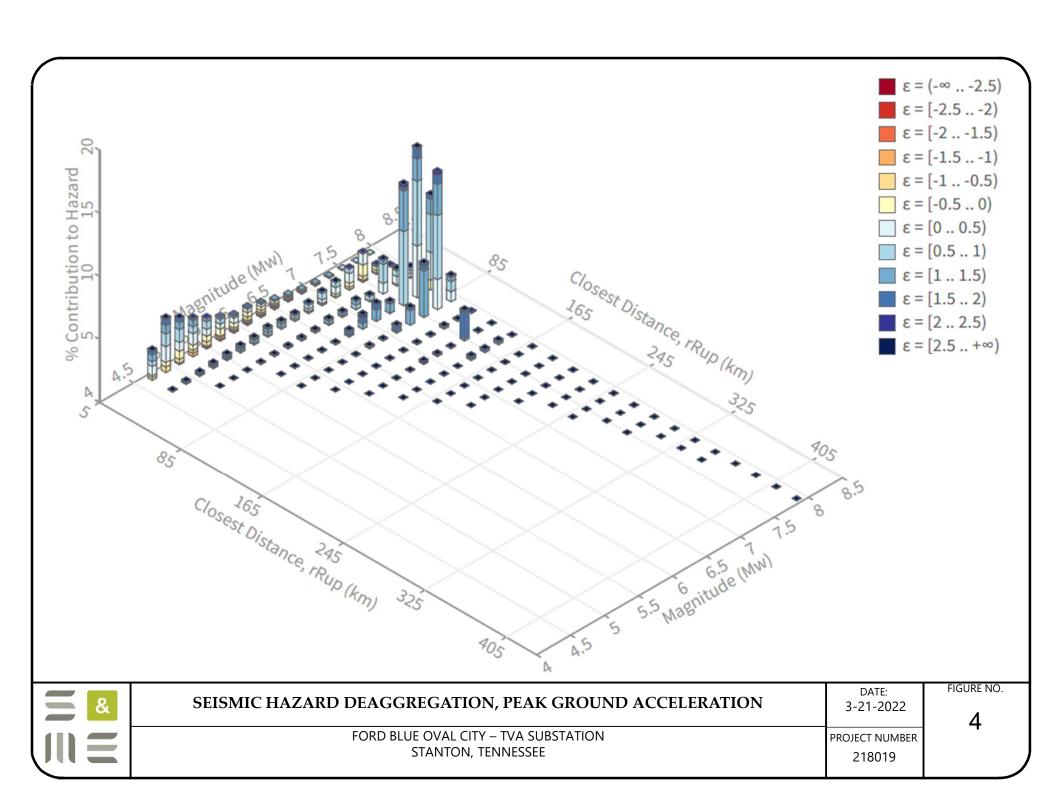
DATE: 3-21-2022

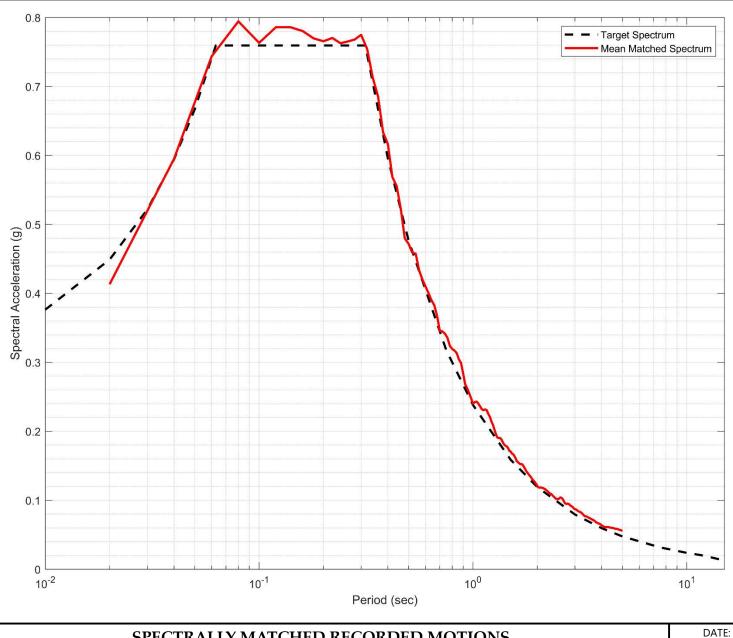
PROJECT NUMBER 218019

3

FIGURE NO.

FORD BLUE OVAL CITY - TVA SUBSTATION STANTON, TENNESSEE







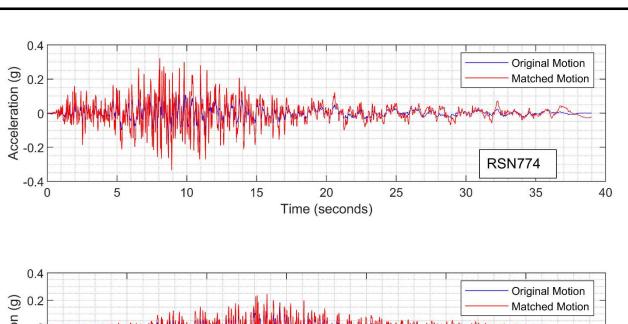
SPECTRALLY MATCHED RECORDED MOTIONS
B/C BOUNDARY

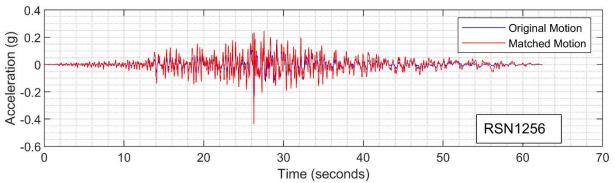
3-21-2022

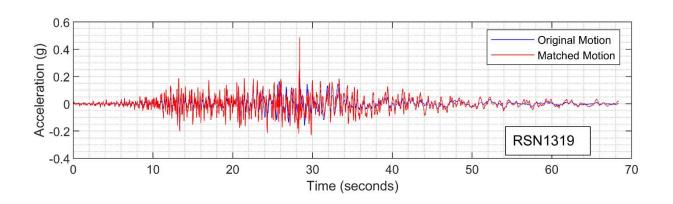
FIGURE NO.

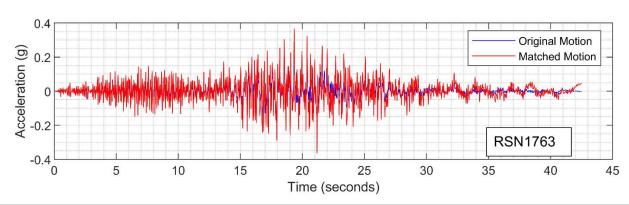
FORD BLUE OVAL CITY – TVA SUBSTATION STANTON, TENNESSEE

PROJECT NUMBER 218019









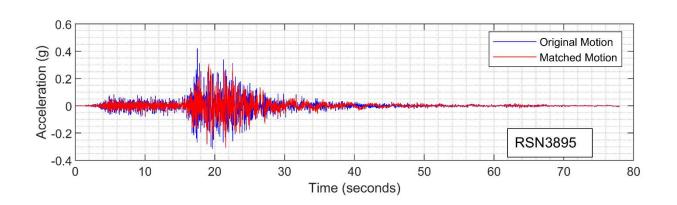


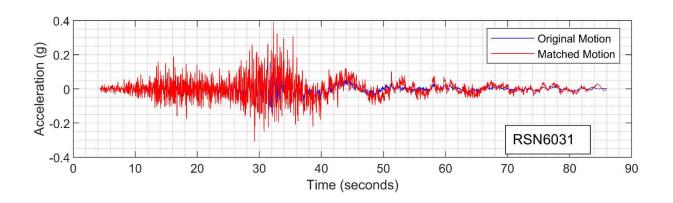
SPECTRALLY MATCHED ACCELERATION TIME HISTORIES

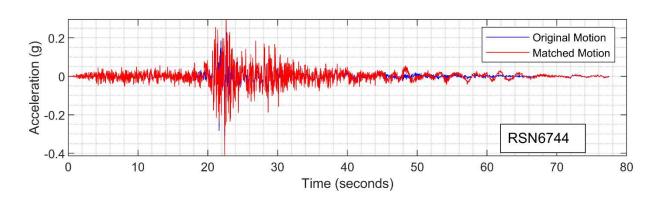
FORD BLUE OVAL CITY – TVA SUBSTATION STANTON, TENNESSEE

DATE:
3-21-2022

PROJECT NUMBER 218019 FIGURE NO.









SPECTRALLY MATCHED ACCELERATION TIME **HISTORIES**

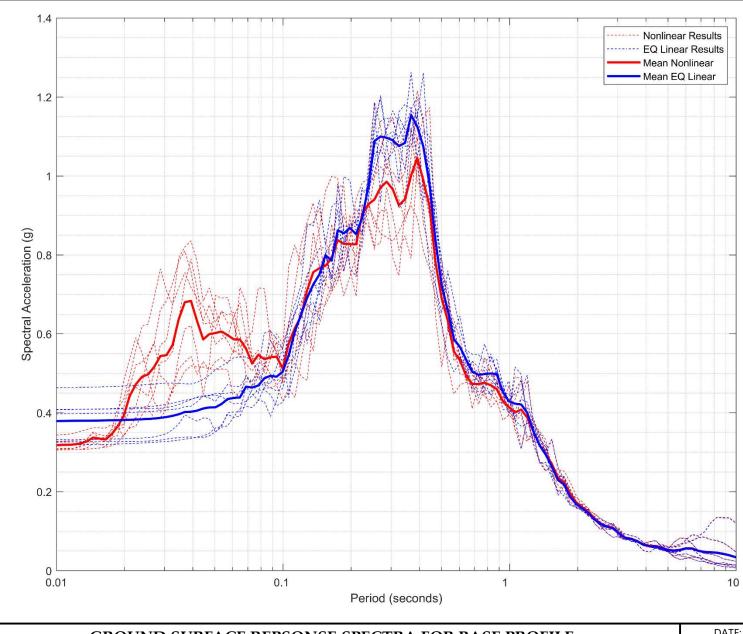
DATE: 3-21-2022

7

FORD BLUE OVAL CITY - TVA SUBSTATION STANTON, TENNESSEE

PROJECT NUMBER 218019

FIGURE NO.





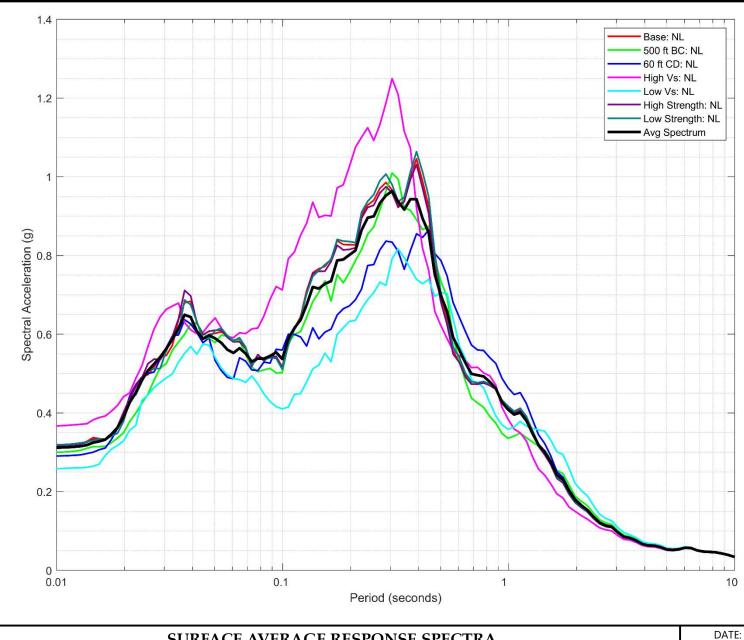
GROUND SURFACE REPSONSE SPECTRA FOR BASE PROFILE 1% PROBABILTY OF STRUCTURAL COLLAPSE IN 50 YEARS, 5% DAMPING

FORD BLUE OVAL CITY – TVA SUBSTATION STANTON, TENNESSEE

DATE: 3-21-2022

PROJECT NUMBER 218019

FIGURE NO.



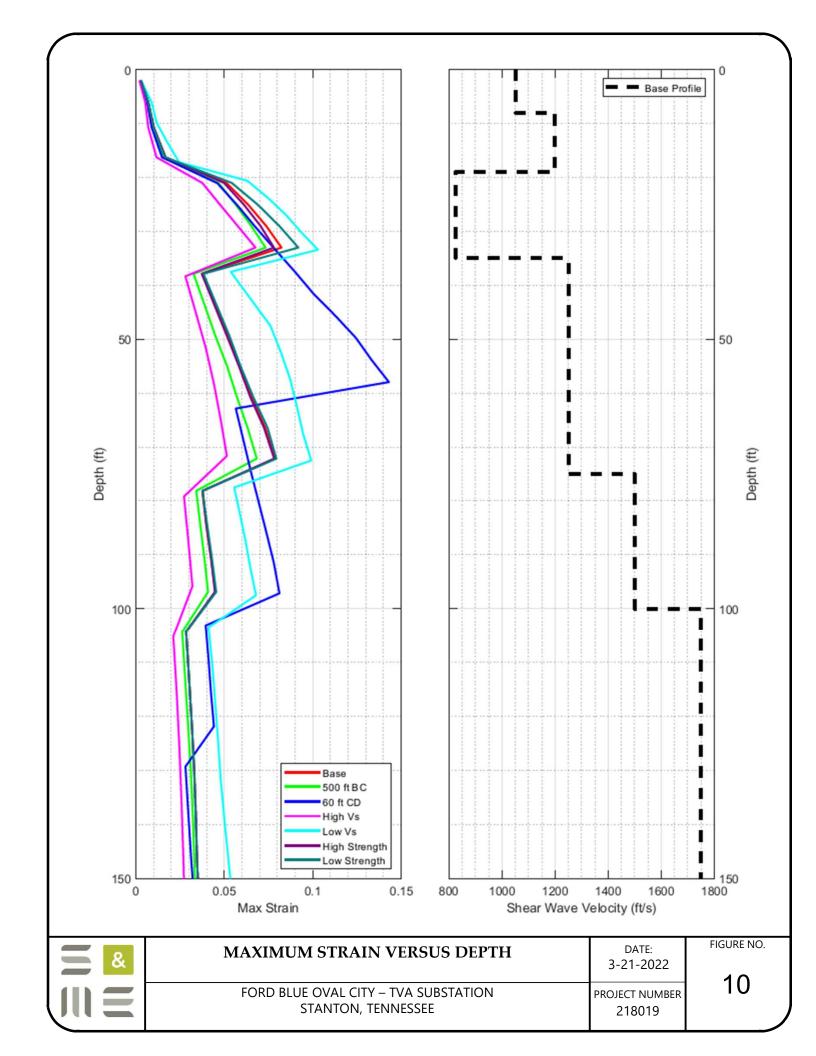


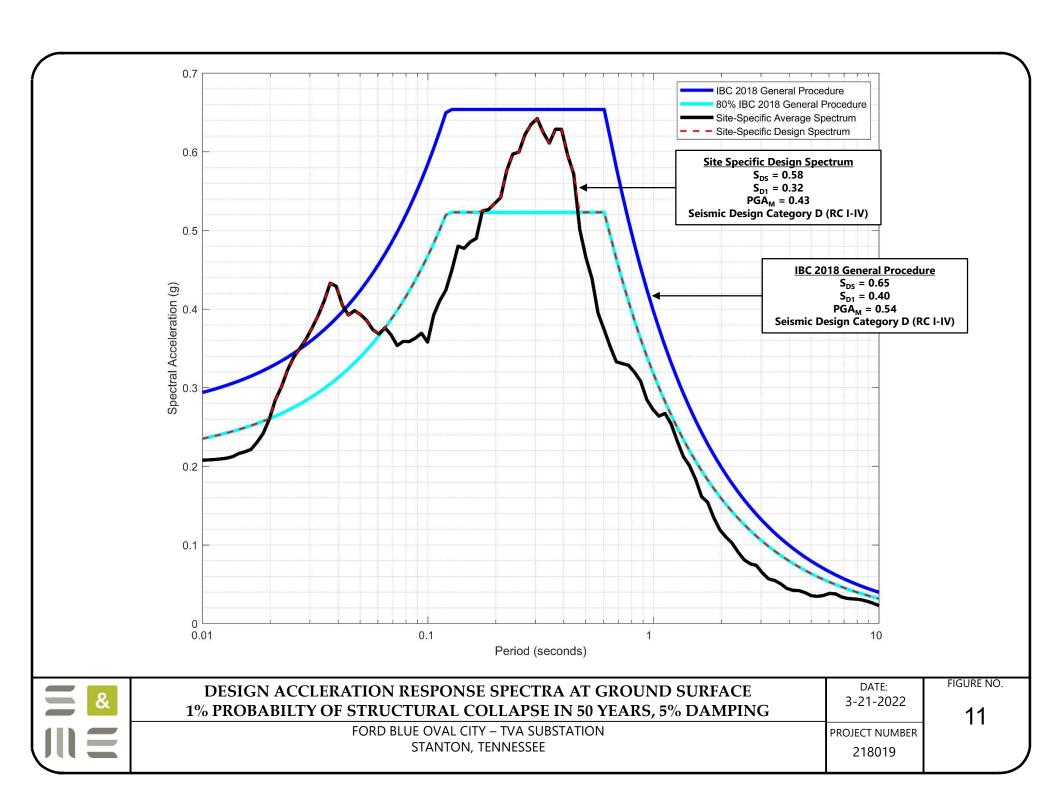
SURFACE AVERAGE RESPONSE SPECTRA
1% PROBABILTY OF STRUCTURAL COLLAPSE IN 50 YEARS, 5% DAMPING

FORD BLUE OVAL CITY – TVA SUBSTATION STANTON, TENNESSEE

DATE: 3-21-2022

PROJECT NUMBER 218019 FIGURE NO.







Important Information About Your Geotechnical Engineering Report

Variations in subsurface conditions can be a principal cause of construction delays, cost overruns and claims. The following information is provided to assist you in understanding and managing the risk of these variations.

Geotechnical Findings Are Professional Opinions

Geotechnical engineers cannot specify material properties as other design engineers do. Geotechnical material properties have a far broader range on a given site than any manufactured construction material, and some geotechnical material properties may change over time because of exposure to air and water, or human activity.

Site exploration identifies subsurface conditions at the time of exploration and only at the points where subsurface tests are performed or samples obtained. Geotechnical engineers review field and laboratory data and then apply their judgment to render professional opinions about site subsurface conditions. Their recommendations rely upon these professional opinions. Variations in the vertical and lateral extent of subsurface materials may be encountered during construction that significantly impact construction schedules, methods and material volumes. While higher levels of subsurface exploration can mitigate the risk of encountering unanticipated subsurface conditions, no level of subsurface exploration can eliminate this risk.

Scope of Geotechnical Services

Professional geotechnical engineering judgment is required to develop a geotechnical exploration scope to obtain information necessary to support design and construction. A number of unique project factors are considered in developing the scope of geotechnical services, such as the exploration objective; the location, type, size and weight of the proposed structure; proposed site grades and improvements; the construction schedule and sequence; and the site geology.

Geotechnical engineers apply their experience with construction methods, subsurface conditions and exploration methods to develop the exploration scope. The scope of each exploration is unique based on available project and site information. Incomplete project information or constraints on the scope of exploration increases the risk of variations in subsurface conditions not being identified and addressed in the geotechnical report.

Services Are Performed for Specific Projects

Because the scope of each geotechnical exploration is unique, each geotechnical report is unique. Subsurface conditions are explored and recommendations are made for a specific project. Subsurface information and recommendations may not be adequate for other uses. Changes in a proposed structure location, foundation loads, grades, schedule, etc. may require additional geotechnical exploration, analyses, and consultation. The geotechnical engineer should be consulted to determine if additional services are required in response to changes in proposed construction, location, loads, grades, schedule, etc.

Geo-Environmental Issues

The equipment, techniques, and personnel used to perform a geo-environmental study differ significantly from those used for a geotechnical exploration. Indications of environmental contamination may be encountered incidental to performance of a geotechnical exploration but go unrecognized. Determination of the presence, type or extent of environmental contamination is beyond the scope of a geotechnical exploration.

Geotechnical Recommendations Are Not Final

Recommendations are developed based on the geotechnical engineer's understanding of the proposed construction and professional opinion of site subsurface conditions. Observations and tests must be performed during construction to confirm subsurface conditions exposed by construction excavations are consistent with those assumed in development of recommendations. It is advisable to retain the geotechnical engineer that performed the exploration and developed the geotechnical recommendations to conduct tests and observations during construction. This may reduce the risk that variations in subsurface conditions will not be addressed as recommended in the geotechnical report.