

GEOTECHNICAL DATA REPORT

I-40 BRIDGE REPLACEMENT / REST AREA TRUCK
PARKING
SMITH - PUTNAM COUNTY, TENNESSEE

FEDERAL AID PROJECT NO. NH-I-40-5 (161)
TDOT PROJECT NO. 80I040-S1-009
TDOT PIN 131552.01
TDOT GES NO. 8001625

Prepared for:

HMB PROFESSIONAL ENGINEERS, LLC FRANKFORT, KENTUCKY

Prepared by:

UES PROFESSIONAL SOLUTIONS 25, LLC MEMPHIS, TENNESSEE

Date:

JUNE 18, 2025

UES Project No.:

A24138.00136.001

SAFETY TEAMWORK RESPONSIVENESS INTEGRITY VALUE EXCELLENCE



June 18, 2025

Alex Carpenter, P.E. HMB Professional Engineers, LLC 3 HMB Circle Frankfort, Kentucky 40601

Re: Geotechnical Data Report

I-40 Bridge Replacement / Rest Area Truck Parking

Smith - Putnam County, Tennessee UES Project No. A24138.00136.001 Federal Aid Project No. NH-I-40-5 (161)

TDOT Project No. 80I040-S1-009

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Dear Mr. Carpenter:

Presented in this report are the results of the geotechnical exploration performed by UES Professional Solutions 25, LLC (UES) for the referenced project. The report includes our understanding of the project, observed site conditions, and data as listed in the Table of Contents.

We appreciate the opportunity to provide geotechnical services for this project. If you have any questions regarding this report, or if we can be of any additional service to you, please do not hesitate to contact us.

Respectfully submitted,

Chula heada

UES

Amber Meadows Project Manager

ABM/ASE:jtm

Copies submitted: Client (email)

Ashraf S. Elsayed, Ph.D., P.E., BC.GE Chief Engineer – South Region



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Geotechnical Data Report I-40 Bridge Replacement / Rest Area Truck Parking Smith - Putnam County, Tennessee

June 18, 2025

UES Project No. A24138.00136.001 |TDOT PIN 131552.01 | TDOT GES No. 8001625

1.0 SCOPE OF SERVICES

Presented in this report are the results of the geotechnical exploration for design and construction of the proposed Interstate 40 (I-40) Welcome Center improvements and bridge replacement in Smith and Putnam County, Tennessee. The referenced project includes upgrades to the existing Welcome Center ramps, truck parking spaces to be added to the TDOT-owned property within the Welcome Center, and the replacement of the existing adjacent bridge structure of I-40 over the eastbound entrance and exit ramps and Caney Fork River. The project location is shown on Figure 1 included in Appendix B.

Data presented in this report are based on the geology, provided plans and project information, and the results of the geotechnical exploration. Results of borings, in-situ testing, sampling, and laboratory testing are included in the report. A total of 39 borings were performed in the vicinity of the site as shown on Figure 2 in Appendix B. Results of borings, in-situ testing, sampling, and laboratory testing are included in the report. The general site conditions are discussed. Unless noted otherwise, all dimensions, measurements, depths, and locations in this report should be considered approximate. Important information prepared by the Geotechnical Business Council (GBC) of the Geoprofessional Business Association for studies of this type is presented in Appendix A for your review.

2.0 GENERAL INFORMATION

Planned Modifications

The proposed I-40 Welcome Center (MM267) and interchange improvements project include replacement of the twin bridges for eastbound (EB) and westbound (WB) I-40 with a single bridge, ramp and access drive modifications, and addition of new parking and drive areas to the adjacent Welcome Center in Smith & Putnam County. The project length is approximately 0.86 miles. The I-40 corridor is a full access-controlled facility with an interchange to access the Welcome Center. Based on provided plans¹, the project will utilize two conceptual typical sections for I-40: four-lane

¹ Drawings titled, *Preliminary Function Design Plans*, developed by State of Tennessee – Department of Transportation – Bureau of Engineering, and dated 2025.



freeway with a depressed median and six-lane freeway with median barrier for the proposed bridge. The planned modifications are discussed in the following paragraphs.

Bridge 80I00400036: I-40 EB & WB over the Caney Fork River and EB access ramps

The existing twin bridges are two 320-foot-long, 44-foot-wide, four-span, pre-stressed, concrete bridges with 14 feet and 11 inches of vertical clearance at their intersection with EB I-40 entrance and exit ramps, and 45 to 48 feet of vertical clearance at the Caney Fork River bottom. Each bridge consists of two, 12-foot-wide travel lanes and outside/inside shoulders. A retaining wall is located at the east abutment.

The existing twin bridges will be replaced with either a 325-foot long, 135-foot-wide, two-span, steel bridge or a 322-foot long, 135-foot-wide, three-span, steel bridge. Sides slopes are anticipated to range from two horizontal units for every vertical unit (2H:1V) to (10H:1V). Abutment slopes are anticipated to match existing. Up to 2 feet of cut and 12 feet of fill will be required to achieve design grades.

Ancillary Modifications

Additional improvements will be made to the I-40 Welcome Center interchange including modifying the existing alignment and side slopes of I-40 WB entrance ramp (Ramp A), I-40 EB exit ramp (Ramp B), I-40 EB entrance ramp (Ramp C), and I-40 WB exit ramp (Ramp D) in accordance with current design standards. Up to 30 feet of cut and 12 feet of fill will be required to achieve design grades. Sides slopes are anticipated to range from 2H:1V to 10H:1V.

Welcome Center Modifications

The existing wooded areas to the west of the Welcome Center will be clear cut for the construction of a 125-bay truck parking lot expansion with associated drive areas. Grading information for the proposed parking and drive areas was not provided.

Topography and Drainage

Based on the provided plans, the existing topography at the site ranges from approximately El² 480 to El 580 across the project area, with the exception of the Caney Fork River which has a mudline elevation of El 455 at the bridge crossing. The site is within the floodplain of Caney Fork River, which drains west into the Cumberland River.

Geology

The site is located in the eastern Highland Rim physiographic province of central Tennessee, within Smith and Putnam Counties. The region is underlain by Middle Ordovician carbonate bedrock, specifically the Bigby–Cannon Limestone, which dominates the local stratigraphy. This formation, as mapped by the Tennessee Division of Geology, consists primarily of the Cannon facies—medium-dark gray to brownish-black, microcrystalline to medium-grained, thin- to

² Elevations are referenced in units of feet to North American Vertical datum (NAVD 88).



medium-bedded limestone with common chert and occasional silty mottling. The Dove facies is present only as relatively thin zones and is characterized by medium-light gray to medium gray, cryptocrystalline limestone with conchoidal fracture and scattered calcite stringers. The formation typically ranges from 50 to 125 feet thick in this region.

Overlying the bedrock is a mantle of unconsolidated surficial materials that include residual soils, colluvium, and alluvium. These deposits vary in composition and thickness depending on topographic position.

On uplands and hillslopes, the surficial cover consists of residual soils formed in place by the weathering of the underlying limestone, often accompanied by colluvium on slopes and benches. These deposits typically include clayey and silty materials with varying amounts of chert fragments. Depth to bedrock in these areas commonly ranges from approximately 3 to more than 5 feet, depending on slope position and degree of weathering. In some locations—particularly on footslopes or benches—residual and colluvial soils may exceed 60 inches in thickness above the limestone.

In the lower-lying floodplain areas adjacent to streams and drainageways, Holocene alluvium is present. These deposits consist primarily of silt, silty clay loam, and minor sand or gravel layers, reflecting modern fluvial processes. According to USDA NRCS mapping, soils in these environments commonly exhibit clay-rich subsoils and moderate to poor drainage, with depths to bedrock typically exceeding 40 to 50 inches.

3.0 GEOTECHNICAL EXPLORATION

The geotechnical exploration consisted of 39 borings in the locations of the proposed structures as described in Table 1. The borings were located in the field by a UES representative. The boring locations shown on Figure 2 in Table 1 are approximate; if elevations or more precise locations are required, the client should retain a registered surveyor to establish boring locations and elevations.

Table 1. Boring Location Summary.

Boring(s)	Proposed Improvement
BR-1 through BR-5	Bridge
WB-1, WB-2, EB-1, and EB-2	Approaches
W-1 through W-11 and E-1 through E-9	Entrance and Exit Ramps
P-1 through P-10	Parking and Drive Areas

The borings were drilled on March 27 through May 14, 2025, with ATV- and track-mounted rotary drill rigs (Geoprobe 7822DT, CME 550X, and CME 750X) using hollow stem augers and rotary wash drilling methods. Borings BR-3 and BR-4 were drilled through the bridge deck of the WB and EB driving lanes, respectively. Auger refusal occurred in Borings BR-1 through BR-5, E-1 through E-3, E-8 through E-9, EB-1, EB-2, W-1, W-2, W-4 through W-11, and WB-2 during drilling at



approximate depths of 4 to 57 feet (El 459 to El 527). Borings BR-1 through BR-5 were advanced into rock by NQ coring to total depths of 32 to 67 feet (El 433 to El 487). Rock core samples were obtained in 2- to 5-foot-long segments.

Soil sampling procedures included Standard Penetration Test (SPT) and thin-walled (Shelby) tube methods. SPT's were conducted at 2.5- and 5-foot depth intervals using an automatic hammer to obtain the standard penetration resistance, or N-values³, of the sampled material. Composite bulk sample of auger cuttings/spoils were collected at Borings W-1, W-7, W-11, E-6, P-2, P-5, and P-8 and placed in buckets. Groundwater observations were made during drilling operations. Pavement core samples were collected in Borings EB-1, EB-2, WB-1, and WB-2 during drilling.

Samples collected by UES were visually examined by a geologist and transported to our laboratory for further evaluation and testing. The samples were examined in the laboratory by a geotechnical professional who prepared descriptive logs of the materials encountered. Descriptions of the rock cores are provided on the boring logs. Boring logs and rock core photographs are presented in Appendix C. An explanation of the terms and symbols used on the boring logs, and an explanation of rock core descriptions, are also provided in Appendix C. Included on each boring log are surveyed location and surface elevation data. Included in Table 2 are in situ tests and measurements made as part of the fieldwork and recorded on the boring logs.

Table 2. Field Tests and Measurements.

Item	Test Method
Soil Classification	ASTM D 2488/ D 3282
Standard Penetration Test (SPT)	ASTM D 1586/ AASHTO T206
Thin-Walled (Shelby) Tube Sampling	ASTM D 1587/ AASHTO T207
Phreatic Surface Level Measurement in Boring	ASTM D 4750
Rock Core Drilling and Sampling of Rock	ASTM D 2113 / AASHTO T 225
Rock Quality Designation (RQD⁴) of Rock Core	ASTM D 6032

The boring logs and related information depict subsurface conditions only at the specific locations and times where sampling was conducted. The passage of time could result in changes in conditions, interpreted to exist, at or between the locations where sampling was conducted.

³ The standard penetration resistance, or N-value, is defined as the number of blows required to drive the split-spoon sampler 12 inches with a 140-pound hammer falling 30 inches. Since the split spoon sampler is driven 18 inches or until refusal, the blows for the first 6 inches are for seating the sampler, and the number of blows for the final 12 inches is the N-value. Additionally, "refusal" of the split-spoon sampler occurs when the sampler is driven less than 6 inches with 50 blows of the hammer.

⁴ Rock quality designation is the ratio of the sum of the pieces of core measuring 4 inches or larger to the total length of the cored interval, expressed as a percentage.



4.0 LABORATORY REVIEW AND TESTING

Laboratory testing was performed on soil and rock samples to assess engineering and index properties. Moisture contents, grain size (sieve analyses), Atterberg limits, unconsolidated-undrained triaxial compression (UU), and compressive strength of rock core test results are presented on the boring logs in Appendix C.

Laboratory test results for grain size distributions, Atterberg, UU, consolidated-drained direct shear (CD), standard Proctor, and rock core compressive strength results are presented in Appendix D. Laboratory tests and corresponding test method standards are listed in Table 3.

Table 3. Summary of Laboratory Tests and Methods.

Laboratory Test	ASTM	AASHTO
Moisture Content	D 2216	T 265
Grain Size Analysis by Sieving	D 6913	T 88
Grain Size Analysis by Hydrometer	D 7928	T 88
Atterberg Limits	D 4318	T 98
Unconsolidated-Undrained Triaxial Compression (UU)	D 2850	T 296
Consolidated-Drained Direct Shear (CD)	D 3080	T 236
Moisture-Density Relationship (Standard Effort)	D 698	T 99
California Bearing Ratio (CBR)	D 1883	T 193
Compressive Strength of Rock Core Specimens	D 7012	T 226

The boring logs were prepared from field logs, visual classification of the soil samples, and laboratory test results. Terms and symbols used on the boring logs are presented on the Boring Log: Terms and Symbols in Appendix C. Stratification lines on the boring logs indicate approximate changes in strata. The transition between materials could be gradual or could occur between recovered samples. The stratification given on the boring logs, or described herein, is for use by UES in its analyses and should not be used as the basis of design or construction cost estimates without realizing that there can be variation from that shown or described.

5.0 SUBSURFACE CONDITIONS

Existing Pavement and Ground Surface Conditions

The ground surface at the locations of the borings was covered with 3 to 15 inches of topsoil in landscaped areas and 4 to 25 inches of asphalt underlain by up to 38 inches of base materials in paved areas. The designation, location, and ground surface conditions encountered at the borings are presented in Table 4. It should be noted that due to the sample intervals and space between boring locations, the actual depth of base materials may vary between samples and borings.



Table 4. Ground Surface Conditions Summary.

Boring or Pavement Core	Station Offset ¹ (feet)	Material	Thickness (inches)
BR-1	546+25.5 17.5 RT	Asphalt	20
BR-2	546+95.5 6.5 RT	Asphalt	14
	·	Asphalt	4
		Concrete	14
BR-3 ²	548+28.0 15.5 LT	Void Space	32
		Concrete	7.5
		Asphalt	4.25
BR-4 ²	549+09.5 17.5 RT	Concrete	13.75
		Void Space	24
		Asphalt	5
BR-5	550+20.0 9.0 RT	Base Materials: crushed limestone	13
		and sand	
F 4	510100 01 67 0 DT	Asphalt Base Materials: crushed limestone	7
E-1	519+98.0 67.0 RT	and sand	12
		Asphalt	7.5
E-2	523+87.5 60.0 RT	Base Materials: crushed limestone and sand	10.5
E-3	527+81.5 101.5 RT	Asphalt	5
L-3	327 101.3 101.3 1(1	crushed limestone and sand	11
F 4	500.00 5 L 44 0 DT	Asphalt	7
E-4	533+96.5 44.0 RT	Base Materials: crushed limestone and sand	35
E-5	534+17.0 116.5 RT	Topsoil	3
-		Asphalt	4
E-6	538+18.0 52.0 RT	Base Materials: crushed limestone and sand	38
E-7	537+89.0 112.11 RT	Topsoil	3
F 0	540.50 0 L 50 0 DT	Asphalt	8
E-8	542+58.0 52.0 RT	Base Materials: crushed limestone and sand	34
E-9	542+48.5 152.0 RT	Topsoil	2
2 0		Asphalt	13
EB-1	545+07.0 47.0 RT	Base Materials: crushed limestone and sand	29
EB-1 (lane) ³	•	Asphalt	21.5
EB-1 (shoulder) ³		Asphalt	16.75
ED 0		Asphalt	5
EB-2	551+07.5 39.0 RT	Base Materials: crushed limestone and sand	37
EB-2 (lane) ³	001107.0 00.0 MI	Asphalt	21.25
EB-2 (shoulder) ³		Asphalt	8.5
P-1	509+87.5 375.0 LT	Topsoil	3
P-2	538+69.0 681.0 LT	Topsoil	3
P-3	511+55.5 551.0 LT	Topsoil	12
P-4	519+12.5 277.5 LT	Topsoil	7



Table 4. Ground Surface Conditions Summary (continued).

Boring or Pavement Core	Station Offset ¹ (feet)	Material	Thickness (inches)			
P-5	519+86.5 553.0 LT	Topsoil	10			
P-6	525+56.0 204.0 LT	525+56.0 204.0 LT Topsoil				
P-7	526+17.5 489.0 LT	Topsoil	4			
P-8	527+89.0 395.0 LT	Topsoil	3			
		Asphalt	4			
P-9	531+12.5 322.5 LT	Base Materials: crushed limestone and sand	8			
P-10	535+03.5 528.0 LT	Topsoil	3			
W-1	510+98.5 123.5 LT	Topsoil	3			
	•	Asphalt	10			
W-2	528+81.0 126.0 LT	Base Materials: crushed limestone and sand	32			
W-3	529+05.5 51.5 LT	Topsoil	3			
		Asphalt	12			
W-4	511+50.5 70.0 LT	Base Materials: crushed limestone and sand	30			
W-5	514+61.0 105.5 LT	Topsoil	6			
W-6	514+81.5 46.5 LT	Topsoil	3			
		Asphalt	10			
W-7	518+43.0 98.5 LT	Base Materials: crushed limestone and sand	10			
W-8	521+73.0 103.0 LT	Topsoil	15			
		Asphalt	16			
W-9	521+88.5 35.0 LT	Base Materials: crushed limestone and sand	9			
W-10	524+76.0 104.5 LT	Topsoil	3			
		Asphalt	9			
W-11	525+06.07 36.0 LT	Base Materials: crushed limestone and sand	33			
		Asphalt	12			
WB-1	541+01.5 14.5 LT	Base Materials: crushed limestone and sand	30			
WB-1 (lane) ³		Asphalt	24.5			
WB-1 (shoulder) ³		Asphalt	9.5			
WB-2	552+41.5 13.5 LT	Asphalt Base Materials: crushed limestone and sand	7 35			
WB-2 (lane) ³	302 141.0 10.0 LI	Asphalt	18.75			
WB-2 (shoulder) ³		Asphalt	5.25			

¹ Offset to the right and left of the centerline is notated as RT and LT, respectively.

Pavement cores were obtained near Borings WB-1, WB-2, EB-1, and EB-2 with a coring machine equipped with a 4-inch diameter core barrel. Pavement material thicknesses presented in Table 4 were measured from recovered core samples at core locations and boring locations during

² Borings drilled through the bridge deck; thicknesses shown are in reference to the bridge deck.

³ Pavement core



drilling. Pavement thicknesses presented in this report might not reflect the maximum thicknesses encountered during construction. The recovered pavement core samples were marked and labeled in the field for identification then returned to our laboratory. Photographs of the recovered pavement cores are included in Appendix E.

General Stratigraphy

Beneath the pavement materials and topsoil shown in Table 4 and from the creek bottom in Borings BR-3 and BR-4, the stratigraphy generally consisted of interlayered fine- and coarse-grained soils underlain by limestone and shale bedrock. More specific descriptions of the stratigraphy encountered are provided below and on the boring logs in Appendix C.

Fine-Grained Soils

The fine-grained soils were generally classified as low plasticity, lean clay (CL), silt (ML), and silty clay (CL-ML) and high plasticity fat clay (CH) and elastic silt (MH) with varying amounts of sand and gravel by the Unified Soil Classification System (USCS) and A-2-6, A-4, A-6, A-7-5, and A-7-6 by the AASHTO method. Moisture contents of tested samples ranged from 1 to 54 percent. Liquid limits (LL) and plasticity indices (PI) of the tested samples ranged from 30 to 98 percent and 5 to 58 percent, respectively. SPT N-values ranged from 0 to 40 blows per foot (bpf). The UU tests performed on relatively undisturbed Shelby Tube samples yielded an undrained shear strength range of 1,840 to 2,850 pounds per square foot (psf). The results of field and laboratory testing were indicative of very soft to hard consistencies in this upper fine-grained stratum.

Coarse-Grained Soils

The coarse-grained soils were generally classified as clayey sand (SC, SC-SM), silty sand (SM), clayey gravel (GC), intermixed sand (SP, SP-SC, SP-SM), and intermixed gravel (GP, GW, GP-GC) by USCS and A-1-b, A-2-4, A-2-6, A-2-7, A-4, A-6, and A-7-6 by the AASHTO method. SPT N-values measured in the coarse-grained soils ranged from 0 to greater than 50 bpf, indicative of very loose to very dense conditions.

Bedrock

Auger refusal on apparent bedrock occurred in Borings BR-1 through BR-5, E-1 through E-3, E-8 through E-9, EB-1, EB-2, W-1, W-2, W-4 through W-11, and WB-2 at depths of 3.9 to 56.5 feet (EI 459 to EI 527). Borings BR-1 through BR-5 were advanced into rock by NQ coring to total depths of 32 to 67 feet (EI 433 to EI 487).

Split spoons obtained in the upper foot of bedrock in Borings BR-4, BR-5, E-1 through E-3, EB-2, W-7, W-8, and EB-2 yielded highly weathered limestone. SPT N-values measured in the weathered rock ranged from 40 to greater than 50 bpf, indicative of dense to very dense conditions.

Rock cores recovered in the bedrock consisted of medium strong to very strong, gray, very finely to coarsely crystalline, thin to medium bedded, moderately weathered to unweathered limestone and/or gray to black, aphanitic to medium crystalline, thin to medium bedded, slightly weathered



to highly weathered calcareous shale with mudstone (encountered in Borings BR-2 through BR-4). Uniaxial compressive strength tests on rock core samples generally ranged from 5,037 to 17,877 pounds per square inch (psi), indicative of medium strong to very strong rock. Photos of rock cores and the uniaxial compressive strength testing results are presented in Appendix C and Table 5, respectively. RQD values measured from the rock cores ranged from 39 to 100 percent, indicative of poor to excellent quality rock. Rock core recovery and RQD generally increased with depth in the limestone, except within and around the observed shale where RQD generally decreased.

Table 5. Unconfined Compressive Strength of Rock Core Samples.

DATE	BORING	CORE	DEPTH	DIAMETER	LENGTH	DENSITY	LOAD	STRENGTH
TESTED	NO.	NO.	FT	IN	IN	LBS/FT ³	LBS	PSI
5/30/2025	BR-1	1	57.50	1.98	4.00	169.1	34,887	11,290
5/30/2025	DK-1	3	64.50	1.99	4.19	167.3	48,549	15,664
5/30/2025		1	41.25	1.99	4.01	168.3	33,694	10,882
5/30/2025	BR-2	2	46.70	1.99	4.20	167.0	44,881	14,496
5/30/2025		3	51.10	1.99	4.16	166.2	44,435	14,366
5/30/2025		11	8.25	1.99	4.04	168.3	45,541	14,709
5/30/2025	BR-3	2	16.60	1.99	4.08	169.0	24,154	7,801
5/30/2025	DK-3	3	21.30	1.99	4.07	166.0	42,549	13,756
5/30/2025		5	29.30	1.99	4.02	168.1	46,290	14,951
5/30/2025		1	10.20	1.99	4.16	168.9	23,319	7,539
5/30/2025		2	15.80	1.99	4.11	170.3	15,579	5,037
5/30/2025	BR-4	3	17.30	1.99	4.06	170.1	23,968	7,741
5/30/2025		4	22.00	1.99	4.03	169.7	55,294	17,877
5/30/2025		5	77.00	1.98	4.01	168.8	39,855	12,898
5/30/2025		1	6.25	1.99	4.10	167.3	17,163	5,543
5/30/2025		2	13.20	1.99	4.06	169.1	48,536	15,692
5/30/2025	BR-5	3	15.40	1.99	4.12	169.8	41,974	13,557
5/30/2025		4	27.70	1.99	4.09	168.7	41,850	13,517
5/30/2025		5	29.40	1.99	4.14	169.1	43,677	14,107

Groundwater

Groundwater was encountered during drilling at depths of 15 to 43.5 feet (El 469.5 to El 493.8) in Borings BR-1, BR-2, E-5, E-7, and E-9. Borings BR-3 and BR-4 were drilled in the Caney Fork River where mudline elevations were El 467.4 and El 473.2, respectively. Groundwater was not encountered in the remaining borings. Groundwater levels vary over time due to the effects of seasonal variation in precipitation, stage of and proximity to Caney Fork River, or other factors not evident at the time of exploration.

6.0 LIMITATIONS

This report has been prepared on behalf of, and for the exclusive use of, the client for specific application to the named project as described herein. If this report is provided to other parties, it should be provided in its entirety with all supplementary information. In addition, the client should



make it clear the information is provided for factual data only, and not as a warranty of subsurface conditions presented in this report.

Geotechnology has attempted to conduct the services reported herein in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. The recommendations and conclusions contained in this report are professional opinions. The report is not a bidding document and should not be used for that purpose.

Our scope for this phase of the project did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, groundwater, or air, on or below or around this site. Any statements in this report or on the boring logs regarding odors noted or unusual or suspicious items or conditions observed are strictly for the information of our client. Our scope did not include an assessment of the effects of flooding and erosion of creeks or rivers adjacent to or on the project site.

Our scope did not include: any services to investigate or detect the presence of mold or any other biological contaminants (such as spores, fungus, bacteria, viruses, and the by-products of such organisms) on and around the site; or any services, designed or intended, to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants.

The analyses, conclusions, and recommendations contained in this report are based on the data obtained from the geotechnical exploration. The field exploration methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Consequently, subsurface conditions could vary gradually, abruptly, and/or nonlinearly between sample locations and/or intervals.

The conclusions or recommendations presented in this report should not be used without Geotechnology's review and assessment if the nature, design, or location of the facilities is changed, if there is a lapse in time between the submittal of this report and the start of work at the site, or if there is a substantial interruption or delay during work at the site. If changes are contemplated or delays occur, Geotechnology must be allowed to review them to assess their impact on the findings, conclusions, and/or design recommendations given in this report. Geotechnology will not be responsible for any claims, damages, or liability associated with any other party's interpretations of the subsurface data or with reuse of the subsurface data or engineering analyses in this report.

The recommendations included in this report have been based in part on assumptions about variations in site stratigraphy that can be evaluated further during earthwork and foundation construction. Geotechnology should be retained to perform construction observation and continue its geotechnical engineering service using observational methods. Geotechnology cannot assume liability for the adequacy of its recommendations when they are used in the field without Geotechnology being retained to observe construction.



Appendix A IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT

Important Information about This

Geotechnical-Engineering Report

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

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

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

Understand the Geotechnical-Engineering Services Provided for this Report

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

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

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

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will <u>not</u> likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

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

Do <u>not</u> rely on this report if your geotechnical engineer prepared it:

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

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer About Change

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

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

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

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

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

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

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

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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



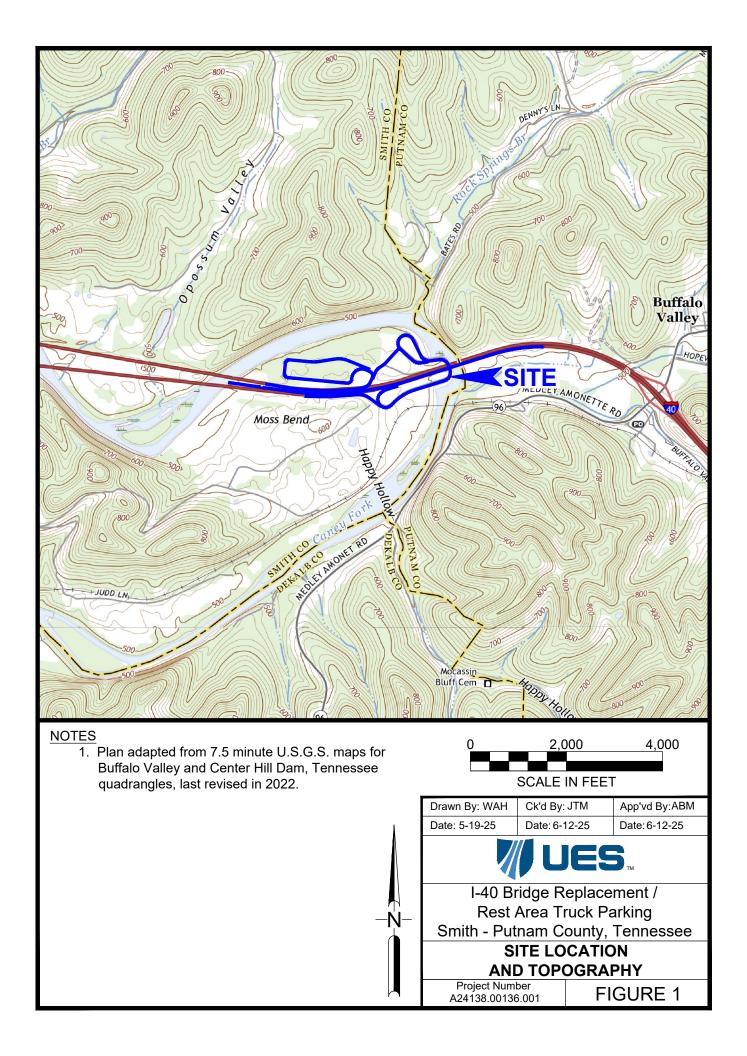
Telephone: 301/565-2733

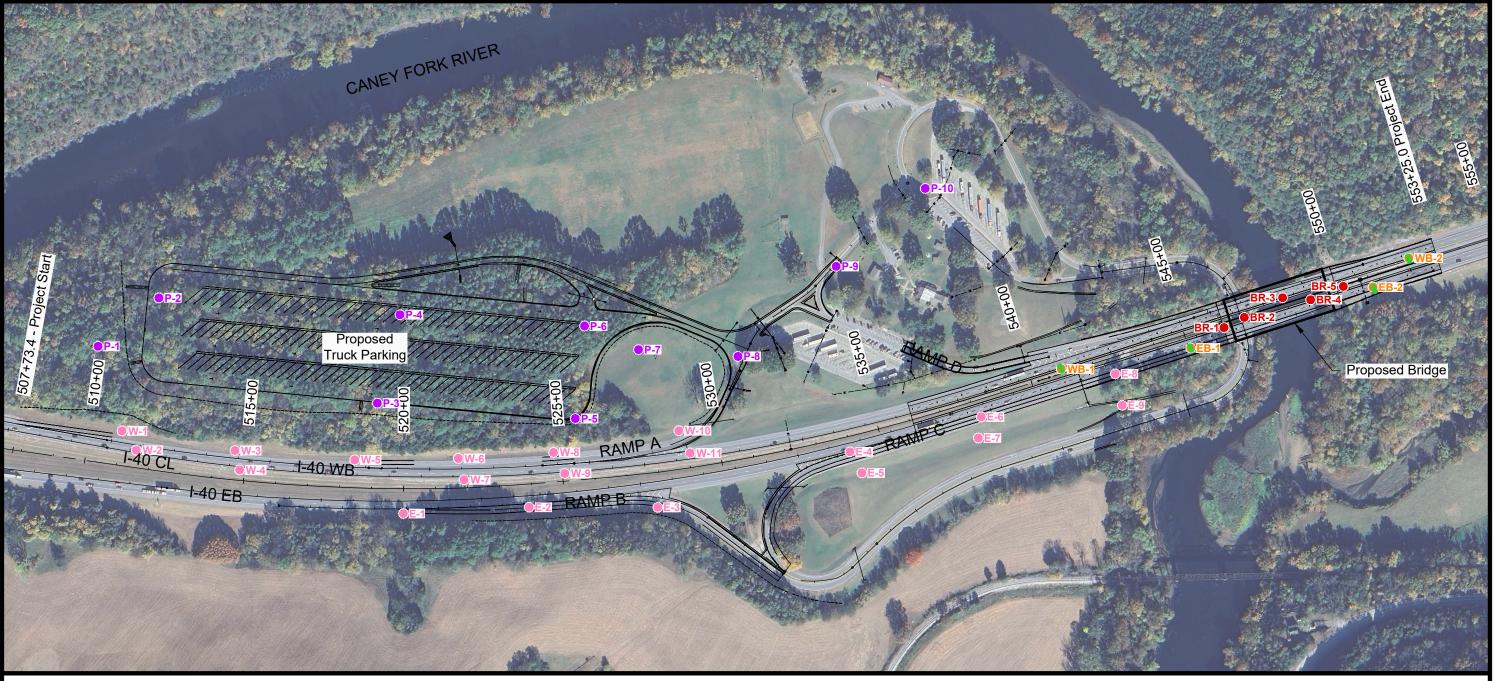
e-mail: info@geoprofessional.org www.geoprofessional.org

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Appendix B FIGURES





NOTES

- 1. Plan adapted from a October 24, 2024 aerial photograph courtesy of Google Earth and a drawing set printed on May 8, 2025, titled "Smith Putnam I-40 Bridge Replacement/Rest Area Truck Parking (L.M. 16.316/L.M.0.078)", prepared by State of Tennessee Department of Transportation Bureau of Engineering.
- 2. Boring locations were surveyed by the project surveyor.

LEGEND

- Boring Location Bridge
- Boring Location Approaches
- Boring Location Acceleration/Deceleration Lanes
- Boring Location Parking and Drives
- Pavement Core Location



Date: 5-29-25	Date: 6-12-25	Date: 6-12-25
Drawn By: WAH	Ck'd By:JTM	App'vd By: ABM



I-40 Bridge Replacement /
Rest Area Truck Parking
Smith - Putnam County, Tennessee

AERIAL PHOTOGRAPH OF SITE AND BORING LOCATIONS

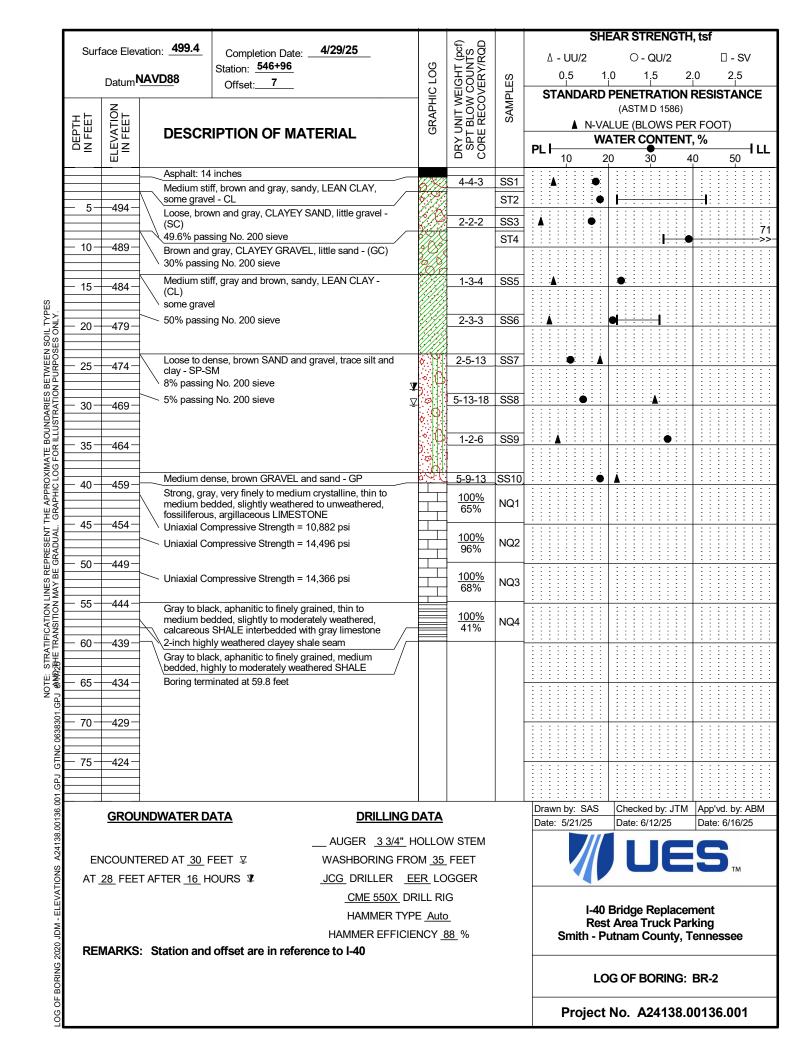
Project Number A24138.00136.001

FIGURE 2



Appendix C
BORING INFORMATION

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- 5	CLAY, trace gravel - (CL) Gray, highly weathered LIMESTONE		1-9-31	SS2					
	Medium strong to very strong, gray, very finely to coarsely crystalline, thin to medium bedded,		98%	NO					
	moderately weathered to unweathered, argillaceous		98% 70%	NQ1					
10 512	\\\\\ 1-inch core loss								
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	vuggy Uniaxial Compressive Strength = 15,692 psi		92%	NQ2					
15 507	1-inch core loss								
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	calcite infilled vug		100%	NQ4					
	cardio Illinoa vag		100%	110					
25—497—									
	vuggy		100% 100%	NQ5					
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			97% 97%	NQ6					
			97%	1143					
35 487	1.5-inch core loss								
	Boring terminated at 35.2 feet.								
40 482									
45 /									
45477									
GROU	NDWATER DATA DRILLING	DATA			Drawn by: SAS	Checked by: JTM	App'vd. by: ABM		
_	EE WATER NOT AUGER 3_3/4"_		W STFM		Date: 5/22/25	Date: 6/12/25	Date: 6/16/25		
	RED DURING DRILLING WASHBORING FI					JUE	5		
	JCG DRILLER						ТМ		
	<u>CME 550X</u> [RILL RI	G		1.40	Duidas Davida			
	HAMMER TY				Res	Bridge Replacer t Area Truck Par	king		
DEMARKS	HAMMER EFFIC	ENCY _	88_%			utnam County, 1			
KEWAKAS	Station and offset are in reference to I-40				LC	OG OF BORING:	BR-5		
					Project	No. A24138.0	00136.001		

		vation: <u>537.8</u>	Completion Date: 4/16/25 Station: 519+98 Offset: 67	907	GHT (pcf) OUNTS ERY/RQD	S	Δ - UU/2	EAR STRENGTH ○ - QU/2 .0 1.5 2	l, tsf ☐ - SV
DEPTH IN FEET	ELEVATION IN FEET		IPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	A N-VA	PENETRATION (ASTM D 1586) ALUE (BLOWS PE ATER CONTENT	R FOOT) 7, %
	Ш	Asphalt: 7 i	nches ial: 12 inches gray and white crushed				10 2	20 30 4	10 50
		limestone a	nd sand d brown, clayey, ELASTIC SILT, little sand,		12-6-9	SS1		•	
— 5—	533 <i></i>	76% passir	ng No. 200 sieve	Ш	2-5-8	SS2		•	>
		Stiff, red an gravel - CL	d brown, LEAN CLAY, some sand and		2-4-7	SS3			
		Medium sti organics - (ff, brown, FAT CLAY, trace sand and CH		1-3-3	SS4			
— 10 —	 528								
— 15 —	523 <i></i>	(CL)	gray, sandy, LEAN CLAY, little gravel - ng No. 200 sieve		97 50/1"	ST5		- • • • • • • • • • • • • • • • • • • 	
10	323	Gray LIME: Boring term	STONE ninated at 14.8 feet due to auger refusal.						
_ 20_	 518								
25	 513								
_ 30_	-508								
ENC	<u>X</u> FI	JNDWATER D REE WATER NO RED DURING D	OT AUGER <u>3 1/4"</u>	_HOLLO	FEET		Drawn by: AG Date: 4/23/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25
REM	MARKS	: Station and	Geoprobe7822E HAMMER TO HAMMER EFFICE Offset are in reference to I-40	YPE Auto	<u>o</u>		Res	Bridge Replace t Area Truck Par utnam County, 1	king
							LC	OG OF BORING:	E- 1
							Project	No. A24138.0	00136.001

		ration: <u>538.5</u>	Completion Date: 4/16/25 Station: 523+87	90-	SHT (pcf) DUNTS RY/RQD	Ø	Δ - UU/2					
DEPTH IN FEET	LEVATION IN FEET		Offset: 60 IPTION OF MATERIAL	GRAPHIC LOG	/ UNIT WEIGHT (pcf) PT BLOW COUNTS RE RECOVERY/RQD	SAMPLES	▲ N-VA	STANDARD PENETRATION RESISTANCE (ASTM D 1586) A N-VALUE (BLOWS PER FOOT)				
<u>Z</u>	ELE) IN				DRY UI SPT E CORE I		PL	ATER CONTENT	10 50 LL			
		limestone a	ial: 10.5 inches gray and white crushed and sand		12-8-7	SS1						
		organics - 0		e ////								
— 5—	534 <i></i>	Medium sti and gravel	ff, red and brown, FAT CLAY, little sand - CH		1-2-3	SS2	: X ::::::					
			own, sandy, FAT CLAY, trace gravel - (C ng No. 200 sieve	iH)	102	ST3		 •				
— 10 <i>—</i>	529 <i></i>				1-2-2	SS4	∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴ ∴	· · · · · · · · · · · · · · · · · · ·				
— 15 —	524 <i></i>	Soft, red ar 89% passir	d brown, ELASTIC SILT, little sand - (Ming No. 200 sieve	H)	1-1-1	SS5	A					
		Į	nestone fragments	Ш	5-17-15	SS6	•					
			nestone fragments own, sandy, FAT CLAY - CH		1-2-50/3"	SS7						
_ 20_	 519	Gray LIME: Boring term	STONE ninated at 19.3 feet due to auger refusal.									
_ 25_	—514 —											
30	—509 —											
	GROU	INDWATER D	ATA DRIL	LING DATA			Drawn by: AG	Checked by: JTM	App'vd. by: ABM			
ENC	<u>X</u> FI	REE WATER NO RED DURING [DT AUGER <u>3</u> DRILLING WASHBORII <u>JJA</u> DRILLE	3 <u>1/4"</u> HOLLO NG FROM ER <u>SAS</u> LO 822DT DRILL	FEET		Date: 4/23/25 Date: 6/12/25 Date: 6/16/25					
REM	MARKS	: Station and		ER TYPE <u>Auto</u> EFFICIENCY <u>-</u>			Res	Bridge Replace et Area Truck Par eutnam County, T	king			
							L	OG OF BORING:	E- 2			
							Project	No. A24138.0	00136.001			

Surfa	ace Flevat	ion: 534.8	Completion Date: 4/16/25		g, g			EAR STRENGTH	•		
			Station: <u>527+82</u>	9	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	Δ - UU/2	O - QU/2	□ - SV		
	Datum N	<u>4VD8</u> 8	Offset:101.6	3RAPHIC LOG			0.5 1.0 1.5 2.0 2.5				
	Z.			H H	₩ ₩ ₩ ₩	AMP	STANDARD PENETRATION RESISTANCE (ASTM D 1586)				
토田 	ATIC EET	DESCD	IPTION OF MATERIAL	GRA		Ś		ALUE (BLOWS PE			
DEPTH IN FEET	ELEVATION IN FEET	DESCR	IPTION OF WATERIAL		SP1		PI	ATER CONTENT	Γ, % ——— LI		
	ш	A 1 11 E 1			۵ ٥		10 2	20 30	40 50		
		Asphalt: 5 i	ncnes ial: 11 inches gray and white crushed								
		limestone a	red and brown, FAT CLAY, some sand,		13-7-3	SS1	111141101				
		trace grave	I - (CH)								
		→ 79% passir	ng No. 200 sieve		2-3-5	SS2	1:::4:::::	i	<u> </u>		
- 5+	-5 30 -										
					0-0-2	SS3	· · · · · · · · · · · ·				
					0-0-2	333	. .	-			
		Gray LIMES			50/3"	SS4	1		S-3"		
- 10 -	-525 -	Boring term	ninated at 8.3 feet due to auger refusal.								
	020										
- 15 -	-5 20 -										
- 20	-515-										
20	313										
05	540										
- 25+	-510-										
- 30 	-5 05 -										
	GROUN	IDWATER D	ATA DRILLI	NG DATA	,		Drawn by: AG Date: 4/23/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25		
ENC		EE WATER NO ED DURING D	DILLING					JUE			
			WASHBORING JJA DRILLER						тм		
			Geoprobe782				1_40	Bridge Replace	mont		
				TYPE Auto			Res	st Area Truck Pa	rking		
REM	IARKS:	Station and	HAMMER EFF offset are in reference to I-40	-ICIENCY <u>(</u>	<u>98</u> %		Smith - P	outnam County, ⁻	Tennessee		
							L	OG OF BORING:	E-3		
							1				

		525.6	4/45/05		€ 0		SH	EAR STRENGTH	l, tsf		
Surf	ace Elev	vation: <u>525.6</u>	Completion Date: <u>4/15/25</u> Station: <u>533+96</u>	(1)	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV		
	Datum	NAVD88	Offset: 44	3RAPHIC LOG	유인	ES	0.5 1	1,0 1,5 2	2.0 2.5		
			Offset		N C C	 PLI	STANDARD PENETRATION RESISTANCE				
±Η	<u> </u>			(API	EC SEC	SAMPLES		(ASTM D 1586)	·		
DEPTH IN FEET	TE A	DESCR	RIPTION OF MATERIAL	6				ALUE (BLOWS PE ATER CONTENT			
ÖΖ	ELEVATION IN FEET				R R R		PL	•	40 50 L		
	Ш	Asphalt: 7 i	inches				10 2		10 30		
		Base Mater	rial: 35 inches of gray and white crushed						1 : : : : : : 6		
		limestone a	and sand		19-36-29	SS1					
		Medium sti CLAY - (Cl	ff to stiff, red and brown, sandy, LEAN		7-4-5	SS2	111 X 11•1				
- 5-	 521-	,	ng No. 200 sieve								
		1				ST3		· -			
		1									
		1									
		1			6-5-7	SS4	111114101				
— 10 —	516-	some grave	el								
		-									
		†									
		†									
		trace grave	el		2-3-4	SS5	1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1	 			
— 15 <i>-</i>	511-	-									
		1									
		†									
		C+i#1	nd brown, sandy, SILTY CLAY - (CL-ML)			-					
			ng No. 200 sieve		2-3-6	SS6		 			
- 20 <i>-</i>	506	1									
		1									
		1									
		Soft to med	dium stiff, red and brown, sandy, LEAN								
٥٢	504	CLAY - CL			2-2-4	SS7	: : 4 : : : : : :				
- 25 <i>-</i>	501										
– 30 –	406	L			2-0-3	SS8	A : : : : : : : :	• : : : : : : : : : : : : : : : : : : :			
30	496 -		ite concretions ninated at 30 feet.								
		1									
	GRO	JNDWATER D	ATA DRILLIN	G DATA			Drawn by: AG Date: 4/23/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25		
		REE WATER N			M STEM		Date. 4/23/23				
ENC		RED DURING I						JUE	5		
			JJA DRILLER						ТМ		
			Geoprobe7822								
							I-40	Bridge Replace	ment		
			HAMMER T HAMMER EFFI				Res	st Area Truck Par	rking		
BEI	MARKS	S: Station and	I offset are in reference to I-40	CILINUT _	30 /0		Smith - P	Putnam County, 1	ennessee		
KE	*17-(1 \F\C	. Glation and	i onset are in reference to 1-40								
							Le	OG OF BORING:	E- 4		
							Project	No. A24138.0	00136.001		

		=10.0			<u> </u>		SH	EAR STRENGTH	l, tsf		
Surfa	ace Elev	ration: <u>518.8</u>	Completion Date: 3/28/25 Station: 534+17	(2)	Poc NTS NRQI	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD SAMPLES	Δ - UU/2	○ - QU/2	□ - SV		
	Datum	NAVD88	Offset: 117	GRAPHIC LOG	FS S				2.0 2.5		
			GHSGL.		₩ W O O	SAMPLES	STANDARD PENETRATION RESISTANCE				
ᆂᇤ	ELEVATION IN FEET			RAP	BEC REC	SAI	A NLV/	(ASTM D 1586) ALUE (BLOWS PE	R FOOT)		
DEPTH IN FEET	-WE	DESCR	RIPTION OF MATERIAL	Ō	γ PT RE		W	ATER CONTENT	Г. %		
	٣				R ₀ S		PI		40 50 LL		
			d grass: 3 inches	/ /////							
		Medium sti sand - (CL)	ff to stiff, brown, silty, LEAN CLAY, little		2-5-5	SS1					
					2-2-3	SS2					
- 5	 514				2-2-3	332					
					2-3-3	SS3					
		Brown and	tan, CLAYEY SAND - (SC)								
		→ 49.8% pass	sing No. 200 sieve			ST4		• · · · · · · · · · · · · · · · · · · ·			
- 10	 509										
		Medium de	ense, red SAND, trace clay and organics -								
- 15	 504	SP-SC	, , ,		4-7-7	SS5					
		Medium de gravel - SC	ense, brown and gray, CLAYEY SAND and		6-8-6	SS6					
- 20	 499	graver - 50	,								
	40.4				5-4-7	SS7		•::::::::::::::::::::::::::::::::::::::			
25	—494 —			*							
				9/10							
		18% passir	ng No. 200 sieve		5-5-6	SS8					
- 30	 489	Poring torm	ninated at 30 feet.		3-3-6	330					
		Boning term	ilitated at 50 feet.								
	CDO		ATA DDULIN	IC DATA	I	1	Drawn by: SAS	Checked by: JTM	App'vd. by: ABM		
	GRUL	JNDWATER D		IG DATA			Date: 4/1/25	Date: 6/12/25	Date: 6/16/25		
	1001 :-		AUGER <u>3 3/4</u>					UE	C		
EN	ICOUNT	ERED AT <u>25</u> F							тм		
			JT DRILLER								
			<u>CME750X</u> HAMMER				I-40	Bridge Replace	ment		
			HAMMER EFF				Res	t Area Truck Parutnam County, 1	rking		
REN	//ARKS	: Station and	offset are in reference to I-40		<u></u> /0		Siniui - P	uulani County,	C C35CC		
							LC	OG OF BORING:	E- 5		
							Dunings	No. A244204	00426.004		
							Project	No. A24138.0	100.001		

0f	-	ation: <u>517.4</u>	Completion Date: 4/21/25		€2		SH	EAR STRENGTH	H, tsf		
Surra	ace Elev	ation: OTT-4	Completion Date: <u>4/21/25</u> Station: <u>538+18</u>	U U	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		∆ - UU/2	○ - QU/2	□ - SV		
	Datum	NAVD88	Offset:52	P	유일하	ES	0 _. 5 1	0 1.5 2	2,0 2,5		
					N N N	SAMPLES	STANDARD PENETRATION RESISTANCE				
ᆂᇤᅵ	ΘH			SRAPHIC LOG	불일	SAN	A N13/A	(ASTM D 1586)	'D FOOT\		
DEPTH IN FEET	A E	DESCR	RIPTION OF MATERIAL	25	A E F			ALUE (BLOWS PE ATER CONTENT			
¤Z	ELEVATION IN FEET				S S S S S S S S S S S S S S S S S S S		PI		40 50 LI		
		Asphalt: 4 i	inches						1		
		Base Mate	rial: 38 inches gray and white crushed	_							
		limestone a	and sand		12-20-17	SS1					
			n, sandy, LEAN CLAY - (CL) ng No. 200 sieve		3-6-7	SS2	::::: X ::♦	 : : : : : : : : :			
- 5-	 512	104 /0 passii	ng No. 200 sieve								
		Medium de	ense, tan, SILTY SAND - (SM)	(///// :- :- :	4						
			ng No. 200 sieve			ST3		: : : : : :			
					4-5-5	SS4					
- 10	 507						-				
		Loose to ve	ery dense, tan and orange SAND - SP		4-2-3	SS5	· · · · · · · · · · · · · · · ·				
- 15	 502				4-2-3	333					
					}						
					10.1-01						
- 20-	—497 —				12-17-21	SS6					
20	431										
		Verv dense	e, brown SAND and gravel, trace clay - SP	o 14/	:						
25	402	,	, , , , , , , , , , , , , , , , , , , ,		8-15-17	SS7					
- 25	 492										
				o Z							
) (2) //				•			
00	407	Medium sti	ff, brown, FAT CLAY - CH		9-4-3	SS8					
- 30 -	 487	Boring tern	ninated at 30 feet.								
	GROL	INDWATER D	ΔΤΔ DRILL	ING DATA	•		Drawn by: REP	Checked by: JTM			
							Date: 4/28/25	Date: 6/12/25	Date: 6/16/25		
ENIC		REE WATER N RED DURING I	DOLLING					JUE			
		[WASHBURIN						TM		
EINC			JJA DRILLEI								
EINC				<u> 322DT</u> DRILL			1.40	Bridge Replace	mont		
EINC			LIANANAC	R TYPE Auto	<u>0</u>		I-40 Res	t Area Truck Pa	ment rkina		
ENC									rkirig		
			HAMMER EI		98_%			utnam County,			
REN			HAMMER EI I offset are in reference to I-40		98_%						
REN			HAMMER EI		98_%		Smith - P	utnam County, 1	Tennessee		
REN			HAMMER EI I offset are in reference to I-40		98_%		Smith - P		Tennessee		

		=			£ 0		SH	IEAR STRENGTH	l, tsf	
Surfa	ace Elev	ration: 510.8	Completion Date: 3/28/25		DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV	
	- · N	NAVD88	Station: <u>537+89</u>	3RAPHIC LOG	F N	SAMPLES	0,5	1,0 1,5 2	2,0 2,5	
	Datum'	MAYDOO	Offset: 112	CL	#BS					
	z			─ ₹	₹≥		STANDARD PENETRATION RESISTANCE (ASTM D 1586)			
	은뇨			RA	[필품	S	A N-V	ALUE (BLOWS PE	R FOOT)	
DEPTH IN FEET	`₹"	DESCR	RIPTION OF MATERIAL	٥	그드出		W	ATER CONTENT		
	ELEVATION IN FEET				SOO		PI		40 50 LI	
		Topsoil and	d grass: 3 inches	- 11/1/2; ; ;	,		10 .	20 30 4	+0 30	
			ff to stiff, brown, silty, LEAN CLAY, some							
		sand - CL			3-3-4	SS1	[
			AYEY SAND - (SC) ng No. 200 sieve			ST2				
_		1 30 /0 passii	ig No. 200 sieve			312		1		
- 5	 506									
		Medium de	ense, red to tan SAND, trace clay - SP-SC		400	000				
					4-6-9	SS3				
			ff, gray and red, sandy, LEAN CLAY - (CL)		2-3-4	SS4		<u> </u>		
- 10	 501	> 59% passir	ng No. 200 sieve		2-0-4	554		T		
-					1					
					1			1:::::		
		B 4 = -10 1	was and CAND to a star CD		1					
		ıviedium de	ense, red SAND, trace clay - SP		2-5-7	SS5	11111491			
15	 496									
					1					
		Very dense	e, red and brown, CLAYEY SAND and	6/54/						
20	404	gravel - SC			11-15-17	SS6	•	🛦		
20	 491									
				19.//						
				∇						
		Stiff brown	and black, sandy, FAT CLAY, little	- <u> </u>	4-6-3	SS7				
- 25	 486	organics - 0	CH							
							: : : : : : : : :			
			clayey sand seam		6-23-5	SS8	: : : : : : : : : : : : : : : : : : :	111416111	:::::•:	
- 30	 481		gray, sandy, CLAYEY GRAVEL - GC	<i>XXY</i> / X						
		boning term	ninated at 30 feet.							
	CDOI	INDWATER DA	ATA DRILLIN	C DATA			Drawn by: SAS	Checked by: JTM	App'vd. by: ABM	
	GRUU	HUNNAL EK DI	DRILLIN'	<u> DAIA</u>			Date: 4/1/25	Date: 6/12/25	Date: 6/16/25	
			AUGER <u>3 3/4</u>	<u>'</u> HOLLO	W STEM					
ENC	COUNTE	ERED AT <u>23.5</u>	FEET WASHBORING F	ROM	FEET			JUE		
			<u>JT</u> DRILLER	SAS LO	GGER				TM	
			<u>CME750X</u>							
							I-40	Bridge Replace	ment	
			HAMMER T				Res	st Area Truck Par	rking	
	14 D.C	. 04-41-	HAMMER EFFI	JIENCY _	<u>85</u> %		Smith - F	Putnam County, 1	Tennessee	
KEN	NAKKS	: Station and	offset are in reference to I-40				L	OG OF BORING:	E- 7	
							Project	t No. A24138.0	100.001	

		tion: <u>514.7</u>	Completion Date: 4/15/25 Station: 542+58	Ŋ	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2				
	Datum N	AVD88	Offset: 52	GRAPHIC LOG	F - 프 - 프 - 프 - 프 - 프 - 프 - 프 - 프 - 프 - 프	SAMPLES	0,5 1,0 1,5 2,0 2,5				
	7			₹	N N N N N N N N N N N N N N N N N N N		STANDARD PENETRATION RESISTANCE (ASTM D 1586) • N-VALUE (BLOWS PER FOOT)				
ᆂᇤ	LEVATION IN FEET			\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	 2 2 2 3 3 3 3 3 3 3	SAI					
DEPTH IN FEET	LAN I	DESCR	IPTION OF MATERIAL	9				ATER CONTENT			
۵z					Ka		PI	-	10 50 LI		
		Asphalt: 8 i	nches				10 2	20 30 2	10 50		
			ial: 34 inches gray and white crushed								
		limestone a	and sand		17-26-14	SS1			 		
		Gray, LEAN	CLAY and gravel - CL		50/4"	SS2	•		A		
- 5-	510	Boring term	ninated at 3.8 feet due to auger refusal.								
	0.0										
- 10 -	505										
- 15-	500										
	000										
- 20	 495										
- 25	400										
- 25	490										
- 30	485										
							<u> </u>	<u> </u>	<u> </u>		
	GROUI	NDWATER DA		LLING DATA			Drawn by: AG	Checked by: JTM	App'vd. by: ABM		
							Date: 4/23/25	Date: 6/12/25	Date: 6/16/25		
		EE WATER NO		3 1/4" HOLLO	W STEM						
ENC	JOUNTER	RED DURING D	WASHBOR WASHBOR	RING FROM	FEET			JUE	7.		
			JJA DRILL	ER <u>SAS</u> LC	GGER				IN		
			<u>Geo</u> probe	7822DT DRILI	RIG						
				 /IER TYPE <u>Aut</u>			I-40	Bridge Replace	ment		
				EFFICIENCY_			Res	t Area Truck Par utnam County, 1	King		
RFN	MARKS.	Station and	offset are in reference to I-40		55 /6		Siliui - P	adiani County, 1	GI II IC33CC		
: XIII		Julion and	555t and 1 stored to 1-40				L	OG OF BORING:	E- 8		
								No. A24138.0			

0 (ation: 493.0	2/20/25		€ 5		SH	IEAR STRENGTI	H, tsf			
Surra	ace Elev	ation:100.0	Completion Date:	ى ق	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		∆ - UU/2	○ - QU/2	□ - SV			
	Datum •	8 <u>8DVA</u>	Offset: 152	GRAPHIC LOG	F. S. S. F.	ËS			2.0 2.5			
	7			 	₩ 800 800	SAMPLES	STANDARD PENETRATION RESISTANCE					
王뉴	ELEVATION IN FEET			RAF	BLO RE(SAI	A N-V	(ASTM D 1586) ALUE (BLOWS PE	R FOOT)			
DEPTH IN FEET	.¥∃	DESCR	RIPTION OF MATERIAL	٥	Y U		V	ATER CONTENT	Γ, %			
					R ₈ 00		PL		<u>,</u> 40 50 LI			
			d grass: 2 inches									
		Stiff, brown	, sandy, LEAN CLAY, some organics - CL		4-4-5	SS1	: : : : _A : : : .					
						-	: : : : : : :					
		Medium sti	ff to hard, brown, LEAN CLAY, some									
- 5-	- 488 -	limestone g	gravel - CL		5-2-3	SS2	. A					
	400											
					4-11-20	SS3		1::::::::::::::::::::::::::::::::::::::				
					422	004						
- 10 -	- 483 -			20/1/	1-3-3	SS4	4 🛡					
	.00			<i>XXX</i>								
		Very dense	e, gray and brown GRAVEL and sand, trace	6.00	5-11-19	SS5						
- 15 -	-4 78 -	clay - GP-0	g No. 200 sieve	₽	3-11-19	333						
				à.O.								
				9:15								
				à.Q								
		Boring term	ninated at 18.7 feet due to auger refusal.	0.1.189	50/2"	SS6			S-2"			
- 20 -	-473 -											
- 25	-468 -											
- 30 	 463											
	GROU	INDWATER D	ATA DRILLIN	G DATA			Drawn by: SAS	Checked by: JTM				
							Date: 4/1/25	Date: 6/12/25	Date: 6/16/25			
_ K !		EDED AT 45 5	AUGER <u>3 3/4</u>					JUE				
EN	COUNT	ERED AT <u>15</u> F							TM			
			JT DRILLER									
			CME750X				1-40) Bridge Replace	ment			
			HAMMER TEL				Res	st Area Truck Pa	rking			
REM	IVKKG	· Station and	HAMMER EFF offset are in reference to I-40	CIENCY _	<u>00</u> %		Smith - F	Putnam County,	ı ennessee			
IXLIV	.A. (110	. Gadon and	SHOUL WE HITEIGIGING IO 1990				L	OG OF BORING:	: E-9			
								t No. A24138.				

					<u> </u>		SH	EAR STRENGTH	l, tsf			
Surf	ace Elev	vation: 516.7	Completion Date: 4/15/25		DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV			
	- · ·	NAVD88	Station: <u>545+07</u>	90.	F.N.	S			2,0 2,5			
	Datum '	MAYDOO	Offset: 47	101		Ë	STANDARD PENETRATION RESISTANCE					
	Z_			GRAPHIC LOG		SAMPLES	(ASTM D 1586)					
TH EE1	ATIC EEI	DESCE	RIPTION OF MATERIAL	GR/		S	▲ N-VA	ALUE (BLOWS PE	R FOOT)			
DEPTH IN FEET	ELEVATION IN FEET	DESCI	MITTON OF MATERIAL		SP. R		I PL	ATER CONTENT	「, % ————————————————————————————————————			
	ш						10 2	20 30 4	10 50			
		Asphalt: 13	3 inches									
		Base Mate	rial: 29 inches gray and white crushed		<u> </u>							
		limestone a			}							
					26-41-35	SS1	•		76			
							1					
					}							
					}							
		Red and hi	rown, sandy, LEAN CLAY - (CL)		-							
			ng No. 200 sieve									
		1			3-4-50/4"	SS2	• +	· · · · · · · · · · · · · · · · · · ·	10"			
									10"			
- 5-	512-											
		Boring tern	ninated at 5.1 feet due to auger refusal.									
	GROL	JNDWATER D	ATA DRILLING	DATA			Drawn by: AG Date: 4/23/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25			
	X FI	REE WATER N	OT AUGER <u>3 1/4"</u>	HOLLO	W STFM		Date. 4/20/20		<u> </u>			
ENC		RED DURING I						JUE	5			
			JJA DRILLER						ТМ			
			Geoprobe7822D									
			HAMMER TY				I-40	Bridge Replace	ment			
			HAMMER EFFIC				Smith - P	st Area Truck Par Putnam County, 1	ring Tennessee			
REM	MARKS	: Station and	I offset are in reference to I-40					,				
							10	OG OF BORING:	EB-1			
								Joon Bording.				
							Project	00136.001				

						0 0		SH	EAR STRENGTH	l, tsf				
	Surf	face Elev	vation: <u>522.5</u>	Completion Date: 4/15/25		DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV				
		5. I	NAVD88	Station: <u>551+07</u>	90.	F N N	ဟ			.0 2,5				
		Datum '	MAYDOO	Offset: 39	GRAPHIC LOG		SAMPLES							
		Z_			H [→]	× 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AM	STANDARD PENETRATION RESISTANCE (ASTM D 1586)						
	DEPTH IN FEET	ELEVATION IN FEET	DESCE	RIPTION OF MATERIAL	GR/		S	▲ N-VALUE (BLOWS PER FOOT)						
	H N	N N	DESCR	IPTION OF WATERIAL		RY SPI		PL I	ATER CONTENT	', %				
		<u> </u>				ōö		10 2	20 30 4	10 50				
			Asphalt: 5 i	nches										
			Base Mater	rial: 37 inches gray and white crushed		3								
			limestone a	and sand		}								
						}								
						47-50/5"	SS1			A				
						47-30/3	001	•		5"				
						}								
						}								
I						}								
						}								
I						}								
														
				CLAY - (CH) ng No. 200 sieve										
			0070 pass	.9 200 0.000		0 0 50/0"	000			88				
GPJ SHIPZBTE INAINSTILION MAT BE GRADOAL. GRAFFIIC LOG FOR ILLUSTRATION FORFOSES ONLT.						2-3-50/3"	SS2			9"				
5			Gray, highl	y weathered LIMESTONE										
í	— 5-	518 –	Boring term	ninated at 4.8 feet due to auger refusal.										
	3	310												
0.00.00.00.00.00.00								Drawn by: AG	Checked by: JTM	App'vd. bv: ABM				
		GROL	JNDWATER D	ATA DRILLING	<u>DATA</u>			Date: 4/23/25	Date: 6/12/25	Date: 6/16/25				
ı			REE WATER N		HOLLO	W STEM								
	ENG	COUNTE	RED DURING I	DRILLING WASHBORING F	ROM	FEET			UE	S _{TM}				
				<u>JJA</u> DRILLER	SAS LC	GGER				TIVI				
				Geoprobe7822D				1.40	Duides Danie	mont				
				HAMMER TY				I-40 Res	Bridge Replacer t Area Truck Par	nent king				
				HAMMER EFFIC	CIENCY _	98_%		Smith - P	utnam County, T	ennessee				
104	REI	MARKS	: Station and	offset are in reference to I-40										
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0								LC	OG OF BORING:	EB-2				
5								Project	No. A24138.0	00136.001				

	Datum N	ation: <u>502.7</u>	Completion Date: _ Station: _509+88 Offset:375	3/27/25	3RAPHIC LOG	UNIT WEIGHT (pcf) T BLOW COUNTS E RECOVERY/RQD	SAMPLES	Δ - UU/2 0.5	HEAR STRENGTI O - QU/2 1,0 1,5 2 D PENETRATION	□ - SV 2.0 2.5
DEPTH IN FEET	ELEVATION IN FEET		RIPTION OF MAT	ERIAL)	DRY UNIT W SPT BLOW CORE RECC	SAM	PL I	(ASTM D 1586) 'ALUE (BLOWS PE VATER CONTEN' 20 30	
			d wood debris: 3 inches , silty, LEAN CLAY, some	e sand - Cl	`.\ <i>\\</i> .\\					
		Cun, brown	, only, LL, u v OL, v v, oom	o cana o c						
						1-3-6	SS1	A	•	
			, silty, sandy, LEAN CLA	Y, trace organics -						
		CL				2-5-6	SS2	A •		
− 5	-498 —									
						2-5-6	SS3	A •		
			wn and red, CLAYEY SAI	ND - (SC)						
		➤ 38% passir	ng No. 200 sieve			2-3-4	SS4	A	 	
— 10 	-493 —									
		Soft, brown	ı, sandy, FAT CLAY - CH							
						0-2-1	SS5	A	•	
— 15 —	-488 -	Poring torm	ninated at 15 feet.							
		Boning term	ililated at 13 leet.							
	GROU	NDWATER D	<u>ATA</u>	DRILLING D	<u>ATA</u>			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25
	<u>X</u> FF	REE WATER NO	ОТ	AUGER <u>3 3/4"</u> H	OLLO\	N STEM		111111111111111111111111111111111111111		
ENC		RED DURING D		WASHBORING FRO					JUE	
				JT DRILLER SAS						TM
				CME750X DRI	LL RI	3				
				HAMMER TYPE	E <u>Auto</u>	<u>)</u>		I-40) Bridge Replace st Area Truck Pa	ment rking
				HAMMER EFFICIE	NCY 8	<u>35</u> %		Smith - I	Putnam County,	Tennessee
REM	IARKS:	Station and	offset are in referer	nce to I-40						
								L	OG OF BORING	: P-1

		400.4			£ 0		SH	IEAR STRENGT	H, tsf
Surfa	ace Elev	vation: <u>499.1</u>	Completion Date:	(D	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV
	Datum	NAVD88	Station: <u>538+69</u> Offset: <u>-681</u>	SRAPHIC LOG	문인	S	0 _. 5	1 _. 0 1 _. 5	2 _. 0 2 _. 5
			Offset:001		NE NE	SAMPLES	STANDARD	PENETRATION	RESISTANCE
-⊢	N N ⊢			APF		SAM		(ASTM D 1586)	
DEPTH IN FEET	E#	DESCR	RIPTION OF MATERIAL	GR	N T B	",		ALUE (BLOWS PE	
ᆸᆯ	ELEVATION IN FEET				X 22		PI	ATER CONTEN	I LL
_		Topsoil and	d wood debris: 3 inches	121 12 · 21			10	20 30	40 50
		· ·	lium stiff, brown, sandy, LEAN CLAY - (CL				· · · · · · -	 	
		61% passi	ng No. 200 sieve						
					1-3-5	SS1			
		1							
		1			1-3-3	SS2			
						002	.]	
- 5	 494	1							
		interbedde	d seams of clayey sand, trace organics					<u>.</u>	
		+			1-2-3	SS3		•	
		1							
					0-1-1	SS4	A	•	
- 10	 489	_							
		1							
		1							
		_							
		Vorulooso	brown and red, CLAYEY SAND, trace						
		gravel - SC	;		0-0-0	SS5			
			ter		0-0-0	3337		Ţ	
15	 484	Boring tern	ninated at 15 feet.	7.5.4.)					
		1							
		1							
		<u> </u>					Drov by CAC	Charles III	1 Applied to ADM
	GROU	JNDWATER D	ATA DRILL	ING DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	1 App'vd. by: ABM Date: 6/16/25
	<u>X</u> F	REE WATER N	OT AUGER <u>3 3</u>	3 <u>/4"</u> HOLLO	W STEM				
ENC		ERED DURING I						UE	
			JT DRILLER						ТМ
				X DRILL RI					
				— R TYPE <u>Auto</u>			<u>1</u> -40	Bridge Replace	ement
			HAMMER EF				Kes Smith - F	st Area Truck Pa Putnam County,	rking Tennessee
REN	//ARKS	S: Station and	offset are in reference to I-40	_			J 1		
Bulk	k Samp	ole collected fr	om 0 to 5 feet.					OG OF BORING	. в э
								OG OF BORING	. F- 4
							Proiect	t No. A24138.	00136.001
							i i ojec	727100.	

DESCRIPTION OF MATERIAL Topsoil and wood debris: 12 inches Soft to stiff, brown, sandy, LEAN CLAY - (CL) trace roots and organics 5 5 524 53% passing No. 200 sieve some gravel	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES		(ASTM D 1586) LUE (BLOWS PEI	·
Topsoil and wood debris: 12 inches Soft to stiff, brown, sandy, LEAN CLAY - (CL) trace roots and organics 5 - 524 -	<u> </u>			TLI 10	ATER CONTENT	-, % ────────────────────────────────────
trace roots and organics				10 2	0 30 4	10 50
5		1-1-1	SS1	A	• • • • • • • • • • • • • • • • • • • •	
5 - 524 -		1-2-2	SS2			
53% passing No. 200 sieve		1-2-2	SS3			
some gravel						
— 10 — 5 19 —		2-5-6	SS4			
trace gravel 15 514 Boring terminated at 15 feet.		2-4-4	SS5			
GROUNDWATER DATA DRILLING	DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25
X FREE WATER NOT AUGER <u>3 3/4"</u> ENCOUNTERED DURING DRILLING WASHBORING FR JT DRILLER <u>S</u> CME750X D	ROM SAS_LOC	FEET GGER			UE	S _{tM}
HAMMER TYL HAMMER EFFICI REMARKS: Station and offset are in reference to I-40				Res Smith - P	Bridge Replacer t Area Truck Par utnam County, T	king Tennessee
				LC	OG OF BORING:	P- 3

Surf		ation: <u>526.3</u>	Completion Date: 3/28/25 Station: 519+12 Offset: -278	CLOG	EIGHT (pcf) COUNTS VERY/RQD	LES	Δ - UU/2 0,5 1	CAR STRENGTH O - QU/2 0 1 _i 5 2 PENETRATION	□ - SV 2.0 2.5
DEPTH IN FEET	ELEVATION IN FEET	DESCR	RIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	▲ N-VA	(ASTM D 1586) LUE (BLOWS PE ATER CONTENT	R FOOT)
		Topsoil and	d wood debris: 7 inches	<u>x\ \lambda_1\ \rangle \ . \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ </u>			10 2	0 30 .	10 30
		Soft, brown	n, silty, LEAN CLAY, trace sand and						
		organics -	CL			004	<u>.</u> <u>.</u>		
		•			1-1-1	SS1	<u> </u>		
			ff to stiff, brown, sandy, LEAN CLAY - (CL) ng No. 200 sieve					<u>.</u>	
		01 70 passii	19 140. 200 31040		1-3-3	SS2	↑ [.	• !	
— 5—	 521								
					1-4-5	SS3	🕭		
- 5-					1-4-5	SS4	.	•	
— 10 <i>—</i>	516 <i>-</i> _								
		•							
					2-3-4	SS5			
45	F44]		
— 15 –	511-	Boring tern	ninated at 15 feet.						
— 15—									
5									
ENC	CBOU		ATA DDULU	IC DATA		1	Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
		INDWATER D		NG DATA			Date: 4/1/25	Date: 6/12/25	Date: 6/16/25
ENC		REE WATER N RED DURING I	DOLLING					UE	C
		20.11101	WASHBURING						ТМ
			JT DRILLER						
			CME750X				1-40	Bridge Replace	ment
			HAMMER				Rest	Area Truck Pa	rking
REI	MARKS	: Station and	HAMMER EFF I offset are in reference to I-40	TOIENCY _	00 %		Smith - Pu	utnam County, 7	ı ennessee
REI		. Glation and	. S Social of the leading to 1-40				LC	OG OF BORING:	P-4
								N 48/100	20402.22:
l							Project	No. A24138.0	JU136.001

Surfa	ace Ele\	ration: <u>537.7</u> Completion Date: <u>3/28/25</u> Station: <u>519+87</u>	- <u>o</u>	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	EAR STRENGTH	□ - SV
	Datum I	NAVD88 Offset: -553	SRAPHIC LOG	ER, ER	ES			2,0 2,5
	z		──	M 8 8	SAMPLES	SIANDARD	PENETRATION (ASTM D 1586)	RESISTANCE
든ᇤㅣ	응뉴	250222500000000000000000000000000000000	, RA	F S S S S S S S S S S S S S S S S S S S	δ	▲ N-VA	ALUE (BLOWS PE	R FOOT)
DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL		SPT SPT ORE			ATER CONTENT	
	<u> </u>					10 2	20 30 4	40 50 16
		Topsoil and wood debris: 10 inches	12. 14. 15. 17. 17. 17. 17. 17. 17. 17. 17. 17. 17	<u> </u>				
		Medium stiff to stiff, red and brown, sandy, LEAN						
		CLAY - (CL) some organics		4-4-4	SS1		•	
		54% passing No. 200 sieve						
				3-3-4	SS2		• I	│
- 5-	 533							
	555							
				3-4-6	SS3			
				}				
		trace organics/roots						
		ados organisonosis		2-4-4	SS4		•	
10	 528					-		
- 10 -	-526-							
		trace gravel						
		Table graver		2-4-5	SS5			
- 15 -	 523							
13	323	Boring terminated at 15 feet.						
	GROL	JNDWATER DATA DI	RILLING DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25
	<u>X</u> F	REE WATER NOT AUGER	3 3/4" HOLLO	W STEM				
ENC		DED DI IDINIC DDILLI INIC	DRING FROM				JUE	
			LER <u>SAS</u> LOC					ТМ
		<u>CMI</u>	E750X DRILL RI	G				
		HAN	MER TYPE Auto	<u>)</u>		I-40 Res	Bridge Replace at Area Truck Pa	ment rkina
			R EFFICIENCY 1	<u>35</u> %		Smith - P	utnam County,	Tennessee
		: Station and offset are in reference to I-40 le collected from 1 to 10 feet.				Lo	OG OF BORING:	: P- 5
						Project	No. A24138.	00136.001

Surf		vation: <u>534.1</u>	Completion Date: 3/27/25 Station: 525+56 Offset: -204	907.2	EIGHT (pcf) COUNTS VERY/RQD	,LES	Δ - UU/2 0,5 1.	CAR STRENGTH O - QU/2 0 1,5 2 PENETRATION	□ - SV
DEPTH IN FEET	ELEVATION IN FEET		RIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	A N-VA	(ASTM D 1586) LUE (BLOWS PE	R FOOT)
			d wood debris: 4 inches ff to stiff, brown and red, silty, LEAN CLAY,	<u> </u>	1				
			, trace gravel - CL		2-3-4	SS1		•	
					12-8-7	SS2			
— 5—	-529-	Stiff red ar	nd brown, sandy, FAT CLAY, trace gravel						
		and organi	cs - CH		3-6-5	SS3			
					4-6-8	SS4			
— 10—	524	-			-1 -0-0	304			
		(MH)	rown and red, ELASTIC SILT, some sand -		2-8-8	SS5		• • • • • • • • •	
— 15 <i>—</i>	 519-	Boring tern	ninated at 15 feet.						
	GROL	JNDWATER D	ATA DRILLIN	NG DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABN Date: 6/16/25
ENC	<u>X</u> F	REE WATER N	OT AUGER <u>3 3/</u> -	4" HOLLO FROM	FEET		Date. 4/1/20	Date: 6/12/25	
REI	MARKS	s: Station and	CME750X HAMMER HAMMER EFF	TYPE Auto	<u> </u>		Rest	Bridge Replace t Area Truck Par utnam County, 1	king
i XIII	u vi vo	Canon and	. S Soc and in relevance to 1-40				LC	OG OF BORING:	P- 6
							Project	No. A24138.0	00136.001

Surf		ation: <u>529.1</u>	Completion Date: 3/27/25 Station: 526+18 Offset: -489	507.2	EIGHT (pcf) COUNTS VERY/RQD	LES	Δ - UU/2 0,5 1.	O - QU/2 0 1,5 2 PENETRATION	□ - SV 2.0 2.5
DEPTH IN FEET	ELEVATION IN FEET		RIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	▲ N-VA	(ASTM D 1586) LUE (BLOWS PE ATER CONTENT	R FOOT)
			d grass: 4 inches ff to stiff, brown, silty, LEAN CLAY, some	- <u>''', '''</u>					
		sand - CL	, , , , , , , , , , , , , , , , , , ,		4-4-5	SS1			
					3-3-2	SS2			
— 5 <i>—</i>	 524 <i>-</i> -								
			ense, tan and brown, CLAYEY SAND - (SC) ng No. 200 sieve		3-4-6	SS3			
40	540	Medium sti some grave	ff, brown and red, sandy, LEAN CLAY, el - CL		2-4-4	SS4		•	
_ 10_	 519								
		Soft, brown and organi	n and red, sandy, FAT CLAY, trace gravel cs - CH		1-1-2	SS5	A	• • • • • • • • • • • • • • • • • • • •	
— 15 <i>—</i>	 514	Boring term	ninated at 15 feet.						
	GROU	INDWATER D	ATA DRILLIN	IG DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM
ENC	<u>X</u> FI	REE WATER NO RED DURING I	OT AUGER <u>3 3/</u>	FROM	FEET		Fac. 4/1/20		
REI	MARKS	: Station and	CME750X HAMMER HAMMER EFF I offset are in reference to I-40	TYPE Auto	<u>)</u>		Rest	Bridge Replace t Area Truck Par utnam County, 1	king
							LC	OG OF BORING:	P- 7
							Project	No. A24138.0	00136.001

Surf		vation: <u>528.0</u>	Completion Date: 3/28/25 Station: 527+89 Offset: -395	9070	EIGHT (pcf) COUNTS VERY/RQD	LES	Δ - UU/2 0,5	1,0	IR STRENGTH O - QU/2 1,5 2 ENETRATION	□ - SV 0 2.5
DEPTH IN FEET	LEVATION IN FEET	DESCR	RIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	≜ N-	VALU	(ASTM D 1586) JE (BLOWS PER ER CONTENT	R FOOT)
	==	- "		1, .×, 1/2.	۵ ٥		10	20	30 4	0 50
		Stiff, brown (CL)	d grass: 3 inches and red, sandy, LEAN CLAY, trace gravel - ng No. 200 sieve		4-5-9	SS1	ا ا 			
— 5 <i>—</i>	-523-				5-5-4	SS2	A•.			
					3-3-6	SS3		• .		
— 10—	 518-				3-4-5	SS4			•	
		Medium de gravel - SC	ense, brown and red, CLAYEY SAND, trace		2-4-7	SS5		• .		
— 15 <i>—</i>	 513-	Boring tern	ninated at 15 feet.							
	GROL	JNDWATER D	ATA DRILLIN	G DATA		1	Drawn by: SA Date: 4/1/25		Checked by: JTM Date: 6/12/25	App'vd. by: ABN Date: 6/16/25
ENC		REE WATER N RED DURING I		FROM	FEET				UE	S _{TM}
REI	MARKS	s: Station and	CME750X HAMMER T HAMMER EFFI offset are in reference to I-40	YPE Auto	<u>)</u>		R	est A	ridge Replacer Area Truck Par nam County, T	king
Bul	k Samp	le collected fr	om 0 to 5 feet.					LOG	OF BORING:	P- 8
							Proje	ct N	o. A2413 8.0	0136.001

Surf	ace Flev	vation: 527.7	Completion Date: 3/28/25		Soct)			EAR STRENGTH	
			Station: <u>531+12</u>	ပ္ခ	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV
	Datum	NAVD8	Offset:323_	SRAPHIC LOG	유얼을	ES			2,0 2,5
	-	I		— ⋛	M N S	SAMPLES	STANDARD	PENETRATION	RESISTANCE
ᆂᇤ	Į į			ΑAP	불일없	SAI	A N13/A	(ASTM D 1586)	D FOOT)
DEPTH IN FEET	¥ä	DESCR	RIPTION OF MATERIAL	B				ALUE (BLOWS PE ATER CONTENT	
۵z	ELEVATION IN FEET				KB CS CS CS CS CS CS CS C		PL I	•	40 50 LI
	Ш	Asphalt: 4	inches	7, 18. 1			10 2	30 2	40 50
			rials: 8 inches gray and white crushed		\$				
		limestone							
		trace grave	iff, brown, silty, LEAN CLAY, some sand, el - CL		3-4-4	SS1			
		1							
		_							
					2-4-4	SS2	🖣 📍		
- 5-	 523	-							
		Medium de	ense, brown and red, CLAYEY SAND - (SC)						
		trace grave			4-5-5	SS3			
		+					 		
		33% passi	ng No. 200 sieve						
					3-6-9	SS4		<u> </u>	
_ 10_	518 <i>-</i> _	-							
		1							
		-							
		some grav	el		8-11-12	SS5	•	A	
- 15-	513 <i>-</i> _								
	0.0	Boring tern	ninated at 15 feet.						
		1							
		1							
	GROL	JNDWATER D	ATA DRILLIN	NG DATA			Drawn by: SAS	Checked by: JTM	
		REE WATER N			M CTERA		Date: 4/1/25	Date: 6/12/25	Date: 6/16/25
ENC		RED DURING						UE	6
			WASHBURING						ТМ
			JT DRILLER						
			CME750X				1_40	Bridge Replace	ment
			HAMMER				Res	t Area Truck Par	rking
_			HAMMER EFF	ICIENCY _	<u>85</u> %			utnam County, 7	
REM	MARKS	: Station and	d offset are in reference to I-40						
							10	OG OF BORING:	P- 9

Surf	ace Elev	vation: 511.7	Completion Date: 3/27/25	(1)	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		SH I Δ - UU/2	EAR STRENGTH	l, tsf □ - SV		
	Datum I	NAVD88	Station: <u>535+04</u> Offset: <u>-528</u>	GRAPHIC LOG	유민	S	0 _. 5 1	.0 1.5 2	2.0 2.5		
			Oliset		WE OVI	SAMPLES	STANDARD	PENETRATION	RESISTANCE		
프뉴				SAP		SAN	(ASTM D 1586) ▲ N-VALUE (BLOWS PER FOOT)				
DEPTH IN FEET	AT	DESCR	RIPTION OF MATERIAL	9	10 N			ATER CONTENT			
ōΖ	ELEVATION IN FEET				SP		PI		40 50 LI		
		Topsoil and	d grass: 3 inches	',\\ 1½.'.\\	ų .		., .,				
			n, silty, LEAN CLAY, some organics, trace								
		sand - CL									
		limestone f	ragments		12-28-12	SS1			†		
		1									
		Medium de	ense to dense, brown and red, CLAYEY								
		SAND - (S	C)		6-12-12	SS2	· · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			
_	507	39% passii	ng No. 200 sieve				-	- - -			
— 5 <i>—</i>	 507	-									
		-			6-7-7	SS3					
		<u> </u> 									
		1			5-5-8	SS4	 				
— 10 <i>—</i>	502 <i>-</i>										
_ 10_	-502-										
		1									
		<u> </u>									
					}						
		1									
		Loose, red	and tan SAND, little clay - SP-SC								
					1-3-4	SS5					
- 15-	—497 —			- //							
.0		Boring tern	ninated at 15 feet.								
		1									
		1									
							D	 	 		
	GROL	JNDWATER D	ATA DRILLI	NG DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25		
	ΧF	REE WATER N	OT AUGER <u>3 3/</u>	4" HOLL∩	W STFM						
ENC		RED DURING						JUE			
			JT DRILLER						ТМ		
				<u>070</u> LO DRILL RI							
				TYPE Aut			I-40	Bridge Replace	ment		
			HAMMER EFF				Res	t Area Truck Pa	rking		
RFI	MARKS	: Station and	I offset are in reference to I-40	IOILINOT _	<u> </u>		Smith - P	utnam County, 1	ennessee		
i (Li	. <i></i> (110		. S Soc and in relevance to 1-40				LC	OG OF BORING:	P-10		
							Project	No. A24138.0	00136.001		

						<u> </u>			SH	EAR STR	ENGTH	l, tsf
Surfa	ace Elev	vation: <u>512.2</u>	Completion Date:	3/29/25		DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UL	J/2	O-Q	QU/2	□ - SV
	Datum	NAVD88	Station: <u>510+98</u>		8	포질장	S	0,5	1	1,0 1,5	5 2	2,0 2,5
	Datum		Offset: -124		SRAPHIC LOG		SAMPLES	STANI	DARD	PENETR	ATION	RESISTANCE
	N L				1 🖺		₩			(ASTM D		
DEPTH IN FEET	ATI(DESCE	RIPTION OF MA	TEDIAL	GR/		S			ALUE (BLC		
	ELEVATION IN FEET	DESCR	APTION OF MA	IENIAL		SP.		PL I		ATER CO	NTENT	Γ, %
	<u> </u>							10	2	20 30) 4	10 50
			d grass: 3 inches]	 	 : :		
			wn, CLAYEY SAND, tra ng No. 200 sieve	ce gravei - (SC)		2-3-3	SS1			•		
			TY, CLAYEY SAND, tra	ace gravel - (SC-SM)		440	СТО					
_	F07	40% passii	ng No. 200 sieve			112	ST2			T! : : : :		
- 5	 507	1										
		Soft, brown	n, silty, LEAN CLAY, sor	me sand - CL		2-2-2	SS3	1				
		cobble				2-2-2	- 000	. •				
		†										
		†				0-0-2	SS4	A	•			
- 10	5 02-	-					1					
		†										
		+										
+		Stiff, brown	n, sandy, LEAN CLAY, s id, trace gravel - CL	ome seams of		2-4-7	SS5	: : : : : : : : : : : : : : : : : : :				
- 15	 497	-	_,				1					
		+										
		+						: : : : :				
		+						: : : : :				
		Brown, san	ndy, FAT CLAY - CH			1-50/5.5"	SS6] : : : : :				
- 20	 492	Boring tern	minated at 19.9 feet due	to auger refusal		25,0.0						5.5"
		2011119 10111		aaga. raidadi.						: : : : :		
		1										
		4						: : : : :				
		1										
- 25	 487	_										
		1								: : : : :		
		1										
		1										
- 30	 482]										
30	402											
								: : : : :				
	GROI	JNDWATER D	ATA	DRILLING	ξ DΔΤΔ		•	Drawn by:		Checked	_	+
								Date: 4/1/	/25	Date: 6/1		Date: 6/16/25
FNC		REE WATER NO ERED DURING I		AUGER <u>3 3/4"</u>								S
_,,,				WASHBORING FI								ТМ
				JT DRILLER S								
				<u>CME750X</u> D					1.40	Drides D	onloss	mont
				HAMMER TY	/PE <u>Auto</u>	<u> </u>			Res	Bridge R at Area Tru	uck Par	king
				HAMMER EFFIC	EIENCY 2	<u>85</u> %		Sm				Tennessee
REN	MARKS	S: Station and	d offset are in refere	ence to I-40								
REN Bulk	MARKS k Samp	S: Station and ole collected fr	d offset are in refere rom 0 to 5 feet.	ence to I-40					10	OG OF BO)RING.	W- 1
REN Bulk	MARKS k Samp	6: Station and ble collected fr	l offset are in refere om 0 to 5 feet.	ence to I-40					L	OG OF BC	ORING:	W- 1

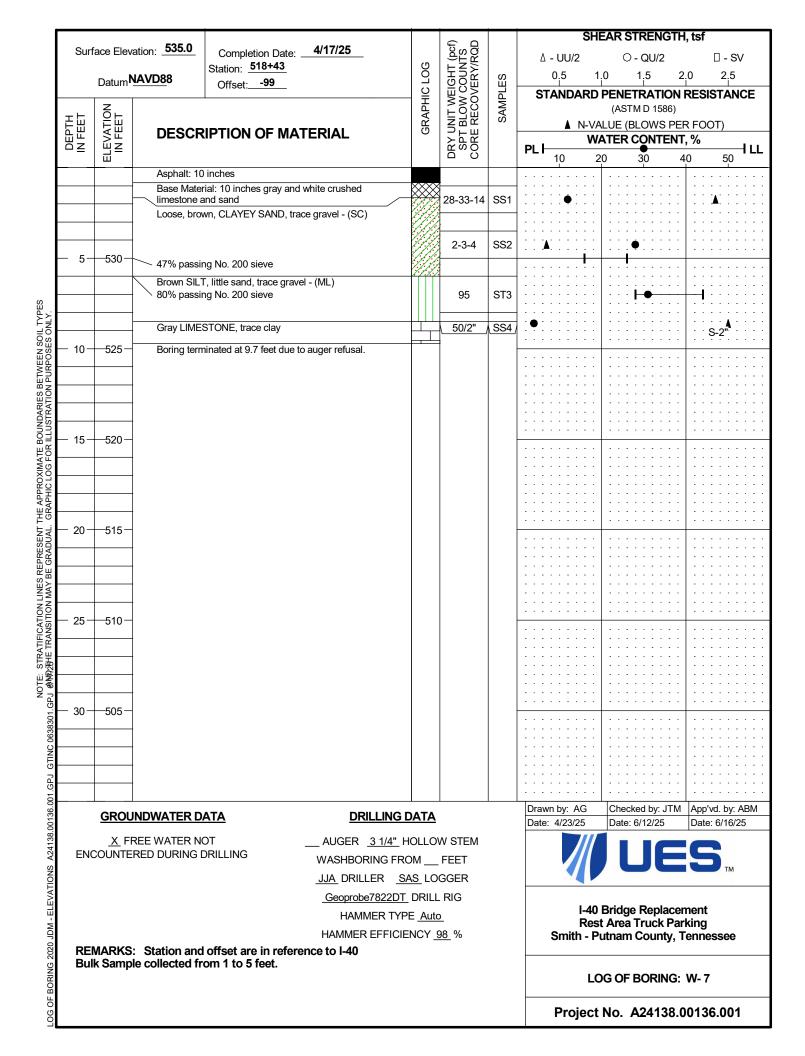
		522.2	4/00/05		£ D		SHE	EAR STRENGTH	l, tsf
Surfa	ace Ele\	vation: <u>523.3</u>	Completion Date: <u>4/22/25</u> Station: <u>528+81</u>	(2)	/ UNIT WEIGHT (pcf) PT BLOW COUNTS RE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV
	Datum	NAVD88	Offset: -126	SRAPHIC LOG	F S S F	ES	0.5 1.	0 1,5 2	2.0 2.5
		T .			N N O	SAMPLES	STANDARD	PENETRATION	RESISTANCE
ェ뉴ᅵ	<u>N</u> ∷			\ZAP	A S S	SAN		(ASTM D 1586)	D 500T)
DEPTH IN FEET	YEE	DESCR	RIPTION OF MATERIAL	9	70.			LUE (BLOWS PE ATER CONTENT	
¤Z	ELEVATION IN FEET				DRY UI SPT E CORE I		PL 10 2		10 50 LL
		Asphalt: 10	Dinches						1
		Base Mate	rial: 32 inches gray and white crushed		50/4"	sS1			
		limestone a	and sand		}				3-4
		Stiff, browr	n, sandy, LEAN CLAY, trace gravel - (CL)		3-5-7	SS2	1:::::.		
- 5	 518-	-							
		Loose, gra	y, CLAYEY SAND - (SC)						
			ng No. 200 sieve			ST3	· · · · · · · · ·	• · · · · · · · · · · · · · · · · · · ·	· · · · · ·
		-			<u></u>				
		-			2-2-4	SS4	:: ∆ ::: ⊙ ::		
- 10	 513-	-				1			
		1			4				
		1							
		-							
		Medium de some grav	ense to dense, brown, CLAYEY SAND,		4-9-15	SS5		• A : : : : : :	
- 15	 508	31% passi	ng No. 200 sieve						
		1							
		-							
		1							
		<u> </u>			5-6-8	SS6			
- 20	 503	_				+			
		-							
		1							
		1							
		Medium de SC	ense, brown, CLAYEY SAND, trace gravel -		3-4-7	SS7	: : : : : .		
- 25	 498	- 30					- · · · · - · · · ·		
		1			3				
		1							
		-							
		<u> </u>			36-8-0	SS8	1 1 1 🛦 1 1 1 1 1		
- 30	 493	Boring terr	ninated at 29.5 feet due to auger refusal.	7.4.4					
		1							
		-							
		1							
		1							
							Drawn by DED	Checked by ITM	Applied by ARM
	GROL	JNDWATER D	DRILLI	NG DATA			Drawn by: REP Date: 4/28/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25
	<u>X</u> F	REE WATER N	OT AUGER <u>3 1/</u>	4" HOLLO	W STEM				
ENC		RED DURING						JUE	
			JJA DRILLER						ТМ
			Geoprobe782						
				TYPE Aut			<u>I-40</u>	Bridge Replace	ment
			HAMMER EFF				Kest Smith - Pi	: Area Truck Par utnam County, 1	king Tennessee
REN	//ARKS	: Station and	d offset are in reference to I-40	_	_		J		
							LO	G OF BORING:	W- 2
							D	N- 404400 1	0400 004
							Project	No. A24138.0	JU136.001

		E2E 4			£ 0		SH	EAR STRENGTH	l, tsf
Surfa	ace Ele\	vation: <u>525.1</u>	Completion Date:3/29/25Station:529+06	(1)	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV
	Datum I	NAVD88	Offset: -52	SRAPHIC LOG	문인	S	0 _. 5 1	.0 1.5 2	2.0 2.5
			Oliset		N C C	SAMPLES	STANDARD	PENETRATION	RESISTANCE
	LEVATION IN FEET			APF) AV		(ASTM D 1586)	
DEPTH IN FEET	ATI	DESCR	RIPTION OF MATERIAL	GR		0,		ALUE (BLOWS PE	
	ÄΕ	DE001	WATERIAL		SP S		PI	ATER CONTENT	LI
				.,,,			10 2	20 30 4	40 50
			d grass: 3 inches dium stiff, brown, sandy, LEAN CLAY - (CL)						
		3011 to med	diditi Still, blowii, Salidy, LEAN CLAT - (CL)		4-3-4	SS1	:: :: : : : •		
		1							
		1			2-2-2	SS2	[▲]]]]		
- 5	 520	1							
		57% passi	ng No. 200 sieve						
		1				ST3		 	
		1							
			soft, brown, sandy, SILTY CLAY - (CL-ML)		0-0-0	SS4	<u></u>		
- 10	 515	51% passi trapped wa	ng No. 200 sieve		0-0-0	334		. 1	
	2.0	uappeu wa				1			
			ion						
		trace organ	lics		1-1-2	SS5	A		
- 15 -	 510-	-							
		1							
		-							
- 20	 505				0-1-2	SS6	.4		
20	505								
		1							
		1							
		1							
-		1			0-0-2	SS7	A:::::::::		
- 25	 500	-							
		-							
		_							
		1							
		Medium st	iff, gray and brown, sandy, FAT CLAY, little						
- 30	 495	organics -	CH		2-3-3	SS8	4 • .		
- 30 -	495	Boring tern	ninated at 30 feet.						
		1							
		1							
		†							
		1							
							Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
		JNDWATER D	ATA DRILLIN	<u>IG DATA</u>			Date: 4/1/25	Date: 6/12/25	Date: 6/16/25
	GROL		OT	1" HOLLO	W STEM				
	" <u></u>	REE WATER N	OT AUGER <u>3 3/</u>	- HOLLO					
ENC	<u>X</u> F	REE WATER N	DDILLING						
ENC	<u>X</u> F		DRILLING WASHBORING	FROM	FEET			JUE	ТМ
ENC	<u>X</u> F		DRILLING WASHBORING <u>JT</u> DRILLER	FROM SAS_LO	FEET GGER				тм
ENC	<u>X</u> F		DRILLING WASHBORING <u>JT</u> DRILLER <u>CME750X</u>	FROM SAS_LOO DRILL RI	FEET GGER G		I-40		
ENC	<u>X</u> F		DRILLING WASHBORING <u>JT</u> DRILLER <u>CME750X</u> HAMMER	FROM _SAS_LO _DRILL RI TYPE _Aut	FEET GGER G		Res	Bridge Replace	ment rking
	<u>X</u> F	ERED DURING I	DRILLING WASHBORING JT DRILLER CME750X HAMMER HAMMER EFF	FROM _SAS_LO _DRILL RI TYPE _Aut	FEET GGER G		Res	Bridge Replace	ment rking
	<u>X</u> F	ERED DURING I	DRILLING WASHBORING <u>JT</u> DRILLER <u>CME750X</u> HAMMER	FROM _SAS_LO _DRILL RI TYPE _Aut	FEET GGER G		Res Smith - P	Bridge Replace t Area Truck Pal utnam County, T	ment rking Fennessee
	<u>X</u> F	ERED DURING I	DRILLING WASHBORING JT DRILLER CME750X HAMMER HAMMER EFF	FROM _SAS_LO _DRILL RI TYPE _Aut	FEET GGER G		Res Smith - P	Bridge Replace	ment rking Fennessee

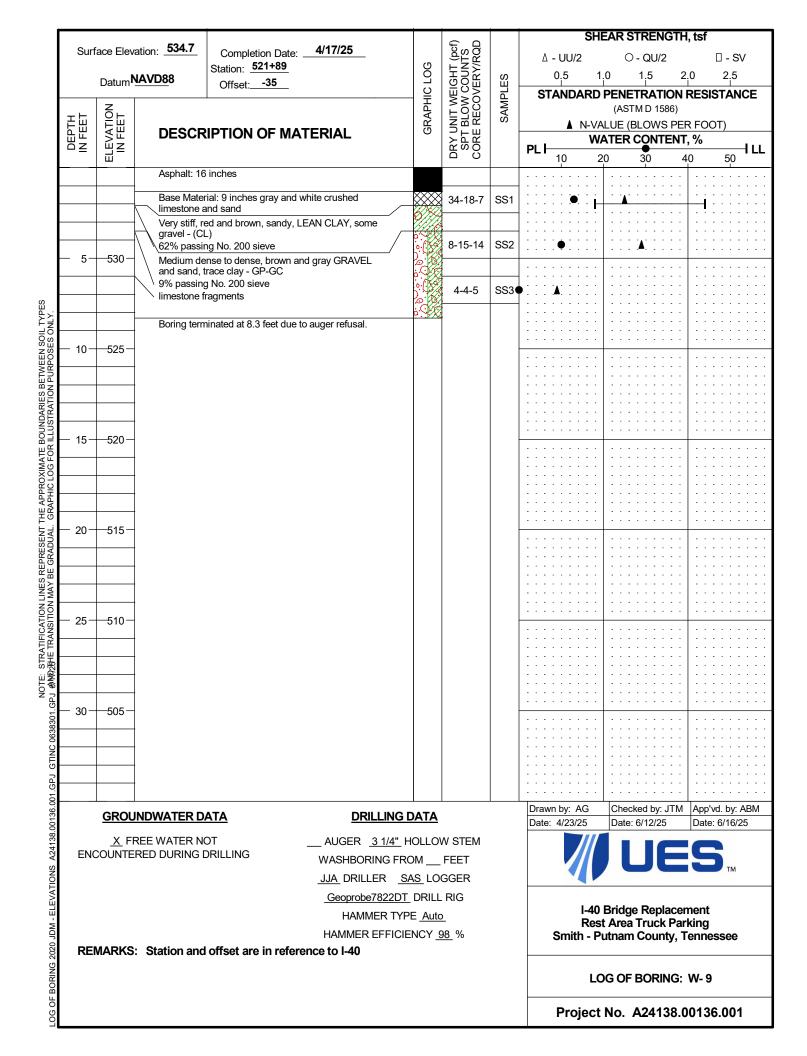
Surf	ace Flev	vation: 528.4	Completion Date: 4/17/25		Scf.			EAR STRENGTH		
SuiT		St	Completion Date: <u>4/17/25</u> ation: <u>511+51</u>	ق	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	O - QU/2 .0 1.5 2	□ - SV	
	Datum	LAN/DOO	Offset: -70	2	F 50 F	ES	0.5 1	.0 2.5		
	_		· · · · · · · · · · · · · · · · · · ·	€	W W	SAMPLES	STANDARD	STANDARD PENETRATION RES (ASTM D 1586)		
프뉴	LEVATION IN FEET			3RAPHIC LOG	불일없	SAI	A N13//		•	
DEPTH IN FEET	₹	DESCRIP	TION OF MATERIAL	5	PT F		N-VALUE (BLOWS PER FOOT) WATER CONTENT, %			
ō≥					Sol		PL		10 50 LI	
		Asphalt: 12 inc	hes							
		Base Material:	30 inches gray and white crushed		26-50/5"	SS1	•			
		limestone and	sand		20 00/0				5"	
		Medium dense 33% passing N	e, red, CLAYEY SAND, trace gravel - S	C ///	2-5-6	SS2		•: : : : : : : : :		
- 5-	 523	- 33 % passing i	NO. 200 Sieve							
		Stiff, red and b	rown, sandy, LEAN CLAY, some grave							
		- (CL)			3-5-9	SS3		•		
					3-7-8	SS4		•		
- 10 <i>-</i>	518	-		1/30		1				
		-								
		-								
		-		X///						
		1			3-5-8	SS5				
- 15-	513 <i></i>	-			3-3-6	333				
		<u> </u>								
		Red and browing 18% passing 1	n, CLAYEY SAND, trace gravel - (SC)		114	ST6				
- 20-	5 08					0.0		· · ·		
20	000									
		Boring termina	ted at 22.5 feet due to auger refusal.							
			-							
- 25 <i>-</i>	503 <i>-</i> _									
23	303									
00	400									
- 30 <i>-</i>	4 98	1								
		1								
		1								
		1								
		1								
	CDO		A DDII I	INC DATA	1	1	Drawn by: AG	Checked by: JTM	App'vd. by: ABM	
		JNDWATER DAT		ING DATA			Date: 4/23/25	Date: 6/12/25	Date: 6/16/25	
ENC		REE WATER NOT RED DURING DRI	AUGER <u>3</u>							
⊏INC	JOUNTE	יייבט טטעוואט טאו	WASHBURIN					JUE	TM	
			JJA DRILLE	R <u>SAS</u> LC	GGER					
			Geoprobe78	22DT DRILI	RIG			Duides Davis		
			HAMME	R TYPE Aut	<u>o</u>		I-40	Bridge Replacer t Area Truck Par	nent kina	
			HAMMER EF	FICIENCY_	<u>98</u> %		Smith - P	utnam County, T	ennessee	
RE	MARKS	: Station and of	fset are in reference to I-40							
							1.0	OG OF BORING:	W_ 1	
								JO OI BURING:	· · · ·	
							Droinet	No. A24429.0	0136 004	
								No. A24138.0		

					. 0		SH	IEAR STRENGTH	l, tsf			
Surf	ace Elev	ation: <u>528.2</u>	Completion Date:	(0)	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2	○ - QU/2	□ - SV			
	Datum	NAVD88	Station: <u>514+61</u> Offset: <u>-106</u>	GRAPHIC LOG	\frac{1}{2} \fra	က္သ	0,5	1,0 1,5 2	2,0 2,5			
			Offset: -100	⊋		SAMPLES	STANDARD	PENETRATION	RESISTANCE			
	ELEVATION IN FEET			 		AM	(ASTM D 1586)					
FIII	ATI(DESCE	RIPTION OF MATERIAL	GR/		l o		R FOOT)				
DEPTH IN FEET	Ä.⊼ ∑.π	DESCI	MI HON OF WATERIAL		SP- OR		PI	WATER CONTENT, %				
	Ш						10	20 30 4	40 50 LI			
			d grass: 6 inches iff to stiff, brown and red, sandy, LEAN	'x' '1/. '.' 	,							
		CLAY, trac	e gravel - CL		3-4-5	SS1	: : : 	. : : : : : : : : :				
_	F00				3-3-5	SS2	1:::4:::::	•				
- 5-	 523											
		Medium sti	iff, red and brown, sandy, LEAN CLAY	6///	3-3-5	SS3	: : : 🛕 : : : : :					
		some grave	ei - CL			000	. : : : . : : : : :					
		Soft to very	y stiff, brown and gray, FAT CLAY, trace					<u>.</u>	· · · · · · · g			
		sand - (CH 93% passi	ng No. 200 sieve		96	ST4	· · · · · · · · Δ		>			
- 10-	518-	•										
		trace organ	nics		2-3-13	SS5						
- 15-	 513											
		79% passii	ng No. 200 sieve, little sand		1-2-2	SS6		: : : • · · · · · · ·	6			
- 20-	- 508 -					+ -			1			
		trace organ	nics		0-1-1	SS7	1					
- 25 -	 503				J=1-1	301		•				
		Boring tern	ninated at 26.6 feet due to auger refusal.		†							
- 30-	—498 —											
	GROU	INDWATER D	ATA DRILLIN	IG DATA			Drawn by: SAS	Checked by: JTM				
					M 075		Date: 4/1/25	Date: 6/12/25	Date: 6/16/25			
FNC		REE WATER N RED DURING I	DDILLING					JUE	C			
	·- <u>-</u>		WASHBORING						TM			
			<u>JT</u> DRILLER									
			CME750X				1.40	Bridge Replace	mont			
			HAMMER ⁻				Res	st Area Truck Pa	rking			
			HAMMER EFF	ICIENCY _	<u>85</u> %		Smith - F	Putnam County,	Tennessee			
REM	VIARKS	: Station and	d offset are in reference to I-40				1,4	OG OF BORING:	W- 5			
							L	UG UF BUKING:	VV- 3			
								t No. A24138.0				

SRAPH SAM SAM SAM SAM SAM SAM SAM SA	1,5 2,0 2,5 NETRATION RESISTANCE ASTM D 1586)			
STANDARD PEL STANDARD PE STANDARD PE WATE PL 10 20	ASTM D 1586)			
DESCRIPTION OF MATERIAL OUT OF THE FILE O				
DESCRIPTION OF MATERIAL S	- (DL OMO DED EOOT)			
	▲ N-VALUE (BLOWS PER FOOT)			
	ER CONTENT, %			
	30 40 50			
Topsoil and grass: 3 inches Soft to medium stiff, brown, FAT CLAY, trace sand and				
organics - (CH)				
91% passing No. 200 sieve 1-1-3 SS1	6			
trace gravel				
1-2-3 SS2				
- 5 - 525 -				
Soft, brown, ELASTIC SILT, trace gravel - (MH)				
86% passing No. 200 sieve	· · · · · · · · · · · · · · · · · · ·			
	· · · · · · · · · · · · · · · · · · · · · ·			
0-0-2 SS4 A				
_ 10 — 520 —				
Boring terminated at 13.5 feet due to auger refusal.				
- 15 - 515 -				
GROUNDWATERDATA DRILLING DATA ——————————————————————————————————	hecked by: JTM App'vd. by: ABM ate: 6/12/25 Date: 6/16/25			
V FREE WATER NOT				
ENCOUNTERED DURING DRILLING WASHBORING FROM FEET WASHBORING FROM FEET	UES _{TM}			
	TM			
JT DRILLER SAS LOGGER				
CME750X DRILL RIG	dge Replacement			
HAMMER TYPE Auto Prof. Part Auto	rea Truck Parking			
Rest Ar	am County, Tennessee			
HAMMER EFFICIENCY 85 % Smith - Putna				
HAMMER EFFICIENCY 85 % Smith - Putna REMARKS: Station and offset are in reference to I-40	<u> </u>			
HAMMER EFFICIENCY 85 % Smith - Putna REMARKS: Station and offset are in reference to I-40	OF BORING: W- 6			



		vation: <u>529.1</u>	Completion Date: 3/29/25 Station: 521+73	907	SHT (pcf) DUNTS :RY/RQD	မ္သ	Δ - UU/2	EAR STRENGTI ○ - QU/2 ₁0 ₁5 2 	-l, tsf □ - SV 2,0 2,5	
DEPTH IN FEET	ELEVATION IN FEET		Offset: -103	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) N-VALUE (BLOWS PER FOOT) WATER CONTENT, %			
۵ <u>z</u>	ELE N				S S S S S S S S S S S S S S S S S S S		PI		40 50 L	
		Topsoil: 12		<u> </u>						
		(CH)	n, FAT CLAY, little sand, trace organics -		3-5-7	SS1	1:::::	: : : : : : : :	· · · · · · · · · ·	
		∖ 81% passi	ng No. 200 sieve							
					3-17 -50/4.5"	SS2		:•::::::::::::::::::::::::::::::::::::	10.	
- 5-	 524	Gray LIME			00/4.0				10.	
10	F10	Boring terr	ninated at 5.1 feet due to auger refusal.							
- 10-	 519									
- 15 -	 514									
- 20-	 509									
- 25	 504									
- 30	 499									
		 		10.5.=:		<u> </u>	Drawn by: SAS	Checked by: JTM	App'vd. by: ABN	
	GROL	JNDWATER D	<u>DRILLIN</u>	IG DATA			Date: 4/1/25	Date: 6/12/25	Date: 6/16/25	
ENC		REE WATER N RED DURING I		FROM	FEET			UE	S _{TM}	
			CME750X	DRILL RI	G					
			HAMMER				Res	Bridge Replace t Area Truck Pa	rking	
 -	44 D: 40	DE-04-11-	HAMMER EFF	ICIENCY _	<u>85</u> %		Smith - P	utnam County,	Tennessee	
KEN	VIAKKS	: Station and	d offset are in reference to I-40							
							LC	OG OF BORING:	W- 8	



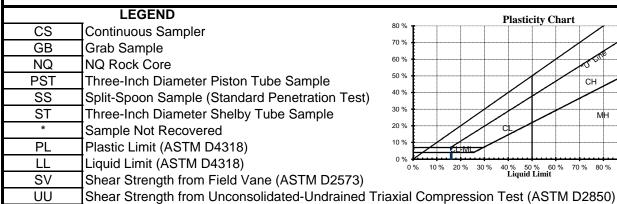
	ace Elev	ration: 526.8	Completion Date: 3/29/25		s S QD			EAR STRENGTI	•		
			Station: <u>524+76</u>	_	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		Δ - UU/2 0,5 1	○ - QU/2 I.0 1.5 2	☐ - SV		
	Datum	NAVD88	Offset: -105	0 10		SAMPLES			2.0 2.5		
	z				M N N N N N N N N N N N N N N N N N N N	MP	STANDARD PENETRATION RESISTANCE (ASTM D 1586)				
DEPTH IN FEET	LEVATION IN FEET	DECOD	UDTION OF MATERIAL	SRAPHIC LOG	E 3	\S	▲ N-VALUE (BLOWS PER FOOT)				
	EVA P.FE	DESCR	RIPTION OF MATERIAL		SPT SPT SRE		W	ATER CONTENT			
_=	Π=				E " S		PL I 10 2	20 30	40 50		
			d grass: 3 inches								
		Stiff, brown	, LEAN CLAY, trace gravel and san	a-CL	3-4-5	SS1					
							- : : : - : : : : :				
		Stiff to verv	stiff, brown and red, FAT CLAY, litt	le sand.					6		
- 5-	 522	\ trace organ	ics and gravel - (CH)		3-4-6	SS2	🛦	l •	· · · · · · · · · · · · · · · · · · ·		
	JZZ	\ 87% passir	ng No. 200 sieve								
					4-7-9	SS3	1:::::::.				
		─ 80% passir	ng No. 200 sieve		99	ST4			7		
- 10-	 517										
	J.,										
		little gravel			202	005					
- 15-	 512				3-6-3	SS5	📤	🛡			
		Boring term	ninated at 18.3 feet due to auger ref	usal.							
- 20 -	5 07										
		•									
- 25	 502										
		_									
- 30	 497										
	GROU	JNDWATER DA	ATA I	DRILLING DATA			Drawn by: SAS Date: 4/1/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25		
	X FI	REE WATER NO	OT AUGE	R <u>3 3/4"</u> HOLLO	W STEM		Dato. 4/1/20				
ENC		RED DURING D	DRILLING WASHE	BORING FROM	FEET			JUE	S _{TM}		
				<u>ME750X</u> DRILL RI							
				MMER TYPE <u>Aut</u>			I-40	Bridge Replace	ment		
				ER EFFICIENCY			Res	st Area Truck Pa Putnam County,	rking Tonnossos		
REM	MARKS	: Station and	offset are in reference to I-4		<u></u> /0		Simui - P	adiani County,	1 CI II IC 3 3 C C		
							LC	OG OF BORING:	W-10		

		531.1	4/00/	05	€ 0		S	HEAR STRENGT	H, tsf			
Surfa	ace Elev	vation: 531.1	Completion Date: <u>4/22/</u> Station: <u>525+06</u>		DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD		∆ - UU/2	○ - QU/2	□ - SV			
	Datum I	NAVD88	Offset: -36	loc	유일목	ES	0,5		2,0 2,5			
	7				WE SOV	SAMPLES	STANDAR	STANDARD PENETRATION RESISTANCE (ASTM D 1586)				
ᅚᇤᆝ				SRAPHIC LOG	N SIS	SAI	▲ N-	(ASTM D 1586) VALUE (BLOWS PE	FR FOOT)			
DEPTH IN FEET	\ E	DESCR	RIPTION OF MATERIA	L D	> T H		,	WATER CONTEN	T, %			
	ELEVATION IN FEET				RO CO		PL 10	20 30	40 50 LI			
		Asphalt: 9			a							
		limestone a	rial: 33 inches gray and white cru and sand	isnea XX	44-24-11	SS1	•::::::	: : : : : : : : : : : : : :				
					}							
			n, FAT CLAY, trace sand and orga	anics -	3-4-6	SS2			8			
- 5	 526	(CH) 92% passii	ng No. 200 sieve		3-4-6	332						
		1	n, sandy, FAT CLAY - (CH)									
			ng No. 200 sieve		1-4-7	SS3		.: . : • : : <u> </u>	· · · · · · · · 8			
		1										
		Stiff, brown	n, FAT CLAY, some gravel - CH	6//	2-4-6	SS4	1					
- 10	 521	-										
		Poring torn	ainated at 12.2 feet due to guger	refued								
		Boring tern	ninated at 12.3 feet due to auger	reiusai.								
		1										
- 15	 516-	-										
		_										
		1										
− 20 	 511-	-										
		1										
		1										
		1										
- 25	 506											
		_										
		1										
- 30 	 501	_										
		1										
		1										
	0001		ATA	DDU LING DATA			Drawn by: REF	P Checked by: JTM	App'vd. by: ABM			
	GKUL	JNDWATER D	AIA	DRILLING DATA			Date: 4/28/25	Date: 6/12/25	Date: 6/16/25			
EN 10		REE WATER N		GER <u>3 1/4"</u> HOLLO								
ENC	OUNTE	RED DURING I	VVAS	HBORING FROM				/ UE	TM			
				DRILLER <u>REP</u> LO								
				oprobe7822DT DRIL			L	40 Bridge Replace	ement			
				HAMMER TYPE Aut			R	est Area Truck Pa	rking			
 -		n 04:41:		MMER EFFICIENCY	<u>98</u> %		Smith -	Putnam County,	Tennessee			
			offset are in reference to om 1 to 7 feet.	I-4U								
							ı	LOG OF BORING:	: W-11			
							Ducie	ct No. A24138.				

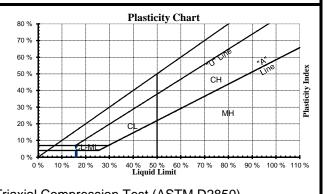
Surf	ace Eleva	tion: <u>515.9</u>	Completion Date:	CLOG	EIGHT (pcf) COUNTS VERY/RQD	LES	Δ - UU/2 0 _. 5 1	EAR STRENGTH O - QU/2 0 1,5 2 PENETRATION	□ - SV 2.0 2.5
DEPTH IN FEET	ELEVATION IN FEET	DESCR	IPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES	▲ N-VA	R FOOT) 7, % 40 50	
		Asphalt: 12	inches						
		Base Mater limestone a	rial: 30 inches gray and white crushed and sand		28-36-19	SS1	•		
		Stiff to very (CL)	stiff, red and brown, sandy, LEAN CLAY	(-	2-7-11	SS2	•		
— 5 <i>—</i>	5 11-								
		➤ 59% passii	ng No. 200 sieve		2-5-7	SS3			
— 10 <i>—</i>	506-				3-4-7	SS4			
		Medium de SC	nse, red and tan SAND, trace clay - SP-						
— 15 <i>—</i>	501	Boring tern	ninated at 15 feet.		4-5-5	SS5	· · · · · • · · · · · · · · · · · · · ·		
		Boiling to in							
	00011	JD14/4 TED D	A.T.A. D.D.II	LINGBATA			Drawn by: AG	Checked by: JTM	App'vd. by: ABM
ENC	<u>X</u> FR	NDWATER D EE WATER N RED DURING I	OT AUGER DRILLING WASHBORI	LING DATA 3 1/4" HOLLO' NG FROM ER SAS LO	FEET		Date: 4/23/25	Date: 6/12/25	Date: 6/16/25
REI	MARKS:	Station and	<u>Geoprobe</u> HAMM	7822DT DRILL ER TYPE <u>Auto</u> EFFICIENCY <u>(</u>	. RIG <u>)</u>		Res	Bridge Replace t Area Truck Par utnam County, 1	king
KE		Julion and	S.136t al				LO	G OF BORING:	WB-1
ı							Project	No. A24138.0	00136.001

Surf		ation: <u>523.9</u>	Completion Date:	907	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	S	Δ - UU/2	EAR STRENGTH	l, tsf □ - SV 2,0 2,5		
HH HH				GRAPHIC LOG	JNIT WEIGH	SAMPLES	STANDARD PENETRATION RESISTANCE (ASTM D 1586) • N-VALUE (BLOWS PER FOOT)				
DEPTH IN FEET	ELEVATION IN FEET	DESCR	RIPTION OF MATERIAL		DRY L SPT CORE		PL	ATER CONTENT	7, % 40 50 L		
		Asphalt: 7	inches								
		Base Mate limestone s	rial: 35 inches gray and white crushed sand and clay		23-32-12	SS1	•				
			STONE and clay	XXXX	50/5"	SS2	•		S-5"		
— 5—	 519	Boring tern	ninated at 3.9 feet due to auger refusal.								
3	319										
— 5— — 10—											
— 10 <i>-</i>	 514										
15	-509-										
— 15 <i>—</i>	509										
	GROU	NDWATER D	ATA DRILLING	G DATA			Drawn by: AG Date: 4/23/25	Checked by: JTM Date: 6/12/25	App'vd. by: ABM Date: 6/16/25		
ENC		REE WATER N RED DURING I		ROM	FEET			JUE	S _{TM}		
per	MARKE	Station and	Geoprobe78220 HAMMER T HAMMER EFFICE d offset are in reference to I-40	YPE Auto	<u> </u>		Res	Bridge Replace t Area Truck Par utnam County, T	king		
		. Glation and	. On 36t ale in 1616161106 to 1 -4 0				LO	G OF BORING:	WB- 2		
								N 40/100			
							Project	No. A24138.0)0136.001		

BORING LOG: TERMS AND SYMBOLS



QU



SOIL GRAIN SIZE

Shear Strength from Unconfined Compression Test (ASTM D2166)

US STANDARD SIEVE

	12"	3"	3/4	." 4	4 10) 4	0 20	00	
BOULDERS	СОВВ	I ES	GRAV	/EL		SAND		SILT	CLAY
DOOLDLING	COBB		COARSE	FINE	COARSE	MEDIUM	FINE		CLC
	300	76.2	2 19.3		76 2.0	00 0.4	42 0.0	74 0.0	05

SOIL GRAIN SIZE IN MILLIMETERS

UNIFIED SOIL CLASSIFICATION SYSTEM

	Major Di	visions	Symbol	Description
00	Gravel	Clean Gravels	GW	Well-Graded Gravel, Gravel- Sand Mixture
ed 50% 200	and	Little or no Fines	GP	Poorly-Graded Gravel, Gravel-Sand Mixture
rain han No. ize)	Gravelly	Gravels with	GM	Silty Gravel, Gravel-Sand-Silt Mixture
Single	Soil	Appreciable Fines	GC	Clayey-Gravel, Gravel-Sand-Clay Mixture
oarse-G (More t jer than Sieve S	Cond and	Clean Sands	SW	Well-Graded Sand, Gravelly Sand
Coarse Is (Mo rger th Siev	Sand and Sandy	Little or no Fines	SP	Poorly-Graded Sand, Gravelly Sand
Coar Soils (M Larger	Soils	Sands with	SM	Silty Sand, Sand-Silt Mixture
So	Jolis	Appreciable Fines	SC	Clayey-Sand, Sand-Clay Mixture
Is o	Silts and	Liquid Limit	ML	Silt, Sandy Silt, Clayey Silt, Slight Plasticity
d Soils 50% n No. Size)	Clays	Less Than 50	CL	Lean Clay, Sandy Clay, Silty Clay, Low to Medium Plasticity
ined (stan 5) than the Si.	Clays	Less man so	OL	Organic Silts or Lean Clays, Low Plasticity
$\omega = -\omega$	Silts and	Liquid Limit	MH	Silt, High Plasticity
Grai re th aller	Clays	Liquid Limit Greater Than 50	CH	Fat Clay, High Plasticity
Fine-Gra (More t Smaller 200 Si	Ciays	Greater Than 50	OH	Organic Clay, Medium to High Plasticity
正しのい	High	nly Organic Soils	PT	Peat, Humus, Swamp Soil

STRENG	TH OF COHESIVE	SOILS	DENSITY OF GRANULAR SOILS			
Consistency	Undrained Shear Strength (tsf)	Unconfined Comp. Strength (tsf)	Descriptive Term	Approximate N ₆₀ -Value Range		
Very Soft	less than 0.125	less then 0.25	Very Loose	0 to 4		
Soft	0.125 to 0.25	0.25 to 0.5	Loose	5 to 10		
Medium Stiff	0.25 to 0.5	0.5 to 1.0	Medium Dense	11 to 30		
Stiff	0.5 to 1.0	1.0 to 2.0	Dense	31 to 50		
Very Stiff	1.0 to 2.0	2.0 to 3.0	Very Dense	>50		
Hard	greater than 2.0	greater than 4.0				

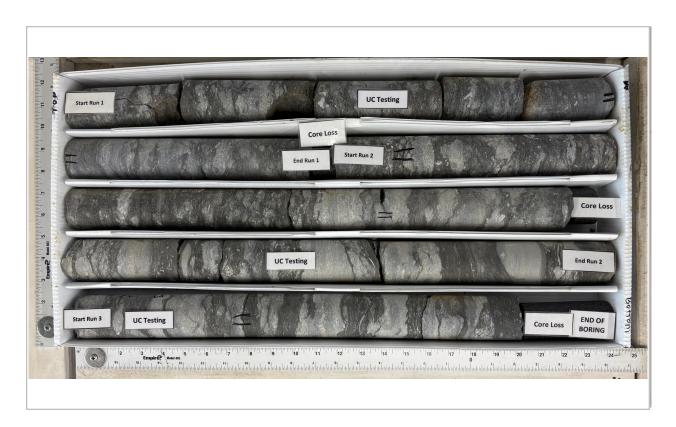
N-Value (Blow Count) is the last two, 6-inch drive increments (i.e. 4/7/9, N = 7 + 9 = 16). Values are shown as a summation on the grid plot and shown in the Unit Dry Weight/SPT column.

MPOSITION	OTHER TERMS
0 to 10%	Layer - Inclusion greater than 3 inches thick.
10 to 20%	Seam - Inclusion 1/8-inch to 3 inches thick
20 to 35%	Parting - Inclusion less than 1/8-inch thick
35 to 50%	Pocket - Inclusion of material that is smaller than sample diameter
	0 to 10% 10 to 20% 20 to 35%



Relative composition and Unified Soil Classification System (USCS) designations are based on visual descriptions and are approximate only. If laboratory tests were performed to classify the soil, the USCS designation is shown in parenthesis.

ROCK CORE DESCRIPTIONS			
TERM		REFERENCE	
Strength		STRENGTH	
Color	Description	Uniaxial Compressive Strength (psi)	
Crystallinity	Extremely Weak	less than 150	
Grain Size	Very Weak	150 to 700	
Mass Bedding	Weak	700 to 4,000	
Weathering	Medium Strong	4,000 to 7,000	
Voids	Strong	7,000 to 15,000	
Quality	Very Strong	15,000 to 36,000	
SEDIMENTARY ROCK TYPE	Extremely Strong	greater than 36,000	
Sandstone - Predominantly quartz grains	Extremely offorig	COLOR	
cemented by silica, iron, clay or carbonate	Common colors are are	ay, brown, black and white. Exotic colors such	
material. Color depends on cementing	_	maroon can be used when necessary.	
agent; porous and pervious; hard and	as green, blue,	CRYSTALLINITY	
generally thickly bedded.	Description	Criteria	
Siltstone - Composition similar to sandstone	Aphanitic	Crystals cannot be seen with the naked eye	
•		Crystals are barely visible with the naked eye	
but at least 50% grains 0.002 to 0.02 millimeters in size. Rarely forms thick beds,	Very Finely Crystalline Finely Crystalline	Crystals are easily visible with the naked eye	
•	Finely Crystalline	·	
but often hard. Shale - Predominant particles are less than	Medium Crystalline	Crystals are medium size; up to 1/8-inch diameter	
0.002 millimeters with a well defined fissile	Coorook, Crustollino		
	Coarsely Crystalline	Crystals are 1/8- to 1/4-inch in diameter	
fabric. Commonly interbedded with	Very Coarsely	Crystals are larger than 1/4-inch in diameter	
sandstone or limestone and relatively soft.	Crystalline	ODAIN OIZE	
Limestone - Contains more than 50%	Description	GRAIN SIZE	
calcium carbonate. The calcite can be	Description	Criteria	
precipitated chemically, organically, or it	Very Finely Grained	Grains cannot be seen with the naked eye	
may be detrital in origin. Reacts with dilute	Fine Grained	Grains are barely visible with the naked eye	
HCL.	Medium Grained	Grains up to 2 mm in diameter	
Dolomite - Harder and heavier than	Coarse Grained	Grains are larger than 2 mm in diameter	
limestone. Forms by alteration of limestone		BEDDING	
or by direct precipitation from sea water.	Description	Criteria	
Reacts with dilute HCL only when	Thin	less than 2 inches	
powdered.	Medium	2 to 24 inches	
Coal - Composed of highly altered plant	Thick	24 to 48 inches	
remains and varying amounts of clay,	Massive	greater than 48 inches	
generally black in color.		WEATHERING	
Chert - Formed by silica deposited from	Description	Criteria	
solution in water. May occur as nodules or	Unweathered	No visible alteration of rock mass	
relatively thick beds.	Slightly Weathered	Slight discoloration inward from fractures	
GEOLOGIC DEFINITIONS	Moderately Weathered	Discoloration throughout, slight loss of	
Stylolite - A term applied to parts of certain	, , , , , , , , , , , , , , , , , , ,	strength, texture intact	
limestones which have a column like	Highly Weathered	Entire rock mass appears discolored and dull,	
development that is grooved, sutured or		texture indistinct, fabric intact	
striated and irregular in cross-section.	Severely Weathered	Majority of rock mass reduced to soil-like state	
Fissility - A property of splitting along	,	with relic rock structure	
closely spaced parallel planes.	5 ' "	VOIDS	
Argillaceous - A term applied to rock or	Description	Criteria	
substances having a notable portion,	Dense	Usually not visible with the naked eye	
greater then 30%, clay in composition.	Pitted	Visible to 1/4-inch	
Oolitic - A spherical or ellipsoidal texture,	Vuggy	1/4-inch to diameter of the core	
0.25 to 2.0 mm in diameter, with concentric	Cavity	Larger than 6 inches in diameter	
or radial structure.			
Brecciated - A rock texture which is	Percent RQD	Description	
composed of angular fragments which	90 to 100	Excellent	
correspond in size to gravel and/or pebbles.	75 to 90	Good	
<u> </u>	50 to 75	Fair	
Slickenside - A polished or striated surface	25 to 50	Poor	
on or within a rock.	0 to 25	Very Poor	



<u>RUN</u>	DEPTH, FT	RECOVERY, %	<u>RQD, %</u>
1	56.5 - 59.5	97	65
2	59.5 - 64.5	98	95
3	64.5 - 66.5	83	83



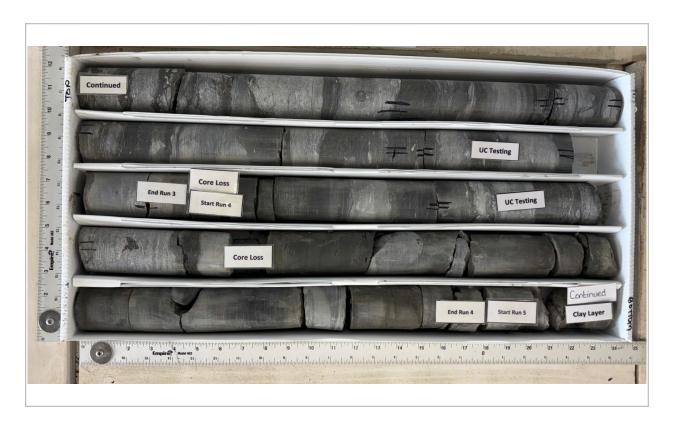
<u>RUN</u>	DEPTH, FT	RECOVERY, %	<u>RQD, %</u>
1	39.8 - 44.8	100	65
2	44.8 - 49.8	100	96



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
3	49.8 - 54.8	100	68
4	54.8 - 59.8	100	41



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
1	8.25 - 12.25	95	81
2	12.25 - 17.25	98	98
3	17.25 - Cont.	100	100



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
3	Cont 22.25	100	100
4	22.25 - 27.25	97	39
5	27.25 - Cont.	98	72



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
5	Cont 32.0	98	72



<u>RUN</u>	DEPTH, FT	RECOVERY, %	<u>RQD, %</u>
1	9.9 - 12.0	100	100
2	12.0 - 17.0	100	93
3	17.0 - Cont.	100	93



<u>RUN</u>	DEPTH, FT	RECOVERY, %	<u>RQD, %</u>
3	Cont 22.0	100	93
4	22.0 - 27.0	100	100
5	27.0 - Cont.	100	82



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
5	Cont 32.0	100	82
6	32.0 - 37.0	100	80
7	37.0 - 39.9	100	81



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
1	5.2 - 10.2	98	70
2	10.2 - 15.2	98	92



<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
3	15.2 - 20.2	100	100
4	20.2 -25.2	100	100

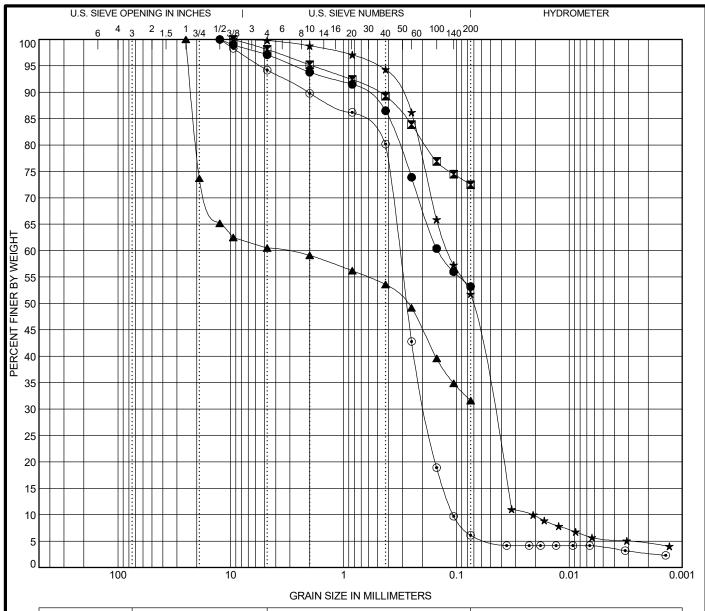


BORING BR-5

<u>RUN</u>	DEPTH, FT	RECOVERY, %	RQD, %
5	25.2 - 30.2	100	100
6	30.2 - 35.2	97	97



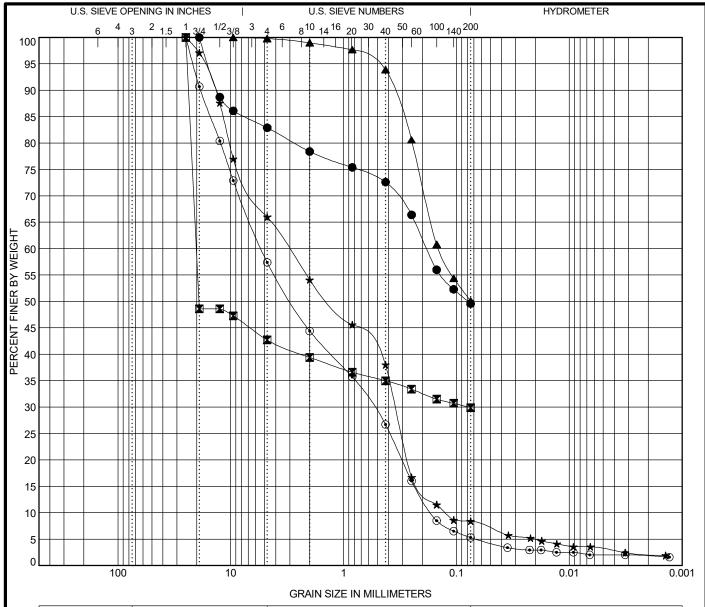
Appendix D
LABORATORY TEST DATA



CODDI ES	GRA	AVEL		SAND)	SILT OR CLAY
COBBLES	000000	fina	000500	ma a diu uma	fina	SILT OR CLAT

5	Specimen l	Identification		Cla	assification			LL	PL	PI	Сс	Cu
•	BR-1	8.5	SA	SANDY LEAN CLAY(CL), A-7-6 (11)				49	23	26		
	BR-1	28.5	FAT	FAT CLAY with SAND(CH), A-7-6 (25)				61	27	34		
4	BR-1	33.5	CLAY	CLAYEY GRAVEL with SAND(GC), A-2-4					19	9		
3	BR-1	38.5		SANDY	SILT(ML), A-	4					0.91	5.52
*	BR-1	43.5	POORLY G	RADED SAN	ND with CLA	Y(SP-SC), A	-2-4				1.06	2.98
5	Specimen	Identification	D100	D60	D30	D10	%Grave	I %	6Sand	%Si	It 9	6Clay
}	BR-1	Identification 8.5	12.5	0.145			2.9		43.9		53.2	
3	BR-1	28.5	9.5				1.9		25.6		72.5	
5	BR-1	33.5	25	3.488			39.5		28.9		31.6	
1	BR-1	38.5	9.5	0.118	0.048	0.021	0.2		48.0	46.3	3	5.5
	BR-1	43.5	12.5	0.319	0.19	0.107	5.8		88.1	2.3		3.8





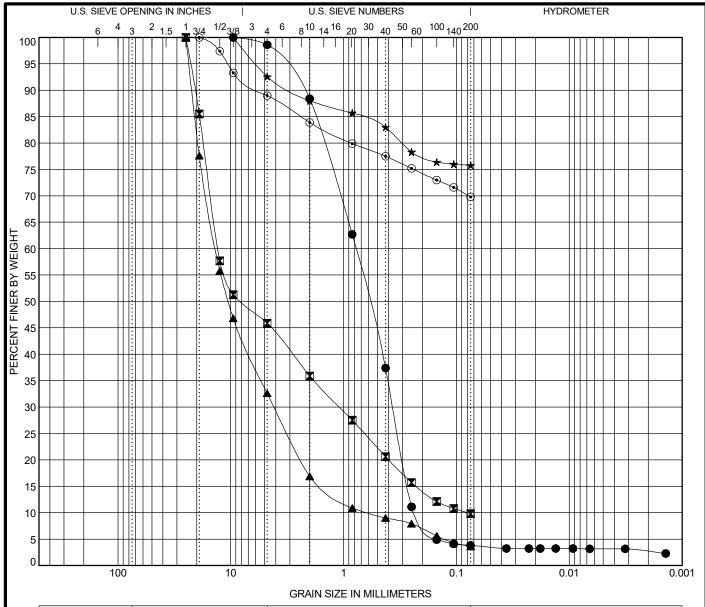
C	OBBLES	GRA	VEL	SAND			SILT OR CLAY
	OBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAY

S	pecimen	Identification		Classification						PI	Сс	Cu
•	BR-2	3.0	CLAYE	CLAYEY SAND with GRAVEL(SC), A-7-6 (7)					22	21		
X	BR-2	8.0	С	CLAYEY GRAVEL(GC), A-2-7 (4)					33	38		
lack	BR-2	18.5	S	ANDY LEAN	CLAY(CL),	A-4 (2)		32	22	10		
*	BR-2	23.5	P. GRADED S	AND with SII	LT and GRA	VEL(SP-SM),	, A-2-4				0.31	24.50
0	BR-2	28.5	P. GRADED S	AND with SII	LT and GRA	VEL(SP-SM),	, A-2-4				0.34	32.12
S	pecimen	Identification	D100	D60	D30	D10	%Grav	′el ′	%Sand	%Sil	t %	6Clay
•	BR-2	3.0	19	0.183			17.1		33.3		49.6	
X	BR-2	8.0	25	20.192	0.078		57.3		12.8		29.9	
A	BR-2	18.5	9.5	0.144			0.2		49.7		50.1	
*	BR-2	23.5	25	3.071	0.348	0.125	34.0		57.6	5.3		3.1
•	BR-2	28.5	25	5.336	0.546	0.166	42.6		52.1	3.3		2.0



A24138.00136.001.GPJ US LAB.GDT 6/17/25

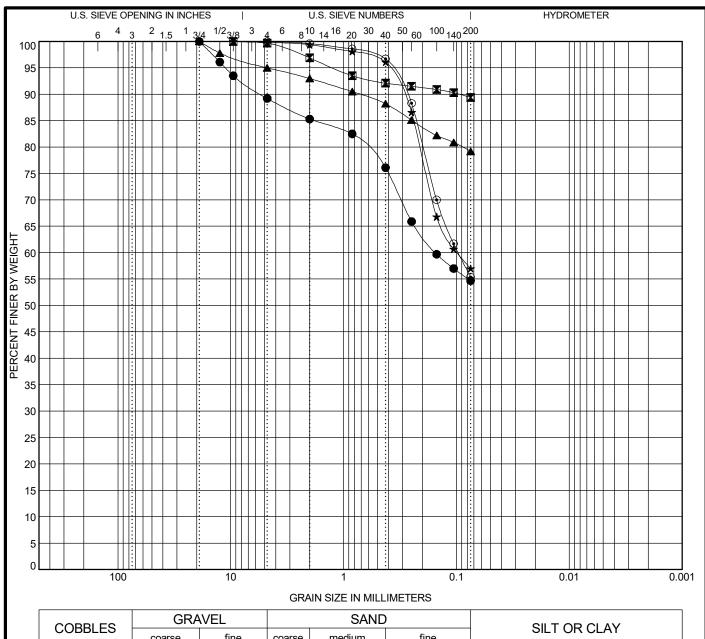
GRAIN SIZE DISTRIBUTION



COPPLES	GRA	VEL		SAND)	SILT OD CLAV
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAY

I	Sp	ecimen	Identification		Cla	assification			LL	PL	PI	Сс	Cu
I	•	BR-3	0.0	POOF	POORLY GRADED SAND(SP), A-1-b (0)							0.75	3.42
I		BR-4	2.0	WELL GRADE	ELL GRADED GRAVEL with SILT and SAND(GW), A-2-							1.14	161.01
Ī	A	BR-4	7.0	WELL GR	WELL GRADED GRAVEL with SAND(GW), A-2-4							2.06	22.28
22	*	E- 1	3.5	ELAS1	ELASTIC SILT with SAND(MH), A-7-5 (27)						32		
//0	★ ⊙	E- 1	13.0	SAI	SANDY LEAN CLAY(CL), A-7-6 (16)					24	24		
- פפר	Sp	ecimen	Identification	D100	D60	D30	D10	%Grav	el '	%Sand	%Si	lt 9	6Clay
Ä.	•	BR-3	Identification 0.0	9.5	0.781	0.366	0.228	1.4		94.8	0.7		3.1
S		BR-4	2.0	25	12.941	1.087	0.08	54.1		36.1		9.8	
5	A	BR-4	7.0	25	13.55	4.116	0.608	67.4		29.0		3.6	
0.00	*	E- 1	3.5	9.5				7.4		16.8		75.8	
500	•	E- 1	13.0	19	19					19.2		69.8	

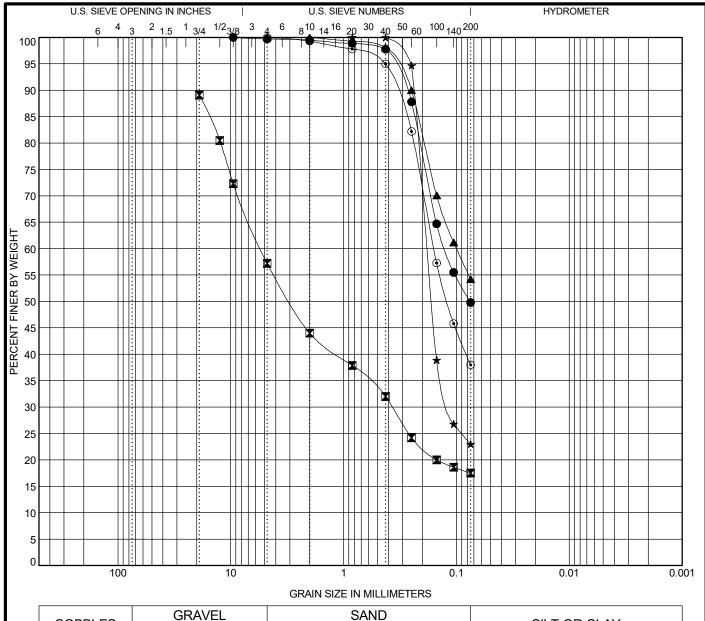




COPPLES	GRA	VEL	SAND			SILT OR CLAY
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAT

I	Sp	ecimen	Identification		Cla	assification			LL	PL	PI	Сс	Cu
Ī	•	E- 2	6.0	SA	SANDY FAT CLAY(CH), A-7-6 (10)					26	24		
1	X	E- 2	13.5	!	ELASTIC SILT(MH), A-7-5 (28)					31	27		
Į	▲	E- 3	3.5	FAT	FAT CLAY with SAND(CH), A-7-6 (20)					28	24		
	*	E- 4	5.0	S	SANDY LEAN CLAY(CL), A-6 (6)					23	14		
6/17/25	•	E- 4	18.5	SAI	SANDY SILTY CLAY(CL-ML), A-4 (1)					25 20			
GDT	Sp	ecimen	Identification	D100	D60	D30	D10	%Grave	I %	Sand	%Sil	t	%Clay
LAB.GDT	•	E- 2	6.0	19	0.154			10.8		34.5		54.7	
S I	X	E- 2	13.5	9.5				0.3		10.3		89.4	
.GPJ	A	E- 3	3.5	19				5.0		15.8		79.2	
00136.001.GPJ	*	E- 4	5.0	9.5	0.099			0.2		42.8		57.0	
0013	9	E- 4	18.5	4.75	4.75 0.097 0.					44.6		55.4	





SAND)	SILT OD CLAV
	_	SIL I UK CLAT

fine

,	Sp	ecimen	Identification		Cla	assification			LL	PL	PI	Сс	Cu
k	•	E- 5	8.0		CLAYEY SAND(SC), A-6 (5)				36	20	16		
	X	E- 5	28.5	CLAY	CLAYEY SAND with GRAVEL(SC), A-2-6								
	A	E- 6	3.5	S	SANDY LEAN CLAY(CL), A-6 (6)					20	17		
52	*	E- 6	6.0		SILTY SAND(SM), A-2-4 (0)					24	6		
6/1//25	•	E- 7	3.0		CLAYEY SAND(SC), A-6 (1)					19	12		
<u> </u>	Sp	ecimen	Identification	D100	D60	D30	D10	%Grav	el 9	%Sand	%Sil	it c	%Clay
LAB.GDI	•	E- 5	8.0	9.5	0.126			0.3		49.9		49.8	
S	X	E- 5	28.5	19	5.401	0.371		31.9		39.7		17.5	
.00136.001.GPJ	A	E- 6	3.5	4.75	0.1			0.0		45.8		54.2	
9.00	*	E- 6	6.0	0.84	0.182	0.116		0.0		77.0		23.0	
0013	•	E- 7	3.0	4.75	4.75 0.159 0.0				62.0		38.0		

medium



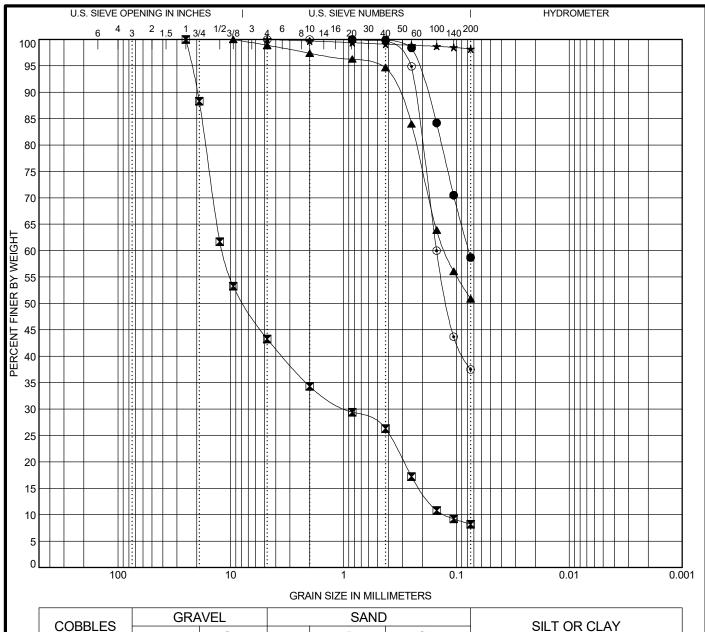
coarse

fine

coarse

COBBLES

GRAIN SIZE DISTRIBUTION



				T
١	VEL	SAND		
			<i>-</i> :	SILT OR CLAY

fine

I	Sp	ecimen	Identification		Cla	assification			LL	PL	PI	Сс	Cu
I	•	E- 7	8.5	5	SANDY LEAN	CLAY(CL),	A-6 (6)		30	15	15		
I	×	E- 9	13.5	P. GRADED G	RAVEL with	CLAY and S	AND(GP-GC	s), A-2-6				0.59	93.78
I	A	EB-1	3.5	5	SANDY LEAN	CLAY(CL),	A-6 (3)		30	17	13		
25	*	EB-2	3.5		FAT CLAY	(CH), A-7-5 ((63)		88	36	52		
6/17/25	lacksquare	P- 1	8.5		CLAYEY SA	AND(SC), A-		31	21	10			
GDT	Sp	ecimen	Identification	D100	D60	D30	D10	%Grave	el 9	6Sand	%Si	It 9	6Clay
LAB.GDT	•	E- 7	8.5	0.84	0.078			0.0		41.3		58.7	
NS N	X	E- 9	13.5	25	11.825	0.934	0.126	56.7		35.1		8.2	
.GPJ	•	EB-1	3.5	9.5	0.126			1.1		48.0		50.9	
6.001	▲ ★ ⊙	EB-2	3.5	4.75				0.0		1.8		98.2	
0013	•	P- 1	8.5	4.75	4.75 0.15 0.0 62.5								

medium

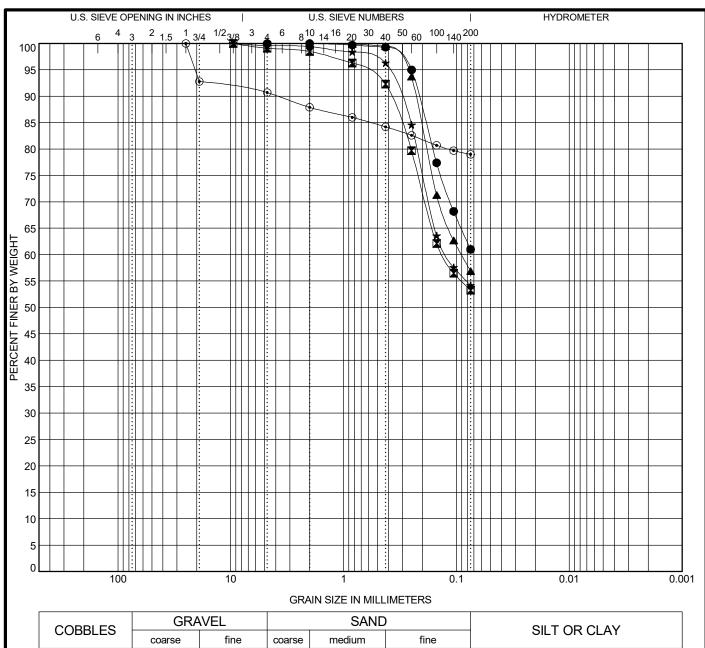


coarse

fine

coarse

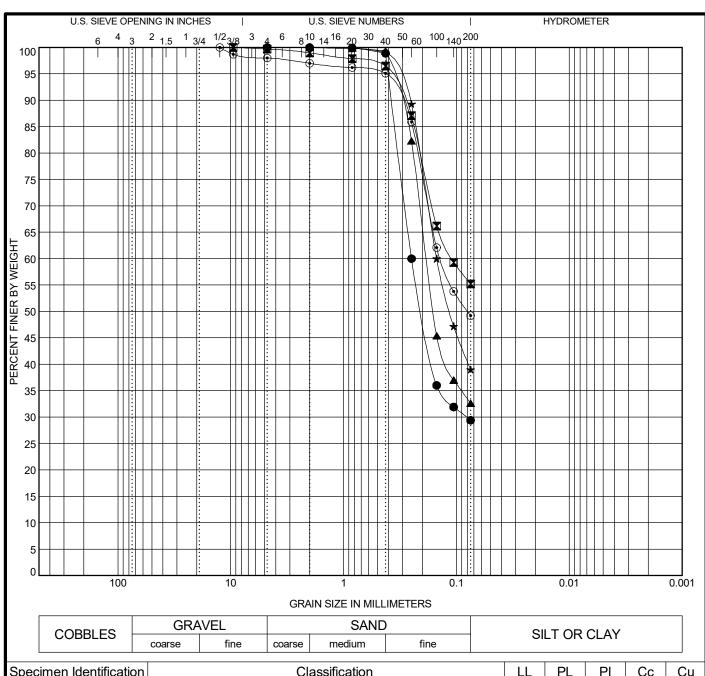
GRAIN SIZE DISTRIBUTION



CORRI ES	GRA	VEL		SAND)	SILT OR CLAY
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAT

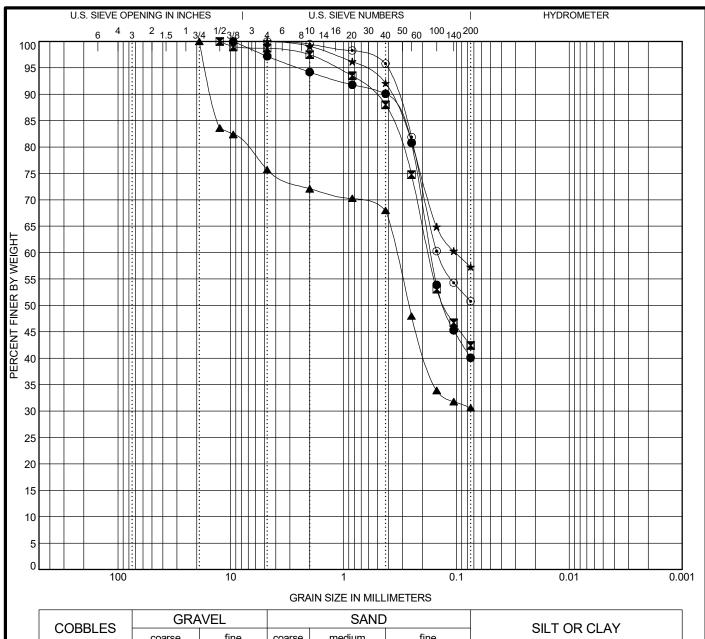
Ľ	Specimen l	dentification		Cla	assification			LL	PL	PI	Сс	Cu
	P- 2	0.5	S	ANDY LEAN	CLAY(CL),	A-6 (6)		32	18	14		
	P- 3	6.0	S	ANDY LEAN	CLAY(CL),		29	13	16			
4	P- 4	3.5	S	ANDY LEAN	CLAY(CL),		30	16	14			
7	P- 5	3.5		SANDY LI	EAN CLAY(C	L)		41	23	18		
6/17/25	P- 6	13.5		ELASTIC SIL	.T(MH), A-7-		81	38	43			
GDT S	Specimen l	dentification	D100	D60	D30	D10	%Grave	el 9	6Sand	%Sil	t 9	6Clay
YB.	P- 2	dentification 0.5	4.75				0.0		39.0		61.0	
S		6.0	9.5	0.132			0.9		45.8		53.3	
შე ⊿	P- 4	3.5	2	0.09			0.0		43.1	1 56.9		
00136.001.	P- 5	3.5	9.5	0.122	0.4	4 45.4			54.2			
0013	P- 6	13.5	25		9.3		11.7		79.0			





ı	Sp	ecimen Ide	entification		Cla	assification			LL	PL	PI	Сс	Cu
ŀ	•	P- 7	6.0		CLAYEY SA	ND(SC), A-2	-6 (1)		36	19	17		
	X	P- 8	0.5	S	ANDY LEAN	CLAY(CL),	A-6 (6)		32	16	16		
Į.	•	P- 9	8.5		CLAYEY SA	ND(SC), A-2	-6 (1)		38	23	15		
. 25	*	P-10	3.5		CLAYEY SA	AND(SC), A-		30	16	14			
6/17/25	•	W- 1	0.5		CLAYEY SA	AND(SC), A-		27	16	11			
GDT	Sp	ecimen Ide	entification	D100	D60	D30	D10	%Grav	el %	6Sand	%Sil	t %	6Clay
LAB.	•	P- 7	entification 6.0	4.75	0.25	0.081		0.0		70.6		29.4	
S)	\blacksquare	P- 8	0.5	9.5	0.11			0.3	44.5		55.2		
.GPJ	•	P- 9	8.5	2	0.184			0.0	67.4		7.4 32.6		
6.001	*	P-10	3.5	4.75	0.15	0.0	61.0			39.0			
.00136.001.GPJ	•	W- 1	0.5	12.5	0.137		2.0		48.8		49.2		

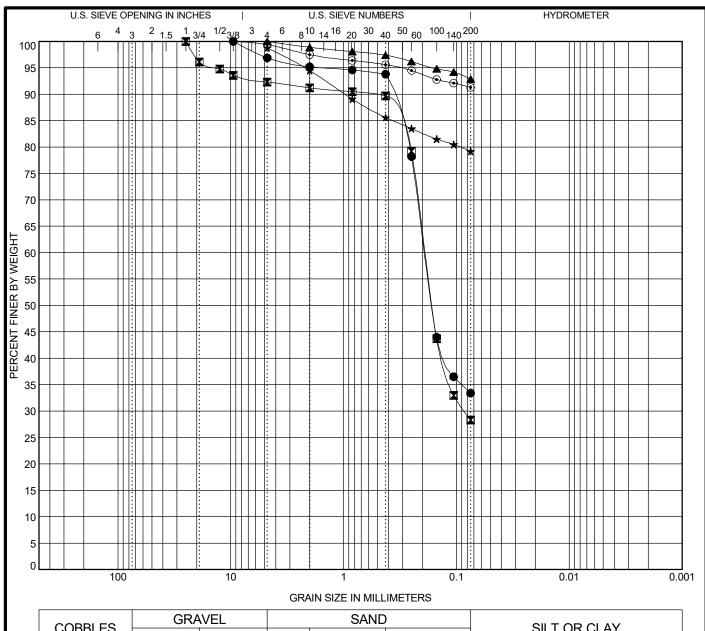




COPPLES	GRA	VEL		SAND)	SILT OR CLAY
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAT

oecimen Ide	ntification		Cla	ssification			LL	PL	PI	Сс	Cu
W- 1	3.0	SIL7	TY, CLAYEY S	SAND(SC-SI	VI), A-4 (0)		22	15	7	·	
W- 2	6.0		CLAYEY SAI	ND(SC), A-7	-6 (6)		46	19	27		
W- 2	13.5	CLA	YEY SAND wi	th GRAVEL	(SC), A-2-7						
W- 3	6.0	5	SANDY LEAN	CLAY(CL),	A-4 (3)		29	20	9		
W- 3	8.5	SA	NDY SILTY C	LAY(CL-ML), A-4 (1)		24	17	7		
oecimen Ide	ntification	D100	D60	D30	D10	%Grav	∕el %	6Sand	%Sil	t 9	6Clay
W- 1	3.0	9.5	0.168			2.8		57.1		40.1	
W- 2	6.0	12.5	0.176			1.3		56.3		42.4	
W- 2	13.5	19	0.344			24.3		45.1		30.6	
W- 3	6.0	4.75	0.102			0.0		42.7		57.3	
W- 3	8.5	4.75	0.147			0.0		49.2		50.8	
										NC	
	W- 1 W- 2 W- 3 W- 3 Decimen Ide W- 1 W- 2 W- 2 W- 3	W- 2 6.0 W- 2 13.5 W- 3 6.0 W- 3 8.5 Decimen Identification W- 1 3.0 W- 2 6.0 W- 2 13.5 W- 3 6.0	W- 1 3.0 SILT W- 2 6.0 W- 2 13.5 CLAY W- 3 6.0 S W- 3 8.5 SA Decimen Identification D100 W- 1 3.0 9.5 W- 2 6.0 12.5 W- 2 13.5 19 W- 3 6.0 4.75	W- 1 3.0 SILTY, CLAYEY S W- 2 6.0 CLAYEY SAI W- 2 13.5 CLAYEY SAND wi W- 3 6.0 SANDY LEAN W- 3 8.5 SANDY SILTY C Decimen Identification D100 D60 W- 1 3.0 9.5 0.168 W- 2 6.0 12.5 0.176 W- 2 13.5 19 0.344 W- 3 6.0 4.75 0.102	W- 1 3.0 SILTY, CLAYEY SAND(SC-SI W- 2 6.0 CLAYEY SAND(SC), A-7 W- 2 13.5 CLAYEY SAND with GRAVEL W- 3 6.0 SANDY LEAN CLAY(CL), W- 3 8.5 SANDY SILTY CLAY(CL-ML Decimen Identification D100 D60 D30 W- 1 3.0 9.5 0.168 W- 2 6.0 12.5 0.176 W- 2 13.5 19 0.344 W- 3 6.0 4.75 0.102	W- 1 3.0 SILTY, CLAYEY SAND(SC-SM), A-4 (0) W- 2 6.0 CLAYEY SAND(SC), A-7-6 (6) W- 2 13.5 CLAYEY SAND with GRAVEL(SC), A-2-7 W- 3 6.0 SANDY LEAN CLAY(CL), A-4 (3) W- 3 8.5 SANDY SILTY CLAY(CL-ML), A-4 (1) Decimen Identification D100 D60 D30 D10 W- 1 3.0 9.5 0.168 W- 2 6.0 12.5 0.176 W- 2 13.5 19 0.344 W- 3 6.0 4.75 0.102 W- 3 8.5 4.75 0.147	W- 1 3.0 SILTY, CLAYEY SAND(SC-SM), A-4 (0) W- 2 6.0 CLAYEY SAND(SC), A-7-6 (6) W- 2 13.5 CLAYEY SAND with GRAVEL(SC), A-2-7 W- 3 6.0 SANDY LEAN CLAY(CL), A-4 (3) W- 3 8.5 SANDY SILTY CLAY(CL-ML), A-4 (1) Decimen Identification D100 D60 D30 D10 %Grav W- 1 3.0 9.5 0.168 2.8 W- 2 6.0 12.5 0.176 1.3 W- 2 13.5 19 0.344 24.3 W- 3 6.0 4.75 0.102 0.0 W- 3 8.5 4.75 0.147 GRAIN SIZ	W- 1 3.0 SILTY, CLAYEY SAND(SC-SM), A-4 (0) 22 W- 2 6.0 CLAYEY SAND (SC), A-7-6 (6) 46 W- 2 13.5 CLAYEY SAND with GRAVEL(SC), A-2-7 W- 3 6.0 SANDY LEAN CLAY(CL), A-4 (3) 29 W- 3 8.5 SANDY SILTY CLAY(CL-ML), A-4 (1) 24 Decimen Identification D100 D60 D30 D10 %Gravel % W- 1 3.0 9.5 0.168 2.8 2.8 W- 2 6.0 12.5 0.176 1.3 24.3 W- 2 13.5 19 0.344 24.3 W- 3 6.0 4.75 0.102 0.0 W- 3 8.5 4.75 0.147 0.0 GRAIN SIZE DISE	W- 1 3.0 SILTY, CLAYEY SAND(SC-SM), A-4 (0) 22 15 W- 2 6.0 CLAYEY SAND(SC), A-7-6 (6) 46 19 W- 2 13.5 CLAYEY SAND with GRAVEL(SC), A-2-7 29 20 W- 3 6.0 SANDY LEAN CLAY(CL), A-4 (3) 29 20 W- 3 8.5 SANDY SILTY CLAY(CL-ML), A-4 (1) 24 17 Decimen Identification D100 D60 D30 D10 %Gravel %Sand W- 1 3.0 9.5 0.168 2.8 57.1 W- 2 6.0 12.5 0.176 1.3 56.3 W- 2 13.5 19 0.344 24.3 45.1 W- 3 6.0 4.75 0.102 0.0 42.7 W- 3 8.5 4.75 0.147 0.0 49.2 GRAIN SIZE DISTRIE	W- 1 3.0 SILTY, CLAYEY SAND(SC-SM), A-4 (0) 22 15 7 W- 2 6.0 CLAYEY SAND(SC), A-7-6 (6) 46 19 27 W- 2 13.5 CLAYEY SAND with GRAVEL(SC), A-2-7 29 20 9 W- 3 6.0 SANDY LEAN CLAY(CL), A-4 (3) 29 20 9 W- 3 8.5 SANDY SILTY CLAY(CL-ML), A-4 (1) 24 17 7 Decimen Identification D100 D60 D30 D10 %Gravel %Sand %Sil W- 1 3.0 9.5 0.168 2.8 57.1 W- 2 6.0 12.5 0.176 1.3 56.3 W- 2 13.5 19 0.344 24.3 45.1 W- 3 6.0 4.75 0.102 0.0 42.7 W- 3 8.5 4.75 0.147 0.0 49.2 GRAIN SIZE DISTRIBUTION	W- 1 3.0 SILTY, CLAYEY SAND(SC-SM), A-4 (0) 22 15 7 W- 2 6.0 CLAYEY SAND(SC), A-7-6 (6) 46 19 27 W- 2 13.5 CLAYEY SAND with GRAVEL(SC), A-2-7 29 20 9 W- 3 6.0 SANDY SILTY CLAY(CL), A-4 (3) 29 20 9 W- 3 8.5 SANDY SILTY CLAY(CL-ML), A-4 (1) 24 17 7 Decimen Identification D100 D60 D30 D10 %Gravel %Sand %Silt 9 W- 1 3.0 9.5 0.168 2.8 57.1 40.1 W- 2 6.0 12.5 0.176 1.3 56.3 42.4 W- 2 13.5 19 0.344 24.3 45.1 30.6 W- 3 6.0 4.75 0.102 0.0 42.7 57.3

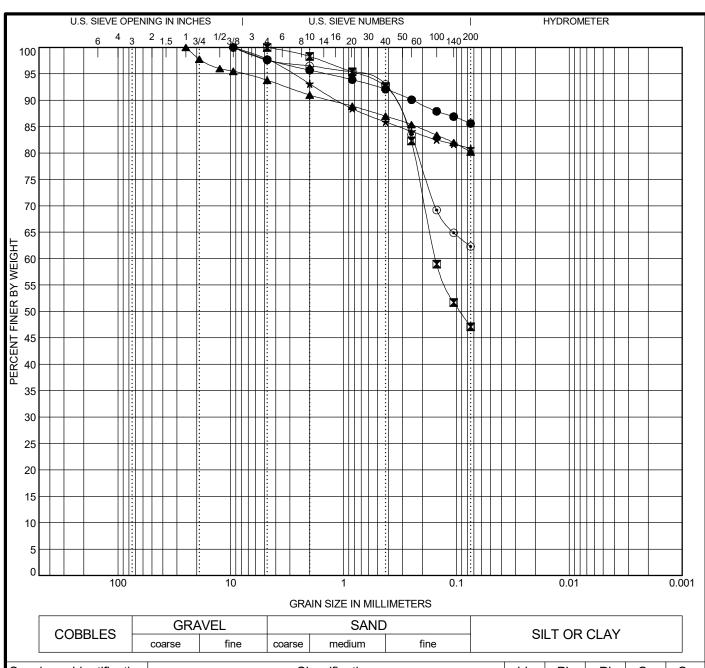




COPPLES	GRA	VEL		SAND)	SILT OD CLAV
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAY

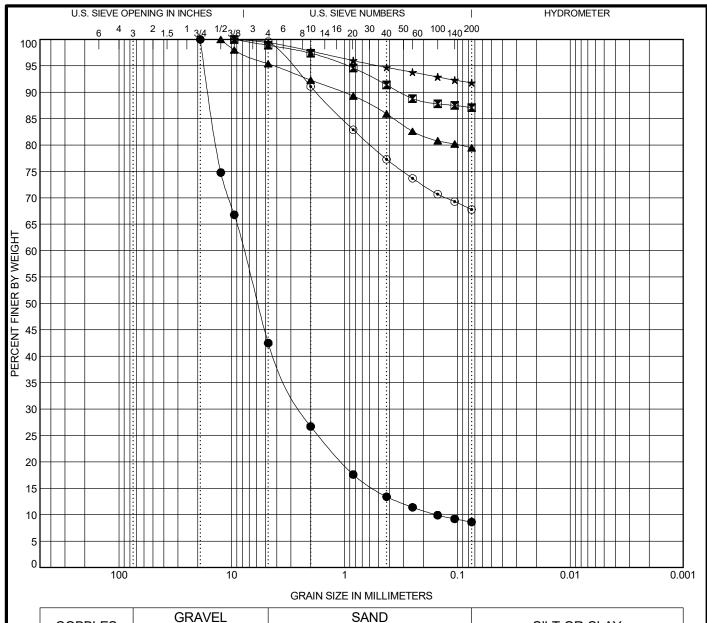
Ŀ	Sp	ecimen	Identification		Cla	assification		LL	PL	PI	Сс	Cu	
ŀ		W- 4	3.5		CLAYEY S	AND(SC), A	-2-4						
1		W- 4	18.0		CLAYEY SA	ND(SC), A-2		33	21	12			
L	•	W- 5	8.0		FAT CLAY	(CH), A-7-5 (98	40	58			
	k	W- 5	18.5	FAT	CLAY with	SAND(CH),		61	27	34			
6/17/25	•	W- 6	1.0		FAT CLAY		62	22	40				
GDT	Sp	ecimen	Identification	D100	D60	D30	D10	%Grave	9	6Sand	%Sil	t 9	%Clay
LAB		W- 4	Identification 3.5	9.5	0.19			3.1		63.5		33.4	
ns I		W- 4	18.0	25	0.19	0.085		7.7		64.0	28.3		
GP.	A	W- 5	8.0	4.75		0.0		7.1	92.9				
.00136.001.GPJ	k	W- 5	18.5	4.75		0.0	19.6			79.2			
0013	•	W- 6	1.0	9.5		0.6	8.1		1 91.3				





S	pecimen Ide	ntification		Cla	assification			LL	PL	PI	Сс	Cu
•	W- 6	6.0		ELASTIC SIL	.T(MH), A-7-	5 (32)		65	33	32		
X	W- 7	5.0		CLAYEY SA	AND(SC), A-4		26	16	10			
	W- 7	6.0	S	SILT with SA	ND(ML), A-7-	44	28	16				
★	W- 8	1.0	FAT	CLAY with	SAND(CH), A	N-7-6 (22)		52	26	26		
★	W- 9	2.0	SA	NDY LEAN (44	18	26					
S	pecimen Ide	ntification	D100	D60	D30	D10	%Grav	rel 9	6Sand	%Sil	t º	%Clay
9	pecimen Ide W- 6	6.0	9.5				2.3		12.1		85.6	
3 🗷	W- 7	5.0	4.75	0.153			0.0		52.9		47.1	
<u></u>	W- 7	6.0	25				6.2		13.6		80.2	
★	W- 8	1.0	9.5				2.2		16.9		80.9	
<u> </u>	W- 9	2.0	9.5		2.4		35.3		62.3			

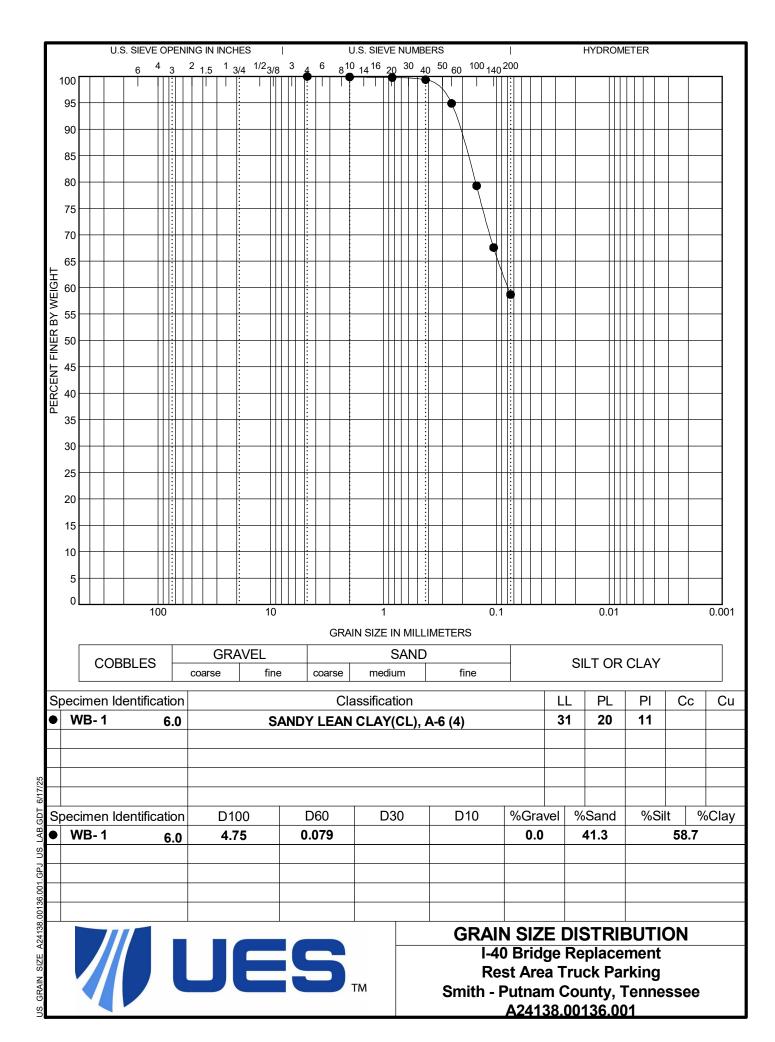


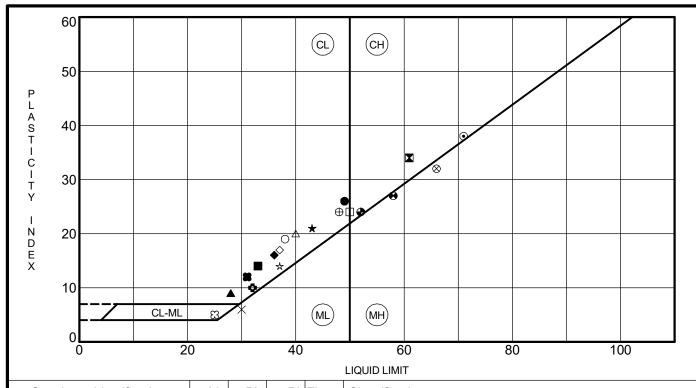


CORRI ES	GRA	VEL		SAND		SILT OR CLAY
COBBLES	coarse	fine	coarse	medium	fine	SILT OR CLAY

S	pecimen Iden	tification		Cla	assification			LL	PL	PI	Сс	Cu
•	W- 9	3.5	P. GRADED G	RAVEL with	CLAY and S	AND(GP-GC	;), A-2-7				4.73	50.42
X	W-10	3.5		FAT CLAY	(CH), A-7-6 (40)	,,	66	25	41		
A	W-10	8.0	FA1	CLAY with	SAND(CH), A	·-7-5 (38)		74	30	44		
*	W-11	3.5		FAT CLAY	(CH), A-7-6 (59)		85	29	56		
0	W-11	7.0	S	ANDY FAT C	LAY(CH), A-7	'-5 (34)		80	31	49		
S	pecimen Iden	tification	D100	D60	D30	D10	%Grav	∕el %	6Sand	%Si	It 9	6Clay
•	W- 9	3.5	19	7.825	2.396	0.155	57.5	5	33.9		8.6	
	W-10	3.5	9.5				1.1		11.8		87.1	
<u> </u>	W-10	8.0	12.5				4.6		15.9		79.5	
*	W-11	3.5	9.5				0.6		7.6		91.8	
0	W-11	7.0	9.5				0.4		31.8		67.8	
		1				GRAI	N SIZ	E DI	STRIE	BUTI	ON	
3						1.4	0 Bride	70 D	nlago	mont		



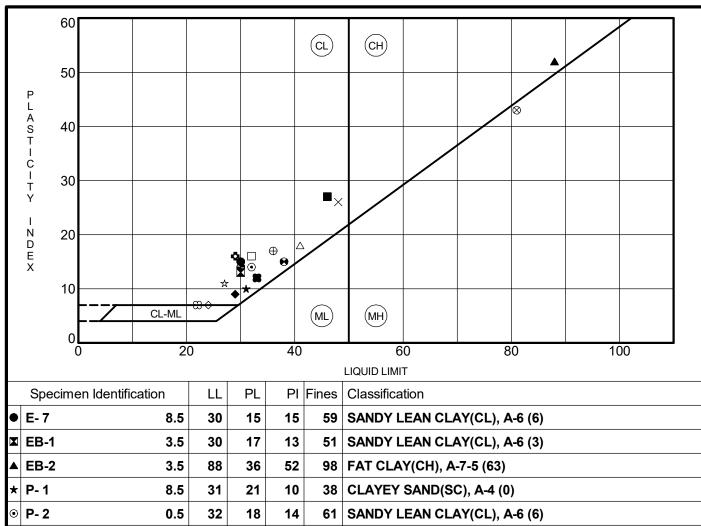




		Specimen Identific	ation	LL	PL	PI	Fines	Classification
•	•	BR-1	8.5	49	23	26	53	SANDY LEAN CLAY(CL), A-7-6 (11)
I	X	BR-1	28.5	61	27	34	73	FAT CLAY with SAND(CH), A-7-6 (25)
	•	BR-1	33.5	28	19	9	32	CLAYEY GRAVEL with SAND(GC), A-2-4
	*	BR-2	3.0	43	22	21	50	CLAYEY SAND with GRAVEL(SC), A-7-6 (7)
(◉	BR-2	8.0	71	33	38	30	CLAYEY GRAVEL(GC), A-2-7 (4)
ŀ	٥	BR-2	18.5	32	22	10	50	SANDY LEAN CLAY(CL), A-4 (2)
(0	BR-5	1.5	38	19	19		SANDY LEAN CLAY(CL), A-6
	Δ	BR-5	3.5	40	20	20		SANDY LEAN CLAY(CL), A-6
	⊗	E- 1	3.5	66	34	32	76	ELASTIC SILT with SAND(MH), A-7-5 (27)
•	⊕	E- 1	13.0	48	24	24	70	SANDY LEAN CLAY(CL), A-7-6 (16)
[E- 2	6.0	50	26	24	55	SANDY FAT CLAY(CH), A-7-6 (10)
•	8	E- 2	13.5	58	31	27	89	ELASTIC SILT(MH), A-7-5 (28)
25	Ð	E- 3	3.5	52	28	24	79	FAT CLAY with SAND(CH), A-7-6 (20)
_	☆	E- 4	5.0	37	23	14	57	SANDY LEAN CLAY(CL), A-6 (6)
B.GDT	3	E- 4	18.5	25	20	5	55	SANDY SILTY CLAY(CL-ML), A-4 (1)
US LAB		E- 5	6.0	33	19	14		LEAN CLAY(CL), A-2-6
.GPJ	•	E- 5	8.0	36	20	16	50	CLAYEY SAND(SC), A-6 (5)
36.001	\diamond	E- 6	3.5	37	20	17	54	SANDY LEAN CLAY(CL), A-6 (6)
38.00136	×	E- 6	6.0	30	24	6	23	SILTY SAND(SM), A-2-4 (0)
~	-	E- 7	3.0	31	19	12	38	CLAYEY SAND(SC), A-6 (1)
ATTERBERG LIMITS								ATTERBERG LIMITS RESULTS
ERG								I-40 Bridge Replacement
TERB							TM	Rest Area Truck Parking Smith - Putnam County, Tennessee
US AT								A24138.00136.001



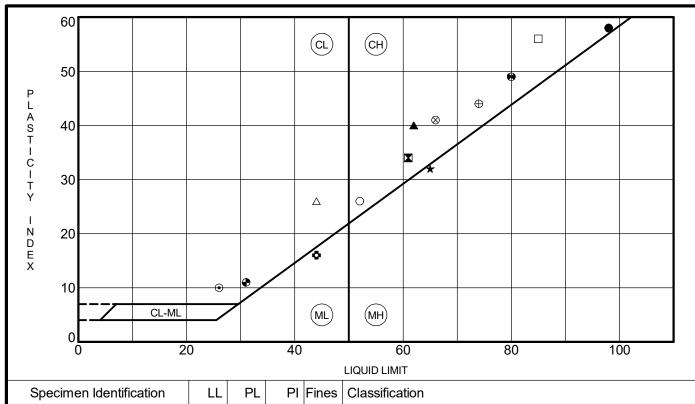
ATTERBERG LIMITS RESULTS



₽ P- 3 16 6.0 29 13 53 SANDY LEAN CLAY(CL), A-6 (5) O P- 4 3.5 30 16 14 SANDY LEAN CLAY(CL), A-6 (5) △ P- 5 3.5 41 23 18 54 SANDY LEAN CLAY(CL) ⊗ P- 6 13.5 81 38 43 79 **ELASTIC SILT(MH), A-7-5 (39)** ⊕ P- 7 6.0 36 19 17 29 CLAYEY SAND(SC), A-2-6 (1) □ P-8 0.5 32 16 16 55 SANDY LEAN CLAY(CL), A-6 (6) **⊕** P-9 8.5 23 15 CLAYEY SAND(SC), A-2-6 (1) 38 **₽** P-10 16 CLAYEY SAND(SC), A-6 (2) 3.5 30 14 39 **☆ W-1** 0.5 27 16 11 49 CLAYEY SAND(SC), A-6 (2) AB.GDT ස W- 1 3.0 22 15 7 40 SILTY, CLAYEY SAND(SC-SM), A-4 (0) ■ W- 2 6.0 46 19 27 42 | CLAYEY SAND(SC), A-7-6 (6) ♦ W-3 6.0 29 20 9 57 SANDY LEAN CLAY(CL), A-4 (3) A24138.00136.001 7 ♦ W- 3 17 8.5 24 SANDY SILTY CLAY(CL-ML), A-4 (1) 51 W-4 \times 8.5 48 22 26 SANDY LEAN CLAY(CL), A-7-6 ***** W- 4 18.0 33 21 12 28 CLAYEY SAND(SC), A-2-6 (0) ATTERBERG LIMITS



ATTERBERG LIMITS RESULTS



	EIQOID EIIVIT									
	Specimen Identification		PL	PI	Fines	Classification				
•	W- 5 8.0	98	40	58	93	FAT CLAY(CH), A-7-5 (66)				
X	W- 5 18.5	61	27	34	79	FAT CLAY with SAND(CH), A-7-6 (29)				
_	W- 6 1.0	62	22	40	91	FAT CLAY(CH), A-7-6 (40)				
*	W- 6 6.0	65	33	32	86	ELASTIC SILT(MH), A-7-5 (32)				
•	W- 7 5.0	26	16	10	47	CLAYEY SAND(SC), A-4 (2)				
٥	W- 7 6.0	44	28	16	80	SILT with SAND(ML), A-7-6 (14)				
0	W- 8 1.0	52	26	26	81	FAT CLAY with SAND(CH), A-7-6 (22)				
Δ	W- 9 2.0	44	18	26	62	SANDY LEAN CLAY(CL), A-7-6 (14)				
\otimes	W-10 3.5	66	25	41	87	FAT CLAY(CH), A-7-6 (40)				
\oplus	W-10 8.0	74	30	44	80	FAT CLAY with SAND(CH), A-7-5 (38)				
	W-11 3.5	85	29	56	92	FAT CLAY(CH), A-7-6 (59)				
8	W-11 7.0	80	31	49	68	SANDY FAT CLAY(CH), A-7-5 (34)				
•	WB- 1 6.0	31	20	11	59	SANDY LEAN CLAY(CL), A-6 (4)				
5										
9										
5										
9										



US_ATTERBERG_LIMITS_A24138.00136.001.GPJ_US_LAB.GDT_6/17/25

ATTERBERG LIMITS RESULTS



UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ON COHESIVE SOILS ASTM D2850

CLIENT: HMB Professional Engineers, LLC DATE: 4/9/2025

PROJECT NO.: A24138.00136.001

PROJECT: PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River

LOCATION: Smith County, TN

BORING NO.: W-5 SAMPLE NO.: ST-4 DEPTH (ft.): 8.0-10.0

SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed

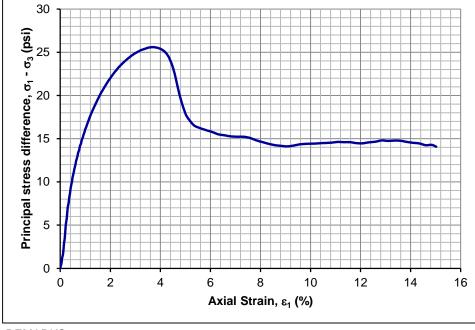
SAMPLE DESCRIPTION: Stiff, brown and orange, FAT CLAY - (CH)

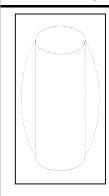
LIQUID LIMIT (%): 98 PLASTIC LIMIT (%): 40 PLASTICITY INDEX (%): 58 USCS: CH

SPECIFIC GRAVITY OF SOLIDS: 2.75 (Assumed)

LOAD CELL NO.:

INITIAL SAMPLE DATA FAILURE DATA*** AVERAGE DIAMETER (in.): 2.85 MOISTURE CONTENT AFTER FAILURE (%)**: 30.0 HEIGHT (in.): AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.): 1.0 5.89 **HEIGHT TO DIAMETER RATIO:** AXIAL STRAIN AT FAILURE (%): 3.8 2.07 WET UNIT WEIGHT (pcf): 122.9 PRINCIPAL STRESS DIFFERENCE AT FAILURE, σ_1 - σ_3 (psi): 25.6 5.3 DRY UNIT WEIGHT (pcf): 96.0 MINOR PRINCIPAL STRESS AT FAILURE, σ₃ (psi): **VOID RATIO:** 0.79 MAJOR PRINCIPAL STRESS AT FAILURE, σ₁ (psi): 30.9 MOISTURE CONTENT (%)*: 28.0 UNDRAINED COMPRESSIVE STRENGTH, Uu (psf): 3,680 DEGREE OF SATURATION (%): 97.7 UNDRAINED SHEAR STRENGTH, s, (psf): 1,840 LIMITING UNDRAINED COMP. STRESS @ 10% STRAIN (psf): N/A





FAILURE SHAPES

REMARKS:

^{*} Initial moisture content determined from sample cuttings.

^{**} Final moisture content determined from entire sample.

^{***} Failure stress values have been corrected for membrane effects.



UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST ON COHESIVE SOILS ASTM D2850

CLIENT: HMB Professional Engineers, LLC DATE: 4/9/2025

PROJECT NO.: A24138.00136.001

PROJECT: PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River

LOCATION: Smith County, TN

BORING NO.: W-10 SAMPLE NO.: ST-4 DEPTH (ft.): 8.0-10.0

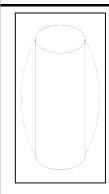
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed SAMPLE DESCRIPTION: Very stiff, brown and orange, FAT CLAY with SAND - (CH)

LIQUID LIMIT (%): 74 PLASTIC LIMIT (%): 30 PLASTICITY INDEX (%): 44 USCS: CH

SPECIFIC GRAVITY OF SOLIDS: 2.75 (Assumed) LOAD CELL NO.:

INITIAL SAMPLE DATA		FAILURE DATA***	
AVERAGE DIAMETER (in.):	2.86	MOISTURE CONTENT AFTER FAILURE (%)**:	23.6
HEIGHT (in.):	5.89	AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	1.0
HEIGHT TO DIAMETER RATIO:	2.06	AXIAL STRAIN AT FAILURE (%):	10.3
WET UNIT WEIGHT (pcf):	124.8	PRINCIPAL STRESS DIFFERENCE AT FAILURE, σ_1 - σ_3 (psi):	39.6
DRY UNIT WEIGHT (pcf):	99.0	MINOR PRINCIPAL STRESS AT FAILURE, σ_3 (psi):	5.3
VOID RATIO:	0.73	MAJOR PRINCIPAL STRESS AT FAILURE, σ_1 (psi):	44.9
MOISTURE CONTENT (%)*:	26.1	UNDRAINED COMPRESSIVE STRENGTH, Uu (psf):	5,700
DEGREE OF SATURATION (%):	97.6	UNDRAINED SHEAR STRENGTH, s _u (psf):	2,850
		LIMITING UNDRAINED COMP. STRESS @ 10% STRAIN (psf):	5,695
45		FAILURE SHAPES	

45 6° 35 15 10 0 0 2 4 4 6 8 10 12 14 16 Axial Strain, ε₁ (%)



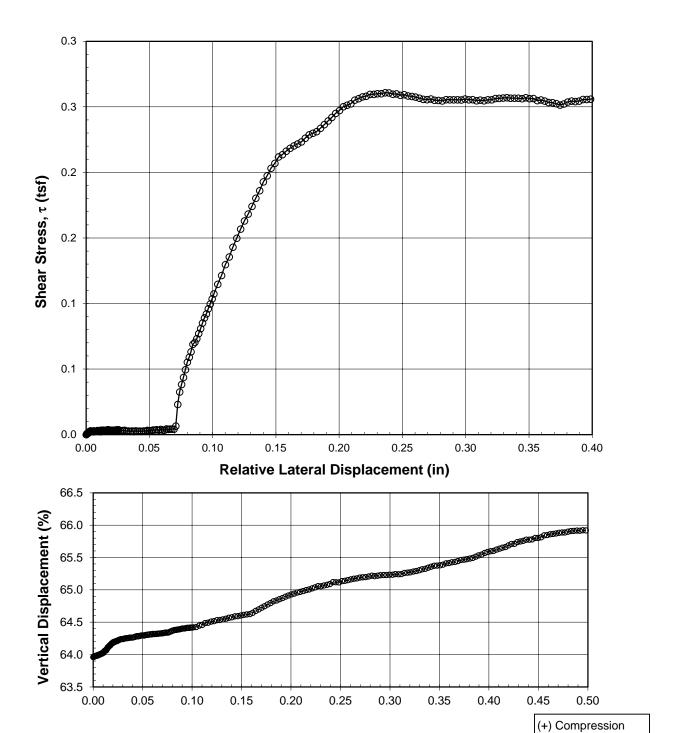
REMARKS:

^{*} Initial moisture content determined from sample cuttings.

^{**} Final moisture content determined from entire sample.

^{***} Failure stress values have been corrected for membrane effects.





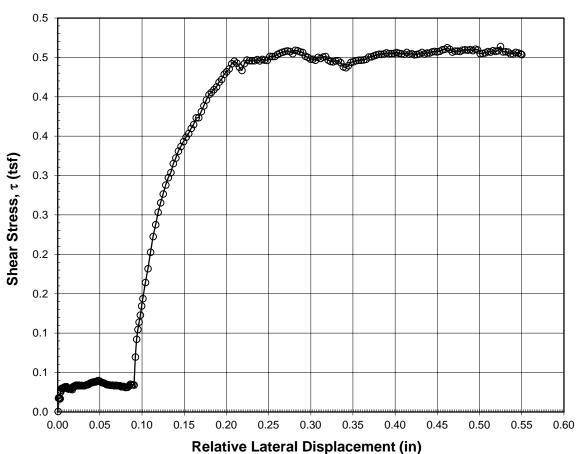
(-) Dilation

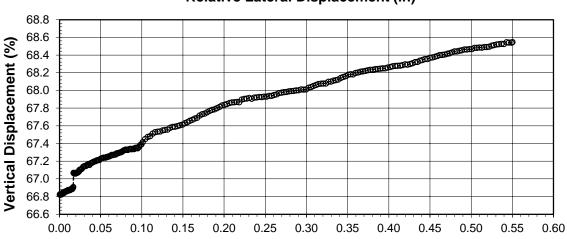
ASTM D 3080 Boring: W-3

Sample: ST-3 - Depth: 8 ft

 $\sigma'_{v,c} = 5.00$ PSI





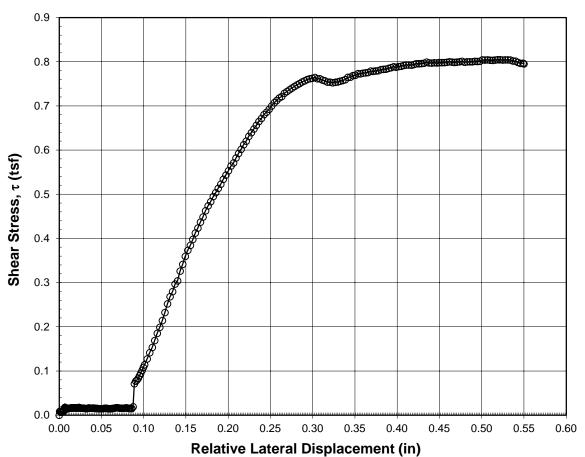


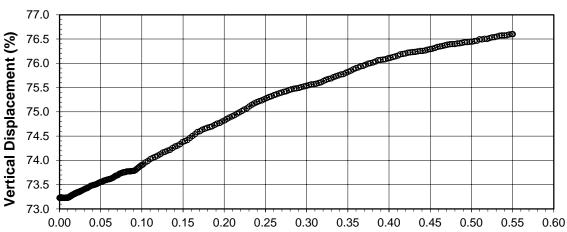
(+) Compression (-) Dilation

ASTM D 3080 Boring: W-3

Sample: ST-3 - Depth: 6 ft $\sigma'_{v,c} = 10.00$ PSI







(+) Compression (-) Dilation

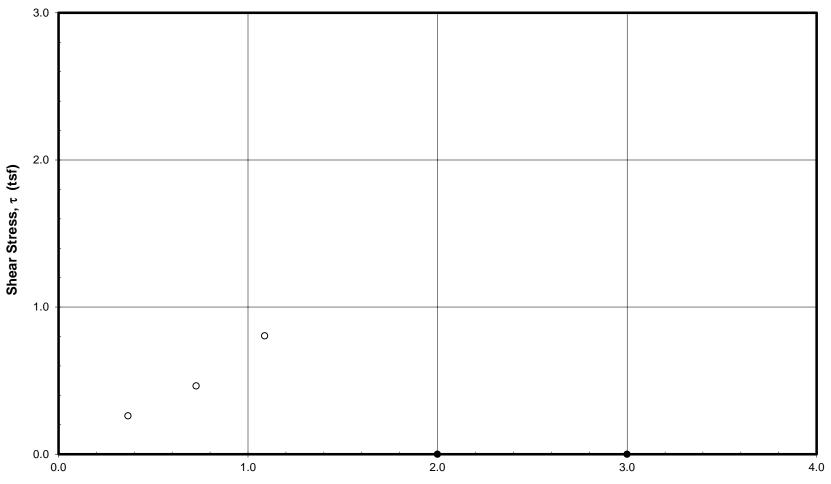
ASTM D 3080

Boring: W-3

Sample: ST-3 - Depth: 6 ft

 $\sigma'_{v,c} = 15.00 \text{ PSI}$





Effective Normal Stress, $\sigma'_n = \sigma'_{v,c}$ (tsf)

ASTM D 3080

Boring: W-3 Sample: ST-3 -Depth: 8ft



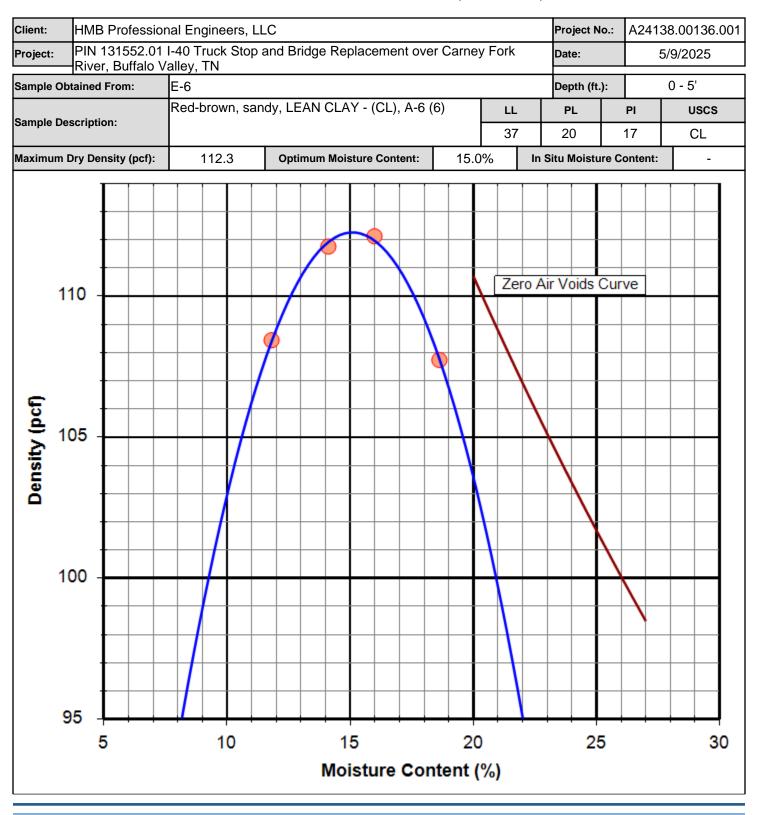
Appendix E
SUMMARY OF COMPACTION AND CBR TEST RESULTS



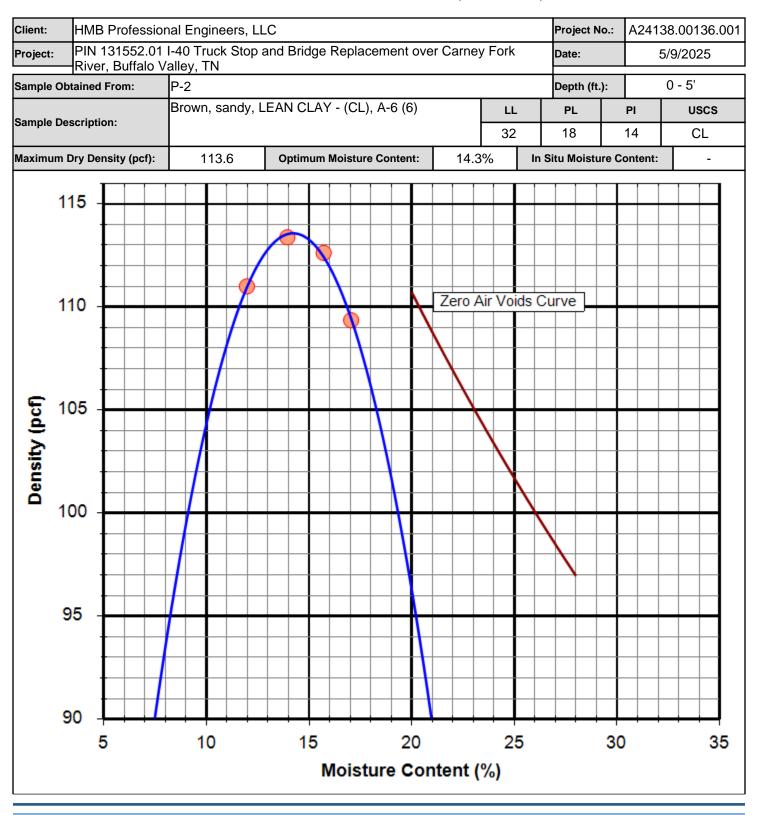
Summary of Compaction and CBR Test Results.

			Liquid Limit (%)	(%)	Proctor Results		CBR Results				* (%
Boring No.	Depth (ft.)	USCS/ AASHTO		Plastic Limit (%)	Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Blows per Layer	Dry Unit Weight (pcf)	Moisture Content (%) *	CBR	Percent Compaction (%) *
E-6	0 to 5	CL/ A-6 (7)	37	19	112.3	15.0	25 56	108.5 115.0	14.4 14.2	5.9 6.2	96.6 102.4
P-2	0 to 5	CL/ A-6 (6)	32	18	18 113.6	14.3	10 25	98.7 109.7	14.3 14.4	1.6 6.2	86.9 96.6
P-5	1 to 10	CL/	41	23	112.6	15.5	56 25	114.1 109.3	14.5 15.9	6.4 5.1	100.4 97.1
1 0	1 10 10	A-7-6 (7)	-	20	112.0	10.0	56 10	112.8 100.3	15.8 12.8	3.9 2.0	100.2 85.9
P-8	0 to 5	CL/ A-6 (6)	32	16	116.8	13.3	25 56	112.2 117.8	12.8 13.0	7.5 8.1	96.1 100.9
10/ 4	0.45 5	SC/ A-6 (2)	07	16	114.8	14.0	10	105.2	13.3	2.5	91.6
W-1	0 to 5		27				25 56	113.9 117.2	13.4 13.4	3.2 5.8	99.2 102.1
W-7	1 to 5	SC/ A-4 (2)	26	16	108.6	15.6	25 56	98.4 107.6	14.1 13.7	0.9 1.5	90.6 99.1
W-11	1 to 7	CH/ A-7-5 (34)	80	31	96.5	23.0	10 25	81.0 92.7	22.2	0.4	83.9 96.1
VV-11			60	31	90.0		56	93.4	21.8	3.4	96.8

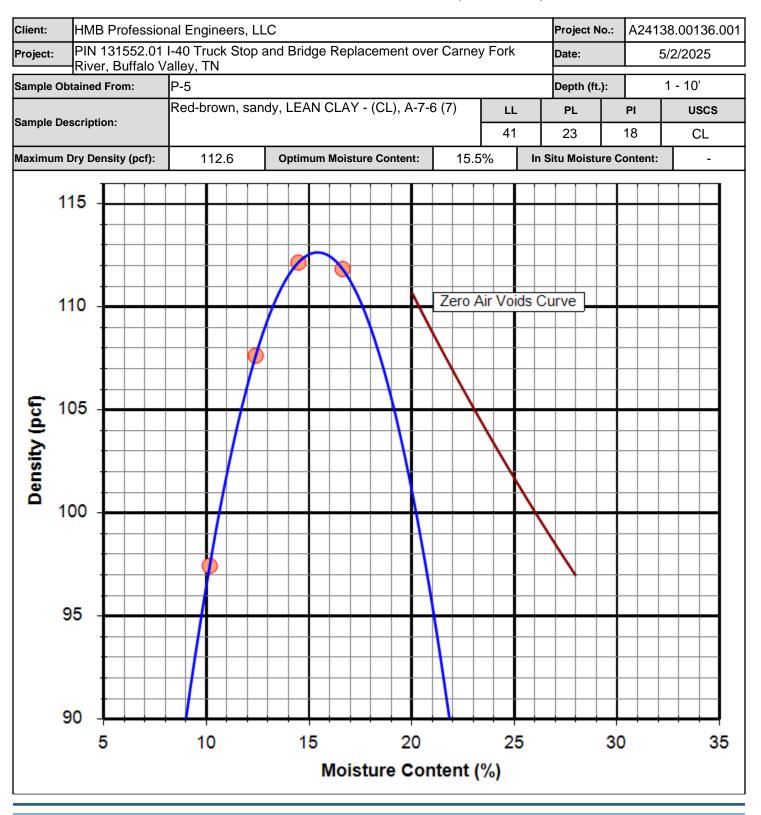




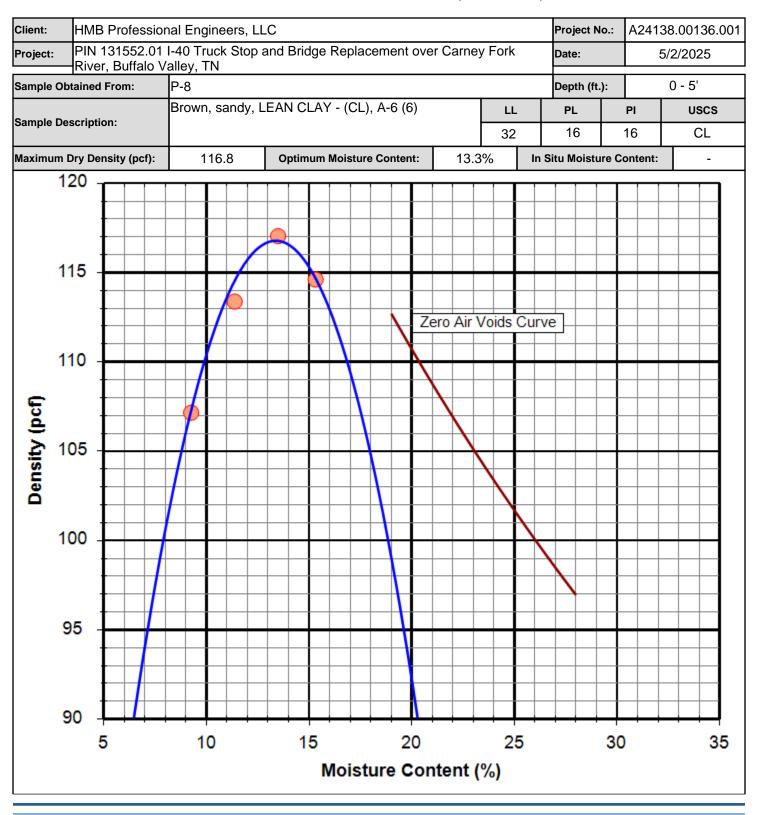




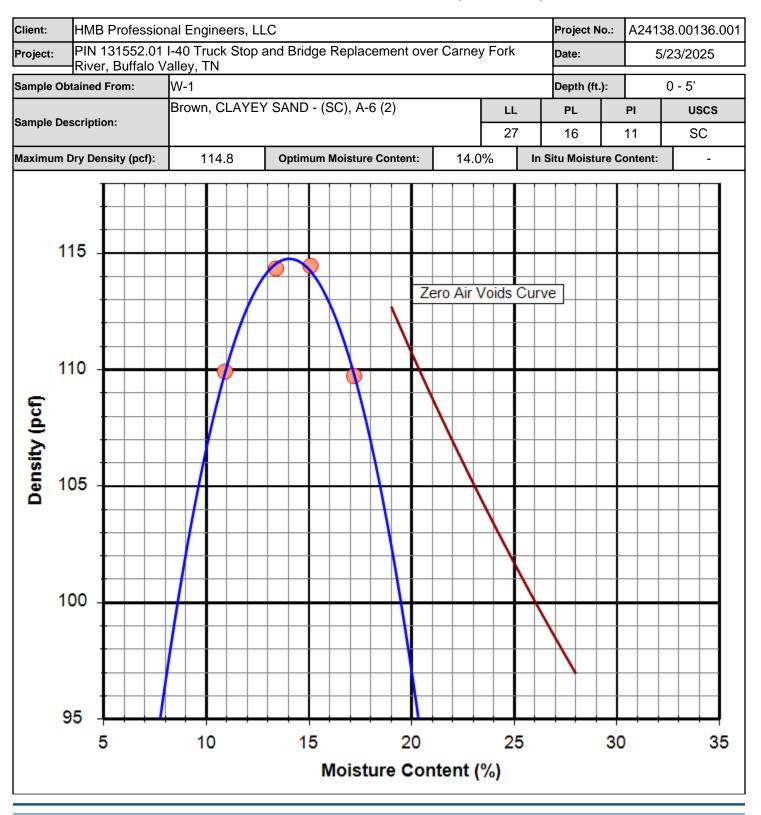








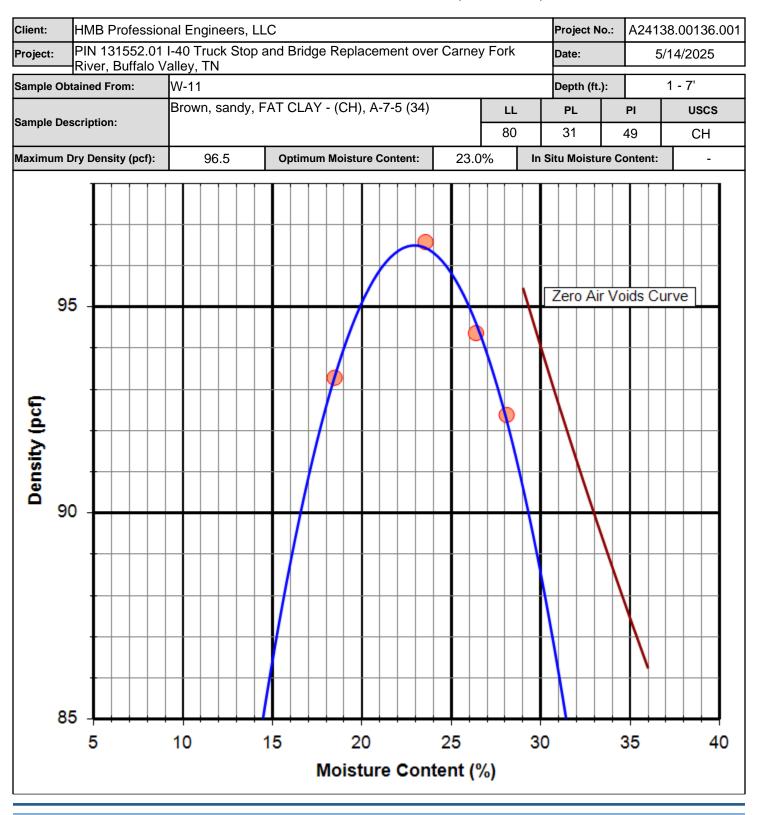






Client:	HMB Profess	ional Engineers, L	LC		Project No.: A241		138.00136.001		
Project	River, Buffalo Valley, TN								
Sample	Sample Obtained From: W-7 Depth (ft.): 1 - 5'								
Sample	Description:	Brown, CLAYE	LL	PL	PI	USCS			
			1	ntent: 15.6	26 16		10	SC	
Maximu	um Dry Density (pcf)	108.6	Optimum Moisture Co	Situ Moisture (Content:	-			
	110				Zero Air V	oids Curve			
			 <mark>7 </mark>	 	ZCIOAIIV	olus Oul VC			
(bcf)	105								
Density (pcf)	100								
	95								
	90 5	10	15 Moisture	20 e Content (25	30	0	35	
					•				







Appendix F
PAVEMENT CORE PHOTOGRAPHS



I-40 Bridge Replacement / Rest Area Truck Parking Smith-Putnam County, Tennessee

Boring EB-1 (Lane) 545+07.0 | 47.0 RT

A24138.00136.001

Photograph 1

Description: 21 ½ inches of asphalt. Photograph taken on May 22, 2025.



I-40 Bridge Replacement/ Rest Area Truck Parking Smith-Putnam County, Tennessee

Boring EB-1 (Shoulder) 545+07.0 | 47.0 RT

A24138.00136.001

Photograph 2

Description: 16 ¾ inches of asphalt. Photograph taken on May 22, 2025.



I-40 Bridge Replacement / Rest Area Truck Parking Smith-Putnam County, Tennessee

Boring EB-2 (Lane) 551+07.5 | 39.0 RT

A24138.00136.001

Photograph 3

Description: 21 ¼ inches of asphalt. Photograph taken on May 22, 2025.



I-40 Bridge Replacement/ Rest Area Truck Parking Smith-Putnam County, Tennessee

Boring EB-2 (Shoulder) 551+07.5 | 39.0 RT

A24138.00136.001

Photograph 4

Description: 8 ½ inches of asphalt. Photograph taken on May 22, 2025.



I-40 Bridge Replacement / Rest Area Truck Parking Smith-Putnam County, Tennessee

Boring WB-1 (Lane) 541+01.5 | 14.5 LT

A24138.00136.001

Photograph 5

Description: 24 ½ inches of asphalt. Photograph taken on May 22, 2025.



I-40 Bridge Replacement/ Rest Area Truck Parking Smith-Putnam County, Tennessee

Boring WB-1 (Shoulder) 541+01.5 | 14.5 LT

A24138.00136.001

Photograph 6

Description: 9 ½ inches of asphalt. Photograph taken on May 22, 2025.



I-40 Bridge Replacement / Rest Area Truck Parking						
Smith-Putnam County, Tennessee						
Boring WB-2 (Lane) 552+41.5 13.5 LT						
A24138.00136.001	Photograph 7					
Description: 18 ¾ inches of asphalt.						
Photograph taken on May 22, 2025.						



I-40 Bridge Replacement/ Rest Area Truck Parking Smith-Putnam County, Tennessee					
Boring WB-2 (Shoulder) 552+41.5 13.5 LT					
A24138.00136.001	Photograph 8				
Description: 5 ¼ inches of asphalt. Photograph taken on May 22, 2025.					