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
TDOT PIN 131552.01
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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,

UES

Amber Meadows
Project Manager

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

ABM/ASE:jtm

Copies submitted: Client (email)

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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 plans[1], 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 El[2] 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-values[3], 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 (RQD[4]) 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
BR-3[2]	548+28.0 | 15.5 LT	Asphalt	4
		Concrete	14
		Void Space	32
		Concrete	7.5
BR-4[2]	549+09.5 | 17.5 RT	Asphalt	4.25
		Concrete	13.75
		Void Space	24
BR-5	550+20.0 | 9.0 RT	Asphalt	5
		Base Materials: crushed limestone and sand	13
E-1	519+98.0| 67.0 RT	Asphalt	7
		Base Materials: crushed limestone and sand	12
E-2	523+87.5 | 60.0 RT	Asphalt	7.5
		Base Materials: crushed limestone and sand	10.5
E-3	527+81.5 | 101.5 RT	Asphalt	5
		crushed limestone and sand	11
E-4	533+96.5 | 44.0 RT	Asphalt	7
		Base Materials: crushed limestone and sand	35
E-5	534+17.0 | 116.5 RT	Topsoil	3
E-6	538+18.0 | 52.0 RT	Asphalt	4
		Base Materials: crushed limestone and sand	38
E-7	537+89.0 | 112.11 RT	Topsoil	3
E-8	542+58.0 | 52.0 RT	Asphalt	8
		Base Materials: crushed limestone and sand	34
E-9	542+48.5 | 152.0 RT	Topsoil	2
EB-1	545+07.0 | 47.0 RT	Asphalt	13
		Base Materials: crushed limestone and sand	29
EB-1 (lane)[3]		Asphalt	21.5
EB-1 (shoulder)[3]		Asphalt	16.75
EB-2	551+07.5 | 39.0 RT	Asphalt	5
		Base Materials: crushed limestone and sand	37
EB-2 (lane)[3]		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	Topsoil	4
P-7	526+17.5 | 489.0 LT	Topsoil	4
P-8	527+89.0 | 395.0 LT	Topsoil	3
P-9	531+12.5 | 322.5 LT	Asphalt	4
		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
W-2	528+81.0 | 126.0 LT	Asphalt	10
		Base Materials: crushed limestone and sand	32
W-3	529+05.5 | 51.5 LT	Topsoil	3
W-4	511+50.5 | 70.0 LT	Asphalt	12
		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
W-7	518+43.0 | 98.5 LT	Asphalt	10
		Base Materials: crushed limestone and sand	10
W-8	521+73.0 | 103.0 LT	Topsoil	15
W-9	521+88.5 | 35.0 LT	Asphalt	16
		Base Materials: crushed limestone and sand	9
W-10	524+76.0 | 104.5 LT	Topsoil	3
W-11	525+06.07 | 36.0 LT	Asphalt	9
		Base Materials: crushed limestone and sand	33
WB-1	541+01.5 | 14.5 LT	Asphalt	12
		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	7
		Base Materials: crushed limestone and sand	35
WB-2 (lane)[3]		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.
[2] Borings drilled through the bridge deck; thicknesses shown are in reference to the bridge deck.
[3] Pavement core

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

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 (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).

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 TESTED	BORING NO.	CORE NO.	DEPTH FT	DIAMETER IN	LENGTH IN	DENSITY LBS/FT³	LOAD LBS	STRENGTH PSI
5/30/2025	BR-1	1	57.50	1.98	4.00	169.1	34,887	11,290
5/30/2025		3	64.50	1.99	4.19	167.3	48,549	15,664
5/30/2025	BR-2	1	41.25	1.99	4.01	168.3	33,694	10,882
5/30/2025		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	BR-3	1	8.25	1.99	4.04	168.3	45,541	14,709
5/30/2025		2	16.60	1.99	4.08	169.0	24,154	7,801
5/30/2025		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	BR-4	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		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	BR-5	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		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 not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

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

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

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

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

Read this Report in Full

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

You Need to Inform Your Geotechnical Engineer About Change

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

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

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

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

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

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

This Report's Recommendations Are Confirmation-Dependent

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

This Report Could Be Misinterpreted

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

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

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

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

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

Geoenvironmental Concerns Are Not Covered

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

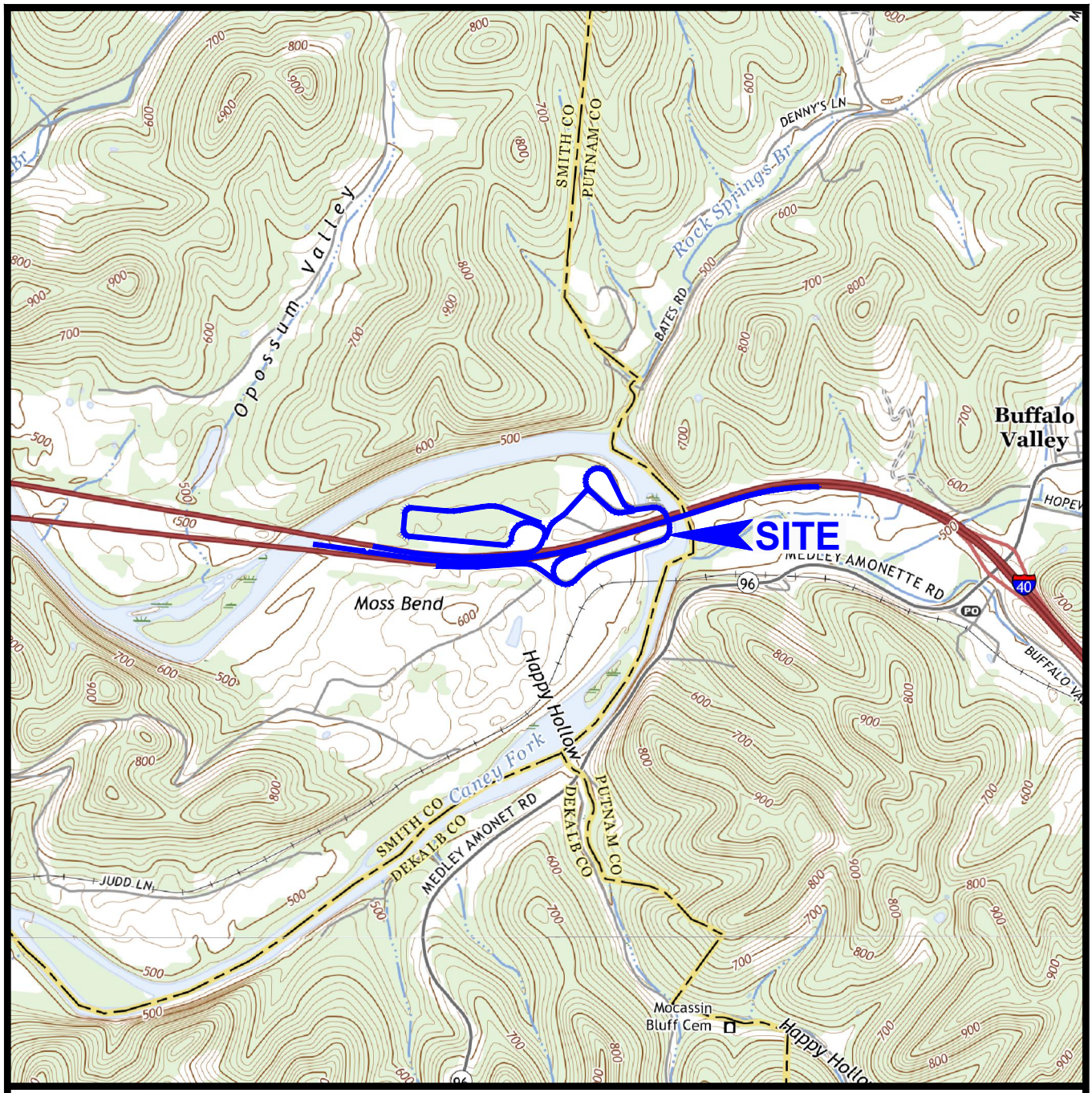
Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

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

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Appendix B
FIGURES



NOTES

1. Plan adapted from 7.5 minute U.S.G.S. maps for Buffalo Valley and Center Hill Dam, Tennessee quadrangles, last revised in 2022.

0 2,000 4,000

SCALE IN FEET

N

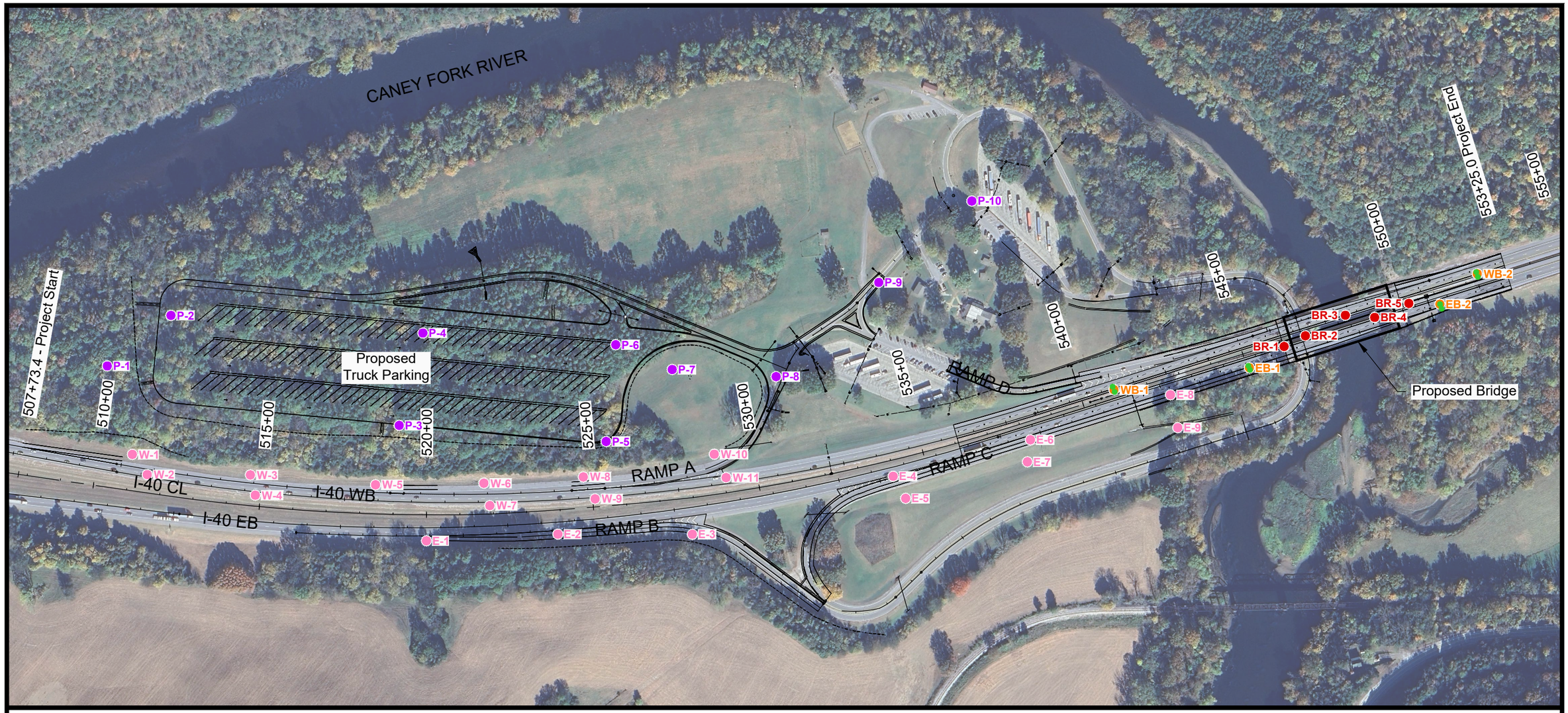
Drawn By: WAH	Ck'd By: JTM	App'vd By:ABM
Date: 5-19-25	Date: 6-12-25	Date: 6-12-25

UES™

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

SITE LOCATION AND TOPOGRAPHY

Project Number A24138.00136.001	FIGURE 1



0 300 600

SCALE IN FEET

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

N

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

UES

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

Surface Elevation: 518.3
Datum NAVD88
Completion Date: 5/10/25
Station: 546+25
Offset: 18

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 20 inches		
		Stiff, brown, sandy, LEAN CLAY, trace gravel - CL		
5	513		7-4-6	SS1
		Medium stiff, brown, sandy, LEAN CLAY and gravel - CL	2-3-2	SS2
10	508	Medium stiff, brown, sandy, LEAN CLAY, trace organics and gravel - (CL) 53% passing No. 200 sieve	3-2-3	SS3
15	503		3-3-5	*SS4
20	498		2-3-4	SS5
25	493		3-3-3	SS6
30	488	Medium stiff, brown, FAT CLAY, some sand, trace gravel - (CH) 73% passing No. 200 sieve	4-4-4	SS7
35	483	Medium dense, brown, CLAYEY GRAVEL, some sand - (GC) 32% passing No. 200 sieve	7-7-10	SS8
40	478	Stiff, gray, sandy SILT, trace clay - ML 52% passing No. 200 sieve	3-5-5	SS9
45	473	Medium dense, brown and gray SAND, trace clay, silt and gravel - SP-SC 6% passing No. 200 sieve	5-7-5	SS10
50	468	Medium dense, brown GRAVEL - GP	3-4-8	SS11
55	463	Very dense, brown GRAVEL and sand - GP	4-11-25	SS12
			3-12-26	SS13
60	458	Strong to very strong, gray, very finely to medium crystalline, thin to medium bedded, slightly weathered to unweathered, fossiliferous, argillaceous LIMESTONE Uniaxial Compressive Strength = 11,290 psi	97% 65%	NQ1
65	453	1-inch core loss Uniaxial Compressive Strength = 15,664 psi	98% 95%	NQ2
		4-inch core loss	83%/83%	NQ3
70	448	Boring terminated at 66.5 feet		
75	443			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

61 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

ENCOUNTERED AT 43.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM 45 FEET
JCG/KJB DRILLER JWT/JJA LOGGER
CME 550X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 88 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 5/21/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: BR-1

Project No. A24138.00136.001

Surface Elevation: 499.4
Datum NAVD88
Completion Date: 4/29/25
Station: 546+96
Offset: 7

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 14 inches		
		Medium stiff, brown and gray, sandy, LEAN CLAY, some gravel - CL	4-4-3	SS1
				ST2
5	494	Loose, brown and gray, CLAYEY SAND, little gravel - (SC)	2-2-2	SS3
		49.6% passing No. 200 sieve		ST4
10	489	Brown and gray, CLAYEY GRAVEL, little sand - (GC)		
		30% passing No. 200 sieve		
15	484	Medium stiff, gray and brown, sandy, LEAN CLAY - (CL)	1-3-4	SS5
		some gravel		
20	479	50% passing No. 200 sieve	2-3-3	SS6
25	474	Loose to dense, brown SAND and gravel, trace silt and clay - SP-SM	2-5-13	SS7
		8% passing No. 200 sieve		
30	469	5% passing No. 200 sieve	5-13-18	SS8
35	464		1-2-6	SS9
40	459	Medium dense, brown GRAVEL and sand - GP	5-9-13	SS10
		Strong, gray, very finely to medium crystalline, thin to medium bedded, slightly weathered to unweathered, fossiliferous, argillaceous LIMESTONE	100% / 65%	NQ1
45	454	Uniaxial Compressive Strength = 10,882 psi		
		Uniaxial Compressive Strength = 14,496 psi	100% / 96%	NQ2
50	449	Uniaxial Compressive Strength = 14,366 psi	100% / 68%	NQ3
55	444	Gray to black, aphanitic to finely grained, thin to medium bedded, slightly to moderately weathered, calcareous SHALE interbedded with gray limestone	100% / 41%	NQ4
60	439	2-inch highly weathered clayey shale seam		
		Gray to black, aphanitic to finely grained, medium bedded, highly to moderately weathered SHALE		
65	434	Boring terminated at 59.8 feet		
70	429			
75	424			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

71 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/4/25

GROUNDWATER DATA

ENCOUNTERED AT 30 FEET ▽
AT 28 FEET AFTER 16 HOURS ▼

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM 35 FEET
JCG DRILLER EER LOGGER
CME 550X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 88 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 5/21/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: BR-2

Project No. A24138.00136.001

Surface Elevation: 467.4
Datum NAVD88
Completion Date: 5/8/25
Station: 548+28
Offset: -15

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Medium dense, gray and brown SAND, trace gravel and clay - SP 4% passing No. 200 sieve	1-2-8	SS1
5	462		50/4"	*SS2
10	457	Strong, gray, very finely to medium crystalline, thin to medium bedded, slightly weathered to unweathered, fossiliferous, argillaceous LIMESTONE Uniaxial Compressive Strength = 14,709 psi 2.5-inch core loss	95% 81%	NQ1
15	452	1-inch core loss Uniaxial Compressive Strength = 7,801 psi	98% 98%	NQ2
20	447	Uniaxial Compressive Strength = 13,756 psi	100% 100%	NQ3
25	442	Gray, very finely to medium crystalline, thin bedded, slightly weathered, argillaceous LIMESTONE interbedded with shale and mudstone 1-inch core loss 1-inch core loss 3-inch clay layer	97% 39%	NQ4
30	437	Gray to black, aphanitic to finely grained, medium bedded, highly to moderately weathered SHALE and mudstone 3.5-inch clay layer	98% 72%	NQ5
35	432	Strong, gray, medium crystalline, thin bedded, slightly weathered to unweathered, fossiliferous and argillaceous LIMESTONE Uniaxial Compressive Strength = 14,951 psi		
40	427	Boring terminated at 32 feet.		
45	422			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

S-4"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020.JDM - ELEVATIONS A24138.00136.001.GPJ GTINC.0638301.GPJ 6/16/25

GROUNDWATER DATA

ENCOUNTERED AT 0 FEET ▽

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM 0 FEET
JCG DRILLER JWT LOGGER
CME 550X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 88 %

REMARKS: Station and offset are in reference to I-40.
Bridge Deck - Asphalt: 4 inches | Concrete: 14 inches | Void space: 32 inches | Concrete: 7.5 inches | Top of bridge deck to mudline: 53 feet

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 5/21/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: BR-3

Project No. A24138.00136.001

Surface Elevation: 473.2
Datum NAVD88
Completion Date: 5/1/25
Station: 549+10
Offset: 18

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Medium dense, red and brown GRAVEL and sand, trace clay - GC		
		10% passing No. 200 sieve	13-7-5	SS1
5	468			
		Loose, red and brown GRAVEL, some sand, trace clay - GW	5-3-4	SS2
		4% passing No. 200 sieve		
10	463	Gray, very finely to medium crystalline, highly weathered, argillaceous, LIMESTONE	100% / 100%	NQ1
		Medium strong to very strong, gray, very finely to medium crystalline, thin to medium bedded, slightly weathered to unweathered, fossiliferous, argillaceous LIMESTONE	100% / 93%	NQ2
15	458	Uniaxial Compressive Strength = 7,539 psi		
		Uniaxial Compressive Strength = 5,037 psi		
		Uniaxial Compressive Strength = 7,741 psi	100% / 100%	NQ3
20	453			
		Uniaxial Compressive Strength = 17,877 psi	100% / 100%	NQ4
25	448			
		Uniaxial Compressive Strength = 12,898 psi	100% / 82%	NQ5
30	443	Gray to black, aphanitic to finely grained, medium bedded, slightly weathered calcareous SHALE interbedded with limestone and mudstone		
		Gray to black, aphanitic to finely grained, thin to medium bedded, highly to moderately weathered SHALE and mudstone	100% / 80%	NQ6
35	438	Gray, very finely to medium crystalline, thin to medium bedded, slightly weathered to unweathered, fossiliferous, argillaceous LIMESTONE	100% / 81%	NQ7
40	433	Boring terminated at 39.9 feet		
45	428			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020.JDM - ELEVATIONS A24138.00136.001.GPJ GTINC.0638301.GPJ 6/16/25

GROUNDWATER DATA

ENCOUNTERED AT 0 FEET ▽

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM 0 FEET
JCG DRILLER EER LOGGER
CME 550X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 88 %

REMARKS: Station and offset are in reference to I-40.
Bridge Deck - Asphalt: 4.25 inches | Concrete: 13.75 inches | Void space: 24 inches | Top of bridge deck to mudline: 48 feet

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 5/22/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: BR-4

Project No. A24138.00136.001

Surface Elevation: 521.8
Datum NAVD88
Completion Date: 5/2/25
Station: 550+19
Offset: 9

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 5 inches		
		Base Material: 13 inches gray and white crushed limestone and sand	4-5-3	SS1
		Medium stiff to hard, brown and gray, sandy, LEAN CLAY, trace gravel - (CL)	1-9-31	SS2
5	517	Gray, highly weathered LIMESTONE		
		Medium strong to very strong, gray, very finely to coarsely crystalline, thin to medium bedded, moderately weathered to unweathered, argillaceous LIMESTONE	98% / 70%	NQ1
10	512	1-inch core loss		
		Uniaxial Compressive Strength = 5,543 psi		
		2-inch brown clay seam	98% / 92%	NQ2
		vuggy		
		Uniaxial Compressive Strength = 15,692 psi		
15	507	1-inch core loss		
		Uniaxial Compressive Strength = 13,557 psi	100% / 100%	NQ3
		vuggy		
20	502		100% / 100%	NQ4
		calcite infilled vug		
25	497		100% / 100%	NQ5
		vuggy		
		Uniaxial Compressive Strength = 13,517 psi		
30	492	Uniaxial Compressive Strength = 14,107 psi	97% / 97%	NQ6
35	487	1.5-inch core loss		
		Boring terminated at 35.2 feet.		
40	482			
45	477			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM 5 FEET
JCG DRILLER EER LOGGER
CME 550X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 88 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 5/22/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: BR-5

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 537.8
Datum NAVD88
Completion Date: 4/16/25
Station: 519+98
Offset: 67

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 7 inches		
		Base Material: 12 inches gray and white crushed limestone and sand	12-6-9	SS1
		Stiff, red and brown, clayey, ELASTIC SILT, little sand, trace gravel - (MH)		
		76% passing No. 200 sieve	2-5-8	SS2
5	533			
		Stiff, red and brown, LEAN CLAY, some sand and gravel - CL	2-4-7	SS3
		Medium stiff, brown, FAT CLAY, trace sand and organics - CH	1-3-3	SS4
10	528			
		Brown and gray, sandy, LEAN CLAY, little gravel - (CL)	97	ST5
		70% passing No. 200 sieve	50/1"	SS6
15	523	Gray LIMESTONE		
		Boring terminated at 14.8 feet due to auger refusal.		
20	518			
25	513			
30	508			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

66 >>

S-1"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 1

Project No. A24138.00136.001

Surface Elevation: 538.5
Datum NAVD88
Completion Date: 4/16/25
Station: 523+87
Offset: 60

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 7.5 inches		
		Base Material: 10.5 inches gray and white crushed limestone and sand	12-8-7	SS1
		Stiff, brown and gray, LEAN CLAY, some sand, trace organics - CL		
		Medium stiff, red and brown, FAT CLAY, little sand and gravel - CH	1-2-3	SS2
5	534			
		Red and brown, sandy, FAT CLAY, trace gravel - (CH) 55% passing No. 200 sieve	102	ST3
			1-2-2	SS4
10	529			
		Soft, red and brown, ELASTIC SILT, little sand - (MH) 89% passing No. 200 sieve	1-1-1	SS5
15	524			
		3-inches limestone fragments	5-17-15	SS6
		2-inches limestone fragments		
		Red and brown, sandy, FAT CLAY - CH	1-2-50/3"	SS7
		Gray LIMESTONE		
20	519	Boring terminated at 19.3 feet due to auger refusal.		
25	514			
30	509			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

9"

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 2

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 534.8
Datum NAVD88
Completion Date: 4/16/25
Station: 527+82
Offset: 101.6

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 5 inches			
		Base Material: 11 inches gray and white crushed limestone and sand		13-7-3	SS1
		Soft to stiff, red and brown, FAT CLAY, some sand, trace gravel - (CH)			
		79% passing No. 200 sieve		2-3-5	SS2
5	530				
				0-0-2	SS3
		Gray LIMESTONE		50/3"	SS4
		Boring terminated at 8.3 feet due to auger refusal.			
10	525				
15	520				
20	515				
25	510				
30	505				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

S-3"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 3

Project No. A24138.00136.001

Surface Elevation: 525.6
Datum NAVD88
Completion Date: 4/15/25
Station: 533+96
Offset: 44

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 7 inches		
		Base Material: 35 inches of gray and white crushed limestone and sand	19-36-29	SS1
		Medium stiff to stiff, red and brown, sandy, LEAN CLAY - (CL)	7-4-5	SS2
5	521	57% passing No. 200 sieve		ST3
			6-5-7	SS4
10	516	some gravel		
		trace gravel	2-3-4	SS5
15	511			
		Stiff, red and brown, sandy, SILTY CLAY - (CL-ML)	2-3-6	SS6
20	506	55% passing No. 200 sieve		
		Soft to medium stiff, red and brown, sandy, LEAN CLAY - CL	2-2-4	SS7
25	501			
			2-0-3	SS8
30	496	trace siderite concretions		
		Boring terminated at 30 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

65

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 4

Project No. A24138.00136.001

Surface Elevation: 518.8
Datum NAVD88
Completion Date: 3/28/25
Station: 534+17
Offset: 117

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches		
		Medium stiff to stiff, brown, silty, LEAN CLAY, little sand - (CL)	2-5-5	SS1
			2-2-3	SS2
5	514		2-3-3	SS3
		Brown and tan, CLAYEY SAND - (SC) 49.8% passing No. 200 sieve		ST4
10	509			
		Medium dense, red SAND, trace clay and organics - SP-SC	4-7-7	SS5
15	504			
		Medium dense, brown and gray, CLAYEY SAND and gravel - SC	6-8-6	SS6
20	499			
			5-4-7	SS7
25	494	▽		
		18% passing No. 200 sieve	5-5-6	SS8
30	489	Boring terminated at 30 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

ENCOUNTERED AT 25 FEET ▽

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 5

Project No. A24138.00136.001

Surface Elevation: 517.4
Datum NAVD88
Completion Date: 4/21/25
Station: 538+18
Offset: 52

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 4 inches		
		Base Material: 38 inches gray and white crushed limestone and sand	12-20-17	SS1
5	512	Stiff, brown, sandy, LEAN CLAY - (CL) 54% passing No. 200 sieve	3-6-7	SS2
		Medium dense, tan, SILTY SAND - (SM) 23% passing No. 200 sieve		ST3
10	507		4-5-5	SS4
		Loose to very dense, tan and orange SAND - SP	4-2-3	SS5
15	502			
20	497		12-17-21	SS6
		Very dense, brown SAND and gravel, trace clay - SP	8-15-17	SS7
25	492			
30	487	Medium stiff, brown, FAT CLAY - CH	9-4-3	SS8
		Boring terminated at 30 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER REP LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 0 to 5 feet.

Drawn by: REP	Checked by: JTM	App'vd. by: ABM
Date: 4/28/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 6

Project No. A24138.00136.001

Surface Elevation: 510.8
Datum NAVD88
Completion Date: 3/28/25
Station: 537+89
Offset: 112

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches			
		Medium stiff to stiff, brown, silty, LEAN CLAY, some sand - CL		3-3-4	SS1
		Brown, CLAYEY SAND - (SC) 38% passing No. 200 sieve			ST2
5	506				
		Medium dense, red to tan SAND, trace clay - SP-SC		4-6-9	SS3
		Medium stiff, gray and red, sandy, LEAN CLAY - (CL) 59% passing No. 200 sieve		2-3-4	SS4
10	501				
		Medium dense, red SAND, trace clay - SP		2-5-7	SS5
15	496				
		Very dense, red and brown, CLAYEY SAND and gravel - SC		11-15-17	SS6
20	491				
				4-6-3	SS7
25	486	Stiff, brown and black, sandy, FAT CLAY, little organics - CH			
		2-inch tan clayey sand seam		6-23-5	SS8
30	481	Brown and gray, sandy, CLAYEY GRAVEL - GC			
		Boring terminated at 30 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

ENCOUNTERED AT 23.5 FEET ▽

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 7

Project No. A24138.00136.001

Surface Elevation: 514.7
Datum NAVD88
Completion Date: 4/15/25
Station: 542+58
Offset: 52

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 8 inches			
		Base Material: 34 inches gray and white crushed limestone and sand		17-26-14	SS1
		Gray, LEAN CLAY and gravel - CL		50/4"	SS2
5	510	Boring terminated at 3.8 feet due to auger refusal.			
10	505				
15	500				
20	495				
25	490				
30	485				

SHEAR STRENGTH, tsf

Δ - UU/2 ○ - QU/2 □ - SV

0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE

(ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %

PL 10 20 30 40 50 LL

S-4"

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 8

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 493.0
Datum NAVD88
Completion Date: 3/28/25
Station: 542+48
Offset: 152

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 2 inches			
		Stiff, brown, sandy, LEAN CLAY, some organics - CL		4-4-5	SS1
		Medium stiff to hard, brown, LEAN CLAY, some limestone gravel - CL		5-2-3	SS2
5	488			4-11-20	SS3
				1-3-3	SS4
10	483				
		Very dense, gray and brown GRAVEL and sand, trace clay - GP-GC		5-11-19	SS5
15	478	8% passing No. 200 sieve ▽			
		Boring terminated at 18.7 feet due to auger refusal.		50/2"	SS6
20	473				
25	468				
30	463				

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

S-2"

GROUNDWATER DATA

ENCOUNTERED AT 15 FEET ▽

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: E- 9

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 516.7
Datum NAVD88
Completion Date: 4/15/25
Station: 545+07
Offset: 47

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 13 inches			
		Base Material: 29 inches gray and white crushed limestone and sand		26-41-35	SS1
		Red and brown, sandy, LEAN CLAY - (CL) 51% passing No. 200 sieve		3-4-50/4"	SS2
5	512	Boring terminated at 5.1 feet due to auger refusal.			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

SS1: 76
SS2: 10"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: EB-1

Project No. A24138.00136.001

Surface Elevation: 522.5
Datum NAVD88
Completion Date: 4/15/25
Station: 551+07
Offset: 39

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 5 inches			
		Base Material: 37 inches gray and white crushed limestone and sand			
				47-50/5"	SS1
		Red, FAT CLAY - (CH) 98% passing No. 200 sieve		2-3-50/3"	SS2
		Gray, highly weathered LIMESTONE			
5	518	Boring terminated at 4.8 feet due to auger refusal.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

5"
88
>>
9"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020.JDM - ELEVATIONS A24138.00136.001.GPJ GTINC.0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: EB-2

Project No. A24138.00136.001

Surface Elevation: 502.7
Datum NAVD88
Completion Date: 3/27/25
Station: 509+88
Offset: -375

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and wood debris: 3 inches			
		Stiff, brown, silty, LEAN CLAY, some sand - CL		1-3-6	SS1
		Stiff, brown, silty, sandy, LEAN CLAY, trace organics - CL		2-5-6	SS2
5	498			2-5-6	SS3
		Loose, brown and red, CLAYEY SAND - (SC) 38% passing No. 200 sieve		2-3-4	SS4
10	493				
		Soft, brown, sandy, FAT CLAY - CH		0-2-1	SS5
15	488	Boring terminated at 15 feet.			

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 1

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 499.1
Datum NAVD88
Completion Date: 3/28/25
Station: 538+69
Offset: -681

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and wood debris: 3 inches		
		Soft to medium stiff, brown, sandy, LEAN CLAY - (CL) 61% passing No. 200 sieve	1-3-5	SS1
			1-3-3	SS2
5	494	interbedded seams of clayey sand, trace organics	1-2-3	SS3
			0-1-1	SS4
10	489			
		Very loose, brown and red, CLAYEY SAND, trace gravel - SC trapped water	0-0-0	SS5
15	484	Boring terminated at 15 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 0 to 5 feet.

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 2

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 528.6
Datum NAVD88
Completion Date: 3/28/25
Station: 511+55
Offset: -551

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and wood debris: 12 inches		
		Soft to stiff, brown, sandy, LEAN CLAY - (CL) trace roots and organics	1-1-1	SS1
			1-2-2	SS2
5	524			
		53% passing No. 200 sieve	1-2-2	SS3
		some gravel	2-5-6	SS4
10	519			
		trace gravel	2-4-4	SS5
15	514	Boring terminated at 15 feet.		

GRAPHIC LOG

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 3

Project No. A24138.00136.001

Surface Elevation: 526.3
Datum NAVD88
Completion Date: 3/28/25
Station: 519+12
Offset: -278

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and wood debris: 7 inches		
		Soft, brown, silty, LEAN CLAY, trace sand and organics - CL	1-1-1	SS1
		Medium stiff to stiff, brown, sandy, LEAN CLAY - (CL) 57% passing No. 200 sieve	1-3-3	SS2
5	521		1-4-5	SS3
			1-4-5	SS4
10	516		2-3-4	SS5
15	511	Boring terminated at 15 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 4

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 537.7
Datum NAVD88
Completion Date: 3/28/25
Station: 519+87
Offset: -553

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and wood debris: 10 inches		
		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
5	533			
			3-4-6	SS3
		trace organics/roots	2-4-4	SS4
10	528			
		trace gravel	2-4-5	SS5
15	523	Boring terminated at 15 feet.		

GRAPHIC LOG

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 1 to 10 feet.

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 5

Project No. A24138.00136.001

Surface Elevation: 534.1
Datum NAVD88
Completion Date: 3/27/25
Station: 525+56
Offset: -204

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and wood debris: 4 inches		
		Medium stiff to stiff, brown and red, silty, LEAN CLAY, some sand, trace gravel - CL	2-3-4	SS1
			12-8-7	SS2
5	529			
		Stiff, red and brown, sandy, FAT CLAY, trace gravel and organics - CH	3-6-5	SS3
			4-6-8	SS4
10	524			
		Very stiff, brown and red, ELASTIC SILT, some sand - (MH) 79% passing No. 200 sieve	2-8-8	SS5
15	519	Boring terminated at 15 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

81 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 6

Project No. A24138.00136.001

Surface Elevation: 529.1
Datum NAVD88
Completion Date: 3/27/25
Station: 526+18
Offset: -489

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 4 inches		
		Medium stiff to stiff, brown, silty, LEAN CLAY, some sand - CL	4-4-5	SS1
			3-3-2	SS2
5	524			
		Medium dense, tan and brown, CLAYEY SAND - (SC) 29% passing No. 200 sieve	3-4-6	SS3
		Medium stiff, brown and red, sandy, LEAN CLAY, some gravel - CL	2-4-4	SS4
10	519			
		Soft, brown and red, sandy, FAT CLAY, trace gravel and organics - CH	1-1-2	SS5
15	514	Boring terminated at 15 feet.		

GRAPHIC LOG

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 7

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 528.0
Datum NAVD88
Completion Date: 3/28/25
Station: 527+89
Offset: -395

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches		
		Stiff, brown and red, sandy, LEAN CLAY, trace gravel - (CL)		
		55% passing No. 200 sieve	4-5-9	SS1
			5-5-4	SS2
5	523			
			3-3-6	SS3
			3-4-5	SS4
10	518			
		Medium dense, brown and red, CLAYEY SAND, trace gravel - SC	2-4-7	SS5
15	513	Boring terminated at 15 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 0 to 5 feet.

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 8

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 527.7
Datum NAVD88
Completion Date: 3/28/25
Station: 531+12
Offset: -323

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 4 inches		
		Base Materials: 8 inches gray and white crushed limestone and sand		
		Medium stiff, brown, silty, LEAN CLAY, some sand, trace gravel - CL	3-4-4	SS1
			2-4-4	SS2
5	523			
		Medium dense, brown and red, CLAYEY SAND - (SC) trace gravel	4-5-5	SS3
		33% passing No. 200 sieve	3-6-9	SS4
10	518			
		some gravel	8-11-12	SS5
15	513	Boring terminated at 15 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P- 9

Project No. A24138.00136.001

Surface Elevation: 511.7
Datum NAVD88
Completion Date: 3/27/25
Station: 535+04
Offset: -528

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches		
		Hard, brown, silty, LEAN CLAY, some organics, trace sand - CL		
		limestone fragments	12-28-12	SS1
		Medium dense to dense, brown and red, CLAYEY SAND - (SC) 39% passing No. 200 sieve	6-12-12	SS2
5	507		6-7-7	SS3
			5-5-8	SS4
10	502			
		Loose, red and tan SAND, little clay - SP-SC	1-3-4	SS5
15	497	Boring terminated at 15 feet.		

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: P-10

Project No. A24138.00136.001

Surface Elevation: 512.2
Datum NAVD88
Completion Date: 3/29/25
Station: 510+98
Offset: -124

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches		
		Loose, brown, CLAYEY SAND, trace gravel - (SC) 49% passing No. 200 sieve	2-3-3	SS1
		Brown, SILTY, CLAYEY SAND, trace gravel - (SC-SM) 40% passing No. 200 sieve	112	ST2
5	507			
		Soft, brown, silty, LEAN CLAY, some sand - CL	2-2-2	SS3
		cobble		
			0-0-2	SS4
10	502			
		Stiff, brown, sandy, LEAN CLAY, some seams of clayey sand, trace gravel - CL	2-4-7	SS5
15	497			
		Brown, sandy, FAT CLAY - CH	1-50/5.5"	SS6
20	492	Boring terminated at 19.9 feet due to auger refusal.		
25	487			
30	482			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

5.5"

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 0 to 5 feet.

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 1

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 523.3
Datum NAVD88
Completion Date: 4/22/25
Station: 528+81
Offset: -126

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 10 inches			
		Base Material: 32 inches gray and white crushed limestone and sand		50/4"	SS1
5	518	Stiff, brown, sandy, LEAN CLAY, trace gravel - (CL)		3-5-7	SS2
		Loose, gray, CLAYEY SAND - (SC) 42% passing No. 200 sieve			ST3
10	513			2-2-4	SS4
15	508	Medium dense to dense, brown, CLAYEY SAND, some gravel - SC 31% passing No. 200 sieve		4-9-15	SS5
20	503			5-6-8	SS6
25	498	Medium dense, brown, CLAYEY SAND, trace gravel - SC		3-4-7	SS7
30	493	Boring terminated at 29.5 feet due to auger refusal.		36-8-0	SS8

SHEAR STRENGTH, tsf
△ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

S-4"

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER REP LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: REP	Checked by: JTM	App'vd. by: ABM
Date: 4/28/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 2

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 525.1
Datum NAVD88
Completion Date: 3/29/25
Station: 529+06
Offset: -52

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches			
		Soft to medium stiff, brown, sandy, LEAN CLAY - (CL)		4-3-4	SS1
				2-2-2	SS2
5	520				
		57% passing No. 200 sieve			ST3
		Very soft to soft, brown, sandy, SILTY CLAY - (CL-ML)		0-0-0	SS4
10	515	51% passing No. 200 sieve trapped water			
		trace organics		1-1-2	SS5
15	510				
				0-1-2	SS6
20	505				
				0-0-2	SS7
25	500				
		Medium stiff, gray and brown, sandy, FAT CLAY, little organics - CH		2-3-3	SS8
30	495	Boring terminated at 30 feet.			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 3

Project No. A24138.00136.001

Surface Elevation: 528.4
Datum NAVD88
Completion Date: 4/17/25
Station: 511+51
Offset: -70

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 12 inches			
		Base Material: 30 inches gray and white crushed limestone and sand		26-50/5"	SS1
5	523	Medium dense, red, CLAYEY SAND, trace gravel - SC 33% passing No. 200 sieve		2-5-6	SS2
		Stiff, red and brown, sandy, LEAN CLAY, some gravel - (CL)		3-5-9	SS3
10	518			3-7-8	SS4
15	513			3-5-8	SS5
		Red and brown, CLAYEY SAND, trace gravel - (SC) 28% passing No. 200 sieve		114	ST6
20	508				
		Boring terminated at 22.5 feet due to auger refusal.			
25	503				
30	498				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

5"

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 4

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 528.2	Completion Date: 3/29/25
Datum NAVD88	Station: 514+61
	Offset: -106

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) / SPT BLOW COUNTS / CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 6 inches		
		Medium stiff to stiff, brown and red, sandy, LEAN CLAY, trace gravel - CL	3-4-5	SS1
			3-3-5	SS2
5	523			
		Medium stiff, red and brown, sandy, LEAN CLAY some gravel - CL	3-3-5	SS3
		Soft to very stiff, brown and gray, FAT CLAY, trace sand - (CH) 93% passing No. 200 sieve	96	ST4
10	518			
		trace organics	2-3-13	SS5
15	513			
		79% passing No. 200 sieve, little sand	1-2-2	SS6
20	508			
		trace organics	0-1-1	SS7
25	503			
		Boring terminated at 26.6 feet due to auger refusal.		
30	498			

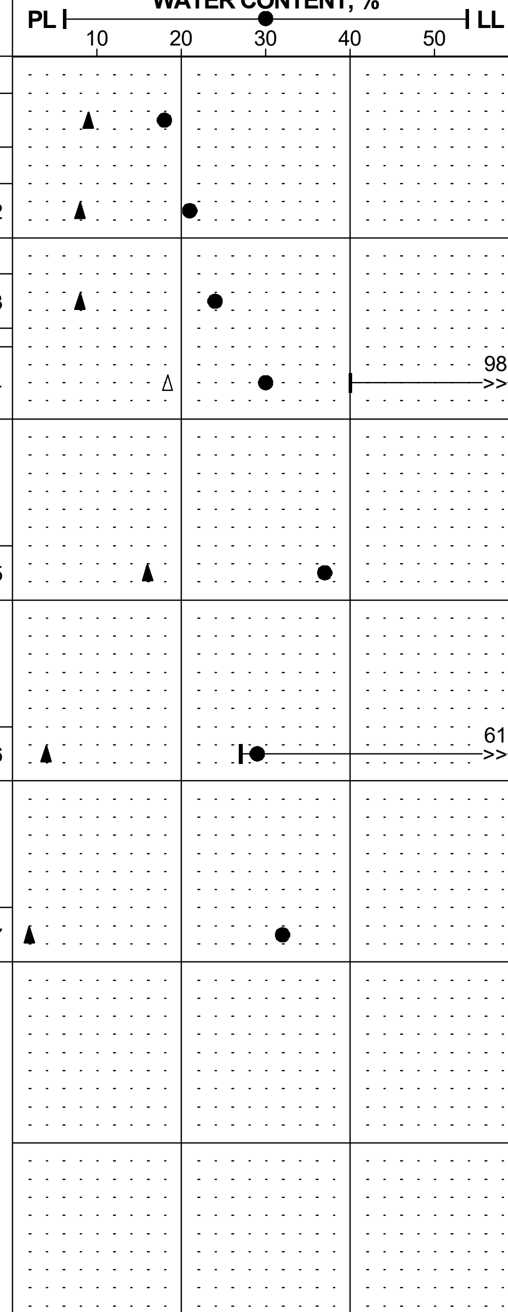
SHEAR STRENGTH, tsf

∆ - UU/2 ○ - QU/2 □ - SV

STANDARD PENETRATION RESISTANCE (ASTM D 1586)

▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %



GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

__ AUGER 3 3/4" HOLLOW STEM

WASHBORING FROM __ FEET

JT DRILLER SAS LOGGER

CME750X DRILL RIG

HAMMER TYPE Auto

HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 5

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

Surface Elevation: 529.9
Datum NAVD88
Completion Date: 3/29/25
Station: 514+81
Offset: -47

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		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
		trace gravel		1-2-3	SS2
5	525				
		Soft, brown, ELASTIC SILT, trace gravel - (MH) 86% passing No. 200 sieve		1-1-2	SS3
				0-0-2	SS4
10	520				
		Boring terminated at 13.5 feet due to auger refusal.			
15	515				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

SS1: 62 >>
SS3: 65 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 6

Project No. A24138.00136.001

Surface Elevation: 535.0
Datum NAVD88
Completion Date: 4/17/25
Station: 518+43
Offset: -99

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 10 inches		
		Base Material: 10 inches gray and white crushed limestone and sand	28-33-14	SS1
		Loose, brown, CLAYEY SAND, trace gravel - (SC)		
			2-3-4	SS2
5	530	47% passing No. 200 sieve		
		Brown SILT, little sand, trace gravel - (ML) 80% passing No. 200 sieve	95	ST3
		Gray LIMESTONE, trace clay	50/2"	SS4
10	525	Boring terminated at 9.7 feet due to auger refusal.		
15	520			
20	515			
25	510			
30	505			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

S-2"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 1 to 5 feet.

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 7

Project No. A24138.00136.001

Surface Elevation: 529.1
Datum NAVD88
Completion Date: 3/29/25
Station: 521+73
Offset: -103

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil: 12 inches			
		Stiff, brown, FAT CLAY, little sand, trace organics - (CH) 81% passing No. 200 sieve		3-5-7	SS1
				3-17 -50/4.5"	SS2
5	524	Gray LIMESTONE Boring terminated at 5.1 feet due to auger refusal.			
10	519				
15	514				
20	509				
25	504				
30	499				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

67
10.5"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 8

Project No. A24138.00136.001

Surface Elevation: 534.7
Datum NAVD88
Completion Date: 4/17/25
Station: 521+89
Offset: -35

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 16 inches			
		Base Material: 9 inches gray and white crushed limestone and sand		34-18-7	SS1
		Very stiff, red and brown, sandy, LEAN CLAY, some gravel - (CL) 62% passing No. 200 sieve			
5	530	Medium dense to dense, brown and gray GRAVEL and sand, trace clay - GP-GC 9% passing No. 200 sieve limestone fragments		8-15-14	SS2
				4-4-5	SS3
		Boring terminated at 8.3 feet due to auger refusal.			
10	525				
15	520				
20	515				
25	510				
30	505				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W- 9

Project No. A24138.00136.001

Surface Elevation: 526.8
Datum NAVD88
Completion Date: 3/29/25
Station: 524+76
Offset: -105

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Topsoil and grass: 3 inches			
		Stiff, brown, LEAN CLAY, trace gravel and sand - CL		3-4-5	SS1
		Stiff to very stiff, brown and red, FAT CLAY, little sand, trace organics and gravel - (CH)		3-4-6	SS2
5	522	87% passing No. 200 sieve		4-7-9	SS3
		80% passing No. 200 sieve		99	ST4
10	517				
		little gravel		3-6-3	SS5
15	512				
		Boring terminated at 18.3 feet due to auger refusal.			
20	507				
25	502				
30	497				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

66 >>
74 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 3/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JT DRILLER SAS LOGGER
CME750X DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 85 %

REMARKS: Station and offset are in reference to I-40

Drawn by: SAS	Checked by: JTM	App'vd. by: ABM
Date: 4/1/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W-10

Project No. A24138.00136.001

Surface Elevation: 531.1
Datum NAVD88
Completion Date: 4/22/25
Station: 525+06
Offset: -36

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 9 inches			
		Base Material: 33 inches gray and white crushed limestone and sand		44-24-11	SS1
5	526	Stiff, brown, FAT CLAY, trace sand and organics - (CH) 92% passing No. 200 sieve		3-4-6	SS2
		Stiff, brown, sandy, FAT CLAY - (CH) 68% passing No. 200 sieve		1-4-7	SS3
10	521	Stiff, brown, FAT CLAY, some gravel - CH		2-4-6	SS4
15	516	Boring terminated at 12.3 feet due to auger refusal.			
20	511				
25	506				
30	501				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

SS2: 85 >>
SS3: 80 >>

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER REP LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40
Bulk Sample collected from 1 to 7 feet.

Drawn by: REP	Checked by: JTM	App'vd. by: ABM
Date: 4/28/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: W-11

Project No. A24138.00136.001

Surface Elevation: 515.9
Datum NAVD88
Completion Date: 4/17/25
Station: 541+01
Offset: -14

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 12 inches			
		Base Material: 30 inches gray and white crushed limestone and sand		28-36-19	SS1
		Stiff to very stiff, red and brown, sandy, LEAN CLAY - (CL)		2-7-11	SS2
5	511	59% passing No. 200 sieve		2-5-7	SS3
				3-4-7	SS4
10	506				
		Medium dense, red and tan SAND, trace clay - SP-SC		4-5-5	SS5
15	501	Boring terminated at 15 feet.			

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

LOG OF BORING: WB- 1

Project No. A24138.00136.001

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

Surface Elevation: 523.9
Datum NAVD88
Completion Date: 4/17/25
Station: 552+41
Offset: -14

DEPTH IN FEET	ELEVATION IN FEET	DESCRIPTION OF MATERIAL	GRAPHIC LOG	DRY UNIT WEIGHT (pcf) SPT BLOW COUNTS CORE RECOVERY/RQD	SAMPLES
		Asphalt: 7 inches			
		Base Material: 35 inches gray and white crushed limestone sand and clay		23-32-12	SS1
		Gray LIMESTONE and clay		50/5"	SS2
		Boring terminated at 3.9 feet due to auger refusal.			
5	519				
10	514				
15	509				

SHEAR STRENGTH, tsf
Δ - UU/2 ○ - QU/2 □ - SV
0.5 1.0 1.5 2.0 2.5

STANDARD PENETRATION RESISTANCE
(ASTM D 1586)
▲ N-VALUE (BLOWS PER FOOT)

WATER CONTENT, %
PL 10 20 30 40 50 LL

S-5"

NOTE: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL. GRAPHIC LOG FOR ILLUSTRATION PURPOSES ONLY.

LOG OF BORING 2020 JDM - ELEVATIONS A24138.00136.001.GPJ GTINC 0638301.GPJ 6/16/25

GROUNDWATER DATA

X FREE WATER NOT ENCOUNTERED DURING DRILLING

DRILLING DATA

___ AUGER 3 1/4" HOLLOW STEM
WASHBORING FROM ___ FEET
JJA DRILLER SAS LOGGER
Geoprobe7822DT DRILL RIG
HAMMER TYPE Auto
HAMMER EFFICIENCY 98 %

REMARKS: Station and offset are in reference to I-40

Drawn by: AG	Checked by: JTM	App'vd. by: ABM
Date: 4/23/25	Date: 6/12/25	Date: 6/16/25

UES™

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

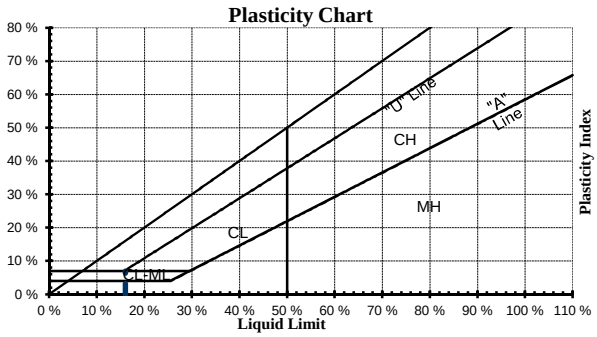
LOG OF BORING: WB- 2

Project No. A24138.00136.001

BORING LOG: TERMS AND SYMBOLS

LEGEND

CS	Continuous Sampler
GB	Grab Sample
NQ	NQ Rock Core
PST	Three-Inch Diameter Piston Tube Sample
SS	Split-Spoon Sample (Standard Penetration Test)
ST	Three-Inch Diameter Shelby Tube Sample
*	Sample Not Recovered
PL	Plastic Limit (ASTM D4318)
LL	Liquid Limit (ASTM D4318)
SV	Shear Strength from Field Vane (ASTM D2573)
UU	Shear Strength from Unconsolidated-Undrained Triaxial Compression Test (ASTM D2850)
QU	Shear Strength from Unconfined Compression Test (ASTM D2166)



SOIL GRAIN SIZE

US STANDARD SIEVE

12"	3"	3/4"	4	10	40	200

BOULDERS	COBBLES	GRAVEL		SAND			SILT	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

300	76.2	19.1	4.76	2.00	0.42	0.074	0.005

SOIL GRAIN SIZE IN MILLIMETERS

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Symbol	Description
Coarse-Grained Soils (More than 50% Larger than No. 200 Sieve Size)	Gravel and Gravelly Soil	Clean Gravels Little or no Fines	GW	Well-Graded Gravel, Gravel- Sand Mixture
			GP	Poorly-Graded Gravel, Gravel-Sand Mixture
		Gravels with Appreciable Fines	GM	Silty Gravel, Gravel-Sand-Silt Mixture
			GC	Clayey-Gravel, Gravel-Sand-Clay Mixture
	Sand and Sandy Soils	Clean Sands Little or no Fines	SW	Well-Graded Sand, Gravelly Sand
			SP	Poorly-Graded Sand, Gravelly Sand
		Sands with Appreciable Fines	SM	Silty Sand, Sand-Silt Mixture
			SC	Clayey-Sand, Sand-Clay Mixture
Fine-Grained Soils (More than 50% Smaller than No. 200 Sieve Size)	Silts and Clays	Liquid Limit Less Than 50	ML	Silt, Sandy Silt, Clayey Silt, Slight Plasticity
			CL	Lean Clay, Sandy Clay, Silty Clay, Low to Medium Plasticity
			OL	Organic Silts or Lean Clays, Low Plasticity
	Silts and Clays	Liquid Limit Greater Than 50	MH	Silt, High Plasticity
			CH	Fat Clay, High Plasticity
			OH	Organic Clay, Medium to High Plasticity
	Highly Organic Soils		PT	Peat, Humus, Swamp Soil

STRENGTH OF COHESIVE SOILS

Consistency	Undrained Shear Strength (tsf)	Unconfined Comp. Strength (tsf)
Very Soft	less than 0.125	less then 0.25
Soft	0.125 to 0.25	0.25 to 0.5
Medium Stiff	0.25 to 0.5	0.5 to 1.0
Stiff	0.5 to 1.0	1.0 to 2.0
Very Stiff	1.0 to 2.0	2.0 to 3.0
Hard	greater than 2.0	greater than 4.0

DENSITY OF GRANULAR SOILS

Descriptive Term	Approximate N_{60}-Value Range
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	>50

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.

RELATIVE COMPOSITION

Trace	0 to 10%
Little	10 to 20%
Some	20 to 35%
And	35 to 50%

OTHER TERMS

Layer - Inclusion greater than 3 inches thick.

Seam - Inclusion 1/8-inch to 3 inches thick

Parting - Inclusion less than 1/8-inch thick

Pocket - Inclusion of material that is smaller than sample diameter

UES™

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

Strength
Color
Crystallinity
Grain Size
Mass Bedding
Weathering
Voids
Quality

SEDIMENTARY ROCK TYPE

Sandstone - Predominantly quartz grains cemented by silica, iron, clay or carbonate material. Color depends on cementing agent; porous and pervious; hard and generally thickly bedded.

Siltstone - Composition similar to sandstone but at least 50% grains 0.002 to 0.02 millimeters in size. Rarely forms thick beds, but often hard.

Shale - Predominant particles are less than 0.002 millimeters with a well defined fissile fabric. Commonly interbedded with sandstone or limestone and relatively soft.

Limestone - Contains more than 50% calcium carbonate. The calcite can be precipitated chemically, organically, or it may be detrital in origin. Reacts with dilute HCL.

Dolomite - Harder and heavier than limestone. Forms by alteration of limestone or by direct precipitation from sea water. Reacts with dilute HCL only when powdered.

Coal - Composed of highly altered plant remains and varying amounts of clay, generally black in color.

Chert - Formed by silica deposited from solution in water. May occur as nodules or relatively thick beds.

GEOLOGIC DEFINITIONS

Stylolite - A term applied to parts of certain limestones which have a column like development that is grooved, sutured or striated and irregular in cross-section.

Fissility - A property of splitting along closely spaced parallel planes.

Argillaceous - A term applied to rock or substances having a notable portion, greater then 30%, clay in composition.

Oolitic - A spherical or ellipsoidal texture, 0.25 to 2.0 mm in diameter, with concentric or radial structure.

Brecciated - A rock texture which is composed of angular fragments which correspond in size to gravel and/or pebbles.

Slickenside - A polished or striated surface on or within a rock.

REFERENCE

STRENGTH

Description	***Uniaxial Compressive Strength (psi)***
Extremely Weak	less than 150
Very Weak	150 to 700
Weak	700 to 4,000
Medium Strong	4,000 to 7,000
Strong	7,000 to 15,000
Very Strong	15,000 to 36,000
Extremely Strong	greater than 36,000

COLOR

Common colors are gray, brown, black and white. Exotic colors such as green, blue, maroon can be used when necessary.

CRYSTALLINITY

Description	***Criteria***
Aphanitic	Crystals cannot be seen with the naked eye
Very Finely Crystalline	Crystals are barely visible with the naked eye
Finely Crystalline	Crystals are easily visible with the naked eye
Medium Crystalline	Crystals are medium size; up to 1/8-inch diameter
Coarsely Crystalline	Crystals are 1/8- to 1/4-inch in diameter
Very Coarsely Crystalline	Crystals are larger than 1/4-inch in diameter

GRAIN SIZE

Description	***Criteria***
Very Finely Grained	Grains cannot be seen with the naked eye
Fine Grained	Grains are barely visible with the naked eye
Medium Grained	Grains up to 2 mm in diameter
Coarse Grained	Grains are larger than 2 mm in diameter

BEDDING

Description	***Criteria***
Thin	less than 2 inches
Medium	2 to 24 inches
Thick	24 to 48 inches
Massive	greater than 48 inches

WEATHERING

Description	***Criteria***
Unweathered	No visible alteration of rock mass
Slightly Weathered	Slight discoloration inward from fractures
Moderately Weathered	Discoloration throughout, slight loss of strength, texture intact
Highly Weathered	Entire rock mass appears discolored and dull, texture indistinct, fabric intact
Severely Weathered	Majority of rock mass reduced to soil-like state with relic rock structure

VOIDS

Description	***Criteria***
Dense	Usually not visible with the naked eye
Pitted	Visible to 1/4-inch
Vuggy	1/4-inch to diameter of the core
Cavity	Larger than 6 inches in diameter

QUALITY

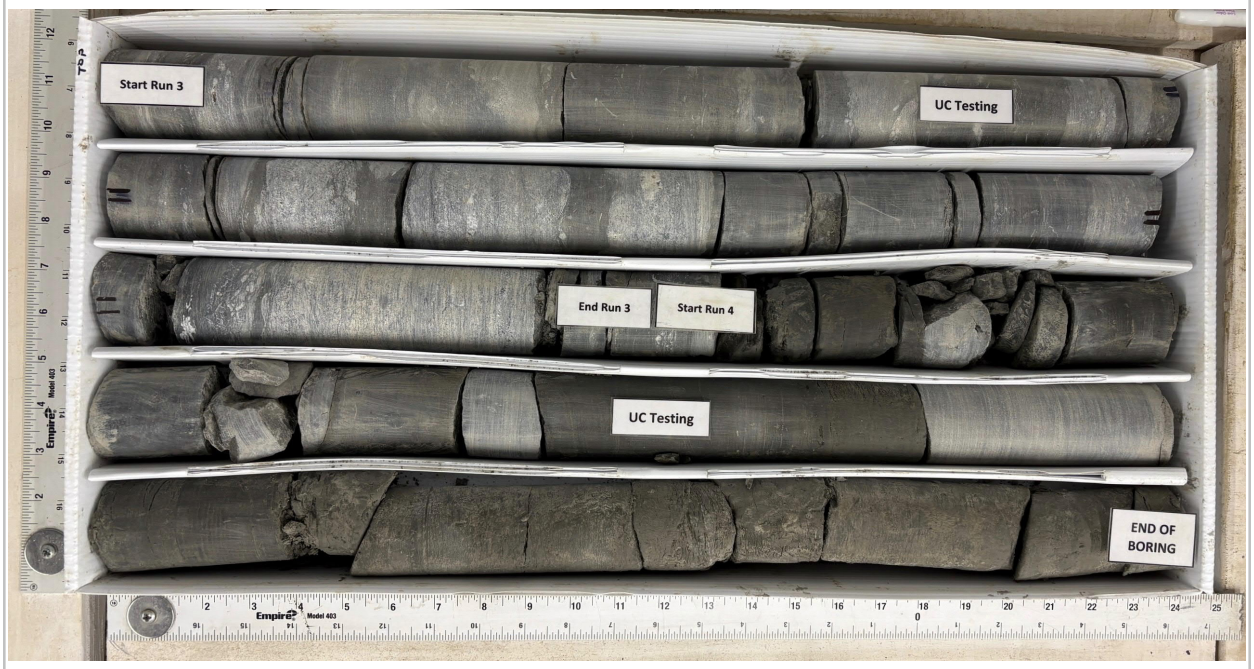
Percent RQD	***Description***
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor

BORING BR-1

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

BORING BR-2

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

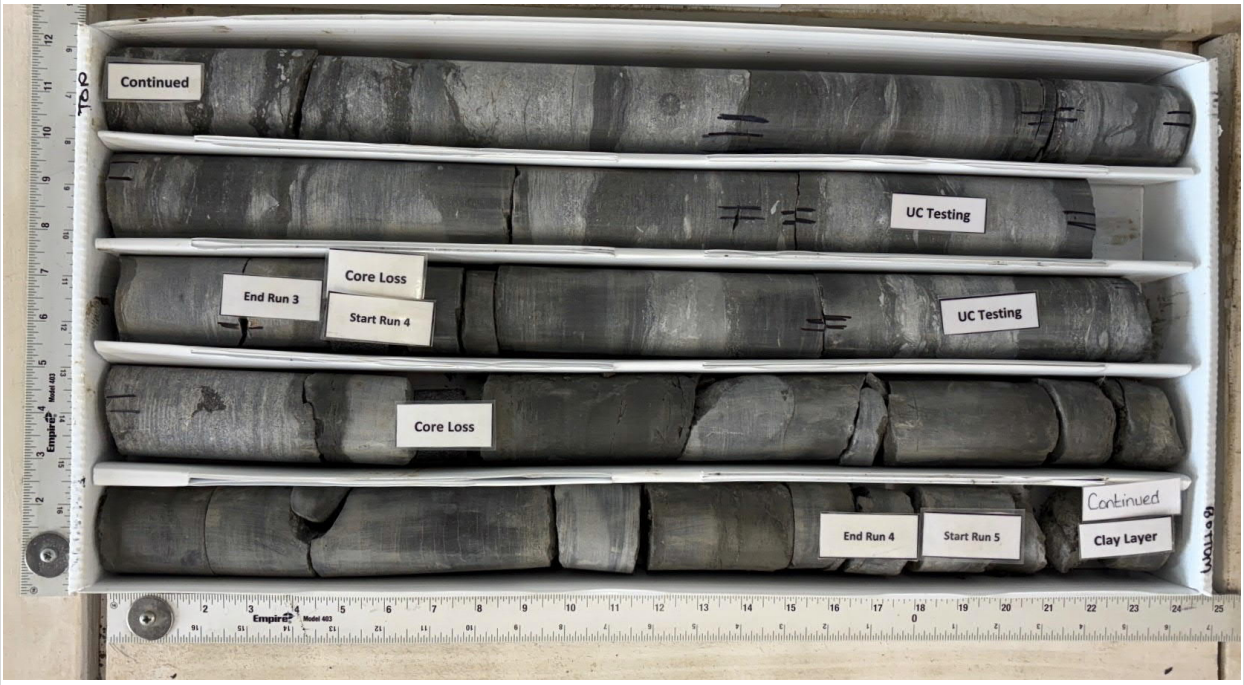


BORING BR-2

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

BORING BR-3

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

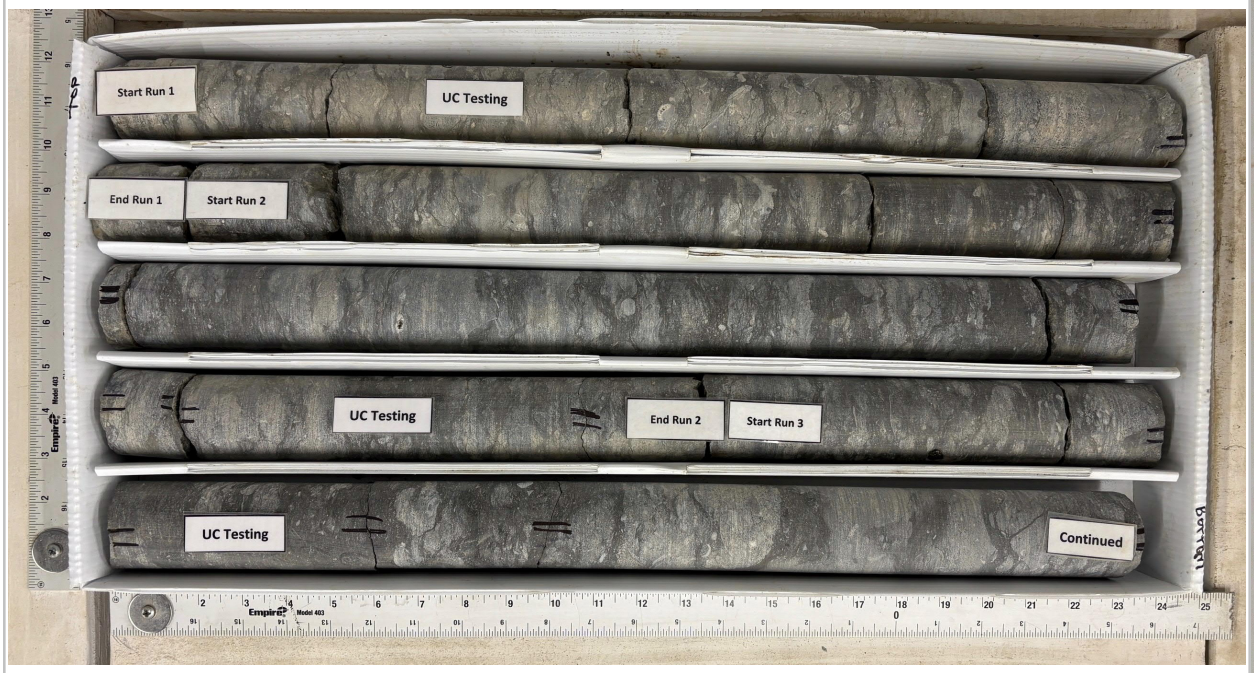


BORING BR-3

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

BORING BR-3

RUN	DEPTH, FT	RECOVERY, %	RQD, %
5	Cont. - 32.0	98	72



BORING BR-4

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

BORING BR-4

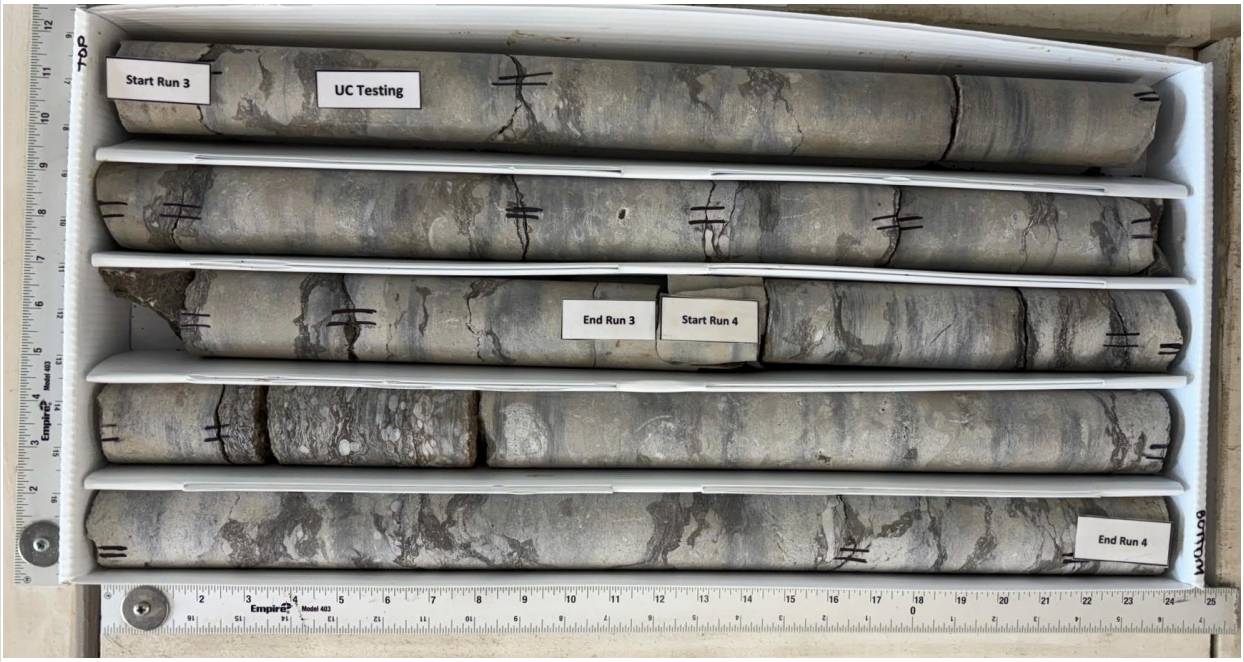
RUN	DEPTH, FT	RECOVERY, %	RQD, %
3	Cont. - 22.0	100	93
4	22.0 - 27.0	100	100
5	27.0 - Cont.	100	82

BORING BR-4

RUN	DEPTH, FT	RECOVERY, %	RQD, %
5	Cont. - 32.0	100	82
6	32.0 - 37.0	100	80
7	37.0 - 39.9	100	81

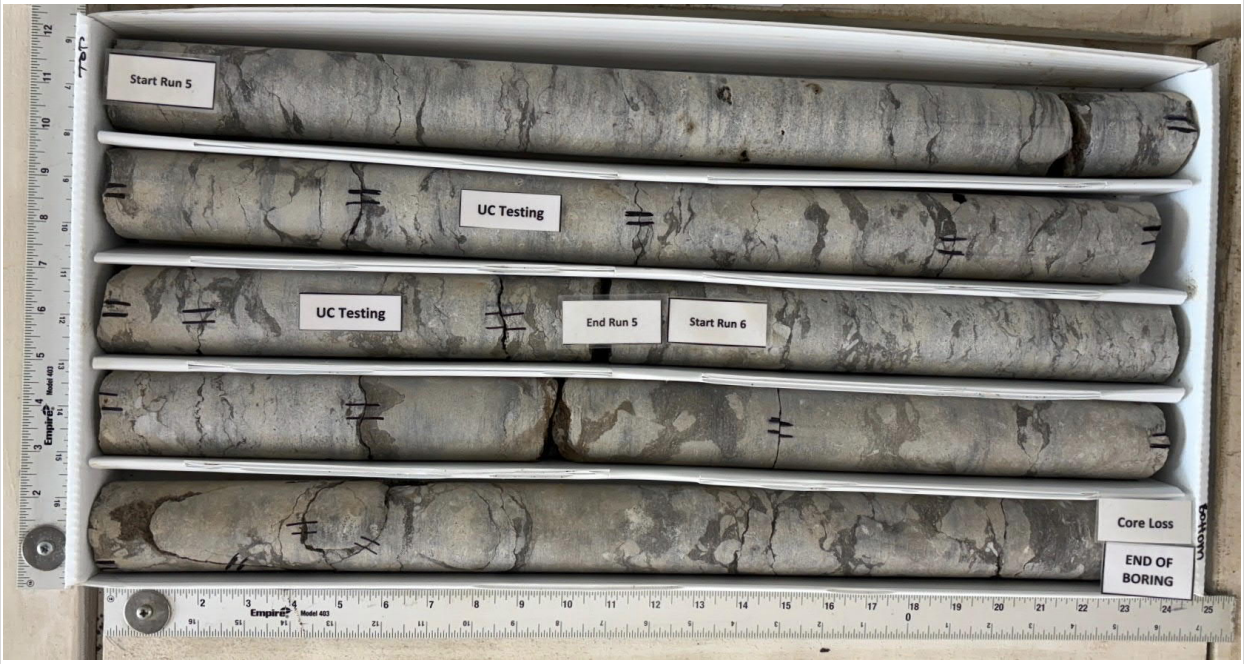
BORING BR-5

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



BORING BR-5

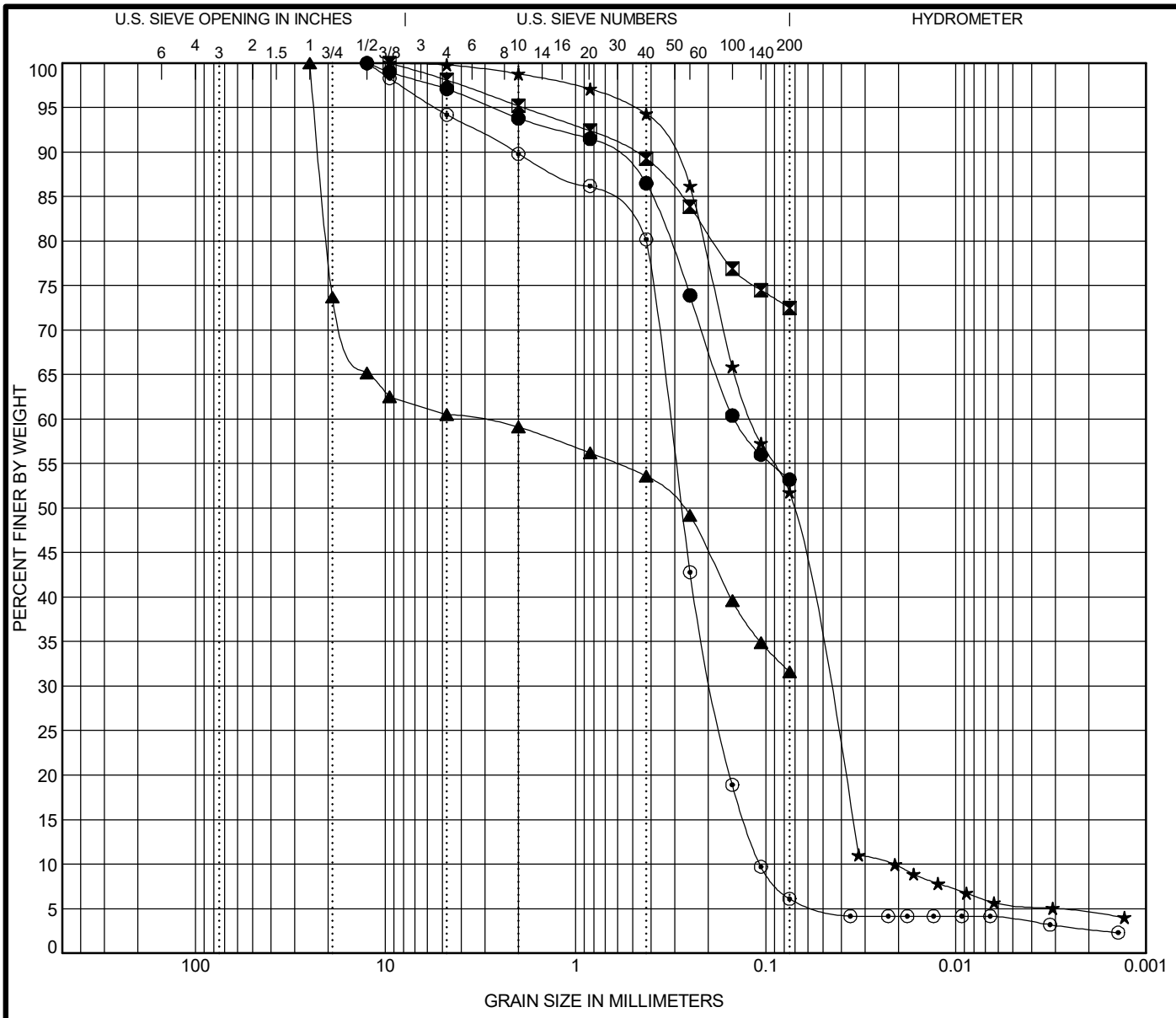
RUN	DEPTH, FT	RECOVERY, %	RQD, %
3	15.2 - 20.2	100	100
4	20.2 -25.2	100	100



BORING BR-5

RUN	DEPTH, FT	RECOVERY, %	RQD, %
5	25.2 - 30.2	100	100
6	30.2 - 35.2	97	97

Appendix D
LABORATORY TEST DATA



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	BR-1	8.5	SANDY LEAN CLAY(CL), A-7-6 (11)	49	23	26		
⊠	BR-1	28.5	FAT CLAY with SAND(CH), A-7-6 (25)	61	27	34		
▲	BR-1	33.5	CLAYEY GRAVEL with SAND(GC), A-2-4	28	19	9		
★	BR-1	38.5	SANDY SILT(ML), A-4				0.91	5.52
⊙	BR-1	43.5	POORLY GRADED SAND with CLAY(SP-SC), A-2-4				1.06	2.98

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BR-1	8.5	12.5	0.145			2.9	43.9	53.2	
⊠	BR-1	28.5	9.5				1.9	25.6	72.5	
▲	BR-1	33.5	25	3.488			39.5	28.9	31.6	
★	BR-1	38.5	9.5	0.118	0.048	0.021	0.2	48.0	46.3	5.5
⊙	BR-1	43.5	12.5	0.319	0.19	0.107	5.8	88.1	2.3	3.8

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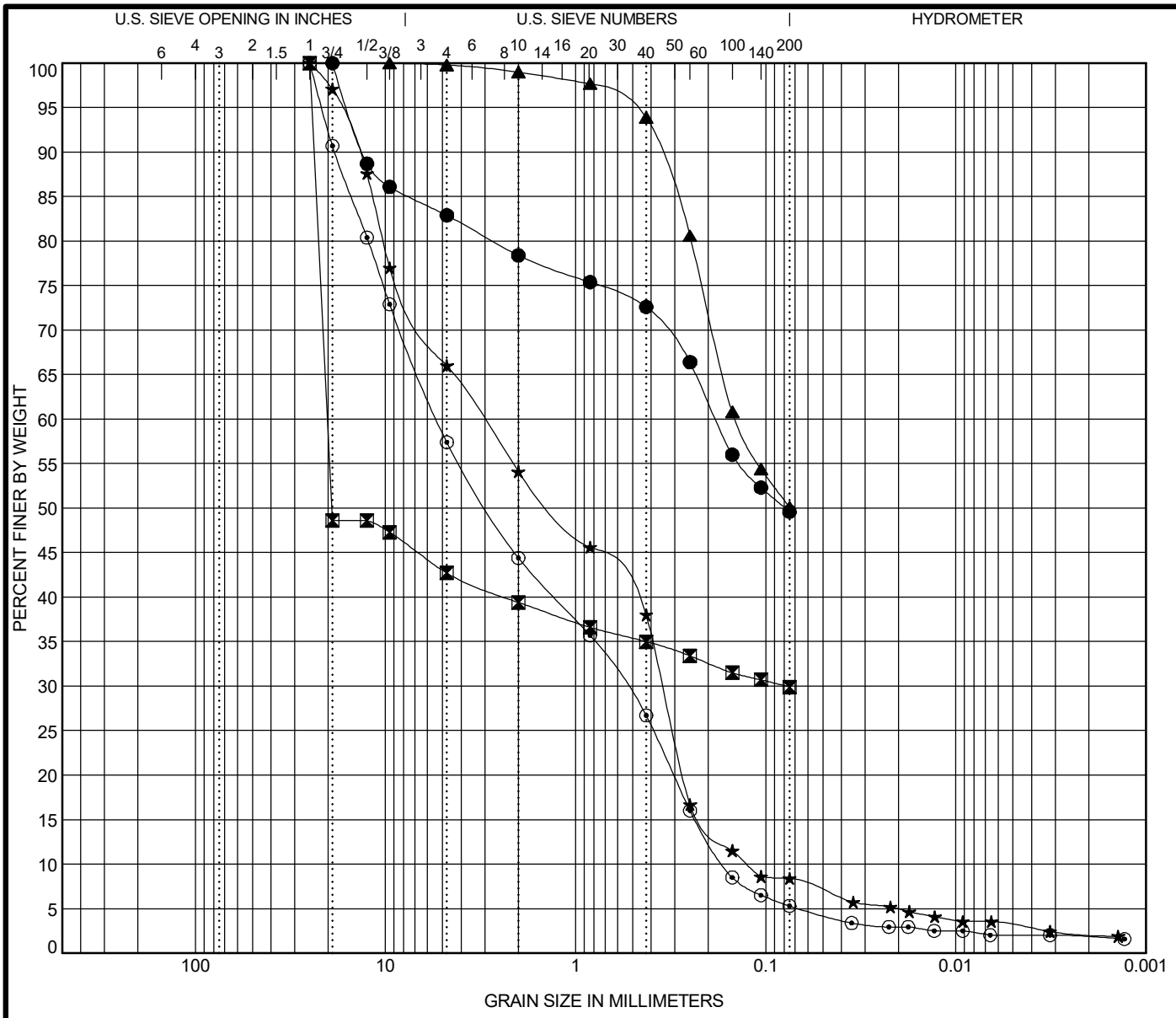

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	BR-2	3.0	CLAYEY SAND with GRAVEL(SC), A-7-6 (7)	43	22	21		
⊠	BR-2	8.0	CLAYEY GRAVEL(GC), A-2-7 (4)	71	33	38		
▲	BR-2	18.5	SANDY LEAN CLAY(CL), A-4 (2)	32	22	10		
★	BR-2	23.5	P. GRADED SAND with SILT and GRAVEL(SP-SM), A-2-4				0.31	24.50
⊙	BR-2	28.5	P. GRADED SAND with SILT and GRAVEL(SP-SM), A-2-4				0.34	32.12

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BR-2	3.0	19	0.183			17.1	33.3	49.6	
⊠	BR-2	8.0	25	20.192	0.078		57.3	12.8	29.9	
▲	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

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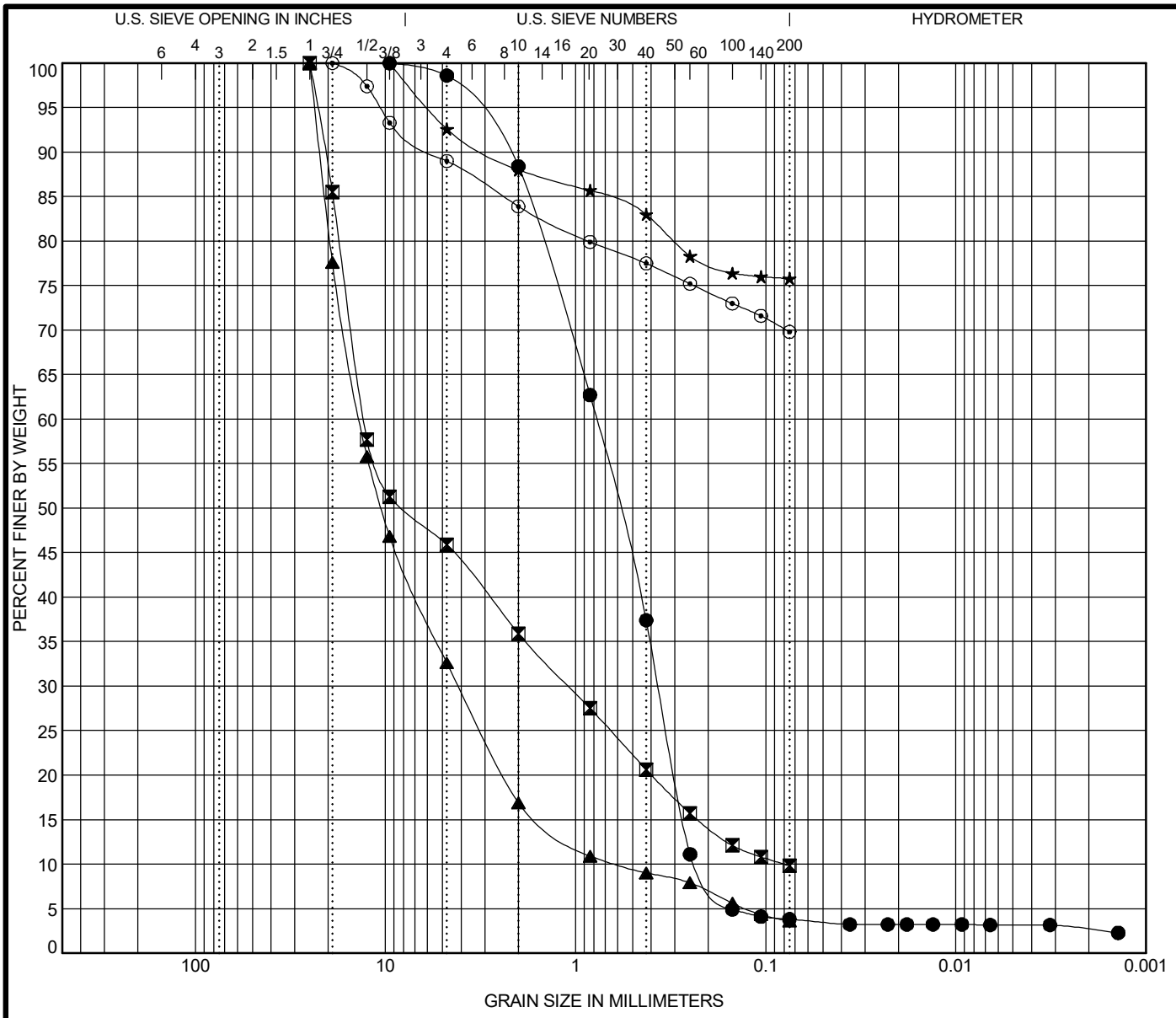

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	BR-3	0.0	POORLY GRADED SAND(SP), A-1-b (0)				0.75	3.42
⊠	BR-4	2.0	WELL GRADED GRAVEL with SILT and SAND(GW), A-2-4				1.14	161.01
▲	BR-4	7.0	WELL GRADED GRAVEL with SAND(GW), A-2-4				2.06	22.28
★	E- 1	3.5	ELASTIC SILT with SAND(MH), A-7-5 (27)	66	34	32		
⊙	E- 1	13.0	SANDY LEAN CLAY(CL), A-7-6 (16)	48	24	24		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BR-3	0.0	9.5	0.781	0.366	0.228	1.4	94.8	0.7	3.1
⊠	BR-4	2.0	25	12.941	1.087	0.08	54.1	36.1	9.8	
▲	BR-4	7.0	25	13.55	4.116	0.608	67.4	29.0	3.6	
★	E- 1	3.5	9.5				7.4	16.8	75.8	
⊙	E- 1	13.0	19				11.0	19.2	69.8	

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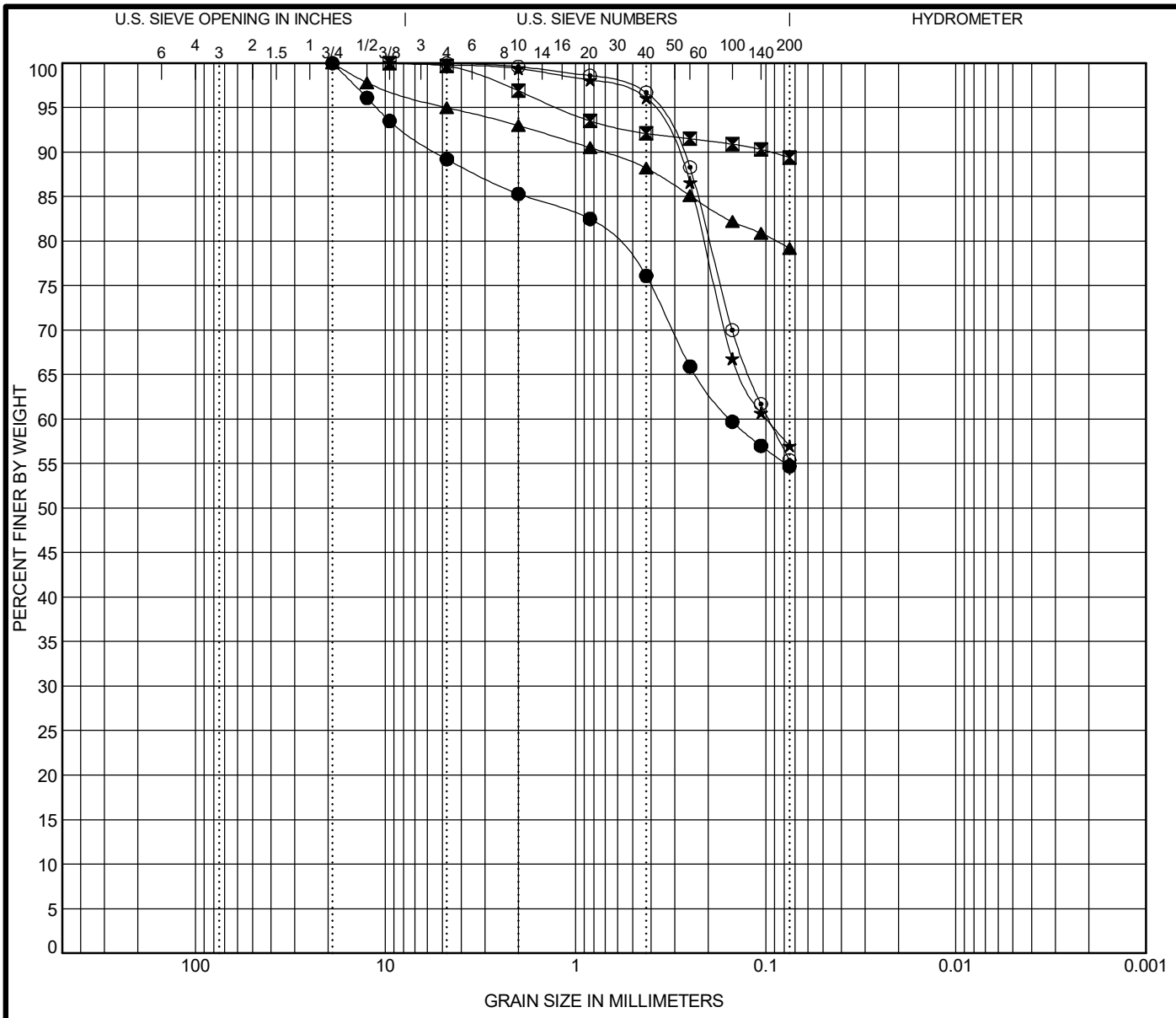

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	E- 2	6.0	SANDY FAT CLAY(CH), A-7-6 (10)	50	26	24		
⊠	E- 2	13.5	ELASTIC SILT(MH), A-7-5 (28)	58	31	27		
▲	E- 3	3.5	FAT CLAY with SAND(CH), A-7-6 (20)	52	28	24		
★	E- 4	5.0	SANDY LEAN CLAY(CL), A-6 (6)	37	23	14		
⊙	E- 4	18.5	SANDY SILTY CLAY(CL-ML), A-4 (1)	25	20	5		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	E- 2	6.0	19	0.154			10.8	34.5	54.7	
⊠	E- 2	13.5	9.5				0.3	10.3	89.4	
▲	E- 3	3.5	19				5.0	15.8	79.2	
★	E- 4	5.0	9.5	0.099			0.2	42.8	57.0	
⊙	E- 4	18.5	4.75	0.097			0.0	44.6	55.4	

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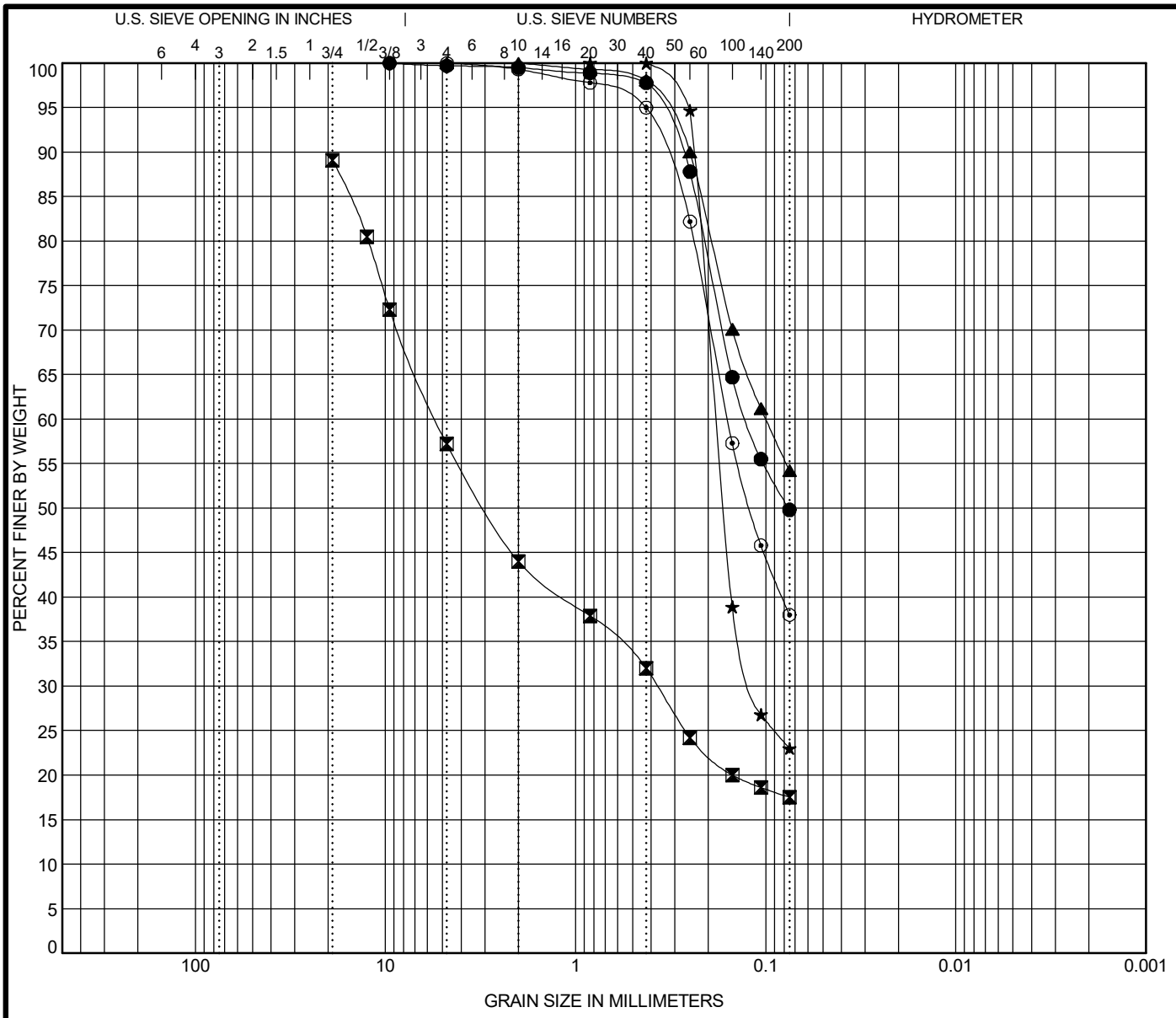

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	E- 5	8.0	CLAYEY SAND(SC), A-6 (5)	36	20	16		
⊠	E- 5	28.5	CLAYEY SAND with GRAVEL(SC), A-2-6					
▲	E- 6	3.5	SANDY LEAN CLAY(CL), A-6 (6)	37	20	17		
★	E- 6	6.0	SILTY SAND(SM), A-2-4 (0)	30	24	6		
⊙	E- 7	3.0	CLAYEY SAND(SC), A-6 (1)	31	19	12		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	E- 5	8.0	9.5	0.126			0.3	49.9	49.8	
⊠	E- 5	28.5	19	5.401	0.371		31.9	39.7	17.5	
▲	E- 6	3.5	4.75	0.1			0.0	45.8	54.2	
★	E- 6	6.0	0.84	0.182	0.116		0.0	77.0	23.0	
⊙	E- 7	3.0	4.75	0.159			0.0	62.0	38.0	

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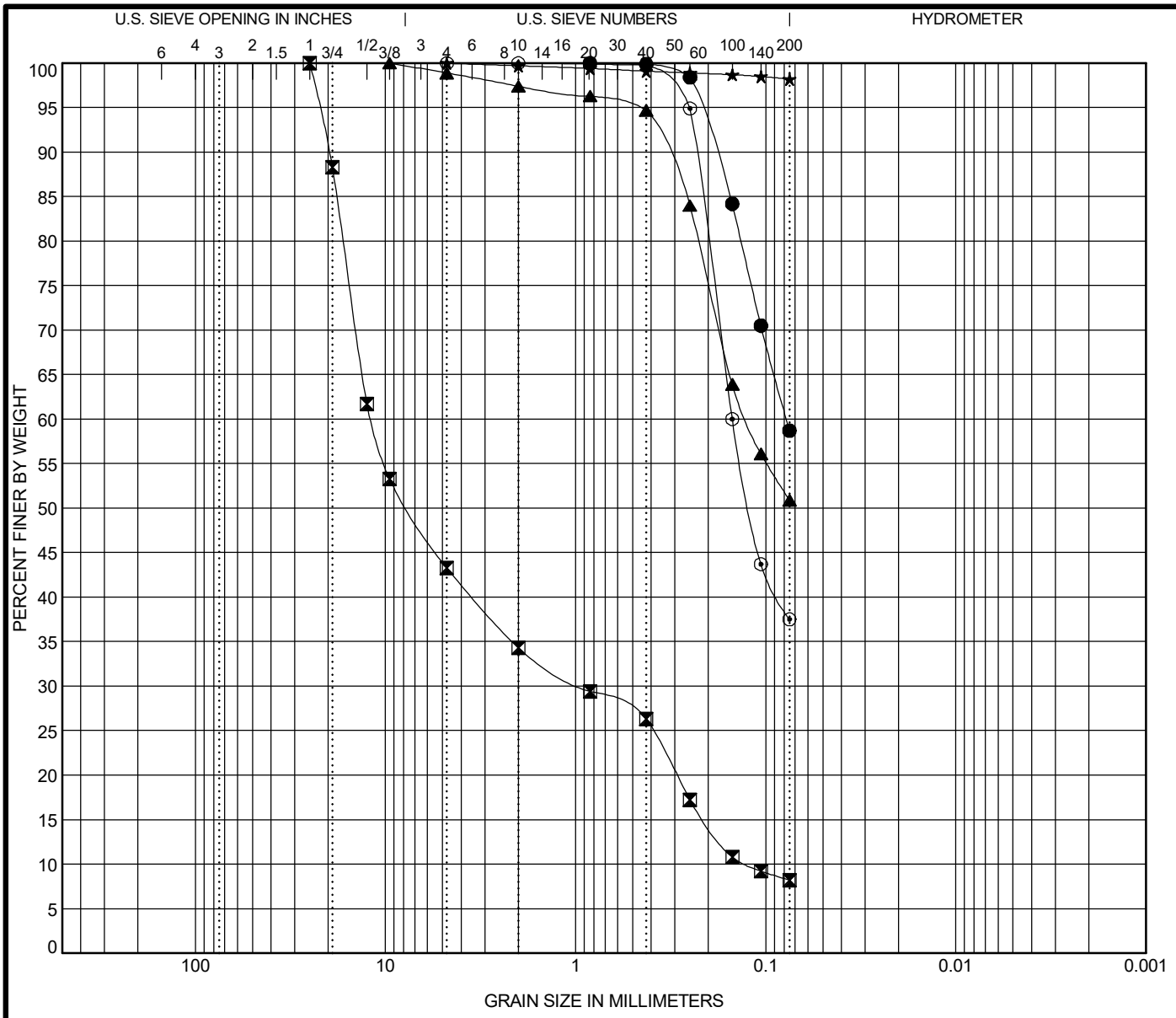

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● E- 7	8.5	SANDY LEAN CLAY(CL), A-6 (6)	30	15	15		
⊠ E- 9	13.5	P. GRADED GRAVEL with CLAY and SAND(GP-GC), A-2-6				0.59	93.78
▲ EB-1	3.5	SANDY LEAN CLAY(CL), A-6 (3)	30	17	13		
★ EB-2	3.5	FAT CLAY(CH), A-7-5 (63)	88	36	52		
⊙ P- 1	8.5	CLAYEY SAND(SC), A-4 (0)	31	21	10		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● E- 7	8.5	0.84	0.078			0.0	41.3	58.7	
⊠ E- 9	13.5	25	11.825	0.934	0.126	56.7	35.1	8.2	
▲ EB-1	3.5	9.5	0.126			1.1	48.0	50.9	
★ EB-2	3.5	4.75				0.0	1.8	98.2	
⊙ P- 1	8.5	4.75	0.15			0.0	62.5	37.5	

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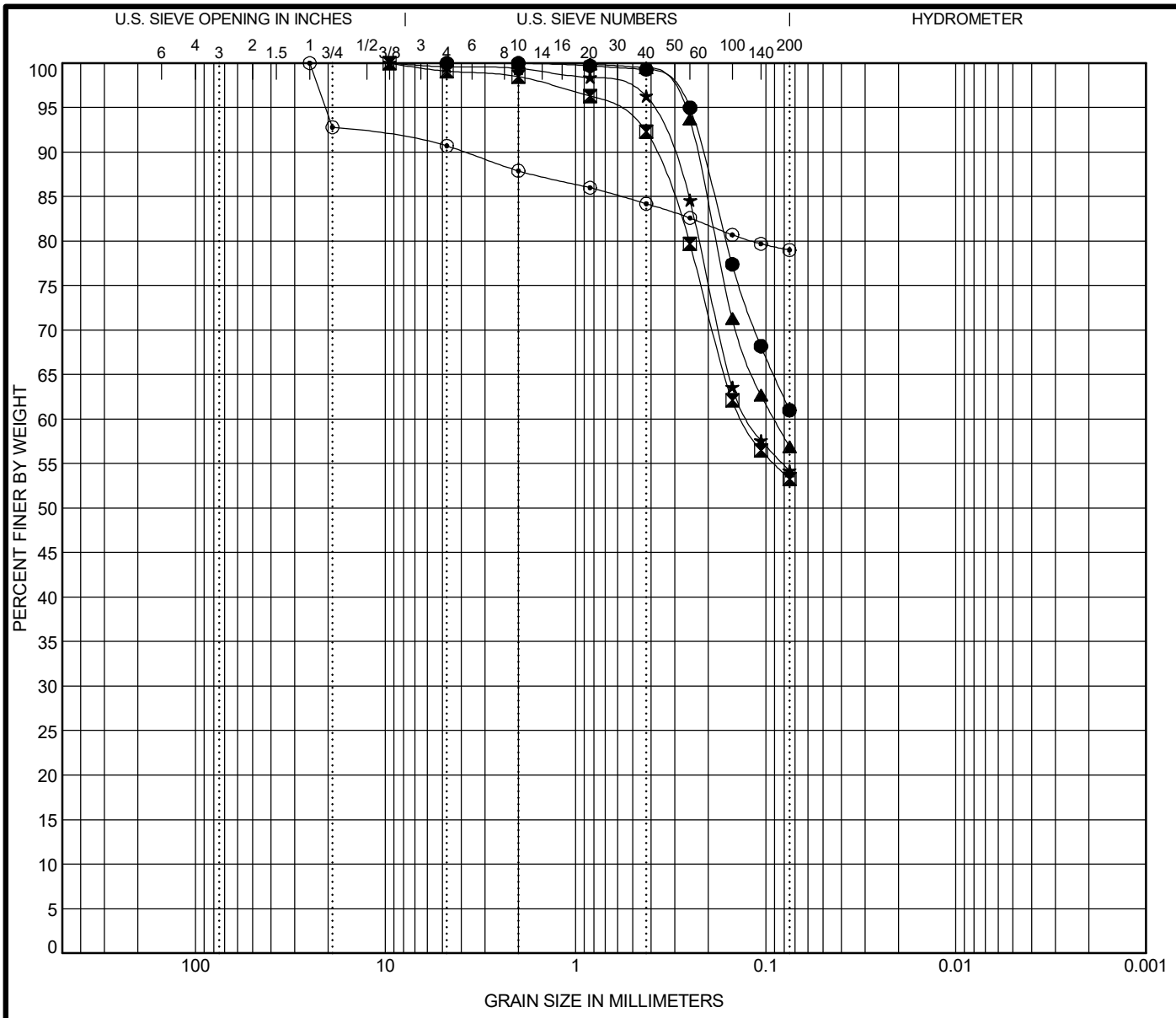

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● P- 2	0.5	**SANDY LEAN CLAY(CL), A-6 (6)**	32	18	14		
⊠ P- 3	6.0	**SANDY LEAN CLAY(CL), A-6 (5)**	29	13	16		
▲ P- 4	3.5	**SANDY LEAN CLAY(CL), A-6 (5)**	30	16	14		
★ P- 5	3.5	**SANDY LEAN CLAY(CL)**	41	23	18		
⊙ P- 6	13.5	**ELASTIC SILT(MH), A-7-5 (39)**	81	38	43		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● P- 2	0.5	**4.75**				**0.0**	**39.0**	**61.0**	
⊠ P- 3	6.0	**9.5**	**0.132**			**0.9**	**45.8**	**53.3**	
▲ P- 4	3.5	**2**	**0.09**			**0.0**	**43.1**	**56.9**	
★ P- 5	3.5	**9.5**	**0.122**			**0.4**	**45.4**	**54.2**	
⊙ P- 6	13.5	**25**				**9.3**	**11.7**	**79.0**	

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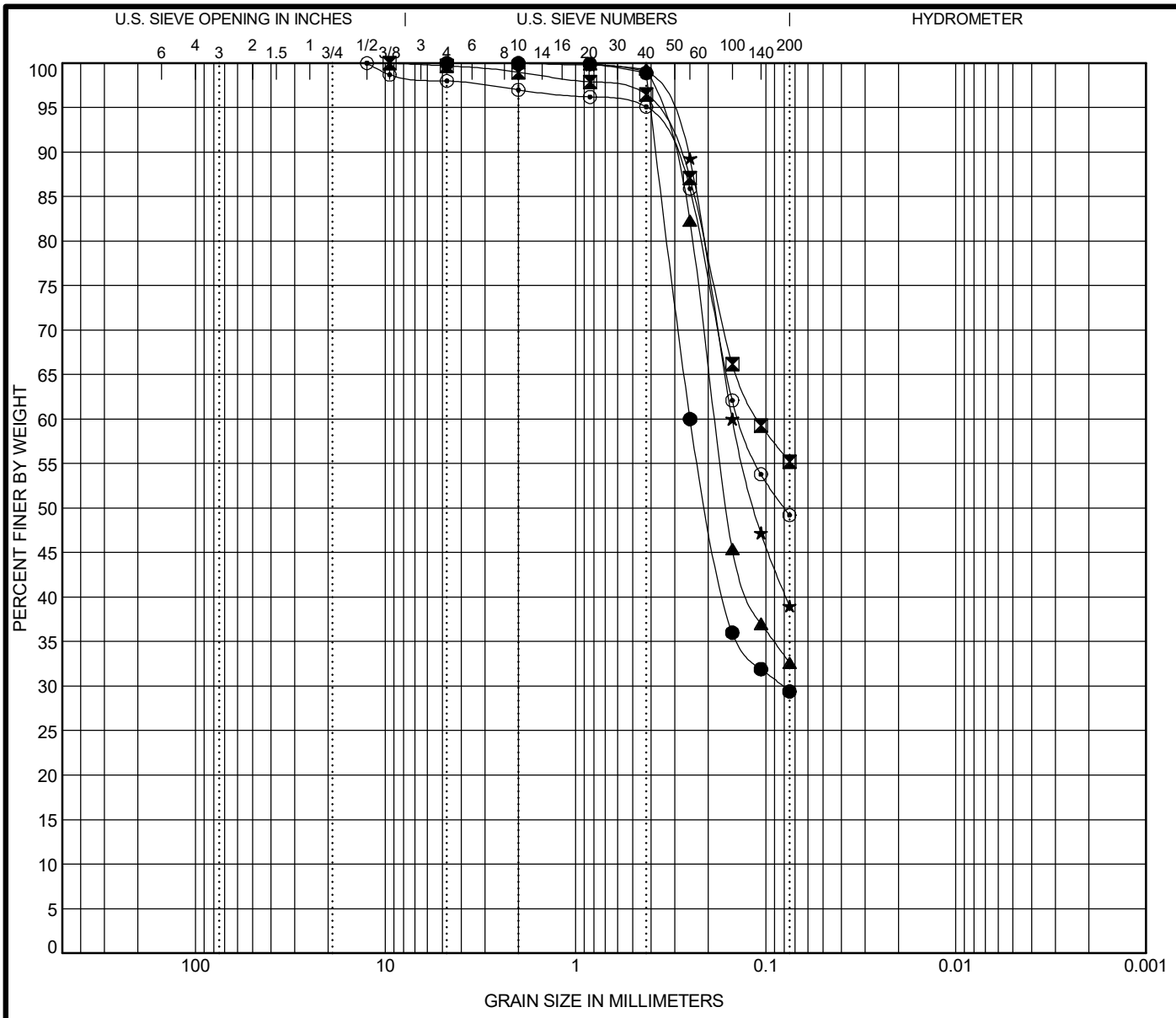

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● P- 7	6.0	**CLAYEY SAND(SC), A-2-6 (1)**	36	19	17		
⊠ P- 8	0.5	**SANDY LEAN CLAY(CL), A-6 (6)**	32	16	16		
▲ P- 9	8.5	**CLAYEY SAND(SC), A-2-6 (1)**	38	23	15		
★ P-10	3.5	**CLAYEY SAND(SC), A-6 (2)**	30	16	14		
⊙ W- 1	0.5	**CLAYEY SAND(SC), A-6 (2)**	27	16	11		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● P- 7	6.0	**4.75**	**0.25**	**0.081**		**0.0**	**70.6**	**29.4**	
⊠ P- 8	0.5	**9.5**	**0.11**			**0.3**	**44.5**	**55.2**	
▲ P- 9	8.5	**2**	**0.184**			**0.0**	**67.4**	**32.6**	
★ P-10	3.5	**4.75**	**0.15**			**0.0**	**61.0**	**39.0**	
⊙ W- 1	0.5	**12.5**	**0.137**			**2.0**	**48.8**	**49.2**	

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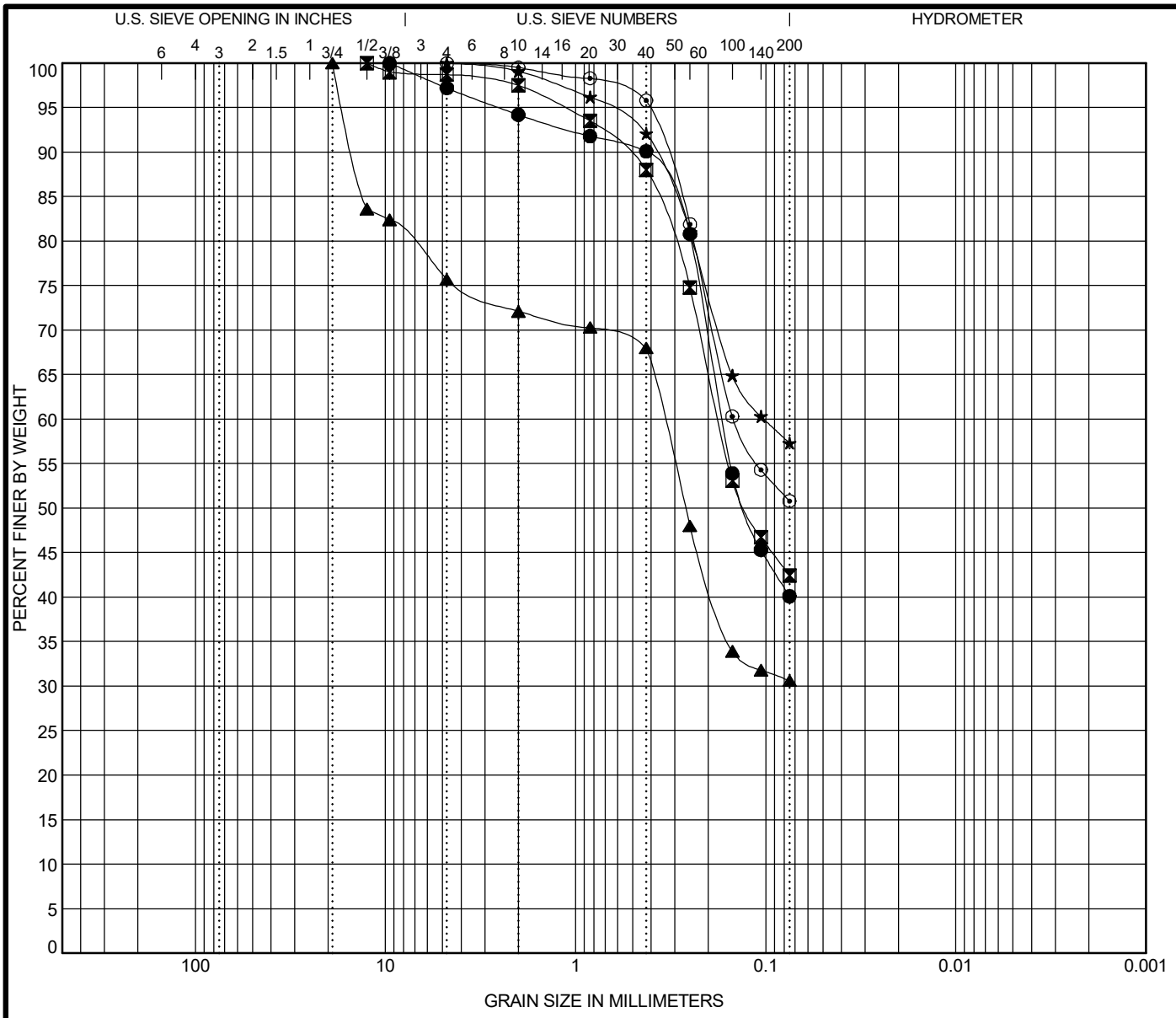

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	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					
★	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		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	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	

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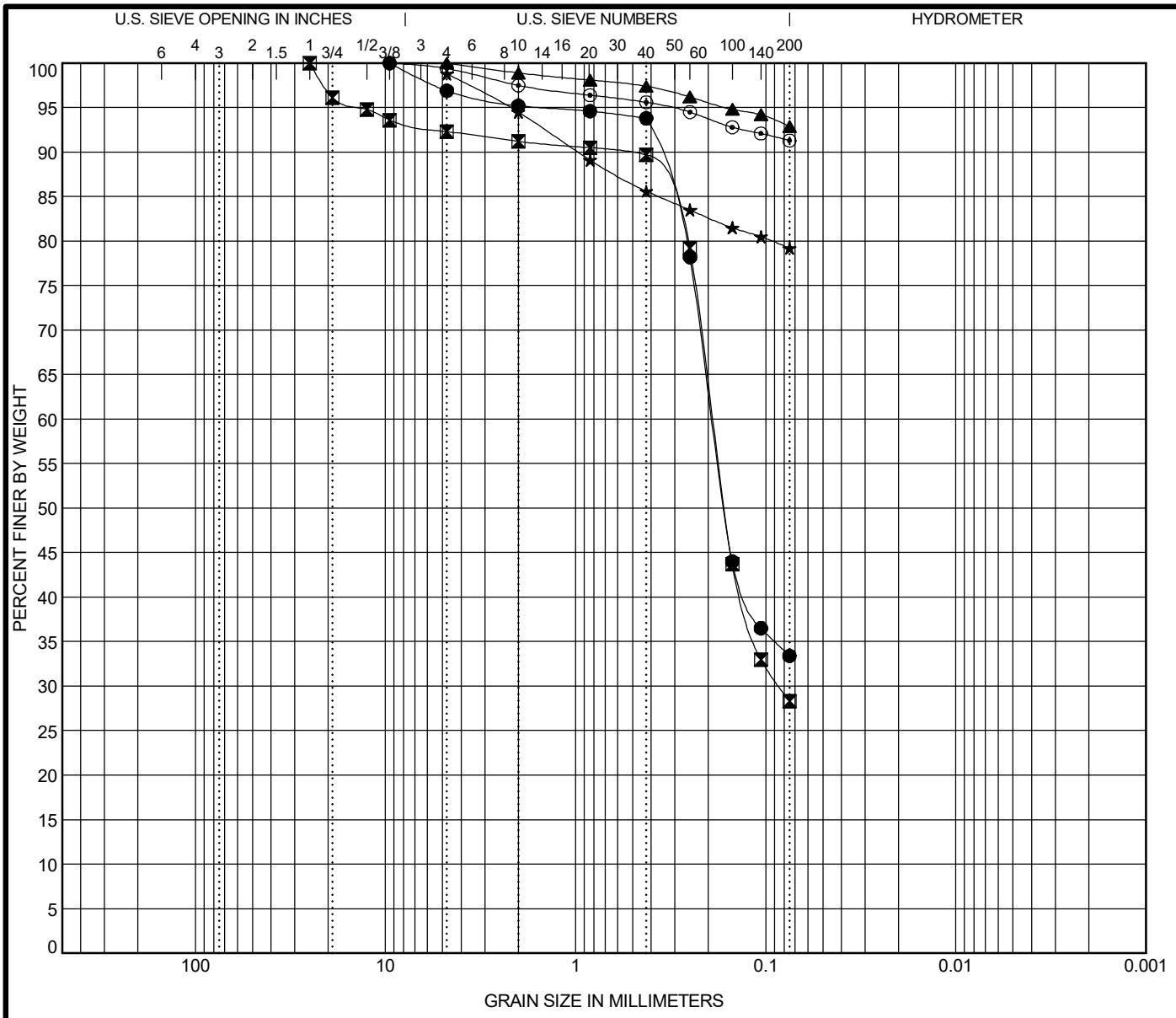
GRAIN SIZE DISTRIBUTION

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

US GRAIN_SIZE A24138.00136.001.GPJ US_LAB.GDT 6/17/25



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	W- 4	3.5	CLAYEY SAND(SC), A-2-4					
⊠	W- 4	18.0	CLAYEY SAND(SC), A-2-6 (0)	33	21	12		
▲	W- 5	8.0	FAT CLAY(CH), A-7-5 (66)	98	40	58		
★	W- 5	18.5	FAT CLAY with SAND(CH), A-7-6 (29)	61	27	34		
⊙	W- 6	1.0	FAT CLAY(CH), A-7-6 (40)	62	22	40		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	W- 4	3.5	9.5	0.19			3.1	63.5	33.4	
⊠	W- 4	18.0	25	0.19	0.085		7.7	64.0	28.3	
▲	W- 5	8.0	4.75				0.0	7.1	92.9	
★	W- 5	18.5	4.75				0.0	19.6	79.2	
⊙	W- 6	1.0	9.5				0.6	8.1	91.3	

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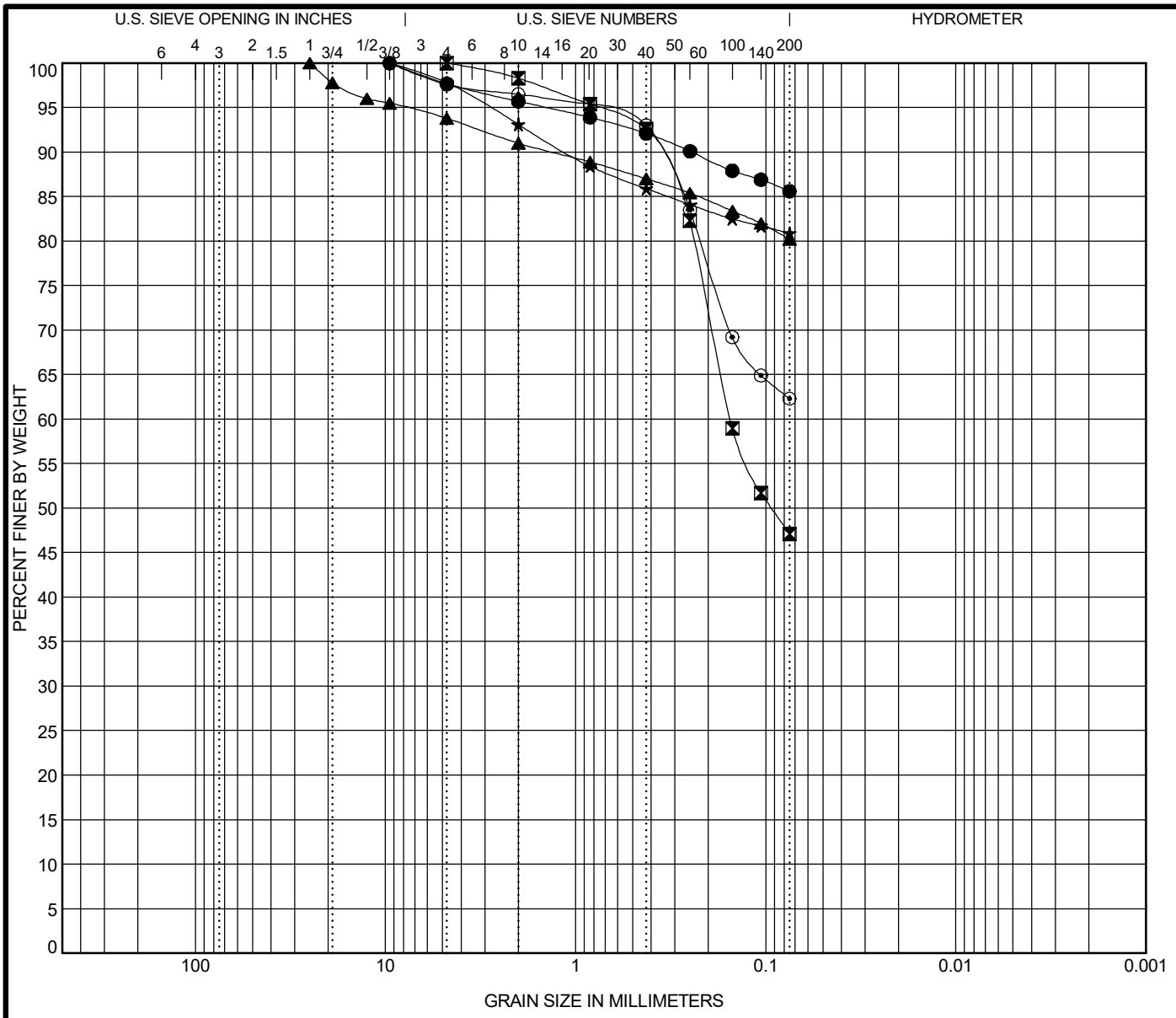
GRAIN SIZE DISTRIBUTION

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

US GRAIN_SIZE A24138.00136.001.GPJ US_LAB.GDT 6/17/25



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification	LL	PL	PI	Cc	Cu
●	W- 6	6.0	ELASTIC SILT(MH), A-7-5 (32)	65	33	32		
⊠	W- 7	5.0	CLAYEY SAND(SC), A-4 (2)	26	16	10		
▲	W- 7	6.0	SILT with SAND(ML), A-7-6 (14)	44	28	16		
★	W- 8	1.0	FAT CLAY with SAND(CH), A-7-6 (22)	52	26	26		
⊙	W- 9	2.0	SANDY LEAN CLAY(CL), A-7-6 (14)	44	18	26		

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	W- 6	6.0	9.5				2.3	12.1	85.6	
⊠	W- 7	5.0	4.75	0.153			0.0	52.9	47.1	
▲	W- 7	6.0	25				6.2	13.6	80.2	
★	W- 8	1.0	9.5				2.2	16.9	80.9	
⊙	W- 9	2.0	9.5				2.4	35.3	62.3	

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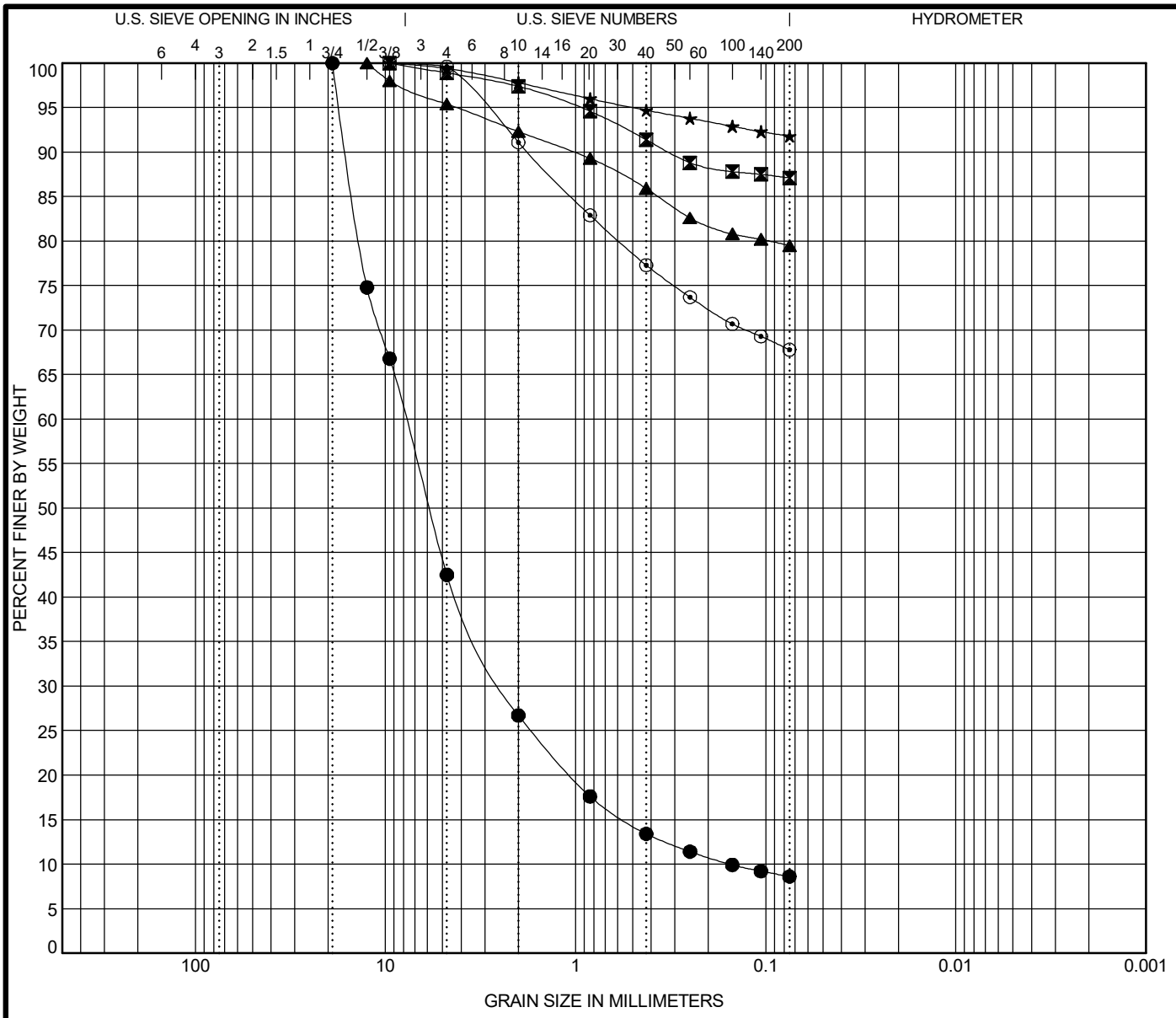
GRAIN SIZE DISTRIBUTION

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

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



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● W- 9	3.5	P. GRADED GRAVEL with CLAY and SAND(GP-GC), A-2-7				4.73	50.42
⊠ W-10	3.5	FAT CLAY(CH), A-7-6 (40)	66	25	41		
▲ W-10	8.0	FAT 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		
⊙ W-11	7.0	SANDY FAT CLAY(CH), A-7-5 (34)	80	31	49		

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● W- 9	3.5	19	7.825	2.396	0.155	57.5	33.9	8.6	
⊠ W-10	3.5	9.5				1.1	11.8	87.1	
▲ W-10	8.0	12.5				4.6	15.9	79.5	
★ W-11	3.5	9.5				0.6	7.6	91.8	
⊙ W-11	7.0	9.5				0.4	31.8	67.8	

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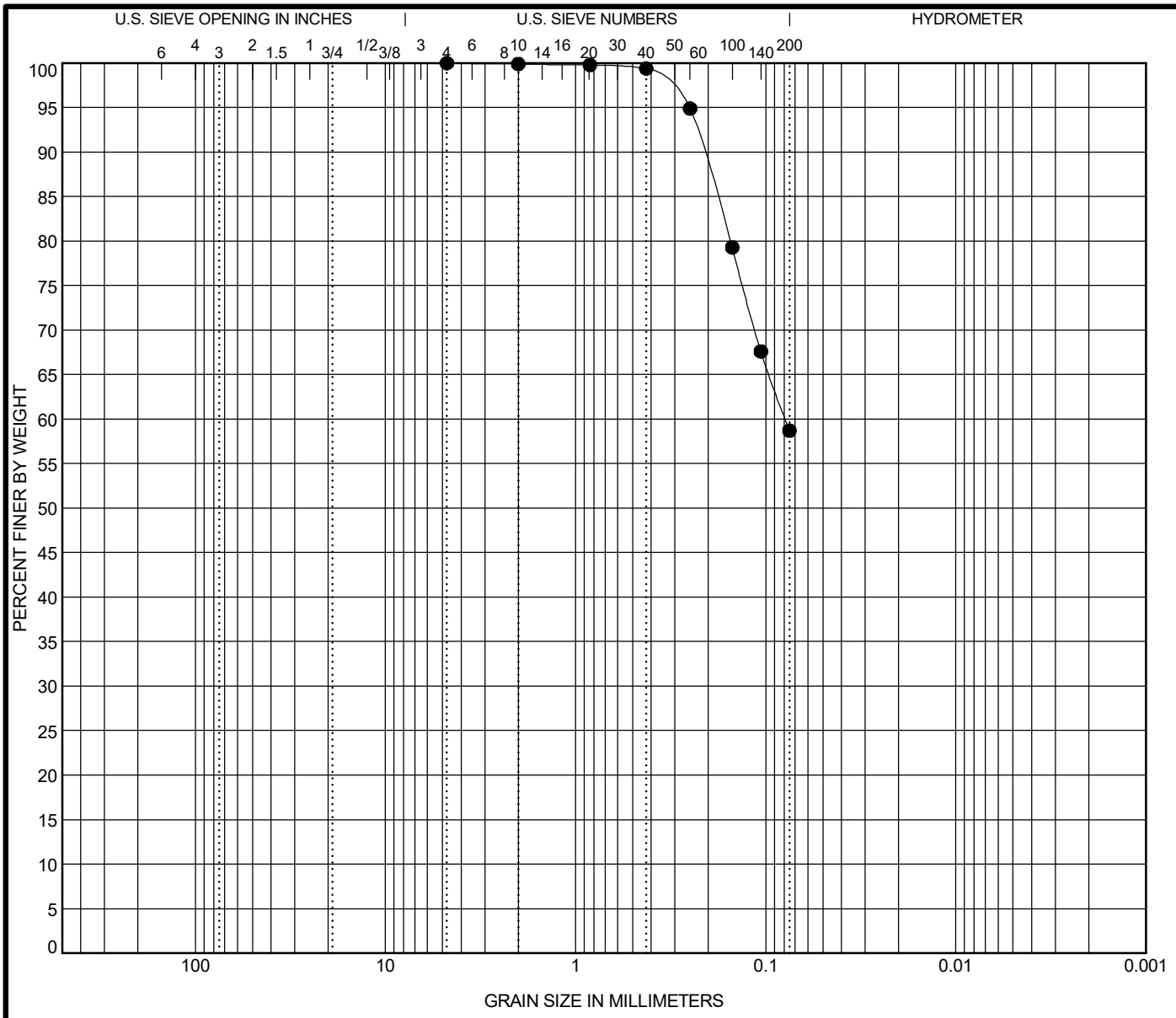
GRAIN SIZE DISTRIBUTION

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

US GRAIN_SIZE A24138.00136.001.GPJ US_LAB.GDT 6/17/25



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	**WB- 1**	**6.0**	**SANDY LEAN CLAY(CL), A-6 (4)**	**31**	**20**	**11**		

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**WB- 1**	**6.0**	**4.75**	**0.079**			**0.0**	**41.3**	**58.7**	

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GRAIN SIZE DISTRIBUTION

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Rest Area Truck Parking
Smith - Putnam County, Tennessee
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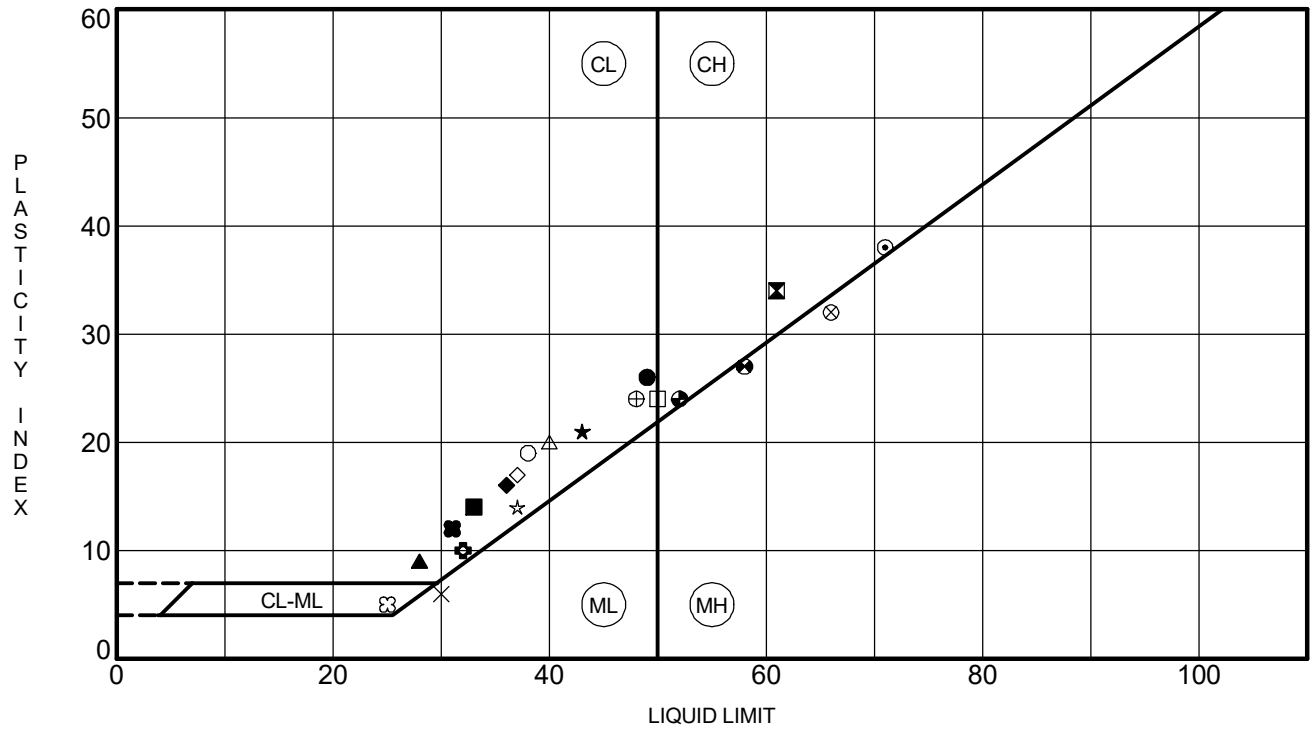

Specimen Identification			LL	PL	PI	Fines	Classification
●	BR-1	8.5	49	23	26	53	SANDY LEAN CLAY(CL), A-7-6 (11)
⊠	BR-1	28.5	61	27	34	73	FAT CLAY with SAND(CH), A-7-6 (25)
▲	BR-1	33.5	28	19	9	32	CLAYEY GRAVEL with SAND(GC), A-2-4
★	BR-2	3.0	43	22	21	50	CLAYEY SAND with GRAVEL(SC), A-7-6 (7)
⊙	BR-2	8.0	71	33	38	30	CLAYEY GRAVEL(GC), A-2-7 (4)
✿	BR-2	18.5	32	22	10	50	SANDY LEAN CLAY(CL), A-4 (2)
○	BR-5	1.5	38	19	19		SANDY LEAN CLAY(CL), A-6
△	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)
❽	E- 2	13.5	58	31	27	89	ELASTIC SILT(MH), A-7-5 (28)
◕	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)
⊠	E- 4	18.5	25	20	5	55	SANDY SILTY CLAY(CL-ML), A-4 (1)
■	E- 5	6.0	33	19	14		LEAN CLAY(CL), A-2-6
◆	E- 5	8.0	36	20	16	50	CLAYEY SAND(SC), A-6 (5)
◇	E- 6	3.5	37	20	17	54	SANDY LEAN CLAY(CL), A-6 (6)
╳	E- 6	6.0	30	24	6	23	SILTY SAND(SM), A-2-4 (0)
❽	E- 7	3.0	31	19	12	38	CLAYEY SAND(SC), A-6 (1)

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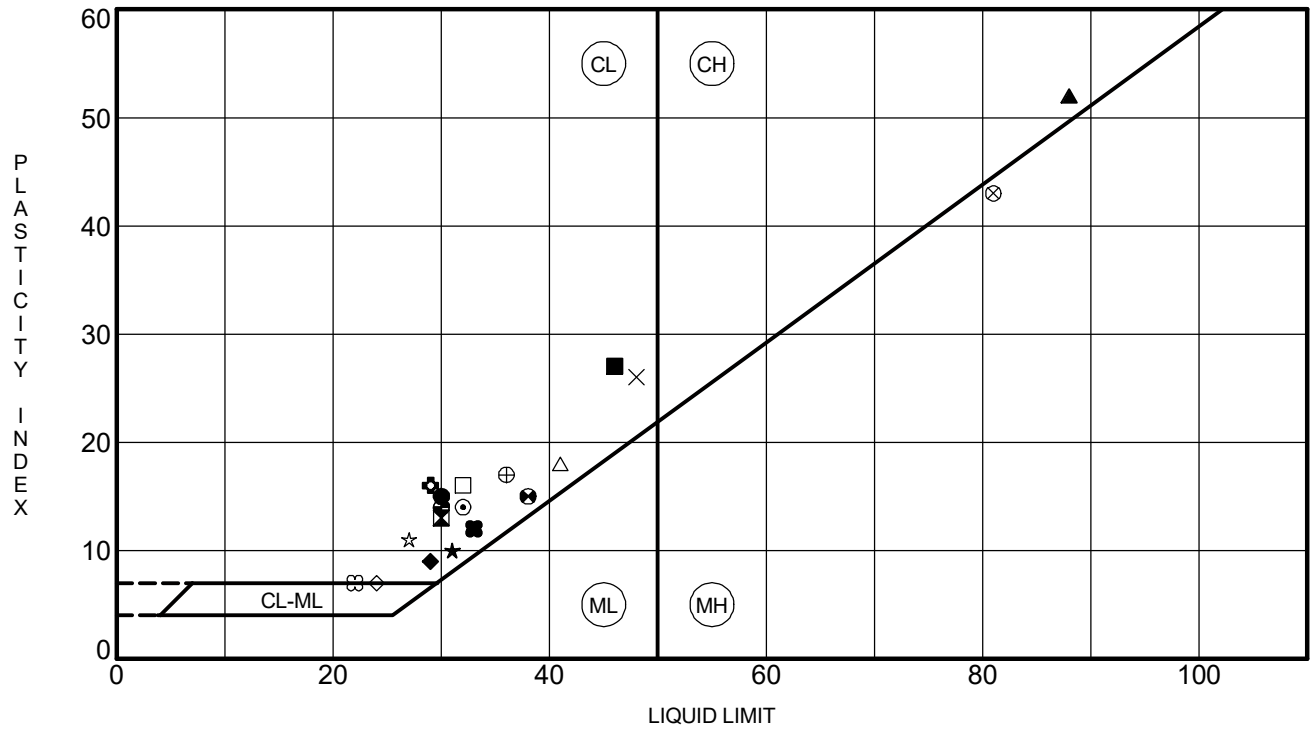
ATTERBERG LIMITS RESULTS

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

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



Specimen Identification		LL	PL	PI	Fines	Classification
E- 7	8.5	30	15	15	59	SANDY LEAN CLAY(CL), A-6 (6)
EB-1	3.5	30	17	13	51	SANDY LEAN CLAY(CL), A-6 (3)
EB-2	3.5	88	36	52	98	FAT CLAY(CH), A-7-5 (63)
P- 1	8.5	31	21	10	38	CLAYEY SAND(SC), A-4 (0)
P- 2	0.5	32	18	14	61	SANDY LEAN CLAY(CL), A-6 (6)
P- 3	6.0	29	13	16	53	SANDY LEAN CLAY(CL), A-6 (5)
P- 4	3.5	30	16	14	57	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	38	23	15	33	CLAYEY SAND(SC), A-2-6 (1)
P-10	3.5	30	16	14	39	CLAYEY SAND(SC), A-6 (2)
W- 1	0.5	27	16	11	49	CLAYEY SAND(SC), A-6 (2)
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)
W- 3	8.5	24	17	7	51	SANDY SILTY CLAY(CL-ML), A-4 (1)
W- 4	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)

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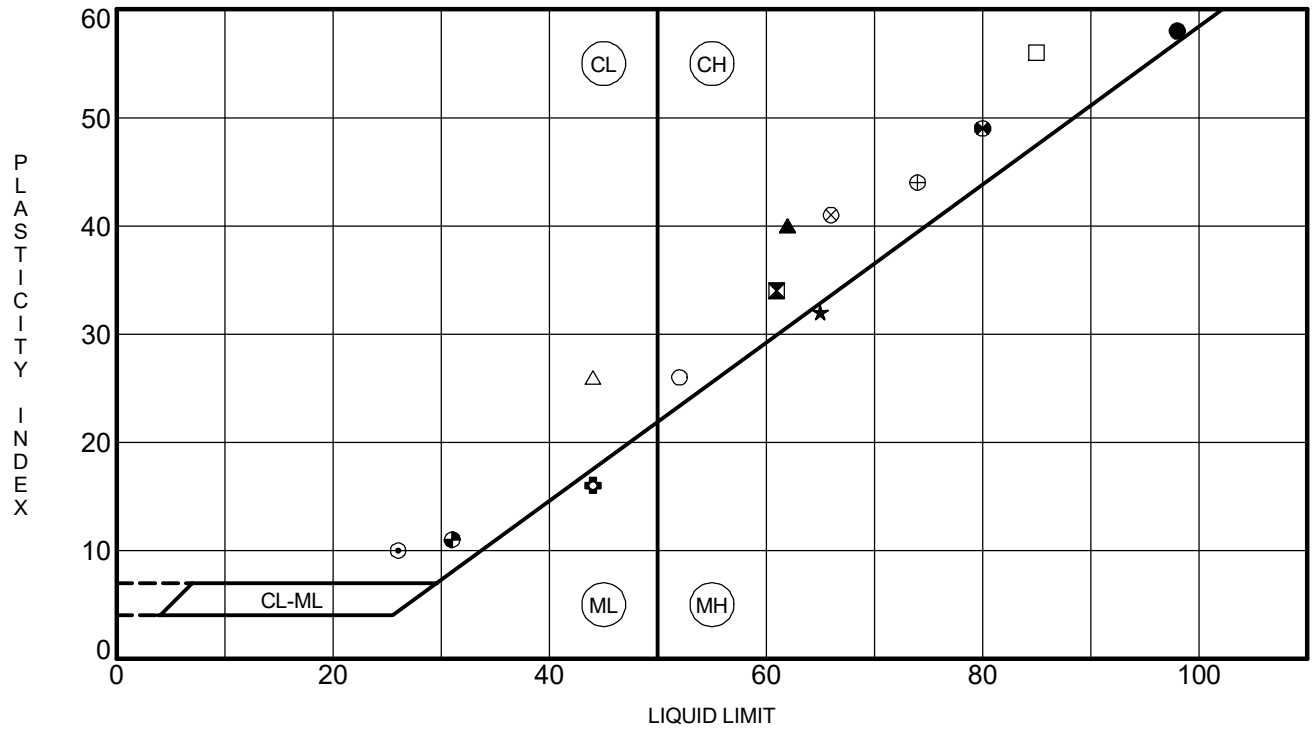
ATTERBERG LIMITS RESULTS

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

US ATTERBERG_LIMITS A24138.00136.001.GPJ US_LAB.GDT 6/17/25



Specimen Identification			LL	PL	PI	Fines	Classification
●	W- 5	8.0	98	40	58	93	FAT CLAY(CH), A-7-5 (66)
⊠	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)
✿	W- 7	6.0	44	28	16	80	SILT with SAND(ML), A-7-6 (14)
○	W- 8	1.0	52	26	26	81	FAT CLAY with SAND(CH), A-7-6 (22)
△	W- 9	2.0	44	18	26	62	SANDY LEAN CLAY(CL), A-7-6 (14)
⊗	W-10	3.5	66	25	41	87	FAT CLAY(CH), A-7-6 (40)
⊕	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)
⊛	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)

UES™

ATTERBERG LIMITS RESULTS

I-40 Bridge Replacement
Rest Area Truck Parking
Smith - Putnam County, Tennessee
A24138.00136.001

US ATTERBERG_LIMITS A24138.00136.001.GPJ US_LAB.GDT 6/17/25

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

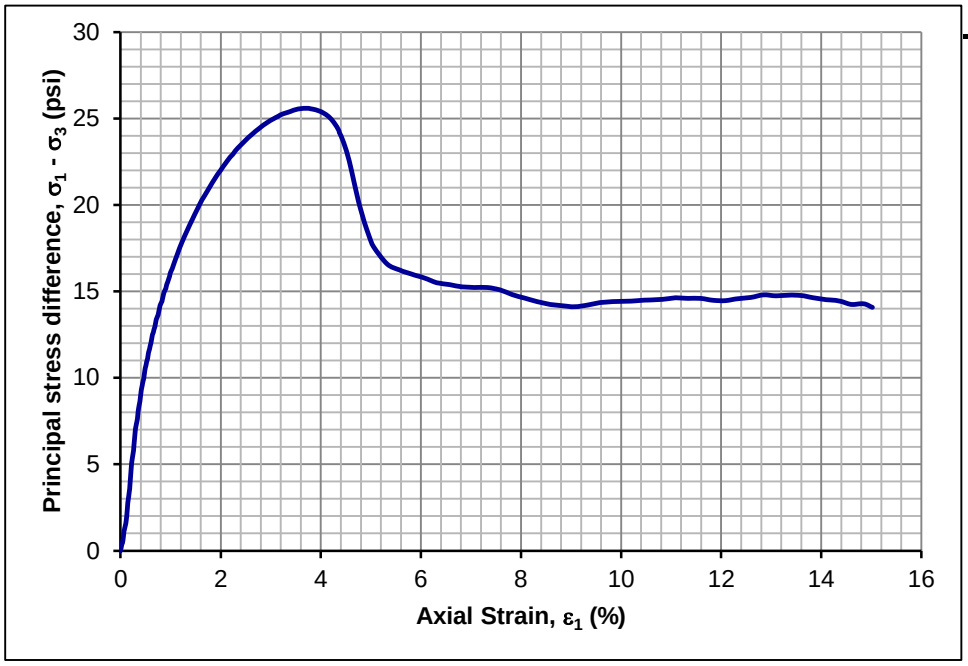
BORING NO.: W-5 SAMPLE NO.: ST-4 DEPTH (ft.): 8.0-10.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Stiff, brown and orange, FAT CLAY - (CH)

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

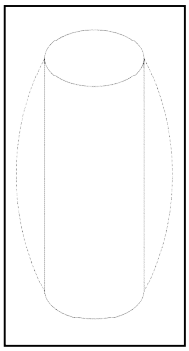
SPECIFIC GRAVITY OF SOLIDS: 2.75 (Assumed) LOAD CELL NO.:

INITIAL SAMPLE DATA	
AVERAGE DIAMETER (in.):	2.85
HEIGHT (in.):	5.89
HEIGHT TO DIAMETER RATIO:	2.07
WET UNIT WEIGHT (pcf):	122.9
DRY UNIT WEIGHT (pcf):	96.0
VOID RATIO:	0.79
MOISTURE CONTENT (%)*:	28.0
DEGREE OF SATURATION (%):	97.7

FAILURE DATA***	
MOISTURE CONTENT AFTER FAILURE (%)**:	**30.0**
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.0**
AXIAL STRAIN AT FAILURE (%):	**3.8**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**25.6**
MINOR PRINCIPAL STRESS AT FAILURE, σ_3 (psi):	**5.3**
MAJOR PRINCIPAL STRESS AT FAILURE, σ_1 (psi):	**30.9**
UNDRAINED COMPRESSIVE STRENGTH, U_u (psf):	**3,680**
UNDRAINED SHEAR STRENGTH, s_u (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

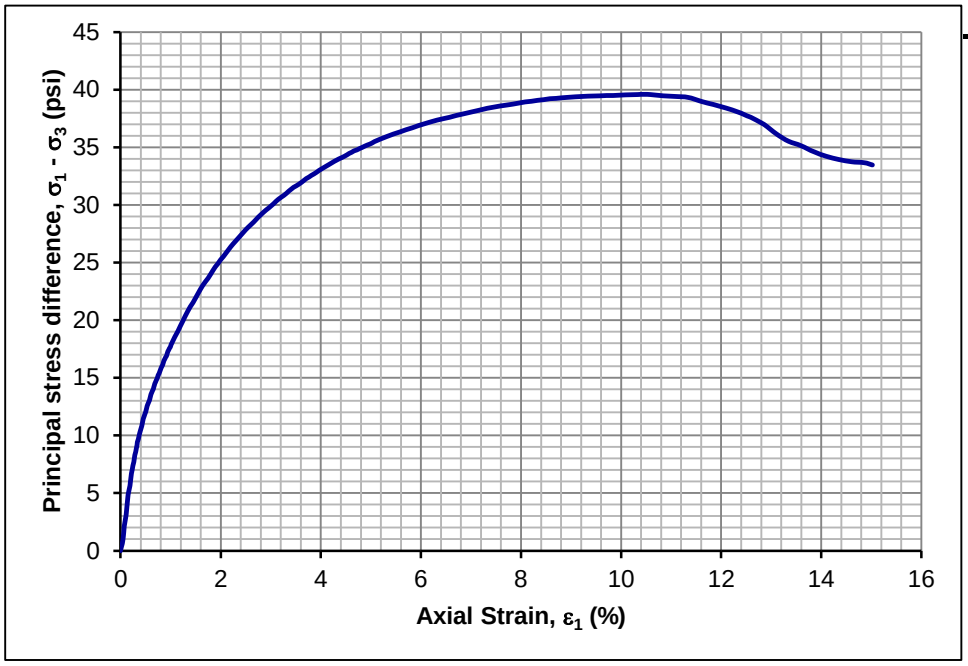
BORING NO.: W-10 SAMPLE NO.: ST-4 DEPTH (ft.): 8.0-10.0
SAMPLE OBTAINED BY: Shelby Tube CONDITION: Undisturbed
SAMPLE DESCRIPTION: Very stiff, brown and orange, FAT CLAY with SAND - (CH)

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

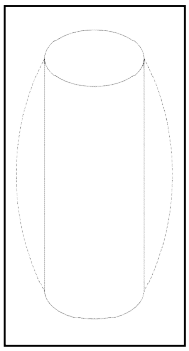
SPECIFIC GRAVITY OF SOLIDS: 2.75 (Assumed) LOAD CELL NO.:

INITIAL SAMPLE DATA	
AVERAGE DIAMETER (in.):	2.86
HEIGHT (in.):	5.89
HEIGHT TO DIAMETER RATIO:	2.06
WET UNIT WEIGHT (pcf):	124.8
DRY UNIT WEIGHT (pcf):	99.0
VOID RATIO:	0.73
MOISTURE CONTENT (%)*:	26.1
DEGREE OF SATURATION (%):	97.6

FAILURE DATA***	
MOISTURE CONTENT AFTER FAILURE (%)**:	**23.6**
AVERAGE RATE OF AXIAL STRAIN TO FAILURE (%/min.):	**1.0**
AXIAL STRAIN AT FAILURE (%):	**10.3**
PRINCIPAL STRESS DIFFERENCE AT FAILURE, $\sigma_1 - \sigma_3$ (psi):	**39.6**
MINOR PRINCIPAL STRESS AT FAILURE, σ_3 (psi):	**5.3**
MAJOR PRINCIPAL STRESS AT FAILURE, σ_1 (psi):	**44.9**
UNDRAINED COMPRESSIVE STRENGTH, U_u (psf):	**5,700**
UNDRAINED SHEAR STRENGTH, s_u (psf):	**2,850**
LIMITING UNDRAINED COMP. STRESS @ 10% STRAIN (psf):	**5,695**

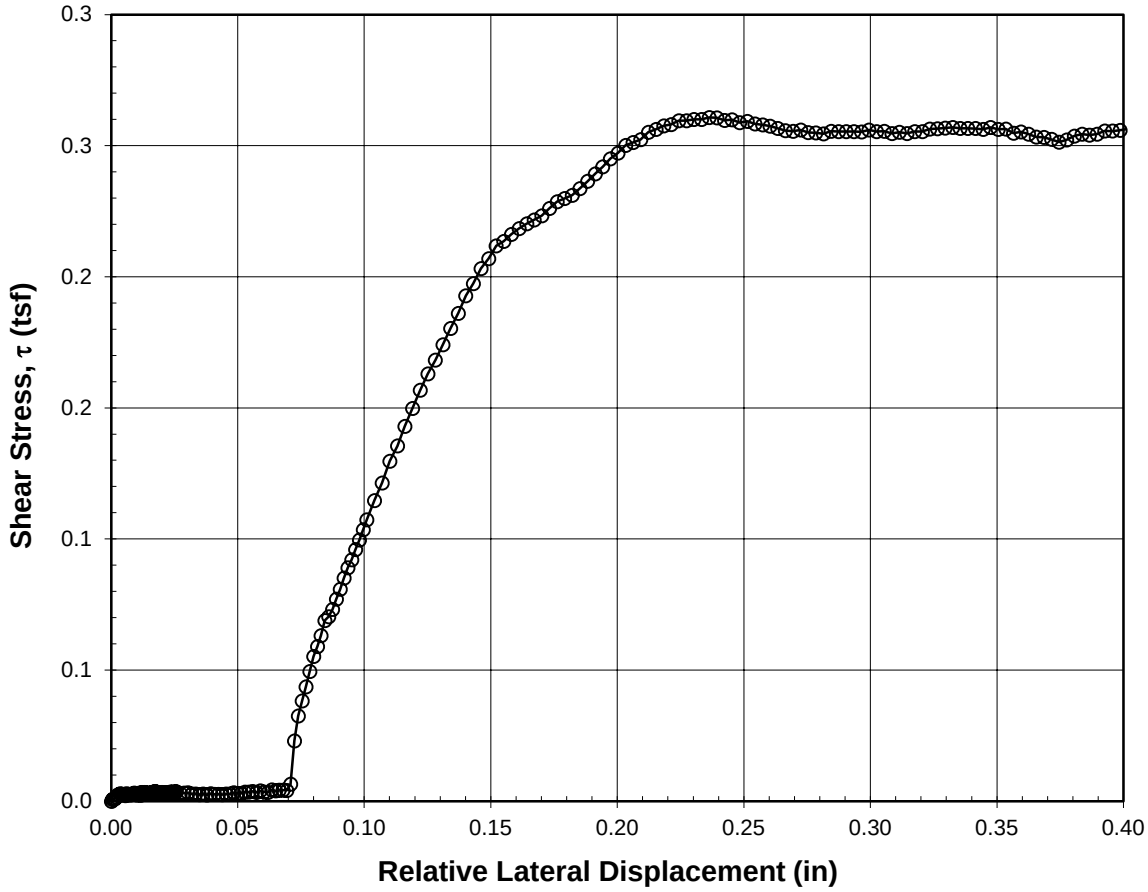


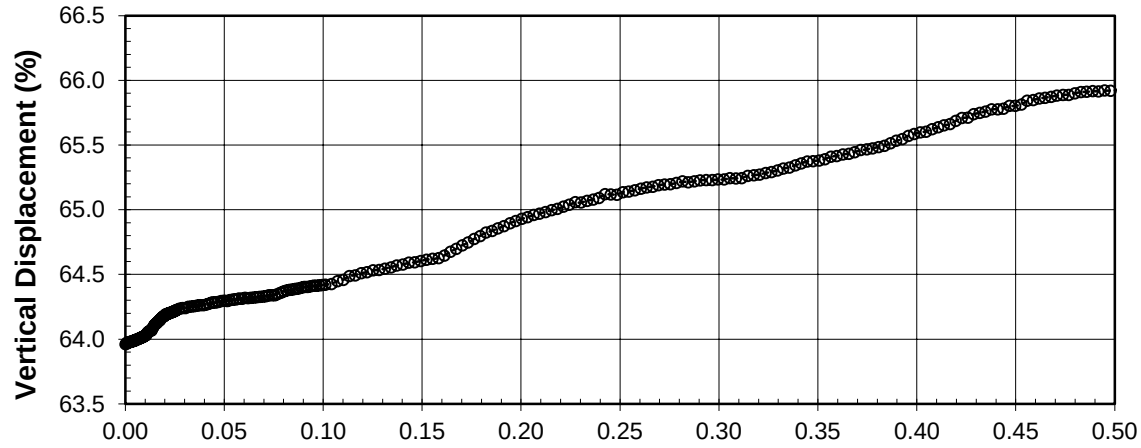
FAILURE SHAPES



REMARKS :

* Initial moisture content determined from sample cuttings.
** Final moisture content determined from entire sample.
*** Failure stress values have been corrected for membrane effects.





(+) Compression
(-) Dilation

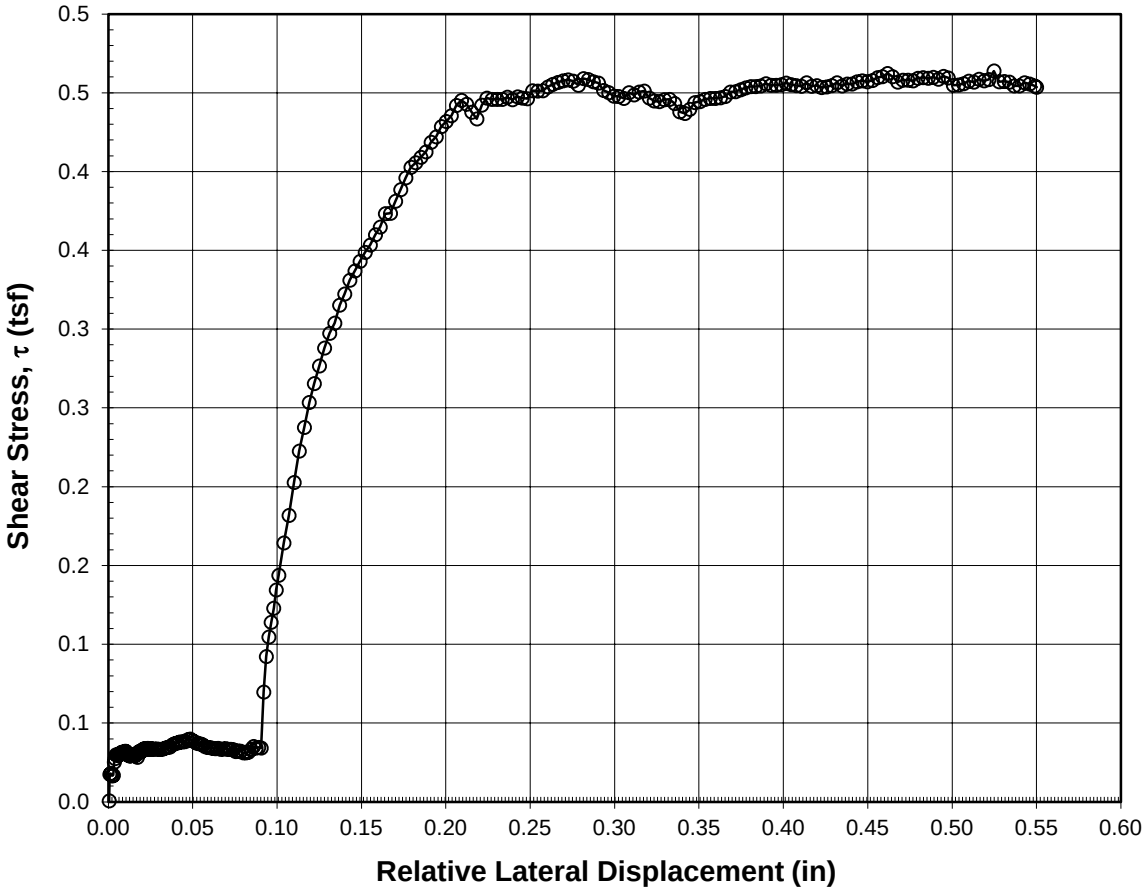
DRAINED DIRECT SHEAR TEST

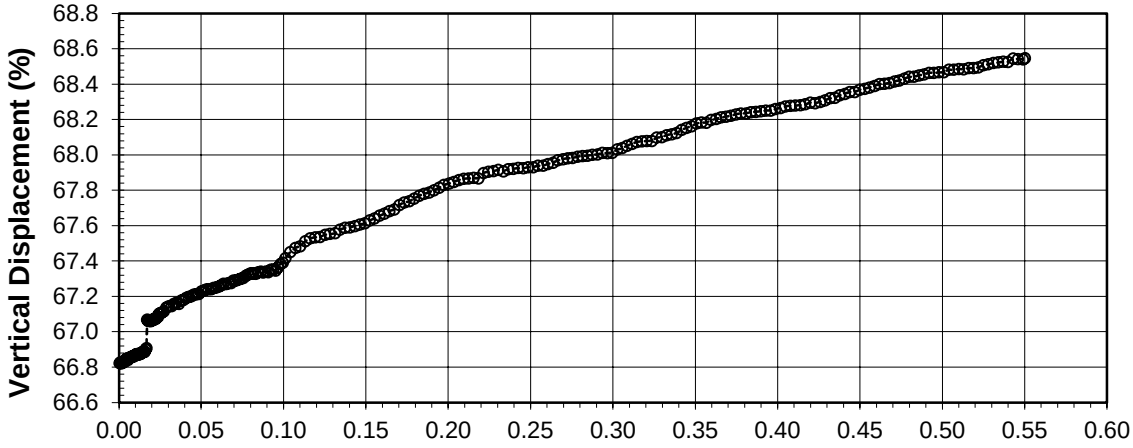
ASTM D 3080

Boring: W-3

Sample: ST-3 - Depth: 8 ft

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





(+) Compression
(-) Dilation

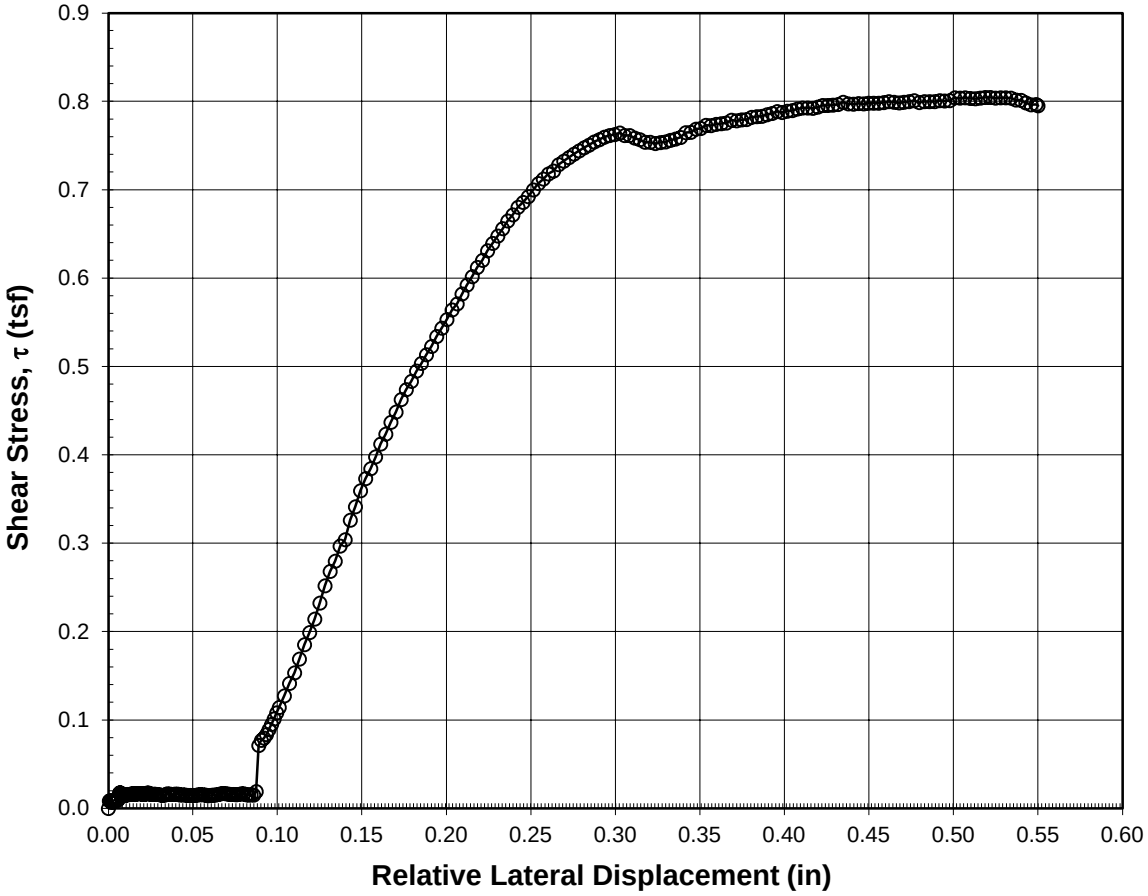
DRAINED DIRECT SHEAR TEST

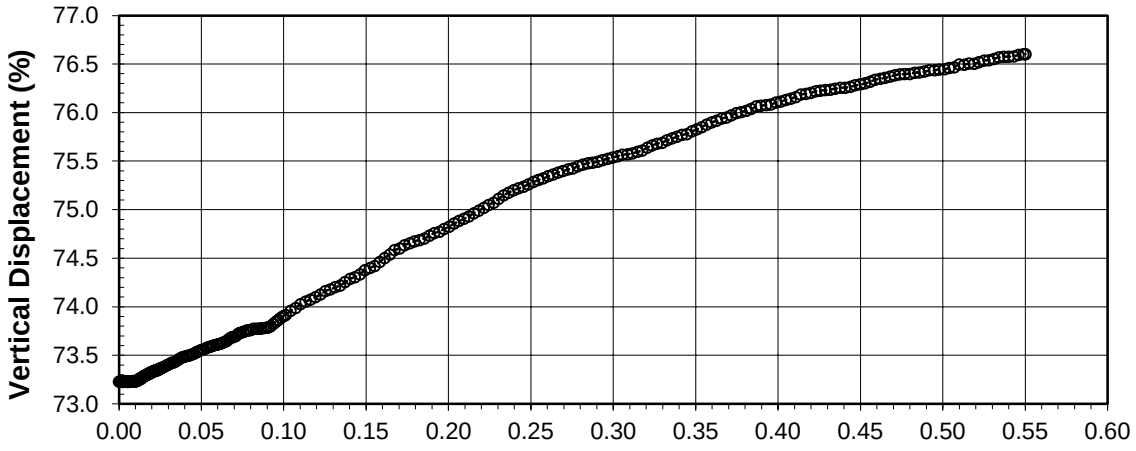
ASTM D 3080

Boring: W-3

Sample: ST-3 - Depth: 6 ft

$\sigma'_{v,c}$ = 10.00 PSI





(+) Compression
(-) Dilation

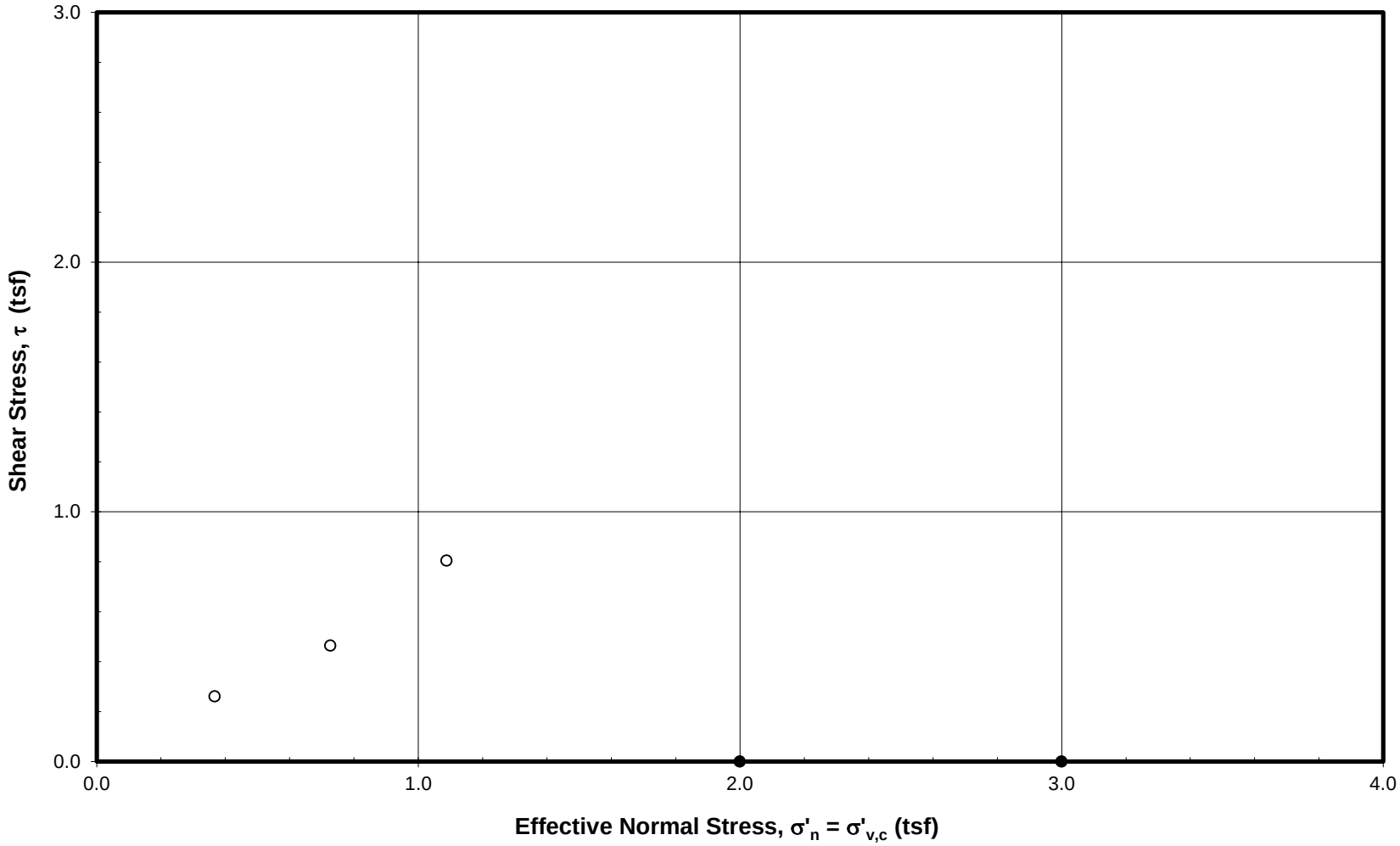
DRAINED DIRECT SHEAR TEST

ASTM D 3080

Boring: W-3

Sample: ST-3 - Depth: 6 ft

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



DRAINED DIRECT SHEAR TEST

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.

Boring No.	Depth (ft.)	USCS/ AASHTO	Liquid Limit (%)	Plastic Limit (%)	Proctor Results		CBR Results				Percent Compaction (%) *
					Maximum Dry Unit Weight (pcf)	Optimum Moisture Content (%)	Blows per Layer	Dry Unit Weight (pcf)	Moisture Content (%) *	CBR	
E-6	0 to 5	CL/ A-6 (7)	37	19	112.3	15.0	25	108.5	14.4	5.9	96.6
							56	115.0	14.2	6.2	102.4
P-2	0 to 5	CL/ A-6 (6)	32	18	113.6	14.3	10	98.7	14.3	1.6	86.9
							25	109.7	14.4	6.2	96.6
							56	114.1	14.5	6.4	100.4
P-5	1 to 10	CL/ A-7-6 (7)	41	23	112.6	15.5	25	109.3	15.9	5.1	97.1
							56	112.8	15.8	3.9	100.2
P-8	0 to 5	CL/ A-6 (6)	32	16	116.8	13.3	10	100.3	12.8	2.0	85.9
							25	112.2	12.8	7.5	96.1
							56	117.8	13.0	8.1	100.9
W-1	0 to 5	SC/ A-6 (2)	27	16	114.8	14.0	10	105.2	13.3	2.5	91.6
							25	113.9	13.4	3.2	99.2
							56	117.2	13.4	5.8	102.1
W-7	1 to 5	SC/ A-4 (2)	26	16	108.6	15.6	25	98.4	14.1	0.9	90.6
							56	107.6	13.7	1.5	99.1
W-11	1 to 7	CH/ A-7-5 (34)	80	31	96.5	23.0	10	81.0	22.2	0.4	83.9
							25	92.7	22.4	1.3	96.1
							56	93.4	21.8	3.4	96.8

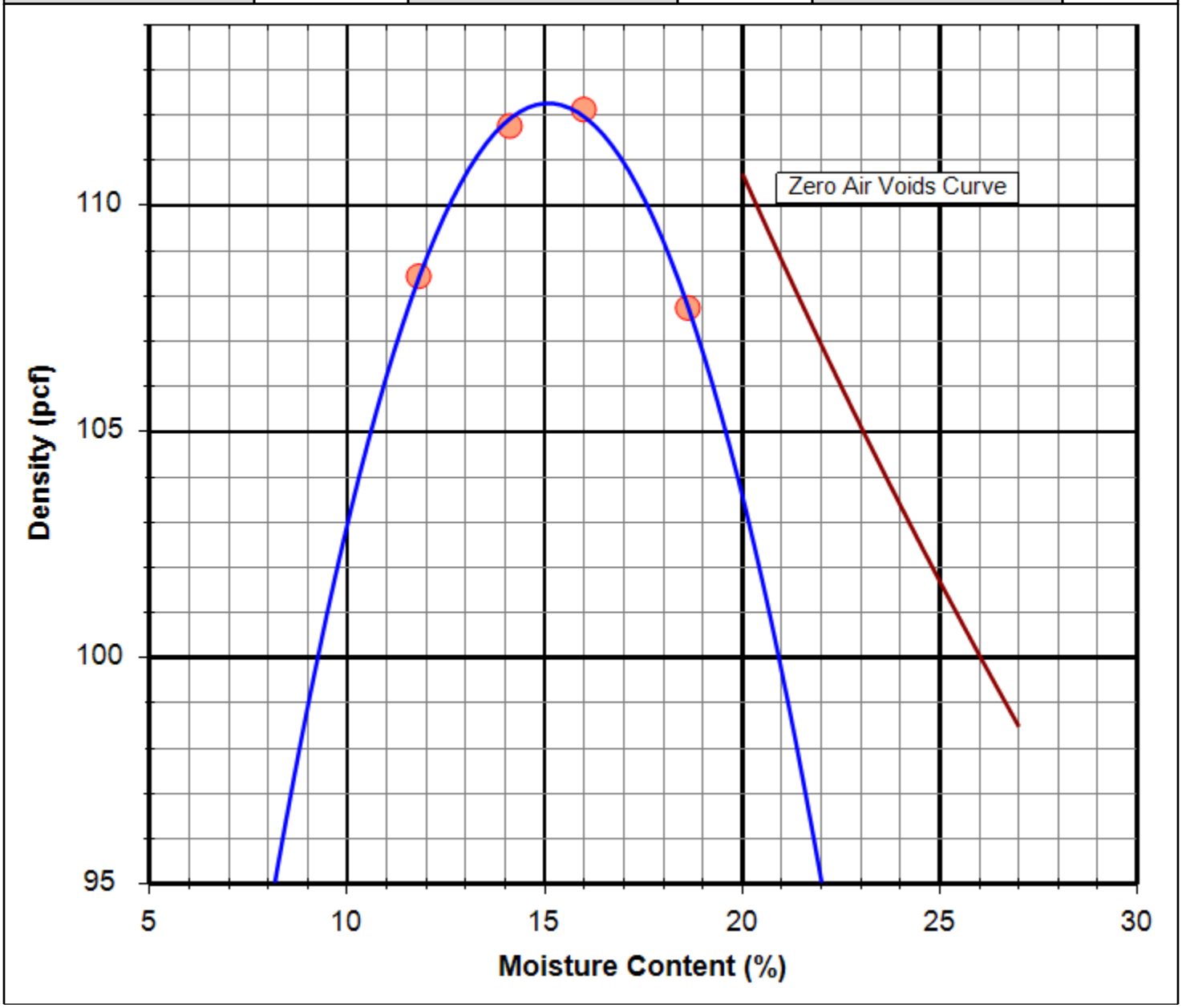
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/9/2025

Sample Obtained From:	E-6	**Depth (ft.):**	0 - 5'

Sample Description:	Red-brown, sandy, LEAN CLAY - (CL), A-6 (6)	**LL**	**PL**	**PI**	**USCS**
		37	20	17	CL

Maximum Dry Density (pcf):	112.3	**Optimum Moisture Content:**	15.0%	**In Situ Moisture Content:**	-



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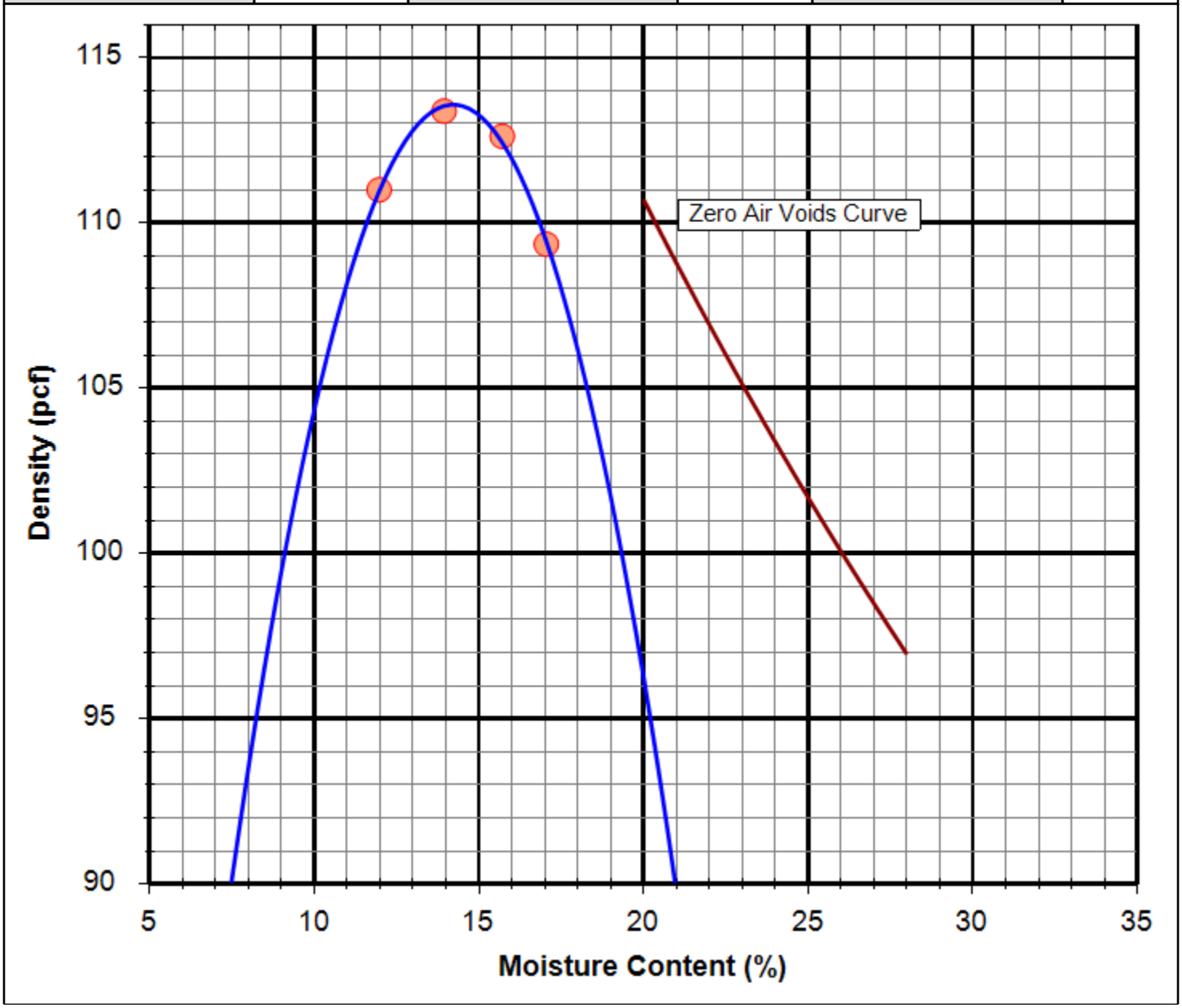
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/9/2025
Sample Obtained From:	P-2	**Depth (ft.):**	0 - 5'
Sample Description:	Brown, sandy, LEAN CLAY - (CL), A-6 (6)		

LL	PL	PI	USCS
32	18	14	CL

Maximum Dry Density (pcf):	113.6	**Optimum Moisture Content:**	14.3%	**In Situ Moisture Content:**	-



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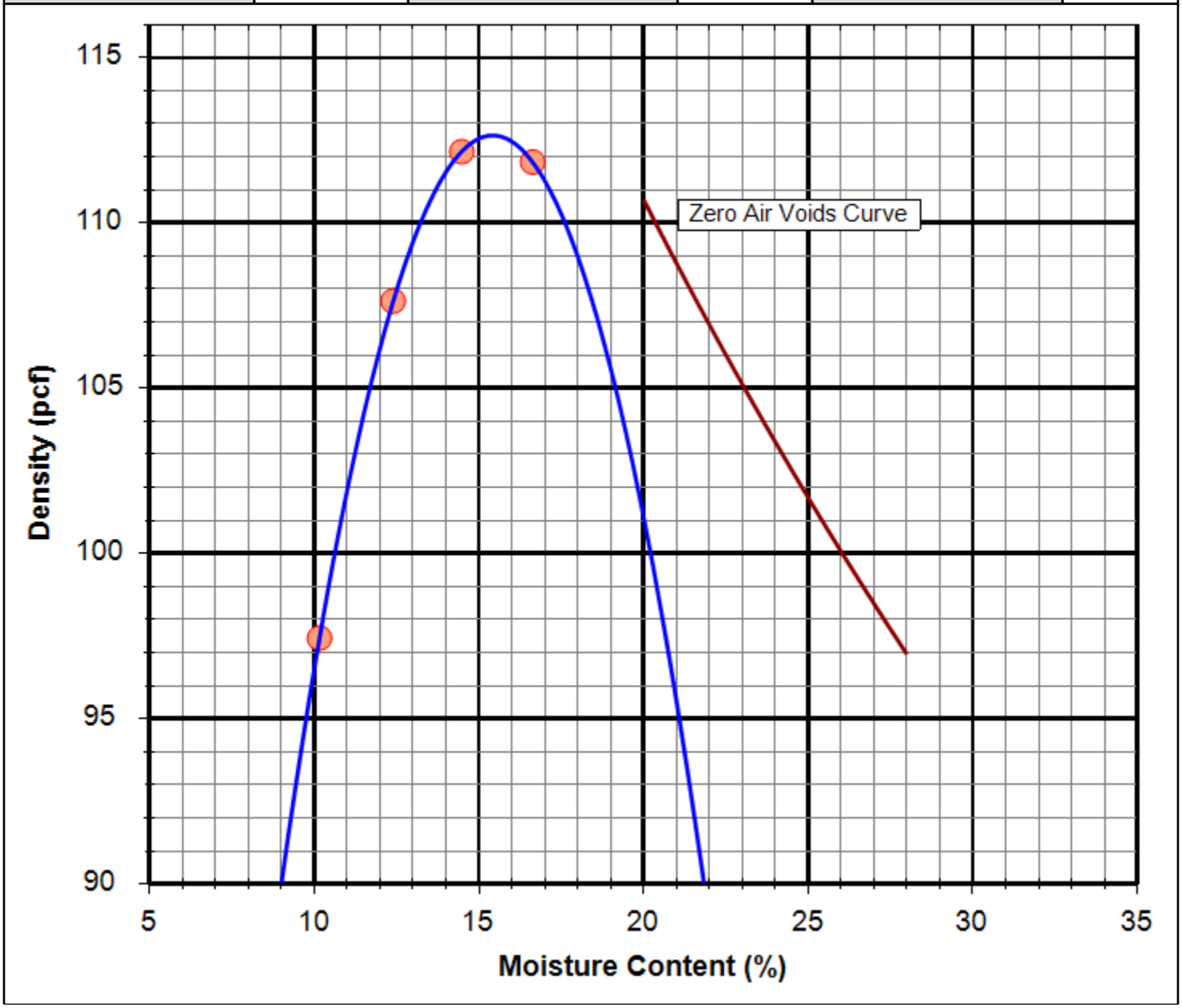
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/2/2025

Sample Obtained From:	P-5	**Depth (ft.):**	1 - 10'

		LL	**PL**	**PI**	**USCS**
Sample Description:	Red-brown, sandy, LEAN CLAY - (CL), A-7-6 (7)	41	23	18	CL

Maximum Dry Density (pcf):	112.6	**Optimum Moisture Content:**	15.5%	**In Situ Moisture Content:**	-



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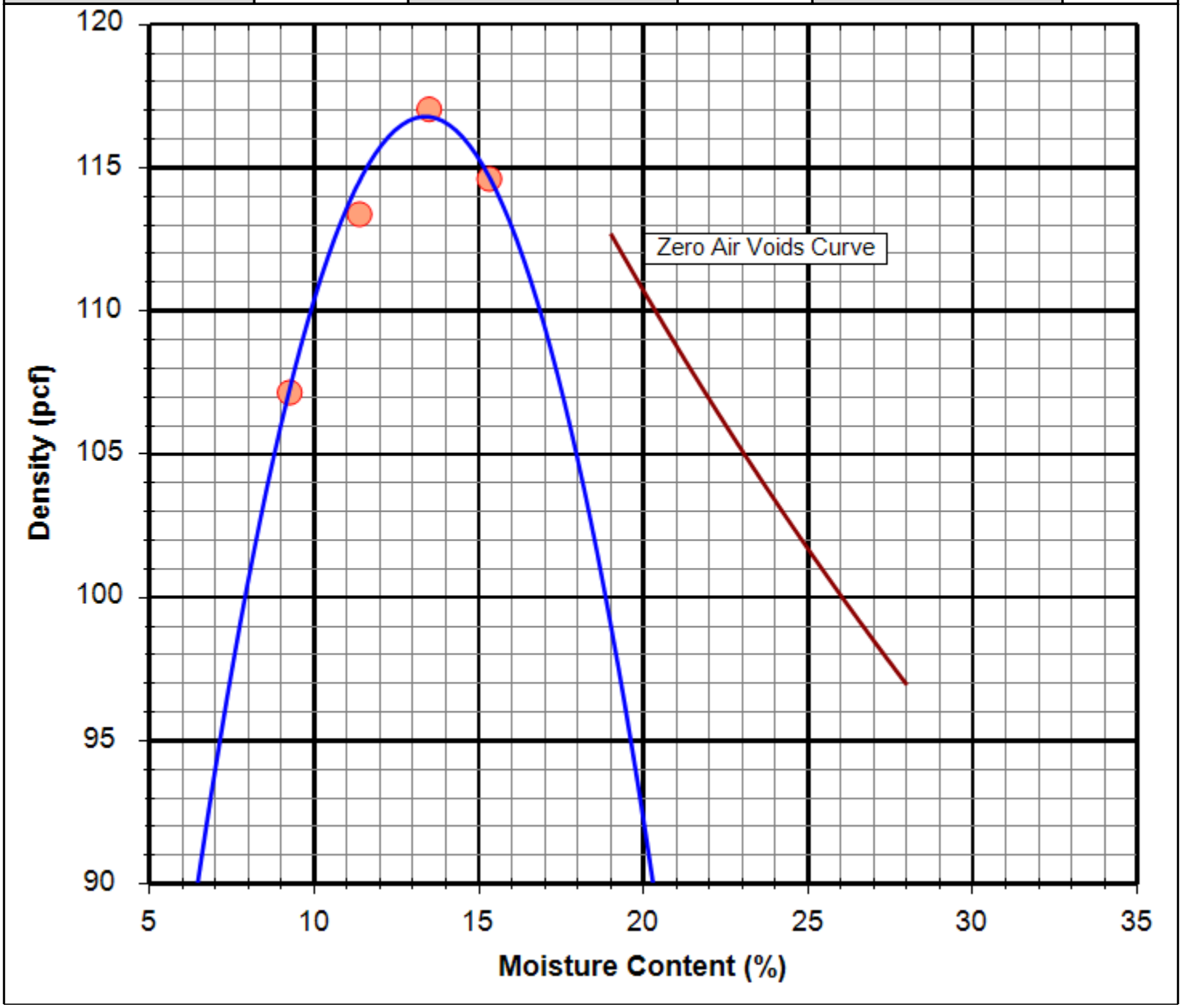
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/2/2025
Sample Obtained From:	P-8	**Depth (ft.):**	0 - 5'
Sample Description:	Brown, sandy, LEAN CLAY - (CL), A-6 (6)		

LL	PL	PI	USCS
32	16	16	CL

Maximum Dry Density (pcf):	116.8	**Optimum Moisture Content:**	13.3%	**In Situ Moisture Content:**	-



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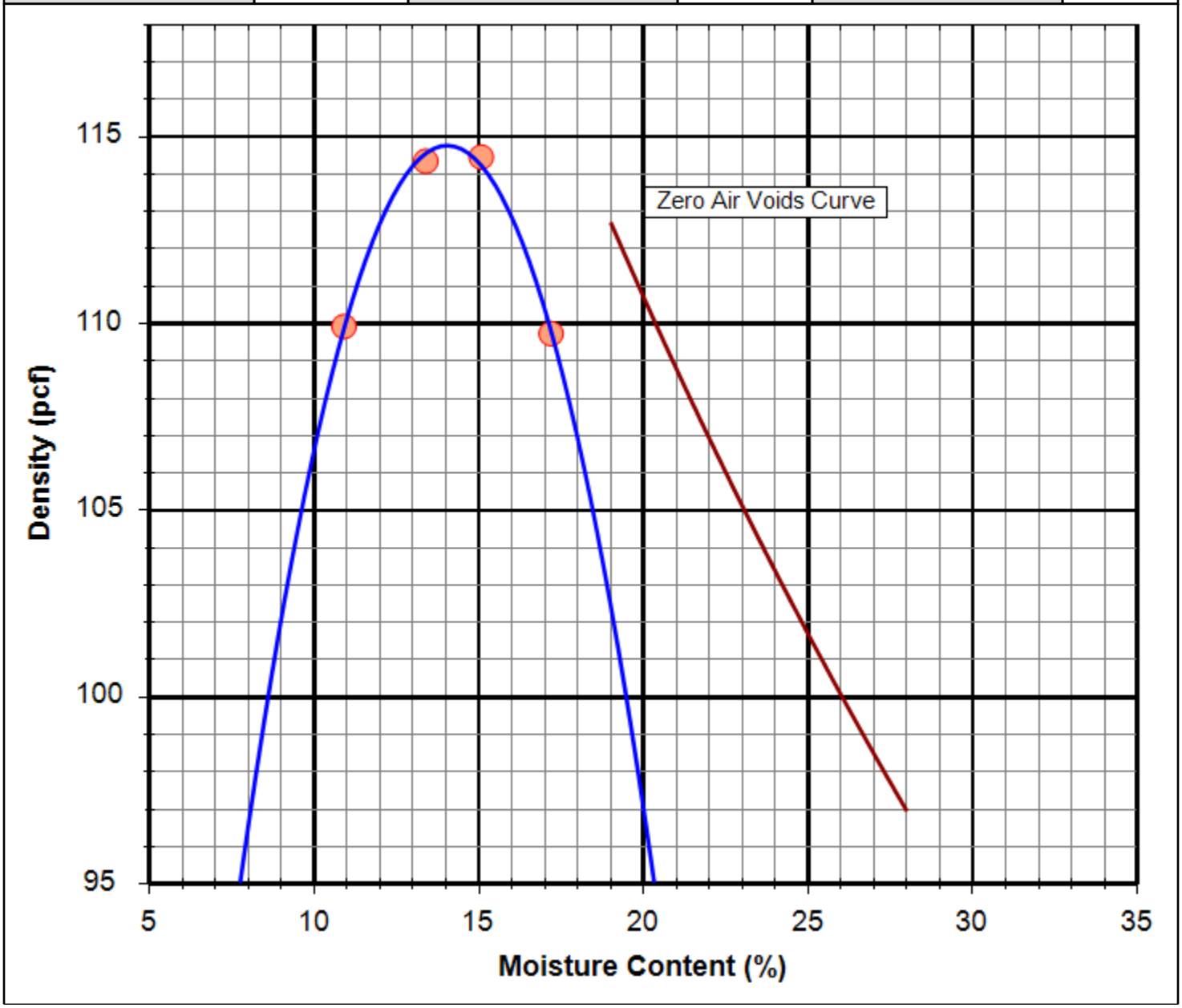
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/23/2025

Sample Obtained From:	W-1	**Depth (ft.):**	0 - 5'

Sample Description:	Brown, CLAYEY SAND - (SC), A-6 (2)	**LL**	**PL**	**PI**	**USCS**
		27	16	11	SC

Maximum Dry Density (pcf):	114.8	**Optimum Moisture Content:**	14.0%	**In Situ Moisture Content:**	-



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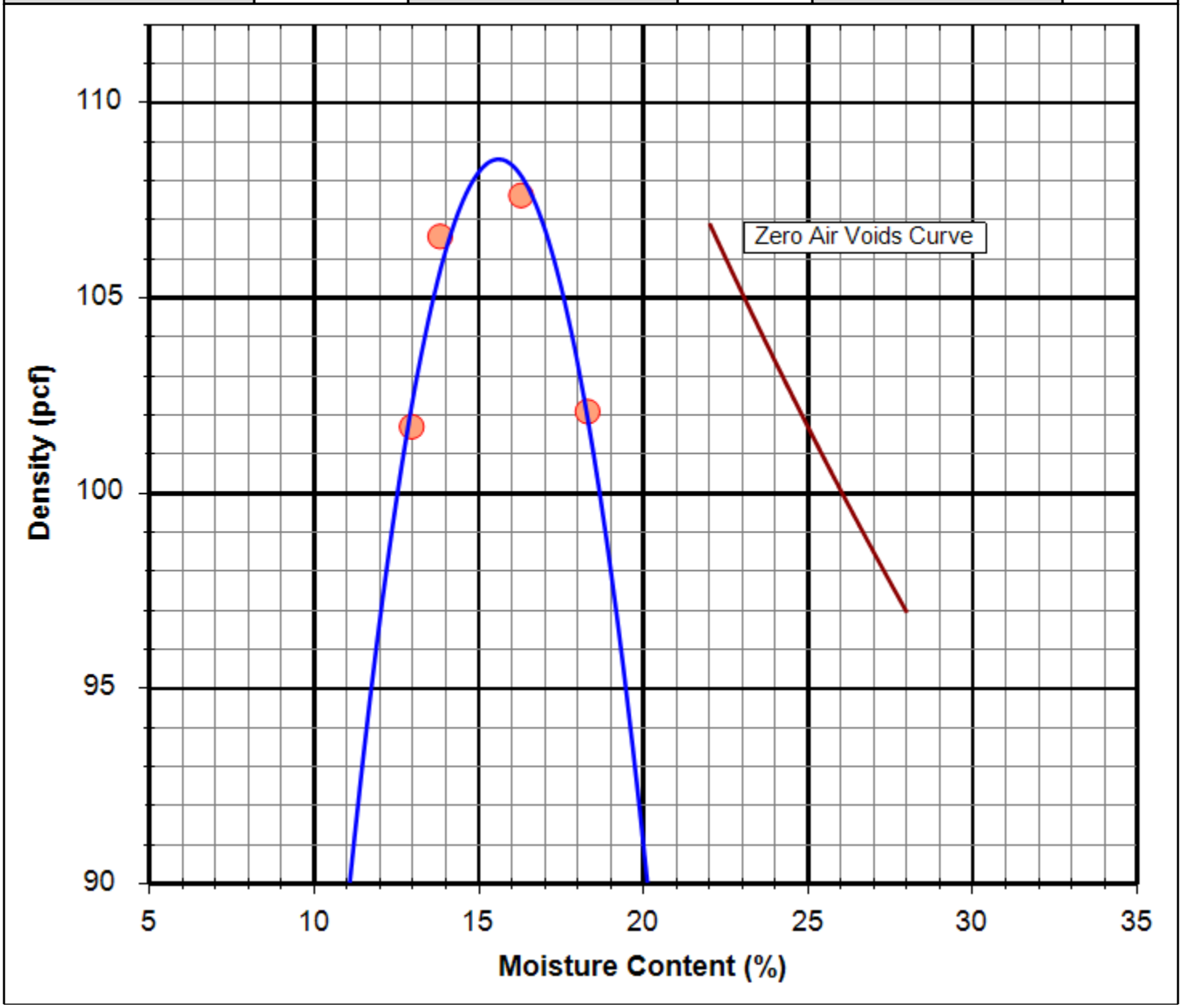
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/14/2025
Sample Obtained From:	W-7	**Depth (ft.):**	1 - 5'

Sample Description:	Brown, CLAYEY SAND - (SC), A-4 (2)	**LL**	**PL**	**PI**	**USCS**
		26	16	10	SC

Maximum Dry Density (pcf):	108.6	**Optimum Moisture Content:**	15.6%	**In Situ Moisture Content:**	-



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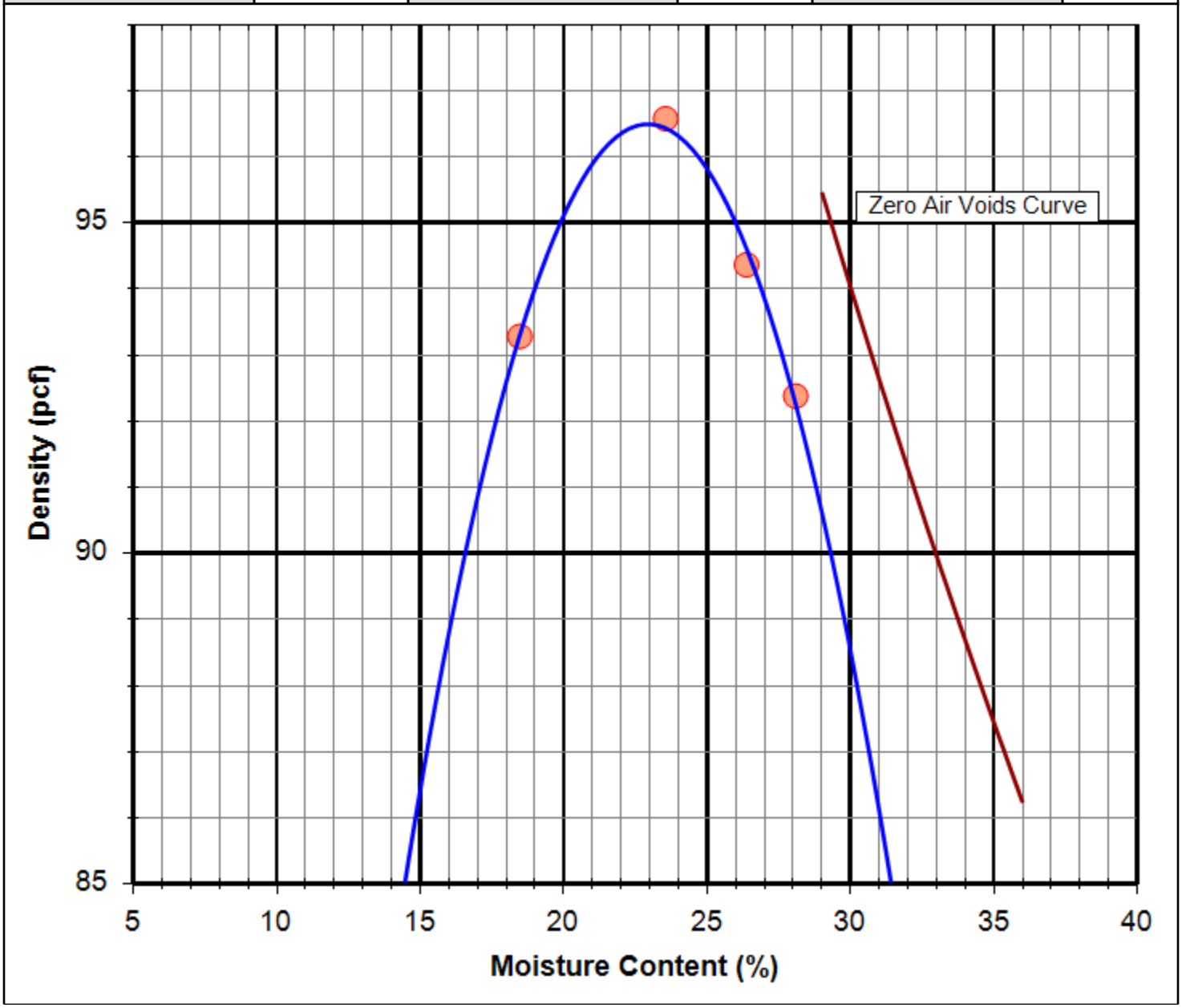
STANDARD PROCTOR MOISTURE DENSITY TEST, ASTM D698, METHOD A

Client:	HMB Professional Engineers, LLC	**Project No.:**	A24138.00136.001
Project:	PIN 131552.01 I-40 Truck Stop and Bridge Replacement over Carney Fork River, Buffalo Valley, TN	**Date:**	5/14/2025
Sample Obtained From:	W-11	**Depth (ft.):**	1 - 7'
Sample Description:	Brown, sandy, FAT CLAY - (CH), A-7-5 (34)		

LL	PL	PI	USCS
80	31	49	CH

Maximum Dry Density (pcf):	96.5	**Optimum Moisture Content:**	23.0%	**In Situ Moisture Content:**	-



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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.	