ARKANSAS DEPARTMENT OF TRANSPORTATION

SUBSURFACE INVESTIGATION

STATE JOB NO. 090550

FEDERAL AID PROJECT NO. BFP-0005(52)

CROOKED CREEK STR. & APPRS. (HARRISON) (S)

STATE HIGHWAY 65B **SECTION** 1B

IN BOONE **COUNTY**

The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the location, character and depth of the materials encountered. The information is only included and made available so that bidders may have access to subsurface information obtained by the Department and is not intended to be a substitute for personal investigation, interpretation and judgment of the bidder. The bidder should be cognizant of the possibility that conditions affecting the cost and/or quantities of work to be performed may differ from those indicated herein.

ARKANSAS DEPARTMENT OF TRANSPORTATION
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MATERIALS DIVISION
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October 14, 2019

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 090550
Crooked Creek Str. & Apprs. (Harrison) (S)
Route 65 Section 1B
Harrison County

Based on soil information from projects in the surrounding area, an estimated R-Value of ten is appropriate for pavement design.

Listed below is the additional information requested for use in developing the plans:

Asphalt Concrete Hot Mix

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.5	94.5
Binder Course	4.4	95.6
Base Course	4.3	95.7

Michael C. Benson
Materials Engineer

MCB:pt:bjj
Attachment
cc: State Constr. Eng. – Master File Copy
District 9 Engineer
System Information and Research Div.
G. C. File

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December 7, 2022

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. 090550
Crooked Creek Str. and Apprs. (Harrison) (S)
Boone County
Route 65B, Section 1B

Introduction

Submitted herein are foundation recommendations for the proposed replacement bridge planned on U.S. Highway 65B in Boone County. This project consists of replacing the existing 62.0-foot-wide, 361.0-foot-long bridge (Bridge No. A1421) over Crooked Creek with a new 365.7-foot-long, 75.3-foot-wide (out-to-out width) structure. The new bridge will be comprised of two continuous reinforced concrete slab units (184.6 feet and 179.4 feet, respectively) and a total of 12 spans.

A design Seismic Operation Classification of "Other" is assigned. Based on conversations with the Design Consultant and Bridge Division, both driven steel H piles and drilled shafts are considered for supporting the foundation loads at the bridge abutments. At the intermediate bents, drilled shafts are planned. A concrete wall is planned at the south abutment (Bent 1) to transition grade. At the north abutment (Bent 13), the existing end slope configuration will be utilized with a minor cut.

Field Investigation

Request for Subsurface Investigation made by Bridge Division was received on July 22, 2022, to develop recommendations for bridge foundations. A total of 27 borings were requested. Borings were generally performed in accordance with the Request for Subsurface Investigation, i.e., two (2) borings at each bent. Additional borings (Borings 3B, 3BC, 9AB, 9AE, 11A, 11AA, 11AB, 12BB and 12BC) where cavities were found or where rock elevation changes abruptly, were performed to better define the depth of competent rock and extent of the capacities. The planned Borings 11B and 12A were not performed due to proximity to the other borings. The approximate locations of the borings are presented in the Plan of Borings included in Attachment A.

The borings were advanced with a track-mounted Acker Renegade rotary drill rig using a combination of hollow-stem auger and diamond core methods. The boring logs, showing the subsurface conditions encountered and the results of field and laboratory tests, are also included in Attachment A. A Legend is attached after the boring logs to interpret / explain the symbols, terms, and conventions used on the logs. Standard Penetration Tests (SPT) were conducted in accordance with ASTM D1586 for field testing and soil sampling. Liners were not used inside the standard split-barrel samplers.

The number of blows required to drive the standard split-barrel sampler for each 6-inch penetration of the total 18-inch drive were counted and shown on the logs. SPT N-values are

defined as the number of blows required to advance the split barrel the final 12 inches. The SPT N-values indicated on the logs are raw (uncorrected) blow counts measured in field.

Core samples of bedrock were retrieved by using NQ3-size triple-tube core barrels (rock core diameter of 1-3/4 in. and hole diameter of 3 in.). For each core run, Rock Quality Designation (RQD) was determined in field by the logger and further evaluated by licensed Professional Geologists (PG). RQD, expressed in percent, is defined as the sum of the intact core pieces that are longer than 4 inches divided by the total length of the core run. The RQD of each core run is indicated on the corresponding log. Core pictures are also included in Attachment A. Groundwater was also observed during the drilling process and noted on the logs.

Lab Investigation

Soil Samples. All samples were brought to the Materials laboratory for further evaluation and testing. Soil samples were tested to evaluate index properties and to verify soil type and classification. Lab tests were performed on representative soil samples to determine moisture content, Atterberg limits, and / or gradation. Tested soils were classified by licensed Professional Geologists in accordance with both USCS and AASHTO soil classification systems. The laboratory test and their corresponding ASTM and / or AASHTO test methods are listed below in Table 1.

Table 1: Summary of Laboratory Tests and Methods

Laboratory	ASTM	AASHTO	Denotation on Logs
Moisture Content	D2216	T 265	Solid Circle Symbol (●)
Sieve Analysis	D6913	T 88	Whole Number in the "- No. 200 %" Column (e.g., 12)
Atterberg Limits	D4318	T 89	Plus symbol (+) on the Right for Liquid Limit
		T 90	Plus symbol (+) on the Left for Plastic Limit

Rock Samples. Rock cores were first examined by licensed Professional Geologists to verify RQD measured in the field and to determine Geological Strength Index (GSI) and Rock Mass Rating (RMR). Compressive strength of rock cores was then determined by uniaxial compressive tests on intact rock cores in accordance with ASTM D7012, Method C. Rock core uniaxial compressive test results, GSI, and RMR are presented in Attachment B.

D_{50} for Scour Analysis. The particle size through which 50% of soil particles by weight passing, D_{50}, is summarized below in Table 2. Detailed particle size distribution curves used for D_{50} determination are also included in Attachment B.

Table 2: Summary of D_{50} for Scour Analysis

Creek Name	Station	Sample Type	Location	D_{50}, mm
Crooked Creek	59+70, 30 Lt.	Bulk	Creek Bank	0.14

Site Conditions

The existing bridge is located on the south side of Harrison on Highway 65B and spans a small, dammed section of Crooked Creek. Crooked Creek flows west to east at the project location. The existing north bridge end is located on top of a man-made levee that protects the town of Harrison from flooding. Outcrops of limestone with interbedded chert can be observed in multiple locations surrounding the existing bridge. These locations include areas on the banks of the creek channel and behind several buildings located around the south end of the bridge. Some of these outcrops depict evidence of dissolution such as cavities. Dissolution features are common in limestone such as those encountered in the retrieved borings and should be anticipated at the project location. Selected site photos are included in Attachment C.

Site Geology

The project alignment is located on the Springfield Plateau of the Ozarks in the Early Mississippian aged Saint Joe Member of the Boone Formation. This formation is a frequent bluff former and ranges in thickness from very thin to over 110 feet thick. It consists of fine-grained, crinoidal limestone that may occasionally contain some smoothly bedded chert. Some beds may display a coarse bioclastic texture. The limestones are frequently gray, but may also be red, pink, purple, brown, or amber. Fossil clasts found in this formation are generally white in contrast to the matrix. Some thin calcareous shales are found in the sequence. The base of the St. Joe Limestone is generally associated with a phospatic, greenish shale or conglomerate. The Everton Formation underlies the St. Joe Formation and the contact between the two is mapped several hundred feet east and downstream from the existing bridge. The Everton Formation is considered to be disconformable with the St. Joe in most places.

Generalized Subsurface Conditions

Generalized Subsurface Profiles are included in Attachment D to aid in visualizing subsurface conditions and stratigraphy. In light of the natural variations in stratigraphy and subsurface conditions, **particularly the varying nature of the limestone, deviation from those illustrated on the profiles must be anticipated.**

Temporary access roads comprised of shot rock (Stratum 1 – Fill) have been built for drilling access. The overburden soils (Stratum 2 – Overburden Soils) are predominantly comprised of moist to wet, very loose to medium dense, brown sand to clayey sand with gravel (limestone and chert rock fragments) to moist to wet, very soft to very stiff, brown clay to sandy clay with gravel.

Soil-filled cavities were encountered in the limestone bedrock in Borings 2B, 3B, 3BC, and 12BB. Bedrock with cavities (Stratum 3 – Incompetent Rock) is considered incompetent.

The basal stratum encountered in the borings is competent moderately hard to hard slightly weathered to unweathered limestone with chert and frequent shale partings (Stratum 4) The estimated elevation of the competent rock (defined as slightly weathered to unweathered rock), as revealed by the borings, are indicated on the Generalized Subsurface Profiles and are also summarized in Table 3.

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Table 3: Estimated Elevation of Competent Rock

Boring No.	Bent No.	Boring Location	Ground Surf. Elev., ft	Depth to Competent Rock, ft	Estimated Elev. of Competent Rock
1A	1	Sta. 57+54, 31 Lt.	1053.7	24.2	1029.5
1B	1	Sta. 57+61, 33 Rt.	1050.7	19.6	1031.1
2A	2	Sta. 57+97, 38 Lt.	1042.5	9.5	1033.0
2B	2	Sta. 57+97, 38 Rt.	1039.9	13.0	1026.9
3A	3	Sta. 58+32, 38 Lt.	1038.5	4.6	1033.9
3B	3	Sta. 58+26, 37 Rt.	1040.3	28.9	1011.4
3BC	3	Sta. 58+35, 37 Rt.	1040.4	31.5	1008.9
4A	4	Sta. 58+60, 37 Lt.	1039.5	10.0	1029.5
4B	4	Sta. 58+60, 38 Rt.	1036.7	3.9	1032.8
5A	5	Sta. 58+92, 38 Lt.	1036.9	11.5	1025.4
5B	5	Sta. 58+92, 37 Rt.	1035.9	4.3	1031.6
6A	6	Sta. 59+23, 36 Lt.	1033.5	6.3	1027.2
6B	6	Sta. 59+23, 37 Rt.	1032.9	6.3	1026.6
7A	7	Sta. 59+52, 36 Lt.	1033.3	6.3	1027.0
7B	7	Sta. 59+53, 37 Rt.	1033.6	6.5	1027.1
8A	8	Sta. 59+81, 37 Lt.	1032.5	5.5	1027.0
8B	8	Sta. 59+82, 37 Rt.	1033.6	5.6	1028.0
9AB	9	Sta. 60+08, 37 Lt.	1032.7	Competent rock not encountered within exploration depth	
9AE	9	Sta. 60+12, 38 Lt.	1032.7	18.9	1013.8
9B	9	Sta. 60+10, 37 Rt.	1033.7	5	1028.7
10A	10	Sta. 60+42, 37 Lt.	1032.8	18.6	1014.2
10B	10	Sta. 60+42, 35 Rt.	1033.6	6.5	1027.1
11A	11 and 12	Sta. 60+84, 30 Lt.	1037.8	Competent rock not encountered within exploration depth	
11AA	11 and 12	Sta. 60+84, 36 Lt.	1038.0	13.8	1024.2
11AB	11 and 12	Sta. 60+98, 32 Lt.	1037.7	12.8	1024.9
12BB	11 and 12	Sta. 60+94, 37 Rt.	1038.0	30	1008.0
12BC	11 and 12	Sta. 60+82, 34 Rt.	1038.7	41.1	997.6
13A	13	Sta. 61+48, 80 Lt.	1051.0	23.6	1027.4
13C	13	Sta. 61+29, 54 Rt.	1052.7	24.8	1027.9

Seismic Conditions

In light of the average subsurface conditions as revealed by the borings, a **Seismic Site Class C (Very Dense Soil and Soft Rock Profile)** is calculated for the project site. Utilizing the Seismic Site Class C and the approximate GPS coordinates of the project site, the following design peak ground acceleration coefficient (A_S), design short-period spectral acceleration coefficient (S_{DS}), as well as design long-period spectral acceleration coefficient (S_{D1}), are determined. These seismic coefficients are summarized in Table 4. The Design Response Spectrum is presented in Attachment E.

Table 4: Summary of Design Ground Motion Acceleration Response Coefficients

Acceleration Coefficient	Value (g)
A_S (Site PGA)	0.094
S_{DS} (0.2 sec)	0.224
S_{D1} (1 sec)	0.117

For the design long-period spectral acceleration coefficient (S_{D1}) of 0.117, a **Seismic Performance Zone 1** is considered applicable to the project site.

Concrete Wall at Bent 1

A concrete wall is planned at the south abutment of the bridge. Detailed information of the concrete wall is not provided at this time. It is recommended that a minimum wall embedment of 2 feet be utilized. Based on the results of Borings 1A and 1B and a minimum wall embedment of 2 feet, foundation soils at the assumed subgrade elevation are expected to be loose to medium dense clayey sand with gravel. Increased bearing resistance and sliding resistance can be achieved by undercutting and backfilling with Section 303 Class 7 Aggregate Base. Nominal and factored bearing capacities and sliding resistance for alternate foundation alternatives are summarized in Table 5 below.

Table 5: Nominal and Factored Bearing Capacities and Sliding Resistance

Foundation Alternative	Estimated Depth of Undercut Below Plan Subgrade, ft	Nominal Bearing Capacity, q_n, ksf	Factored Bearing Capacity, $q_R = \varphi_b q_n$, ksf	Nominal Sliding Factor, $\tan\delta$	Factored Sliding Factor, $\varphi_\tau \tan\delta$
Native Soils	0	8	4	0.58	0.52
Undercut and Backfill w/ Class 7 Base	2	12	6	0.68	0.61

Foundation Recommendations

Steel H-Piling – Bents 1 and Bent 13. Based on the results of the borings, it is recommended steel H-piling be utilized to support the foundation loads at the bridge end bents. Final pile size has not been determined. Steel H-piles should be driven to practical refusal and

should penetrate through embankment fill in the abutment areas and the overburden soils to bear in the competent slightly weathered to unweathered limestone with chert. Preboring will be required at both abutment locations for penetrating through the overburden soils that contain gravel, cobbles, and/or boulders.

Practical refusal is defined as a maximum penetration of 1.0 inch for 20 blows by a pile hammer. For the purpose of estimating pile length, a pile embedment of 6 inches into the moderately hard to hard slightly weathered limestone to unweathered limestone with interbedded chert is assumed. This estimated penetration is based on the results of the borings and our experience with similar foundation rock. The results of the borings indicate moderate to severe driving conditions are expected. Consequently, rock points are recommended for all the h-piles driven to refusal.

A minimum pile penetration of 10 feet, measured below natural ground surface, is recommended. Greater pile length/penetration may be warranted by lateral resistance demand. Based on the results of the borings and the previously noted assumed penetration into the resistant rock, the estimated shallowest pile tip elevation is summarized below in Table 6.

Table 6: Summary of Estimated Shallowest Pile Tip Elevation

Bent No.	Boring No.	Estimated Shallowest Pile Tip Elevation, ft.	Comments
1	1A	1029	Prebore to penetrate overburden soils with gravel, cobbles, and boulders
	1B	1030.5	
13	13A	1027	
	13C	1027.5	

The estimated shallowest pile tip elevation summarized in the table above is based on the evaluation of the rock cores retrieved from the borings. Actual subsurface conditions can vary from those encountered in the borings. As-constructed pile tip elevation can vary and must be field verified.

Nominal axial resistance of steel H piles driven to refusal in competent rock is governed by the structural capacity of the piles. Therefore, the nominal resistance should be determined by the Structural Engineer utilizing applicable AASHTO LRFD design procedures. The Geotechnical Section is available to provide geotechnical inputs for structural evaluation of the nominal axial pile resistance. In light of the expected moderate to severe driving conditions, a resistance factor (φ_c) of 0.50 is recommended for calculating factored structural bearing resistance of H-piles. For steel piling driven to refusal in competent rock, long-term, post-construction settlement is expected to be negligible.

Drilled Shafts – Bents 1 through 13. Drilled shafts are planned to support the foundation loads at the intermediate bents (Bents 2 through 12). In addition, it is understood that drilled shafts are also considered at the abutment bents (Bents 1 and 13).

Drilled shafts should be founded a minimum of two (2) shaft diameters into the competent moderately hard to hard, slightly weathered to unweathered limestone with chert. Diameter of the drilled shafts has not been provided.

A maximum nominal bearing capacity (q_p) of 120 ksf is recommended for drilled shafts founded as recommended above. Shaft side resistance should be neglected from design consideration. Applying the resistance factor to the nominal tip resistance results in a maximum factored tip resistance (q_R) of 60 ksf.

It is recommended the drilled shafts be designed utilizing the estimated elevation of competent rock summarized in Table 3 and a rock socket of minimum two shaft diameters into the competent rock. Actual competent rockline elevation at the drilled shaft locations can vary and must be field verified. Depending on specific rock quality, deepening or shortening of shaft length can be warranted. Settlement of properly constructed drilled shafts founded into the competent rock should be negligible.

In light of the varying nature of the limestone at this job site, we recommend one test boring be drilled at each shaft location prior to drilled shaft excavation. Test borings should be 1-1/2 inches or larger and should extend to a minimum depth of 1.5 times the shaft diameter below the planned tip elevation.

Geotechnical Input Parameters for Lateral Load Analysis Using LPile – Bents 1 through 13. It is understood lateral load analysis will be performed by the Structural Engineer using the commercial computer program LPile. The following generalized geotechnical input parameters (Table 7) are recommended for use in LPile lateral load analysis.

Table 7: Generalized Geotechnical Parameters (Intact Soils) for LPile Analysis

Stratum	Overburden Soils (Stratum 2)	Incompetent Rock (Rock with Soil Filled Cavities – Stratum 3)	Competent Rock (Slightly Weathered to Unweathered – Stratum 4)
p-y Curve Model	Sand (Reese)	Stiff Clay w/ Free Water	Weak Rock
Effective Unit Weight, γ', pcf	120	80	100
Undrained Shear Strength, c_u, psf	NA	1500	NA
Strain Factor, ε_{50} (Soil) / k_{rm} (Rock)	NA	0.007	0.0005
Friction Angle, ϕ, °	30	NA	NA
Soil Modulus, k, pci	20	500	NA
Uniaxial Compressive Strength, q_u, psi	NA	NA	3500
Initial Modulus of Rock Mass, E_m, psi x 10^6	NA	NA	5.0
RQD, %	NA	NA	60

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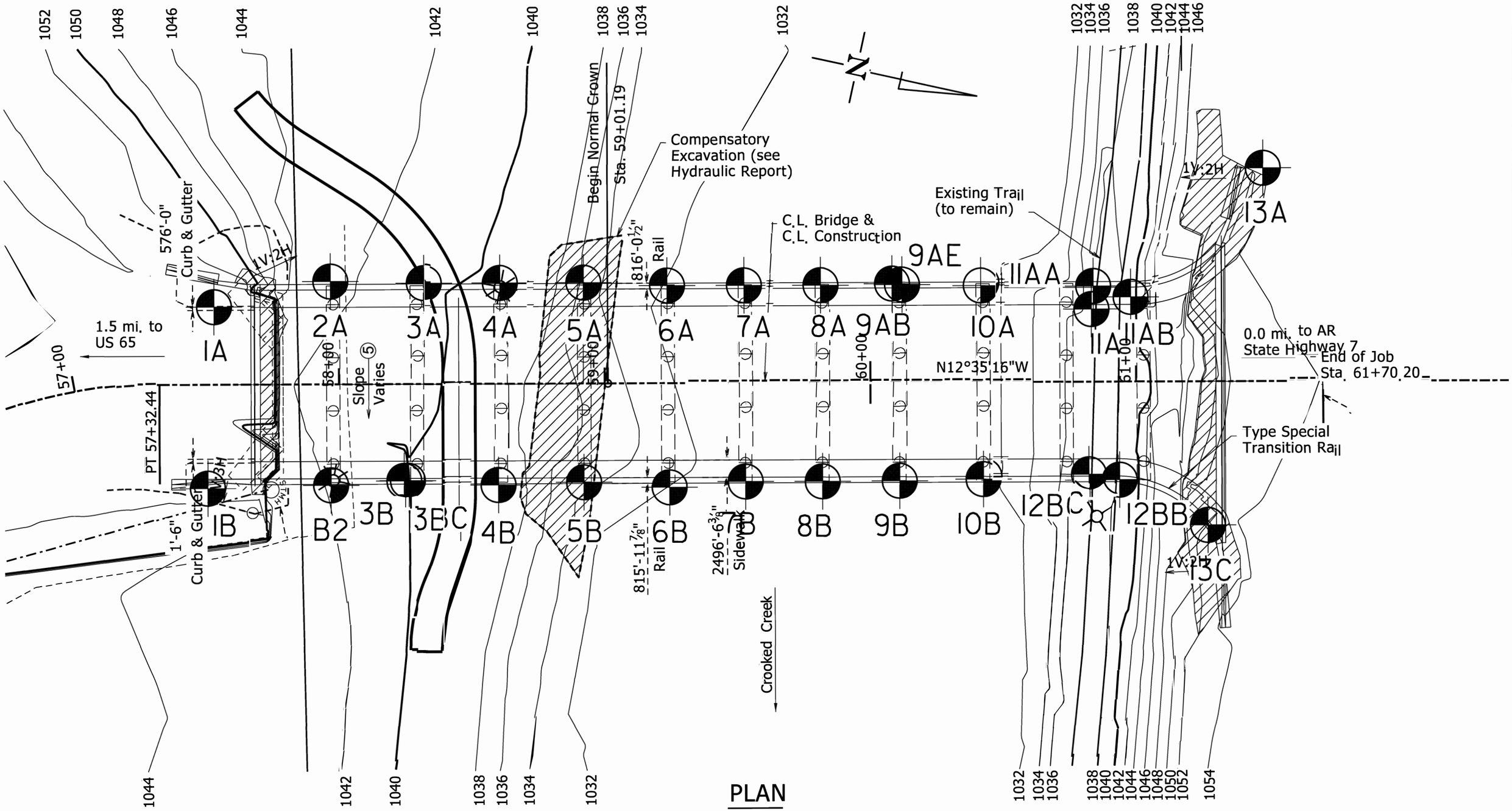
Depth and elevation of each subsurface stratum should be evaluated based on specific boring logs, actual topographic data, and grading plan utilizing the interpretations illustrated on the Generalized Subsurface Profiles (Attachment D).

Paul Tinsley
Materials Engineer

PT:yz:mlg:pwt:pwc
cc: State Construction Engineer
District 9 Engineer
G. C. File

Attachment A



PLAN

⑤ See SUPERELEVATION TRANSITION SKETCH

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1A
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 57+54
LOCATION: 31' Left of Construction Centerline
LOGGED BY: Coty Campbell

DATE: August 28, 2022
TYPE OF DRILLING: Auger to 24.1 Feet - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 27.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1053.7	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Clay						
10			Moist, Loose, Brown Clayey Sand with Gravel				3 4-4 4 3-3		
15									
20			Moist, Loose, Brown Sand with Gravel				2 3-5		
25			Moist, Medium Dense, Brown Clayey Sand with Gravel				7 13-8		
			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray*					100	38
30			Boring Terminated						
35									

REMARKS: *Boring terminated at 27.5' below ground level due to broken kelly bar.

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MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1B
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 57+61
LOCATION: 33' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 14, 2022
TYPE OF DRILLING: Auger to 19.6' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 33.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1050.7	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Moist, Stiff, Brown Sandy Clay with Gravel				3 5-4		
			Moist, Loose, Brown Clayey Sand with Gravel				3 3-4		
10			Moist, Medium Dense, Brown Clayey Sand with Gravel (Limestone Rock Fragments)				3 9-7		
15			Moist, Very Loose, Brown Clayey Sand with Gravel (Limestone Rock Fragments)				1 2-0		
20			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray				30 (0")	100	40
25			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard with Moderately Hard Layers, Frequent Shale Partings (Stylolites), Gray					98	64
30								100	70
35			Boring Terminated						

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2A
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 57+97
LOCATION: 38' Left of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 11, 2022
TYPE OF DRILLING: Auger to 9.0 - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 23.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1042.5	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Moist, Medium Dense, Red and Brown Sand with Gravel (Limestone and Chert Rock Fragments)				9 18-12		
10			Sand with Gravel, Cobbles, and Boulders (Limestone Rock Fragments)*					32	18
15			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings and Seams (Stylolites), Gray					94	94
20								100	82
25			Boring Terminated						
30									
35									

REMARKS: *Partial water loss from 9.0 to 23.3 feet below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
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BORING NO. 2B
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 57+97
LOCATION: 38' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 16, 2022
TYPE OF DRILLING: Auger to 4.5' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 23.6

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1039.9	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Moist, Dense, Brown and Gray Clayey Sand with Gravel (Limestone Rock Fragments)		•		3 6-31		
5			LIMESTONE WITH INTERBEDDED CHERT*				60 (1")		
			LIMESTONE WITH INTERBEDDED CHERT - Slightly Weathered, Moderately Hard, Gray					100	75
10									
			0.7' Thick Soil-Filled Cavity					54	31
			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray						
15			0.9' Thick Soil-Filled Cavity						
			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					100	45
20									
								100	60
			Boring Terminated						
25									
30									
35									

REMARKS: *Water was encountered at approximately 4.0 feet below ground level.

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BORING NO. 3A
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+32
LOCATION: 38' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: July 23, 2022
TYPE OF DRILLING: Auger to 4.6 Feet - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 22.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1038.5	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Sand with Gravel						
5			Dry, Very Dense, Gray Sand With Gravel (Limestone Rock Fragments)				60 (1")		
			LIMESTONE WITH INTERBEDDED CHERT - Unweathered wtih Occasional Slightly Weathered Layers, Hard, Frequent Shale Partings (Stylolites), Gray					100	45
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Occasional Fractures, Gray					90	40
15								100	57
			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray						
20								96	48
			Boring Terminated						
25									
30									
35									

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3B
PAGE 1 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+26
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 12, 2022
TYPE OF DRILLING: Auger to 1.6 Feet - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 33.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1040.3	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Brown Clay and Gravel (Limestone Rock Fragments)						
								82	17
5			LIMETONE WITH INTERBEDDED CHERT - Unweathered, Hard, Occasional Shale Partings (Stylolites), Gray					100	68
10								38	24
15			Soil Filled Cavity from 10.8 to 23.9 Feet					0	0
20								0	0
25								38	0
30			LIMESTONE WITH INTERBEDDED CHERT - Weathered with Highly Weathered Layers, Moderately Hard with Soft Layers, Gray and Red Cavity LIMESTONE WITH INTERBEDDED CHERT - Weathered with Highly Weathered Layers, Moderately Hard with Hard Layers, Frequent Shale Partings and Seams (Stylolites), Gray and Red					82	34
35									

REMARKS: *Boring terminated do to core barrel failure.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3B
PAGE 2 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+26
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 12, 2022
TYPE OF DRILLING: Auger to 1.6 Feet - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 33.9

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1040.3						
			LIMESTONE WITH INTERBEDDED CHERT - Slightly Weathered, Moderately Hard with Hard Layers, Frequent Shale Partings and Seams (Stylolites), Gray and Red*						
40			Boring Terminated						
45									
50									
55									
60									
65									
70									

REMARKS: *Boring terminated do to core barrel failure.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3BC
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+35
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 18, 2022
TYPE OF DRILLING: Auger to 4.8 Feet - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 41.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1040.4	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Sandy Clay with Gravel (Limestone Rock Fragments)						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					82	82
15								32	22
20								0	0
25			Soil Filled Cavity from 11.8 to 31.8 feet below ground level					0	0
30								14	10
35			Chert Gravel, Cobbles, and Boulders					84	40

REMARKS: *Total water loss at approximately 24.8 feet below ground level. **Core run terminated at 41.8 feet below ground level due to drilling malfunction.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3BC
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+35
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 18, 2022
TYPE OF DRILLING: Auger to 4.8 Feet - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 41.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1040.4	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
40			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Moderately Hard with Hard Layers, Frequent Shale Partings (Stylolites), Gray**					88	60
								44	18
45			Boring Terminated						
50									
55									
60									
65									
70									

REMARKS: *Total water loss at approximately 24.8 feet below ground level. **Core run terminated at 41.8 feet below ground level due to drilling malfunction.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 4A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+60
LOCATION: 37' Left of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 12, 2022
TYPE OF DRILLING: Auger to 6.6 - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 25

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1039.5	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Sand with Gravel						
			Moist, Very Loose, Brown Sand				3 1-2		
10			Sandy Clay with Gravel and Boulders					0	0
15			LIMESTONE WITH INTERBEDDED CHERT - Slightly Weathered, Moderately Hard, Frequent Fractures, Frequent Shale Partings (Stylolites), Gray*					88	50
20			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					98	98
25								100	72
30			Boring Terminated						
35									

REMARKS: *Total water loss at 10.0 feet below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 4B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+60
LOCATION: 38' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 16, 2022
TYPE OF DRILLING: Auger to 3.8' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 17.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1036.7	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Sand with Rock Fragments						
5							60 (0")	100	37
10			LIMESTONE WITH INTERBEDDED CHERT - Slightly Weathered, Hard, Frequent Fractures and Shale Partings (Stylolites), Gray					88	48
15								100	44
			Boring Terminated						
20									
25									
30									
35									

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 5A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+92
LOCATION: 38' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 17, 2022
TYPE OF DRILLING: Auger to 11.5' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 23.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1036.9						
5			Moist, Medium Stiff, Brown Lean Clay with Sand	CL		71	3 4-4		
10			Moist, Very Stiff, Brown Sandy Clay				4 14-13		
15			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray	-			60 (0")	100	55
20			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Occasional Shale Partings (Stylolites) and Fractures, Gray					98	13
25			Boring Terminated					100	42
30									
35									

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 5B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 58+92
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Paul Tierney

DATE: September 28, 2022
TYPE OF DRILLING: Auger to 4.2' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1035.9	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Temporary Access Road Composed of Shot Rock						
5			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Moderately Hard with Hard Layers, Frequent Shale Partings (Stylolites), Gray*					100	57
10								100	88
15								100	79
20			Boring Terminated						
25									
30									
35									

REMARKS: This boring was drilled on a temporary road. *Partial water loss between 4.2 and 8.4 feet below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 6A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 59+23
LOCATION: 36' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 21, 2022
TYPE OF DRILLING: Auger to 6.2' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.6

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1033.5	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					100	95
15								98	88
20								100	84
25			Boring Terminated						
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 6B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 59+23
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Jessie Birdine / Coty Campbell

DATE: October 18, 2022
TYPE OF DRILLING: Auger to 6.2' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.7

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1032.9	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
0			Temporary Access Road Composed of Shot Rock						
5			Wet, Very Dense, Brown Clayey Sand with Gravel (Limestone Rock Fragments)				1 2-19 (8.4")	98	56
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					100	90
15								100	95
20			Boring Terminated						
25									
30									
35									

REMARKS: This boring was drilled on a temporary access road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 7A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 59+52
LOCATION: 36' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 21, 2022
TYPE OF DRILLING: Auger to 6.3' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.7

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1033.3	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					100	92
15								100	72
20								98	90
25			Boring Terminated						
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 7B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 59+53
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Paul Tierney

DATE: September 27, 2022
TYPE OF DRILLING: Auger to 6.5' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.7

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1033.6	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Temporary Access Road Composed of Shot Rock						
5			Wet, Medium Dense, Brown Sand with Gravel (Limestone Rock Fragments)				11 12-17		
								95	52
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					99	82
15								100	81
20			Boring Terminated						
25									
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 8A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 59+81
LOCATION: 37' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 21, 2022
TYPE OF DRILLING: Auger to 5.7' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1032.5	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					100	47
15								98	78
								100	84
20			Boring Terminated						
25									
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 8B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 59+82
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Paul Tierney

DATE: September 27, 2022
TYPE OF DRILLING: Auger to 5.5' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.7

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1033.6	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Moderately Hard with Hard Layers, Frequent Shale Partings (Stylolites), Gray					96	78
15								100	78
20								100	92
25			Boring Terminated						
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 9AB
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+08
LOCATION: 37' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 20, 2022
TYPE OF DRILLING: Auger to 27.0'
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 27.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1032.7	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10									
15			Wet, Very Loose, Brown Clayey Sand with Some Gravel	SC -	PL ● LL	42	0 1-0		
20			Wet, Very Soft, Brown Sandy Lean Clay	CL -	PL ● LL	64	1 0-0		
25			Wet, Very Loose, Brown Clayey Sand	SM	●	33	2 1-1		
30			Wet, Loose, Brown and Gray Clayey Gravel with Sand (Limestone Rock Fragments) LIMESTONE* Boring Terminated	GC	●	24	15 5-5 20 (2")		
35									

REMARKS: This boring was drilled on a temporary road. *Boring abandoned at 27.2 feet due to core barrel malfunction.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 9AE
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+12
LOCATION: 38' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 21, 2022
TYPE OF DRILLING: Auger to 18.5' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 32.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1032.7	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			Clayey Sand						
15									
20			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard with Occasional Moderately Hard Layers, Frequent Shale Partings (Stylolites), Gray					100	60
25								100	80
30								100	92
35			Boring Terminated						

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 9B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+10
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Paul Tierney

DATE: September 27, 2022
TYPE OF DRILLING: Auger to 5.0' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.1

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1033.7	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					93	64
15								100	62
								100	92
20			Boring Terminated						
25									
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 10A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+42
LOCATION: 37' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 20, 2022
TYPE OF DRILLING: Auger to 19.2' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 33

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1032.8	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10									
15			Soil (No Samples Collected)						
20			LIMESTONE WITH INTERBEDDED CHERT					100	50
25			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					98	68
30								100	68
35			Boring Terminated						

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 10B
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+42
LOCATION: 35' Right of Construction Centerline
LOGGED BY: Paul Tierney

DATE: September 26, 2022
TYPE OF DRILLING: Auger to 6.5' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 18.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1033.6	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Temporary Access Road Composed of Shot Rock						
10			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray					95	40
15								100	62
								98	86
20			Boring Terminated						
25									
30									
35									

REMARKS: This boring was drilled on a temporary road.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 11A
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JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+84
LOCATION: 30' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 23, 2022
TYPE OF DRILLING: Auger to 29.5'
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 29.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1037.8						
			Sandy Clay with Gravel, Cobbles, and Boulders						
5			Moist, Medium Dense, Brown Poorly Graded Gravel with Sand*	GP -		0	13 / 11-12		
10			Wet, Loose, Brown Poorly Graded Sand with Clay and Gravel	GW-GC -		10	3 / 4-5		
15			Wet, Very Stiff, Brown Well Graded Gravel with Clay and Sand	GW-GC -		10	9 / 12-4		
20			Wet, Very Loose, Brown Clayey Sand with Gravel	SC -		25	1 / 1-1		
25			Wet, Very Loose, Brown Clayey Sand with Gravel**	SC -		30	0 / 0-0		
30			Boring Terminated						
35									

REMARKS: *Water was encountered at approximately 5.5' below ground level.**Boring terminated at approximately 29.5' due to broken auger head.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 11AA
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+84
LOCATION: 36' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 30, 2022
TYPE OF DRILLING: Auger to 13.7' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 27.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1038.0	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			No soil samples collected						
10									
15			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings and Seams (Stylolites), Gray					100	39
20								90	62
25								96	30
30			Boring Terminated						
35									

REMARKS: No soil samples were colllected on this boring.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 11AB
PAGE 1 OF 1

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+98
LOCATION: 32' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 30, 2022
TYPE OF DRILLING: Auger to 12.8' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 27.5

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1037.7	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
0			Clay with Gravel						
5			Wet, Very Stiff, Brown Clay with Gravel (Limestone Rock Fragments)		●		3 12-13		
10			Wet, Loose, Brown Sand with Gravel (Limestone Rock Fragments)		●		3 3-2		
15			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent to Occasional Shale Partings and Seams (Stylolites), Gray				60 (0")	93	57
20								96	52
25								100	35
30			Boring Terminated						
35									

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 12BB
PAGE 1 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+94
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 31, 2022
TYPE OF DRILLING: Auger to 24.6' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 37.7

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1038.0	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Sandy Clay with Gravel						
10									
15									
20			Wet, Stiff, Brown Sandy Clay with Gravel				13 6-6		
25			Wet, Very Soft, Brown Clay				0 0-1		
30			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Fractures and Shale Partings (Stylolites), Gray				(0")	100	0
			1.1' Thick Soil-Filled Cavity						
			LIMESTONE WITH INTERBEDDED CHERT - Unweathered with Frequent Weathered Layers, Hard, Frequent Factures and Shale Seams(Stylolites), Gray					46	23
35			LIMESTONE WITH INTERBEDDED					100	8

REMARKS: *No samples collected prior to 15.5 feet due to this boring's proximity to boring 12B. ** Boring terminated at 37.7 feet due to broken core barrel.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 12BB
PAGE 2 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+94
LOCATION: 37' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: August 31, 2022
TYPE OF DRILLING: Auger to 24.6' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 37.7

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1038.0						
			CHERT - Unweathered with Occasional Weathered Layers, Hard, Occasional Fractures and Shale Partings (Stylolites), Gray**					100	100
			Boring Terminated						
40									
45									
50									
55									
60									
65									
70									

REMARKS: *No samples collected prior to 15.5 feet due to this boring's proximity to boring 12B. ** Boring terminated at 37.7 feet due to broken core barrel.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 12BC
PAGE 1 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+82
LOCATION: 34' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 13, 2022
TYPE OF DRILLING: Auger to 42.0' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 51.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1038.7						
5		X	Moist, Medium Dense, Brown Clayey Sand with Gravel	SC	•	41	2 4-3		
				-					
10		X	Wet, Loose, Brown Poorly Graded Sand with Clay and Gravel	SP-SC	•	10	0 3-7		
				-					
15		X	Wet, Very Loose, Brown Sandy Fat Clay with Some Gravel	CH	|—•—|	69	1 0-1		
				-					
20		X	Wet, Very Soft, Brown Sandy Lean Clay	CL	|—•|	63	0 0-0		
				-					
25		X		CL	|—•|	62	0 0-0		
				-					
30		X	Wet, Medium Dense, Brown Clayey Sand with Gravel (Limestone Rock Fragments)	SC	•	31	60 5-6		
35									

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 12BC
PAGE 2 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 60+82
LOCATION: 34' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 13, 2022
TYPE OF DRILLING: Auger to 42.0' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 51.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1038.7	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
40			Wet, Very Stiff, Brown Sandy Clay with Gravel (LImestone Rock Fragments)	-			4 16-8		
			Wet, Very Hard, Brown Sandy Lean Clay with Trace Gravel (Limestone Rock Fragments)	CL		56	10 39-60 (10") 60 (0")		
			LIMESTONE WITH INTERBEDDED CHERT					100	35
45			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray	-				100	30
50								100	30
			Boring Terminated						
55									
60									
65									
70									

REMARKS:

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 13A
PAGE 1 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 61+48
LOCATION: 80' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: October 26, 2022
TYPE OF DRILLING: Auger to 23.6' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 38

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1051.0	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			Asphalt						
			Clayey Sand with Gravel						
5			Moist, Medium Dense, Brown and Gray Sand with Gravel				6 9-10		
10			Moist, Loose, Brown Clayey Sand with Gravel				9 7-2		
15			Moist, Stiff, Brown Clay				2 4-6		
20			Moist, Stiff, Brown Clay with Gravel				2 3-7		
25			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Hard, Frequent Shale Partings (Stylolites), Gray*				10 (0")	95	52
30								100	56
35									

REMARKS: *Partial water loss at approximately 28.0' below ground level and total water loss at approximately 33.0' below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 13A
PAGE 2 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 61+48
LOCATION: 80' Left of Construction Centerline
LOGGED BY: Stanley Bates

DATE: October 26, 2022
TYPE OF DRILLING: Auger to 23.6' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 38

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL 10 20 30 40 50 60 70 LL	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1051.0						
								100	90
			Boring Terminated						
40									
45									
50									
55									
60									
65									
70									

REMARKS: *Partial water loss at approximately 28.0' below ground level and total water loss at approximately 33.0' below ground level.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 13C
PAGE 1 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 61+29
LOCATION: 54' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 7, 2022
TYPE OF DRILLING: Auger to 24.7' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 38.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 1052.7	SOIL GROUP	MOISTURE CONTENT (%) PL — LL 10 20 30 40 50 60 70	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
5			Moist, Medium Stiff, Brown Sandy Clay with Gravel				3 3-4		
10			Moist, Soft, Brown Sandy Clay with Gravel				0 1-2		
15			Moist, Loose, Brown Sandy Clay with Gravel				2 1-4		
20			Moist, Soft, Brown Clay with Gravel				0 0-2		
25			Wet, Very Dense, Gray Sand with Gravel (Limestone Rock Fragments)				60 (2")	100	63
30			LIMESTONE WITH INTERBEDDED CHERT - Unweathered, Moderately Hard with Hard Layers, Frequent Shale Partings (Stylolites), Gray					100	60
35									

REMARKS: This boring was drilled through the Crooked Creek Levee.

ARKANSAS DEPARTMENT OF TRANSPORTATION
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 13C
PAGE 2 OF 2

JOB NO. 090550 Boone County
JOB NAME: Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)
STATION: 61+29
LOCATION: 54' Right of Construction Centerline
LOGGED BY: Stanley Bates

DATE: September 7, 2022
TYPE OF DRILLING: Auger to 24.7' - Diamond Core
EQUIPMENT: Acker 2
HAMMER CORRECTION FACTOR: 1.55

COMPLETION DEPTH: 38.3

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	MOISTURE CONTENT (%) PL — LL (10 20 30 40 50 60 70)	PERCENT PASSING NO. 200 SIEVE	NO. OF BLOWS PER 6-IN.	% TCR	% RQD
			SURFACE ELEVATION: 1052.7						
								100	76
			Boring Terminated						
40									
45									
50									
55									
60									
65									
70									

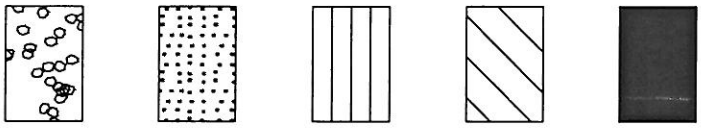
REMARKS: This boring was drilled through the Crooked Creek Levee.

LEGEND

SOIL TYPES

(SHOWN IN SYMBOL COLUMN)

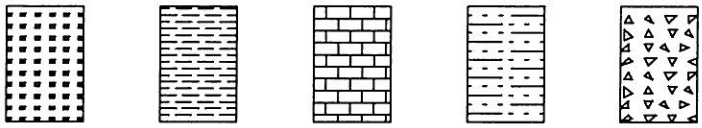
(PREDOMINANT TYPE SHOWN HEAVY)



GRAVEL | SAND | SILT | CLAY | ORGANIC MATTER

ROCK TYPES

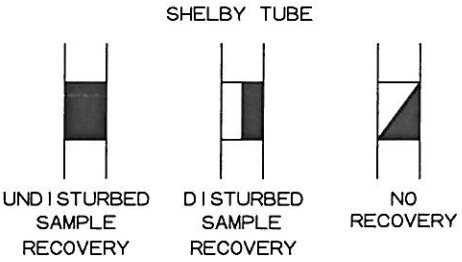
(SHOWN IN SYMBOL COLUMN)



SANDSTONE | SHALE or SILTSTONE | LIMESTONE or DOLOMITE | ALTERNATING LAYERS of SHALE and SANDSTONE | OTHER

SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)



TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANULAR SOIL		CLAY		CLAY-SHALE		SHALE	
'N' Value	Density	'N' Value	Consistency	'N' Value	Consistency	'N' Value	Consistency
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft		
5-10	Loose	2-4	Soft	2-4	Soft	31-60	Soft
11-30	Medium Dense	5-8	Medium Stiff	5-8	Medium Stiff	Over 60	
31-50	Dense	9-15	Stiff	9-15	Stiff	More than 2'	
Over 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetration	
		31-60	Hard	31-60	Hard	in 60 Blows:	Medium Hard
		Over 60	Very Hard	Over 60	Very Hard	Less than 2'	
						Penetration	
						in 60 Blows:	Hard

1. Ground water elevations indicated on boring logs represent ground water elevations at date or time shown on boring log. Absence of water surface implies that no ground water data is available but does not necessarily mean that ground water will not be encountered at locations or within the vertical reaches of these borings.
2. Borings represent subsurface conditions at their respective locations for their respective depths. Variations in conditions between or adjacent to boring locations may be encountered.
3. Terms used for describing soils according to their texture or grain size distribution are in accordance with the Unified Soil Classification System.

Standard Penetration Test – Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and performing the test are recorded for each 6 inches of penetration on the drill log. The field "N" Value (N_f) can be obtained by adding the bottom two numbers for example: $\frac{6}{8-9} \Rightarrow 8+9=17 blows/ft$. The "N" Value corrected to 60% efficiency (N_{60}) can be obtained by multiplying N_f by the hammer correction factor published on the boring log.

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 57+54, 31' Lt.
Depth, ft: 24.1 – 27.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 57+61, 33' Rt.
Depth, ft: 19.6-28.1

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 57+97, 38' Lt.
Depth, ft: 9.0-18.3

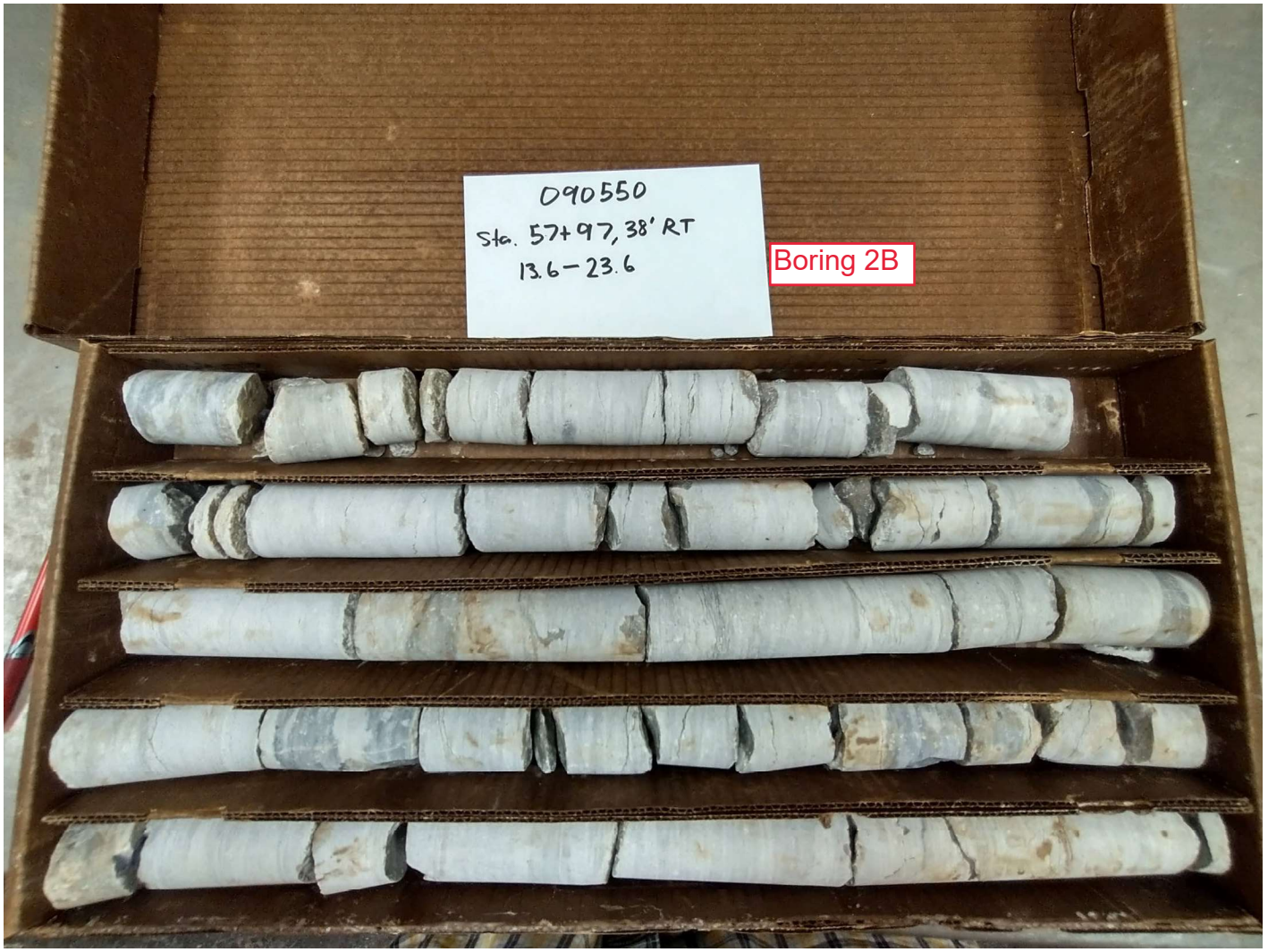
ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 57+97, 38' Rt.
Depth, ft: 4.6-13.6

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek



Station and Offset, ft: Sta. 57+97, 38' Rt.
Depth, ft: 13.6-23.6

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+32, 38' Lt.
Depth, ft: 12.8-22.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+26, 37' Rt.
Depth, ft: 1.6-8.9

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+26, 37’ Rt.
Depth, ft: 8.9-33.9

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+35, 37' Rt.
Depth, ft: 4.8-29.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+35, 37' Rt.
Depth, ft: 29.8-39.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+35, 37' Rt.
Depth, ft: 39.8-41.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+60, 37' Lt.
Depth, ft: 8.1-20.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+60, 37' Lt.
Depth, ft: 20.0-25.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+60, 38' Rt.
Depth, ft: 3.8-12.3

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+92, 38' Lt.
Depth, ft: 11.5-18.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+92, 38' Lt.
Depth, ft: 18.5-23.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+92, 37' Rt.
Depth, ft: 4.2-13.4

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 58+92, 37' Rt.
Depth, ft: 13.4-18.4

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+23, 36' Lt.
Depth, ft: 6.2-13.6

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+23, 36' Lt.
Depth, ft: 13.6-18.1

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+23, 37' Rt.
Depth, ft: 6.2-13.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+23, 37' Rt.
Depth, ft: 13.7-18.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+52, 36' Lt.
Depth, ft: 6.3-13.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+52, 36' Lt.
Depth, ft: 13.7-18.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+53, 37' Rt.
Depth, ft: 6.5-13.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+53, 37' Rt.
Depth, ft: 13.7-18.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+81, 37' Lt.
Depth, ft: 5.7-13.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+81, 37' Lt.
Depth, ft: 13.0-18.0

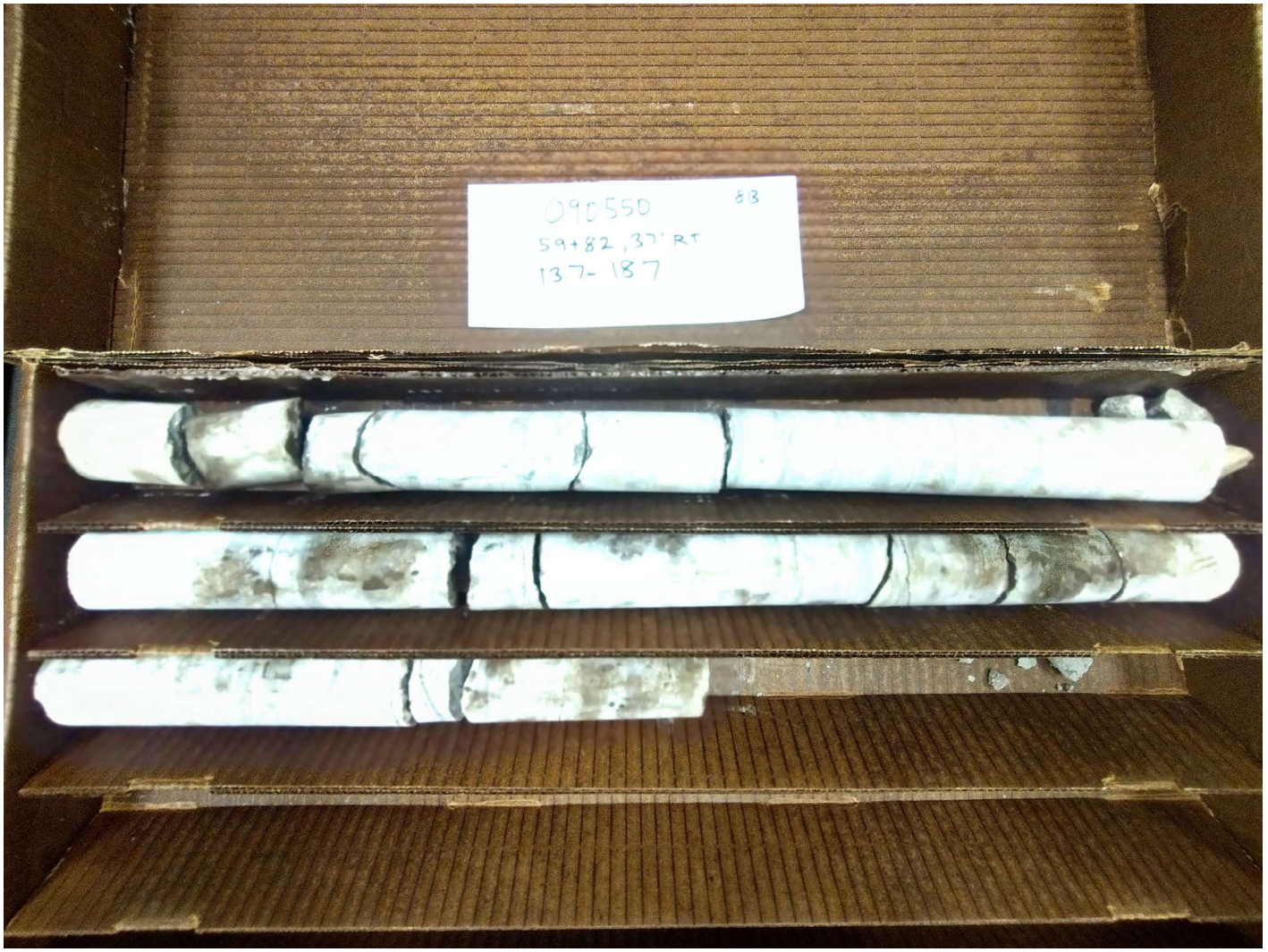
ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 59+82, 37' Rt.
Depth, ft: 5.5-13.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek



Station and Offset, ft: Sta. 59+82, 37' Rt.
Depth, ft: 13.7-18.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+12, 38' Rt.
Depth, ft: 18.5-27.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+12, 38' Rt.
Depth, ft: 27.8-32.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+10, 37' Rt.
Depth, ft: 5.0-13.1

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+10, 37' Rt.
Depth, ft: 13.1-18.1

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+42, 37' Lt.
Depth, ft: 19.2-28

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+42, 37' Lt.
Depth, ft: 28.0-33.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+42, 35' Rt.
Depth, ft: 6.5-13.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+42, 35' Rt.
Depth, ft: 13.5-18.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+84, 36' Lt.
Depth, ft: 13.7-22.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+84, 36' Lt.
Depth, ft: 22.8-27.8

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+98, 32' Lt.
Depth, ft: 12.8-22.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+98, 32' Lt.
Depth, ft: 22.5-27.5

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+94, 37' Rt.
Depth, ft: 24.6-32.2

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+94, 37' Rt.
Depth, ft: 32.2-37.7

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+82, 34' Rt.
Depth, ft: 42.0-48.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 60+82, 34' Rt.
Depth, ft: 48.0-51.3

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 61+48, 82' Lt.
Depth, ft: 23.6-33.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 61+48, 82’ Lt.
Depth, ft: 33.0-38.0

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 61+29, 54' Rt.
Depth, ft: 24.7-33.3

ROCK CORE PHOTO

Job No.: 090550
Job Name: Hwy. 65B over Crooked Creek

Station and Offset, ft: Sta. 61+29, 54' Rt.
Depth, ft: 33.3-38.3

Attachment B

Rock Core Unconfined Compression Test Summary

Project Number: 090550
Project Name: Hwy 65B Over Crooked Creek Strs. & Apprs.
Date Tested:

Station	Location	Sample No.	Depth (ft.)	Diameter (in)	Height (in)	Total Load (lbs.)	Correction Factor	Stress (psi)	Remarks
57+54	31' LT	1	26.3	1.77	3.54	19,670		8,085	Boring 1A
57+97	38' LT	2	17.6	1.77	3.54	9,400		3,863	2A
57+97	38' LT	3	18.8	1.77	3.53	15,870		6,523	2A
58+32	38' LT	4	14.5	1.77	3.53	19,410		7,981	3A
58+32	38' LT	5	15.6	1.77	3.53	12,560		5,162	3A
58+60	37' LT	6	18.5	1.77	3.53	19,630		8,068	4A
58+60	37' LT	7	20.3	1.76	3.52	11,690		4,805	4A
58+92	38' LT	8	17.8	1.761	3.52	14,610		6,005	5A
58+92	38' LT	9	21.1	1.76	3.53	14,680		6,034	5A
59+23	36' LT	10	10.9	1.76	3.53	21,180		8,705	6A
59+23	36' LT	11	14.6	1.76	3.53	12,360		5,080	6A
59+52	36' LT	12	11.9	1.76	3.53	23,740		9,758	7A
59+52	36' LT	13	18.0	1.76	3.52	10,430		4,287	7A
59+81	37' LT	14	12.7	1.76	3.52	16,350		6,720	8A
59+81	37' LT	15	15.3	1.76	3.52	8,000		3,288	8A
60+12	38' LT	16	27.0	1.76	3.52	14,780		6,112	9AE
60+12	38' LT	17	30.2	1.74	3.49	19,700		8,097	9AE
60+42	37' LT	18	26.4	1.76	3.52	13,790		5,668	10A
60+42	37' LT	19	29.0	1.76	3.52	28,050		11,505	10A
60+84	36' LT	20	21.4	1.76	3.52	15,960		6,560	11AA
60+84	36' LT	21	24.8	1.76	3.52	12,620		5,187	11AA
60+98	32' LT	22	22.2	1.76	3.52	14,310		5,882	11AB
61+48	82' LT	23	25.1	1.76	3.52	16,990		6,983	13A

* Please note any broken samples, fractures or other characteristics of sample in Remarks.

Rock Core Unconfined Compression Test Summary

Project Number: 090550
Project Name: Hwy 65B Over Crooked Creek Strs. & Apprs.
Date Tested:

Station	Location	Sample No.	Depth (ft.)	Diameter (in)	Height (in)	Total Load (lbs.)	Correction Factor	Stress (psi)	Remarks
57+61	31' LT	24	29.1	1.75	3.50	12,170		5059	Boring 1B
57+97	38' RT	25	22.7	1.76	3.52	23,590		9696	2B
58+35	37' RT	26	38.8	1.75	3.50	19,620		8157	3BC
58+60	38' RT	27	6.0	1.76	3.52	23,210		9540	4B
59+23	37' RT	28	15.0	1.76	3.52	20,700		8508	6B
59+82	37' RT	29	15.0	1.76	3.52	14,370		5906	8B
60+42	35' RT	30	15.5	1.76	3.52	20,120		8270	10B
60+94	37' RT	31	36.9	1.76	3.52	18,840		7744	12BB
61+29	54' RT	32	35.0	1.76	3.52	14,990		6161	13C

* Please note any broken samples, fractures or other characteristics of sample in Remarks.

ROCK MASS RATING SUMMARY

JOB # 090550 **GSI 85**

SAMPLE #1

Station/Location	57+54, 31' LT
Depth (ft)	26.3
	Relative Rating
Uniaxial Compressive Strength	7
RQD	8
Spacing of Joints	25
Condition of Joints	20
Groundwater Conditions	7
Sum	*67*
Class Number	II
Description	GOOD ROCK

SAMPLE #2

Station/Location	57+97, 38' LT
Depth (ft)	17.6
	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*68*
Class Number	II
Description	GOOD ROCK

SAMPLE #3

Station/Location	57+97, 38' LT
Depth (ft)	18.8
	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*68*
Class Number	II
Description	GOOD ROCK

SAMPLE #4

Station/Location	58+32, 38' LT
Depth (ft)	14.5
	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*67*
Class Number	II
Description	GOOD ROCK

SAMPLE #5

Station/Location	58+32, 38' LT
Depth (ft)	15.6
	Relative Rating
Uniaxial Compressive Strength	4
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*64*
Class Number	II
Description	GOOD ROCK

SAMPLE #6

Station/Location	58+60, 37' LT
Depth (ft)	18.5
	Relative Rating
Uniaxial Compressive Strength	7
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*71*
Class Number	II
Description	GOOD ROCK

SAMPLE #7

Station/Location	58+60, 37' LT
Depth (ft)	20.3
	Relative Rating
Uniaxial Compressive Strength	4
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	*74*
Class Number	II
Description	GOOD ROCK

SAMPLE #8

Station/Location	58+92, 38' LT
Depth (ft)	17.8
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	*69*
Class Number	II
Description	GOOD ROCK

SAMPLE #9

Station/Location	58+92, 38' LT
Depth (ft)	21.1
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*59*
Class Number	**III**
Description	**FAIR ROCK**

SAMPLE #10

Station/Location	59+23,36' LT
Depth (ft)	10.9
	Relative Rating
Uniaxial Compressive Strength	7
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*71*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #11

Station/Location	59+23,36' LT
Depth (ft)	14.6
	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*68*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #12

Station/Location	59+52, 36' LT
Depth (ft)	11.9
	Relative Rating
Uniaxial Compressive Strength	7
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*71*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #13

Station/Location	59+52, 36' LT
Depth (ft)	18
	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*68*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #14

Station/Location	59+81, 37' TL
Depth (ft)	12.7
	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	25
Condition of Joints	20
Groundwater Conditions	7
Sum	*73*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #15

Station/Location	59+81, 37' TL
Depth (ft)	15.3
	Relative Rating
Uniaxial Compressive Strength	2
RQD	17
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*66*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #16

Station/Location	60+12, 38' LT
Depth (ft)	27
	Relative Rating
Uniaxial Compressive Strength	4
RQD	20
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*71*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #17

Station/Location	60+12, 38' LT
Depth (ft)	30.2
	Relative Rating
Uniaxial Compressive Strength	7
RQD	20
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*74*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #18

Station/Location	60+42, 37' LT
Depth (ft)	26.4
	Relative Rating
Uniaxial Compressive Strength	4
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*64*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #19

Station/Location	60+42, 37' LT
Depth (ft)	29
	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*67*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #20

Station/Location	60+84, 36' LT
Depth (ft)	21.4
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*59*
Class Number	**III**
Description	**FAIR ROCK**

SAMPLE #21

Station/Location	60+84, 36' LT
Depth (ft)	24.8
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*59*
Class Number	**III**
Description	**FAIR ROCK**

SAMPLE #22

Station/Location	60+98, 32' LT
Depth (ft)	22.2
	Relative Rating
Uniaxial Compressive Strength	4
RQD	8
Spacing of Joints	25
Condition of Joints	20
Groundwater Conditions	7
Sum	*64*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #23

Station/Location	61+48, 82' LT
Depth (ft)	25.1
	Relative Rating
Uniaxial Compressive Strength	4
RQD	13
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*64*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #24

Station/Location	57+61, 31' LT
Depth (ft)	29.1
	Relative Rating
Uniaxial Compressive Strength	4
RQD	13
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	*74*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #25

Station/Location	57+97, 38' RT
Depth (ft)	22.7
	Relative Rating
Uniaxial Compressive Strength	7
RQD	13
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	*82*
Class Number	**I**
Description	**VERY GOOD ROCK**

SAMPLE # 26

Station/Location	58+35, 37' RT
Depth (ft)	38.8
	Relative Rating
Uniaxial Compressive Strength	7
RQD	20
Spacing of Joints	20
Condition of Joints	20
Groundwater Conditions	7
Sum	*74*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #27

Station/Location	58+60, 38' RT
Depth (ft)	6
	Relative Rating
Uniaxial Compressive Strength	7
RQD	8
Spacing of Joints	10
Condition of Joints	20
Groundwater Conditions	7
Sum	*52*
Class Number	**III**
Description	**FAIR ROCK**

SAMPLE #28

Station/Location	59+23, 37' RT
Depth (ft)	15
	Relative Rating
Uniaxial Compressive Strength	7
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	*84*
Class Number	**I**
Description	**VERY GOOD ROCK**

SAMPLE #29

Station/Location	59+82, 37' RT
Depth (ft)	15
	Relative Rating
Uniaxial Compressive Strength	4
RQD	20
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	*81*
Class Number	**I**
Description	**VERY GOOD ROCK**

SAMPLE #30

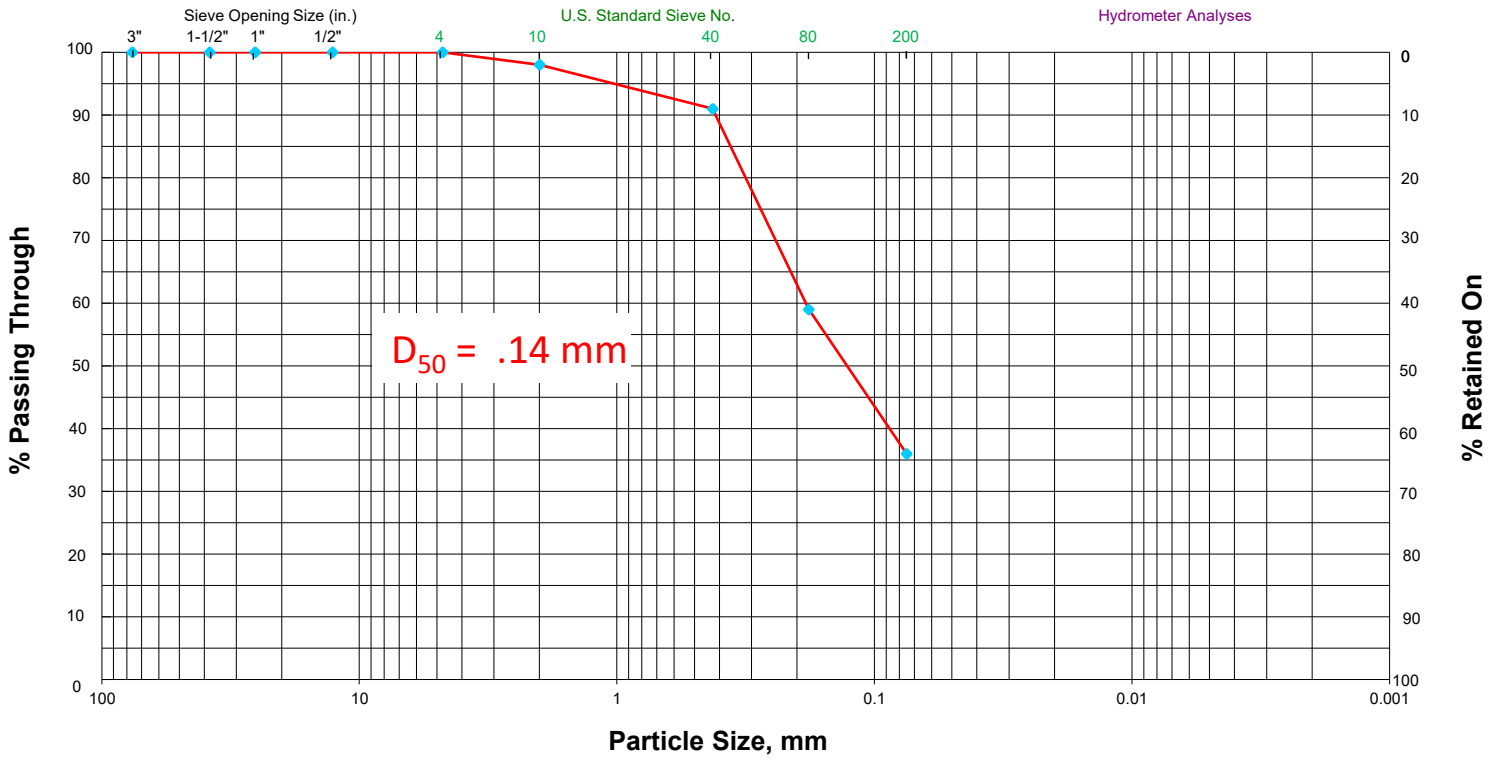
Station/Location	60+42, 35' RT
Depth (ft)	15.5
	Relative Rating
Uniaxial Compressive Strength	7
RQD	17
Spacing of Joints	25
Condition of Joints	25
Groundwater Conditions	7
Sum	*81*
Class Number	**I**
Description	**VERY GOOD ROCK**

SAMPLE #31

Station/Location	60+94, 37' RT
Depth (ft)	36.9
	Relative Rating
Uniaxial Compressive Strength	7
RQD	3
Spacing of Joints	20
Condition of Joints	25
Groundwater Conditions	7
Sum	*62*
Class Number	**II**
Description	**GOOD ROCK**

SAMPLE #32

Station/Location	61+29, 54' RT
Depth (ft)	35
	Relative Rating
Uniaxial Compressive Strength	4
RQD	17
Spacing of Joints	30
Condition of Joints	25
Groundwater Conditions	7
Sum	*83*
Class Number	**I**
Description	**VERY GOOD ROCK**



090550 Particle Size Distribution Curve

Station 59+70 / 30' Lt of CL - Crooked Creek

Attachment C

SITE PICTURES

Job No.: 090550
Job Name: Hwy 65B Over Crooked Creek

South end of Hwy 65B bridge looking north (September 2022)

SITE PICTURES

Job No.: 090550
Job Name: Hwy 65B Over Crooked Creek

Northwest bridge end looking toward the southeast (September 2022)

SITE PICTURES

Job No.: 090550
Job Name: Hwy 65B Over Crooked Creek

North Hwy 65B bridge abutment (September 2022)

SITE PICTURES

Job No.: 090550
Job Name: Hwy 65B Over Crooked Creek

South Hwy 65B bridge end abutment (September 2022)

SITE PICTURES

Job No.: 090550
Job Name: Hwy 65B Over Crooked Creek

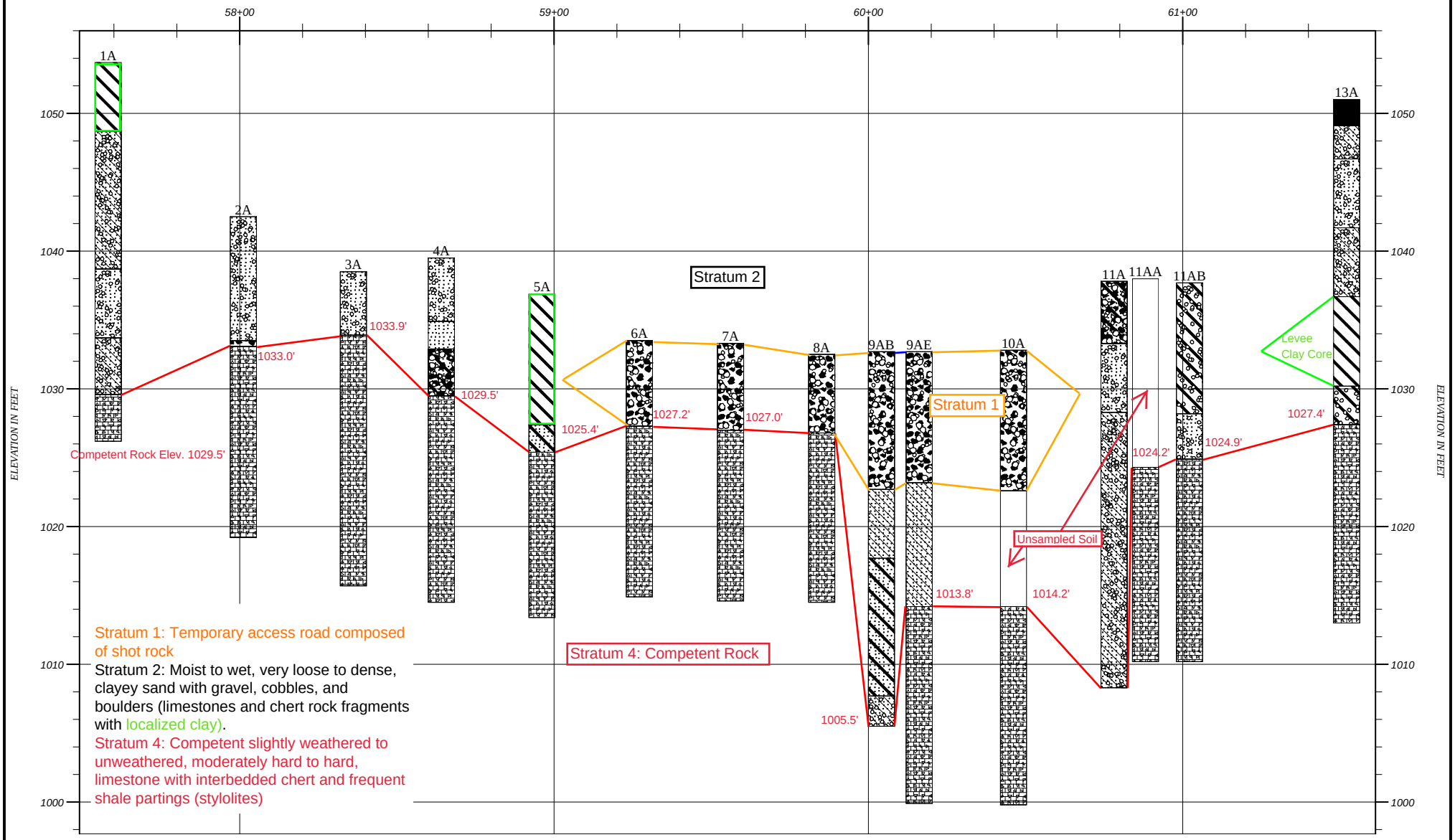
Dissolution features (cavities) located behind buildings at the south end of the Hwy 65B bridge.

SITE PICTURES

Job No.: 090550
Job Name: Hwy 65B Over Crooked Creek

Limestone exposed on the creek bank to the west of the existing Hwy 65B bridge.

Attachment D



Plan View

Strata symbols

- clay
- clayey sand and gravel
- sand and gravel
- Limestone/Chert
- boulders
- sand
- sandy clay with gravel, cobbles and boulders
- sandy clay
- gravel, cobbles and boulders
- clayey sand
- cavity
- clay with gravel
- asphalt/coal

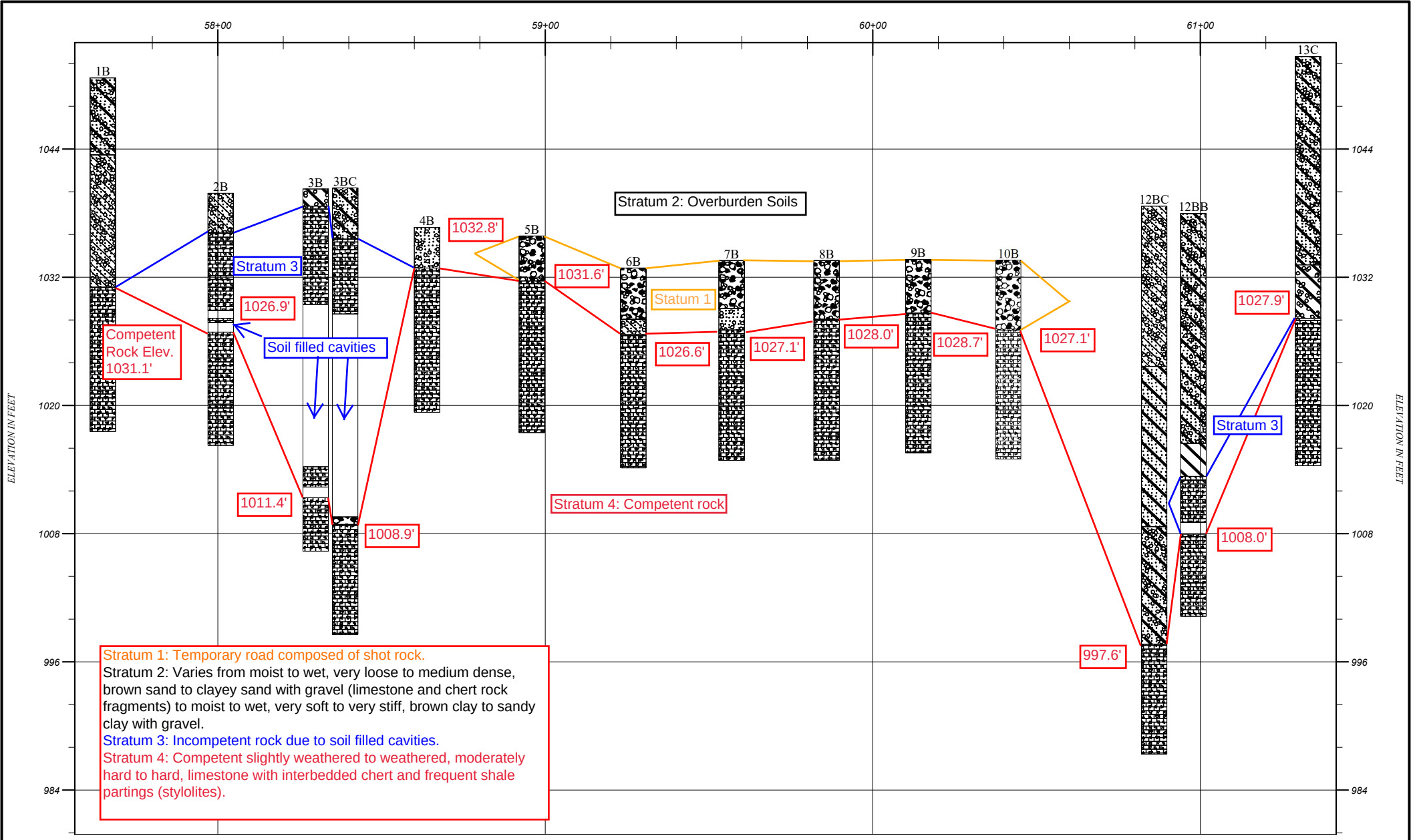
ARDOT GENERALIZED SOIL PROFILE

HORIZONTAL SCALE: NTS VERTICAL SCALE: NTS	DRAWN BY/APPROVED BY	DATE DRAWN 11/16/2022

Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)

PROJECT NO. 090550
Boone County

BORING PROFILE A



Plan View

Strata symbols

- sandy clay with gravel
- clayey sand and gravel
- Limestone/Chert
- cavity
- clay with gravel
- gravel, cobbles and boulders
- sand and gravel
- sandy clay
- clay

ARDOT GENERALIZED SOIL PROFILE

HORIZONTAL SCALE: NTS	DRAWN BY/APPROVED BY	DATE DRAWN
VERTICAL SCALE: NTS		11/17/2022

Hwy 65B over Crooked Creek Str. and Apprs. (Harrison) (S)

PROJECT NO. 090550
Boone County

SUBSURFACE PROFILE B

Attachment E

Title:	090550
Latitude:	36.228359
Longitude:	-93.10715
Site Class	C

Get USGS Data

PGA:	0.078
F_{PGA}:	1.2
A_S:	0.094
S_S:	0.187
F_A:	1.2
S_{DS}:	0.224
S_1:	0.069
F_V:	1.7
S_{D1}:	0.117
S_{Dc}:	A
T_S:	0.523
T_0:	0.105