ARKANSAS DEPARTMENT OF TRANSPORTATION



STATE JOB NO.	BR6210	
FEDERAL AID PROJECT NO.	STPB-0062(52)	
	HURRICANE CREEK STRS. & APPRS. NO. 2 (S)	
COUNTY ROAD NO.	CR 65	
IN	SALINE	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

ARDOT.gov IDriveArkansas.com Lorie H. Tudor, P.E., Director

MATERIALS DIVISION

11301 West Baseline Road | P.O. Box 2261 | Little Rock, AR 72203-2261 | Phone: 501.569.2185 | Fax: 501.569.2368

August 25, 2020

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. BR6210 Hurricane Creek Strs. & Apprs. No. 2 (S) Saline County County Road 65 (Samples Rd.)

Transmitted herewith are a brief summary of the geology and site conditions, rock core unconfined compression test summary, RMR, D50 scour analysis, and the logs of the borings conducted for the structures and approaches of the above referenced project. The samples obtained by the Standard Penetration Tests were brought to the laboratory and visually classified by experienced lab personnel to confirm the field identifications.

This project is located north of the town of Salem and consists of shifting the alignment of a section of County Road 65 (Samples Rd.), to the east and replacing two bridges crossing separate forks of Hurricane Creek. This will eliminate some sharp curves and will allow the grade of the roadway and adjacent bridges to be raised, to prevent flooding. Five borings were requested for Bridge 1, whose station limits extend from 108+29 to 111+11 and four borings were requested for Bridge 2, whose station limits extend from 114+04 to 116+16. All requested borings were obtained.

Bridge 1

Based on the depth at which bedrock was encountered and correspondence with Bridge Design, it is anticipated that both end bents will be founded on piling and all intermediate bents will be founded on spread footings. Preboring may be necessary to achieve minimum pile penetration requirements. Spread footings founded in competent Limestone with interbedded Shale should be designed based on the values provided in Table 1.

Nominal Bearing Resistance (KSF)	Factored Bearing Resistance (KSF)	Bearing Resistance at Service Limit State (KSF)
137.5	62	20

TABLE 1 – Bearing Capacity Recommendations for Spread Footings

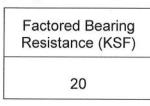
Bridge 2

Based on the depth at which bedrock was encountered and correspondence with Bridge Design, it is anticipated that both end bents will be founded on piling. Piling should be tipped into competent Interbedded Limestone and Shale. Preboring may be necessary to achieve minimum pile penetration requirements. Spread footings founded in competent Interbedded Limestone and Shale should be designed based on the values provided in Table 2.

No rock core unconfined compressive strength tests were performed for this bridge. The rock mass underlying this bridge is composed of interbedded limestone and shale. Shale tends to be brittle in the unconfined condition causing the cores to break along weak planes. Therefore, testing of the rock cores unconfined compressive strength is not practical and yields

unreliable results. After inspection, this interbedded limestone and shale has been deemed a sound Hard rock and spread footing Bearing Resistance values have been determined from Table C10.6.2.6.1-1 of the AASHTO LRFD Bridge Design Specifications, edition 2017. This Factored Bearing Resistance is equivalent to the Bearing Resistance at the Service Limit State.

TABLE 2 – Bearing Capacity Recommendations for Spread Footings



It is acceptable to utilize 2H:1V end slopes for the proposed embankments. This embankment geometry provides a satisfactory Factor of Safety for seismic and static conditions. If you have any questions concerning these recommendations, please contact the Geotechnical Section.

Jonathan A. Annable

Materials Engineer

MCB:rpt:mlg

cc: State Construction Engineer - Master File Copy District 6 Engineer G.C. File

<u>GEOLOGY AND SITE CONDITIONS</u> Job No. BR6210 Hurricane Creek Str. & Apprs. No. 2 (S) Saline County Co Rd. 65 (Samples Road)

Site Conditions

This job consists of rerouting County Road 65 (Samples Rd.), to the east, and replacing two bridges that span separate forks of Hurricane Creek. Both bridges appear to be constructed similarly and both bridges were widened in the past by additions to the wall piers and the concrete decking. **Bridge 1** is a two span bridge with cast-in-place concrete decking and an asphalt overlay. The decking is supported on each end by concrete endwalls with a single skewed wall pier intermediate support, resting on a spread footing. The channel beneath the bridge and the end slopes have been reinforced with a combination of stone riprap, concrete, and asphalt. The bridge has concrete curbs, but no guardrail. **Bridge 2** is a three span bridge with cast-in-place concrete decking and an asphalt overlay. The reare also two intermediate supports composed of two skewed wall piers, resting on spread footings. The end slopes have been reinforced with a combination of stone accheed with a combination of stone riprap.

Hurricane Creek is a perennial watershed that flows west to-east and has a shallow rocky channel. There are two separate forks of Hurricane Creek surrounding the project alignment. The land between these forks appears to be susceptible to flooding, as evident by gravel bars and older channels where the water has run in the past. The majority of the land surrounding the project alignment is composed of sand, gravel, rocks, and boulders. The area surrounding the Hurricane Creek channels consists primarily of pastureland to the west and woodlands to the east. Overhead power lines parallel the west side of County Road 65 (Samples Rd.) up-station and down-station of both bridges and a buried telecommunication line parallels the east side of both bridges.

Site Geology

The project alignment is located in the mapped outcrop of the Mazarn Formation. This Formation is Ordovician in age and is found throughout the Ouachita Mountains, in the west central part of the state. This formation consists primarily of shale with small amounts of siltstone, silty to conglomeratic sandstone, limestone, and glossy black chert. The shale is mostly gray-black, but thin layers of olive-gray silty shale or siltstone are interbedded with darker shales in some sequences. When the dark and greenish shales are cleaved at an angle to bedding, they yield a ribboned surface. In many places, quartzose siltstone or very fine-grained sandstone is present. Dense, bluish-gray, thin-bedded limestones may be present throughout the interval. Thin to thick beds of gray sandstone are occasionally found at random horizons, notably in the upper and lower portions of the sequence. Chert is usually found in the upper part of the unit. Milky quartz veins are common in some areas. The unit is conformable with the underlying Crystal Mountain Sandstone. The thickness of the Mazarn Shale ranges from 1000 feet to over 2500 feet. The rock exposed at the project location is most likely part of the middle section of the Mazarn Formation due to the abundance of limestone found throughout the core. An abundance of thick to thin calcite veins, quartz veins, and pyrite crystals were observed throughout the majority of the core. The shales and limestones have been slickensided from

previous tectonic activity. There are no mapped faults or igneous dikes directly along the project alignment; however, there are faults and igneous dikes mapped in the surrounding area and throughout the Mazarn Formation.

Scour Potential

There were no obvious signs of scour at either of the two existing bridges and scour is not anticipated along the new bridge alignments.





Bridge 1 looking downstream.

Bridge 2 looking upstream.

Subsurface Conditions

Based on the results of the borings, the subsurface stratigraphy for **Bridge 1** may be generalized as follows:

- 0 to 3.3 Feet: Varies from brown sandy clay to clay with organic matter to moist, brown, clayey sand with gravel.
- 3.3 to 9.5 Feet: * Varies from brown clay with organic matter to moist, medium dense brown sand with gravel and clay to highly weathered to unweathered, moderately hard to hard, slickensided, slightly dipping gray limestone with interbedded shale with frequent to occasional fractures, pyrite, and mineral veins.
- 9.5 to 38.2 Feet: Consists of unweathered, moderately hard to hard, slickensided, slightly dipping gray **limestone with interbedded shale and sandstone** with frequent to occasional fractures, pyrite, and mineral veins.
- * A water stratum was encountered in two of the borings between 4.8 and 6.5 feet below ground level. Thick layers of **quartz** and **calcite** were encountered in boring 1 at 10.7 feet and 13.9 feet below ground level.

Based on the results of the borings, the subsurface stratigraphy for **Bridge 2** may be generalized as follows:

- 0 to 6.4 Feet: Varies from moist, very hard, brown and white sandy clay with gravel and organic matter to moist to wet, medium dense to very dense, brown sand with gravel to gravel with sand and occasional cobbles.
- 6.4 to 9.6 Feet: Varies from moist to wet, medium dense to very dense, brown sand with gravel to gravel with sand and occasional cobbles to weathered to unweathered, moderately hard, slightly dipping, slickensided gray limestone with interbedded sandstone and shale with frequent to occasional fractures, mineral veins, and pyrite.
- 9.6 to 39.3 Feet:* Consists of unweathered, moderately hard, slightly dipping, slickensided gray **limestone with interbedded sandstone and shale** with frequent to occasional fractures, mineral veins, and pyrite.
- * A water stratum was encountered in two of the borings between 4.4 and 8.4 feet below ground level. A 0.3 feet thick layer of **quartz** and **calcite** was encountered in the boring at station 115+45 at 35.3 feet below ground level and in the boring at station 116+15 at 28.3 feet below ground level.

Rock Core Unconfined Compression Test Summary

Project Number:BR6210Project Name:Hurricane Creek Strs. & Apprs. No. 2 (S)Date Tested:7/29/2020

Station	Location	Sample No.	Depth (ft.)	Diameter (in.)	Height (in.)	Total Load (lbs.)	Correction Factor	Stress (psi)	Remarks
109+00	3' RT	1	13.2	1.75	3.83	15,830	1.00	6,581	
109+00	3' RT	2	14.1	1.75	3.83	NT	N/A	NT	Broke before Testing
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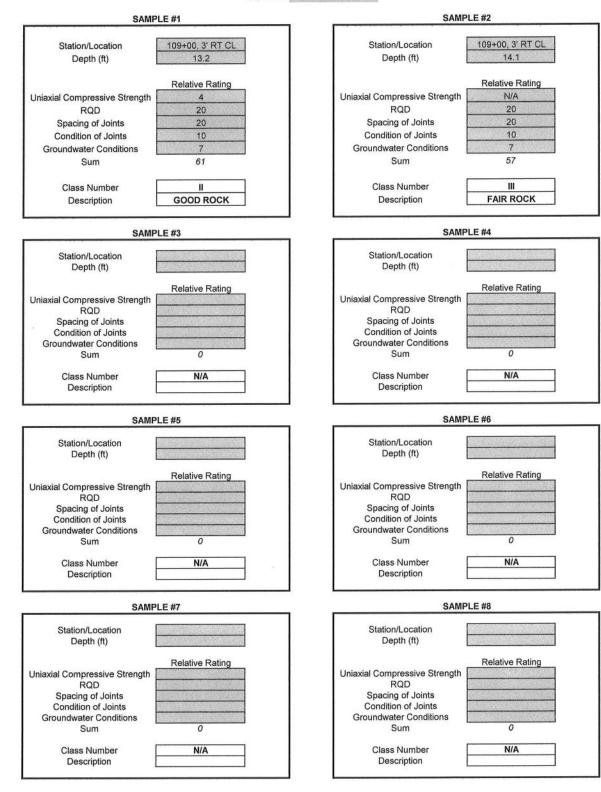
Terminology

NT = No Test

N/A = Not Applicable

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

ROCK MASS RATING SUMMARY JOB # BR6210

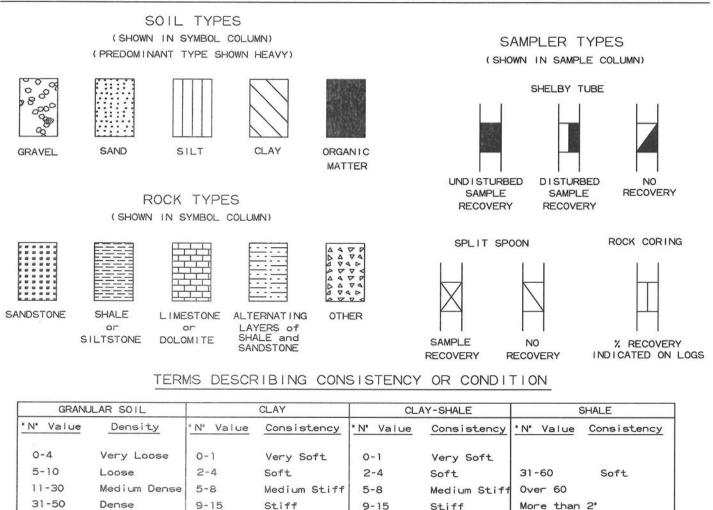


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D50 AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

		Job No.	BR6210		
Creek Name	Station	Sample Type	Location	Depth (Ft.)	Aggregate Size (D50) (In.)
Hurricane Creek	115+04	Creek Bank	15' LT Const. CL	N/A	0.438
Hurricane Creek	110+08	Creek Bank	12' LT Const. CL	N/A	0.750

EGEND



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

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31-60

Over 60

Very Stiff

Very Hard

Hard

Very Stiff

Very Hard

Hard

Penetration

Less than 2

Penetration

in 60 Blows: Medium Hard

Over 50

Very Dense

16-30

31-60

Over 60

- mean that ground water will not be encountered at locations or within the vertical reaches of these borings.
- Borings represent subsurface conditions at their respective locations for their respective depths. Variations in conditions between or adjacent to boring locations may be encountered.
- 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, and 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: $\frac{6}{8-9} \Rightarrow 8+9 = 17b lows / ft$. 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.

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JOB N	the second s	-	DIVISION - GEOTECHNICAL SEC. BR6210		PAGE	1		F 2 Mar	ch 1	1,20	20		
JOB N	CONTRACTOR		Hurricane Creek STRS. & APPRS. NO.2(S)		DATE: TYPE C	F DP				1,20	20		
JODIN			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	Jiamo	ond (Core	
STATI	ION:		114+05		EQUIP			14.50		ker 1'			
LOCA	TION:		Construction Centerline										
LOGG	ED BY	: S	tanley Bates		НАММ	ER CO	ORREC	TION	FAC	FOR:		N/A	
	CALCEL OF BLOCKELED	And an other dis-	DEPTH: 39.3										
D		S			1								
Е	S Y	A								10			
Ρ	M	Μ	DESCRIPTION OF MATERIAL	SOIL				TH	J.FJ	MC		% T	% R
T	В	P		GROUP	0	H H		BIG	SCI	BLC	ż	c	Q
н	0	E			STIC	OIS	E E	WE	PEF	OF]	6-IN	R	D
FT.	L	S	SURFACE ELEVATION: 432.0		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.		
	1.2.6	-	SORIAGE ELEVATION. 432.0			6			I	4	д		
	11		Sandy Clay with Organic Matter										
			, , , , , , , , , , , , , , , , , , ,										
	0000		Croud										
	8000		Gravel										
5	0000 A	\checkmark								1			
										19-	-10		
	800 A		Moist, Medium Dense, Brown Sand with Gravel*										
	0.00.00		Moist, Medium Dense, Diown Gand with Oraver										
	6.00												
10	40:00	~	SHALE - Weathered, Medium Hard, Brown							1	0		
			LIMESTONE WITH INTERBEDDED SHALE -							(4			
	<i>444</i>		Weathered, Moderately Hard, Slickensided,										
	<i>444</i>		Frequent Fractures and Mineral Veins, Slightly									40	0
			Dipping, Brown and Gray										
15	4454												
15	147		LIMESTONE WITH INTERBEDDED SHALE -										
			Slighty Weathered, Moderately Hard,										
			Slickensided, Frequent Fractures and Mineral									36	0
	<u>444</u>		Veins, Slightly Dipping, Brown and Gray										
20													
												56	0
25													
												50	0
													2
	<u>ANN</u>		LIMESTONE WITH INTERBEDDED SHALE - Unweathered, Hard, Slickensided, Frequent										
30		+	Fractures and Mineral Veins, Slightly Dipping,										
	4444		Brown and Gray										
	<u> </u>											62	22
												02	22
35	<u> </u>												
dh h	4444	1		and a local division of the local division o	1				_				

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.		BORIN	IG NO		- 2					
JGB N	an and shall a state of the state	And in case of the local diversion of the local diversion of the local diversion of the local diversion of the	BR6210		PAGE DATE:		And the owner of the second	and the second second	h 1	1,20	20		
JOB N			Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C	F DR				1, 20.	20		
			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	iamo	ond (Core	
STATI	ION:		114+05		EQUIPM			0.000		ter 17			
LOCA	TION:	1	Construction Centerline										
A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OF THE OWNER OF THE OWNER OF THE OWNER	COLUMN AND ADDRESS OF	of Such Street or Call of	tanley Bates		HAMM	ER CO	ORREC	TION	FACT	FOR:		N/A	
COM	PLET	ION	DEPTH: 39.3										
D	s	S											
E P	Y	A							T.	S		%	%
T	M	M P	DESCRIPTION OF MATERIAL	SOIL				THE	U.F	NO(Т	R
н Н	B	L		GROUP	IC	ST.		/EIC	ER C	BL	N.	C R	Q D
	O L	Е			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	R.	D
FT.	L	S	SURFACE ELEVATION: 432.0		PL	1 %	LIN LIN	DR	LB	NON NO	PEI		
												80	9
													U
			5										
40		_	Boring Terminated	-									
45													
50													
													2
55													
60													
65													
				-									
70													
REMA	RKS	: */	A water stratum was encountered at approximate	ly 8.4' be	ow gro	ound	leve	I. Bri	idge	2			

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.				0. 6A						
JOB N	ALC: NAME OF TAXABLE PARTY.	State of Lots	BR6210		PAGE DATE:	1		F 2 Mar	ch 1	7,20	20		
	NO. NAME:		Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C)F DR				7,20	20		
			C0. Rd. 65 (Samples) Saline County		COLUMN DESIGN CONSTRUCT		Stem A		r - D	iamo	ond (Core	;
STAT	ION:		114+09		EQUIP			U		ker 1'			20
	TION:		2' Right of Consturction Centerline										
LOGO	GED BY	': C	Connor Bunton		HAMM	ER CO	ORREC	TION	FAC	FOR:		N/A	
COM	PLET	ION	I DEPTH: 39.2										
D	s	S											
E	Y	A							T.	S		%	%
Р Т	M	M P	DESCRIPTION OF MATERIAL	SOIL				THE	CU.F	NO		Т	R
н	B	Ĺ		GROUP	2	ST.		/EIC	SR C	BL	ż	C R	Q D
	0	E			PLASTIC	% MOIST.	IN	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	ĸ	D
FT.		S	SURFACE ELEVATION: 432.0		PL/	% N	LIQUID	DR	LBS	NO	PEI		
	6.095 												
	0.000 g												
	00.00	2	Wet, Brown, Sand with Gravel										
	300° 0												
5	20.0 0000			_							•		
	9. ₀ .9	X								22-	8		
	00.00	$ \rightarrow $								22	10		
	0.000		Wet, Dense, Brown Gravel with Sand										
	e e												
10	00.000												
10			Wet, Very Dense, Brown Gravel (Rock							1 (0	0		
	<u>444</u>		(Fragments)	-						(0	/		
												35	0
	拼發												
15	<u> </u>												
	444										1	27	0
	<i>444</i>										1		
20													
	<i>4444</i>												
												33	0
											į		
			LIMESTONE WITH INTERBEDDED SANDSTONE AND SHALE - Unweathered,										
25			Hard, Frequent Fractures, Occasional Mineral										
	孫招		Veins, Slightly Dipping, Gray										
												67	46
	<u>AA</u>			4.5									
30		+											
												38	0
													5
35	<u>444</u>	+											
	LULT,	1											

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			7 2					
JOB N	No. of Concession, Name	And in case of the local diversion of	BR6210		DATE:	2	and the second second		ch 1'	7,20	20		
JOB N			Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C	OF DR				1,20	20		
			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	iamo	ond (Core	
STATI	ION:		114+09		EQUIPN					er l'			
LOCA			2' Right of Consturction Centerline										
	And a local division of the second		onnor Bunton		HAMM	ER CO	ORREC'	TION	FACT	FOR:		N/A	
COM	PLET	-	DEPTH: 39.2		1								_
D	s	S											
E P	Y	A M							FT.	SA		%	%
T	M	P	DESCRIPTION OF MATERIAL	SOIL				GH	cu.	LOV		T	R
н	B O	L		GROUP	LIC.	IST.	Δ.	WEI	ER	F BI	Z.	C R	Q D
	L	E			PLASTIC	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.		
FT.	77777	S	SURFACE ELEVATION: 432.0		LI LI	%	EE	DF	LE	ž	PE		
												81	52
	444												
40			Boring Terminated										
45													
50													
55													
								- 2					
60													
65	20										1		
											6		
70													
REMA	ARKS	: В	ridge 2										

					BORIN			- 4					
JOB N	COLUMN TWO IS NOT	COLUMN ADDRESS OF	DIVISION - GEOTECHNICAL SEC.		PAGE DATE:	1		F 1	ah 1	0, 202	20		
	IAME:		Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C)E DR			ch I	0, 202	20		
			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	iamo	ond (Core	
STAT	ION:		114+75		EQUIP					er 17			
LOCA	TION:		6' Right of Construction Centerline										
	ARCOLA PROVIDENCE AND	-	ustin Dillman		НАММ	ER C	ORREC	TION	FAC	FOR:	1	N/A	
COM	PLET	ION	DEPTH: 29.2										
D	s	S											
EP	Y	A M							Ŀ.	s		%	%
T	M	P	DESCRIPTION OF MATERIAL	SOIL				THE	CU.F	MO		Т	R
H.	B O	Ĺ		GROUP	$1 \cong$	ST.		/EI(ER C	BL	N.	C R	Q D
	L	Е			PLASTIC	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	K	D
FT.		S	SURFACE ELEVATION: 432.8		PL	%	LIN	DR	LB	N	PE		
	0000		- No Sample										
	0000												
	60000		Gravel										
	8°00												
5			Moist, Very Hard, Brown and White Sandy Clay							16	3		
	60/	X	Moist, very hard, brown and white Sandy Clay							35-			
	2%		Maint Vary Hard White and Grou Clauwith								ŝ		
			Moist, Very Hard, White and Gray Clay with Gravel (Quartz Fragments)										
	8 gg		Slaver (edul 2 Hagments)										
10										1.	1		_
										(0	')		
												96	84
	<u> </u>											90	04
15													
												80	72
	<u>A</u>												
			LIMESTONE WITH INTERBEDDED SHALE -										
20			Unweathered, Hard, Frequent to Occasional Fractures and Mineral Veins, Trace Pyrite,										
	545		Slickensided, Gray										
												86	86
													00
	<u> </u>												
25	444												
												98	96
												50	00
30	4477	+	Boring Terminated										
- 1											1		
35													
NAMES AND ADDRESS OF TAXABLE PARTY.	RKS:	B	ridge 2										
And in case of the	And a state of the local division of the loc			ALL DATE OF LESS OF LESS	And in case of the local division of the loc					Competition Des		-	All of the Owner, or other

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.		BORIN			- 2					
JOB N	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER OWNE		BR6210		PAGE DATE:	1	0	F 2	rch (9, 202	20		_
	AME:		Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C)F DR	ILLING			, 202	.0		
			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	Diamo	ond C	Core	:
STAT	ION:		115+45		EQUIP					ker 17			
LOCA	TION:		Construction Centerline										
Contraction of the local division of the loc	AND ADDRESS OF TAXABLE PARTY.	A PROPERTY AND A PROPERTY AND A	ustin Dillman		HAMM	ER C	ORREC	TION	FAC	TOR:	1	N/A	
COM	PLET	ION	DEPTH: 38.6										
D	s	S											
E P	Y	A							Ŀ.	s		%	%
T	M	M	DESCRIPTION OF MATERIAL	SOIL				THE	U.F	MO		Т	R
н.	B	Ĺ		GROUP	2	ST.		/EIC	CR C	BL	ż	C R	Q D
	O L	Е			AST	% MOIST.	III	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	S 6-]	ĸ	D
FT.	L	S	SURFACE ELEVATION: 431.5		PLASTIC LIMIT	% N	LIQUID	DR	LBS	NO	PER 6-IN.		
			No Sample										
	Ser 9												
	0000		Gravel and Cobbles								8		
5	0°80 h	\bigvee								7	and the second second		
	0 ¹² 0 0	Δ								7-1	16		
	800 6		Wet, Medium Dense, Brown Gravel with Sand										
	0.00												
	0.05												
10										1 (0	1		
	<i>444</i>									(0	")		
	$\frac{1}{1}$											80	34
													-
			LIMESTONE WITH INTERBEDDED SHALE -										
45	444		Unweathered, Hard, Frequent Fractures, Trace										
15			Pyrite, Gray										
	444											72	54
											Ì		
20													
	7/7											96	76
	<u> </u>										ŀ	-	
25													
			LIMESTONE WITH INTERBEDDED SHALE -									100	09
			Unweathered, Hard, Occasional Fractures,								ľ	00	90
			Frequent to Occasional Mineral Veins, Trace										
		-	Pyrite, Gray								H	-	
30													
Ē													00
Ē												96	60
		+										_	
35													
ີ		and an and a								_			

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			F 2					
JOB N	And the second se	COLUMN DISTANCE	BR6210		DATE:		0	Mar	ch 9	202	20		
8	AME:		Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C	F DR	ILLING		011 >	, 202	.0		
			C0. Rd. 65 (Samples) Saline County				Stem A		- D	iamo	ond (Core	;
STAT	ION:		115+45		EQUIPM					er 17			
0	TION:		Construction Centerline										
LOGO	GED BY	<u>r: A</u>	ustin Dillman		HAMM	ER CO	DRREC	TION I	FACT	OR:	1	N/A	
COM	PLET	ION	DEPTH: 38.6										
D E P T H	S Y M B O	SAMPL	DESCRIPTION OF MATERIAL	SOIL GROUP	Ξ	IST.	g,	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	-IN.	% T C R	% R Q D
FT.	Ĺ	E S	SURFACE ELEVATION: 431.5		PLASTIC LIMIT	% MOIST.	LIQUID	DRY	LBS P	NO. 0	PER 6-IN.		
			Quartz Layer LIMESTONE WITH INTERBEDDED SHALE - Unweathered, Hard, Occasional Fractures, Frequent to Occasional Mineral Veins, Trace									72	56
40			Pyrite, Gray Boring Terminated										
40			Bonng reminated										
45													
45													
50													
55													
-+													
60													
60												-1	
65													
70													
REMA	RKS:	*8	Boring termanted at 38.6' below ground level due to	blocke	d off c	ore	oarrre	l. Bri	idge	2			
					A DECEMBER OF THE OWNER.						-		

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.		BORIN	IG NO		. 2					
JOB N	CALCULATION OF THE RANGE	STATISTICS.	BR6210		PAGE DATE:		0	F 2 Mai	ch 4	, 202	20		
	IAME:		Hurricane Creek STRS. & APPRS. NO.2(S)		TYPE C	OF DR	ILLING		e n 4	, 202	.0		
			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	iamo	ond (Core	;
STAT	ION:		116+15		EQUIP					er 1'			
	TION:		Construction Centerline										
COLUMN STATISTICS	ACC - Descent States, Sale	Contractor in a	ustin Dillman		HAMM	ER CO	ORREC	TION	FACT	FOR:			
and the local division, the second	PLET	Party States	DEPTH: 38.6		1		1						
D E	S	S A											
P	Y	M						-	FT.	NS		%	%
T	M	P	DESCRIPTION OF MATERIAL	SOIL				GH	cu.	ro/		T	R
Н	B	L		GROUP	LIC	IST	Δ.	WEI	ER	F B	Ϋ́.	C R	Q D
	L	E			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.		
FT.	-	S	SURFACE ELEVATION: 431.9		PL	%	EE	D	LE	ž	PE		
	P												
	1		Clay with Organic Matter.										
			Clay with Organic Matter.										
	PP												
5		\bigtriangledown		1						6	6		
			SHALE - Weathered, Medium Hard, Gray*							6-6 (11			
										(1	')		
	<u>444</u>											100	0
	<u>444</u>	-											
10													
	協会											6	0
	445												
15	44												
	拚												
			LIMESTONE WITH INTERBEDDED SHALE -									92	58
	44A		Unweathered, Hard, Occasional Fractures,										
	<u> </u>		Slickensided, Slightly Dipping, Trace Pyrite, Light and Dark Gray*										
20	747 7472		Light and Dark Gray										
20	安安												
	<i>444</i>											92	92
	1444 1444												
25	<u>444</u>												
											60	48	28
	<u> </u>												
	444					1							
	7-8-9-9 77-5-5	+ 1	Quartz and Calcite Layer										
30	<u>AU</u>												
												98	48
													The second se
			LIMESTONE WITH INTERBEDDED SHALE -										
		+	Unweathered, Hard, Occasional Fractures, Slickensided, Slightly Dipping, Trace Pyrite,										
35	44.4		enertenerdete, engrity Dipping, fracer yrite,										
100000000000000000000000000000000000000	DVC	*/	water stratum was encountered at approximately	4 4' hel	ow are	June	leve	**	Poo	r rec	OVA	ry fr	on

			DEPARTMENT OF TRANSPORTATION DIVISION - GEOTECHNICAL SEC.		BORIN								
JOB N	And in some days in the local division of the local division of the local division of the local division of the	and the second se	BR6210		PAGE	2	0	F 2	ich 4	202	20		
	IAME:		Hurricane Creek STRS. & APPRS. NO.2(S)		DATE: TYPE C	סרו שר			rcn 4	, 202	20		
			C0. Rd. 65 (Samples) Saline County				Stem A		r - D	iamo	ond (Core	
STAT	ION:		116+15		EQUIP			14.60		ter 1'		0010	
LOCA	TION:		Construction Centerline										
Tradition distantion of the	The Real Property lies in the local division of the local division		ustin Dillman		HAMM	ER CO	ORREC	TION	FACT	FOR:			
COM	PLET	ION	DEPTH: 38.6										
D	s	S											
E	Y	A M							Ŀ.	S		%	%
T	M	P	DESCRIPTION OF MATERIAL	SOIL				THE	U.F	MO		Т	R
Ĥ	B O	Ĺ		GROUP	12	ST.		/EIC	ER C	BL	Ż	C R	Q D
	L	Е			PLASTIC	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	ĸ	D
FT.	-	S	SURFACE ELEVATION: 431.9		LIN	%	LIN	DR	LB	0X	PEI		
			Light and Dark Gray										~~
	<u>444</u>											96	90
	<u>444</u>												
	1,1,1,1		Boring Terminated										
40			Doning Forminatod										
45													
	a 8												
50													
		1											
		1											
55													
60													
00													
- 1													
65													
70													
CONTRACTOR OF STATE	RKS:	*A	water stratum was encountered at approximate	ely 4.4' bel	ow gro	ound	level	. **	2001	rec	ove	y fr	om
			6 to 13.6' below ground level due to drilling mal										