ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

IN		NEWTON	COUNTY
STATE HIGHWAY	7		18
BUFF	ALO RIVER &	MILL CREEK STRS. & A	PPRS. (S)
FEDERAL AID PROJEC	T NO. <u>NH</u>	PP-STPB-0051(13)	
STATE JOB NO		009784	

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 STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

March 6, 2017

TO: Mr. Rick Ellis, Bridge Engineer

SUBJECT: Job No. 009784 Buffalo River Br. & Apprs. (Pruitt) (S) Route 7, Section 18 Newton County

Transmitted herewith are a brief summary of the geology and site conditions, D50 analysis test results, rock mass rating summary, unconfined compressive strength results, and the logs of the borings conducted for the structure 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. The rock cores are available for inspection at the Materials Division.

Based on plans provided by the Bridge Division, it is anticipated that the south bridge end, Bent 1, will be founded on piling. Preboring may be necessary in order to achieve minimum penetration requirements.

Based on the depth at which bedrock was encountered, it is anticipated that the north bridge end, Bent 5, will be founded on a spread footing and all intermediate bents will be founded on drilled shafts. Spread footings should be founded in the competent Sandstone and should be sized based on the values provided in Table 1.

Foundation	Nominal Bearing	Resistance	Nominal Bearing
Description	Resistance (ksf)	Factor	Resistance (ksf)
Spread Footing	44.2	0.45	20.0

TABLE 1 – Bearing Capacity Recommendations for Spread Footings

Drilled shafts socketed into the competent Sandstone to Dolostone should be designed based on the values provided in Table 2.

Foundation	Nominal Tip	Factored Tip	Nominal Side	Factored Side
Description	Resistance (ksf)	Resistance (ksf)	Resistance (ksf)	Resistance (ksf)
Drilled Shafts	412	206	21.2	11.7

TABLE 2 – Bearing Capacity Recommendations for Drilled Shafts

Bent 5 is currently located on the edge of a steep bluff. It is recommended that the bent be moved a minimum of 30 feet up station. This will ensure the bent is founded on a stable formation and provide protection against natural weathering of the bluff face. The area around Bent 5 was heavily vegetated prior to the subsurface investigation. It is recommended that Surveys Division verify the topography in this area before final plans are produced.

If you have any questions concerning these recommendations, please contact the Geotechnical Section.

Michael C. Benson Materials Engineer

MCB:rpt:mlg

cc: State Construction Engineer - Master File Copy District 9 Engineer G.C. File Surveys Division

GEOLOGY AND SITE CONDITIONS Job No. 009784

Buffalo River BR. & APPRS. (Pruitt) (S) <u>Newton County</u> <u>Route 7 Section 18</u>

Site Conditions

The existing Buffalo River Bridge is located on Route 7 in Newton County. It is a 4 span bridge, approximately 280 feet long, running northeast to southwest. The superstructure consists of an arched steel truss supported by 3 wall piers on spread footings with concrete end bents. The decking is cast-in-place, reinforced concrete and contains multiple steel drainpipes. The decking is in poor condition and contains multiple cracks with exposed rebar. Both endwalls are concrete and show signs of erosion under their structures. The northernmost endwall has additional stacked stone on the left side for erosion control and the southernmost endwall has stone riprap on its endslope. The guardrails are steel and concrete leading up to the bridge and the guardrails on the bridge, attached to the bridge trusses, are steel. Suspended telecommunication lines parallel the right side of the bridge and cross the road up-station from the northernmost bridge end. Overhead power lines parallel the right side of Route 7 both up-and down-station from the bridge, but terminate before reaching the bridge ends. Down-station from the southern bridge end, there is a National Forest Visitor Center on the left and a storage facility on the right.

The Buffalo National River flows from west to east under the bridge, to its confluence with the White River at Buffalo City. Sediment deposited in the channel is primarily sand, gravel, and boulders. A secondary channel has developed on the southern flank of the river forming an island during periods of high flow. There is a major sandstone bluff on the northern side of the bridge and both sides of the channel are heavily vegetated. There is a canoe takeout/drop-off point located approximately one quarter of a mile downstream from the bridge. A moderately used horseback riding/hiking trail can be found up-station from the northern bridge end, which leads to the canoe pickup/drop-off point downstream from the bridge. The remains of an older bridge can be found just east of the project alignment on both sides of the river channel.

Site Geology

The project alignment is located in the Boston Mountains Plateau of the Ozarks in the Ordovician-aged Everton Formation (Oe). This formation has several named members including the Calico Rock Sandstone, the Kings River Sandstone, and the Newton Sandstone. The sandstone in this area correlates to the Newton Sandstone. The Everton Formation is composed primarily of dolostone, sandstone, and limestone with the majority consisting of clean friable sandstone with alternating layers of dolostone and limestone at the project locality. The limestone is light-gray to brownish-gray and generally more or less dolomitic and sandy. The dolostone is light- to dark-gray and generally more or less limy and sandy. The Everton Formation has thick members of friable sandstone dominating local sections in different regions. The sandstone tends to be made up of clean, white, well-rounded, frosted, medium-sized sand grains and thickness ranges from 300 to 650 feet. The lower contact is unconformable and

other disconformities occur within the formation. The thickness of the Everton Formation varies from about 300 feet to as much as 650 feet. Multiple soil filled cavities were encountered in the borings ranging from 0.1 to 3.2 feet in thickness with the larger cavities located on the northern side of the channel. Several faults exist in the surrounding area, including the Carlton Fault Zone which runs adjacent to the project alignment. However, no faulting was evident in any of the borings.

Subsurface Conditions

Based on the results of the borings, the subsurface stratigraphy may be generalized as follows:

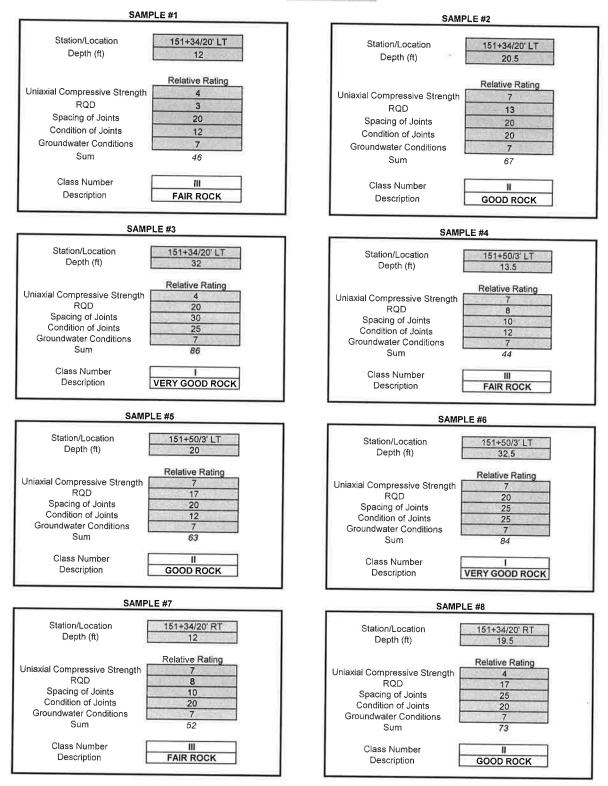
- 0 to 14.3 Feet: Varies from loose to very dense, reddish brown clayey sand with gravel (rock fragments) to moist, stiff to very stiff, reddish brown sandy clay with gravel (rock fragments).
- 14.3 to 52.0 Feet: Consists of slightly weathered to weathered, poorly cemented to well cemented, white to light gray, occasionally fractured, partially calcareous, sandstone with occasional layers of limestone and dolostone.

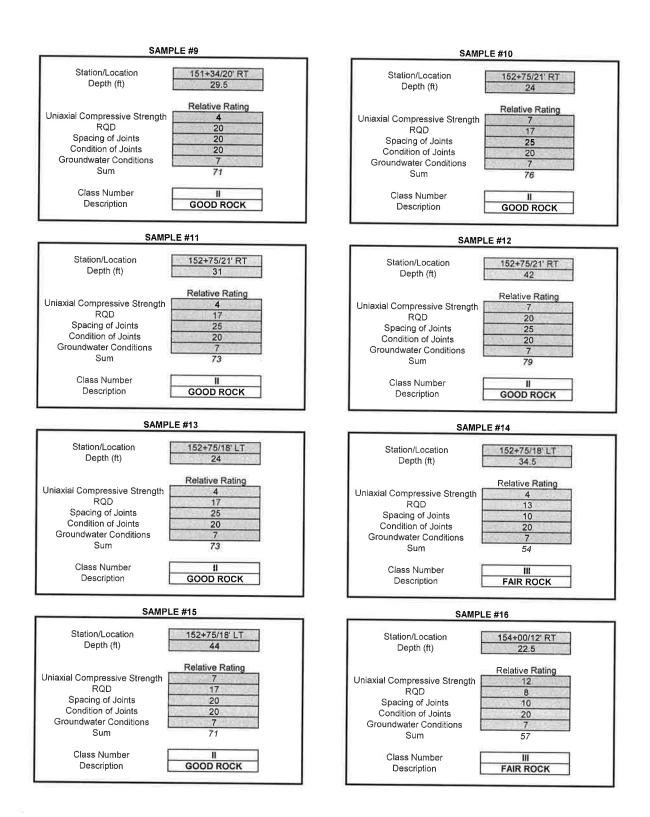
Cavities were encountered in many of the borings. These ranged in thickness from 0.1 to 0.3 feet for stations 151+34 to 158+41 and 3.0 to 3.2 feet at stations 158+25 18' right and 158+34 6' left.

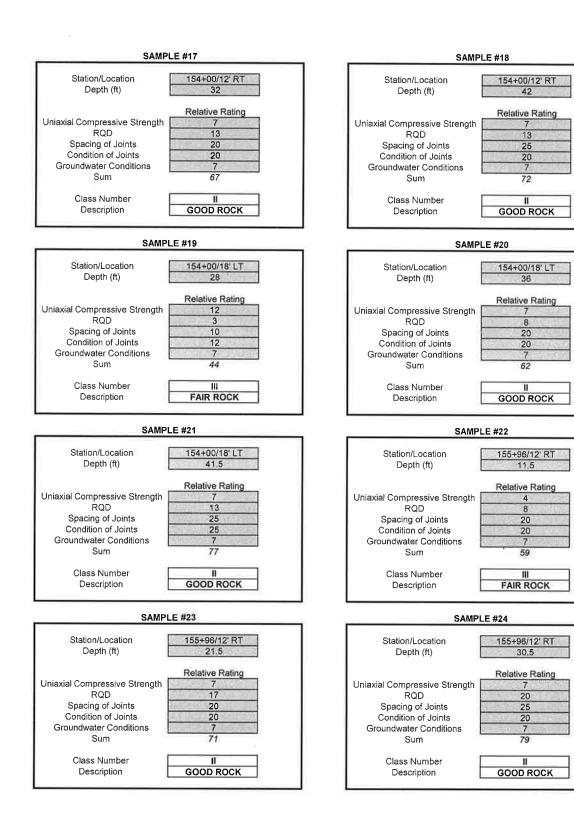
D₅₀ AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

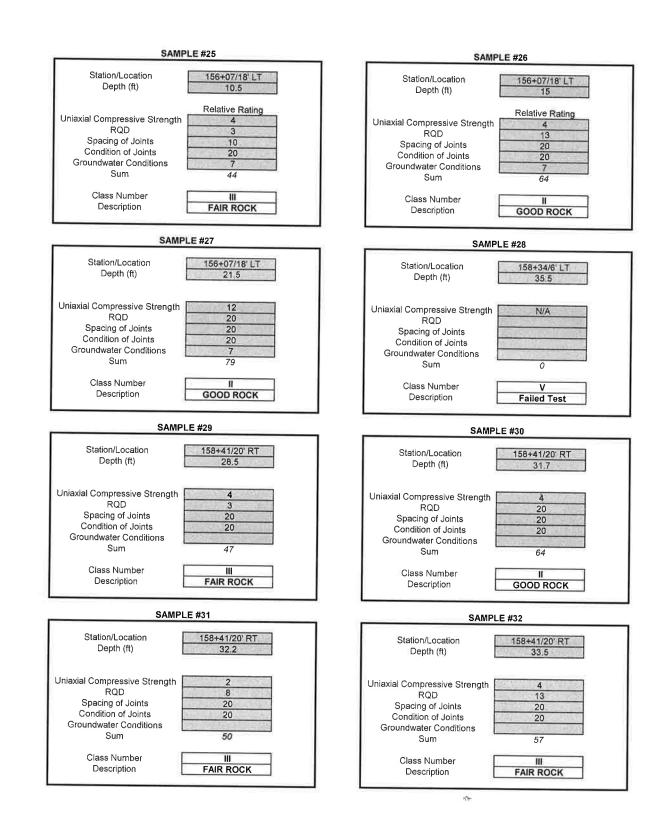
		Job No.	009784		
Creek Name	Station	Sample Type	Location	Depth (FT)	Aggregate Size (D50) (IN)
Buffalo River	155+90	River Channel	Construction C.L.	N/A	0.0197

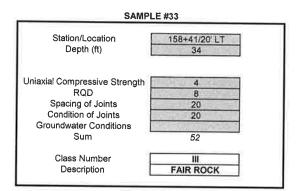
ROCK MASS RATING SUMMARY JOB # 009784

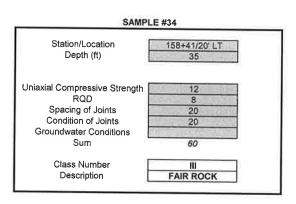












Rock Core Unconfined Compression Test Summary

Project Number:009784Project Name:Buffalor River Br. & Apprs. (Pruitt) (S)Date Tested:1/4/2017

Station Location Sample Depth Diameter Height Total Load Correction Stress Remarks No. (ft) (in) (in) (lbs) Factor (psi) 151+34 20' Lt 1 12.0 1.75 3.65 16,720 1.00 6,951 SS 2 1.75 27,510 151+34 20' Lt 20.5 3.55 1.00 11,437 SS 3 1.75 15,350 151+34 20' Lt 32.0 3.55 1.00 6,382 SS 4 20,700 SS 151+50 3' Lt 13.5 1.75 3.65 1.00 8,606 5 151+50 3' Lt 20.0 1.75 4.00 20,610 1.00 8,569 SS 151+50 3' Lt 6 32.5 1.75 3.75 28,630 1.00 11,903 ss 7 151+34 20' Rt 12.0 1.75 3.75 28,390 1.00 11,803 ss 20' Rt 3.65 17,180 7,143 151+34 8 19.5 1.75 1.00 SS 20' Rt 9 1.75 3.65 17,110 1.00 7,113 151+34 29.5 SS 152+75 21' Rt 10 24.0 1.75 3.60 19,140 1.00 7.957 SS 21' Rt 11 31.0 1.75 3.60 15,440 1.00 6,419 152 + 75Dolostone 21' Rt 12 42.0 1.75 3.70 25,140 1.00 10,452 152 + 75SS 3.70 18' Lt 13 1.75 17,020 7,076 152 + 7524.0 1.00 SS w/ vertical seam 18' Lt 14 34.5 1.75 3.65 10.680 1.00 4.440 SS 152+75 152+75 18' Lt 15 44.0 1.75 3.70 18,960 1.00 7,883 Dolostone 12' Rt 22.5 1.75 40,800 1.00 16,963 154 + 0016 3.60 SS 12' Rt 17 32.0 1.75 3.65 22,190 1.00 9,225 154+00 SS 12' Rt 18 42.0 1.75 3.65 29,810 1.00 12,393 SS 154+00 1.75 3.65 37,860 1.00 15,740 SS 154+00 18' Lt 19 28.0 18' Lt 20 36.0 1.75 3.70 33,830 1.00 14,065 SS 154+00 21 28,350 11,786 154 + 0018' Lt 41.5 1.75 3.65 1.00 Dolostone 155+96 12' Rt 22 11.5 1.75 3.95 18,020 1.00 7,492 1.00 155+96 12' Rt 23 21.5 1.75 3.85 28,730 11,944 155+96 12' Rt 24 30.5 1.75 3.65 24,280 1.00 10,094 11,530 1.00 4,794 156+07 18' Lt 25 10.5 1.75 3.60 SS 18' Lt 26 15.0 1.75 3.70 14,800 1.00 6,153 156+07 27 21.5 1.75 3.75 48,260 1.00 20.064 156+07 18' Lt

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

Page 1 of 2

Rock Core Unconfined Compression Test Summary

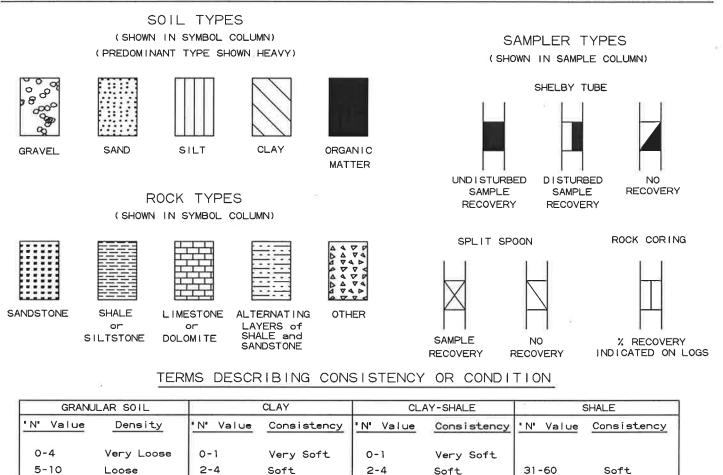
Page 2 of 2

Project Number:009784Project Name:Buffalo River Br. & Apprs. (Pruitt)(S)Date Tested:2/24/2017

Location	Sample No.	Depth (ft)	Diameter (in)	Height (in)	Total Load (lbs)	Correction Factor	Stress (psi)	Remarks
6' LT	28	35.5	1.75	-		-	Broke	SS(Visible seam in sample)
20' RT	29	28.5	1.75	3.61	13,500	1.00	5,613	SS(Piece missing from top)
20' RT	30	31.7	1.75	3.50	13,680	1.00	5,688	SS
20' RT	31	32.2	1.75	3.51	5,640	1.00	2,345	SS
20' RT	32	33.5	1.75	3.52	9,920	1.00	4,124	SS
20' LT	33	34.0	1.75	3.53	14,960	1.00	6,220	SS
20' LT	34	35.0	1.75	3.64	36,620	1.00	15,225	SS
			(1) (1)					
							·	
	6' LT 20' RT 20' RT 20' RT 20' RT 20' LT	No. 6' LT 28 20' RT 29 20' RT 30 20' RT 31 20' RT 32 20' LT 33	No. (ft) 6' LT 28 35.5 20' RT 29 28.5 20' RT 30 31.7 20' RT 31 32.2 20' RT 32 33.5 20' RT 33 34.0	No. (ft) (in) 6' LT 28 35.5 1.75 20' RT 29 28.5 1.75 20' RT 30 31.7 1.75 20' RT 30 31.7 1.75 20' RT 31 32.2 1.75 20' RT 32 33.5 1.75 20' RT 32 33.5 1.75 20' RT 32 33.5 1.75 20' LT 33 34.0 1.75	No. (ft) (in) (in) 6' LT 28 35.5 1.75 - 20' RT 29 28.5 1.75 3.61 20' RT 30 31.7 1.75 3.50 20' RT 31 32.2 1.75 3.51 20' RT 31 32.2 1.75 3.51 20' RT 32 33.5 1.75 3.52 20' RT 32 33.5 1.75 3.52 20' RT 33 34.0 1.75 3.53	No. (ft) (in) (in) (lbs) 6' LT 28 35.5 1.75 - - 20' RT 29 28.5 1.75 3.61 13,500 20' RT 30 31.7 1.75 3.50 13,680 20' RT 31 32.2 1.75 3.51 5,640 20' RT 32 33.5 1.75 3.52 9,920 20' RT 33 34.0 1.75 3.53 14,960	No.(ft)(in)(in)(lbs)Factor6' LT2835.51.7520' RT2928.51.753.6113,5001.0020' RT3031.71.753.5013,6801.0020' RT3132.21.753.515,6401.0020' RT3233.51.753.529,9201.0020' RT3334.01.753.5314,9601.00	No.(ft)(in)(in)(lbs)Factor(psi)6' LT2835.51.75Broke20' RT2928.51.753.6113,5001.005,61320' RT3031.71.753.5013,6801.005,68820' RT3132.21.753.515,6401.002,34520' RT3233.51.753.529,9201.004,12420' LT3334.01.753.5314,9601.006,220

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

EGEND



5-8

9-15

16-30

31-60

0ver 60

Medium Stif

Very Stiff

Very Hard

Stiff

Hard

0ver 60

More than 2

Penetration

Less than 2

Penetration

in 60 Blows: Medium Hard

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.

Medium Stif

Very Stiff

Very Hard

Stiff

Hard

11-30

31-50

0ver 50

Medium Dense

Very Dense

Dense

5-8

9-15

16-30

31-60

0ver 60

- 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: $\frac{6}{8-9} \Rightarrow 8+9 = 17blows / ft$. 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.

ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			F 2					
JOB NO. 009784 Newton County		DATE:				her	15, 2	2016		
JOB NAME: Buffalo River BR. & APPRS. (Pruitt)(S)		TYPE C)F DR			1001	10,1	2010		
Route 7 Section 18				Stem A		r - D	iamo	ond C	Core	
STATION: 151+34		EQUIPN			0		AE 8.			
LOCATION: 20' Left of Construction Centerline										
LOGGED BY: Steve Faulkner		HAMM	ER CO	ORREC	TION	FACT	FOR:]	1.23	
COMPLETION DEPTH: 38.5										
D E Y A P M M T B H O E C E	SOIL GROUP		% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D
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10 Moist, Very Dense, Brown and Gray Sand with							3	0		
Gravel (Rock Fragments)*							(3			
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CHERT- Weathered, Hard, Fractured, Gray SANDSTONE - Weathered, Poorly Cemented, Occasional Fractures, White and Light Gray**									96	50
SANDSTONE - Slightly Weathered, Poorly Cemented, Occasional Fractures, White and Light Gray									100	90
30 SANDSTONE - Unweathered, Well Cemented, Occasional Fractures, White and Light Gray									100	98
35										
REMARKS: * No sampler advancement after 10 hammer blows failure at approximately 20' bgl.	at 9.4 fe	et belo	ow g	round	d lev	el (b	ogl).	** D	rill k	oit

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		_	DIVISION - GEOTECHNICAL SEC.		PAGE	2		7 2		16.5	010	-	
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JOB N			009784 Newton County		DATE:		Nove		r 28	and 2	9, 20)16	
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			Gravel (Chert Fragments)										
												93	0
		10											
			SANDSTONE - Weathered, Poorly Cemented,										
15			Frequent Fractures, White and Light Gray								!	98	40
					33								
_ =											- 1		
20											- h	od	95
			SANDSTONE - Weathered, Cemented,										
			Occasional Fractures, White and Brown										
										-			
											ł	od	78
25													
			SANDSTONE - Weathered with Slighty									00	11
			Weathered Layers, Cemented, Calcareous in _ Part, White and Light Gray								1	DO	41
			SANDSTONE - Slightly Weathered, Well										
30			Cemented with Cemented Layers, Calcareous								h	od	88
			in Part, White and Light Gray								ľ	1	
											-	-	
35													
	ARKS	: *(Changed from diamond impregnated to surface set	bit at 2	5.1 fee	et be	low a	rour	nd le	evel (bgl)	to	
			rind up gravel below augers. **Driller noted a void								5.7		
												_	

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	ig N 2		F 2					
JOB N		_	009784 Newton County		DATE:	_	Nove	_	r 28	and ?	29 21	016	
JOB N	-		Buffalo River BR. & APPRS. (Pruitt)(S)		TYPE C				20		_, _,	010	
			Route 7 Section 18				Stem A		r - D	Diamo	ond C	Core	
STATI	ION:		151+34		EQUIP			U		AE 8			
LOCA	TION:		20' Right of Construction Centerline										
LOGG	ED BY	: P	aul Campbell / Carson Sloan		HAMM	ER C	ORREC	TION	FAC	FOR:		1.23	
COM	PLET	ION	I DEPTH: 52.3										
D	s	s											
E	Y	A	इ.	1					Ē	S		%	%
P T	M	M P	DESCRIPTION OF MATERIAL	SOIL				HT	U.F	MO		Т	R
H	В	г L		GROUP	<u>ပ</u> ·	ST.		EIC	RC	BL	ż	C	Q
	0	Ē			ITST	% MOIST		DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT,			SURFACE ELEVATION: 816.7		PLASTIC LIMIT	% N	LIQUID	DR	LBS	l S	PER		
										-		100	100
			SANDSTONE - Unweathered, Well Cemented, Calcareous in Part, White and Light Gray										
					0								
40												100	100
45			DOLOSTONE - Weathered, Moderately Hard,									90	58
			Light Gray**										
1			SANDSTONE - Unweathered, Well Cemented, White and Light Gray										
			SANDSTONE - Unweathered, Well Cemented,										_
			Calcareous, White and Light Gray										
50			SANDSTONE WITH INTERBEDDED									100	
- 30			DOLOSTONE AND CHERT- Unweathered,									100	98
			Well Cemented, White and Light Gray										
			DOLOSTONE - Slightly Weathered, Moderately									_	
			Hard, Light Gray										
			Boring Terminated										
55													
60													
65													
70													
REMA	ARKS		Changed from diamond impregnated to surface set							evel	(bgl)	to	
			rind up gravel below augers. **Driller noted a void										

					BORIN								
<u> </u>			DIVISION - GEOTECHNICAL SEC.		PAGE	_		F 2	. 00	. 1.5	0.0	01.0	_
JOB N			009784 Newton County Buffalo River BR. & APPRS. (Pruitt)(S)		DATE: TYPE (Nove		r 29	and 3	50, 2	016	
JOB N	AME:		Route 7 Section 18				Stem A		- T	liama	and (⁷ 0#0	
ST A TI			152+75					Auge		ME 8:		Jore	
STATI LOCA			21' Right of Construction Centerline		EQUIPI	MENI	:		Cr	VIE 0.	50		
			aul Campbell / Carson Sloan		HAMM	ER CI		τιων	FAC	TOP.		1.23	
			DEPTH: 60.3		TIAMIN	EKU	JAKEC	TION	FAC	IOK.	-	1.25	_
			DEF1H. 00.5										_
D E	s	S A											
P	Y	м М							FT.	NS		%	%
Ť	M	Р	DESCRIPTION OF MATERIAL	SOIL				Ηg	CU.	Q		T	R
н	B	L		GROUP	IC	ST.		VEI	ER.	B	N.	C R	Q D
		E			PLASTIC LIMIT	% MOIST	5	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		D
FT.	L	S	SURFACE ELEVATION: 798.9		LIN PL	%	LIQUID	DR	LB	2 N	PEI		
	11												
	11		Malat Man Oliff Dama Olam ille Orangia										
	11		Moist, Very Stiff, Brown Clay with Organic Matter							2			
	11		Maner										
	11												
5	17	\bigvee								4			
102-0		\bigtriangleup								7-	11		
		11	Moist, Very Stiff, Brown Clay										
	\vee												
	1000		Sandstone Boulder										
10	32		Sandstone Boulder	ġ.						Ľ.			
10													
			Clayey Sand with Gravel, Cobbles, and			6 - C						69	0
			Boulders										
	23												
	$\overline{//}$	\bigtriangledown								5			
15	11	\bigtriangleup								6-1	10		
	//												
	//	0	Wet, Medium Dense, Brown Clayey Sand										
	11		·····,································										
	11												
	11												
20	111	\bigtriangledown	Moist, Very Dense, Gray Clayey Sand							2	0		
	8.5	\wedge	Moist, Very Dense, Gray Sand with Gravel							16-	45		
	9.69.0		(Rock Fragments)							2	0	_	
			SANDSTONE - Unweathered with Highly							(Ō	")	54	0
			Weathered Layers, Well Cemented with Poorly		1							54	U
25			Cemented Layers, Calcareous in Part, Light										
			Gray										
			SANDSTONE - Unweathered, Well Cemented,										
			Calcareous in Part, White and Light Gray									99	75
			Galdareous in Fart, while and Light Gray										
								0					
30			DOLOSTONE - Slightly Weathered, Moderately								- 1		
			Hard, Light Gray										
			Cavity									95	84
			DOLOSTONE - Slightly Weathered, Moderately									90	04
			Hard, Light Gray										
			SANDSTONE - Unweathered, Well Cemented,										
35													
	ARKS	: *	Total water loss at 38.6 feet bgl.										
			Ŭ										
	_			_	_	_	_	_	_	_	_	_	_

			HWY. & TRANS. DEPARTMENT		BORIN								
		_	DIVISION - GEOTECHNICAL SEC.		PAGE			F 2					
JOB N			009784 Newton County		DATE:		Nove		r 29 a	and 3	30, 2	016	
JOB N	AME:		Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18		TYPE C				D		1.0	-	
							Stem A	Auge				Core	
STATI			152+75		EQUIP	MENT			CN	AE 8	50		
LOCA			21' Right of Construction Centerline									1 0 0	
		_	Paul Campbell / Carson Sloan		HAMM	ER CO	DRREC	TION	FAC	FOR:		1.23	
	PLET.	_	DEPTH: 60.3		r				_		_		
D	s	S											
E P	Y	A M							E	N/S		%	%
	M	P	DESCRIPTION OF MATERIAL	SOIL				E	U.I	Ň		Т	R
ΙΉΙ	B	Ĺ		GROUP	<u> </u>	ST.		E	R C	BI	ż	C R	Q
	0	Ē			LST IIT	% MOIST.	55	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	к	D
FT.	L	S	SURFACE ELEVATION: 798.9		PLASTIC LIMIT	% N	LIQUID	DR	LBS	0 Z	PER		
		Т	White and Light Gray		1			-					_
				1								99	88
			DOLOSTONE - Slightly Weathered, Moderately									33	00
			- Hard, Light Gray										
	*****	4	SANDSTONE - Unweathered, Well Cemented,										
40		-	Calcareous, White and Light Gray DOLOSTONE - Unweathered, Moderately Hard,										
			Light Gray*										
			SANDSTONE - Unweathered, Well Cemented									96	81
			with Poorly Cemented Layers, Occasionally										
			Friable, Calcareous, White and Light Gray										
45												_	
45			DOLOSTONE - Slightly Weathered, Moderately										
			Hard, Light Gray										
												100	98
			SANDSTONE - Slightly Weathered, Well Cemented with Occasional Poorly Cemented										
			Layers, Light Gray										
50			Layers, Light Oray										
											8	100	100
			SANDSTONE - Slightly Weathered, Cemented,						- 1				
			White and Light Gray										
		+										-	
55													
												98	73
	田田		DOLOSTONE - Slightly Weathered, Cemented,										
			Occasional Fractures, Gray										
60												100	100
		1	Boring Terminoted					_		-	-		
			Boring Terminated										
65													
_													
70													
		. *	Total water less at 29 6 fast hal		1								-
	AKKS	•	Total water loss at 38.6 feet bgl.										
		_				_		_	_	_	_	_	

			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			F 2					
JOB N			009784 Newton County		DATE:	I		_	nhe	r 6, 2	016		
JOB N	-	I	Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18		TYPE C			i: H	Iollo	w St	em A	uge	er -
STAT	ION:		152+75		EQUIP	MENT	`:		CN	ME 8:	50		
	TION:		18' Left of Construction Centerline										
		_	teve Faulkner		HAMM	ER CO	ORREC	TION	FAC	TOR:	1	.23	
COM	PLET		DEPTH: 63.2		1	r	r	r		r			
D E P	S Y M	S A M	DESCRIPTION OF MATERIAL	SOIL				HT	J.FT.	SWG		% T	% R
T H	B O L	P L E		GROUP	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		Q D
FT.		S	SURFACE ELEVATION: 797.9			%	33	Ð	LB	ž	PE	_	
		X	Moist, Medium Stiff, Brown and Gray Sandy Clay with Gravel (Rock Fragments)							3			
			Chert Boulder							1: (5	2		
_		X	Moist, Stiff, Brown and Gray Sandy Clay with Gravel (Rock Fragments)							(0 2 6-			
			Moist, Medium Dense, Brown to Dark Brown Clayey Sand							10- 3 5-			
20		X	Moist, Very Dense, Brown and Gray Sand with Gravel (Rock Fragments) SANDSTONE - Weathered, Cemented, White							40 60 (5	5		
-0			And Light Gray Fracture/Void* SANDSTONE - Weathered, Cemented, White							10		50	23
25			And Light Gray SANDSTONE - Slightly Weathered, Cemented, Calcareous, White and Light Gray								2	92	82
30			SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray DOLOSTONE - Unweathered, Moderately Hard, Light Gray**									98	90
35			SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray Possible Void at 22.1 to 22.4 feet bgl. ** Total wate										

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		-	IWY. & TRANS. DEPARTMENT		BORIN							-	
		_	DIVISION - GEOTECHNICAL SEC. 009784 Newton County	_	PAGE	2	_	F 2	1.		016	_	
JOB N JOB N	_	l	009784 Newton County Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18		DATE: TYPE C Rota			i: E	Iollo		em A	Auge	er -
STATI	ION:		152+75		EQUIP	MENT	:		CN	AE 8:	50		
LOCA			18' Left of Construction Centerline						_			1.00	
		_	teve Faulkner		HAMM	ER CO	ORREC	ΓΙΟΝ	FAC	FOR:		1.23	
	PLEI.	S	DEPTH: 05.2		T		1	<u> </u>		-			_
D E P	S Y	S A M	DESCRIPTION OF MATERIAL					L	.FT.	WS		%	%
T H	M B O	P L	DESCRIPTION OF MATERIAL	SOIL GROUP	$1 \ge 1$	% MOIST.	LIQUID LIMIT	WEIGH	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	T C R	R Q D
FT.	L	E S	SURFACE ELEVATION: 797.9		PLAST	% WC	NUL NUL	JRY	BS I	Q.	ER (
		T				<u> </u>				4	_	100	0.4
			DOLOSTONE - Unweathered, Moderately Hard, Light Gray SANDSTONE - Unweathered, Well Cemented,									100	64
40			Calcareous, White and Light Gray DOLOSTONE - Unweathered, Moderately Hard, Light Gray SANDSTONE - Unweathered, Well Cemented,									99	70
			SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray										
45			DOLOSTONE - Unweathered, Moderately Hard, Light Gray									99	82
			SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray				L					100	100
												99	94
60			DOLOSTONE - Unweathered, Moderately Hard, <u>Light Gray</u>										
			SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray									99	86
			Boring Terminated										
 70													
REMA	ARKS	: *	Possible Void at 22.1 to 22.4 feet bgl. ** Total wate	er loss k	etwee	en 30).0 an	d 63	3.2 fe	eet b	gl.		

					BORIN			D D					
JOB N		_	DIVISION - GEOTECHNICAL SEC. D09784 Newton County		PAGE	_	Decer	F 2	. 1 2	and 1	2 74	116	
JOB N	AME:	E	Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18			of dr 1ry V	illing Vash -	i: H	Iollo non	w Ste d Cor	em A re		er -
STATI LOCA	TION:		154+00 12' Right of Construction Centerline		EQUIP	MENT	`:		CN	AE 8:			
			aymond Taylor		HAMM	ER CO	DRREC	TION	FAC	for:		1.23	
D		S	DEPTH: 63.2		r –		1	1		<u> </u>	1	-1	
E P T H FT.	S Y M B O L	A M P L E	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 799.0	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D
	11									-	-	-	-
	//		Moist, Very Stiff, Reddish Brown Sandy Clay										
5		X	Moist, Medium Dense, Reddish Brown Sand and Gravel with Some Clay							1 10			
		X	Moist, Medium Dense, Reddish Brown Sand	20						- 5 - 8- - 9- - 10-	9		
20		X	Gravel (Sandstone Fragments) Moist, Very Dense, Reddish Brown and Light Gray Sand with Gravel (Sandstone Fragments) CEMENTED SANDSTONE							2 31-			
			SANDSTONE - Weathered, Poorly Cemented, Occasional Fractures, Light Gray							=		62	29
25			SANDSTONE - Weathered, Cemented, Calcareous, Light Gray									60	28
<u>30</u>			DOLOSTONE - Slightly Weathered, Moderately - Hard, Light Gray									100	72
35			SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray										
REMA	ARKS	: *	Partial water loss at 41.1' below ground level (bgl).	4 9 9									

			WY. & TRANS. DEPARTMENT		BORIN								
		_	DIVISION - GEOTECHNICAL SEC.		PAGE	2		F 2					
JOB N			009784 Newton County		DATE:		Dece						
JOB N	AME:		Buffalo River BR. & APPRS. (Pruitt)(S)		TYPE C							luge	er -
0.000			Route 7 Section 18			-	Vash -	Diai					
STATI			154+00		EQUIP	MENT	:		CI	AE 8	50		
LOCA			12' Right of Construction Centerline									1.00	
_			aymond Taylor		HAMM	ER C	JRREC	TION	FAC	FOR:		1.23	
	PLEI		DEPTH: 63.2		T		1		_	r		- 1	
D E	s	S A											
P	Y	м М							FT.	SN		%	%
T	M	P	DESCRIPTION OF MATERIAL	SOIL				GH	CU.	2		T	R
Н	B O	L		GROUP	IC	IST		VEI	ER	F B]	N.	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: 799.0		LIP	%	ËË	DR	LB	z	PE		
												100	54
				*								1	
			DOLOSTONE WITH INTERBEDDED										
	班班		SANDSTONE - Unweathered, Moderately Hard,										
40			Light Gray								-		
10													
											j.		ā)
			SANDSTONE - Unweathered, Well Cemented,										
			Calcareous, White and Light Gray*									_	
45													
			DOLOSTONE - Unweathered, Moderately Hard,								2	100	76
			Light Gray										
_													
50													
											- 3	100	86
			SANDSTONE - Slightly Weathered, Well										
		+	Cemented, Calcareous, White and Light Gray								3	-	
55													
00													
												100	80
			DOLOSTONE - Unweathered, Moderately Hard,										
60			∽ Light Gray										
			SANDSTONE - Unweathered, Well Cemented,									100	90
			Calcareous, White and Light Gray										
									- 0				
			Boring Terminated	-						1			
65													
<u> </u>													
70													_
REMA	ARKS	: *	Partial water loss at 41.1' below ground level (bgl).										
										_	_		

			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.	_	BORIN PAGE	ig n 1		F 2					
JOB N	О.	(009784 Newton County		DATE:		Dece	_	: 13	and 1	4, 20)16	
JOB N.	AME:		Buffalo River BR. & APPRS. (Pruitt)(S)		TYPE C							uge	er -
			Route 7 Section 18			-	Vash -	Dia					
STATI			154+00		EQUIP	MENT	` :		CN	ME 8	50		
LOCA			18' Left of Construction Centerline								1	~~~	
		_	teve Faulkner	_	HAMM	ER C	ORREC	TION	FAC	FOR:	1	.23	
	PLEI	_	DEPTH: 63.6		1	12	1	1		1	- 1	-	
D E	s	S A											
P	Y	M	DESCRIPTION OF MATERIAL					H	FT.	WS		%	%
Т	M B	Р	DESCRIPTION OF MATERIAL	SOIL GROUP		, x		[GH	CU	Ľ0	.	T C	R Q
н	l o l	L			LUC L	LSIC	A L	WE	PER	DF B	-I-I-I	R	D
FT.	L	E	SURFACE ELEVATION: 799.5		PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
1.092	77.7.7	-	SURFACE ELEVATION. 799.5		E D	~	111		Ľ	Z	E.	-	
	///												
	///												
	11/												
	11		Moist, Medium Dense, Reddish Brown Clayey										
5	///	\bigvee	Sand							3			
	///	$ rac{1}{2}$								6-	.5		
	///												
	///		15										
	///												
10	11/	\bigvee											
	///	$ \bigtriangleup $								4-	.5		
	///		Moist, Loose, Reddish Brown Clayey Sand										
	1//												
	///												
15		\bigvee								1	1000		
		$ \bigtriangleup $								13-	12		
	202		Moist, Medium Dense, Brown Sand with Some										
			Gravel (Rock Fragments)			1							
20	\boldsymbol{I}	\vee	Moist, Very Dense, Brown to Light Brown Sand								5		
	1	Δ	with Gravel (Rock Fragments)							34-	50		
			SANDSTONE SANDSTONE - Highly Weathered, Poorly								Ī		~
			Cemented, Frequent Fractures, Light Brown								ľ	14	0
			\and Gray										
25													
			SANDSTONE - Weathered, Cemented,									72	24
			Frequent Fractures, Light Brown and Gray*										
30													
			SANDSTONE - Slightly Weathered, Cemented,									90	10
			White and Light Gray										
			DOLOSTONE - Slightly Weathered, Moderately										
35		<u> </u>						-	Ĭ				_
REIVIA	ARKS	•	Complete water loss at 24.8 feet bgl.										
		_				_	_	_	_			_	

			HWY. & TRANS. DEPARTMENT		BORIN								
			DIVISION - GEOTECHNICAL SEC.		PAGE	_		F 2	. 1.2	. 1 4	4 00	14	
JOB N JOB N			009784 Newton County Buffalo River BR. & APPRS. (Pruitt)(S)		DATE: TYPE (Decer						
JODIN	AIVIL.		Route 7 Section 18				Vash -					uge	- 1
STATI	ION:		154+00		EQUIP			Diai		лЕ 8			
LOCA			18' Left of Construction Centerline		200				01				
			teve Faulkner		HAMM	ER CO	ORREC	TION	FAC	FOR:	1	.23	
COM	PLET	ION	I DEPTH: 63.6										
D		s											
Е	S Y	Α							ئ	0		~	
P	м	М	DESCRIPTION OF MATERIAL	SOIL				HT	U.FJ	MC		% T	% R
T H	в	P		GROUP	0	E		EIG	R CI	BL(C	Q
	0	E			ITS	OIS	195 H	8	PE)	OF	PER 6-IN.	R	D
FT.	L	s	SURFACE ELEVATION: 799.5		PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DR	LBS PER CU.FT	NO. OF BLOWS	PER		
			Hard, Light Gray							~			
			SANDSTONE - Slightly Weathered, Well									94	26
			Cemented, Calcareous, White and Light Gray										
				i i									
40			SANDSTONE - Slightly Weathered, Cemented,									- 1	
			White and Light Gray								ł	IOd	48
			DOLOSTONE - Slightly Weathered, Moderately										
			Hard, Light Gray										
											- 1		
45													
			SANDSTONE - Slightly Weathered, Cemented,										
			Calcareous, White and Light Gray		1							98	80
			Calculations, while and Eight Oray										
50			DOLOSTONE - Unweathered, Moderately Hard,										
50			Light Gray										
			SANDSTONE - Unweathered, Well Cemented,								1	00	72
			Calcareous, White and Light Gray										
											- 1		
											-		
55													
											L		70
			SANDSTONE - Unweathered, Well Cemented,								ľ	104	78
			Occasional Calcareous Layer, White and Light										
		_	Gray								Ļ	_	
60					6 5								
												96	86
			DOLOSTONE Unweathered Mederately Land										
			DOLOSTONE - Unweathered, Moderately Hard, Light Gray										
			Boring Terminated										
65													
70													
	ARKS	: *	Complete water loss at 24.8 feet bgl.										
		-						-	-	-		-	_

			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	ig N 1		F 2					
JOB N		_	009784 Newton County		DATE:			_	ıber	20, 2	016		
JOB N	AME:		Buffalo River BR. & APPRS. (Pruitt)(S)		TYPE C								
			Route 7 Section 18				Stem A	Auge				Core	
STATI	ION: TION:		155+96 12' Right of Constructrion Centerline		EQUIPI	MENT	;		CN	AE 8:	50		
			oty Campbell		HAMM	ER CO	ORREC	TION	FAC	FOR:		.23	
			DEPTH: 53.3										
D	s	S					1				t		
E P	Y	A							E.	S		%	%
Р Т	м	M P	DESCRIPTION OF MATERIAL	SOIL				GHT	CU.F	MO		Т	R
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FT.	L	E S			PLASTIC	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
25	711171	3	SURFACE ELEVATION: 773.5			~			L	Z	E.		
5		\bigtriangledown	Wet, Loose, Brown Sand with Some Gravel							4			
5		\bigtriangleup						ľ		4-	4		
10	0.00 0.00	X	Wet, Medium Dense, Brown Sand with Gravel							1!			
	80.00 80.00 80.00		(Rock Fragments)							10-	^{''}		
			SANDSTONE - Weathered, Cemented,									0.5	70
-			Calcareous, Occasional Fractures, Light Gray									95	79
			SANDSTONE - Weathered, Cemented,										
15		ł	Calcareous In Part, Frequent Fractures, Light										
			Gray									88	24
			LIMESTONE - Slightly Weathered, Moderately										
			Hard, Frequent Fractures, Light Gray										
20			DOLOSTONE - Slightly Weathered, Moderately										
			Hard, Light Gray									96	74
			SANDSTONE - Slightly Weathered, Well									30	
			Cemented, Calcareous, White and Light Gray										
25			DOLOCTONE Unweathered Mederately Hard										
			DOLOSTONE - Unweathered, Moderately Hard, Light Gray									98	92
	班日		Light Ordy										
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_ +													
30													
			SANDSTONE - Unweathered, Well Cemented,									100	100
			White and Light Gray										
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MATERIAL	S HWY. & TRANS. DEPARTMENT S DIVISION - GEOTECHNICAL SEC.		BORIN PAGE			F 2				
	009784Newton CountyBuffalo River BR. & APPRS. (Pruitt)(S)Route 7 Section 18155+9612' Right of Constructrion CenterlineCoty CampbellON DEPTH: 53.3		DATE: TYPE C Holl EQUIPM HAMM	low S Ment	ILLING Stem A	luger	: - D CN	ЛЕ 85	nd Co	
DS EY PM TB	S A M DESCRIPTION OF MATERIAL L	SOIL GROUP	IC	ST.		DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	% T Z	Г
FT.	E S SURFACE ELEVATION: 773.5		PLASTIC LIMIT	% MOIST.	LIQUID	DRY W	LBS PE	NO. OF	PER 6	
	SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray DOLOSTONE - Unweathered, Moderately Hard Light Gray								10)(
<u>40</u> 	SANDSTONE - Unweathered, Well Cemented, Calcareous, White and Light Gray								10)(
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	LIMESTONE - Unweathered, Moderately Hard, Light Gray							1	10)(
<u>55</u> 60 65 65 70	Boring Terminated									

			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	10 N		- 1					
OB N		(009784 Newton County Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18		DATE: TYPE C	OF DR	D	ecen :		20, 2			
	ON: TION:		156+07 21' Left of Construction of Centerline		EQUIPM			1450		AE 8		010	
			aymond Taylor		HAMM	ER CO	ORREC	ΓION	FAC	FOR:		1.23	
	PLET	_	DEPTH: 22.8		r							_	
D E P T H	S Y M B O	SAMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D
Т <u>.</u>	C.000	-	SURFACE ELEVATION: 773.1		PLA	% N	LIQ	DR	LBS	NO.	PER		
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0			SANDSTONE - Weathered, Cemented, Frequent Fractures, Calcareous, Light Gray Cavity (10.7'-11.0') SANDSTONE - Weathered, Cemented, Frequent Fractures, Calcareous, Light Gray									59	8
5			SANDSTONE - Slightly Weathered, Cemented, Calcareous in Part, White and Light Gray*									32	30
			LIMESTONE - Slightly Weathered, Moderately Hard, Light Gray SANDSTONE WITH INTERBEDDED LIMESTONE - Slightly Weathered, Well Cemented, Calcareous, Light Gray SANDSTONE - Slightly Weathered, Cemented,									98	92
5			Calcareous, White and Light Gray Boring Terminated								_		
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MATERIALS DIVISION - GEOTECHINICAL SEC. PAGE 1 OF 2 IDR NO. 008764 Newton County Data T January 10, 2017 JOB NAME: Buffalo River BR. & APPRS. (Pruiti)(S) Route 7 Section 18 There: January 10, 2017 STATION: 184-41 LOCATION: 201 Left of construction Centerline Hollow Stem Auger - Diamoed Core LOCATION: 201 Left of construction Centerline LOCATION: 123 COMPLETION DEPTH: 58.1 Image: State S						BORIN						_		
JOB NAME: Buffalo River BR. & APPRS. (Pruitb)(S) Route 7 Section 18 TYPE OF DRULLING: STATION: 158-41 LOCATION: 201 Left of construction Centerline LOWINGST: CME 850 LOCATION: 201 Left of construction Centerline LOWINGST: CME 850 LOCATION: 201 Left of construction Centerline LOWINGST: CME 850 LOCATION: 201 Left of construction Centerline Solid Image: Construction Factors: 1.23 COMPLETION DEPTIE: S.I. DESCRIPTION OF MATERIAL Solid Image: Construction Factors: 1.23 FT. L S SURFACE ELEVATION: 845.0 Image: Construction Factors: 1.23 FT. L S SURFACE ELEVATION: 845.0 Image: Construction Factors: 1.23 FT. L S SURFACE ELEVATION: 845.0 Image: Construction Factors: 1.23 FT. L S SURFACE ELEVATION: 845.0 Image: Construction Factors: 1.23 Indicatione Fragments) Image: Construction Factors: Image: Construction Factors: 1.23 Indicatione Fragments) Image: Construction Factors: Image: Constructi		_	_			PAGE			_	1	0.20	17		
Route 7 Section 18 Thildswall between the state of the stat							מרו שו			ary i	.0, 20	17		
STATION: 158-41 EQUIPMENT: CME 850 LOCATION: 20'Left of construction Centerline Identified Identified LOCATION: 20'Left of construction Centerline Identified Identified LOCATION: 20'Left of construction Centerline Identified Identified Identified COMPLETION DEPTIF: S. I DESCRIPTION OF MATERIAL SOIL Identified Identified P M M DESCRIPTION 6F MATERIAL SOIL Identified Identified Identified FT. L S SURFACE ELEVATION: 845.0 Identified Id	JODIN									r - D	Diamo	nd (Core	
LOCATION: 20° Left of construction Centerline LOGGED PY: Paul Campbell ILAMMER CORRECTION FACTOR: 1.23 COMPLETION DEPTH: 58.1 D E S S R A M D ESCRIPTION OF MATERIAL SOIL GROUP U E FT. S S U R C B C B C S S SURFACE ELEVATION: 845.0 FT. S S SURFACE ELEVATION: 845.0 T Moist, Loose, Reddish Brown Clayey Sand with Gravel (Sandstone Fragments) S Moist, Loose, Brown Clayey Sand with Gravel (Sandstone Fragments) T Moist, Medium Dense, Red Clayey Sand with Some Gravel Moist, Medium Dense, Red Clayey Sand with Some Gravel S SANDSTONE SanDSTONE SanDSTONE SANDSTONE SIghtly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray S SANDSTONE Cemented, Calcareous in Part, Frequent Fractures, White and Light Cemented, Calcareous in Part, Frequent Fractures, White and Light Cemented, Calcareous in Part, Frequent Fractures, White and Light Cemented, Calcareous in Part, Frequent Fractures, White and Light Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent Fractures, White and Light Gray SanDSTONE Sightly Weathered, Well Cemented, Calcareous in Part, Frequent SanDS	STATI	ION:							Iugo				010	
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Image: Clay Image: Clay 100 68 Image: Limestone Hard, Gray SANDSTONE - Slightly Weathered, Well 100 68 Cemented, Calcareous In Part, Frequent Cemented, Calcareous In Part, Frequent 100 68 30 Image: Comparison of the second														
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Cemented, Calcareous In Part, Frequent Fractures, White and Light Gray				SANDSTONE - Slightly Weathered. Well									1	
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			WY. & TRANS. DEPARTMENT	_	BORIN								
		_	DIVISION - GEOTECHNICAL SEC.		PAGE	2		F 2		0.5			
JOB N JOB N			009784 Newton County Buffalo River BR. & APPRS. (Pruitt)(S)		DATE:				ary 1	0, 20)17		
JOB N	AME:		Route 7 Section 18		TYPE (Holl		Stem A		r _ D)iamo	and (ore	
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LOCA			20' Left of construction Centerline		LQUII	VIL21 VI			UI.	112 0.	00		
			aul Campbell		HAMM	ER CO	ORREC'	TION	FAC	FOR:		1.23	
COM	PLET	ION	DEPTH: 58.1										
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			Soil Filled Cavity (54.0' to 54.1') SANDSTONE - Slightly Weathered, Cemented,									99	78
			Occasional Fractures, White and Light Gray						.				
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REMA	ARKS	:											

	ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.					BORING NO. 11 PAGE 1 OF 2									
JOB N STATI LOCA LOGG	DB NO. 009784 Newton County DB NAME: Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18 TATION: 158+34 OCATION: 6' Left of Construction Centerline OGGED BY: Paul Campbell 'OMPLETION DEPTH: 47.8					PAGE 1 OF 2 DATE: January 11, 2017 TYPE OF DRILLING: Hollow Stem Auger - Diamond Core EQUIPMENT: CME 850 HAMMER CORRECTION FACTOR: 1.23									
DEPTH F	S Y M B O L	S A M P L E	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 844.8	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.				
			Moist, Medium Dense, Reddish Brown Clayey Sand												
5			Moist, Medium Dense, Reddish Brown Clayey Sand with Gravel (Rock Fragments)							10 16-					
10			SANDY LIMESTONE - Slightly Weathered, Moderately Hard, Occasional Vertical Fractures, Gray								92	2			
 			Clay-Filled Cavity (12.8' to 16.0')								74	1			
			Cravel (Sandstone Fragments) SANDSTONE - Slightly Weathered, Poorly Cemented, White SANDSTONE - Slightly Weathered, Well Cemented, White												
			LIMESTONE - Slightly Weathered, Moderately Hard, Gray								87	,			
25			SANDSTONE - Slightly Weathered, Cemented, White LIMESTONE - Slightly Weathered, Moderately								99	3			
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MATERIALS DIVISION - GEOTECHNICAL SEC.		PAGE	2		- 2		1 00	17	_	
JOB NO. 009784 Newton County JOB NAME: Buffalo River BR. & APPRS. (Pruitt)(S)		DATE: January 11, 2017 TYPE OF DRILLING:								
JOB NAME: Buffalo River BR. & APPRS. (Pruitt)(S) Route 7 Section 18				Stem A		r D	iamo	and (Cora	
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LOCATION: 6' Left of Construction Centerline		EQUIT	VILINI	•		CI	IL 0.	00		
LOGGED BY: Paul Campbell		HAMM	ER CO	DRREC	TION	FACT	FOR:		1.23	
COMPLETION DEPTH: 47.8										
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E S A P M M T B P H O L	SOIL GROUP	PLASTIC LIMIT	% MOIST		DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D
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SURFACE ELEVATION. 644.6		L P	~	11	Ω	<u>г</u>	Z		hod	7
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ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.							BORING NO. 12 PAGE 1 OF 2									
JOB NO. 009784 Newton County							PAGE 1 OF 2 DATE: January 17, 2017									
JOB NAME: Buffalo River BR. & APPRS. (Pruitt)(S)							ILLING		5	, ,						
Route 7 Section 18							Stem A	Auge				Core				
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		ģ.	Moist, Very Stiff, Brown and Gray Sandy Clay with Gravel (Rock Fragments)													
	//															
	11		Moist, Very Dense, Brown and Gray Clayey							1	1					
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20			Clay Filled Cavity with Rock Fragments (17.9 to 20.9')									56	23			
			20.0)													
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KEMA	ARKS	. *	Total water loss at approximately 17.9 feel below g	round le	evel (t	ogi).										
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			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORIN PAGE	IG NO 2		- 2					
JOB N		_	009784 Newton County		DATE:				ary 1	7, 20	17		
JOB N	AME:		Buffalo River BR. & APPRS. (Pruitt)(S)		TYPE C								
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JOB N		_	009784 Newton County		DATE:				arv 🤉	24, 20)17		
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			Cemented, Moderately Hard, Gray										
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			SANDSTONE - Slightly Weathered, Well									100	100
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REMA	ARKS		Temporary total water loss at approximately 18.4 f	eet belo	w gro	und	level	(bgl). *'	' Par	tial v	wate	ər
	_	10	ss at approximately 56.0 to 58.4 feet (bgl).	_	_				_	_	_		

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			009784 Newton County		DATE:				ary 2	24, 20)17		
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			SANDSTONE - Slightly Weathered with Occasional Highly Weathered Seams, Well									99	84
- 7			Cemented, Light Gray									99	04
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≺⊨MA	AKKS		Temporary total water loss at approximately 18.4 to ss at approximately 56.0 to 58.4 feet (bgl).	eet belo	w gro	und	ievel	(bgl)). **	Par	tial w	ate	r

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

November 22, 2017

TO: Mr. Trinity Smith, Roadway Engineer

SUBJECT: Job No. 009784 Buffalo River Br. & Apprs. (Pruitt) (S) Route 7, Section 18 Newton County

The Materials Division has evaluated the proposed cut and fill slopes for the above referenced project and offers the following recommendations.

Station 134+94 to 138+00 Left

Rock Fill should be utilized to create the proposed 2:1 fills.

Station 138+00 to 161+00 Left

Slopes shown on the current cross sections as 3:1 or flatter are acceptable as shown.

Station 161+00 to End of Project Left

Cut slopes shown with a 3:1 slope on the current cross sections are acceptable. These slopes may be steepened to 2:1 if they are plated with Dumped Rip-Rap.

Station 134+94 o 148+00 Right

A subsurface investigation was conducted in this area. Borings were extended to the elevation of the proposed ditch line. Rock was not encountered in any of the borings. It is recommended that slopes be cut on a 2:1 and be plated with Dumped Rip-Rap.

Station 148+00 to 162+00 Right

Slopes shown on the current cross sections 3:1 or flatter are acceptable as shown.

Station 162+00 to 163+35 Right

Rock Fill should be utilized below elevation 833.0 with a 2:1 slope face. Compacted Embankment may be placed above the Rock Fill with a 2:1 slope face plated with Dumped Rip-Rap.

Station 163+35 to 166+00 Right

Compacted Embankment plated with Dumped Rip may be utilized to create the 2:1 slope configuration shown in the cross sections.

Station 166+00 to End of Project Right

Embankment should be constructed of Rock Fill. This area will support a large fill in project BR5102.

A copy of the boring logs is attached along with a draft Rock Fill special provision. The special provision states, "Native Sandstone shall be used on the exterior side slopes the color and appearance approximating that locally." If you have any questions concerning these recommendations, please contact the Geotechnical Section.

Michael C. Benson Materials Engineer

MCB:rpt Attachment

cc: State Construction Engineer - Master File Copy District 9 Engineer Environmental Division Bridge Division G.C. File

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 009784

ROCK FILL

Description: This item shall consist of the construction of embankments at the locations shown on the plans or as directed by the Engineer as Rock Fill. Embankments designated as Rock Fill shall comply with Section 210, Excavation and Embankment, of the Standard Specifications, Edition of 2014. Where there is a conflict between these Special Provisions and Section 210, these Special Provisions shall govern.

Materials and Construction Requirements: Embankments requiring Rock Fill shall be constructed of materials meeting the following requirements:

- (1) Material for Rock Fill shall include stone obtained from an approved source and shall consist of hard and durable limestone, sandstone, dolomite, or rock-like shale. Shale shall have a minimum slake durability index (SDI) of 95% as tested according to AHTD Test Method 399. The SDI shall be determined by the Engineer using the above method at least once per 3000 cubic yards. The stone shall be greater than 1½" and less than 30" reasonably well-graded and angular, with fractured faces on at least 75% of the surface and shall not contain more than 10% overburden or fines less than 1½" in maximum cross-section. The stone shall weigh not less than 140 pounds per solid cubic foot and shall have a percent of wear not greater than 45 by Los Angeles Test (AASHTO T 96).
- (2) The following shall be added to the third paragraph of Section 801.08 of the Standard Specifications. Rock Fill placed immediately adjacent to Pipe Culverts or Box Culverts including a minimum of 6 inches on top of the culvert, shall meet the gradation requirements of 802.02(c) of the Standard Specifications for Coarse Aggregate AASHTO M43 #57.
- (3) Material Placed in the vicinity of piling, shall be constructed in accordance with Sections 303.02, 303.03, and 303.04 of the Standard Specifications, Edition of 2014. It shall meet the material requirements of Aggregate Base Course (Class 7).
- (4) The top layer of Rock Fill shall be in accordance with Section 303 of the Standard Specifications for Aggregate Base Course (Class 7). It shall be placed to provide a barrier for preventing the migration of fines from the overlaying embankment material into the rock fill embankment. The layer shall be at least 6 inches in thickness. The layer will not be required on the exterior side slopes (the exterior surface that daylights and is not covered with fill). Native Sandstone shall be used on the exterior side slopes the color and appearance approximating that locally. The Engineer will inspect the completed surface of the rock fill embankment prior to allowing placement of additional embankment material. Density testing will not be required for the Aggregate Base Course (Class 7) material used to cap Rock Fill. The stone shall be spread, shaped, and consolidated to provide a firm and unyielding foundation for the subgrade and/or base

ARKANSAS DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

JOB NO. 009784

ROCK FILL

course. The Contractor shall not place overlaying embankment material without approval of the Engineer.

(5) Prior to construction of Rock Fill and regardless of embankment height, all sod and vegetable matter shall be removed from the surface upon which the embankment is to be The cleared surface shall then be completely broken up by plowing, constructed. scarifying, or disking to a minimum depth of 6". The area shall then be recompacted and stabilized in accordance with Subsection 210.10. These requirements may be modified by the engineer as conditions justify. When Rock Fill is to be placed and compacted on hillsides, or when Rock Fill is to be compacted against existing embankments, the slopes shall be continuously benched as the work is brought up in layers. Benching shall be sufficient width to permit operations of placing and compacting equipment. Each horizontal cut shall begin at the intersection of the original ground and the vertical sides of the previous cuts. Unless otherwise specified, material thus cut out shall be wasted or placed in another location. Excavation and removal of this material shall be considered subsidiary to the item Rock Fill and shall be performed at no additional cost to the Department.

Method of Measurement: Rock Fill, which includes all embankment material types described above, including Aggregate Base Course (Class 7), will be measured by the cubic yard in place as provided for in Section 210, Excavation and Embankment, Subsection 210.12(c) of the Standard Specifications.

Basis of Payment: Placement and compaction of Rock Fill embankment material shall be paid for under the item "Rock Fill", which price shall be full compensation for all costs involved in furnishing all materials for constructing the embankments in accordance with Section 210 and this Special Provision; and for all labor, tools, equipment, quality control sampling and testing, and incidentals necessary to complete the work.

Payment will be made under:

Pay Item

Pay Unit

Rock Fill

Cubic Yard

	-	-	IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE			of 1					
JOB N			009784 Newton County		DATE:				ober	25,2	2017		
JOB N	AME:		Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN			,			
		(Cut Slope		Ho	llow	Stem	Aug	er				
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	1000	\square	Gravel				<u> </u>			34	-14		
	-		Boring Terminated										
35					l		<u> </u>	<u> </u>					<u> </u>
REM	ARK	5: L	Dry Hole measured 24 hours after drilling,										

			WY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.				10, 2	NE 1					
JOB N	_	_	009784 Newton County		PAGE DATE:			$\frac{1}{Octo}$	hor	25,2	017		
JOB N			Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN		JUCI	2J, Z	.01/		
JODIN	2 1 1 11 2,		Cut Slope				Stem		er				
STATI	ON:		139+03		EQUIF			0		Acke	er		
LOCA			44' Right of Construction Centerline										
LOGG	ED BY	: S	tanley Bates		HAMN	AER O	CORRE	CTION	N FAC	CTOR:		N/A	
COM	PLET	ION	DEPTH: 31.2										
D	s	S											
E P	Ŷ	A							Ë	S		%	%
T T	М	M P	DESCRIPTION OF MATERIAL	SOIL				THE	U.F	ŇŎ		T	R
н	B	Ľ		GROUP	10	ST.		VEIC	ER C	F BI	z	C R	Q D
_	O L	Е			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	The second secon	υ
FT _{*5}		S	SURFACE ELEVATION: 928.0		LIL	%	11	DR	LB	ž	PE		
	0.00												
	28												
			Clay with Gravel, Cobbles, and Boulders										
	33												
5	66									6	3		
	\sim	Х								10-	-14		
			Moist, Very Stiff, Reddish Brown Clay with										
	\sim		Some Gravel (Chert Fragments)										
	\sim												
10	>									1	0		
		\boxtimes		(16-			
			Maint Dance, Daddich Drown Cond										
			Moist, Dense, Reddish Brown Sand										
15	5.0		Moist, Hard, Reddish Brown Clay with Gravel							1	4		
	18	Х	with Cobbles (Rock Fragments)							22.	-17		
	000												
			Gravel, Cobbles, and Boulders										
	805												
20										2	1		
	Seve	Х								31-	-30		
			Moist, Very Dense, Reddish Brown Clayey										
	282		Sand with Gravel and Cobbles (Rock Fragments)										
	198		······,		1								1
25	20/7							1		1	0		
	on o B	\bowtie								13	-11		
	80		Moist, Medium Dense, Reddish Brown Sand										
	0.00		with Gravel (Rock Fragments)										
	0.05												
30	8	$\langle \rangle$	Moist, Medium Dense, Reddish Brown Sand							9	9		
		ee	with Some Gravel (Rock Fragments)							11	-10		
			Boring Terminated										
35							<u> </u>						
REM	ARK	S: [Dry Hole measured 24 hours after drilling.										
							_			_		_	_

			IWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE		10. 3)F 1					
JOB N		_	009784 Newton County		DATE			tobe	_	8. 24	4, 20	17	
JOB N.			Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN				., _0		
			Cut Slope		Ho	llow	Stem	Aug	er				
STATI	ON:		139+46		EQUI	MEN	T:			Ack	er		
LOCA			40' Right of Construction Centerline										
		_	tanley Bates		HAMM	AER (CORRE	CTION	N FAC	CTOR:	_	N/A	
COM	PLET	_	I DEPTH: 31.3	r			r			_	_		
D E	s	S											
P	Y	A M							FT.	WS		%	%
т	M B	Ρ	DESCRIPTION OF MATERIAL	SOIL GROUP				IGH	CU	TO		T C	R Q
н	0	L			$I \cong$	ISI	le L	ME	ER)F B	NI-9	R	D
FT.	Ĺ	E S			PLASTIC	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
E Le	4.001	3	SURFACE ELEVATION: 921.7			~			L	Z	P	_	_
_ 4	8.40												
	85		Clay with Gravel, Cobbles, and Boulders										
			Clay with Graver, Cobbles, and Boulders										
	20												
5	200	\bigtriangledown		1							0		
	XX	\bigtriangleup								28	-22		
			Moist, Hard, Reddish Brown Clay with Gravel										
	200		(Chert Fragments)										
	No.												
10	202	\bigtriangledown									1		
	8.26	\bigtriangleup								45	-65		
	2		Moist, Very Hard, Reddish Brown Clay with										
	200		Gravel and Cobbles (Chert Fragments)										
15	So												
15	2	\bigtriangledown								2	5		
		arphi								57	-66		
	0000		Moist, Very Hard, Reddish Brown Clay with										
	Sel.		Gravel (Chert Fragments)										
20	85												
20	61	\bigtriangledown									8		
	No C	arpropto								19	-27		
	38		Moist, Hard, Reddish Brown Clay with Gravel (Chert Fragments)										
	18				1								
25	36												
		X	Moist, Very Dense, Reddish Brown Sand with							-	1		
		Ĥ	Trace Gravel (Rock Fragments)							28	-60 0")		
	200			1	1								
			Sand with Gravel, Cobbles, and Boulders										
30													
	80.00	\mathbb{X}	Moist, Dense, Reddish Brown Sand with								1 -21		
	00.0-0	\vdash	Gravel (Rock Fragments) Boring Terminated			-		-	-	19	-21	-	
35	1												
	ARKS	S: E	Dry Hole measured 24 hours after drilling.										
												_	

			WY. & TRANS. DEPARTMENT				10, 4	NE 1					
JOB N		_	DIVISION - GEOTECHNICAL SEC. 009784 Newton County		PAGE DATE:			$\frac{1}{Oct}$	hor	19, 2	017		
JOB N			Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN		JUCI	19, 2	.017		
JODA	AWIL.		Cut Slope				Stem		er				
STAT	ION [,]		140+00		EQUIF			Tug		Acke	er		
LOCA			41' Right of Construction Centerline		201								
1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.			tanley Bates		HAMN	/IER C	ORRE	CTION	N FAC	TOR		N/A	
		_	UDEPTH: 25.6										
D		S		1	1								
Ē	S	Ă											
Р	Y M	М	DESCRIPTION OF MATERIAL	SOIL				Ę	J.FT	SMO		% T	% R
Т	B	Ρ		GROUP		L		10I	CC	BLC		C	Q
н	ō	L			Ĕн	DIS	19 F	N N	PER	OF I	-II-9	R	Ď
FT	L	E S	SURFACE ELEVATION: 914.4		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
1.00	2020	-	SURFACE ELEVATION. 914.4			8				2	Р		
	8.8												
	28		Clay with Croyal Cabbles, and Paulders										
	No.		Clay with Gravel, Cobbles, and Boulders										
	363												
5	Sol			4						1	6		
L -	Sere	igtrianglelow		1			1			20-	-20		
_	81		Moist, Hard, Reddish Brown Clay with Gravel										
	19		and Cobbles (Chert Fragments)										
	83												
10	08			4						-	7		
	\mathbb{N}	X								1.1	13		
	\mathbb{N}	()	Moist, Very Stiff, Reddish Brown Clay with										
	\sim		Some Gravel (Chert Fragments)										
— -	\mathbb{N}								i.				
15	∇												
	802	\mathbf{N}									8 -12		
	6	\mapsto									-12		
	60		Moist, Very Stiff, Reddish Brown Clay with Gravel and Cobbles (Chert Fragments)										
	000												
	Se												
20	19%	\bigtriangledown		1							8		
	XX	arphi	, ,							13	-15		
	EX)		Moist, Very Stiff, Reddish Brown Clay with										
<u> </u>	18		Gravel (Chert Fragments)										
<u> </u>	No.												
25	22		Moist, Very Hard, Reddish Brown Sandy Clay	1						1	0		
L -	1	ightarrow	with Gravel (Chert Fragments)	/	-	-		+		_	50 5")		
			Boring Terminated							L(5)		
30													
						1							
	1												
	1												
35	1												
		ц 2. г	Dry Hole measured 24 hours after drilling.	I		1	1			<u>. </u>			
	WALANA ANA	J. L	bry hole measured 24 nours after driming.										
L					_	_			_	_	_		_

			HWY. & TRANS. DEPARTMENT				10. 5						
		_	DIVISION - GEOTECHNICAL SEC.		PAGE	_		DF 1				_	_
JOB N	IO. IAME:		009784 Newton County		DATE:				ober	18, 2	017		
JOB N	AME:		Buffalo River Br. & Apprs. (Pruitt)(S) Cut Slope				RILLIN Stem		or				
STAT	ION		140+55		EQUIF			Aug		Acke	<u>e</u> r		
	TION:		45' Right of Construction Centerline		LQUII	IVILIA	1.			TUR	<i>.</i>		
			stanley Bates		HAM	AER (CORRE	CTION	N FAC	CTOR:		N/A	
			I DEPTH: 26.2										
D		s											
E	S Y	A							3				
P T	м	M	DESCRIPTION OF MATERIAL	SOIL				ΗT	U.F	MO		% T	% R
I H	В	P L		GROUP	0	Ë		EIG	RC	BL	ż	C	Q
	0	Ē			PLASTIC LIMIT	101	151	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT.	L	s	SURFACE ELEVATION: 907.0		PLAST LIMIT	% MOIST.	LIQUID	DR'	LBS	NO.	PER		
	200				1								
	3												
_	05.		Clay with Gravel, Cobbles, and Boulders										
	0												
5	64												
-	Sec.	\mathbb{X}			1					24-			
	666	\mapsto								24-	.29		
	60												
	88												
10	88		Moist, Hard, Reddish Brown Sandy Clay with										
10	8	\bigtriangledown	Gravel and Cobbles (Chert Fragments								6		
	184	ightarrow								24-	-20		
	3.3												
	NB												
	6												
15	77	$\overline{\mathbf{\nabla}}$								7	7		
	$\langle \rangle$	\square								9-1	13		
	1	Į	Moist, Very Stiff, Reddish Brown Clay with										
	\sim		Some Gravel and Cobbles										
	\sim												
20	\mathcal{H}			-						7	,		
	1	\mathbb{N}								14-	-20		
	1	1	Moist, Hard, Reddish Brown Clay with Some		1								
	11		Gravel										
	11	1											
25	\mathcal{H}		Moist, Very Stiff, Reddish Brown Clay with	-						,	,		
	\mathbb{N}	X	Trace Gravel							12	_		
			Boring Terminated										
					1								
	1												
30	1												
	1			1									
]												
35]												
	ARK	S: D	Dry Hole measured 24 hours after drilling.										
		_											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.				10, 6	DF 1					
JOB N		_	009784 Newton County		PAGE DATE	_		_	her	17 1	2017		
JOB N			Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN		JUCI	17,4	2017		
			Cut Slope				Stem		er				
STAT	ION:		141+00		EQUIF					Ack	er		
LOCA		e j	72' Right of Construction Centerline		80								
LOGG	ED BY		stanley Bates		НАММ	AER (CORREC	CTION	N FAC	TOR		N/A	
COM	PLET	ION	N DEPTH: 26.2										
D	s	s					1						
E		Α							3				
P	м	M	DESCRIPTION OF MATERIAL	SOIL				Ħ	J.F	MO		% T	% R
T H	В	Р		GROUP	D	ц.		1 D I D	s CI	BLO	ż	Ċ	Q
	0	L E			II S	OIS	l <u>e</u>	8	PEI	OF	6-II	R	D
FT.			SURFACE ELEVATION: 907.5		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
	300 S					<u>°`</u>		<u> </u>		~	H		
			Clay with Gravel, Cobbles, and Boulders										
	200												
5	5	\bigtriangledown		1						1	6		
	a a	\bigtriangleup								27	-34		
	8.60		Dry, Very Hard, Reddish Brown Sandy Clay										
	00		with Gravel and Cobbles (Chert Fragments)										
	200												
10	S.S.									1	1		
_	S	Х								11.	-38		
	Nº C		Moist, Hard, Reddish Brown Sandy Clay with										
	30		Gravel and Cobbles (Chert Fragments)										
- -	10												
15	68 83												
	\mathbb{N}	\mathbf{X}									5		
	\mathbb{N}	$ \simeq$								10	-14		
<u> </u>	$\langle \rangle$		Moist, Very Stiff, Reddish Brown Clay with										
	\mathbf{N}		Sand and Some Gravel (Chert Fragments)										
	$\langle \rangle$												
20	17	\bigtriangledown		1							4		
		\bigtriangleup								7-	10		
	\mathbb{N}		Moist, Very Stiff, Reddish Brown Clay with										
	\mathbb{N}		Some Gravel (Chert Fragments)										
	\mathbb{N}	č.											
25	\mathbb{H}		Moist, Stiff, Reddish Brown Clay with Some	-						:	3		
	\sum	Х	Gravel (Chert Fragments)								-8		
			Boring Terminated										
30													
	1												
	1												
35													
		. г	I Dry Hole measured 24 hours after drilling.		I								
		va L	bry hole measured 24 nours after drilling.										
L	_	_				_		_	_	_	_	_	

			WY. & TRANS. DEPARTMENT				10. 7	. 4		_			
JOB NO		_	DIVISION - GEOTECHNICAL SEC.009784Newton County		PAGE DATE:			Octo	hor	11,2	2017		
JOB NO			Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN		JUCI	11, 2	2017		
UOD IIII			Cut Slope				Stem		er				
STATIC	DN:		141+50		EQUIF			0		Ack	er		
LOCAT	ION:	4	43' Right of Construction Centerline		1								
			tanley Bates		HAMN	/IER C	CORREC	CTION	√ FA(CTOR		N/A	
COMP	LET	_	DEPTH: 16	r	r								
P	s	S											
E P	Y	A M						-	ET.	SN		%	%
Ť	M	P	DESCRIPTION OF MATERIAL	SOIL GROUP				GH ⁷	CU.	0		T C	R
н	B O	L		GROUP	LIC	IST	9.	WEI	ER	F B	N.	R	Q D
FT.	Ľ	E S			PLASTIC LIMIT	% MOIST.	LIQUID	RY	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
	Con V	3	SURFACE ELEVATION: 902.2	<u> </u>	E D	%	<u> </u>	D	1	Z	P		
			Clay with Gravel, Cobbles, and Boulders and										
			Some Organic Matter										
5	6.4										•		
5	Sec.	Х									6 -60		
*	Cold a	()	Dry, Very Hard, Reddish Brown Clay with								1")		
			Gravel (Chert Fragments)										
	SX.												
10	23										3		
	S	Х									-30		
	100	\square	Moist, Hard, Reddish Brown Clay with Gravel										
	Nº.		(Chert Fragments)										
	N												
15	200		Moist, Hard, Reddish Brown Clay with Gravel	-						1	3		
000	200	Х	and Cobbles (Chert Fragments)								-22		
			Boring Terminated										
20													
25													
										1			
-													
30													
35	DKO				I								
REMA	ARKS): L	Dry Hole measured 19 hours after drilling.										
		_			_		_	_	-		_		

			WY. & TRANS. DEPARTMENT		BORI					_			
		_	DIVISION - GEOTECHNICAL SEC.		PAGE	_	_	F 1	la -	11.0	017	_	
JOB N JOB N			009784 Newton County Buffalo River Br. & Apprs. (Pruitt)(S)		DATE:		RILLIN		ber	11,2	2017		
JOB N.	AWLE.		Cut Slope				Stem		er				
STATI	ON:		142+00		EQUIF			. ruß		Ack	er		
LOCA			38' Right of Construction Centerline		- (-		
LOGG	ED BY		tanley Bates		HAMN	1ER C	ORREG	CTION	I FAC	CTOR:		N/A	
COM	PLET	ION	DEPTH: 16										
D	s	S											
E	Y	A						<u>a</u>	Ľ	ø		%	%
P T	М	M P	DESCRIPTION OF MATERIAL	SOIL				THE	U.F	MO		Т	R
н	B	Ľ		GROUP	IC	ST.		/EIC	ER C	BL	z	C R	Q D
	O L	Е			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	к	D
FT,		S	SURFACE ELEVATION: 896.6		LI	[%]	ELC	DR	LB	ž	PE		
	30												
	3		Clausith Crause Caleblas, and Davidson										
			Clay with Gravel, Cobbles, and Boulders										
5	100	\bigtriangledown								-	8		
	2 re	\bigtriangleup								2	6		
	X.		Dry, Hard, Reddish Brown Clay with Gravel										
	000		(Chert Fragments)						I.				
	No.												
10	19	\bigtriangledown									3		
	\sim	\bigtriangleup								12	-19		
	\sim		Dry, Hard, Reddish Brown Clay with Some										
	\sim		Gravel (Chert Fragments)										
	\sim												
15	\sim	\bigtriangledown	Dry, Hard, Reddish Brown Clay with Trace	1							0		
	\sim	\bigtriangleup	Gravel (Chert Fragments)		-					22.	-33		
			Boring Terminated										
20											1		
25													
<u> </u>													
30													
25													
35 REM		<u> </u>	l Dry Hole measured 19 hours after drilling.			I	L	L			_		
		J. L	by note measured to nours aller unning.										
	_									-			

			WY. & TRANS. DEPARTMENT		BORI								
JOB N		_	DIVISION - GEOTECHNICAL SEC.009784Newton County		PAGE DATE:			F 1	her	10, 2	017		_
JOB N			Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN		Der	10, 2	,017		
			Cut Slope				Stem		er				
STATI	ON:		144+00		EQUIF			0		Acke	er		
LOCA			38' Right of Construction Centerline										
		_	tanley Bates		HAMN	IER C	ORREG	CTION	N FAC	CTOR:		N/A	_
	PLET	_	DEPTH: 21.3		1		-				_		_
D E	S	S A											
Р	Y M	Μ	DESCRIPTION OF MATERIAL	SOIL				H	I.FT	MS		% T	% D
Т Н	B	Ρ		GROUP	D	Ľ.		IOIE	J Z	BLC	÷	C	R Q
	0	L E			PLASTIC LIMIT	% MOIST.		DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	R	D
FT,	L		SURFACE ELEVATION: 884.5		PLAST LIMIT	% N	LIQUID	DR	LBS	NO.	PER		
	300												
			Clay with Gravel, Cobbles, and Boulders										
	33												
5										1	7		
	826	riangle								38-			
<u> </u>	8		Dry, Very Dense, Reddish Brown Gravel and				×						
	100		Cobbles (Chert Fragments) with Clay										
	No.												
10	202	\mathbf{X}								3			
	XX	\square								7 (6	3		
	No.		Dry, Very Dense, Reddish Brown Gravel (Chert								· /		
-	000		Fragments) with Clay										
15	S												
	\sim	X	Mojet Very Hard, Baddish Brown Clay with							23-			
	\mathbb{N}	\sim	Moist, Very Hard, Reddish Brown Clay with Some Gravel and Some Organic Matter.							23-	40		
			Cobbles and Boulders										
20	003									6	2		
		Х	Moist, Medium Dense, Reddish Brown Sand						_	11-			
<u> </u>			Boring Terminated										
25												1	
<u> </u>													
30													
	1												
	1												
35													
REM.	ARKS	S:											
		_						_					

			WY. & TRANS. DEPARTMENT				10. 10								
		_	DIVISION - GEOTECHNICAL SEC.		PAGE 1 OF 1 DATE: October 4, 2017 1										
JOB N JOB N			009784 Newton County Buffalo River Br. & Apprs. (Pruitt)(S)		DATE: October 4, 2017 TYPE OF DRILLING:										
JOB N	AME:		Cut Slope				Stem		ər _ T	Jiam	ond	Core			
STATI	ON		144+50		EQUIP			Aug		Acke		COLE			
LOCA			38' Right of Construction Centerline			WILIN	1.				1				
			tanley Bates		НАММ	IER C	ORRE	CTION	I FAC	TOR:		N/A			
			I DEPTH: 21.8												
D	· · · · · ·	S													
E	S Y	Α							8						
P	м	М	DESCRIPTION OF MATERIAL	SOIL				Ħ	U.FJ	MC		% T	% R		
Т Н	B	P		GROUP	U	Ē.		BIG	D 2	BL(ż	C	Q		
	0	L E			STI	OIS	<u>S</u> E	Į	PEI	OF	0-II	R	D		
FT.	L		SURFACE ELEVATION: 884.5		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.				
	000	_						-			_				
	X		Clay with Gravel, Cobbles, and Boulders												
5															
	1	\bigtriangledown								1(_				
		\triangle								25-	18				
	260 P		Dry, Hard, Reddish Brown Clay with Gravel												
	8		(Chert Fragments)												
_10	000	\bigtriangledown		6						19					
	200	$ \bigtriangleup $								28-	27				
			Dry, Hard, Reddish Brown, Sandy Clay with												
	200		Gravel (Chert Fragments)												
	18														
15		\bigtriangledown	Moist, Very Hard, Reddish Brown Sandy Clay							28	в				
	2.2	$ \land$	with Gravel (Rock Fragments) Boulder							60 (6)	0				
	-		Boulder							(6)	_			
	8.0														
	X X		Clay with Cravel Cabbles, and Baulders									26	0		
20	23		Clay with Gravel, Cobbles, and Boulders									20	0		
	23														
$\vdash \dashv$	0.8		Boring Terminated						-	-		_			
25															
					1										
30															
					1										
35															
REM	ARKS	S:													
					_	_		_	_	_	_		_		

			WY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE		ιο. 1΄ 1 c	1 DF 1						
JOB N	0.	1	009784 Newton County		DATE: October 4, 2017									
JOB N	AME:		Buffalo River Br. & Apprs. (Pruitt)(S) Cut Slope											
STATI	ON:		146+00		EQUIF		Stem	Aug		Acke	er			
LOCA			38' Right of Construction Centerline											
		_	tanley Bates		HAMN	AER C	ORREG	CTION	N FAC	TOR;		1.37		
D		S	1 DEI 111. 50.8		T									
E P T H	S Y M B O	AMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D	
FT.	L	S	SURFACE ELEVATION: 871.5		PLA LIN	% N	LIMIT	DR'	LBS	NO.	PER			
			Clay with Gravel, Cobbles, and Boulders							4				
5	a all a series of the series o	X	Dry, Hard, Reddish Brown Clay with Gravel (Chert Fragments)							1 ⁻ 20-				
 	ANN MANN		Dry, Hard, Reddish Brown Sandy Clay							9 17- 8 20-	25 26			
 	ANN	\times	Moist, Hard, Reddish Brown Sandy Clay Moist, Very Dense, Reddish Brown Sand with Clay and Some Gravel (Chert Fragments) Boring Terminated							21- 7 14- 22 35-	29 18 8			
35														
REM/	ARKS	5:												

			WY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORING NO. 12 PAGE 1 OF 1										
JOB N JOB N	0.	(009784 Newton County Buffalo River Br. & Apprs. (Pruitt)(S)		DATE		RILLIN	Oct	ober	3,20	017				
		(Cut Slope				Stem		er						
STATI			146+50		EQUII	MEN	T:			Acke	er				
LOCA LOGG			38' Right of Construction tanley Bates		HAMN	AER O	CORRE	CTION	N FAC	TOR		N/A			
			DEPTH: 21												
D E P T H	S Y M B O L	S A M P L E S	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 866.6	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% T C R	% R Q D		
	58A.	-	SURFACE ELEVATION: 800.0			%				Z	PI	_			
			Clay with Gravel, Cobbles, and Boulders												
5	X2	X								30 53-					
	Left		Dry, Very Dense, Reddish Brown Gravel (Chert Fragments) with Clay							00	50				
		X	Moist, Dense, Reddish Brown Clayey Sand							7 14-					
		X	Moist, Very Dense, Reddish Brown Clayey Sand							1: 23-					
20		\setminus	Moist, Very Hard, Reddish Brown Sandy Clay with Gravel							1: 39-					
	A CAN	$ \rightarrow$	Boring Terminated												
			-												
25															
30															
	35 REMARKS:														
					_	_	_	_			_	_	_		

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE		10. 13 1 C							
JOB N		_	009784 Newton County		PAGE 1 OF 1 DATE: October 3, 2017 1									
JOB N	AME:		Buffalo River Br. & Apprs. (Pruitt)(S)				RILLIN	G:		, , ,				
			Cut Slope				Stem	Aug						
STAT			147+00		EQUIF	MEN	T:			Ack	er			
LOCA LOGG			38' Right of Construction Centerline tanley Bates		HAMN	AER (CORREC	TIO	N FA(TOR		N/A		
			I DEPTH: 16											
D	s	s												
E P	Y	A M							ц. Ц	s		%	%	
T	M	P	DESCRIPTION OF MATERIAL	SOIL				GHT	CU.F	MO		Т	R	
н	B	L		GROUP	LIC	IST.	le_	WEI	ER (F BI	NI-	C R	Q D	
FTa	L	E S	SURFACE ELEVATION: 861.2		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.			
	NOX.	F	SURFACE ELEVATION: 601.2			~		Д	<u></u>	Z	P			
	8.4													
	De se		Clay with Gravel, Cobbles, and Boulders											
	0.000													
5		$\overline{}$		-						1	2			
	XX	vee								28	-20			
	No.		Dry, Hard, Reddish Brown Clay with Gravel											
	000		(Chert Fragments)											
10	X													
_10	889.);	X									2 -17			
		()	Moist, Dense, Reddish Brown Clayey Sand							<u> </u>				
			with Gravel (Chert Fragments)											
15	80.	\bigtriangledown	Moist, Medium Dense, Reddish Brown Sand	1							6			
	0.00.0	\bigtriangleup	with Gravel (Rock Fragments)							13	-16			
			Boring Terminated											
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35 REM	35													

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS RECOMPACTED SAMPLES

Job No. Date Sampled: Date Tested: Name of Project: County: Sampled By:	Code: 51 Name: NEWTON	Material Code Station No.: Location: Depth:	SSRVPS 138+00 NBL CL 0-5
Lab No.: Sample ID: LATITUDE:	20070686 RVII0	AASHTO Class: Material Type (1 or 2 LONGITUDE:	A-2-4(0)): 2
1. Testing Inform	nation:		
	Preconditioning - Permanent Strain > 5% (Y Testing - Permanent Strain > 5% (Y=Yes or Number of Load Sequences Completed (0-1	N=No)	N N 15
2. Specimen Info	ormation:		
·	Specimen Diameter (in):		
	Тор		3.99
	Middle		3.99
	Bottom		4.00
	Average		3.99
	Membrane Thickness (in):		0.00
	Height of Specimen, Cap and Base (in):		8.01
	Height of Cap and Base (in):		0.00
	Initial Length, Lo (in):		8.01
	Initial Area, Ao (sq. in):		12.52
	Initial Volume, AoLo (cu. in):		100.32
3. Soil Specimer	n Weight:		
·	Weight of Wet Soil Used (g):		3335.90
4. Soil Propertie	s:		
-	Optimum Moisture Content (%):		13.8
	Maximum Dry Density (pcf):		117.4
	95% of MDD (pcf):		111.5
	In-Situ Moisture Content (%):		N/A
5. Specimen Pro	perties:		
•	Wet Weight (g):		3335.90
	Compaction Moisture content (%):		14.4
	Compaction Wet Density (pcf):		126.70
	Compaction Dry Density (pcf):		110.75
	Moisture Content After Mr Test (%);		14.3
6. Quick Shear T	est (Y=Yes, N=No, N/A=Not Applicable):		#VALUE!
7. Resilient Mod	ulus, Mr:	11042(5	Sc)^-0.21543(S3)^0.31481
8. Comments	a		
et continonto			
9. Tested By:	DEB	Date: <u>April 19, 2007</u>	

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS RECOMPACTED SAMPLES

Code SSRVPS (o.: 138+00				0-2	ASHTO Class: A-2-4(0)	Material Type (1 or 2): 2	'UDE:
Material Code Station No.:	Location			Depth:	AASHTC	Material	LONGITUDE:
		RUITT) (S)	NEWTON				
		BR & APPR. (P	Name:				
009784 04/19/2007	April 19, 2007	BUFFALO RIVER	Code: 51		20070686	RV110	
Job No. Date Sampled:	Date Tested:	Name of Project:	County:	Sampled By:	Lab No.:	Sample ID:	LATITUDE:

	Modulus			Mr	psi	16,777	15,409	13,837	12,174	11,262	15,019	13,692	12,552	11,534	10,428	11,055	10,634	9,920	9,281	8,449
Resilient	Strain			Ψ	in/in	0.00011	0.00024	0.00039	0.00058	0.00077	0.00012	0.00026	0.00043	0.00061	0.00083	0.00016	0.00034	0.00053	0.00074	0.00100
Average	Recov Def. LVDT 1	and 2		Havg	u	0.00088	0.00189	0.00311	0.00464	0.00618	0.00097	0.00211	0.00341	0.00490	0.00666	0.00132	0.00269	0.00425	0.00596	0.00800
Actual	Applied Contact	Stress		Scontact	psi	0.2	0.2	0.3	0.5	0.7	0.2	0.2	0.2	0.4	0.6	0.2	0.2	0.2	0.4	0.6
Actual	Applied Cyclic	Stress		S _{cyclic}	psi	1.8	3.6	5.4	7.1	8.7	1.8	3.6	5.3	7.0	8.7	1.8	3.6	5.3	6.9	8.4
Actual	Applied Max.	Axial	Stress	S _{max}	psi	2.1	3.8	5.7	7.5	9.4	2.0	3.8	5.6	7.5	9.3	2.0	3.8	5.5	7.3	9.0
Actual	Applied Contact	Load		Pcontact	lbs	2.7	2.7	3.7	6.2	8.8	2.7	2.8	2.9	5.4	7.9	2.7	2.7	2.8	4.5	7.1
Actual	Applied Cyclic Load			P _{cyclic}	lbs	23.1	45.4	67.3	88.3	108.7	22.8	45.1	60.9	88.3	108.7	22.8	44.8	65.9	86.5	105.7
Actual	Applied Max. Axial	Load		P _{max}	lbs	25.8	48.1	71.0	94.5	117.5	25.5	47.8	66.69	93.7	116.5	25.4	47.5	68.7	91.0	112.8
Nominal	Maximum Axial	Stress		S _{cyclic}	psi	2.0	4.0	6.0	8.0	10.0	2.0	4.0	6.0	8.0	10.0	2.0	4.0	6.0	8.0	10.0
Chamber	Confining Pressure			လိ	psi	6.0	6.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	2.0	2.0	2.0	2.0	2.0
	PARAMETER			DESIGNATION	UNIT	Sequence 1	Sequence 2	Sequence 3	Sequence 4	Sequence 5	Sequence 6	Sequence 7	Sequence 8	Sequence 9	Sequence 10	Sequence 11	Sequence 12	Sequence 13	Sequence 14	Sequence 15

TESTED BY REVIEWED BY

DEB

April 19, 2007

DATE DATE

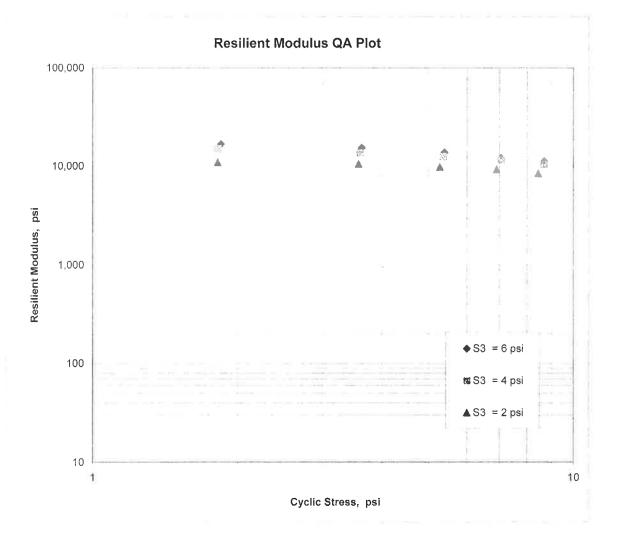
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS RECOMPACTED / THINWALL TUBE SAMPLES

Job No.	009784			Material Code	SSRVPS
Date Sampled:	04/19/2007			Station No.:	138+00
Date Tested:	April 19, 2007			Location:	NBL CL
Name of Project:	BUFFALO RIVER	BR & AP	PR. (PRUITT) (S)		
County:	Code: 51	Name:	NEWTON		
Sampled By:				Depth:	0-5
Lab No.:	20070686			AASHTO Class:	A-2-4(0)
Sample ID:	RV110		Materi	al Type (1 or 2):	2
LATITUDE:				LONGITUDE:	

 $M_{R} = K1 (S_{C})^{K2} (S_{3})^{K5}$

K1 =	11,042	
K2 =	-0.21543	
K5 =	0.31481	
$R^2 =$	0.95	



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION JERRY WESTERMAN, MATERIALS ENGINEER *** SOIL SURVEY STRENGTH TEST REPORT *** DATE - 04/23/2007 SEQUENCE NO. - 1 JOB NUMBER - 009784 MATERIAL CODE - SSRVPS SPEC. YEAR - 2003 SUPPLIER ID. - 1 COUNTY/STATE - 51 DISTRICT NO. - 09 JOB NAME WE BUFFALO RIVER BR. & APPRS (PRUITT) (S) STATION LIMITS R-VALUE AT 240 psi *

> BEGIN JOB - END JOB 15 RESILENT MODULUS STA.138+00 8449

REMARKS -

AASHTO TESTS : T190

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT *** - 05/21/07 DATE SEQUENCE NO. - 1 JOB NUMBER - 009784 MATERIAL CODE - SSRVPS FEDERAL AID NO. - TO BE ASSIGNED SPEC. YEAR - 2003 PURPOSE - SOIL SURVEY SAMPLE SUPPLIER ID. - 1 SPEC. REMARKS - NO SPECIFICATION CHECK COUNTY/STATE - 51 SUPPLIER NAME - STATE DISTRICT NO. - 09 NAME OF PROJECT - BUFFALO RIVER BR. & APPRS (PRUITT) (S) PROJECT ENGINEER - NOT APPLICABLE PIT/QUARRY - ARKANSAS - NEWTON, COUNTY LOCATION DATE SAMPLED - 04/09/07 SAMPLED BY - D KRAFT M CREAMER DATE RECEIVED - 04/10/07 SAMPLE FROM - NEWTON COUNTY DATE TESTED - 04/19/07 MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS 680 - 20070681 - S105 LAB NUMBER - 20070680 20070682 SAMPLE ID - S104 S106 - INFORMATION ONLY - INFORMATION ONLY - INFORMATION ONLY TEST STATUS 138+00 -163+00 STATION - 138+00 CL 🎫 7'LT LOCATION - 15'LT 0-5 RED - 0-5 - 0-5 DEPTH IN FEET 200 - RED RED MAT'L COLOR _ MAT'L TYPE LATITUDE DEG-MIN-SEC 36 3 28.70 36 03 28.40 36 3 45.10 LONGITUDE DEG-MIN-SEC 93 08 32.70 93 08 33.50 93 08 14.20 % PASSING 2 IN. - $1 \ 1/2 \ IN. -$ 3/4 IN. ---3/8 IN. -_ 100 100 NO. 4 - 100 - 80 NO. 10 - 90 99 - 62 NO. 40 -77 94 - 42 -36 NO. 80 - 64 33 NO. 200 - 55 24 - 31 33 - ND LIQUID LIMIT PLASTICITY INDEX = 17 AASHTO SOTI 17 NP --AASHTO SOIL A-2-6(1) A-6(6) A - 2 - 4(0)_ UNIFIED SOIL 8 MOISTURE CONTENT 16.1 12.4 10.2 (IN) -4.5W 5.0W ACHMSC TY2 -------CHIP SEAL (IN) -.50X .50 22 (IN) ⁻ ACHMSC TY2 1.5 -1.0 ACHMSC TY2 (IN)

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

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ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION JERRY WESTERMAN, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT *** DATE - 05/21/07 JOB NUMBER - 009784 SEQUENCE NO. - 2 MATERIAL CODE - SSRVPS FEDERAL AID NO.- TO BE ASSIGNED SPEC. YEAR - 2003 PURPOSE - SOIL SURVEY SAMPLE SUPPLIER ID. - 1 SPEC. REMARKS - NO SPECIFICATION CHECK COUNTY/STATE - 51 SUPPLIER NAME - STATE DISTRICT NO. - 09 NAME OF PROJECT - BUFFALO RIVER BR. & APPRS (PRUITT) (S) PROJECT ENGINEER - NOT APPLICABLE PIT/QUARRY - ARKANSAS LOCATION - NEWTON, COUNTY DATE SAMPLED - 04/09/07 SAMPLED BY - D KRAFT M CREAMER DATE RECEIVED - 04/10/07 DATE TESTED - 04/19/07 SAMPLE FROM - NEWTON COUNTY MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS - 20070683 - 20070684 - 20070685 - S107 - S108 - S109 LAB NUMBER SAMPLE ID TEST STATUS - INFORMATION ONLY - INFORMATION ONLY - INFORMATION ONLY - 163+00 = 168+00 = 168+00 ____5'LT ____0-5 ____ STATION -22'LT - 6'RT LOCATION (#) - 0-5 DEPTH IN FEET 0-1.5Z BROWN - BROWN BROWN MAT'L COLOR MAT'L TYPE LATITUDE DEG-MIN-SEC - 36 3 45.10 - 36 03 47.70 - 36 3 47.80 LONGITUDE DEG-MIN-SEC - 93 08 14.10 93 08 16.30 93 08 16.30 % PASSING 2 IN. - $1 \ 1/2 \ IN. -$ 3/4 IN. --3/8 IN. -100 97 92 NO. 4 - 100 100 NO. 10 - 95 NO. 40 - 83 95 ----83

NO.	80	-	38	~	46		43
NO.	200	-	20		29		29
LIQUID LIMIT		_	ND	2	ND	-	ND
PLASTICITY INDEX		_	NP	<u></u>	NP	-	NP
AASHTO SOIL		-	A-2-4(0)	-	A-2-4(0)	-	A-2-4(0)
UNIFIED SOIL		-		22		-	
% MOISTURE CONTENT	•	-	5.0	ā	6.1	-	13.5
ACHMSC TY2	(IN)	-		-14 C	4.75W	<u> </u>	
CHIP SEAL	(IN)	-		-	.50	-	
ACHMBC TY2	(IN)	- 11			1.5	~	
		2					
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		С Н		÷+-)		-	
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		92 194		50 C			

REMARKS - W=MULTIPLE LAYERS, Z=AUGER REFUSAL

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ARKANSAS STATE HIG	HWAY AND TRANSPORTATI MATERIALS		- LITTLE ROCK, ARKANSAS
	JERRY WESTERMAN, M	ATERIALS ENGI	NEER
*** SC	DIL SURVEY / PAVEMENT	SOUNDING TEST	REPORT ***
DATE - 05/21/0 JOB NUMBER - 009784 FEDERAL AID NO TO BE A PURPOSE - SOIL SU SPEC. REMARKS - NO SPEC SUPPLIER NAME - STATE NAME OF PROJECT - BUFFA PROJECT ENGINEER - NOT A PIT/QUARRY - ARKANSAS	ASSIGNED RVEY SAMPLE CIFICATION CHECK ALO RIVER BR. & APPRS	(PRUITT)(S)	SEQUENCE NO 1 MATERIAL CODE - RV SPEC. YEAR - 2003 SUPPLIER ID 1 COUNTY/STATE - 51 DISTRICT NO 09
LOCATION - NEWTON, (COUNTY		DATE SAMPLED - 04/09/07
SAMPLED BY - D KRAFT M			DATE RECEIVED - 04/10/07
SAMPLE FROM - NEWTON CO			DATE TESTED - 04/19/07
MATERIAL DESC SOIL S	JRVEY - RESISTANCE R-	VALUE ACTUAL	RESULTS
LAB NUMBER	- 20070686	-	
SAMPLE ID	- RV110	-	-
TEST STATUS		-	2 2
	- 138+00	-	
	- CL	-	-
DEPTH IN FEET		-	
	- RED	-	- -
MAT'L TYPE LATITUDE DEG-MIN-SEC	-	-	-
LONGITUDE DEG-MIN-SEC		-	
% PASSING 2 IN	-	-	-
1 1/2 IN.		-	-
3/4 IN		-	-
3/8 IN.		-	-
	- 100 - 93	-	-
	- 69	-	-
	- 36	-	-
NO. 200	- 28		
I TOUTD I INTE	- 25		
LIQUID LIMIT PLASTICITY INDEX	- 09	-	
AASHTO SOIL	- A-2-4(0)	Ξ.	
UNIFIED SOIL	-	121 () 1	t a
% MOISTURE CONTENT	-	140) 1	1.2
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REMARKS -			

REMARKS -

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AASHTO TESTS : T24 T88 T89 T90 T265

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