ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



SUBSURFACE INVESTIGATION

STATE JOB NO. 030428								
FEDERAL AID PROJEC	CT NO	NHPP-0066(28)						
BURKE	CREEK & CO	SSATOT RELIEF STRS. &	APPRS. (S)					
STATE HIGHWAY	71	SECTION	6					
IN		SEVIER	COUNTY					
LETTING OF	SE	PTEMBER 21, 2016						

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

June 12, 2013

TO:

Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT:

Job No. 030428

Burke Creek and Cossatot Relief Strs. & Apprs. (S)

Route 71 Section 6 Sevier County

Transmitted herewith is the requested Soil Survey, Strength Data and Resilient Modulus test results for the above referenced job. The project consists of replacing the Burke Creek and Cossatot Relief bridges and widening approximately 1.1 miles of Highway 71 from two lanes to five lanes. Samples were obtained in the existing travel lanes, shoulders and ditch line. Sample locations were measured from centerline of existing roadway and should be noted as such on the logs.

Based on laboratory results of samples obtained, the subgrade soils consist of low to moderately plastic sandy clay with varying amounts of gravel. Cross-sections are not currently available, but it is anticipated that the construction grade line will closely match that of the existing roadway. Subgrade soils are expected to provide a stable working platform with conventional processing if the weather is favorable during construction. Embankment recommendations will be made when plans are further developed and cross-sections become available.

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

- 1. The Qualified Products List (QPL) indicates that Aggregate Base Course (Class CL-7) is available from commercial producers located in the vicinity of De Queen.
- 2. Asphalt Concrete Hot Mix

	64-22	
Туре	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	4.4	95.6
Base Course	4.0	96.0

	70-22	
Туре	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	4.4	95.6
Base Course	4.0	96.0

-	^	_	^
_	h	-/	"

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	4.4	956
Base Course	4.0	96.0

Michael C. Benson Materials Engineer

MCB:pt:bjj Attachment

State Constr. Eng. – Master File Copy District 3 Engineer Planning Div. G. C. File

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY STRENGTH TEST REPORT ***

DATE - 06/07/2013

JOB NUMBER - 030428

SEQUENCE NO. - 1

MATERIAL CODE - SSRVPS

SPEC. YEAR - 2003

SUPPLIER ID. - 1

COUNTY/STATE - 66

DISTRICT NO. - 03

JOB NAME - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS

STATION LIMITS R-VALUE AT 240 psi

BEGIN JOB - END JOB

15

RESILIENT MODULUS

STA.107+00

9159

REMARKS -

AASHTO TESTS : T190

JOB NAME: BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS

Materials Division

COUN	TY NO.	66	DATE TESTEL)	6/4/2	2013			Michael Benson, Materials Engineer					
STA.#	LOC.	DEPTH	COLOR	#4	#10		#80	#200	L.L.	P.I.	SOIL CLASS	<i>LAB</i> #:	%MOISTURE	
107+00	33'RT	0-5	BROWN	92	89	83	<i>v</i> 77	65 F	18	2	A-4(0)	RV932		
107+00	6'RT	0-5	BROWN	93	84	72	64	52	23	10	A-4(2)	S915	12.9	
107+00	18'RT	0-5	BR/GR	92	86	80	65	45	24	11	A-6(2)	S916	10.6	
107+00	33'RT	0-5	BROWN	97	95	90	83	70	19	4	A-4(0)	S917	14.8	
15+00	13'LT	0-5	BR/GR	87	76	61	53	45	21	8	A-4(0)	S918	12.4	
15+00	25'LT	0-5	BROWN	74	64	54	48	41	21	8	A-4(0)	S919	11.2	
15+00	36'LT	0-5	BROWN	83	77	69	63	54	21	6	A-4(0)	S920	15.5	
23+00	5'RT	0-5	BROWN	99	98	96	92	81	23	11	A-6(6)	S921	16.4	
23+00	17'RT	0-5	BROWN	98	97	94	89	78	21	9	A-4(4)	S922	15	
23+00	26'LT	0-5	BROWN	93	88	85	76	64	24	9	A-4(3)	S923	10	
31+00	6'LT	0-5	BR/GR	99	97	94	90	78	23	10	A-4(5)	S924	15.2	
31+00	16'LT	0-5	BROWN	99	97	95	94	74	21	8	A-4(3)	S925	18.1	
31+00	24'LT	0-5	BROWN	90	86	79	67	47	20	5	A-4(0)	S926	13.1	
39+00	5'RT	0-5	BR/GR	82	71	61	54	43	27	12	A-6(2)	S927	10.9	
39+00	16'RT	0-5	BROWN	93	89	82	74	60	28	12	A-6(4)	S928	13.1	
47+00	6'LT	0-5	BROWN	99	98	95	84	65	ND	NP	A-4(0)	S929	14.5	
47+00	16'LT	0-5	BROWN	99	97	93	82	63	23	10	A-4(3)	S930	14.5	
47+00	26'LT	0-5	BROWN	94	91	89	83	67	22	9	A-4(3)	S931	12.8	

DATE TESTED

6/4/2013

Arkansas State Highway Transporation Department

JOB: 030428JOB NAME: BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS

COUNTY NO. 66

Materials Division

Michael Benson, Materials Engineer

		NAME OF TAXABLE PARTICULAR PROPERTY.	Control of the Contro		The second secon
STA.#	STA.# LOC.				PAVEMENT SOUNDINGS
107+00	6'RT	ACHMSC 15.0W	AGG BASE CRS CL5		
107+00	18'RT	ACHMSC 12.5W	AGG BASE CRS CL5		
107+00	33'RT	ACHMSC	AGG BASE CRS CL5		
115+00	13'LT	ACHMSC 14.0W	AGG BASE CRS CL5 5.0		
115+00	25'LT	ACHMSC 12.0W	AGG BASE CRS CL5 7.0		
115+00	36'LT	ACHMSC	AGG BASE CRS CL5		
123+00	5'RT	ACHMSC 10.0W	AGG BASE CRS CL5 8.0		
123+00	17'RT	ACHMSC 5.0W	AGG BASE CRS CL5 7.0		
123+00	2 6 'LT	ACHMSC	AGG BASE CRS CL5		
131+00	6'LT	ACHMSC 10.25W	AGG BASE CRS CL5 7.0		
131+00	16'LT	ACHMSC 5.5W	AGG BASE CRS CL5 7.0		
131+00	24'LT	ACHMSC	AGG BASE CRS CL5		
139+00	5'RT	ACHMSC 9.5W	ACHMSC	ACHMSC	AGG BASE CRS CL5 7.0
139+00	16'RT	ACHMSC 6.0W	ACHMSC	ACHMSC	AGG BASE CRS CL5 12.0
147+00	6'LT	ACHMSC 5.0	ACHMSC 1.0X	ACHMSC	AGG BASE CRS CL5 5.0
147+00	16'LT	ACHMSC 6.5	AGG BASE CRS CL5 8		
147+00	26'LT	ACHMSC	AGG BASE CRS CL5		

Friday, June 07, 2013

W=MULTIPLE LAYERS, X=STRIPPED comments:

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No.	030428	Material Code	SSRVPS
Date Sampled:	06/06/13	Station No.:	107+00
Date Tested:	June 6, 2013	Location:	33'RT
Name of Project:	BURKE CREEK & COSSATOT RELIEF		
County:	Code: 66 Name: SEVIER		
Sampled By:	FAULKNER	Depth:	0-5
Lab No.:	20132356	AASHTO Class:	A-4(0)
Sample ID:	RV932 (#2)	Material Type (1 or 2)	
LATITUDE:		LONGITUDE:	
1. Testing Inform	nation:		
	Preconditioning - Permanent Strain > 5% (Y=	Yes or N= No)	N
	Testing - Permanent Strain > 5% (Y=Yes or N	=No)	N
	Number of Load Sequences Completed (0-15)		15
2. Specimen Info	ormation:		
•	Specimen Diameter (in):		
	Тор		2.00
	Middle		3.96
	Bottom		3.95
	Average		3.95
	Membrane Thickness (in):		3.95
	Height of Specimen, Cap and Base (in):		0.00
	Height of Cap and Base (in):		8.02
	Initial Length, Lo (in):		0.00
	Initial Area, Ao (sq. in):		8.02
	Initial Volume, AoLo (cu. in):		12.27
			98.44
3. Soil Specimer			
	Weight of Wet Soil Used (g):		3249.00
4. Soil Properties	s:		
	Optimum Moisture Content (%):		11.4
	Maximum Dry Density (pcf):		116.2
	95% of MDD (pcf):		110.4
	In-Situ Moisture Content (%):		N/A
5. Specimen Pro	perties:		
	Wet Weight (g):		2040.00
	Compaction Moisture content (%):		3249.00
,	Compaction Wet Density (pcf):		11.6
	Compaction Dry Density (pcf):		125.75
	Moisture Content After Mr Test (%):		112.68 11.5
6. Quick Shear To	est (Y=Yes, N=No, N/A=Not Applicable):		
			#VALUE!
7. Resilient Modu	ılus, Mr:	9247(Sc)	^-0.14015(S3)^0.38969
8. Comments			
9. Tested By:	DEB Da	te: lune 6, 2012	
		te: June 6, 2013	

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

SSRVPS 107+00

33'RT

Material Code Station No.: Location: SEVIER BURKE CREEK & COSSATOT RELIEF Name: Code: 66 June 6, 2013 FAULKNER 06/06/13 030428 Name of Project: Date Sampled: Date Tested: Sampled By: Job No. County:

AASHTO Class:

RV932 (#2) 20132356

LATITUDE:

Sample ID: Lab No.:

Depth:

A-4(0)

Material Type (1 or 2): 2 LONGITUDE:

Resilient Modulus	Σ	isa	16.814	15,689	15 182	14 444	10 750	207,61	14,503	12,928	12,087	11 807	11,608	11 583	10.200	90200	9,390	9,207
Resilient Strain	ű	in/in	0.00011	0.00023	0.00036	0.00050	0.0000	0.00000	0.00013	0.00028	0.00044	0.00060	0.00076	0.00015	0.00034	0.00054	0.00024	0.0000
Average Recov Def. LVDT 1 and 2	Havg	2.	0.00087	0.00186	0.00289	0.00401	0.00522	0.00101	0.00	0.00223	0.00353	0.00481	0.00607	0.00124	0.00273	0.00436	0.00590	0.00739
Actual Applied Contact Stress	Scontact	psi	0.2	0.2	0.3	0.5	0.7	0.5	1 0	0.2	0.2	0.4	9.0	0.2	0.2	0.2	0.4	9.0
Actual Applied Cyclic Stress	Scyclic	psi	1.8	3.6	5.5	7.2	9.0	1.8	0	3.0	5.3	7.1	8.8	1.8	3.5	5.1	8.9	8.4
Actual Applied Max. Axial Stress	Smax	psi	2.1	3.9	5.8	7.7	9.7	2.0	3.0	0.0	5.6	7.5	9.4	2.0	3.7	5.4	7.2	9.0
Actual Applied Contact Load	Pcontact	sql	2.8	2.7	3.6	6.2	8.8	2.8	20	0.7	5.9	5.4	7.9	2.8	2.9	2.9	4.6	7.1
Actual Applied Cyclic Load	Pcyclic	sql	22.5	44.8	67.2	88.8	109.9	22.3	44.1		65.3	86.8	107.9	21.9	42.6	62.7	83.9	103.5
Actual Applied Max. Axial Load	Ртах	sql	25.3	47.5	70.8	95.0	118.7	25.1	47.0	000	0.00	92.3	115.8	24.7	45.5	65.7	88.4	110.6
Nominal Maximum Axial Stress	Scyclic	ısd	2.0	4.0	0.9	8.0	10.0	2.0	4.0	0	0.0	8.0	10.0	2.0	4.0	0.9	8.0	10.0
Confining Pressure	So T	Isd	0.9	0.0	0.0	0.9	0.9	4.0	4.0	40	9 6	0.4	4.0	2.0	2.0	2.0	2.0	2.0
PARAMETER	DESIGNATION	ONIC	Sequence 1	Sednence 2	Sednence 3	Sednence 4	Sednence 5	Sequence 6	Sequence 7	Seguence 8		6 appliantage	Sequence 10	Sequence 11	Sequence 12	Sequence 13	Sequence 14	Sequence 15

REVIEWED BY TESTED BY

DEB

June 6, 2013 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.

030428

Material Code SSRVPS

Date Sampled:

06/06/13

Station No.: 107+00

Date Tested:

June 6, 2013

Location: 33'RT

Name of Project: BURKE CREEK & COSSATOT RELIEF

County:

Code: 66

Name: SEVIER

Sampled By:

FAULKNER

Depth: 0-5

Lab No .:

20132356

AASHTO Class: A-4(0)

RV932 (#2)

Sample ID:

Material Type (1 or 2): 2

LATITUDE:

LONGITUDE:

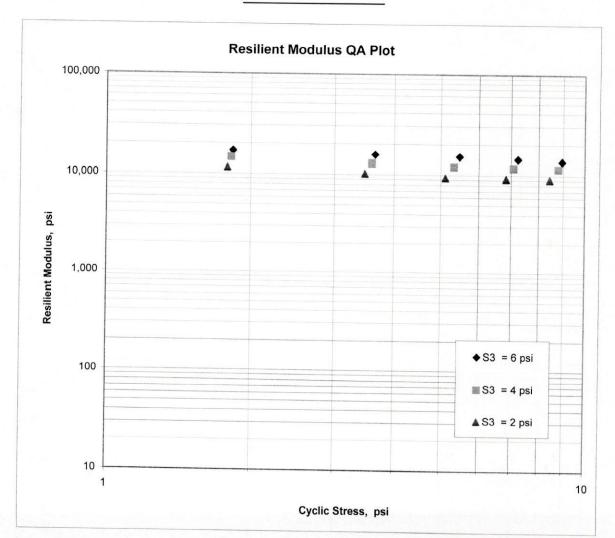
$$M_R = K1 (S_C)^{K2} (S_3)^{K5}$$

K1 = 9,247

K2 = -0.14015

K5 = 0.38969

 $R^2 = 0.99$



MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

		50	111	SURVEY / PAVEME	NT SO	UNDING TES	ST REPORT	***
JOB NUMBER FEDERAL AID NO. PURPOSE SPEC. REMARKS SUPPLIER NAME NAME OF PROJECT PROJECT ENGINEER PIT/QUARRY - LOCATION - SAMPLED BY - F SAMPLE FROM -	- SOI - NO - STA - I R - I ARKAN SEVIE FAULKI	D428 BE A IL SU SPEC ATE BURKE NOT A NSAS ER, C NER/E HOLE	SS: RVI CIF: CI PPI PPI	EY SAMPLE ICATION CHECK REEK AND COSSATO LICABLE NTY GHNER	T REL		MATERIAL SPEC. YE SUPPLIED COUNTY/S DISTRICT APPRS DATE SAL DATE REC	E NO 1 L CODE - SSRVPS EAR - 2003 R ID 1 STATE - 66 F NO 03 MPLED - 05/13/13 CEIVED - 05/20/13 STED - 06/04/13
MATERIAL DESC	- SO	IL SU	JRV.	EY - R VALUE- P	AVEME	NT SOUNDI	NGS	00/01/15
LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR MAT'L TYPE				20132339 S915 INFORMATION ONI 107+00 6'RT 0-5	- - -	20132340 S916	- ON ONLY -	20132341 S917 INFORMATION ONLY 107+00 33'RT 0-5 BROWN
	MTN	CEC		34 2 26.10	-	2.4	-	
				94 11 35.60		0 - 02		34 2 26.20
				J4 11 35.00		94 11	35.50	94 11 35.30
	2	IN.			10-0			
	1 1/2				\$ - 0			
	10	IN.			-		-	
		IN.		100	-	100	_	100
	NO.	3883	-	93	_	92		97
	NO.	0.000	-	84	_	86	_	95
	NO.		-	72	-	80	_	90
	NO.		-	64	-	65		83
	NO.	200	-	52		45		70
LIQUID LIMIT			-0	23	-	24	1.0	19
PLASTICITY INI	DEX		_	10	-	11		4
AASHTO SOIL			_	A-4(2)	-	A-6(2)	_	A-4(0)
UNIFIED SOIL			-		-	11 0 (2)		A-4 (0)
% MOISTURE CON	TENT		-	12.9	-	10.6	-	14.8
ACHMSC		(IN)	_	15.0W	_	12.5W		
AGG BASE CRS CL5		(IN)		7	-		_	
			-		2		_	
			_		-		-	
			_		-		-	
			_		-			
			_		-			
			_		_			
			_		_			

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

- LOCATIONS MEASURED FROM C.L. OF EXISTING HWY

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

	* * 7	SOIL	SURVEY /	PAVEMENT	SC	UNDING TES	ST REPORT	*	**	
LOCATION -	- SOII - NO S - STAT T - BU ER - NO ARKANS SEVIER FAULKNE	128 3E ASS L SURV SPECIF TE JRKE C DT APP SAS R, COU ER/BOU	EY SAMPLE ICATION CH REEK AND C LICABLE NTY GHNER	ECK			MATERI SPEC. SUPPLI COUNTY DISTRI & APPRS DATE S DATE R DATE T	AL YEA /S' CT	ID 1 TATE - 66	/13/13 /20/13
LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEE MAT'L COLOR MAT'L TYPE LATITUDE DE	T G-MIN-S	- - - - - - EC -	20132342 S918 INFORMAT 115+00 13'LT 0-5 BR/GR	ION ONLY		20132343 S919 INFORMATI 115+00 25'LT 0-5 BROWN	ON ONLY 33.70	1 1 1 1 1 1 1 1		33.60
LONGITUDE DE % PASSING	2 1 1/2 3/4 3/8 NO. NO.	IN IN IN IN 4 - 10 - 40 - 80 -	100 87 76 61 53 45	38.00		94 11 100 74 64 54 48 41	38.10		100 83 77 69 63	38.20
LIQUID LIMIT PLASTICITY II AASHTO SOIL UNIFIED SOIL % MOISTURE CO	NDEX ONTENT	- - - - - IN) -	21 8 A-4(0)		-	21 8 A-4(0)			54 21 6 A-4(0)	
AGG BASE CRS CI		IN) - 	14.0W 5.0			12.0W 7.0				

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

	SOIL	SURVEY / PAVEMENT	SC	DUNDING TE	ST REPORT *	**
DATE - 06 JOB NUMBER - 03 FEDERAL AID NO TO PURPOSE - SO SPEC. REMARKS - NO SUPPLIER NAME - ST NAME OF PROJECT - PROJECT ENGINEER - PIT/QUARRY - ARKA LOCATION - SEVI SAMPLED BY - FAULE SAMPLE FROM - TEST	5/04/13 30428 D BE ASS: DIL SURVI D SPECIF: TATE BURKE CI NOT APPI ANSAS TER, COUN	IGNED EY SAMPLE ICATION CHECK REEK AND COSSATOT LICABLE UTY SHNER	REI	JEF STRS.	SEQUENCE MATERIAL SPEC. YE SUPPLIER COUNTY/S DISTRICT & APPRS DATE SAM DATE REC	NO 3 CODE - SSRVPS AR - 2003 ID 1 TATE - 66
MATERIAL DESC SO LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR MAT'L TYPE LATITUDE DEG-MIN LONGITUDE DEG-MIN	- - - - - - -SEC -	20132345 S921 INFORMATION ONLY 123+00 5'RT 0-5 BROWN		20132346 S922 INFORMAT: 123+00 17'RT 0-5 BROWN	- ION ONLY - - - - - 40.60 -	20132347 S923 INFORMATION ONLY 123+00 26'LT 0-5 BROWN
% PASSING 2 1 1/3 3/3 3/3 NO. NO. NO.	IN 2 IN 4 IN 8 IN 4 - 10 - 40 -	100 99 98 96 92 81		100 98 97 94 89 78	42.60	94 11 42.50 100 93 88 85 76 64
	-	23		21 9 A-4(4) 15.0	=	24 9 A-4(3)
AGG BASE CRS CL5	(IN) - - - - - - -	8.0		5.0W 7.0		

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

	501	L SURVEY / PAVEMEN	r sc	OUNDING TES	ST REPORT *	**
JOB NUMBER - FEDERAL AID NO PURPOSE - SPEC. REMARKS - SUPPLIER NAME - NAME OF PROJECT PROJECT ENGINEER PIT/QUARRY - AR LOCATION - SE SAMPLED BY - FAU SAMPLE FROM - TE	06/04/13 030428 TO BE AS SOIL SUR NO SPECI STATE - BURKE - NOT AP KANSAS VIER, CO	SIGNED VEY SAMPLE FICATION CHECK CREEK AND COSSATOT PLICABLE UNTY	REI	JIEF STRS.	SEQUENCE MATERIAL SPEC. YE SUPPLIER COUNTY/S' DISTRICT & APPRS DATE SAM DATE REC	NO 4 CODE - SSRVPS AR - 2003 ID 1 FATE - 66 NO 03 PLED - 05/13/13 EIVED - 05/20/13
LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR MAT'L TYPE LATITUDE DEG-M: LONGITUDE DEG-M:	- - - - - - - -	20132348 - S924 - INFORMATION ONLY - 131+00 - 6'LT - 0-5 - BR/GR		20132349 S925 INFORMATI 131+00 16'LT 0-5 BROWN	- ON ONLY - - - - - 44.90 -	20132350 S926 INFORMATION ONLY 131+00 24'LT 0-5 BROWN
% PASSING 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	IN 1/2 IN 3/4 IN 3/8 IN 0. 4 - 0. 10 - 0. 40 - 0. 80 - 0. 200 -	100 99 97 94 90		100 99 97 95 94 74	50.40	94 11 50.40 100 90 86 79 67 47
LIQUID LIMIT PLASTICITY INDEX AASHTO SOIL UNIFIED SOIL % MOISTURE CONTE	- - TM:	10 A-4(5)	-	21 8 A-4(3)	:	20 5 A-4(0)
AGG BASE CRS CL5	(IN) - - - - - - -	10.25W 7.0		5.5W 7.0		

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

	POIL	SURVEY / PAVEMENT	l' SC	DUNDING TES	ST REPORT	* * *
DATE - 06	/04/13				ana	
JOB NUMBER - 03	200 C 100 C					NO 5
FEDERAL AID NO TO		CNED				CODE - SSRVPS
PURPOSE - SC	TI CUDUE	CAMPIE			SPEC. YE	AR - 2003
SPEC. REMARKS - NO	CDECTER	SI SAMPLE			SUPPLIER	ID 1
SUPPLIER NAME - ST	SPECIFI	CATION CHECK			COUNTY/S	TATE - 66
					DIGERRA	
NAME OF PROJECT -	BURKE CR	REEK AND COSSATOT	REL	LIEF STRS.	& APPRS	
PROJECT ENGINEER -		ICABLE				
PIT/QUARRY - ARKA						
LOCATION - SEVI	ER, COUN	TY			DATE SAM	IPLED - 05/13/13
SAMPLED BY - FAULK	NER/BOUG	SHNER			DATE REC	EIVED - 05/20/13
SAMPLE FROM - TEST					DATE TEC	TED - 06/04/13
MATERIAL DESC SC	IL SURVE	EY - R VALUE- PAV	/EME	ENT SOUNDIN	1GS	00/01/13
LAB NUMBER	_	20132351				
SAMPLE ID	_	S927				20132353
TEST STATUS	_			S928	-	S929
STATION	_	130.00	-	INFORMATI	ON ONLY -	INFORMATION ONLY
LOCATION		203100	_	139+00	-	147+00
DEPTH IN FEET	-	5'RT	_	16'RT	-	6'LT
MAT'L COLOR	-	0-5	-	0-5		0 - 5
MAT'L COLOR	-	BR/GR	-	BROWN	-	BROWN
LATITUDE DEG-MIN			_	34 02	46 80	34 2 46.50
LONGITUDE DEG-MIN	-SEC -	94 11 59.50			59.50	
% PASSING 2	IN				33.30	J4 12 9.00
	2 IN		-		-	
	IN		_		-	
	IN	100	_		-	
	4 -	100	_	100	_	100
	10 -	82	_	93	_	99
	40 -	71	-	89		98
		61	-	82		95
	80 -	54	-	74	-	84
	200 -	43		60		65
LIQUID LIMIT	_	27	-	28		ND
PLASTICITY INDEX	-0	12	_	12		NP
AASHTO SOIL	-	A-6(2)	_			
UNIFIED SOIL	-		-	11 0 (4)		A-4(0)
% MOISTURE CONTENT	-	10.9	-	13.1	-	14.5
ACHMSC	(IN) -	9.5W	_	6.0W		
ACHMSC	(IN) -		_	6.0W		5.0
ACHMSC	(IN) -		-		_	1.0X
AGG BASE CRS CL5	(IN) -	7.0	-	12.0		4.0
	-		-	12.0		5.0
	-		-			
	-		-		-	
	_		-		-	
			-		_	

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

	DOIL	SOKVEI /	PAVEMENT	SC	OUNDING TES	T REPO	RT ***		
DATE - 06	/04/13					CEOTH	INCE NO		_
JOB NUMBER - 03							ENCE NO.		
FEDERAL AID NO TO		IGNED					RIAL CODE	-	SSRVPS
		EY SAMPLE					YEAR	-	2003
SPEC. REMARKS - NO	SDECTE:	TCATTON CU	DOM				LIER ID.	-	1
SUPPLIER NAME - ST	ATE	ICATION CH	ECK				TY/STATE	-	66
		DEEK AND G	0007.000.0			DISTE	RICT NO.	-	03
NAME OF PROJECT - PROJECT ENGINEER -	NOW ADD	KEEK AND C	OSSATOT F	KEL	IEF STRS.	& APPR	S		
		LICABLE							
		70037							
SAMPLED BY - FAULK	ER, COU	N.T.A				DATE	SAMPLED	-	05/13/13
CAMBLE EDOM	MEK/BOU	SHNER				DATE	RECEIVED	-	05/20/13
SAMPLE FROM - TEST						DATE	TESTED		06/04/13
MATERIAL DESC SO	IL SURV	EY - R VA	LUE- PAVI	EME	NT SOUNDIN	GS			
LAB NUMBER	:=	20132354		-	20132355				
SAMPLE ID	_	S930			S931				
TEST STATUS	_		CON ONLY		INFORMATION		-		
STATION	_		CON CIVILI		147+00	ON ONLY	<i>-</i>		
LOCATION	_			_	26'LT		= <u>-</u>		
DEPTH IN FEET	_			-			_		
MAT'L COLOR	_			-	0-5		_		
MAT'L TYPE	_	BROWN		-	BROWN		-		
LATITUDE DEG-MIN-	SEC -	34 2	16 EO	=	24		-		
LONGITUDE DEG-MIN-	GEC -	94 12		-	12002	46.40	-		
	DEC -	J4 12	9.10		94 12	9.10			
% PASSING 2	IN			-			_		
1 1/2	? IN			_					
3/4	IN			-			_		
3/8	3 IN	100		-	100		-		
NO.	4 -	99		-	94		-		
NO.	10 -	97		-	91		-		
NO.	40 -	93		_	89		-		
NO.	80 -	82		_	83		-		
NO.	200 -	63			67		-		
LIQUID LIMIT		•							
PLASTICITY INDEX	-	23		-	22		-		
A A CITIMO CONT	-	10		-	9		-		
UNIFIED SOIL	-	A-4(3)		-	A-4(3)		-		
	-			_					
% MOISTURE CONTENT	-	14.5			12.8				
ACHMSC	(IN) -	6.5		_					
AGG BASE CRS CL5	(IN) -	8		_					
	-			_			_		
	_			-			-		
	-1 3			-			-		
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	=			_			-		
							-		

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

	06/04/13			SEQUENCE NO.	- 1
JOB NUMBER - 0	030428			MATERIAL CODE	
FEDERAL AID NO T	TO BE ASS	GNED		SPEC. YEAR	- 2003
PURPOSE - S	SOIL SURVE	EY SAMPLE		SUPPLIER ID.	- 2003
SPEC. REMARKS - N	NO SPECIF	CATION CHECK		COUNTY/STATE	
SUPPLIER NAME - S	STATE		10		
NAME OF PROJECT -	BURKE CI	REEK AND COSS	ATOT RELIEF STRS.	DISTRICT NO.	- 03
PROJECT ENGINEER -	NOT APPI	TCABLE	THE RELEASE BIRD.	AFFRS	
and the same of th	KANSAS				
	VIER, COUN	ITY		DAME CAMPIED	05/10/10
SAMPLED BY - FAUI	LKNER/BOUG	SHNER		DATE SAMPLED DATE RECEIVED	- 05/13/13
SAMPLE FROM - TES					
		ZV - PECTCTAN	ICE R-VALUE ACTUAL	DATE TESTED	- 06/04/13
	JOID BORV	TATESTAN	ICE R-VALUE ACTUAL	RESULTS	
LAB NUMBER	-	20132356	n-1	-	
SAMPLE ID	_	RV932		<u> </u>	
TEST STATUS	· -	INFORMATION	ONLY -		
STATION	-		_	-	
LOCATION	-	33'RT	1-1	-	
DEPTH IN FEET	-	0-5	(-)	-	
MAT'L COLOR	_	BROWN	-	-	
MAT'L TYPE	-		-		
LATITUDE DEG-MI	N-SEC -	34 2 26	.20 -		
LONGITUDE DEG-MI					
% PASSING 2			-	-	
	/2 IN		-		
	/4 IN		-		
	/8 IN	100			
NO	. 4 -	92			
	. 10 -	89	_		
NO	. 40 -	83	_		
NO		77	<u> </u>		
NO	. 200 -	65			
LIQUID LIMIT	_	10			
PLASTICITY INDEX		18 2			
AASHTO SOIL	_				
UNIFIED SOIL	_	A-4(0)			
% MOISTURE CONTEN	-				
* MOISTURE CONTER	N.T. –				
	_				
	-		_		
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	9=9				

REMARKS -

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

August 7, 2015

TO:

Mr. Rick Ellis, Bridge Engineer

SUBJECT:

Job No. 030428

Burke Creek and Cossatot Relief Strs. & Apprs. (S)

Route 71, Section 6

Sevier County

Transmitted herewith is a brief summary of the geology and site conditions, D50 analysis test results, unconfined compressive strength test results, and logs of the rotary wash borings conducted for the structures and approaches of the above job. 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.

It is anticipated the bridge ends will be founded on piling and the interior bents will be founded on drilled shafts. It is recommended that the shafts be designed for side resistance, based on the values provided in Table 1. No recommendation for tip resistance was made due to the extreme variability of the underlying soil and rock strata and the inability to obtain a boring at Bent 2.

Table 1- Side Resistance Recommendation for Drilled Shafts

1				
	Foundation	Nominal Side Resistance	Resistance	Factored Side Resistance
	Description	(ksf)	Factor	(ksf)
1	·			· · · · · · · · · · · · · · · · · · ·
	Drilled Shaft	10.2	0.55	5.6

If you have any questions about this information or recommendations please feel free to contact the Geotechnical Section.

Materials Engineer

MCB:rpt:mlg

CC:

State Construction Engineer - Master File Copy

District 3 Engineer

G.C. File

GEOLOGY AND SITE CONDITIONS Job No. 030428

Burke Creek and Cossatot Relief Strs. & Apprs. (S) Sevier County Route 71 Section 6

Site Conditions

The existing bridge over Burke Creek is a four span bridge. The bridge is constructed of concrete deck supported by 5 sets of steel beams with concrete wall bents on spread footings. The end bents are constructed of concrete supported by piling. The guardrail is constructed of concrete on the bridge and steel leading up to the bridge. A telecommunication line parallels the right side of the bridge. It is located overhead crossing the channel and buried up- and down-station from the bridge. There is a pipeline crossing over the channel approximately 150 feet to the left of the existing bridge.

The channel is heavily lined with trees. The area around the channel on the right side of the bridge consists of scrubland. The area on the left side of the bridge on the up-station side of the channel is pastureland, and the down-station side consists of a wooded area and scrubland.

Site Geology

The project alignment is located over sediment mapped as alluvial deposits (map symbols Qal). The alluvial sediment has been deposited by present streams and includes gravels, sands, silts, clays, and mixtures of any and all of these clastic materials. Depth to bedrock at the bridge ranges from 11.5 to 29.0 feet below ground level (bgl) (ranging in elevation from 332.2 to 336.7 feet above MSL).

The De Queen Formation varies in thickness from 0 to 100 feet and represents the middle part of the Trinity Group in Arkansas. The De Queen is composed of interbedded green and gray calcareous clay, limestone, gypsum, and celestine. The limestones are thin-bedded and sandy, but crystalline and fossiliferous intervals are present.

Gypsum is a soft calcium sulfate mineral (none was encountered during the subsurface investigation). Celestine, also known as celestite, is a strontium sulfate mineral which was found in abundance at the job site. Celestine has a similar hardness to calcite (the mineral that makes up limestone), but has a higher specific gravity than calcite.

The De Queen Formation overlies a sandstone formation referred to as the Holly Creek Formation in Oklahoma. The Holly Creek is described as being composed of lenticular beds of gravel, clay, and sandy clay in Oklahoma. The Holly Creek ranges in thickness from 30 to 100 feet in its outcrop area. The formation at the job site is composed of clayey sand. The Holly Creek was encountered in borings at depths ranging from 61.4 to 79.4 feet bgl (ranging in elevation from 282.3 to 287.5 feet above MSL)

Subsurface Conditions

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

0 to 11.5 Feet:

Consists of moist, soft to very hard, reddish brown sandy clay to sandy

clay with gravel.

11.5 to 28.8 Feet:

Varies from soil consisting of moist to wet, very soft to very stiff, gray clay to reddish brown sandy clay to sandy clay with gravel to rock consisting primarily of alternating beds of hard, gray limestone and medium hard, gray claystone with occasional beds of cemented, gray,

calcareous sandstone.

28.8 to 61.4 Feet:

Varies from hard, gray limestone interbedded with claystone and celestine seams and layers to medium hard, gray claystone with limestone seams and layers. Some zones have an occasional layer of sandstone. Also some zones contain occasional to frequent layers of celestine.

61.4 to 79.4 Feet:

Varies from hard, gray limestone interbedded with claystone seams and layers to medium hard, gray claystone with limestone seams and layers to cemented, reddish brown to gray, clayey sandstone.

79.4 to 93.2 Feet:

Consists of cemented, reddish brown to gray, **clayey sandstone**.

D₅₀ AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

		Job No.	030428		
Creek Name	Station	Sample Type	Location	Depth (FT)	Aggregate Size (D50) (IN)
Burke Creek	118+61	Creek Bank	38' Rt. C.L. Construction	NA	Less Than 0.0029

Rock Core Unconfined Compression Test Summary

Project Number:

030428

Project Name:

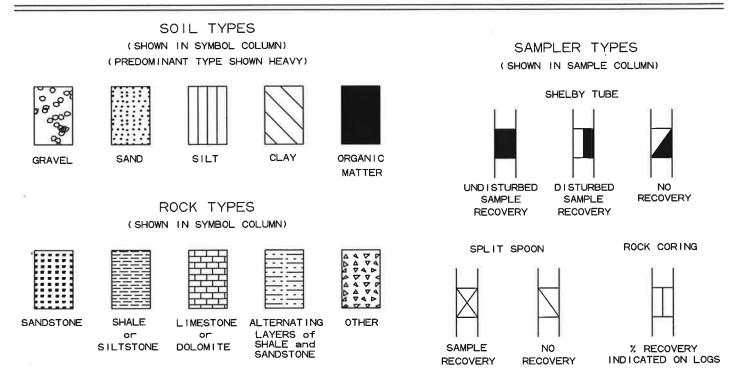
Burke Creek & Cossatot Relief Strs. & Apprs.

Date Tested:

3/6/2015

Location	Sample No.	Depth (ft)	Diameter (in)	Height (in)	Total Load (lbs)	Correction Factor	Stress (psi)	Remarks
5' LT	1	29.0	1.75	4.30	16,260	1.000	6,760	L.S.
5' LT	2	35.0	1	3.86	7,640	1.000	9,728	L.S.
5' LT	3	62.0	1.75	3.80	20,890	1.000	8,685	L.S. w/ Celestite
5' LT	4	80.0	1.75	3.92	0	1.000	0	S.S.
39' RT	5	23.0	1.75	3.80	29,320	1.000	12,190	S.S.
39' RT	6	30.0	1.75	3.90	27,360	1.000	11,375	S.S.
39' RT	7	41.5	1.75	4.45	4,250	1.000	1,767	Fragile - Claystone
39' RT	8	62.0	1.75	3.75	19,200	1.000	7,982	S.S.
4' LT	9	31.5	1.75	3.60	1,950	1.000	811	L.S. w/ Clay Seams
4' LT	10	40.5	1.75	3.74	20,520	1.000	8,531	S.S.
4' LT	11	55.5	1.75	3.10	18,580	1.000	7,725	Celestite
4' LT	12	61.5	1.75	6.60	1,700	1.000	707	Fragile - Claystone
4' LT	13	76.5	1.75	5.45	3,390	1.000	1,409	S.S.
	5' LT 5' LT 5' LT 5' LT 39' RT 39' RT 39' RT 4' LT 4' LT 4' LT 4' LT	S'LT 1 5'LT 2 5'LT 3 5'LT 4 39'RT 5 39'RT 6 39'RT 7 39'RT 8 4'LT 9 4'LT 10 4'LT 11 4'LT 12	No. (ft) 5' LT 1 29.0 5' LT 2 35.0 5' LT 3 62.0 5' LT 4 80.0 39' RT 5 23.0 39' RT 6 30.0 39' RT 7 41.5 39' RT 8 62.0 4' LT 9 31.5 4' LT 10 40.5 4' LT 11 55.5 4' LT 12 61.5	No. (ft) (in) 5' LT 1 29.0 1.75 5' LT 2 35.0 1 5' LT 3 62.0 1.75 5' LT 4 80.0 1.75 39' RT 5 23.0 1.75 39' RT 6 30.0 1.75 39' RT 7 41.5 1.75 39' RT 8 62.0 1.75 4' LT 9 31.5 1.75 4' LT 10 40.5 1.75 4' LT 11 55.5 1.75 4' LT 12 61.5 1.75	No. (ft) (in) (in) 5' LT 1 29.0 1.75 4.30 5' LT 2 35.0 1 3.86 5' LT 3 62.0 1.75 3.80 5' LT 4 80.0 1.75 3.92 39' RT 5 23.0 1.75 3.80 39' RT 6 30.0 1.75 3.90 39' RT 7 41.5 1.75 4.45 39' RT 8 62.0 1.75 3.75 4' LT 9 31.5 1.75 3.60 4' LT 10 40.5 1.75 3.74 4' LT 11 55.5 1.75 3.10 4' LT 12 61.5 1.75 6.60	No. (ft) (in) (in) (lbs) 5' LT 1 29.0 1.75 4.30 16,260 5' LT 2 35.0 1 3.86 7,640 5' LT 3 62.0 1.75 3.80 20,890 5' LT 4 80.0 1.75 3.92 0 39' RT 5 23.0 1.75 3.80 29,320 39' RT 6 30.0 1.75 3.90 27,360 39' RT 7 41.5 1.75 4.45 4,250 39' RT 8 62.0 1.75 3.75 19,200 4' LT 9 31.5 1.75 3.60 1,950 4' LT 10 40.5 1.75 3.74 20,520 4' LT 11 55.5 1.75 3.10 18,580 4' LT 12 61.5 1.75 6.60 1,700	No. (ft) (in) (in) (lbs) Factor 5' LT 1 29.0 1.75 4.30 16,260 1.000 5' LT 2 35.0 1 3.86 7,640 1.000 5' LT 3 62.0 1.75 3.80 20,890 1.000 5' LT 4 80.0 1.75 3.92 0 1.000 39' RT 5 23.0 1.75 3.80 29,320 1.000 39' RT 6 30.0 1.75 3.90 27,360 1.000 39' RT 7 41.5 1.75 4.45 4,250 1.000 39' RT 8 62.0 1.75 3.75 19,200 1.000 4' LT 9 31.5 1.75 3.60 1,950 1.000 4' LT 10 40.5 1.75 3.74 20,520 1.000 4' LT 11 55.5 1.75 3.10 18,580 1.0	No. (ft) (in) (in) (lbs) Factor (psi) 5' LT 1 29.0 1.75 4.30 16,260 1.000 6,760 5' LT 2 35.0 1 3.86 7,640 1.000 9,728 5' LT 3 62.0 1.75 3.80 20,890 1.000 8,685 5' LT 4 80.0 1.75 3.92 0 1.000 0 39' RT 5 23.0 1.75 3.80 29,320 1.000 12,190 39' RT 6 30.0 1.75 3.90 27,360 1.000 11,375 39' RT 7 41.5 1.75 4.45 4,250 1.000 1,767 39' RT 8 62.0 1.75 3.75 19,200 1.000 7,982 4' LT 9 31.5 1.75 3.60 1,950 1.000 8,531 4' LT 10 40.5 1.75

LEGEND



TERMS DESCRIBING CONSISTENCY OR CONDITION

GRANU	LAR SOIL		CLAY	CLA	Y-SHALE	SHALE					
"N' Value	Density	'N' Value	Consistency	'N' Value	Consistency	<u>"N" Value</u>	Consistency				
0-4	Very Loose	0-1	Very Soft	0-1	Very Soft						
5-10	Loose	2-4	Soft	2-4	Soft	31-60	Soft				
11-30	Medium Dense	5-8	Medium Stiff	5-8	Medium Stiff	0ver 60					
31-50	Dense	9-15	Stiff	9-15	Stiff	More than	2'				
0ver 50	Very Dense	16-30	Very Stiff	16-30	Very Stiff	Penetrati	on a				
		31-60	Hard	31-60	Hard	in 60 Blov	vsı Medium Hard				
		0ver 60	Very Hard	0ver 60	Very Hard	Less than	2'				
						Penetrati	on				
						in 60 Blov	vsı Hard				

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

Standard Penetration Test – Driving a 2.0" O.D., 1-3/8" I.D. sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and performing the test are recorded for each 6 inches of penetration on the drill log. The field "N" Value (N_f) can be obtained by

adding the bottom two numbers for example: $\frac{6}{8-9} \Rightarrow 8+9=17 blows / ft$. The "N" Value corrected to 60% efficiency (N₆₀) can be obtained by multiplying N_f by the hammer correction factor published on the boring log.

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE		10. 1)F 3					
JOB N			030428 Sevier County		DATE:				_	2-13, 2	015		
JOB N			Burke Creek & Cossatot Relief Strs. & Apprs.						-	ow Ste		ıger	&
			U.S. 71										
STATI	ION:		117+32		EQUIE	PMEN	T: CM	1E 8	50 w	/ CMI	E Aut	tom	atic
LOCA	TION:	;	5' Left of Center Line of Construction										
LOGG	ED BY	7: T	racy Henderson		HAMN	MER (CORRE	CTION	V FAC	CTOR:	1	.23	
COM	PLET	ION	DEPTH: 98.4			_			_			_	
D	s	S											
E P	Υ	A M						ا_	FT	SA	9	%	%
<u>'</u>	M	P	DESCRIPTION OF MATERIAL	SOIL GROUP				GH	CU.	[5		S C	R Q
Н	B O	L		GROUP	[음.	IST	le.	WEI	ER	F B	ΞĮ,	R	D
	Ľ	E			PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
FT _s	· · · · · ·	S	SURFACE ELEVATION: 363.2			%		<u>D</u>		Ż	=	-	
	0000												
	Sept 9												
_ =	1		Moist, Medium Stiff, Reddish Brown Sandy		1					3		- 1	
5	8	X	Clay with Gravel							4-3	=1	- 1	
	30° 30°												
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	3												
										0			
10	1	X								1-2	→ 7		
	X		Moist, Soft, Reddish Brown Sandy Clay with										
	1		Gravel										
	11									1			
15	//	X								0-0			
	//												
	1		Moist, Very Soft, Gray Clay										
	1									1			
_20	1	X								6-8			
	//		Moist, Stiff, Reddish Brown Clay with Sand with										
	//		Trace of Gravel										
-													
	100									2			
25	800	X								11-1	6		
	3/		Moist to Wet, Very Stiff, Reddish Brown Sandy										
	181		Clay with Gravel										
	N												
			Limestone		1					30			
30	X									(1")			
	XX		Hard, Gray, Slightly Weathered Limestone with								8	34	27
	XX		occasional Clay Layers										
	级												
35	V D	Щ											
KEM.	ARKS	٠.											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE)F 3					
JOB N			030428 Sevier County		DATE:					2-13,	201	5	_
JOB N			Burke Creek & Cossatot Relief Strs. & Apprs.				ı. RILLIN		•				r &.
JOBIN	AIVIE.		U.S. 71		1111	Or D.	KILLIN	U. I	10110	, w G	V111 2	rugo	
STATI	ON.		117+32		FOUIE	MEN	T: CM	1E 8	50 w	/ CV	ſE A	utom	atic
LOCA			5' Left of Center Line of Construction		Lecn	TVIID! V	1. 01.	111	, , , , , , , , , , , , , , , , , , ,	, 01,			
			racy Henderson		HAMN	ΛER (CORRE	CTION	N FAC	CTOR:		1.23	
			J DEPTH: 98.4										
D		S	BEI III VOIT	ľ									
E	S	A											
P	Y	М	DESCRIPTION OF MATERIAL					l⊟	ET.	WS		%	%
T	M B	Р	DESCRIPTION OF MATERIAL	SOIL GROUP		200		IGF	CC	31.0		S C	R Q
Н	o	L			ΙĔΙ	SIS	e_	WE	PER)F.I	2-IN	R	Ď
СТ	L	E S	OUDEAGE ELEVATION COO C		PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
FT.	*******	3	SURFACE ELEVATION: 363.2 Hard, Gray, Slightly Weathered Limestone with			%	111		1	Z	P		
_ =	33		occasional Clay Seams and Layers									100	47
	700		ooddonar day oodina and Eayere	ļ									
	//												
	//		Medium Hard, Light Gray Claystone										
40	//		intodiam mara, Eight Gray Glayelene										
	77			ļ								46	0
	7357 7357											40	U
	777												
	777	4											
— – 45	<i>1332</i>												
45	77.5		 Medium Hard, Light Gray Limestone										
	757		Interbedded with Medium Hard, Claystone with									72	10
	7777		occasional Layers of Sandstone										
_ =			,										
50	7377		-										
												50	28
	7777												
	//												
	$^{\prime}/^{\prime}$		Medium Hard, Dark Gray Claystone										
55	//												
	777	1			1							100	0
												100	U
		4											
	77777 77777		Hard, Light Gray Limestone Interbedded with										
60			Medium Hard Claystone with frequent Layers of Celestite										
			Of Gelestite									66	36
— -	7,77												
	777												
65													
												100	11
			=										
 70	===												
	ARKS	<u>. </u>			1			1				_	
I XILIVIA	~11 \17\C	,.											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE)F 3					
JOB N			030428 Sevier County		DATE:					2-13,	201	5	
JOB N.			Burke Creek & Cossatot Relief Strs. & Apprs.				RILLIN		•				r &
			U.S. 71									Ü	
STATI	ON:		117+32		EQUIF	MEN	T: CM	1E 8.	50 w	/ CM	IE A	utom	atic
LOCA'			5' Left of Center Line of Construction										
LOGG	ED BY	: T	racy Henderson		HAMN	IER (CORREC	CTION	I FAC	CTOR:		1.23	
COM	PLET	ION	DEPTH: 98.4										
D	s	S											
E	> Y	Α							Ľ,	S		%	%
P	M	М	DESCRIPTION OF MATERIAL	SOIL				H	U.F	MO.		S	R
T H	В	P L		GROUP	ည	ST		EIG	R.C	BIL	ż	C R	Q D
''	0	Ē			PLASTIC LIMIT	"MOIST.		DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.	K	ו
FT,	L	S	SURFACE ELEVATION: 363.2		PLAST LIMIT	V %	LIQUID	DR	LB	ON	PEI		
		П										78	0
	-12		Medium Hard, Gray Claystone with frequent									'	١
			Limestone Layers										
		+											
75													
7.0												100	0
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80													
-00	11/1											400	C4
												100	61
-													
-	1111	1											
85													
- 65	199												
-												90	41
-													
-	1999	1	CLAYEY SANDSTONE - Reddish Brown to										
			Gray, Thick Bedded, Poorly-Cemented to										
90			Cemented, Slightly Calcareous, with Slight Dip										
<u> </u>												24	8
<u> </u>													
-		Ш											
95													
		1										92	71
<u> </u>	11/1												
-													
-			Boring Terminated										
100													
<u> </u>													
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105													
REM	ARK	3:											

			HWY. & TRANS. DEPARTMENT DIVISION - GEOTECHNICAL SEC.		BORI PAGE		10. 2)F 3					
JOB N		_	030428 Sevier County		DATE:					21, 2	015		
JOB N			Burke Creek & Cossatot Relief Strs. & Apprs.				RILLIN			-		Auge	r &
			U.S. 71										
STATI	ION:		118+78		EQUIF	MEN	T: CN	1E 8	50 w	/ CN	IE A	utom	natic
LOCA			39' Right of Center Line of Construction										
		_	avid Allen		HAMN	MER (CORREC	CTION	V FAC	CTOR:		1.23	
COM	PLET	ION	DEPTH: 78.8			_					_		_
D E	s	S											
P	Y	м	DECORIDION OF MATERIAL					I	FT.	WS		%	%
Т	M B	P	DESCRIPTION OF MATERIAL	SOIL GROUP		200		IGH	CO	3TO		S	R Q
Н	0	ᅵᆫᅵ	,	GROOT	T	ISI		WE	PER)F E	NI-9	R	Ď
FT.	Ĺ	E S	OUDEACE ELEVATION: 242.7		PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.		
L I &	V:(3	SURFACE ELEVATION: 343.7		집기	<u>~</u>	111	Д		-Z	Д.	_	_
= =													
_==													
5		∇	Moist, Soft, Reddish Brown Sandy Clay							2-			
_ =		$\langle \cdot \rangle$	ł							2-	2		
10		\times	Moist, Very Hard, Reddish Brown Sandy Clay							2			
	000		with Gravel							6 (1	")		
												0.7	20
			Hard, Gray Limestone with Clay Seams									87	22
	XIIX	\vdash											_
15													
	===		Medium Hard, Gray Claystone with occassional									36	0
			Layers of Limestone										
	===												
	UTHE.	IT											
20			Cemented, Gray, Clayey Sandstone										
	H		Interbedded with Limestone with frequent Clay									56	18
		1	Seams and Layers										
_ =	ta.				١.								
 25	X												
20	1												
_ =	//		Cemented, Gray, Calcareous Sandstone									60	1
			Interbedded Limestone and Claystone										
	//												
30	//												
30													
	17		Cemented, Gray, Calcareous Sandstone									90	18
	//		Interbedded with Limestone and Claystone										
					-								
	Luk	4—1—		1	1		1	1					
 35	開始							l .					

						BORING NO. 2 PAGE 2 OF 3								
						DATE: January 21, 2015								
	JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71 TYPE OF DRILLING: Hollow Stem Aug										Auge	: &		
STATI		EQUIPMENT: CME 850 w/ CME Automatic												
LOCA'			39' Right of Center Line of Construction avid Allen		HAMN	ÆR C	CORREC	CTION	V FAC	CTOR:		1.23		
COM	PLET		DEPTH: 78.8		_			_						
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.	% S C R	% R Q D	
FT.	_	S	SURFACE ELEVATION: 343.7		필급	%	33	<u>E</u>	LB	ž	PE			
40			Medium Hard, Gray Claystone Interbedded with Limestone, and Celestite									100	0	
		4000000000	Medium Hard, Gray Claystone	•								98	44	
		2	Hard, Gray Limestone and Celestite Interbedded											
45			Medium Hard, Gray Claystone with frequent Layers of Limestone and Celestite									100	0	
55			Medium Hard, Claystone with occassional Limestone Layers									100	0	
60			Medium Hard, Claystone with occassional Limestone Layers									86	56	
65												88	58	
70 REM	ARKS	<u>1</u> S:						1						

JOB NO. 030428 Sevier County DATE: January 21 JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. TYPE OF DRILLING: Hollow												
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. TYPE OF DRILLING: Hollow			PAGE 3 OF 3									
· · · · · · · · · · · · · · · · · · ·	v Stem.	,										
	TYPE OF DRILLING: Hollow Stem Auger &											
U.S. 71	C) 4E 4		. •									
STATION: 118+78 EQUIPMENT: CME 850 w/ 0	CME A	uton	natic									
LOCATION: 39' Right of Center Line of Construction LOGGED BY: David Allen HAMMER CORRECTION FACTOR	HAMMER CORRECTION FACTOR: 1.23											
COMPLETION DEPTH: 78.8	OK:	1.23										
D S S A												
P M M DESCRIPTION OF MATERIAL SOIL	× ×	%	%									
T B DESCRIPTION OF MATERIAL SOIL GROUP O). SEO	S C	R									
H O L O L O C O C O O O O O	OF E	R	Q D									
P T M M P L GROUP SOIL GROUP SOIL GROUP TIMIT DISABLE RELEVATION: 343.7	NO. OF BLOWS PER 6-IN.											
CLAYEY SANDSTONE - Reddish Brown to	<u>и</u>	_	-									
Gray, Thick Bedded, Poorly-Cemented to		98	56									
Cemented, Slightly Calcareous, with Slight Dip		"										
75												
<u> </u>		100	98									
		100	30									
Boring Terminated												
80 Borning Terminated												
85												
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95												
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		1										
105												
REMARKS:												

ARKANSAS HWY. & TRANS. DEPARTMENT MATERIALS DIVISION - GEOTECHNICAL SEC.							10. 3)F 3											
JOB NO. 030428 Sevier County									ıary	14, 2	015								
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. TYPE OF DRILLING: Hollow Stem Auger &												r &							
U.S. 71																			
STATIO			I 19+56 I' Left of Center Line of Construction		EQUI	MEN	T: CN	1E 8:	50 w	// CM	Œ A	utom	atio						
LOCAT										1 00									
			avid Allen		HAMN	MER C	CORRE	CTION	V FAC	STOR:		1.23	_						
	LEI	$\overline{}$	DEPTH: 93.2								_								
D E P T H	S Y M B O L	SAMPLE	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT	LBS PER CU.FT.	NO. OF BLOWS	PER 6-IN.	% S C R	% R Q D						
FT.		S	SURFACE ELEVATION: 363.4			%	33	ā		ž	핍		_						
5		X	Moist, Soft, Reddish Brown Clay with Sand							0 0- 1 2-	2								
15		X	Moist, Stiff, Reddish Brown Clay with Sand							3 5-	5								
25 — —		X	Moist, Very Stiff, Reddish Brown Gravelly Clay with Sand							6-1	12								
 			Limestone																
30 			Limestone with frequent Clay Seams and Layers							60 (2)	")	100	5						
 35	111																		
REMA	RKS												_						

					BORING NO. 3 PAGE 2 OF 3										
JOB NO. 030428 Sevier County					DATE: January 14, 2015										
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs.						TYPE OF DRILLING: Hollow Stem Auger &									
U.S. 71															
STATION: 119+56						EQUIPMENT: CME 850 w/ CME Automatic									
LOCA	TION:		4' Left of Center Line of Construction		Exeminate. Child 636 W. Child Automatic										
			Pavid Allen		HAMN	ΛER C	ORRE	CTION	V FAC	CTOR:		1.23			
COM	PLET	ION	I DEPTH: 93.2												
D		s													
Ē	S	A													
Р	Y M	М	DESCRIPTION OF MATERIAL	SOIL					ľ.FT	M.S		% S	% R		
Т	B	Р	BEOOKII HOW OF MATERIAL	GROUP	 -	20		[5]	CC) [20		C	Q		
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	L	E			PLASTIC LIMIT	% MOIST.	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.				
FT,		S	SURFACE ELEVATION: 363.4			%	133	a		Z	P.				
	77		Medium Hard, Gray Claystone									60	0		
	777														
	777														
40	7777														
40	777		Hard, Gray Limestone Interbedded with									70	18		
	<i>7377</i>		Medium Hard, Gray Claystone									′ ′	10		
	1,1,1														
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	建														
45	韓														
	韓		Hard, Gray Limestone with frequent Layers of									52	20		
	語		Claystone												
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	1111	+													
50	Œ														
-50	三三		Medium Hard, Gray Claystone Interbedded									المما			
	臣臣		with well-cemented, calcareous Sandstone									100	8		
		Ш													
	7														
55	7777	4													
	777	9	Hard, Gray Limestone Interbedded with									96	10		
	/////	9	Medium Hard, Gray Claystone and Celestite												
	7777	9													
				1											
	强势		Hard, Gray Limestone												
60	岛至		Trara, Gray Emiostorio												
				1								100	36		
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		1													
			Medium Hard, Gray Claystone with frequent												
65		1	Layers of Limestone and Celestite												
			Edjoid of Eliflotions and dollotte									88	0		
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		1		1											
	-7-7	1													
70		1							_						
REM	ARK	S:													

							10. 3								
MATERIALS DIVISION - GEOTECHNICAL SEC.						PAGE 3 OF 3									
JOB N			030428 Sevier County		DATE: January 14, 2015										
JOB N.	AME:		Burke Creek & Cossatot Relief Strs. & Apprs.		TYPE OF DRILLING: Hollow Stem Auger &										
U.S. 71 STATION: 119+56							EQUIPMENT, CME 950 m/ CME Automatic								
	EQUIPMENT: CME 850 w/ CME Automatic														
	LOCATION: 4' Left of Center Line of Construction LOGGED BY: David Allen							HAMMER CORRECTION FACTOR: 1.23							
COMPLETION DEPTH: 93.2							ORIGE	71101	11110	TOK		1.23			
D S S															
E	S	A													
P	Y M	М	DESCRIPTION OF MATERIAL	SOIL				ĮĮ.	I.F.T	M.S		% S	% R		
T	В	Р	BESSIAI FISH OF MARKETAINE	GROUP	()	H		SIGI	CC	BLC	÷.	C	Q		
Н	ō	E			STI	OIS		W	PEF	OF.	Ū-9	R	D		
FT.	L	S	SURFACE ELEVATION: 363.4	=	PLASTIC LIMIT	% MOIST	LIQUID	DRY WEIGHT	LBS PER CU.FT	NO. OF BLOWS	PER 6-IN.				
		Ť	Medium Hard, Gray Claystone with occasional			*	111			~	Ī	00	_		
			Layers of Limestone									80	0		
		4											_		
			Medium Hard, Gray Claystone with frequent												
- /3			Layers of Limestone									86	45		
	17.72		CLAYEY SANDSTONE - Reddish Brown to									00	45		
			Gray, Thick Bedded, Poorly-Cemented to												
		+	Cemented, Slightly Calcareous												
80															
												60	30		
-													50		
85															
- 00			CLAYEY SANDSTONE - Reddish Brown to Gray, Thick Bedded, Poorly-Cemented to									98	24		
			Cemented, Slightly Calcareous									30	27		
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90															
30												98	67		
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REM	ARKS	 3:			1										
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