ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

SUBSURFACE INVESTIGATION

STATE JOB NO. 030428

FEDERAL AID PROJECT NO. NHPP-0066(28)

BURKE CREEK & COSSATOT RELIEF STRS. & APPRS. (S)

STATE HIGHWAY 71 SECTION 6

IN SEVIER COUNTY

LETTING OF SEPTEMBER 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	
Type	**Asphalt Cement %**	**Mineral Aggregate %**
Surface Course	5.2	94.8
Binder Course	4.4	95.6
Base Course	4.0	96.0

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

Type	76-22 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
cc: State Constr. Eng. – Master File Copy
District 3 Engineer
Planning Div.
G. C. File

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS

MATERIALS DIVISION

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: 030428

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

COUNTY NO. 66 **DATE TESTED** 6/4/2013

Arkansas State Highway Transporation Department

Materials Division

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4	#10	#40	#80	#200	L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				S	I	E	V	E S					
107+00	33'RT	0-5	BROWN	92	89	83	77	65	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
115+00	13'LT	0-5	BR/GR	87	76	61	53	45	21	8	A-4(0)	S918	12.4
115+00	25'LT	0-5	BROWN	74	64	54	48	41	21	8	A-4(0)	S919	11.2
115+00	36'LT	0-5	BROWN	83	77	69	63	54	21	6	A-4(0)	S920	15.5
123+00	5'RT	0-5	BROWN	99	98	96	92	81	23	11	A-6(6)	S921	16.4
123+00	17'RT	0-5	BROWN	98	97	94	89	78	21	9	A-4(4)	S922	15
123+00	26'LT	0-5	BROWN	93	88	85	76	64	24	9	A-4(3)	S923	10
131+00	6'LT	0-5	BR/GR	99	97	94	90	78	23	10	A-4(5)	S924	15.2
131+00	16'LT	0-5	BROWN	99	97	95	94	74	21	8	A-4(3)	S925	18.1
131+00	24'LT	0-5	BROWN	90	86	79	67	47	20	5	A-4(0)	S926	13.1
139+00	5'RT	0-5	BR/GR	82	71	61	54	43	27	12	A-6(2)	S927	10.9
139+00	16'RT	0-5	BROWN	93	89	82	74	60	28	12	A-6(4)	S928	13.1
147+00	6'LT	0-5	BROWN	99	98	95	84	65	ND	NP	A-4(0)	S929	14.5
147+00	16'LT	0-5	BROWN	99	97	93	82	63	23	10	A-4(3)	S930	14.5
147+00	26'LT	0-5	BROWN	94	91	89	83	67	22	9	A-4(3)	S931	12.8

comments: W=MULTIPLE LAYERS, X=STRIPPED

Friday, June 07, 2013

JOB: 030428

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

COUNTY NO. 66

Arkansas State Highway Transporation Department

Materials Division

Michael Benson, Materials Engineer

DATE TESTED
6/4/2013

PAVEMENT SOUNDINGS

STA.#	LOC.				
107+00	6'RT	ACHMSC	AGG BASE CRS CL5		
		15.0W	**7**		
107+00	18'RT	ACHMSC	AGG BASE CRS CL5		
		12.5W	---		
107+00	33'RT	ACHMSC	AGG BASE CRS CL5		
		---	---		
115+00	13'LT	ACHMSC	AGG BASE CRS CL5		
		14.0W	**5.0**		
115+00	25'LT	ACHMSC	AGG BASE CRS CL5		
		12.0W	**7.0**		
115+00	36'LT	ACHMSC	AGG BASE CRS CL5		
		---	---		
123+00	5'RT	ACHMSC	AGG BASE CRS CL5		
		10.0W	**8.0**		
123+00	17'RT	ACHMSC	AGG BASE CRS CL5		
		5.0W	**7.0**		
123+00	26'LT	ACHMSC	AGG BASE CRS CL5		
		---	---		
131+00	6'LT	ACHMSC	AGG BASE CRS CL5		
		10.25W	**7.0**		
131+00	16'LT	ACHMSC	AGG BASE CRS CL5		
		5.5W	**7.0**		
131+00	24'LT	ACHMSC	AGG BASE CRS CL5		
		---	---		
139+00	5'RT	ACHMSC	ACHMSC	ACHMSC	AGG BASE CRS CL5
		9.5W	---	---	**7.0**
139+00	16'RT	ACHMSC	ACHMSC	ACHMSC	AGG BASE CRS CL5
		6.0W	---	---	**12.0**
147+00	6'LT	ACHMSC	ACHMSC	ACHMSC	AGG BASE CRS CL5
		5.0	**1.0X**	**4.0**	**5.0**
147+00	16'LT	ACHMSC	AGG BASE CRS CL5		
		6.5	**8**		
147+00	26'LT	ACHMSC	AGG BASE CRS CL5		
		---	---		

comments: W=MULTIPLE LAYERS, X=STRIPPED

Friday, June 07, 2013

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):**	2
LATITUDE:		**LONGITUDE:**	

1. Testing Information:

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 Information:

Specimen Diameter (in):	
Top	3.96
Middle	3.95
Bottom	3.95
Average	3.95
Membrane Thickness (in):	0.00
Height of Specimen, Cap and Base (in):	8.02
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.02
Initial Area, Ao (sq. in):	12.27
Initial Volume, AoLo (cu. in):	98.44

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	3249.00

4. Soil Properties:

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 Properties:

Wet Weight (g):	3249.00
Compaction Moisture content (%):	11.6
Compaction Wet Density (pcf):	125.75
Compaction Dry Density (pcf):	112.68
Moisture Content After Mr Test (%):	11.5

6. Quick Shear Test (Y=Yes, N=No, N/A=Not Applicable): #VALUE!

7. Resilient Modulus, Mr: 9247(Sc)^-0.14015(S3)^0.38969

8. Comments _____

9. Tested By: DEB **Date:** June 6, 2013

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

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

Job No. 030428
Date Sampled: 06/06/13
Date Tested: June 6, 2013
Name of Project: BURKE CREEK & COSSATOT RELIEF
County: **Code:** 66 **Name:** SEVIER
Sampled By: FAULKNER
Lab No.: 20132356
Sample ID: RV932 (#2)
LATITUDE:

Material Code SSRVPS
Station No.: 107+00
Location: 33'RT

Depth: 0-5
AASHTO Class: A-4(0)
Material Type (1 or 2): 2
LONGITUDE:

PARAMETER	*Chamber Confining Pressure*	*Nominal Maximum Axial Stress*	*Actual Applied Max. Axial Load*	*Actual Applied Cyclic Load*	*Actual Applied Contact Load*	*Actual Applied Max. Axial Stress*	*Actual Applied Cyclic Stress*	*Actual Applied Contact Stress*	*Average Recov Def. LVDT 1 and 2*	*Resilient Strain*	*Resilient Modulus*
DESIGNATION	S_3	S_{cyclic}	P_{max}	P_{cyclic}	$P_{contact}$	S_{max}	S_{cyclic}	$S_{contact}$	H_{avg}	ε_r	M_r
UNIT	psi	psi	lbs	lbs	lbs	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	25.3	22.5	2.8	2.1	1.8	0.2	0.00087	0.00011	16,814
Sequence 2	6.0	4.0	47.5	44.8	2.7	3.9	3.6	0.2	0.00186	0.00023	15,689
Sequence 3	6.0	6.0	70.8	67.2	3.6	5.8	5.5	0.3	0.00289	0.00036	15,182
Sequence 4	6.0	8.0	95.0	88.8	6.2	7.7	7.2	0.5	0.00401	0.00050	14,444
Sequence 5	6.0	10.0	118.7	109.9	8.8	9.7	9.0	0.7	0.00522	0.00065	13,752
Sequence 6	4.0	2.0	25.1	22.3	2.8	2.0	1.8	0.2	0.00101	0.00013	14,503
Sequence 7	4.0	4.0	47.0	44.1	2.9	3.8	3.6	0.2	0.00223	0.00028	12,928
Sequence 8	4.0	6.0	68.3	65.3	2.9	5.6	5.3	0.2	0.00353	0.00044	12,087
Sequence 9	4.0	8.0	92.3	86.8	5.4	7.5	7.1	0.4	0.00481	0.00060	11,807
Sequence 10	4.0	10.0	115.8	107.9	7.9	9.4	8.8	0.6	0.00607	0.00076	11,608
Sequence 11	2.0	2.0	24.7	21.9	2.8	2.0	1.8	0.2	0.00124	0.00015	11,583
Sequence 12	2.0	4.0	45.5	42.6	2.9	3.7	3.5	0.2	0.00273	0.00034	10,209
Sequence 13	2.0	6.0	65.7	62.7	2.9	5.4	5.1	0.2	0.00436	0.00054	9,396
Sequence 14	2.0	8.0	88.4	83.9	4.6	7.2	6.8	0.4	0.00590	0.00074	9,287
Sequence 15	2.0	10.0	110.6	103.5	7.1	9.0	8.4	0.6	0.00739	0.00092	9,159

TESTED BY DEB DATE June 6, 2013
REVIEWED BY _____ DATE _____

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

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

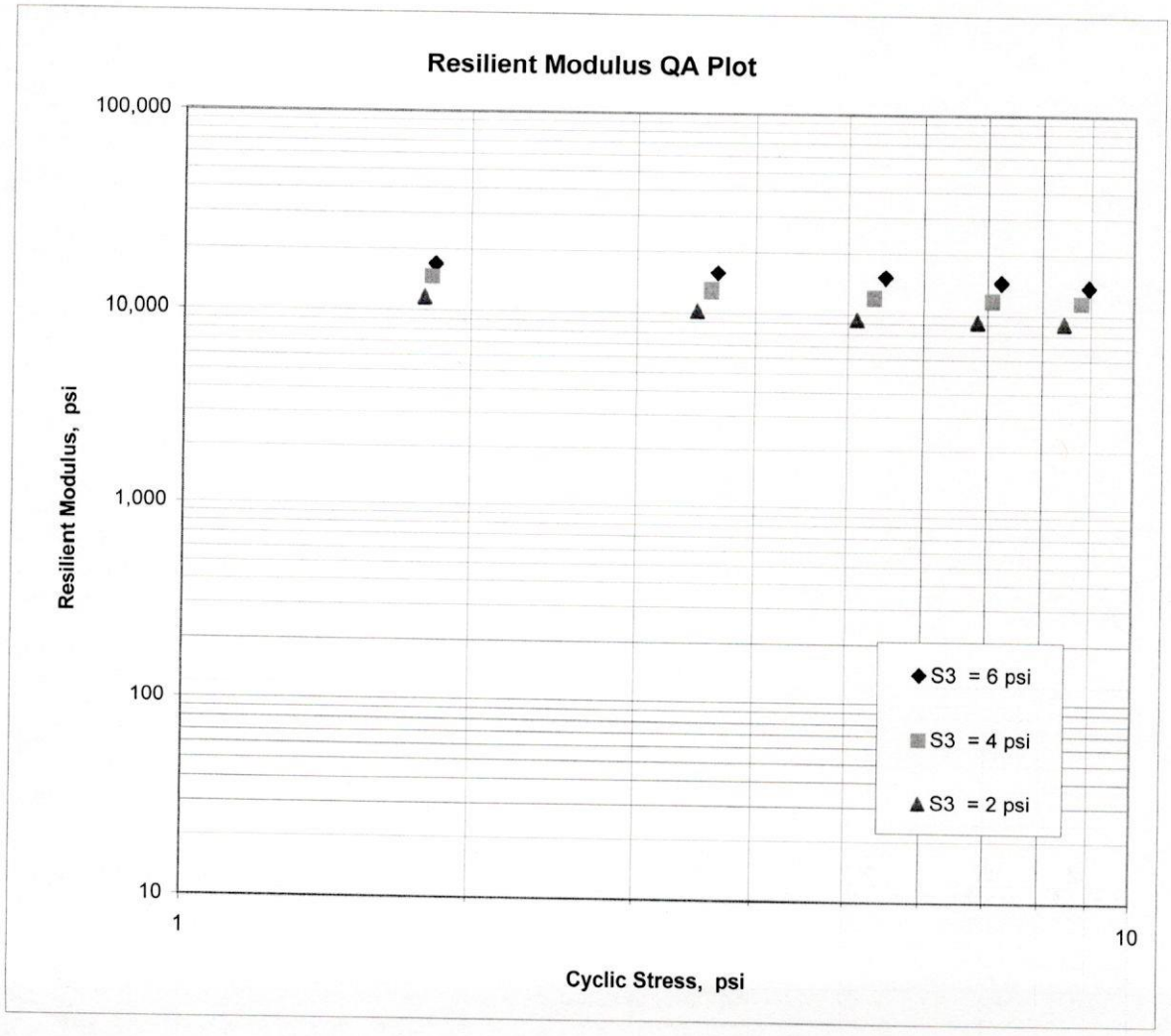
Job No. 030428
Date Sampled: 06/06/13
Date Tested: June 6, 2013
Name of Project: BURKE CREEK & COSSATOT RELIEF
County: **Code:** 66 **Name:** SEVIER
Sampled By: FAULKNER
Lab No.: 20132356
Sample ID: RV932 (#2)
LATITUDE:

Material Code SSRVPS
Station No.: 107+00
Location: 33'RT

Depth: 0-5
AASHTO Class: A-4(0)
Material Type (1 or 2): 2
LONGITUDE:

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

K1 = 9,247
K2 = -0.14015
K5 = 0.38969
R^2 = 0.99



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 1
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132339	20132340	20132341
SAMPLE ID	S915	S916	S917
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	107+00	107+00	107+00
LOCATION	6'RT	18'RT	33'RT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BR/GR	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 2 26.10	34 02 26.10	34 2 26.20
LONGITUDE DEG-MIN-SEC	94 11 35.60	94 11 35.50	94 11 35.30
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.	100	100	100
NO. 4	93	92	97
NO. 10	84	86	95
NO. 40	72	80	90
NO. 80	64	65	83
NO. 200	52	45	70
LIQUID LIMIT	23	24	19
PLASTICITY INDEX	10	11	4
AASHTO SOIL	A-4(2)	A-6(2)	A-4(0)
UNIFIED SOIL			
% MOISTURE CONTENT	12.9	10.6	14.8
ACHMSC (IN)	15.0W	12.5W	---
AGG BASE CRS CL5 (IN)	7	---	---

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED
- LOCATIONS MEASURED FROM C.L. OF EXISTING HWY

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 2
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132342	20132343	20132344
SAMPLE ID	S918	S919	S920
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	115+00	115+00	115+00
LOCATION	13'LT	25'LT	36'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BR/GR	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 2 33.70	34 02 33.70	34 2 33.60
LONGITUDE DEG-MIN-SEC	94 11 38.00	94 11 38.10	94 11 38.20
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.	100	100	100
NO. 4	87	74	83
NO. 10	76	64	77
NO. 40	61	54	69
NO. 80	53	48	63
NO. 200	45	41	54
LIQUID LIMIT	21	21	21
PLASTICITY INDEX	8	8	6
AASHTO SOIL	A-4(0)	A-4(0)	A-4(0)
UNIFIED SOIL			
% MOISTURE CONTENT	12.4	11.2	15.5
ACHMSC (IN)	14.0W	12.0W	---
AGG BASE CRS CL5 (IN)	5.0	7.0	---

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO. - TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 3
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132345	20132346	20132347
SAMPLE ID	S921	S922	S923
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	123+00	123+00	123+00
LOCATION	5'RT	17'RT	26'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BROWN	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 2 40.50	34 02 40.60	34 2 40.60
LONGITUDE DEG-MIN-SEC	94 11 42.60	94 11 42.60	94 11 42.50
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.	100	100	100
NO. 4	99	98	93
NO. 10	98	97	88
NO. 40	96	94	85
NO. 80	92	89	76
NO. 200	81	78	64
LIQUID LIMIT	23	21	24
PLASTICITY INDEX	11	9	9
AASHTO SOIL	A-6(6)	A-4(4)	A-4(3)
UNIFIED SOIL			
% MOISTURE CONTENT	16.4	15.0	10.0
ACHMSC (IN)	10.0W	5.0W	---
AGG BASE CRS CL5 (IN)	8.0	7.0	---

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 4
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132348	20132349	20132350
SAMPLE ID	S924	S925	S926
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	131+00	131+00	131+00
LOCATION	6'LT	16'LT	24'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BR/GR	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 2 44.90	34 02 44.90	34 2 44.80
LONGITUDE DEG-MIN-SEC	94 11 50.30	94 11 50.40	94 11 50.40
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.	100	100	100
NO. 4	99	99	90
NO. 10	97	97	86
NO. 40	94	95	79
NO. 80	90	94	67
NO. 200	78	74	47
LIQUID LIMIT	23	21	20
PLASTICITY INDEX	10	8	5
AASHTO SOIL	A-4(5)	A-4(3)	A-4(0)
UNIFIED SOIL			
% MOISTURE CONTENT	15.2	18.1	13.1
ACHMSC (IN)	10.25W	5.5W	---
AGG BASE CRS CL5 (IN)	7.0	7.0	---

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO. - TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 5
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132351	20132352	20132353
SAMPLE ID	S927	S928	S929
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY	INFORMATION ONLY
STATION	139+00	139+00	147+00
LOCATION	5'RT	16'RT	6'LT
DEPTH IN FEET	0-5	0-5	0-5
MAT'L COLOR	BR/GR	BROWN	BROWN
MAT'L TYPE			
LATITUDE DEG-MIN-SEC	34 2 46.70	34 02 46.80	34 2 46.50
LONGITUDE DEG-MIN-SEC	94 11 59.50	94 11 59.50	94 12 9.00
% PASSING 2 IN.			
1 1/2 IN.			
3/4 IN.			
3/8 IN.	100	100	100
NO. 4	82	93	99
NO. 10	71	89	98
NO. 40	61	82	95
NO. 80	54	74	84
NO. 200	43	60	65
LIQUID LIMIT	27	28	ND
PLASTICITY INDEX	12	12	NP
AASHTO SOIL	A-6(2)	A-6(4)	A-4(0)
UNIFIED SOIL			
% MOISTURE CONTENT	10.9	13.1	14.5
ACHMSC (IN)	9.5W	6.0W	5.0
ACHMSC (IN)	---	---	1.0X
ACHMSC (IN)	---	---	4.0
AGG BASE CRS CL5 (IN)	7.0	12.0	5.0

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO.- TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS

SEQUENCE NO. - 6
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132354	20132355
SAMPLE ID	S930	S931
TEST STATUS	INFORMATION ONLY	INFORMATION ONLY
STATION	147+00	147+00
LOCATION	16'LT	26'LT
DEPTH IN FEET	0-5	0-5
MAT'L COLOR	BROWN	BROWN
MAT'L TYPE		
LATITUDE DEG-MIN-SEC	34 2 46.50	34 02 46.40
LONGITUDE DEG-MIN-SEC	94 12 9.10	94 12 9.10
% PASSING 2 IN.		
1 1/2 IN.		
3/4 IN.		
3/8 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	23	22
PLASTICITY INDEX	10	9
AASHTO SOIL	A-4(3)	A-4(3)
UNIFIED SOIL		
% MOISTURE CONTENT	14.5	12.8
ACHMSC (IN)	6.5	---
AGG BASE CRS CL5 (IN)	8	---

REMARKS - W=MULTIPLE LAYERS, X=STRIPPED

AASHTO TESTS : T24 T88 T89 T90 T265

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 06/04/13
JOB NUMBER - 030428
FEDERAL AID NO. - TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - BURKE CREEK AND COSSATOT RELIEF STRS. & APPRS
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - SEVIER, COUNTY
SAMPLED BY - FAULKNER/BOUGHNER
SAMPLE FROM - TEST HOLE
MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

SEQUENCE NO. - 1
MATERIAL CODE - RV
SPEC. YEAR - 2003
SUPPLIER ID. - 1
COUNTY/STATE - 66
DISTRICT NO. - 03

DATE SAMPLED - 05/13/13
DATE RECEIVED - 05/20/13
DATE TESTED - 06/04/13

LAB NUMBER	20132356
SAMPLE ID	RV932
TEST STATUS	INFORMATION ONLY
STATION	107+00
LOCATION	33'RT
DEPTH IN FEET	0-5
MAT'L COLOR	BROWN
MAT'L TYPE	
LATITUDE DEG-MIN-SEC	34 2 26.20
LONGITUDE DEG-MIN-SEC	94 11 35.30
% PASSING 2 IN.	
1 1/2 IN.	
3/4 IN.	
3/8 IN.	100
NO. 4	92
NO. 10	89
NO. 40	83
NO. 80	77
NO. 200	65
LIQUID LIMIT	18
PLASTICITY INDEX	2
AASHTO SOIL	A-4(0)
UNIFIED SOIL	
% MOISTURE CONTENT	

REMARKS -

AASHTO TESTS : T24 T88 T89 T90 T265

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

Foundation Description	Nominal Side Resistance (ksf)	Resistance Factor	Factored Side Resistance (ksf)
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.

Michael C. Benson
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**.

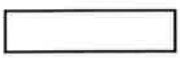
D_{50} AGGREGATE ANALYSIS FOR SCOUR CALCULATIONS

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

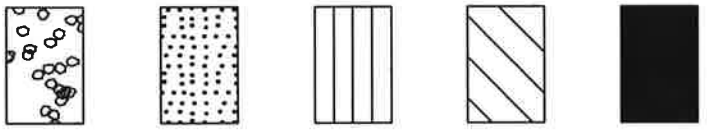
Station	Location	Sample No.	Depth (ft)	Diameter (in)	Height (in)	Total Load (lbs)	Correction Factor	Stress (psi)	Remarks
117+32	5' LT	1	29.0	1.75	4.30	16,260	1.000	6,760	L.S.
117+32	5' LT	2	35.0	1	3.86	7,640	1.000	9,728	L.S.
117+32	5' LT	3	62.0	1.75	3.80	20,890	1.000	8,685	L.S. w/ Celestite
117+32	5' LT	4	80.0	1.75	3.92	0	1.000	0	S.S.
118+78	39' RT	5	23.0	1.75	3.80	29,320	1.000	12,190	S.S.
118+78	39' RT	6	30.0	1.75	3.90	27,360	1.000	11,375	S.S.
118+78	39' RT	7	41.5	1.75	4.45	4,250	1.000	1,767	**Fragile** - Claystone
118+78	39' RT	8	62.0	1.75	3.75	19,200	1.000	7,982	S.S.
119+56	4' LT	9	31.5	1.75	3.60	1,950	1.000	811	L.S. w/ Clay Seams
119+56	4' LT	10	40.5	1.75	3.74	20,520	1.000	8,531	S.S.
119+56	4' LT	11	55.5	1.75	3.10	18,580	1.000	7,725	Celestite
119+56	4' LT	12	61.5	1.75	6.60	1,700	1.000	707	**Fragile** - Claystone
119+56	4' LT	13	76.5	1.75	5.45	3,390	1.000	1,409	S.S.



LEGEND

SOIL TYPES

(SHOWN IN SYMBOL COLUMN)
(PREDOMINANT TYPE SHOWN HEAVY)



GRAVEL | SAND | SILT | CLAY | ORGANIC MATTER

ROCK TYPES

(SHOWN IN SYMBOL COLUMN)

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

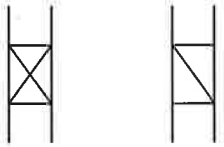
SAMPLER TYPES

(SHOWN IN SAMPLE COLUMN)

SHELBY TUBE

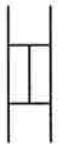
UNDISTURBED SAMPLE RECOVERY | DISTURBED SAMPLE RECOVERY | NO RECOVERY

SPLIT SPOON



SAMPLE RECOVERY | NO RECOVERY

ROCK CORING



% RECOVERY INDICATED ON LOGS

TERMS DESCRIBING CONSISTENCY OR CONDITION

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

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

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

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
PAGE 1 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 117+32
LOCATION: 5' Left of Center Line of Construction
LOGGED BY: Tracy Henderson

DATE: January 12-13, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 98.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 363.2	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
5		X	Moist, Medium Stiff, Reddish Brown Sandy Clay with Gravel						3 4-3		
10		X	Moist, Soft, Reddish Brown Sandy Clay with Gravel						0 1-2		
15		X	Moist, Very Soft, Gray Clay						1 0-0		
20		X	Moist, Stiff, Reddish Brown Clay with Sand with Trace of Gravel						1 6-8		
25		X	Moist to Wet, Very Stiff, Reddish Brown Sandy Clay with Gravel						2 11-16		
30			Limestone Hard, Gray, Slightly Weathered Limestone with occasional Clay Layers						30 (1")	84	27
35											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
PAGE 2 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 117+32
LOCATION: 5' Left of Center Line of Construction
LOGGED BY: Tracy Henderson

DATE: January 12-13, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 98.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
			SURFACE ELEVATION: 363.2								
			Hard, Gray, Slightly Weathered Limestone with occasional Clay Seams and Layers							100	47
40			Medium Hard, Light Gray Claystone							46	0
45			Medium Hard, Light Gray Limestone Interbedded with Medium Hard, Claystone with occasional Layers of Sandstone							72	10
50										50	28
55			Medium Hard, Dark Gray Claystone							100	0
60			Hard, Light Gray Limestone Interbedded with Medium Hard Claystone with frequent Layers of Celestite							66	36
65										100	11
70											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 1
PAGE 3 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 117+32
LOCATION: 5' Left of Center Line of Construction
LOGGED BY: Tracy Henderson

DATE: January 12-13, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 98.4

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
			SURFACE ELEVATION: 363.2								
			Medium Hard, Gray Claystone with frequent Limestone Layers							78	0
75										100	0
80			CLAYEY SANDSTONE - Reddish Brown to Gray, Thick Bedded, Poorly-Cemented to Cemented, Slightly Calcareous, with Slight Dip							100	61
85										90	41
90										24	8
95										92	71
100			Boring Terminated								
105											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 1 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 118+78
LOCATION: 39' Right of Center Line of Construction
LOGGED BY: David Allen

DATE: January 21, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 78.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 343.7	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
5			Moist, Soft, Reddish Brown Sandy Clay						2 2-2		
10			Moist, Very Hard, Reddish Brown Sandy Clay with Gravel						2 60 (1")		
			Hard, Gray Limestone with Clay Seams							87	22
15			Medium Hard, Gray Claystone with occassional Layers of Limestone							36	0
20			Cemented, Gray, Clayey Sandstone Interbedded with Limestone with frequent Clay Seams and Layers							56	18
25			Cemented, Gray, Calcareous Sandstone Interbedded Limestone and Claystone							60	18
30			Cemented, Gray, Calcareous Sandstone Interbedded with Limestone and Claystone							90	18
35											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 2 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 118+78
LOCATION: 39' Right of Center Line of Construction
LOGGED BY: David Allen

DATE: January 21, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 78.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 343.7	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
			Medium Hard, Gray Claystone Interbedded with Limestone, and Celestite							100	0
40			Medium Hard, Gray Claystone							98	44
			Hard, Gray Limestone and Celestite Interbedded								
45			Medium Hard, Gray Claystone with frequent Layers of Limestone and Celestite							100	0
50											
										100	0
55			Medium Hard, Claystone with occassional Limestone Layers							86	0
60			Medium Hard, Claystone with occassional Limestone Layers							86	56
65										88	58
70											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 2
PAGE 3 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs.
U.S. 71
STATION: 118+78
LOCATION: 39' Right of Center Line of Construction
LOGGED BY: David Allen

DATE: January 21, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 78.8

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
			SURFACE ELEVATION: 343.7								
			CLAYEY SANDSTONE - Reddish Brown to Gray, Thick Bedded, Poorly-Cemented to Cemented, Slightly Calcareous, with Slight Dip							98	56
75										100	98
80			Boring Terminated								
85											
90											
95											
100											
105											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 1 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 119+56
LOCATION: 4' Left of Center Line of Construction
LOGGED BY: David Allen

DATE: January 14, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 93.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 363.4	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
5			Moist, Soft, Reddish Brown Clay with Sand						0 0-2		
10									1 2-2		
15			Moist, Stiff, Reddish Brown Clay with Sand						0 5-5		
20									3 5-6		
25			Moist, Very Stiff, Reddish Brown Gravelly Clay with Sand						4 6-12		
			Limestone								
30			Limestone with frequent Clay Seams and Layers						60 (2")	100	57
35											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 2 OF 3

JOB NO. 030428 Sevier County
JOB NAME: Burke Creek & Cossatot Relief Strs. & Apprs. U.S. 71
STATION: 119+56
LOCATION: 4' Left of Center Line of Construction
LOGGED BY: David Allen

DATE: January 14, 2015
TYPE OF DRILLING: Hollow Stem Auger &
EQUIPMENT: CME 850 w/ CME Automatic
HAMMER CORRECTION FACTOR: 1.23

COMPLETION DEPTH: 93.2

DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE ELEVATION: 363.4	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
			Medium Hard, Gray Claystone							60	0
40			Hard, Gray Limestone Interbedded with Medium Hard, Gray Claystone							70	18
45			Hard, Gray Limestone with frequent Layers of Claystone							52	20
50			Medium Hard, Gray Claystone Interbedded with well-cemented, calcareous Sandstone							100	8
55			Hard, Gray Limestone Interbedded with Medium Hard, Gray Claystone and Celestite							96	10
60			Hard, Gray Limestone							100	36
65			Medium Hard, Gray Claystone with frequent Layers of Limestone and Celestite							88	0
70											

REMARKS:

ARKANSAS HWY. & TRANS. DEPARTMENT
MATERIALS DIVISION - GEOTECHNICAL SEC.

BORING NO. 3
PAGE 3 OF 3

JOB NO. 030428 Sevier County
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U.S. 71
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DEPTH FT.	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL	SOIL GROUP	PLASTIC LIMIT	% MOIST.	LIQUID LIMIT	DRY WEIGHT LBS PER CU.FT.	NO. OF BLOWS PER 6-IN.	% SCR	% RQD
			SURFACE ELEVATION: 363.4								
			Medium Hard, Gray Claystone with occasional Layers of Limestone							80	0
75			Medium Hard, Gray Claystone with frequent Layers of Limestone							86	45
			CLAYEY SANDSTONE - Reddish Brown to Gray, Thick Bedded, Poorly-Cemented to Cemented, Slightly Calcareous								
80										60	30
85			CLAYEY SANDSTONE - Reddish Brown to Gray, Thick Bedded, Poorly-Cemented to Cemented, Slightly Calcareous							98	24
90										98	67
95			Boring Terminated								
100											
105											

REMARKS: