ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO.		050324				
FEDERAL AID PROJE	CT NO. N	NHPP-0067(28)				
	HURRICANE	CREEK STR. & APPRS.	(S)			
STATE HIGHWAY	354	SECTION	4			
IN	SHARP COUNT					

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

May 16, 2017

TO:

Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT:

Job No. 050324

Hurricane Creek Str. & Apprs. (S)

Route 354 Section 4

Sharp 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 bridge crossing Hurricane Creek on Highway 354 on new location. Samples were obtained in the existing travel lanes and ditch line. There were no paved shoulders within the project limits.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of moderately plastic cherty clay. Isolated locations of highly plastic clay were encountered within the project limits. The subgrade soils are expected to provide a stable working platform with normal drying and compactive efforts, if the weather is favorable during construction. Rock was encountered at stations 205+00, 18 feet right of centerline at a depth of 3.5 feet; at 205+12, 25 feet right of centerline at a depth of 3.5 feet and at 223+00, 6 feet left of centerline at a depth of 3.5 feet. There were no slide areas observed within the project limits.

Based on currently available cross sections the maximum embankment height is approximately 22 feet. The embankment may be constructed with locally available unspecified material utilizing the 3:1 slope configuration shown.

The proposed cut slopes are acceptable as shown in the currently available cross sections.

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 Ash Flat.

2. Asphalt Concrete Hot Mix

TypeAsphalt Cement %Mineral Aggregate %Surface Course5.594.5Binder Course4.595.5Base Course4.096.0

Materials Engineer

MCB:pt:bjj Attachment

CC:

State Constr. Eng. – Master File Copy

District 5 Engineer

System Information and Research Div.

G. C. File

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY STRENGTH TEST REPORT ***

DATE - 05/09/2017 SEQUENCE NO. - 1

JOB NUMBER - 050324 MATERIAL CODE - SSRV

SPEC. YEAR - 2014

SUPPLIER ID. - 1

COUNTY/STATE - 67

DISTRICT NO. - 05

JOB NAME - HURRICANE CREEK STR. & APPRS.(S)

RESILIENT MODULUS

BEGIN JOB - END JOB

STA. 205+12 7388

REMARKS -

AASHTO TESTS : T190

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No.	050324	Material Code	SSRVPS	
Date Sampled:	3/29/17	Station No.:	205+12	
Date Tested:	May 4, 2017	Location:	25RT	
Name of Project:	HURRICANE CREEK STR. & APPRS. (S)			
County:	Code: 67 Name: SHARP			
Sampled By:	THORNTON/TAYLOR	Depth:		0-5
Lab No.:	20171244	AASHTO Clas		A-2-6(0)
Sample ID: LATITUDE:	RV326	Material Type LONGITUDE:		2
1. Testing Inform		-Voc or N= No)		N
	Preconditioning - Permanent Strain > 5% (Y=Testing - Permanent Strain > 5% (Y=Yes or N			N
	Number of Load Sequences Completed (0-15			N 15
	Trainizer er zead esqueriese sempreted (c re	,		10
2. Specimen Info			* 8	
	Specimen Diameter (in):			
	Тор			3.96
	Middle			3.96
	Bottom	(ā)		3.94
	Average			3.95
	Membrane Thickness (in):			0.00
	Height of Specimen, Cap and Base (in):			8.03
	Height of Cap and Base (in):			0.00
	Initial Length, Lo (in):			8.03
	Initial Area, Ao (sq. in):			12.27
	Initiał Volume, AoLo (cu. in):			98.57
3. Soil Specimen	Weight:			
	Weight of Wet Soil Used (g):			3135.60
4. Soil Properties	:			
•	Optimum Moisture Content (%):			14.7
	Maximum Dry Density (pcf):			107.7
	95% of MDD (pcf):			102.3
	In-Situ Moisture Content (%):			N/A
5. Specimen Pro	perties:			
o. opcomion i io	Wet Weight (g):			3135.60
	Compaction Moisture content (%):			15.1
	Compaction Wet Density (pcf):			121.21
	Compaction Dry Density (pcf):			105.31
	Moisture Content After Mr Test (%):			14.6
6. Quick Shear To	est (Y=Yes, N=No, N/A=Not Applicable):			#VALUE!
7. Daniii 4.881				
7. Resilient Modu	iius, Wr:		9127(Sc)^-0.21112	(S3)^0.33798
8. Comments				
				-
9. Tested By:	GW	Date: May 4, 2017		

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Material Code Station No.: Location: HURRICANE CREEK STR. & APPRS. (S) May 4, 2017 3/29/17 050324 Name of Project: Date Sampled: Date Tested: Job No.

SSRVPS 205+12 25RT

County:Code: 67Name:SHARPSampled By:THORNTON/TAYLORLab No.:20171244Sample ID:RV326

LATITUDE:

AASHTO Class: A-Material Type (1 or 2): 2 LONGITUDE:

A-2-6(0)

0-5

Depth:

	Chamber	Nominal	Actual	Actual	Actual	Actual	Actual	Actual	Average	Resilient	Resilient
	Confining	Maximum	Applied	Applied	Applied	Applied	Applied	Applied	Recov Def.	Strain	Modulus
PARAMETER	Pressure	Axial	Max. Axial	Max. Axial Cyclic Load	Contact	Мах.	Cyclic	Contact	LVDT 1		
		Stress	Pood		Load	Axia/	Stress	Stress	and 2		
						Stress					
DESIGNATION	လိ	Scyclic	P _{max}	Poyolic	Pcontact	Smax	Scyclic	Scontact	Havg	చ్	Σ̈́
UNIT	psi	psi	sql	sql	sql	psi	psi	psi	<u>.</u> ⊆	in/in	psi
Sequence 1	0.9	2.0	25.4	22.5	2.8	2.1	1.8	0.2	0.00100	0.00012	14,697
Sequence 2	6.0	4.0	47.7	44.9	2.8	3.9	3.7	0.2	0.00215	0.00027	13,645
Sequence 3	6.0	0.9	70.4	66.7	3.7	5.7	5.4	0.3	0.00353	0.00044	12,374
Sequence 4	0.9	8.0	94.0	87.8	6.2	7.7	7.2	0.5	0.00525	0.00065	10,947
Sequence 5	6.0	10.0	116.8	108.2	9.8	9.5	8.8	0.7	0.00707	0.00088	10,010
Sequence 6	4.0	2.0	25.3	22.5	2.8	2.1	1.8	0.2	0.00121	0.00015	12,158
Sequence 7	4.0	4.0	47.2	44.3	2.9	3.8	3.6	0.2	0.00260	0.00032	11,165
Sequence 8	4.0	0.9	68.7	65.8	2.8	5.6	5.4	0.2	0.00424	0.00053	10,150
Seguence 9	4.0	8.0	92.1	86.8	5.3	7.5	7.1	0.4	0.00594	0.00074	9,552
Sequence 10	4.0	10.0	115.4	107.6	7.7	9.4	8.8	9.0	0.00789	0.00098	8,920
Sequence 11	2.0	2.0	25.0	22.2	2.8	2.0	1.8	0.2	0.00145	0.00018	9,989
Sequence 12	2.0	4.0	46.3	43.5	2.8	3.8	3.5	0.2	0.00314	0.00039	9,062
Sequence 13	2.0	0.9	67.0	64.2	2.8	5.5	5.2	0.2	0.00511	0.00064	8,220
Sequence 14	2.0	8.0	88.9	84.5	4.4	7.2	6.9	0.4	0.00711	0.00089	7,775
Sequence 15	2.0	10.0	111.8	105.0	6.8	9.1	8.6	9.0	0.00930	0.00116	7,388

May 4, 2017	
DATE	DATE
GW	
TESTED BY	EVIEWED BY

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No.050324Material Code SSRVPSDate Sampled:3/29/17Station No.: 205+12

Date Tested: May 4, 2017 Location: 25RT

Name of Project: HURRICANE CREEK STR. & APPRS. (S)

County: Code: 67 Name: SHARP

Sampled By:THORNTON/TAYLORDepth: 0-5Lab No.:20171244AASHTO Class: A-2-6(0)Sample ID:RV326Material Type (1 or 2): 2LATITUDE:LONGITUDE:

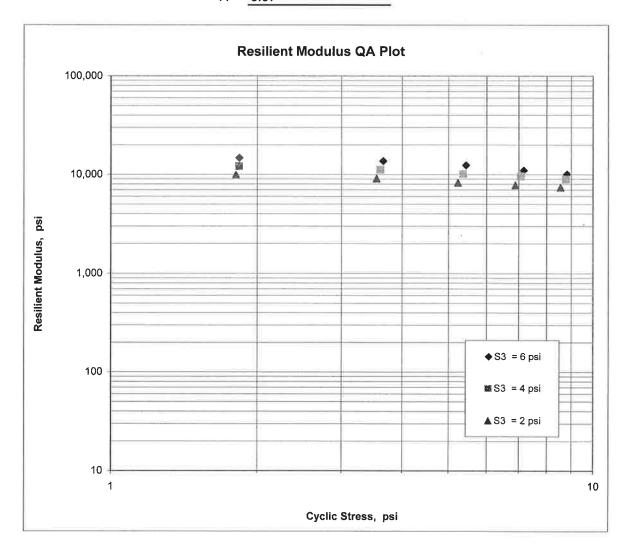
$$M_R = K1 (S_C)^{K2} (S_3)^{K5}$$

K1 = 9,127

K2 = -0.21112

K5 = 0.33798

 $R^2 = 0.97$



JOB: 050324

Arkansas State Highway Transporation Department

JOB NAME: HURRICANE CREEK STR. & APPRS.(S)

Materials Division

COUNTY NO. 67 **DATE TESTED** 4/24/2017

Michael Benson, Materials Engineer

STA.#	LOC. I	<i>EPTH</i>	COLOR	#4	#10	#40	#80	#200	L.L.	<i>P.I.</i>	SOIL CLASS	<i>LAB</i> #:	%MOISTURE
205+12	25 RT	0-3.5Z	BROWN	45	38	33	30	28	35	19	A-2-6(0)	RV326	
205+00	06 RT	0-5	BR/GR	93	82	65	57	53	25	14	A-6(4)	S322	4.8
205+00	18 RT	0-3.5Z	BROWN	64	54	41	36	33	39	23	A-2-6(2)	S323	10.2
223+00	06 LT	0-3.5Z	BROWN	85	60	38	31	28	18	06	A-2-4(0)	S324	5.4
223+00	18 LT	0-5	BROWN	71	63	47	38	35	47	34	A-2-7(5)	S325	7.8

DATE TESTED 4/24/2017

Arkansas State Highway Transporation Department

JOB: 050324
JOB NAME: HURRICANE CREEK STR. & APPRS.(S)

COUNTY NO. 67

STA.# LOC.

Materials Division

Michael Benson, Materials Engineer

PAVEMENT SOUNDINGS

AGG.BASE CRS CL-7 8.0

ACHIMSC 3.5X

06 LT

223+00

AGG.BASE CRS CL-7

ACHMSC

18 RT

205+00

AGG.BASE CRS CL-7

ACHIMSC 3.0X

06 RT

205+00

Wednesday, May 10, 2017

comments: X=STRIPPED, Z=AUGER REFUSAL

Page 1 of 1

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 04/ JOB NUMBER - 050 FEDERAL AID NO TO PURPOSE - SOI SPEC. REMARKS - NO SUPPLIER NAME - STA NAME OF PROJECT - H PROJECT ENGINEER - N PIT/QUARRY - ARKAN LOCATION - SHARE SAMPLE BY - THORNT SAMPLE FROM - TESTH MATERIAL DESC SOI	324 BE ASSIC L SURVEY SPECIFIC TE CURRICANI OT APPLE SAS COUNTY CON/TAYL COLE	Y SAMPLE CATION CHECK E CREEK STR. & ICABLE OR	APPRS.(S)	MATERIAL SPEC. YE SUPPLIER COUNTY/S DISTRICT DATE SAM DATE REC DATE TES	NO 1 CODE - SSRVPS AR - 2014 ID 1 TATE - 67 NO 05 MPLED - 03/29/17 EIVED - 03/31/17 GTED - 04/24/17
LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR MAT'L TYPE LATITUDE DEG-MIN- LONGITUDE DEG-MIN-	- - - - SEC -	S322 INFORMATION O 205+00 06 RT 0-5 BR/GR	NLY - IN - 20 - 18 - 0- - BR -	23 FORMATIO 5+00 RT 3.5Z OWN 36 08 1	- N ONLY - - - - -	20171242 S324 INFORMATION ONLY 223+00 06 LT 0-3.5Z BROWN 36 8 6.50 91 27 27.30
% PASSING 2 1 1/2 3/4 3/8 NO. NO. NO.	IN IN IN IN 4 - 10 - 40 -	100 93 82 65 57 53	- - - - - - -	00 79 64 54 41 36 33		100 99 85 60 38
UNIFIED SOIL % MOISTURE CONTENT ACHMSC	15 15	14	- 2	9 3 -2-6(2) 10.2		18 06 A-2-4(0) 5.4 3.5X 8.0

REMARKS - X=STRIPPED, Z=AUGER REFUSAL

1 1

AASHTO TESTS : T24 T88 T89 T90 T265

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 04/24/ JOB NUMBER - 050324 FEDERAL AID NO TO BE PURPOSE - SOIL S SPEC. REMARKS - NO SPE SUPPLIER NAME - STATE NAME OF PROJECT - HURR PROJECT ENGINEER - NOT PIT/QUARRY - ARKANSAS LOCATION - SHARP CO SAMPLED BY - THORNTON/ SAMPLE FROM - TEST HOL	ASSI URVE CIFI ICAN APPI UNTY	Y SAMPLE CATION CHECK IE CREEK STR. & LICABLE	APPRS.(S)	MATERIAL CODE SPEC. YEAR SUPPLIER ID. COUNTY/STATE DISTRICT NO. DATE SAMPLED DATE RECEIVED	- 2014 - 1 - 67 - 05
MATERIAL DESC SOIL S	URVI	EY - R VALUE-	PAVEMENT SO	UNDINGS	
LAB NUMBER	12	20171243	=		
SAMPLE ID	_	S325	2		
TEST STATUS			ILY =		
STATION	_		-	<=	
LOCATION	_	18 LT	=		
DEPTH IN FEET	-	0-5	<u>=</u>		
MAT'L COLOR	_	BROWN	_	-	
MAT'L TYPE	-		-	=	
LATITUDE DEG-MIN-SEC	_	36 8 6.4	0 =	-	
LONGITUDE DEG-MIN-SEC	_	91 27 27.3	0		
% PASSING 2 IN					
1 1/2 IN			_	-	
3/4 IN		100	_	-	
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NO. 40		47	<u>-</u>	元 空	
	_	38	_	——————————————————————————————————————	
NO. 200		35			
LIQUID LIMIT	-	47	-	[基] (22)	
PLASTICITY INDEX AASHTO SOIL		34	₩ 2	=	
	-	A-2-7(5)	<u></u>	: -	
UNIFIED SOIL	_	7 0	=	:=:	
% MOISTURE CONTENT	-	7.8			
	-		-	-	
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REMARKS - X=STRIPPED, Z=AUGER REFUSAL

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AASHTO TESTS : T24 T88 T89 T90 T265

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 04/24/17 JOB NUMBER - 050324 FEDERAL AID NO TO BE ASS: PURPOSE - SOIL SURVI SPEC. REMARKS - NO SPECIF: SUPPLIER NAME - STATE NAME OF PROJECT - HURRICAL PROJECT ENGINEER - NOT APP! PIT/QUARRY - ARKANSAS LOCATION - SHARP COUNT: SAMPLED BY - THORNTON/TAY SAMPLE FROM - TEST HOLE	EY SAMPLE ICATION CHECK NE CREEK STR. & API LICABLE	PRS.(S)	MATERIAL CODE SPEC. YEAR SUPPLIER ID. COUNTY/STATE DISTRICT NO. DATE SAMPLED DATE RECEIVED	- 2014 - 1 - 67 - 05
MATERIAL DESC SOIL SURV	EY - RESISTANCE R-	VALUE ACTUAL		01/21/2/
I AD MIMIDED			=	
SAMPLE ID -	20171244 RV326	_	<u></u>	
TEST STATUS -		-	± .	
STATION -		-	_	
	25 RT	_	-	
	0-3.5Z	-	=	
	BROWN	-	₩	
MAT'L TYPE -	BROWN	-	=	
LATITUDE DEG-MIN-SEC -	36 8 12 30	-	=	
LONGITUDE DEG-MIN-SEC -		-		
	J2 27 17.50			
% PASSING 2 IN		-	-	
1 1/2 IN	100	=	-	
3/4 IN	95	_	-	
3/8 IN	60	_	_	
NO. 4 -		-	_	
NO. 10 -		_	-	
NO. 40 -		-	-	
NO. 80 -		-	-	
NO. 200 -	28			
LIQUID LIMIT -	35	_		
PLASTICITY INDEX -	19	_	=	
AASHTO SOIL -	A-2-6(0)	-	848	
UNIFIED SOIL -		-	-	
% MOISTURE CONTENT -	*:	-	8 #	
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REMARKS - X=STRIPPED, Z=AUGER REFUSAL

AASHTO TESTS : T24 T88 T89 T90 T265