ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO.	100871								
FEDERAL AID PROJECT NO.		NHPP-0047(53)						
HWY. 14 STR. & APPRS. (S)									
STATE HIGHWAY	14	SECTION	16						
IN	N	IISSISSIPPI		COUNTY					

The information contained herein was obtained by the Department for design and estimating purposes only. It is being furnished with the express understanding that said information does not constitute a part of the Proposal or Contract and represents only the best knowledge of the Department as to the location, character and depth of the materials encountered. The information is only included and made available so that bidders may have access to subsurface information obtained by the Department and is not intended to be a substitute for personal investigation, interpretation and judgment of the bidder. The bidder should be cognizant of the possibility that conditions affecting the cost and/or quantities of work to be performed may differ from those indicated herein.

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT

January 31, 2017

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 100871 Hwy. 14 Str. & Apprs. (S) Route 14 Section 16 Mississippi 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 a bridge on Highway 14. 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 to highly plastic clays containing some sand. Cross sections are not currently available. Seismic considerations are expected to be very significant for this project. Fully reinforced embankment is anticipated. Earthwork requirements will be provided with the subsurface investigation report.

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 at the river port near Osceola.
- 2. Asphalt Concrete Hot Mix

Туре	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.1	94.9
Binder Course	4.2	95.8
Base Course	3.8	96.2

Michael C. Benson

Materials Engineer

MCB:pt:bjj

Attachment

cc: State Constr. Eng. – Master File Copy District 10 Engineer System Information and Research 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 - 01/26/2017 SEQUENCE NO. - 1 JOB NUMBER - 100871 MATERIAL CODE - SSRV SPEC. YEAR - 2014 SUPPLIER ID. - 1 COUNTY/STATE - 47 DISTRICT NO. - 10 JOB NAME - HWY.14 STR. & APPRS. (S)

> RESILIENT MODULEUS 120+00 7587

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. Date Sampled: Date Tested: Name of Project:	100871 12/28/16 January 25, 2017 HWY. 14 STR. & APPRS. (S)	Material Code Station No.: Location:	SSRVPS 120+00 22'LT
County: Sampled By: Lab No.: Sample ID: LATITUDE:	Code: 47 Name: MISSISSIPPI THORNTON/TAYLOR 20164179 RV537	Depth: AASHTO Class: Material Type (1 or 2): LONGITUDE:	0-5 A-6(8) 2
1. Testing Inform	nation:		
	Preconditioning - Permanent Strain > 5% (Y=Y Testing - Permanent Strain > 5% (Y=Yes or N=I Number of Load Sequences Completed (0-15)	•	N N 15
2. Specimen Info	ormation:		
3. Soil Specimer	Specimen Diameter (in): Top Middle Bottom Average Membrane Thickness (in): Height of Specimen, Cap and Base (in): Height of Cap and Base (in): Initial Length, Lo (in): Initial Area, Ao (sq. in): Initial Volume, AoLo (cu. in):		3.96 3.97 3.97 3.97 0.01 8.04 0.00 8.04 12.28 98.76 3000.20
4. Soil Propertie	s:		
	Optimum Moisture Content (%): Maximum Dry Density (pcf): 95% of MDD (pcf): In-Situ Moisture Content (%):		19.9 101.6 96.5 N/A
5. Specimen Pro	operties:		
	Wet Weight (g): Compaction Moisture content (%): Compaction Wet Density (pcf): Compaction Dry Density (pcf): Moisture Content After Mr Test (%):		3000.20 20.1 115.75 96.38 20.1
6. Quick Shear 1	ēst (Y=Yes, N=No, N/A=Not Applicable):		#VALUE!
7. Resilient Mod		12006(S	c)^-0.23973(S3)^0.11063
8. Comments	3 		
9 Tested By:	G.W. Do	te: Japuany 25, 2017	

9. Tested By: G.W.

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ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No. Date Sampled: Date Tested: Name of Proiect:	100871 12/28/16 January 25, 2017 HWY 14 STR & APPRS (S)	(S) SA		Material Code Station No.: Location:	SSRVPS 120+00 22'LT
	Code: 47 THORNTON/TAYLOR	Name: DR	MISSISSIPPI	Depth:	0-5
Lab No.: Sample ID:	20164179 RV537			AASHTO Class: A-6 Material Type (1 or 2): 2	A-6(8) 2): 2

	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	Cyclic Load	Contact	Max.	Cyclic	Contact	LVDT 1		
		Stress	Load		Load	Axial	Stress	Stress	and 2		
						Stress					
DESIGNATION	လိ	S _{cyclic}	P _{max}	P _{cyclic}	Pcontact	S _{max}	S _{cyclic}	Scontact	Havg	τ	Mr
UNIT	psi	psi	lbs	lbs	lbs	psi	psi	psi	'n	in/in	psi
Sequence 1	6.0	2.0	25.4	22.6	2.8	2.1	1.8	0.2	0.00118	0.00015	12,479
Sequence 2	6.0	4.0	47.6	44.8	2.8	3.9	3.6	0.2	0.00253	0.00031	11,598
Sequence 3	6.0	6.0	70.1	66.4	3.7	5.7	5.4	0.3	0.00418	0.00052	10,389
Sequence 4	6.0	8.0	93.1	86.9	6.2	7.6	7.1	0.5	0.00634	0.00079	8,978
Sequence 5	6.0	10.0	115.0	106.4	8.6	9.4	8.7	0.7	0.00870	0.00108	8,004
Sequence 6	4.0	2.0	25.3	22.5	2.8	2.1	1.8	0.2	0.00128	0.00016	11,483
Sequence 7	4.0	4.0	47.4	44.6	2.8	3.9	3.6	0.2	0.00274	0.00034	10,664
Sequence 8	4.0	6.0	68.9	66.1	2.8	5.6	5.4	0.2	0.00445	0.00055	9,716
Sequence 9	4.0	8.0	91.8	86.5	5.2	7.5	7.0	0.4	0.00649	0.00081	8,726
Sequence 10	4.0	10.0	114.4	106.6	7.7	9.3	8.7	0.6	0.00879	0.00109	7,941
Sequence 11	2.0	2.0	25.3	22.5	2.8	2.1	1.8	0.2	0.00139	0.00017	10,611
Sequence 12	2.0	4.0	47.2	44.3	2.8	3.8	3.6	0.2	0.00296	0.00037	9,804
Sequence 13	2.0	6.0	68.5	65.7	2.8	5.6	5.3	0.2	0.00476	0.00059	9,028
Sequence 14	2.0	8.0	90.7	86.4	4.4	7.4	7.0	0.4	0.00684	0.00085	8,259
Sequence 15	2.0	10.0	112.9	106.1	6.8	9.2	8.6	0.6	0.00915	0.00114	7,587

DATE J. DATE J. DATE

G.W.

January 25, 2017

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

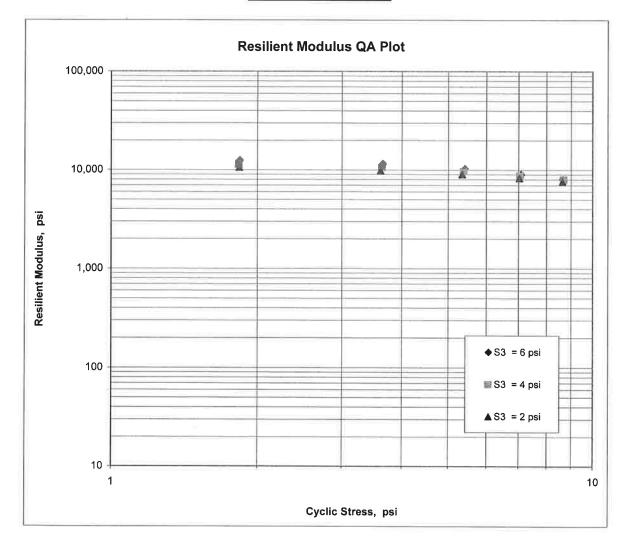
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AASHTO T 307-99 - RESILIENT MODULUS OF SUBGRADE SOILS RECOMPACTED / THINWALL TUBE SAMPLES

Job No.	100871	Material Code SSRVPS
Date Sampled:	12/28/16	Station No.: 120+00
Date Tested:	January 25, 2017	Location: 22'LT
Name of Project:	HWY. 14 STR. & APPRS. (S	3)
County:	Code: 47 Name:	MISSISSIPPI
Sampled By:	THORNTON/TAYLOR	Depth: 0-5
Lab No.:	20164179	AASHTO Class: A-6(8)
Sample ID:	RV537	Material Type (1 or 2): 2
LATITUDE:		LONGITUDE:

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

K1 =	12,006	
K2 =	-0.23973	
K5 =	0.11063	
$R^2 =$	0.90	



BST PCCP BST PCCP BST 8.0 PCCP AGG.BASE 1.5 8.0 PCCP AGG.BASE 7.0 PCCP AGG.BASE 0 8.0 7.0 8.0 8.0	PAVEMENT SOUNDINGS PCCP AGG BASE CRS CL-7 PCCP AGG BASE CRS CL-7 R.0 8.0 AGG BASE CRS CL-7 B.0 AGG BASE CRS CL-7 AGG BASE CRS CL-7 AGG BASE CRS CL-7 B.0 AGG BASE CRS CL-7 AGG BASE CRS CL-7
	AGG BASE CRS CL-7 AGG BASE CRS CL-7 8.0 8.0
	•
	ASE CRS CL-7 ASE CRS CL-7 ASE CRS CL-7
	ASE CRS CL-7 ASE CRS CL-7 ASE CRS CL-7
	ASE CRS CL-7 ASE CRS CL-7
	ASE CRS CL-7
	ASE CRS CL-7

Friday, January 27, 2017

comments:

Page I of I

JOB: 100871

Arkansas State Highway Transporation Department Materials Division

JOB NAME: HWY.14 STR. & APPRS. (S)

COUNTY NO. 47 DATE TESTED 1/11/2017

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4	#10	# 4 0 E	#80	#200	<i>L.L.</i>	<i>P.I</i> .	SOIL CLASS	<i>LAB</i> #:	%MOISTURE
120+00	22LT	0-5	GRAY	97	95	93	85	69	30	16	A-6(8)	RV537	
102+00	06RT	0-5	GRAY	98	97	94	90	83	65	42	A-7-6(37)	S529	40.7
102+00	21RT	0-5	GRAY	99	99	97	90	68	37	23	A-6(13)	S530	36
108+00	06LT	0-5	GRAY	100	99	98	95	88	65	43	A-7-6(41)	S531	31.7
108+00	21LT	0-5	GRAY	96	95	91	82	58	31	17	A-6(7)	S532	28.1
115+00	06RT	0-5	GRAY	99	98	94	88	77	50	30	A-7-6(23)	S533	32.8
115+00	21RT	0-5	GRAY	99	98	94	85	72	43	27	A-7-6(18)	S534	30.6
120+00	6LT	0-5	GRAY	98	96	94	89	83	56	34	A-7-6(30)	S535	35.5
120+00	21LT	0-5	GRAY	99	99	97	94	87	45	29	A-7-6(25)	S536	32.4

ARKANSAS STATE		Y AND TRANSPORTATI MATERIALS I	DIVISION		ROCK, ARKANSAS
*		HAEL BENSON, MATER SURVEY / PAVEMENT			* *
DATE - 01 JOB NUMBER - 10 FEDERAL AID NO TO PURPOSE - SO SPEC. REMARKS - NO SUPPLIER NAME - ST NAME OF PROJECT - T PROJECT ENGINEER - T PIT/QUARRY - ARKA	BE ASS IL SURVE SPECIFI ATE HWY.14 S NOT APPI	EY SAMPLE ICATION CHECK STR. & APPRS. (S)		MATERIAL SPEC. YE SUPPLIER COUNTY/S	NO 1 CODE - SSRVPS AR - 2014 ID 1 TATE - 47 NO 10
LOCATION - MISS SAMPLED BY - THORN SAMPLE FROM - TEST MATERIAL DESC SO	ISSIPPI TON/TAY: HOLE	LOR	EMENT SOUNDIN	DATE REC DATE TES	IPLED - 12/28/16 EIVED - 12/29/16 TED - 01/11/17
LAB NUMBER		20164171			00164170
SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET	-	S529 INFORMATION ONLY 102+00 06RT 0-5	- S530	- ON ONLY - -	20164173 S531 INFORMATION ONLY 108+00 06LT 0-5 GRAY
LATITUDE DEG-MIN		35 36 40.70 90 06 54.20		- 40.50 - 54.20	35 36 40.80 90 06 46.80
3/4 3/8 NO. NO. NO. NO.	2 IN 4 IN 3 IN 4 - 10 - 40 -	98 97 94 90	- - - 99 - 99 - 97 - 90 68		100 99 98 95 88
LIQUID LIMIT PLASTICITY INDEX AASHTO SOIL UNIFIED SOIL	- - -	65 42 A-7-6(37)	- 37 - 23 - A-6(13)		65 43 A-7-6(41)
<pre>% MOISTURE CONTENT</pre>		40.7	36.0		31.7
BST PCCP AGG BASE CRS CL-7	(IN) - (IN) - (IN) - - - - - - - - - - - - - -	8.0 8.0			1.5 8.0 8.0

REMARKS -

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- AASHTO TESTS : T24 T88 T89 T90 T265

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ARKANSAS STATE HIGHW	AY AND TRANSPORTATION MATERIALS I		- LITTLE ROCK	, ARKANSAS
	CHAEL BENSON, MATER SURVEY / PAVEMENT		REPORT ***	
DATE - 01/27/17 JOB NUMBER - 100871 FEDERAL AID NO TO BE ASS PURPOSE - SOIL SURV SPEC. REMARKS - NO SPECIN SUPPLIER NAME - STATE NAME OF PROJECT - HWY.14 PROJECT ENGINEER - NOT APD PIT/QUARRY - ARKANSAS	YEY SAMPLE TICATION CHECK STR. & APPRS. (S)		SEQUENCE NO. MATERIAL CODE SPEC. YEAR SUPPLIER ID. COUNTY/STATE DISTRICT NO.	- SSRVPS - 2014 - 1 - 47
LOCATION - MISSISSIPP SAMPLED BY - THORNTON/TA SAMPLE FROM - TEST HOLE MATERIAL DESC SOIL SUR	LOR		DATE SAMPLED DATE RECEIVED DATE TESTED	- 12/29/16
	VEY - R VALUE- PAV.	EMENT SOUNDING	55	
SAMPLE ID - TEST STATUS - STATION -	INFORMATION ONLY 108+00 21LT 0-5 GRAY 35 36 40.90 90 06 46.80 100 99 96	- S533 - INFORMATIO - 115+00 - 06RT - 0-5 - GRAY - 35 36 4	- S534 N ONLY - INFC - 115+ - 21RT - 0-5 - GRAY - 40.70 - 35	PRMATION ONLY 00 3 5 6 36 40.60 0 06 38.60
NO. 10 - NO. 40 -		_ 98 _ 94	-	
NO. 40 -		- 88	_ 94 _ 85	
NO. 200 -	58	77	72	
LIQUID LIMIT - PLASTICITY INDEX - AASHTO SOIL - UNIFIED SOIL -	31 17 A-6(7)	- 50 - 30 - A-7-6(23) - 32.8	- 43 - 27 - A-7	7-6(18) 30.6
% MOISTURE CONTENT -	20.1	52.0		50.6
PCCP (IN) - AGG.BASE CRS CL-7 (IN) - - - - - - - - - - - - - - - - - - -		- 8.0 - 7.0 -		-
REMARKS -				

REMARKS -

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AASHTO TESTS : T24 T88 T89 T90 T265

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ARKANSAS STATE H		AND TRANSPORTATI MATERIALS I AEL BENSON, MATER	JIV	ISION/	- LITTLE ROCK, ARKANS	AS
* * *		URVEY / PAVEMENT			REPORT ***	
DATE - 01/27 JOB NUMBER - 10087 FEDERAL AID NO TO BE PURPOSE - SOIL SPEC. REMARKS - NO SE SUPPLIER NAME - STATE NAME OF PROJECT - HWY PROJECT ENGINEER - NOT PIT/QUARRY - ARKANSA	71 E ASSIG SURVEY PECIFIC E 7.14 ST F APPLI	SAMPLE ATION CHECK R. & APPRS. (S)			SEQUENCE NO 3 MATERIAL CODE - SSRVI SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 47 DISTRICT NO 10	25
LOCATION - MISSISS SAMPLED BY - THORNTON SAMPLE FROM - TEST HO	SIPPI C N/TAYLC				DATE SAMPLED - 12/28 DATE RECEIVED - 12/29 DATE TESTED - 01/12)/16
MATERIAL DESC SOIL	SURVEY	C - R VALUE- PAV	EMI	ENT SOUNDING	S	
LAB NUMBER	-	20164177	_	20164178		
SAMPLE ID	-			S536		
		INFORMATION ONLY			N ONLY -	
STATION	-	120+00	-	120+00		
LOCATION	-		-	21LT	1/20	
DEPTH IN FEET		0-5	-	0-5	5 8	
	_		-	GRAY	3 	
MAT'L TYPE	_	01012	-		2 	
LATITUDE DEG-MIN-SE	- C	35 36 40.80	-	35 36 4		
LONGITUDE DEG-MIN-SE					32.50	
	N		-		-	
1 1/2 1			1		-	
3/4]					-	
	.n		_	100		
	4 -		-	99	-	
	.0 -		-	99	-	
	0 -		Ξ.	97	-	
	- 0	89	2	94	-	
NO. 20	0 -	83		87		
LIQUID LIMIT	-	56	-	45	9 <u>2</u> .	
PLASTICITY INDEX	-	34	-	29	*	
AASHTO SOIL	-	A-7-6(30)	-	A-7-6(25)	-	
UNIFIED SOIL	-	. ,	-			
% MOISTURE CONTENT	-	35.5	-	32.4	-	
PCCP (IN) -	8.0	120		-	
AGG.BASE CRS CL-7 (8.0	-	2.2		
		0.0	-		-	
	-		-		= 3	
	-		-		-	
	-		-		-	
	-		-		-	
	_				77	
	-				- 	
REMARKS =						
e: 12 —						
AASHTO TESTS : T24 T88 T89	T90 T265					

AASHTO TESTS : T24 T88 T89 T90 T265 :

	WAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION	- LITTLE ROCK, ARKANSAS
	IICHAEL BENSON, MATERIALS ENGINEER IL SURVEY / PAVEMENT SOUNDING TEST	REPORT ***
DATE - 01/27/1 JOB NUMBER - 100871 FEDERAL AID NO TO BE A PURPOSE - SOIL SU SPEC. REMARKS - NO SPEC SUPPLIER NAME - STATE NAME OF PROJECT - HWY.1 PROJECT ENGINEER - NOT A PIT/QUARRY - ARKANSAS	SSIGNED RVEY SAMPLE IFICATION CHECK 4 STR. & APPRS. (S)	SEQUENCE NO 1 MATERIAL CODE - RV SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 47 DISTRICT NO 10
LOCATION - MISSISSIP SAMPLED BY - THORNTON/T		DATE SAMPLED - 12/28/16
SAMPLED BY - THORNTON/1 SAMPLE FROM - TEST HOLE		DATE RECEIVED - 12/29/16 DATE TESTED - 01/11/17
	RVEY - RESISTANCE R-VALUE ACTUAL	
LAB NUMBER	- 20164179 -	122
SAMPLE ID	- RV537 -	
TEST STATUS	- INFORMATION ONLY - - 120+00 -	28 1-
STATION LOCATION	- 120+00 - 22LT -	-
DEPTH IN FEET	- 0-5	-
MAT'L COLOR	- GRAY -	-
MAT'L TYPE LATITUDE DEG-MIN-SEC		
LATITODE DEG-MIN-SEC LONGITUDE DEG-MIN-SEC		-
% PASSING 2 IN.		-
1 1/2 IN. 3/4 IN.		-
	- 100 -	-
NO. 4	_	-
NO. 10	- 95 _	-
NO. 40	- 93 -	-
NO. 80 NO. 200		-
LIQUID LIMIT	- 30 -	
PLASTICITY INDEX	- 16 ·	-
AASHTO SOIL UNIFIED SOIL	- A-6(8) -	35
% MOISTURE CONTENT	-	
		1917 - 19
	- 141	-:
	- 4	
		# 1
	- 2	
REMARKS -		

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AASHTO TESTS : T24 T88 T89 T90 T265

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