

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



**SUBSURFACE INVESTIGATION**

STATE JOB NO. 061474

FEDERAL AID PROJECT NO. NHPP-30-2(269)124

BRYANT PKWY. INTERCHANGE (BRYANT) (S)

STATE HIGHWAY 30 SECTION 22

IN SALINE COUNTY

LETTING OF JANUARY 18, 2017

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**

August 1, 2016

**TO:** Mr. Trinity Smith, Engineer of Roadway Design

**SUBJECT:** Job No. 061474  
Echo Lake Blvd Interchange (Bryant) (S)  
Route 30 Section 22  
Saline County

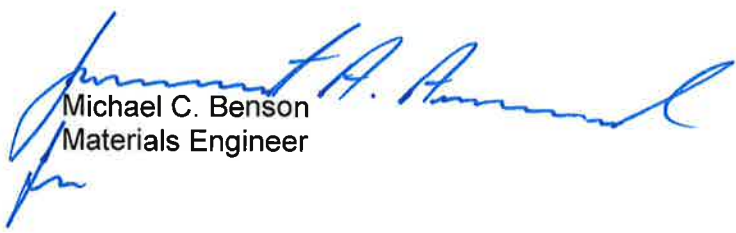
Transmitted herewith is the requested Soil Survey, Strength Data and Resilient Modulus test results for the above referenced job. The project consists of constructing slip ramps for a proposed interchange on Interstate 30. Samples were obtained in the travel lanes of the frontage road and the median between the frontage road and Interstate 30.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of moderately plastic sandy clay. Highly plastic clays were encountered at isolated locations within the project limits. Cross-sections are not currently available, but it is assumed that the construction grade line will closely match that of the existing roadway. The subgrade soils are expected to provide a stable working platform with conventional processing if the weather conditions are favorable during construction. Embankment will be placed within the median between Interstate 30 and the Frontage road. All soft unstable organic material will need to be undercut prior to embankment construction, anticipated to be no more than two feet. The undercut may be back filled with locally available unspecified material.

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 near Bryant.
2. Asphalt Concrete Hot Mix

<u>Type</u>	<u>Asphalt Cement %</u>	<u>Mineral Aggregate %</u>
Surface Course	4.9	95.1
Binder Course	4.1	95.9
Base Course	3.8	96.2

  
Michael C. Benson  
Materials Engineer

MCB:pt:bjj  
Attachment

cc: State Constr. Eng. – Master File Copy  
District 6 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 - 07/21/2016  
JOB NUMBER - 061474

SEQUENCE NO. - 1  
MATERIAL CODE - SSRVPS  
SPEC. YEAR - 2014  
SUPPLIER ID. - 1  
COUNTY/STATE - 62  
DISTRICT NO. - 06

JOB NAME - ECHO LAKE BLVD.INTERCHANGE (BRYANT) (S)

\*\*\*\*\*  
\* STATION LIMITS R-VALUE AT 240 psi \*  
\*\*\*\*\*

BEGIN JOB - END JOB 13

RESILIENT MODULUS  
STA. 660+00 7792

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REMARKS -

AASHTO TESTS : T190

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
MATERIALS DIVISION**

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

<b>Job No.</b>	061474	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	7/20/16	<b>Station No.:</b>	660+00
<b>Date Tested:</b>	July 20, 2016	<b>Location:</b>	21'LT
<b>Name of Project:</b>	ECHO LAKE BLVD.INTER.(BRYANT)(S)		
<b>County:</b>	<b>Code:</b> 62	<b>Name:</b> SALINE	
<b>Sampled By:</b>	Thornton	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20162151	<b>AASHTO Class:</b>	A-4(0)
<b>Sample ID:</b>	RV265	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

**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	3.95
Middle	3.94
Bottom	3.95
Average	3.95
Membrane Thickness (in):	0.01
Height of Specimen, Cap and Base (in):	8.01
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.01
Initial Area, Ao (sq. in):	12.15
Initial Volume, AoLo (cu. in):	97.32

**3. Soil Specimen Weight:**

Weight of Wet Soil Used (g):	3209.00
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**4. Soil Properties:**

Optimum Moisture Content (%):	13.3
Maximum Dry Density (pcf):	116
95% of MDD (pcf):	110.2
In-Situ Moisture Content (%):	N/A

**5. Specimen Properties:**

Wet Weight (g):	3209.00
Compaction Moisture content (%):	13.4
Compaction Wet Density (pcf):	125.64
Compaction Dry Density (pcf):	110.79
Moisture Content After Mr Test (%):	13.0

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

**7. Resilient Modulus, Mr:** 11300(Sc)<sup>-0.18985</sup>(S3)<sup>0.21352</sup>

**8. Comments**

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**9. Tested By:** DEB **Date:** July 20, 2016

**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
MATERIALS DIVISION**

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

<b>Job No.</b>	061474	<b>Material Code</b>	SSRVPS
<b>Date Sampled:</b>	7/20/16	<b>Station No.:</b>	660+00
<b>Date Tested:</b>	July 20, 2016	<b>Location:</b>	21'LT
<b>Name of Project:</b>	ECHO LAKE BLVD.INTER.(BRYANT)(S)		
<b>County:</b>	<b>Code:</b> 62	<b>Name:</b>	SALINE
<b>Sampled By:</b>	Thornton	<b>Depth:</b>	0-5
<b>Lab No.:</b>	20162151	<b>AASHTO Class:</b>	A-4(0)
<b>Sample ID:</b>	RV265	<b>Material Type (1 or 2):</b>	2
<b>LATITUDE:</b>		<b>LONGITUDE:</b>	

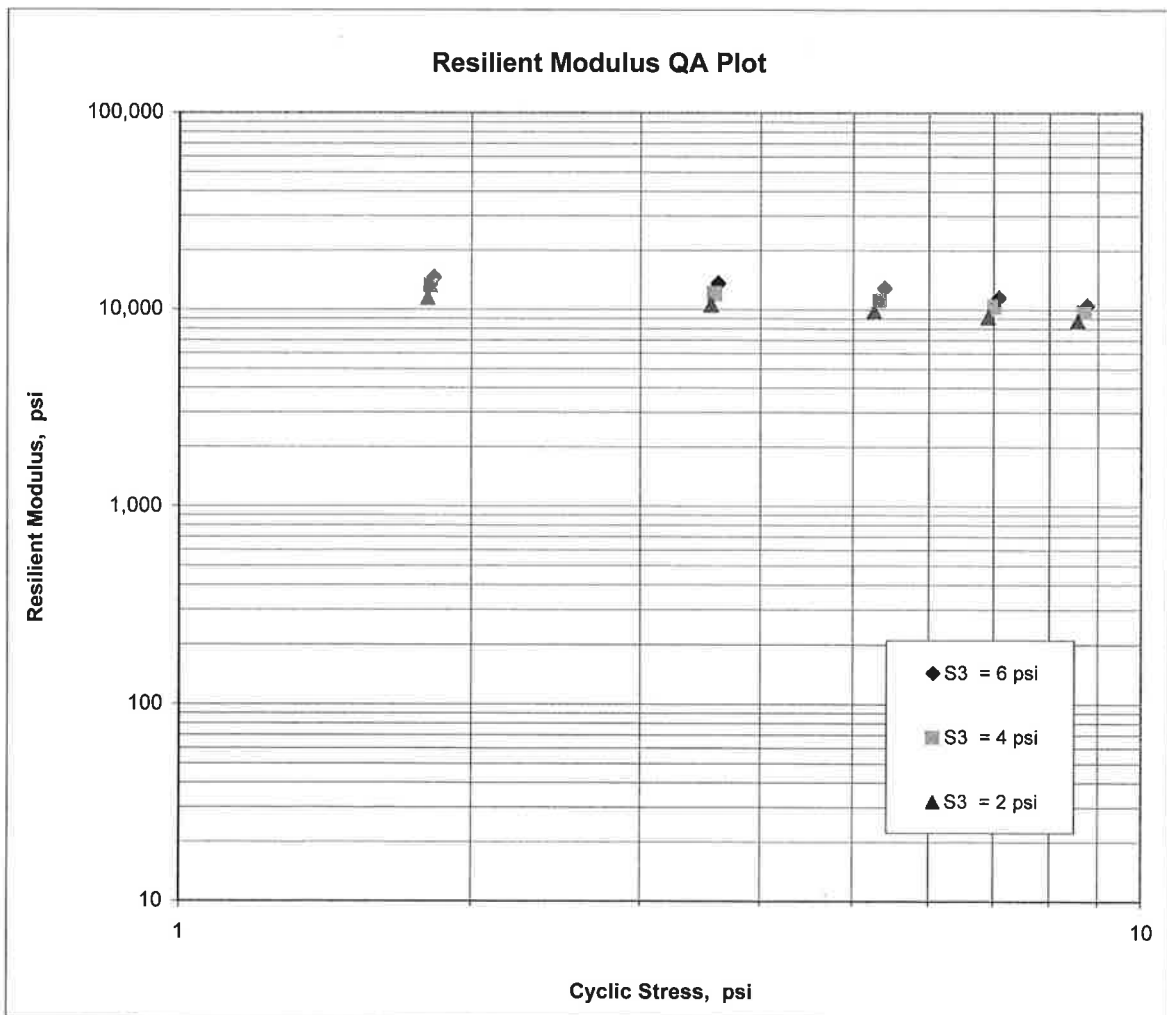
$$M_R = K_1 (S_C)^{K_2} (S_3)^{K_5}$$

$$K_1 = 11,300$$

$$K_2 = -0.18985$$

$$K_5 = 0.21352$$

$$R^2 = 0.96$$



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
MATERIALS DIVISION

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

Job No. 061474  
Date Sampled: 7/20/16  
Date Tested: July 20, 2016  
Name of Project: ECHO LAKE BLVD.INTER.(BRYANT)(S)  
County: Code: 62 Name: SALINE  
Sampled By: Thornton  
Lab No.: 20162151  
Sample ID: RV265  
LATITUDE:

Material Code SSRVPS  
Station No.: 660+00  
Location: 21'LT  
Depth: 0-5  
ASHTO 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 <sub>3</sub>	S <sub>cyclic</sub>	P <sub>max</sub>	P <sub>cyclic</sub>	P <sub>contact</sub>	S <sub>max</sub>	S <sub>cyclic</sub>	S <sub>contact</sub>	H <sub>avg</sub>	ε <sub>r</sub>	M <sub>r</sub>
UNIT	psi	psi	lbs	lbs	lbs	psi	psi	psi	in	in/in	psi
Sequence 1	6.0	2.0	24.7	21.9	2.8	2.0	1.8	0.2	0.00097	0.00012	14,844
Sequence 2	6.0	4.0	46.1	43.2	2.9	3.8	3.6	0.2	0.00215	0.00027	13,248
Sequence 3	6.0	6.0	67.1	63.4	3.7	5.5	5.2	0.3	0.00351	0.00044	11,911
Sequence 4	6.0	8.0	89.0	82.8	6.2	7.3	6.8	0.5	0.00492	0.00061	11,094
Sequence 5	6.0	10.0	110.9	102.3	8.7	9.1	8.4	0.7	0.00635	0.00079	10,623
Sequence 6	4.0	2.0	24.5	21.6	2.8	2.0	1.8	0.2	0.00110	0.00014	12,984
Sequence 7	4.0	4.0	45.1	42.3	2.9	3.7	3.5	0.2	0.00243	0.00030	11,477
Sequence 8	4.0	6.0	64.9	61.9	3.0	5.3	5.1	0.2	0.00392	0.00049	10,410
Sequence 9	4.0	8.0	86.7	81.3	5.3	7.1	6.7	0.4	0.00546	0.00068	9,818
Sequence 10	4.0	10.0	108.2	100.4	7.8	8.9	8.3	0.6	0.00704	0.00088	9,403
Sequence 11	2.0	2.0	24.0	21.2	2.8	2.0	1.7	0.2	0.00131	0.00016	10,666
Sequence 12	2.0	4.0	44.0	41.1	2.9	3.6	3.4	0.2	0.00289	0.00036	9,377
Sequence 13	2.0	6.0	62.6	59.7	2.9	5.2	4.9	0.2	0.00464	0.00058	8,481
Sequence 14	2.0	8.0	82.4	78.0	4.4	6.8	6.4	0.4	0.00640	0.00080	8,028
Sequence 15	2.0	10.0	103.5	96.7	6.9	8.5	8.0	0.6	0.00818	0.00102	7,792

TESTED BY \_\_\_\_\_  
REVIEWED BY \_\_\_\_\_

DATE July 20, 2016  
DATE \_\_\_\_\_

DEB \_\_\_\_\_

**JOB: 061474**

**Arkansas State Highway Transportation Department**

**JOB NAME: ECHO LAKE BLVD.INTERCHANGE (BRYANT)(S)**

**Materials Division**

**COUNTY NO. 62 DATE TESTED 7/13/2016**

**Michael Benson, Materials Engineer**

STA.#	LOC.	DEPTH	COLOR						L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				#4	#10	#40	#80	#200					
				S	I	E	V	E	S				
660+00	05LT	0-5	BR/GR	96	90	83	63	41	23	8	A-4(0)	S257	18.8
663+00	24RT	0-5	BROWN	99	94	85	68	44	24	10	A-4(1)	S258	12.9
664+00	24LT	0-5	BR/GR	99	95	85	61	43	33	19	A-6(4)	S259	17
668+00	05RT	0-5	GRAY	99	96	92	79	55	20	7	A-4(0)	S260	11.9
705+00	05LT	0-5	BR/GR	100	98	95	84	50	30	16	A-6(4)	S261	14.9
710+00	24LT	0-5	BR/GR	98	95	90	77	53	30	17	A-6(5)	S262	21.1
710+00	24RT	0-5	BROWN	99	98	94	74	54	38	25	A-6(9)	S263	19.9
714+00	05RT	0-5	RD/BR	99	98	94	76	49	28	12	A-6(3)	S264	17.7
660+00	21LT	0-5	GRAY	94	89	83	59	40	24	8	A-4(0)	S265	

**comments: W= MULTIPLE LAYERS**

**Monday, August 01, 2016**

**COUNTY NO.** 62 **Michael Benson, Materials Engineer**

**PAVEMENT SOUNDINGS**

STA.#	LOC.						
660+00	05LT	ACHMSC	AGG.BASE CL7				
		6W	5				
663+00	24RT	ACHMSC	AGG.BASE CL7				
		---	---				
664+00	24LT	ACHMSC	AGG.BASE CL7				
		---	---				
668+00	05RT	ACHM SC	ACHM BC	AGG.BASE CL7			
		2	9	8			
705+00	05LT	ACHM SC	ACHM BC	AGG.BASE CL7			
		6	---	9			
710+00	24RT	ACHMSC	ACHMBC	AGG.BASE CL7			
		---	---	---			
710+00	24LT	ACHM SC	ACHM BC	AGG.BASE CL7			
		---	---	---			
714+00	05RT	ACHMSC	ACHMBC	AGG.BASE CL7			
		3	5.5	8			

**comments:** W= MULTIPLE LAYERS









