ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT



SUBSURFACE INVESTIGATION

STATE JOB NO.		061474	
FEDERAL AID PROJEC	CT NON	HPP-30-2(269)124	
В	RYANT PKW	/. INTERCHANGE (BRYAN	IT) (S)
STATE HIGHWAY	30	SECTION	22
IN		SALINE	COUNTY
LETTING OF	J	ANUARY 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

Type	Asphalt Cement %	Mineral Aggregate %
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

MICHAEL BENSON, MATERIALS ENGINEER

*** SOIL SURVEY STRENGTH TEST REPORT ***

DATE - 07/21/2016 SEQUENCE NO. = 1

JOB NUMBER - 061474 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

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.	061474	Material Code		
Date Sampled:	7/20/16	Station No.:	660+00	
Date Tested:	July 20, 2016	Location:	21'LT	
Name of Project:	ECHO LAKE BLVD.INTER.(BRYANT)(S) Code: 62 Name: SALINE			
County: Sampled By:	Thornton	Depth:		0-5
Lab No.:	20162151	AASHTO Clas	20*	0-3 A-4(0)
Sample ID:	RV265	Material Type		A-4(0)
LATITUDE:	KV203	LONGITUDE	100	2
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 (0-1	•		15
2. Specimen Info	ormation:			
•	Specimen Diameter (in):			
	Тор			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 Specimer	n Weight:			
	Weight of Wet Soil Used (g):			3209.00
4. Soil Propertie	s:			
	Optimum Moisture Content (%):			13.3
	Maximum Dry Density (pcf):			116
	95% of MDD (pcf):			110.2
	In-Situ Moisture Content (%):			N/A
5. Specimen Pro	perties:			
•	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 T	est (Y=Yes, N=No, N/A=Not Applicable):	*		#VALUE!
7. Resilient Mod	ulus, Mr:		11300(Sc)^-0.18985	(S3)^0.21352
8. Comments				
v. vomments				
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

Job No.

061474

Material Code SSRVPS

Date Sampled:

7/20/16

Station No.: 660+00

Date Tested:

July 20, 2016

Location: 21'LT

Name of Project: ECHO LAKE BLVD.INTER.(BRYANT)(S)

County:

Code: 62

Name: SALINE

Sampled By:

Thornton

Depth: 0-5

Lab No.:

AASHTO Class: A-4(0)

Sample ID:

20162151 **RV265**

Material Type (1 or 2): 2

LATITUDE:

LONGITUDE:

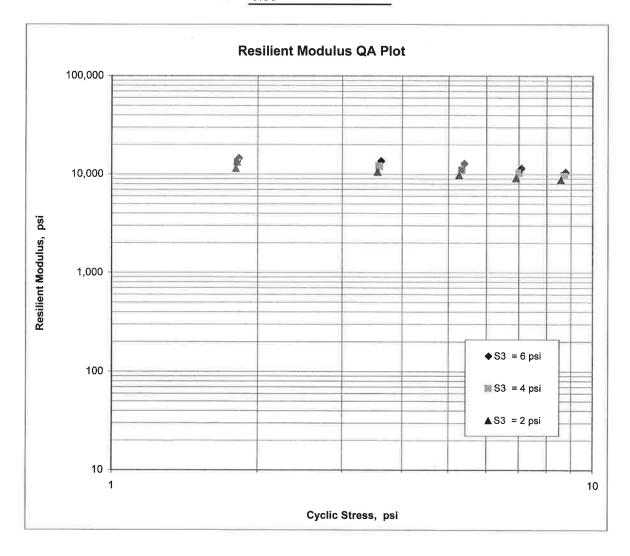
$$M_R = K1 (S_C)^{K2} (S_3)^{K5}$$

$$K1 = 11,300$$

K2 = -0.18985

K5 = 0.21352

 $R^2 = 0.96$



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No. Date Tested: Date Sampled: 7/20/16 061474 July 20, 2016 Station No.: Material Code Location:

660+00

SSRVPS

21'LT

Sampled By: County: Name of Project: Thornton ECHO LAKE BLVD.INTER.(BRYANT)(S) Code: 62 Name: SALINE

Lab No.: 20162151

Sample ID: LATITUDE: **RV265**

> **AASHTO Class:** Depth: A-4(0)0-5

Material Type (1 or 2): 2 LONGITUDE:

7,792	0.00102	0.00818	0.6	8.0	8.5	6.9	96.7	103.5	10.0	2.0	Sequence 15
8,028	0.00080	0.00640	0.4	6.4	6.8	4.4	78.0	82.4	8.0	2.0	Sequence 14
8,481	0.00058	0.00464	0.2	4.9	5.2	2.9	59.7	62.6	6.0	2.0	Sequence 13
9,377	0.00036	0.00289	0.2	3.4	3.6	2.9	41.1	44.0	4.0	2.0	Sequence 12
10,666	0.00016	0.00131	0.2	1.7	2.0	2.8	21.2	24.0	2.0	2.0	Sequence 11
9,403	0.00088	0.00704	0.6	8.3	8.9	7.8	100.4	108.2	10.0	4.0	Sequence 10
9,818	0.00068	0.00546	0.4	6.7	7.1	5.3	81.3	86.7	8.0	4.0	Sequence 9
10,410	0.00049	0.00392	0.2	5.1	5.3	3.0	61.9	64.9	6.0	4.0	Sequence 8
11,477	0.00030	0.00243	0.2	3.5	3.7	2.9	42.3	45.1	4.0	4.0	Sequence 7
12,984	0.00014	0.00110	0.2	1.8	2.0	2.8	21.6	24.5	2.0	4.0	Sequence 6
10,623	0.00079	0.00635	0.7	8.4	9.1	8.7	102.3	110.9	10.0	6.0	Sequence 5
11,094	0.00061	0.00492	0.5	6.8	7.3	6.2	82.8	89.0	8.0	6.0	Sequence 4
11,911	0.00044	0.00351	0.3	5.2	5.5	3.7	63.4	67.1	6.0	6.0	Sequence 3
13,248	0.00027	0.00215	0.2	3.6	3.8	2.9	43.2	46.1	4.0	6.0	Sequence 2
14,844	0.00012	0.00097	0.2	1.8	2.0	2.8	21.9	24.7	2.0	6.0	Sequence 1
psi	in/in	ñ	psi	psi	psi	lbs	lbs	lbs	psi	psi	UNIT
ĭ	-ço	H _{avg}	Scontact	S _{cyclic}	S _{max}	Pcontact	P _{cyclic}	P _{max}	S _{cyclic}	လ္ဒ	DESIGNATION
					Stress						2
		and 2	Stress	Stress	Axial	Load		Load	Stress		_
		LVDT 1	Contact	Cyclic	Max.	Contact	Cyclic Load	Max. Axial	Axial	Pressure	PARAMETER
Modulus	Strain	Recov Def.	Applied	Applied	Applied	Applied	Applied	Applied	Maximum	Confining	
Resilient	Resilient	Average	Actual	Actual	Actual	Actual	Actual	Actual	Nominal	Chamber	

REVIEWED BY	TESTED BY
	DEB
DATE	DATE
	July 20, 2016

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	#4	#10	#40	#80	#200	L.L.	P.I.	SOIL CLASS	<i>LAB</i> #:	%MOISTURE
660+00	05LT	0-5	BR/GR	96	90	83	63	E S 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	

DATE TESTED

7/13/2016

Arkansas State Highway Transporation Department

JOB: 061474
JOB NAME: ECHO LAKE BLVD.INTERCHANGE (BRYANT)(S)

COUNTY NO. 62

Materials Division

Michael Benson, Materials Engineer

PAVEMENT SOUNDINGS AGG.BASE CL7 **ACHIM BC ACHIM BC ACHIM BC** ACHIMBC ACHIMBC ACHIMSC 3 **ACHIM SC ACHM SC ACHM SC** ACHIMSC ACHIMSC ACHMSC **ACHIMSC 6W** 05RT 24RT 24RT 05LT 24LT 05RT 05LT STA.# LOC. 24LT 714+00 663+00 664+00 710+00 710+00 00+099 668+00 705+00

Thursday, July 21, 2016

MICHAEL BENSON, MATERIALS ENGINEER

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

JOB NUMBER - FEDERAL AID NO PURPOSE - SPEC. REMARKS - SUPPLIER NAME - NAME OF PROJECT - PROJECT ENGINEER - PIT/QUARRY - AR	TO BE ASSI SOIL SURVE NO SPECIFI STATE - ECHO LAF - NOT APPI KANSAS LINE, COUN orton/bates	EY SAMPLE CATION CH TE BLVD.IN LICABLE TTY S	ECK TERCHANGE		SPEC. YEAR SUPPLIER COUNTY/ST DISTRICT DATE SAME DATE RECEDATE TEST	CODE - SSRVPS R - 2014 ID 1 PATE - 62 NO 06 PLED - 06/28/16 EIVED - 06/30/16
LAB NUMBER SAMPLE ID TEST STATUS STATION LOCATION DEPTH IN FEET MAT'L COLOR MAT'L TYPE	- - - - - -	660+00 05LT 0-5 BR/GR	ION ONLY -	663+00 24RT 0-5 BROWN	ON ONLY	20162145 S259 INFORMATION ONLY 664+00 24LT 0-5 BR/GR
N N N	IN-SEC - IN 1/2 IN 3/4 IN 3/8 IN 0. 4 - 0. 10 - 0. 40 -	92 28 100 96 90 83 63			39.90 - 43.20	34 37 39.30 92 28 39.90 100 99 95 85 61 43
LIQUID LIMIT PLASTICITY INDE: AASHTO SOIL UNIFIED SOIL % MOISTURE CONT	-	23 8 A-4(0)		24 10 A-4(1)	30 30 30 30 30 30 30 30 30 30 30 30 30 3	33 19 A-6(4)
ACHMSC AGG.BASE CL7	(IN) - (IN) - - - - -	6W 5				

REMARKS - W= MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265

MICHAEL BENSON, MATERIALS ENGINEER

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

JOB NUMBER - 061 FEDERAL AID NO TO PURPOSE - SOI SPEC. REMARKS - NO SUPPLIER NAME - STA NAME OF PROJECT - E PROJECT ENGINEER - N PIT/QUARRY - ARKAN	BE ASSI L SURVE SPECIFI TE CHO LAK OT APPL ISAS IE, COUN on/bates HOLE	Y SAMPLE CATION CH E BLVD.IN ICABLE TY	ECK TERCHANGI			SPEC. SUPPLI COUNTY DISTRI DATE S DATE R DATE T	AL YEA ER /ST CT	CODE - LR - LD - LATE - NO - PLED - EIVED -	SSRVPS 2014 1 62	6
LAB NUMBER	=	20162146		77.0	20162147		, -	2016214	.8	
SAMPLE ID	_	S260			S261			S262	-	
TEST STATUS	-	INFORMAT	ION ONLY	-	INFORMATIO	ON ONLY			TION ON	LY
STATION	-	668+00		*	705+00			710+00		
LOCATION	-	05RT		: :: :::	05LT		S#8	24LT		
DEPTH IN FEET	-	0-5		= 3	0-5		- T	0-5		
MAT'L COLOR	-	GRAY		*	BR/GR		-	BR/GR		
MAT'L TYPE	-						-			
LATITUDE DEG-MIN-					34 37		-		7 58.10	
LONGITUDE DEG-MIN-	SEC -	92 28	19.70		92 27	56.70		92 2	7 51.30)
% PASSING 2	IN			-			_			
1 1/2	IN			-			-			
	IN			-			-			
·	IN	100		_	100		_	100		
		99		_	100		_	98		
NO.		96		-	98		-	95		
	40 -	92		-	95		-	90		
	80 - 200 -	79 55		-	84 50		-	77 53		
110.	200 -	22			50			53		
LIQUID LIMIT	=	20		= 7	30			30		
PLASTICITY INDEX	=	7		3 0			-	17		
AASHTO SOIL	-	A-4(0)		2	A-6(4)		-	A-6(5)		
UNIFIED SOIL	**			-	14.0		-	11 1		
% MOISTURE CONTENT	12	11.9			14.9			21.1	-	
ACHM SC	(IN) -	2		-	6		-			
ACHM BC	(IN) -	9		-	**		-			
AGG.BASE CL7	(IN) -	8		_	9		_			
	_			_			-			
	=			-			-			
	-			-			-			
	_			-			-			
	-			_			_			

REMARKS - W= MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 07/ JOB NUMBER - 061 FEDERAL AID NO TO PURPOSE - SOI SPEC. REMARKS - NO SUPPLIER NAME - STA NAME OF PROJECT - E PROJECT ENGINEER - N PIT/QUARRY - ARKAN LOCATION - SALIN SAMPLED BY - thorte SAMPLE FROM - TEST MATERIAL DESC SOI	A74 BE ASSI L SURVE SPECIFI TE CHO LAK OT APPL ISAS IE, COUN on/bates HOLE	Y SAMPLE CATION CHECK E BLVD.INTERCH ICABLE TY	IANGE			COUNTY/STATE - DISTRICT NO DATE SAMPLED DATE RECEIVED DATE TESTED	- SSRVPS - 2014 - 1 - 62 - 06 - 06/28/16 - 06/30/16
LAB NUMBER	=	20162149		-	20162150	X 7.	
SAMPLE ID		S263		_	S264		
TEST STATUS	-	INFORMATION O	NLY	-	INFORMATIO	ON ONLY -	
STATION	-	710+00		-	714+00	(=)	
LOCATION		24RT		_	05RT	(=)	
DEPTH IN FEET		0-5		_	0-5	1	
MAT'L COLOR	22	BROWN		-	RD/BR	:=:	
MAT'L TYPE		24 25 52		-			
LATITUDE DEG-MIN-		34 37 59.9			34 38		
LONGITUDE DEG-MIN-	SEC =	92 27 51.8	30		92 27	47.60	
% PASSING 2				22		-	
	IN			-		-	
	IN. =			======================================		-	
		100		_	100	_	
		99		-	99	_	
		98		7	98	-	
	40 =	94		_	94	_	
NO.	80 = 200 =	74 54		-	76 49	=	
NO.	200 -	54			49		
LIQUID LIMIT	=	38		-	28	=	
PLASTICITY INDEX	*			-	12	₹	
AASHTO SOIL	~	A-6(9)		_	A-6(3)	-	
UNIFIED SOIL	-			_	15.5	; * :	
% MOISTURE CONTENT	0 =	19.9			17.7		
ACHMSC	(IN) -			-	3	-	
ACHMBC	(IN) -	***		-	5.5	2 0	
AGG.BASE CL7	(IN) -			_	8		
	-			-		-	
	-			-		1.7	
	_			_		\ <u>=</u>	
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	_			-		-	

REMARKS - W= MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265

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MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 07/13/ JOB NUMBER - 061474 FEDERAL AID NO TO BE PURPOSE - SOIL S SPEC. REMARKS - NO SPE SUPPLIER NAME - STATE NAME OF PROJECT - ECHO PROJECT ENGINEER - NOT PIT/QUARRY - ARKANSAS	ASSI URVE CIFI LAK	Y SAMP CATION E BLVD	CHI	ECK	E (BRY	'ANT) (S)	SEQUENCE NO. MATERIAL CODE SPEC. YEAR SUPPLIER ID. COUNTY/STATE DISTRICT NO.	- - -	2014 1 62
LOCATION - SALINE,							DATE SAMPLED		06/28/16
SAMPLED BY - thorton/k SAMPLE FROM - TEST HOL		5					DATE RECEIVED DATE TESTED		06/30/16 07/13/16
MATERIAL DESC SOIL S		EY - RE	ESIS	TANCE R-	VALUE	ACTUAL		_	07/13/10
LAB NUMBER	-	20162	151		-		·=:		
SAMPLE ID	-	S265			-				
TEST STATUS	-	INFOR	MAT)	ON ONLY	-		<u>~</u>		
STATION	-	660+0	0		-		-		
LOCATION	-	21LT			_		-		
DEPTH IN FEET		0-5			_		: 		
MAT'L COLOR	-	GRAY			-		72		
MAT'L TYPE	-				-		-		
LATITUDE DEG-MIN-SEC					-) 		
LONGITUDE DEG-MIN-SEC	-	92	28	44.20					
% PASSING 2 IN		8			2		=		
1 1/2 IN					×		-		
3/4 IN		100			=		=		
3/8 IN		99			5 2				
NO. 4	_	94			_		=		
	-	89			=		<u>,=</u> ;		
NO. 40		83			<u> </u>		=		
	-	59			=) and		
NO. 200	-	40							
LIQUID LIMIT	-	24			÷		=		
PLASTICITY INDEX	-	8			==		.=		
AASHTO SOIL	-	A-4 (0)		77		-		
UNIFIED SOIL	-						-		
% MOISTURE CONTENT	-				-				
	-				= :		_		
	-				=0		-		
	-				33		-		
	-				20		-		
	_						_		
	_				30.		_		
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REMARKS - W= MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265