ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

IN		PIKE	COUNT	Y			
STATE HIGHWAY	8	SECTION	4				
	HWY. 70 – CLA	RK CO. LINE (SEL. SEC	S.) (S)				
FEDERAL AID PROJI	ECT NO	STPR-0055(28)					
				_			
STATE JOB NO.		030483					

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 DEPARTMENT OF TRANSPORTATION

ARDOT.gov | IDriveArkansas.com | Scott E. Bennett, P.E., Director

MATERIALS DIVISION

11301 West Baseline Road | P.O. Box 2261 | Little Rock, AR 72203-2261 | Phone: 501.569.2185 | Fax: 501.569.2368

October 5, 2017

TO:

Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT:

Job No. 030483

Hwy. 70 - Clark Co. Line (Sel. Secs.) (S)

Route 8 Section 4

Pike County

Transmitted herewith is the requested Soil Survey, strength data and Resilient Modulus test results for the above referenced job. The project consists of adding a turning lane at Centerpoint Elementary School on Highway 8. Samples were obtained in the existing travel lanes, shoulders and ditch line.

Based on laboratory results of samples obtained, the subgrade soils consist of sand with gravel. The subgrade soils are expected to provide a stable working platform with conventional processing, if the weather is favorable during construction.

Based on currently available cross-sections the construction grade line closely matches that of the existing roadway. The maximum embankment height is approximately 5 feet. The embankments may be constructed with locally available unspecified material utilizing the slope configuration shown. The proposed cut slopes are acceptable as shown.

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 Bismarck.
- 2. Asphalt Concrete Hot Mix

PG64-22. PG70-22. PG76-22

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	4.4	95.6
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

System Information and Research Div.

G. C. File

MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY STRENGTH TEST REPORT ***

DATE - 09/19/2017 SEQUENCE NO. - 1

JOB NUMBER - 030483 MATERIAL CODE - SSRV

SPEC. YEAR - 2014

SUPPLIER ID. - 1

COUNTY/STATE - 55 DISTRICT NO. - 03

JOB NAME = HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)

BEGIN JOB - END JOB 12

RESILIENT MODULUS

STA. 109+10 6335

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:	030483 8/14/2017	Material Code Station No.:	SSRVPS 109+10
Date Tested:	September 15, 2017	Location:	27'RT
Name of Project: County:	HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S) Code: 55 Name: PIKE		
Sampled By:	THORNTON/BATES	Depth:	0-5
Lab No.:	20172671	AASHTO Class:	A-4 (1)
Sample ID:	RV552	Material Type (1 or 2):	
LATITUDE:		LONGITUDE:	
1. Testing Inform	nation:		
rooting inform	Preconditioning - Permanent Strain > 5% (Y=Y	es or N= No)	N
	Testing - Permanent Strain > 5% (Y=Yes or N=	•	N
	Number of Load Sequences Completed (0-15)	,	15
2 Chasiman Infe	, um etien .		
2. Specimen Info	Specimen Diameter (in):		
	Top		3.97
	Middle		3.96
	Bottom		3.96
	Average		3.96
	Membrane Thickness (in):		0.01
	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):		12.26
	Initial Volume, AoLo (cu. in):		98.47
3. Soil Specimer	-		
	Weight of Wet Soil Used (g):		3170.30
4. Soil Properties	s:		
-	Optimum Moisture Content (%):		14.9
	Maximum Dry Density (pcf):		111.6
	95% of MDD (pcf):		106.0
	In-Situ Moisture Content (%):		N/A
5. Specimen Pro	perties:		
	Wet Weight (g):		3170.30
	Compaction Moisture content (%):		14.6
	Compaction Wet Density (pcf):		122.68
	Compaction Dry Density (pcf):		107.05
	Moisture Content After Mr Test (%):		14.6
6. Quick Shear T	est (Y=Yes, N=No, N/A=Not Applicable):		#VALUE!
7. Resilient Mod	ulus, Mr:	9090(S	c)^-0.30338(S3)^0.35591
8. Comments			
9. Tested By:	GW	ite: September 15, 2017	

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

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

SSRVPS 109+10 27'RT Material Code Station No.: Location: September 15, 2017 8/14/2017 030483 Date Sampled: Date Tested: Job No.

HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S) Name of Project:

AASHTO Class: Depth: Name: THORNTON/BATES Code: 55 Sampled By: County:

RV552 Sample ID:

20172671 LATITUDE: Lab No.:

A-4 (1)

Material Type (1 or 2): 2

LONGITUDE:

0-5

	Chamber Confining	Nominal Maximum	Actual Applied	Actual Applied	Actual Applied	Actual Applied	Actual Applied	Actual Applied	Average Recov Def.	Resilient Strain	Resilient Modulus
PARAMETER	Pressure	Axial	a	Cyclic Load	Contact	Мах.	Cyclic	Contact	LVDT 1		
		Stress	Load		Load	Axial	Stress	Stress	and 2		
						Stress					
DESIGNATION	S³	Scyclic	P _{max}	P _{cyclic}	Pcontact	S _{max}	Scyclic	Scontact	H _{avg}	3 ک	Mr
UNIT	isd	psi	lbs	sql	sql	psi	isd	psi	u	in/in	psi
Sequence 1	6.0	2.0	25.2	22.6	2.7	2.1	1.8	0.2	0.00107	0.00013	13,870
Sequence 2	6.0	4.0	47.7	44.9	2.8	3.9	3.7	0.2	0.00242	0.00030	12,174
Sequence 3	0.9	6.0	70.2	9.99	3.6	5.7	5.4	0.3	0.00405	0.00050	10,757
Sequence 4	6.0	8.0	93.3	87.2	6.1	9.7	7.1	0.5	0.00602	0.00075	9,478
Sequence 5	0.9	10.0	116.4	107.8	9.8	9.5	8.8	0.7	0.00796	0.00099	8,870
Sequence 6	4.0	2.0	25.2	22.4	2.7	2.1	1.8	0.2	0.00121	0.00015	12,160
Sequence 7	4.0	4.0	46.9	44.1	2.8	3.8	3.6	0.2	0.00285	0.00035	10,148
Sequence 8	4.0	6.0	67.5	64.7	2.8	5.5	5.3	0.2	0.00487	0.00061	969'8
Sequence 9	4.0	8.0	90.5	85.3	5.2	7.4	7.0	0.4	0.00696	0.00087	8,020
Sequence 10	4.0	10.0	113.8	106.1	7.7	9.3	8.7	9.0	0.00912	0.00114	7,616
Sequence 11	2.0	2.0	25.0	22.2	2.8	2.0	1.8	0.2	0.00146	0.00018	9,948
Sequence 12	2.0	4.0	45.6	42.8	2.8	3.7	3.5	0.2	0.00348	0.00043	8,058
Sequence 13	2.0	0.9	65.0	62.2	2.8	5.3	5.1	0.2	0.00587	0.00073	6,937
Sequence 14	2.0	8.0	86.3	82.0	4.4	7.0	6.7	0.4	0.00833	0.00104	6,446
Sequence 15	2.0	10.0	109.4	102.6	6.8	8.9	8.4	9.0	0.01061	0.00132	6,335

September 15, 2017	
DATE	DATE
- GW	
TESTED BY	REVIEWED BY

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

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

Job No.

030483

Material Code SSRVPS

Date Sampled:

8/14/2017

Station No.: 109+10

Date Tested:

Location: 27'RT

September 15, 2017

County:

Name of Project: HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)

Name: PIKE

Code: 55

Depth: 0-5

Sampled By: Lab No.:

THORNTON/BATES

AASHTO Class: A-4 (1)

Sample ID:

20172671

RV552

Material Type (1 or 2): 2

LATITUDE:

LONGITUDE:

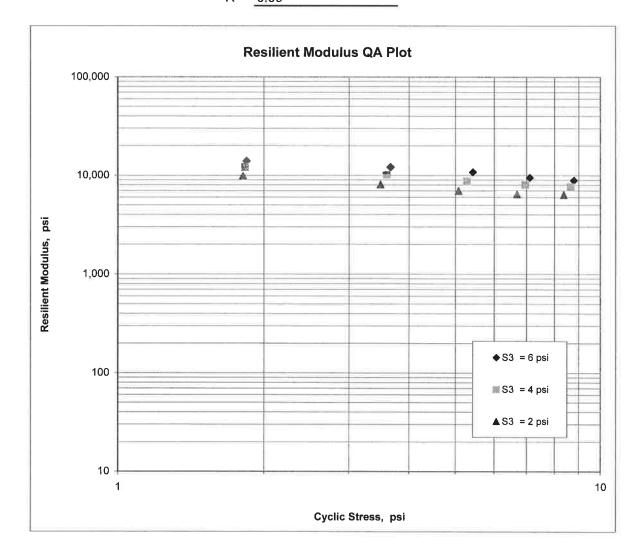
$$M_R = K1 (S_C)^{K2} (S_3)^{K5}$$

K1 = 9,090

K2 = -0.30338

K5 = 0.35591

 $R^2 = 0.99$



JOB: 030483

Arkansas State Highway Transporation Department

JOB NAME: HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)

Materials Division

COUNTY NO. 55 DATE TESTED

9/5/2017

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4	#10	#40	#80	#200	L.L.	P.I.	SOIL CLASS	<i>LAB</i> #:	%MOISTURE
109+10	27 RT	0-5	BR/GR	87	81	71	63	E S 48	25	8	A-4(1)	RV552	
109+00	06 RT	0-5	BROWN	95	89	80	68	51	21	8	A-4(1)	S546	10.5
109+00	15 RT	0-5	BROWN	97	91	. 83	75	63	36	18	A-6(9)	S547	11
109+00	27 RT	0-5	BROWN	70	64	59	52	39	ND	NP	A-4(0)	S548	15.8
117+00	06 LT	0-5	BROWN	96	94	88	79	56	ND	NP	A-4(0)	S549	9.8
117+00	13 LT	0-5	BROWN	82	71	62	52	37	ND	NP	A-4(0)	S550	14.6
117+00	19 LT	0-5	BROWN	92	89	85	68	46	ND	NP	A-4(0)	S551	17.9

DATE TESTED

Arkansas State Highway Transporation Department

Materials Division

 $JOB\ NAME$: HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)

030483

JOB:

9/5/2017

Michael Benson, Materials Engineer	PAVEMENT SOUNDINGS						
		ISC AGG BASE CRS CL-7					
55		ACHMSC 4.5W	ACHIMSC 0.5	ACHMSC	ACHIMSC 4.75W	ACHIMSC 2.75W	ACHMSC
COUNTY NO. 55	STA.# LOC.	109+00 06 RT	15 RT	27 RT	06 LT	13 LT	19 LT
COUN	STA.#	109+00	109+00	109+00	117+00	117+00	117+00

MICHAEL BENSON, MATERIALS ENGINEER

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

* *	* SOIL	SURVEY /	PAVEMENT	SO	UNDING TEST	r REPORT	T. w.	* *		
DATE - 09/ JOB NUMBER - 030 FEDERAL AID NO TO PURPOSE - SOI SPEC. REMARKS - NO SUPPLIER NAME - STA NAME OF PROJECT - H PROJECT ENGINEER - N PIT/QUARRY - ARKAN LOCATION - PIKE SAMPLED BY - THORNT SAMPLE FROM - TEST	483 BE ASSI L SURVE SPECIFI TE WY. 70 OT APPL ISAS COUNTY TON/BATE HOLE	Y SAMPLE CATION C - CLARK ICABLE	CO. LINE	(SE	L. SECS.)(MATERI SPEC. SUPPLI COUNTY DISTRI S) DATE S DATE S DATE S	AL YEA ER C/ST CT	NO PLED - EIVED -	\$\$ 20 1 55 03	14 //14/17 //16/17
MATERIAL DESC SOI	L SURVE	sy - R '	/ALUE- PAV	EME	INI SOUNDIN	GS				
LAB NUMBER	-	2017266	5	-	20172666		_	201726	667	
SAMPLE ID	=			-	S547		$\underline{\underline{w}}_{i}$	S548		
TEST STATUS	-		TION ONLY	-	INFORMATIO	ON ONLY	\approx	INFORM	ITAN	ON ONLY
STATION				-	109+00		=	109+00)	
LOCATION	=			.5	15 RT		27 20	27 RT		
DEPTH IN FEET				-	0-5		-	0-5		
	343	BROWN		-	BROWN		100	BROWN		
MAT'L TYPE		24 1	7 06 20	-	24		$\pi_{i}(t)$	2.4		06.10
LATITUDE DEG-MIN-										26.10
LONGITUDE DEG-MIN-	SEC -	93 3	0 41.60		93 30	41.70		93	30	41.70
% PASSING 2	IN.			-			(
1 1/2	IN. =			-			77	100		
3/4	IN			=			8	95		
· ·	IN. =			_	100		_	80		
	4 -			-	97		= :	70		
	10 =			-	91		=	64		
	40 -			-	83		4			
	80 -			-	75		*			
NO.	200 =	51			63			39		
LIQUID LIMIT	_	21		_	36		-	ND		
PLASTICITY INDEX	-	8		-	18			NP		
AASHTO SOIL	= 0	A-4(1)		-	A-6(9)		-	A-4() (C	
UNIFIED SOIL	**			-			***			
% MOISTURE CONTENT	-	10.5	5	-	11.0		(75)	15	. 8	
ACHMSC		4.5W		0.77	0.5		1	5.55		
AGG BASE CRS CL-7	(IN) -	11		_	5	200	-			
	_						-			
	_			-			-			
	_			~			-			
	-			-			-			
	-			-						
	-									
	-			-			-			
DEMARKS										

REMARKS - W=MULTIPLE LAYERS

1

AASHTO TESTS : T24 T88 T89 T90 T265

1

MICHAEL BENSON, MATERIALS ENGINEER

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

		,	-			į.
DATE - 09/0	5/17				SEQUENCE	NO. 2
JOB NUMBER - 0304	183				MATERIAL	CODE - SSRVPS
FEDERAL AID NO TO E	BE ASSI	GNED			SPEC. YE	AR - 2014
PURPOSE - SOII	SURVE	Y SAMPLE			SUPPLIER	ID 1
SPEC. REMARKS - NO S	SPECIFI	CATION CHECK			COUNTY/S	TATE = 55
SUPPLIER NAME - STAT	re					NO. = 03
NAME OF PROJECT - HV	VY. 70	- CLARK CO. LINE	(SE	L. SECS.)(S	3)	
PROJECT ENGINEER - NO	OT APPL	ICABLE				
PIT/QUARRY - ARKANS	SAS					
LOCATION - PIKE (COUNTY				DATE SAM	IPLED - 08/14/17
SAMPLED BY - THORNTO	ON/BATE	S				EIVED - 08/16/17
SAMPLE FROM - TEST H	HOLE					TED - 09/05/17
MATERIAL DESC SOI		Y - R VALUE- PAV	EME	NT SOUNDING		•
LAB NUMBER				20172669		20172670
SAMPLE ID	-			S550		S551
TEST STATUS	-	·				INFORMATION ONLY
STATION	-	117+00		117+00	_	117+00
LOCATION		06 LT	100	13 LT	-	19 LT
DEPTH IN FEET			-	0 - 5	_	0-5
MAT'L COLOR	=	BROWN		BROWN	_	BROWN
MAT'L TYPE	()				-	
LATITUDE DEG-MIN-S	SEC -	34 17 20.00	-	34 17	20.00 -	34 17 20.10
LONGITUDE DEG-MIN-S	SEC -	93 30 37.70		93 30	37.60	00 .00
% PASSING 2	IN		1022			
1 1/2			-		-	
	IN	100 -	-	100		100
	IN.	98	2	98	=	95
·	4 -	96	(x_{i+1}, x_{i+1})	82	Sec. 1	92
NO.				71	=	89
NO.		88	-	62	Ξ.	0.5
			_	52	*	85 68
NO.	80 -	56	-	37	≔ <	46
NO. 2	200	50		37		40
LIQUID LIMIT	-	ND	-	ND	-	ND
PLASTICITY INDEX	-	NP	-	NP		NP
AASHTO SOIL	_	A-4(0)	-	A-4(0)	-	A-4(0)
UNIFIED SOIL	-		-		-	
% MOISTURE CONTENT	_	9.8	-	14.6	-	17.9
ACHMSC	(IN) -	4.75W	_	2.75W		that the care
	(IN) -	4.75W 11	_	6		
AGG BASE CRS CL-/	(TM)	11	_	0	100 100	
) = ;		_		::-	
	=		-		8.55	
	4		-		-	
	-		-		2=	
	-		-		10 0	
	(E)		=		5 	
			-			

REMARKS - W=MULTIPLE LAYERS

-

.

AASHTO TESTS : T24 T88 T89 T90 T265

MICHAEL BENSON, MATERIALS ENGINEER

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

JOB NUMBER - COMPANY - COM	SOIL SURVENO SPECIFIC STATE HWY. 70 NOT APPLOXIMATE SECURITY RECOUNTY RECOUNTS SECURITY RECOUNTS SECURI	Y SAMPLE CATION CHECK - CLARK CO. ICABLE S	LINE (SEL. S	SUPPLIER ID COUNTY/STATE - DISTRICT NO ECS.)(S) DATE SAMPLED - DATE RECEIVED - DATE TESTED -	2014 1 55 03
LAB NUMBER	_		=	<u> 120</u>	
SAMPLE ID	_	20172671 RV552			
TEST STATUS	_	INFORMATION	I ONLY	-	
STATION	_		ONDI :	## E	
LOCATION	_	27 RT	œ.	-	
DEPTH IN FEET	-		·	_	
MAT'L COLOR	_		:=	41	
MAT'L TYPE	_	,	=		
LATITUDE DEG-MI	IN-SEC -	34 17 20	6.10		
LONGITUDE DEG-MI		93 30 4:	1.60		
% PASSING 2	IN		-	49	
	L/2 IN		_	=# 21	
	•	100	_	요 발	
	3/8 IN	95	-	=0	
	0. 4 -	87	-	= 3	
). 10 -). 40 -	81	-	=	
		71	-	폴1	
	80 -	63	-	=	
INC	200 -	48			
LIQUID LIMIT	-	25	:e:	-	
PLASTICITY INDEX	ζ -	8	-	-	
AASHTO SOIL	-	A-4(1)		-	
UNIFIED SOIL	_		1 4	-	
% MOISTURE CONTE	ENT -		(35)	-	
	_		_		
	_		= <u>=</u>		
	_		2 2	2000 2000	
	_		-	:=	
	-		=	S=	
	-		₩.	(E	
	-		2	:= 	
	-		-		
	-		2	(2년 기계 : 10년 - 11년	

REMARKS - W=MULTIPLE LAYERS

-

.

AASHTO TESTS : T24 T88 T89 T90 T265