

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. 030483

FEDERAL AID PROJECT NO. STPR-0055(28)

HWY. 70 – CLARK CO. LINE (SEL. SECS.) (S)

STATE HIGHWAY 8 SECTION 4

IN PIKE 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 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

Table with 3 columns: Type, Asphalt Cement %, Mineral Aggregate %. Rows include Surface Course, Binder Course, and Base Course.

Handwritten signature of 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

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION
MICHAEL BENSON, MATERIALS ENGINEER
*** SOIL SURVEY STRENGTH TEST REPORT ***

DATE - 09/19/2017
JOB NUMBER - 030483

SEQUENCE NO. - 1
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)

* STATION LIMITS R-VALUE AT 240 psi *

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.	030483	Material Code	SSRVPS
Date Sampled:	8/14/2017	Station No.:	109+10
Date Tested:	September 15, 2017	Location:	27'RT
Name of Project:	HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)		
County:	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):	2
LATITUDE:		LONGITUDE:	

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	3.97
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 Specimen Weight:

Weight of Wet Soil Used (g):	3170.30
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4. Soil Properties:

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 Properties:

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 Test (Y=Yes, N=No, N/A=Not Applicable):

#VALUE!

7. Resilient Modulus, Mr:

9090(Sc)^{-0.30338}(S3)^{0.35591}

8. Comments

9. Tested By:

GW

Date: September 15, 2017

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

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

Job No. 030483 **Material Code** SSRVPS
Date Sampled: 8/14/2017 **Station No.:** 109+10
Date Tested: September 15, 2017 **Location:** 27RT
Name of Project: HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)
County: 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):** 2
LATITUDE: **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
	S ₃ psi	S _{cyclic} psi	P _{max} lbs	P _{cyclic} lbs	P _{contact} lbs	S _{max} psi	S _{cyclic} psi	S _{contact} psi	H _{avg} in	ε _r in/in	M _r 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	6.0	6.0	70.2	66.6	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	7.6	7.1	0.5	0.00602	0.00075	9,478
Sequence 5	6.0	10.0	116.4	107.8	8.6	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	8,696
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	0.6	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	6.0	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	0.6	0.01061	0.00132	6,335

TESTED BY _____ **DATE** September 15, 2017
REVIEWED BY _____ **DATE** _____

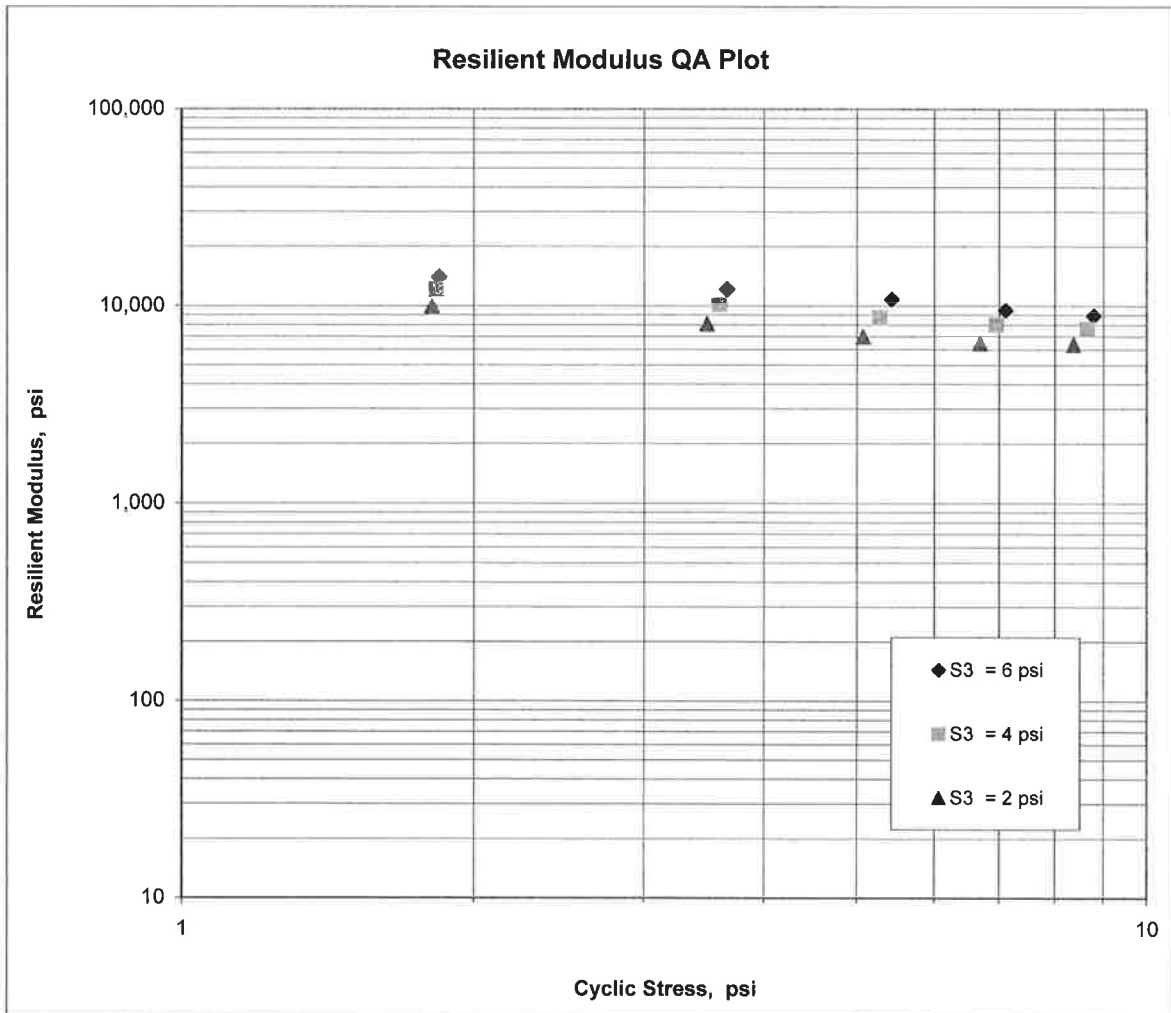
**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION**

**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:	September 15, 2017	Location:	27'RT
Name of Project:	HWY. 70 - CLARK CO. LINE (SEL. SECS.)(S)		
County:	Code: 55	Name:	PIKE
Sampled By:	THORNTON/BATES		
Lab No.:	20172671	Depth:	0-5
Sample ID:	RV552	AASHTO Class:	A-4 (1)
LATITUDE:		Material Type (1 or 2):	2
		LONGITUDE:	

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

$K_1 = \underline{9,090}$
 $K_2 = \underline{-0.30338}$
 $K_5 = \underline{0.35591}$
 $R^2 = \underline{0.99}$



JOB: 030483

Arkansas State Highway Transportation 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						L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				#4	#10	#40	#80	#200					
109+10	27 RT	0-5	BR/GR	87	81	71	63	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

comments: W=MULTIPLE LAYERS

Monday, October 02, 2017

JOB: 030483

*Arkansas State Highway Transportation Department
Materials Division*

DATE TESTED
9/5/2017

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

COUNTY NO. 55

Michael Benson, Materials Engineer

STA.# LOC.

PAVEMENT SOUNDINGS

109+00	06 RT	ACHMSC 4.5W	AGG BASE CRS CL-7 11
109+00	15 RT	ACHMSC 0.5	AGG BASE CRS CL-7 5
109+00	27 RT	ACHMSC ---	AGG BASE CRS CL-7 ---
117+00	06 LT	ACHMSC 4.75W	AGG BASE CRS CL-7 11
117+00	13 LT	ACHMSC 2.75W	AGG BASE CRS CL-7 6
117+00	19 LT	ACHMSC ---	AGG BASE CRS CL-7 ---

comments: W=MULTIPLE LAYERS

