

ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO. C29002

CITY AID PROJECT STATE AID CITY JOB (CODE 9971)

HOPE 6TH ST. RECONSTRUCTION (S)

CITY STREET WEST 6TH ST.

IN HEMPSTEAD 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

October 28, 2015

TO: Mr. David Mayo, Jr., State Aid Engineer

SUBJECT: C29002
Hope 6th St. Reconstruction (S)
W. 6th Street
Hempstead County

Transmitted herewith is the requested Soil Survey, Strength Data and Resilient Modulus test results for the above referenced job. The project consists of reconstructing 6th Street on existing location. Samples were obtained from the existing travels lanes and locations are measured from centerline of the existing roadway, there were no paved shoulders within the project limits.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of highly plastic clay. The proposed construction grade line closely matches that of the existing roadway. The existing subgrade is expected to provide a stable working platform if the weather is favorable during construction. If soil remediation is needed to allow construction to proceed during adverse weather conditions, or if a stable working platform cannot be achieved, stabilization with lime is the most appropriate remediation technique. It is recommended that the addition of 5% lime (by dry wt.) mixed to a depth of 12 inches be used for quantity estimation purposes; however, if the Engineer determines that stabilization is necessary; field trials or local experience may dictate a stable working platform can be achieved with a lower lime content.

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 of Malvern.
2. Asphalt Concrete Hot Mix

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.2	94.8
Binder Course	4.3	95.7
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

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

DATE - 10/29/2015
JOB NUMBER - C29002

SEQUENCE NO. - 1
MATERIAL CODE - SSRVPS
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 29
DISTRICT NO. - 03

JOB NAME - HOPE 6TH ST.RECONSTRUCTION(S)

* STATION LIMITS R-VALUE AT 240 psi *

BEGIN JOB - END JOB LESS THAN 5

RESILIENT MODULUS
STA.123+00 14483

REMARKS :-

AASHTO TESTS : T190

JOB: C29002

Arkansas State Highway Transportation Department

JOB NAME: HOPE 6TH ST.RECONSTRUCTION(S)

Materials Division

COUNTY NO. 29 DATE TESTED

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4 #10 #40 #80 #200					L.L.	P.I.	SOIL CLASS	LAB #:	%MOISTURE
				S	I	E	V	E					
123+00	15 LT	0-5	BROWN	97	95	92	90	88	45	25	A-7-6(23)	RV418	
101+00	6 RT	0-5	BROWN	98	93	86	82	77	38	20	A-6(14)	S414	30.2
108+00	6 LT	0-5	BROWN	99	96	91	86	77	41	21	A-7-6(15)	S415	26.5
115+00	6 RT	0-5	BROWN	99	97	94	92	88	62	45	A-7-6(42)	S416	31.1
123+00	6 LT	0-5	BROWN	100	99	97	94	90	58	40	A-7-6(38)	S417	31.6

Arkansas State Highway Transportation Department
 Materials Division
 Michael Benson, Materials Engineer

STA.# LOC. [REDACTED] **PAVEMENT SOUNDINGS**

101+00	6 RT	ACHMSC 4.0WX	PCCP --	AGG.BASE CRS CL-7 6.0
108+00	6 LT	ACHMSC 4.5WX	PCCP --	AGG.BASE CRS CL-7 7.0
115+00	6 RT	ACHMSC 4.0WX	PCCP --	AGG.BASE CRS CL-7 8.0
123+00	6 LT	ACHMSC 3.0W	PCCP 6.5	AGG.BASE CRS CL-7 --

comments: W=MULTIPLE LAYERS, X=STRIPPED

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

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

Job No.	C29002	Material Code	SSRVPS
Date Sampled:	10/15/15	Station No.:	123+00
Date Tested:	October 15, 2015	Location:	15'LT
Name of Project:	HOPE 6TH STREET RECONSTRUCTION		
County:	Code: 29	Name:	HEMPSTEAD
Sampled By:	FAULKNER	Depth:	0-5
Lab No.:	20152889	AASHTO Class:	A-7-6(23)
Sample ID:	RV418	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	3.95
Middle	3.94
Bottom	3.93
Average	3.94
Membrane Thickness (in):	0.01
Height of Specimen, Cap and Base (in):	8.05
Height of Cap and Base (in):	0.00
Initial Length, Lo (in):	8.05
Initial Area, Ao (sq. in):	12.11
Initial Volume, AoLo (cu. in):	97.50

3. Soil Specimen Weight:

Weight of Wet Soil Used (g):	2803.80
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4. Soil Properties:

Optimum Moisture Content (%):	20.5
Maximum Dry Density (pcf):	94.2
95% of MDD (pcf):	89.5
In-Situ Moisture Content (%):	N/A

5. Specimen Properties:

Wet Weight (g):	2803.80
Compaction Moisture content (%):	21.0
Compaction Wet Density (pcf):	109.57
Compaction Dry Density (pcf):	90.55
Moisture Content After Mr Test (%):	20.5

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

7. Resilient Modulus, Mr: 15565(Sc)^{-0.07508}(S3)^{0.12642}

8. Comments

9. Tested By: CG/DT **Date:** October 15, 2015

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

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

Job No.	C29002	Material Code	SSRVPS
Date Sampled:	10/15/15	Station No.:	123+00
Date Tested:	October 15, 2015	Location:	15'LT
Name of Project:	HOPE 6TH STREET RECONSTRUCTION	Depth:	0-5
County:	Code: 29 HEMPSTEAD	AASHTO Class:	A-7-6(23)
Sampled By:	FAULKNER	Material Type (1 or 2):	2
Lab No.:	20152889	LONGITUDE:	
Sample ID:	RV418		

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	25.0	22.2	2.8	2.1	1.8	0.2	0.00079	0.00010	18,565
Sequence 2	6.0	4.0	46.8	44.0	2.8	3.9	3.6	0.2	0.00161	0.00020	18,206
Sequence 3	6.0	6.0	69.4	65.8	3.6	5.7	5.4	0.3	0.00246	0.00031	17,759
Sequence 4	6.0	8.0	93.2	87.2	6.0	7.7	7.2	0.5	0.00343	0.00043	16,884
Sequence 5	6.0	10.0	116.6	108.2	8.4	9.6	8.9	0.7	0.00450	0.00056	15,980
Sequence 6	4.0	2.0	24.9	22.1	2.8	2.1	1.8	0.2	0.00085	0.00011	17,363
Sequence 7	4.0	4.0	46.6	43.8	2.8	3.9	3.6	0.2	0.00173	0.00021	16,830
Sequence 8	4.0	6.0	68.3	65.5	2.8	5.6	5.4	0.2	0.00265	0.00033	16,413
Sequence 9	4.0	8.0	92.0	86.9	5.1	7.6	7.2	0.4	0.00362	0.00045	15,963
Sequence 10	4.0	10.0	115.6	108.2	7.5	9.5	8.9	0.6	0.00464	0.00058	15,497
Sequence 11	2.0	2.0	24.8	22.0	2.8	2.1	1.8	0.2	0.00090	0.00011	16,179
Sequence 12	2.0	4.0	46.5	43.7	2.9	3.8	3.6	0.2	0.00188	0.00023	15,441
Sequence 13	2.0	6.0	68.1	65.2	2.9	5.6	5.4	0.2	0.00287	0.00036	15,070
Sequence 14	2.0	8.0	91.0	86.7	4.4	7.5	7.2	0.4	0.00391	0.00049	14,734
Sequence 15	2.0	10.0	114.7	108.0	6.8	9.5	8.9	0.6	0.00495	0.00062	14,483

TESTED BY _____ CG/DT _____ DATE October 15, 2015

REVIEWED BY _____ DATE _____

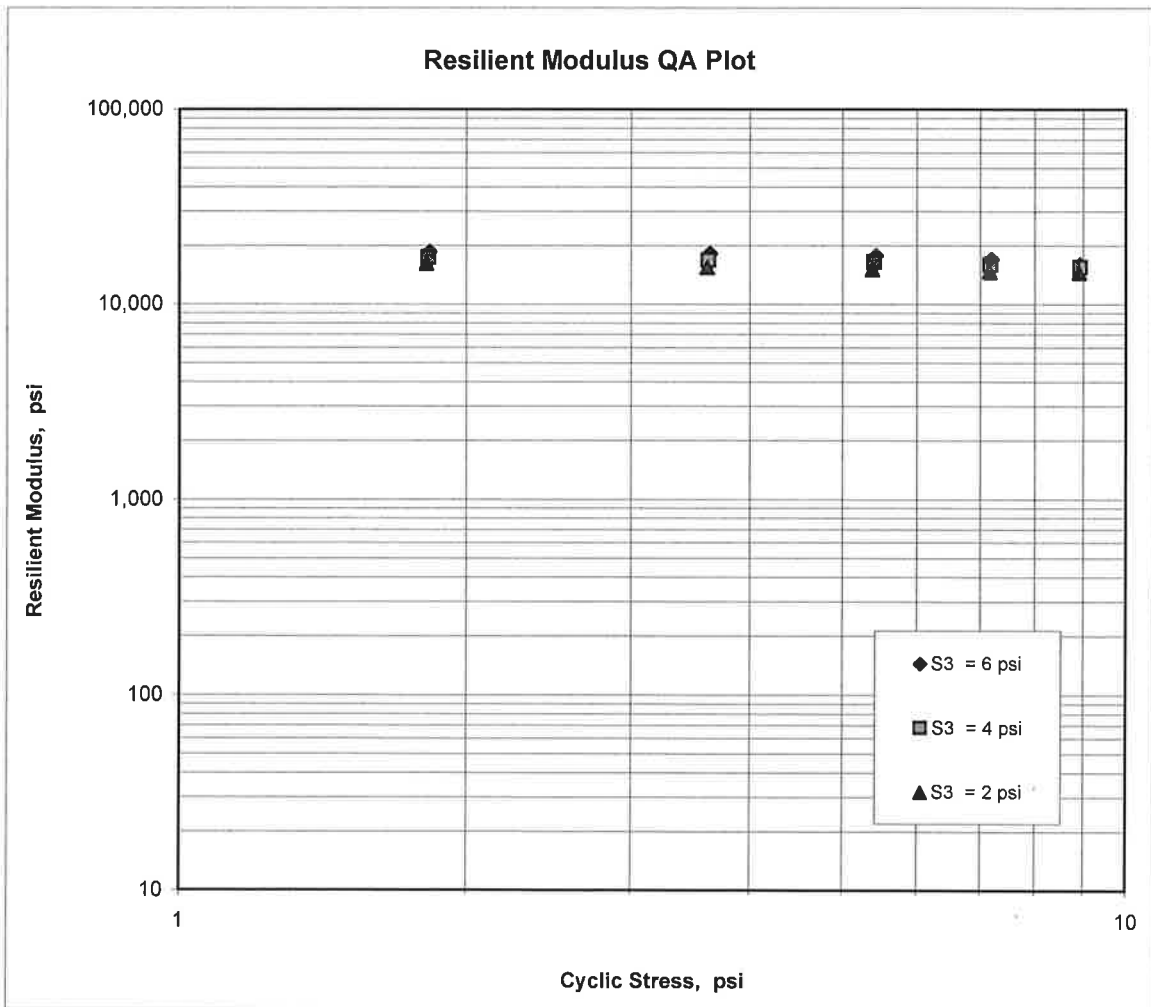
**ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION**

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

Job No.	C29002	Material Code	SSRVPS
Date Sampled:	10/15/15	Station No.:	123+00
Date Tested:	October 15, 2015	Location:	15'LT
Name of Project:	HOPE 6TH STREET RECONSTRUCTION		
County:	Code: 29	Name:	HEMPSTEAD
Sampled By:	FAULKNER	Depth:	0-5
Lab No.:	20152889	AASHTO Class:	A-7-6(23)
Sample ID:	RV418	Material Type (1 or 2):	2
LATITUDE:		LONGITUDE:	

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

$K_1 = \underline{15,565}$
 $K_2 = \underline{-0.07508}$
 $K_5 = \underline{0.12642}$
 $R^2 = \underline{0.95}$



ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE	- 10/21/15	SEQUENCE NO.	- 2
JOB NUMBER	- C29002	MATERIAL CODE	- SSRVPS
FEDERAL AID NO.	- TO BE ASSIGNED	SPEC. YEAR	- 2014
PURPOSE	- SOIL SURVEY SAMPLE	SUPPLIER ID.	- 1
SPEC. REMARKS	- NO SPECIFICATION CHECK	COUNTY/STATE	- 29
SUPPLIER NAME	- STATE	DISTRICT NO.	- 03
NAME OF PROJECT	- HOPE 6TH ST.RECONSTRUCTION(S)		
PROJECT ENGINEER	- NOT APPLICABLE		
PIT/QUARRY	- ARKANSAS		
LOCATION	- HEMPSTEAD COUNTY	DATE SAMPLED	- 09/14/15
SAMPLED BY	- DICKERSON	DATE RECEIVED	- 09/18/15
SAMPLE FROM	- TEST HOLE	DATE TESTED	- 10/20/15
MATERIAL DESC.	- SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS		

LAB NUMBER	-	20152888	-	-
SAMPLE ID	-	S417	-	-
TEST STATUS	-	INFORMATION ONLY	-	-
STATION	-	123+00	-	-
LOCATION	-	6 LT	-	-
DEPTH IN FEET	-	0-5	-	-
MAT'L COLOR	-	BROWN	-	-
MAT'L TYPE	-		-	-
LATITUDE DEG-MIN-SEC	-	33 39 48.50	-	-
LONGITUDE DEG-MIN-SEC	-	93 35 36.40	-	-
% PASSING	2	IN.	-	-
	1 1/2	IN.	-	-
	3/4	IN.	-	-
	3/8	IN.	-	-
	NO. 4	-	100	-
	NO. 10	-	99	-
	NO. 40	-	97	-
	NO. 80	-	94	-
	NO. 200	-	90	-
LIQUID LIMIT	-	58	-	-
PLASTICITY INDEX	-	40	-	-
AASHTO SOIL	-	A-7-6(38)	-	-
UNIFIED SOIL	-		-	-
% MOISTURE CONTENT	-	31.6	-	-
ACHMSC	(IN)	-	3.0W	-
PCCP	(IN)	-	6.5	-
AGG.BASE CRS CL-7	(IN)	-	--	-
		-		-
		-		-
		-		-
		-		-
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		-		-
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REMARKS - W=MULTIPLE LAYERS, X=STRIPPED