ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

IN		LEE	COUNTY			
STATE HIGHWAY	238	SECTION	2			
	HOG TUSK	CREEK STR. & APPRS. (S)				
FEDERAL AID PROJECT NO.	NHPP-0039(22)					
STATE JOB NO 110621						

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

March 15, 2017

Mr. Trinity Smith, Engineer of Roadway Design TO:

Job No. 110621 SUBJECT:

Hog Tusk Creek Str. & Apprs. (S)

Route 238 Section 2

Lee County

Transmitted herewith is the requested Soil Survey, strength data and Resilient Modulus test results for the above referenced job. The project consists of replacing the bridge crossing Hog Tusk Creek on Highway 238. Samples were obtained in the existing travel lanes and ditch line. There were no paved shoulders within the project.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of low plasticity silty clay. Cross sections are not currently available; 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 normal drying and compactive efforts, if the weather is favorable during construction. No slides were observed within the project limits.

Additional earthwork requirements will be made upon request when plans are further developed.

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 at the river ports near West Helena.
- 2. Asphalt Concrete Hot Mix

DC	64 22	
Р(3	b4-22	

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
Binder Course	4.3	95.7
Base Course	4.0	96.0
Base Geares	PG 70.	.22

PG 70-22

Type	Asphalt Cement %	Mineral Aggregate %		
Surface Course	5.3	94.7		
Binder Course	4.3	95.7		
Base Course	4.0	96.0		
Dasc Odaroo	DC 70	20		

PG 76-22

Type	Asphalt Cement %	Mineral Aggregate %
Surface Course	5.3	94.7
Binder Course	4.3	95.7
	3.8	96.2
Base Course	0.0	

Materials Engineer

MCB:pt:bjj Attachment

State Constr. Eng. - Master File Copy CC:

District 1 Engineer

System Information and Research Div.

G. C. File

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

DATE 03/09/2017

JOB NUMBER - 110621 MATERIAL CODE - SSRV

SPEC. YEAR - 2014

SUPPLIER ID. - 1 COUNTY/STATE - 39

SEQUENCE NO. - 1

DISTRICT NO. - 01

JOB NAME - HOG TUSK CREEK STR. & APPRS. (S)

BEGIN JOB - END JOB LESS THAN 5

RESILIENT MODULUS

107+00 9163

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: Date Tested: Name of Project:	110621 2/14/17 March 8, 2017 HOG TUSK CREEK STR. & APPRS. (S)	Material Code Station No.: Location:	SSRVPS 107+00 14RT
County: Sampled By:	Code: 39 Name: LEE THORNTON/TAYLOR	Depth:	0-5
Lab No.: Sample ID: LATITUDE:	20170593 RV152	AASHTO Class: Material Type (1 or 2 LONGITUDE:	A-4(4)
1. Testing Inform	nation:		
	Preconditioning - Permanent Strain > 5% (Y=Testing - Permanent Strain > 5% (Y=Yes or Number of Load Sequences Completed (0-15)	I=No)	N N 15
2. Specimen Info	ormation:		
•	Specimen Diameter (in):		
	Тор		3.95
	Middle		3.96
	Bottom		3.95
	Average		3.95
	Membrane Thickness (in):		0.01
	Height of Specimen, Cap and Base (in): Height of Cap and Base (in):		8.02 0.00
	Initial Length, Lo (in):		8.02
	Initial Area, Ao (sq. in):		12.20
	Initial Volume, AoLo (cu. in):		97.85
3. Soil Specimen			
	Weight of Wet Soil Used (g):		3096.50
4. Soil Properties			
41 CON 1 TOPOTO	Optimum Moisture Content (%):		14.6
	Maximum Dry Density (pcf):		108.7
	95% of MDD (pcf):		103.3
	In-Situ Moisture Content (%):		N/A
5. Specimen Pro	perties:		
	Wet Weight (g):		3096.50
	Compaction Moisture content (%):		14.9
	Compaction Wet Density (pcf):		120.58
	Compaction Dry Density (pcf):		104.94
	Moisture Content After Mr Test (%):		14.6
6. Quick Shear T	est (Y=Yes, N=No, N/A=Not Applicable):		#VALUE!
7. Resilient Mode	ulus, Mr:	8783	(Sc)^-0.07909(S3)^0.29225
8. Comments			
9. Tested By:	<u>GW</u>	Date: March 8, 2017	

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

SSRVPS 107+00

14RT

Material Code Station No.: Location: HOG TUSK CREEK STR. & APPRS. (S) March 8, 2017 110621 2/14/17 Name of Project: Date Sampled: Date Tested: Job No.

County: Code: 39 Name: LEE
Sampled By: THORNTON/TAYLOR
Lab No.: 20170593
Sample ID: RV152

LATITUDE:

Depth: 0-5
AASHTO Class: A-4(4)
Material Type (1 or 2): 2
LONGITUDE:

	Chamber	Nominal	Actual	Actual	Actual	Actual	Actual	Actual	Average	Resilient	Resilient
PARAMETER	Pressure	Maximum Axial	Applied Max. Axial	Applied Cyclic Load	Applied Contact	Applied M ax.	Applied Cyclic	Applied Contact	Recov Der. LVDT 1	Strain	Sninbolni
		Stress	Load		Load	Axial	Stress	Stress	and 2		
						Stress					
DESIGNATION	လိ	Scyclic	P _{max}	P _{cyclic}	Pcontact	S _{max}	S _{cyclic}	Scontact	H _{avg}	ž	M
UNIT	psi	psi	sql	sql	sql	psi	psi	psi	Ľ.	in/in	psi
Sequence 1	6.0	2.0	25.0	22.4	2.6	2.1	1.8	0.2	0.00107	0.00013	13,725
Sequence 2	6.0	4.0	47.5	44.9	2.6	3.9	3.7	0.2	0.00214	0.00027	13,764
Sequence 3	0.9	6.0	70.2	2.99	3.5	5.8	5.5	0.3	0.00332	0.00041	13,216
Sequence 4	0.9	8.0	94.1	88.2	5.9	7.7	7.2	0.5	0.00453	0.00056	12,801
Sequence 5	0.9	10.0	118.2	109.8	8.4	9.7	9.0	0.7	0.00580	0.00072	12,458
Sequence 6	4.0	2.0	25.2	22.5	2.7	2.1	1.8	0.2	0.00117	0.00015	12,636
Sequence 7	4.0	4.0	47.0	44.3	2.7	3.9	3.6	0.2	0.00246	0.00031	11,857
Sequence 8	4.0	0.9	68.5	65.8	2.7	5.6	5.4	0.2	0.00384	0.00048	11,275
Sequence 9	4.0	8.0	97.6	87.5	5.1	9.7	7.2	0.4	0.00521	0.00065	11,041
Sequence 10	4.0	10.0	116.2	108.6	9.7	9.5	8.9	9.0	0.00648	0.00081	11,020
Sequence 11	2.0	2.0	24.7	21.9	2.8	2.0	1.8	0.2	0.00138	0.00017	10,434
Sequence 12	2.0	4.0	46.1	43.2	2.9	3.8	3.5	0.2	0.00292	0.00036	9,732
Sequence 13	2.0	0.9	0.79	64.1	2.9	5.5	5.3	0.2	0.00453	0.00056	9,302
Sequence 14	2.0	8.0	89.5	85.1	4.4	7.3	7.0	0.4	0.00611	0.00076	9,163
Sequence 15	2.0	10.0	113.5	106.6	6.9	9.3	8.7	9.0	0.00758	0.00094	9,253

March 8, 2017

DATE DATE

GW

REVIEWED BY

TESTED BY

ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT MATERIALS DIVISION

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

Job No.

110621

Material Code SSRVPS

Date Sampled:

2/14/17

Station No.: 107+00

Date Tested:

Location: 14RT

March 8, 2017

County:

Name of Project: HOG TUSK CREEK STR. & APPRS. (S)

Name: LEE

Sampled By:

Code: 39 THORNTON/TAYLOR

Depth: 0-5

Lab No.:

20170593

AASHTO Class: A-4(4)

Sample ID:

RV152

Material Type (1 or 2): 2

LATITUDE:

LONGITUDE:

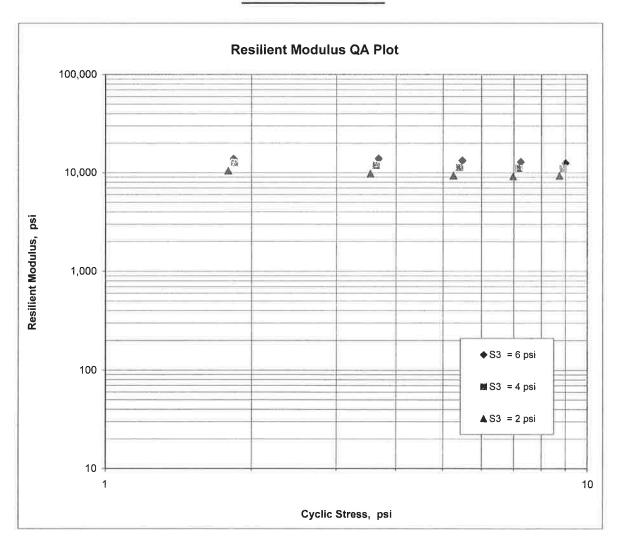
$$M_R = K1 (S_C)^{K2} (S_3)^{K5}$$

$$K1 = 8,783$$

$$K2 = -0.07909$$

$$K5 = 0.29225$$

$$R^2 = 0.99$$



JOB: 110621

Arkansas State Highway Transporation Department

JOB NAME: HOG TUSK CREEK STR. & APPRS. (S)

Materials Division

COUNTY NO. 39 DATE TESTED

3/8/2017

Michael Benson, Materials Engineer

STA.#	LOC.	DEPTH	COLOR	#4	#10	#40	#80	#200	L.L.	P.I.	SOIL CLASS	<i>LAB</i> #:	%MOISTURE
107+00	14'RT	0-5	BROWN	93	91	88	86 B	85	26	6	A-4(4)	RV152	
107+00	05'RT	0-5	GRAY	100			50,21 5070	97	27	8	A-4(7)	S148	28.2
107+00	13'RT	0-5	GRAY	100	3.07	ARIA.	3101	97	26	6	A-4(5)	S149	24.3
113+00	05'LT	0-5	GRAY	100	150		76 5	96	27	7	A-4(6)	S150	32.7
113+00	16'LT	0-5	GRAY	100	9,50			95	28	7	A-4(6)	S151	29.8

DATE TESTED

Arkansas State Highway Transporation Department

Materials Division

 $JOB\ NAME$: HOG TUSK CREEK STR. & APPRS. (S)

COUNTY NO. 39

STA.# LOC.

110621

JOB:

ACHIMSC 2.5X

05'LT

113+00

ACHIMSC

107+00 05'RT

4.0X

ACHIMSC

107+00 13'RT

Michael Benson, Materials Engineer

PAVEMENT SOUNDINGS

3/8/2017

Monday, March 13, 2017

X=STRIPPED comments:

Page I of I

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 03/09/17 JOB NUMBER - 110621 FEDERAL AID NO TO BE ASS PURPOSE - SOIL SURV SPEC. REMARKS - NO SPECIE SUPPLIER NAME - STATE NAME OF PROJECT - HOG TUS PROJECT ENGINEER - NOT APE PIT/OUARRY - ARKANSAS	EY SAMPLE ICATION CHECK K CREEK STR. & APPRS	SEQUENCE NO 1 MATERIAL CODE - SSRVPS SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 39 DISTRICT NO 01
LOCATION - LEE COUNTY SAMPLED BY - THORNTON/TAY SAMPLE FROM - TEST HOLE MATERIAL DESC SOIL SURV		DATE SAMPLED - 02/14/17 DATE RECEIVED - 02/17/17 DATE TESTED - 03/08/17 MENT SOUNDINGS
LAB NUMBER - SAMPLE ID - TEST STATUS - STATION - LOCATION - DEPTH IN FEET - MAT'L COLOR - MAT'L TYPE -	S148 INFORMATION ONLY 107+00 05'RT 0-5	20170590
LATITUDE DEG-MIN-SEC - LONGITUDE DEG-MIN-SEC -		34 46 56.10 - 34 47 2.00 90 59 17.80 90 59 17.90
% PASSING 2 IN 1 1/2 IN 3/4 IN 3/8 IN NO. 4 - NO. 10 - NO. 40 - NO. 80 - NO. 200 -		- - - - 100 - 100
LIQUID LIMIT - PLASTICITY INDEX - AASHTO SOIL - UNIFIED SOIL - % MOISTURE CONTENT -		- 26 - 27 - 6 - 7 - A-4(5) - A-4(6) - 24.3 32.7
ACHMSC (IN) -	4.0X	2.5X
REMARKS - X=STRIPPED AASHTO TESTS : T24 T88 T89 T90 T	265	

:

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 - AB	SOIL SURVEY NO SPECIFIC STATE - HOG TUSK - NOT APPLE RKANSAS EE COUNTY	Y SAMPLE CATION CHECK CREEK STR. & APPI ICABLE	RS. (S)	SEQUENCE NO. MATERIAL CODE SPEC. YEAR SUPPLIER ID. COUNTY/STATE DISTRICT NO. DATE SAMPLED	- SSRVPS - 2014 - 1 - 39 - 01
SAMPLE FROM - TH	EST HOLE			DATE RECEIVED DATE TESTED	- 02/17/17
MATERIAL DESC	SOIL SURVE	Y - R VALUE- PAV	EMENT SOUNDING	I S	
LAB NUMBER	-	20170592	=	-	
SAMPLE ID	-	S151	<u></u>	-	
TEST STATUS	-	INFORMATION ONLY	=	(*)	
STATION	-	113+00	-	\$ _ \$	
LOCATION		16'LT	<u>=</u>		
DEPTH IN FEET	_	0-5	_	-	
MAT'L COLOR	_	GRAY	=		
MAT'L TYPE	-		=	-	
		34 47 2.00	2	=	
LONGITUDE DEG-N	MIN-SEC -	90 59 18.10			
% PASSING 2	IN		_		
1	1/2 IN -		-	-	
	3/4 IN		-	=	
	3/8 IN		-	(€ 3	
N	10.4 -	100	-	***	
N	10. 10 -		_	(5)	
N.	10.40 -		-		
N	10 80 -		-	-	
D.	10.200 -	95			
LIQUID LIMIT	_	2.0			
PLASTICITY INDE		28 7	-	-	
AASHTO SOIL	- -		_	· ·	
UNIFIED SOIL	_	A-4(0)	-	-	
% MOISTURE CONT	ידאידי _	29.8	-	<u> </u>	
* MOISTORE CONT	ENI -	25.0			
	-		=	(C)	
	-		-	%±	
	_		_	: -	
	_			175 144	
	_		<u></u>	-	
	-			: =	
	-		=	: :	
	-		<u>=</u>	-	
	-		2	~	

REMARKS - X=STRIPPED

-

AASHTO TESTS : T24 T88 T89 T90 T265

1

MICHAEL BENSON, MATERIALS ENGINEER

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

```
DATE
            - 03/10/17
                                                    SEQUENCE NO. - 1
           - 110621
JOB NUMBER
                                                    MATERIAL CODE - RV
FEDERAL AID NO.- TO BE ASSIGNED
                                                    SPEC. YEAR - 2014
PURPOSE - SOIL SURVEY SAMPLE
                                                    SUPPLIER ID. - 1
SPEC. REMARKS - NO SPECIFICATION CHECK
                                                    COUNTY/STATE - 39
SUPPLIER NAME - STATE
                                                    DISTRICT NO. - 01
NAME OF PROJECT - HOG TUSK CREEK STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
          - LEE COUNTY
LOCATION
                                                    DATE SAMPLED - 02/14/17
SAMPLED BY - THORNTON/TAYLOR
                                                    DATE RECEIVED - 02/17/17
SAMPLE FROM - TEST HOLE
                                                    DATE TESTED - 03/08/17
MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS
  LAB NUMBER
                      - 20170593
  SAMPLE ID
                     - RV152
 TEST STATUS
                    - INFORMATION ONLY -
                     - 107+00
  STATION
 LOCATION
                     - 14'RT
                   - 0-5
 DEPTH IN FEET
                     - BROWN
  MAT'L COLOR
 MAT'L TYPE
  LATITUDE DEG-MIN-SEC - 34 46 56.10
 LONGITUDE DEG-MIN-SEC - 90 59 17.70
  % PASSING 2 IN. -
             1 1/2 IN. - 100
              3/4 IN. - 95
               3/8 IN. - 95
              NO. 4 - 93
              NO. 10 - 91
              NO. 40 - 88
                         86
              NO. 80 -
              NO. 200 - 85
  LIQUID LIMIT
                          26
 PLASTICITY INDEX
                         6
  AASHTO SOIL
                        A-4(4)
 UNIFIED SOIL
  % MOISTURE CONTENT
```

REMARKS - X=STRIPPED

-

AASHTO TESTS : T24 T88 T89 T90 T265

: