ARKANSAS DEPARTMENT OF TRANSPORTATION



SUBSURFACE INVESTIGATION

STATE JOB NO.	E JOB NO030455						
FEDERAL AID PROJECT NO. NHPP-0037(37)							
	DOOLEY C	REEK STR. & APPRS	(S)				
STATE HIGHWAY	160	SECTION	2				
IN		LAFAYETTE		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

September 24, 2018

TO:

Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT:

Job No. 030455

Dooley Creek Str. & Apprs. (S)

Route 160 Section 2 Lafayette 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 Dooley Creek on Highway 160. Samples were taken in the existing travel lanes and ditch line.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of highly plastic clay with sand and gravel. The subgrade soils are expected to provide a stable working platform with conventional processing if the weather is favorable during construction. There were no slide areas observed within the project limits.

Based on currently available cross sections the construction grade line closely matches that of the existing roadway. The maximum embankment height is approximately 7 feet. Prior to embankment construction all soft unstable organic material in the ditch line should be undercut, anticipated to be no more than two feet. The embankment may be constructed with locally available unspecified material utilizing the slope configuration shown in the cross sections.

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 of Sawyer, OK.

2. Asphalt Concrete Hot Mix

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 - 08/09/2018 SEQUENCE NO. - 1

JOB NUMBER - 030455 MATERIAL CODE - SSRV

SPEC. YEAR - 2014

SUPPLIER ID. - 1
COUNTY/STATE - 37

DISTRICT NO. - 03

JOB NAME DOOLEY CREEK STR. & APPRS. (S)

BEGIN JOB = END JOB 5

RESILIENT MODULUS

STA. 104+ 00 6796

REMARKS -

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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:	030455 7/11/18	Material Code Station No.:	SSRVPS 104+00
Date Tested:	August 7, 2018	Location:	18'RT
Name of Project:	DOOLEY CREEK STR. & APPRS. (S)	Doublom	10111
County:	Code: 37 Name: LAFAYETTE		
Sampled By:	DICKERSON FRAZIER	Depth:	0-5
Lab No.:	20181743	AASHTO Class:	A-6 (8)
Sample ID:	RV375	Material Type (1 or	2): 2
LATITUDE:		LONGITUDE:	
1. Testing Inform			
	Preconditioning - Permanent Strain > 5% (•	N
	Testing - Permanent Strain > 5% (Y=Yes o	-	N
	Number of Load Sequences Completed (0-	15)	15
2. Specimen Info			
	Specimen Diameter (in):		
	Тор		3.95
	Middle		3.95
	Bottom		3.94
	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):		12.16
			97.52
	Initial Volume, AoLo (cu. in):		97.52
3. Soil Specimen	_		
	Weight of Wet Soil Used (g):		3160.70
4. Soil Properties			
	Optimum Moisture Content (%):		14.6
	Maximum Dry Density (pcf):		110.4
	95% of MDD (pcf):		104.9
	In-Situ Moisture Content (%):		N/A
5. Specimen Pro	perties:		
	Wet Weight (g):		3160.70
	Compaction Moisture content (%):		14.9
	Compaction Wet Density (pcf):		123.50
	Compaction Dry Density (pcf):		107.48
	Moisture Content After Mr Test (%):		14.9
6. Quick Shear To	est (Y=Yes, N=No, N/A=Not Applicable):		#VALUE!
7. Resilient Modu	ulus, Mr:	99166	(Sc)^-0.24721(S3)^0.24107
8. Comments			
9. Tested By:	GW	Date: August 7, 2018	

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

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

SSRVPS 104+00 18'RT Material Code Station No.: Location: DOOLEY CREEK STR. & APPRS. (S) August 7, 2018 7/11/18 030455 Name of Project: Date Sampled: Date Tested: Job No.

LAFAYETTE Name: DICKERSON FRAZIER Code: 37 Sampled By: County:

20181743 RV375 LATITUDE: Sample ID: Lab No.:

Material Type (1 or 2): 2

0-5

Depth:

LONGITUDE:

	Chamber	Nominal	Actual	Actual	Actual	Actual	Actual	Actual	Average	Resilient	Resilient
	Confining	Maximum	Applied	Applied	Applied	Applied	Applied	Applied	Recov Def.	Strain	Modulus
PARAMETER	Pressure	Axial	Max. Axial	Cyclic Load	Contact	Max.	Cyclic	Contact	LVDT 1		
		Stress	Load		Load	Axial	Stress	Stress	and 2		
						Stress					
DESIGNATION	တ်	Sayalic	Ртах	Poyolic	Pcontact	Smax	Scyclic	Scontact	Havg	ယ်	M
UNIT	psi	psi	sql	sq	sql	psi	isd	psi	. ⊑	in/in	psi
Sequence 1	0.9	2.0	25.2	22.4	2.8	2.1	1.8	0.2	0.00113	0.00014	13,122
Sequence 2	0.0	4.0	47.2	44.4	2.8	3.9	3.7	0.2	0.00243	0.00030	12,035
Sequence 3	0.0	0.9	2.69	1.99	3.6	5.7	5.4	0.3	0.00402	0.00050	10,852
Sequence 4	0.0	8.0	92.3	86.3	0.9	9.7	7.1	0.5	0.00613	0.00076	9,285
Sequence 5	0.0	10.0	114.2	105.7	8.5	9.4	8.7	0.7	0.00853	0.00106	8,175
Sequence 6	4.0	2.0	25.1	22.3	2.8	2.1	1.8	0.2	0.00132	0.00016	11,114
Sequence 7	4.0	4.0	47.0	44.2	2.8	3.9	3.6	0.2	0.00286	0.00036	10,202
Sequence 8	4.0	0.9	68.3	65.4	2.8	5.6	5.4	0.2	0.00465	0.00058	9,278
Sequence 9	4.0	8.0	91.0	85.9	5.1	7.5	7.1	0.4	0.00664	0.00083	8,529
Sequence 10	4.0	10.0	113.4	105.8	9.7	9.3	8.7	9.0	0.00898	0.00112	7,772
Sequence 11	2.0	2.0	25.1	22.3	2.8	2.1	1.8	0.2	0.00152	0.00019	669'6
Sequence 12	2.0	4.0	46.6	43.8	2.8	3.8	3.6	0.2	0.00328	0.00041	8,815
Sequence 13	2.0	0.9	67.4	64.7	2.8	5.5	5.3	0.2	0.00533	99000.0	8,005
Sequence 14	2.0	8.0	89.1	84.9	4.2	7.3	7.0	0.3	0.00757	0.00094	7,397
Sequence 15	2.0	10.0	110.9	104.3	9.9	9.1	8.6	0.5	0.01012	0.00126	6,796

DATE DATE REVIEWED BY TESTED BY

August 7, 2018

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

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

Job No.

030455

Material Code SSRVPS

Date Sampled:

7/11/18

Station No.: 104+00

Date Tested:

August 7, 2018

Location: 18'RT

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

County:

Code: 37

Name: LAFAYETTE

Sampled By:

DICKERSON FRAZIER

Depth: 0-5

Lab No.:

20181743 **RV375**

AASHTO Class: A-6 (8)

Sample ID:

Material Type (1 or 2): 2

LATITUDE:

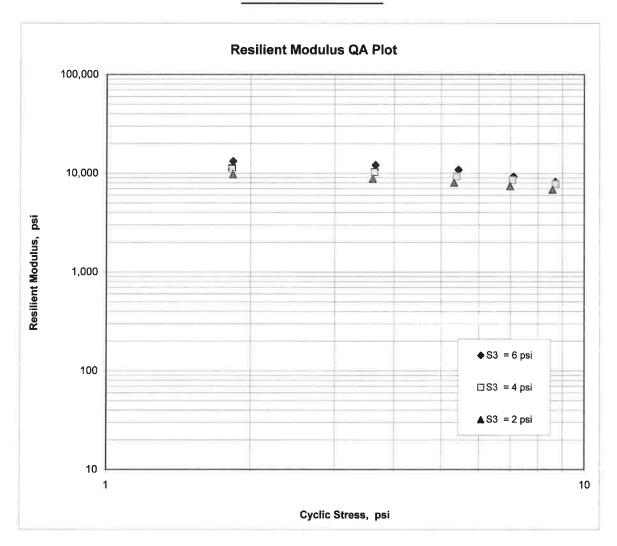
LONGITUDE:

$$M_R = K1 (S_C)^{K2} (S_3)^{K5}$$
 $K1 = 9,916$

K2 = -0.24721

K5 = 0.24107

 $R^2 = 0.93$



MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 09/18/18 JOB NUMBER - 030455 FEDERAL AID NO TO BE ASSIGNED PURPOSE - SOIL SURVEY SAMPLE SPEC. REMARKS - NO SPECIFICATION CHECK SUPPLIER NAME - STATE NAME OF PROJECT - DOOLEY CREEK STR. & APPRS. PROJECT ENGINEER - NOT APPLICABLE PIT/QUARRY - ARKANSAS					S)	SEQUENC MATERIA SPEC. Y SUPPLIE COUNTY/ DISTRIC	L CO EAR R ID STATI	DE - SS - 20 1 E - 3)14
LOCATION - LAFAYETTE COUNTY SAMPLED BY - DICKERSON/FRAZIER SAMPLE FROM - TEST HOLE						DATE SA DATE RE	ECEIV	ED - 07	7/24/18
MATERIAL DESC SO	IL SURV	EY - R V	ALUE- PAV	EME	NT SOUNDIN	IGS			
LAB NUMBER SAMPLE ID TEST STATUS STATION	- - -	20181739 S371)	## 25 25 25 25	20181740 S372 INFORMATI 104+00	ON ONLY	- S3	FORMAT	ION ONLY
LOCATION DEPTH IN FEET MAT'L COLOR	-	06'RT 0-5			18'RT 0-5			LT	
MAT'L TYPE LATITUDE DEG-MIN- LONGITUDE DEG-MIN-		33 4 93 35	44.80	-		44.80		33 4 93 34	42.00 59.60
HONGIIODE DEG MIN	DEC -	33 33	J.50		99 99	9.40		JJ J4	33.00
3/4 3/8	IN IN IN 4 - 10 - 40 - 80 -	100 96 93 89 81 77 67			100 98 93 87 76 72 72		- - - -	00 99 97 94 90 86 75	
LIQUID LIMIT PLASTICITY INDEX AASHTO SOIL UNIFIED SOIL % MOISTURE CONTENT	- - - -	32 21 A-6(11) 26.0			ND NP A-4(0)		- 2	25.1	
ACHMSC AGG. BASE CRS CL-7	(IN) - -	6.75W 8.0		1 1 1 1			-	7.5W 8.0	
	-			770			77		
	844			-			-		
	; : 			<u>=</u> 3			-		
	8 55 1655			-			-		
	:57			===			=		

REMARKS - W=MULTIPLE LAYERS

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AASHTO TESTS : T24 T88 T89 T90 T265

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MICHAEL BENSON, MATERIALS ENGINEER *** SOIL SURVEY / PAVEMENT SOUNDING TEST REPORT ***

DATE - 08/06/18 JOB NUMBER - 030455 FEDERAL AID NO TO BE AS PURPOSE - SOIL SUR SPEC. REMARKS - NO SPECT SUPPLIER NAME - STATE NAME OF PROJECT - DOOLES PROJECT ENGINEER - NOT AN PIT/QUARRY - ARKANSAS LOCATION - LAFAYETTE	SSI RVE IFI Y C PPL	Y SAMPLE CATION CHECK REEK STR. & APPRS ICABLE UNTY	. (S)	SEQUENCE NO 4 MATERIAL CODE - SSRVPS SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 37 DISTRICT NO 03
SAMPLED BY - DICKERSON/S SAMPLE FROM - TEST HOLE MATERIAL DESC SOIL SU			EMENT	DATE RECEIVED - 07/24/18 DATE TESTED - 08/06/18 SOUNDINGS
	1111	II II WHEOLI IIIV		BOONDINGB
LAB NUMBER	-	20181742	-	-
SAMPLE ID	-	S374	-	-
TEST STATUS	-	INFORMATION ONLY	-	-
STATION	_	113+00	-	-
LOCATION	_	18'LT	-	-
DEPTH IN FEET	-	0-5	-	_
MAT'L COLOR	_		-	-
MAT'L TYPE	_		_	_
LATITUDE DEG-MIN-SEC	_	33 4 42.10	_	_
LONGITUDE DEG-MIN-SEC		93 34 59.50		
% PASSING 2 IN.	_		<u> </u>	
1 1/2 IN.			-	<u>-</u>
3/4 IN.		100	-	_
3/4 IN. 3/8 IN.		95	-	-
NO. 4		93	<u>==</u>	-
			300	-
1101 10	<u>-</u>	92	1.55	-
1,0,		88	-	_
1101	-	85	-	-
NO. 200	-	80		
LIQUID LIMIT	-	40	-	=
PLASTICITY INDEX	-	28	377	<u> </u>
AASHTO SOIL	-	A-6(21)	=	<u>-</u> :
UNIFIED SOIL				<u> </u>
% MOISTURE CONTENT	-	21.8	_	
	-		_	-
	-		_	-
	-		_	-
	-		_	-
	_		_	- -
	_		_	<u>-</u>
	_		_	_
	_		_	_
	_		_	_

REMARKS - W=MULTIPLE LAYERS

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AASHTO TESTS : T24 T88 T89 T90 T265

MICHAEL BENSON, MATERIALS ENGINEER

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

DATE - 08/06/18 JOB NUMBER - 030455 FEDERAL AID NO TO BE AS PURPOSE - SOIL SUR SPEC. REMARKS - NO SPECI SUPPLIER NAME - STATE NAME OF PROJECT - DOOLEY PROJECT ENGINEER - NOT AP PIT/QUARRY - ARKANSAS LOCATION - LAFAYETTE SAMPLED BY - DICKERSON/F SAMPLE FROM - TEST HOLE	VEY SAMPLE FICATION CHECK CREEK STR. & APPRS PLICABLE COUNTY RAZIER		SEQUENCE NO 1 MATERIAL CODE - RV SPEC. YEAR - 2014 SUPPLIER ID 1 COUNTY/STATE - 37 DISTRICT NO 03 DATE SAMPLED - 07/11/18 DATE RECEIVED - 07/24/18 DATE TESTED - 08/06/18
MATERIAL DESC SOIL SUF	VEY - RESISTANCE R-	VALUE ACTUAL	RESULTS
LAB NUMBER	- 20181743	_	-
SAMPLE ID	- RV375		-
TEST STATUS	- INFORMATION ONLY	_	-
STATION	- 104+00	-	_
LOCATION	- 18'RT	-	_
DEPTH IN FEET	- 0-5	_	- -
MAT'L COLOR	-	_	-
MAT'L TYPE	-	_	_
LATITUDE DEG-MIN-SEC		-	_
LONGITUDE DEG-MIN-SEC	93 35 9.40		
% PASSING 2 IN.	_		_
1 1/2 IN.		=::	_
3/4 IN.		=	=
3/8 IN.			=
NO. 4	- 74	-):	=
NO. 10	- 69		
NO. 40		=:	- 100 mm
NO. 80	- 62	(—):	≔ :
NO. 200	- 58		
I TOUTD I IMIT	- 33		_
	- 33 - 19	=	
	- A-6(8)	=6 =6	:=:
UNIFIED SOIL	A-0(0)	¥0	:=:
% MOISTURE CONTENT	_	= 20	
6 MOISTORE CONTENT			
	-	-	-
	_	_	
	-	_	_
	-	-	-
	-	-	-
	-	_	-
•	- -	- 5	-
	-	- -	_

REMARKS - W=MULTIPLE LAYERS

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AASHTO TESTS : T24 T88 T89 T90 T265