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.
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Asphalt Cement %</th>
<th>Mineral Aggregate %</th>
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</thead>
<tbody>
<tr>
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<tr>
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<td>Base Course</td>
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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
DATE: 08/09/2018

JOB NUMBER: 030455

SEQUENCE NO.: 1

MATERIAL CODE: SSRV

SPEC. YEAR: 2014

SUPPLIER ID.: 1

COUNTY/STATE: 37

DISTRICT NO.: 03

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

RESILIENT MODULUS
STA. 104+ 00

BEGIN JOB - END JOB: 5

R-VALUE AT 240 psi: 6796

AASHTO TESTS: T190

REMARKS: -
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

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

Job No. 030455
Date Sampled: 7/11/18
Date Tested: August 7, 2018
Name of Project: DOOLEY CREEK STR. & APPRS. (S)
County: Code: 37 Name: LAFAYETTE
Sampled By: DICKERSON FRAZIER
Lab No.: 20181743
Sample ID: RV375
LATITUDE:

Material Code SSRVPS
Station No.: 104+00
Location: 18'RT

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 3.95
     Bottom 3.94
     Average 3.95
   Membrane Thickness (in): 0.01
   Height of Specimen, Cap and Base (in): 8.02
   Height of Cap and Base (in): 0.00
   Initial Length, Lo (in): 8.02
   Initial Area, Ao (sq. in): 12.16
   Initial Volume, AoLo (cu. in): 97.52

3. Soil Specimen Weight:
   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 Properties:
   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 Test (Y=Yes, N=No, N/A=Not Applicable):
   #VALUE!

7. Resilient Modulus, Mr:
   9916(Sc)^0.24721(S3)^0.24107

8. Comments

9. Tested By: GW Date: August 7, 2018
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<th>PARAMETER</th>
<th>Chamber Confining Pressure</th>
<th>Nominal Maximum Axial Stress</th>
<th>Actual Applied Max. Axial Load</th>
<th>Actual Applied Cyclic Load</th>
<th>Actual Applied Contact Load</th>
<th>Actual Applied Max. Axial Stress</th>
<th>Actual Applied Cyclic Stress</th>
<th>Actual Applied Contact Stress</th>
<th>Average Recover Def. LVDT 1 and 2</th>
<th>Resilient Strain</th>
<th>Resilient Modulus</th>
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ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT  
MATERIALS DIVISION  

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

Job No. 030455  
Date Sampled: 7/11/18  
Date Tested: August 7, 2018  
Name of Project: DOOLEY CREEK STR. & APPRS. (S)  
County: Code: 37  Name: LAFAYETTE  
Sampled By: DICKERSON FRAZIER  
Lab No.: 20181743  
Sample ID: RV375  
LATITUDE:  

Material Code SSRVPS  
Station No.: 104+00  
Location: 18'RT  
Depth: 0-5  
AASHTO Class: A-6 (8)  
Material Type (1 or 2): 2  
LONGITUDE:  

\[ M_R = K_1 \left( S_c \right)^{K_2} \left( S_s \right)^{K_5} \]

K_1 = 9.916  
K_2 = -0.24721  
K_5 = 0.24107  
R^2 = 0.93  

Resilient Modulus QA Plot  

- S3 = 6 psi  
- S3 = 4 psi  
- S3 = 2 psi  

Cyclic Stress, psi
### Soil Survey / Pavement Sounding Test Report

**Arkansas State Highway and Transportation Department - Little Rock, Arkansas**

**Materials Division**

**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. (5)
- **Project Engineer:** Not Applicable
- **Pit/Quarry:** Arkansas
- **Location:** Lafayette County
- **Sampled By:** Dickerson/Frazier
- **Sample From:** Test Hole

**Material Desc.: Soil Survey - R Value - Pavement Soundings**

<table>
<thead>
<tr>
<th>Lab Number</th>
<th>Sample ID</th>
<th>Test Status</th>
<th>Station</th>
<th>Location</th>
<th>Depth in Feet</th>
<th>Mat'l Color</th>
<th>Mat'l Type</th>
<th>Latitude Deg-Min-Sec</th>
<th>Longitude Deg-Min-Sec</th>
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<tbody>
<tr>
<td>- 20181739</td>
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<td>-</td>
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<td>-</td>
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</table>

- **% Passing**
  - 2 IN. -
  - 1 1/2 IN. -
  - 3/4 IN. -
  - 3/8 IN. -
  - NO. 4 -
  - NO. 10 -
  - NO. 40 -
  - NO. 80 -
  - NO. 200 -

- **Liquid Limit**
- **Plasticity Index**
- **AASHTO Soil**
- **Unified Soil**
- **% Moisture Content**

- **ACHMSC** (IN) - 6.75W
- **AGG. Base CRS CL-7** (IN) - 8.0

**Remarks:** W = Multiple Layers

**AASHTO Tests:** T24 T88 T89 T90 T265
# Soil Survey / Pavement Sounding Test Report

**Arkansas State Highway and Transportation Department - Little Rock, Arkansas**

**Materials Division**

**Michael Benson, Materials Engineer**

*** Soil Survey / Pavement Sounding Test Report ***

<table>
<thead>
<tr>
<th><strong>Field</strong></th>
<th><strong>Value</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Date</strong></td>
<td>08/06/18</td>
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<tr>
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<td><strong>Job Number</strong></td>
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<td>SSRVPS</td>
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<td><strong>Specific Remarks</strong></td>
<td>No Specification Check</td>
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<tr>
<td><strong>Supplier Name</strong></td>
<td>State</td>
</tr>
<tr>
<td><strong>Name of Project</strong></td>
<td>Dooley Creek Str. &amp; Apprs. (S)</td>
</tr>
<tr>
<td><strong>Engineer</strong></td>
<td>Not Applicable</td>
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<tr>
<td><strong>Pit/Quarry</strong></td>
<td>Arkansas</td>
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<tr>
<td><strong>Location</strong></td>
<td>Lafayette County</td>
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<tr>
<td><strong>Sampled By</strong></td>
<td>Dickerson/Frazier</td>
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<tr>
<td><strong>Sample From</strong></td>
<td>Test Hole</td>
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<td><strong>Date Sampled</strong></td>
<td>07/11/18</td>
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<tr>
<td><strong>Date Received</strong></td>
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<td><strong>Date Tested</strong></td>
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<td><strong>Material Desc.</strong></td>
<td>Soil Survey - R Value - Pavement Soundings</td>
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</table>

| **Lab Number**             | 20181742          |
| **Sample ID**              | S374              |
| **Test Status**            | Information Only  |
| **Station**                | 113+00            |
| **Location**               | 18'LT             |
| **Depth In Feet**          | 0-5               |
| **Material Color**         |                   |
| **Material Type**          |                   |
| **Latitude Deg-Min-Sec**   | 33 4 42.10        |
| **Longitude Deg-Min-Sec**  | 93 34 59.50       |

**% Passing**

- 2 in. -
- 1 1/2 in. -
- 3/4 in. - 100 -
- 3/8 in. - 95 -
- No. 4 - 93 -
- No. 10 - 92 -
- No. 40 - 88 -
- No. 80 - 85 -
- No. 200 - 80 -

**Liquid Limit**

- 40 -

**Plasticity Index**

- 28 -

**AASHTO Soil**

- A-6(21) -

**Unified Soil**

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<thead>
<tr>
<th><strong>% Moisture Content</strong></th>
<th><strong>Value</strong></th>
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<tr>
<td>% Moisture Content</td>
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**Remarks**

- W=Multiple Layers

**AASHTO Tests**

- T24 T88 T89 T90 T265
AR KANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS
MATERIALS DIVISION

M ICHAEL BENSON, MATER IALS ENGINEER

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

DATE - 08/06/18
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. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - LAFAYETTE COUNTY
SAMPLED BY - DICKERSON/FRAZIER
SAMPLE FROM - TEST HOLE

MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE

| 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 | - 33 4 44.80 |
| LONGITUDE DEG-MIN-SEC | - 93 35 9.40 |

% PASSING

| 2 IN. | - |
| 1 1/2 IN. | - |
| 3/4 IN. | - 100 |
| 3/8 IN. | - 88 |
| NO. 4 | - 74 |
| NO. 10 | - 69 |
| NO. 40 | - 65 |
| NO. 80 | - 62 |
| NO. 200 | - 58 |

LIQUID LIMIT - 33
PLASTICITY INDEX - 19
AASHTO SOIL - A-6(8)
UNIFIED SOIL -

% MOISTURE CONTENT -

REMARKS - W=MULTIPLE LAYERS

AASHTO TESTS : T24 T88 T89 T90 T265