STATE JOB NO. ____________________ 090430

FEDERAL AID PROJECT NO. _______ NHPP-0044(15) _________________________________

PIGEON CREEK STR. & APPRS. (S)

STATE HIGHWAY _____ 74 ___________ SECTION _______ 3 ___________

IN ___________________________ MADISON ______________________ 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
ArkDOT.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

June 19, 2018

TO: Mr. Trinity Smith, Engineer of Roadway Design

SUBJECT: Job No. 090430
Pigeon Creek Str. & Apprs. (S)
Route 74 Section 3
Madison 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 Pigeon Creek on Highway 74. Samples were taken in the existing travel lanes and ditch line. The shoulders are not paved within the project limits.

Based on laboratory results of samples obtained, the subgrade soils consist primarily of moderately plastic cherty clay. Cross-sections are not currently available, but it is assumed the construction grade line will closely match that of the existing roadway. The subgrade soils are expected to provide a stable working platform with conventional processing if the weather is favorable during construction. Rock was encountered at station 40+00 at 6 and 18 feet right of centerline at a depth of 3.0 feet.

There were no slide areas observed within the project limits. Earthwork recommendations will be made upon requests when plans are further developed and cross-sections are available.

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 Farmington.

2. Asphalt Concrete Hot Mix

<table>
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<tr>
<th>Type</th>
<th>Asphalt Cement %</th>
<th>Mineral Aggregate %</th>
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<td>Base Course</td>
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<td>95.9</td>
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Michael C. Benson  
Materials Engineer

MCB:pt:bjj
Attachment
cc: State Constr. Eng. – Master File Copy  
District 9 Engineer  
System Information and Research Div.  
G. C. File
DATE - 06/12/2018
JOB NUMBER - 090430
SEQUENCE NO. - 1
MATERIAL CODE - SSRV
SPEC. YEAR - 2014
SUPPLIER ID. - 1
COUNTY/STATE - 44
DISTRICT NO. - 09

JOB NAME - PIGEON CREEK STR. & APPRS. (S)

***************************************************************
* STATION LIMITS R-VALUE AT 240 psi *
***************************************************************

BEGIN JOB - END JOB 9

RESILIENT MODULUS
STA. 47+00  7271

REMARKS -

AASHTO TESTS : T190
### 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: 3.95
  - 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):** 12.18
- **Initial Volume, AoLo (cu. in):** 97.68

### 3. Soil Specimen Weight:

- Weight of Wet Soil Used (g): 3320.60

### 4. Soil Properties:

- **Optimum Moisture Content (%):** 12.6
- **Maximum Dry Density (pcf):** 117.5
- **95% of MDD (pcf):** 116.6
- **In-Situ Moisture Content (%):** N/A

### 5. Specimen Properties:

- **Wet Weight (g):** 3320.60
- **Compaction Moisture content (%):** 12.9
- **Compaction Wet Density (pcf):** 129.52
- **Compaction Dry Density (pcf):** 114.73
- **Moisture Content After Mr Test (%):** 12.9

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

- #VALUE!

### 7. Resilient Modulus, Mr:

- $7495(Sc)^{0.15366}(S3)^{0.40190}$

### 8. Comments

### 9. Tested By: GW  Date: May 15, 2018
# ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
## MATERIALS DIVISION

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

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<tr>
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<td>May 15, 2018</td>
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<td>Name of Project:</td>
<td>PIGEON CREEK STR. &amp; APPRS. (S)</td>
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<th>Actual Applied Cyclic Load</th>
<th>Actual Applied Contact Load</th>
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<th>Actual Applied Contact Stress</th>
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TESTED BY: GW
REVIEWED BY: 
DATE: May 15, 2018
\[ M_R = K_1 \left(S_C\right)^{K_2} \left(S_3\right)^{K_5} \]

- \( K_1 = 7.495 \)
- \( K_2 = -0.15366 \)
- \( K_5 = 0.40190 \)
- \( R^2 = 0.98 \)
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<th>#4</th>
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<th>P.I.</th>
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Comments: W=MULTIPLE LAYERS

Friday, June 15, 2018
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<th>ACHMBC</th>
<th>AGG. BASE CRS CL-7</th>
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<td>BST</td>
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**Comments:** W=MULTIPLE LAYERS

Friday, June 15, 2018
**ARAKANS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT - LITTLE ROCK, ARKANSAS MATERIALS DIVISION**

**MICHAEL BENSON, MATERIALS ENGINEER**

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

**DATE** - 06/14/18  
**SEQUENCE NO.** - 1

**JOB NUMBER** - 090430  
**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** - 44

**SUPPLIER NAME** - STATE  
**DISTRICT NO.** - 09

**NAME OF PROJECT** - PIGEON CREEK STR. & APPRS. (S)  
**DATE SAMPLED** - 03/20/18

**PROJECT ENGINEER** - NOT APPLICABLE  
**DATE RECEIVED** - 03/23/18

**PIT/QUARRY** - ARKANSAS  
**DATE TESTED** - 05/08/18

**LOCATION** - MADISON COUNTY

**SAMPLED BY** - THORNTON/BATES

**SAMPLE FROM** - TEST HOLE

**MATERIAL DESC.** - SOIL SURVEY - R VALUE - PAVEMENT SOUNDINGS

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% PASSING
- 2 IN. -
- 1 1/2 IN. -
- 3/4 IN. - 100 -
- 3/8 IN. - 88 -
- NO. 4 - 83 -
- NO. 10 - 77 -
- NO. 40 - 72 -
- NO. 80 - 63 -
- NO. 200 - 50 -

LIQUID LIMIT - 21 - 36 - 41
PLASTICITY INDEX - 07 - 20 - 22
AASHTO SOIL - A-4(5) - A-6(7) - A-7-6(11)
UNIFIED SOIL -

% MOISTURE CONTENT - 40.3 - 34.7 - 20.4

BST (IN) - 4.0 - - - 2.0
ACHMSC (IN) - - - - 4.0
ACHMBC (IN) - 1.5 - - 1.5
AGG. BASE CRS CL-7 (IN) - 7.0 - - 5.0

REMARKS - W=MULTIPLE LAYERS

AASHTO TESTS: T24 T88 T89 T90 T265
DATE - 05/08/18  
JOB NUMBER - 090430  
SEQUENCE NO. - 2  
FEDERAL AID NO.- TO BE ASSIGNED  
SPEC. YEAR - 2014  
PURPOSE - SOIL SURVEY SAMPLE  
SUPPLIER ID. - 1  
SPEC. REMARKS - NO SPECIFICATION CHECK  
COUNTY/STATE - 44  
SUPPLIER NAME - STATE  
DISTRICT NO. - 09  
NAME OF PROJECT - PIGEON CREEK STR. & APPRS. (S)  
PROJECT ENGINEER - NOT APPLICABLE  
PIT/QUARRY - ARKANSAS  
LOCATION - MADISON COUNTY  
DATE SAMPLED - 03/20/18  
SAMPLED BY - THORNTON/BATES  
DATE RECEIVED - 03/23/18  
SAMPLE FROM - TEST HOLE  
DATE TESTED - 05/08/18  
MATERIAL DESC. - SOIL SURVEY - R VALUE- PAVEMENT SOUNDINGS  

LAB NUMBER - 20180678  
SAMPLE ID - S169  
TEST STATUS - INFORMATION ONLY  
STATION - 47+00  
LOCATION - 18 LT  
DEPTH IN FEET - 0-5  
MAT'L COLOR - BROWN  
MAT'L TYPE -  
LATITUDE DEG-MIN-SEC - 36 57.60  
LONGITUDE DEG-MIN-SEC - 93 53 39.90  
% PASSING 2 IN. -  
1 1/2 IN. -  
3/4 IN. - 100  
3/8 IN. - 97  
NO. 4 - 89  
NO. 10 - 82  
NO. 40 - 76  
NO. 80 - 73  
NO. 200 - 69  

LIQUID LIMIT - 41  
PLASTICITY INDEX - 23  
AASHTO SOIL - A-7-6(14)  
UNIFIED SOIL -  

% MOISTURE CONTENT - 18.7  
BST (IN) - ---  
ACHMSC (IN) - ---  
ACHMBC (IN) - ---  
AGG. BASE CRS CL-7 (IN) - ---  

REMARKS - W=MULTIPLE LAYERS  

AASHTO TESTS: T24 T88 T89 T90 T265  

:
DATE - 05/08/18
JOB NUMBER - 090430
FEDERAL AID NO. - TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - PIGEON CREEK STR. & APPRS. (S)
PROJECT ENGINEER - NOT APPLICABLE
PIT/QUARRY - ARKANSAS
LOCATION - MADISON COUNTY
SAMPLED BY - THORNTON/BATES
SAMPLE FROM - TEST HOLE
DATE SAMPLED - 03/20/18
DATE RECEIVED - 03/23/18
DATE TESTED - 05/08/18

MATERIAL DESC. - SOIL SURVEY - RESISTANCE R-VALUE ACTUAL RESULTS

LAB NUMBER - 20180679
SAMPLE ID - RV170
TEST STATUS - INFORMATION ONLY
STATION - 47+00
LOCATION - 18 LT
DEPTH IN FEET - 0-5
MAT'L COLOR - BROWN
MAT'L TYPE -
LATITUDE DEG-MIN-SEC - 36 57.60
LONGITUDE DEG-MIN-SEC - 93 53 39.90

% PASSING 2 IN. -
1 1/2 IN. -
3/4 IN. - 100
3/8 IN. - 94
NO. 4 - 88
NO. 10 - 82
NO. 40 - 76
NO. 80 - 69
NO. 200 - 57

LIQUID LIMIT - 25
PLASTICITY INDEX - 06
AASHTO SOIL - A-4 (I)
UNIFIED SOIL -

% MOISTURE CONTENT -

REMARKS - W-MULTIPLE LAYERS

AASHTO TESTS: T24 T88 T89 T90 T265