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.
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

<table>
<thead>
<tr>
<th>Type</th>
<th>Asphalt Cement %</th>
<th>Mineral Aggregate %</th>
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<tr>
<td>Base Course</td>
<td>4.0</td>
<td>96.0</td>
</tr>
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</table>

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 - 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
<table>
<thead>
<tr>
<th>STATION</th>
<th>LOCATION</th>
<th>DEPTH (cm)</th>
<th>COLOR</th>
<th>#4</th>
<th>#10</th>
<th>#40</th>
<th>#80</th>
<th>#200</th>
<th>LL</th>
<th>PI</th>
<th>SOIL CLASS</th>
<th>LAB #</th>
<th>% MOISTURE</th>
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<td>123+00</td>
<td>15 LT</td>
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<td>88</td>
<td>45</td>
<td>25</td>
<td>A-7-6(23)</td>
<td>RV418</td>
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<tr>
<td>101+00</td>
<td>6 RT</td>
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**Comments:** W=MULTIPLE LAYERS, X=STRIPPED
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<th>STA.#</th>
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<th>JOB</th>
<th>PAVEMENT SOUNDINGS</th>
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<td>ACHMSC</td>
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**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  
Date Sampled: 10/15/15  
Date Tested: October 15, 2015  
Name of Project: HOPE 6TH STREET RECONSTRUCTION  
County: Faulkner  
Sample ID: RV418  
Lab No.: 20152889  

Material Code: SSRVPS  
Station No.: 123+00  
Location: 15LT  

Name: Hempstead  
Depth: 0-5  
AASHTO Class: A-7-6(23)  

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

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

**Job No.** C29002  
**Date Sampled:** 10/15/15  
**Date Tested:** October 15, 2015  
**Name of Project:** HOPE 6TH STREET RECONSTRUCTION  
**County:**  
  **Code:** 29  
  **Name:** HEMPSTEAD  
**Sampled By:** FAULKNER  
**Lab No.:** 20152889  
**Sample ID:** RV418  
**Location:** 15'LT

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<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 Recov Def. LVDT 1 and 2</th>
<th>Resilient Strain</th>
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<td>P_max</td>
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**Material Code:** SSRVPS  
**Station No.:** 123+00  
**Depth:** 0-5  
**AASHTO Class:** A-7-6(23)  
**Material Type (1 or 2):** 2  
**LONGITUDE:**

---

**Tested By:**  
**Reviewed By:**

**Date:** October 15, 2015
ARKANSAS STATE HIGHWAY AND TRANSPORTATION DEPARTMENT
MATERIALS DIVISION

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

Job No. C29002
Date Sampled: 10/15/15
Date Tested: October 15, 2015
Name of Project: HOPE 6TH STREET RECONSTRUCTION
County: Faulkner
Sampled By: FAULKNER
Lab No.: 20152889
Sample ID: RV418
LATITUDE: 

Material Code: SSRVPS
Station No.: 123+00
Location: 15'LT

Sample By: FAULKNER
Lab No.: 20152889
Sample ID: RV418
LATITUDE: 

Depth: 0-5
AASHTO Class: A-7-6(23)
Material Type (1 or 2): 2

\[ M_r = K_1 (S_c)^{K_2} (S_3)^{K_5} \]

\[ K_1 = 15,565 \]
\[ K_2 = -0.07508 \]
\[ K_5 = 0.12642 \]
\[ R^2 = 0.95 \]

Resilient Modulus QA Plot

![Graph showing resilient modulus against cyclic stress with data points for S3 = 6 psi, S3 = 4 psi, and S3 = 2 psi.](image)
DATE - 10/21/15
JOB NUMBER - C29002
FEDERAL AID NO. - TO BE ASSIGNED
PURPOSE - SOIL SURVEY SAMPLE
SPEC. REMARKS - NO SPECIFICATION CHECK
SUPPLIER NAME - STATE
NAME OF PROJECT - HOPE 6TH ST. RECONSTRUCTION(S)
PROJECT ENGINEER - NOT APPLICABLE
LOCATION - HEMPSTEAD COUNTY
SAMPLED BY - DICKERSON
SAMPLE FROM - TEST HOLE
DATE SAMPLED - 09/14/15
DATE RECEIVED - 09/18/15
DATE TESTED - 10/20/15
MATERIAL DESC. - SOIL SURVEY - R VALUE - PAVEMENT SOUNDINGS

LAB NUMBER - 2015285 - 20152886 - 20152887
SAMPLE ID - S414 - S415 - S416
TEST STATUS - INFORMATION ONLY - INFORMATION ONLY - INFORMATION ONLY
STATION - 101+00 - 108+00 - 115+00
LOCATION - 6 RT - 6 LT - 6 RT
DEPTH IN FEET - 0-5 - 0-5 - 0-5
MAT'L COLOR - BROWN - BROWN - BROWN
MAT'L TYPE -

LATITUDE DEG-MIN-SEC - 33 39 44.10 - 33 39 44.30 - 33 39 46.10
LONGITUDE DEG-MIN-SEC - 93 36 1.90 - 93 35 53.80 - 93 35 45.80

% PASSING 2 IN.
1 1/2 IN. -
3/4 IN. -
3/8 IN. - 100 - 99 - 100
NO. 4 - 98 - 99 - 99
NO. 10 - 93 - 96 - 97
NO. 40 - 86 - 91 - 94
NO. 80 - 82 - 86 - 92
NO. 200 - 77 - 77 - 88

LIQUID LIMIT - 38 - 41 - 62
PLASTICITY INDEX - 20 - 21 - 45
AASHTO SOIL - A-6(14) - A-7-6(15) - A-7-6(42)
UNIFIED SOIL -

% MOISTURE CONTENT - 30.2 - 26.5 - 31.1

ACHMSC (IN) - 4.0WX - 4.5WX - 4.0WX
PCCP (IN) - -- - -- - --
AGG.BSCE CRS CL-7 (IN) - 6.0 - 7.0 - 8.0

REMARKS - W = MULTIPLE LAYERS, X = STRIPPED

AASHTO TESTS: T24 T88 T89 T90 T265
**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 SAMPED** - 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) | - |

**REMARKS** - W=MULTIPLE LAYERS, X=STRIPPED

**AASHTO TESTS** : T24 T88 T89 T90 T265