

# ENGINEERING SERVICES DEPARTMENT

GEOTECHNICAL UNIT  
GEOLOGY SECTION

BRIDGE FOUNDATION GEOLOGY REPORT  
99-75 K-0672-01  
F-BRF-059-3(8)  
Rock Creek, Bridge No. 3.69  
Pottawatomie County



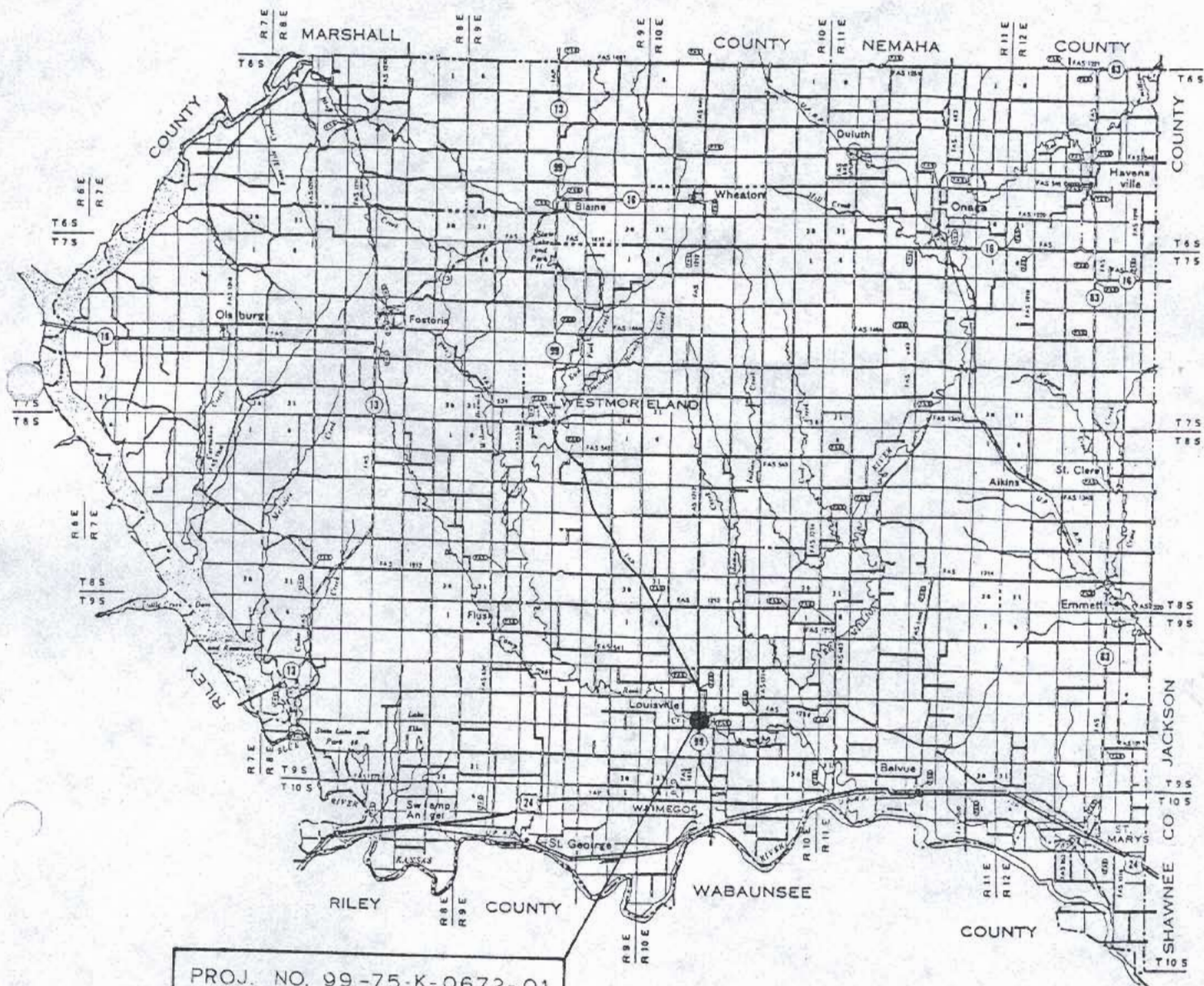
LAWRENCE A. ROCKERS  
CHIEF GEOLOGIST

By

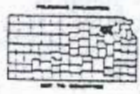
Alex A. Kotoyantz, Geol. II

Wallace K. Taylor, Regional Geologist

December 1980

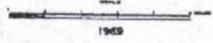


PROJ. NO. 99-75-K-0672-01  
 K-99 over ROCK CREEK  
 BR. NO. 99-75-3.69



# GENERAL HIGHWAY MAP POTTAWATOMIE COUNTY KANSAS

PREPARED BY THE  
 STATE HIGHWAY COMMISSION OF KANSAS  
 DEPARTMENT OF PLANNING AND DEVELOPMENT  
 IN COOPERATION WITH THE  
 U. S. DEPARTMENT OF TRANSPORTATION  
 FEDERAL HIGHWAY ADMINISTRATION



## FOUNDATION GEOLOGIC MATERIAL

The alluvium deposits consist predominantly of silty clay material, silt, and minor amounts of limestone gravel.

The bedrock units that were encountered in the soundings are the Elmont Limestone Member, Harveyville Shale Member, and Reading Limestone Member.

## FIELD TEST PROCEDURES

The footing material was subjected to two types of dynamic testing. The 2½ inch casing drive and the air hammer penetrometer tests were made. This information was supplemented by coring the bedrock.

The air hammer drives and the casing drives penetrated the fill section and the alluvium deposits without difficulties or much resistance.

On Abutment No. 1 the casing drive in Core Drill No. 1 refused at an elevation of 972.3. After 25 blows per tenth, there was no penetration. Air hammer drive No. 2 refused at an elevation of 965.6. See Cross Section A-A'.

The mantle-bedrock elevations in Pier Nos. 1, 2, and 3 were interpolated after analyzing the air hammer drives.

On Abutment No. 2, the casing drive in Core Drill No. 2 refused at an elevation of 947.6 after 25 blows per tenth and no penetration. Also, air hammer No. 1 refused at an elevation of 947.6.

## PILE RECOMMENDATION

Pre-cast, prestressed concrete pile, pipe pile and H-pile may be used for this bridge site.

All types of Pile should penetrate the alluvium deposits and attain the necessary point bearing into the bedrock as shown by the pile tip elevations listed below. When the piles have obtained bearing in bedrock, further driving may damage the pile, and should therefore be avoided.

The following are the suggested approximate pile tip elevations in the bedrock for the abutments and the piers:

| <u>Location</u>                  | <u>H-pile, Pre-cast and Prestressed<br/>Concrete Pile Tip Elevation</u> |        |         | <u>Pipe Pile<br/>Tip Elevation</u> |        |         |
|----------------------------------|-------------------------------------------------------------------------|--------|---------|------------------------------------|--------|---------|
|                                  | 20' Lt.                                                                 | Center | 20' Rt. | 20' Lt.                            | Center | 20' Rt. |
| Abutment No. 1<br>Station 160+68 | 971.0                                                                   | 965.0  | 960.0   | 972.0                              | 970.5  | 963.0   |
| Pier No. 1<br>Station 161+30     |                                                                         | 955.0  |         |                                    | 958.0  |         |
| Pier No. 2<br>Station 162+07     |                                                                         | 947.0  |         |                                    | 949.0  |         |
| Pier No. 3<br>Station 162+84     |                                                                         | 947.0  |         |                                    | 948.0  |         |
| Abutment No. 1<br>Station 163+46 |                                                                         | 947.0  |         |                                    | 947.0  |         |

## INVESTIGATION PROCEDURES

Two core drill soundings, one power auger sounding, and seven air hammer drives

were made at the bridge site to develop the Foundation Engineering Geology.

#### HYDROLOGY

Excavation for Piers No. 1 and 2 will be below the flowline of the stream and will be wet. Pumping and cribbing of the excavation will probably be necessary.

#### ACKNOWLEDGEMENTS

Recognition is given to Leo E. Teasley, Larry Cavender, Bob Staadt, Bill Werner, David Schurle, and Terri Kellenberger, Engineering Technicians, for their aid in obtaining the field data.

#### DISTRIBUTION

The Engineering Geology Bridge Sheet with the drill logs is being transmitted to the Bridge Engineer with a copy of this report. Copies are being transmitted to the Construction Engineer to be used during the construction of the bridge.

Engineering Geology Sheet

Pottomac County

99-75-F-0672-01  
Project 99-75-F-BRF-059-3(8)

Location Rock Creek

Bridge No. 3.69 Station 162 + 07

Date 1-22-81

Above transmitted to L. Rockers

with copy of drill logs and report.

In Geology Files;

|           |                                              |                   |
|-----------|----------------------------------------------|-------------------|
| <u>1</u>  | Cronaflex or linen                           |                   |
| <u>2</u>  | Print of Engineering Geology Sheet           |                   |
| <u>15</u> | Half-size print of Engineering Geology sheet |                   |
| <u>2</u>  | Foundation Geology Report                    | } original & copy |
| <u>3</u>  | Original Drill Logs                          |                   |
| <u>1</u>  | Air Hammer Drive Data                        |                   |
|           | Cores                                        |                   |
|           | Split spoon samples                          |                   |
| <u>15</u> | Location maps                                |                   |

*Report being prepared*  
1/22/81

*Transmitted* 1/29/81

## SOUNDING DATA

KANSAS DEPARTMENT OF TRANSPORTATION

Sheet 1 of 4

|                            |             |                                    |             |                                          |       |      |      |      |       |
|----------------------------|-------------|------------------------------------|-------------|------------------------------------------|-------|------|------|------|-------|
| COUNTY <i>Pottawatomie</i> |             | PROJECT NO. <i>99-75-K-0672-01</i> |             | BRIDGE NO. <i>3-073.69</i>               |       |      |      |      |       |
| Q. STA. <i>162+07</i>      |             | NAME <i>Rock Creek</i>             |             | STA. <i>160+68</i>                       |       |      |      |      |       |
| GROUNDWATER EL.            |             | VERTICAL SCALE <i>1"=10'</i>       |             | RT/EF <i>8.5'</i> SOUND. NO. <i>CD-1</i> |       |      |      |      |       |
| B.M. NO. <i>13</i>         |             | B.M. EL. <i>1012.18</i>            |             | SUBMITTED BY <i>Alex A. Kotovantz</i>    |       |      |      |      |       |
| POINT                      | B.S.        | H.I.                               | F.S.        | ELEV.                                    | POINT | B.S. | H.I. | F.S. | ELEV. |
| <i>T<sub>1</sub></i>       | <i>3.83</i> | <i>1016.01</i>                     |             | <i>1012.18</i>                           |       |      |      |      |       |
| <i>CD-1</i>                |             |                                    | <i>4.55</i> | <i>1011.46</i>                           |       |      |      |      |       |
|                            |             |                                    |             |                                          |       |      |      |      |       |
|                            |             |                                    |             |                                          |       |      |      |      |       |
|                            |             |                                    |             |                                          |       |      |      |      |       |
|                            |             |                                    |             |                                          |       |      |      |      |       |

| FORM                    | BIT | EL.  | LOG | ACC. DEP. | GEOLOGIC DESCRIPTION AND REMARKS                        | CASING DRIVE REC. DEPTH | BL/10 |
|-------------------------|-----|------|-----|-----------|---------------------------------------------------------|-------------------------|-------|
| Alluvium & Fill Section |     |      |     |           | TH. 1011.5 CD-1 Abut. #1                                |                         |       |
|                         |     | 1010 |     |           |                                                         |                         |       |
|                         |     |      |     |           | Silty clay, dk. brown                                   |                         |       |
|                         |     | 1000 |     |           |                                                         |                         |       |
|                         |     |      |     | 15'       | 995.8                                                   | 15'                     | 995.8 |
|                         |     | 990  |     |           |                                                         |                         |       |
|                         |     |      |     |           | Silt, tan-brown                                         |                         |       |
|                         |     | 980  |     |           |                                                         |                         |       |
|                         |     |      |     | 31'       | 980.0                                                   |                         |       |
|                         |     |      |     |           | Sand, fine, tan brown                                   |                         |       |
| Elmont Mbr.             |     |      |     | 35'       | 976.0                                                   |                         |       |
|                         |     |      |     |           | Silty clay, dk. brown-gray                              |                         |       |
|                         |     |      |     | 39'       | 972.3                                                   |                         |       |
|                         |     |      |     | 40'       | 970.9 Ls., dense, crystalline, hard, lt. gray.          |                         |       |
|                         |     |      |     | 41.3      | 970.2 Ls., shaly, dk. gray.                             |                         |       |
|                         |     |      |     | 42.3      | 969.2 Ls., dense, hard, vertical lt., staining          |                         |       |
|                         |     | 960  |     |           |                                                         |                         |       |
|                         |     |      |     |           | Sh., limy, silty, clayey, lt. grayish green - dk. gray. |                         |       |
|                         |     | 950  |     |           |                                                         |                         |       |
|                         |     |      |     | 58'       | 953.0                                                   |                         |       |
| Harveyville Mbr.        |     |      |     |           | Ls., dense, hard, lt. gray.                             |                         |       |
|                         |     |      |     | 61'       | 950.5                                                   |                         |       |
|                         |     |      |     |           | Ls., shaly, lt. gray, hard.                             |                         |       |
|                         |     |      |     | 63'       | 948.5                                                   |                         |       |
|                         |     |      |     | 63.4      | 948.7                                                   |                         |       |
|                         |     |      |     | 64.9      | 946.6 Sh., limy, clayey, gray.                          |                         |       |
|                         |     | 940  |     |           |                                                         |                         |       |
|                         |     |      |     |           | Core #1, 39' - 42' (972.3 - 968.2) Cut 3' Rec. 2'       |                         |       |
|                         |     |      |     |           | Core #2, 42' - 47' (968.9 - 963.1) Cut 5' Rec. 5'       |                         |       |
|                         |     |      |     |           | Core #3, 47' - 51' (963.2 - 960.3) Cut 3' Rec. 1'       |                         |       |
| Reading Mbr.            |     |      |     |           | Core #4, 51' - 56' (960.3 - 953.3) Cut 5' Rec. 3'       |                         |       |
|                         |     |      |     |           | Core #5, 56' - 59' (953.3 - 946.6) Cut 3' Rec. 1'       |                         |       |
|                         |     |      |     |           | Core #6, 59' - 61' (946.6 - 948.5) Cut 2' Rec. 1'       |                         |       |
|                         |     |      |     |           | Core #7, 61' - 63' (948.5 - 946.6) Cut 2' Rec. 1'       |                         |       |
|                         |     |      |     |           | Core #8, 63' - 64.9' (946.6 - 948.7) Cut 1.9' Rec. 1'   |                         |       |
|                         |     |      |     |           | Core #9, 64.9' - 66' (948.7 - 946.6) Cut 1.1' Rec. 1'   |                         |       |
|                         |     |      |     |           | Core #10, 66' - 68' (946.6 - 948.5) Cut 2' Rec. 1'      |                         |       |
|                         |     |      |     |           | Core #11, 68' - 70' (948.5 - 946.6) Cut 2' Rec. 1'      |                         |       |
|                         |     |      |     |           | Core #12, 70' - 72' (946.6 - 948.5) Cut 2' Rec. 1'      |                         |       |
|                         |     |      |     |           | Core #13, 72' - 74' (948.5 - 946.6) Cut 2' Rec. 1'      |                         |       |

Pushed  
2 1/2 inch casing20 BPT &  
No penetration

## SOUNDING DATA

KANSAS DEPARTMENT OF TRANSPORTATION

Sheet 2 of 4

|                            |             |                                    |             |                    |                            |                 |      |                        |       |
|----------------------------|-------------|------------------------------------|-------------|--------------------|----------------------------|-----------------|------|------------------------|-------|
| COUNTY <i>Pottawatomie</i> |             | PROJECT NO. <i>99-75-R-0672-01</i> |             |                    | BRIDGE NO. <i>3-073.69</i> |                 |      |                        |       |
| & STA. <i>162+07</i>       |             | NAME <i>Rock Creek</i>             |             | STA. <i>163+46</i> |                            | RT/LE <i>9'</i> |      | SOUND. NO. <i>CD-2</i> |       |
| GROUNDWATER EL.            |             | VERTICAL SCALE <i>1"=10'</i>       |             |                    | DATE <i>11-6-1980</i>      |                 |      |                        |       |
| B.M. NO. <i>13</i>         |             | B.M. EL. <i>1012.18</i>            |             |                    | SUBMITTED BY               |                 |      |                        |       |
| POINT                      | B.S.        | H.I.                               | F.S.        | ELEV.              | POINT                      | B.S.            | H.I. | F.S.                   | ELEV. |
| <i>T<sub>1</sub></i>       | <i>3.83</i> | <i>1016.01</i>                     |             | <i>1012.18</i>     |                            |                 |      |                        |       |
| <i>CD-2</i>                |             |                                    | <i>4.51</i> | <i>1011.50</i>     |                            |                 |      |                        |       |
|                            |             |                                    |             |                    |                            |                 |      |                        |       |
|                            |             |                                    |             |                    |                            |                 |      |                        |       |
|                            |             |                                    |             |                    |                            |                 |      |                        |       |

| FORM                          | BIT | EL.  | LOG | ACC. DEP. | GEOLOGIC DESCRIPTION AND REMARKS              | CASING DRIVE REC. DEPTH  | BL/10 |
|-------------------------------|-----|------|-----|-----------|-----------------------------------------------|--------------------------|-------|
| A 114 V I U M & F: 11 Section |     | 1010 |     |           | TH. 1011.5 CD-2 Abut. #2                      |                          |       |
|                               |     | 1000 |     |           | Silty clay, dk. brown.                        |                          |       |
|                               |     | 990  |     |           |                                               |                          |       |
|                               |     | 980  |     | 28°       | 983.2                                         |                          |       |
|                               |     | 970  |     |           | Silt, tan-brown                               |                          |       |
|                               |     | 960  |     | 40°       | 971.5                                         |                          |       |
|                               |     | 950  |     |           | Silty clay, dk. brown.                        |                          |       |
|                               |     | 940  |     | 60°       | 950.8                                         |                          |       |
|                               |     | 930  |     | 62°       | 949.7 Ls. gravel                              |                          |       |
|                               |     | 920  |     | 63°       | 948.0 clay & ls. frags. dk. brown - tan brown |                          |       |
| Reading Mbr.                  |     | 910  |     | 64°       | 947.1 sh, limy, dk. gray.                     |                          |       |
|                               |     | 900  |     | 65.6      | 945.9 Ls. dense, hard, lt. gray.              |                          |       |
|                               |     | 890  |     | 66.0      | 945.5 sh, limy, limy stringers, dk. gray.     |                          |       |
|                               |     | 880  |     | 69°       | 942.5                                         |                          |       |
|                               |     | 870  |     |           | Core #1, 64°-69° (947.5-942.5) Cut 5° Rec. 4° |                          |       |
|                               |     |      |     |           |                                               | Pushed 2 1/2 inch casing |       |
|                               |     |      |     |           |                                               | 55°                      | 956.5 |
|                               |     |      |     |           |                                               | 63°                      | 947.6 |
|                               |     |      |     |           |                                               | 25 BPT & No Penetration  |       |

Power Auger Soundings  
(F-100)Proj 99-75-K-0672-01  
Dr. No. 3-07 3.69

Pottawatomie County

Abut<sup>#1</sup> PA<sup>#1</sup>1011.4 0<sup>2</sup>-39<sup>4</sup>

Silt, Silty Clay + sand tan to brown

Sta 160+68 Lt. 6<sup>2</sup>972.0 39<sup>4</sup>-39<sup>5</sup>

Ls. hard

11-12-80

971.9 39<sup>5</sup>

S. I. S.

Closed

## Survey Notes

Proj 99-75-K-0672-01

Br No. ~~3.07~~ 3.69

99 over Hook Cr.

Pottawatomie County

| Sta    | B.S. | H.I.    | F.S.  | Elev.    | Plans BM #13                        |
|--------|------|---------|-------|----------|-------------------------------------|
| BM #13 | 3.83 | 1016.01 |       | 1012.181 | "t" cut on S.W. Wing of Bridge      |
| CD #1  |      |         | 4.55  | 1011.46  | 15' Lt. Sta 160+79.5 Elev. 1012.181 |
| AH #5  |      |         | 4.36  | 1011.65  |                                     |
| AH #6  |      |         | 4.39  | 1011.62  |                                     |
| CD #2  |      |         | 4.51  | 1011.50  |                                     |
| AH #7  |      |         | 16.66 | 999.35   |                                     |
| PA #1  |      |         | 4.52  | 1011.43  |                                     |
| BM #13 |      |         | 3.83  | 1012.18  |                                     |

| Sta    | B.S. | H.I.    | F.S.  | Elev.    |
|--------|------|---------|-------|----------|
| BM #13 | 3.21 | 1015.39 |       | 1012.181 |
| AH #2  |      |         | 3.78  | 1011.61  |
| AH #1  |      |         | 3.84  | 1011.55  |
| AH #3  |      |         | 12.23 | 1003.16  |
| AH #4  |      |         | 3.86  | 1011.53  |
| BM #13 |      |         | 3.21  | 1012.18  |