

BUREAU of MATERIALS and RESEARCH

GEOTECHNICAL UNIT
GEOLOGY SECTION

BRIDGE FOUNDATION GEOLOGY REPORT
24-75 K 2603-01
US-24 OVER LOST CREEK
BR. NO. 21.54, STATION 100+00
POTTAWATOMIE COUNTY



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DECEMBER 1987



LEGEND

ROADS AND ROADWAY FEATURES

PRIMITIVE ROAD
 UNIMPROVED ROAD
 GRADED AND DRAINED ROAD
 SOIL SURFACED ROAD
 GRAVEL OR STONE ROAD
 NOT GRADED OR DRAINED
 GRAVEL OR STONE ROAD
 GRADED AND DRAINED
 GRAVEL OR STONE ROAD WITH
 STABILIZED SURFACE
 BITUMINOUS ROAD-LOW TYPE
 PAVED ROAD
 DIVIDED HIGHWAY
 HIGHWAY WITH FULL CONTROL OF
 ACCESS AND INTERCHANGE

ROAD SYSTEM DESIGNATION

FEDERAL AND INTERSTATE HIGHWAY SYSTEM
 FEDERAL AND PRIMARY HIGHWAY SYSTEM
 FEDERAL AND SECONDARY HIGHWAY SYSTEM
 INTERSTATE NUMBERED HIGHWAY
 U.S. NUMBERED HIGHWAY
 STATE HIGHWAY SYSTEM OR
 STATE NUMBERED HIGHWAY
 ROAD OF DESIGNATED STATUS IN
 MARKED ROUTE



PA SYSTEM REVISED TO DEC. 15, 1965

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GEOLOGY AND FOUNDATION MATERIAL

The alluvial deposits consist predominantly of fine to medium sand, and coarse sand with scattered gravel in the lower 1.0 foot. Casing and air hammer drives penetrated the alluvial deposits with little resistance.

The Pony Creek SHale Member is the bedrock that will provide the foundation material. The shale consists of silty, micaceous material with fine grained sandstone stringers. Locally, the Pony Creek Member appears to be a channel fill deposit.

FIELD TEST PROCEDURES

The footing material was subjected to dynamic testing and laboratory tests for the determination of bearing capacity. A casing drive, standard penetration and unconfined compression tests were made. The information was supplemented by a core sounding.

The casing drive refused at an elevation of 896.3. It penetrated 0.2 foot into the Pony Creek Member with 75 blows per tenth.

An air hammer drive refused at an elevation of 895.5 in the upper 1.0 foot of the silty shale.

Unconfined compression tests on samples from an elevation of 894.1 to 882.7 shows the compressive strength of Pony Creek Member to be approximately 25.6 T.S.F.

FOOTING RECOMMENDATIONS

We recommend that H-pile be used at the abutment and pier footings to insure satisfactory penetration of the alluvial deposits to obtain the necessary point bearing in the bedrock.

Design pile tip elevations and mantle-bedrock contacts at each location are listed below in tabulated form.

<u>Location</u>	<u>Mantle-Bedrock Elevation</u>	<u>Recommended Pile Tip Elev.</u>
Abutment No. 1 Station 99+35	896.5	891.5
Pier No. 1 Station 99+74	896.5	891.5
Pier No. 2 Station 100+26	896.5	891.5
Abutment No. 2 Station 100+65	896.5	891.5

Plan Note:

"When the piles have obtained the necessary bearing within the bedrock, as shown on the plans, driving should be stopped to prevent damage to the pile".

HYDROLOGY

The groundwater was found to have a hydrostatic level of 943.4 near Abutment No. 2

INVESTIGATION PROCEDURES

One core drill sounding and one air hammer drive was made at the bridge site to develop the foundation geology.

KANSAS DEPARTMENT OF TRANSPORTATION

GEOLOGY SECTION

DATE 9-28-87
 WEATHER Cool, Clear
 COUNTY Pottawatomie
 BR. NO. 21.54

PARTY

Kobayashi
Beigman
Strickland
Chapman

DIV. 1 ROUTE 24 SEC. CL 75 PROJ. K-2403 SEC. AGR 01 CL. ---

Abut. #1

T.H. EL. 958.48

STA. 99+35, Lt. 34'

SDG. NO. 1

DEPTH	0-1	1-2	2-3	3-4	4-5
0-5					
5-10					
10-15					
15-20	37	33 70	12 82	8 90	10 100
20-25	5	10 15	8 23	10 33	8 41
25-30	10	4 14	6 20	7 27	12 39
30-35	19	13 32	6 38	12 50	9 59
35-40	9	13 22	11 33	10 43	7 50
40-45	15	14 29	10 39	6 45	10 55
45-50	8	6 14	11 25	20 45	16 61
50-55	11	6 17	8 25	9 34	17 46
55-60	16	18 34	8 42	13 55	25 80
60-65	24	19 43	257 300		
65-70					
70-75					
75-80					
80-85					
85-90					
90-95					
95-100					
100-105					
105-110					
110-115					
115-120					
120-125					

Ref.
63°

(895.48)

NO. 2 McK. & T. AIR HAMMER TIMED AT SECONDS PER FT.

REMARKS: 942.9
15' firm, 18' less firm, 62' hard, 62' 75' 63' No
penetration, 3 min. 895.7 895.5

COMPRESSOR TIME - BEGINNING _____ COMPLETION _____