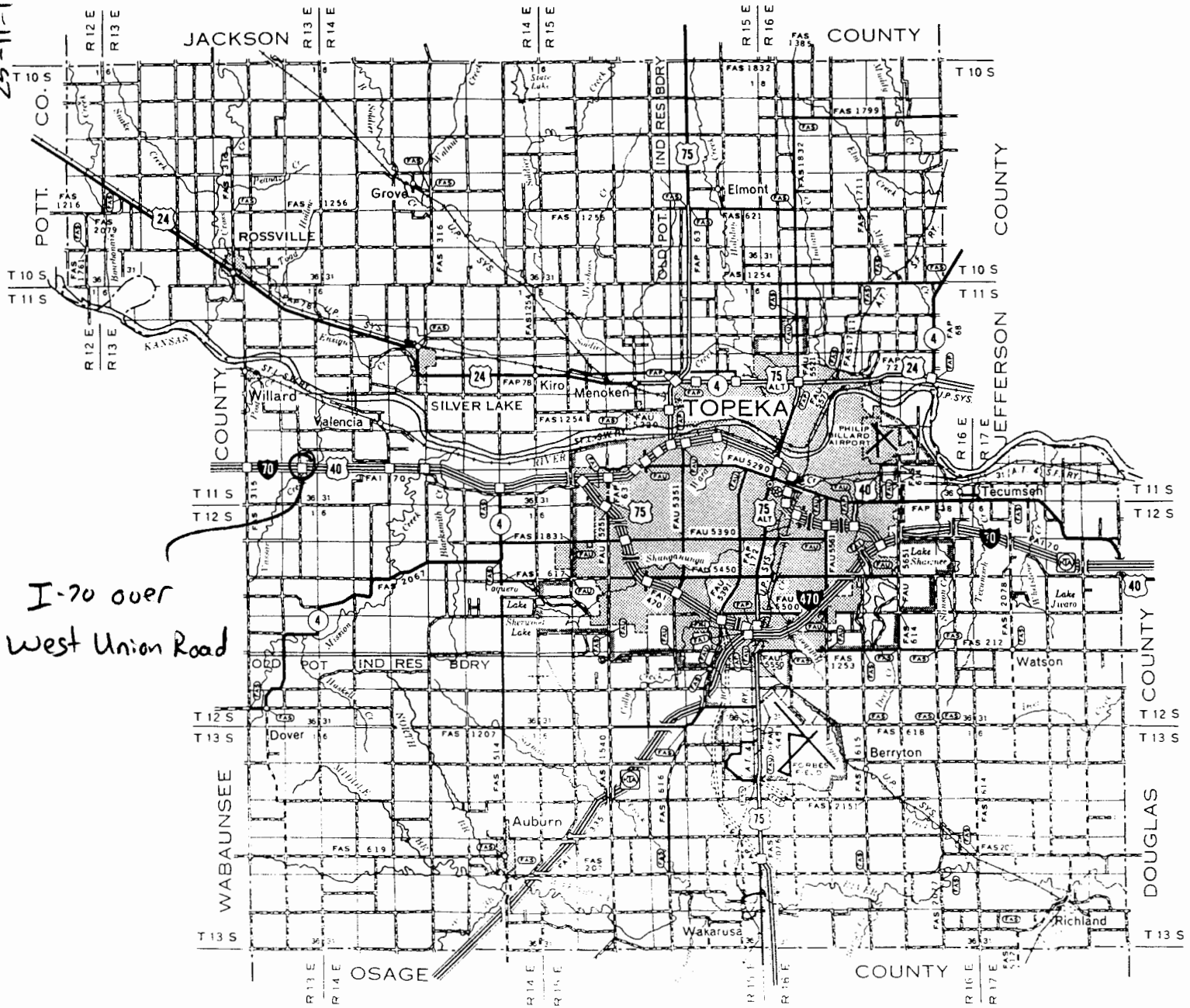


Project 70-89 K-6358-01 CD2 ✓  
 I-70 over West Union Rd.

25-11-13E

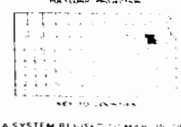


I-70 over West Union Road

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-AID INTERSTATE HIGHWAY SYSTEM
  - FEDERAL-AID PRIMARY HIGHWAY SYSTEM
  - FEDERAL-AID SECONDARY HIGHWAY SYSTEM
  - INTERSTATE NUMBERED HIGHWAY
  - U.S. NUMBERED HIGHWAY
  - STATE HIGHWAY SYSTEM OR STATE NUMBERED HIGHWAY
  - END OF DESIGNATED SYSTEM OR MARKED ROUTE



GENERAL HIGHWAY MAP  
 SHAWNEE COUNTY  
 KANSAS

KANSAS DEPARTMENT OF TRANSPORTATION  
 BUREAU OF TRANSPORTATION PLANNING

2 CE D



# KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO. <b>70-89</b>	SOUNDING NO. <b>CD 2</b>	SHEET <b>1</b> OF <b>2</b>
BRIDGE STA. <b>43+00.7686</b> <sup>EB</sup> <sub>WB</sub>	PROJ. NO. <b>K-6358-01</b>	BRIDGE NO. <b>70-89-1.490(004)</b> <sup>EB</sup> <sub>WB</sub> <b>70-89-1.500(003)</b> <sub>WB</sub>
SITE NAME <b>I-70 over West Union Road</b>		HOLE STA. <b>43+017.37</b> m Lt Proj. <b>2</b>
GEOLOGIST <b>Randy Billinger</b>	SCALE: <b>1:100</b> (10mm = 1 Meter)	DATE <b>3/6/01</b>
DRILLER <b>Rob Veruynck</b>	RIG TYPE <b>Mobil B-61</b>	TOP HOLE ELEV. <b>295.44</b>
GROUNDWATER ELEV <b>292.30</b>	TOTAL DEPTH <b>13.44</b> m	M/B ELEV. <b>291.12</b>

BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE	
							BLOWS	ELEV
			0.0	295.44		kPa		
	Mantle			295	Silty clay, brown.			
				294				
				293				
				292				
	Elmout L5		4.32	291.12	Limestone, weathered, brown, platy, shaly.			
			4.99	290				
	Harveyville Shale Mbr.			290	Shale, dark gray, firm.			
				289				
				288				
						818.7	Sample 1	289.14

		SOUNDING NO. <b>CD 2</b>	PROJECT NO. <b>K-6358-01</b>	SHEET <b>2 OF 2</b>				
DATE <b>3/6/01</b>		RTE./CO. <b>70-89</b>	TOTAL DEPTH <b>13<sup>44</sup> m</b>	THE <b>295.44</b>				
BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION kPa	STANDARD PENETRATION OR CASING DRIVE	
							BLOWS	ELEV
	Reading Ls. Member	Shale	8 <sup>71</sup>	287 <del>286<sup>73</sup></del>	Shale, dark gray, firm.	686.6	Sample 2	287 <sup>15</sup>
	Reading Ls. Member		9 <sup>78</sup>	286 <del>285<sup>66</sup></del>	Limestone, hard, massive, light gray.	1,539.9	Sample 3	286 <sup>36</sup>
	Auburn Shale Formation			285	Mudstone, hard, green-gray.	4,251.5	Sample 4	285 <sup>01</sup>
				284	Several shale breaks.	10,471.8	Sample 5	284 <sup>62</sup>
				283		15,346.6	Sample 6	284 <sup>17</sup>
				13 <sup>44</sup>	282	Total Depth	10,766.2	Sample 7
						878.3	Sample 8	283 <sup>04</sup>

## I-70 over West Union Road Core Hole #2

Project No. 70-89 K-6358-01

	<u>Elevation</u>	<u>Depth</u>		
<b>Core Hole #2</b>	<u>295.44</u>	0.00	Set casing. Brown silty clay in the casing when we cleaned it out.	
Sta. 43+017				
37 m Lt. Project C.L.	291.12	4.32	Limestone, hard.	<b>Elmont Limestone</b>
Water Level 3.14 m	291.03	4.41	Start coring.	<b>Member</b>
Water Elevation 292.30				
Date Drilled 3/06/01				
Core # 1	291.03	4.41	Limestone, gray, hard.	<b>Elmont</b>
4.41 to 5.85	290.69	4.75	Limestone, dark gray, shaly.	<b>Limestone</b>
Cut 1.43 m	290.57	4.87	Limestone, gray, hard.	<b>Member</b>
Recovered 0.64 m	290.45	4.99	Shale, dark gray, clayey.	<b>Harveyville Sh.</b>
Lost 0.88 m off the bottom.	290.42	5.02	Shale, dark gray. This portion was ground away.	
Limestone jammed in the barrel.	289.59	5.85	End Core 1.	<b>Member</b>
Core # 2	289.59	5.85	Shale, firm, dark gray.	<b>Harveyville Sh.</b>
5.85 to 7.31	288.13	7.31	End core 2.	<b>Member</b>
Cut 1.46 m				
Recovered 1.46 m				
RQD = 100%			Sample 1 6.09 to 6.30 Shale, gray.	
Core # 3	288.13	7.31	Shale, gray.	<b>Harveyville</b>
7.31 to 8.86 m	288.04	7.40	Shale, limy, gray.	<b>Shale</b>
Cut 1.55 m	287.64	7.80	Shale, gray.	<b>Member</b>
Recovered 1.55 m	286.85	8.59	Shale, limy, to shaly limestone.	
RQD = 86%	286.73	8.71	Limestone, light gray, hard.	<b>Reading Limestone</b>
	286.58	8.86	End core 3.	<b>Member</b>
			Sample 2 8.07 to 8.29 Shale, gray.	
Core # 4	286.58	8.86	Limestone, hard, massive bedded, light gray.	
8.86 to 10.39 m	285.66	9.78	Mudstone, shaly, light gray-green.	<b>Auburn</b>
Cut 1.52 m	285.05	10.39	End core 4.	<b>Shale</b>
Recovered 1.49 m				
RQD = 100%			Sample 3 8.93 to 9.08 Limestone, light gray.	
			Sample 4 9.41 to 9.63 Limestone, light gray.	

## I-70 over West Union Road Core Hole #2

Project No. 70-89 K-6358-01

	<u>Elevation</u>	<u>Depth</u>		
Core # 5	285.05	10.39	Limestone/mudstone, hard, light gray-green.	
10.39 to 11.91 m	284.56	10.88	Shale break, gray-green.	<b>Auburn</b>
Cut 1.52 m	284.50	10.94	Mudstone, shaly, gray-green to tan.	<b>Shale</b>
Recovered 1.52 m	283.86	11.58	Green shale to green mudstone, hard.	<b>Frm.</b>
RQD = 100%	283.53	11.91	End core 5.	

Sample 5 10.69 to 10.82 Ls/mudstone, hard, gray-green.

Sample 6 11.09 to 11.27 Ls/mudstone, tan.

Sample 7 11.82 to 11.91 Mudstone, green.

Core # 6	283.53	11.91	Mudstone, hard, green.	<b>Auburn</b>
11.91 to 13.44 m	283.22	12.22	Shale, blocky, green.	<b>Shale</b>
Cut 1.52 m	282.40	13.04	Mudstone, hard, tan-green.	<b>Formation</b>
Recovered 1.52 m	282.22	13.22	Shale, tan-green.	
RQD = 94%	282.13	13.31	Mudstone, light tan-white.	
	282.00	13.44	End core 6.	
			Total depth. End core hole 2.	

Sample 8 12.2 to 12.4 Shale, green.

# Kansas Department of Transportation

Report of sample of Shelby/Geology Cores

Laboratory No. 01-523

Date Reported. March 19, 2001

Date Received. March 8, 2001

Specification No. -- Quantity ---

Source of material Project

Sample from Project

Submitted by Delmar Thompson, Lawrence Regional Geology Office

Identification marks Tags with samples

Project or POV 70-89 K-6358-01, Shawnee County

Type of construction Bridge I-70 over West Union Road CD # 2

## TEST RESULTS

Sample No.	Station	☐ Dist. m	Depth m	Description	Qu. kPa	Dry Unit Weight kg/m <sup>3</sup>	Moisture (% of Dry Wt.)
S# 1	43+017	15 LT	6.09-6.30	Shale, Gray	818.7	2,047	11.8%
S# 2	"	"	8.07-8.29	Shale, Gray	688.6	1,968	13.4%
S# 3	"	"	8.93-9.08	Limestone, Light Gray	1,539.9	2,272	8.4%
S# 4	"	"	9.41-9.63	Limestone, Light Gray	4,251.5	2,263	8.5%
S# 5	"	"	10.69-10.82	Limestone, Mudstone, Gray-Green	10,471.8	2,353	5.6%
S# 6	"	"	11.09-11.27	Limestone, Mudstone, Tan-Green	15,346.6	2,246	7.6%
S# 7	"	"	11.82-11.91	Mudstone green	10,766.2	2,314	6.6%
S# 8	"	"	12.20-12.40	Shale- Green	878.3	2,062	10.6%

cc: L.S. Ingram  
G.R. Koontz  
D. Thompson  
J.J. Brennan  
Soil Section  
File

Reported by: James J. Brennan

Title James J. Brennan, Soils Engineer

3-6-01

Core Hole #2

Sta 43+017

37 m ht Project

Meters

Feet

H<sub>2</sub>O 10.3 ft

3.14 m

292.30

Core 1

145-192 ft

4.41-5.85 m

cut 4 ft / 1.43 m

Recov. 2 ft / 0.67 m

RQD = N.A.

last 2 ft off bottom

core barrel plugged &amp;

we ground it away

RQD = 1/2 of what we recovered

The shale is probably 100%

Core 2

192-240

5.85-7.31

cut 4 ft / 1.46 m

Recov. 4 ft / 1.46 m

RQD = 100%

295.44

0°

291.12

4.32

291.03

4.41

291.03

4.41

290.69

4.75

290.57

4.87

290.45

4.99

290.42

5.02

289.59

5.85

289.59

5.85

288.13

7.31

0°-142

291.12 142-145

145

145-152

152-160

160-164

164-165

165-192

192

192-240

240

I-70 over West Union Rd

38

Casing set, cleaned out casing, brown silty clay

LS, hard

Start casing

Casing 7' + 7' = 142 + 19 =

14.2 ft in ground

4.32 m in ground

LS, gray, hard

LS, dark gray, shaly

LS, gray, hard

Shale, dark gray, clayey

Shale, dark gray (This portion was ground away)

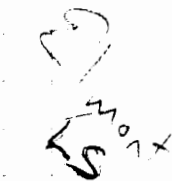
End Core 1

Shale, dark gray, firm

End Core 2

Sample 1 20°-207 ft Shale, gray  
(6.09-6.30 m)

289.14



0.67 m

Hard shale

	meters		feet
Core 3	288.13	7.31	24 <sup>0</sup> -24 <sup>3</sup>
24 <sup>0</sup> -29'	288.04	7.40	24 <sup>3</sup> -25 <sup>6</sup>
7.31 - 8.86	287.64	7.80	25 <sup>6</sup> -28 <sup>2</sup>
cut 5' ft / 1.55m	286.85	8.59	28 <sup>2</sup> -28 <sup>6</sup>
Recov. 5' ft / 1.55m	286.73	8.71	28 <sup>6</sup> -29'
RQD = 4 1/5'	286.58	8.86	29'
= 86%			

Core 4	286.58	8.86	29'-32'
29'-34' ft	285.66	9.78	32'-34'
8.86 - 10.39 m	285.05	10.39	34'
cut 5' ft / 1.52m			
Recov. 4' ft / 1.49m			
RQD = 100%			

I-70 over West Union Rd 38.7 39

Shale, gray  
 Shale, limy, gray  
 Shale, gray  
 Shale, limy tan to shaly LS  
 LS, light gray, hard  
 End core 3

Harveysville  
 Shale 12.2

---

Reading LS

Sample 2 26<sup>5</sup>-27<sup>2</sup> ft shale, gray  
 (8.07-8.29m)  
 287.15

LS, hard, massive bedded, light gray. — ?  
 LS to mudstone, shaly, light gray-green.  
 End core 4

Sample 3 29<sup>3</sup>-29<sup>8</sup> ft LS, light gray  
 (8.93-9.08m)  
 286.36

Sample 4 30<sup>9</sup>-31<sup>6</sup> ft LS, light gray  
 (9.41-9.63m)  
 285.81



Core 5	285.05	10.39	34'-35 <sup>7</sup>
34'-39' <del>†</del>	284.56	10.88	35 <sup>7</sup> -35 <sup>9</sup>
10.39-11.91 m	284.50	10.94	35 <sup>9</sup> -38 <sup>0</sup>
Cut 5 <sup>9</sup> <del>†</del> / 1.52m	283.86	11.58	38 <sup>0</sup> -39 <sup>1</sup>
Recov. 5 <sup>9</sup> <del>†</del> / 1.52m	283.53	11.91	39 <sup>1</sup>
RQD = 100%			

Core 6	283.53	11.91	39'-40'
39'-44'	283.22	12.22	40 <sup>1</sup> -42 <sup>8</sup>
11.91-13.44	282.40	13.04	42 <sup>8</sup> -43 <sup>4</sup>
Cut 5 <sup>9</sup> <del>†</del> / 1.52m	282.22	13.22	43 <sup>4</sup> -43 <sup>7</sup>
Recov. 5 <sup>9</sup> <del>†</del> / 1.52m	282.13	13.31	43 <sup>7</sup> -44 <sup>1</sup>
RQD = 4 <sup>7</sup> /5 <sup>0</sup> = 94%	282.0	13.44	44 <sup>1</sup>

I-70 over West Union Rd.

40

LS or hard mudstone, gray-green  
 Shale break, gray-green  
 mudstone, shaly, gray-green to tan  
 Shale, green to green mudstone<sup>?</sup>, hard  
 End core 5

28<sup>7</sup>

Sample 5 35<sup>1</sup>-35<sup>5</sup> LS/mudstone, gray-green  
 (10.69-10.82 m)  
 284.62

Sample 6 36<sup>4</sup>-37<sup>0</sup> mudstone/LS tan  
 (11.09-11.27 m)  
 284.17

Sample 7 38<sup>8</sup>-39<sup>1</sup> mudstone, green  
 (11.82-11.91)  
 283.53

mudstone, hard, green  
 Shale, blocky, green  
 mudstone, tan-green  
 Shale, tan-green  
 Mudstone, tan-white  
 End core 6 Total Depth

Sample 8 40<sup>1</sup>-40<sup>7</sup> Shale, green  
 (12<sup>2</sup>-12<sup>4</sup> m)  
 283.04