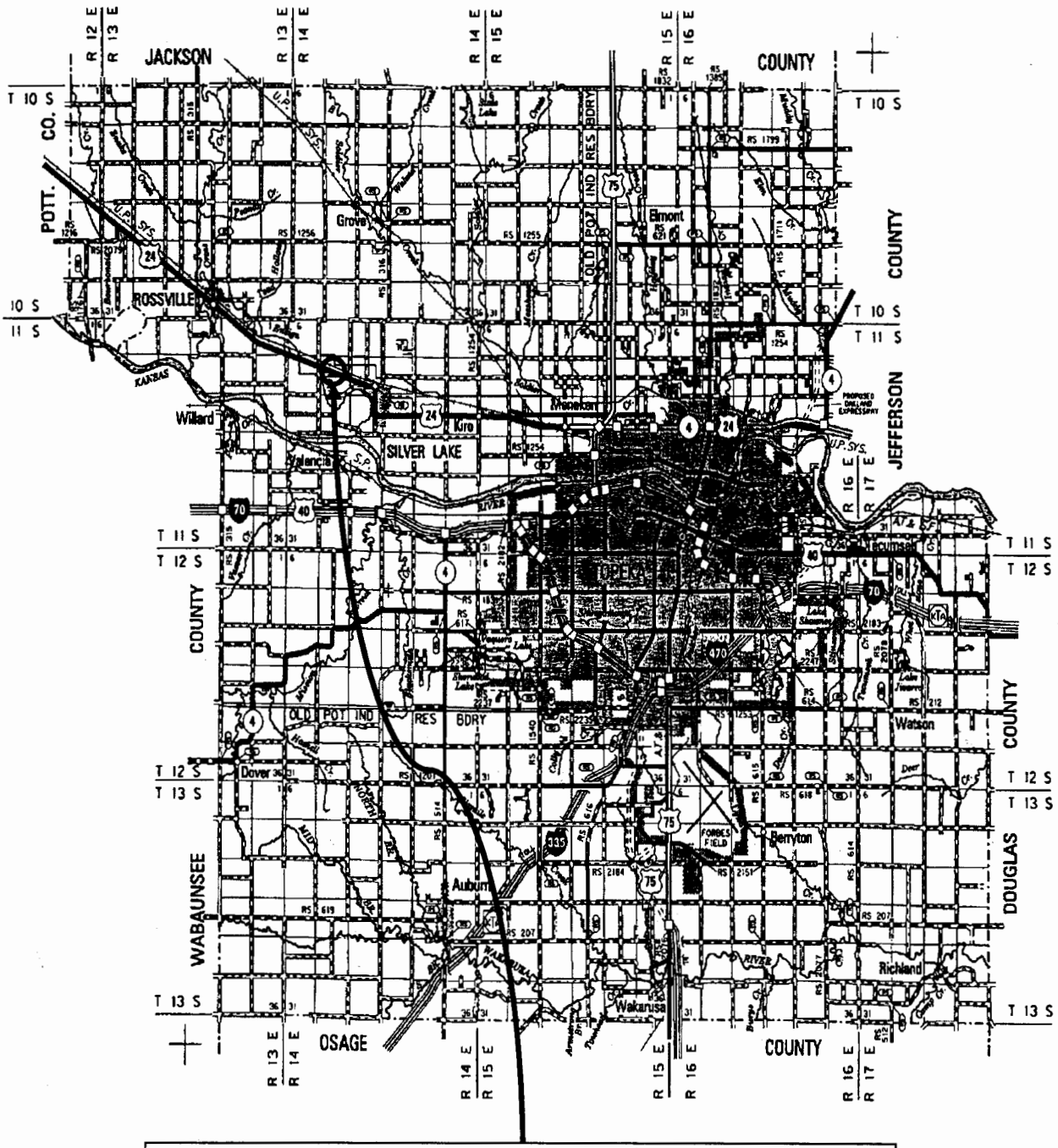


24-89 KA-0711-01 *US*-24 over Ensign Creek

Bridge No. 24-89-8.42(299)

Shawnee County

CD 02

N: 39.116250 E: -95.903002

SW ¼ , SE ¼ , SW ¼, Section 06 T11S, R14E

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO.	24-89	SOUNDING NO.	CD2	SHEET 1 of 4	
BRIDGE STA.	523+61.75	PROJ. NO.	KA-0711-01	BRIDGE NO.	24-89-8.42 (299)
SITE NAME	US-24 over Ensign Ck			HOLE STA.	523+12.2, 33.0' Rt CL
GEOLOGIST	J. Geist	SCALE 1 inch = 5.0 feet		DATE	May 3, 2010
DRILLER	R. Hinderliter	RIG TYPE	CME 75	TOP HOLE ELEV.	912.31
GW ELEV.	N/A	TOTAL DEPTH	93.6	M/B ELEV.	842.81

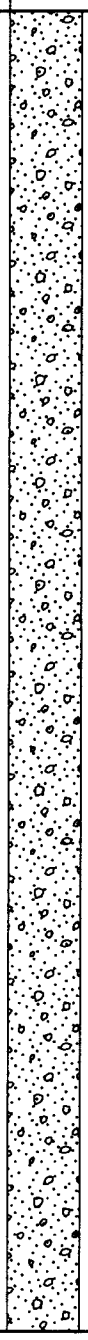
Bit Type	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (TSF)	ELASTIC MODULUS (PSF)	N60 COUNT (SPT)	ELEVATION
Flush Joint Casing	Alluvium			912.3	Silt and silty clay, brown				
			19.7	892.6	Sand and gravel				

910 905 900 895 890 885

BOREHOLE REPORT - KANSAS DOT.GDT - 7/6/10 15:49 - Q:\GEOLOGY\BRIDGE\24-89 KA-0711-01\ENSIGN CREEK SOUNDINGS.GPJ

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO.	24-89	SOUNDING NO.	CD2	SHEET 2 of 4	
BRIDGE STA.	523+61.75	PROJ. NO.	KA-0711-01	BRIDGE NO.	24-89-8.42 (299)
SITE NAME	US-24 over Ensign Ck			HOLE STA.	523+12.2, 33.0' Rt CL

Bit Type	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (TSF)	ELASTIC MODULUS (PSF)	N60 COUNT (SPT)	ELEVATION
Flush Joint Casing	Alluvium			880 875 870 865 860 855 850	Sand and gravel				

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO.	24-89	SOUNDING NO.	CD2	SHEET 3 of 4	
BRIDGE STA.	523+61.75	PROJ. NO.	KA-0711-01	BRIDGE NO.	24-89-8.42 (299)
SITE NAME	US-24 over Ensign Ck			HOLE STA.	523+12.2, 33.0' Rt CL

Bit Type	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (TSF)	ELASTIC MODULUS (PSF)	N60 COUNT (SPT)	ELEVATION
	Alluvium			845	Sand and gravel				
Diamond	White Cloud Shale Member	1	69.5	842.8	Shale, highly calcareous, laminar, hard, occasional vertical fractures, core lost				
				840					
			73.8	838.5	Shale, light brown, very weathered, stiff				
		2	74.2	838.1	Shale, gray, limy, few fossils	405	1.08E+08		836.71
				835		121.5	4.01E+07		834.31
		3	81.2	831.1	Shale, gray-green, moderately hard, few softer clay seams	119.5	3.68E+07		830.61
				830					
		4	83.6	828.7	Shale, silty, gray-green, laminated to fissile, vertical fractures, stiff	22.2	7710000		827.91
				825					
		5	89.8	822.5	Limestone, medium bedded, interbedded with shale, gray to brown gray, trace pyrite				
				820					
			92.6	819.7	Shale, gray-green, moderately hard				
			93.6	818.71	T.D. = 93.6				

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO.	24-89	SOUNDING NO.	CD2	SHEET 4 of 4	
BRIDGE STA.	523+61.75	PROJ. NO.	KA-0711-01	BRIDGE NO.	24-89-8.42 (299)
SITE NAME	US-24 over Ensign Ck			HOLE STA.	523+12.2, 33.0' Rt CL

Bit Type	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (TSF)	ELASTIC MODULUS (PSF)	N60 COUNT (SPT)	ELEVATION

Core	Depth	Elev.	Cut	Rec	Rec %	RQD
1	69.5	842.81	5.1	0.8	16	75%
2	74.6	837.71	4.0	4.0	100	100%
3	78.6	833.71	5.0	5.0	100	88%
4	83.6	828.71	5.0	5.0	100	78%
5	88.6	823.71	5.0	5.1	102	26%
Total	**93.6**	**818.71**	**24.1**	**19.9**	**83**	**72%**