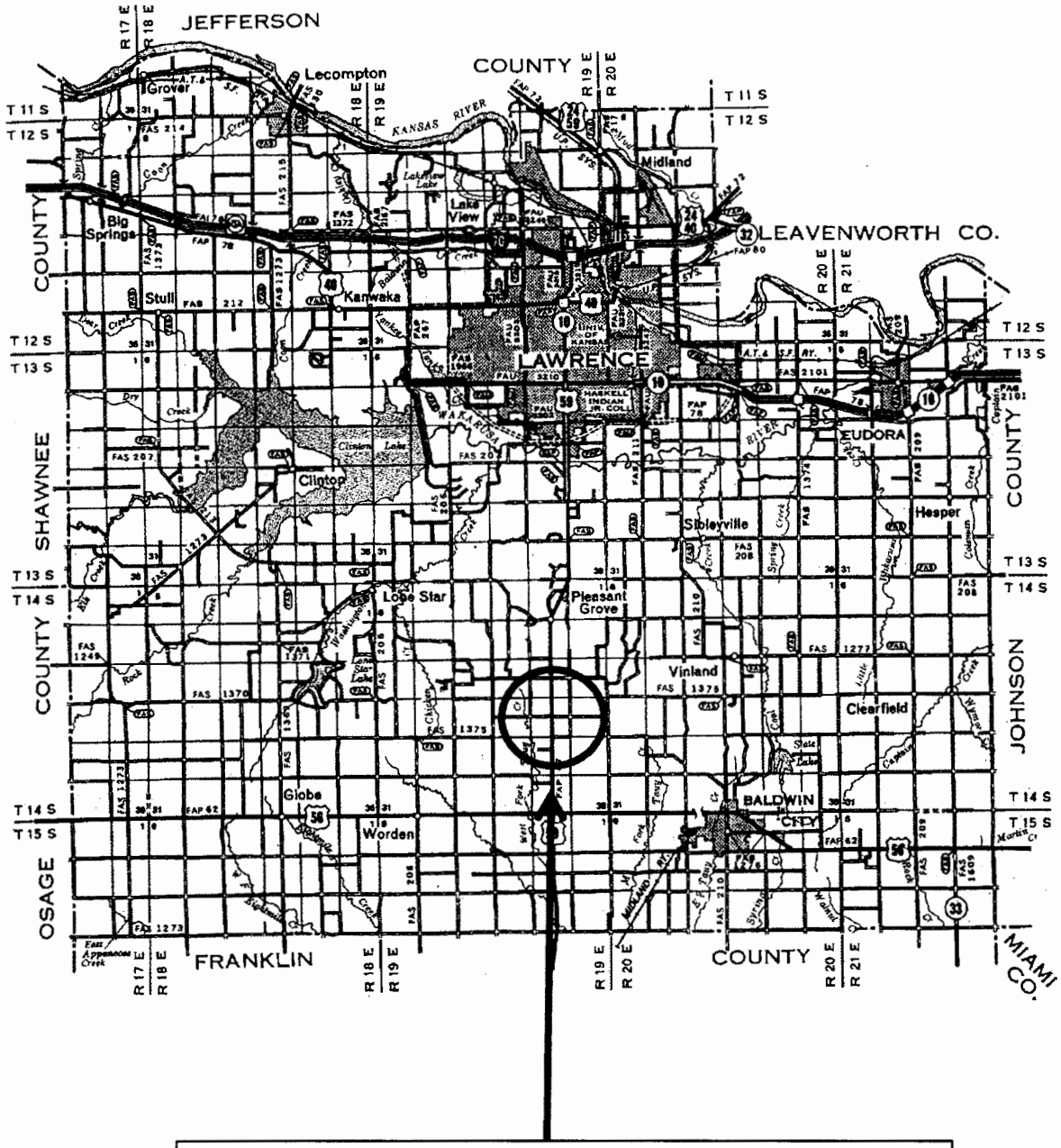


K-7888-01 Road 550N over US-59

2.5 miles north of US-59/US-56 Intersection

Douglas County

CD 02

N: 38.818844 E: -95.269163 (Approximate)

Center of Sect 23, T14S, R19E

6/26/2006

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO. 59-23 US-59 Douglas	SOUNDING NO. CD 2	SHEET 1 OF 2
BRIDGE STA. 391+74.40	PROJ. NO. K-7888-01	BRIDGE NO. 59-23-5.53(114)
SITE NAME Road 550N over US-59		HOLE STA. 49+69.28'Lt ℄ Rd 550N
GEOLOGIST Crow	SCALE 1:120 (1"=10')	DATE June 26, 2006
DRILLER Vervynck	RIG TYPE CME-55	TOP HOLE ELEV. 1085.82
GW ELEV. ++	TOTAL DEPTH 92.0	M/B ELEV. 1080.82

BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION TEST (SPT) N COUNT	STANDARD PENETRATION TEST (SPT) ELEVATION
8" Hollow Stem Augers			0.0	1085.82				
	Soil Mantle		5.0	1080.82	Silty clay, rubble			
Hawthorne	Plattsmouth Limestone Member		9.8	1080 1076.02	Limestone			1080
	Heebner Shale Member		16.8	1069.02 1070	Shale, tan gray at top then becoming black			1070
	LV		18.7	1067.12	Limestone, hard LEAVENWORTH MEMBER			
	Snyderville Shale Member		25.8	1060.02 1060	Shale, gray, limy			1060
	Toronto Limestone Mbr		33.5	1052.32	Limestone, hard			
Diamond	Lawrence Formation	1 2 3 4 5		1050 1040	Shale, gray, laminated, micaceous, firm, limy Shale, gray, green & maroon, near-vertical shear planes			1050 1040

KANSAS DEPARTMENT OF TRANSPORTATION

RTE./CO. 59-23 US-59 Douglas	SOUNDING NO. CD 2	SHEET 2 OF 2
BRIDGE STA. 391+74.40	PROJ. NO. K-7888-01	BRIDGE NO. 59-23-5.53(114)
SITE NAME Road 550N over US-59		HOLE STA. 49+69.28' Lt ℄ Rd 550N

BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION TEST (SPT) N COUNT	STANDARD PENETRATION TEST (SPT) ELEVATION
Diamond	Lawrence Formation	5 6 7 8 9 10 11 12	92.0	993.82	Shale, limy, sandy Coal, black, 0.5 ft thick Shale, limy, sandy			

1020
1010
1000
990
980
970

Core log June 26, 2006

59-23 K-7888-01 Supervisor: Delmar Thompson Helpers: Sean Nordlund
Br. No. 59-23-5.53(114) Logger: Rocky Crow Jessica Thompson
Road 550N over US-59 Driller: Rob Vervynck Kayla
Douglas County Driller Helper: Ryan Salber
Sunny, windy CME-55

Logs CD#2	Elevation	Depth	Description
49+69, 28' Lt CL Road 550N			
THE=1085.82			
8" Hollow Stem Augers	1085.82	0.0-5.0	Soil mantle, silty clay, rubble
	1080.82	5.0-8.1	Limestone, weathered PLATTSMOUTH LS MBR
Began strat hole, Hawthorne Bit	1077.72	8.1-9.8	Limestone, firmer
	1076.02	9.8-10.2	Shale, tan HEEBNER SHALE MEMBER
	1075.62	10.2-11.5	Shale, gray
	1074.32	11.5-16.8	Shale, black
	1069.02	16.8-18.7	Limestone, hard LEAVENWORTH LS MEMBER
	1067.12	18.7-23.0	Shale, gray SNYDERVILLE SHALE MEMBER
	1062.82	23.0-24.2	Shale, limy
	1061.62	24.2-25.8	Shale
	1060.02	25.8-33.5	Limestone, hard TORONTO LIMESTONE MBR
	1052.32	33.5-33.65	Shale, gray LAWRENCE FORMATION
Diamond Drill Bit			
Core #1	1052.17	33.65-34.0	Shale, very limy, gray
33.65-38.4	1051.82	34.0-35.9	Shale, gray, limy, sandy, micaceous
1052.17-1047.42	1049.92	35.9-38.05	Shale, gray, laminated, micaceous, firm, limy
Cut 4.75	1047.77	38.05-38.4	No recovery
Rec 4.4			
RQD=64%			Sample #1 35.9-36.7
Core #2	1047.42	38.4-43.2	Shale, gray, laminated, micaceous, firm, limy
38.4-43.2			Shear planes
1047.42-1042.62			
Cut 4.8			
Rec 4.6			
RQD=70%			Sample #2 40.1-40.6
Core #3	1042.62	43.2-48.2	Shale, gray & maroon, near-vertical shear planes
43.2-48.2			Clayey
1042.62-1037.62			
Cut 5.0			
Rec 5.2			
RQD 88%			Sample #3 46.8-47.3
Core #4	1037.62	48.2-52.0	Shale, gray/green, clayey
48.2-52.0	1036.72	49.1-52.0	Shale maroon w/green, shear planes
1037.62-1033.82			
Cut 3.8			
Rec 3.6			
RQD=82%			Sample #4 50.4-51.0

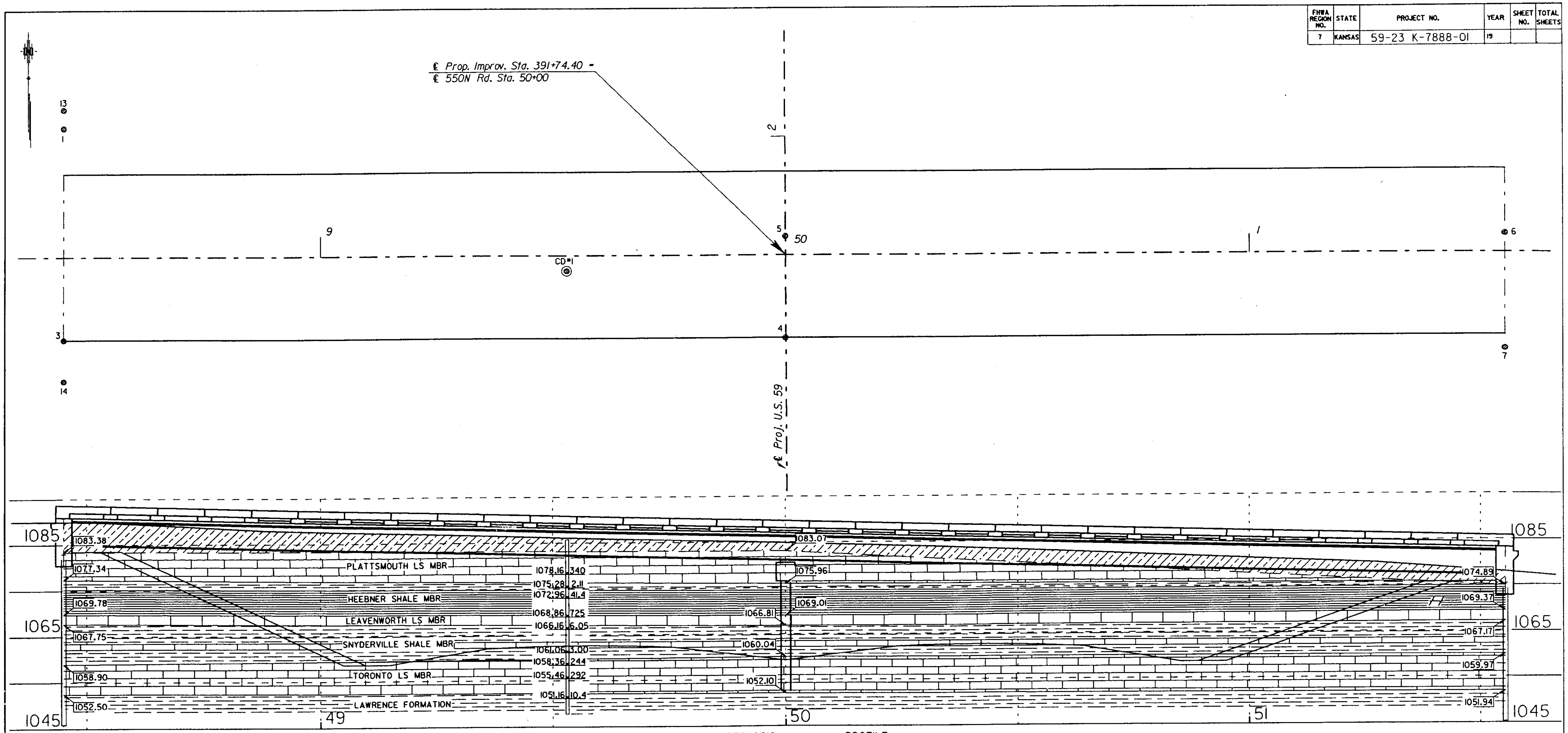
Core #5	1033.82	52.0-52.5	Shale, maroon
52.0-57.0	1033.32	52.5-53.6	Shale, gray, clayey
1033.82-1028.82	1032.22	53.6-55.0	Shale, limy, chaotic
Cut 5.0	1030.82	55.0-55.8	Shale, gray, limy
Rec 5.0	1030.02	55.8-57.0	Shale, green/gray, laminated
RQD=80%			Sample #5 55.8-56.5
Core #6	1028.82	57.0-61.1	Shale, gray, firm, limy, laminated
57.0-62.0	1024.72	61.1-61.5	Limestone w/septarian structure
1033.82-1028.82			
Cut 5.0	1024.32	61.5-62.0	Shale, gray, limy, coal seam 1mm thick @ 61.8
Rec 5.0			
RQD=88%			Sample #6 59.7-60.3
Core #7	1023.82	62.0-63.0	Shale, dark gray, very firm
62.0-67.0	1022.82	63.0-67.0	Shale gray w/v fine light & dark gray laminations
1023.82-1018.82			
Cut 5.0			With very fine sand, micaceous
Rec 5.0			
RQD=96%			Sample #7 65.0-65.8
Core #8	1018.82	67.0-72.0	Shale, sandy, small scale cross bedding
67.0-72.0			
1018.82-1013.82			
Cut 5.0			
Rec 5.0			
RQD=98%			Sample #8 67.8-68.3
Core #9	1013.82	72.0-72.3	Shale, laminated, sandy
72.0-77.0	1013.52	72.3-75.2	Shale, very limy
1013.82-1008.82			
Cut 5.0	1010.62	75.2-75.7	Coal, black
Rec 5.0	1010.12	75.7-77.0	Shale, clayey, gray
RQD=78%			Sample #9 73.8-74.5
			Sample #10 76.0-76.5
Core #10	1008.82	77.0-82.0	Shale, gray, laminar, limy
77.0-82.0			
1008.82-1003.82			
Cut 5.0			
Rec 5.0			
RQD=98%			Sample #11 80.1-81.0
Core #11	1003.82	82.0-84.2	Shale, sandy, gray, laminar
1003.82-998.82			
82.0-87.0	1001.62	84.2-87.0	Sandstone, shaley, light & dark gray thin bedding
Cut 5.0			
Rec 5.0			
RQD=66%			Sample #12 84.6-85.1

Core #12	998.82	87.0-92.0	Shale, gray, sandy, firm
87.0-92.0			TD
998.82-993.82			
Cut 5.0			
Rec 5.0			
RQD=84%			Sample #13 90.5-91.2

Point	+	HI	-	Elev.	
BM 94				1093.08	1093.08 East Hdwl. RCB 904+18.49, 14.16' Rt BL
Setup 1	0.83	1093.91			
CD 2			8.09	1085.82	
BM 94			0.83	1093.08	

Plotted By : rocky	Std. Base File : Rocky Crow 785.843.2827	
Plot File : C:\crow\bridge\K-7888-01\7888O553.dgn	Server File : working\k788801\geology\dgn\78880553.dgn	
Plot Date : 3/30/2006	Server : Dt00mh71	View: PLOT1

FHWA REGION NO.	STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
7	KANSAS	59-23 K-7888-01	19		



STANDARD GEOLOGIC SYMBOLS

Clay; Silty Clay; Silt; Sand; Gravel; Boulders; Caliche; Silty Clayey Shale; Limy Shale; Black or Fissile Shale; Sandy Shale; Gypsiferous Shale; Weathered Shale; Sandstone; Shaly Sandstone; Siltstone; Gypsum; Coal; Limestone; Cherty Limestone; Shaly Limestone; Sandy Limestone; Weathered or Broken Limestone

SOUNDINGS

- Coredrill
- Power auger
- Hand tools
- Air hammer
- Dutch cone penetrometer
- Water level 01/06

000.0 Elevation interpolated or from adjacent soundings

000.0 Actual sounding elevation

1000.0 Drive started

1000.0 Refusal

CASING DRIVE TEST

GEOLOGIC PROFILE

000.0 | 00 — Elevation, Tons/sq. ft. — UNCONFINED COMPRESSION TEST

000.0 | 00 — Elevation, Blows/ft. — STANDARD PENETRATION TEST

Graphic representation of Drive Test in seconds per foot penetration — AIR HAMMER DRIVE TEST (0, 100, 200, 300; Scale: 1"= 100 Seconds Horiz. 1"= 10' Vert.)

Graphic representation of Static Cone Penetration Test in tons per foot penetration — DUTCH CONE PENETROMETER TEST (0, 100, 200, 300, 400; Scale: 1"= 100 Tons/sq.ft. Horiz. 1"= 10' Vert.)

NOTE: Soundings shown on these plans are taken from notes obtained in the field and represent the best information available. Logs of these soundings are in the files of the Kansas Department of Transportation and are available at their offices at Topeka, Kansas for inspection by interested and qualified bidders.

SCALE: 1"= 10 Horiz. 1"= 10' Vert.

NO.	DATE	REVISIONS	BY	APP'D
1				
2				
3				

KANSAS DEPARTMENT OF TRANSPORTATION

Br. No. 59-23-5.53(114) Sta. 391+74.40

ENGINEERING GEOLOGY
ROAD 550N OVER US 59

Proj. No. 59-23 K-7888-01 Douglas Co.

SHEET NO. OF	SCALE	APP'D	
DESIGNED	DETAILED	QUANTITIES	TRACED
DESIGN CK.	DETAIL CK.	QUAN.CK.	TRACE CK.

ORIG. FROM BR.NO.	PROJ.	CO.
DESIGN		CHECK
DESIGN	DATE	DATE
DETAIL	DATE	DATE
QUANTITIES	DATE	DATE
TRACING	DATE	DATE
RETRACED	DATE	DATE