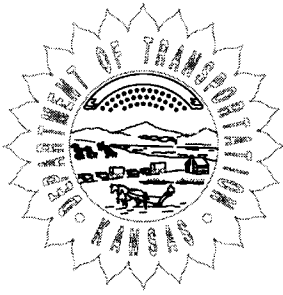


K-7888-01 Road 550N over US-59
 2.5 miles north of US-59/US-56 Intersection
 Douglas County
 CD 02
 N: 38.818844 E: -95.269163 (Approximate)
 Center of Sect 23, T14S, R19E
 6/26/2006

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 C Rd 550N
GEOLOGIST Crow	SCALE 1:20 (1"=10')	DATE June 26, 2006
DRILLER Vervynck	RIG TYPE CME-55	TOP HOLE ELEV. 1085.82
GW ELEV. H	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	ELEVATION
Hollow Augers	Salt Mantle		0.0	1085.82	Silty clay, rubble			
			5.0	1080.82				
Hawthorne	Pittsboro Limestone Member		9.8	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 Shale, gray, firm			
	Snyderville Shale Member		25.8	1060.02 1060	Limestone, hard			1060
	Toronto Limestone Mbr		33.5	1052.32				
	Diamond Lawrence Formation		1		1050	Shale, gray, laminated, micaceous, firm, firm		
2					Shale, gray, green & maroon, near-vertical shear planes			
3				1040				1040
4								
5								



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	ELEVATION
	Diamond	Lawrence Formation	5 6 7 8 9 10 11 12	1020 1010 1000 993.82	<p>Shale, limy, sandy</p> <p>Coal, black, 0.5 ft thick</p> <p>Shale, limy, sandy</p>		1020 1010 1000 990 980 970	
			92.0					

Core log

June 26, 2006

59-23 K-7888-01
 Br. No. 59-23-5.53(114)
 Road 550N over US-59
 Douglas County
 Sunny, windy

Supervisor: Delmar Thompson Helpers: Sean Nordlund
 Logger: Rocky Crow Jessica Thompson
 Driller: Rob Vervynck Kayla
 Driller Helper: Ryan Salber
 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

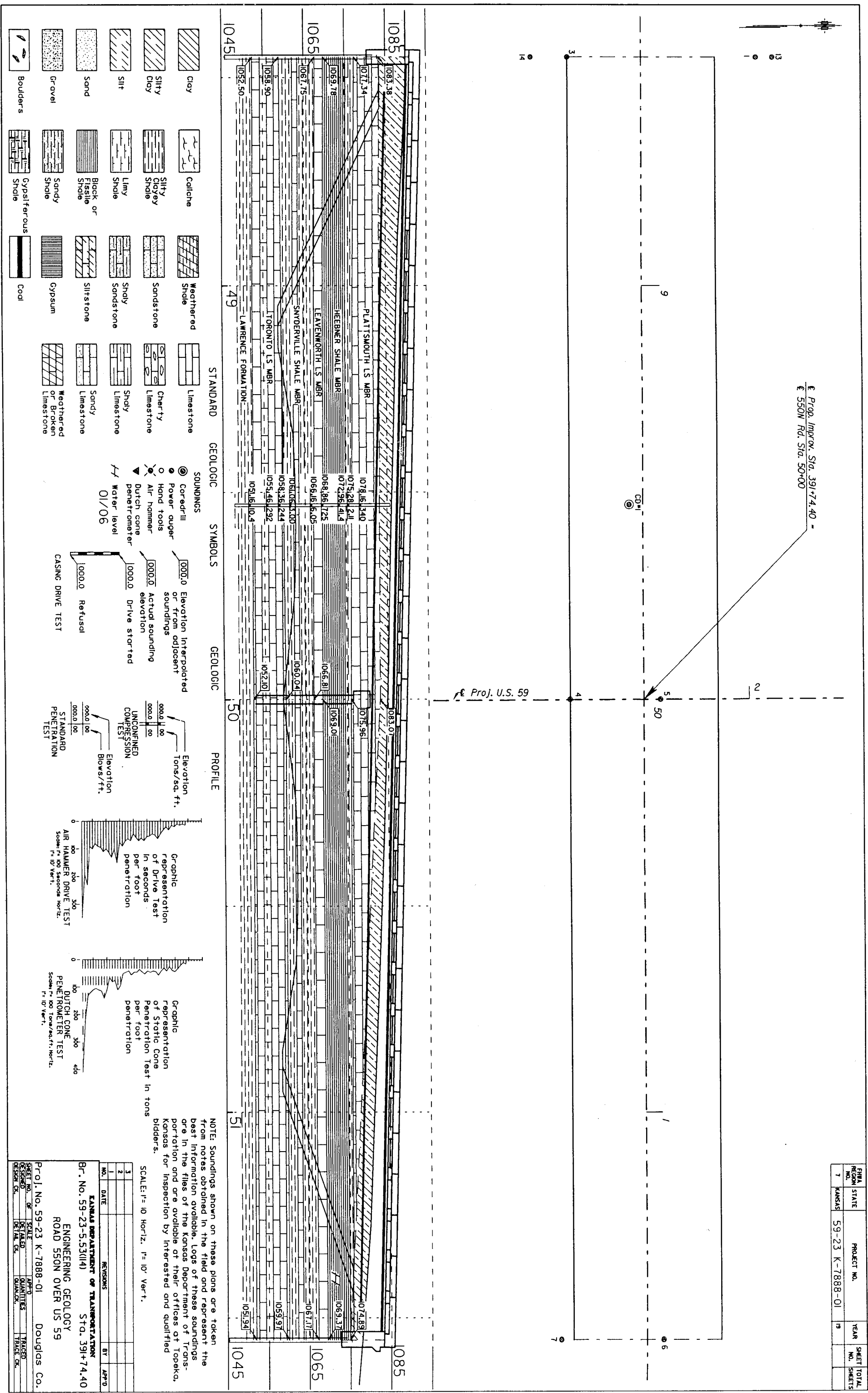
Core #12	998.82	87.0-92.0	Shale, gray, sandy, firm
87.0-92.0			TD
998.82-993.82			
Cut 5.0			
Rec 5.0			
RQD=84%			Sample #13 90.5-91.2

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
 Plot File : C:\crowbridge\K-7888-01\78880553.dgn
 Plot Date : 3/30/2006

Std. Base File : Rocky Crow 785,843,2827
 Server File : working\k788801\geology\dgn\78880553.dgn
 Server : DK00mh71
 View : PLOT1

DATE	FROM	BY	NO.
DESIGN	DESIGN	DATE	CHECK
DETAIL	DATE	DATE	DATE
QUANTITIES	DATE	DATE	DATE
TRACING	DATE	DATE	DATE
RELEASED	DATE	DATE	DATE



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

NO.	DATE	REVISIONS	BY	APP'D.
1				
2				
3				

KANSAS DEPARTMENT OF TRANSPORTATION
 BR. No. 59-23-5.53(14) Sta. 391+74.40
 ENGINEERING GEOLOGY
 ROAD 550N OVER US 59
 Proj. No. 59-23 K-7888-01 Douglas Co.

SCALE	APPROVED	TRACED
DESIGNED	QUANTITIES	
REVISION	QUANT.	TRACE OK