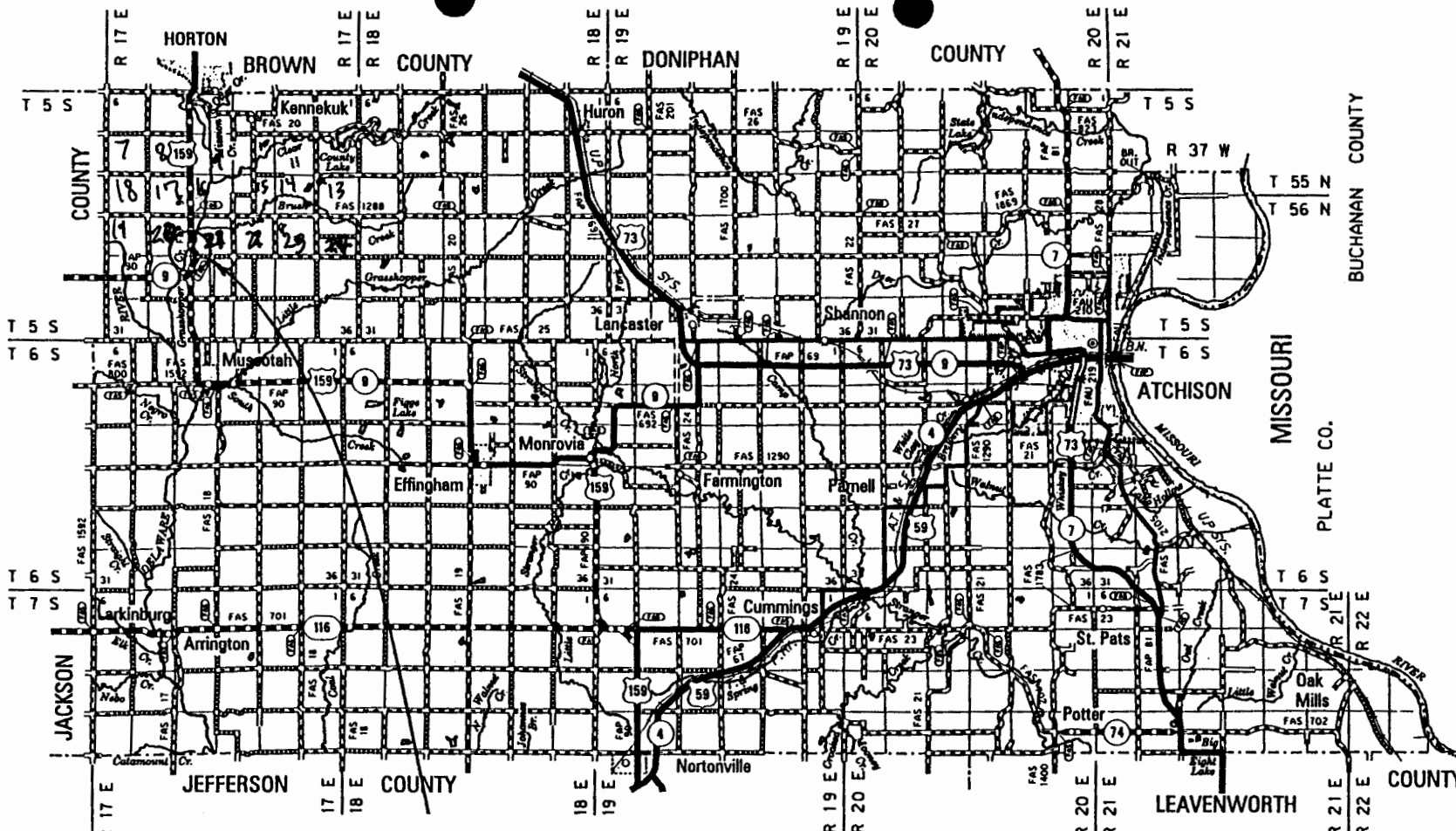


△

QAS

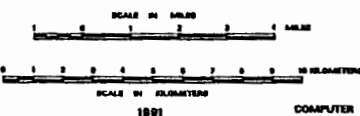
21-5-17E
SW SW SW



Proj.No. 159-003 K-5030-01
Br.Nos. 159-003-27.28 & RCB
US-159 over Grasshopper Creek
Atchison County

GENERAL HIGHWAY MAP ATCHISON COUNTY KANSAS

PREPARED BY THE
KANSAS DEPARTMENT OF TRANSPORTATION
BUREAU OF TRANSPORTATION PLANNING
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



FA SYSTEM REVISED TO JAN. 6, 1993

ROADS AND ROADWAY FEATURES		Road System Designation	
Primitive Road (Type A)	=====	Federal-Aid Interstate Highway System	FAI
Unimproved Road (Type B)	=====	Federal-Aid Primary Highway System	FAP
Graded and Drained Road (Type C)	=====	Federal-Aid Secondary Highway System	FAS
Soil Surface Road (Type D)	=====	Federal-Aid Urban Highway System	FUI
Gravel or Stone Road — Not Graded or Drained (Type E-1)	=====		
Gravel or Stone Road — Graded and Drained (Type E-2)	=====		
Gravel or Stone Road With Shoulder Surface (Type E-3)	=====		
Bituminous Road — Low Type (Type F, G-1, H-1)	=====		
Paved Road (Type G-2, H-2, I, J, K, L)	=====		
Divided Highway	=====		
Highway With Full Control of Access and Interchange	=====		
		Interstate Numbered Highway	70
		U.S. Numbered Highway	40
		State Highway System or State Numbered Highway	20
		End of Designated System or Marked Route	36
		Kansas Turnpike Authority	187

COMPUTER GENERATED

QAS

△

KANSAS DEPARTMENT OF TRANSPORTATION



1. ROUTE-COUNTY NO. 159 -03	7. SOUNDING NO. 1	2. SHEET 1 OF 3
3. BRIDGE STA. 193+82.75	4. PROJECT NO. K-5030-01	5. BRIDGE NO. 27.28
6. DESCRIPTION US 159 over Grasshopper Creek	8. HOLE STA. 194+63, R+32	
9. GEOLOGIST Thompson, Billinger	10. VERTICLE SCALE 1"=10'	11. DATE 10-25-94
12. DRILLER Sundeland	13. RIG B-61	14. ELEVATION TOP OF HOLE 1001.7
15. GROUND WATER ELEV. 984.6	16. TOTAL DEPTH OF HOLE 644	17. ELEVATION TOP OF ROCK 971.5

BIT TYPE & NO.	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION TSF	STANDARD PENETRATION OR CASING DRIVE 8" Auger	
							BLOWS	ELEV.
			0°	1001.7				
	Soil Mantle			1000	Clay, silty, brown to light gray	3.5		995.2
				990				
				984.6		1.7		989.7
				980		4.2		979.7
			265	975.2		0.15		974.7
			302	971.5	Sand, med. to light gravel			
	Harveyville Member	1		970	Shale, gray to dark gray, very Firm, little weathering, limy	38.17		
		2				110.28		
		3	392	962.5	Limestone, light gray to olive, mudlime	91.22		
	Reading Mbr.	4	419	960 959.8	lower 1° gradational mix Shale, light gray to olive, very Firm, limy	15.6		
		5	47.9	953.8	Limestone, shaly, light gray to olive	132.27		
		6	49.7	952.0		131.26		
		7		950	Shale, dark gray upper 2.6 and lower 2.6 limy	32.91		
		8	58.6	943.1	Limestone, light gray			
		9	59.6	941.5	Shale dark gray, limy			
			61.7	940 940.0	Limestone light gray	1131.14		
			644	937.3	Shale, olive to dark gray			

DRILLING LOG (con't sheet)		SOUNDING NO. 1		PROJECT NO. K-5030-01		SHEET 2 OF 3		
ELEVATION TOP OF HOLE 1001.7		GROUND WATER ELEV. 984.6		TOTAL DEPTH OF HOLE 64.4		ELEVATION TOP OF ROCK 971.5		
BIT TYPE & NO.	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE	
							BLOWS	ELEV.
					Core # 1 31°-34 ³ Cut 3 ³ Recor. 3 ³ 31°-34 ³ Shale, gray Firm - little weathering RQD = 64% Sample # 1 32°-32 ⁴⁵ - Shale			
					Core # 2 34 ³ -38' Cut 3 ⁸ Recor. 3 ⁸ 34 ³ -34 ² Shale, gray Firm 34 ² -36 ⁸ Shale, dark gray, slightly Fissile 36 ⁸ -38' - Shale, gray, very Firm limy RQD = 71% Sample # 2 36 ⁸ -37 ⁵ - Shale			
					Core # 3 38'-43' Cut 5° Recor. 5° 38'-39 ² - Shale dark gray to black 39 ² -41 ⁹ - Limestone, mud lime, light gray to olive, lower 1° gradational mix into olive, limy shale. 41 ⁹ -43' - Shale, olive, limy, very Firm. RQD = 80% Sample # 3, 39 ² 39 ²⁵ - Limestone Sample # 4, 41 ² 42 ⁵⁵ - Shale			
					Core # 4 43'-47 ⁹ Cut 4 ⁸ Recor. 4 ⁸ 43'-45 ⁹ - Shale, light gray to olive, very Firm 45 ⁹ -47 ⁹ - Shale, olive RQD = 96% Sample # 5 45 ² -45 ⁸ - Shale			

DRILLING LOG (con't sheet)		SOUNDING NO. 1		PROJECT NO. K-5030-01		SHEET 3 OF 3		
ELEVATION TOP OF HOLE 1001.7		GROUND WATER ELEV. 984.6		TOTAL DEPTH OF HOLE 64 ⁹		ELEVATION TOP OF ROCK 971.5		
BIT TYPE & NO.	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE	
							BLOWS	ELEV.
					Core #5 47 ⁹ -52 ³ Cut 4 ⁴ Recov. 4 ⁴ 47 ⁹ -49 ⁷ - Limestone, shaly, olive to gray 49 ⁷ -52 ³ Shale, dark gray, lime RQD = 100% Sample #6 48 ² -48 ⁹ - Limestone Sample #7 50 ⁰ -50 ⁷ - Shale			
					Core #6 52 ³ -56 ⁰ Cut 3 ⁷ Recov. 3 ⁷ 52 ³ -56 ⁰ - Shale dark gray RQD = 89% Sample #8 54 ¹ -54 ⁶ - Shale			
					Core #7 56 ⁰ -60 ⁰ Cut 4 ⁰ Recov. 4 ⁰ 56 ⁰ -58 ⁶ , Shale dark gray to limy 58 ⁶ -59 ¹ - Limestone, light gray 59 ¹ -60 ⁰ Shale, dark gray RQD = 70% Sample #9 56 ³ -56 ⁸ - Shale			
					Core #8 60 ⁰ -64 ⁴ Cut 4 ⁴ Recov. 4 ³ 60 ⁰ -60 ² Shale, gray, limy 60 ² -61 ⁷ - Limestone, light gray 61 ⁷ -62 ¹ - Shale, dark gray, limy 62 ¹ -63 ⁰ Shale, dark gray to black 63 ⁰ -63 ⁸ Shale, olive, very limy 63 ⁸ -64 ³ Shale dark gray RQD = 98% Sample #10 60 ² -61 ⁰ Limestone			

KANSAS DEPARTMENT OF TRANSPORTATION

Report of sample of Geology CoresLaboratory No. 94-4825Date Rep'td. November 7, 1994Date Rec'd. October 27, 1994Specification No. - - Quantity - - -Source of material ProjectSample from ProjectSubmitted by Delmer Thompson, Lawrence Geology OfficeIdentification marks Taqs with samplesProject or POV 159-03 K-5030-01, Atchison County, District 1Type of construction Foundation for Br. #27.28

TEST RESULTS

Sample No.	Station	Dist.ft. CL	Depth ft.	Description	Qu. t.s.f.	Sample p.c.f. by Dry Wt.	Moisture (% of Dry Wt.)
Core #1	194+63	32 Rt	320-324 ⁵	Shale, gray	38.167	140.3	7.8
Core #2	"	"	368-375	Shale, gray, limy	110.276	145.7	6.4
Core #3	"	"	393-397 ⁵	Ls, lt gry to olive	91.222	140.5	8.0
Core #4	"	"	419-425 ⁵	Sh, olive, limy	108.431	137.1	9.1
Core #5	"	"	452-458	Shale, lt gray	15.628	134.1	7.4
Core #6	"	"	482-489	LS, lt gry to olive	132.267	146.5	5.1
Core #7	"	"	500-507	Shale, dk gray	131.266	146.5	3.8
Core #8	"	"	541-546 ⁹	Shale, gray	32.905	134.3	6.9
Core #9	"	"	563-568 ⁹	Shale, dk gray	Lost Sample while trimming		
Core #10	"	"	602-610	Limestone	1131.135	162.9	1.0

cc: L.S. Ingram
 L.A. Rockers
 D. Thompson
 J.J. Brennan
 Soil Section
 File

Reported by _____

Title James J. Brennan, Soils Engineer

Proj. 159-3-K-5030-01 Br. # 27.28, US 159 over Grasshopper Crk. Atchison Co.

PA # 1	1003.4	0°-4°	Mantle, clay, silty, brown
Sta. 194+63, 20L+	999.4	4°-26 ⁵	Mantle, clay, silty, dark brown - Push 20°-21 ⁵
~ 985.3			Grades to slightly sandy, brown-gray
	976.9	26 ⁵ -28°	Clay, silty to sandy - Fine gray-brown
	975.4	28°-29 ⁸	Finner Clay, silty to sandy
	973.6	29 ⁸ -32 ⁸	Sand to gravel - light
	970.6	32 ⁸ -39°	Shale, Firm, occasional limy zone
	964.4	39°-48°	Shale Finner, limy
	962.6	40 ⁸ -43 ⁸	Limestone, shaly
	959.6	43 ⁸ -47 ²	Shale, limy, gray
	956.2	47 ²	TD
PA # 2	999.3	0°-14°	Mantle, clay, silty, brown to red-brown
Sta. 193+00, 29R+	985.3	14°-21 ⁵	Clay, silty, gray brown, wet
	977.8	21 ⁵ -22 ⁵	Clay, silty, gravel, light
	976.8	22 ⁵ -24°	Sand to gravel - heavy
	975.3	24°-26°	Shale, slightly weathered
	973.3	26°-34°	Shale, gray, limy
	965.3	34°-37 ⁵	Shale, gray, Firm
	961.8	37 ⁵ -40 ¹	Limestone, shaly
	958.4	40 ¹ -45 ²	Shale, gray, limy
	954.1	45 ² -47 ⁸	Limestone, shaly
	951.9	47 ⁸ -52 ⁵	Shale, gray, limy
	946.8	52 ⁵	TD
PA # 3	998.6	0°-14°	Clay, silty, brown, soft
Sta. 194+16, 21R+	984.6	14°-24°	Clay, silty, brown, wet
~ 984.6	974.6	24°-24°	Gravel zone
	973.8	24 ⁸ -25 ⁴	Clay, silty, gray-brown
	973.2	25 ⁴ -25 ⁷	Gravel zone
	972.9	25 ⁷ -26 ⁵	Clay, silty, gray-brown
	972.1	26 ⁵ -28 ⁵	Shale, Firm, olive to brown
	970.1	28 ⁵ -35 ⁸	Shale, Firm, gray, limy
	962.8	35 ⁸ -38 ⁷	Limestone, shaly, gray
	959.9	38 ⁷ -44 ⁷	Shale, limy, gray
	953.9	44 ⁷ -46°	Limestone, shaly
	952.6	46°-53°	Shale, limy
	945.6	53°	TD

Pro. 159-3-K-5030-01, Br 27.28, US 159 over Grasshopper Creek Atchison Co.

PA# 4	999.1	0°-21°	Mud, clay, silty, brown
Sta. 193+03, 40 Lt	977.5	21°-21°	Gravel zone
985.3	977.3	21°-22°	Clay, silty, gray brown
	976.3	22°-24°	Sand to gravel
	974.6	24°-27°	Shale, limy, olive, slightly weathered
	972.1	27°-36°	Shale, limy, gray
	962.3	36°-42°	Limestone, shaly
	956.3	42°-45°	Shale, gray, limy
	953.8	45°-47°	Limestone, shaly
	951.6	47°-57°	Shale, gray, limy
	942.1	57°-57°	Limestone, shaly
	941.3	57°-59°	Limestone, hard
	939.3	59°-67°	Shale, gray, firm
	931.6	67°	
PA# 5	983.2	0°-2°	Silt, dark gray, wet
Sta. 193+46, 25 Lt	981.2	2°-6°	Clay, silty to sandy, gray-brown
	977.2	6°-9°	Rubble, heavy
	973.7	9°-13°	Shale, brown, weathered
	969.8	13°-20°	Shale, gray, limy
	962.6	20°-22°	Limestone
	960.3	22°-23°	Limestone, shaly
	960.0	23°-27°	Shale, gray, limy
	955.7	27°	TD
PA# 6	994.2	0°-2°	Heavy rock rubble - erosion check
Sta. 194+18, 21 Lt	992.2	2°-10°	Clay, silty, brown
	984.2	10°-21°	Clay, silty, gray-brown
	973.1	21°-22°	Sand to gravel
	971.4	22°-23°	Gravel, heavy
	970.5	23°-25°	Shale, limy, firm
	969.2	25°-31°	Shale, gray, limy
	962.5	31°-34°	Limestone, shaly
	959.9	34°-40°	Shale, limy, gray
	954.1	40°-42°	Limestone, shaly
	951.4	42°-47°	Shale, gray, limy
	947.2	47°	TD

Proj. 159-3-K-5030-01, Br. #27.28, US 159 over Grasshopper Creek, Atchison Co.

	+	H.I.	-	Elev.
Bm #23				1005.15
π	1.4	1006.55		
PA #1			3.2	1003.35
Bm #23			1.4	1005.15
Bm #23				1005.15
π	4.21	1009.36		
PA #2			10.11	999.25
Bm #23			4.21	1005.15
Bm #23				1005.15
π	4.73	1009.88		
PA #3			11.33	998.55
PA #4			10.81	999.07
Bm #23			4.73	1005.15
Bm #23				1005.15
π	3.77	1008.92		
PA #5			21 ⁰² + 3 ⁹⁸ feet	983.2
Bm #23			3.77	1005.15
Bm #23				1005.15
π	0 ³	1005.45		
PA #6			11.3	994.15
Bm #23			0 ³	1005.15
Bm #23				1005.15
π	3.60	1008.75		
CD #1			7.05	1001.70
Bm #23			3.60	1005.15

RCB

Project No. 159-3 K-5030-01

K-159 over Little Creek

Atchison Co.

PA #1	994.1	0°-13°	Silty clay, tan-brown
115+66	981.1	13°-43°	Silt + silty clay, very soft
Rt 58°	951.1	43°	SIS
W/L 14° = 980.1			

PA 2	994.5	0°-13°	Silty Clay, tan-brown
116+62	981.5	13°-32°	Silt + silty clay
Lt. 27°	961.9	32°	SIS
W/L 14° = 979.7			

BM# 12			998.78
π_1	4.98	1003.76	
PA 1		9.70	994.06
PA 2		9.28	994.48
BM 12		4.98	998.78

KANSAS DEPARTMENT OF TRANSPORTATION

Report of sample of Geology Cores

Laboratory No. 94-4825

Date Rep'td. November 15, 1994

Date Rec'd. October 27, 1994

Specification No. - - Quantity - - -

Source of material Project

Sample from Project

Submitted by Delmer Thompson, Lawrence Geology Office

Identification marks Tags with samples

Project or POV 159-03 K-5030-01, Atchison County, District 1

Type of construction Foundation for Br. #27.28

TEST RESULTS

Sample No.	Station	Dist.ft. CL	Depth ft.	Description	Qu. t.s.f.	Sample p.c.f. by Dry Wt.	Moisture (% of Dry Wt.)
SH #1	194+63	32 Rt	45-65	Clay, silty, brown	3.485	100.8	23.4
SH #2	"	"	150-170	Clay, silty, brn, damp	1.700	89.5	30.1
SH #3	"	"	200-220	Clay, very silty, brn	4.191	104.4	22.7
SH #4	"	"	250-270	Vry silty, lt gry, sand	0.148	104.2	22.6
Core #1	"	"	320-324 ⁵	Shale, gray	38.167	140.3	7.8
Core #2	"	"	368-375	Shale, gray, limy	110.276	145.7	6.4
Core #3	"	"	393-397 ⁵	Ls, lt gry to olive	91.222	140.5	8.0
Core #4	"	"	419-425 ⁵	Sh, olive, limy	108.431	137.1	9.1
Core #5	"	"	452-458	Shale, lt gray	15.628	134.1	7.4
Core #6	"	"	482-489	Ls, lt gry to olive	132.267	146.5	5.1
Core #7	"	"	500-507	Shale, dk gray	131.266	146.5	3.8
Core #8	"	"	541-546	Shale, gray	32.905	134.3	6.9
Core #9	"	"	563-569	Shale, dk gray	Lost Sample while trimming		
Core #10	"	"	602-610	Limestone	1131.135	162.9	1.0

See attached routine analysis test results.

cc: L.S. Ingram
L.A. Rockers
D. Thompson ✓
J.J. Brennan
Soil Section
File 18-3

Reported by Chuck Oldaker Jr

Title James J. Brennan, Soils Engineer