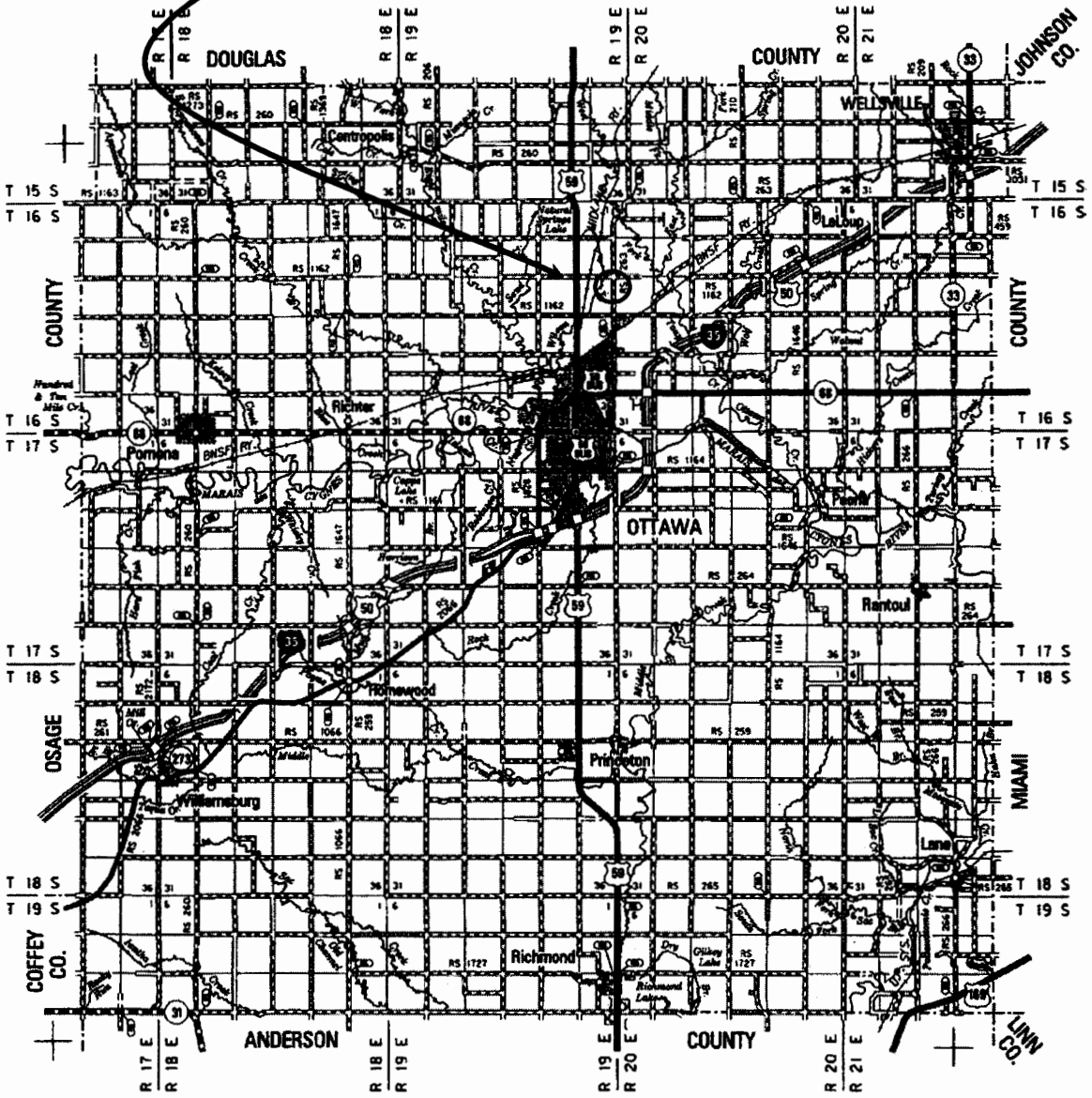
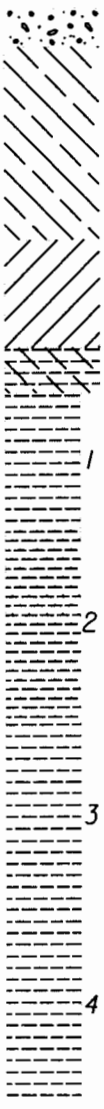
13-16-19E
NE NE

Project 59-30 K-7889-01
Montana Road over US-59



Franklin County

RTE./CO.	59-30	SOUNDING NO.	CD-X	SHEET 1 OF 3	
BRIDGE STA.	173+23.32	PROJ. NO.	K-7889-01	BRIDGE NO.	59-30-21.09(109)
SITE NAME	Montana Road over US-59			HOLE STA.	50+10.00; 10.0' Rt.
GEOLOGIST	R. Crow	SCALE (1 unit = 2 feet)		DATE	June 2, 2004
DRILLER	J. Burns	RIG TYPE	CME-75	TOP HOLE ELEV.	924.27
GW ELEV. ⊣	N/A	TOTAL DEPTH	68.2	M/B ELEV.	915.47



BIT TYPE / GEOLOGIC NAME / STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (tsf)	ELASTIC MODULUS (tsf)	ELEVATION
	0.0	924	T.H.E. = 924.27			924
	1.0		923.27 Gravel. Silty Clay, tan to brown.			
		922				922
		920		Shelby #1		920
	6.0	918	918.27 Clay, tan.	1.525	93.0	918 / 917.27
		916				916
	8.8		915.47 Shale, olive gray, weathered.			
	10.0	914	914.27 Shale, olive gray to tan, laminated.			914
1				2.550	64.0	912.57
		912				912
	13.5		910.77			
		910	Shale, limy, laminated, olive to tan to maroon, friable.			910
				1.470	98.5	909.02
2		908		3.185	106.0	908 / 907.87
	18.5	906	905.77			906
			Shale, gray, clayey, laminar, becoming more gray, more clayey, and less laminar with depth.			
		904		0.950	47.25	904 / 904.27
3						
		902				902
	23.5		900.77	1.505	93.5	901.07
		900	Shale, gray, clayey, laminar with tan lenses.			900
				4.285	89.5	899.17
4		898				898
				2.730	88.0	896.77
	28.3	896	895.97			896

RTE./CO. 59-30 SOUNDING NO. CD-X SHEET 2 OF 3

BRIDGE STA. 173+23.32 PROJ. NO. K-7889-01 BRIDGE NO. 59-30-21.09(109)

SITE NAME Montana Road over US-59 HOLE STA. 50+10.00; 10.0' Rt.

BIT TYPE: Diamond Core Barrel

GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (tsf)	ELASTIC MODULUS (tsf)	ELEVATION
				Shale, laminar, gray, with iron concretions at base.			
Weston Shale Member		29.3	894	894.97			894
	5	30.8		893.47 Shale, black, laminar.			
		32.0	892	892.27 Shale, very dark gray, laminar.			892
South Bend Limestone		33.3		Limestone with 0.1' shale seam at 32.2'. 890.97	7200	104500	891.30
			890	Limestone, hard gray to black.			890
	6	34.9		888.77	655.0	106000	888.80
Rock Lake Sh. Mbr.			888	Shale, gray with a coal seam at the top.			888
		37.6		886.67			
		38.1	886	886.17 Shale, blue-gray to green.	3120	168.0	886.50 886
		38.3		885.97 Shale, blue-green, very limy.			
	7		884	Limestone, shaley, granular grading to hard gray, wavy bedded, fossiliferous. Crystalline calcite present in middle portion. Fractured at 50.1' to 50.9'.	221.0	65000	883.50 884
			882				882
		43.1					
			880				880
	8				162.5	24350	878.60
			878				878
		48.1	876				876
			874				874
	9						
			872				872
		53.1			278.0	84000	871.20
			870				870
	10						
		56.6	868	867.67	462.5	101000	868
		57.3		866.97 Shale, limy, gray.			867.70
Eudora Shale Mbr.		58.1	866	Shale, black, platy, with some laminae.			866
	11	58.5					
			864				864
	12				79.0	18150	863.00
		62.3	862	861.97			862

RTE./CO. 59-30 SOUNDING NO. CD-X SHEET 3 OF 3

BRIDGE STA. 173+23.32 PROJ. NO. K-7889-01 BRIDGE NO. 59-30-21.09(109)

SITE NAME Montana Road over US-59 HOLE STA. 50+10.00; 10.0' Rt.

BIT TYPE / GEOLOGIC NAME / STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION (tsf)	ELASTIC MODULUS (tsf)	ELEVATION
		861.07	Shale, black, laminar, grades to limy gray.			
Diamond Core Brl.	12 63.2		Limestone, blue-gray, wavy bedded, fossilferous.			
Captain Creek Limestone Mbr.		860				860
	13	858				858
	68.2	856	856.07	401.0	67000	856
			T.D. = 68.2'			856.07

Core	Depth	Elev.	Cut	Rec.	%	RQD
1	10.0	914.27	3.5	3.5	100	90%
2	13.5	910.77	5.0	5.0	100	90%
3	18.5	905.77	5.0	5.0	100	100%
4	23.5	900.77	4.8	4.8	100	100%
5	28.3	895.97	5.0	4.5	90	74%
6	33.3	890.97	4.8	4.8	100	100%
7	38.1	886.17	5.0	5.0	100	100%
8	43.1	881.17	5.0	5.0	100	100%
9	48.1	876.17	5.0	5.0	100	84%
10	53.1	871.17	5.0	3.8	76	100%
11	58.1	866.17	0.4	1.2	300	100%
12	58.5	865.77	4.7	5.2	111	100%
13	63.2	861.07	5.0	5.0	100	88%
Total	68.2	856.07	58.2	57.8	99	XXXXX

Montana Road over US-59

Project No. 59-30 K-7889-01

Note: All measurements are in English

	Elevation	Depth		
Core Hole #1	924.27	0.00	Silty clay, tan-brown, gravel in upper foot.	**Mantle**
Sta. 50+10	919.27	5.00	Pushed shelby #1. 5.0 to 7.0.	
10 Rt of centerline	917.27	7.00	Clay, tan.	
Date Drilled 6/2/04	915.47	8.80	Shale, weathered, olive.	
Geologist: R. Crow	914.27	10.00	Begin coring.	**Weston Shale Fm.**
Driller: Jim Burns				
Core # 1	914.27	10.00	Shale, weathered, olive-gray.	
10.0 to 13.5 ft.	910.77	13.50	End Core 1.	
Cut 3.5 ft.				
Recovered 3.5 ft.			Sample 1 11.1 to 11.7 Shale.	
RQD = 90%				
Core # 2	910.77	13.50	Shale, weathered, soft, clayey, orange-gray.	
13.5 to 18.5 ft.	905.77	18.50	End Core 2.	
Cut 5.0 ft.				
Recovered 5.0 ft.			Sample 2 14.65 to 15.25 Shale.	
RQD =90%			Sample 3 16.0 to 16.4 Shale.	
Core # 3	905.77	18.50	Shale, becoming more gray, more clayey.	
18.5 to 23.5 ft.	900.77	23.50	End Core 3.	
Cut 5.0 ft.				
Recovered 5.0 ft.			Sample 4 19.4 to 20.0	
RQD = 100%			Sample 5 22.6 to 23.2	
Core # 4	900.77	23.50	Shale, gray, clayey, tan lenses.	**Weston Shale Fm.**
23.5 to 28.3 ft.	895.97	28.30	End core 4.	
Cut 4.8 ft.				
Recovered 4.8 ft.			Sample 6 24.3 to 25.1	
RQD = 100%			Sample 7 26.8 to 27.5	
Core # 5	895.97	28.30	Shale, gray, clayey, tan lenses, iron concretions.	
28.3 to 33.3 ft.	894.97	29.30	Shale, dark gray to black.	
Cut 5.0 ft.	893.47	30.80	Shale, dark gray.	
Recovered 4.5 ft.	892.27	32.00	Limestone.	
RQD = 74%	890.97	33.30	End core 5.	**South Bend Ls. Member**
			Sample 8 32.3 to 33.0	

Montana Road over US-59

Project No. 59-30 K-7889-01

	Elevation	Depth		
				South Bend Ls. Member
Core # 6	890.97	33.30	Limestone, gray to blue-gray, medium to coarse grained,	
33.3 to 38.1 ft.	889.07	35.20	Coal seam.	**Rock Lake Shale**
Cut 4.8 ft.	888.67	35.60	Shale, gray to blue-gray.	**Member**
Recovered 4.8 ft.	886.17	38.10	End core 6.	
RQD = 100%				
			Sample 9 34.9 to 35.5	
			Sample 10 36.9 to 37.8	
Core # 7	886.17	38.10	Shale, blue-gray/green, limy.	
38.1 to 43.1 ft.	885.97	38.30	Limestone, shaly.	
Cut 5.0 ft.	885.37	38.90	Limestone, hard, wavy, gray, fossiliferous.	**Stoner Ls. Member**
Recovered 5.0 ft.	881.17	43.10	End core 7.	
RQD = 100%				
			Sample 11 40.1 to 40.8 Limestone.	
Core # 8	881.17	43.10	Limestone, hard, wavy, calcite crystals.	
43.1 to 48.1 ft.	876.17	48.10	End core 8.	
Cut 5.0 ft.				
Recovered 5.0 ft.			Sample 12 45.1 to 45.7	
RQD = 100%				
Core # 9	876.17	48.10	Limestone, hard, wavy, calcite crystals.	
48.1 to 53.1 ft.	871.17	53.10	End core 9.	
Cut 5.0 ft.				
Recovered 5.0 ft.			Sample 13 52.5 to 53.1	
RQD = 84%				
Core # 10	871.17	53.10	Limestone, hard, wavy, calcite crystals.	
53.1 to 58.1 ft.	867.67	56.60	Shale, gray, limy, laminated.	
Cut 5.0 ft.	866.97	57.30	Shale, black, platy.	**Eudora Shale Mbr.**
Recovered 5.0 ft.	866.17	58.10	End core 10.	
RQD = 100%				
			Sample 14 55.9 to 56.6	
Core # 11	866.17	58.10	Shale, black, platy.	
58.1 to 58.5 ft.	865.77	58.50	End core 11.	
Cut 0.4 ft.				
Recovered 0.4 ft.				
RQD = 100%				

Montana Road over US-59

Project No. 59-30 K-7889-01

	Elevation	Depth		
Core # 12	865.77	58.50	Shale, black, platy.	**Eudora Shale Mbr.**
58.5 to 63.2 ft.	861.07	63.20	End core 12.	
Cut 4.7 ft.				
Recovered 4.7 ft.			Sample 15 60.7 to 61.3	
RQD = 100%				
Core # 13	861.07	63.20	Limestone, blue-gray, wavy, cherty, algal.	
63.2 to 68.2 ft.	859.27	65.00	Limestone, blue-gray, wavy, fossiliferous.	**Captain Creek Ls.**
Cut 5.0 ft.	856.07	68.20	End core 13. Total Depth.	**Member**
Recovered 5.0 ft.				
RQD = 88%			Sample 16 67.5 to 68.2	

Kansas Department of Transportation

Report of sample of geology cores & shelby tube

Laboratory N°. 04-1898
Date Reported: 6/28/2004
Date Received: 6/3/2004

Specification N°.	AASHTO T-208
Source of Material	59-30 K-7889-01
Sampled from	59-30 K-7889-01
Submitted by:	Rocky Crow
Identification marks:	tags on samples
Project or POV	59-30 K-7889-01
Description of site:	Montana Rd over US 59
Type of Construction	Bridge Foundation

Quantity: 16 cores & 1 tube
County: Franklin

TEST RESULTS

Sample N°.	Station	Offset Feet	Depth Feet	Description	Unconfined Compression TSF	Unconfined Compression Qu (psf)	Elastic Modulus E (psf)	Dry Density γ_d (lb/ft^3)	Moisture Percent % γ_d
SH-1			6.15-7.0	Brown mottled clay	1.53	3050	186000	98	26.9
S-1			11.1-11.7	Shale, green/gray, soft	2.6	5100	128000	115	16.7
S-2			14.65-15.25	Shale, green/gray, soft	1.5	2940	197000	117	17.0
S-3			16.0-16.4	Shale, green/gray, soft	3.2	6370	212000	117	16.9
S-4			19.4-20.0	Shale, green/gray, soft	0.95	1900	94500	111	19.0
S-5			22.6-23.2	Shale, green/gray, firm	1.5	3010	187000	117	16.2
S-6			24.3-25.1	Shale, green/gray, mottled	4.3	8570	179000	115	16.4
S-7			26.8-27.5	Shale, green/gray, mottled	2.73	5460	176000	115	16.9
S-8			32.3-33.0	LS	7200	14400000	2.09E+08	168	0.5
S-9			34.9-35.5	LS	655	1310000	2.12E+08	161	2.1
S-10			36.9-37.8	Shale, dk gray	3.1	6240	336000	126	11.5
S-11			40.1-40.8	LS, white	221	442000	1.3E+08	161	0.9
S-12			45.1-45.7	LS, white	162.5	325000	48700000	149	4.7
S-13			52.5-53.1	LS, white	278	556000	1.68E+08	158	2.3
4			55.9-56.6	LS, white w/shale lenses	462.5	925000	2.02E+08	158	1.6
S-15			60.7-61.3	Shale, black, hard	79	158000	36300000	113	7.3
S-16			67.5-68.2	LS, white	401	802000	1.34E+08	162	1.3

T.H.E.= 925.52
See attached routine test results

cc: L.S. Ingram
R. Fuller
R. Henthorne
Soil Section
File 18-3

Reported by: _____

Title: Robert Fuller; Soils Engineer

STATE	PROJECT NO.	YEAR	SHEET NO.	TOTAL SHEETS
KANSAS	59-30 K-7889-01	2006	1	

INDEX OF SHEETS

Volume 1

Volume 2

Volume 3

STATE OF KANSAS

DEPARTMENT OF TRANSPORTATION

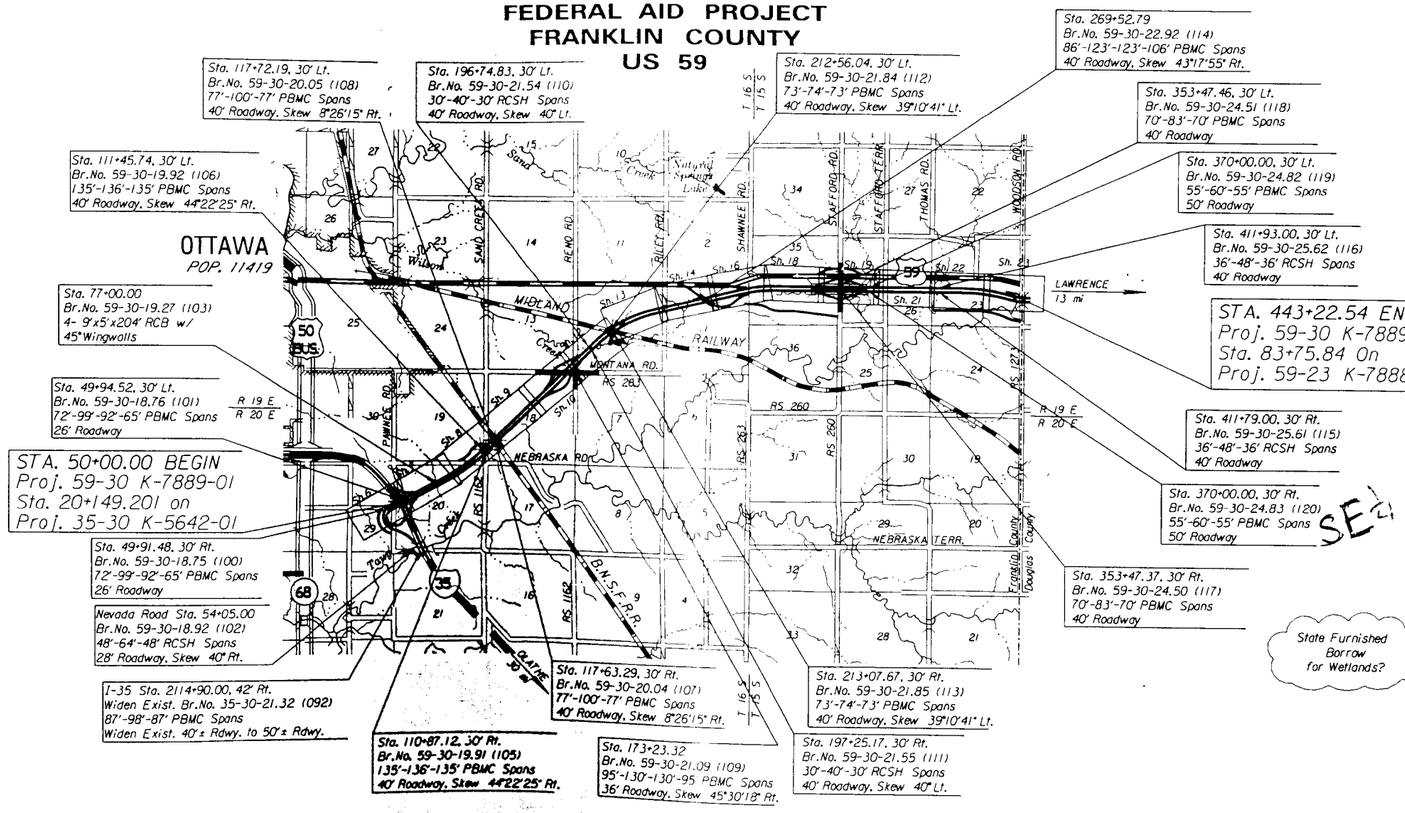
PLAN AND PROFILE OF PROPOSED

STATE HIGHWAY

FEDERAL AID PROJECT
FRANKLIN COUNTY
US 59

PROJ. NO. 59-30 K-7889-01
K788-0(901)

GRADING
BRIDGES
FENCING
SEEDING



Scale = 1" : 4,000'

NOTE: TRAFFIC TO BE CARRIED THRU CONSTRUCTION.
FOR CONSTRUCTION SEQUENCE SEE SH. NO. 141

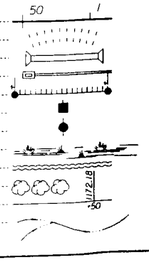
State Furnished Borrow for Wetlands?

DESIGN DESIGNATION

AADT	(2007)	= 6900
AADT	(2027)	= 10500
DHV		= 11%
D		= 60/40
T		= 7%
V		= 70 mph
C of A		= FULL
Clear Zone		= 34'

CONVENTIONAL SIGNS

COUNTY LINE	CENTER LINE OF PROJECT
CITY LIMITS	TERRACE
STATE OR NATIONAL LINE	CULVERTS
TOWNSHIP, SECTION or GRANT LINE	DROP INLET & STORM SEWER
PROPERTY LINE	ACCESS CONTROL
HIGHWAY FENCE	POWER POLE
EXISTING FENCE	TELEPHONE POLE
GUARD FENCE	MARSH
CONSTRUCTION LIMITS	HEDGE
RIGHT OF WAY LINE	TREES
TRAVELED WAY	PROFILE ELEVATION
RAILROADS	STREAM or CREEK



GROSS LENGTH OF PROJECT	39,322.54	FT.
EXCEPTIONS	None	
ADDITIONS	None	
NET LENGTH OF PROJECT	39,322.54	FT.
NET LENGTH OF BRIDGES	1,511.00	FT.
NET LENGTH OF ROAD	37,811.54	FT.

FEB 2 3 2005

PLANS PREPARED AND SUBMITTED BY:
GEORGE BUTLER ASSOCIATES, INC.
LENEXA KANSAS

RECOM. FOR APPROVAL-DATE	RECOM. FOR APPROVAL-DATE
CHIEF, BUREAU OF DESIGN KANSAS DEPARTMENT OF TRANSPORTATION	ENGINEER FEDERAL HIGHWAY ADMINISTRATION DEPARTMENT OF TRANSPORTATION
APPROVED - DATE	APPROVED - DATE
STATE TRANSPORTATION ENGINEER KANSAS DEPARTMENT OF TRANSPORTATION	DIVISION ADMINISTRATOR FEDERAL HIGHWAY ADMINISTRATION DEPARTMENT OF TRANSPORTATION

Sec 23 T 15S R 19E
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