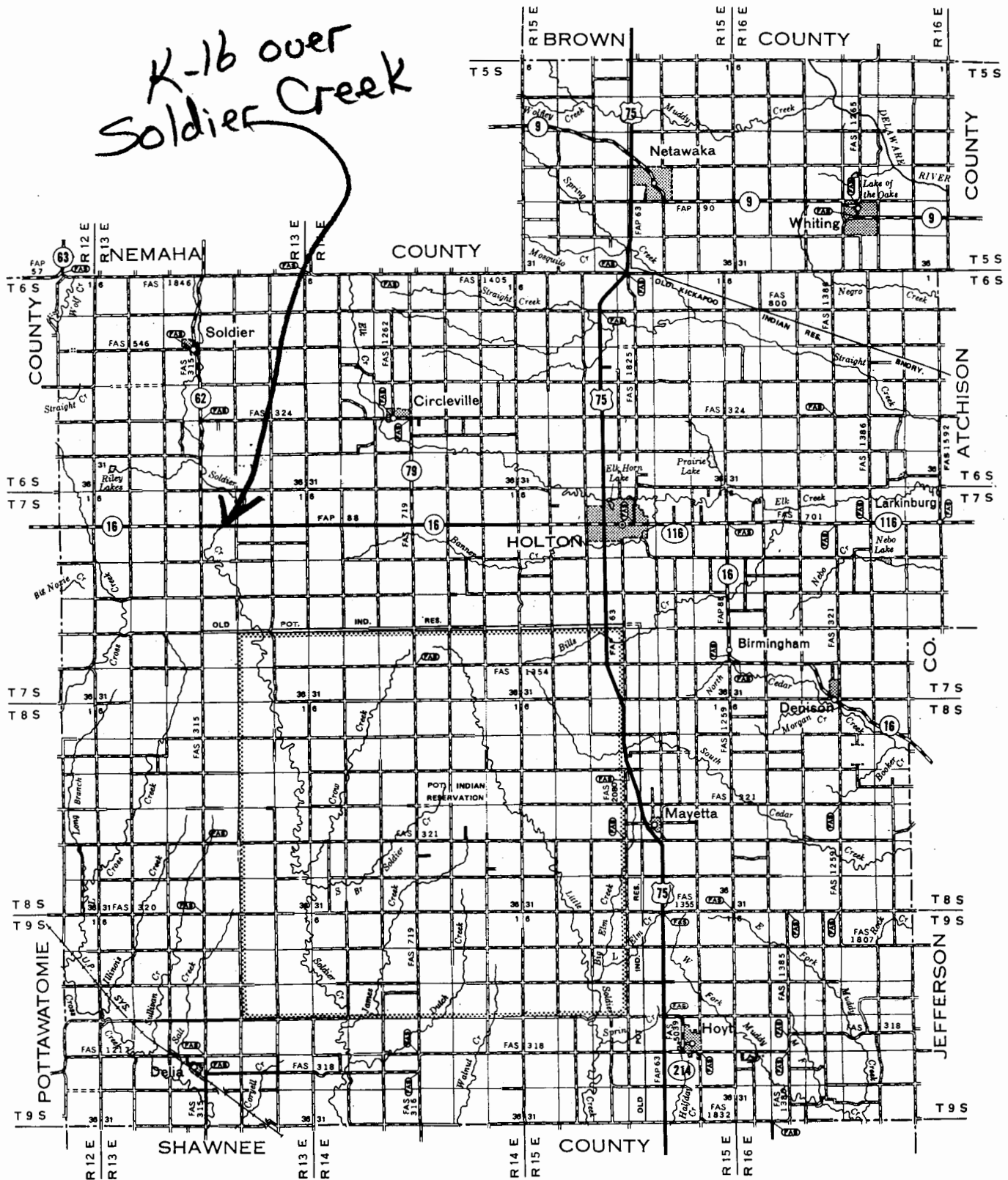


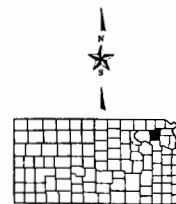
K-16 over
Soldier Creek



LEGEND

ROADS AND ROADWAY FEATURES	
UNPAVED ROAD	=====
GRAVEL OR STONE ROAD	=====
GRAVEL OR STONE ROAD - GRADED AND DRAINED	=====
GRAVEL OR STONE ROAD WITH STABILIZED SURFACE	=====
BITUMINOUS ROAD - LOW TYPE	=====
PAVED ROAD	=====
DIVIDED HIGHWAY	=====
HIGHWAY WITH FULL CONTROL OF ACCESS AND INTERCHANGE	=====

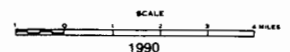
ROAD SYSTEM DESIGNATION	
FEDERAL-AID INTERSTATE HIGHWAY SYSTEM	=====
FEDERAL-AID PRIMARY HIGHWAY SYSTEM	=====
FEDERAL-AID SECONDARY HIGHWAY SYSTEM	=====
INTERSTATE NUMBERED HIGHWAY	=====
U.S. NUMBERED HIGHWAY	=====
STATE HIGHWAY SYSTEM OR STATE NUMBERED HIGHWAY	=====
END OF DESIGNATED SYSTEM OR MARKED ROUTE	=====



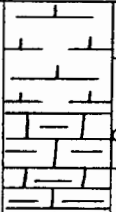
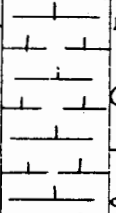
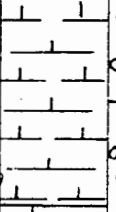
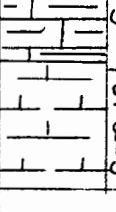
FA SYSTEM REVISED TO JULY 30, 1991

GENERAL HIGHWAY MAP JACKSON 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



		SOUNDING NO. Core Hole 2	PROJECT NO. K-6381-01	SHEET 2 OF 6				
DATE	7-24-00	RTE./CO. 16-43	TOTAL DEPTH 24.23 m	THE 338.81				
BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE	
							BLOWS	ELEV
	Mantle		9.45	329.36	Sandy Silty clay.			
	Long Creek Limestone Mbr.		10.67	328.14	Limestone, gray, very vuggy. Very Vuggy!			
Hughes Creek Shale Member		Core 1		328				
				327	Shale, gray, limy.	1768.2	Sample 1	327.59
				326				
				325	Shale, gray, limy. Numerous gypsum veins.	5920.9	Sample 3	325.45
				324				
				323	Limestone, gray, fossiliferous.	26930.0	Sample 4	323.93
				322				
				321	Shale, limy, gray.	1235.7	Sample 5	322.77
				320				
					Core 2			
		Core 3	14.60	324.21				
		Core 4	15.12	323.69				
		Core 5						
		Core 6						
	</							

			SOUNDING NO. <u>Core Hole 2</u>	PROJECT NO. <u>K-6381-01</u>	SHEET <u>3</u> OF <u>6</u>		
DATE <u>7-24-00</u>			RTE/CO. <u>16-43</u>	TOTAL DEPTH <u>24.23m</u>	THE <u>338.81</u>		
BIT TYPE	GEOLOGIC NAME	STRATIGRAPHIC COLUMN	DEPTH	ELEVATION	CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS	UNCONFINED COMPRESSION	STANDARD PENETRATION OR CASING DRIVE
							BLOWS ELEV
				320			
	<u>Hughes Creek Shale Member</u>		19 ⁵⁴	319 ²⁷	Shale, limy, gray.	2572.8	Sample 7 319 ⁷⁵
				319	Limestone, shaly, gray.		
			20 ¹⁸	318 ⁶³		Sample Cracked	Sample 8 318 ⁵¹
				318	Shale, limy, gray.		
				317		Sample Cracked	Sample 9 317 ⁰⁷
			22 ⁹⁶	316 ⁸⁵	Limestone, shaly, gray.	1983.2	Sample 10 315 ⁹⁵
			23 ⁴¹	315 ⁴⁰			
				315	Shale, limy, gray.		
			24 ²³	314 ⁵⁸	Total Depth		
				314			
				313			

K-16 Over Soldier Creek, Jackson County west of Holton. Core Hole 2.

	<u>Elevation</u>	<u>Depth</u>		
Core Hole #2	338.81	0.00	Pushed casing.	
Sta. 11+137	329.36	9.45	Straited. Very limy shale or shaly limestone.	<u>Long Creek</u>
16.5 m Rt. Project C.L.			Vuggy. White gypsum crystals.	
Water Level 4.0	328.44	10.37	Limy shale to shaly limestone, gray-green.	<u>Limestone</u>
Water Elevation 334.81	328.14	10.67	Limy, shale, gray.	
Date Drilled 07/24/2000	327.83	10.98	Start coring at 10.98 m. Casing has been reset to 10.82 m.	
Core # 1	327.83	10.98	Limestone, gray, hard.	
10.98 to 12.50	327.74	11.07	Shale, clayey, gray, gypsum filled vugs.	
Cut 1.53 m	326.92	11.89	Limy shale to shaly limestone, gray.	
Recovered 1.53 m	326.58	12.23	Shale, dark gray, numerous gypsum seams.	
RQD = 64%	326.31	12.50	End core 1.	
			Sample 1 11.07 to 11.22 Shale, gray.	
			Sample 2 11.77 to 11.92 Shale, gray.	
Core # 2	326.31	12.50	Shale, dark gray, numerous gypsum seams.	
12.50 to 14.03	326.09	12.72	Shale, gray, limy, very fossiliferous(fusulinids)	
Cut 1.53 m	325.70	13.11	Shale, clayey, firm.	
Recovered 1.25 m	325.45	13.36	Shale, very limy, fossiliferous.	
RQD = 100% of recovered core.	325.15	13.66	Shale, dark gray, less limy.	
	325.06	13.75	Lost.	
	324.78	14.03	End core 2.	
			Sample 3 13.20 to 13.36 Shale, gray.	
Core # 3	324.78	14.03	Shale, black, gypsum seams.	
14.03 to 15.25	324.39	14.42	Shale, dark gray, very firm.	
Cut 1.23 m	324.21	14.60	Limestone, gray, fossiliferous.	
Recovered 1.23 m	323.69	15.12	Shale, limy, dark gray.	
RQD = 83%	323.56	15.25	End core 3.	
			Sample 4 14.70 to 14.88 Limestone, gray.	
Core # 4	323.56	15.25	Shale, dark gray, blocky. Gypsum seam at 16.06.	
15.25 to 16.77	322.65	16.16	Shale, limy, gray, fossiliferous.	
Cut 1.53 m	322.04	16.77	End core 4	
Recovered 1.53 m			Sample 5 15.85 to 16.04 Shale, clayey, dark gray.	
RQD = 78%				

Hughes Creek Shale Member

• **K-16 Over Soldier Creek, Jackson County west of Holton. Core Hole 2.**

Core # 5	322.04	16.77	Shale, gray, limy, fossiliferous.
16.77 to 18.29	321.22	17.59	Limestone, gray.
Cut 1.53 m	320.88	17.93	Shale, gray, clayey. Thin gypsum seam at 18.29.
Recovered 1.53 m	320.52	18.29	End core 5.
RQD = 90%			

Sample 6 17.96 to 18.11 Shale, gray.

Core # 6	320.52	18.29	Shale, gray, clayey, firm.
18.29 to 19.82	319.27	19.54	Limestone, shaly, gray.
Cut 1.53 m	319.21	19.60	Limestone, gray.
Recovered 1.37 m	318.99	19.82	End core 6.
RQD = 96 %			

Sample 7 18.90 to 19.06 Shale, gray.

Core # 7	318.99	19.82	Limestone, gray.
19.82 to 21.19	318.63	20.18	Shale, dark gray, limy.
Cut 1.38 m	317.62	21.19	End core 7.
Recovered 1.38 m			
RQD = 94%			

Sample 8 20.18 to 20.30 Shale, limy, gray.

Core # 8	317.62	21.19	Shale, dark gray.
21.19 to 22.28	316.53	22.28	End core 8.
Cut 1.1 m			
Recovered 1.1 m			
RQD = 100 %			

Sample 9 21.58 to 21.74 Shale, dark gray.

Core # 9	316.53	22.28	Shale, gray.
22.28 to 23.47	315.85	22.96	Limestone, gray, fossiliferous.
Cut 1.19 m	315.40	23.41	Shale, limy, dark gray.
Recovered 1.19 m	315.34	23.47	End core 9.
RQD = 95 %			

Sample 10 22.71 to 22.86 Shale, gray.

Core # 10	315.34	23.47	Shale, dark gray, limy.
23.47 to 24.23	315.25	23.56	Shale, gray, limy.
Cut 0.76 m	314.58	24.23	End core 10. Total depth.
Recovered 0.71 m			
RQD = 72 %			

Hughes Creek Shale Member

• **K-16 Over Soldier Creek, Jackson County west of Holton. Core Hole 2.**
Soil Samples

Core Hole #2	338.81	0.00	Silty clay.
Sta. 11+137	338.20	0.61	Shelby 1. Pushed 0.55, recovered 0.55.
16.5 m Rt. Project C.L.			Silty clay, brown.
Water Level 4.0	337.65	1.16	Silty clay, dark brown.
Water Elevation 334.81	337.28	1.53	Shelby 2. Pushed 0.55, recovered 0.55.
Date Drilled 07/24/2000			Silty clay, dark brown.
	336.73	2.08	Silty clay, dark brown.
	335.77	3.04	Shelby 3. Pushed 0.55, recovered 0.55.
			Silty sand, wet.
	335.21	3.60	Silty sand and gravel, wet.
	334.24	4.57	Shelby 4. Pushed 0.55, recovered 0.55.
			Silty sand and gravel, wet.
	333.69	5.12	Stop soil sampling.

7-24-00

CD #2

Sta 11+137
16.5 Rt.

H₂O level 13 ft
3.96 m

Bm

T₁

CD #2

5.4 344.21

5.4

338.81

338.81

shot at PA #1

	<u>feet</u>	<u>Casing</u>	<u>meters</u>
1-	7.1		2.17
2-	7.2		2.20
	<u>14.3</u>		<u>4.37</u>
3-	7.1		2.17
	<u>21.4</u>		<u>6.54</u>
4-	7.1		2.17
	<u>28.5</u>		<u>8.71</u>
5-	3.2		0.96
	<u>31.7</u>		<u>9.67</u>
6-	4.1		1.25
	<u>35.8</u>		<u>10.92</u>
	- 0.3	total	- 0.09
	<u>35.5</u>	in ground	<u>10.83</u>

meters	Feet
330.81 0'	1111.58 0° - 31'
329.36 9.45	31' - 34°

Pushed casing
strated, very limy shale or very shaly LS.
Uuggy. lots of white ^{gypsum} crystals, mostly gray-gran

Stopped at 34° to reset casing. Set casing to 34°

Long
Creek

328.44 10.37

34° - 35°

limy shale to shaly LS gray

328.14 10.67

35° - 36°

limy shale, gray

Stopped to reset casing to 35.5 ft

327.83 10.98

36°

Begin coring

Core #1

36° - 41° ft 327.83 10.98

10.98 - 12.50 m. 327.74 11.07

cut 5 ft / 1.53 m

Recou. 5 ft / 1.53 m 326.92 11.89

RQD = $3\frac{3}{5} = 1$ 326.58 12.23

= 64% 326.31 12.50

36° - 36°

LS, gray, hard

36° - 39°

Shale, clayey, gray areas of gypsum filled
Uugs.

39° - 40°

Very limy shale to shaly LS, Very firm, gray

40° - 41°

Shale, dark gray, numerous gypsum seams

41°

End core 1

36° - 36°

Sample 1 Shale, gray (11.07 - 11.22 m)

36° - 39°

Sample 2 Shale, gray (11.77 - 11.92 m)

Hughes Creek Shale

Meters
 core #2 326.31 12.50
 41°-46° ft 326.09 12.72
 12.50-14.03 m
 Cut 5 ft / 1.53m 325.70 13.11
 Recov. 4 ft / 1.25m 325.45 13.36
 RQD = 100% 325.15 13.66
 on what we recovered 13.75
 lost 0.9 14.03

Core 3
 46°-50° ft 324.78 14.03
 14.03-15.25 m 324.39 14.42
 Cut 4 ft / 1.23m 324.21 14.60
 Recov. 4 ft / 1.23m 323.69 15.12
 RQD = $\frac{3.3}{4.0}$ 323.56 15.25
 = 83%

324.78
 323.66
 321.19

Feet
 41°-41⁷
 41⁷-43°
 43°-43⁸
 43⁸-44⁸
 44⁸-45¹
 45¹-46°
 46°

43°-43⁸

46°-47³
 47³-47⁹
 47⁹-49⁶
 49⁶-50°
 50°

48²-48⁸

Shale, gray with gypsum seams, clayey
 Shale grading limy, gray fossiliferous,
 fusulines
 Shale, gray, firm, clayey to silty
 Shale, gray, very limy, fossiliferous
 Shale, dark gray, less limy
 lost
 End core 2

Sample 3 Shale, gray. (13.20-13.36 m)

Shale, black, gypsum seams, ^{maybe 10' high}
 Shale, dark gray, very firm
 ls, gray fossiliferous
 Shale, dark gray, limy
 End core 3

Sample 4 ls, gray fossiliferous
 (14.70-14.88 m)

Hughes Creek Shale

metersfeet

Core 4 323.56 15.25

50° - 55° ft

15.25 - 16.77 m 322.65 16.16

Cut 5 ft / 1.53 m 322.04 16.77

Recov. 5 ft / 1.53 m

RQD = 3 9/5°

= 78%

50° - 53°

53° - 55°

55°

Shale, dark gray, clayey with a few
limy lenses. Thin gypsum seam at 52.7
Shale, gray, limy, fossiliferous
End core 4

52° - 52.6°

Sample 5 shale, dark gray, clayey
(15.85 - 16.04 m)

Core 5 322.14 16.77

55° - 60° ft 321.22 17.59

16.77 - 18.29 m 320.88 17.93

Cut 5 ft / 1.53 m

Recov. 5 ft / 1.53 m 320.52 18.29

RQD = 4 5/5°

= 90%

55° - 57.7°

57.7° - 58.8°

58.8° - 60°

60°

Shale, gray, very limy, fossiliferous
LS gray, hard,
Shale, gray, clayey to silty
thin gypsum seam at 60.0 ft
End core 5

58.9° - 59.4°

Sample 6 Shale, gray
(17.96 - 18.11 m)

Hughes Creek Shale

	<u>meters</u>	
Core 6	320.52	18.29
60°-65°	319.27	19.54
18.29-19.82	319.21	19.60
Cut 5 ⁵ / ₈ ft / 1.53 m	318.99	19.82
Recov. 4 ⁵ / ₈ ft / 1.37 m		
RQD = 48/50		
= 96%		

	<u>meters</u>	
Core 7	318.99	19.82
65°-69°5'	318.63	20.18
19.82-21.19	317.62	21.19
Cut 4 ⁵ / ₈ ft / 1.38 m		
Recov. 4 ⁵ / ₈ ft / 1.38 m		
RQD = 96%		

feet

60°-64'
64'-64³/₄'
64³/₄'-65°
65°

Shale, gray, clayey, firm
LS Shaly gray
LS, gray
End Core 6

62°-62°5'

Sample 7 Shale gray. (18.90-19.06 m)

65°-66°2'
66°2'-69°5'
69°5'

LS, gray
Shale, dark gray, limy
End Core 7

66°2'-66°6'

Sample 8 Shale limy gray
(20.18-20.30 m)

Hughes Creek Shale

Core 8
 69⁵-73¹ ft
 21.19 - 22.28 m
 Cut 3⁶ / 1.1 m
 Recov. 3⁶ / 1.1 m
 RQD = 100%

meters

feet

69⁵-73¹

73¹

Shale, dark gray.
 End Core 8

70⁸-71³

Sample 9

Shale, dark gray
 (21.58 - 21.74 m)

Core 9
 73¹-77⁰
 22.28 - 23.47
 Cut 3⁹ ft / 1.19 m
 Rec. 3⁹ ft / 1.19 m
 RQD = 95%

316.53 22.28

315.85 22.96

315.40 23.41

315.34 23.47

73¹-75³

75³-76⁸

76⁸-77⁰

77⁰

Shale, gray
 Ls gray, fossiliferous
 limy shale, dark gray
 End core 9

74⁵-75⁰

(22.71 - 22.86 meters)

Sample 10

Shale gray

Hughes Creek Shale

Core 10
 770-795
 23.47-
 cut 2 $\frac{5}{4}$ / 0.76 m
 Recov. 2 $\frac{3}{1}$ / 0.71 m
 RQD = $\frac{18}{25}$
 = 72%

meters

feet

315.34 23.47

315.25 23.56

314.88 23.93

314.58 24.23

770-773

773-785

785-795

795

Shale dark gray limy

Shale, gray limy

Shale, light gray, limy

End core 10

Total Depth of hole

Hughes
Creek
Shale

338.81 0⁰⁰

338.20 0.61

337.65 1.16

337.28 1.53

336.73 2.08

335.77 3.04

335.21 3.60

334.24 4.57

333.69 5.12

0⁰-2⁰

2⁰-3⁸

3⁸-5⁰

5⁰-6⁸

6⁸-10⁰

10⁰-11⁸

11⁸-15⁰

15⁰-16⁸

16⁸

Silty clay

Shelby #1

pushed 1⁸ ft / 0.55 m

Recov. 1⁸ ft / 0.55 m

Silty clay dark brown

Shelby #2

pushed 1⁸ ft / 0.55 m

Recov. 1⁸ ft / 0.55 m

Silty clay, dark brown

Shelby #3

pushed 1⁸ ft / 0.55 m

Recov. 1⁸ ft / 0.55 m

Silty sand

Shelby 4

pushed 1⁸ ft / 0.55 m

Recov. 1⁸ ft / 0.55 m

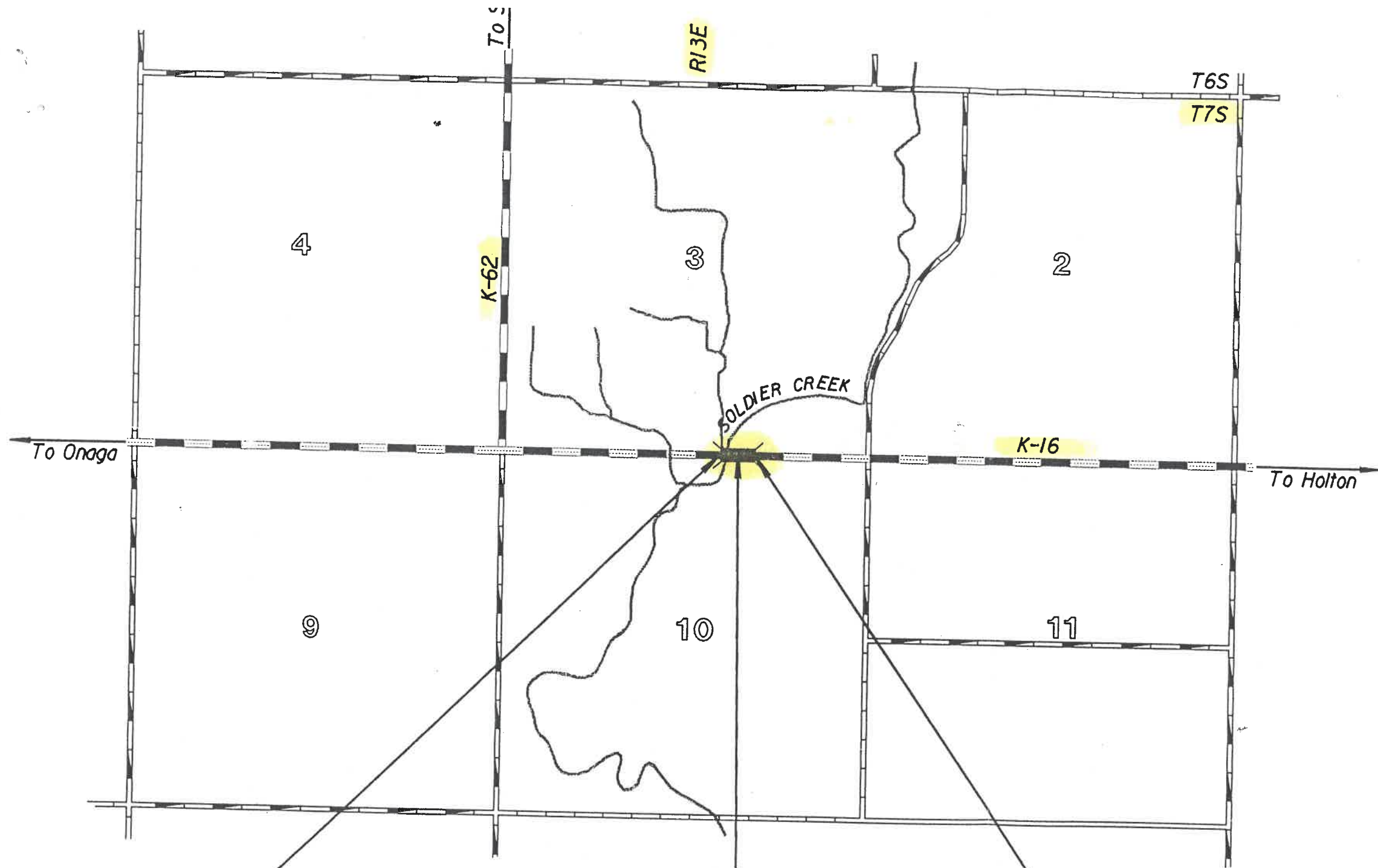
Stop

Silty clay
brown

Silty clay
dark brown

Silty sand
wet

wet Silty
Sand & gravel

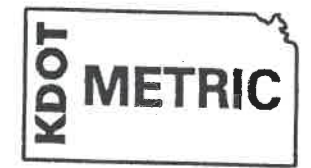


2

1.000 BEGIN
 K-6381-01 -
 6.03 on
 F.A. 524 B (dated 1936)

STA. 11+190.000
 Br. No. 16-43-4.57 (032)
 27-31-27 m Prestressed Concrete
 Beam Spans
 12.2 m Roadway, 30° Skew Rt.

STA. 11+355.000 END
 PROJ. 16-43 K-6381-01 -
 STA. 372+53.87 on
 PROJ. 24-7A F.A. 524 B (dated 1936)



All di
 Si su
 elev

GROSS LENGTH OF PROJECT 295.000 m

PLANS PREPARED BY:

RECOM. FOR APPROVAL-DATE

CHIEF BUREAU OF DESIGN