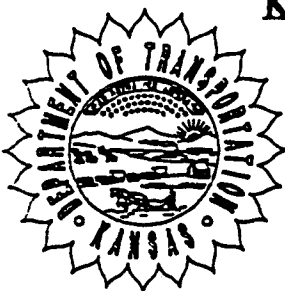


KANSAS DEPARTMENT OF TRANSPORTATION



| | | |
|----------------------------------|--------------------------------|---------------------------------|
| 1. ROUTE-COUNTY NO. 004-089 | 7. SOUNDING NO. 1 | 8. SHEET 01 OF 04 |
| 2. BRIDGE STA. 50+00 | 6. PROJECT NO. K-3362-03 | 5. BRIDGE NO. 19.41 |
| 3. DESCRIPTION Rice Rd. over K-4 | | 4. HOLE STA. 50+00, 58 Ft |
| 9. GEOLOGIST Thompson | 10. VERTICLE SCALE 1"=10' | 11. DATE 3-14-94 |
| 12. DRILLER Shull | 13. RIG B-61 | 14. ELEVATION TOP OF HOLE 984.7 |
| 15. GROUND WATER ELEV. 972.2 | 16. TOTAL DEPTH OF HOLE 57' 8" | 17. ELEVATION TOP OF ROCK 978.9 |

3-12-16E

| BIT TYPE & NO. | GEOLOGIC NAME | STRATIGRAPHIC COLUMN | DEPTH | ELEVATION | CLASSIFICATION OF MATERIALS DESCRIPTION AND REMARKS | UNCONFINED COMPRESSION | STANDARD PENETRATION OR CASING DRIVE | |
|----------------|---------------------|----------------------|-------|-----------|---|---------------------------|--------------------------------------|-------|
| | | | | | | | Depth | ELEV. |
| | | | 0° | 984.7 | | | | |
| Casing | Mantle | | 58 | 978.9 | Mantle, silty clay, brown with limestone rubble. | | | |
| | Holt Mbr. | | 85 | 976.2 | shale, black | | | |
| | DuBois Mbr. | | 113 | 973.4 | Limestone, shaly with shale breaks weathered, brown to gray-brown | 13.749 | 12' | 972.5 |
| | Turner Crk. Sheldon | | 130 | 971.7 | shale, dark gray, limy | | | |
| | Jones Pt. Mbr. | | 145 | 970.8 | Limestone, light gray | | | |
| | | | 173 | 967.4 | Shale, olive, firm, clayey | 632.012 | 17' | 966.9 |
| | Carzon Mbr. | | 3 | | Limestone, hard, shaly zones gray. Dense in zones with no shale. | 246.495 | 19' | 965.0 |
| | | | 4 | | | 216.768 | 22' | 961.9 |
| | Iowa Pt. | | 26° | 958.7 | shale, gray, clayey | 700.097 | 27' | 957.3 |
| | Hartford Mbr. | | 26.8 | 957.9 | | | | |
| | | | 315 | 953.2 | Limestone, hard, dense, gray | | | |
| | | | 6 | | Shale, gray, clayey | 47.125 | 33' | 951.0 |
| | | | 7 | | Shale, gray, very firm, sandy | 15.903 | 36' | 947.9 |
| | Calhoun Frm | | 40° | 943.8 | | | | |
| | | | 436 | 941' | sandstone, gray, shaly | 71.362 | 43' | 941.5 |
| | | | 9 | | Shale, gray, firm, sandy with thin sandstone stringers | 20.404 | 45' | 939.1 |
| | | | 10 | | | 41.570 | 49' | 935 |
| | | | 55° | 929.7 | | | | |
| | | | 57' | 927.6 | sandstone, shaly | | | |
| | | | 57.8 | | shale clayey gray 926.9 TD. | | | |

3-14-94 K-3362-03 Rice Rd

Br. # 19.41

CD # 1 984.7 0°-4° S. Cl, brn

Sta. 412+11 K-4 4°-5° Ls, Rblc

= 50+00, 59Rt Rice Rd. 978.9 Holt 5°-8° Sh, blk

976.2 8°-9° Ls, hd, wt

Caseing 9°-10° Sh, brn

6⁵

-2³

4³

Drive 4³-5⁸

Water ~ 12.5

973.4 Turner creek

971.7 Sheldon

970.7 Jones point

74.7
16.0
58.7 0°-4° 84.7
16.0
68.7 5.15
0.7
5.8 (13)

Pot 791.16 74.7
10.8

T. 2.3

CD # 1 8.90 74.7
10.8

Pot 2.3 84.7
22.7

12.8

Core # 1 6°-11° Cut 5° Recov. 5° ←

6°-6⁴ - Ls, shly, very wt d

6⁴-8⁵ Sh, brn to blk wt d - Lost 0.5

8⁵-9⁵ Ls, shly, wt d

9⁵-10⁰ Sh, brn-gry, wt d, - Lost 0.5 Ls

RQD = 1.4 x 5.0

Core # 2 11°-16° Cut 5° Recov.

11°-11¹ - Sh

11¹-11³ - Ls - base Dubois

11³-12³ Sh, Turner Crk dk gry very

fine

12³-13⁰ - Sh, dk gry, very limy

- gradational to Ls

13⁰-13³ - Ls, lt gry impure

13³-14⁰ - Ls, hd

14⁰-15⁷ Sh, olive, limy - Jones Pt - very clayey

RQD = 3² x 5.0

Sample #1 11^A-12^I - Shale Turner Ck

Core #3 16⁰-20⁸ Cut 4⁸ Recov. 4⁷

16⁰-17³ Sh, olive, firm - no sample possible

17³-18⁵ Limestone, lt gray, dense

18⁵-20² Limestone, impure, shaly

20²-20⁵ Limestone, lt gray

RQD = 3⁸/4⁸

Sample #2 17³-17⁸ Limestone

Sample #3 18⁸-19⁷ Limestone shaly

Core #4 20⁸-25⁵ Cut 4⁷ Recov. 4⁷

20⁸-23⁴ Ls, lt gray dense to mottled

23⁴-24¹ Ls, impure to shaly

24¹-25⁴ Ls, lt gray, dense, slightly

impure

25⁴-25⁵ - Ls, shaly

RQD = 98%

Sample #4

21⁴-22⁸ All Ls, Curzon

14

↑
Curzon

967.4

967.4
958.7
8.7

Core # 5 25⁵-30⁵ Cut 5° Recov. 4⁸ 5°

25⁵-26⁰ Ls, lt gray, impure to shly

26⁰-26⁸ Sh, gray clayey

26⁸-30⁵ Ls, light gray dense to unit bedded.

RQD = 4²/5⁰

Sample # 5 ~~27¹-27⁹~~ Ls, Hartford

26⁰-27⁴

Core # 6 30⁵-35³ Cut 4⁸ Recov. 4⁶

30⁵-31⁵ Ls, lt gray, slightly impure

31⁵-32⁷ Sh, gray, Firm

32⁷-32⁹ Coal

32⁹-35³ Sh, dark gray Firm

Sample # 6 33⁰-33⁷ Sh, gray

RQD = 4⁰/4⁸

Core # 7 35³-40¹ Cut 4⁸ Recov. 3⁰ 4⁰

35³-38² Sh, light gray, sandy

Sample # 7 36³-36⁸ Sh,

RQD = 3³/4⁰

974.7
26.0

958.7

984.7

26.0

958.7

(15)

Curzon

Jones Pt

Hartford

Colburn

(958.7 to 957.9)

957.9

953.2

5.79
0.15
5.64

109
81
28

Core # 8 40¹-43³ Cut 3² Recor. 3²
 40¹-40⁹ Sh, gray, sand, very fine
 → 40⁹-43³ Sandstone, lt gray, shaly
 Sample # 8 42⁵-43² Sandstone
 RQD = 2⁴/3²

Core # 9 43³-48³ Cut 5⁰ Recor. 4⁵
 43³-43⁶ Ss, lt gray Shly
 43⁶-46⁶ Sh, lt gray, clayey, sandy
 46⁶-48³ Sh, lt gray, clayey
 Sample # 9 45⁰-45⁶⁵
 Sh, sand
 RQD = 78%

Core # 10 48³-52¹ Cut 4⁶ Recor. 4⁶
 → 48³-52⁸ Sh, lt gray, very sand
 to ss stringers
 RQD = 3⁶/4⁶

→ 52⁹
48⁶
7
Sample # 10 48⁶-49⁷

Core # 11 52⁹-57⁸ Cut 4⁹ Recor. 4⁵
 52⁹-55⁰ Samp as above
 RQD 55⁰-55⁹ Ss, shaly
 = 55⁹-57¹ Ss, lt gray, calcareous
 4¹/4⁹ 57¹-57⁸ Sh, dk gray
 1D

004-089-K-3362-03

Rice Rd. Over K-4

Core Descriptions.

| | | |
|---------------|--------------------------------|----------------------------------|
| Core 1 | 6°-6 ⁴ | Limestone, shaly, very weathered |
| 6°-11° | 6 ⁴ -8 ⁵ | Shale, brown to black, weathered |
| Cut 5° | 8 ⁵ -9 ⁵ | Limestone, shaly, weathered |
| Recov. 5° | 9 ⁵ -11° | Shale, brown-gray weathered. |
| RQD = 1.4/5.0 | | |
| = 28% | | |

| | | |
|--------------------------|----------------------------------|---|
| Core 2 | 11°-11 ¹ | Shale |
| 11°-16° | 11 ¹ -11 ³ | Limestone |
| Cut 5° | 11 ³ -12 ³ | shale, dark gray, very firm |
| Recov. 5° | 12 ³ -13° | shale, dark gray, very limy gradational to limestone |
| RQD = 3 ² /5° | 13°-13 ³ | Limestone, light gray, impure |
| = 64% | 13 ³ -14° | Limestone, hard |
| | 14°-15 ⁷ | shale, olive, limy, very clayey |

| | | |
|----------|----------------------------------|-------------|
| Sample 1 | 11 ⁴ -12 ¹ | shale, gray |
|----------|----------------------------------|-------------|

| | | |
|--------------------------------------|----------------------------------|------------------------------|
| Core 3 | 16°-17 ³ | Shale, olive, firm |
| 16°-20 ⁸ | 17 ³ -18 ⁵ | Limestone, light gray, dense |
| Cut 4 ⁸ | 18 ⁵ -20 ² | Limestone, impure, shaly |
| Recov. 4 ⁷ | 20 ² -20 ⁵ | Limestone, light gray |
| RQD = 3 ⁸ /4 ⁸ | 20 ⁵ -20 ⁸ | lost in coring. |
| = 79.2% | | |

| | | |
|----------|----------------------------------|-----------|
| Sample 2 | 17 ³ -17 ⁸ | Limestone |
|----------|----------------------------------|-----------|

| | | |
|----------|----------------------------------|------------------|
| Sample 3 | 18 ⁸ -19 ⁷ | Limestone, shaly |
|----------|----------------------------------|------------------|

| | | |
|----------------------------------|----------------------------------|--|
| Core 4 | 20 ⁸ -23 ⁶ | Limestone, light gray, dense to unit bedded. |
| 20 ⁸ -25 ⁵ | 23 ⁶ -24 ¹ | Limestone, impure to shaly |
| Cut 4 ⁷ | 24 ¹ -25 ⁴ | Limestone, light gray, dense, |
| Recov. 4 ⁷ | 25 ⁴ -25 ⁵ | Limestone, shaly |
| RQD = 98% | | |

| | | |
|----------|----------------------------------|------------|
| Sample 4 | 21 ⁶ -22 ⁸ | Limestone. |
|----------|----------------------------------|------------|

Core Descriptions (Con't)

| | |
|--------------------------------------|--|
| Core 5 | |
| 25 ⁵ -30 ⁵ | 25 ⁵ -26 ⁰ Limestone, light gray, impure to shaly |
| cut 5 ⁰ | 26 ⁰ -26 ⁸ Shale, gray, clayey |
| Recov. 5 ⁰ | 26 ⁸ -30 ⁵ Limestone, light gray, dense to unit bedded |
| RQD = 4 ² /5 ⁰ | |
| = 84% | |

Sample 5 26⁸-27⁴ Limestone

| | |
|--------------------------------------|---|
| Core 6 | |
| 30 ⁵ -35 ³ | 30 ⁵ -31 ⁵ Limestone, light gray |
| cut 4 ⁸ | 31 ⁵ -32 ⁷ Shale, gray, firm |
| Recov. 4 ⁶ | 32 ⁷ -32 ⁹ Coal |
| RQD = 4 ⁰ /4 ⁸ | 32 ⁹ -35 ¹ Shale, dark gray, firm |
| = 83.3% | 35 ¹ -35 ³ Lost ? |

Sample 6 33⁰-33⁷ Shale, gray

| | |
|--------------------------------------|---|
| Core 7 | |
| 35 ³ -40 ¹ | 35 ³ -40 ¹ Shale, light gray, sandy |
| cut 4 ⁸ | |
| Recov. 4 ⁸ | |
| RQD = 3 ³ /4 ⁸ | |
| = 68.75% | |

Sample 7 36³-36⁸ Shale, sandy

| | |
|--------------------------------------|--|
| Core 8 | |
| 40 ¹ -43 ³ | 40 ¹ -40 ⁹ Shale, gray, sandy, very firm |
| cut 3 ² | 40 ⁹ -43 ³ Sandstone, light gray, shaly |
| Recov. 3 ² | |
| RQD = 2 ⁴ /3 ² | |
| = 75% | |

Sample 8 42⁵-43² Sandstone

Core Descriptions (Con't)

Core 9
 43³-48³
 cut 5⁰
 Recov. 4⁵
 RQD = 73%
 Sample 9 45⁰-45⁶⁵ Shale, Sandy

Core 10
 48³-52⁹
 cut 4⁶
 Recov. 4⁶
 RQD = 3⁶/4⁶
 = 78.3%
 Sample 10 48⁶-49⁷ shale

Core 11
 52⁹-57⁸
 cut 4⁹
 Recov. 4⁶
 RQD = 4¹/4⁹
 = 83.7%
 52⁹-55⁰ Shale, light gray, very sandy
 55⁰-55⁹ Sandstone, shaly
 55⁹-57¹ Sandstone, light gray
 57¹-57⁸ shale, dark gray
 57⁸ TD

Lawrence

KANSAS DEPARTMENT OF TRANSPORTATION

Report of sample of Geology Cores

Laboratory No. 94-0732

Date Rep'td. March 22, 1994

Date Rec'd. March 18, 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 4-89 K-3362-03, Bridge #19.41, Shawnee County, District 1

Type of construction Bridge

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.) |
|------------|---------|-------------|-----------|-----------------------|------------|--------------------------|-------------------------|
| CD-1 | 50+00 | 59' Rt Rice | 114-121 | Sh, Turner Crk. ✓ | 13.749 | 134.7 | 8.1 ✓ |
| CD-2 | " | " | 173-178 | Ls, light gray ✓ | 632.012 | 161.0 | 3.1 ✓ |
| CD-3 | " | " | 183-197 | Ls, Shaley ✓ | 246.495 | 150.9 | 4.6 |
| CD-4 | " | " | 216-228 | Ls, light gray ✓ | 216.768 | 149.3 | 5.2 |
| CD-5 | " | " | 268-274 | Ls, light gray ✓ | 700.097 | 151.6 | 5.3 |
| CD-6 | " | " | 330-337 | Sh, gray ✓ | 47.125 | 133.8 | 9.4 |
| CD-7 | " | " | 363-368 | Sh, lght gry, sandy ✓ | 15.903 | 129.0 | 10.4 |
| CD-8 | " | " | 425-432 | Ss, Shaley ✓ | 71.362 | 122.8 | 12.7 |
| CD-9 | " | " | 450-4565 | Sh, lght gry, sandy ✓ | 20.404 | 129.4 | 10.0 |
| CD-10 | " | " | 486-497 | Sh, lght gry, sandy | 41.570 | 135.0 | 8.9 |

cc: L.S. Ingram
 L.A. Rockers
 Lawrence Geology Office ✓
 J.J. Brennan
 Soil Section
 File

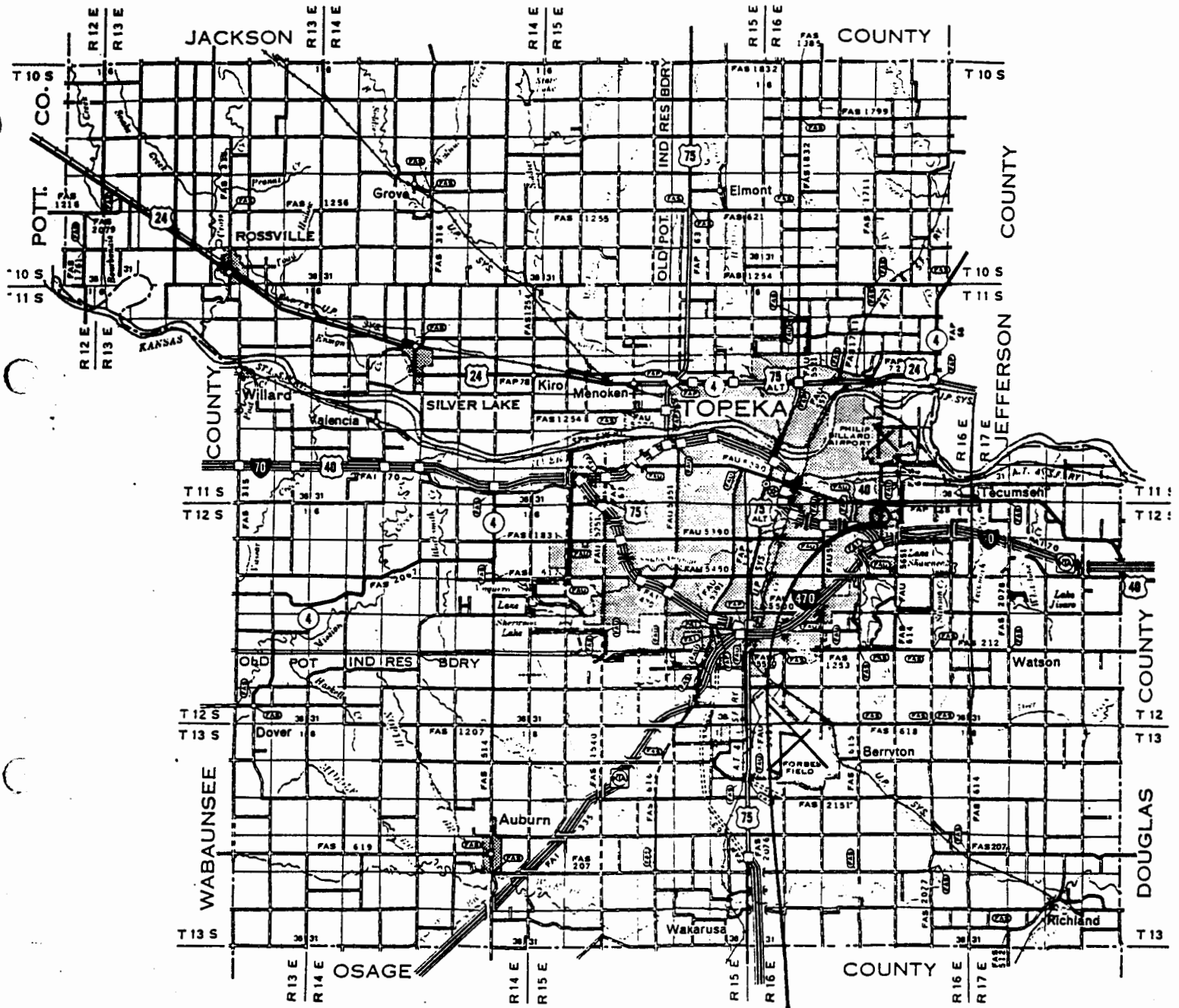
Reported by Marie Hunt for

Title James J. Brennan, Soils Engineer

Kansas Department of Transportation

FINAL DESIGN GEOLOGY REPORT

3-12-110E



C N2 - 3 - 125 - 110E

0-58'

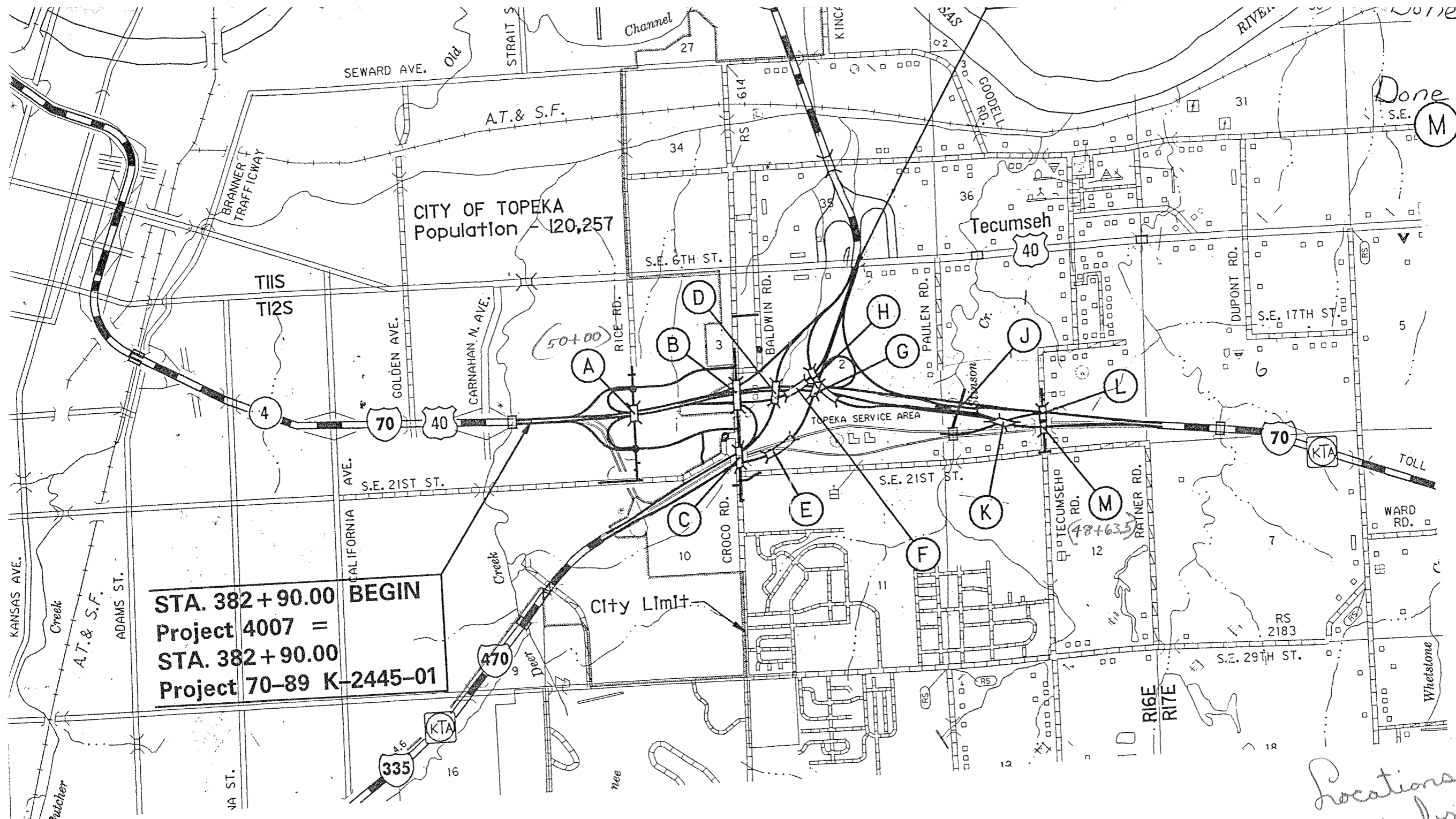
Shawnee

Holt to Calhoun

Project 4-89 K-3362-03
Shawnee County

Bridge # 19.41

S2 N2 S2



32'-0" roadway
STA. 521+16.57
 Tecumseh Road
 Br. No. 70-89-2
 70'-125'-70' Cor
 32'-0" Roadway

Note: (I) not u

STA. 382+90.00 BEGIN
 Project 4007 =
 STA. 382+90.00
 Project 70-89 K-2445-01

*Locations of the
 new bridges*

Sheets see Sheet No. 2
 out See Sheet No.

| | | |
|-------------------------|---------------|-------------|
| GROSS LENGTH OF PROJECT | 10,936.33 FT. | 2.071 MILES |
| EXCEPTIONS | FT. | MILES |
| ADDITIONS | FT. | MILES |

RECOM. FOR APPROVAL-DATE

CHIEF, BUREAU OF DESIGN
 KANSAS DEPARTMENT OF TRANSPORTATION

APPROVED - DATE