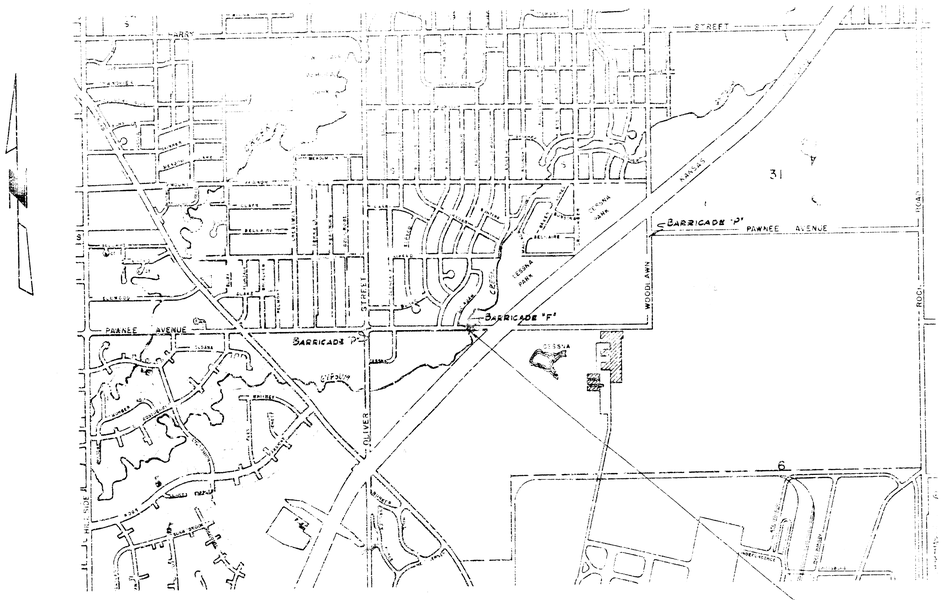
# PAWNEE AVENUE BRIDGE

OVER

# GYPSUM CREEK

## WICHITA, KANSAS




INDEX OF SHEETS


Sheet No. 1. Title Sheet
" " 2. Control Map
" " 3. Construction Layout
" " 4. Abutment Details
" " 5. Pier Details
" " 6. Prestressed Beam Details
" " 7. Superstructure Details
" " 8. Standard File Details
" " 9. Bar Supports, Bridge Excavation, Handrail Details & Summary of Quantities


DEPARTMENT OF PUBLIC WORKS

CITY OF WICHITA

B. E. SMITH, CITY ENGINEER

PROJECT C15-47

PLANS PREPARED BY

H. S. DELAMATER, CONSULTING ENGINEER
WICHITA, KANSAS
AUGUST, 1966

| PUB. ROAD DIV. NO. | STATE | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 5 | KANSAS | C15-47 | 1965 | 2 | 3 |

P.O.T. Sta. 18+65 ¾" Iron Pipe
33.31' S.E. Spk. & Bott. Cap in 40" Ash
31.34' N.N.W. Spk. & Washer in T.P.
30.48' S.S.W. " " " P.P.

Flood Control Traverse
Point "GC12" Sta. 20+25.4
27.35' S.W. to three tacks in pwr. pole
63.54' N.E. " " " tel. pole
11.65' N. to edge of black top

SCALE: 1"=50'

Sta. 18+65 Construct
47'-52'-47' Cont. Composite
Prestressed Beam Spans.
Pile Bent Type Abutments
and Piers.
52'-0" Rdwy. Skew 30° Rt.

Waste Area
(Slope to drain)

El. 112
Compacted Plug

Existing B/M

CURVE DATA
Δ = 28°
D = 12°-30'
T = 114.12
L = 224.00
R = 458.37
E = 14.03

24" San. Sewer

Compacted
Fill Area

12" Water Line

8" Water Line

15" San. Sewer (Abandoned)

Sta. 18+65 ℄ Pawnee Ave =
Sta. 199+15.51 ℄ Channel

Future Channel ℄

Wer Ind. Sewer 42" RCP

GYPSUM

℄ Channel
40'-0"

Slope 0.01'/Ft.

El. 118

2.5:1

Compaction
Type 'B' MR-5

Channel Grade is 0.278%
Set El. 102.9 @ ℄ Pawnee.

TYPICAL CHANNEL CHANGE SECTION

20'

Profile Grade

5:1

Compaction
Type 'B' MR-5

TYPICAL SECTION FOR APPROACH GRADE

60'

0.01'/Ft.

3:1

Compaction
Type 'B' MR-5
℄ Rdwy.

SECTION A-A

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

PAWNEE AVENUE BRIDGE OVER
GYPSUM CREEK

CONTOUR MAP

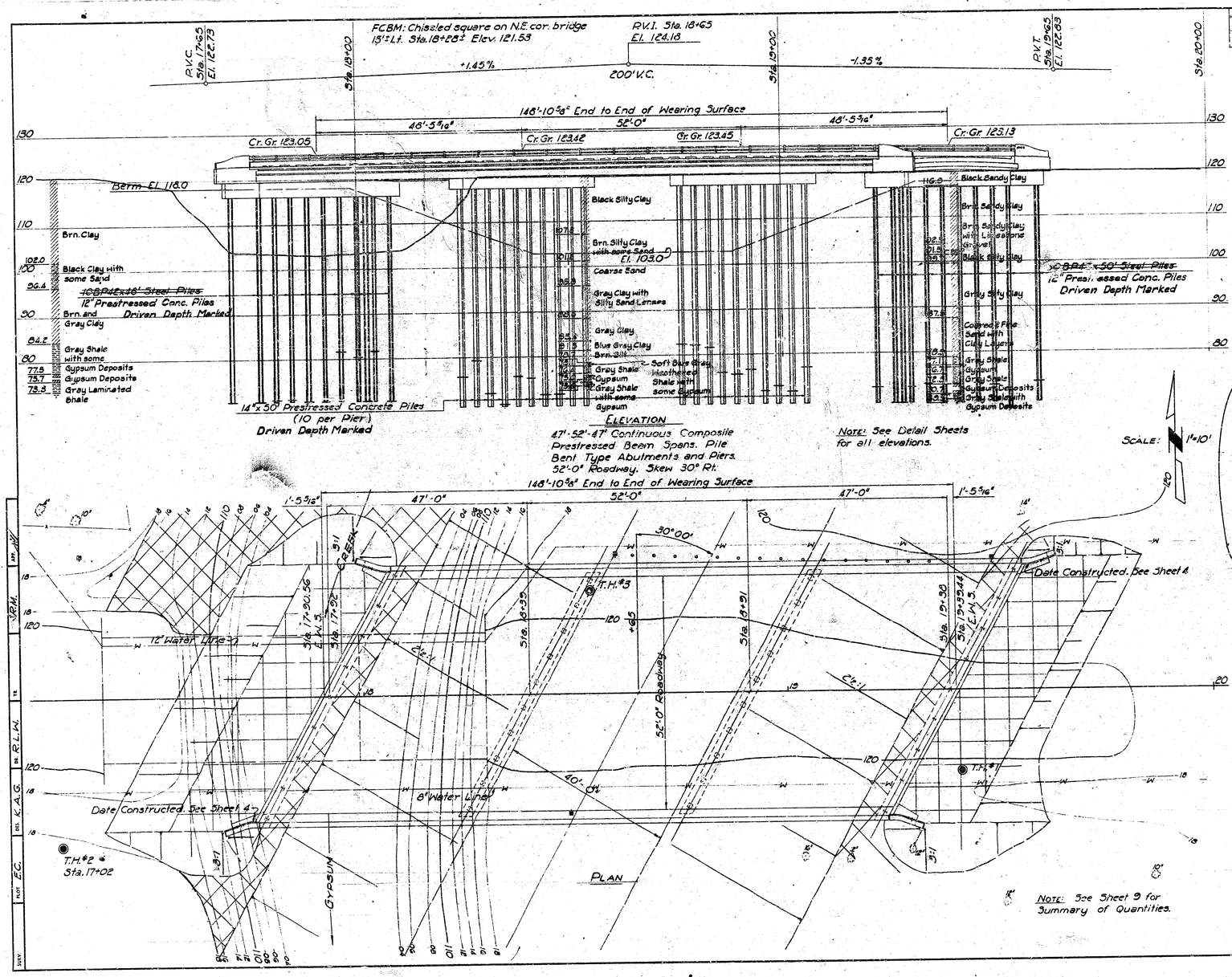
R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

DATE August, 1965
SCALE 1"=50'
DWG. NO. 79-M-2

DES. R.S.D. | DR. E.C.& R.K. | CH. B.E.S. | APP.

REVISED 8-26-65
SUBMITTED

| PUB. ROAD DIV. NO. | STATE | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 5 | KANSAS | C15-47 | 1965 | 3 | 9 |




## GENERAL NOTES

**EXISTING STRUCTURE:** The Contractor shall remove the existing structure.

**COMPACTED EMBANKMENTS:** The Contractor shall construct the embankments and the berms at the abutments as shown on this sheet and the Contour Map prior to construction of the bridge.

**BRIDGE EXCAVATION:** All bridge excavation shall be Class III. See Sheet 9 for limits of pay excavation.

**SOUNDINGS:** Sounding information shown on this sheet is as obtained from borings made in the field and represents the best information available to the City of Wichita.

**PILES:** Piles shall be 14" prestressed concrete in piers and 10" steel piles in abutments, or alternate, as described and detailed on Sheet 9. Piles shall be driven to the penetration shown unless in the opinion of the Engineer such penetration cannot be secured without injury to the pile. All piles shall be driven to a minimum computed bearing value of 35 tons per pile in abutments, 45 tons per pile in piers.

**PILE DRIVING:** All piles shall be driven with a steam or diesel hammer; if a diesel hammer is used, sufficient transfer data shall be provided to permit rating by the Engineer before driving starts.

**CONCRETE:** Class A(AE) concrete shall be used in abutments and piers, except for prestressed piles. Class AA(AE) concrete shall be used in the superstructure, including curbs and diaphragms, except for prestressed beams. Bevel all exposed edges with a 3/4" triangular molding and fillet all corners 3/4" unless otherwise noted.

**REINFORCING STEEL:** All dimensions relative to reinforcing steel placement are to centerline of bars unless otherwise noted. All dimensions shown in bending diagrams are out to out of bars.

**WATER LINES:** Concrete inserts for pipe hangers are to be furnished by the owner of water lines (McConnell 17", Cessna 8", City's proposed 12") for installation by the Bridge Contractor.

**DESIGN:**

Design Loading: H20-S16-44 A.A.S.H.O. Specifications (1961 Ed.)

Unit Stresses:
- f'c = 1,650 p.s.i. Class AAA
- fc = 1,200 p.s.i. Class A
- fs = 20,000 p.s.i. (Rein.)
- f'c = 3,000 p.s.i. Class AAA
- f'c = 3,000 p.s.i. Class A

Pile Loading:
- 45 tons per pile in piers
- 35 tons per pile in abutments

**QUANTITIES:** All quantities shown on these plans shall be used as final pay quantities except that measurement and payment for piling shall be in accordance with the specifications.

**GENERAL REQUIREMENTS:** It is the intention of these plans and specifications that construction of the bridge shall be in accordance with applicable standard specifications and requirements of the Kansas State Highway Commission and that materials shall conform to these specifications unless otherwise expressly noted.

Note: (4-66)
Cessna laid new line South of bridge. McConnell's line to be taken over by City Water Dept. See sheet 7.

| REV | | DATE | |
|---|---|---|---|
| 1 | WLB | 4-66 | Rev. As Built |

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

PAWNEE AVENUE BRIDGE OVER GYPSUM CREEK

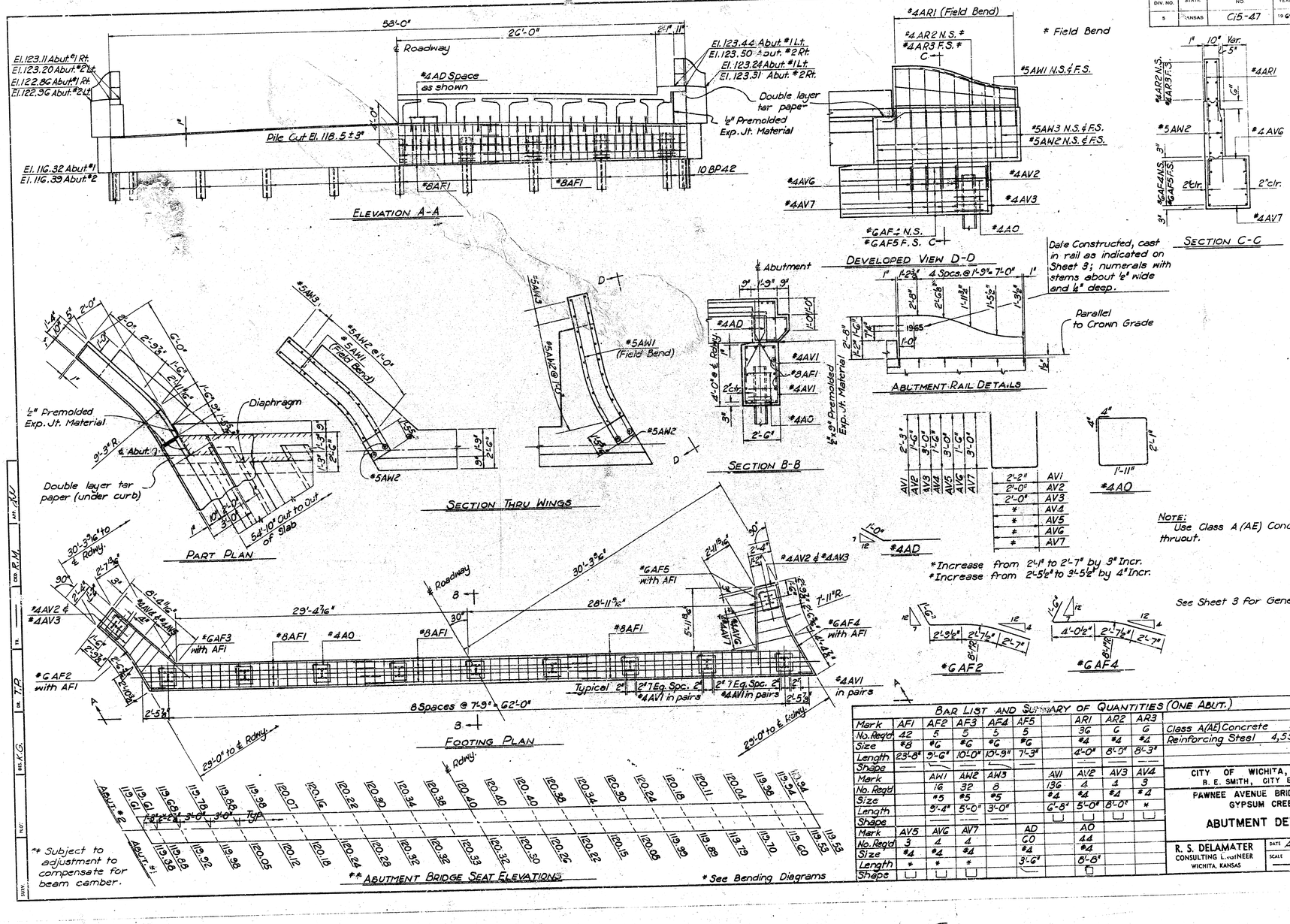
# CONSTRUCTION LAYOUT

R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

DATE August, 1965
SCALE 1"=10'
DWG. NO. 79-M-3

Elmer 7 Talis El Elmer
& Richard Talis

| PUB. ROAD DIV. NO. | STATE | PROJECT NO | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 5 | KANSAS | C-5-47 | 1965 | 4 | 9 |




BAR LIST AND SUMMARY OF QUANTITIES (ONE ABUT.)

| Mark | AF1 | AF2 | AF3 | AF4 | AF5 | | AR1 | AR2 | AR3 |
|---|---|---|---|---|---|---|---|---|---|
| No. Req'd | 42 | 5 | 5 | 5 | 5 | | 36 | 6 | 6 |
| Size | #8 | #6 | #6 | #6 | #6 | | #4 | #4 | #4 |
| Length | 29'-8" | 5'-6" | 10'-0" | 10'-9" | 7'-3" | | 4'-0" | 8'-0" | 8'-3" |
| Shape | — | — | — | — | — | | — | — | — |

| Mark | AW1 | AW2 | AW3 | | AV1 | AV2 | AV3 | AV4 |
|---|---|---|---|---|---|---|---|---|
| No. Req'd | 16 | 32 | 8 | | 136 | 4 | 4 | 3 |
| Size | #5 | #5 | #5 | | #4 | #4 | #4 | #4 |
| Length | 5'-4" | 5'-0" | 3'-0" | | 6'-8" | 5'-0" | 8'-0" | " |
| Shape | — | — | — | | — | — | — | — |

| Mark | AV5 | AV6 | AV7 | | AD | AO |
|---|---|---|---|---|---|---|
| No. Req'd | 3 | 4 | 4 | | 60 | 44 |
| Size | #4 | #4 | #4 | | #4 | #4 |
| Length | * | * | * | | 3'-6" | 8'-8" |
| Shape | — | — | — | | — | — |

Class A(AE) Concrete 33.9 Cu. Yds.
Reinforcing Steel 4,550 Lbs.

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

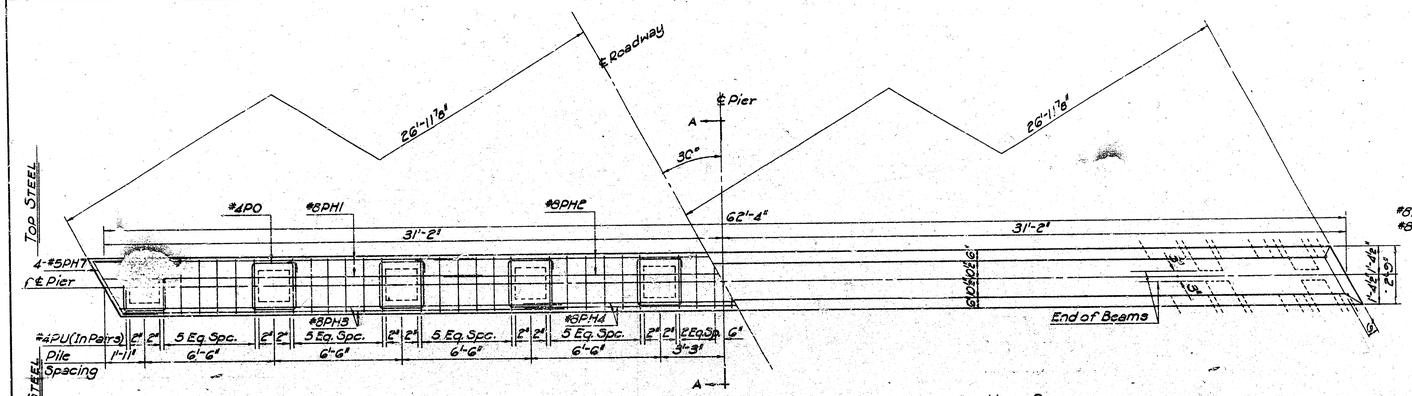
PAWNEE AVENUE BRIDGE OVER GYPSUM CREEK

# ABUTMENT DETAILS

R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

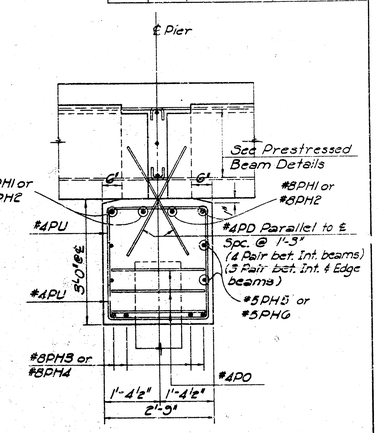
DATE August, 1965
SCALE —
DWG. NO. 79-M-4

| PUB. ROAD DIV. NO. | STATE | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 9 | KANSAS | C15-47 | 1965 | 5 | 9 |

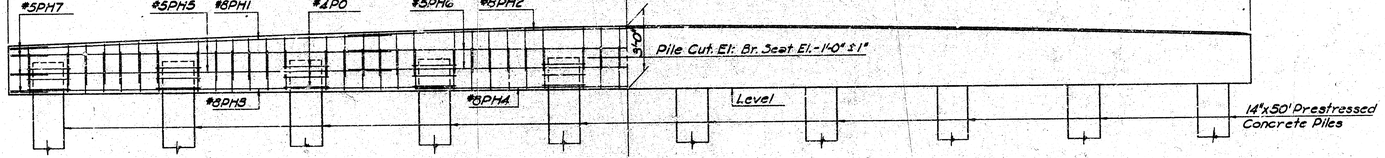



HALF PLAN SHOWING REINFORCING

HALF PLAN

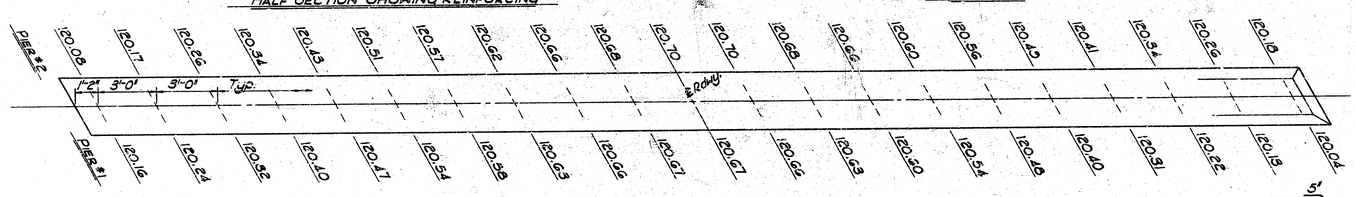



SECTION A-A

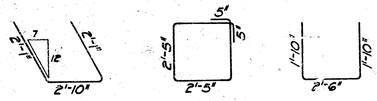



HALF SECTION SHOWING REINFORCING

HALF VIEW




PIER BRIDGE SEAT ELEVATIONS
(Subject to adjustment to compensate for beam camber)




NOTE:
Use Class A(AE) Concrete thruout.

See Sheet 3 for General Notes.

BAR LIST AND SUMMARY OF QUANTITIES (ONE PIER)

| Mark | PD | PH1 | PH2 | PH3 | PH4 | PH5 | PH6 | PH7 | PO | PU |
|---|---|---|---|---|---|---|---|---|---|---|
| No. Req'd | 76 | 8 | 4 | 8 | 4 | 8 | 4 | 8 | 30 | 112 |
| Size | #4 | #8 | #8 | #8 | #8 | #5 | #5 | #5 | #4 | #4 |
| Length | 3'-0" | 13'-0" | 28'-0" | 22'-3" | 21'-6" | 13'-0" | 25'-0" | 7'-0" | 10'-6" | 6'-2" |
| Shape | — | — | — | — | — | — | — | U | □ | U |

Class A(AE) Conc. 17.5 Cu. Yds.
Reinforcing Steel 2,570 Lbs.

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

PAWNEE AVENUE BRIDGE OVER GYPSUM CREEK

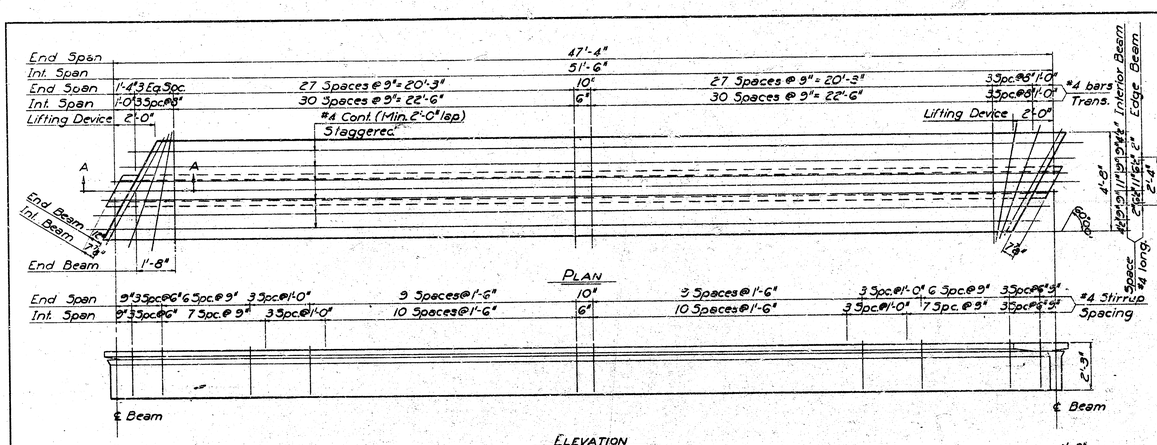
PIER DETAILS

R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

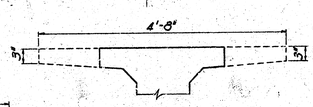
DATE August, 1965
SCALE —
DWG. NO. 79-M-5

DES. KAG
DET.
CHK. E.C.
QUAN.
TC.
CHK. R.M.
APP. [illegible]
SURV.

| PUB. ROAD DIV. NO. | STATE | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 5 | KANSAS | C15-47 | 1965 | 6 | 9 |

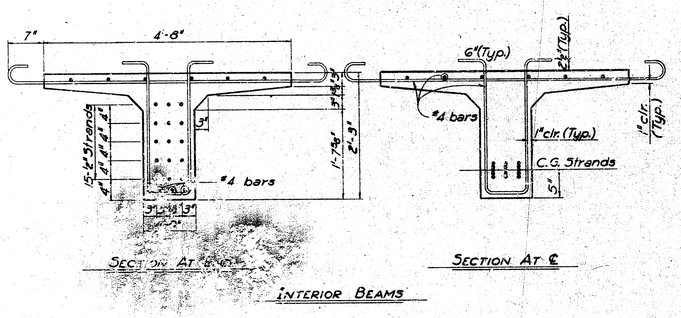



ELEVATION
(Similar for Interior and Edge Beams)






NOTE: Offset #4 bars slightly at ends, as shown.

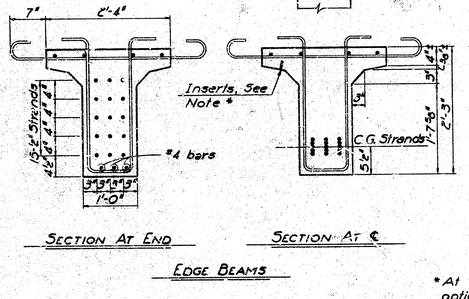






SECTION AT ℄

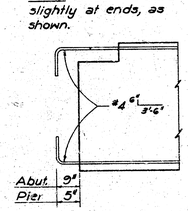
INTERIOR BEAMS




SECTION AT END

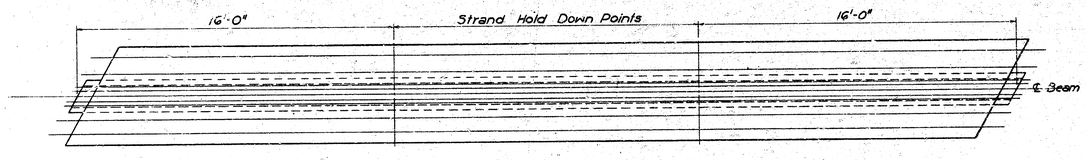
SECTION AT ℄

EDGE BEAMS

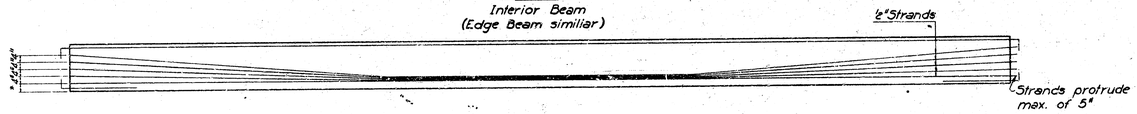



SECTION A-A

*At the Contractor's option: inserts to support forms for edge of slab.




PLAN
Interior Beam
(Edge Beam similar)




*4" - Interior Beam
4'2" - Edge Beam

ELEVATION

GENERAL NOTES

DESIGN:
Loading: H20-S16-44 A.A.S.H.O. Specifications (1961 Ed.)
Concrete: f'c = 6,000 p.s.i. at 28 days
f'ci = 4,650 p.s.i. Min. release strength
Prestressing steel: 1 2" nominal diameter 7-wire high tensil type, stress relieved strands having an ultimate strength of 41,300 lbs per strand.
Reinforcing Steel: fs = 20,000 p.s.i.

STEEL PLACEMENT: All dimensions shown relative to placement of reinforcing steel are to centerline of bars unless otherwise noted, all dimensions shown in the bending diagrams are out to out of bars.

HANDLING AND ERECTION: Each beam shall be equipped with lifting devices of sufficient strength to insure safe and proper handling of the beams. Details of lifting devices shall be submitted for approval by the engineer before fabrication for placing procedure and erection loads.

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

PAWNEE AVENUE BRIDGE OVER GYPSUM CREEK

# PRESTRESSED BEAM DETAILS

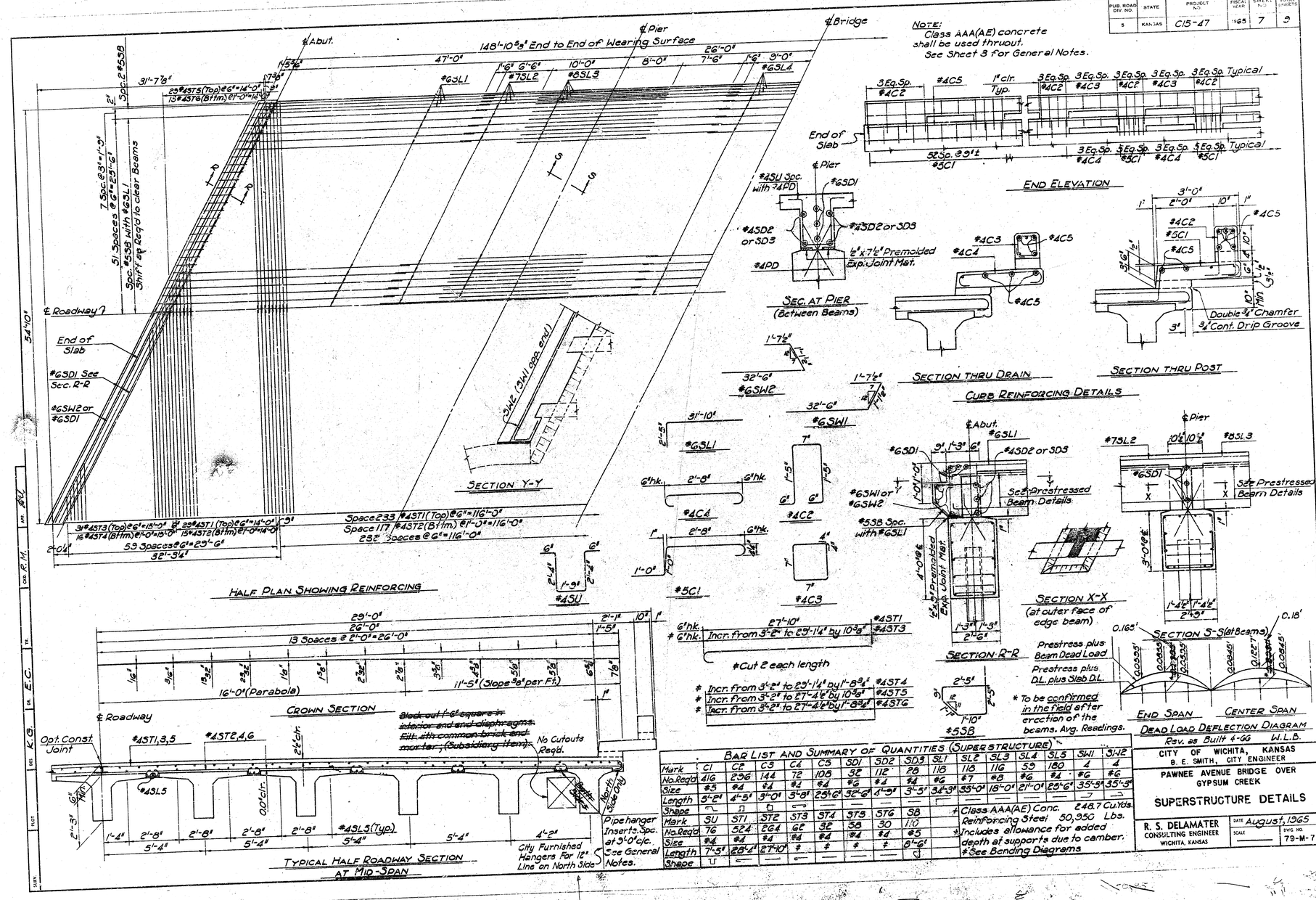
R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

DATE August, 1965
SCALE ———
DWG. NO. 79-M-6

APP. | CHK. KHG | TR. | DR. R.L.H. | DES. K.A.G. | PLOT | SURV.

| PUB. ROAD DIV. NO. | STATE | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 5 | KANSAS | C15-47 | 1965 | 7 | 9 |

NOTE:
Class AAA(AE) concrete shall be used thruout.
See Sheet 3 for General Notes.







BAR LIST AND SUMMARY OF QUANTITIES (SUPERSTRUCTURE)

| Mark | C1 | C2 | C3 | C4 | C5 | SD1 | SD2 | SD3 | SL1 | SL2 | SL3 | SL4 | SL5 | SW1 | SW2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. Reqd | 416 | 256 | 144 | 72 | 105 | 32 | 112 | 28 | 116 | 116 | 116 | 58 | 180 | 4 | 4 |
| Size | #5 | #4 | #4 | #4 | #4 | #6 | #4 | #4 | #6 | #7 | #8 | #6 | #4 | #6 | #6 |
| Length | 5'-2" | 4'-5" | 3'-0" | 5'-8" | 25'-6" | 32'-6" | 4'-5" | 3'-5" | 34'-3" | 35'-0" | 18'-0" | 21'-0" | 25'-6" | 35'-5" | 35'-3" |
| Shape | ⌐ | ⎍ | □ | ⌐⌐ | — | — | — | — | — | — | — | — | — | ⊐ | ⊐ |
| Mark | SU | ST1 | ST2 | ST3 | ST4 | ST5 | ST6 | S8 | | | | | | | |
| No. Reqd | 76 | 524 | 264 | 66 | 32 | 56 | 30 | 110 | | | | | | | |
| Size | #4 | #4 | #4 | #4 | #4 | #4 | #4 | #5 | | | | | | | |
| Length | 7'-5" | 28'-4" | 27'-10" | * | * | * | * | 6'-6" | | | | | | | |
| Shape | U | ⟍ | — | ⟍ | — | — | — | ⊐ | | | | | | | |

* Class AAA(AE) Conc. 246.7 Cu Yds.
Reinforcing Steel 50,950 Lbs.
* Includes allowance for added depth at supports due to camber.
# See Bending Diagrams

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

PAWNEE AVENUE BRIDGE OVER GYPSUM CREEK

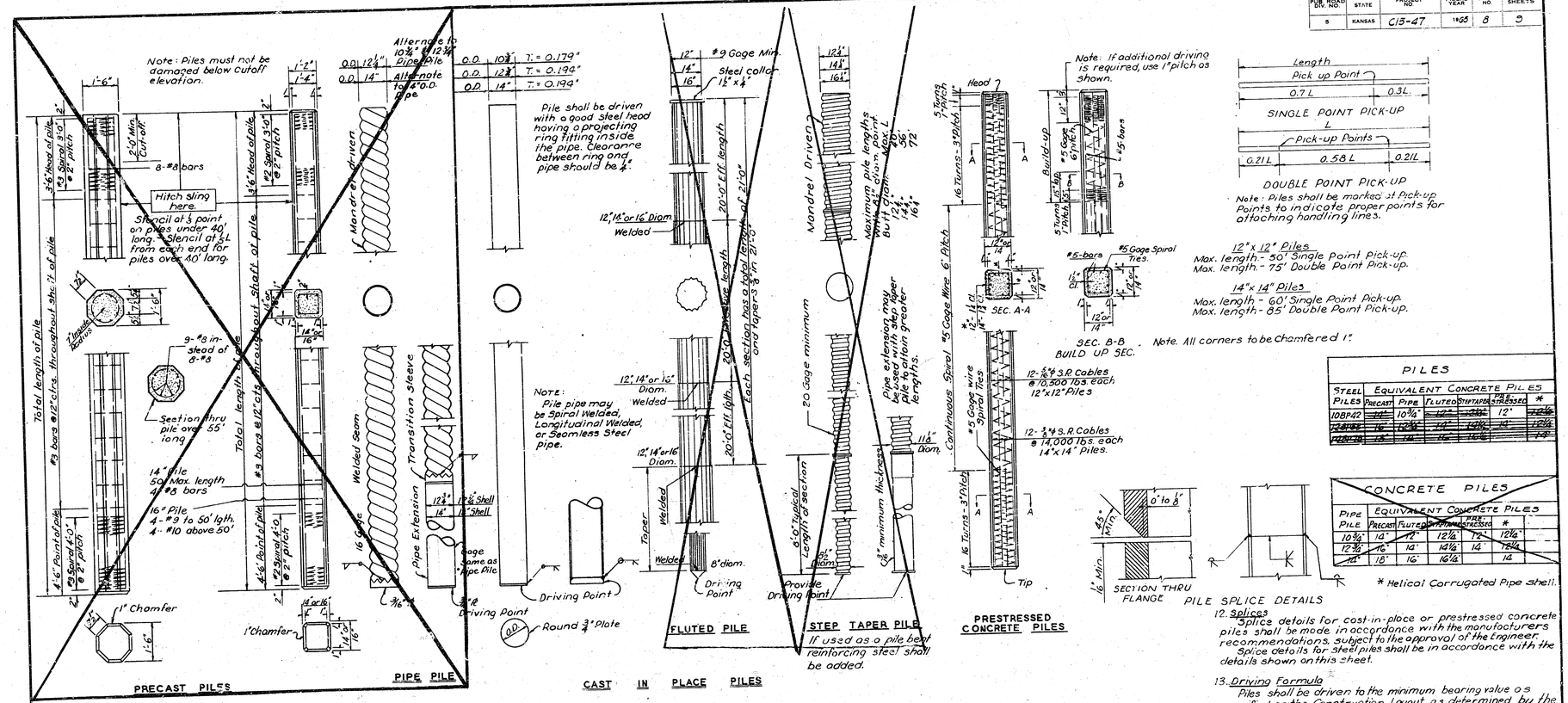
# SUPERSTRUCTURE DETAILS

R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

DATE August, 1965
SCALE —
DWG. NO. 79-M-7

Rev. as Built 6-66 W.L.B.

| FUR. ROAD DIV. NO. | STATE | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| 5 | KANSAS | C15-47 | 1965 | 8 | 9 |




## PILES

| STEEL PILES | EQUIVALENT CONCRETE PILES | | | | | |
|---|---|---|---|---|---|---|
| | PRECAST | PIPE | FLUTED | STEP TAPER | PRESTRESSED | * |
| 10BP42 | 12" | 10¾" | 12" | 12" | 12" | 12" |
| 12BP53 | 14" | 12¾" | 14" | 14" | 14" | 14" |
| 14BP89 | 16" | 14" | 16" | 16" | 16" | 16" |

## CONCRETE PILES

| PIPE PILE | EQUIVALENT CONCRETE PILES | | | | | |
|---|---|---|---|---|---|---|
| | PRECAST | FLUTED | PIPE | STEP TAPER | PRESTRESSED | * |
| 10¾" | 14" | 12" | 12¼" | 12" | 12¼" | - |
| 12¾" | 16" | 14" | 14¼" | 14" | 14¼" | - |
| 14" | 18" | 16" | 16¼" | | 14 | - |

* Helical Corrugated Pipe Shell.

General Notes

1. Specifications
Standard Specifications for State Road and Bridge Construction as currently used by State Highway Commission of Kansas.

2. Choice of Piles
Where Piles are specified, the contractor may elect to use either the steel pile specified on the footing plans or the equivalent precast concrete, cast-in-place concrete or prestressed concrete pile shown in the table on this sheet. Where Concrete Piles are specified the Contractor may elect to use either the size and type concrete pile specified on the footing plans or the equivalent precast concrete, cast-in-place concrete or prestressed concrete pile shown in the table on this sheet.
Other types of concrete piles not shown here are subject to the approval of the Engineer. Prestressed concrete piles, Helical corrugated pipe shell or Step taper piles shall not be used for abutments without expansion joints on bridges more than 120 ft. long.

3. Concrete.
All concrete for Precast and Cast-in-place shall be Class 'A' f'c = 3000 p.s.i. Concrete for Prestressed piles shall be Class AAA f'c = 4000 p.s.i.

4. Reinforcement
Reinforcing bars shall be new billet steel of intermediate grade without exception. Hoops and spirals may be either plain or deformed bars.

5. Precast Piles.
Precast piles shall conform to the requirements of Sub-Section G1-7.

6. Cast-in-place Shells
A. Pile shells shall have a minimum thickness as follows:
1. Piles driven without mandrel - Use gages or thicknesses shown above, except fluted pile use No. 9 gage minimum.
2. Piles driven with mandrel shell shall be of sufficient strength and thickness to withstand driving without injury and to resist harmful distortion and/or buckling due to soil pressure after being driven and the mandrel removed.
B. The contractor shall maintain on the job at all times prior to and during the filling of the shells, a light suitable for their inspection.
C. Improperly driven, broken or otherwise defective shells shall be removed and replaced or otherwise corrected to the satisfaction of the Engineer by removal and replacement, or the driving of an additional pile at no extra cost.

7. Steel Piles
Steel pile material shall meet the requirements of A.S.T.M. A7.

8. Pile Points
All Cast-in-place piles except mandrel driven piles shall be equipped with a steel driving point of ¾" minimum thickness. Driving points shall be mill welded to the pile.
Steel piles shall have a square cut end only. No driving point is required.

9. Welding.
All field welding shall meet the requirements of Article G1-6 Specifications.

10. Paint
Shall comply with the Kansas Standard Specifications. 1960 Edition.

11. Test Piles - Test piles shall be driven where called for on the Bridge plans. All test piles shall be located so that they will become part of the Bridge pile system.

12. Splices
Splice details for cast-in-place or prestressed concrete piles shall be made in accordance with the manufacturers recommendations, subject to the approval of the Engineer.
Splice details for steel piles shall be in accordance with the details shown on this sheet.

13. Driving Formula
Piles shall be driven to the minimum bearing value as specified on the Construction Layout as determined by the driving formulas stipulated in the Specifications.

14. Mill Test Reports
Notarized mill test reports, in triplicate, shall be furnished by the contractor for all steel pile and cast-in-place pile shells.

15. Payment
Payment for all piles will be made as set forth in the specifications.

| NO. | DATE | REVISIONS | BY | APP'D |
|---|---|---|---|---|
| 4 | 4-8-64 | Add Longitudinal Welded Pipe pile | J.C.L. | T.W.O. |
| 3 | 4-2-64 | Revise Choice of Pile note, Item 2 | J.C.L. | T.W.O. |
| 2 | 9-27-61 | Revise Pipe Pile General Note | J.C.L. | T.W.O. |
| 1 | 7-26-61 | Remove hole in Prestressed Conc. Pile | J.C.L. | T.W.O. |

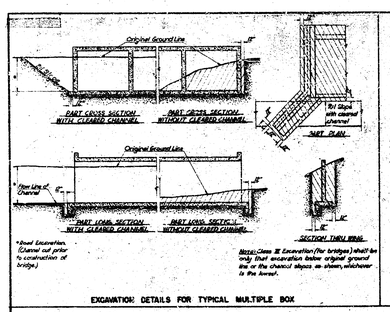
STATE HIGHWAY COMMISSION OF KANSAS

STANDARD PILE DETAILS

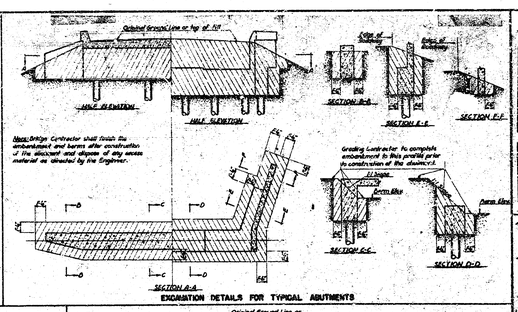
STD. NO. 102

| SHEET NO. | OF | SCALE | APP'D |
|---|---|---|---|
| DESIGNED | | DETAILED | QUANTITIES |
| DESIGN CK. | | DETAIL CK. | QUAN. CK. |
| | | | TRACED |
| | | | TRACE CK. |

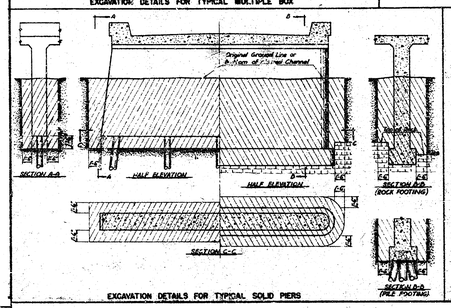
| DIV. | DIST. | COUNTY | PROJECT NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |



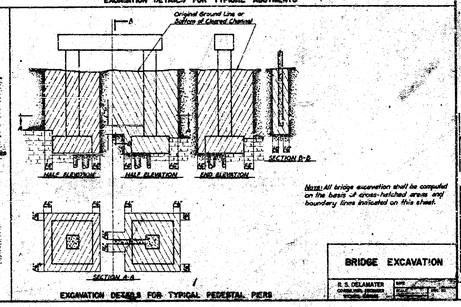

EXCAVATION DETAILS FOR TYPICAL MULTIPLE BOX




EXCAVATION DETAILS FOR TYPICAL ABUTMENTS



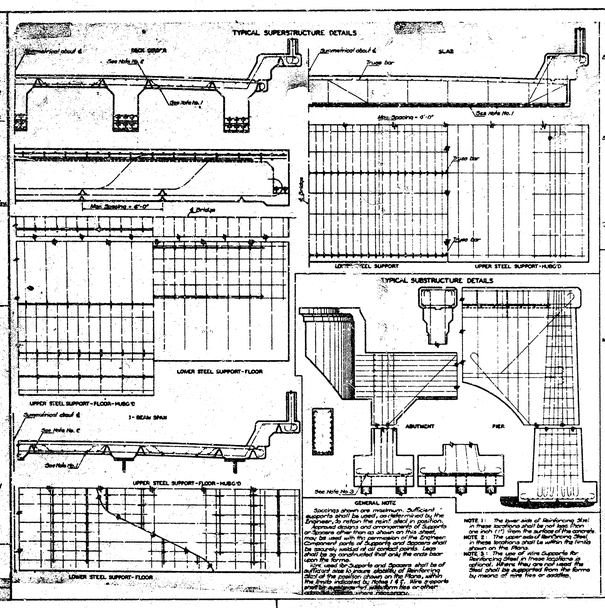

EXCAVATION DETAILS FOR TYPICAL SOLID PIERS

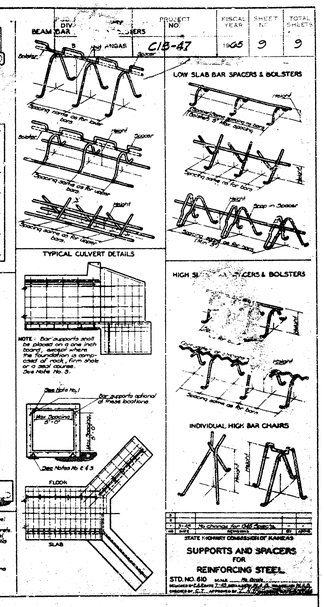


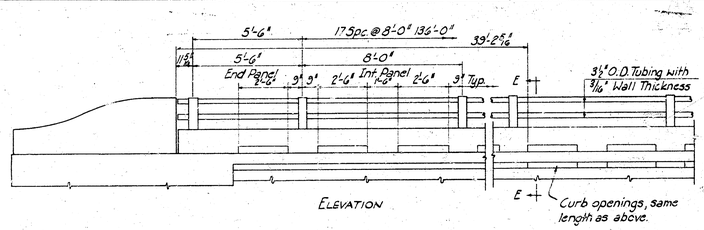

EXCAVATION DETAILS FOR TYPICAL PEDESTAL PIERS

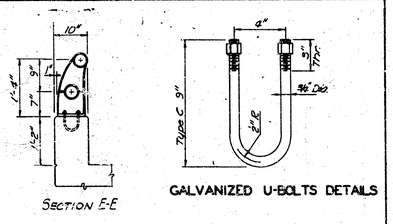
BRIDGE EXCAVATION

R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

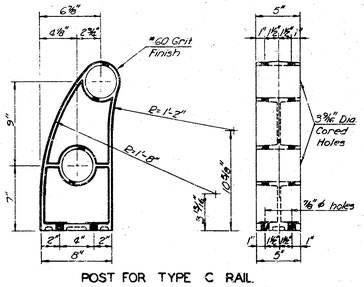


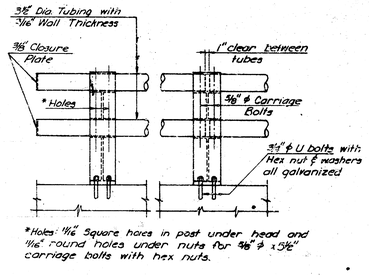




Note: All concrete and reinforcing steel for abutment wing rail is included in superstructure quantities.




Notes: (Aluminum Handrail)
Handrail Tubing shall be fabricated in lengths to include two or three spaces.
Bolt holes in tubing at intermediate posts to be 1 1/16" diameter. At other posts 1 1/16" slotted holes centered on bolts @ 60°F.
All rail post flanges and webs shall have a minimum thickness of 9/16" with 3° draft. Nominal thickness of base shall be 3/4" with minimum of 9/16".
Aluminum shims between concrete and post base may be used. The space below post shall be thoroughly caulked with Alumilastic compound or other approved material.

STATE HIGHWAY COMMISSION OF KANSAS

STANDARD HANDRAIL DETAILS

| SHEET NO. OF | SCALE | APP'D |
|---|---|---|
| DESIGNED | DETAILED K.L.N. | QUANTITIES TRACED |
| DESIGN CK. | DETAIL CK. E.E.W. | QUAN. CK. TRACE CK. |

### Summary Of Bridge Quantities

| Item | Abut. #1 | Pier #1 | Pier #2 | Abut. #2 | S. perst. | Total | Unit |
|---|---|---|---|---|---|---|---|
| Excavation, Class III | 57 | —— | —— | 57 | —— | 114 | Cu. Yds. |
| Class AAA(AE) Conc. | —— | —— | —— | —— | 248.7 | 248.7 | Cu. Yds. |
| Class A(AE) Conc. | 33.9 | 17.8 | 17.8 | 33.9 | —— | 103.4 | Cu. Yds. |
| Reinforcing Steel | 4,550 | 2,570 | 2,570 | 4,550 | 50,950 | 65,190 | Lbs. |
| Prestr'd. Conc. Beams | —— | —— | —— | —— | 33 | 33 | Each |
| Aluminum Handrail | —— | —— | —— | —— | 294.0 | 294.0 | Lin. Ft. |
| Steel Piles 10" | 550 | —— | —— | 528 | —— | 1,078 | Lin. Ft. |
| Prestr'd. Conc. Piles 14" | —— | 500 | 500 | —— | —— | 1,000 | Lin. Ft. |

### Summary Of Grading Quantities

| Item | Quan. | Unit |
|---|---|---|
| Common Excavation | 18,900 | Cu. Yds. |
| Compacted Embankment | 10,200 | Cu. Yds. |
| Removal of Exist. Structure | L. S. | L. S. |

CITY OF WICHITA, KANSAS
B. E. SMITH, CITY ENGINEER

PAWNEE AVENUE BRIDGE OVER GYPSUM CREEK

BAR SUPPORTS, BR. EXC., HANDRAIL SUMMARY OF QUANTITIES

R. S. DELAMATER
CONSULTING ENGINEER
WICHITA, KANSAS

DATE August, 1965
SCALE ——— DWG. NO. 79-M-9

11 1 3 (S)