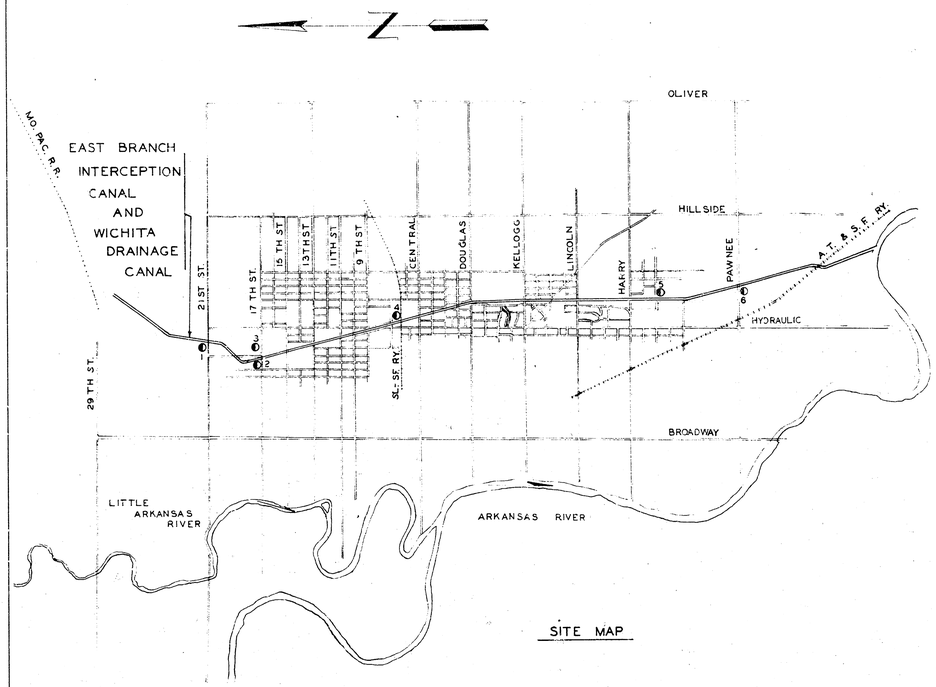
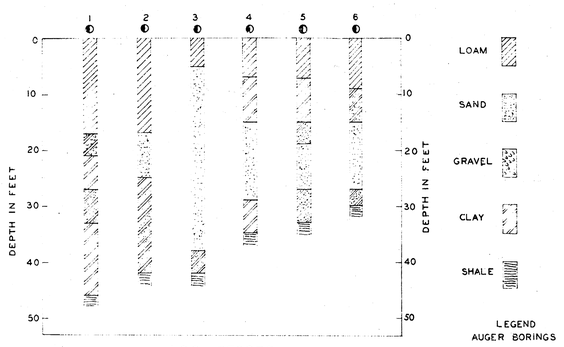


SITE MAP



LOG RECORD
FOR LOCATION OF AUGER BORINGS SEE SITE MAP

RECAPITULATION OF ESTIMATED QUANTITIES

Station	Culvert Size	Steel Piling Lineal Feet	Wood Piling Lineal Feet	Excavation Cu. Yds.	Concrete Cu. Yds.	Reinforcing Steel Pounds	Backfill Cu. Yds.	Flap Gate Size-Inches	Rip Rap Sq. Yds.	Concrete Pipe Lineal Feet	Metal Mastikoted	Tile Pipe Lineal Feet
5+50 Rt	39 C.M.P.	318.0		28.76	9.17	201.72	17.26	39"F	6.22			
6+30 Lt	24" C.M.P.							24"F	4.0			
7+35 Rt	12" Tile Pipe								9.0			
9+40 Lt	4-4'x4' Conc. Box	438.0		39.00	15.21	196.06	21.01		10.0			3
9+30 Lt	4-4'x5' Conc. Box	450.0		53.33	18.80	389.21	27.06	60"x60"	4.7			3
9+30 Lt	4-4'x5' Conc. Box	486.0		56.96	20.00	536.64	33.74	48"x48"	9.5			3
10+30 Lt	4-4'x5' Conc. Box	456.0		58.27	18.79	453.87	31.65	60"x60"	7.8			3
10+10 Lt	18" C.M.P.								5.6			
10+20 Rt	24" R.C.P.								6.0			
11+30 Rt	12" C.I.P.								4.0			
11+80 Rt	3-3'x3' Conc. Box								0.0			
11+50 Rt	4" C.I.P.								2.0			
123+80 Rt	3-3'x3' Conc. Box	420.0		45.95	16.63	441.81	32.49	36"x36"	13.7			
135+00 Rt	30" R.C.P.								5.0			
137+30 Lt	2-3'x3' Conc. Box 1-5'x5' Conc. Box	372		500	31.35	1782.0	8.1	60"x60" 60"x60"				2
137+30 Rt	2-3'x3' Conc. Box	402.0		32.07	14.82	232.80	16.13	48"x48"	8.4			
143+40 Rt	24" Tile Pipe								6.0			
150+80 Lt	3-4'x4' Conc. Box	402.0		29.71	17.34	244.15	13.25	48"x48"	13.0			
157+40 Rt	3-4'x4' Conc. Box	402.0		42.31	15.27	251.26	26.80	36"x36"	12.5			
157+70 Lt	60" R.C.P.	228		84.45	8.62	208.58	37.90	60"F	50.03	18"-60" RCP		2
160+40 Lt	45" R.C.P.	192		14.45	6.0	150.47	6.32	42"F	7.07	176-24" RCP		
164+50 Lt	3-3'x3' Conc. Box	336.0		29.94	12.26	200.56	17.43	36"x36"	22.6			
167+50 Rt	3-3'x3' Conc. Box	462.0		38.09	15.79	222.24	23.62	36"x36"	32.6			
176+50 Lt	4-4'x4' Conc. Box	392.0		26.01	11.65	271.90	12.40	48"x48"	6.5			3
176+50 Rt	4-4'x4' Conc. Box	498.0		32.02	21.88	336.15	19.94	48"x48"	28.7			
191+90 Lt	3-3'x3' Conc. Box								6.0			
198+40 Rt	3-3'x3' Conc. Box								10.0			
198+70 Lt	90° Conc. Arch	240.0	280.0	34.81	6.48	125.67			27.0			
205+25 Lt	3-3'x3' Conc. Box								6.0			
215+00 Lt	10" Tile Pipe								3.5			
216+20 Rt	20" Tile Pipe								6.0			
219+60 Rt	3-5'x5' Conc. Box								12.0			
219+80 Lt	3-5'x5' Conc. Box								6.0			
233+50 Lt	24" Tile Pipe								4.0			
233+50 Rt	3-5'x5' Conc. Box								6.0			
234+10 Lt	3-3'x3' Conc. Box								15.0			
245+45 Rt	3-3'x3' Conc. Box								37.0			
251+30 Lt	8" Tile Measuring				3 (concrete anchors)							
257+90 Lt	[illegible]								6.0			
258+40 Rt	5-5'x5' Conc. Box								10.0			
271+70 Lt	36" Tile Pipe	378		30.79	10.85	197.45	18.35		11.26			2
277+20 Lt	24 R.C.P.								8.0			
287+00 Rt	15" C.I.P.								4.0			
301+50 Lt	36" C.M.P.								4.0			
317+20 Rt	18" R.C.P.								7.0			
323+80 Rt	5-5'x5' Conc. Box	252.0		45.48	13.17	418.47	21.98		97			3
351+10 Rt	12" C.M.P.A.								10.0			
361+20 Lt	4-4'x7' Gates								100.2			
TOTALS		7128	280	836.48	360.06	8082.12	384.63	17 Flap Gates	454.18	372	1	25

Note - Reinforcing Steel in Pounds includes weight of Reinforcing Steel and Wire Mesh. Corrugated Metal Pipe (Asphalt Coated Paved Invert) may be substituted for Reinforced Concrete Pipe

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
SITE MAP, LOG RECORD &
RECAPITULATION OF ESTIMATED QUANTITIES

SCALE 1 INCH = 1/2 MILE
CITY COUNTY ENGINEER OFFICE WICHITA KANSAS
APPROVED:

CITY-ENGINEER — ENGINEER IN CHARGE

DRAWN
TRACED
CHECKED

SHEET 1 OF 12

HYDRAULIC AVE.

STA 53+50 RT
48" C.M.P.

Construct Headwall with Flap Gate & Apron

E. EAST BRANCH INTERCEPTION CANAL

Flap Gate & Rip Rap Apron
STA 67+50 LT
24" C.M.P.

Construct Headwall & Apron

21ST ST.

PENNSYLVANIA AVE.

STA 79+25 LT
4'x4' CONCRETE BOX

STA 79+25 RT
12" TILE
Rip Rap

Construct Headwall with Flap Gate & Apron
STA 86+30
4'x4' CONCRETE BOX LT

18TH ST.

Construct Headwall with Flap Gate & Apron
STA 93+30 LT
4'x4' CONCRETE BOX

CLEVELAND AVE.

END EAST BRANCH INTERCEPTION CANAL

BEGIN WICHITA DRAINAGE CANAL

Repair with Rip Rap
STA 110+10
18" C.M.P. LT

Construct Headwall with Flap Gate & Apron
STA 109+30 LT
4'-4' CONCRETE BOX

STA 110+20 RT
2'4" CONCRETE BOX

17TH ST. Rip Rap Headwall & Apron

STA 112+90
12" C.I.P. RT
Repair with Rip Rap

Construct Headwall with Flap Gate & Apron
STA 176+50 LT
4'x4' CONCRETE BOX

MATCH LINE STA 17+00

STA 176+50 RT
4'x4' CONCRETE BOX
Construct Headwall with Flap Gate & Apron

MUNDOCK AVE.

Relay 196'-60 RCP or 2'-0" M.P.
Construct Headwall with Flap Gate & Apron
STA 157+70 LT
60" R.C.P.

Relay 176'-48" R.C.P. or 48" C.M.P.
Construct Headwall with Flap Gate & Apron
STA 163+40 LT
3'-9" CONCRETE PIPE

Construct Headwall with Flap Gate & Apron
STA 164+50 LT
3'x2'-6" CONCRETE BOX

Construct Headwall with Flap Gate & Apron
STA 150+70 LT
4'x4' CONCRETE BOX

STA 164+50 RT
3'x2'-6" CONCRETE BOX
Construct Headwall with Flap Gate & Apron

STA 157+40 RT
3'x2'-6" CONCRETE BOX
Construct Headwall with Flap Gate & Apron

9TH ST.

10TH ST.

NEW YORK AVE.

11TH ST.

Construct Headwall with Flap Gates & Apron
STA 137+30 LT
4-36" & 5'5" CONCRETE BOXES

STA 143+40 RT
24" TILE
Rip Rap Apron

MATHESON AVE.

STA 135+00 RT
2'-6" CONCRETE PIPE
Rip Rap Apron

STA 137+30 RT
4'x4' CONCRETE BOX
Construct Headwall with Flap Gate & Apron

13TH ST.

14TH ST.

STA 123+80 RT
3'x3' CONCRETE BOX
Construct Headwall with Flap Gate & Apron

STA 118+50 RT
4" IRON PIPE
Rip Rap Apron

STA 116+80 RT
3'X3' CONCRETE BOX
Repair with Rip Rap

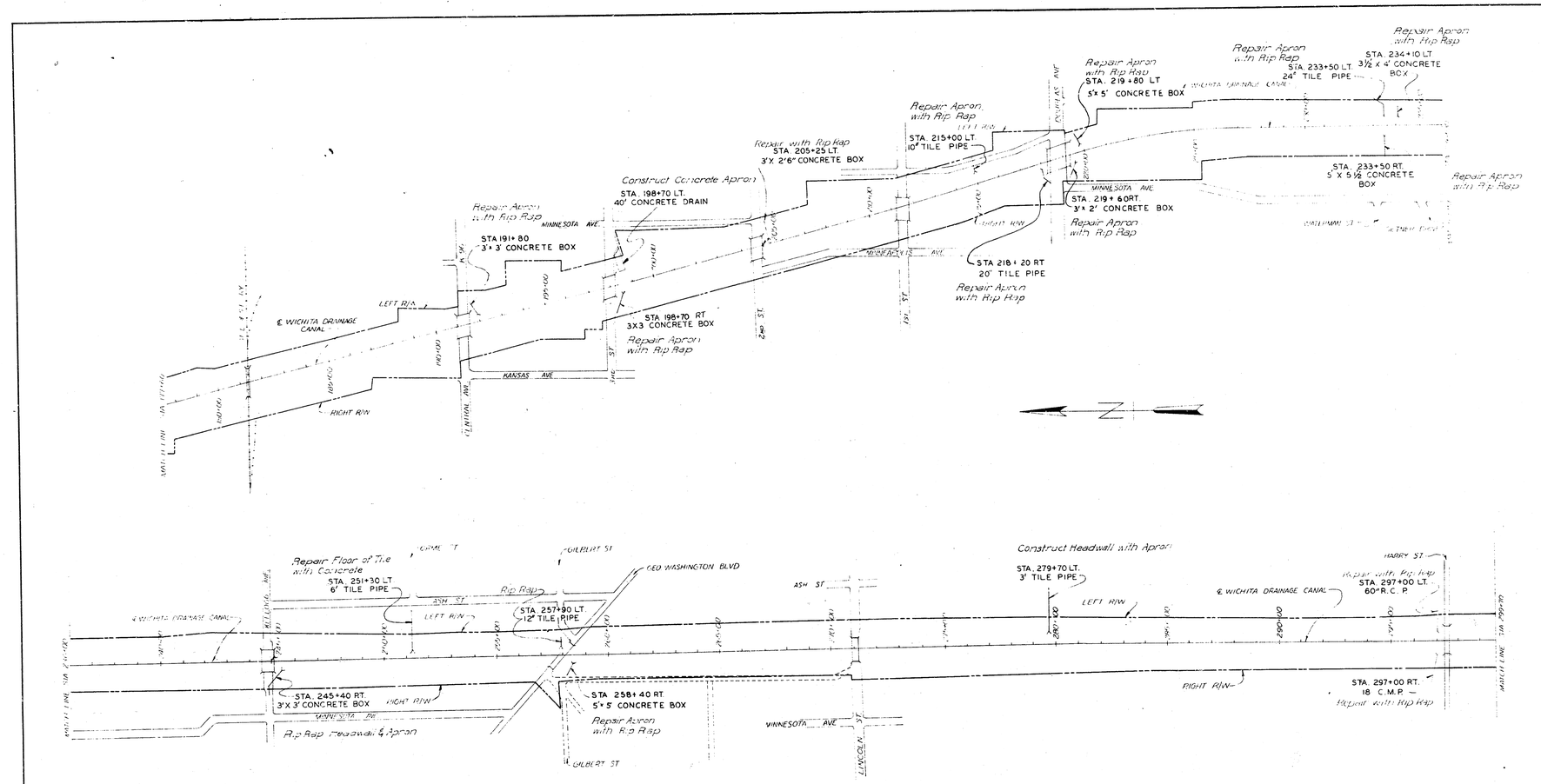
ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
LOCATION OF CONSTRUCTION & REPAIR

SCALE 1 INCH = 200 FEET
CITY-COUNTY ENGINEER OFFICE WICHITA KANSAS
APPROVED: APPROVED

CITY-ENGINEER ENGINEER-IN-CHARGE

DRAWN JJP
TRACED
CHECKED

SHEET 2 OF 12



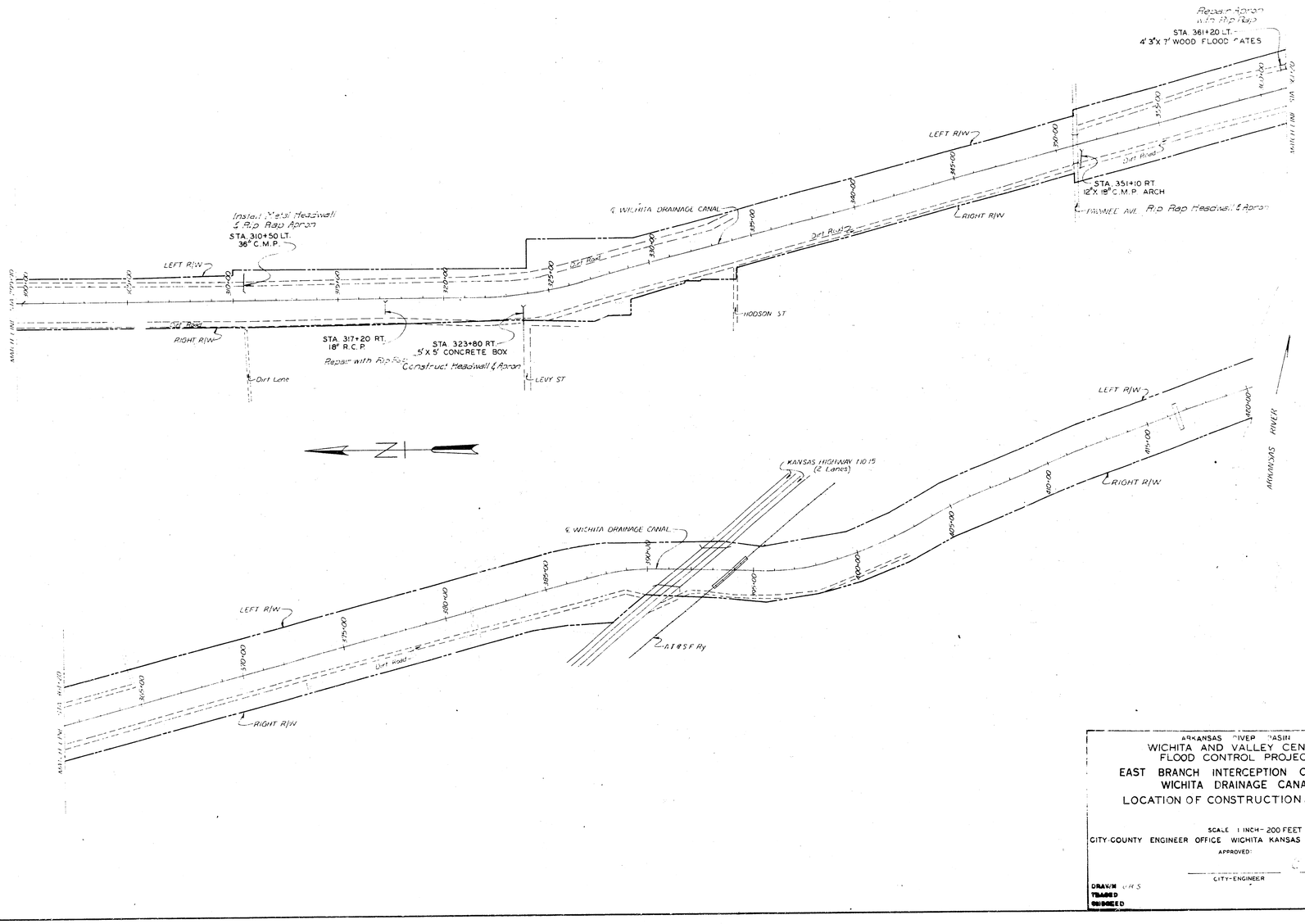
ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
LOCATION OF CONSTRUCTION & REPAIR

SCALE 1 INCH 200 FEET
CITY-COUNTY ENGINEER OFFICE WICHITA KANSAS
APPROVED

CITY-ENGINEER | ENGINEER-IN-CHARGE

DRAWN J.W.S.
TRACED
CHECKED

SHEET 3 OF 12



ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
LOCATION OF CONSTRUCTION & REPAIR

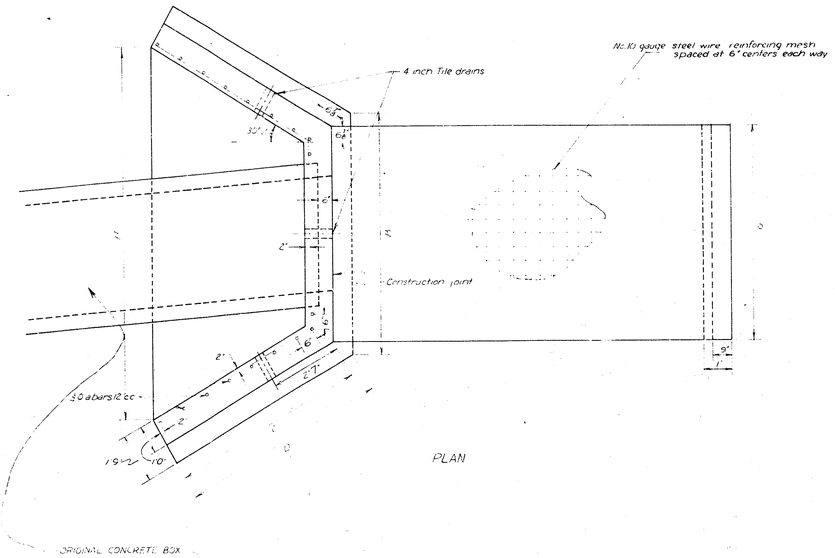
SCALE 1 INCH = 200 FEET
CITY-COUNTY ENGINEER OFFICE WICHITA KANSAS

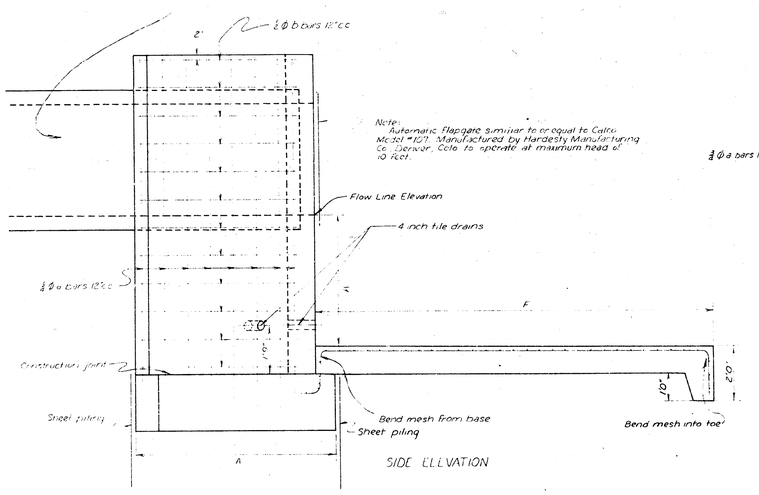
APPROVED:
CITY-ENGINEER

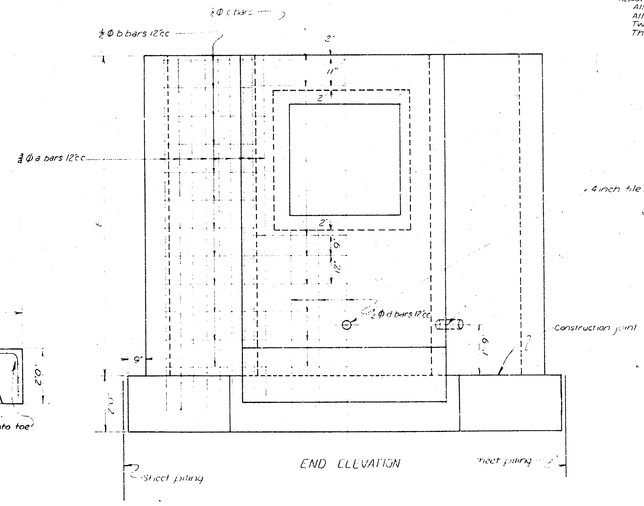
APPROVED
ENGINEER IN CHARGE

DRAWN CRS
TRACED
CHECKED

SHEET 4 OF 12







LISTS OF BARS, DIMENSIONS, AND QUANTITIES FOR HEADWALLS

FOR 4'X4' CONCRETE BOX AT STA. 79+40 LT.

	A	B	C	D	E	F	G	H	K			Flow Line Elevs
Letter										Excavation	39.06 Cu Yds	1301.00
Dimension	5'10½"	8'8"	5'2⅝"	5'8"	10'9"	13'1"	7'9⅝"	11'3½"	4'0"	Concrete	Hdwl 11.04 cu yds Apron 4.17 cu yds	Backfill - 21.61 cu yds
Bar	a	b	c	d						Reinf. Steel	⅝ ϕ - 248.76# ½ ϕ 120.00#	Rip Rap - 9.95 sq yds
Number	16	22	7	5						Sheet Piling	Hdwl - 37 secs. Apron 36 secs	
Size	⅝ ϕ	½ ϕ	½ ϕ	½ ϕ						Flapgate	None needed	
Length	11'10"	4'8"	7'0"	5'7"						Steel Wire Reinf.	No. 10 gauge - 87.3#	

FOR 4'X4' CONCRETE BOX AT 86+30 LT.

	A	B	C	D	E	F	G	H	K			Flow Line Elev
Letter										Excavation	53.35 Cu Yds	1294.20
Dimension	8'5⅛"	8'8"	8'2⅝"	8'8"	9'9⅝"	10'7"	7'9⅝"	14'9⅛"	2'8⅛"	Concrete	Hdwl 15.45 cu yds Apron 3.91 cu yds	Backfill - 29.06 cu yds
Bar	a	b	c	d						Reinf. Steel	⅝ ϕ - 345.42# ½ ϕ - 145.38#	Rip Rap - 9.70 sq yds
Number	20	20	9	5						Sheet Piling	Hdwl - 46 secs Apron - 29 secs	
Size	⅝ ϕ	½ ϕ	½ ϕ	½ ϕ						Flapgate	One 60" x 60"	
Length	10'6"	7'8"	7'0"	4'3"						Steel Wire Reinf.	No. 10 gauge - 22.47#	

FOR 4'X4' CONCRETE BOX AT 93+30 LT.

	A	B	C	D	E	F	G	H	K			Flow Line Elev
Letter										Excavation	56.96 Cu Yds	1293.16
Dimension	7'7"	8'8"	7'2⅝"	7'8"	11'6"	13'7"	7'9½"	13'3½"	4'3⅛"	Concrete	Hdwl 15.28 cu yds Apron 4.32 cu yds	Backfill - 33.75 cu yds
Bar	a	b	c	d						Reinf. Steel	⅝ ϕ - 337.95# ½ ϕ 168.29#	Rip Rap - 9.54 sq yds
Number	18	20	8	5						Sheet Piling	Hdwl - 43 secs Apron 38 secs	
Size	⅝ ϕ	½ ϕ	½ ϕ	½ ϕ						Flapgate	One 48" x 48"	
Length	12'6"	6'8"	7'0"	7'2"						Steel Wire Reinf.	No. 10 gauge - 30.96#	

FOR 4'X4' CONCRETE BOX AT 109+30 LT.

	A	B	C	D	E	F	G	H	K			Flow Line Elev.
Letter										Excavation	52.27 Cu Yds	1292.16
Dimension	5'10¾"	7'8"	5'2⅝"	5'8"	9'10½"	8'7"	12'9½"	16'3½"	3'1⅛"	Concrete	Hdwl 14.90 cu yds Apron 6.49 cu yds	Backfill - 31.65 cu yds
Bar	a	b	c	d						Reinf. Steel	⅝ ϕ 297.6# ½ ϕ - 126.87#	Rip Rap - 7.78 sq yds
Number	18	20	8	5						Sheet Piling	Hdwl 47 secs Apron 29 secs	
Size	⅝ ϕ	½ ϕ	½ ϕ	½ ϕ						Flapgate	One 60" x 60"	
Length	11'0"	4'8"	12'0"	7'11"						Steel Wire Reinf.	No. 10 gauge - 29.4#	

FOR 4'X4' CONCRETE BOX AT 176+50 LT.

	A	B	C	D	E	F	G	H	K			Flow Line Elev.
Letter										Excavation	26.01 Cu Yds	1270.30
Dimension	5'0"	8'8"	4'2⅝"	4'8"	8'6⅝"	11'1"	7'9½"	10'3½"	1'9⅛"	Concrete	Hdwl 8.05 cu yds Apron 3.60 cu yds	Backfill - 12.40 cu yds
Bar	a	b	c	d						Reinf. Steel	⅝ ϕ - 174.79# ½ ϕ 79.86#	Rip Rap - 6.49 sq yds
Number	12	18	5	5						Sheet Piling	Hdwl 34 secs Apron - 32 secs	
Size	⅝ ϕ	½ ϕ	½ ϕ	½ ϕ						Flapgate	One 48" x 48"	
Length	9'8"	3'8"	7'0"	3'7"						Steel Wire Reinf.	No. 10 gauge - 24.15#	

FOR 5'X5' CONCRETE BOX AT STA 323+80 RT.

	A	B	C	D	E	F	G	H	K			Flow Line Elev
Letter										Excavation	45.48 Cu Yds	1274.20
Dimension	6'9⅜"	9'8"	6'2⅝"	6'8"	10'5⅜"		8'9½"	13'3½"		Concrete	Hdwl 13.17 cu yds	Backfill - 21.98 cu yds
Bar	a	b	c	d						Reinf. Steel	⅝ ϕ - 276.37# ½ ϕ 142.10#	Rip Rap - 9.78 sq yds
Number	16	22	7	6						Sheet Piling	Hdwl - 42 sections	
Size	⅝ ϕ	½ ϕ	½ ϕ	½ ϕ						Flapgate	None needed	
Length	11'6"	5'8"	8'0"	5'3"								

Note
The corrugated sheet piling sections shall be of 12 gauge steel and 6 feet long.
For Flapgate detail see sheet no. 12
3 sets of 4 inch tile - 1 foot long shall be required for each headwall

GENERAL NOTES

Coarse aggregate shall be deposited behind each weep hole to occupy a space extending 15 inches in all directions from the weephole.
The front face of the headwalls shall be placed parallel and 6 inches in front of the face of the concrete boxes and shall be placed symmetrically about centerline of the concrete boxes at the front face of the headwall.
All exposed edges shall be beveled with ¾ inch triangular molding.
All reinforcing dimensions are to the center-line of the bars.
Two feet of rip rap shall be placed on each side of all aprons.
The distance that rip rap extends in front of each apron is as follows

Sta 79+40 Lt.	3 feet
Sta 86+30 Lt.	2 "
Sta 93+30 Lt.	2 "
Sta 109+30 Lt.	3 "
Sta 176+50 Lt.	3 "
Sta 323+80 Rt.	10 "

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL
WICHITA DRAINAGE CANAL
HEADWALLS FOR BOX CULVERTS

SCALE 1 INCH 2 FEET

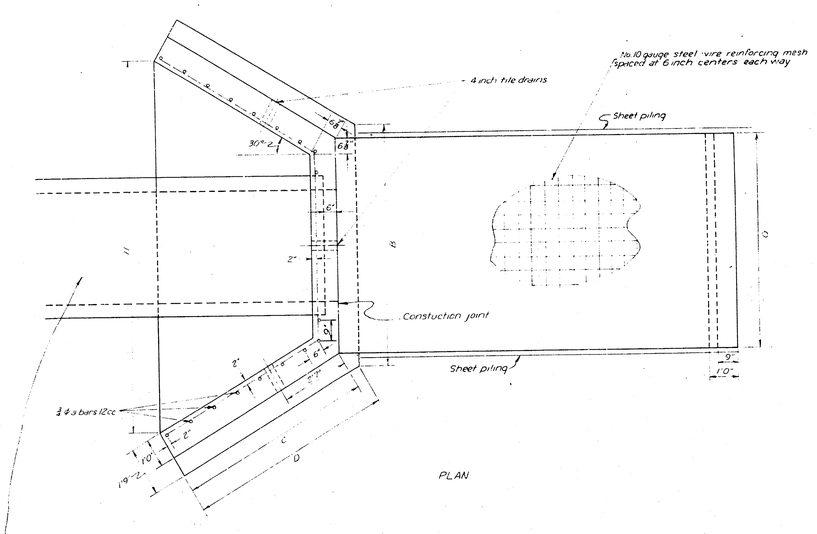
CITY COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED: CITY-ENGINEER

APPROVED: ENGINEER-IN-CHARGE

DRAWN J.R.S.
TRACED
CHECKED

SHEET 5 OF 12



LISTS OF BARS, DIMENSIONS, AND QUANTITIES FOR HEADWALL

FOR 3'x3' CONCRETE BOX AT STA 123+80 RT.

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	45.95 cu yds.	Flow line elevation
Dimension	5'-9½"	7'-9"	5'-2⅜"	5'-8"	6'-6"	14'-7"	6'-9½"	10'-3⅜"	8"	Concrete	HEwl 127.7 cu yds Apron- 3.86 cu yd	1294.50
Bar	a	b	c	d						Backfill	28.59 cu yds	Rip Rap - 13.65 sq yds
Number	18	14	4	4						Reinforcing Steel	HEwl - 234.61" Apron- 23.21"	
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet piling	HEwl - 35 secs Apron - 3.5 secs	.....
Length	8'0"	4'-8"	5'-10"	2'-0"						Flap Gate	One 36" x 36"	

FOR 4'x4' CONCRETE BOX AT STA 137+30 RT

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	32.07 cu yds.	Flow line elevation
Dimension	4'-10⅜"	8'-8"	3'-2⅜"	3'-8"	7'6"	14'-7"	7'-9½"	9'-3⅜"	8"	Concrete	HEwl-10.98 cu yds Apron- 4.44 cu yds	1292.90
Bar	a	b	c	d						Backfill	16.13 cu yds	Rip Rap - 26.06 sq yds
Number	10	16	4	5						Reinforcing Steel	HEwl - 206.02" Apron - 26.78"	.....
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet Piling	HEwl - 31 secs Apron - 3.6 secs	
Length	9'0	2'-8"	6'10"	2'-8"						Flap Gate	One 48" x 46"	

FOR 4'x4' CONCRETE BOX AT STA 150+80 LT

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	29.71 cu yds.	Flow line elevation
Dimension	4'0⅜"	8'-8"	3'2⅜"	3'-8"	8'6"	14'-7"	7'-9½"	9'-3⅜"	1'-8"	Concrete	HEwl 10.90 cu yds Apron- 4.44 cu yds	1292.80
Bar	a	b	c	d						Backfill	13.35 cu yds	Rip Rap - 13.0 sq yds
Number	10	18	5	5						Reinforcing Steel	HEwl - 217.37" Apron- 26.78"	
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet Piling	HEwl - 31 secs Apron- 3.6 secs	
Length	10'0"	2'-8"	6'10"	3'-8"						Flap Gate	One 48" x 48"	

FOR 3'x3' CONCRETE BOX AT STA 157+40 RT

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	42.31 cu yds	Flow line elevation
Dimension	4'10⅜"	7'-8"	4'-2⅜"	4'-8"	7'6"	14'-7"	6'-9½"	9'-3⅜"	8"	Concrete	HEwl 11.41 cu yds Apron- 3.86 cu yd	1290.9
Bar	a	b	c	d						Backfill	26.80 cu yds	Rip Rap - 12.45 sq yds
Number	12	16	5	4						Reinforcing Steel	HEwl - 228.05" Apron - 23.21"	
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet Piling	HEwl - 32 secs Apron - 3.5 secs	
Length	9'0"	3'8"	5'10"	2'8"						Flap Gate	One 36" x 36"	

FOR 2½'x3' CONCRETE BOX AT STA 164+50 RT

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	38.09 cu yds	Flow line elevation
Dimension	4'10⅜"	7'-8"	4'-2⅜"	4'-8"	6'0"	10'-7"	6'-9½"	9'-3⅜"	8"	Concrete	HEwl-10.68 cu yds Apron- 5.11 cu yd	1291.00
Bar	a	b	c	d						Backfill	23.82 cu yds	Rip Rap - 32.59 sq yds
Number	12	14	4	4						Reinforcing Steel	HEwl - 198.51" Apron - 30.23"	
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet Piling	HEwl - 32 secs Apron - 4.5 secs	
Length	7'6"	3'8"	5'10"	2'8"						Flap Gate	One 36" x 36"	

FOR 2½'x3' CONCRETE BOX AT STA 164+50 LT

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	39.94 cu yds	Flow line elevation
Dimension	4'0⅜"	7'6"	3'2⅜"	3'8"	7'0"	10'7"	6'9½"	8'3⅜"	8"	Concrete	HEwl 9.40 cu yds Apron- 2.86 cu yd	1292.50
Bar	a	b	c	d						Backfill	17.43 cu yds	Rip Rap - 22.62 sq yds
Number	10	16	5	4						Reinforcing Steel	HEwl - 182.81" Apron - 17.75"	
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet Piling	HEwl - 29 secs Apron - 2.7 secs	
Length	8'6"	2'8"	5'10"	2'8"						Flap Gate	One 36" x 36"	

FOR 4'x4' CONCRETE BOX AT STA 176+50 RT

	A	B	C	D	E	F	G	H	K			
Letter										Excavation	42.02 cu yds	Flow line elevation
Dimension	5'9½"	8'8"	5'2⅜"	5'8"	8'6"	19'7"	7'9½"	11'3⅜"	1'8"	Concrete	HEwl-16.01 cu yds Apron- 5.87 cu yd	1290.80
Bar	a	b	c	d						Backfill	19.94 cu yds	Rip Rap - 28.65 sq yds
Number	12	18	5	5						Reinforcing Steel	HEwl - 301.50" Apron - 38.65"	
Size	¾ ø	¾ ø	¾ ø	¾ ø						Sheet Piling	HEwl - 37 secs Apron - 4.6 secs	.....
Length	10'0"	4'8"	6'10"	3'8"						Flap Gate	One 48" x 48"	

Note
The corrugated sheet piling sections shall be of 12 gauge steel and 6 feet long.
For Flap gate detail see sheet no. 12
Coarse aggregate shall be deposited behind each weep hole to occupy a space extending 15 inches in all directions from the weephole.
The front face of the headwalls shall be placed perpendicular to and symmetrically about the centerline of the boxes. The front face of the headwalls shall be placed 6 inches in front of the ends of the boxes.
All exposed edges shall be beveled with a ¾ inch triangular molding.
All reinforcing measurements are to the centerline of the bars.
The length of concrete box to be removed at each station is as follows:

Station	
123+80 RT	– 9 feet
137-30 RT	– 9 feet
150+80 LT	– None
157+40 RT	– 9 feet
164+50 RT	– 12 feet
164+50 LT	– 12 feet

Measurements are along axis of the box from the front face of the top headwall. At Sta 176+50 RT the concrete box shall be extended into the headwall until the end is perpendicular. Concrete quantity shall be included with the headwalls concrete quantity.
Two feet of riprap shall be placed on each side of all aprons.
The distance that riprap shall extend in front of each apron is as follows:

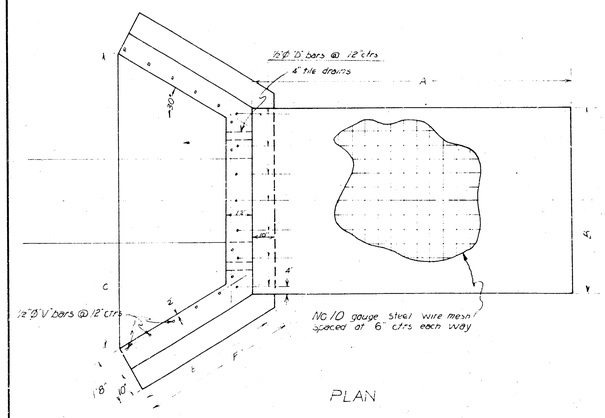
Sta 123+80 RT	– 6.0 feet
Sta 137+30 RT	– 15.0 feet
Sta 150+80 LT	– 5.0 feet
Sta 157+40 RT	– 5.0 feet
Sta 164+50 RT	– 20.0 feet
Sta 164+50 LT	– 15.0 feet
Sta 176+50 RT	– 18.0 feet

3 secs of 4 inch tile - 1 foot long shall be required for each headwall.

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL & WICHITA DRAINAGE CANAL
HEADWALLS FOR BOX CULVERTS

SCALE. 1 INCH 2 FEET
CITY-COUNTY ENGINEER OFFICE, WICHITA KANSAS
APPROVED: APPROVED
CITY-ENGINEER ENGINEER IN CHARGE
DRAWN J.R.S
TRACED
CHECKED
SHEET 6 OF 12

STATION	ELEVATION		
	A	B	C
53+50	1305.00	1299.25	1300.10
279+70 Lt	1280.20	1274.00	1273.00
157+70	1294.50	1289.00	1288.50



PLAN

NOTE:

Outfall apron at sta 157+70 to be rip rapped bottom and sides for a length of 24 ft. from headwall. The bottom shall be 6'2" wide. Slope of sides shall be one to one to top of natural bank.

NOTE:

Automatic taggates to be similar to or equal to Calco Model 100 Manufactured by Hardesty Manufacturing Co Denver Colo. to operate at a maximum head of 10 ft.
The corrugated sheet piling sections shall be of 12 gauge steel and 6 ft long
Remove one 40 in section of 36 in tile pipe before placing headwall
Cut 2 ft off of 48 IN CMP before Placing headwall
Headwalls to be placed at rt angles to ℄ of pipe
For flap gate detail see sheet no 11
Slots of 4 inch thk 1 foot long are required for each headwall

LISTS OF BARS, DIMENSIONS, AND QUANTITIES FOR HEADWALLS FOR

36" TILE PIPE AT STA 279 + 70 LT.

Letter	A	B	C	D	D_a	E	F	G	H	J	K	L
Dimension	12'0"	6'8"	10'2¼"	36"	42¾"	5'3"	5'8"	11'11"	8'0"	6'0"	5'10"	12"
Bar	A	B	C	V	H	D	E					
Number	3	4	4	14	14	7	4					
Size	½Ø	½Ø	½Ø	½Ø	½Ø	½Ø	½Ø					
Length	7'6"	2'9"	1'9"	7'0"	5'4"	3'6"	3'6"					

Excavation	30.79 cu yds
Concrete	Hdwl 7.70 cu yds - Apron 3.23 cu yds
Rein Steel	174.35 #
Sheet Piling	6.3 Sections*
Wire Mesh	23.1 #
Flap Gate	None
Backfill	18.69 cu yds
Rip Rap	11.26 sq yds

48" C.M.P. PIPE AT STA 53+50 Lt

Letter	A	B	C	D	D_a	E	F	G	H	J	K	L
Dimension	6'0"	6'0"	10'2¼"	48"		5'3"	5'8"	11"	9'0"	7'0"	5'10"	12"
Bar	A	B	V	H	D	E						
Number	3	4	14	16	7	4						
Size	½Ø	½Ø	½Ø	½Ø	½Ø	½Ø						
Length	7'6"	2'3"	8'8"	5'4"	3'6"	4'3"						

Excavation	28.76 cu yds
Concrete	Hdwl 1.76 cu yds Apron 1.41 cu yds
Rein Steel	186.81 #
Sheet Piling	5.3 Sections*
Wire Mesh	14.91 #
Flap Gate	48"
Backfill	17.76 cu yds
Rip Rap	6.22 sq yds

60" CONCRETE PIPE AT STA 157+70 Lt

Letter	A	B	C	D	D_a	E	F	G	H	J	K	L
Dimension	24'0"	6'2"	11'8¾"	60"	70"	5'3"	5'8"	13'5"	10'0"	8'0"	5'10"	12"
Bar	A	B	V	H	D	E						
Number	3	4	14	18	8	4						
Size	½Ø	½Ø	½Ø	½Ø	½Ø	½Ø						
Length	9'0"	2'4"	9'8"	5'4"	3'6"	4'2"						

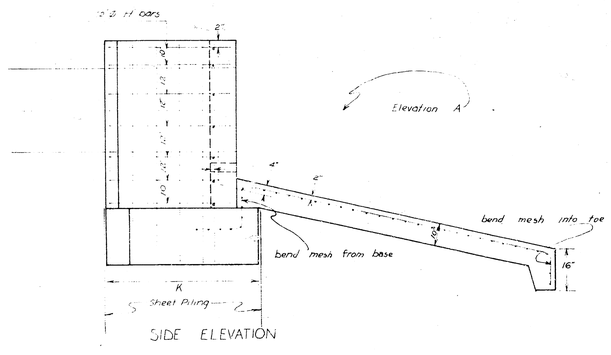
Excavation	84.45 cu yds
Concrete	Hdwl 8.62 cu yds
Rein Steel	208.03 #
Sheet Piling	38 sections
Rip Rap	52.03 Sq yd.
Flap Gate	60"
Backfill	37.90 cu yds

AT STA 157-70 LT

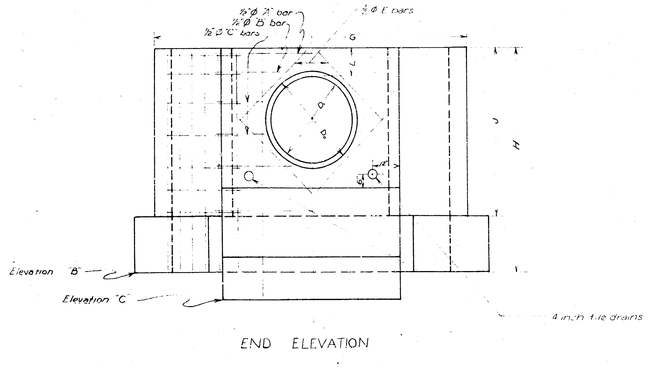
QUANTITIES FOR RELAYING PIPE	
Excavation	430.87 cu yds
Reinf Conc Pipe	195.0 ℓ of 60" ϕ
Backfill	356.0 cu yds

General Notes

Coarse aggregate shall be deposited behind each weephole to occupy a space extending 15 in in all direction from the weephole
All exposed edges shall be beveled with ¾ in triangular moulding
All reinforcing dimensions are to centerlines of bars
Two feet of riprap shall be placed at each side of all aprons
The distance that rip rap shall extend in front of each apron is as follows
Sta 279+70 Lt - 5 feet
Sta 53+50 Lt - 3 feet



SIDE ELEVATION



END ELEVATION

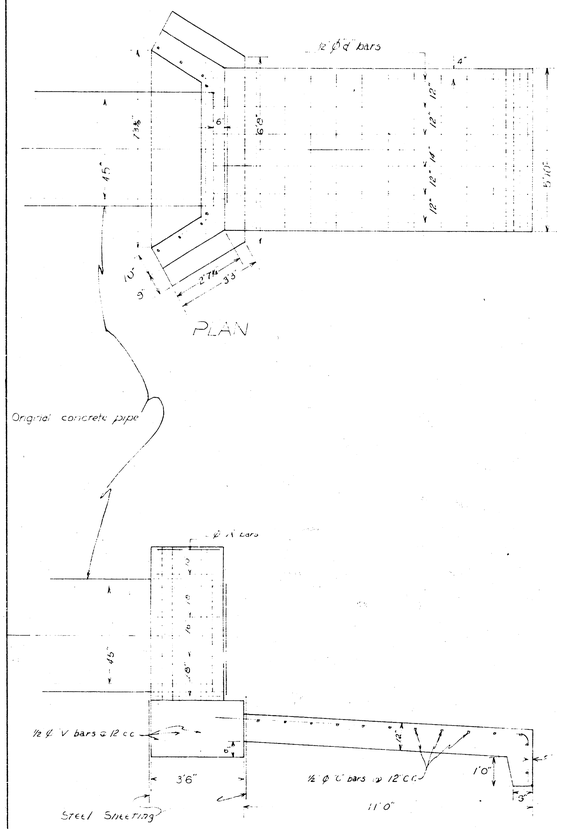
ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL & WICHITA DRAINAGE CANAL
HEADWALLS FOR PIPE CULVERTS

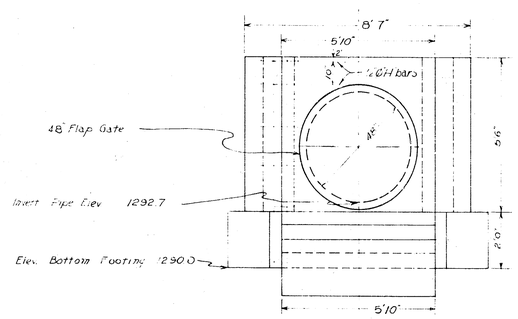
SCALE: 1 INCH = 2 FT.
CITY-COUNTY ENGINEER OFFICE, WICHITA, KANSAS

APPROVED _____ CITY-ENGINEER
APPROVED: _____ ENGINEER-IN-CHARGE

DRAWN C.W.G.
TRACED
CHECKED

SHEET 7 OF 12





& Ditch

Flow

68° 34'

Sta 163 + 40 Lt

REIN STEEL SCHEDULE

Type	A	C	D	H	V
Number	5	13	6	3	8
Size	⅝"Ø	½"Ø	½"Ø	⅝"Ø	⅝"Ø
Length	3'9"	5'6"	13'6"	6'0"	5'1⅛"

ESTIMATE OF QUANTITIES

Excn	14.45 Cu Yds
Conc	6.00 Cu Yds
Rein Steel	150.47 Lbs
Sheet Piling	192.00 Ft
Flap Gate	40" Ø
Backfill	6.31 cu yds
Rip Rap	7.07 sq yds

QUANTITIES FOR RELAYING PIPE

Excavation	416.15 cu yds
Reinf Conc Pipe	176.0 l.f. 78"Ø
Backfill	312.51 cu yds

Note

Automatic flapgate similar to or equal to Calco Tideflex 100 Manufactured by Hardesty Manufacturing Co Denver Colo. to operate at maximum head of 10 ft. For flap gate detail see sheet no 11

Note

Steel Sheeting similar to or equal to Armco Flange type 12 gauge manufactured by Armco Drainage and Metal Products Inc. Middletown, Ohio

All exposed edges shall be beveled with ¾ inch triangular molding.
All reinforcing dimensions are to the centerline of the bars.
The headwall shall be placed perpendicular to the axis of the pipe.
Rip rap shall be placed around the apron for a distance of 2 feet

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
HEADWALL FOR PIPE CULVERT
STA 163+40 LT.

SCALE 1 INCH = 2 FT.

CITY-COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED

CITY-ENGINEER

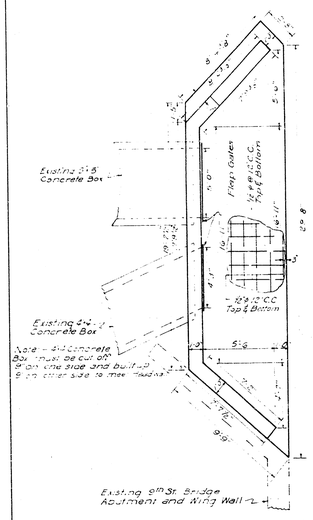
APPROVED

DRAWN
TRACED
CHECKED

SHEET 8 OF 12

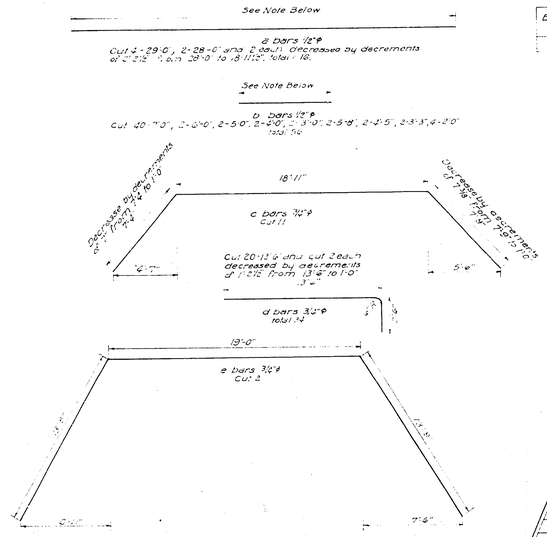
ESTIMATE OF QUANTITIES FOR HEADWALL AT STA 137+30 LT.

Excavation Cu Yds	Sheet Piling Lineal Feet	Reinforcing Steel Lbs.	Concrete Cu Yds.	Flap Gates Inches	Backfill Cu Yds.	Drain Tile Lineal Feet
50.0	340	1702	31.35	2-60" 60"	8.1	2

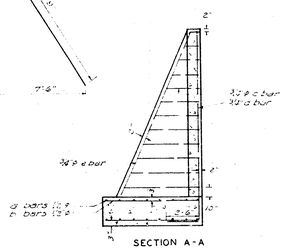


PLAN

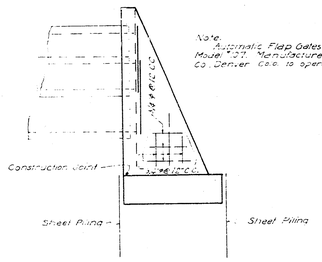
Note: Place front face perpendicular to centerline of existing 3'-6" Concrete Box and perpendicular to axis of Box.



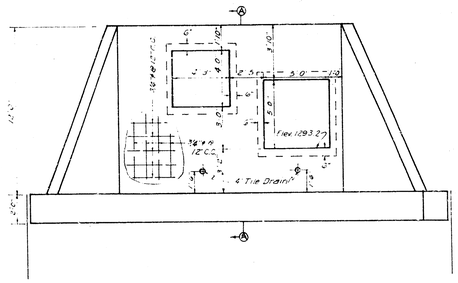
REINFORCING BAR BENDING DIAGRAM



SECTION A-A



SIDE ELEVATION



FRONT ELEVATION

GENERAL NOTES

Corrugated Sheet Piling Sections shall be of 10 gauge steel and 6 feet in length
For Flap Gates see Sheet No 10
Coarse aggregate shall be deposited behind each weep hole to occupy a space extending 3 inches in all directions from the weep hole.
All exposed edges shall be beveled with 3/4 inch triangular molding
All reinforcing dimensions are to the center-line of the bar

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL & WICHITA DRAINAGE CANAL
HEADWALL FOR BOX CULVERT
STA 137+30 LT.

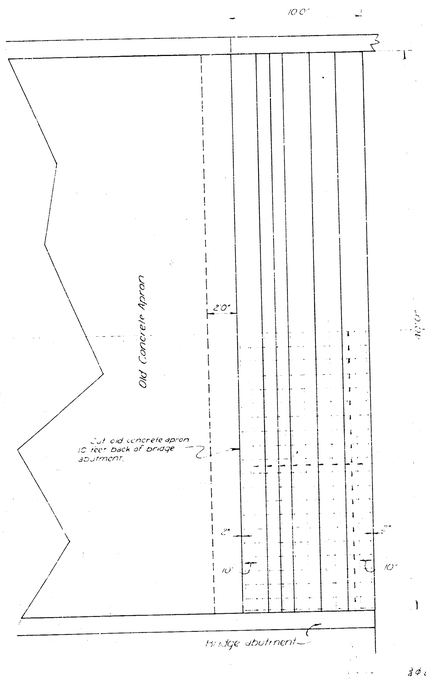
SCALE 1 INCH 4 FEET

CITY COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED _____ CITY-ENGINEER

APPROVED _____ ENGINEER IN CHARGE

DRAWN
TRACED
CHECKED

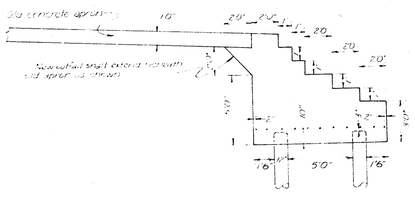


PLAN

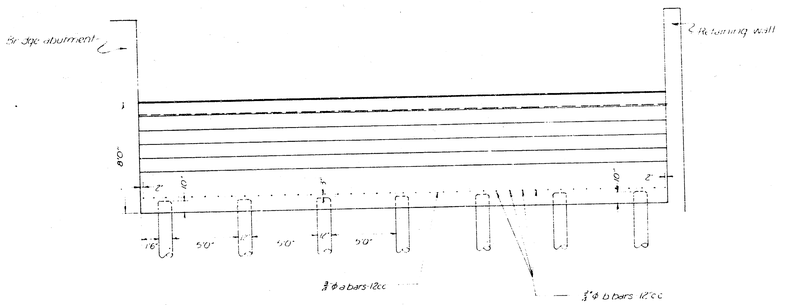
MAIN STEEL SCHEDULE		
Bar	a	b
Number	11	41
Size	#6	#4
Length	39'0"	9'8"

ESTIMATE OF QUANTITIES	
Excavation	94.81 cu yds
Concrete	81.48 cu yds
Reinforcing Steel	#3 - 12506 lbs
Sheet Piling	40 secs of 12 gauge - 6' long
Piling	14 - 12" treated pile - 20' long

NOTE
All reinforcing measurements are to the center line of the bars
Bevel all exposed edges with a 3/4 inch triangular molding
Removal of old concrete shall be considered part of the excavation and will be paid for accordingly
The apron shall be constructed perpendicular to the axis of the drain and the front face shall be flush with the existing bridge abutment
New concrete at top of outfall shall be made flush with old apron



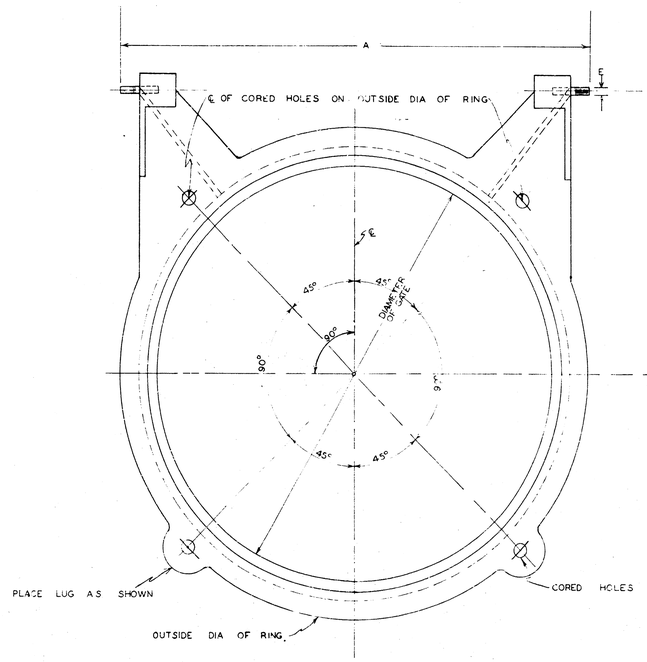
SIDE ELLVATION



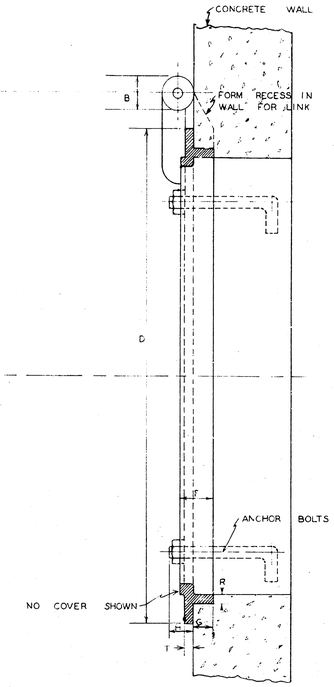
END ELLVATION

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
OUTFALL APRON AT 3RD STREET
STA. 198+80 LT

SCALE 1 INCH 4 FEET
CITY COUNTY ENGINEER OFFICE WICHITA KANSAS
APPROVED
APPROVED
CITY-ENGINEER
ENGINEER IN CHARGE
DRAWN J.R.S.
TRACED
CHECKED
SHEET 10 OF 12



FRONT ELEVATION
RING ONLY



SECTION ON ℄

FLAP GATE SCHEDULE — CALCO MODEL #100

STATION	DIA	A	B	C	D	E	F	G	H	R	T	ANCHOR BOLT DIA
53+50	48"	53½"	2½	34"	54"	1"	4"	2¾"	1¾	¾"	¾	¾"
67+50	24"	28¾"	2"	17"	27½	¾"	2½"	1½"	1½"	9/16"	⅜	⅜"
157+70	60"	66⅜"	2½"	42"	60½	1¼"	4⅜"	2¾"	2¼"	⅝	11/16	1"
183+40	48"	53½"	2½"	34"	54"	1"	4"	2¾	1¾	¾"	¾	¾"

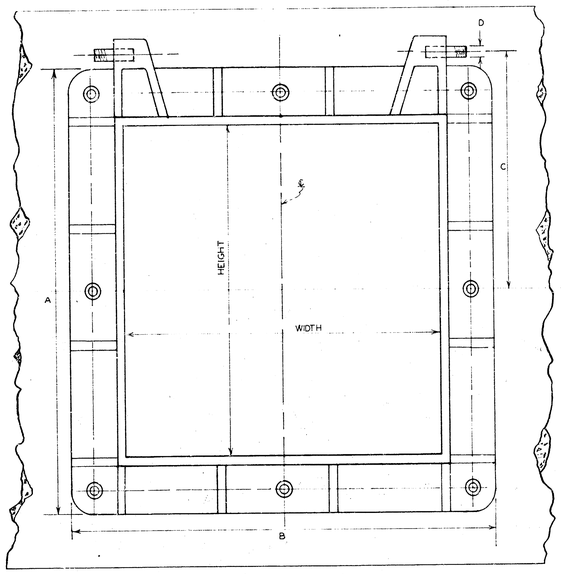
ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
FLAP GATE DETAIL
MODEL 100

SCALE: 1 INCH= 4 INCHES
CITY-COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED:
CITY-ENGINEER
APPROVED:
ENGINEER-IN-CHARGE

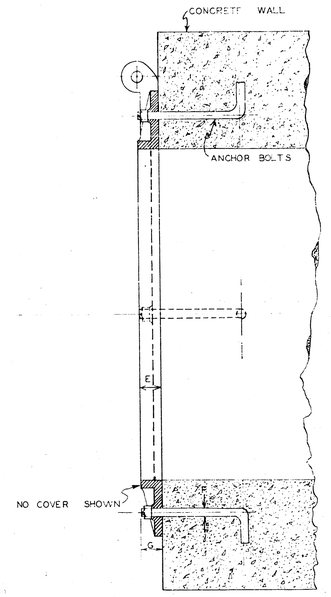
DRAWN CWG
TRACED
CHECKED

SHEET 1 OF 2



FRONT ELEVATION

RING ONLY



SECTION ON ℄

FLAP GATE SCHEDULE — CALCO MODEL 107

STATION	GATE SIZE WIDTH	GATE SIZE HEIGHT	A	B	C	D	E	F	G
86 + 30Lt	60"	60"	70"	70"	42"	1 1/4"	2 1/2"	1"	2 1/4"
93 + 30Lt	48"	48"	57"	57"	34"	1"	2 1/16"	3/4"	1 3/4"
109 + 30	60"	60"	70"	70"	42"	1 1/4"	2 1/2"	1"	2 1/4"
123 + 80	36"	36"	44"	44"	25"	1"	2 1/16"	5/8"	1 3/8"
137 + 30Lt	60"	60"	70"	70"	42"	1 1/4"	2 1/2"	1"	2 1/4"
137 + 30Lt	60"	60"	70"	70"	42"	1 1/4"	2 1/2"	1"	2 1/4"
137 + 30Rt	48"	48"	57"	57"	34"	1"	2 1/16"	3/4"	1 3/4"
150 + 80Lt	48"	48"	57"	57"	34"	1"	2 1/16"	3/4"	1 3/4"
157 + 40Rt	36"	36"	44"	44"	25"	1"	2 1/16"	5/8"	1 3/8"
164 + 50Lt	36"	36"	44"	44"	25"	1"	2 1/16"	5/8"	1 3/8"
164 + 50Rt	36"	36"	44"	44"	25"	1"	2 1/16"	5/8"	1 3/8"
176 + 50Lt	48"	48"	57"	57"	34"	1"	2 1/16"	3/4"	1 3/4"
176 + 50Rt	48"	48"	57"	57"	34"	1"	2 1/16"	3/4"	1 3/4"

ARKANSAS RIVER BASIN
WICHITA AND VALLEY CENTER
FLOOD CONTROL PROJECT
EAST BRANCH INTERCEPTION CANAL &
WICHITA DRAINAGE CANAL
FLAP GATE DETAIL
MODEL 107

SCALE: 1 INCH = 4 INCHES

CITY COUNTY ENGINEER OFFICE WICHITA KANSAS

APPROVED

APPROVED

CITY ENGINEER

ENGINEER IN CHARGE

DRAWN C.W.G.
TRACED
CHECKED

SHEET 2 OF 2