CRAWFORD COUNTY ~ Proj. No.: SN-827(9)--51-24 ~ Culverts ~ Letting Date: May 2, 1968

36412O - SEC. 11

FED. ROAD DIST. NO.	STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA		1968	1	4

Proj. No. :- SN-827(9)--51-24

STATE OF IOWA
STATE HIGHWAY COMMISSION
CULVERTS
ON THE
FARM TO MARKET SYSTEM
CRAWFORD COUNTY

PROJECT NO. SN-827(9)--51-24

DESIGNS FOR REINFORCED CONCRETE BOX CULVERT AND EXTENSIONS WITH DROP INLETS

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964, SHALL APPLY TO WORK ON THIS PROJECT, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

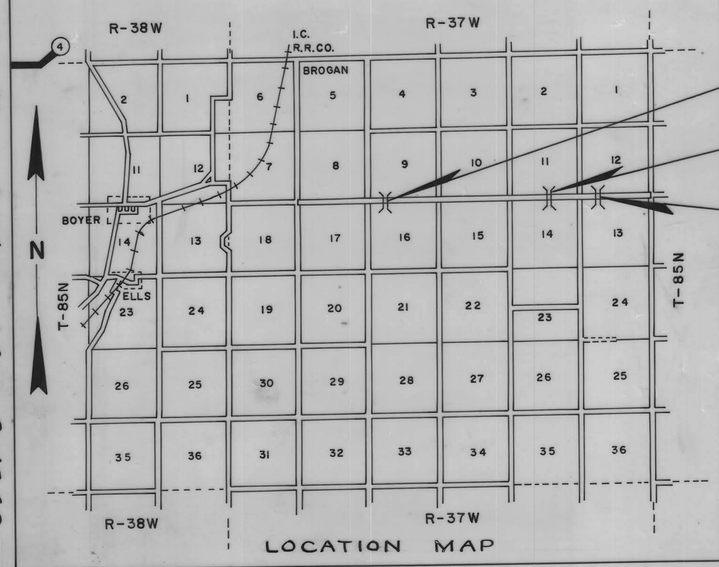
INDEX OF SHEETS

Iowa State Highway Commission Standards Required (May be obtained at storeroom)

Standard	Date Issued	Latest Revision
C4P	April 1932	June 1944
C5P	April 1932	June 1944
CHP-2.5-65	1965	August 1967

In Letting of May 2, 1968	Design	Location Sec.	Twp.	Station	Description Type And Size Reinforced Concrete Box Culverts	Estimate of Quantities: Structural Concrete Class "C" Cu. yds.	Class 20 Excavation Cu. yds.	Reinforcing Steel Lbs.	1 1/2" Galvanized Pipe Rail Lbs.	Removals
	568	9-16	85-37	446+60.4	5'x4'x22'-0" Extension Ct. with drop inlet 5'x4'x30'-0" Extension Rt.	42.63	90	3,941	228	As Per Plan
	668	11-14	85-37	567+65.0	Twin 10'x10'x78'-0" R.C.B.C.	326.0	660	41,721	———	By Others
	768	12-13	85-37	602+60.7	4'x3'x23'-0" Extension Ct. with drop inlet 4'x3'x32'-0" Extension Rt.	31.87	63	2,966	160	As Per plan
					Total	400.50	813	48,628	388	Lump Sum

Note: Culvert Contractor To Coordinate His Work With Grading Contractor To Expedite Entire Project.



LOCATION MAP

Design 568
Sta. 446+60.4 & 5'x4' R.C.B.C. Extensions With Drop Inlet

Design 668
Sta. 567+65.0 & Twin 10'x10'x78'-0" R.C.B.C.

Design 768
Sta. 602+60.7 & 4'x3' R.C.B.C. Extensions With Drop Inlet

I HEREBY CERTIFY THESE PLANS WERE PREPARED UNDER MY SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

William C. Stone
REG. NO. 2586

DATE March 18, 1968

COUNTY ENGINEER
APPROVED DATE

CHAIRMAN

BOARD OF SUPERVISORS

APPROVED DATE
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION
R A Gwin 3/25/68

DEPARTMENT OF TRANSPORTATION
BUREAU OF PUBLIC ROADS
APPROVED DATE

DIVISION ENGINEER

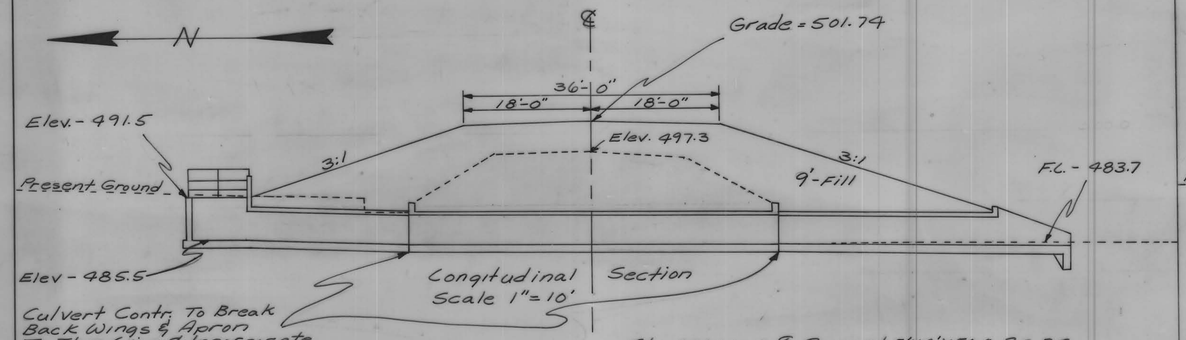
(85)

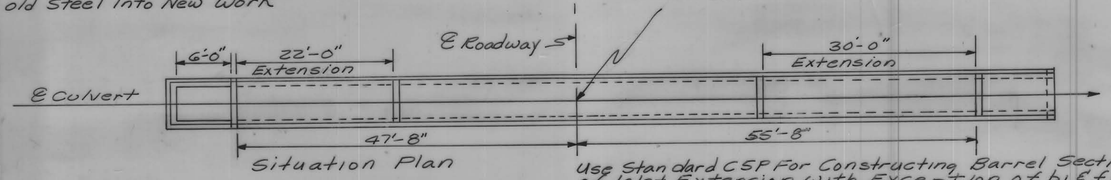
1966 TRAFFIC 84-126 V.P.D.

CP 3-28-68 EDA 3-27-68

CRAWFORD COUNTY PROJECT NO. SN-827(9)--51-24 FILE NO. 23341 SHEET NO. 1 OF 4

T.B.M. SPK In Top Fence Post 33' Rt. Sta. 445+05 Elev.= 500.09





Omit 2- sets r bars 32 Lbs.

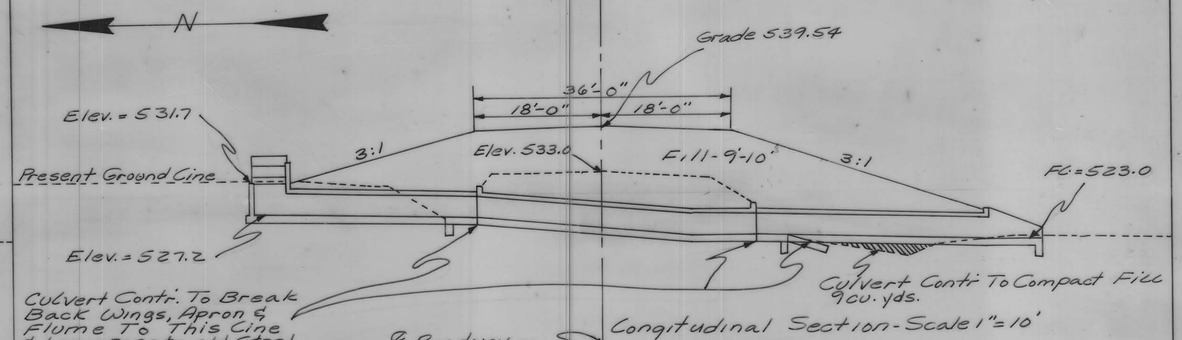
C. = 0.90

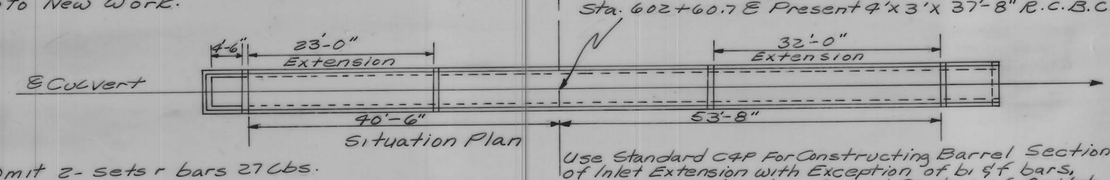
Compaction Backfill By Road Contr. - 61 Cu. yds.

Use Standard CSP For Constructing Barrel Section of Inlet Extension with Exception of bi & f bars, Also For Constructing Barrel Section of Outlet Extension.
Use Standard CHP 25-65 For Constructing Outlet Headwall.
See Sheet 4 For Drop Inlet Details.

Drainage Area 66 Ac.	Section Between 9 & 16
Size & Type 5'x4' Extension of Drop Inlet	Township Jackson
Depth of Fill - 9'	County Crawford
Excavation Class 20-90 Cu. yds.	Station 446+60.4
Concrete-Class "C" 42.63 Cu. yds.	Project SN-827(9)--51-24
Reinforcing 3,941 Cbs.	Design 568
	Date.

B.M.#50 Bolt in Inlet Headwall 17' Ct. Sta. 602+60.7 Elev. = 531.01





Omit 2- sets r bars 27 Cbs.

C. = 0.66

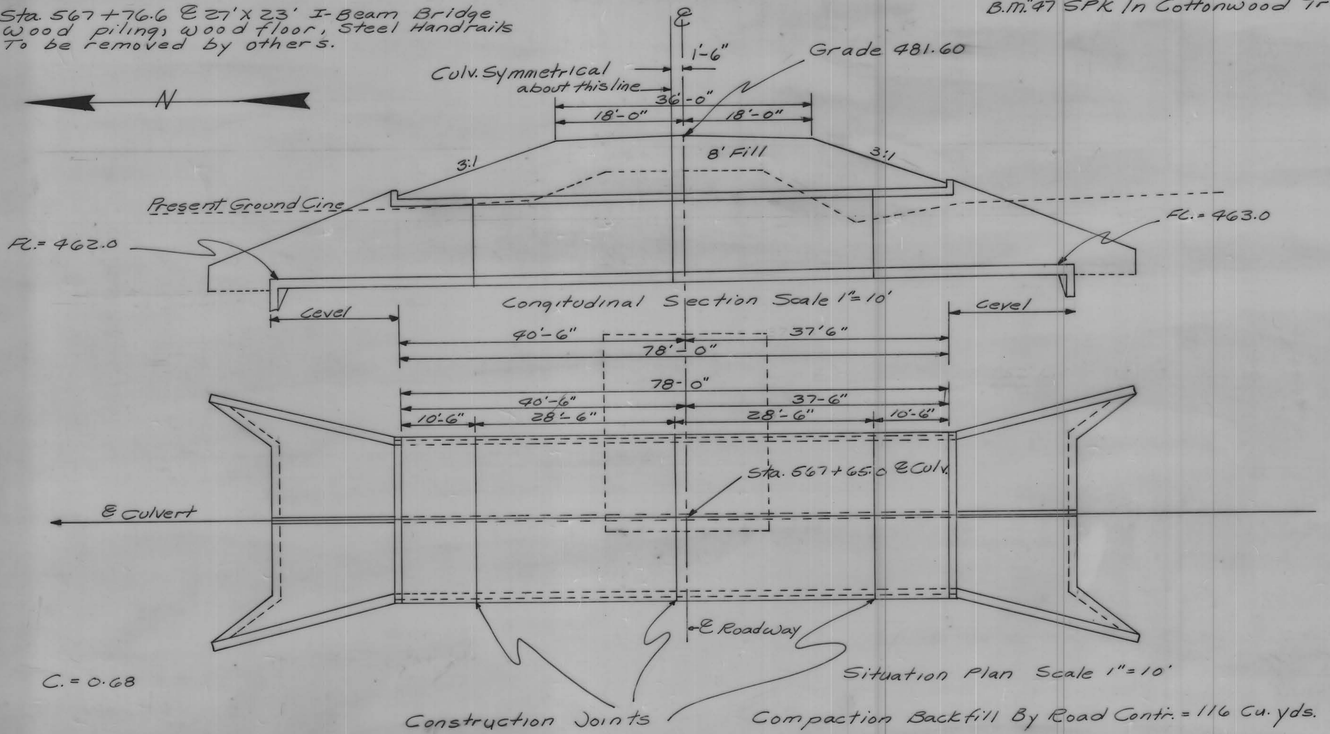
Compaction Backfill By Road Contr. - 42 Cu. yds.

Use Standard C4P For Constructing Barrel Section of Inlet Extension with Exception of bi & f bars, Also For Constructing Barrel Section of Outlet Extension.
Use Standard CHP 25-65 For Constructing Outlet Headwall.
See Sheet 4 For Drop Inlet Details.

Drainage Area 50 Ac.	Section Between 12-13
Size & Type 4'x3' Extension of Drop Inlet	Township Jackson
Depth of Fill 9'-10'	County Crawford
Excavation Class 20 = 63 Cu. yds.	Station 602+60.7
Concrete Class "C" 31.87 Cu. yds.	Project SN-827(9)--51-24
Reinforcing 2,966 Cbs.	Design 768
	Date

Sta. 567+76.6 ℄ 27'x 23' I-Beam Bridge
Wood piling, wood floor, Steel Handrails
To be removed by others.

B.M.#47 SPK In Cottonwood Tree 175' Ct. Sta. 568+50 Elev. = 472.68

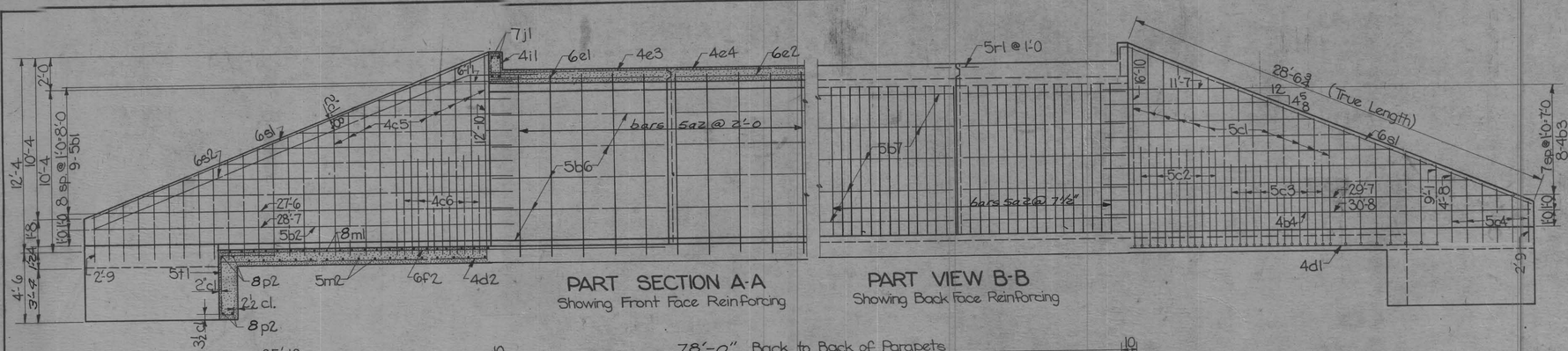


C. = 0.68

See Sheet No. 3 For Structure Details

CONCRETE PLACEMENT QUANTITIES			
	FLOOR	WALL - SLAB	TOTAL
BARREL-CENTER SECTION	2 @ 30.5 = 61.0	2 @ 51.1 = 102.2	163.2 Cu. yds.
BARREL-END SECTION	2 @ 11.3 = 22.6	2 @ 19.6 = 39.2	61.8 Cu. yds.
HEADWALL & CENTER WING	2 @ 35.2 = 70.4	2 @ 15.3 = 30.6	101.0 Cu. yds.
TOTAL	154.0	172.0	326.0 Cu. yds

Drainage Area 2,010 Ac.	Section Between 11-14
Size & Type Twin 10'x10'x78'-0" R.C.B.C.	Township Jackson
Depth of Fill 8'	County Crawford
Excavation Class 20 = 660 C.Y.	Station 567+65.0
Concrete Class "C" 326.00 C.Y.	Project SN-827(9)--51-24
Reinforcing 91,976 Cbs.	Design 668
	Date



Revision 5-17-67: Spacing of 4i1 bars changed.
Revision 12-28-66: Cover of reinforcing steel & size of parapet bars changed.

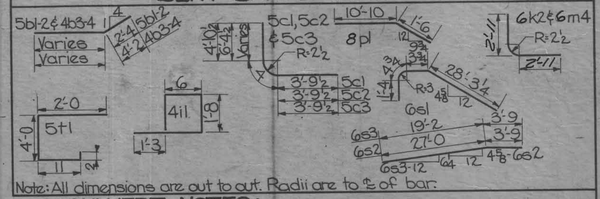
BILL OF REINFORCING STEEL

Bar	Location	Shape	No.	Length	Weight
5a1	Barrel Walls, Vertical	—	39	12'-2	495
5a2	" " Ext. B.F.V.	—	125	9'-5	1228
5b1	Headwall Wingwalls, F.F.H.	/	36	6i1-2'6	646
5b2	" " "	//	4	28'-7	119
4b3	" " B.F.H.	//	32	11'-7 9'-1	440
4b4	" " "	//	4	30'-8	82
5b5	" Ice Breaker, Horizontal	—	16	4'0-11'6	179
5b6	Barrel Walls, End Section, "	—	54	11'-0	620
5b7	" " Center " "	—	54	28'-4	1596
5c1	Headwall Wingwalls, B.F.V.	L	84	9'1-16'0	1135
5c2	" " "	L	24	10'-6	263
5c3	" " "	L	28	9'-0	263
5c4	" " "	—	24	2'9-4'8	93
4c5	" " F.F.V.	—	108	2'9-12'10	562
4c6	" " "	—	24	6'0	96
5c7	" Ice Breaker, Vertical	—	34	1'10-10'3	214
4d1	" Apron, Bottom Longit.	—	8	20'-6	110
4d2	" " " "	—	12	17'-3	138
4d3	Barrel Floor, End Section, Bott. Longit.	—	16	12'-5	133
4d4	" " Center " " "	—	16	28'-4	303
6e1	Slab, End Section, Bottom Longit.	—	44	11'-0	727
6e2	" Center " " "	—	44	28'-4	1873
4e3	" End " Top "	—	16	11'-0	118
4e4	" Center " " "	—	16	28'-4	303
6f1	Headwall Apron, " "	—	4	19'-4	116
6f2	End Section & " " "	—	44	28'-3	1867
6f3	Barrel Floor, ~~End~~ Section Top Longit.	—	44	28'-4	1873
4i1	Parapet, Hoods Centerline	⌐	90	5'-7	336
7j1	" Horizontal	—	8	22'-2	363
6k1	Slab, Bottom Transverse	—	125	22'-2	4162
6k2	" Corner Bars	⌐	250	5'-10	2190
8k3	" Top Transverse	—	93	7'-0	1738
8k4	" " "	—	32	22'-2	1894
8m1	Headwall Floor, Top Transverse	—	46	22'-11	2815
5m2	" " Bott. "	—	32	22'-8	757
6m3	Barrel Floor, Top "	—	125	22'-8	4256
6m4	" " Corner Bars	⌐	250	5'-10	2190
8m5	" " Bott. Transverse	—	93	7'-0	1738
8m6	" " "	—	32	22'-8	1090
8p1	Apron Curtain Wall, Horizontal	/	16	12'-6	534
8p2	" " "	—	8	20'-0	427
5r1	Slab Dowels	—	66	2'-6	172
6s1	Headwall Wingwalls, Slope	⌐	8	30'-4	364
6s2	" " "	/	4	30'-9	185
8s3	" Ice Breaker "	/	8	22'-11	490
5t1	Apron Curtain Wall, Vertical	⌐	60	6'-10	428
	Total Reinforcing Steel				41,721

CONCRETE PLACEMENT QUANT.

	Inlet	Outlet	Barrel Sections	Total
Floor	—	—	—	—
Walls	—	—	Sheet 2 of 4	—
Slab	—	Same	—	—
Total	—	—	—	—

BENT BAR DETAILS



CULVERT NOTES:

The floor of the barrel is to be finished smooth. The sides of the footing are to be formed to insure correct line and grade.

All exposed corners 90° or sharper to be filleted with a ¾" dressed and beveled strip.

Bar chairs spaced at not over 3' centers in either direction are to be used to support all reinforcing as indicated by Para. 2404.06 and 2404.07 of the Standard Specifications.

Construction joints are to be formed by beveled 2×6's.

Clear distance from face of concrete to near reinforcing bar is to be 2" unless noted otherwise.

Except for r bars, longitudinal reinforcing is not to extend thru construction joints.

Design for
TWIN 10'-0" × 10'-0" × 78'-0" REINFORCED CONCRETE BOX CULVERT
STRUCTURE DETAILS

Station 567+65.0 ~~Project No.~~
Project No. SN-827(9)--51-24
Iowa State Highway Commission
Sheet 3 of 4

Design No. 668 File No. 23341

Detailed by: Traced by: Checked by:

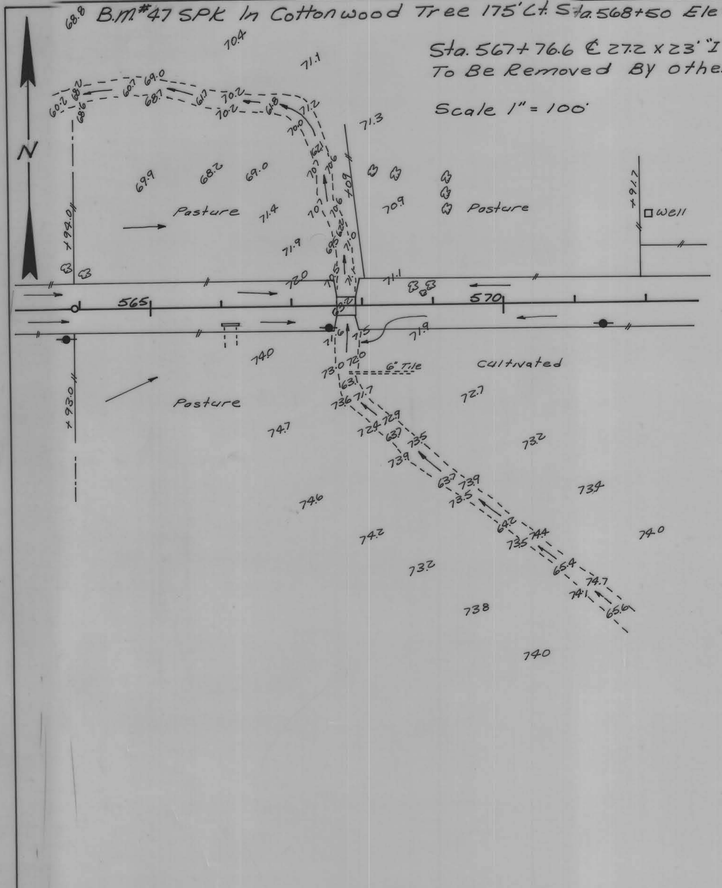
5002

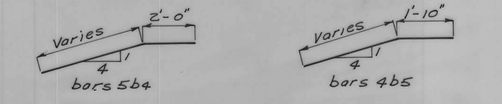
DIETZGEN NO 131 ARKWRIGHT

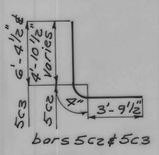
B.M #47 SPK In Cottonwood Tree 175'Lt. Sta. 568+50 Elev. = 472.68

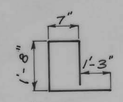
Sta. 567+76.6 ℄ 27.2 x 23' "I" Beam Bridge
To Be Removed By others.

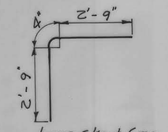
Scale 1" = 100'

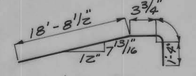


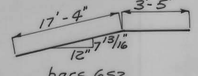


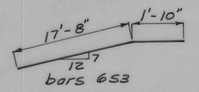


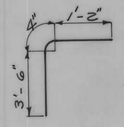


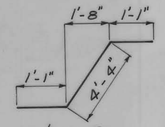












Note: All dimensions are out To out
Radii To ℄ of bars
BENT BAR DETAILS

REINFORCING BAR LIST

Bar	Location	Shape	No.	Length	Weight
5a1	Extr. Wall - vert. B.F.				
5a2	" " & Center Wall Vert. F.F.				
5a3	Ice breaker - Vert.				
5b1	Walls - Mid. Sec. - horiz.				
5b2	Extr. Walls - End Sec. - horiz.				
5b3	Ice breaker & Ctr. Wall - End Sec. hor.				
5b4	Wing Wall - horiz. F.F.				
4b5	" " - " B.F.				
5c1	" " - vert. B.F.				
5c2	" " - " " "				
5c3	" " - " " "				
4c4	" " - " F.F.				
4c5	" " - " "				
4d1	Apron - bottom - longit.				
5e1	Slab - Mid. Sec. - bott. longit.				
5e2	" - End " - " "				
4e3	" - mid. Sec. - Top "				
4e4	" - End " - " "				
5f1	Floor - Mid " - " "				
5f2	" - End " - " "				
5f3	" - " " - " "				
4f4	" - Mid. " - bottom "				
4f5	" - End " - " "				
4g	Parapet - Vert.				
7h	" - horiz.				
6k1	Slab - bottom trans.				
6k2	" - Corner bars				
8k3	" - Top Trans.				
8k4	" - " "				
6m1	Floor - Top "				
6m2	" - Corner bars				
8m3	" - bottom Trans.				
8m4	" - " "				
6m5	Apron - Top Trans.				
5m6	" - bottom				
7p	Curtain Wall horiz.				
5r	Slab - dowels				
6s1	Wing Slope - both faces				
6s2	" " - F.F.				
6s3	Ice breaker				
5t	Curtain Wall - vert.				
5u	" " - Counterfort				
	Total Reinforcing Steel				

ESTIMATED QUANTITIES		
Concrete, Structural	Cu. yd.	
Reinforcing Steel	lbs.	
Class 20 Excavation		
Remove Old Structure		By Others

CONCRETE PLACEMENT QUANTITIES			
	2 End Sections	Mid Section	Total
Floor			
Above Floor			
Total			

Drainage Area 2,010 Ac.	Section Between 11 & 14
Size & Type Twin 10'x10' x	Township Jackson
Depth of Fill	County Crawford
Class 20 Excavation	Station
Concrete	Project No. S-827
Reinforcing	Date
	Design No.

CRAWFORD COUNTY DESIGN NO. PROJECT NO. S -827 FILE NO. SHEET NO.