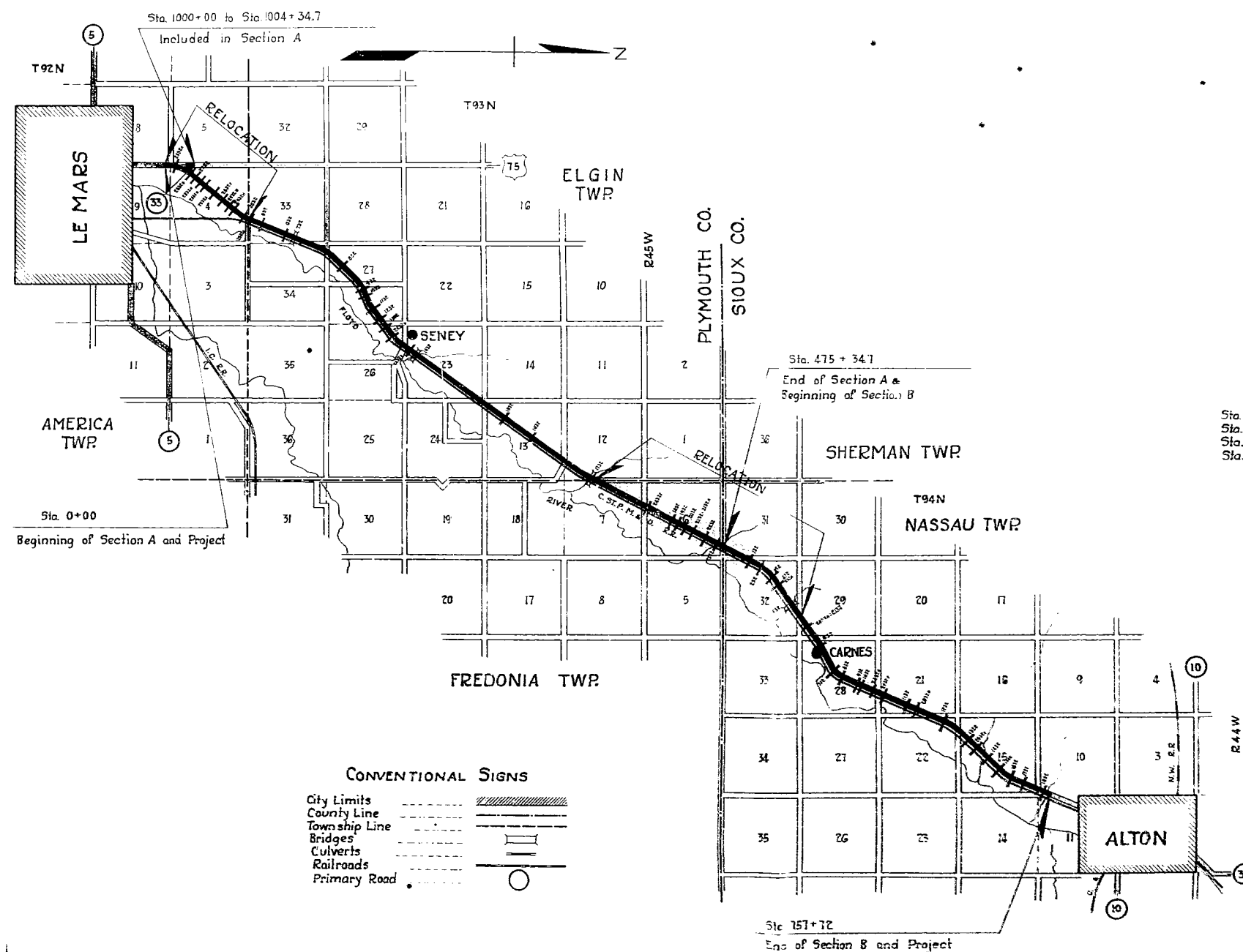


STATE OF IOWA
STATE HIGHWAY COMMISSION
DESIGNS FOR
BRIDGES AND CULVERTS
PRIMARY ROAD SYSTEM - FEDERAL AID PROJECT NO. 342

SECTION A-B
PLYMOUTH & SIOUX COUNTIES
IOWA STATE HIGHWAY COMMISSION
LIBRARY 682



MILEAGE SUMMARY

Sta. 120+18.25 to Sta. 120+52.95	34.7
Sta. 234+61.8 to Sta. 234+96.2	34.4
Sta. 377+61.1 to Sta. 377+88.9	27.8
Sta. 341+98.0 to Sta. 342+22.0	24.0
	162.7 = 9.03

Approved _____ Date _____

Chief Engineer - Iowa Highway Commission
Recommended for Approval _____ Date _____

District Engineer - District No. 5
Recommended for Approval _____ Date _____

Chief Engineer - Bureau of Public Roads
Approved _____ Date _____

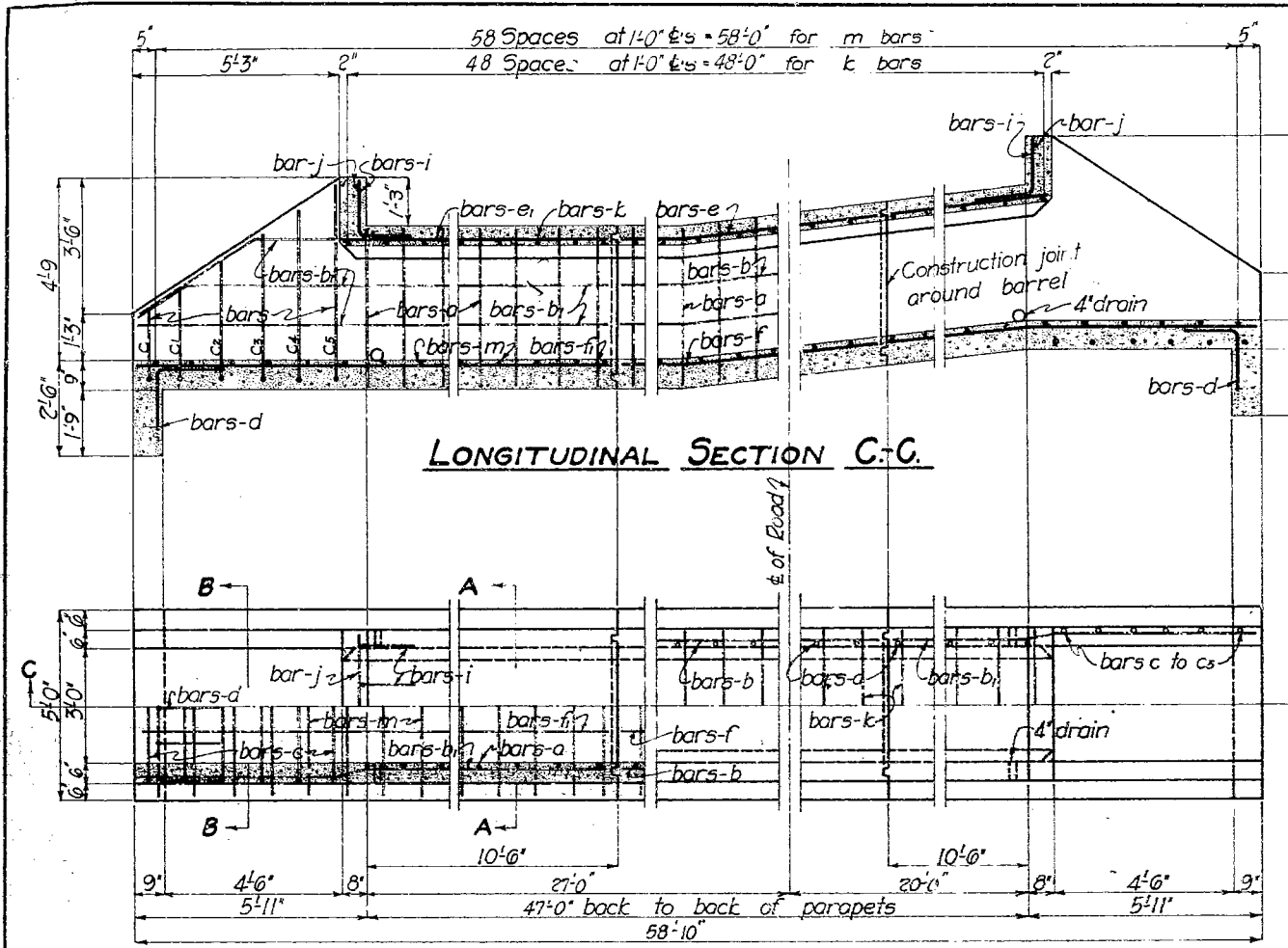
Chief - Bureau of Public Roads

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA	342		Z	

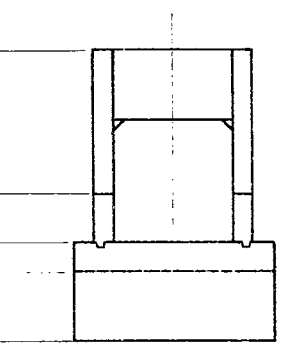
STATE OF IOWA
STATE HIGHWAY COMMISSION
SUMMARY AND ESTIMATES FOR
BRIDGES AND CULVERTS
PRIMARY ROAD SYSTEM FEDERAL AID PROJECT NO. 342
SECTION A-B
PLYMOUTH & SIOUX COUNTIES
IOWA STATE HIGHWAY COMMISSION
FEBRUARY 1932

DESIGN	LOCATION			DESCRIPTION	SKEW	ESTIMATE OF QUANTITIES							
	SECTION	TOWNSHIP	STATION			CONCRETE	REIN. STEEL	STRUCT. STEEL	PILING	CONC. PIPE			
				SIZE AND TYPE						24"	30"	36"	
				PLYMOUTH COUNTY									
2432b	26	Elgin	210+72.4	36"x54" Circular Culvert									54
2432e	23	"	228+90	24"x12" " "							72		
2432f	6	Fredonia	415+90	30"x48" " "								48	
2632	4	America	96+00	6"x5"x38" Box Culvert		32.9	3205						
532	33	Elgin	90+55	3"x3"x38" " "		16.3	1520						
632	"	"	109+26.6	12"x5" " " Ext.		22.0	1750						
732	"	"	120+35.6	3"x24" I Beam Bridge - Raise		200	1050						
832	27	"	151+00	3"x3"x41" Box Culvert		17.3	1610						
932	"	"	169+73	4"x3"x41" " "		200	2215						
1032	"	"	174+40	3"x3"x67" " "	30°	26.5	2400						
1132	"	"	185+00	5"x5"x63" " "	45°	43.9	4955						
1232	"	"	194+44	5"x5"x40" " "		28.1	2990						
1332	26	"	202+50	4"x4"x39" " "		22.4	2365						
1432	23	"	234+80	3"x24" I Beam Bridge	45°	182.6	10130	19410	48x20				
1532	13	"	305+95	8"x5"x38" Box Culvert - Twin		85.0	8430						
1632	"	"	319+87	8"x5"x39" " "		85.0	8430						
1732	7	Fredonia	377+75	24"x24" I Beam Bridge	30°	130.4	9940	12020	46x25				
1832	6	"	436+00	3"x3"x38" Box Culvert		16.3	1520						
1932	"	"	439+00	4"x3"x40" " "		19.6	2165						
2032	"	"	446+40	4"x3"x38" " "		18.9	2085						
2132	"	"	452+51	4"x4"x39" " "		22.4	2365						
2232	"	"	467+75	4"x4"x49" " "		26.6	2815						
2332	"	"	474+96	5"x8"x61" " " Twin		150.0	12165						
2532a	4	America	5+20	24"x48" Circular Culvert								48	
2532s	"	"	11+00	30"x48" " "									48
2532c	"	"	19+42	30"x48" " "									54
2532d	"	"	23+60	24"x60" " "								60	
2532f	"	"	30+95	24"x66" " "								66	
2532g	"	"	37+69	24"x66" " "								66	
2532e	"	"	43+71	30"x54" " "									54
2532h	"	"	46+64	24"x54" " "								54	
2532i	33	Elgin	68+00	30"x48" " "									48
Totals						956.8	84105	31430	94	366	252	54	
2132a	6	Fredonia	452+51	4"x5"x36" Cattle Pass		25.4	2620			Supersedes Design No. 2181 4-8-32			
2732	4	America	16+00	4"x6"x36" " "		28.6	2820			Added 15-15-32			

DESIGN	LOCATION			DESCRIPTION	SKEW	ESTIMATE OF QUANTITIES					
	SECTION	TOWNSHIP	STATION			SIZE AND TYPE	CONCRETE	REIN. STEEL	STRUCT. STEEL	PILING	CONC. PIPE
										24"	30"
				SIOUX COUNTY							
	132	32	Nassau	496+78	3x3x47' Box Culvert		193	1785			
	232	"	"	505+86	4x4x48' " "		262	2780			
	332	"	"	518+93	2x2x49' " "		141	1275			
*	432	"	"	524+93	4x3x51' " "		238	2595			
	532	"	"	542+30	60' x 24' I Beam Bridge	15°	302.4	27085	62680	78 @ 20'	
	632	28	"	568+00	4x2x39' Box Culvert		16.7	1800			
	732	"	"	587+79	6x4x39' " "		30.6	2975			
	832	"	"	592+98	4x3x39' " "		19.3	2120			
	932	"	"	603+00	2x2x48' " "		13.8	1250			
	1032	"	"	606+37	3x2x47' " "		16.4	1465			
	1132	21	"	644+39	5x5x31' " "		28.7	3090			
	1232	22	"	667+67	6x5x38' " "		27.7	2885			
	1332	15	"	687+23	4x4x40' " "		22.8	2420			
	1432	"	"	706+95	6x4x40' " "		31.1	3040			
	1532	"	"	715+00	3x3x38' " "		16.3	1520			
	1632	"	"	724+70	3x3x40' " "	45°	28.2	2630			
	1732	"	"	734+06	3x2x38' " "		13.7	1235			
	1832	10	"	752+68	10x5x44' " "	30°	69.3	6380			
A	2032A	29	"	555+00	24"x48' Circular Culvert						48'
	2032B	28	"	619+62	24"x54' " "	30°					54'
	2032C	21	"	623+26	30"x48' " "						48'
	2032D	22	"	659+70	24"x72' " "						72'
	2032E	15	"	693+03	24"x54' " "						54'
									</		



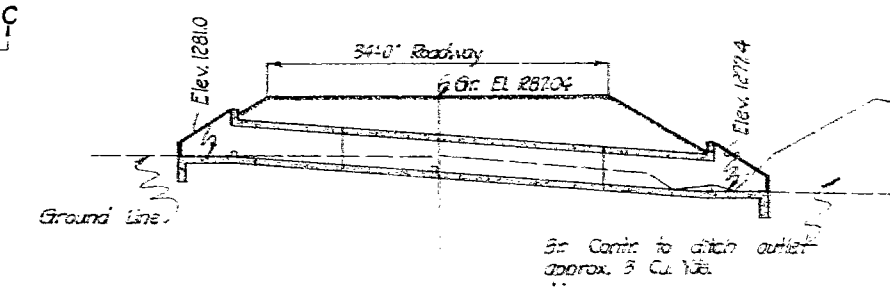
LONGITUDINAL SECTION C-C.



END ELEVATION

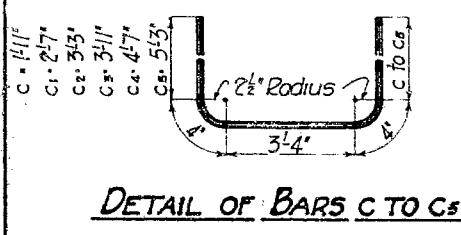
Bench Mark = N 932-5th 505+32-Spike in tele. pole - 60' Rt. Elev. 233.44

BILL OF REINFORCING STEEL & QUANTITIES									
Description - bars	Mark	Number	Size	Spacing	Length	Weight			
Walls: Vertical	a	96	3/4"	1'-0"	4'-0"	4.01			
Walls: Horiz. (center)	b	6	3/4"	1'-0"	25'-9"	16.1			
Walls: Horiz. (end)	b ₁	12	3/4"	1'-0"	15'-1"	20.0			
Wings: Vertical	c to c ₅	12	3/4"	1'-0"	Var.	13.9			
Footing: Longitud.	d	10	3/4"	1'-0"	24'-1"	30			
Slab: Long. (center)	e	2	3/4"	—	25'-9"	5.1			
Slab: Long. (end)	e ₁	4	3/4"	—	10'-8"	4.5			
Slab: Trans. (top)	k ₁	—	—	—	—	—			
Slab: Trans. (bottom)	k	49	3/4"	1'-0"	3'-9"	19.2			
Floor: Transverse	m	59	3/4"	1'-0"	4'-9"	23.2			
Floor: Long. (center)	f	4	3/4"	1'-4"	25'-9"	10.7			
Floor: Long. (end)	f ₁	8	3/4"	1'-4"	15'-1"	13.3			
Parapet: Vertical	i	8	3/4"	1'-0"	24'-1"	2.5			
Parapet: Longitud.	j	2	3/4"	—	5'-9"	8			
Reinforcing Steel Total Weight						178.7			
Concrete Cu. Yds.						19.3			



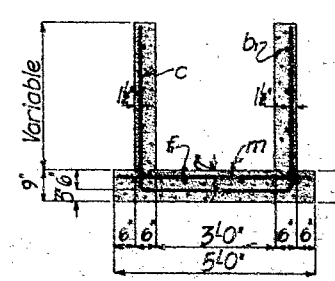
SITUATION PLAN
Scale 1/4" = 1'-0"
Drainage area 30 acres very hilly.

Design for:
3'x3' BOX CULVERT
Reinforced Concrete
Station 496+78 - Fed Aid Proj No 342
SIoux COUNTY
Iowa State Highway Commission
January 1932
Scale as noted

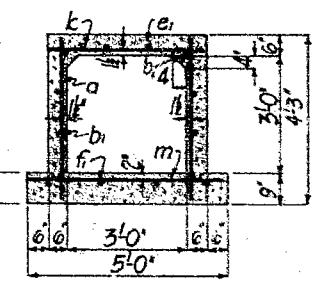


DETAIL OF BARS C TO C5

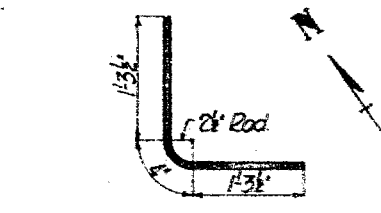
General Notes:-
Construction joint formed by a 2x4 keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
If longitudinal bars are spliced use a 50 diameter lap.
All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.
Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.



CROSS SECTION B-B.
Scale 1/4" = 1'-0"



CROSS SECTION A-A.
Scale 1/4" = 1'-0"



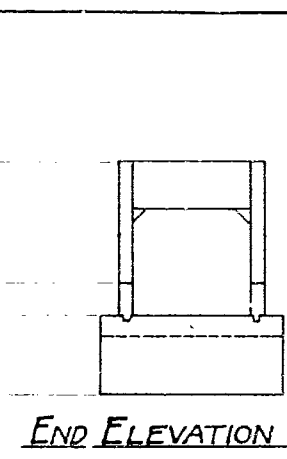
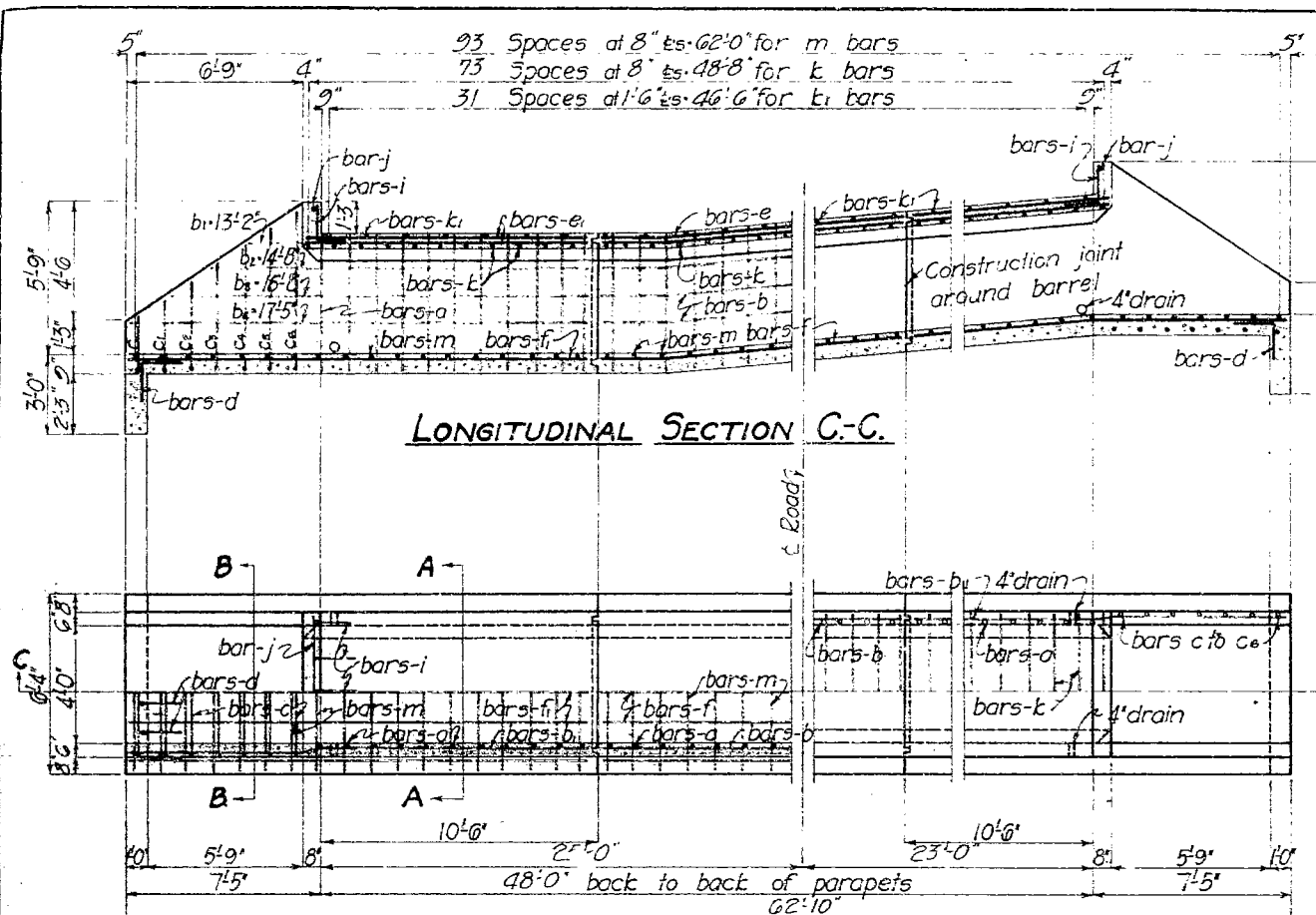
DETAIL OF BARS i & d

Location
Section 32
Nassau Twp.
Sioux Co.

(Floor 3" Wings 4")
Wings, parapets, curtain-floor - 3.80 Cu. Yds.

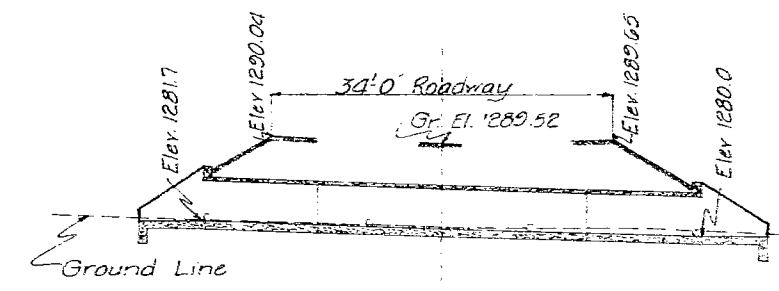
[2] 36" Box Culvert for 228

Design No. - 32-Sioux County

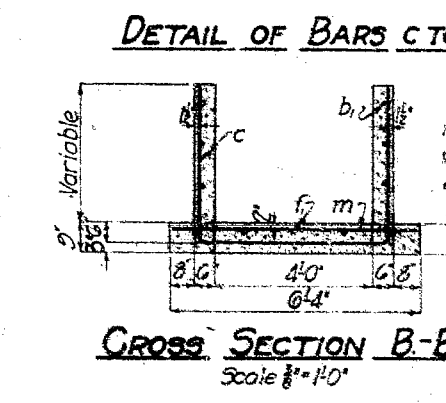
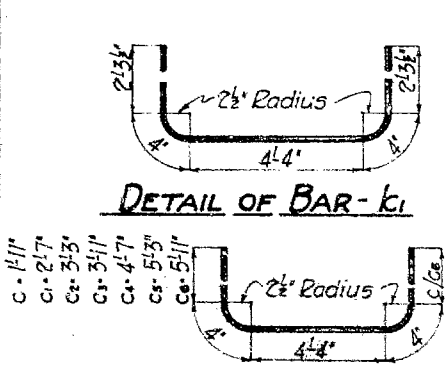
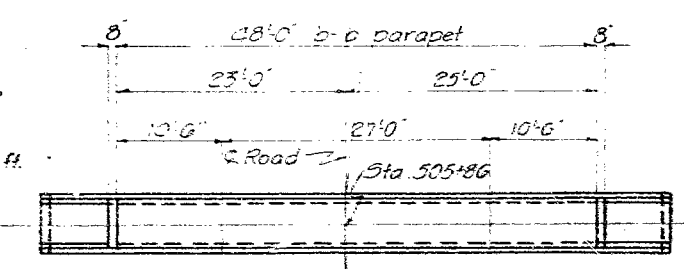


BILL REINFORCING STEEL QUANTITIES									
Description - bars	Mark	Number	Size	Spacing	Length	Weight			
Walls: Vertical	a	98	1/2"	10'	5'0"	511			
Walls: Horiz (center)	b	8	1/2"	10'	26'9"	223			
Walls: Horiz (end)	b	16	1/2"	10'	10'	255			
Wings: Vertical	c to e	14	1/2"	10'	10'	187			
Footing: Longitud	d	12	1/2"	10'	2'11"	36			
Slab: Long (center)	e	5	1/2"	—	26'9"	140			
Slab: Long (end)	e	10	1/2"	—	10'8"	112			
Slab: Trans (top)	k	32	1/2"	16'	9'7"	520			
Slab: Trans (bottom)	k	74	1/2"	8'	2'9"	235			
Floor: Transverse	m	94	1/2"	8'	6'11"	382			
Floor: Long (center)	f	5	1/2"	1'3"	26'9"	140			
Floor: Long (end)	f	10	1/2"	1'3"	17'5"	181			
Parapet: Vertical	i	10	1/2"	10'	2'11"	30			
Parapet: Longitud	j	2	1/2"	—	4'9"	10			
Reinforcing Steel Total Weight						2762			
Concrete Cu Yds.						26.2			

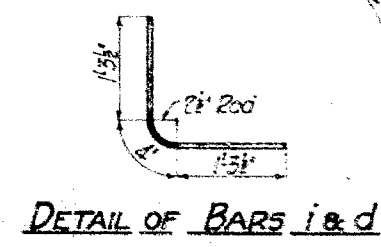
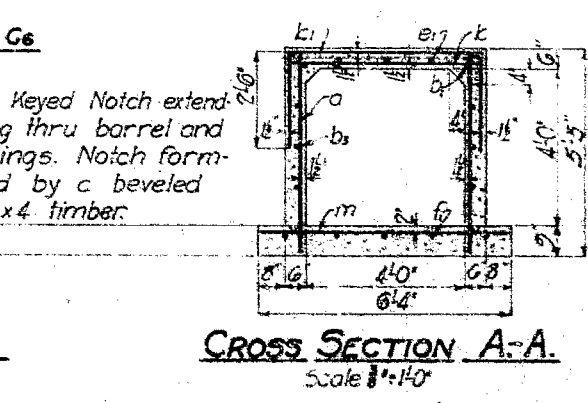
Bench Mark: - #32 Sta. 505+32 Spike in tel. pole 60' Rt.
 Elev. 1283.44



Horiz. Curve Data:
 Δ = 20° 16'
 D = 1° 56' Rt.
 T = 692.6
 L = 1361.0
 E = 79.7
 PC = Sta. 505+32.2
 PT = Sta. 512+24.8
 PI = Sta. 508+28.5
 Super = 258' per ft.



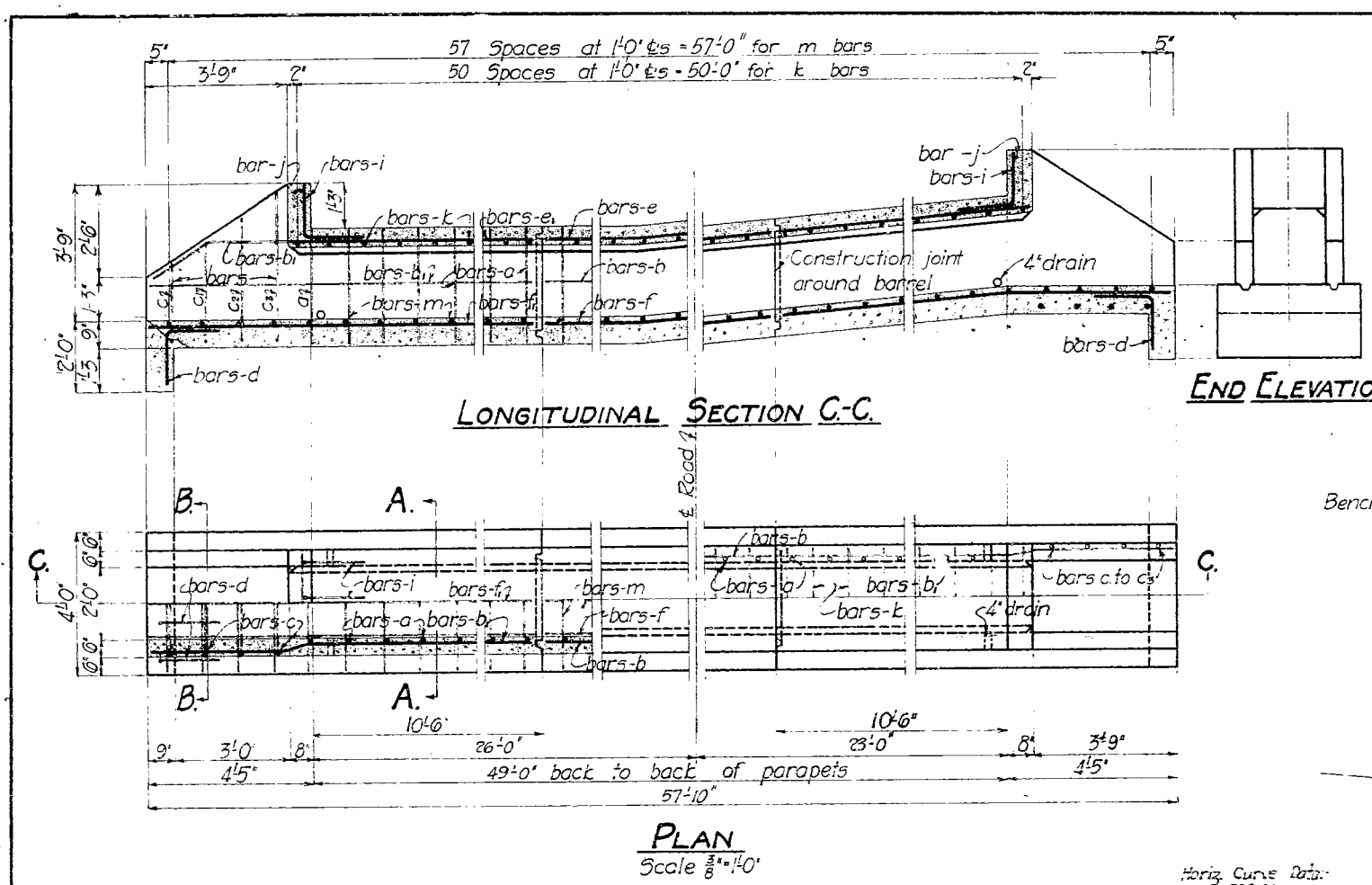
General Notes:-
 Construction joint formed by a 2x4 keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joint.
 If longitudinal bars are spliced use a 50 dia. lap.
 All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.
 Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.



Location
 Section 32
 Nassau Twp.
 Sioux Co.

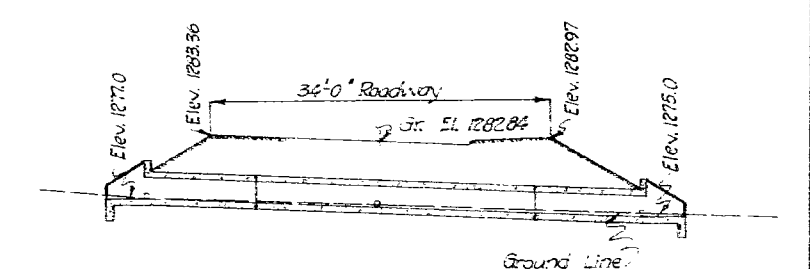
Design for
4'x4' BOX CULVERT
 Reinforced Concrete
 Station 505+86 Fed Aid Proj No. 342
 SIOUX COUNTY
 Iowa State Highway Commission
 Jan. 1932 Scale as noted

Design No. 232 Sioux County

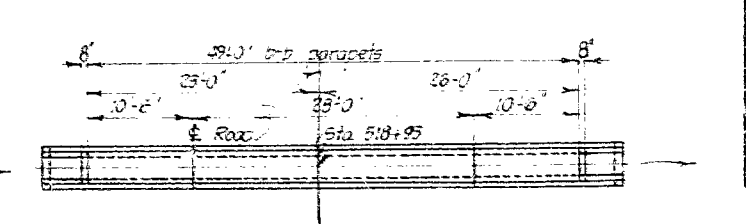


BILL REINFORCING STEEL & QUANTITIES						
Description - bars	Mark	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	100	$\frac{3}{8}''$	1'-0"	3'-0"	313
Walls: Horiz (center)	b	4	$\frac{3}{8}''$	1'-0"	27'-9"	116
Walls: Horiz (end)	b ₁	8	$\frac{3}{8}''$	1'-0"	14'-5"	120
Wings: Vertical	c to c ₃	8	$\frac{3}{8}''$	1'-0"	Var	73
Footing: Longitud.	d	8	$\frac{3}{8}''$	1'-0"	2'-11"	25
Slab: Long (center)	e	1	$\frac{3}{8}''$	—	27'-9"	29
Slab: Long (end)	e ₁	2	$\frac{3}{8}''$	—	10'-8"	23
Slab: Trans (top)	k	—	—	—	—	—
Slab: Trans (bottom)	k	51	$\frac{3}{8}''$	1'-0"	2'-9"	146
Floor: Transverse	m	58	$\frac{3}{8}''$	1'-0"	3'-9"	227
Floor: Long (center)	f	3	$\frac{3}{8}''$	1'-1"	27'-9"	87
Floor: Long (end)	f ₁	6	$\frac{3}{8}''$	1'-1"	14'-5"	90
Parapet: Vertical	i	2	$\frac{3}{8}''$	1'-0"	2'-3"	8
Parapet: Longitud.	j	2	$\frac{3}{8}''$	—	2'-3"	6
Reinforcing Steel Total Weight						1273
Concrete Cu Yds.						141

Bench Mark: - No 33 Sta. 522+70 Spike in telegraph pole - Rt. Elev. 1279.12



Horiz. Curve Data:
 $\Delta = 26^\circ 16'$
 $D = 1^\circ 56' R$
 $T = 892.6$
 $L = 1361.0$
 $E = 79.7$
 $PC = Sta 505+32.2$
 $PI = Sta 512+24.3$
 $PT = Sta 518+93.2$
 $Super = 0.032$

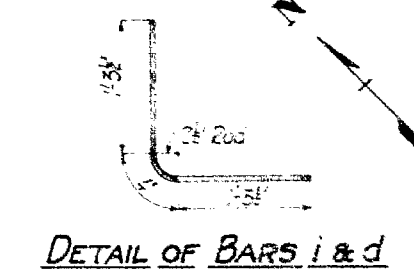


General Notes:-
 Construction Joint formed by 2x4 keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
 If longitudinal bars are spliced use a 50 dia lcp.
 All exposed corners of 90° or sharper to be filletted with a 1" dressed beveled strip.
 Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.

DETAIL OF BARS C TO C₃

CROSS SECTION B-B.
Scale $\frac{1}{2}'' = 1'-0''$

CROSS SECTION A-A.
Scale $\frac{1}{2}'' = 1'-0''$



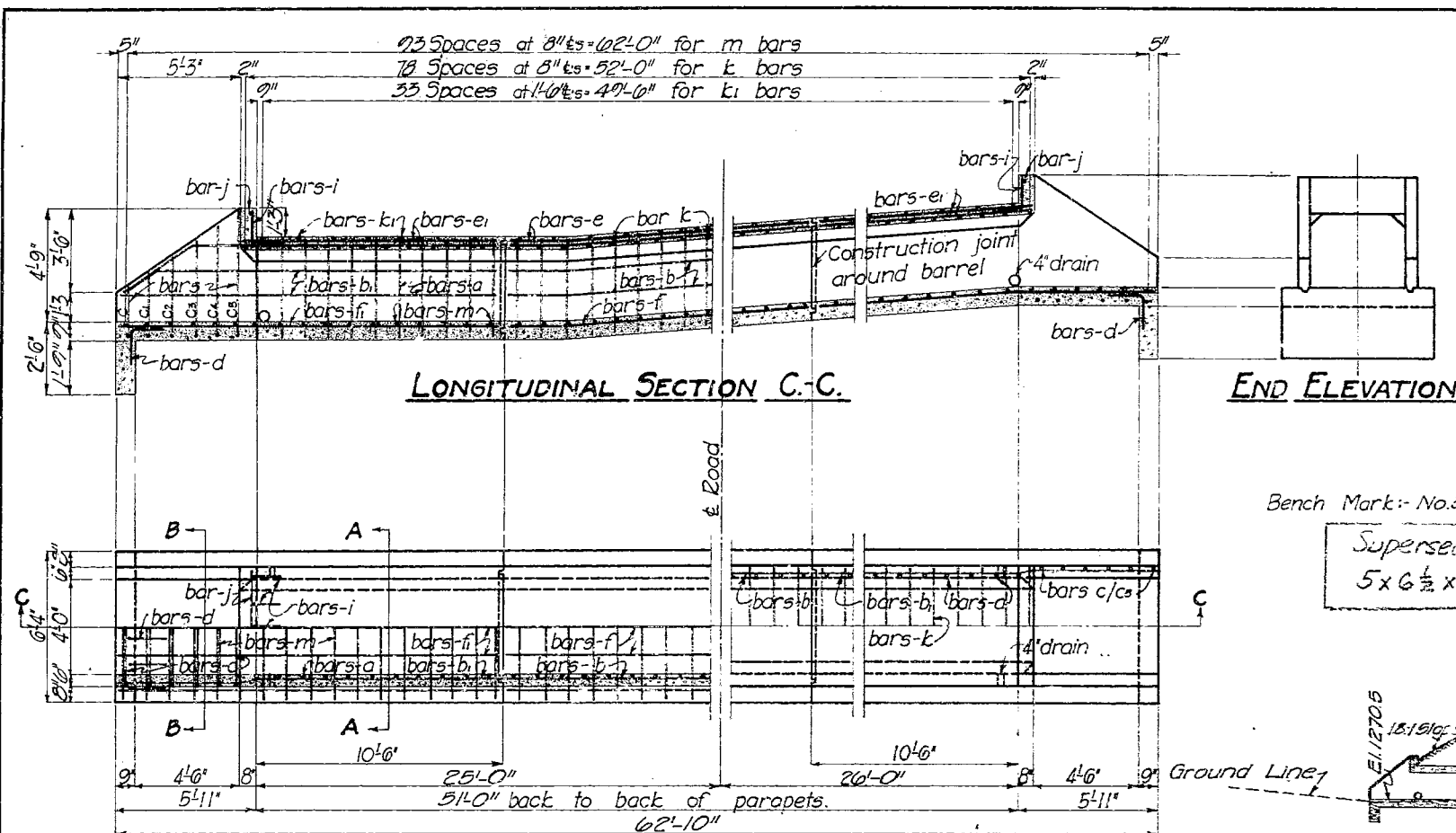
DETAIL OF BARS i & d
Location: Section 52, Vossau Trp, Sioux Co.

Design for
2'x2' BOX CULVERT
 Reinforced Concrete
 Station 518+93- Fed Aid Proj No 342
SIoux COUNTY
 Iowa State Highway Commission
 January 1952 Scale as noted

Design No 532-Sioux County

Wings, parapets, curbs - floor - 25' Cu Yds

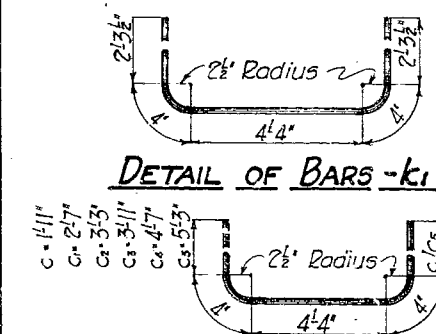
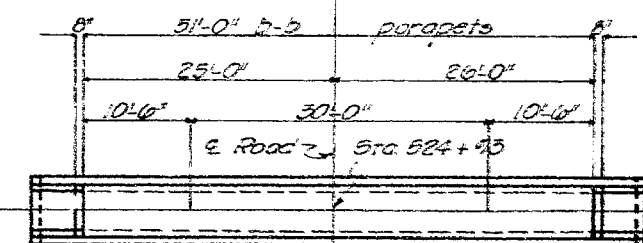
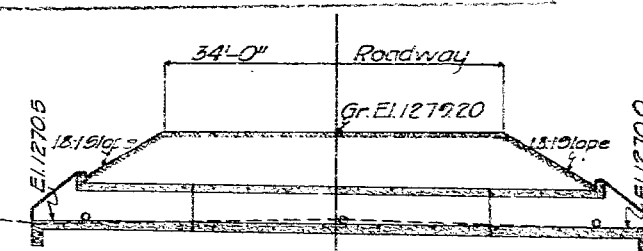
1 2'x2' Box Culvert, Jan 1952



BILL REINFORCING STEEL QUANTITIES						
Description-bars	Mark	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	104	3/8"	1'-0"	4'-0"	434
Walls: Horiz (center)	b	6	3/8"	1'-0"	29'-9"	186
Walls: Horiz (end)	b ₁	12	3/8"	1'-0"	15'-1"	198
Wings: Vertical	c-bc	12	3/8"	1'-0"	Var.	152
Footing: Longitud.	d	12	3/8"	1'-0"	2'-11"	36
Slab: Long (center)	e	5	3/8"	—	29'-9"	155
Slab: Long (end)	e ₁	10	3/8"	—	10'-8"	112
Slab: Trans (top)	k	34	3/8"	1'-6"	9'-7"	340
Slab: Trans (bottom)	k	94	3/8"	8"	4'-9"	298
Floor: Transverse	m	70	3/8"	8"	6'-11"	321
Floor: Long (center)	f	5	3/8"	1'-3"	29'-9"	155
Floor: Long (end)	f ₁	10	3/8"	1'-3"	15'-1"	166
Parapets: Vertical	i	10	3/8"	1'-0"	2'-11"	30
Parapet: Longitud.	j	2	3/8"	—	2'-9"	10
Reinforcing Steel Total Weight						2593
Concrete Cu Yds.						23.8

Bench Mark: No. 33 Sta 522+70. Spike in tel. pole 60' Rt. - El. 1279.12.

Superseded by Design 4329
 5x6 1/2 x 39 - Cattle Pass. 4-8-32

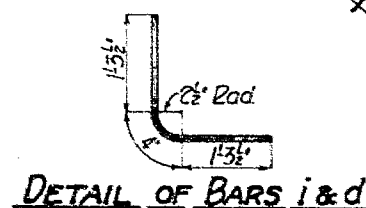
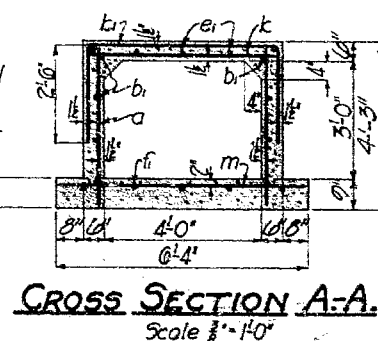
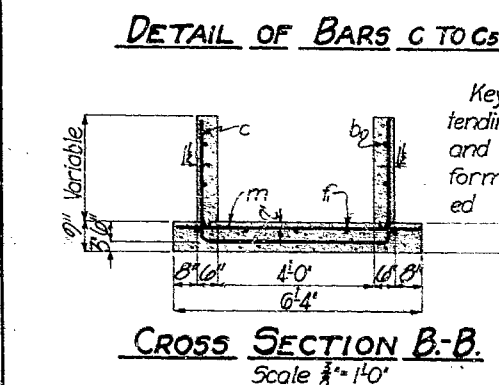


General Notes:-

Construction joint formed by a 2x4 keyed notch to be placed in barrel as shown Reinforcing bars not to extend thru joints.

If longitudinal bars are spliced use a 50 dia. lap. All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.

Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.



Location
 Section 32
 Nassau Twp.
 Sioux County

SITUATION PLAN
 Scale 1/4" = 1'-0"

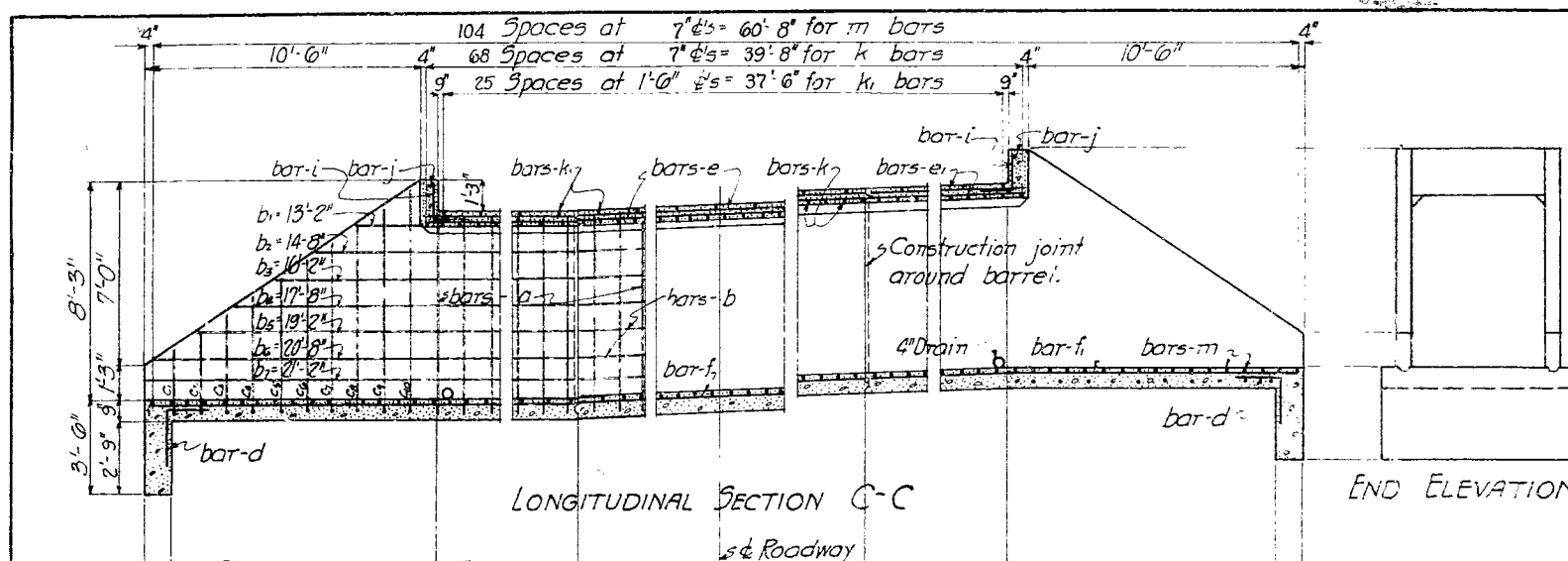
Design for
4'x3' BOX CULVERT
 Reinforced Concrete
 Station 524+73. Fed. Aid Proj. No. 342
SIoux COUNTY
 Iowa State Highway Commission.
 Jan. 1932. Scale as noted

Wings, parapets, curtain floor 32. 4.44 Cu. Yds.
 11" dia. 4.88 C.Y.

5 4'x3' Box Culvert Jan. 1928

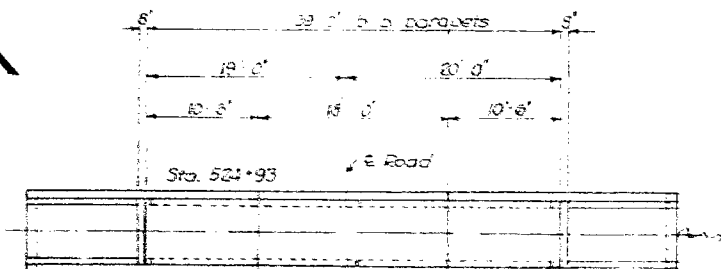
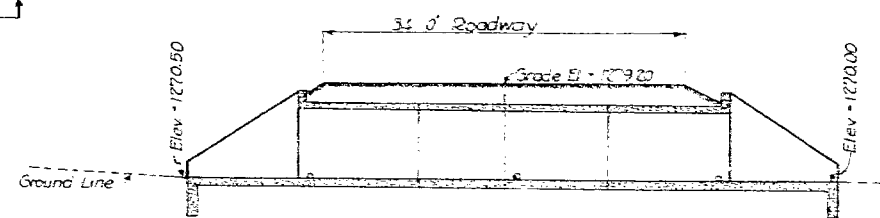
Design No. 432. Sioux County

L.J.

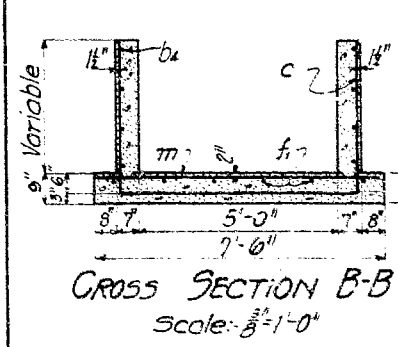
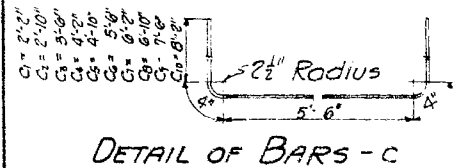
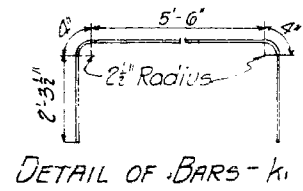
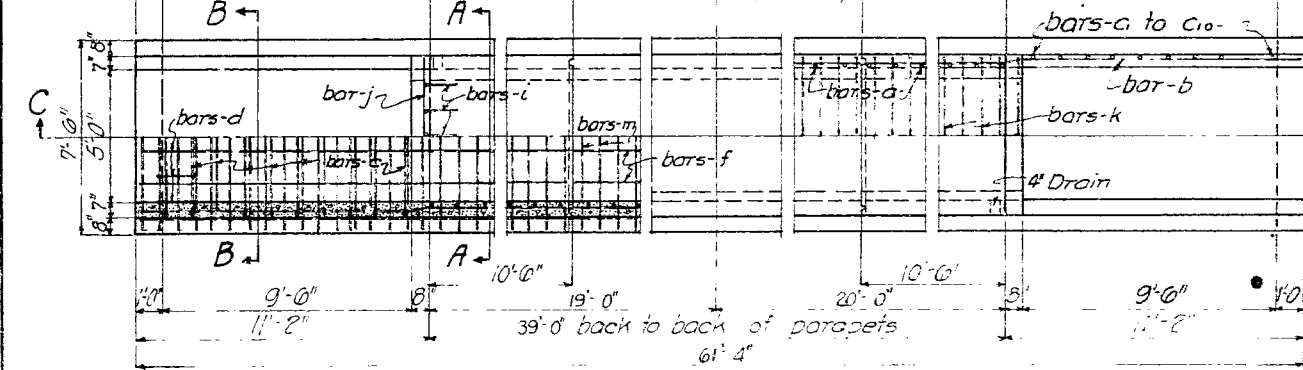


BILL REINFORCING STEEL & QUANTITIES									
Description - Bars	Mark Number	Size	Length	Weight					
Walls: Vertical	a	80	7'-6"	626					
Walls: Hor. (center)	b	14	17'-9"	259					
Walls: Hor. (ends)	b ₁	28	17'-9"	512					
Wings: Vertical	c, c ₁	20	17'-9"	344					
Footings: Longitud.	d	12	2'-7"	96					
Slab: long (center)	e	5	17'-9"	93					
Slab: long (ends)	e ₁	10	10'-8"	112					
Slab: Trans. (top)	k ₁	26	10'-9"	292					
Slab: Trans. (bottom)	k	69	5'-11"	273					
Floor: Transverse	m	105	7'-3"	508					
Floor: long (center)	f	6	17'-9"	111					
Floor: long (ends)	f ₁	12	21'-2"	265					
Parapet: Vertical	i	10	2'-11"	50					
Parapet: long	j	2	5'-11"	12					
Reinforcing Steel Total Weight				3473					
Concrete Cu. Yds.				35.0					

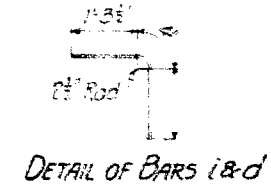
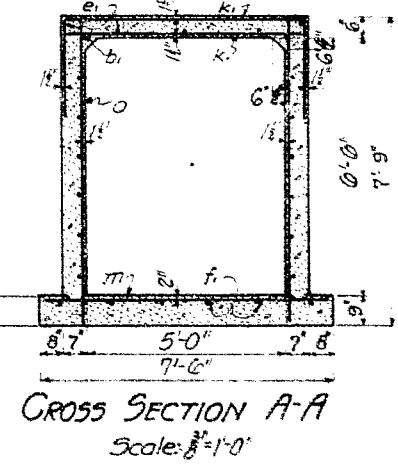
Bench Mark: -+33 Sta. 522+70 Spike in telephone pole, 60 Ft.
 Elev. = 1279.12



Drainage Area - 60 Acres - Very Rolling
 This design supersedes Design No. 432
 Design for
5'x6 1/2" CATTLE PASS
 Reinforced Concrete
 Station 524+93 Primary Road Project No. 342
SIoux COUNTY
 Iowa State Highway Commission
 April 4, 1932 Scales as noted



GENERAL NOTES: Construction joints formed by a 2"x2" keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
 If longitudinal bars are spliced use a 50 diam. lap.
 All exposed corners 90° or less to be filled with a 1" dressed beveled strip.
 Standard Specifications of the Iowa State Highway Commission, Series of 1930 for construction.



Location
 Section 32
 Nassau Twp.
 Sioux Co.

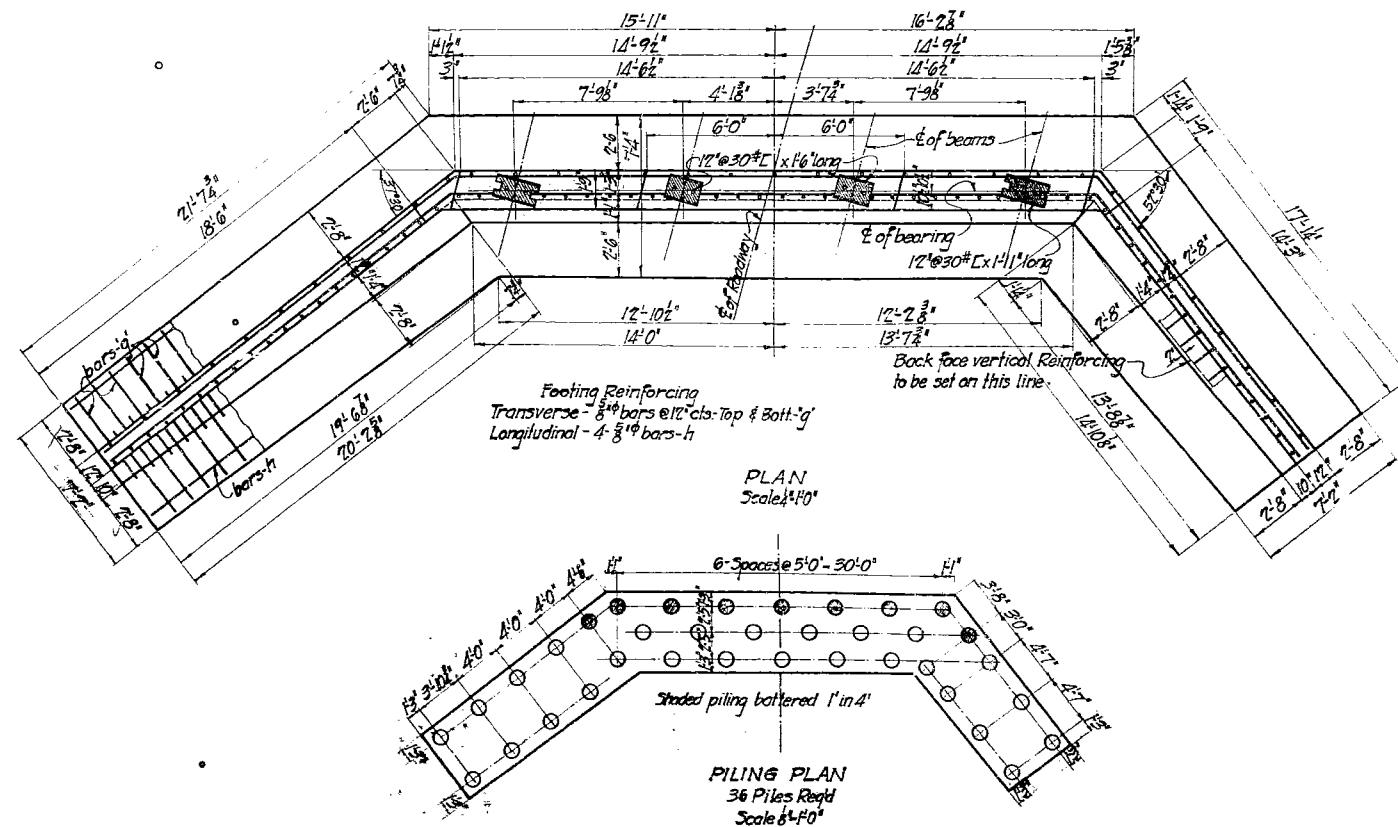
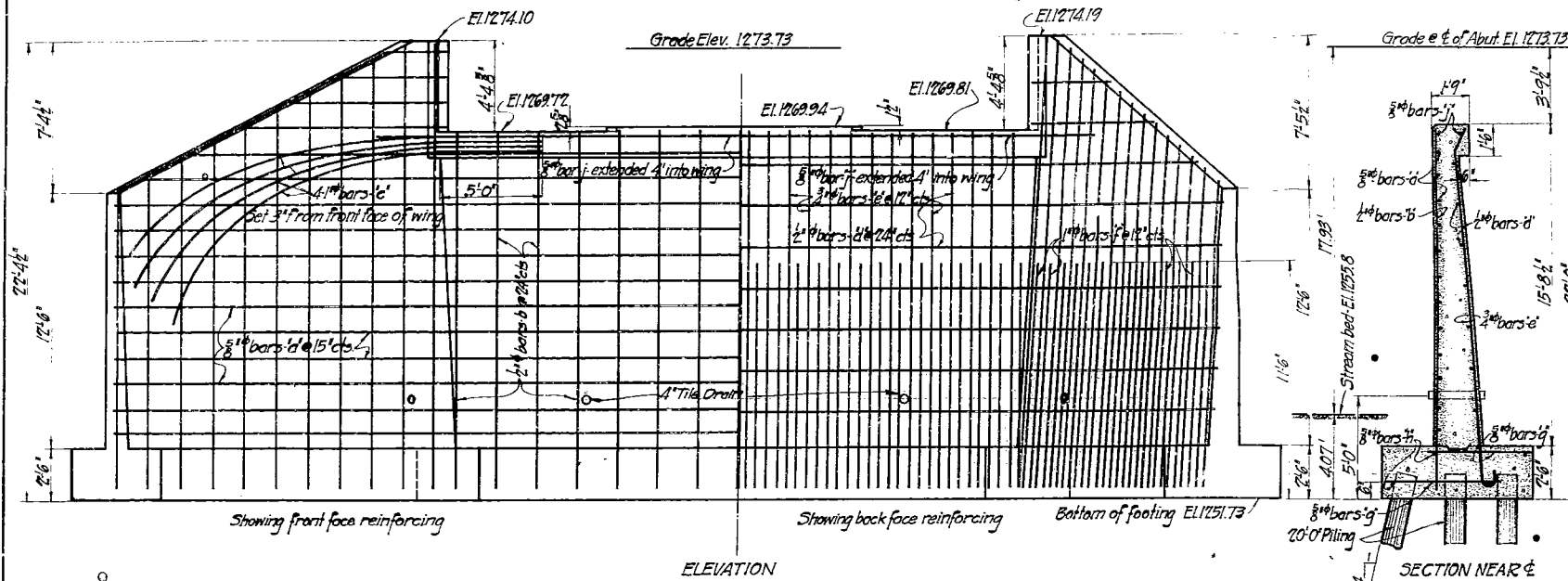
Wings, Parapets, Curbs for 9" floor = 11.3 Cu. Yds.

5'x6 1/2" Cattle Pass, May 1928

L.R.C.

11.44

3.M. No. 34- Spike in Telegraph pole, 60' Right of Sta. 538+70, El. 1280.11



General Notes:

Abutment details shown on this sheet are for the North East Abutment only. For details of South West abutment, see Sheet No. 2.

Superstructure details are shown on Sheet No. 3.

Horizontal bars in abutment may be spliced at or near E. Bars to be lapped 50 dia. for all splices. All hooked bars to have a standard 16 diameter hook.

All exposed corners 90° or sharper to be filled with a 1" dressed beveled strip, unless shown otherwise.

Boring diagram is shown for design purposes only and is not guaranteed for construction.

Standard Specifications of the Iowa State Highway Commission, Series of 1930.

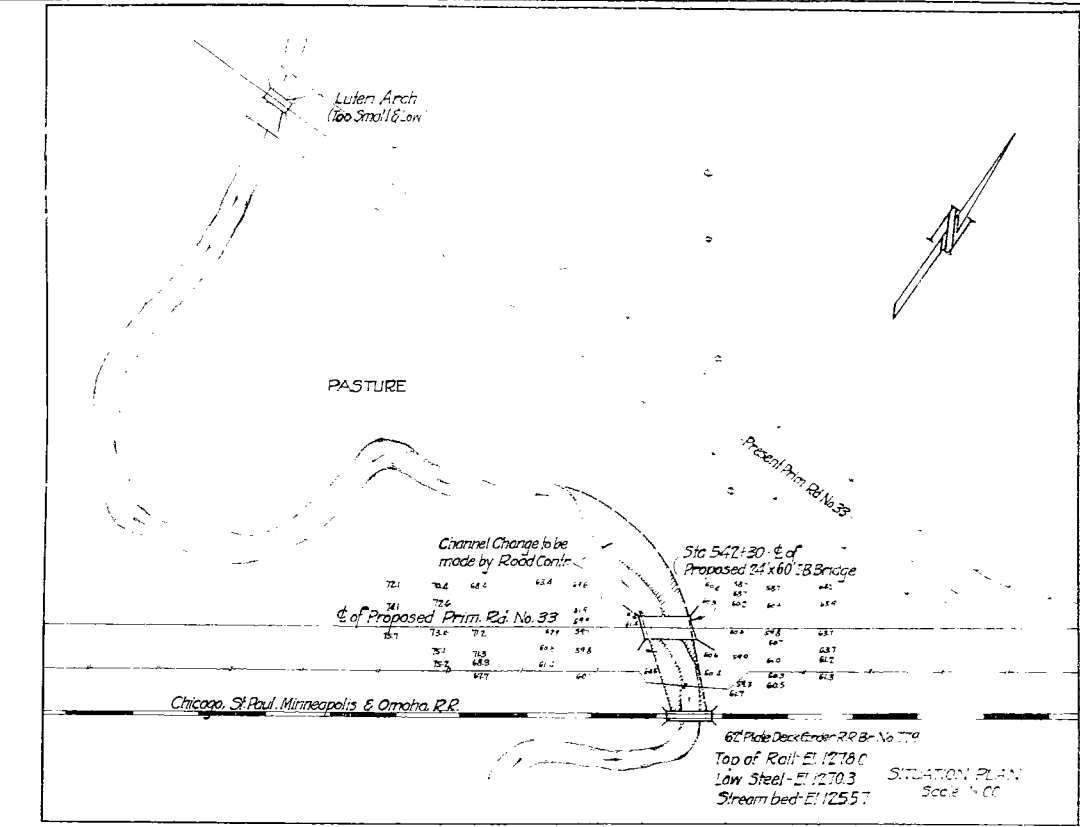
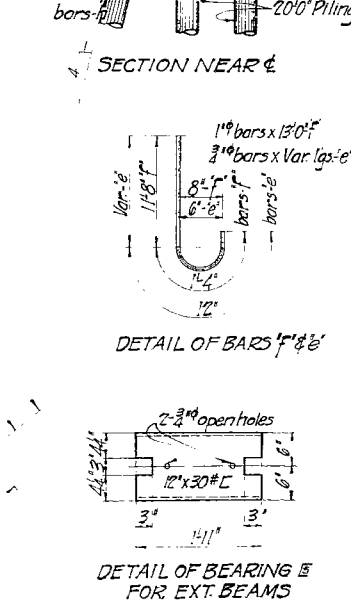
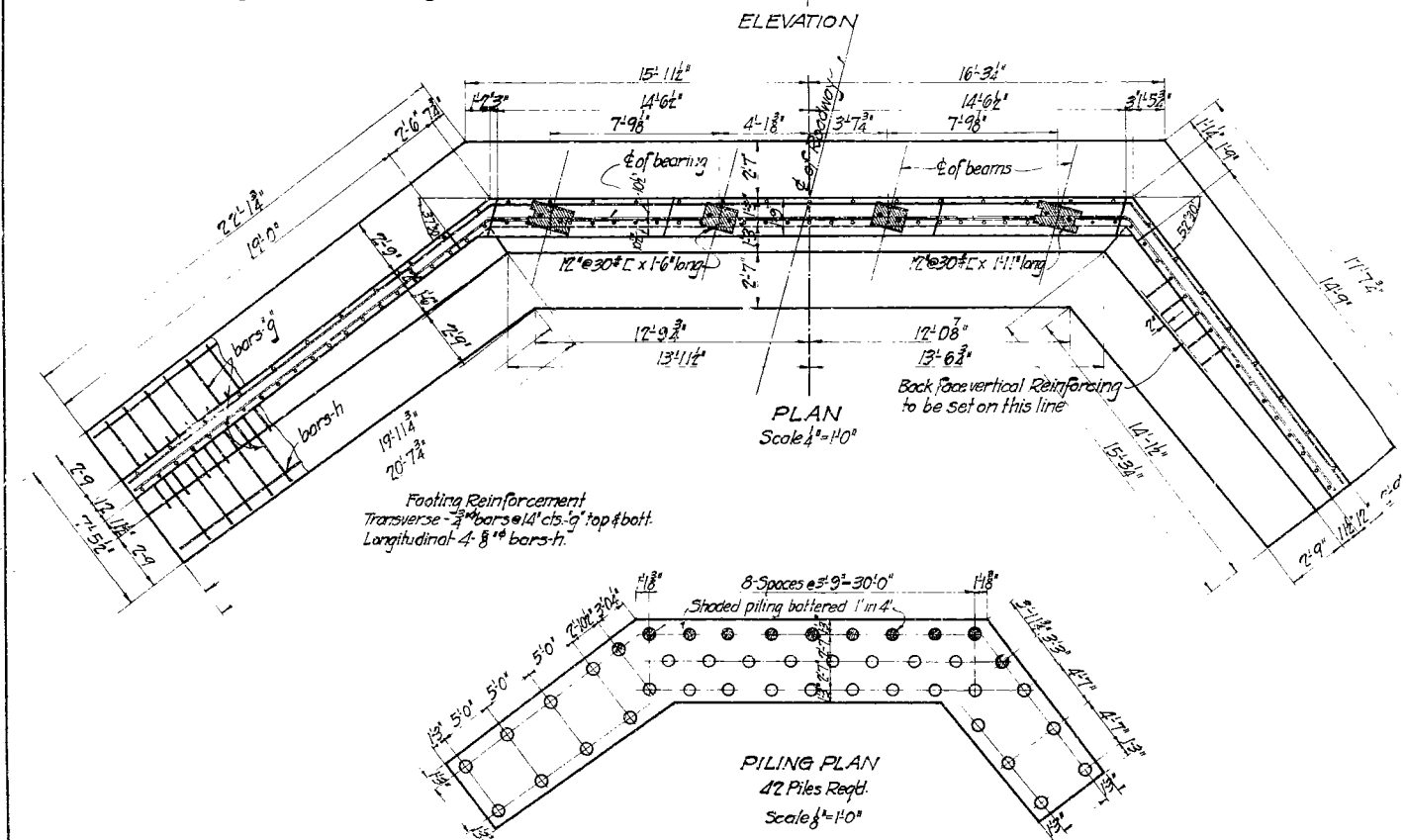
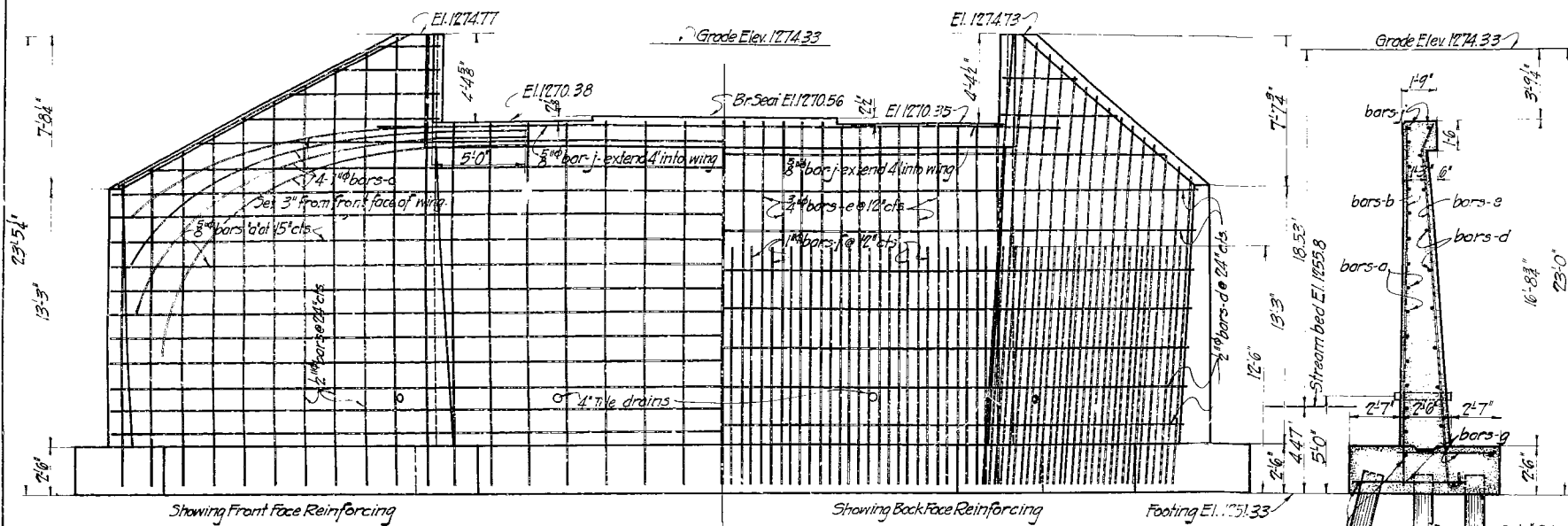
ESTIMATED QUANTITIES				
Part	Cone	Rein. Steel	Stone	Piling
SW Abutments	119.4	791.5	205	42.0
NE Abutments	109.5	7200	205	36.0
Superstructure	79.5	12560	62.70	
Totals	308.4	27685	62680	78.0

Design for
60'x24'-5" SKEWED I-BEAM BRIDGE
With Concrete Floor and Abutments
N.E. ABUTMENT DETAILS
Station 542+30 F.A. Project No. 342
SIOUX COUNTY
Iowa State Highway Commission
February 1932 Scales as noted
Sheet 1 of 3

Bridge No.
Section 32
Mossou Twp.
Sioux County

Design No. 532 Sioux County
BRR 911

B.M. No. 34- Spike in Telegraph Pole 60' R of Sta. 538+70. El. 1280.11



General Notes:
Abutment details shown on this sheet are for the South West Abutment only. For details of North East Abutment see Sheet No. 1.
Horizontal bars in abutment may be spliced at or near E. Bars to be lapped 50 dia. for all splices. All hooked bars to have a standard 16 diameter hook as detailed.
All exposed corners 90° or sharper to be filleted with a 1" dressed beveled strip, unless shown or noted otherwise.
Bridge contractor to back fill abutments, front and back, to Elev. 1258.0
Standard Specifications of the Iowa State Highway Commission, Series of 1930.

ESTIMATED QUANTITIES

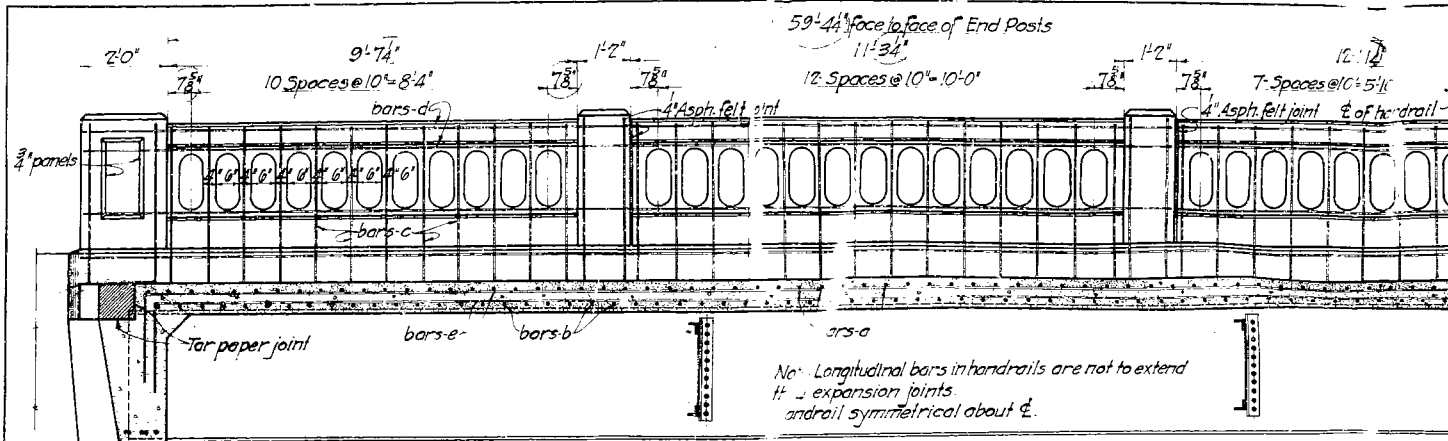
Concrete Cu. Yds.	119.4
Reinforcing Steel - Lbs.	7925
Structural Steel - Lbs.	205
Piling - Lin. Ft.	42 @ 20 = 840

Bridge No.
Section 32
Nassau
Sioux County

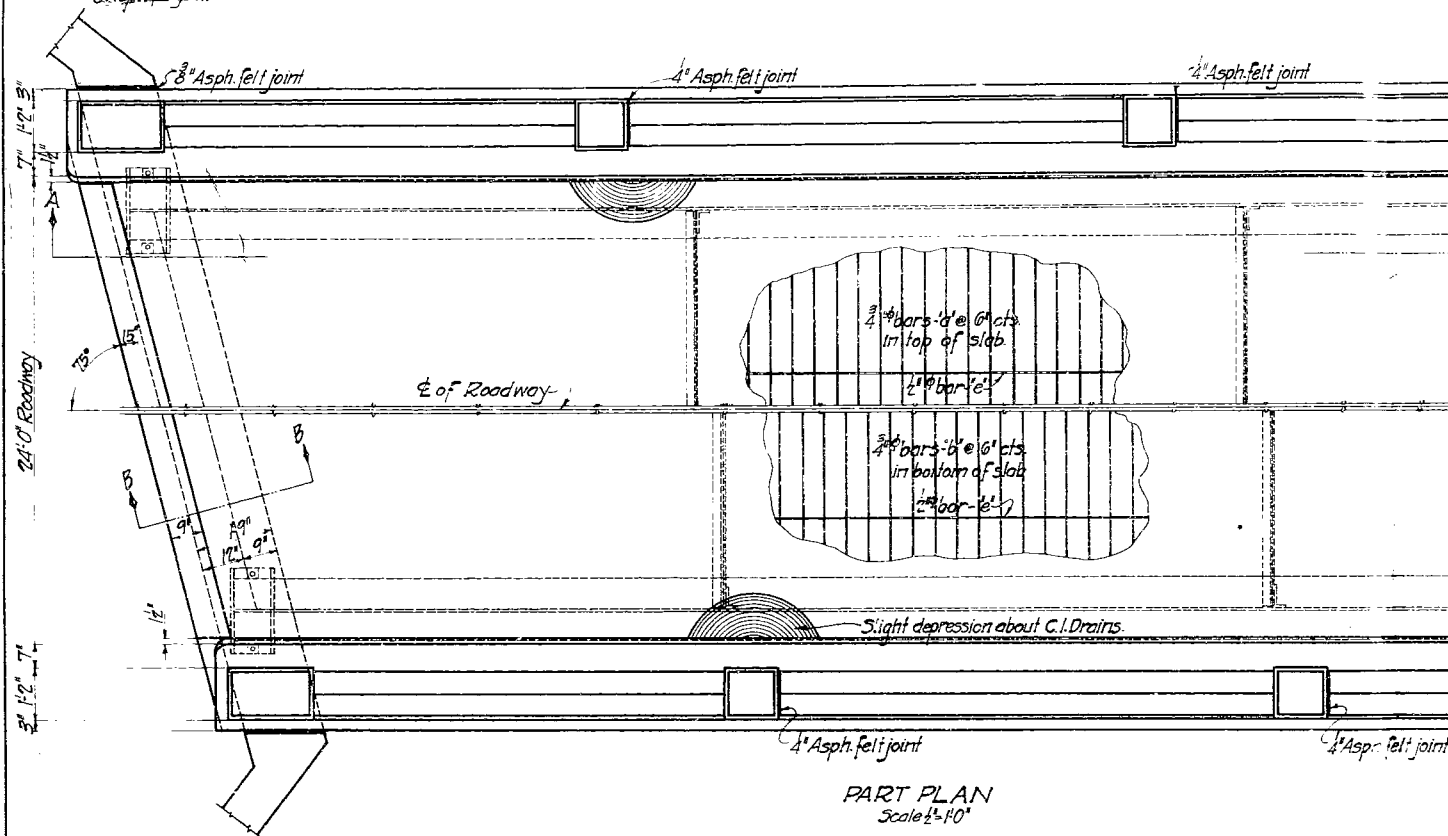
Design for
60' x 24'-15" SKEWED I-BEAM BRIDGE
With Concrete Floor and Abutments
SW ABUTMENT DETAILS
Sta. 542+30 F.A. Project No. 362
SIOUX COUNTY
Iowa State Highway Commission
February 1932 Scales as noted
Sheet 2 of 3

Design No. 532 Sioux County
B.R.R. G.W.

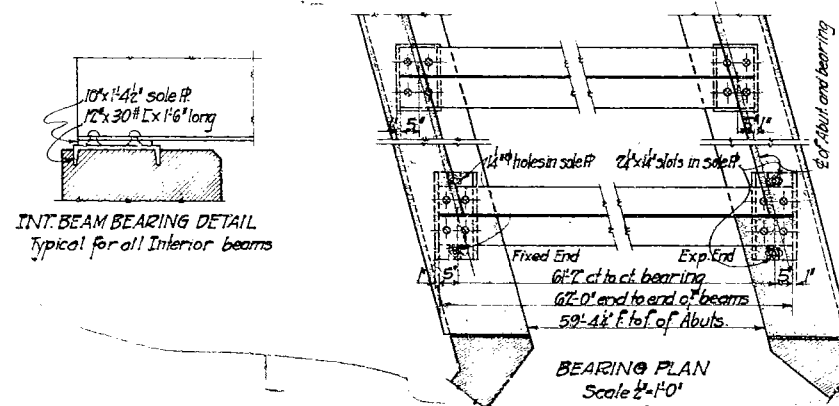
2/3



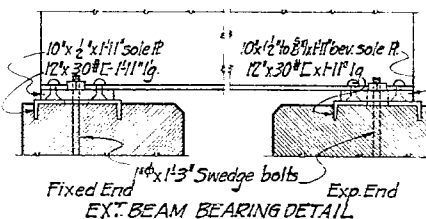
LONGITUDINAL SECTION A-A



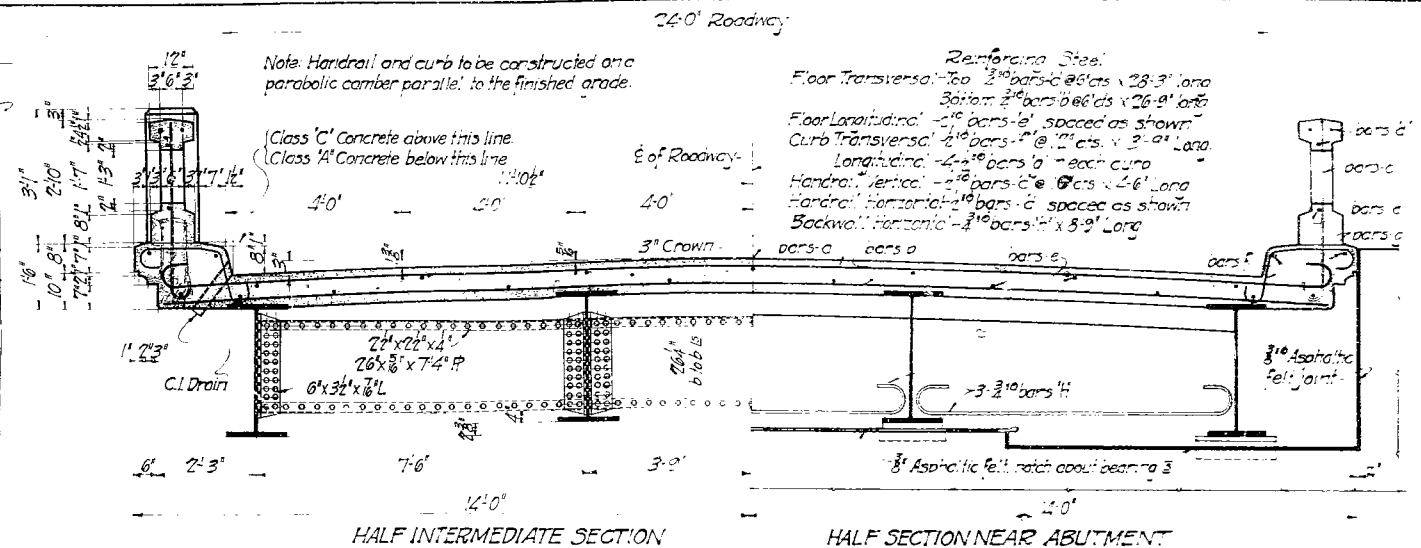
PART PLAN
Scale 1/4"=1'-0"



BEARING PLAN
Scale 1/4"=1'-0"

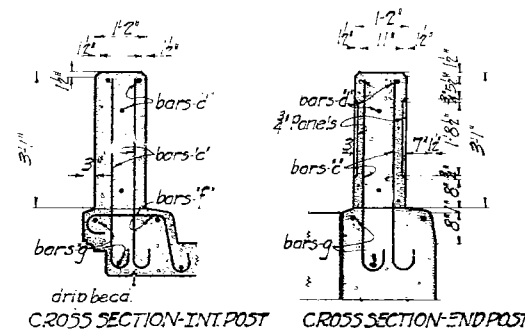


INT. BEAM BEARING DETAIL
Typical for all interior beams



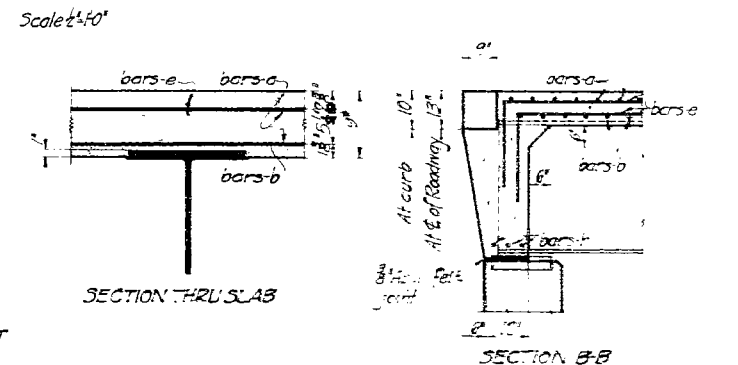
HALF INTERMEDIATE SECTION

HALF SECTION NEAR ABUTMENT



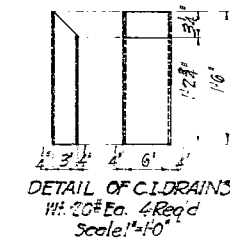
CROSS SECTION-INT. POST

CROSS SECTION-END POST

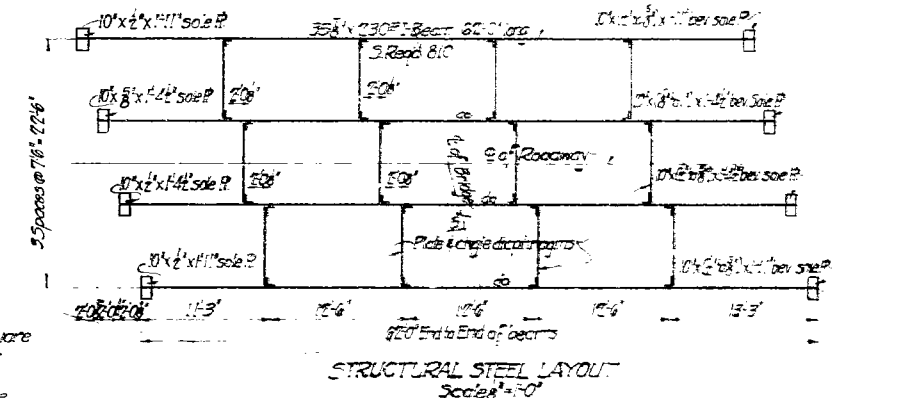


SECTION THRU SLAB

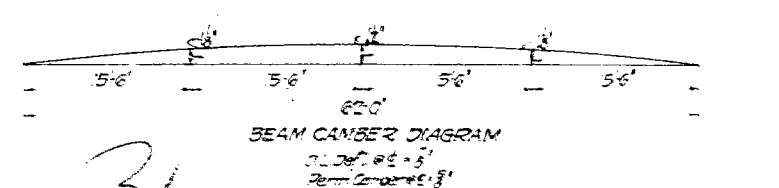
SECTION B-B



DETAIL OF C.I. DRAINS
1/4"=1'-0"



STRUCTURAL STEEL LAYOUT
Scale 1/4"=1'-0"



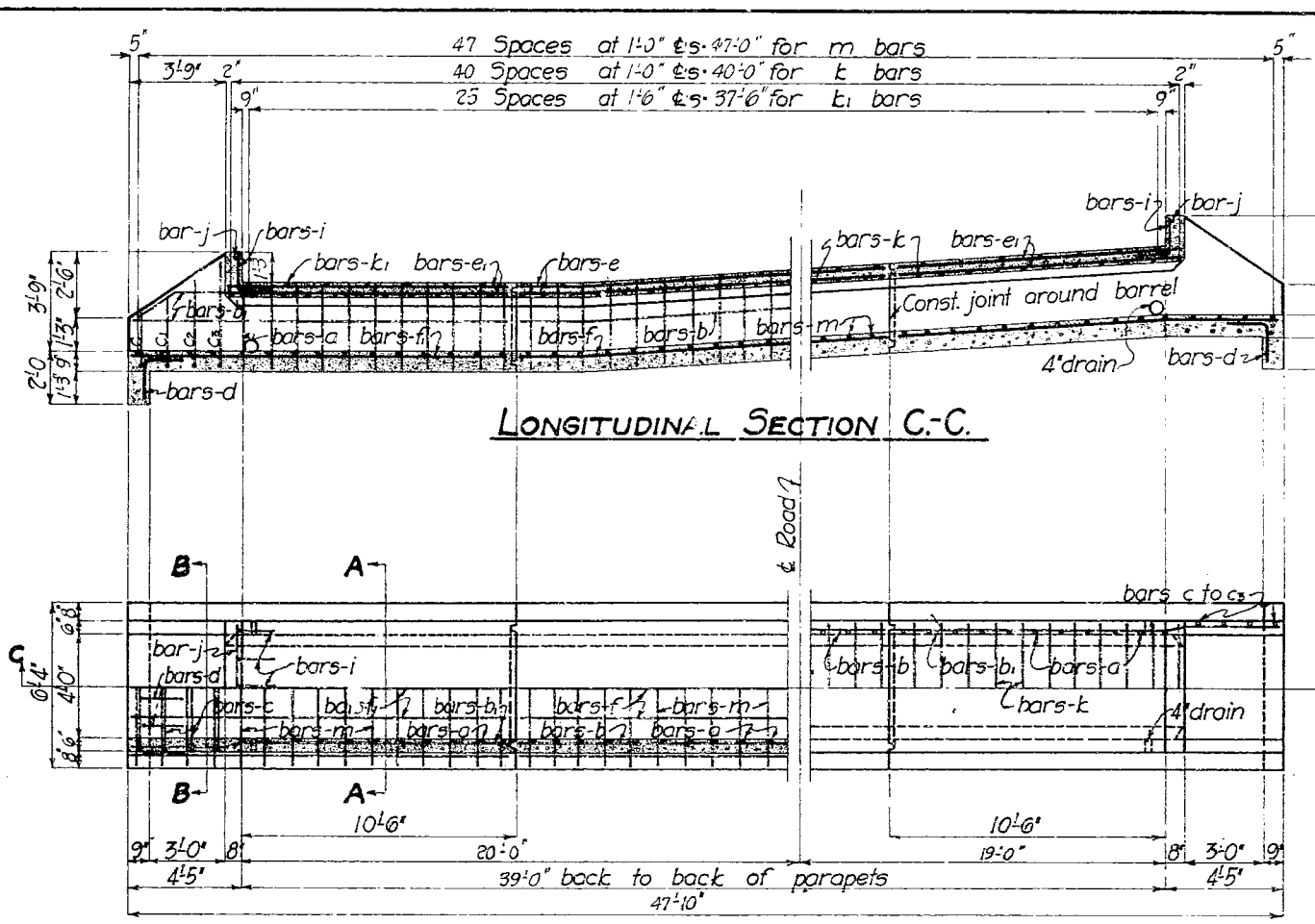
BEAM CAMBER DIAGRAM
Scale 1/4"=1'-0"

General Notes:
This bridge is designed for Class 'A' loading plus 38¢ per square foot of roadway for future wearing surface. Floor as shown includes 1" of wearing surface.
Reinforcing steel to be securely wired in position before the concrete is placed. Longitudinal bars in handrails are not to extend thru expansion joints. Longitudinal bars in floor and curb may be spliced using a 50 diameter lap. All hooked bars to have a standard 16 diameter hook.
All corners of the concrete 90° or sharper to be chamfered 1" unless shown otherwise.
Shop coat of paint to be omitted from tops of top flanges of all beams.
Rivets and bolts to be 3/4". All field connections to be bolted. Bolts to be furnished 50¢ in excess of number required. Forms to be supported by the beams.
Standard Specifications of the Iowa State Highway Commission, Series of 1930.

ESTIMATED QUANTITIES	
Class 'A' Concrete Cu Yds	64.5
Class 'C' Concrete Cu Yds	9.0
Reinforcing Steel Lbs	7560
Structural Steel Lbs	62270

Bridge No.
Section 32
Nassau
Sioux County

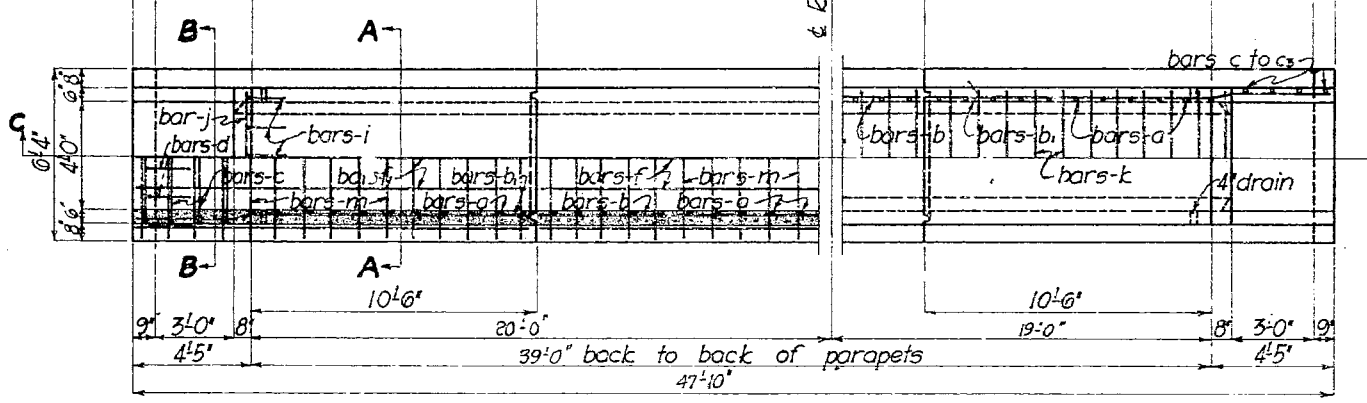
Design for
60x24-15° SKEWED T-BEAM BRIDGE
with Concrete Floor and Substructure
SUPERSTRUCTURE DETAILS
Sta. 542+30 F.A. Project No. 542
SIOUX COUNTY
Iowa State Highway Commission
February 1932 Scales as noted
Sheet 3 of 3



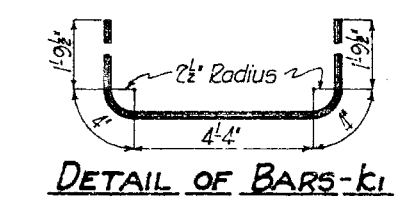
END ELEVATION

BILL REINFORCING STEEL & QUANTITIES						
Description: bars	Mark	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	30	3/8"	1'-0"	3'-0"	250
Walls: Horiz. (center)	b	4	3/8"	1'-0"	17'-9"	74
Walls: Horiz. (end)	b1	8	3/8"	1'-0"	14'-5"	120
Wings: Vertical	c-foc3	8	3/8"	1'-0"	Var.	90
Footing: Longitud.	d	12	3/8"	1'-0"	2'-11"	36
Slab: Long. (center)	e	5	3/8"	—	17'-9"	93
Slab: Long. (end)	e1	10	3/8"	—	10'-8"	111
Slab: Trans. (top)	k1	26	3/8"	1'-6"	8'-7"	233
Slab: Trans. (bottom)	k	41	3/8"	1'-0"	4'-9"	203
Floor: Transverse	m	48	3/8"	1'-0"	6'-11"	305
Floor: Long. (center)	f	5	3/8"	1'-3"	17'-9"	93
Floor: Long. (end)	f1	10	3/8"	1'-3"	14'-5"	150
Parapet: Vertical	i	10	3/8"	1'-0"	2'-11"	30
Parapet: Longitud.	j	2	3/8"	—	4'-9"	10
Reinforcing Steel Total Weight						1798
Concrete Cu. Yds.						167

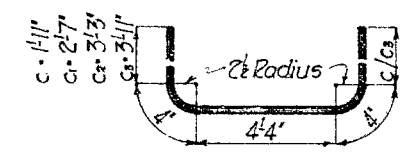
Bench Mark: N 936 Sta 578+35 Spike in telegraph pole - 65' R+
Elev. 1276.44



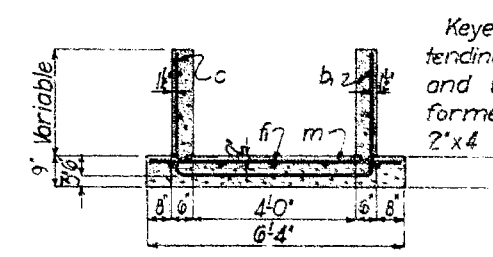
PLAN
Scale 1/4" = 1'-0"



DETAIL OF BARS-K1

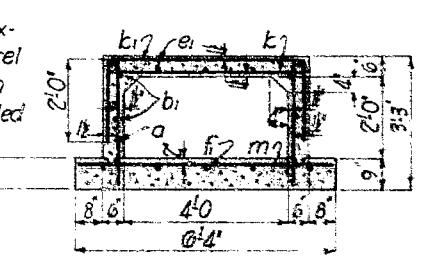


DETAIL OF BARS C TO C3



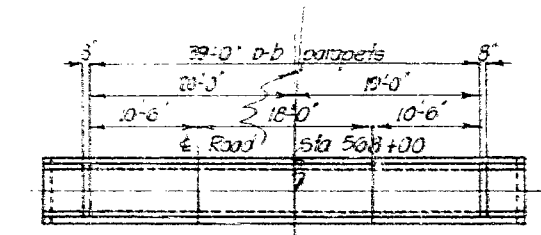
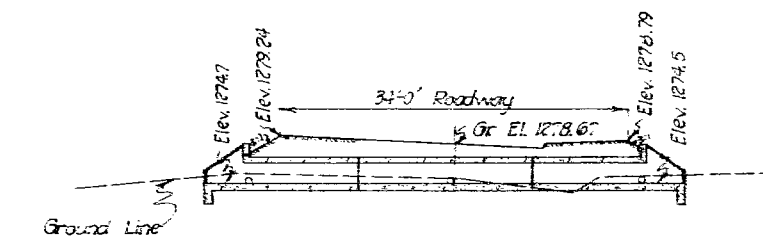
CROSS SECTION B-B
Scale 1/4" = 1'-0"

Keyed Notch extending thru barrel and wings. Notch formed by beveled 2"x4 timber.



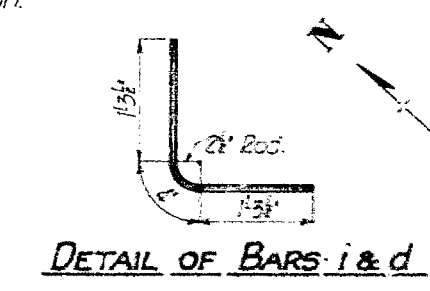
CROSS SECTION A-A
Scale 1/4" = 1'-0"

Horiz. Curve Data:-
Δ: 15° 03' 2"
D: 2° R+
T: 378.6
L: 752.9
R: 2865
E: 249
PC-Sta. 563+75.4
PT-Sta. 567+54.0
PT-Sta. 571+28.3
Super: 00333



SITUATION PLAN
Scale 1/8" = 1'-0"

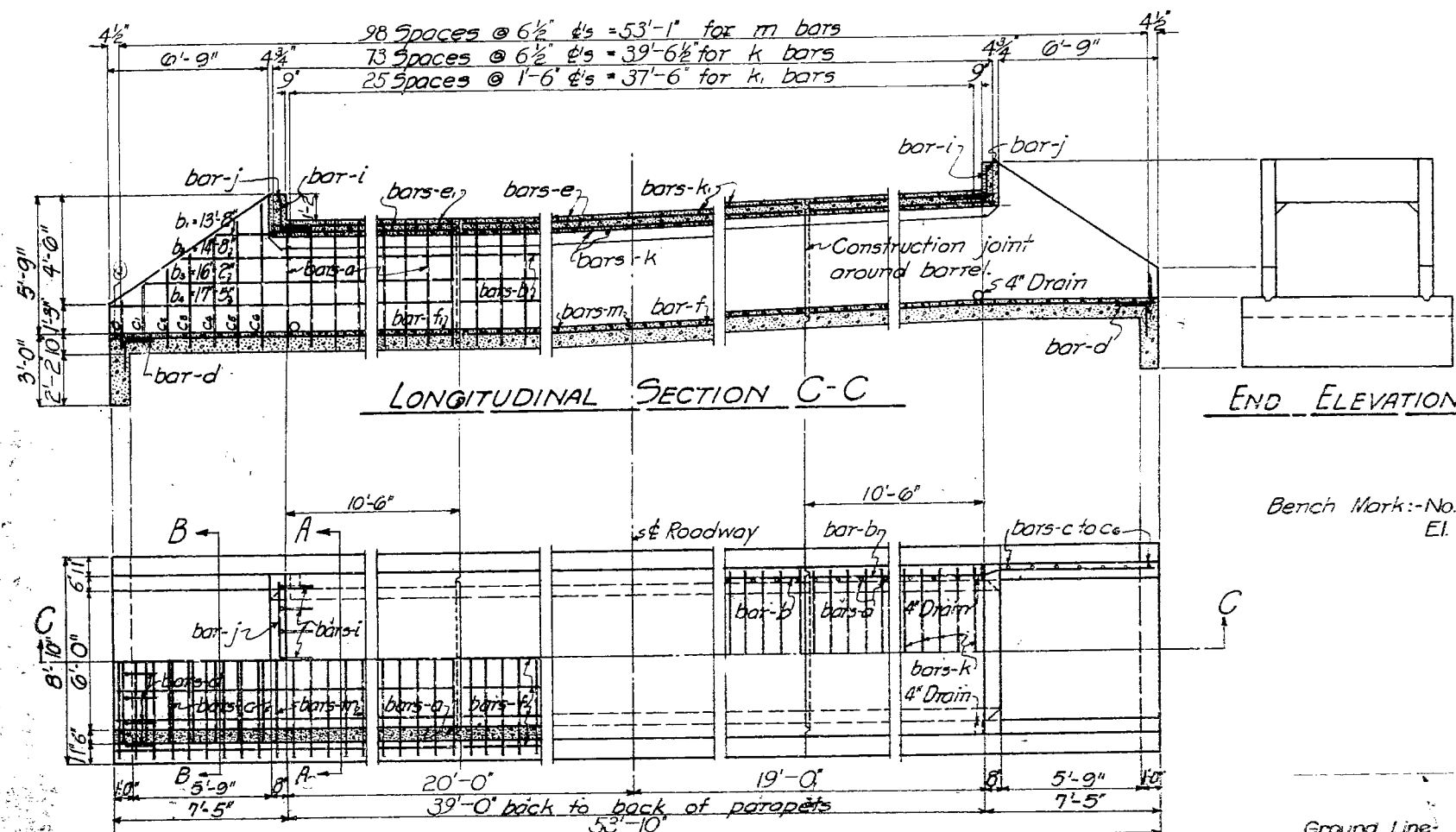
Design for
4' x 2' BOX CULVERT
Reinforced Concrete
Station 568+00- Fed Aid Proj. No. 342
SIOUX COUNTY
Iowa State Highway Commission
January 1962
Scale as noted



DETAIL OF BARS-I & D

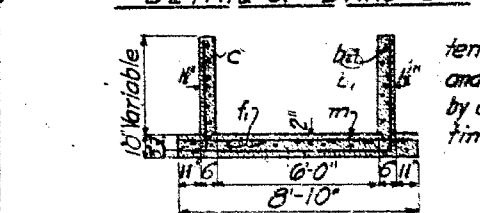
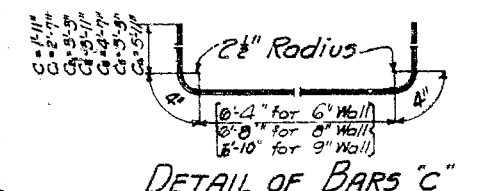
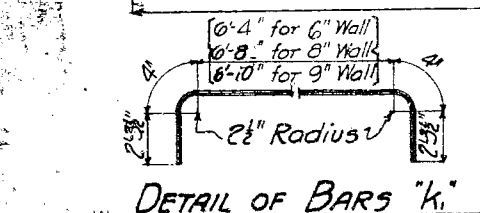
Location
Section 28
Nassau Twp.
Sioux Co.

Wings, parapets, curbs, floor
9' floor 3.22 CY 10' floor 3.40 CY 11' floor 3.57 CY



BILL REINFORCING STEEL AND QUANTITIES									
Description	bars	Mark	Number	Size	Spacing	Length	Weight		
Walls: Vertical	a		80	5/8"		1'-0"	5'-2"	431	
Walls: Hor. (center)	b		8	5/8"		1'-0"	17'-9"	148	
Walls: Hor. (end)	b		10	5/8"		1'-0"	Var.	255	
Wings: Vertical	c to e		14	5/8"		1'-0"	Var.	219	
Footing: Longitud.	d		10	5/8"		1'-0"	2'-11"	49	
Slab: Long. (center)	e		5	5/8"		—	17'-9"	93	
Slab: Long. (end)	e		10	5/8"		—	10'-8"	111	
Slab: Trans. (top)	k		26	5/8"		1'-6"	11'-7"	319	
Slab: Trans. (bottom)	k		74	5/8"		6'-9"	342		
Floor: Transverse	m		99	5/8"		6'-9"	567		
Floor: Long. (center)	f		7	5/8"		1'-3"	17'-9"	130	
Floor: Long. (end)	f		14	5/8"		1'-3"	17'-5"	254	
Parapet: Vertical	i		14	5/8"		1'-0"	2'-11"	43	
Parapet: Longitud.	j		2	5/8"		—	0'-6"	14	
Reinforcing Steel, Total Weight							2975		
Concrete, Cu. Yds.							30.6		

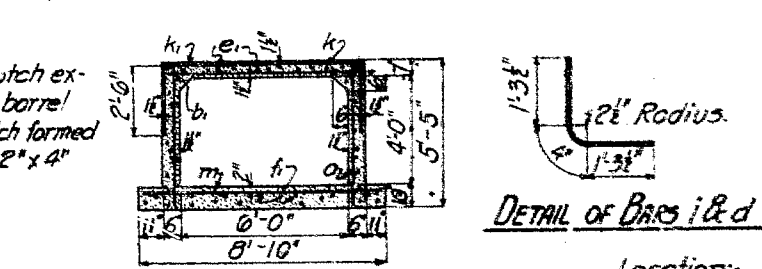
Bench Mark:-No. 37 Sta. 593+35 Spk. in tele pole 60' Rt
El. 1276.36



Cross Section B-B
Scale:- 1/2" = 1'-0"

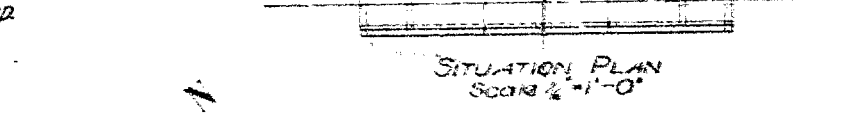
PLAN
Scale:- 1/4" = 1'-0"

General Notes:-
Construction joint formed by a 2"x4" keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
If longitudinal bars are spliced use a 50 dia. lap.
All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.
Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.



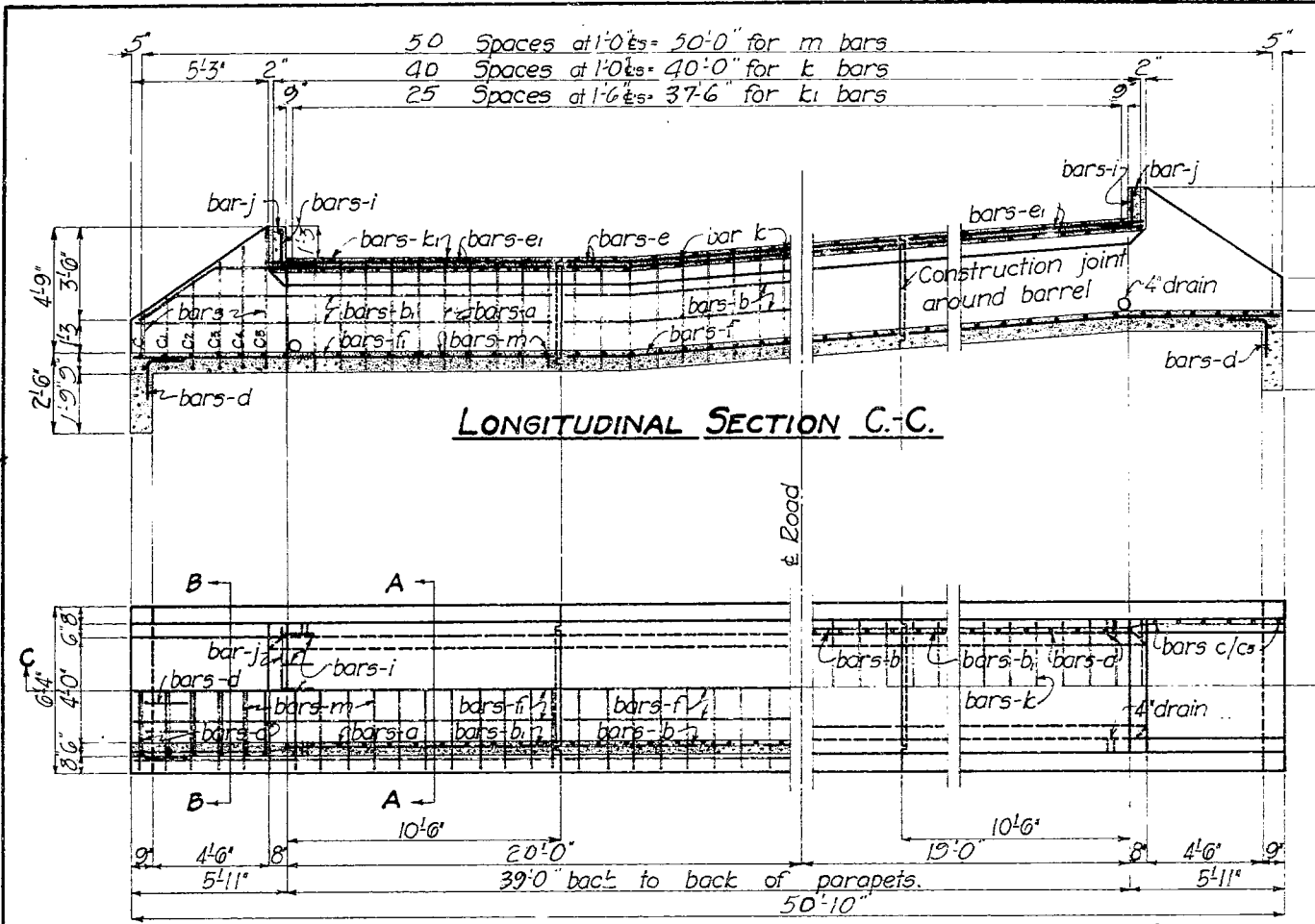
Cross Section A-A
Scale:- 1/4" = 1'-0"

Hor. Curve Data:
A = 33° 38'
D = 1° 28' L
T = 1180.7
L = 2293.1
E = 174.3
PC = Sta. 583+29
PI = Sta. 590+06.2
PT = Sta. 601+28.6
Superelevation = 0.0263



SITUATION PLAN
Scale 1/4" = 1'-0"

Design for
6'x4' BOX CULVERT
Reinforced Concrete
Station 583+29 Fed Aid Proj No. 342.
SIoux COUNTY
Iowa State Highway Commission
Jan. 27, 1932 Scales as noted
Design No. 132 Sioux Co.

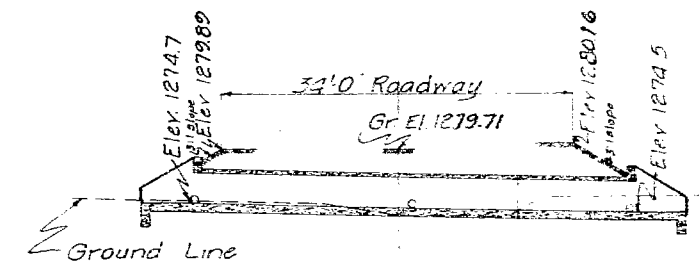


LONGITUDINAL SECTION C-C.

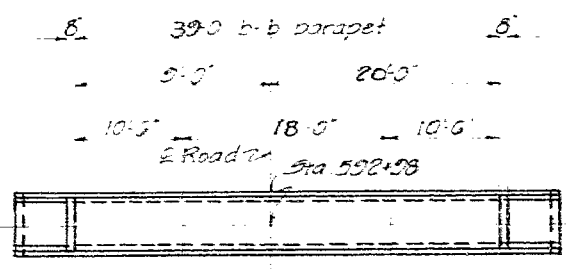
END ELEVATION

BILL REINFORCING STEEL QUANTITIES						
Description-bars	Mark	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	80	#8	1'-0"	4'-0"	33.4
Walls: Horiz (center)	b	6	#8	1'-0"	17'-9"	11.1
Walls: Horiz (end)	b1	12	#8	1'-0"	15'-11"	19.8
Wings: Vertical	c to cs	12	#8	1'-0"	Var.	15.2
Footing: Longitud.	d	12	#8	1'-0"	2'-11"	3.6
Slab: Long (center)	e	5	#8	—	17'-9"	9.3
Slab: Long (end)	e1	10	#8	—	10'-8"	11.2
Slab: Trans (top)	k	26	#8	1'-6"	9'-7"	26.0
Slab: Trans (bottom)	k1	41	#8	1'-0"	4'-0"	20.3
Floor: Transverse	m	51	#8	1'-0"	6'-11"	32.3
Floor: Long (center)	f	5	#8	1'-3"	17'-9"	9.3
Floor: Long (end)	f1	10	#8	1'-3"	15'-11"	16.6
Parapets: Vertical	i	10	#8	1'-0"	2'-11"	3.0
Parapet: Longitud.	j	2	#8	—	4'-9"	1.0
Reinforcing Steel Total Weight						2121
Concrete Cu Yds.						19.3

Bench Mark: #37 Sta. 593+35 Spk. in tel pole 60' Rt.
Elev. 1276.56

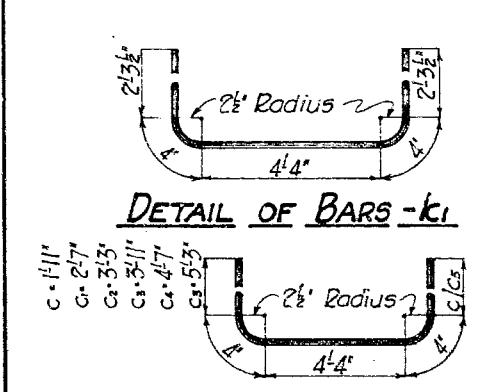


Horiz. Curve Data—
 Δ=33°58' L.
 D=1°28'
 T=1180.7
 L=2223.1
 E=174.5
 R=3206.7
 P.C. Sta. 598+25.5
 P.T. Sta. 590+06.2
 P.T. Sta. 601+18.6
 Super.=0.0265 per ft.

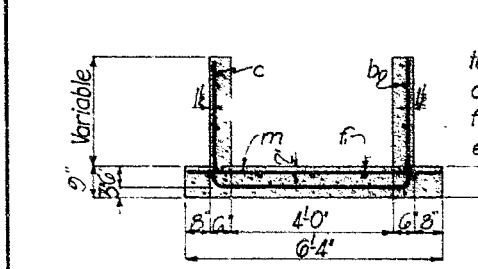


SITUATION PLAN
Scale 1/2"=1'-0"

Drainage area 55 acres Rolling.

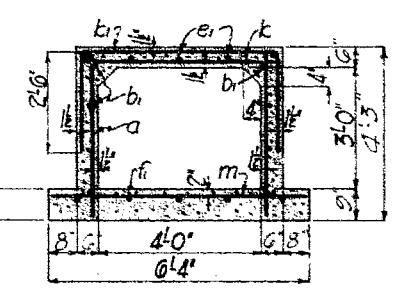


DETAIL OF BARS C TO CS

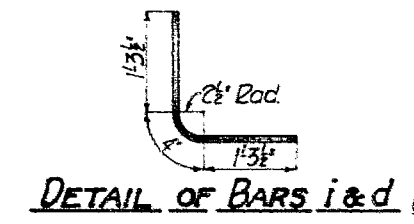


CROSS SECTION B-B.
Scale 1/2"=1'-0"

Keyed Notch extending thru barrel and wings. Notch formed by a beveled 2x4 timber.



CROSS SECTION A-A.
Scale 1/2"=1'-0"

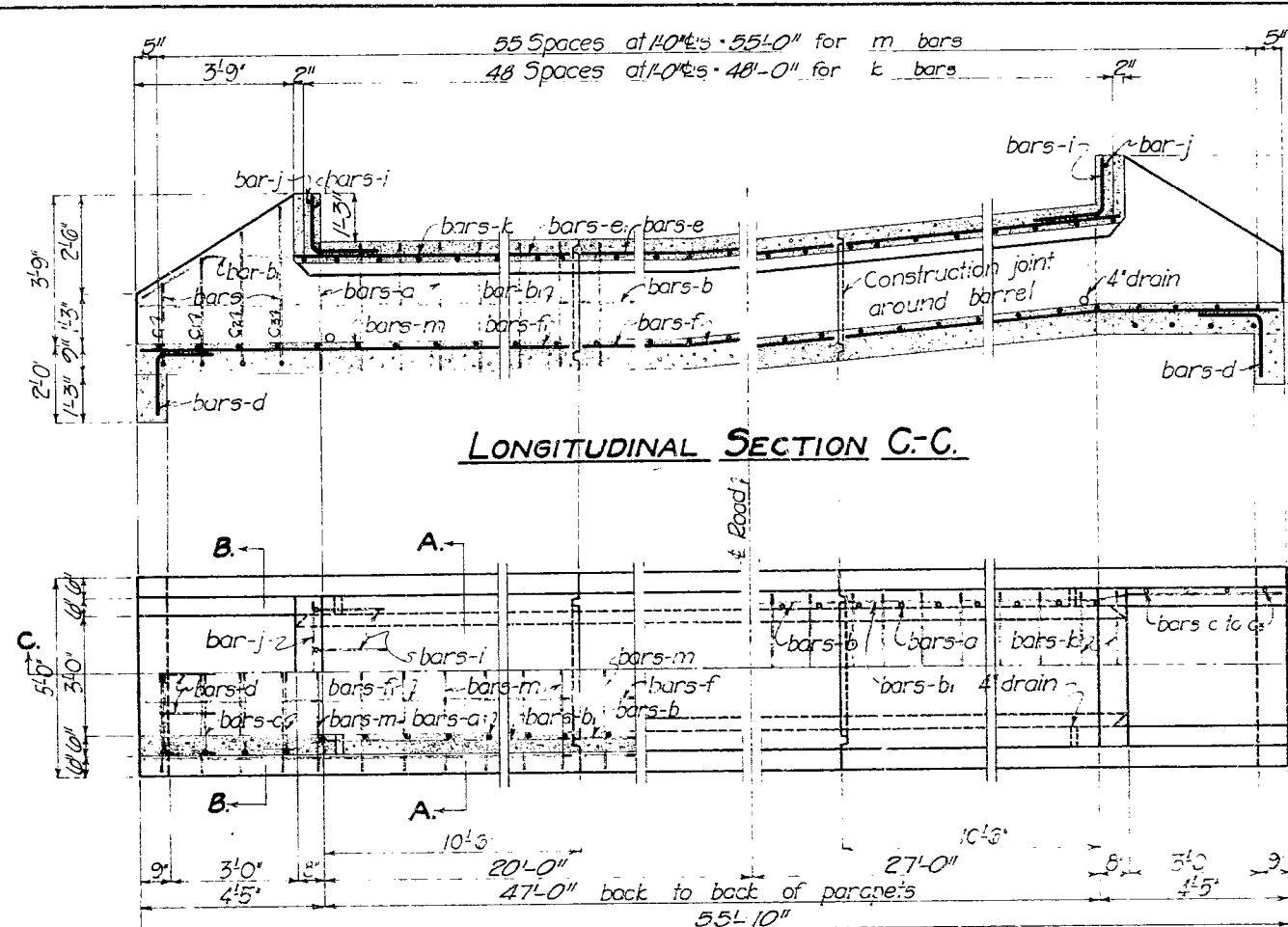


DETAIL OF BARS i & d

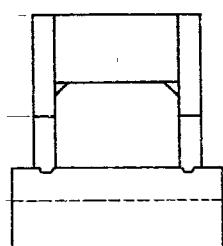
Location
 Section 28
 Nassau Twp
 Sioux Co.

Design for
4'x3' BOX CULVERT
 Reinforced Concrete
 Station 592+28 Fed Aid Proj. No. 342
 SIOUX COUNTY
 Iowa State Highway Commission.
 Jan. 1932 Scale as noted

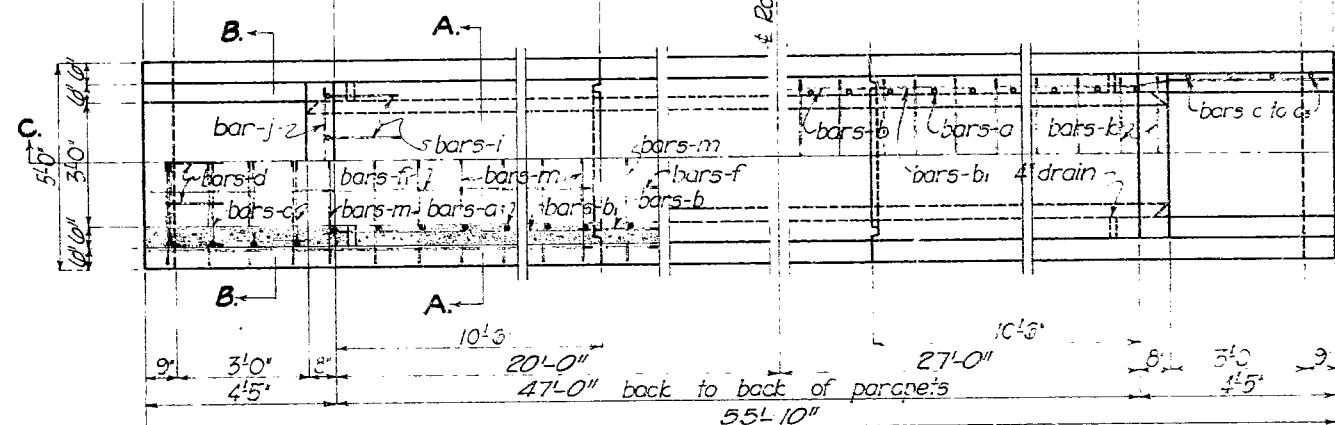
Wings, parapets, curtain-floor 4.64 Cu. Yds.
 10' base 4.66 C.Y. 11' base 4.88 C.Y.



LONGITUDINAL SECTION C-C

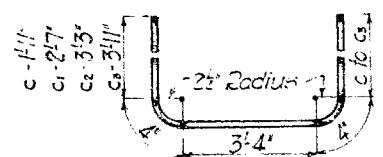


END ELEVATION

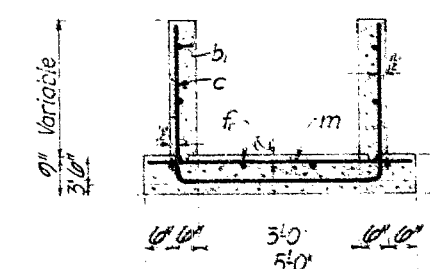


PLAN
Scale 3/8" = 1'-0"

General Notes:-
 Construction joint formed by a 2x4 keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
 If longitudinal bars are spliced use a 50 dia lap.
 All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.
 Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.

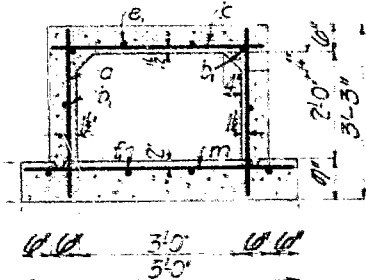


DETAIL OF BARS c TO g

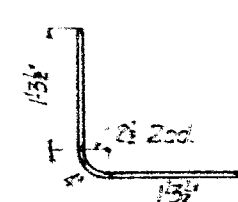


CROSS SECTION B-B
Scale 1/2" = 1'-0"

Keyed Notch extending thru barrel and wings. Notch formed by beveled 2x4 timber.



CROSS SECTION A-A
Scale 1/2" = 1'-0"

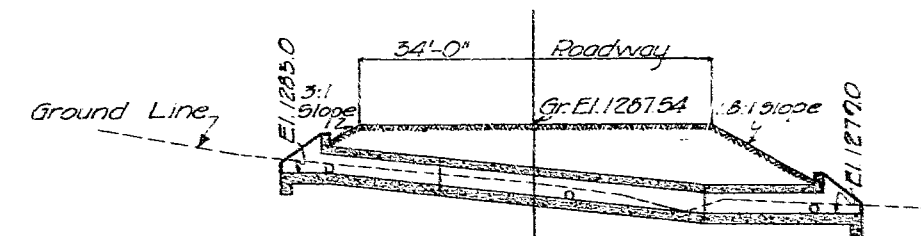


DETAIL OF BARS i & d

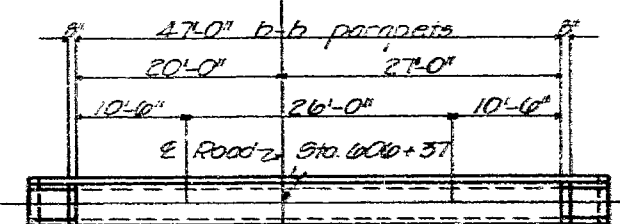
Location
 Section 28
 Nassau Twp
 Sioux County

BILL REINFORCING STEEL & QUANTITIES					
Description - bars	Mark	Number	Size	Spacing	Length
Walls: Vertical	a	40	3/8"	1'-0"	3'-0"
Walls: Horiz. (center)	b	4	3/8"	1'-0"	25'-0"
Walls: Horiz. (end)	b1	8	3/8"	1'-0"	1'-5"
Wings: Vertical	c to g	8	3/8"	1'-0"	1'-3"
Footing: Longitud.	d	10	3/8"	1'-0"	2'-11"
Slab: Long. (center)	e	2	3/8"	—	25'-0"
Slab: Long. (end)	e1	4	3/8"	—	1'-8"
Slab: Trans. (top)	k	—	—	—	—
Slab: Trans. (bottom)	k	40	3/8"	1'-0"	3'-9"
Floor: Transverse	m	50	3/8"	1'-0"	4'-9"
Floor: Long. (center)	f	4	3/8"	1'-0"	25'-0"
Floor: Long. (end)	f1	2	3/8"	1'-0"	1'-5"
Parapet: Vertical	i	5	3/8"	1'-0"	2'-11"
Parapet: Longitud.	j	2	3/8"	—	3'-3"
Reinforcing Steel: Total Weight					14.00
Concrete: Cu Yds.					10.4

Bench Mark:- No. 38. Sta. 611+60. Spike in tel. pole 60' Rt. - El. 1279.10.



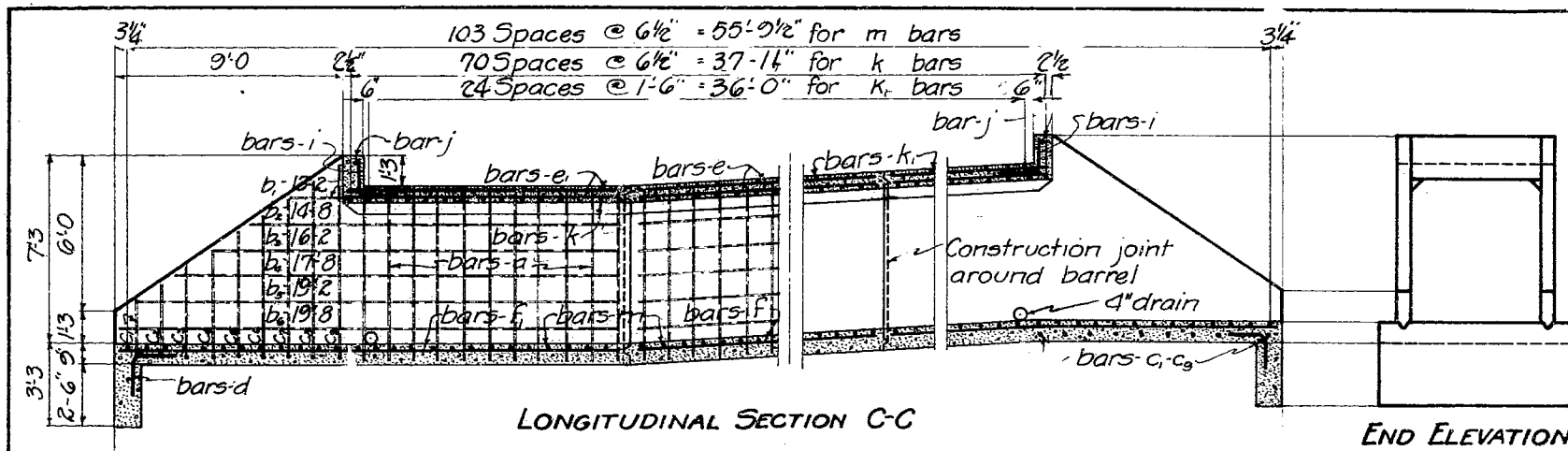
Rd. contr. to remove pres 15" x 24" corr pipe at Sta. 607+10.5.



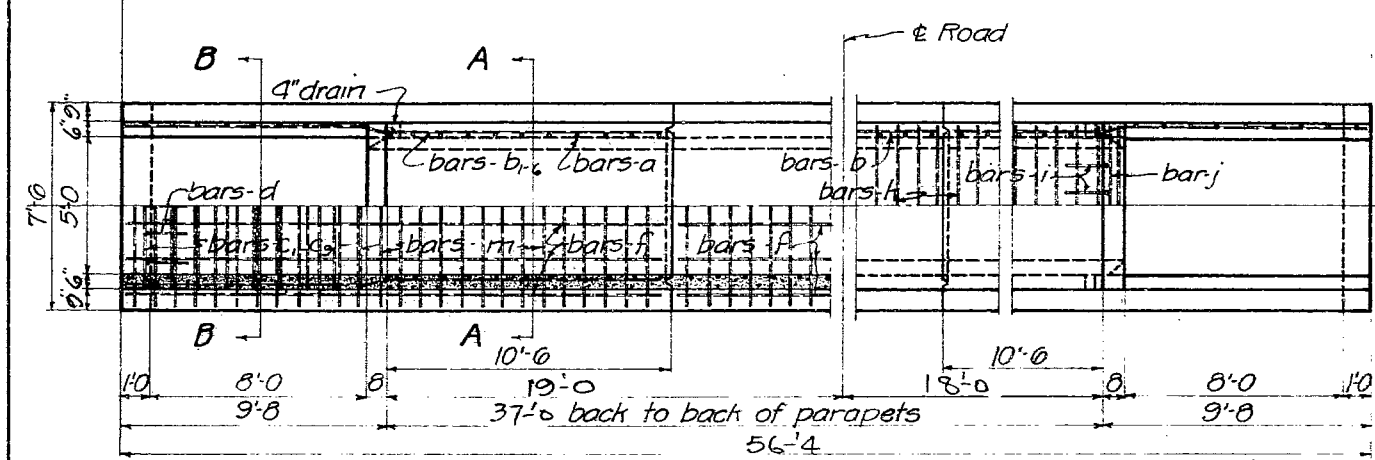
SITUATION PLAN
 Scale 3/8" = 1'-0"
 D.A. = 18 Acres V. Rolling

Design for
3'x2' BOX CULVERT
 Reinforced Concrete
 Station 606+37. Fed. Aid Proj. No. 342
SIoux COUNTY
 Iowa State Highway Commission
 Jan. 1932. Scale as noted

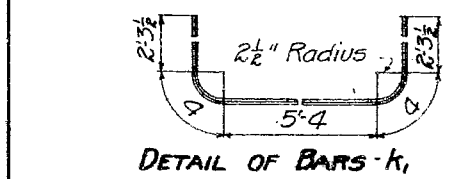
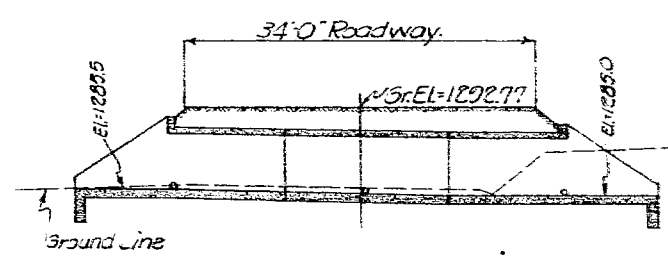
Design No. 1032 Sioux County



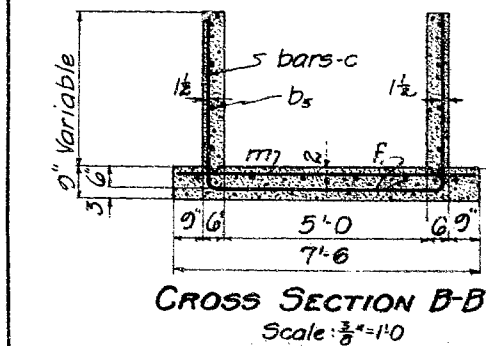
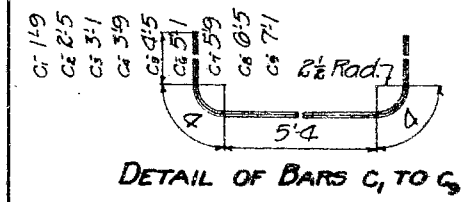
BILL REINFORCING STEEL AND QUANTITIES						
LOCATION OF BARS	MARK	NO.	SIZE	SPACE	LENGTH	WEIGHT
Walls: Vertical	a	76	3/4"	1'-0"	6'-6"	51.5
" Hor. (Center)	b	12	"	"	15'-9"	1.97
" " (ends)	b ₁ -b ₂	84	"	"	Var.	4.19
Wings: Vertical	c ₁ -c ₉	18	"	"	Var.	2.78
Curtain: Horiz.	d	14	"	"	2'-11"	.43
Slab: Long. (center)	e	5	"	"	15'-9"	.82
" (ends)	e ₁	10	"	"	10'-8"	1.11
" Trans. (top)	k ₁	25	"	1'-6"	10'-7"	2.76
" " (bottom)	k ₂	71	1/2"	6'-6"	5'-9"	2.73
Floor: "	m	104	"	6'-6"	7'-3"	50.4
" Long. (center)	f	6	3/4"	1'-3"	15'-9"	.99
" (ends)	f ₁	12	"	1'-3"	19'-8"	2.47
Parapet: Vertical	i	12	"	1'-0"	2'-11"	.36
" Longitud.	j	2	"	"	5'-9"	.12
Reinforcing Steel: Total Lbs.						3092
Concrete: Total Cubic Yds.						28.7



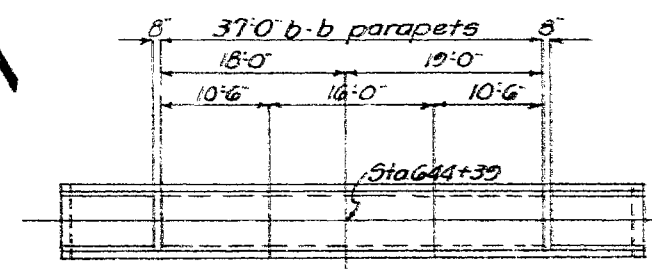
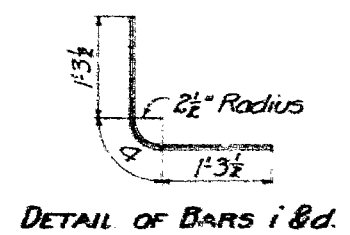
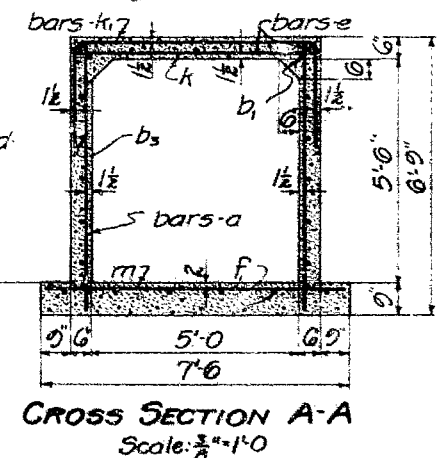
BENCH MARK: No. 40 Sta 644+47 on N.W. cor. N. abut. RR trestle
Elev. 1287.87



General Notes:
Construction Joint formed by a 2"x4" keyed notch to be placed in barrel as shown.
Reinforcing bars not to extend thru joints.
If longitudinal bars are spliced, use a 50 dia. lap.
All exposed edges of 90° or less to be filleted with a 1" dressed beveled strip.
Standard Specifications of Iowa Highway Commission, Series of 1930 for construction.



Keyed Notch extending thru barrel and wings. Notch formed by a 2"x4" beveled timber.

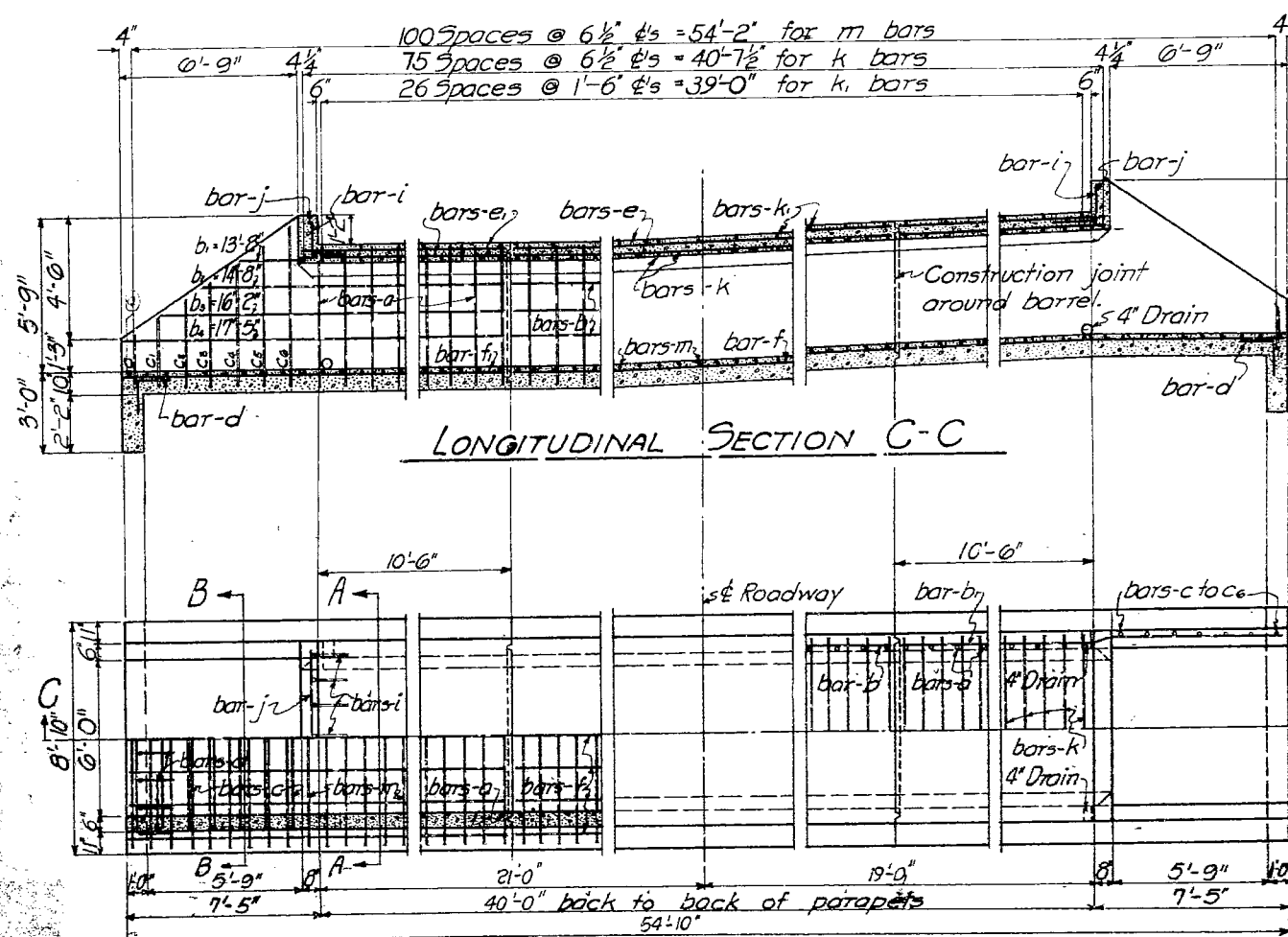


Design for
5'x5 1/2' BOX CULVERT
Reinforced Concrete
Sta 644+39 Fed. Aid Proj. No. 342
SIoux COUNTY
Iowa State Highway Commission
Feb. 1932
Scales as noted

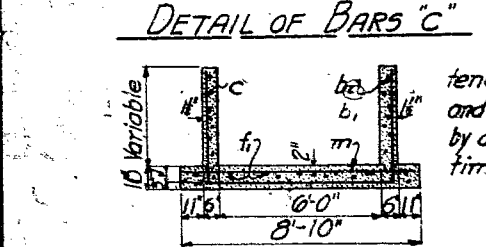
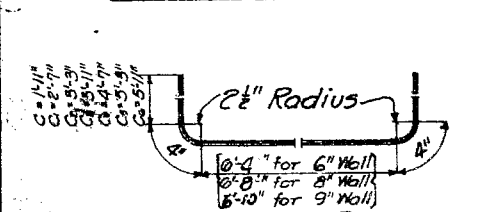
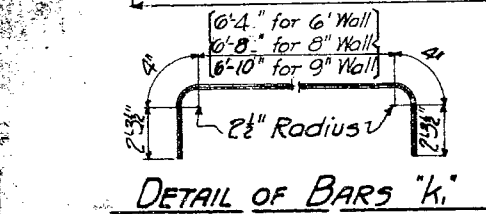
Concrete in wings, parapets, curtain, Floor 9" = 9.05 C.Y.

9129 a Washington

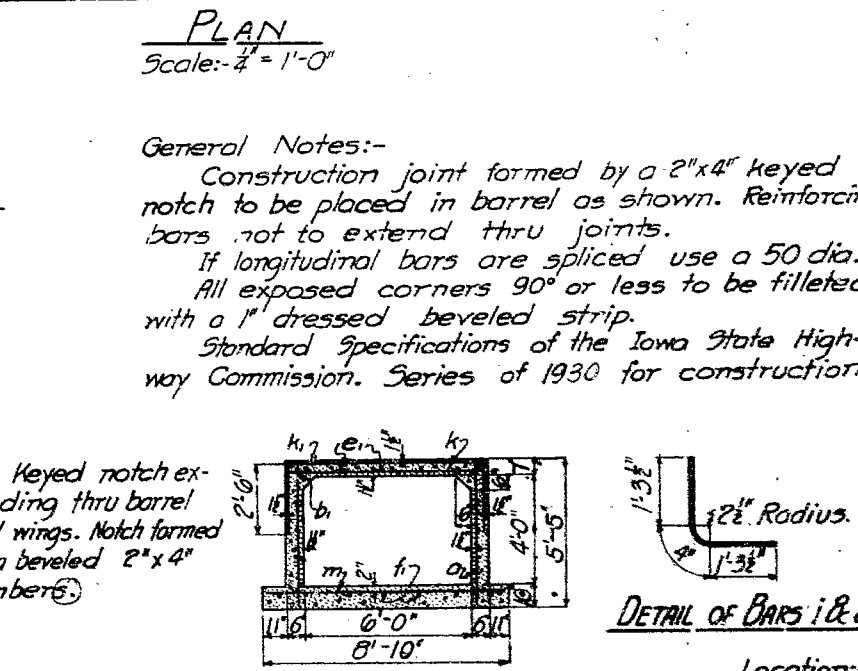
Design No. 1152 Sioux Co.



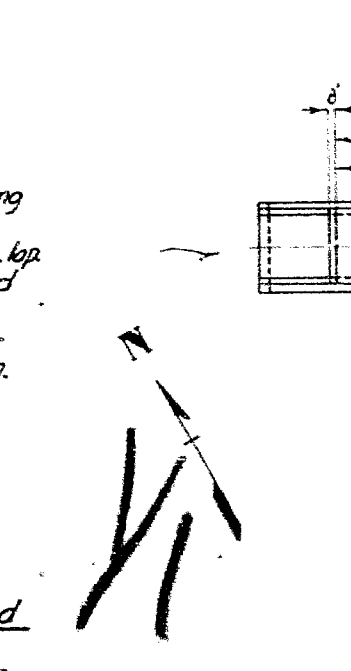
BILL REINFORCING STEEL AND QUANTITIES						
Description:- bars.	Mark.	Number	Size	Spacing	Length	Weight
Walls:- Vertical	a	82	3/8"	1'-0"	5'-2"	142
Walls:- Hor. (center)	b	8	3/8"	1'-0"	8'-9"	156
Walls:- Hor. (end)	b ₁	10	3/8"	1'-0"	Var.	255
Wings:- Vertical	c to c ₆	14	3/8"	1'-0"	Var.	219
Footing:- Longitud.	d	10	3/8"	1'-0"	2'-11"	49
Slab:- Long. (center)	e	5	3/8"	—	8'-9"	98
Slab:- Long. (end)	e ₁	10	3/8"	—	10'-8"	111
Slab:- Trans. (top)	k	27	3/8"	1'-6"	11'-7"	331
Slab:- Trans. (bottom)	k	76	3/8"	6'-2"	6'-9"	351
Floor:- Transverse	m	101	3/8"	6'-2"	8'-7"	519
Floor:- Long. (center)	f	7	3/8"	1'-3"	18'-9"	137
Floor:- Long. (end)	f ₁	14	3/8"	1'-3"	11'-5"	254
Parapet:- Vertical	i	14	3/8"	1'-0"	2'-11"	43
Parapet:- Longitud.	j	2	3/8"	—	0'-6"	4
Reinforcing Steel, Total Weight						3039
Concrete, Cu. Yds.						31.1



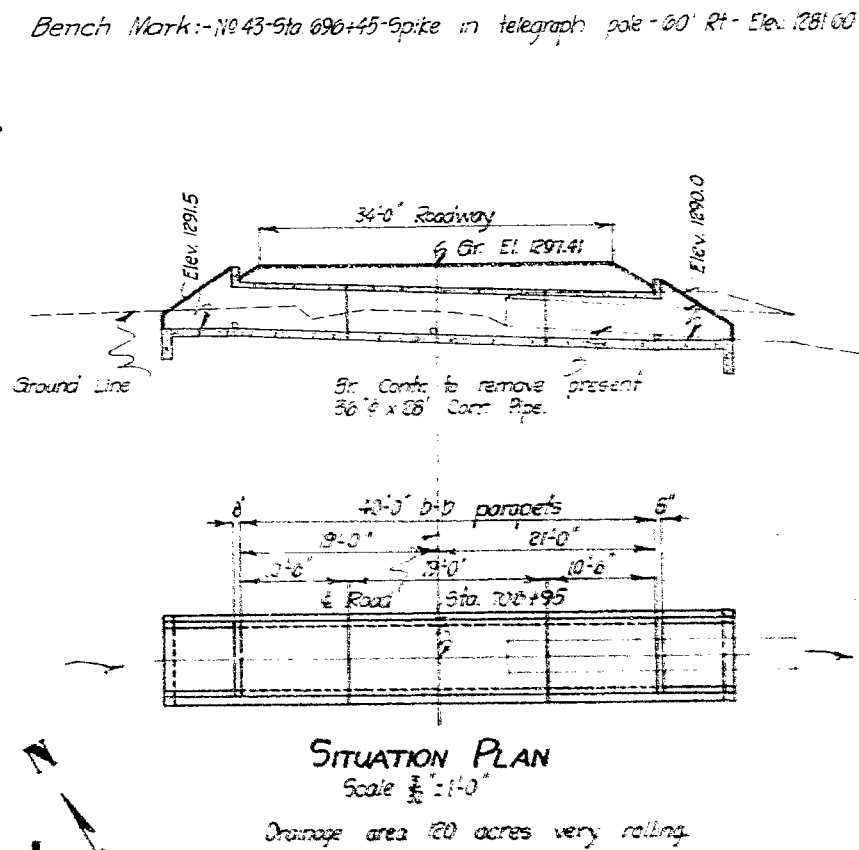
CROSS SECTION B-B
Scale:- 4" = 1'-0"



CROSS SECTION A-A
Scale:- 4" = 1'-0"



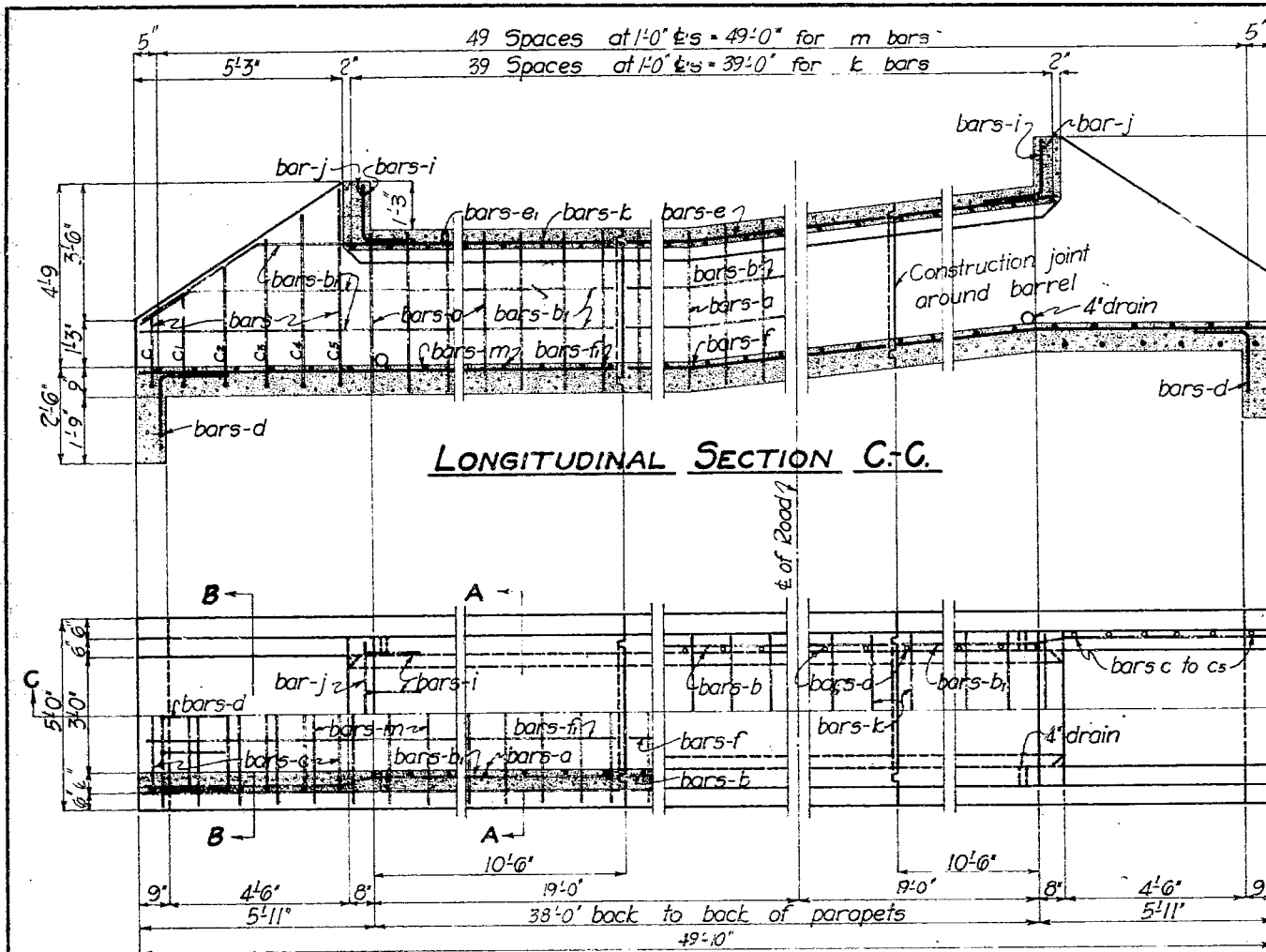
DETAIL OF BARS 'i & d'



SITUATION PLAN
Scale 1/2" = 1'-0"
Drainage area 20 acres very rolling.

Design for
6'x4' BOX CULVERT
Reinforced Concrete
Station 700+95- Fed Aid Proj. No. 342
SIOUX COUNTY
Iowa State Highway Commission
January 1928
Scales as noted

Design No. 432 Sioux County

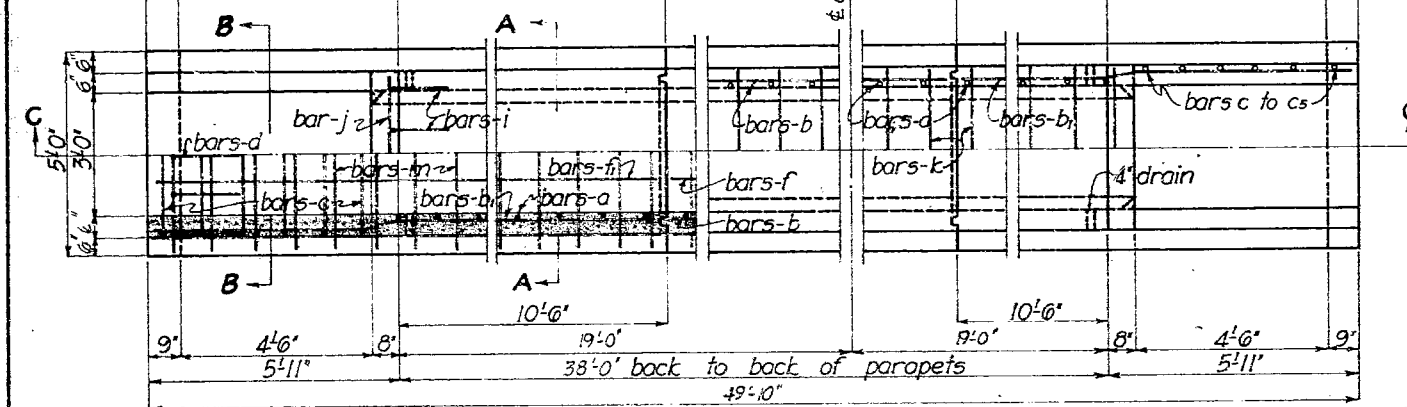


LONGITUDINAL SECTION C-C.

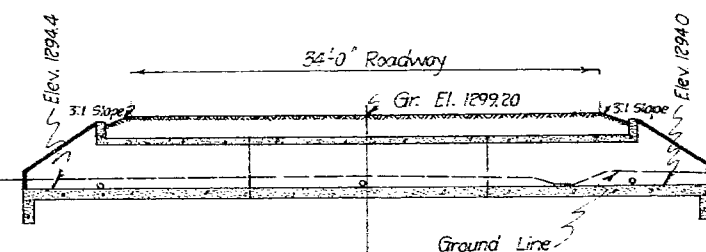
END ELEVATION

BILL OF REINFORCING STEEL & QUANTITIES						
Description - bars	Mark	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	78	8/8	1'0"	4'0"	325
Walls: Horiz. (center)	b	6	8/8	1'0"	16'9"	105
Walls: Horiz. (end)	b ₁	12	8/8	1'0"	15'11"	200
Wings: Vertical	c to c ₅	12	8/8	1'0"	Var.	139
Footing: Longitud.	d	10	8/8	1'0"	2'11"	30
Slab: Long. (center)	e	2	8/8	—	10'9"	35
Slab: Long. (end)	e ₁	4	8/8	—	10'8"	45
Slab: Trans. (top)	k ₁	—	—	—	—	—
Slab: Trans. (bottom)	k	40	8/8	1'0"	3'9"	150
Floor: Transverse	m	50	8/8	1'0"	4'9"	248
Floor: Long. (center)	f	4	8/8	1'4"	16'9"	70
Floor: Long. (end)	f ₁	8	8/8	1'4"	15'11"	133
Parapet: Vertical	i	8	8/8	1'0"	2'11"	25
Parapet: Longitud.	j	2	8/8	—	3'9"	8
Reinforcing Steel Total Weight						1519
Concrete Cu. Yds.						163

Bench Mark :- N^o 44- Sta. 718 + 75- Spike in telegraph pole - 60' Rt - Elev. 1297.73

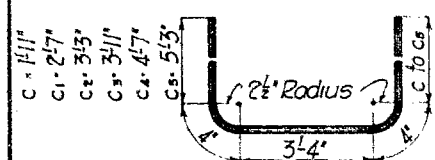


PLAN
Scale 3/8" = 1'0"



SITUATION PLAN
Scale 3/8" = 1'0"

Drainage area 50 acres rolling.



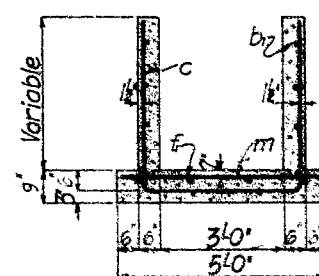
DETAIL OF BARS C TO C5

General Notes:-

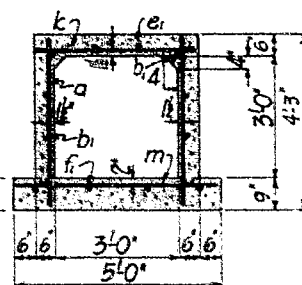
Construction joint formed by a 2x4 keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.

If longitudinal bars are spliced use a 50 diameter lap. All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.

Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.



CROSS SECTION B-B.
Scale 1" = 1'0"



CROSS SECTION A-A.
Scale 1" = 1'0"

DETAIL OF BARS i & d

Location
Section 5
Nassau Twp
Sioux Co.

**Design for
3'x3' BOX CULVERT**

Reinforced Concrete
Station 715 + 00- Fed. Aid Proj. No. 342

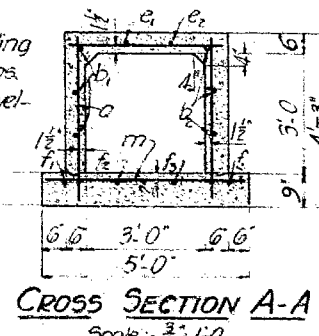
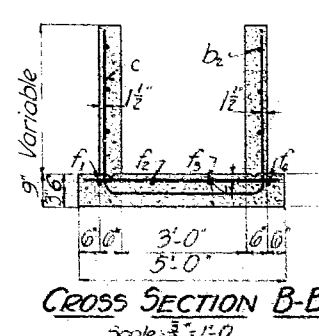
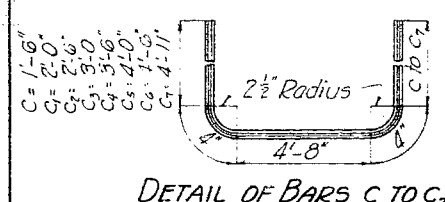
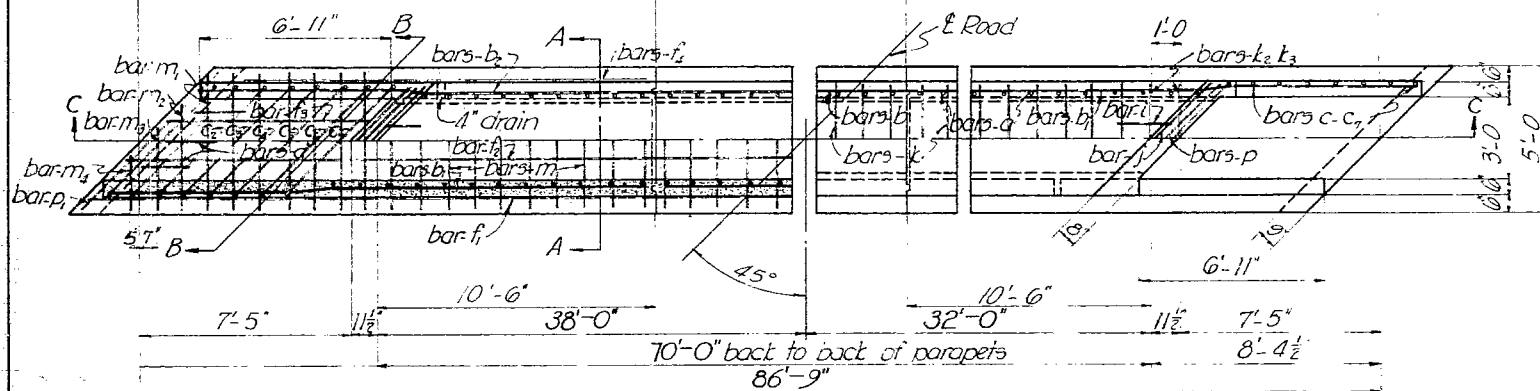
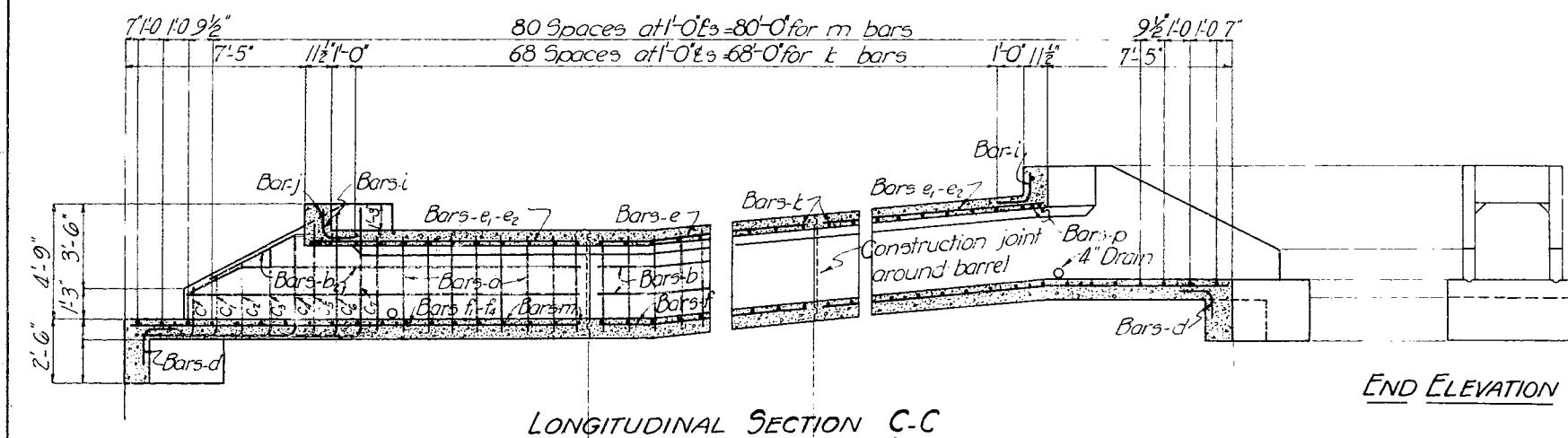
SIoux COUNTY

Iowa State Highway Commission
January 1932 Scale as noted

Design No. 1532-Sioux County

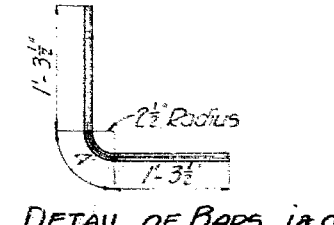
(Floor 9" Wings 6")
Wings, parapets, curtain-floor 3'0"

3'x3' Box Culvert, En. 1932



General Notes :-
 Construction joint formed by a 2"x4" laged notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
 If longitudinal bars are spliced use a 50 diameter lap.
 All exposed corners 90° or sharper to be filleted with a 1" dressed beveled strip.
 Standard specifications of the Iowa State Highway Commission. Series 1930 for construction.

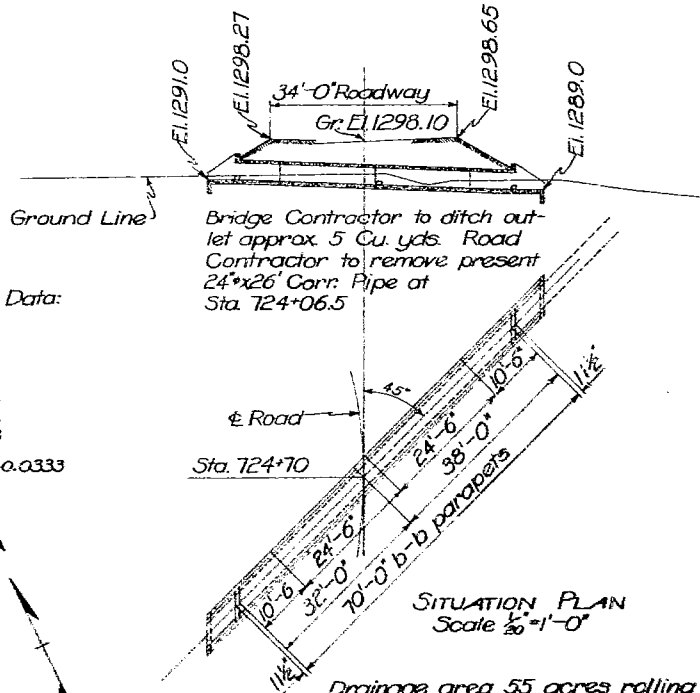
Length of variable bars not detailed
 Bars - e₁ = 11'-8"
 e₂ = 10'-8"
 f₁ = 20'-5"
 f₂ = 19'-1"
 f₃ = 17'-9"
 f₄ = 16'-5"
 k₂ = 1'-8"
 k₃ = 2'-8"
 m₂ = 3'-10"
 m₃ = 2'-10"
 m₄ = 1'-10"
 m₁ = 4'-7"



Location
 Section 15
 Nassau Twp.
 Sioux Co.

BILL OF REINFORCING STEEL AND QUANTITIES						
Description - bars	Mat.	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	142	3/8"	1'-0"	4'-0"	592
Walls: Horiz. (Center)	b	12	3/8"	1'-0"	24'-3"	304
Walls: Horiz. (End)	b ₁	6	3/8"	1'-0"	20'-2"	126
Walls: Horiz. (End)	b ₂	6	3/8"	1'-0"	15'-8"	98
Wings: Vertical	clac	16	3/8"	1'-0"	Var.	197
Footings: Vertical	d	10	3/8"	1'-0"	2'-11"	30
Footings: Long	p ₁	2	3/8"	-	6'-8"	14
Slab: Long. (Center)	e	4	3/8"	-	24'-3"	101
Slab: Long. (End)	e ₁ -e ₂	4	3/8"	-	Var.	47
Slab: Trans. (Parapet)	k ₁ -k ₂	4	3/8"	1'-0"	Var.	9
Slab: Trans. (Bottom)	k	69	3/8"	1'-0"	3'-9"	270
Floor: Trans.	m	81	3/8"	1'-0"	4'-9"	401
Floor: Trans. (Parapet)	m ₁ -m ₂	6	3/8"	1'-0"	Var.	27
Floor: Long. (Center)	f	8	3/8"	1'-4"	24'-3"	202
Floor: Long. (End)	f ₁ -f ₂	8	3/8"	1'-4"	Var.	154
Parapet: Vertical	i	8	3/8"	1'-0"	2'-11"	25
Parapet: Long. (with j)	j	2	3/8"	-	5'-3"	11
Parapet: Long. (with k)	p	4	3/8"	-	5'-3"	22
Reinforcing Steel	Total					2630
Concrete	Cu. Yds.					28.2

BENCH MARK: No. 44 Sta. 718+75 Spk. in telegr. Pole
 60' Rt. El. 1297.73



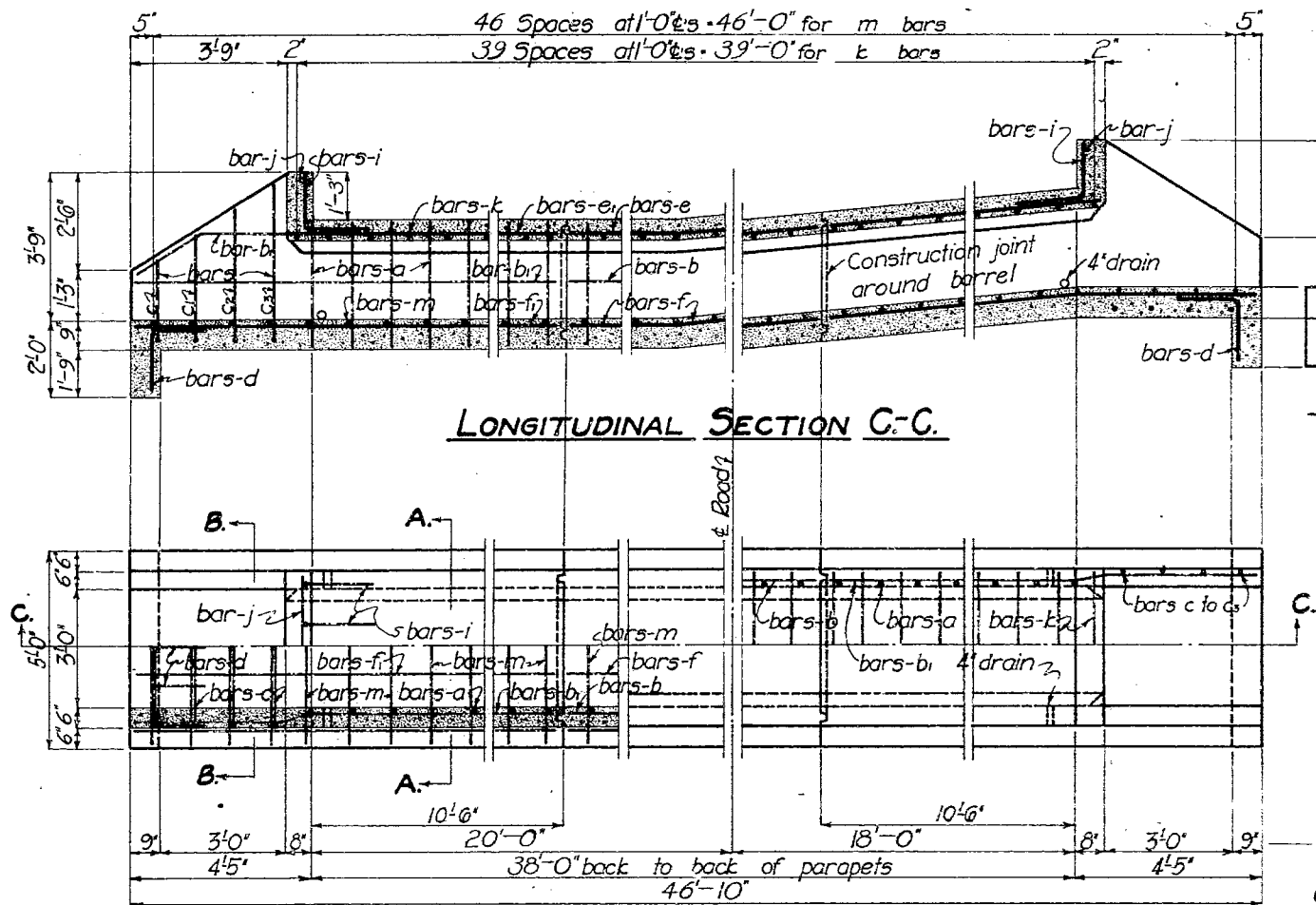
Design for
3'x3' SKEW BOX CULVERT
 Reinforced Concrete
 Station 724+70 Fed. Aid Proj. No. 342
 SIOUX COUNTY
 Iowa State Highway Commission
 Jan. 28, 1932 Scales as noted

Design No. 1632 Sioux Co.

Wings - parapets - curtain floor
 9' floor - 5.10 C.Y.

112 3'x3' Skew Box Culvert May 1928

VC



LONGITUDINAL SECTION C-C.

END ELEVATION

PLAN
Scale $\frac{1}{8}'' = 1'-0''$

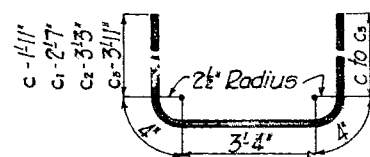
General Notes:-

Construction joint formed by a 2x4 keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.

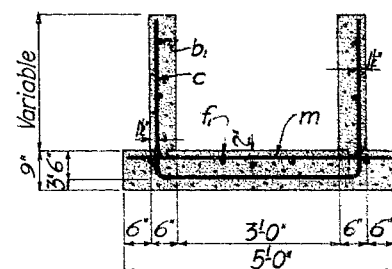
If longitudinal bars are spliced use a 50 dia lap.

All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.

Standard Specifications of the Iowa State Highway Commission. Series of 1930 for construction.

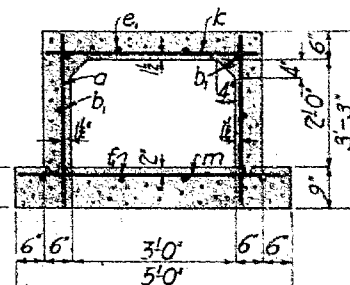


DETAIL OF BARS c TO c1

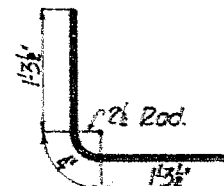


CROSS SECTION B-B
Scale $\frac{1}{4}'' = 1'-0''$

Keyed Notch extending thru barrel and wings. Notch formed by beveled 2x4 timber.

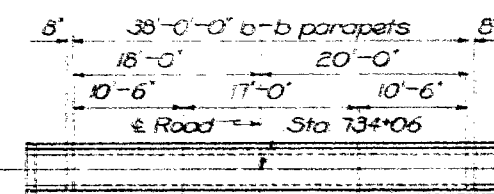


CROSS SECTION A-A
Scale $\frac{1}{4}'' = 1'-0''$



DETAIL OF BARS i & d

Location
Section 15
Nassau Twp.
Sioux Co.



SITUATION PLAN
Scale $\frac{1}{2}'' = 1'-0''$

Drainage area 25 acres rolling

Design for 3'x2' BOX CULVERT

Reinforced Concrete
Station 73+06 Fed. Aid Proj. No. 342
SIoux COUNTY
Iowa State Highway Commission
Jan. 29, 1932 Scale as noted

Design No. 1732 Sioux Co.

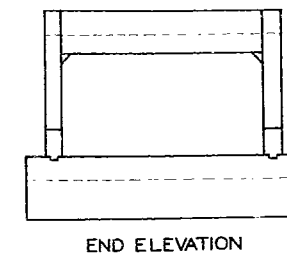
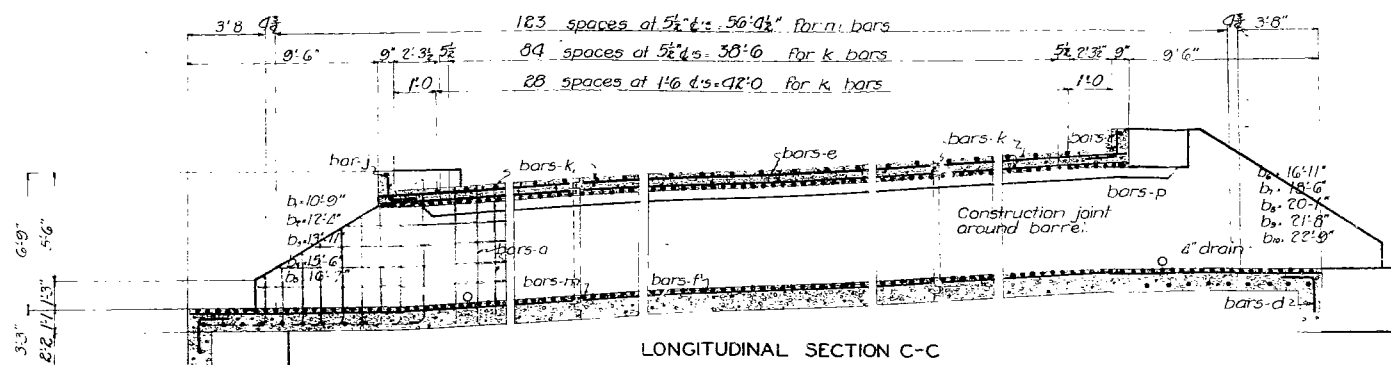
Wings, parapets curtains-floor = 2.72 Cu Yds.
(Side Walls = 6" Floor 9")

3'x2' Box Culvert, Jan. 1928

V.C.

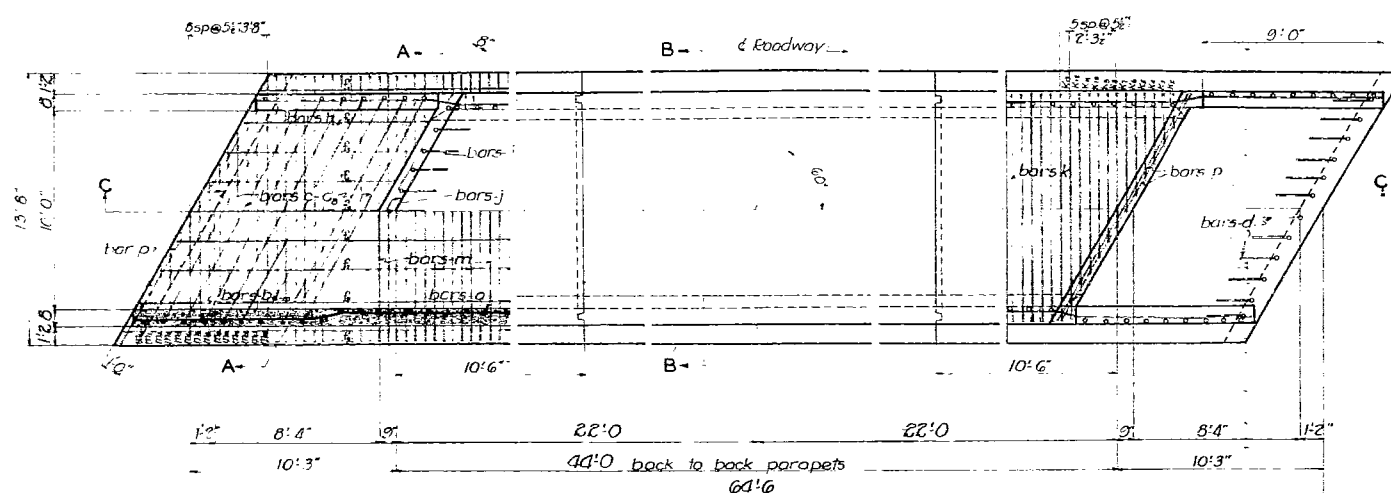
Description - bars	Mark	Number	Size	Spacing	Length	Weight
Walls: Vertical	a	78	$\frac{3}{8}$ "	1'-0"	3'-0"	244
Walls: Horiz. (center)	b	4	$\frac{3}{8}$ "	1'-0"	1'-9"	70
Walls: Horiz. (end)	b1	8	$\frac{3}{8}$ "	1'-0"	1'-5"	120
Wings: Vertical	c to c3	8	$\frac{3}{8}$ "	1'-0"	Var.	82
Footing: Longitud.	d	10	$\frac{3}{8}$ "	1'-0"	2'-11"	30
Slab: Long. (center)	e	2	$\frac{3}{8}$ "	—	16'-9"	35
Slab: Long. (end)	e1	4	$\frac{3}{8}$ "	—	10'-8"	45
Slab: Trans. (top)	k1	—	—	—	—	—
Slab: Trans. (bottom)	k	40	$\frac{3}{8}$ "	1'-0"	3'-9"	156
Floor: Transverse	m	47	$\frac{3}{8}$ "	1'-0"	4'-9"	233
Floor: Long. (center)	f	4	$\frac{3}{8}$ "	1'-4"	16'-9"	70
Floor: Long. (end)	f1	8	$\frac{3}{8}$ "	1'-4"	14'-5"	120
Parapet: Vertical	i	8	$\frac{3}{8}$ "	1'-0"	2'-11"	24
Parapet: Longitud.	j	2	$\frac{3}{8}$ "	—	3'-9"	8
Reinforcing Steel Total Weight						1237
Concrete Cu Yds.						13.7

Bench Mark:- No. 45 Sta. 733+90 Spk. in tele. pole 60' Rt.
El. 1299.41

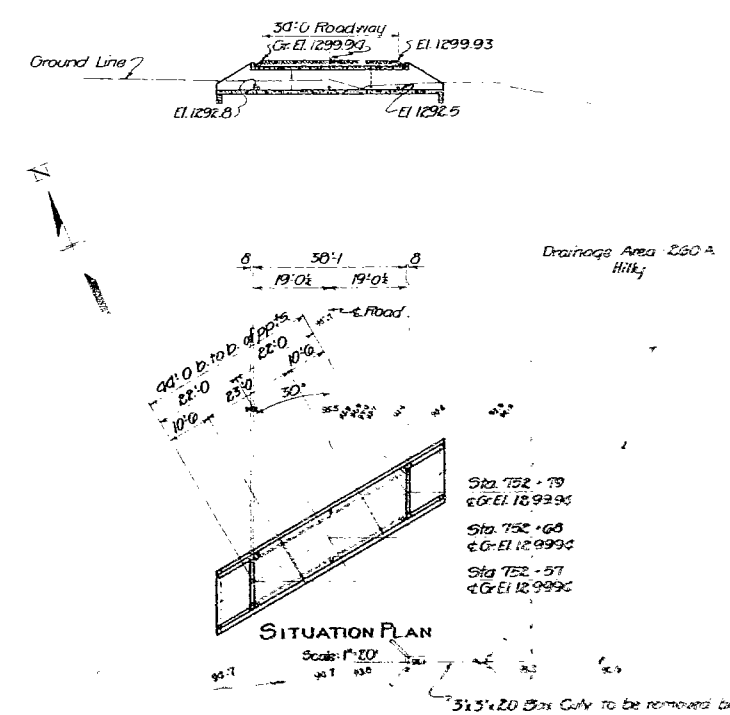
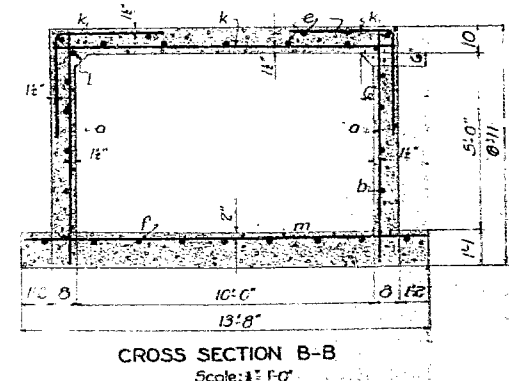
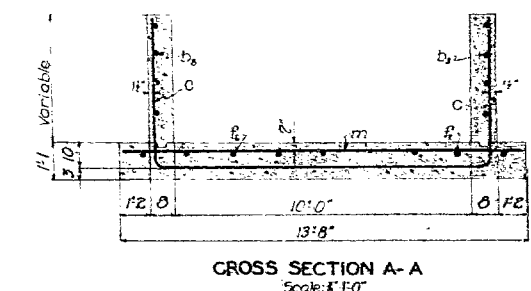
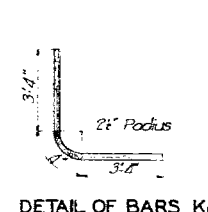
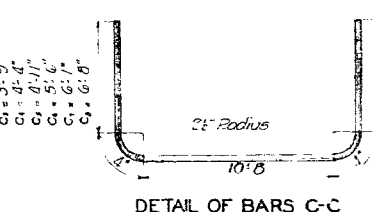


VARIABLE BARS	
2 k, 2'-11"	2 f, 17'-8"
2 k, 2'-10"	2 f, 16'-5"
2 k, 3'-8"	2 f, 16'-5"
2 k, 4'-5"	2 f, 20'-3"
2 k, 5'-3"	2 f, 21'-11"
2 k, 6'-10"	2 f, 22'-10"
2 k, 7'-5"	2 f, 23'-8"
2 k, 8'-5"	2 m, 3'-4"
2 k, 9'-2"	2 m, 4'-2"
2 k, 10'-0"	2 m, 5'-9"
2 k, 10'-7"	2 m, 6'-6"
2 e, 8'-8"	2 m, 7'-3"
2 e, 9'-4"	2 m, 8'-1"
2 e, 10'-9"	2 m, 8'-10"
2 e, 11'-9"	2 m, 9'-8"
2 e, 12'-1"	2 m, 10'-5"
2 e, 12'-10"	2 m, 11'-3"
2 e, 13'-10"	2 m, 12'-0"
2 f, 16'-10"	2 m, 12'-0"

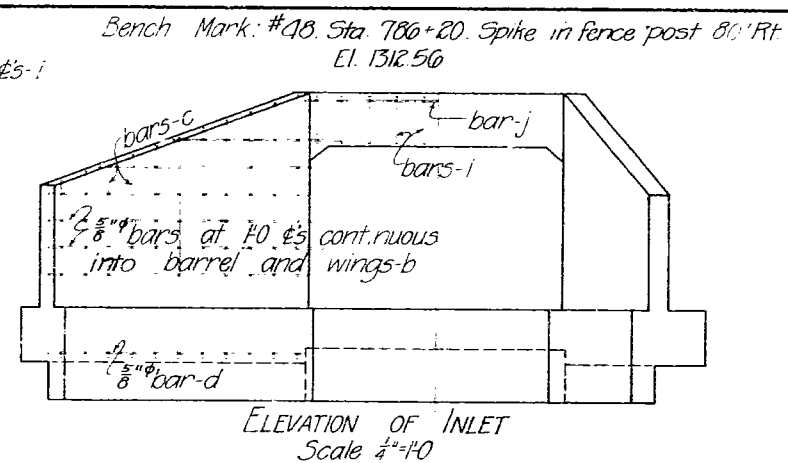
BILL OF REINFORCING STEEL & QUANTITIES					
Description of bars	Quantity	Unit	Weight	Value	
Walls Vertical	90	50	1'-0"	625	
Walls Horizontal Center	10	50	1'-0"	237	
Walls Horizontal Ends	20	50	1'-0"	523	
Wings Vertical	8	50	1'-0"	376	
Footings Longitudinal	24	50	1'-0"	15	
Curbs Longitudinal	2	50	1'-0"	32	
Slab Longitudinal Center	9	50	22'-9"	214	
Slab Longitudinal Ends	12	50	Var	201	
Slab Transverse Top	58	50	1'-0"	425	
Slab Transverse Bottom	21	50	Var	61	
Slab Transverse Center	80	50	1'-0"	982	
Foot Transverse	25	50	1'-0"	204	
Foot Transverse	121	50	5'-2"	735	
Foot Longitudinal Center	9	50	22'-9"	214	
Foot Longitudinal Ends	5	50	1'-0"	380	
Parapets Longitudinal	22	50	1'-0"	60	
Parapets Longitudinal	1	50	15'-2"	27	
Parapets Longitudinal with k	2	50	3'-2"	44	
Reinforcing Steel				6381	
Concrete				695	



General Notes
 Construction joint formed by a 2x4' keyed notch to be placed in barrel as shown. Reinforcing bars not to extend thru joints.
 If longitudinal bars are spliced use a 50 diameter lap.
 All exposed corners 90° or less to be filleted with a 1" dressed beveled strip.
 Standard Specifications of Iowa State Highway Commission, Series of 1930 for construction.



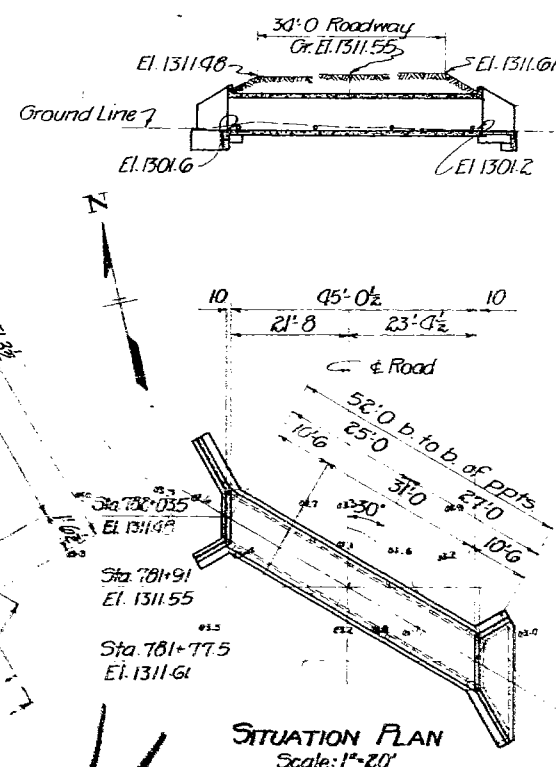
DESIGN FOR
 10X5' SKEW BOX CULVERT
 REINFORCED CONCRETE
 STATION 752+68 FEB AND PROJ NO 342
 SIOUX COUNTY
 IOWA STATE HIGHWAY COMMISSION
 JAN 1932 SCALES AS NOTED



General Notes.

Scale $\frac{1''}{1'0}$

Longitudinal bars to be continuous, splicing of bars in no case to occur at junction of wing and barrel. Use a 2'6" lap on all splices. Foundations to be carried deeper if necessary. Standard Specifications of the Iowa Highway Commission. Bars not to continue thru construction joints. All exposed edges of 90° or less to be filleted with a 1" dressed beveled strip.



SITUATION PLAN
Scale: 1"=20'

QUANTITIES
Conc. 76.5 CY
Steel 62.00 Lbs

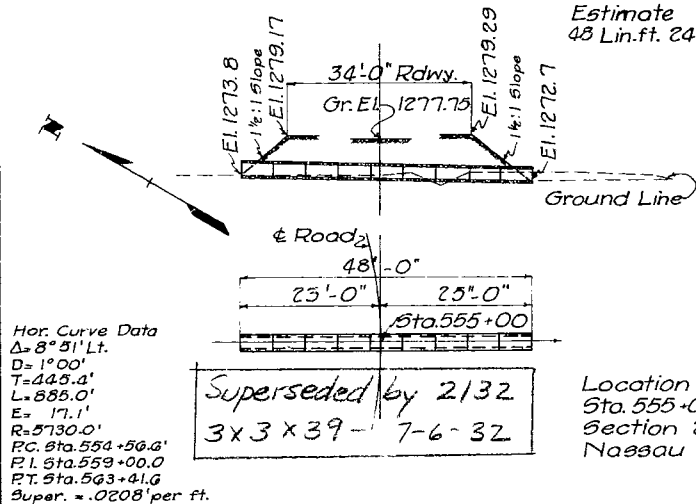
Design for
8'x6' SKEW BOX CULVERT
Reinforced Concrete
Station 781+91, Fed Aid Project No. 342
SIOUX COUNTY
Iowa Highway Commission
January 19, 1952 Scales as noted

Design No 1932 Sioux County.

Design 52 Crawford 1921

Bench Mark: - #35 Sta. 554+80 Spike in tel. pole 60'rt.
El. 1275.30

Estimate
48 Lin. Ft. 24" pipe.

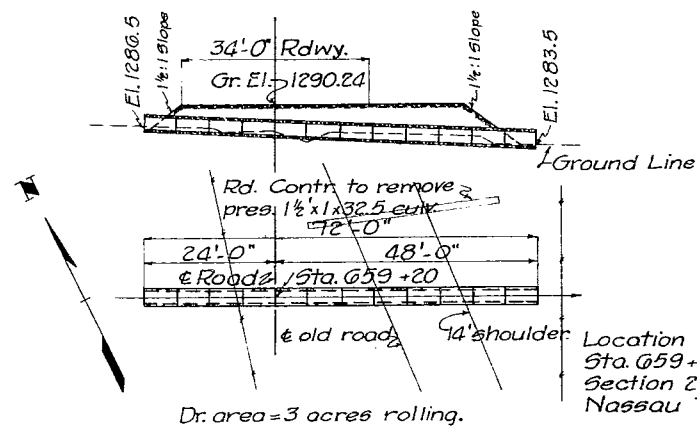


Location
Sta. 555+00
Section 29
Nassau Twp.

(A)

Bench Mark: - #41 Sta. 660+04 Spike in tel. pole 60'rt.
El. 1284.44

Estimate
72 Lin. Ft. 24" pipe.

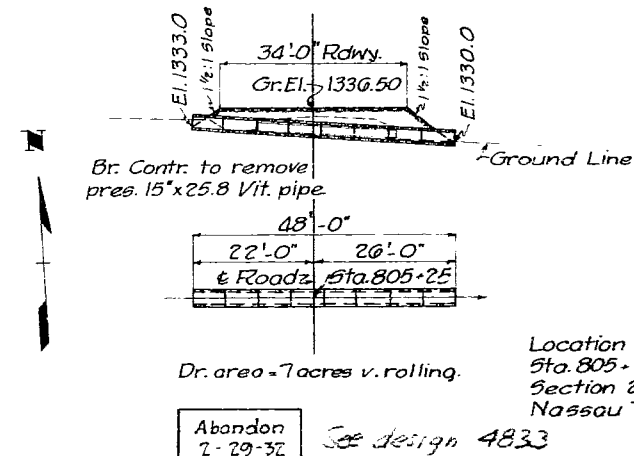


Location
Sta. 659+20
Section 22
Nassau Twp.

(D)

Bench Mark: - #49 Sta. 802+30 'X' on sidewalk to house Lt.
El. 1345.92

Estimate
48 Lin. Ft. 24" pipe.

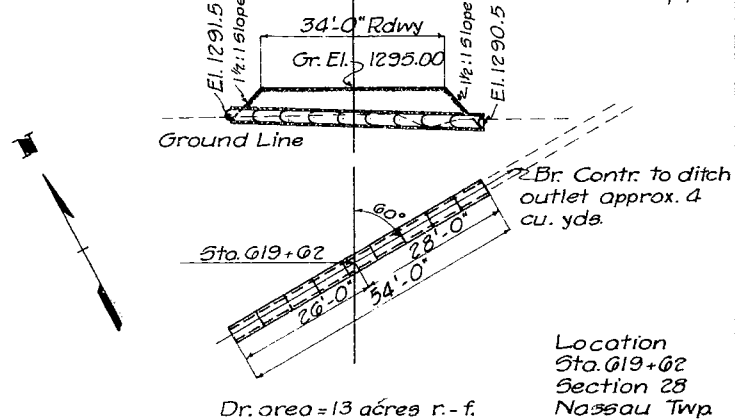


Location
Sta. 805+25
Section 2
Nassau Twp.

(G)

Bench Mark: - #38 Sta. 611+60 Spike in tel. pole 60'rt.
El. 1291.16

Estimate
54 Lin. Ft. 24" pipe.

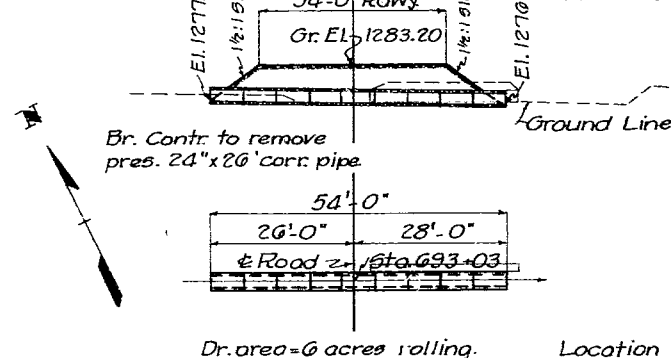


Location
Sta. 619+02
Section 28
Nassau Twp.

(B)

Bench Mark: - #43 Sta. 696+45 Spike in tel. pole 60'rt.
El. 1281.60

Estimate
54 Lin. Ft. 24" pipe.



Location
Sta. 693+03
Section 15
Nassau Twp.

(E)

General Notes:-

All culverts to be pre-cast pipe made according to Iowa State Highway Commission Standard F.I. (Revised Feb. 1931.)

Installation to correspond to Type A on Standard F.I.

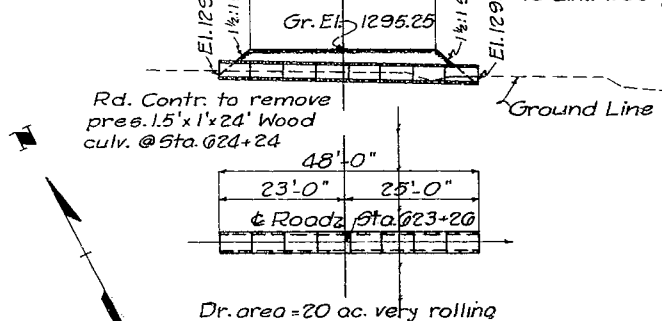
All material and construction to be in accordance with Standard Specifications of Iowa State Highway Commission Series of 1930.

TOTAL QUANTITIES

228 LIN. FT. 24" PIPE
48 LIN. FT. 30" PIPE
FOR A, B, C, D, & E.

Bench Mark: - #39 Sta. 634+80 Spike in tel. pole 60'rt.
El. 1293.26

Estimate
48 Lin. Ft. 30" pipe.

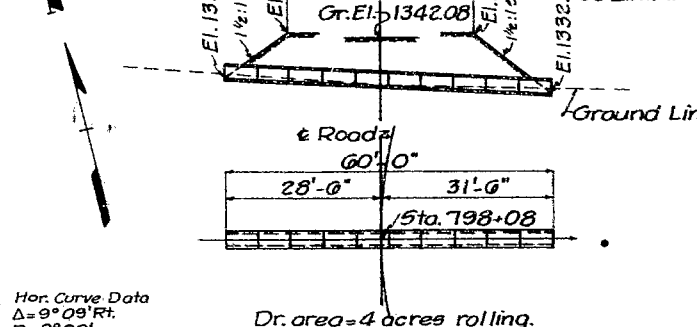


Location
Sta. 623+26
Section 21
Nassau Twp.

(C)

Bench Mark: - #49 Sta. 802+30 'X' on side of sidewalk Lt.
El. 1345.92

Estimate
60 Lin. Ft. 24" pipe.



Location
Sta. 798+08
Section 11
Nassau Twp.

(F)

Horizontal Curve Data
Δ=9°09' Rt.
D=2°00'
T=229.2'
L=457.5'
E=9.1'
R=2805.0'
P.C. Sta. 797+45.8
P.I. Sta. 799+16.0
P.T. Sta. 802+03.3
Super.=0.0333' per ft.

Abandon
2-29-32

DESIGN FOR 24" & 30" CIRCULAR CULVERTS USING CONCRETE PIPE

FEDERAL AID PROJECT NO. 342

SIOUX COUNTY

IOWA STATE HIGHWAY COMMISSION

JAN. 28, 1932 SCALE 1/2" = 1'-0"

DESIGN NO. 2032 SIOUX COUNTY

