

STATE OF IOWA
STATE HIGHWAY COMMISSION
DESIGNS FOR
BRIDGES AND CULVERTS

PRIMARY ROAD SYSTEM F. PROJECT NO. 2(7)

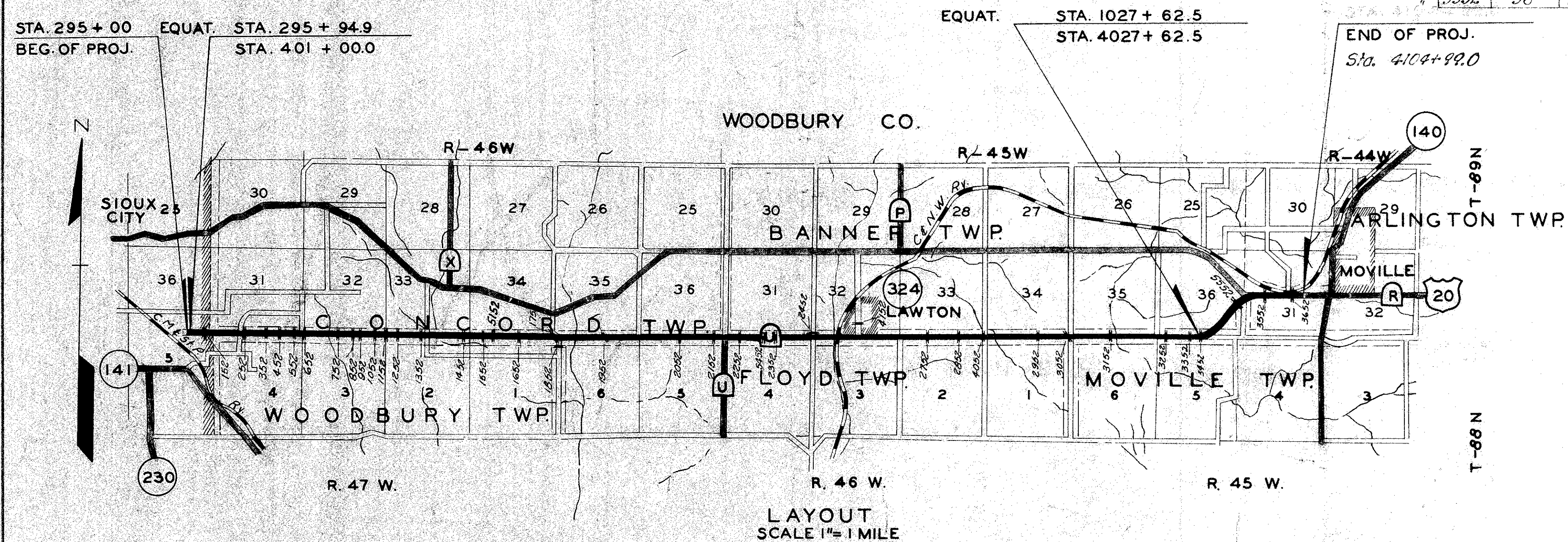
WOODBURY COUNTY

APRIL 1952

In Letting of May 20, 1952

DESIGN	LOCATION			DESCRIPTION	ESTIMATE OF QUANTITIES							
	SECTION	TWP	STA.		SIZE AND TYPE	CONCRETE CU. YD.	REINFORCING STEEL LB.	EXCAVATION CU. YD.		LIN. FT. OF F-I PIPE		REMOVALS
								CL. 20	CL. 24	24"	36"	
152	5-36	Sioux City	416+00	4'X4'X22.3' Reinforced Conc. Box	144.1	14985	75					
252	4-31	Woodbury & Concord	435+00	9'X11'X15.7' Cor. Arch Culvert & Reinf. with	324.6	28697	170					
352	4-31	"	451+60	24" F-I Pipe with Flume	4.0	301	46	25	72			
452	4-31	"	459+60	" " "	3.1	233	56	34	120			
552	4-31	"	468+95	4'X4'X18.5' Reinf. Conc. Box	113.1	11231	230					
652	32	Concord	475+75	5'X5'X10.4' Reinf. Conc. Box & Flume	83.8	7389	253				20'X16' Plank Br. 57' At Sta. 471+73	
752	3-32	Woodbury & Concord	495+63	8'X8'X17.7' " " "	355.1	37666	238					
852	3-32	"	503+65	48" F-I Pipe with Flume	7.0	436	130	169			136	
952	3-32	"	509+30	24" F-I " " "	3.0	229	59		78			
1052	3-32	"	517+40	" " " " "	3.5	265	20	90	66			
1152	3-32	"	527+22	4'X4'X12.1' Reinf. Conc. Box	62.9	5649	68					
1252	2-33	"	535+80	6'X6'X126' " " "	127.7	13526	98					
1352	2-33	"	549+98	12'X10'X55' " " "	160.7	16817	551				Salvage; 14'X25' Wood Truss Bdy	
1452	2-33	"	574+50	3'X4'X19.1' " " "	95.3	7755	61					
1552	1-34	"	587+00	4'X5'X196' " " "	141.1	12657	50	139				
1652	1-34	"	608+00	24" F-I Pipe with Flume	3.1	233	32	24	78			
1752	1-34	Concord & Woodbury	633+23	5'X5'X11.1' Reinf. Conc. Box	72.1	6338	198					
1852	1-6	Woodbury & Floyd	651+63	8'X5'X46' " " "	60.1	5466	91				10.3' At Sta. 635+63	
1952	6-35	Floyd & Woodbury	663+24	4'X4'X66' " " "	358	3032	114				Salvage; 36" Conc. Pipe 31a	
2052	5-36	Floyd & Concord	706+77	36" F-I Pipe with Flume	37.5	376	165	96	138		" 24" Pipe at Sta. 706+77	
Totals					1837.6	173301	2705	577	414	138	186	

DESIGN	LOCATION			DESCRIPTION	ESTIMATE OF QUANTITIES												
	SECTION	TWP.	STA.		SIZE AND TYPE	CONCRETE CU. YD.	REINFORCING STEEL LB.	EXCAVATION CU. YD.		LIN. FT. OF F-I PIPE				REMOVALS			
								CL. 20	CL. 24	24"	30"	36"	42"		48"		
In letting of May 20, 1952	2152	5-36	Floyd & Concord	731+652	5'X5'X59' Reinf. Conc. Box	42.5	3652	50									T Beam Bdg. 20'X20' 31a
	2252	4-31	Floyd & Banner	748+58	12'X10'X50' " " "	150.8	15842	86									18'X16' Bdg. 51a 748+58
	2352	4-31	"	769+09	4'X4'X18' " " "	118.4	10834	118									Salvage; 36" Conc. Pipe 769+09
	2452	31-32	Banner	793+91	8'X6'X34' Reinf. Con. Box	53.2	6126	77									Sal. 8.8'X17'X20' Wood Culk.
	2752	2-33	Floyd & Banner	867+00	24"X168' F-I Pipe & Flume	3.0	222	40	114	168							Sal. 18" pipe Sta. 867+00
	2852	2-33	"	884+67	30"X150' F-I Pipe & Flume	3.9	271	77	55	150							" " " " 884+67
	2952	1-34	"	936+10	42"X132' F-I Pipe & 4'X3' Flume	6.6	369	63	160				132				" 24" " " 936+10
	3052	6	Noville	952+30	4'X4'X15.4' Reinf. Conc. Box	92.5	9301	110									Sal. 42" Pipe Sta. 952+30
	3152	6-35	Noville & Banner	975+92	8'X8'X17.7' " " "	356.5	37875	526									" 38.5'X16.1' Beam Bdg.
	3252	5-36	"	1010+04	4'X4'X27.4' " " "	196.0	19000	343	170								36"X150' Conc. Pipe 1010+04
	3352	5-36	"	1025+25	3'X2' Flume 186' of 30" F-I Pipe	4.8	338	145	62	186							
	3452	5-36	"	1027+625	24"X72' F-I Pipe & Flume	4.4	327	57	5	72							
	3552	31	Arlington	4081+41	" X78' F-I Pipe Ext.	.2	6	10	90	78							Plug as per plan.
	3652	31	"	4097+27	4'X4'X96' Reinf. Conc. Box	48.9	4683	90									30'X41' Conc. Pipe 31a
	4052	1-33	Banner	899+685	14'X12' Reinf. Conc. Box Culvert with 36" F-I Pipe Lot & 4'X4' Conc. Lot	528.0	62446	630	2670				114				Structures as per plan
	4152	32	Banner	2828+60	10'X4'X72' Reinforced Conc. Box	100.4	10782	180									10'X26.5' Wood Culk. as per plan
					Sub. Total 2152-4152	1710.1	182074	2602	3326	318	336	114	132				
				Brot. Forward 152-2052	1837.6	173301	2705	577	414	138		186					
				Totals	3547.7	355375	5307	3903	732	336	252	132	186				
FN	5152	34-1	Concord	590+00	4.5'X5'X58' Reinf. Conc. Box	35.6	3173	19	3								
"	5452	31/4	Banner	764+50	4'X5'X68' Reinf. Conc. Box	42.6	3606	65									
"	5552	36	Banner	4049+57	4'X5'X55' Reinf. Conc. Box	36.1	3035	61									



Specifications:
All materials and construction to be in accordance with Iowa State Highway Commission Standard Specifications, Series of 1952.

APPROVED:

CHIEF ENGINEER
IOWA HIGHWAY COMMISSION

DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

RECOMMENDED FOR APPROVAL:

DISTRICT ENGINEER

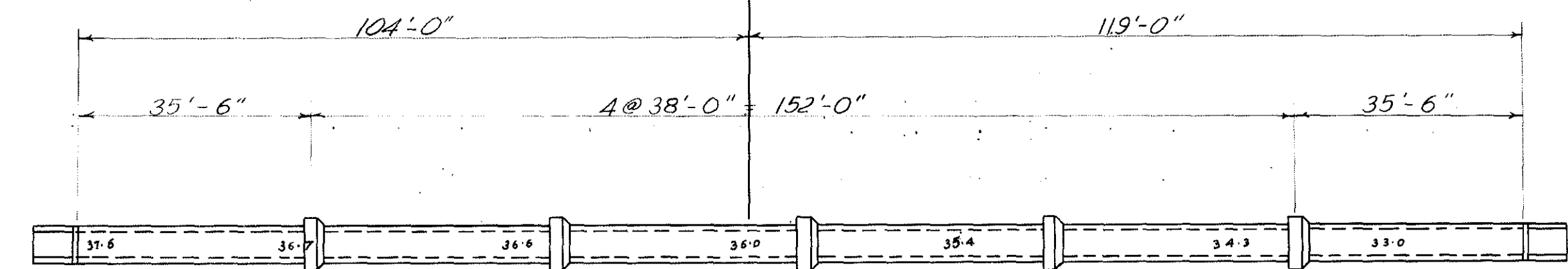
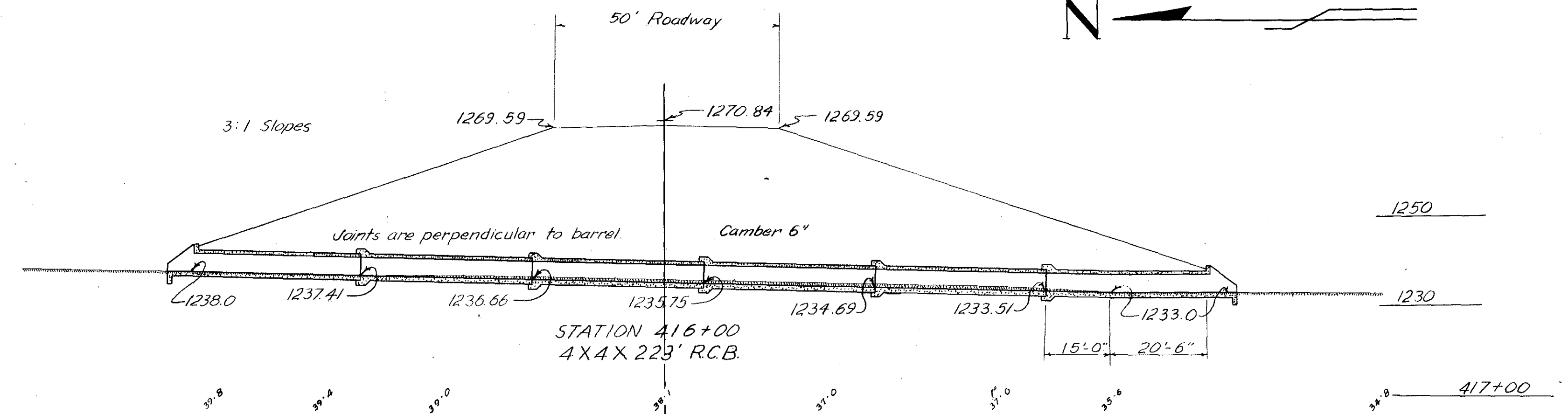
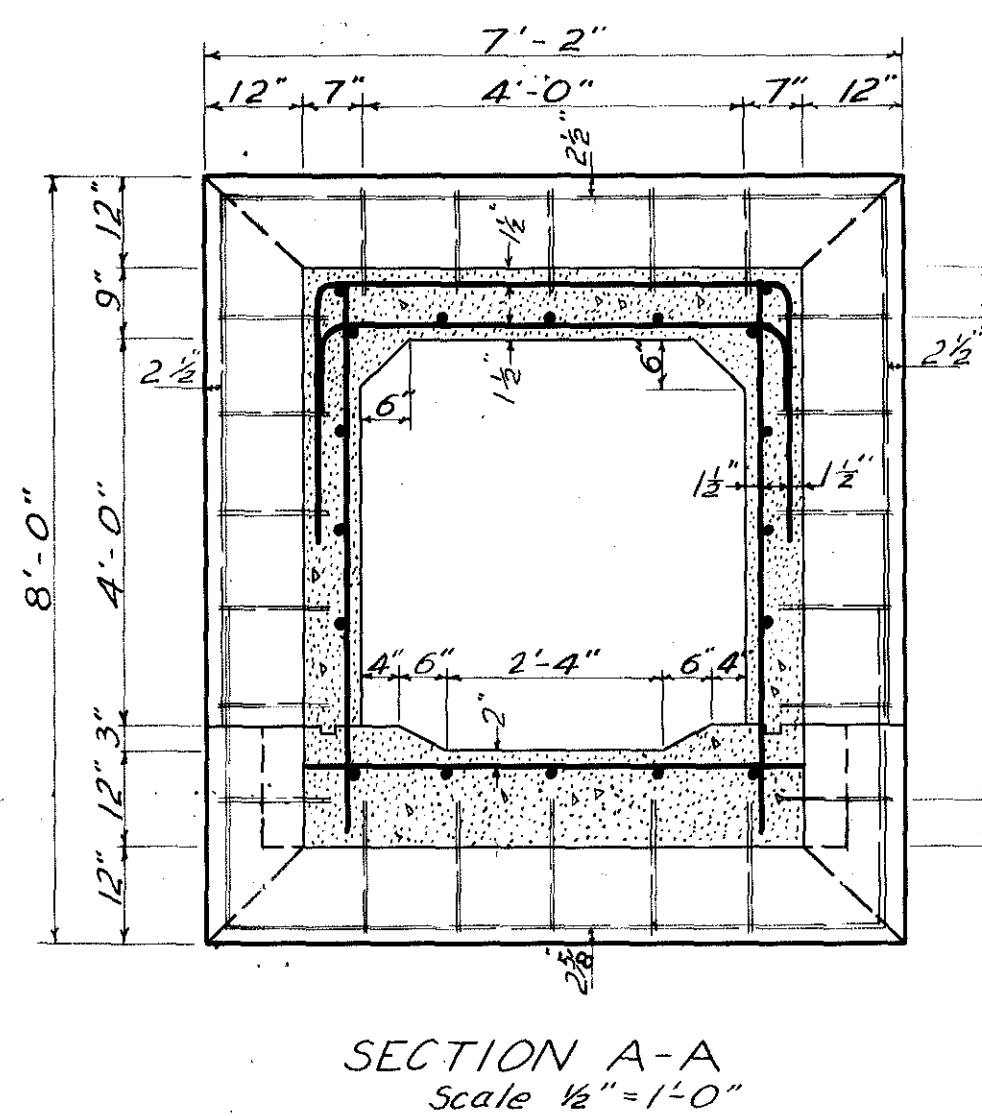
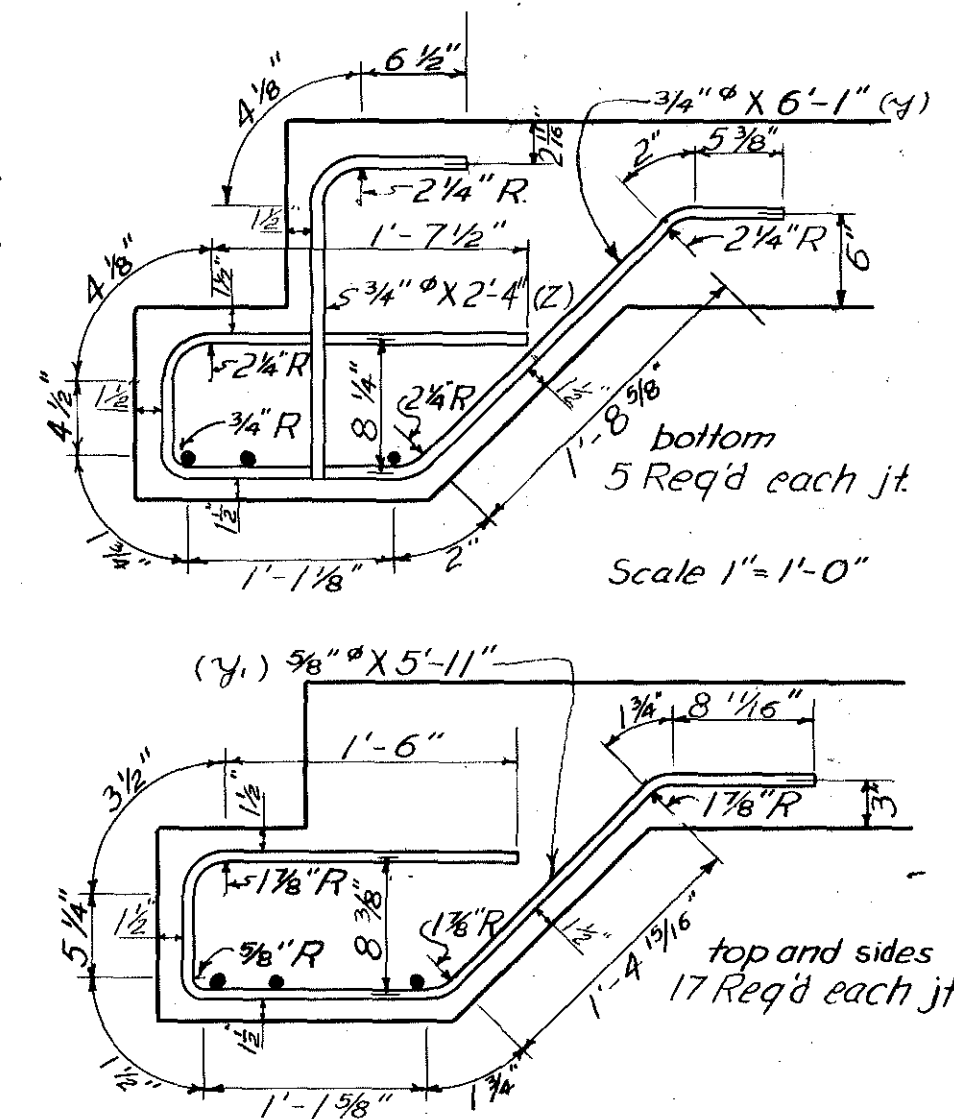
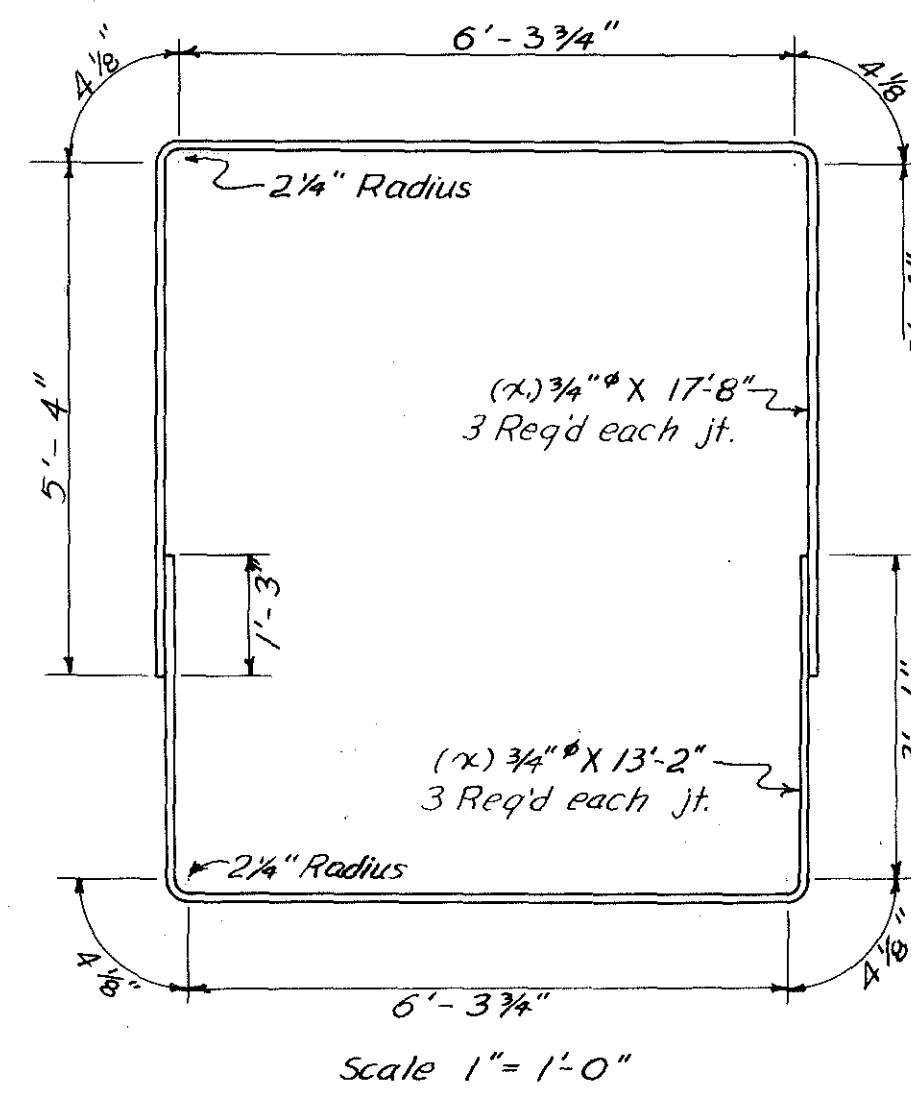
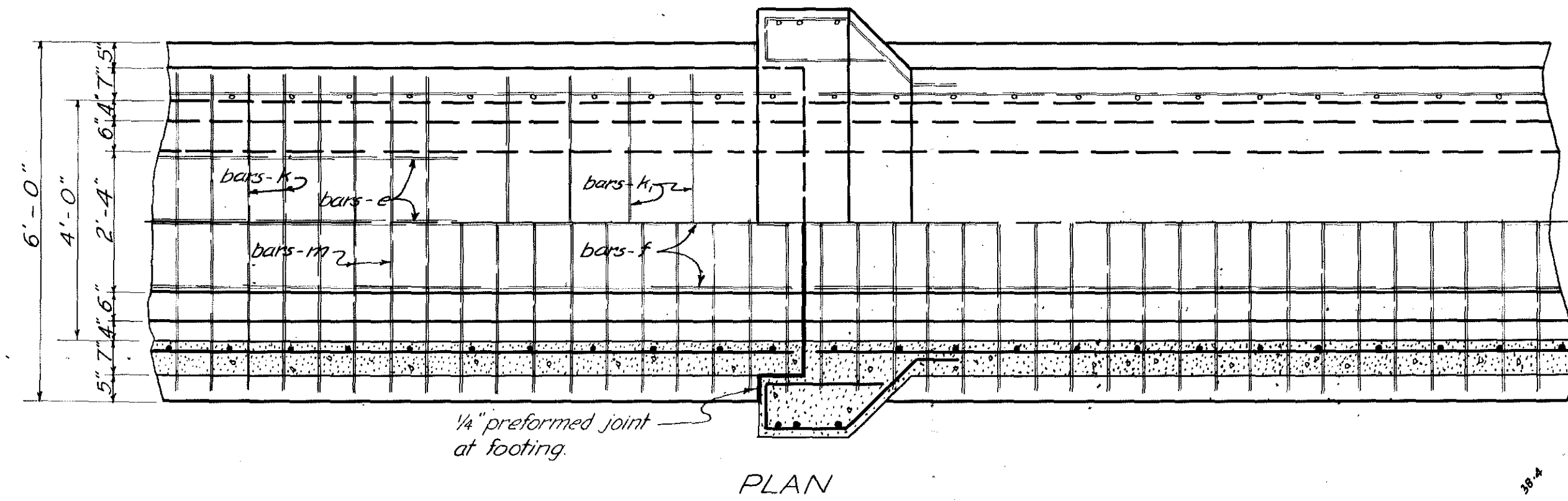
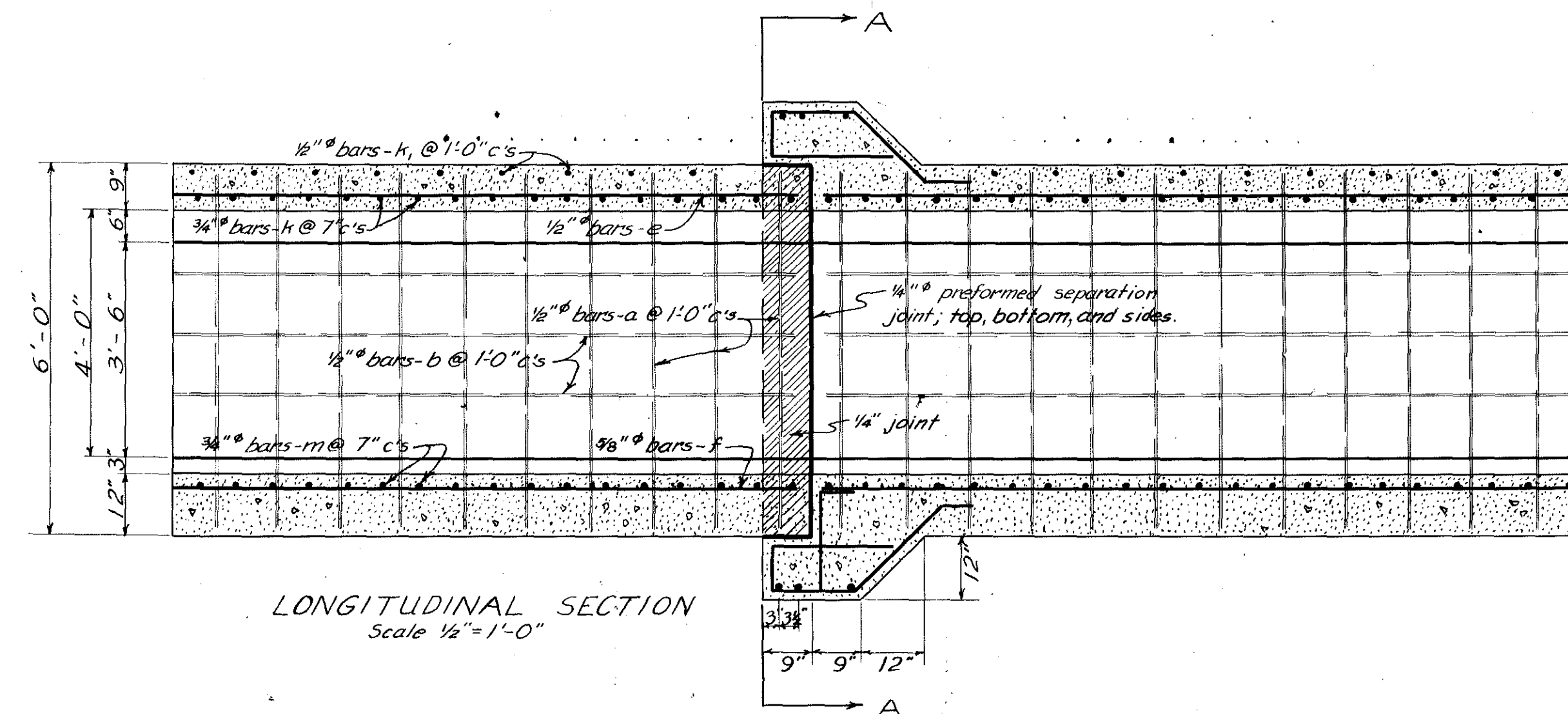
DATE

APPROVED:

DIVISION ENGINEER

DATE

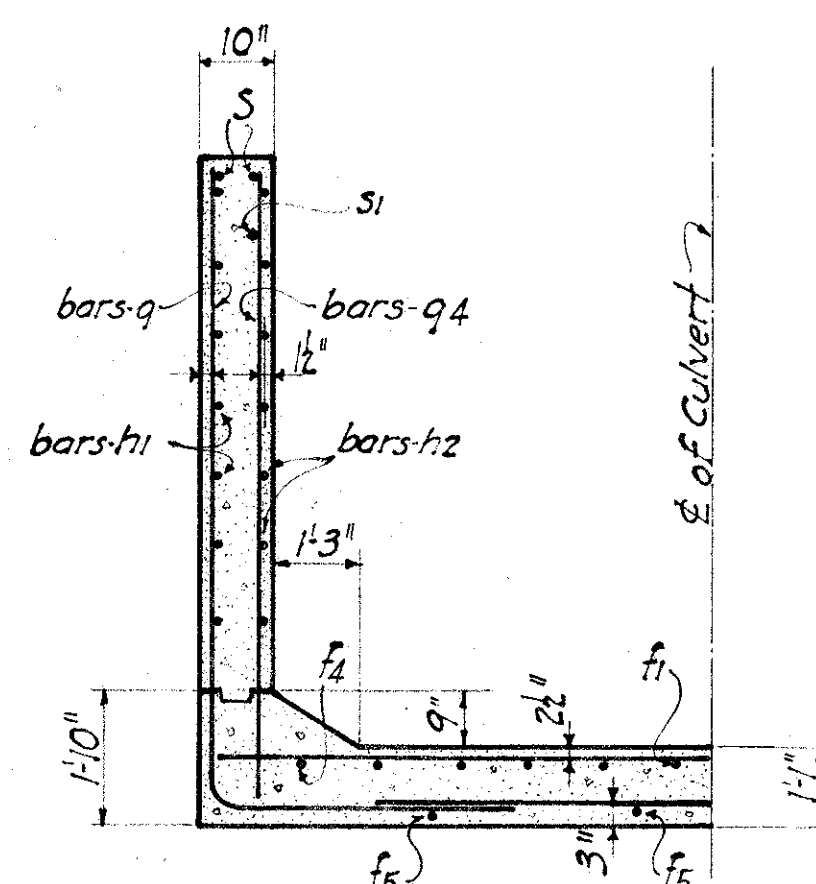
Revised 10-24-52 Designs 5452 & 5552 added as FN-2
Revised 7-11-52 Design 5152 Added as FN-2



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-4-P			
DRAINAGE AREA	4.5 acres - hilly	SECTION	5-36
SIZE AND TYPE	4x4x223' RCB	TOWNSHIP	Woodbury - Sioux City
DEPTH OF FILL	30'	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE EXCAVATION 75 C.Y.	STATION	416+00
	CONCRETE 144.1 C.Y.	PROJECT	F-2 (7)
	REINFORCING 14,985 LBS	DATE	February, 1952
		DESIGN NO.	152

BILL OF REINFORCING STEEL

Bar	Location	Shape	No.	Size	Length	Weight
a	Extrados Transverse	7	159	5/8" φ	18-0	2985
a1	Intrados Transverse	7	159	5/8" φ	17-0	2819
b1	Long. End barrel sections	—	76	1/2" φ	20-8	1049
b2	Long. Int. barrel sections	—	114	1/2" φ	38-8	2945
c	Intrados dowels	1	159	5/8" φ	3-3	539
d	Extrados dowels	L	159	5/8" φ	6-4	1050
e	Slab Transverse	—	191	1" φ	10-8	5440
e1	Apron-Top Transverse	—	38	1" φ	Var	1439
e2	Apron-Bottom Transverse	—	20	1/2" φ	Var	137
f1	Slab Long. End Sections	—	20	3/4" φ	36-2	1086
f2	Slab Long. Int. Sections	—	42	3/4" φ	38-8	2439
f3	Slab-Bott. long. End Sections	—	8	3/4" φ	21-0	252
g	Back Face Vert. Wing Walls	L	44	5/8" φ	Var	648
g1	" " " " "	1	20	5/8" φ	9-3	102
g2	" " " " "	L	12	5/8" φ	10-11	137
g3	" " " " "	L	16	5/8" φ	9-5	157
g4	Front " " " "	—	64	1/2" φ	55-0	367
g5	" " " " "	—	12	1/2" φ	7-0	56
h1	Back " Horiz. " "	—	44	1/2" φ	Var	328
h2	Front " " " "	—	44	5/8" φ	Var	512
i	Parapet Verticals	11	22	1/2" φ	19-3	114
j	" " Horizontals	—	8	5/8" φ	10-8	89
k	Curtain Wall-Vertical	7	24	5/8" φ	4-6	113
l	" " " Horizontal	—	4	3/4" φ	17-6	143
m	Brackets	7	8	5/8" φ	6-6	54
s	Wing Walls sloped	7	8	3/4" φ	21-0	252
s1	" " " " "	7	4	3/4" φ	19-0	114
t	Bell Joint-Top Long.	7	16	3/4" φ	30-1	723
u	" " " - Bott. "	7	16	1/2" φ	22-2	532
v	" " " " Vert.	7	44	3/4" φ	3-6	231
x	" " " " - Top Trans.	7	132	5/8" φ	6-10	941
y	" " " " - Bott. "	7	44	3/4" φ	8-10	584
f5	Apron-Bott. Long.	—	8	1/2" φ	11-0	59
f4	" " Top Long.	—	4	3/4" φ	14-0	84
Total Reinforcing Steel				#4 Ga.	3000'	28697

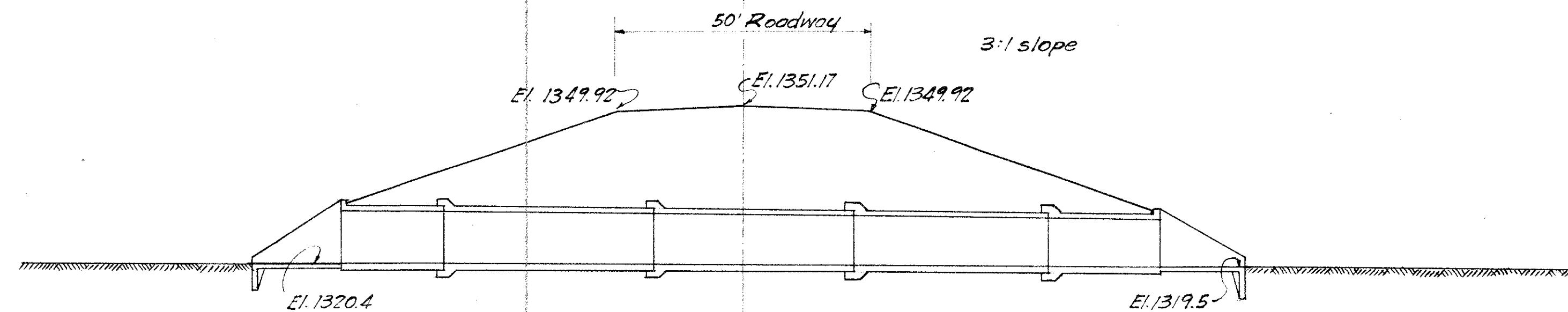


SECTION-CC

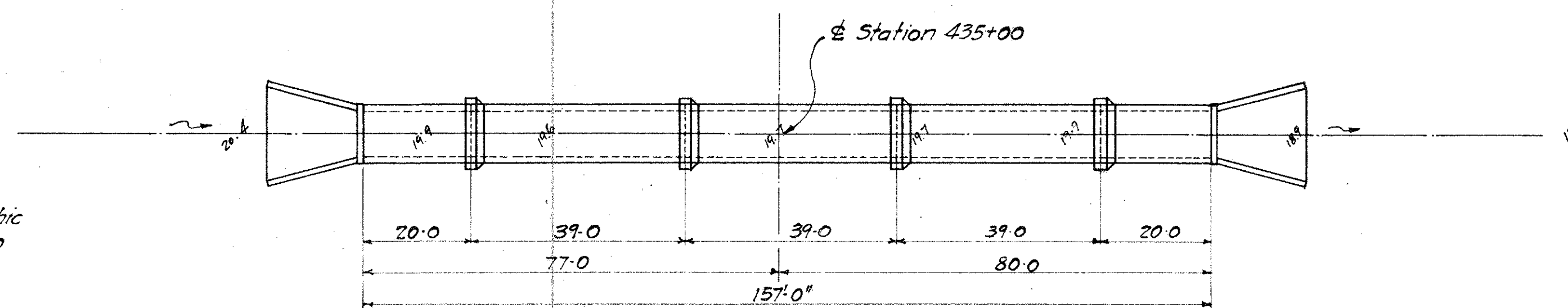
See Sheet 2 for location of Section

General Notes

Barrel is to be constructed in sections as indicated on Situation Plan. Each ring section to be placed in one continuous operation and in such a manner as to load the arch ring symmetrically. Headwalls to be built monolithic with each respective end section. Reinforcing to be securely wired in position before concrete is placed. Longitudinal bars are not to be spliced or extended thru transverse construction joints. All exposed corners of the concrete to be chamfered 3/4". Standard Specifications, Series of 1952, of The Iowa State Highway Commission for construction and materials.



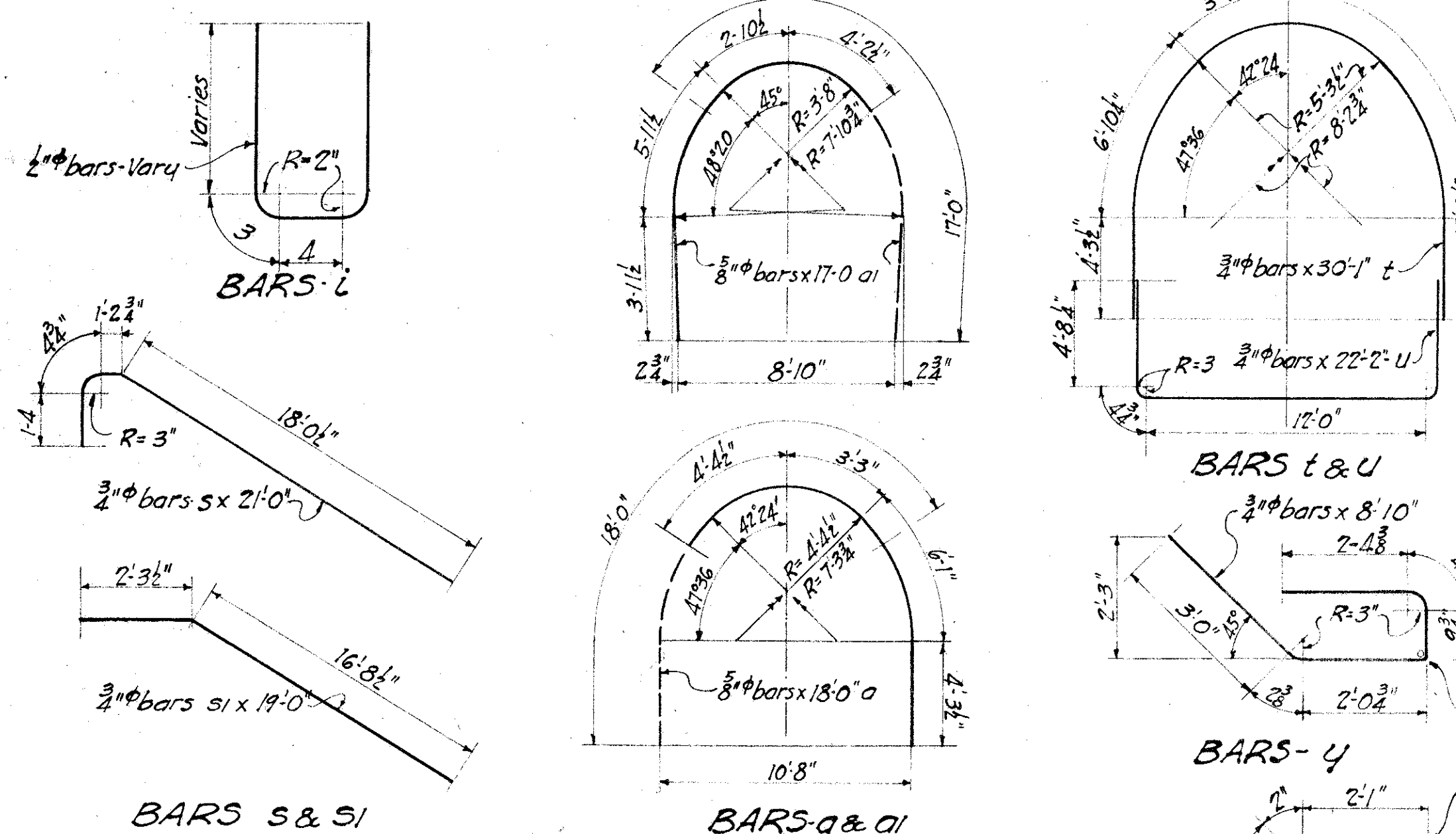
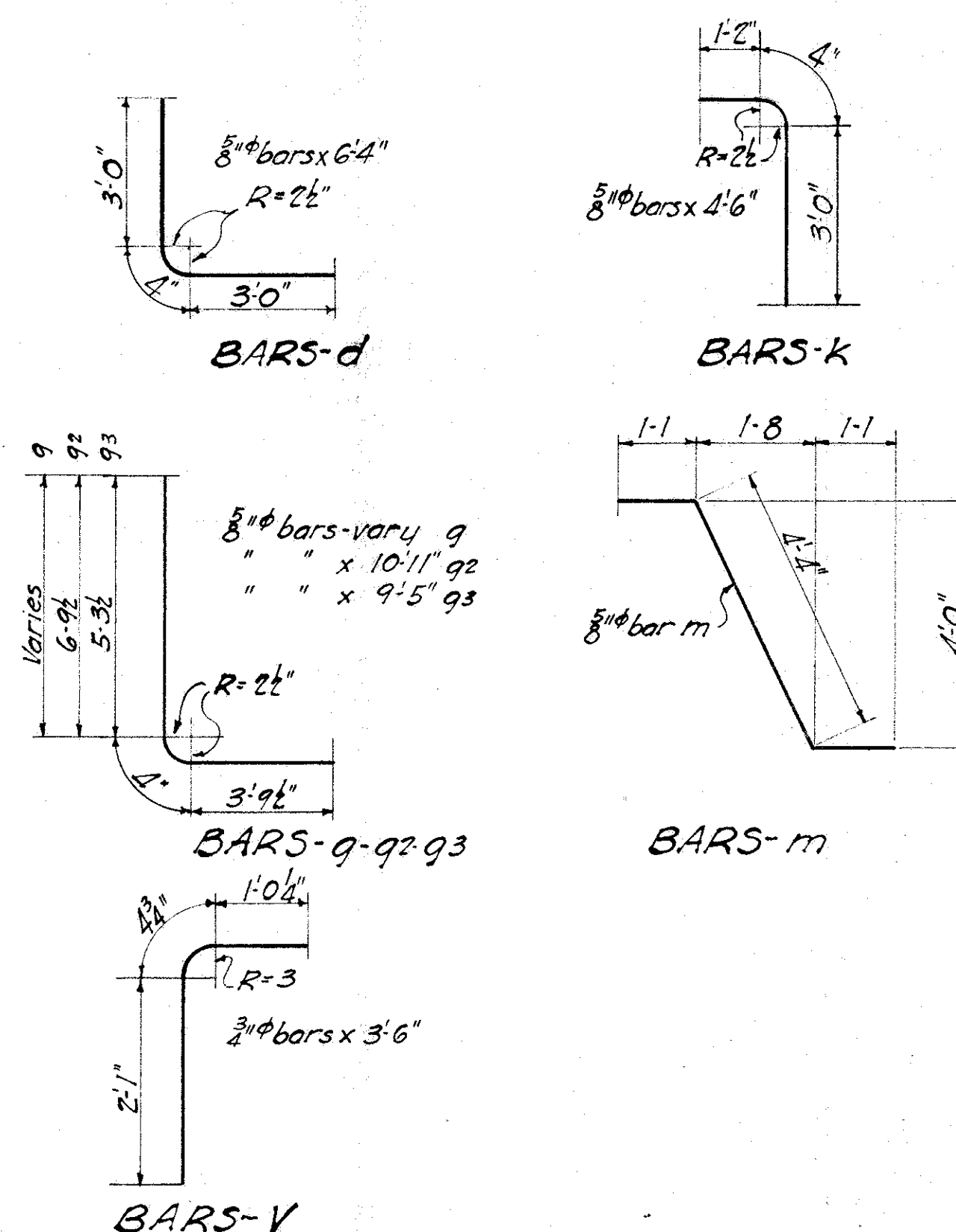
E SECTION



SITUATION PLAN

Scale 1"=20'

Drainage Area
3 1/2 Acres-Hilly & Very Hilly



DETAIL OF REINFORCING BARS

CONCRETE SCHEDULE

Inlet	(Above Key)	27.60	Cu.Yds.
	(Below Key)	28.00	
Outlet	(Above Key)	30.84	
	(Below Key)	30.82	
3 Interior Sections	(Above Key)	119.20	
	(Below Key)	83.14	
Total		324.60	Cu.Yds.

ESTIMATED QUANTITIES

Concrete	324.6 Cu.Yds.
Reinforcing Steel	28697 Lbs.
Class 20 Excavation	* 170 Cu.Yds.

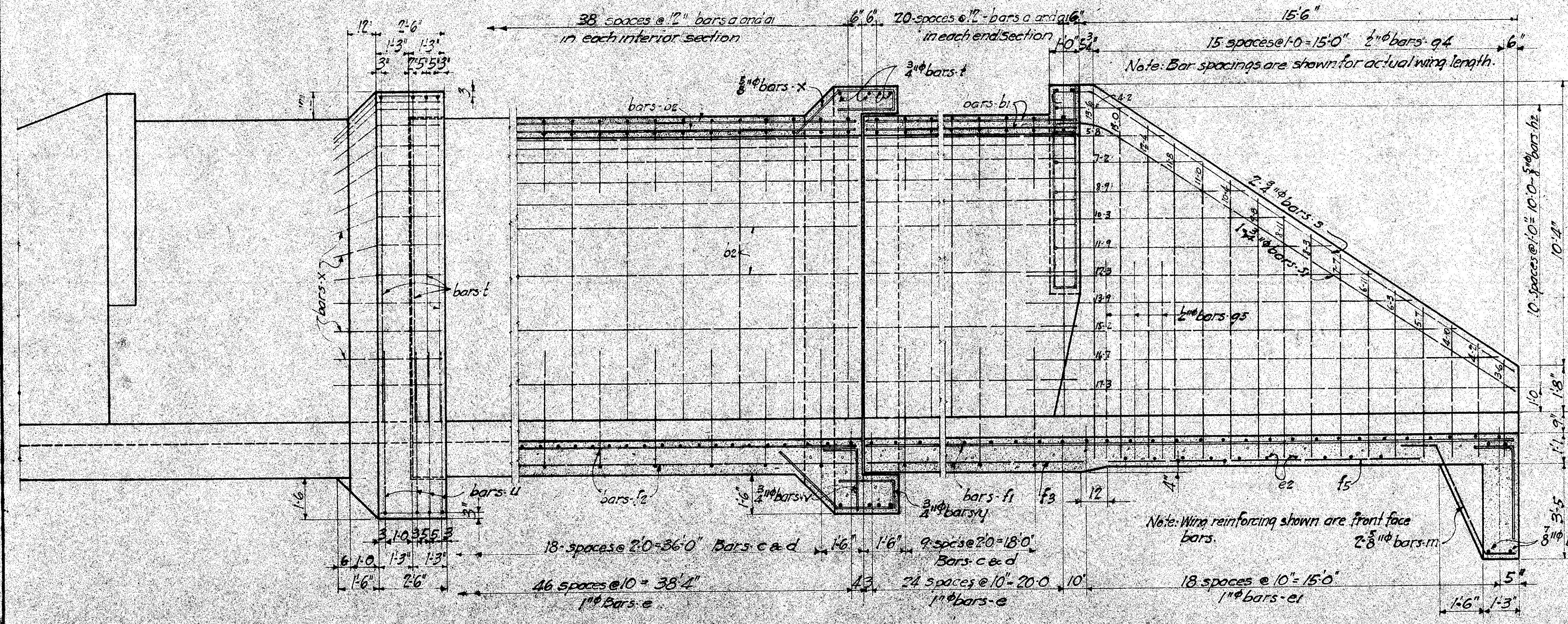
* Based on a width of 18" outside the footings.

Design for
9'x11' REINFORCED CONCRETE ARCH CULVERT
Station 435+00 Project F2 (7)
WOODBURY COUNTY

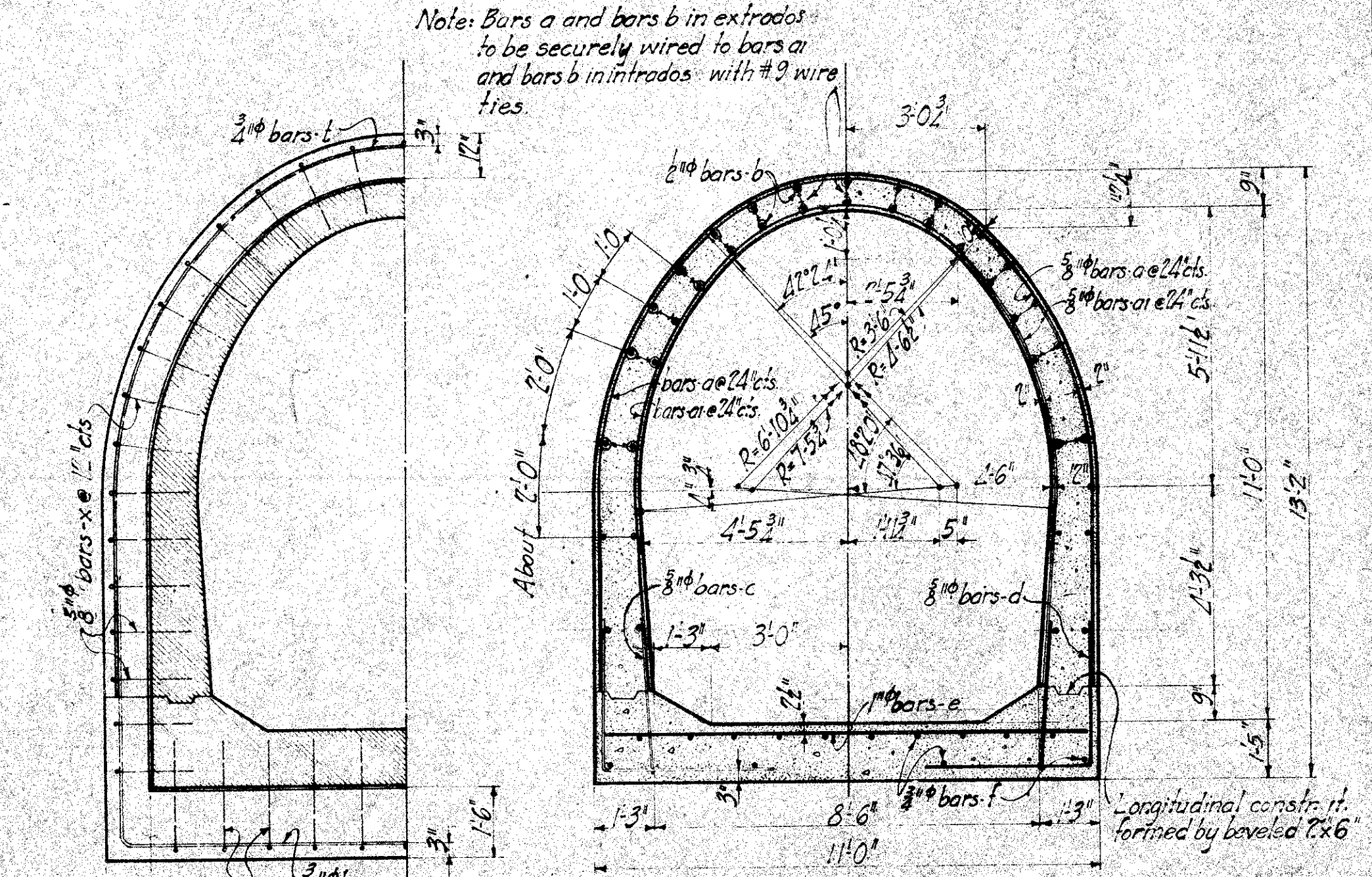
Location:
Section 4-31
Woodbury-Concord Twp.
Woodbury Co.

Iowa State Highway Commission
March 1952 Scale 3/8"=1'-0"
Sheet 1 of 2

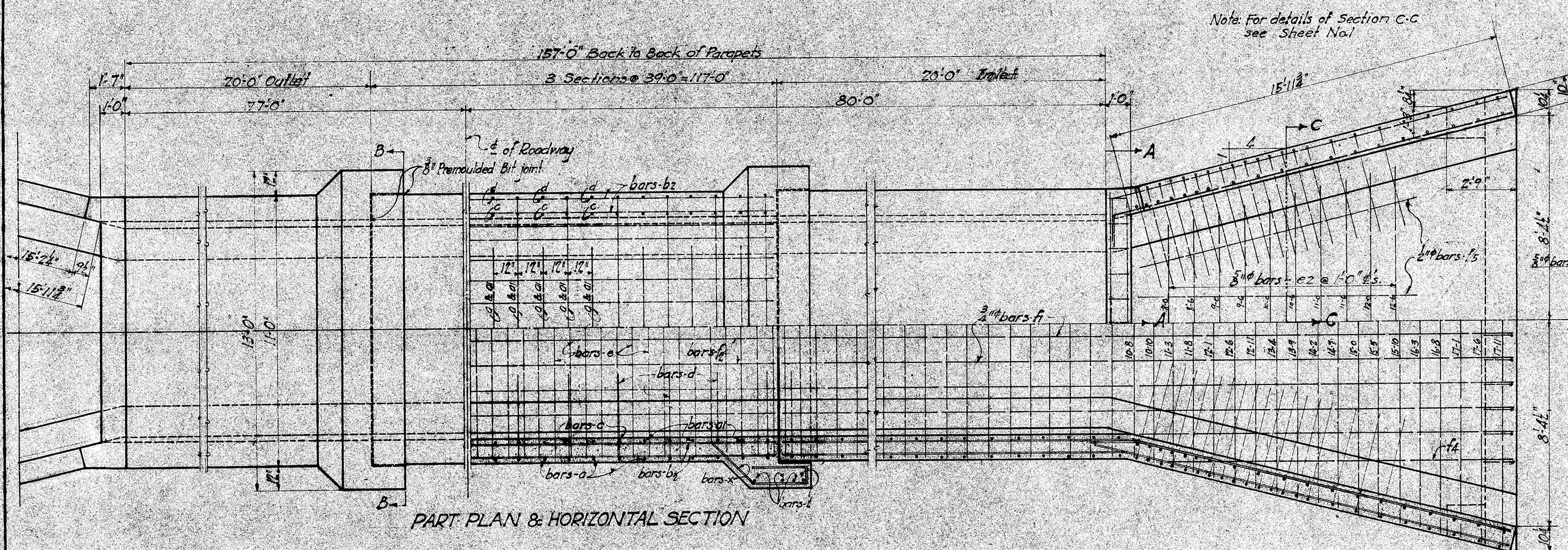
Note: Bars a and bars b in extrados to be securely wired to bars a and bars b in intrados with #9 wire ties.



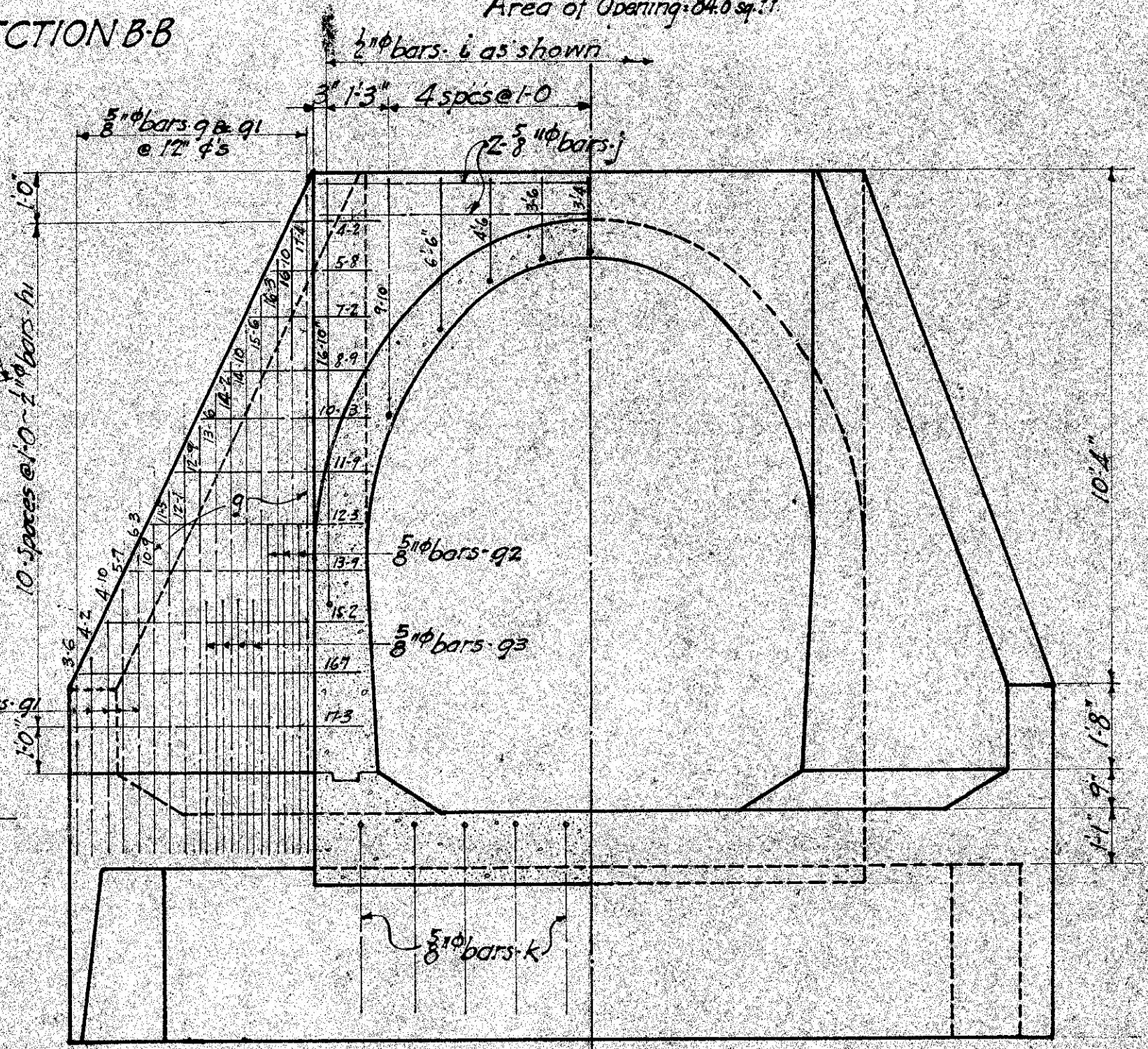
PART ELEVATION & LONGITUDINAL SECTION



HALF SECTION B-B
 BARREL SECTION
 Area of Opening: 84.8 sq. ft.



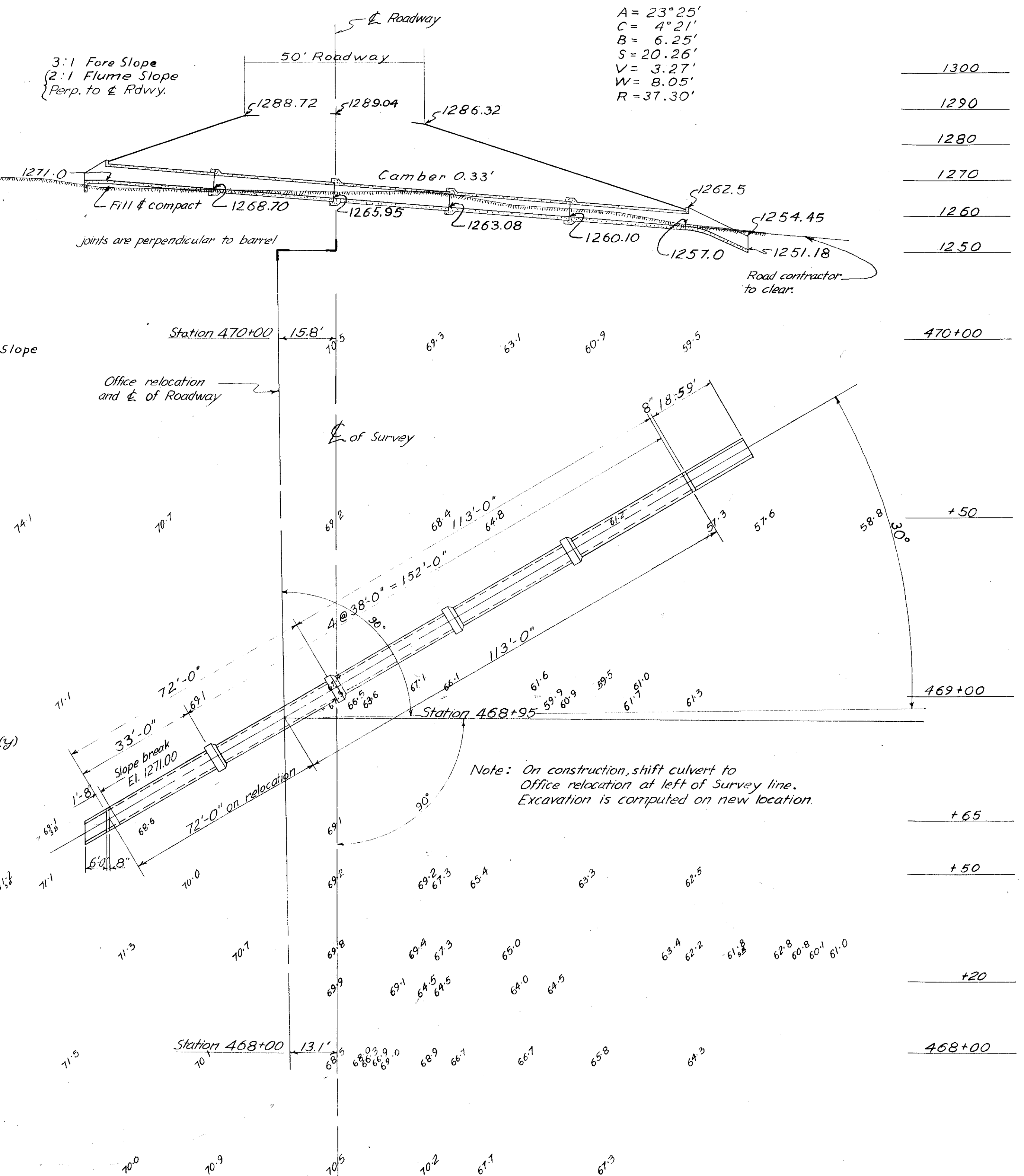
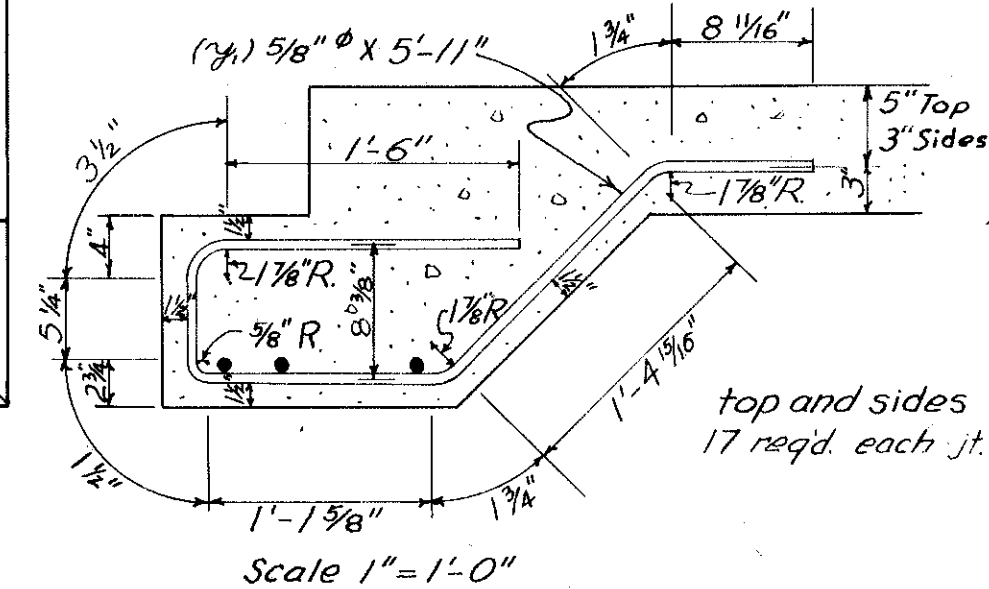
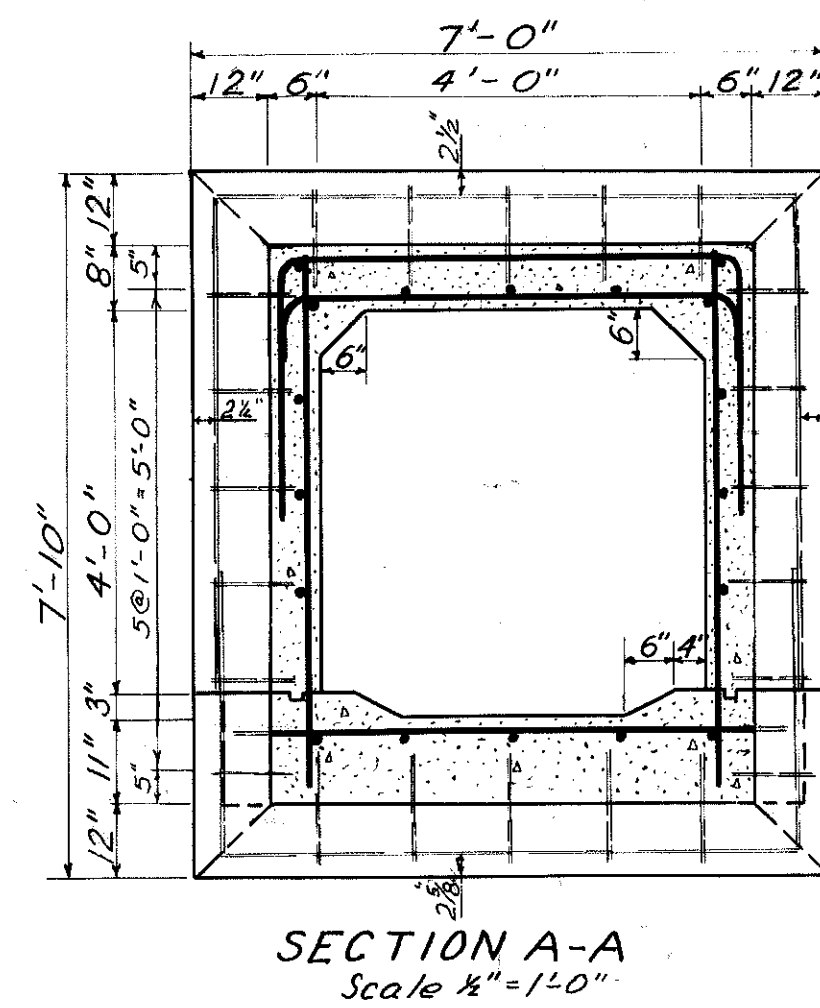
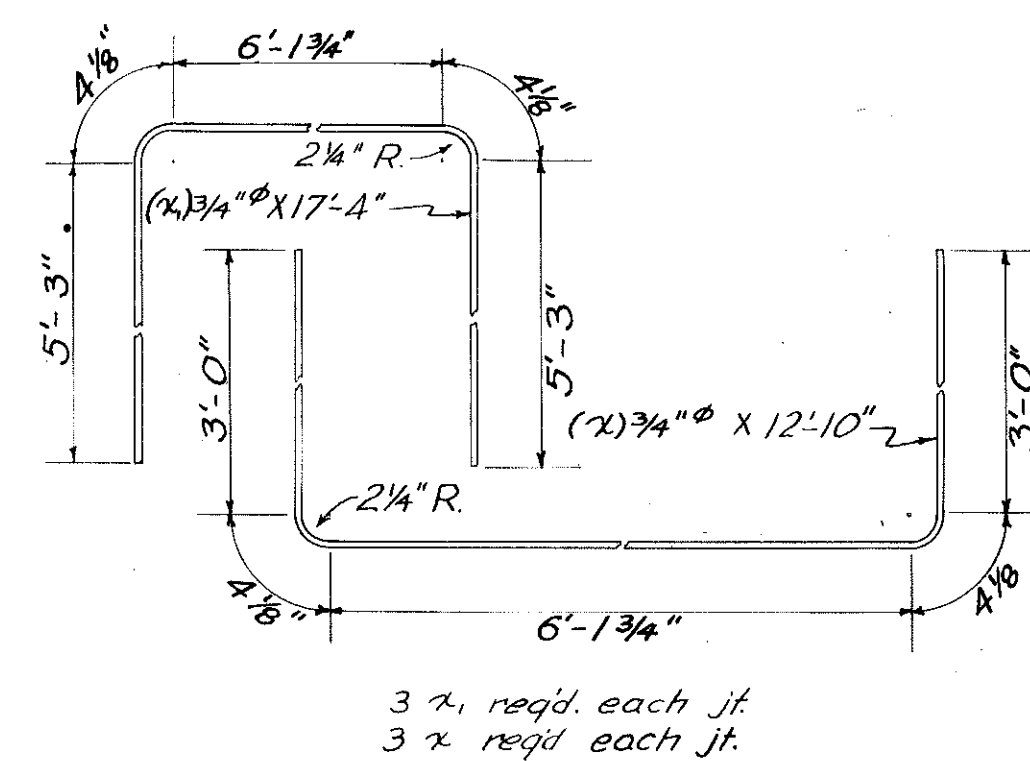
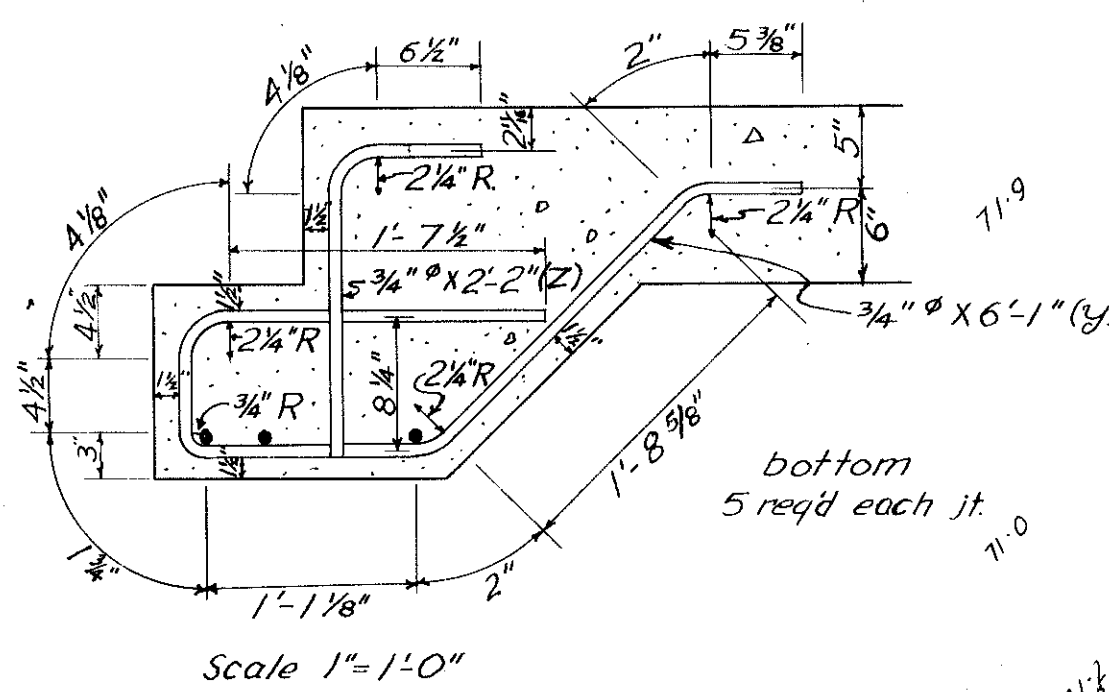
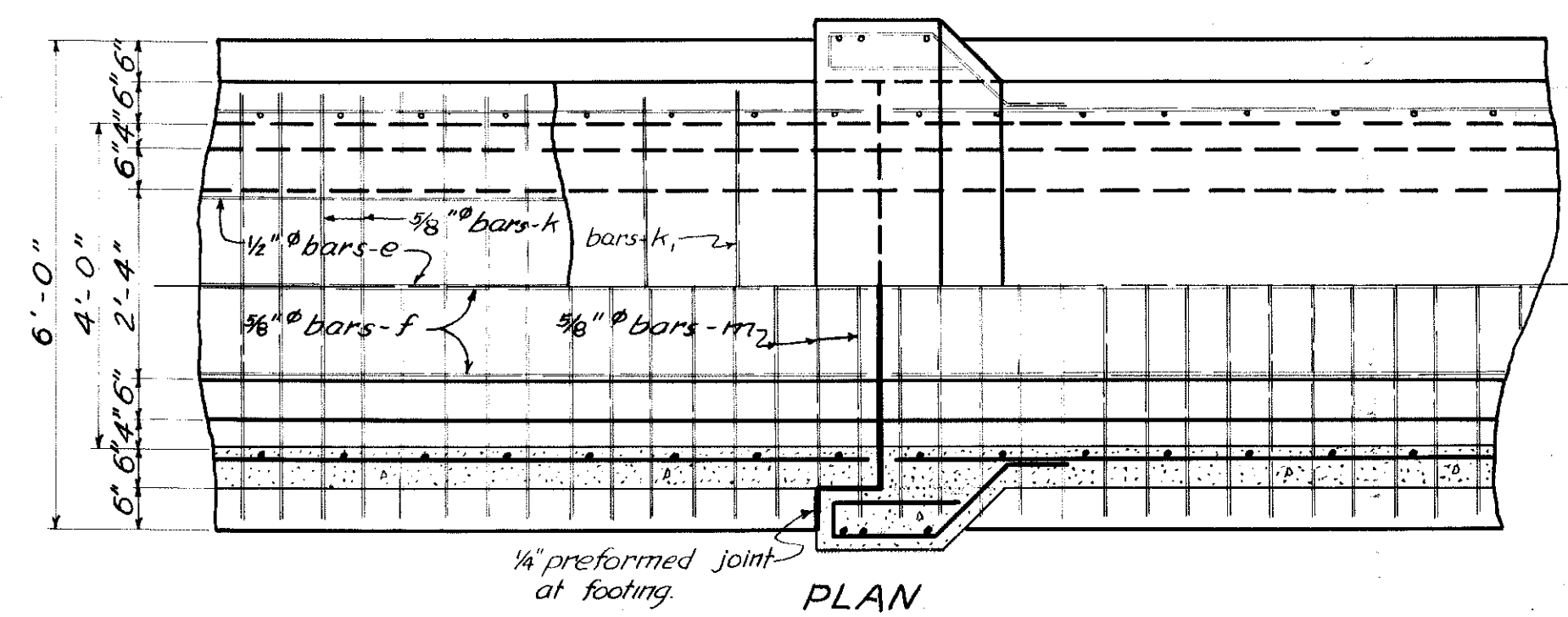
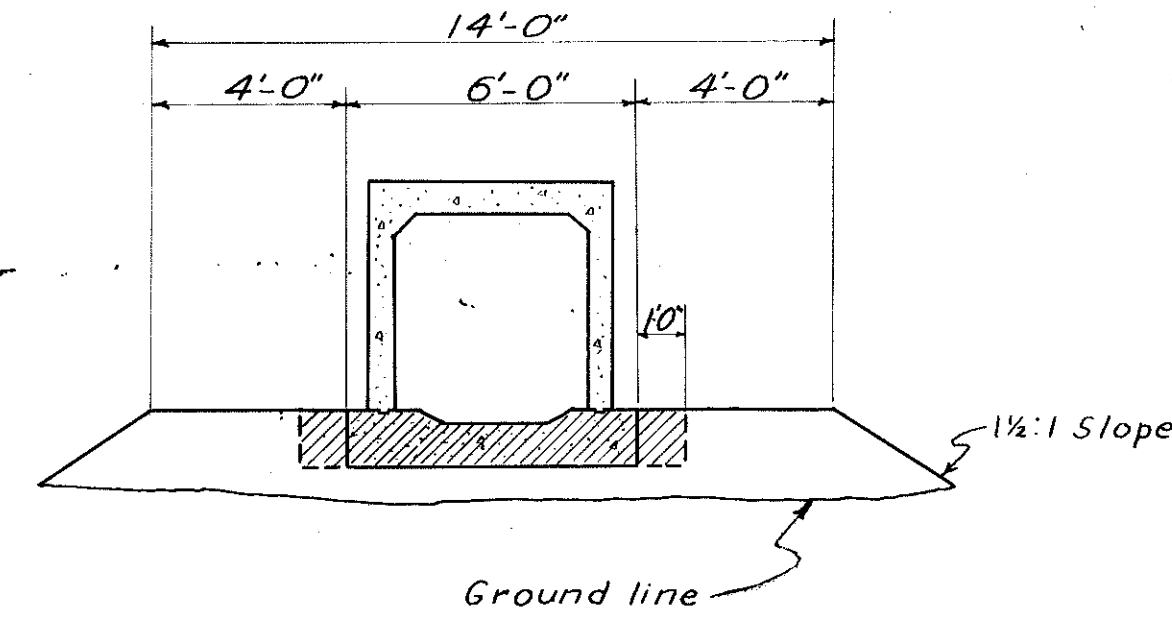
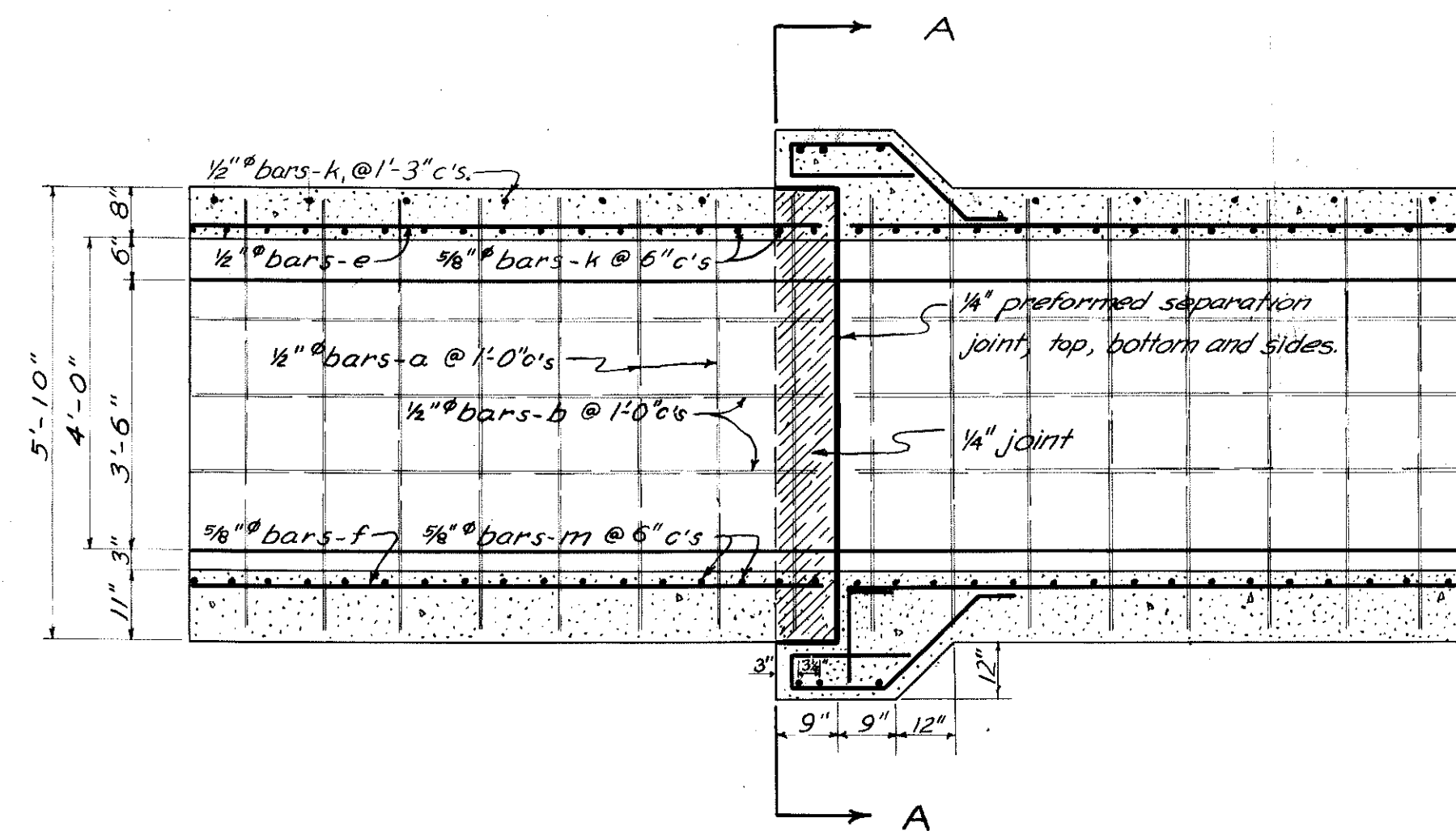
PART PLAN & HORIZONTAL SECTION



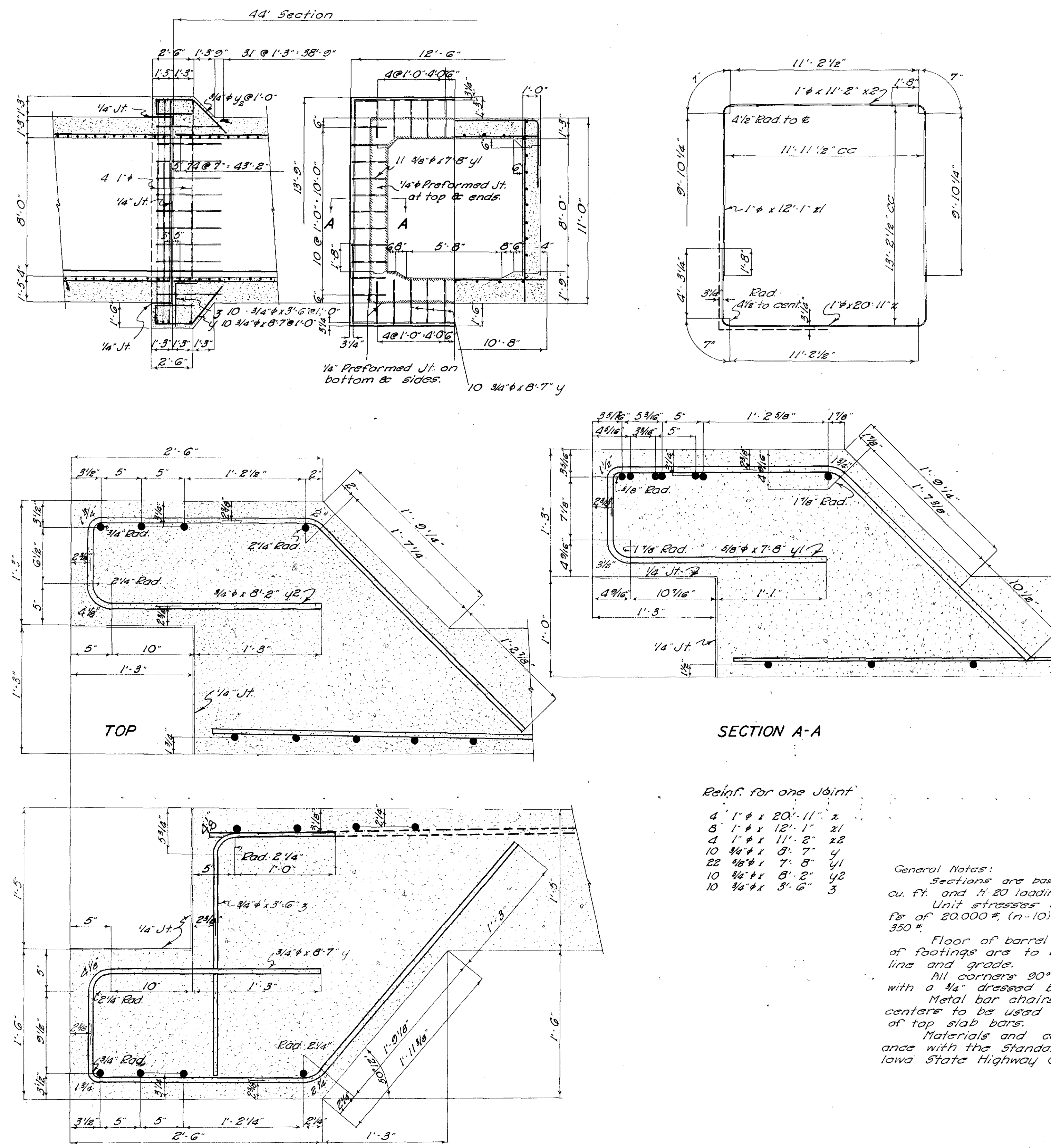
SECTION A-A
 END VIEW
 Note: Wing reinforcing shown are back face bars

Note: For General Notes, Situation Plan, Bar List and Estimated Quantities see Sheet 1 of this design.

Design for
 9'x11' REINFORCED CONCRETE
 ARCH CULVERT
 Station 435+00 Project F2(1)
 WOODBURY COUNTY
 Iowa State Highway Commission
 March 1952 Scale 3/4"=1'-0"
 Sheet 2 of 2

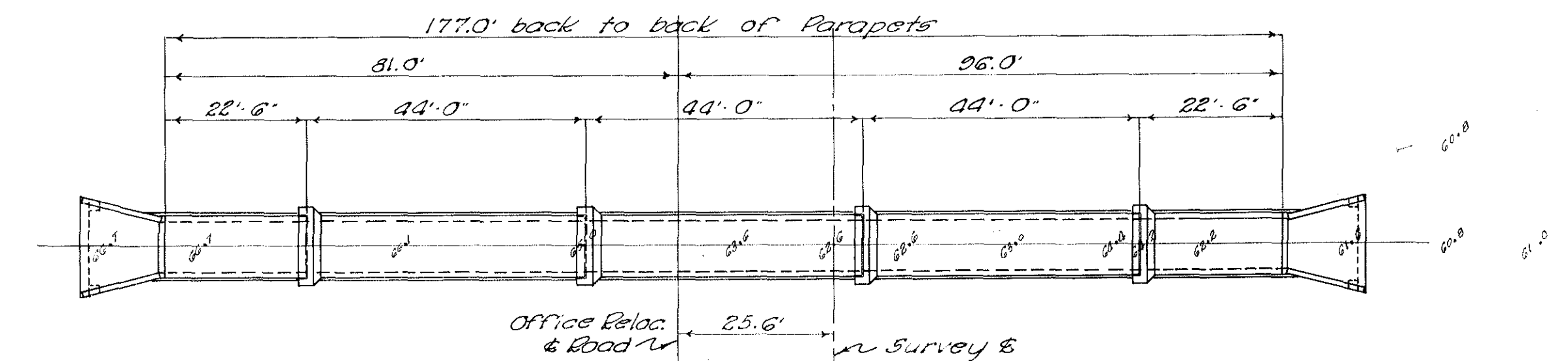
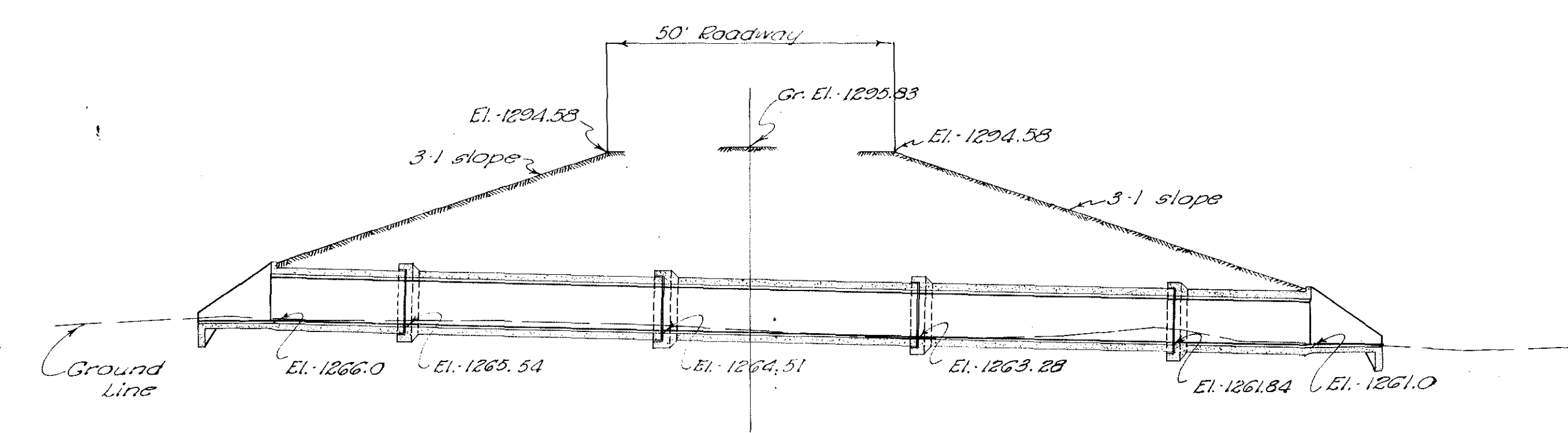


DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C&P	
DRAINAGE AREA <u>35.9</u> <u>Hilly</u>	SECTION <u>4-31</u>
SIZE AND TYPE <u>1 x 1 x 185 RCB</u>	TOWNSHIP <u>Woodbury - Concord</u>
DEPTH OF FILL <u>19'</u>	COUNTY <u>Woodbury</u>
PIPE <u>48"</u> LIN FT	STATION <u>468+95</u>
ESTIMATED EXCAVATION <u>230</u> C.Y.	PROJECT <u>F-2(7)</u>
QUANTITIES CONCRETE <u>113.1</u> C.Y.	DATE <u>February 1952</u>
REINFORCING <u>1231</u> LBS	DESIGN NO. <u>552</u>



Estimate of Quantities

Concrete	355.1 cu. yds.
Reinforcing	37,667 lbs.
Excav. Cl. 20'	238 cu. yds.

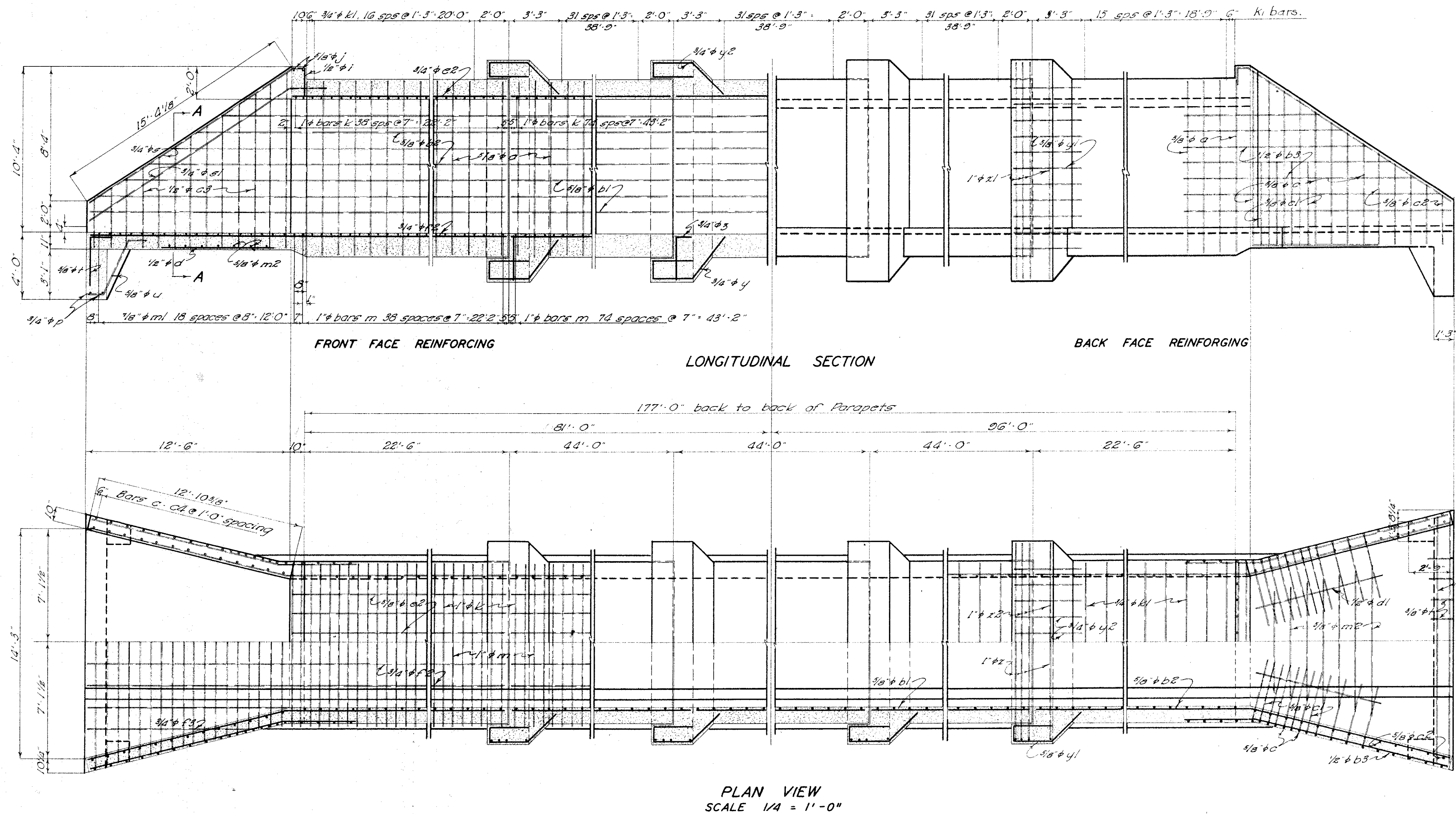


SITUATION PLAN
SCALE 1"=20'-0"
FILL - 23 FT.
DA - 218 AC. HILLY

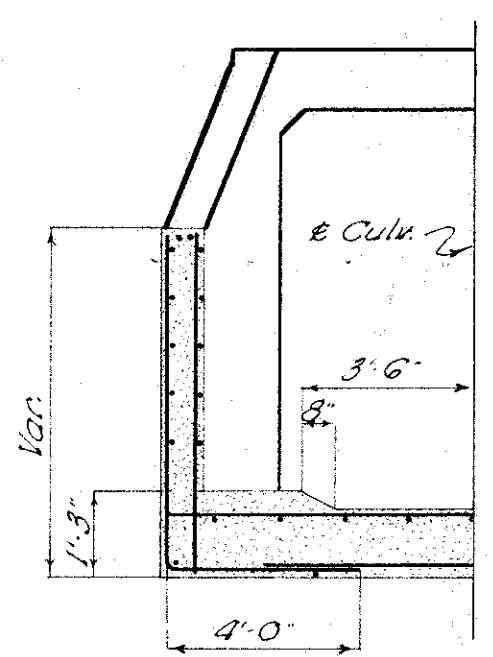
DESIGN FOR
8'-0" X 8'-0" REINF. CONCRETE BOX CULVERT
STATION 495 + 63
PROJECT F-2(7)

LOCATION :
WOODBURY COUNTY
SECTION 3-32
WOODBURY - CONCORD TWP. MARCH 1952

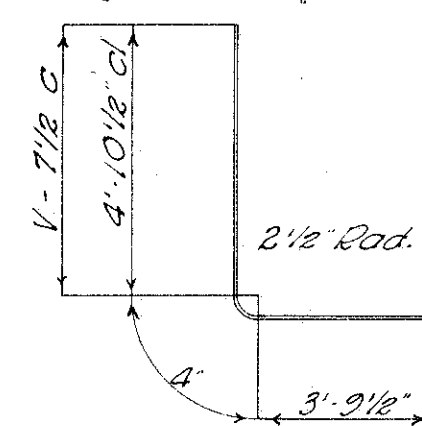
WOODBURY COUNTY
IOWA STATE HIGHWAY COMMISSION
SCALES AS NOTED



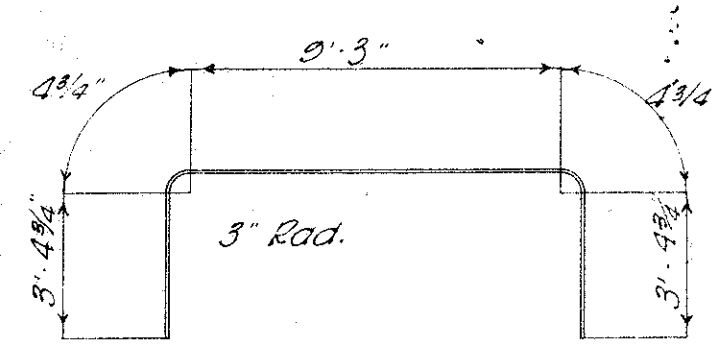
PLAN VIEW
SCALE 1/4" = 1'-0"



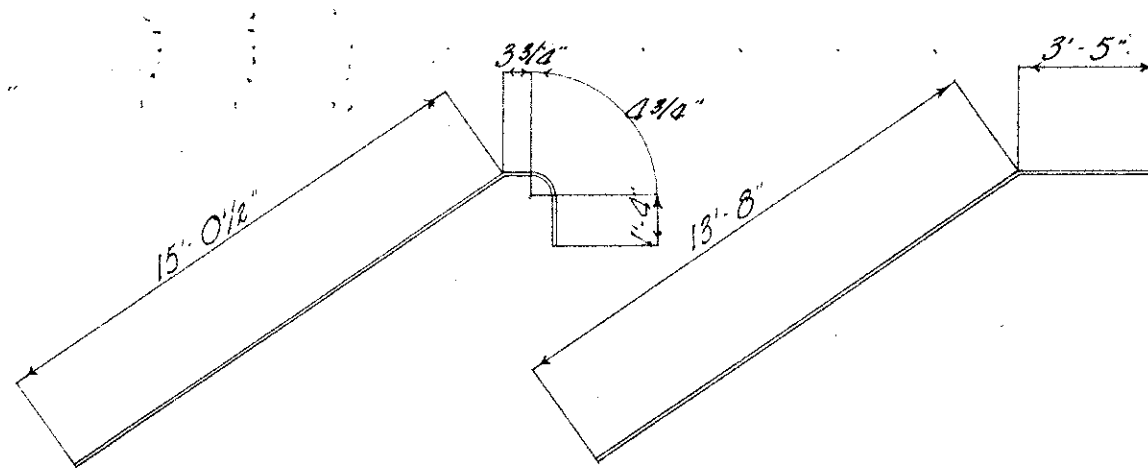
SECTION A-A
SCALE 1/4" = 1'-0"



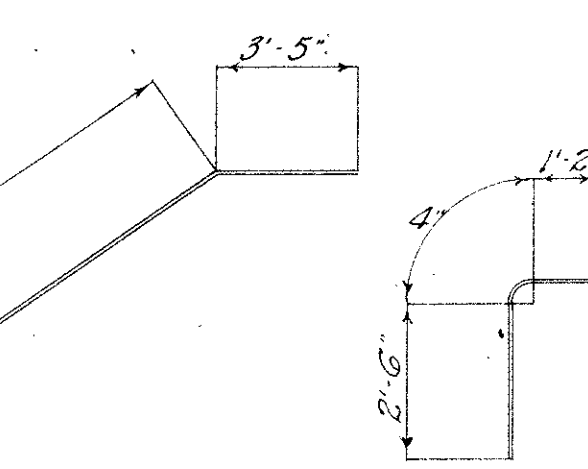
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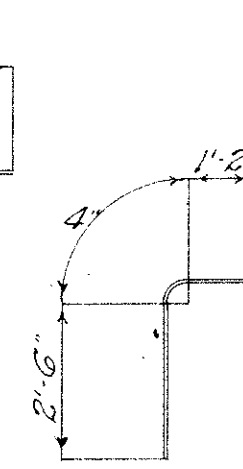
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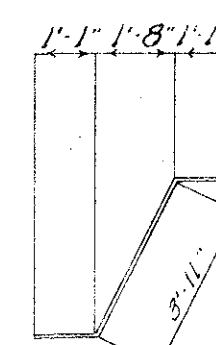
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SI



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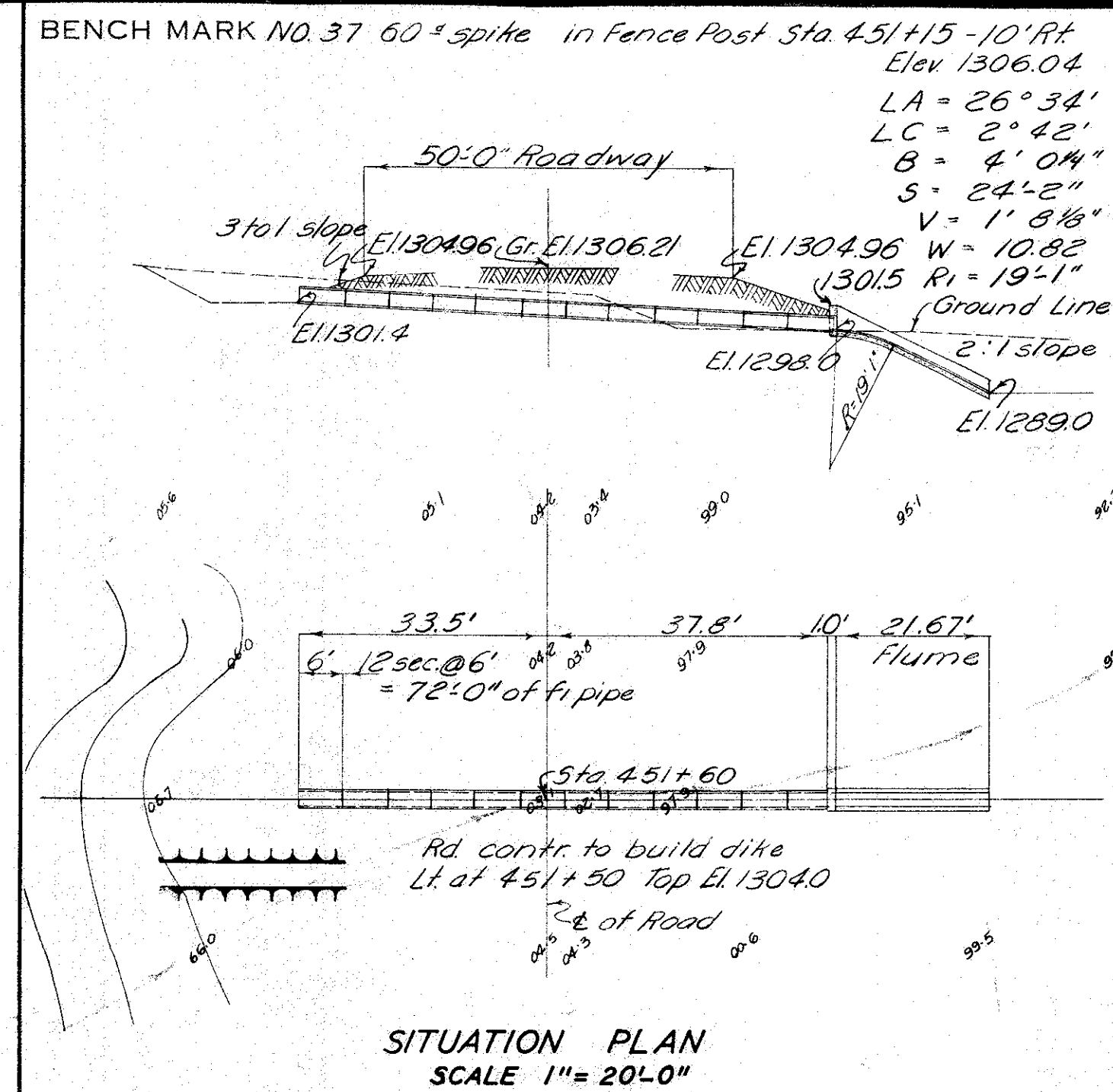
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Mark	Location	Shape	Size	No	Length	Linear Feet				
						1/2"	3/4"	1"	1 1/2"	2"
a	Walls Vert.		3/4"	372	10'-8"					
b1	Horiz. Center Sec. F.F.		3/4"	26	22'-4"					
b2	End "		3/4"	32	Shown					
b3	W. "	B.F.	1/2"	28						
c	Wing Walls Vert.		3/4"	32						
d	" "		1/2"	16	9'-0"					
e2	" "		20	Shown						
e3	" "	F.F.	1/2"	52						
d	Below Wings		1/2"	4	12'-10"					
d1	Hdwl. Apron		1/2"	6	7'-10"					
e1	Slab Center Sec. Longit.		3/4"	36	22'-4"					
e2	End Sec. "		1/2"	12	23'-0"					
e3	Center Sec. "		1/2"	12	22'-3"					
e4	End Sec. "		1/2"	4	23'-0"					
f1	Floor Center Sec.		3/4"	48	22'-6"					
f2	End "		1/2"	14	35'-6"					
f3	Hdwl. Longit.		1/2"	4	9'-6"					
i	Ppt. Vert.		1/2"	16	1'-6"					
j	Longit.		3/4"	4	9'-8"					
k	Slab. Trans.		1"	305	9'-8"					
kl	Corners		3/4"	120	16'-10"					
m	Floor Trans.		1"	303	10'-4"					
ml	" Hdwl.		3/4"	38	Shown					
m2	" "		3/4"	14						
p	Curt. Longit.		3/4"	4	15'-2"					
s	Wing Slope		1/2"	8	17'-1"					
sl	" F.F.		1/2"	4	17'-1"					
t	Curtain & Floor		3/4"	18	4'-0"					
u	Struts		1"	8	6'-1"					
x	Joint		1"	16	20'-11"					
xl	" "		3/4"	32	12'-1"					
x2	" "		1/2"	16	11'-2"					
y	" "		3/4"	40	8'-7"					
yl	" "		3/4"	88	7'-8"					
y2	" "		3/4"	40	8'-2"					
z	" "		1"	40	3'-6"					
* Indicates 20 dia. lap						Length				
						Weight				
Total Reinforcing						37666.8 pounds				
Total Concrete						355.1 cu. yds.				
Excavation Class 20						238 cu. yds.				

	Top Slab	Walls	Bottom Slab	Total
Inlet End	11.9	17.7	23.3	52.9
3 Center Sections	73.1	80.8	88.4	242.4
Outlet End	14.2	19.9	25.7	59.8
Total	99.2	118.4	137.4	355.1 cu. yds.

DESIGN FOR
8'-0" X 8'-0" REINF. CONCRETE BOX CULVERT
STATION 495 + 63
PROJECT F-2(7)

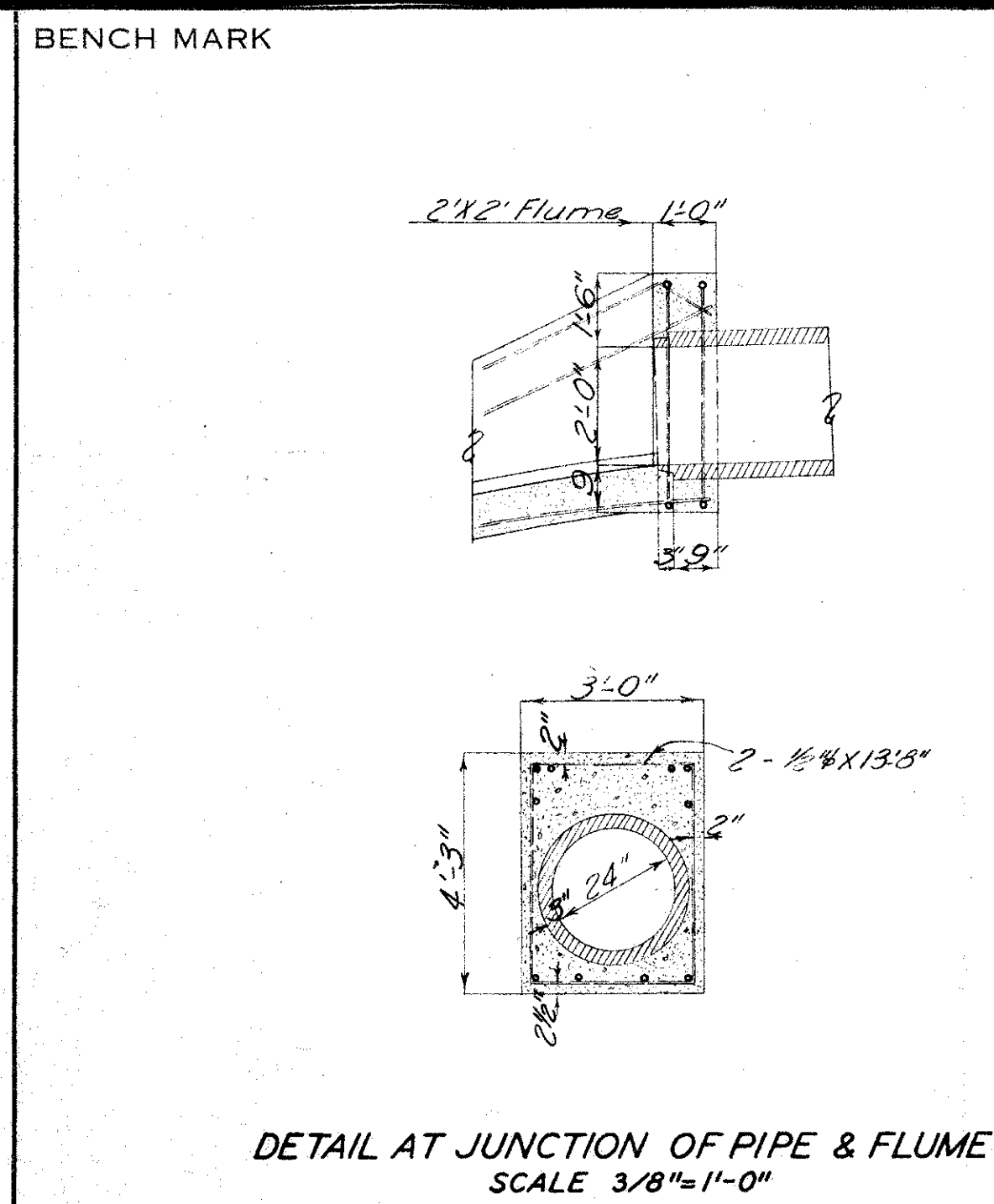
LOCATION :
WOODBURY COUNTY
SECTION 3 - 32
WOODBURY - CONCORD TWP
MARCH 1952
IOWA STATE HIGHWAY COMMISSION
SCALES AS NOTED



Sheet 1 of 2

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F-1 & CFP

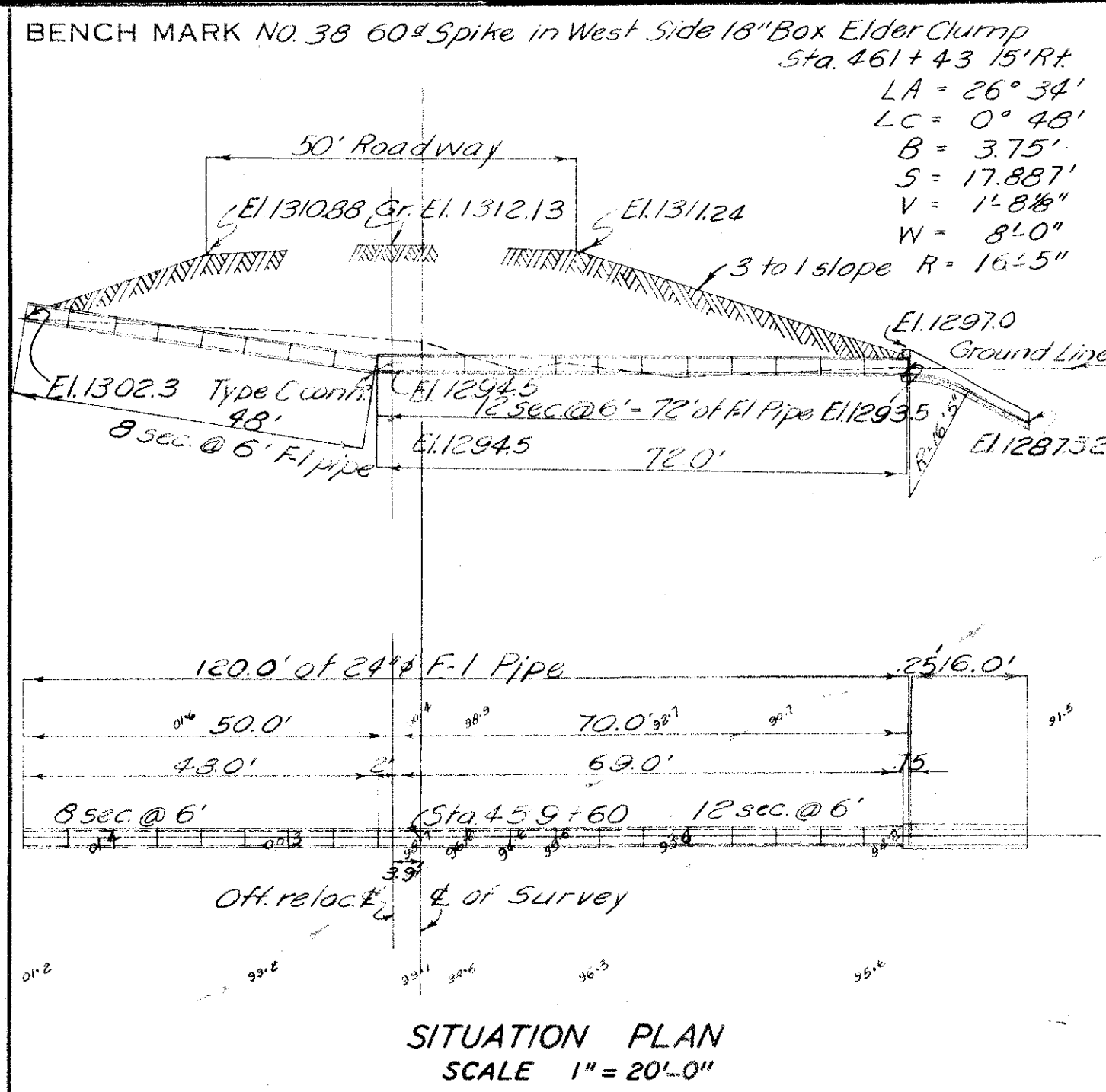
DRAINAGE AREA	3 acres Hilly	SECTION	4-31
SIZE AND TYPE	24" x 12' Pipe with flume	TOWNSHIP	Woodbury-Concord
DEPTH OF FILL	5'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 120' 6" LIN. FT. EXCAVATION 232' 32" C. Y. CONCRETE 4.0 C. Y. REINFORCING 301 LBS.	STATION	451+60
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	352



Sheet 2 of 2

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F-1 & CFP

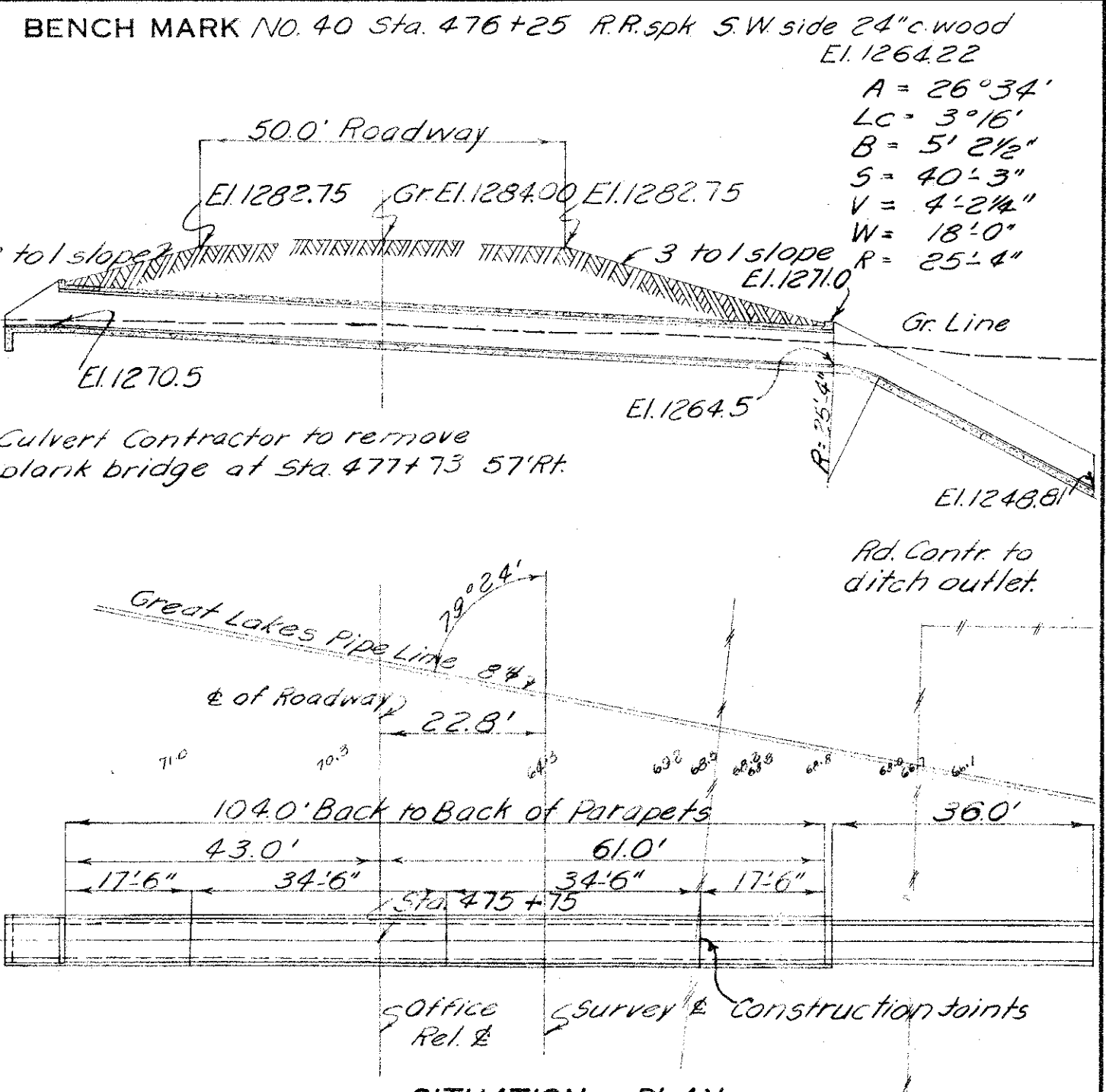
DRAINAGE AREA		SECTION	4-31
SIZE AND TYPE		TOWNSHIP	Woodbury-Concord
DEPTH OF FILL		COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE 3.0 C. Y. REINFORCING 24 LBS.	STATION	451+60
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	352



For Detail of Junction see Sh. 2 Des. NO. 352

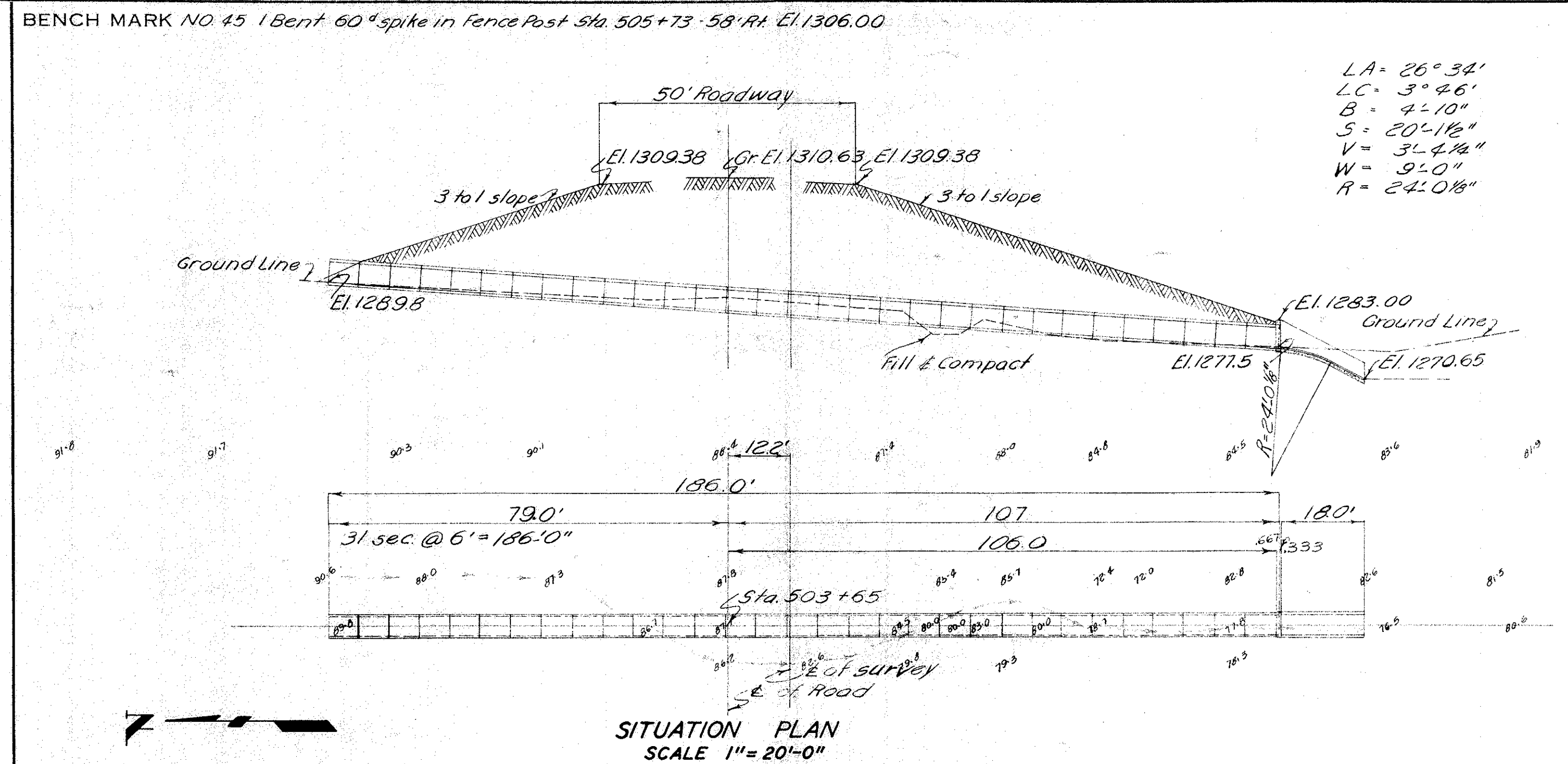
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F-1 & CFP

DRAINAGE AREA	3 acres Hilly	SECTION	4-31
SIZE AND TYPE	24" x 12' Pipe with flume	TOWNSHIP	Woodbury-Concord
DEPTH OF FILL	15'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 20' 6" LIN. FT. EXCAVATION 232' 32" C. Y. CONCRETE 3.1 C. Y. REINFORCING 233 LBS.	STATION	459+60
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	452



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS CFP & CFP

DRAINAGE AREA	15 acres Hilly	SECTION	3-2
SIZE AND TYPE	54" x 48" B with flume	TOWNSHIP	Concord
DEPTH OF FILL	10'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION 1120' 253" C. Y. CONCRETE 83.8 C. Y. REINFORCING 1389 LBS.	STATION	475+75
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	652



Sheet 1 of 3

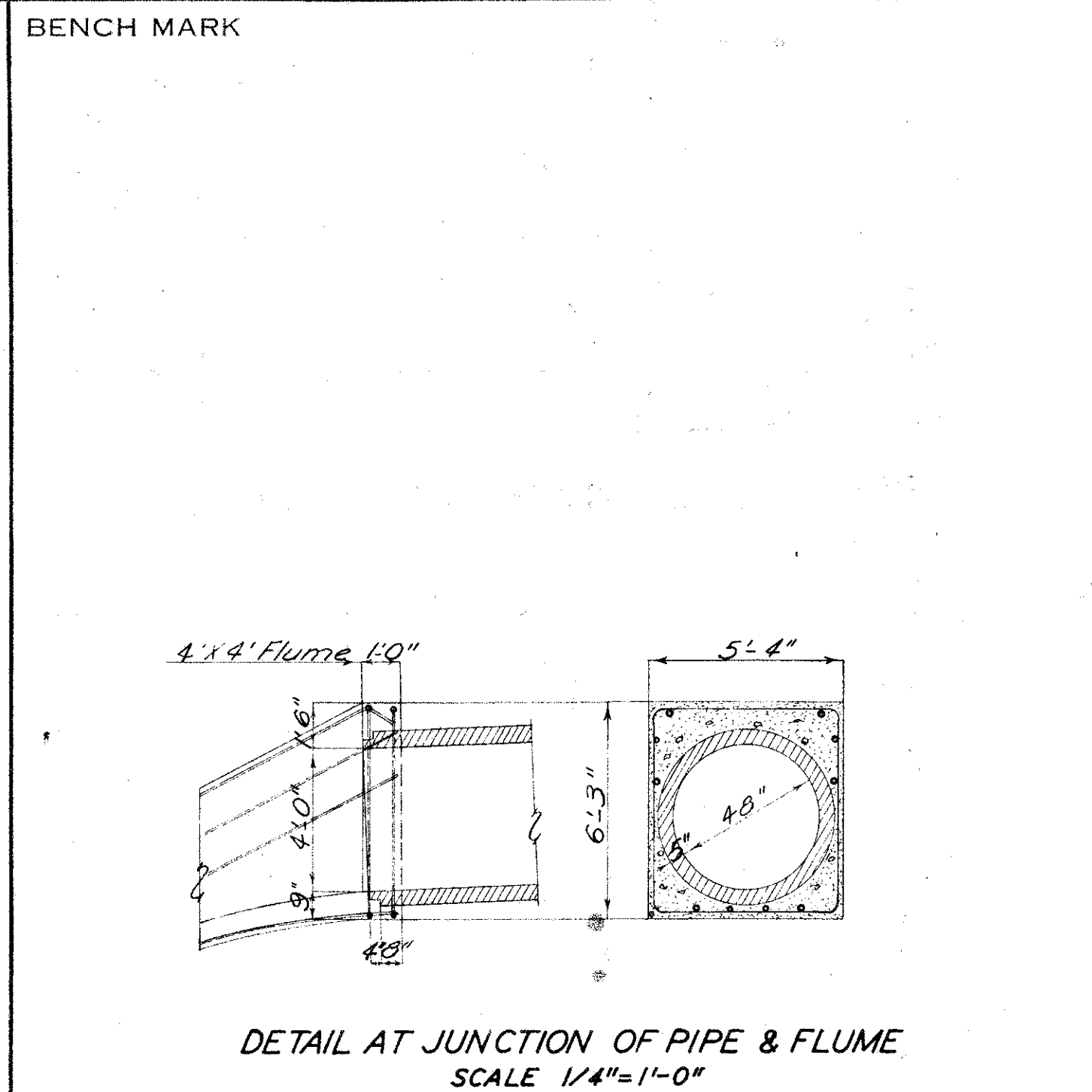
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS CFP & CFP

DRAINAGE AREA	2.5 acres Hilly	SECTION	3-32
SIZE AND TYPE	48" x 48" Flume	TOWNSHIP	Woodbury-Concord
DEPTH OF FILL	22'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 31 sec. @ 6' = 186' LIN. FT. EXCAVATION 1220' 130" C. Y. CONCRETE 7.0 C. Y. REINFORCING 436 LBS.	STATION	503+65
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	652

Sheet 2 of 3

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS CFP & CFP

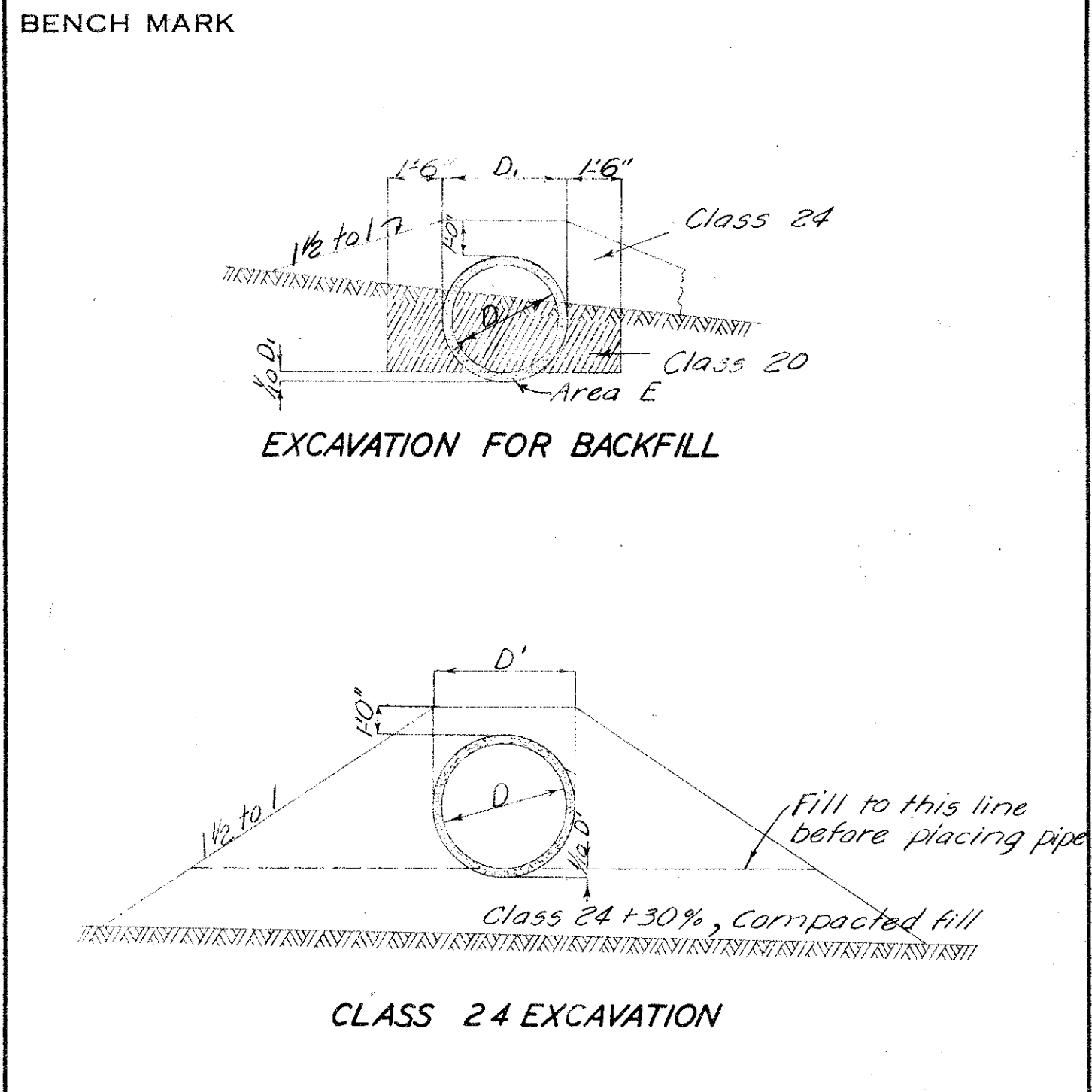
DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	



Sheet 3 of 3

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS CFP & CFP

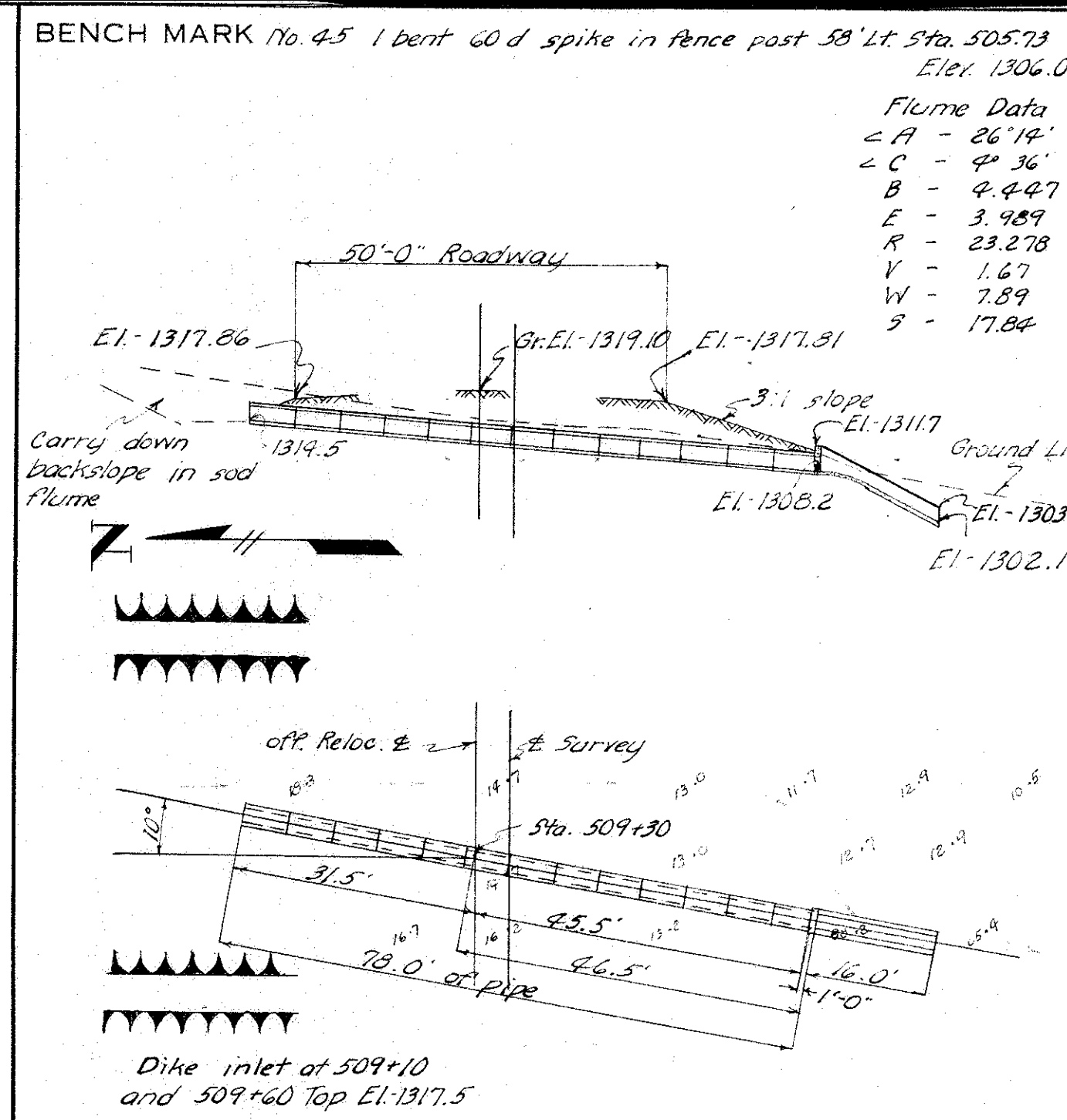
DRAINAGE AREA		SECTION	3-32
SIZE AND TYPE		TOWNSHIP	Woodbury-Concord
DEPTH OF FILL		COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	503+65
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	852



Sheet 3 of 3

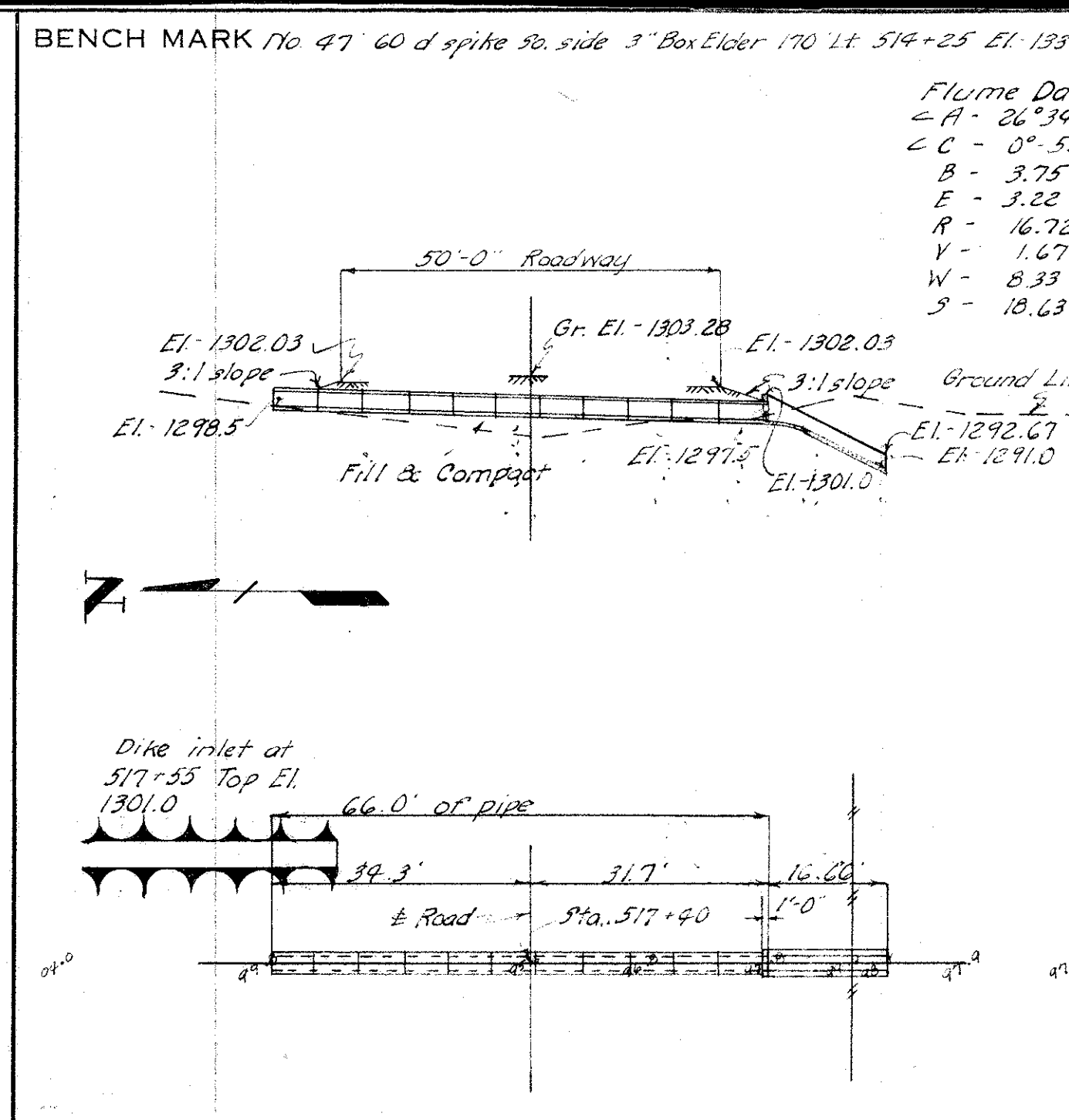
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS CFP & CFP

DRAINAGE AREA		SECTION	3-32
SIZE AND TYPE		TOWNSHIP	Woodbury-Concord
DEPTH OF FILL		COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	503+65
		PROJECT	F-2(7)
		DATE	February, 1952
		DESIGN No.	852



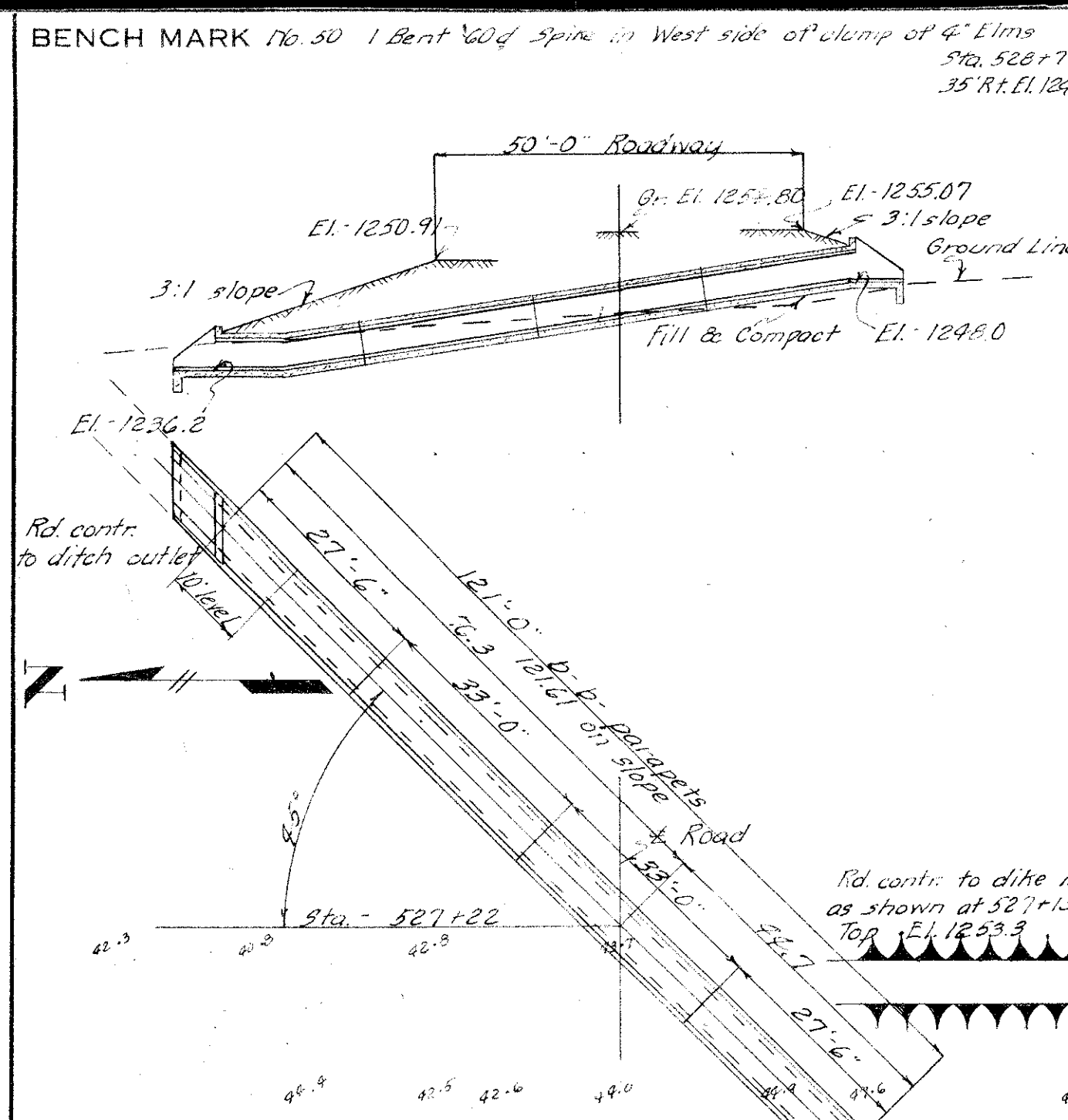
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>E.I.C.P.</i>	
DRAINAGE AREA <i>1 1/2 Acres Hilly</i>	SECTION <i>3-32</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>5'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>509+30</i>
PIPE <i>78'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>59</i> C.Y.	DATE <i>March 19-1952</i>
CONCRETE <i>3.0</i> C.Y.	DESIGN No. <i>952</i>
REINFORCING <i>229</i> LBS.	



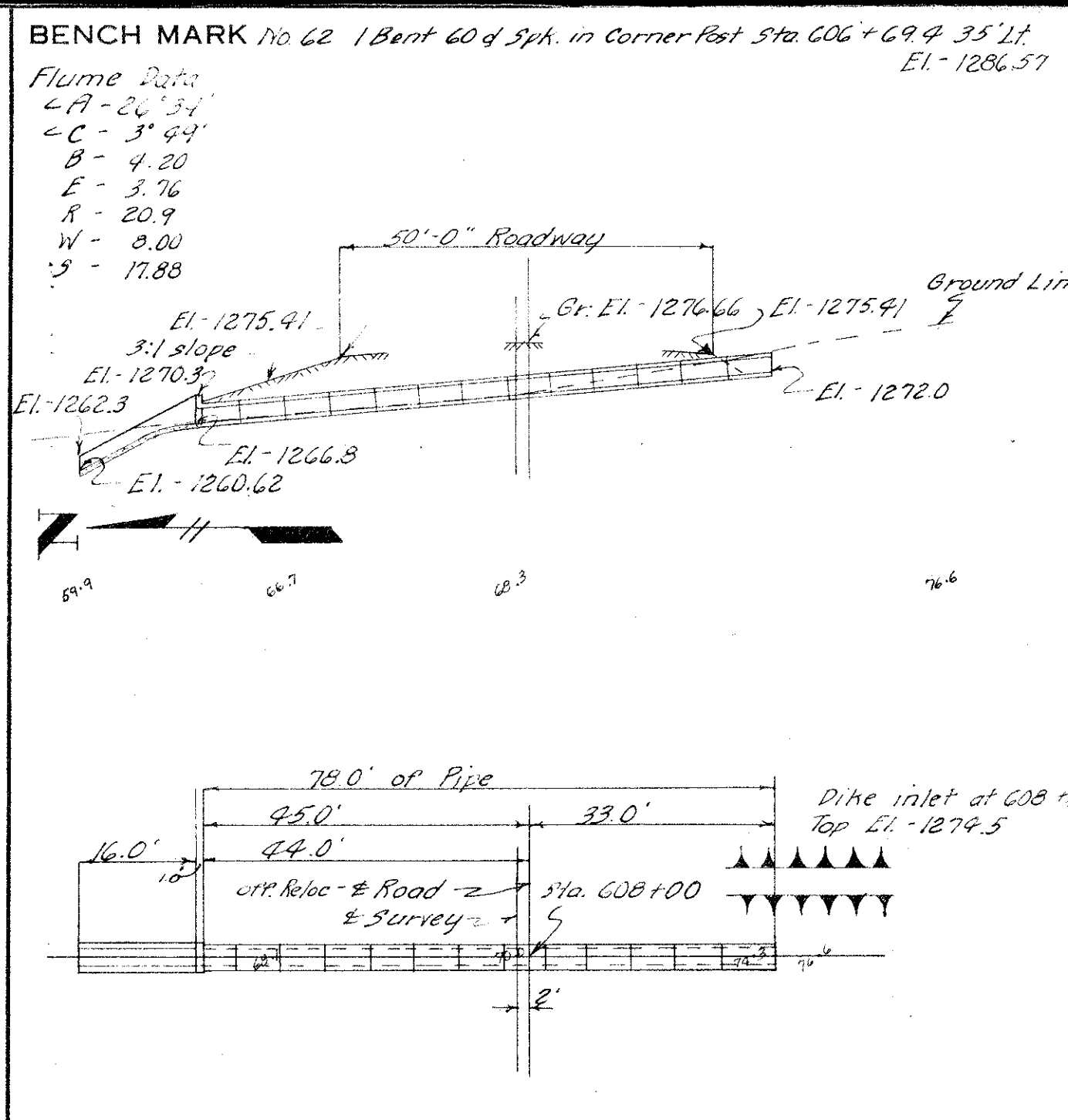
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>E.I.C.P.</i>	
DRAINAGE AREA <i>3 Acres Hilly</i>	SECTION <i>3-32</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>2'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>517+40</i>
PIPE <i>66'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>22</i> C.Y.	DATE <i>March 19-1952</i>
CONCRETE <i>3.5</i> C.Y.	DESIGN No. <i>1052</i>
REINFORCING <i>265</i> LBS.	



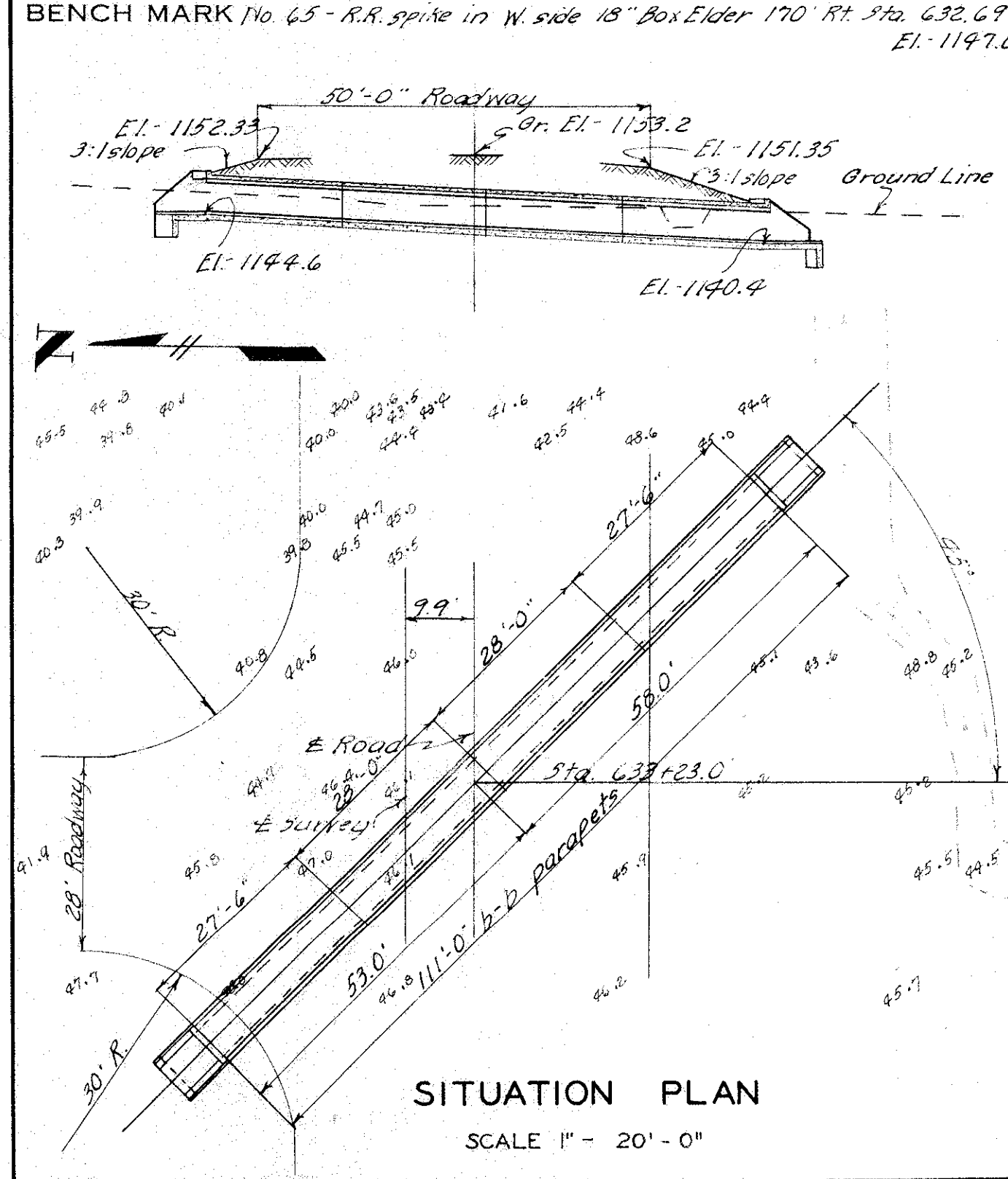
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>C-4-P</i>	
DRAINAGE AREA <i>3 1/2 Acres Hilly</i>	SECTION <i>3-32</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>7'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>527+22</i>
PIPE <i>78'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>68</i> C.Y.	DATE <i>March 19-1952</i>
CONCRETE <i>62.9</i> C.Y.	DESIGN No. <i>1152</i>
REINFORCING <i>5649</i> LBS.	



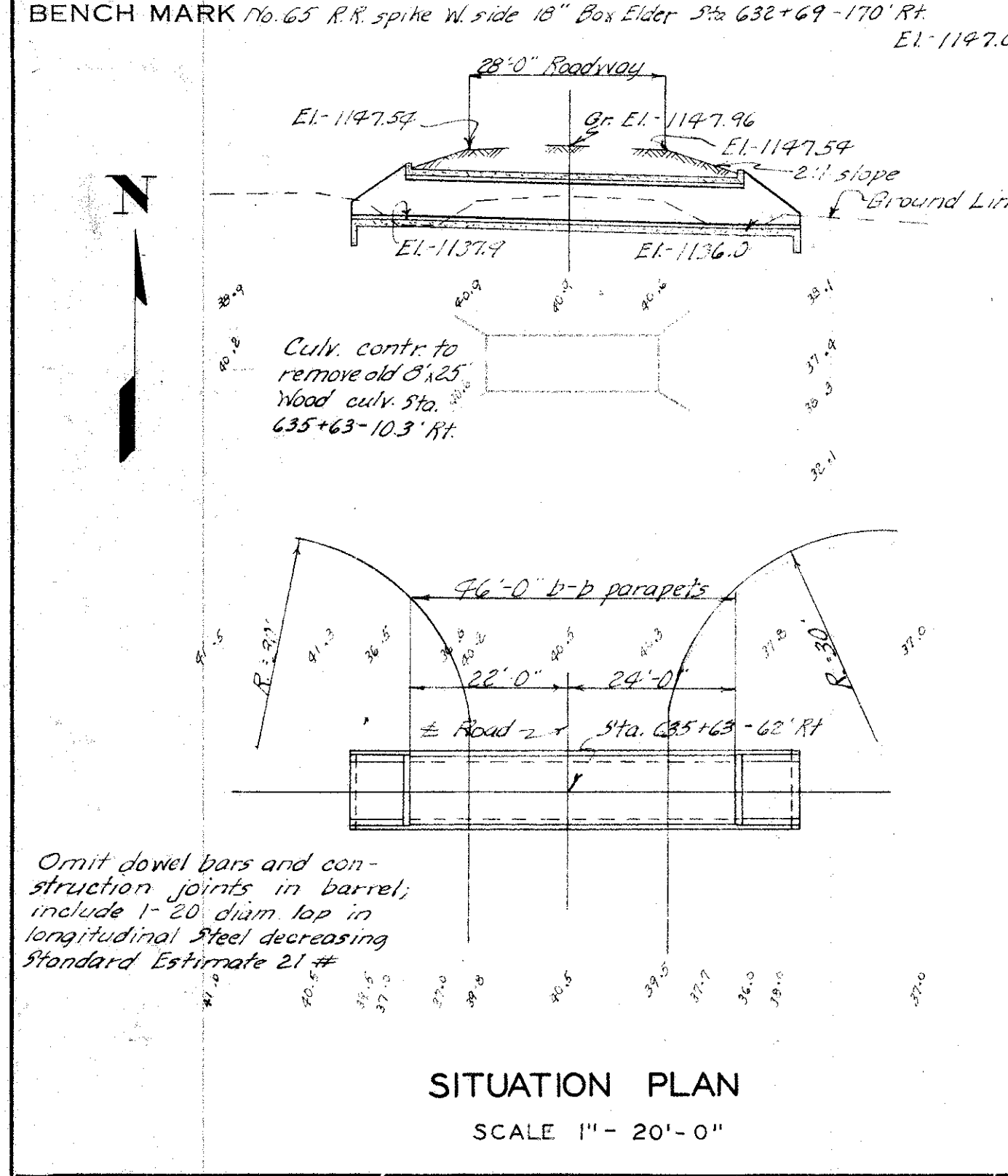
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>E.I.C.P.</i>	
DRAINAGE AREA <i>3 Acres - Hilly</i>	SECTION <i>1-34</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>5'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>608+00</i>
PIPE <i>78'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>32</i> C.Y.	DATE <i>March 19-1952</i>
CONCRETE <i>3.1</i> C.Y.	DESIGN No. <i>1652</i>
REINFORCING <i>233</i> LBS.	



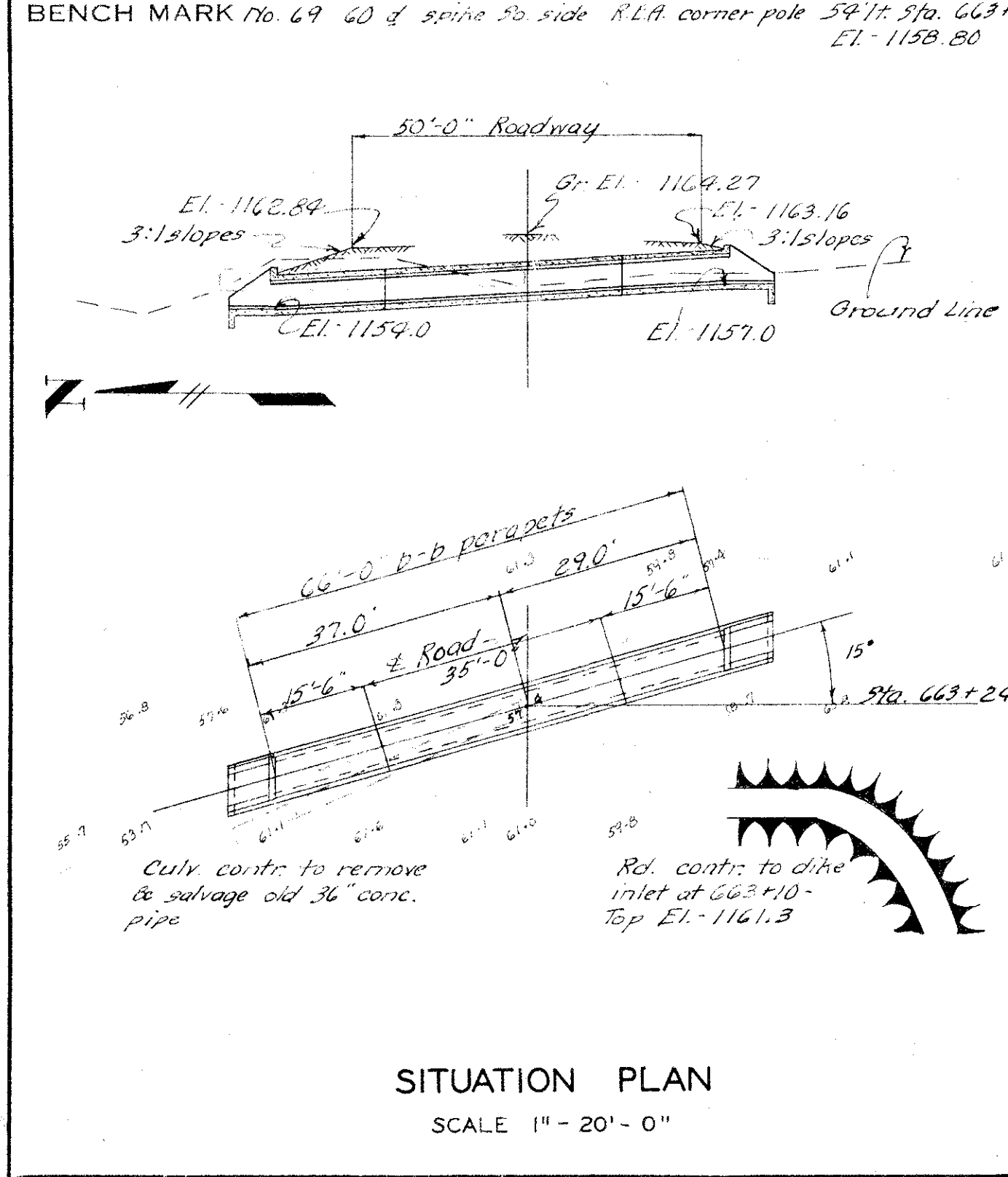
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>C-5-P</i>	
DRAINAGE AREA <i>7.5 Acres Rolling to Hilly</i>	SECTION <i>1-34</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>5'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>632+69</i>
PIPE <i>198'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>198</i> C.Y.	DATE <i>March 20-1952</i>
CONCRETE <i>72.1</i> C.Y.	DESIGN No. <i>1252</i>
REINFORCING <i>6338</i> LBS.	



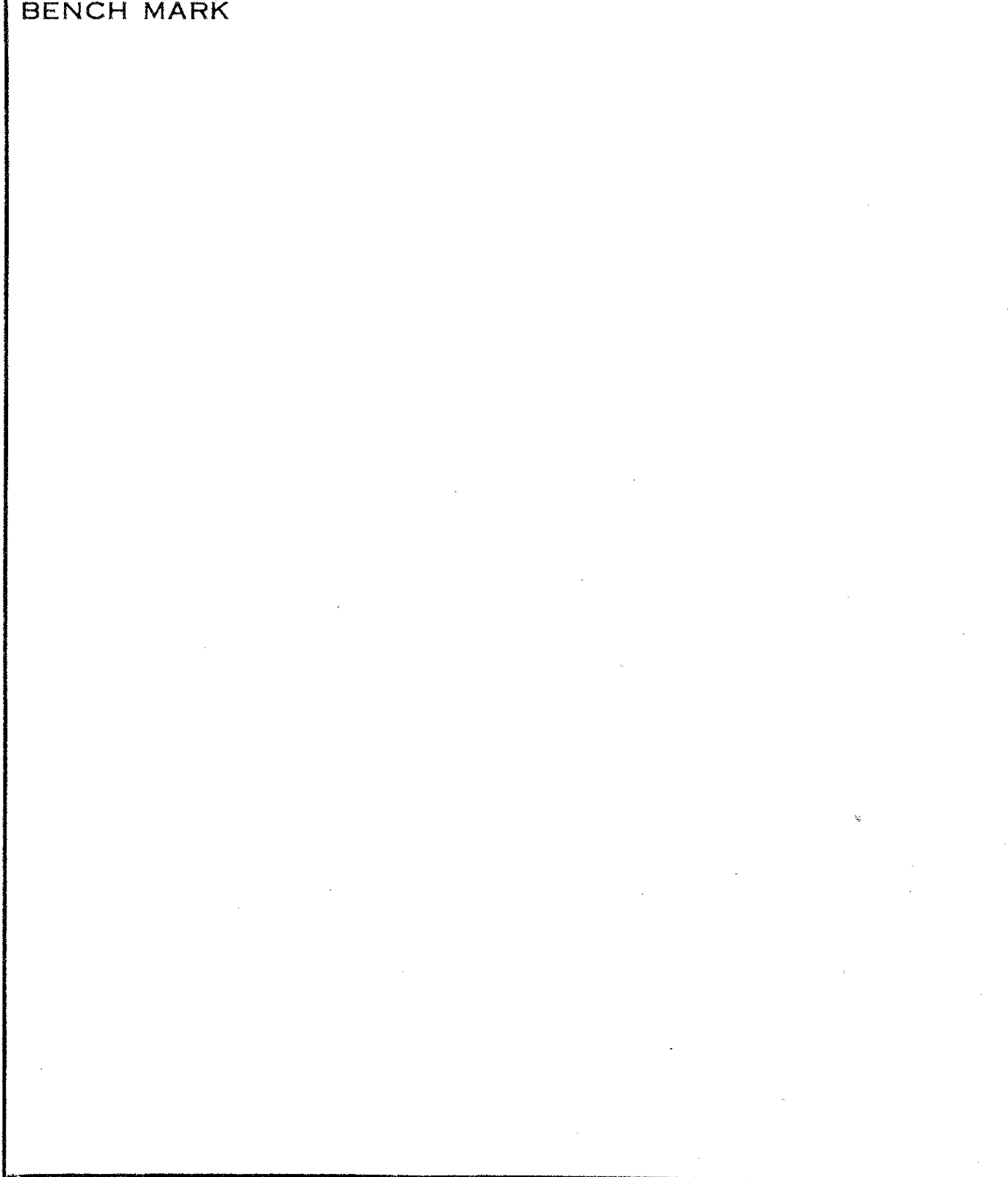
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>C-5-P</i>	
DRAINAGE AREA <i>7.5 Acres Rolling to Hilly</i>	SECTION <i>1-34</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>5'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>632+69</i>
PIPE <i>198'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>198</i> C.Y.	DATE <i>March 20-1952</i>
CONCRETE <i>72.1</i> C.Y.	DESIGN No. <i>1252</i>
REINFORCING <i>6338</i> LBS.	



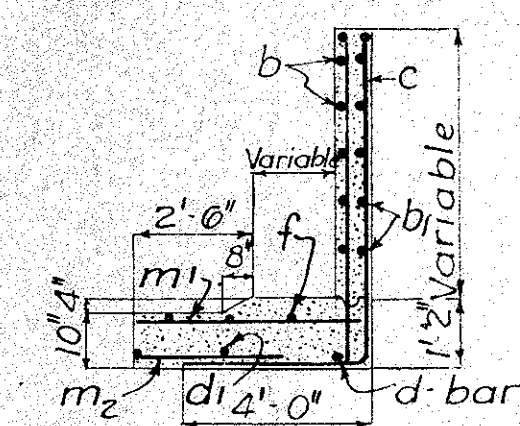
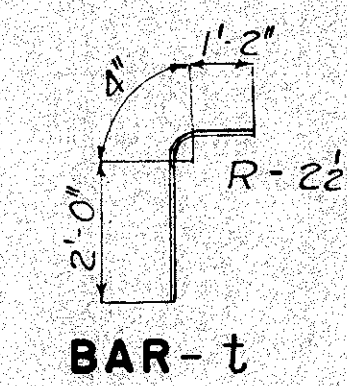
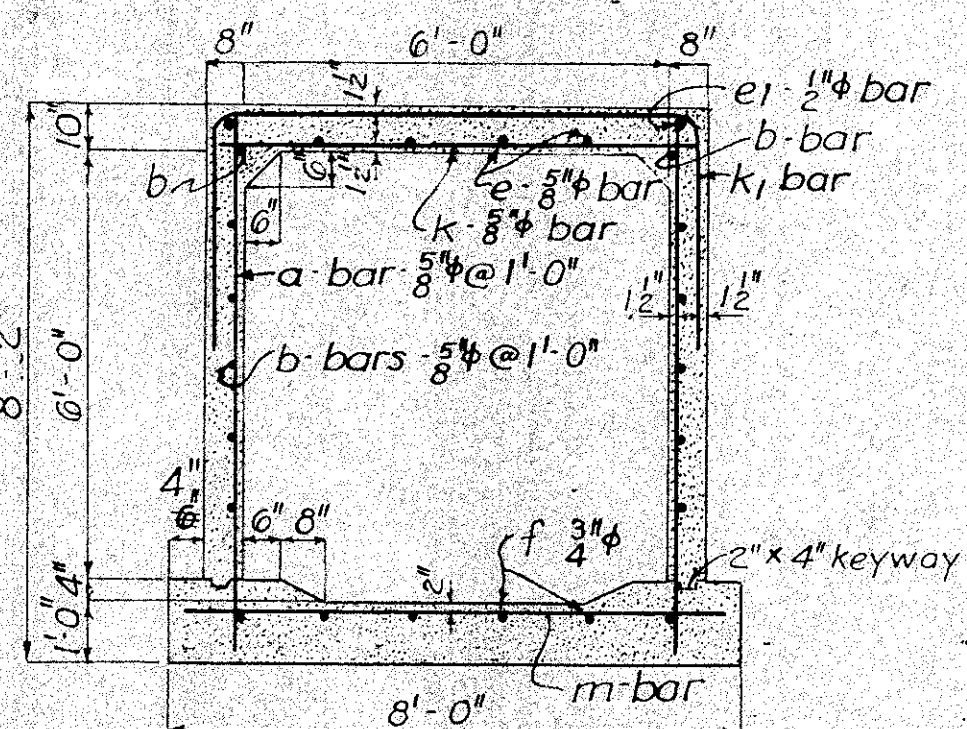
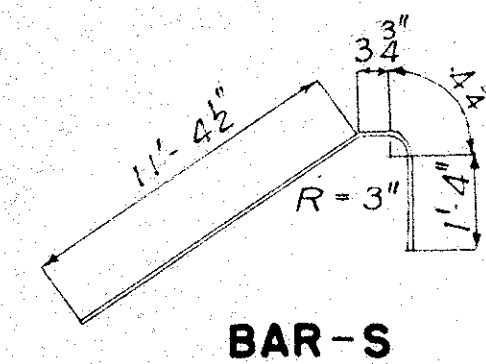
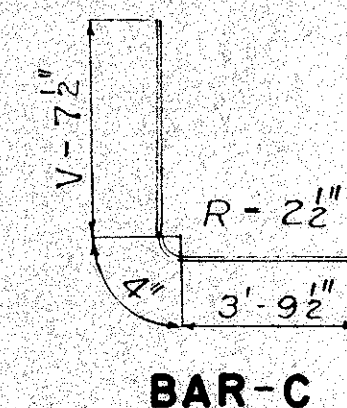
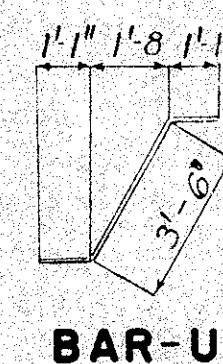
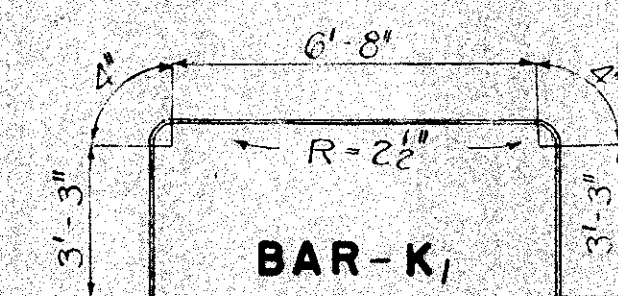
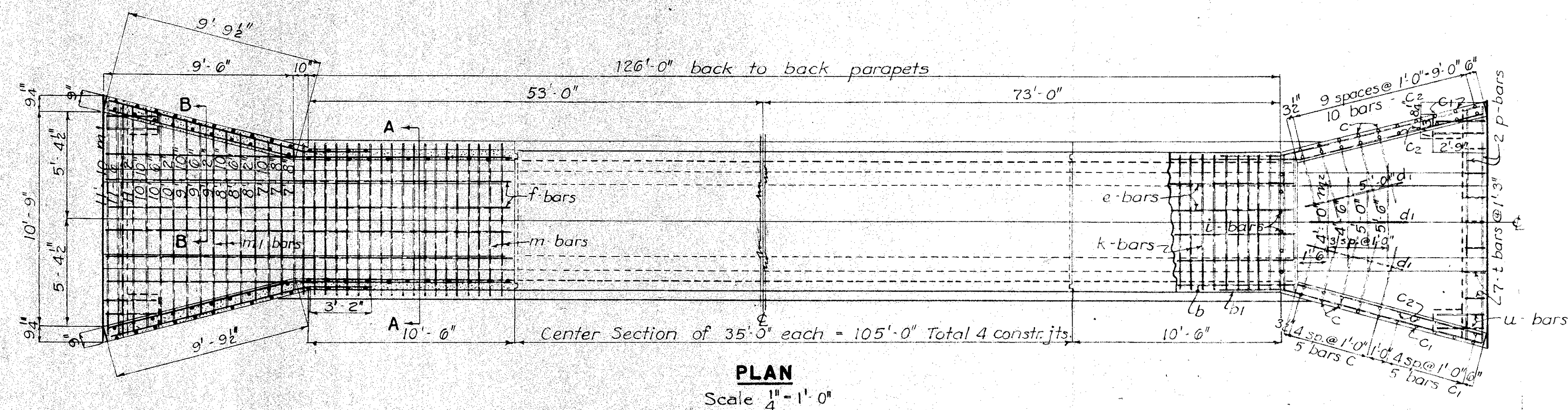
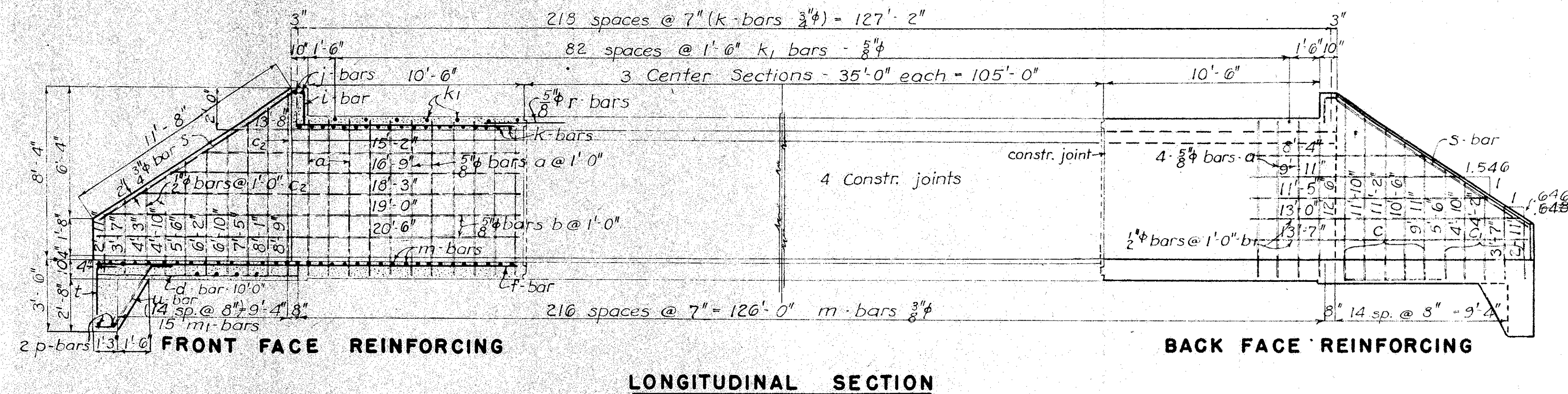
SITUATION PLAN
SCALE 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>C-4-P</i>	
DRAINAGE AREA <i>9.5 Acres Hilly</i>	SECTION <i>2-35</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>2'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>663+24</i>
PIPE <i>144'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>144</i> C.Y.	DATE <i>March 20-1952</i>
CONCRETE <i>35.8</i> C.Y.	DESIGN No. <i>1352</i>
REINFORCING <i>3052</i> LBS.	



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS <i>C-4-P</i>	
DRAINAGE AREA <i>9.5 Acres Hilly</i>	SECTION <i>2-35</i>
SIZE AND TYPE <i>24" P. F.I. Pipe & Flume</i>	TOWNSHIP <i>Woodbury - Concord</i>
DEPTH OF FILL <i>2'-0"</i>	COUNTY <i>Woodbury</i>
ESTIMATED QUANTITIES	STATION <i>663+24</i>
PIPE <i>144'-24" P.</i> LIN. FT.	PROJECT <i>F-2 (7)</i>
EXCAVATION <i>144</i> C.Y.	DATE <i>March 20-1952</i>
CONCRETE <i>35.8</i> C.Y.	DESIGN No. <i>1352</i>
REINFORCING <i>3052</i> LBS.	

BENCH MARKS: No. 51... Bent 60° Spike in Fence Post Sta. 534+17. 19° Rt. Elev. = 1217.13



CONCRETE ESTIMATE			
	Above Keyway Cu. Yds.	Below Keyway Cu. Yds.	Total
2 Headwalls	0.60	11.04	17.6 C.Y.
126'-0" b.to.b. Parapets	67.03	43.09	110.1 "
	73.63 C.Y.	54.13 C.Y.	127.7 Cu.Yds.

Concrete per ft. barrel = 0.532 above Footing
0.342 below
0.874

GENERAL NOTES:

Sections are based on earth fills of 125* per cu. ft. and H-20 loading. Unit stresses not to exceed f_c of 1000* f_s of 20,000* (n=10) shear of 90* and bond of 350*.

Floor of barrel to be finished smooth. Sides of footing are to be formed to insure correct line and grade.

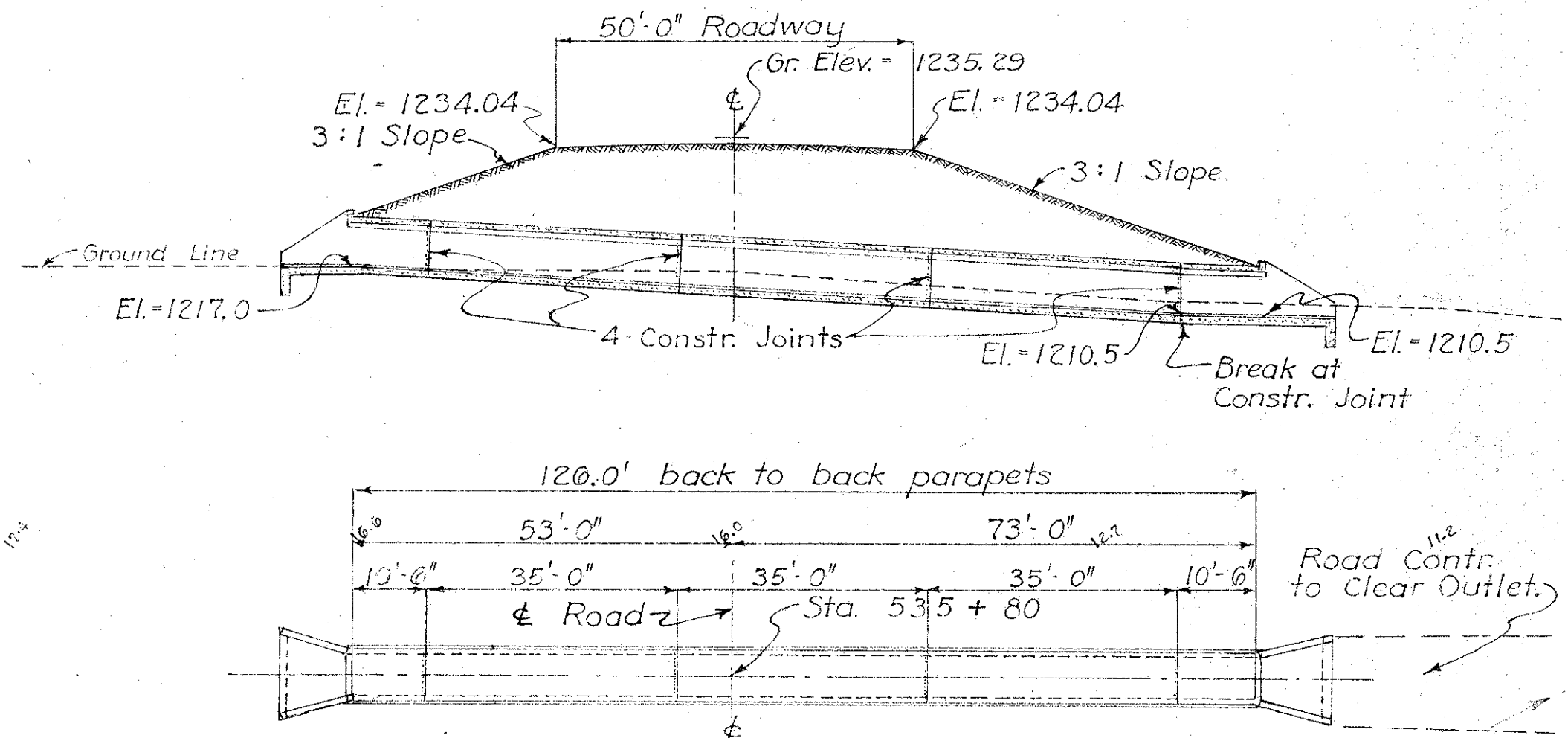
All exposed corners 90° or sharper are filleted with $\frac{3}{4}''$ dressed bevelled strip.

Metal bar chairs spaced not over 3' centers in either direction are to be used to support the lower layer of the top slab bars.

Standard Specifications, Series 1945, of the Iowa State Highway Commission.

All reinforcing steel shall conform to A.S.T.M. Specification. A 305-49.

ESTIMATED QUANTITIES									
Mark	Location	Shape	Size	No.	Length	Linear Feet			
						$\frac{1}{2}''$	$\frac{3}{4}''$	$5''$	$3''$
a	Walls, Vertical, Front Face	—	$\frac{5}{8}''$	270	7'-10"			2114.9	
b	" Horizontal " "	—	$\frac{1}{2}''$	24	shown			424.3	
b ₁	" " Back Face	—	$\frac{1}{2}''$	20	"			225.0	
b ₂	" " Center	—	$\frac{5}{8}''$	36	34'-8"			1248.0	
c	Wing, Vert. Back Face	L	"	20	11'-2" Av.			223.7	
c ₁	" " " "	—	$\frac{5}{8}''$	20	4'-12"			84.3	
c ₂	" " Front Face	—	$\frac{1}{2}''$	40	5'-10" Av.			233.3	
d	Floor Ends, Bottom of wing	—	$\frac{1}{2}''$	4	10'-0"			40.0	
d ₁	" " " "	—	"	6	5'-0"			30.0	
e	Slab Longit. bottom ends	—	$\frac{5}{8}''$	8	11'-0"			88.0	
e ₁	" " top	—	$\frac{1}{2}''$	4	11'-0"			44.0	
e ₂	" " Center bottom	—	$\frac{5}{8}''$	12	34'-8"			416.0	
e ₃	" " top	—	$\frac{1}{2}''$	6	34'-8"			208.0	
f	Floor long. in Hdwl's + 10'-6"	—	$\frac{3}{4}''$	12	20'-6"				246.0
f ₁	" " Center	—	$\frac{3}{4}''$	18	34'-8"				624.0
g	Parapet, Vertical	—	$\frac{1}{2}''$	12	1'-8"			20.0	
j	" Trans.	—	$\frac{5}{8}''$	4	7'-0"			28.0	
k	Slab " bottom	—	$\frac{5}{8}''$	219	7'-0"			1533.0	
k ₁	" " "	—	$\frac{5}{8}''$	33	13'-10"			1148.1	
m	Floor Trans.	—	$\frac{3}{4}''$	217	7'-8"			1663.7	
m ₁	" Ends Top	—	$\frac{3}{4}''$	30	shown			288.0	
m ₂	" " Bottom	—	$\frac{5}{8}''$	8	4'-9" Av.			38.0	
p	Curtain Transverse	—	$\frac{3}{4}''$	4	11'-6"			46.0	
r	Slab Dowel bars	—	$\frac{5}{8}''$	28	2'-0"			56.0	
s	Wing Slope	—	$\frac{3}{4}''$	8	13'-5"			107.3	
t	Curtain, Vertical	—	$\frac{5}{8}''$	14	3'-6"			49.0	
u	" Brackets	—	$\frac{5}{8}''$	8	5'-8"			45.3	
Length						800.3	5963.6	4508.0	
Weight						534.6	6220.0	6771.0	
Reinforcing						Total Weight			
Concrete						127.7 Cu. Yds.			
Excavation						98 Cu. Yds.			



LOCATION

SECTION, 2 - 33
TOWNSHIP, WOODBURY - CONCORD
COUNTY, WOODBURY

DESIGN FOR

6'x6' BOX CULVERT

REINFORCED CONCRETE

STATION 535 + 80

PROJECT F-2(7)

WOODBURY COUNTY

IOWA STATE HIGHWAY COMMISSION

JAN. 1952

SCALES AS NOTED

BENCH MARK #54 60" nail in W. side 28" willow 10' Lt. Sta. 549+58 E.I. 1188.33

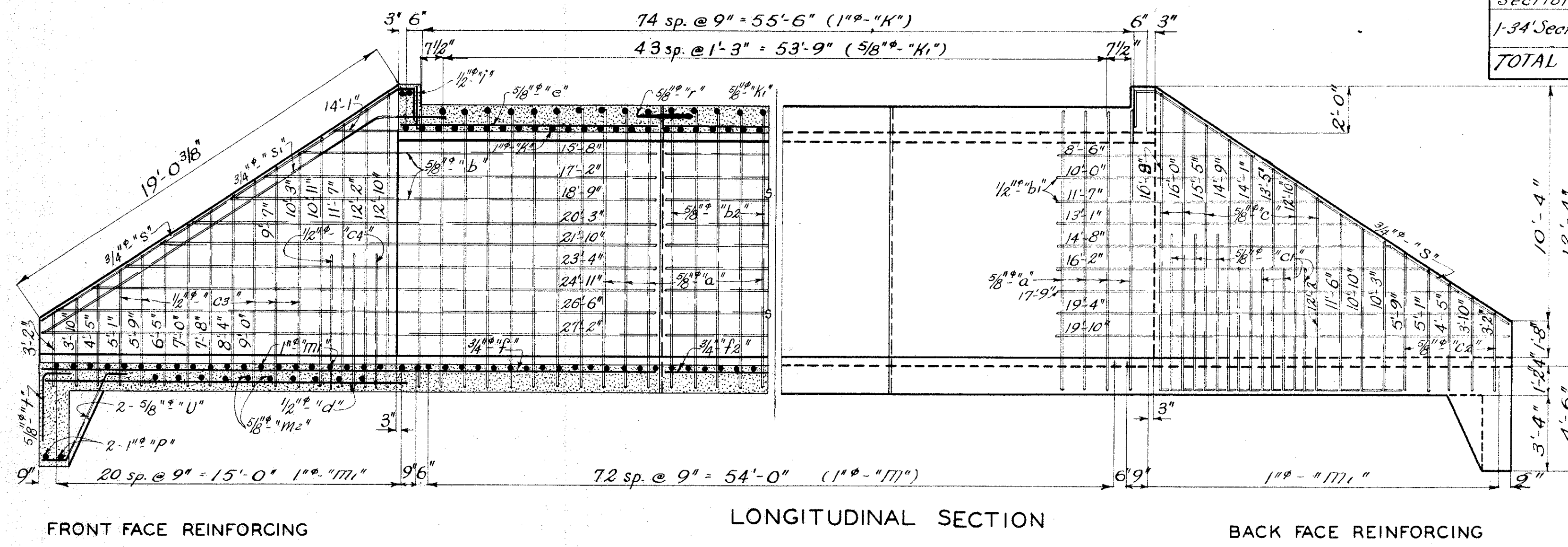
Concrete in Parts		
	Above Key	Below Key
2-Hdwl's	17.04	35.02
2-10'-6" Sections	26.65	14.83
1-34' Section	43.15	24.00
TOTAL	86.84	73.85
		160.69

ESTIMATE OF QUANTITIES

Mark	Location	Shape	Size	No.	Length	Linear Feet			
						1/2"	5/8"	3/4"	1"
a	Walls - Vert.	F.F.	5/8"	128	12'-2"		1,557.4		
b	" - Horiz. (ends)	F.F.	5/8"	40	Shown		838.7		
b1	" - " (ends)	B.F.	1/2"	36	Shown	523.7			
b2	" - " (center)	F.F.	5/8"	20	33'-8"		673.3		
c	Wings - Vert.	B.F.	5/8"	44	Shown		591.7		
c1	" - " "	B.F.	5/8"	28	18'-2"		270.0		
c2	" - " "	B.F.	5/8"	20	Shown		89.0		
c3	" - " "	F.F.	1/2"	64	Shown	512.0			
c4	" - " "	F.F.	1/2"	12	6'-0"	72.0			
d	Hdwl's. (under wings)		1/2"	4	16'-0"	64.0			
d1	" (floor, bottom)		1/2"	10	11'-2"	110.0			
e	Slab - Long. (ends, bottom)		3/4"	16	11'-2"			178.7	
e1	" - " (" , top)		1/2"	8	11'-2"	89.3			
e2	" - " (center, bottom)		3/4"	8	33'-8"			269.3	
e3	" - " (" , top)		1/2"	4	33'-8"	134.7			
f	Floor - Long. (ends, top)		3/4"	20	26'-8"			533.3	
f1	" - " (next to wings, top)		3/4"	4	12'-0"			48.0	
f2	" - " (center, top)		3/4"	10	33'-8"			336.7	
i	Parapet - Vert.		1/2"	24	1'-8"	40.0			
j	" - Horiz.		5/8"	4	13'-5"		53.7		
k	Slab - Transv. (bottom)		1"	77	13'-8"				1,052.4
k1	" - Corners (top)		5/8"	88	8'-0"		704.0		
m	Floor - Transv. (barrel, top)		1"	75	14'-8"				1,100.0
m1	" - " (hdwl, top)		1"	42	Shown				718.8
m2	" - " (hdwl, bottom)		5/8"	20	Shown	255.0			
p	Curtain - Transv. (bottom)		1"	4	20'-7"				82.3
r	Dowel bars		5/8"	26	2'-0"	52.0			
s	Wing Slope (back & front)		3/4"	8	20'-11"			167.3	
s1	" - " (front face)		3/4"	4	20'-11"			83.7	
t	Curtain - Vert.		5/8"	24	4'-6"	108.0			
u	Curtain braces		5/8"	8	6'-6"	52.0			

Length	1,545.7	5,244.8	1,617.0	2,953.5
Weight	1,032.5	5,470.3	2,428.7	7,885.9
TOTAL WEIGHT			16,817.4	LBS.

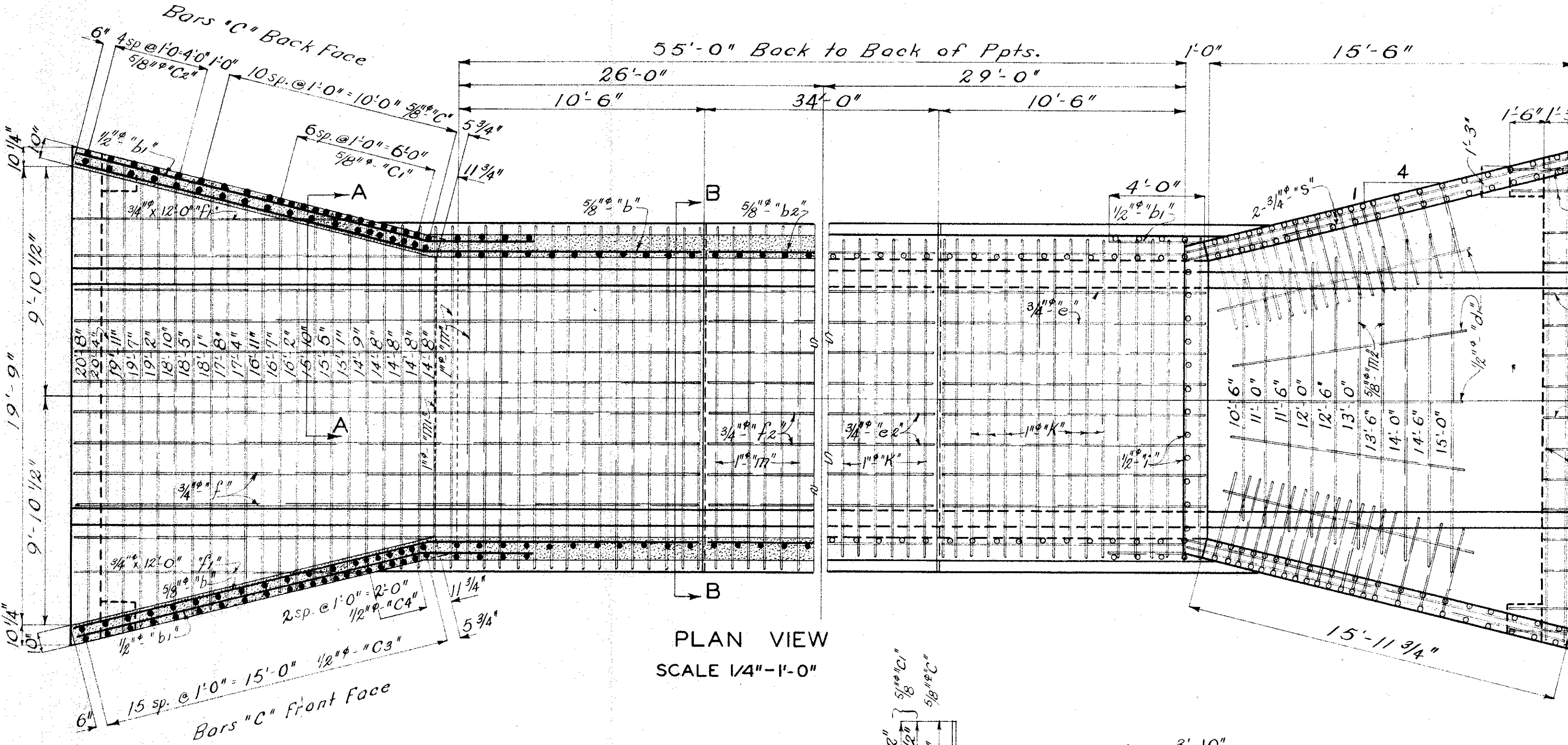
TOTAL CONCRETE	160.69	C.Y.
CL. 20 EXCAVATION	551	C.Y.



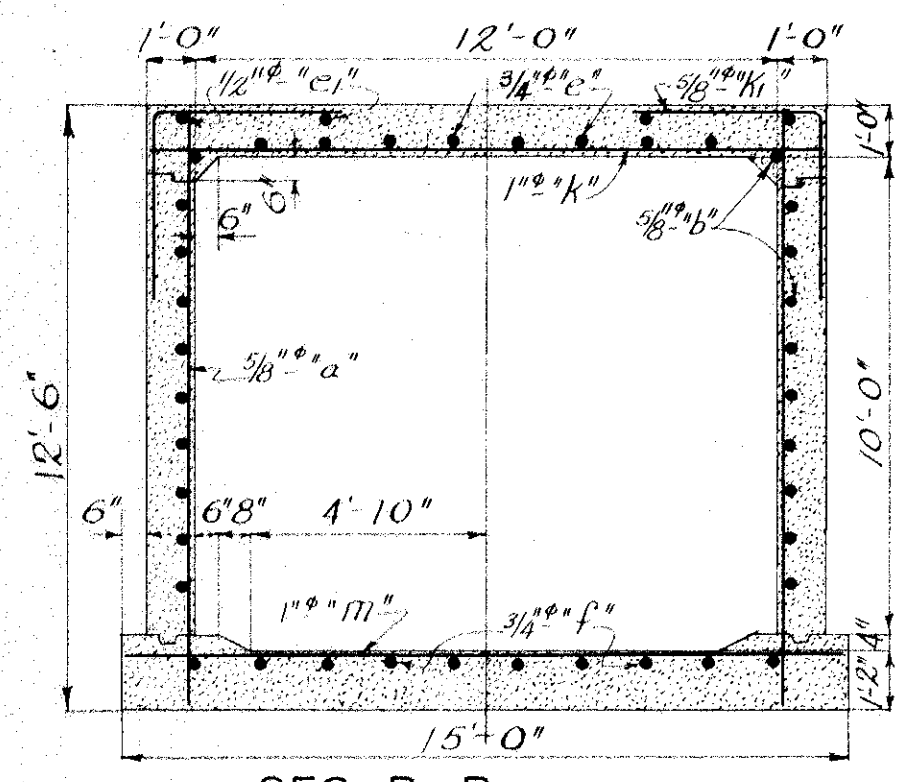
FRONT FACE REINFORCING

LONGITUDINAL SECTION

BACK FACE REINFORCING

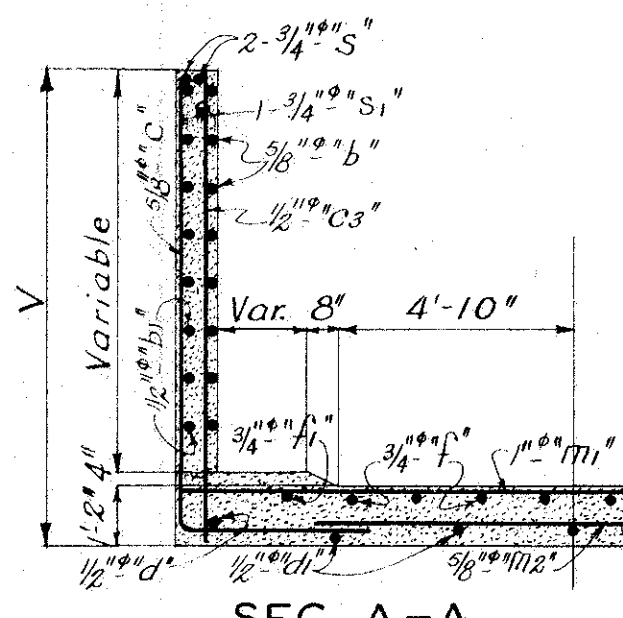


PLAN VIEW
SCALE 1/4" = 1'-0"

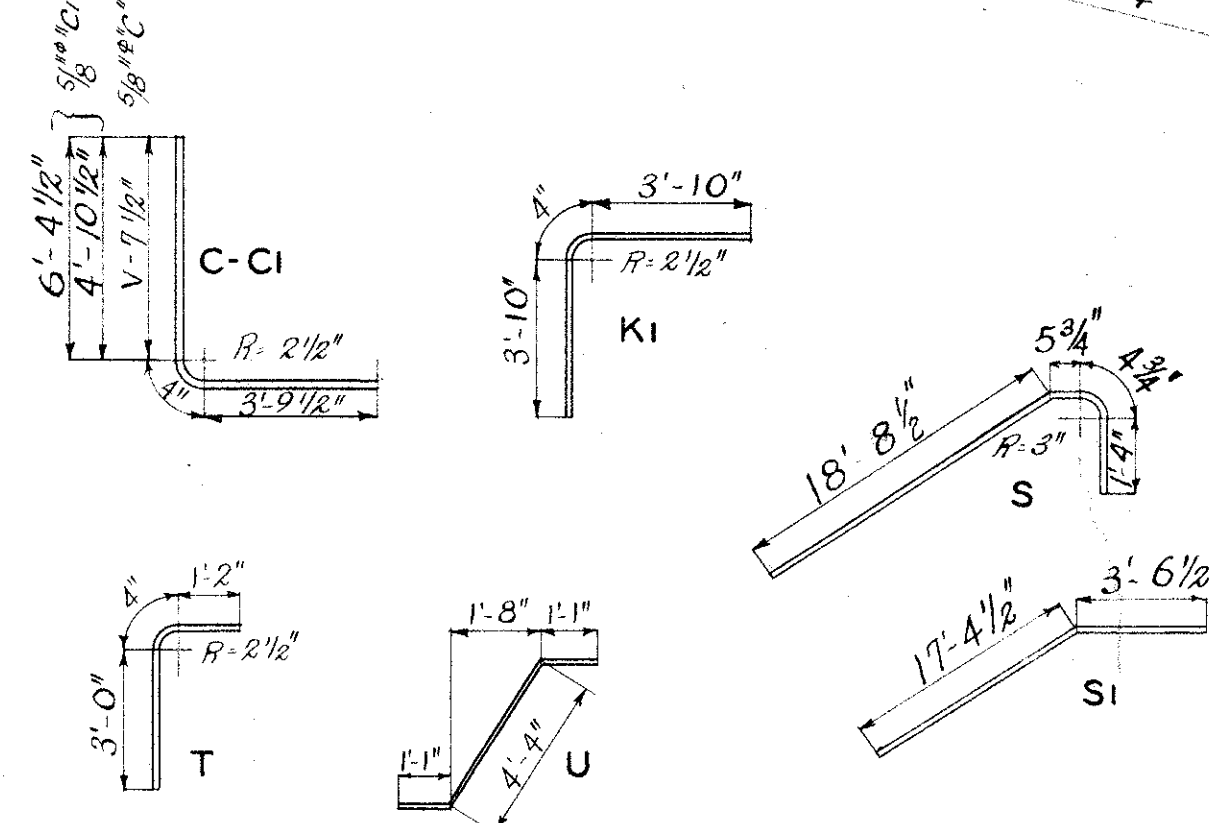


SEC. B-B

SCALE 1/4" = 1'-0"

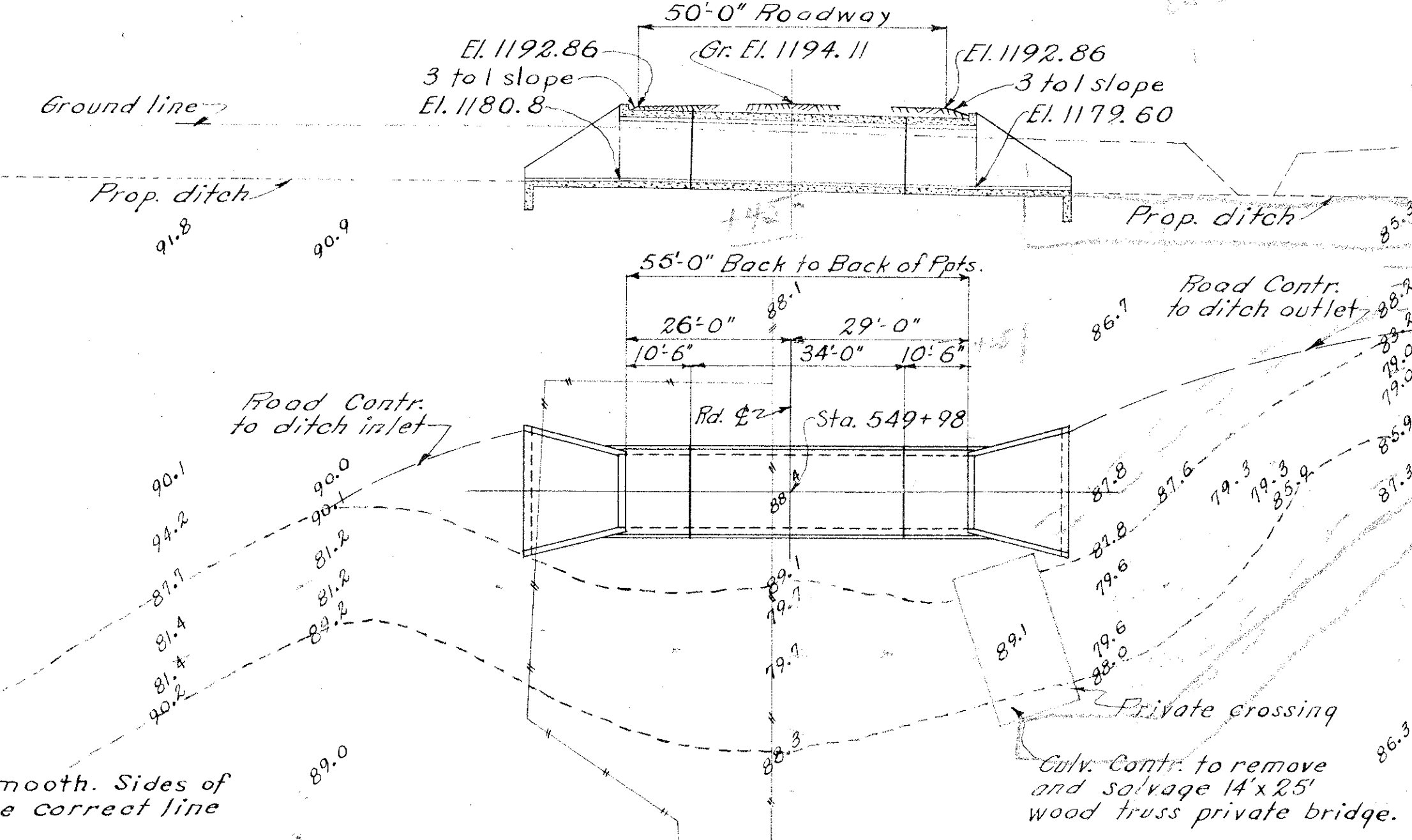


SEC. A-A



BAR DETAILS

General Notes:
Floor of barrel to be finished smooth. Sides of footing are to be formed to insure correct line and grade.
All exposed corners 90° or sharper are to be filleted with a 3/4" dressed beveled strip.
Metal bar chairs spaced not over 3' centers in either direction are to be used to support the lower layer of the top slab bars.
Standard specifications, series 1952 of the Iowa State Highway Commission.



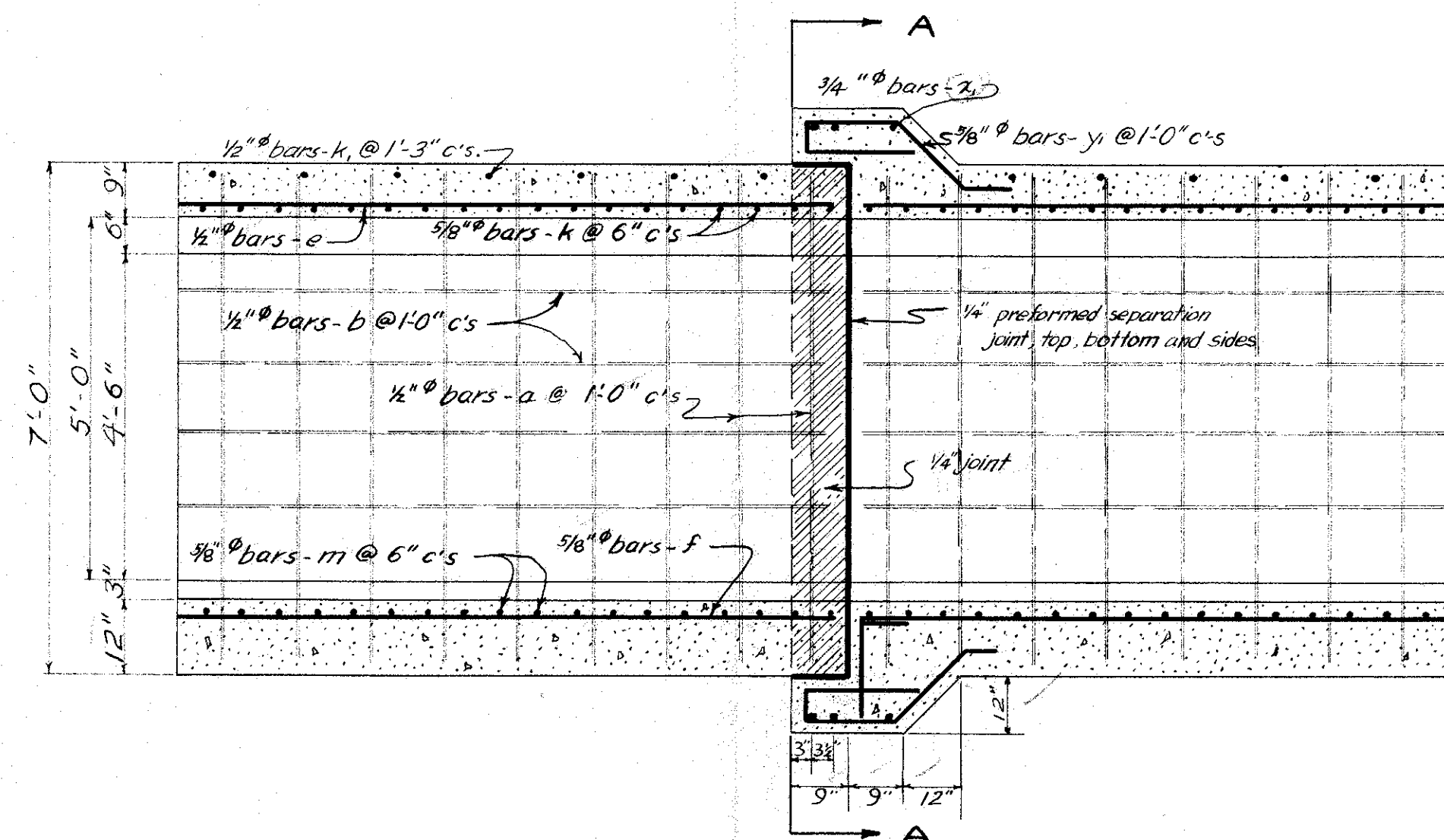
SITUATION PLAN

SCALE 1" = 20'-0"

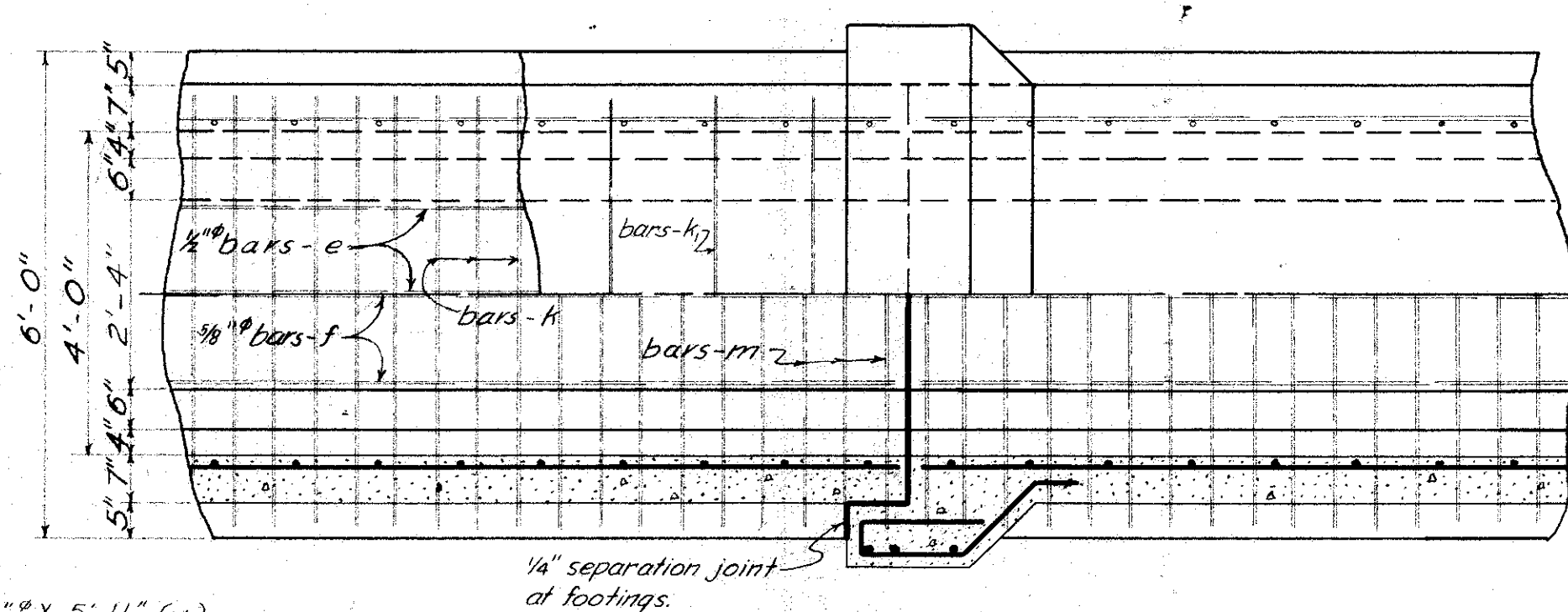
Fill - 2'-0"

Drainage Area 650 AC. Hilly

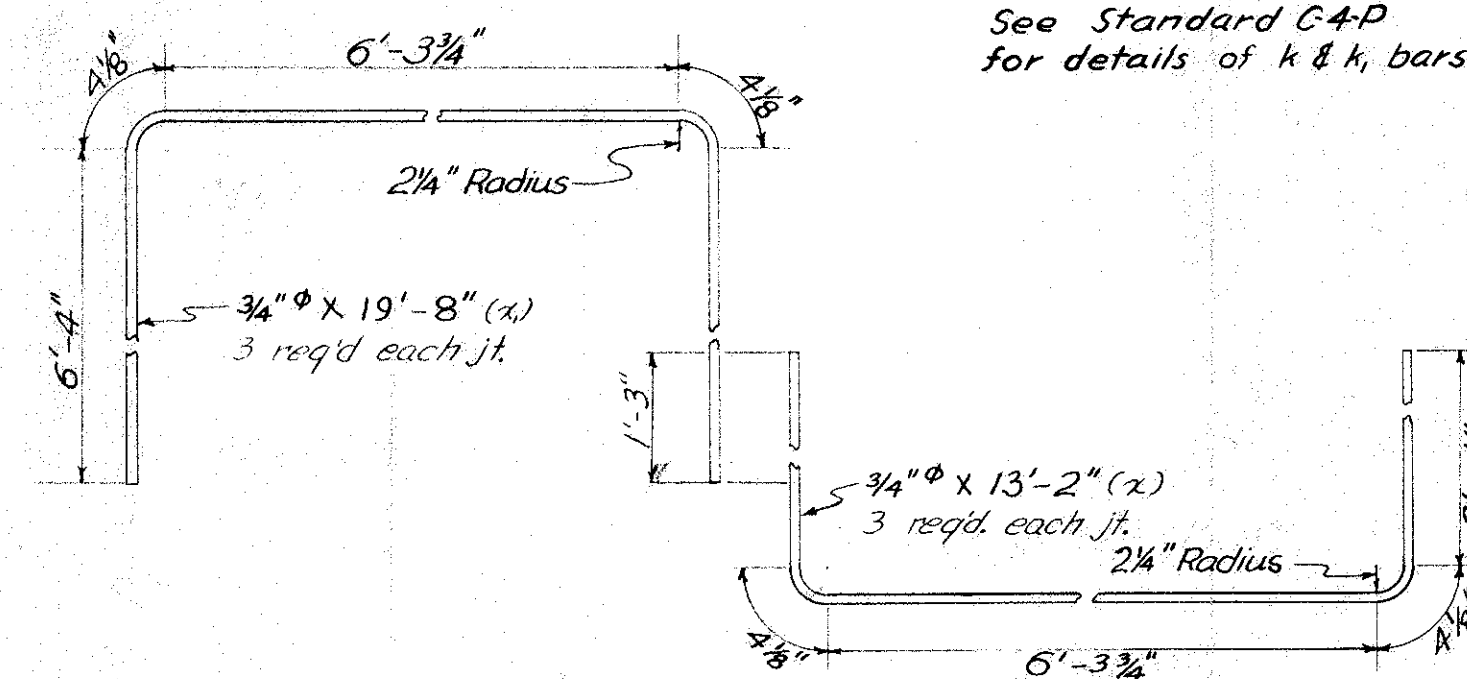
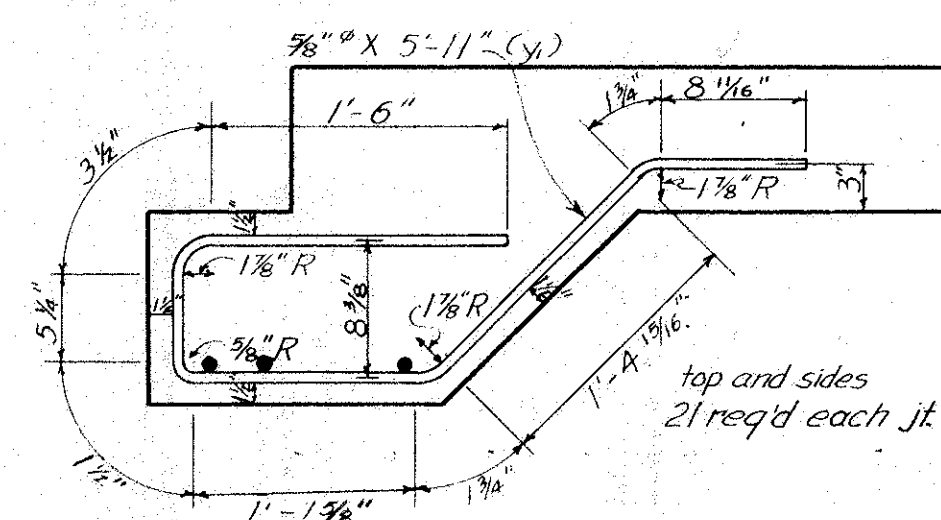
DESIGN FOR
12' X 10' X 55' BOX CULVERT
REINFORCED CONCRETE
STATION 549+98 PROJECT NO. F-2(7)
WOODBURY COUNTY
IOWA STATE HIGHWAY COMMISSION
FEBRUARY 7, 1952 SCALES AS NOTED



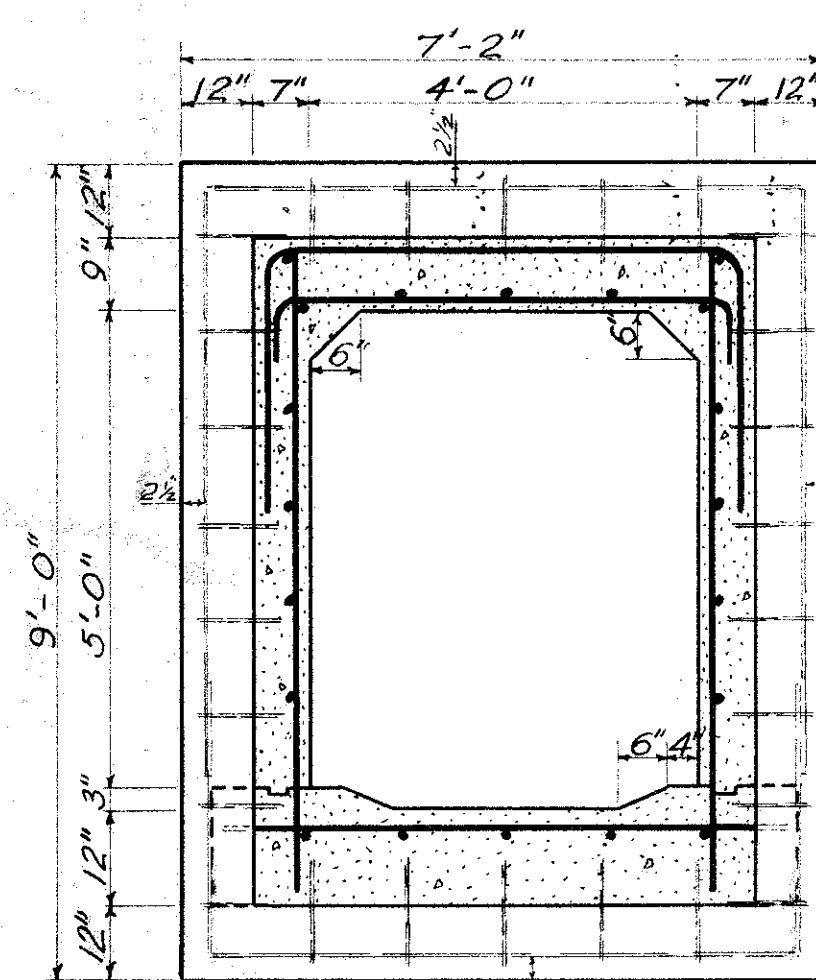
LONGITUDINAL SECTION
Scale 1/2"=1'-0"



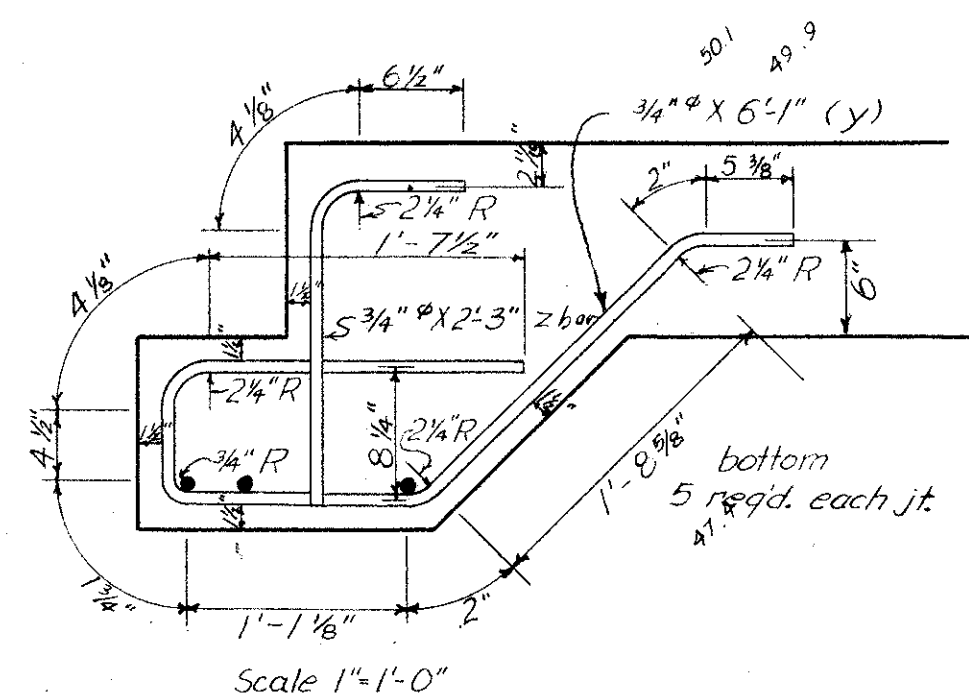
PLAN



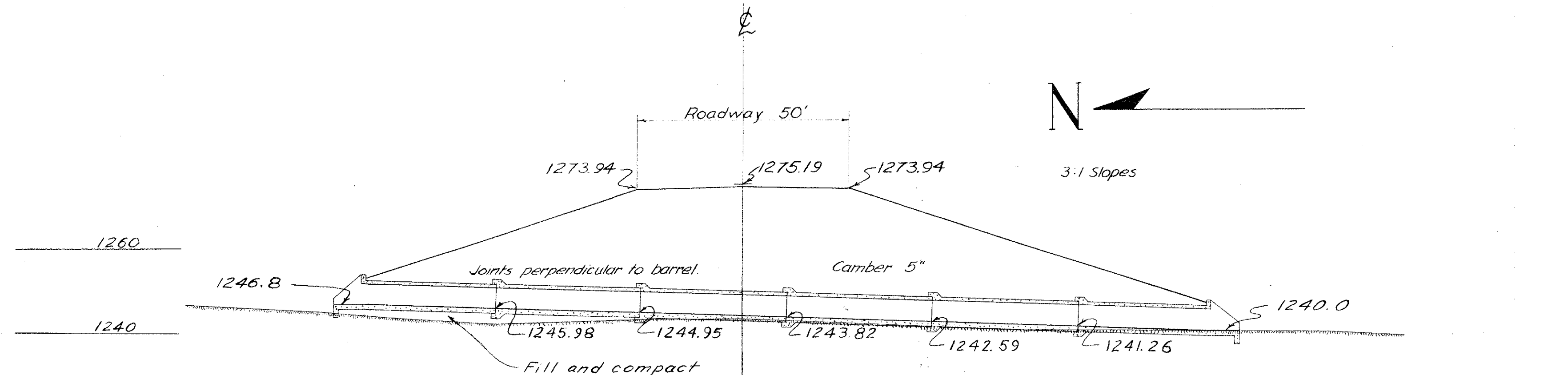
BAR DETAILS
Scale 1"=1'-0"



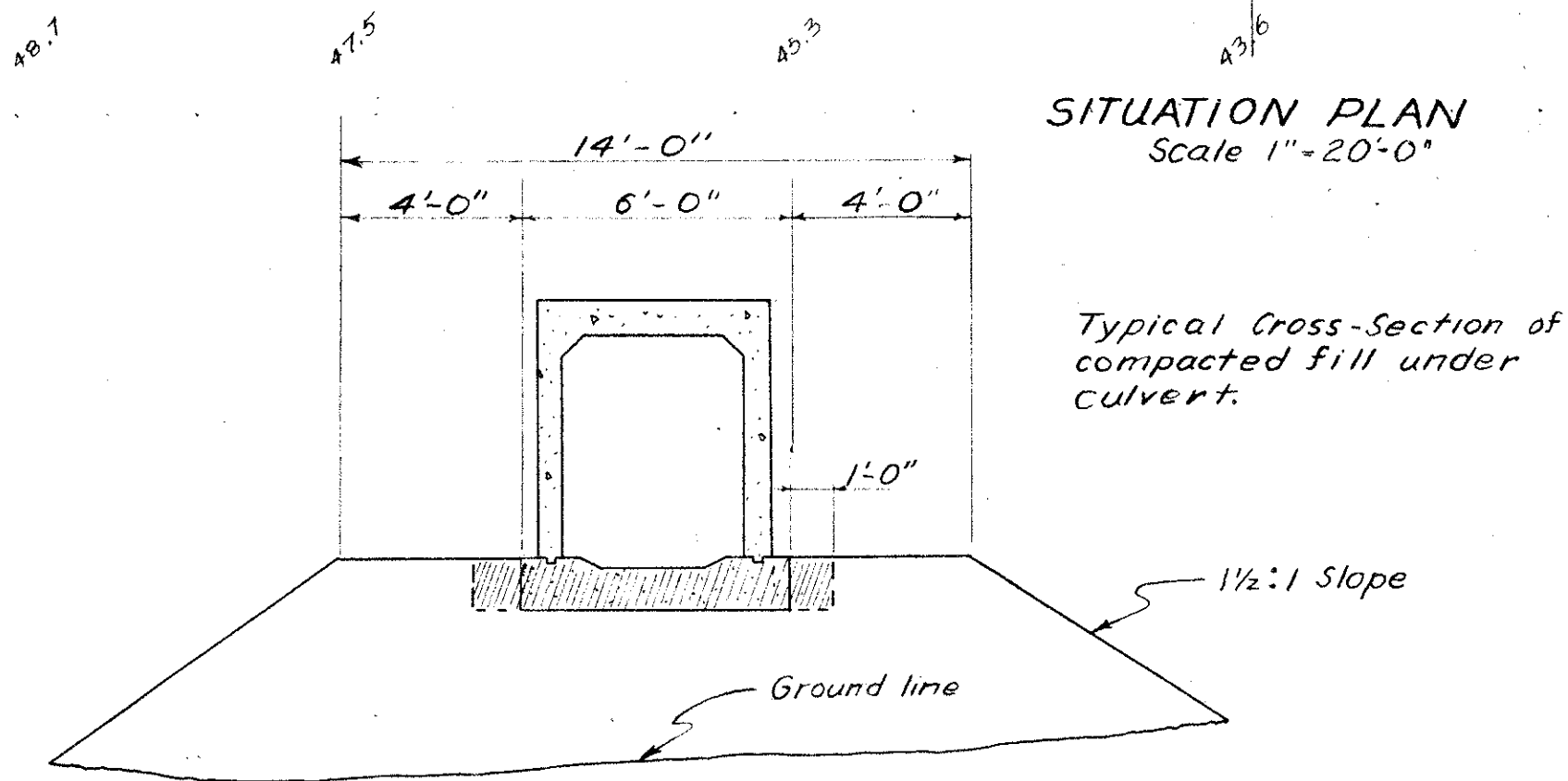
SECTION A-A
Scale 1/2"=1'-0"



Scale 1"=1'-0"



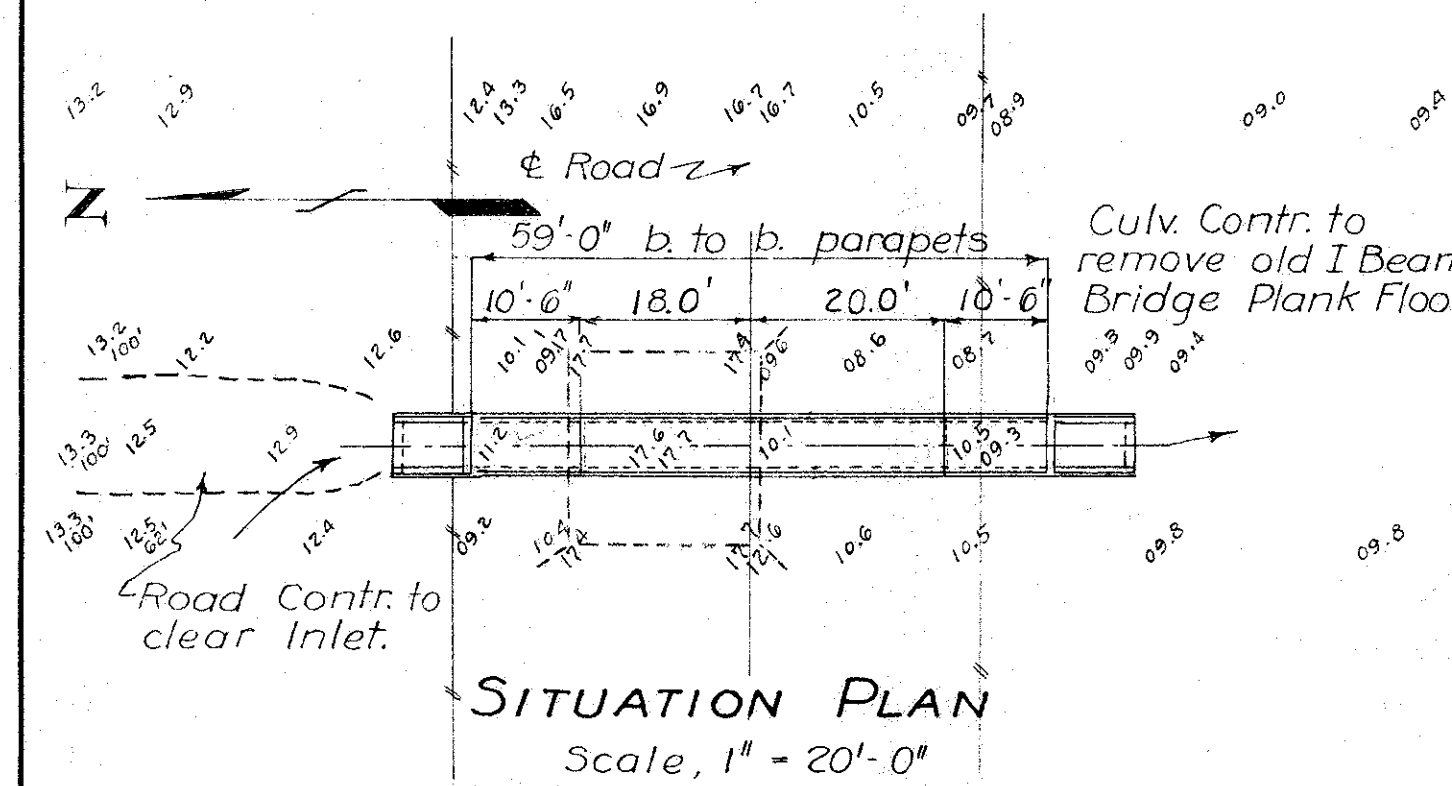
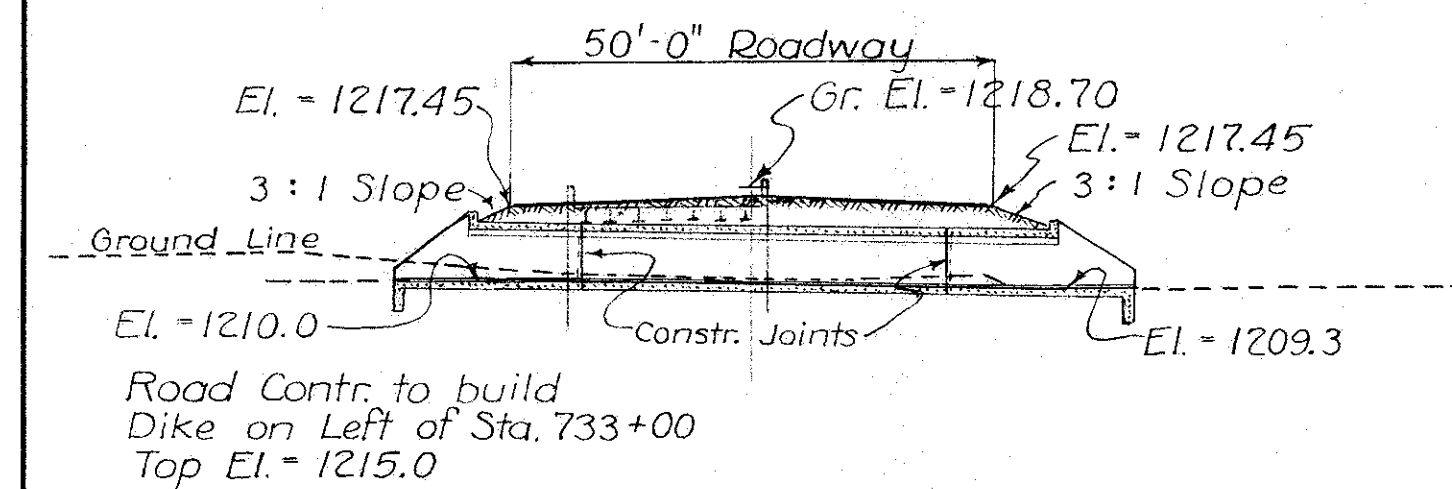
SITUATION PLAN
Scale 1"=20'-0"



Typical Cross-Section of
compacted fill under
culvert.

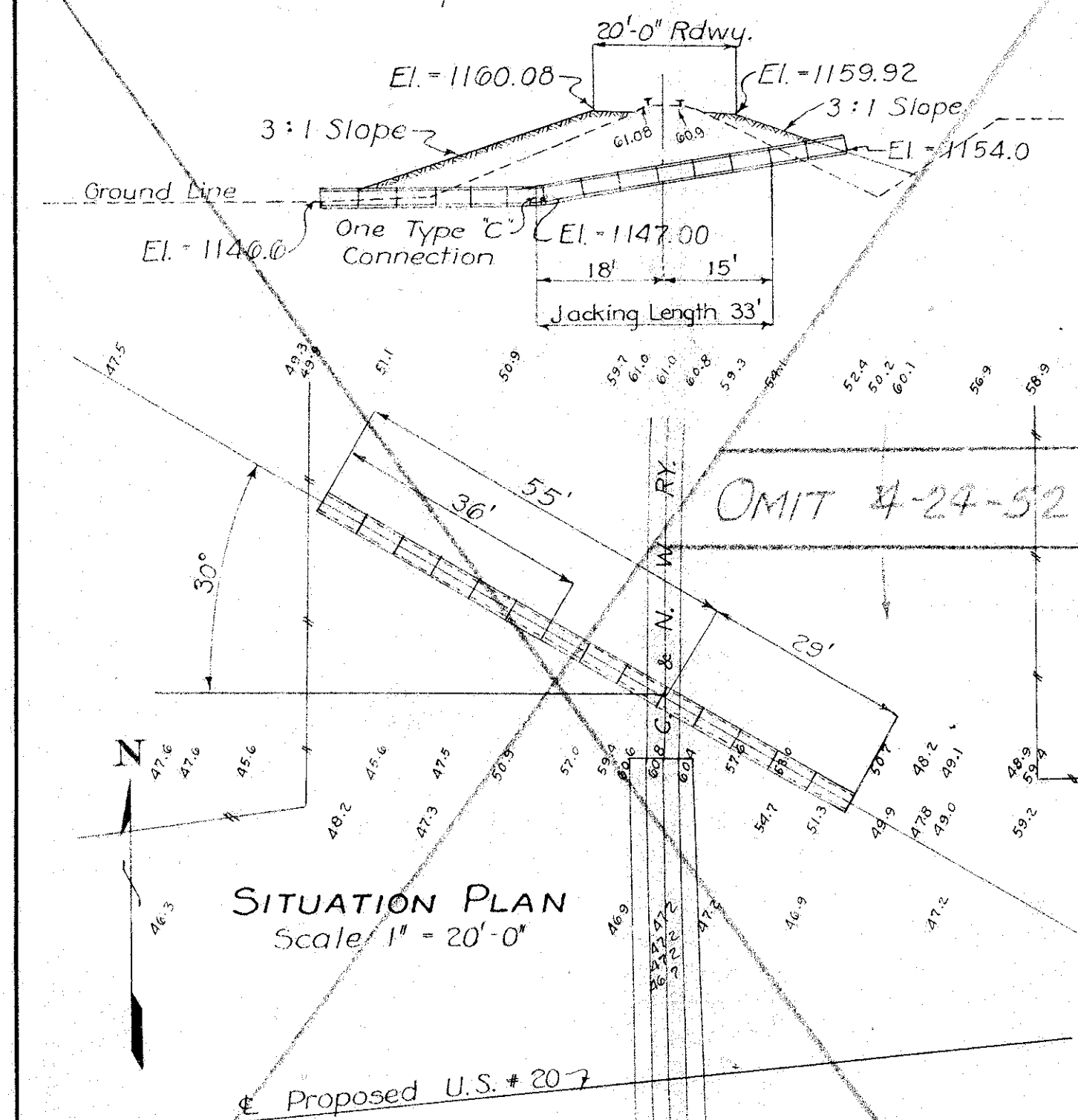
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-4-P			
DRAINAGE AREA 53 Ac. Hill	SECTION 1 - 34	TOWNSHIP Woodbury-Concord	STATION 587+00
SIZE AND TYPE 4x5x196" R.C.B.	COUNTY Woodbury	PROJECT E-2(7)	DATE February 1952
DEPTH OF FILL 25'	PIPE 14.11 C.Y.	REINFORCING 126.57 C.Y.	DESIGN NO. 1552
ESTIMATED EXCAVATION 139 C.Y.			

BENCH MARK No. 74 60' Spike top S. E. wing pile
3' Rt. Sta. 731 + 50 Elev. = 1217.15



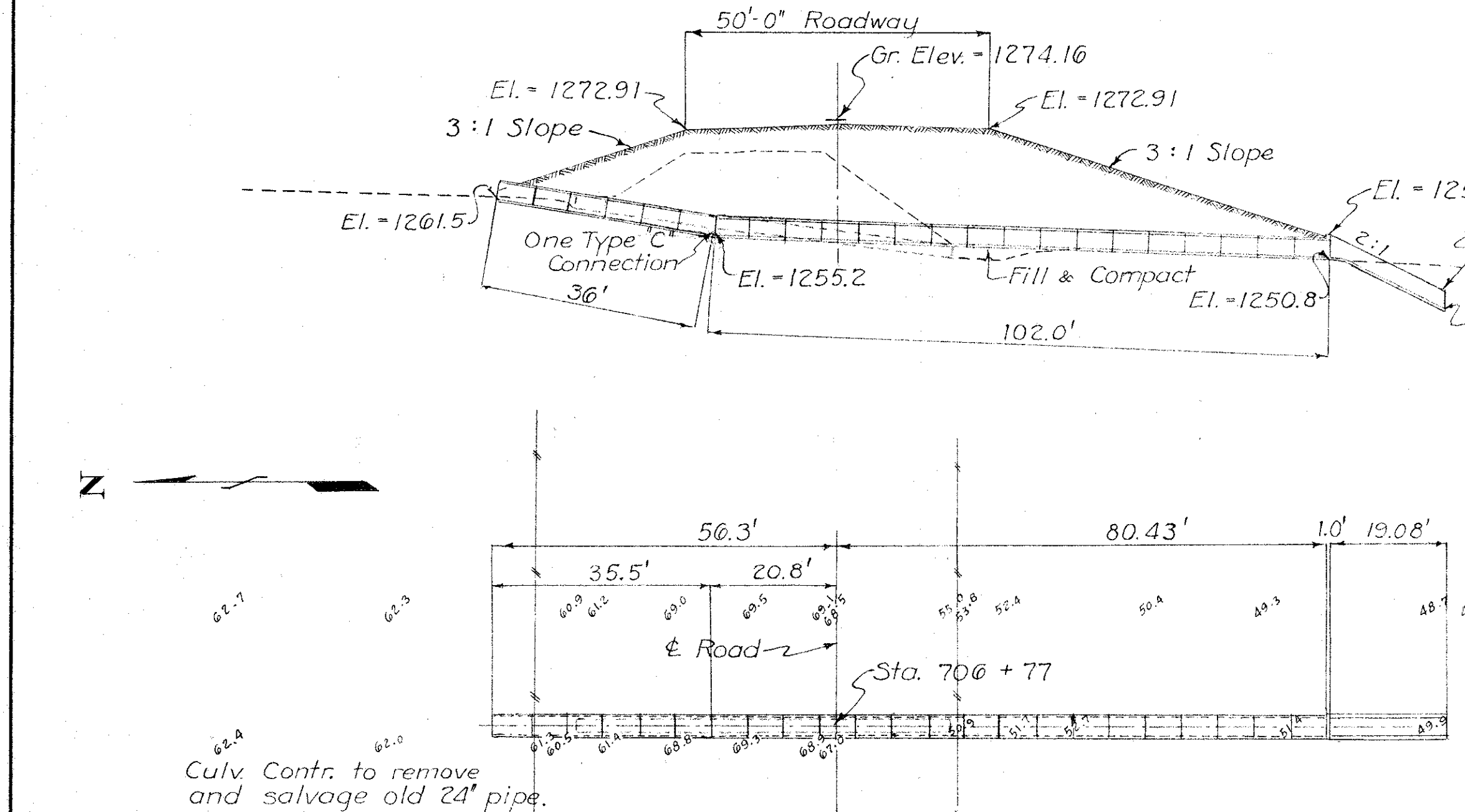
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C 5 P			
DRAINAGE AREA	70 Ac. Hilly to Very Hilly	SECTION	5 - 30
SIZE AND TYPE	5' x 5' x 59' R.C.B.	TOWNSHIP	Floyd - Concord
DEPTH OF FILL	4 Ft.	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 14 x 6' 0" LIN. FT. STATION 731 + 05.2 EXCAVATION CL 20 - 50 C.Y. PROJECT F-2(7) CONCRETE 42.5 C.Y. DATE Feb. 1952 REINFORCING 3652 LBS. DESIGN No. 2152		

BENCH MARK No. 81 Sta. 808 + 41, Head Bolt, Diagonal Brace Center Rt. pile Elev. = 1150.90



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F.L. & 2			
DRAINAGE AREA	5 Ac.	SECTION	32 - 3
SIZE AND TYPE	24' x 84' F.L. Pipe	TOWNSHIP	Banner - Floyd
DEPTH OF FILL	9 Ft.	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 14 x 6' 0" LIN. FT. STATION 808 + 41.35 54' Lt. EXCAVATION CL 24 - 43 C.Y. PROJECT F-2(7) CONCRETE 11 C.Y. DATE Feb. 1952 REINFORCING 2.82 LBS. DESIGN No. 2552		

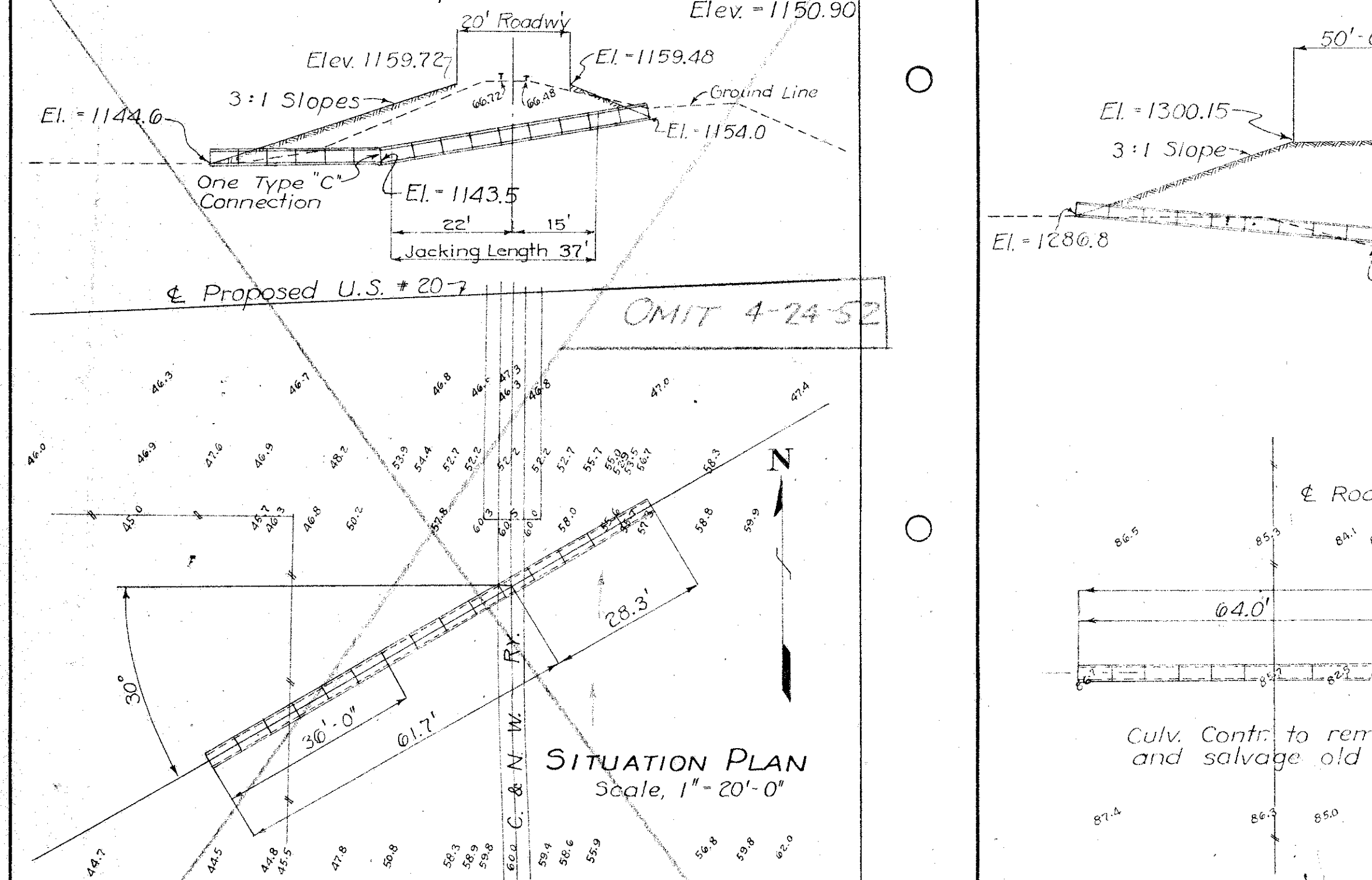
BENCH MARK No. 72 60' Spike South side 10' Walnut 83 ft. Left Sta. 699 + 03 Elev. = 1203.35



SITUATION PLAN Scale 1" = 20'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F.L.			
DRAINAGE AREA	10 Ac. Hilly	SECTION	5 - 30
SIZE AND TYPE	36' x 138' F.L. Pipe	TOWNSHIP	Floyd - Concord
DEPTH OF FILL	10 Ft.	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 17 @ 6' 0" LIN. FT. STATION 700 + 77 EXCAVATION CL 20 - 105 C.Y. PROJECT F-2(7) CONCRETE 37.5 C.Y. DATE Jan. 1952 REINFORCING 376 LBS. DESIGN No. 2052		

BENCH MARK No. 81 Sta. 808 + 41 Head Bolt Diagonal Brace Center Rt. pile R.R. Trestle 11' Rt. Elev. = 1150.90

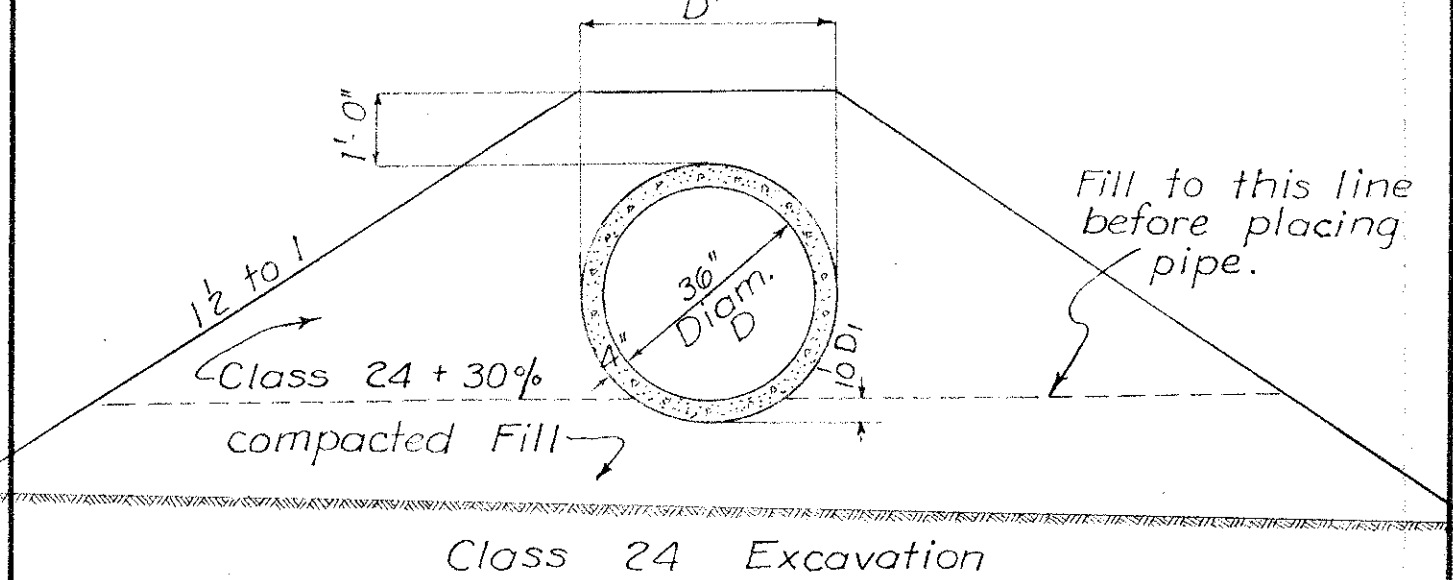
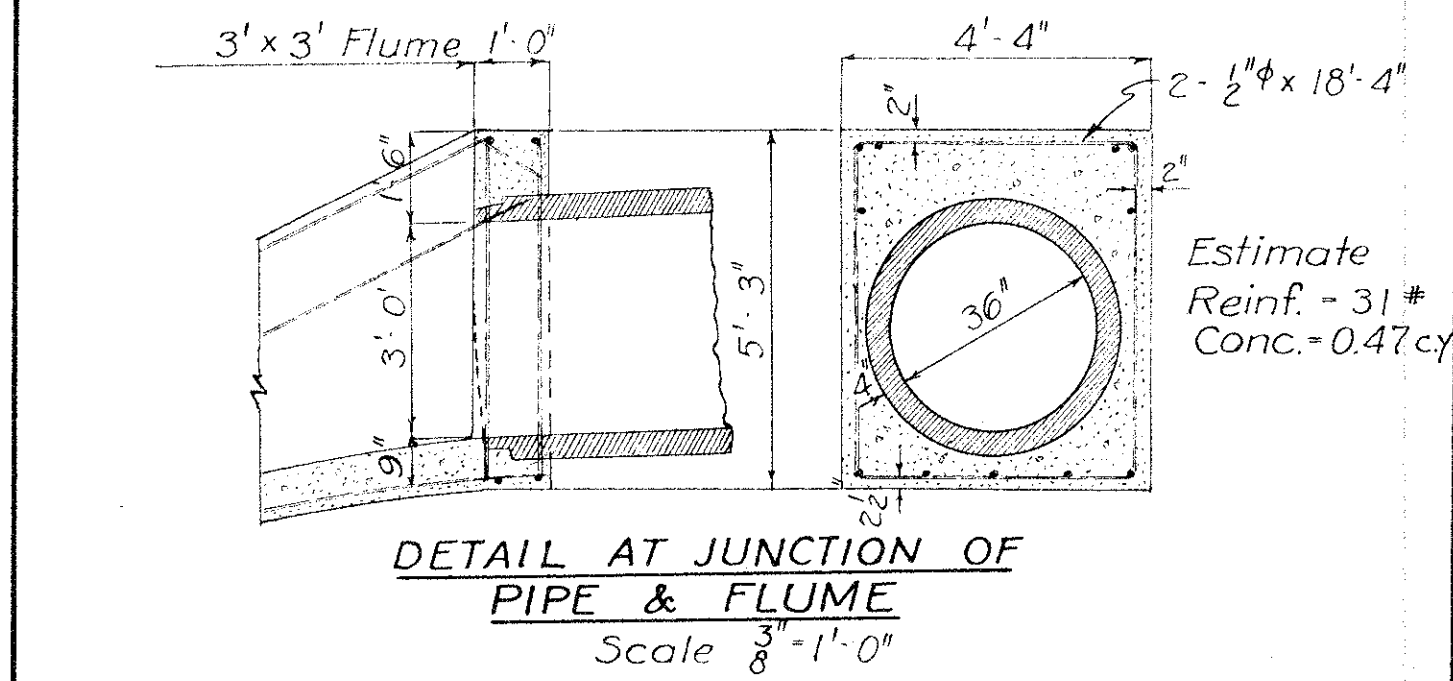


DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS			
DRAINAGE AREA	5 Ac.	SECTION	32 - 3
SIZE AND TYPE	24' x 90' F.L. Pipe	TOWNSHIP	Banner - Floyd
DEPTH OF FILL	9 Ft.	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 15 x 6' 0" LIN. FT. STATION 808 + 41.35 52' Rt. EXCAVATION CL 20 - 40 C.Y. PROJECT F-2(7) CONCRETE 11 C.Y. DATE Feb. 1952 REINFORCING 2.82 LBS. DESIGN No. 2652		

A = 26° - 34'
C = 2° - 28'
B = 4° - 48'
S = 21' - 4"
V = 2' - 08"
W = 9' - 08"
R = 20' - 48"

Sheet 1 of 2

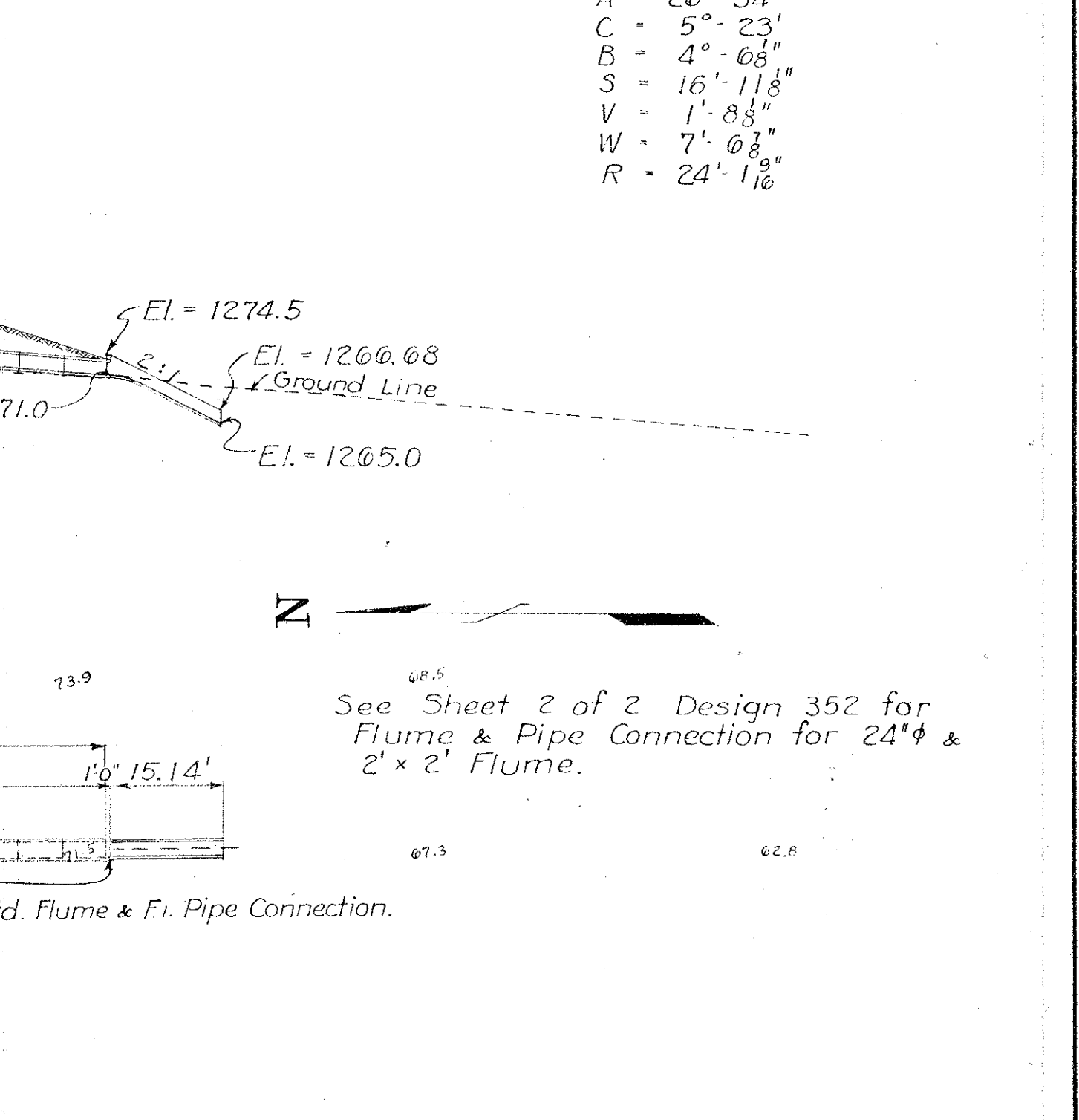
BENCH MARK



Sheet 2 of 2

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS			
DRAINAGE AREA	26 Ac. Hilly	SECTION	5 - 30
SIZE AND TYPE	24' x 108' F.L. Pipe & Flume	TOWNSHIP	Floyd - Concord
DEPTH OF FILL	19 Ft.	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 28 x 6' 0" LIN. FT. STATION 807 + 00 EXCAVATION CL 24 - 114 C.Y. PROJECT F-2(7) CONCRETE 3.0 C.Y. DATE Feb. 1952 REINFORCING 222 LBS. DESIGN No. 2752		

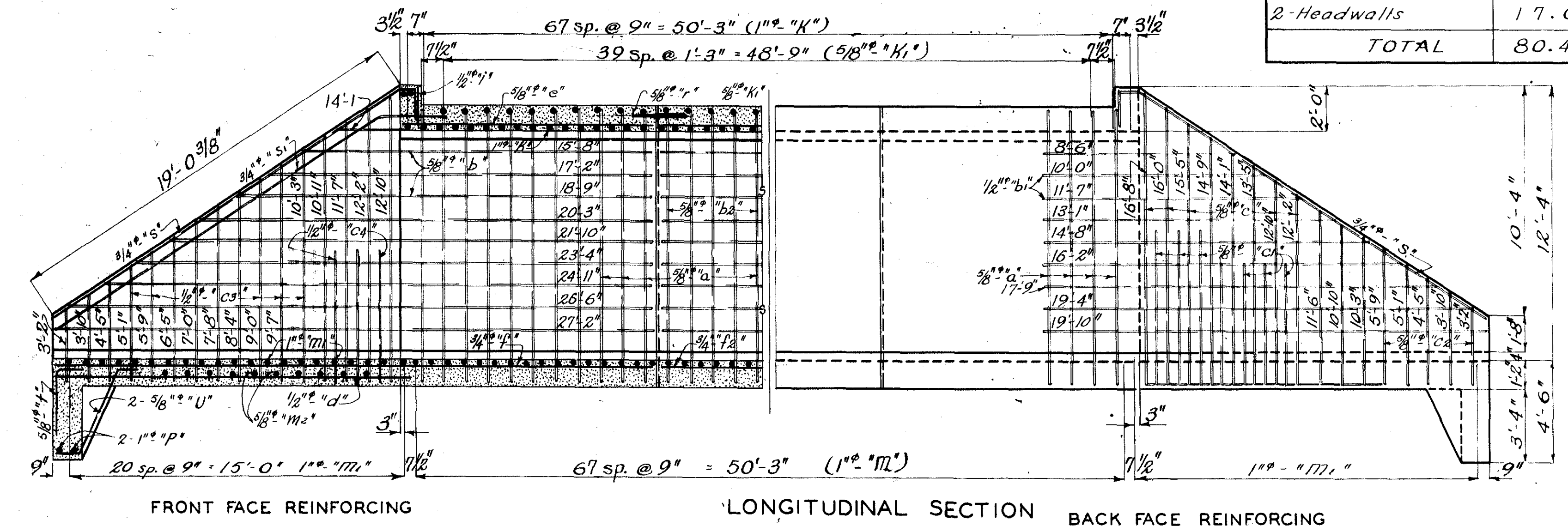
BENCH MARK No. 85 (X) Nails, 30" Cottonwood 141' Rt. Sta. 801 + 11 Elev. = 1267.58



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C.F.P.			
DRAINAGE AREA	26 Ac. Hilly	SECTION	2 - 33
SIZE AND TYPE	24' x 108' F.L. Pipe & Flume	TOWNSHIP	Floyd - Banner
DEPTH OF FILL	19 Ft.	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 28 x 6' 0" LIN. FT. STATION 807 + 00 EXCAVATION CL 24 - 114 C.Y. PROJECT F-2(7) CONCRETE 3.0 C.Y. DATE Feb. 1952 REINFORCING 222 LBS. DESIGN No. 2752		

BENCH MARK # 76 (+) South Handrail 18'x16' Conc. Slab Br. 3' Rt. Sta. 748+50 El. 1191.55

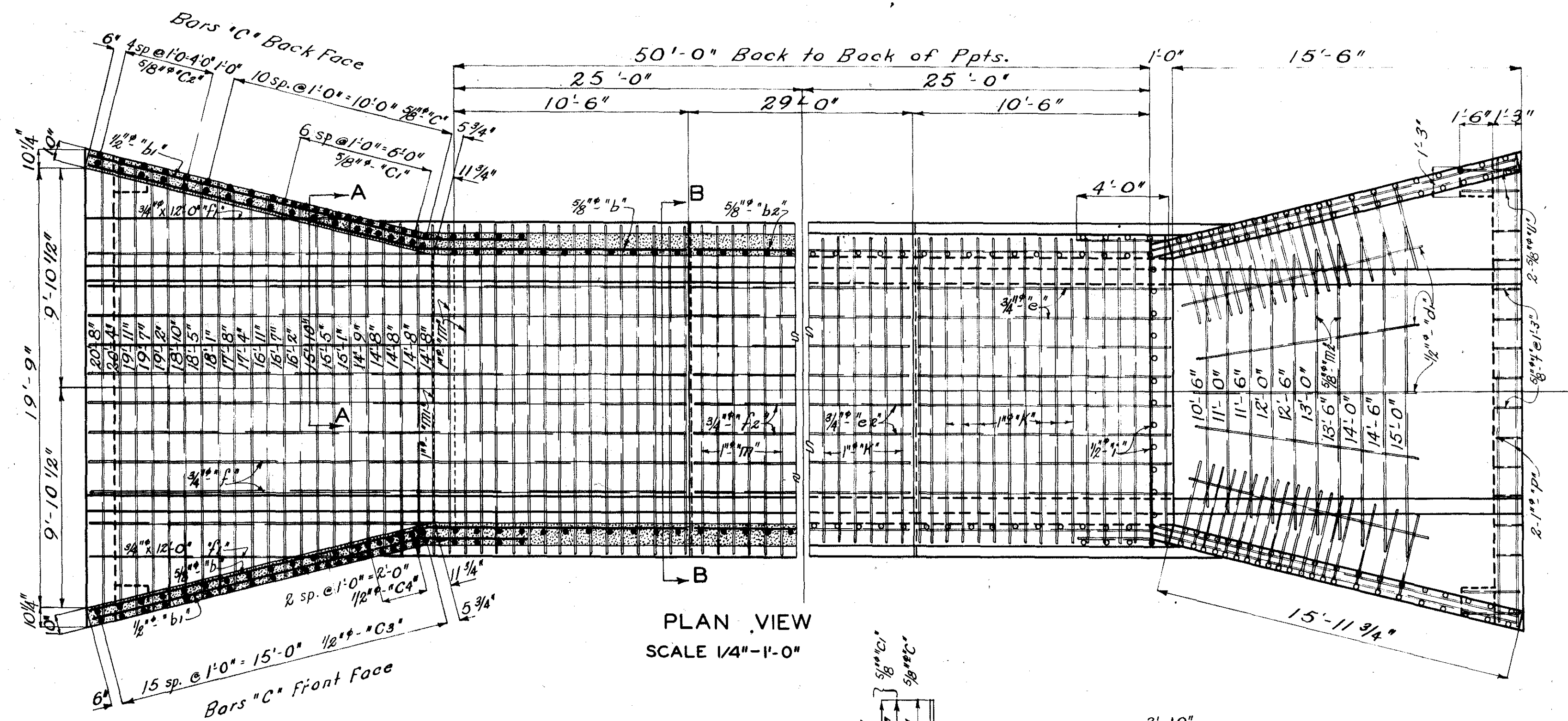
CONCRETE IN PARTS		
	Above Footing	Footings
Middle Section (bbl)	36.801	20.474
2-End Sections (bbl)	26.649	14.826
2-Headwalls	17.04	35.02
TOTAL	80.490	70.320
	150.810	



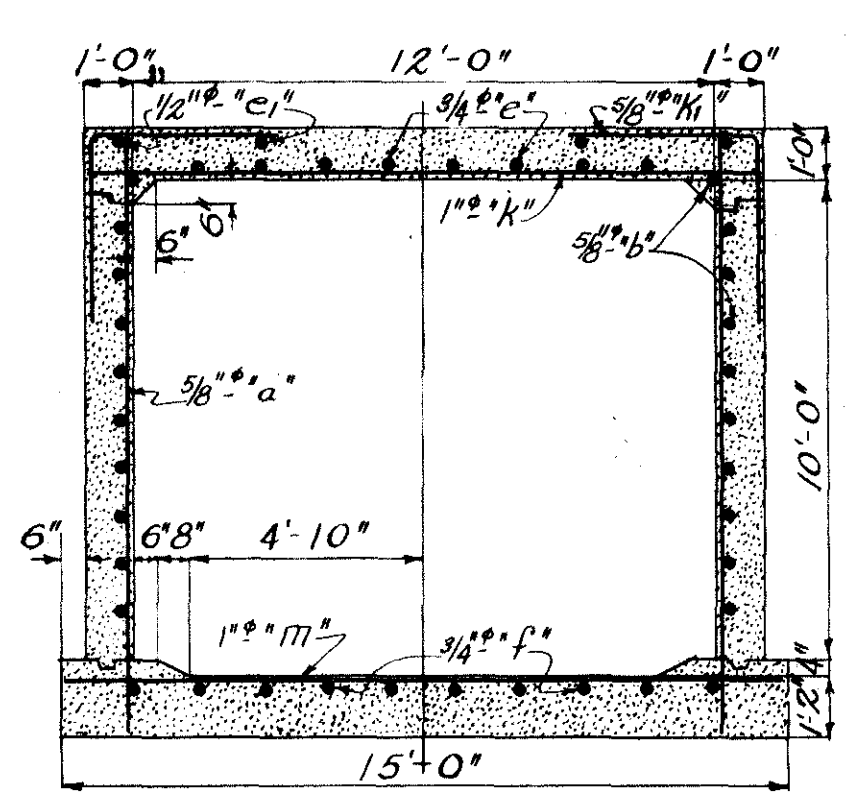
FRONT FACE REINFORCING

LONGITUDINAL SECTION

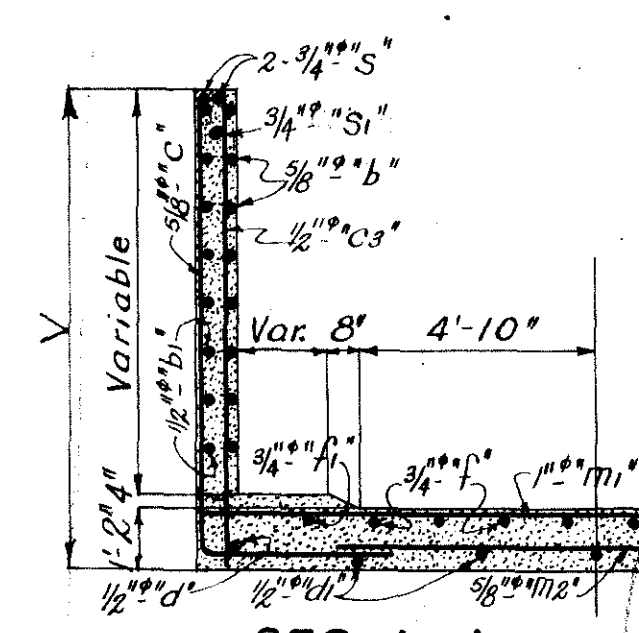
BACK FACE REINFORCING



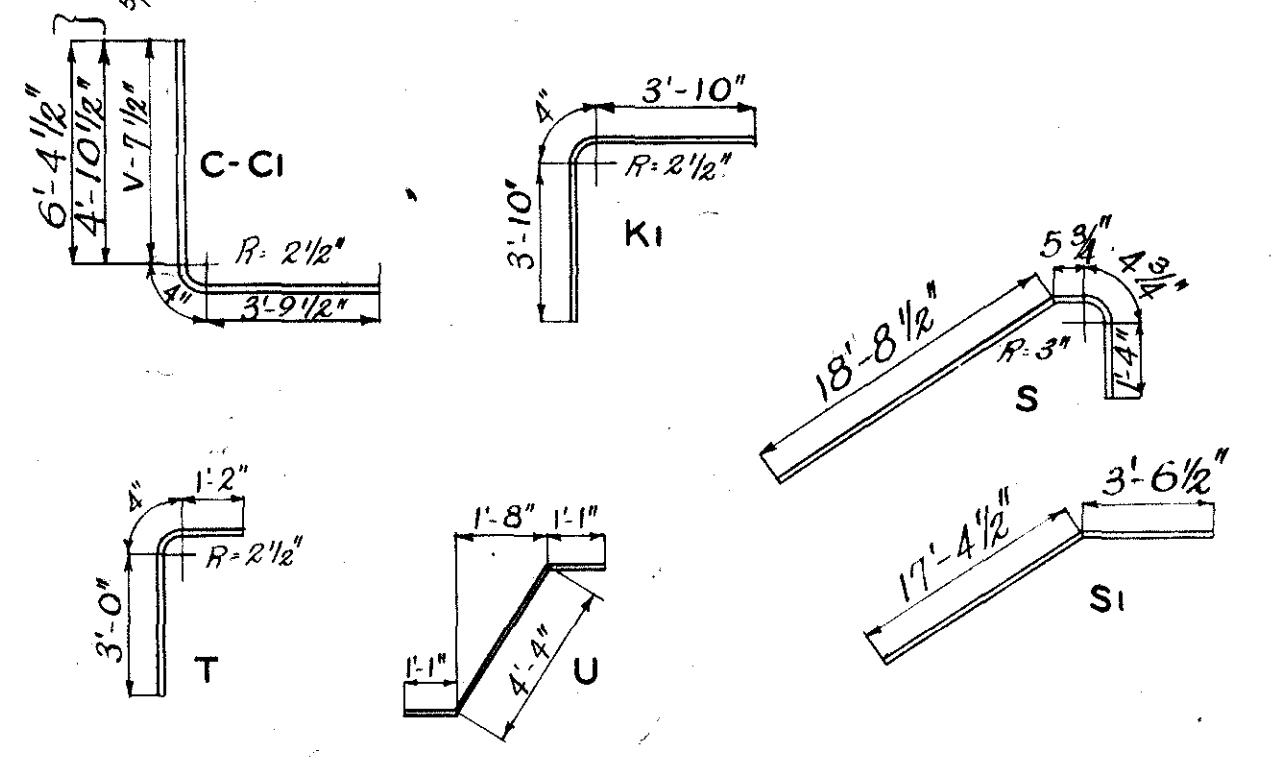
PLAN VIEW
SCALE 1/4\"/>



SEC. B-B
SCALE 1/4\"/>

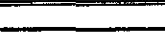

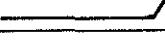

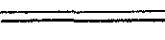

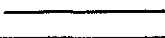
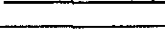
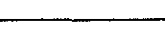
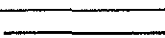
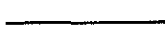
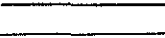

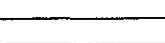
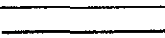
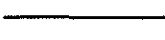
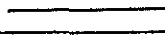
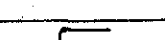
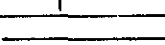
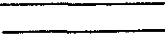
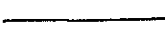

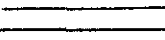

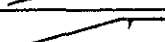


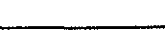
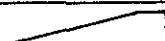






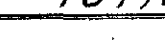


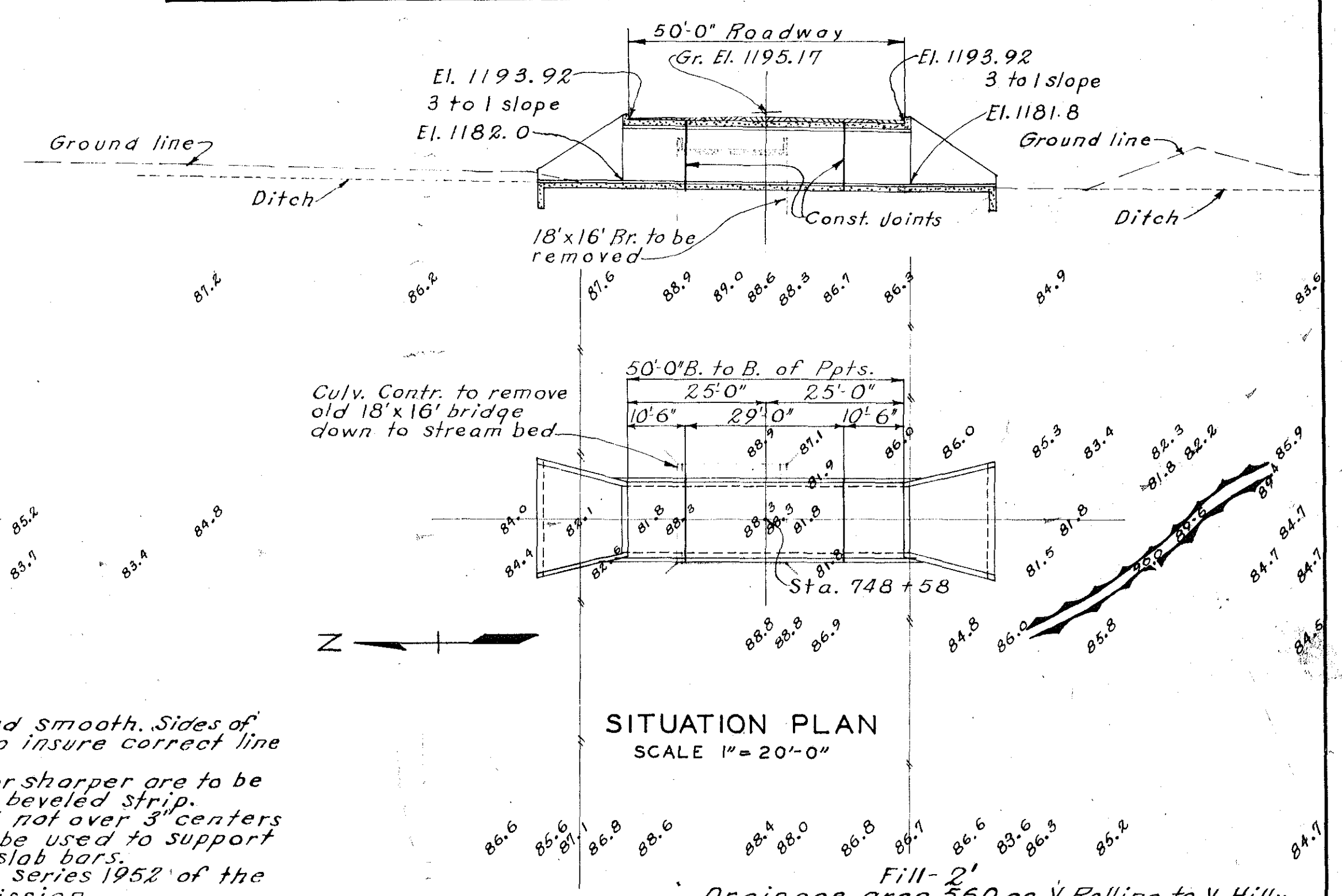
SEC. A-A



BAR DETAILS

General Notes:
 Floor of barrel to be finished smooth. Sides of footing are to be formed to insure correct line and grade.
 All exposed corners 90° or sharper are to be filled with a 3/4\"/>

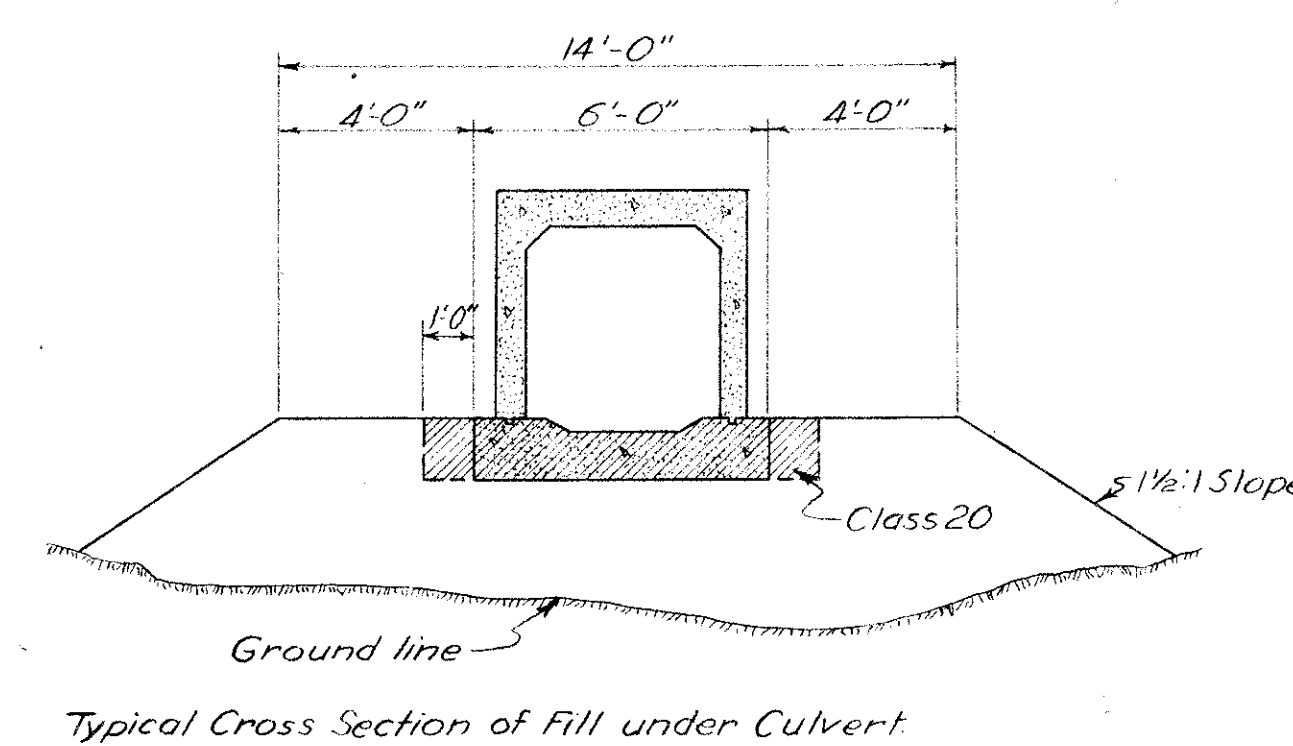
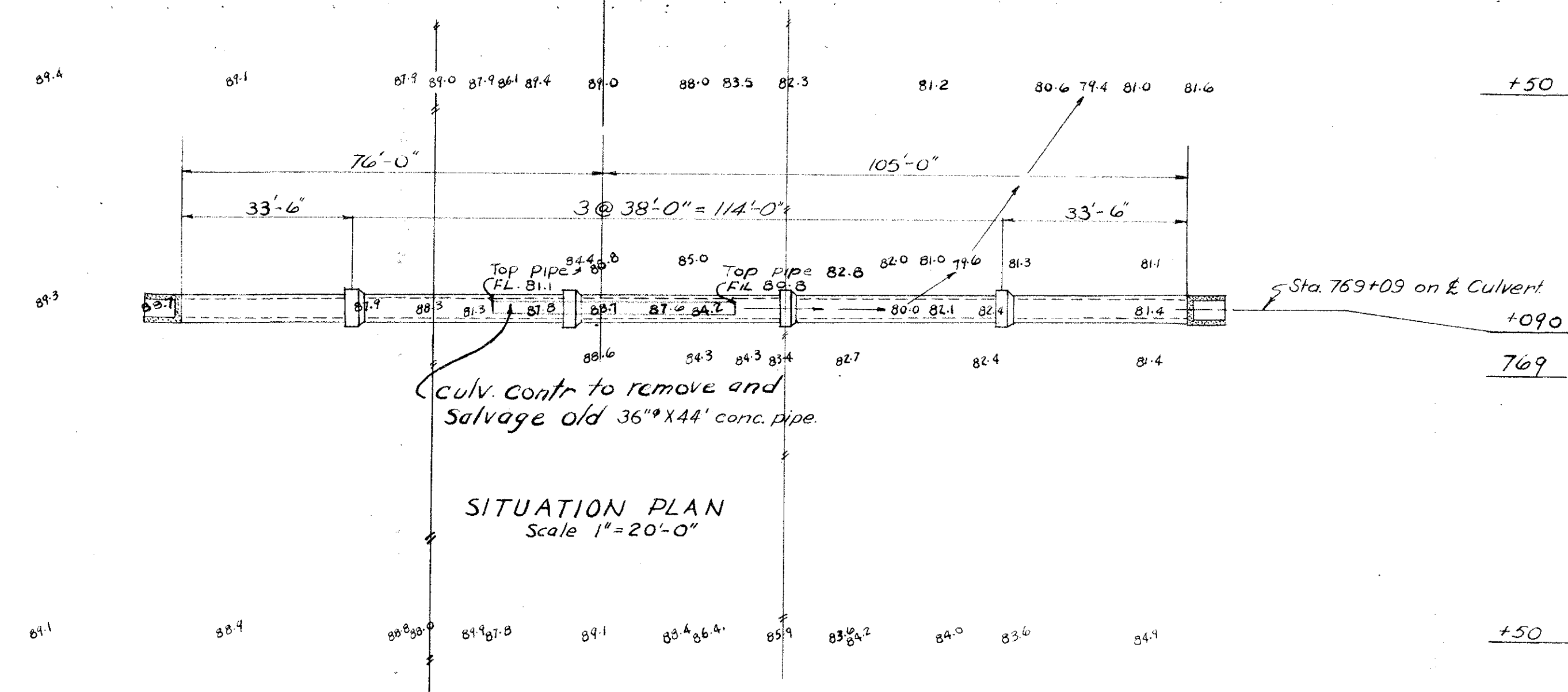
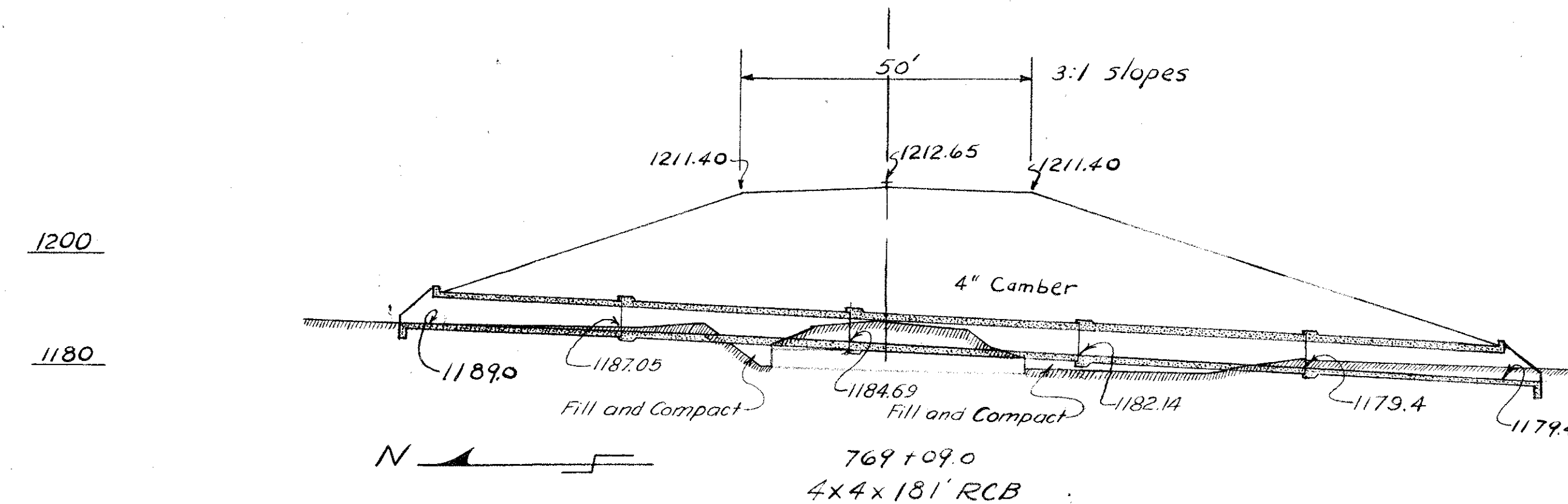
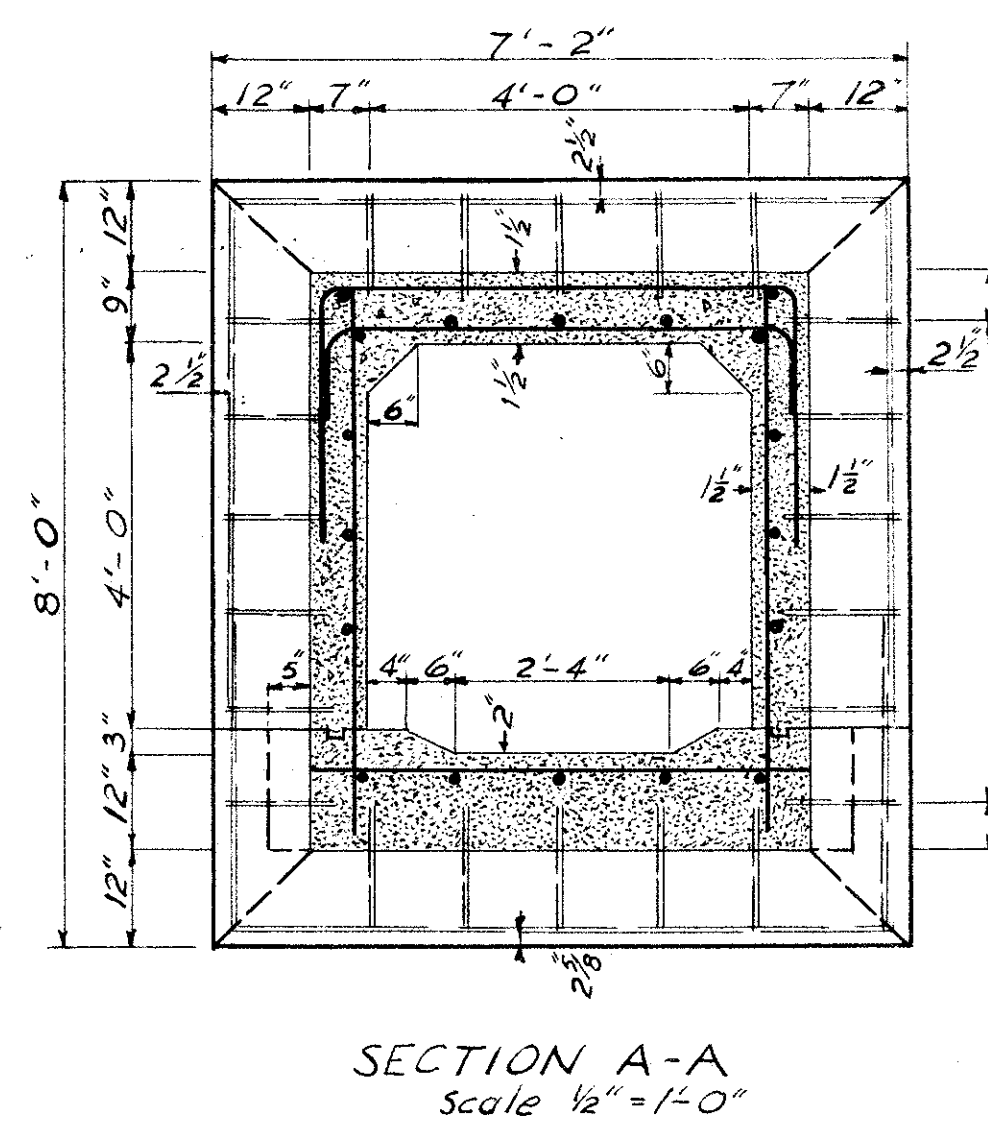
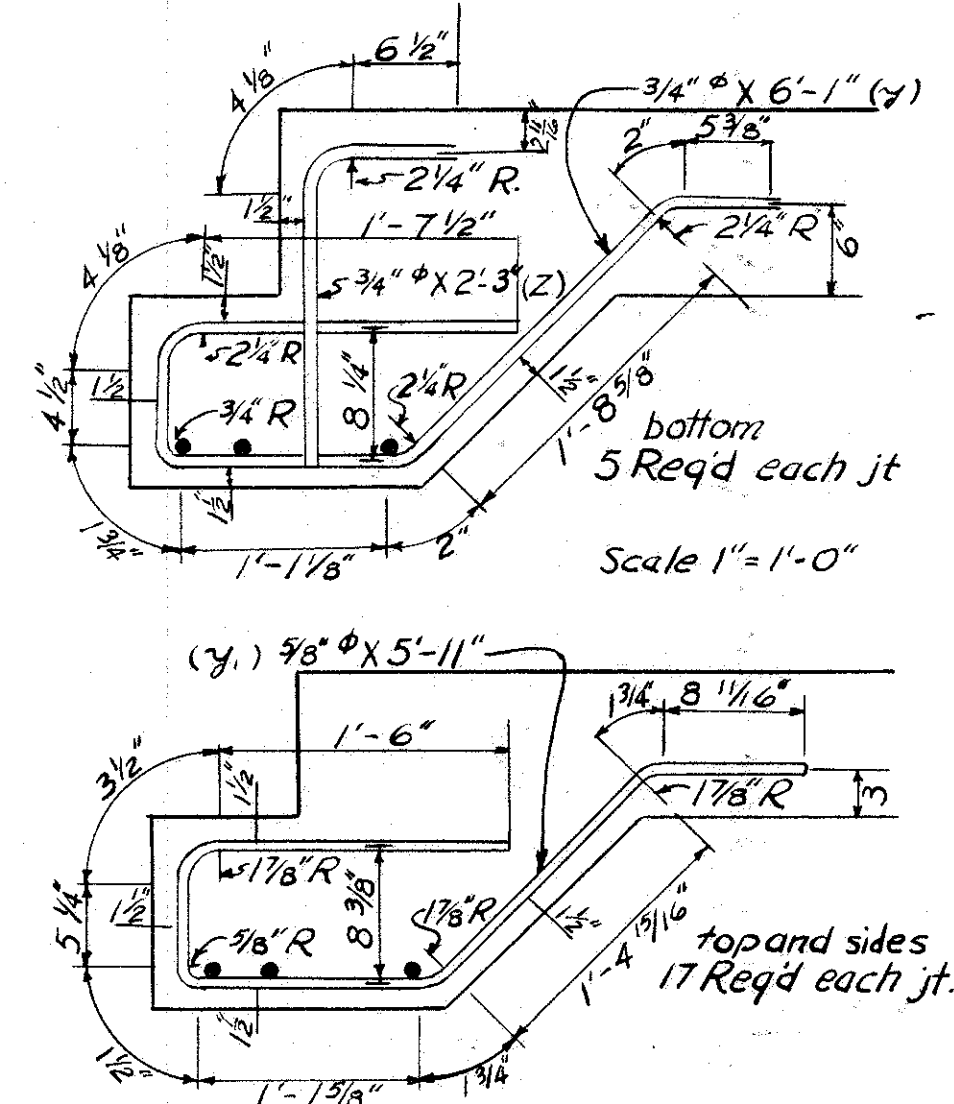
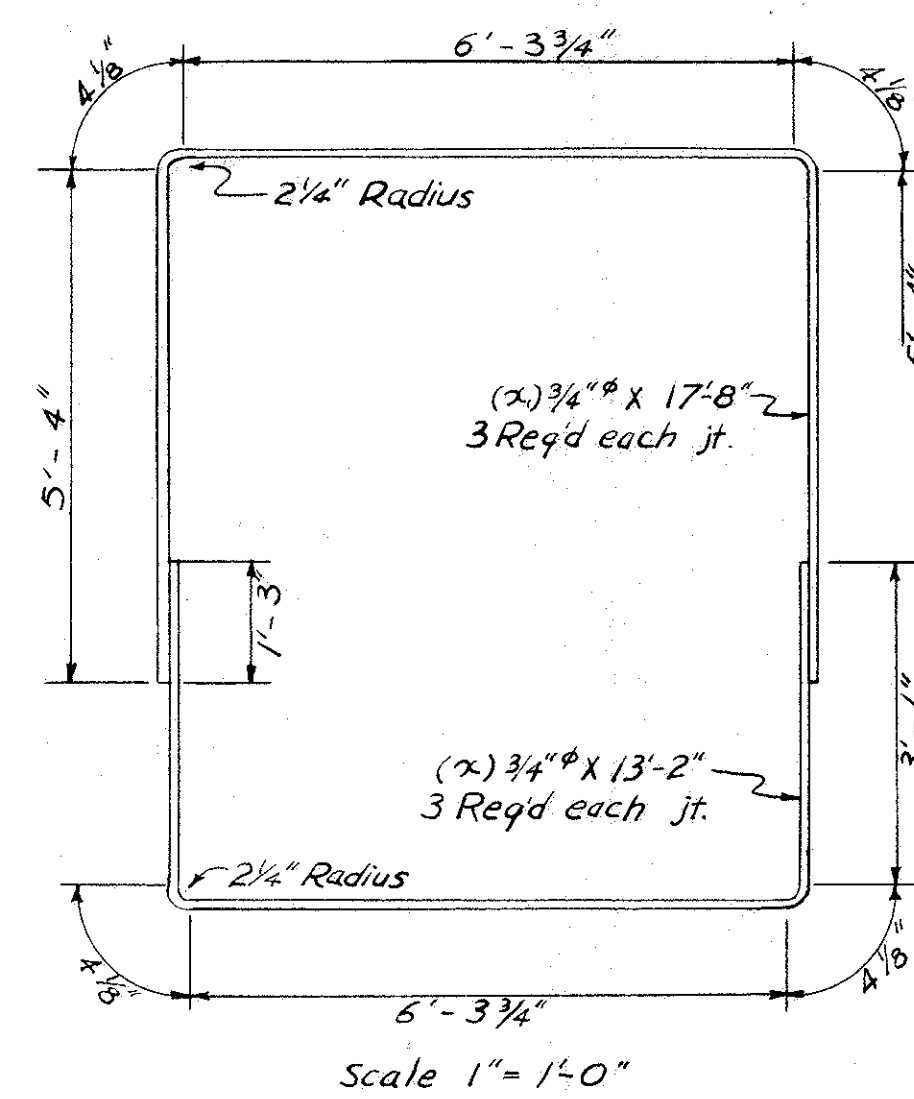
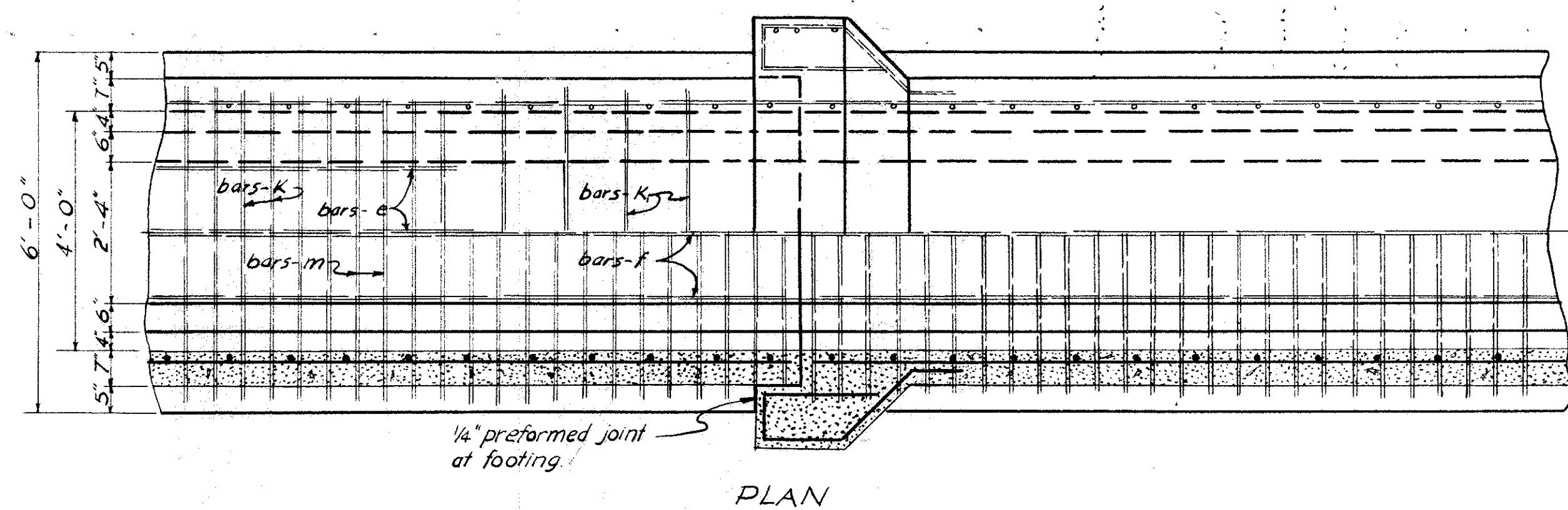
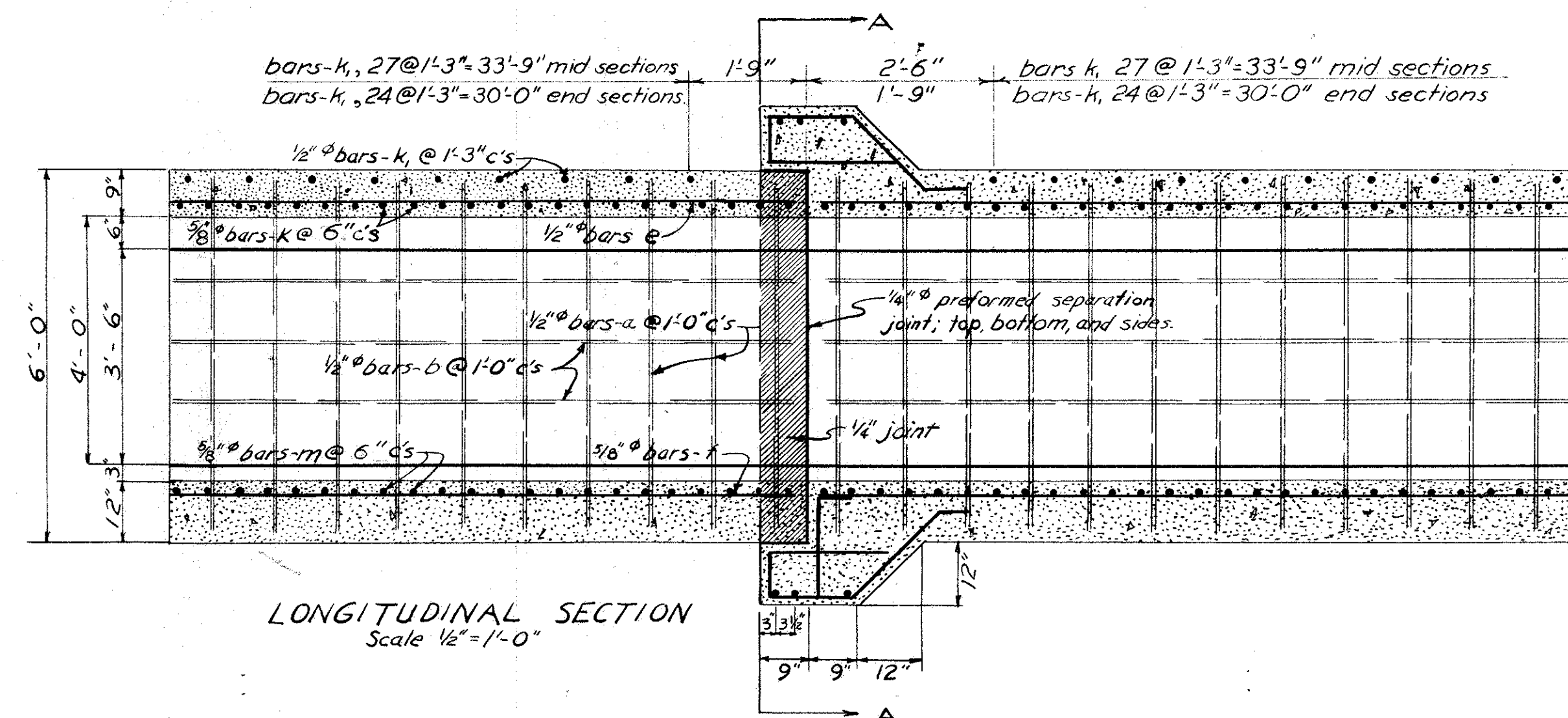
Mark	Location	Shape	Size	No.	Length	Linear Feet			
						1/2"φ	5/8"φ	3/4"φ	1"φ
a	Walls- Vert.	F.F.		5/8"φ	118	12'-2"		1,435.7	
b	Walls- Horiz. (ends)	F.F.		3/8"φ	40	Shown		838.7	
b1	" - " (")	B.F.		1/2"φ	36	Shown	523.7		
b2	" - " (center)	F.F.		5/8"φ	20	28'-8"		573.3	
c	Wings- Vert.	B.F.		5/8"φ	44	Shown		591.7	
c1	" - "	B.F.		3/8"φ	28	12'-2" 12'-10"		270.0	
c2	" - "	B.F.		5/8"φ	20	Shown		89.0	
c3	" - "	F.F.		1/2"φ	64	Shown	512.0		
c4	" - "	F.F.		1/2"φ	12	6'-0"	72.0		
d	Hd'wll. (under wings)			1/2"φ	4	16'-0"	64.0		
d1	" (Floor, bottom)			1/2"φ	10	11'-0"	110.0		
e	Slab- long. (ends, bottom)			3/4"φ	16	11'-2"		178.7	
e1	" - " (" , top)			1/2"φ	8	11'-2"	89.3		
e2	" - " (center, bottom)			3/4"φ	8	28'-8"		229.3	
e3	" - " (" , top)			1/2"φ	4	28'-8"	114.7		
f	Floor- long. (ends, top)			3/4"φ	20	26'-8"		533.3	
f1	" - " (top, next to wings)			3/4"φ	4	12'-0"		48.0	
f2	" - " (center, top)			3/4"φ	10	28'-8"		286.7	
i	Parapet- Vert.			1/2"φ	24	1'-8"	40.0		
j	" - Horiz.			5/8"φ	4	13'-5"		53.7	
k	Slab- Transv. (bottom)			1"φ	70	13'-8"			956.7
m1	Slab- Corners (top)			3/8"φ	80	8'-0"	640.0		
m2	Floor- Transv. (top, bbl)			1"φ	68	14'-8"			997.4
m3	" - " (top, hd'wll)			1"φ	42	Shown			718.8
m2	" - " (bottom, hd'wll)			5/8"φ	20	Shown	255.0		
p	Curtain- transv.			1"φ	4	20'-7"			82.3
r	Dowel bar			3/8"φ	26	2'-0"	52.0		
s	Wing Slope (top, F.F. & B.F.)			3/4"φ	8	20'-11"		167.3	
s1	" - " (Front face)			3/8"φ	4	20'-11"		83.7	
t	Curtain- Vert.			5/8"φ	24	4'-6"	108.0		
u	" - brace			5/8"φ	8	6'-6"	52.0		
Length						1,525.7	4,959.1	1,521.0	2,755.2
Weight						1,019.2	5,172.3	2,293.6	7,356.4
TOTAL WEIGHT						15,841.5 LBS			
CONCRETE						150.8 C.Y.			
EXCAVATION CL. 20						86 C.Y.			



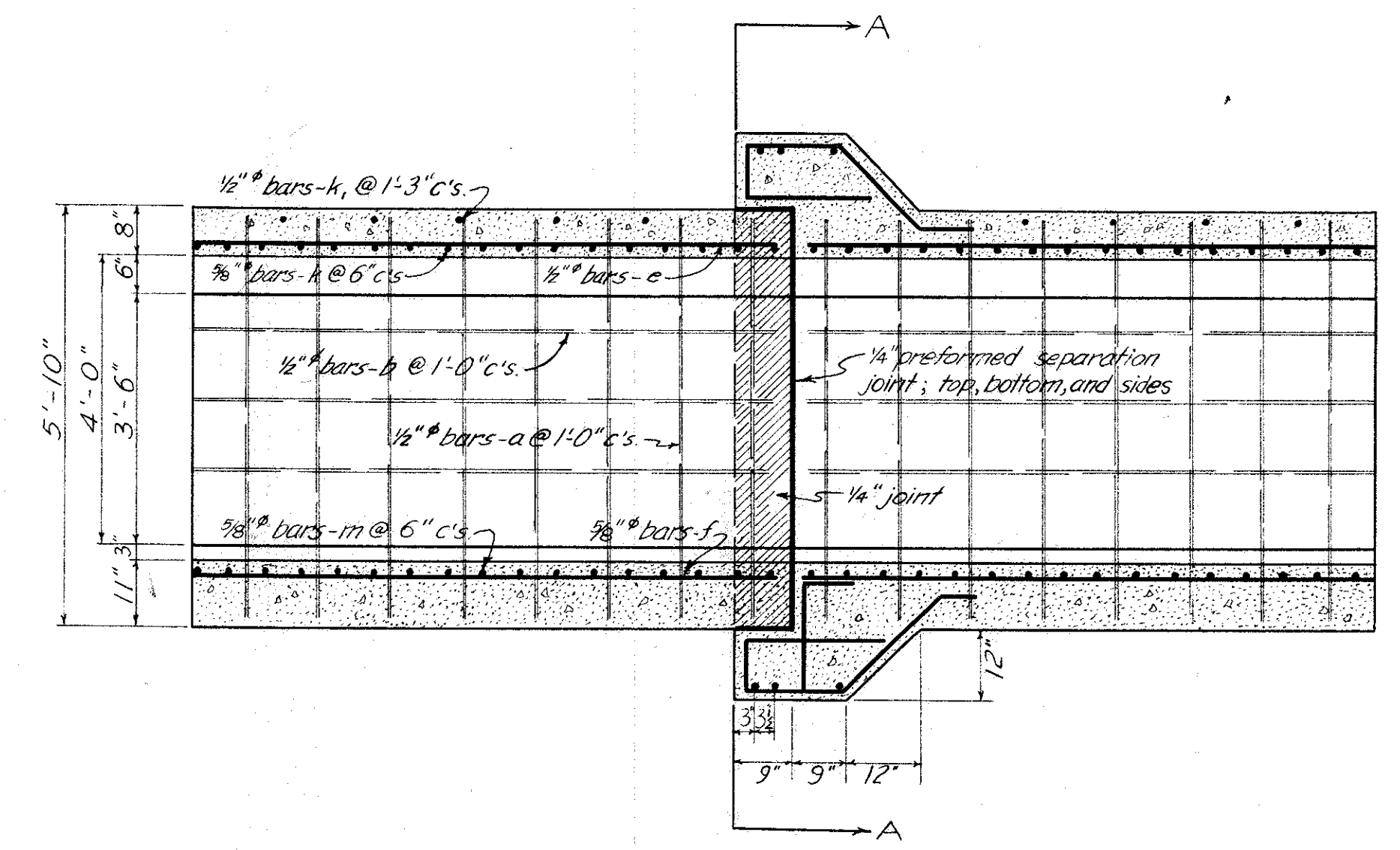
SITUATION PLAN
SCALE 1\"/>

LOCATION:
 Sections 4-31
 Floyd-Banner Township
 Woodbury County

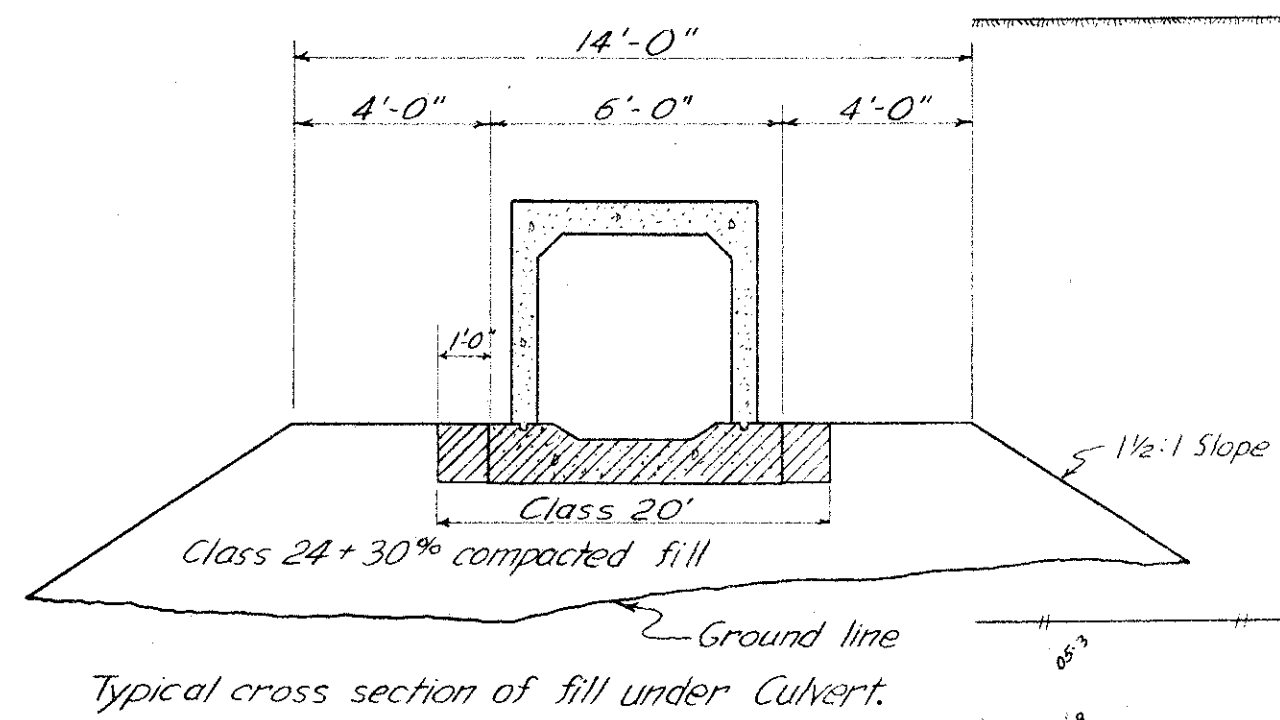
DESIGN FOR
12'X10'X50' BOX CULVERT
 REINFORCED CONCRETE
 STATION 748+58 PROJECT NO. F-2(7)
WOODBURY COUNTY
 IOWA STATE HIGHWAY COMMISSION
 FEBRUARY 7, 1952 SCALES AS NOTED



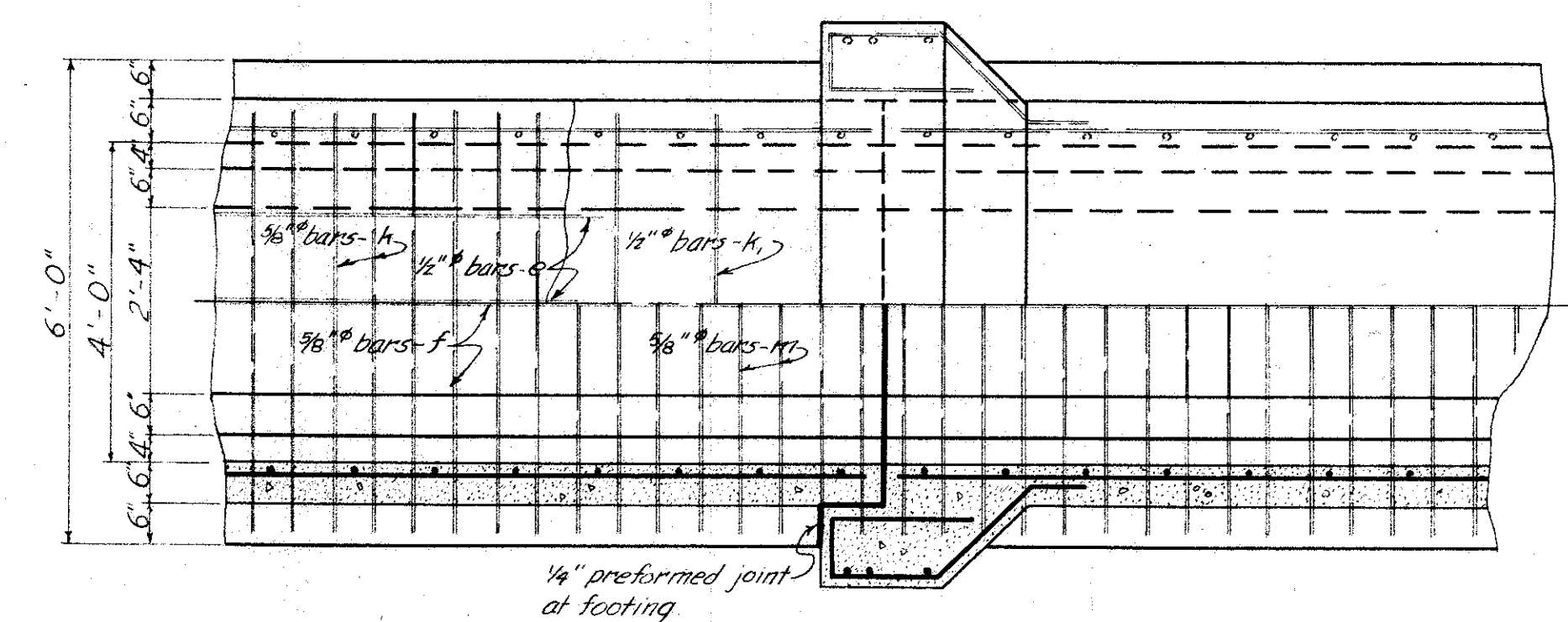
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-4P			
DRAINAGE AREA	40 acres R. Milliy	SECTION	4-31
SIZE AND TYPE	4x4x18" R.C.B.	TOWNSHIP	Floyd - Banner
DEPTH OF FILL	24'	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE Removal 36" 44' Conc. Pipe L.I.N. FT. EXCAVATION Class 20-118 C.Y. CONCRETE 118.4 C.Y. REINFORCING 10834 LBS	STATION	769+0.9
		PROJECT	F-2 (7)
		DATE	March, 1952
		DESIGN NO	2352



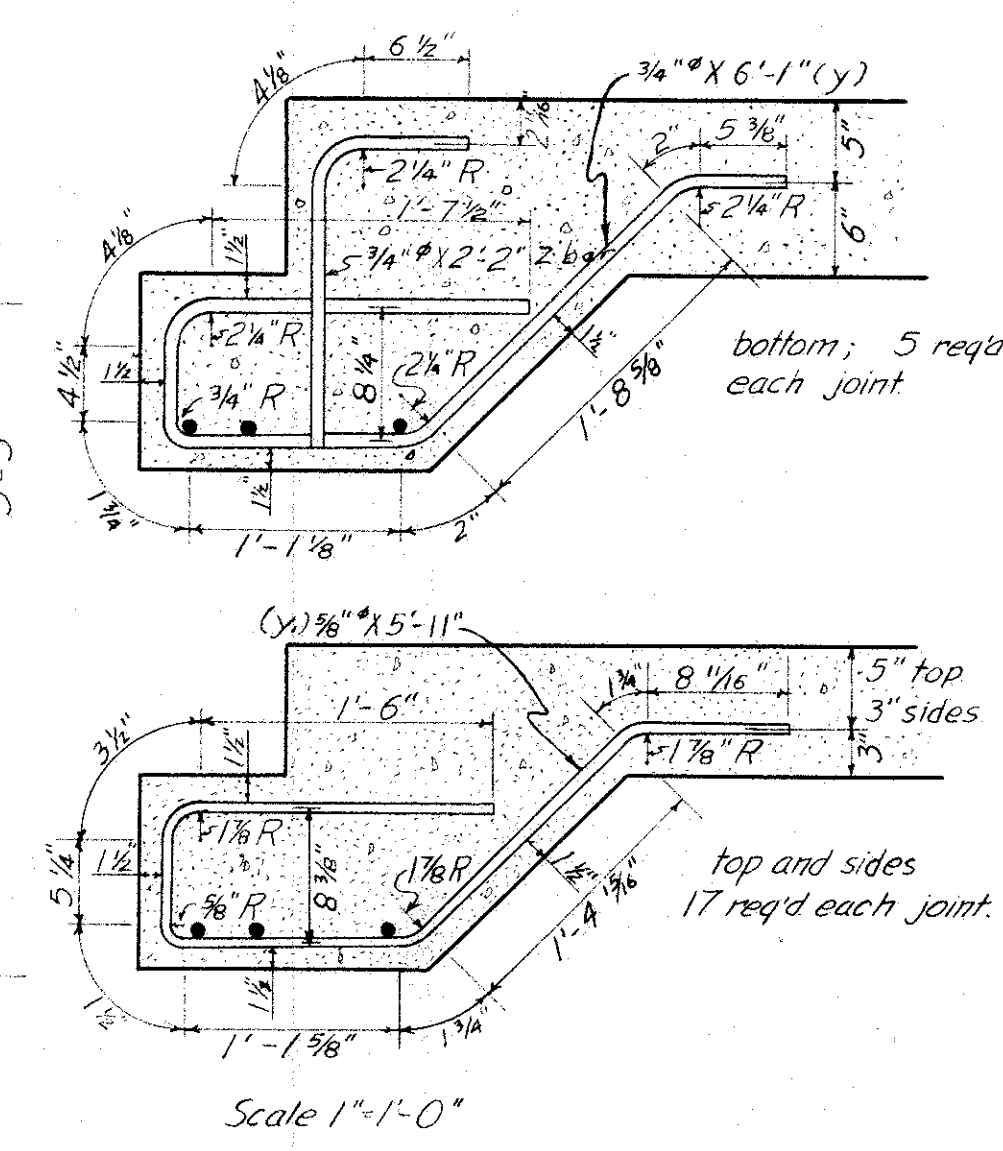
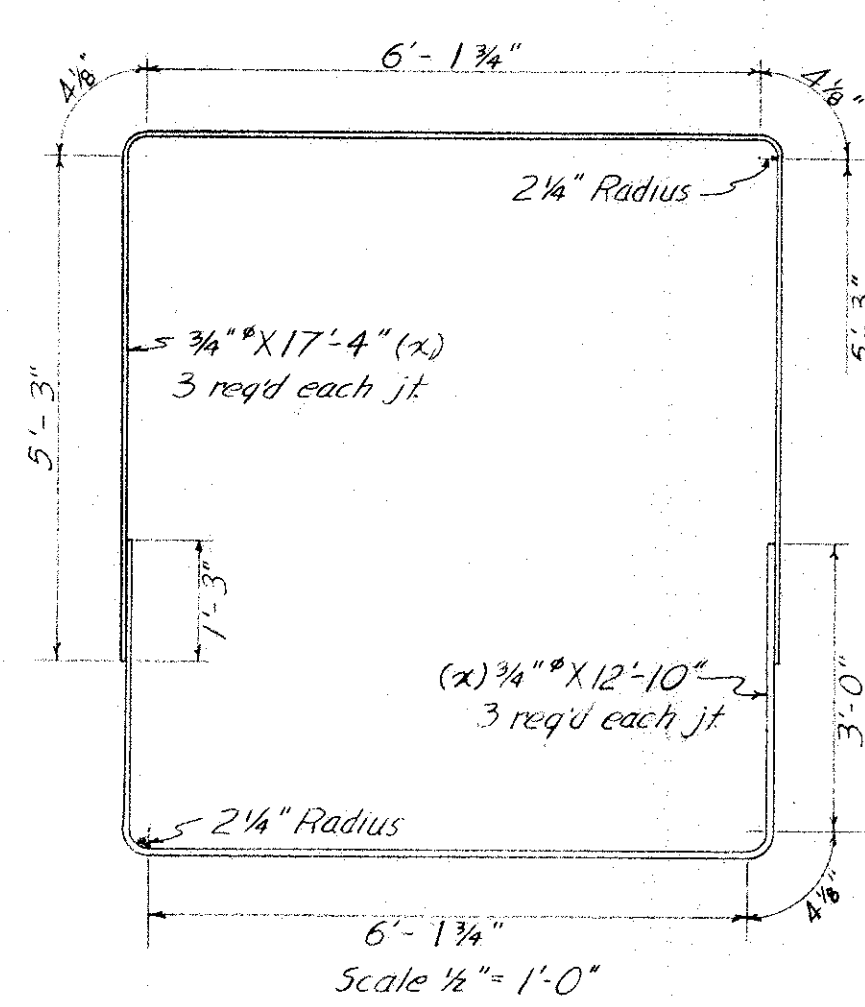
LONGITUDINAL SECTION
Scale 1/2" = 1'-0"



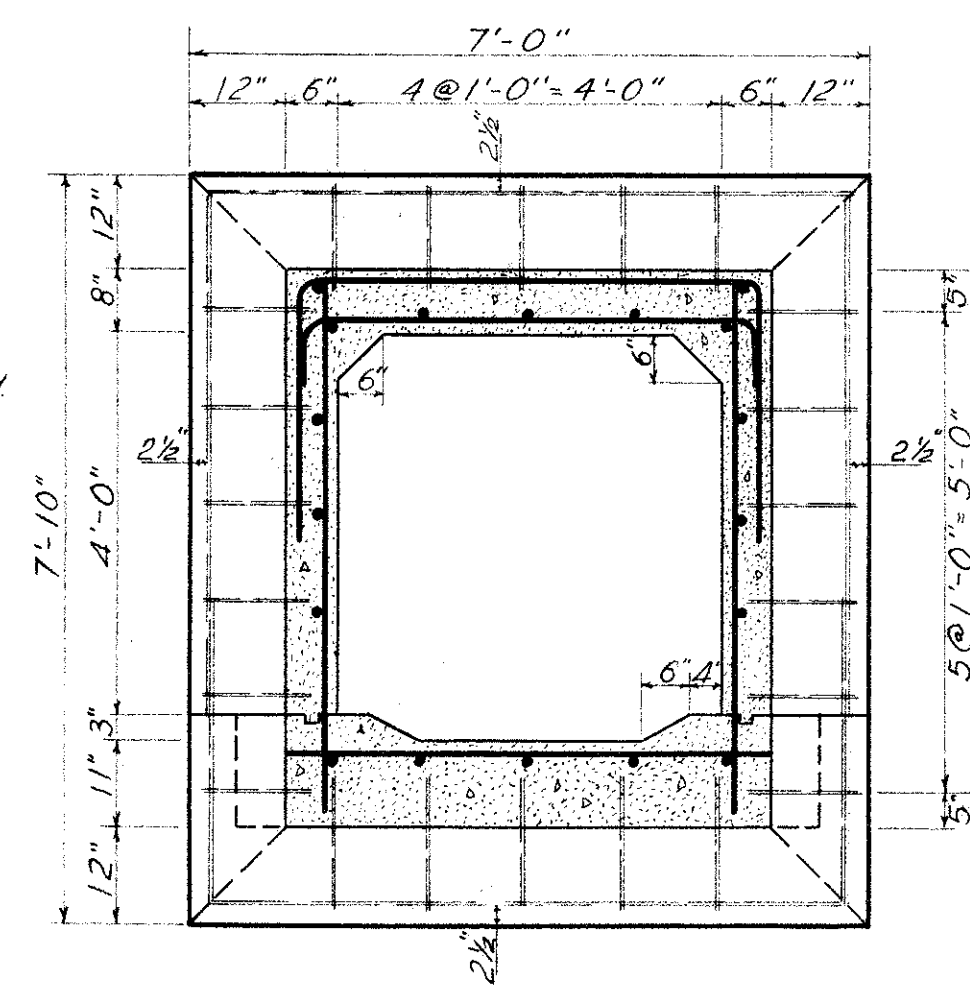
Typical cross section of fill under Culvert.



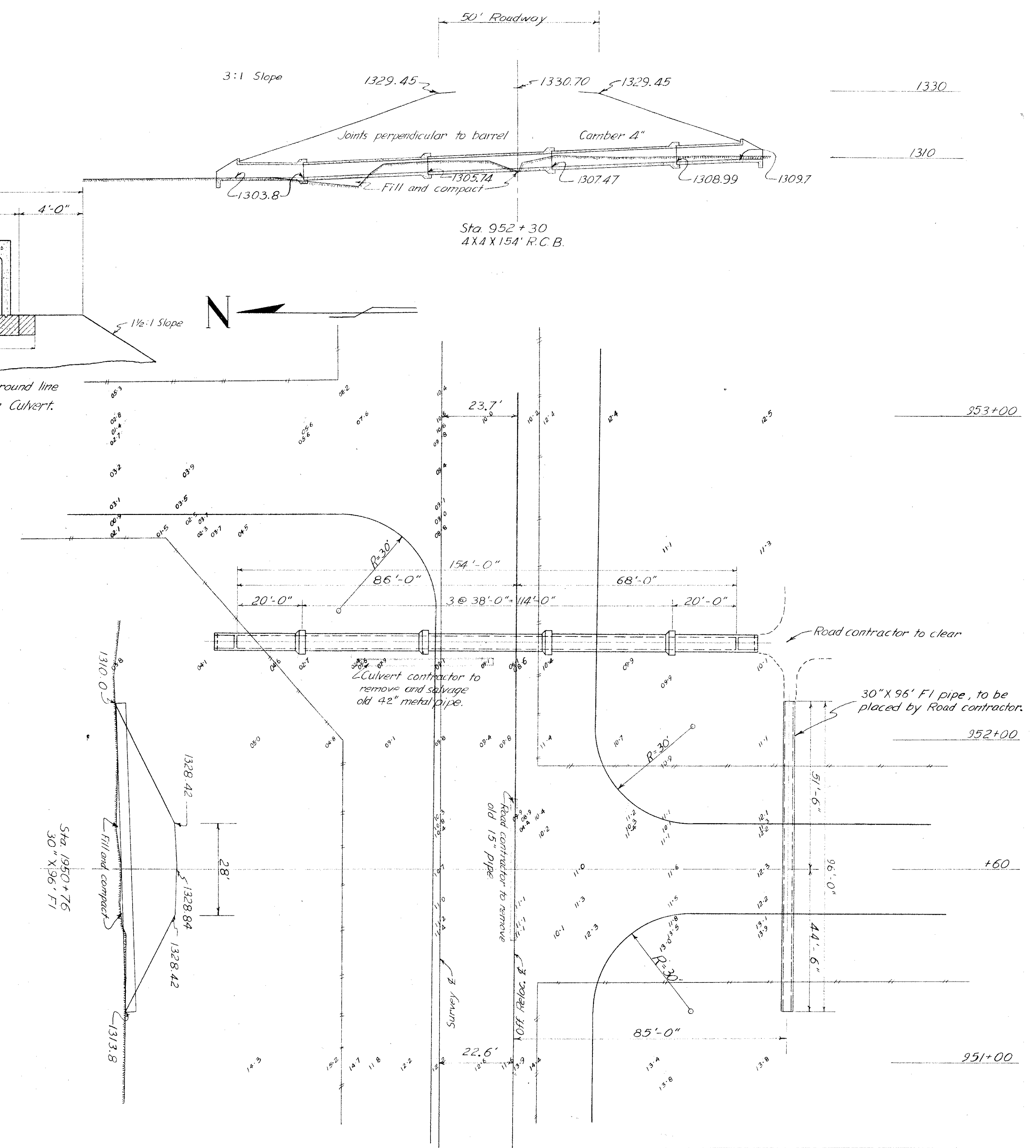
PLAN



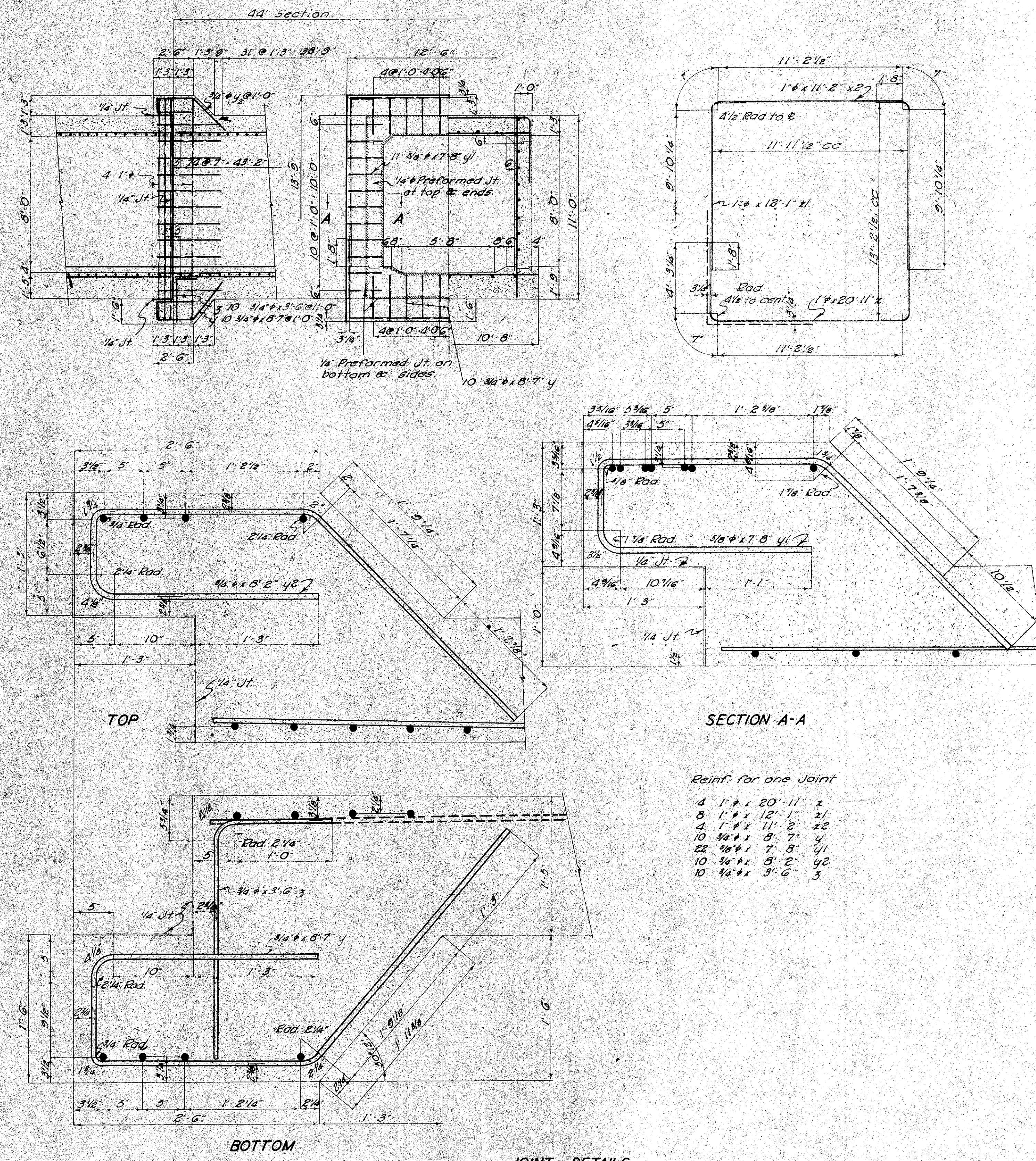
BAR DETAILS
for Bell Joints



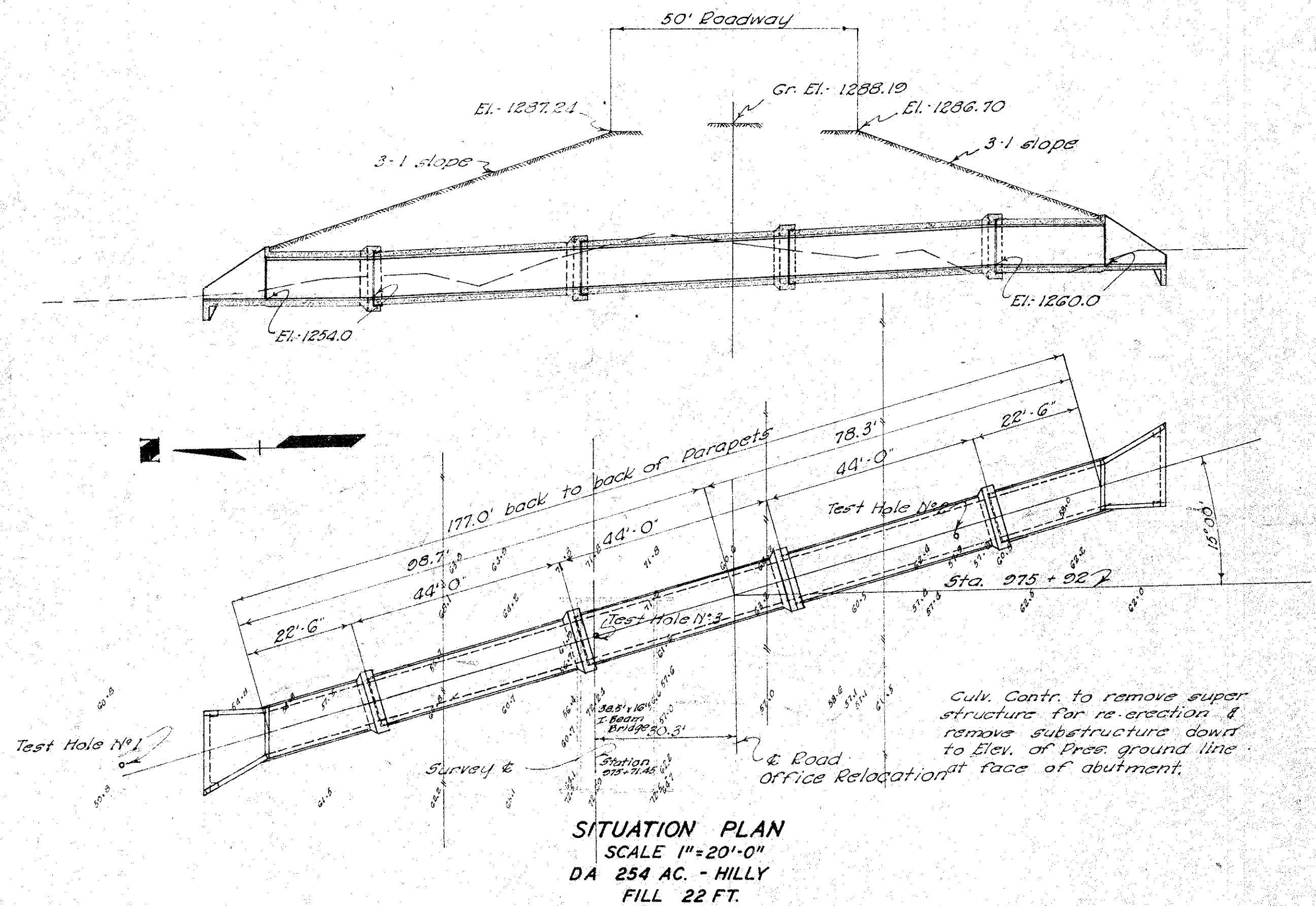
SECTION A-A
Scale 1/2" = 1'-0"



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-4-P			
DRAINAGE AREA	39 Acres	Rolling to Hilly	SECTION 6
SIZE AND TYPE	4X4X154' R.C.B.		TOWNSHIP
DEPTH OF FILL	1.9'		County
PIPE	30" X 96' F.I. pipe		STATION
ESTIMATED QUANTITIES	EXCAVATION 220.110 C.Y.	PROJECT	F-2 (7)
	CONCRETE 92.5 C.Y.	DATE	
	REINFORCING 9301 LBS.	DESIGN NO.	3052



	Surface Elev.	Depth of Water	Depth (Ft.) From To	Description of Materials
Test Hole N°1 Station 975+58.4	96.6' Lt. 1255.52	0.6 Ft.	0.0 2.0	Brownish Black Silty Clay Loam
			2.0 7.8	Grayish
			7.8 12.0	Dark Olive Gray Silty Clay
			12.0 14.4	Mottled Clay - Traces of Sand
Test Hole N°2 Station 976+04	75.3' Rt. 1259.34	1.1 Ft.	0.0 8.4	Grayish Black Silty Clay Loam
			8.4 12.5	Dark Olive Gray Silty Clay
Test Hole N°3 Station 975+84	on E 1259.64	3.4'	0.0 1.0	Dark Yellowish Brown Silty Clay
			1.0 11.3	Grayish Black Silty Clay Loam
			11.3 17.4	Dark Olive Gray Silty Clay
			17.4 21.0	Mottled Clay - Traces of Sand



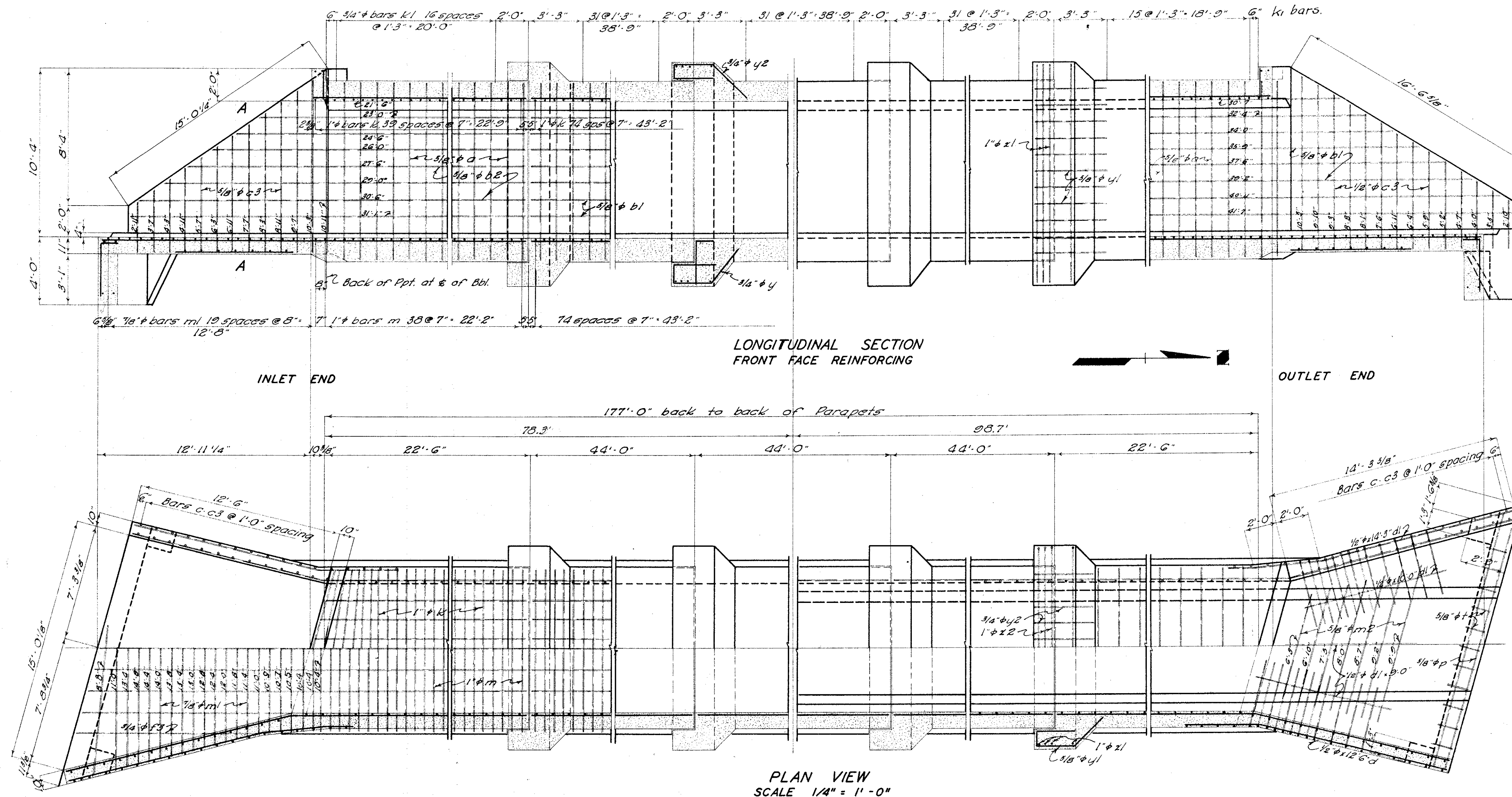
Estimate of Quantities

Concrete	356.5 cu. yds.
Reinforcing	31,876 lbs.
Excav. Cl. 20	526 cu. yds.

DESIGN FOR
8'-0" X 8'-0" REINF. CONCRETE BOX CULVERT
STATION 975 + 92
PROJECT F-2 (7)

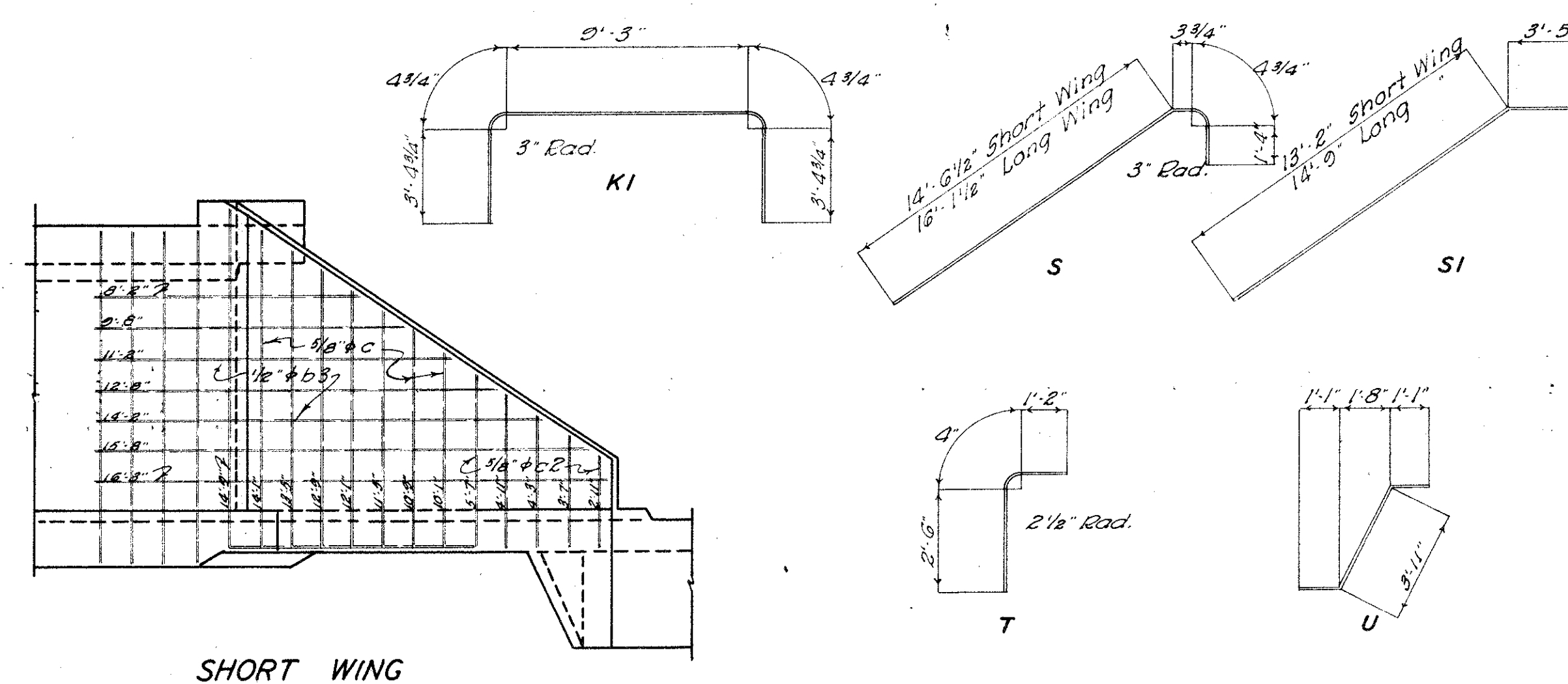
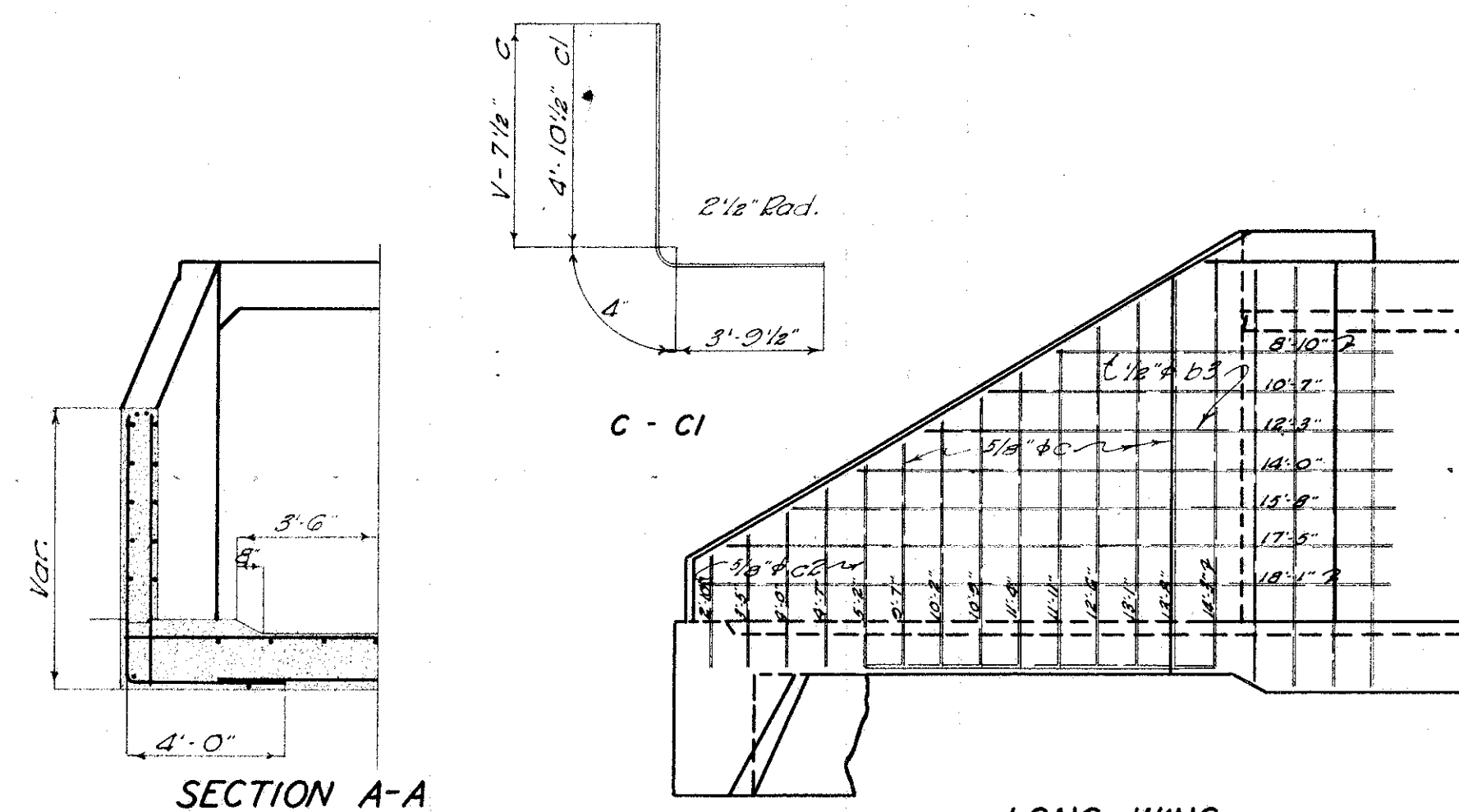
LOCATION:
SECTIONS 6-35
BANNER TWP. & MOVILLE
WOODBURY CO.
MARCH 1952

WOODBURY COUNTY
IOWA STATE HIGHWAY COMMISSION
SHEET 1 OF 2
SCALES AS NOTED



Mark	Location	Shape	Size	N°	Length	Linear Feet				
						1/2"	3/8"	3/4"	7/8"	1"
a	Walls Vert.		3/4"	372	10'-8"			3965.0		
b1	Horiz. Center Sec. F.F.			96	22'-4"			2144.0		
b2	" " End			32	Shown			1009.8		
b3	" " " B.F.		1/2"	28				369.2		
c	Wing Vert. B.F.		3/8"	34				413.2		
c1	" " "			16	2'-0"			144.0		
c2	" " "			20	Shown			82.5		
c3	" " F.F.		1/2"	54				365.3		
d	Below Wings			2	12'-6"			25.0		
d1	Headwall Apron			6	Shown			56.0		
e1	Slab Longit. Center Sec.		3/8"	36	22'-4"			804.0		
e2	" " End			12	Shown			276.5		
e3	" " Center		1/2"	12	22'-3"			267.0		
e4	" " End			2	21'-11"			43.8		
f1	Floor " Center "		3/4"	42	22'-6"			945.0		
f2	" " End "			14	Shown			503.6		
f3	" " Hdwl.			4	9'-6"			38.0		
i	Ppt. Vert.		1/2"	16	1'-8"			26.7		
j	" Horiz.		3/8"	4	9'-4"			37.3		
k	Slab Trans.		1"	305	9'-8"					2949.5
k1	Slab & Corners		3/4"	129	16'-10"			2171.5		
m	Floor Trans.		1"	303	10'-4"					3131.0
m1	" Hdwl.		3/8"	40	Shown			479.8		
m2	" " "		3/8"	14				112.0		
p	Curtain Longit.		3/4"	8	15'-11"			127.3		
s	Wing Slope			4	18'-2"			66.3		
s1	" " F.F.			2	18'-2"			72.7		
t	Curtain		3/8"	22	4'-0"			88.0		
u	Struts			8	6'-1"			48.7		
x	Joints		1"	16	20'-11"					334.7
x1	" " "			32	12'-1"					386.7
x2	" " "			16	11'-2"					178.7
y	" " "		3/4"	40	8'-7"			343.3		
y1	" " "		3/8"	88	7'-8"			674.7		
y2	" " "		3/4"	40	8'-2"			326.7		
z	" " "			40	3'-6"			140.0		
Length						1229.7	280.27	4803.3	478.8	6272.4
Weight						821.4	10224.2	7215.5	278.7	18635.0
Total Reinforcing Steel						37,674.3 lbs.				
Total Concrete						356.5 cu. yds.				
Excavation Cl. 20						586				

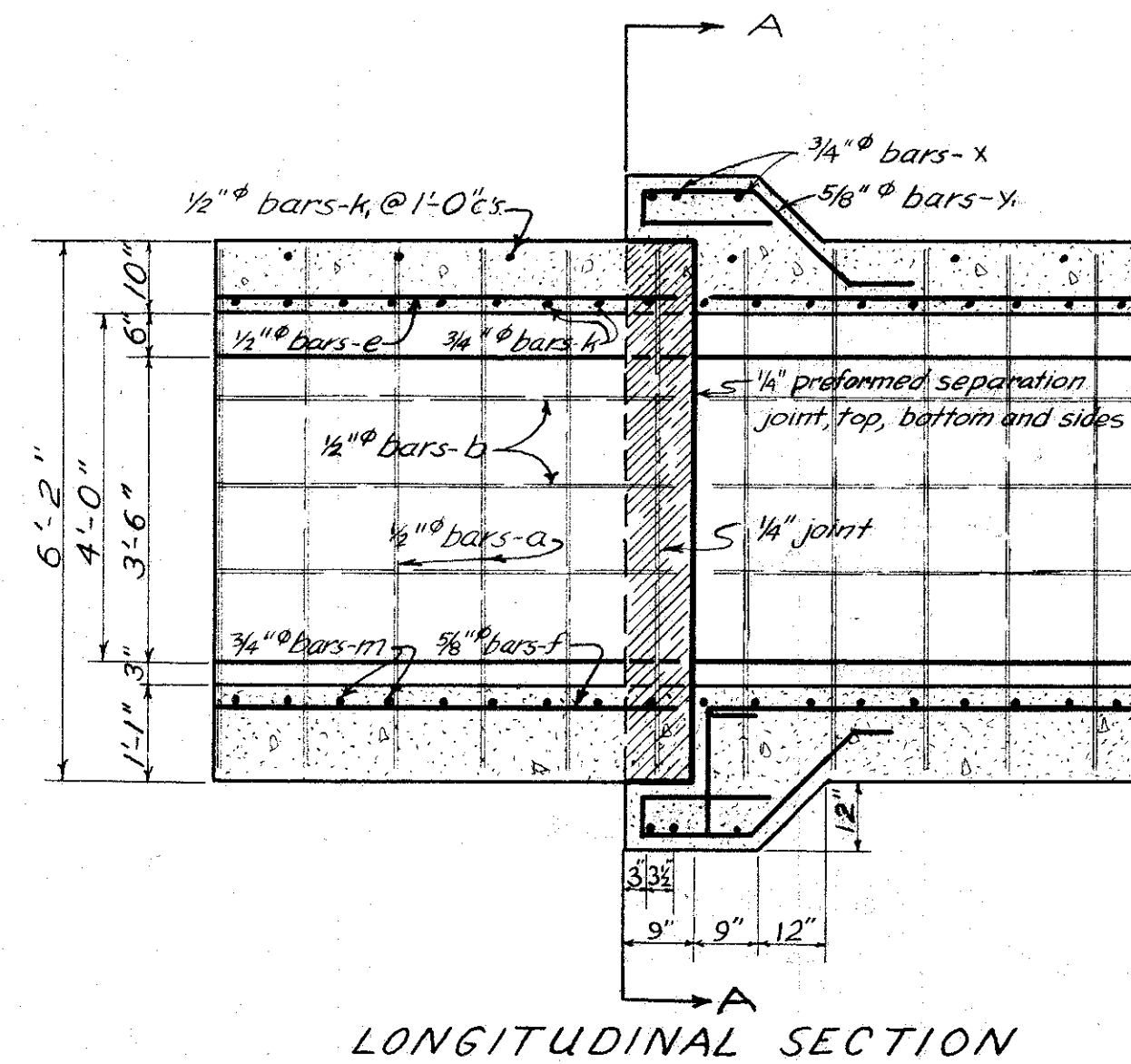
	Inlet Section	3 Center Section	Outlet Section	Total
Top Slab	12.0	73.1	14.2	99.3
Walls	17.0	60.8	20.2	118.0
Floor Slab	23.7	88.4	26.2	138.3
Totals	52.7	222.3	60.6	335.6 cu. yds.



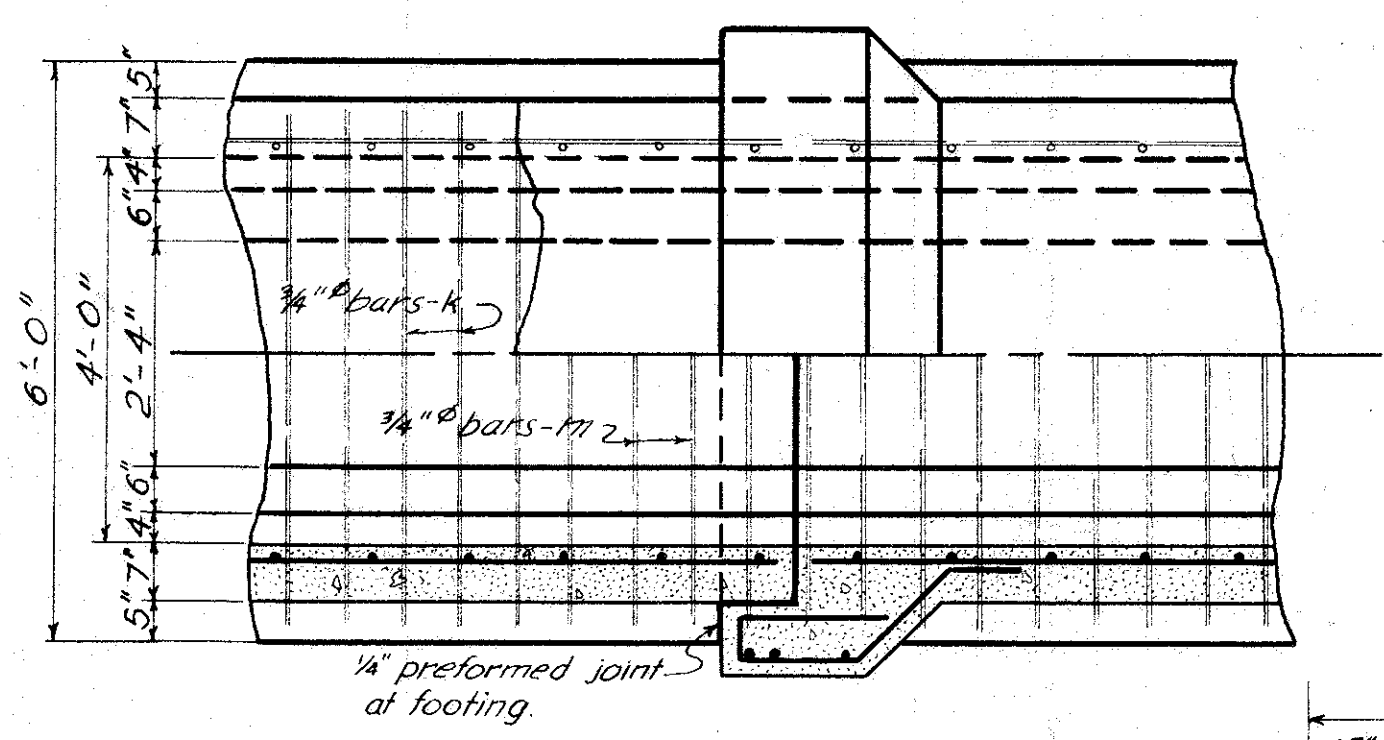
LOCATION :
WOODBURY COUNTY
SECTION 6 - 35
MOVILLE - BANNER TWP. MARCH 1952

DESIGN FOR
8'-0" X 8'-0" REINF. CONCRETE BOX CULVERT
STATION 975 + 92
PROJECT F-2(7)

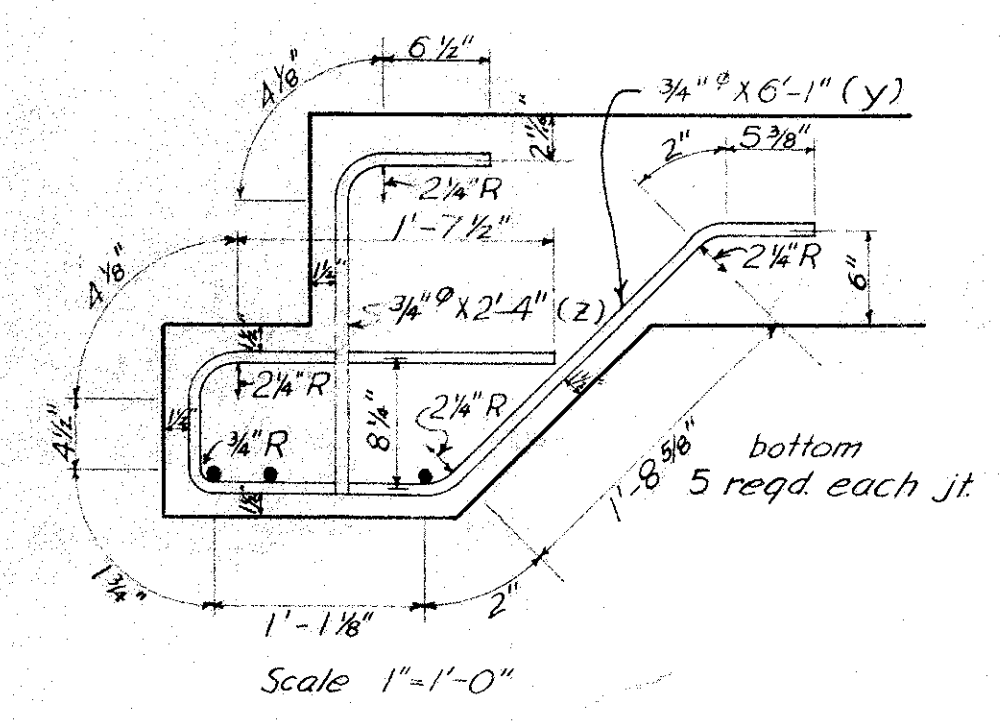
WOODBURY COUNTY
IOWA STATE HIGHWAY COMMISSION
SHEETS AS NOTED
SHEET 2 OF 2



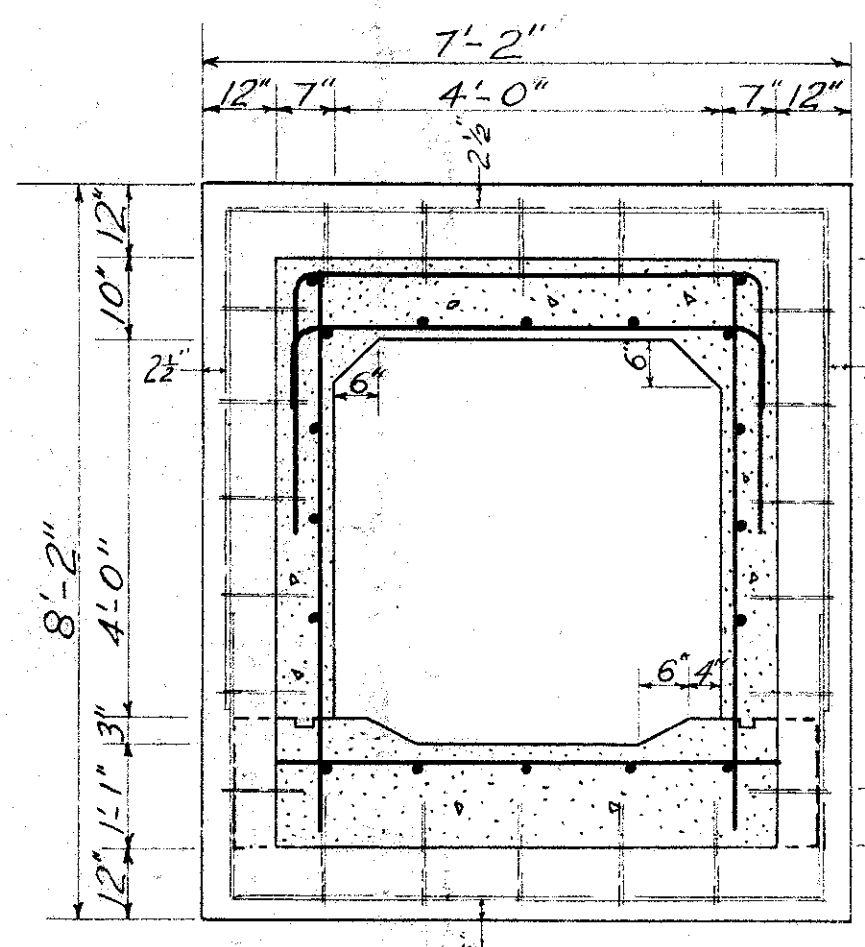
LONGITUDINAL SECTION



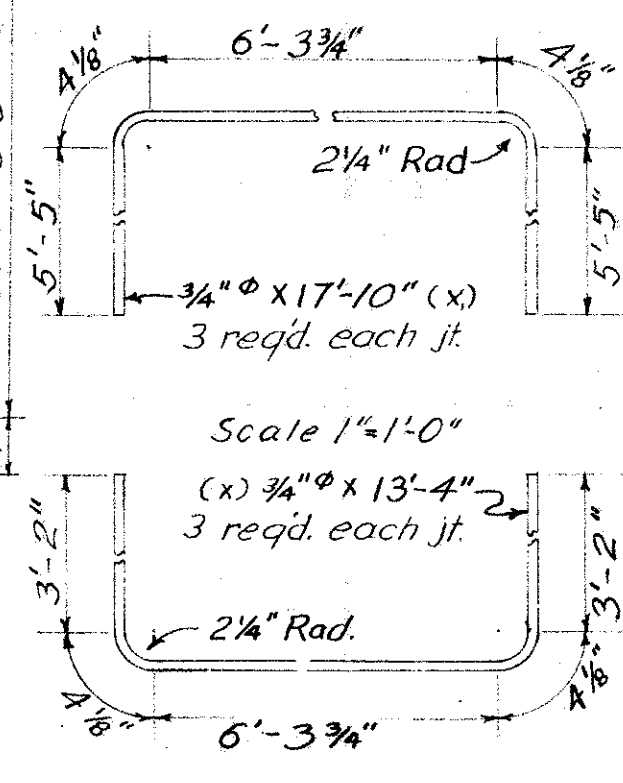
PLAN
Scale 1/2" = 1'-0"



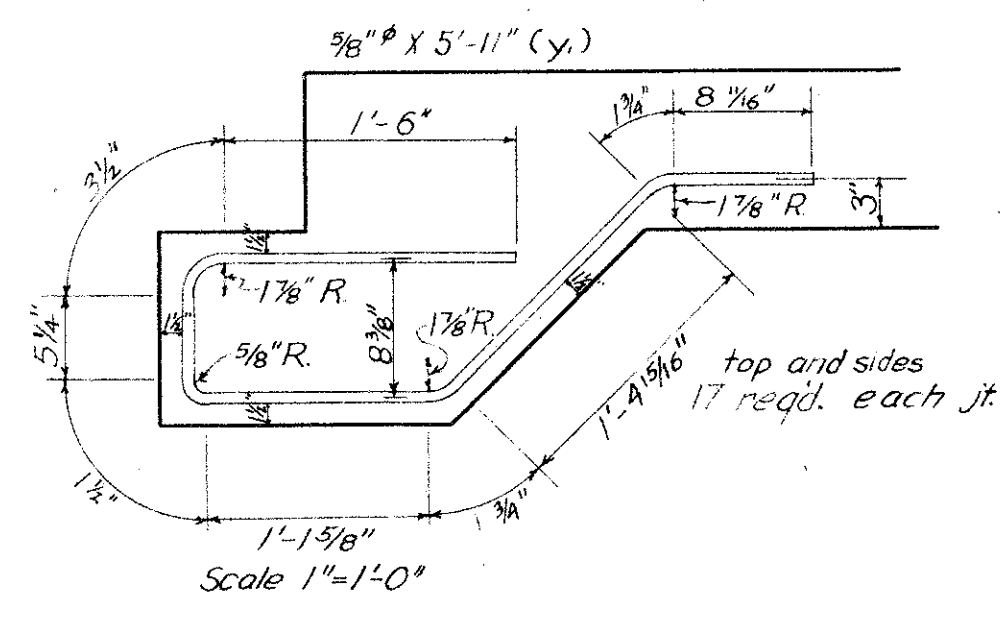
Scale 1" = 1'-0"



SECTION A-A

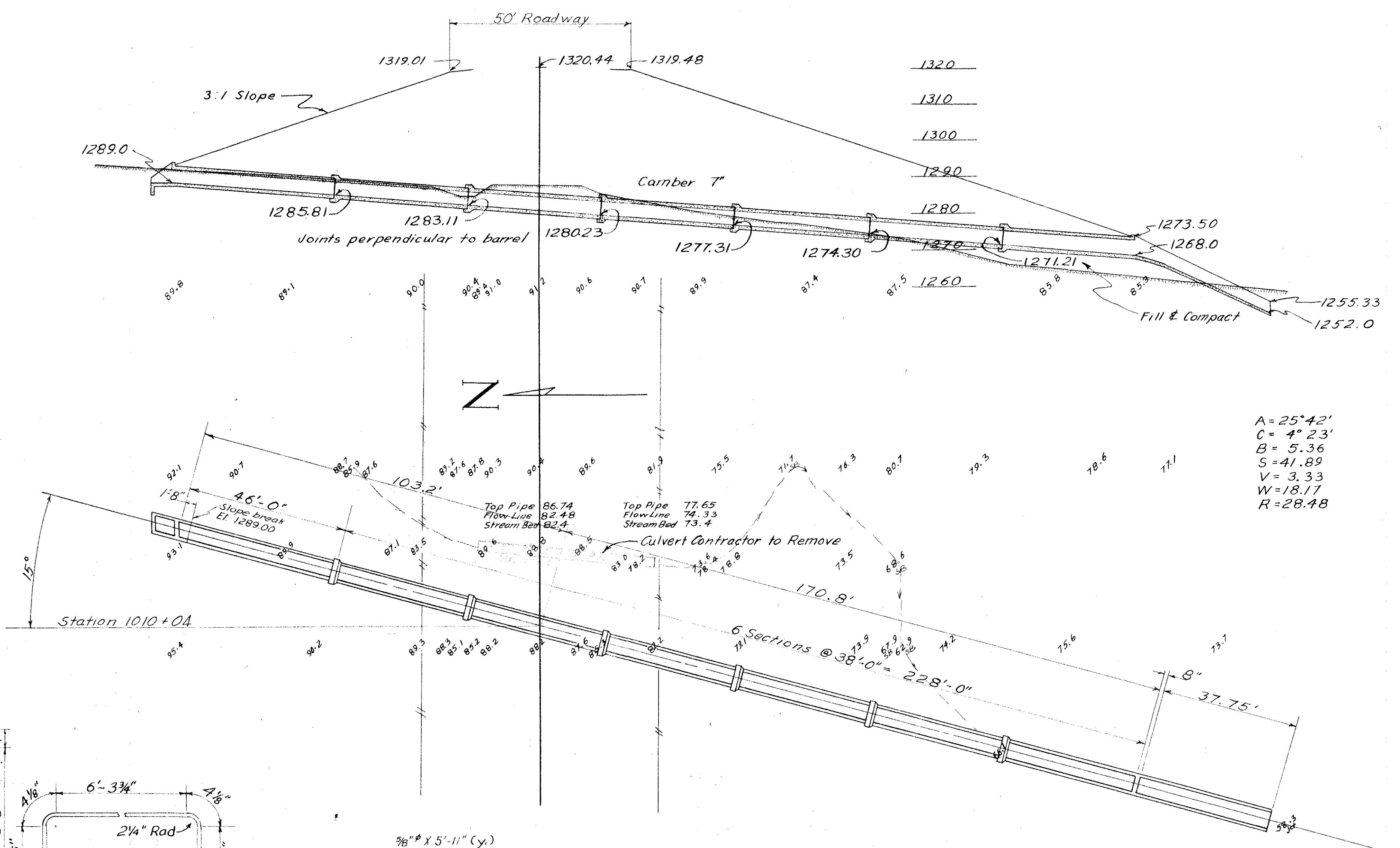


Scale 1" = 1'-0"

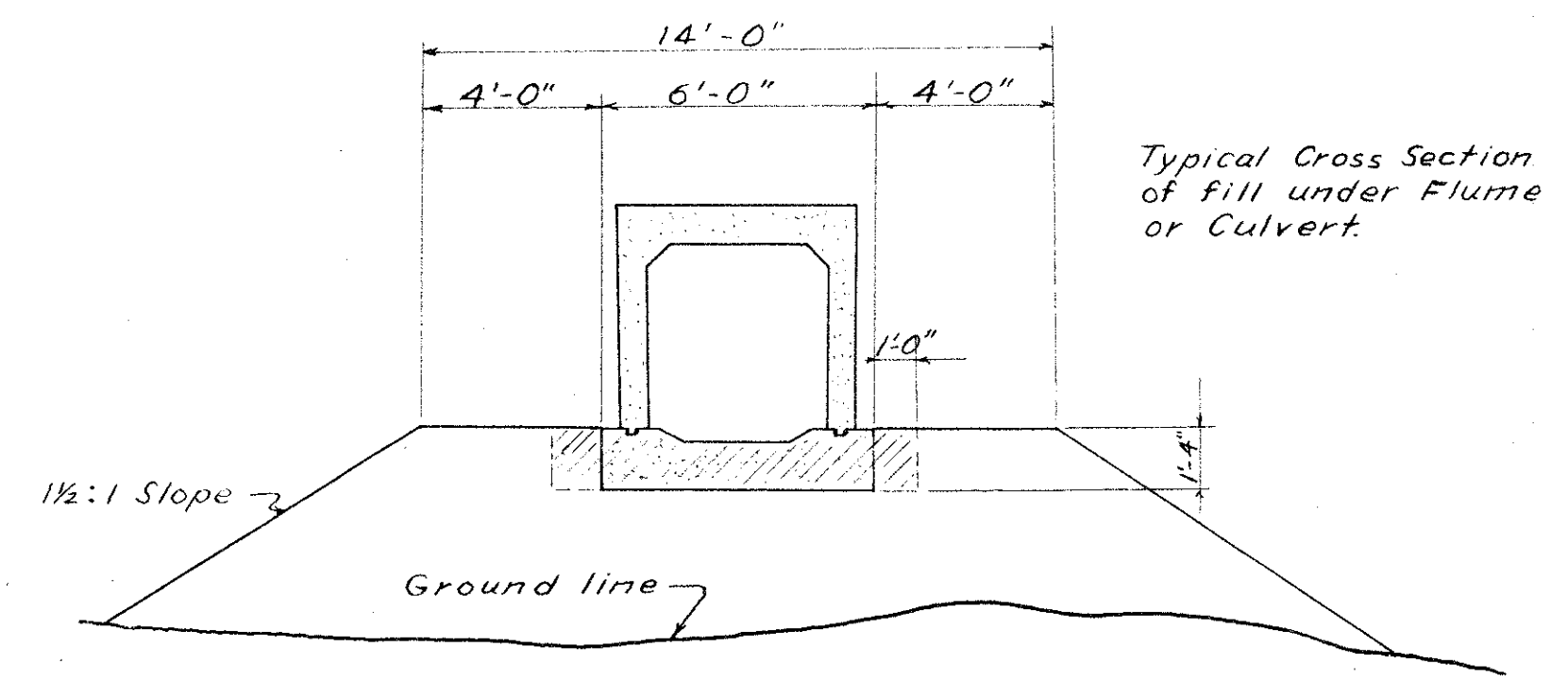


Scale 1" = 1'-0"

SITUATION PLAN
Scale 1" = 20'-0"

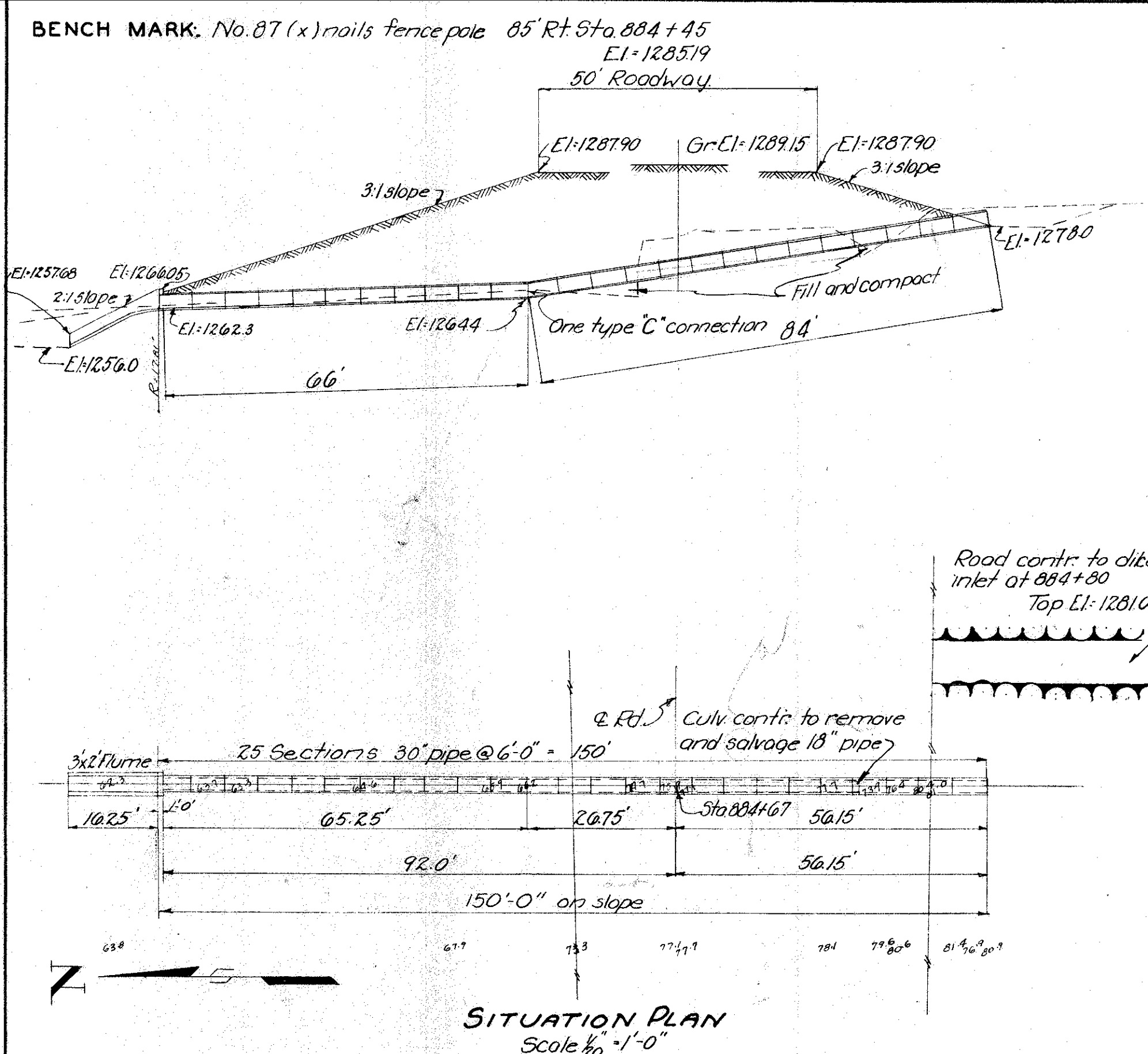


A = 25°42'
C = 4°23'
B = 5.36
S = 41.89
V = 3.33
W = 18.17
R = 28.48

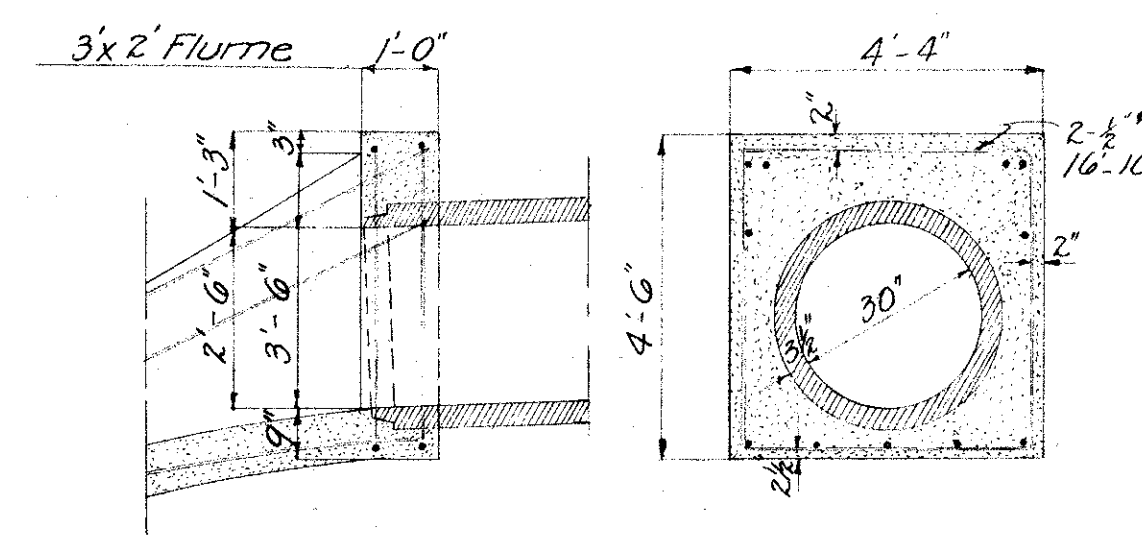


Typical Cross Section
of Fill under Flume
or Culvert.

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS G4P			
DRAINAGE AREA	23 Acres	V. Hilly	SECTION 5-36
SIZE AND TYPE	414 X 274 RCB		TOWNSHIP Merville, Banner
DEPTH OF FILL	36		COUNTY Woodbury
ESTIMATED PIPE	CL 20 = 343	C.Y.	STATION 1010+04
QUANTITIES EXCAVATION	CL 24 = 170	C.Y.	PROJECT F-2(7)
CONCRETE	196.0	C.Y.	DATE January 1952
REINFORCING	19000	LBS	DESIGN NO. 3252

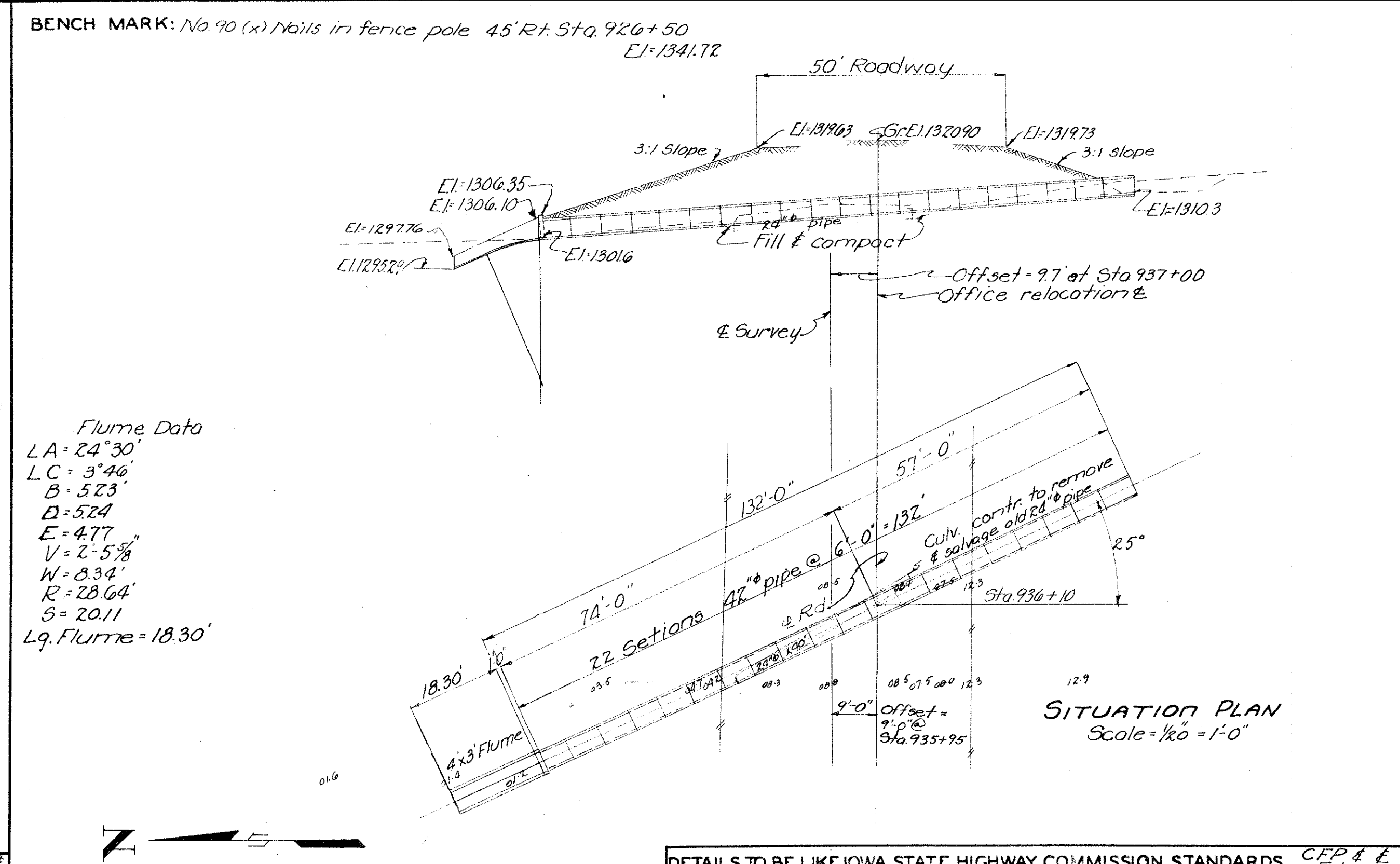


Flume Data
 A = 26'34"
 C = 1'51"
 B = 3'90"
 V = 1'-8 1/8"
 R = 1781'
 S = 18.16"
 W = 0.12'

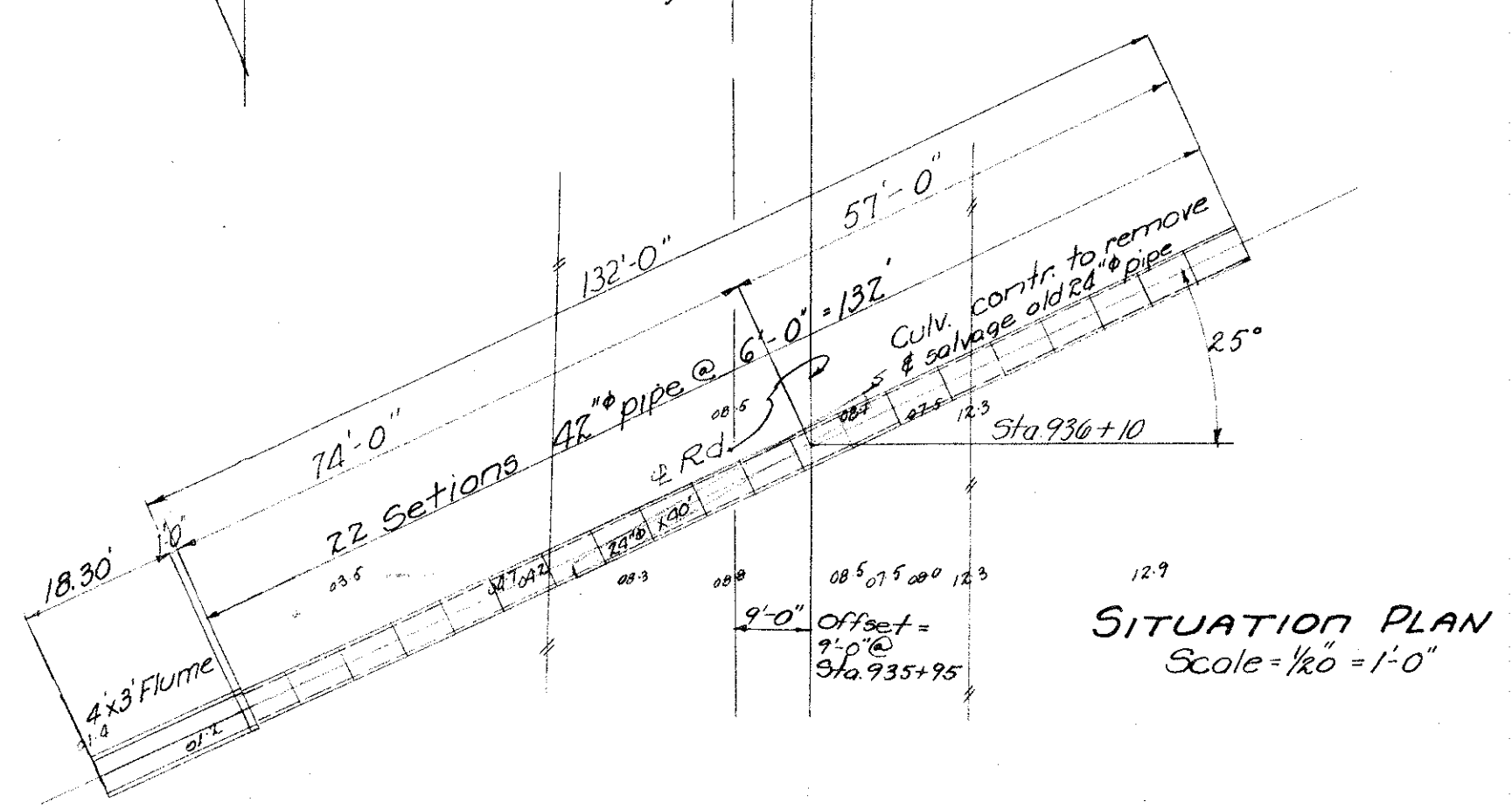


DETAIL AT JUNCTION OF PIPE AND FLUME
 SCALE 3/8" = 1'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS			
DRAINAGE AREA	9 A. Hill	SECTION	2 & 33
SIZE AND TYPE	30" pipe & flume 3x2'	TOWNSHIP	Floyd - Banner
DEPTH OF FILL		COUNTY	Woodbury
ESTIMATED	PIPE 25 Sec. @ 6'-30" LIN. FT.	STATION	884+67
QUANTITIES	EXCAVATION 81.28 - 77.24 C.Y.	PROJECT	No. F-2(7)
	CONCRETE 3.9 C.Y.	DATE	March 5-52
	REINFORCING 271.0 LBS.	DESIGN NO.	2852

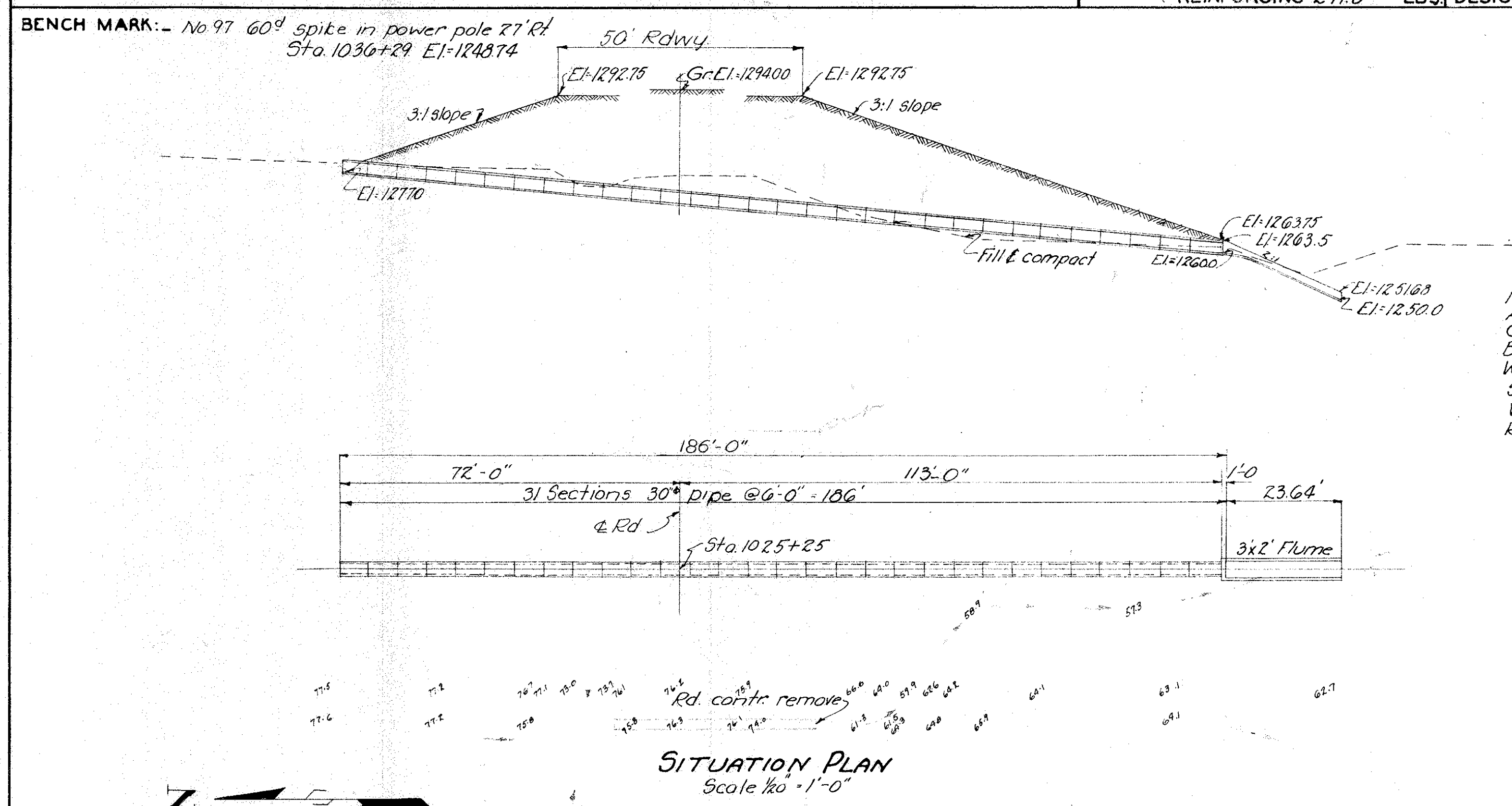


Flume Data
 LA = 24'30"
 LC = 3'46"
 B = 5'23"
 D = 5'24"
 E = 4'77"
 V = 2'-5 5/8"
 W = 8.34"
 R = 2864'
 S = 20.11"
 Lg. Flume = 18.30'

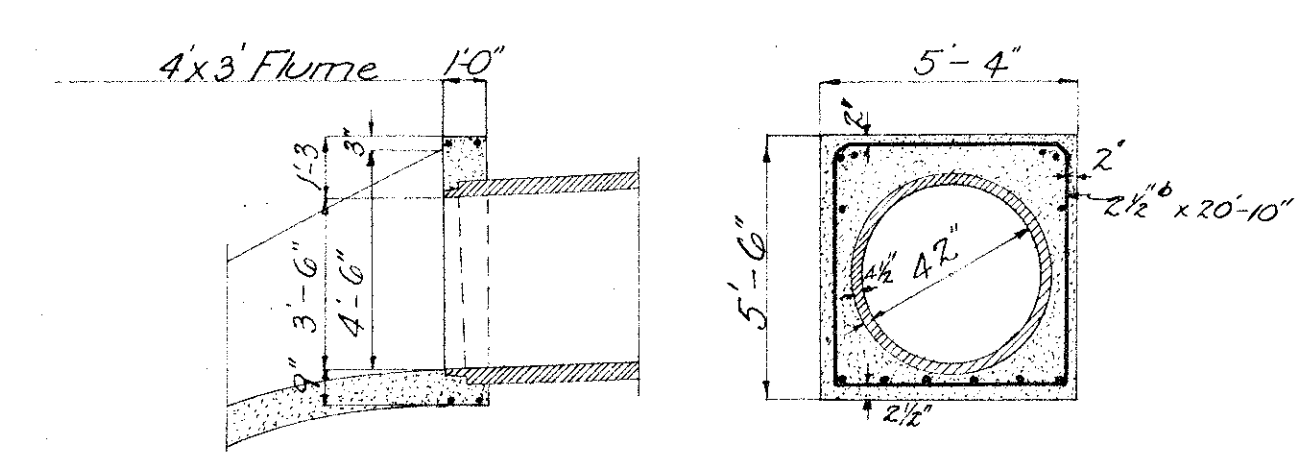


DETAIL AT JUNCTION OF PIPE AND FLUME
 SCALE 1/4" = 1'-0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS			
DRAINAGE AREA	19 A. Rolling	SECTION	1-34
SIZE AND TYPE	4x3' Flume & 42" pipe	TOWNSHIP	Floyd - Banner
DEPTH OF FILL		COUNTY	Woodbury
ESTIMATED	PIPE 22 Sec. @ 6'-42" LIN. FT.	STATION	936+10
QUANTITIES	EXCAVATION 81.28 - 76.63 C.Y.	PROJECT	F-2(7)
	CONCRETE 0.6 C.Y.	DATE	March 5-52
	REINFORCING 36.9 LBS.	DESIGN NO.	2952

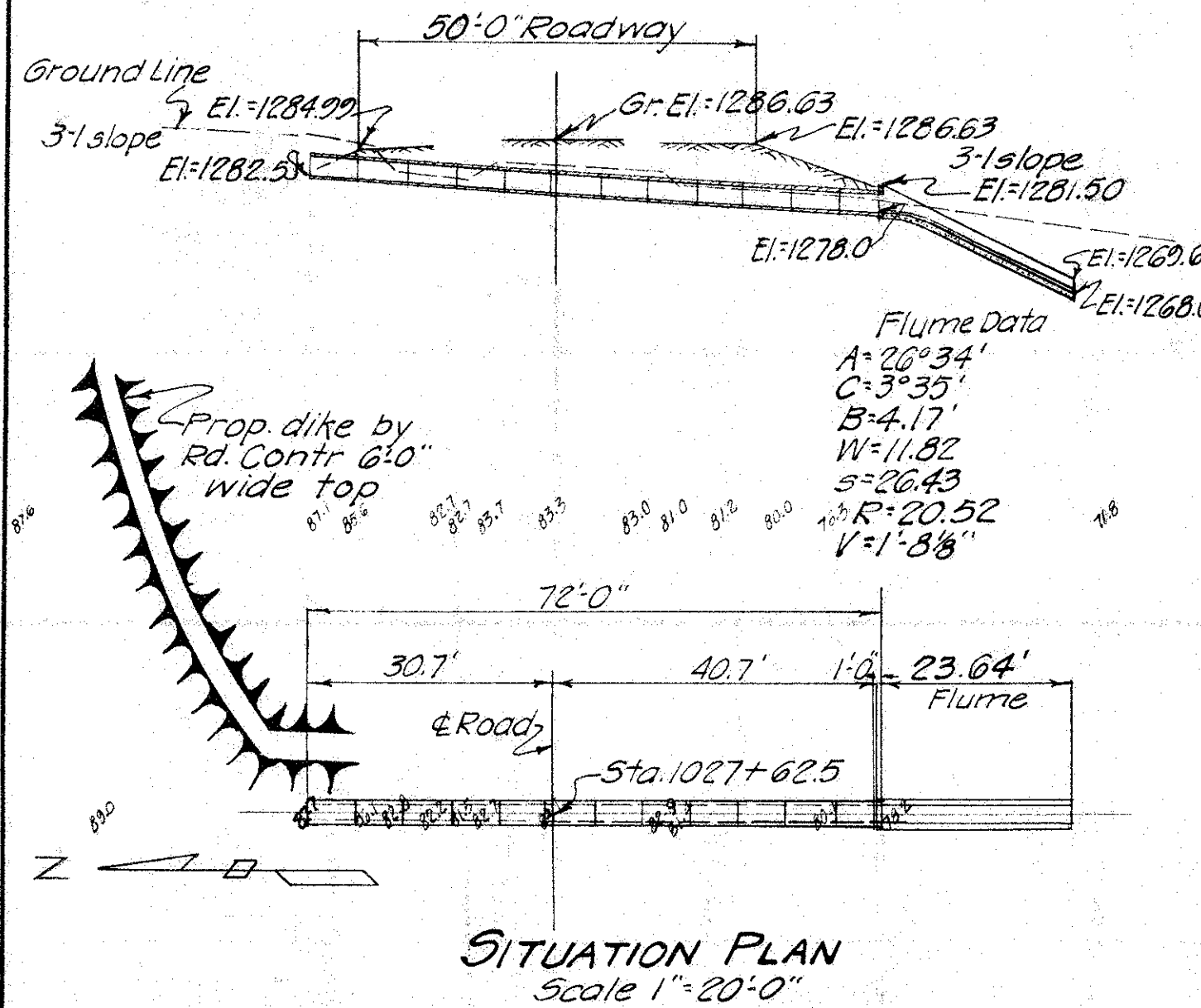


Flume Data
 A = 26'34"
 C = 5'13"
 B = 4'46"
 W = 11.82"
 S = 26.43"
 V = 1'-0 1/8"
 R = 23.78'



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS			
DRAINAGE AREA	6 A. Rolling	SECTION	5-36
SIZE AND TYPE	3x2' Flume & 30" pipe	TOWNSHIP	Moivre - Banner
DEPTH OF FILL		COUNTY	Woodbury
ESTIMATED	PIPE 31 Sec. @ 6'-30" LIN. FT.	STATION	1025+25
QUANTITIES	EXCAVATION 128 - 125.0 C.Y.	PROJECT	F-2(7)
	CONCRETE 4.8 C.Y.	DATE	March 5-52
	REINFORCING 330 LBS.	DESIGN NO.	3352

BENCH MARK No. 97 Sta. 1036+29 60" spk. in power pole 27' L.T.
El.: 1240.74

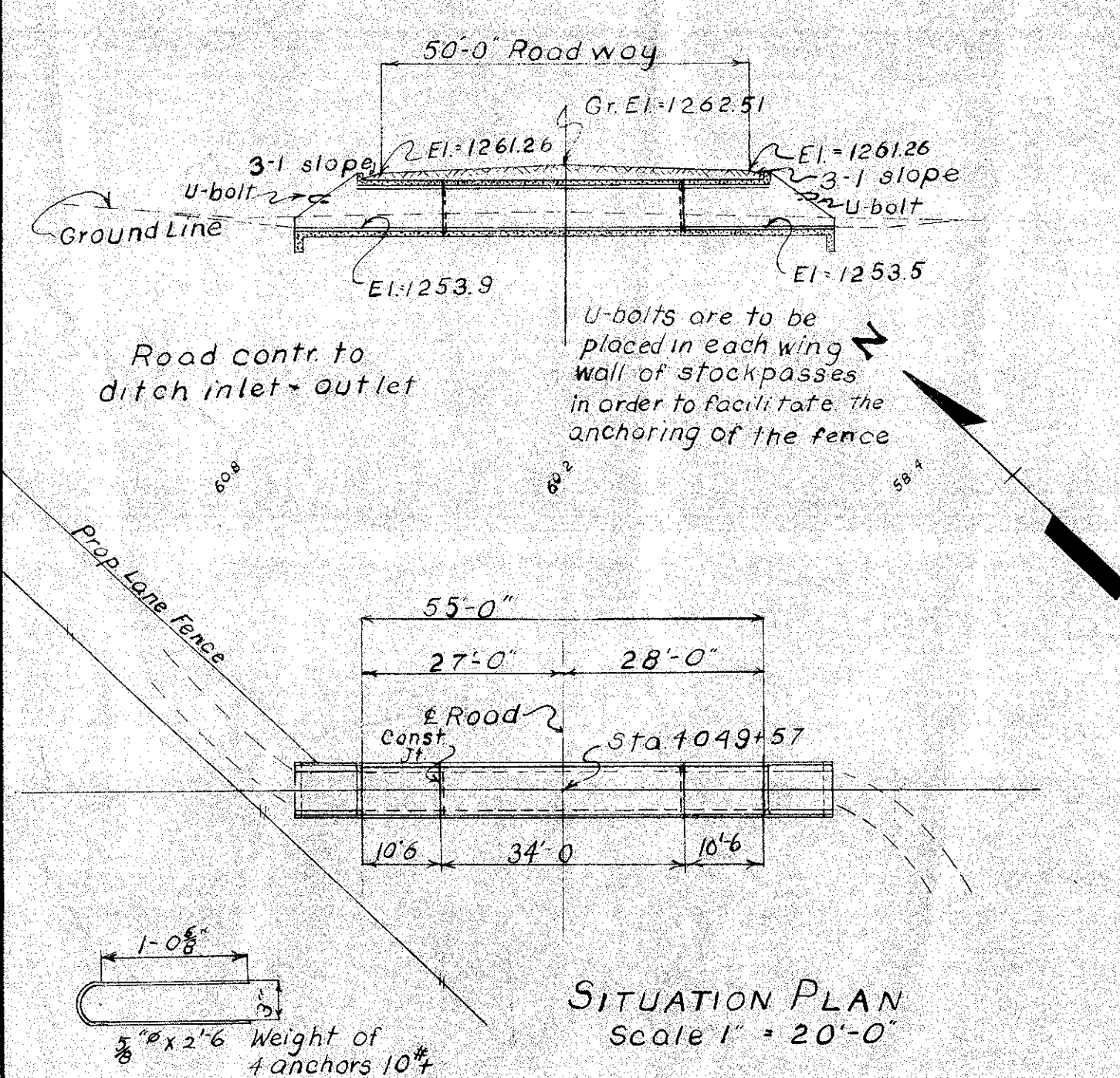


For detail of top flume and pipe see design No. 352

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C.F.P. & F.

DRAINAGE AREA	300	SECTION	5-30
SIZE AND TYPE	24" F.I. Pipe & Flume	TOWNSHIP	Moville-Banner
DEPTH OF FILL	3'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 72'-0" 24" F.I. LIN. FT. EXCAVATION 120-57 C.Y. CONCRETE 4.4 C.Y. REINFORCING 327 LBS.	STATION	1027+62.5
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	3452

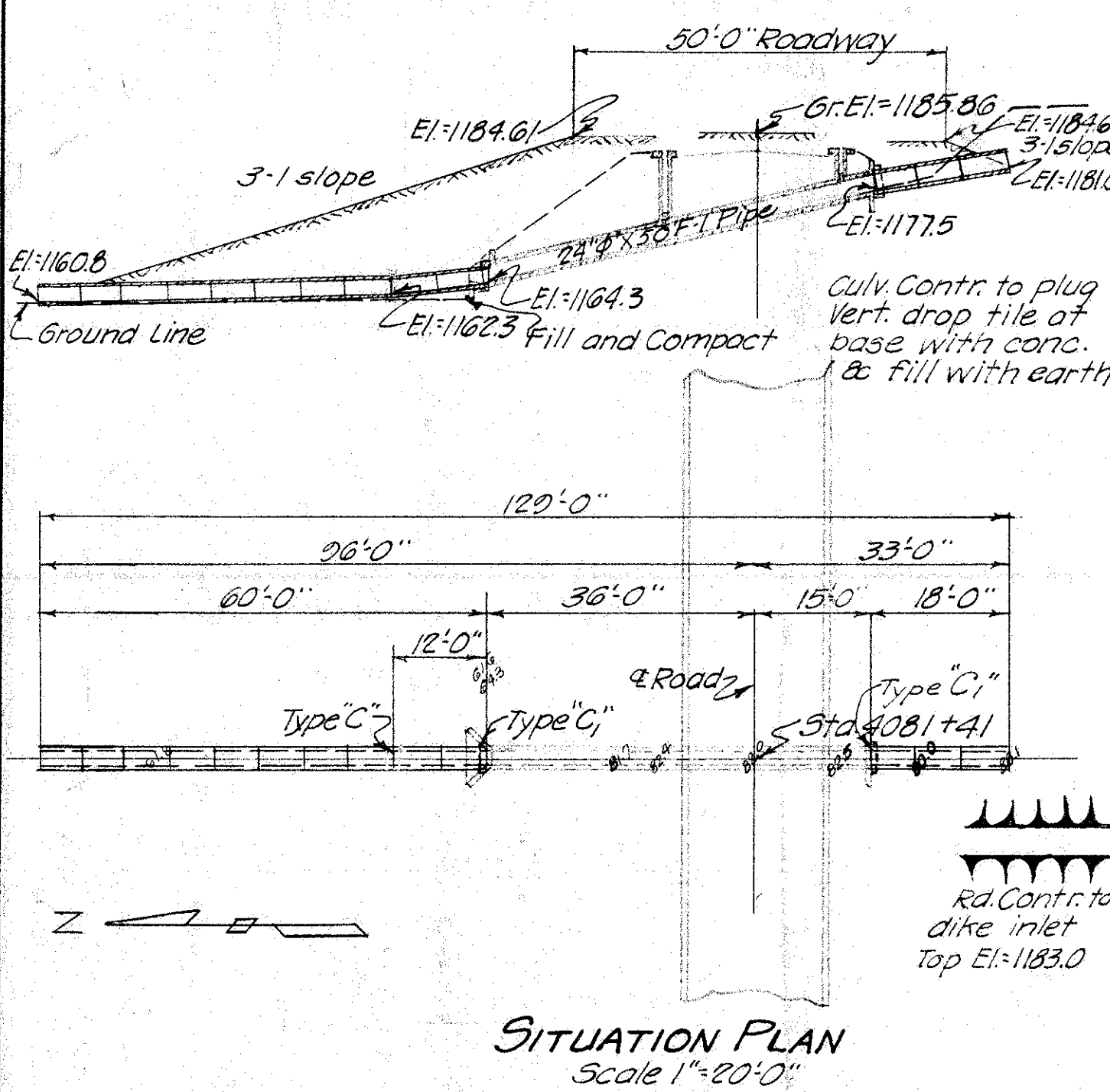
BENCH MARK No. 98A Sta. 4051+10 60" spike in corner post 200' L.T.
El.: 1279.21



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C.S.P.

DRAINAGE AREA	4x5 1/2 x 55 R.C.B.	SECTION	36
SIZE AND TYPE	4x5 1/2 x 55 R.C.B.	TOWNSHIP	Banner
DEPTH OF FILL	3'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 10'-0" 4x5 1/2 LIN. FT. EXCAVATION 61 C.Y. CONCRETE 36.1 C.Y. REINFORCING 3035 LBS.	STATION	4049+57
		PROJECT	F.N.2
		DATE	10-23-52
		DESIGN No.	5552

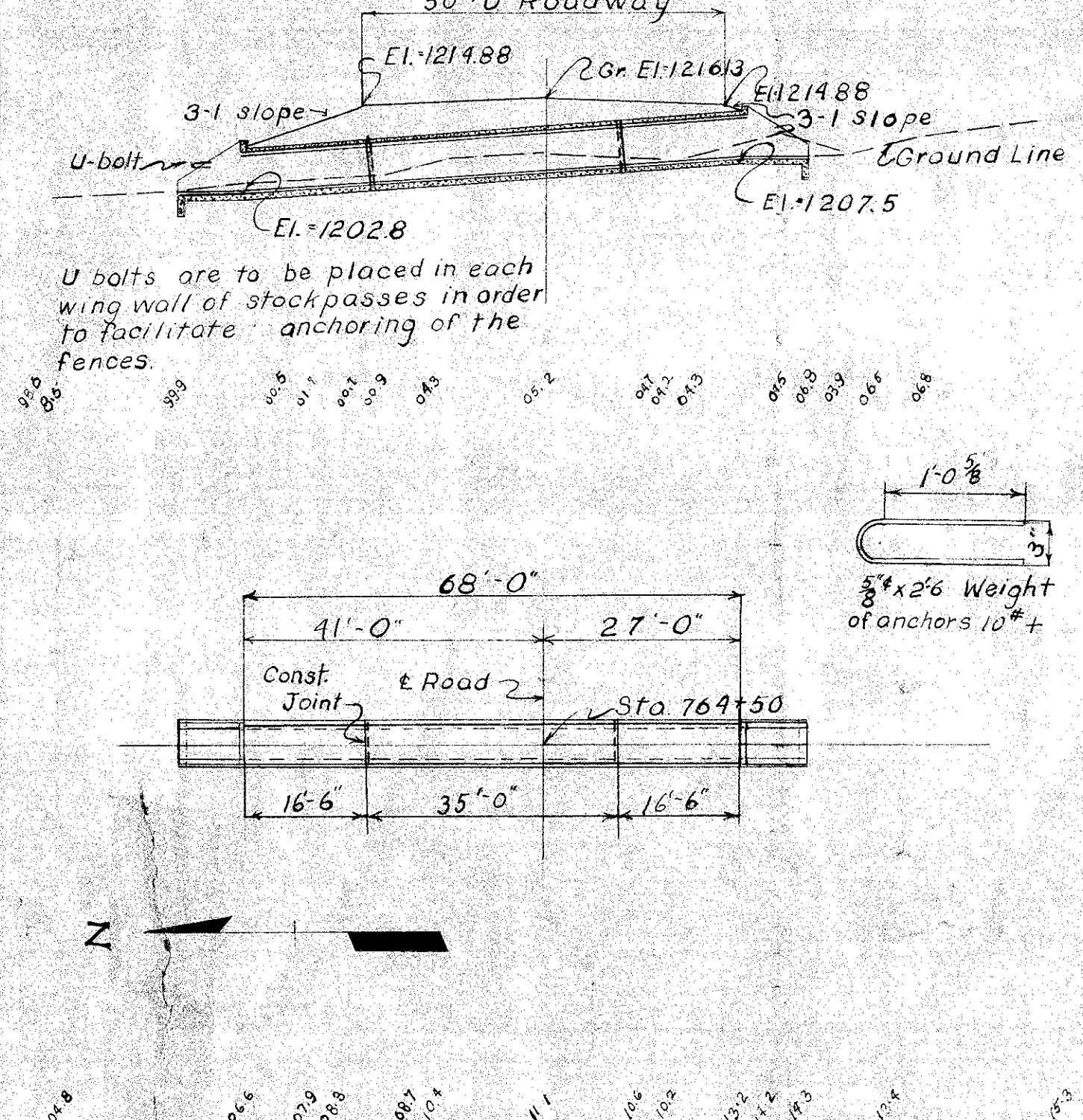
BENCH MARK No. 98 D Nails in power pole Sta. 4079+27 29' L.T.
El.: 1182.19



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F-1

DRAINAGE AREA	500 Hilly	SECTION	31
SIZE AND TYPE	24" F.I. Pipe Ext.	TOWNSHIP	Arlington
DEPTH OF FILL	11'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 78' F.I. pipe LIN. FT. EXCAVATION 120-10 C.Y. CONCRETE 2 C.Y. REINFORCING 6# mesh LBS.	STATION	4081+41
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	3552

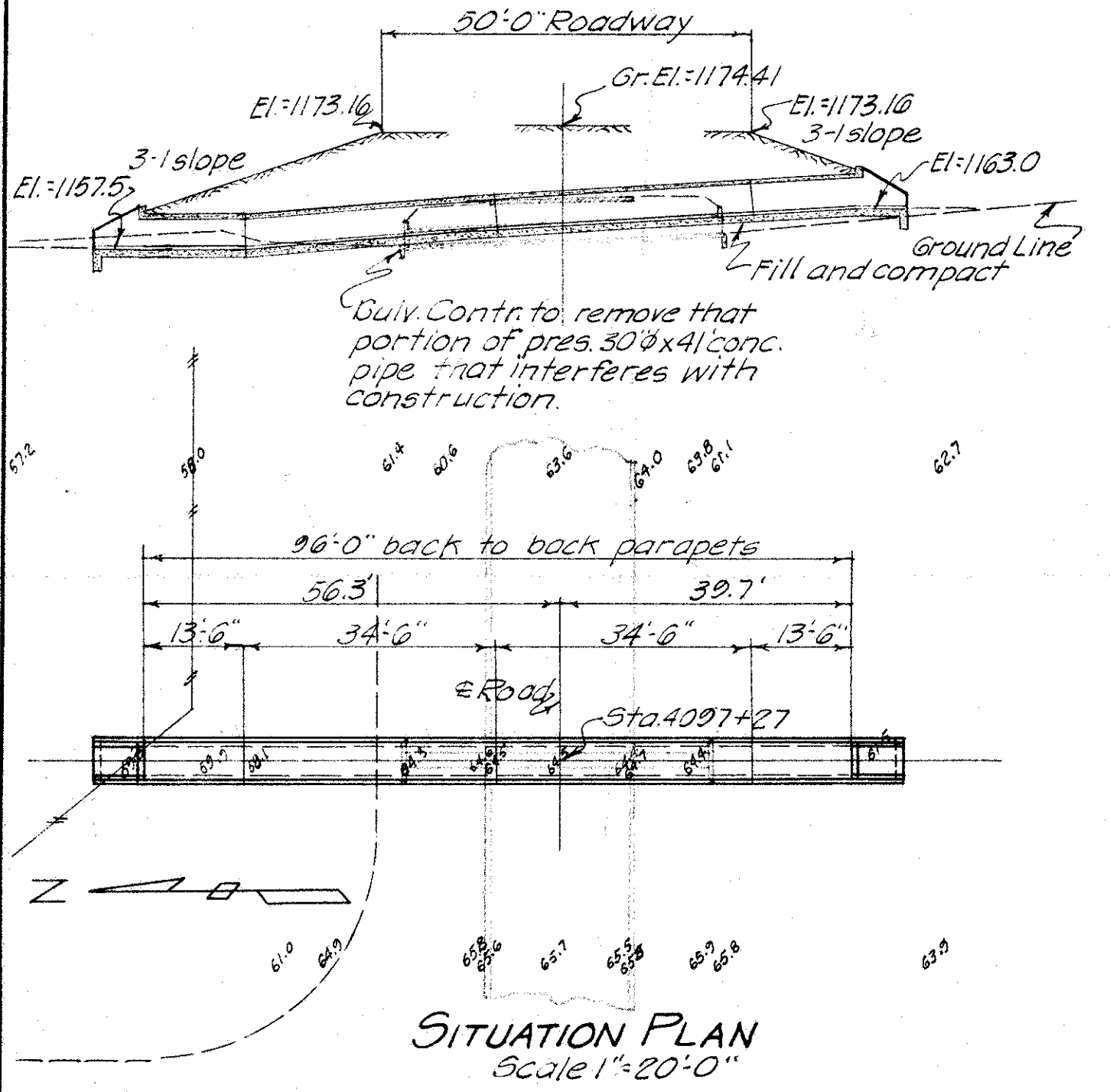
BENCH MARK No. 78 Sta. 767+60 60" spike in W side 30" cottonwood 68' L.T.
El.: 1192.42



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C.S.P.

DRAINAGE AREA	4x5 1/2 x 68 R.C.B.	SECTION	31/4
SIZE AND TYPE	4x5 1/2 x 68 R.C.B.	TOWNSHIP	Banner-Floyd
DEPTH OF FILL	4'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 10'-0" 4x5 1/2 LIN. FT. EXCAVATION 65 C.Y. CONCRETE 42.60 C.Y. REINFORCING 3606 LBS.	STATION	764+50
		PROJECT	F.N.2
		DATE	10-23-52
		DESIGN No.	5452

BENCH MARK No. 98 F Sta. 4096+72 Top of conc. monument 71' L.T.
El.: 1170.06



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C.F.P.

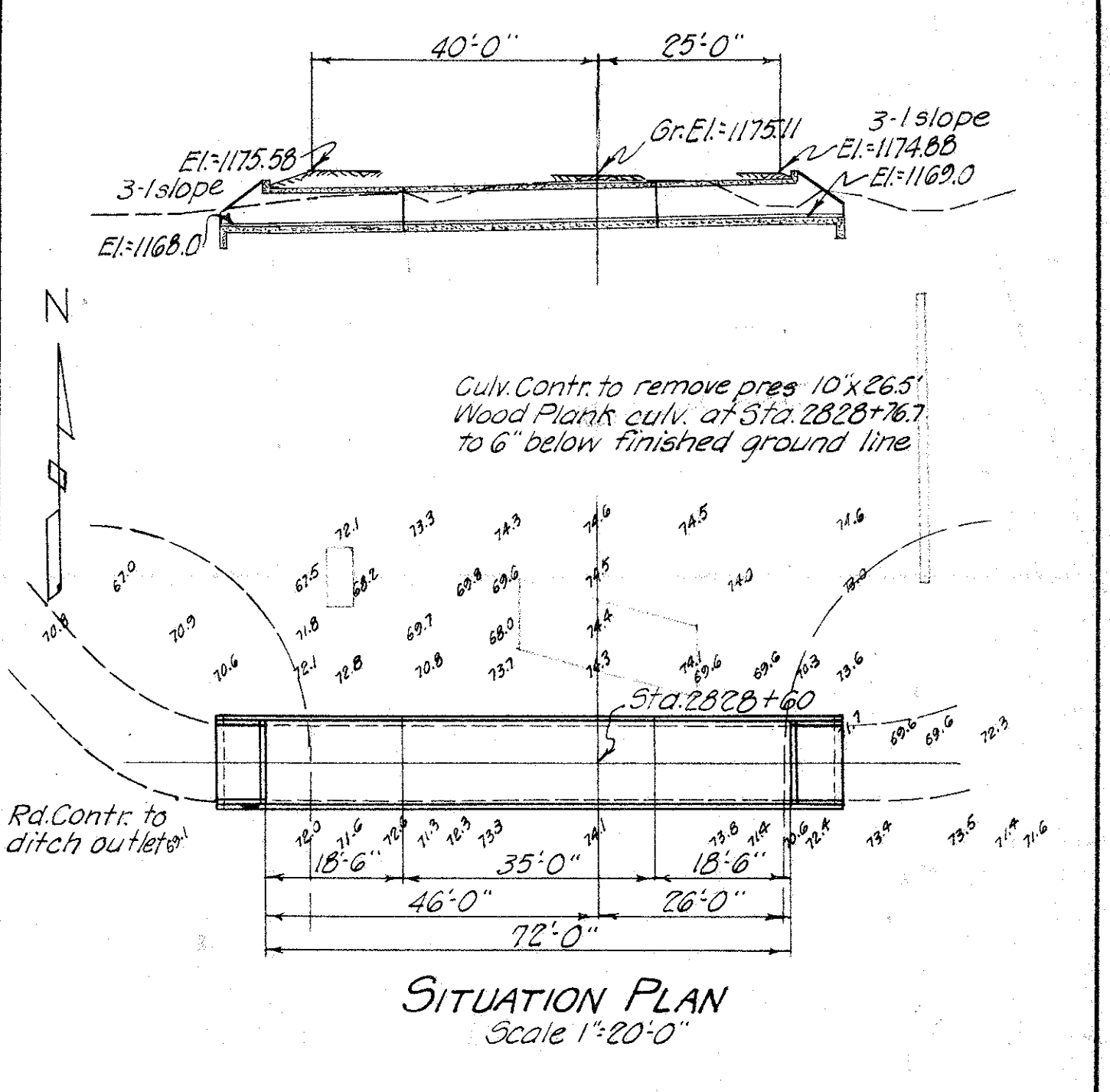
DRAINAGE AREA	46200 Hilly	SECTION	31
SIZE AND TYPE	4x4x26 R.C.B.	TOWNSHIP	Arlington
DEPTH OF FILL	10'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 120'-0" LIN. FT. EXCAVATION 120-90 C.Y. CONCRETE 48.9 C.Y. REINFORCING 4693 LBS.	STATION	4097+27
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	3652

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C.Y. CONCRETE C.Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK No. 82 Sta. 818+36 U.S.C. & G.S. B.M. 97-528 Conc. Mon. 27' L.T.
El.: 1190.08



DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-10-P

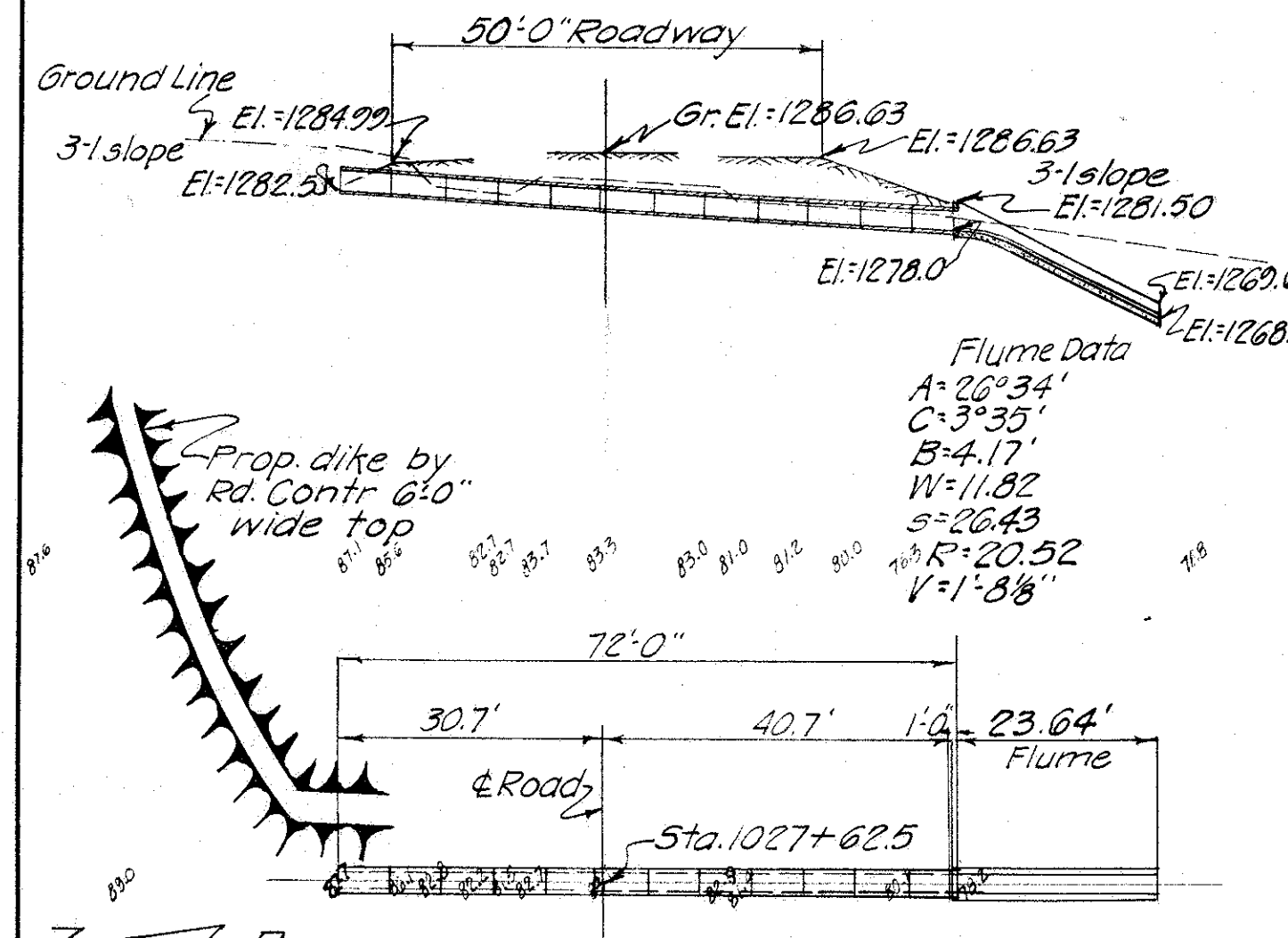
DRAINAGE AREA	13200 R. to H.	SECTION	32
SIZE AND TYPE	10x4x72 R.C.B.	TOWNSHIP	Banner
DEPTH OF FILL	3'-0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 120'-0" LIN. FT. EXCAVATION 120-180 C.Y. CONCRETE 100.4 C.Y. REINFORCING 10782 LBS.	STATION	2828+60
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	4152

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C.Y. CONCRETE C.Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK No. 97 Sta. 1036+20 60' spk. in power pole 27' r.t. El.: 1248.74



SITUATION PLAN
Scale 1"=20'0"

For detail of top flume
and pipe see
design No. 352

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-F-P&F₂

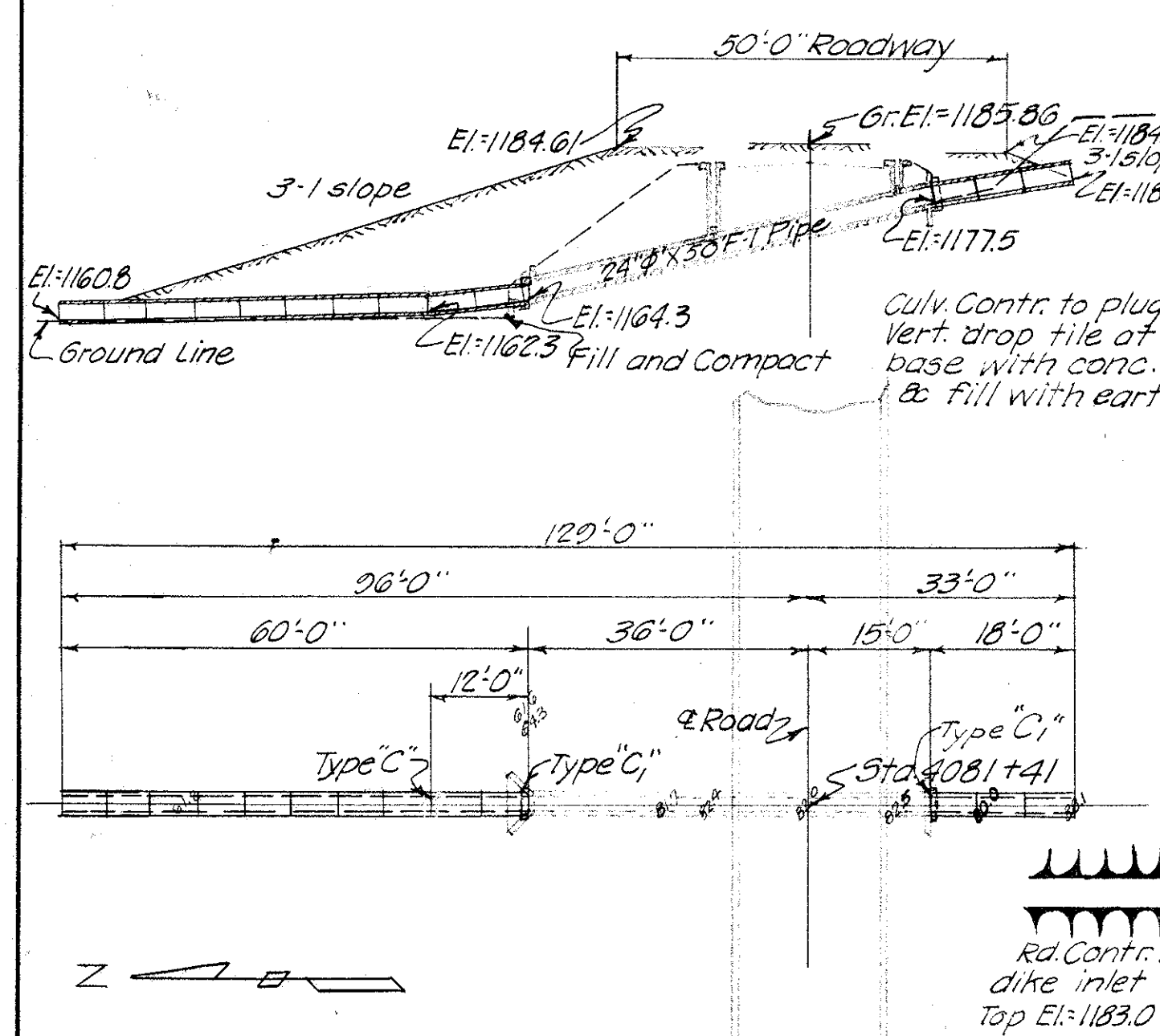
DRAINAGE AREA	3ac.	SECTION	5-36
SIZE AND TYPE	24" F-1 Pipe & Flume	TOWNSHIP	Noville-Banner
DEPTH OF FILL	5'0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 72'0" 24" F-1 LIN. FT. EXCAVATION 6120.57 C.Y. CONCRETE 4.4 C.Y. REINFORCING 327 LBS.	STATION	1027+62.5
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	3452

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS

DRAINAGE AREA	SECTION
SIZE AND TYPE	TOWNSHIP
DEPTH OF FILL	COUNTY
ESTIMATED QUANTITIES	STATION
	PROJECT
	DATE
	DESIGN No.

BENCH MARK No. 28 D Nails in power pole Sta. 4079+27 29' Lt. El.: 1182.19



SITUATION PLAN
Scale 1"=20'0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS F-1

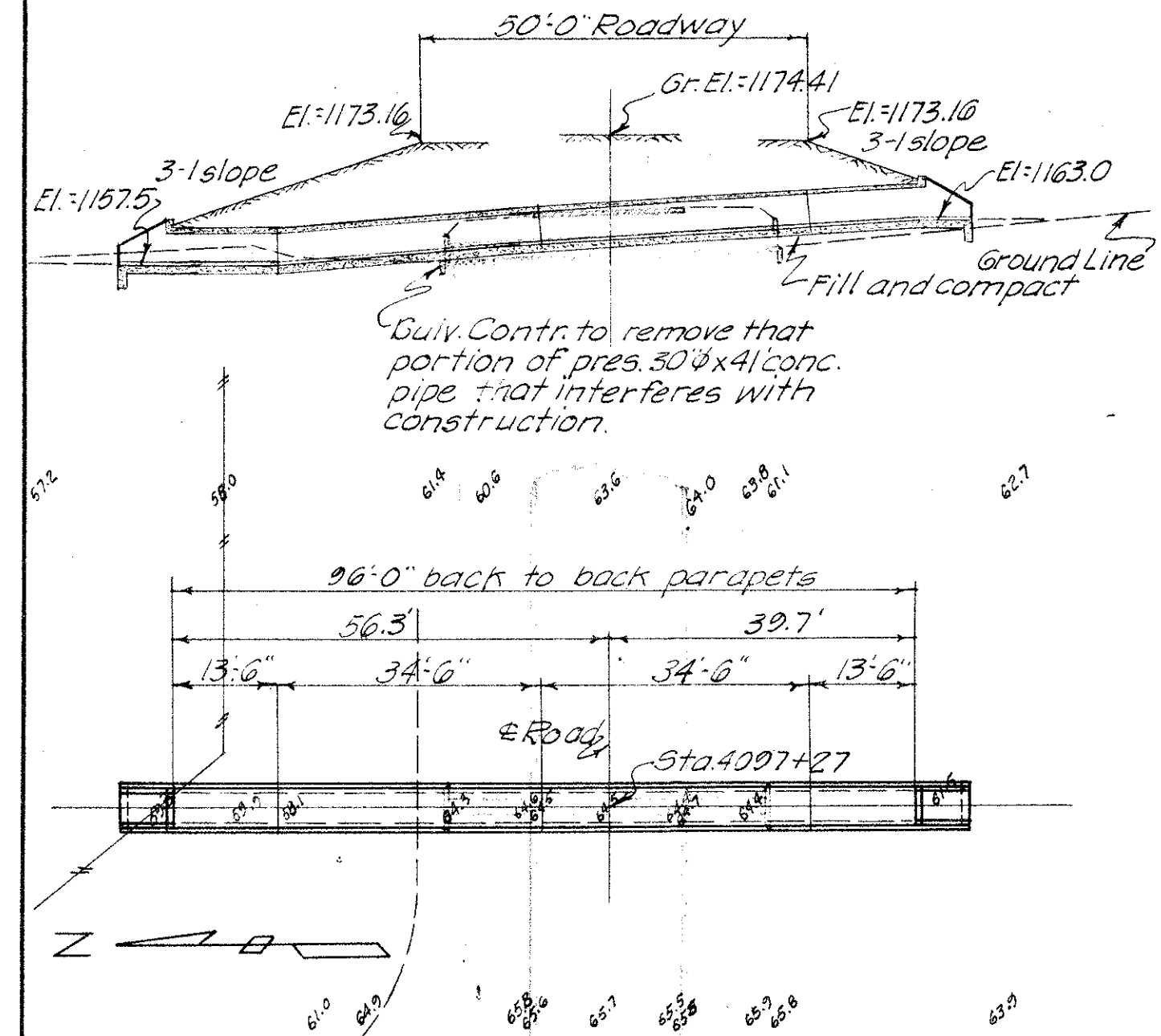
DRAINAGE AREA	5ac. Hilly	SECTION	31
SIZE AND TYPE	24" F-1 Pipe Ext	TOWNSHIP	Arlington
DEPTH OF FILL	11'0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 78' F-1 pipe LIN. FT. EXCAVATION 6120.10 C.Y. CONCRETE .2 C.Y. REINFORCING 6# mesh LBS.	STATION	4081+41
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	3552

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS

DRAINAGE AREA	SECTION
SIZE AND TYPE	TOWNSHIP
DEPTH OF FILL	COUNTY
ESTIMATED QUANTITIES	STATION
	PROJECT
	DATE
	DESIGN No.

BENCH MARK No. 28 F Sta. 4026+72 Top of conc. monument 71' r.t. El.: 1170.06



SITUATION PLAN
Scale 1"=20'0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-4-P

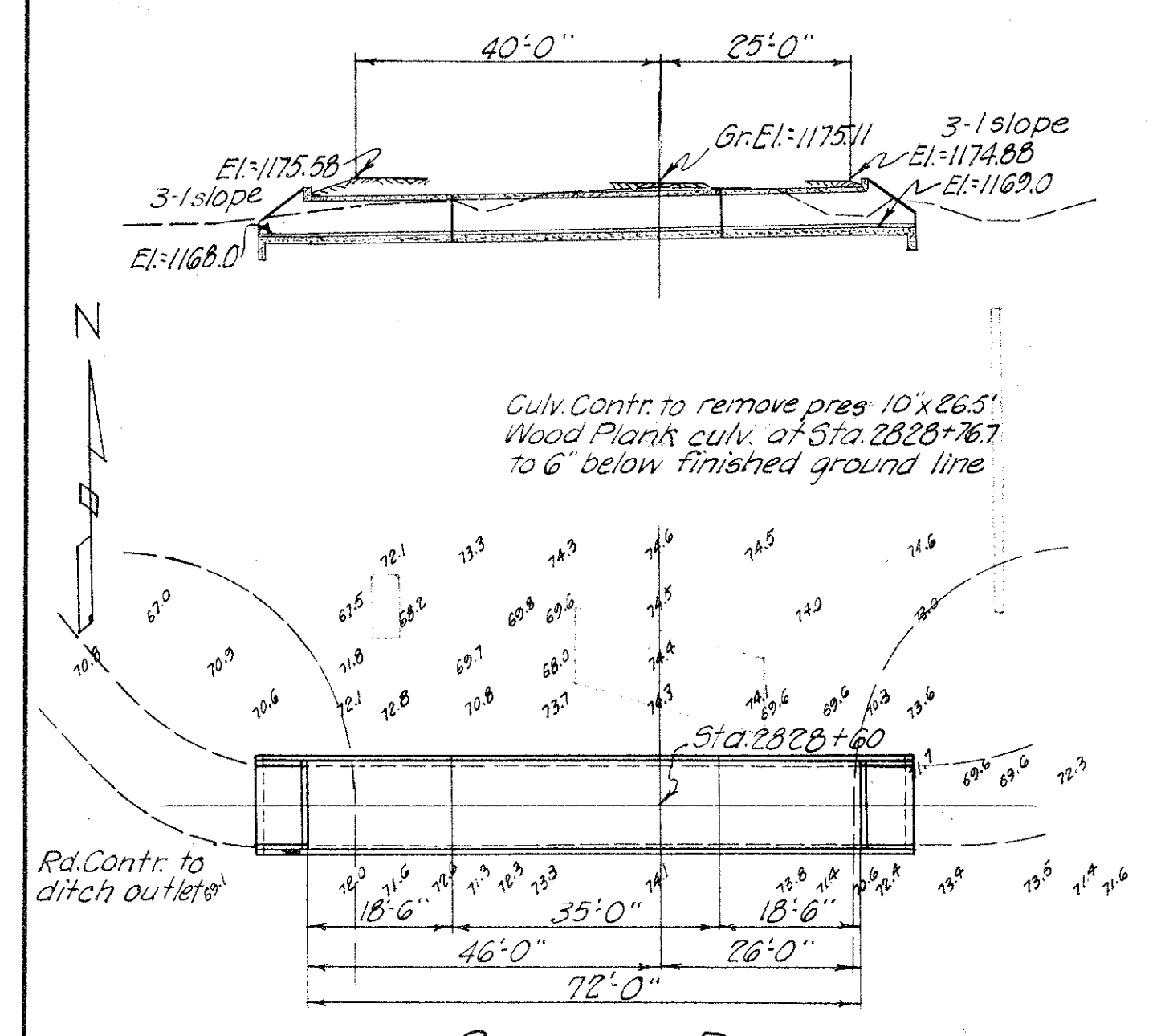
DRAINAGE AREA	46 1/2 ac. Hilly	SECTION	31
SIZE AND TYPE	4' x 4' x 26' R.C.B.	TOWNSHIP	Arlington
DEPTH OF FILL	10'0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION 6120.90 C.Y. CONCRETE 48.9 C.Y. REINFORCING 4693 LBS.	STATION	4027+27
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	3652

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS

DRAINAGE AREA	SECTION
SIZE AND TYPE	TOWNSHIP
DEPTH OF FILL	COUNTY
ESTIMATED QUANTITIES	STATION
	PROJECT
	DATE
	DESIGN No.

BENCH MARK No. 82 Sta. 818+36 U.S.C. & G.S. B.M. 97-528 Conc. Mon. 27' Lt. El.: 1190.05



SITUATION PLAN
Scale 1"=20'0"

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS C-10-P

DRAINAGE AREA	132 ac. R. to H.	SECTION	32
SIZE AND TYPE	10' x 4' x 72' R.C.B.	TOWNSHIP	Banner
DEPTH OF FILL	3'0"	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION 6120.180 C.Y. CONCRETE 100.4 C.Y. REINFORCING 10782 LBS.	STATION	2828+60
		PROJECT	F-2(7)
		DATE	2-8-52
		DESIGN No.	4152

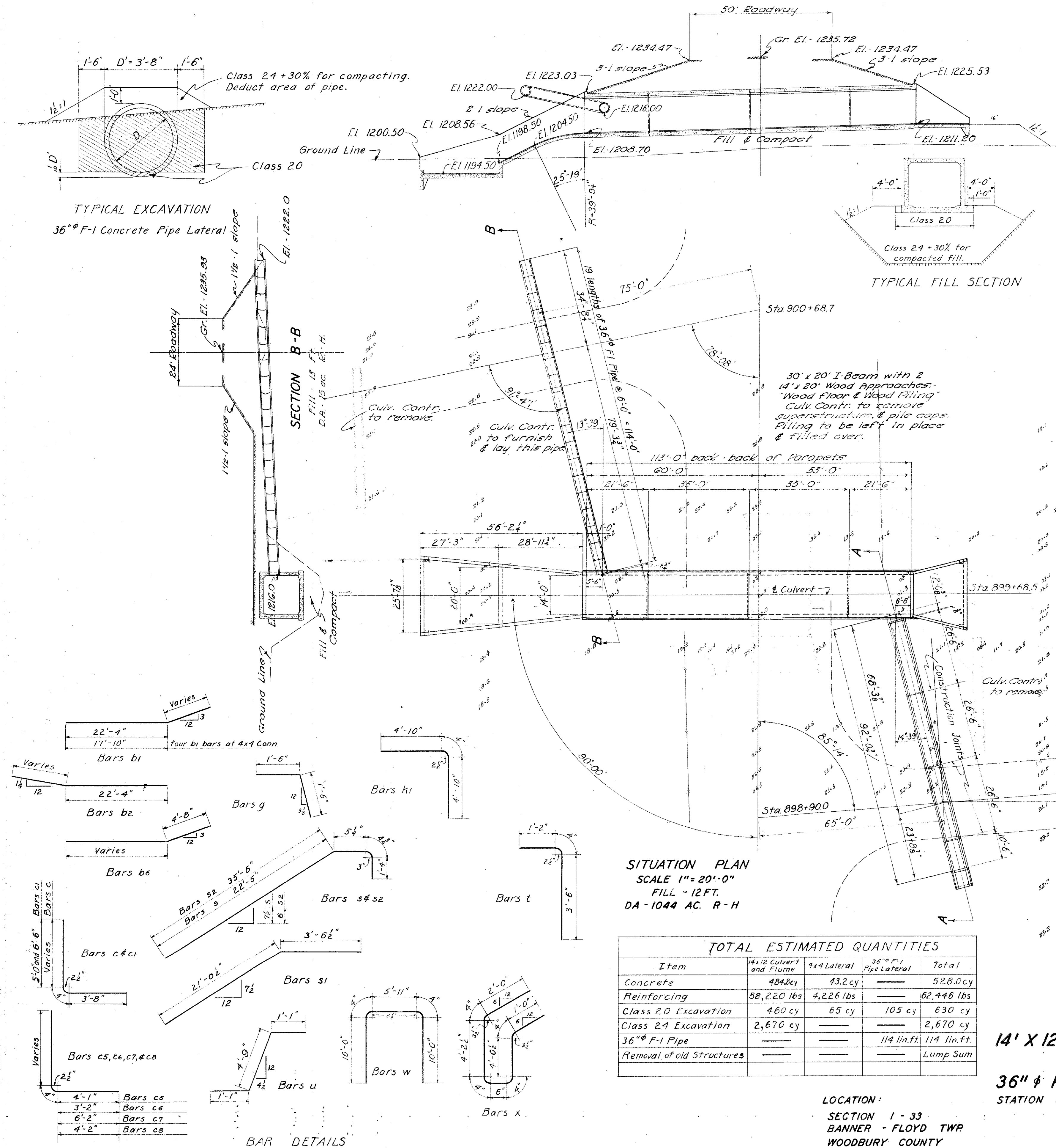
BENCH MARK

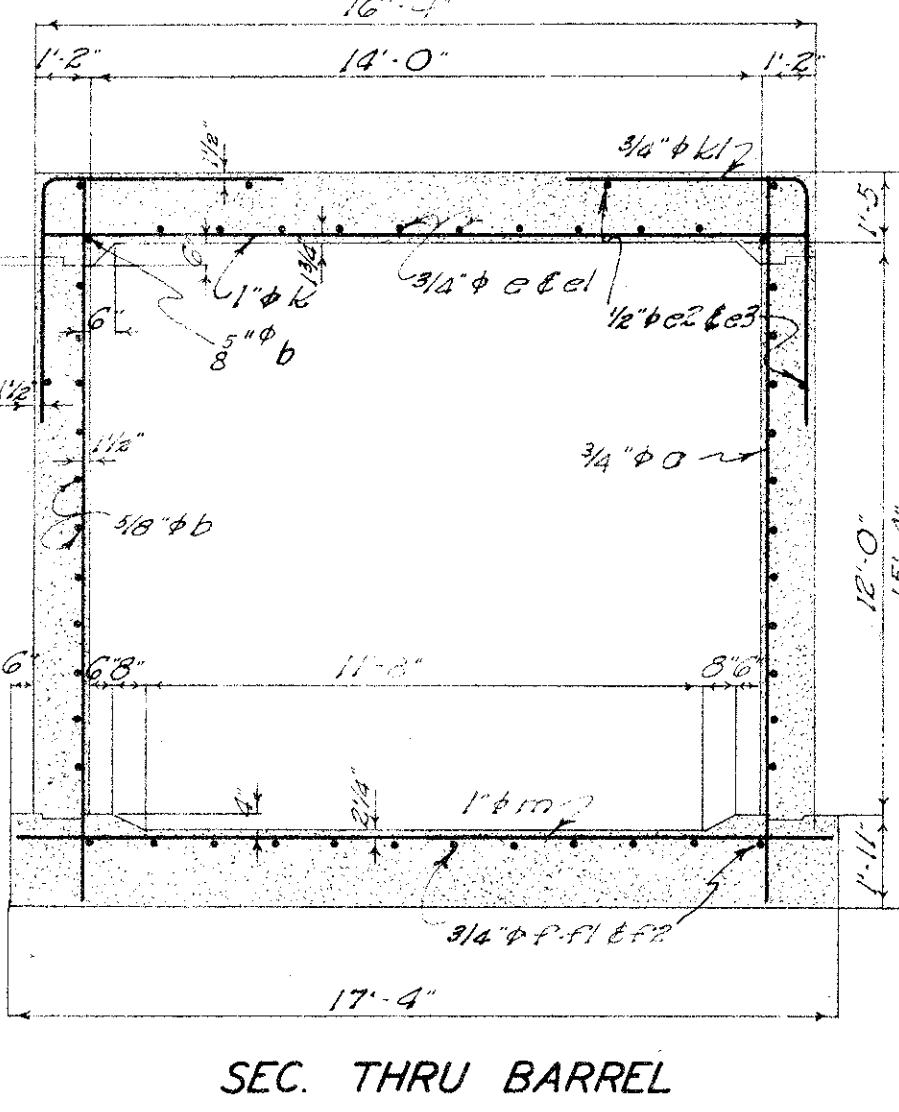
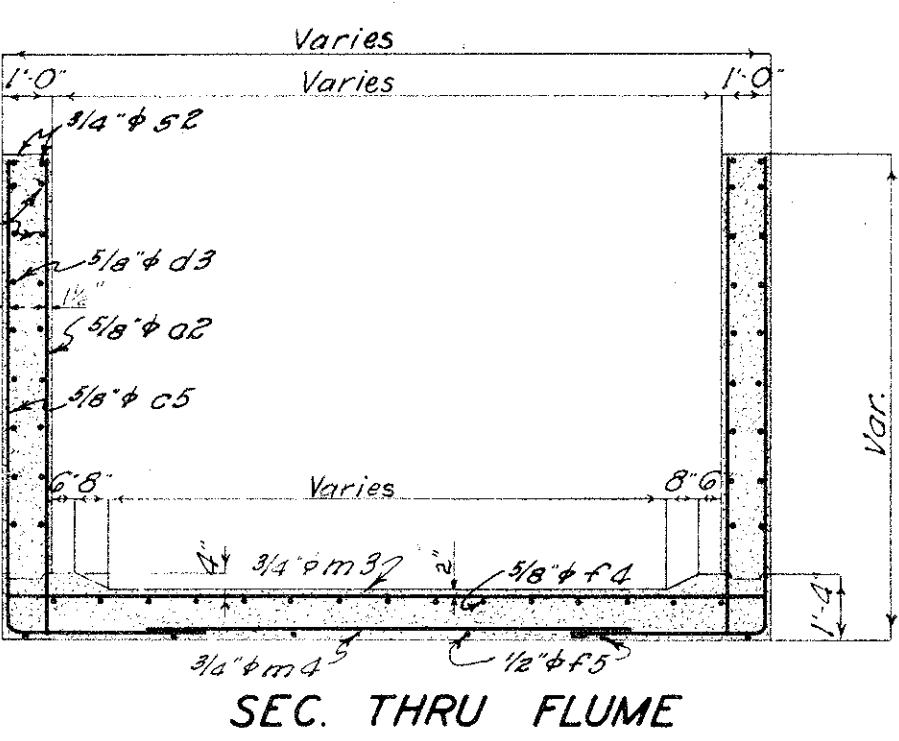
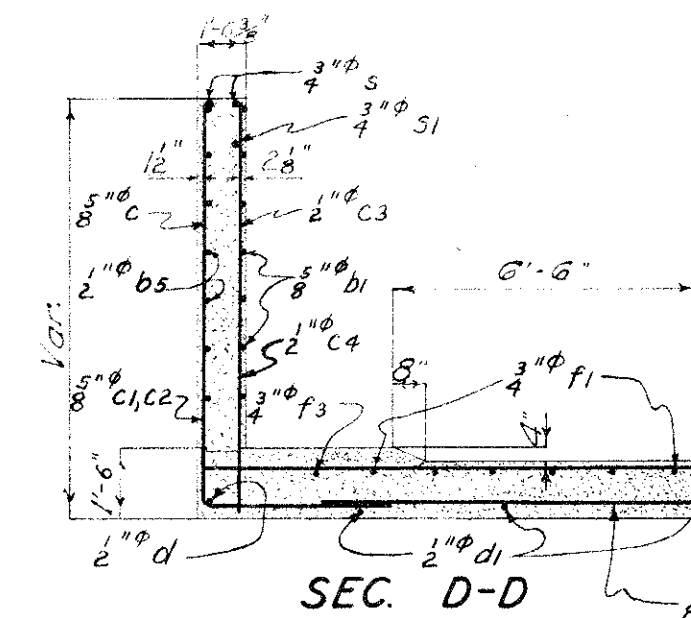
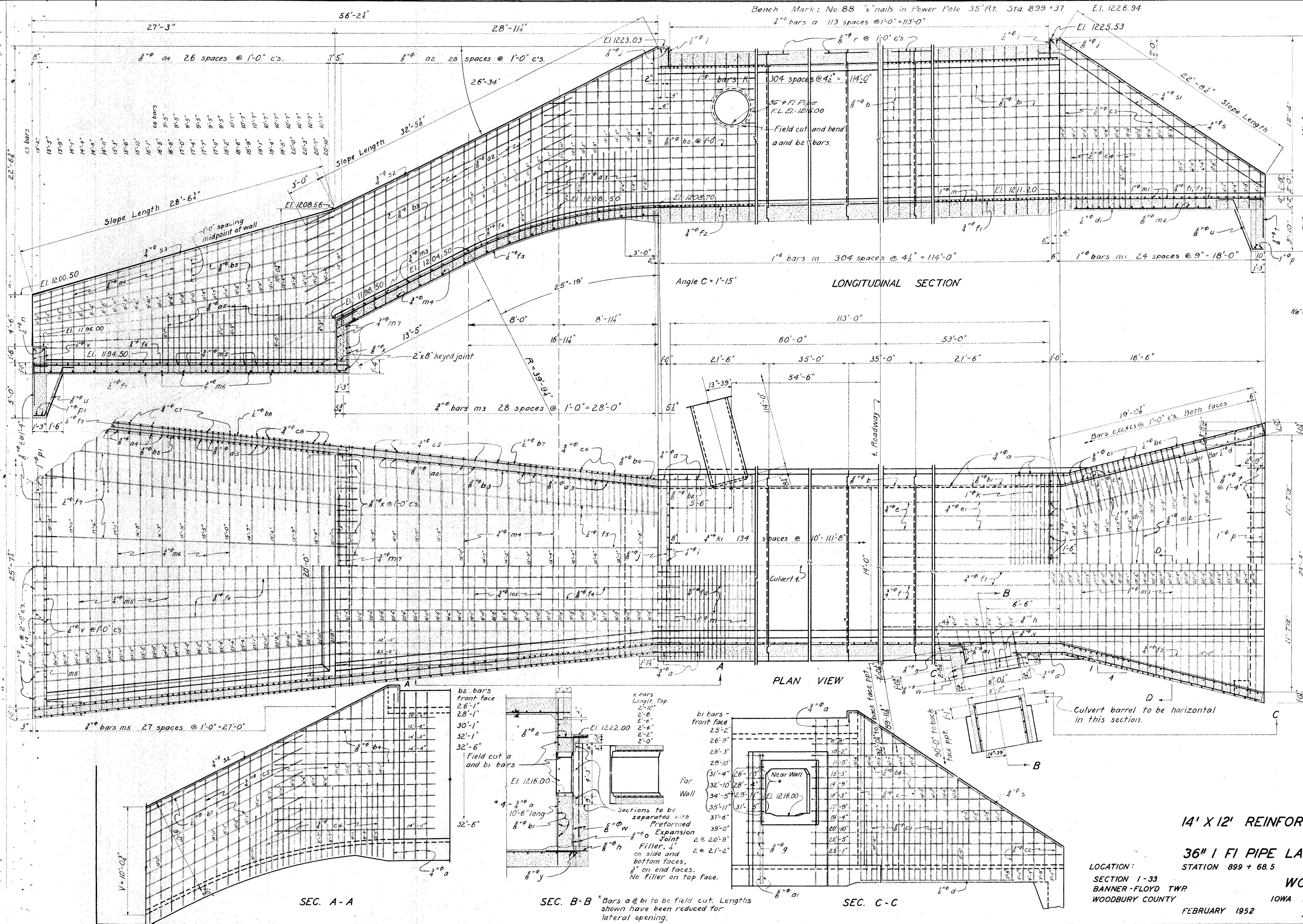
DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS

DRAINAGE AREA	SECTION
SIZE AND TYPE	TOWNSHIP
DEPTH OF FILL	COUNTY
ESTIMATED QUANTITIES	STATION
	PROJECT
	DATE
	DESIGN No.

BILL OF REINFORCING - MAIN STRUCTURE

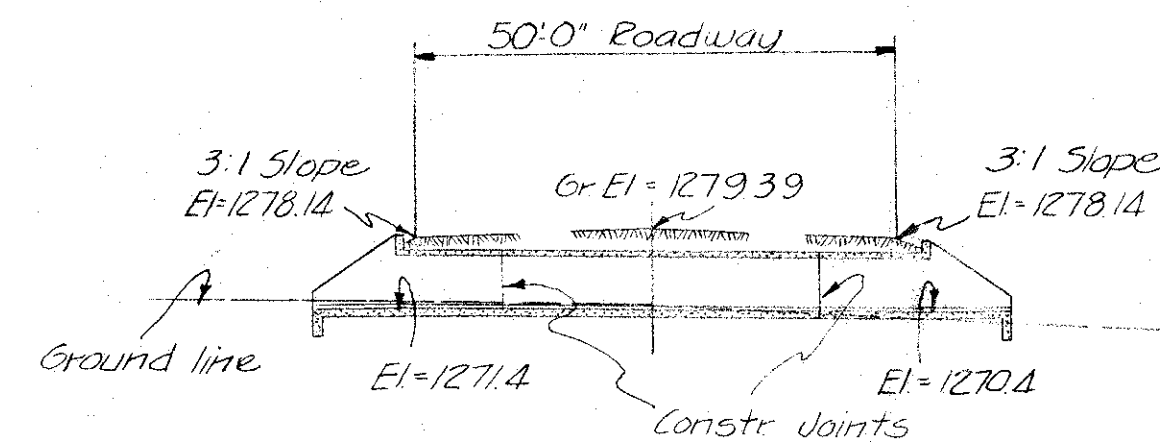
Mark	Location	Shape	Size	No.	Length	Weight
a	Barrel: Vert.		3"	240	15'-0"	5,407
a	Barrel: Vert. at Box Lateral		3"	4	10'-6"	63
a1	4x4 Conn.: Vert.		3"	2	11'-10"	25
a2	Flume Wall: Vert. FF		3"	58	Shown	703
a3	Flume Wall: Vert. FF		3"	24	Shown	153
a4	Basin Wall: Vert. FF		3"	54	Shown	603
a5	Basin Wall: Vert. FF		3"	30	Shown	181
b	Barrel, Center Sect's: Horiz. FF		3"	48	34'-8"	1,736
b1	Barrel, Inlet Sect.: Horiz. FF		3"	28	Shown	826
b2	Barrel, Outlet Sect.: Horiz. FF		3"	24	Shown	785
b3	Flume Wall: Longit. FF		3"	16	26'-9"	446
b4	Flume Wall: Horiz. BF		3"	22	Shown	315
b5	Basin Wall: Longit. FF		3"	18	28'-2"	529
b6	Inlet Wing Wall: Horiz. BF		3"	22	Shown	238
b7	Flume Wall: Longit. BF		3"	16	26'-9"	285
b8	Basin Wall: Longit. BF		3"	18	28'-2"	338
c	Inlet Wing Wall: Vert. BF		3"	28	Shown	418
c1	Inlet Wing Wall: Vert. BF		3"	20	Shown	206
c2	Inlet Wing Wall: Vert. BF		3"	10	Shown	46
c3	Inlet Wing Wall: Vert. FF		3"	38	Shown	225
c4	Inlet Wing Wall: Vert. FF		3"	12	6'-0"	48
c5	Flume Wall: Vert. BF		3"	58	Shown	1,379
c6	Flume Wall: Vert. BF		3"	24	Shown	326
c7	Basin Wall: Vert. BF		3"	54	Shown	1,379
c8	Basin Wall: Vert. BF		3"	30	Shown	456
d	Inlet Wing Wall: Longit. FF		3"	2	19'-0"	25
d1	Inlet Floor: Longit. Bottom		3"	5	14'-0"	47
e	Center Sections, Slab: Long. Bot.		3"	20	34'-8"	1,041
e1	End Sections, Slab: Long. Bot.		3"	20	22'-2"	673
e2	Center Sections, Slab: Long. Top		3"	12	34'-8"	277
e3	End Sections, Slab: Long. Top		3"	12	22'-2"	177
f	Center Sections, Floor: Long. Top		3"	24	34'-8"	1,250
f1	Inlet Section, Floor: Long. Top		3"	24	21'-0"	757
f2	Outlet Section, Floor: Long. Top		3"	12	22'-4"	403
f3	Inlet Section, Floor: Long. Top		3"	2	17'-0"	51
f4	Flume Floor: Longit. Top	Field Bend	3"	19	Shown	587
f5	Flume Floor: Longit. Bottom	Field Bend	3"	6	31'-0"	124
f6	Basin Floor: Longit. Top		3"	19	28'-3"	560
f7	Basin Floor: Longit. Bottom		3"	8	28'-3"	151
g	4x4 Conn. Wall: Horiz.		3"	10	3'-0"	31
h	4x4 Conn. Longit. Bottom		3"	6	Shown	22
i	Parapet: Vertical		3"	32	1'-8"	36
j	Parapet: Horiz.		3"	4	16'-0"	67
k	Slab: Transv.		3"	307	16'-0"	13,099
k1	Slab: Corners		3"	135	10'-0"	2,028
m	Floor: Transv.		3"	305	17'-0"	13,827
m1	Inlet Floor: Transv. Top		3"	25	Shown	1,356
m2	Inlet Floor: Transv. Bottom		3"	13	Shown	212
m3	Flume Floor: Transv. Top		3"	29	Shown	813
m4	Flume Floor: Transv. Bottom		3"	14	Shown	302
m5	Basin Floor: Transv. Top		3"	28	Shown	1,029
m6	Basin Floor: Transv. Bottom		3"	14	Shown	329
m7	Flume Drop: Transv.		3"	4	21'-6"	129
n	End Sill: Horiz. Top		3"	2	27'-0"	36
o	4x4 Conn. Dowels		3"	4	2'-0"	8
p	Inlet Curtain: Horiz. Bottom		3"	2	24'-4"	130
p1	Basin Curtain: Horiz. Bottom		3"	2	27'-0"	144
r	Slab: Dowels		3"	45	2'-2"	102
s	Wing Slope		3"	4	24'-7"	148
s1	Wing Slope		3"	2	24'-7"	74
s2	Flume Slope		3"	4	37'-8"	226
s3	Basin Slope		3"	4	28'-5"	171
t	Curtain: Vertical		3"	35	5'-0"	183
u	Curtain: Brace		3"	8	6'-11"	58
v	End Sill: Vertical		3"	38	2'-0"	51
w	4x4 Conn.		3"	2	26'-7"	55
x	Flume Drop: Vertical		3"	21	13'-1"	287
y	4x4 Conn. Horiz. Bottom		3"	2	6'-4"	13
z	4x4 Conn. Longit. Top		3"	6	Shown	15
				Total		58,220





DESIGN FOR
14' X 12' REINFORCED CONCRETE BOX CULVERT
WITH
36" I F I PIPE LATERAL & 4' X 4' R.C.B. LATERAL
LOCATION: SECTION 1-33 BANNER-FLOYD TWP. WOODBURY COUNTY
STATION 899 + 68.5
IOWA STATE HIGHWAY COMMISSION
FEBRUARY 1952
Sheet 2 of 2
DESIGN 4052
Woodbury County
File No. 14945
PROJECT NO. F-2(7)
SCALES 1/4" = 1'-0"

BENCH MARK No 60, Sta 590+46.1 60d Spl in Fence Post 2' Lt. El.=1277.61



SITUATION PLAN
Scale 1"=20'

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS. CSP

DRAINAGE AREA	None	SECTION	34 & 1
SIZE AND TYPE	4x 5 1/2 x 54 RCB	TOWNSHIP	Concord
DEPTH OF FILL	2'	COUNTY	Woodbury
ESTIMATED QUANTITIES	PIPE 21'-0" LIN. FT. EXCAVATION 1.24 C. Y. CONCRETE 35.6 C. Y. REINFORCING 3173 LBS.	STATION	590+00
		PROJECT	FN-2
		DATE	July 10th, 1952
		DESIGN No.	5152

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	

BENCH MARK

DETAILS TO BE LIKE IOWA STATE HIGHWAY COMMISSION STANDARDS.

DRAINAGE AREA		SECTION	
SIZE AND TYPE		TOWNSHIP	
DEPTH OF FILL		COUNTY	
ESTIMATED QUANTITIES	PIPE LIN. FT. EXCAVATION C. Y. CONCRETE C. Y. REINFORCING LBS.	STATION	
		PROJECT	
		DATE	
		DESIGN No.	