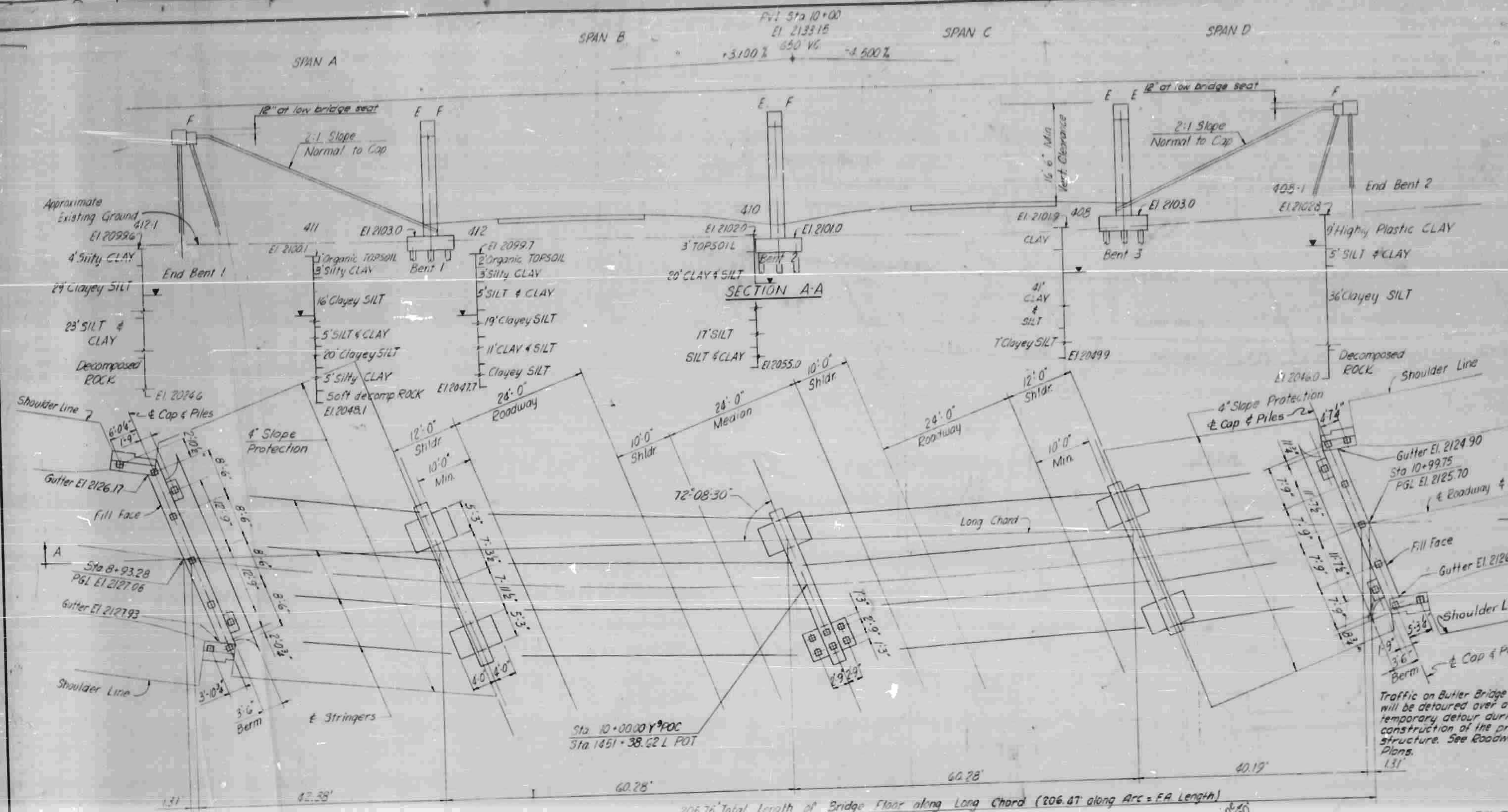


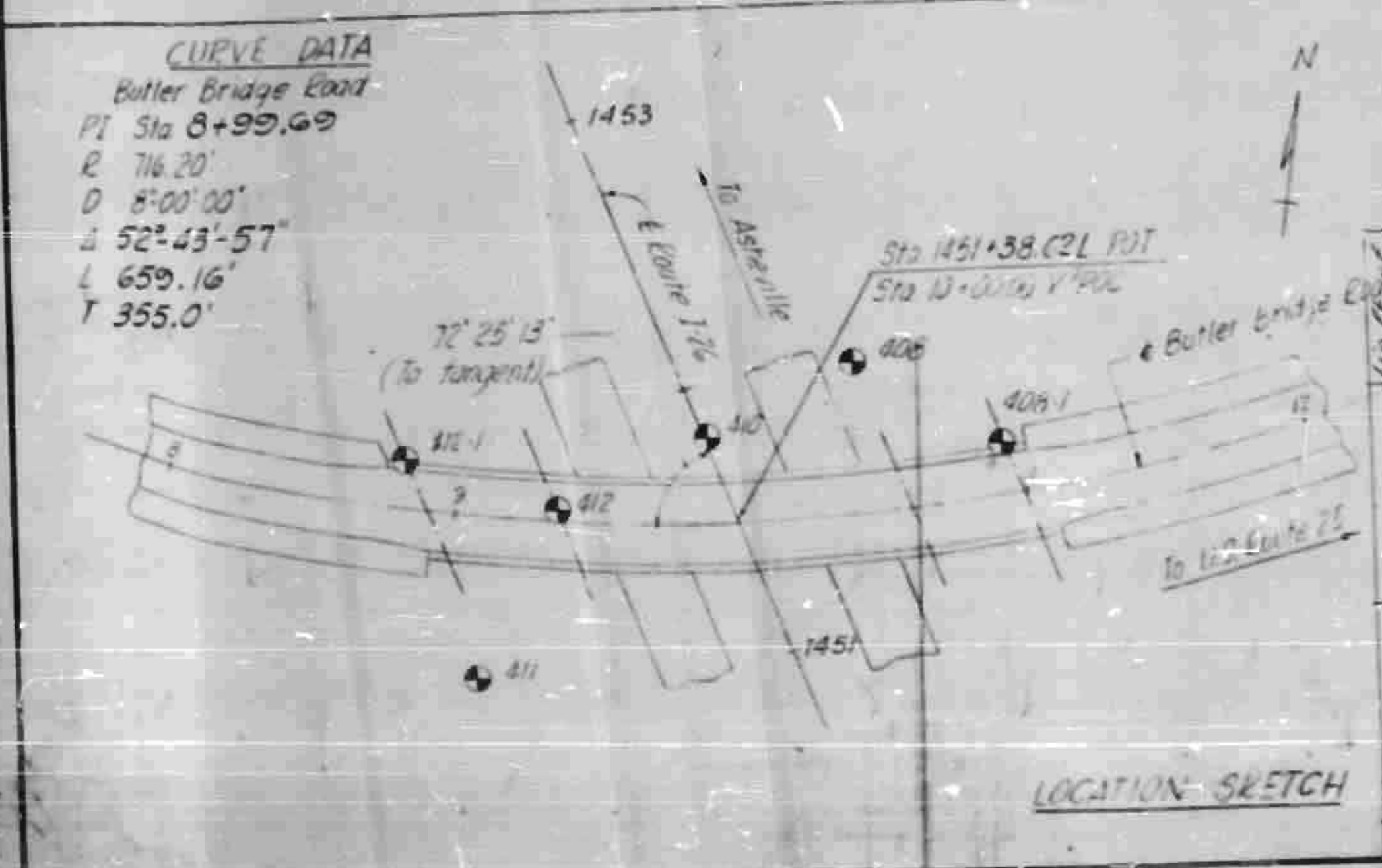
SEE SHEET	DATE
1	11/15/85
FED. AID PROJ. 7-26-100	

**NOTES:**  
 Loading: A.A.S.H.O. H15-812-44  
 Future surfacing: 20 lbs. per sq. ft.  
 Roadway width: 28'-0" curb to curb.  
 For other design data and general notes, see General Notes Sheet.  
 Concrete surfaces to be given a surface finish in accordance with the specifications.  
 The contractor will be required to drive one 12" prestressed concrete test pile in place at Bents 1 & 3. The test piles shall be paid for as linear feet of 12" Prestressed Concrete Piles. The order lengths for all piles shall be given after the test piles have been driven. The test piles at Bents 1 & 3 shall be 30' long.  
 All piles at End Bents shall be driven through the roadway fill. The contractor will be required to excavate completely through the fill before driving these piles. See General Notes Sheet.  
 Piles for all Bents and End Bents shall be driven to a minimum bearing capacity of 30 tons.  
 Unclassified Structure Excavation for Bents 1 & 3 shall be measured from the existing ground line.  
 ⊕ Indicates 2 1/2" cased hole boring  
 ▼ Indicates ground water  
 Benchmark: R.R Spike in 24" Pine Sta. 1450+50.1, Elevation 2106.50



**ROADWAY ELEVATIONS**

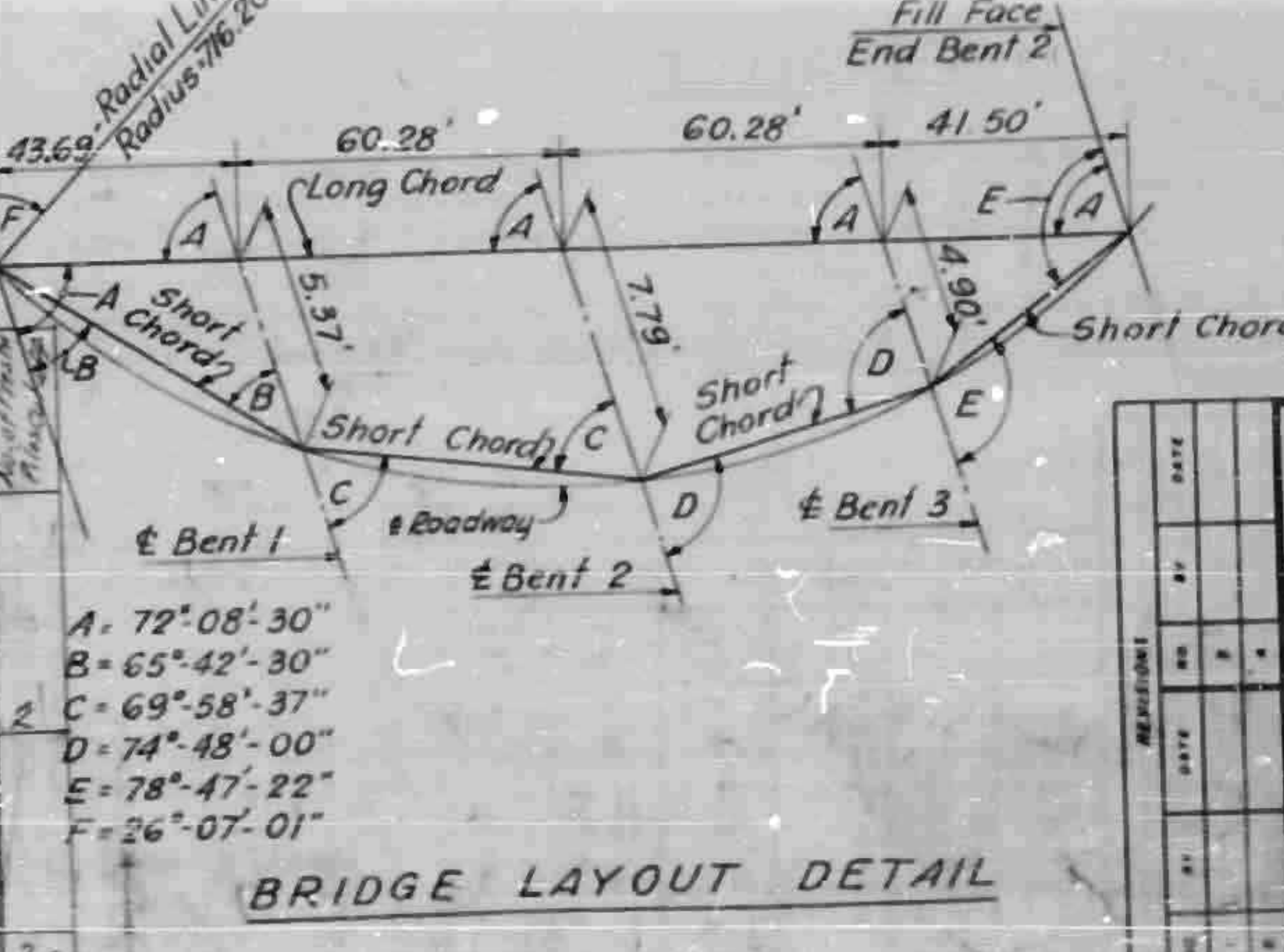
Station	Elevation	Station	Elevation	Station	Elevation
8+90	2127.04	9+65	2127.15	10+40	2126.60
	2127.07		2127.13		2126.54
	2127.09		2127.11		2126.48
	2127.11		2127.09		2126.41
	2127.13		2127.07		2126.34
	2127.15		2127.04		2126.27
	2127.16		2127.01		2126.20
	2127.17		2126.98		2126.12
	2127.18		2126.94		2126.04
	2127.18		2126.90		2125.96
	2127.19		2126.86		2125.87
	2127.18		2126.81		2125.78
	2127.18		2126.76		2125.69
	2127.17		2126.71		
9+60	2127.16	10+35	2126.66		



**PLAN**  
 I hereby certify that this Structure was built according to plans.  
 RES. ENGR. [Signature]

**TOTAL BILL OF MATERIAL**

	Class "A" Concrete Cu Yds	Reinf. Steel Lbs	Structural Steel Approx. Lbs	12" Presr. Conc. Piles No. Lin. Ft.	Unclass. Str. Exca. Cu Yds	Metal Rails Lin. Ft.	4" Conc. Slope Prot. Sq. Yds	4" Conc. Blk. Slope Prot. Sq. Yds
Superstructure	209.9	45,196	129,100	452		419.02	255,866	266
End Bent 1	22.1	3,409		9				
Bent 1	28.8	4,318		12				
Bent 2	29.6	4,977		12				
Bent 3	28.4	4,262		12				
End Bent 2	21.0	3,250		9				
Approach Curbs	3.2	76						
<b>Total</b>	<b>343.0</b>	<b>63,488</b>	<b>129,100</b>	<b>54</b>	<b>109</b>	<b>419.02</b>	<b>476</b>	<b>266</b>



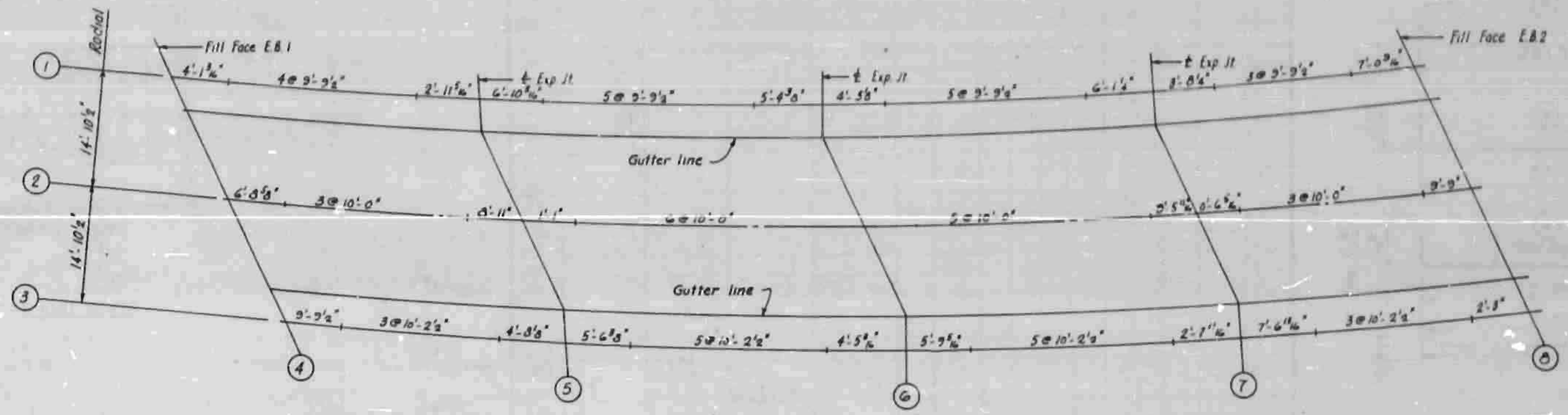
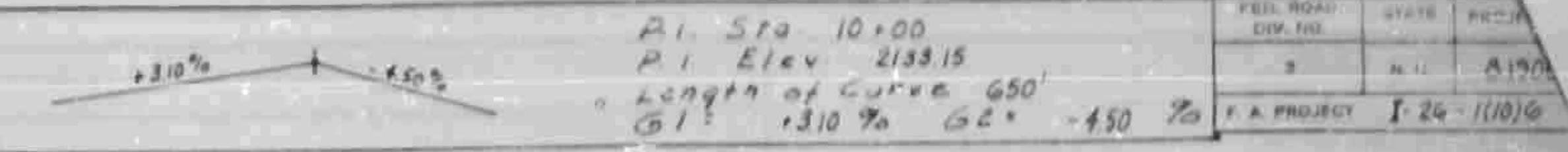
PROJECT NO. 8-19002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451+39 L  
 10+00 Y<sup>P</sup>

STATE OF NORTH CAROLINA  
 STATE HIGHWAY COMMISSION  
 GENERAL DRAWING  
 BRIDGE OVER PROPOSED  
 INTERSTATE ROUTE 26  
 ON BUTLER BRIDGE ROAD

HOWARD T. STILES, JAMES H. BERGENDORF  
 CONSULTING ENGINEERS  
 KANSAS CITY, MISSOURI

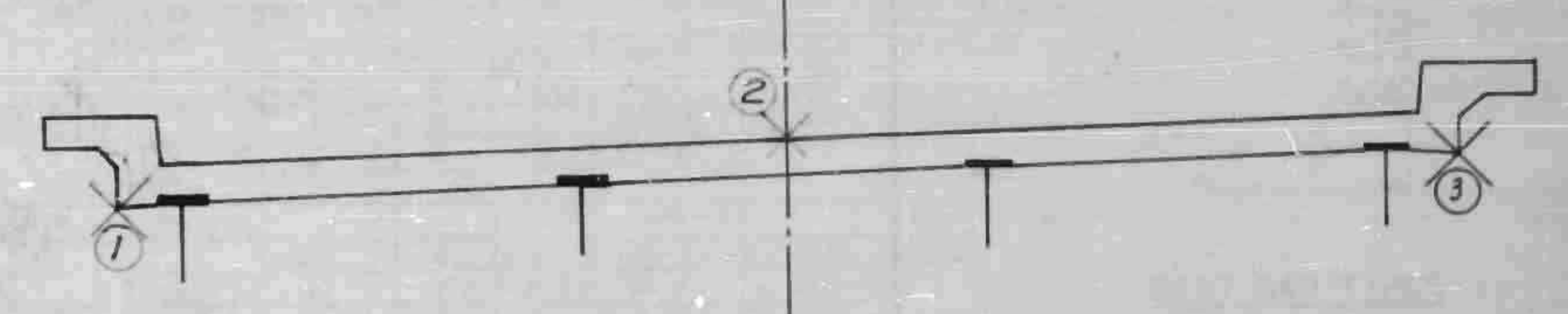
Column 1 Bottom of overhang		Column 2 E of Roadway		Column 3 Bottom of overhang	
Dist	Elev	Dist	Elev	Dist	Elev
4'-1 1/2"	2125.414	6'-8 3/4"	2127.057	5'-2 1/2"	2127.110
5'-0"	500	9'-0"	091	9'-0"	149
5'-3 1/2"	553	10'-0"	132	10'-2 1/2"	178
5'-9 1/2"	594	10'-0"	161	10'-2 1/2"	196
5'-9 3/4"	628	10'-0"	179	10'-2 1/2"	202
5'-9 3/4"	641	9'-3 1/2"	185	4'-8 1/2"	201
5'-11 1/2"	644	1'-1"	185	5'-6 1/2"	196
6'-10 3/4"	647	10'-0"	179	10'-2 1/2"	179
9'-9 1/2"	641	10'-0"	162	10'-2 1/2"	170
9'-9 1/2"	644	10'-0"	133	10'-2 1/2"	159
9'-9 1/2"	595	10'-0"	092	10'-2 1/2"	2127.056
9'-9 1/2"	554	10'-0"	2127.039	10'-2 1/2"	2126.593
9'-9 1/2"	501	10'-0"	2126.376	4'-5 1/2"	361
5'-1 1/2"	468	10'-0"	300	5'-2 1/2"	317
4'-5 1/2"	488	10'-0"	812	10'-2 1/2"	829
9'-9 1/2"	363	10'-0"	718	10'-2 1/2"	730
9'-9 1/2"	274	10'-0"	603	10'-2 1/2"	619
9'-9 1/2"	175	10'-0"	440	10'-2 1/2"	497
9'-9 1/2"	2125.064	9'-5 1/2"	353	10'-2 1/2"	362
9'-9 1/2"	2124.342	10'-0"	345	2'-7 1/2"	325
6'-1 1/2"	853	10'-0"	199	7'-6 1/2"	216
3'-8 1/2"	807	10'-0"	2126.042	10'-2 1/2"	2126.059
9'-9 1/2"	661	10'-0"	2125.872	10'-2 1/2"	2125.889
9'-9 1/2"	504	8'-5"	2125.695	10'-2 1/2"	708
9'-9 1/2"	334	10'-0"	Fill Face	2'-3"	2125.666
7'-0 3/4"	2124.205	Fill Face		Fill Face	

GRADE DATA



PLAN

HEADERS											
Column 4 Fill Face E.B.1		Column 5 Bent 1		Column 6 Bent 2		Column 7 Bent 3		Column 8 Fill Face E.B.2		Column 9 Bent 5	
Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.	Dist.	Elev.
LR Gutter	2126.175	LR Gutter	2126.396	LR Gutter	2126.166	LR Gutter	2125.557	LR Gutter	2124.500	LR Gutter	
2'-2 1/2"	307	2'-2 1/2"	460	2'-1 1/2"	338	2'-0 1/2"	671	2'-0 1/2"	2125.014		
2'-2 1/2"	410	2'-2 1/2"	503	2'-1 1/2"	330		304		127		
2'-2 1/2"	354	2'-2 1/2"	704		519		2125.030		241		
2'-2 1/2"	640	2'-2 1/2"	824		629		2126.011		355		
2'-2 1/2"	805	2'-2 1/2"	2126.394		744		125		460		
2'-2 1/2"	2126.291	2'-2 1/2"	2127.064		860		239	2'-0 1/2"	582		
2'-2 1/2"	2127.057	2'-2 1/2"	185	2'-2 1/2"	2126.976		359	2'-0 1/2"	695		
2'-2 1/2"	182	2'-1 1/2"	805		2127.021		646		809		
2'-2 1/2"	307		425	2'-1 1/2"	207		530		2125.233		
2'-2 1/2"	437		545	2'-1 1/2"	322		654		2126.036		
2'-2 1/2"	557		665	2'-1 1/2"	437		807		151		
2'-2 1/2"	681	2'-1 1/2"	785	2'-1 1/2"	553		2126.221		265		
2'-2 1/2"	806	2'-1 1/2"	2127.304	2'-1 1/2"	668	2'-0 1/2"	2127.025	2'-0 1/2"	379		
RT Gutter	2127.231	RT Gutter	2128.024	RT Gutter	2127.784	RT Gutter	2127.148	RT Gutter	2126.492		



TYPICAL SECTION

Elevations shown in Columns 1 thru 8 are final required elevations of the completed structure. In setting up the form and screed elevations, provisions must be made for deflections where required.

For columns 9 thru 8 given elevations are at 2'-0" intervals normal to E of roadway from the left gutter line to the right gutter line.

PROJECT No. 815002  
 HENDERSON - BUNCOMBE COUNTY  
 STATION: 1451 + 39

SUPERIMPOSED DEAD LOAD DEFLECTION (inches)

	SPAN A	SPAN B	SPAN C	SPAN D
INT.	1/2"	3/4"	1 1/4"	1 1/2"
EXT.	1/2"	1 1/4"	1 1/2"	1 1/2"

STATE OF NORTH CAROLINA  
**STATE HIGHWAY COMMISSION**  
 RALEIGH

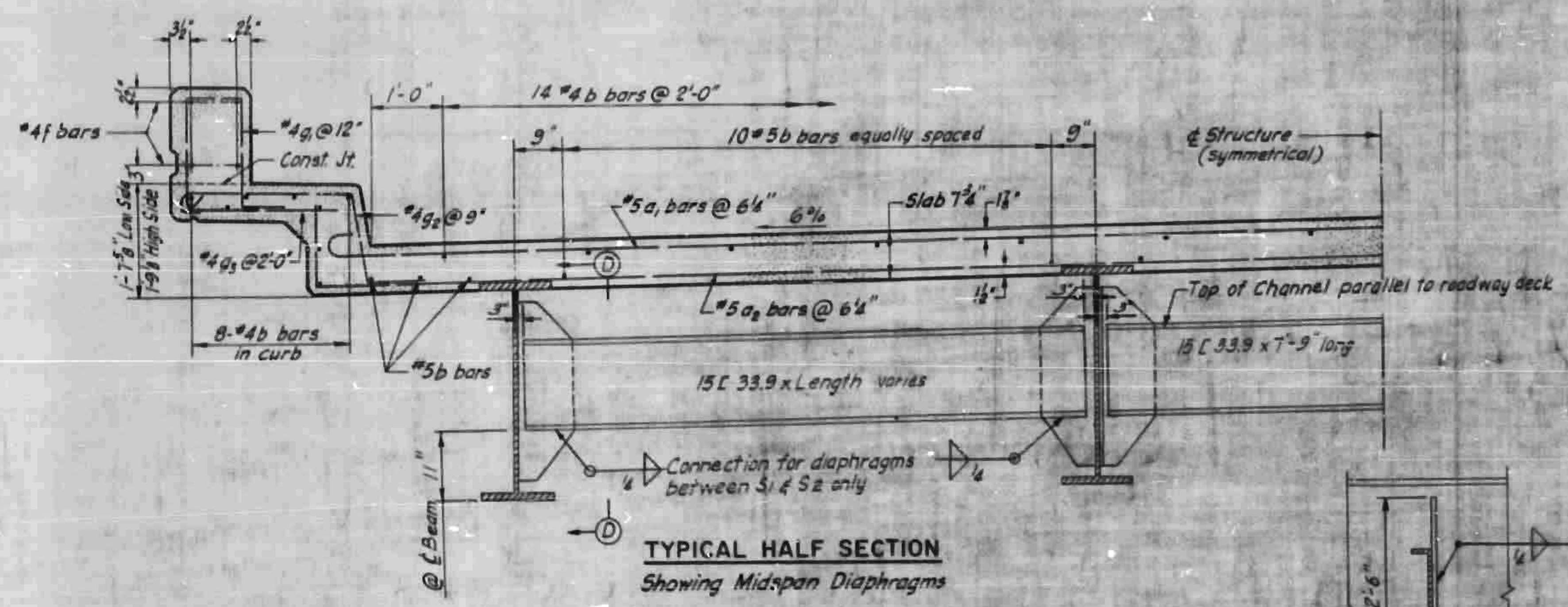
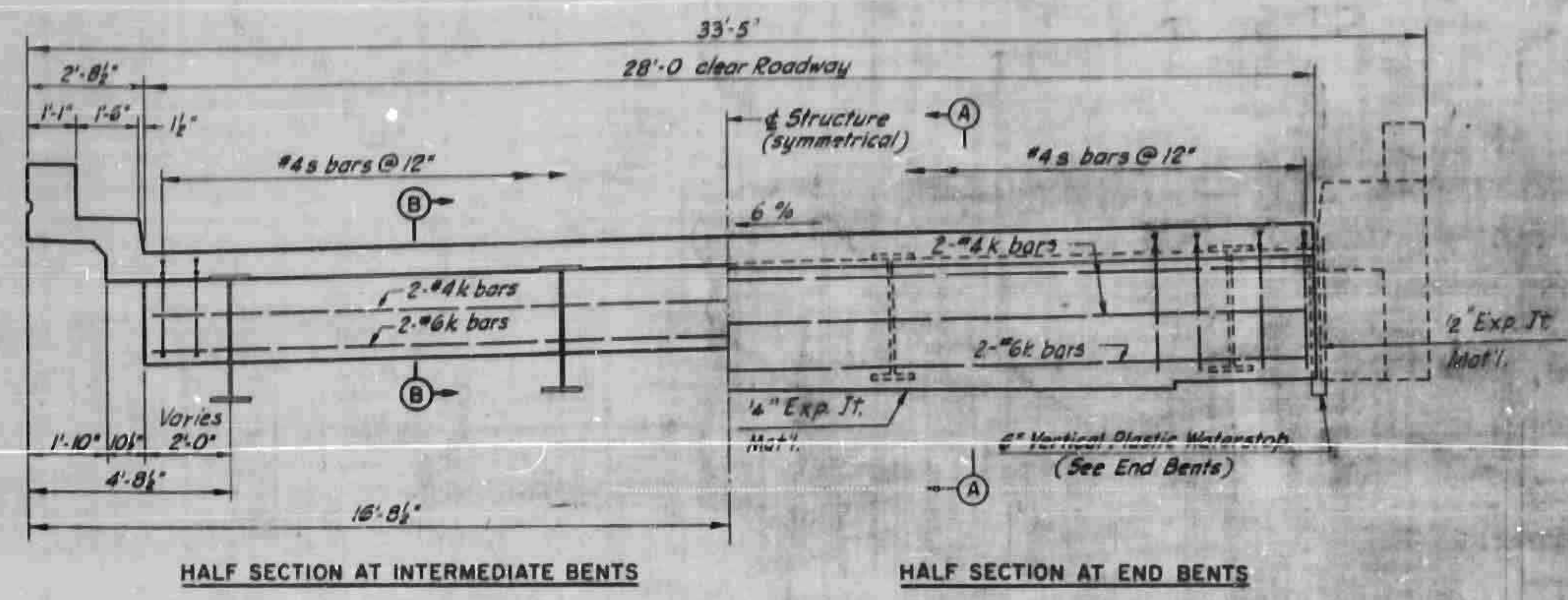
ELEVATIONS  
 FOR  
 SETTING UP  
 FORMS AND SCREEDS

August 1962

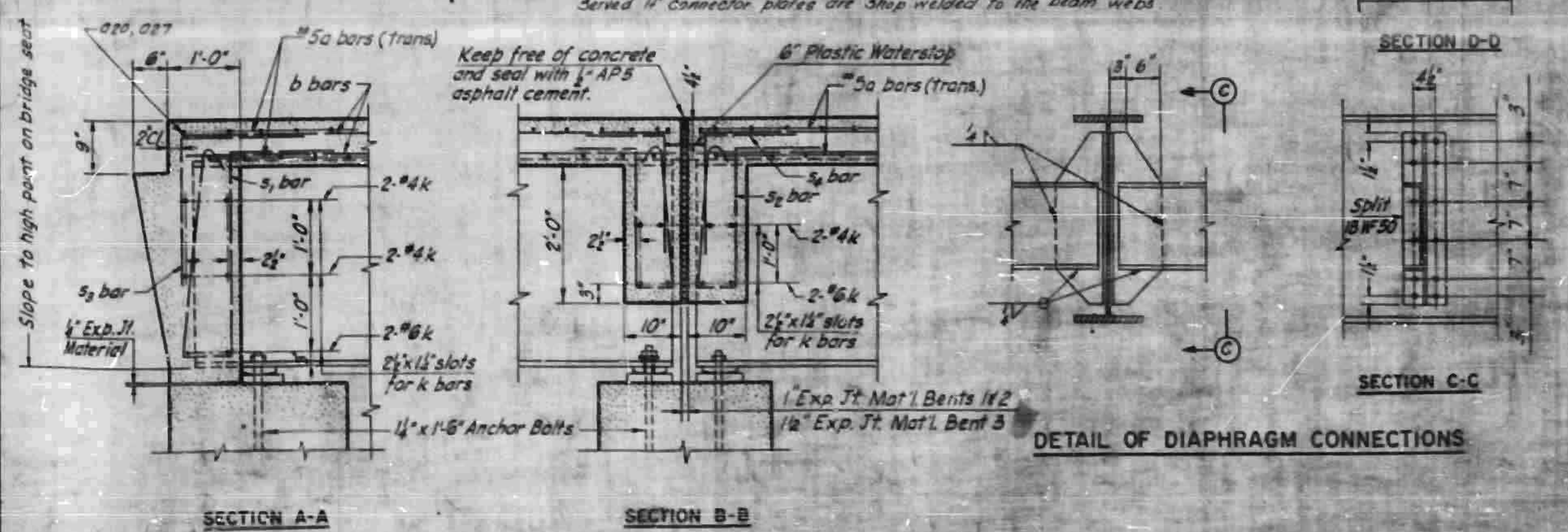
REVISIONS

DATE	BY	REVISION

SHEET NO. 2-186  
 TOTAL SHEETS 2120



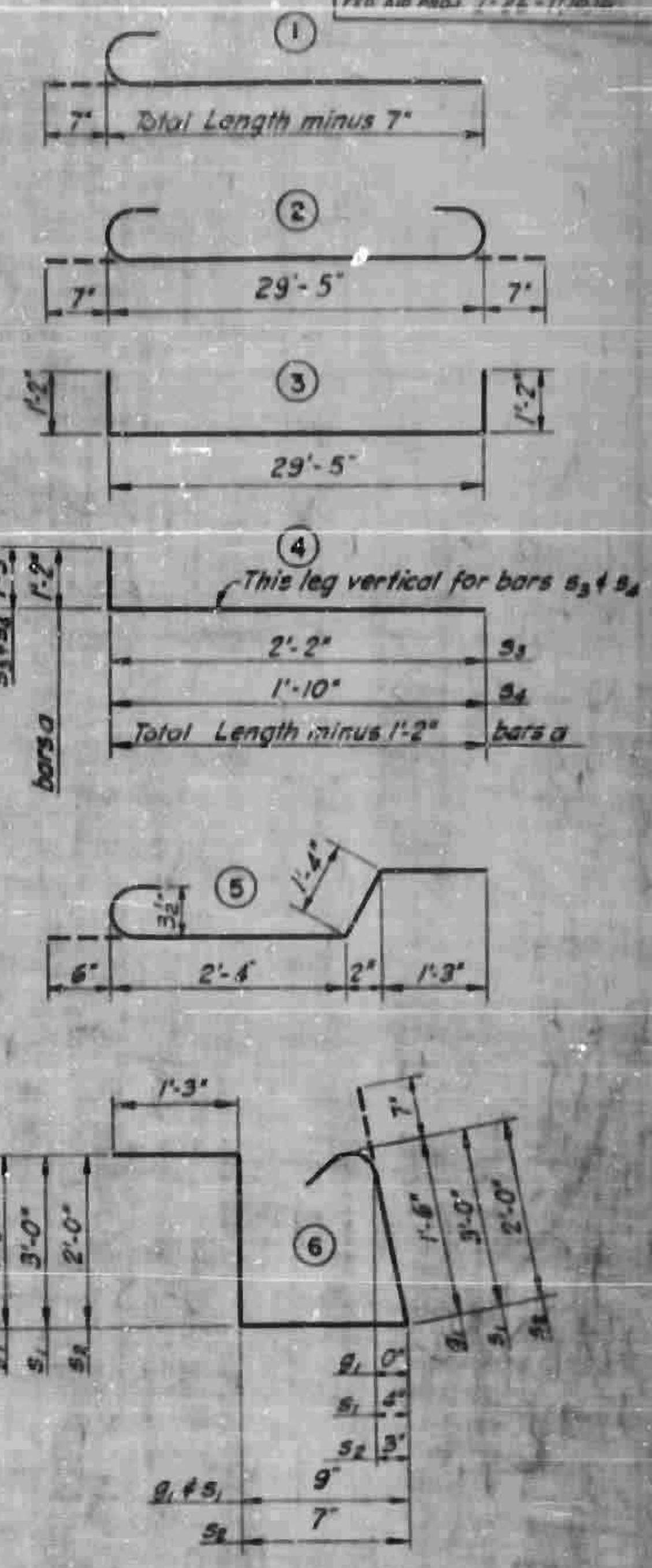
Note: In lieu of the welding procedure for shop and field welds indicated for the intermediate diaphragm connections, the contractor may, at his option, shop weld the connector plates to the beam webs and field weld the channels to the connector plates. Special care in handling the beams must be observed if connector plates are shop welded to the beam webs.



**BILL OF MATERIALS — SPAN A**

BAR	NUMBER OF BARS				TOTAL	SIZE	TYPE	LENGTH	WEIGHT
	SPAN A	SPAN B	SPAN C	SPAN D					
01					58	5	2	30-7	1350
02					58	1	3	31-9	1921
03					6	1	1	29-1	182
04					6	4	2	29-8	155
05					4	1	1	3-8	15
06								6-0	25
07								8-4	35
08								10-7	44
09								12-11	54
10								15-4	64
11								17-7	73
12								19-10	83
13								22-1	92
14								24-4	102
15								26-7	111
16								4-10	20
17								7-2	30
18								9-6	40
19								11-9	49
20								14-1	59
21								16-5	69
22								18-8	78
23								21-0	88
24								23-4	97
25								25-6	106
26								27-9	115
27							Str.	30-9	32
28							Str.	29-10	31
29							field bend	2-7	5
b1					72	5	Str.	23-6	1745
b2					16	4	Str.	22-7	241
b3					16	4	Str.	21-8	232
b4					28	4	Str.	23-3	435
f1					8	4	Str.	22-7	121
f2					8	4	Str.	21-8	116
g1					88	4	6	5-7	326
g2					117	4	6	5-5	424
g3					45	4	Str.	2-4	70
k1					4	4	Str.	30-9	52
k2					2	6		30-9	93
k3					2	4		29-10	40
k4					2	6	Str.	29-10	90
s1					29	4	6	8-7	166
s2					30	4	6	6-5	129
s3					31	4	4	3-5	71
s4					31	4	4	3-1	64

Reinforcing Steel lbs. 10,392  
 Class 'A' Concrete C.Y. 48.0

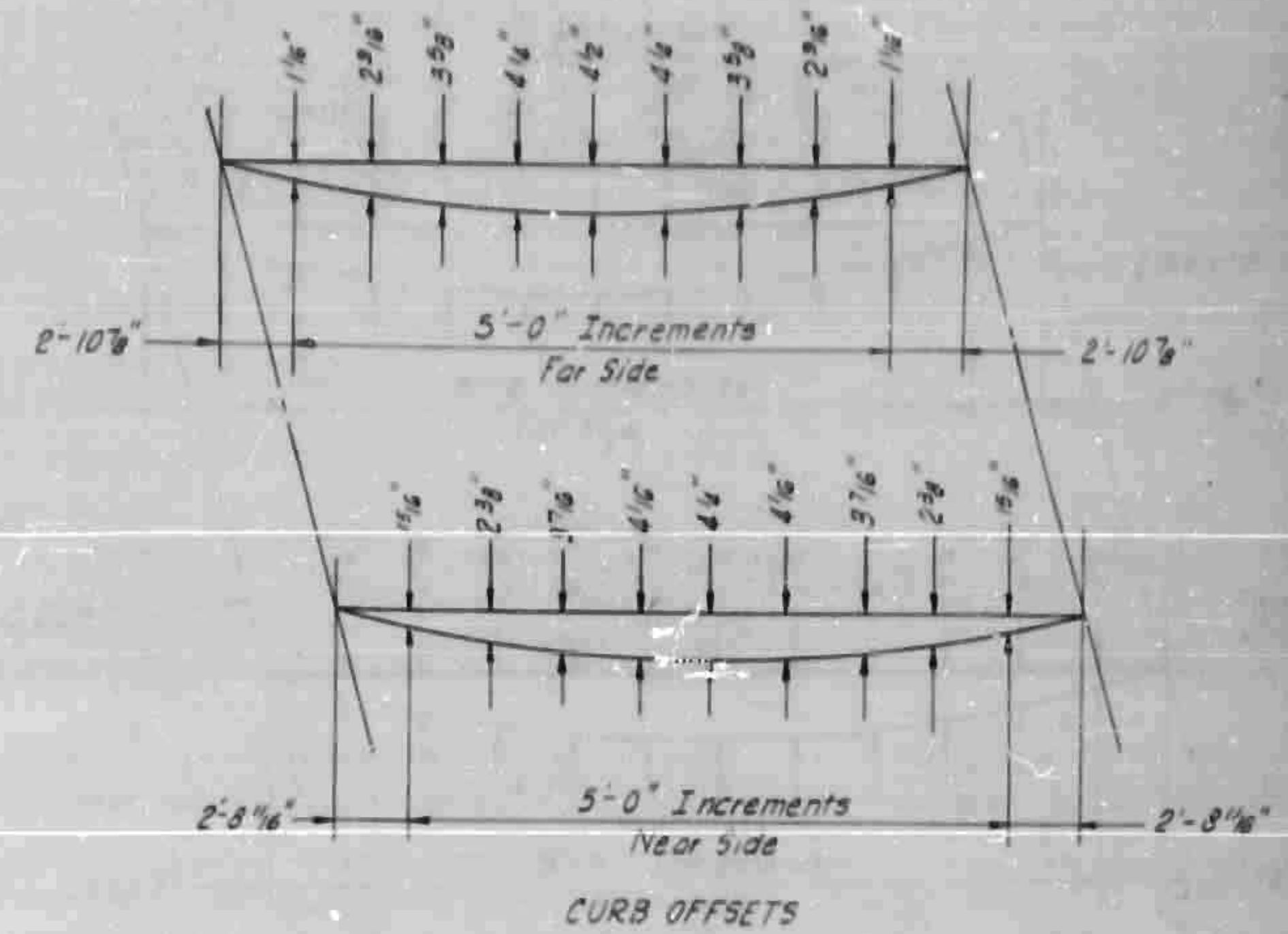
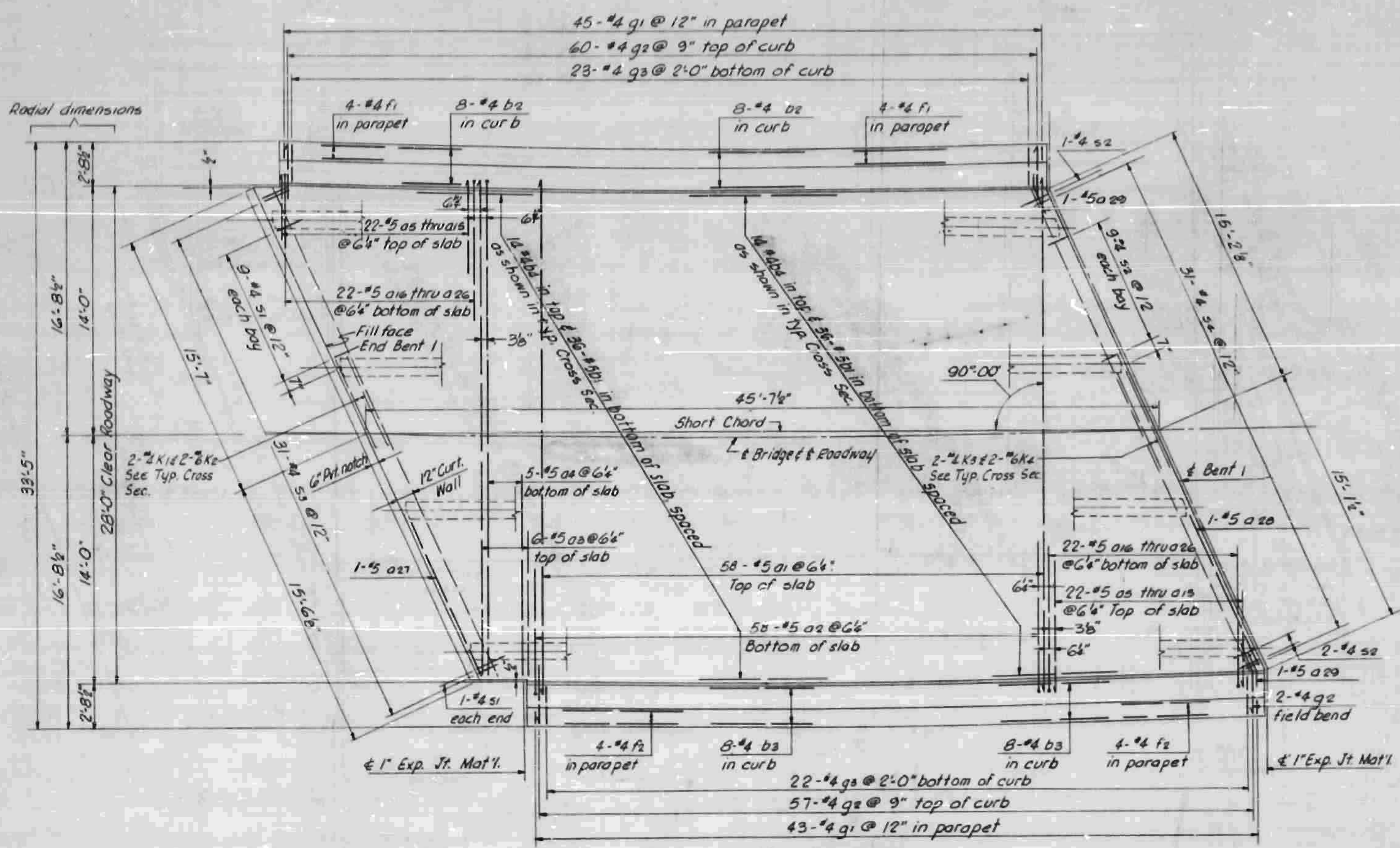


PROJECT NO. 8-19002  
 HENDERSON-BUNCOMB COUNTY  
 STATION 1451+39L  
 10+00 Y9

STATE OF NORTH CAROLINA  
 STATE HIGHWAY COMMISSION  
 RALEIGH

SUPERSTRUCTURE  
 CROSS SECTIONS

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N.C.	B19002
FED. AID PROJ. I-26-1(10)6		



PLAN

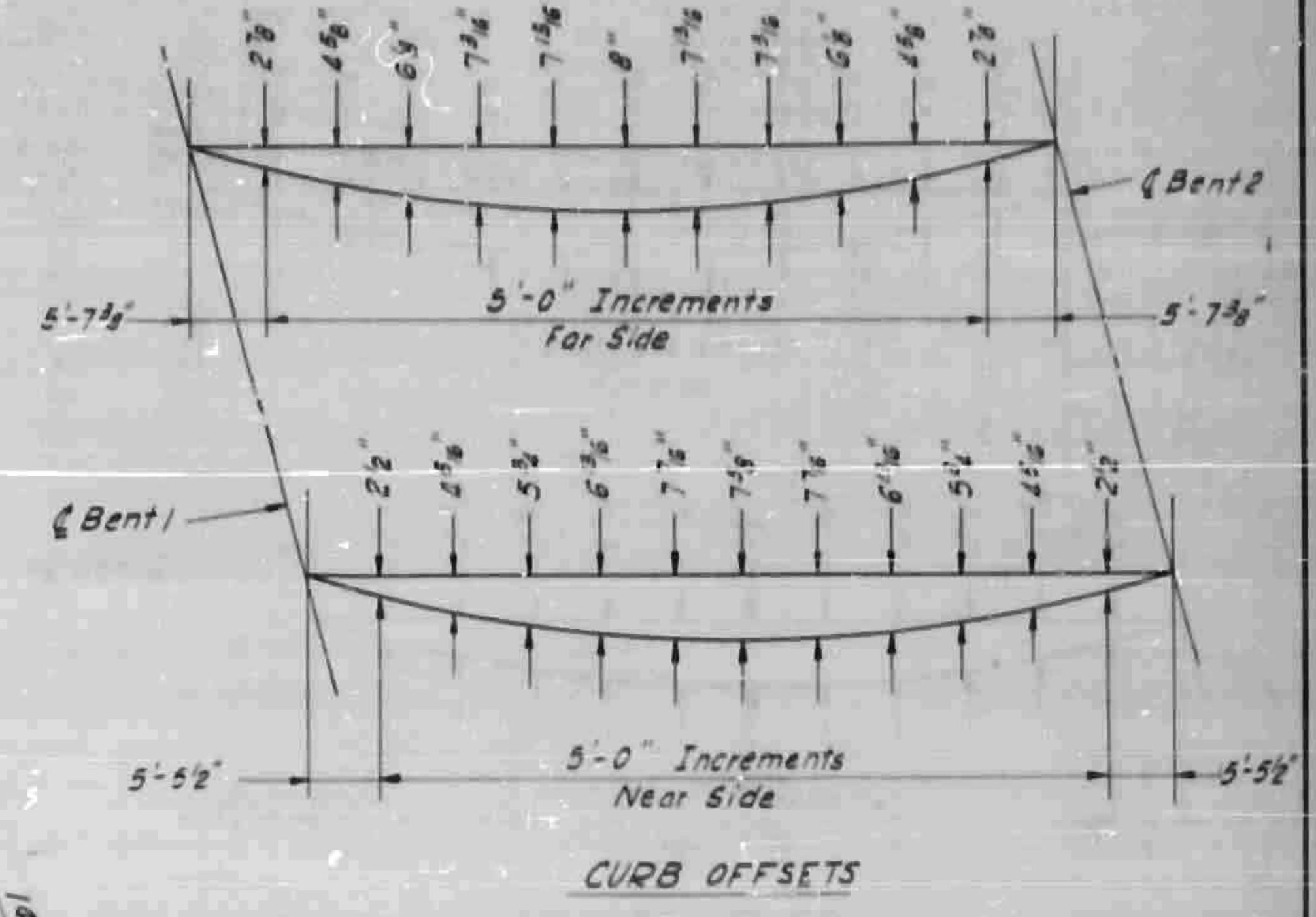
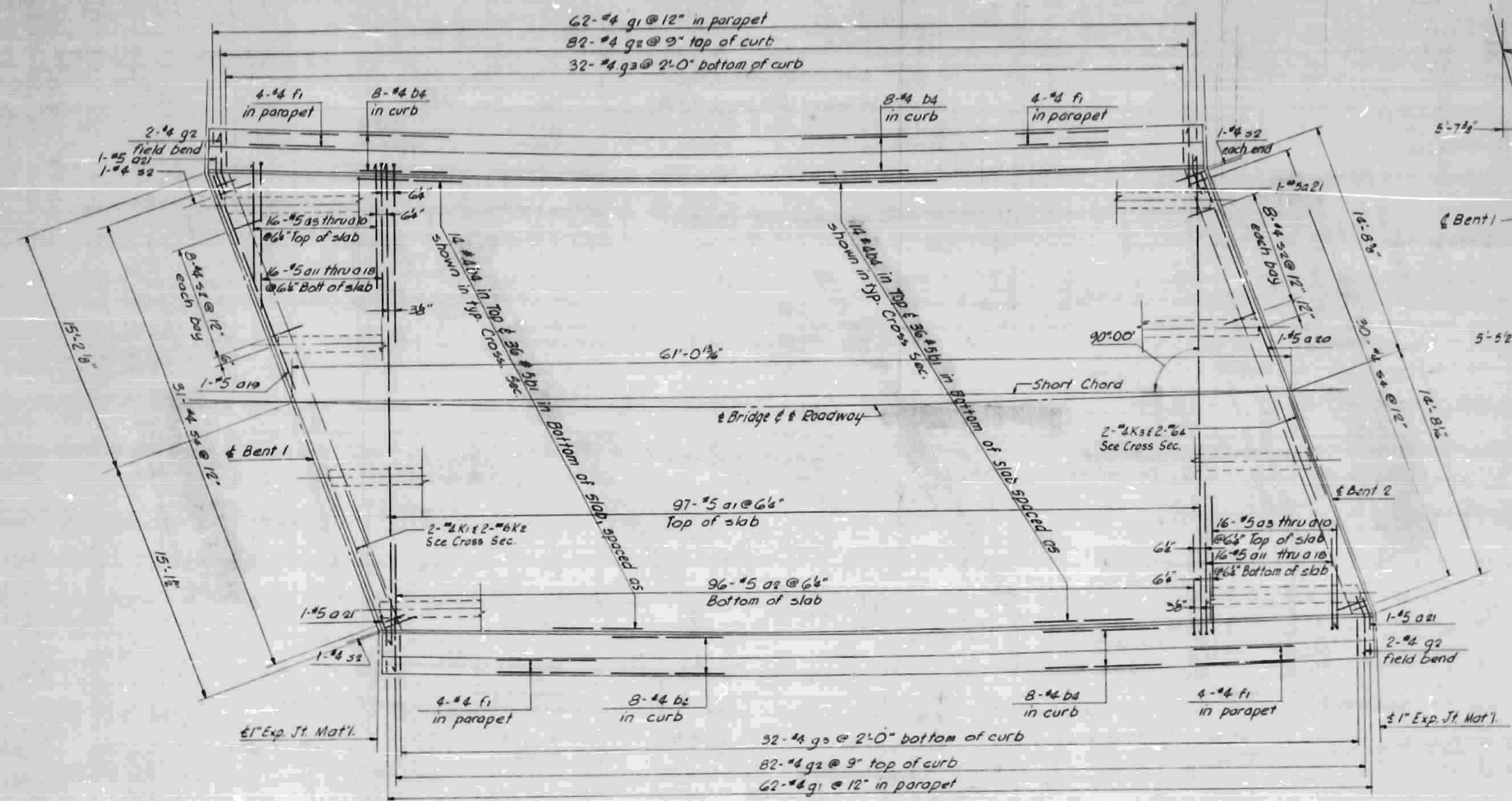
PROJECT NO. B19002  
 HENDERSON-BUNCOMB COUNTY  
 STATION 1451+39 L  
 10+00Y

DATE	BY	REVISION

STATE OF NORTH CAROLINA  
 STATE HIGHWAY COMMISSION

SUPERSTRUCTURE  
 SPAN A

FED. ROAD DIST. NO.	STATE	PROJECT NO.
3	N. C.	3100
FED. AID PROJ. 1-26-110		

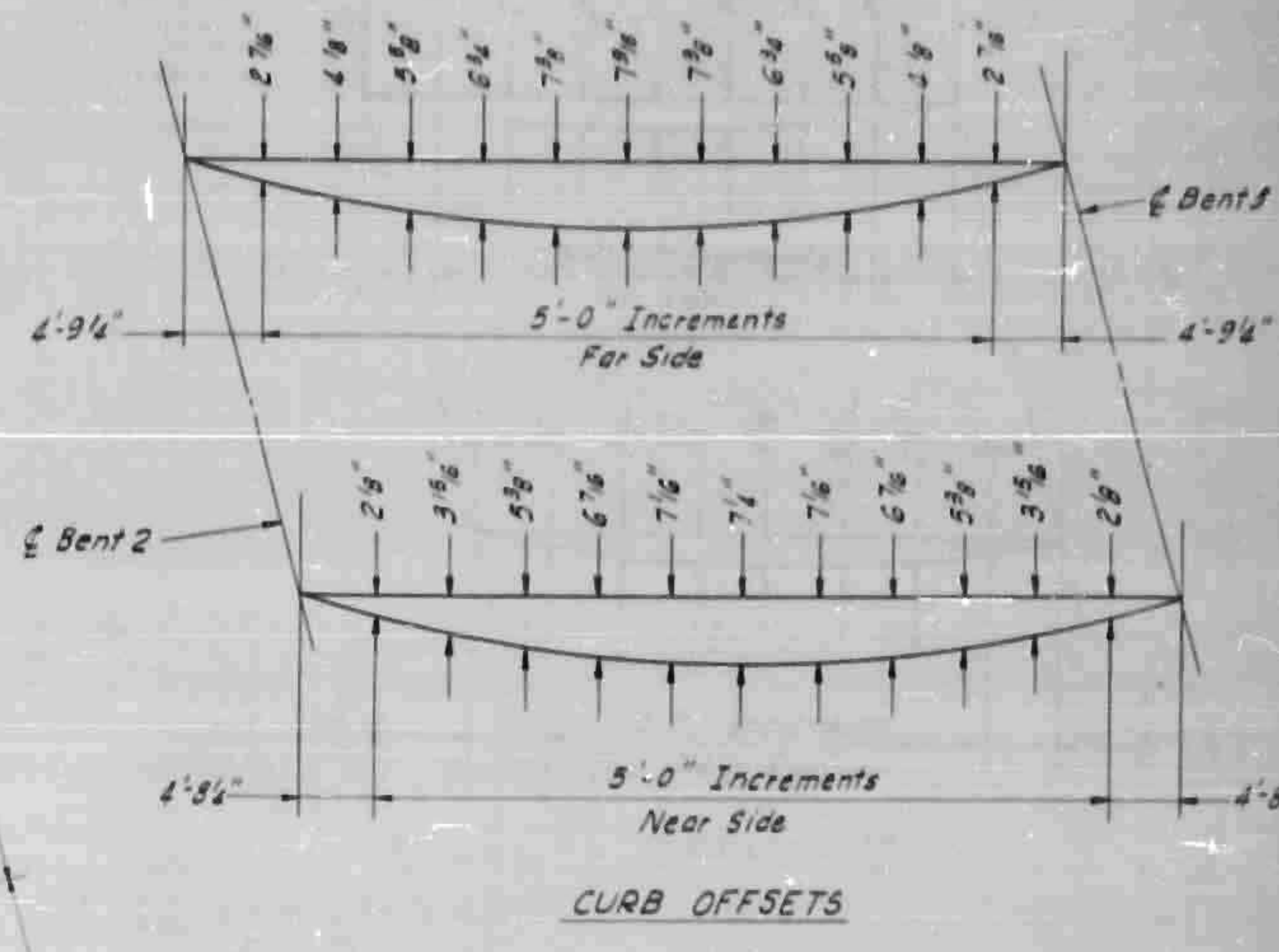
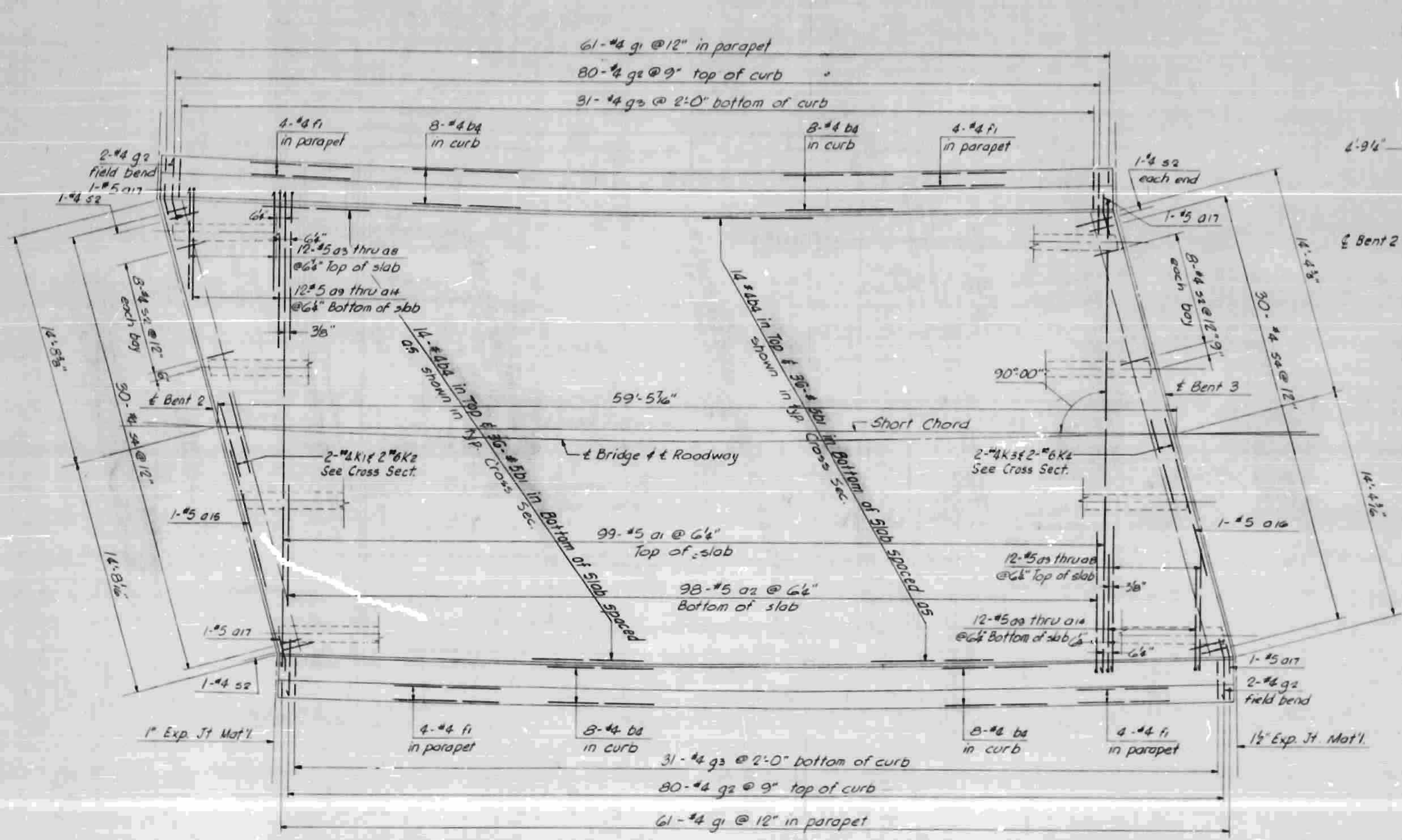


PLAN

PROJECT NO. 8.19002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451+39L  
10-00 43

STATE OF NORTH CAROLINA STATE HIGHWAY COMMISSION RALEIGH	
SUPERSTRUCTURE SPAN B	
DATE	BY
DATE	BY
DATE	BY
DATE	BY
DATE	BY
DATE	BY

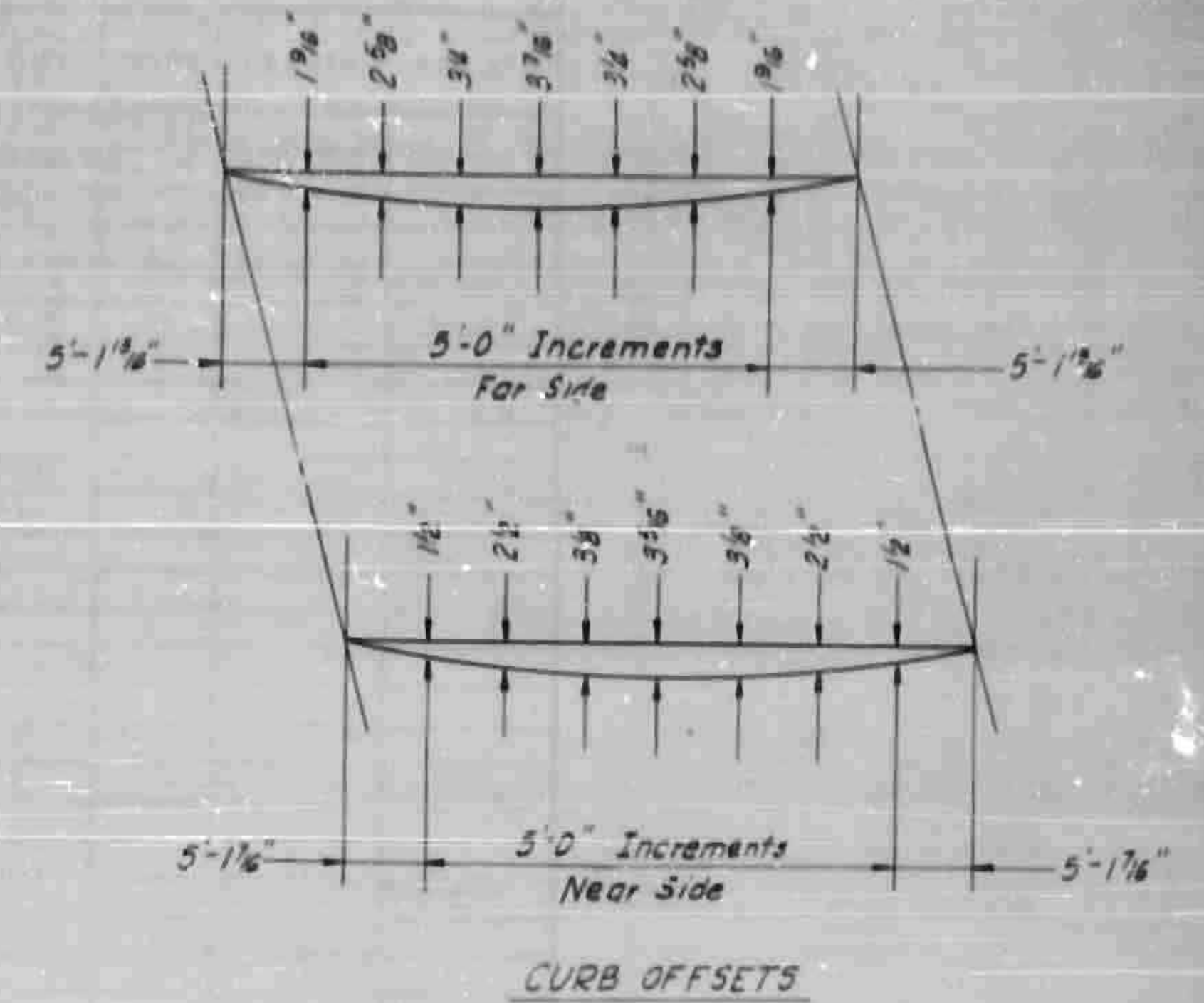
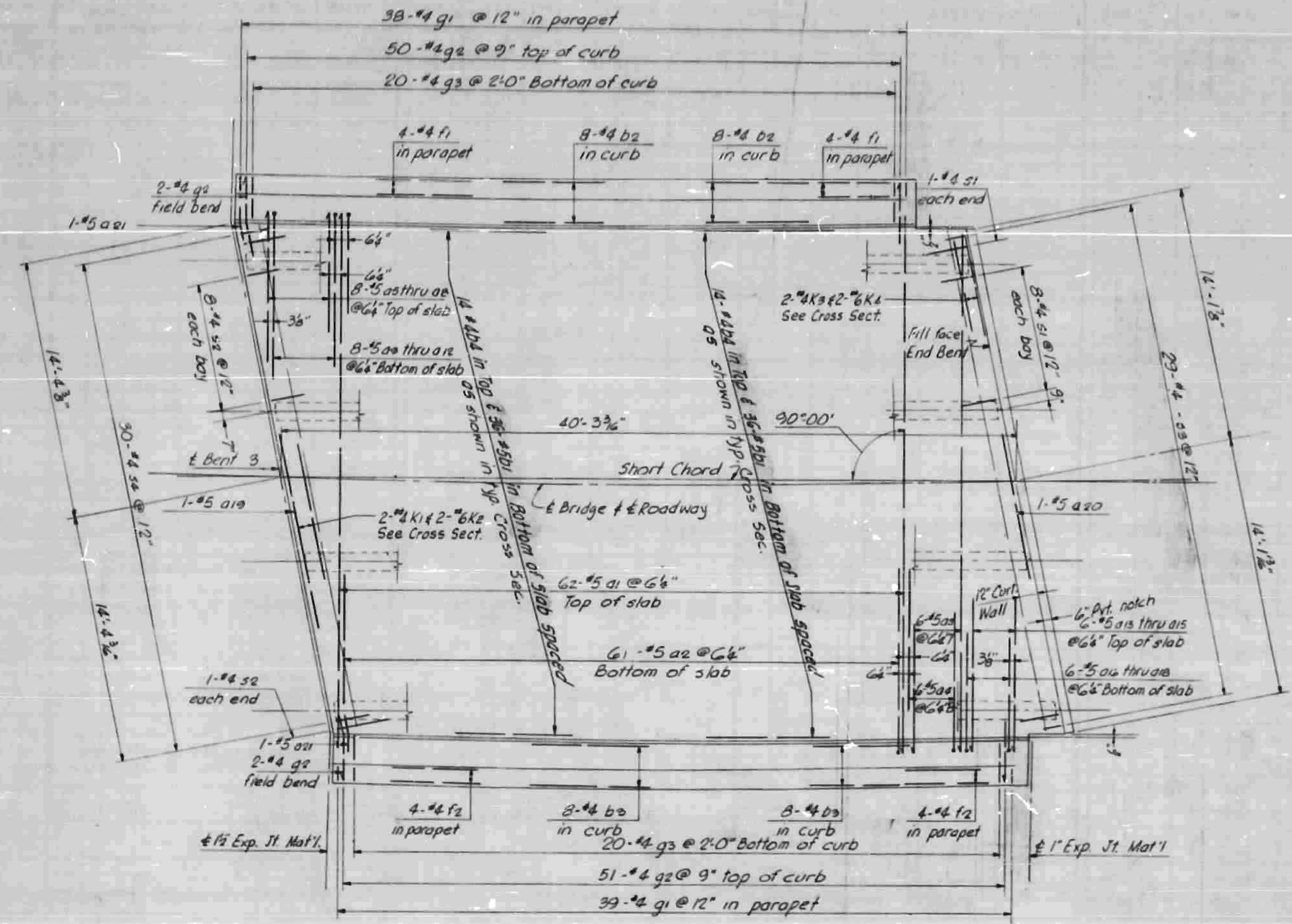
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PLAN

PROJECT NO. 819002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451+39L  
 10+00Y<sup>3</sup>

REVISIONS	DATE	BY	CHKD.	DATE	BY	CHKD.
STATE OF NORTH CAROLINA STATE HIGHWAY COMMISSION RALEIGH						
SUPERSTRUCTURE SPAN C						
SHEET 23						DATE
DRAWN BY						DATE



PLAN

PROJECT NO. 819002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451 + 39L  
 10.00'

STATE OF NORTH CAROLINA	
STATE HIGHWAY COMMISSION	
RALEIGH	
SUPERSTRUCTURE	
SPAN D	
REVISION	DATE

**BILL OF MATERIALS — SPAN B**

BAR	NO. BARS	SIZE	TYPE	LENGTH	WEIGHT
a1	97	5	2	30-7	3,074
a2	96	3	3	31-9	3,179
a3	4	1	1	7-1	30
a4	4	1	1	9-11	41
a5	4	1	1	12-9	53
a6	4	1	1	15-7	65
a7	4	1	1	18-5	77
a8	4	1	1	21-3	89
a9	4	1	1	24-2	101
a10	4	1	1	27-1	113
a11	4	4	4	8-4	35
a12	4	4	4	11-2	47
a13	4	4	4	14-0	58
a14	4	4	4	16-10	70
a15	4	4	4	19-8	82
a16	4	4	4	22-6	94
a17	4	4	4	25-4	106
a18	4	4	4	28-2	118
a19	1	Str.	Str.	29-10	31
a20	1	Str.	Str.	28-11	30
a21	4	5	field bend	2-7	11
b1	72	5	Str.	31-1	2,334
b4	60	4	Str.	30-10	1,236
f1	16	4	Str.	30-10	330
g1	124	4	6	5-7	462
g2	164	4	5	5-9	334
g3	64	4	Str.	2-4	100
k1	2	4	Str.	29-10	40
k2	2	6	Str.	29-10	90
k3	2	4	Str.	28-11	39
k4	2	6	Str.	28-11	87
s2	52	4	6	6-5	223
s4	61	4	4	3-1	125

Reinforcing Steel lbs 13184  
 Class "A" Concrete C.Y. 60.4

**BILL OF MATERIALS — SPAN C**

BAR	NO. BARS	SIZE	TYPE	LENGTH	WEIGHT
a1	99	5	2	30-7	3,158
a2	98	3	3	31-9	3,245
a3	4	1	1	7-7	32
a4	4	1	1	11-5	48
a5	4	1	1	15-3	64
a6	4	1	1	19-1	80
a7	4	1	1	22-11	96
a8	4	1	1	26-7	111
a9	4	4	4	9-1	38
a10	4	4	4	12-11	54
a11	4	4	4	16-9	70
a12	4	4	4	20-7	86
a13	4	4	4	24-5	102
a14	4	4	4	28-3	118
a15	1	Str.	Str.	28-11	30
a16	1	Str.	Str.	28-3	29
a17	4	5	field bend	2-7	11
b1	72	5	Str.	30-5	2,284
b4	60	4	Str.	30-2	1,209
f1	16	4	Str.	30-2	322
g1	122	4	6	5-7	435
g2	160	4	5	5-5	579
g3	62	4	Str.	2-4	96
k1	2	4	Str.	28-11	39
k2	2	6	"	28-11	87
k3	2	4	"	28-3	39
k4	2	6	"	28-3	85
s2	52	4	6	6-5	233
s4	60	4	4	3-1	123

Reinforcing Steel lbs 12,912  
 Class "A" Concrete C.Y. 58.9

**BILL OF MATERIALS — SPAN D**

BAR	NO. BARS	SIZE	TYPE	LENGTH	WEIGHT
a1	2	5	2	30-7	1,977
a2	1	3	3	31-9	2,020
a3	6	1	1	29-1	182
a4	6	4	4	29-8	186
a5	2	1	1	9-5	20
a6	2	1	1	14-5	30
a7	2	1	1	19-5	40
a8	2	1	1	24-6	51
a9	2	4	4	11-1	23
a10	2	4	4	16-5	34
a11	2	4	4	21-5	45
a12	2	4	4	26-2	55
a13	2	1	1	12-0	25
a14	2	1	1	17-11	37
a15	2	1	1	23-10	50
a16	2	4	4	13-8	29
a17	2	4	4	19-7	41
a18	2	4	4	25-8	54
a19	1	Str.	Str.	28-5	30
a20	1	Str.	Str.	28-0	29
a21	2	5	field bend	2-7	5
b1	72	5	Str.	21-10	1,640
b2	16	4	Str.	18-11	202
b3	16	4	Str.	19-5	208
b4	28	4	Str.	21-7	404
f1	8	4	Str.	18-11	101
f2	8	4	Str.	19-5	104
g1	77	4	6	5-7	287
g2	101	4	5	5-5	366
g3	40	4	Str.	2-3	62
k1	2	4	Str.	28-5	38
k2	2	6	"	28-5	85
k3	4	4	"	28-0	75
k4	4	6	Str.	28-0	84
s1	26	4	6	8-7	149
s2	26	1	6	6-5	112
s3	29	1	4	3-5	66
s4	30	4	4	3-1	62

Reinforcing Steel lbs. 9008  
 Class "A" Concrete C.Y. 42.6

Note:  
 For Span A and for Bent Bar Types and dimensions see Superstructure Cross Sections sheet.

PROJECT NO. 819002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451+39L  
 10+00 Y<sup>9</sup>

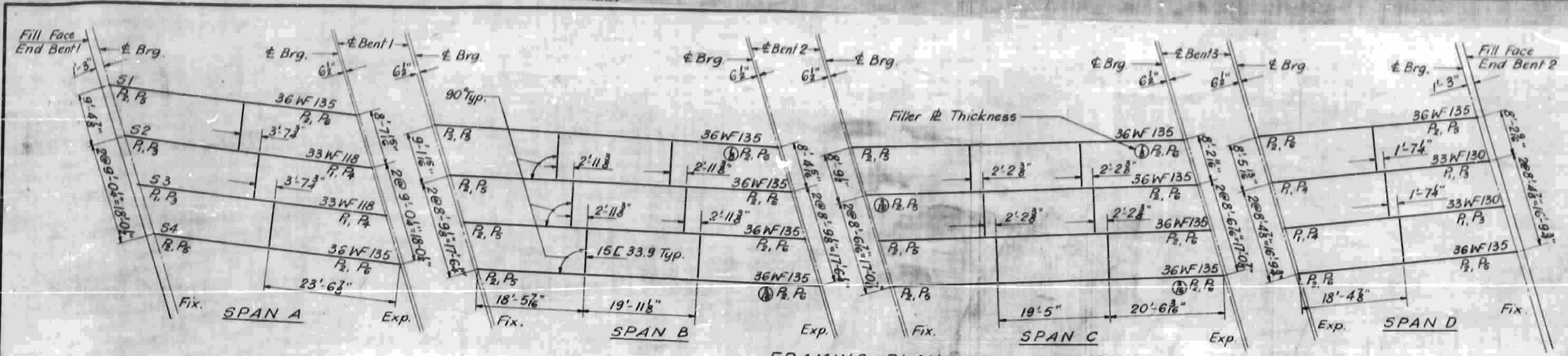
STATE OF NORTH CAROLINA  
 STATE HIGHWAY COMMISSION  
 Raleigh

SUPERSTRUCTURE  
 BAR LISTS

DATE	
BY	
CHECKED	
APPROVED	

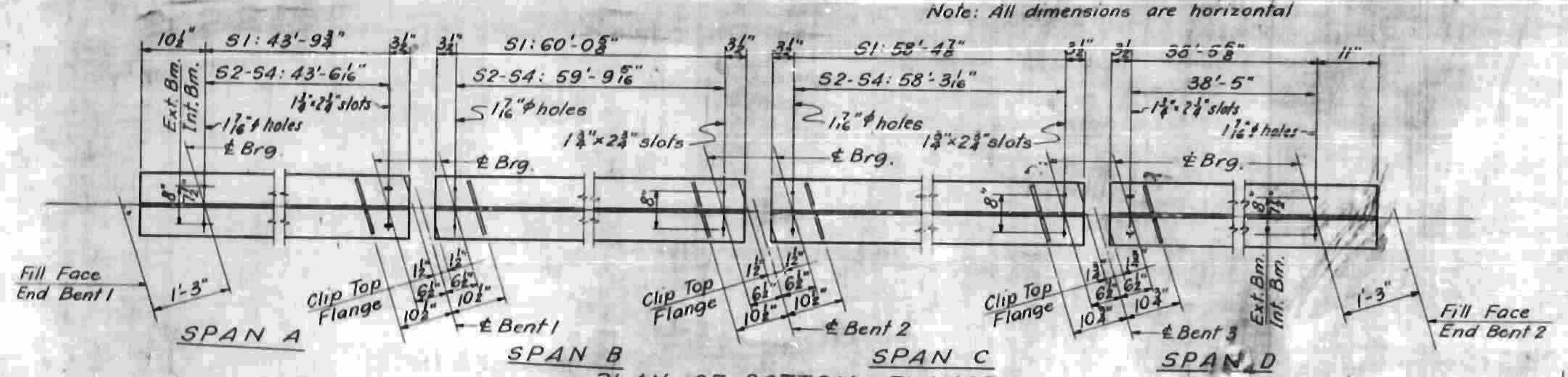
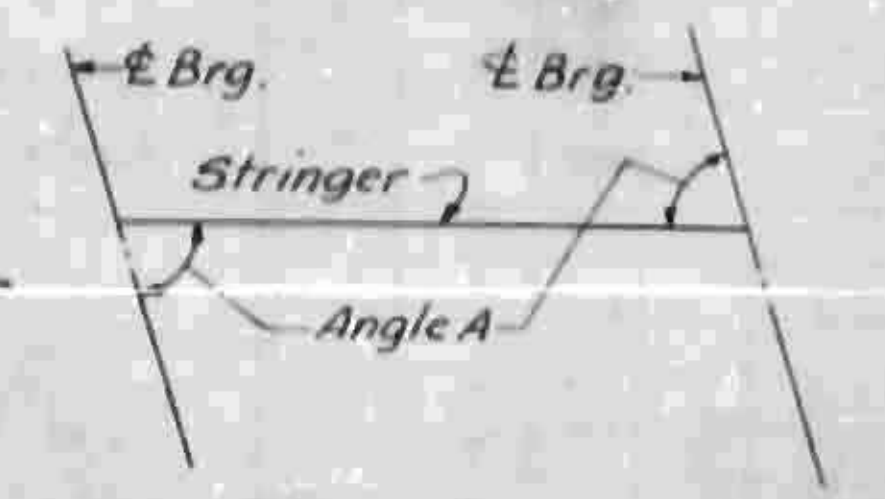
372



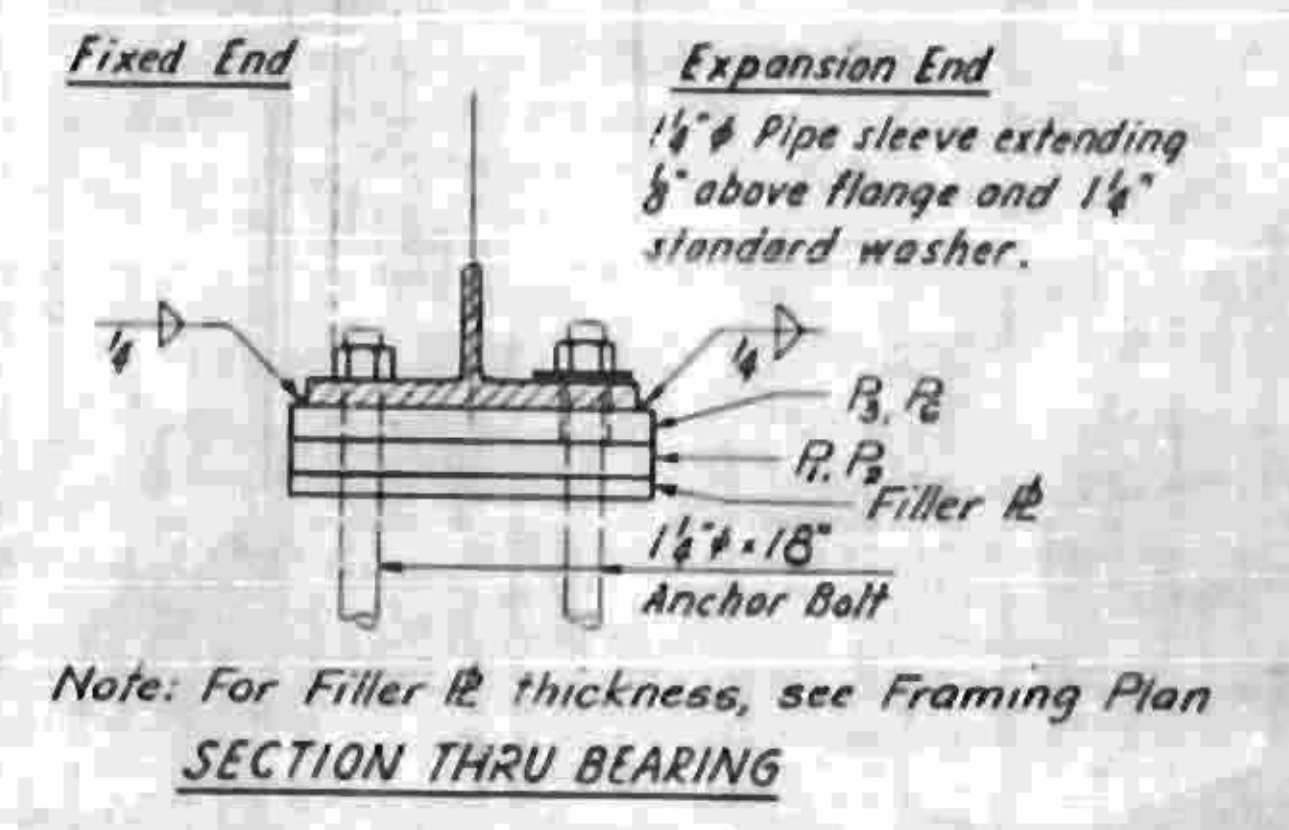


**FRAMING PLAN**  
Note: All dimensions are horizontal

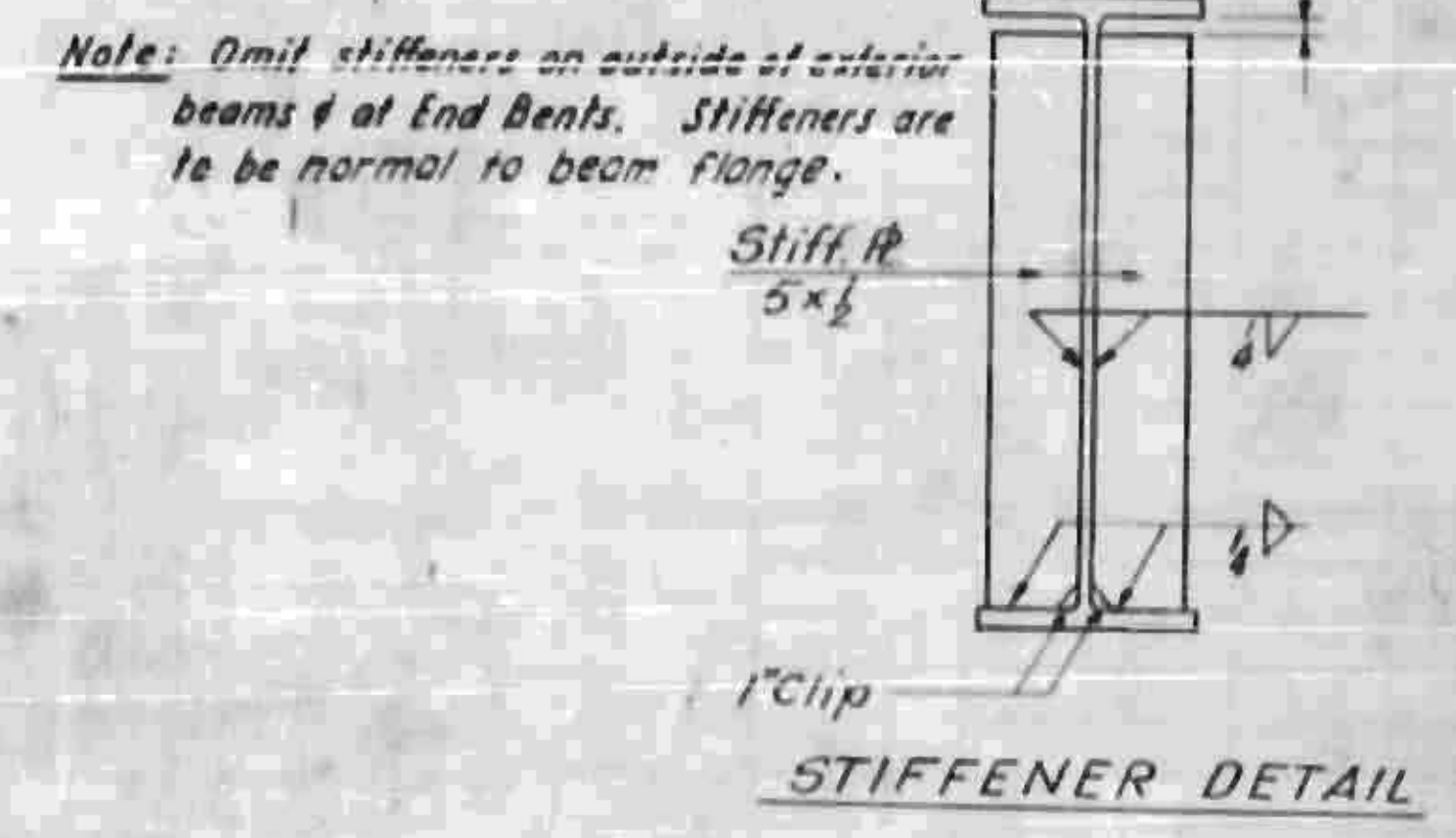
ANGLE "A"				
	SPAN A	SPAN B	SPAN C	SPAN D
S1	65°15'58"	69°37'12"	74°32'00"	78°35'44"
S2-S4	66°09'27"	70°20'24"	75°04'12"	78°59'12"



**PLAN OF BOTTOM FLANGE**  
Note: All dimensions are horizontal

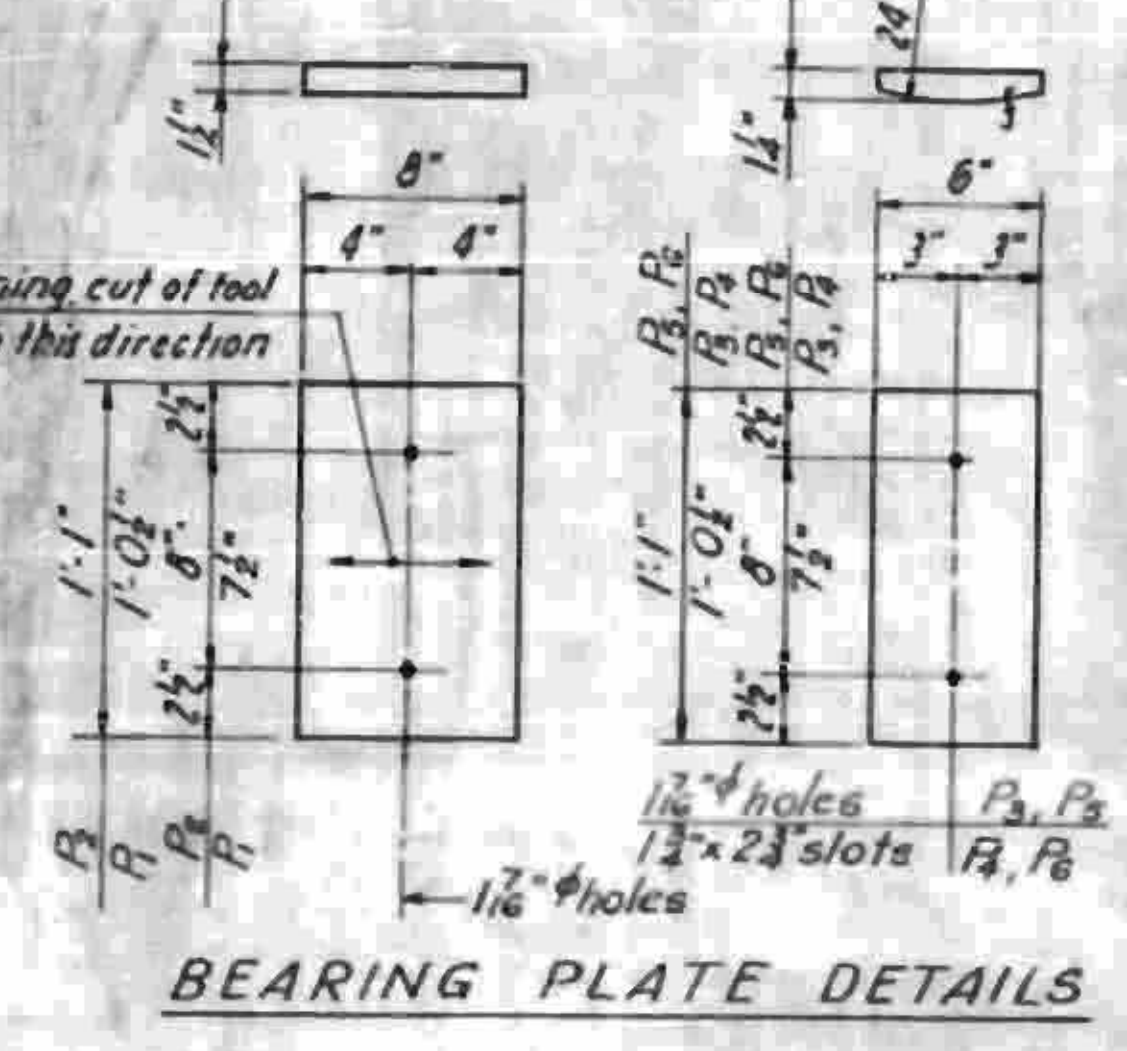


**SECTION THRU BEARING**  
Note: For Filler R thickness, see Framing Plan



Note: Omit stiffeners on outside of exterior beams at End Bents. Stiffeners are to be normal to beam flange.

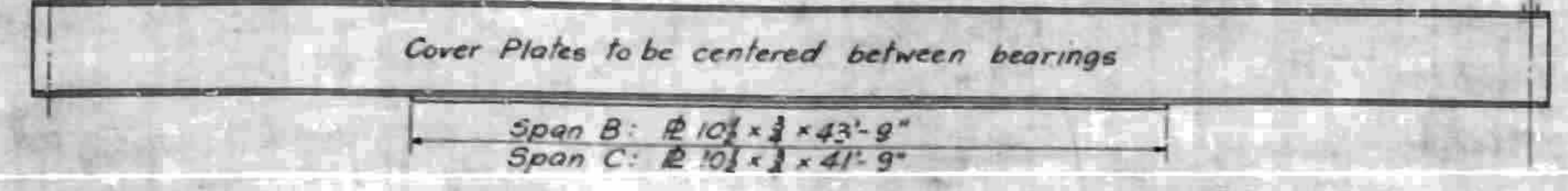
SPAN	Beam	Span A				Span B				Span C				No. Shear Studs
		Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	
A	S1	4 1/2"	7@6 3/4"-3'11 1/2"	7@8'-4'-8"	5@9 1/2"-3'11 1/2"	5@11 1/2"-4'-9 1/2"	8@12 1/2"-8'-4"	5@11 1/2"-4'-9 1/2"	5@9 1/2"-3'11 1/2"	7@8'-4'-8"	7@6'-3'-11 1/2"	4 1/2"	177	
	S2-S3	5"	10@5'-4'-2"	8@6'-4'-0"	7@7'-4'-1"	6@9'-4'-6"	12@9 1/2"-9'-6"	6@9'-4'-6"	7@7'-4'-1"	8@6'-4'-0"	10@5'-4'-2"	3 1/2"	231	
	S4	4 1/2"	7@6 1/2"-3'-9 1/2"	7@8'-4'-8"	5@9 1/2"-3'11 1/2"	5@11 1/2"-4'-9 1/2"	8@12 1/2"-8'-4"	5@11 1/2"-4'-9 1/2"	5@9 1/2"-3'11 1/2"	7@8'-4'-8"	7@6'-3'-9 1/2"	4 1/2"	177	
B	S1	2 1/2"	12@6'-6'-0"	10@7'-5'-10"	8@9'-6'-0"	7@10'-5'-11 1/2"	12@12'-12'-0"	7@10'-5'-11 1/2"	8@9'-6'-0"	10@7'-5'-10"	12@6'-6'-0"	2 1/2"	267	
	S2-S3	4 1/2"	13@5'-5'-3 1/2"	12@6'-6'-0"	9@8'-6'-0"	8@9'-6'-0"	14@10'-11'-8"	8@9'-6'-0"	9@8'-6'-0"	12@6'-6'-0"	13@5'-5'-3 1/2"	4 1/2"	303	
	S4	5 1/2"	11@6'-5'-6"	10@7'-5'-10"	8@9'-6'-0"	7@10'-5'-11 1/2"	12@12'-12'-0"	7@10'-5'-11 1/2"	8@9'-6'-0"	10@7'-5'-10"	11@6'-5'-6"	5 1/2"	267	
C	S1	4 1/2"	11@6'-5'-3 1/2"	10@7'-5'-10"	8@9'-6'-0"	6@10'-5'-3 1/2"	12@12'-12'-0"	6@10'-5'-3 1/2"	8@9'-6'-0"	10@7'-5'-10"	11@6'-5'-3 1/2"	4 1/2"	255	
	S2-S3	3 1/2"	12@5'-5'-4 1/2"	12@6'-6'-0"	9@7'-5'-7 1/2"	8@9'-6'-0"	14@10'-11'-8"	8@9'-6'-0"	9@7'-5'-7 1/2"	12@6'-6'-0"	12@5'-5'-4 1/2"	3 1/2"	297	
	S4	3 1/2"	11@6'-5'-3 1/2"	10@7'-5'-10"	8@9'-6'-0"	6@10'-5'-3 1/2"	12@12'-12'-0"	6@10'-5'-3 1/2"	8@9'-6'-0"	10@7'-5'-10"	11@6'-5'-3 1/2"	3 1/2"	254	
D	S1						58'-4 1/2"							
	S2-S4						58'-3 1/2"							



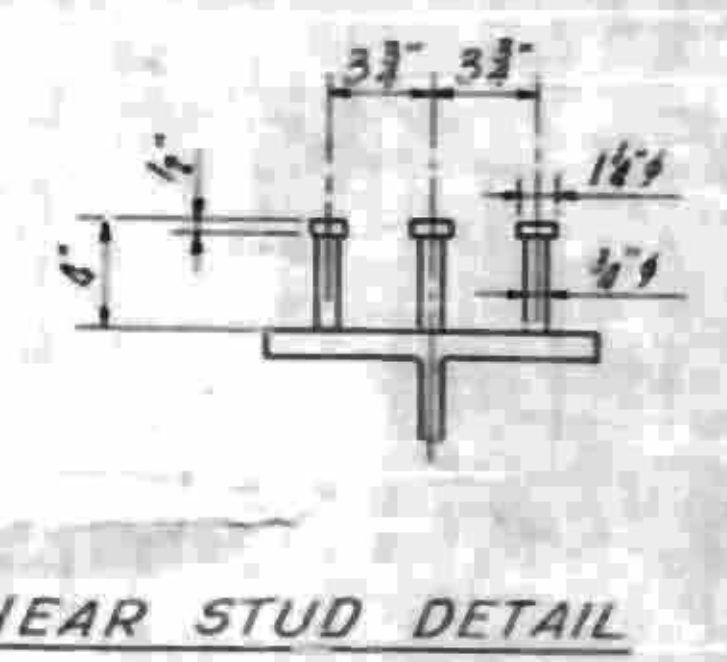
**BEARING PLATE DETAILS**

Note: Ordinate due to Super-elevation  
All beams and cover plates shall be of A36 or ASTM A373 grade structural steel.  
Stress in extreme fiber of structural steel = 18,000 psi  
See Standard Notes sheet for further requirements.

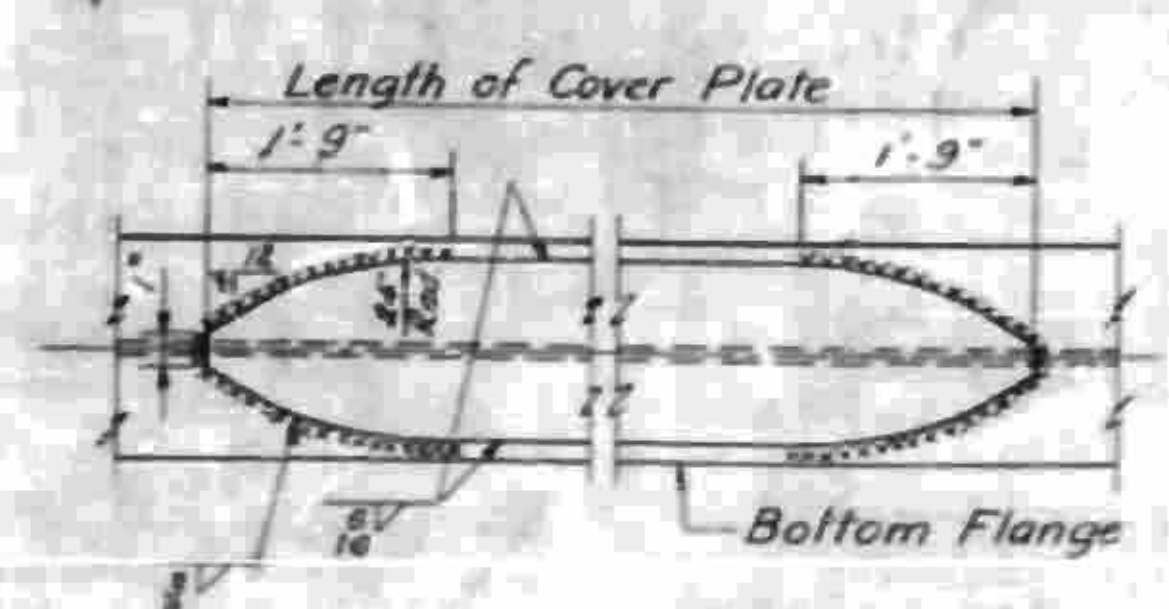
	DEFLECTION TABLE							
	SPAN "A"		SPAN "B"		SPAN "C"		SPAN "D"	
	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.	Ext. Bm.	Int. Bm.
Steel	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"
Concrete	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"
Total DL Defl.	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"
Vertical Curve	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"
Req'd Camber	0	0	0	0	0	0	0	0



**SHEAR STUD SPACING AND COVER PLATE LENGTH**  
Note: All dimensions are along beam grade



**SHEAR STUD DETAIL**

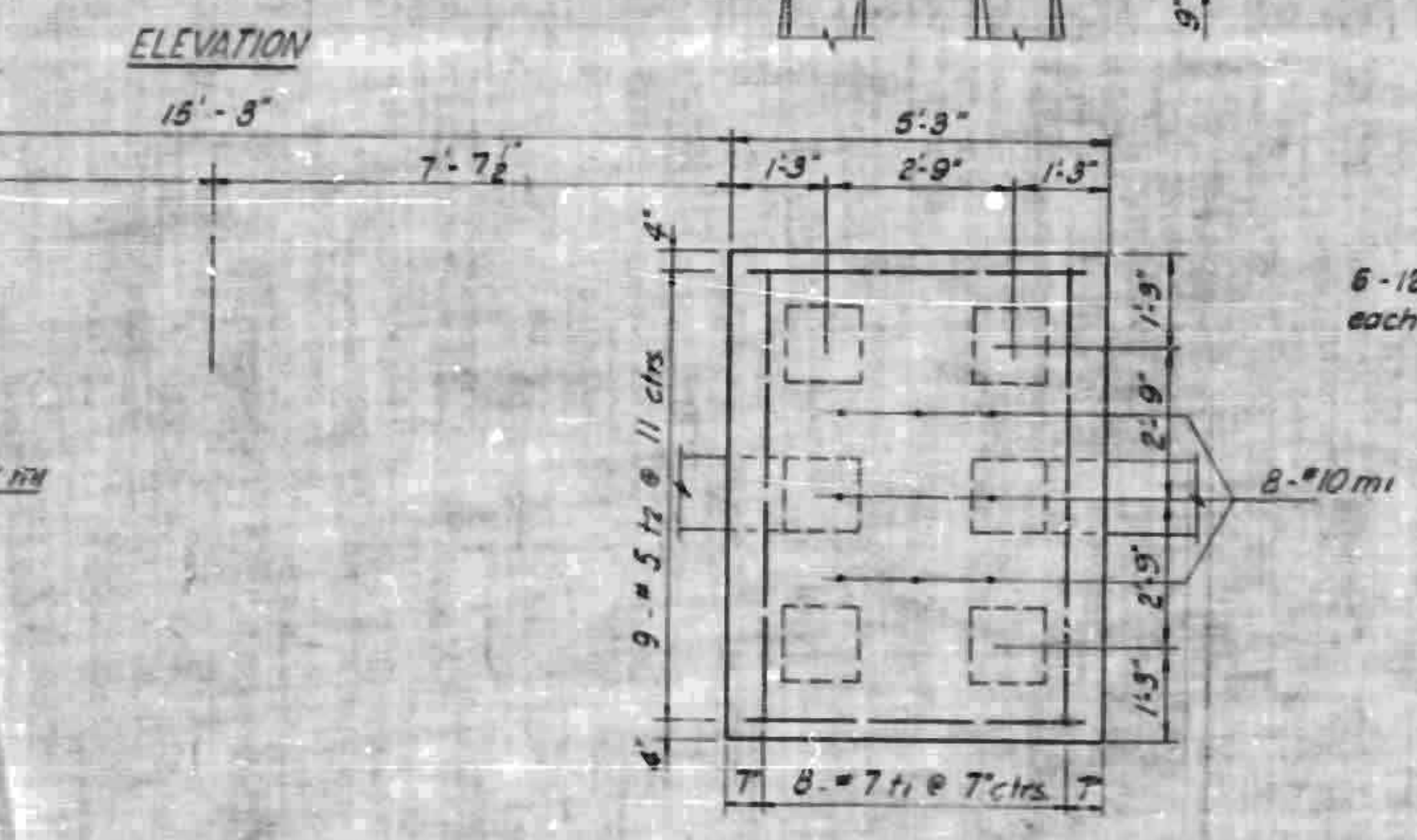
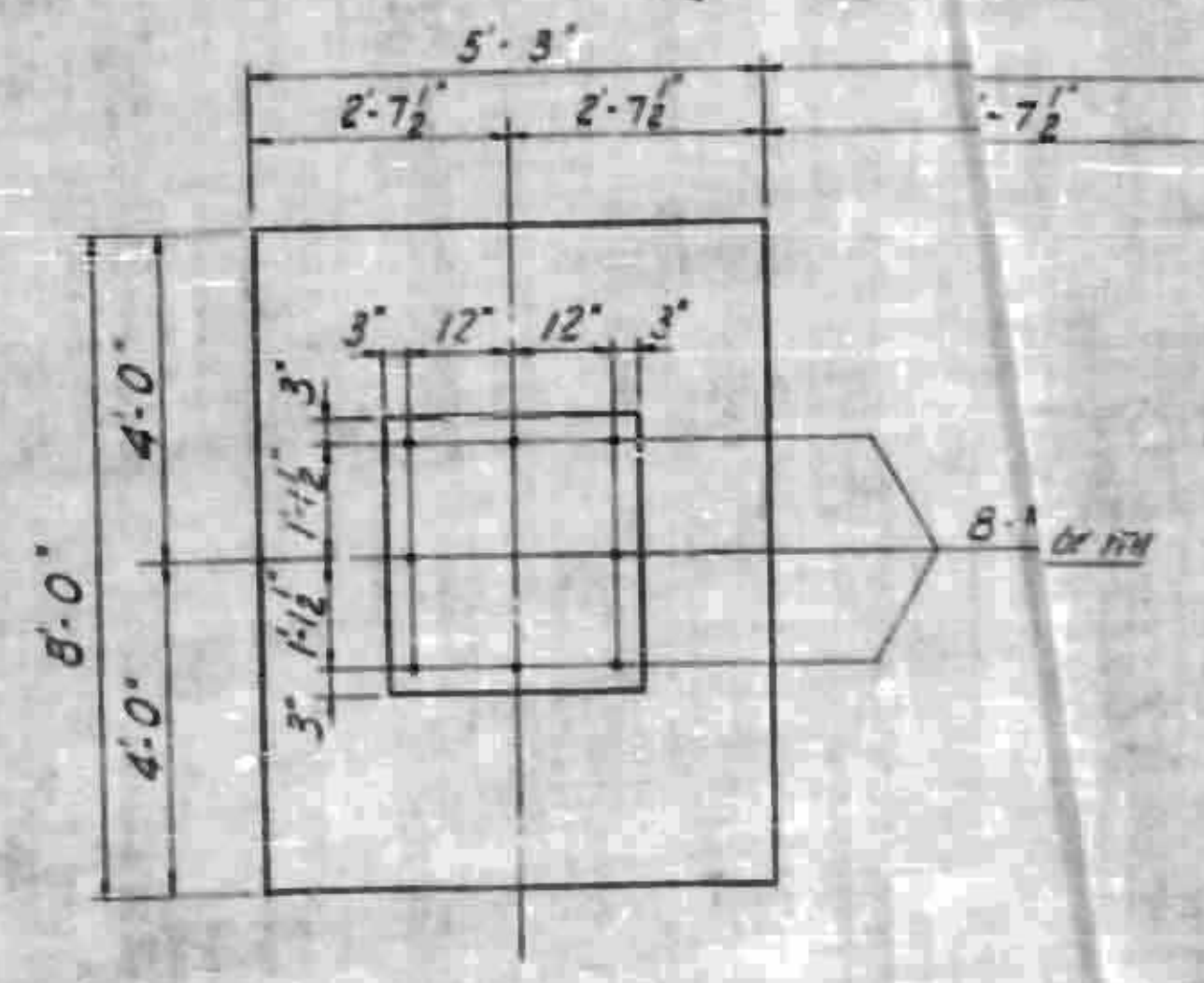
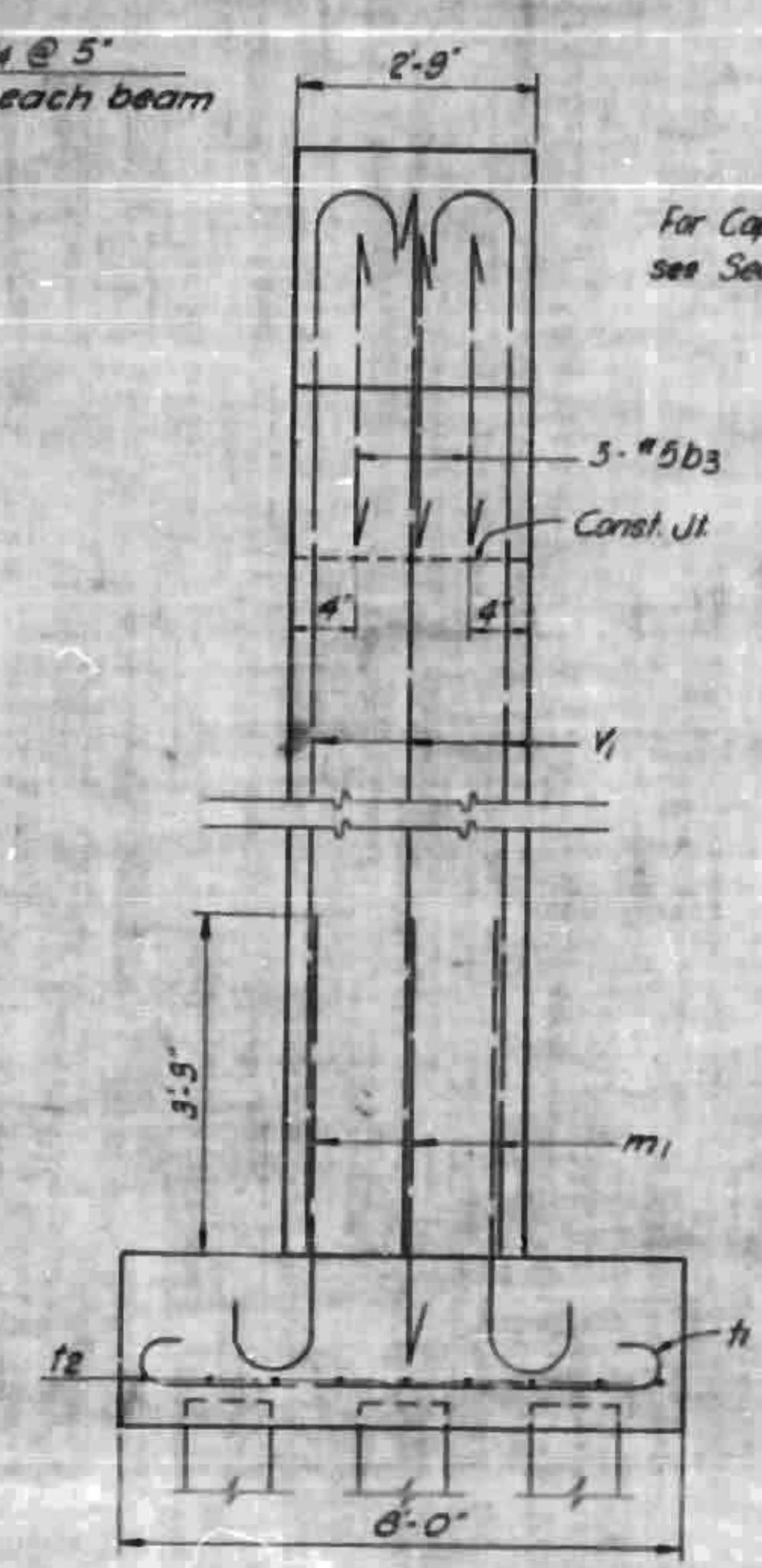
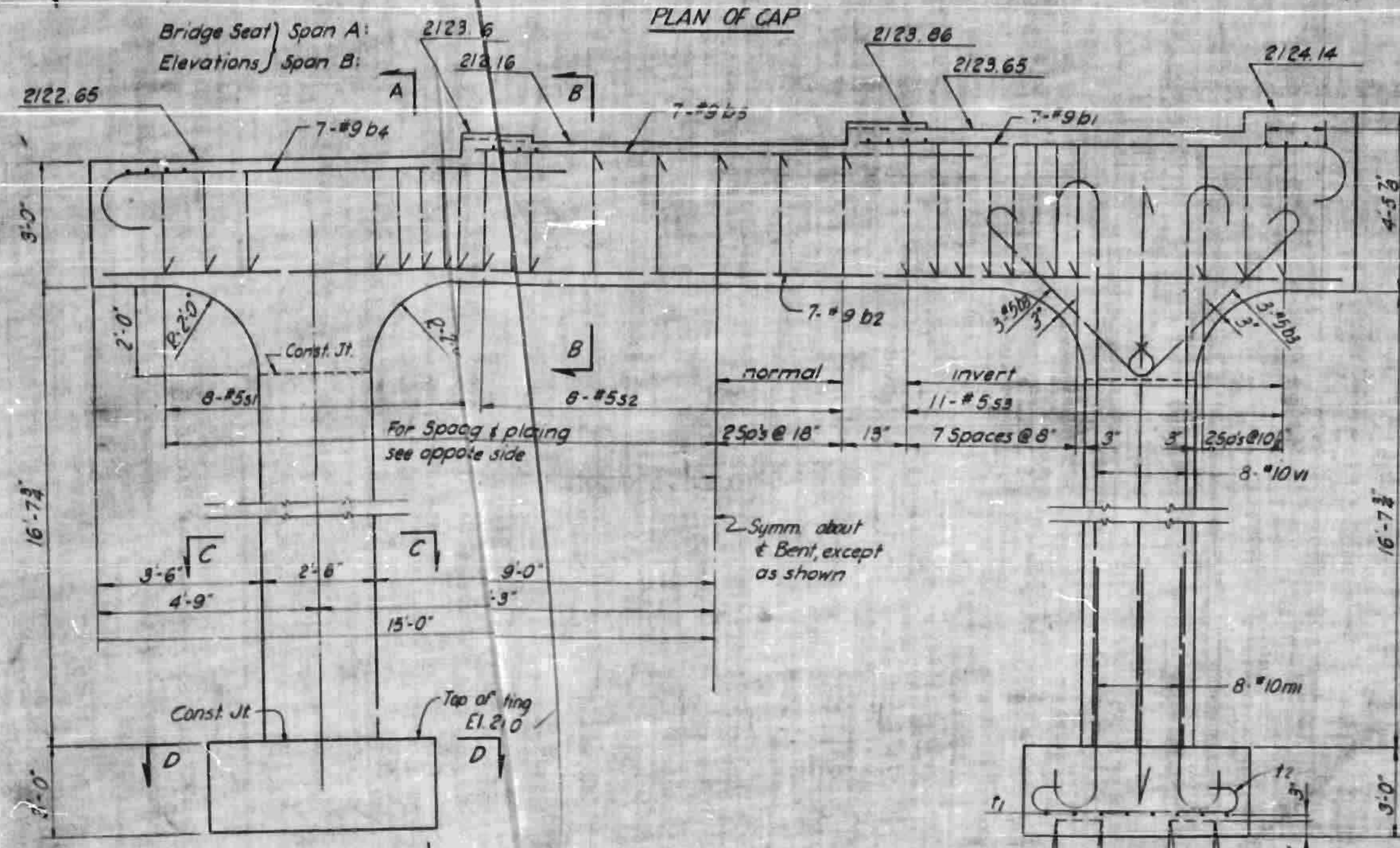
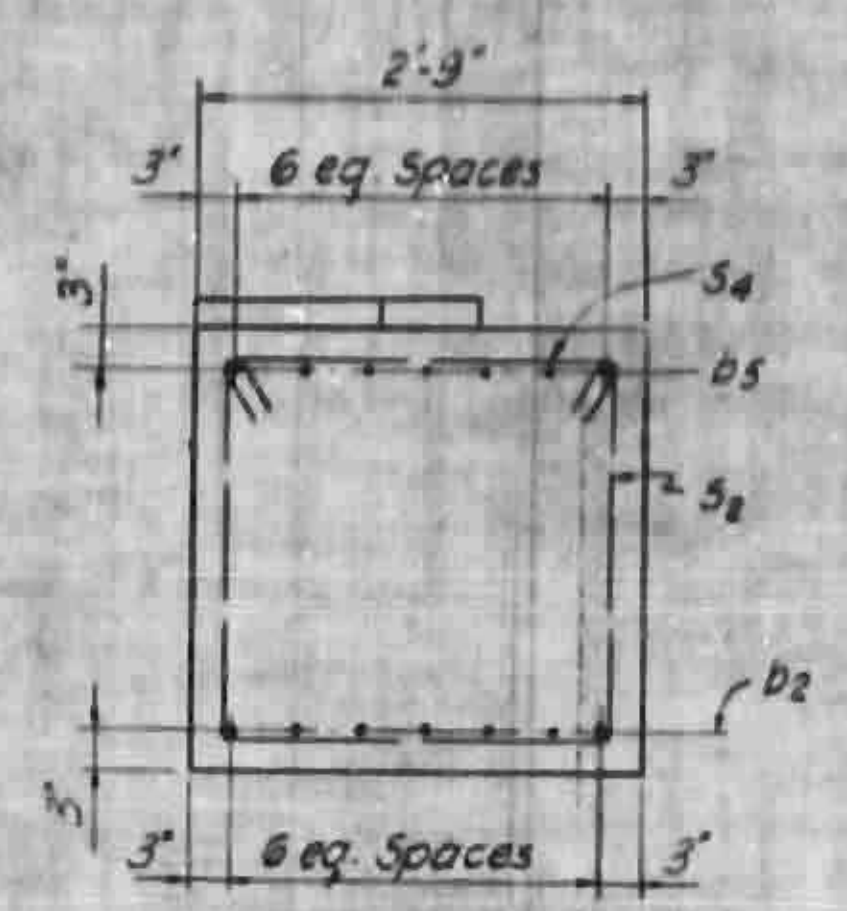
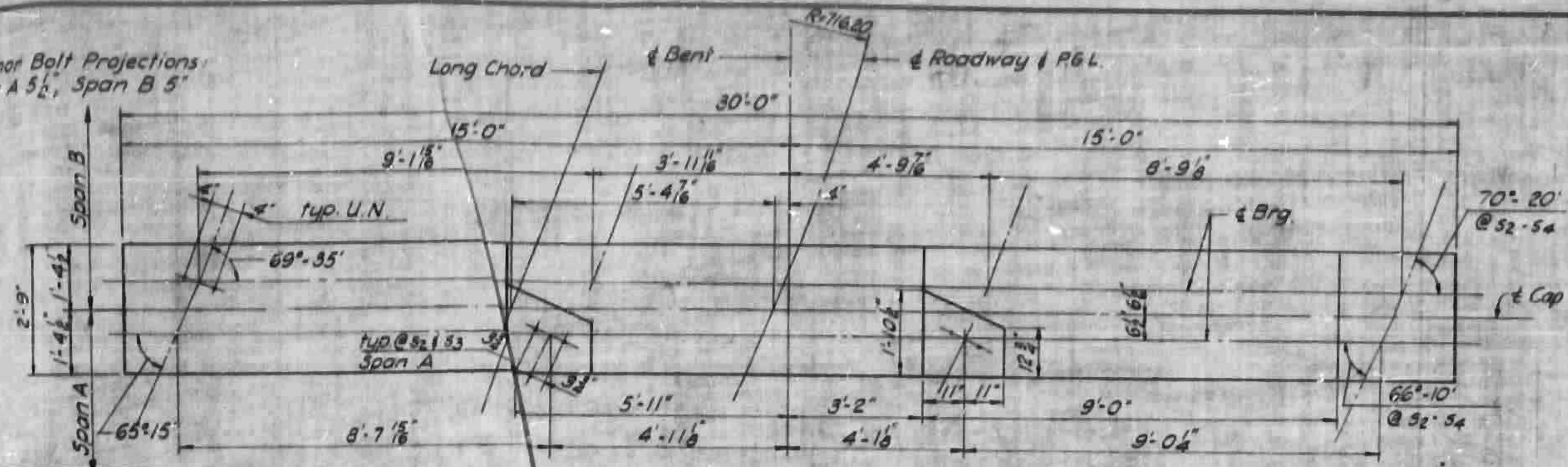


**COVER PLATE DETAIL**

PROJECT NO. 8.19002  
HENDERSON-BUNCOMBE COUNTY  
STATION 1451+39 L  
10+00 Y<sup>9</sup>

DATE	BY	REVISION	STATE OF NORTH CAROLINA STATE HIGHWAY COMMISSION RALEIGH
9-26-43	C.A.K.		STRUCTURAL STEEL

Anchor Bolt Projections  
Span A 5', Span B 5'



BAR DETAILS				BILL OF MATERIAL				
				BAR NO	SIZE	TYPE	LENGTH	WEIGHT
				b1	#9	2	12'-7"	299
				b2	#9	Str.	29'-6"	702
				b3	#5	1	6'-8"	83
				b4	#9	2	14'-1"	335
				b5	#9	Str.	12'-10"	305
				m1	#10	2	6'-8"	459
				s1	#5	4	8'-7"	72
				s2	#5	4	9'-7"	80
				s3	#5	4	10'-7"	121
				s4	#4	3	3'-2"	34
				t1	#7	1	9'-2"	300
				t2	#5	1	3'-11"	111
				vi	#10	2	20'-7"	1,417

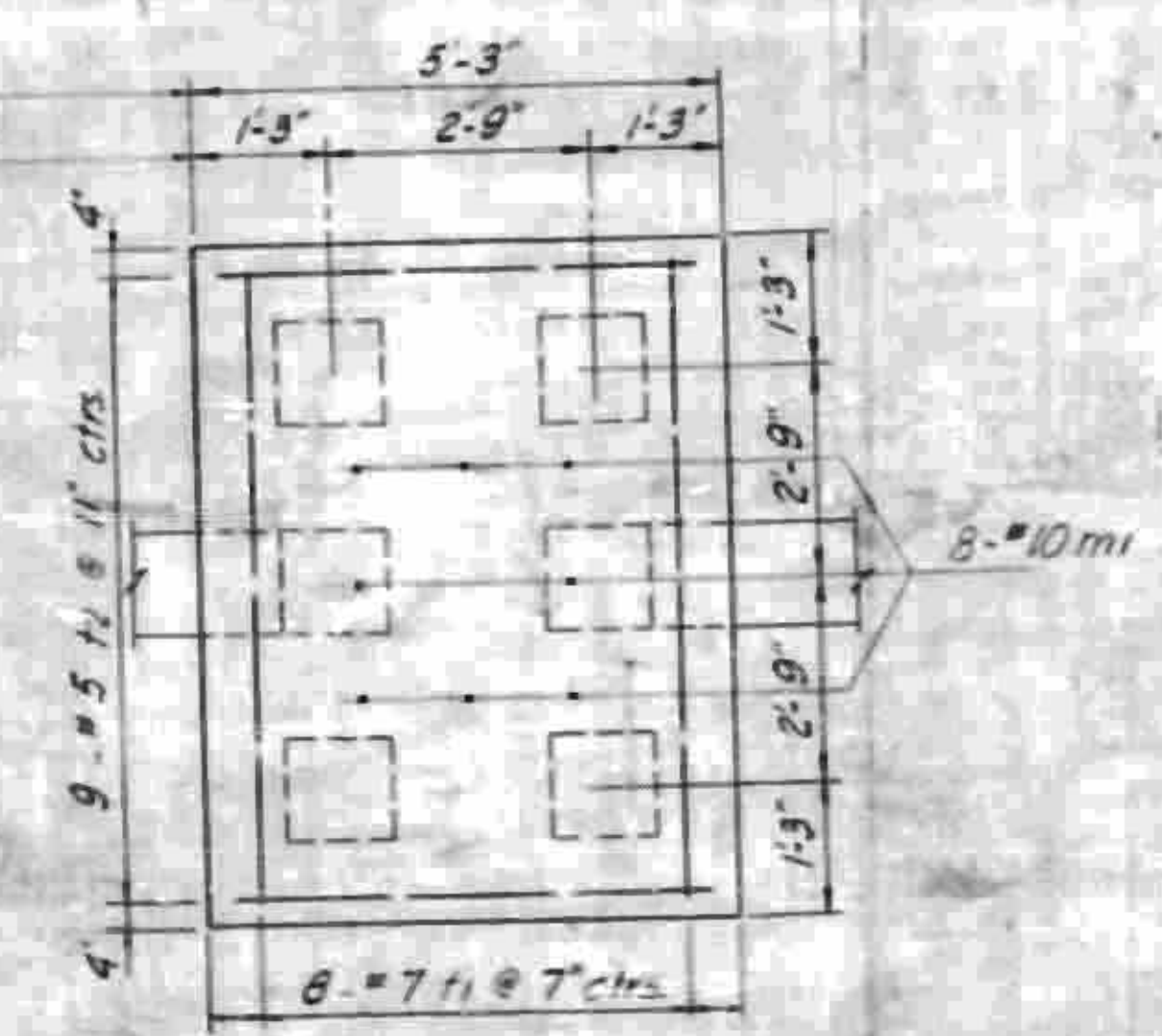
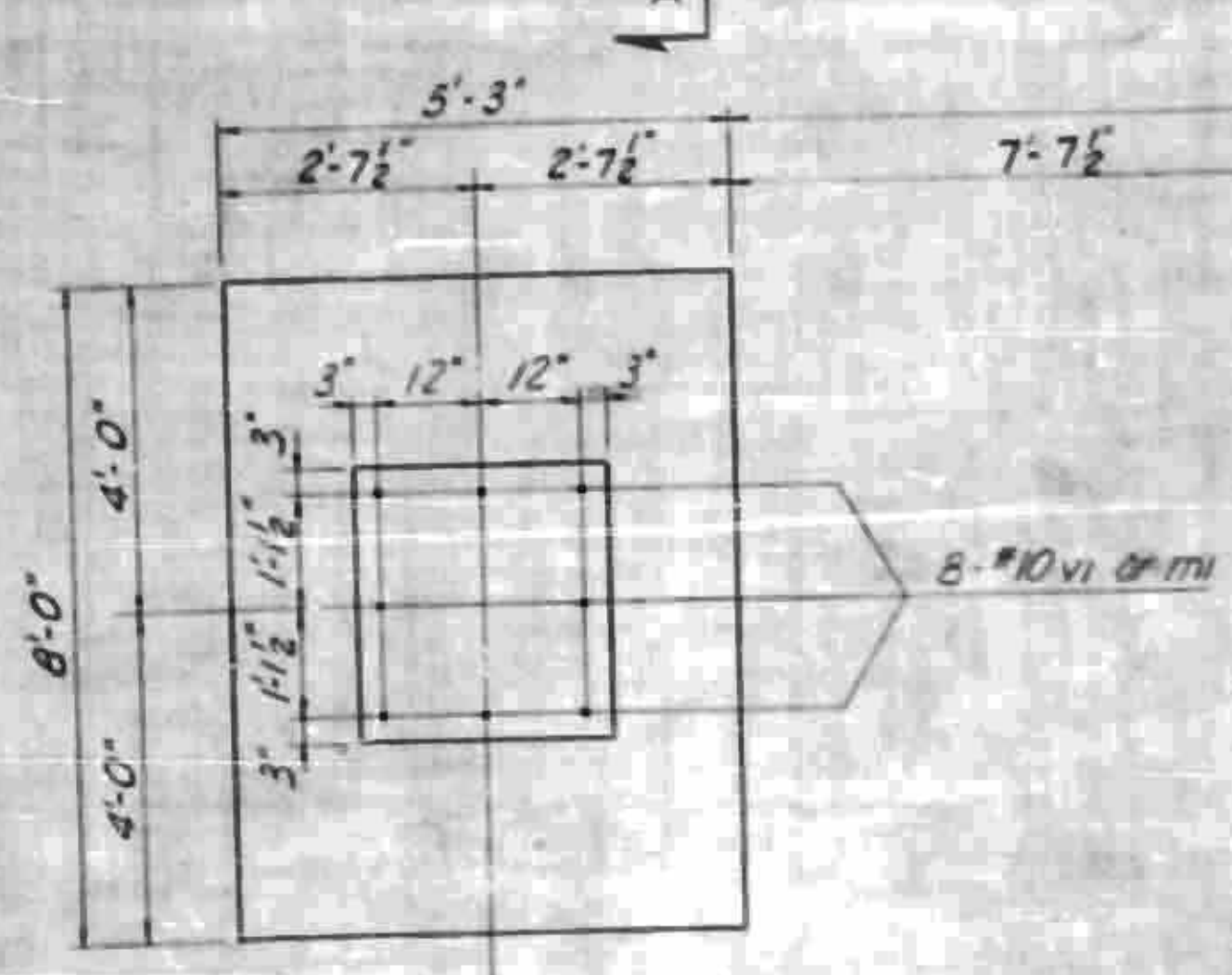
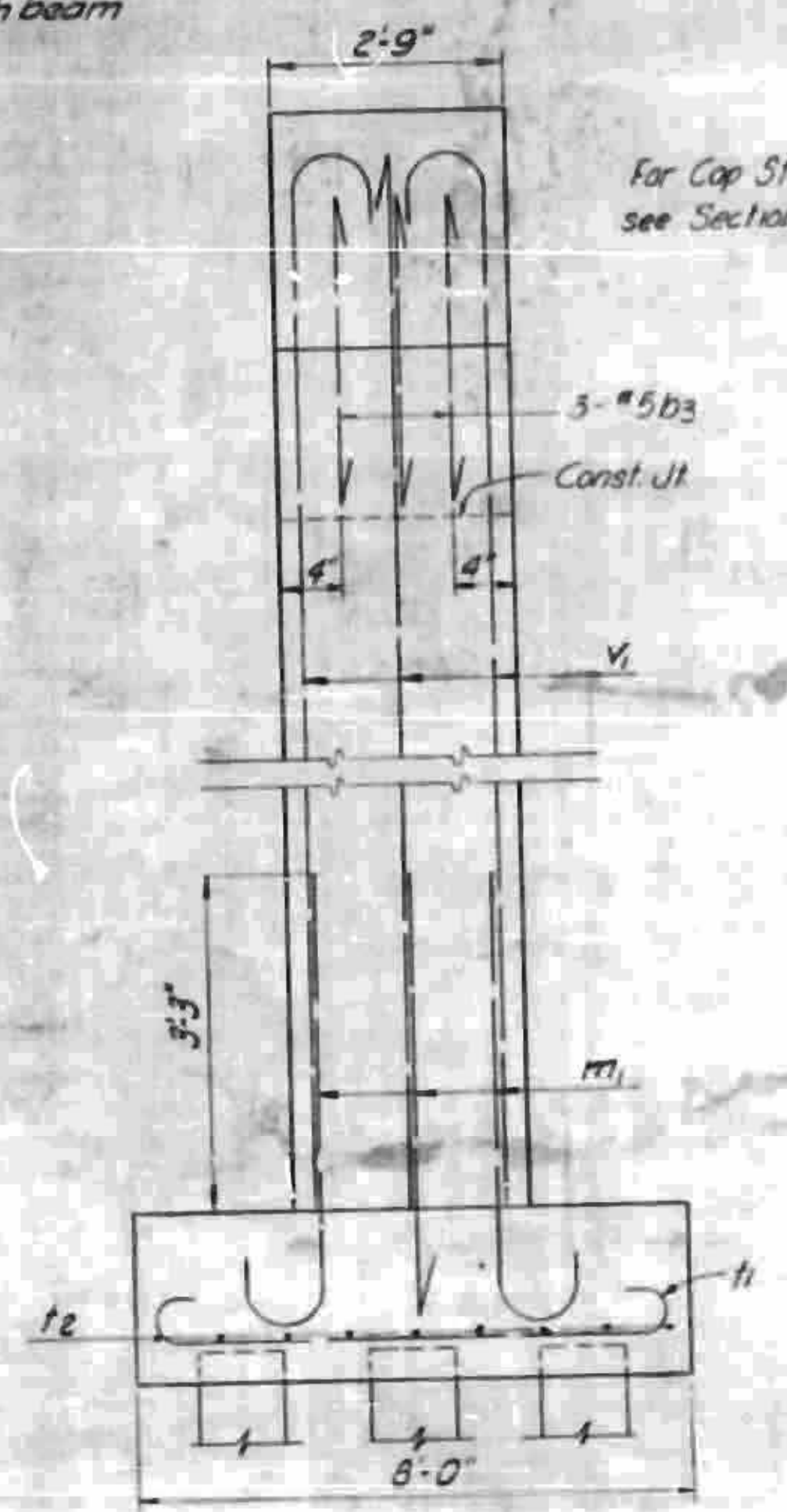
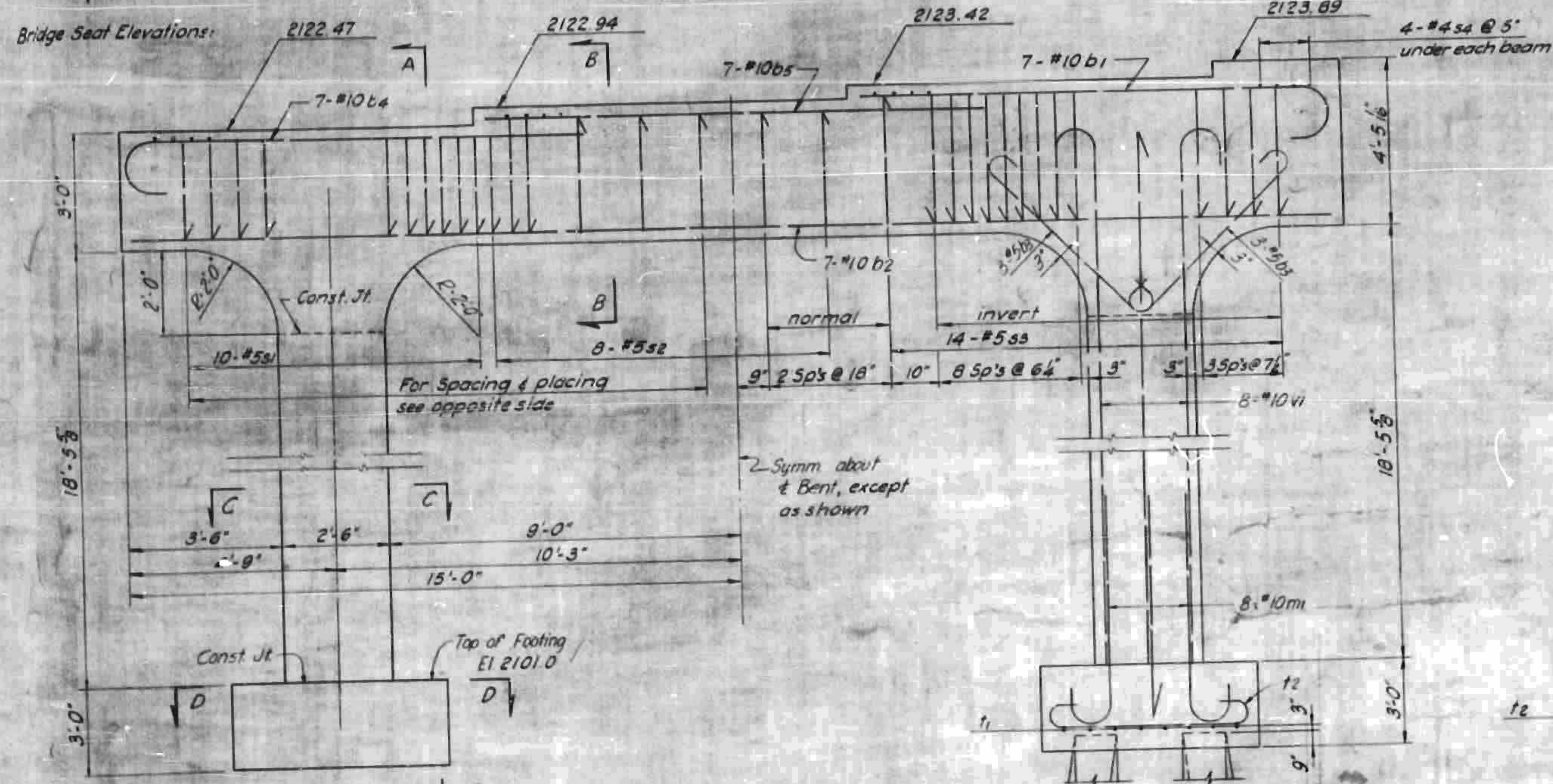
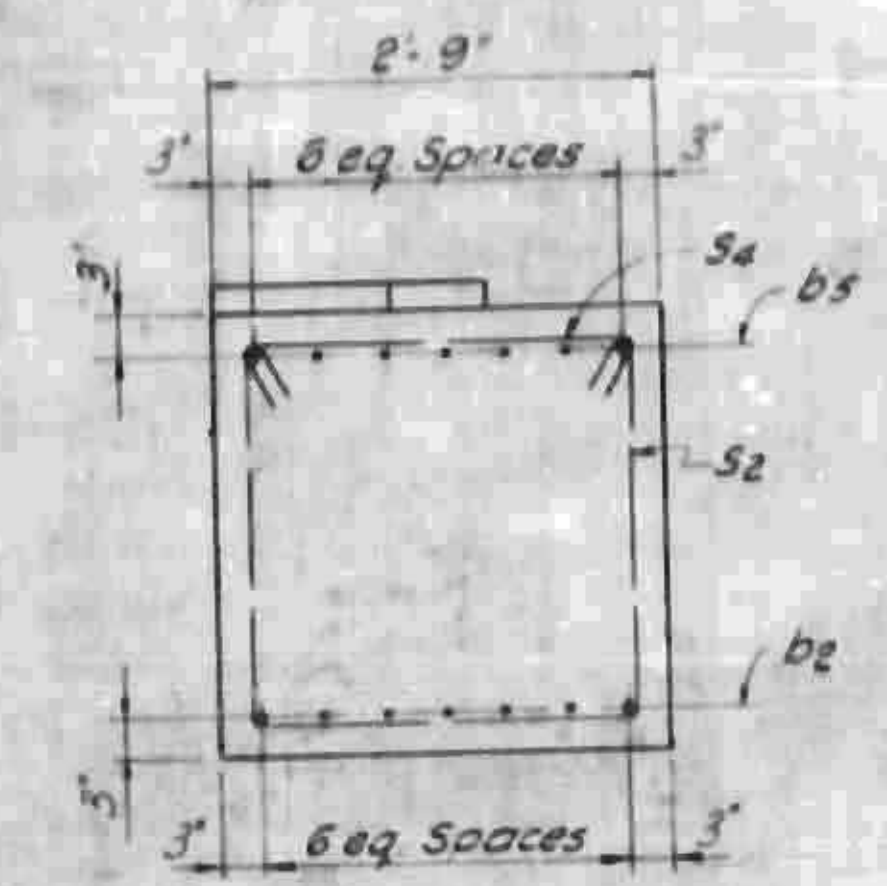
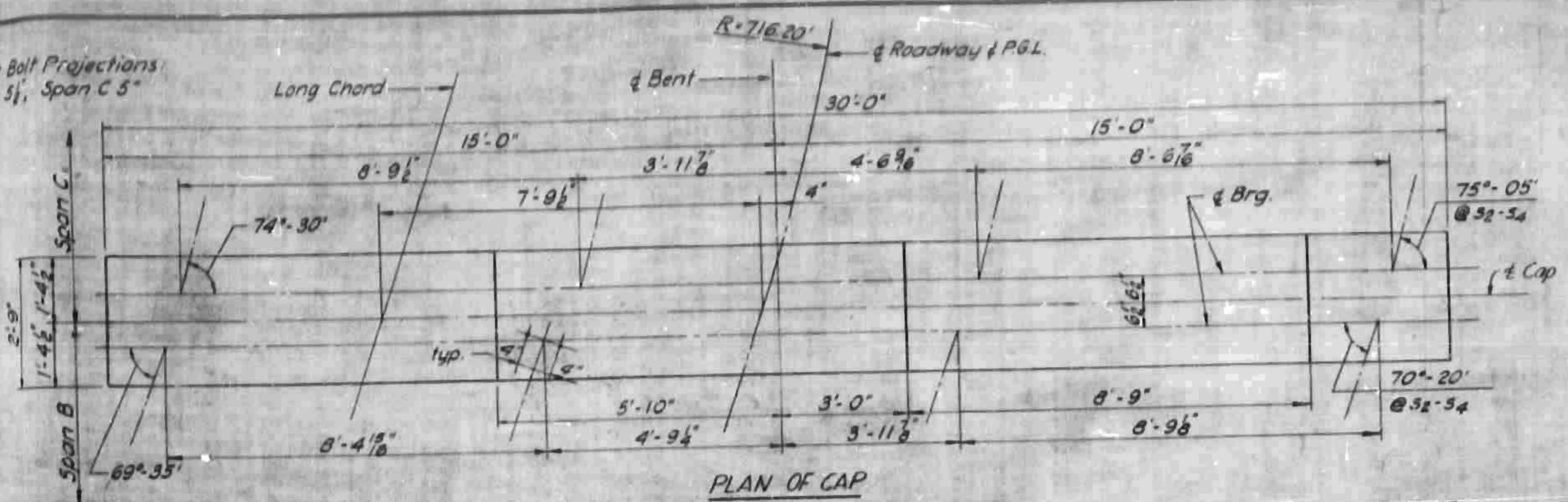
NOTE: All bar dimensions are out to out.  
Note: Reinforcing in Top of Cap may be shifted as necessary to clear Anchor Bolts.

Reinforcing Steel Lbs	4,318
Class A Concrete Cu Yds	28.8
12" Prestr. Concrete Piles No. 12'	
12" Prestr. Conc. Piles Lin. Ft.	360

PROJECT NO. 819002  
HENDERSON-BUNCOMBE COUNTY  
STATION 1451+39.1  
10+00 Y<sup>9</sup>

STATE OF NORTH CAROLINA	
STATE HIGHWAY COMMISSION	
BENT I	
DATE	
BY	
DATE	
BY	

Anchor Bolt Projections  
Span B 5", Span C 5"



SECTION C-C

PLAN OF FOOTINGS

SECTION D-D

BAR DETAILS			
①			
7'	5'-6"	b3	7'
10'	7'-6"	t1	10'
7'	4'-0"	t2	7'
②			
5'-3"		m1	1'-5"
2'-0"		v1	1'-5"
11'-8"		b1	1'-5"
13'-5"		b4	1'-5"
③			
4 1/2"	2'-5"		4 1/2"
④			
2'-8"	3'-2"		3'-2"
8'-2"			5'-5"
2'-5"			

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	7	#10	2	13'-1"	394
b2	7	#10	Str.	29'-6"	889
b3	12	#5	1	6'-8"	113
b4	7	#10	2	14'-10"	447
b5	7	#10	Str.	13'-1"	394
m1	16	#10	2	6'-8"	459
s1	10	#5	4	8'-7"	89
s2	8	#5	4	9'-7"	80
s3	14	#5	4	10'-6"	153
s4	16	#4	3	3'-2"	34
t1	16	#7	1	9'-2"	300
t2	18	#5	1	5'-11"	111
v1	16	#10	2	22'-5"	1544
Reinforcing Steel Lbs					4,977
Class A Concrete Cu Yds					29.6
12" x 12" Prestr. Conc. Piles No. 12					396
12" x 12" Prestr. Conc. Piles Lin. Ft.					396

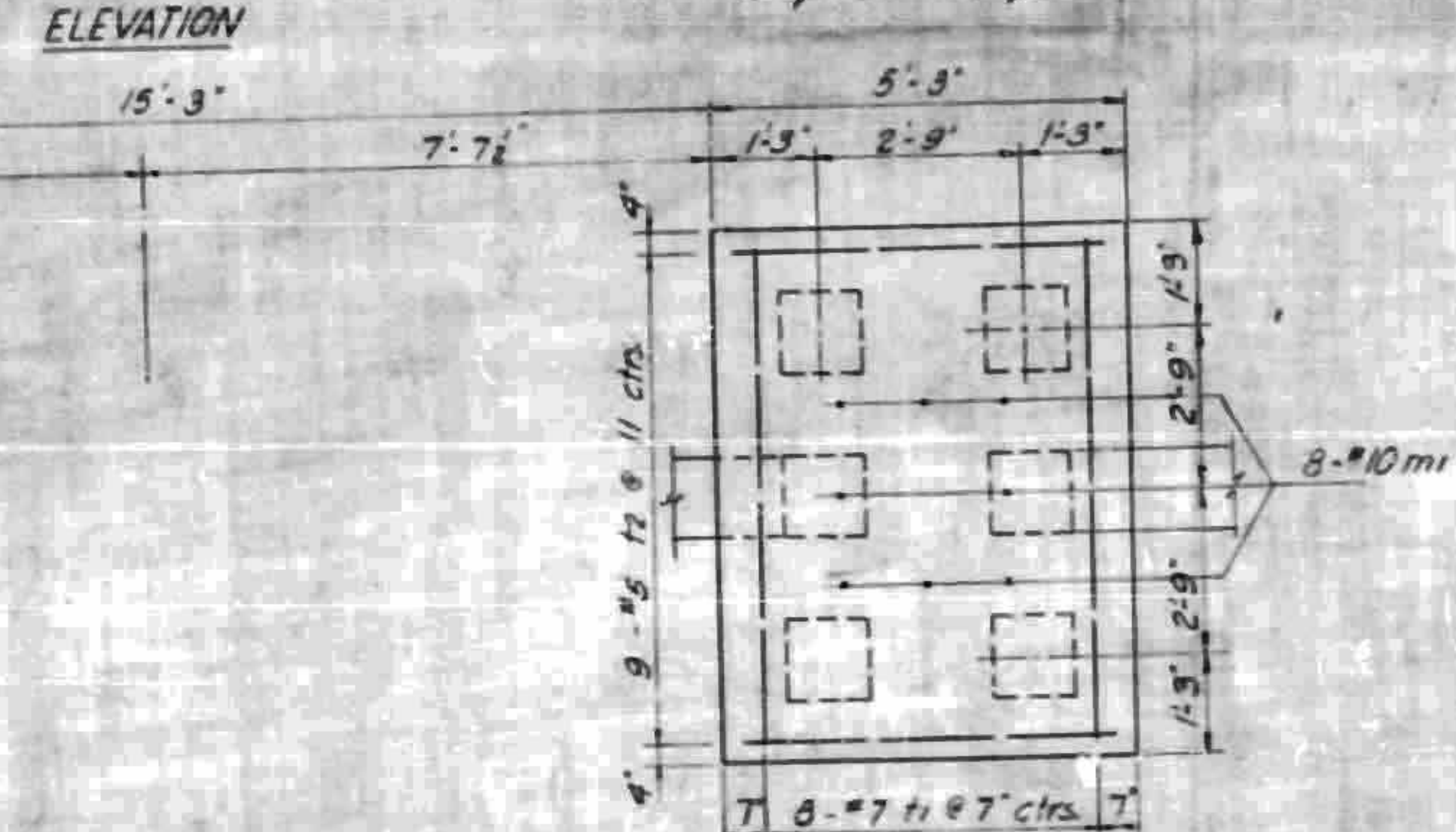
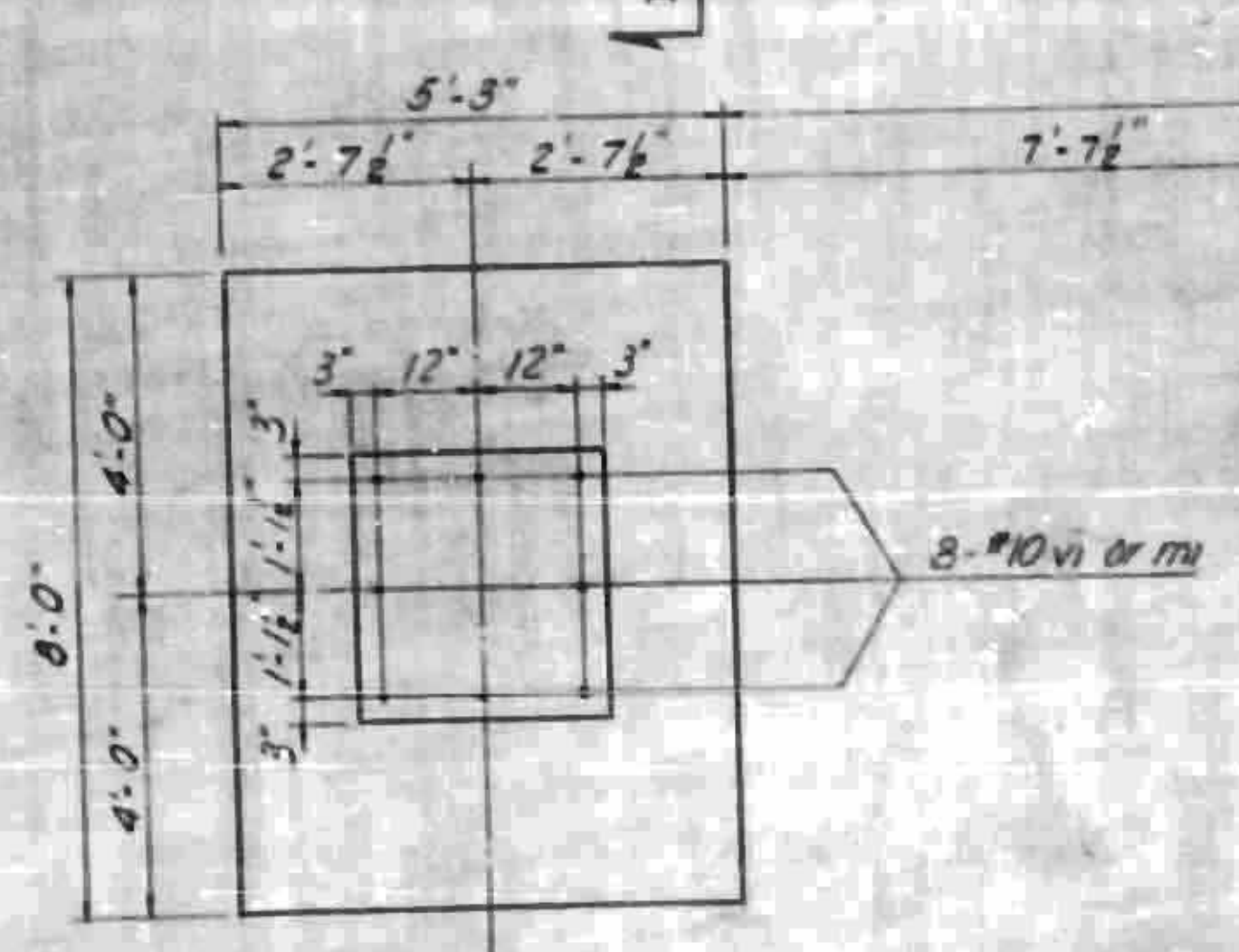
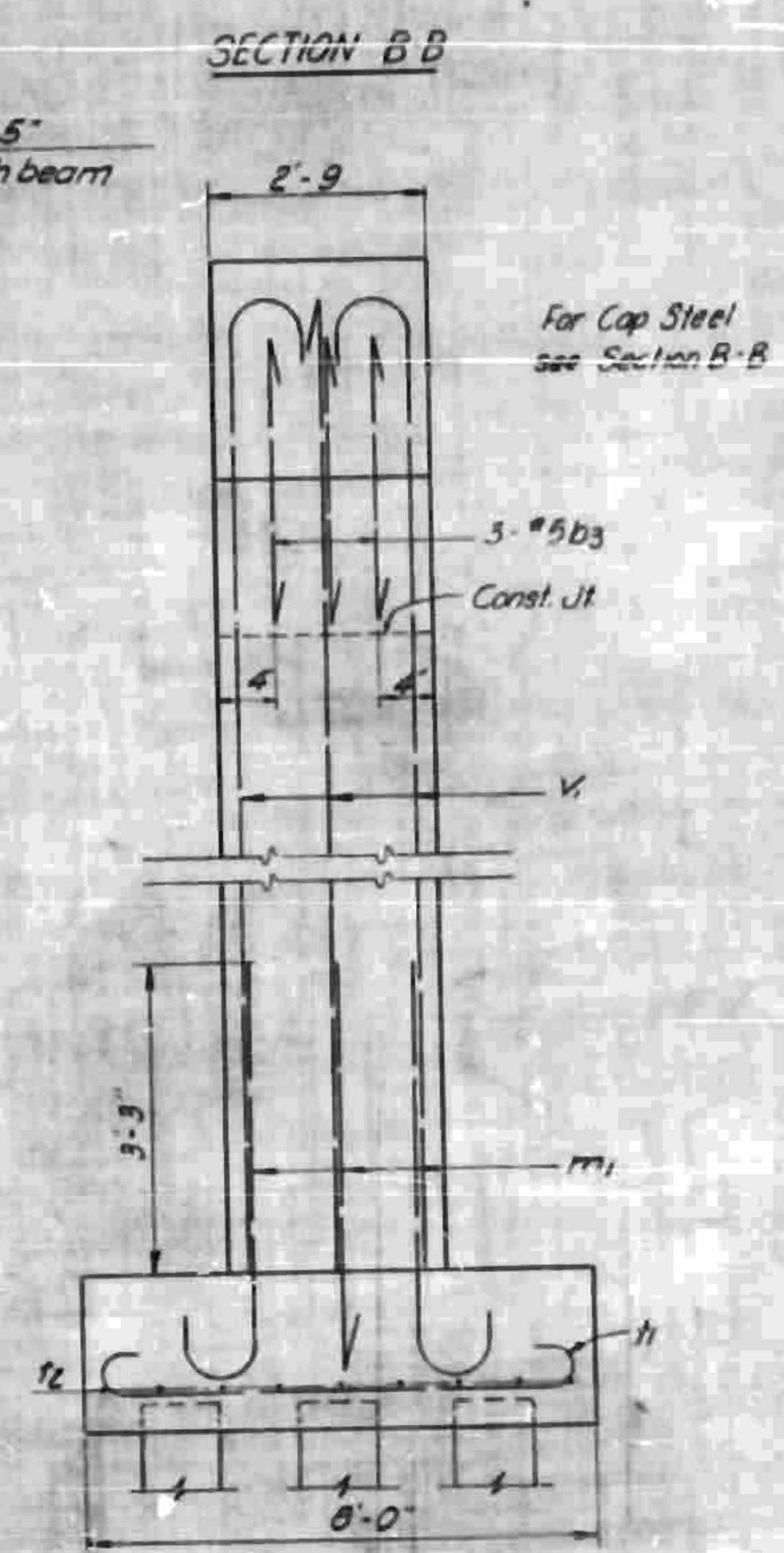
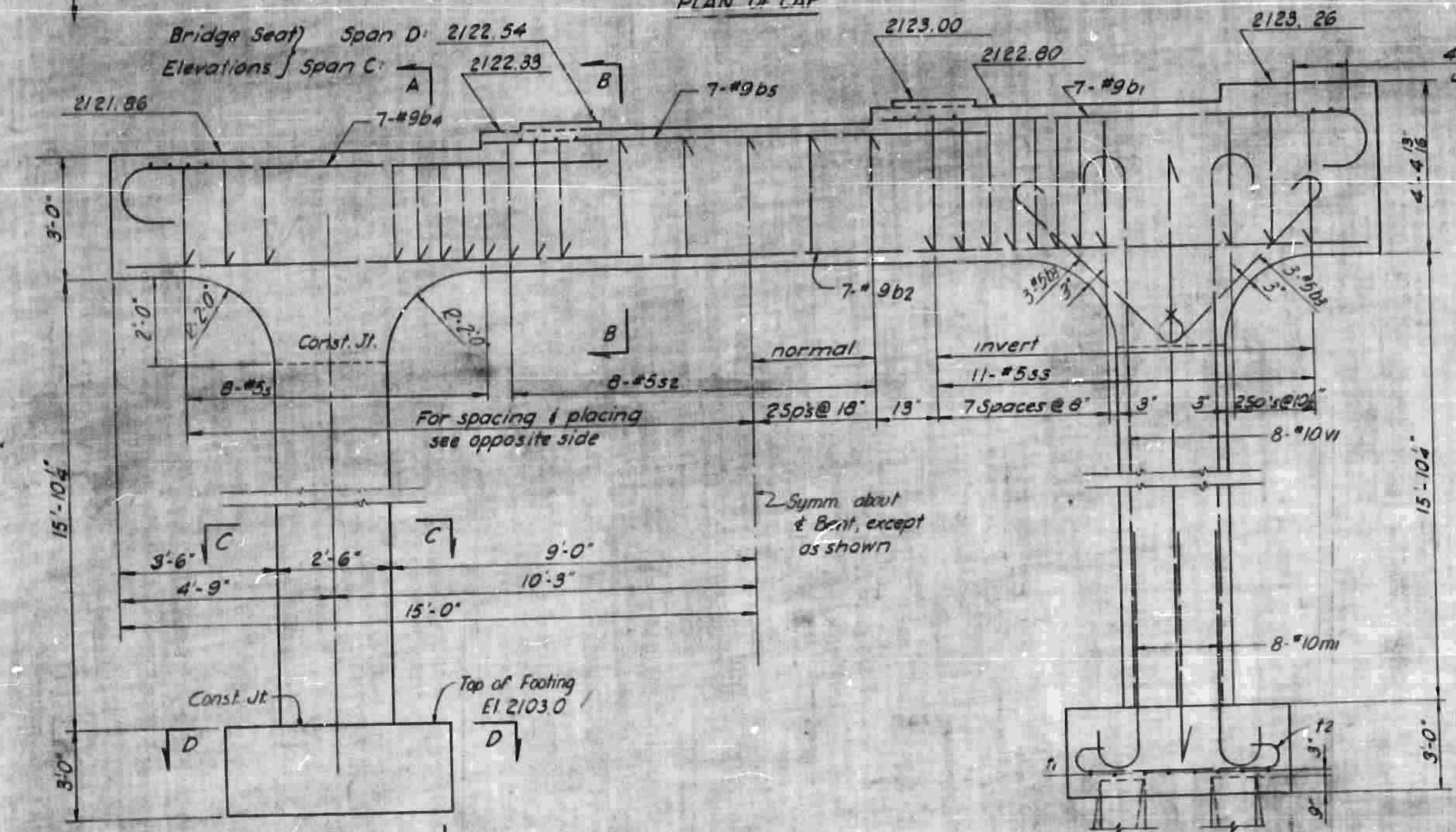
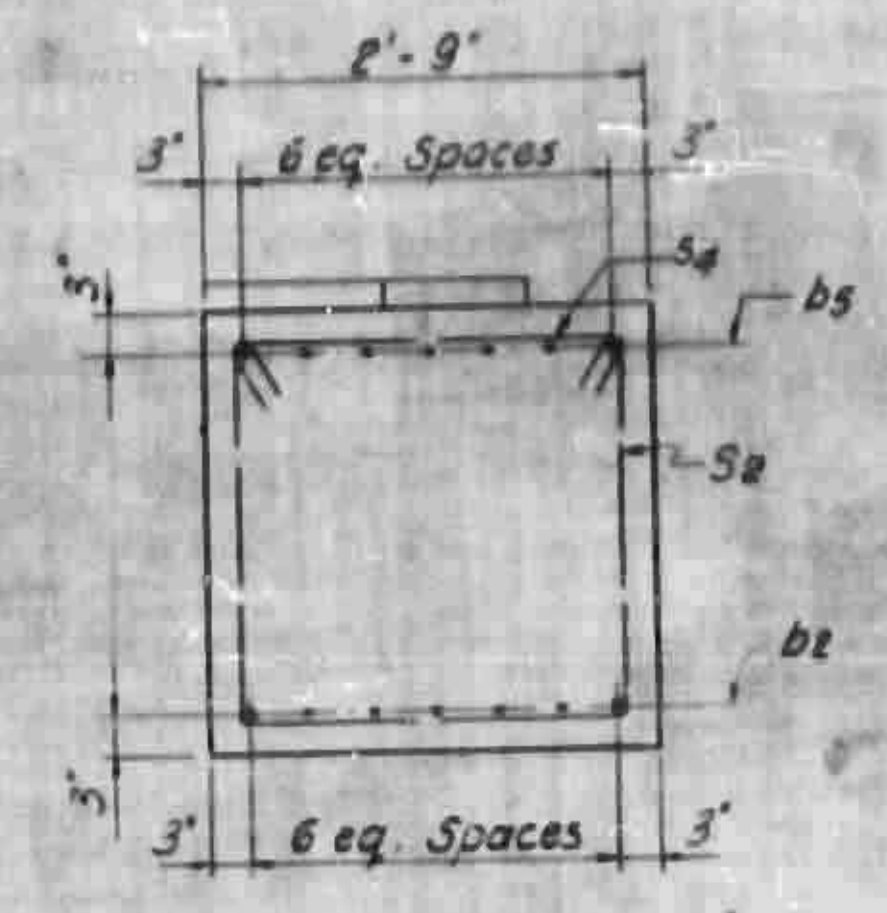
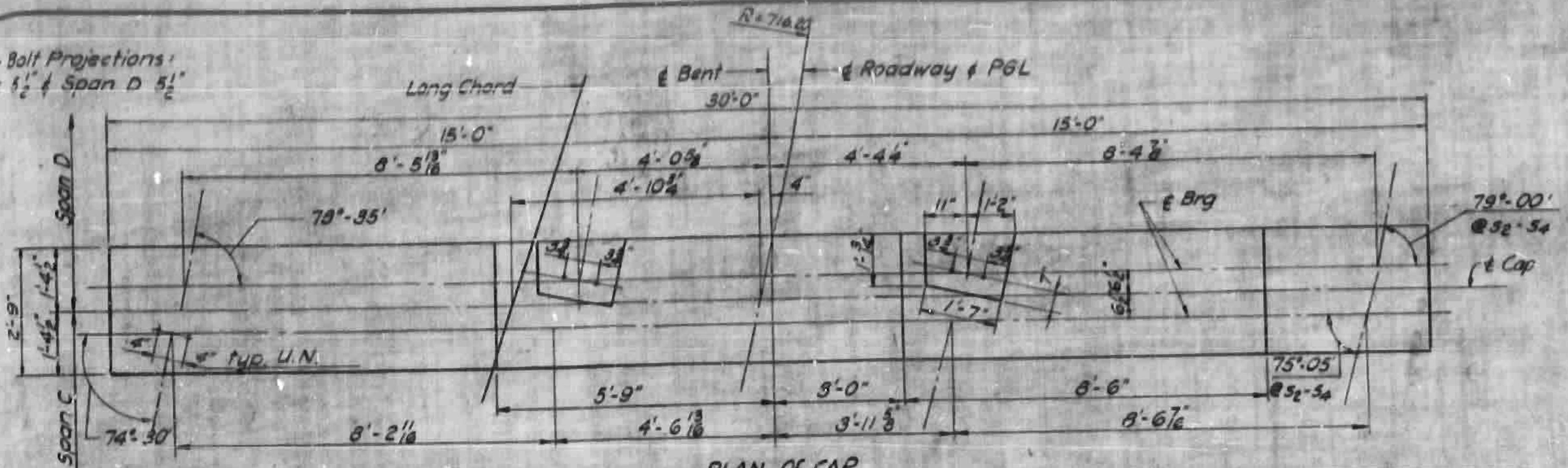
NOTE: All bar dimensions are out to out  
Note: Reinforcing in Top of Cap may be shifted as necessary to clear Anchor Bolts.

6-12" x 12" Prestressed Concrete Piles each Fig., 4 vert. & 2 batt. 1/2-12

PROJECT NO. 819002  
HENDERSON-BUNCOMBE COUNTY  
STATION 1451+39L  
10+00 Y<sup>9</sup>

DATE		STATE OF NORTH CAROLINA STATE HIGHWAY COMMISSION	
BY		BENT 2	
CHECKED		PROJECT NO. 819002	
APPROVED		TOTAL SHEETS 151/208	

Anchor Bolt Projections  
Span C 5' & Span D 5'



BAR DETAILS			
HL	①	HL	
7'	5'-6"	b1	7'
10'	7'-6"	t1	10'
7'	4'-9"	t2	7'
HL	②	HL	
5'-3"	m1	1'-5"	
10'-4"	v1	1'-5"	
11'-6"	b1	1'-5"	
13'-0"	b2	1'-5"	
HL	③	HL	
4 1/2'	2'-5"	4 1/2'	
HL	④	HL	
5'	3'-2"	5'	
2'-6"	3'-2"	5'	
2'-5"		3'-7"	

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
b1	7	#9	2	12'-9"	303
b2	7	#9	5tr	29'-6"	702
b3	12	#5	1	6'-0"	88
b4	7	#9	2	14'-3"	334
b5	7	#9	5tr	12'-6"	298
m1	16	#10	2	6'-8"	459
v1	8	#5	4	9'-7"	72
v2	8	#5	4	9'-7"	80
v3	11	#5	4	10'-5"	121
v4	16	#5	3	3'-2"	34
t1	16	#7	1	9'-2"	300
t2	18	#5	1	3'-11"	111
v1	16	#10	2	19'-9"	1360
Reinforcing Steel Lbs					4,262
Class A Concrete Cu Yds					28.4
12" Prestressed Conc. Piles No. 12					39.3
12" Prest. Conc. Piles Lin. Ft.					388

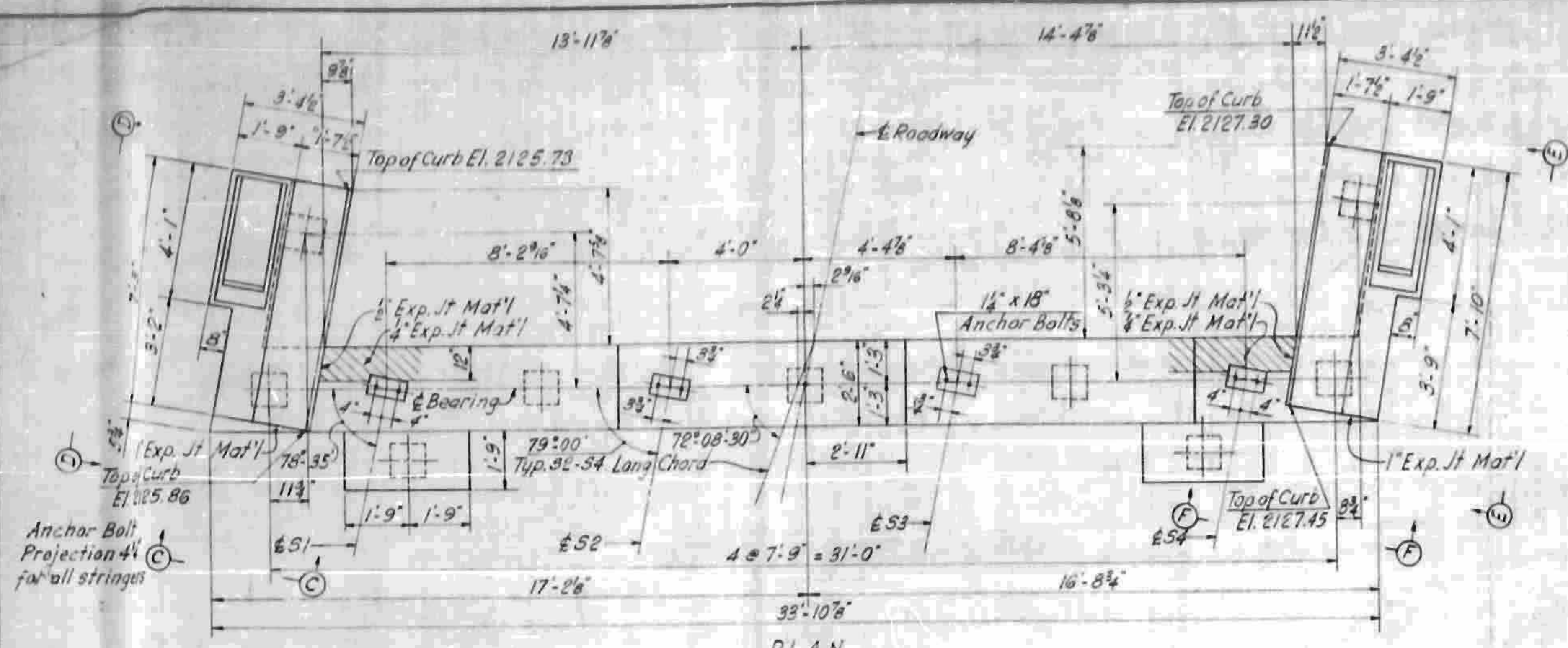
NOTE: All bar dimensions are out to out.  
Note: Reinforcing in Top of Cap may be shifted as necessary to clear Anchor Bolts.

PROJECT NO. 819002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451+39L  
 10+00 V9

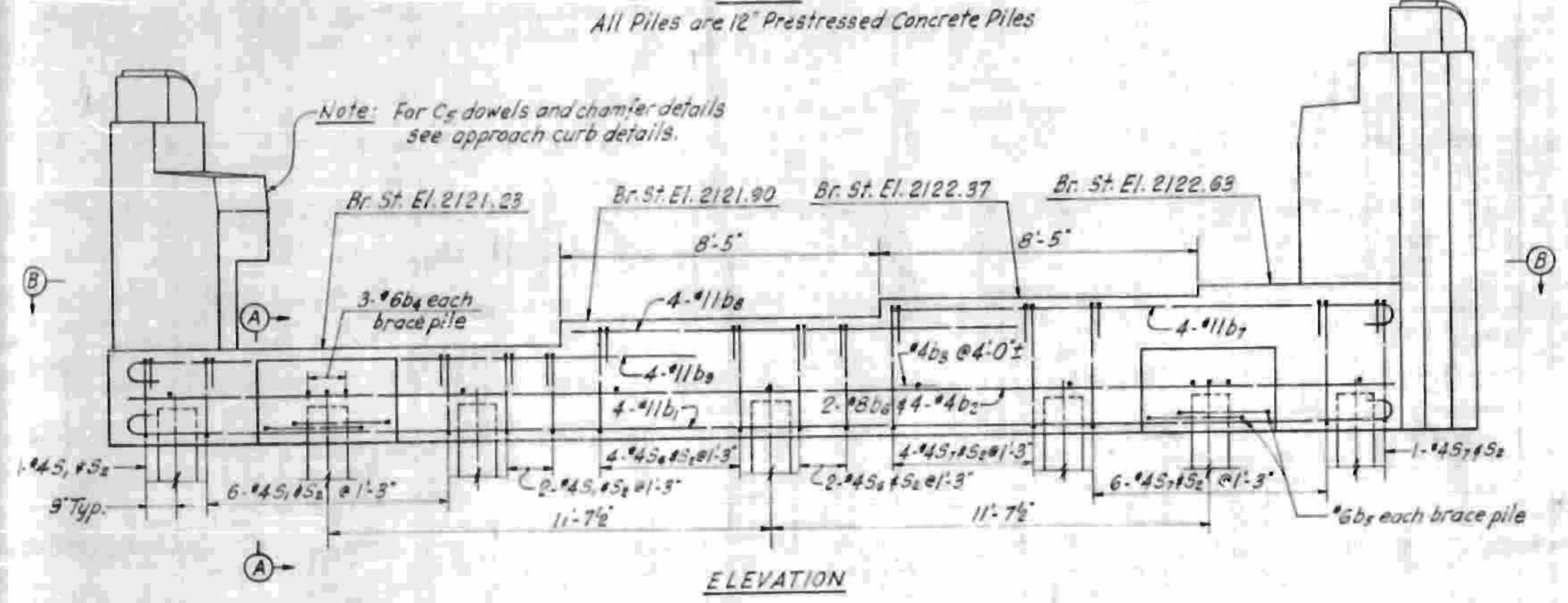
REVISIONS		DATE	

STATE OF NORTH CAROLINA STATE HIGHWAY COMMISSION RALEIGH	
BENT 3	

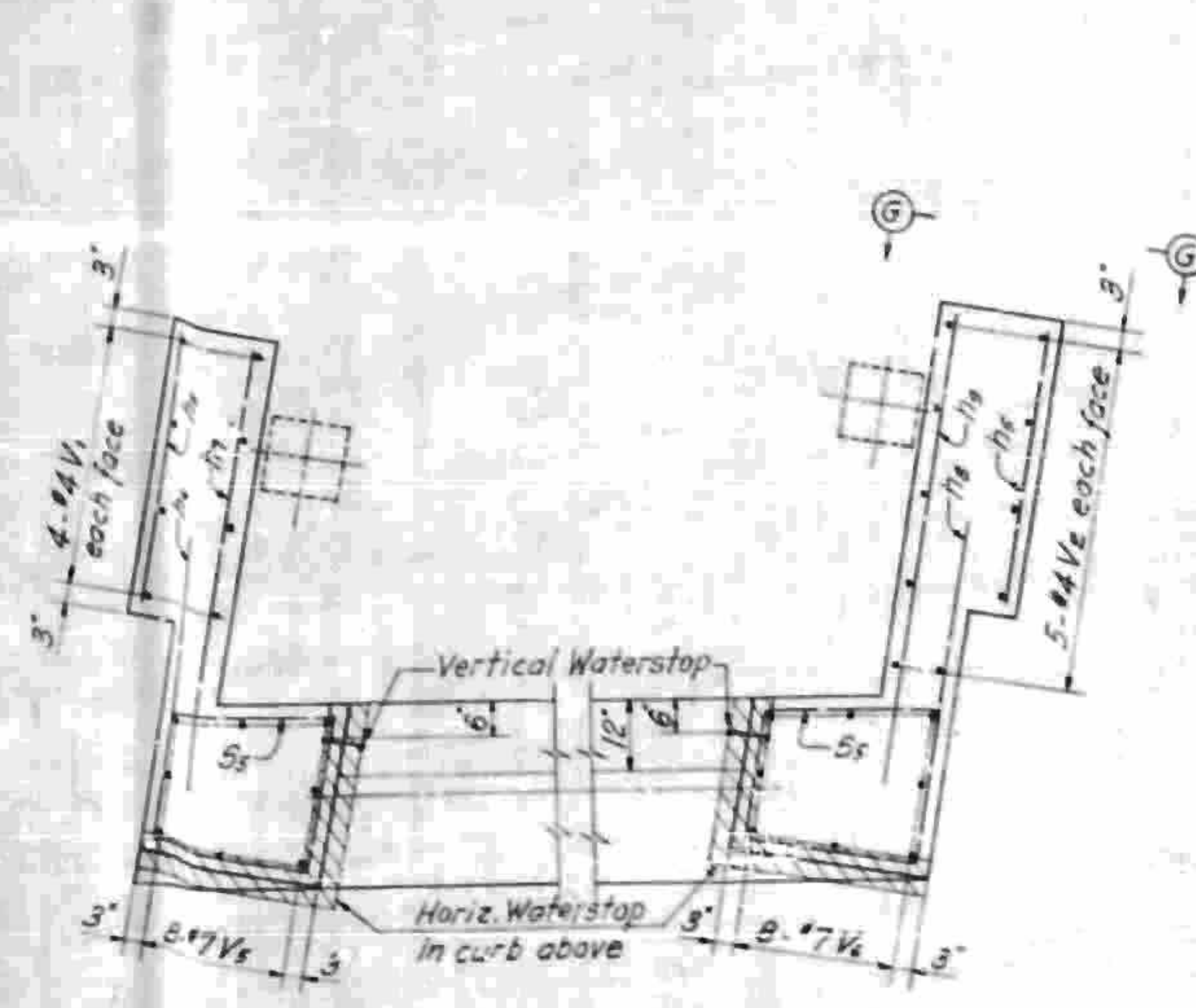




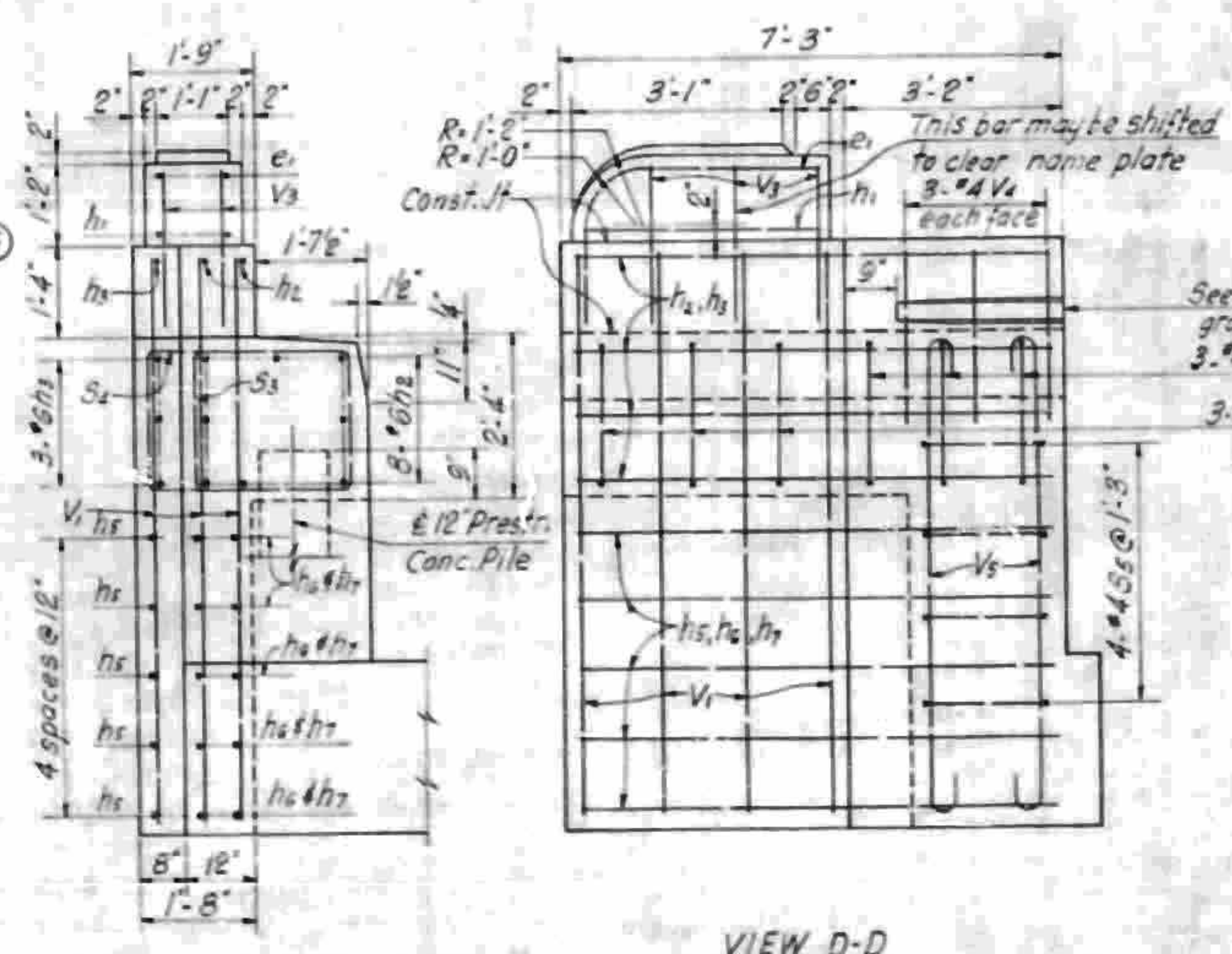
PLAN  
All Piles are 12" Prestressed Concrete Piles



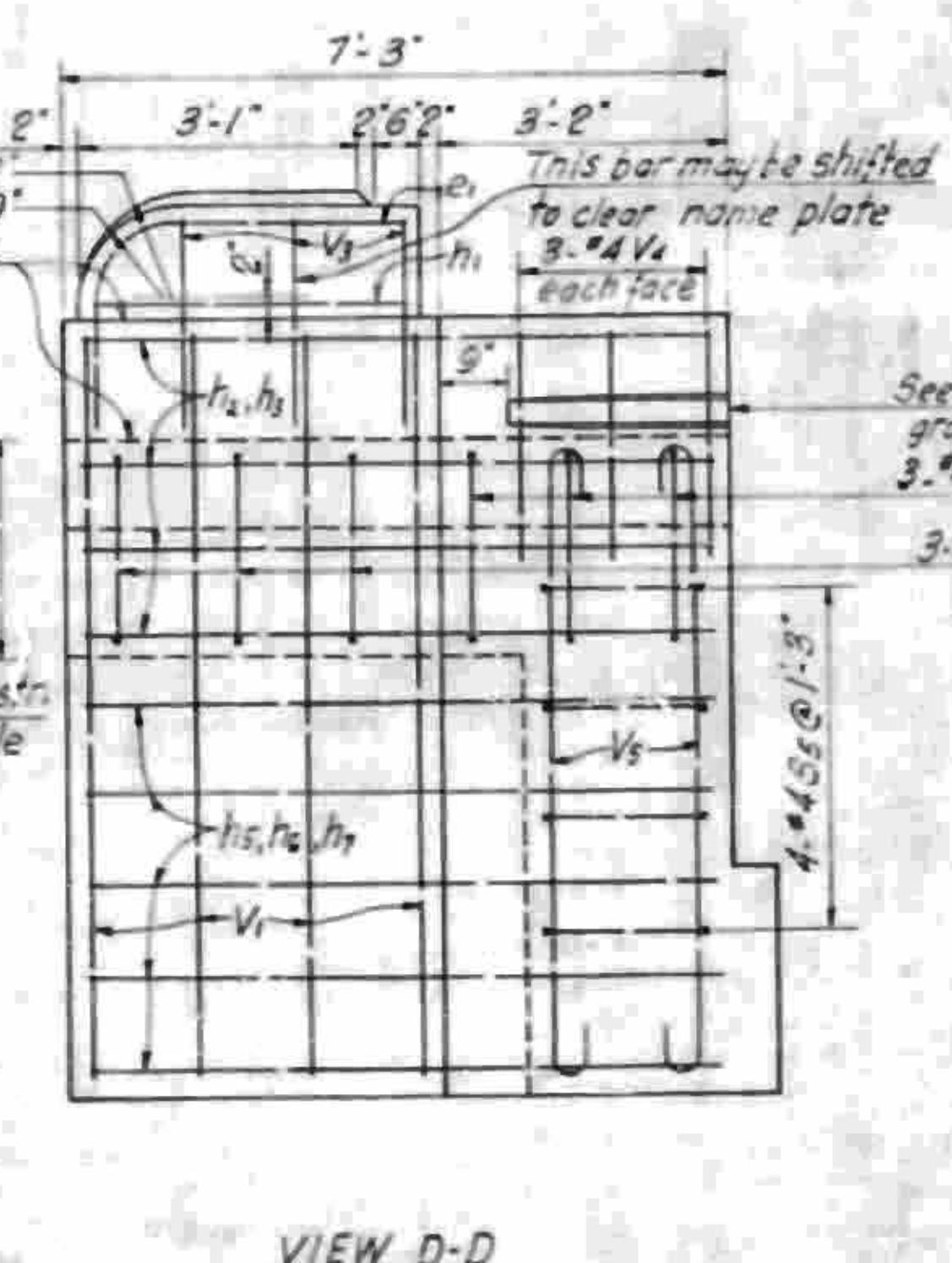
ELEVATION



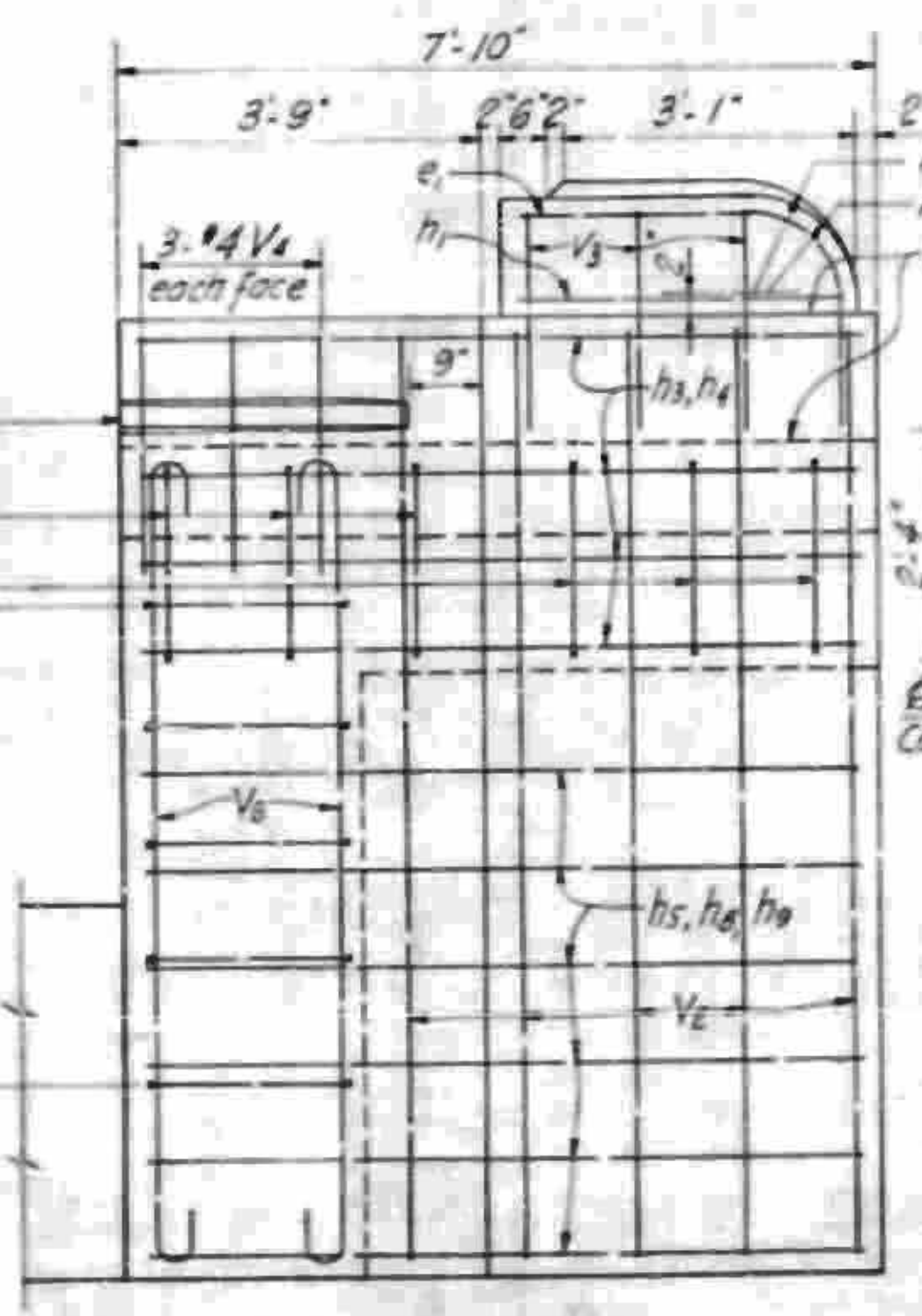
SECTION B-B



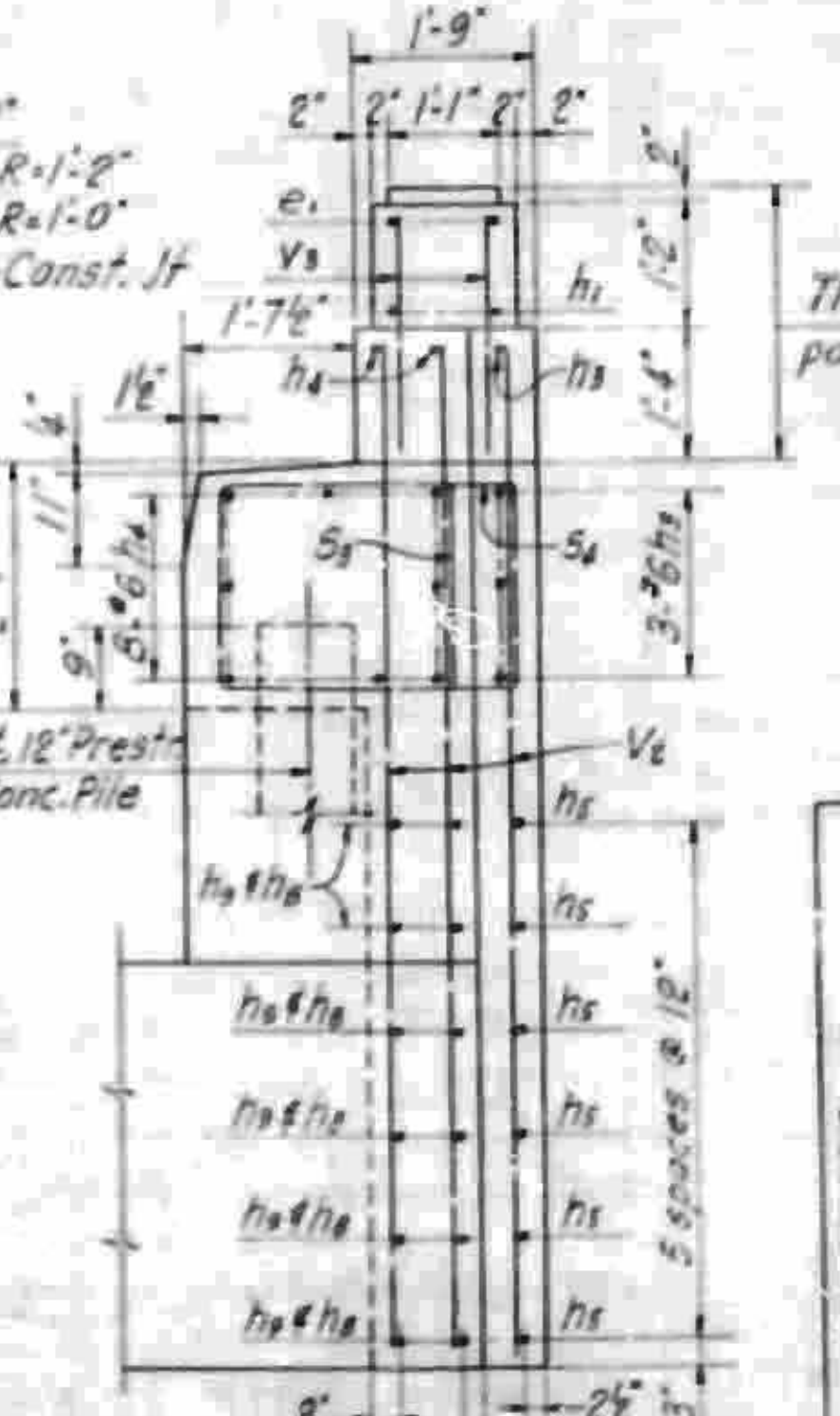
VIEW C-C



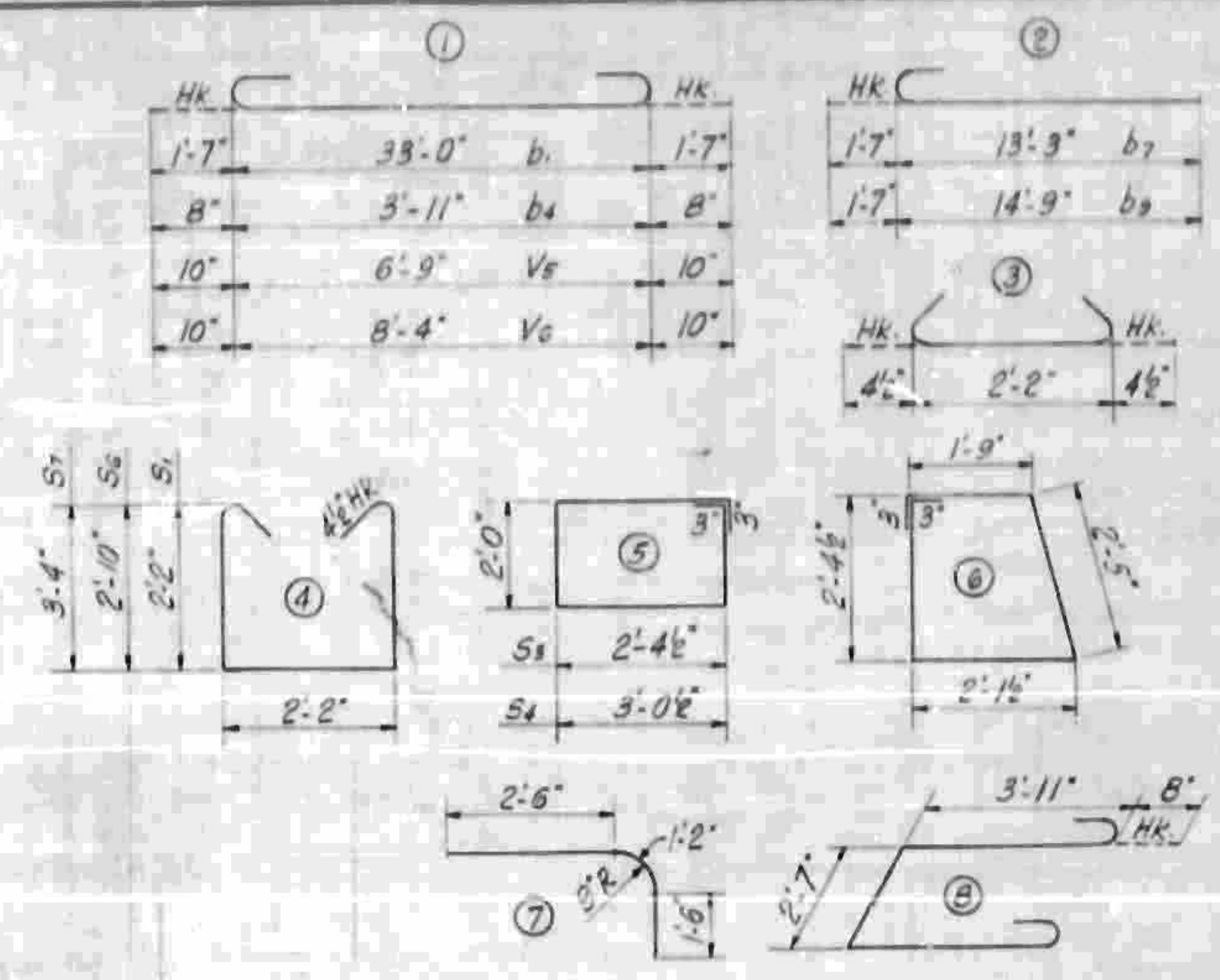
VIEW D-D



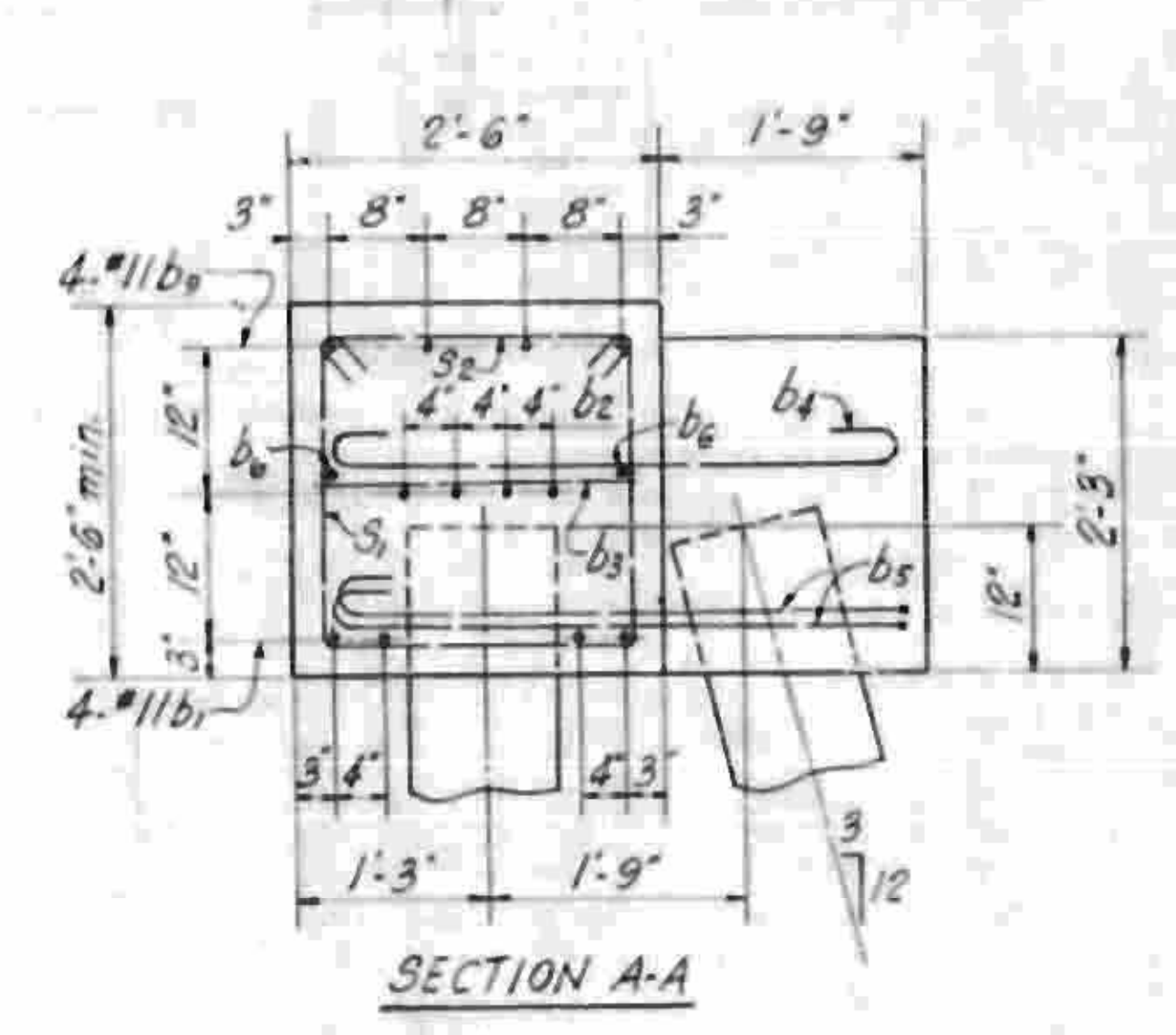
VIEW E-E



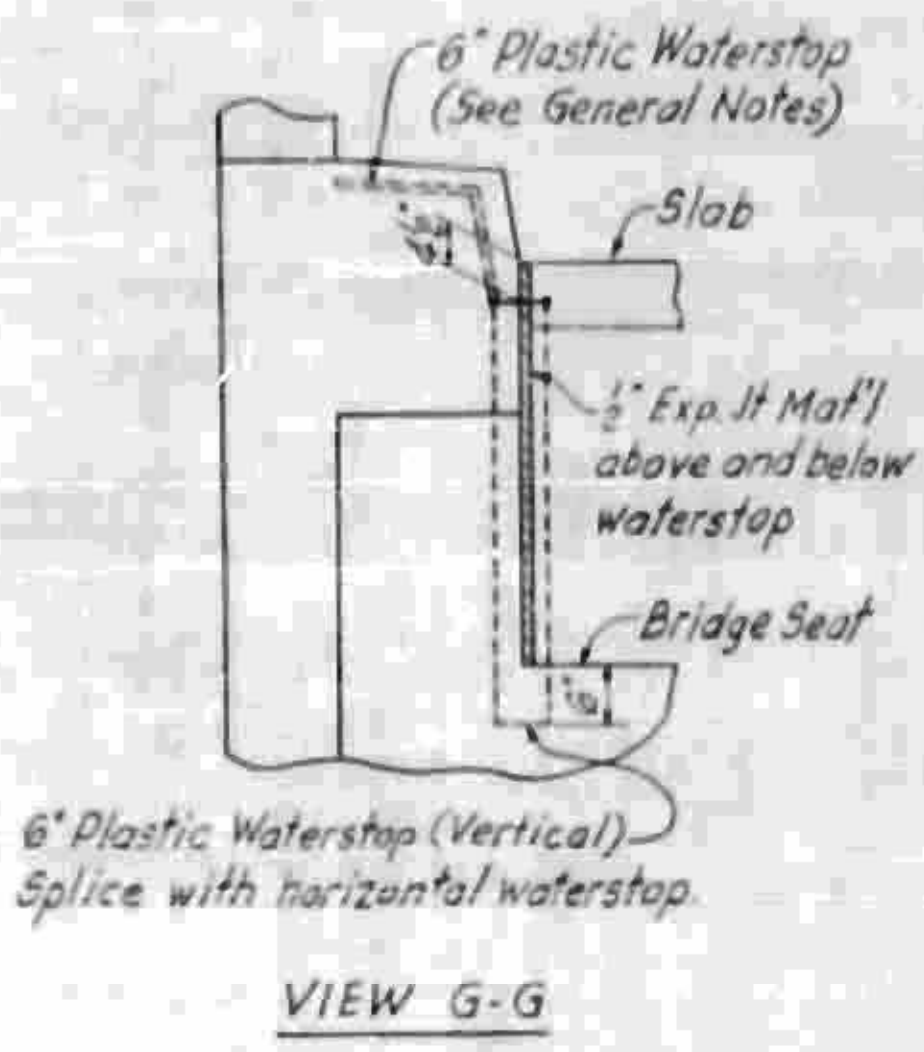
VIEW F-F



BAR TYPES  
All dimensions are out to out



SECTION A-A

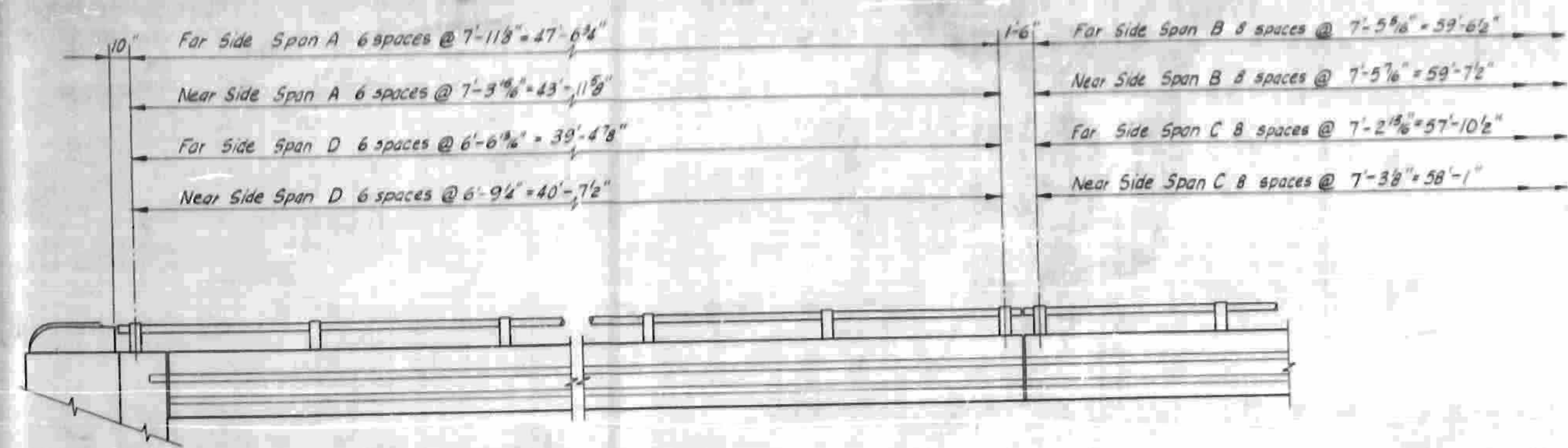


VIEW G-G

BILL OF MATERIAL					
END BENT #2					
BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
b1	4	#11	1	38'-2"	769
b2	4	#4	Str	33'-0"	88
b3	7	#4	Str	2'-2"	10
b4	6	#8	1	5'-3"	47
b5	4	#8	3	11'-9"	71
b6	2	#8	Str	33'-0"	176
b7	4	#11	2	14'-10"	315
b8	4	#11	Str	12'-0"	255
b9	4	#11	2	16'-4"	347
e1	4	#4	7	5'-2"	14
e2	4	#4	Str	3'-5"	9
e3	10	#6	Str	8'-11"	104
e4	8	#6	Str	3'-9"	45
e5	10	#6	Str	7'-6"	113
e6	11	#4	Str	3'-9"	28
e7	5	#4	Str	4'-3"	14
e8	5	#4	Str	6'-0"	20
e9	6	#4	Str	4'-9"	19
e10	6	#4	Str	8'-6"	26
S1	9	#4	4	7'-3"	44
S2	26	#4	3	2'-11"	51
S3	6	#4	5	9'-3"	37
S4	6	#4	5	10'-7"	42
S5	9	#4	6	9'-2"	55
S6	6	#4	4	8'-7"	34
S7	11	#4	4	9'-7"	70
V1	9	#4	Str	8'-0"	43
V2	10	#4	Str	9'-7"	64
V3	12	#4	Str	2'-3"	18
V4	12	#4	Str	2'-6"	20
V5	8	#7	1	8'-5"	138
V6	2	#7	1	10'-0"	164
Reinforcing Steel					lbs 3250
Class 'A' Concrete					cu yds 21.0
12" Prestr Conc Piles					No. 9
12" Prestr Conc Piles					lin ft 224.452
* Concrete displaced by pile heads has been deducted					

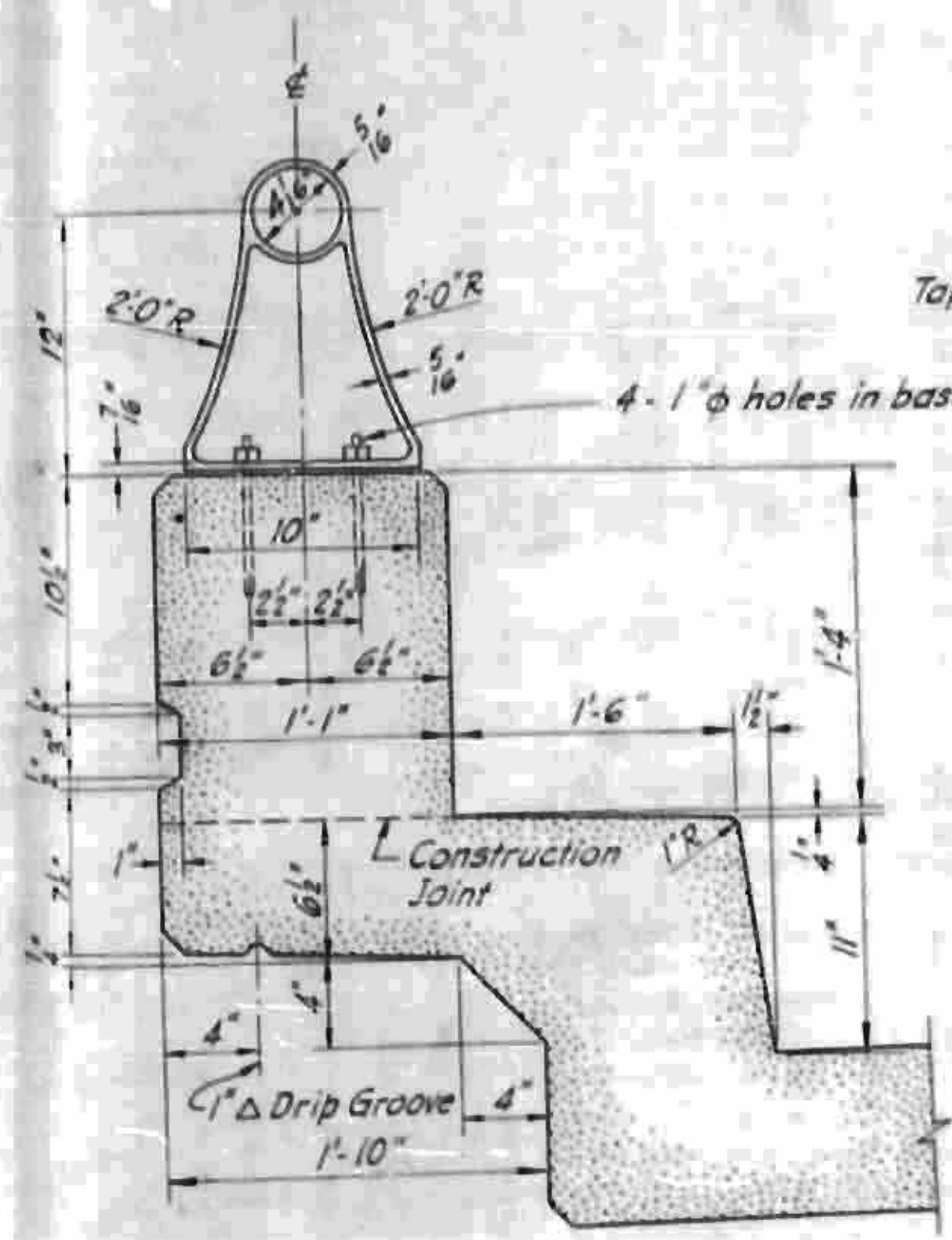
PROJECT NO. 819002  
 HENDERSON-BUNCOMBE COUNTY  
 STATION 1451+39L  
 10+00 V<sup>2</sup>

STATE OF NORTH CAROLINA		STATE HIGHWAY COMMISSION	
RALEIGH			
END BENT 2			
DATE	BY	DATE	BY

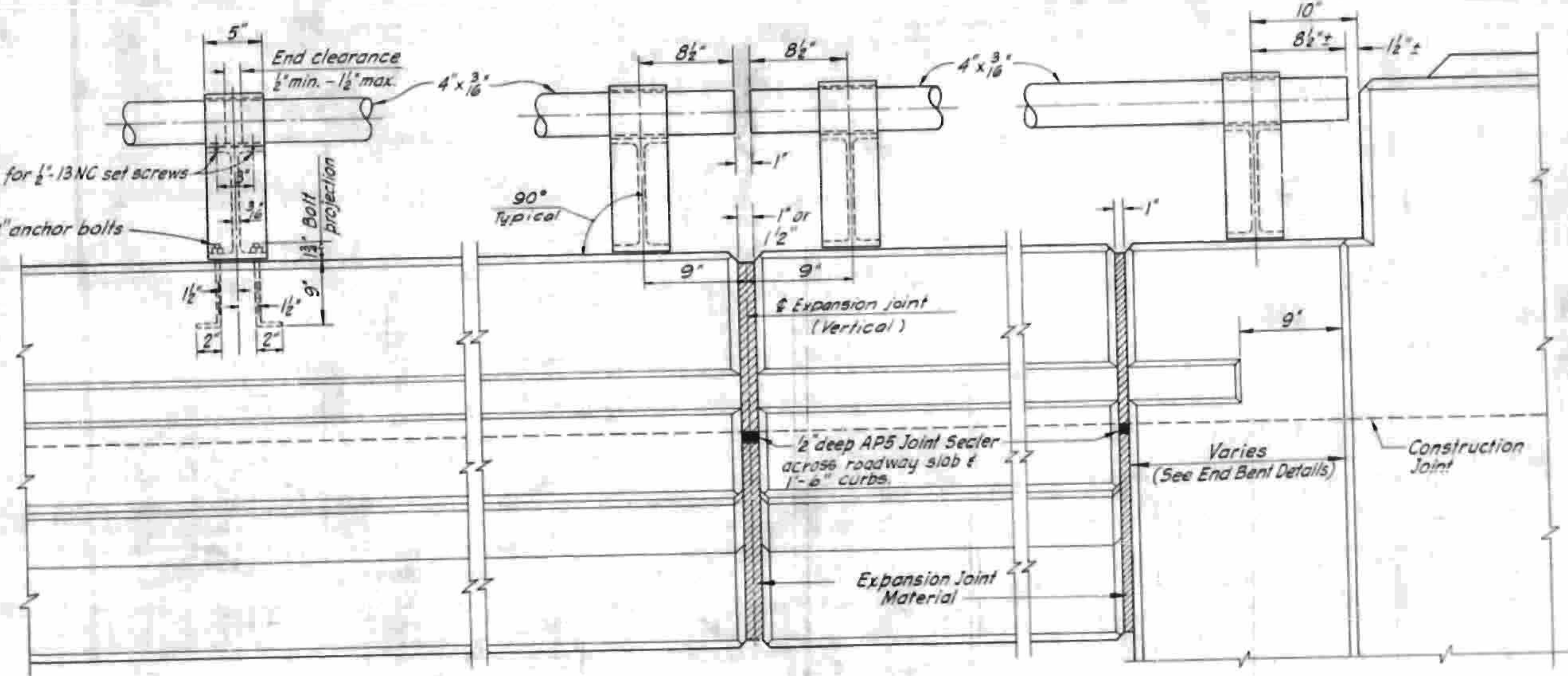


**PARAPET AND RAILING ELEVATION**  
Note: Railing post spacing given at @ parapet.

**NOTES**  
Unless noted on the plans, maximum length of rail section to be one panel plus stick thru.  
End of rail to clear face of concrete End Post by 1/2".  
For double panel runs of rail, set screws shall be set tight at center post and snug at ends to allow for expansion.  
For single panel runs, set screws shall be set tight at one end and snug at other end.  
1" dia Anchor bolts - hex nuts and washers to be steel galvanized in accordance with ASTM A-153 and painted with 2 coats of aluminum paint after erection.  
Cast posts to be as shown or an approved equal.  
Certified Mill reports are required for rails and posts. Shop inspection is not required.  
Metal Rail Posts to be set normal to curb grade.  
Method of measurement for Metal Rails:  
Unless otherwise stated, the length of Metal rails to be paid for shall be the continuous horizontal length measured from end to end of rail, excepting concrete posts, but without deductions for spaces between rail sections.



**TYPICAL SECTION**



**ELEVATION JOINT DETAILS AT BENTS JOINT DETAILS AT END BENTS**

**PARAPET AND RAILING DETAILS**

At the Contractor's option metal rail may be either Aluminum or Galvanized Steel in accordance with the requirements of the general notes and the following specifications for the alternate materials; however, the Contractor will be required to use the same rail material on all structures on the project for which metal rail is designated.

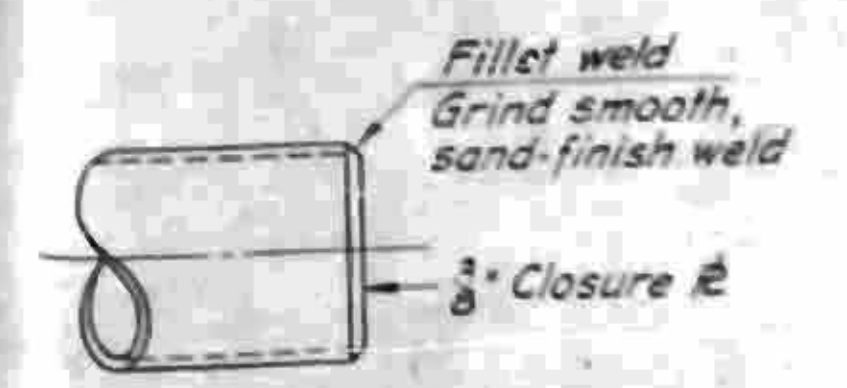
**ALUMINUM RAILS**

Aluminum alloys are to be as follows:  
Cast Rail Posts A356-T6  
Round Tubular Rail 6061-T6 or 6062-T6  
Set Screws 2024-T4  
Closure Plates 6061-T6 or 6062-T6  
Round Tubular Rails are to be of 4" O.D. with 1/8" minimum wall thickness.  
The base of rail posts, or any other aluminum surface in contact with concrete shall be thoroughly coated with an aluminum impregnated caulking compound of approved quality.

**GALVANIZED STEEL RAILS**

Material and galvanizing are to conform to the following specifications:  
Cast Rail Posts Malleable cast iron, ASTM A47 Grade 350-B, Galvanized to ASTM A-123.  
or  
Cast Steel, AASHO M198-60 Class 70, Galvanized to ASTM A-123.  
Standard 3 1/2" Galvanized Steel Pipe, ASTM A-53  
4" O.D Rail Steel, ASTM A-245 Grade C Galvanized to ASTM A-123.  
Closure Plates & Snags Steel, ASTM A-245 Grade C Galvanized to ASTM A-123.  
Set Screws Standard Steel Cap Screws, Galvanized to ASTM A-153.

The cut ends of galvanized pipe railing, the end closure plate weld after grinding smooth and areas adjacent to the weld where spelter coating has been burned by welding shall be thoroughly cleaned by wire brushing to remove all traces of welding flux and loose or cracked spelter after which these cleaned areas shall be given two coats of zinc paint meeting the requirements of Federal Specifications MIL-P-26915 (USAF) Type I.



**DETAIL END CLOSURE**

Note: aluminum posts are to be furnished with fast couplers attached and are to be in accordance with the requirements of AASHO Specification M 193-60.

PROJECT NO. 819002  
HENDERSON-BUNCOMBE COUNTY  
STATION 1451+39L  
10+00 Y9

DATE		STATE OF NORTH CAROLINA	
BY		STATE HIGHWAY COMMISSION	
DATE		RAILINGS	
BY		PARAPET AND RAILING DETAILS	
DATE	BY	DATE	BY
8/19/02	...	...	...