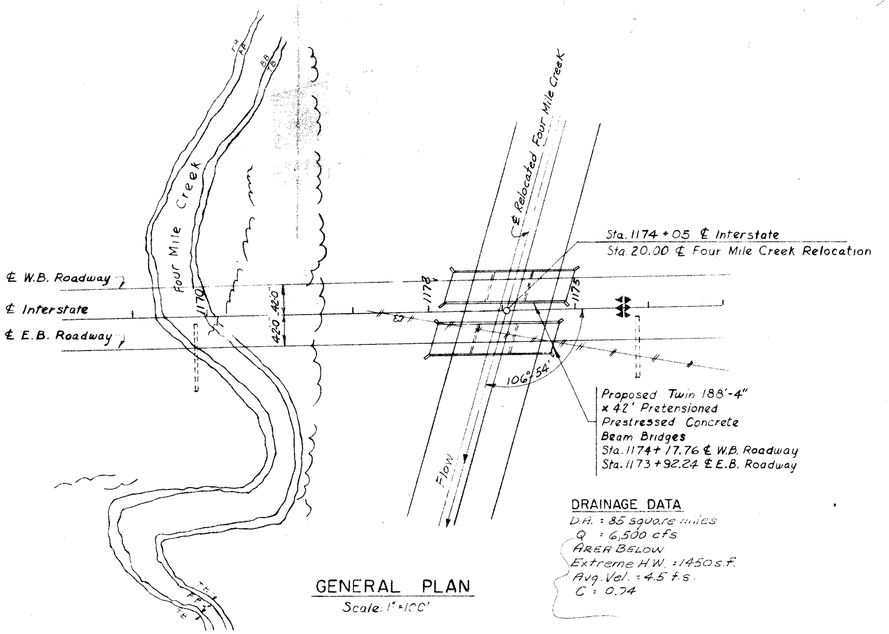
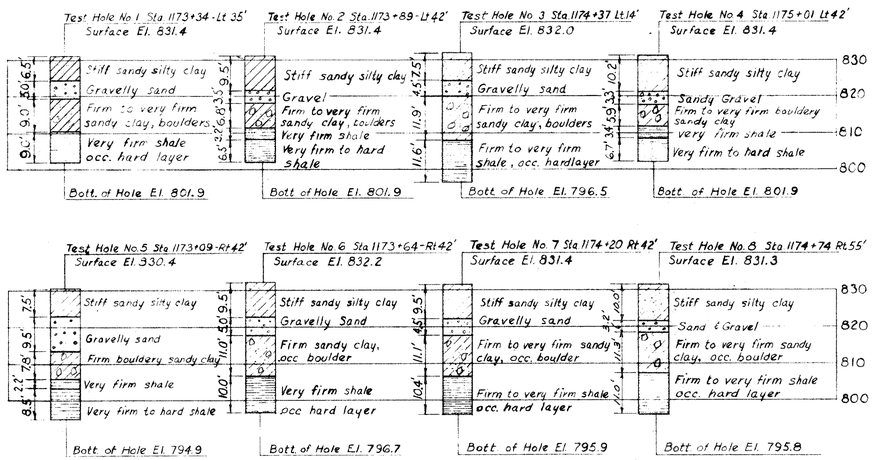


GENERAL PLAN

Scale: 1"=100'

DRAINAGE DATA

D.A. = 85 square miles
Q = 6,500 cfs
AREA BELOW
Extreme H.W. = 1450 s.f.
Avg. Vel. = 4.5 f.s.
C = 0.74



Average Water Table: Elev. 824.0

SOUNDING DATA

Scale: 1" = 20'
Dated: July 18, 1957

GENERAL NOTES:

This bridge is designed for H20-S16 loading and Alternate Loading designated in BPR's P.R.M. 20-4 Section C" plus an allowance of 19 lbs per square foot for future wearing surface.

The approach fills are not a part of this estimate but are to be in place before abutment piles are driven. The bridge contractor is to level off and shape the terms to the elevation shown.

Excavation for pier assumed from finished channel.

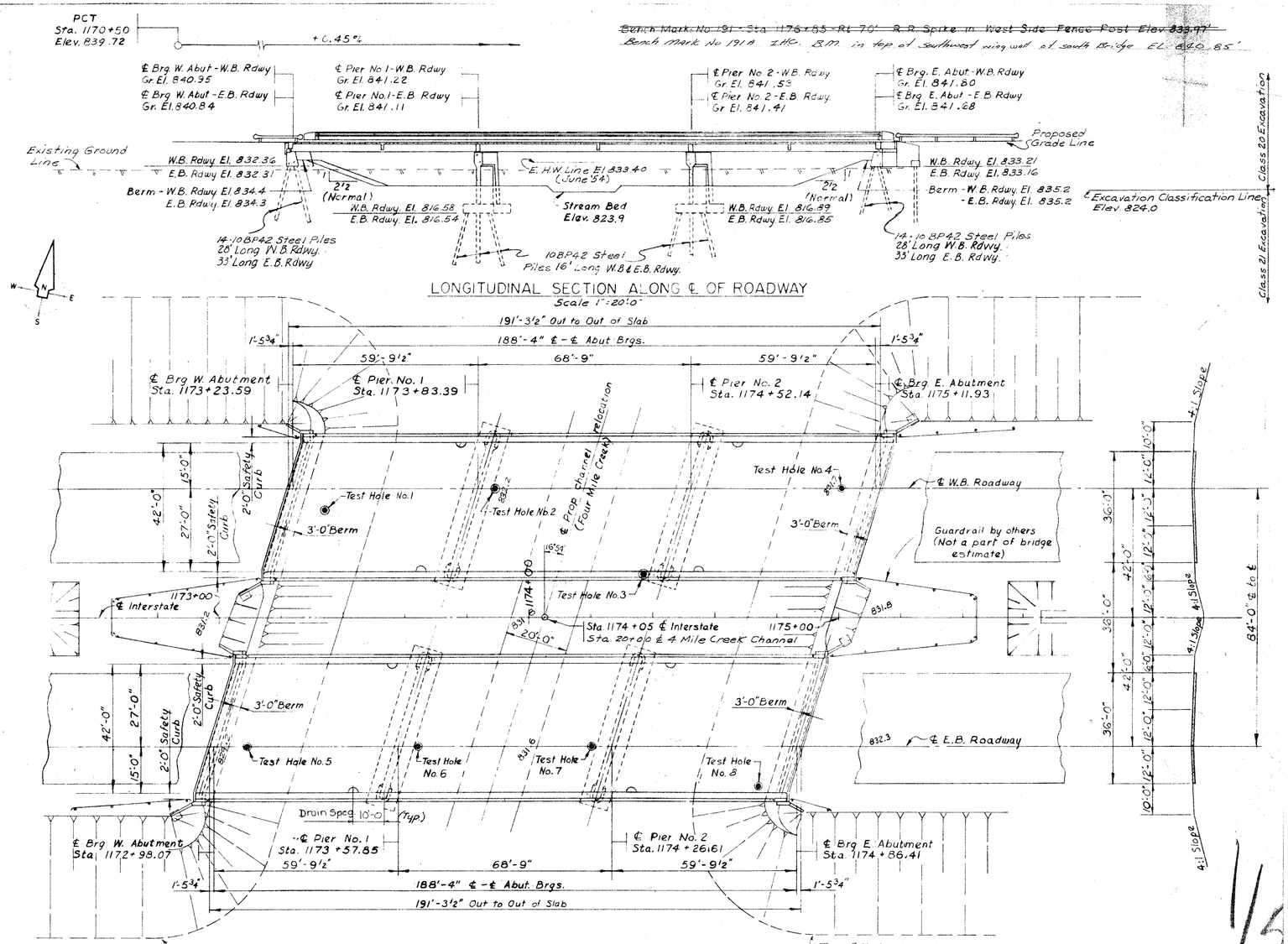
SPECIFICATIONS:

Design: A.A.S.H.O., Series of 1953, and U.S. Bureau of Public Roads Design Criteria for prestressed Concrete Bridges

Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus Current Special Provisions.

TOTAL ESTIMATED QUANTITIES						
Item	Unit	4 Abuts.	4 Piers	Superstr	Total	
			418.8	~~469.4~~	~~1047.0~~	
Concrete	Cu. Yds.	140.8	~~410.0~~	~~487.4~~	~~1038.2~~	
Reinforcing Steel	Lbs.	14,584	21,088	104,394	140,066	
Structural Steel	Lbs.			23,704	23,704	
Prestressed Conc. Beams 67'-6"	Bms			22	22	
Prestressed Conc. Beams 59'-2"	Bms			44	44	
Excavation, Class 20	Cu. Yds.	235.6	158		393.6	
Excavation, Class 21	Cu. Yds.	18.139	770		770	
Furnishing 10BP42 Piles	L.F.	~~1708~~	~~1536~~		~~3244~~	345-5.8
Driving 10BP42 Piles	L.F.	~~1708~~	~~1536~~		~~3244~~	3271.8
		179 2.2	1479.6			

In Charge of R.H.W.
Made By D.J.V.
Traced By J.E.L.
Checked By R.K.

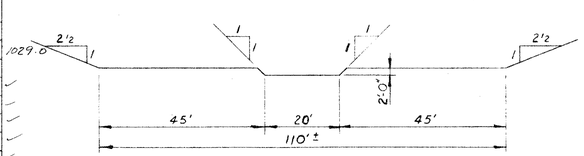


LONGITUDINAL SECTION ALONG ℄ OF ROADWAY

Scale 1":20'-0"

SITUATION PLAN

Scale 1" = 20'



TYPICAL CHANNEL SECTION

LOCATION

Or Interstate
Over Four Mile Creek (R)
Section 17
T 79N R23W
Delaware Township
Polk County

7739.1R080
7739.1L080

DESIGN FOR 16°54' SKEW # 758

TWIN 188'-4½" x 42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

2-59'-9½" END SPANS 1-68'-9" INTERMEDIATE SPAN
CONCRETE FLOOR AND SUBSTRUCTURE - STEEL RAIL

INTERSTATE OVER FOUR MILE CREEK

GENERAL & SITUATION PLANS

STATION 1174+05 ℄ INTERSTATE PROJ. NO. [I-IG-01-4 (2)] I-IG-80-4(2)142

POLK COUNTY

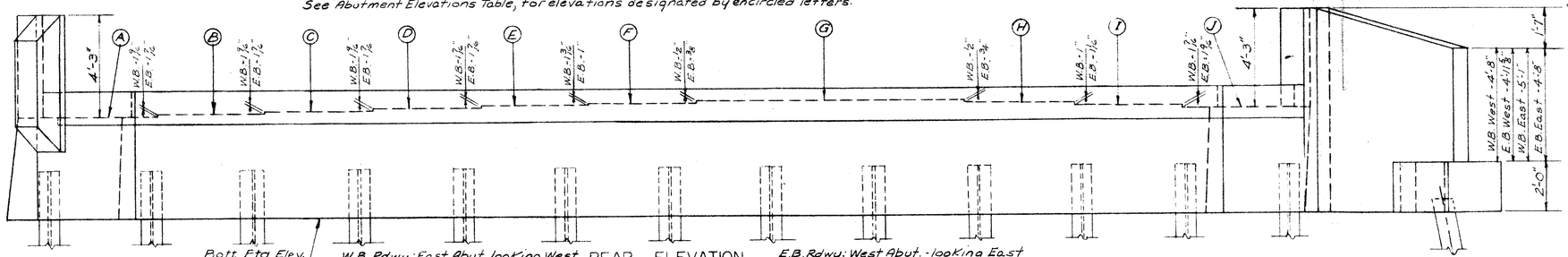
DESIGNED BY BROWN & BLAUVELT, NEW YORK, N.Y. FOR
IOWA STATE HIGHWAY COMMISSION

DECEMBER 1957 File # 18855 SHEET 1 OF 5

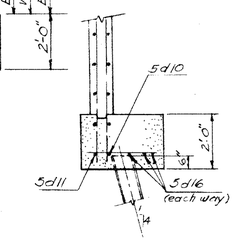
Revised 4-2-59: Pier Concrete Quantity changed.

See "Abutment Elevations Table" for elevations designated by encircled letters.

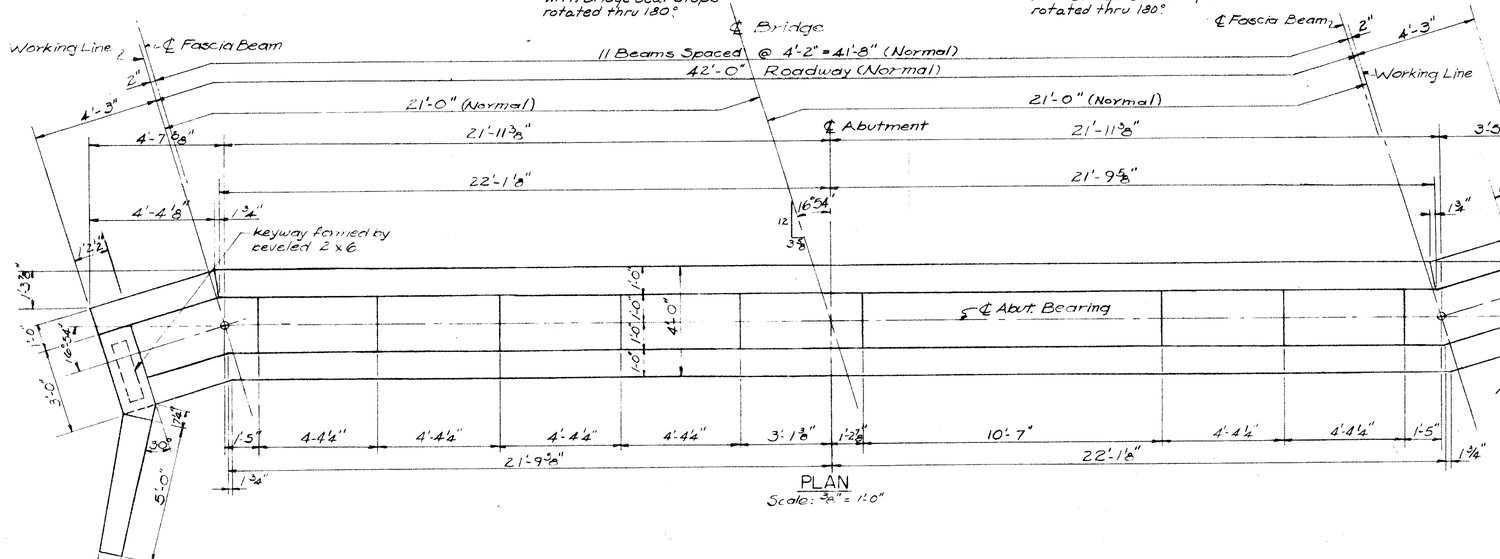
Bench Mark No 1918 LHC. B.M. in Top of southwest wingwall of South Bridge El. 840.85 ~~Bench Mark No. 1918 Sta 1176+85 - Rt 76' R.R. spike in west side of fence post. Elev. 833.97~~



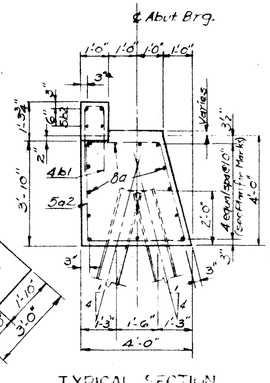
REAR ELEVATION
Scale: 3/8" = 1'-0"



SECTION B B
Scale: 3/8" = 1'-0"

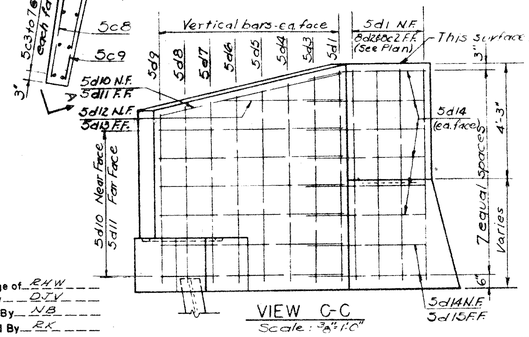


PLAN
Scale: 3/8" = 1'-0"

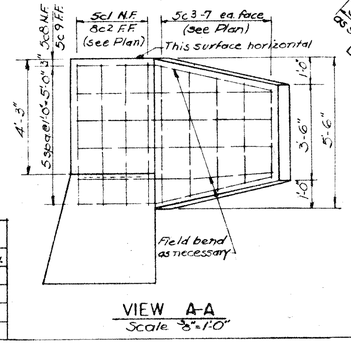


TYPICAL SECTION
Scale: 3/4" = 1'-0"

REINFORCING STEEL — PLAN
Scale: 3/8" = 1'-0"



VIEW C-C
Scale: 3/8" = 1'-0"



VIEW A-A
Scale: 3/8" = 1'-0"

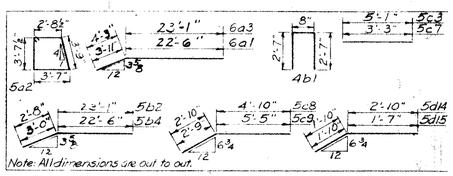
ABUTMENT ELEVATIONS

		A	B	C	D	E	F	G	H	I	J	Bot. Ftg.
W.B.	E. Abut.	837.21	837.34	837.47	837.60	837.72	837.82	837.86	837.82	837.74	837.62	833.21
Rdwy.	W. Abut.	836.34	836.49	836.62	836.75	836.87	836.97	837.01	836.97	836.89	836.77	832.36
E.B.	E. Abut.	837.16	837.28	837.40	837.52	837.64	837.78	837.75	837.69	837.60	837.47	833.16
Rdwy.	W. Abut.	836.31	836.43	836.55	836.67	836.79	836.87	836.90	836.84	836.76	836.62	832.31

14-10BP42 Steel Piles required for each abut. 28' long W.B. Rdwy; 33' long E.B. Rdwy. Batter Piles 1:4 in direction indicated.

BILL of REINF. STEEL - ONE ABUTMENT

Mark	Location	No.	Shape	Length	Weight
8a1	Footing, Longit.	13		26-0	917
5a2	Footing, Heeps	38		14-6	575
8a3	Footing, Longit.	13		27-4	949
4b1	Backwall, Hairpins	51		5-10	199
5b2	Backwall, Longit.	4		25-9	108
5b3	Backwall, Dowels	8		2-3	19
5b4	Backwall, Longit.	4		25-6	108
5c1	Wingwall, Vert. - N.F.	4		5-2	22
8c2	Wingwall, Vert - F.F.	10		5-2	138
5c3-7	Wingwall, Vert.	10		varies	44
5c8	Wingwall, Horiz. - N.F.	6		7-8	49
5c9	Wingwall, Horiz. - F.F.	6		8-2	51
5d1	Wingwall, Vert.	6		varies	52
8d2	Wingwall, Vert. F.F.	4		varies	90
5d3-9	Wingwall, Vert.	14		varies	106
5d10	Wingwall, Horiz. - N.F.	7		7-10	57
5d11	Wingwall, Horiz. - F.F.	7		8-4	61
5d12	Wingwall, Horiz. - N.F.	1		5-3	6
5d13	Wingwall, Horiz. - F.F.	1		5-9	6
5d14	Wingwall, Horiz.	14		4-8	68
5d15	Wingwall, Horiz. - F.F.	2		3-5	7
5d16	Wingwall, Footing	5		2-8	14
				Total	3646



Note: All dimensions are out to out.

CONCRETE PLACEMENT (ONE ABUT.)

Footing	28.3 C.Y.
Backwall	2.4 C.Y.
Wingwalls	4.5 C.Y.
Total	35.2 C.Y.

ESTIMATED QUANTITIES (FOUR ABUTS.)

Concrete	140.8 C.Y.
Reinforcing Steel	14,584 lbs.
Furnishing 10BP42 Steel Piles - ~~28 @ 28' = 784'~~ ~~28 @ 33' = 924'~~ 1813.9	~~1708~~ L.F.
Driving 10BP42 Steel Piles	1792.2 ~~1708~~ L.F.
Class 20 Excavation	2356 C.Y.

ABUTMENT NOTES:

All exposed corners at 90° or sharper are to be filleted with a 3/4" dressed and beveled strip.

Reinforcing steel is to be securely wired in place before concrete is poured.

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

Piling is to be driven to full penetration if practicable, but to at least 37 ton bearing value.

SPECIFICATIONS:

Design: A.A.S.H.O., Series of 1953.
Construction: Iowa State Highway Commission Standard Specifications, Series of 1956, plus current Special Provisions.

DESIGN FOR 16°54' SKEW

TWIN 188'-4" x 42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

2-59'-9 1/2" END SPANS 1-68'-9" INTERMEDIATE SPAN
CONCRETE FLOOR AND SUBSTRUCTURE - STEEL RAIL
INTERSTATE OVER FOUR MILE CREEK

ABUTMENTS

STATION 1174+05 ℄ INTERSTATE PROJ. NO. [I-IG-01-4(2)] I-IG-80-4(2)142

POLK COUNTY

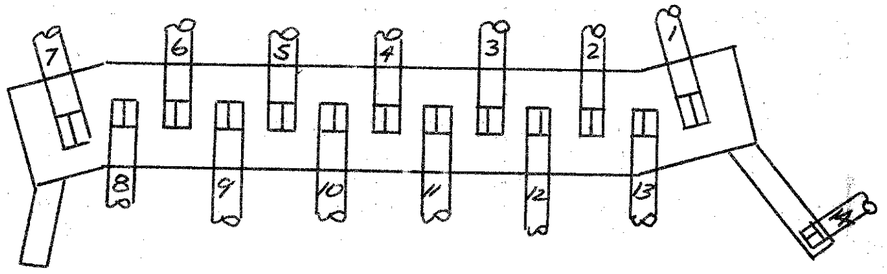
DESIGNED BY BROWN & BLAUVELT, NEW YORK, N.Y. FOR
IOWA STATE HIGHWAY COMMISSION

DECEMBER 1957 SHEET 2 OF 5

In Charge of R.H.W.
Made By O.T.V.
Traced By N.B.
Checked By R.K.

East Abut.

West Abut.



DATA

Type of piling: 10BP42 Steel

Length in leads: As indicated

Type of hammer: Gravity I.H.C. # 742

Weight of hammer:
Gross-------3830 lb.
Eff.--------3750 lb.

Weight of cap: ----------1832 lb.

Weight of pile: Length X 42 lb.

Full penetration or 37 ton minimum bearing

Pile bearing formula: $P = \frac{3\,W\,H}{S + 0.35} \times \frac{W\,K}{W + M}$

P = pile bearing, in tons
W = weight of hammer, in tons
H = height of hammer drop, in feet
M = weight of cap plus pile, in tons
S = average penetration, in inches
K = batter factor (0.946 for 1:4 batter)

WEST ABUTMENT E.B.

Pile No.	Date	Length In Leads	Length Of Cutoff	Length In Structure	Batter	Drop	Av. Pen. In Last 5 Blows	Bearing
1	6-16-59	33'	0.0	33.0	1:4	10'	0.50	33.6
2	"	"	0.0	33.0	"	"	0.35	40.2
3	"	"	1.1	31.9	"	"	0.40	38.0
4	"	"	1.5	31.5	"	"	0.40	38.0
5	"	"	1.8	31.2	"	"	0.48	34.4
6	"	"	0.0	33.0	"	"	0.50	33.6
7	"	"	1.6	31.4	"	"	0.45	35.8
8	6-17-59	35.5	0.3	35.2	"	"	0.45	35.2
9	"	34.1	0.0	34.1	"	"	0.50	33.5
10	6-16-59	33.0	0.4	32.6	"	"	0.50	33.6
11	"	"	0.7	32.3	"	"	0.48	33.4
12	"	"	0.7	32.3	"	"	0.35	40.7
13	"	"	0.4	32.6	"	"	0.45	35.8
14	"	"	1.5	31.5	"	"	0.60	30.1

EAST ABUTMENT E.B.

1	6-13-59	33.0	0.0	33.0	1:4	10'	0.48	34.4
2	6-15-59	36.6	0.9	35.7	"	"	0.33	41.2
3	"	36.9	1.1	35.8	"	"	0.40	37.2
4	"	36.8	0.8	36.0	"	"	0.35	39.8
5	"	38.7	2.1	36.6	"	"	0.45	34.5
6	"	35.8	0.0	35.8	"	"	0.40	37.4
7	"	39.8	1.5	38.3	"	"	0.40	36.6
8	"	34.6	0.0	38.6	"	"	0.40	37.7
9	"	38.8	1.8	37.0	"	"	0.30	42.3
10	"	37.9	1.5	36.4	"	"	0.35	39.6
11	"	35.9	0.0	35.9	"	"	0.40	37.4
12	"	39.4	4.6	34.8	"	"	0.35	39.2
13	"	39.1	4.3	34.8	"	"	0.40	36.6
14	6-13-59	33.0	1.6	31.4	"	"	0.43	36.7

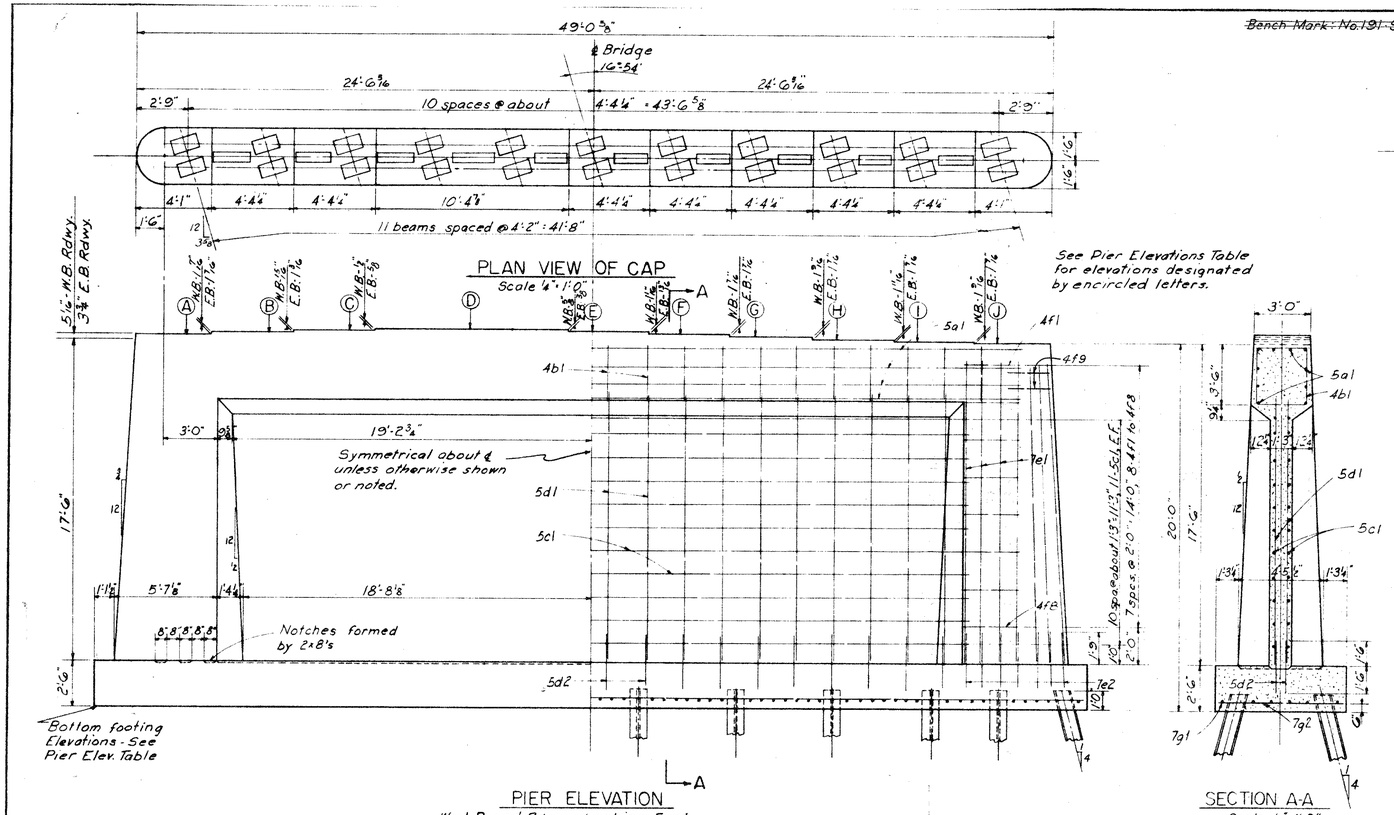
WEST ABUTMENT W.B.

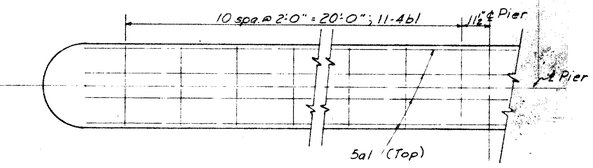
1	6-17-59	33.3	0.0	33.3	1:4	10'	0.53	32.5
2	"	39.7	6.5	33.2	"	"	0.50	32.2
3	"	33.7	3.2	30.5	"	"	0.35	40.6
4	6-16-59	28.0	0.0	28.0	"	"	0.40	39.5
5	"	28.0	0.0	28.0	"	"	0.50	34.8
6	6-17-59	33.4	0.4	33.0	"	"	0.45	35.6
7	"	33.7	1.7	32.0	"	"	0.50	33.5
8	"	32.7	1.4	31.3	"	"	0.45	35.8
9	"	32.7	0.5	32.2	"	"	0.50	33.8
10	"	32.7	0.7	32.0	"	"	0.53	32.6
11	"	33.1	0.3	32.8	"	"	0.53	32.5
12	"	33.5	1.5	32.0	"	"	0.45	35.6
13	"	39.1	7.1	32.0	"	"	0.40	34.4
14	"	33.7	2.0	31.7	"	"	0.45	35.6

EAST ABUTMENT W.B.

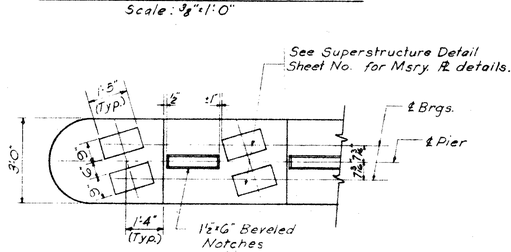
1	6-12-59	28.0	1.8	26.2	1:4	10.0	0.50	34.8
2	"	"	1.1	26.9	"	"	0.40	39.4
3	"	"	0.7	27.3	"	"	0.35	42.3
4	"	"	0.3	27.7	"	"	0.35	42.3
5	"	"	0.0	28.0	"	"	0.53	34.0
6	6-13-59	30.7	0.2	30.5	"	"	0.40	38.8
7	"	32.1	0.0	32.1	"	"	0.40	38.4
8	"	31.9	0.4	31.5	"	"	0.45	36.0
9	6-12-59	33.0	3.0	30.0	"	"	0.38	40.5
10	6-13-59	30.3	0.6	29.7	"	"	0.35	41.6
11	6-12-59	28.0	0.00	28.0	"	"	0.50	34.8
12	"	"	0.2	27.8	"	"	0.40	39.4
13	"	28.0	0.6	27.4	"	"	0.30	45.5
14	"	"	2.6	25.4	"	"	0.40	39.4

~~Bench Mark: No.191 Sta. 1176+85 Rt. 70', R.R. spike in west side fence post Elev. 833.97~~





HALF PLAN - CAP REINFORCING
Scale: 3/8" = 1'-0"

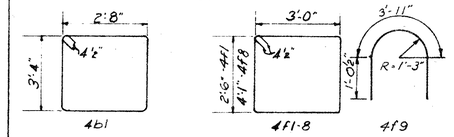


PART PLAN
Scale: 3/8" = 1'-0"

BILL OF REINF. STEEL — ONE PIER

Mark	Location	Shape	No.	Length	Weight
5a1	Cap-Longitudinal	—	10	46'-0"	480
4b1	Cap-Hoops	□	22	12'-9"	187
5c1	Diaphragm-Long.	—	22	40'-6"	929
5d1	Diaphragm-Vert.	—	40	14'-0"	584
5d2	Diaphragm-Dowels	—	40	3'-0"	125
7e1	Pier Shaft-Vert.	—	26	17'-4"	921
7e2	Pier Shaft-Dowels	—	26	3'-6"	186
4f1-8	Pier Shaft-Trans.	□	16	Varies	142
7g1	Footing Long.	—	6	53'-2"	652
7g2	Footing Trans.	—	77	6'-8"	1050
4f9	Cap Ends	⊃	4	6'-0"	16
	Total Weight				5,272

BAR DETAILS



Note: All bar dimensions are out to out of bars.

CONCRETE PLACEMENT QUANTITIES

Concrete in footing	34.7
Concrete above footing	70.0 ~~67.8~~
Total	104.7 ~~102.5~~

ESTIMATED QUANTITIES - FOUR PIERS 418.8 ~~410.0~~

Concrete	C.Y.	
Reinforcing Steel	Lbs.	21,088
Excavation Class 21	C.Y.	770
Excavation - Class 20	C.Y.	158
Furnishing Steel Piles - 10BP42 - 96'-6"	L.F.	1536
Driving Steel Piles - 10BP42	L.F.	1536

PIER NOTES:

All exposed corners 90° or sharper to be filleted with a 3/4" dressed beveled strip.

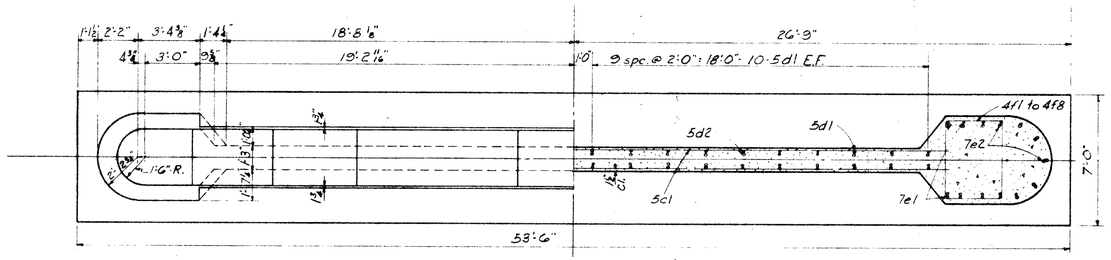
Reinforcing steel is to be securely wired in position before concrete is placed. Edge distance from face of concrete to ℄ of near bar to be 2" unless otherwise noted.

Piling is to be driven to full penetration if practicable but in no case to less than 37 ton bearing capacity.

SPECIFICATIONS:

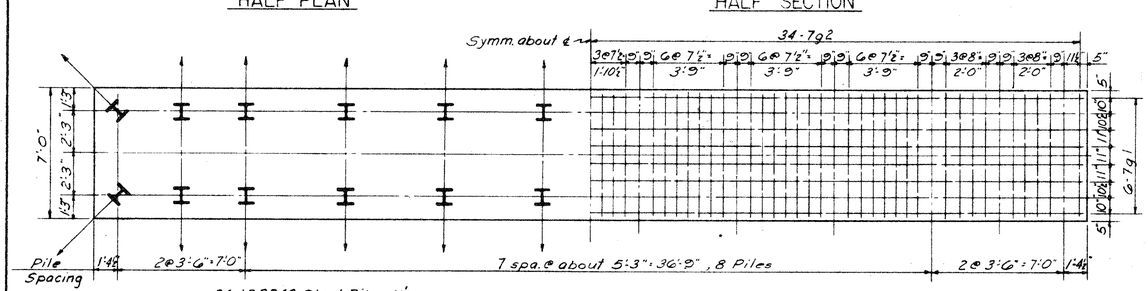
Construction: Iowa State Highway Commission Standard Specifications, Series of 1956, plus current special provisions.

Design: A.A.S.H.O., Series of 1953.



HALF PLAN

HALF SECTION



All piles 10BP42

24-10BP42 Steel Piles - 16' long required for each pier. Batter piles 1:4 in direction indicated.

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

PIER ELEVATIONS

		A	B	C	D	E	F	G	H	I	J	Bott. Elg.
W.B. Rdwy.	Pier No.1	837.00	837.12	837.20	837.24	837.19	837.10	836.98	836.85	836.71	836.58	816.58
	Pier No.2	837.31	837.43	837.51	837.55	837.50	837.41	837.29	837.16	837.02	836.89	816.89
E.B. Rdwy.	Pier No.1	836.85	836.97	837.07	837.12	837.09	837.02	836.90	836.78	836.66	836.54	816.54
	Pier No.2	837.16	837.28	837.38	837.43	837.40	837.33	837.21	837.09	836.97	836.85	816.85

In Charge of RHW
Made by JMK
Traced by JMK
Checked by RS

Revised 4-2-59: Pier Concrete Quantity changed.

DESIGN FOR 16°-54' SKEW

TWIN 188'-4" x 42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

2-59'-9 1/2" END SPANS 1-68'-9" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE - STEEL RAIL

INTERSTATE OVER FOUR MILE CREEK

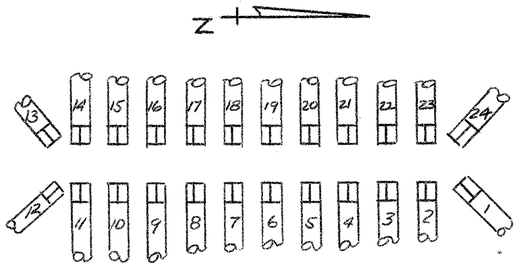
PIERS

STATION 1174+05 ℄ INTERSTATE PROJ. NO. [I-IG-01-4(2)] I-IG-80-4(2)142

POLK COUNTY

DESIGNED BY BROWN & BLAUVELT, NEW YORK, N.Y. FOR IOWA STATE HIGHWAY COMMISSION

DECEMBER 1957 SHEET 3 OF 5



DATA

Length in leads: As indicated

Type of piling: Steel 10BP42

Type of hammer: Gravity I.H.C. # 123

Weight of hammer:
Gross-------2875 lb.
Eff.--------2800 lb.

Weight of cap----------725 lb.

Weight of pile-----length X 42 lb.

Full penetration or 37 ton minimum bearing

Pile bearing formula: $P = \frac{3\,W\,H}{S + 0.35} \times \frac{W\,K}{W + M}$

P = pile bearing, in tons

H = height of hammer drop, in feet

W = weight of hammer, in tons

M = weight of cap plus pile, in tons

S= average penetration, in inches

K = batter factor (0.946 for 1:4 batter)

Note: Formula adjusted for extended piling

PIER No. 1 East Bound

Pile No.	Date	Length In Leads	Length Of Cutoff	Length In Structure	Batter	Drop	Av. Pen. In Last 5 Blows	Bearing
1	3-3-59	18.4	2.5	15.9	1:4	10'	0.20	47.1
2	"	18.7	1.5	17.2	"	"	0.20	46.9
3	"	18.8	1.5	17.3	"	"	0.15	51.7
4	"	20.0	3.3	16.7	"	"	0.15	51.0
5	3-2-59	16.0	0.4	15.6	"	"	0.30	40.7
6	3-3-59	19.0	1.9	18.1	"	"	0.23	44.4
7	"	21.0	4.0	17.0	"	"	0.18	47.6
8	"	19.5	1.8	17.7	"	"	0.15	51.2
9	"	20.9	2.9	18.0	"	"	0.23	43.6
10	3-2-59	30.3	11.3	19.0	"	"	0.20	42.2
11	"	32.0	12.3	19.7	"	"	0.15	45.7
12	"	27.9	8.4	19.5	"	"	0.23	40.8
13	"	24.4	5.5	18.9	"	"	0.18	46.1
14	"	24.2	5.0	19.2	"	"	0.18	46.2
15	"	27.3	8.2	19.1	"	"	0.20	43.3
16	"	31.6	14.3	17.3	"	"	0.18	43.3
17	3-3-59	21.5	5.3	16.2	"	"	0.18	47.4
18	"	19.4	3.5	15.9	"	"	0.20	46.6
19	"	18.9	2.4	16.5	"	"	0.23	44.4
20	3-2-59	16.0	1.1	14.9	"	"	0.20	48.1
21	2-28-59	16.0	0.3	15.7	"	"	0.30	40.7
22	3-3-59	19.1	0.9	18.2	"	"	0.18	48.5
23	3-2-59	16.0	0.6	15.4	"	"	0.20	48.1
24	"	16.0	1.0	15.0	"	"	0.30	40.7

PIER No. 2 East Bound

1	3-18-59	31.5	15.7	15.8	1:4	10'	0.20	41.8
2	"	32.0	15.8	16.2	"	"	0.20	41.6
3	3-17-59-	16.0	0.6	15.4	"	"	0.30	40.8
4	"	16.0	0.7	15.3	"	"	0.30	40.8
5	3-18-59	31.6	10.7	20.9	"	"	0.28	36.4
6	"	31.3	12.9	18.4	"	"	0.25	38.4
7	3-17-59	21.1	3.4	17.7	"	"	0.20	45.9
8	"	23.5	2.0	21.5	"	"	0.30	38.0
9	"	26.7	5.8	20.9	"	"	0.28	41.0
10	"	22.6	2.0	20.6	"	"	0.30	38.4
11	"	32.9	11.0	21.9	"	"	0.25	37.8
12	"	21.1	0.9	20.2	"	"	0.30	38.9
13	3-18-59	26.7	2.7	24.0	"	"	0.28	38.0
14	"	24.8	5.8	19.0	"	"	0.23	42.1
15	"	28.9	8.8	20.1	"	"	0.28	37.4
16	"	31.7	11.4	20.3	"	"	0.25	38.2
17	"	27.4	8.0	19.4	"	"	0.30	36.6
18	"	21.3	1.8	19.5	"	"	0.28	40.0
19	"	21.8	3.2	18.6	"	"	0.33	36.9
20	"	24.0	3.9	20.1	"	"	0.30	37.9
21	"	16.0	0.6	15.4	"	"	0.30	40.8
22	"	16.0	0.5	15.5	"	"	0.33	39.0
23	"	16.0	1.0	15.0	"	"	0.23	45.7
24	"	16.0	0.8	15.2	"	"	0.30	40.8

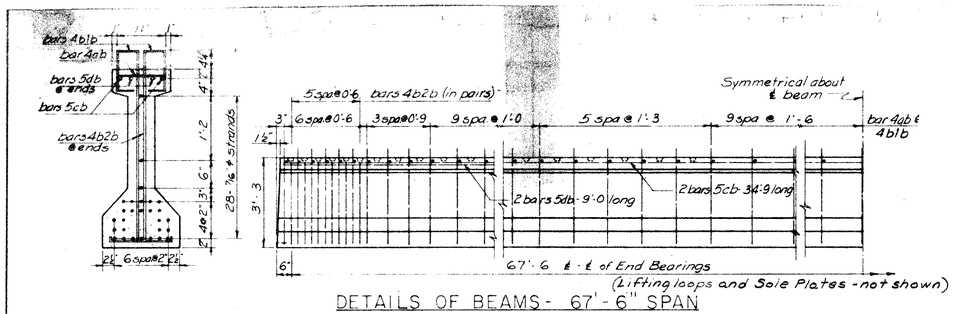
Note: Formula adjusted for extended piling.

PIER No. 1 West Bound

Pile No.	Date	Length In Leads	Length Of Cutoff	Length In Structure	Batter	Drop	Av. Pen. In Last 5 Blows	Bearing
1	2-6-59	16.0'	2.5	13.5	1:4	10'	0.15	53.0
2	"	"	3.5	12.5	"	"	0.1 26	55.6
3	"	"	3.3	12.7	"	"	0.10	59.0
4	"	"	3.1	12.9	"	"	0.126	55.6
5	"	"	4.0	12.0	"	"	0.126	55.6
6	"	"	3.7	12.3	"	"	0.083	61.3
7	"	"	3.5	12.5	"	"	0.10	59.0
8	2-5-59	"	4.4	11.6	"	"	0.10	59.0
9	"	"	3.1	12.9	"	"	0.126	55.6
10	"	"	3.0	13.0	"	"	0.126	55.6
11	"	"	3.0	13.0	"	"	0.12	56.4
12	"	"	2.7	13.3	"	"	0.15	53.0
13	"	"	2.7	13.3	"	"	0.12	56.4
14	"	"	2.6	13.4	"	"	0.15	53.0
15	"	"	2.2	13.8	"	"	0.15	53.0
16	"	"	3.6	12.4	"	"	0.15	53.0
17	"	"	3.6	12.4	"	"	0.15	53.0
18	"	"	3.4	12.6	"	"	0.12	56.4
19	2-4-59	"	4.1	11.9	"	"	0.15	53.0
20	2-5-59	"	3.0	13.0	"	"	0.15	53.0
21	"	"	4.2	11.8	"	"	0.12	56.4
22	"	"	2.0	14.0	"	"	0.12	56.4
23	"	"	2.3	12.7	"	"	0.12	56.4
24	"	"	2.2	13.8	"	"	0.15	53.0

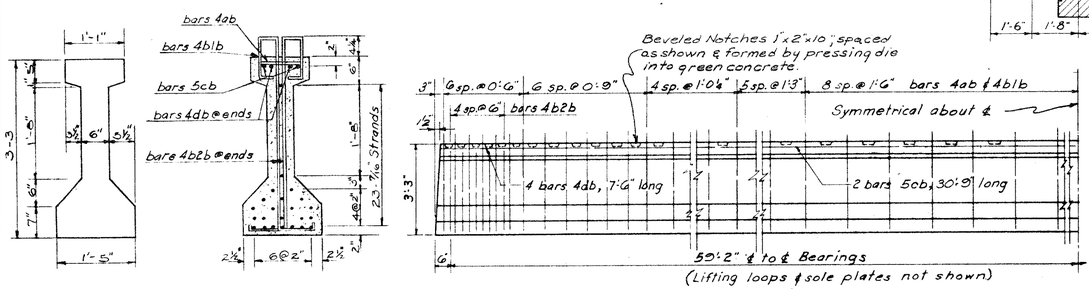
PIER No. 2 West Bound

1	2-16-59	16.0'	5.0	11.0	1:4	10'	0.15	53.0
2	"	"	4.9	11.1	"	"	0.13	55.2
3	"	"	4.8	11.2	"	"	0.10	58.9
4	"	"	4.4	11.6	"	"	0.13	55.2
5	"	"	2.8	13.2	"	"	0.20	48.1
6	"	"	4.5	11.5	"	"	0.10	58.9
7	"	"	2.8	13.2	"	"	0.18	50.0
8	"	"	3.8	12.2	"	"	0.18	50.0
9	"	"	2.5	13.5	"	"	0.15	53.0
10	"	"	2.0	14.0	"	"	0.18	50.0
11	"	"	1.7	14.3	"	"	0.15	53.0
12	"	"	1.5	14.5	"	"	0.15	53.0
13	"	"	1.6	14.4	"	"	0.18	50.0
14	"	"	1.8	14.2	"	"	0.15	53.0
15	2-14-59	"	2.2	13.8	"	"	0.15	53.0
16	"	"	2.5	13.5	"	"	0.20	48.1
17	"	"	3.2	12.8	"	"	0.20	48.1
18	"	"	3.2	12.8	"	"	0.18	50.0
19	"	"	2.2	13.8	"	"	0.20	48.1
20	"	"	2.0	14.0	"	"	0.18	50.0
21	"	"	3.1	12.9	"	"	0.18	50.0
22	"	"	4.1	11.9	"	"	0.15	53.0
23	"	"	3.7	12.3	"	"	0.13	55.2
24	"	"	3.3	12.7	"	"	0.10	58.9



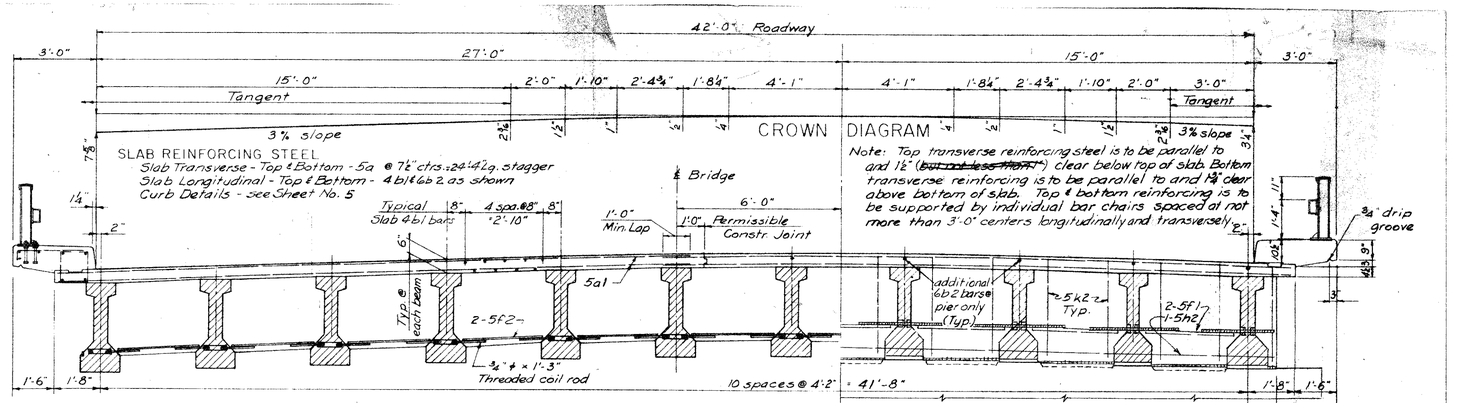
DETAILS OF BEAMS - 67'-6" SPAN

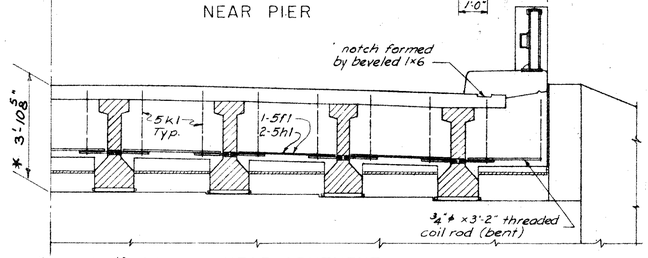
(Lifting loops and Sole Plates - not shown)



DETAILS OF BEAMS - 59'-2" SPAN

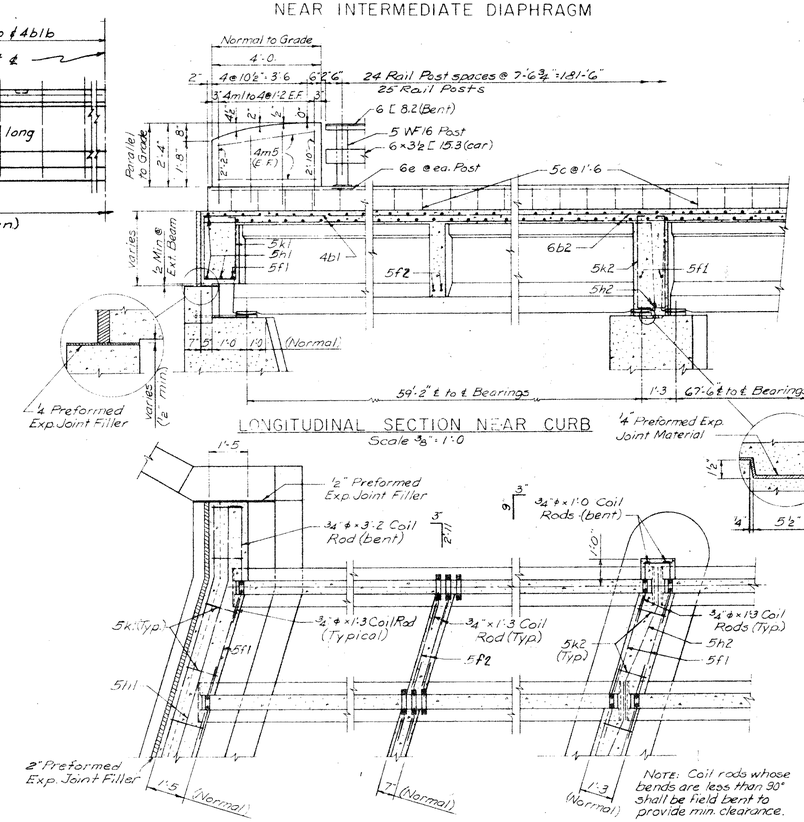
(Lifting loops & sole plates not shown)



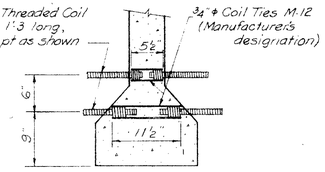


*Includes ½" Paint & Canvas
Does not include Slab Thickening

ROADWAY SECTIONS
Scale: ⅜" = 1'-0"

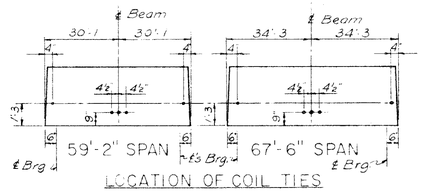


Coil rods shown below shall be similar to and equal to those manufactured by the Superior Concrete Accessories Co., Inc. of Chicago and the Richmond Screw Anchor Co. of St. Joseph, Mo.

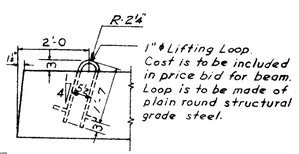


Coil ties are to be type M.12 (Manufacturer's designation)

Coil ties are to be held in place in forms by slotted coil setting studs projecting through forms. Studs are to be left in place until beams are erected when they are to be replaced with coil rods. Cost of coil ties & rods is to be included in price bid for beams.



LOCATION OF COIL TIES

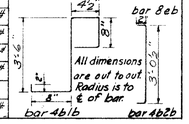


LIFTING LOOP

In Charge of R.H.W.
Made By D.J.V.
Traced By J.S.
Checked By R.K.

BILL OF REINFORCING STEEL (I-BEAM)

Bar	Shape	59'-2" No.	59'-2" Length	59'-2" Weight	67'-6 No.	67'-6 Length	67'-6 Weight
4ab		59	1'-2"	44#	65	1'-2"	51#
4b1b		118	5'-5"	427#	130	5'-5"	471#
4b2b		20	3'-3"	43#	24	3'-3"	52#
5cb	——	4	30'-9"	128#	4	34'-9"	145#
db	——	4	9/7'-6"	20#	4	9/9'-6"	37#
Total Weight				664#			756#



BEAM DATA

Span	Depth	Strands	Conc c.y.	Reinf. Steel - lbs.	Struct. Steel - lbs.	Initial Prestress	Camber As erected	Camber Slab in place
67'-6	3'-3"	28-7/16	6.74	756	229	529K	1 5/8"	1⅛"
59'-2	3'-3"	23-7/16	5.92	664	249	435K	1 7/16	15/16"

NOTES ON PRESTRESSED CONCRETE BEAMS:

Construction of prestressed units is to be in accordance with Section 2406 A with the following added provisions; when stress is released it is to be done gradually by means of jacks. If steam curing is used, the initial prestress shown is to be increased 6%

WEIGHT OF BEAMS

59'-2" Beam = 24,000 lbs.
67'-6" Beam = 27,300 lbs.

SUPERSTRUCTURE NOTES

This bridge is designed for H20-S-16-44 loading and Alternate Loading designated in BPR's PPM 20-4 Section C plus 19 lbs. per square foot of roadway for future wearing surface.

Concrete in slab is to have a 28 day crushing strength of 3500 psi, and is to contain no Class 'V' aggregate. It is to be placed as dry as practicable to reduce shrinkage to a minimum, and special precautions are to be taken to secure complete bond between beams and slab.

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

All reinforcing is to be securely wired in place and adequately supported on metal bar chairs before placing concrete.

Forms for slab are to be supported by the prestressed beams.

Cost of all preformed expansion joint material to be included in price bid for concrete.

Masonry plates are to be flat and true and are to be set in specification red lead and canvas.

Beams are to be set vertically.

SPECIFICATIONS

Design: A.A.S.H.O., Series of 1953, and U.S Bureau of Public Roads Design Criteria for Prestressed Concrete Bridges, 1955.

Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus current Special Provisions.

DESIGN FOR 16°-54' SKEW

TWIN 188'-4" x 42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

2-59'-9½" END SPANS 1-66'-9" INTERMEDIATE SPAN

CONCRETE FLOOR AND SUBSTRUCTURE - STEEL RAIL

INTERSTATE OVER FOUR MILE CREEK

SUPERSTRUCTURE DETAILS

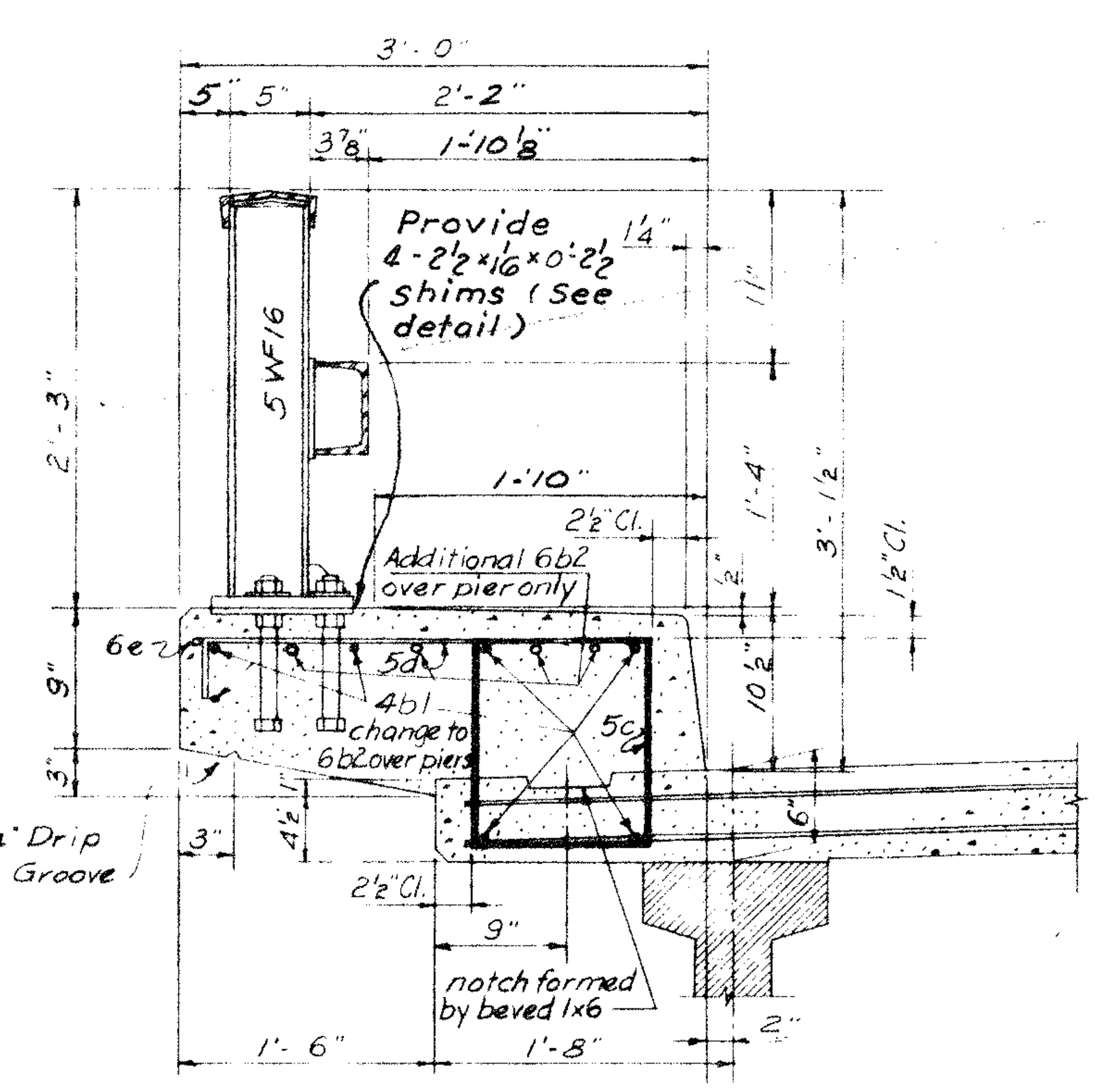
STATION 1174+05 ℄ INTERSTATE PROJ. NO. I-16-01-4(2) 1-16-80-4(2) 14-2

POLK COUNTY

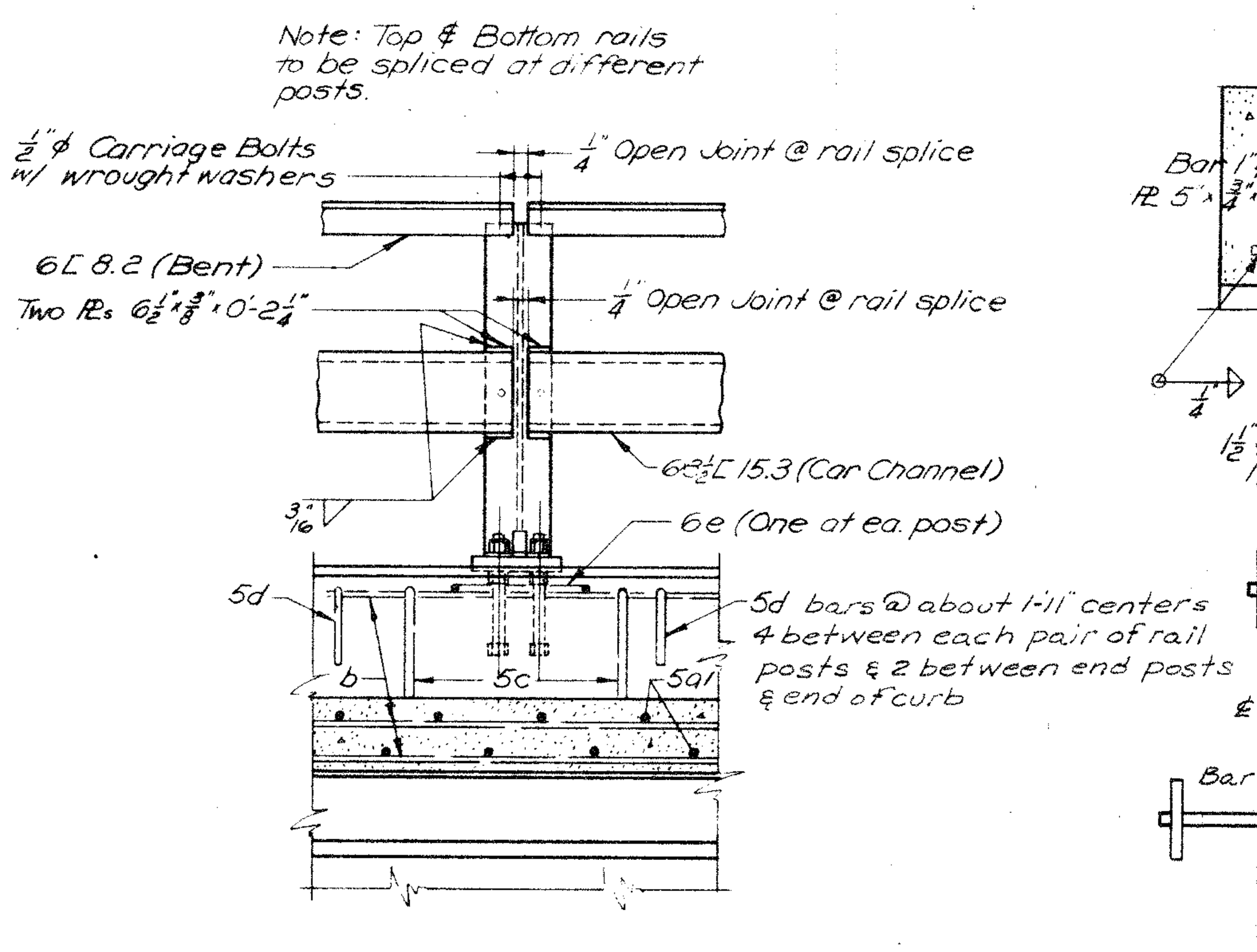
DESIGNED BY BROWN & BLAUVELT, NEW YORK, N.Y. FOR

IOWA STATE HIGHWAY COMMISSION

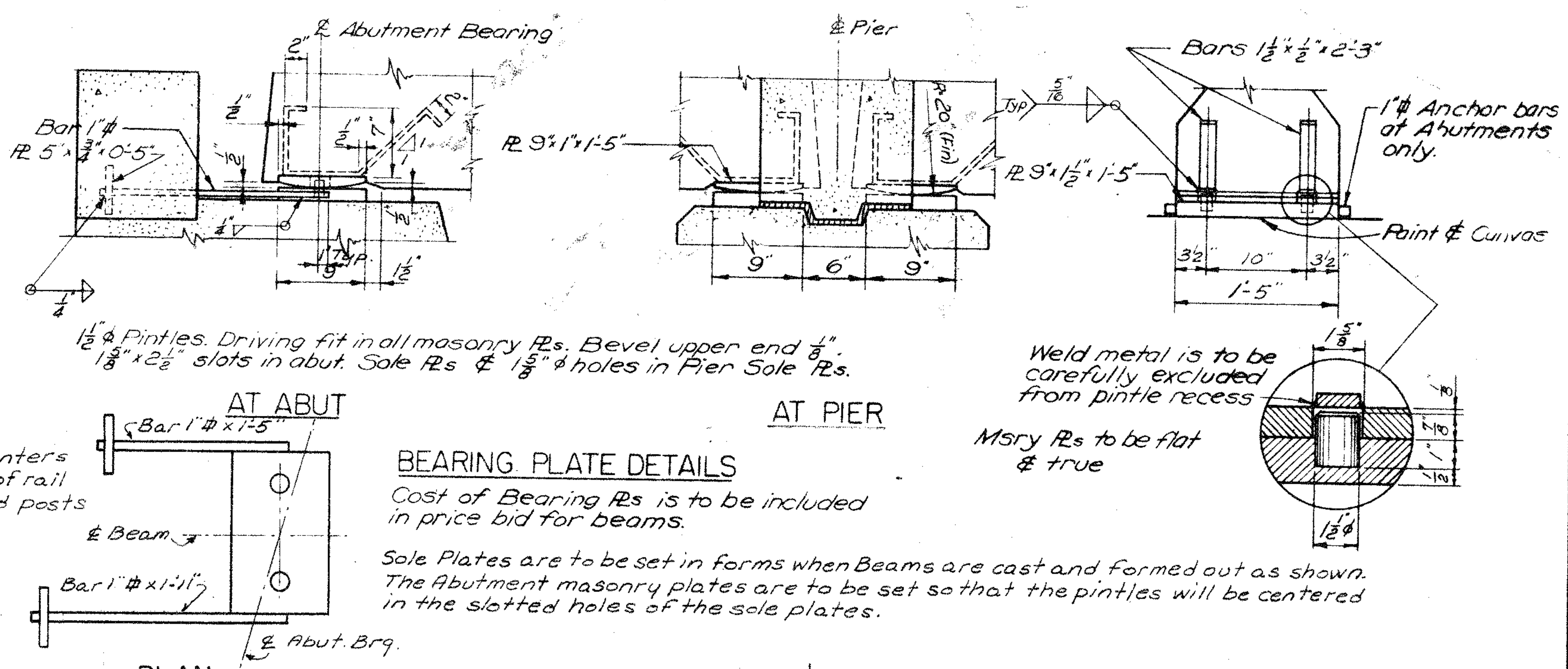
DECEMBER 1957 SHEET 4 OF 5



RAIL AND CURB DETAILS
Scale: 1" = 1'-0"



POST AND RAIL CONNECTION AT SPLICE
Scale: 1" = 1'-0"



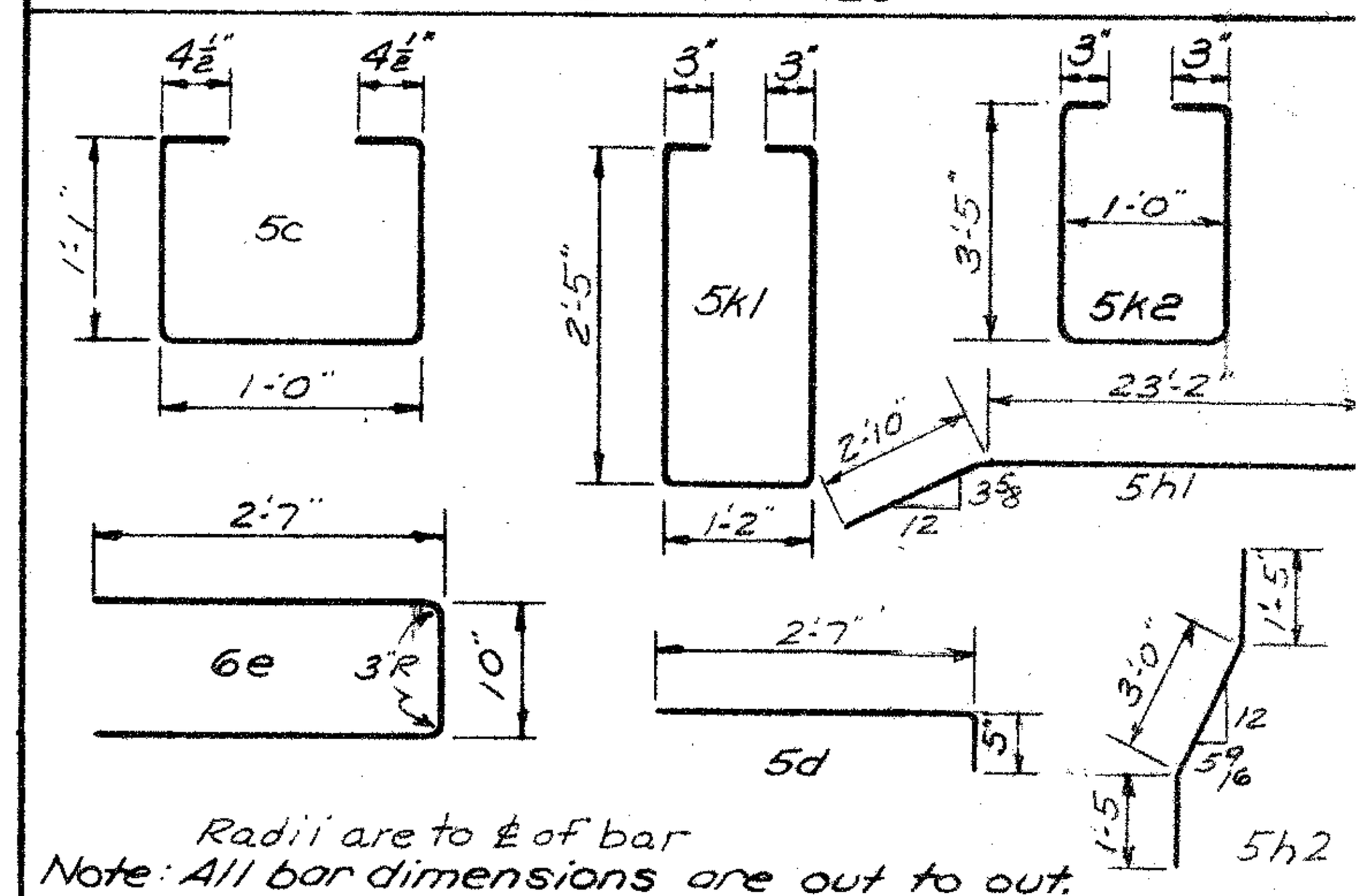
BEARING PLATE DETAILS

Cost of Bearing Pls is to be included in price bid for beams.

Sole Plates are to be set in forms when Beams are cast and formed out as shown. The Abutment masonry plates are to be set so that the pintles will be centered in the slotted holes of the sole plates.

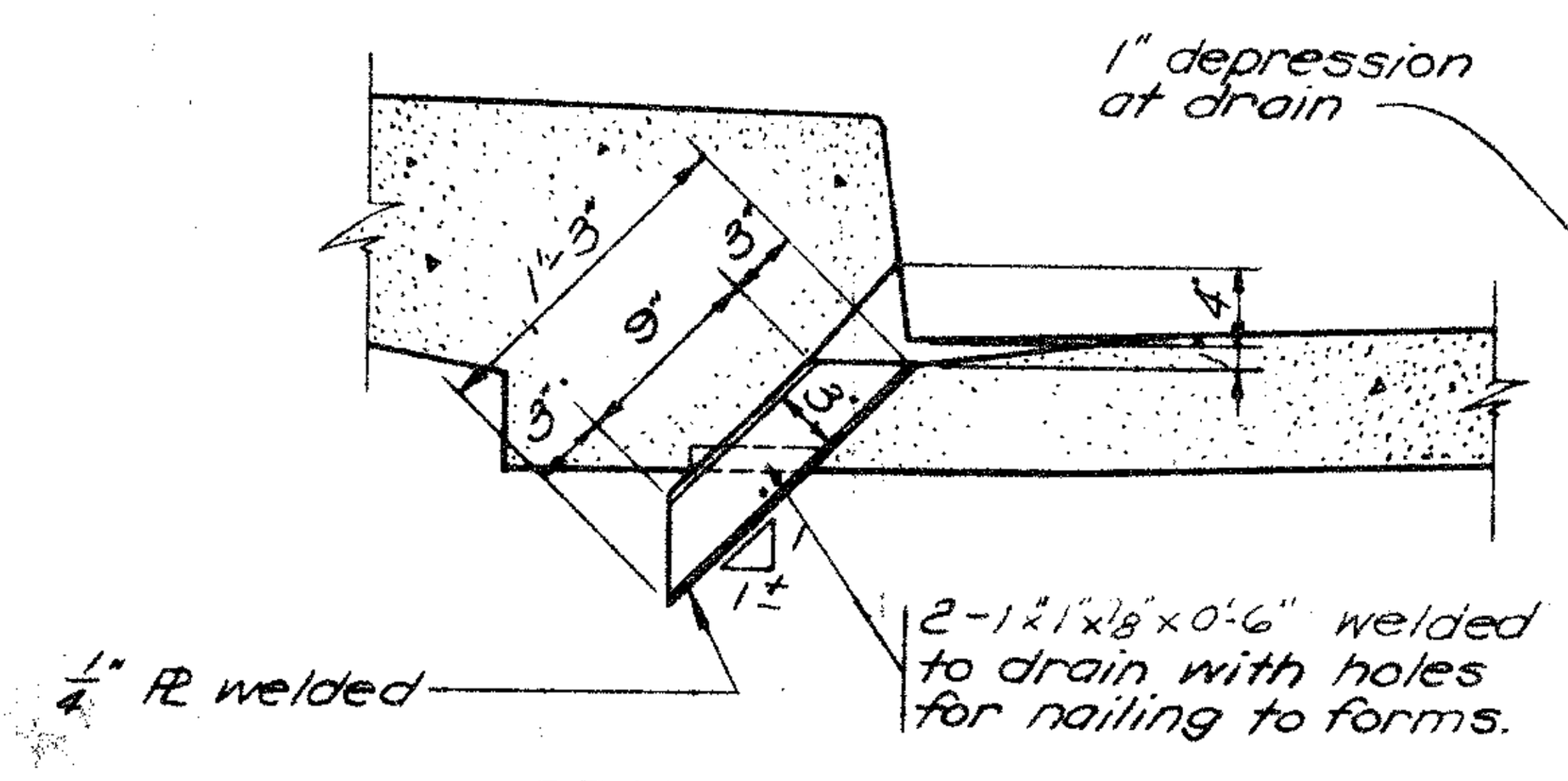
Bar	Location	Shape	No.	Length	Weight
BILL OF REINFORCING STEEL — 1-SUPERSTRUCTURE					
5a1	Slab transverse, top & bot	—	1214	24'-4"	30,70
4b1	Slab & Curb, longitudinal	—	312	53'-5"	11,13
6b2	Slab & Curb, longit. over pier	—	246	17'-10"	6,58
5c	Curb Dowels	⊔	254	3'-11"	1038
5d	Curb transverse	⌐	200	3'-0"	626
6e	Rail Post tie	⊐	50	5'-9"	432
5f1	Abut. & Pier Diaphragm (Short)	—	60	3'-8"	229
5f2	Intermediate Diaphragm (Short)	—	60	3'-0"	188
5h1	Abutment Diaphragm (Long)	⌐	12	26'-0"	325
5h2	Pier Diaphragm (Long)	⌐	20	5'-10"	123
5k1	Abutment Diaphragm Hoops	⊔	48	6'-6"	325
5k2	Pier Diaphragm Hoops	⊔	44	8'-6"	390
4m1-4	Parapet-Vertical	|	32	Varies	54
4m5	Parapet-Horizontal	—	16	3'-8"	40
				Total	52,15

BENT BAR DETAILS

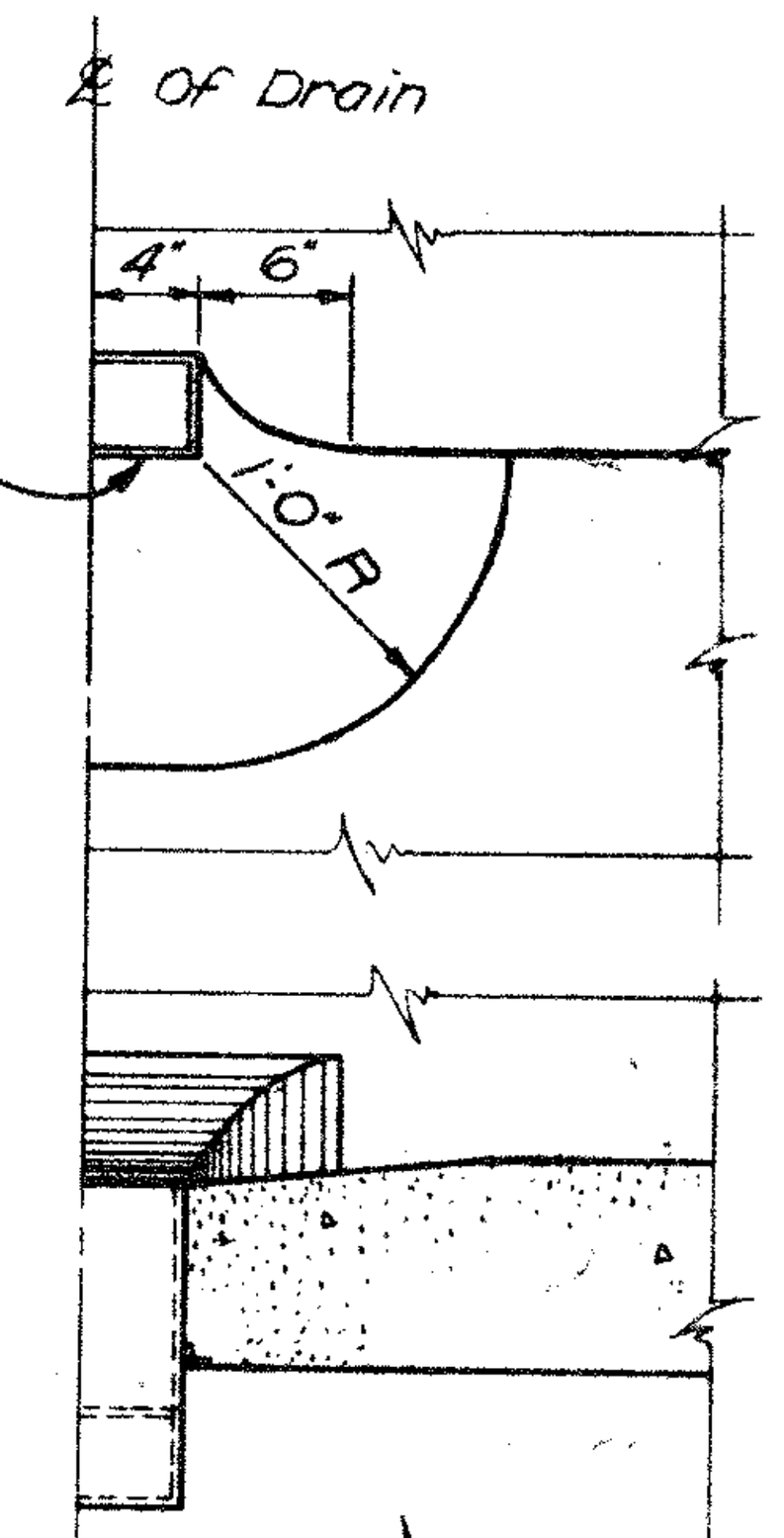


Radii are to ℄ of bar
Note: All bar dimensions are out to out.

Item	Unit	Quantity
ESTIMATED QUANTITIES-2 SUPERSTRUCTURES		
Concrete	C.Y.	487.4
Reinforcing Steel	lbs	104,394
Structural Steel	lbs	23,704
Prestressed Concrete Beam-59'-2"	Beam	44
Prestressed Concrete Beam 67'-6"	Beam	22

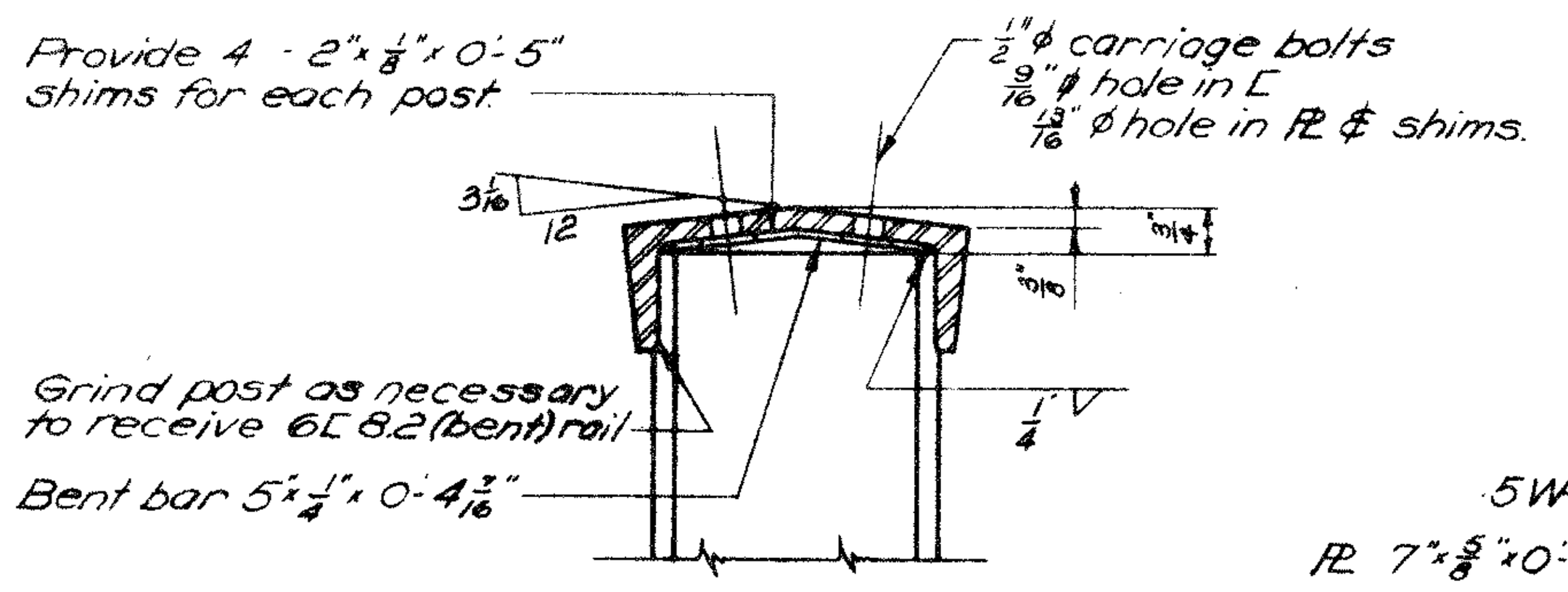


DRAIN DETAILS
Scale 1" = 1'-0"

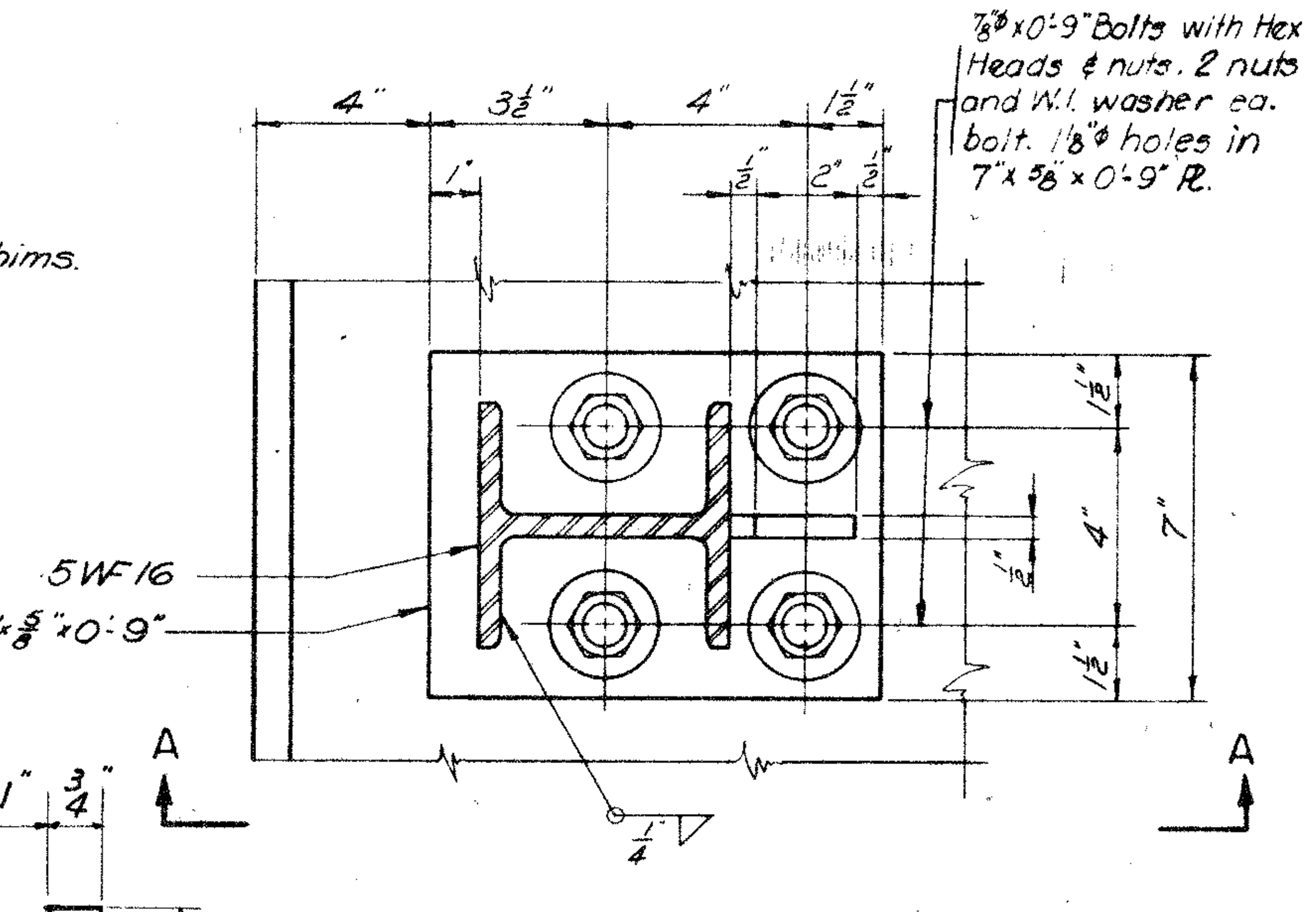


Note: See Situation Plan, Sheet #1 for drain spacing.
Weight of drains = 20 lbs. ea.

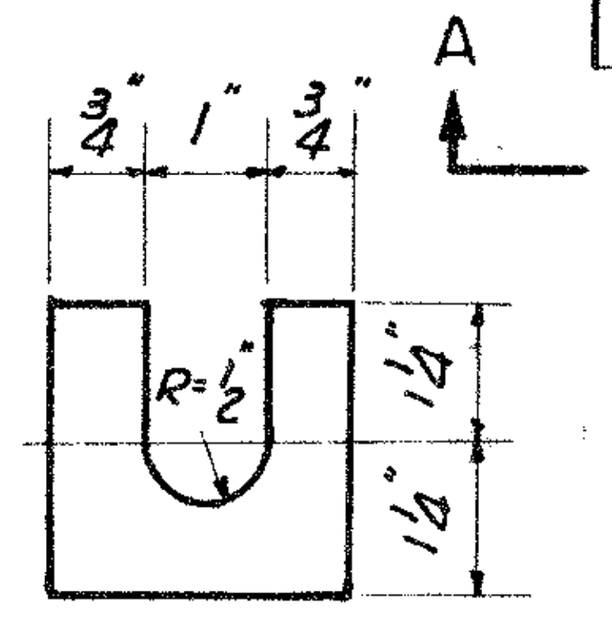
Section	Quantity (C.Y.)
CONC PLACEMENT QUANTITIES	
①	51.9
②	46.4
③	51.9
④	23.4
⑤	23.4
2 Curbs	36.2
4 Parapets	1.5
Total	234.7



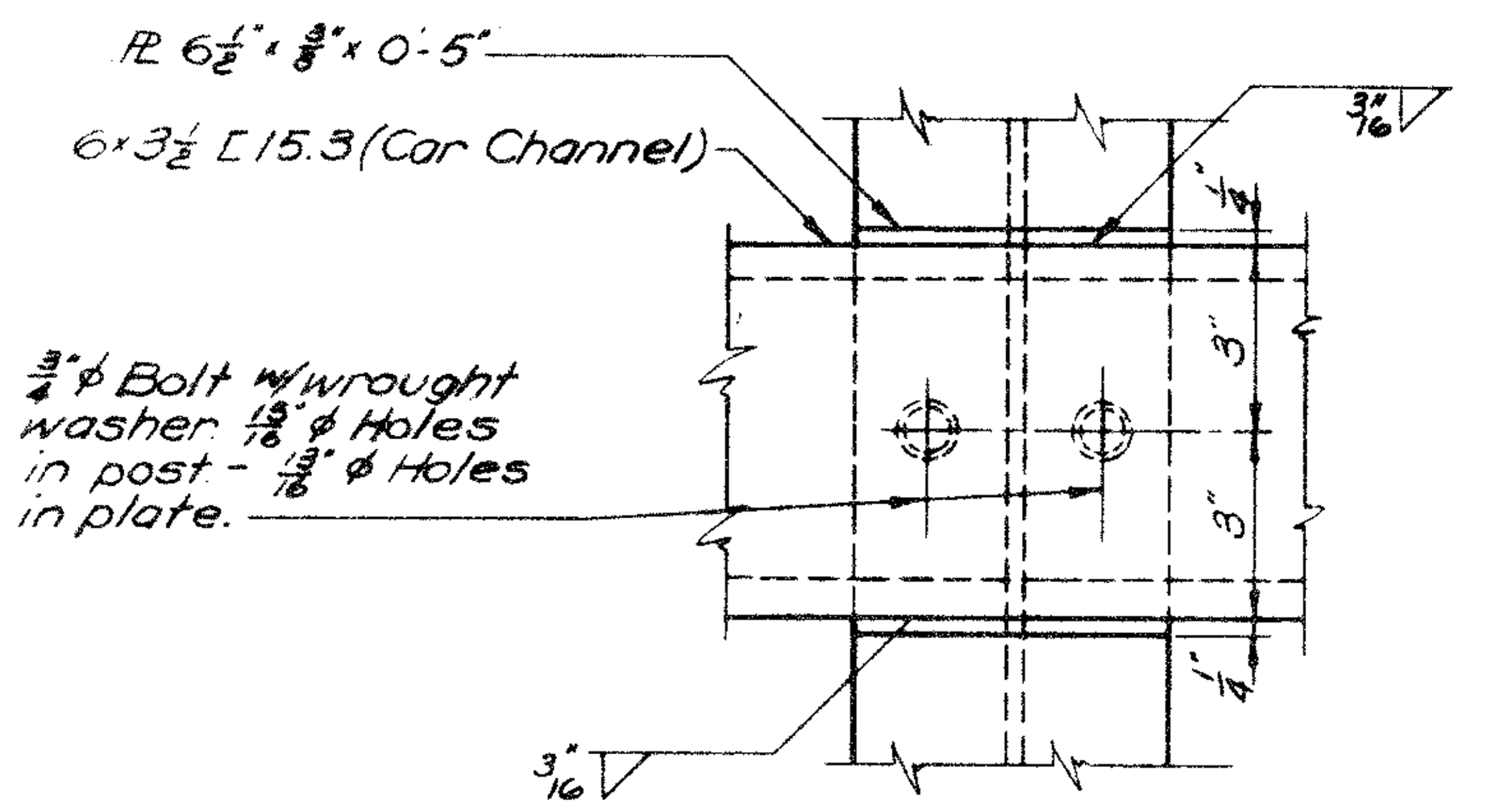
TOP RAIL CONNECTION DETAIL
Scale 3" = 1'-0"



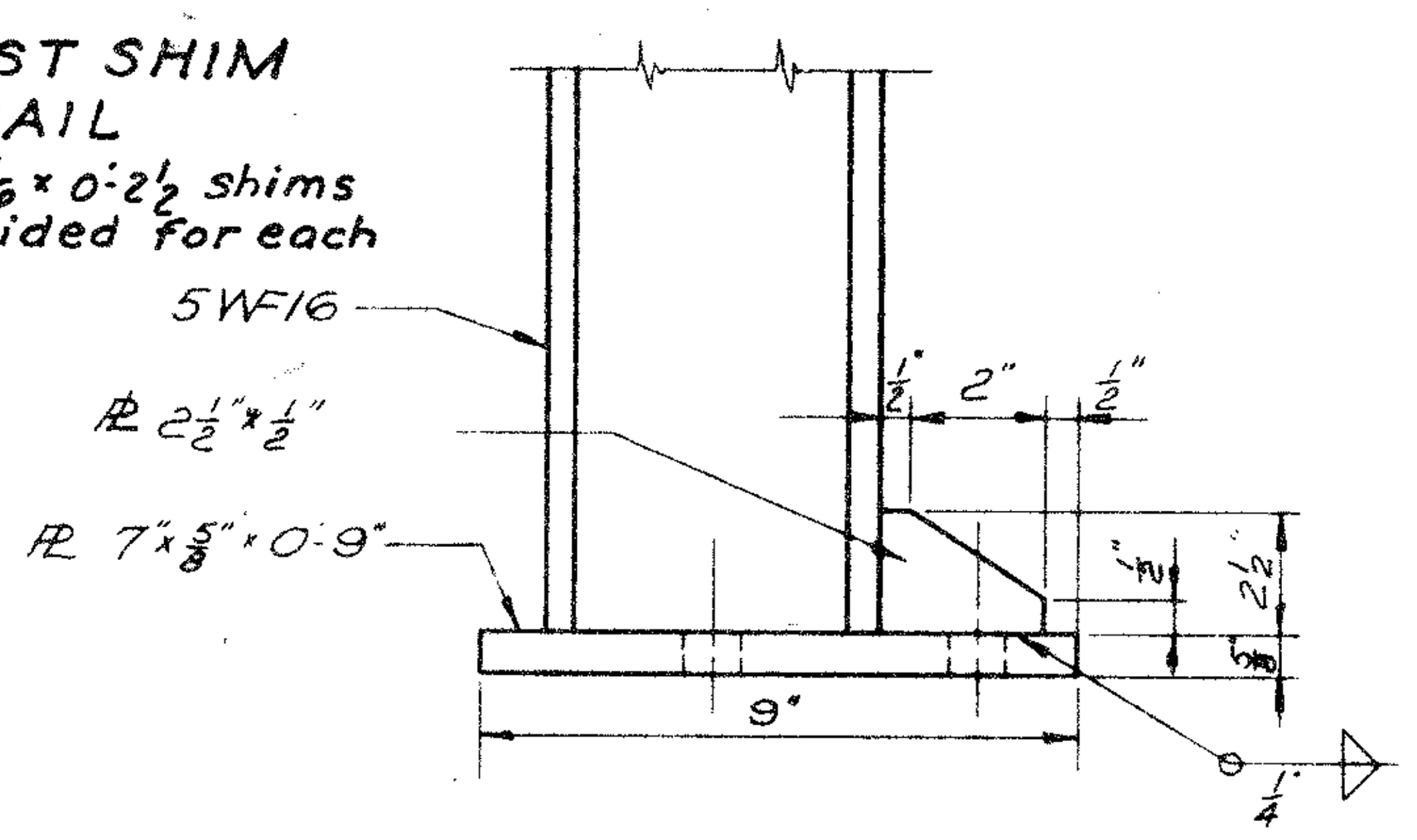
RAIL POST CONNECTION DETAIL
Scale: 3" = 1'-0"



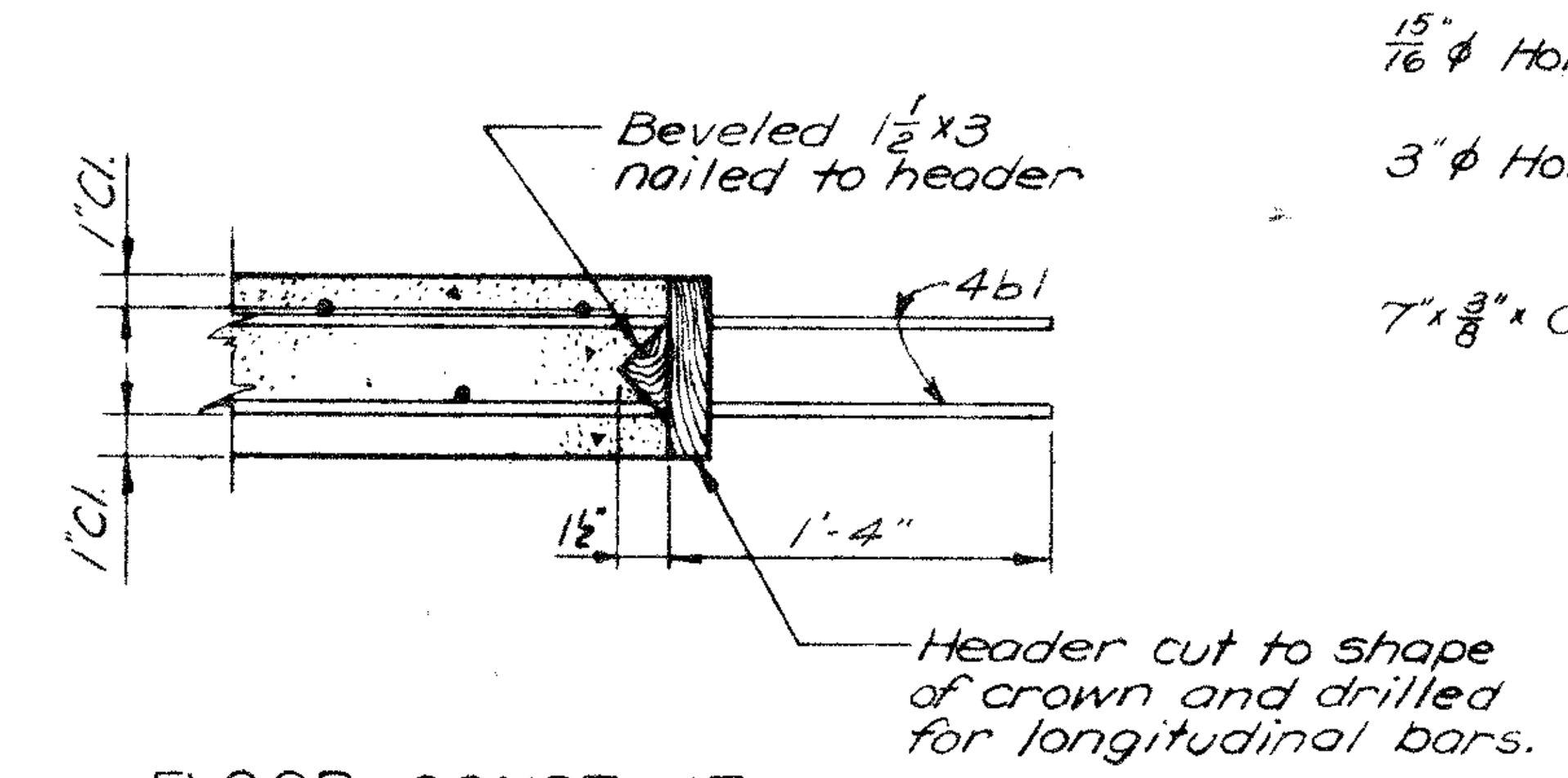
RAIL POST SHIM DETAIL
Four 2½×1/16×0'-2½ shims to be provided for each post.



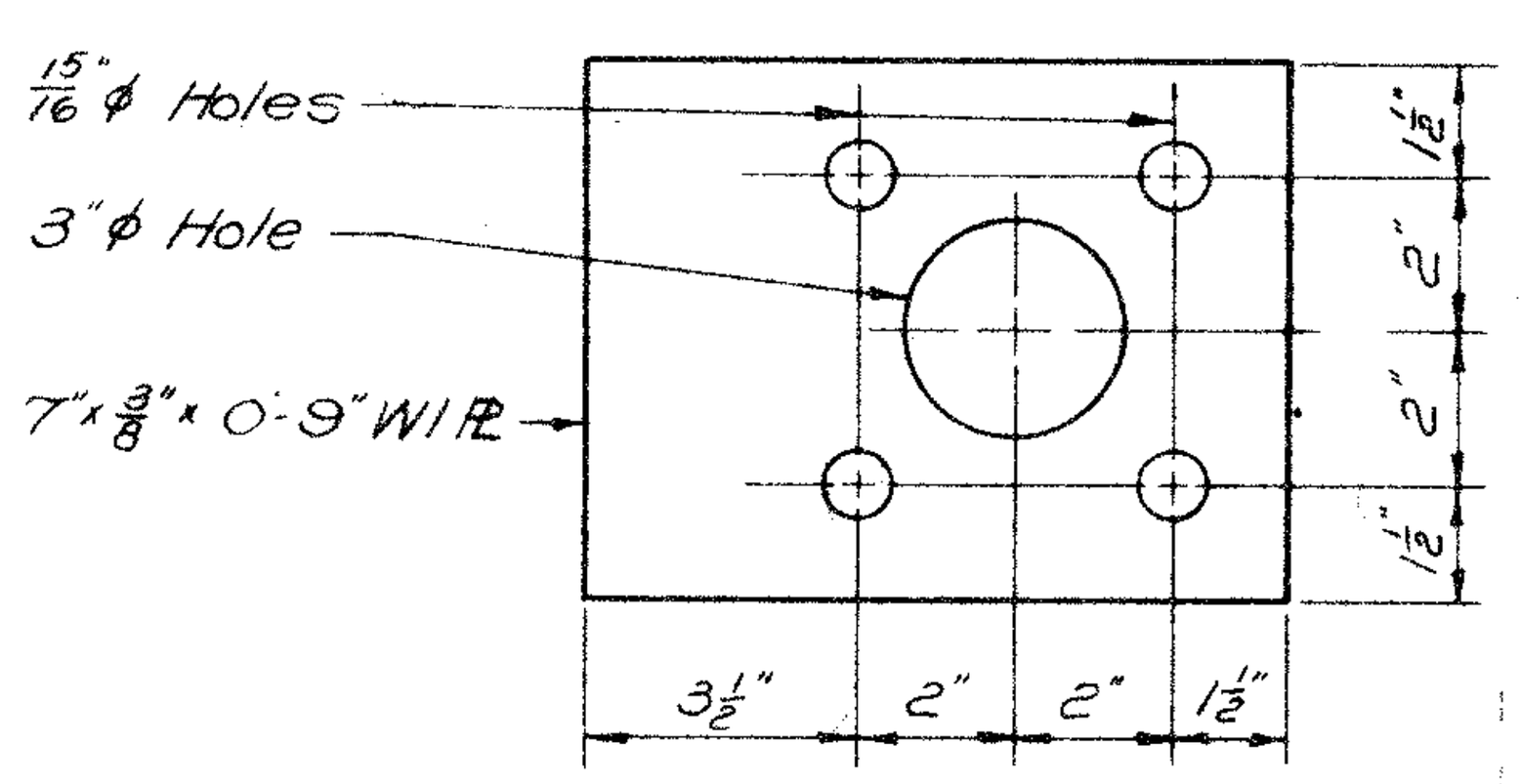
BOTTOM RAIL CONNECTION DETAIL AT INTERMEDIATE POST
Scale 3" = 1'-0"



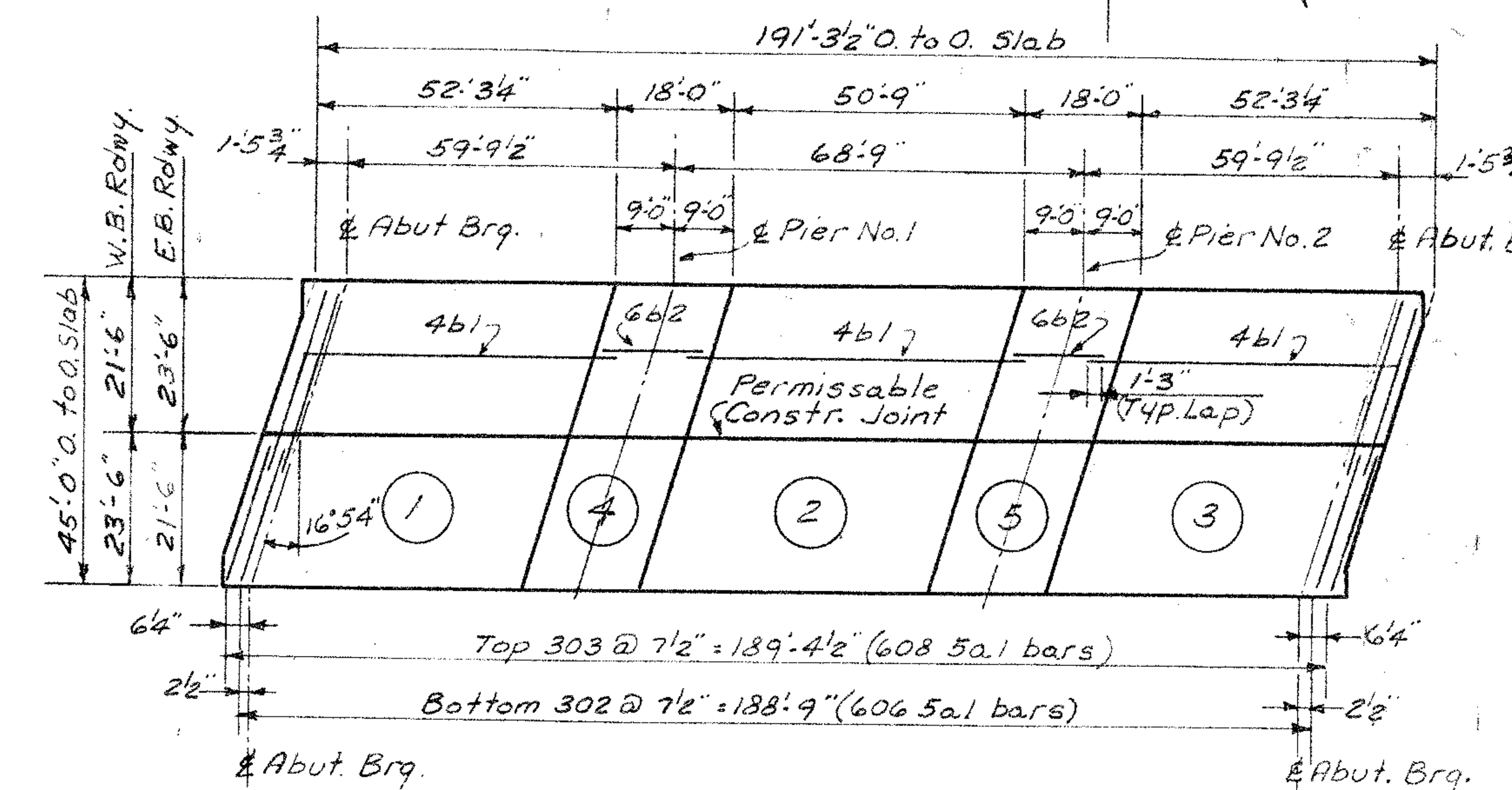
VIEW A A
Scale 3" = 1'-0"



FLOOR CONST JT.
Scale: 1" = 1'-0"



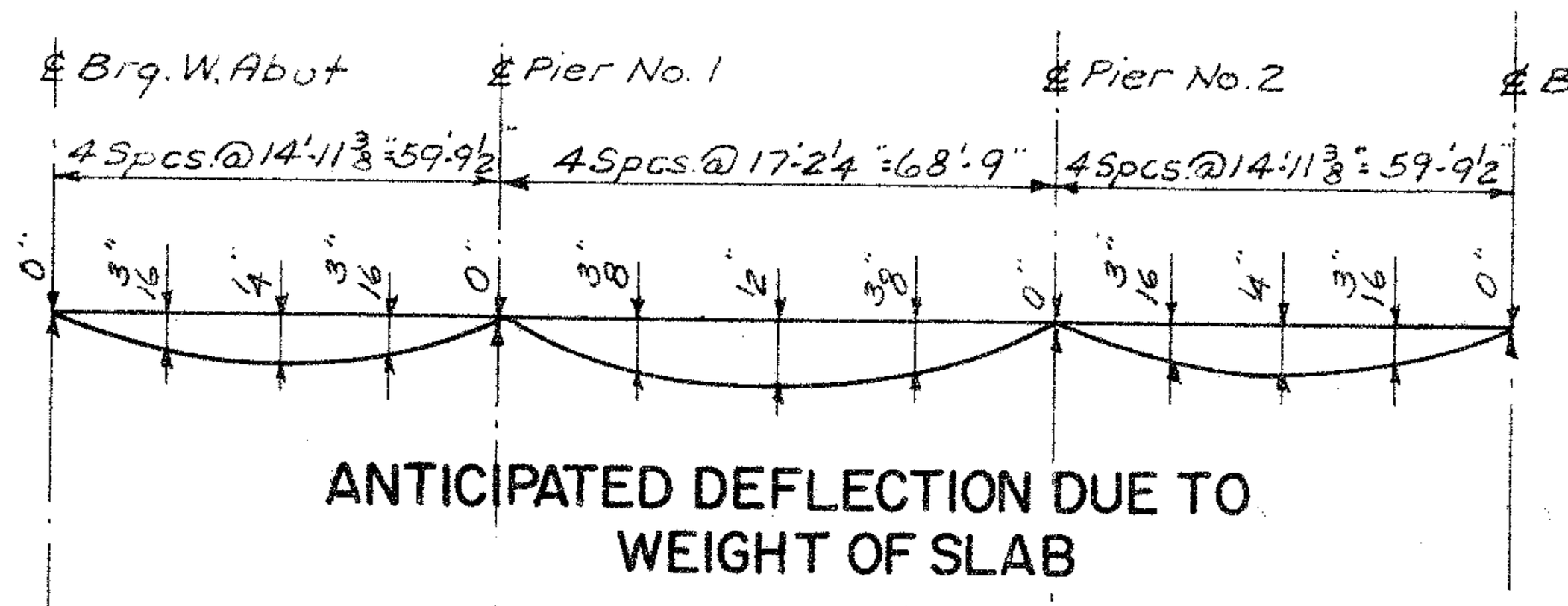
BASE PLATE DETAIL
Scale 3" = 1'-0"



Slab is to be placed in sections and in the order indicated by encircled figures. Curb may be placed continuously.

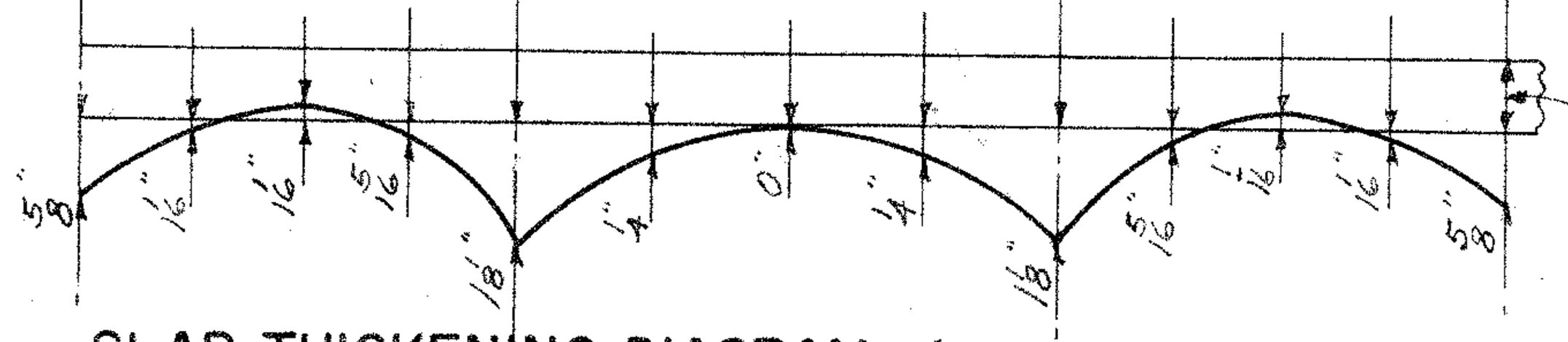
CONCRETE PLACEMENT DIAGRAM & LAYOUT OF LONGITUDINAL STEEL

Note: After final adjustments for alignment have been made, each rail post is to be caulked around the base plate in accordance with paragraph 2508.06 of the std Specs. Cost of caulking material is to be included in the bid price for structural steel.



ANTICIPATED DEFLECTION DUE TO WEIGHT OF SLAB

NOTE: The floor slab is to be thickened or thinned to compensate for dead load deflection due to weight of floor slab and for the difference between permanent camber and actual camber of beams as erected. Maximum thinning not to exceed ⅛". Screeds are to be adjusted accordingly before placing slab.



SLAB THICKENING DIAGRAM (For Estimating Purposes only)

In Charge of RHW
Made By DJV
Traced By JS
Checked By RK

DESIGN FOR 16°54' SKEW
TWIN 188'-4" x 42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
2-59'-9½" END SPANS 1-68'-9" INTERMEDIATE SPAN
CONCRETE FLOOR AND SUBSTRUCTURE - STEEL RAIL
INTERSTATE OVER FOUR MILE CREEK
SUPERSTRUCTURE DETAILS
STATION 1174+05 ℄ INTERSTATE PROJ. NO. [I-IG-01-4(2)] I-IG-80-4(2)142
POLK COUNTY
DESIGNED BY BROWN & BLAUVELT, NEW YORK, N.Y. FOR
IOWA STATE HIGHWAY COMMISSION
DECEMBER 1957
SHEET 5 OF 5