

Notes:
 FINISHED GRADE: FINISHED PLAN GRADE OF BRIDGE AT ROADWAY IS SAME AS PROFILE GRADE SHOWN ON ROAD PLANS.

LIVE LOAD: STANDARD HS20-44 LOADING.
SPECIFICATIONS: MONTANA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1970 EDITION, AND ANY AMENDMENTS THERETO, AND SPECIAL PROVISIONS SHALL GOVERN UNLESS OTHERWISE NOTED. DESIGN PREPARED IN ACCORDANCE WITH A.A.S.H.O. SPECIFICATIONS, 1973 EDITION, AND ANY AMENDMENTS THERETO.

APPROVAL: SHOP PLANS SHALL BE APPROVED BY THE STATE OF MONTANA, DEPARTMENT OF HIGHWAYS BEFORE FABRICATION IS BEGUN.

CAST IN PLACE CONCRETE: UNLESS OTHERWISE APPROVED, ALL CONCRETE SHALL BE CLASS "AD". AN "AIR ENTRAINING AGENT" SHALL BE ADDED TO ALL CONCRETE EXCEPT CLASS "AS". CHAMFER ALL EXPOSED EDGES OF CONCRETE WITH ENCLOSED ANGLE LESS THAN 120°, 3/4" AND FILLET ENTRANT ANGLES 3/4" UNLESS OTHERWISE NOTED. ALL FORMS FOR DECK SLAB SHALL BE REMOVED.

STRUCTURAL STEEL: ALL STRUCTURAL STEEL SHALL BE MEASURED AND PAID FOR ON THE LUMP SUM BASIS AS SET FORTH IN THE STANDARD SPECIFICATIONS. ESTIMATED WEIGHT = 1330 POUNDS.

FOR REQUIREMENTS GOVERNING THE FABRICATION OF "STRUCTURAL STEEL" SEE THE STANDARD SPECIFICATIONS. TO AVOID OVER-SIGHT THESE REQUIREMENTS SHALL BE CLEARLY NOTED ON THE SHOP DRAWINGS.

ALL STRUCTURAL STEEL AND BRIDGE RAIL SHALL RECEIVE ONE (1) SHOP COAT OF RED LEAD OR BASIC LEAD SILICO CHROMATE PRIMER AND TWO (2) FIELD COATS CONSISTING OF FIRST FIELD OR PRIMER COAT AND ONE (1) COAT OF ALUMINUM PAINT AS SPECIFIED IN THE STANDARD SPECIFICATIONS OR AS OTHERWISE SPECIFIED IN THE "SPECIAL PROVISIONS".

FOOTINGS: ELEVATIONS SHOWN FOR BOTTOM OF FOOTINGS ARE APPROXIMATE ONLY. FINAL ELEVATIONS TO BE DETERMINED BY THE ENGINEER.

PROTECTIVE COATING: DECK, CURBS AND CONCRETE END POSTS SHALL BE GIVEN A PROTECTIVE COATING OF BOILED LINSEED OIL. "SEE STANDARD SPECIFICATIONS".

UTILITIES: FOR LOCATION OF UTILITIES, SEE APPROPRIATE ROAD PLANS SHEET.

COVERING: THE MINIMUM COVERING, MEASURED FROM THE SURFACE OF THE CONCRETE TO THE FACE OF ANY REINFORCEMENT BAR, SHALL BE NOT LESS THAN 2 INCHES EXCEPT AS FOLLOWS OR OTHERWISE NOTED:

BOTTOM OF SLAB	1 INCH
STIRRUPS AND TIES	1 1/2 INCHES

IN ALL FOOTINGS AND PIER SHAFTS, THE MINIMUM COVERING SHALL BE 3 INCHES.

SETTING OF MASONRY PLATES: CARE SHALL BE TAKEN IN PLACING REINFORCING STEEL SO AS TO CLEAR ANCHOR BOLTS. MASONRY PLATES SHALL BE PLACED ON THREE LAYERS OF CANVAS THOROUGHLY SWABBED WITH RED LEAD AS CALLED FOR IN THE STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL FINISH CONCRETE UNDER MASONRY PLATES TO THE EXACT ELEVATION SHOWN. BUSH HAMMERING WILL BE PERMITTED AND USED ONLY AS A MEANS OF LEVELING THE CONCRETE SURFACE TO ASSURE FULL AND LEVEL BEARING AND TO REMOVE LAITANCE, LOOSE AND FOREIGN MATERIAL. STEEL SHIMS SHALL BE USED TO BRING THE MASONRY PLATES UP TO GRADE IF NECESSARY. STEEL SHIMS SHALL BE THE SAME SIZE EXCEPT FOR THICKNESS AS THE MASONRY PLATE. MINIMUM THICKNESS OF ANY SHIMS SHALL BE 1/8". THE COST OF BUSH HAMMERING AND SHIMS, IF ANY, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS "AD" CONCRETE.

BACKFILL: THE BACKFILL AT END BENTS MAY BE COMPLETE UP TO THE BOTTOMS OF THE BACKWALLS BEFORE SUPERSTRUCTURE IS IN PLACE. THE BACKFILL AGAINST THE BACKWALLS SHALL NOT BE PLACED UNTIL AFTER THE CONCRETE ROADWAY SLAB HAS BEEN PLACED.

**STATE OF MONTANA
 DEPARTMENT OF HIGHWAYS**

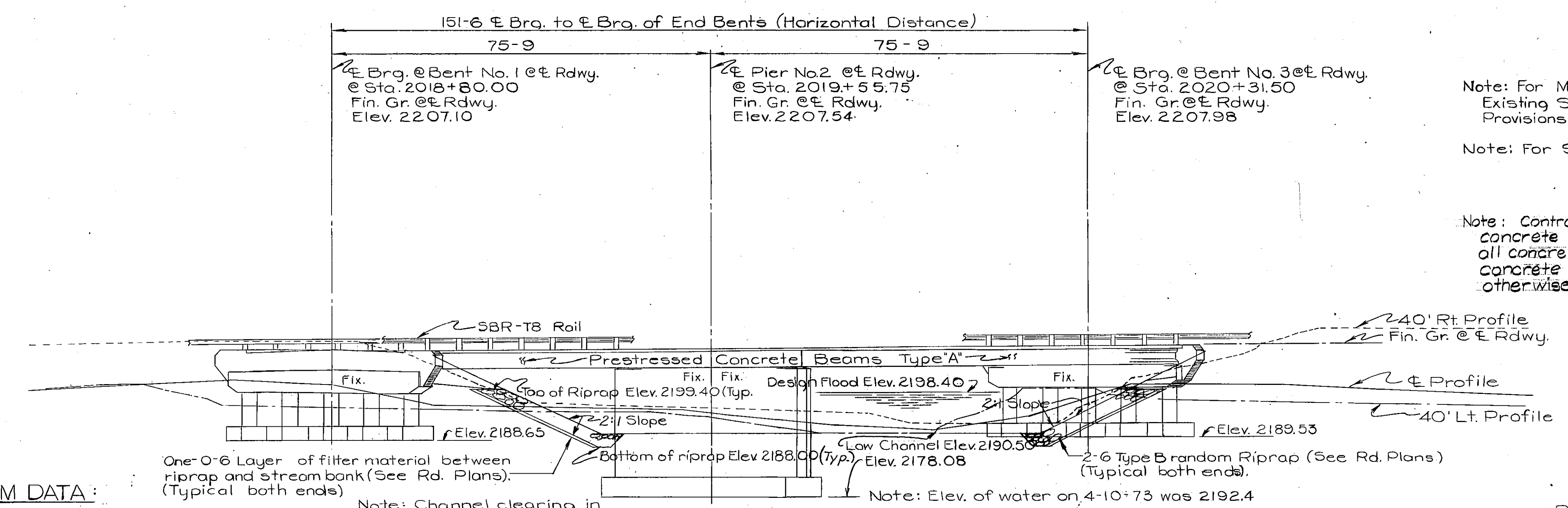
BRIDGE OVER BIG CHERRY CREEK
 AT STA. 2019+55.75
 FEDERAL AID PROJECT NO. RF-330(6)

LINCOLN COUNTY

GENERAL LAYOUT

Scale: 1"=15'-0" except as shown

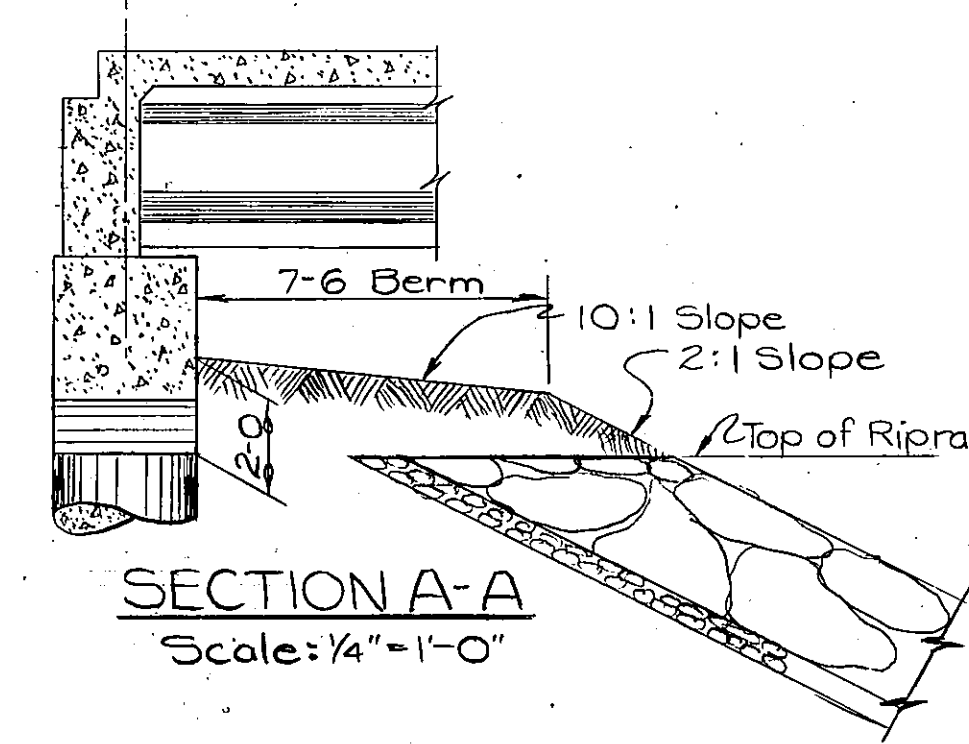
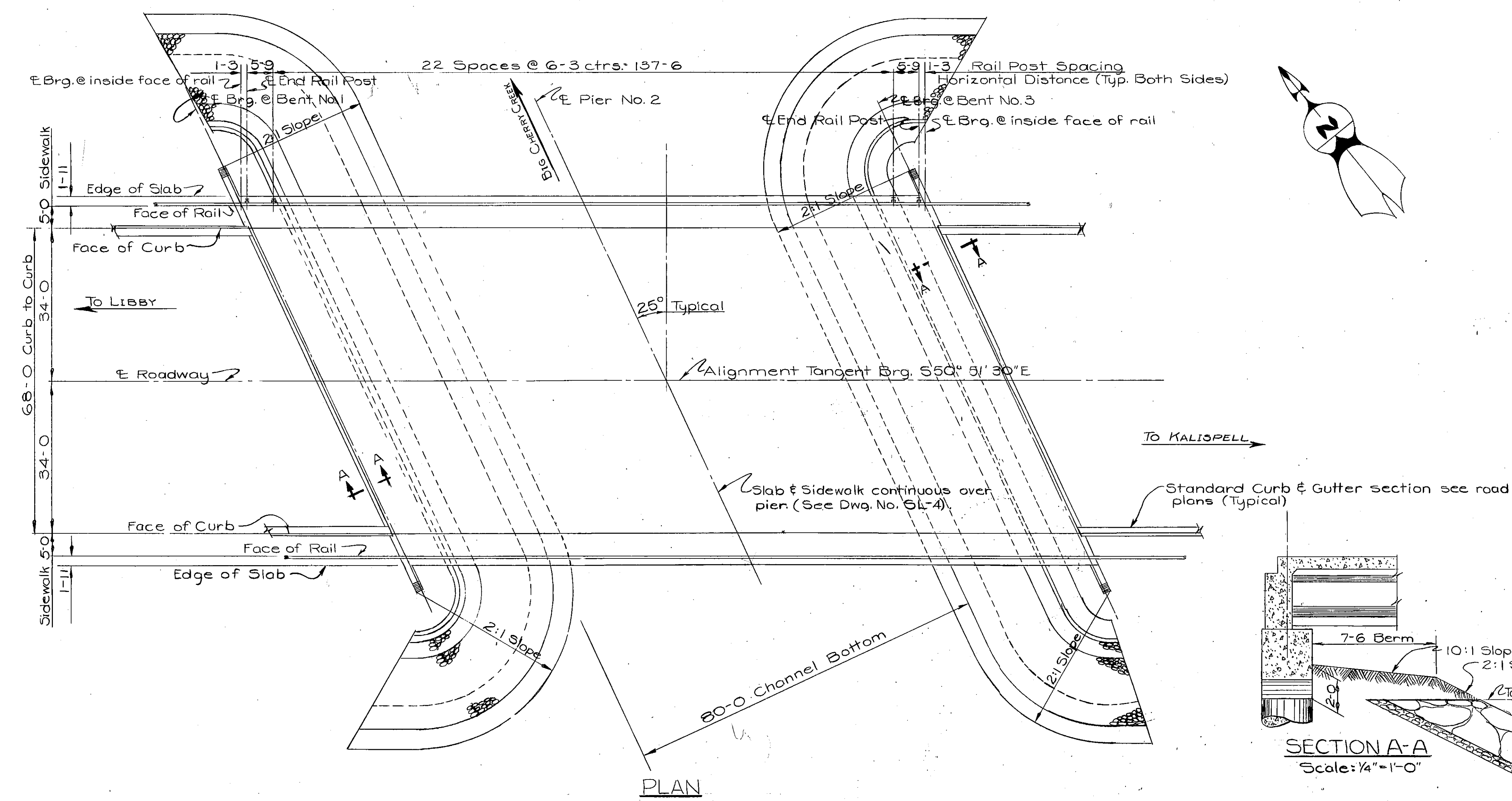
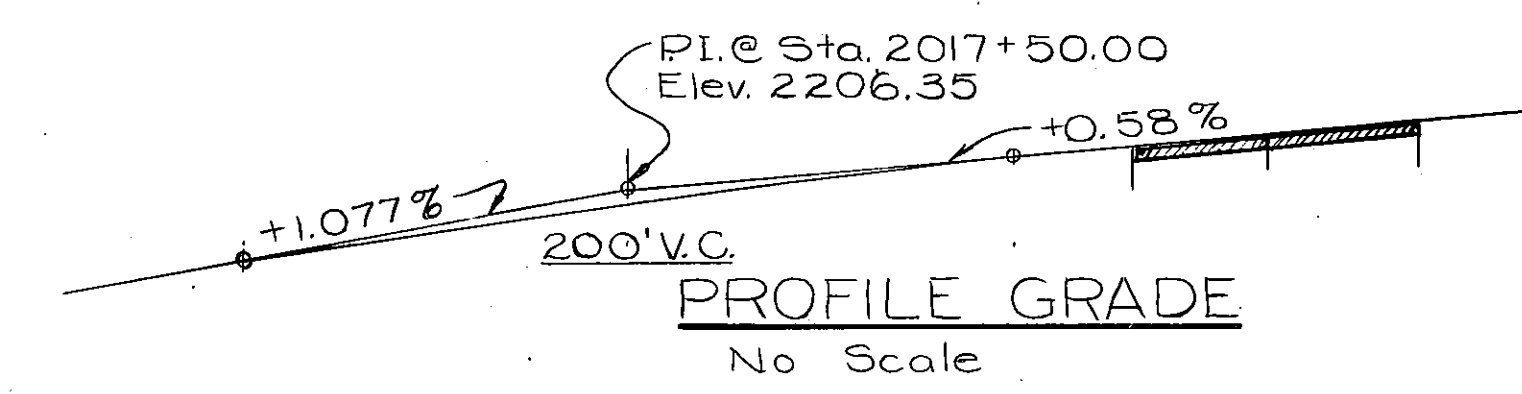
DRAWING NO. 11439



STREAM DATA:

Ice = Moderate
 Drift = Moderate
 Scour = Moderate
 Subsoil = See Log of Borings on Dwg. No. 11440
 Basic Flood (100yr) = 4510 c.f.s. Elev. 2198.70
 Design Flood (50 yr) = 4000 c.f.s.
 Design Velocity = 8.9 f.p.s.
 Drainage Area = 89 sq. mi.
 Flood of Record = Unknown

Note: Channel clearing in immediate vicinity of bridge only. (See Road Plans.)



DESIGNED	1-25-74	R.L.L.
DRAWN	5-15-74	G.A.P.
CHECKED	8-15-74	N.H.R.
APPROVED	11-13-74	H.E.
REVISED	1-20-75	N.H.R.
REVISED		

DRAWN BY : JHE 8-14-74 CHECKED BY : N.H.R. 8-15-74 REVISED: N.H.R. 1-20-75

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS
BRIDGE PLANS & QUANTITIES
FEDERAL AID PROJECT NO. F-330(4) P.E.
RF-330(6) CONST.
LIBBY- MANICKE

LINCOLN COUNTY

LIST OF DRAWINGS

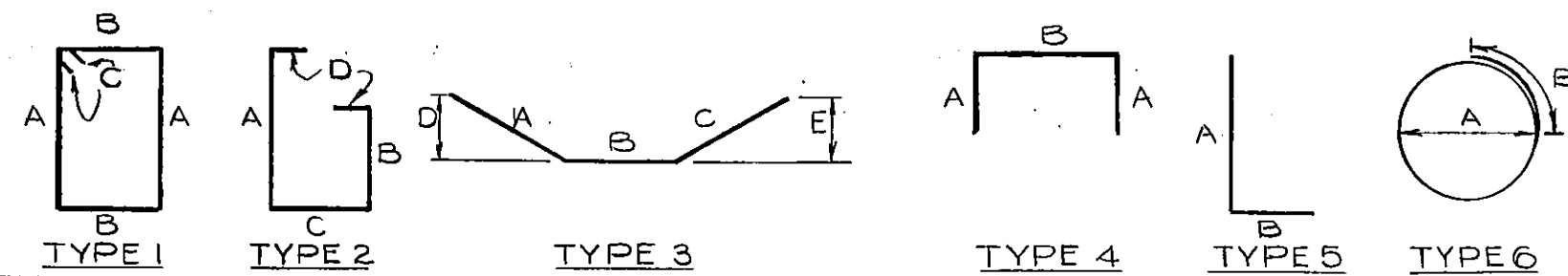
SHEET NO.	DWG. NO.	TITLE
1	11439	GENERAL LAYOUT
2	11440	FOOTING PLAN
3	11441	BENTS NO.1 & NO.3
4	11442	DETAILS
5	11443	PIER NO.2
6	11444	ERECTION PLAN
7	SL-4 (App. 11-5-73)	STANDARD SLAB & DIAPHRAGM DETAILS
8	B-A (Rev. 3-31-72)	STANDARD PRESTRESSED CONCRETE BEAM -TYPE A
9	SBR-T8 (App. 11-5-73)	STANDARD BRIDGE RAIL TYPE NO.8

FINAL ESTIMATED BRIDGE PLAN QUANTITIES										
LOCATION	LENGTH IN FEET	REINFORCING STEEL LBS.	STRUCTURAL STEEL LUMP SUM	CLASS "AD" CONCRETE CU. YDS.	STRUCTURE EXC.-TYPE I CU. YDS.	STEEL BRIDGE RAIL-TYPE NO.8 LIN. FT.	PRESTRESSED BEAMS TYPE A EACH	PROTECTIVE COATING SQ. YD	SHORING & CRIBS LUMP SUM	SRUCTURE EXC.- TYPE I CU. YDS.
							75'			
BENT NO.1		10,900,963	1.00 ^{\$} 1,600	1015,323	420342.87				1.00 ^{LS-} ^{\$25,000}	395,397.44
PIER NO.2		8,566,516		2914,393						
BENT NO.3		10,900,963		1015,304	420342.87					
SUPERSTRUCTURE	151.5	91,238,336		308134.786		298.00	24	14061402.		
TOTAL	151.5	121,604,778	1.00 ^{\$} 1,600	8022	840685.74	298.00	24	14061402.	1.00 ^{LS-} ^{\$25,000}	395,397.44

MOBILIZATION
0.25 L.S. = \$8,000.00

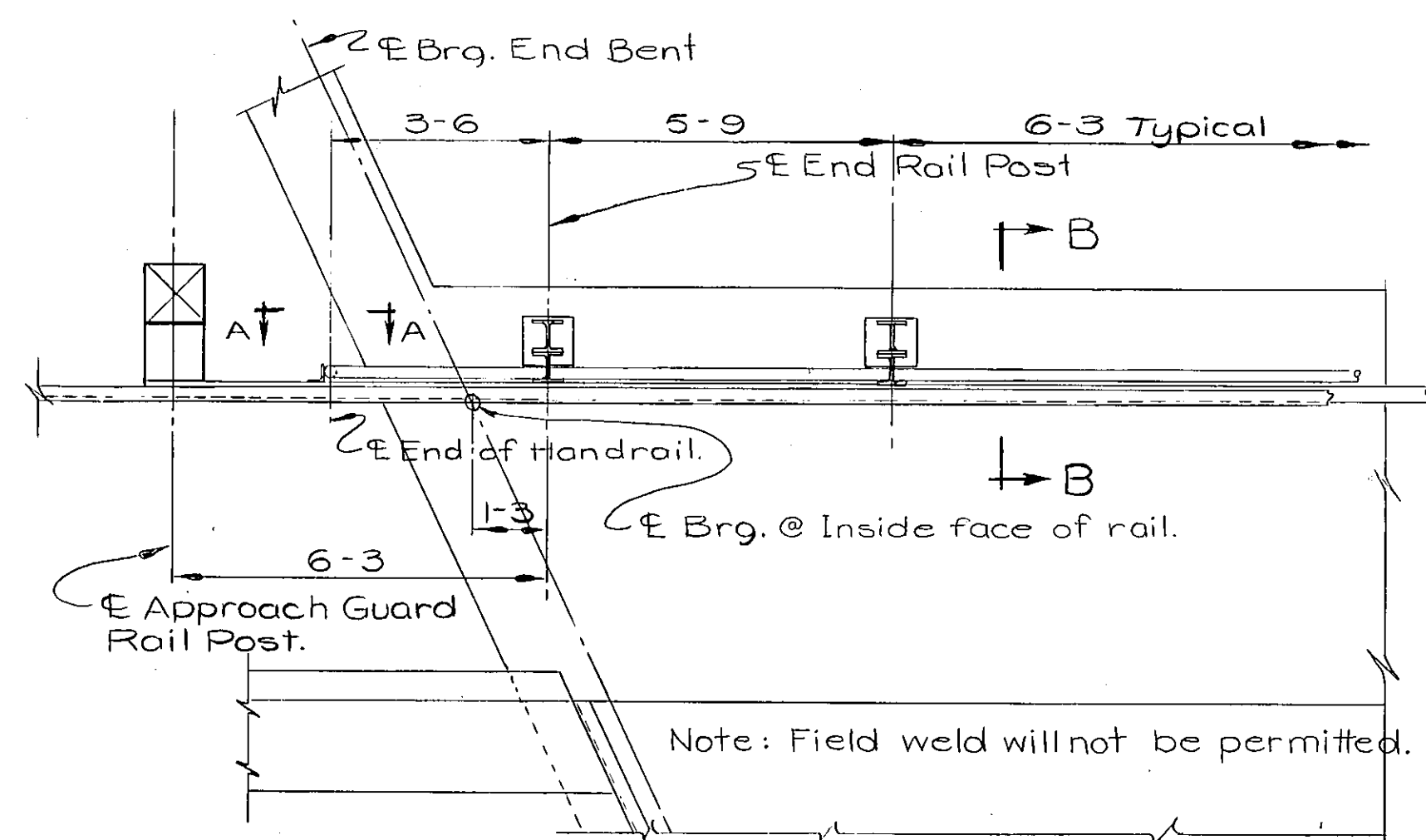
BILL OF REINFORCING STEEL

(For One End Bent only) Bents No.1 or No.3

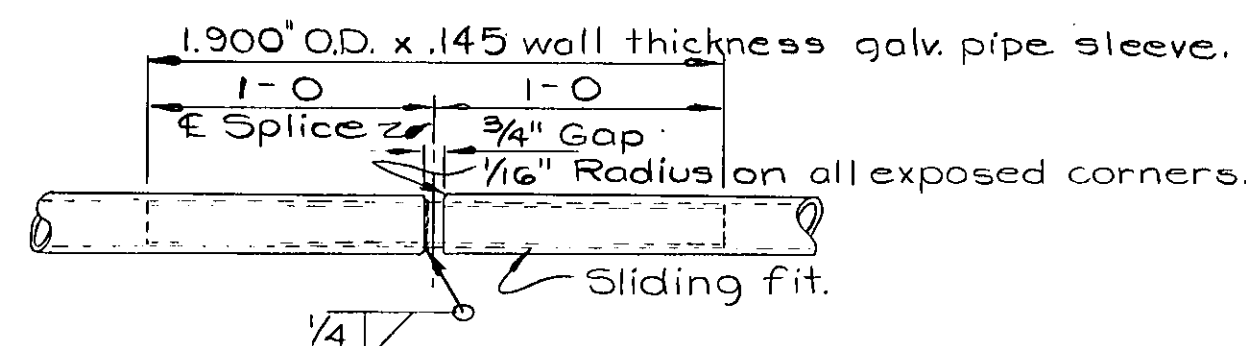


STRAIGHT BARS				BENT BARS (All dimensions are out to out)											
MARK	SIZE	No.	LENGTH	MARK	SIZE	No.	TYPE	LENGTH	A	B	C	D	E		
BW1	#5	4	39'-8"	BW13	#4	6	3	9'-10"	1'-9"	2'-1"	6'-0"	1'-7"	2'-9"		
BW2	5	3	34'-11"	BW14	4	6	3	9'-7"	1'-0"	7'-10"	0'-9"	0'-10"	0'-5"		
BW3	5	3	35'-5"	BW15	4	2	1	8'-1"	2'-5"	1'-3"	0'-4 1/2"				
BW4	5	3	34'-11"	BW16	4	2	1	10'-3"	3'-6"	1'-3"	0'-4 1/2"				
BW5	4	33	5'-10"	BW17	4	2	1	11'-9"	4'-3"	1'-3"	0'-4 1/2"				
BW6	4	11	5'-6"	BW18	4	2	1	12'-11"	4'-10"	1'-3"	0'-4 1/2"				
BW7	6	12	4'-8"	BW19	4	2	1	14'-3"	5'-6"	1'-3"	0'-4 1/2"				
BW8	4	2	7'-6"	BW20	4	2	1	15'-3"	6'-0"	1'-3"	0'-4 1/2"				
BW9	4	4	8'-3"	BW21	4	2	1	16'-3"	6'-6"	1'-3"	0'-4 1/2"				
BW10	4	2	7'-6"	BW22	4	2	1	16'-7"	6'-8"	1'-3"	0'-4 1/2"				
BW11	4	4	4'-6"	BW23	4	58	2	9'-9"	3'-10"	2'-10"	1'-3"	0'-3 1/2"			
BW12	4	4	2'-9"	BW24	4	57	5	4'-0"	2'-0"	2'-0"					
BW29	4	2	6'-8"	BW25	4	2	1	11'-3"	4'-0"	1'-3"	0'-4 1/2"				
				BW26	4	2	1	11'-5"	4'-1"	1'-3"	0'-4 1/2"				
B1	9	8	44'-11"	BW27	4	2	1	11'-7"	4'-2"	1'-3"	0'-4 1/2"				
B2	9	4	10'-6"	BW28	4	2	1	11'-9"	4'-3"	1'-3"	0'-4 1/2"				
B3	9	10	12'-6"												
B4	9	10	10'-9"												
B5	4	6	29'-11"	B 9	4	6	3	6'-9"	1'-6"	4'-3"	1'-0"	0'-5"	0'-11"		
B6	9	10	40'-3"	B 10	4	97	4	4'-8"	1'-0"	2'-8"					
B7	4	6	33'-0"	B 11	4	78	1	12'-5"	3'-2"	2'-8"	0'-4 1/2"				
B8	4	6	3'-0"	B 12	4	2	1	12'-1"	3'-0"	2'-8"	0'-4 1/2"				
				B 13	4	2	1	11'-9"	2'-10"	2'-8"	0'-4 1/2"				
				B 14	4	2	1	11'-5"	2'-8"	2'-8"	0'-4 1/2"				
				B 15	4	2	1	11'-1"	2'-6"	2'-8"	0'-4 1/2"				
				B 16	4	2	1	10'-9"	2'-4"	2'-8"	0'-4 1/2"				
C 1	#8	40	11'-0"												
D 1	#5	12	3'-6"												
F 1	#6	180	8'-6"												
				C 2	4	40	6	9'-4"	2'-8"	1'-0"					
				D 2	#8	40	5	5'-0"	3'-7"	1'-5"					

* D1-1 1/4" smooth bars shall conform to ASTM A-36 steel.

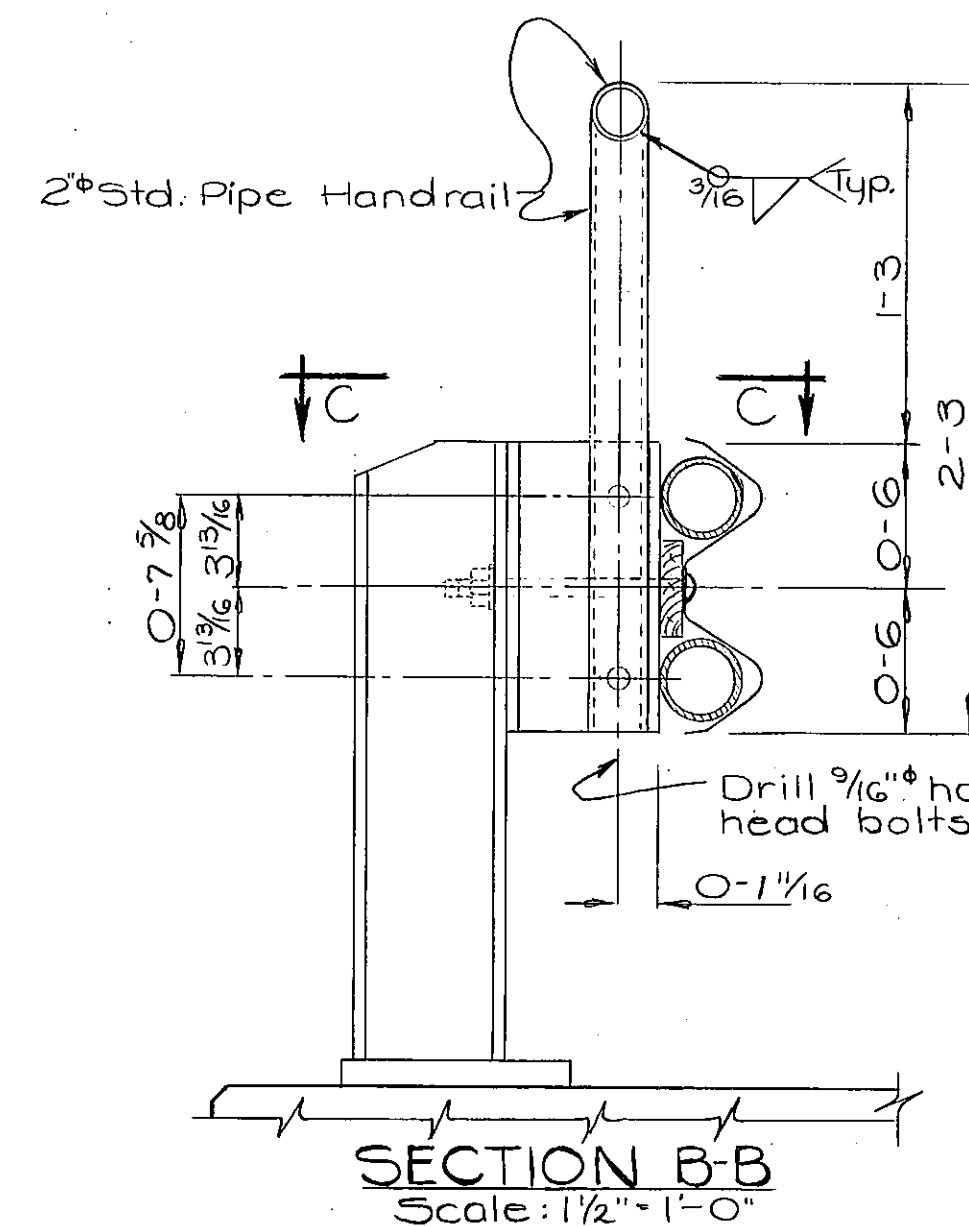


PARTIAL PLAN
Scale: 3/8" = 1'-0"

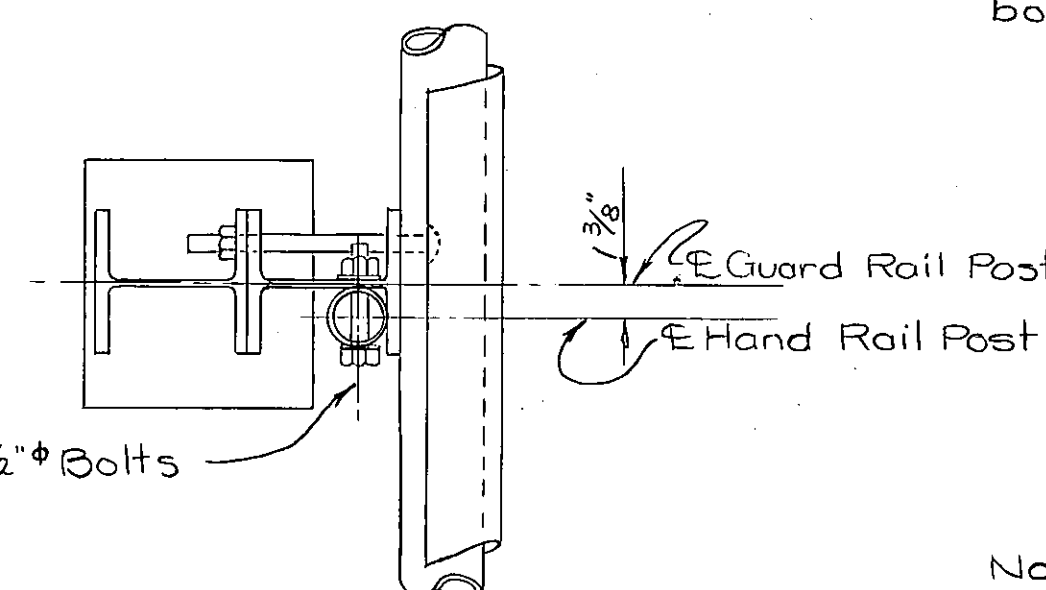


HANDRAIL SPLICE DETAIL
Scale: 1 1/2" = 1'-0"

Note: Cost of furnishing and erecting 2" handrail splices, bolts, accessories and incidentals necessary to complete this work shall be included in the unit price bid per linear foot of SBR-T8 Bridge Rail. All bolts, nuts, washers, clips, sleeves and pipe shall be galvanized in accordance with the details shown on Dwg. No. SBR-T8.
Note: E of handrail splice shall not be less than 1'-6" from the E of the handrail posts.



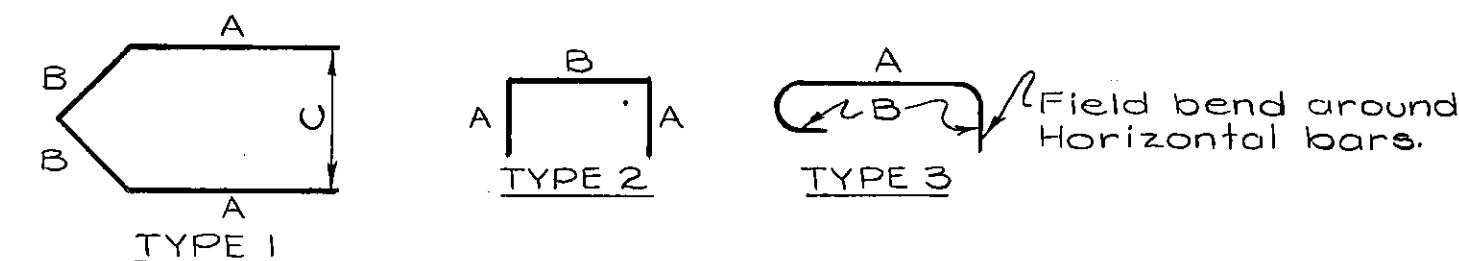
SECTION B-B
Scale: 1 1/2" = 1'-0"



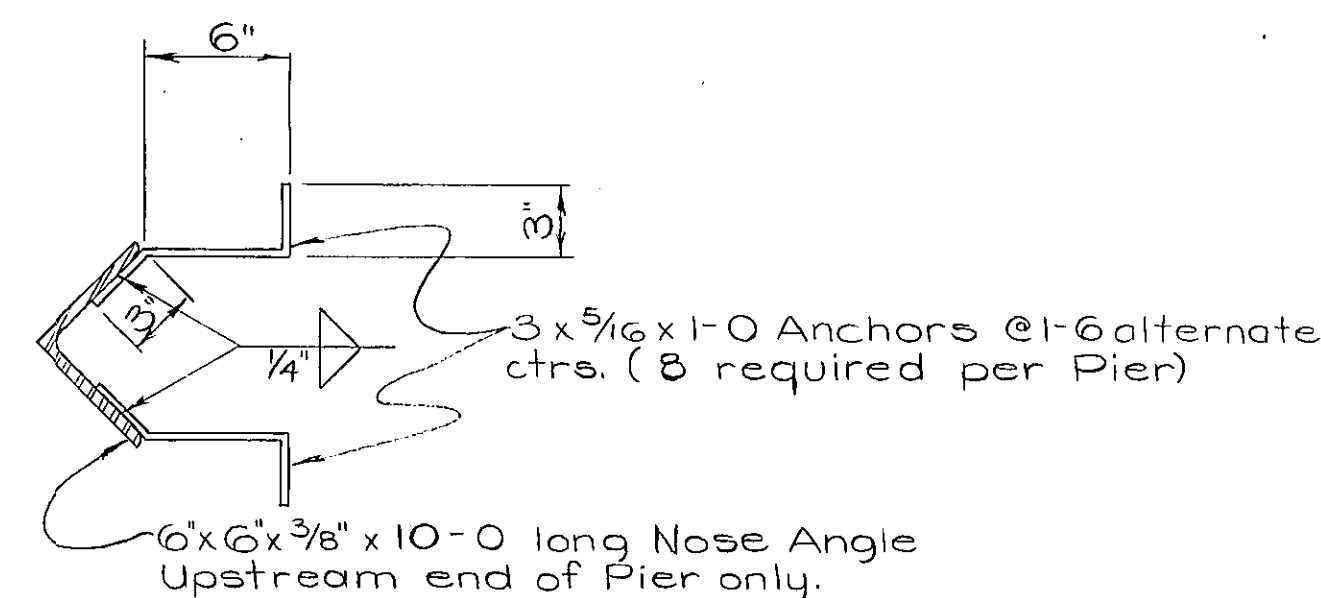
SECTION C-C
Scale: 1 1/2" = 1'-0"
HAND RAIL DETAILS

BILL OF REINFORCING STEEL

Pier No.2.

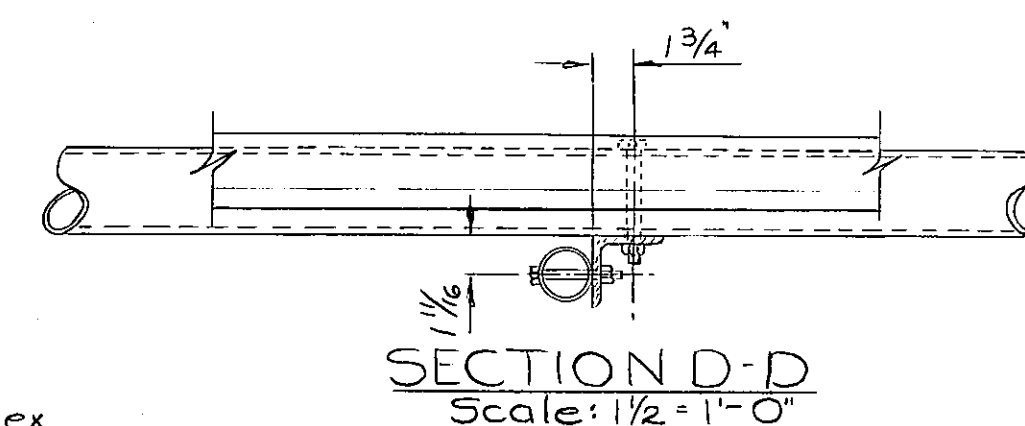


STRAIGHT BARS				BENT BARS (All dimensions are out to out)											
MARK	SIZE	No.	LENGTH	MARK	SIZE	No.	TYPE	LENGTH	A	B	C				
P 1	#5	90	30'-4"	P 5	#4	82	2	4'-6"	1'-0"	2'-6"					
P 2	5	186	20'-3"	P 6	5	30	1	6'-6"	1'-6"	1'-9"	2'-6"				
P 3	4	6	24'-8"	P 7	4	203	3	3'-7"	2'-7"	0'-6"					
P 4	4	2	4'-9"	P 8	#5	2	1	10'-4"	3'-5"	1'-9"	2'-6"				
D 1	#5	186	3'-9"												

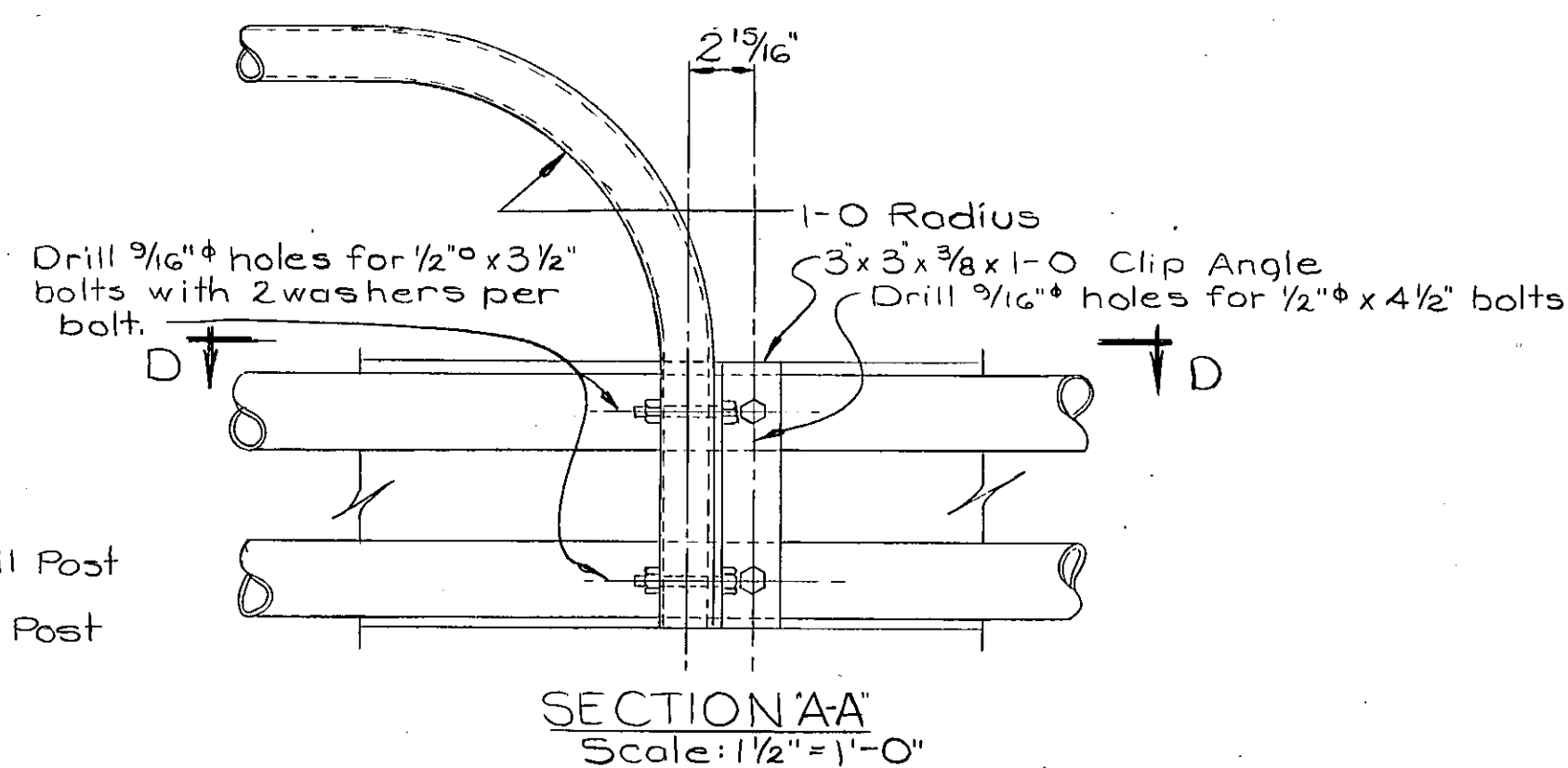


NOSE ANGLE DETAIL
Scale: 1 1/2" = 1'-0"

Note: Pier Nose Angles shall be paid for as structural steel. One (1) shop coat and two (2) field coats of paint as specified for structural steel shall be applied to exposed surfaces of nose angles before erection.



SECTION D-D
Scale: 1 1/2" = 1'-0"



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

Note: For Details of Guard Rail, Posts and hardware See Dwg. No. SBR-T8

Note: 2" Standard Pipe shall conform to ASTM - A53

Note: Shop splices in 2" standard pipe will not be permitted without prior approval by the Engineer. Splices shall be shown on the Shop Drawings.

Note: Handrail shall be continuous over at least three (3) posts except as shown on the "General Layout" or as otherwise approved by the Engineer.

STATE OF MONTANA

DEPARTMENT OF HIGHWAYS

BRIDGE OVER BIG CHERRY CREEK

AT STA. 2019+55.75

FEDERAL AID PROJECT NO. RF-330(6)

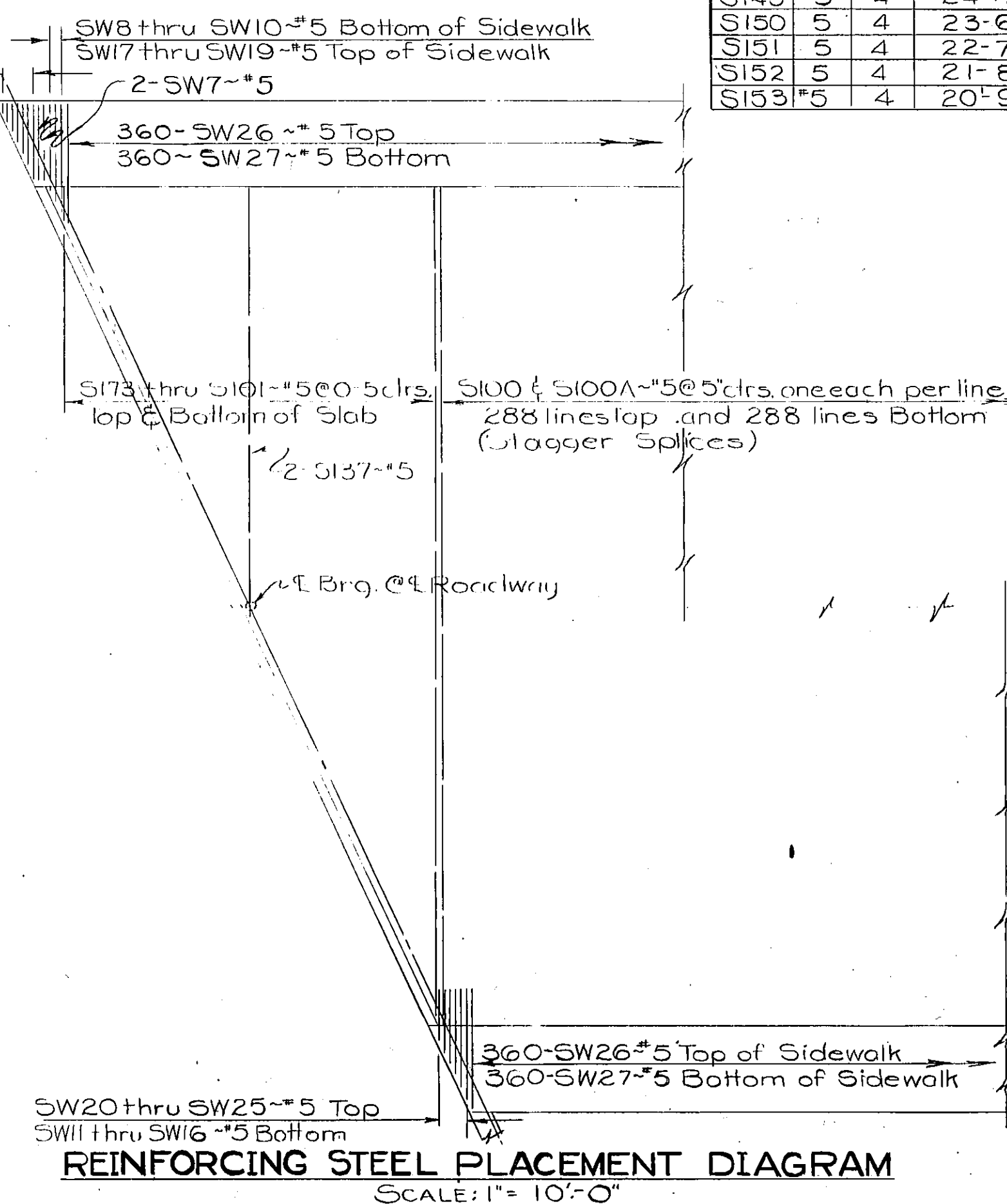
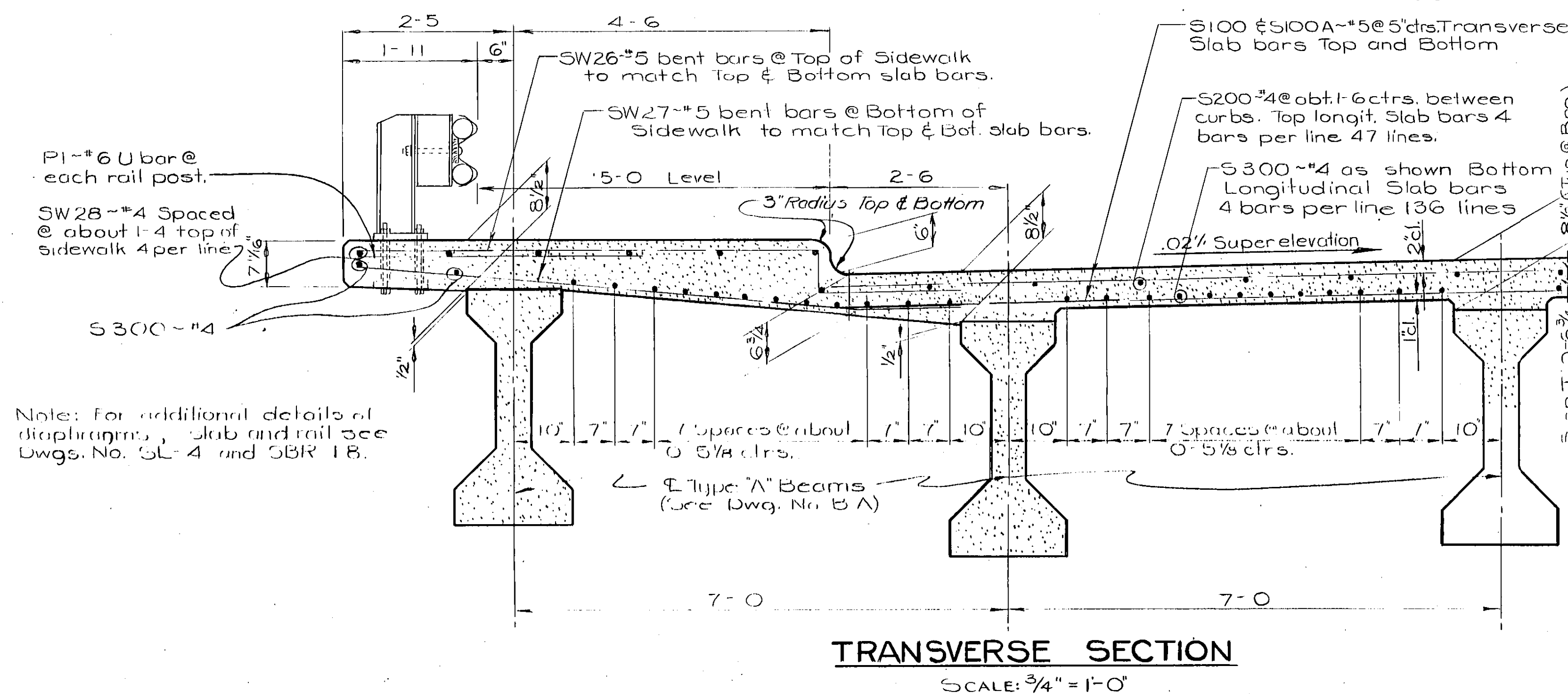
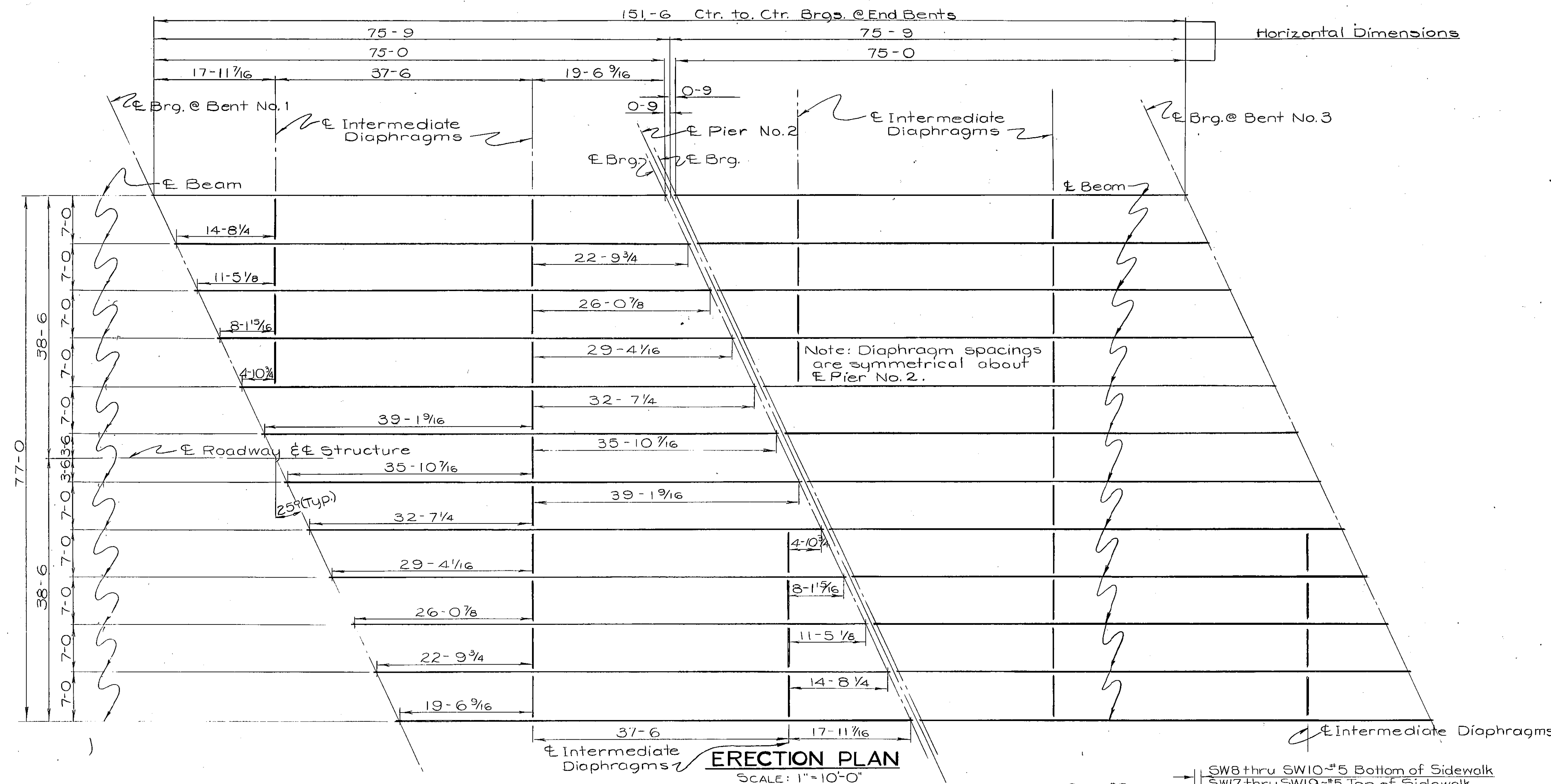
LINCOLN COUNTY

DETAILS

SCALE: AS SHOWN

DESIGNED	6/12/74	J. J. Z.
DRAWN	6/21/74	G.A.P.
CHECKED	8-15-74	N.H.R.
REVISED		
REVISED		

DRAWING NO. 11442

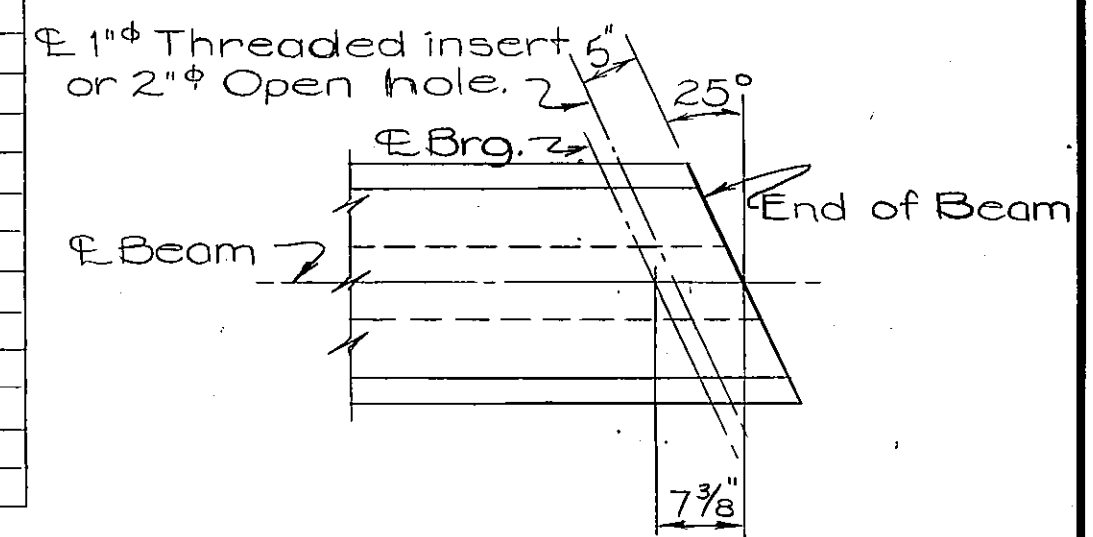


STRAIGHT BARS			
MARK	SIZE	No	LENGTH
55	#5	42	15'-0"
56	5	41	10'-0
S101	5	8	34-3
S102	5	8	33-10
S103	5	8	33-4
S104	5	8	32-11
S105	5	8	32-6
S106	5	8	32-0
S107	5	8	31-7
S108	5	8	31-1
S109	5	8	30-8
S110	5	8	30-3
S111	5	8	29-9
S112	5	8	29-4
S113	5	8	28-11
S114	5	8	28-5
S115	5	8	28-0
S116	5	8	27-7
S117	5	8	27-1
S118	5	8	26-8
S119	5	8	26-2
S120	5	8	25-9
S121	5	8	25-4
S122	5	8	24-10
S123	5	8	24-5
S124	5	8	24-0
S125	5	8	23-6
S126	5	8	23-1
S127	5	8	22-8
S128	5	8	22-2
S129	5	8	21-9
S130	5	8	21-3
S131	5	8	20-10
S132	5	4	39-7
S133	5	4	38-8
S134	5	4	37-9
S135	5	4	36-10
S136	5	4	36-0
S137	5	4	35-1
S138	5	4	34-2
S139	5	4	33-3
S140	5	4	32-5
S141	5	4	31-6
S142	5	4	30-7
S143	5	4	29-9
S144	5	4	28-10
S145	5	4	27-11
S146	5	4	27-0
S147	5	4	26-2
S148	5	4	25-3
S149	5	4	24-4
S150	5	4	23-6
S151	5	4	22-7
S152	5	4	21-8
S153	#5	4	20'-0"

BILL OF REINFORCING STEEL	
------------------------------	--

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.	RF-330 (6)	6	9

STRAIGHT BARS				BENT BARS (All dimensions are out to out)			
MARK	SIZE	No	LENGTH	MARK	SIZE	No	TYPE LENGTH
S154	#5	4	19'-11"	SW11	#5	2	4
S155	5	4	19'-0"	SW12	5	2	4
S156	5	4	18'-1"	SW13	5	2	4
S157	5	4	17'-2"	SW14	5	2	4
S158	5	4	16'-4"	SW15	5	2	4
S159	5	4	15'-5"	SW16	5	2	4
S160	5	4	14'-6"	SW17	5	2	5
S161	5	4	13'-8"	SW18	5	2	5
S162	5	4	12'-9"	SW19	5	2	5
S163	5	4	11'-10"	SW20	5	2	5
S164	5	4	11'-0"	SW21	5	2	5
S165	5	4	10'-1"	SW22	5	2	5
S166	5	4	9'-2"	SW23	5	2	5
S167	5	4	8'-3"	SW24	5	2	5
S168	5	4	7'-4"	SW25	5	2	5
S169	5	4	6'-6"	SW26	5	72Q	5
S170	5	4	5'-7"	SW27	5	72Q	4
S171	5	4	4'-8"				
S172	5	4	3'-10"				
S173	5	4	2'-11"	O4	4	132	1
S200	4	188	38-11	O7	4	288	2
S300	4	544	38-11				
S100	5	576	40'-0"				
S100A	5	576	29'-1"	P1	#6	50	3
SW1	5	4	1'-4"				
SW2	5	4	2'-3"				



PRESTRESSED CONCRETE BEAMS: Prestressed Concrete Beams shall be fabricated in accordance with Dwg. No. B-A except as modified hereon. Maximum f'c (Compressive strength of concrete at 28 days) for design shall be 6000 p.s.i. Design stresses (without prestress) are as follows:

Span Length		75'-0"
Beam D.L. Stresses (p.s.i.)	f _b	- 866
	f _t	1069
Total D.L. + L.L. Design Stresses (p.s.i.)	f _b	- 3710
	f _t	3306
Required Ultimate Moment Capacity (ft. kip.)	M	3433

BEAM D.L. DEFLECTION TABLE					
Span	.1	.2	.3	.4	.5
75'-0	7/16"	1 3/16"	1 1/8"	1 5/16"	1 3/8"

Note: Deflections are symmetrical about $\frac{L}{2}$ of Span.

STATE OF MONTANA
DEPARTMENT OF HIGHWAYS

BRIDGE OVER BIG CHERRY CREEK

AT STA. 2019+55.75

FEDERAL AID PROJECT NO. RF-330 (6)

LINCOLN COUNTY

ERECTION PLAN

SCALE AS SHOWN

DRAWING NO. 11444

DESIGNED	3-14-74	R.L.
DRAWN	5-8-74	G.A.F.
CHECKED	8-15-74	N.H.R.
REVISED		
REVISED		
REVISED		

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	MONT.			

NOTES

STRUCTURAL STEEL: All posts, steel blockouts and plates shall conform to A.S.T.M. A-36. Bridge rail shall conform to A.S.T.M. M-180. Bridge rail shall be lapped in the direction of traffic.

PAYMENT: Bridge Rail Type No. 8 shall be paid for by the lineal foot which shall be full compensation for furnishing all materials, equipment and labor necessary incidental to complete the item. The number of lineal feet of bridge rail for payment shall be computed as the distance between centerlines of the end rail posts.

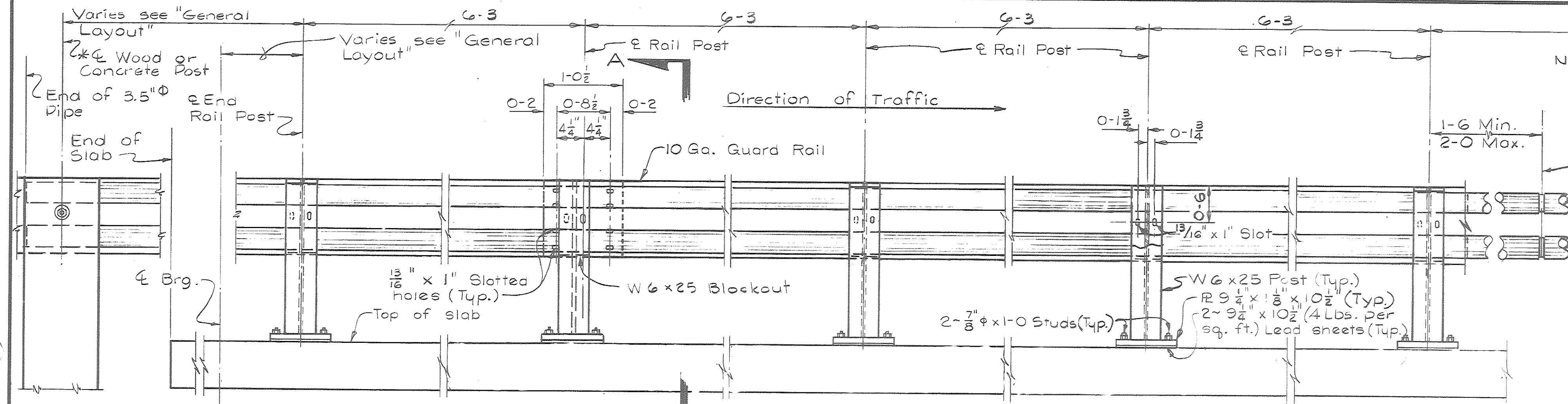
PAINTING: All posts, steel blockouts and anchor plates (except as noted) shall be given three coats of paint as called for in the Standard Specifications. The finish coat shall be the color as specified on the "General Layout".

ERECTION: Rail posts shall be set perpendicular to the roadway grade & the rail shall be set parallel to the roadway grade. To obtain proper alignment, anchor bolt assemblies must be held in exact position while pouring the slab. To obtain proper grade, use vertical slots in rail post for adjustment.

GALVANIZING: All bolts, nuts, washers and pipe sleeves shall be galvanized in accordance with A.S.T.M. specification A153. Bridge rail shall be galvanized in accordance with A.S.T.M. specification A525 or A123.

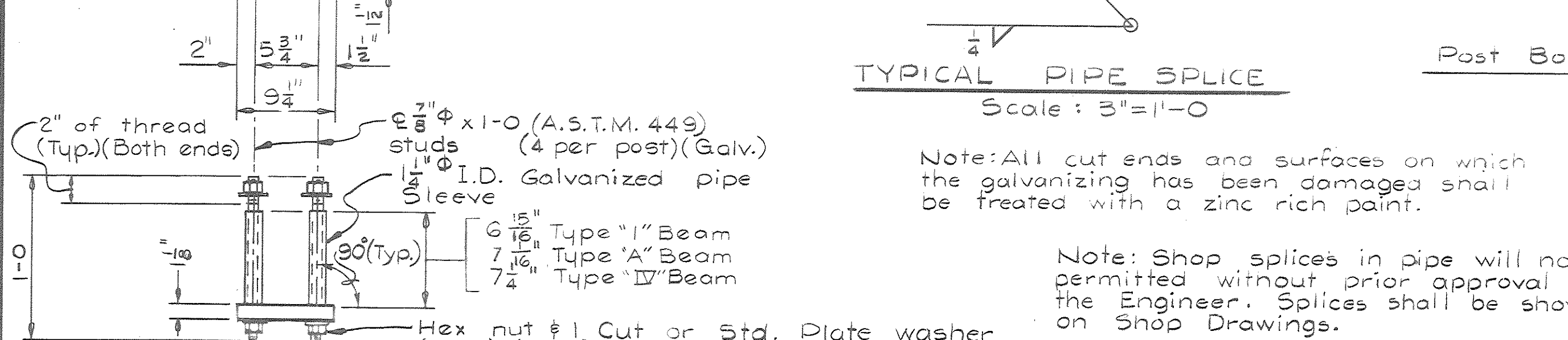
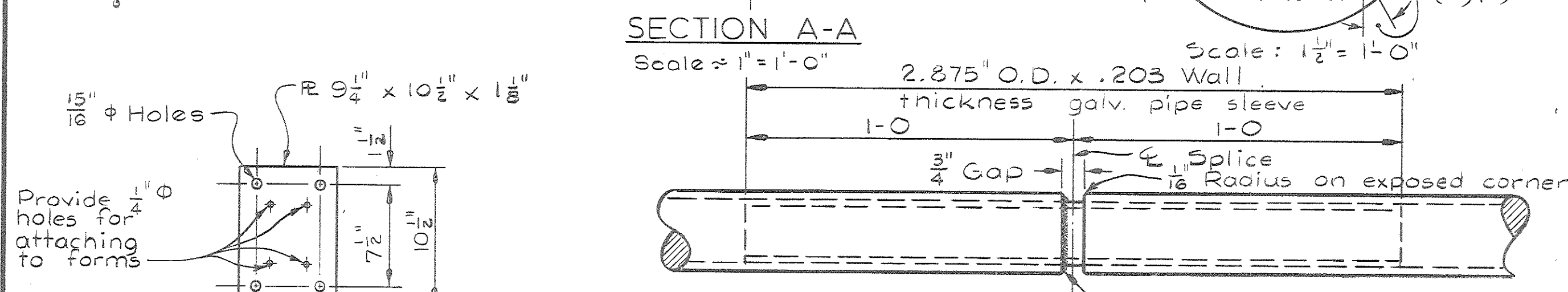
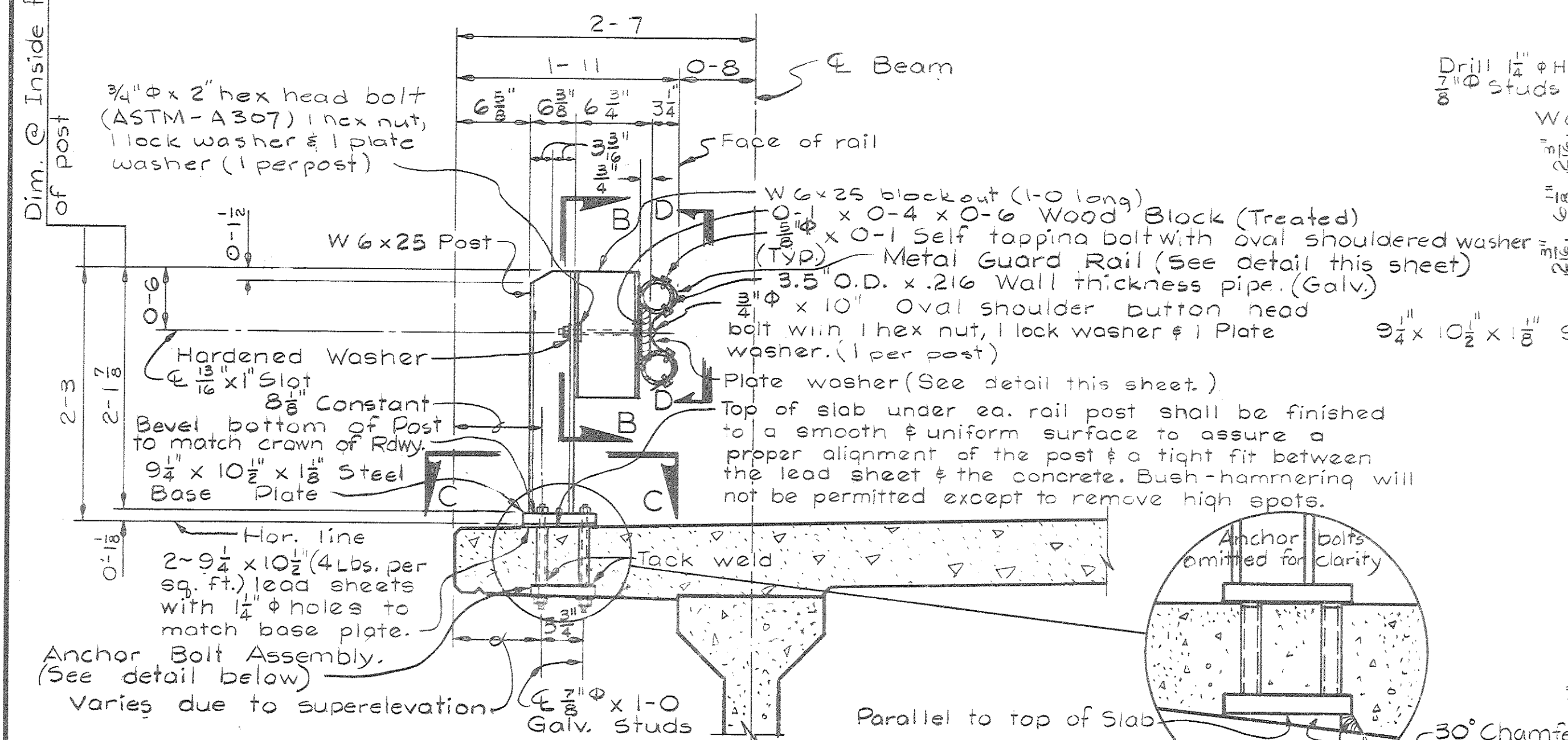
REFLECTORS: A reflector shall be placed on each end rail post and at approximately equal spacing (25' maximum centers or on every fourth rail post) between end rail posts. Reflectors shall be mounted with the reflectorized face toward oncoming traffic. The reflectors shall be included in the unit price bid per lineal foot of rail.

PIPE RAIL: All pipe rail shall be fabricated from new 3.5" O.D. x 0.216 wall thickness galvanized steel pipe. (A.S.T.M. - A53)



Note: Pipe Rail elements shall be continuous over at least three (3) posts except as shown on the "General Layout" or as otherwise approved by the Engineer.

* Note: Includes Standard Blockout & 0-1 x 0-4 x 0-6 Wood Block.

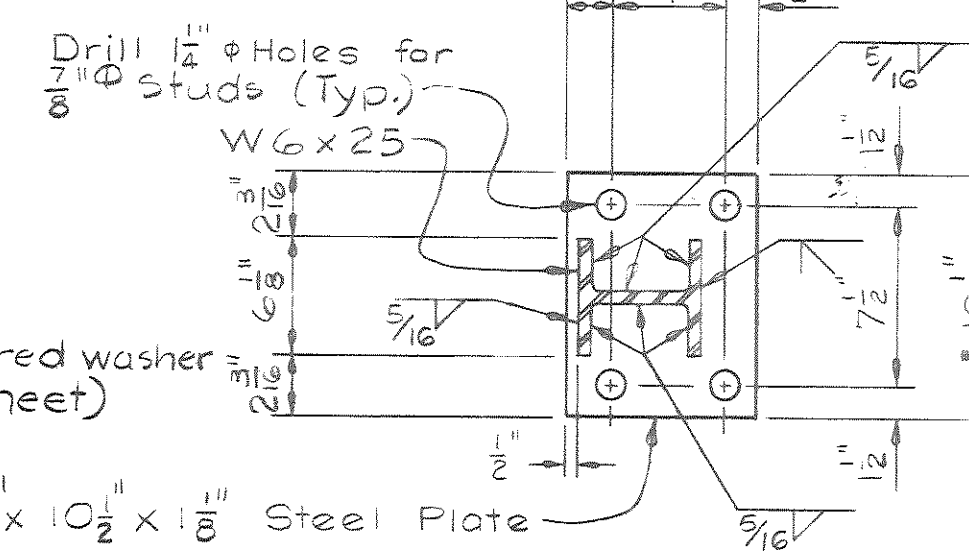


ANCHOR BOLT ASSEMBLY DETAIL
Scale: 1/2" = 1'-0"

TYPICAL RAIL POST

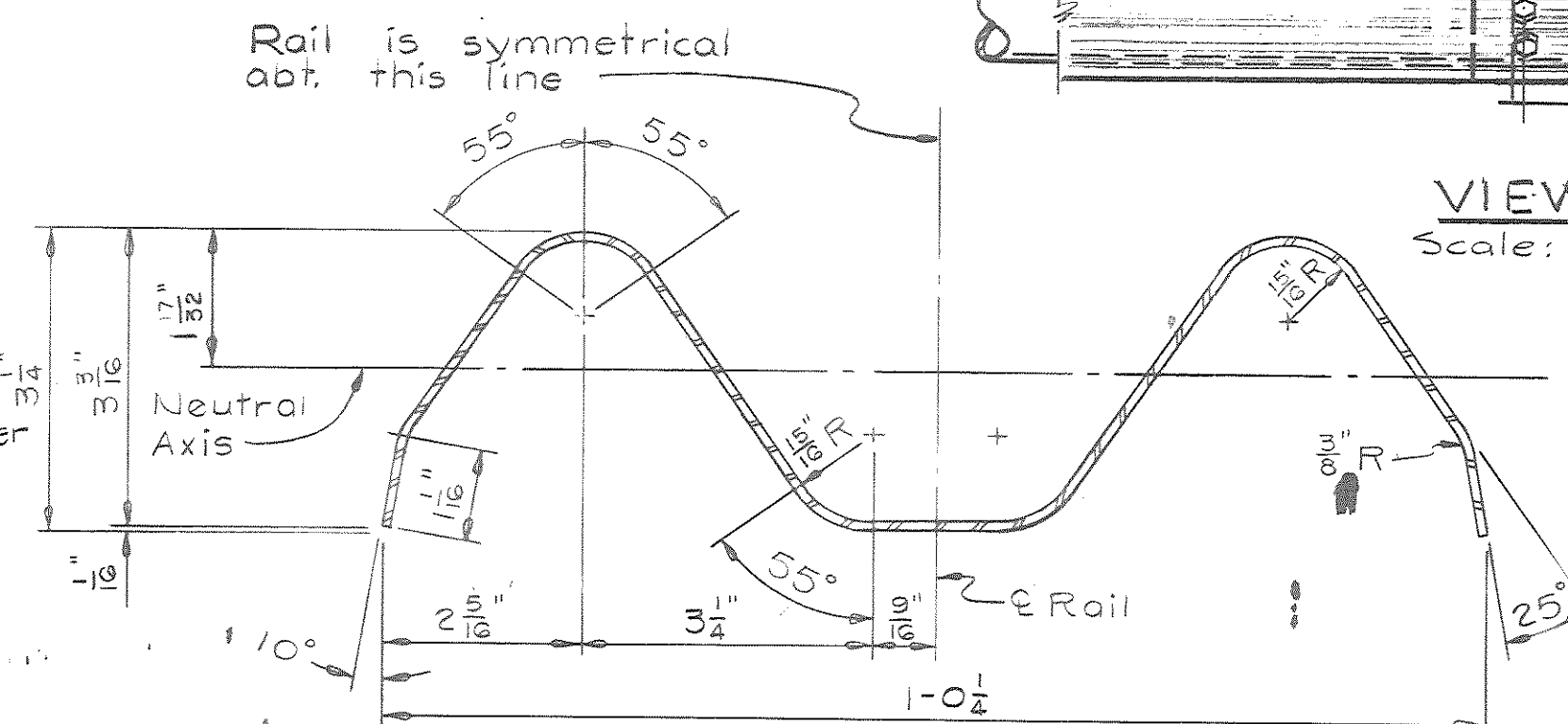
ELEVATION

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



SECTION C-C

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



RAIL SECTION

Scale: 6" = 1'-0"

RAIL POST SHIM DETAIL

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

SECTION B-B

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

Direction of Traffic

Field Drill 1/2" holes in pipe for 3/4" x 0-1 self tapping bolts with oval shouldered washer (Typ. all posts)

Note: Posts will be fabricated with two 1/2" x 1" slots but the erection of the guard rail shall be as shown below on View D-D.

8 Ga. galv. steel

1/2" x 1" Slot

90°

2 1/2"

REFLECTOR - WASHER DETAIL

Scale: 6" = 1'-0"

Note: The reflectorized (white) material shall be in accordance with the Standard Specifications.

8 Ga. galv. steel

1/2" x 1" Slot

90°

2 1/2"

PLATE WASHER DETAIL

Scale: 6" = 1'-0"

Note: Washer shall be placed between head of post bolt and rail. Use at rail post connections that do not use a reflector.

8 Ga. galv. steel

1/2" x 1" Slot

90°

2 1/2"

POST BOLT & NUT

Full Scale

Note: Shop splices in pipe will not be permitted without prior approval by the Engineer. Splices shall be shown on Shop Drawings.

6 1/2" Type 'I' Beam

7 1/2" Type 'A' Beam

7 1/2" Type 'IV' Beam

Hex nut & 1 Cut or Std. Plate washer (Galv.) (Typ.)

2" of thread (Typ.) (Both ends)

1/2" x 1" Slot

90°

2 1/2"

STATE OF MONTANA

DEPARTMENT OF HIGHWAYS

STANDARD BRIDGE RAIL

TYPE NO. 8

Scale: As noted

DRAWING NO. SBR-T8