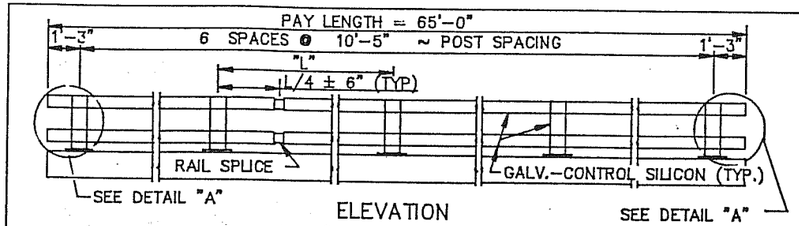
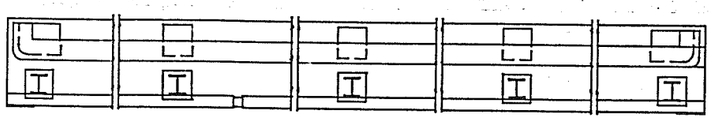
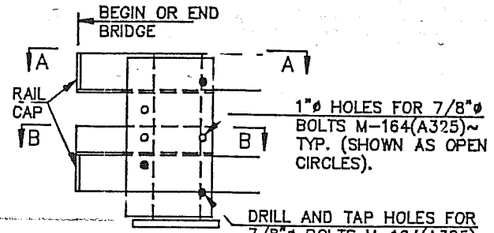
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	SAP-8-032(003)000	



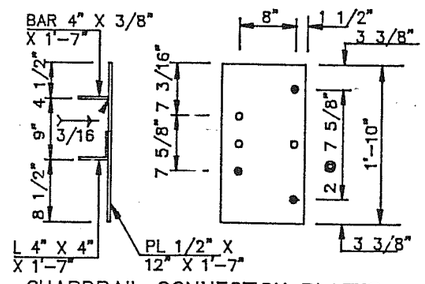
ELEVATION
(BOTH SIDES)



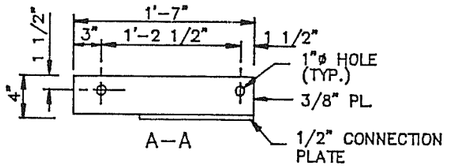
PLAN



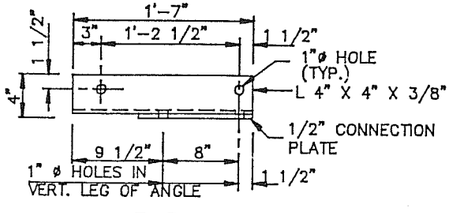
DETAIL "A"



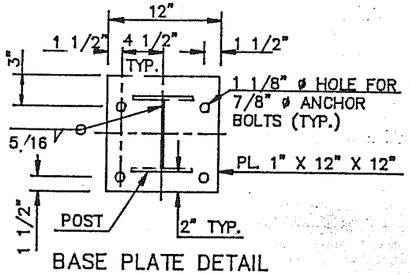
GUARDRAIL CONNECTION PLATES
(4 REQUIRED)



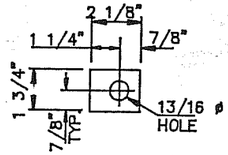
A-A



B-B

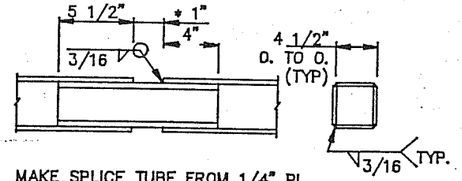


BASE PLATE DETAIL



1/4" PL AASHTO M-270
(GRADE 36) POSITION WASHERS TO COMPLETELY COVER SLOTTED HOLES

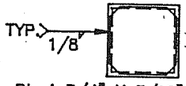
PLATE WASHER "C"



MAKE SPLICE TUBE FROM 1/4" PL. GRIND ALL EDGES PRIOR TO GAVANIZING TO ASSURE PROPER FIT.

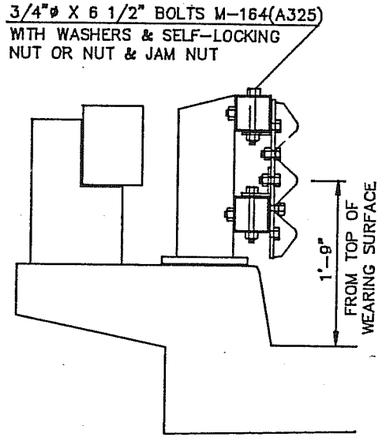
* 1" EXPANSION JT. UNLESS NOTED OTHERWISE ON PLANS. EXP. JT. WILL BE NEEDED IN PANEL THAT HAS A DECK EXP. JT.

RAIL SPLICE DETAIL

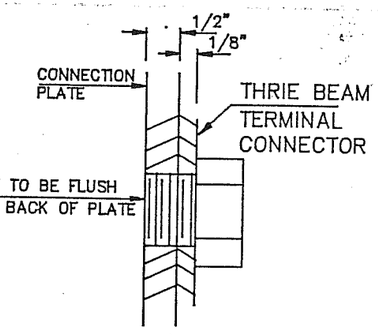


PL 4 3/4" X 3/16" X 4 3/4"
COPE CORNERS 3/4" TO PROVIDE ZINC DRAINS.

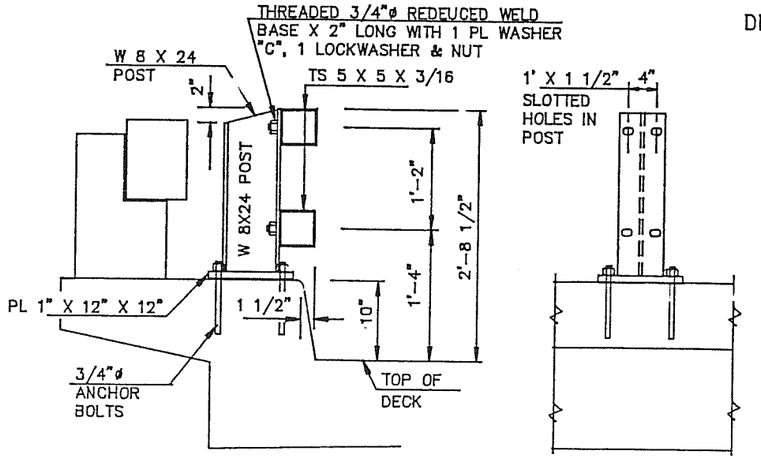
RAIL CAP DETAIL



GUARDRAIL CONNECTION DETAILS



DETAIL "B"



CURB MOUNT POST DETAILS

NOTES:

THE BID ITEM SHALL BE "DOUBLE BOX BEAM RAIL RETROFIT". THE PAY LENGTH SHALL BE END TO END AND IN LINEAR FEET.

RAIL ELEMENTS SHALL BE SQUARE STRUCTURAL TUBING IN ACCORDANCE WITH ASTM SPECIFICATION A 500 GRADE B OR A 618.

STEEL POSTS AND PLATES SHALL CONFORM TO AASHTO SPECIFICATION M 270, GRADE 36 UNLESS OTHERWISE NOTED.

RAILING SHALL BE FABRICATED TO THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE STRUCTURE. POSTS TO BE NORMAL TO GRADE.

PAYMENT FOR THE RAILING SHALL INCLUDE COMPENSATION FOR FURNISHING AND INSTALLING THE GUARDRAIL CONNECTION PLATES.

ALL STRUCTURAL STEEL INCLUDING FASTENERS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION EXCEPT AS NOTED.

GALVANIZE-CONTROL SILICON MEANS SILICON CONTENT OF THE BASE METAL SHALL BE IN THE RANGE OF 0 TO 0.06% (PREFERABLY 0 TO 0.04%) OR 0.15 TO 0.28% (PREFERABLY 0.15 TO 0.25%).

THE ANCHOR BOLTS MUST BE ABLE TO DEVELOP IN TENSION THE EQUIVALENT OF A AASHTO M-164 (A325) 3/4"ø BOLT (13,195 LBS). THE ANCHOR BOLTS MAY BE MECHANICAL TYPE, GROUT-IN TYPE OR OTHER TYPE THAT CAN DEVELOP THE REQUIRED TENSION IN THE CONCRETE.

7/8" 18,250

ALL ANCHOR AND SPLICE BOLTS SHALL BE GALVANIZED AND WILL BE AASHTO M-164 (A325).

THE CONTRACTOR SHALL SUBMIT THE SHOP DRAWINGS FOR DOUBLE BOX BEAM RAIL FOR APPROVAL BY THE BRIDGE ENGINEER BEFORE FABRICATION.

QUANTITIES		
DOUBLE BOX BEAM RAIL RETROFIT		
(FREE STANDING)	130.0	L.FT.

RICE RIVER

RAIL RETROFIT DETAILS

12/7/89

89LCS112

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
4	N. D.	S579(1)		29	195

BENCH MARKS

No.	Description	Location	Elev.
37	Rock I.F.P. Gd.	314+33 44 Lt.	1251.42
38	Rock on side hill I.F.P. Gd.	321+42 68 Rt.	1250.04
39	West Headwall	328+37 13.5 Rt.	1251.68

NOTES:

All exposed edges of concrete shall be beveled with a ¾" triangular molding unless otherwise noted, and all concrete shall be compacted by vibration. All concrete above top of curbs shall be Class A-1.

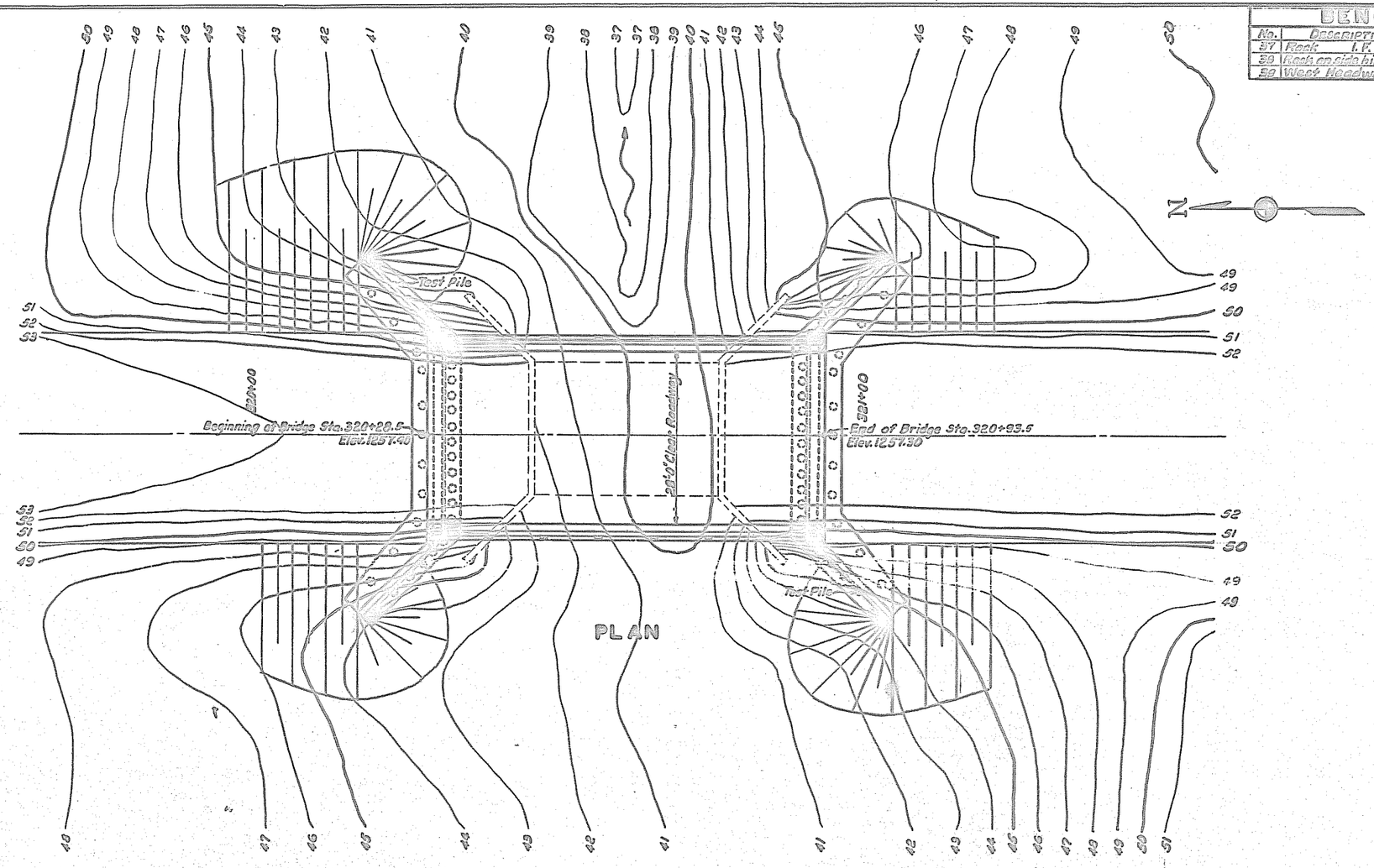
A cutoff of two (2) feet has been assumed in estimating the pay length (below cutoff) of piling as compared with the ordered length.

The cost of furnishing and placing premolded joint filler, drain pipes, guard rail pipe sleeves, rail bolts, sisal kraft paper and incidental items shall be included in the unit price bid for Class A-1½ Concrete.

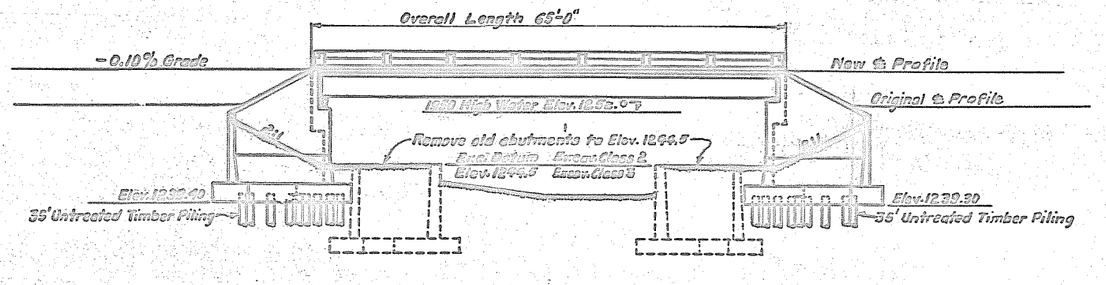
The roadway face of curbs, the outside vertical faces of curb and slab and all faces of railings and posts shall be given the "Rubbed Surface Finish." All other concrete surfaces shall be given the "Ordinary Surface Finish."

The existing structure to be removed is a 30 foot clear I-Beam span bridge with concrete floor, handrails and abutments.

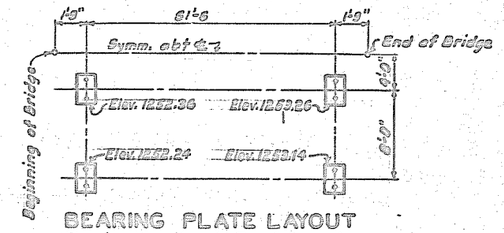
"REMOVING EXISTING STRUCTURE" shall include the removal of the concrete floor, handrails, steel I-Beams and part of the concrete abutments as shown on this drawing; and shall also include the removal of all concrete from the steel I-Beams. The steel beams shall be stored within the right-of-way and adjacent to the bridge site in locations designated by the Engineer.



PLAN



ELEVATION



BEARING PLATE LAYOUT
Showing Elevations to Top of Concrete

SPEC. NO.	ESTIMATE OF QUANTITIES	
81	TEMPORARY CROSSING AND DETOUR	Force Account
12	REMOVING EXISTING STRUCTURE	Sta. 320+61
15	STRUCTURAL EXCAVATION	
	CLASS 2	399 CU. YD.
	CLASS 3	250 CU. YD.
		CU. YD.
65A	UNTREATED TIMBER PILING 6B @ 35 FT.	2244 LIN. FT.
65B	UNTREATED TIMBER TEST PILES 2 @ 50'	2 EACH
	TREATED TIMBER PILING @ FT.	LIN. FT.
	UNTREATED TIMBER	M. B. M.
	TREATED TIMBER	M. B. M.
60*	CONCRETE CLASS "A"-1½	233.5 CU. YD.
60*	" " "A"-1	3.49 CU. YD.
62	REINFORCING STEEL	27224 LB.
63	STRUCTURAL STEEL	56000 LB.

* See Special Provisions

STRUCTURAL DRAWINGS

GENERAL DRAWING 579(1)-1 (This Sheet)

SUBSTRUCTURE 579(1)-2

SUPERSTRUCTURE 579(1)-3

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

BRIDGE LAYOUT

PROJECT No. S-579(1) STA. 320+61

SARGENT COUNTY

APPROVED Sept. 29 To Frank E. Cave
Bridge Engineer

MAX. DESIGN PILE LOADS	
Load	Abutment
Dead Load + Earth	11.27
Live Load	2.17
Longitudinal Force & Wind	0.87
Total	15.17
Max. Design Load	17.37

DESIGN LOADING H15-S12 (1949)

SCALE: 1 IN.=10 FT.

FRANK E. CAVE REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA 32

TOPOGRAPHY — PLOTTED BY J.C. — CHECKED BY
STRUCTURE — DRAWN BY O.C.A. & I.C.F. — CHECKED BY
QUANTITIES — ESTIMATED BY A.J.A. — CHECKED BY A.D.

579(1)

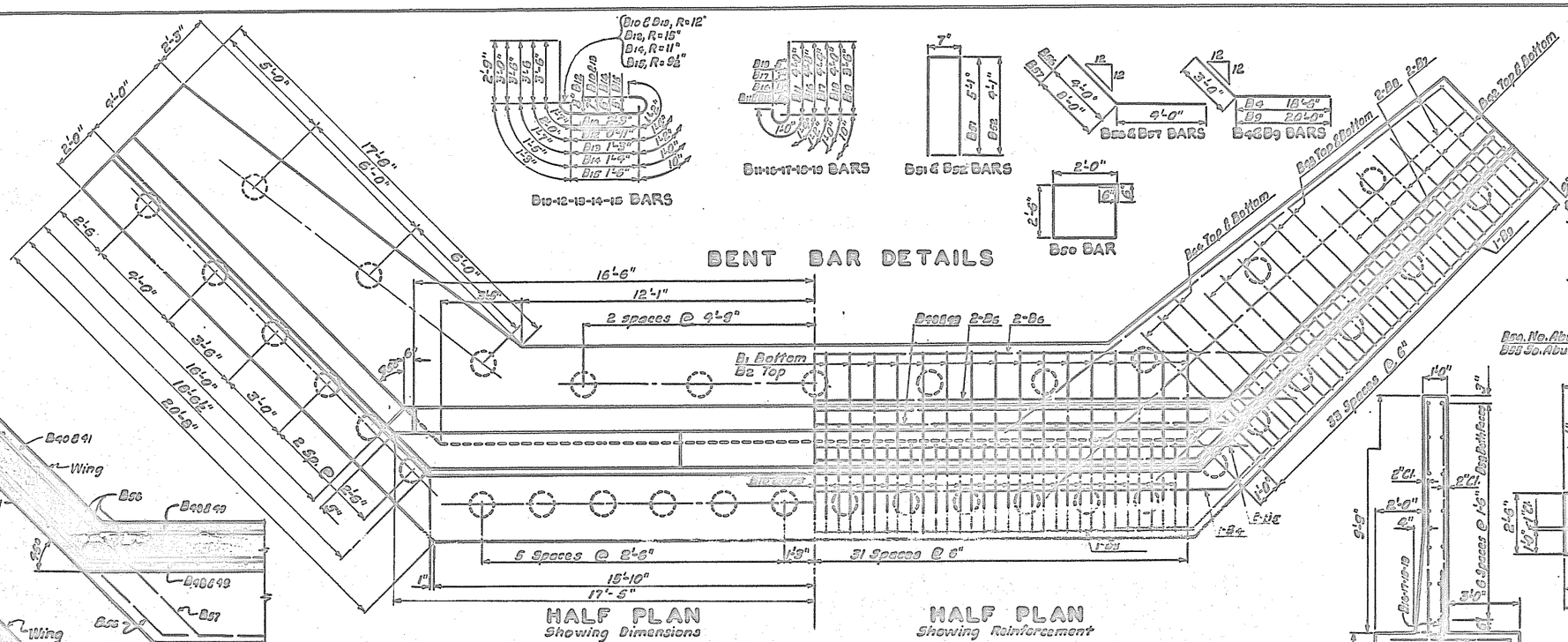
579(1)-1

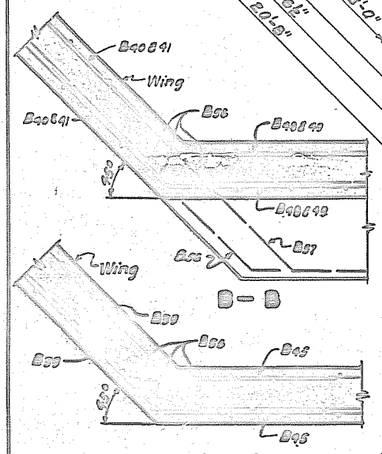
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
SN	N. D.	S-579(1)		24	135

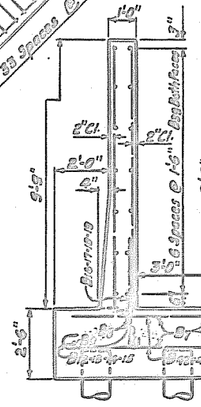
	MADE BY	CHECKED BY	DATE
DESIGN	A.J.A.	K.J.H.	
DETAILS	A.J.A.	G.M.K.	
TRACING	I.C.F.	G.M.K.	

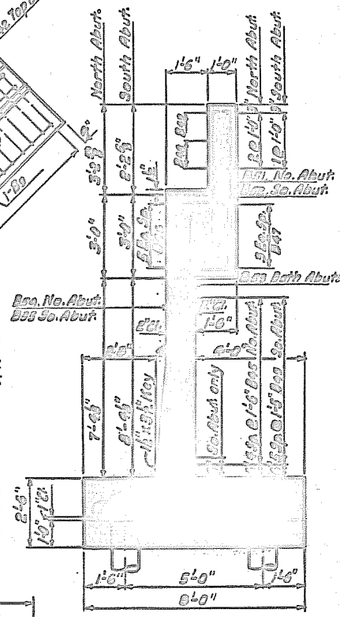
REVISIONS

BENT BAR DETAILS



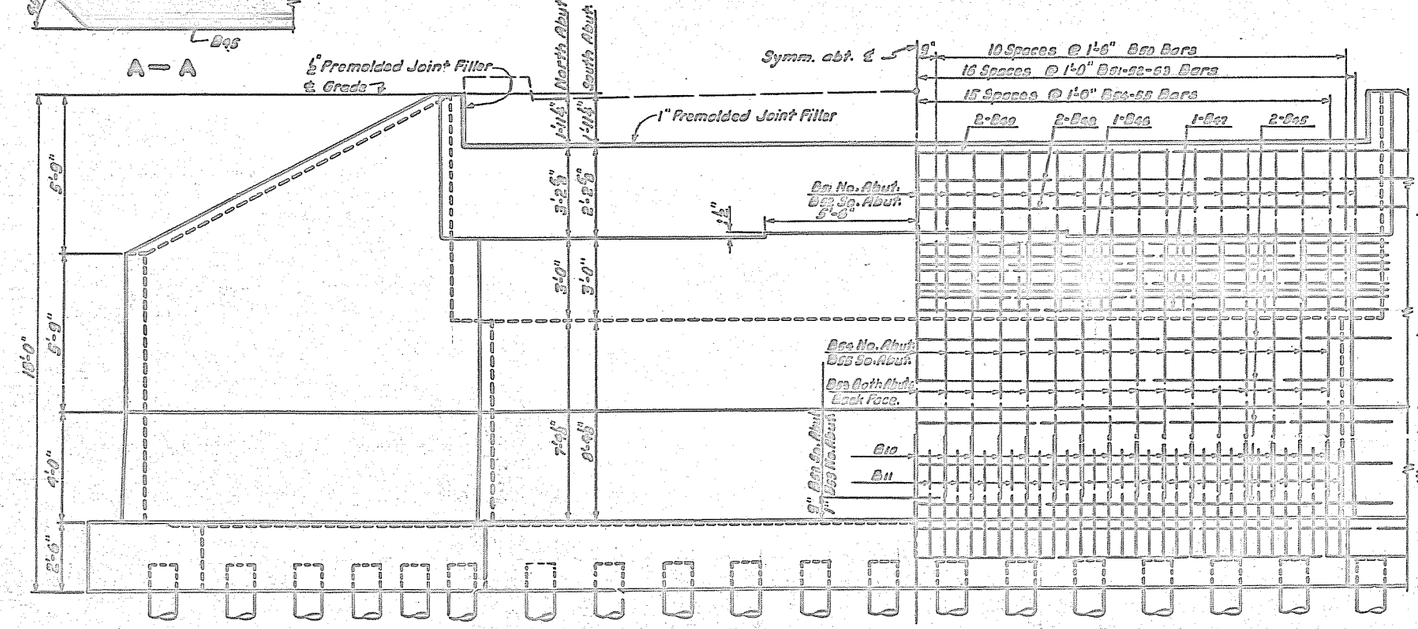


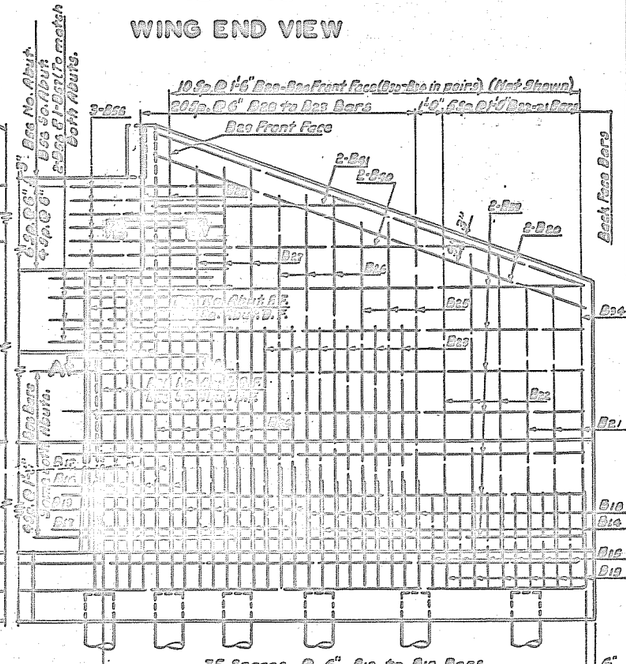




BAR LIST

MARK	NUMBER NORTH	NUMBER SOUTH	SIZE	LENGTH	SHAPE
B1	32	32	5⁄8"	7'-0"	Str.
B2	32	32	"	6'-0"	"
B3	1	1	"	31'-0"	"
B4	2	2	"	21'-6"	Bent
B5	2	2	"	36'-0"	Str.
B6	4	4	"	40'-0"	"
B7	8	8	"	23'-0"	"
B8	4	4	"	21'-0"	"
B9	2	2	"	23'-0"	Bent
B10	31	31	½"	8'-6"	"
B11	32	32	"	5'-0"	"
B12	6	6	½"	7'-9"	"
B13	10	10	"	7'-6"	"
B14	8	8	"	6'-9"	"
B15	12	12	"	6'-6"	"
B16	6	6	½"	6'-0"	"
B17	8	8	"	5'-9"	"
B18	10	10	"	5'-5"	"
B19	12	12	"	4'-9"	"
B20	8	8	"	10'-6"	Str.
B21	6	6	"	9'-6"	"
B22	6	6	"	10'-9"	"
B23	12	12	"	8'-6"	"
B24	8	8	"	8'-6"	"
B25	6	6	"	11'-6"	"
B26	6	6	"	12'-9"	"
B27	6	6	"	14'-0"	"
B28	4	4	"	15'-6"	"
B29	2	2	"	15'-0"	"
B30	4	6	"	14'-9"	"
B31	4	4	"	12'-9"	"
B32	4	4	"	11'-9"	"
B33	4	4	"	10'-6"	"
B34	4	4	"	9'-6"	"
B35	6	—	"	9'-3"	"
B36	—	6	"	10'-3"	"
B37	4	—	"	9'-3"	"
B38	—	4	"	10'-3"	"
B39	28	28	"	10'-0"	"
B40	4	4	"	11'-9"	"
B41	4	4	"	7'-9"	"
B42	32	32	"	8'-6"	"
B43	24	24	½"	6'-6"	"
B44	12	12	"	7'-9"	"
B45	10	12	⅝"	31'-6"	"
B46	6	6	"	31'-6"	"
B47	4	4	"	35'-6"	"
B48	4	2	½"	34'-6"	"
B49	2	2	⅝"	34'-6"	"
B50	32	32	½"	10'-6"	Bent
B51	33	—	"	10'-9"	"
B52	—	33	"	6'-9"	"
B53	31	31	⅝"	9'-6"	Str.
B54	31	—	½"	9'-3"	"
B55	—	31	"	10'-3"	"
B56	69	76	⅝"	6'-6"	Bent
B57	8	8	"	12'-0"	"





QUANTITIES-NORTH ABUT.

Concrete Class A-1b	85.6 C.Y.
Reinforcing Steel	7020 Lbs
Untreated Timber Piling	34 Each
Untreated Timber Test Piles	1 Each

QUANTITIES-SOUTH ABUT.

Concrete Class A-1b	85.6 C.Y.
Reinforcing Steel	7480 Lbs
Untreated Timber Piling	34 Each
Untreated Timber Test Piles	1 Each

ABUTMENT DETAILS

S-579(1) SARGENT CO.

579(1)-24

S7900-2

DESIGN	DETAILS	TRACING
MADE BY K.H.	MADE BY K.H.	MADE BY O.C.A.
CHECKED BY G.M.K.	CHECKED BY G.M.K.	CHECKED BY A.L.A.

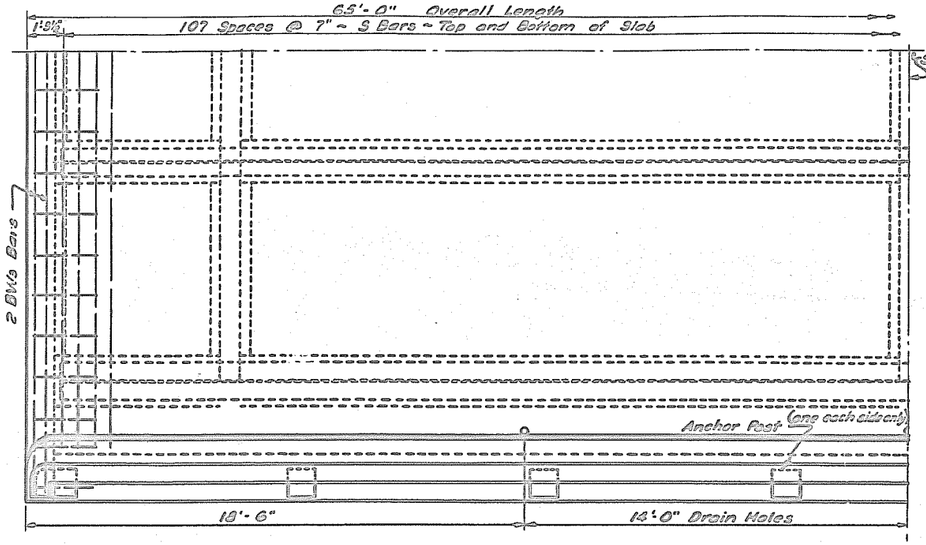
REVISIONS

DATE	MADE BY	CHKD BY

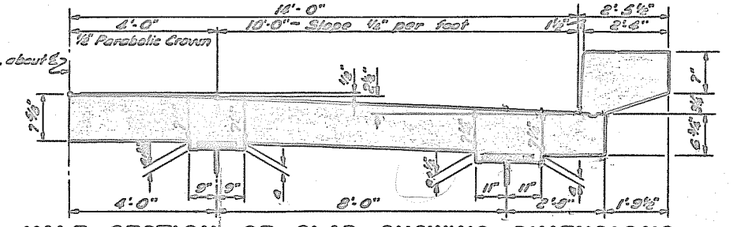
FED. ROAD DIST. NO.	STATE	PROJ. NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
SN	N. D.	S579(1)		25	135

BAR LIST

MARK	NO.	SIZE	LENGTH	SHAPE
BW1	30	#8	5'-10"	Bent
BW2	8	"	7'-6"	"
BW3	8	"	32'-6"	Str.
C1	194	#6	5'-0"	Bent
C2	4	"	33'-6"	Str.
D1	54	"	8'-0"	Bent
E	16	#4	39'-6"	Str.
P1	8	#6	4'-0"	Bent
P2	4	#4	4'-4"	"
P3	56	"	5'-8"	"
P4	92	"	5'-9"	"
P5	68	#6	3'-6"	"
P6	20	"	2'-0"	"
P7	8	"	2'-6"	"
R1	4	#4	26'-6"	Bent
R2	4	"	29'-6"	"
R3	4	"	30'-6"	"
R4	4	"	32'-0"	"
R5	4	"	34'-0"	"
R6	4	"	31'-0"	"
RS	106	#6	2'-8"	Bent
S	216	#5	29'-0"	Str.
T	28	#6	33'-9"	Str.

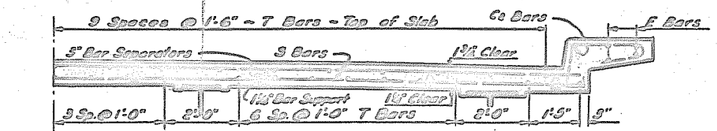


QUARTER PLAN OF SUPERSTRUCTURE

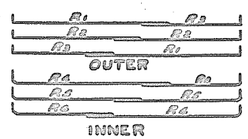


HALF SECTION OF SLAB SHOWING DIMENSIONS

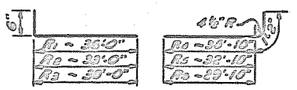
SCALE: HORIZ. ½" = 1'-0" — VERT. 1" = 1'-0"



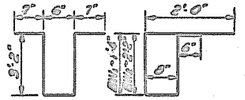
HALF SECTION OF SLAB SHOWING REINFORCEMENT



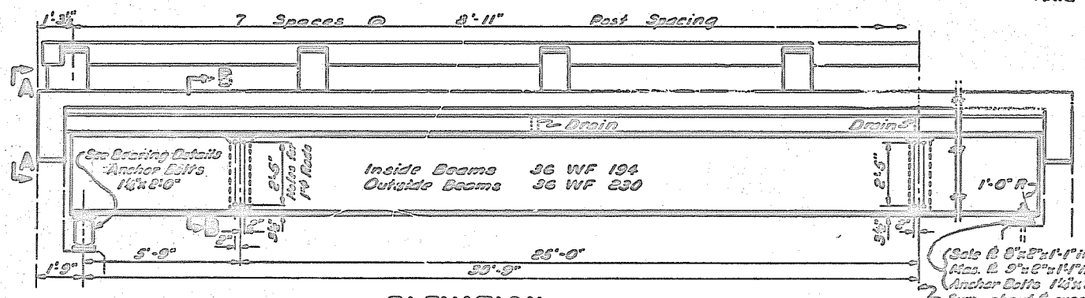
RAIL STEEL ASSEMBLY



R1,2 & 3 BARS — R4,5 & 6 BARS

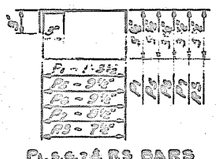


D1 BAR — BW1 & 2 BARS



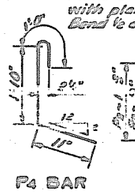
ELEVATION

Scale: ℄ 8"x2"x1'-1" inside, 8"x2"x1'-4" outside
Misc. ℄ 9"x6"x1'-1" inside, 9"x6"x1'-4" outside
Anchor Bolts 1½"x2'-0" — 7° Cage
Sym. about ℄ except for bearing details

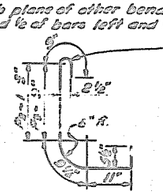


P1, 2, 3, 4, 5, 6, 7 & RS BARS

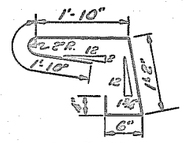
Plane of hook to be 90° with plane of other bend. Bend ½ of bars left and ½ right.



P4 BAR



P2 & P3 BARS



C1 BAR

BENT BAR DETAILS

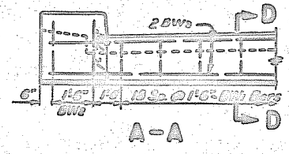
NOTE:

The riser diagram shows dimensions from an assumed chord from each end of beam. Additions must be made to the riser because of the tolerances and the deflection due to the weight of the beams.

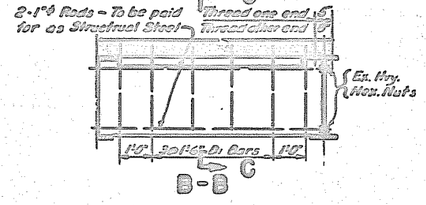
Paint: North Dakota Highway Department Specifications. No paint, shop or field, on top of beams or on diaphram bars covered with concrete.

The rockers, as detailed, shall be constructed from structural steel plates welded together or shall be of cast steel. The cored holes may be omitted if rockers are constructed of welded plates.

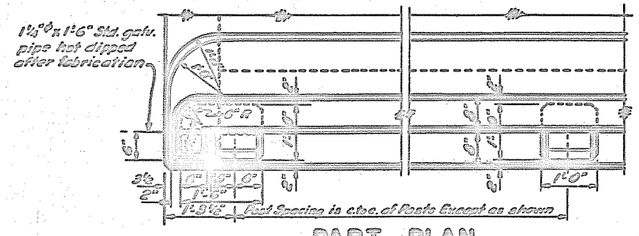
Rolling bolt to be 4½" diameter and 10" long with two washers 8½" O.D. and ¾" thick. A rubber hose sleeve ⅛" I.D. 6" long and ⅛" thick shall be inserted on the bolt between the washers. Cost to be included in the unit price bid for reinforcing steel.



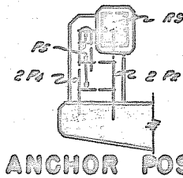
A-A — D-D



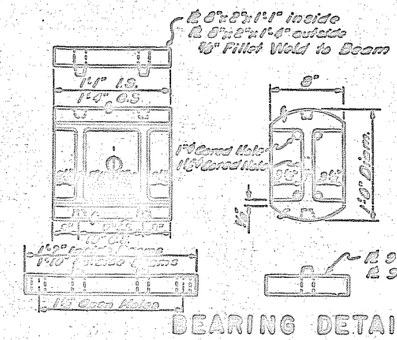
B-B — C-C

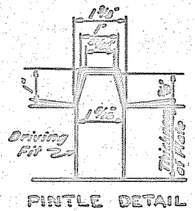


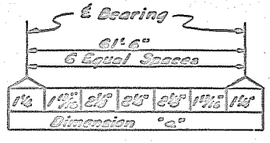
PART PLAN



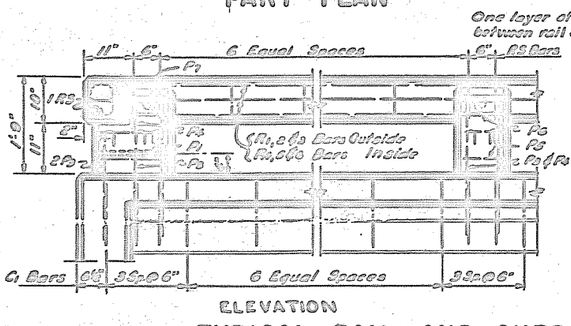
ANCHOR POST



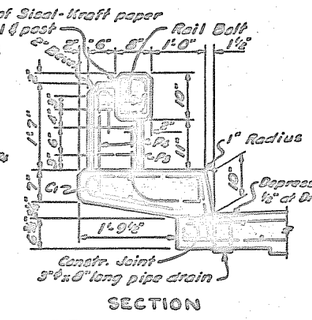




RISER DIAGRAM



ELEVATION



SECTION

TYPICAL RAIL AND CURB DETAILS

QUANTITIES

Concrete Class A-1½	622 Cu.Yd.
Concrete Class A-1	3.49 Cu.Yd.
Reinforcing Steel	12,108 Lbs.
Structural Steel	56,000 Lbs.

SUPERSTRUCTURE DETAILS

S 579(1) SARGENT CO.

579(1) - 3

570 (1)