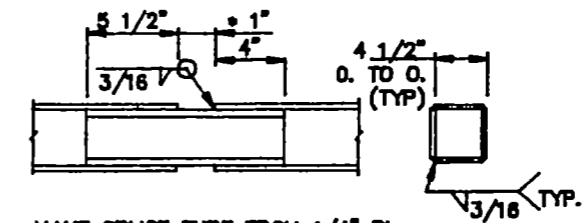
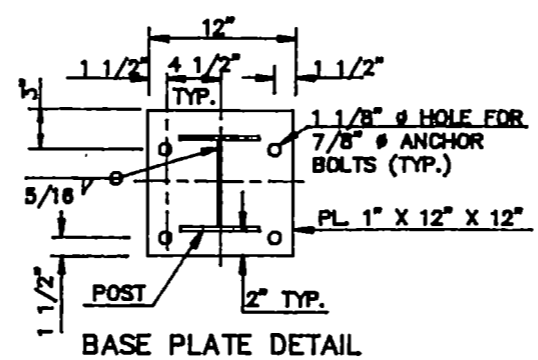
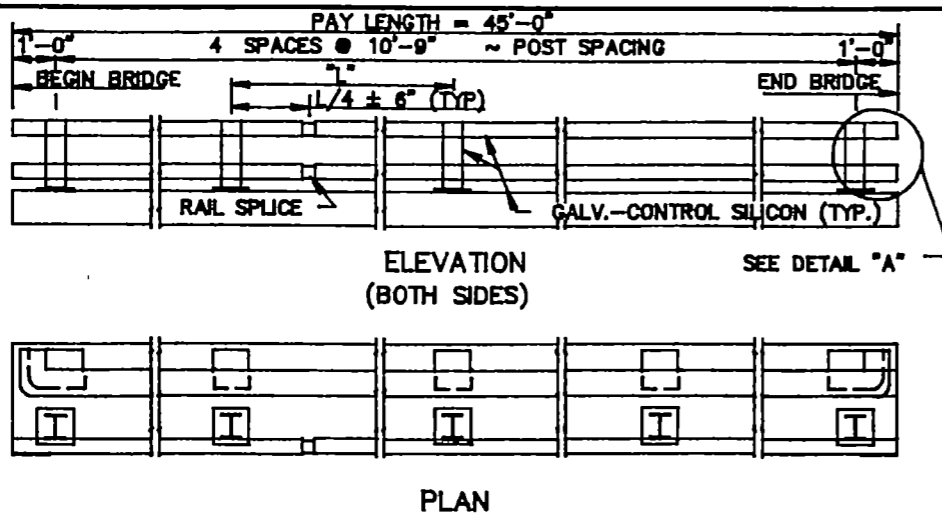
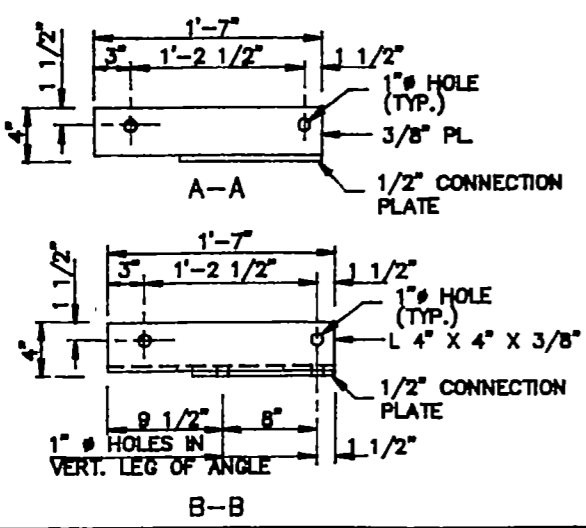
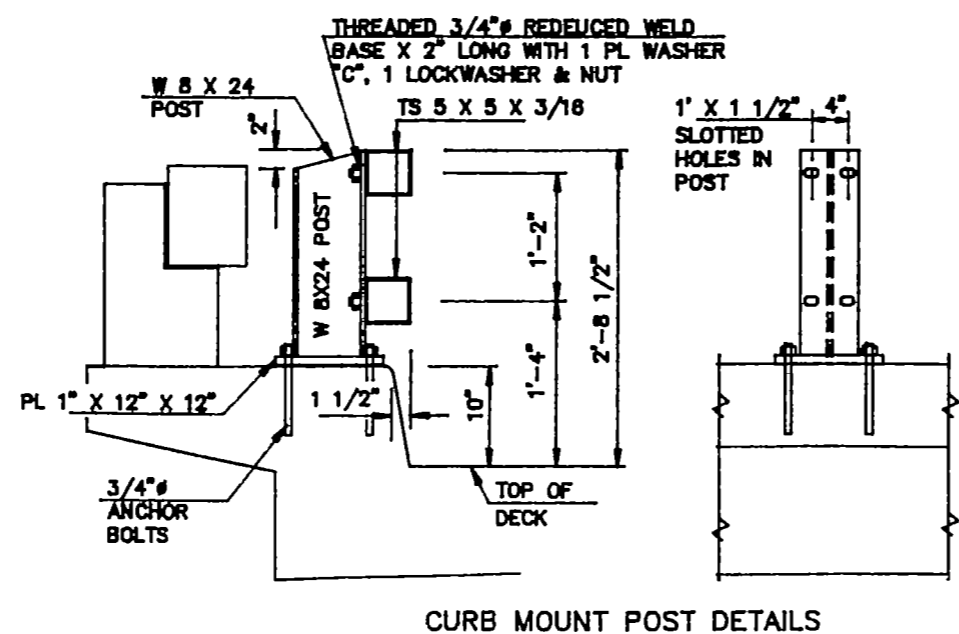
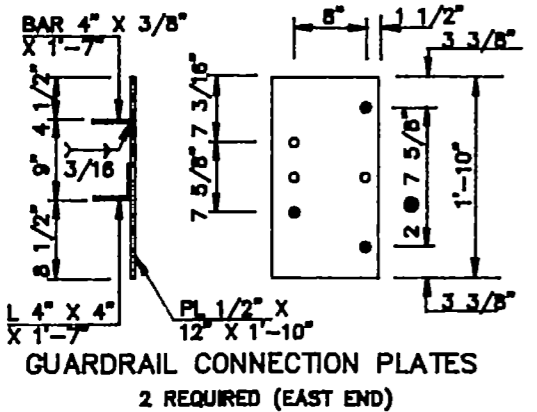
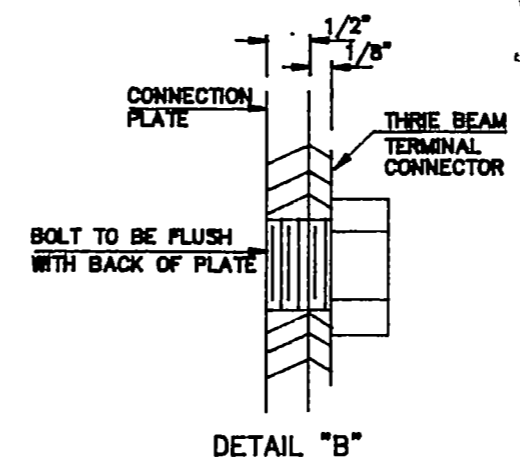
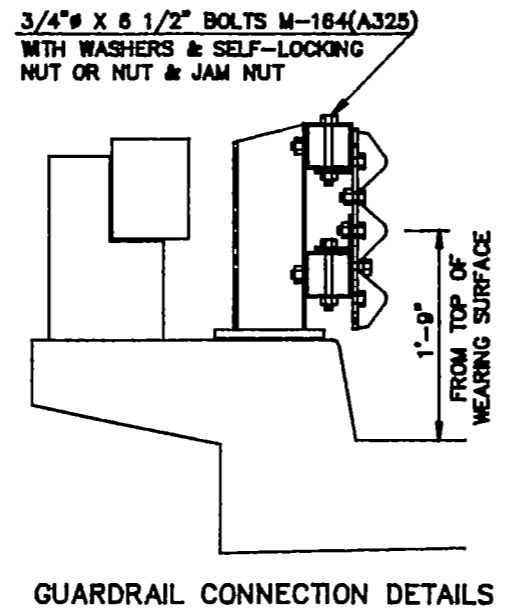
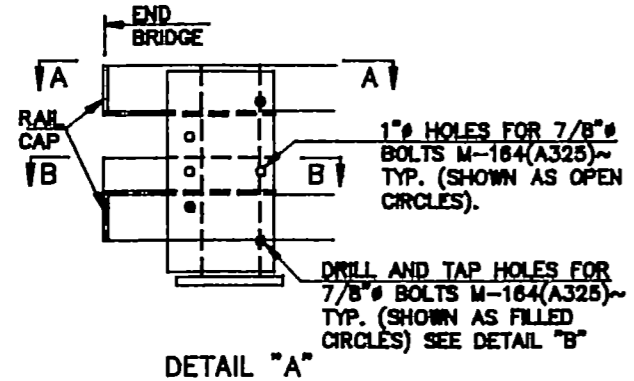
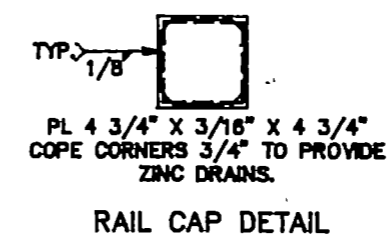
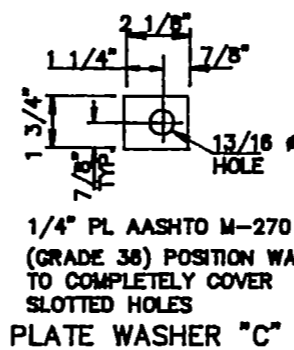


FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	HES-2-003(002)032	



MAKE SPLICE TUBE FROM 1/4" PL. GRIND ALL EDGES PRIOR TO GALVANIZING 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.



**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 818.

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%).

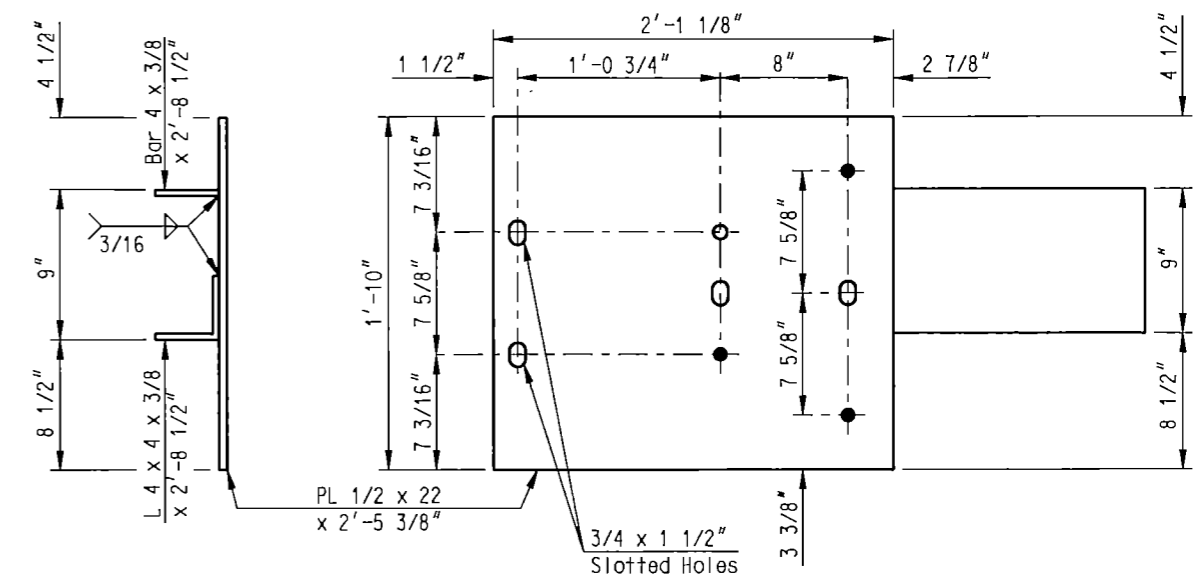
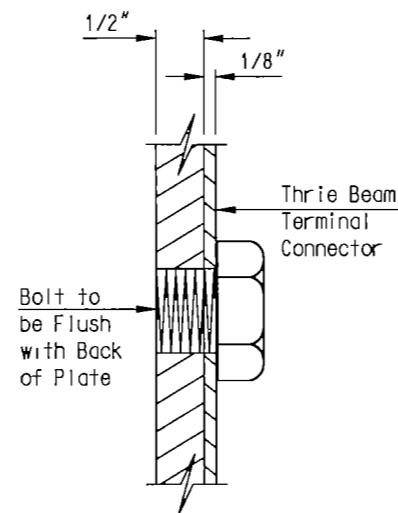
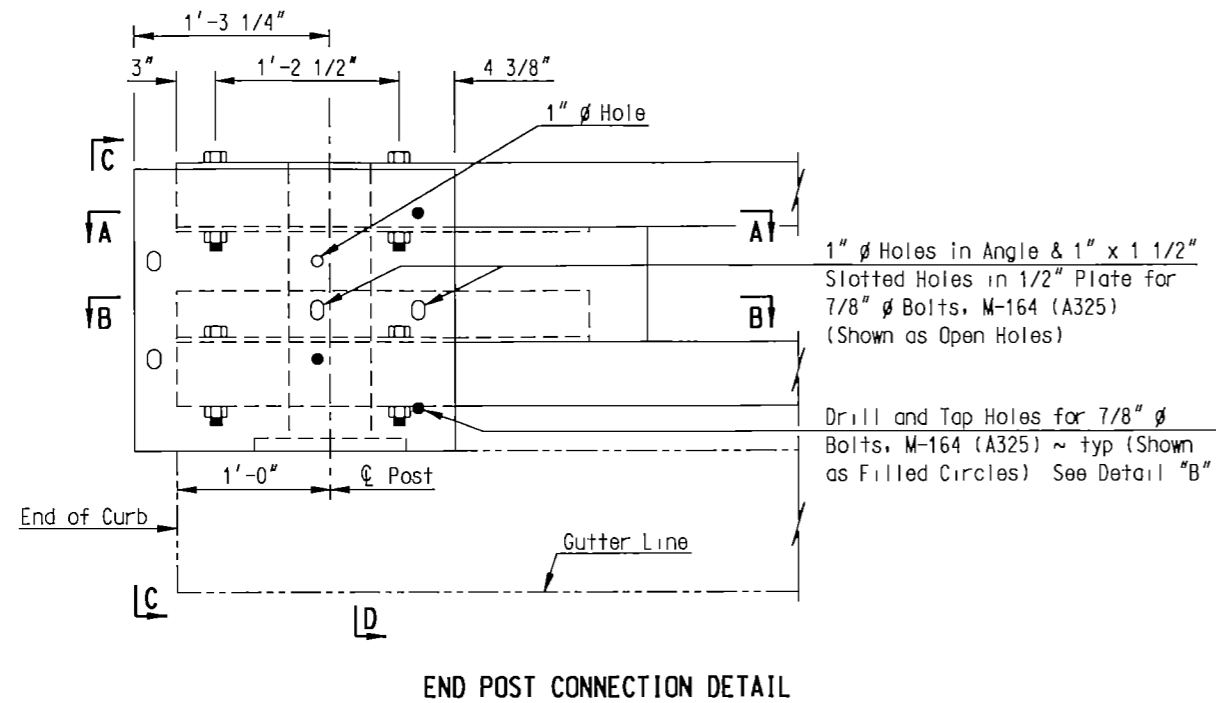
THE ANCHOR BOLTS MUST BE ABLE TO DEVELOP IN TENSION THE EQUIVALENT OF A AASHTO M-164 (A325) 3/4" Ø BOLT (13,195 LBS). THE ANCHOR BOLTS MAY BE MECHANICAL TYPE, GRCUT-IN TYPE OR OTHER TYPE THAT CAN DEVELOP THE REQUIRED TENSION IN THE CONCRETE.

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

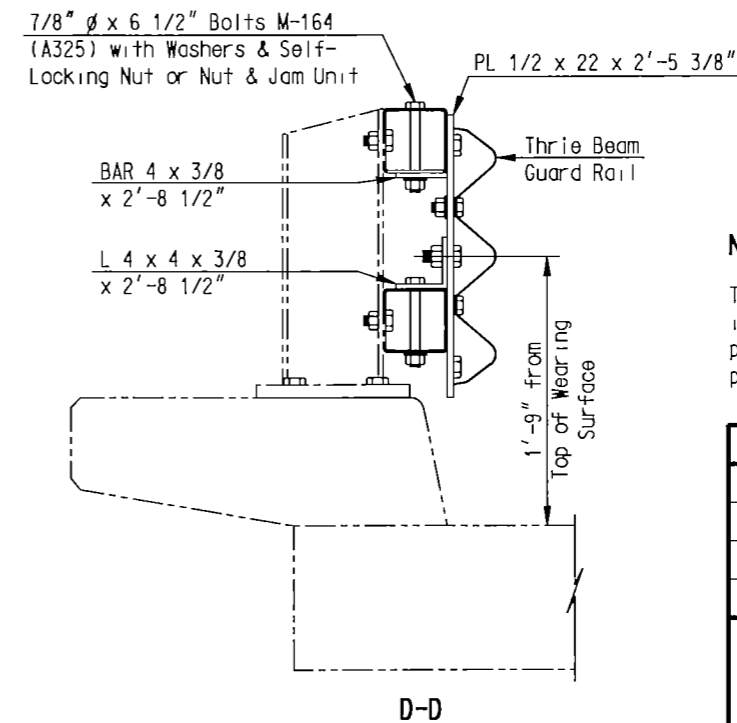
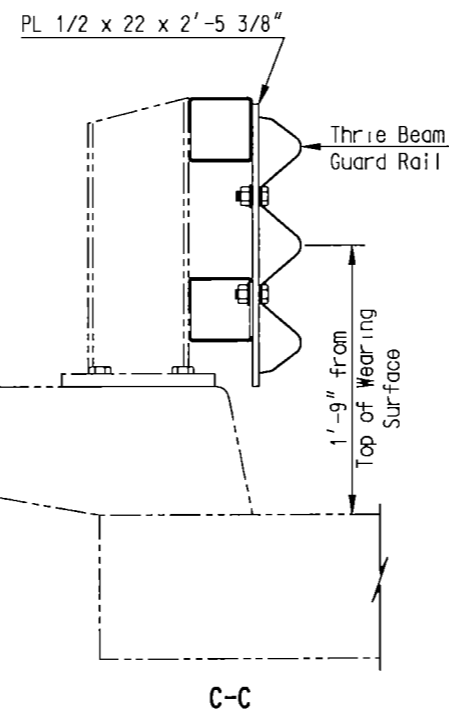
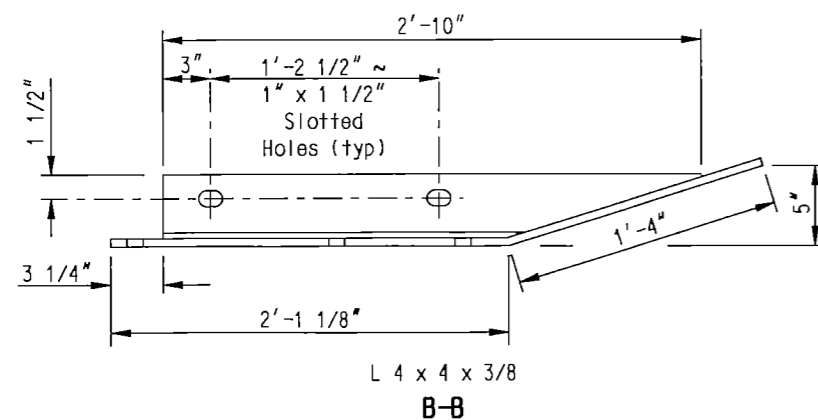
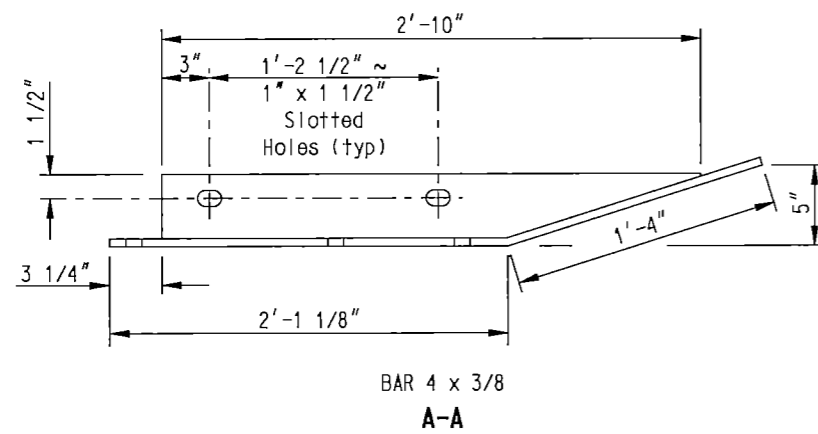
THE CONTRACTOR SHALL SUBMIT THE SHOP DRAWINGS FOR DOUBLE BOX BEAM RAIL FOR APPROVAL BY THE BRIDGE ENGINEER BEFORE FABRICATION.

QUANTITIES	
DOUBLE BOX BEAM RAIL RETROFIT (FREE STANDING)	90.0 L.F.T.
CREEK WEST OF WISHEK	
RAIL RETROFIT DETAILS	

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	NH-2-003(007)031	170	2



GUARDRAIL CONNECTION PLATE DETAILS



**NOTE:**

The bid item "Connection Plate Modification" includes removing the existing connection plate and supplying and installing the new plate.

**QUANTITIES**

CONNECTION PLATE MODIFICATION	4 EA
-------------------------------	------

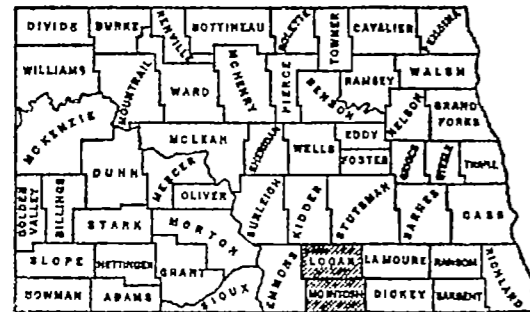
CREEK WEST OF WISHEK

CONNECTION PLATE MODIFICATION DETAILS

# NORTH DAKOTA STATE HIGHWAY DEPARTMENT

## PLANS

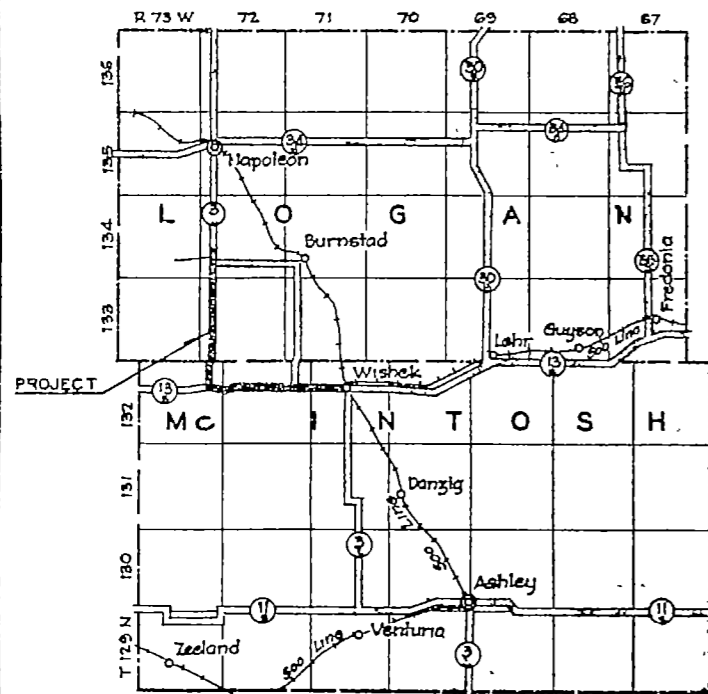
FOR THE PROPOSED IMPROVEMENT OF A  
**STATE HIGHWAY**  
IN LOGAN & MCINTOSH COUNTIES  
FEDERAL AID PROJECT NO. F-123 (6)  
FEDERAL AID SECONDARY PROJECT NO. S-254 (12)



SKETCH-MAP OF NORTH DAKOTA  
SHOWING COUNTIES

**DESIGN DATA**

TRAFFIC	AVERAGE DAILY	EST 20TH MAX HR
PRESENT TRAFFIC (1967):	500 PASS. 100 TRUCKS	400 TOTAL
TRAFFIC FORECAST (1977):	600 PASS. 200 TRUCKS	800 TOTAL
DESIGN SPEED	60	MPH
TRAFFIC CLASSIFICATION		
MINIMUM SIGHT DISTANCE (NON PASSING)	475'	
MINIMUM SIGHT DISTANCE (SAFE PASSING)	2300'	
MINIMUM PASSING SIGHT DISTANCE FOR MARKING 1000'		
VERTICAL CURVES	STA 68+74 H <sub>1</sub> 18.5' L <sub>1</sub> 200' STA 1040+70 H <sub>2</sub> 20.5' L <sub>2</sub> 210'	



SKETCH MAP OF LOGAN & MCINTOSH COUNTIES

SCALES

LAYOUT SHEET	1 IN. = 3000'
PLAN AND PROFILE DRAWINGS	1 IN. = 100 FT
STRUCTURAL DRAWINGS	AS SHOWN
CROSS SECTION SHEETS	1 IN. = 10 FT

**INDEX OF DRAWINGS**

SHEET NO.	TITLE PAGE
1	TITLE PAGE
2	TYPICAL SECTION & SUMMARY OF QUANTITIES
3	CLAYMENT AND BRIDGE LIST
4	TO 39 INCL. PLAN AND PROFILE DRAWINGS
40	TO 47 INCL. STRUCTURAL DRAWINGS
48	TO 66 INCL. SOIL PROFILES
67	TO 227 INCL. CROSS SECTIONS

**GOVERNING SPECIFICATIONS.**  
Standard Specifications adopted by the North Dakota State Highway Department Jan 1956 and approved as standard by the Bureau of Public Roads May 7, 1956. Required Special Provisions approved as standard by the Bureau of Public Roads Dec 22, 1954, and those submitted herewith.

**KEY TO CONVENTIONAL SIGNS**

STATE & NATIONAL LINES	
COUNTY LINE	
TOWNSHIP & RANGE LINES	
GRADE LINE	
CENTERLINE OF CONSTRUCTION	
OLD RIGHT OF WAY LINE	
NEW RIGHT OF WAY LINE	
ABANDONED RIGHT OF WAY LINE	
PROPERTY LINE	
STONE WALL	
OTHER FENCES	
POLE LINES	
POWER LINES	
BRIDGE	
GROUND ELEVATION	
GRADE	
TRAVELED WAY	
RAILROADS	
HEDGES AND TREES	
TRAILS	
CITY OR VILLAGE CORPORATE LIMITS	
SECTION CORNER	
QUARTER SECTION CORNER	
BUILDINGS	
OLD CULVERTS	
NEW CULVERTS	
DRAINAGE	
BENCH MARKS	
WATERS EDGE	
MARSH	
WIRE ROPE GUARD RAIL	
SNOW FENCE	
REPRAP	
GUARD POSTS	
COBBLE GUTTERS	
CONCRETE GUTTERS	

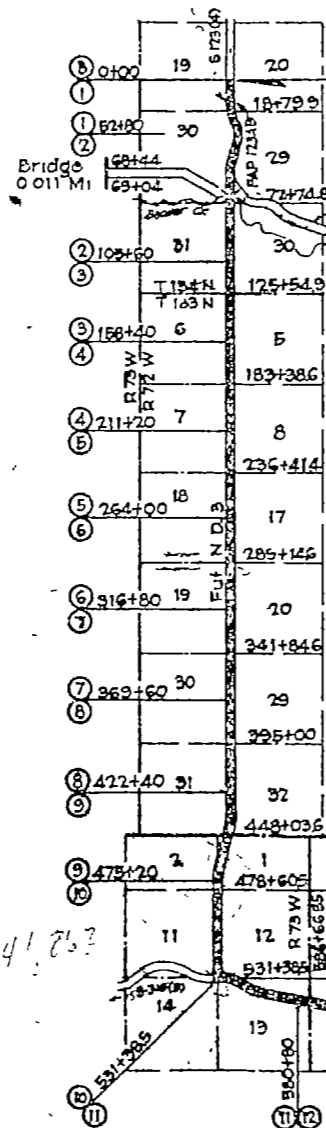
**LENGTH OF PROJECT**

PROJECT MILES - GROSS	MILES - NET
F-123(6) 15.251	15.251
S-254(12) 0.268	0.268
<b>TOTALS</b> 20.119	20.119

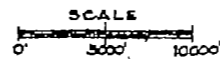
SYSTEM DIST. HWY. AGREEMENT

F-1-3(1)

MILE 31

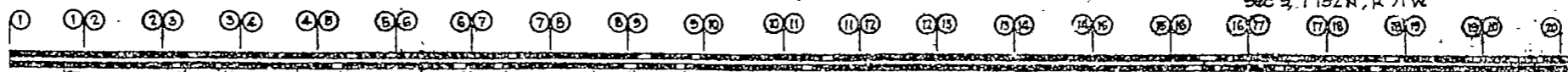


**LAYOUT MAP**



END S-254 (12)  
STA 1087+62.0  
Sta 13+62.15 NRM-254A  
312.15' East of SE Cor  
Sec 9, T182N, R 71 W

WISHER  
17007  
Pop 1261 (1950)  
BEG S-254 (12)  
STA 1023+44.15  
END F-123 (6)  
STA 1033+44.15  
Sta 0+00 S-183(2)  
Sta 284+66.3 FAP 183  
1098' W of SE Cor  
Sec 9, T182N, R 71 W



SIGHT DISTANCE DIAGRAM  
Safe Passing Section (2300' Min SD) ———— Passing Sight Distance (1000' Min SD) ———— Non-passing Sight Distance ————

APPROVED DATE 6-4-57

*W. J. Wisner*  
CHIEF ENGINEER  
NORTH DAKOTA STATE  
HIGHWAY DEPARTMENT

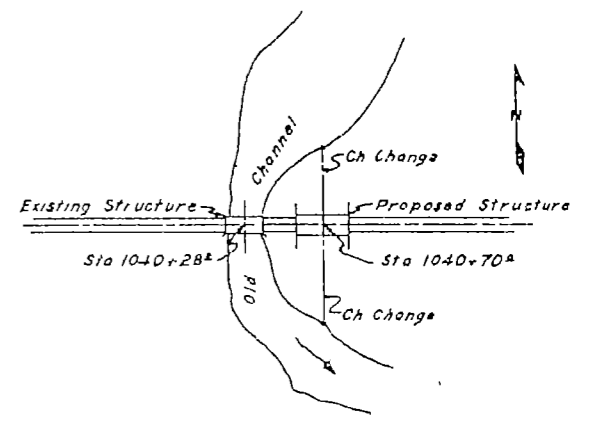
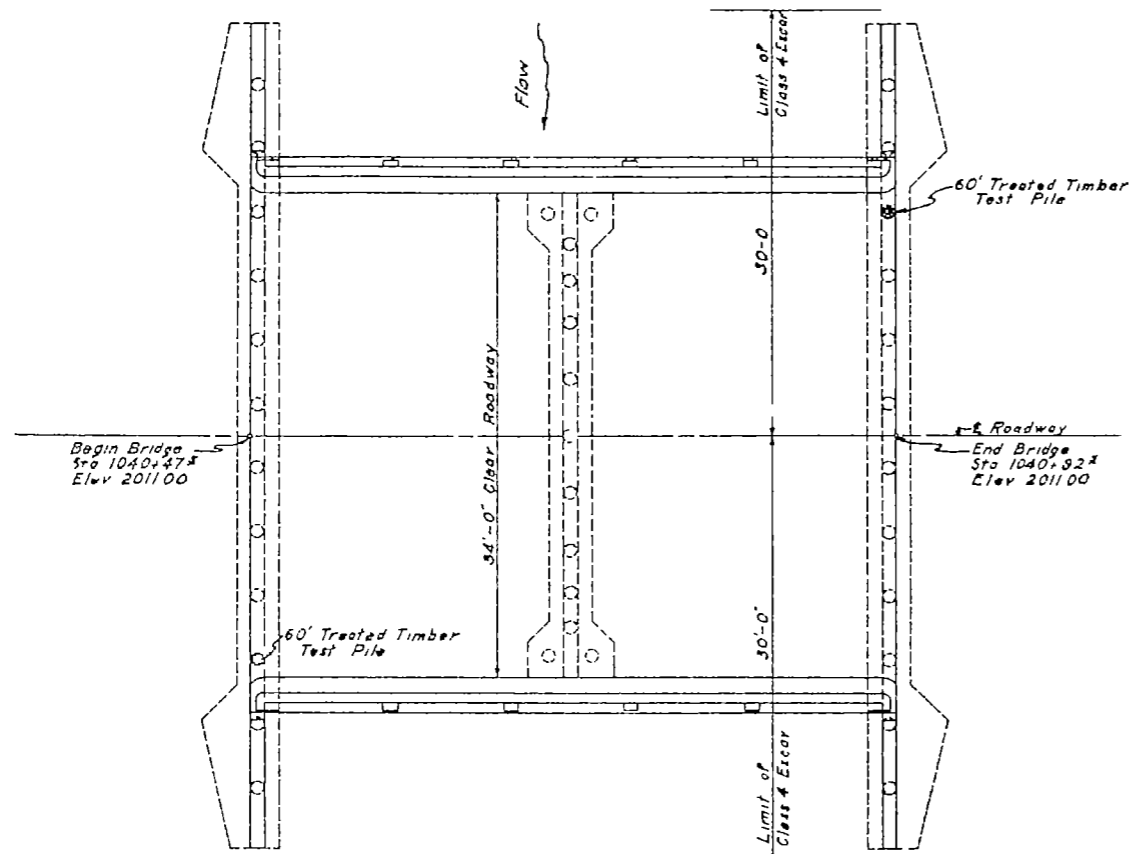


DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS  
  
APPROVED  
DISTRICT ENGINEER DATE

DESIGNED BY	DAVID B.
CHECKED BY	H.J.S.
MADE BY	L.P.M.
TRACING	
QUANTITIES	
CREATED BY	
MODIFIED BY	
DATE	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	F123(6)		44	227

CODE X 020



LAYOUT SKETCH

NOTES

The existing structure to be removed is a 24 foot concrete bridge on concrete abutments at Sta 1040+28.0. Removing Existing Bridge shall conform to Section 12 of the Standard Specifications. All salvageable material shall remain the property of the State.

Class 4 Excavation shall include all the channel excavation extending horizontally 30 feet on each side of the roadway centerline and vertically all that within the channel section limits as shown in "Elevation" on this sheet. The Engineer reserves the right to remove this item, Class 4 Excavation, from the structural contract.

Class 2 Excavation shall include all structure excavation below the lower limits of the Class 4 Excavation.

All exposed edges of concrete shall be beveled with a 1/4" triangular mauling unless otherwise noted. All concrete shall be compacted by vibration. All concrete above top of curb shall be Class A-1.

Piling shall not be ordered until test piles have been driven and the required lengths of piles has been determined by the Engineer.

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

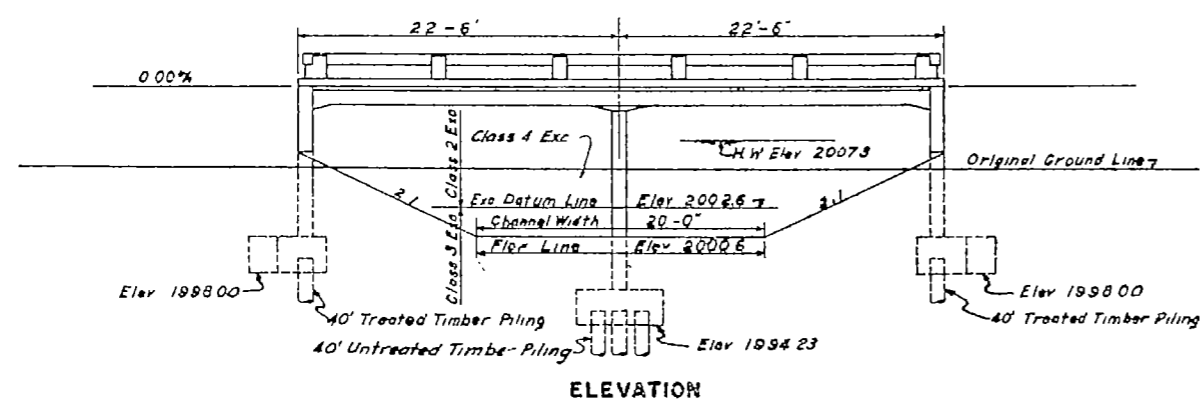
The cost of furnishing and placing drain pipes, preplaced joint material, railing bolts, pipe sleeves and all other incidental items shall be included in the price bid for Class A-1's Concrete.

The surface of handrails, handrail posts, roadway face of curbs shall be given the "Rubbed Surface Finish" all other surfaces shall be given the "Ordinary Surface Finish".

The entire floor slab shall be poured in one continuous run.

This bridge has been designed for a 50'psf future wearing surface.

ESTIMATE OF QUANTITIES		
SPEC NO.	BID ITEM	QUANTITY
12	REMOVING EXISTING STRUCTURE AT STA. 1040+28.0	1.00 LUMP SUM
18	EXCAVATION CLASS 2	77 CU Y
	CLASS 3	184 CU YD
	CLASS 4	305 CU YD
60A	CONCRETE CLASS A-1	2.46 CU YD
	CLASS A-1-X	167.4 CU YD
62A	REINFORCING STEEL	23,789 LBS
63	STRUCTURAL STEEL	1.00 LB
64A	UNTREATED TIMBER	M & M
64B	TREATED TIMBER	M & M
65A	UNTREATED TIMBER PILING	13 @ 40 FT 494 LIN FT
65B	TREATED TIMBER PILING	82 @ 40 FT 836 LIN FT
66K	UNTREATED TIMBER TEST PILES	1 EACH
66L	TREATED TIMBER TEST PILES	60 FT 2 EACH
81	TEMPORARY CROSSING AND DETOUR	FORCE ACCOUNT



ELEVATION

BENCH MARKS				PILE LOADING									
NO.	DESCRIPTION	LOCATION	ELEV	LOCATION	DEAD LOAD	LIVE LOAD	EARTH	50 LB	16 LB	100 LB LL	LONG FORCE	ICE	DESIGN LOAD
136	Top of 18" CMP	Sta 1029+88 ~17 LI	2002.09										
137	T Conc Wheel Ed	Sta 1040+38 ~137 PI	2003.32	Abutment	80T	3.3T	3.3T						17.5T
138	T Conc Headwall	Sta 1047+72 ~16 PI	2003.44	Pier	110T	4.7T	1.5T						17.0T

STRUCTURAL DRAWINGS	
GENERAL DRAWING	This Sheet
SUBSTRUCTURE	H-2210 & H-2908
SUPERSTRUCTURE	H-2109
DESIGN LOADING	H 50 S 16
SCALE	1" = 6' FEET

NORTH DAKOTA  
STATE HIGHWAY DEPARTMENT

BRIDGE LAYOUT

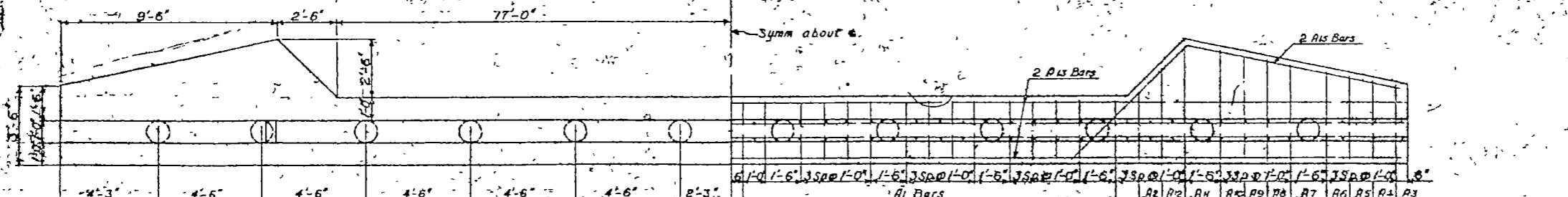
PROJECT F 123 (6) STA. 1040+70

McINTOSH COUNTY

APPROVED  
DATE: Mar 25, 1957  
Joseph D. Kirby  
REGISTERED PROFESSIONAL ENGINEER  
NORTH DAKOTA

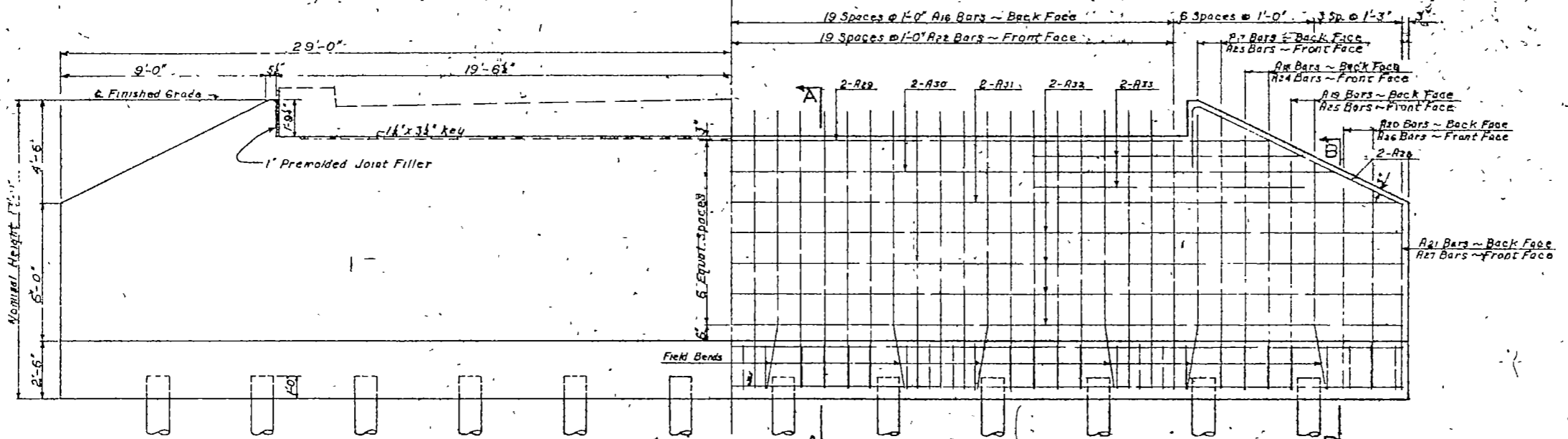
123 (6) - 2

DESIGNED BY	REVISED BY
CHECKED BY	
DRAWN BY	
DATE	
PROJECT	
SCALE	
QUANTITIES	



HALF PLAN  
Showing Dimensions

HALF PLAN  
Showing Reinforcing Steel

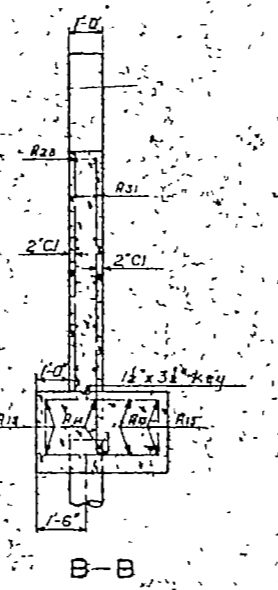
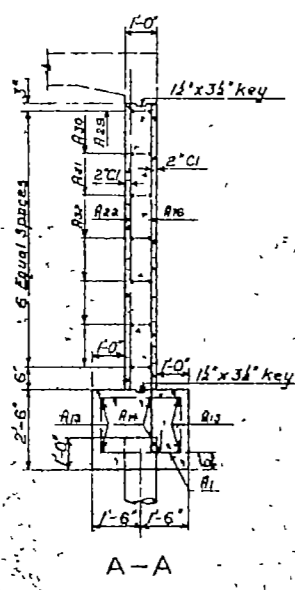


HALF ELEVATION  
Showing Dimensions

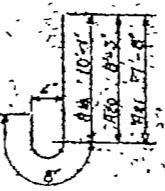
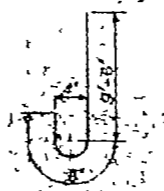
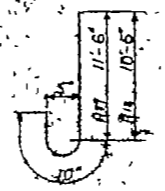
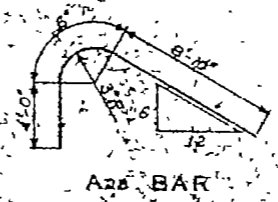
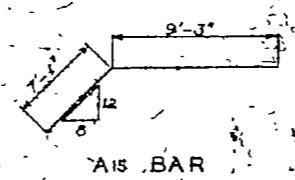
HALF ELEVATION  
Showing Reinforcing Steel

REVISED	NO.	DATE	BY
1			

MARK	NO.	SIZE	LENGTH	SHAPE
A1	30	#4	9'-6"	POST
A2	8	#4	10'-6"	"
A3	2	#4	10'-7"	"
A4	2	#4	11'-2"	"
A5	2	#4	11'-7"	"
A6	2	#4	12'-0"	"
A7	2	#4	12'-7"	"
A8	2	#4	13'-0"	"
A9	2	#4	13'-5"	"
A10	2	#4	13'-10"	"
A11	2	#4	14'-6"	"
A12	2	#4	12'-8"	"
A13	8	#4	30'-6"	S.R.
A14	4	#6	16'-4"	BEAR
A15	39	#5	10'-9"	"
A17	4	#5	12'-4"	"
A18	4	#5	11'-4"	"
A19	4	#5	10'-2"	"
A20	4	#5	8'-11"	"
A21	2	#4	8'-4"	"
A22	39	#5	10'-0"	S.R.
A23	4	#5	9'-8"	"
A24	4	#5	8'-8"	"
A25	4	#5	7'-4"	"
A26	4	#5	6'-5"	"
A27	2	#4	5'-9"	"
A28	4	#6	14'-4"	BEAR
A29	4	#6	24'-9"	S.R.
A30	4	#4	27'-0"	"
A31	4	#4	29'-7"	"
A32	16	#4	29'-8"	"
A33	8	#6	14'-0"	S.R.



A12	4'-0"
A11	5'-0"
A10	4'-8"
A9	4'-3"
A8	4'-3"
A7	4'-0 1/2"
A6	3'-9"
A5	3'-6 1/2"
A4	3'-4"
A3	3'-0 1/2"
A2	5'-0"
A1	2'-6"



BENT BAR DETAILS

QUANTITIES	
Concrete Class 'A1'	2,373 CU. YD.
Reinforcing Steel	3030 LBS.
Piling (See Layout)	
Excavation (See Layout)	

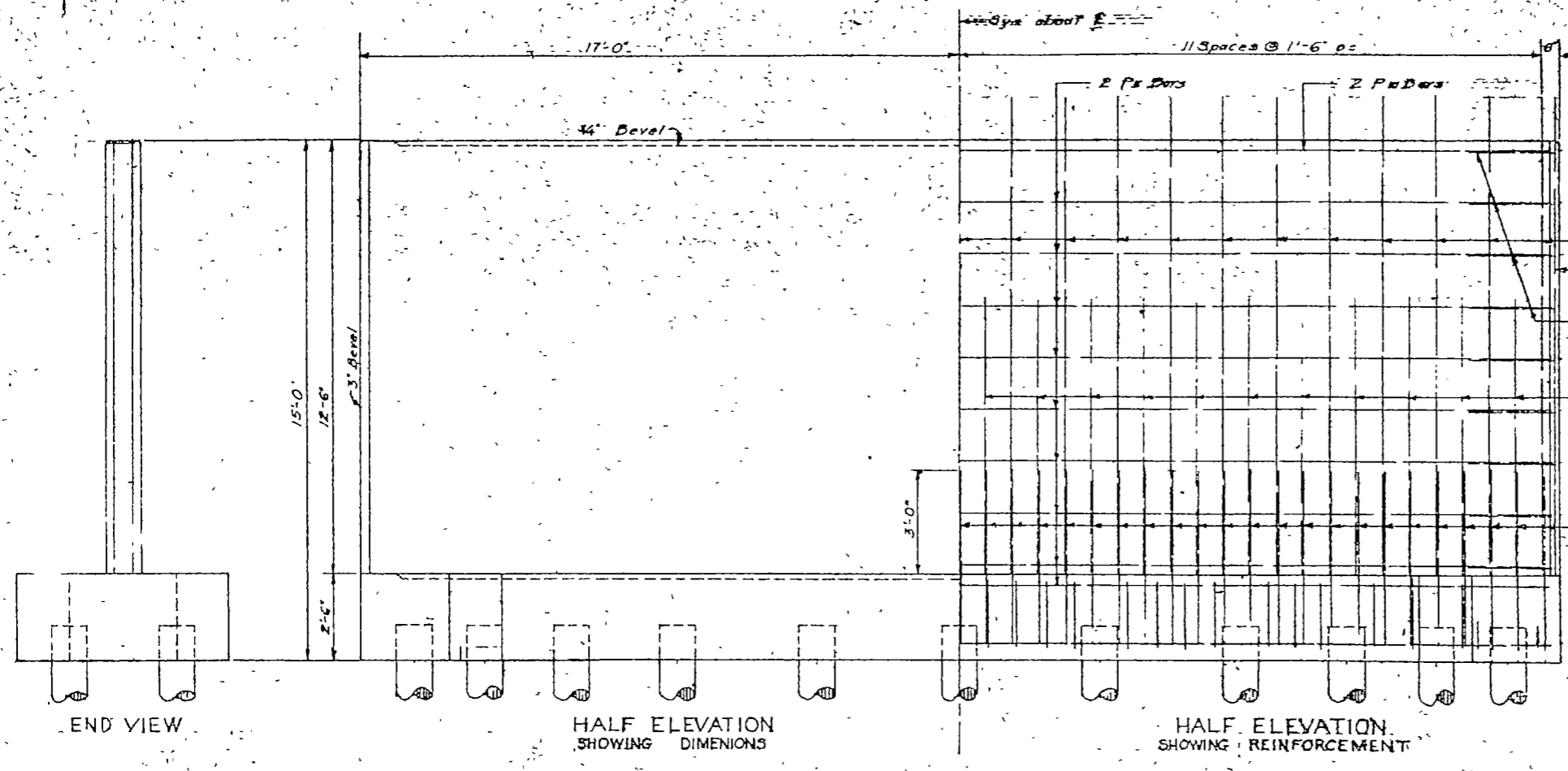
13' ABUTMENT  
FOR SLAB SPANS  
34 FT. ROADWAY

H-2210

H-2210

NO. DRAW	DATE	REVISIONS
1	NO	1/16
NO. PROJ.		
NO. DRAWING		
NO. SHEET		
NO. STATION		
NO. COUNTY		
NO. STATE		
NO. DISTRICT		
NO. DIVISION		
NO. SECTION		
NO. SUBSECTION		
NO. SHEET		
NO. TITLE		

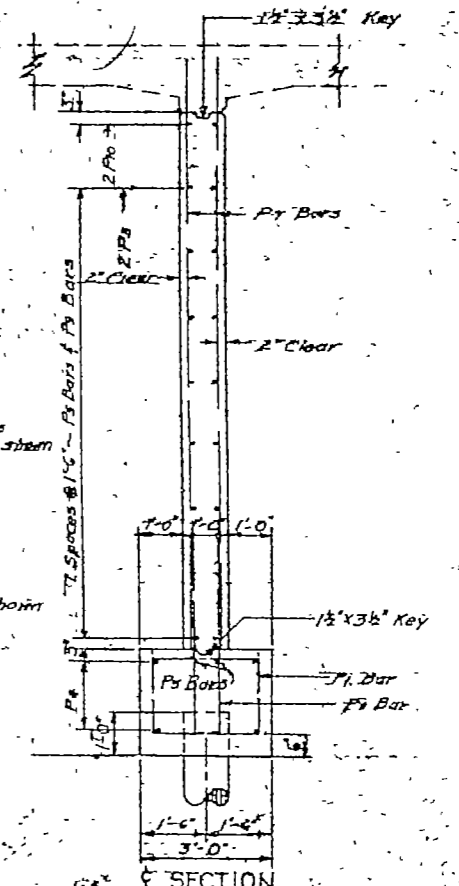
DESIGNED BY: J.C.B.  
 CHECKED BY: J.C.B.  
 DRAWN BY: J.C.B.  
 TRACING BY: J.C.B.  
 QUANTITIES CHECKED BY: J.C.B.



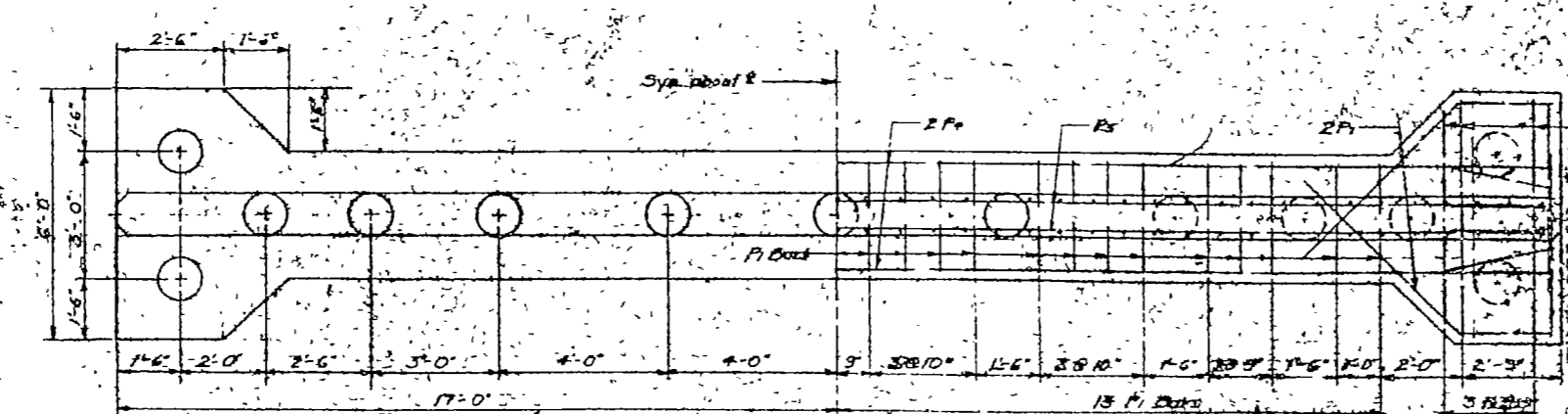
END VIEW

HALF ELEVATION SHOWING DIMENSIONS

HALF ELEVATION SHOWING REINFORCEMENT

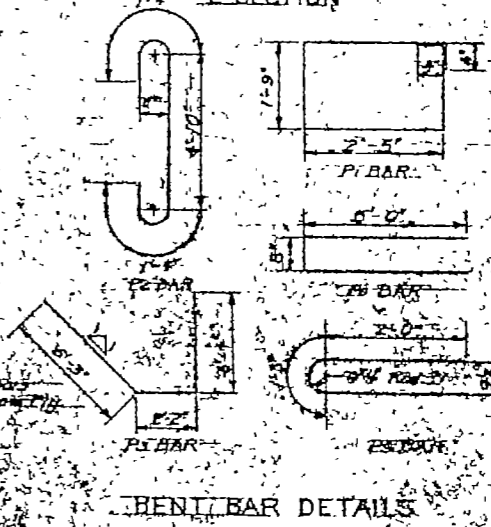


SECTION



HALF FOOTING PLAN SHOWING DIMENSIONS

HALF FOOTING PLAN SHOWING REINFORCEMENT



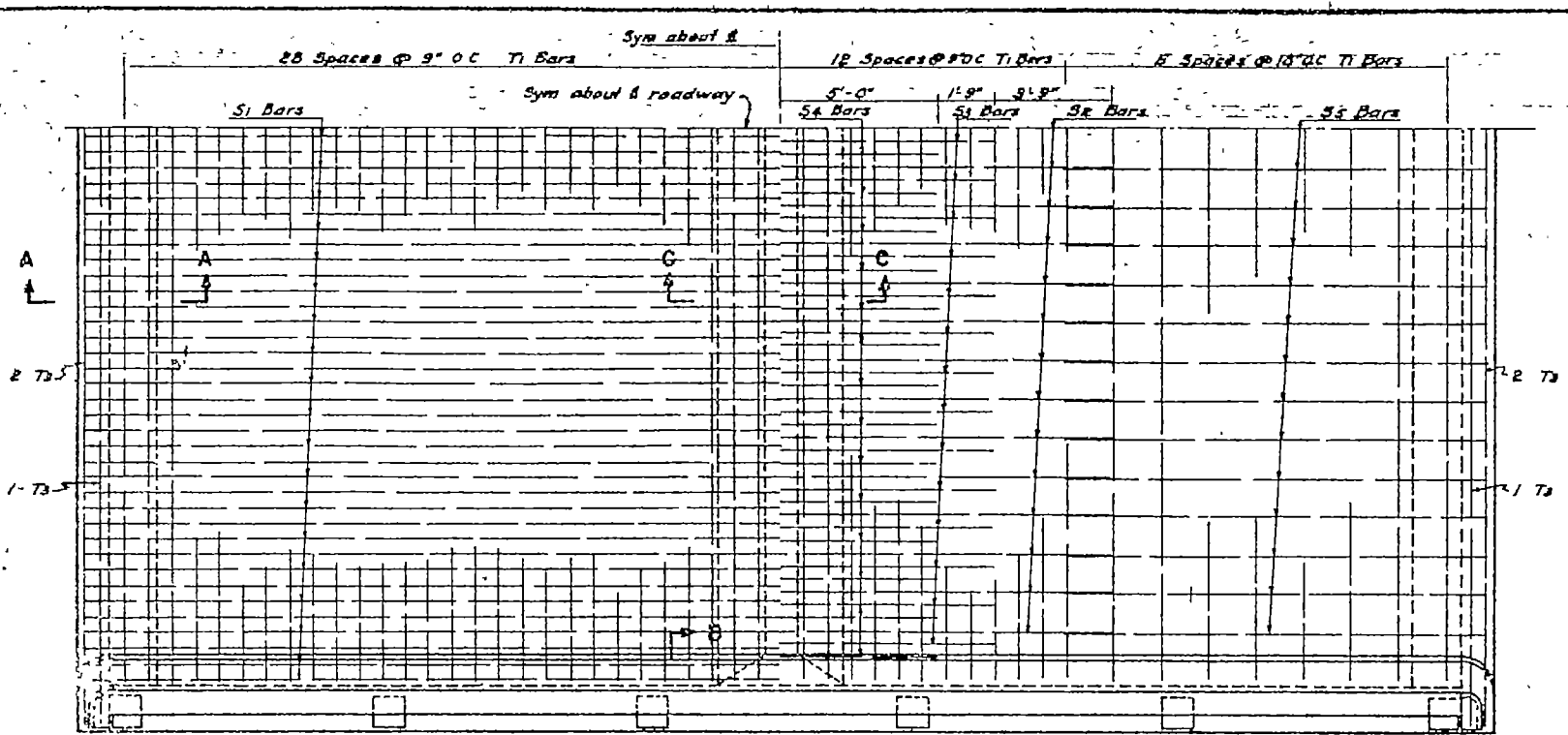
BENT BAR DETAILS

BAR LIST - ONE PIER				
MARK	NO	SIZE	LENGTH	SHAPE
P1	26	No 5	9'-0"	Bent
P2	6	No 6	7'-6"	
P3	0	No 6	11'-9"	
P4	4	No 6	33'-6"	Spr.
P5	18	No 5	33'-0"	
P6	45	No 7	10'-8"	Bent
P7	16	No 6	18'-9"	Spr.
P8	11	No 5	8'-0"	
P9	18	No 4	5'-5"	Spr.
Pro	2	No 6	33'-0"	Spr.

QUANTITIES	
Concrete Class A-1/2	266cu yd
Reinforcing Steel	3553 Lb.
Timber Pile	(See Layout)
PIER DETAILS	
FOR SLAB BRIDGES	
FOR RUNWAY	

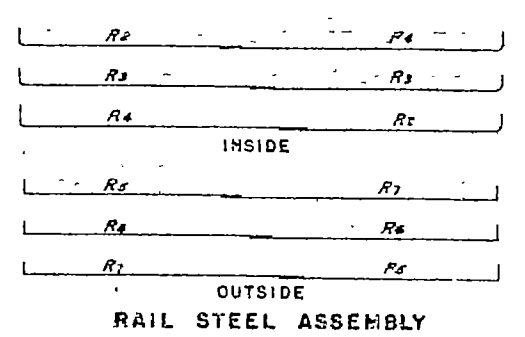
H-2308

DESIGN	MADE BY	V.C.S.
DETAILS	CHECKED BY	P.L.S.
TRACING	MADE BY	V.C.S.
QUANTITIES	CHECKED BY	V.C.S.

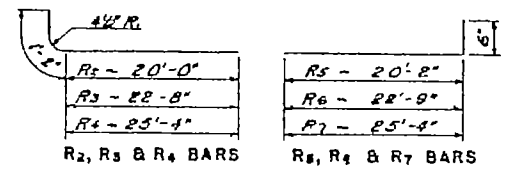


QUARTER PLAN

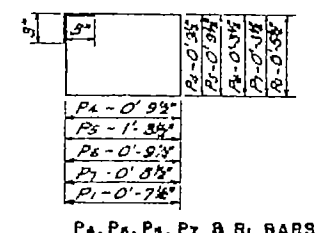
QUARTER PLAN



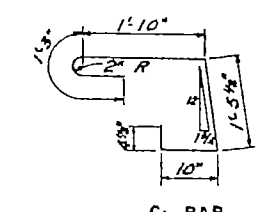
RAIL STEEL ASSEMBLY



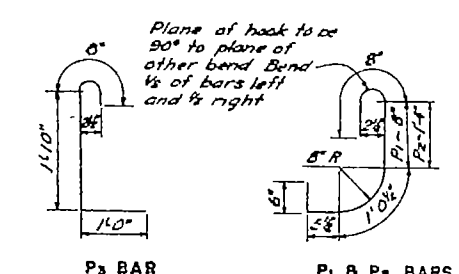
R2, R3 & R4 BARS R5, R6 & R7 BARS



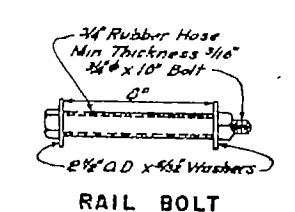
P4, P5, P6, P7 & R1 BARS



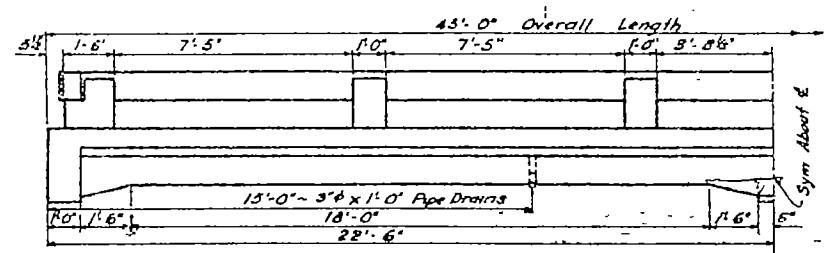
C1 BAR



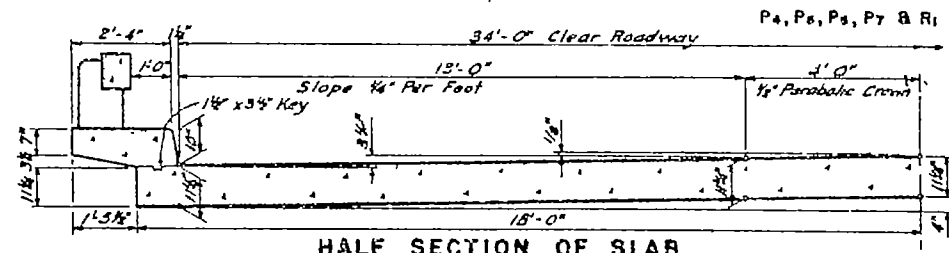
P3 BAR P1 & P2 BARS



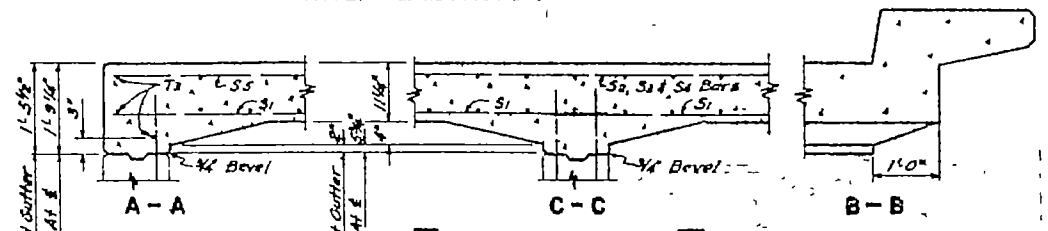
RAIL BOLT



HALF ELEVATION



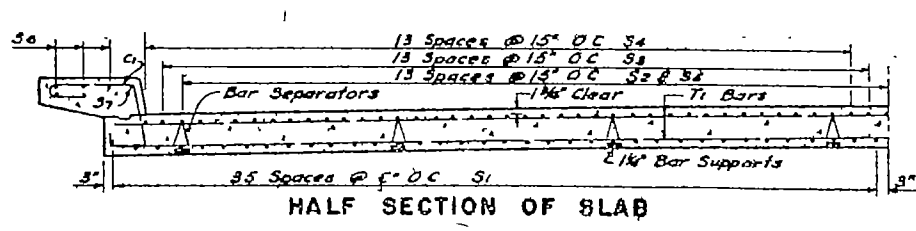
HALF SECTION OF SLAB



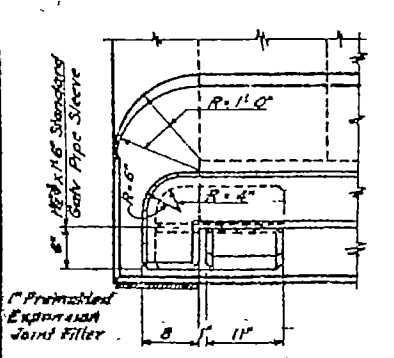
A-A

C-C

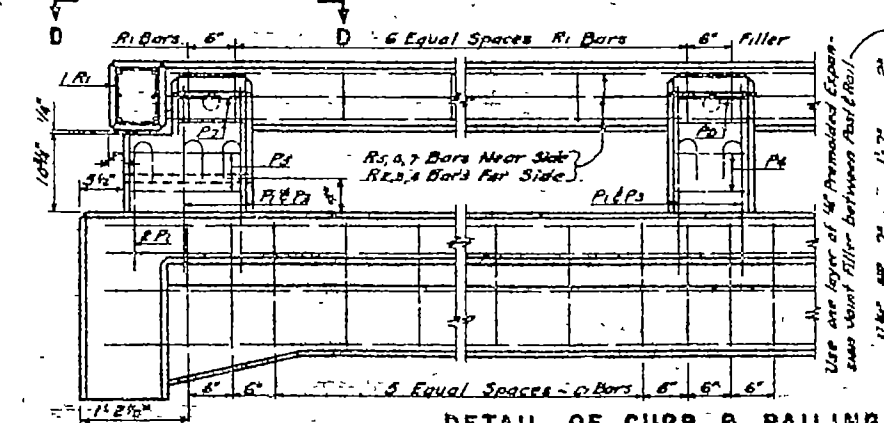
B-B



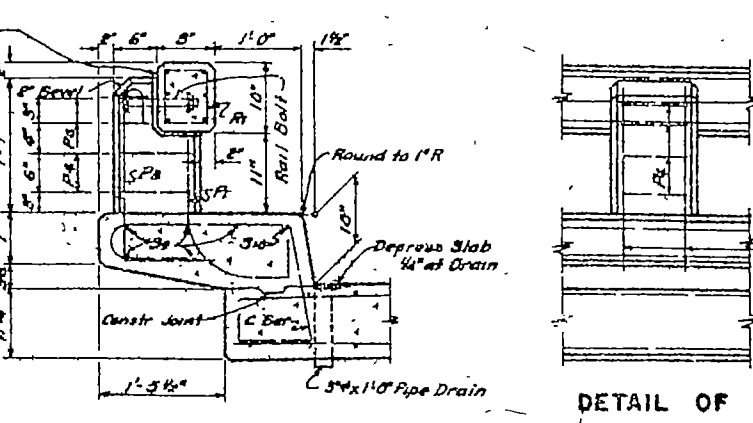
HALF SECTION OF SLAB



PLAN D-D



DETAIL OF CURB & RAILING



DETAIL OF ANCHOR POST

PER. ROAD DIST. NO.	STATE	PROJ. NO.	FINAL YEAR	SHEET NO.	TOTAL SHEETS
5	ND			47	

BAR LIST					
MARK	NO	SIZE	LENGTH	SHAPE	
S1	144	No 7	22'-9"	Str	
S2	27	No 7	21'-0"	Str	
S3	28	No 7	13'-6"	Str	
S4	28	No 7	10'-0"	Str	
S5	27	No 4	13'-6"	Str	
S6	20	No 5	23'-6"	Str	
S7	4	No 6	22'-9"	Str	
T1	98	No 4	35'-6"	Str	
T2	6	No 6	38'-6"	Str	
C1	84	No 5	5'-9"	Bent	
P1	28	No 5	9'-4"	Bent	
P2	4	No 5	4'-0"	Bent	
P3	24	No 5	3'-6"	Bent	
P4	20	No 3	9'-8"	Bent	
P5	8	No 3	4'-0"	Bent	
P6	12	No 3	2'-8"	Bent	
P7	8	No 3	2'-6"	Bent	
R1	78	No 3	2'-8"	Bent	
R2	4	No 5	21'-2"	Bent	
R3	4	No 5	23'-10"	Bent	
R4	4	No 5	26'-6"	Bent	
R5	4	No 5	20'-8"	Bent	
R6	4	No 5	23'-3"	Bent	
R7	4	No 5	25'-10"	Bent	

NOTES:  
Slab has been designed for a 30" future wearing surface  
All concrete above top of curb shall be class A-1  
f'c 1200#/ft<sup>3</sup>

QUANTITIES	
Concrete Class A-1	246 Cu Yd
Concrete Class A-1 1/2	86.3 Cu Yd
Reinforcing Steel	4178 Lbs.

SLAB BRIDGE DETAILS  
TWO SPAN CONTINUOUS  
OVERALL LENGTH 48'-0"  
34 FT ROADWAY  
H20 S16 LOADING

H-2109

H-2109