

DESIGN DATA			
Traffic	Average Daily		Max. Hr.
Current 2002	Pass: 2,685	Trucks 715	Total 3,400
Forecast 2022	Pass: 4,030	Trucks 1,075	Total 5,105
Minimum Sight Dist. for:		Design Speed 75 mph	
Stopping 820'		Bridges	
Full Control of Access			
No Point of Access Other Than at Interchange Ramps			
Pavement Design Life (years) 30			

JOB# 18

STATE	PROJECT NO.	PCN	SHEET NO.
ND	IM-2-094(047)240		1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

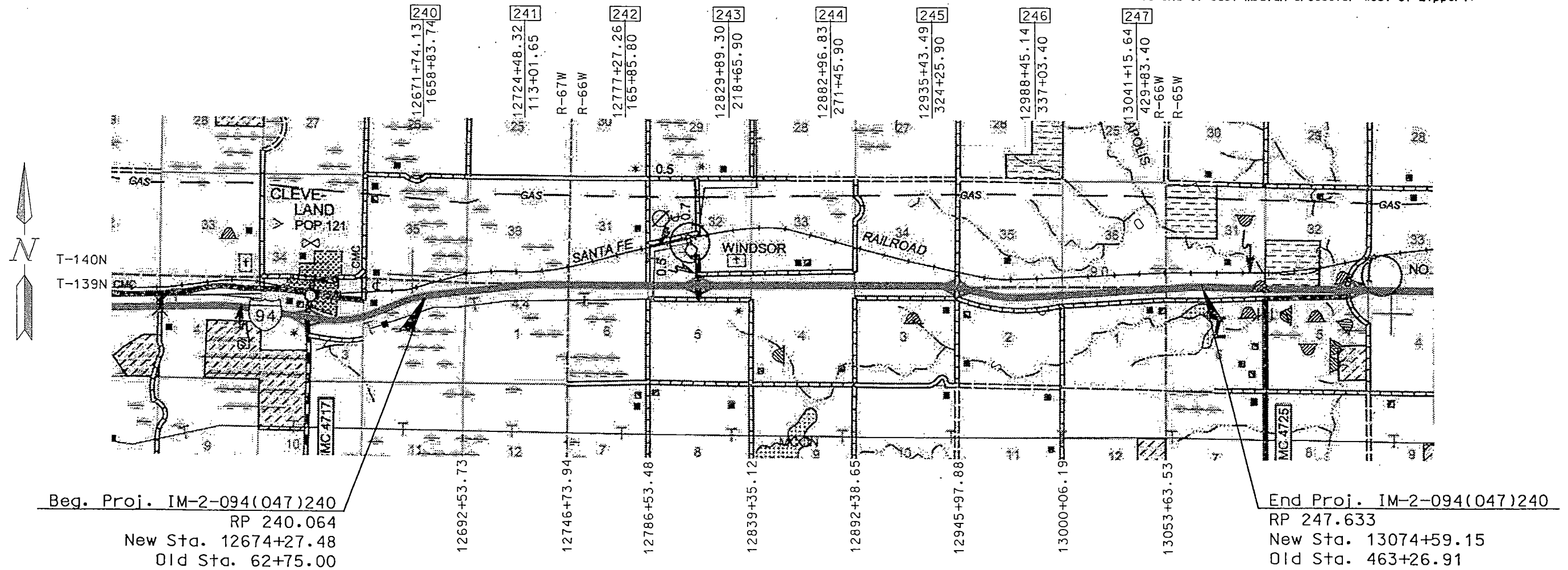
PROJECT NO. IM-2-094(047)240
IN STUTSMAN COUNTY
GRADING, PCC PAVEMENT & INCIDENTALS
(WESTBOUND)

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation October 2002; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

LENGTH OF PROJECT

7.875 Miles
From beginning of west median crossover east of Cleveland to end of east median crossover west of Lippert.



DESIGNER	<i>Scott Woodham</i>
DESIGNER	_____
DESIGNER	_____
DESIGNER	_____
DESIGNER	_____

APPROVED DATE _____

DIVISION ADMINISTRATOR
 FEDERAL HIGHWAY ADMINISTRATION
 U.S. DEPARTMENT OF TRANSPORTATION

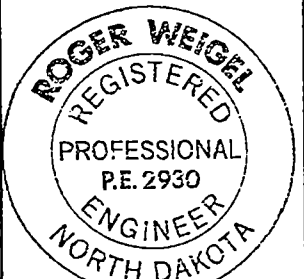
APPROVED DATE 12/19/2002

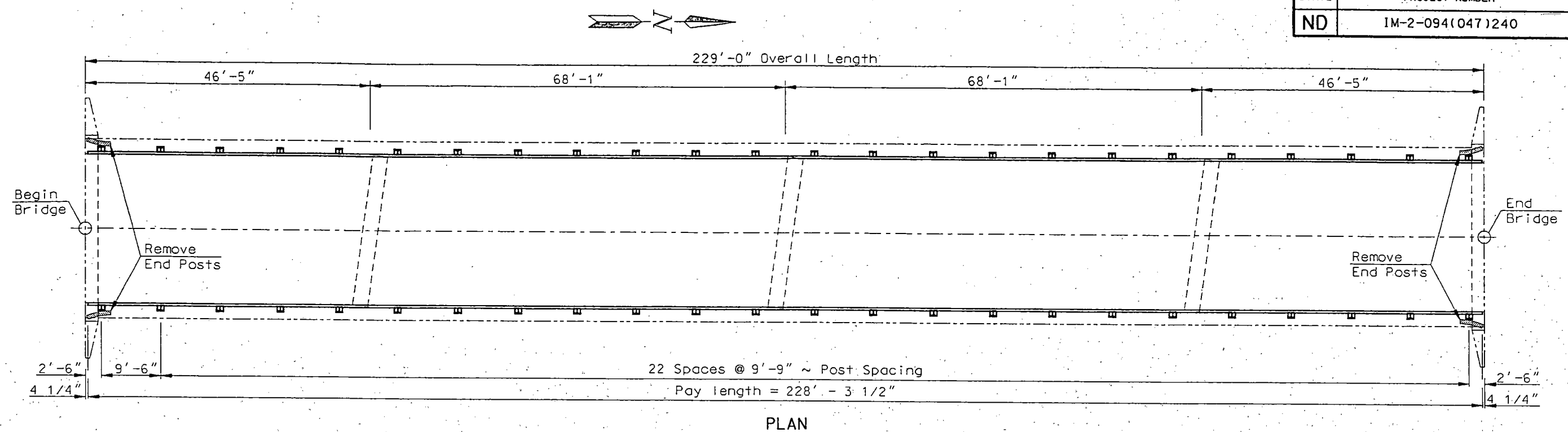
Francis J. [Signature]
 DIRECTOR,
 OFFICE OF PROJECT DEVELOPMENT
 ND DEPARTMENT OF TRANSPORTATION

I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

APPROVED DATE 12-19-2002

Roger Weigel
 DESIGN DIVISION
 NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

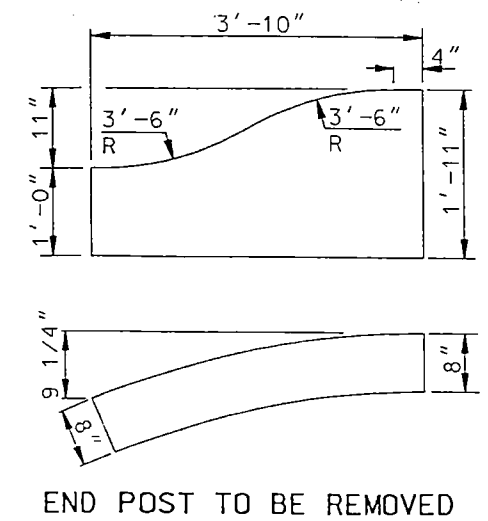




100 SCOPE OF WORK: The work at this site consists of removing aluminum posts and railing, removing concrete end posts and installing a Double Box Beam Rail Retrofit.

202 CONCRETE REMOVAL: The concrete end posts shall be removed flush with the top of the curb. The existing reinforcing steel shall be cut flush with the top surface of the curb and sealed with epoxy. The concrete, aluminum railing and posts removed shall become the property of the contractor and disposed of off the right of way. The cost of removal and disposal of concrete, aluminum posts and railing and sealing with epoxy shall be included in the bid item "Removal of Concrete."

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0111	REMOVAL OF CONCRETE	L SUM	0.5
624	3001	DOUBLE BOX BEAM RAIL RETROFIT - FREE STANDING	LF	456.6



OSWEGO INTERCHANGE
BRIDGE LAYOUT

STATE	PROJECT NUMBER	SHEET NO.
ND	IM-2-094(047)240	109

23 U.S.C. 409
 NDDOT Reserves All Objections

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.

Steel posts, plates and angles 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 shall be normal to grade.

Payment for railing shall include compensation for furnishing and installing the guardrail connection plates and for sawing and removing portions of the curb.

All structural steel shall be hot dip galvanized after fabrication according to AASHTO M 111.

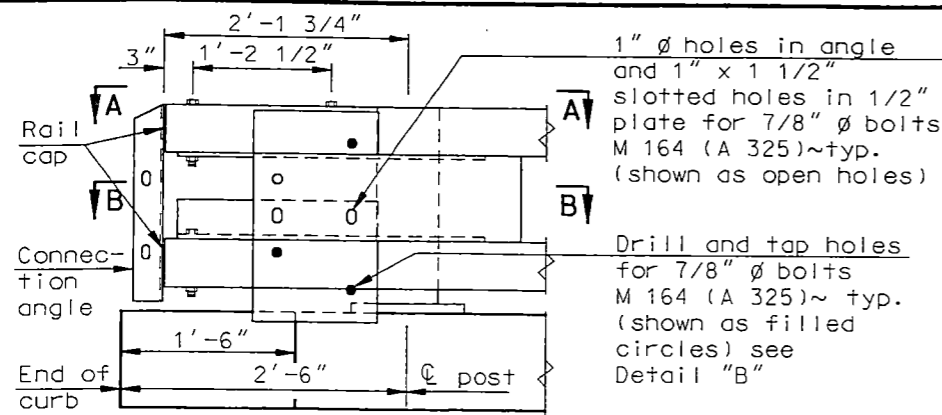
The anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 pounds.

All anchor and splice bolts shall be AASHTO M 164 (A 325) and shall be galvanized according to M232.

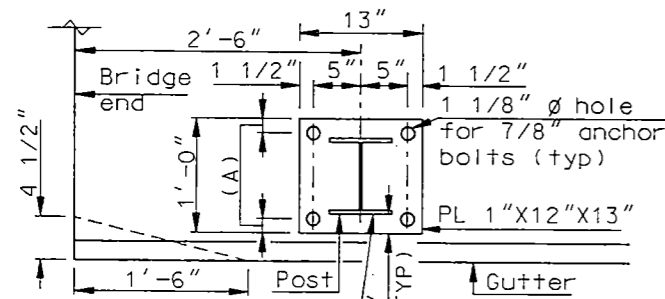
Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

The contractor shall field verify the curb height and any other necessary dimensions.

The contractor shall submit the shop drawings for double box beam rail retrofit for approval to the Construction Office before fabrication.



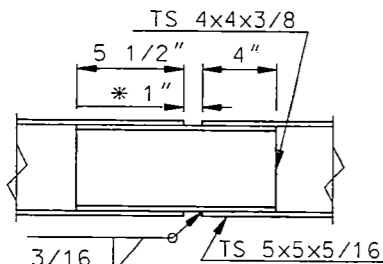
(Typ. @ each end)
END POST CONNECTION DETAIL



Saw cut along dashed line to remove portion of curb

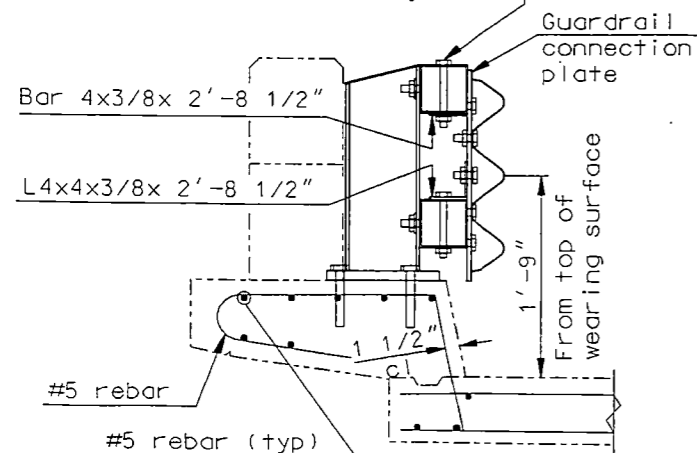
(A) Variable 1 1/2" to 3"

BASE PLATE DETAIL

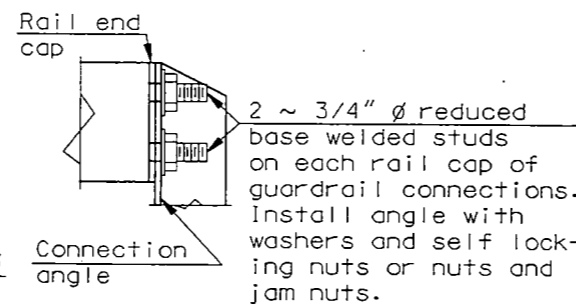
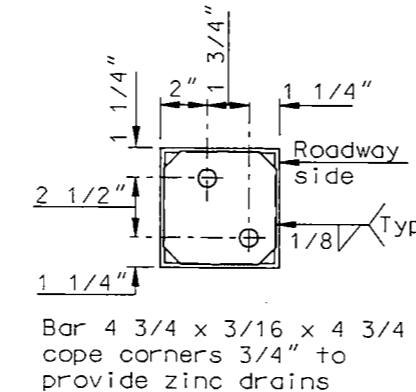
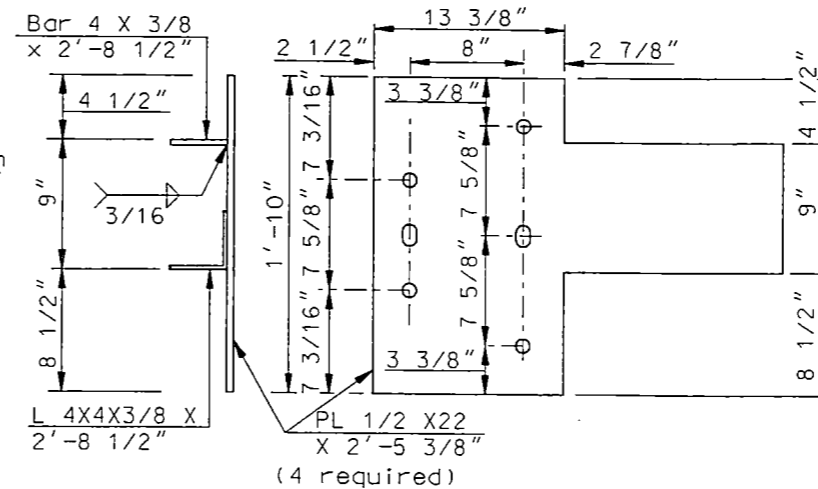
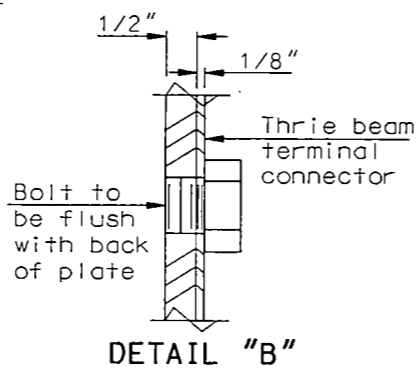


RAIL SPLICE DETAIL

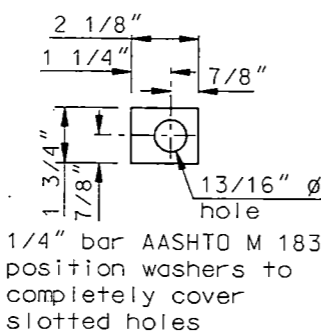
7/8" ϕ x 6 1/2" bolts M 164 (A 325) with washers & self-locking nut or nut & jam nut



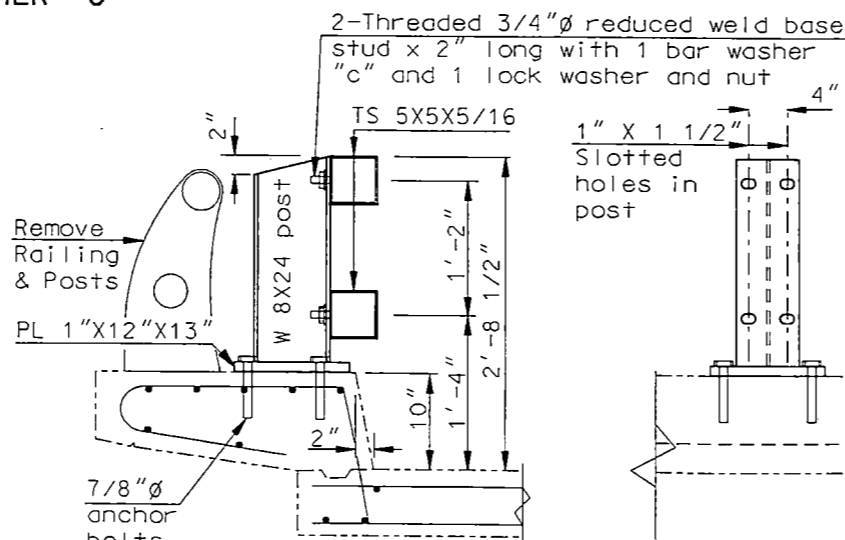
CONNECTION DETAILS



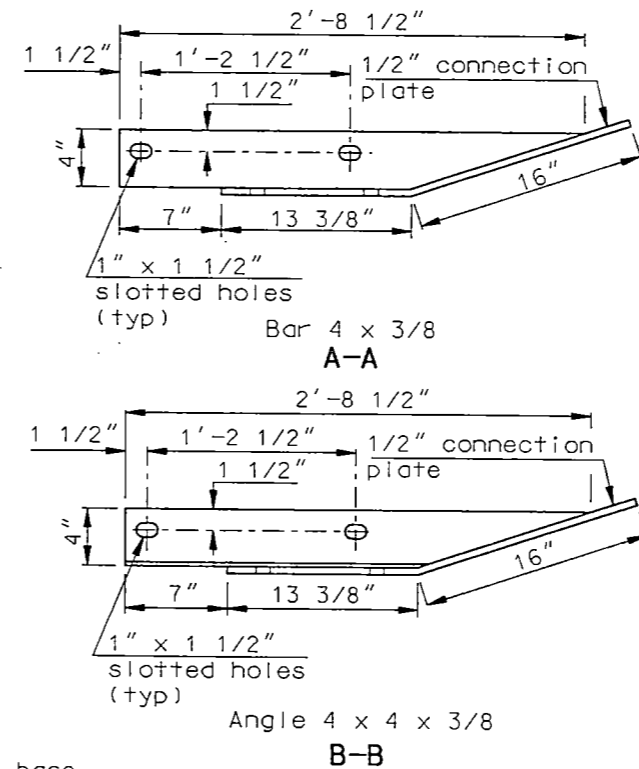
RAIL CAP DETAILS



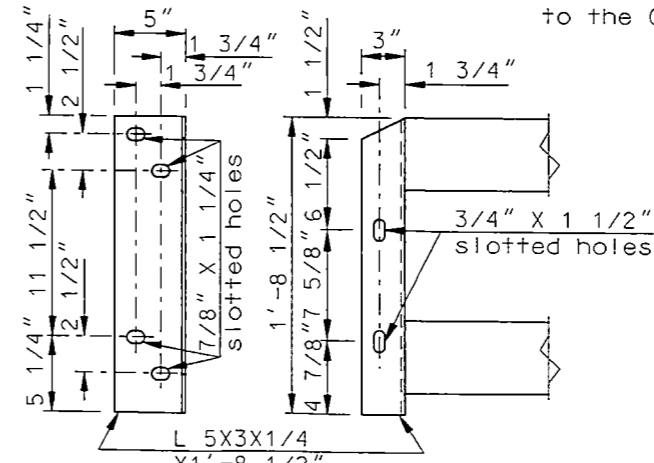
BAR WASHER "C"



CURB MOUNT POST DETAILS



CONNECTION ANGLE DETAILS



CONNECTION ANGLE DETAILS

QUANTITIES	
Double Box Beam Rail Retrofit (Free Standing)	456.6 LF

OSWEGO INTERCHANGE

DOUBLE BOX BEAM RAIL RETROFIT DETAILS (FREE STANDING)

FILE NO.	DATE	BY	REVISION	TOTAL SHEETS
B	N. D.	I-94-6(18)		37

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

PLANS FOR THE PROPOSED IMPROVEMENT OF A STATE HIGHWAY IN STUTSMAN COUNTY FEDERAL AID PROJECT NO. I-94-6(18)243

INDEX OF DRAWINGS

SHEET NO.	TITLE PAGE & SUMMARY OF QUANTITIES
1	TITLE PAGE & SUMMARY OF QUANTITIES
2	TO 10 INCL. PLAN AND PROFILE DRAWINGS
11	TO 23 INCL. STRUCTURAL DRAWINGS
24	TO 37 INCL. CROSS SECTIONS

Sheets No. 120, 121, 123, 124, 126, 170, 171, 172, 174, 175, 258, 266, 267, 276 from I-94-6(20)

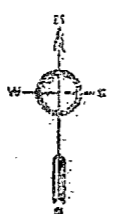
GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota State Highway Department Jan. 1956 and approved as standard by the Bureau of Public Roads May 7, 1956. Required Special Provisions dated Oct. 9, 1957 and approved by the Bureau of Public Roads Nov. 25, 1957 and others submitted 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 FENCED	
POLE LINES	
POWER LINES	
BRIDGES	
GROUND ELEVATION	
TRAVERSED 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	
MARCH	
WIRE ROPE GUARD RAIL	
SNOW FENCE	
ESPRAP	
GUARD POSTS	
COBBLE GUTTERS	
CONCRETE GUTTERS	



SKETCH-MAP OF NORTH DAKOTA SHOWING COUNTIES



SCALES
LAYOUT SHEET: 1 IN. = 3000'
PLAN AND PROFILE DRAWINGS (VERT. 1 IN. = 10 FT.)
STRUCTURAL DRAWINGS: AS SHOWN
CROSS SECTION SHEETS: 1 IN. = 10 FT.

LENGTH OF PROJECT

PROJECTILES-GROSS	MILES-NET
10.313	0.000
TOTAL 10.313	0.000

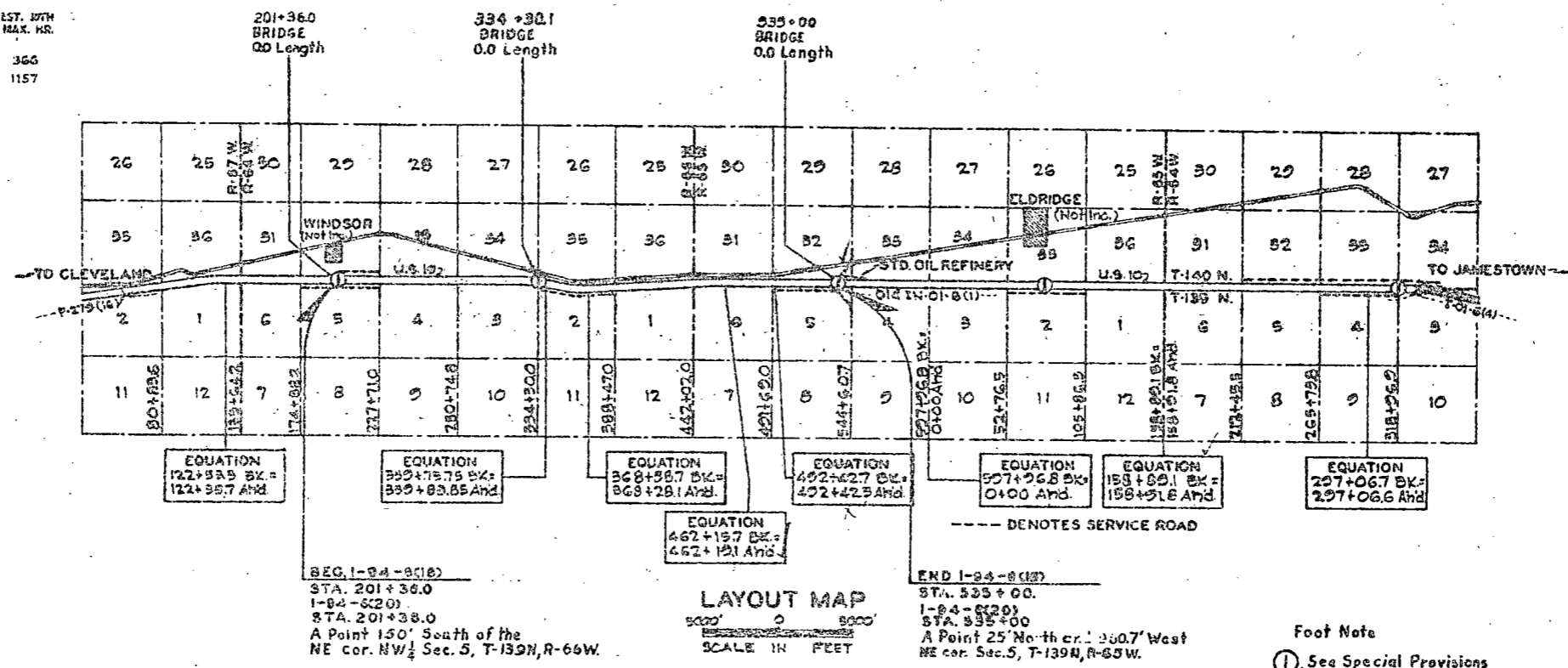
DESIGN DATA

TRAFFIC
CURRENT TRAFFIC (1955) 1500 PASS. 654 TRUCKS 2617 TOTAL 366
TRAFFIC FORECAST (1975) 7025 PASS. 1240 TRUCKS 8265 TOTAL 1157
DESIGN SPEED 70 MPH
TRAFFIC CLASSIFICATION 'M'
MINIMUM SIGHT DISTANCE (NON PASSING) 600'

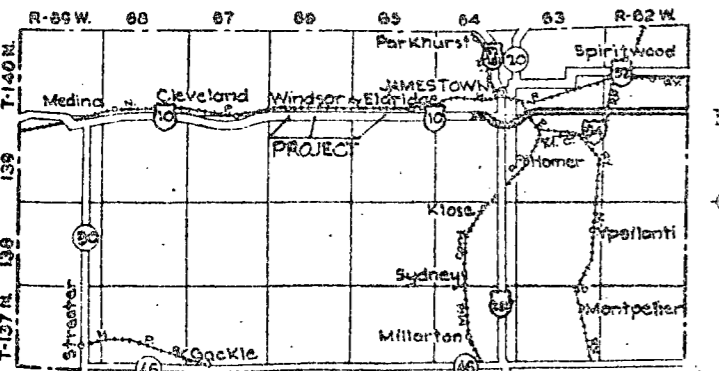
LIST OF STRUCTURAL DRAWINGS

94-91	H-3312
94-92	H-3313
94-93	H-3115-1
94-91(10)-1	H-3115-2
H-0104	H-3116-1
H-0309	H-3116-2
H-3311	

STANDARD DRAWINGS
S'14. 14.9 & S'14.76



LOCATION	QUANTITIES								
	138	60A	62A	83B	65L	65G	65S		
	EXCAVATION	CONCRETE	REINFORCING STEEL	TREATED TIMBER PILING	TREATED TIMBER TEST PILES 60"	STEEL ENCASED PILING	STEEL ENCASED TEST PILES 60"	ORNAMENTAL METAL RAILING	BRIDGE BENCH MARK
	CU. YD.	CU. YD.	LB.	LF.	EACH	LF.	EACH	LF.	SET
STA 201+36.0 &	191	438.4	112403	2964	2			424	1
STA 334+30.0 &	183	449.4	123965	2964	2			442	1
STA 335+00 &	69	424.4	111232			716	2	424	1
GRAND TOTAL	437	1312.2	347620	5928	4	716	2	1290	3



SKETCH MAP OF SOUTH HALF OF STUTSMAN COUNTY

APPROVED DATE 4-24-58
Al Bradley
CHIEF ENGINEER
NORTH DAKOTA STATE HIGHWAY DEPARTMENT

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED
DIVISION ENGINEER DATE

NOTES:

Reinforcing steel bent bar dimensions are center to center unless otherwise noted. The bar fabricator shall add a prefix to each bar mark to designate the structure.

Rail end posts, roadway and outside face of curbs and slab and outside vertical face of outside beams shall be "Rubbed Surface Finish". All other concrete shall be "Ordinary Surface Finish". All exposed edges shall be beveled with 3/4" triangular molding unless otherwise noted.

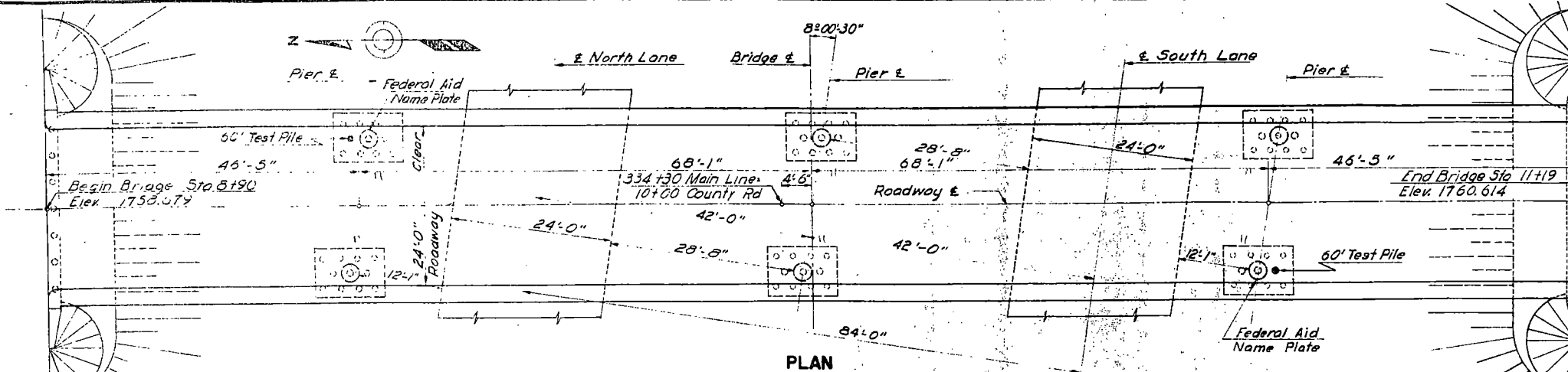
The Structure and Grading Contractors shall be responsible for maintaining traffic during structure and grading operations at structure location. Any detour provided shall allow four-way traffic and be gravel surfaced for all weather use. Payment for maintaining this traffic shall be included in the unit price bid for the several pay items.

The embankment at ends of the bridge shall be placed and compacted by the Grading Contractor in two stages, timed to agree with the Structure Contractor's work. The first stage, consisting of the embankment up to berm elevation, shall be completed (using "Extra Compaction") before any abutment piles are driven, according to Section 17 of the Standard Specifications. The final embankment stage shall be completed after the superstructure is in place.

All piling shall be driven a minimum of fifteen (15) feet into the original ground. If necessary the Structural Contractor will be required to drill pilot holes to permit driving of piling to the required depth. The estimated pile quantity is based on a two foot cut-off for each pile as compared with the specified length.

Payment for incidental items shown on plans, but not listed in the estimate of quantities shall be included in the unit price bid for the various pay items.

BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
X721	5	N.D.	I-94-6(8)		17	7



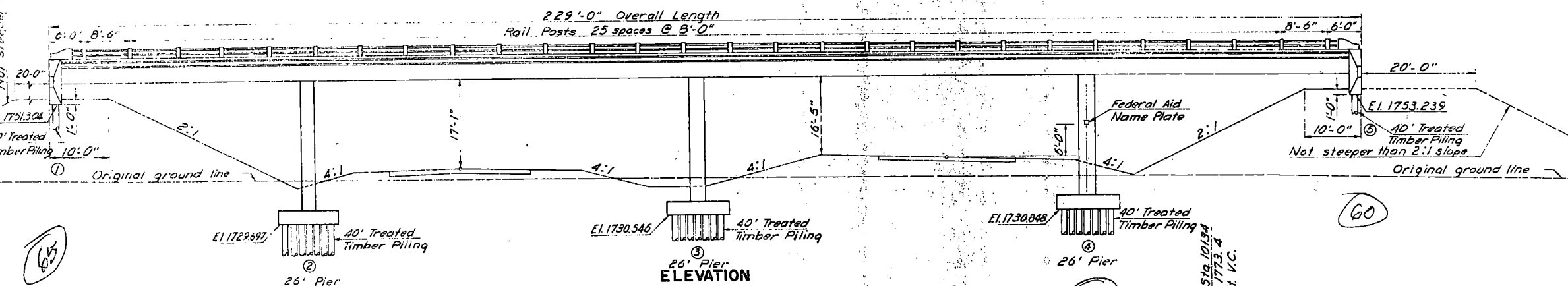
PLAN

FEDERAL AID PROJECT
I-94-6(18)
NORTH DAKOTA
1956

FEDERAL AID NAME PLATE
2 Req'd

Station	Elevation	Notes
Begin Bridge	1753.077	
	1755.849	
	1759.018	
	1759.68	
	1759.305	
	1759.445	
	1759.572	
	1759.710	
	1759.851	
	1759.978	
	1760.096	
	1760.190	
	1760.278	
	1760.353	
	1760.421	
	1760.497	
	1760.564	
	1760.622	
	1760.672	
	1760.597	
	1760.714	
	1760.723	
	1760.723	
	1760.726	
	1760.722	
	1760.711	
	1760.685	
	1760.653	
End Bridge	1760.614	

CONSTRUCTION ELEVATIONS - ROADWAY & ADJUSTED FOR DEAD LOAD DEFLECTIONS



ELEVATION

BENCH MARKS			PILE LOADING										
NO.	DESCRIPTION	ELEVATION	LOCATION	DEAD LOAD	LIVE LOAD	EARTH	LONG FORC.	ICE	DESIGN LOAD				
22	Iron Mon. T. F.P. Gd.	Sta. 322+07-147 Lt.	1738.44							24 T.	33 T.	22 T.	21.5 T.
23	Reck. by Fin Post	Sta. 332+33-180 Lt.	1738.78	Pier (3)	9.5 T.	3.3 T.	0.8 T.						20.3 T.
17	U.S.C.G. Bu R.P. Fence	Sta. 332+400 Lt.	1735.67	Abutment	12.4 T.	7.9 T.							
24	Iron Mon. T. F.P. Gd.	Sta. 345+53-140 S Lt.	1714.15										

VERTICAL CURVE & BRIDGE LOCATION DATA
Elevations are to finished Roadway & Grade

ESTIMATE OF QUANTITIES (ONE BRIDGE)		
SPEC. NO.	BID ITEM	
12	REMOVING EXISTING STRUCTURE AT STA.	
16	EXCAVATION CLASS 1	CU. YD.
15B	CLASS 2	183 CU. YD.
	CLASS 3	CU. YD.
60A	CONCRETE CLASS A-1	CU. YD.
	CLASS A-1 1/2	3 - 449.4 CU. YD.
62A	REINFORCING STEEL	124,129 LB.
63A	STRUCTURAL STEEL	123,985 LB.
64A	UNTREATED TIMBER	M.B.M.
64B	TREATED TIMBER	M.B.M.
65A	UNTREATED TIMBER PILING	78' @ 40' FT. 2964' LIN. FT.
65B	TREATED TIMBER PILING	40' FT. 2964' LIN. FT.
65I	UNTREATED TIMBER TEST PILES	EACH
65L	TREATED TIMBER TEST PILES	60 FT. 2 EACH
E1	TEMPORARY CHANGING AND DETOUR	
	ORNAMENTAL METAL RAILING	442 LIN. FT.
	BRIDGE BENCH MARKS	1 SET

STRUCTURAL DRAWINGS

GENERAL DRAWING: This sheet
 SUBSTRUCTURE: H-3312, Std 14.9, 94-6(18)-1
 SUPERSTRUCTURE: H-3113-1, H-3113-2, H-0104, Std 7.6

DESIGN LOADING: H₂₀ S16 (1983) SCALE: 1 INCH = 10 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
MOON LAKE TWP INTERCHANGE
BRIDGE LAYOUT
PROJECT I-94-6(18) STA. 334+30

STUTSMAN COUNTY

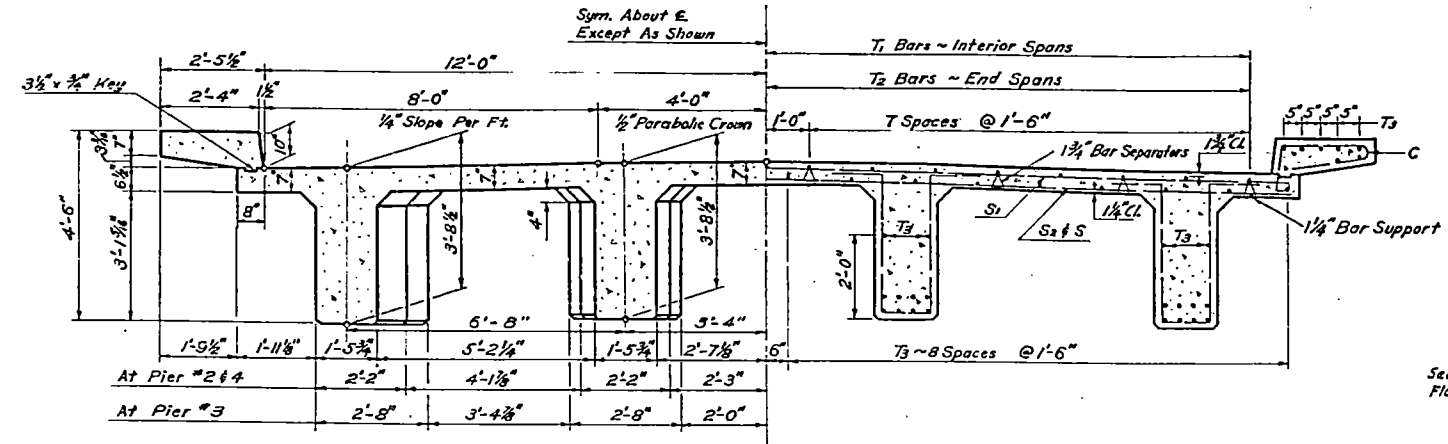
APPROVED: *Joseph R. Kirby* REGISTERED PROFESSIONAL ENGINEER
DATE: 4/21/58

JOSEPH R. KIRBY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA NO. 1254

94-92

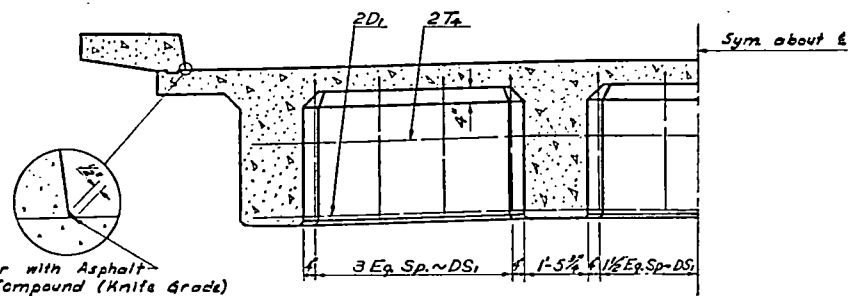


DATE	
DESIGN	MADE BY KCB
DETAILS	CHECKED BY DDB
TRACING	MADE BY GFE
QUANTITIES	CHECKED BY GFE
REVISIONS	



SECTION A-A

Half Showing Dimensions Half Showing Reinforcement



HALF SECTION OF DECK

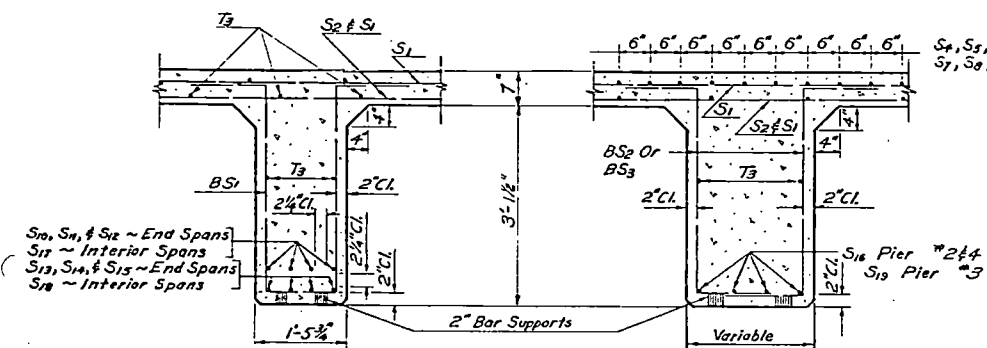
Showing Diaphragm Reinforcement

FED. ROAD DIST. NO.	STATE	FED. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				

BAR LIST-ONE BRIDGE

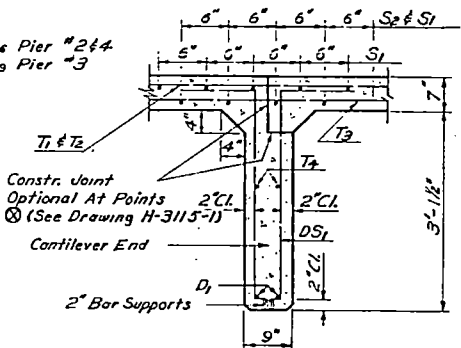
MARK	NO	SIZE	LENGTH	SHAPE
S ₁	674	4	24'-9"	Str.
S ₂	225	4	20'-0"	"
S ₃	32	6	8'-9"	Bent
S ₄	36	9	15'-3"	Str.
S ₅	32	9	27'-6"	"
S ₆	34	9	41'-6"	"
S ₇	18	10	16'-6"	"
S ₈	16	10	28'-0"	"
S ₉	17	10	43'-6"	"
S ₁₀	8	10	36'-6"	"
S ₁₁	8	9	34'-9"	"
S ₁₂	16	9	34'-0"	"
S ₁₃	8	10	41'-6"	"
S ₁₄	8	10	40'-6"	"
S ₁₅	16	10	39'-9"	"
S ₁₆	32	6	17'-9"	"
S ₁₇	32	(11)	42'-6"	"
S ₁₈	32	(11)	55'-0"	"
S ₁₉	16	6	19'-0"	"
BS ₁	912	5	10'-0"	Bent.
BS ₂	224	5	5'-6"	"
BS ₃	208	5	5'-9"	"
DS ₁	72	4	9'-6"	Bent
D ₁	12	6	21'-0"	Str.
C	520	5	5'-3"	Bent
T ₁	34	5	31'-0"	Str.
T ₂	34	5	25'-3"	"
T ₃	240	5	39'-0"	"
T ₄	12	5	21'-0"	"

End Sp.
Int. Spans

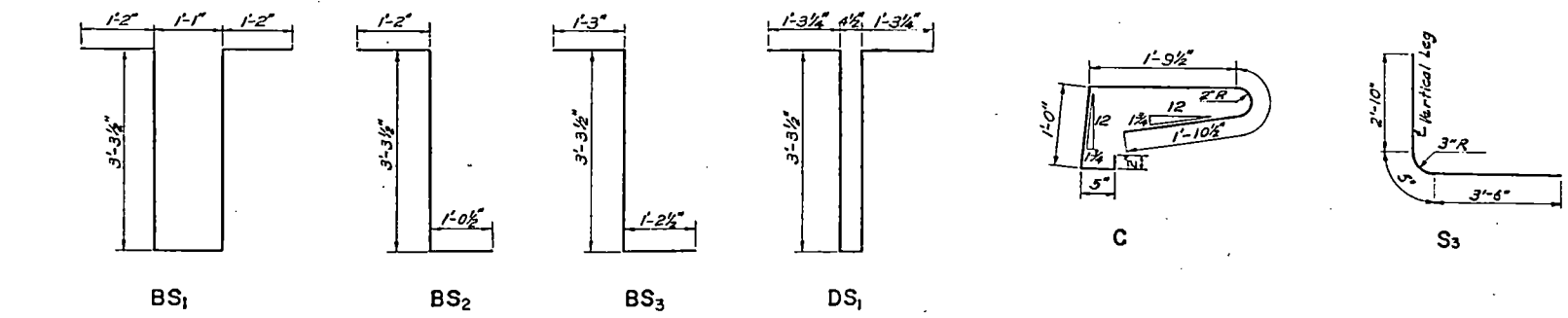


TYPICAL BEAM SECTION

SECTION B-B



SECTION C-C



BENT BAR DETAILS

NOTE:
The deck and abutment concrete shall be placed in one continuous operation, except in case of emergency, optional construction joints may be located at point (C). This slab designed to be used on pier H-3312. For any other substructure design, consideration shall be given to provide reinforcement for floor beams of this slab. The curb shall be placed in one continuous operation.

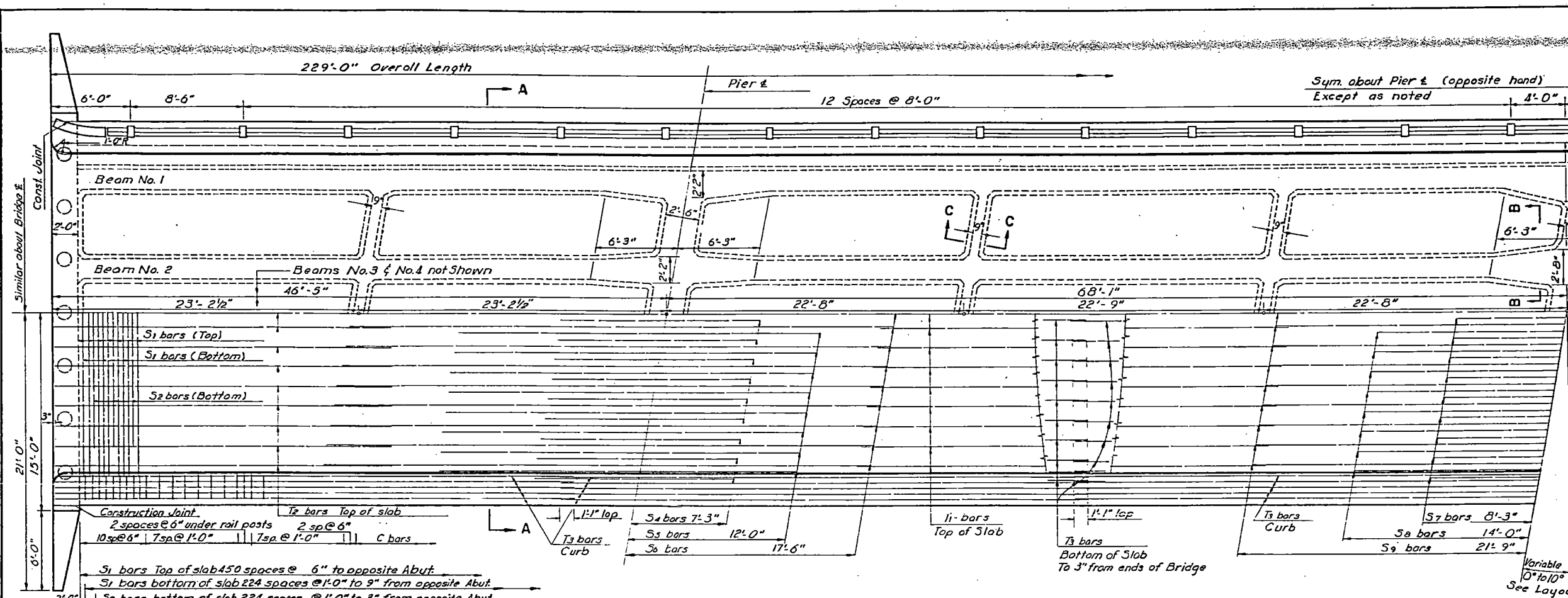
QUANTITIES See H-3115-1

SLAB DETAIL FOR FOUR SPAN CONTINUOUS T-BEAM 229' OVERALL LENGTH 0° TO 10° SKEW 24' ROADWAY H₂₀-S₁₆ LOADING

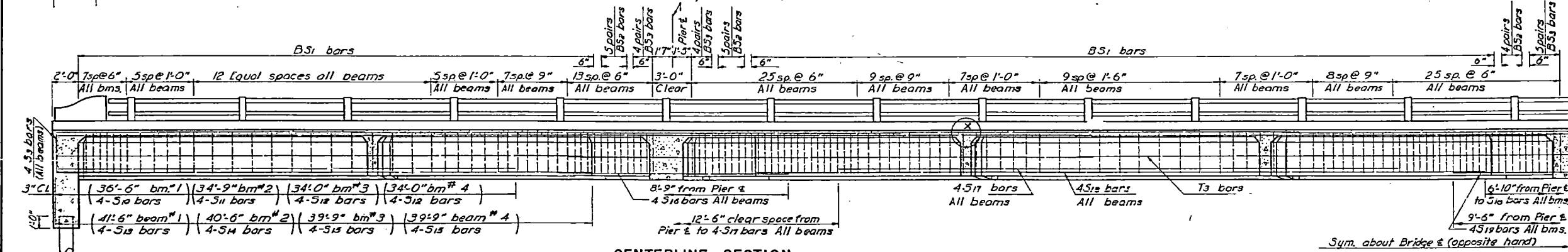
H-3115-2

NO.	BY	DATE

DESIGN	MADE BY	DATE
DETAILS	MADE BY	DATE
TRACING	CHECKED BY	DATE
QUANTITIES	MADE BY	DATE
	CHECKED BY	DATE



HALF PLAN
Showing Dimensions & Slab Steel Reinforcement



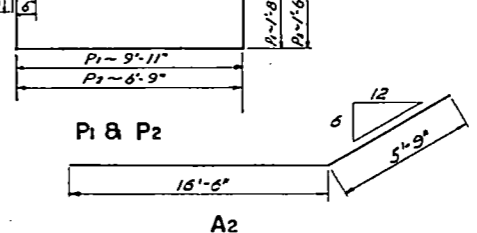
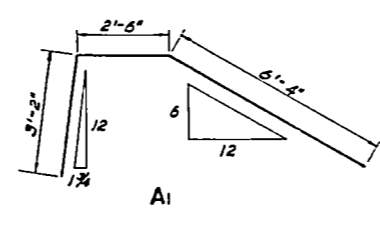
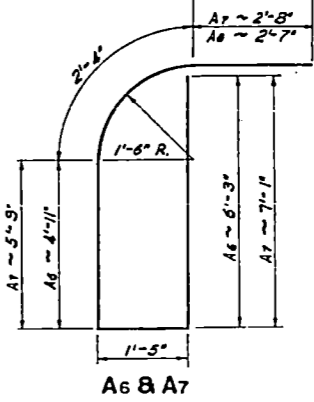
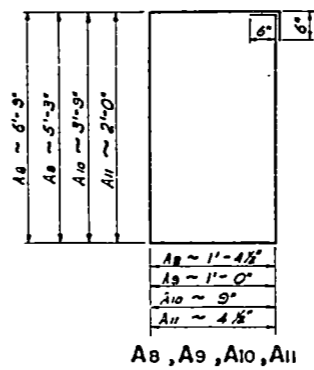
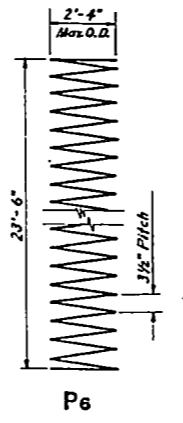
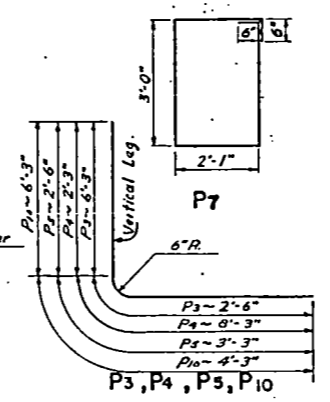
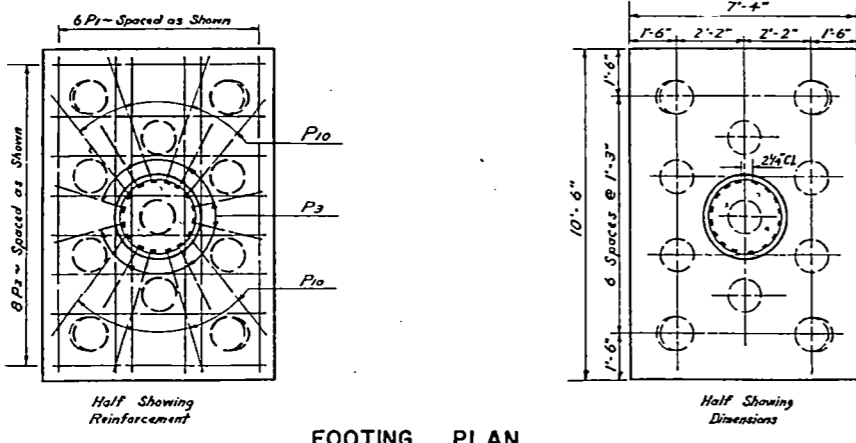
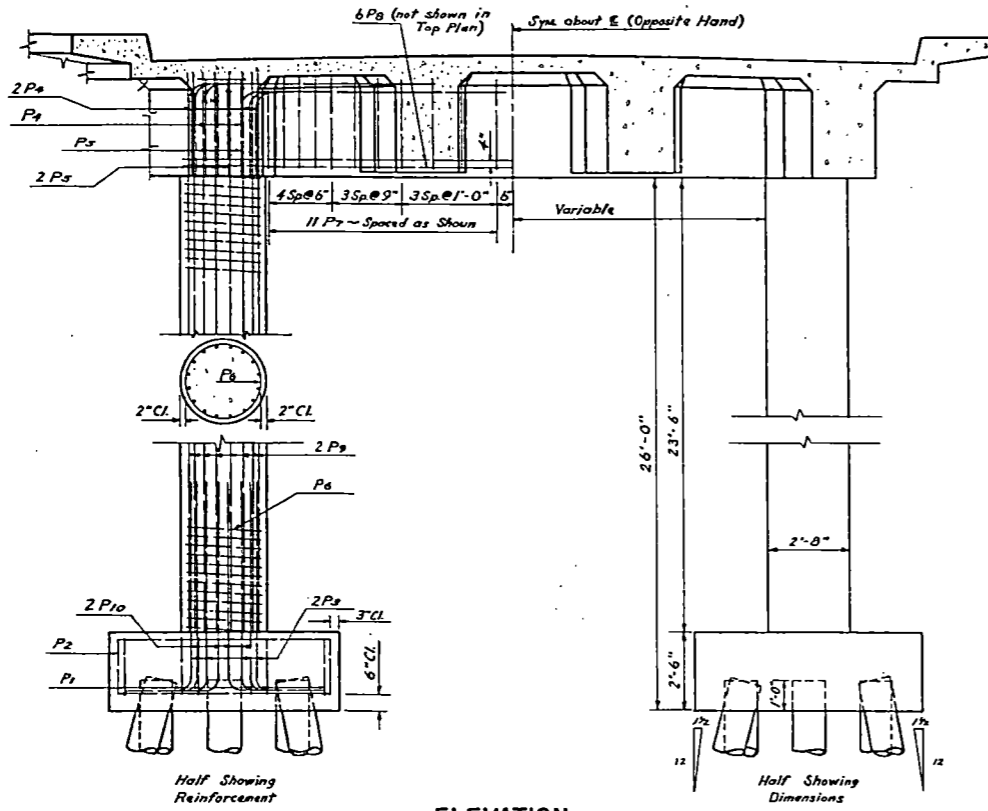
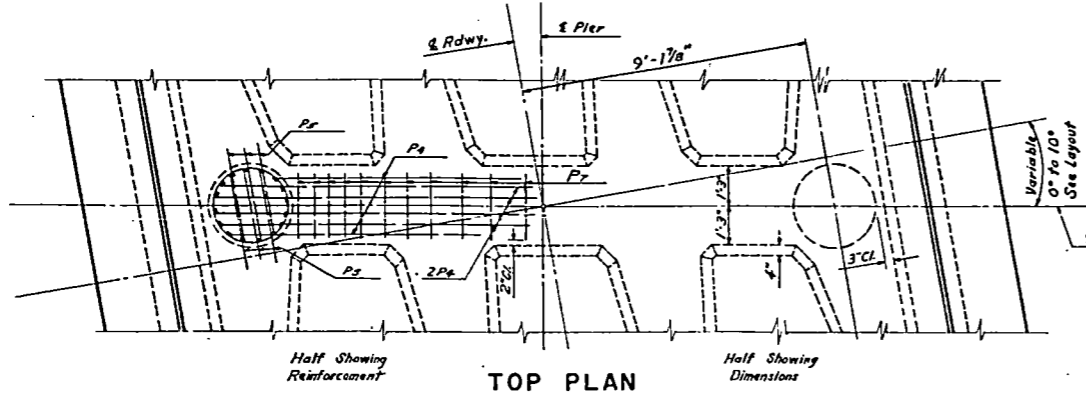
CENTERLINE SECTION
Showing Beam Steel Reinforcement

QUANTITIES	
Concrete Class A-1 1/2	340.4 CY
Reinforcing Steel	85,876 Lbs
Ornamental Metal Railing	442 LF
Piling (see Layout)	
FOUR SPAN CONTINUOUS T-BEAM 0° TO 10° SKEW	
24'-0" CLEAR ROADWAY	
229'-0" OVERALL LENGTH	
H20 S16 LOADING	

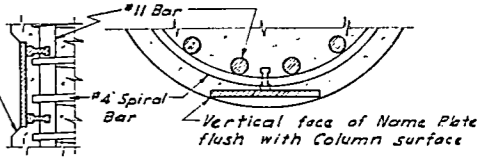
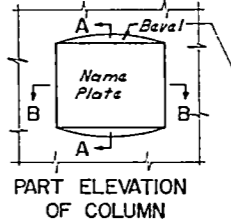
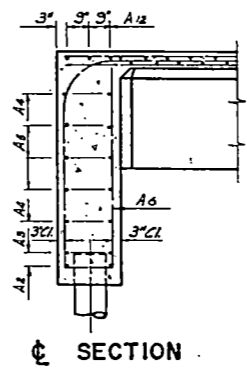
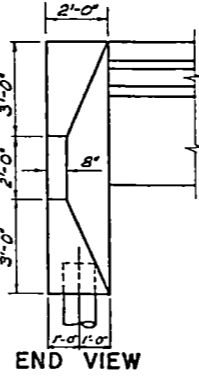
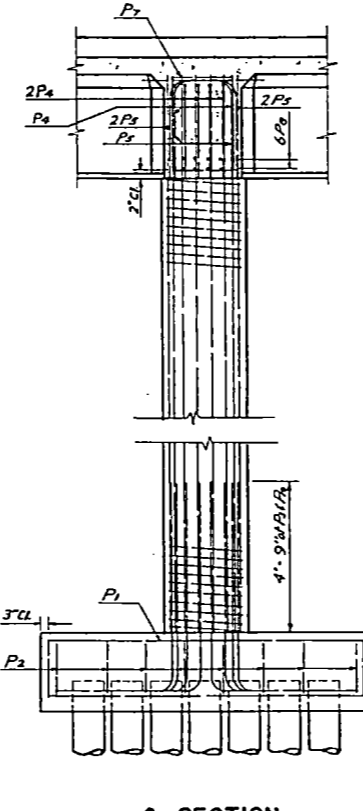
H-3115-1

H-3115-1

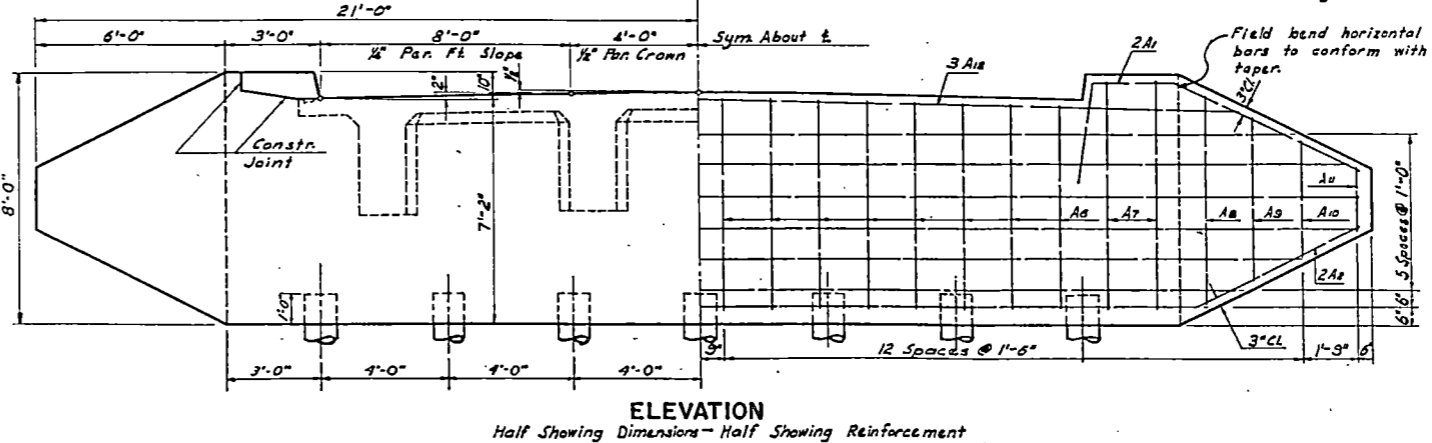
DESIGN	MADE BY G.F.F.	CHECKED BY G.F.F.
DETAILS	MADE BY G.F.F.	CHECKED BY G.F.F.
TRACING	MADE BY G.F.F.	CHECKED BY G.F.F.
QUANTITIES	MADE BY G.F.F.	CHECKED BY G.F.F.



BENT BAR DETAILS



FEDERAL AID NAME PLATE DETAIL (See Layout and Standard 14.9)



ELEVATION Half Showing Dimensions - Half Showing Reinforcement

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				

NOTE:
Slab and beam reinforcing steel shall be placed after column concrete has been placed.

Column concrete shall be placed to the dia of the bottom of the beam; then allowed to set a min of two hours before deck concrete is placed. The concrete surface & reinforcement shall be cleaned by removal of all laitance & foreign matter before deck concrete is placed.

BAR LIST - THREE PIERS & TWO ABUTMENTS					
MARK	NO.	SIZE	LENGTH	SHAPE	
A1	8	6	12'-0"	Bent	
A2	8	8	22'-3"	"	
A3	4	8	33'-0"	Str.	
A4	8	5	32'-0"	"	
A5	24	5	22'-0"	"	
A6	32	6	17'-6"	Bent	
A7	8	6	19'-3"	"	
A8	4	4	17'-3"	"	
A9	4	4	13'-6"	"	
A10	4	4	10'-0"	"	
A11	4	4	5'-9"	"	
A12	6	6	34'-0"	Str.	
P1	36	8	24'-2"	Bent	
P2	48	8	17'-6"	"	
P3	48	11	8'-9"	"	
P4	60	11	10'-6"	"	
P5	36	11	5'-9"	"	
P6	6	4	59'-0"	"	
P7	66	5	11'-2"	"	
P8	36	11	21'-0"	Str.	
P9	96	11	26'-0"	"	
P10	48	11	10'-6"	Bent	

QUANTITIES 3 PIERS & 2 ABUTS.		
Concrete Class A-1 1/2		109.0 C.Y.
Reinforcing Steel		38,109 Lbs.
Piling (See Layout)		

PIER & ABUT. DETAILS FOR T-BEAM SPANS 0° TO 10° SKEW
24' ROADWAY
H20-S16 LOADING