

DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2002	Pass: 2,685	Trucks 715	Total 3,400	340
Forecast 2022	Pass: 4,030	Trucks 1,075	Total 5,105	515
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

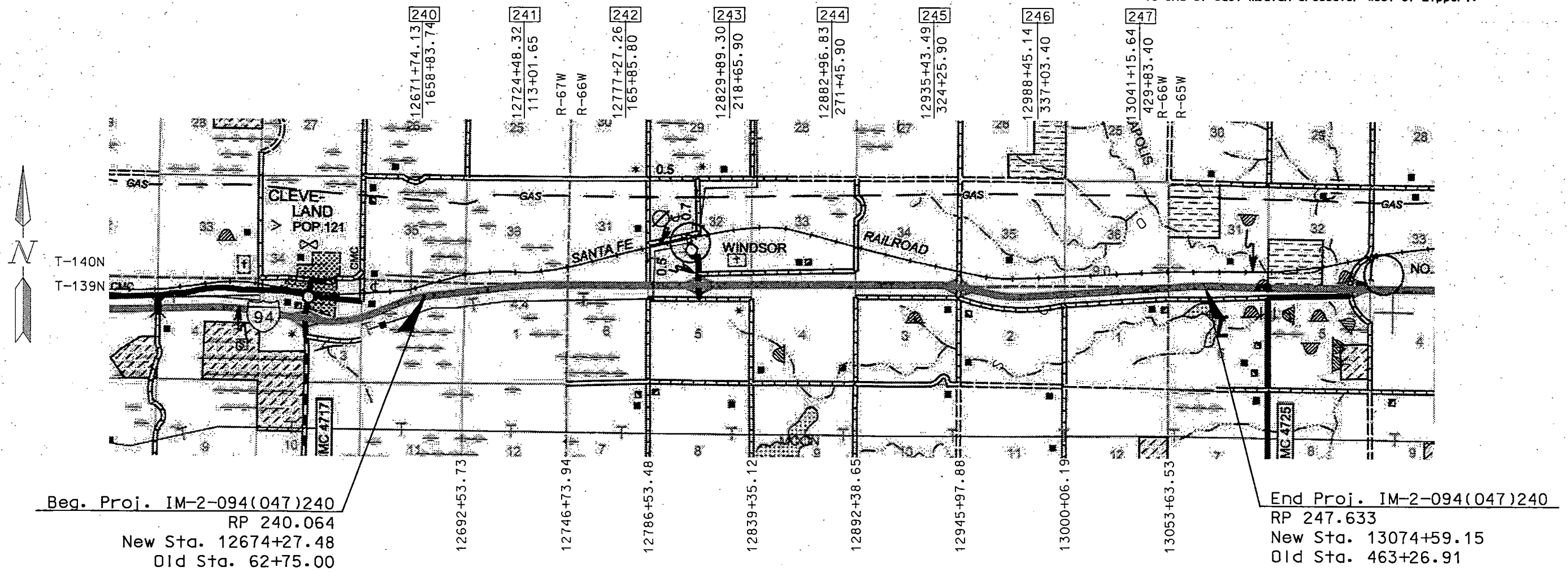
STATE	PROJECT NO.	PCN	SHEET NO.
ND	IM-2-094(047)240		1

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.



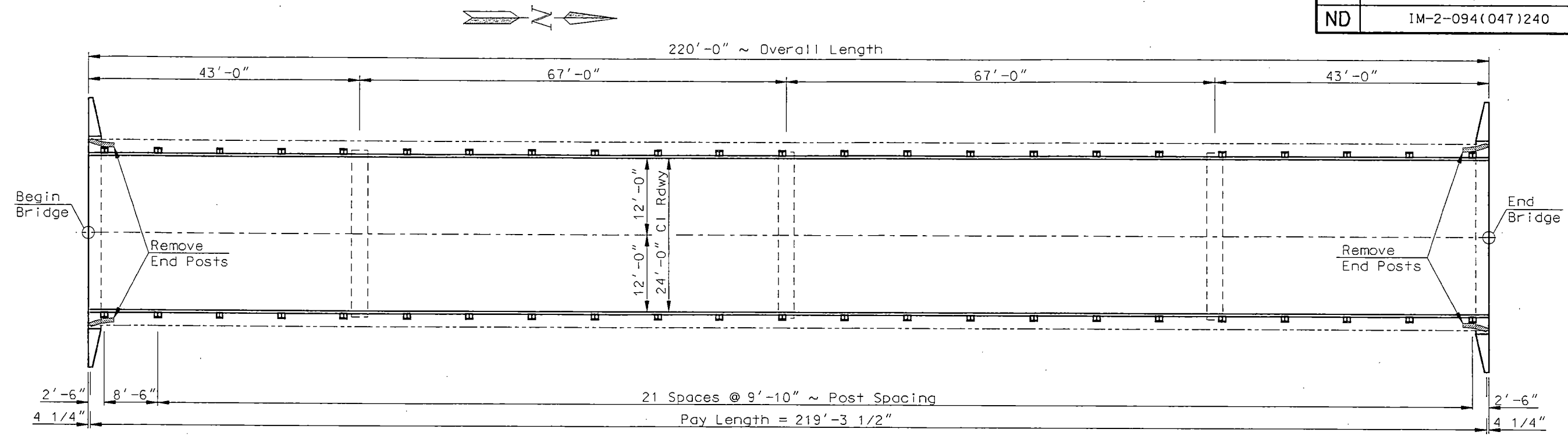
DESIGNER Scott Woodham
 DESIGNER _____
 DESIGNER _____
 DESIGNER _____
 DESIGNER _____

APPROVED DATE _____
 DIVISION ADMINISTRATOR
 FEDERAL HIGHWAY ADMINISTRATION
 U.S. DEPARTMENT OF TRANSPORTATION

APPROVED DATE 12/19/2002
Roger Weigel
 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

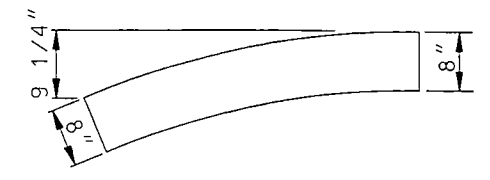
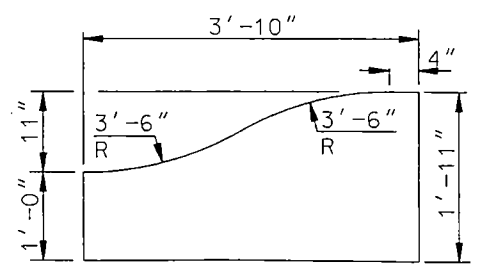




PLAN

- 100 SCOPE OF WORK: The work at this site consists of removing 2 inches of asphalt from bridge deck, removing aluminum posts and railing, removing concrete end posts, placing a bridge deck overlay and installing a Double Box Beam Retrofit. Removal of asphalt shall be included in the price bid for "Class 1 Overlay."
- 202 REMOVAL OF CONCRETE: 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 railing and posts 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	438.6
650	0700	CLASS 1 OVERLAY	SY	586.7
650	0701	CLASS 2 OVERLAY	SY	117.3
650	0702	CLASS 3 OVERLAY	SY	29.3
650	0703	CLASS 2A OVERLAY	LF	211



END POST TO BE REMOVED

WINDSOR INTERCHANGE
BRIDGE LAYOUT

STATE	PROJECT NUMBER	SHEET NO.
ND	IM-2-094(047)240	106

**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 A500 Grade B.

Steel posts, plates and angles shall conform to AASHTO Specification M 183, 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.

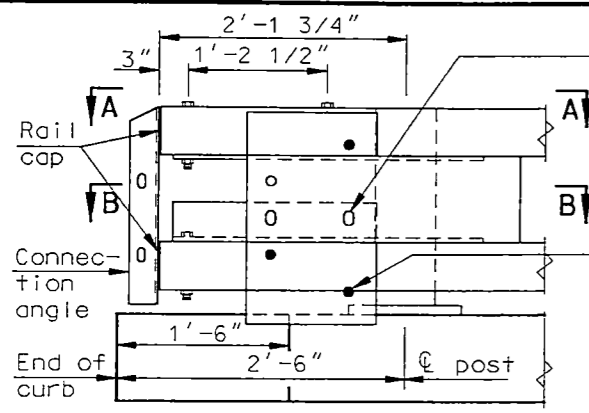
The anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 pounds.

All anchor and splice bolts shall be AASHTO m 164 (A 325) and shall be galvanized according to M 232.

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

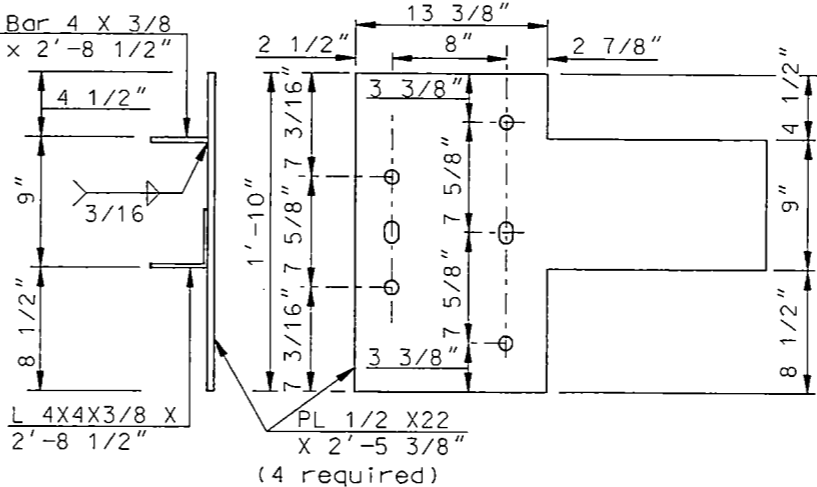
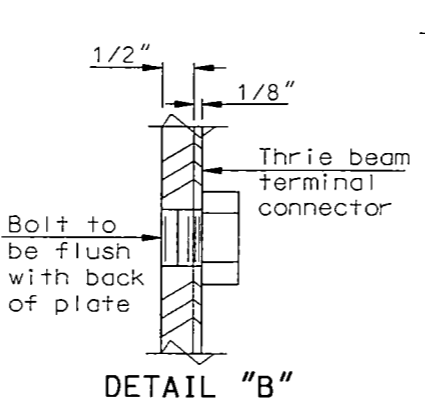
The contractor shall field verify the curb height and any other necessary dimensions.

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



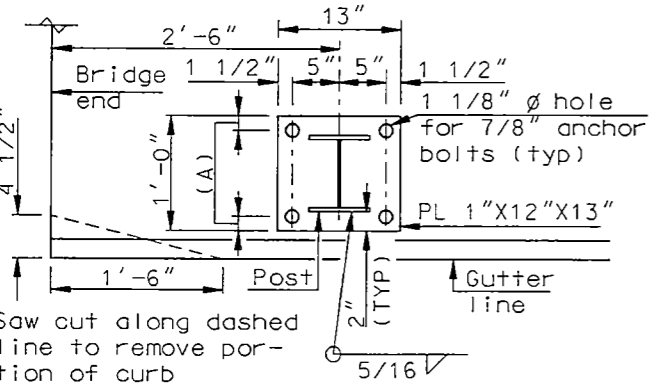
1" ϕ holes in angle and 1" x 1 1/2" slotted holes in 1/2" plate for 7/8" ϕ bolts M 164 (A 325)~typ. (shown as open holes)

Drill and tap holes for 7/8" ϕ bolts M 164 (A 325)~ typ. (shown as filled circles) see Detail "B"

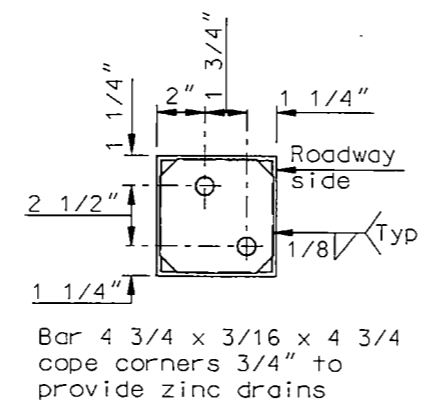


GUARDRAIL CONNECTION PLATE DETAILS

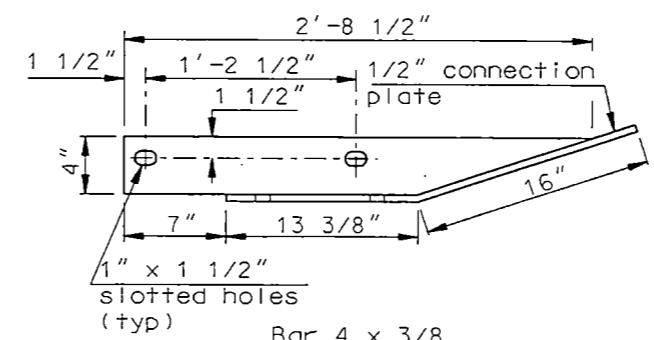
(Typ. @ each end)
END POST CONNECTION DETAIL



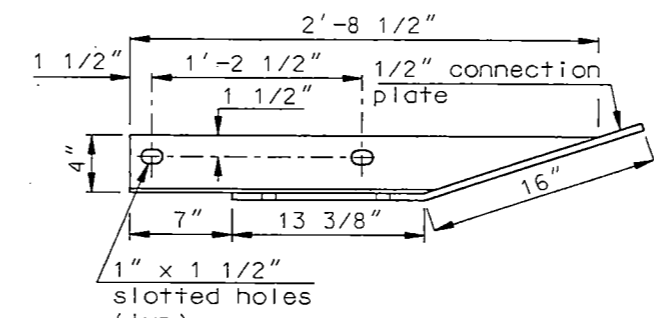
(A) Variable 1 1/2" to 3"
BASE PLATE DETAIL



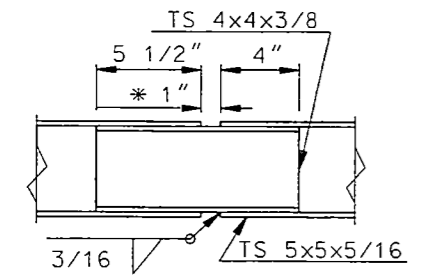
Bar 4 3/4 x 3/16 x 4 3/4 cope corners 3/4" to provide zinc drains



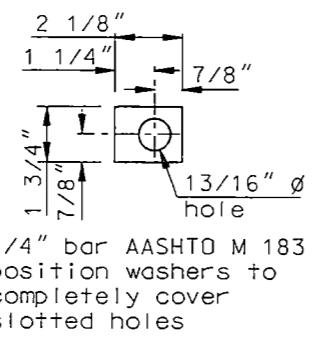
Bar 4 x 3/8
A-A



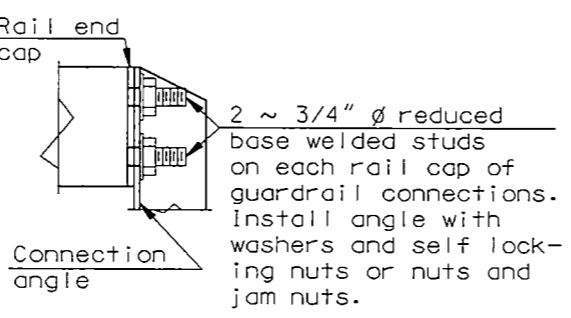
Angle 4 x 4 x 3/8
B-B



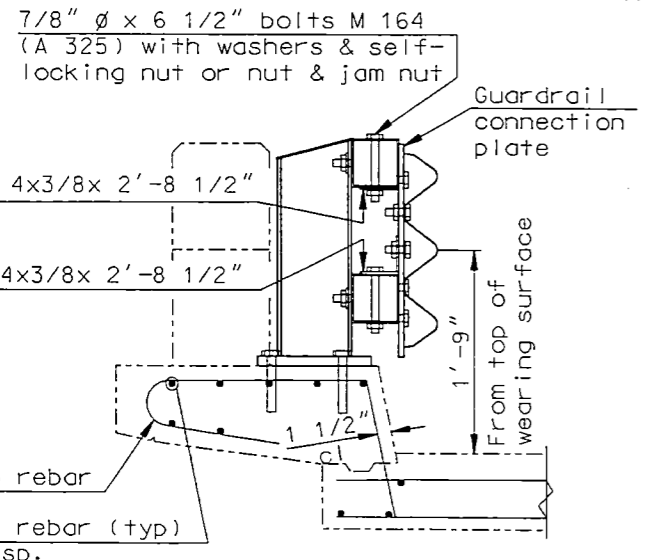
* 2" @ expansion joint
RAIL SPLICE DETAIL



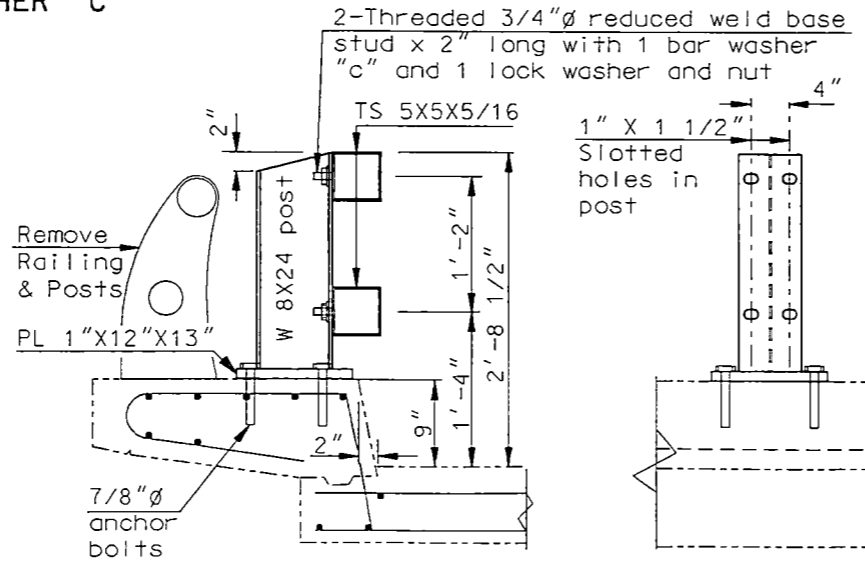
BAR WASHER "C"



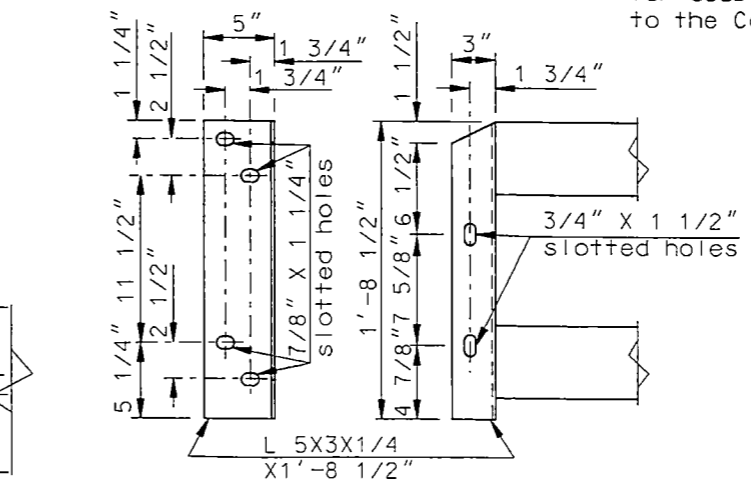
RAIL CAP DETAILS



CONNECTION DETAILS



CURB MOUNT POST DETAILS

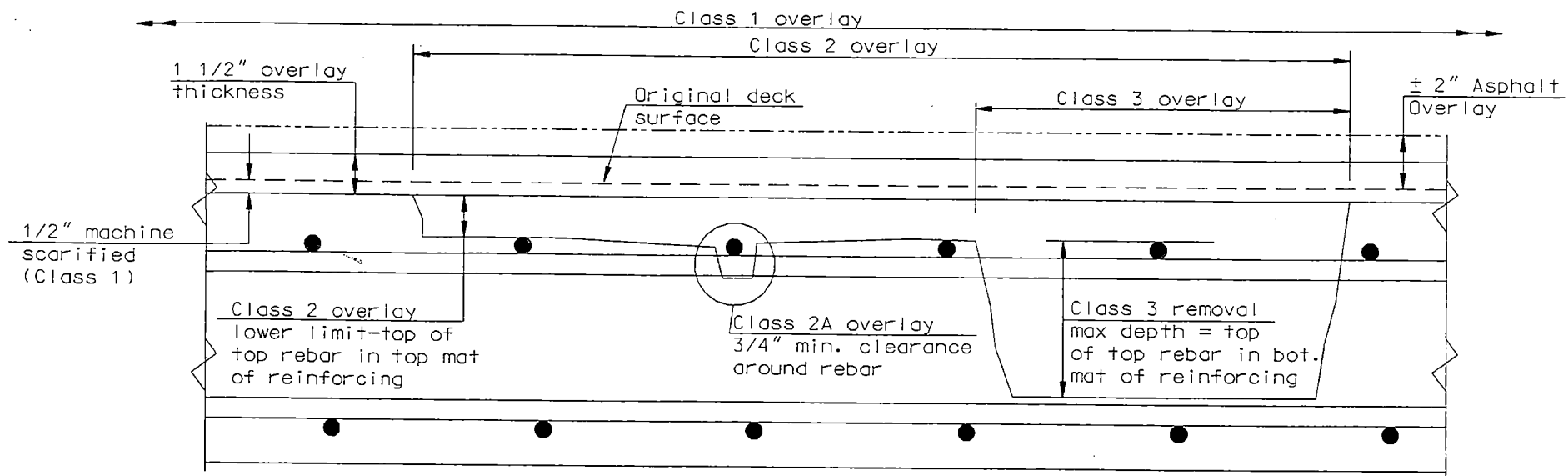


CONNECTION ANGLE DETAILS

QUANTITIES		
Double Box Beam Rail Retrofit (Free Standing)	438.6	LF

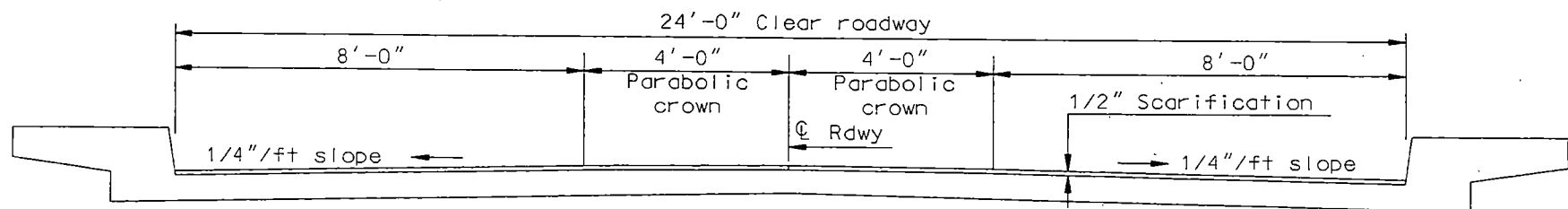
WINDSOR INTERCHANGE

**DOUBLE BOX BEAM RAIL
RETROFIT DETAILS
(FREE STANDING)**

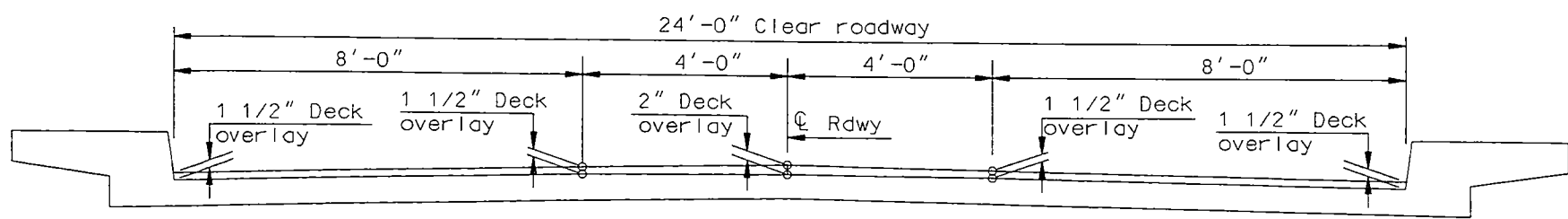


BRIDGE DECK
(Overlay classifications)

NOTES:
 Class 2A overlay is paid for the top rebar in the top mat of reinforcing only. If a rebar that is identified for 2A is in an area that becomes Class 3 or Class 4 it shall not be paid for as 2A overlay.
 Class 4 removal shall be below the limits of class 3 removal to full depth of deck.



DECK ELEVATION
Showing scarification

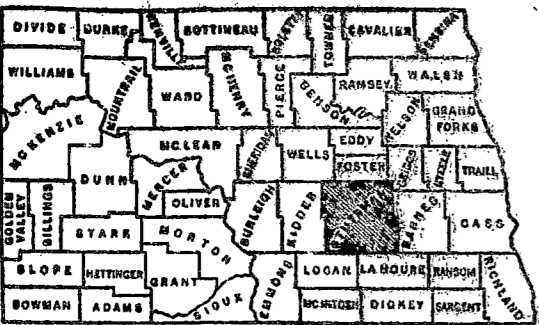


DECK ELEVATION
Showing overlay

QUANTITIES	
CLASS 1 OVERLAY	586.7 SY
CLASS 2 OVERLAY	117.3 SY
CLASS 3 OVERLAY	29.3 SY
CLASS 2A OVERLAY	211 LF

WINDSOR INTERCHANGE

OVERLAY DETAILS



SKETCH-MAP OF NORTH DAKOTA SHOWING COUNTIES

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

SCALES
 LAYOUT SHEET: 1 IN. = 5000'
 PLAN AND PROFILE DRAWINGS: 1 IN. = 100 FT.
 PROFILE DRAWINGS (VERT.): 1 IN. = 10 FT.
 STRUCTURAL DRAWINGS: AS SHOWN
 CROSS SECTION SHEETS: 1 IN. = 10 FT.

INDEX OF DRAWINGS

SHEET NO. 1 TITLE PAGE & SUMMARY OF QUANTITIES

SHEETS NO. 2 TO 10 INCL. PLAN AND PROFILE DRAWINGS.

SHEETS NO. 11 TO 23 INCL. STRUCTURAL DRAWINGS

* SHEETS NO. 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)

LENGTH OF PROJECT		
PROJECT MILES-GROSS	MILES-NET	
6.318	0.660	
TOTAL	6.318	0.660

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. 2, 1957 and approved by the Bureau of Public Roads Nov. 25, 1957 and others submitted herewith.

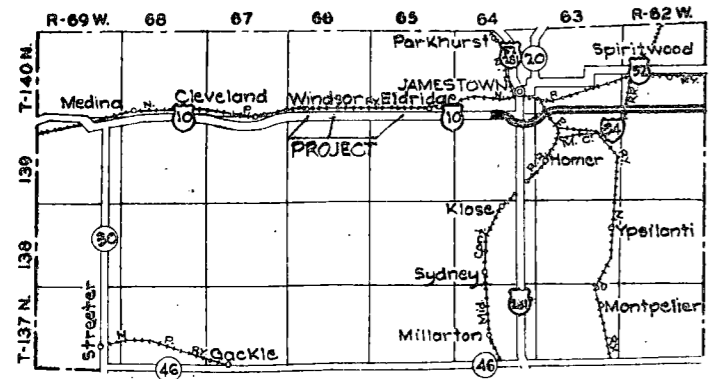
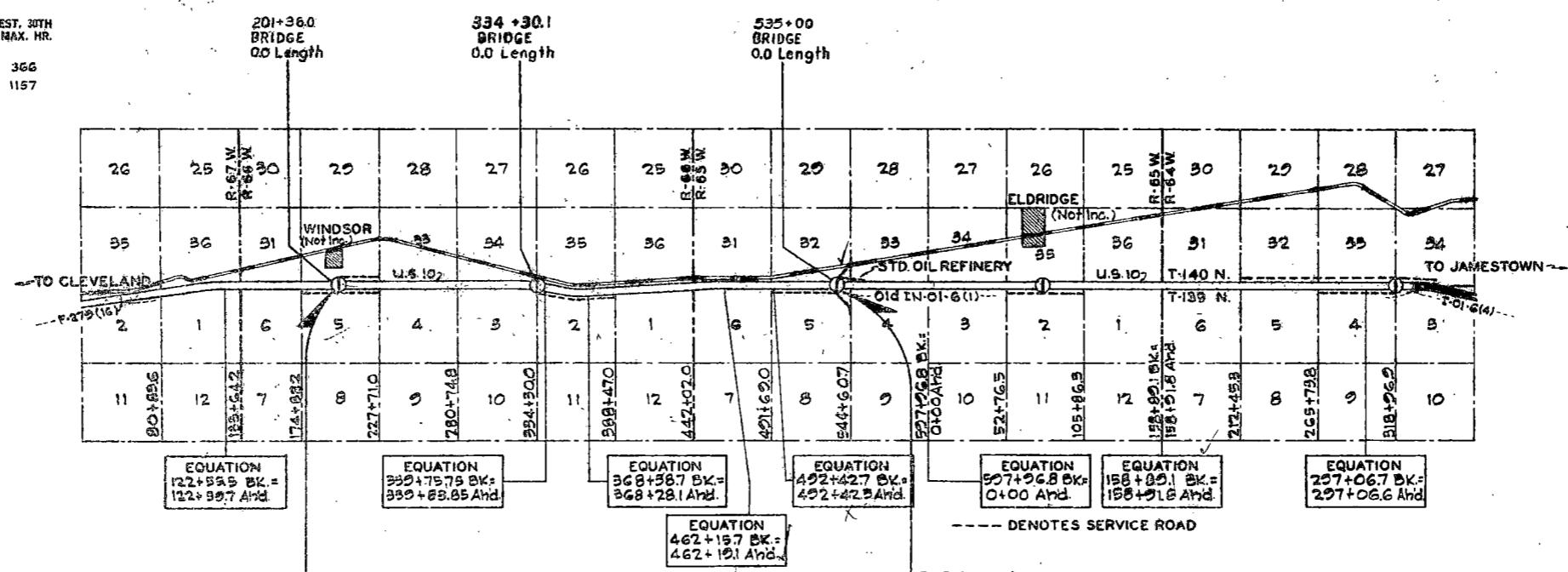
KEY TO CONVENTIONAL SIGNS

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 FENCES	
POLE LINES	
POWER LINES	
BRIDGE	
GROUND ELEVATION	
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	
RIPRAP	
GUARD POSTS	
COBBLE GUTTERS	
CONCRETE GUTTERS	

DESIGN DATA

TRAFFIC	AVERAGE DAILY	EST. 30TH MAX. HR.
CURRENT TRAFFIC (1955)	1563 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**
- | | |
|----------|----------|
| H-3312 | H-3312 |
| H-3313 | H-3313 |
| H-3115-1 | H-3115-1 |
| H-3115-2 | H-3115-2 |
| H-3116-1 | H-3116-1 |
| H-3116-2 | H-3116-2 |
- STANDARD DRAWINGS**
 Std. 14.9 & Std. 7.6



LOCATION	QUANTITIES									
	15B	60A	62A	65B	65L	65G	65S	ORNAMENTAL METAL RAILING	BRIDGE BENCH MARK	
	CLASS 2 EXCAVATION	CLASS A-1 CONCRETE	REINFORCING STEEL	TREATED TIMBER PILING	TREATED TIMBER TEST PILES @ 60"	STEEL ENCASED PILING	STEEL ENCASED TEST PILES @ 60"			
	CU. YD.	CU. YD.	LB.	LF.	EACH	L.F.	EACH	L.F.	SET	
STA 201+36.0 ±	191	438.4	112403	2964	2			424	1	
STA. 334+30.0 ±	183	449.4	123985	2964	2			442	1	
STA. 535+00 ±	63	424.4	111232			716	2	424	1	
GRAND TOTAL	437	1312.2	347620	5928	4	716	2	1290	3	

APPROVED DATE 4-24-58

R. Bradley

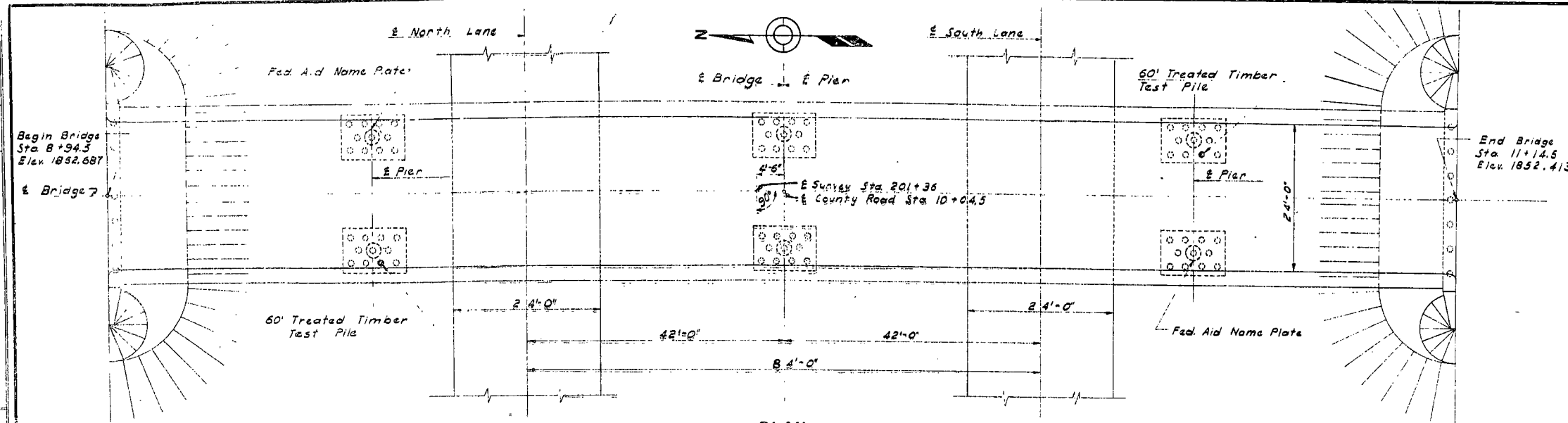
CHIEF ENGINEER
 NORTH DAKOTA STATE HIGHWAY DEPARTMENT

R. E. BRADLEY
 REGISTERED PROFESSIONAL ENGINEER
 No. 10,174 - D. N. D.

DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE



PLAN

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.

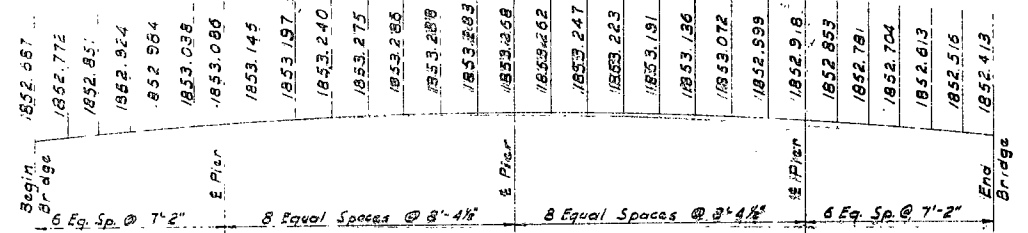
The Structure and Grading Contractors shall be responsible for maintaining traffic during structure and grading operations at structure location. Any detour provided shall allow four-way traffic and be gravel surfaced for all weather use. Payment for maintaining this traffic shall be included in the 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 Contractors' work. The first stage, consisting of the embankment up to beam 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 NO.	FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
X721	5	N.D.	I-94-6(18)		11	7

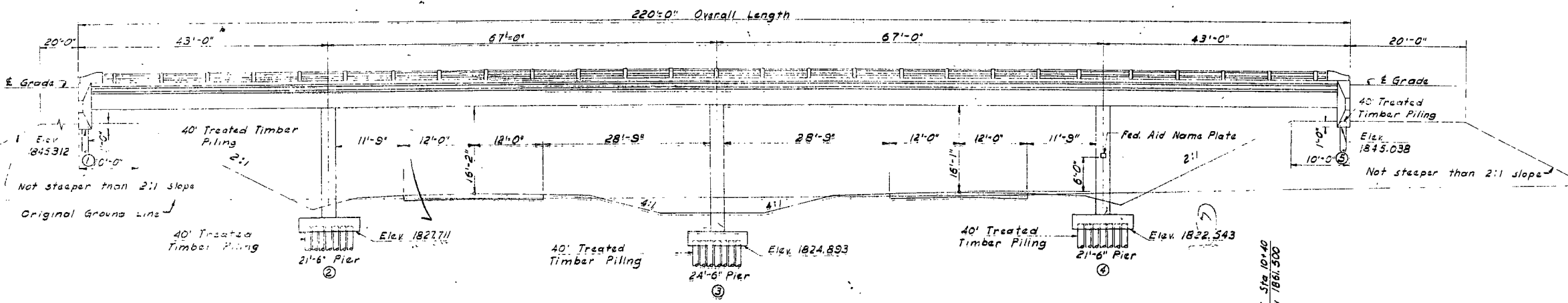


CONSTRUCTION ELEVATIONS - @ ROADWAY ADJUSTED FOR DEAD LOAD DEFLECTIONS

FEDERAL AID PROJECT
I-94-6(18)
NORTH DAKOTA
1958
FEDERAL AID NAME PLATE
2 Req'd

ESTIMATE OF QUANTITIES (ONE BRIDGE)

SPEC. NO.	BID ITEM	QUANTITY	UNIT
12	REMOVING EXISTING STRUCTURE AT STA.		
15	EXCAVATION CLASS 1		CU. YD.
15B	CLASS 2	191	CU. YD.
	CLASS 3		CU. YD.
60A	CONCRETE CLASS A-1		CU. YD.
	CLASS A-1K	3	438.4 CU. YD.
62A	REINFORCING STEEL	112,403	LB.
63A	STRUCTURAL STEEL		LB.
64A	UNTREATED TIMBER		M.B.M.
64B	TREATED TIMBER		M.B.M.
65A	UNTREATED TIMBER PILING		6" LIN. FT.
65B	TREATED TIMBER PILING	78	40 FT. 2964 LIN. FT.
66K	UNTREATED TIMBER TEST PILES		EACH
65L	TREATED TIMBER TEST PILES @ 60'	2	EACH
81	TEMPORARY CROSSING AND DETOUR		
	ORNAMENTAL METAL RAILING	424	LIN. FT.
	BRIDGE BENCH MARKS	1	SET



ELEVATION

BENCH MARKS				PILE LOADING							
NO.	DESCRIPTION	STATION	ELEV.	LOCATION	DEAD LOAD	LIVE LOAD	EARTH	WIND	LONG. FORCE	ICE	DESIGN LOAD
11	Iron Man - I.F.P. Co.	Sta 130+93 - 177' Lt	1840.55	*Pier ③	10.4 T		0.8 T	7.8 T			19.0 T
12	Spot on Rock	Sta 225+2 - 178' Lt	1828.03								
13	Large Rock	Sta 218+24 - 312' Lt	1827.70	Abut.	10.8 T	7.9 T					18.7 T
14	Iron Man by C.R.	Sta 227+33 - 176' Lt	1833.77								

VERTICAL CURVE DATA
Elevations are to top of finished roadway &

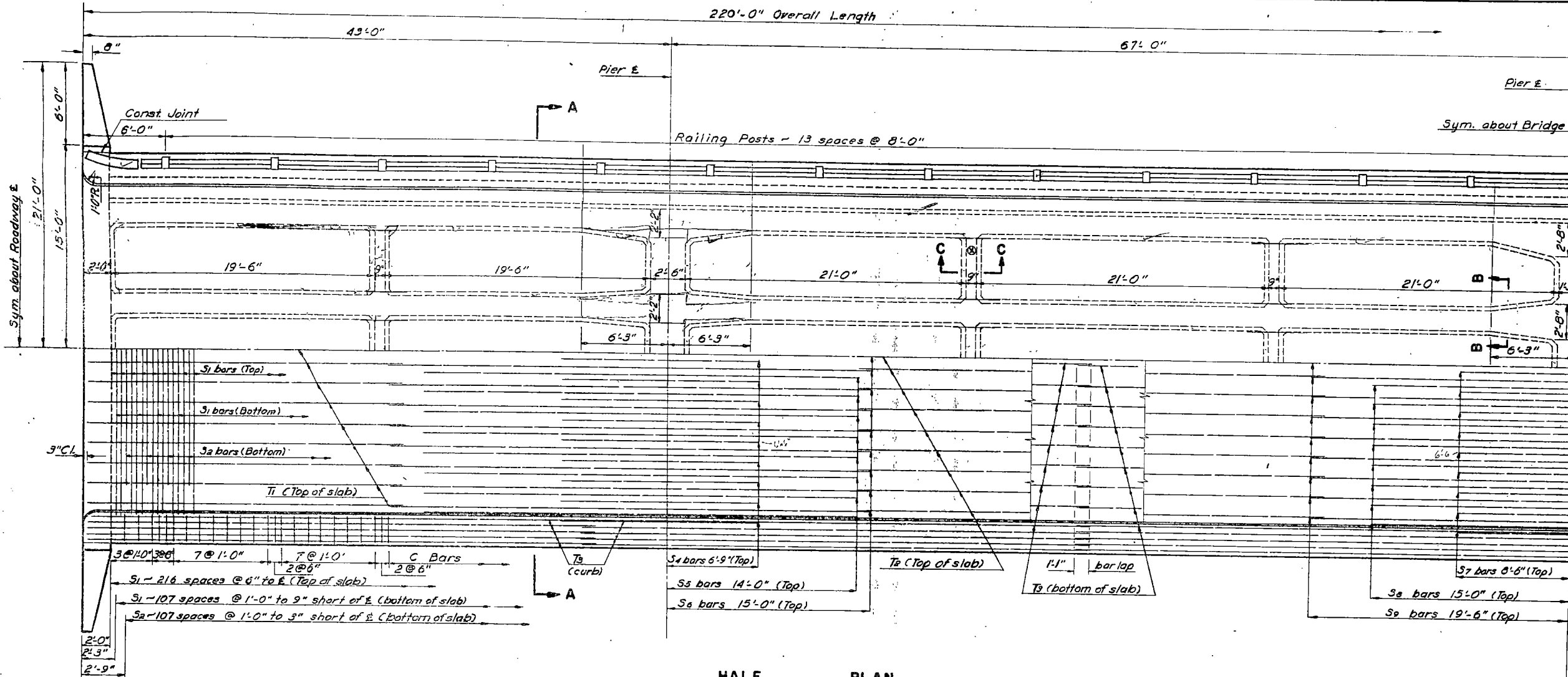
STRUCTURAL DRAWINGS

GENERAL DRAWING This Sheet
SUBSTRUCTURE H-3311, Sta 14.9, 94-6(18)-1
SUPERSTRUCTURE H-3116-1, H-3116-2, H-0104, Sta 7.6
DESIGN LOADING H-20 - S16 (1953) SCALE 1 INCH = 10 FEET

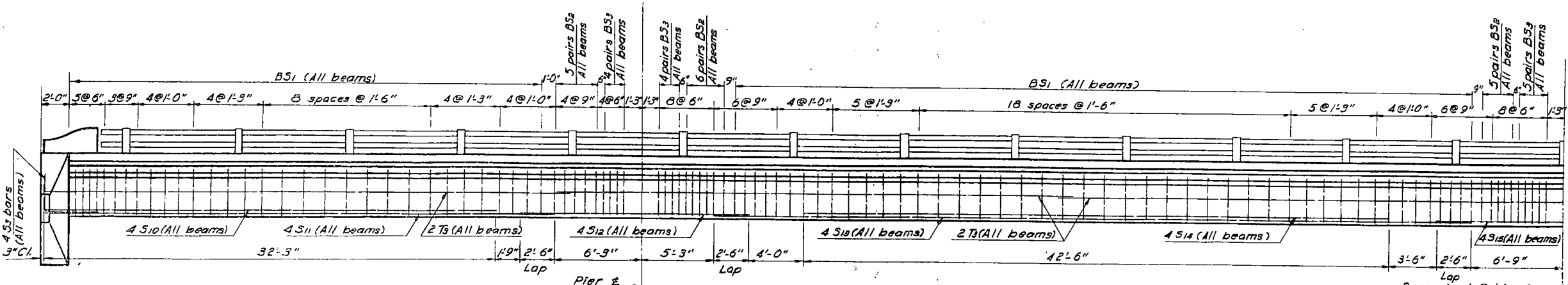
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
WINDSOR INTERCHANGE
BRIDGE LAYOUT
PROJECT I-94-6(18) STA. 201 + 36
STUTSMAN COUNTY

APPROVED
4/21/58
Joseph Kirby
BRIDGE ENGINEER

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



HALF PLAN
Showing Dimensions & Slab Reinforcement



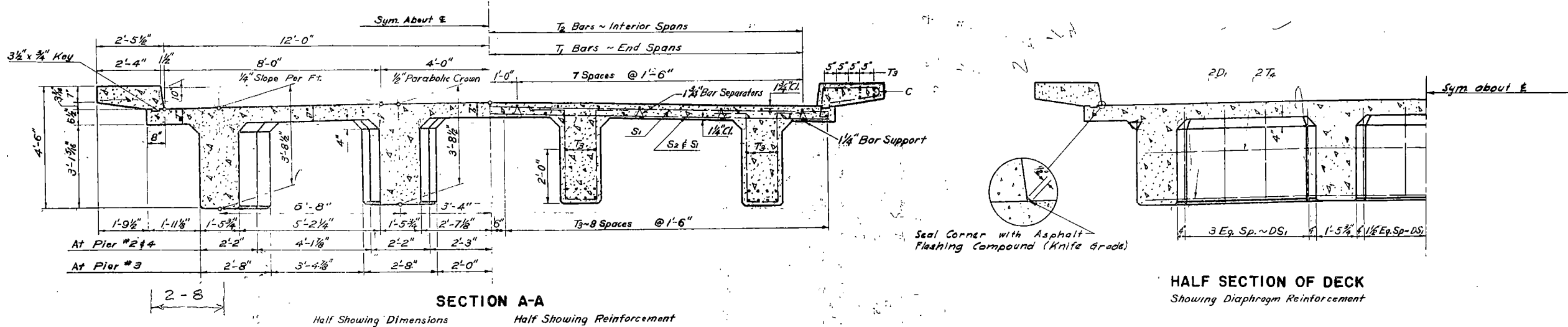
HALF ELEVATION
Showing Beam Steel Reinforcement

**FOUR SPAN CONTINUOUS
CONCRETE T-BEAM**
24'-0" CLEAR ROADWAY
220'-0" OVERALL LENGTH

H₂₀ S₁₆ LOADING

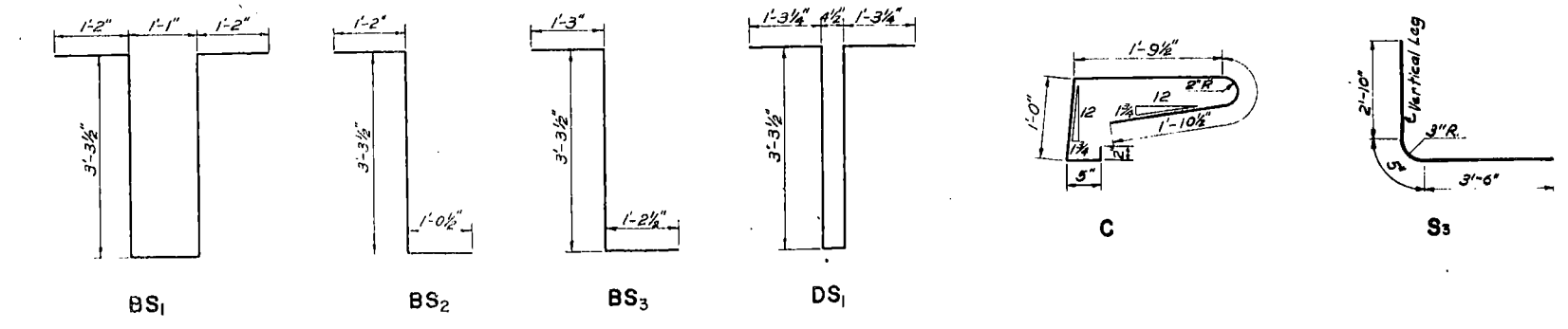
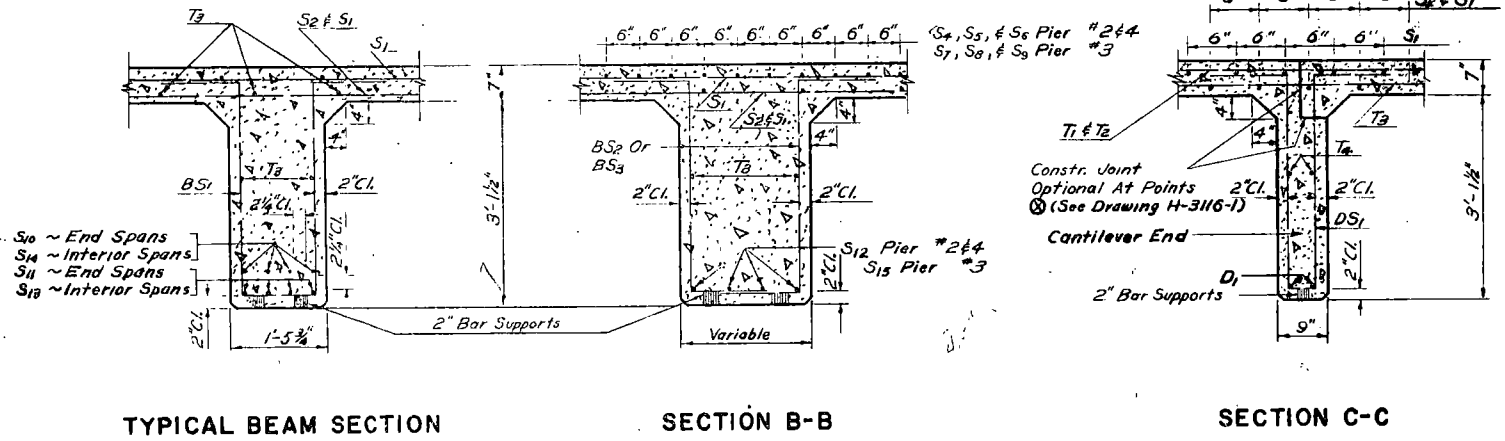
30
210
10

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



HALF SECTION OF DECK
Showing Diaphragm Reinforcement

BAR LIST-ONE BRIDGE				
MARK	NO	SIZE	LENGTH	SHAPE
S1	649	4	24'-9"	Str.
S2	216	4	20'-0"	"
S3	32	6	6'-9"	Bent
S4	36	9	14'-6"	Str.
S5	32	9	32'-0"	"
S6	34	8	35'-6"	"
S7	18	10	17'-0"	"
S8	16	10	30'-0"	"
S9	17	9	39'-0"	"
S10	32	9	32'-3"	"
S11	32	9	36'-6"	"
S12	32	6	16'-6"	"
S13	32	11	55'-0"	"
S14	32	11	42'-6"	"
S15	16	6	18'-6"	"
BS1	616	5	10'-0"	Bent
BS2	256	5	5'-8"	"
BS3	208	5	5'-9"	"
DS1	72	4	9'-6"	Bent
D1	12	6	21'-0"	Str.
C	490	5	5'-3"	Bent
T1	34	5	23'-3"	Str.
T2	34	5	34'-9"	"
T3	240	5	37'-6"	"
T4	12	5	21'-0"	"



NOTE:
The deck and abutment concrete shall be placed in one continuous operation, except in case of an emergency the optional construction joints may be located by "X".
This slab designed to be used on pier H-3311 or H-3313. 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	
Concrete Class A-1 1/2	596.8 CY
Reinforcing Steel	77,330 lbs.

SLAB DETAIL
FOR
FOUR SPAN CONTINUOUS
T-BEAM
220' OVERALL LENGTH
24' ROADWAY
H20-S16 LOADING

MADE BY EUS/SGF CHECKED BY JCS/DOB

H-3116-2

(4) H-3116-2