March 27, 2015 29-000.013

	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
	ND	S-BRI-8-029(139)000	18995	1	1
		BRS-8-032(037)036	20799		

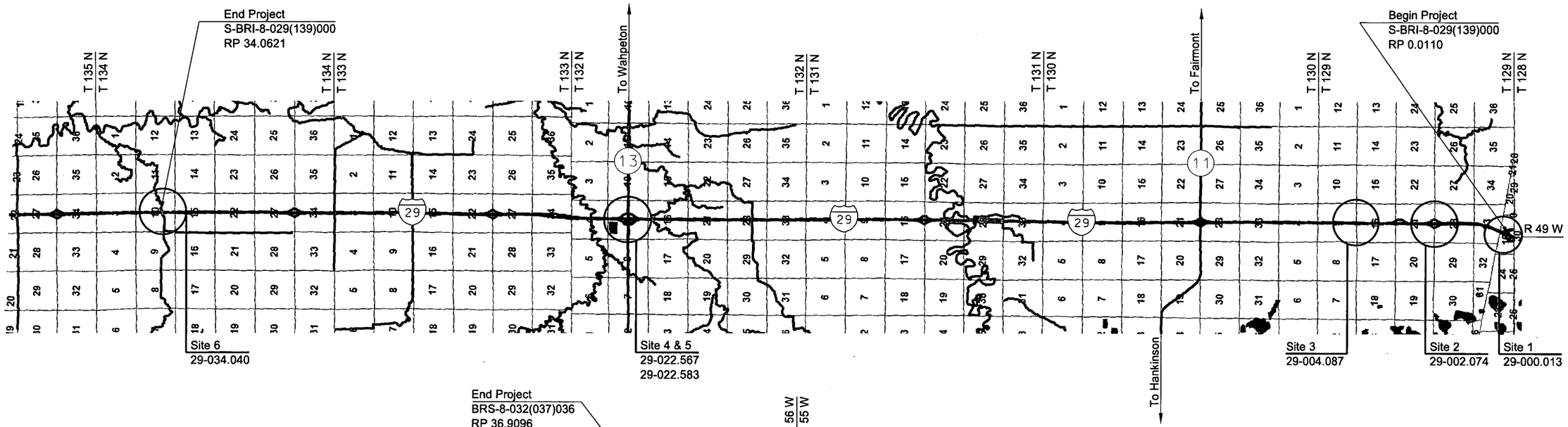
JOB # 11
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

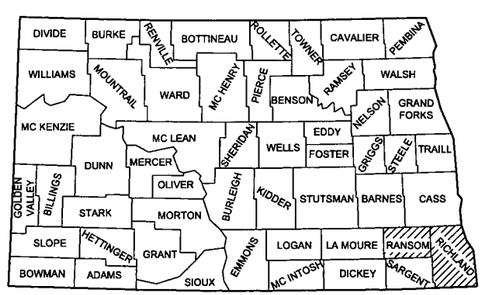
S-BRI-8-029(139)000
BRS-8-032(037)036

Richland & Ransom County
State Line Interchange, Lamars Interchange, Park Lake Separation
Jct of ND 13, Pitcairn Separation, Sheyenne River
Structural Painting

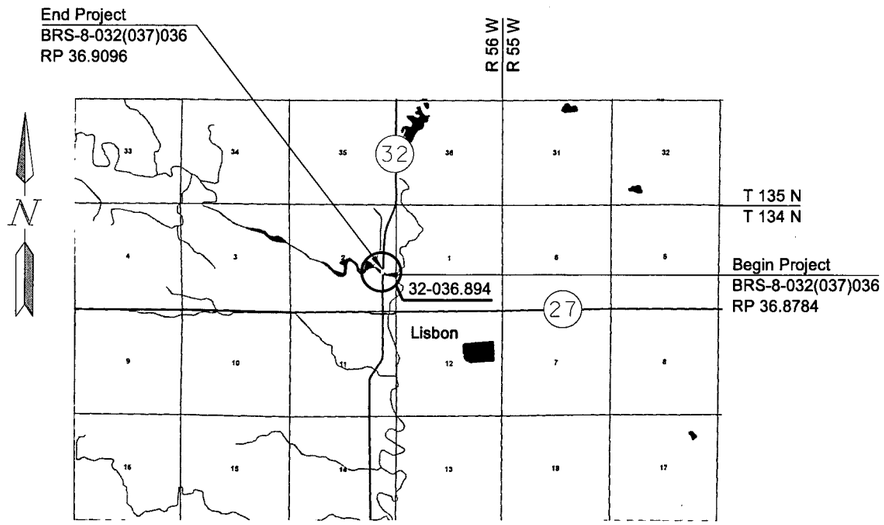
GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
S-BRI-8-029(139)000	0.2731	34.0621
BRS-8-032(037)036	0.0312	0.0312





STATE COUNTY MAP



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.

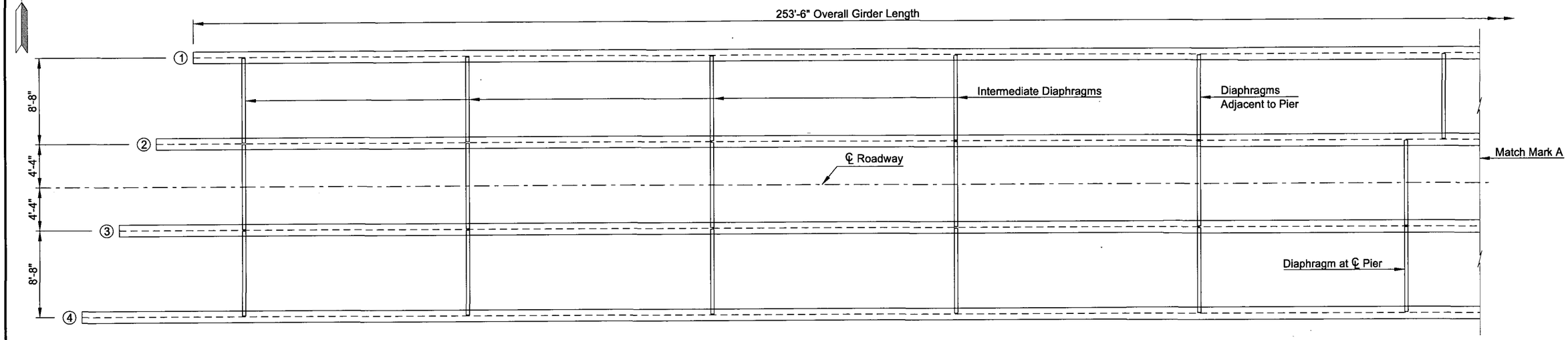
APPROVED DATE _____

_____
BRIDGE DIVISION

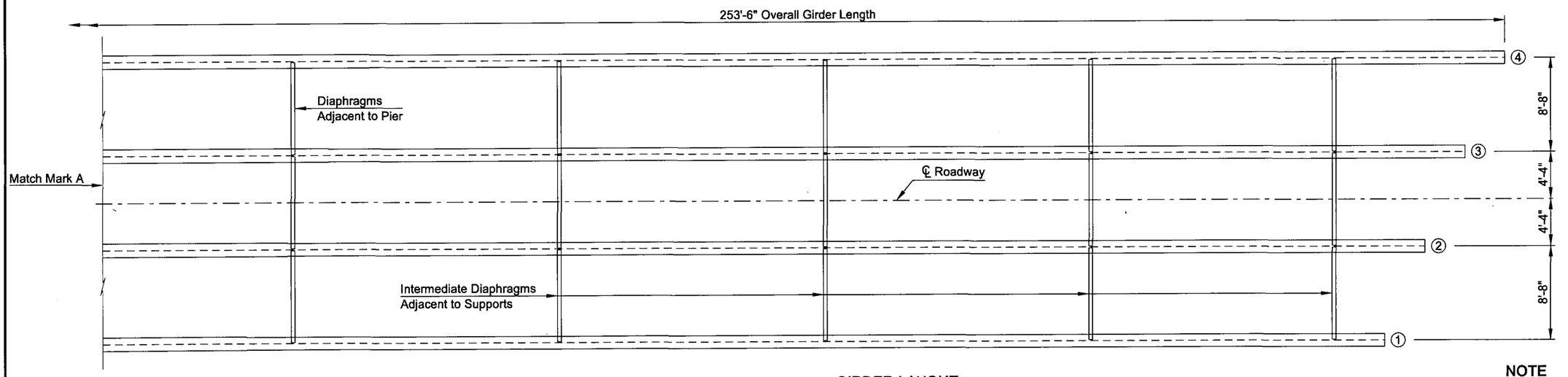
2/19/2015 7:46:31 AM lbossert R:\project\80029000.139\bridge\170BR_001_TITLE.dgn

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	S-BRI-8-029(139)000	170	2



GIRDER LAYOUT



GIRDER LAYOUT

NOTE

See DWG 29-000.013-2 for Diaphragm Details

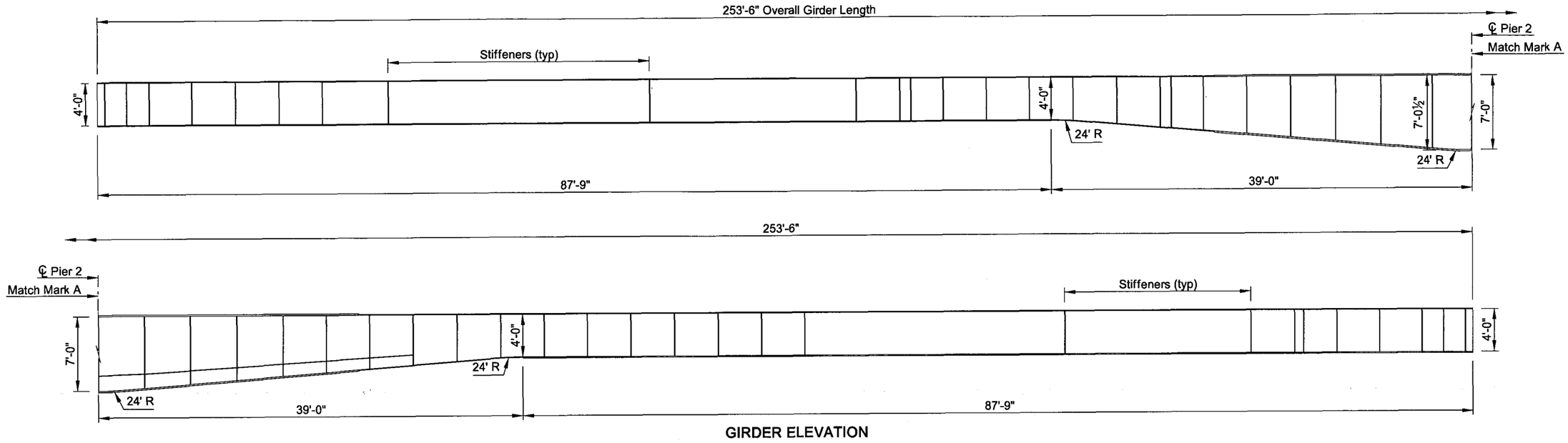
This document was originally issued and sealed by Lindsay Bossert, Registration Number PE 8395, on 01/12/15 and the original document is stored at the North Dakota Department of Transportation

SOUTH DAKOTA BORDER

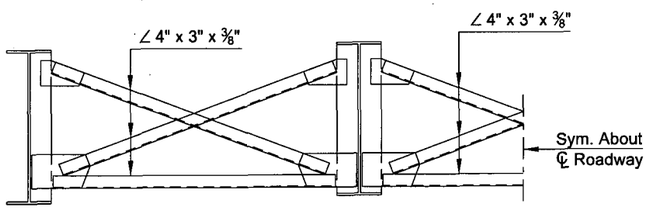
STRUCTURAL STEEL PAINTING DETAILS

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

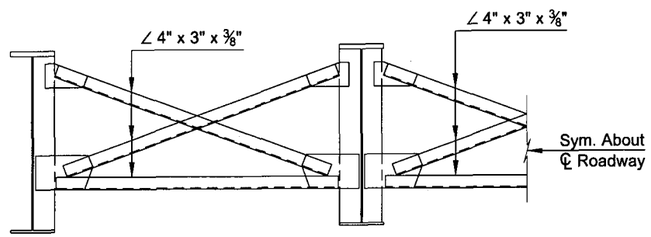
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	ND	S-BRI-8-029(139)000	170	3



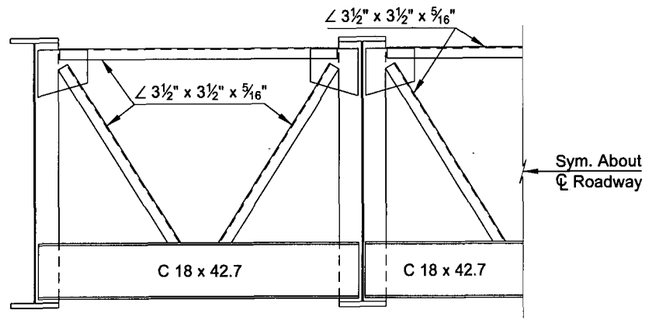
GIRDER ELEVATION



INTERMEDIATE DIAPHRAGM



DIAPHRAGMS ADJACENT TO PIER



DIAPHRAGM AT PIER

This document was originally issued and sealed by Lindsay Bossert, Registration Number PE 8395, on 01/12/15 and the original document is stored at the North Dakota Department of Transportation

I/29 STATE LINE SEPERATION

STRUCTURAL STEEL PAINTING DETAILS

DESIGN DATA				
Traffic	Average Daily			Est. Max. Hr.
Current 1998	Pass: 1070	Trucks 350	Total 1420	215
Forecast 2018	Pass: 1605	Trucks 525	Total 2130	325
Minimum Sight Dist. for:		Design Speed 70 MPH		
Stopping 600'		Bridges		
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				

JOB# 15

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-8-029(027)000	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT AC-IM-8-029(027)000

IN RICHLAND COUNTY

Concrete Pavement Repair, Dowel Bar Retrofit, Grinding & Incd. (North Bound Roadway)

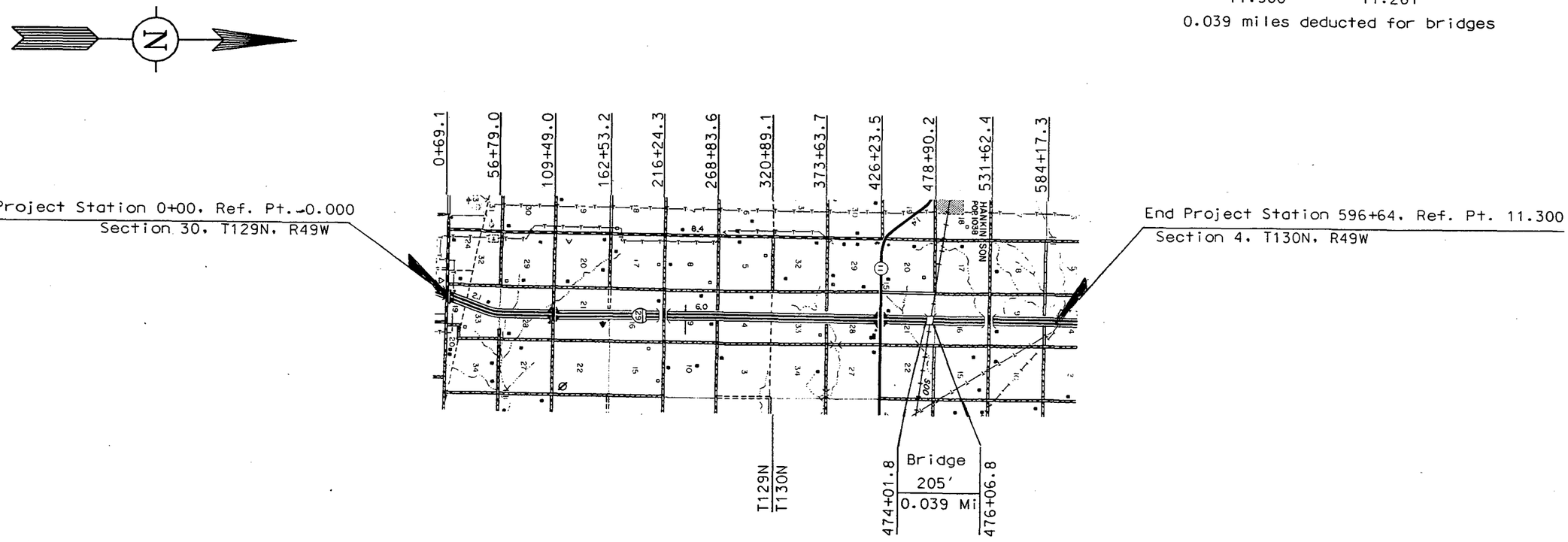
GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation October 1997; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

LENGTH OF PROJECT

Miles Gross	Miles Net
11.300	11.261

0.039 miles deducted for bridges



DESIGNER Scott Woodman

DESIGNER

DESIGNER

RECOMMEND APPROVAL March 20, 1998

for DESIGN ENGINEER Roger Weigel

...\d_paving\title.dgn Mar. 20, 1998 08:13:14

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE March 20, 1998

DIRECTOR OF HIGHWAYS AND ENGINEERING

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

DAVID K. O. LEER REGISTERED PROFESSIONAL P.E. 1199 ENGINEER NORTH DAKOTA

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(027)000	47

				SPEC 950 CODE 9712			SPEC 708 CODE 1100
BR. NO.	NAME	GAP @ WEST ABUTMENT	GAP @ EAST ABUTMENT	QUANTITY JOINT TREATMENT LF	SY OF SLOPE PROTECTION @ WEST ABUTMENT	SY OF SLOPE PROTECTION @ EAST ABUTMENT	QUANTITY OF SLOPE PROTECTION SY
29-000.013	STATE LINE INT.	4"	3"	100	----	----	----
29-002.074	LA MARS INT.	3 1/2"	6"	92	3	3	6
29-004.087	PARK LAKE SEP.	2"	2"	92	----	----	----
29-008.073	ND HWY 11 INT.	----	3"	56	43	3	46
29-010.068	HANKINSON SEP.	3"	3"	92	----	----	----
			TOTAL	432		TOTAL	52

JOINT TREATMENT:

The concrete slope protection has settled and pulled away from the abutments. The gap between the abutments and the slope protection is as shown in the table. All debris and soil shall be cleaned out of the gap and filled with non-reinforced concrete to a minimum depth of 4 inches for the full width of the slope protection. All materials and labor required to place concrete shall be included in the pay item "JOINT TREATMENT".

SLOPE PROTECTION

Slope protection panels need to be replaced at La Mars Interchange and at Highway 11 Interchange.
At La Mars interchange there are 2 panels that need replacing at each abutment. These panels are approximately 2'-6" x 5'-6".

All concrete removal, labor, equipment and materials including concrete, wire mesh and earth fill required to place the new panels shall be included in the price bid for "Concrete Slope Protection" and will be paid by the square yard.

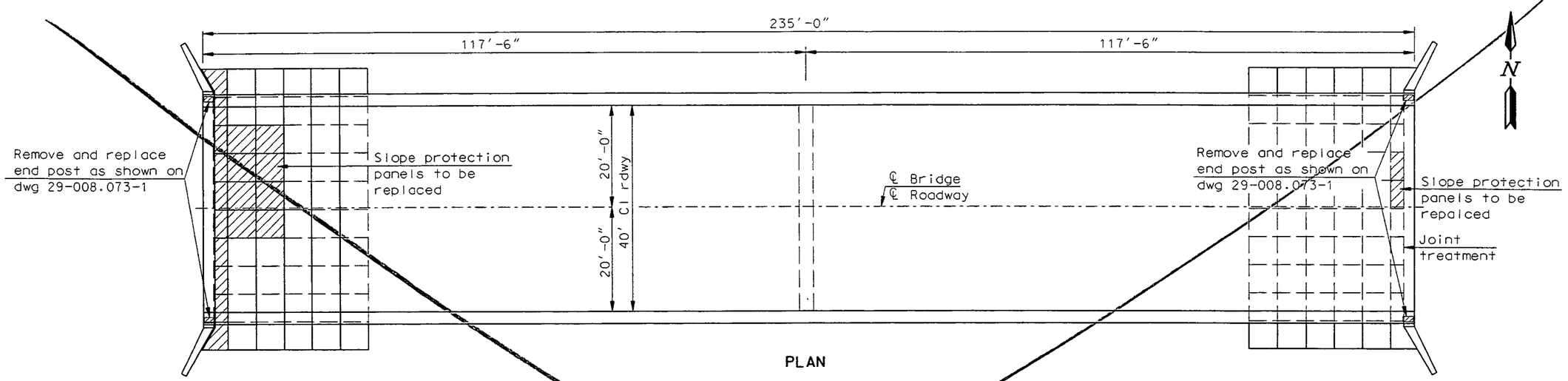
See Bridge Layout (drawing no. 29-008.073) for the joint treatment and concrete slope protection notes for the Highway 11 Interchange bridge.

LIST OF STANDARDS DRAWINGS

D-708-1 STANDARD SLOPE PROTECTION UNDER BRIDGES

JOINT TREATMENT
&
SLOPE PROTECTION

BRIDGE CODE	FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
X-771	8	ND	IM-8-029(027)000	48



PLAN

SCOPE OF WORK: The work on this site consists of removing and replacing the end posts on the ends of the bridge, overlaying the bridge deck with low slump concrete and placing concrete between the abutments and the slope protection on the east end of the bridge.

BRIDGE DECK OVERLAY: The deck overlay shall be done in two stages to allow at least one lane of traffic at all times. All concrete removed from the deck shall be disposed of properly, off of the right of way, by the contractor.
The overlay shall meet the requirements of low-slump concrete as listed in Section 650.02.

JOINT TREATMENT: The concrete slope protection has settled and pulled away from the east abutment leaving a gap of 3". All debris and soil shall be cleaned out of the gap and filled with non-reinforced concrete to a minimum depth of 4 inches for the full width of the slope protection on the east end of the bridge. All materials and labor required to place concrete shall be included in the bid item "JOINT TREATMENT".

CONCRETE SLOPE PROTECTION: There are 10 slope protection panels that need to be replaced at the west abutment. These panels are approximately 2'-6" x 5'-6" . There are 8 panels that need to be replaced on the west slope (3rd, 4th, 5th and 6th from the north side along the 1st and 2nd row from the top). These panels are approximately 5'-6" x 5'-6". There are 2 panels along the east abutment to be replaced. These are approximately 2'-6" x 5'-6". All concrete removal, labor, equipment and materials including concrete, wire mesh and earth fill required to place the new panels shall be included in the price bid for "Concrete Slope Protection" and will be paid for by the square yard.

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	1210	BRIDGE END POST MODIFICATION	EA	4
650	0700	CLASS 1 OVERLAY	SY	1044
650	0701	CLASS 2 OVERLAY	SY	209
650	0702	CLASS 3 OVERLAY	SY	52
650	0703	CLASS 2A OVERLAY	LF	376
708	1100	CONCRETE SLOPE PROTECTION	SY	46 *
950	9712	JOINT TREATMENT	LF	56 *

* These two items are included in the tabular quantities on drawing number 29-000.013 Plus.

LIST OF STANDARD DRAWINGS

D-708-1	STANDARD SLOPE PROTECTION UNDER BRDIGES

ND HWY 11 INTERCHANGE

BRIDGE LAYOUT

29-000.013

FED. ROAD DIV. NO.	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	BIA-8-029(007)001	1

THE SISSETON – WAHPETON DAKOTA NATION

d/b/a DAKOTA MAGIC CASINO

IN COOPERATION WITH

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

PLANS

FOR THE PROPOSED IMPROVEMENTS OF A

INTERSTATE HIGHWAY

IN RICHLAND COUNTY

PROJECT NUMBER

BIA-8-029(007)001

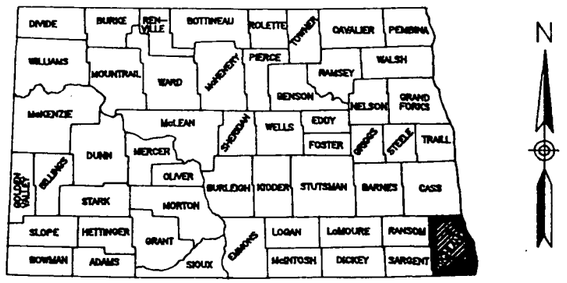
INTERSTATE INTERCHANGE ON

RICHLAND COUNTY ROAD 1E

GRADING, SURFACING, BRIDGE OVERLAY, GUARDRAIL CULVERTS, SIGNING, MARKING, LIGHTING AND INCIDENTALS

GOVERNING SPECIFICAATIONS:

Standard Specifications for Road and Bridge Construction, adopted by the North Dakota Department of Transportation, September 1992, standaard drawings currently in effect and other contract provisions submitted herein.



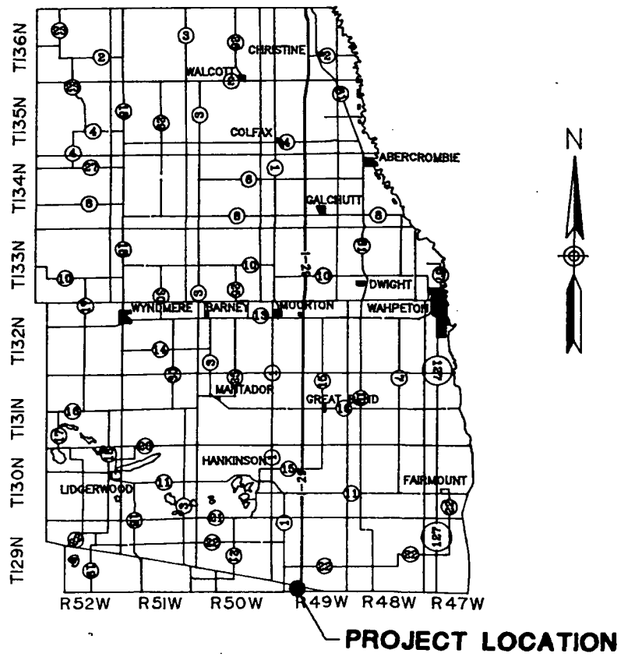
MAP OF NORTH DAKOTA

NTS

DESIGN DATA

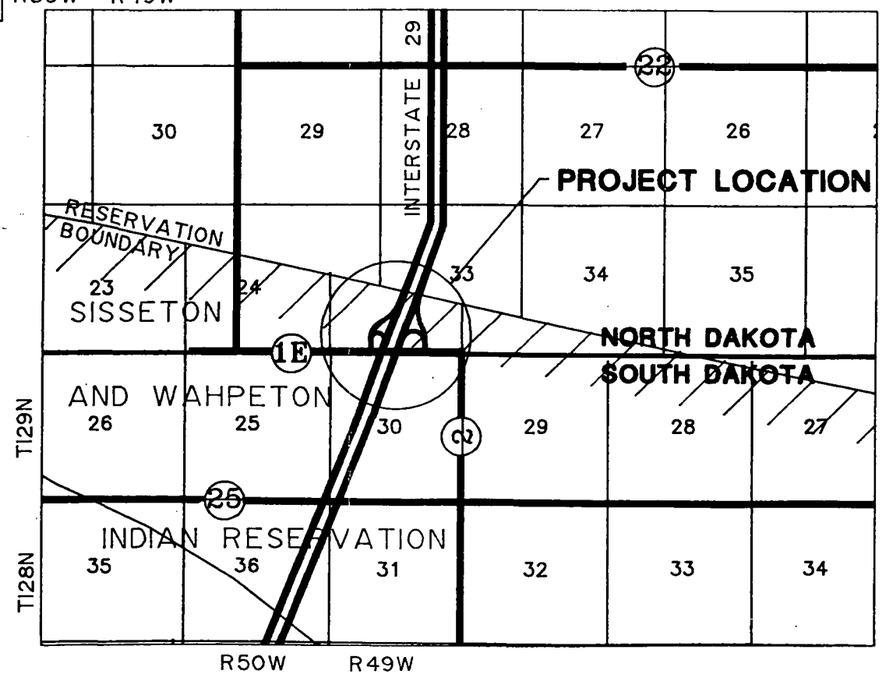
TRAFFIC				EST.MAX.HR.
CURRENT 1995	PASS.	TRUCKS	TOTALS 1126	568
FORECAST 2015	PASS.	TRUCKS	TOTALS 1126	568

MINIMUM SIGHT DIST. FOR:		DESIGN SPEED	40 mph
STOPPING		BRIDGES	
SAFE PASSING			
PASSING FOR MARKING			



MAP OF RICHLAND COUNTY

NTS



LENGTH OF PROJECT

PROJECT	MILES-GROSS	MILES-NET
BIA-8-029(007)001	0.624	0.624
TOTALS	0.624	0.624

PREPARED BY:

interstate engineering, inc.

RANDALL A. POPE REGISTERED PROFESSIONAL 1841 ENGINEER NORTH DAKOTA

BIA-8-029(007)001

Project BIA-8-029(007) 001

Prime contractor - Riley Bros. Const. Co.

Industrial Bldrs. did deck overlay

PROJECT NOTES

100 UNDERGROUND UTILITIES: The Contractor shall notify the local utility companies prior to the beginning of construction, so they may determine the location of all utilities in the project area. Subcutting or scarifying over utility lines may be eliminated if, in the opinion of the engineer, a hazardous situation exists. Separate plans, if any, showing relocation or adjustment work to be performed by utility companies to accommodate highway construction will be made available to the Contractor, upon request to the Construction Engineer. The Owner will pay for required utility relocation.

100 ORDER OF WORK (EARTHWORK): Excavation of material on site must be completed before any borrow is brought to the west side of the interchange. All surplus excavated material from the east side (approximately 43,000 cubic yards) shall be utilized in constructing the embankment on the west side prior to utilizing any borrow. The Contractor shall comply with all load restrictions when utilizing County Highway 1E.

100 ORDER OF WORK (PAVING): The bridge deck overlay shall be done along with the end post modifications, safety shape transitions, curb and gutter at Bridge ends and inlet castings before Highway 1E is overlayed with Class 29.

100 MITIGATION AREA: Grades are fixed and may not change under any circumstances in the mitigation area.

100 The Contractor will be required to conduct the construction activities in such a manner as to comply with the Air Pollution Control Regulations of the State of North Dakota. Water will be used to control dust on the construction site.

100 TREES, SHRUBS, AND NATIVE GRASSES: The Contractor shall exercise care in his construction operations to ensure that trees, shrubs, and native grasses within the right-of-way and outside the construction area are not disturbed. The Engineer in the field will indicate a number of trees to be left in place north of the northeast loop and south of the northeast ramp. Areas around the trees left in place shall be cleaned of any debris or branches and shall be seeded.

100 BENCHMARK: The USGS Benchmark located within the project limits must be protected from damage at all times.

100 WEEKLY PLANNING/REPORTING MEETING:

A. Purpose of Weekly Meetings.

1. The Contractor shall organize the weekly meeting to coordinate the efforts between subcontractors, utilities, local authorities, and others.

B. Contractor's Project Manager/Superintendent: Planning and Reporting.

1. The Contractor will be responsible for sending a knowledgeable representative to conduct a weekly Reporting/Planning meeting. It will be the Contractor's responsibility to prepare minutes for each meeting and to make the appropriate distribution of the minutes.

2. The Contractor will be required to provide a written schedule of the next week's work and a tentative schedule of the following week.

3. Reporting/Planning meeting will include discussion of problems encountered during the current week; information of interest to local authorities, subcontractors, utilities, and next week's prospective schedule.

4. The Contractor shall organize the weekly meeting contacting interested agencies. These agencies include, but are not limited to the following:

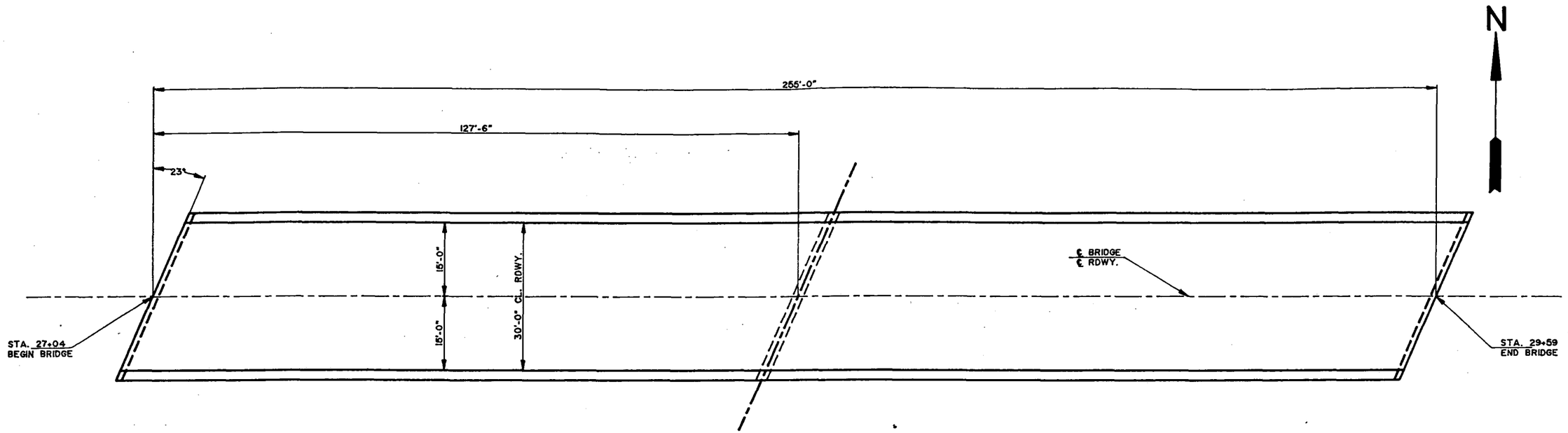
   a. Construction Engineer Representative
   b. Surveyor Representative
   c. Subcontractors involved with the ongoing work
   d. Representative from the Sisseton-Wahpeton Dakota Nation
   e. Dakota Magic Casino Management Committee
   f. Richland County Highway Department
   g. ND Department of Transportation
   h. SD Department of Transportation

100 COOPERATION WITH OTHER CONTRACTORS: The Contractor shall coordinate his schedule with the Dakota Magic Casino Contractor as needed. One lane of Highway 1E must be kept open at all times for truck travel and vehicular traffic related to the casino construction and the public.

A 6" waterline will be constructed by the Dakota Magic Casino Contractor. The Contractor shall organize his construction schedule to allow the construction and perform his work so no damage is caused after installation.

100 CROSSING THE INTERSTATE WITH EQUIPMENT: The Contractor will be allowed to cross the interstate with equipment at existing

FED. ROAD DIV. NO.	STATE	FEDERAL AID SEC. PROJECT NO.	SHEET NO.
8	N.D.	BIA-8-029(007)001	47



PLAN VIEW

GENERAL NOTES:

1. SCOPE OF WORK: THIS PROJECT CONSISTS OF A LOW SLUMP DECK OVERLAY.

ESTIMATE OF QUANTITIES

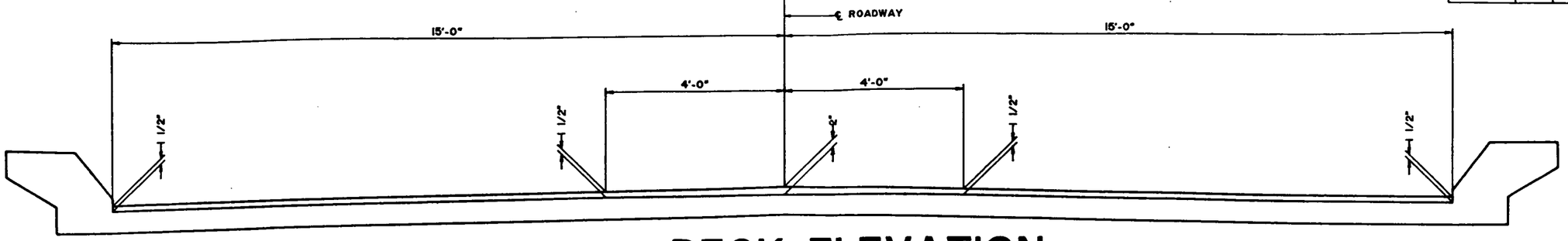
SPEC.	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
650	0700	CLASS 1 OVERLAY	SQ.YD.	850.0
650	0701	CLASS 2 OVERLAY	SQ.YD.	170.0
650	0702	CLASS 3 OVERLAY	SQ.YD.	42.5
650	0703	CLASS 2A OVERLAY	SQ.YD.	306.0

I-29 AND HIGHWAY 1E
PROJECT NO. BIA-8-029(007)001
RICHLAND COUNTY

BRIDGE LAYOUT SHEET

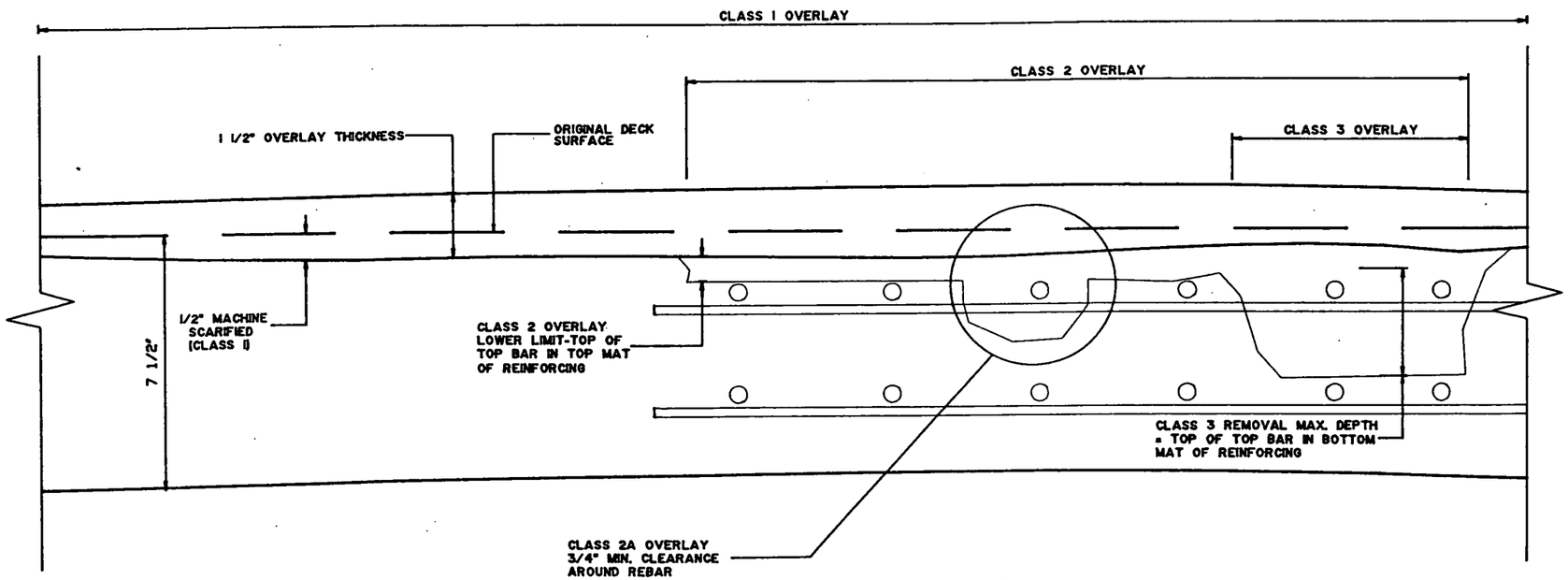
30'-0" ROADWAY

FED. ROAD DIV. NO.	STATE	FEDERAL AID SEC. PROJECT NO.	SHEET NO.
8	N.D.	BIA-8-029(007)001	48



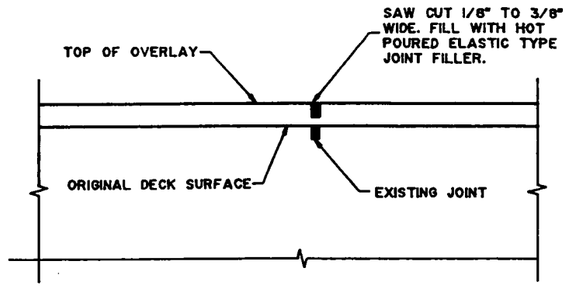
DECK ELEVATION

SHOWING OVERLAY



BRIDGE DECK

(OVERLAY CLASSIFICATIONS)



CONS. OR RELIEF JOINTS

(TRAVERSE AND LOGITUDINAL)

INCIDENTAL TO CLASS I OVERLAY

GENERAL NOTES:

1. IF HYDRODEMOLITION EQUIPMENT IS USED, CLASSIFICATION OF REMOVAL SHALL BE IN ACCORDANCE WITH SECTION 650.05 OF THE NORTH DAKOTA DEPARTMENT OF TRANS-PORTATION SPESIFICATIONS. HYDRODEMOLITION EQUIPMENT WILL NOT BE PAID FOR SEPERATELY BUT SHALL BE INCIDENTAL TO OTHER ITEMS.

ESTIMATE OF QUANTITIES

SPEC.	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
650	0700	CLASS 1 OVERLAY	SQ.YD.	850.0
650	0701	CLASS 2 OVERLAY	SQ.YD.	170.0
650	0702	CLASS 3 OVERLAY	SQ.YD.	42.5
650	0703	CLASS 2A OVERLAY	SQ.YD.	306.0

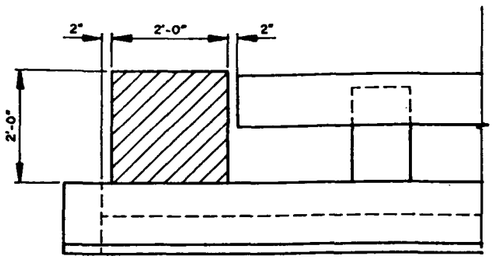
I-29 AND HIGHWAY 1E
PROJECT NO. BIA-8-029(007)001
RICHLAND COUNTY

OVERLAY DETAIL SHEET

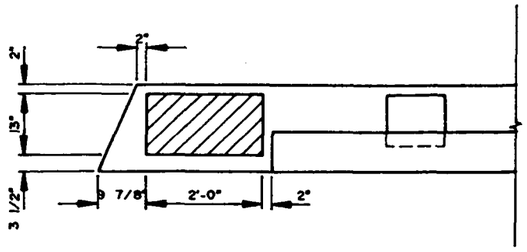
30'-0" ROADWAY

FED. ROAD DIV. NO.	STATE	FEDERAL AID SEC. PROJECT NO.	SHEET NO.
8	N.D.	BIA-8-029(007)001	49

BAR LIST (ONE POST)				
SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	1	3'-4"	BENT.
4	A501	1	3'-1"	BENT.
4	B500	1	2'-8"	STR.
4	B501	1	2'-4"	STR.
4	B502	3	1'-3"	STR.
4	D500	2	3'-9"	BENT.



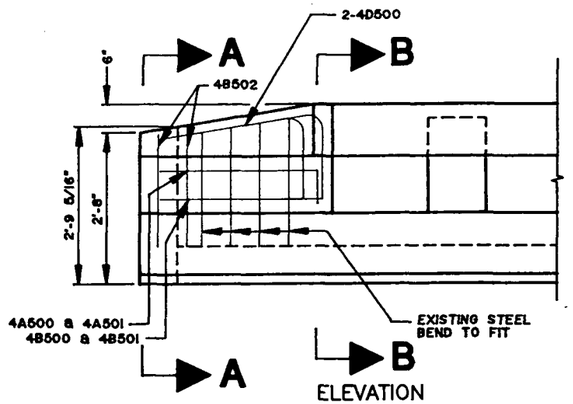
ELEVATION



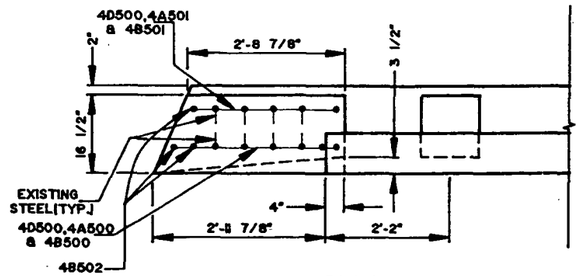
PLAN

SHOWING END POST REMOVAL LIMITS

HATCH AREAS SHOW REMOVAL



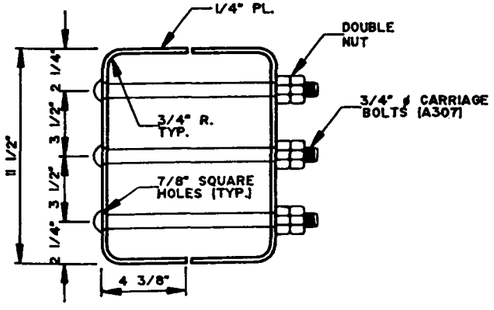
ELEVATION



PLAN

SHOWING END POST REPLACEMENT

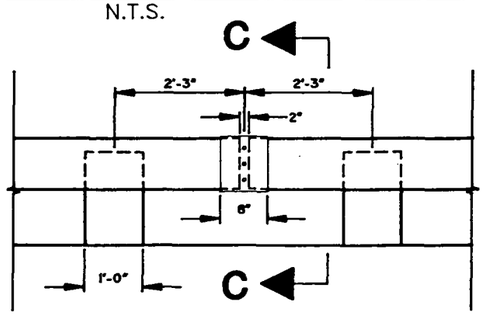
N.T.S.



SLEEVE DETAIL

N.T.S.

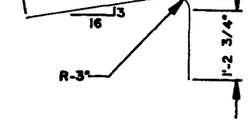
C-C



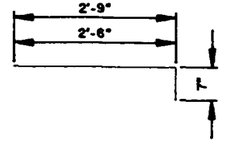
SLEEVE PLACEMENT

N.T.S.

* FABRICATE 1/4" PL ACCORDING TO FIELD VERIFICATION OF E-RAIL. SLEEVE REQUIRED AT EACH RAIL JOINT (2 REQUIRED).

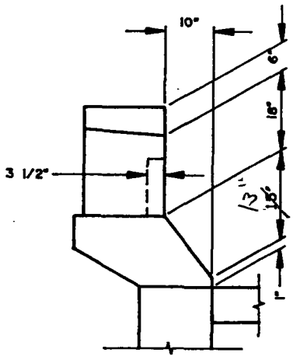


D500

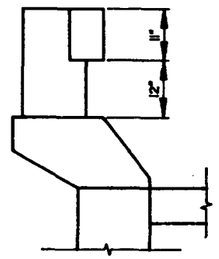


A500 & A501

BENT BAR DETAIL



A-A



B-B

GENERAL NOTES:

1. THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.
2. THE EXISTING END POSTS SHALL BE REMOVED AND PROPERLY DISPOSED OF.
3. THE QUANTITIES SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.
4. ALL MATERIALS, LABOR AND EQUIPMENT INCLUDING CONCRETE AND REINFORCEMENT BARS REQUIRED TO REMOVE AND REPLACE THE END POSTS SHALL BE INCIDENTIAL TO THE PAY ITEM "BRIDGE END POST MODIFICATION". (1)

ESTIMATE OF QUANTITIES				
SPEC.	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	1200	BRIDGE END POST MODIFICATION	EA.	4.0

QUANTITIES (4 POSTS)		
(1)	REMOVAL OF CONCRETE	.6CY
(1)	CLASS AE-3 CONCRETE	1.0CY
(1)	REINFORCING STEEL	44 LBS.
(1)	SLEEVE	2 EACH

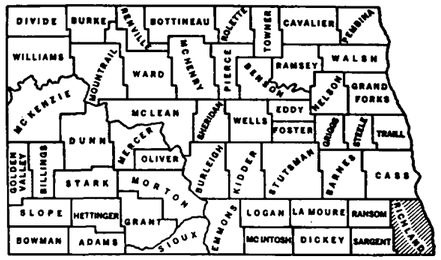
NOTE:
TWO RAIL SLEEVES SHALL BE INSTALLED AND SHALL BE INCIDENTAL TO PRICE BID FOR BRIDGE END POST MODIFICATION.

I-29 AND HIGHWAY 1E
PROJECT NO. BIA-8-029(007)001
RICHLAND COUNTY

END POST MODIFICATION AND RAIL SLEEVE DETAILS

30'-0" ROADWAY

FED. ROAD DIV. NO.	STATE	FED. AID PROJ NO	SHEET NO.
8	N.D.	I-29-1(30)	1



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

SCALES
- LAYOUT SHEET: 1 IN. = 5,000 FT.
- PLAN AND PROFILE DRAWINGS (HOR. 1 IN. = 100 FT. / VERT. 1 IN. = 10 FT.)
- STRUCTURAL DRAWINGS:- AS SHOWN
- CROSS SECTION SHEETS:- 1 IN. = 10 FT.

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN RICHLAND COUNTY

FEDERAL AID PROJECT NO. I-29-1(30)000

STRUCTURAL

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
I-29-1(30)	2.060	0.000
TOTALS	2.060	0.000

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway department July, 1971 and approved as standard by the Federal Highway Administration Sept. 29, 1971. Required Contract Provision (Form PR-1273) dated Sept. 1972 and others submitted herewith.

DESIGN DATA

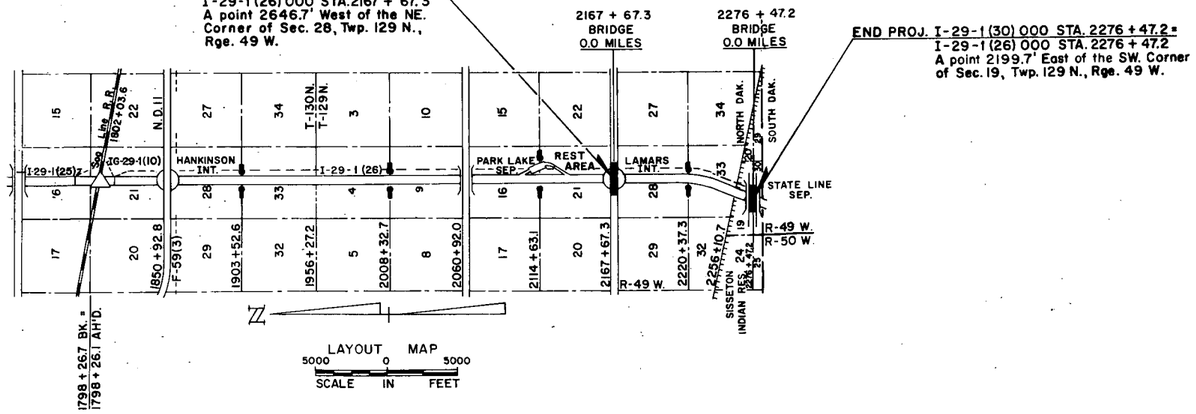
TRAFFIC	AVERAGE DAILY			EST. 30TH MAX. HR.
CURRENT TRAFFIC (1973)	1370 PASS.	240 TRUCKS	1610 TOTAL	210
TRAFFIC FORECAST (1993)	2720 PASS.	480 TRUCKS	3200 TOTAL	420

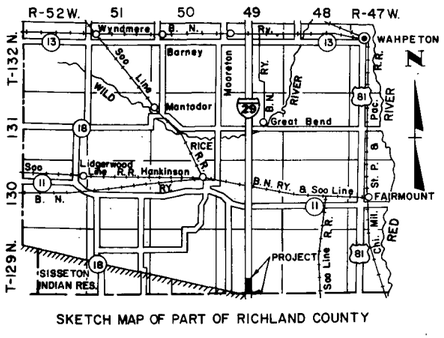
DESIGN SPEED 80 MPH
TRAFFIC CLASSIFICATION "M"
MINIMUM SIGHT DISTANCE (STOPPING) 1050'
FULL CONTROL OF ACCESS (No point of access other than by ramps at interchanges)

STA.	ADT 1993	CLEAR ROWY WIDTH	DESIGN LOADING
2167 + 67.3	100	30'	H 20 (1944)
2276 + 47.2	70	30'	H 15 (1944)

BEG. PROJ. I-29-1(30)000 STA. 2167 + 67.3 = I-29-1(26)000 STA. 2167 + 67.3
A point 2646.7' West of the NE. Corner of Sec. 28, Twp. 129 N., Rge. 49 W.

END PROJ. I-29-1(30)000 STA. 2276 + 47.2 = I-29-1(26)000 STA. 2276 + 47.2
A point 2199.7' East of the SW. Corner of Sec. 19, Twp. 129 N., Rge. 49 W.





SKETCH MAP OF PART OF RICHLAND COUNTY

APPROVED DATE 7-30-73

R. F. Bradley

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

R. F. BRADLEY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA 3005

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER DATE

I-29-1(30)000

SYMBOLS

STATE & NATIONAL LINES

COUNTY LINE

TOWNSHIP & RANGE LINES

SECTION LINE

QUARTER SECTION LINE

SECTION CORNER

QUARTER SECTION CORNER

OLD RIGHT OF WAY LINE

NEW RIGHT OF WAY LINE

GRADE LINE

CENTERLINE OF CONSTRUCTION — 500

RAILROAD RIGHT OF WAY LINE

CITY OR VILLAGE CORPORATE LIMITS

PROPERTY LINE

EASEMENT LINE

FENCES

SNOW FENCE

DRAINAGE

WATERS EDGE

MARSH OR SWAMP

RIPRAP

DRAINAGE DITCH

APPROACH — 502 + 00

TRAVELED WAY

RAILROADS — NAME

GUARD RAIL

GUIDE POSTS

DELINEATORS

HEDGES AND TREES

INTERCHANGE

HIGHWAY GRADE SEPARATION - NO CONNECTION

OTHER BRIDGE

SERVICE ROAD

TERMINATED CROSS-ROAD

BUILDINGS

TELEGRAPH LINES

TELEPHONE LINES

POWER LINES

CULVERTS (In Place)

CULVERTS (Install)

CONCRETE BOX CULVERTS (Install)

BRIDGES (Install)

CONCRETE CURB

CONCRETE CURB AND GUTTER

CONCRETE WALK

CATCH BASIN (Existing)

CATCH BASIN (New)

MANHOLE (Existing)

MANHOLE (New)

CURB INLET (Existing)

CURB INLET (New)

GROUND MOUNTED SIGNS

OVERHEAD SIGNS

HYDRANT

LIGHT STANDARDS

TRAFFIC SIGNALS (Plan & Profile Sheets)

HIGH MAST LIGHTING ASSEMBLY

GROUND ELEVATION / GRADE — 6430 / 6440 / 245

CENTERLINE

SECTION LINE

DEFLECTION ANGLE (Delta)

SOD OR JUTE MESH

POLES TO BE MOVED

POLES TO BE LOWERED

CONCRETE FOUNDATION

CONDUIT

CONDUCTOR

CONCRETE PULL BOX

FEED POINT

250 WATT LIGHT STANDARDS

400 WATT LIGHT STANDARDS

700 WATT LIGHT STANDARDS

1000 WATT LIGHT STANDARDS

FLASHING BEACON

TRAFFIC SIGNAL - MAST ARM MOUNTED

TRAFFIC SIGNAL - POST MOUNTED

SIGNAL HEAD — 3

PEDESTRIAN PUSHBUTTON POST

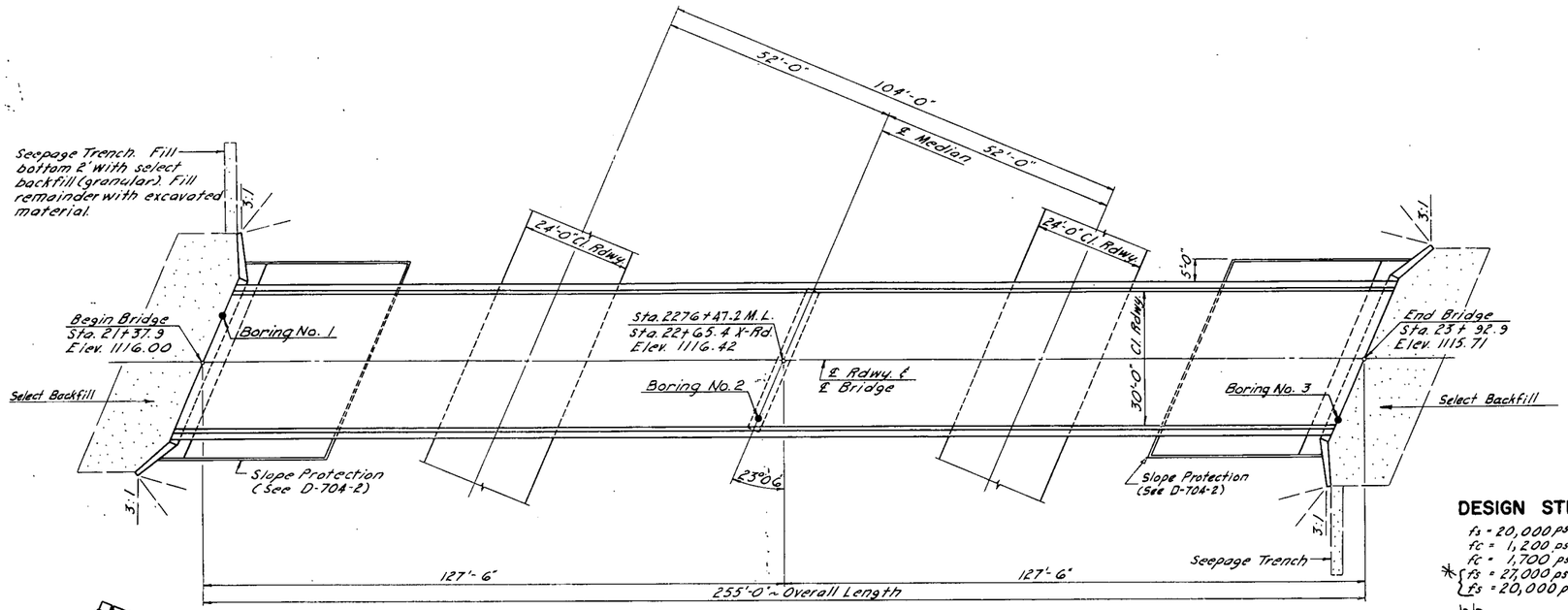
TRAFFIC SIGNAL CONTROLLER

FEED POINT - PAD MOUNTED

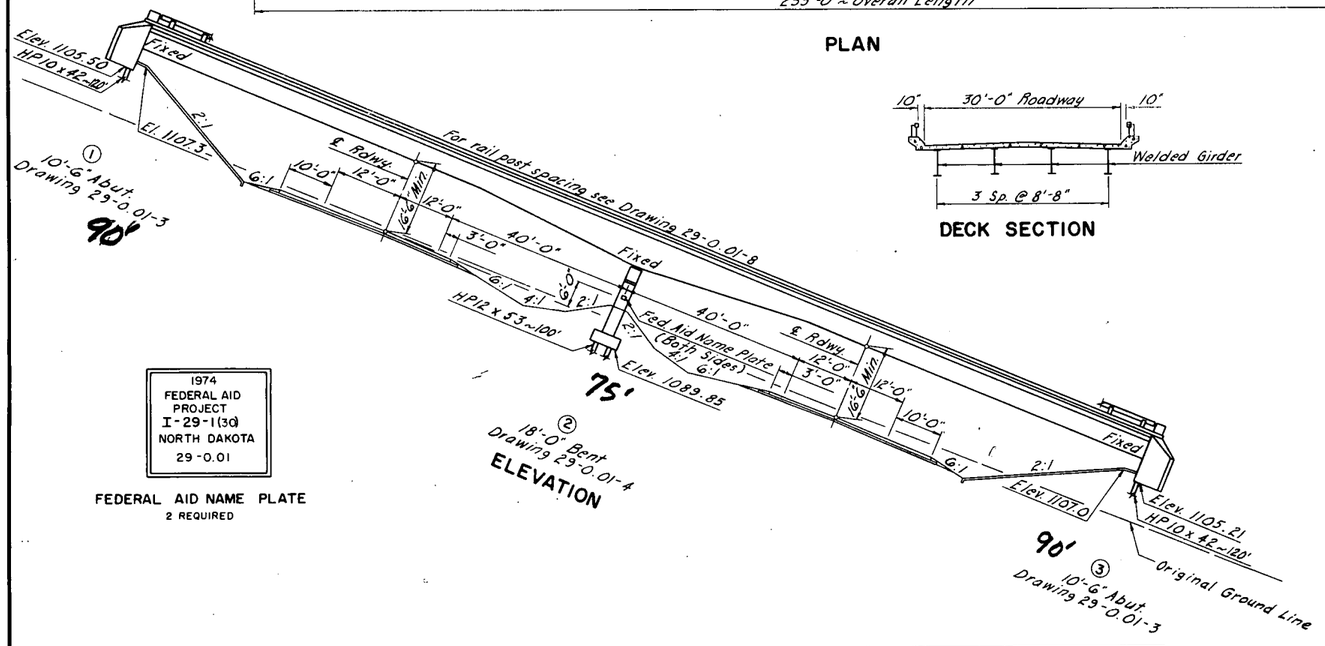
ABBREVIATIONS

Aggr.	Aggregate	M. L.	Main Line
Ahd.	Ahead	N. R.	North Roadway
Alt.	Alternate	Off. Loc.	Office Location
Approx.	Approximate or Approximately	O. to O	Out to Out
Appr.	Approach	P. & P.	Plan and Profile
Asph. Cem. or A.C.	Asphalt Cement	P. C.	Point of Curvature
Asph. Conc.	Asphaltic Concrete	P.C.C	Point of Compound Curve
Bit.	Bituminous or Bitumen	P.C.C. Pvm't	Portland Cement Concrete Pavement
Bk.	Back	P. D.	Private Drive
B. M.	Bench Mark	Pen.	Penetration
Bldg.	Building	Perf.	Perforated
Br.	Bridge	P. I.	Point of Intersection
C. A. E. S.	Corrugated Aluminum End Section	P. O. C.	Point on Curve
C. A. P.	Corrugated Aluminum Pipe	P. O. T.	Point on Tangent
C. B.	Cdtch Basin	P. P.	Power Pole
C. B. G.	Curb and Gutter	P. R. C.	Point of Reverse Curvature
Ch. Blk.	Channel Block	Pref.	Preformed
Ch. Ch.	Channel Change	P. S. D.	Passing Sight Distance
C. I.	Curb Inlet	P. T.	Point of Tangency
C. I. P.	Cast Iron Pipe	P.V.C.	Polyvinyl Chloride Sewer Pipe
Cl.	Class	Quant.	Quantity or Quantities
C. S. E. S.	Corrugated Steel End Section	R	Radius
C. S. P.	Corrugated Steel Pipe	R or Rge.	Range
CMS	Cationic Medium Setting	RC	Rapid Curing
Comp.	Compression	R.C.E.S.	Reinforced Concrete End Section
Const.	Construction	R.C.P.	Reinforced Concrete Pipe
Conc.	Concrete	R.C.P.S	Reinforced Concrete Pipe Sewer
Cont. Reinf. Conc. Pvm't	Continuously Reinforced Concrete Pavement	Rd.	Road
		Rdbd.	Roadbed
Contn.	Contraction	Rdwy.	Roadway
Crn.	Crown	Refl.	Reflectorized
CRS	Cationic Rapid Setting	R. R.	Railroad
Crse.	Course	Rt.	Right
C. S.	Curve to Spiral	R/W	Right of Way
C. to C.	Center to Center	Salv.	Salvage
C. Y.	Cubic Yard	San.	Sanitary
D	Degree of Curvature	S.C.	Spiral to Curve
D-Load	Dead Load	SC	Slow Curing
D. B.	Ditch Block	Sc	Spiral Deflection Angle
Def.	Deformed	S. D.	Sight Distance
Del.	Deliver	S. E.	Superelevation
D. G.	Ditch Grade	Sec.	Section
El. or Elev.	Elevation	Sec. Line Appr.	Section Line Approach
Ellipt.	Elliptical	Sep.	Separation
Emb.	Embankment	Serv.	Service
Emul.	Emulsified	Sgr. Prep.	Subgrade Preparation
Engr.	Engineer	Shldr.	Shoulder
Eq.	Equation	SP	Special Provision
E. R.	East Roadway	S. P. P.	Structural Plate Pipe
E. S.	End Section	S. P. P. A.	Structural Plate Pipe Arch
Esmt.	Easement	S. R.	South Roadway
Exc.	Excavation	SS	Slow Setting or Supplement Specification
Exp.	Expansion	S. S. D	Stopping Sight Distance
F. D.	Field Drive	S. T.	Spiral to Tangent
Found.	Foundation	Sta.	Station
F. P.	Fence Post	Std.	Standard
Furn.	Furnish	Std. Specs.	Standard Specifications
Ga.	Gage or Gauge	Struct.	Structure
Gr.	Gravel	Surf.	Surface or Surfacing
Grd.	Graded	Surv.	Survey
G. V.	Gate Valve	S. W.	Sidewalk
Hel.	Helical	S. Y.	Square Yard
Hyd	Hydrant	T	Tangent Length (circular curve)
Ident.	Identification	T or Twp.	Township
Inchg.	Interchange	Tel.	Telephone
I. M.	Iron Monument	Temp.	Temporary
Inst.	Install	T. P.	Telephone Pole
Inter.	Intersection	Tr	Traffic
Inv.	Invert	Trans	Transverse or Transition
Jt	Joint	Trtd.	Treated
L	Length of Curve	Ts	Tangent Length (curve with spirals)
Lc	Length of Spiral	T. S	Tangent to Spiral
Levg.	Leveling	U.S.C. & G.S.	United States Coast and Geodetic Survey
L. F.	Linear or Lineal Foot	V.C.	Vertical Curve
Liq.	Liquid	V.C.P.	Vitrified Clay Pipe
Long	Longitudinal	W.M.	Water Main
L. P.	Light Pole	W.M.V.	Water Main Valve
Lt.	Left	W.R.	West Roadway
"M"	One Thousand	Wrng	Wearing
Matl.	Material	W.S.V.	Water Service Valve
Max.	Maximum	X-Sec.	Cross Section
MC	Medium Curing	Xc	Spiral Coordinate
M.H	Manhole	Yc	Spiral Coordinate
Min.	Minimum		

BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
X-771	8	N. D.	I-029-1(30)	27	



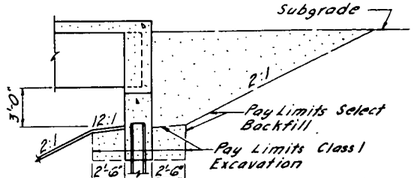
PLAN



DECK SECTION

1974
FEDERAL AID
PROJECT
I-29-1(30)
NORTH DAKOTA
29-0.01

FEDERAL AID NAME PLATE
2 REQUIRED



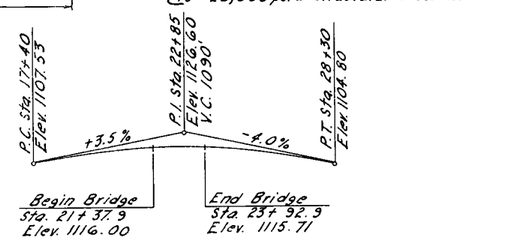
DETAIL AT ABUTMENT ON ℄

DESIGN STRESSES:

f_s = 20,000 psi ~ Reinforcing Steel
f_c = 1,200 psi ~ Class AE-1 & AE-3 Concrete
f_c = 1,700 psi ~ Class AAE-3 Concrete
* f_s = 27,000 psi ~ Structural Steel A572 (Grade 50)
f_s = 20,000 psi ~ Structural Steel A36

See SP-135 Quick Setting Anchor Grout
See SP- Chemical Admixtures for Concrete
See SR116B for Structural Steel.

The general notes for this project are shown on Drawing 29-0.01-1.



VERTICAL CURVE DATA

℄ GIRDER NO.4	1115.68	1115.69	1115.88	1116.04	.16	.23	.26	.25	.22	.19	.17	1116.15	.15	.15	.17	.18	.17	.12	1116.05	1115.90	.72	1115.51	1115.50
℄ GIRDER NO.3	1115.90	1115.91	1116.09	.25	.36	.43	.46	.44	.41	.37	.35	1116.33	.32	.32	.33	.34	.33	.28	.18	1116.04	1115.86	1115.65	1115.64
℄ GIRDER NO.2	1115.93	1115.94	1116.12	.27	.38	.45	.47	.45	.41	.38	.35	1116.33	.31	.31	.32	.32	.31	.25	.15	.01	1115.83	1115.61	1115.60
℄ GIRDER NO.1	1115.77	1115.78	1115.96	1116.11	.22	.28	.30	.28	.24	.20	.16	1116.14	.13	.12	.12	.10	1116.05	1115.95	.80	.61	1115.40	1115.38
℄ ROADWAY	1116.00	1116.01	.20	.35	.46	.53	.55	.54	.50	.46	.44	1116.42	.41	.41	.42	.41	.36	.26	1116.12	1115.93	1115.72	1115.71

1'-1 1/16" Begin Bridge | 10 Equal Spaces = 126'-4 15/16" ℄ Brg. ~ Abut. | ℄ Bent 2 | ℄ Brg. ~ Abut 3 | 10 Equal Spaces = 126'-4 15/16" | 1'-1 1/16" End Bridge

SCREED ELEVATION

Elevations are to top of finished concrete

ESTIMATE OF QUANTITIES

SPEC. NO.	CODE NO.	BID ITEM	
206	0100	CLASS I EXCAVATION	160 CU. YD.
228	0100	SELECT BACKFILL	415 CU. YD.
610	1112	CLASS AE-1 CONCRETE SUBSTRUCTURES	85.4 CU. YD.
610	1134	CLASS AE-3 CONCRETE I BEAM SUPERSTRUCTURE	265.9 CU. YD.
610	0138	CLASS AAE-3 CONCRETE RAILING & POSTS	16.40 CU. YD.
612	0110	REINFORCING STEEL GRADE 40	84,535 LB.
616	5722	STRUCTURAL STEEL① A572 WELDED GIRDER (GRADE 50)	100,677 LB.
616	0362	STRUCTURAL STEEL① A36 WELDED GIRDER	103,120 LB.
622	0020	STEEL PILING (HP 10 X 42)	1200 LIN. FT.
622	0040	STEEL PILING (HP 12 X 53)	1100 LIN. FT.
622	1410	STEEL TEST PILE HP 12 X 53 @ 110' FT.	1 EACH
750	0100	LINSEED OIL TREATMENT	41 GAL.
704	0100	CONCRETE SLOPE PROTECTION	396 SQ. YD.
	3000	BRIDGE BENCH MARKS	1 SET

STRUCTURAL DRAWINGS

GENERAL DRAWING 29-0.01(THIS SHEET), 29-0.01-1, 29-0.01-2, D-704-2
SUBSTRUCTURE 29-0.01-3, 29-0.01-4, D-900-6, H-0401
SUPERSTRUCTURE 29-0.01-5 Thru 9, H-0158, H-0501, D-900-1

DESIGN LOADING HS15(1944) | SCALE 1 INCH = 15 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

STATE LINE SEPARATION

BRIDGE LAYOUT

PROJECT I-029-1(30)000 STA. 2276+47.2

RICHLAND COUNTY

APPROVED

7-26-79 DATE

Allen J. Anderson BRIDGE ENGINEER

ALLEN J. ANDERSON REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

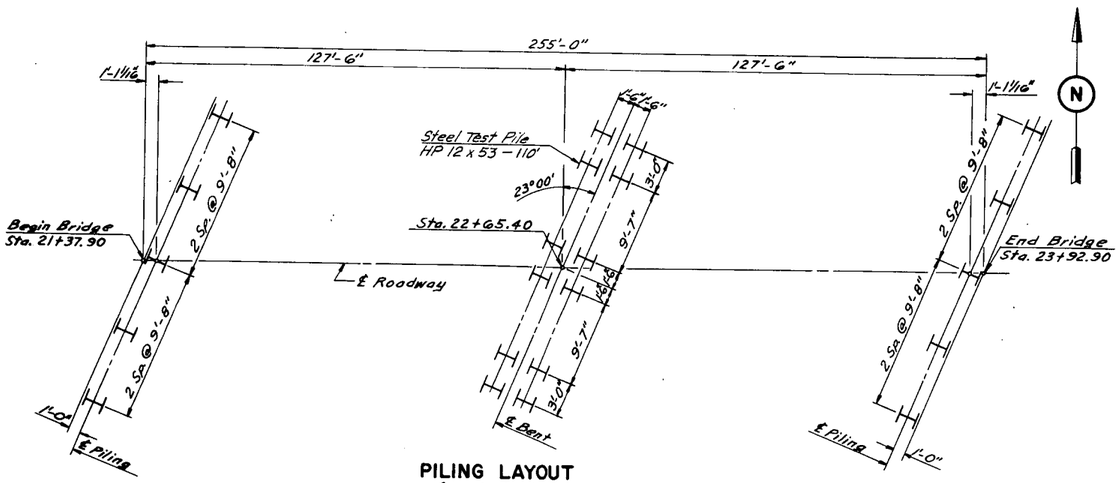
BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
198	I.P. 2x2 gd. by fence Cor.	Sta. 2262+82 - 145 Rt.	1086.47
199	I.P. 2x2 gd. by X-fence	Sta. 2268+28 - 270 Rt.	1084.92
200	I.P. 2x2 gd. by P.P.	Sta. 2277+00 - 250 Rt.	1095.94
S.O.	I.P. 1x2 gd. by T.P.	900' W. of pt. @ End of Job	1099.47
B.M.#1			

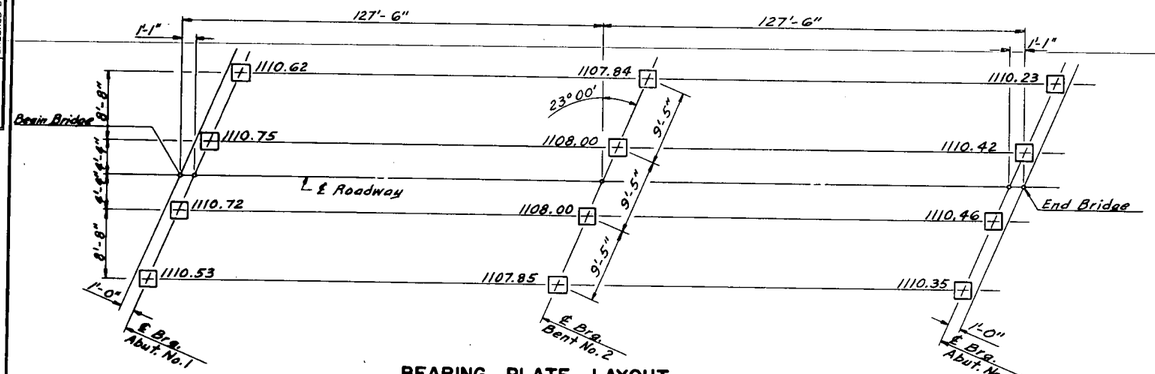
PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH LOAD	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	EMBANKMENT SETTLEMENT	DESIGN LOAD	MAXIMUM REQUIRED BEARING
Abutments	38.8T.	9.1T.					7.1T.	55.0T.	55.0T.
Bent No.2	43.7T.	15.6T.	2.1T.					61.4T.	70.0T.

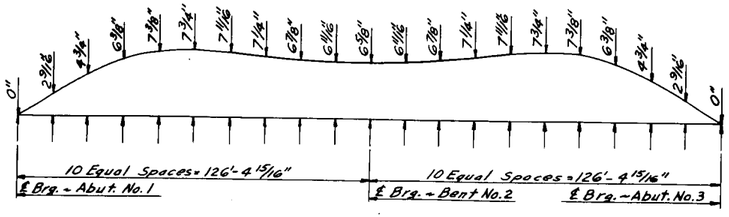
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
8	N. D.	I-029-1(30)	28	



PILING LAYOUT
(Not to Scale)



BEARING PLATE LAYOUT
Elevations are to top of finished concrete
(Not to Scale)



SHOP CAMBER DIAGRAM

NOTES:

GENERAL:

WORK SHALL CONFORM TO ALL APPLICABLE PARAGRAPHS OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

THE COST OF FURNISHING AND PLACING JOINT FILLER, ASPHALT CURB SEAL, NAME PLATES, AND OTHER MISCELLANEOUS ITEMS SHALL BE INCLUDED IN THE PRICE BID FOR CONCRETE.

WELDING WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE UNIT PRICE BID FOR STRUCTURAL STEEL.

BEARING AREAS SHALL BE FINISHED TRUE TO PLAN AND ELEVATION BY GRINDING, IF NECESSARY, BEFORE BEARING PLATES ARE SET.

ALL RIVETS OR HIGH STRENGTH BOLTS ARE TO BE 7/8" DIAMETER. OPEN HOLES ARE TO BE 15/16" DIAMETER EXCEPT AS NOTED. SHOP CONNECTIONS SHALL BE MADE AS SHOWN. FIELD CONNECTIONS SHALL BE MADE WITH HIGH TENSILE STRENGTH BOLTS OR SHALL BE RIVETED.

EMBANKMENT:

THE EMBANKMENT AT THE ABUTMENTS SHALL BE IN PLACE BEFORE PILING ARE DRIVEN. THE CONTRACTOR WILL BE REQUIRED TO PREDRILL THROUGH THE FILL AT THE ABUTMENTS BEFORE DRIVING PILING. ALL PILOT HOLES, NOT COMPLETELY FILLED BY THE PILES, SHALL BE BACKFILLED WITH SAND OR FINE GRAVEL BEFORE THE SUBSTRUCTURE IS PLACED.

EXCAVATION:

EXCAVATION CLASS I AT THE ABUTMENTS SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE UPPER LIMITS AS SHOWN ON THE BRIDGE LAYOUT DRAWING.

EXCAVATION CLASS I AT THE BENT SHALL EXTEND FROM THE BOTTOM OF THE FOOTINGS TO THE FINISHED ELEVATION OF THE INTERSTATE MEDIAN.

BACKFILL:

ALL BACKFILLING SHALL BE DONE ACCORDING TO SECTIONS 228 AND 203-2.3.3 OF THE STANDARD SPECIFICATIONS. SELECT BACKFILL SHALL NOT BE PLACED ABOVE THE ELEVATION OF THE BERM UNTIL THE SUPERSTRUCTURE HAS CURED.

REINFORCING STEEL:

DIMENSIONS FOR BENT BARS ARE GIVEN OUT TO OUT AND TO TANGENT INTERSECTIONS UNLESS OTHERWISE NOTED. BENT BARS SHALL BE BENT AROUND ACI STANDARD SIZE PINS. THE BAR FABRICATOR SHALL ADD A PREFIX TO ALL BAR DESIGNATIONS TO DIFFERENTIATE BETWEEN THE SEVERAL PARTS OF THE STRUCTURE.

CONCRETE:

ALL CONCRETE SHALL BE COMPACTED BY VIBRATION. THE DECK SLAB CONCRETE SHALL BE STRUCK OFF AND COMPACTED BY AN APPROVED DECK FINISHING MACHINE. ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED WITH 3/4" TRIANGULAR MOLDING UNLESS OTHERWISE NOTED.

ALL CONCRETE ABOVE THE TOP OF THE CURBS SHALL BE CLASS AAE-3. SLAB, CURBS, AND END WALLS SHALL BE CLASS AE-3. ABUTMENTS AND BENT SHALL BE CLASS AE-1.

THE "RUBBED SURFACE FINISH" OR THE "SPECIAL SURFACE FINISH" (SECTION 602-3.10.5) WILL BE REQUIRED FOR THE ROADWAY AND OUTSIDE FACES OF CURBS, EDGES OF SLAB, ALL FACES OF THE RAILS, RAIL POSTS AND END POSTS, ALL EXPOSED FACES OF THE BENT, AND ALL EXPOSED FACES OF THE ABUTMENTS ~~WINGS~~. ALL OTHER SURFACES SHALL BE GIVEN THE "ORDINARY SURFACE FINISH". ALL "ORDINARY SURFACE FINISH" SHALL BE COMPLETED WITHIN 24 HOURS AFTER REMOVAL OF THE FORMS.

IF THE EXPOSED FACES OF THE ABUTMENTS AND THE BENT HAVE A SURFACE FINISH ACCEPTABLE TO THE ENGINEER WITHOUT RUBBING, THE REQUIREMENT FOR "RUBBED OR SPECIAL SURFACE FINISH" MAY BE WAIVED AT THE OPTION OF THE ENGINEER AND THE "ORDINARY SURFACE FINISH" WILL APPLY.

STRUCTURAL STEEL:

THE GIRDERS SHALL BE CAMBERED IN THE SHOP AS DETAILED ON THIS SHEET. THE SHOP CAMBER DIAGRAM REPRESENTS THE TOTAL RISE, IN INCHES, ABOVE A CHORD BETWEEN THE CENTERLINES OF ABUTMENT BEARINGS THAT SHALL BE CUT INTO THE WEB PLATE OF THE GIRDER TO COMPENSATE FOR THE DEAD LOAD DEFLECTION OF THE SUPERSTRUCTURE PLUS THE VERTICAL CURVE OF THE ROADWAY. THE CAMBER SHOWN SHALL BE IN ADDITION TO THE RISE REQUIRED FOR THE GIRDER HAUNCH.

A MINIMUM OF TWO(2)CONTIGUOUS GIRDER SECTIONS SHALL BE PLACED ON THEIR SIDES AND IN THEIR CORRECT RELATIVE POSITIONS BEFORE DRILLING THE HOLES FOR THE GIRDER FIELD SPLICE BETWEEN THESE SECTIONS. THE PROPER ALIGNMENT SHALL BE MAINTAINED BETWEEN SECTIONS WHILE REAMING THE HOLES. TEMPLATES SHALL NOT BE USED IN LIEU OF THE ABOVE SHOP ASSEMBLY.

STEEL ERECTION:

FALSEWORK WITH PROVISIONS FOR JACKING MUST BE PROVIDED AT ALL SPLICE POINTS DURING ERECTION. BOTH SPLICE POINTS IN EACH GIRDER LINE SHALL BE BROUGHT TO THEIR PROPER ELEVATION AND SUPPORTED IN POSITION BEFORE THE BOLTS IN EITHER OF THE SPLICES ARE TIGHTENED. THE BOLTS IN BOTH OF THE SPLICES IN A GIRDER LINE SHALL BE TIGHTENED TO THE REQUIRED TENSION BEFORE ANY OF THE SUPPORTS ARE REMOVED.

MATERIAL: (STRUCTURAL STEEL)

GIRDER FLANGES: A572 (GRADE 50)

GIRDER WEB, WEB AND FLANGE SPLICE PLATES, STIFFENERS, DIAPHRAGMS, CHANNEL SHEAR CONNECTORS, BEARING PLATES, AND ANCHOR BOLTS: A36

BLAST CLEANING:

COMMERCIAL BLAST CLEANING OF ALL EXPOSED MAIN AND SECONDARY STEEL MEMBERS WILL BE REQUIRED PRIOR TO PAINTING. (INCLUDE IN UNIT PRICE BID FOR STRUCTURAL STEEL.)

PAINT:

PAINT AND PAINTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS, SECTIONS 718 AND 870-1.2.

ALL EXPOSED STEEL SURFACES SHALL BE GIVEN ONE SHOP COAT OF RED LEAD PAINT (INCLUDING TOP OF UPPER FLANGES BUT NOT SHEAR CONNECTORS), ONE SPOT COAT OF RED LEAD PAINT AFTER ERECTION AND CONCRETE WORK IS COMPLETED, AND TWO FIELD COATS OF ENAMEL. THE FIRST FIELD COAT SHALL CONFORM TO GRAY COLOR NO. 25181 AND THE SECOND COAT SHALL CONFORM TO GRAY-BLUE COLOR NO. 25180. BOTH COATS SHALL MEET THE FEDERAL STANDARD NO. 595 FOR COLOR. COLOR CHIPS ARE ON FILE IN THE BRIDGE DIVISION OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT, BISMARCK.

PILE HAMMERS:

THE PILES FOR THIS STRUCTURE SHALL BE DRIVEN BY A STEAM (OR AIR) OR DIESEL HAMMER HAVING A RATED ENERGY AND RAM WEIGHT NOT LESS THAN 46,360 FOOT-POUNDS-TONS AS COMPUTED BY THE FORMULA W(E-11,025)+0.8WE WHERE W IS THE WEIGHT OF THE RAM IN TONS AND E IS THE RATED HAMMER ENERGY AS ALLOWED IN SECTION 622. IN NO CASE SHALL THE RAM WEIGHT BE LESS THAN 4,800 POUNDS.

TEST PILES:

THE TEST PILES SHALL BE DRIVEN TO A BEARING OF NOT LESS THAN 125% OF THE DESIGN LOAD AS DETERMINED BY THE DYNAMIC FORMULA.

LINSEED OIL TREATMENT:

LINSEED OIL TREATMENT SHALL NOT BE DONE UNTIL ALL CONCRETE WORK IS COMPLETED AND THE ASPHALT CURB SEAL HAS BEEN INSTALLED.

CURING CONCRETE:

EXCEPT AS PROVIDED IN THE FOLLOWING PARAGRAPHS, LIQUID MEMBRANE CURING COMPOUND SHALL NOT BE USED ON ANY CONCRETE WHICH IS TO RECEIVE FURTHER TREATMENT.

THE WATER SOLUBLE LIQUID MEMBRANE CURE (SECTIONS 550-4.13.2.1 AND 880-5 OF THE STANDARD SPECIFICATIONS) MAY BE USED FOR CURING THE DECK SLAB CONCRETE. A PROTECTIVE COVERING SHALL BE USED SO THAT LINSEED OIL IS NOT APPLIED TO THE AREA WITHIN THREE INCHES OF THE GUTTER LINE UNTIL AFTER THE ASPHALT CURB SEAL IS IN PLACE. IF THE CONTRACTOR ELECTS TO USE THIS METHOD OF CURING THE DECK SLAB CONCRETE, THE QUANTITY FOR LINSEED OIL TREATMENT MAY BE REDUCED WITHOUT ADJUSTMENT TO ITS UNIT BID PRICE.

STATIONING:

THE SURVEY STATIONING IS FROM NORTH TO SOUTH WHEREAS THE MILEAGE GIVEN IS DETERMINED FROM SOUTH TO NORTH.

CONCRETE SUBSTITUTION:

THE CONTRACTOR MAY SUBSTITUTE AE-3 CONCRETE FOR AE-1 CONCRETE, BUT NOT AE-1 FOR AE-3. ANY SUBSTITUTIONS, HOWEVER, WILL BE AT THE CONTRACTOR'S EXPENSE AND THE CLASS OF CONCRETE PAID FOR WILL BE THAT CLASS SHOWN ON THE PLANS.

HANDLING BEAMS:

WIRE ROPE SLINGS SHALL NOT BE USED TO HANDLE THE BEAMS. THEY SHALL BE HANDLED WITH BEAM CLAMPS DESIGNED FOR THAT PURPOSE OR OTHER DEVICES APPROVED BY THE ENGINEER.

ABUTMENT PILING:

THE ABUTMENT PILING SHALL NOT BE DRIVEN UNTIL THE EMBANKMENTS HAVE BEEN IN PLACE FOR A PERIOD OF 60 DAYS.

QUANTITIES

STATE LINE SEPARATION

BEARING PLATE LAYOUT

PILING LAYOUT

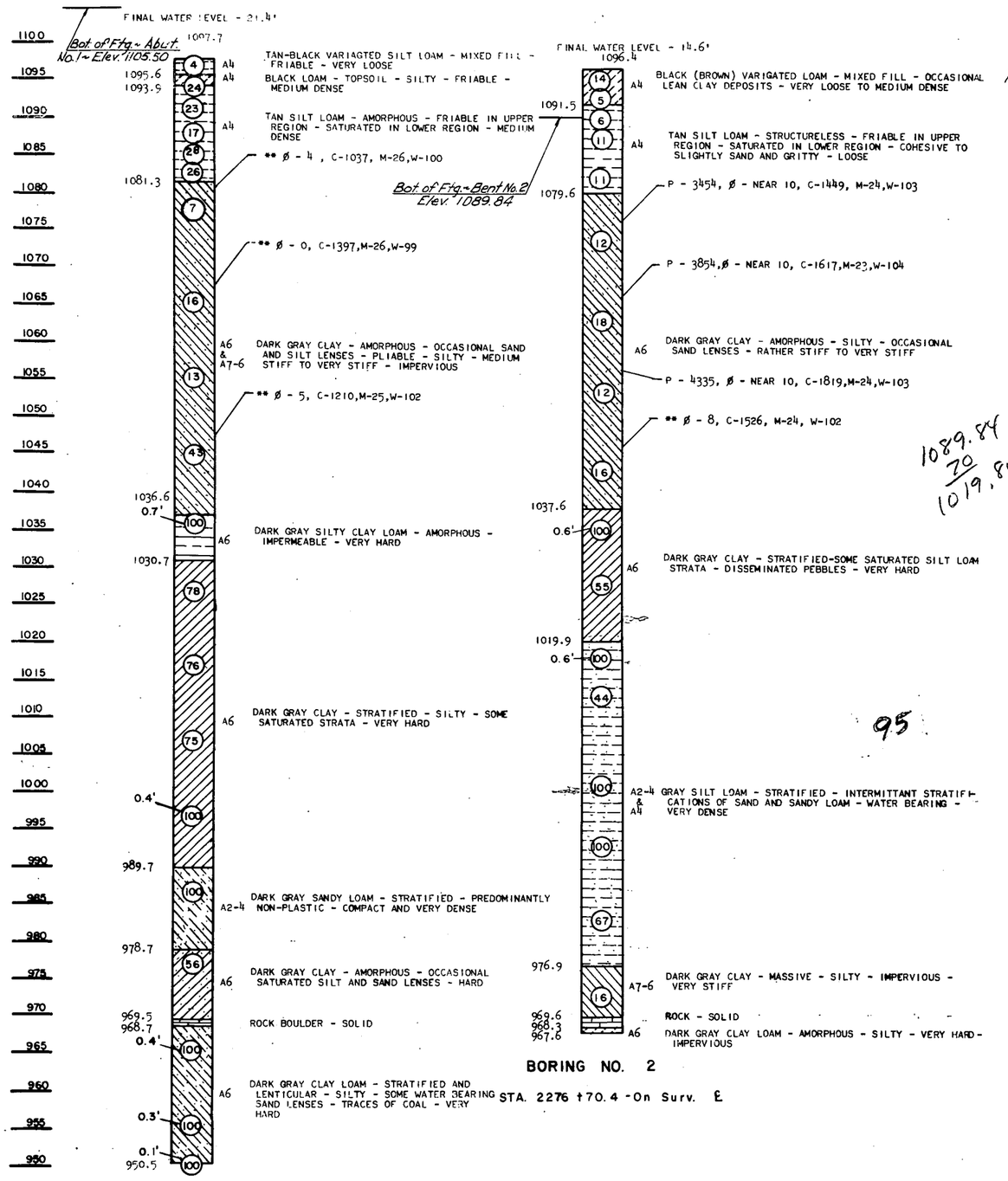
GENERAL NOTES

29-0.01-1

29-0.01-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
8	N. D.	I-029-1(30)	29	

DETAILS CHECKED BY
TRACING MADE BY / CHECKED BY
QUANTITIES MADE BY / CHECKED BY



SYMBOLS:

P - MAXIMUM LOAD (LBS./SQ.FT.)
ø - ANGLE OF INTERNAL FRICTION (DEGREES)
C - COHESION (LBS/SQ.FT.)
M - MOISTURE (PER CENT)
W - DRY WEIGHT (LBS.CU.FT.)
** - TRIAXIAL

NOTES:

ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 LBS. HAMMER FROM A HEIGHT OF 30" TO DRIVE CORE TUBE 1.0'.

THE BORING LOG DATA SHOWN IS FOR DESIGN PURPOSES ONLY. THE STATE ASSUMES NO RESPONSIBILITY IF SOIL CONDITIONS ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THOSE SHOWN.

NEW BRIDGE NO. 29-0.010
OLD BRIDGE NO. 29-116

BORING LOG

STATE LINE SEPARATION

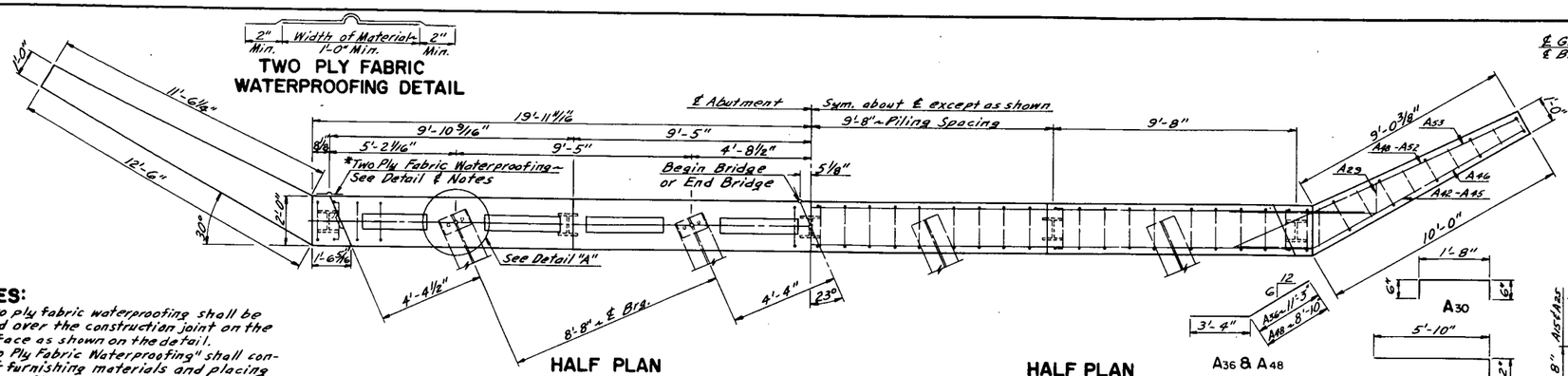
RICHLAND COUNTY

29-0.01-2

29-0.01-2

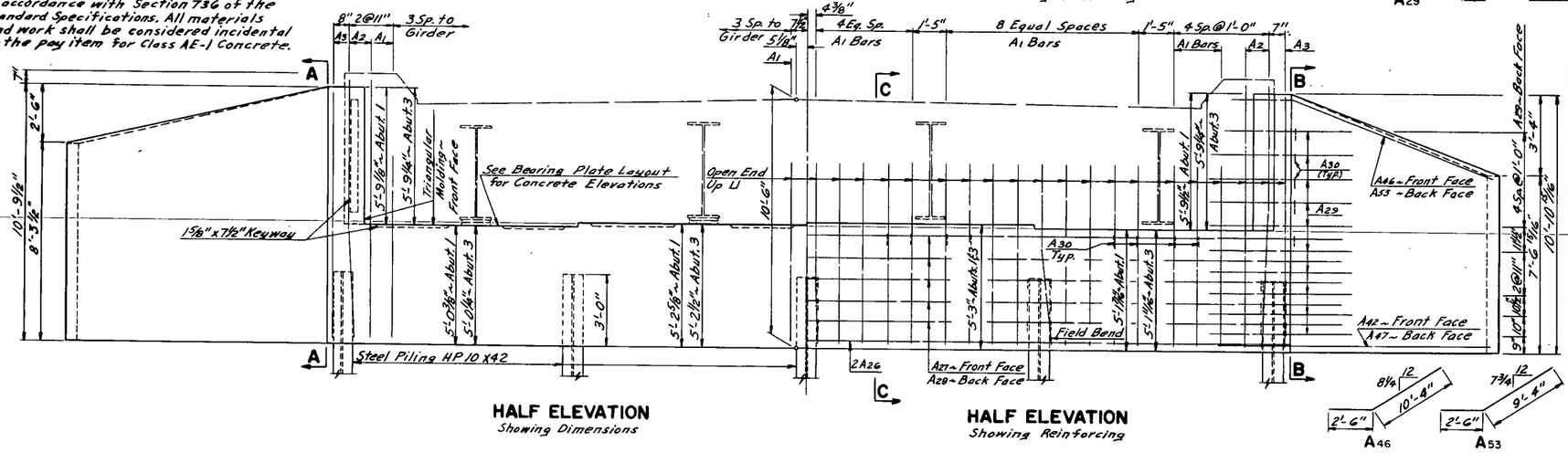
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
8	N. D.	I-029-1(8)I	30

TWO PLY FABRIC WATERPROOFING DETAIL



HALF PLAN
Showing Dimensions

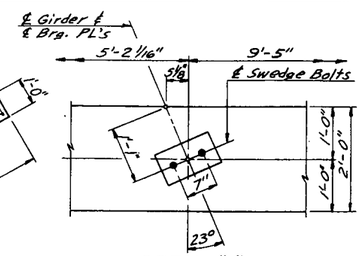
HALF PLAN
Showing Reinforcing

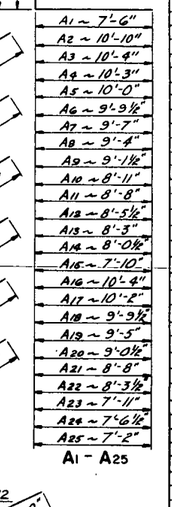


HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcing

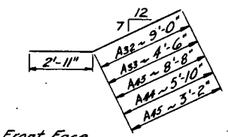
DETAIL "A"





A1 ~ 7'-6"	
A2 ~ 10'-10"	
A3 ~ 10'-4"	
A4 ~ 10'-3"	
A5 ~ 10'-0"	
A6 ~ 9'-9½"	
A7 ~ 9'-7"	
A8 ~ 9'-4"	
A9 ~ 9'-1½"	
A10 ~ 8'-11"	
A11 ~ 8'-8"	
A12 ~ 8'-5½"	
A13 ~ 8'-3"	
A14 ~ 8'-0½"	
A15 ~ 7'-10"	

A1 ~ A25



A32, A33, & A43 ~ A45

BENT BAR DETAILS
Dimensions shown are out to out.

BAR LIST (ONE ABUT.)

MARK	NUMBER	WALL	SIZE	LENGTH	SHAPE	UNIT WT.
A1	34	6	16'-8"	Bent	25.03
A2	4	6	23'-4"	"	35.05
A3	2	6	22'-4"	"	33.55
A4	1	5	22'-1"	"	23.04
A5	1	5	21'-4"	"	22.25
A6	1	5	20'-10"	"	21.73
A7	1	5	20'-4"	"	21.21
A8	1	5	19'-9"	"	20.60
A9	1	5	19'-3"	"	20.08
A10	1	5	18'-10"	"	19.65
A11	1	5	18'-3"	"	19.04
A12	1	5	17'-9"	"	18.52
A13	1	5	17'-3"	"	17.99
A14	1	5	16'-10"	"	17.56
A15	1	5	16'-4"	"	17.04
A16	1	5	22'-3"	"	23.21
A17	1	5	21'-8"	"	22.60
A18	1	5	20'-10"	"	21.73
A19	1	5	20'-0"	"	20.86
A20	1	5	19'-2"	"	19.99
A21	1	5	18'-4"	"	19.12
A22	1	5	17'-6"	"	18.25
A23	1	5	16'-8"	"	17.39
A24	1	5	15'-10"	"	16.52
A25	1	5	15'-0"	"	15.65
A26	2	6	39'-11"	Str.	59.96
A27	5	6	39'-11"	"	41.64
A28	10	5	22'-10"	"	23.82
A29	20	8	7'-0"	Bent	18.69
A30	56	4	2'-8"	"	1.78
A31	9	7	15'-2"	"	31.01
A32	1	7	11'-11"	"	24.36
A33	1	7	7'-5"	"	15.16
A34	1	6	15'-0"	"	22.53
A35	1	8	14'-2"	"	37.83
A36	3	8	14'-7"	"	38.94
A37	5	8	14'-7"	Str.	38.94
A38	1	8	11'-4"	"	30.26
A39	1	8	6'-10"	"	18.25
A40	1	6	14'-0"	Bent	21.03
A41	10	7	8'-4"	Str.	17.04
A42	8	7	12'-9"	Bent	26.07
A43	1	7	11'-7"	"	23.68
A44	1	7	8'-9"	"	17.89
A45	1	7	6'-1"	"	12.44
A46	1	6	12'-10"	"	19.28
A47	1	8	11'-9"	"	31.38
A48	3	8	12'-2"	"	32.49
A49	4	8	12'-2"	Str.	32.49
A50	1	8	11'-0"	"	29.37
A51	1	8	8'-2"	"	21.81
A52	1	8	5'-6"	"	14.69
A53	1	6	11'-10"	Bent	17.77

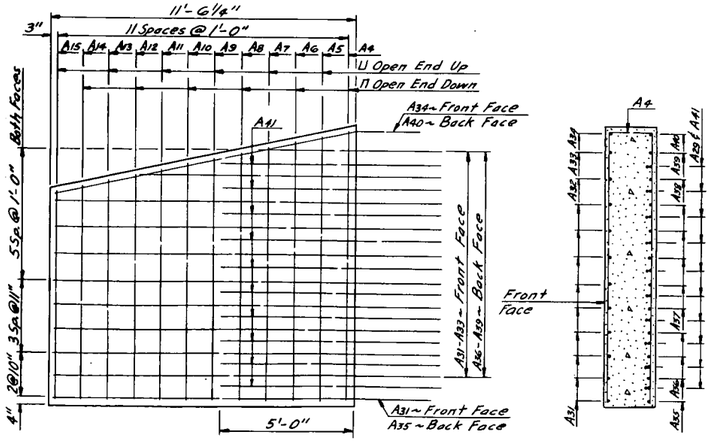
QUANTITIES (ONE ABUT.)

Class AE-1 Concrete	26.6 C.Y.
Reinforcing Steel	4087 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

NOTES:

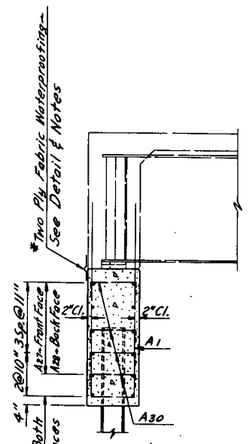
* Two ply fabric waterproofing shall be applied over the construction joint on the back face as shown on the detail.

"Two Ply Fabric Waterproofing" shall consist of furnishing materials and placing dampproofing and fabric waterproofing in accordance with Section 736 of the Standard Specifications. All materials and work shall be considered incidental to the pay item for Class AE-1 Concrete.

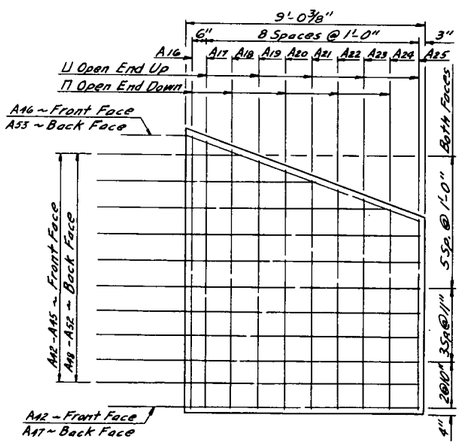


WING ELEVATION
Back Face Shown

A-A



C-C



WING ELEVATION
Back Face Shown

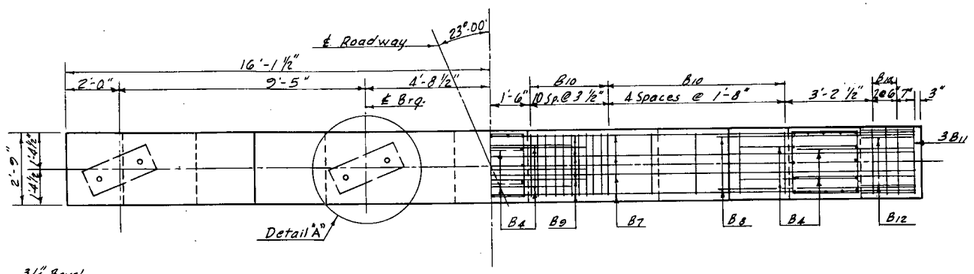
B-B

STATE LINE SEPARATION

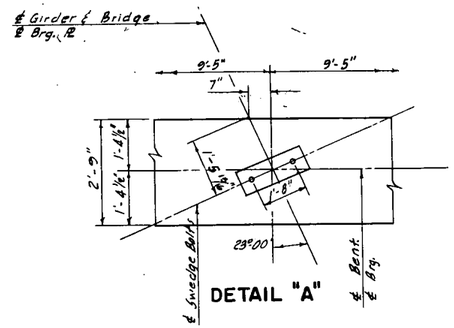
ABUTMENT DETAILS

29-0.01-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
8	N. D.	I-029-1 (30)	31	

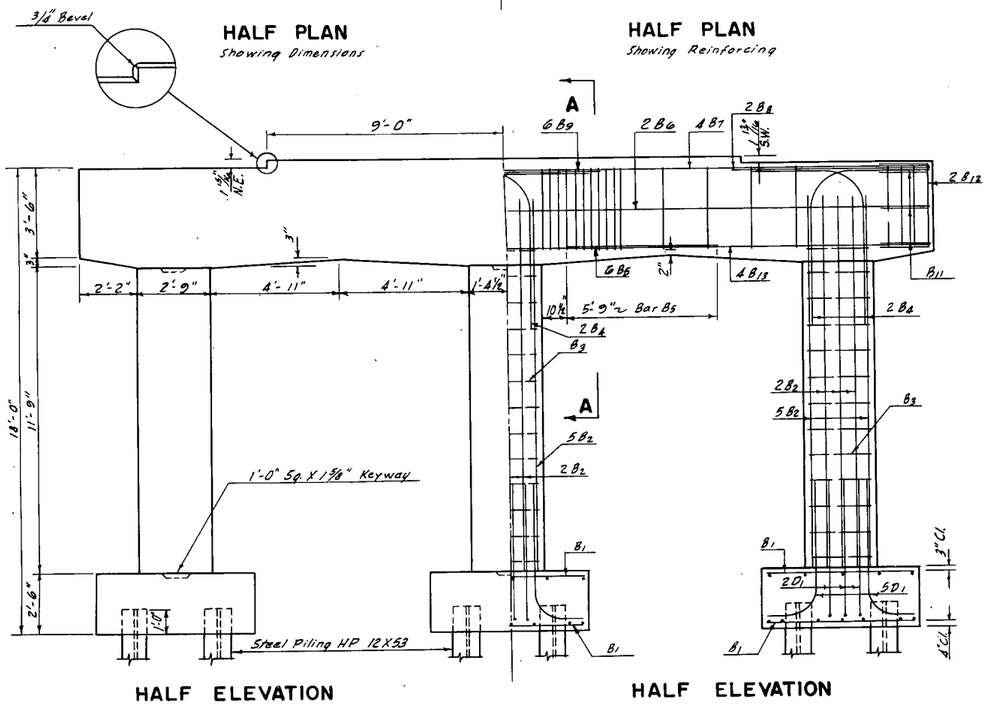


HALF PLAN
Showing Dimensions



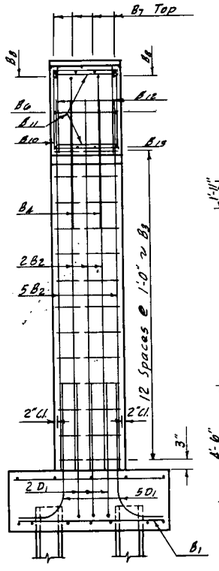
DETAIL "A"

HALF PLAN
Showing Reinforcing

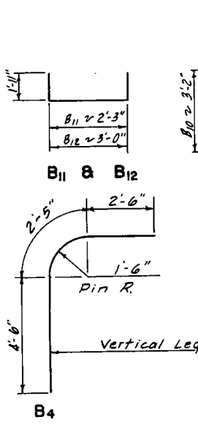


HALF ELEVATION
Showing Dimensions

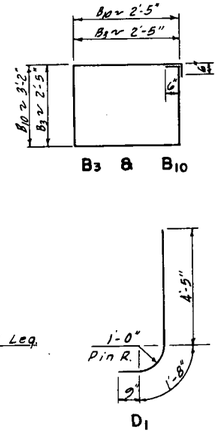
HALF ELEVATION
Showing Reinforcing



END VIEW



BENT BAR DETAILS
All dimensions are out to out unless shown otherwise



BAR LIST

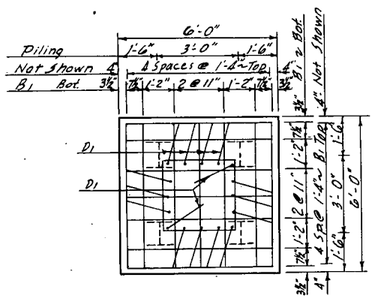
MARK	NUMBER CAP	NUMBER COLUMN	NUMBER FOOTING	SIZE	LENGTH	SHAPE	UNIT WT.
B1			72	5	8'-8"	Str.	9.91
B2		66		8	14'-3"	Str.	30.25
B3	3	39		3	10'-8"	Bent	8.01
B4		12		8	9'-3"	Bent	23.18
B5	12			8	5'-9"	Str.	13.35
B6	2			6	31'-11"	Str.	47.06
B7	2			7	31'-11"	Str.	65.25
B8	4			7	7'-4"	Str.	14.99
B9	6			6	7'-0"	Str.	10.51
B10	36			5	12'-2"	Bent	16.40
B11	6			6	6'-1"	Bent	9.16
B12	4			6	6'-10"	Bent	10.26
B13	4			8	21'-11"	Str.	88.23
D1			18	6	6'-10"	Bent	18.29
#SR4	1			4	3'-8"	Str.	
#SR5	1			5	4'-0"	Str.	
#SR6	1			6	4'-10"	Str.	
#SR7	1			7	5'-0"	Str.	
#SR8	1			8	5'-8"	Str.	

NOTE:

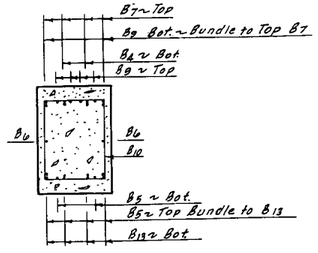
The concrete in the columns shall be allowed to set at least two(2) hours before the bent cap reinforcing is placed, and concrete is poured.

All exposed edges to be beveled with ¾" triangular moulding.

* Sample replacement bar to be spliced to bar from which 2'-0" sample has been cut. Furnish only one (1) set for the entire bridge. This is not a pay item and shall be included in the unit price bid for reinforcing steel.



FOOTING PLAN - TYPICAL



A - A

QUANTITIES

Class AE-1 Concrete	32.2	C.Y.
Reinforcing Steel	5156	Lbs.
Steel Piling (See layout)		
Excavation (See layout)		

STATE LINE SEPARATION

18'-0" BENT

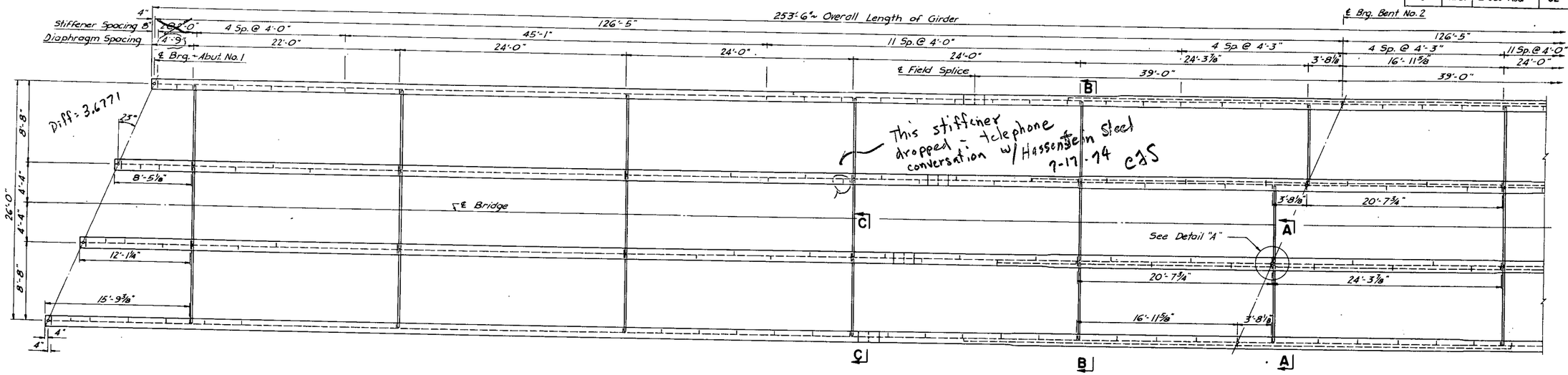
CHECKED BY	E.W.H.
MADE BY	E.W.H.
CHECKED BY	E.O.H.
MADE BY	E.O.H.
CHECKED BY	O.A.R.

PLACING
QUANTITIES

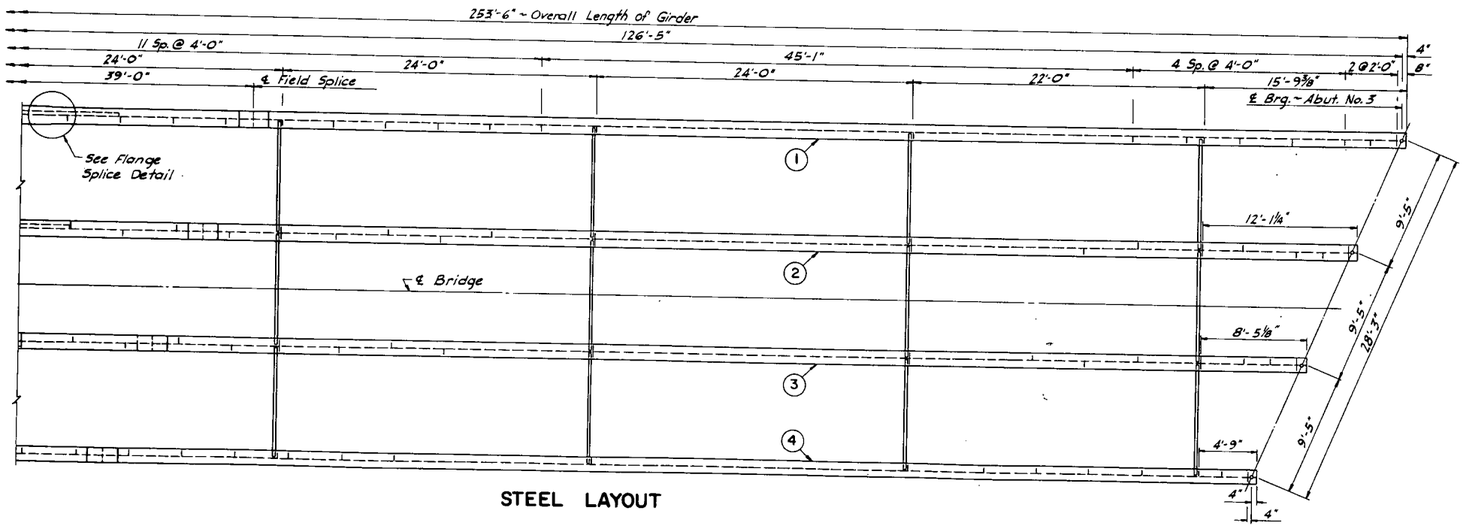
29-0.01-4

29-0.01-4

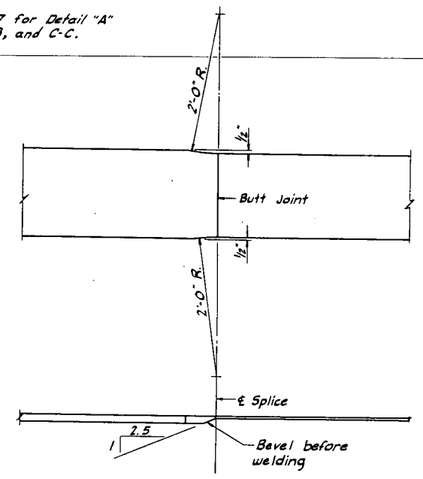
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
8	N. D.	I-029-1(30)8	32



NOTE: See drawing 29-0.01-7 for Detail "A" and Section A-A, B-B, and C-C.



STEEL LAYOUT



FLANGE SPLICE DETAIL

Designed for 75 #/S.F. F.W.S.

QUANTITIES

See Drawing 29-0.01-7

STATE LINE SEPARATION

SUPERSTRUCTURE DETAILS

30'-0" ROADWAY

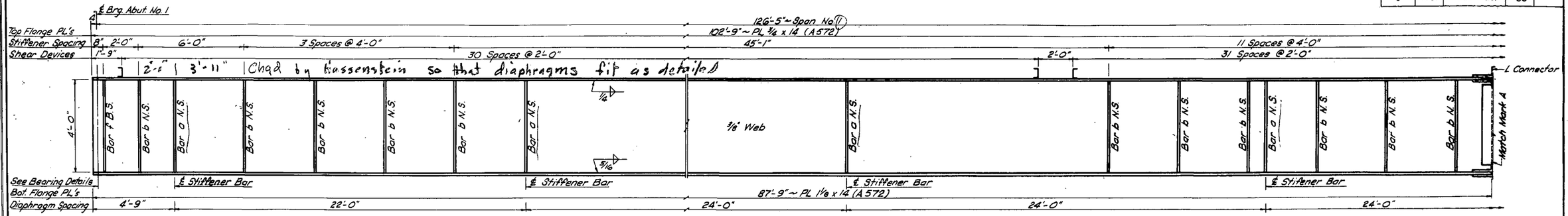
H15 LOADING

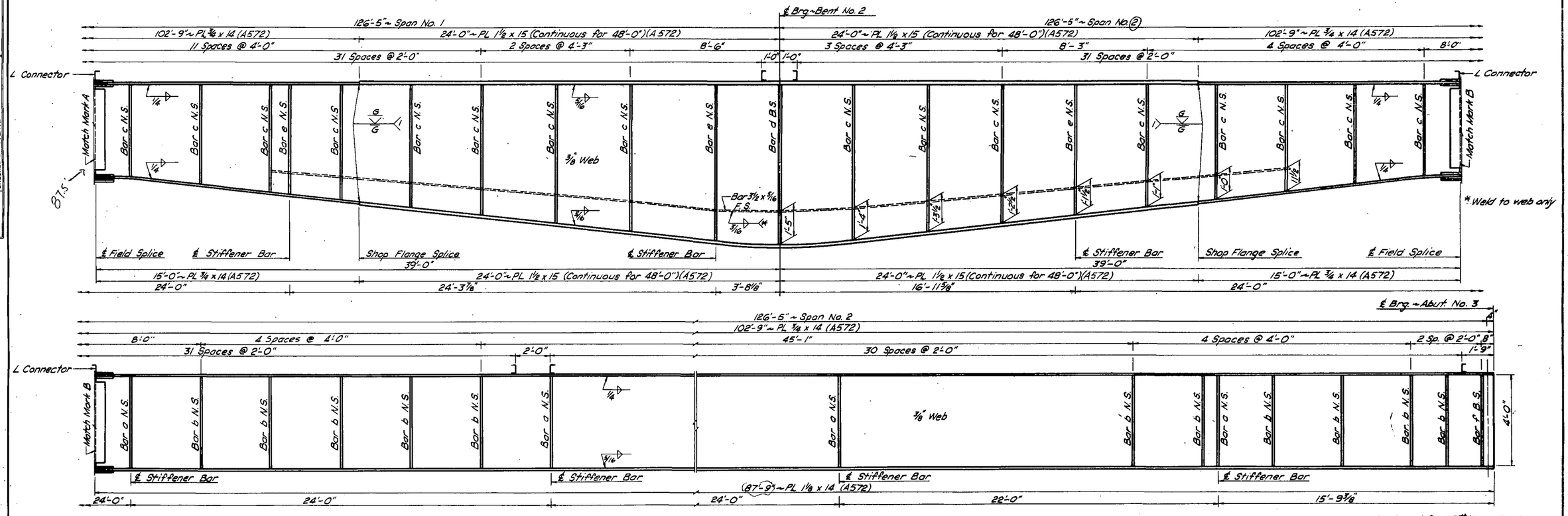
29-0.01-5

29-0.01-5

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
8	N. D.	I-029-1 (30)	33

DETAILS — CHECKED BY D.L.P. — MADE BY D.L.P.
TRACING — CHECKED BY L.F.G. — MADE BY L.F.G.
QUANTITIES — MADE BY E.D.H. — CHECKED BY E.D.H.





ELEVATION

Designed for 25#/S.F. F.W.S.

QUANTITIES

See Dwg. 29-0.01-7

Nomenclature:
N.S. = Near Side
B.S. = Both Sides
F.S. = Far Side

NOTE:
The details shown on this drawing represents Girder No. 1 in a four girder bridge. Girders No. 2, No. 3 and No. 4 are similar to Girder No. 1 and shall be fabricated in accordance with these details, drawings 29-0.01-5 & 7, and the shop camber diagram.

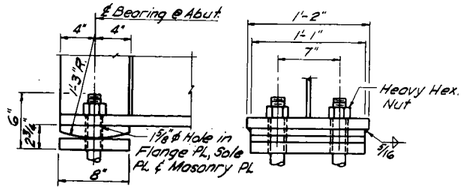
STATE LINE SEPARATION

WELDED GIRDER DETAIL

30'-0" ROADWAY
H15 LOADING

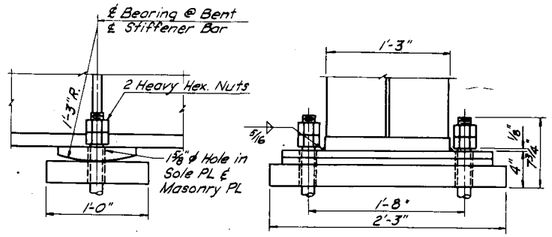
29-0.01-6

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
8	N. D.	I-029-1(30)	34	



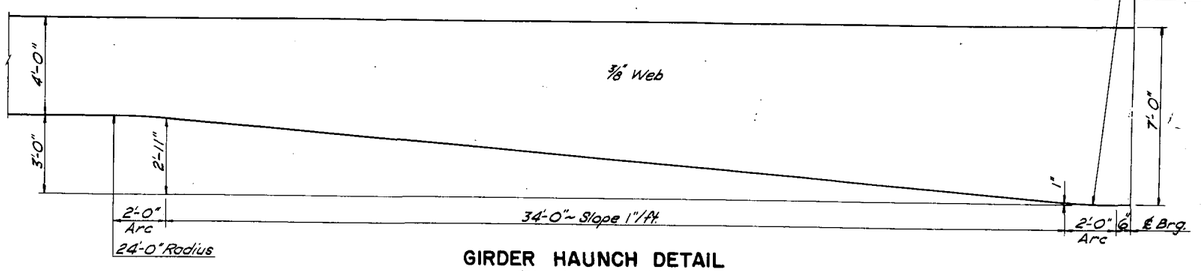
Sole Plate ~ Bar 8 x 1½ x 13
Masonry Plate ~ Bar 8 x 1¼ x 13
Swedge Bolts ~ 1½"ϕ x 1'-9"

ABUTMENT BEARING DETAILS



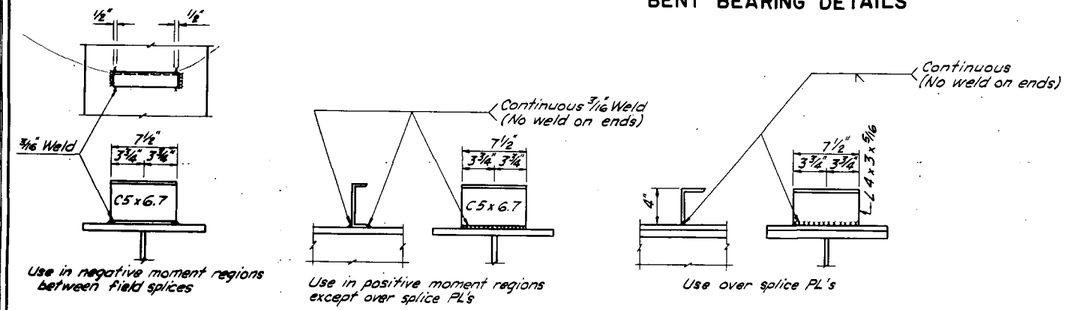
Sole Plate ~ PL 1½ x 9 x 24
Masonry Plate ~ PL 2½ x 12 x 27
Swedge Bolts ~ 1½"ϕ x 2'-0"

BENT BEARING DETAILS

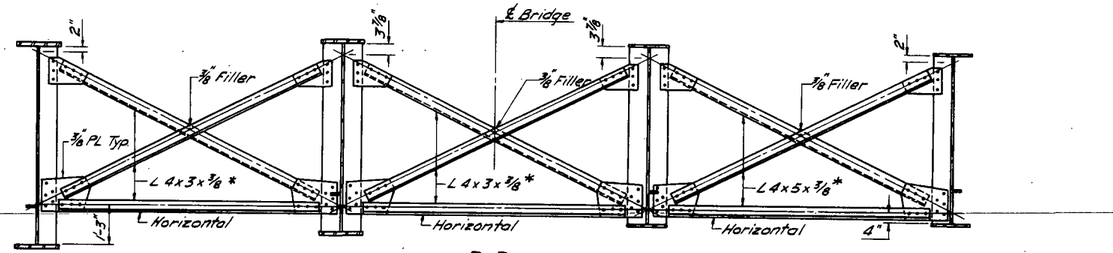


GIRDER HAUNCH DETAIL

(Showing Web only)

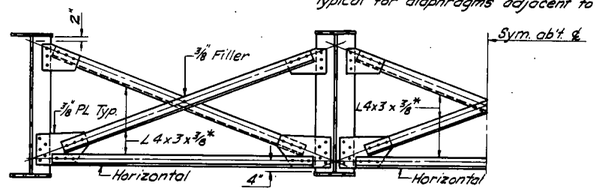


SHEAR DEVICE DETAILS



B-B

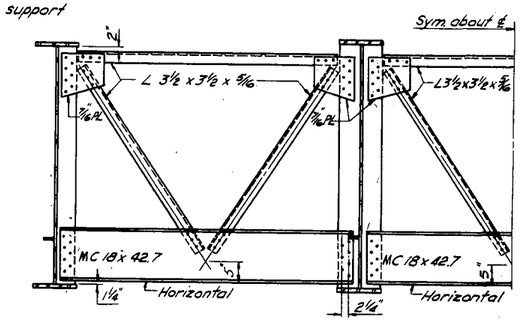
Typical for diaphragms adjacent to support



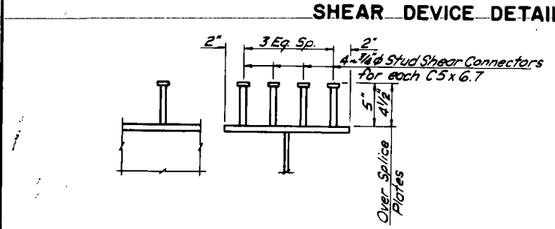
C-C

Typical for diaphragms at positive moment regions

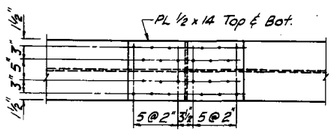
* 4" Leg Vertical

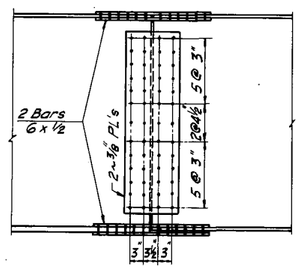


A-A

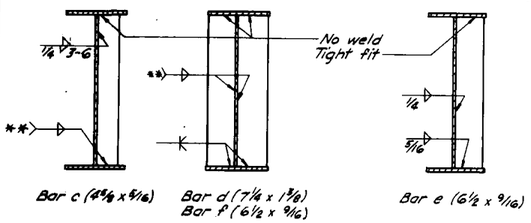


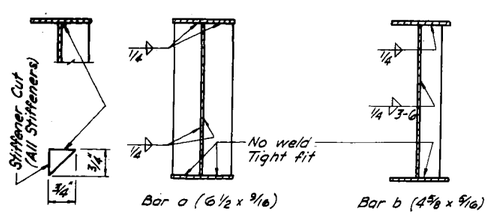
ALTERNATE SHEAR DEVICE



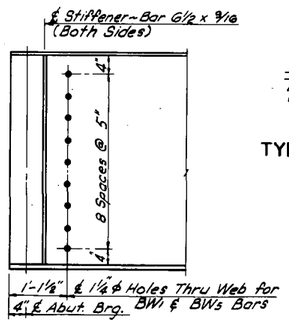


FIELD SPLICE DETAILS

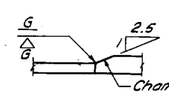




WEB STIFFENER DETAILS

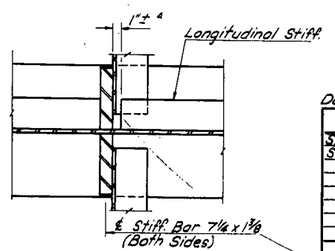


GIRDER DETAIL



TYPICAL SHOP FLANGE SPLICE

Top flange shown



DETAIL "A"

*Allow approximately 1" clearance as shown between vertical and longitudinal stiffeners for installation of diaphragms.

** Weld size to be ¼" for plate thickness of ¾" or less and ⅝6" for Plate thickness of over ¾" to 1½".

Designed for 25#/S.F. F.W.S.

QUANTITIES

Structural Steel A572	100,677 Lb.
Structural Steel A36	123,120 Lb.

STATE LINE SEPARATION

SUPERSTRUCTURE DETAILS

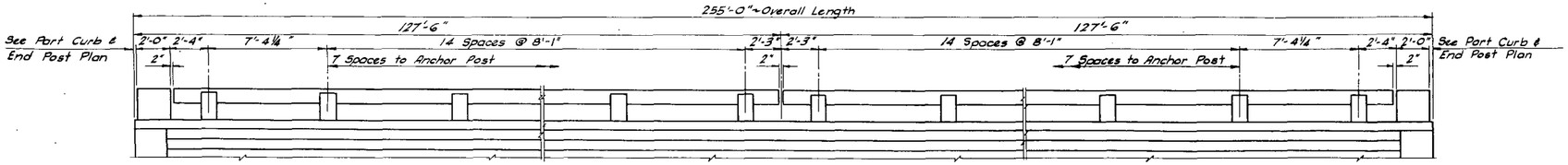
30'-0" ROADWAY

H15 LOADING

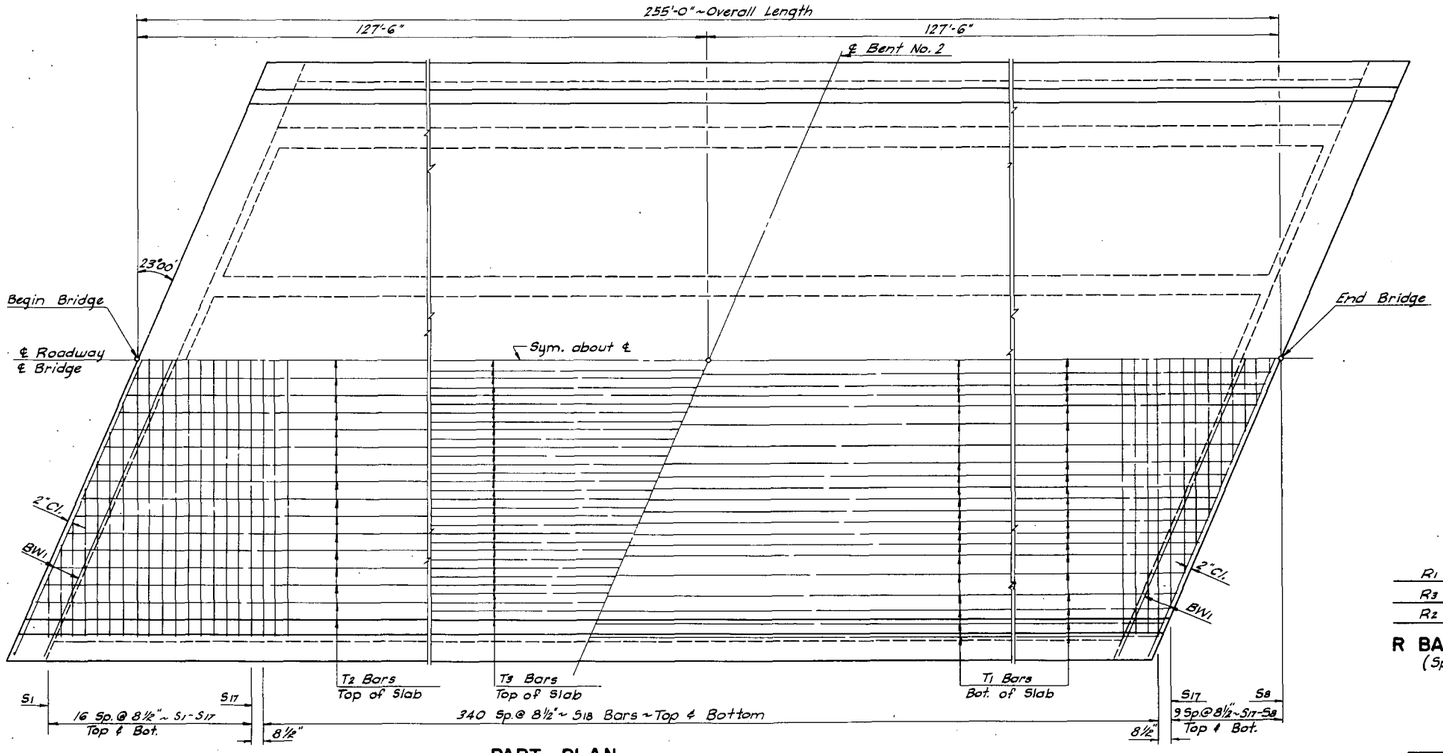
29-0.01-7

29-0.01-7

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
8	N. D.	1-029-1(30)	35	



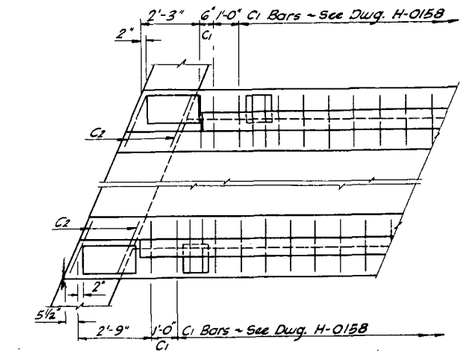
PART ELEVATION
See H-0158 for Railing Details



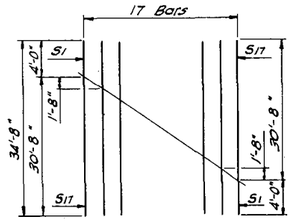
Quarter showing reinforcing in top of slab

PART PLAN
Half showing slab reinforcing
Typical Both Sides~by Rotation

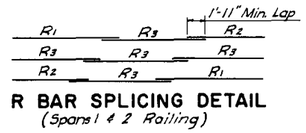
Quarter showing reinforcing in bottom of slab



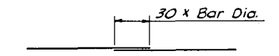
PART CURB AND END POST PLAN



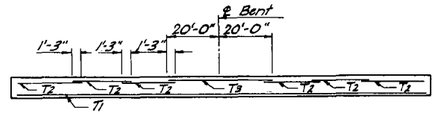
BAR CUTTING DIAGRAM
S1-S17 Bars~Two Sets~589'-4"



R BAR SPLICING DETAIL
(Spans 1 & 2 Railing)



SPLICING DETAIL
T1, C3, C4



BAR LAYOUT
T2 & T3

Designed for 25 #/S.F. F.W.S.

QUANTITIES
See Dwg. 29-0.01-9

STATE LINE SEPARATION

SLAB & RAILING DETAILS

30'-0" ROADWAY

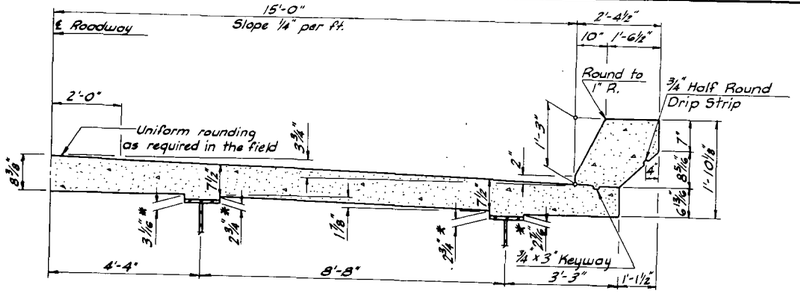
H15 LOADING

CHECKED BY L.E.G.
MADE BY C.J.H.
QUANTITIES
CHECKED BY L.E.G.
MADE BY C.J.H.
RAILING

29-0.01-8

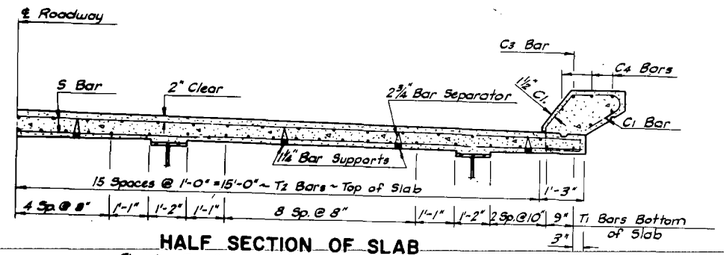
29-0.01-8

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	
8	N. D.	I-029-1(30)	36	

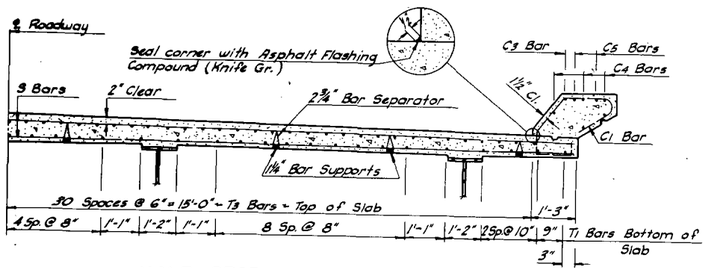


HALF SECTION OF SLAB
Showing Dimensions

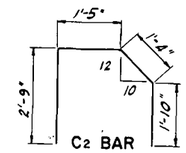
* Allow for variation in girder elevation by adjusting the riser dimension to maintain the required slab thickness.



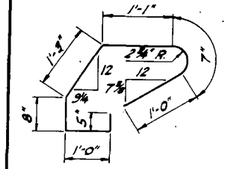
HALF SECTION OF SLAB
Showing Reinforcing between Bent 1 Abutments



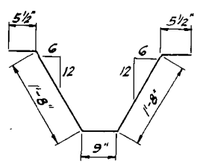
HALF SECTION OF SLAB
Showing Reinforcing over Bent



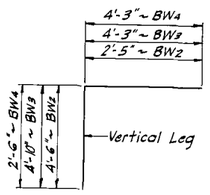
C2 BAR



C1 BAR

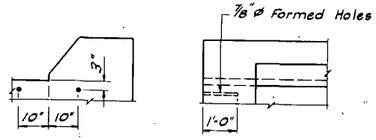


BW5 BAR

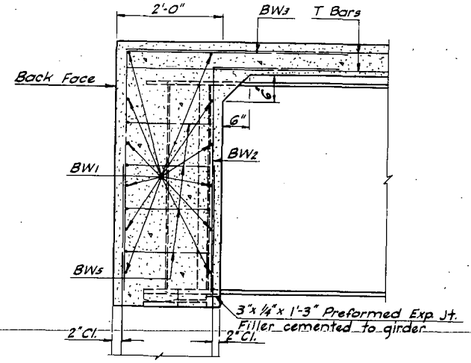


BW2 - BW4 BARS

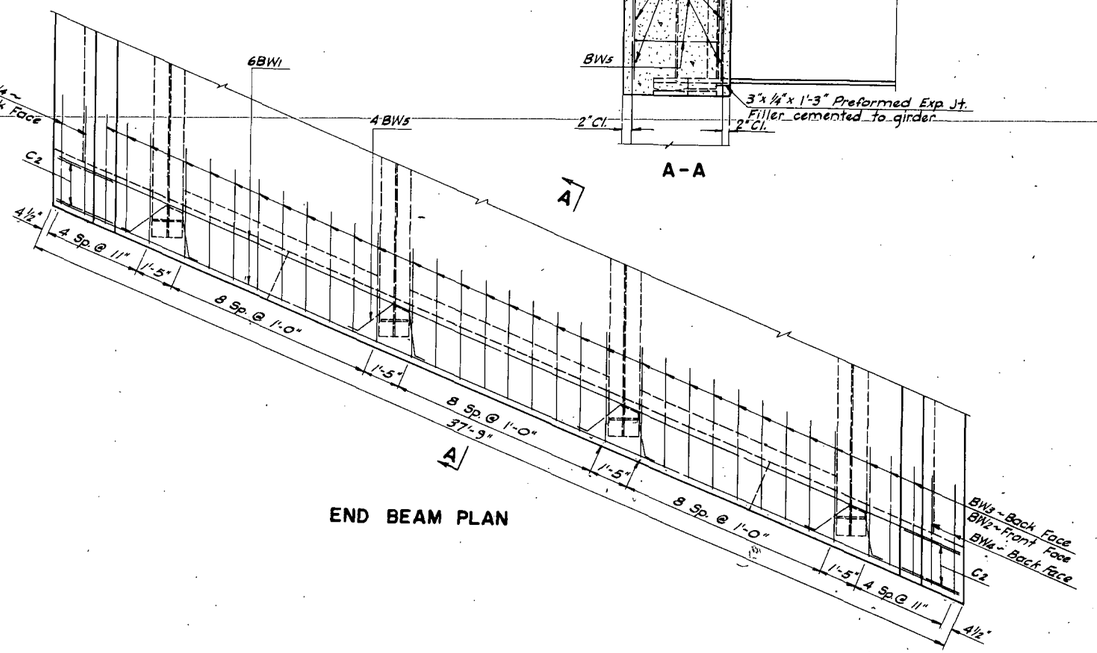
BENT BAR DETAILS
Dimensions shown are out to out



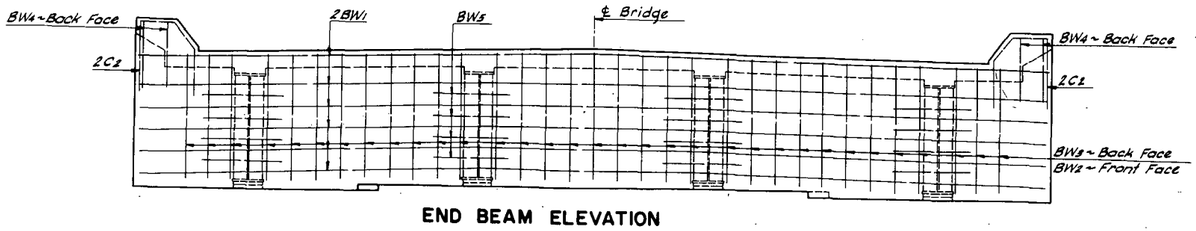
CURB SLEEVE DETAILS



A-A



END BEAM PLAN



END BEAM ELEVATION

NOTES:
It is assumed that the Contractor can place the slab concrete in one continuous operation in accordance with Section 602-3.6.1. thru 602-3.6.2.1.4 of the Standard Specifications. If the Contractor cannot pour at the specified rate, he shall submit drawings to the Bridge Engineer, for approval, showing proposed construction joints and pouring sequence.

Each curb shall be poured in one continuous operation.

See Std. Drawing H-0158 for railing details.

See Drawing 29-0.01-5 thru 29-0.01-7 for structural steel details.

The end beams shall be poured at the same time that the deck slab is poured. Special care shall be taken to completely fill the space under the girders in the end beams with concrete.

BAR LIST (SUPERSTRUCTURE)

MARK	NUMBER: SLAB	NUMBER: RAILING & POSTS	NUMBER: CURB	SIZE	LENGTH	SHAPE	UNIT WT.
BW1	28			6	37'-5"	Str.	56.20
BW2	66			6	6'-11"	Bent	10.38
BW3	66			6	9'-1"	"	13.64
BW4	8			6	6'-9"	"	10.14
BW5	32			5	5'-0"	"	5.22
C1	566			5	6'-0"	Bent	6.26
C2	8			5	7'-4"	"	7.65
C3			14	6	38'-0"	Str.	57.08
C4			70	5	37'-9"	"	39.38
C5			4	4	40'-0"	"	26.70
P4			180	6	4'-4"	Bent	6.51
P5			12	6	5'-1"	"	7.64
P6			128	5	4'-9"	"	4.95
P7	128			3	4'-2"	"	1.56
P8	120			3	3'-2"	"	1.19
P9	8			3	4'-8"	"	1.75
RC	444			3	3'-3"	Bent	1.22
R1	16			6	45'-10"	Str.	68.86
R2	16			6	39'-10"	"	59.85
R3	40			6	42'-10"	"	64.34
S1-S11	4 Sets			6	294'-8"	Str.	442.62
S12	682			6	32'-7"	"	48.97
T1	287			5	37'-9"	"	39.38
T2	186			4	37'-0"	"	24.70
T3	61			5	40'-0"	"	41.72

Designed for 25 #/S.F. F.W.S.

QUANTITIES

Class AE-3 Concrete	265.9 C.Y.
Class AAE-3 Concrete	16.40 C.Y.
Reinforcing Steel	71,205 Lbs.

Railing and end post quantities included.

STATE LINE SEPARATION

SLAB, END BEAM & MISC. DETAILS

30'-0" ROADWAY

H15 LOADING

CHECKED BY K.A.G.

29-0.01-9

29-0.01-9