	STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
"As-Built"	ND	SS-6-018(073)152	22015	1	1
		SS-6-015(022)106	22014		
		SS-6-018(074)169	22047		
		SS-6-045(006)011	21999		
		IM-8-029(178)104	22168		

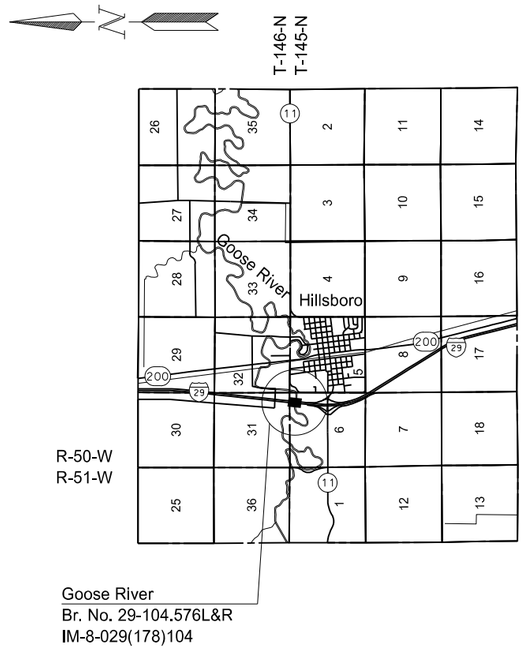
JOB #32
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

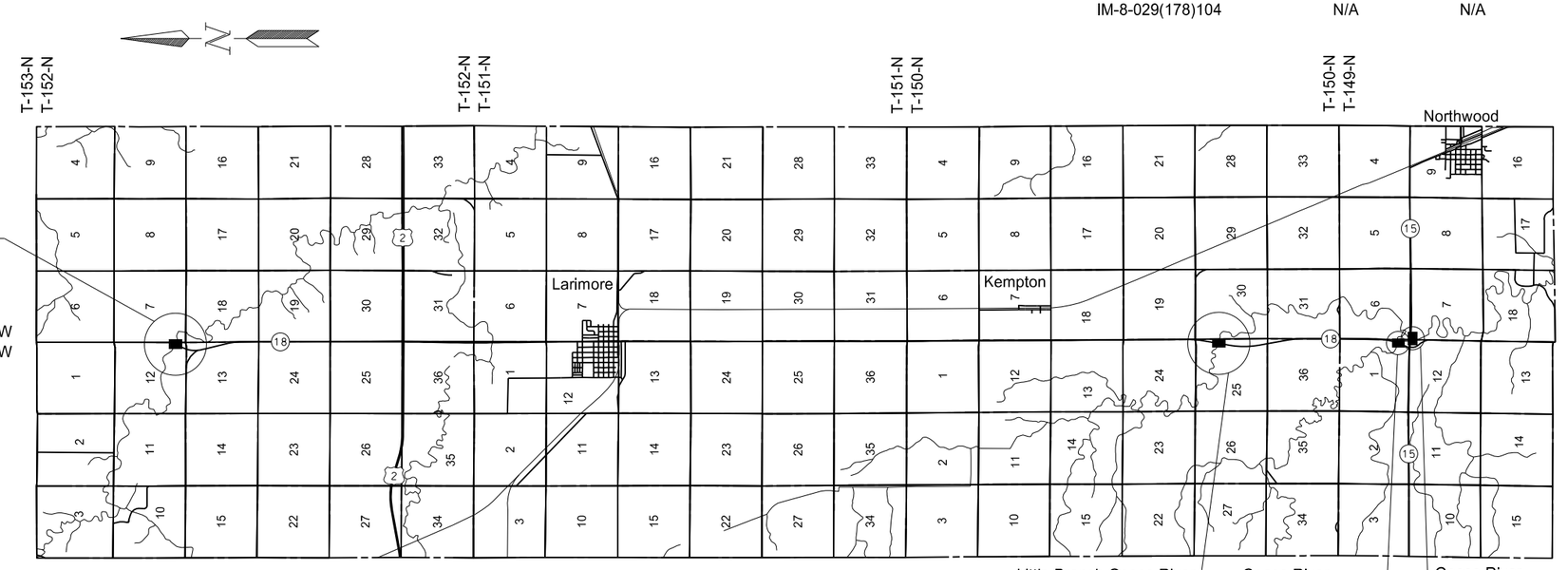
SS-6-018(073)152, SS-6-015(022)106,
SS-6-018(074)169, SS-6-045(006)011, IM-8-029(178)104

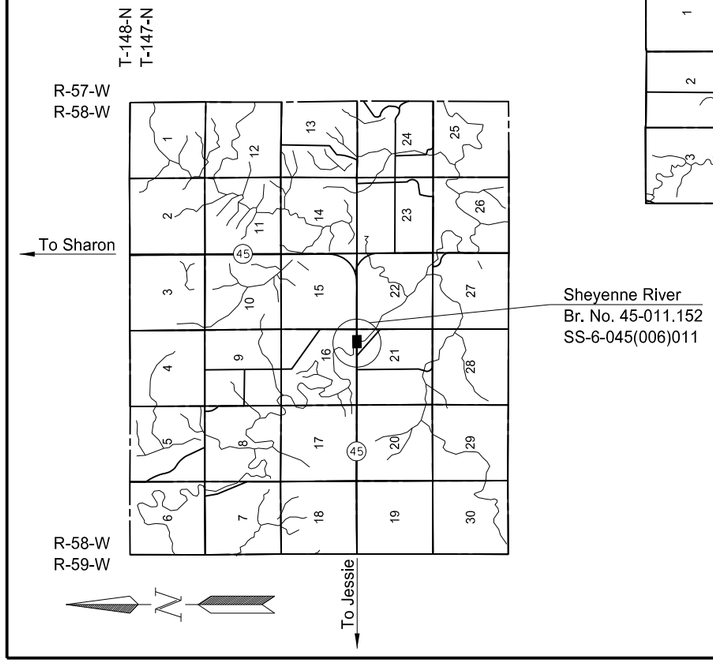
Grand Forks County, Griggs County & Traill County
Just N of ND 15 & 3 Mi N of ND 15, 2 Mi W of Northwood,
3 Mi N of US 2, 4 Mi E of ND 65, 4 Mi N of ND 200 S - NB/SB
Deck Overlay, Rail Retrofit & Deck Spall Repair

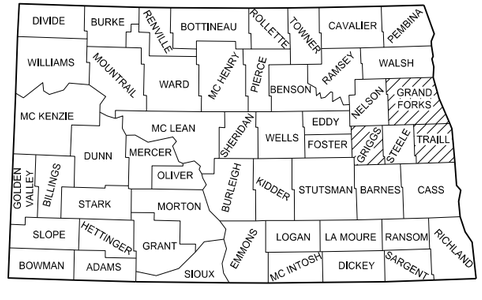
GOVERNING SPECIFICATIONS:
2014 Standard Specifications adopted by the North Dakota Department of Transportation and the Supplemental Specifications effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SS-6-018(073)152	N/A	N/A
SS-6-015(022)106	N/A	N/A
SS-6-018(074)169	N/A	N/A
SS-6-045(006)011	N/A	N/A
IM-8-029(178)104	N/A	N/A









STATE COUNTY MAP

ND DEPARTMENT OF TRANSPORTATION
OFFICE OF PROJECT DEVELOPMENT

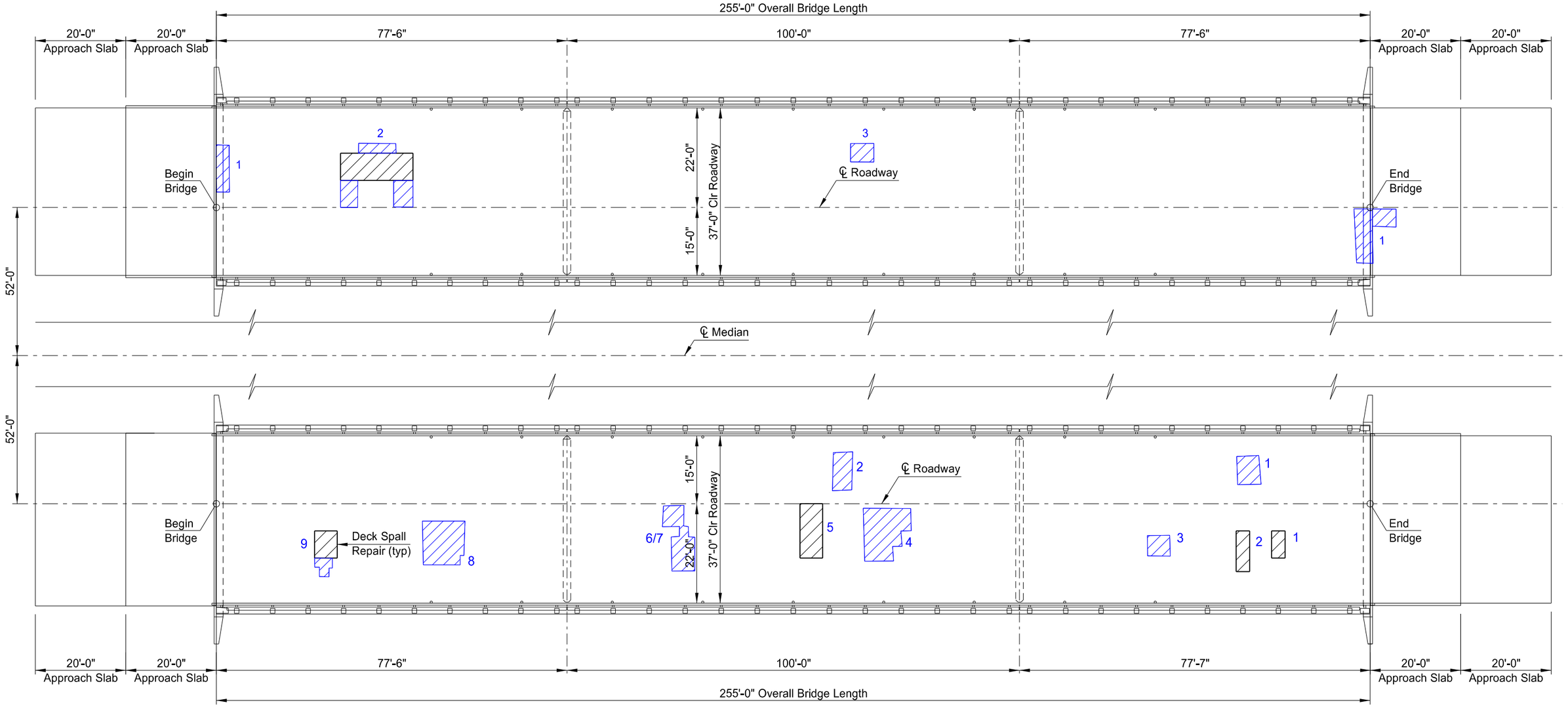
Jon Ketterling 02/21/19

BRIDGE DIVISION

This document was originally issued and sealed by Jon Ketterling, Registration Number PE- 4684 , on 02/21/19 and the original document is stored at the North Dakota Department of Transportation

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

As-Built	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
	ND	IM-8-029(178)104	170	14



Hatched areas indicate deck concrete spall areas.

PLAN

NOTES:

100 SCOPE OF WORK: Work at this site consists of repairing concrete spall areas on the bridge deck surfaces.

650 DECK SPALL REPAIR: The bridge decks have spall areas as shown. Construct the deck spall repair as a Bridge Deck Overlay meeting Section 650. Saw cut the perimeter of the repair area to a depth of 1". Remove concrete to a depth of 2½". The Engineer in the field will determine the actual limits of repair. Include all material, labor, and equipment required to remove the concrete and repair the deck spall area in the bid item "Deck Spall Repair."

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
650	0805	DECK SPALL REPAIR	SF	~~230~~ 514

Note: Refer to attachments for Driving Lane and Passing Lane Dimensions and Calculations.

This document was originally issued and sealed by Tim L Schwagler, Registration Number PE 3151, on 02/20/19 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
GOOSE RIVER
4 NORTH OF 200 SOUTH

BRIDGE LAYOUT

PROJECT: IM-8-029(178)104

TRAILL COUNTY

02/21/19 (DATE) — Jon Ketterling (BRIDGE ENGINEER)

DESIGN DATA				
Traffic	Average Daily - ND 200, RP 395.560			Max.Hr.
Current (2003)	Pass: 1030	Trucks 170	Total 1200	120
Forecast(2023)	Pass: 1320	Trucks 230	Total 1550	160
Traffic	Average Daily - I-29, RP 104.576			Max.Hr.
Current (2003)	Pass: 7350	Trucks 2425	Total 9775	980
Forecast(2023)	Pass: 12055	Trucks 4220	Total 16275	1630
Minimum Sight Dist. for:		Design Speed - ND 200		65 MPH
Stopping		Design Speed - I-29		75 MPH
Safe Passing		Bridges		
Passing for Marking				
Pavement Design Life (years)				

JOB# 14

STATE	PROJECT NO.	PCN	SHEET NO.
ND	HSP-8-999(012)	15417	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

IN TRAILL COUNTY
HSP-8-999(012)
Bridge Rail Retrofit, Guardrail, and Incidentals

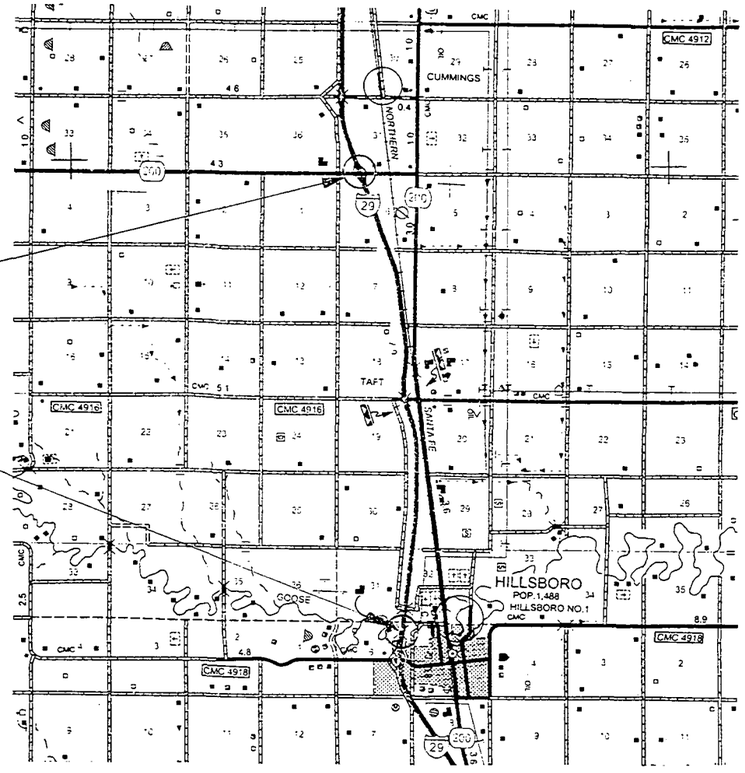
GOVERNING SPECIFICATIONS:

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

N

ND 200 Interchange Overhead
RP 395.560, ND 200
= RP 110.795, I-29

Goose River Bridges
RP 104.576
Northbound and Southbound I-29



DESIGNER Brad Pfeifer
DESIGNER
DESIGNER
DESIGNER
DESIGNER

APPROVED DATE _____

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

APPROVED DATE 5/1/03

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 5/01/03

DESIGN ENGINEER
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

RONALD JASON HENKE
REGISTERED
PROFESSIONAL ENGINEER
NORTH DAKOTA

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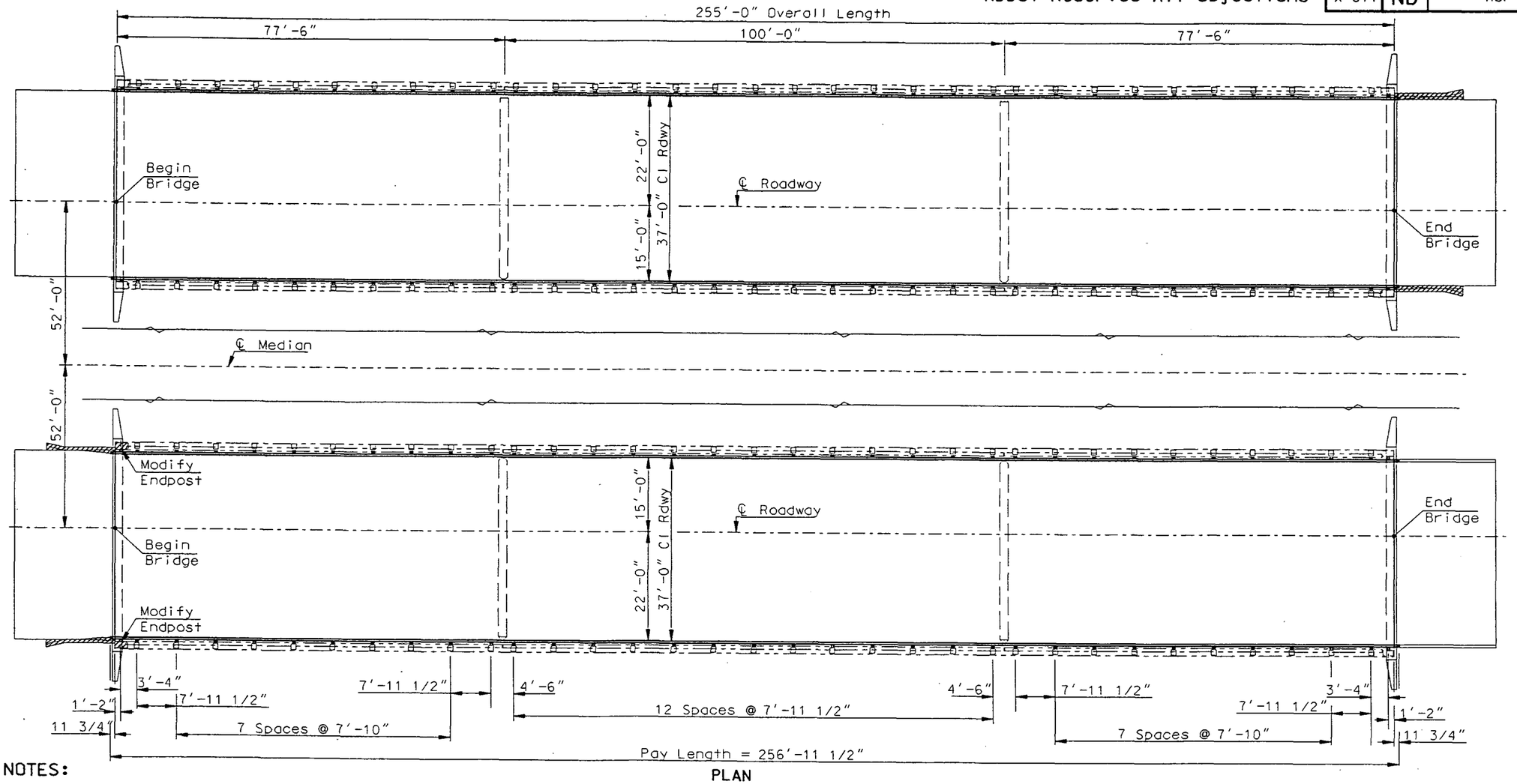
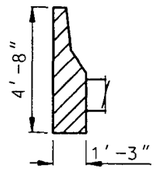
23 U.S.C. 409
NDDOT Reserves All Objections

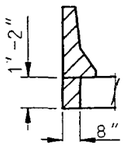
BRIDGE CODE	STATE	PROJECT NUMBER	SHEET NO.
X-071	ND	HSP-8-999(012)	12



PLAN



(WEST BRIDGE)
(FREE STANDING)
CONCRETE REMOVAL



(EAST BRIDGE)
CONCRETE REMOVAL

NOTES:

SCOPE OF WORK: The work at this site consists of removing the safety shape transitions and a portion of the approach slab on the south approach slab of the east bridge, removing the free standing safety shape transitions on the north end of the west bridge and installing a bridge rail retrofit on both bridges and modify the end posts on the south end of the east bridge to accomodate the rail retrofit attachment.

Attachment of the rails to the intermediate posts shall be accomplished by one of the following or any combination of the following methods shown on the detail sheets:
1. Threaded rods and bars
2. U-bolts
3. Anchors

The removal of the safety shape transitions and the portion of the approach slab as shown shall be included in the price bid for "Remove Concrete Safety Shape Transition."

All material removed shall become the property of the contractor and shall be disposed of off the right of way.

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	1210	BRIDGE END POST MODIFICATION	EA	2
624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	1027.8
764	1990	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	4

GOOSE RIVER

BRIDGE LAYOUT

BRLO 03LCS027 JDS

29-104.576L&R

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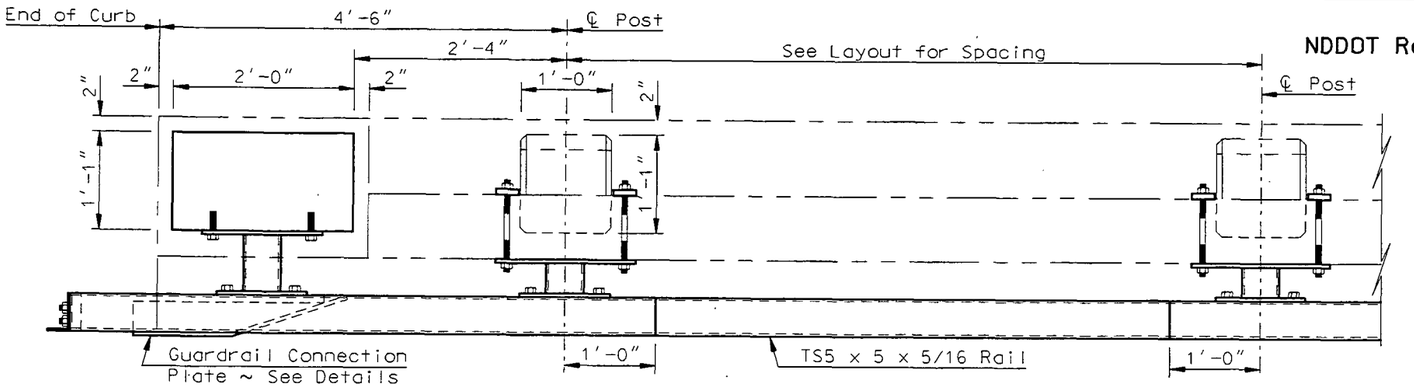
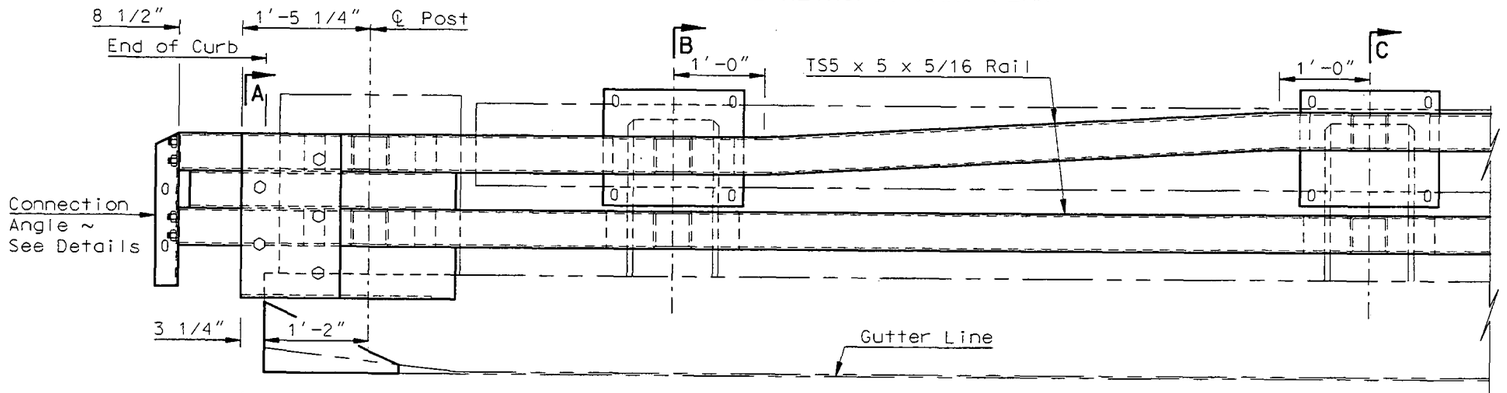
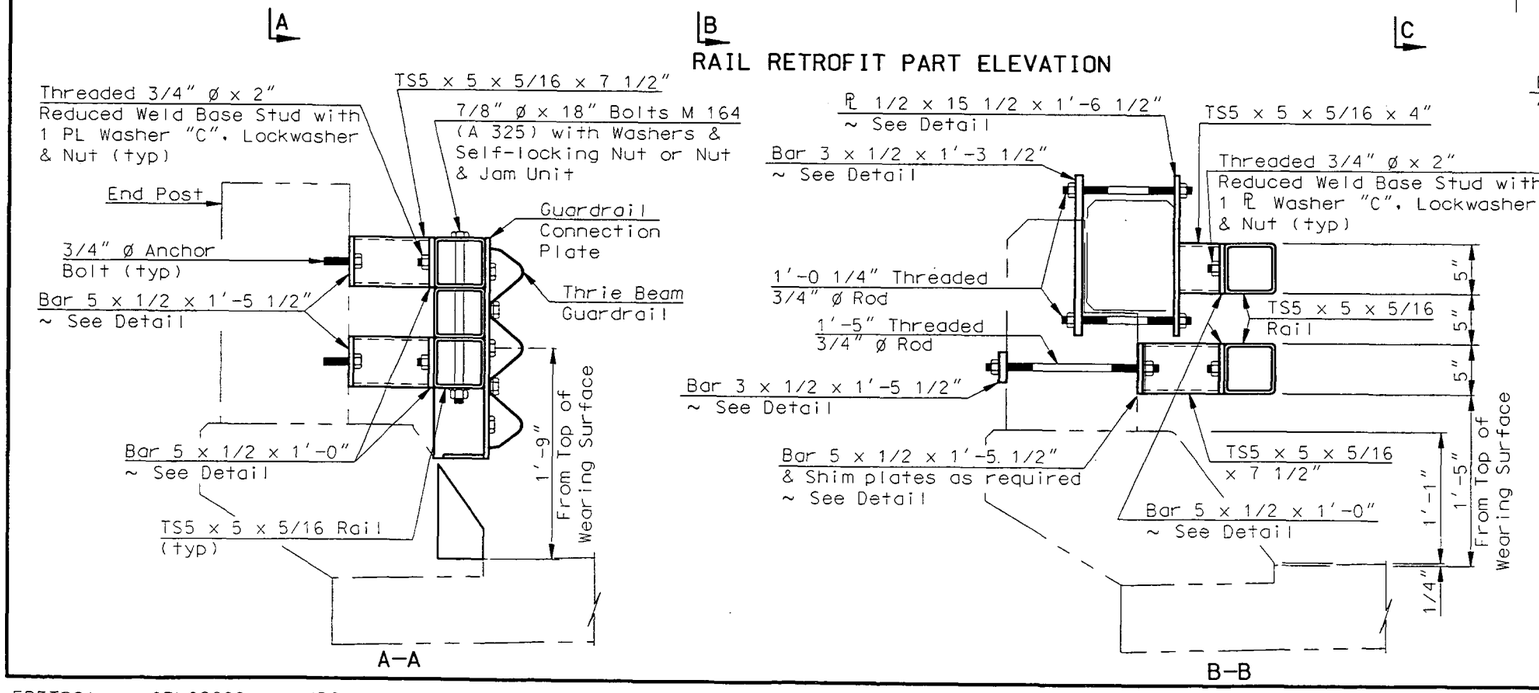
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	13

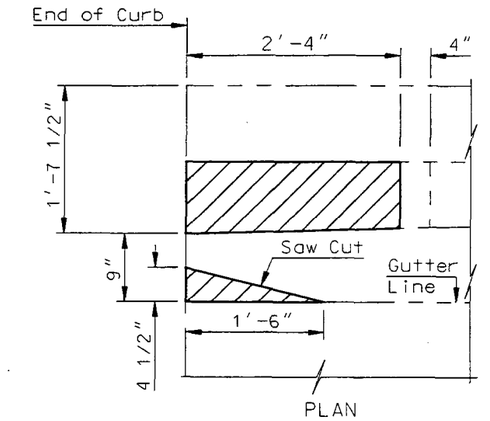


RAIL RETROFIT PART PLAN

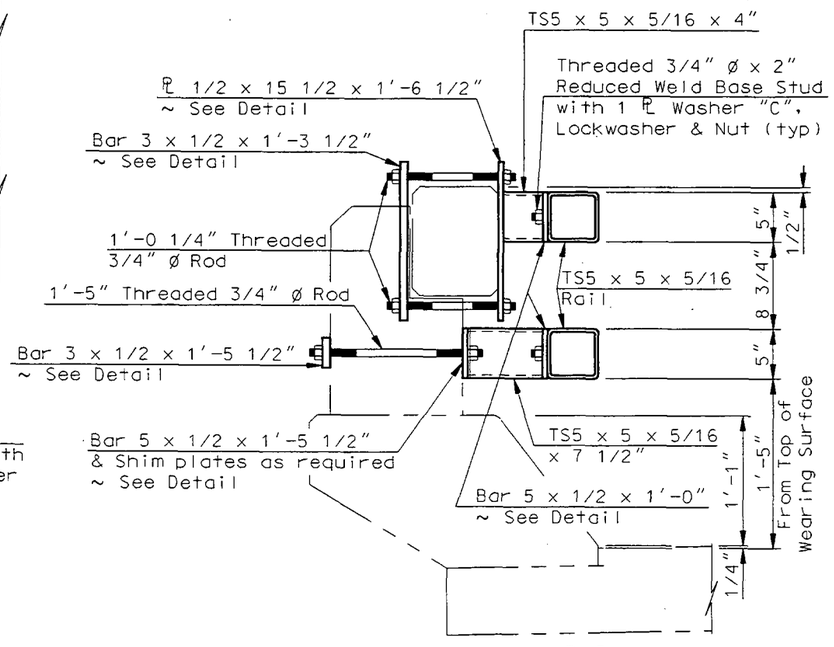




RAIL RETROFIT PART ELEVATION



CONCRETE REMOVAL DETAIL



C-C

QUANTITIES
SEE DWG 29-104.576L&R-5

NOTE:

See Dwg 29-104.576L&R-4 & 5 for notes and details not not shown on this drawing.

GOOSE RIVER
(ENTRANCE END)

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

ERETRO1 03LCS028 JDS

29-104.576R-1

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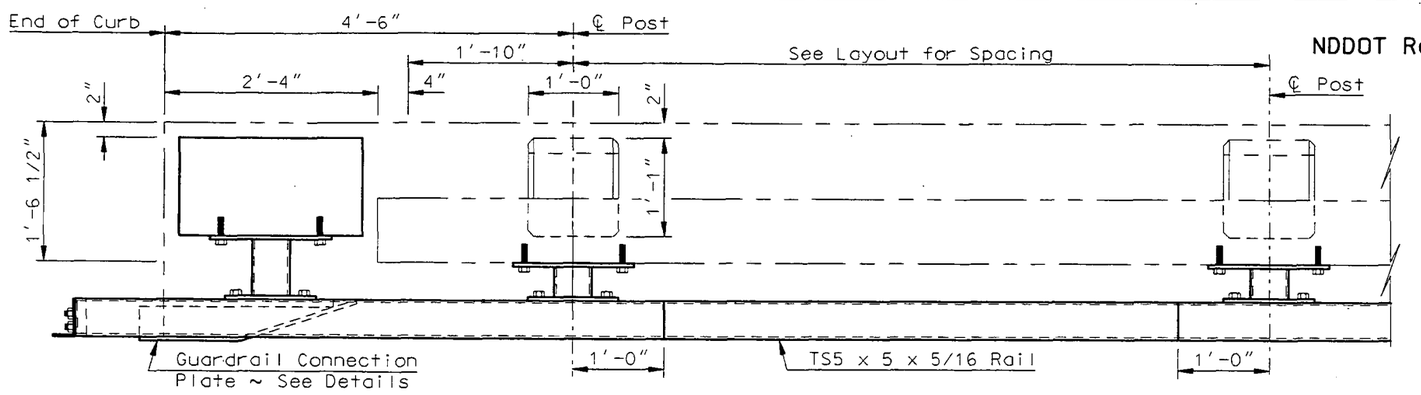
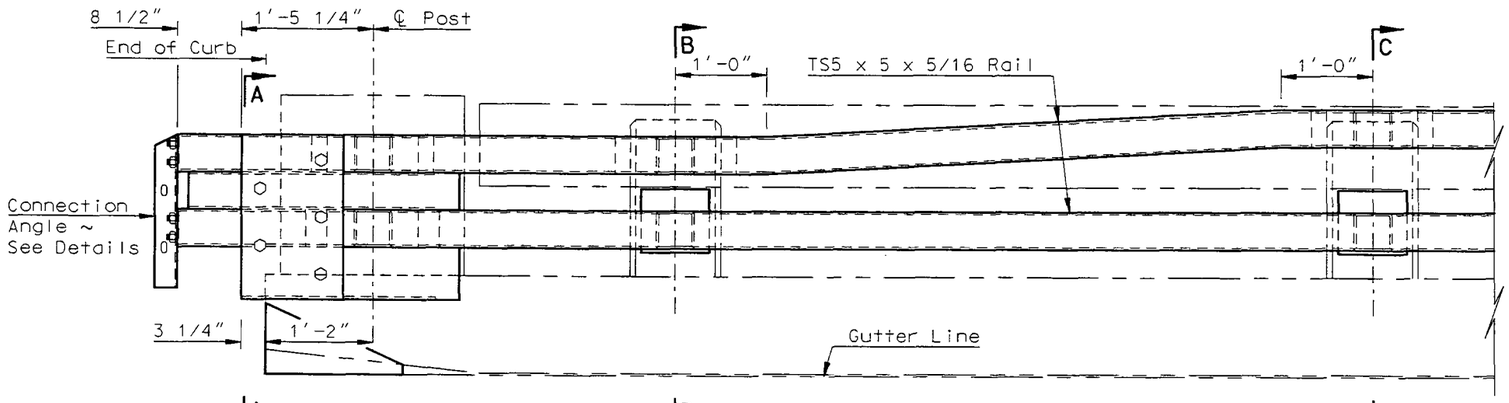
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	14



RAIL RETROFIT PART PLAN



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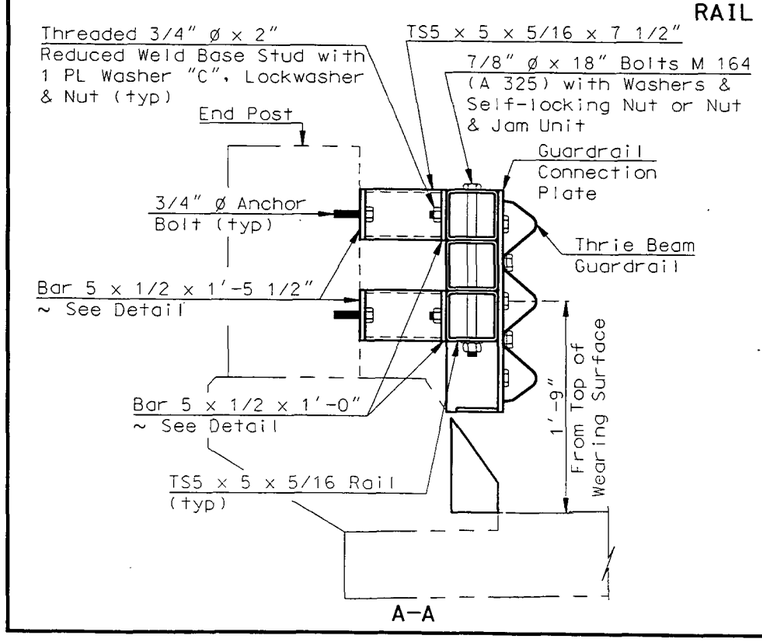

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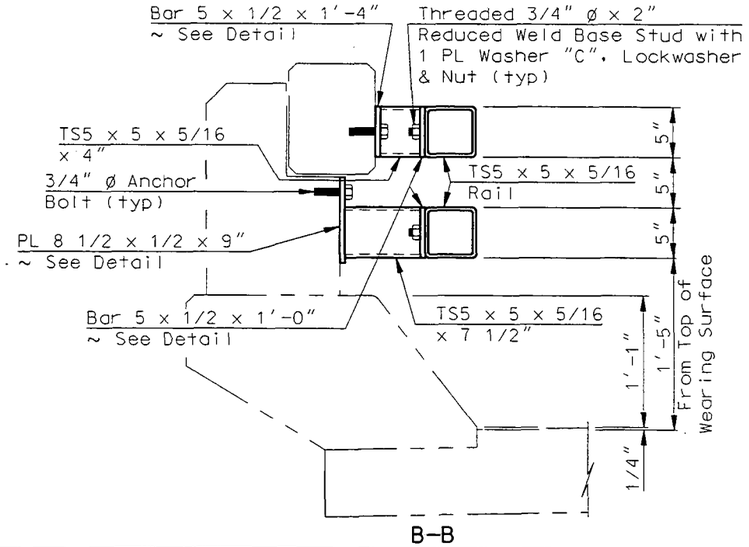

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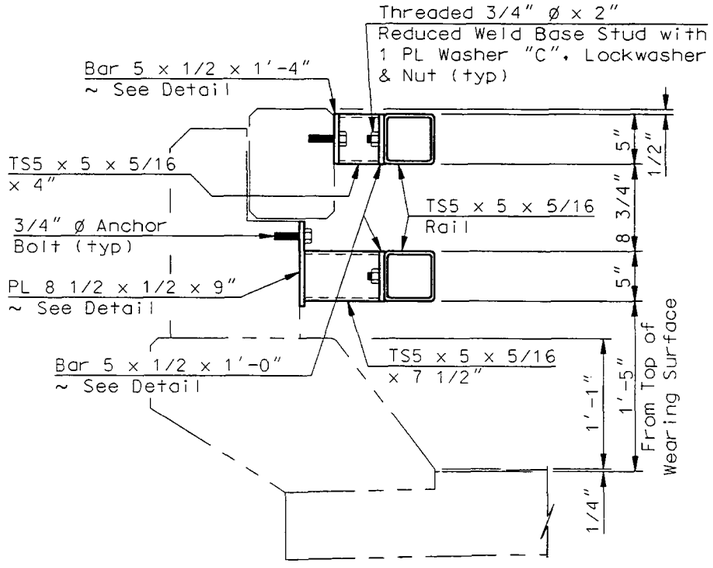

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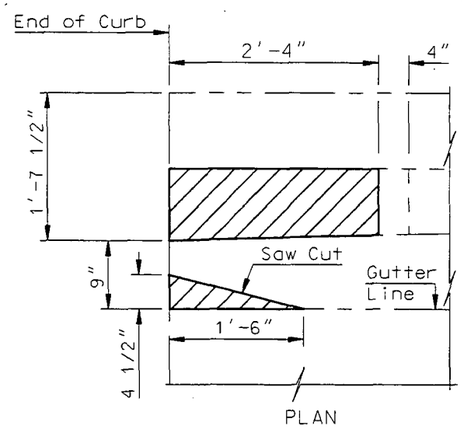

CONCRETE REMOVAL DETAIL

NOTE:

See Dwg 29-104.576L&R-4 & 5 for notes and details not shown on this drawing.

QUANTITIES
SEE DWG 29-104.576L&R-5

GOOSE RIVER

(ENTRANCE END)

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

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29-104.576R-1A

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

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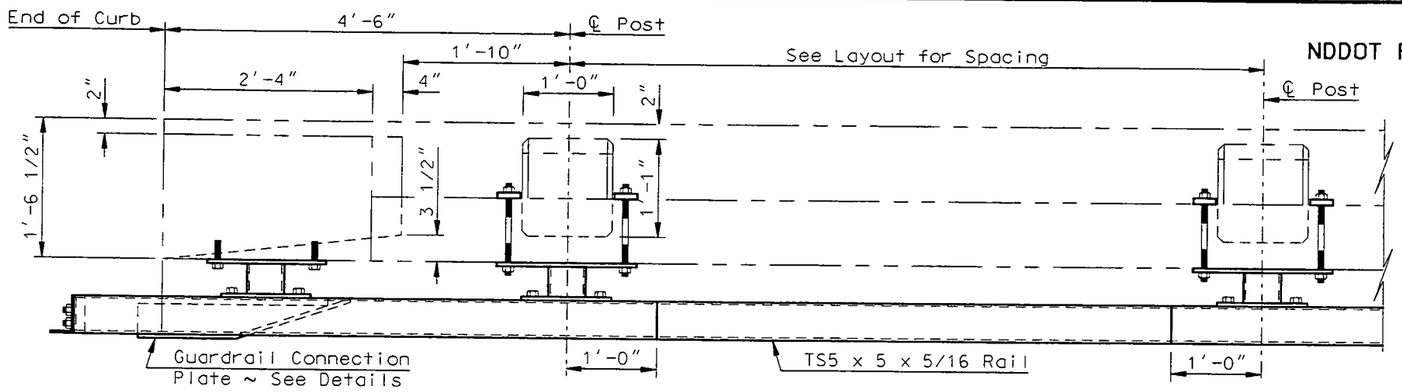
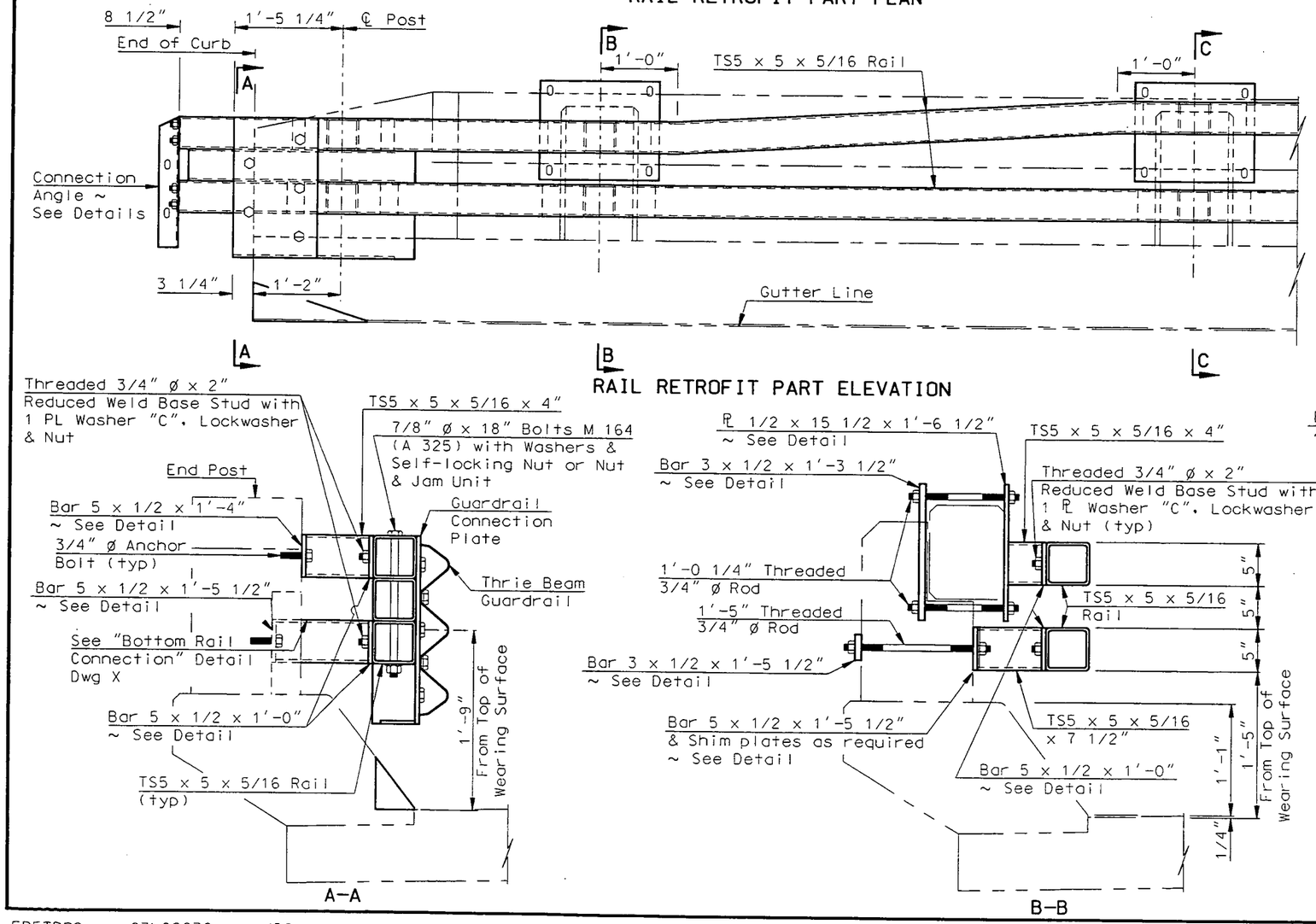
ND	HSP-8-999(012)	15



RAIL RETROFIT PART PLAN



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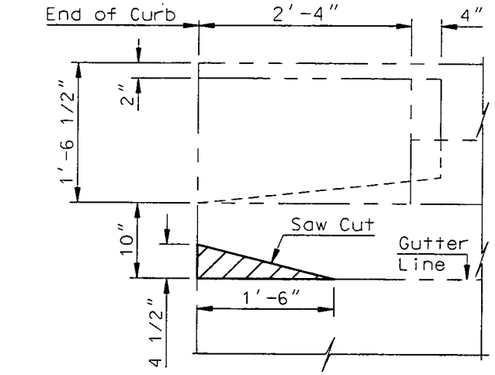

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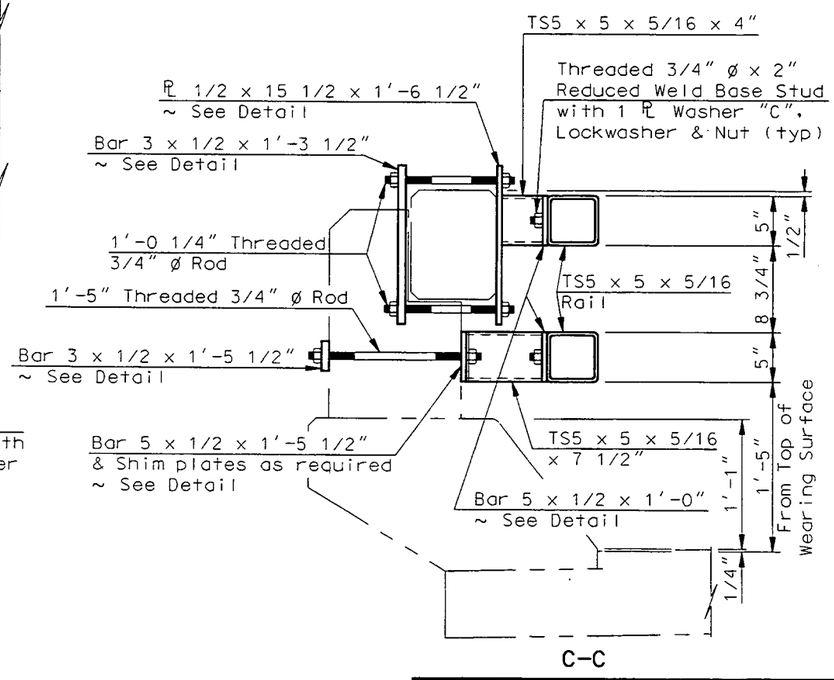

QUANTITIES
SEE DWG 29-104.576L&R-5

NOTE:

See Dwg 29-104.576L&R-4 & 5 for notes and details not not shown on this drawing.

GOOSE RIVER
(ENTRANCE END)

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

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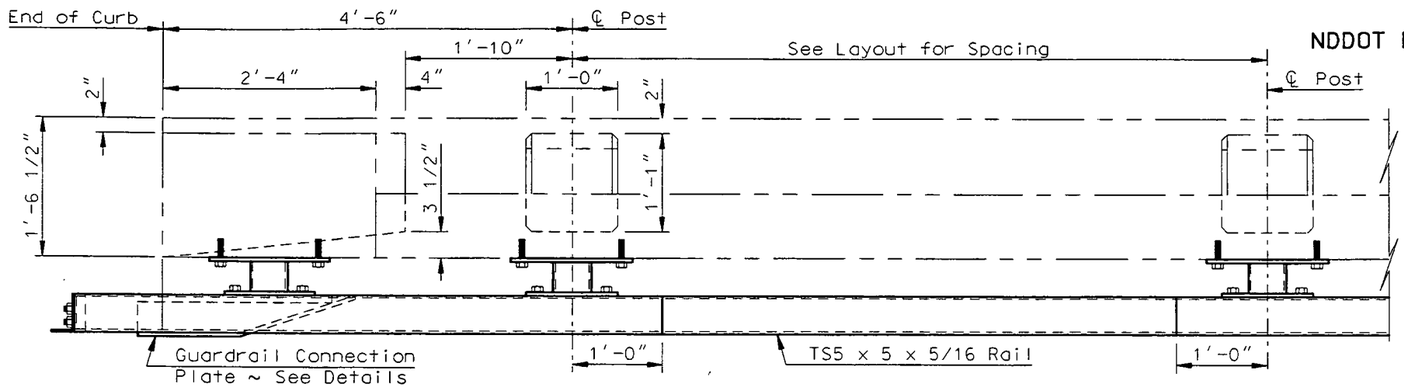
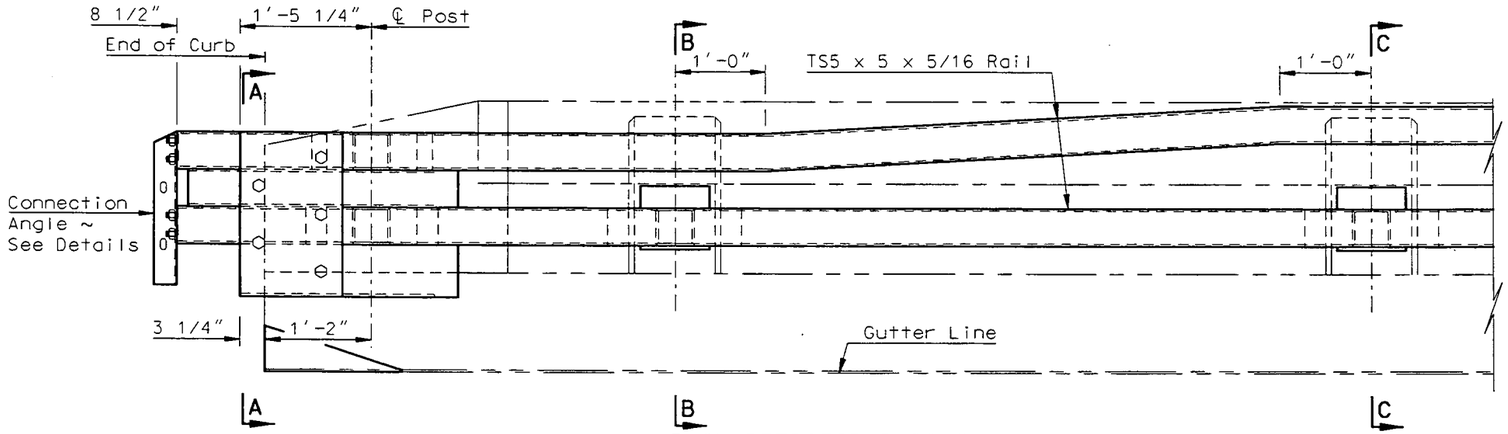
29-104.576L-2

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

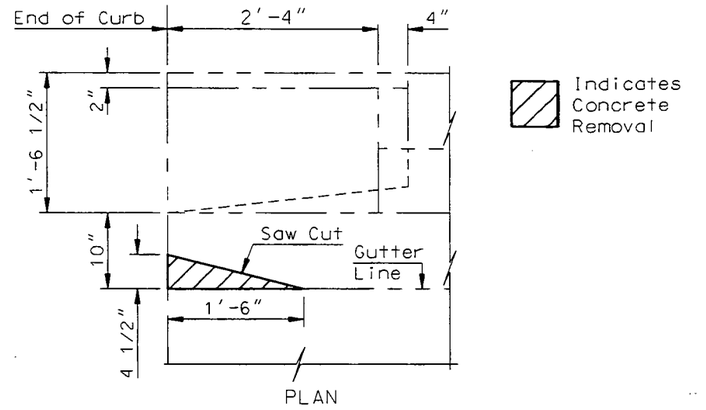
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	16



RAIL RETROFIT PART PLAN



RAIL RETROFIT PART ELEVATION



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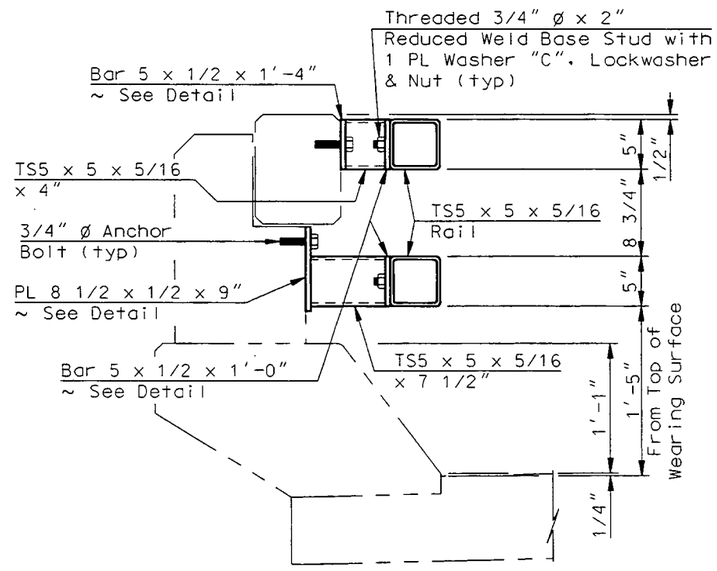

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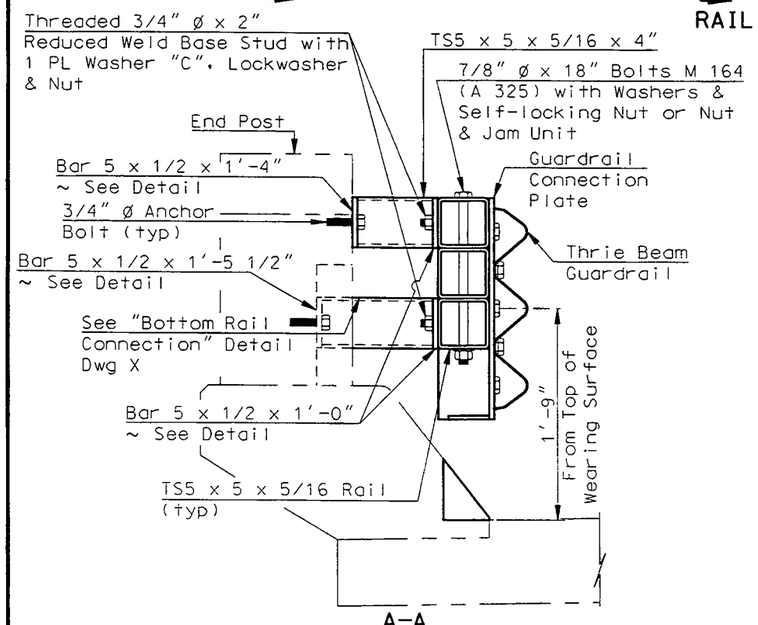

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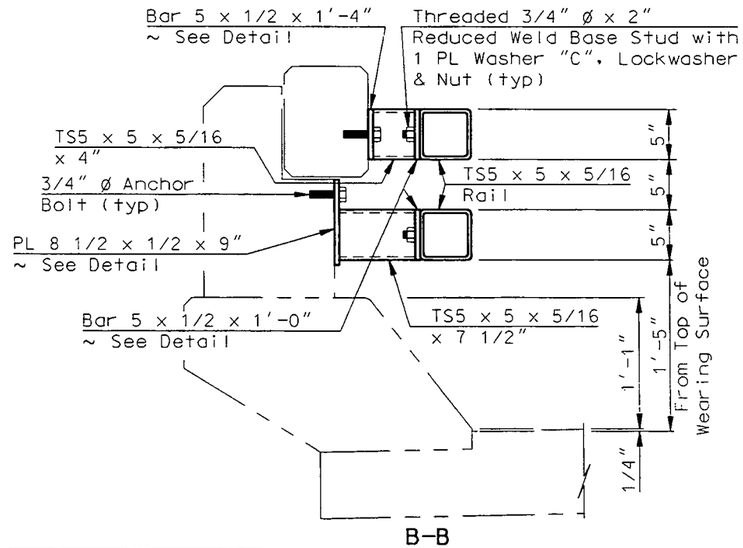

B-B

NOTE:

See Dwg 29-104.576L&R-4 & 5 for notes and details not not shown on this drawing.

QUANTITIES

SEE DWG 29-104.576L&R-5

GOOSE RIVER
(ENTRANCE END)

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

ERETRO2A 03LCS031 JDS

29-104.576L-2A

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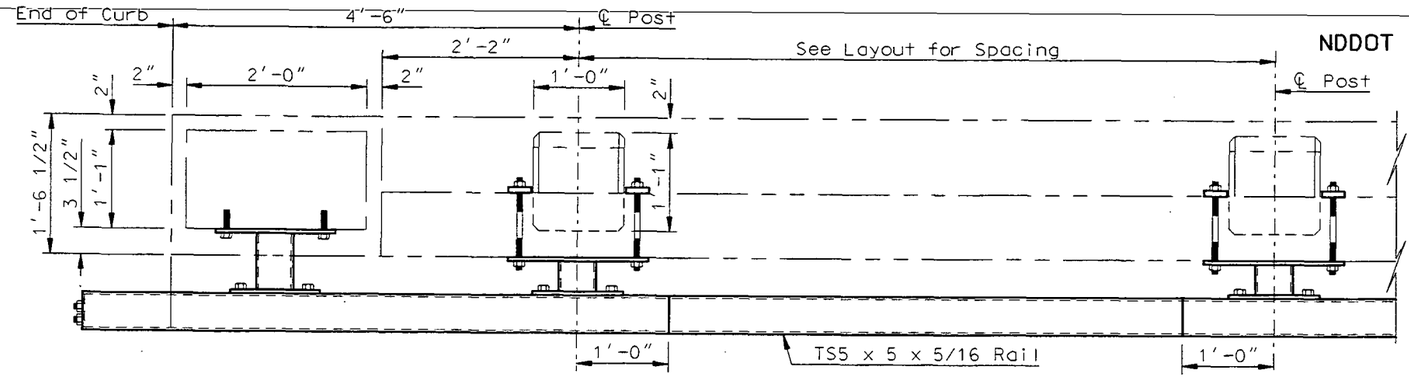
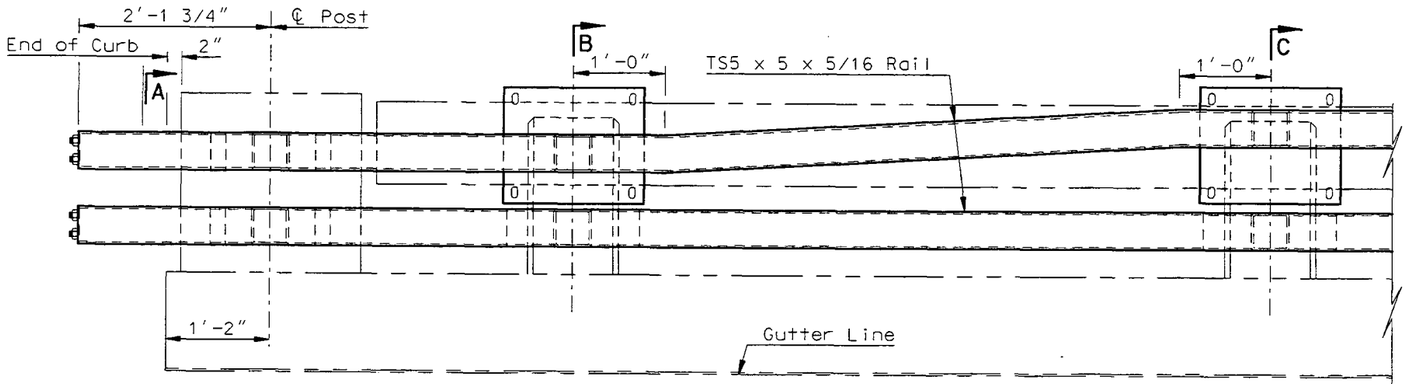
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	17



RAIL RETROFIT PART PLAN



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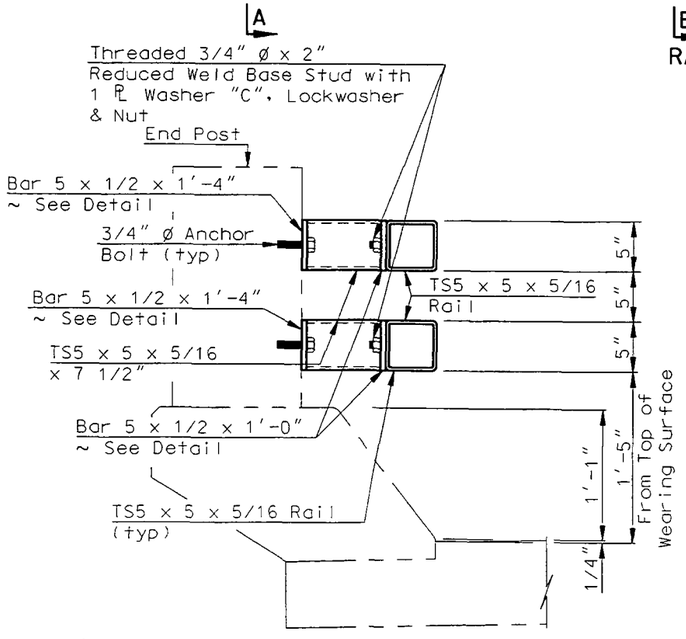

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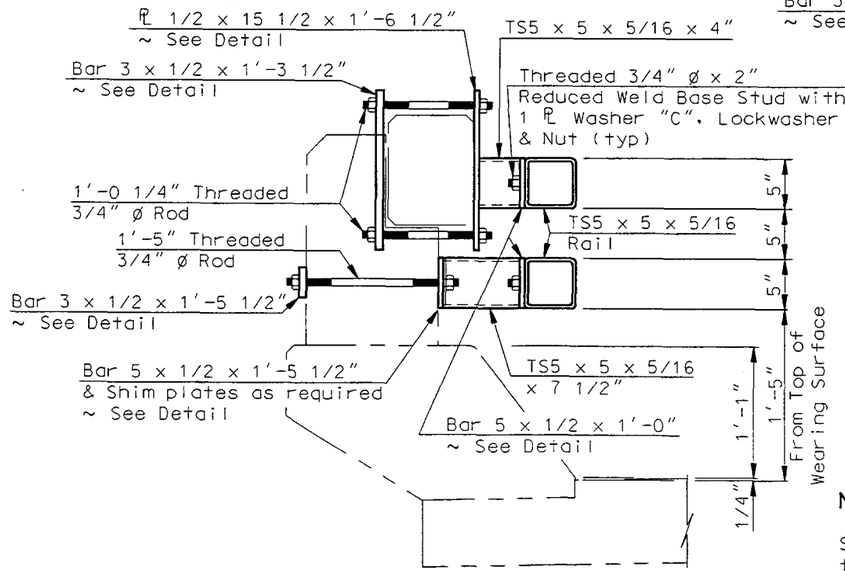

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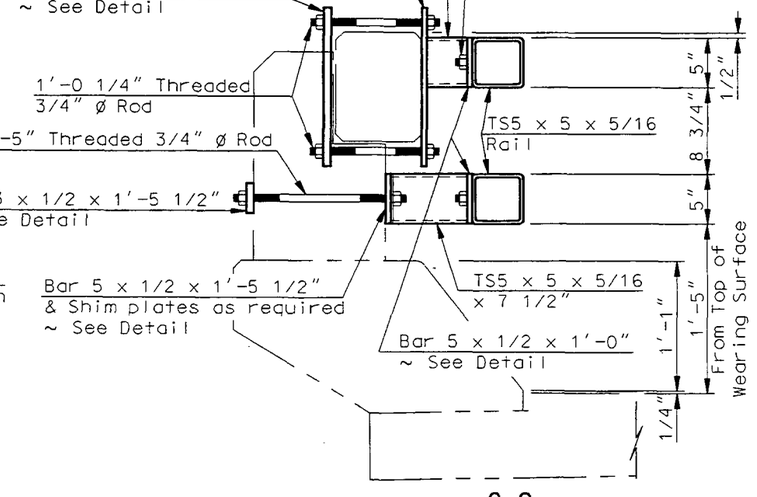

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NOTE:

See Dwg 29-104.576L&R-4 & 5 for notes and details not shown on this drawing.

QUANTITIES

SEE DWG 29-104.576L&R-5

GOOSE RIVER

(EXIT END)

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

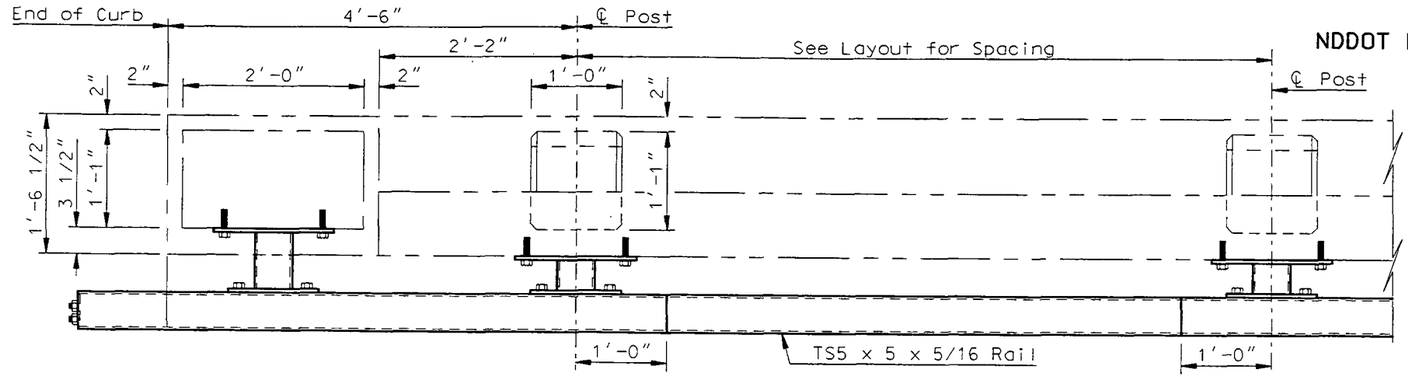
ERETRO3 03LCS032 JDS

.../29-104.5671&r/eretro3.dgn 04/30/2003 08:20:32 AM

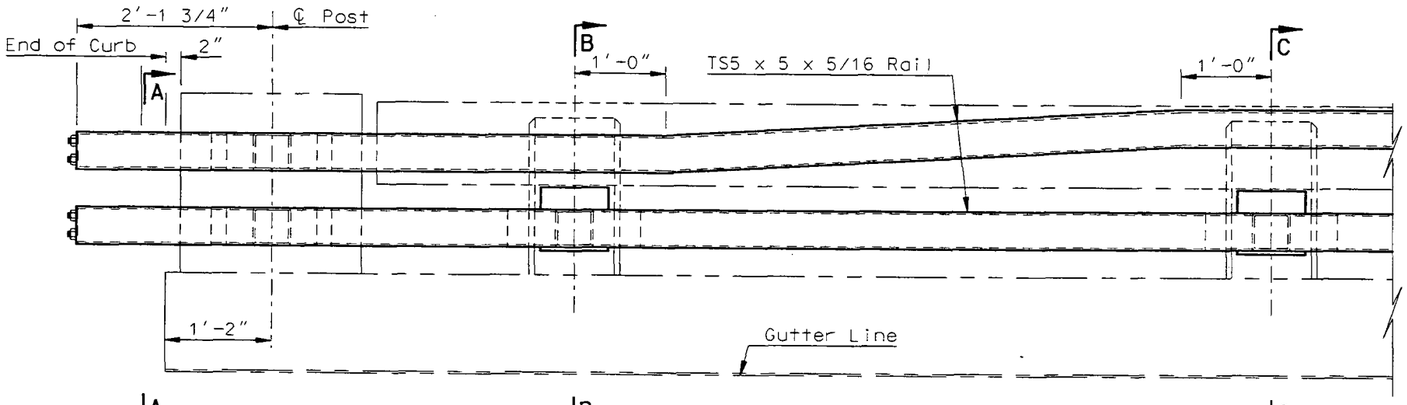
29-104.576L&R-3

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

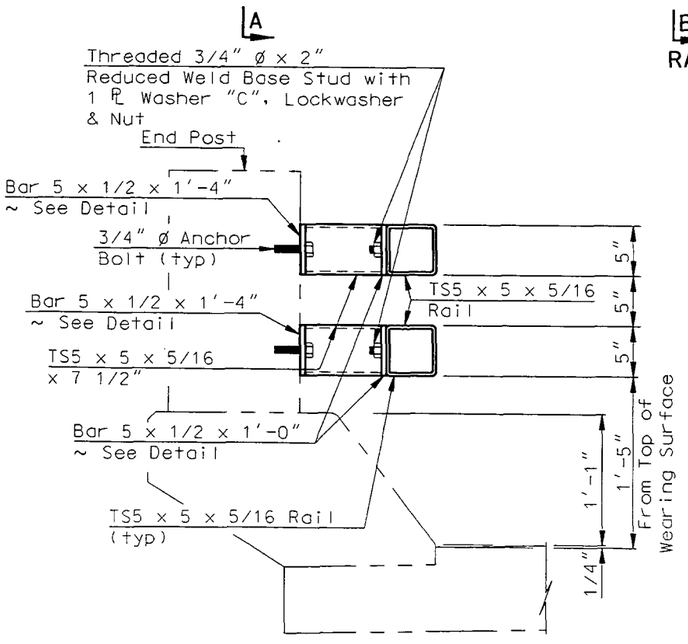
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	18

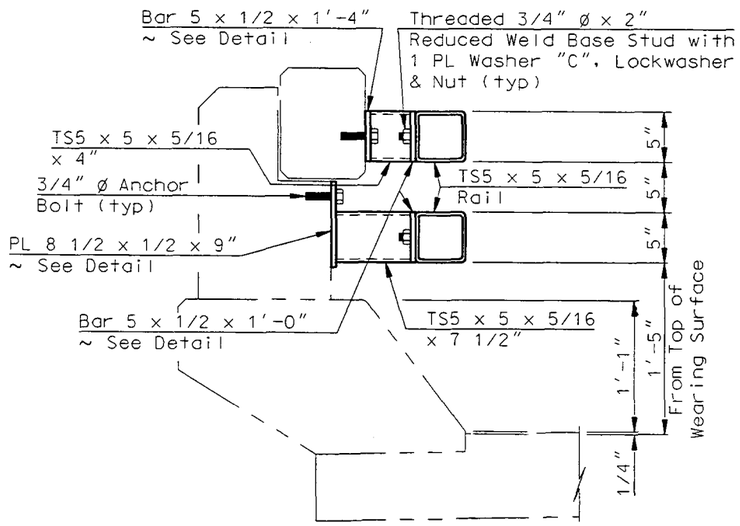


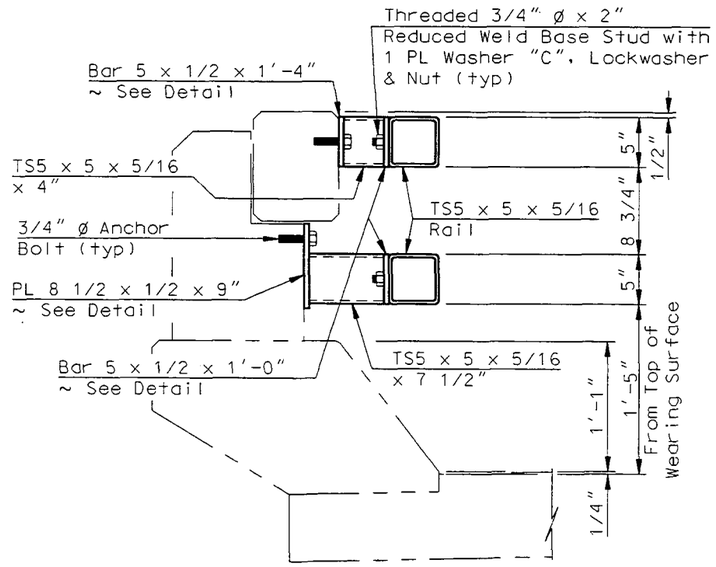
RAIL RETROFIT PART PLAN



RAIL RETROFIT PART ELEVATION







NOTE:

See Dwg 29-104.576L&R-4 & 5 for notes and details not shown on this drawing.

QUANTITIES

SEE DWG 29-104.576L&R-5

GOOSE RIVER

(EXIT END)

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

ERETRO3 03LCS033 JDS

29-104.576L&R-3A

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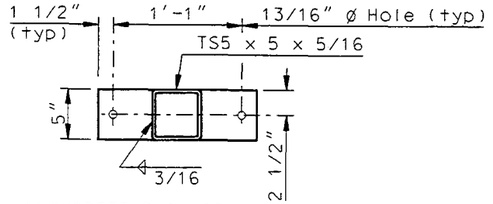
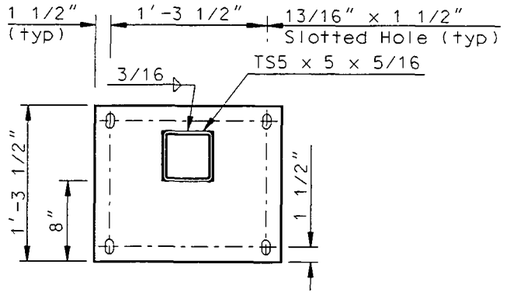
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	19

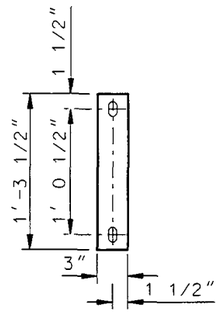
23 U.S.C. 409
NDDOT Reserves All Objections



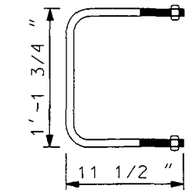
(CONCRETE RAIL CONNECTION)
BAR 5 X 1/2 X 1'-4" DETAIL



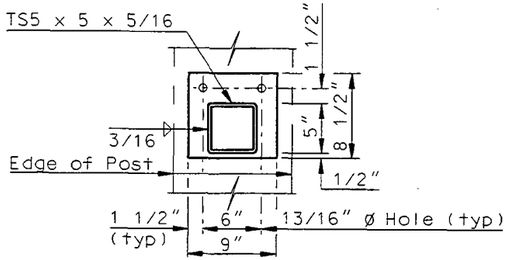
(CONCRETE RAIL CONNECTION)
PL 1/2 X 15 1/2 X 1'-6 1/2" DETAIL



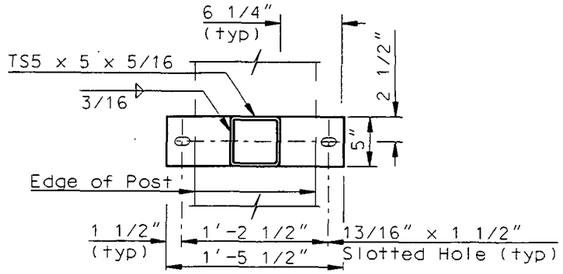
(CONCRETE RAIL CONNECTION)
BAR 3 X 1/2 X 1'-3 1/2" DETAIL



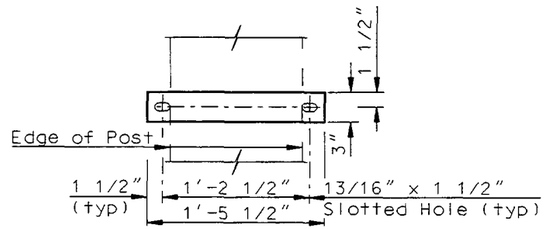
3/4" ø RAIL U-BOLT



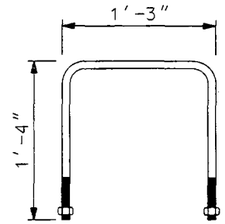
(CONCRETE POST CONNECTION)
PL 8 1/2 X 1/2 X 9" DETAIL



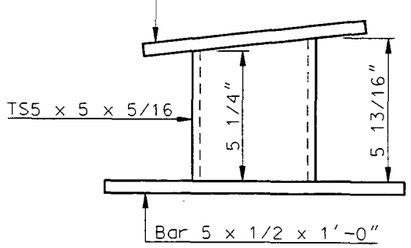
(CONCRETE POST CONNECTION)
BAR 5 X 1/2 X 1'-5 1/2" DETAIL



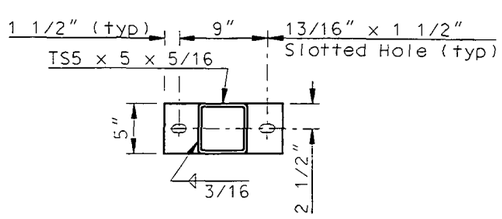
(CONCRETE POST CONNECTION)
BAR 3 X 1/2 X 1'-5 1/2" DETAIL



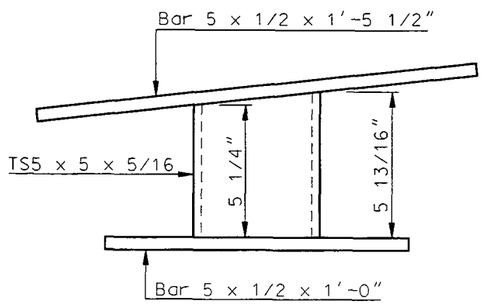
3/4" ø POST U-BOLT



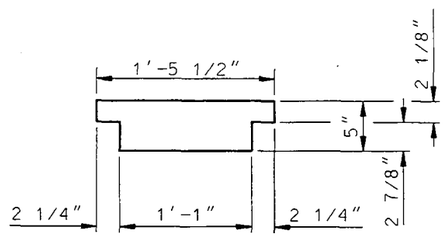
(ON ENTRANCE END WEST BRIDGE)
BOTTOM RAIL CONNECTION DETAIL



(RAIL CONNECTION)
BAR 5 X 1/2 X 1'-0" DETAIL



(ON ENTRANCE END WEST BRIDGE)
BOTTOM RAIL CONNECTION DETAIL



1/4" & 1/8" Thickness
Quantities determined in field

SHIM PLATE DETAIL

QUANTITIES
SEE DWG 29-104.576L&R-5

GOOSE RIVER

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

ERETRO3 03LCS034 JDS

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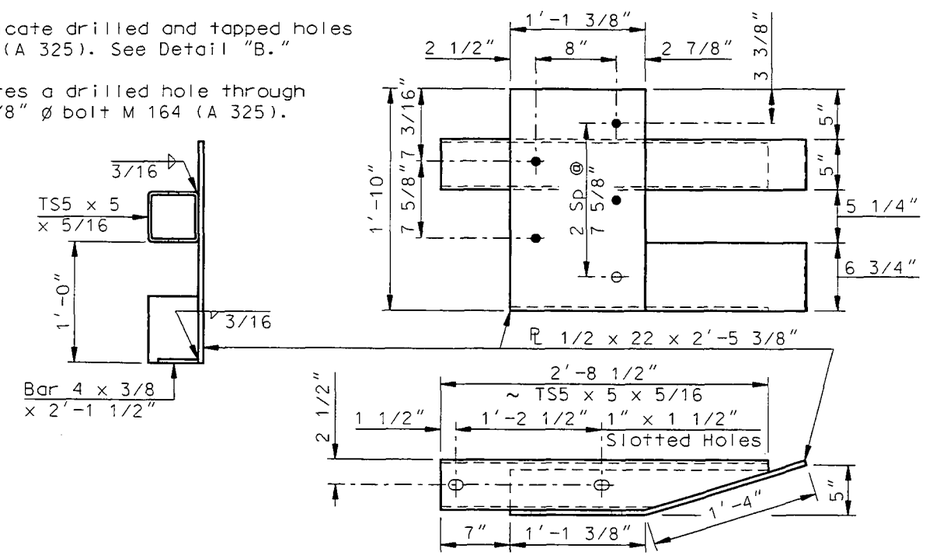
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	20

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

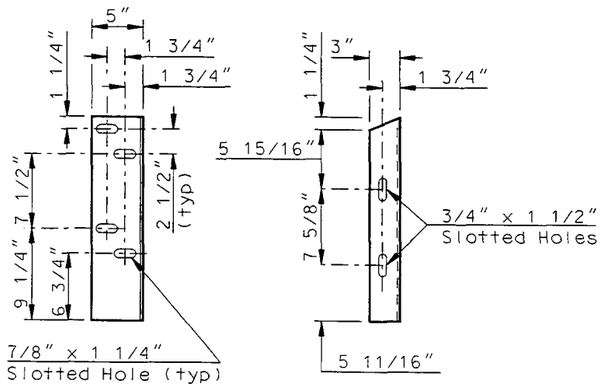
The filled circles indicate drilled and tapped holes for 7/8" ø bolts M 164 (A 325). See Detail "B."

The open circle indicates a drilled hole through the 1/2" plate for a 7/8" ø bolt M 164 (A 325).



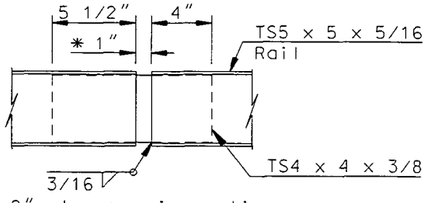
(2 REQUIRED)

GUARDRAIL CONNECTION PLATE DETAILS



(L5 X 3 X 1/4 X 1'-8 1/2")
(2 REQUIRED)

CONNECTION ANGLE DETAILS



* 2" at expansion splices.

RAIL SPLICE DETAIL

NOTES:

The bid item shall be "Double Box Beam Rail Retrofit - E-Rail." 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 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.

Payment for the railing shall include compensation for furnishing and installing the guardrail connection plates.

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

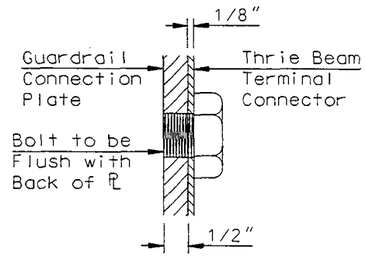
Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

The threaded rods & u-bolts shall be M 270 Grade 36 Steel and galvanized according to M 232. The u-bolts shall be tightened to provide a minimum tensile force of 2,500 lbs. and a maximum tensile force of 2,700 lbs.

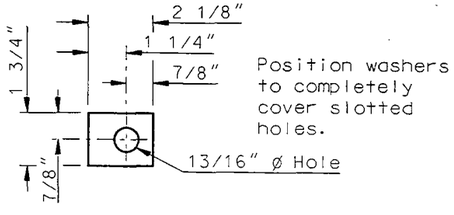
The anchor bolts shall be embedded into the concrete with a chemical adhesive system that can develop a tensile strength of at least 17,500 lbs.

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

The Contractor shall field verify all dimensions and incorporate them into the shop drawings. The double box beam rail retrofit shop drawings shall be submitted for approval to the Construction Office before fabrication.

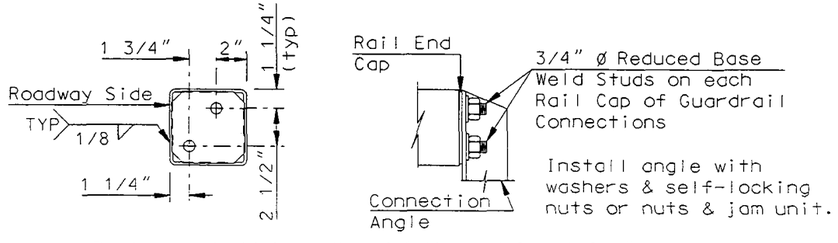


DETAIL "B"



(1/4" PL AASHTO M 270 GRADE 36)

PL WASHER "C"



Rail cap shall be a Bar 4 3/4 x 3/16 x 4 3/4".
Cope corners 1" to provide zinc drains.

RAIL CAP DETAILS

QUANTITIES	
E-RAIL RETROFIT	1027.8 LF

GOOSE RIVER

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

ERETRO5 03LCS035 JDS

29-104.576L&R-5

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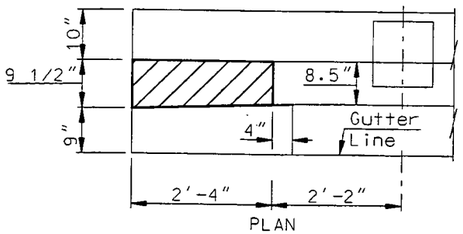
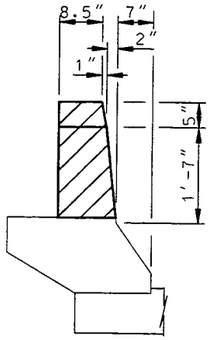
23 U.S.C. 409
NDDOT Reserves All Objections

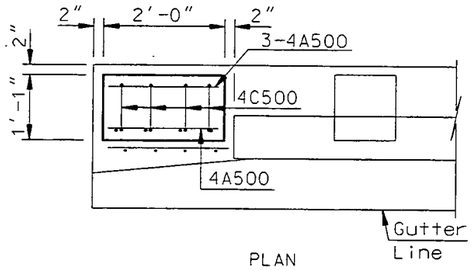
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	21



PLAN



C-C



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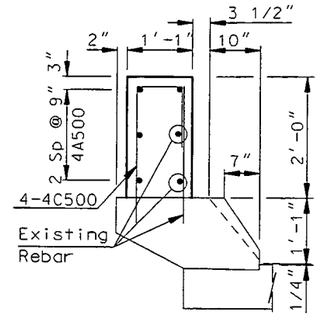
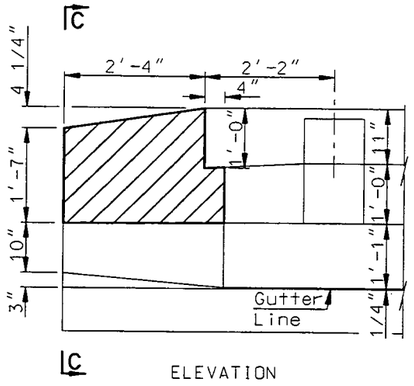


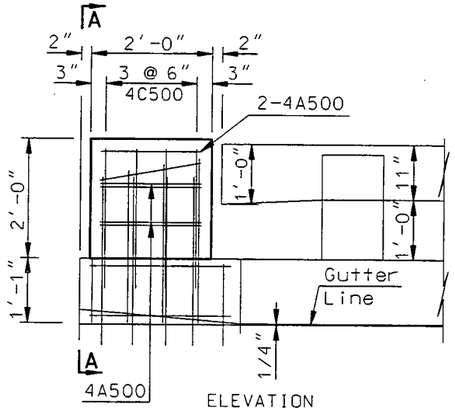
A-A



ELEVATION

END POST REMOVAL DETAILS

END POST REMOVAL DETAILS

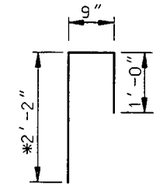


ELEVATION

END POST MODIFICATION DETAILS

BAR LIST (ONE POST)				
SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	4	1'-8"	STR.
4	C500	4	*3'-11"	BENT

ESTIMATE OF QUANTITIES	
REMOVAL OF CONCRETE	0.19 CY
CLASS AAE-3 CONCRETE	0.16 CY
REINFORCING STEEL	15 LBS



C500

Dimensions shown are out to out

BENT BAR DETAILS

* Length may vary depending on manufacturer's recommendations for anchorage.

Hatched areas indicate concrete to be removed.

Care shall be taken to ensure no damage is done to the existing reinforcing steel that is to remain in place.

NOTE:

4C500 bars shall be installed according to the manufacturer's recommendations, with a high strength adhesive specifically intended for concrete anchorage, in accordance with Sec. 806.02 of the NDDOT Standard Specifications.

The concrete shall be class AAE-3 and the reinforcing steel shall be grade 60.

The existing end posts shall be removed and properly disposed of.

The quantities shown are for informational purposes only. All materials, labor and equipment including concrete and reinforcing bars required to remove and replace the end posts shall be included in the pay item "Bridge End Post Modification".

Surface Finish "D" shall be required for all surfaces of the end posts.

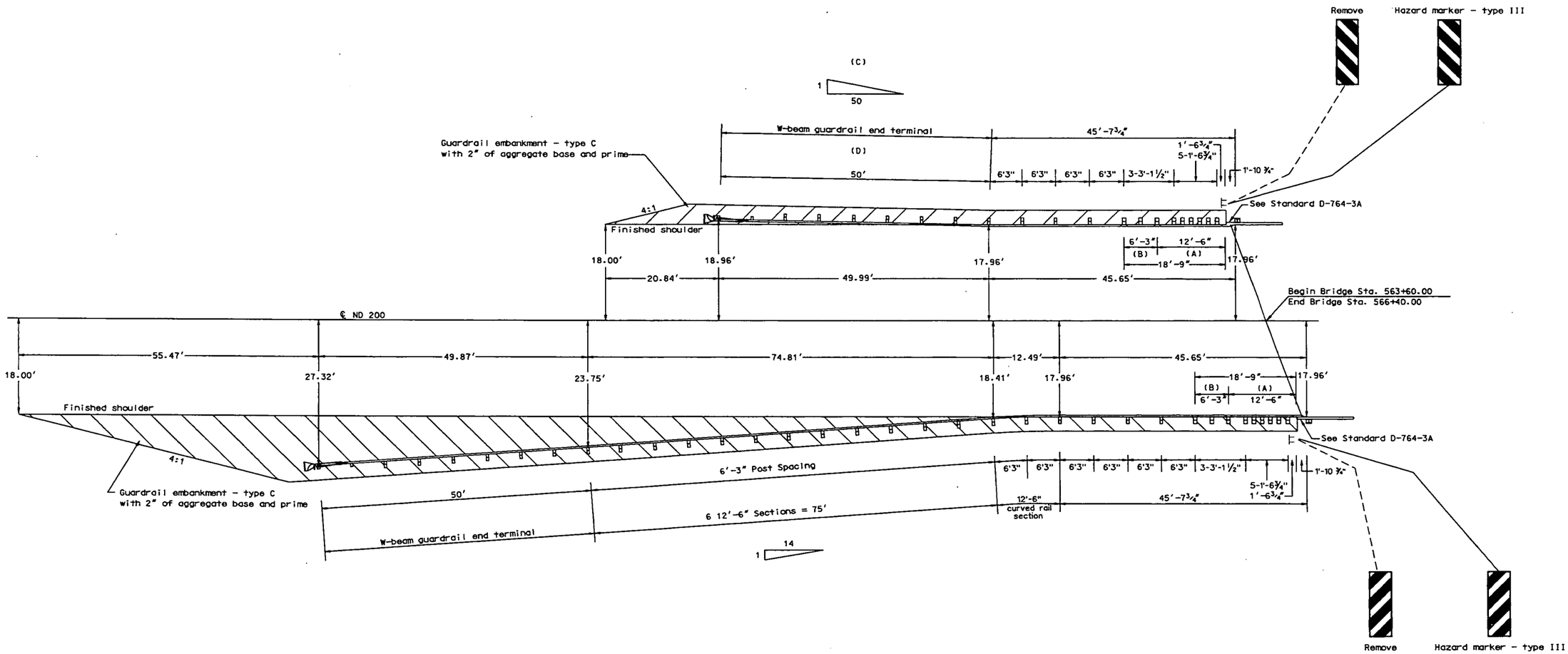
QUANTITIES
BRIDGE END POST MODIFICATION 2 EA

GOOSE RIVER

ENDPOST MODIFICATION DETAILS

23 USC §409 Documents
NDDOT Reserves All Objections

STATE	PROJECT NO.	SHEET NO.
ND	HSP-8-999(012)	22



(A) Thrie beam rail
(double thickness)

(B) W-thrie beam
transition section
(double thickness)

(C) If the ET-2000 end terminal is to be installed, a 50:1 taper shall be used for this end terminal.

If the FLEAT is to be installed, the flare shown on Standard D-764-2C shall be used.

(D) The Slotted Rail Terminal (SRT) end terminal shall not be used at this location.

Thrie/W-Beam Guardrail Layout at Both Ends of Bridge

ND 200 Interchange Overhead

RP 395.560, ND 200
= R.P. 110.795, I-29

.../TRAFFIC/ladr1029 110.795.dgn 04/23/2003 10:25:09 AM

DESIGN DATA				
Traffic	Average Daily			Est. Max. Hr.
Current . 1998	Pass: . 3,235	Trucks . 825	Total . 4,060	.410
Forecast . 2018	Pass: . 5,180	Trucks . 1,405	Total . 6,585	.660
Minimum Sight Dist. for: .		Design Speed . 70		
Stopping . 625'		Bridges .		
Limited Access Control				

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-8-029(042)100	1

JOB# 21

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

Federal Aid Project IM-8-029(042)100
In Traill County
Concrete Pavement Repair, Dowel Bar Retrofit,
Grinding & Incidentals
(Southbound Roadway)

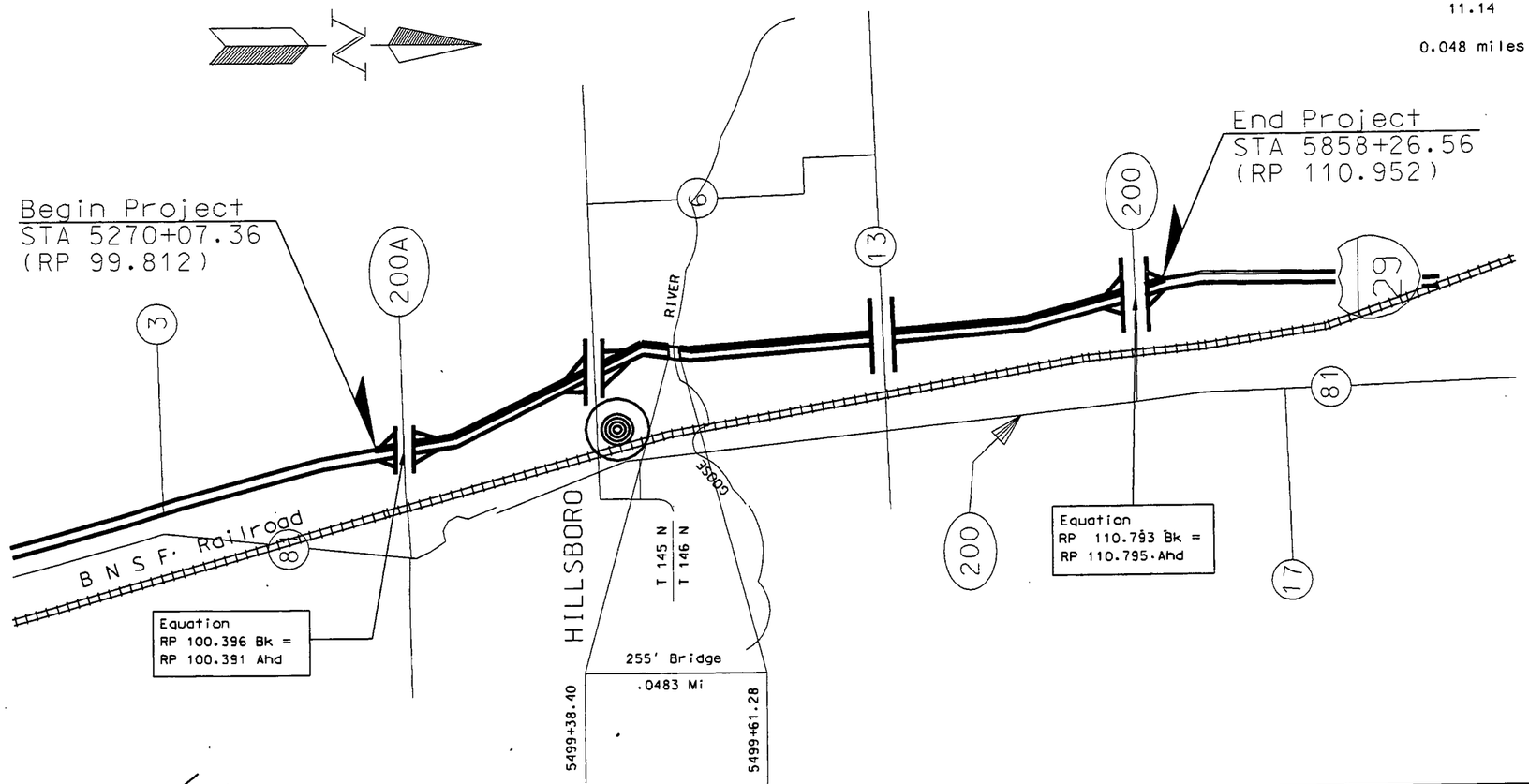
GOVERNING SPECIFICATIONS:

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
11.14	11.092

0.048 miles deducted for bridge



DESIGNER Ronald Zahn

DESIGNER Harlan R Herberholz

DESIGNER _____

RECOMMEND APPROVAL _____, 19 ___

DESIGN ENGINEER _____

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

_____ _____
DIVISION ADMINISTRATOR DATE

APPROVED DATE 3-26-99

Earl E. Nelson

DIRECTOR OF HIGHWAYS
AND ENGINEERING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

EARL E. NELSON
REGISTERED
PROFESSIONAL
P.E. 1392
ENGINEER
NORTH DAKOTA

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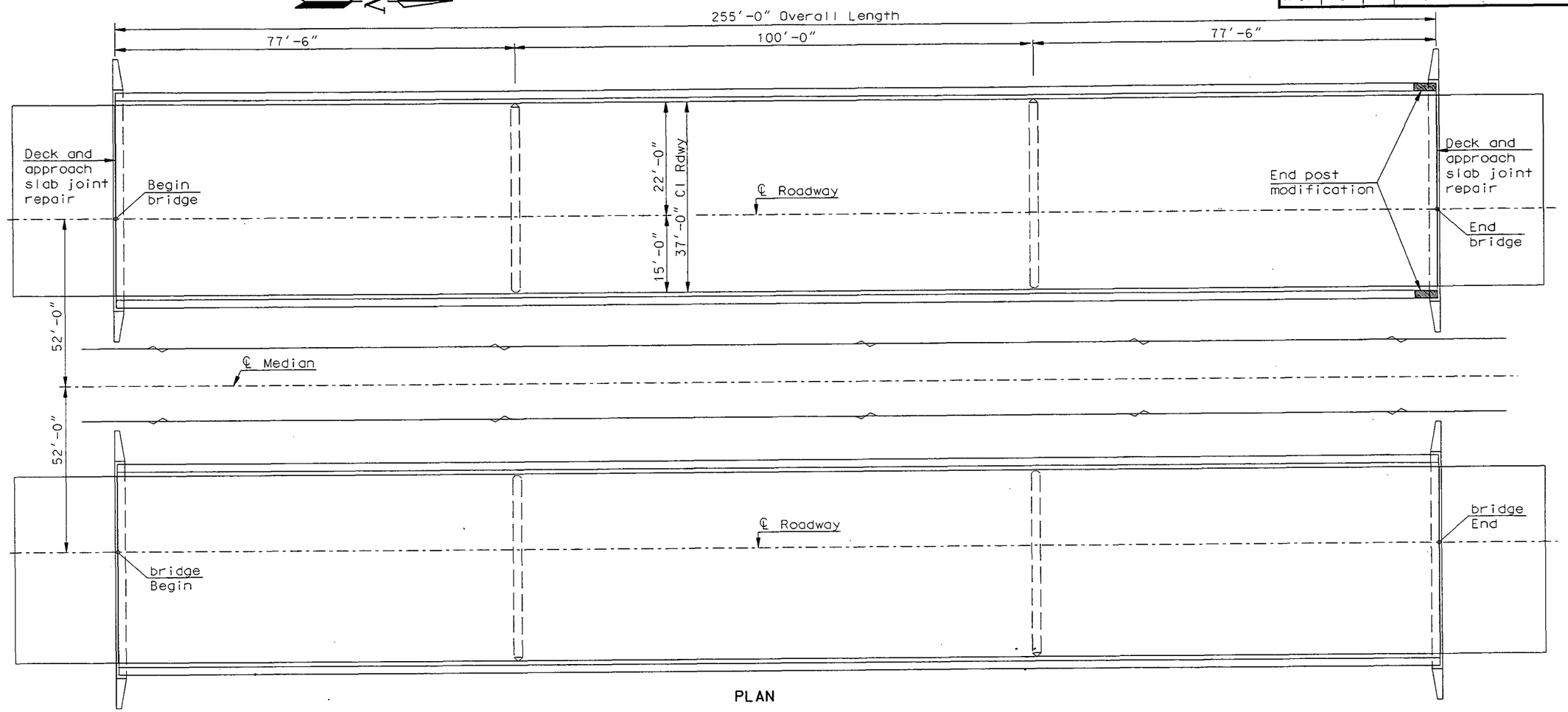
23 U.S.C. 409
NDDOT Reserves All Objections

BRIDGE CODE	FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
X-071	8	ND	IM-8-029(042)100	39



PLAN

100 SCOPE OF WORK: The work at this site consists of modifying the end posts at the north end of the bridge and repairing the joints between the approach slab and the deck. All work is on the southbound roadway.

930 NOSING CONCRETE: The nosing concrete material shall be an elastomeric concrete or a polymeric concrete that will provide a durable edge that can withstand live-load traffic without chipping or spalling. The nosing concrete material shall be SILSPEC 900 PNS, manufactured by Silicone Specialties Inc.: WABOCRETE II, manufactured by Watson Bowman Acme: ELASTOMERIC CONCRETE, manufactured by D.S. Brown Company or an approved equal. The nosing concrete shall be mixed and installed according to the manufacturer's recommendation. All labor and materials required to install the nosing concrete shall be included in the bid item "Nosing Concrete".

930 SILICONE: The silicone sealant shall be a rapid cure, self leveling, cold applied, two component silicone sealant that will bond to and be compatible to the nosing concrete used. The sealant shall be installed according to the manufacturer's recommendations. The silicone sealant and the nosing concrete must be supplied by the same manufacturer as a complete system. The backer rod and any necessary bonding materials shall be included in the bid item "Silicone Sealant".

930 TECHNICAL ASSISTANCE: The Contractor shall acquire technical assistance from the manufacturer of the nosing concrete and the silicone sealant for the surface preparation and installation of the nosing concrete and silicone sealant. A technical representative must be present for the start of surface preparation and installation for at least one day. The Contractor shall contact the manufacturer at least two weeks prior to the installation. The technical assistance shall be provided at no additional cost to the Department.

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
602	1210	BRIDGE END POST MODIFICATION	EA	2.0
930	8642	NOSING CONCRETE	CF	34.7
930	8644	SILICONE SEALANT	LF	74.0

GOOSE RIVER

BRIDGE LAYOUT

29-104.576L

BRLO 99LCS016 LLS
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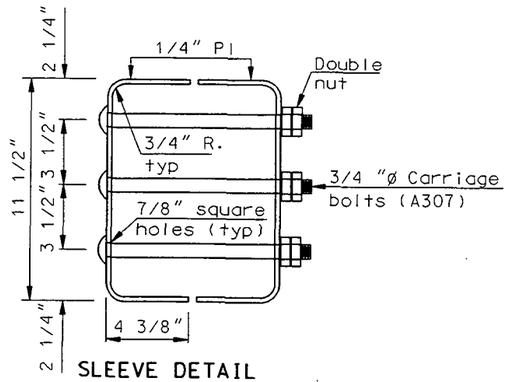
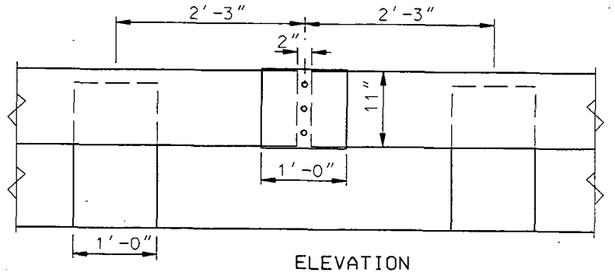


SLEEVE DETAIL

NOTE:

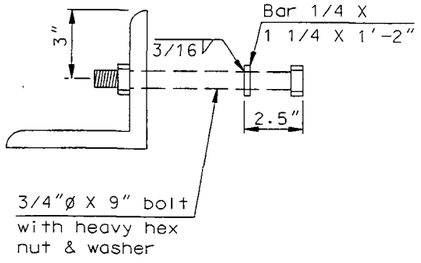
The steel plates shall be M183 steel. Plates, bolts and nuts shall be galvanized in accordance with AASHTO M111. Materials and labor to install the rail sleeves shall be incidental to "BRIDGE END POST MODIFICATION".



ELEVATION

SLEEVE AT RAIL JOINT

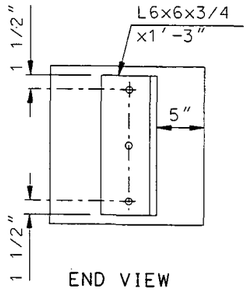
(4 required)



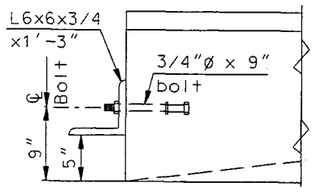
ANCHOR BOLT ASSEMBLY

NOTE:

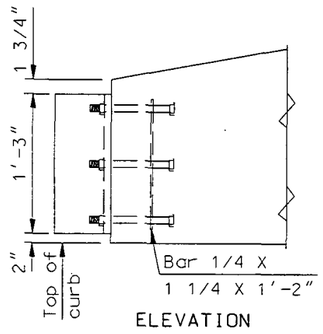
The 6 x 6 x 3/4 angle shall be used in lieu of the MC8x20 shown on Standard D-764-3.



END VIEW



PLAN

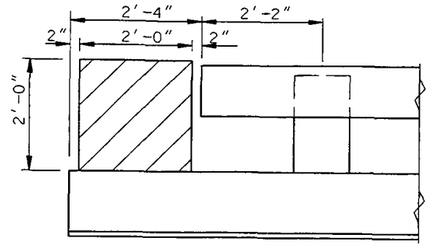


ELEVATION

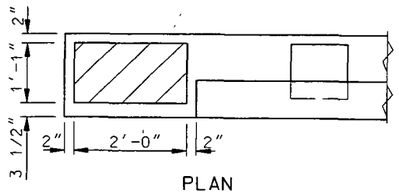
END POST DETAIL

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

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(042)100	40



ELEVATION

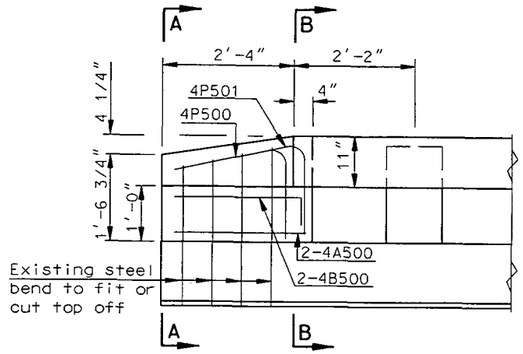


PLAN

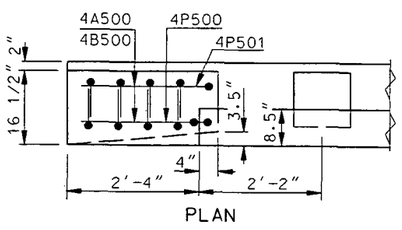
SHOWING END POST REMOVAL LIMITS

BAR LIST (ONE POST)				
SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	2	2'-4"	STR.
4	B500	2	2'-10"	BENT
4	P500	1	3'-4"	BENT
4	P501	1	3'-8"	BENT

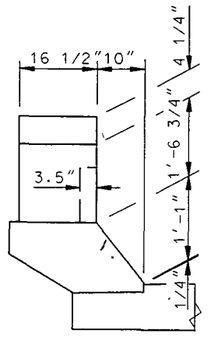
ESTIMATE OF QUANTITIES		
REMOVAL OF CONC.	0.16	C.Y.
CLASS AAE-3 CONC.	0.21	C.Y.
REINFORCING STEEL	12	LBS.



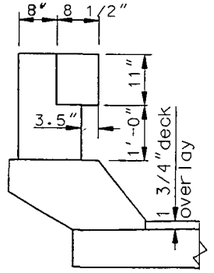
ELEVATION



PLAN



A-A



B-B

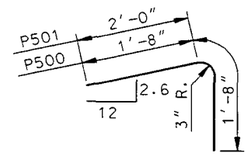
NEW END POST

NOTE:

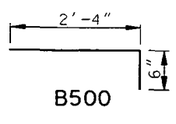
Modify bridge end posts at the north end of the bridge.

The concrete shall be class AAE-3 and the reinforcing steel shall be Grade 60.
The existing end posts shall be removed and properly disposed of. The quantities shown are for informational purposes only. All materials, labor and equipment including concrete, structural steel and reinforcing bars required to remove and replace the end posts shall be included in the pay item "BRIDGE END POST MODIFICATION".

Surface finish "D" shall be required for all surfaces of the end posts.



P500 & P501



B500

BENT BAR DETAILS

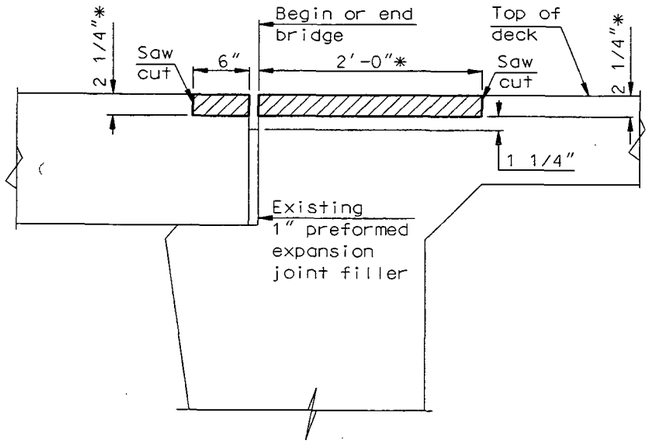
QUANTITIES		
BRIDGE END POST MODIFICATION	2	EA

GOOSE RIVER

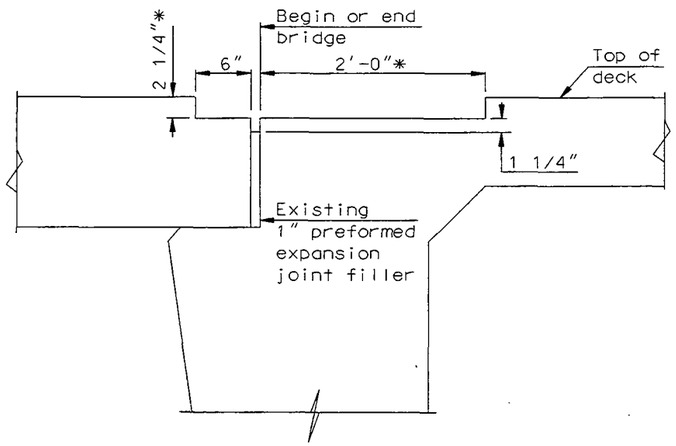
RAIL SLEEVES & END POST DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-8-029(042)100	41

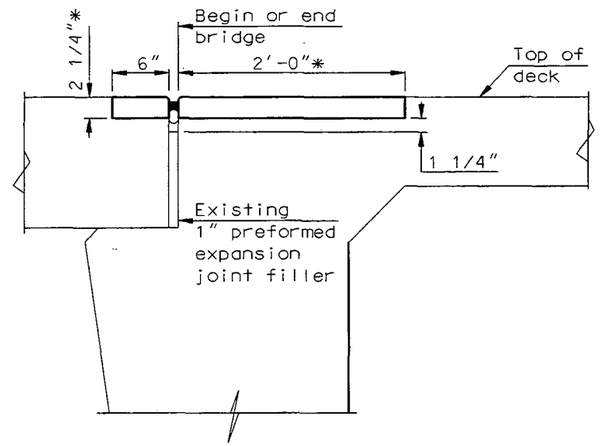
INDICATES CONCRETE REMOVAL



STAGE 1



STAGE 2



STAGE 3

* The width and thickness of the nosing concrete may be adjusted by the field engineer to match the actual deterioration.

APPROACH SLAB - BRIDGE DECK JOINT

STAGE 1:

1. Remove concrete at ends of deckand approach slabs to allow for nosing concrete.

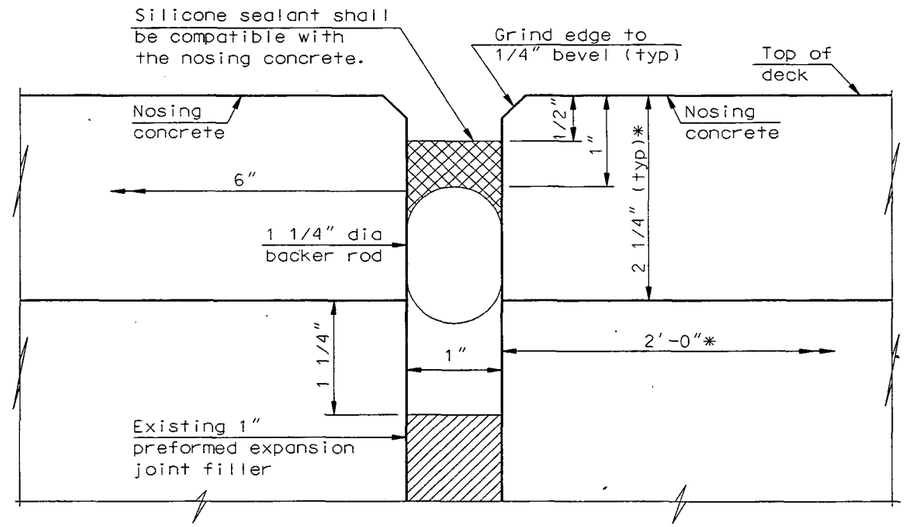
STAGE 2:

2. Remove the existing 1" preformed expansion joint filler to a depth of 3 1/2" below the top of the deck.

STAGE 3:

3. Place nosing concrete in the blockout areas, both in the deck and in the approach slab.

4. After the nosing concrete has cured, grind the 1/4" bevel edge, clean and prepare the joint, apply any necessary bonding material, install the backer rod and the silicone sealant.



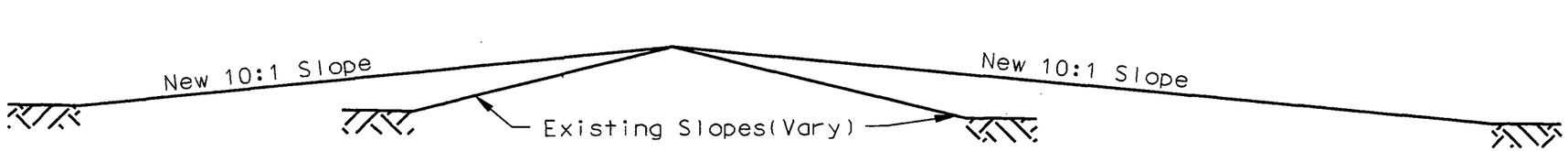
JOINT DETAIL A

QUANTITIES (TWO APPROACHES)		
Nosing Concrete	34.7	CF
Silicone Sealant	74	LF

GOOSE RIVER

APPROACH SLAB JOINT DETAILS

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-8-029(042)100	42



DITCH BLOCK DETAIL

Note: Embankment to complete the specified work shall be included in the cost of "Flatten Ditch Block" Embankment shall be obtained from outside the R/W, and placed as specified by Section 203.02 I.

Removing, stockpiling, and replacing topsoil, and seeding shall be included in the cost of " Flatten Ditch Block". Seeding shall match the guardrail embankment seeding specifications.

203 0206 Flatten Ditch Block

Location	Quantity
RP 100.772 - Lt	1 EA
RP 101.647 - Lt	1 EA
RP 109.432 - Lt	1 EA
RP 109.714 - Lt	1 EA

TYPICAL SECTIONS
SLOPE FLATTENING

DSAFETY1

...\plans\appxsect.dgn Feb. 26, 1999 14:38:20

29-104.576

FHWA REGION	STATE	PROJECT	SHEET NO.
8	N.D.	IR-029-2(51)092 IR-029-3(37)114, F-6-018(17)122 F-6-200(13)406	1

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

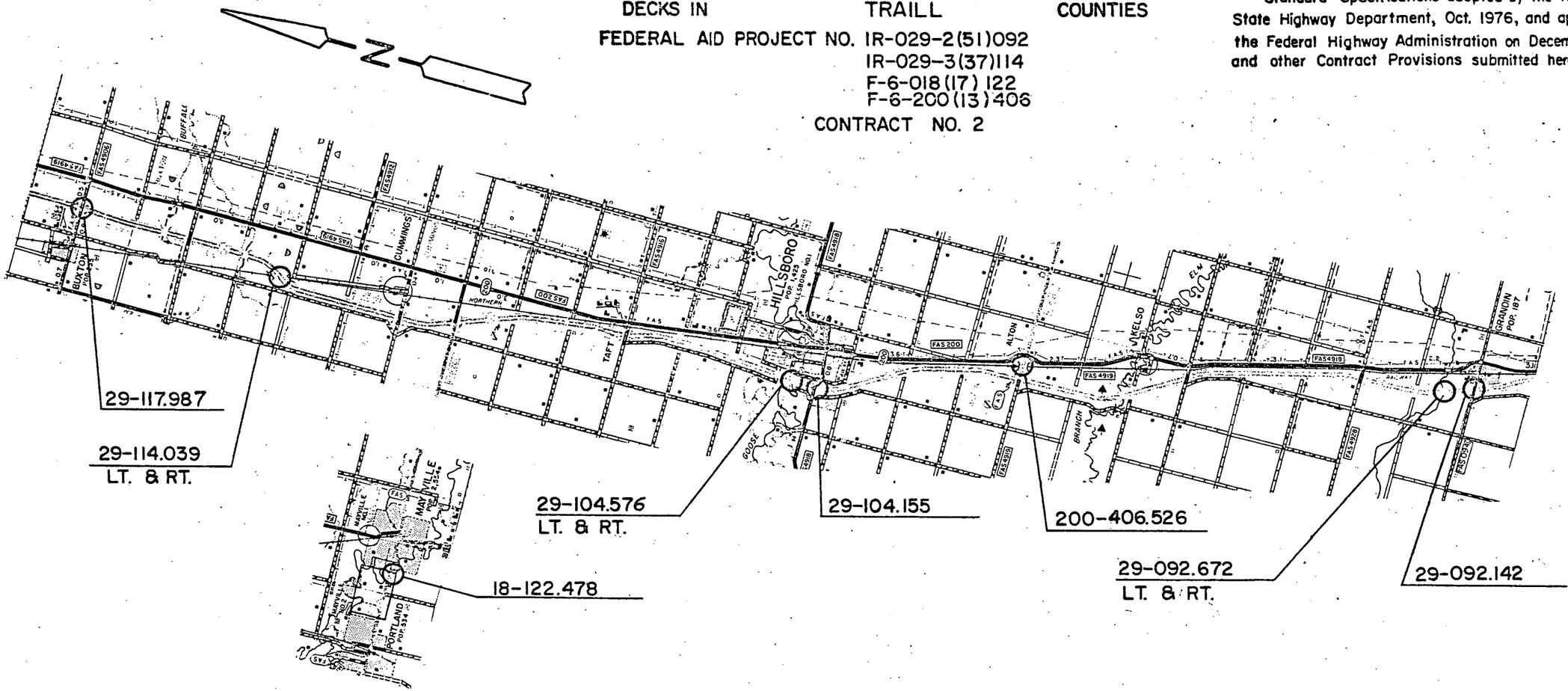
REPAIR & OVERLAY PORTLAND CEMENT CONCRETE BRIDGE DECKS IN TRAILL COUNTIES

FEDERAL AID PROJECT NO. IR-029-2(51)092
IR-029-3(37)114
F-6-018(17) 122
F-6-200(13)406

CONTRACT NO. 2

GOVERNING SPECIFICATIONS

Standard Specifications adopted by the North Dakota State Highway Department, Oct. 1976, and approved by the Federal Highway Administration on December 17, 1976, and other Contract Provisions submitted herewith.



APPROVED DATE 9-23-82

BRIDGE ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

APPROVED DATE 9-24-82

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

RAY ZINK
REGISTERED
PROFESSIONAL
ENGINEER
NORTH DAKOTA

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER DATE

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-029-2(51)092	2

IR-029-3(37)114, F-6-018(17)122
F-6-200(13)406

FED ROAD DIST. NO.	STATE	Federal Aid Project Number	TOTAL SHEETS
8	N.D.	IR-29-2(51)092 IR-29-3(37)114 F-6-200(13)406 F-6-018(17)122	3

NOTES

GENERAL

THE CONTRACTOR SHALL NOTIFY THE DISTRICT OFFICE OF THE STATE HIGHWAY DEPARTMENT WELL IN ADVANCE OF ANY WORK REQUIRED TO BE DONE BY THE STATE MAINTENANCE SO AS NOT TO INTERFERE WITH THE CONTRACTOR'S OPERATIONS.

STRUCTURAL DETAILS OF SPECIFIC STRUCTURES ARE AVAILABLE AT THE DISTRICT OFFICE OR AT THE BRIDGE DIVISION OF THE CENTRAL OFFICE IN BISMARCK.

LIMITS OF CLASS 2 AND 3 OVERLAY SHALL BE DETERMINED BY THE ENGINEER AND OUTLINED WITH SOME SUITABLE MARKING. THESE AREAS SHALL NOT BE EXPANDED UNLESS APPROVED BY THE ENGINEER. ANY REINFORCING STEEL THAT IS REPLACED IN THE DECK OR ABUTMENT SHALL BE PAID FOR IN ACCORDANCE WITH SECTION 109-5 OF THE ND STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES. THE LAP LENGTH SHALL BE A MINIMUM OF 30 DIAMETERS. NO WELDED SPLICES WILL BE ALLOWED. THE OVERLAY SHALL BE PLACED OVER ONE-HALF OF THE BRIDGE FROM LONGITUDINAL CENTERLINE TO THE CURB IN ONE CONTINUOUS POUR UNLESS OTHERWISE SHOWN. TRAFFIC SHALL BE MAINTAINED ON THE OTHER HALF OF THE ROADWAY.

CANOPY

SHOULD THE DEPTH OF CONCRETE REMOVAL MAKE IT POSSIBLE FOR THE CHIPPING HAMMER TO PENETRATE THE FULL DEPTH OF THE SLAB, A MEANS OF PROTECTING THE ROADWAY BENEATH THE STRUCTURE FROM FALLING DEBRIS SHALL BE PROVIDED AS DIRECTED BY THE ENGINEER. PAYMENT FOR SUCH PROTECTION WILL BE MADE IN ACCORDANCE WITH SECTION 109.5 OF THE ND STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES.

SUB-BASE MATERIAL

THE COST OF PLACING ANY REQUIRED AGGREGATE UNDER THE REPLACED APPROACH PANELS AND/OR PCC PAVEMENT PANELS, INCLUDING THAT REQUIRED TO BRING THEM TO THE PROPER GRADE, SHALL BE INCIDENTAL TO THE ITEMS REMOVE AND REPLACE APPROACH SLABS AND REMOVE AND REPLACE PCC PAVEMENT.

PANEL REMOVAL

THE THICKNESS OF THE EXISTING APPROACH SLAB AND/OR PCC PAVEMENT PANELS MAY VARY FROM THE ORIGINAL PLACEMENT THICKNESS DUE TO MUD JACKING WHICH HAS BEEN DONE BY THE MAINTENANCE FORCES ON SOME STRUCTURES. THE COST OF ANY EXTRA REMOVAL SHALL BE INCIDENTAL TO THE ITEMS REMOVE AND REPLACE APPROACH SLAB AND REMOVE AND REPLACE PCC PAVEMENT.

CLASS OF CONCRETE

THE CONCRETE MIX USED IN THE OVERLAYS SHALL BE AS SPECIFIED IN THE SPECIAL PROVISIONS. UNLESS OTHERWISE SPECIFIED, ALL OTHER CONCRETE SHALL BE EITHER CLASS AE-1 OR AE-3 AT THE OPTION OF THE CONTRACTOR.

SHOULDER REPAIR

AREAS OF BITUMINOUS SURFACED SHOULDERS USED TO CARRY TRAFFIC DURING CONSTRUCTION SHALL BE MAINTAINED BY THE CONTRACTOR, AND AFTER COMPLETION OF THE WORK, SHALL BE RESTORED TO SATISFACTORY CONDITION. THE CONTRACTOR WILL BE REIMBURSED AT THE BID PRICE FOR "HOT BITUMINOUS PAVEMENT-SPECIAL" FOR THE HOT MIX USED TO MAINTAIN AND REPAIR THE SHOULDER. THIS PAYMENT WILL CONSTITUTE FULL REIMBURSEMENT FOR ALL MATERIALS, LABOR, AND EQUIPMENT REQUIRED TO MAINTAIN AND REPAIR THE SHOULDERS.

HOT BITUMINOUS PAVEMENT

WHERE SPECIFIED, ASPHALT ADDED TO BRIDGE APPROACHES ON THE MAINLINE (I-29) STRUCTURES SHALL BE HOT BITUMINOUS PAVEMENT (TACONITE TAILINGS). THE ASPHALT TAPERS ON THE CROSS OVER STRUCTURES AND ANY USED ON SHOULDER REPAIR SHALL BE HOT BITUMINOUS PAVEMENT-SPECIAL. THE TACK COAT IS NOT A SEPARATE PAY ITEM, BUT SHALL BE INCLUDED IN THE PRICE BID FOR HOT BITUMINOUS PAVEMENT-SPECIAL OR HOT BITUMINOUS PAVEMENT(TACONITE TAILINGS). THE TYPE AND GRADE OF TACK SHALL BE APPROVED BY THE ENGINEER. THE ASPHALT CEMENT WILL BE PAID FOR UNDER BID ITEM 85-100 ASPHALT CEMENT. THE MINIMUM AIR TEMPERATURE AT THE TIME OF LAYDOWN SHALL BE 50 DEGREES. F. OR AS APPROVED BY THE ENGINEER. THE HOT BITUMINOUS PAVEMENT MATERIAL SHALL BE HOT MIXED AND MACHINE LAID. THE AGGREGATE USED IN THE HOT BITUMINOUS PAVEMENT-SPECIAL SHALL BE APPROVED BY THE FIELD ENGINEER.

THE AGGREGATE USED IN THE HOT BITUMINOUS PAVEMENT (TACONITE TAILINGS) SHALL HAVE A GRADATION AS FOLLOWS:

SIEVE	PERCENT PASSING
1/2	100
3/8	90-100
4	60-100
10	50-90
40	5-40
200	0-5

THE TEMPERATURE OF THE HOT BITUMINOUS PAVEMENT AT DISCHARGE FROM THE MIXER SHALL NOT EXCEED 300 DEGREES F. THE TEMPERATURE OF THE MIX AT LAYDOWN SHALL NOT BE LESS THAN 210 DEGREES F., IF THE AIR TEMPERATURE IS ABOVE 60 DEGREES, AND SHALL NOT BE LESS THAN 225 DEGREES F. IF THE AIR TEMPERATURE IS LESS THAN 60 DEGREES F. THE ACTUAL MIXING TEMPERATURE SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER WITHIN THE ALLOWABLE LIMITATIONS TO BEST SUIT CONSTRUCTION CONDITIONS.

THE COMPACTION EQUIPMENT FOR PAVING SHALL INCLUDE NOT LESS THAN ONE APPROVED STEEL ROLLER OR APPROVED VIBRATORY ROLLER AND ONE APPROVED PNEUMATIC TIRED ROLLER. THE INITIAL COMPACTION SHALL BE COMPLETED BEFORE THE MAT DROPS BELOW 170 DEGREES F., AND THE SPECIFIED DENSITY SHALL BE OBTAINED BEFORE THE MAT TEMPERATURE DROPS BELOW 140 DEGREES F.

TWO-LANE, TWO-WAY ROADWAYS

THE MAINTENANCE AND PROTECTION OF TRAFFIC FOR TWO-LANE, TWO-WAY ROADWAYS AT HILLSBORO INTER. 29-104.155 AND GOOSE RIVER AT MAYVILLE BR. 18-122.478 PROVIDES FOR FLAGGING THE TRAFFIC AT ALL TIMES, UNTIL THE ROADWAY IS COMPLETELY OPEN TO TRAFFIC. THE COST OF FLAGGING DURING THE TIME ONE-LANE TRAFFIC IS MAINTAINED SHALL BE CONSIDERED INCIDENTAL AND SHALL BE INCLUDED IN THE PRICE BID FOR TRAFFIC CONTROL. IN LIEU OF PROVIDING FLAGGING DURING THE TIME ONE-LANE TRAFFIC IS MAINTAINED, A TRAFFIC SIGNAL SYSTEM MAY BE PROVIDED, ELIMINATING THE NEED FOR FLAGGING DURING THIS PERIOD. THE TRAFFIC SIGNAL SYSTEM SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE PRECONSTRUCTION CONFERENCE. IF A TRAFFIC SIGNAL SYSTEM IS USED, A WATCHMAN IS STILL NECESSARY IN CASE THE SYSTEM MALFUNCTIONS.

PORTABLE PRECAST CONCRETE MEDIAN BARRIERS

THE NUMBER OF PRECAST CONCRETE MEDIAN BARRIERS REQUIRED ON THE PROJECT SHALL BE 65- 10 FOOT UNITS. THIS NUMBER PROVIDES FOR THE LONGEST STRUCTURE AND APPROACH ON THIS PROJECT. THE BARRIERS SHALL BE OBTAINED FROM THE FARGO AND BISMARCK DISTRICT STORAGE YARDS, TRANSPORTED TO THE WORK SITE AND ASSEMBLED AS REQUIRED. THERE ARE 13 AVAILABLE IN THE BISMARCK DISTRICT AND 52 AVAILABLE IN THE FARGO DISTRICT. UPON COMPLETION OF THE PROJECT THE CONTRACTOR SHALL RETURN THE BARRIERS TO THE DISTRICT THEY WERE OBTAINED FROM. ANY BARRIERS THAT BECOME DAMAGED DURING HANDLING, TRANSPORTING, OR PLACING SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IN LIEU OF USING THE STATE FURNISHED BARRIERS, THE CONTRACTOR MAY FURNISH THE REQUIRED BARRIERS. THE COST OF OBTAINING, TRANSPORTING, INSTALLING, MOVING AND RETURNING THE PRECAST CONCRETE MEDIAN BARRIERS SHALL BE INCIDENTAL TO PRICE BID FOR TRAFFIC CONTROL. IF THE CONTRACTOR CHOOSES TO WORK ON MORE THAN ONE STRUCTURE, ADDITIONAL BARRIERS AND ATTENUATION DEVICES SHALL BE FURNISHED AT HIS OWN EXPENSE.

ATTENUATION DEVICE

THE CONTRACTOR SHALL PROVIDE THE ATTENUATION DEVICE AS SHOWN IN THE PLANS.

CURB AND GUTTER FOR BRIDGE APPROACHES

WHERE SPECIFIED, THE CURB AND GUTTER SHALL BE BUILT TO MATCH THE NEW GRADE AS ESTABLISHED FOR THE BRIDGE APPROACHES. THE CURB SHALL TRANSITION FROM THE EXISTING SECTION ON THE BRIDGE TO THE TYPICAL SECTION SHOWN ON THE GROUND AS SHOWN ON STANDARD D-708-6, OR D-708-1 AS SPECIFIED ON THE DRAWINGS. THE MOUNTABLE CURB AND GUTTER SHALL TRANSITION FROM THE EXISTING SECTION ON THE BRIDGE TO THE TYPICAL SECTION IN A DISTANCE OF 10 FEET.

CONSTRUCTION JOINTS

ALL EXISTING CONSTRUCTION OR RELIEF JOINTS, TRANSVERSE OR LONGITUDINAL, SHALL BE CLEANED OUT PRIOR TO THE PLACEMENT OF THE OVERLAY. THE OVERLAY SHALL THEN BE SAW CUT AT THESE LOCATIONS WITHIN 24 HOURS OF PLACEMENT. THE JOINT SHALL THEN BE SEALED WITH HOT POURED ELASTIC TYPE JOINT SEALER 0 INCH TO 1/8 INCH BELOW THE FINISHED PAVEMENT. THE COST OF ANY SUCH WORK SHALL BE INCIDENTAL TO CLASS 1 OVERLAY OR OVERLAY TAPER.

GUARD RAIL AND/OR END POSTS

WITH THE EXCEPTION OF THOSE SPECIFIED, ANY APPROACH GUARD RAIL OR END POSTS REMOVED IN CONNECTION WITH PLACING CURB AND GUTTER SECTIONS, APPROACH TAPERS, OR DECK OVERLAYS, SHALL BE FOR THE CONTRACTOR'S CONVENIENCE ONLY. THE COST OF ANY SUCH REMOVAL SHALL BE AT THE CONTRACTOR'S EXPENSE AND THE REMOVED ITEMS SHALL BE REPLACED TO EXISTING CONDITIONS.

GUARDRAIL EMBANKMENT

THE EMBANKMENT MATERIAL REQUIRED TO CONSTRUCT THE GUARDRAIL EMBANKMENT MAY BE OBTAINED FROM WITHIN THE RIGHT OF WAY. ALL AVAILABLE TOPSOIL IN THE AREAS TO BE DISTURBED SHALL BE SALVAGED AND STOCKPILED SO IT MAY BE SPREAD ON THE EMBANKMENT INSLOPES AND OVER THE BORROW AREAS AND SEEDED. THE ENGINEER SHALL APPROVE THE AREAS FROM WHICH THE EMBANKMENT MATERIAL IS OBTAINED AND THE TYPE OF SEED USED. COMPACTION SHALL BE IN ACCORDANCE WITH SEC. 203-2.5 (TYPE C) OF THE STANDARD SPECIFICATIONS. ALL INSLOPES ON AREAS THAT ARE TO BE WIDENED REGARDLESS OF RATE OF SLOPE SHALL BE BENCHED UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BENCHES SHALL BE DEEP ENOUGH TO PROVIDE A SUFFICIENT WIDTH TO PERMIT PLACING, SPREADING AND COMPACTING EQUIPMENT TO OPERATE. EACH BENCH SHALL BE THOROUGHLY COMPACTED BEFORE ADDITIONAL EMBANKMENT IS PLACED. COST FOR BENCHING, PLACING OF EMBANKMENT, TOP SOIL SALVAGING, STOCKPILING, SPREADING AND SEEDING SHALL BE INCLUDED IN THE PRICE BID FOR BOX BEAM GUARDRAIL.

SPECIAL PROVISIONS

NO.	NAME
SP-103.3	AWARD AND EXECUTION OF CONTRACT
SP-107-7	LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC
SP-108-9	PROSECUTION AND PROGRESS
SP-108-19	PROSECUTION AND PROGRESS
SP-109-4	MEASUREMENT AND PAYMENT
SP-402	REPAIR AND OVERLAY OF P.C.C. BRIDGE DECKS WITH LOW SLUMP CONCRETE
SP-406-11	HOT BITUMINUS PAVEMENT
SP-746-1	FLAGGING
SP-756-2	FIELD LABORATORY
SP-762-6	MAINTENANCE & PROTECTION OF TRAFFIC
SP-610-3	PORTLAND CEMENT CONCRETE
SP-806-3	AGGREGATE FOR PORTLAND CEMENT
SP-370	RAILWAY PROTECTION INSURANCE
SP-722-2	GUARDRAIL, GUARD POSTS, AND GUIDE POSTS
SP-850-2	GUARDRAIL AND GUARD POSTS

LIST OF STANDARDS

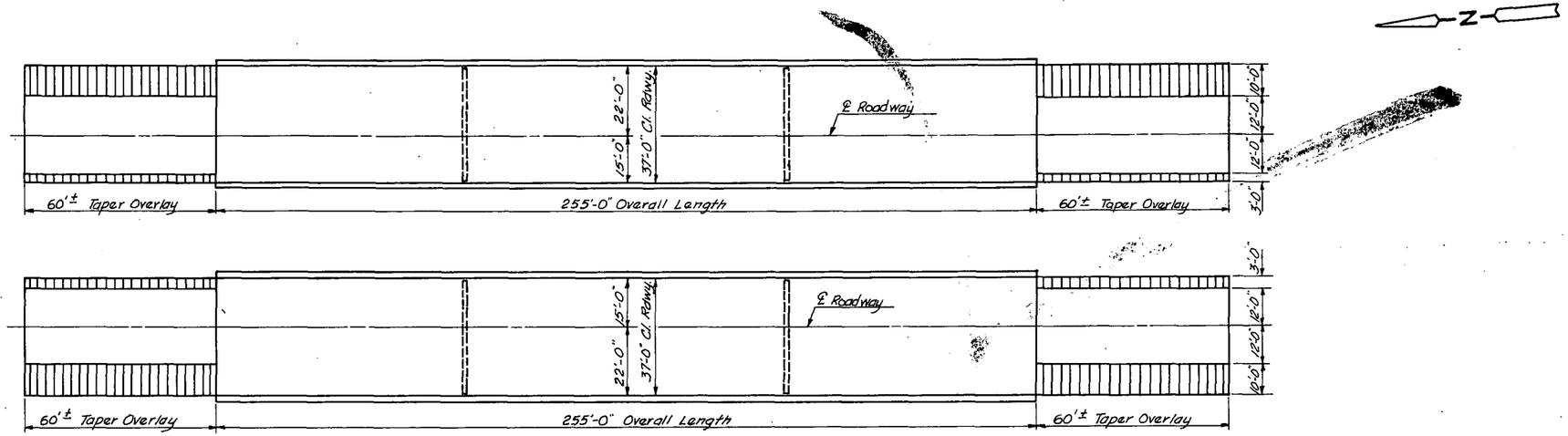
D-708-1
D-708-6
D-722-1, 14, 15, 16 & 18

SUMMARY OF QUANTITIES

SPEC. NO.	103	406	602	705	708	716	722	746	750	756	762	900	900	900	900	900	900	708	722	722	722	406	322
CODE NO.	0100	0230	0130	0100	0410	0100	0150	0100	0100	0100	3298	9501	9690	9700	9701	9702	9705	0420	0118	0119	0600	0100	0360
BRIDGE NO.	CONTRACT BOND	HOT BITUMINOUS PAVEMENT-SPECIAL	CLASS AAE-3 CONCRETE	MOBILIZATION	MOUNTABLE CURB AND GUTTER TYPE I	ADJUST CATCH BASIN	REMOVE & RESET GUARDRAIL	FLAGGING	LINSEED OIL TREATMENT	FIELD LABORATORY TYPE "A"	TRAFFIC CONTROL	APPROACH SLAB REMOVE & REPLACE	CURB OVERLAY	CLASS I OVERLAY	CLASS 2 OVERLAY	CLASS 3 OVERLAY	OVERLAY TAPER	CURB & GUTTER TYPE I REINFORCED	BOX BEAM GUARD RAIL	BOX BEAM GUARD RAIL - END TREATMENT	BOX BEAM GUARDRAIL FLARED END TREATMENT & TRANSITION	HOT BIT. PAVEMENT (TACONITE TAILINGS)	85-100 ASPHALT CEMENT
	L.S.	TON	C.Y.	L.S.	L.F.	EA.	L.F.	M. HR.	GAL.	L.S.	L.S.	S.Y.	L.F.	S.Y.	S.Y.	S.Y.	S.Y.	L.F.	L.F.	EA.	EA.	TON	TON
GRANDIN INT. 29-092.142	1	24.0		1	160	4		25	14.0	1	1			933.3	186.7	46.7							1.6
S. BRANCH ELM RIVER 29-092.672 LT.								35	15.3			82.2		698.9	139.8	34.9	320						
S. BRANCH ELM RIVER 29-092.672 RT.								35	15.3			164.4		698.9	139.8	34.9	320						
HILLSBORO INT. 29-104.155		24.0			80	2		35	15.9					1060.0	212.0	53.0							1.6
GOOSE RIVER 29-104.57 LT.								25	20.5					1048.3	209.7	52.4	320						
GOOSE RIVER 29-104.57 RT.								25	20.5					1048.3	209.7	52.4	320						
BN SEP. LT. 29-114.039			11.3			4	100	35	20.3					1356.7	271.3	67.8						215.0	14.0
BN SEP. RT. 29-114.039			11.3			4	100	35	20.3					1356.7	271.3	67.6						215.0	14.0
BUXTON INT. 29-117.98		20.0						35	13.3					883.3	176.7	44.2							1.3
SUB-TOTAL		68.0	22.6	1	240	14	200	285	155.4	1	1	246.6		9,084.4	1,817.0	454.1	1280					430.0	32.5
BN SEP @ BLANCHARD 200-406.224 INT.		29.0			160	4		35	15.5				440	880.0	176.0	44.0							1.9
GOOSE RIVER @ MAYVILLE 18-122.473		27.0						25	11.7					777.8	155.6	38.9		80.0	524.6	2	2		1.8
TOTAL	1	124.0	22.6	1	400	18	200	345	182.6	1	1	246.6	440	10,742.2	2,148.6	537.0	1280	80.0	524.6	2	2	430.0	36.2

NOTES & QUANTITIES

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-29-2(51)092	9



PLAN

37'-0" Clear Roadway
Deck drains on both bridges

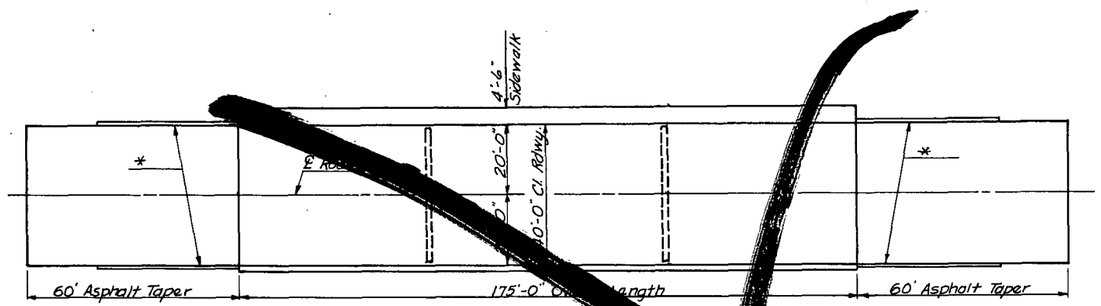
ASPHALT OVERLAY

Asphalt shoulders to be brought to final grade with an asphalt overlay and shall be incidental to "Taper Overlay".

GOOSE RIVER AT HILLSBORO

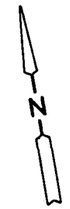
LT. & RT. 29-104.576-8

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	F-6-018 (17)122	10



PLAN

40'-0" Clear Roadway
Deck drains on bridge



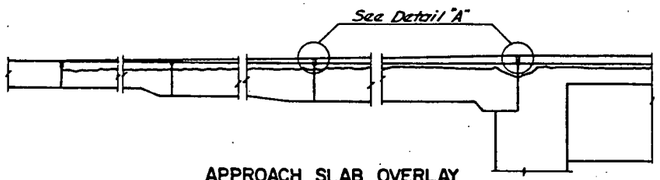
* Remove existing curb & gutter on all 4 corners of structure. Replace curb & gutter on East & West approaches on the North side only, as shown on Standard D-708-6. Removal and replacement to be paid for under bid item "Curb and Gutter Type ... Reinforced".

NOTE: Remove existing guardrail and replace with Box Beam Guardrail as shown on Standards D-712-14, 15, 16 and 17. To be paid for under bid items "Box Beam Guard Rail", "Box Beam Guardrail - End Treatment" and "W-Beam Guardrail - Flared End Treatment - ... Transition". Guardrail which is removed shall be ... loaded and stockpiled at the North Dakota State ... Department Maintenance yard at Mayville, N. D. Any ... embankment, if needed, shall be incidental to ... payment "Box Beam Guard Rail".

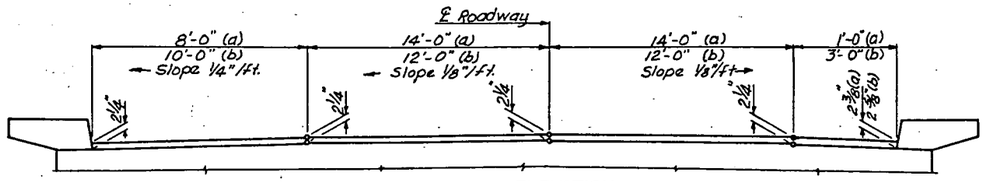
GOOSE R...
AT MAYV...E

18-122.478-9

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-29-2(101)92 IR-29-3(107)114 F-6-200(13)406 F-6-018(17)122	20

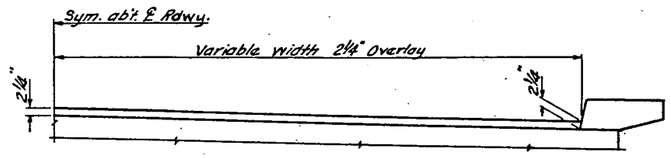


APPROACH SLAB OVERLAY



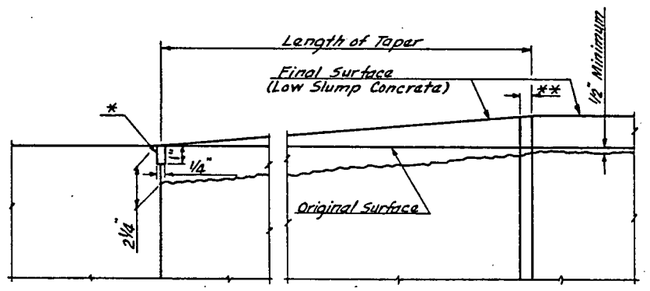
ELEVATION

(a) S. BRANCH ELM RIVER LT. & RT
(b) GOOSE RIVER LT. & RT.
(b) BNRR SEP. LT. & RT.



ELEVATION

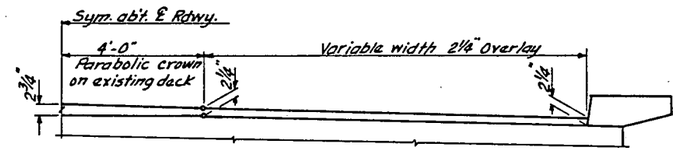
GRANDIN INT.
BNRR SEP. (200-406.526)
HILLSBORO INT.
BUXTON INT.



DETAIL "A"

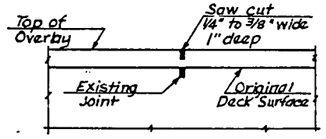
* To be filled with hot poured joint filler

** Remove existing premolded joint filler & fill hot poured joint filler. Width 1½".



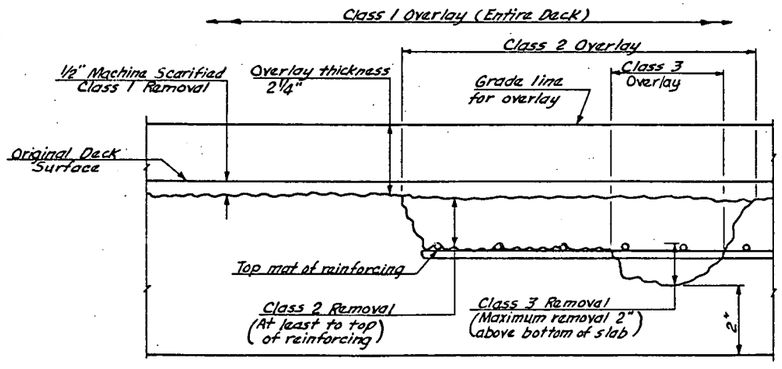
ELEVATION

GOOSE RIVER (18-122.478)



CONSTRUCTION OR RELIEF JOINTS
(TRANSVERSE & LONGITUDINAL)

Incidental to Class 1 Overlay or Overlay Taper



BRIDGE DECK

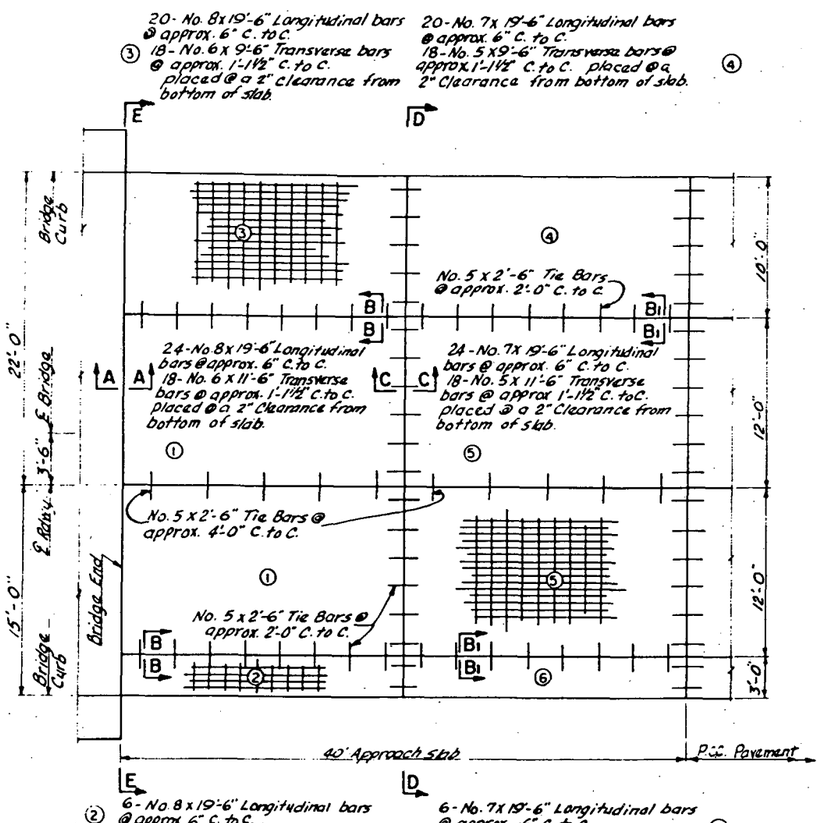
NOTE:

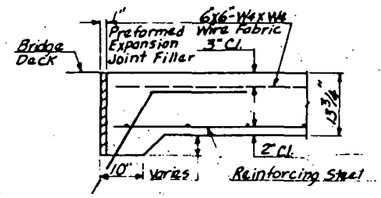
Maximum limits for Class 3 Overlay will be determined in the field, but will be less than full depth of slab. (See Special Provisions)

OVERLAY DETAILS

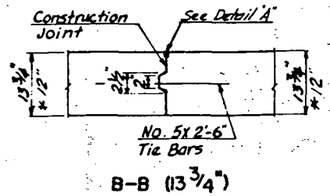
CONTRACT NO. 2 29-13

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-029-2(52)100	19

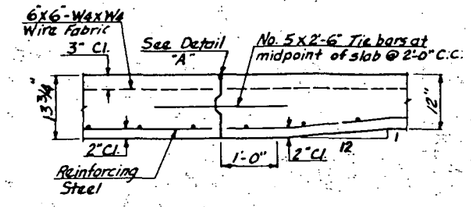




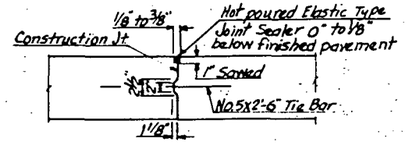
A–A



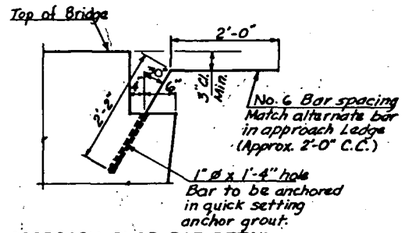
B–B (13¾")
* B1–B1 (12")



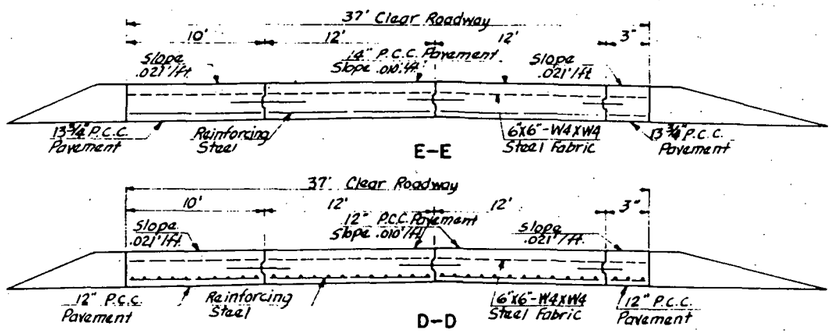
C–C



DETAIL "A"



APPROACH SLAB BAR DETAIL



E–E

D–D

NOTE:
All labor and materials required in removal and replacement of approach slabs will be incidental to the pay item "Approach Slab (Remove & Replace)".
Quantity for 2 Approach Slabs = 329 S.Y.

NOTE: 2" x 42' Recycled Hot Bituminous Pavement shall be placed beneath the approach slab. 42 ton are provided for in the mainline quantities.

Panels No. 1, 2 & 3		Panels No. 4, 5 & 6	
21 - No. 6 x 4'-2"	131	74 - No. 7 x 19'-6"	2,950
74 - No. 8 x 19'-6"	3,853	36 - No. 5 x 11'-6"	432
36 - No. 6 x 11'-6"	622	18 - No. 5 x 9'-6"	178
18 - No. 6 x 9'-6"	257	40 - No. 5 x 2'-6"	104
18 - No. 6 x 2'-6"	68		3,664 lbs.
40 - No. 5 x 2'-6"	104		
	5,035 lbs.		
Wire Mesh	76 S.Y.	Wire Mesh	76 S.Y.

Bar list for information purposes only.

GOOSE RIVER

BRIDGE APPROACH SLAB

37'-0" CLEAR ROADWAY

LET 5/16/00

DESIGN DATA				
Traffic	Average Daily			Est.Max.Hr.
Current 2000	Pass: 3.385	Trucks 835	4.220	425
Forecast 2020	Pass: 5.420	Trucks 1.420	Total 6.840	685
Minimum Sight Dist. for:		Design Speed 70		
Stopping 625'		Bridges		
Limited Access Control				

JOB# 15

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-8-029(040)099	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

Federal Aid Project IM-8-029(040)099
In Traill County
Concrete Pavement Repair, Dowel Bar Retrofit, Grinding, Mill and Overlay
(Northbound Roadway)
Mill and Overlay (Southbound Roadway)

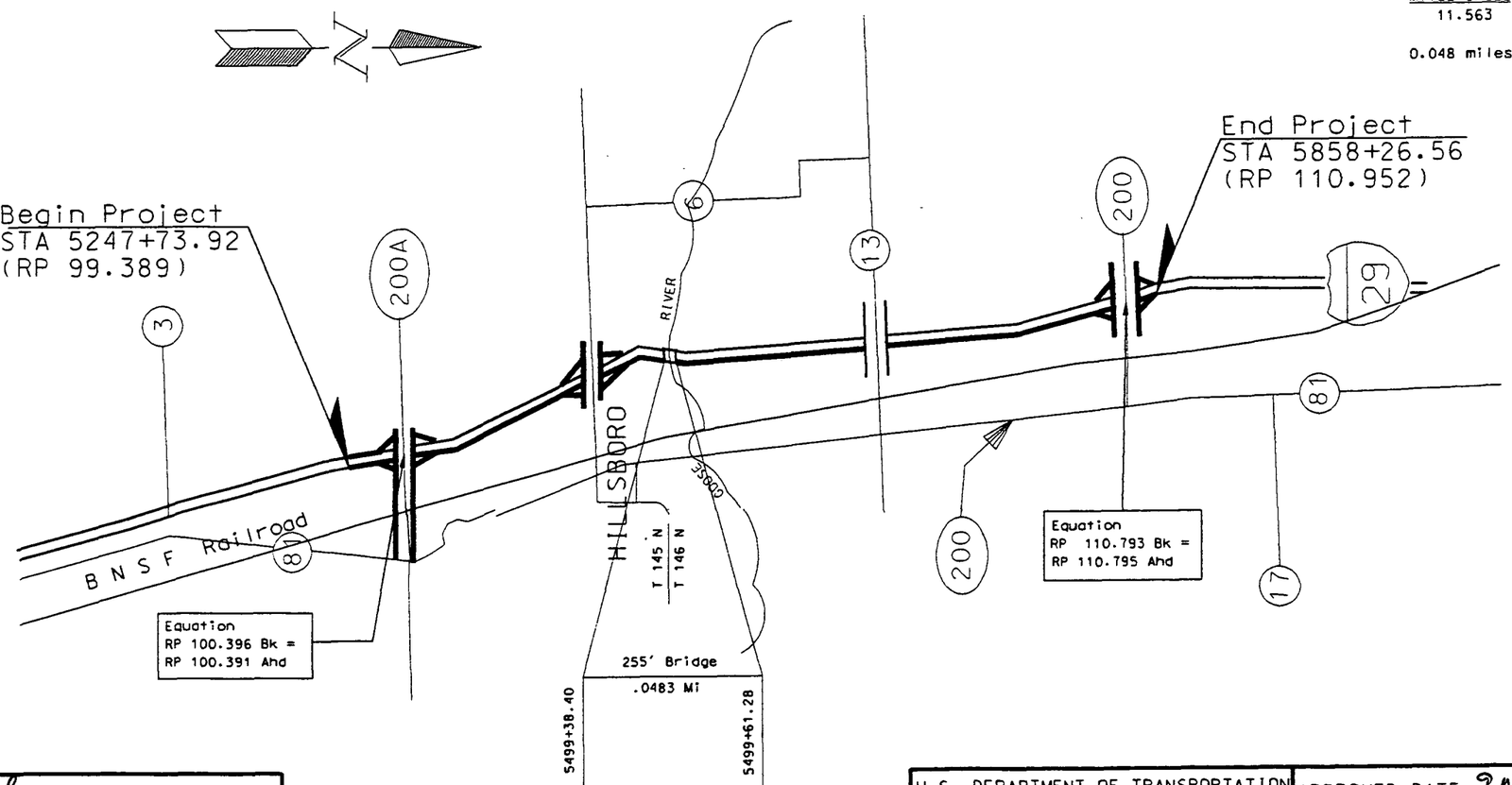
GOVERNING SPECIFICATIONS:

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
11.563	11.515

0.048 miles deducted for bridge



DESIGNER Benjamin Marohl
DESIGNER _____
DESIGNER _____
RECOMMEND APPROVAL _____, 19___
DESIGN ENGINEER _____

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

_____ _____
DIVISION ADMINISTRATOR DATE

APPROVED DATE 9 MARCH 00

Robert R. Walton Jr.
DISTRICT ENGINEER

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

ROBERT R. WALTON, JR. REGISTERED PROFESSIONAL PE 4040 ENGINEER NORTH DAKOTA

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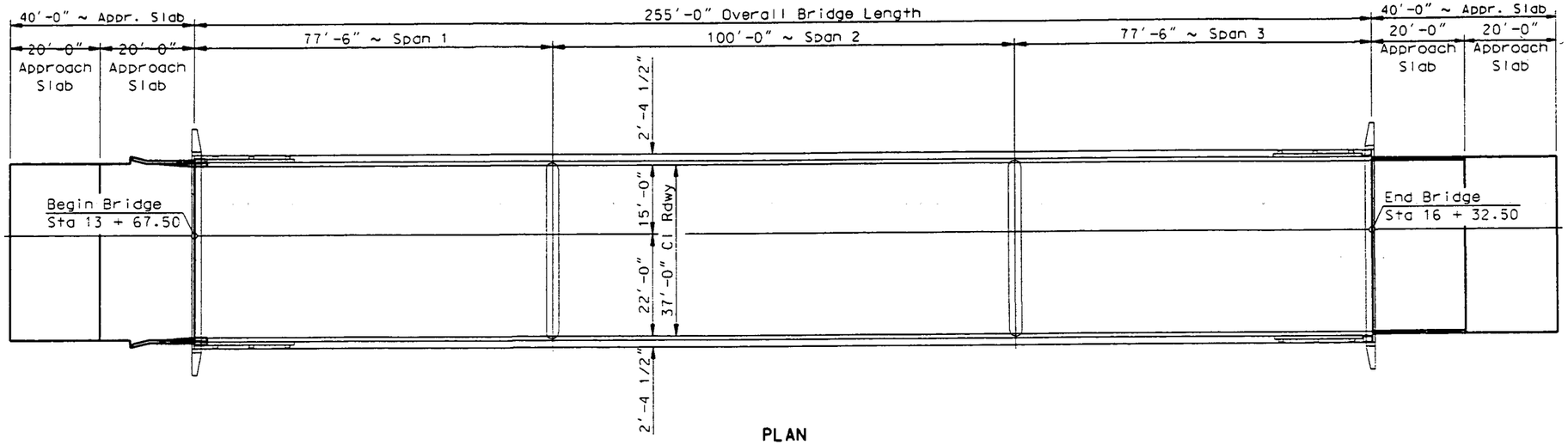
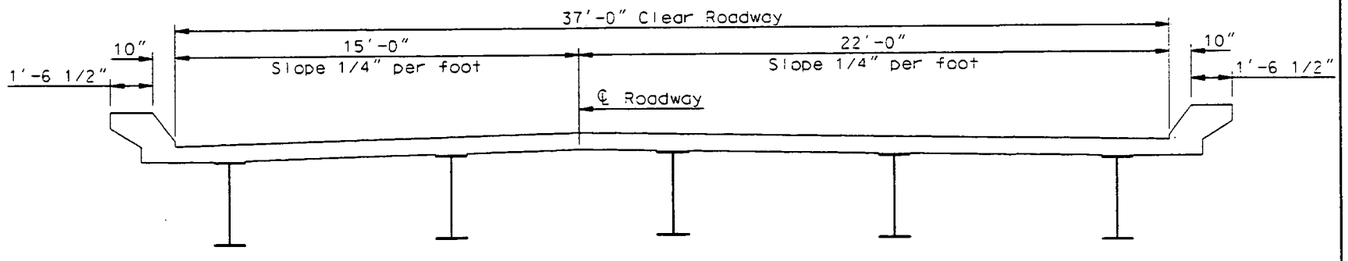
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(040)099	84



PLAN



TYPICAL DECK SECTION

NOTES:

930 NOSING CONCRETE: The nosing concrete material shall be an elastomeric concrete or a polymeric concrete that will provide a durable edge that can withstand live-load traffic without chipping or spalling. The nosing concrete material shall be SILSPEC 900 PNS, manufactured by Silicone Specialties Inc.; WABOCRETE II, manufactured by Watson Bowman Acme; ELASTOMERIC CONCRETE, manufactured by D.S. Brown Company or an approved equal. The nosing concrete shall be mixed and installed according to the manufacturer's recommendation. All labor and materials required to install the nosing concrete shall be included in the bid item "Nosing Concrete".

930 SILICONE: The silicone sealant shall be a rapid cure, self leveling, cold applied, two component silicone sealant that will bond to and be compatible to the nosing concrete used. The sealant shall be installed according to the manufacturer's recommendations. The silicone sealant and the nosing concrete must be supplied by the same manufacturer as a complete system. The backer rod and any necessary bonding materials shall be included in the bid item "Silicone Sealant".

930 TECHNICAL ASSISTANCE: The Contractor shall acquire a technical assistance from the manufacturer of the nosing concrete and the silicone sealant for the surface preparation and installation of the nosing concrete and silicone sealant. A technical representative must be present for the start of surface preparation and installation for at least one day. The Contractor shall contact the manufacturer at least two weeks prior to the installation. The technical assistance shall be provided at no additional cost to the Department.

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
550	0217	BRIDGE APPROACH SLAB - REMOVE & REPLACE	SY	340.2
602	1210	BRIDGE END POST MODIFICATION	EA	2
930	8642	NOSING CONCRETE	CF	12.6
930	8644	SILICONE SEALANT	LF	74

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

GOOSE RIVER

BRIDGE LAYOUT

PROJECT: IM-8-029(040)099
STATION 328 + 88.5

TRAILL COUNTY

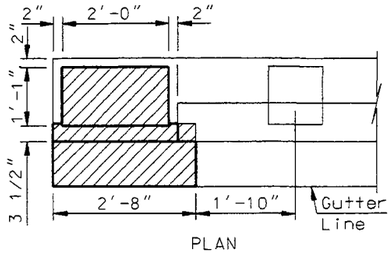
BRLO 00DLS33 LLS

29-104.576R

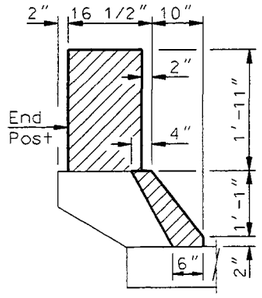
...\DLS\DLS\29-104.576R\brlo.dgn 02/23/2000 03:56:48

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

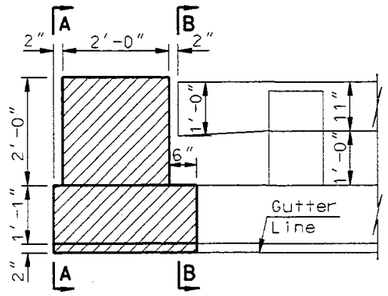
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	IM-8-029(040)099	85



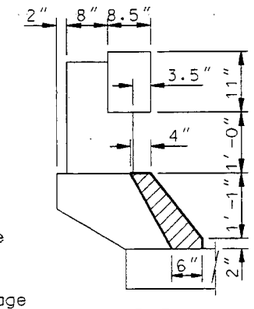
PLAN



A-A



ELEVATION



B-B

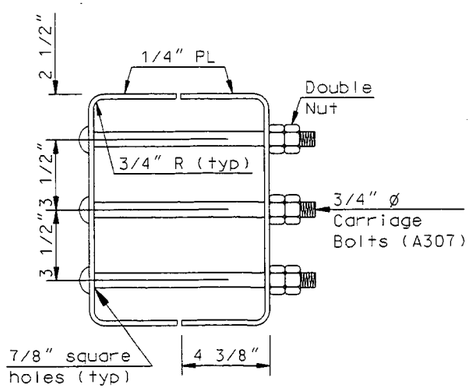
Hatched areas indicate concrete to be removed.

Care shall be taken to ensure no damage is done to the existing reinforcing steel that is to remain in place.

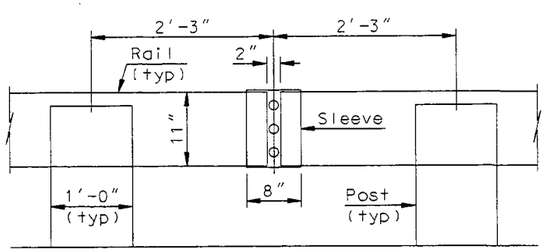
END POST REMOVAL DETAILS

NOTE:

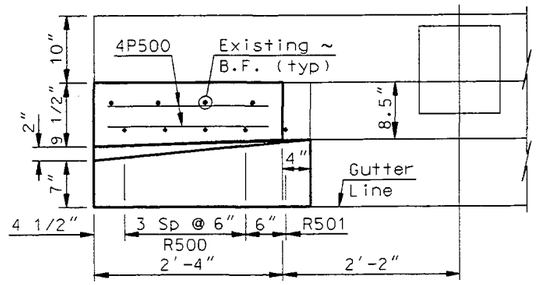
The steel plates shall be M183 steel. Plates, bolts and nuts shall be galvanized in accordance with AASHTO M111. All materials and labor required to install the rail sleeves shall be included in the pay item "Bridge End Post Modification".



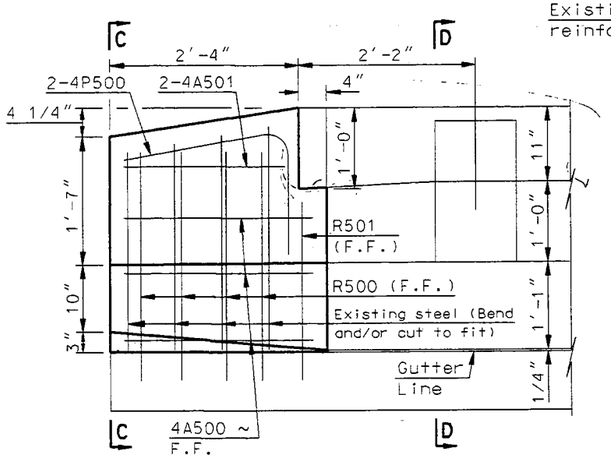
SLEEVE DETAIL



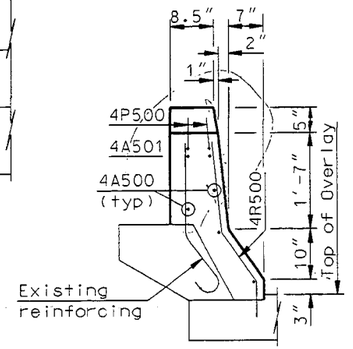
(4 Required)
ELEVATION
SLEEVE AT RAIL JOINT



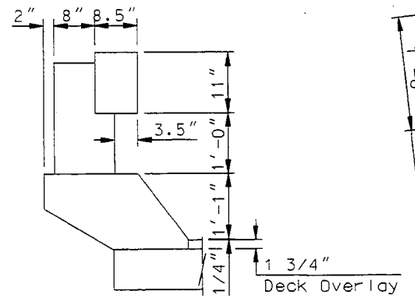
PLAN



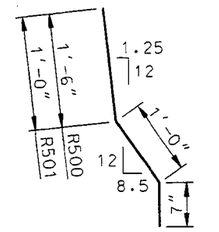
ELEVATION
END POST MODIFICATION DETAILS



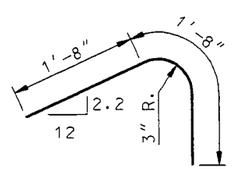
C-C



D-D



R500 & R501



P500

DIMENSIONS SHOWN ARE OUT TO OUT
BENT BAR DETAILS

NOTE:

The concrete shall be class AAE-3 and the reinforcing steel shall be grade 60.

The existing end posts shall be removed and properly disposed of.

The 4R500's & 4R501's shall be installed according to the manufacturers recommendations, with a high strength adhesive specifically intended for concrete anchorage in accordance with section 806.02 of the NDDOT Standard Specifications.

The quantities shown are for informational purposes only. All materials, labor and equipment including concrete and reinforcing bars required to remove and replace the end posts shall be included in the pay item "Bridge End Post Modification".

Surface Finish "D" shall be required for all surfaces of the end posts.

BAR LIST (ONE POST)

SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	4	2'-4"	STR.
4	A501	2	2'-0"	STR.
4	P500	2	3'-4"	BENT
4	R500	4	3'-1"	BENT
4	R501	1	2'-7"	BENT

ESTIMATE OF QUANTITIES

REMOVAL OF CONCRETE	0.21 CY
CLASS AAE-3 CONCRETE	0.21 CY
REINFORCING STEEL	23 LBS

QUANTITIES

BRIDGE END POST MODIFICATION	2 EA

GOOSE RIVER

RAIL SLEEVE & END POST MODIFICATION DETAILS

29-104.576R-1

ENDPOST OODLS28 LLS
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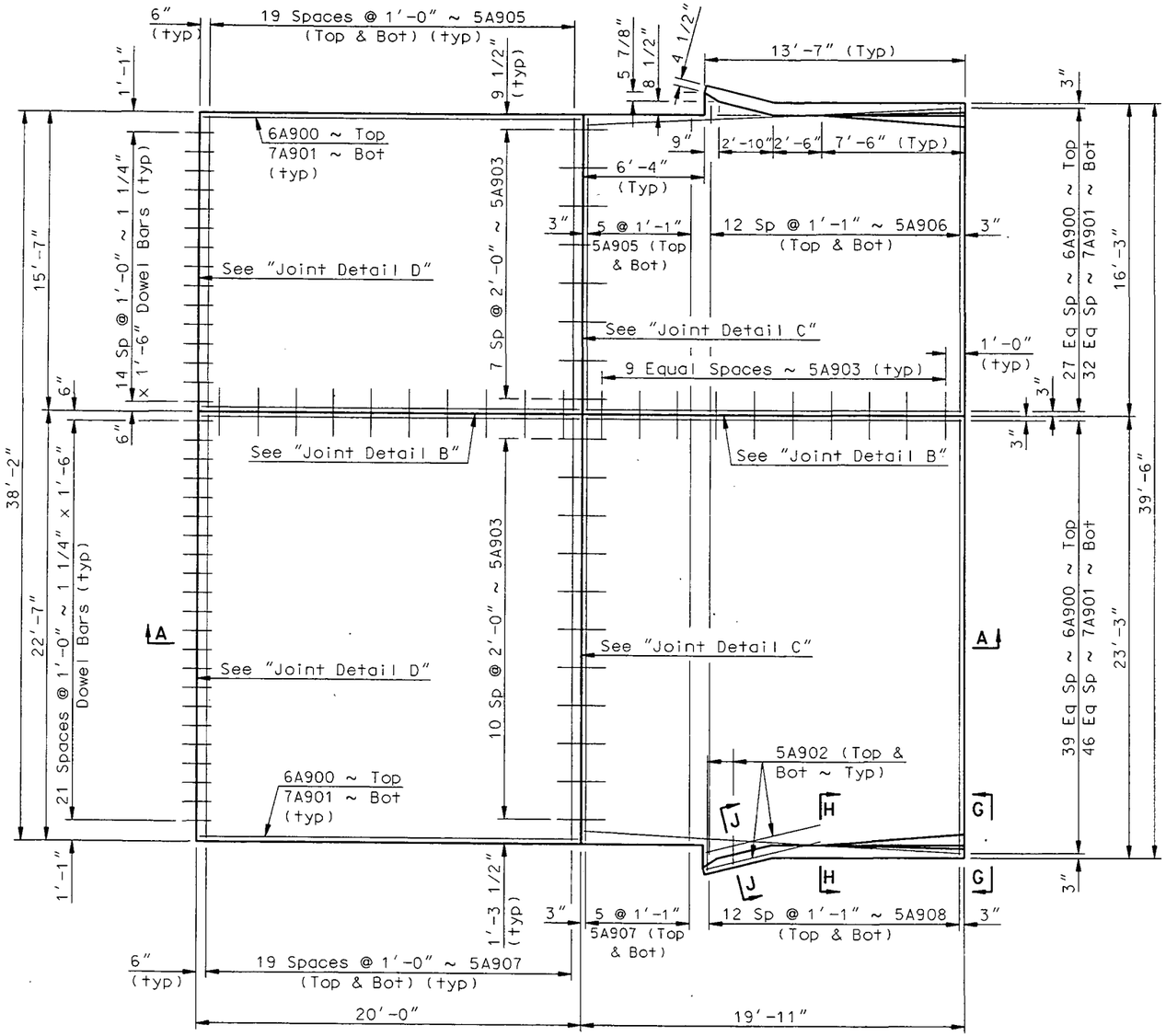
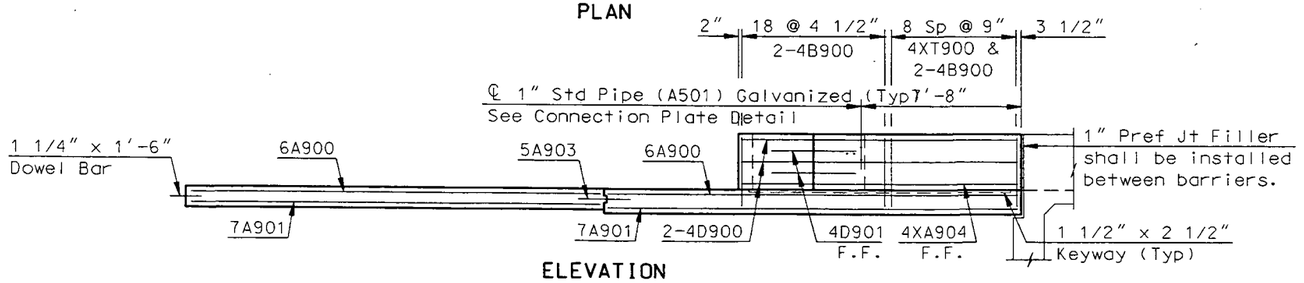
23 U.S.C. 409
NDDOT Reserves All Objections

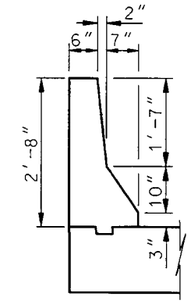
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(040)099	86



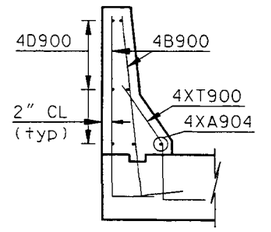
PLAN



ELEVATION

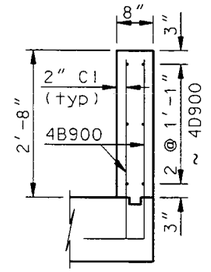


(SHOWING DIMENSIONS)
G-G

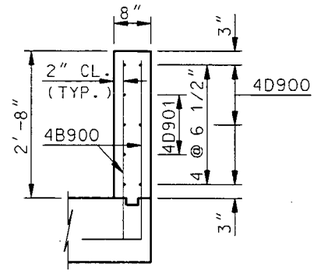


(FIELD BEND 4XT900's TO FIT AS REQUIRED)

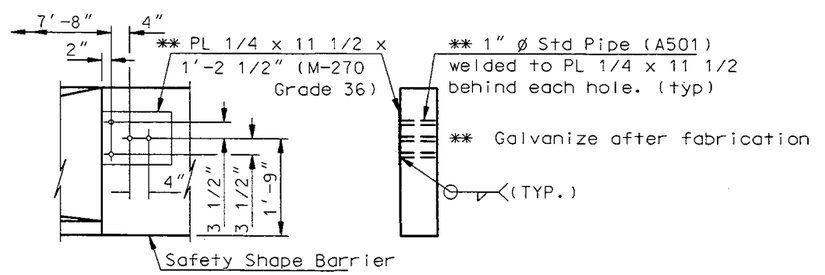
(SHOWING REINFORCING)
G-G



H-H



J-J



(SHOWING INSIDE FACE)
CONNECTION PLATE DETAILS

NOTE:

See Dwg 29-104.576R-3 for Section A-A, Detail "B", Detail "C" and Detail "D".

See Dwg 29-104.576R-5 for Notes.

QUANTITIES

See Dwg 29-104.576R-3

GOOSE RIVER

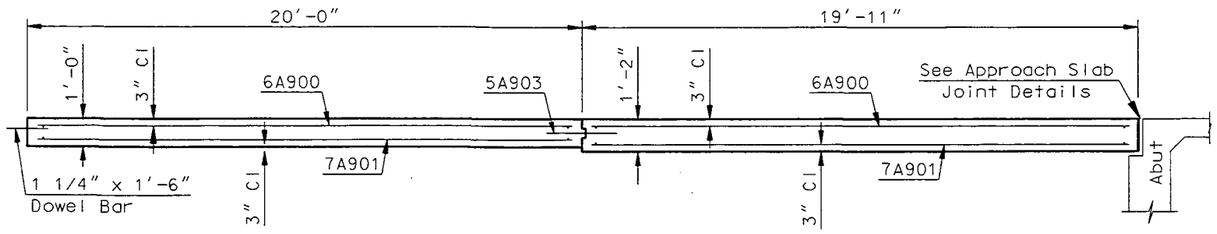
(AT BEGIN BRIDGE)
APPROACH SLAB DETAILS

APPSLAB OODLS29 LLS
...\DLS\29-104.576R\appslab.dgn Mar. 21, 2000 10:52:50

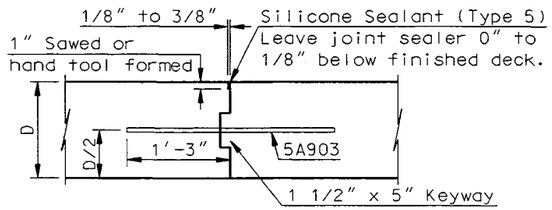
29-104.576R-2

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

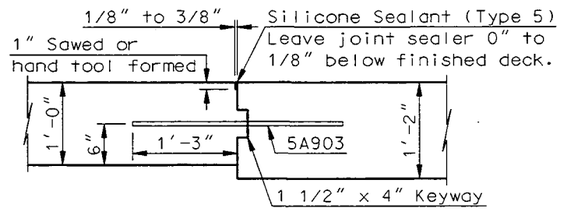
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(040)099	87



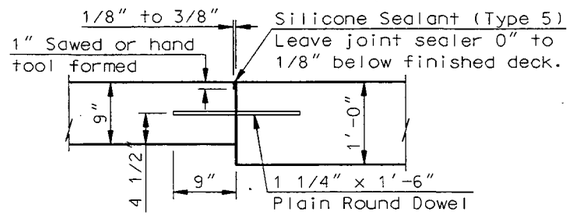
A-A



JOINT DETAIL B



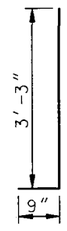
JOINT DETAIL C



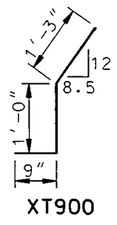
JOINT DETAIL D

SKEW ANGLE = 0°			
BAR LIST - ONE SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	136	19'-7"
7	A901	160	19'-7"
5	A902	16	6'-0"
5	A903	39	2'-6"
4	XA904	2	7'-6"
5	A905	52	15'-3"
5	A906	26	15'-11"
5	A907	52	22'-3"
5	A908	26	22'-11"
4	B900	112	4'-0"
4	D900	12	13'-3"
4	D901	4	4'-0"
4	XT900	18	3'-0"

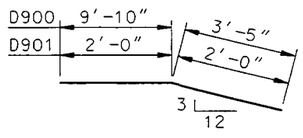
ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
14,156	65.7



B900



XT900



D900 & D901

NOTE:

See Dwg 29-104.576R-2 for Section A-A and the location of Detail "B" and Detail "C".

See Dwg 29-104.576R-5 for Notes.

All dowel bars shall be epoxy coated and conform to AASHTO M-254 Type B.

Free ends of Type B epoxy coated dowels (minimum of one-half of dowel length plus 2 inches) shall be given a thin, *uniform* coating of grease. This coating shall be applied within two hours before covering with concrete.

The above note applies to the transverse joint between the approach slab and the concrete pavement only. Longitudinal joints in the approach slabs shall be tied together with rebar.

QUANTITIES	(ONE SLAB)
APPROACH SLAB	171.7 SY

GOOSE RIVER

(AT BEGIN BRIDGE)

APPROACH SLAB DETAILS

APPSLAB1 00DLS30 LLS

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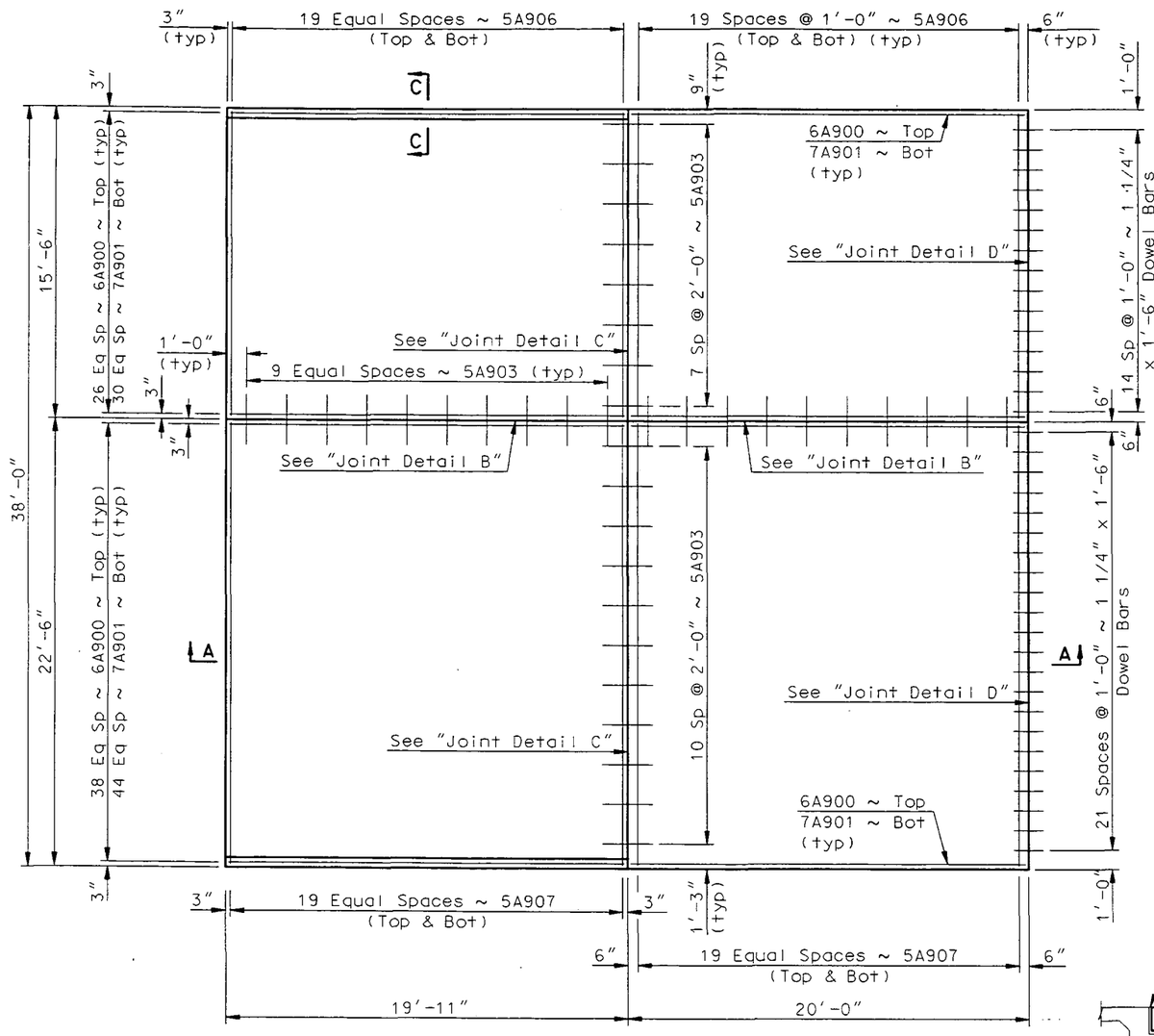
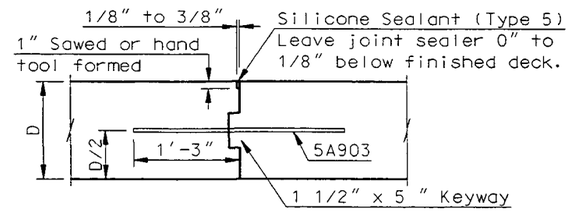
29-104.576R-3

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

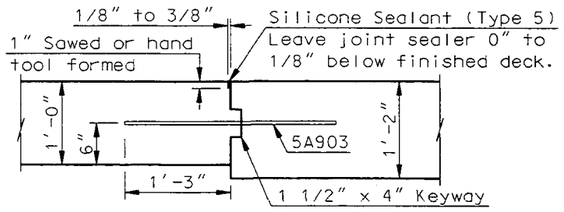
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(040)099	88



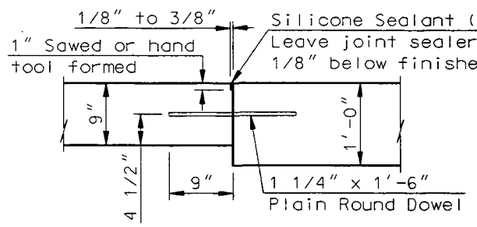
PLAN



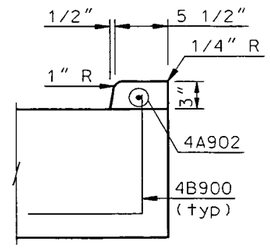
JOINT DETAIL B



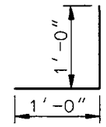
JOINT DETAIL C



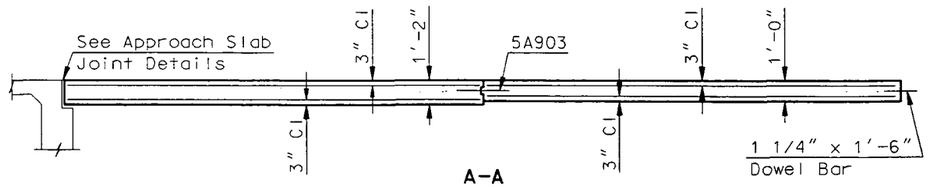
JOINT DETAIL D



C-C



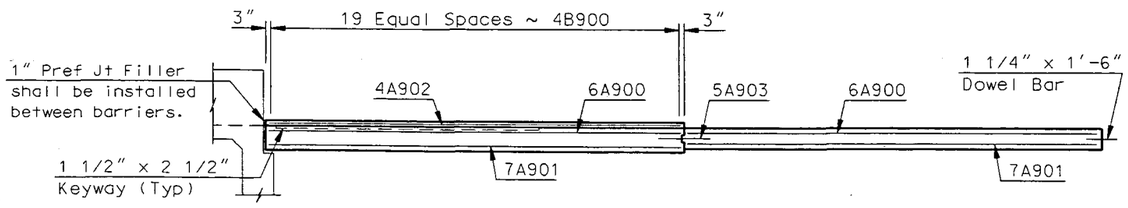
B900



A-A

SKEW ANGLE = 0°			
BAR LIST - ONE SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	132	19'-7"
7	A901	152	19'-7"
4	A902	2	19'-7"
5	A903	39	2'-6"
5	A906	80	15'-2"
5	A907	80	22'-2"
4	B900	40	2'-0"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS)	CONCRETE (CY)
13,263	61.0



ELEVATION

NOTE:
See Dwg 29-104.576R-6 for Notes.

QUANTITIES	(ONE SLAB)
APPROACH SLAB	168.5 SY

GOOSE RIVER

(AT END BRIDGE)
APPROACH SLAB DETAILS

APPSLAB2 OODLS38 LLS
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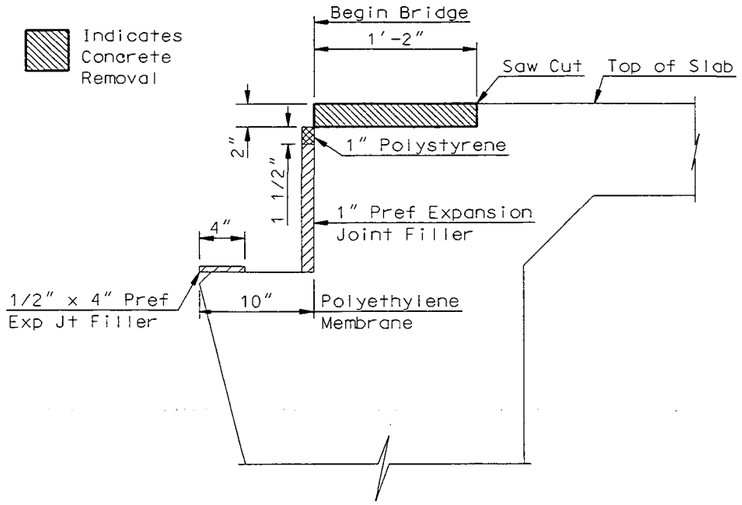
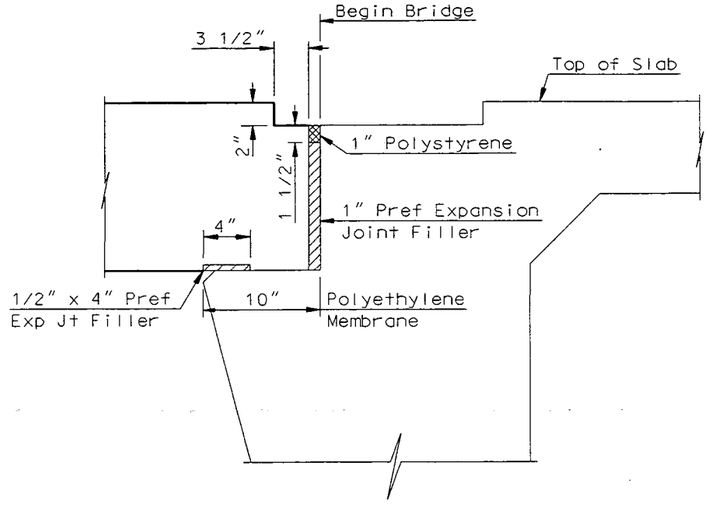
29-104.576R-4

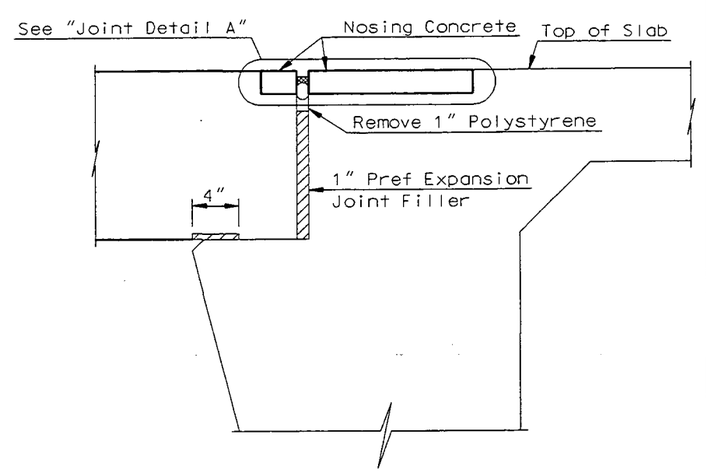
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	IM-8-029(040)099	89



STAGE 1



STAGE 2



STAGE 3

NOTES:

STAGE 1:

1. Remove concrete at ends of deck to allow for nosing concrete.
2. Place the 1" preformed expansion joint filler, the 1/2" x 4" preformed expansion joint filler, the 1" polystyrene and the polyethylene membrane.

STAGE 2:

3. Place the new approach slab concrete. A 2" x 3 1/2" blockout shall be formed between the curbs in the approach slab as shown.

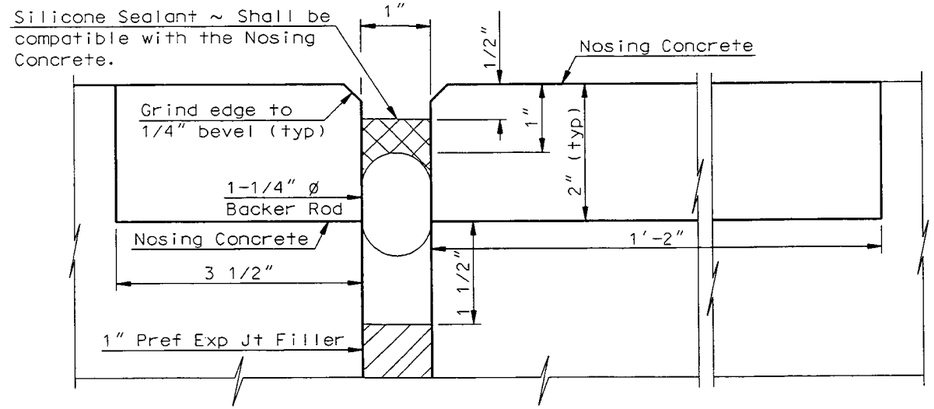
STAGE 3:

4. Remove the 1" polystyrene.
5. Place nosing concrete in the blockout areas, both in the deck and in the approach slab.
6. After the nosing concrete has cured, grind the 1/4" beveled edge. Clean and prepare the joint, apply any necessary bonding material. Install the backer rod and the silicone sealant.

All estimated material quantities shown on drawing number 29-104.576R-3 are for information purposes only. All materials including concrete, reinforcing bars, dowel bars, polythylene membrane, preformed joint filler and labor required to build the approach slabs and approach slab barriers shall be included in the pay item, "Bridge Approach Slab - Remove & Replace".

The concrete shall be Class AE-3 and the reinforcing steel shall be Grade 60. The polyethylene membrane shall meet the requirements of AASHTO M171.

Surface Finish "D" shall be required for all surfaces of the curb transitions.



JOINT DETAIL A

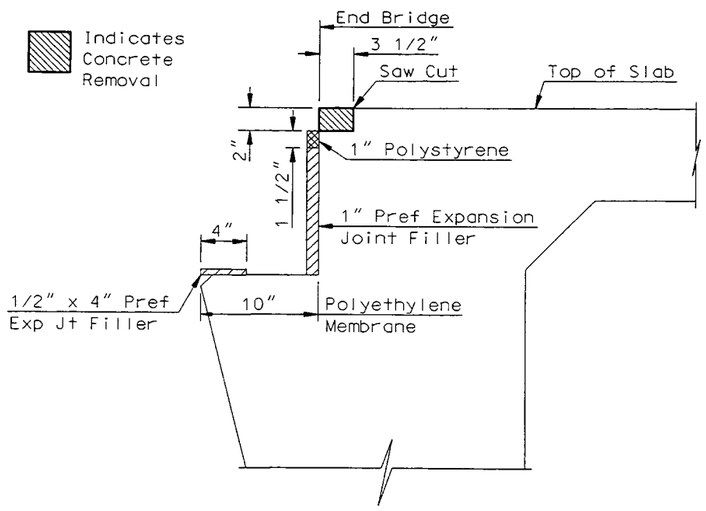
QUANTITIES	(ONE APPROACH)
NOSING CONCRETE	9.0 CF
SILICONE SEALANT	37.0 LF

GOOSE RIVER

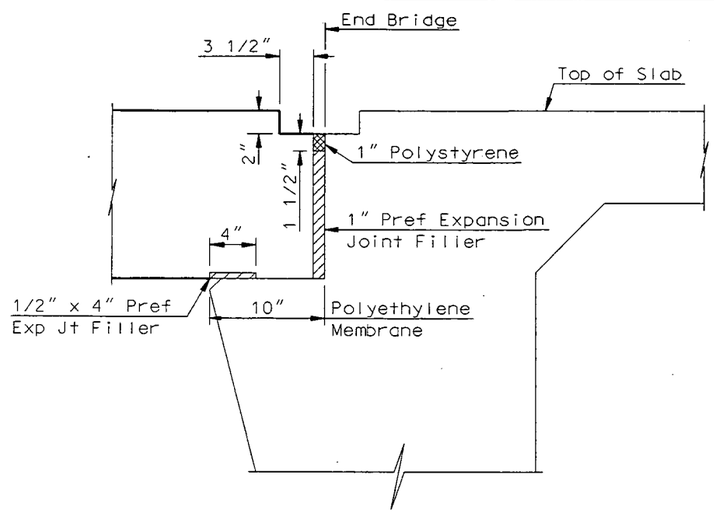
(AT BEGIN BRIDGE)

APPROACH SLAB JOINT DETAILS & NOTES

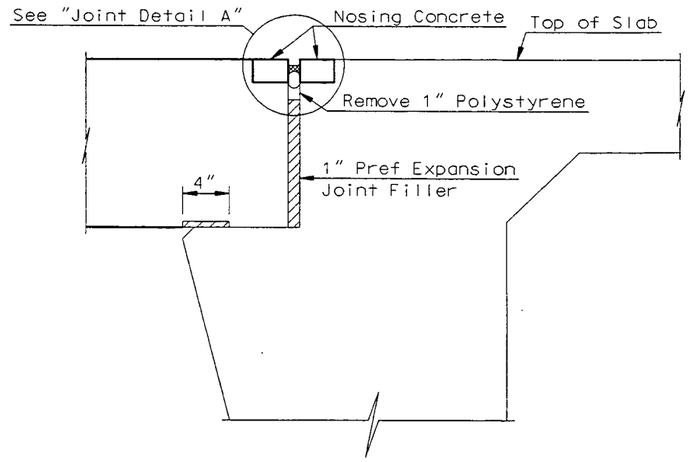
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	IM-8-029(040)099	90



STAGE 1



STAGE 2



STAGE 3

NOTES:

STAGE 1:

1. Remove concrete at ends of deck to allow for nosing concrete.

2. Place the 1" preformed expansion joint filler, the 1/2" x 4" preformed expansion joint filler, the 1" polystyrene and the polyethylene membrane.

STAGE 2:

3. Place the new approach slab concrete. A 2" x 3 1/2" blockout shall be formed between the curbs in the approach slab as shown.

STAGE 3:

4. Remove the 1" polystyrene.

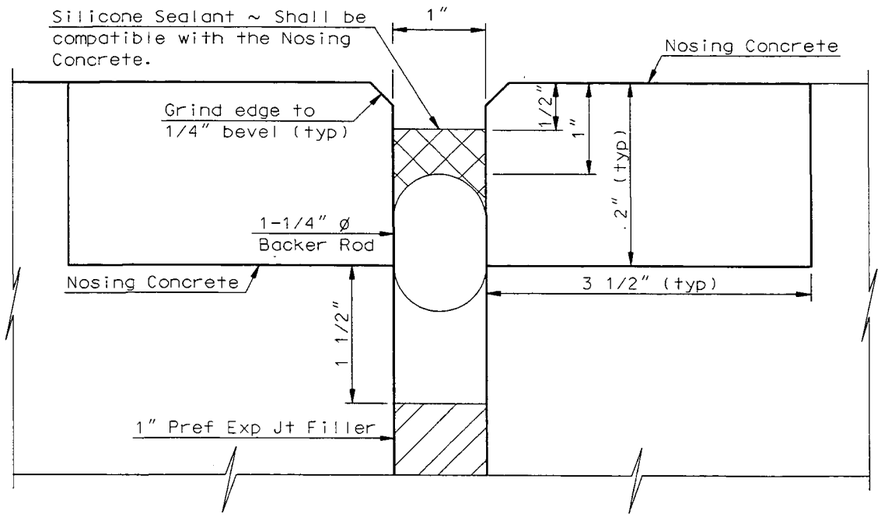
5. Place nosing concrete in the blockout areas, both in the deck and in the approach slab.

6. After the nosing concrete has cured, grind the 1/4" beveled edge. Clean and prepare the joint, apply any necessary bonding material. Install the backer rod and the silicone sealant.

All estimated material quantities shown on drawing number 29-104.576R-4 are for information purposes only. All materials including concrete, reinforcing bars, dowel bars, polythylene membrane, preformed joint filler and labor required to build the approach slabs and approach slab barriers shall be included in the pay item, "Bridge Approach Slab - Remove & Replace".

The concrete shall be Class AE-3 and the reinforcing steel shall be Grade 60. The polyethylene membrane shall meet the requirements of AASHTO M171.

Surface Finish "D" shall be required for all surfaces of the curb transitions.



JOINT DETAIL A

QUANTITIES (ONE APPROACH)	
NOSING CONCRETE	3.6 CF
SILICONE SEALANT	37.0 LF

GOOSE RIVER

(AT END BRIDGE)

APPROACH SLAB JOINT DETAILS & NOTES

APPSLJT1 OODLS32 LLS

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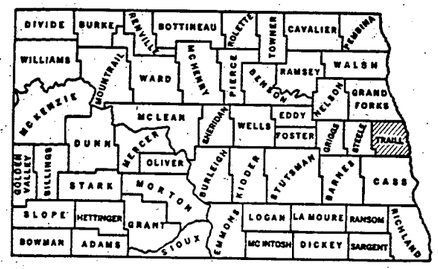
29-104.576R-6



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

SCALES
- LAYOUT SHEET: 1 IN. = 5000 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. & 1 IN. = 20 FT

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

PLANS

FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN TRAILL COUNTY

FEDERAL AID PROJECT NO. I-29-2(20)99 & F-FG-426(6)

GRADING & STRUCTURAL

INDEX OF DRAWINGS

PROJ. F-FG-426(6) SHEET – 1 thru 28, 2E thru 2G, 3A, 3I thru 34, 283 thru 305

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
I-29-2(20)	11.405	11.405
F-FG-426(6)	0.198	0.198
TOTALS	11.603	11.603

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99	1	319

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway department Jan. 1965 and approved as standard by the Bureau of Public Roads June 23, 1965. Required Contract Provisions (Form PR-1273) dated October 1966 and others submitted herewith.

DESIGN DATA
I-29-2 (20)99

TRAFFIC	AVERAGE DAILY	EST. 30TH MAX. HR.
CURRENT TRAFFIC (1969)	2300 PASS. 400 TRUCKS 2700 TOTAL	340
TRAFFIC FORECAST (1989)	5050 PASS. 890 TRUCKS 5940 TOTAL	750

DESIGN SPEED 70 MPH
TRAFFIC CLASSIFICATION "M"
MINIMUM SIGHT DISTANCE (NON PASSING) 600'
FULL CONTROL OF ACCESS, NO POINT OF ACCESS OTHER THAN BY RAMPS AT INTERCHANGES.

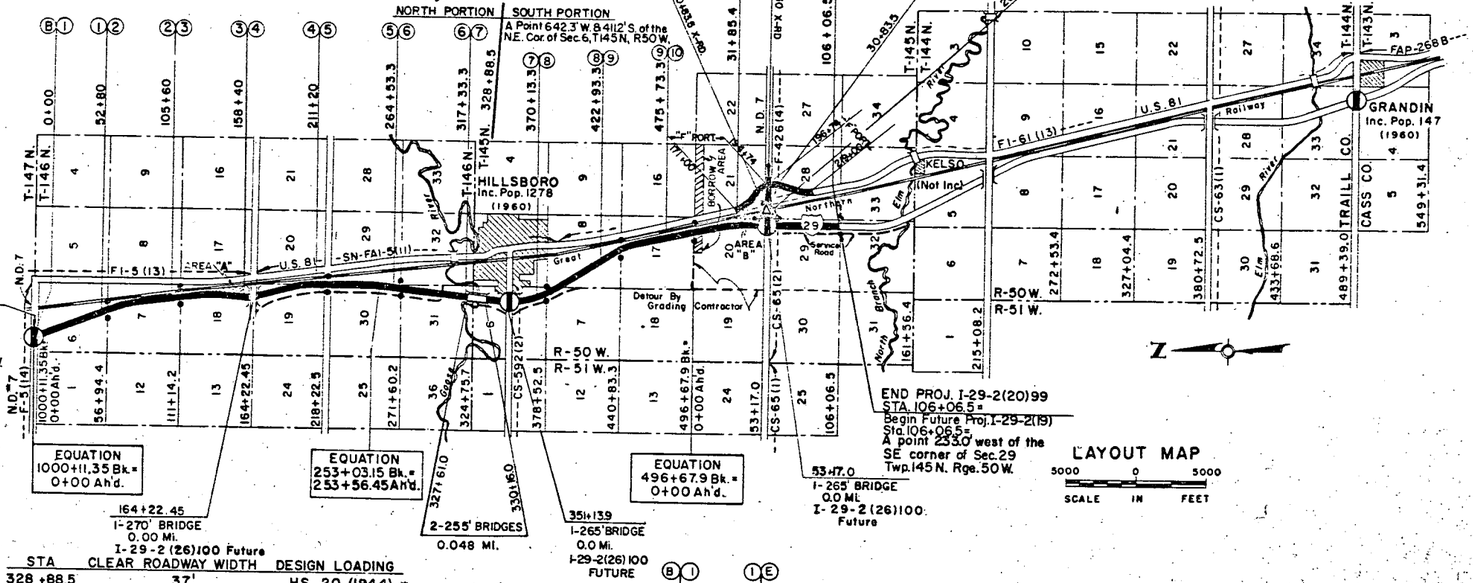
DESIGN DATA
F-FG-426 (6)

TRAFFIC	AVERAGE DAILY	EST. 30TH. MAX. HR.
CURRENT TRAFFIC (1969)	550 PASS. 100 TRUCKS 650 TOTAL	85
TRAFFIC FORECAST (1989)	1100 PASS. 200 TRUCKS 1300 TOTAL	170

DESIGN SPEED 60 MPH
TRAFFIC CLASSIFICATION "M"
MINIMUM SIGHT DISTANCE (NON PASSING) 475'
MINIMUM SIGHT DISTANCE (SAFE PASSING) 2300'
MINIMUM PASSING SIGHT DISTANCE FOR MARKING 1000'

LEGEND
- INTERCHANGE
- HIGHWAY GRADE SEPARATION – NO CONNECTION.
- OTHER BRIDGE
- SERVICE ROAD
- TERMINATED CROSS-ROAD
- △ RAILROAD GRADE SEPARATION

STRUCTURE

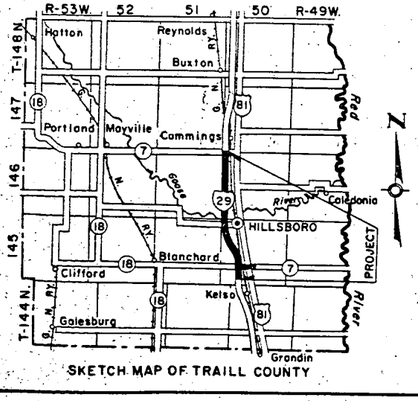


REFER TO SHEET NO. 2C FOR LIST OF STRUCTURAL DRAWINGS AND SHEET NO'S

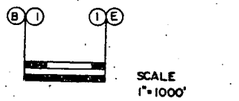
LAYOUT MAP
5000 0 5000
SCALE IN FEET

STA	CLEAR ROADWAY WIDTH	DESIGN LOADING
328+88.5	37'	HS 20 (1944) *

* AND ALTERNATE LOADING AS DESIGNATED IN PPM 20-4, SECTION 4 C



SKETCH MAP OF TRAILL COUNTY



SIGHT DISTANCE DIAGRAM
F-FG-426 (6)

LEGEND
- PASSING ZONES (1000' MIN. S.D.)
- NON PASSING ZONES
- SAFE PASSING SECTIONS (2300' MIN. S.D.)

KEY TO CONVENTIONAL SIGNS
- STATE & NATIONAL LINES
- COUNTY LINE
- TOWNSHIP & RANGE LINES
- GRADE LINE (800)
- CENTERLINE OF CONSTRUCTION
- OLD RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE
- ABANDONED RIGHT OF WAY LINE
- PROPERTY LINE
- STONE WALL
- OTHER FENCES (KIND)
- POLE LINES (KIND)
- POWER LINES (KIND)
- BRIDGE
- GROUND ELEVATION GRADE (1650 / 1615 / 245)
- TRAVELED WAY
- RAILROADS (KIND & NAME)
- HEDGES AND TREES (KIND)
- TRAILS
- CITY OR VILLAGE CORPORATE LIMITS
- SECTION CORNER
- QUARTER SECTION CORNER
- BUILDINGS
- OLD CULVERTS
- NEW CULVERTS
- DRAINAGE
- BENCH MARKS (BM)
- WATERS EDGE
- MARSH
- WIRE ROPE GUARD RAIL
- SNOW FENCE
- RIPRAP
- GUARD POSTS
- COBBLE GUTTERS
- CONCRETE GUTTERS (CONCRETE GUTTER 2'-0")
- SODDING AND JUTE MESH

APPROVED DATE 7-10-69

CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

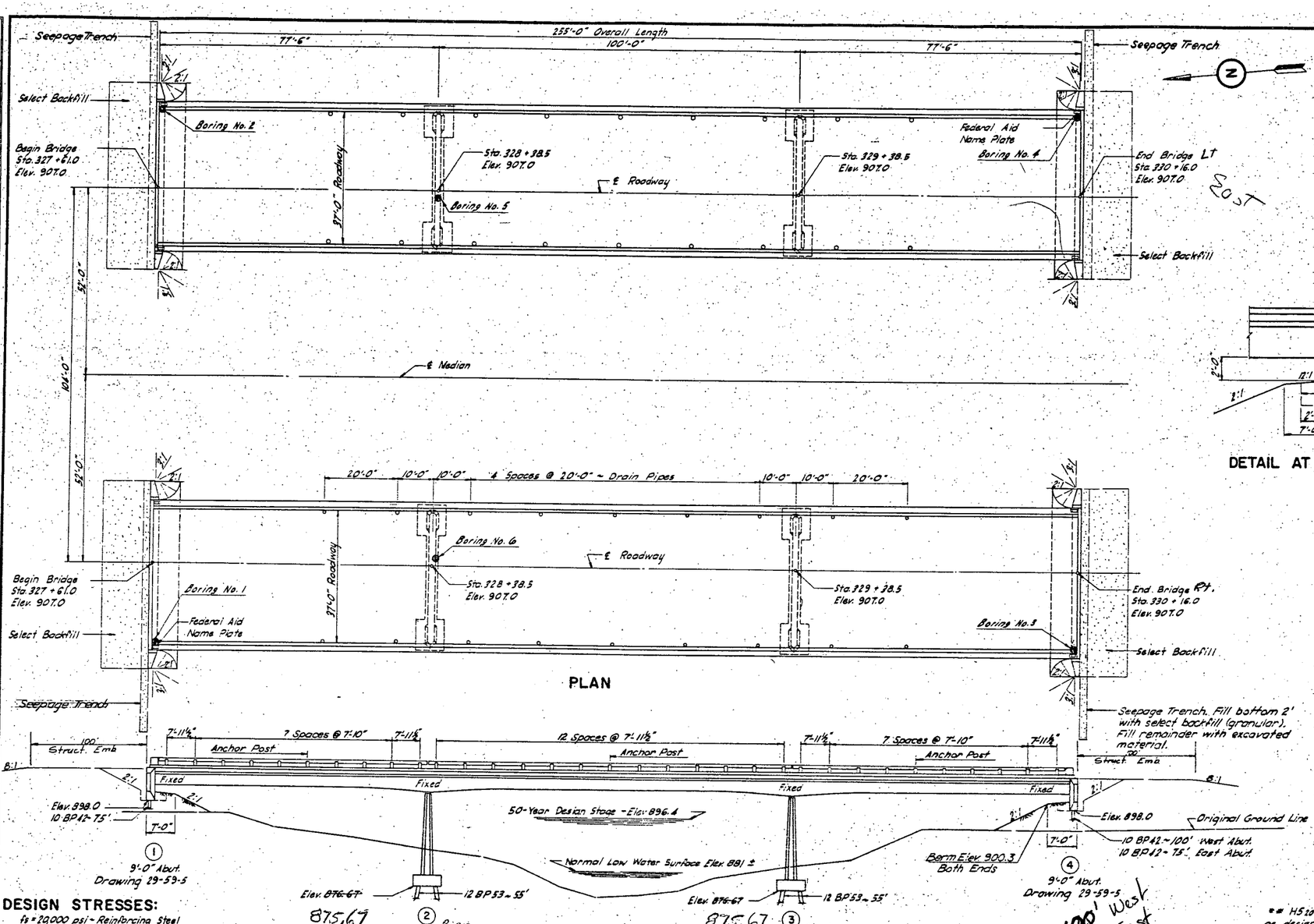
L. L. SHAFER
REGISTERED PROFESSIONAL ENGINEER
STATE OF NORTH DAKOTA
3609

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
BUREAU OF PUBLIC ROADS

APPROVED

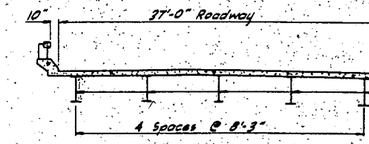
DIVISION ENGINEER DATE

BRIDGE CODE	FED ROAD DIST NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
X-071	5	N. D.	I-29-2(20)99	58	319



PLAN

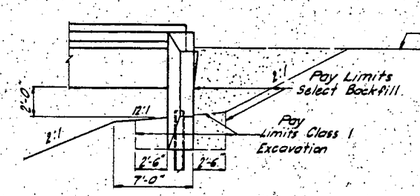
ELEVATION



DECK SECTION

1969
FEDERAL AID
PROJECT
I-29-2(20)99
NORTH DAKOTA
29-59

FEDERAL AID NAME PLATE
2 REQUIRED



DETAIL AT ABUTMENTS

The general notes for this project are shown on Drawing 29-59-1.

① See SP-33 for Painting.
① See SP-35 for Structural Steel.
② See SS-21 for Piling.
③ See SP-27 for Backfill.
④ See SP-32 for Reinforcement.
See SP-34 for Quick Setting Anchor Grout.
See SP-29 for Optional Concrete Surface Finish.

ESTIMATE OF QUANTITIES (TWO BRIDGES)

SPEC. NO.	CODE NO.	BID ITEM		
203	0100	COMMON EXCAVATION	42,125	CU. YD.
208	0100	CLASS 1 EXCAVATION	165	CU. YD.
208	0100	CLASS 2 EXCAVATION	630	CU. YD.
228	0100	SELECT BACKFILL ③	360	CU. YD.
216	0100	WATER		"M" GAL.
610	1112	CLASS AE-1 CONCRETE (SUB-STRUCTURE)	381.6	CU. YD.
610	1134	CLASS AE-3 CONCRETE (I-BEAM SUPERSTR.)	603.6	CU. YD.
610	0138	CLASS AAE-3 CONCRETE (RAILING)	33.08	CU. YD.
612	0110	REINFORCING STEEL ① (GRADE 40)	242,064	LB.
616	4412	STRUCTURAL STEEL (A-441) ① (WELDED BEAM)	353,520	LB.
616	0362	STRUCTURAL STEEL (A-36) ① (WELDED BEAM)	66,530	LB.
622	0020	STEEL PILING (10 BP 42) ②	1475	LIN. FT.
622	0040	STEEL PILING (12 BP 53) ②	2090	LIN. FT.
622	0540	STEEL TEST PILES (10 BP 42) ② @ 110 FT.	2	EACH
622	1360	STEEL TEST PILES (12 BP 53) ② @ 85 FT.	2	EACH
750	0100	LINSEED OIL TREATMENT	97	GAL.
	3000	BRIDGE BENCH MARKS	1	SET

STRUCTURAL DRAWINGS

GENERAL DRAWING 29-59(THIS SHEET) 29-59-1 THRU 29-59-4
SUBSTRUCTURE 29-59-5, 29-59-6, 29-59-7, H-0401
SUPERSTRUCTURE 29-59-8 THRU 29-59-12, H-0153, STD. 7.6, STD.14.98, H-0501

DESIGN LOADING	SCALE
** HS20 (1944)	1 INCH = 15 FEET

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

GOOSE RIVER BRIDGE

BRIDGE LAYOUT

PROJECT I-29-2(20)99 STA. 328 + 88.5

TRAILL COUNTY

APPROVED

12-28-67
DATE

BRIDGE ENGINEER

JOSEPH R. KIROY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

29-59

DESIGN STRESSES:

f_s = 20,000 psi - Reinforcing Steel
f_c = 1,700 psi - Class AE-1 & AE-3 Concrete
f_c = 1,700 psi - Class AAE-3 Concrete
f_s = 20,000 psi - Structural Steel A-36
f_s = 27,000 psi - Structural Steel A-441 (¾" and under)
f_s = 25,000 psi - Structural Steel A-441 (¾" to 1½")
f_s = 23,000 psi - Structural Steel A-441 (1½" to 4")

BENCH MARKS

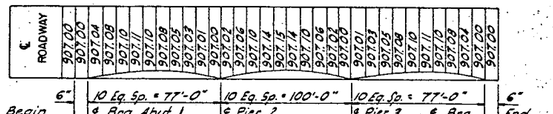
NO.	DESCRIPTION	LOCATION	ELEV.
35	Railroad Spike in Tree	328+04 - 212' Rt.	897.18
36	Railroad Spike in Tree	330+75 - 195' Rt.	895.83
37	Iron Mon. by P. Pole	333+00 - 195' Rt.	906.66

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	EMBANKMENT SETTLEMENT	DESIGN LOAD	MAXIMUM REQUIRED BEARING
Abutments	37.1 T.	12.3 T.					5.6 T	55.0 T.	55.0 T.
Piers	48.0 T.	14.2 T.	5.1 T.					67.3 T.	70.0 T.

875.67 D.L.R. 9-27-69
80' Bridge
100' West
95' East
55' West
55' East

** H520 and "Alternate loading as designated in PPM 20-4, Section 4C"

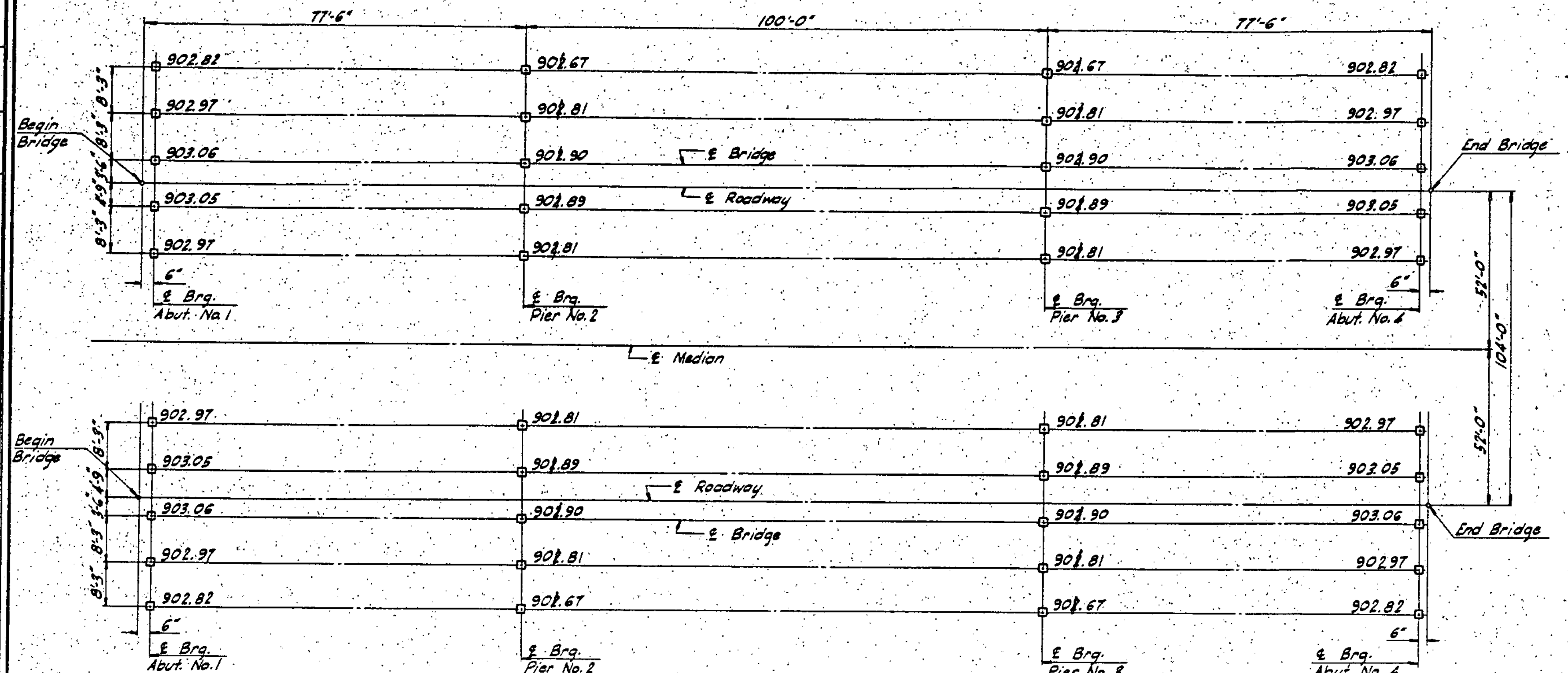


SCREED ELEVATION

Elevations are to top of finished concrete

29-59

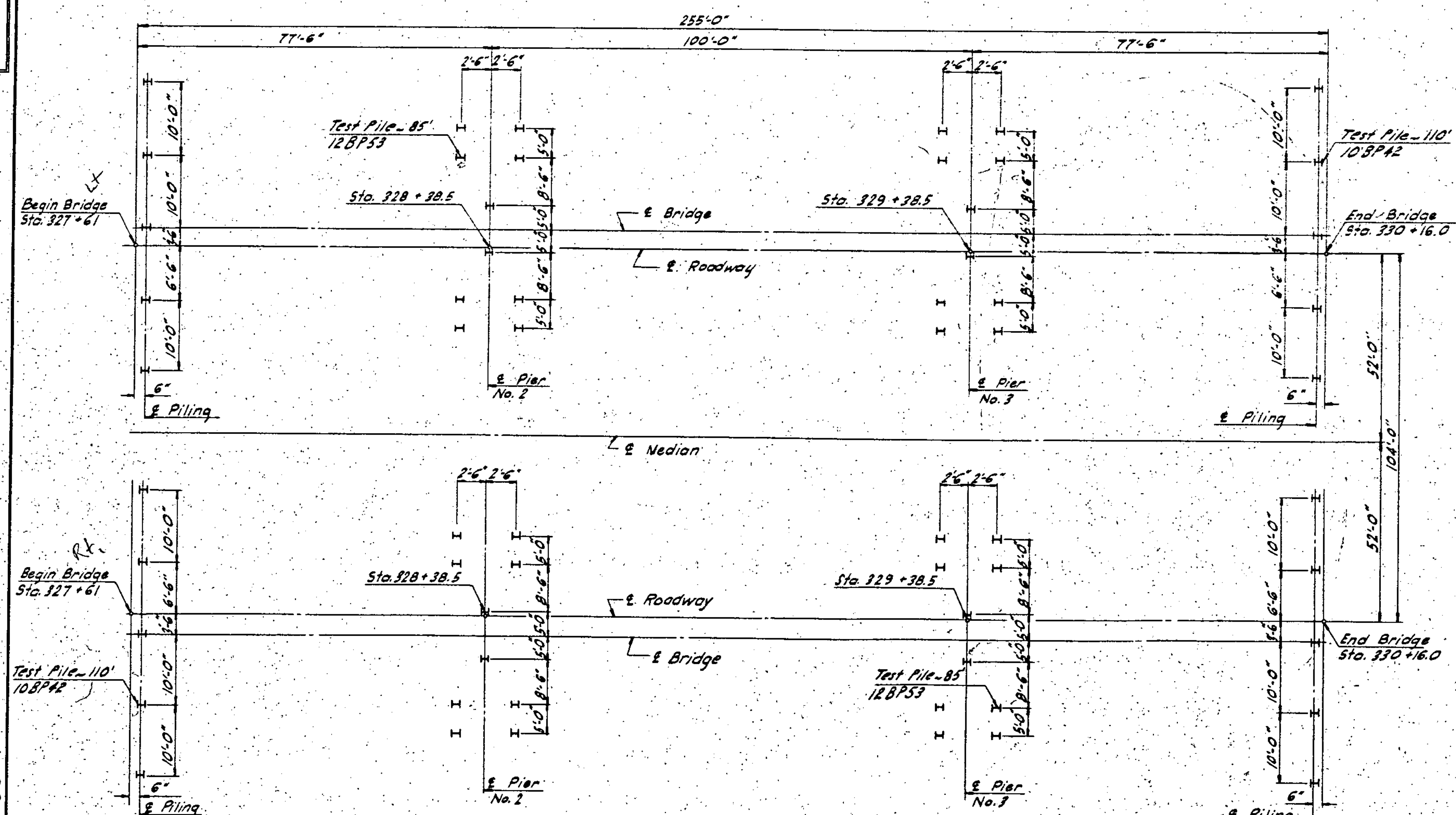
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99		55	319



BEARING PLATE LAYOUT

Elevations are to top of finished concrete
(Not to Scale)

D.L.R.
9-23-69



PILING LAYOUT

(Not to Scale)

NOTES:

GENERAL:

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.

DEAD LOAD DEFLECTIONS AND VERTICAL CURVE CORRECTIONS HAVE BEEN ACCOUNTED FOR IN THE SHOP CAMBER OF THE GIRDERS.

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

IF HIGH STRENGTH BOLTS ARE USED IN THE WEB AND FLANGE SPLICES, THE BOLTS SHALL BE PLACED WITH THE NUTS ON THE INTERIOR SIDE OF THE WEB AND ON THE UPPER SIDE OF THE FLANGE.

BACKFILL AND EMBANKMENT:

ALL EMBANKMENT AND BACKFILL SHALL BE PLACED ACCORDING TO SECTION 203-2.3 OF THE STANDARD SPECIFICATIONS EXCEPT THAT MAXIMUM DRY DENSITY AS DETERMINED BY AASHO DESIGNATION T-99 SHALL BE 95%. THE MOISTURE CONTENT IN THE SOIL AT THE TIME OF COMPACTION SHALL NOT BE LESS THAN FOUR PERCENTAGE POINTS BELOW OPTIMUM NOR MORE THAN THAT WHICH WILL PERMIT COMPACTION TO THE REQUIRED DENSITY. SELECT BACKFILL SHALL NOT BE PLACED ABOVE THE BERM ELEVATIONS UNTIL THE ENTIRE SUPERSTRUCTURE SLAB HAS CURED.

THE EMBANKMENT AT THE ABUTMENTS SHALL BE IN PLACE BEFORE ABUTMENT PILING ARE DRIVEN.

THE CONTRACTOR WILL BE REQUIRED TO PREDRILL TO ELEV. 885.0 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 SUB-STRUCTURE IS PLACED.

EXCAVATION:

EXCAVATION CLASS 1 AT THE ABUTMENTS SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE UPPER LIMITS AS SHOWN ON THE BRIDGE LAYOUT DRAWING. EXCAVATION CLASS 2 AT THE PIERS SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE BOTTOM OF THE CHANNEL.

REINFORCING STEEL:

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

CONCRETE:

ALL EXPOSED EDGES OF CONCRETE SHALL BE BEVELED WITH 3/4" TRIANGULAR MOLDING UNLESS OTHERWISE NOTED. THE DECK SLAB CONCRETE SHALL BE STRUCK OFF AND COMPACTED BY AN APPROVED DECK FINISHING MACHINE. ALL CONCRETE ABOVE THE TOP OF THE CURBS SHALL BE CLASS AAE-3. THE REMAINING SUPERSTRUCTURE CONCRETE SHALL BE CLASS AE-3 AND THE SUB-STRUCTURE CONCRETE AE-1.

ALL CONCRETE SHALL BE COMPACTED BY VIBRATION. THE "RUBBED SURFACE FINISH" WILL BE REQUIRED FOR THE ROADWAY AND OUTSIDE VERTICAL FACES OF CURBS, EDGES OF SLAB, ALL FACES OF THE RAILS, RAIL POSTS AND END POSTS, ALL EXPOSED FACES OF BENTS, AND ALL EXPOSED FACES OF ABUTMENT WINGS. ALL OTHER SURFACES SHALL BE GIVEN THE "ORDINARY SURFACE FINISH".
(SEE OPTION BELOW)
IF THE EXPOSED FACES OF THE ABUTMENTS AND BENTS HAVE A SURFACE FINISH ACCEPTABLE TO THE ENGINEER WITHOUT RUBBING, THE REQUIREMENT FOR "RUBBED SURFACE FINISH" MAY BE WAIVED AT THE OPTION OF THE ENGINEER, AND THE "ORDINARY SURFACE FINISH" WILL APPLY.

ALL "ORDINARY SURFACE FINISH" SHALL BE COMPLETED WITHIN 24 HOURS AFTER REMOVAL OF FORMS.

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

THE CONTRACTOR HAS THE OPTION OF USING THE SPECIAL SURFACE FINISH AS PROVIDED IN SPECIAL PROVISION NO. 29, CONCRETE STRUCTURES, IN LIEU OF THE RUBBED SURFACE FINISH (602-3.10.3) CALLED FOR ABOVE.

STRUCTURAL STEEL:

THE NORTH DAKOTA STANDARD SPECIFICATIONS 616-3.3.12, FLAME CUTTING, SHALL GOVERN THE FLAME CUTTING PREPARATION OF A36 AND A441 STEELS. IN ADDITION, PREHEATING OF THE A36 AND A441 STEEL SHALL BE REQUIRED. JUST PRIOR TO FLAME CUTTING, THE STEEL SHALL BE PREHEATED TO A TEMPERATURE CONFORMING TO TABLE 2, PAGE 3 OF SPECIAL PROVISION SP 35 GOVERNING THE PREHEATING OF STEEL THICKNESSES WHEN LOW HYDROGEN ELECTRODES ARE USED IN WELDING.

THE BEND TEST, UNDER 616-3.3.12.2, SHALL BE REQUIRED FOR THE THICKEST A36 AND A441 STEEL USED IN THE PROJECT. AS STATED IN PARAGRAPHS 616-3.3.12.3, "IN LIEU OF PREHEATING, THE FLAME CUT EDGES SHALL BE REMOVED TO A DEPTH OF AT LEAST 1/8" BY MILLING OR GRINDING OR IN THE CASE OF MACHINE FLAME CUTTINGS, THE EDGES MAY BE FLAME SOFTENED AFTER CUTTING". IN ACCORDANCE WITH SP 35, PARAGRAPH 406(G) THE TEST PLATE SIZE SHALL BE 3/4"X14".

THE GIRDERS SHALL BE CAMBERED IN THE SHOP AS DETAILED ON DRAWING 29-59-8. SUFFICIENT PARTS OF THE STRUCTURE SHALL BE SHOP ASSEMBLED AND ADJUSTED TO LINE, GRADE AND CAMBER OR OTHER PROPER FIT UP, IN ORDER TO ESTABLISH THE ACCURACY OF THE WORKMANSHIP AND SHOP DRAWINGS. AFTER SUB-PUNCHING OR SUBDRILLING, EACH FULL LENGTH GIRDER LINE WITH ITS FIELD SPLICE PLATES IN PLACE SHALL BE SHOP ASSEMBLED TO THE CORRECT LINE AND GRADE BEFORE REAMING. TEMPLATES SHALL NOT BE USED IN LIEU OF COMPLETE ASSEMBLY.

ALTERNATE STUD SHEAR DEVICES SHALL BE MANUFACTURED OF C-1015 OR C-1020 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A 108-61T SPECIFICATIONS, SHALL CONFORM TO THE DIAMETER AND OTHER DIMENSIONS AS SHOWN. THE CONTRACTOR IS REQUIRED TO OBTAIN A PRODUCT CERTIFICATION OF THE STUD SHEAR DEVICES USED ON THIS BRIDGE IN ACCORDANCE WITH SECTION 802 OF THE 1965 NORTH DAKOTA "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".
ALTERNATE SHEAR DEVICES WILL BE PAID FOR AS CHANNEL SHEAR DEVICES.
AASHO REQUIREMENTS FOR WELDABILITY OF STUD CONNECTORS SHALL BE MET AND CERTIFIED.

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 26,400 FOOT-POUND-TONS AS COMPUTED BY THE FORMULA W(E-8,820)+0.6E WHERE W IS THE WEIGHT OF THE RAM IN TONS AND E IS THE RATED HAMMER ENERGY AS ALLOWED IN THE SPECIAL PROVISIONS/SUPPLEMENTAL SPECIFICATIONS. IN NO CASE SHALL THE RAM WEIGHT BE LESS THAN 4,800 POUNDS.

TEST PILES:

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

MATERIALS: (STRUCTURAL STEEL)

GIRDER FLANGES, WEBS, FLANGE AND WEB SPLICE PLATES: A-441.

STIFFENERS, DIAPHRAGMS, SHEAR CONNECTORS, BEARING PLATES AND ANCHOR BOLTS: A-36, EXCEPT ALTERNATE STUD SHEAR DEVICES.

PAINT:

PAINT AND PAINTING SHALL CONFORM TO THE NORTH DAKOTA STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION; SECTIONS 718, AND 870-1.2, AND THE SPECIAL PROVISION ON PAINTING.

ALL EXPOSED STEEL SURFACES SHALL BE GIVEN ONE SHOP COAT OF RED LEAD PAINT (INCLUDING TOP OF UPPER GIRDER 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 GREY-GREEN COLOR NO. 24260 AND THE SECOND COAT SHALL CONFORM TO GREY-GREEN COLOR NO. 24300. 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.

COFFERDAMS:

SHEET PILE COFFERDAMS SHALL BE DRIVEN TO FACILITATE THE CONSTRUCTION OF EACH PIER. AFTER COMPLETION OF THE PIER AND BEFORE THE SHEET PILES ARE PULLED, WATER SHALL BE PUMPED OUT AND THE BACKFILL PLACED AND COMPACTED IN THE DRY TO THE ELEVATION OF THE ORIGINAL GROUND. THE COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR CLASS 2 EXCAVATION.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE BORING LOGS WHICH SHOW A FAIRLY HARD STRATA ABOVE ELEVATION 820 AND BELOW ELEVATION 805 WITH A SOFTER STRATA BETWEEN, EXCEPT AT THE SOUTHWEST ABUTMENT. THE LENGTHS OF THE TEST PILES HAVE BEEN SELECTED SO AS TO DRIVE THROUGH THE UPPER STRATA AND SEAT IN THE LOWER HARD STRATA IF POSSIBLE. THE LENGTHS OF THE REGULAR PILING SHOWN ON THE PLANS HAVE BEEN SELECTED TO SEAT IN THE UPPER HARD STRATA. THE TEST PILE RESULTS WILL DETERMINE IF THE REGULAR PILING WILL BE SEATED IN THE UPPER OR LOWER STRATA.

LINSEED OIL TREATMENT:

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

BLAST CLEANING:

COMMERCIAL BLAST CLEANING OF ALL EXPOSED MAIN AND SECONDARY STEEL MEMBERS WILL BE REQUIRED PRIOR TO PAINTING. SEE S.P. 33.
(INCLUDE IN UNIT BID PRICE FOR STRUCTURAL STEEL).

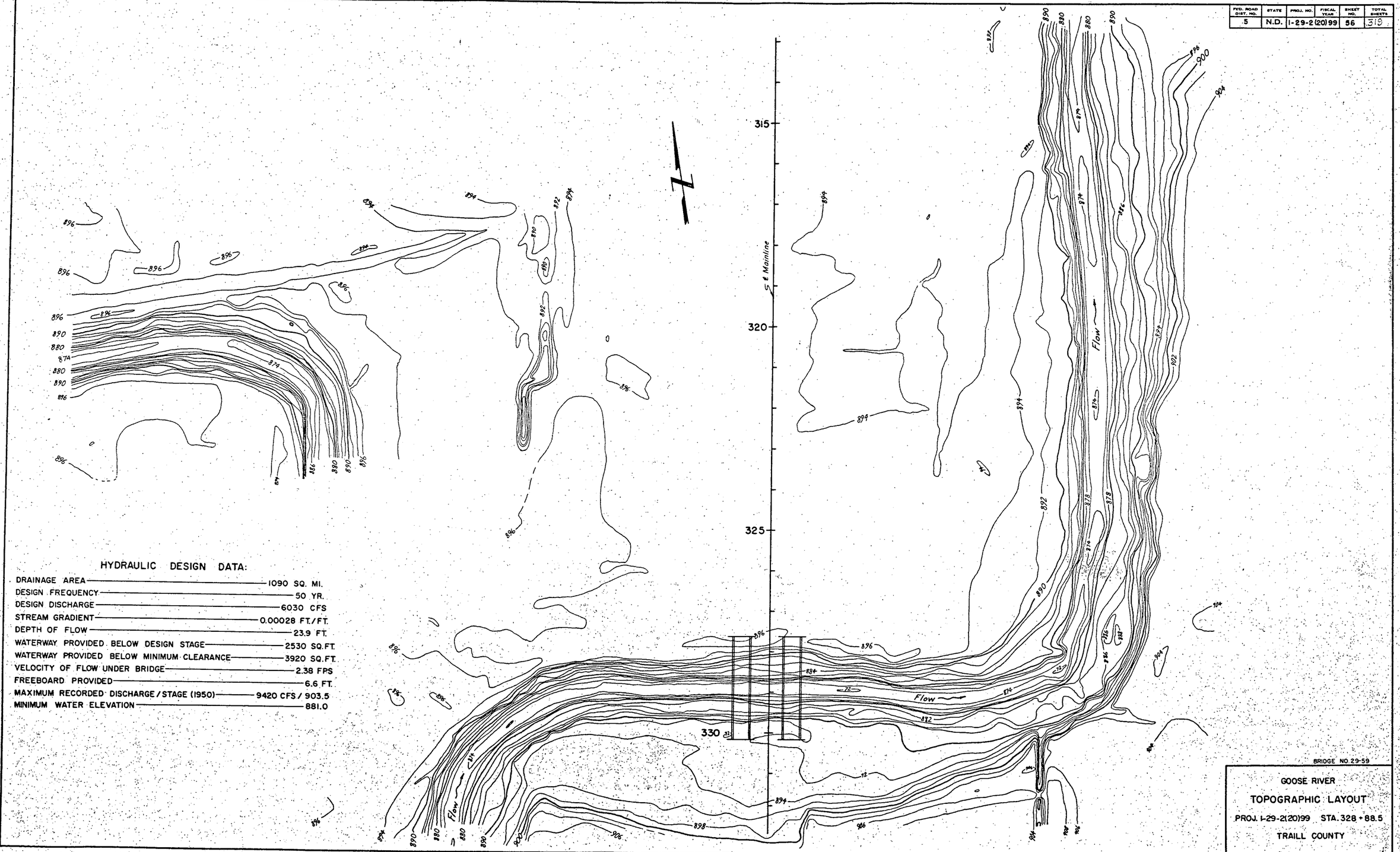
GOOSE RIVER BRIDGE
BEARING PLATE LAYOUT
PILING LAYOUT
GENERAL NOTES

REVISIONS

DESIGN	MADE BY	O.A.L.
	CHECKED BY	
DETAILS	MADE BY	O.A.L.
	CHECKED BY	L.E.G.
TRACING	MADE BY	O.A.L.
	CHECKED BY	D.L.R.
QUANTITIES	MADE BY	
	CHECKED BY	

29-59-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	I-29-2(20)99		56	315



HYDRAULIC DESIGN DATA:

DRAINAGE AREA	1090 SQ. MI.
DESIGN FREQUENCY	50 YR.
DESIGN DISCHARGE	6030 CFS
STREAM GRADIENT	0.00028 FT./FT.
DEPTH OF FLOW	23.9 FT.
WATERWAY PROVIDED BELOW DESIGN STAGE	2530 SQ.FT.
WATERWAY PROVIDED BELOW MINIMUM CLEARANCE	3920 SQ.FT.
VELOCITY OF FLOW UNDER BRIDGE	2.38 FPS
FREEBOARD PROVIDED	6.6 FT.
MAXIMUM RECORDED DISCHARGE / STAGE (1950)	9420 CFS / 903.5
MINIMUM WATER ELEVATION	881.0

29-59-2

BRIDGE NO. 29-59

GOOSE RIVER

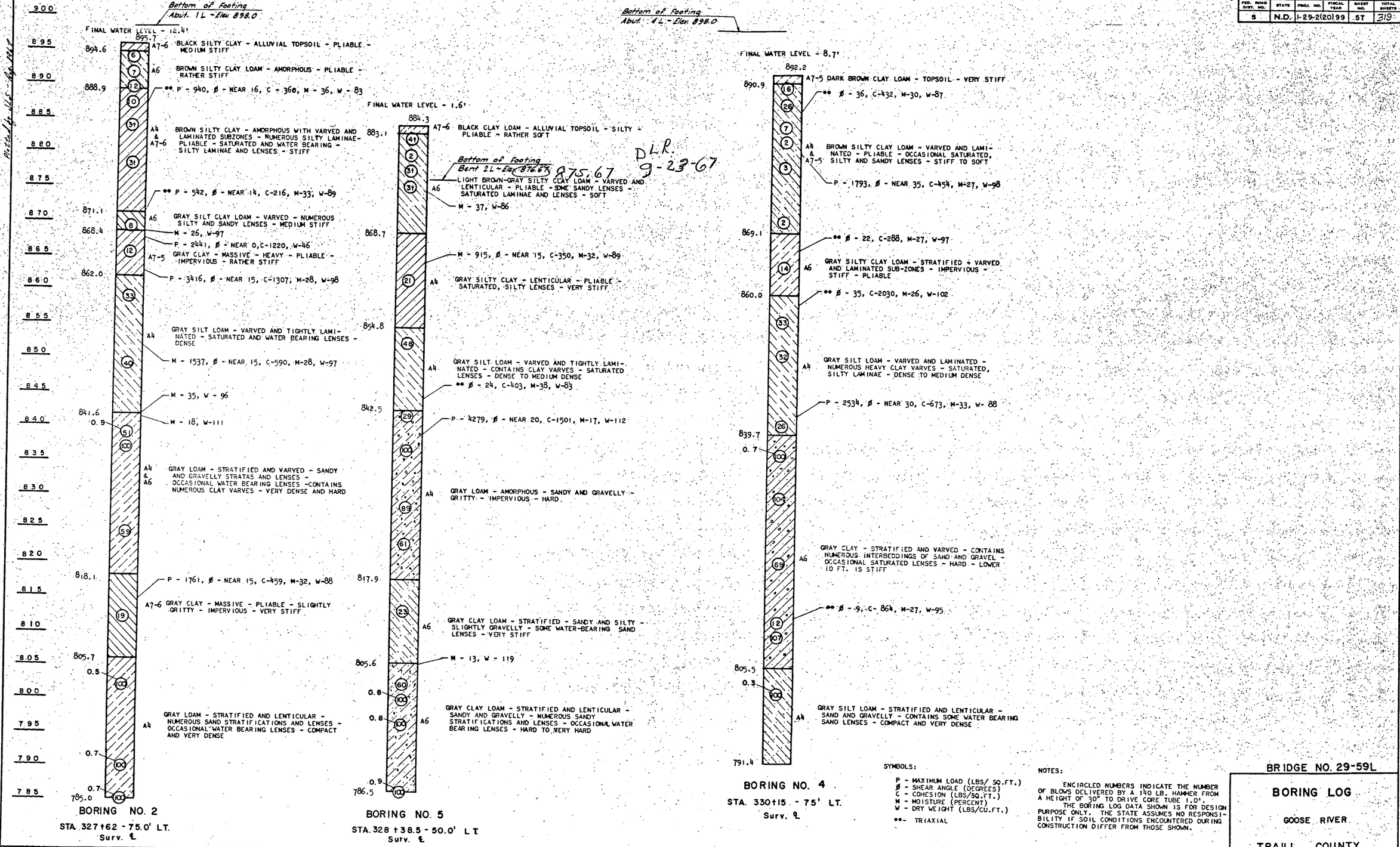
TOPOGRAPHIC LAYOUT

PROJ. I-29-2(20)99 STA. 328+88.5

TRAILL COUNTY

29-59-2

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	I-29-2(20)99		57	319



SYMBOLS:

- P - MAXIMUM LOAD (LBS/ SQ.FT.)
- ø - SHEAR ANGLE (DEGREES)
- C - COHESION (LBS/SQ.FT.)
- M - MOISTURE (PERCENT)
- W - DRY WEIGHT (LBS/CU.FT.)
- **- TRIAXIAL

NOTES:

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

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

BRIDGE NO. 29-59L

BORING LOG

GOOSE RIVER

TRAILL COUNTY

Sheet 1 of 2

29-59-3

29-59-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.	I-29-2(20)99	58	319	

Bottom of Footing
Abut. 1 R - Elev. 892.0

FINAL WATER LEVEL - 12.5'

895.9

895.1 — A7-6 BLACK SILTY CLAY - ALLUVIAL TOPSOIL - PLIABLE - MEDIUM STIFF

A7-6 BROWN SILTY CLAY LOAM - AMORPHOUS - PLIABLE - RATHER STIFF

889.5 — ** P - 3888, ∅ - NEAR 1, C-1944, M-28, W-90

A6 & A7-6 LIGHT BROWN TO BROWN SILTY CLAY LOAM - AMORPHOUS WITH VARVED AND LAMINATED SUBZONES - SATURATED AND WATER BEARING SILT LAMINAE - STIFF

** ∅ - 15, C-288, M-28, W-96

872.2

A7-6 GRAY CLAY - TIGHTLY LAMINATED - HEAVY - SILTY - PLIABLE - IMPERVIOUS - VERY STIFF

P-2474, ∅ - NEAR 15, C-948, M-34, W-88

856.9

A4 GRAY SILT LOAM - TIGHTLY LAMINATED - SATURATED - DENSE

843.0

0.7

A4 GRAY LOAM - STRATIFIED AND LENTICULAR - SANDY - GRAVELLY STRATIFICATIONS - COMPACT AND VERY DENSE

0.9

0.8

825.2

BORING NO. 1

STA. 327+62 - 75' RT. of Surv. ℄

Bottom of Footing
Bent 2R - Elev. 876.7

875.64 DLR 9-23-69

FINAL WATER LEVEL - 12.1'

889.7

881.3 — A7-6 BLACK CLAY LOAM - ALLUVIAL TOPSOIL - SOFT - PLIABLE

A6 BROWN-GRAY MOTTLED CLAY LOAM - VARVED - NUMEROUS SATURATED SAND LENSES - PLIABLE - SOFT

P - 1385, ∅ - NEAR 15, C-531, M-28, W-95

871.4

A2-4 GRAY SANDY LOAM - STRATIFIED AND LENTICULAR - SOME CLAY STRATA

866.0

M-26, W-98

A4 GRAY SILT LOAM - VARVED AND LAMINATED - OCCASIONAL CLAY VARVES - SATURATED LAMINAE - MEDIUM DENSE

P-2293, ∅ - NEAR 20, C-803, M-33, W-91

841.1

0.8

A4 GRAY LOAM - STRATIFIED AND LENTICULAR - SANDY AND GRAVELLY - OCCASIONAL SAND STRATAS - OCCASIONAL WATER BEARING LENSES - COMPACT AND VERY DENSE

817.1

BORING NO. 6

STA. 329+38.5 - 50' RT. of Surv. ℄

Bottom of Footing
Abut. 4 R - Elev. 898.0

FINAL WATER LEVEL - 8.4'

892.0

890.8 — A7-6 BROWN CLAY LOAM - AMORPHOUS - SILTY - PLIABLE - MEDIUM STIFF

P - 2435, ∅ - NEAR 15, M-37, W-85, C-932

P - 826, ∅ - NEAR 15, C-317, M-29, W-93

A4 & A7-6 BROWN TO GRAY-BROWN SILTY CLAY LOAM - VARVED AND LAMINATED - PLIABLE - OCCASIONAL SAND LENSES - SOME SATURATED WATER BEARING LAMINAE AND LENSES - STIFF

** ∅ - 20, C-350, M-28, W-93

P-2728, ∅ - NEAR 20, C-1047, M-26, W-102

862.3

A4 GRAY SILT LOAM - LAMINATED - PREDOMINANTLY NON-PLASTIC - SATURATED AND WATER BEARING - LAMINAE AND LENSES - DENSE

842.0

A4 & A6 GRAY CLAY LOAM - STRATIFIED AND LENTICULAR - OCCASIONAL INTERBEDDINGS OF SAND AND GRAVEL - OCCASIONAL WATER BEARING SAND LENSES - VERY STIFF TO VERY HARD

P-3056, ∅ - NEAR 15, C-1169, M-27, W-98

819.2

P-1117, ∅ - NEAR 8, C-425, M-28, W-95

A6 & A7-6 GRAY CLAY LOAM - STRATIFIED AND VARVED - OCCASIONAL HEAVILY CLAY VARVES - IMPERVIOUS - VERY STIFF TO STIFF

∅ - 20, C-320, M-15, W-120

802.2

0.8

A6 GRAY CLAY LOAM - STRATIFIED AND LENTICULAR - NUMEROUS LOAM STRATIFICATIONS - SANDY AND SILTY - OCCASIONAL WATER BEARING LENSES - VERY HARD

0.8

787.5

BORING NO. 3

STA. 330+15 - 75' RT. of Surv. ℄

SYMBOLS:

P - MAXIMUM LOAD (LBS/SQ.FT.)
∅ - SHEAR ANGLE (DEGREES)
C - COHESION (LBS/SQ.FT.)
M - MOISTURE (PERCENT)
W - DRY WEIGHT (LBS/CU.FT.)
** - TRIAXIAL

NOTES:

ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 LB. 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.

Sheet 2 of 2

BRIDGE NO. 29-59R

BORING LOG

GOOSE RIVER

TRAILL COUNTY

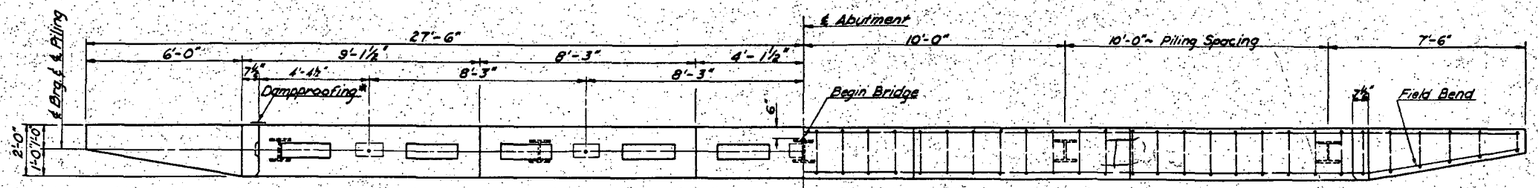
29-59-4

29-59-4

DESIGN	MADE BY	E.S.
	CHECKED BY	L.P.M.
DETAILS	MADE BY	A.E.G.
	CHECKED BY	G.A.L.
TRACING	MADE BY	D.L.R.
	CHECKED BY	D.A.L.
QUANTITIES	MADE BY	D.L.R.
	CHECKED BY	D.A.L.

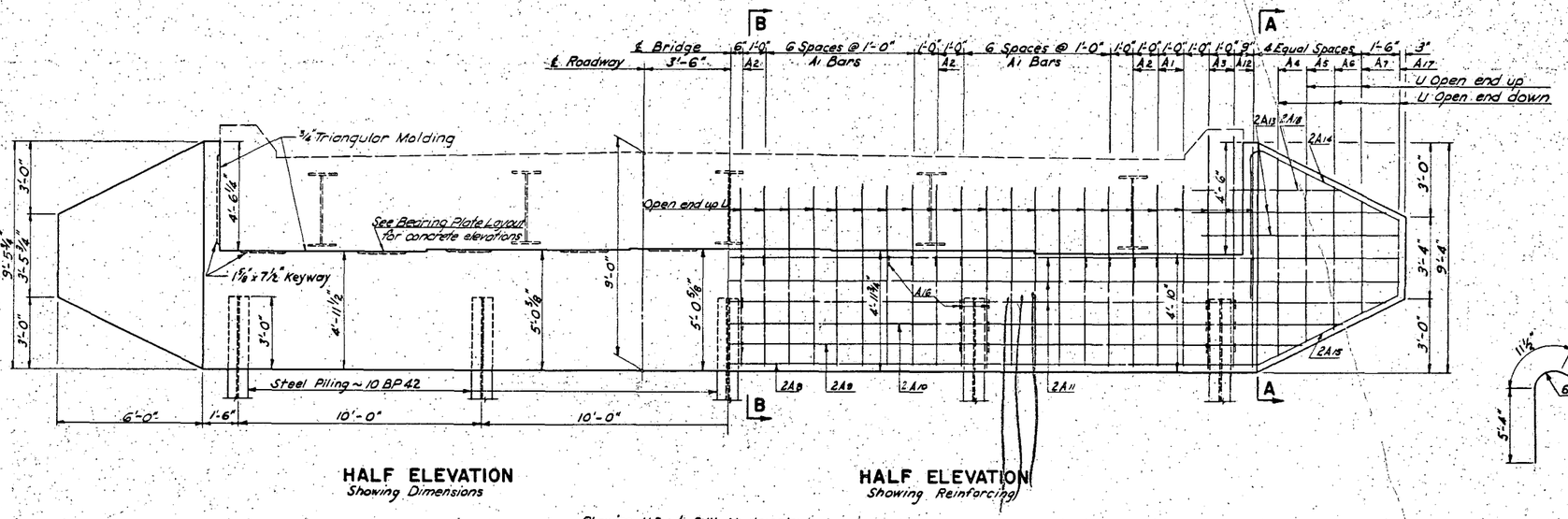
REVISIONS | MADE | CHK'D BY | DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99	59.	319



HALF PLAN
Showing Dimensions

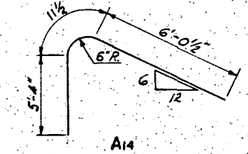
HALF PLAN
Showing Reinforcing



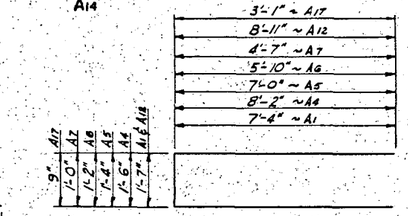
HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcing

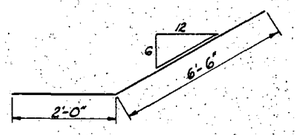
Showing N.E. & S.W. Abutments



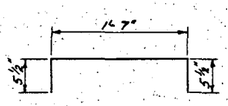
A14



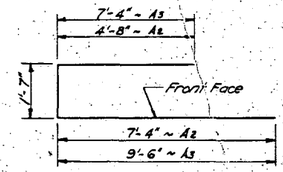
A1, A4-A7, A12 & A17 BARS



A15

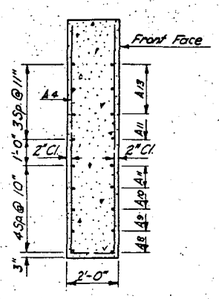


A16

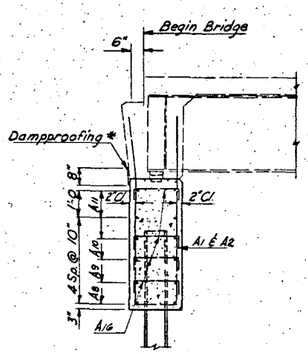


A2 & A3

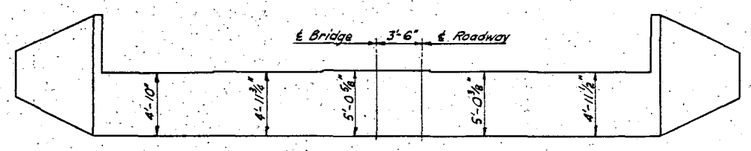
BENT BAR DETAILS
Dimensions shown are center to center



A-A



B-B



ELEVATION
Showing N.W. & S.E. Abutments

NOTE:

** Two coats of dampproofing shall be applied over the construction joint on the back face as shown on the detail.*

"Dampproofing Two Coats" shall be applied in accordance with Section 736 of the Standard Specifications. Dampproofing will not be paid for directly, but shall be included in the unit price bid for Concrete Class AE-1.

ABUTMENT (ONE ABUT.)

MARK	NUMBER				SIZE	LENGTH	SHAPE	UNIT WT.
A1	32				G	16'-3"	Bent	244.1
A2	6				G	13'-7"	"	20.40
A3	4				G	18'-5"	"	27.66
A4	2				5	17'-10"	"	18.60
A5	2				5	15'-4"	"	16.00
A6	2				5	12'-10"	"	13.39
A7	2				5	10'-2"	"	10.60
A8	4				G	23'-3"	Str.	34.92
A9	4				5	24'-9"	"	25.82
A10	4				5	26'-4"	"	27.47
A11	12				5	28'-2"	"	29.38
A12	2				6	19'-5"	Bent	29.17
A13	8				5	8'-0"	Str.	8.34
A14	4				G	12'-4"	Bent	18.53
A15	4				6	8'-6"	"	12.77
A16	50				4	2'-6"	"	1.67
A17	2				5	6'-11"	"	7.21
A18	4				5	6'-0"	Str.	6.26

PROJECT I-29-2(20)99
DRAWING 29-59-5

QUANTITIES (ONE ABUT.)

Concrete Class AE-1	20.7 C.Y.
Reinforcing Steel	2210 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

GOOSE RIVER BRIDGE

9'-0" ABUTMENT

37'-0" ROADWAY

HS20 LOADING

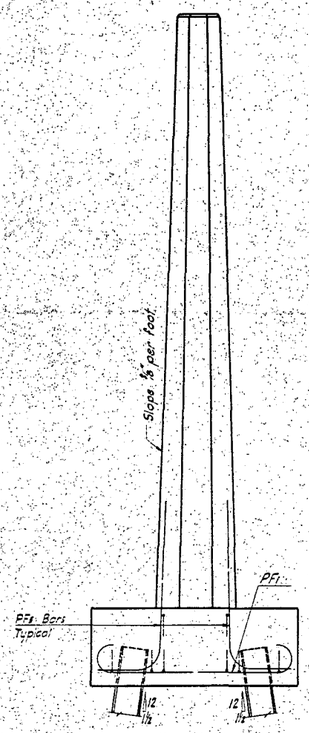
29-59-5

29-59-5

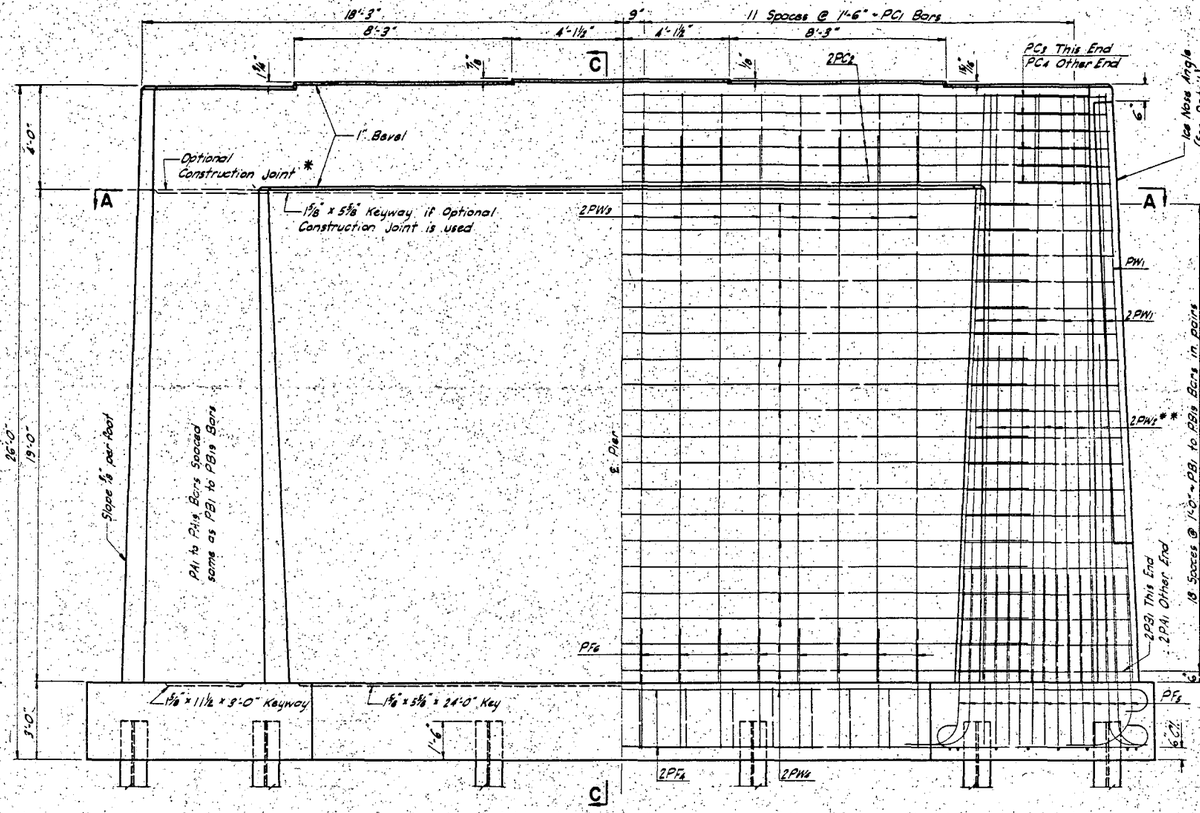
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99		60	319

REVISIONS	MADE BY	CHK'D BY	DATE

DESIGN	MADE BY	L.P.H.
	CHECKED BY	E.S.
DETAILS	MADE BY	G.A.L.
	CHECKED BY	L.C.L.
TRACING	MADE BY	G.A.L.
	CHECKED BY	G.A.P.
QUANTITIES	MADE BY	G.A.L.
	CHECKED BY	D.L.R.

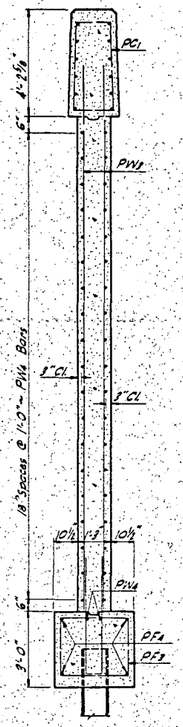


END VIEW



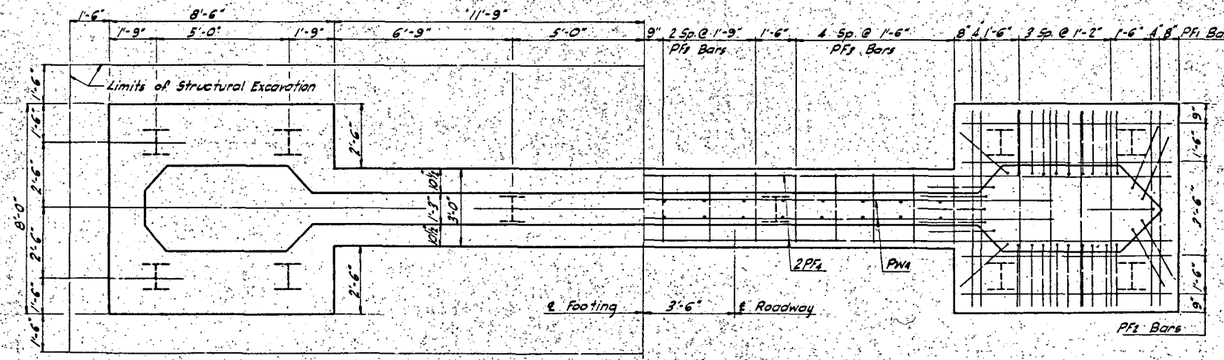
HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcing
Looking South on Northbound Bridge



SECTION C-C

* * See Section B-B on Dwg. 29-59-7 for locations of more PW1 Bars.



HALF FOOTING
Showing Dimensions

HALF FOOTING
Showing Reinforcing

See Dwg. 29-59-7 for Top Plan, Sections A-A and B-B, Ice Nose Angle, Bar List and Bar Details.

* At least two hours shall elapse between pouring of the columns and web and pouring of the cap to allow for shrinkage of the concrete.

QUANTITIES

See 29-59-7 for quantities

GOOSE RIVER BRIDGE

26'-0" PIER

37'-0" ROADWAY

HS20 LOADING

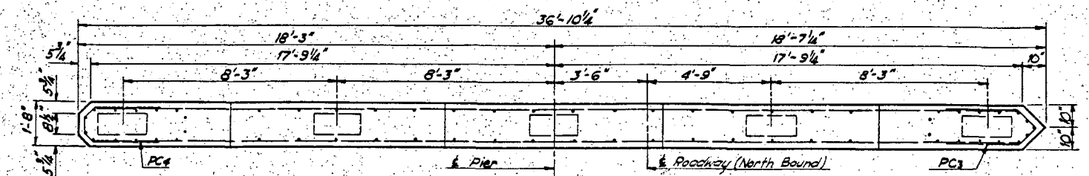
29-59-6

29-59-6

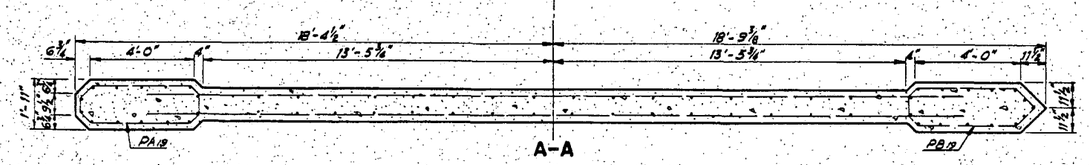
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99	61	319

REVISIONS	DATE	CHK'D BY

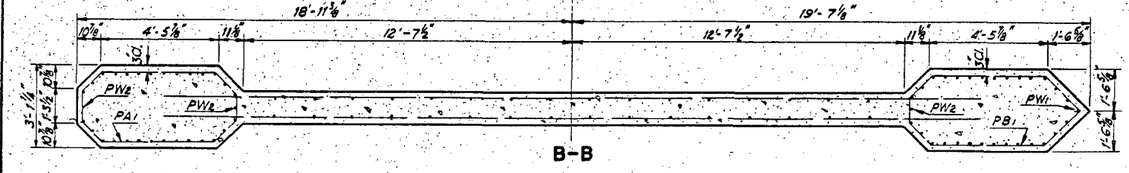
	MADE BY	CHECKED BY	DATE
DESIGN	MEW	LDH	
DETAILS	GAL		
TRACING	DLP		
QUANTITIES	GAL		
	JLP		



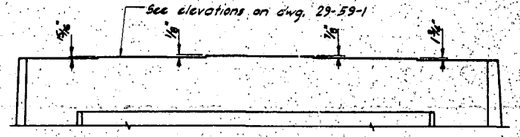
TOP PLAN



A-A



B-B



CAP ELEVATION

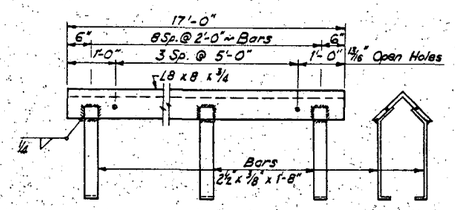
LOOKING SOUTH ON SOUTHBOUND BRIDGE

PIER BAR LIST (ONE PIER)

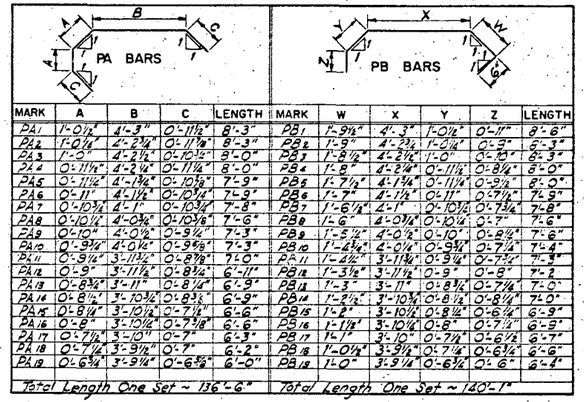
MARK	NUMBER: COLUMN & WALL	NUMBER: FOOTING	NUMBER: CAP	SIZE	LENGTH	SHAPE	UNIT WT.
PA1-	2						
PA19 Sets			4	136'-6"	Bent	911.8
PB1-	2						
PB19 Sets			4	140'-1"	Bent	935.2
PC1			24	5	10'-3"	Bent	10.69
PC2			12	9	34'-4"	Str.	116.73
PC3			6	6	7'-0"	Bent	10.57
PC4			6	6	6'-6"	"	9.76
PF1		16		8	3'-0"	Bent	24.03
PF2		8		7	8'-11"	"	18.23
PF3		16		6	9'-10"	"	14.77
PF4		4		9	42'-0"	Str.	142.80
PF5		60		10	8'-9"	Bent	37.65
PF6		16		5	9'-9"	"	10.17
PW1	29			10	22'-9"	Str.	97.90
PW2	31			10	13'-0"	"	55.94
PW3	32			5	21'-0"	"	21.97
PW4	38	2		5	31'-0"	"	32.34
*SP2		1		4	3'-8"	Str.	
*SP3		1		5	4'-0"	"	
*SP6		1		6	4'-6"	"	
*SP7		1		7	5'-0"	"	
*SP8		1		8	5'-4"	"	

PROJECT 1-29-2(20)99
DRAWING 29-59-7

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



ICE NOSE ANGLE

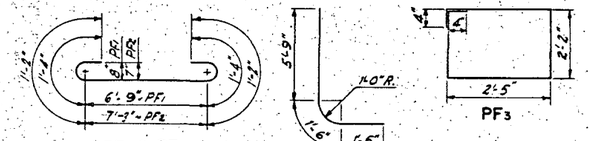


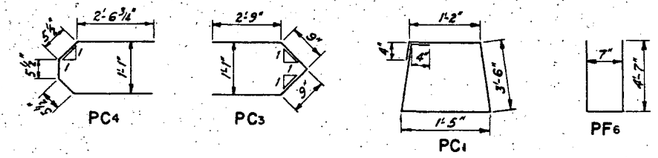
MARK	A	B	C	LENGTH
PA1	1'-0⅛"	4'-3"	0'-11½"	8'-3"
PA2	1'-0⅛"	4'-2⅛"	0'-11⅞"	8'-3"
PA3	1'-0"	4'-2⅛"	0'-10⅜"	8'-0"
PA4	0'-11⅛"	4'-2⅛"	0'-11¼"	8'-0"
PA5	0'-11⅛"	4'-1⅜"	0'-10⅝"	7'-9"
PA6	0'-11"	4'-1½"	0'-10¾"	7'-9"
PA7	0'-10⅞"	4'-1"	0'-10⅜"	7'-8"
PA8	0'-10⅛"	4'-0⅜"	0'-10⅜"	7'-6"
PA9	0'-10"	4'-0⅛"	0'-9¼"	7'-3"
PA10	0'-9⅛"	4'-0⅛"	0'-9⅜"	7'-3"
PA11	0'-9⅛"	3'-11½"	0'-8⅞"	7'-0"
PA12	0'-9"	3'-11⅛"	0'-8¼"	6'-11"
PA13	0'-8¾"	3'-11"	0'-8¼"	6'-9"
PA14	0'-8⅛"	3'-10½"	0'-8⅜"	6'-9"
PA15	0'-8⅛"	3'-10⅛"	0'-7⅛"	6'-6"
PA16	0'-8"	3'-10⅛"	0'-7⅜"	6'-6"
PA17	0'-7⅞"	3'-10"	0'-7"	6'-3"
PA18	0'-7⅛"	3'-9⅞"	0'-7"	6'-2"
PA19	0'-6¾"	3'-9⅛"	0'-6⅝"	6'-0"

Total Length One Set ~ 136'-6"

MARK	W	X	Y	Z	LENGTH
PB1	1'-9⅛"	4'-3"	1'-0⅛"	0'-11"	8'-6"
PB2	1'-8"	4'-2⅜"	1'-0⅛"	0'-9"	8'-3"
PB3	1'-8⅛"	4'-2⅛"	1'-0"	0'-10"	8'-3"
PB4	1'-8"	4'-2⅛"	0'-11⅛"	0'-8¼"	8'-0"
PB5	1'-7½"	4'-1¾"	0'-11⅛"	0'-9¼"	8'-0"
PB6	1'-7"	4'-1½"	0'-11"	0'-7½"	7'-9"
PB7	1'-6⅛"	4'-1"	0'-10½"	0'-7¾"	7'-8"
PB8	1'-6"	4'-0⅜"	0'-10¼"	0'-7"	7'-6"
PB9	1'-5½"	4'-0½"	0'-10"	0'-6¾"	7'-6"
PB10	1'-4⅛"	4'-0¼"	0'-9⅜"	0'-7½"	7'-4"
PB11	1'-4⅛"	3'-11⅛"	0'-9¼"	0'-7½"	7'-3"
PB12	1'-3⅛"	3'-11⅛"	0'-9"	0'-6"	7'-2"
PB13	1'-3"	3'-11"	0'-8½"	0'-7⅛"	7'-0"
PB14	1'-2⅛"	3'-10⅜"	0'-8⅛"	0'-6⅛"	7'-0"
PB15	1'-2"	3'-10⅛"	0'-8⅛"	0'-6⅛"	6'-9"
PB16	1'-1⅛"	3'-10⅛"	0'-8"	0'-7½"	6'-9"
PB17	1'-1"	3'-10"	0'-7⅞"	0'-6½"	6'-7"
PB18	1'-0⅛"	3'-9½"	0'-7¼"	0'-6¼"	6'-6"
PB19	1'-0"	3'-9¼"	0'-6⅝"	0'-6"	6'-4"

Total Length One Set ~ 140'-1"





BENT BAR DETAILS

Dimensions shown are center to center

See Dwg. 29-59-6 For Elevation, View, End View, Footing Plan, and ℄ Section.

QUANTITIES (ONE PIER)		
Concrete Class AE-1	74.7	Cu. Yd.
Reinforcing Steel	12,435	Lbs.
Structural Steel (1-56)	736	Lbs.
Piling (See Layout)		
Excavation (See Layout)		

GOOSE RIVER BRIDGE

26'-0" PIER

37'-0" ROADWAY

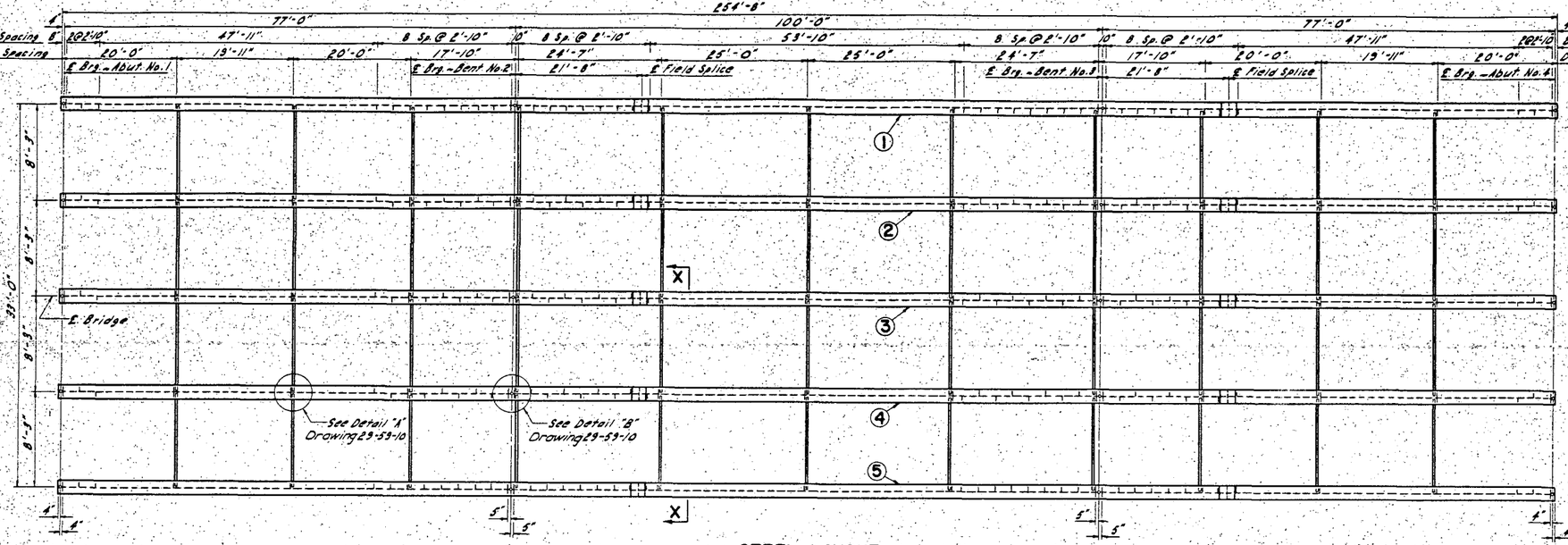
HS20 LOADING

29-59-7

29-59-7

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99	62	319	

		DATE	CHK'D BY
REVISIONS			
DESIGN	MADE BY M.E.W.		
	CHECKED BY L.P.H.		
DETAILS	MADE BY A.L.S.		
	CHECKED BY A.L.S.		
TRACING	MADE BY A.L.S.		
	CHECKED BY A.L.S.		
QUANTITIES	MADE BY A.L.S.		
	CHECKED BY G.A.L.		



STEEL LAYOUT

FIELD SPLICES:

TWO FIELD SPLICES ARE PROVIDED ON DRAWING 29-59-9. FALSEWORK WITH PROVISIONS FOR JACKING MUST BE PROVIDED DURING ERECTION TO HOLD THE GIRDERS IN ALIGNMENT WHILE SPLICES ARE BEING MADE.

OPTIONAL FIELD SPLICES:

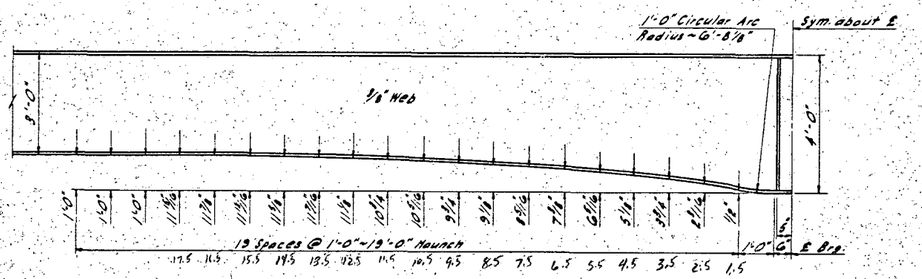
IN ADDITION TO THE TWO FIELD SPLICES ON DRAWING 29-59-9, TWO OPTIONAL FIELD SPLICES ARE SHOWN. THESE TWO ADDITIONAL FIELD SPLICES MAY BE USED BY THE CONTRACTOR UNDER THE FOLLOWING CONDITIONS:

1. THEY ARE MADE AT NO EXPENSE TO THE STATE.
2. FLANGE AND WEB SPLICE PLATES AND BOLTS WILL BE AS SHOWN IN DETAILS ON DRAWING 29-59-10.
3. FALSEWORK AT THESE SPLICE POINTS WITH PROVISIONS FOR JACKING MUST BE PROVIDED DURING ERECTION TO HOLD THE GIRDERS IN ALIGNMENT WHILE SPLICES ARE BEING MADE.

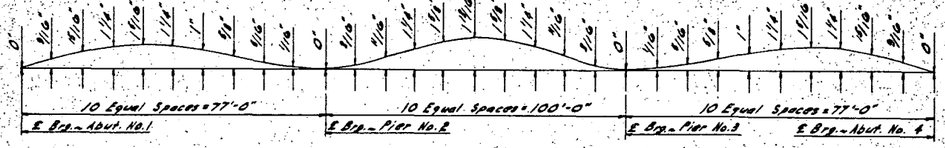
THE SHOP FABRICATION AND ERECTION DRAWING MUST INDICATE FOUR PICKUP POINTS FOR EACH MEMBER OVER 100 FEET LONG TO BE USED DURING SHIPPING AND ERECTION.

THE DETAILS SHOWN ARE FOR A THREE SPAN CONTINUOUS WELDED GIRDER AND REPRESENT GIRDER NO. 1 IN A FIVE (5) GIRDER BRIDGE. GIRDERS NO. 2, NO. 3, NO. 4 AND NO. 5 ARE SIMILAR TO GIRDER NO. 1 AND SHALL BE FABRICATED IN ACCORDANCE WITH THESE DETAILS AND DRAWINGS 29-59-9 THRU 29-59-10.

ALL SHOP BUTT WELDS IN THE FLANGE PLATES SHALL BE MADE BEFORE FINAL FITTING AND WELDING INTO THE GIRDER.

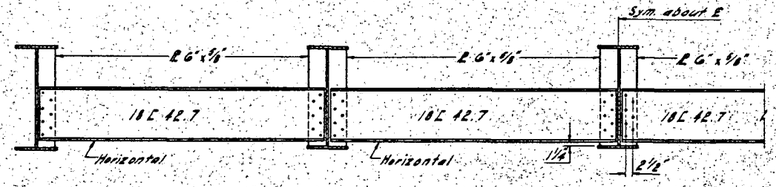


GIRDER HAUNCH DETAILS



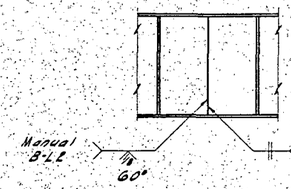
SHOP CAMBER DIAGRAM

The shop camber diagram above represents the total rise in inches above a chord between the ℄ of abutment bearings that shall be cut into the web plate of the girders 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. The depth of the web plate will also vary according to the thickness of the flange plates.



X-X

Typical for all diaphragms



SHOP WEB SPLICE

If optional field splices are used in spans 1 and 2, shop web splices will not be used in those spans.

Designed for 25 T.S.F. H.S.

QUANTITIES
See Drawing 29-59-10

GOOSE RIVER BRIDGE

SUPERSTRUCTURE DETAILS

37'-0" ROADWAY

HS20 LOADING

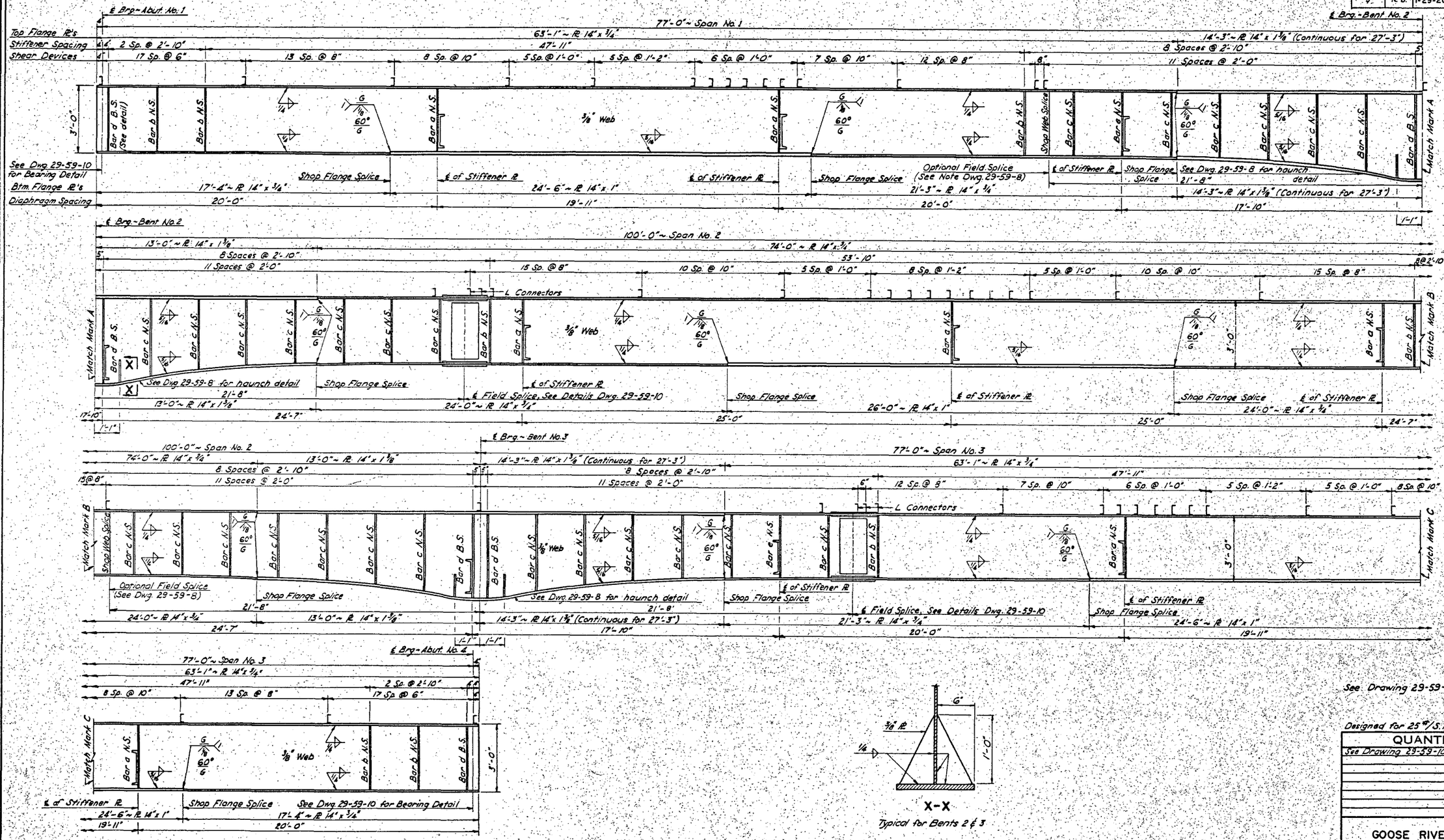
29-59-8

29-59-8

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99	63	319	

DESIGN	MADE BY	M.E.W.
	CHECKED BY	L.D.H.
DETAILS	MADE BY	L.E.G.
	CHECKED BY	G.A.L.
TRACING	MADE BY	D.L.P.
	CHECKED BY	G.A.L.
QUANTITIES	MADE BY	L.E.G.
	CHECKED BY	G.A.L.

REVISIONS — DATE — CH'D BY



ELEVATION

X-X

Typical for Bents 2 & 3

See Drawing 29-59-8 for notes.

Designed for 25 T.S. F. F.W.S.

QUANTITIES

See Drawing 29-59-10

GOOSE RIVER BRIDGE

WELDED GIRDER DETAIL

37'-0" ROADWAY

HS20 LOADING

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

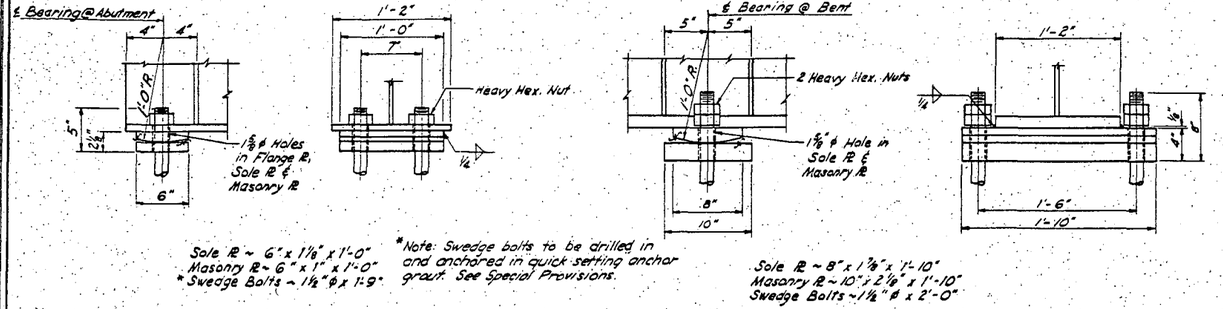
29-59-9

29-59-9

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99		64.	319

REVISIONS	DATE	CHK'D BY

DESIGN	MADE BY	M.E.W.
	CHK'D BY	A.P.H.
DETAILS	MADE BY	G.A.G.
	CHECKED BY	D.L.R.
TRACING	MADE BY	G.A.L.
	CHECKED BY	
QUANTITIES	MADE BY	A.E.S.
	CHECKED BY	D.A.L.



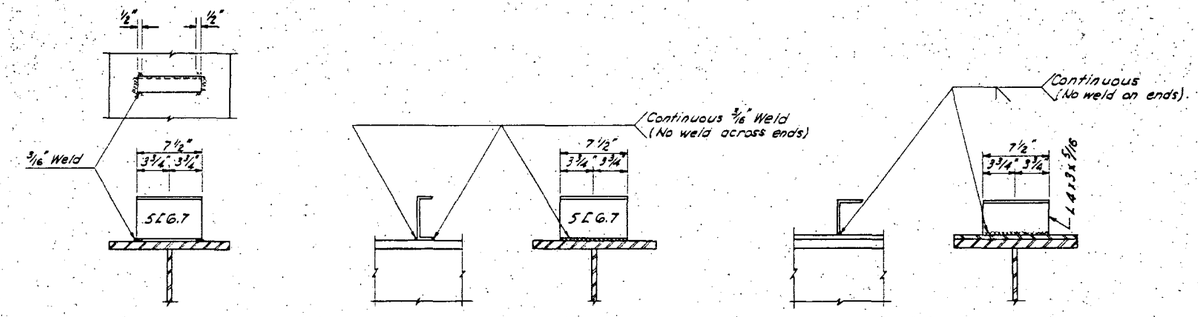
Sole Pl ~ 6" x 1⅛" x 1'-0"
Masonry Pl ~ 6" x 1" x 1'-0"
*Swedge Bolts ~ 1½" ϕ x 1'-9"

*Note: Swedge bolts to be drilled in and anchored in quick setting anchor grout. See Special Provisions.

Sole Pl ~ 8" x 1⅛" x 1'-10"
Masonry Pl ~ 10" x 2⅛" x 1'-10"
Swedge Bolts ~ 1½" ϕ x 2'-0"

ABUTMENT BEARING DETAILS

PIER BEARING DETAILS

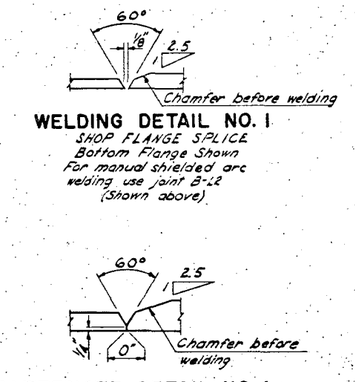


Use in Span 1 & 3 and in negative moment regions where spacing is 2'-0".

Use in positive moment region except over splice Pl's.

Use over splice Pl's.

SHEAR DEVICE DETAILS

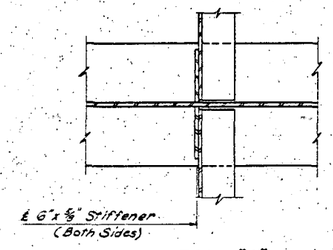


WELDING DETAIL NO. 1

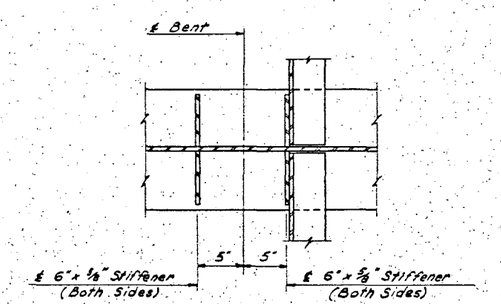
SHOP FLANGE SPLICE
Bottom Flange Shown
For manual shielded arc welding use joint B-L2 (Shown above)

ALTERNATE DETAIL NO. 1

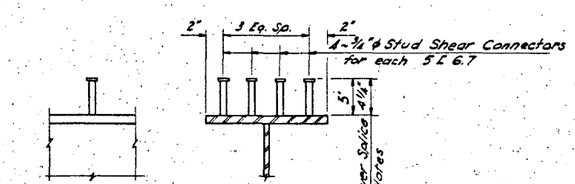
SHOP FLANGE SPLICE
Bottom Flange Shown
Submerged Arc AWS B-L2b-S
If submerged arc welding is used AWS B-L2b-S is an acceptable replacement for BL2 (Manual).



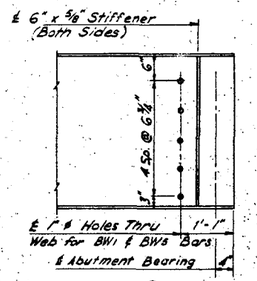
DETAIL "A"



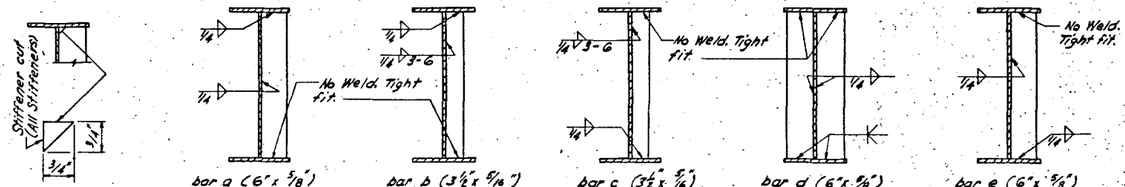
DETAIL "B"



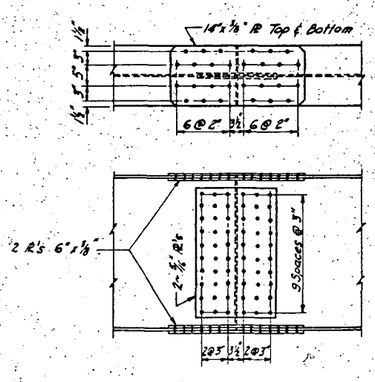
ALTERNATE SHEAR DEVICE



BEAM DETAILS



WEB STIFFENER DETAILS



FIELD SPLICE DETAIL

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

QUANTITIES (ONE BRIDGE)	
Structural Steel (A-441)	176,760 Lbs.
Structural Steel (A-36)	31,368 Lbs.

GOOSE RIVER BRIDGE

SUPERSTRUCTURE DETAILS

37'-0" ROADWAY

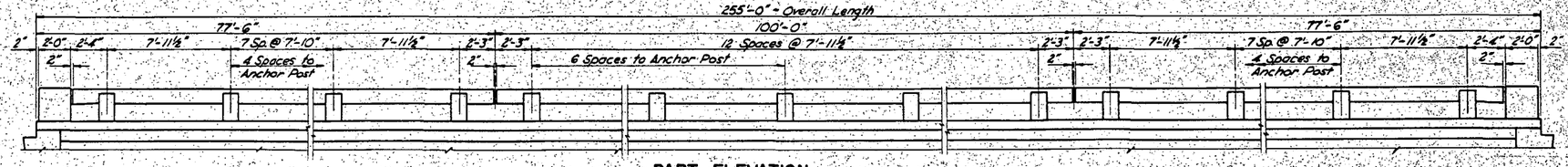
HS20 LOADING

29-59-10

29-59-10

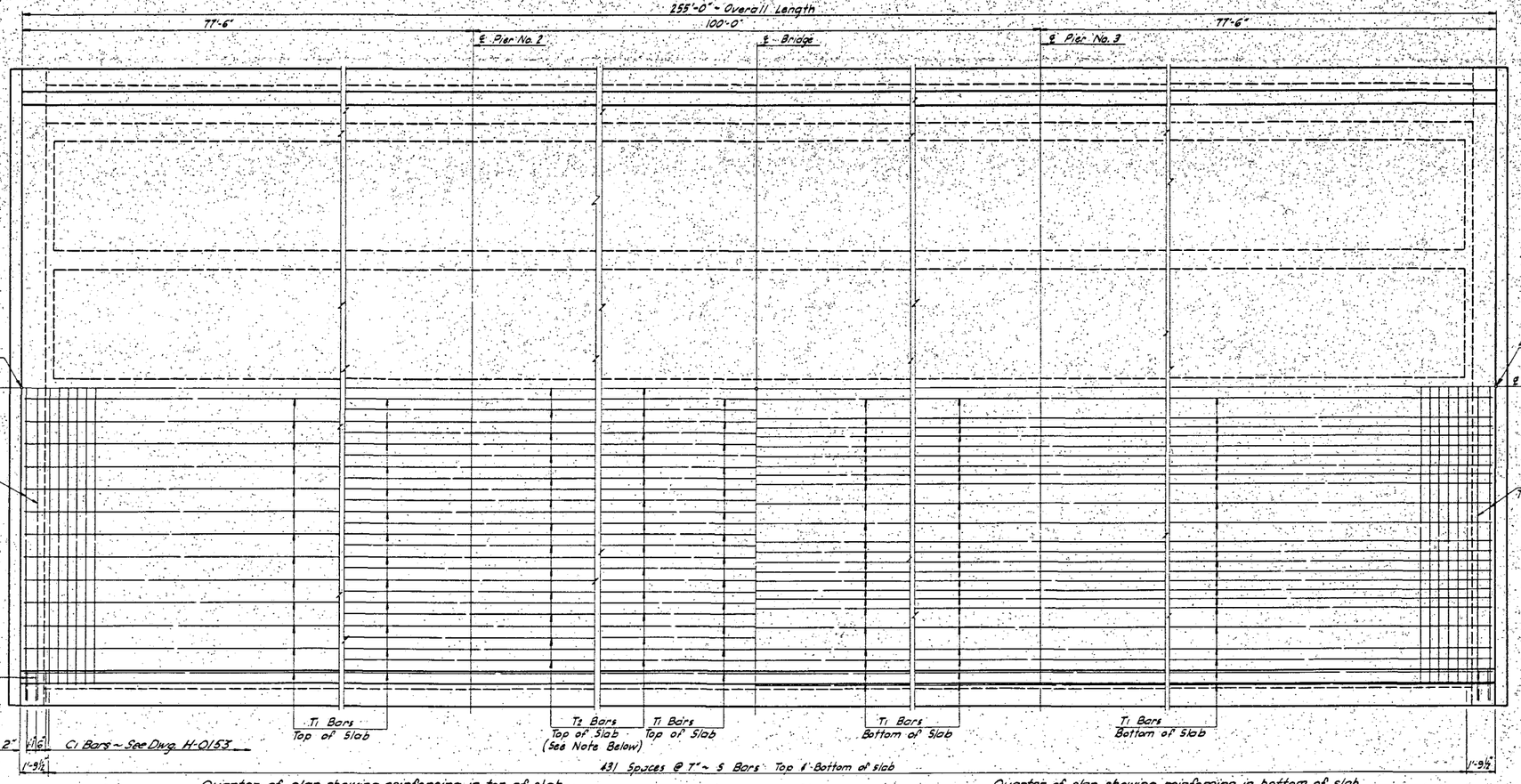
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99		65	319

		DATE	CHK'D BY	REVISIONS
DESIGN	MADE BY M.E.H.			
	CHECKED BY L.P.H.			
DETAILS	MADE BY L.E.C.			
	CHECKED BY C.M.C.			
TRACING	MADE BY C.M.C.			
	CHECKED BY C.M.C.			
QUANTITIES	MADE BY D.L.H.			
	CHECKED BY D.L.H.			



PART ELEVATION

See H-0153 for Railing Details



Quarter of plan showing reinforcing in top of slab

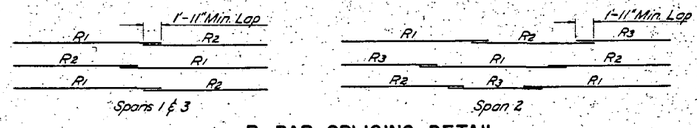
PART PLAN

Half Showing Slab Reinforcing
Typical Both Sides - by Rotation

Quarter of plan showing reinforcing in bottom of slab

NOTE:

T2 Bar placement - 20 feet each side of pier.



R BAR SPLICING DETAIL

CURB SLEEVE DETAILS

NOTES:

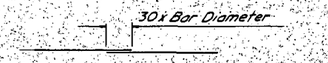
It is assumed that the Contractor can place the slab concrete in one continuous operation in accordance with Sections 602-3.6.1 thru 602-3.6.2.1.4 of the Standard Specifications. If the Contractor cannot pour at the specified rate, he shall submit drawings to the Bridge Engineer, for approval, showing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

Each curb shall be poured in one continuous operation.

See Std. Drawing H-0153 for railing details.

See Drawing 29-59-8 thru 29-59-10 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.



Ssplicing DETAILS

T1, E1, & E2

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

QUANTITIES

See Drawing 29-59-12 for Quantities

GOOSE RIVER BRIDGE

SLAB & RAILING DETAILS

37'-0" ROADWAY

HS20 LOADING

29-59-11

29-59-11

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-2(20)99	66	319	

		DATE
DESIGN	MADE BY M.E.W.	
	CHECKED BY A.P.H.	
DETAILS	MADE BY L.E.G.	
	CHECKED BY G.H.R.	
TRACING	MADE BY G.H.R.	
	CHECKED BY G.H.R.	
QUANTITIES	MADE BY W.E.F.	
	CHECKED BY W.E.F.	

REVISIONS

MARK	
1	
2	

SUPERSTRUCTURE (ONE BRIDGE)

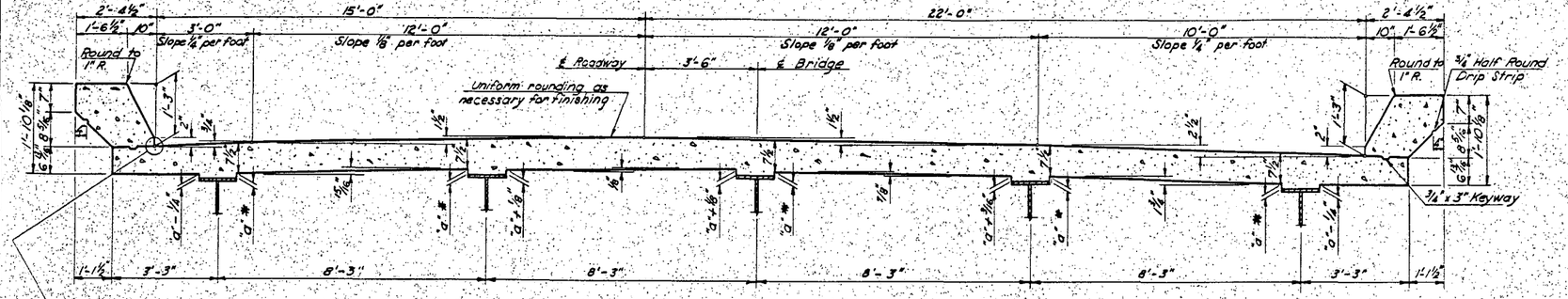
MARK	NUMBER SLAB	NUMBER RAILING & POSTS	NUMBER CURB	SIZE	LENGTH	SHAPE	UNIT WT.
P4		180	6	3'-8"	Bent		5.51
P5		18	6	4'-5"	"		6.63
P6		132	5	4'-11"	"		5.13
P7	132		3	3'-10"	"		1.44
P8	120		3	2'-10"	"		1.06
P9	12		3	4'-4"	"		1.63
RC	450		3	2'-11"	Bent		1.10
R1	36		6	40'-0"	Str.		60.08
R2	36		6	36'-8"	"		55.09
R3	12		6	26'-8"	"		40.06

PROJECT I-29-2(20)99
DRAWING 29-59-12
SHEET 2

SUPERSTRUCTURE (ONE BRIDGE)

MARK	NUMBER SLAB	NUMBER RAILING & POSTS	NUMBER CURB	SIZE	LENGTH	SHAPE	UNIT WT.
BW1	32		6	21'-8"	Str.		32.55
BW2	68		6	6'-4"	Bent		9.51
BW3	76		6	3'-0"	"		4.51
BW4	8		6	9'-4"	"		14.02
BW5	20		5	5'-0"	"		5.22
BW6	68		5	6'-9"	"		7.04
BW7	84		5	4'-8"	"		4.87
C1	580		5	5'-9"	Bent		6.00
C2	8		5	7'-1"	"		7.39
E1		14	6	38'-1"	Str.		57.20
E2		54	5	37'-9"	"		39.38
S	864		6	39'-2"	Str.		58.83
T1	518		5	37'-9"	Str.		39.38
T2	50		6	40'-0"	"		60.08

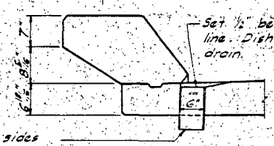
PROJECT I-29-2(20)99
DRAWING 29-59-12
SHEET 1



SECTION OF SLAB

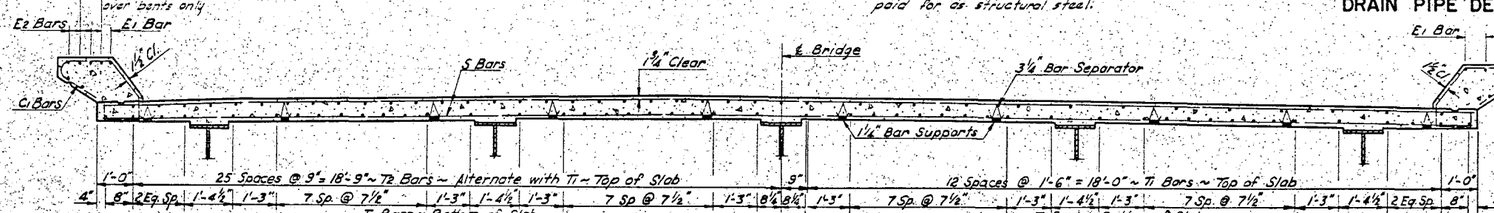
Showing Dimensions

*"a" equals 1⅛" @ ℄ bearings of piers and abutments. At intermediate points "a" equals screed elevation at ℄ roadway minus top of girder elevation minus (.9043 girder no. 1), (.7569 girder no. 2), (.6675 girder no. 3), (.6806 girder no. 4), (.7587 girder no. 5).



6" x 4" x ¼" x 8" long Rect. Tube. Weld Bead on two sides 5/16" x 2". Hot dip galvanized after fabrication. To be paid for as structural steel.

DRAIN PIPE DETAIL

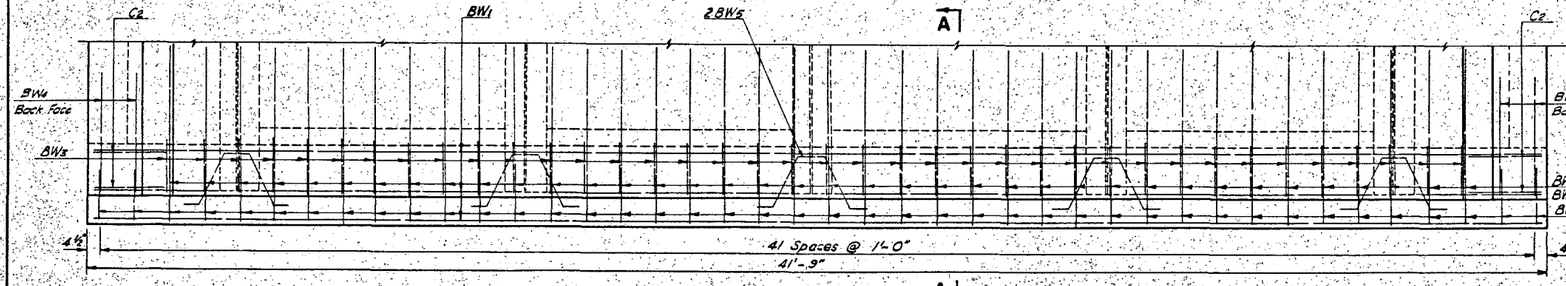


HALF SECTION OF SLAB

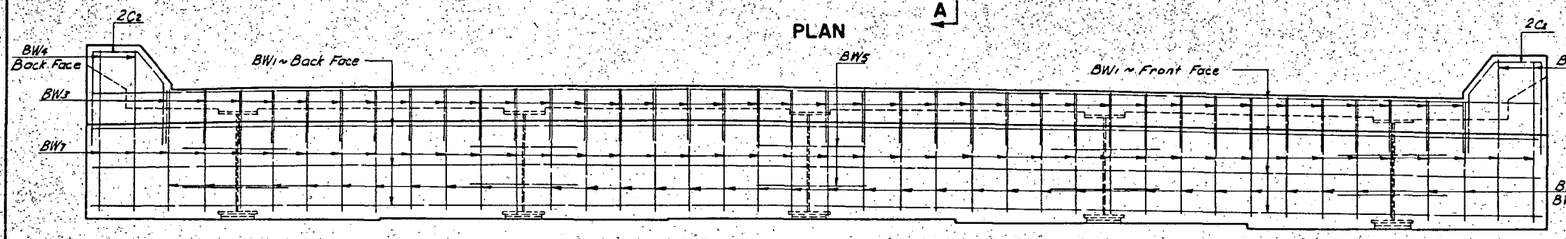
Showing Reinforcing over Piers

HALF SECTION OF SLAB

Showing Reinforcing in all spans between supports

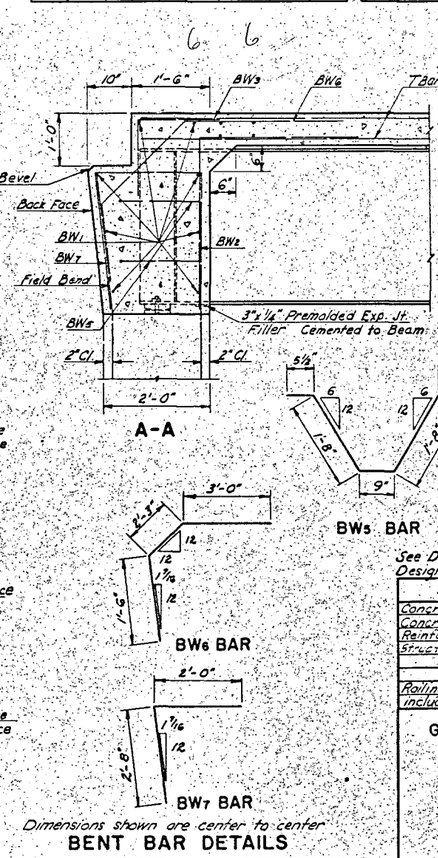


PLAN



ELEVATION

END BEAM DETAILS



Dimensions shown are center to center

BENT BAR DETAILS

See Drawing 29-59-11 for notes. Designed for 25# /S.F. F.W.S.

QUANTITIES (ONE BRIDGE)

Concrete Class AE-3	307.8 C.Y.
Concrete Class AAE-3	16.54 C.Y.
Reinforcing Steel	91,642 Lbs.
Structural Steel (A 36)	185 Lbs.

Railing and end post quantities included.

GOOSE RIVER BRIDGE
SLAB, END BEAM & MISC. DETAILS

37'-0" ROADWAY
HS20 LOADING

29-59-12

29-59-12