Feb 18, 2011

DESIGN DATA FOR ND 200				
Traffic	Average Daily			Max.Hr.
Current 2009	Pass: 1575	Trucks: 225	Total: 1,800	
Forecast 2029	Pass: 2035	Trucks: 290	Total: 2,325	
Clear Zone Distance: 34 ft		Design Speed: 65		
Minimum Sight Dist. for Stopping: 645		Bridges: HS 20 DESIGN LOADING		
Minimum Sight Dist. for Safe Passing: 2,285				
Sight Dist. for No Passing Zone: 1,100				
Pavement Design Life (years)				

JOB# 28

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

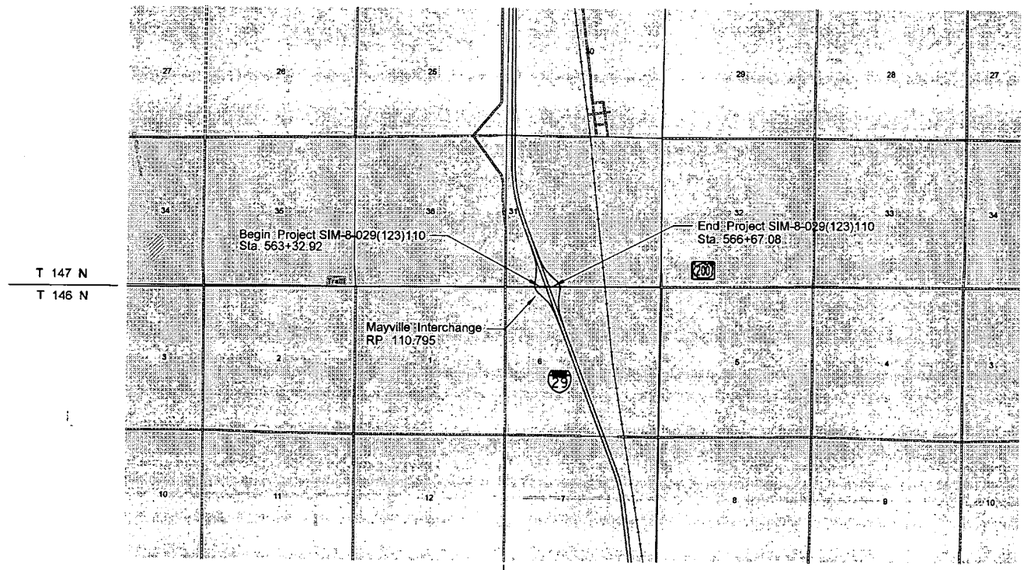
SIM-8-029(123)110, PCN 18360

TRAILL COUNTY
ND HIGHWAY 200, MAYVILLE INTERCHANGE
BRIDGE DECK REPLACEMENT, REPLACE
APPROACH SLABS, AND UPGRADE GUARDRAIL
Bridge No. 29-110.795

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	18360	1	1

GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota Department of Transportation October 2008; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SIM-8-029(123)110	0.063	0.063



DESIGNERS

Luke J. Beckermann

APPROVED DATE 12/17/2010

Roger Weigel /s/ for
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

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

APPROVED DATE 12/15/2010

Jeremy L. McLaughlin /s/
HOUSTON ENGINEERING, INC., FARGO, ND

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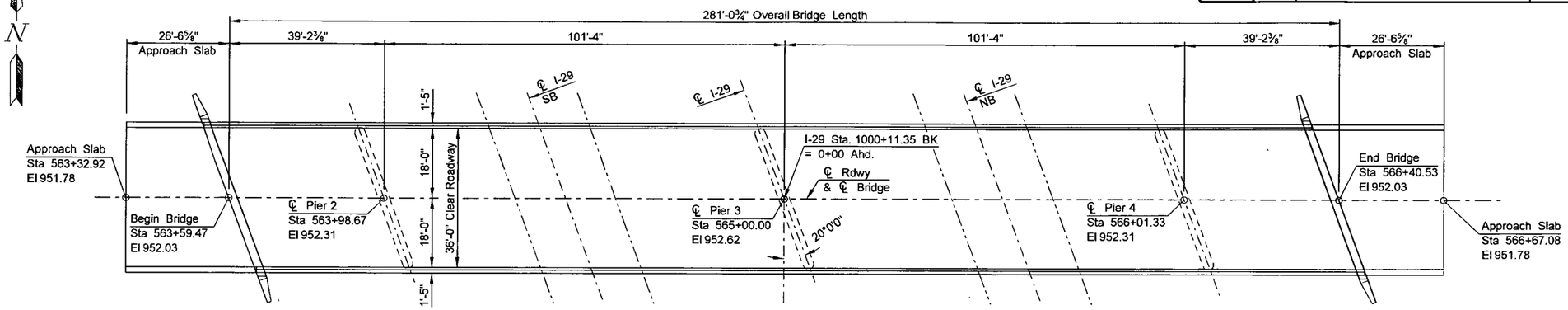
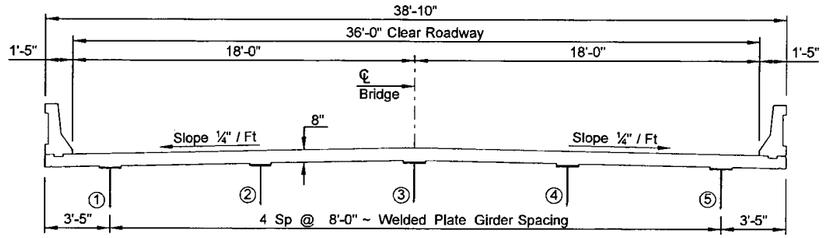
23 U.S.C. 409
NDDOT Reserves All Objections

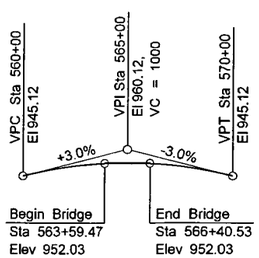
BRIDGE CODE	STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
X-771	ND	SIM-8-029(123)110	170	1



PLAN



TYPICAL DECK SECTION



VERTICAL CURVE DATA

ELEVATION

DESIGN STRENGTHS:

f'c = 4,000 psi ~ Class AAE-3 Concrete
fy = 60,000 psi ~ Reinforcing Steel

Load Factor Design

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INITIALIZING BENCHMARK
CORS SYSTEM
NAVD - 88

STANDARD DRAWINGS
D-900-1
F.W.S. 15 PSF
HS20 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
MAYVILLE INTERCHANGE

BRIDGE LAYOUT

PROJECT: SIM-8-029(123)110
STATION: 1000+11.35
TRAILL COUNTY

12/10/2010 DATE — Terrence R. Udland BRIDGE ENGINEER

12/10/2010 10:38:42 AM lbeckermann Z:\3900\3950\09_3950_070\CAD\170BR_001_BRLO.dgn JLM

Houston Engineering Inc.

29-110.795-1

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	2

NOTES

100 SCOPE OF WORK: This project consists of removing and replacing the concrete deck and the approach slabs at the Mayville interchange. The structure is a 4-span steel girder bridge with an overall bridge length of 281'-0 3/4". The clear roadway width will remain 36'-0".

100 GENERAL: The cost of furnishing and placing preformed expansion joint filler, silicone sealant, concrete inserts, rebar couplers, and other miscellaneous items shall be included in the price bid for Class AAE-3 concrete.

202 HAZARDOUS MATERIAL: The existing structural steel is painted with lead-based paint. Certain Contractor operations could expose employees to hazardous levels of lead. The contractor shall plan accordingly and shall inform employees of the hazards of lead-based paint.

202 REMOVAL OF CONCRETE: The Contractor shall remove the concrete deck in a manner that prevents any damage to the parts of the structure to remain. All concrete removed shall become the property of the Contractor and shall be disposed of properly off of the right of way. The work needed for the deck, curb, rail, end cap, and post removal shall be included in the bid item, "Removal of Concrete."

202 REMOVE BRIDGE RAIL: The double box beam – post braced bridge rail, and hardware shall become the property of the Contractor and shall be disposed of outside of the highway right of way.

All costs to remove and dispose of bridge rail shall not be paid for separately, but shall be included in the price bid for "Remove Bridge Rail".

408 ASPHALT TRANSITIONS: The existing pavement shall be milled 2" deep at a distance of 20 feet beyond the ends of the approach slabs. Transition to 1/2" mill depth at ends of approach slabs. Hot Bituminous Pavement shall then be placed to match the elevation of the approach slab at the approach slab and the elevation of the milled pavement 20 feet beyond the end of the approach slabs. The cost of milling, materials, and labor for placing the asphalt transitions shall be included in the price bid for "Bridge Approach Slab – Remove and Replace."

602 FALSEWORK: Exterior steel girders shall be braced at a maximum of 10'-0" spacing to prevent rotation. The strength of the bracing shall be dependent on the forces induced by the weight of the concrete, forms, equipment, and workers. The design shall be based on the assumption that diaphragms will not carry any of the load. The Contractor's bracing plan and design shall be stamped by a Professional Engineer and submitted to the Engineer.

602 SURFACE FINISH "D": Surface Finish "D" shall be required for all exposed surfaces of the existing and new substructure, the outside edges of the deck, the bottom side of the deck outside the exterior girders, the exposed end beam areas outside of the exterior girders, and on all barrier surfaces. The surface finish color for the raised areas of the barriers shall be brown, color no. 30475, and shall meet Federal Standard 595B. All other surface finish color shall be white as approved by the engineer.

The special surface finish shall be a 100% acrylic material that is capable of providing a durable, textured coating of the specified colors to the surface of the concrete. The material shall be roller applied at the manufacturer's recommended application rate and in accordance with the manufacturer's written instructions. The Contractor shall submit a one square foot sample for color and texture approval before application begins.

602 DECK CONCRETE: Beams and girders have slight variations in the anticipated camber. To build the deck to the designated thickness will require slight adjustments in deck elevation and/or riser dimensions. These adjustments result in minor concrete quantity discrepancies. The Contractor shall consider this quantity discrepancy when he bids the unit price for Class AAE-3 concrete. The Department will pay plan quantity of Class AAE-3 concrete.

602 ENDWALLS: The endwall concrete shall be placed 72 hours before the deck is placed.

602 DECK CURING: No work shall be done on the deck while the wet cure is in progress, including forming of the barrier. No vehicles or equipment not required in the curing process shall be on the deck.

602 PENETRATING WATER REPELLENT TREATMENT: Penetrating water repellent shall be applied to the driving surface of the concrete deck after the barriers have been cast and surface finish "D" applied.

602 DECK PLACEMENT: The deck concrete shall be placed at a minimum rate of 80 CY per hour.

602 BARRIERS: Barriers shall be constructed according to the provisions of Section 602.03B.4 except that there shall be no expansion or deflection joints. Make 3/4" V-grooves in all faces of the barriers as shown in section on drawing 29-110.795-7.

602 POUR SEQUENCING: The deck concrete shall be placed as designated on the pour sequencing diagram. All pours shall be allowed to cure for a minimum of 72-hours prior to the next pour.

900 ELEVATION CHECK POINTS: Ten bolts need to be placed on the top of the barriers to serve as elevation check points. The cost for this item shall be included in the unit price bid for Class AAE-3 concrete.

930 ROADWAY CANOPY: The Contractor shall construct a canopy above the traveled roadway under the structures to protect traffic from falling material. The canopy is an added

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	3

NOTES

safeguard and does not relieve the Contractor of any responsibility for the safety of the public.

The canopy must be erected before the deck is removed and remain in place until after the new deck is complete. The canopy may be supported from the ground or suspended from the girders. The erection of the canopy shall be completed in a minimum amount of time and with the least inconvenience to the public.

The canopy shall be of a design and material selected by the Contractor and reviewed by the Engineer. The minimum vertical clearance from the traveled roadway to the bottom of the canopy shall be 15'-6". The canopy shall project a minimum distance of 5'-0" beyond the outside edge of the curb of the structure. The canopy shall project a minimum distance of 5'-0" beyond the edge of the driving lanes beneath the structure.

After the completion of the bridge deck and barriers, the canopy shall be removed and shall remain the property of the Contractor.

The roadway canopy shall be paid for at the contract lump sum unit price for "Roadway Canopy." The roadway canopy shall be measured as a lump sum item and shall include construction, maintenance, and removal. The contractor shall submit a detailed drawing of the canopy to the Engineer for review at least one week prior to construction.

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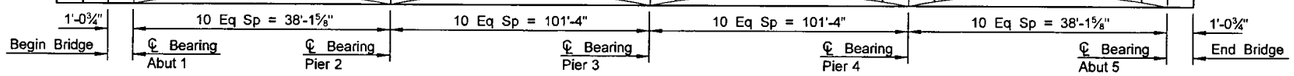
CL Girder 1	CL Girder 2	CL Girder 3	CL Girder 4	CL Girder 5
951.65	951.83	952.03	951.88	951.74
951.66	951.84	952.04	951.89	951.75
951.68	951.87	952.07	951.92	951.77
951.71	951.90	952.09	951.94	951.80
951.73	951.93	952.12	951.97	951.82
951.76	951.95	952.14	951.99	951.85
951.78	951.97	952.17	952.02	951.87
951.81	952.00	952.19	952.04	951.89
951.84	952.03	952.22	952.07	951.92
951.87	952.05	952.24	952.09	951.95
951.91	952.09	952.28	952.13	951.98
951.95	952.12	952.31	952.16	952.02
952.05	952.23	952.42	952.27	952.11
952.16	952.35	952.52	952.38	952.22
952.26	952.44	952.62	952.46	952.31
952.33	952.51	952.68	952.53	952.37
952.36	952.54	952.71	952.56	952.40
952.37	952.54	952.72	952.56	952.39
952.35	952.52	952.69	952.53	952.37
952.31	952.48	952.66	952.49	952.32
952.29	952.45	952.63	952.46	952.30
952.29	952.45	952.62	952.45	952.29
952.30	952.46	952.63	952.48	952.29
952.32	952.49	952.65	952.52	952.31
952.36	952.53	952.69	952.54	952.34
952.39	952.56	952.71	952.53	952.37
952.40	952.55	952.71	952.53	952.36
952.37	952.53	952.68	952.51	952.33
952.31	952.46	952.62	952.44	952.26
952.22	952.38	952.52	952.35	952.16
952.11	952.27	952.42	952.23	952.05
952.02	952.16	952.31	952.12	951.95
951.98	952.13	952.28	952.09	951.91
951.95	952.09	952.24	952.05	951.87
951.92	952.07	952.22	952.03	951.84
951.89	952.04	952.19	952.00	951.81
951.87	952.02	952.16	951.97	951.78
951.85	951.99	952.14	951.94	951.76
951.82	951.97	952.12	951.93	951.73
951.80	951.94	952.09	951.90	951.71
951.77	951.92	952.07	951.87	951.68
951.75	951.89	952.04	951.84	951.66
951.74	951.88	952.03	951.83	951.65



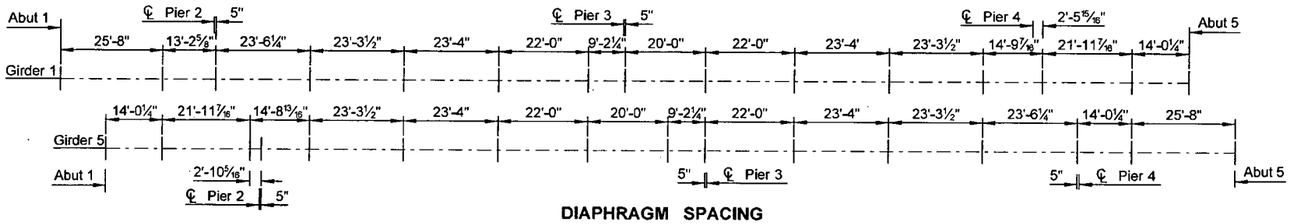
Girder No. 1 is the North Girder

SCREED ELEVATIONS

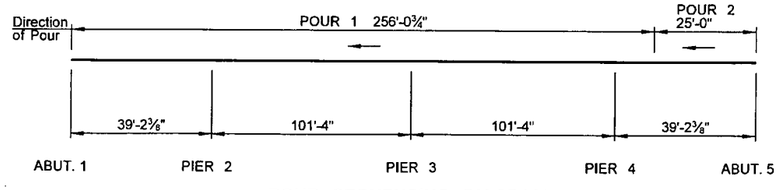
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	4

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0111	REMOVAL OF CONCRETE	L SUM	1
202	0149	REMOVE BRIDGE RAIL	LF	563
550	0217	BRIDGE APPROACH SLAB - REMOVE AND REPLACE	SY	229.2
602	0130	CLASS AAE-3 CONCRETE	CY	338.3
602	1250	PENETRATING WATER REPELLENT TREATMENT	SY	1,124
612	0116	REINFORCING STEEL-GRADE 60-EPOXY COATED	LBS	96,368
930	7012	ROADWAY CANOPY	L SUM	1



DIAPHRAGM SPACING



POUR SEQUENCING DIAGRAM

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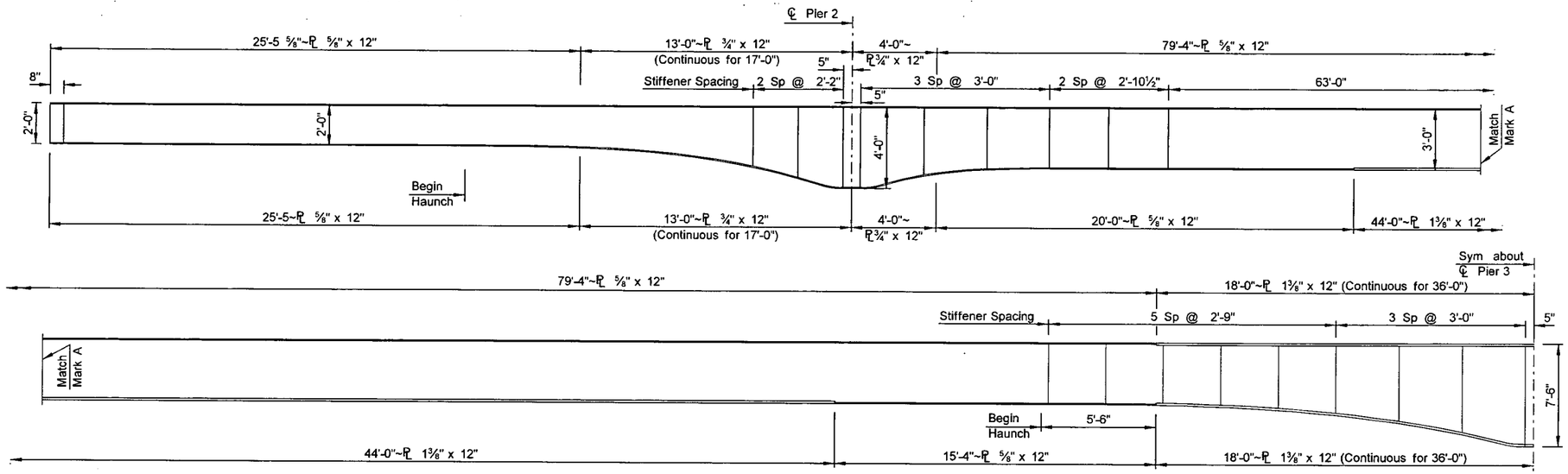
MAYVILLE INTERCHANGE

QUANTITIES & SCREED ELEVATIONS

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	5



GIRDER ELEVATION

Note:
Diaphragm plates omitted for clarity.

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MAYVILLE INTERCHANGE

EXISTING GIRDER DETAILS

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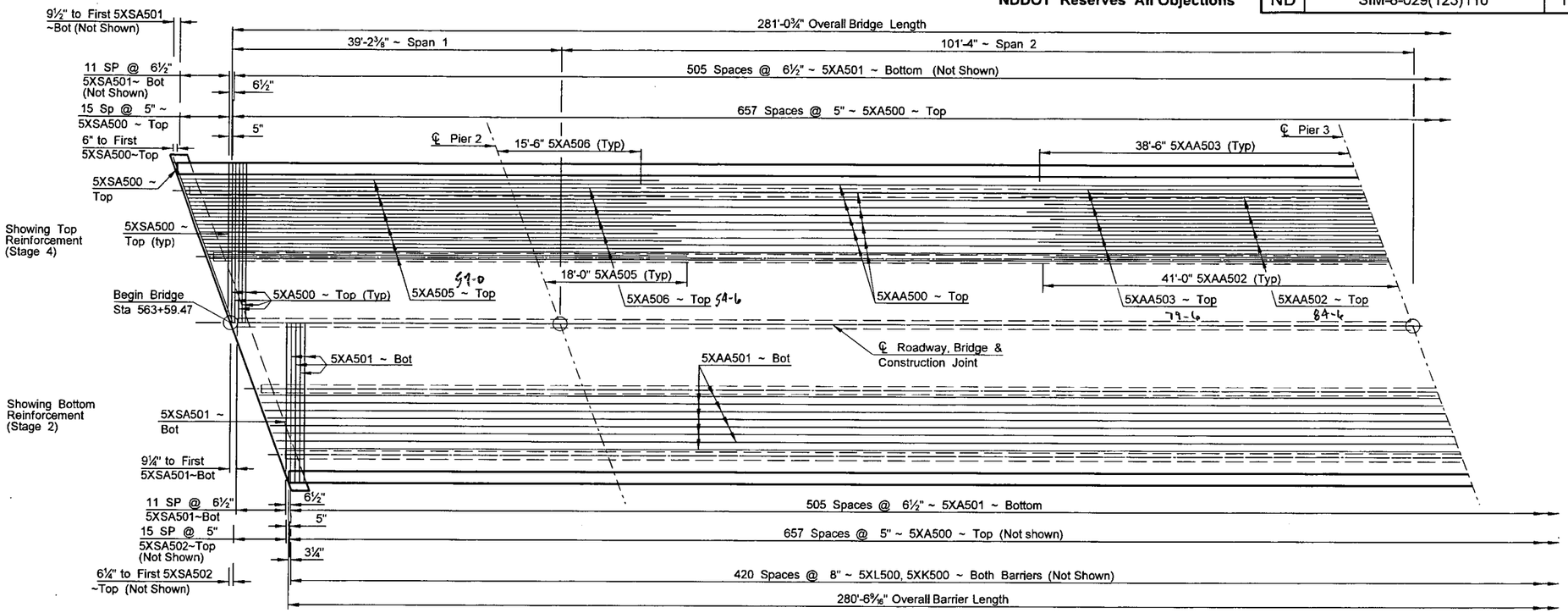
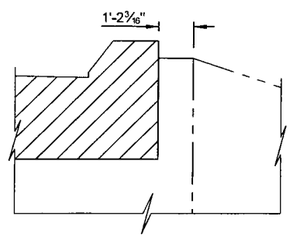
23 U.S.C. 409
NDDOT Reserves All Objections

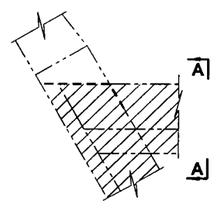
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	6



PLAN



A-A



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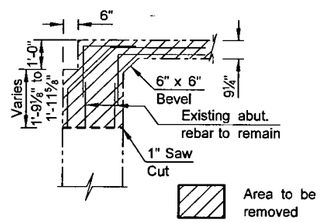

ENDWALL DETAIL

CONCRETE REMOVAL DETAILS AT ABUTMENT

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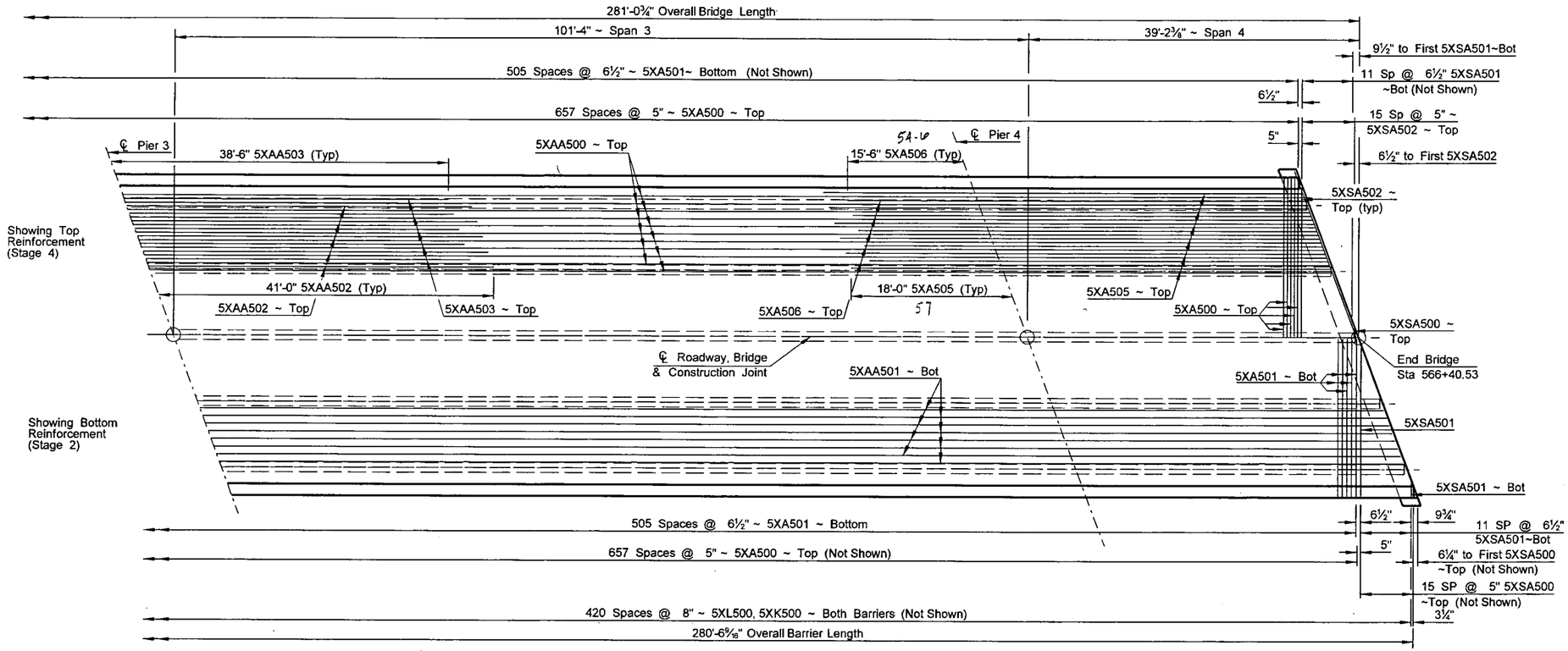
QUANTITIES
SEE DWG 29-110.795-9

MAYVILLE INTERCHANGE

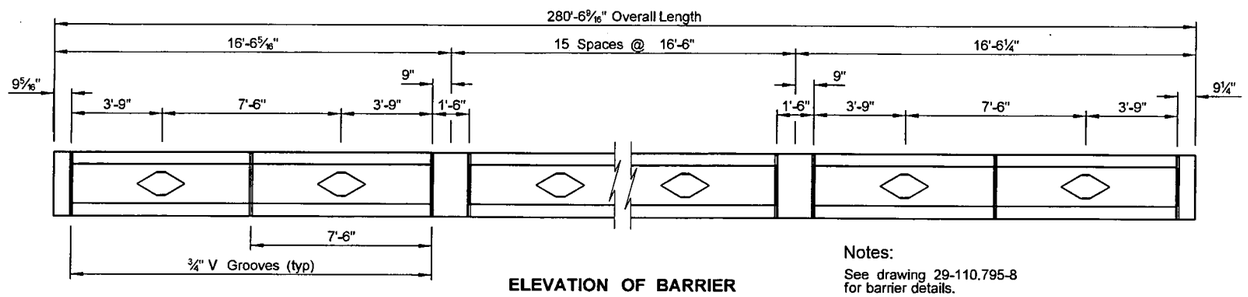
SLAB LAYOUT

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	7



PLAN



ELEVATION OF BARRIER

Notes:
See drawing 29-110.795-8 for barrier details.

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QUANTITIES

SEE DWG 29-110.795-9

MAYVILLE INTERCHANGE

SLAB LAYOUT

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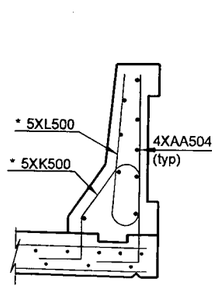
Houston Engineering Inc.

29-110.795-7

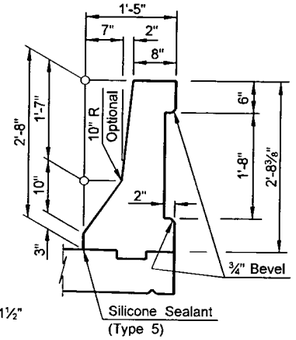
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	8



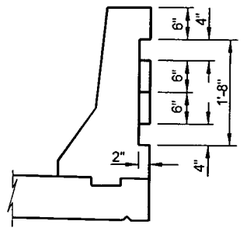
* Barrier reinforcing shall have a 1½" clearance from the front face.

SHOWING REINFORCING

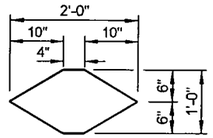


SHOWING DIMENSIONS

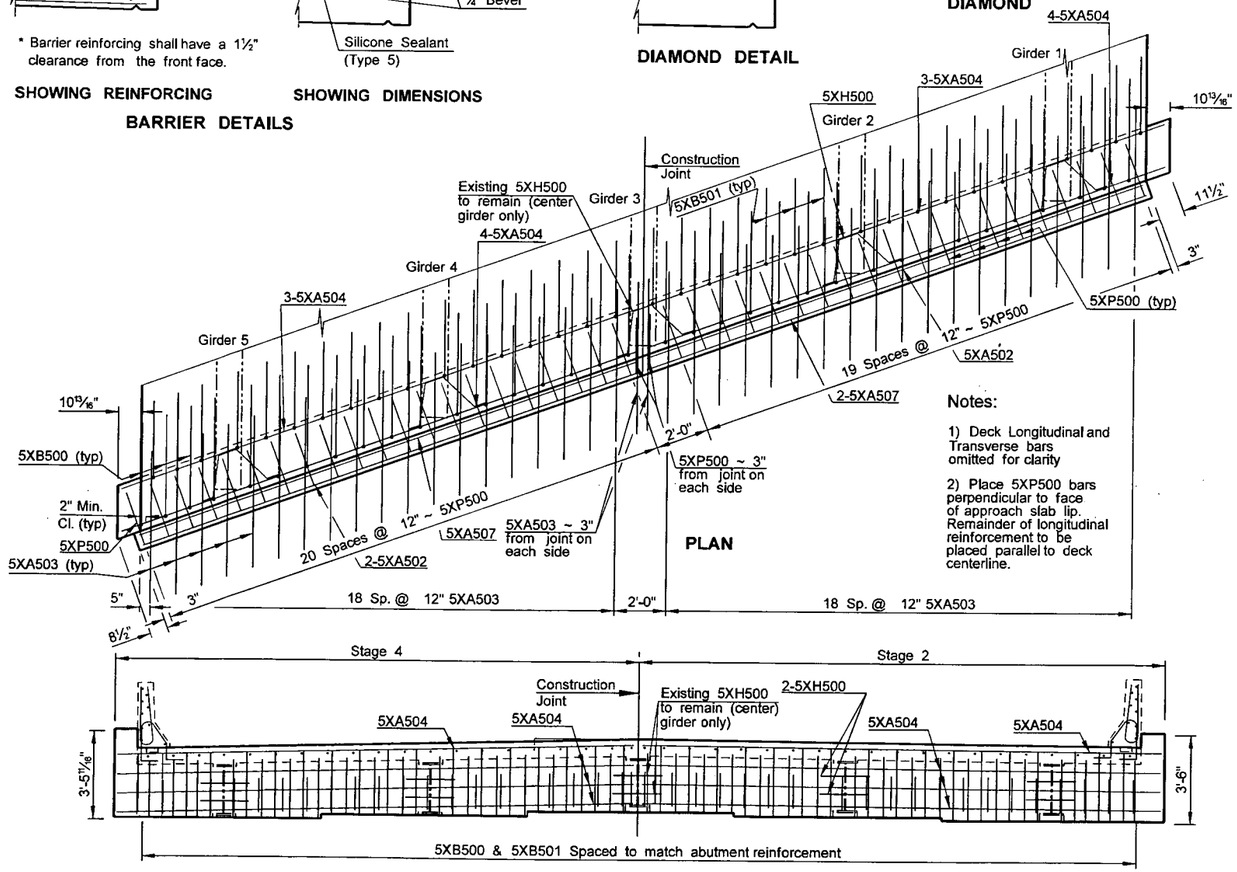
BARRIER DETAILS



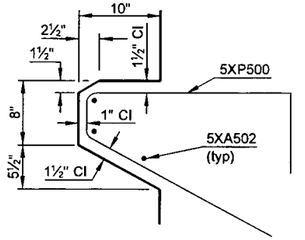
DIAMOND DETAIL



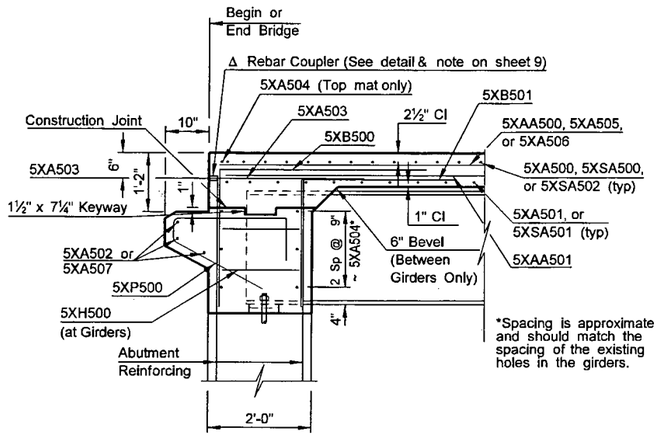
DETAIL OF DIAMOND



ELEVATION
(APPROACH LIP NOT SHOWN)



APPROACH SLAB LIP DETAIL



*Spacing is approximate and should match the spacing of the existing holes in the girders.

ENDWALL DETAIL

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QUANTITIES

SEE DWG 29-110.795-9

INCLUDED IN SUPERSTRUCTURE QUANTITIES

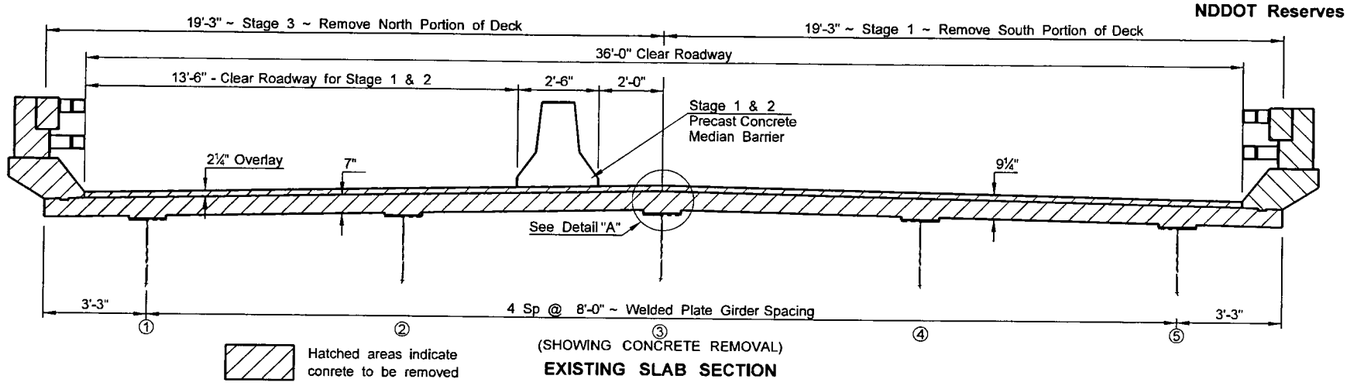
MAYVILLE INTERCHANGE
MAYVILLE, ND

(LOOKING SOUTHWEST)
(ABUTMENT 5 SHOWN)

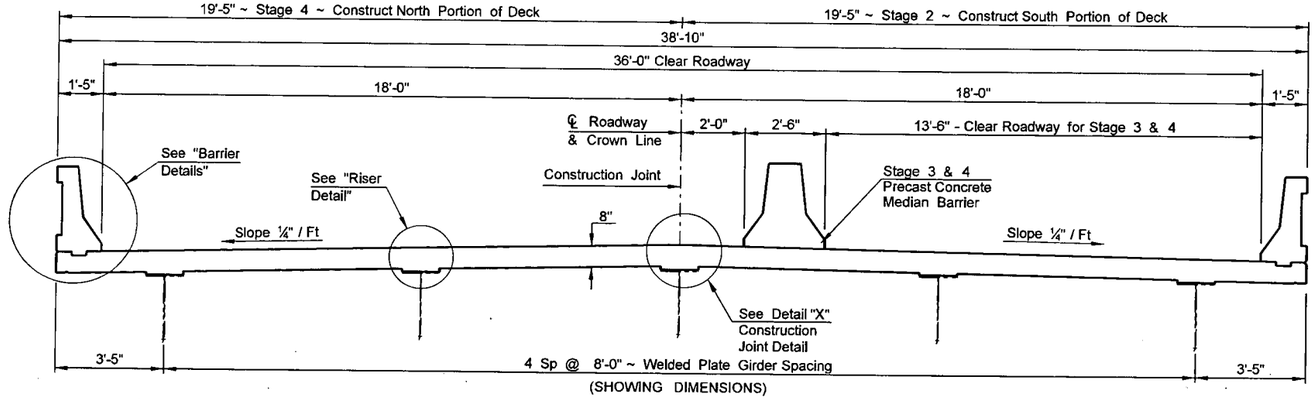
ENDWALL DETAILS

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

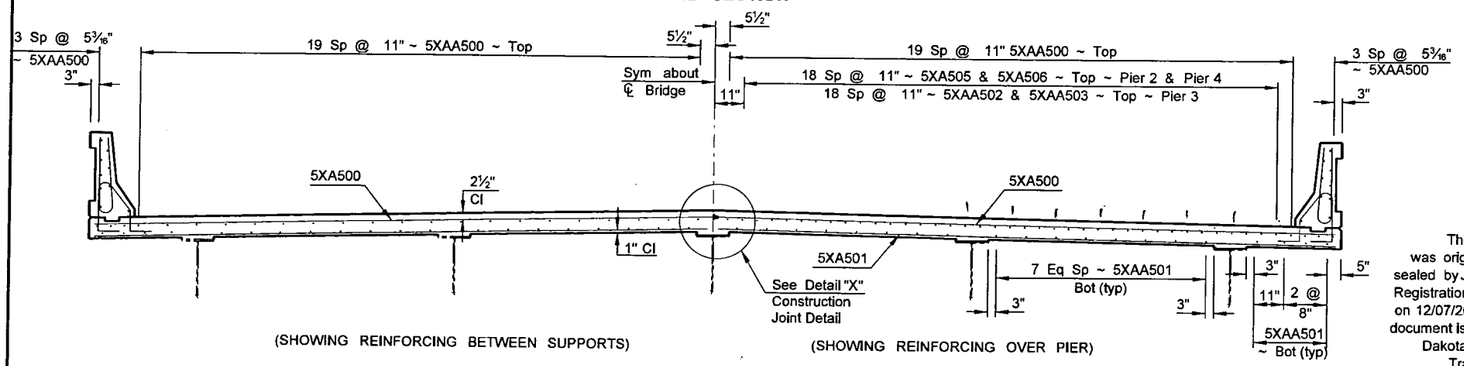
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	9



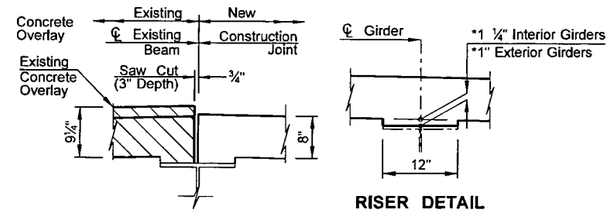
EXISTING SLAB SECTION



SLAB SECTION



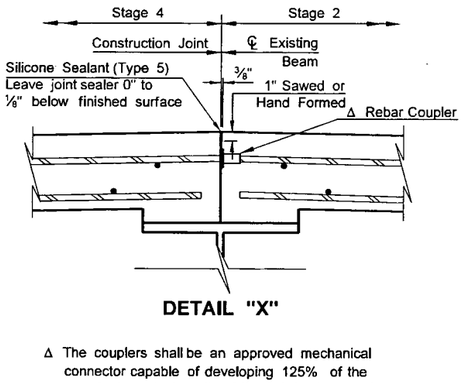
SLAB SECTION



DETAIL A

RISER DETAIL

*Riser depths are approximate and may be greater on east end of bridge. See bridge notes.



DETAIL "X"

Δ The couplers shall be an approved mechanical connector capable of developing 125% of the specified yield strength of the reinforcing steel. The couplers shall be epoxy coated according to AASHTO M 284. Damaged epoxy coating on the couplers shall be repaired according to Section 612.03 E. Contractor shall adjust transverse bar lengths (if necessary) to account for couplers. Rebar lengths are based on total out-to-out reinforcement dimensions required. No payment will be made for additional reinforcement required due to couplers.

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QUANTITIES	
CLASS AAE-3 CONCRETE	338.3 CY
REINFORCING STEEL (EPOXY)	96,368 LBS

MAYVILLE INTERCHANGE

(Looking East)

SLAB SECTION

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

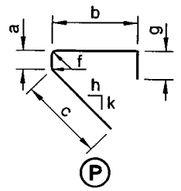
LOCATION		SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS								
						a	b	c	d	e	f	g	h	k
SUPERSTRUCTURE		5	XA500	1316	19'-3"		19'-3"							
		5	XA501	1012	19'-1"		19'-1"							
		5	XA502	6	20'-4"		20'-4"							
		5	XA503	80	6'-0"		6'-0"							
		5	XA504	28	21'-3"		21'-3"							
		5	XA505	40	57'-0"		57'-0"							
		5	XA506	36	54'-6"		54'-6"							
		5	XA507	6	20'-6"		20'-6"							
		5	XSA500	2	149'-4"	0'-9"	17'-11"			15				
		5	XSA501	4	115'-6"	1'-5"	17'-10"			11				
		5	XSA502	2	152'-0"	0'-11"	18'-1"			15				
	EPOXY	5	XAA500	46	290'-8"		60'-0"	2'-6"	50'-8"	4		280'-8"		
		5	XAA501	40	290'-8"		60'-0"	2'-6"	50'-8"	4		280'-8"		
		5	XAA502	20	84'-6"		60'-0"	2'-6"	24'-6"	1		82'-0"		
		5	XAA503	18	79'-6"		60'-0"	2'-6"	19'-6"	1		77'-0"		
		4	XAA504	18	286'-3"		60'-0"	1'-6"	46'-3"	4		280'-3"		
		5	XB500	70	6'-5"		2'-5"	4'-0"						
		5	XB501	70	5'-3"		2'-3"	3'-0"						
		5	XH500	16	5'-0"	5½"	1'-8"	0'-9"					6	12
		5	XL500	842	5'-0"	0'-3"	2'-2"	0'-8"	2'-2"		2.5"		1.25	12
		5	XK500	842	4'-11"	1'-4"	0'-8"	0'-11"	0'-8"	1'-0"	2.5"	0'-8"	8.5	12
		5	XP500	86	5'-4"	0'-5"	2'-2"	1'-11"			1.25"	0'-10"	12	6.5

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	10

NOTES:

1. Fabrication and tolerances shall be in accordance with the CRSI Manual of Standard Practice.
2. All dimensions are out to out of bars.
3. Nominal length of each bent bar or cut bar is the sum total of the detailing dimensions for that bar, unless otherwise noted.
4. Adjacent "AA" bars shall be turned end for end so that the splice locations are staggered.
5. The "f" dimension indicates the inside radius in inches unless otherwise noted.
6. An "X" preceding a bar designation indicates an epoxy coated bar.
7. All reinforcing steel shall be grade 60.



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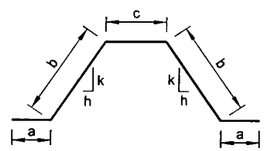

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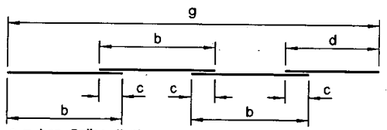
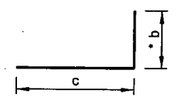


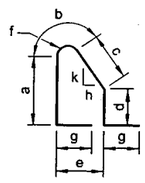
c = Lap Splice (typ)
e = No. of "b" Length Pieces in a Set
Total Length per Set = e x b + d

(AA)



(B)

* b = Vertical Leg for XB500's and XB501's.



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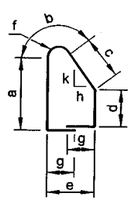

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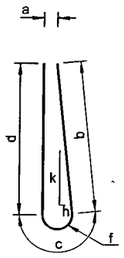

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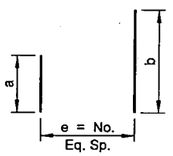

(SA)

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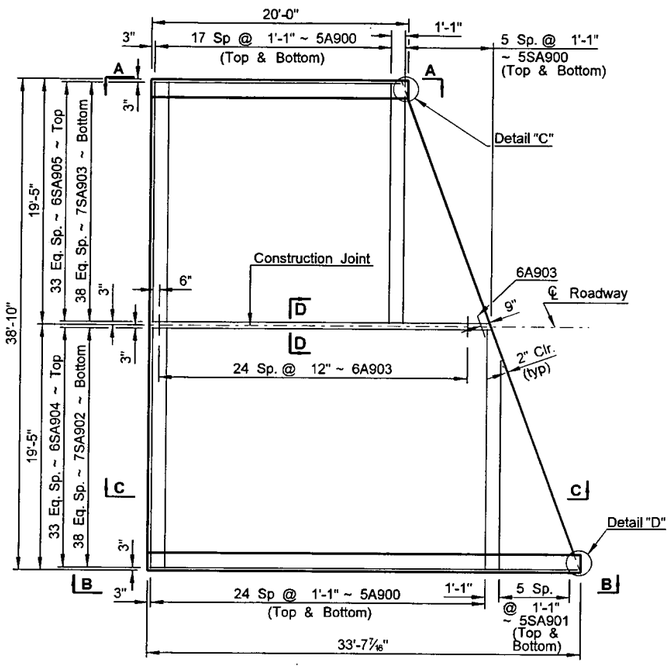
MAYVILLE INTERCHANGE

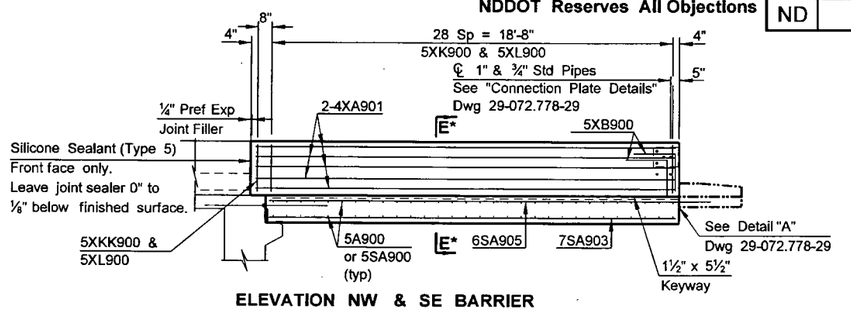
REINFORCING BAR LIST & DETAILS

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	11

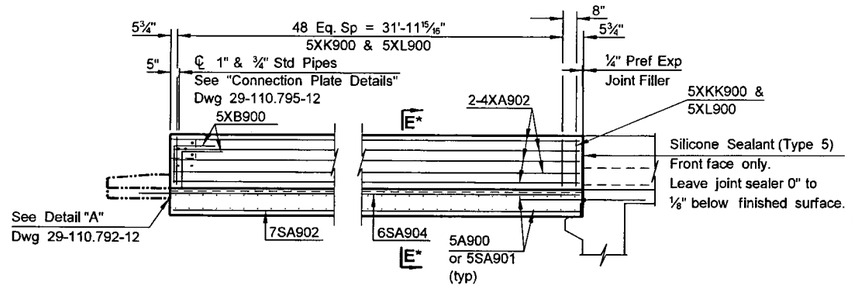


PLAN



ELEVATION NW & SE BARRIER
A-A

*See Drawing 29-110.795-12



ELEVATION SW & NE BARRIER
B-B

20° SKEW BAR LIST - ONE SLAB						
SIZE	MARK	NO.	LENGTH	a	b	e
5	A900	86	19'-1"			
4	XA901	9	19'-8"			
4	XA902	9	33'-3"			
6	A903	26	2'-6"			
4	A904	4	3'-0"			
5	SA900	2	63'-2"	3'-1"	18'-0"	5
5	SA901	2	54'-10"	1'-8"	16'-7"	5
7	SA902	1	1158'-7"	26'-3"	33'-2"	38
7	SA903	1	882'-5"	19'-2"	26'-1"	38
6	SA904	1	1010'-1"	26'-3"	33'-2"	33
6	SA905	1	769'-4"	19'-2"	26'-1"	33
5	XL900	80	5'-0"			
5	XK900	78	5'-7"			
5	XKK900	2	3'-11"			
5	XB900	4	3'-8"	1'-10"	1'-10"	

ESTIMATED MATERIAL QUANTITIES (ONE SLAB)	
REINFORCING STEEL (LBS)	CONCRETE (CY)
10,121	49.5

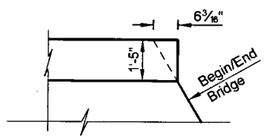
NOTES:

Removal of pavement consists of removing curb and gutter, bituminous pavement, and aggregate base. All costs to load, haul and stockpile the material shall be included in the unit price bid for "Bridge Approach Slab - Remove and Replace." All pavement removed shall become the property of the contractor.

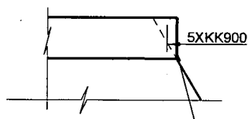
The estimated material quantities shown are for information purposes only. All materials including concrete, reinforcing bars, polyethylene membrane, preformed joint filler, polystyrene, silicone sealant, connection plates and pipes, and all labor required to build the approach slabs, barriers, & curbs shall be included in the pay item "Bridge Approach Slab - Remove and 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 M 171. The cost to remove asphalt on top of the approach slab shall be included in the pay item "Bridge Approach Slab - Remove and Replace."

Surface Finish "D" shall be required for the surfaces of the approach slab barriers & curbs.

The bar marks beginning with an "X" indicate an epoxy coated bar. The dimensions shown in the bent bar details are out to out.

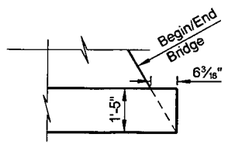


DETAIL "C"
Showing Dimensions

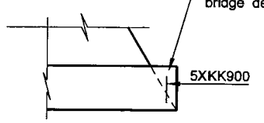


DETAIL "C"
Showing Reinforcing

BARRIER DETAILS



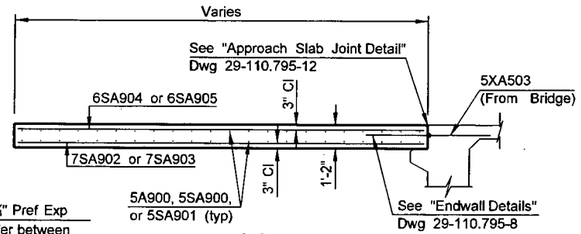
DETAIL "D"
Showing Dimensions



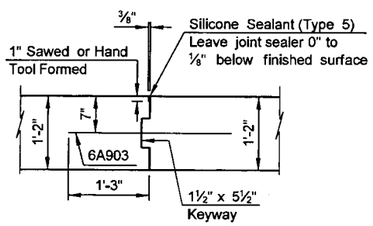
DETAIL "D"
Showing Reinforcing

Place ¼" Pref Exp Joint Filler between bottom of barrier and bridge deck

BARRIER DETAILS



C-C



D-D

CROSSROAD QUANTITIES (ONE SLAB)	
APPROACH SLAB	114.6 SY

MAYVILLE INTERCHANGE
MAYVILLE, ND

APPROACH SLAB

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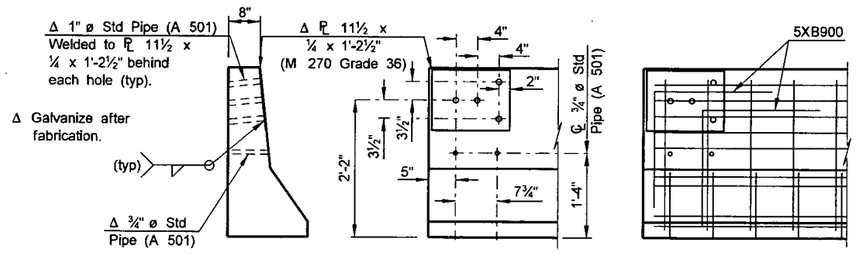
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-8-029(123)110	170	12

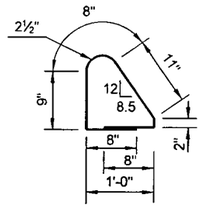
23 U.S.C. 409
NDDOT Reserves All Objections

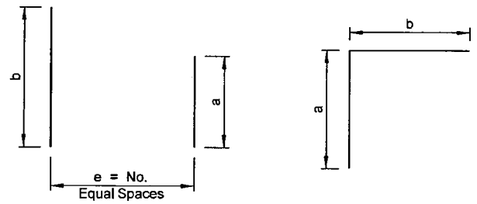


SHOWING DIMENSIONS

SHOWING REINFORCING

(SHOWING FRONT FACE)
CONNECTION PLATE DETAILS





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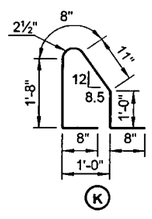

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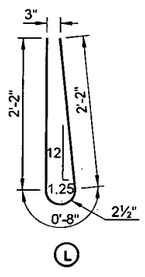
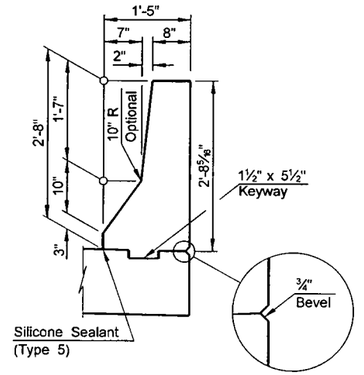


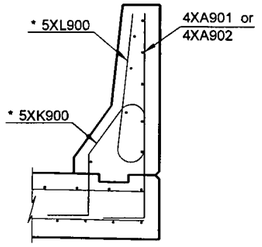
(L)

(B)

BENT BAR DETAILS



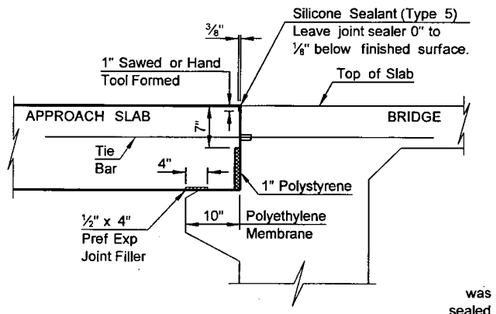
SHOWING DIMENSIONS



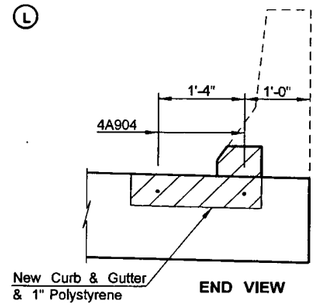
* Barrier reinforcing shall have a 1½" min. clearance on front face.

SHOWING REINFORCING

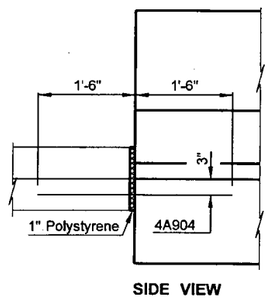
BARRIER DETAIL
E-E



APPROACH SLAB JOINT DETAIL



END VIEW



SIDE VIEW

DETAIL "A"
(CORNER OF SLAB)

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QUANTITIES

See Dwg 29-110.795-11

MAYVILLE INTERCHANGE
MAYVILLE, ND

APPROACH SLAB DETAILS

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

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

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

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

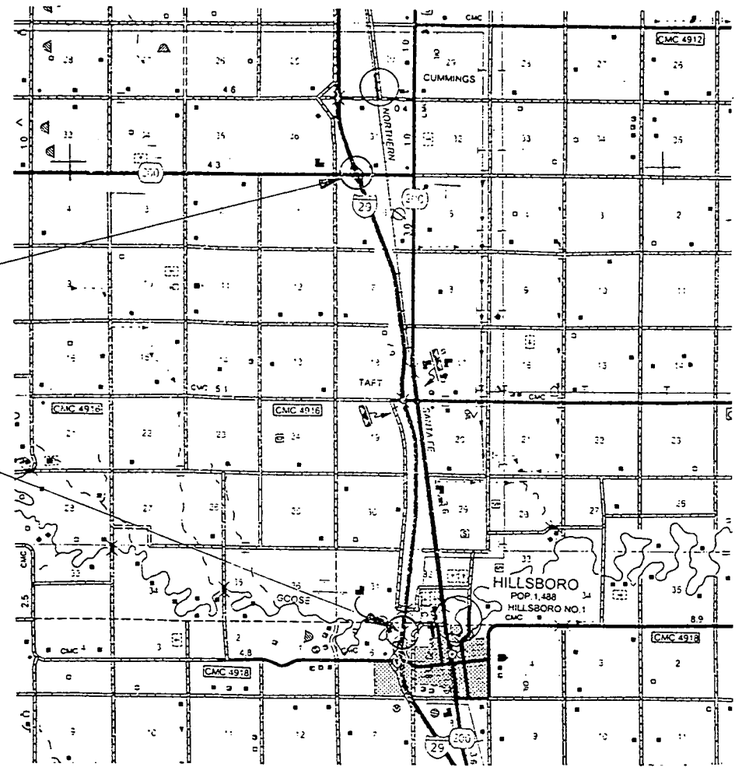
GOVERNING SPECIFICATIONS:

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

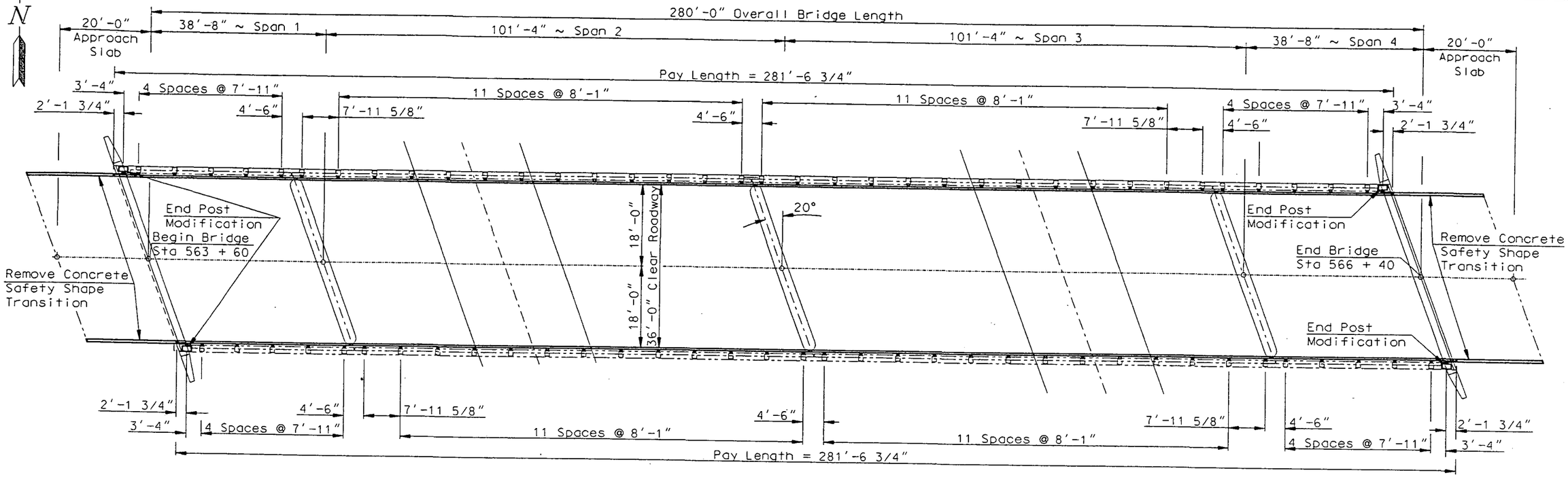
DESIGN ENGINEER
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

RONALD JASON HENTZ
REGISTERED
PROFESSIONAL ENGINEER
NORTH DAKOTA

.../80999000.012/TRAFFIC/title.dgn 04/25/2003 02:21:30 PM

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

BRIDGE CODE	STATE	PROJECT NUMBER	SHEET NO.
X-771	ND	HSP-8-999(012)	6



PLAN

NOTES:

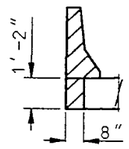
SCOPE OF WORK: The work at this site consists of removing a portion of the approach slab & safety shape transitions, placing a 3" curb the entire length of the approach slabs, end post modificatgion on all 4 corners of the bridge and placing a rail retrofit on the bridge.

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

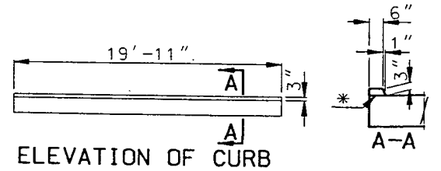
The removal of the safety shape transitions and the portion of the approach slab as shown shall be included in the price bid for "Remove Concrete Safety Shape Transition."

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	4
624	3002	DOUBLE BOX BEAM RAIL RETROFIT - E-RAIL	LF	563.1
748	0540	CURB	LF	79.7
764	1990	REMOVE CONCRETE SAFETY SHAPE TRANSITION	EA	4



CONCRETE REMOVAL



ELEVATION OF CURB

* Bush hammer finish before any concrete is placed against existing concrete the surface shall be prepared with a bush hammer to produce a clean rough surface.

HWY 200 MAYVILLE INTERCHANGE

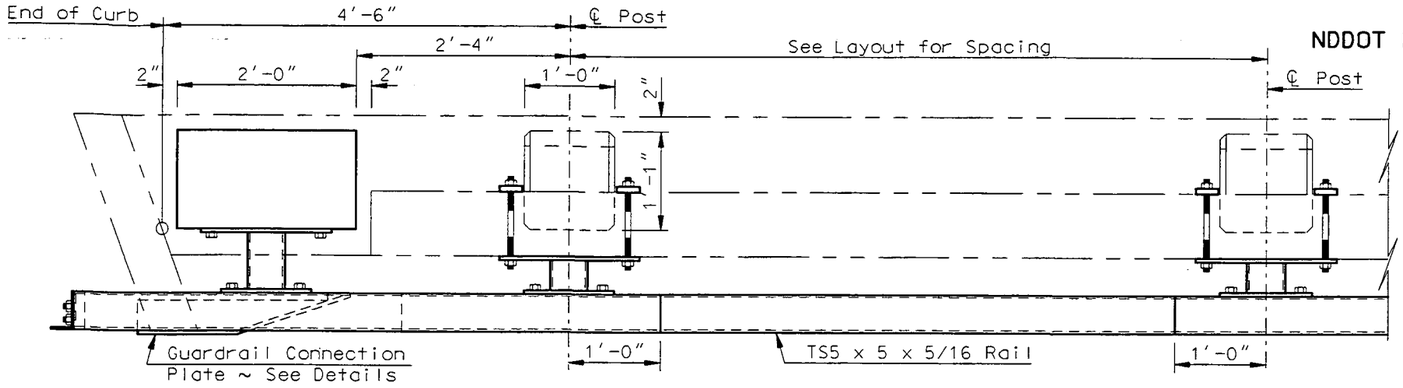
BRIDGE LAYOUT

BRLO 03LCS037 JDS

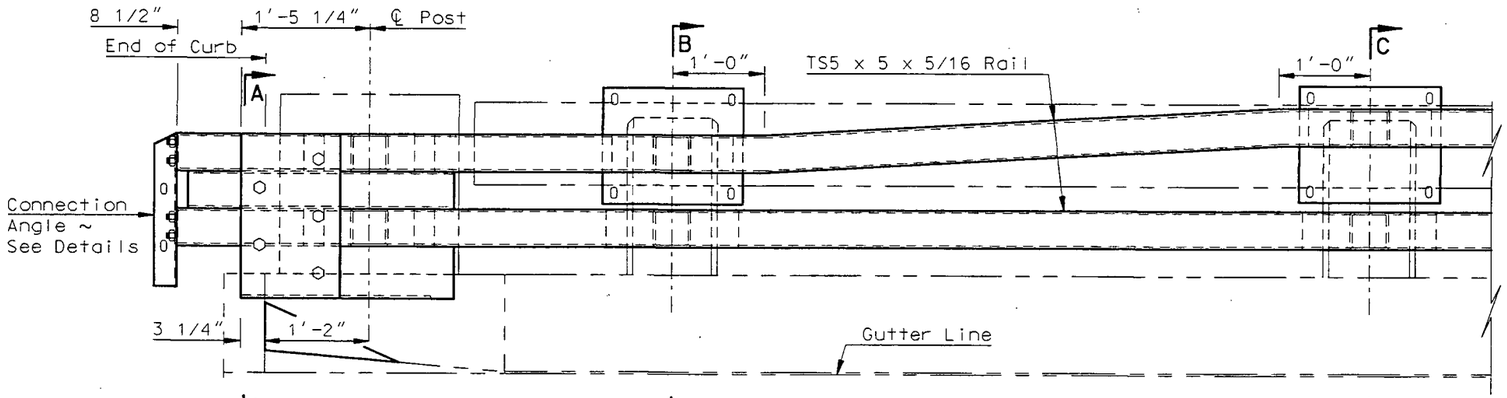
.../bridge/29-110.795/brlo.dgn 04/30/2003 08:21:02 AM

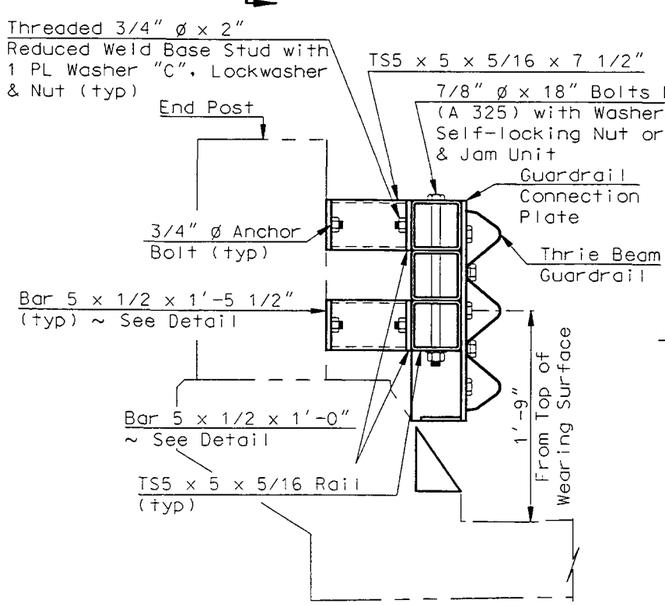
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	7



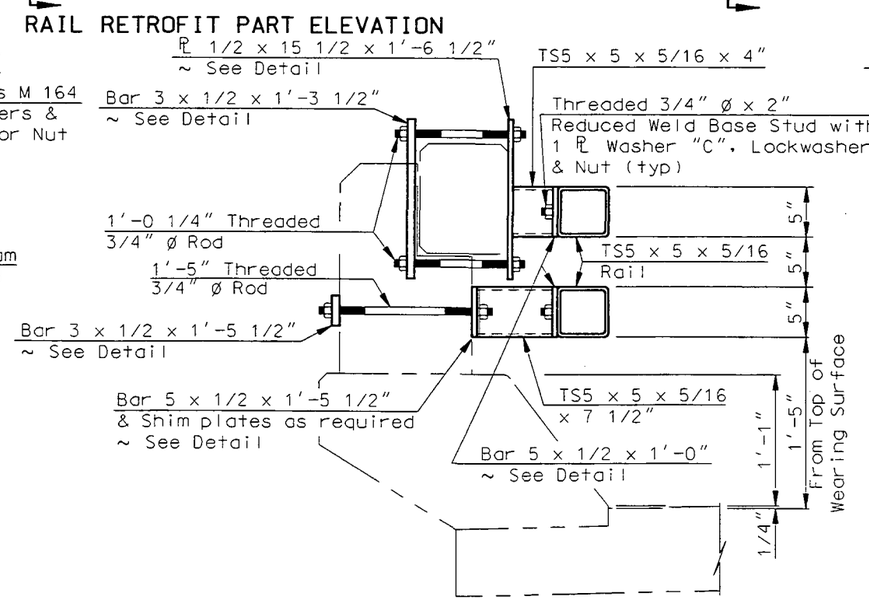
RAIL RETROFIT PART PLAN





A–A

RAIL RETROFIT PART ELEVATION



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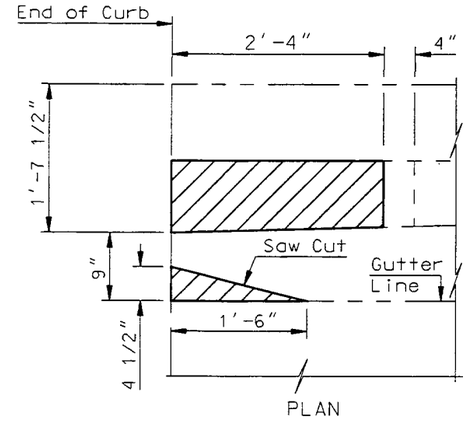
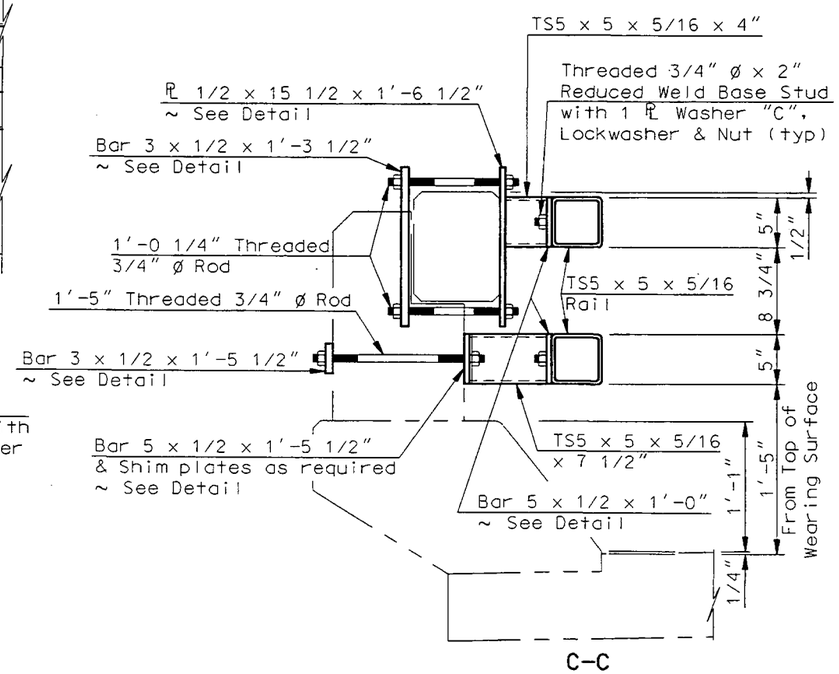


CONCRETE REMOVAL DETAIL



C–C

QUANTITIES
SEE DWG 29-110.795-3

HWY 200 MAYVILLE INTERCHANGE

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

NOTE:

See Dwg 29-110.795-2 & 3 for notes and details not not shown on this drawing.

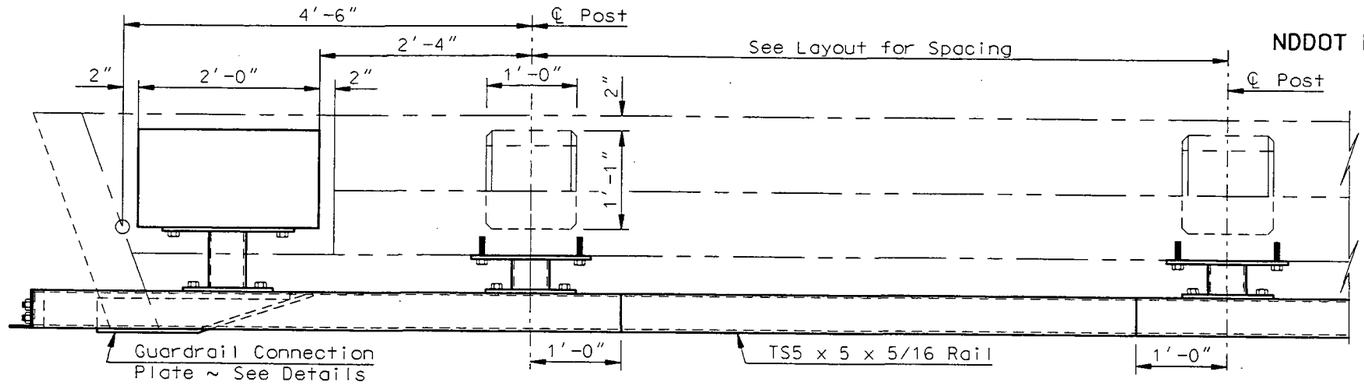
ERETRO1 03LCS039 JDS

29-110.795-1

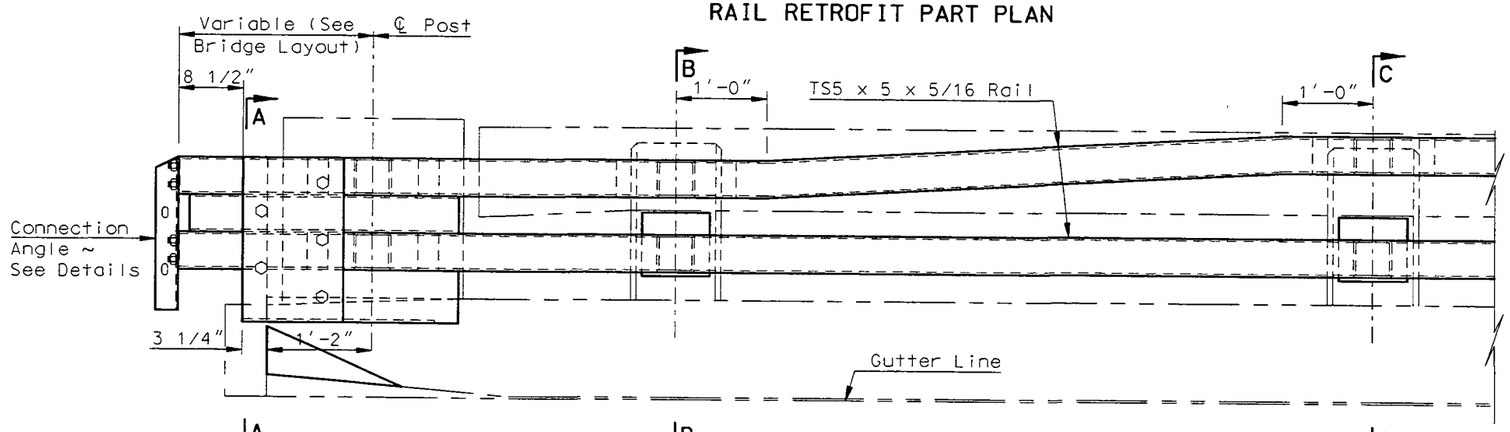
.../bridge/29-110.795/eretro1.dgn 04/30/2003 08:21:04 AM

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

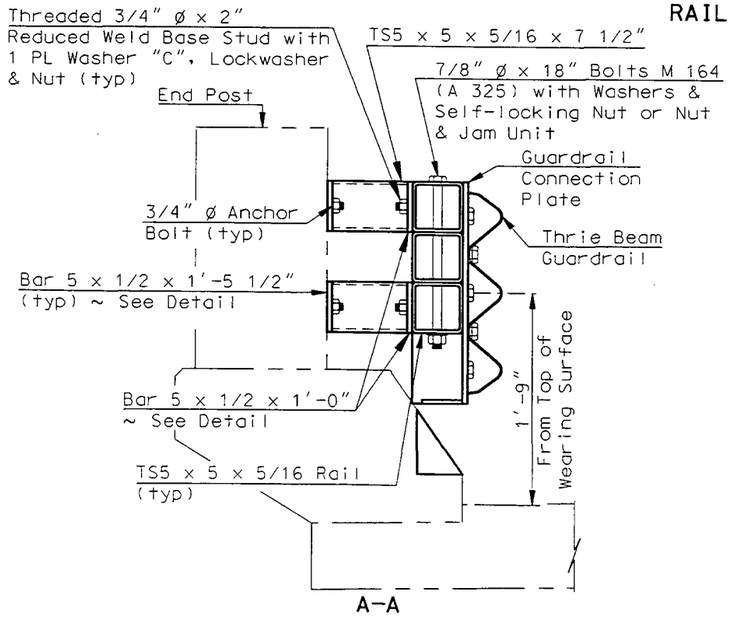
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	8



RAIL RETROFIT PART PLAN



RAIL RETROFIT PART ELEVATION



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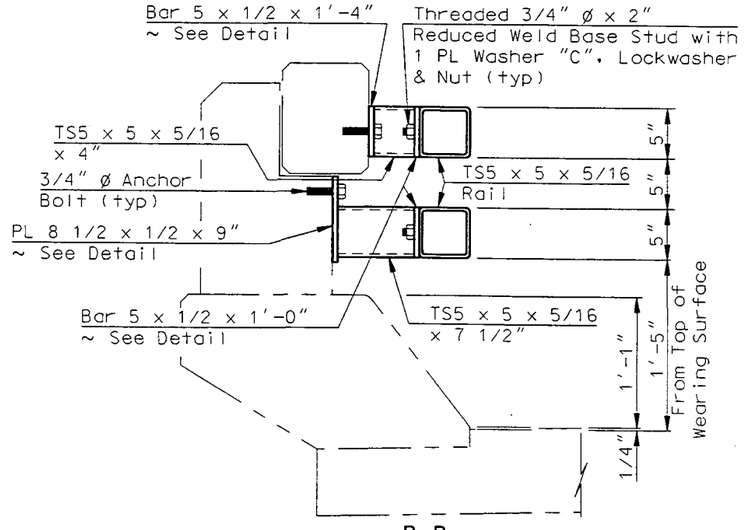

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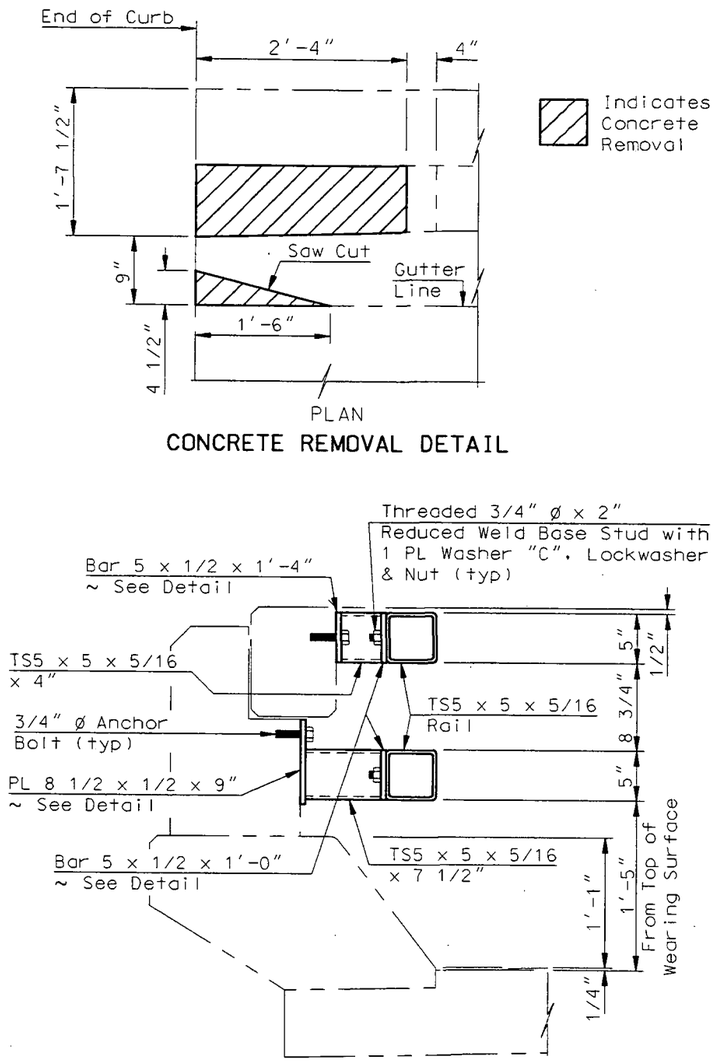

C–C

CONCRETE REMOVAL DETAIL

NOTE:

See Dwg 29-110.795-2 & 3 for notes and details not shown on this drawing.

QUANTITIES

SEE DWG 29-110.795-3

HWY 200 MAYVILLE INTERCHANGE

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

ERETRO1A 03LCS040 JDS

29-110.795-1A

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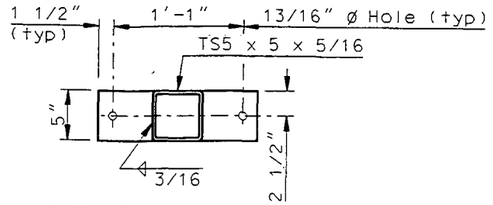
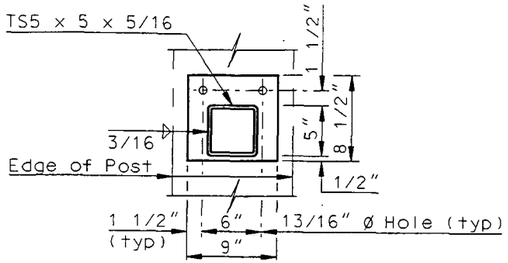
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	9



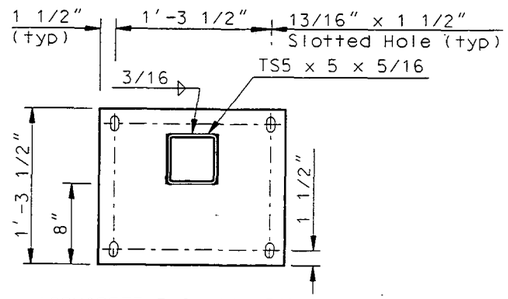
(CONCRETE RAIL CONNECTION)

BAR 5 X 1/2 X 1'-4" DETAIL



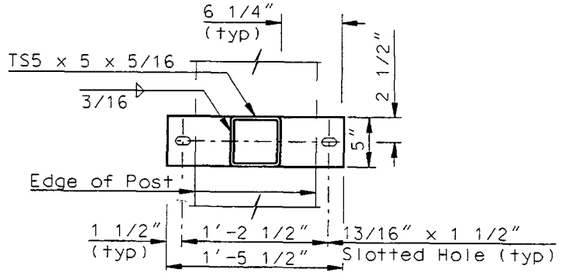
(CONCRETE POST CONNECTION)

PL 8 1/2 X 1/2 X 9" DETAIL



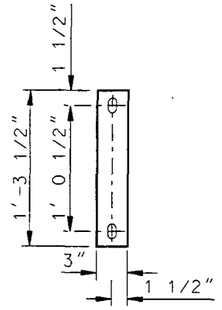
(CONCRETE RAIL CONNECTION)

PL 1/2 X 15 1/2 X 1'-6 1/2" DETAIL



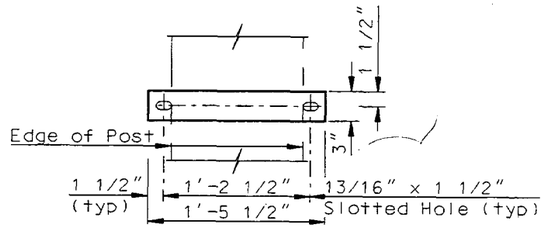
(CONCRETE POST CONNECTION)

BAR 5 X 1/2 X 1'-5 1/2" DETAIL



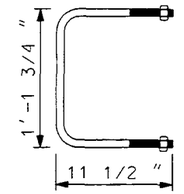
(CONCRETE RAIL CONNECTION)

BAR 3 X 1/2 X 1'-3 1/2" DETAIL

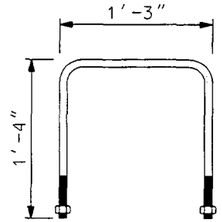


(CONCRETE POST CONNECTION)

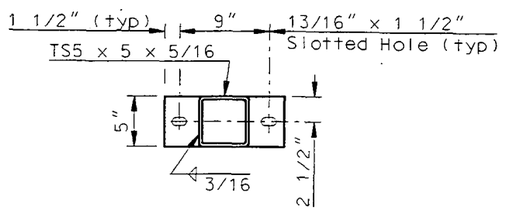
BAR 3 X 1/2 X 1'-5 1/2" DETAIL



3/4" ø RAIL U-BOLT

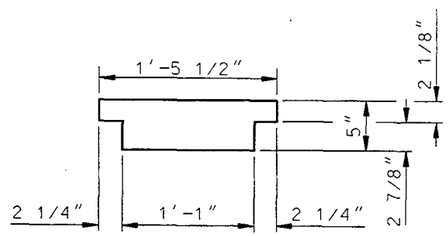


3/4" ø POST U-BOLT



(RAIL CONNECTION)

BAR 5 X 1/2 X 1'-0" DETAIL



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

SHIM PLATE DETAIL

QUANTITIES

SEE DWG 29-110.795-3

HWY 200 MAYVILLE INTERCHANGE

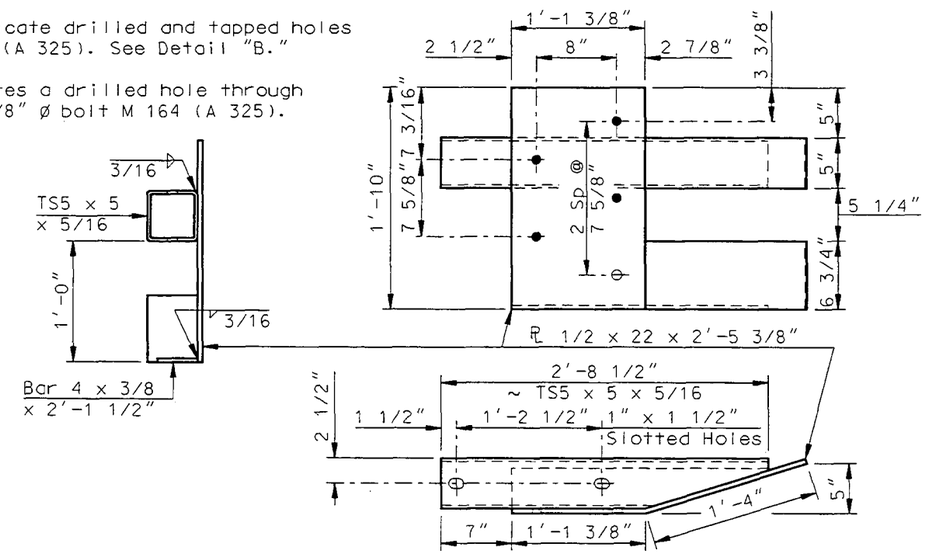
DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	10

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

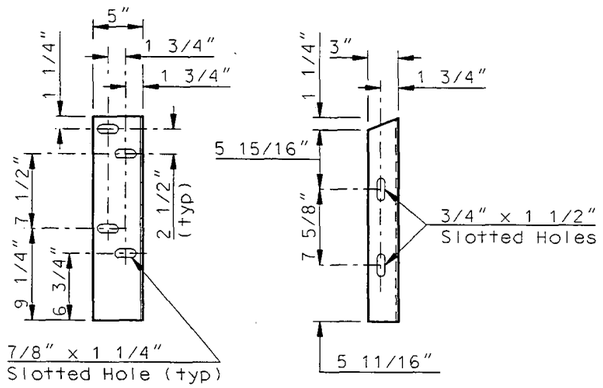
The filled circles indicate drilled and tapped holes for 7/8" ø bolts M 164 (A 325). See Detail "B."

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



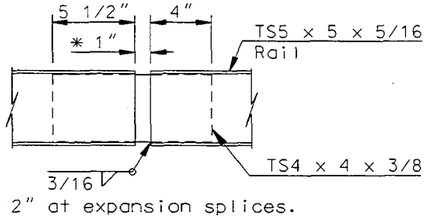
(4 REQUIRED)

GUARDRAIL CONNECTION PLATE DETAILS



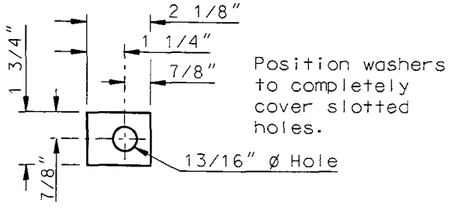
(L5 X 3 X 1/4 X 1'-8 1/2")
(4 REQUIRED)

CONNECTION ANGLE DETAILS



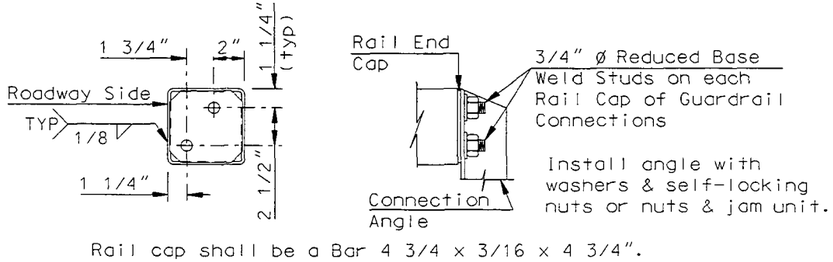
* 2" at expansion splices.

RAIL SPLICE DETAIL



(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

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.

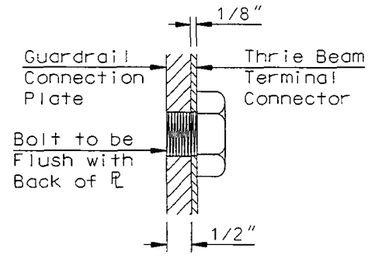
Rails shall be fabricated so that each rail segment between splices is attached to a minimum of two posts.

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"

QUANTITIES	
E-RAIL RETROFIT	563.1 LF

HWY 200 MAYVILLE INTERCHANGE

DOUBLE BOX BEAM
E-RAIL RETROFIT DETAILS

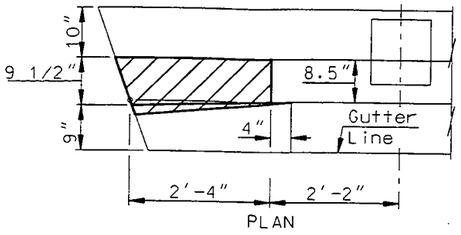
ERETRO3 03LCS042 JDS

29-110.795-3

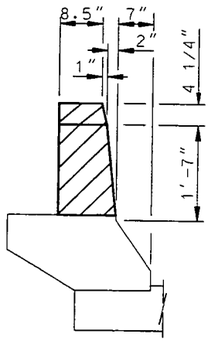
.../bridge/29-110.795/eretro3.dgn 04/30/2003 11:50:27 AM

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

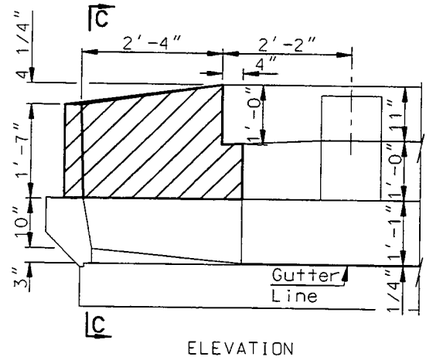
STATE	PROJECT NUMBER	SHEET NO.
ND	HSP-8-999(012)	11



PLAN



C-C



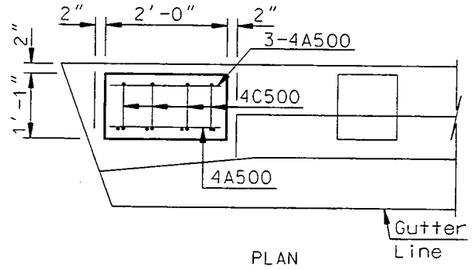
ELEVATION

END POST REMOVAL DETAILS

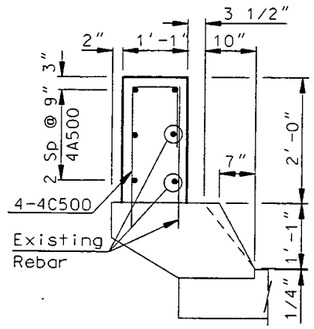
END POST REMOVAL DETAILS

Hatched areas indicate concrete to be removed.

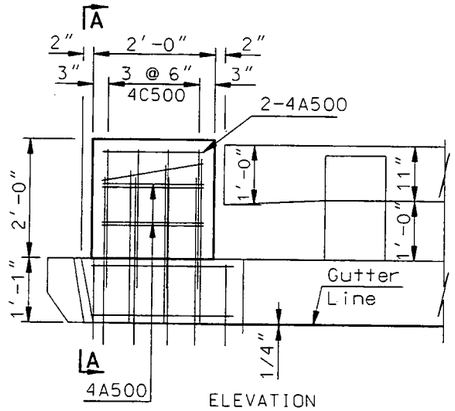
Care shall be taken to ensure no damage is done to the existing reinforcing steel that is to remain in place.



PLAN



A-A



ELEVATION

END POST MODIFICATION DETAILS

END POST MODIFICATION DETAILS

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.

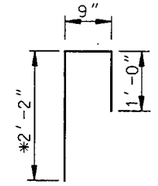
The existing end posts shall be removed and properly disposed of.

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.

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.

QUANTITIES
BRIDGE END POST MODIFICATION 4 EA

HWY 200 MAYVILLE INTERCHANGE

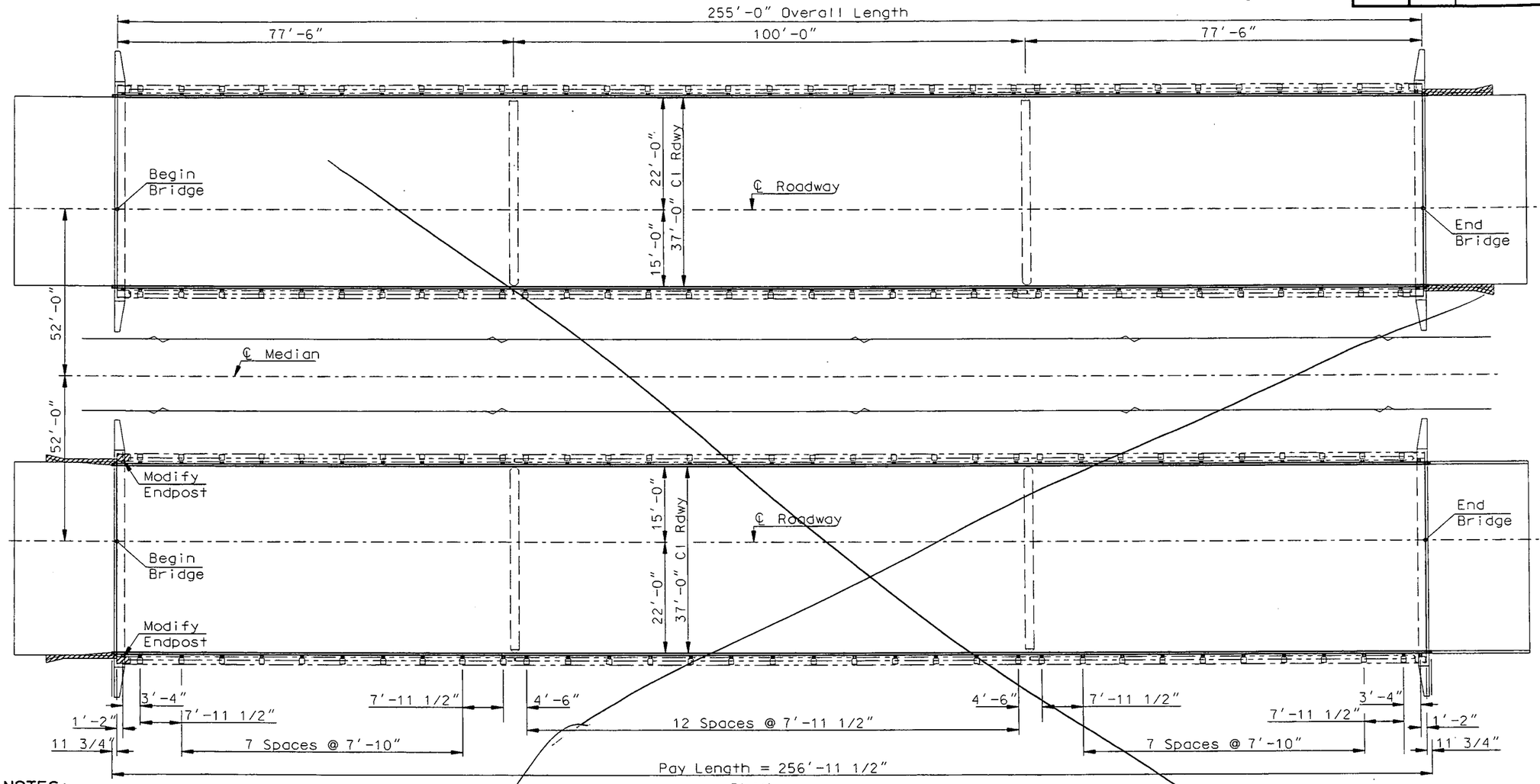
ENDPOST MODIFICATION DETAILS

ENDPOST 03LCS43 JDS

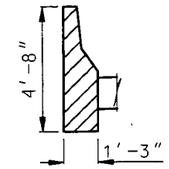
.../bridge/29-110.795/endpost.dgn 04/30/2003 08:21:07 AM

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

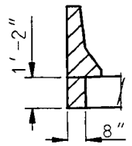
BRIDGE CODE	STATE	PROJECT NUMBER	SHEET NO.
X-071	ND	HSP-8-999(012)	12



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

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)

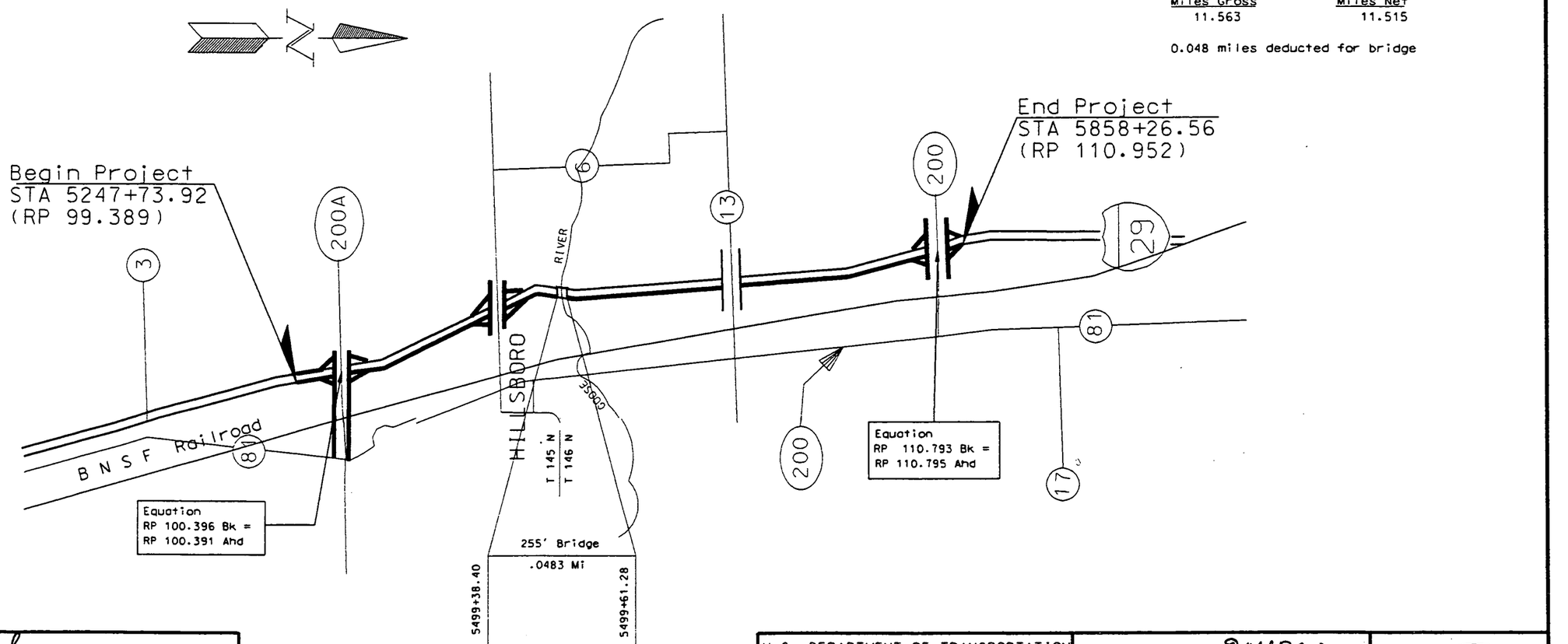
GOVERNING SPECIFICATIONS:

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 Jacqueline Mashl
DESIGNER _____
DESIGNER _____
RECOMMEND APPROVAL _____, 19___
DESIGN ENGINEER _____

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

_____ _____
DIVISION ADMINISTRATOR DATE

APPROVED DATE 9 MARCH 00

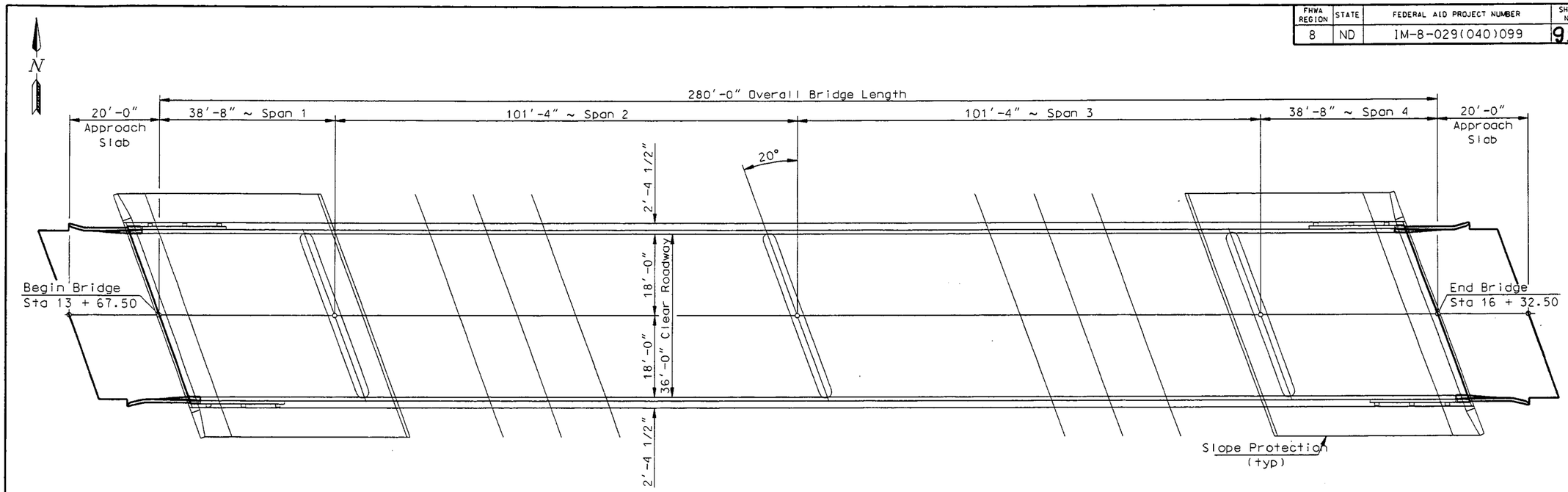
DISTRICT ENGINEER

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

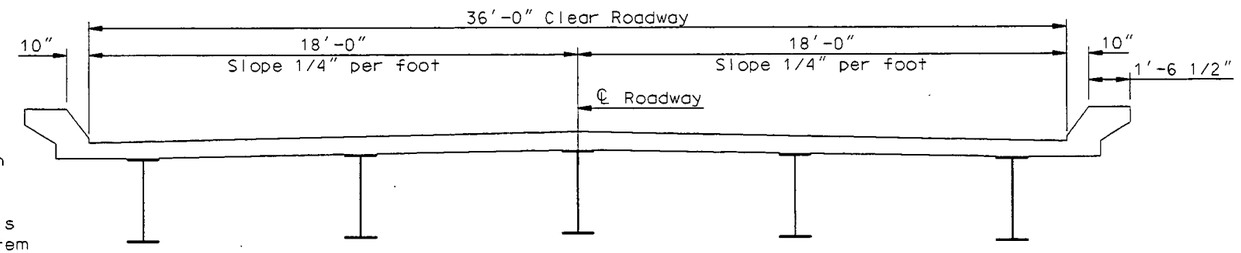
ROBERT R. WALTON, JR. REGISTERED PROFESSIONAL PE 4040 ENGINEER NORTH DAKOTA

d:\80029099.040\plan\title.dgn Mar. 09, 2000 07:49:46

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	IM-8-029(040)099	91



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	0215	CONCRETE BRIDGE APPROACH SLAB	SY	169.2
602	1210	BRIDGE END POST MODIFICATION	EA	4
930	8642	NOSING CONCRETE	CF	7.4
930	8644	SILICONE SEALANT	LF	77

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

MAYVILLE INTERCHANGE

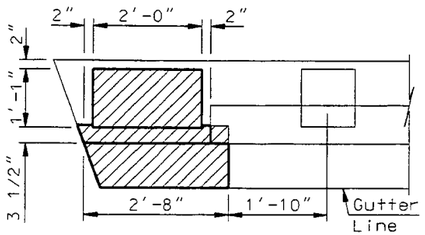
BRIDGE LAYOUT

PROJECT: IM-8-029(040)099
STATION 565 + 00.0

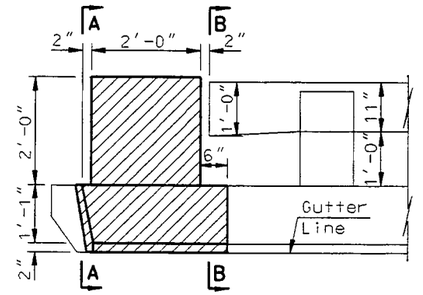
TRAILL COUNTY

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	92



PLAN



ELEVATION

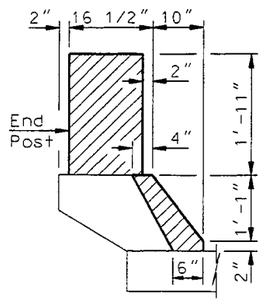
Hatched areas indicate concrete to be removed.

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 galvainzed 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".



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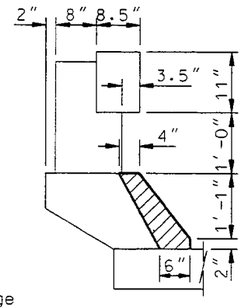

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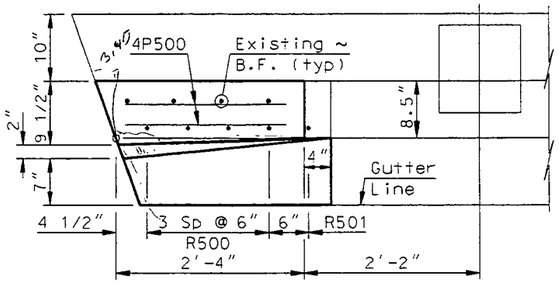

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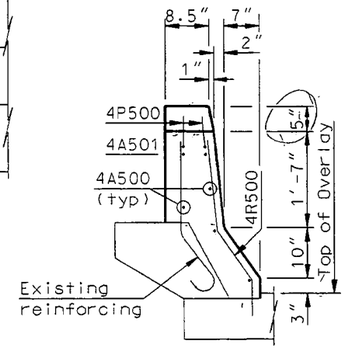
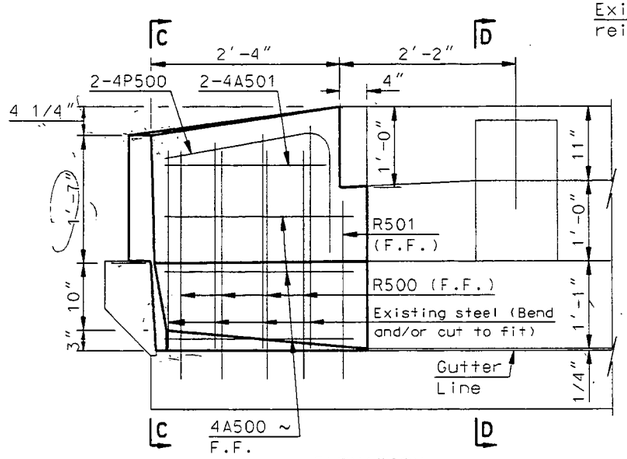
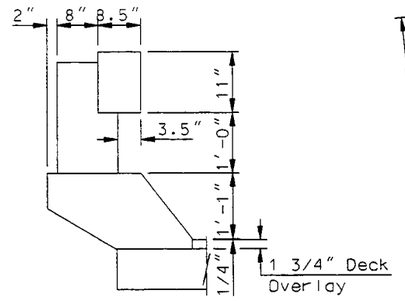


C-C

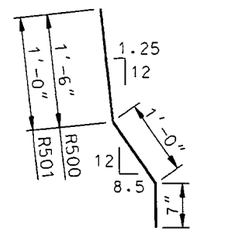


ELEVATION

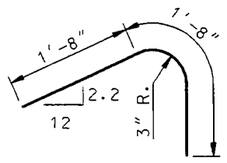
END POST MODIFICATION DETAILS



D-D



R500 & R501



P500

DIMENSIONS SHOWN ARE OUT TO OUT

BENT BAR DETAILS

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	0.19 CY
CLASS AAE-3 CONCRETE	0.23 CY
REINFORCING STEEL	23 LBS

NOTE:

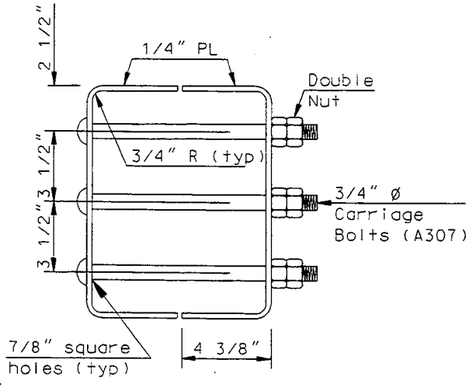
The concrete shall be class AAE-3 and the reinforcing steel shall be grade 60.

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

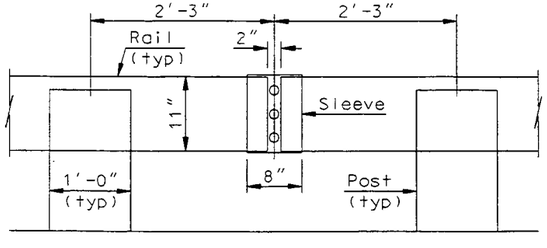
The 4R500's & 4R501's shall be installed according to the manufacturers recommendations, with a high strength adhesive specifically intended for concrete anchorage in accordance with section 806.02 of the NDDOT Standard Specifications.

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 osts shall be included in the pay item "Bridge End Post Modification".

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



SLEEVE DETAIL



(6 Required)
ELEVATION

SLEEVE AT RAIL JOINT

QUANTITIES

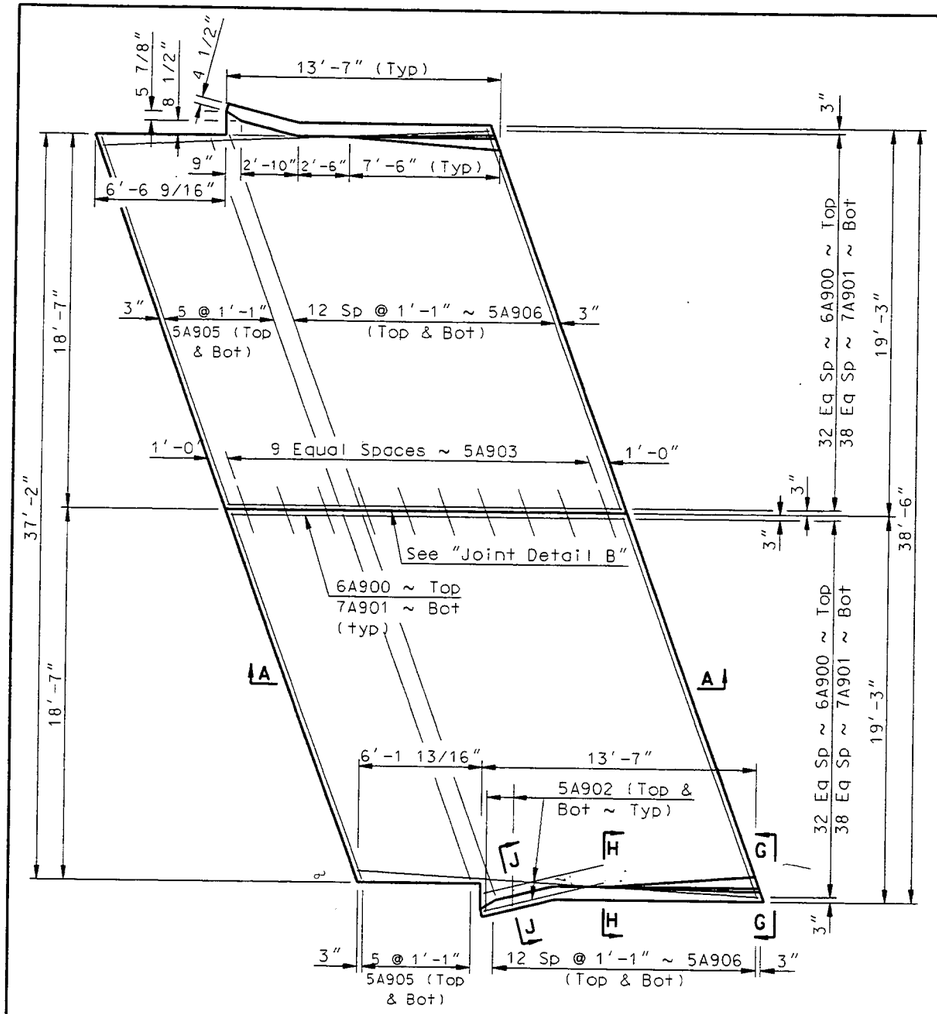
BRIDGE END POST MODIFICATION	4 EA.

MAYVILLE INTERCHANGE

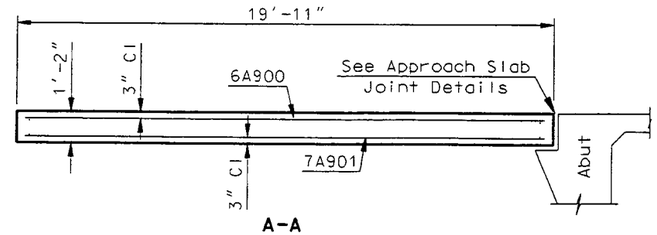
RAIL SLEEVE & END POST MODIFICATION DETAILS

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	93



PLAN



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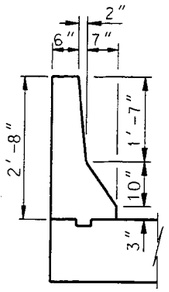
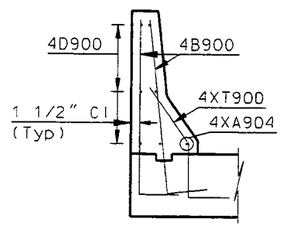
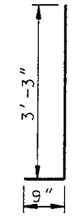


(SHOWING DIMENSIONS)
G-G



(Field bend 4XT900's to fit as required)
(SHOWING REINFORCING)
G-G



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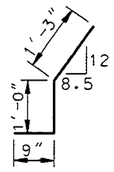

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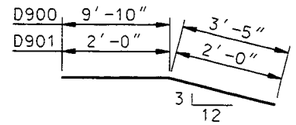
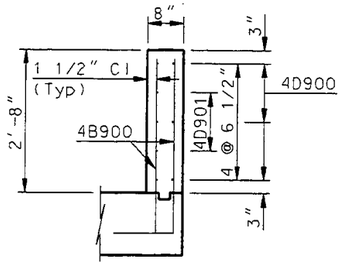


D900 & D901



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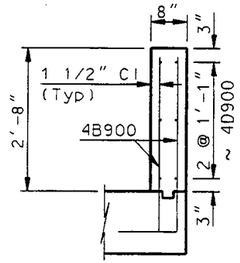

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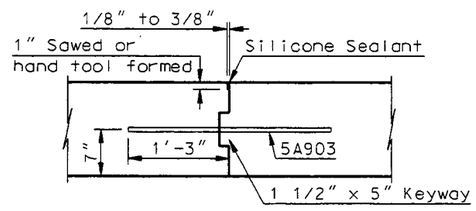
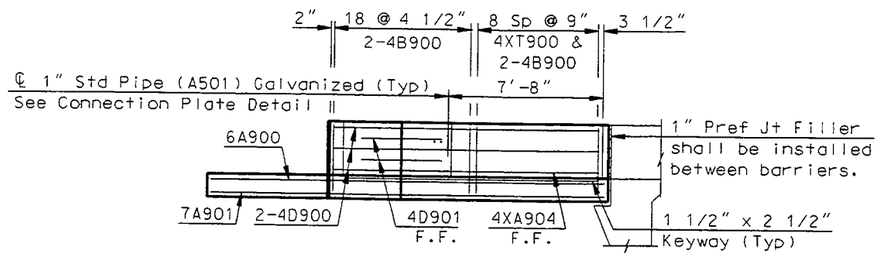
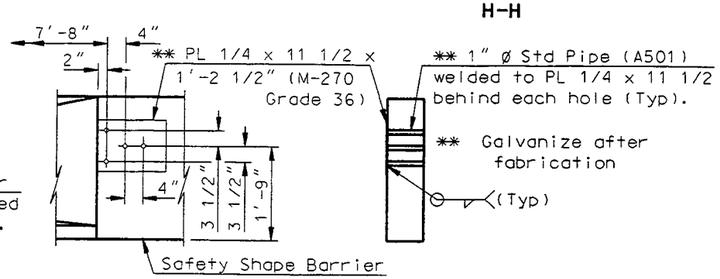


JOINT DETAIL B



ELEVATION



(SHOWING INSIDE FACE)
CONNECTION PLATE DETAILS

SKEW ANGLE = 20°

BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
6	A900	66	19'-7"
7	A901	78	19'-7"
5	A902	16	6'-0"
5	A903	10	2'-6"
4	XA904	2	7'-6"
5	A905	24	19'-5"
5	A906	52	20'-2"
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.)
7232	36.6

NOTE:
See Dwg 29-110.795-3 for Notes.

QUANTITIES	(ONE SLAB)
APPROACH SLAB	84.6 SY

MAYVILLE INTERCHANGE

APPROACH SLAB DETAILS

29-110.795-2

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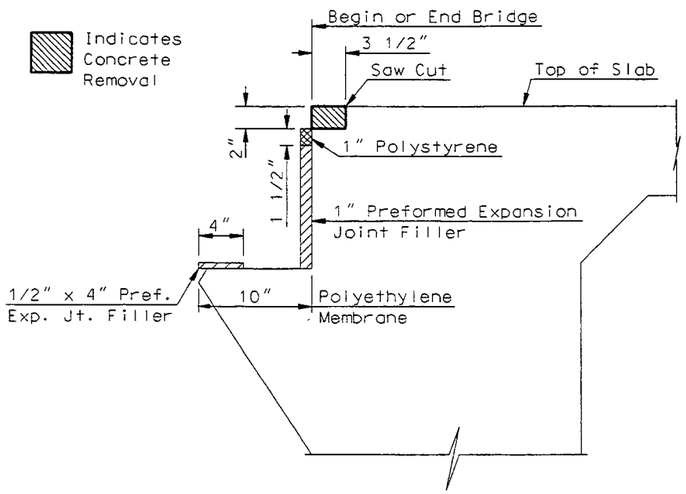
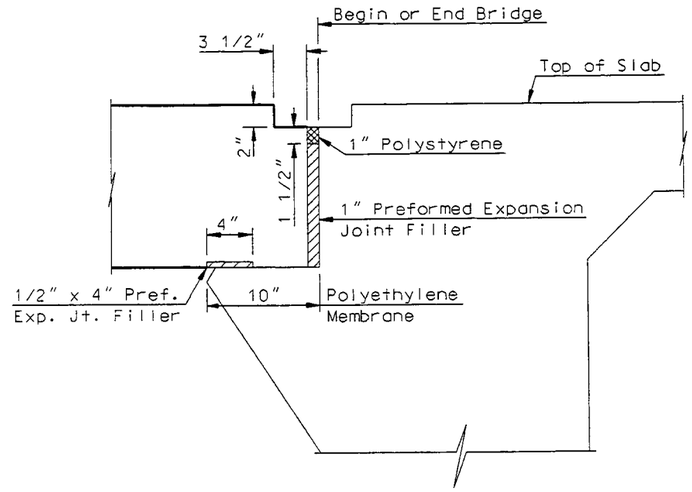
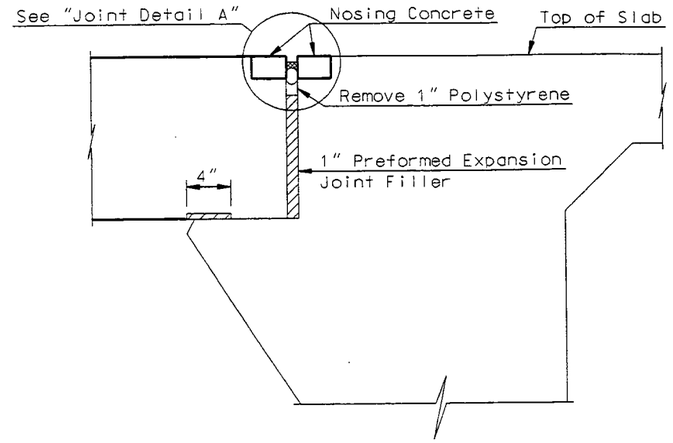
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	IM-8-029(040)099	94



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.

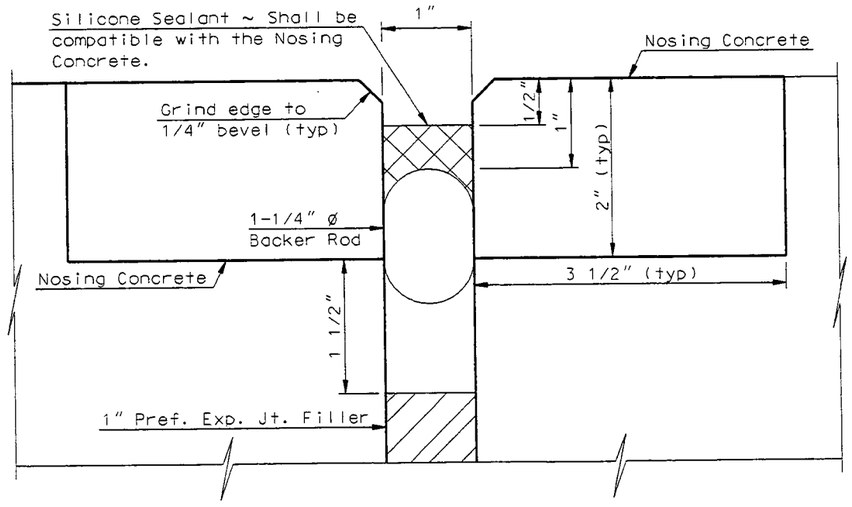
STAGE 3:

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 29-110.795-2 are for information purposes only. All materials including concrete, reinforcing bars, polythylene membrane, preformed joint filler and labor required to build the approach slabs and approach slab barriers and the removal of asphalt shall be included in the pay item, "Concrete Bridge Approach Slab".

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 (TWO APPROACHES)	
NOSING CONCRETE	7.4 CF
SILICONE SEALANT	77 LF

MAYVILLE INTERCHANGE

APPROACH SLAB JOINT DETAILS & NOTES

29-110.795-3

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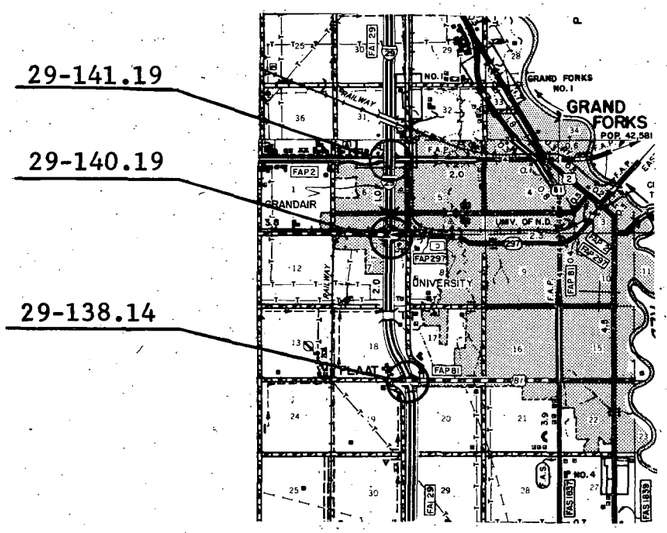
29-110.795

FHWA REGION	STATE	PROJECT	SHEET NO.
8	N.D.	IR-029-3(36)092	1

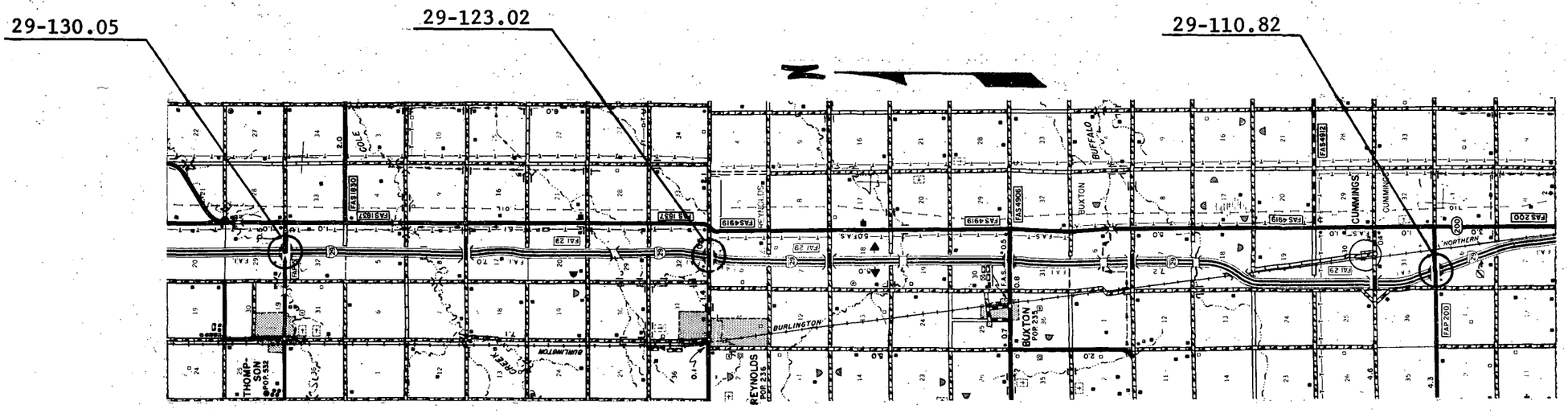


NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

REPAIR & OVERLAY PORTLAND CEMENT CONCRETE BRIDGE DECKS IN TRAILL & GRAND FORKS COUNTIES
FEDERAL AID PROJECT NO. IR-029-3(36)092
CONTRACT NO. 1

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 2-10-81

Stanley Haas

BRIDGE ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

STANLEY HAAS REGISTERED PROFESSIONAL 494 ENGINEER NORTH DAKOTA

APPROVED DATE 7-3-81

R. E. Bradley

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

R. E. BRADLEY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA 3809

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ENGINEER DATE

SYMBOLS

STATE & NATIONAL LINES
COUNTY LINE
TOWNSHIP & RANGE LINES
SECTION LINE
QUARTER SECTION LINE
SECTION CORNER
QUARTER SECTION CORNER
OLD RIGHT OF WAY LINE
NEW RIGHT OF WAY LINE
GRADE LINE
CENTERLINE OF CONSTRUCTION — 500
RAILROAD RIGHT OF WAY LINE
CITY OR VILLAGE CORPORATE LIMITS
PROPERTY LINE
EASEMENT LINE
FENCES
SNOW FENCE
DRAINAGE
WATERS EDGE
MARSH OR SWAMP
RIPRAP
DRAINAGE DITCH
APPROACH — 502 + 00
TRAVELED WAY
RAILROADS — NAME
GUARD RAIL
GUIDE POSTS
DELINEATORS
HEDGES AND TREES
INTERCHANGE
HIGHWAY GRADE SEPARATION - NO CONNECTION
OTHER BRIDGE
SERVICE ROAD
TERMINATED CROSS-ROAD

BUILDINGS
TELEGRAPH LINES
TELEPHONE LINES
POWER LINES
CULVERTS (In Place)
CULVERTS (Install)
CONCRETE BOX CULVERTS (Install)
BRIDGES (Install)
CONCRETE CURB
CONCRETE CURB AND GUTTER
CONCRETE WALK
CATCH BASIN (Existing)
CATCH BASIN (New)
MANHOLE (Existing)
MANHOLE (New)
CURB INLET (Existing)
CURB INLET (New)
GROUND MOUNTED SIGNS
OVERHEAD SIGNS
HYDRANT
LIGHT STANDARDS
TRAFFIC SIGNALS (Plan & Profile Sheets)
HIGH MAST LIGHTING ASSEMBLY
GROUND ELEVATION 643.0 / GRADE ELEVATION 641.0
CENTERLINE
SECTION LINE
DEFLECTION ANGLE (Delta)
SOD OR JUTE MESH
POLES TO BE MOVED
POLES TO BE LOWERED
CONCRETE FOUNDATION
CONDUIT
CONDUCTOR
CONCRETE PULL BOX
FEED POINT
250 WATT LIGHT STANDARDS
400 WATT LIGHT STANDARDS
700 WATT LIGHT STANDARDS
1000 WATT LIGHT STANDARDS
FLASHING BEACON
TRAFFIC SIGNAL - MAST ARM MOUNTED
TRAFFIC SIGNAL - POST MOUNTED
SIGNAL HEAD — 3
PEDESTRIAN PUSHBUTTON POST
TRAFFIC SIGNAL CONTROLLER
FEED POINT - PAD MOUNTED

ABBREVIATIONS

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

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-029-3(36)092	2

TABLE OF CONTENTS

CONTRACT NO. 1

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IR-029-3(36)092	3

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 WHICH 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 THE LONGITUDINAL CENTERLINE TO THE CURB IN ONE CONTINUOUS POUR. 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.

PAVEMENT 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 THE PCC PAVEMENT PANELS, INCLUDING THAT REQUIRED TO BRING THEM TO THE PROPER GRADE, SHALL BE INCIDENTAL TO THE ITEMS REMOVE AND REPLACE APPROACH SLAB AND REMOVE AND REPLACE PCC PAVEMENT.

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

REFACING CURBS
THE ROADWAY FACES OF THE CURBS TO BE REFACED SHALL BE CLEANED BY SANDBLASTING AND/OR CHIPPING TO A DEPTH SUFFICIENT TO OBTAIN SOUND, DURABLE CONCRETE. THE MINIMUM DEPTH OF CONCRETE REMOVED SHALL BE SUCH THAT AN AVERAGE DEPTH OF ONE INCH OF CLEARANCE BEYOND THE INSIDE SURFACE OF THE VERTICAL CURB STEEL IS OBTAINED.

THE CURBS SHALL BE REFACED BEFORE THE OVERLAY CONCRETE IS PLACED ON THE DECK. PRIOR TO REFACING THE CURB, THE CLEANED SURFACE SHALL BE TREATED WITH A CEMENT GROUT OR OTHER APPROVED BONDING AGENT. THE CURBS SHALL BE REFACED WITH LOW SLUMP OVERLAY CONCRETE. THE THICKNESS OF THIS REFACING MATERIAL SHALL PROVIDE A MINIMUM OF ONE AND ONE-HALF INCHES OF COVER ON THE STEEL REINFORCEMENT. TO OBTAIN A UNIFORM, EVEN FACE ON THE CURBS, FORMING OR OTHER METHODS APPROVED BY THE ENGINEER SHALL BE USED. PAYMENT WILL BE AT THE UNIT PRICE BID PER LINEAR FOOT OF CURB REFACED AND WILL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE WORK.

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

HOT BITUMINOUS PAVEMENT - SPECIAL
THE ASPHALT CEMENT AND THE TACK COAT ARE NOT SEPARATE PAY ITEMS, BUT SHALL BE INCLUDED IN THE PRICE BID FOR "HOT BITUMINOUS PAVEMENT-SPECIAL". THE AGGREGATE USED FOR HOT BITUMINOUS PAVEMENT AND THE TYPE AND GRADE OF LIQUID ASPHALT FOR TACK SHALL BE APPROVED BY THE ENGINEER IN THE FIELD. THE HOT BITUMINOUS PAVEMENT MATERIAL SHALL BE HOT MIXED, BLADE LAID, COMPACTED AND MAY BE OBTAINED FROM A COMMERCIAL SOURCE. IT IS INTENDED THAT THE OPTIMUM AMOUNT OF ASPHALT CEMENT BE USED IN THE MIX, AND THE QUANTITY SHOWN UNDER THE BASIS OF ESTIMATE MAY BE ADJUSTED BY THE ENGINEER IF NECESSARY.

TWO-LANE, TWO-WAY ROADWAYS: THE MAINTENANCE AND PROTECTION OF TRAFFIC FOR TWO-LANE, TWO-WAY ROADWAYS AT 32ND AVENUE, THOMPSON, AND MAYVILLE INTERCHANGES PROVIDES FOR FLAGGING THE TRAFFIC AT ALL TIMES, UNTIL THE ROADWAY IS COMPLETELY OPEN TO TRAFFIC. 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 THE TIME ONE-LANE TRAFFIC IS MAINTAINED. THE COST OF FLAGGING DURING THE ONE-LANE TRAFFIC IS MAINTAINED SHALL BE CONSIDERED INCIDENTAL AND SHALL BE INCLUDED IN THE PRICE BID FOR TRAFFIC CONTROL. THE TRAFFIC SIGNAL SYSTEM SHALL BE APPROVED BY THE ENGINEER PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.

CONSTRUCTION JOINTS
ALL CONSTRUCTION JOINTS SHALL BE CLEANED OUT PRIOR TO PLACEMENT OF THE OVERLAY. THE OVERLAY SHALL THEN BE SAW CUT AT THESE LOCATIONS WITHIN 24 HOURS OF PLACEMENT. THE SAW CUT SHALL BE 1" DEEP BY 1/8" TO 3/8" WIDE. THE JOINT SHALL THEN BE SEALED WITH HOT POURED ELASTIC TYPE JOINT SEALER 0" TO 1/8" BELOW THE FINISHED PAVEMENT. THE COST OF ANY SUCH WORK SHALL BE INCIDENTAL TO CLASS 1 OVERLAY.

GUARD RAIL AND/OR END POSTS
THE APPROACH GUARD RAIL WHICH IS SPECIFIED TO BE REMOVED AND RESET SHOULD BE RESET SO THAT THE TOP OF THE RAIL IS 27" ABOVE THE GROUND LINE AS RE-ESTABLISHED FOR THE BRIDGE APPROACHES. ALSO, THE BRIDGE END OF THE GUARD RAIL SHOULD MATCH THE ELEVATION OF THE MOUNTING HOLES IN THE END POSTS.

IF THE CONSTRACTOR WISHES TO REMOVE ANY APPROACH GUARD RAIL OR END POSTS OTHER THAN THOSE SPECIFIED IN CONNECTION WITH PLACING CURB AND GUTTER SECTIONS, APPROACH TAPERS, OR DECK OVERLAYS, HE SHALL DO SO FOR HIS 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.

SHOP DRAWINGS
THE CONTRACTOR SHALL SUBMIT THE FOLLOWING SHOP DRAWINGS TO THE BRIDGE ENGINEER FOR APPROVAL BEFORE FABRICATION:

1. STEEL EXTRUSIONS FOR EXPANSION JOINT MODIFICATIONS.

PORTABLE PRECAST CONCRETE MEDIAN BARRIERS: THE NUMBER OF PRECAST CONCRETE MEDIAN BARRIERS FURNISHED ON THE PROJECT SHALL BE 90-10 FOOT UNITS. THIS NUMBER WILL PROVIDE COVERAGE FOR LONGEST STRUCTURE AND APPROACH ON THIS PROJECT. IF THE CONTRACTOR CHOOSES TO WORK ON MORE THAN ONE STRUCTURE, ADDITIONAL BARRIERS AND ATTENUATION DEVICES SHALL BE FURNISHED AT HIS OWN EXPENSE. THE 90-10 FOOT BARRIERS SHALL BECOME THE PROPERTY OF THE STATE UPON COMPLETION OF THE PROJECT. THE CONTRACTOR SHALL FURNISH, INSTALL, MOVE AND DELIVER TO THE STATE HIGHWAY DISTRICT YARD AS REQUIRED. THE COST OF FURNISHING, INSTALLING, MOVING AND DELIVERING THE PRECAST CONCRETE MEDIAN BARRIERS SHALL BE INCIDENTAL TO THE PRICE BID FOR TRAFFIC CONTROL.

MOUNTABLE CURB & GUTTER
WHERE SPECIFIED, THE MOUNTABLE CURB & GUTTER SHALL BE BUILT TO MATCH THE NEW GRADE AS ESTABLISHED FOR THE BRIDGE APPROACHES. IN A DISTANCE OF 10 FEET, THE CURB SHALL TRANSITION FROM THE EXISTING SECTION ON THE BRIDGE TO THE TYPICAL SECTION SHOWN ON THE STANDARD.

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 RATE OF $25.00 PER TON FOR HOT MIX USED TO MAINTAIN AND REPAIR THE SHOULDERS. THIS PAYMENT WILL CONSTITUE FULL REIMBURSEMENT FOR ALL MATERIALS, LABOR, AND EQUIPMENT REQUIRED TO MAINTAIN AND REPAIR THE SHOULDERS. THE QUALITY OF AGGREGATE AND GRADE OF ASPHALT CEMENT USED FOR THE HOT MIX SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

SPECIAL PROVISION

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-406-7	Hot Bituminous Pavement
SP 4.0	EXPANSION JOINT STRIP SEAL
SP-746-1	Flagging
SP-756-2	Field Laboratory
SP-762-6	Maintenance and Protection of Traffic
SP-384	Pressure Relief Joint Filler
SP-402	Repair and Overlay of Portland Cement Concrete (Box) Decks with Low Slump Concrete BRIDGE
SP-610-3	PORTLAND CEMENT CONCRETE
SP-806-3	AGGREGATES FOR PORTLAND CEMENT

SUMMARY OF QUANTITIES

ESTIMATE OF QUANTITIES

SPEC. NO.	302	406	705	708	716	722	746	750	756	762	900	900	900	900	900	900	900	900	900	103
CODE NO.	0120	0230	0100	0410	0100	0150	0100	0100	0100	3298	8673	8676	9499	9501	9586	9690	9700	9701	9702	0100
BRIDGE NO.	AGGREGATE BASE COURSE CL. 5	HOT BITUMINOUS PAVEMENT SPECIAL	MOBILIZATION	MOUNTABLE CURB & GUTTER TYPE I	ADJUST CATCH BASIN	REMOVE & RESET GAURDRAIL	FLAGGING	LINSEED OIL TREATMENT	FIELD LABORATORY TYPE "A"	TRAFFIC CONTROL	EXPANSION JOINT MODIFICATION (STRIP SEAL)	EXPANSION JOINT CURB ASSEMBLY	10" P.C.C. PAVING (REMOVE & REPLACE)	APPROACH SLAB (REMOVE & REPLACE)	PRESSURE RELIEF JOINT	CURB OVERLAY	CLASS 1 OVERLAY	CLASS 2 OVERLAY	CLASS 3 OVERLAY	CONTRACT BOND
	TON	TON	L.S.	L.FT.	EACH	L.FT.	M. HR.	GAL.	L.S.	L.S.	L.FT.	EACH	S.Y.	S.Y.	L.FT.	L.FT.	S.Y.	S.Y.	S.Y.	L.SUM
MAYVILLE INT. 29-110.82	273.0	223.0	1	160.0	4	300.0	200	16.8	1	1							1120.0	224.0	56.0	1
REYNOLDS INT. 29-123.02		15.8					100	13.5									896.7	179.3	44.8	
THOMPSON INT. 29-130.052	468.0	187.2		160.0	4	300.0	240	14.8								530.0	883.3	176.7	44.2	
32 nd AVE. INT. 29-138.14		15.8					100	12.5									833.3	166.7	41.7	
DEMERS AVE INT. 29-140.19 RT.		4.2			4		160	29.8					296.7	364.4	67.6	570.0	1266.7	253.3	63.3	
DEMERS AVE INT. 29-140.19 LT.		4.3			4		120	39.9					1027.0	364.4			1266.7	253.3	63.3	
HWY NO. 2 INT. 29-141.19 RT.		10.3					160	25.2			74.0	4	210.7	213.3	48.0		1253.9	250.8	62.7	
HWY NO. 2 INT. 29-141.19 LT.		4.2			4		240	38.3			74.0	4	842.7	364.4		610.0	1253.9	250.8	62.7	
GRAND TOTAL	741.0	464.7	1	320.0	20	600.0	1320	190.8	1	1	148.0	8	2377.1	1306.5	115.6	1710.0	8774.5	1754.9	438.7	1

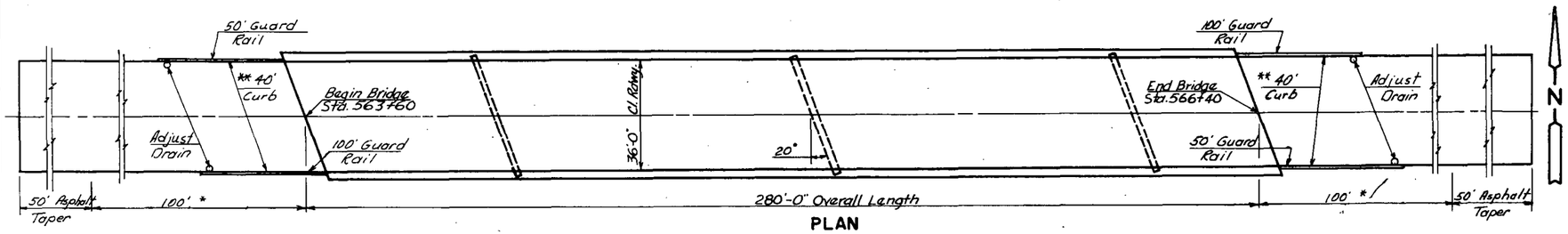
4 @ 8
1 @ 50

Revised 7/14/82

NOTES & QUANTITIES

CONTRACT NO.1 29-2

FED. ROAD DIST. NO.	STATE	Federal Aid Project Number	TOTAL SHEETS
8	N.D.	IR-029-3(36)092	4



PLAN

36'-0" Clear Roadway

** Remove curb and gutter from both ends of bridge. Replace with a mountable curb and gutter Type I (Sec. A). See st'd D-708-1

The drains shall be adjusted to meet the gutter line.

Remove and reset guardrail. (lengths shown)

*Remove asphalt to aggregate base, approximately 1' to 1.5' in depth, full width of roadway. Build roadway up to within 6" of final grade with an aggregate material (Cl. 5). The final 6" shall be hot bituminous pavement.

All material removed shall be disposed of by the contractor and will be incidental to the pay item "Hot Bituminous Pavement".

The aggregate will be paid for as "Aggregate Base Course Cl. 5".

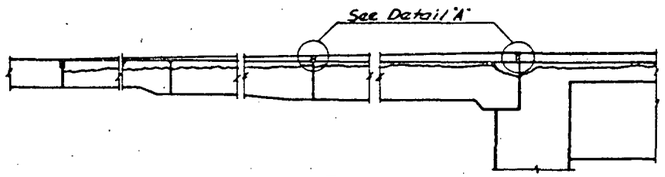
TRACING CHECKED BY
QUANTITIES MADE BY
CHECKED BY

CONTRACT NO. 1

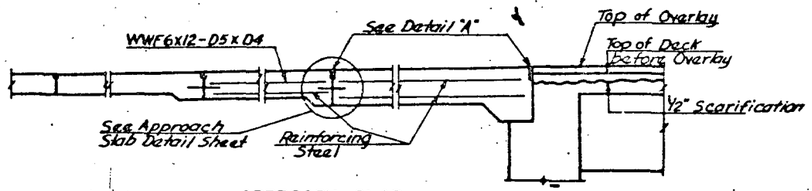
MAYVILLE INTERCHANGE

29-110.820-- 3

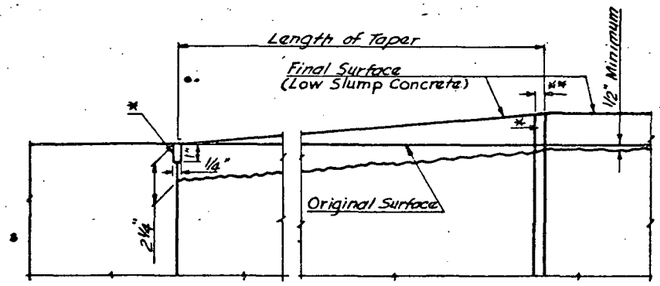
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.
9	R. I.	I-029-3(36)092	16



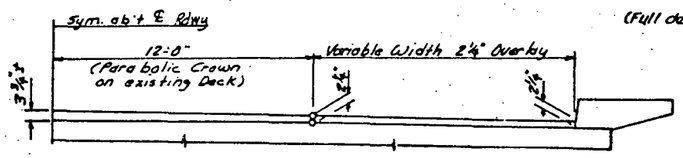
APPROACH SLAB
(Slab overlayed)



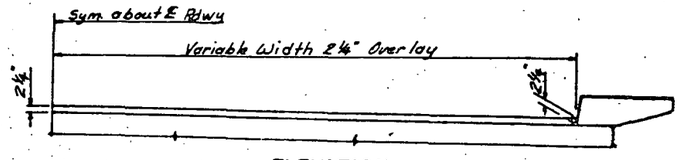
APPROACH SLAB
(Full depth removal & replacement to final surface grade)



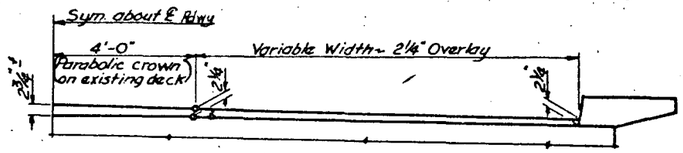
DETAIL "A"



ELEVATION
U.S. Highway #2
Demers Ave.



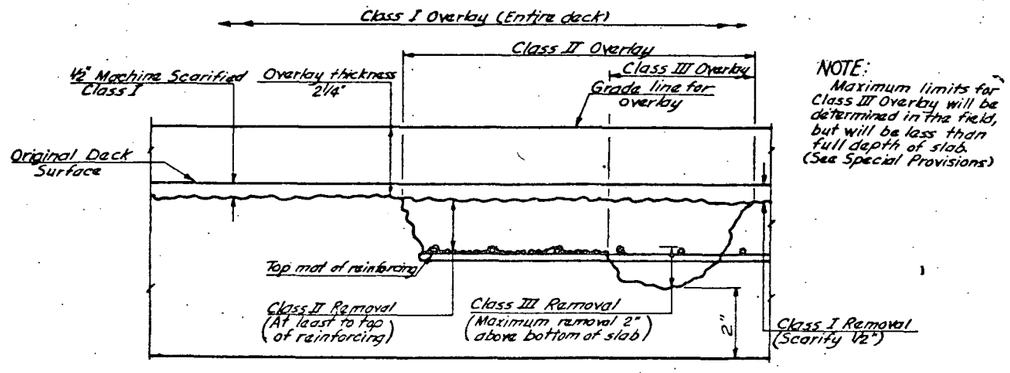
ELEVATION
Reynolds
Mayville



ELEVATION
Thompson

* To be filled with hot poured joint filler

** Remove existing premoldad joint filler & fill with hot poured joint filler. Width 1½"±



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

BRIDGE DECK

QUANTITIES

OVERLAY DETAILS

CONTRACT NO. 1

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)110	1	64

NORTH DAKOTA STATE HIGHWAY DEPARTMENT

PLANS

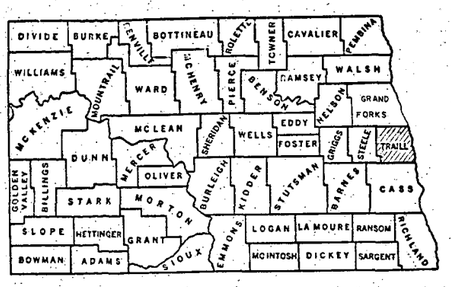
FOR THE PROPOSED IMPROVEMENT OF A

STATE HIGHWAY

IN TRAILL COUNTY

FEDERAL AID PROJECT NO. I-29-3(20)110

STRUCTURAL



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES

STA.	CLEAR RDWY. WIDTH	DESIGN LOADING
945+17.31	30'	H 20-44
1000+11.35	36'	HS 20-1944

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.

INDEX OF DRAWINGS

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 Provision (Form PR-1273) dated October 1968 and others submitted herewith.

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
I-29-3(20)	1.040	0.000
TOTALS	1.040	0.000

LIST OF STANDARDS

SLOPE PROTECTION	7.5A
BRIDGE BENCH MARKS	7.6
STANDARD SIGNS	14.1A-1 Thru 14.1A-10
FEDERAL AID NAME PLATE	14.9B
CONST. IDENT. SIGNS	14.25

KEY TO CONVENTIONAL SIGNS

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

DESIGN DATA

		EST. 30TH MAX. HR.
TRAFFIC	AVERAGE DAILY	
CURRENT TRAFFIC (1969)	2000 PASS. 350 TRUCKS 2350 TOTAL	310
TRAFFIC FORECAST (1989)	4950 PASS. 870 TRUCKS 5820 TOTAL	760

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

LIST OF SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

NAME	NO.
BIDDING REQUIREMENTS AND CONDITIONS	SS-9
PAINTING	SP-33
LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC.	SS-16 & 10
PILING	SS-21
CONCRETE SLOPE PROTECTION	SS-22
FIELD LABORATORY	SS-7
GENERAL STATEMENT	SS-24
STRUCTURAL STEEL	SP-58
MOBILIZATION	SP-10
PROSECUTION AND PROGRESS	SP-9
VALUE ENGINEERING INCENTIVE	SP-11
MAINTENANCE AND PROTECTION OF TRAFFIC	SP-16C
SCOPE OF WORK	SS-25
BACKFILL	SS-27
CONCRETE STRUCTURES	SP-29
REINFORCEMENT	SP-32
QUICK SETTING ANCHOR GROUT	SP-34

LIST OF STRUCTURAL DRAWINGS

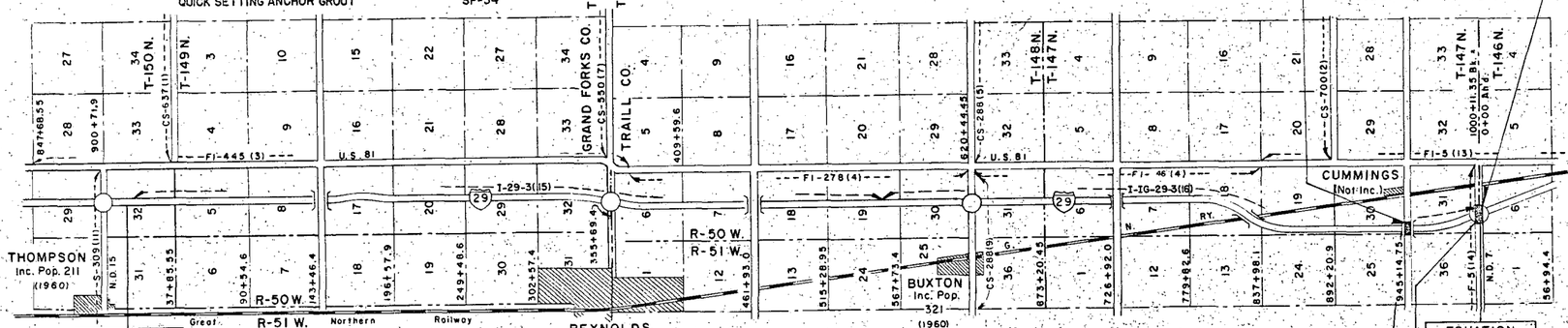
29-55	H-5122	29-56	29-56-7
29-55-1	H-5123-1	29-56-1	29-56-8
29-55-2	H-5123-2	29-56-2	29-56-9
H-1299	H-0153	29-56-2A	29-56-10
H-1371		29-56-3	29-56-11
H-1372		29-56-4	H-0501
H-0401		29-56-5	
H-5120		29-56-6	
H-5121			

Beg. Proj. No. I-29-3(20)110
Sta. 945+17.31=

Sta. 945+17.31 on Proj I-IG-29-3(16)=
Sta. 15+00 on crossroads=
A point 233.0' East and 1.81' South of the NW Corner of Sec.31, Twp.147 N., Rge.50W.

End Proj No. I-29-3(20)110
Sta. 1000+11.35=

Sta. 1000+11.35 on Proj. I-IG-29-3(16)=
Sta.565+00 on X-Road and
Proj. no. F-5(14)=a point 1491.0' east of the SW corner of
Sec. 31, Twp. 147 N, RGE 50 W.



NOTES:

Quantities-Total quantities have been adjusted to the nearest whole unit for bidding purposes.

The structural and grading contractors shall conduct their individual operations to the mutual benefit of each other. See Sec. 105-7 of the Std. Specs.

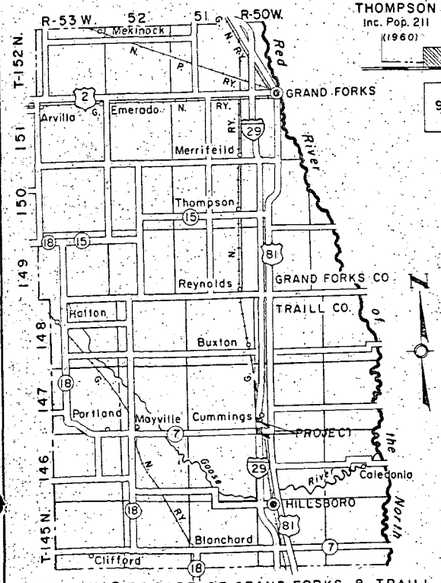
LAYOUT MAP

5000 0 5000
SCALE IN FEET

CONSTRUCTION IDENTIFICATION SIGN shall be installed at Sta. 23+00 Lt. Cummings Sep. X-Rd. and 553+00 Rt. and 577+00 Lt. Mayville Int. X-Rd.

LEGEND

- INTERCHANGE
- HIGHWAY GRADE SEPARATION-NO CONNECTION.
- OTHER BRIDGE
- SERVICE ROAD
- TERMINATED CROSS-ROAD



SKETCH MAP OF PART OF GRAND FORKS & TRAILL COUNTIES

QUANTITIES

SPEC. NO.	756	208	228	610			612	616		622					750		704				746	
CODE NO.	0100	0100	0100	1112	1134	0138	0110	4412	0362	0020	0040		0560	1400	1420	0100	3000	0100	7520	3331	0100	
LOCATION	FIELD LABORATORY	CLASS I EXCAVATION	SELECT BACKFILL	CLASS AE-1 CONCRETE (SUB STRUCTURE)	CLASS AE-3 CONCRETE (T-BEAM SUPER STRUCTURE)	CLASS AAE-3 CONCRETE (RAILING)	REINFORCING STEEL (GRADE 40)	STRUCTURAL STEEL (A-441) WELDED BEAM	STRUCTURAL STEEL (A-36) WELDED BEAM	STEEL PILING			STEEL TEST PILES			LINSEED OIL TREATMENT	BRIDGE BENCH MARKS	CONCRETE SLOPE PROTECTION	MOBILIZATION	MAINTENANCE AND PROTECTION OF TRAFFIC TWO CROSS ROAD DETOURS	FLAGGING	
													120'	105'	115'							
										10BP42	12BP53		10BP42	12BP53	12BP53							
	EA.	CU. YD.	CU. YD.	CU. YD.	CU. YD.	CU. YD.	LB	LB	LB	L.F	L.F		EA.	EA.	EA.	GAL.	SET	SQ. YD.	LUMP SUM	LUMP SUM	MAN HOURS	
945+17.31		195	150	126.8	259.8	17.13	101,575	140,400	26,000	805	1865		1	1		42	1	480				
1000+11.35		250	210	156.9	312.2	18.07	119,224	168,100	33,300	1175	2285				2	52	1	580				
TOTAL	1	445	360	284	572	35	220,799	308,500	59,300	1980	4150		1	1	2	94	2	1060	1	1	100	

APPROVED DATE 2-6-69

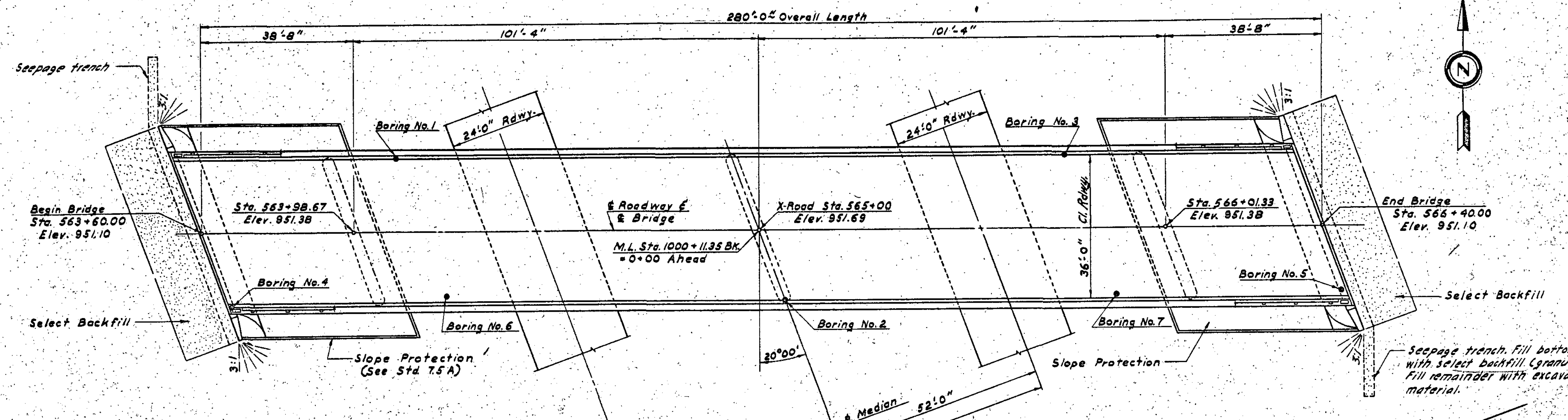
CHIEF ENGINEER
NORTH DAKOTA STATE
HIGHWAY DEPARTMENT

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

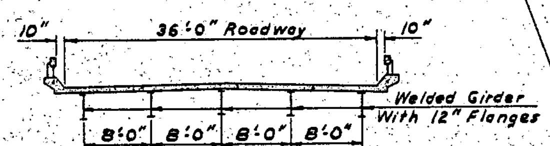
APPROVED

DIVISION ENGINEER DATE

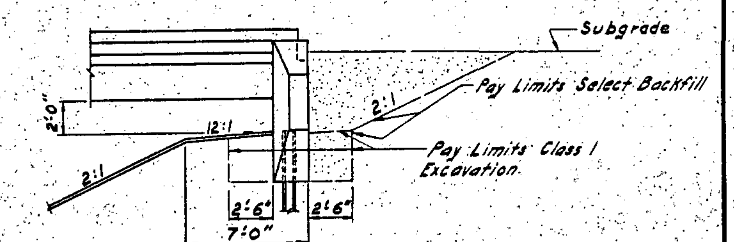
BRIDGE CODE	FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
X-771	5	N. D.	I-29-3(20)	23	54



PLAN



DECK SECTION



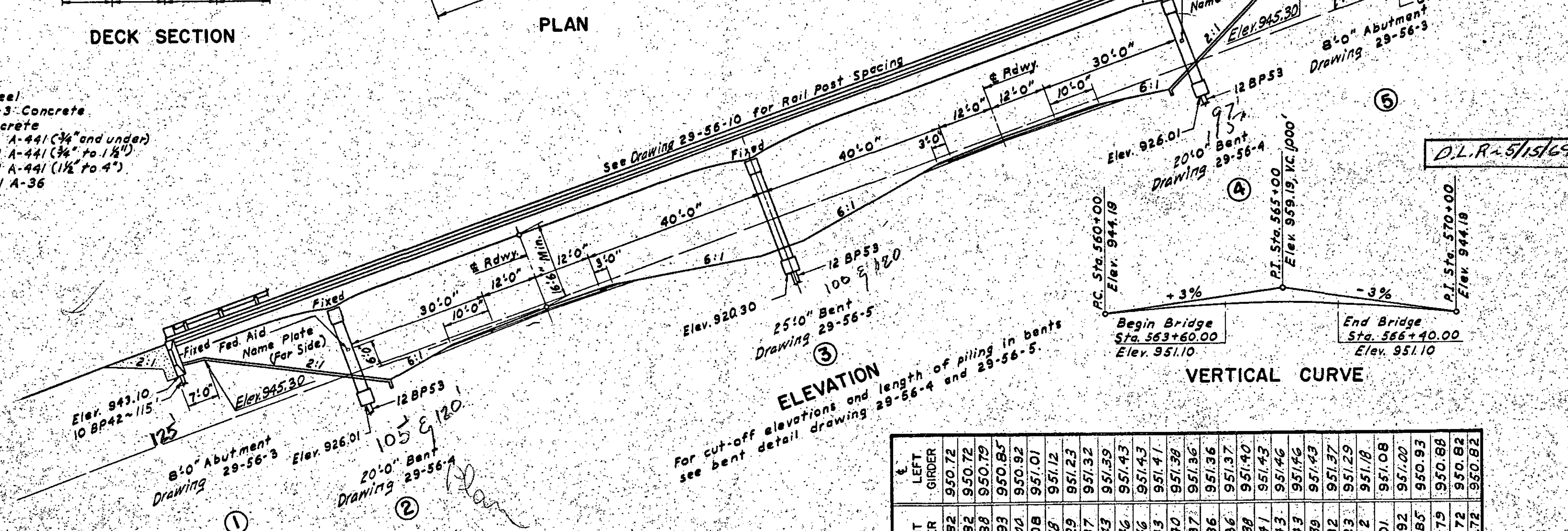
DETAIL AT ABUTMENTS

See SP-34 for Quick Setting Anchor Grout.
See SP-29 for Optional Concrete Surface Finish.
① See SP-33 for Painting.
① See SP-35 for Structural Steel.
② See SS - 21 for Piling.
③ See SS - 22 for concrete Slope Protection.
④ See SP-32 for Reinforcing Steel.
⑤ See SP-27 for Select Backfill.

The General Notes for this project are shown on Drawing 29-56-1.

DESIGN STRESSES:

f_s = 20,000 psi. ~ Reinforcing Steel
f_c = 1,200 psi. ~ Class AE-1 & AE-3 Concrete
f_c = 1,700 psi. ~ Class AAE-3 Concrete
f_s = 27,000 psi. ~ Structural Steel A-441 (3/4" and under)
f_s = 25,000 psi. ~ Structural Steel A-441 (3/4" to 1 1/2")
f_s = 23,000 psi. ~ Structural Steel A-441 (1 1/2" to 4")
f_s = 20,000 psi. ~ Structural Steel A-36



ELEVATION

For cut-off elevations and length of piling in bents see bent detail drawing 29-56-4 and 29-56-5.

VERTICAL CURVE

D.L.R. 5/15/69

1969
FEDERAL AID PROJECT
I-29-3(20)
NORTH DAKOTA
29-56

FEDERAL AID NAME PLATE

2 REQUIRED

BDSP-1
BDSP-8
BDSP-13

ESTIMATE OF QUANTITIES

SPEC. NO.	CODE NO.	BID ITEM	
203	0100	COMMON EXCAVATION	CU. YD.
208	0100	CLASS I EXCAVATION	250 CU. YD.
228	0100	SELECT BACKFILL ⑤	210 CU. YD.
216	0100	WATER	"M" GAL.
610	1112	CLASS AE-1 CONCRETE (SUBSTRUCTURE)	156.9 CU. YD.
610	1134	CLASS AE-3 " (I-BEAM SUPERSTRUCTURE)	312.2 CU. YD.
610	0138	CLASS AAE-3 " (RAILING)	18.07 CU. YD.
612	0110	REINFORCING STEEL ④ (GRADE 40) 119,395	119,224 LB.
616	4412	STRUCTURAL STEEL (A-441) ① (WELDED BEAM)	168,100 LB.
616	0382	STRUCTURAL STEEL (A-36) ① (WELDED BEAM)	33,300 LB.
622	0040	STEEL PILING (12BP53) ②	2285 LIN. FT.
622	0020	STEEL PILING (10BP42) ②	1175 LIN. FT.
622	1420	STEEL TEST PILE (12BP53) ② @ 115 FT.	2 EACH
750	0100	LINSEED OIL TREATMENT	52 GAL.
704	0100	CONCRETE SLOPE PROTECTION ③	580 SQ. YD.
	3000	BRIDGE BENCH MARKS	1 SET

STRUCTURAL DRAWINGS

GENERAL DRAWING 29-56 (THIS SHEET), 29-56-1, 29-56-2, 29-56-2A, STD. 7.5A
SUBSTRUCTURE 29-56-3, 29-56-4, 29-56-5, H-0401, STD. 14.98
SUPERSTRUCTURE 29-56-6, THRU 29-56-11, H-0153, STD. 7.6, H-0501

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

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

MAYVILLE INTERCHANGE
BRIDGE LAYOUT

PROJECT I-29-3 (20) STA. 1000+11.35

TRAILL COUNTY

APPROVED
12-2-68 Joseph R. Kirby
DATE BRIDGE ENGINEER

JOSEPH R. KIRBY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

SCREED ELEVATION

℄ LEFT GIRDER	950.72	950.72	950.79	950.85	950.92	951.01	951.12	951.23	951.32	951.39	951.43	951.43	951.41	951.38	951.36	951.36	951.37	951.40	951.43	951.46	951.46	951.43	951.37	951.29	951.18	951.08	951.00	950.93	950.88	950.82	950.82
℄ RIGHT GIRDER	950.82	950.82	950.88	950.93	951.00	951.08	951.18	951.29	951.37	951.43	951.46	951.46	951.43	951.40	951.37	951.36	951.36	951.38	951.41	951.43	951.43	951.39	951.32	951.23	951.12	951.01	950.92	950.85	950.79	950.72	950.72
℄ ROADWAY	951.10	951.11	951.17	951.23	951.29	951.38	951.48	951.59	951.68	951.75	951.78	951.78	951.76	951.73	951.70	951.69	951.70	951.73	951.76	951.78	951.78	951.75	951.68	951.59	951.48	951.38	951.29	951.23	951.17	951.11	951.10

6 3/8" Begin Bridge; 4 Eq. Sp. = 38'-1 5/8" ℄ Brg. Abut. No. 1; 10 Eq. Sp. = 101'-4" ℄ Bent 2; 10 Eq. Sp. = 101'-4" ℄ Bent 3; 4 Eq. Sp. = 38'-1 5/8" ℄ Bent 4; ℄ Brg. Abut. 5; 6 3/8" End Bridge

Elevations are to top of finished concrete

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
102	Iron Mon. Buried 13"	984+00 - ℄	928.08
103	Iron Mon. Buried 13"	994+00 - ℄	927.61
1	Iron Mon. by P.P.	2+15 - 278' Lt.	927.79
2	Iron Mon. Shelter	8+00 - 210' Lt.	927.18
3	Iron Mon. Shelter	22+03 - 202' Lt.	925.24

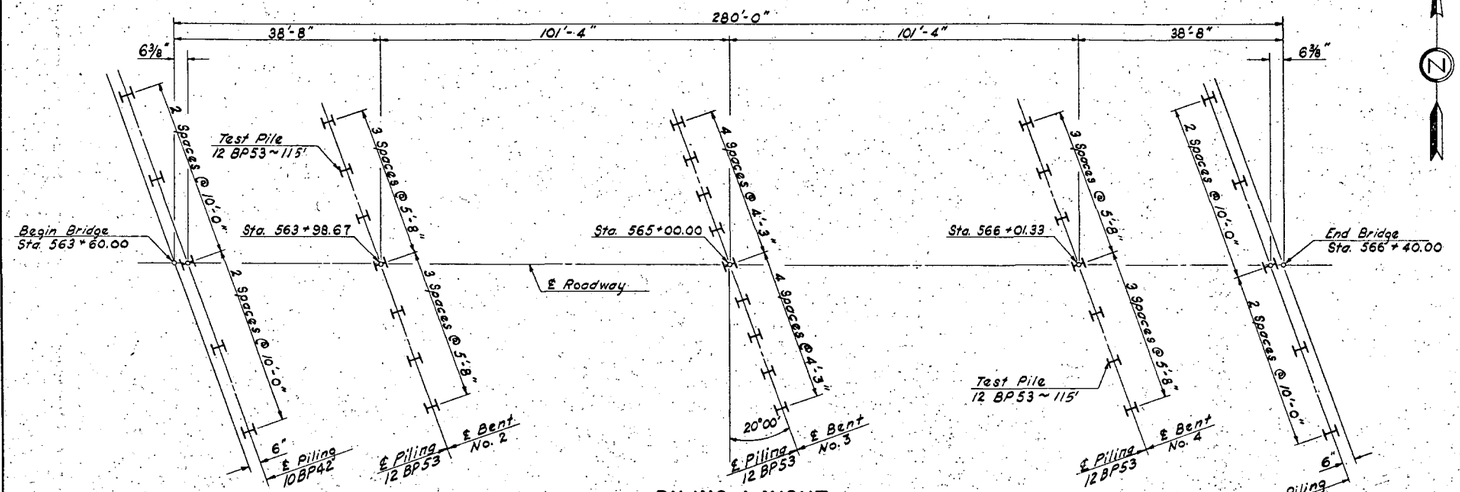
PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH LOAD	WIND 50 LB.	WIND 15 LB.	WIND 100 LB. L.L.	EMBANKMENT SETTLEMENT	DESIGN LOAD	MAXIMUM REQUIRED BEARING
Abutments	21.6 T.	13.4 T.					20.0 T	55.0 T.	55.0 T.
Bents 2 & 4	45.2 T.	22.6 T.	1.5 T.					69.3 T.	70.0 T.
Bent 3	50.0 T.	18.8 T.	1.2 T.					70.0 T.	70.0 T.

REVISIONS	DATE

TOPOGRAPHY	PLOTTED BY / CHECKED BY
DETAILS	MADE BY D.L.R. / CHECKED BY L.E.G.
TRACING	MADE BY L.E.G. / CHECKED BY D.L.R.
QUANTITIES	MADE BY D.L.R. / CHECKED BY L.E.G.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)	28	54



PILING LAYOUT

(Not to Scale)

BEARING PLATE LAYOUT

Elevations are to top of finished concrete.
(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.

EMBANKMENT:

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

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

EXCAVATION:

EXCAVATION CLASS I AT THE ABUTMENTS SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE UPPER LIMITS AS SHOWN ON THE BRIDGE LAYOUT DRAWING. EXCAVATION CLASS I AT THE BENTS SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE FINISHED ELEVATION OF THE INTERSTATE MEDIAN AT BENT 3, AND TO THE FINISHED PROFILE OF THE EMBANKMENT BACKSLOPES AT BENTS 2 AND 4.

BACKFILL:

ALL BACKFILL SHALL BE COMPACTED ACCORDING TO SECTION 203-2.3 OF THE STANDARD SPECIFICATIONS, EXCEPT THAT THE COMPACTED DENSITY SHALL BE AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY AASHO DESIGNATION T-99. SELECT BACKFILL SHALL NOT BE PLACED ABOVE THE ELEVATION OF THE BERM UNTIL THE SUPERSTRUCTURE HAS BEEN PLACED.

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. SLAB, CURBS, AND END WALLS SHALL BE CLASS AE-3. ABUTMENTS AND BENTS SHALL BE CLASS AE-1.

ALL CONCRETE SHALL BE COMPACTED BY VIBRATION. THE "RUBBED SURFACE FINISH" WILL BE REQUIRED FOR THE ROADWAY AND OUTSIDE FACES OF CURBS, EDGES OF SLAB, ALL FACES OF THE RAILS, RAIL POSTS AND END POSTS, ALL EXPOSED FACES OF 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.

LINSEED OIL TREATMENT:

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

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 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 5/8"X12".

THE GIRDERS SHALL BE CAMBERED IN THE SHOP AS DETAILED ON DRAWING 29-56-8. 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 SUBPUNCHING 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 SHEAR DEVICES WILL BE PAID FOR AS CHANNEL SHEAR DEVICES.

ALTERNATE STUD SHEAR DEVICES SHALL BE MANUFACTURED OF C-1015 OR C-1020 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A 108-61T SPECIFICATIONS, AND 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". 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 47,500 FOOT-POUND-TONS AS COMPUTED BY THE FORMULA W(E-11,000) + .86E WHERE W IS THE WEIGHT OF THE RAM IN TONS AND E IS THE RATED HAMMER ENERGY AS ALLOWED IN THE SPECIAL PROVISIONS. IN NO CASE SHALL THE RAM WEIGHT BE LESS THAN 4,800 POUNDS.

TEST PILES:

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

MATERIALS: (STRUCTURAL STEEL)

GIRDER FLANGES, WEBS, FLANGE AND WEB SPLICE PLATES: A 441
STIFFENERS, DIAPHRAGMS, SHEAR DEVICES, BEARING PLATES AND ANCHOR BOLTS: A 36, EXCEPT ALTERNATE STUD SHEAR DEVICES.

PAINT:

PAINT AND PAINTING SHALL CONFORM TO THE NORTH DAKOTA STANDARD SPECIFICATION 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 DEVICES), ONE SPOT COAT OF RED LEAD PAINT AFTER ERECTION AND CONCRETE WORK IS COMPLETED, AND TWO FIELD COATS OF ENAMEL. THE FIRST FIELD COAT SHALL CONFORM TO GRAY-BLUE COLOR NO. 25414 AND THE SECOND COAT SHALL CONFORM TO GRAY-BLUE COLOR NO. 25184. 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.

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).

QUANTITIES

MAYVILLE INTERCHANGE

BEARING PLATE LAYOUT

PILING LAYOUT

GENERAL NOTES

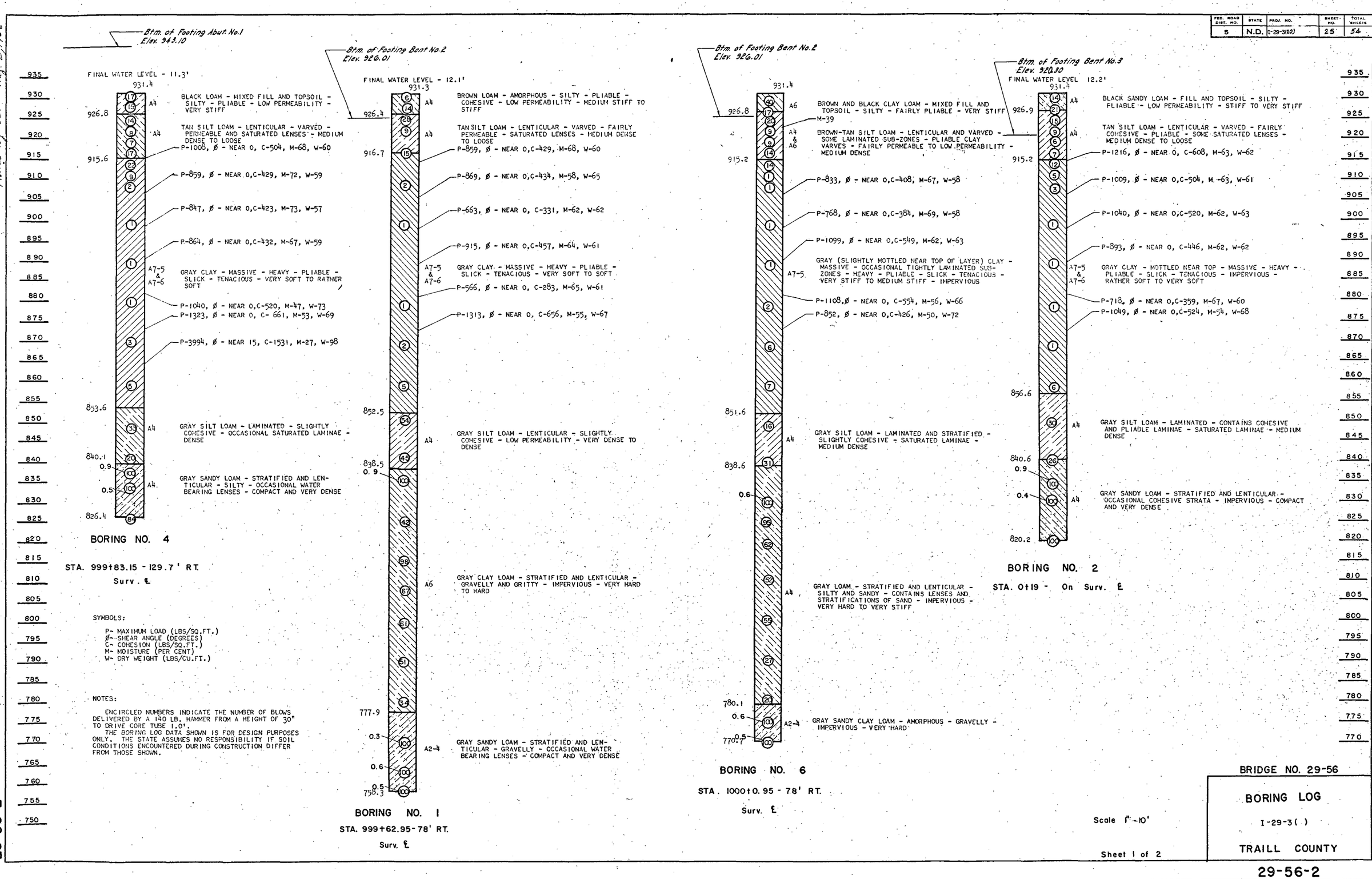
TRACING CHECKED BY
QUANTITIES MADE BY CHECKED BY D.L.R.

29-56-1

29-56-1

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N.D.	I-29-3(10)	25	54

Plotted by JLS Aug. 2, 1966



Scale 1" = 10'

Sheet 1 of 2

BRIDGE NO. 29-56

BORING LOG

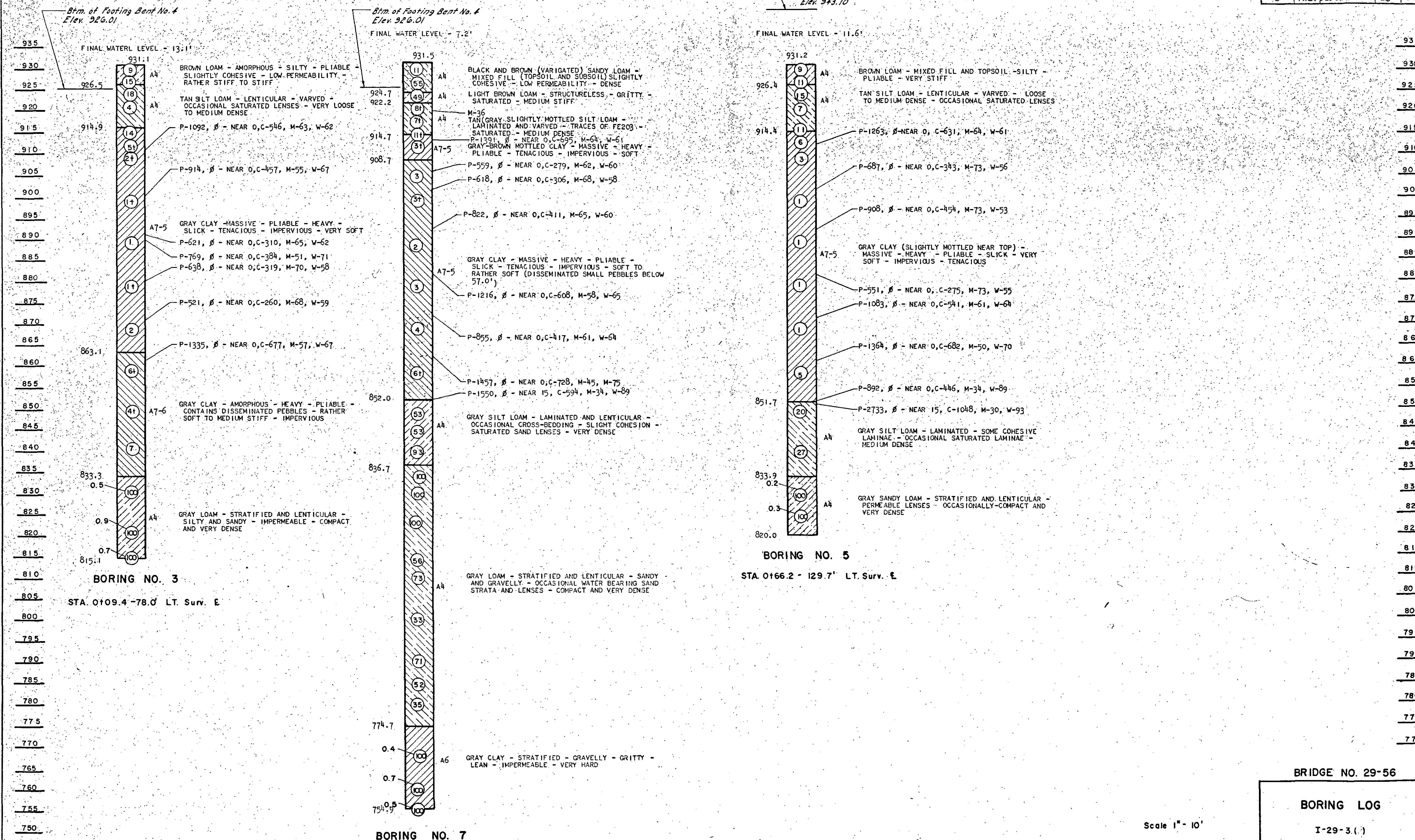
I-29-3( )

TRAILL COUNTY

29-56-2

29-56-2

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N.D.	I-29-3(20)	26	52



BRIDGE NO. 29-56

BORING LOG

I-29-3( )

TRAILL COUNTY

Scale 1" = 10'

Sheet 2 of 2

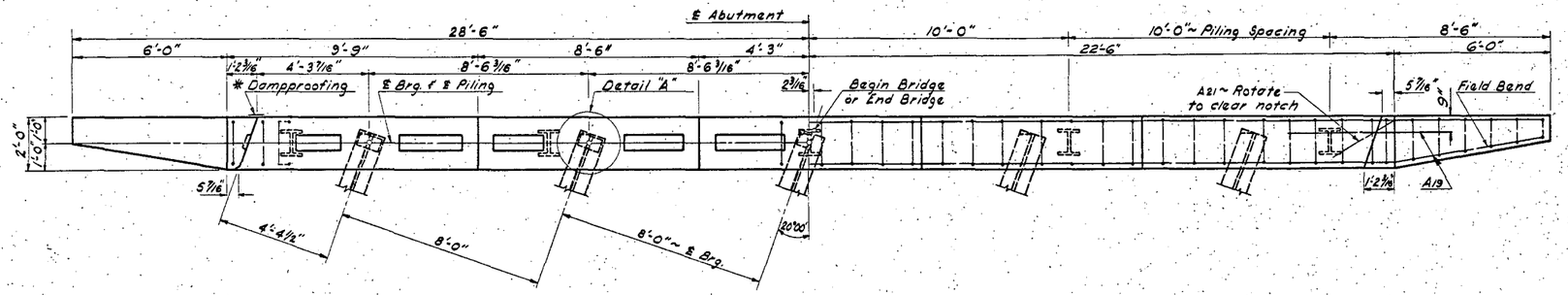
29-56-2A

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)	27	54

DESIGN		DRAWN		TRACED		QUANTITIES	
MADE BY	L.P.H.	MADE BY	J.U.S.	MADE BY	D.L.R.	MADE BY	D.L.R.
CHECKED BY	D.O.A.	CHECKED BY	L.E.G.	CHECKED BY	D.L.R.	CHECKED BY	J.A.E.
MADE BY	D.L.R.						
CHECKED BY	L.E.G.						

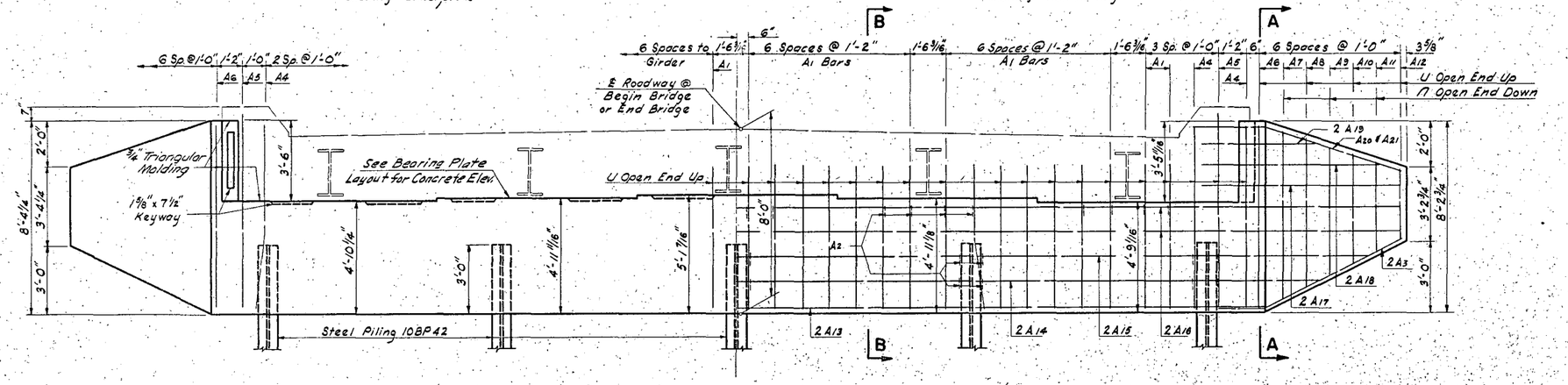
REVISIONS

DATE | CHK'D BY | MADE BY



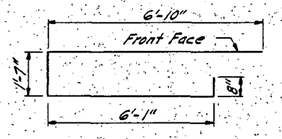
HALF PLAN
Showing Dimensions

HALF PLAN
Showing Reinforcing

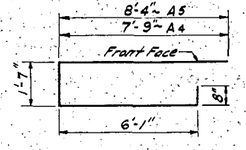


HALF ELEVATION
Showing Dimensions

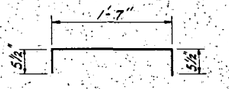
HALF ELEVATION
Showing Reinforcing



A1



A4 & A5 BARS



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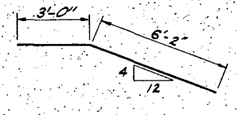
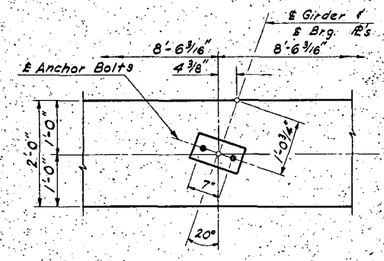
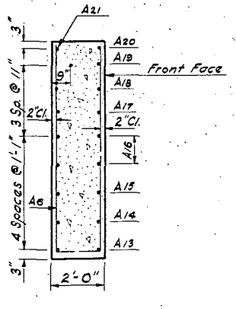


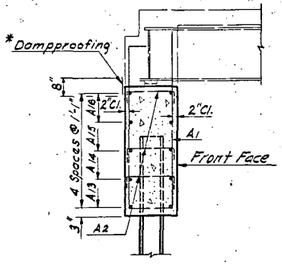
A20



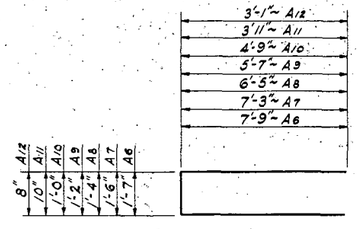
DETAIL "A"



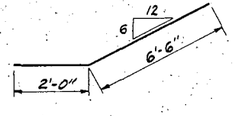
A-A



B-B

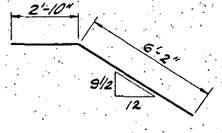


A6 thru A12 BARS



A3

BENT BAR DETAIL



A21

BAR LIST (ONE ABUT.)

MARK	NUMBER	WALL			SIZE	LENGTH	SHAPE
A1	32				6	15'-2"	Bent
A2	40				4	1'-6"	"
A3	4				6	8'-6"	"
A4	3				6	16'-11"	"
A5	2				6	16'-8"	"
A6	2				6	17'-1"	"
A7	2				5	16'-0"	"
A8	2				5	14'-2"	"
A9	2				5	12'-4"	"
A10	2				5	10'-6"	"
A11	2				5	8'-8"	"
A12	2				5	6'-10"	"
A13	4				6	23'-6"	Str.
A14	4				5	25'-8"	"
A15	4				5	27'-9"	"
A16	8				5	29'-2"	"
A17	4				5	8'-8"	"
A18	4				5	8'-0"	"
A19	4				5	5'-2"	"
A20	2				6	9'-2"	Bent
A21	2				6	9'-0"	"

PROJECT I-29-3 (20)
DRAWING 29-56-3

NOTES:

* 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 Class AE-1 Concrete.

QUANTITIES (ONE ABUT.)

Class AE-1 Concrete	20.9 C.Y.
Reinforcing Steel	1917 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

MAYVILLE INTERCHANGE

8'-0" ABUTMENT

36'-0" ROADWAY

HS 20 LOADING

29-56-3

29-56-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.		SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)		28	54

BAR LIST (ONE BENT)

MARK	NUMBER CAP	NUMBER COLUMN	NUMBER FOOTING	SIZE	LENGTH	SHAPE
P1			4	9	38'-8"	Bent
P2			4	7	38'-2"	"
P3			40	5	10'-4"	"
P4			36	7	5'-6"	Str.
P5		3		4	435'-0"	Spiral
P6		2		3	211'-0"	"
P7		36		7	16'-0"	Str.
P8		12		5	16'-0"	"
P9		16		8	8'-7"	Bent
P10		4		8	7'-6"	"
P11		8		6	4'-8"	Str.
P12	10			7	35'-10"	"
P13	43			5	10'-6"	Bent
P14	2			5	7'-3"	"
P15	6			5	7'-6"	"
P16			2	5	36'-6"	Str.
*SR4		1		4	3'-8"	Str.
*SR5		1		5	4'-0"	"
*SR6		1		6	4'-6"	"
*SR7		1		7	5'-0"	"
*SR8		1		8	5'-4"	"

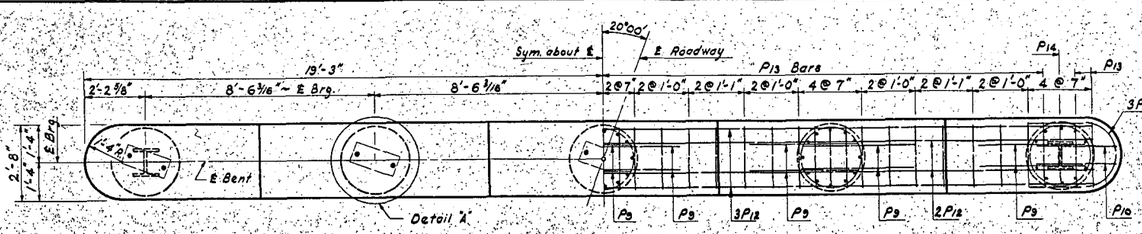
PROJECT I-29-3(20)
DRAWING 29-56-4

NOTE:

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

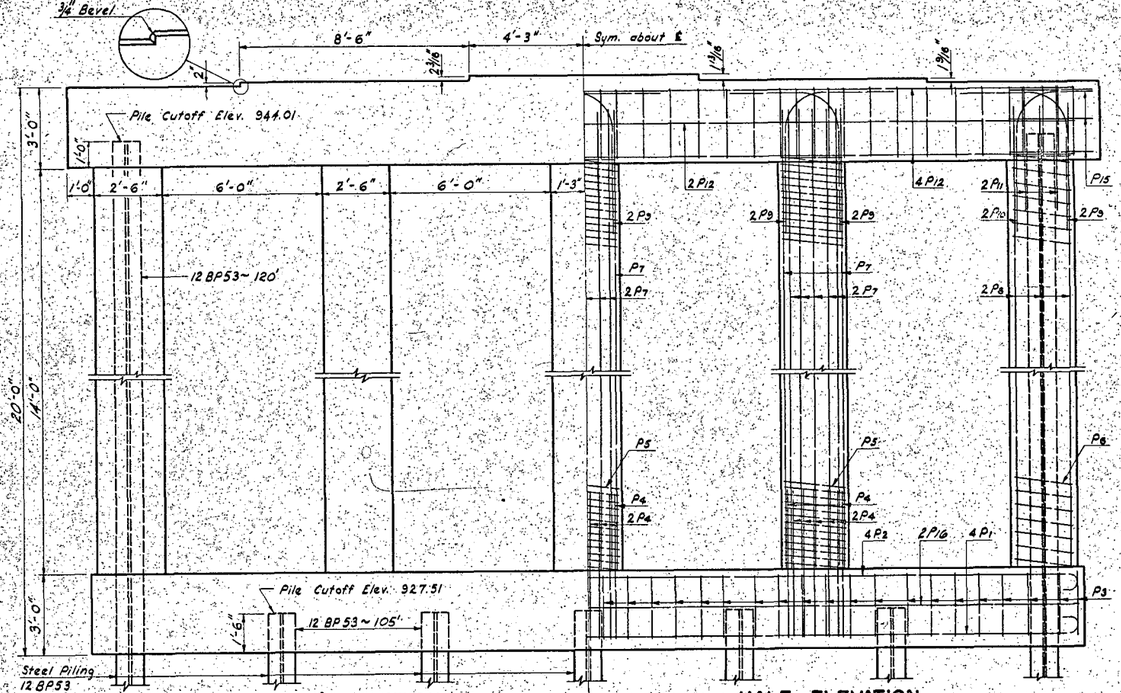
All exposed edges to be beveled with 3/4" triangular molding.

* 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.



HALF PLAN
Showing Dimensions

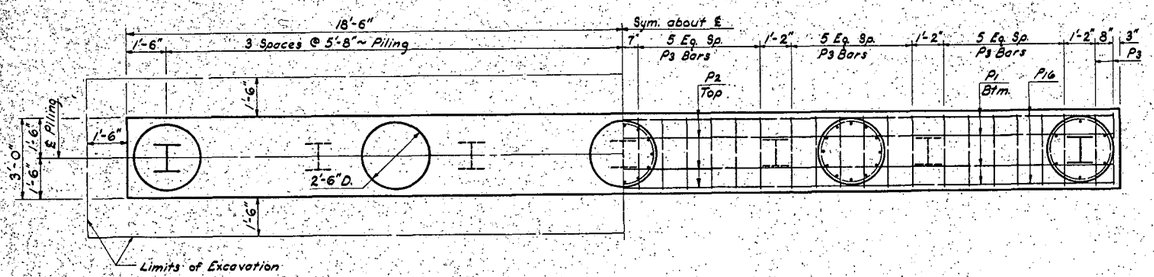
HALF PLAN
Showing Reinforcing



HALF ELEVATION
Showing Dimensions

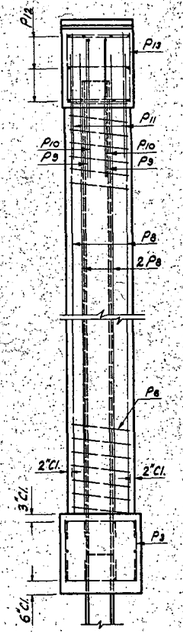
HALF ELEVATION
Showing Reinforcing

Bent No. 2 ~ Looking N.E.
Bent No. 4 ~ Looking S.W.

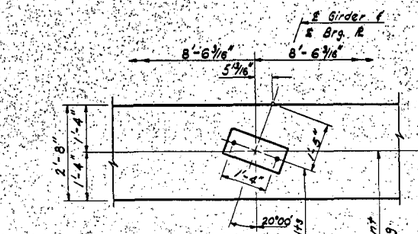


HALF FOOTING PLAN
Showing Dimensions

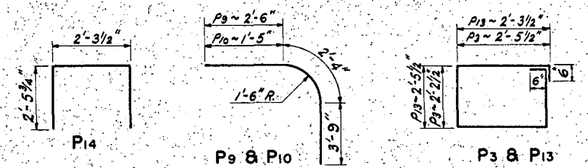
HALF FOOTING PLAN
Showing Reinforcing

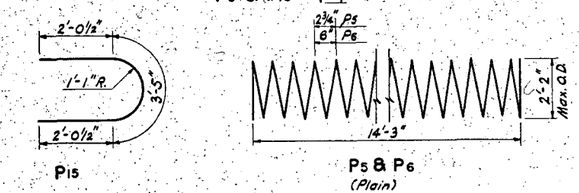


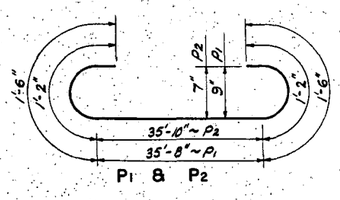
END VIEW



DETAIL "A"







P1 & P2

BENT BAR DETAILS

QUANTITIES (ONE BENT)

Class AE-1 Concrete	30.9 C.Y.
Reinforcing Steel	5322 Lbs.
Steel Piling (See Layout)	
Excavation (See Layout)	

MAYVILLE INTERCHANGE

20'-0" BENT

36'-0" ROADWAY

HS20 LOADING

29-56-4

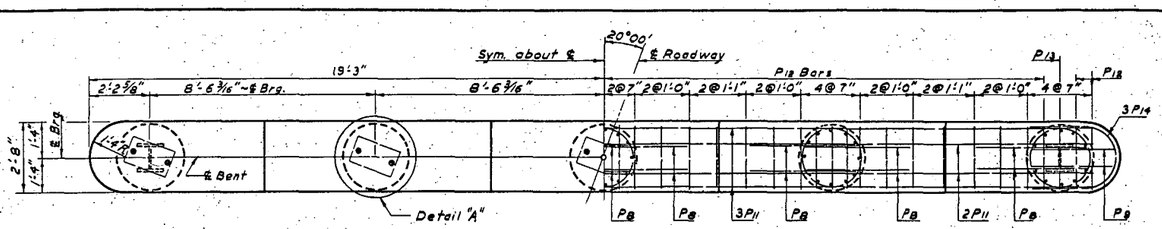
TRACING CHECKED BY
QUANTITIES CHECKED BY
DLR
JJS

29-56-4

FED. ROAD DIST. NO.	STATE	PROJ. NO.		SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)		29	54

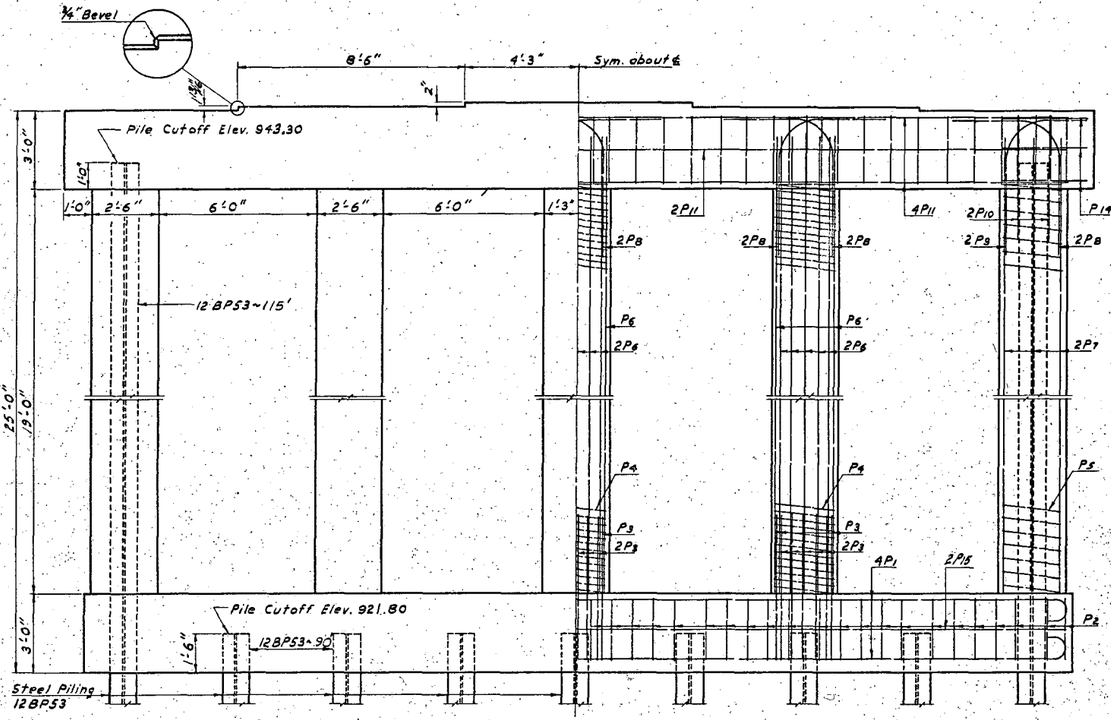
		DATE
DESIGN	MADE BY L.P.H.	
	CHECKED BY D.D.A.	
DETAILS	MADE BY L.E.G.	
	CHECKED BY D.L.R.	
TRACING	MADE BY U.A.E.	
	CHECKED BY D.L.R.	
QUANTITIES	MADE BY D.L.R.	
	CHECKED BY U.A.E.	

REVISIONS — MADE BY — CHK'D BY — DATE



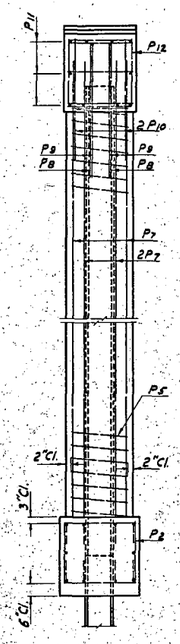
HALF PLAN
Showing Dimensions

HALF PLAN
Showing Reinforcing

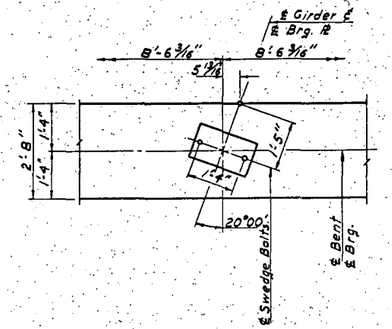


HALF ELEVATION
Showing Dimensions

HALF ELEVATION
Showing Reinforcing



END VIEW



DETAIL "A"

BAR LIST (ONE BENT)

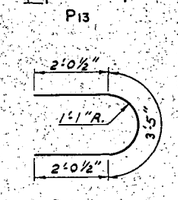
MARK	NUMBER CAP	NUMBER COLUMN	NUMBER FOOTING	SIZE	LENGTH	SHAPE
P1			8	9	38'-8"	Bent
P2			44	5	10'-4"	"
P3			36	7	5'-6"	Str.
P4		3		4	581'-0"	Spiral
P5		2		3	278'-0"	"
P6		36		7	21'-0"	Str.
P7		12		5	21'-0"	"
P8		16		8	8'-7"	Bent
P9		4		8	7'-6"	"
P10		8		6	4'-8"	Str.
P11	10			7	35'-10"	"
P12	43			5	10'-6"	Bent
P13	2			5	7'-3"	"
P14	6			5	7'-6"	"
P15			2	5	36'-6"	Str.

PROJECT 1-29-3(20)
DRAWING 29-56-5

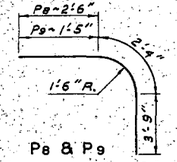
NOTE:

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

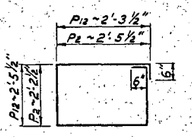
All exposed edges to be beveled with 3/4" triangular molding.



P13

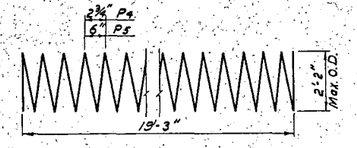


P8 & P9

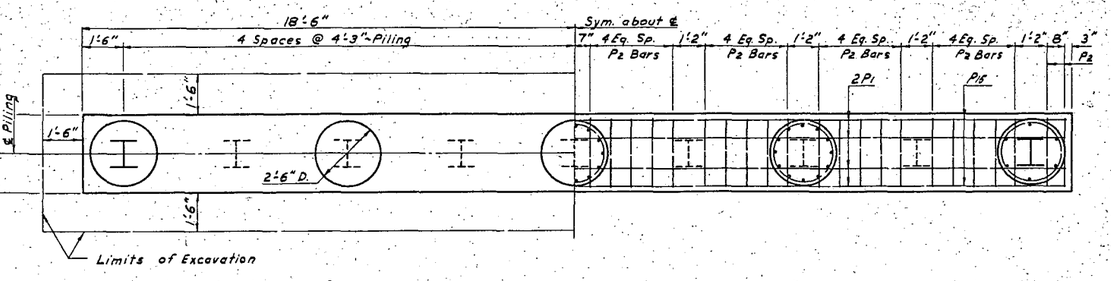


P2 & P12

P14

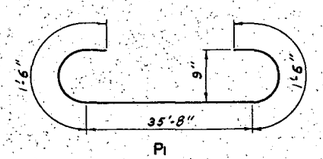


P4 & P5
(Plain)



HALF FOOTING PLAN
Showing Dimensions

HALF FOOTING PLAN
Showing Reinforcing



P1

BENT BAR DETAILS

QUANTITIES (ONE BENT)

Class AE-1 Concrete	41.3 C.Y.
Reinforcing Steel	6956 Lbs.
Steel Piling (See layout)	
Excavation (See layout)	

MAYVILLE INTERCHANGE

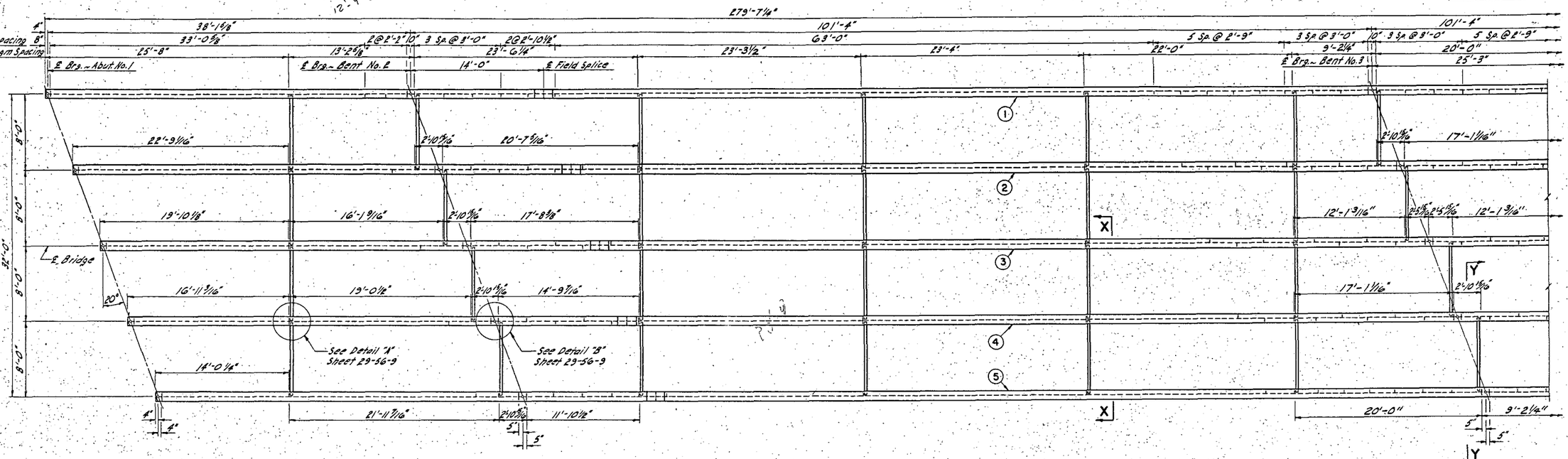
25'-0" BENT

36'-0" ROADWAY
HS_{20} LOADING

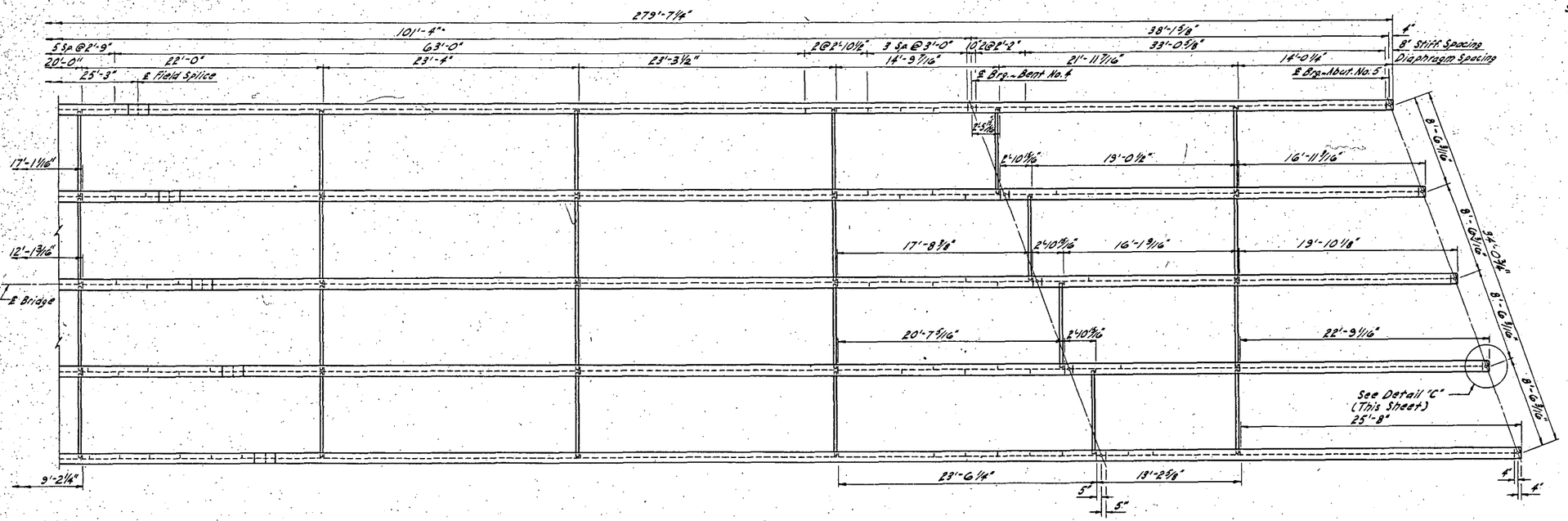
29-56-5

29-56-5

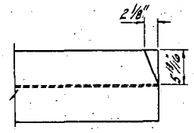
FED. ROAD DIST. NO.	STATE	PROJ. NO.		SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)		30	54



See Drawing 29-56-8 for X-X and Y-Y.



STEEL LAYOUT



DETAIL "C"

Clip top flanges only.

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

QUANTITIES

See Drawing 29-56-9

MAYVILLE INTERCHANGE

SUPERSTRUCTURE DETAILS

36'-0" ROADWAY

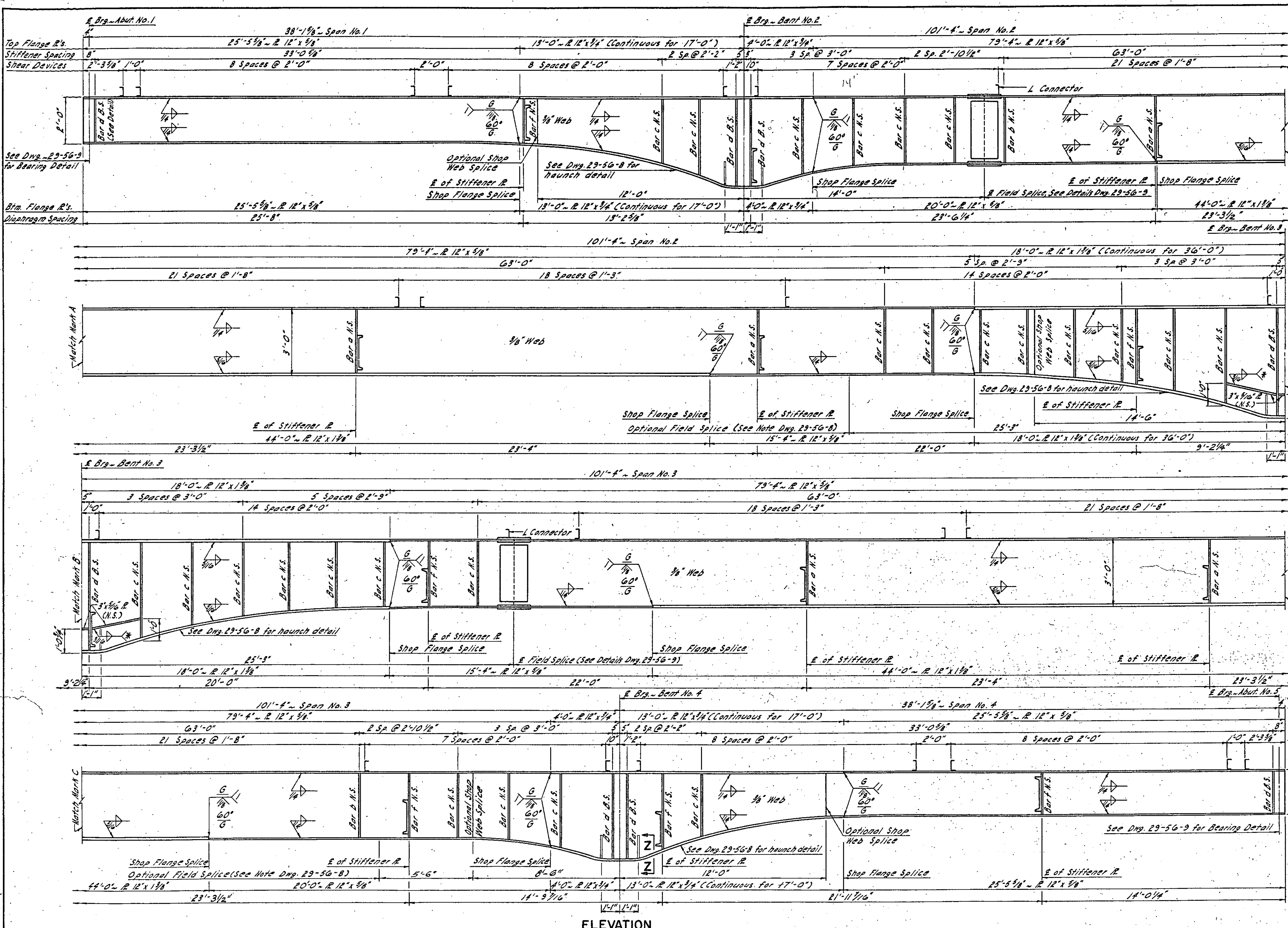
HS20 LOADING

29-56-6

TRACING | CHECKED BY D.L.R.
QUANTITIES | MADE BY D.L.R.
CHECKED BY J.A.E.

29-56-6

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)	31	54



38 × 1.354
1.0907

* Weld to web only.

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

See 29-56-8 for Z-Z
See Drawing 29-56-8 for notes.

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

QUANTITIES
See Drawing 29-56-9

MAYVILLE INTERCHANGE

WELDED GIRDER DETAIL

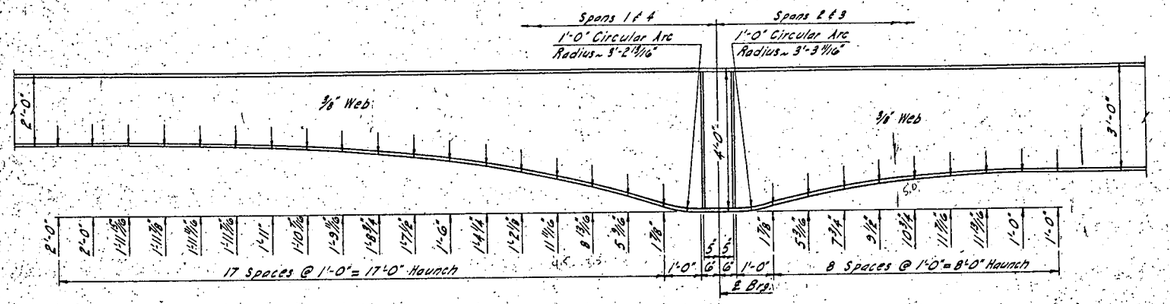
36'-0" ROADWAY

HS20 LOADING

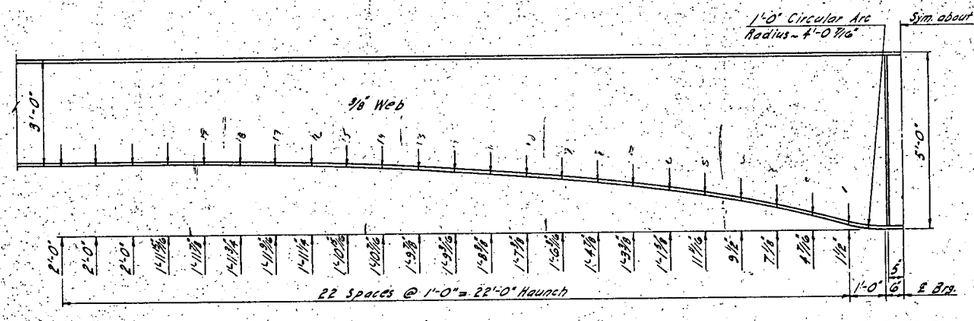
29-56-7

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)	32	54

TRACING — MADE BY
CHECKED BY D.A.P.
QUANTITIES — MADE BY
CHECKED BY D.A.P.

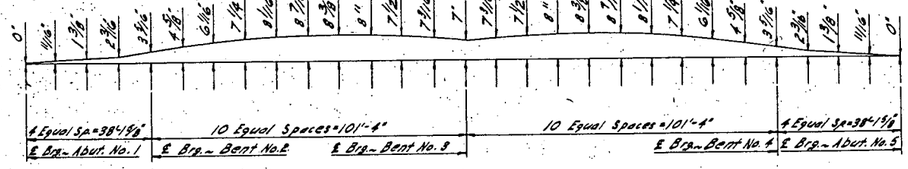


BENT 2 & 4



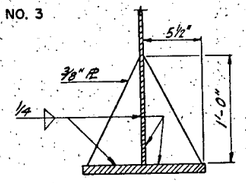
BENT NO. 3

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.



Z-Z

Typical for bents 2, 3 & 4
See 29-56-7 for Z-Z.

FIELD SPLICES:

TWO FIELD SPLICES ARE PROVIDED ON DRAWING 29-56-7. 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 29-56-7, TWO OPTIONAL FIELD SPLICES ARE SHOWN. THESE TWO ADDITIONAL FIELD SPLICES MAY BE USED BY THE CONTRACTOR UNDER THE FOLLOWING CONDITIONS:

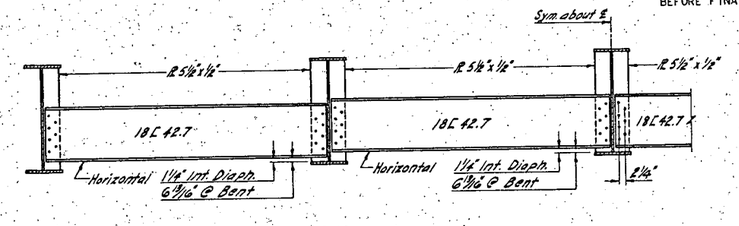
1. THEY ARE MADE AT NO EXPENSE TO THE STATE.
2. FLANGE AND WEB SPLICE PLATES AND BOLTS WILL BE AS SHOWN IN DETAILS ON DRAWING 29-56-9.
3. FALSEWORK AT THESE SPLICE POINTS WITH PROVISIONS FOR JACKING MUST BE PROVIDED DURING ERECTION TO HOLD THE GIRDERS IN ALIGNMENT WHILE SPLICES ARE BEING MADE.

THE PAY QUANTITY FOR STRUCTURAL STEEL WILL BE BASED ON THE USE OF THE OPTIONAL SHOP WEB SPLICES.

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

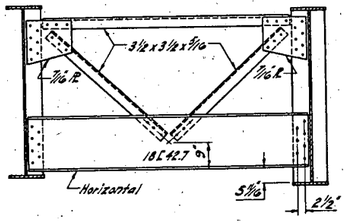
THE DETAILS SHOWN ARE FOR A FOUR SPAN CONTINUOUS WELDED GIRDER AND REPRESENT GIRDER NO. 1 IN A FIVE (5) GIRDER BRIDGE. GIRDERS NO. 2, NO. 3, NO. 4 AND NO. 5 ARE SIMILAR TO GIRDER NO. 1 AND SHALL BE FABRICATED IN ACCORDANCE WITH THESE DETAILS AND DRAWINGS 29-56-6 THRU 29-56-9.

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



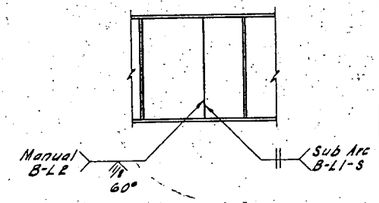
X-X

Typical for diaphragms at Bents 2 and 4 and all intermediate diaphragms.



Y-Y

AT BENT NO. 3 ONLY



OPTIONAL SHOP WEB SPLICE

If optional field splices are used in spans 2 and 3, shop web splices will not be used in those spans.

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

QUANTITIES

See Drawing 29-56-9

MAYVILLE INTERCHANGE

SUPERSTRUCTURE DETAILS

36'-0" ROADWAY

HS20 LOADING

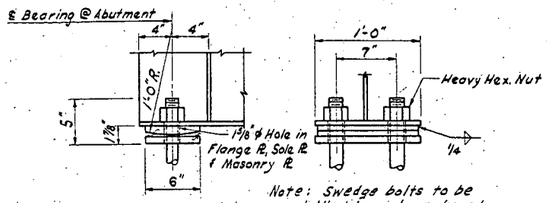
29-56-8

29-56-8

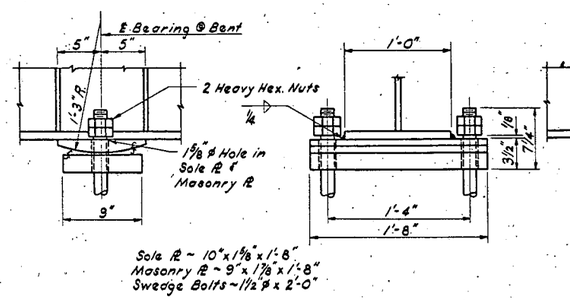
FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(30)	53	54

REVISIONS | MADE BY/CHK'D BY | DATE

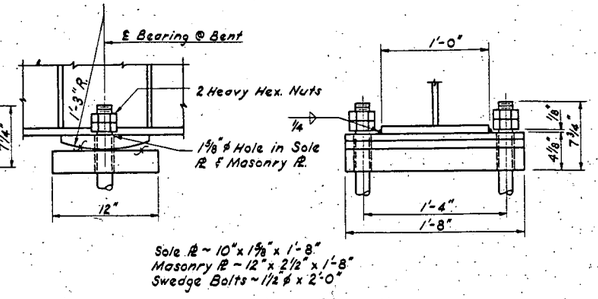
DESIGN	MADE BY	L.P.H.
	CHECKED BY	D.O.A.
DETAILS	MADE BY	D.L.S.
	CHECKED BY	J.L.S.
TRACING	MADE BY	D.L.P.
	CHECKED BY	D.L.P.
QUANTITIES	MADE BY	V.A.F.
	CHECKED BY	V.A.F.



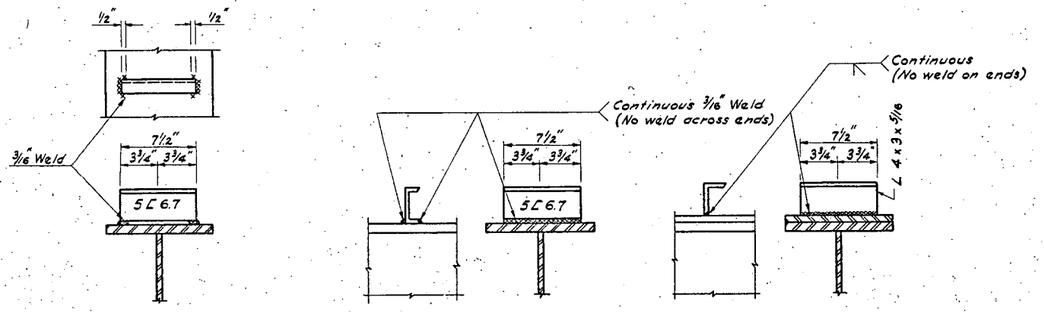
ABUTMENT BEARING DETAILS



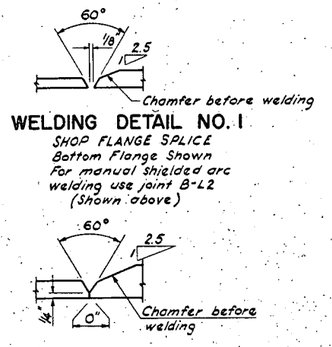
BENT BEARING DETAILS
BENTS 2 & 4



BENT BEARING DETAILS
BENT 3

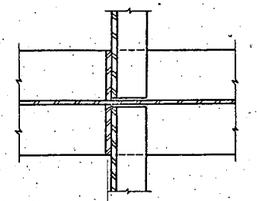


SHEAR DEVICE DETAILS

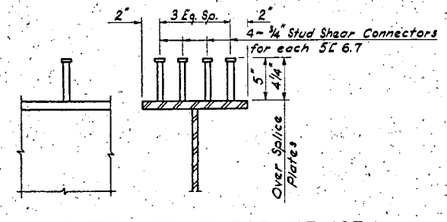


WELDING DETAIL NO. 1
SHOP FLANGE SPLICE
Bottom Flange Shown
For manual shielded arc welding use joint B-L2
(Shown above)

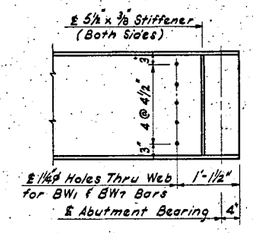
ALTERNATE DETAIL NO. 1
SHOP FLANGE SPLICE
Bottom Flange Shown
Submerged Arc AWS B-L2b-S
If submerged arc welding is used AWS B-L2b-S is an acceptable replacement for B-L2 (Manual).



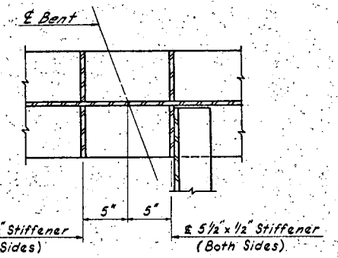
DETAIL "A"



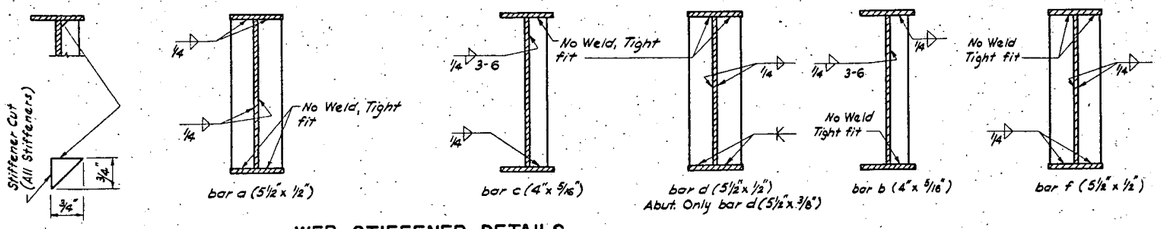
ALTERNATE SHEAR DEVICE



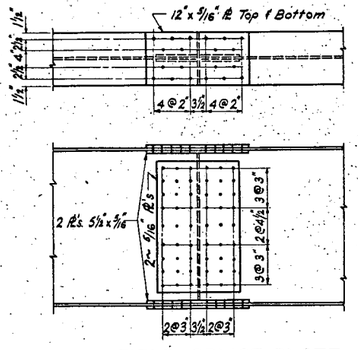
BEAM DETAILS



DETAIL "B"



WEB STIFFENER DETAILS



FIELD SPLICE PLATE

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

QUANTITIES

Structural Steel (A-441)	163,100 Lbs.
Structural Steel (A-36)	33,300 Lbs.

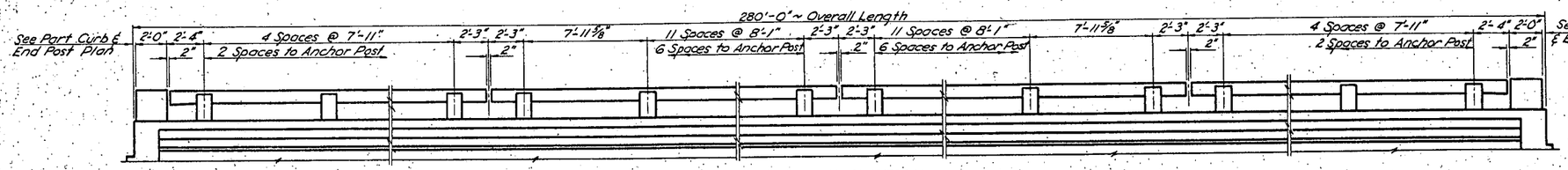
MAYVILLE INTERCHANGE
SUPERSTRUCTURE DETAILS
36'-0" ROADWAY
HS20 LOADING

29-56-9

29-56-9

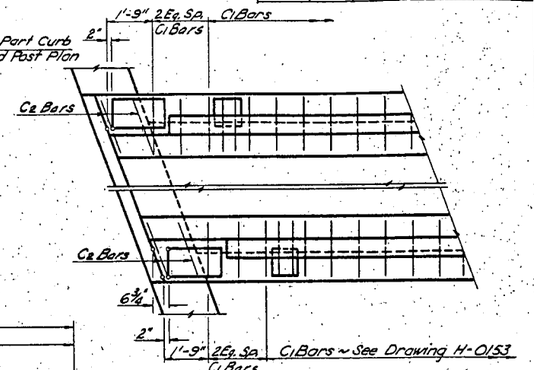
FED. ROAD DIST. NO.	STATE	PROJ. NO.		SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(20)		34	54

TRACING CHECKED BY L.C.G.
QUANTITIES MADE BY D.L.P. CHECKED BY U.J.S.

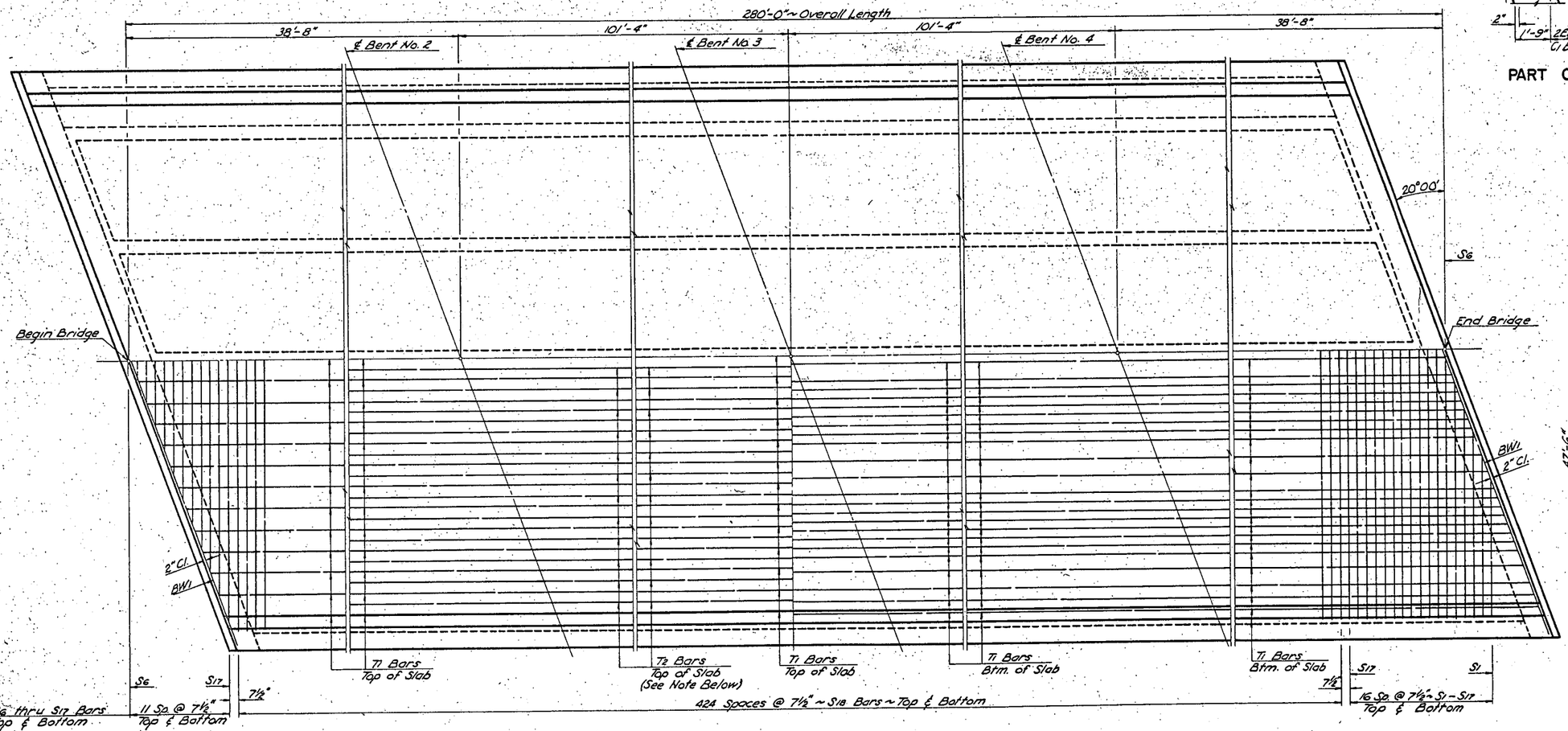


PART ELEVATION

See H-0153 for Railing Details



PART CURB AND END POST PLAN

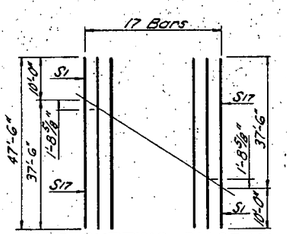


Quarter of plan showing reinforcing at top of slab.

PART PLAN

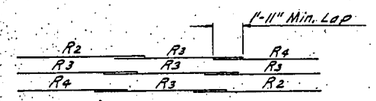
Quarter of plan showing reinforcing at bottom of slab.

Half showing slab reinforcing
Typical both sides by rotation



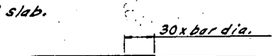
BAR CUTTING DIAGRAM

S1 - S17 Bars ~ Two Sets ~ 807'-6"



R BAR SPLICING DETAIL

Span No. 2 & No. 3
Use R1 Bars in Spans No. 1 & No. 4



SPLICING DETAIL

T1, E1 & E2

NOTE:

T2 Bar Placement:
At Bent No. 2 ~ 15 feet in Span No. 1, 25 feet in Span No. 2
At Bent No. 3 ~ Center over Bent.
At Bent No. 4 ~ 25 feet in Span No. 3, 15 feet in Span No. 4

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

QUANTITIES

See Drawing 29-56-11.

MAYVILLE INTERCHANGE

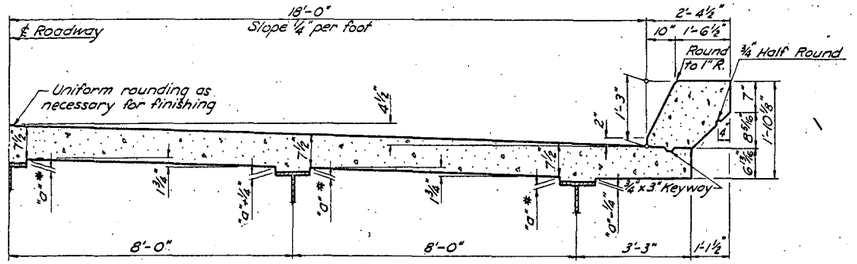
SLAB & RAILING DETAILS

36'-0" ROADWAY
HS20 LOADING

29-56-10

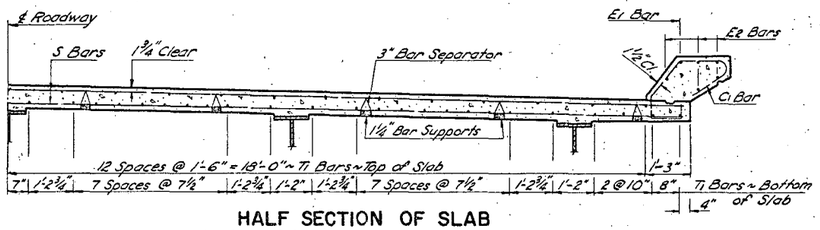
29-56-10

FED. ROAD DIST. NO.	STATE	PROJ. NO.	SHEET NO.	TOTAL SHEETS
5	N. D.	I-29-3(99)	35	54

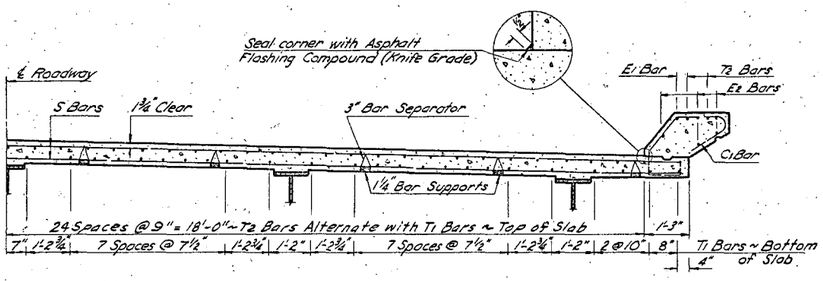


HALF SECTION OF SLAB
Showing Dimensions

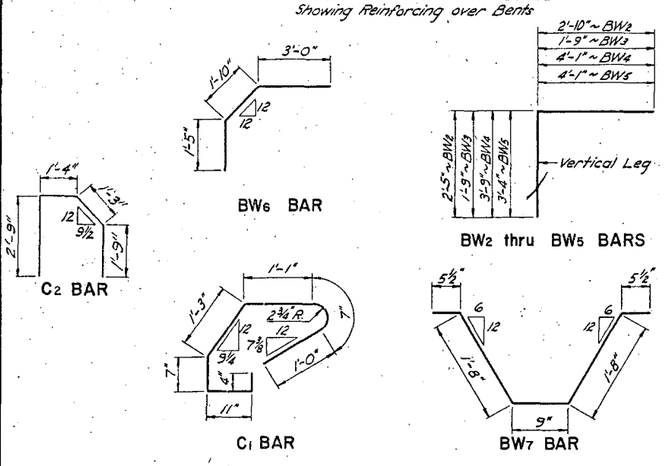
* "o" equals 1⅛" @ ℄ bearings of bents and abutments. At intermediate points "o" equals screed elevation at ℄ Roadway minus top of girder elevation minus (0.948' outside girders)/(0.802" inside girders)/(0.635" center girder).



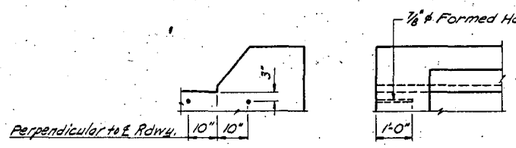
HALF SECTION OF SLAB
Showing Reinforcing between Bents & Abutments



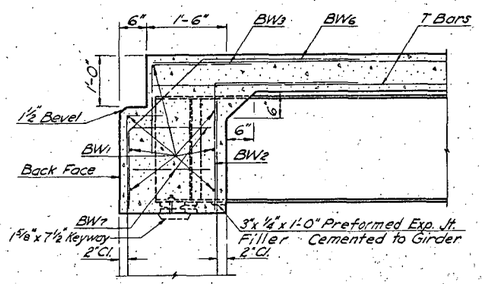
HALF SECTION OF SLAB
Showing Reinforcing over Bents



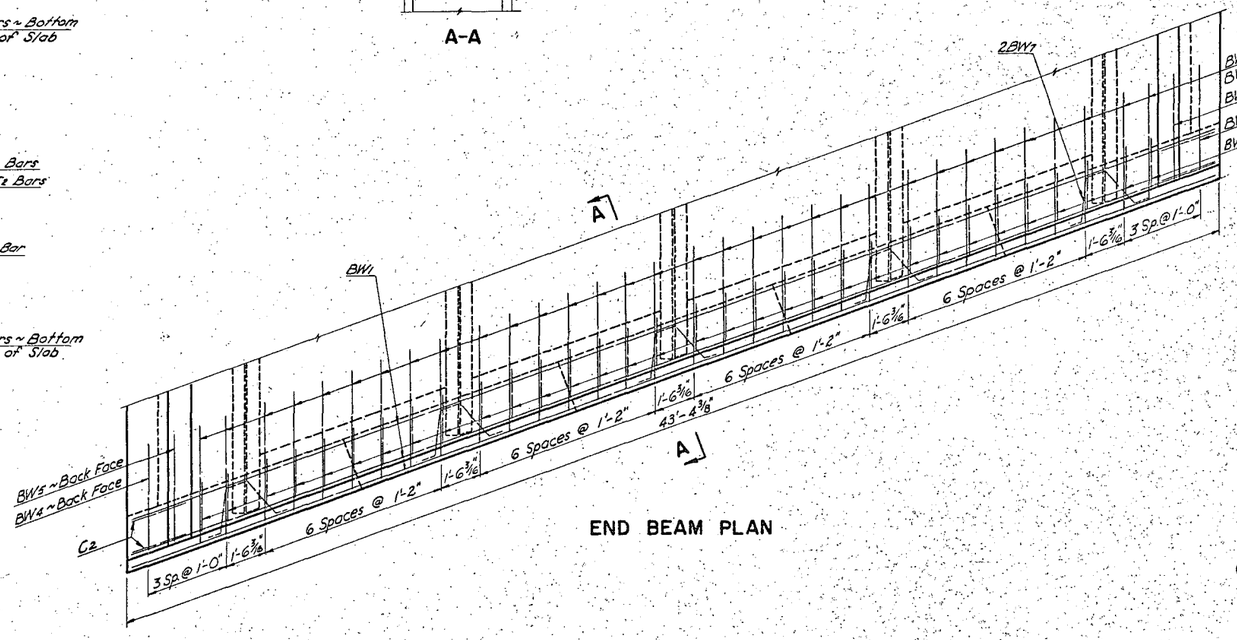
BENT BAR DETAILS



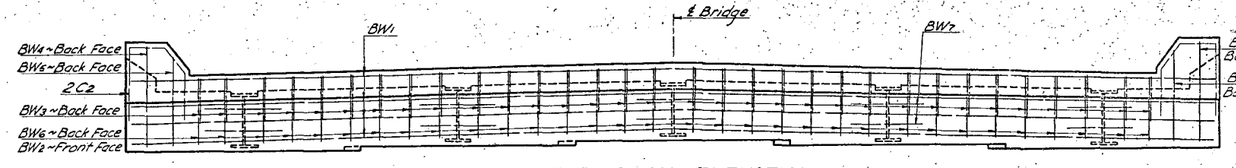
CURB SLEEVE DETAILS



A-A



END BEAM PLAN



END BEAM ELEVATION

SUPERSTRUCTURE

MARK	NUMBER: SLAB	NUMBER: RAILING & POSTS	NUMBER: CURB	SIZE	LENGTH	SHAPE
BW1	28		6	6	22'-6"	Str.
BW2	64		6	6	5'-3"	Bent
BW3	64		6	6	3'-6"	"
BW4	4		6	6	7'-10"	"
BW5	4		6	6	7'-5"	"
BW6	64		6	6	6'-3"	"
BW7	20		5	5	5'-0"	"
C1	628		5	5	5'-9"	"
C2	8		5	5	7'-1"	"
E1		16	6	6	36'-8"	Str.
E2		80	5	5	36'-5"	"
P4		192	6	6	3'-8"	Bent
VP5		24	6	6	4'-5"	"
VP6		144	5	5	4'-11"	"
P7	144		3	3	3'-10"	"
P8	128		3	3	2'-10"	"
P9	16		3	3	4'-4"	"
PC	496		3	3	2'-11"	Bent
R1	24		6	6	35'-8"	Str.
R2	16		6	6	37'-4"	"
R3	40		6	6	34'-11"	"
R4	16		6	6	32'-6"	"
S1-S17	4 Sets		6	6	40'-3"	Str. *
S18	850		6	6	38'-2"	"
T1	584		5	5	36'-4"	Str.
T2	72	12	6	6	40'-0"	"

PROJECT I-29-3(99)
DRAWING 29-56-11

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 Drawings 29-56-6 thru 29-56-9 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.

*See Drawing 29-56-10 for bar cutting diagram.

P1, P2, P3 bents omitted

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

QUANTITIES

Class AE-3 Concrete	1	312.2 C.Y.
Class AAE-3 Concrete		18.07 C.Y.
Reinforcing Steel		96,590 Lbs.

D.L.A-5-15-64=96,151

Railing and end post quantities included.

MAYVILLE INTERCHANGE

SLAB, END BEAM & MISC. DETAILS

36'-0" ROADWAY
HS20 LOADING

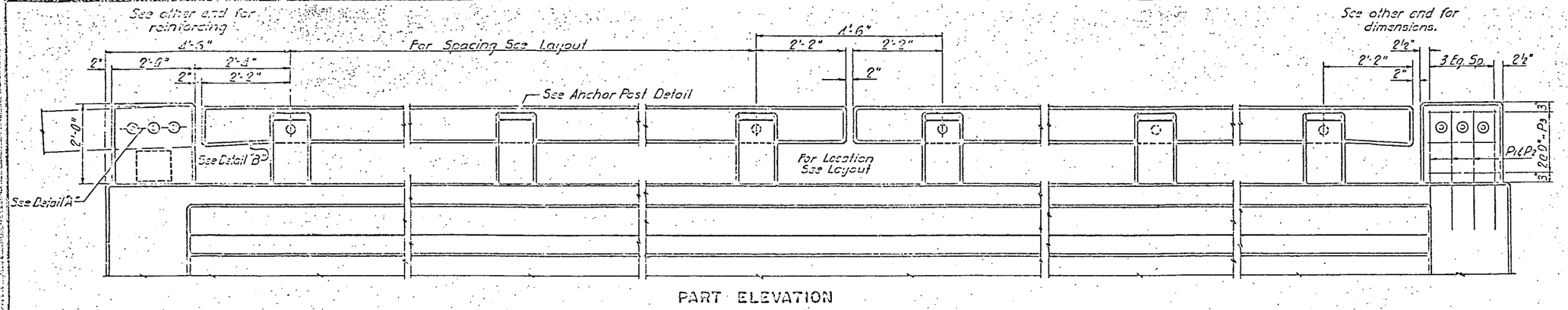
29-56-11

29-56-11

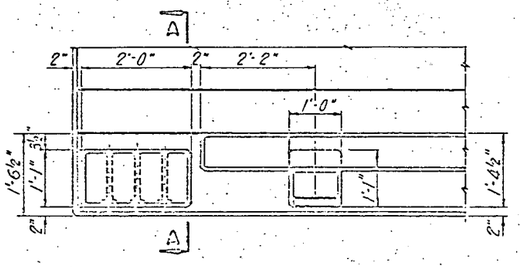
	MADE BY	CHECKED BY
DESIGN	L.P.H.	D.O.A.
DETAILS	G.A.L.	D.L.A.
TRACING	L.E.G.	D.L.A.
QUANTITIES	J.L.S.	D.L.A.

REVISIONS — MADE BY — CHKD BY — DATE

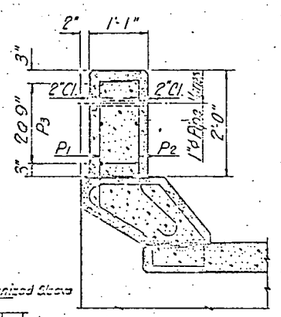
FED. ROAD DIST. NO.	STATE	FISCAL NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N.D.				



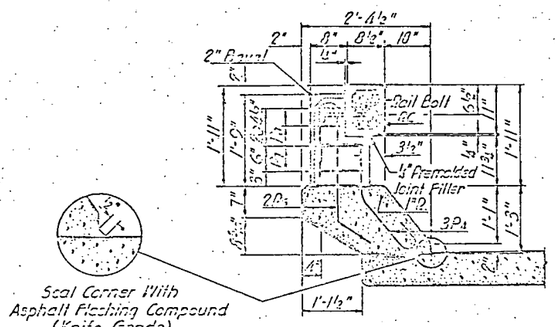
PART ELEVATION



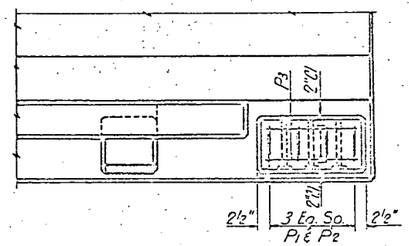
PART PLAN



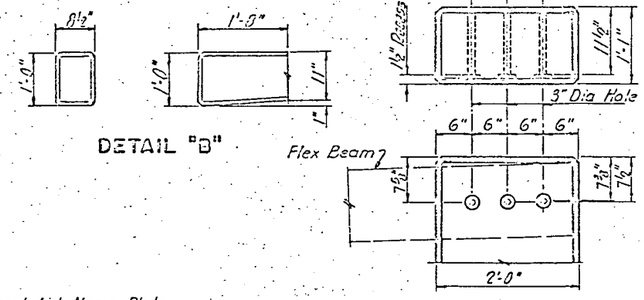
A-A



TYPICAL SECTION

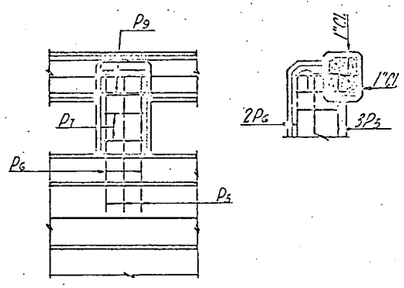


PART PLAN

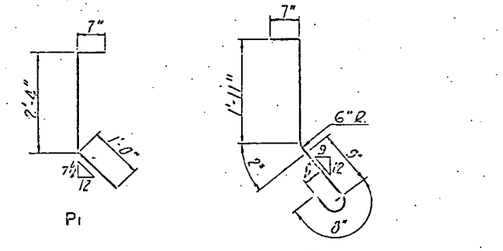


DETAIL "B"

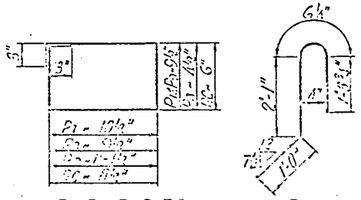
DETAIL "A"



ANCHOR POST DETAIL
See Layout For Placement

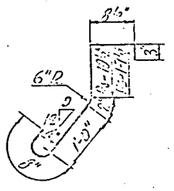


P1 P2

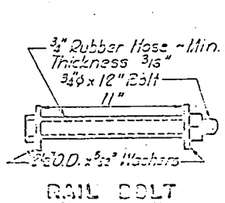


P7, P8, P9 & R8

P3

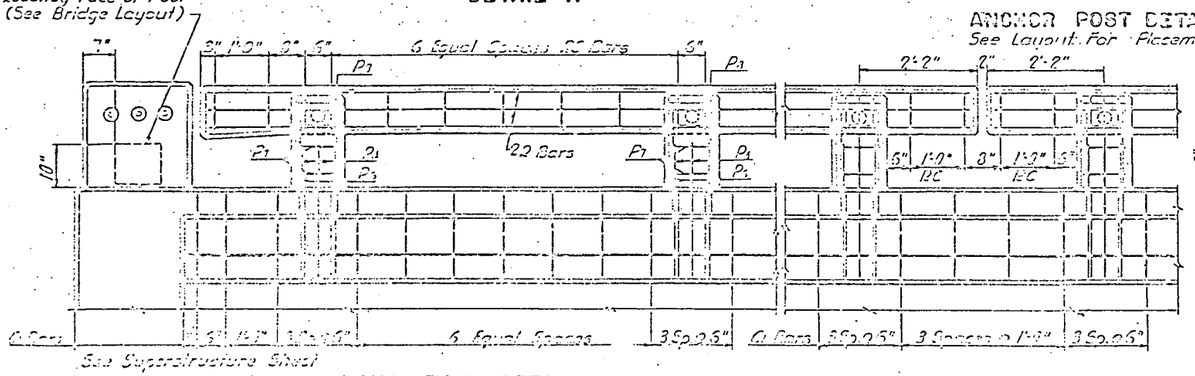


P4 & P5



RAIL BOLT (Galvanized)
To be included in the unit price bid for Class AAE-3 Concrete.

DENT BAR DETAILS



HAND RAIL DETAILS

NOTES:

All concrete above top of curb shall be Class AAE-3.

"Rubbed Surface Finish" will be required for the roadway faces of curbs, the outside vertical faces of curb and slab, and all faces of rails, intermediate and end posts.

Designed in accordance with 1965 A.A.S.H.O. Specifications.

* Number of bars shown on superstructure sheet.
** Number, length & splicing information of R bars shown on superstructure sheet.

BAR LIST
(BARS FOR FOUR END POSTS)

MARK	NO.	SIZE	LENGTH	SHAPE
P1	16	5	3'-1"	Bent
P2	16	5	4'-1"	"
P3	24	4	1'-8"	Str.

BAR LIST
(BARS FOR RAILING AND POSTS)

MARK	NO.	SIZE	LENGTH	SHAPE
P4	8	6	3'-4"	Bent
P5	8	6	4'-5"	"
P6	8	5	4'-11"	"
P7	8	3	3'-0"	"
P8	8	3	3'-10"	"
P9	8	3	4'-4"	"
R*		3	REF	Bent
R**	AR	6	REF	Str.

QUANTITIES 4 END POSTS

Class AAE-3 Concrete	1.1	Cu. Yds.
Reinforcing Steel	193	Lbs.

* Railing and end post quantities are included in slab quantities on superstructure sheet.

STANDARD RAILING DETAILS

H-0153