April 15, 2011 Bid Opening

DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2010	Pass: 1,680	Trucks: 355	Total: 2,035	205
Forecast 2030	Pass: 2,405	Trucks: 510	Total: 2,915	295
Clear Zone Distance: ___		Design Speed: _		
Minimum Sight Dist. for Stopping: ___		Bridges: ___		
Minimum Sight Dist. for Safe Passing: ___				
Sight Dist. for No Passing Zone: ___				
Pavement Design Life 20 (years)				

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SIM-5-094(070)001	17808	1	1

JOB# 50
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

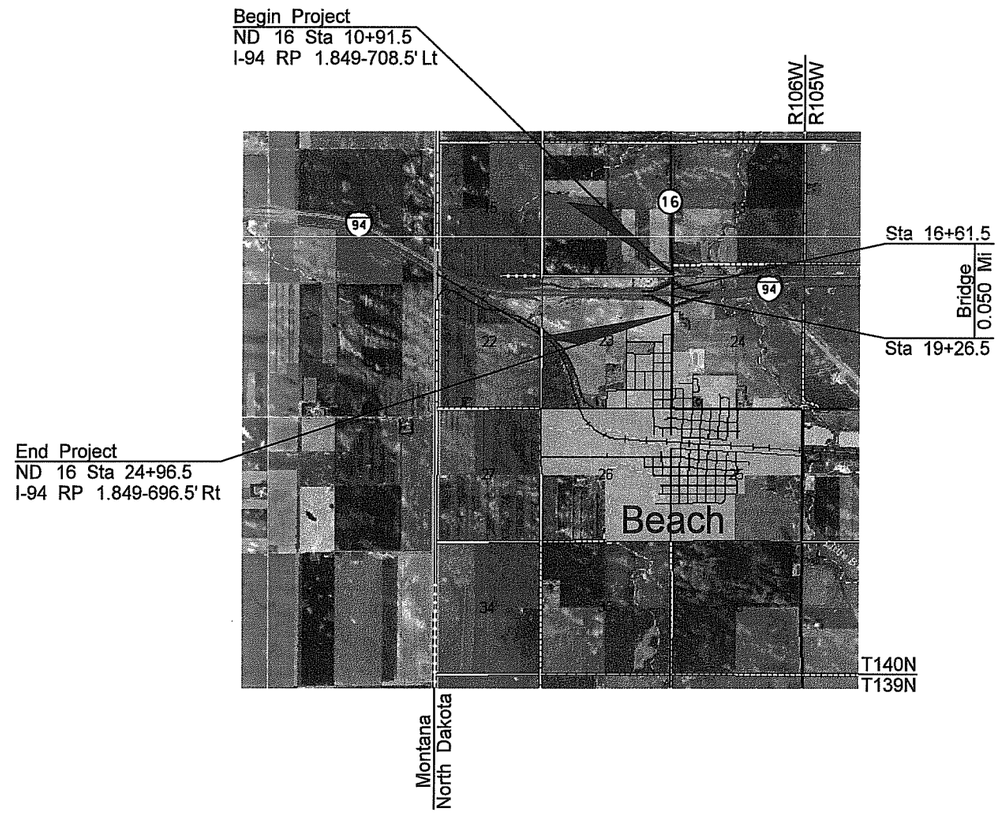
SIM-5-094(070)001

Golden Valley County
Junction I-94 and ND 16
Mill and Hot Bituminous Overlay, Approach Slab Replacement,
and Bridge Barrier and Slope Protection Repair

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-5-094(070)001 Mill and Hot Bituminous Overlay Approach Slab Replacement Bridge Barrier and Slope Protection Repair	0.266 Miles	0.266 Miles



DESIGNERS

Reuben Hauck /s/

Brian Rosin /s/

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 12/17/2010

Roger Weigel /s/
NDDOT DESIGN DIVISION

This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 12/17/2010 and the original document is stored at the North Dakota Department of Transportation

3/9/2011 11:29:15 AM rhauck R:\project\50094001.070\design\001TS_001_Title Sheet.dgn

	STATE	PROJECT NO.	SECTION NO.	SHEET NO.
	ND	SIM-5-094(070)001	4	1

N

Beg Project
Sta 10+91.5 X-Rd
15' 15'

Sta 13+20.98 X-Rd=
Sta 0+00 NE Ramp=
Sta 21+59.01 NW Ramp
15' 15'

14' 14'

14' 14'

Beg Appr Slab Sta 16+41.5
Beg Br Sta 16+61.5

Sta 100+00.0 ML=
Sta 18+00.0 X-Rd

End Br Sta 19+26.5

End Appr Slab Sta 19+46.5
14' 14'

21' 21'

33' 33'

Sta 22+59.0 X-Rd=
Sta 0+00 SE Ramp=
Sta 13+01.13 SW Ramp

22' 29.5'

End Project
Sta 24+96.5 X-Rd

3" Mill and Hot Bit Pvmt Overlay

Bridge Approach Slab-Remove & Replace

Bridge barrier and Slope Protection Repair

This document was originally issued and sealed by Brian J Rosin, Registration Number PE-2928, on 12/20/10 and the original document is stored at the North Dakota Department of Transportation

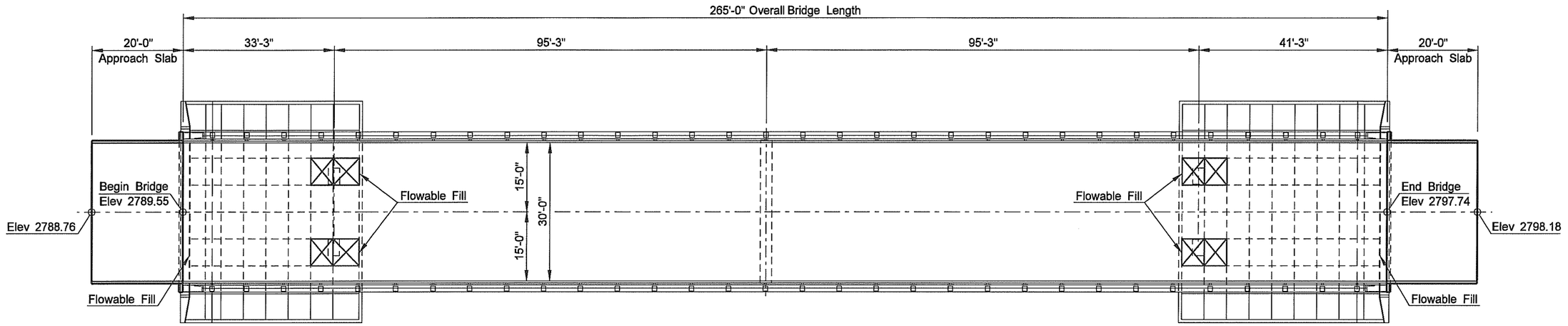
Scope of Work

Approach Slab, Milling, and Hot Bit Pvmt Overlay

Junction I-94 and ND 16

12/20/2010 2:33:30 PM rhauck R:\project\50094001.070\design\004SW_001_Scope of Work.dgn

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-5-094(070)001	170	1



NOTES:

100 SCOPE OF WORK: Work at this site consists of removing and replacing both approach slabs, repairing both approach slab lips, curb spall repairs, and slope protection repairs. A single lane of traffic will be maintained at all times during the work.

210 FLOWABLE FILL: The existing concrete slope protection has voids beneath some of the panels and also gaps between the panels, between the panels and the pier columns, and between the panels and the abutments. Flowable fill will be required to fill in these voids and gaps. All panels shall remain in place. Approximately 10 CY of flowable fill has been estimated to complete this work. The limits of flowable fill shall be determined by the engineer in the field.

The properties of the flowable fill shall be a blend of cement, water, pozzuolanic materials, and fillers. The material shall be fluid on placement to flow through and fill the voids. The material shall be able to support normal loads after six hours and shall have a compressive strength in the range of 75 psi to 125 psi at 28 days. The material shall be such that it lends itself to easy removal with a tractor backhoe. If the mix design shown is used, no further testing will be required. The mix design yields approximately one cubic yard of flowable mortar.

The flowable fill mix design shall be as follows:

Cement	100 pounds/cubic yard
Fly Ash	300 pounds/cubic yard
Fine Aggregate	2600 pounds/cubic yard
Water	70 gallons/cubic yard

Flowable fill shall be placed from above, starting at the toe of the slope and progressing up the embankment. All labor, equipment, and materials required to complete this work shall be included in the price bid for "Flowable Fill."

930 BARRIER REPAIR: The curbs have several spalled areas located at exposed reinforcing steel that shall be repaired. The contractor shall remove all unsound concrete and replace it with new material. Any rust scale found on the existing reinforcing shall be thoroughly sandblasted clean. All other surfaces shall be cleaned by light sandblasting.

Each individual exposed reinforcing steel location is considered 1 EA repair item. Fifteen locations have been estimated in need of repair. The actual number and limits of the repair locations shall be determined by the engineer in the field.

The patching material shall be a semi-leveling, cementitious base material with a 7 day bond strength of 1500 psi based on ASTM C 882, that is specifically intended for patching concrete. This material may be CERATECH Pavement SL or an approved equal. It is important to minimize the shrinkage in the patching material. Therefore, the contractor shall use proper curing methods to minimize shrinkage.

All labor, equipment and materials needed to repair the spall areas shall be included in the bid item "Barrier Repair."

This document was originally issued and sealed by Tim L Schwagler, Registration Number PE 3151, on 12/14/10 and the original document is stored at the North Dakota Department of Transportation

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0212	FLOWABLE FILL	CY	10
550	0217	BRIDGE APPROACH SLAB-REMOVE & REPLACE	SY	137.8
930	9639	APPROACH SLAB LIP REPAIR	LF	69.5
930	9665	BARRIER REPAIR	EA	15

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

BEACH INTERCHANGE

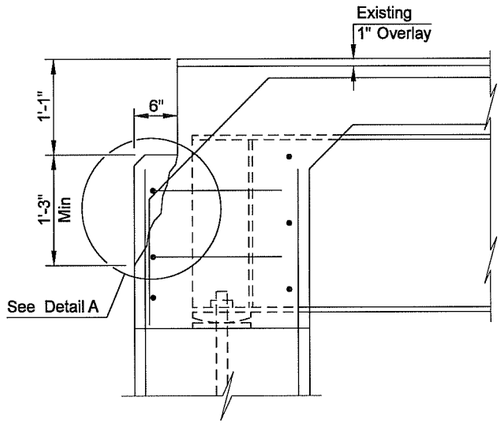
BRIDGE LAYOUT

PROJECT: SIM-5-094(070)001
STATION: 000+00
GOLDEN VALLEY COUNTY

12/14/10 (DATE) Terrence R. Udland (BRIDGE ENGINEER)

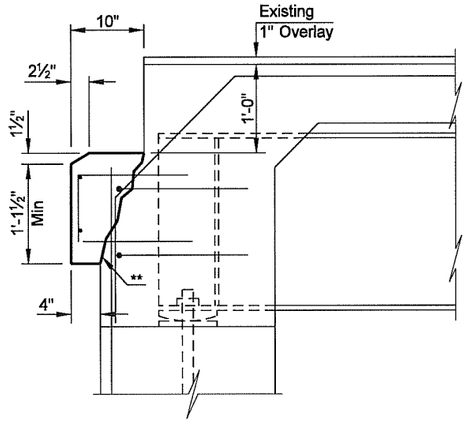
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-5-094(070)001	170	2



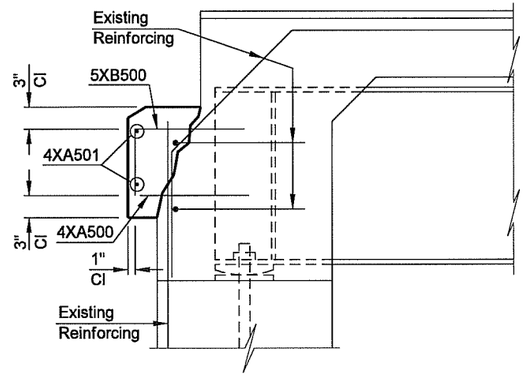
(SHOWING REMOVAL)

EXISTING APPROACH SLAB LIP



(SHOWING DIMENSIONS)

NEW APPROACH SLAB LIP



(SHOWING REINFORCING)

NEW APPROACH SLAB LIP

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

BAR LIST - ONE APPR LIP			
SIZE	MARK	NO.	LENGTH
4	XA500	36	* 1'-3"
4	XA501	4	17'-0"
5	XB500	36	* 2'-3"

ESTIMATED MATERIAL QUANTITIES	
REINFORCING EPOXY STEEL (LBS)	CONCRETE (CY)
160	0.9

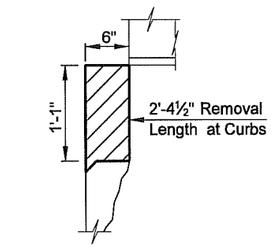
* Length may vary depending on manufacturer's recommendations for anchorage.

NOTES:

4XA500 and 4XB500 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.

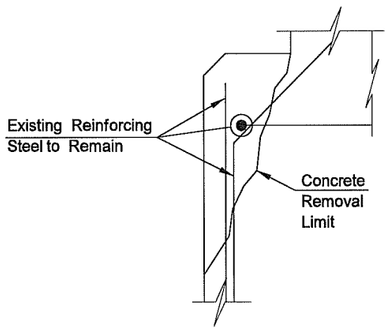
Quantities shown are for informational purposes only.

Class AAE-3 Concrete, reinforcing steel, labor and equipment required to build the approach slab lip shall be included in the bid item "Approach Slab Lip Repair".

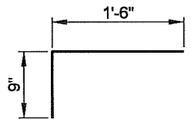


(SHOWING REMOVAL AT CURBS)

EXISTING APPROACH SLAB LIP

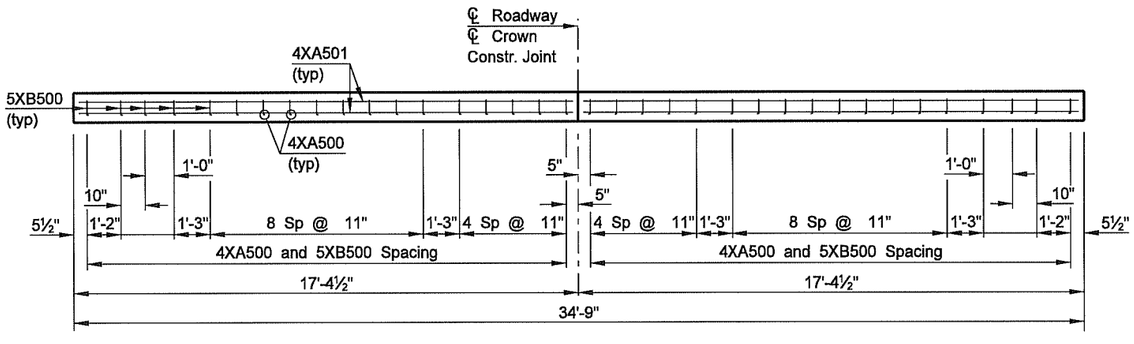


DETAIL A



5XB500
(DIMENSIONS SHOWN ARE OUT TO OUT)

BENT BAR DETAILS



(SHOWING NEW REINFORCING)

ELEVATION

This document was originally issued and sealed by Tim L Schwagler, Registration Number PE 3151, on 12/14/10 and the original document is stored at the North Dakota Department of Transportation

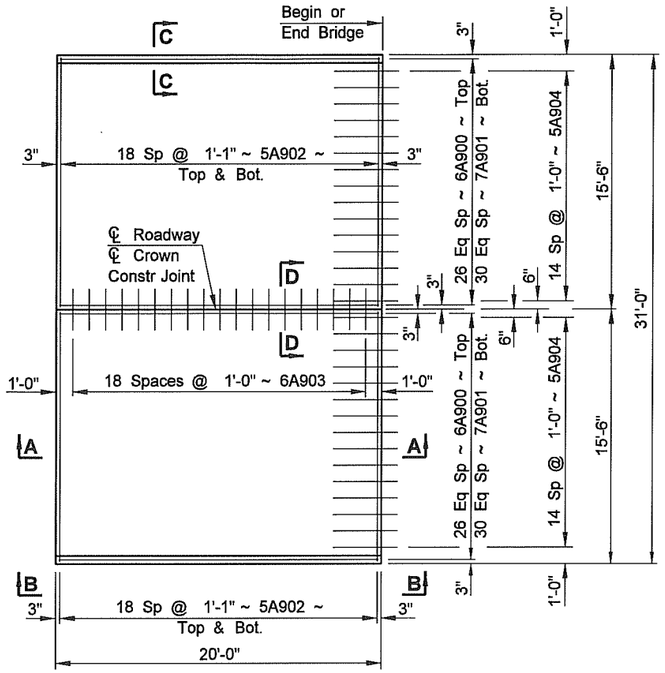
QUANTITIES	
APPROACH SLAB LIP REPAIR	69.5 LF

BEACH INTERCHANGE

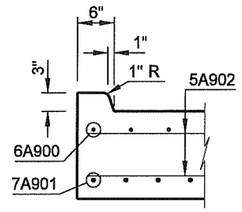
APPROACH SLAB LIP REPAIR

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

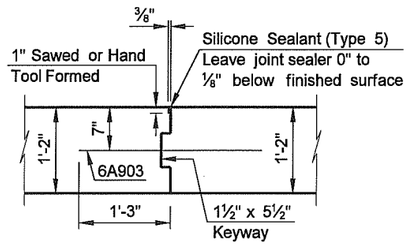
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SIM-5-094(070)001	170	3



PLAN



C-C



D-D

NOTES:

The estimated material quantities shown are for information purposes only. All labor and equipment required to remove existing approach slabs and all materials including select backfill, concrete, reinforcing bars, polyethylene membrane, polystyrene, preformed joint filler, silicone sealant and labor and equipment required to build the approach slabs shall be included in the bid item "Bridge Approach Slab-Remove & Replace." The concrete shall be Class AE-3 and the reinforcing steel shall be Grade 60. The polyethylene membrane shall meet the requirements of AASHTO M 177.

Silicone sealant shall extend up the faces of both curbs. A low modulus (Type 5) silicone sealant shall be used.

The 5A904 bars shall be embedded a minimum depth of 1'-0" and epoxied in place with a high strength adhesive specifically intended for concrete anchorage in accordance with Section 806.02 of the Standard Specifications.

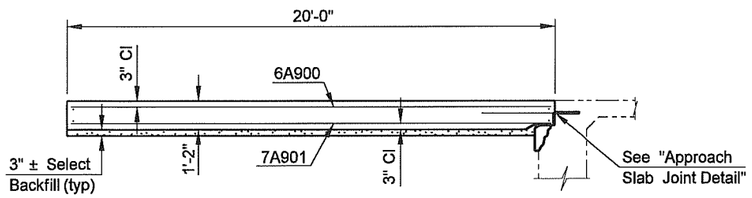
SKEW ANGLE = 0°

BAR LIST - ONE SLAB

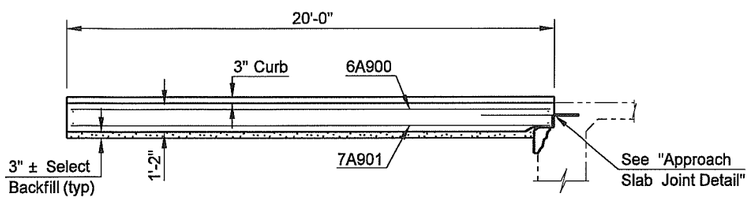
SIZE	MARK	NO.	LENGTH
6	A900	54	19'-8"
7	A901	62	19'-8"
5	A902	76	15'-2"
6	A903	19	2'-6"
5	A904	30	4'-0"

ESTIMATED MATERIAL QUANTITIES

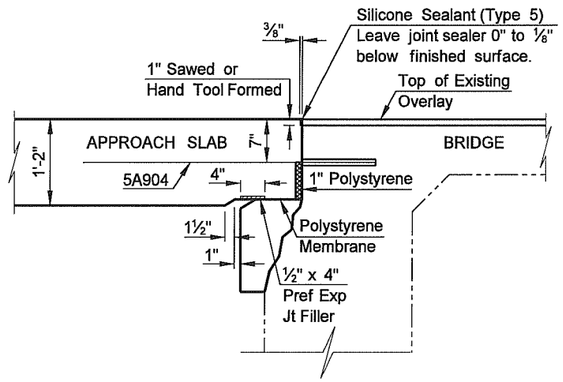
REINFORCING STEEL (LBS)	CONCRETE (CY)
5,487	27.0



A-A



B-B



APPROACH SLAB JOINT DETAIL

This document was originally issued and sealed by Tim L Schwagler, Registration Number PE 3151, on 12/14/10 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	(ONE SLAB)
BRIDGE APPROACH SLAB-REMOVE AND REPLACE	68.9 SY

BEACH INTERCHANGE

APPROACH SLAB DETAILS

DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2001	Pass: 1135	Trucks 365	Total 1500	150
Forecast 2021	Pass: 1590	Trucks 515	Total 2105	215
Minimum Sight Dist. for:		Design Speed 70 mph		
Stopping 730'		Bridges		
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				
Pavement Design Life (years) 20				

JOB# 12

STATE	PROJECT NO.	PCN	SHEET NO.
ND	IM-5-094(024)000	12017	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT IM-5-094(024)000
IN GOLDEN VALLEY AND BILLINGS COUNTIES
CPR, HBP OVERLAY, & INCIDENTALS
(Eastbound Roadway)

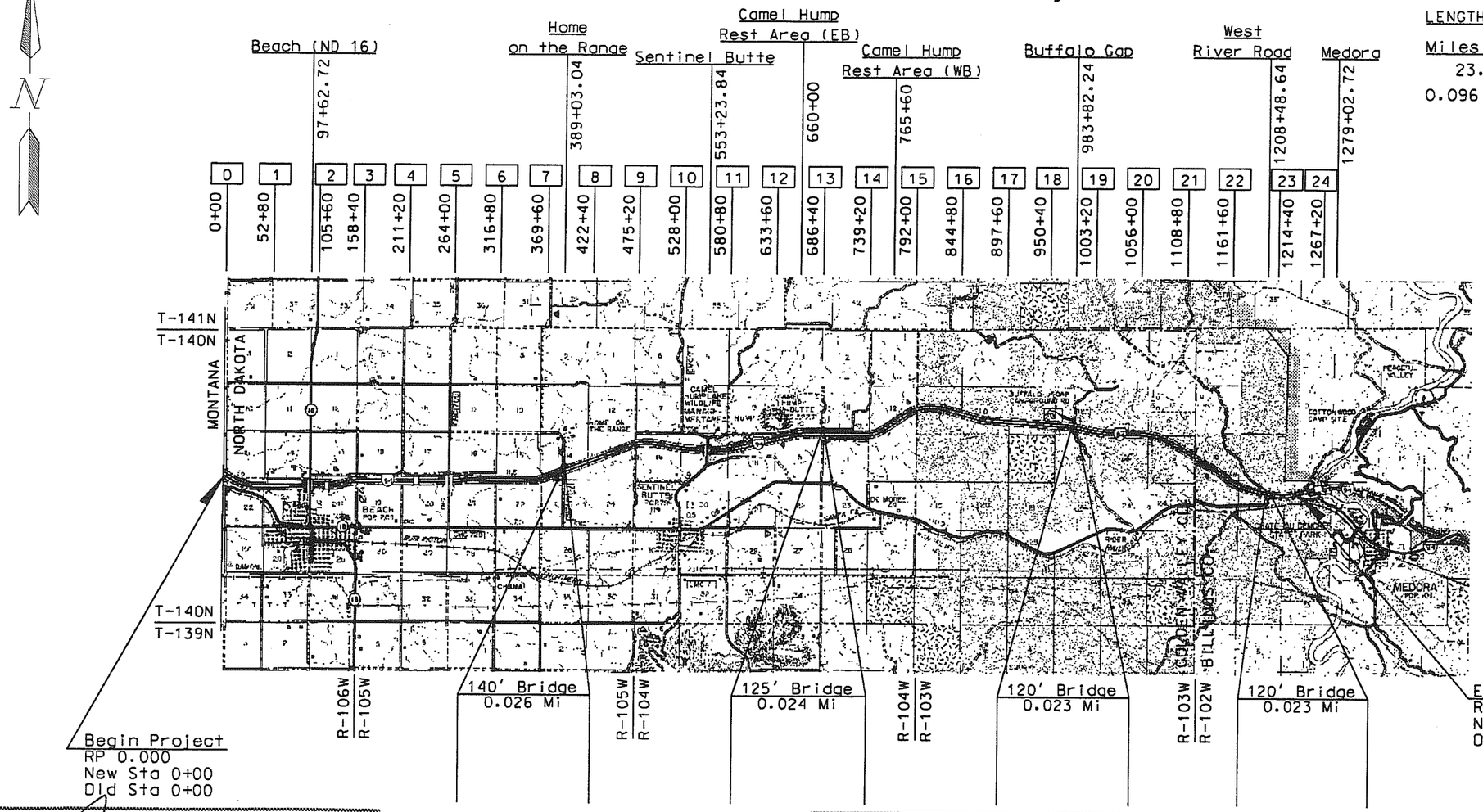
GOVERNING SPECIFICATIONS:

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
23.708	23.612

0.096 Mi deducted for bridges



DESIGNER Jerry L. Hanson

DESIGNER Brad Pfeifer

DESIGNER

RECOMMEND APPROVAL 3-27, 2002

DESIGN ENGINEER

APPROVED DATE

DIVISION ADMINISTRATOR
FEDERAL HIGHWAY ADMINISTRATION
U.S. 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 3/21/2002

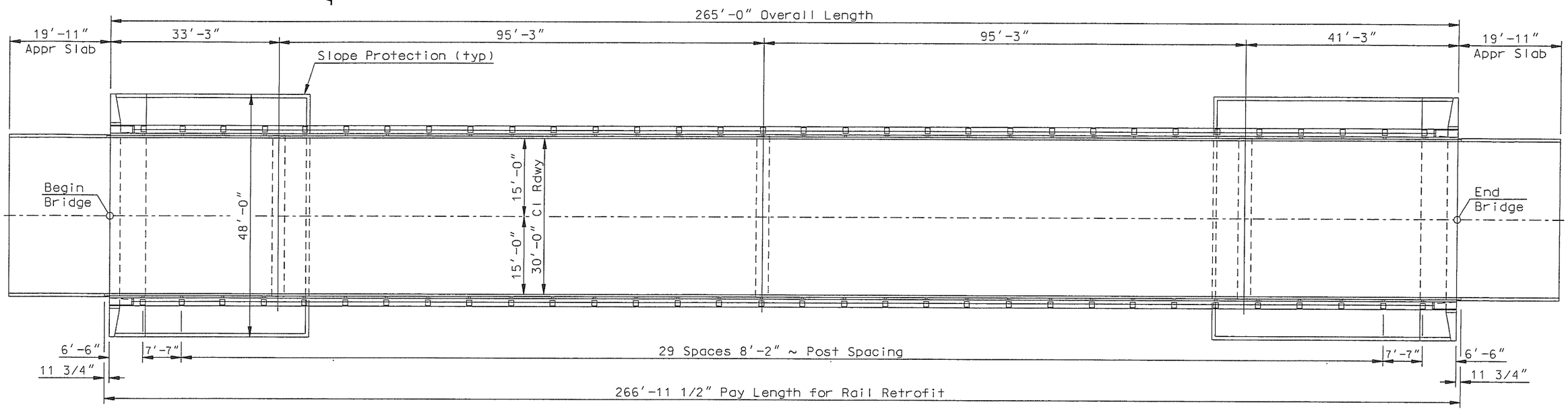
Francis G. Ziegler

OFFICE OF INFRASTRUCTURE SUPPORT
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

FRANCIS G. ZIEGLER REGISTERED PROFESSIONAL PE 3875 ENGINEER NORTH DAKOTA

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

STATE	PROJECT NUMBER	SHEET NO.
ND	IM-5-094(024)000	101



PLAN

NOTES:

100 SCOPE OF WORK: The work at this site consists of removing the safety shape barriers and 8" of the approach slab on both sides and both ends of the bridge, filling in the gaps at the top of the slope protection at the abutments on both ends of the bridge and installing a double box beam rail retrofit.

950 JOINT TREATMENT: The concrete slope protection has pulled away from the abutments at both ends of the bridge leaving about a 4" gap between the abutment wall and the slope protection. All debris and soil shall be cleaned out of the gaps and filled with non-reinforced concrete or flowable fill to a minimum depth of 4" for the full width of the gap. All materials and labor shall be included in the price bid for "Joint Treatment."

The mix design for flowable fill shall be as follows:

Cement	60 Lbs/CY
Fly Ash	290 Lbs/CY
Fine Aggregate	2900 Lbs/CY
Water	70 Gal/CY

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0111	REMOVAL OF CONCRETE	LS	1
624	3002	DOUBLE BOX BEAM RAIL RETROFIT-ERAIL	LF	534
950	9712	JOINT TREATMENT	LF	96

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

BEACH INTERCHANGE

BRIDGE LAYOUT

PROJECT: IM-5-094(024)000

GOLDEN VALLEY COUNTY

3-4-02 DATE — Loren R. Volland BRIDGE ENGINEER

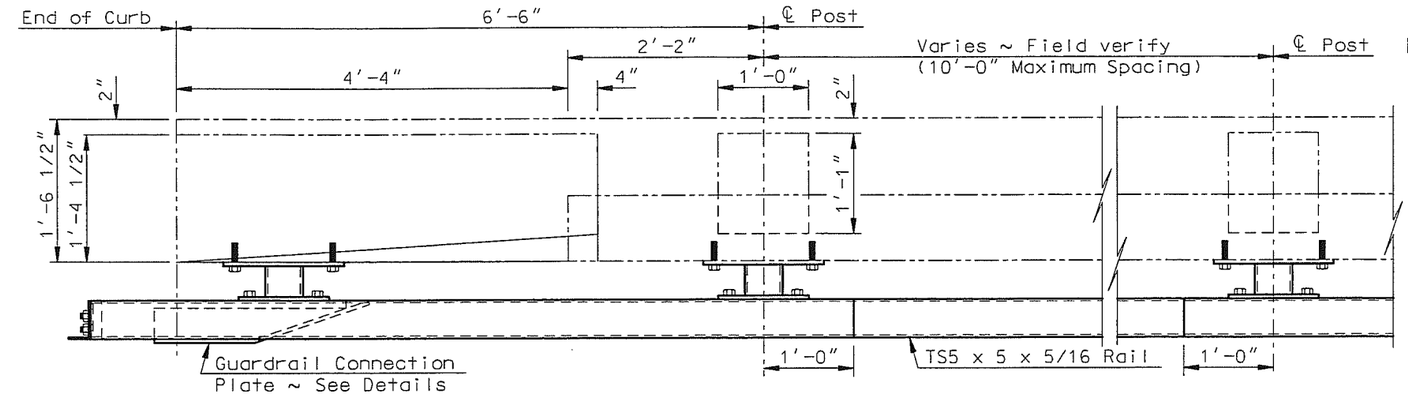
BRLO DLS 5 FEB 02

94-001.849

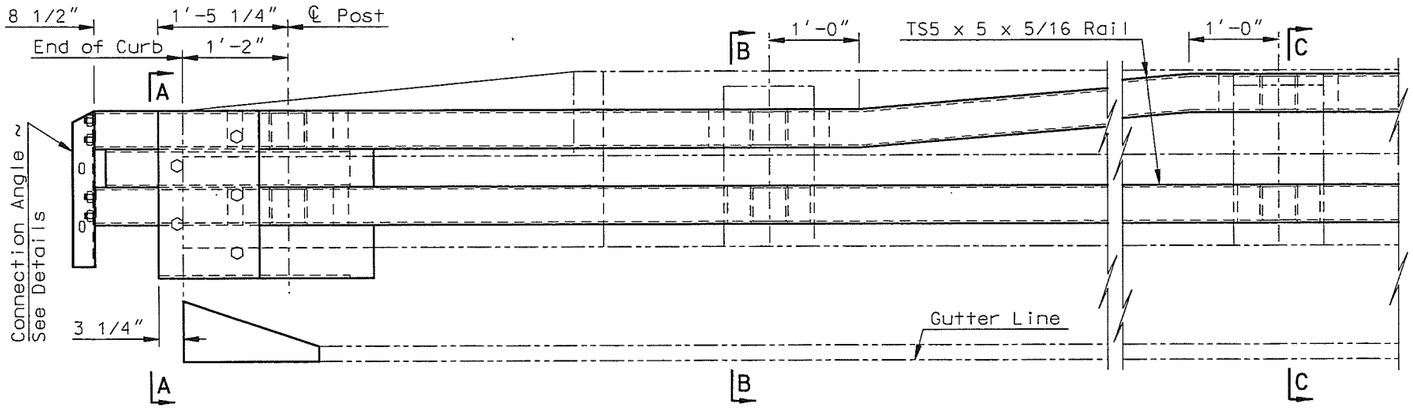
.../94-001.849 beach int/brlo.dgn 03/04/2002 08:24:11 AM

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

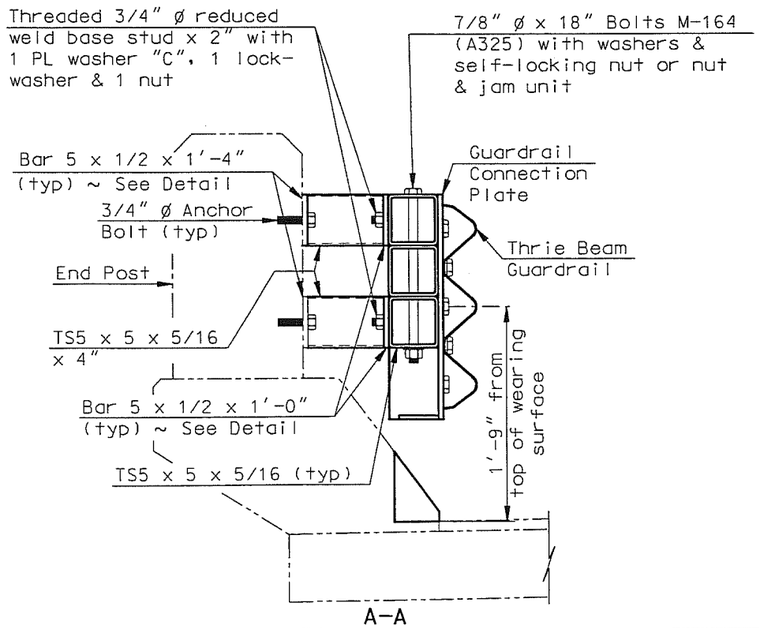
STATE	PROJECT NUMBER	SHEET NO.
ND	IM-5-094(024)000	102



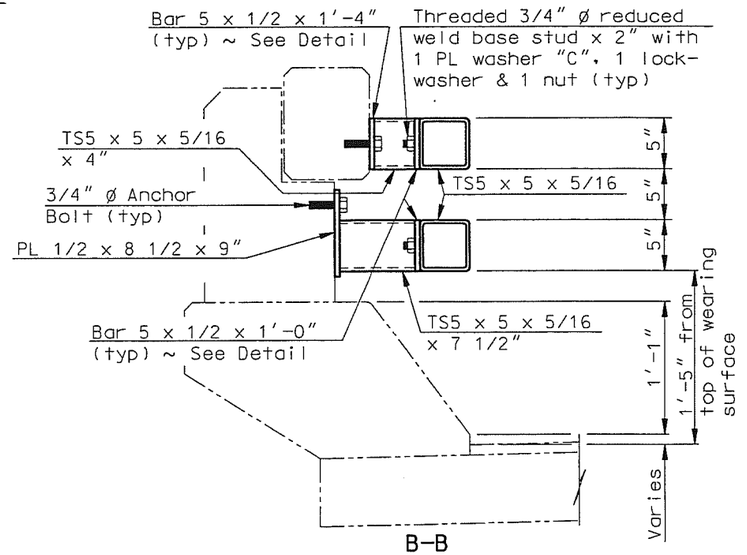
RAIL RETROFIT PART PLAN



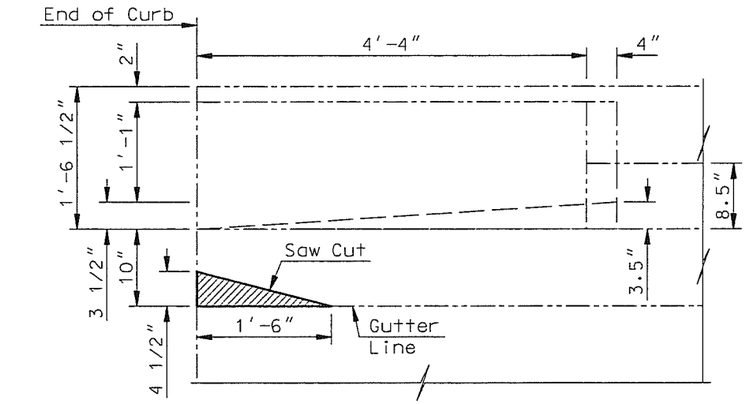
RAIL RETROFIT PART ELEVATION



A–A



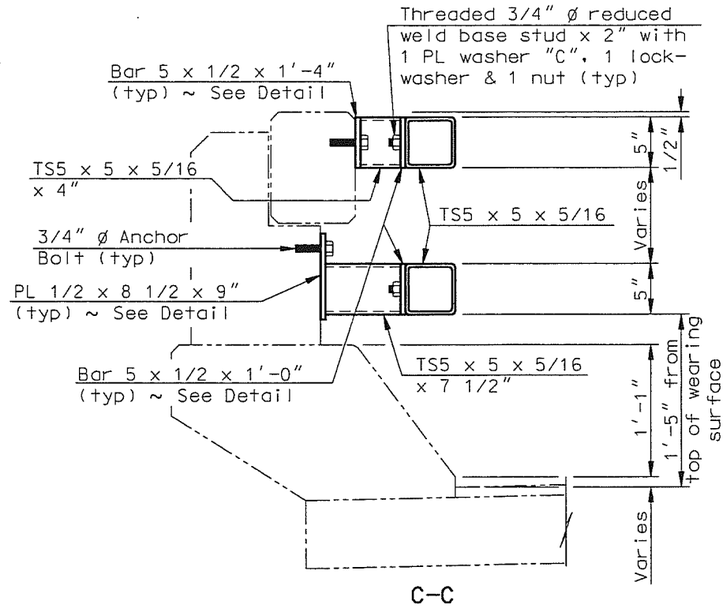
B–B



PLAN

CONCRETE REMOVAL DETAIL

Indicates Concrete Removal



C–C

NOTE:

See Dwg 94-001.849-2 for more details, notes and details not shown on this drawing.

QUANTITIES

SEE DWG. NO. 94-001.849-2

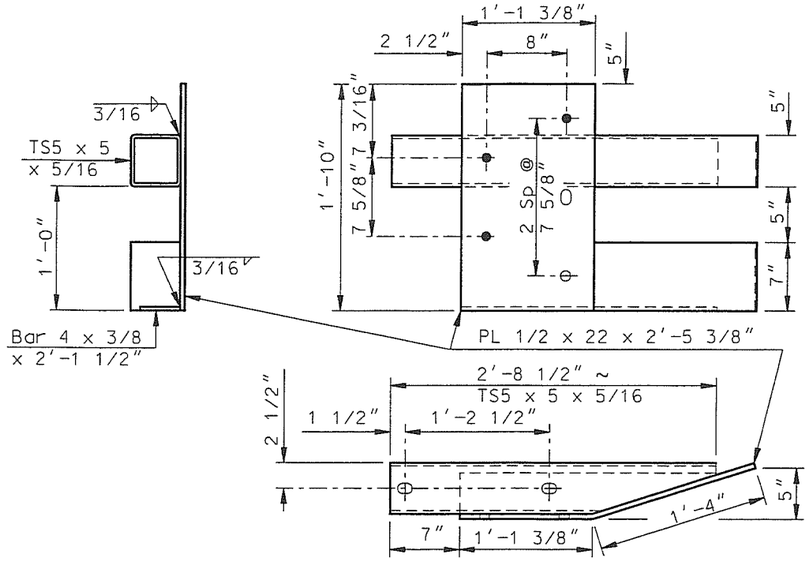
BEACH INTERCHANGE

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

ERRETROSTD DLS 28 NOV 01

94-001.849-1

.../erretrostd.dgn 03/04/2002 08:24:12 AM



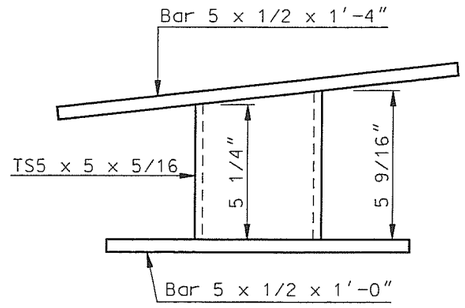
(4 REQUIRED)

GUARDRAIL CONNECTION PLATE DETAILS

The filled circles indicate drilled and tapped holes for 7/8" ø bolts M-164 (A325) (typ). See Detail "B"

The open circle indicates a drilled hole through the 1/2" plate for a 7/8" ø bolt M-164 (A325) (typ).

The slotted hole shown shall be 1" x 1 1/2" in the 1/2" plate for a 7/8" ø bolt M-164 (A325).



BOTTOM RAIL CONNECTION ON MODIFIED END POST

NOTES:

The bid item shall be "Double Box Beam Rail Retrofit". The pay length shall be end to end and in linear feet.

Rail elements shall be square structural tubing in accordance with ASTM Specification A500 Grade B.

Steel plates and angles shall conform to AASHTO Specification M-183, unless otherwise noted.

Railing shall be fabricated to the horizontal and vertical alignment of the structure.

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

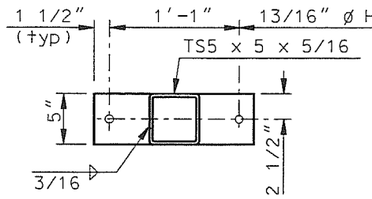
All structural steel including fasteners shall be hot-dip galvanized after fabrication according to AASHTO M111.

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

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.

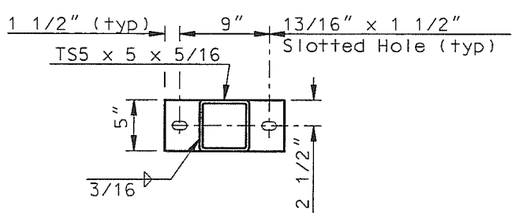
All anchor and splice bolts shall be galvanized and shall be AASHTO M-164 (A325).

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



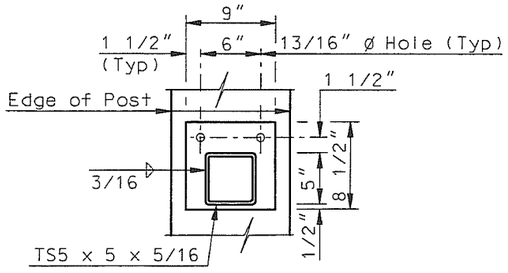
(CONCRETE RAIL CONNECTION)

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



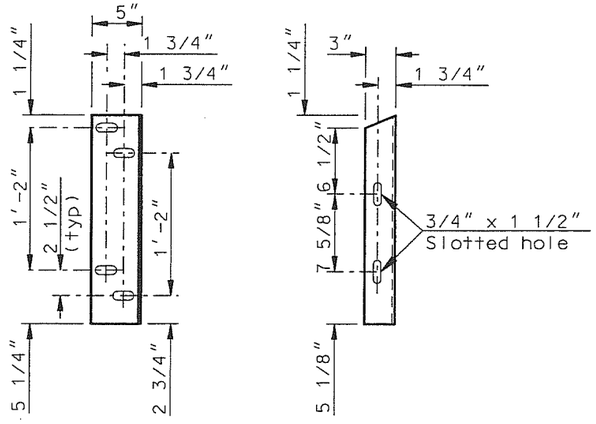
(RAIL CONNECTION)

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



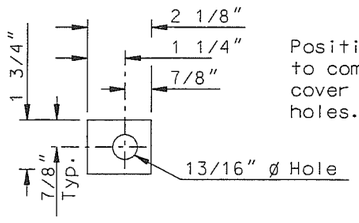
(CONCRETE POST CONNECTION)

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



L5 x 3 x 1/4 x 1'-8 1/2"

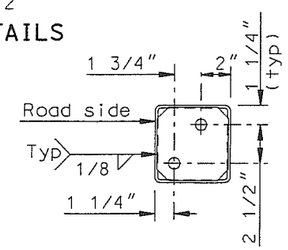
CONNECTION ANGLE DETAILS



Position washers to completely cover slotted holes.

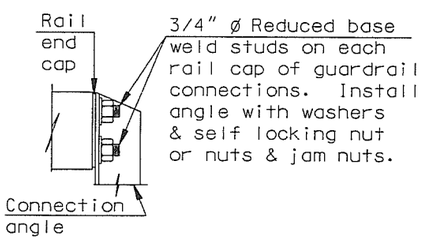
1/4" PL (AASHTO M-183)

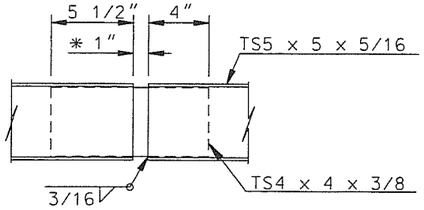
PLATE WASHER "C"



Rail Cap shall be a BAR 4 3/4 x 3/16 x 4 3/4". Cope corners to 3/4" to provide for zinc drains.

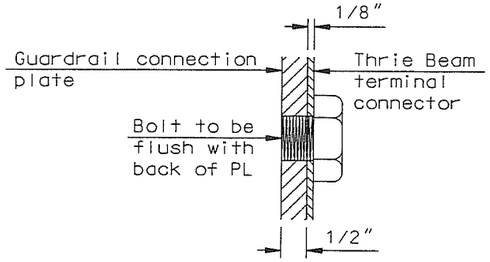
RAIL CAP DETAILS





* 2" at Expansion Splices

RAIL SPLICE DETAIL



DETAIL "B"

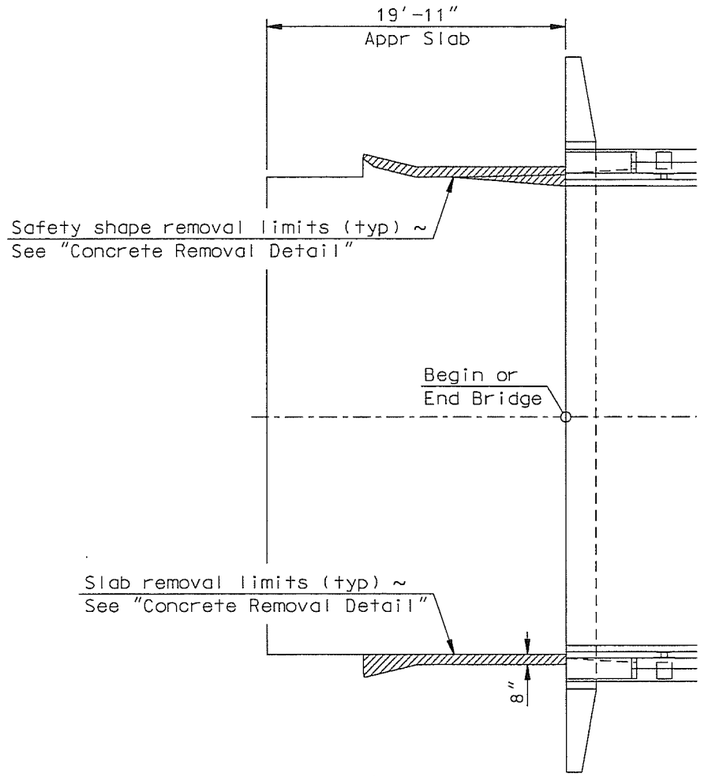
QUANTITIES	
E-RAIL RETROFIT	534 LF

BEACH INTERCHANGE

DOUBLE BOX BEAM E-RAIL RETROFIT DETAILS

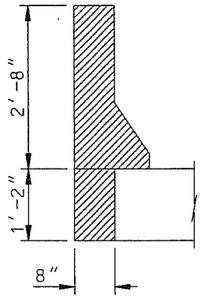
23 U.S.C. 409
NDDOT Reserves All Objections

STATE	PROJECT NUMBER	SHEET NO.
ND	IM-5-094(024)000	104



(Showing concrete removal)

PLAN



CONCRETE REMOVAL DETAIL

BEACH INTERCHANGE

APPROACH SLAB & SAFETY SHAPE CONCRETE REMOVAL DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SIM-9-999(139)	1

JOB NO. 26

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

GOLDEN VALLEY, BILLINGS, MORTON & BURLEIGH COUNTIES

SIM-9-999(139)

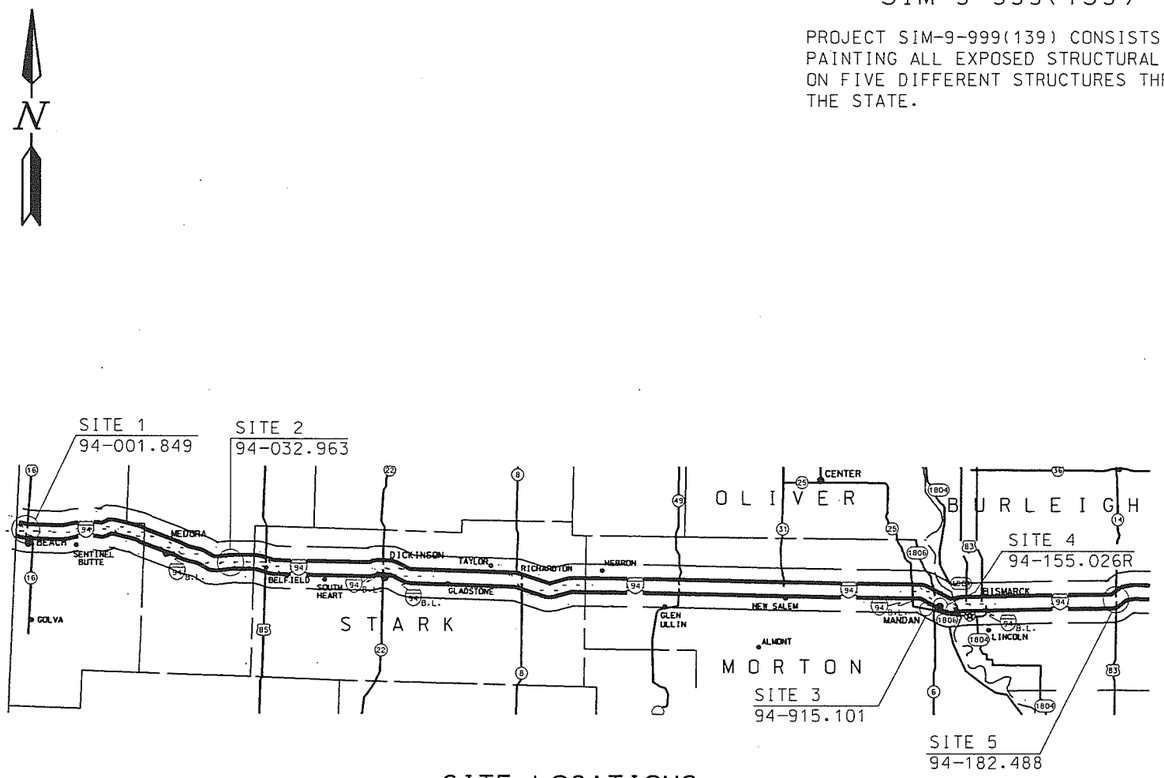
PROJECT SIM-9-999(139) CONSISTS OF PAINTING ALL EXPOSED STRUCTURAL STEEL ON FIVE DIFFERENT STRUCTURES THROUGHOUT THE STATE.

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.

INDEX OF DRAWINGS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE OF QUANTITIES
3	NOTES AND BASIS OF ESTIMATE
4-8	STRUCTURAL STEEL PAINTING DETAILS



SITE LOCATIONS

LIST OF STANDARD DRAWINGS

D-704-8	BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS
D-704-9, 10, 11, 12	CONSTRUCTION SIGN DETAILS
D-704-13	BARRICADE DETAILS
D-704-14	CONSTRUCTION SIGN AND BARRICADE ASSEMBLY DETAILS
D-704-19	CONSTRUCTION SIGN AND BARRICADE LOCATION DETAILS
D-704-35	SIGN LAYOUT FOR ONE LANE CLOSURE INTERSTATE SYSTEM

TERRENCE R. UDLAND REGISTERED PROFESSIONAL 2674 ENGINEER NORTH DAKOTA

3-24-00 DATE — Terrence R. Udland — BRIDGE ENGINEER

APPROVED DATE 3-24-00

DIRECTOR OF HIGHWAYS & ENGINEERING
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

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

TITLE 00LCS047 BWR

...\90999000.139\BRIDGE\title.dgn Mar. 23, 2000 10:31:19

ESTIMATE OF QUANTITIES

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	SIM-9-999(139)	2

SPEC	CODE	ITEM DESCRIPTION	UNIT	MAINLINE	TOTAL
103	0100	CONTRACT BOND	L SUM	1	1
630	0121	CLEANING & PAINTING - SITE 1	L SUM	1	1
630	0122	CLEANING & PAINTING - SITE 2	L SUM	1	1
630	0123	CLEANING & PAINTING - SITE 3	L SUM	1	1
630	0124	CLEANING & PAINTING - SITE 4	L SUM	1	1
630	0125	CLEANING & PAINTING - SITE 5	L SUM	1	1
702	0100	MOBILIZATION	L SUM	1	1
704	0100	FLAGGING	MHR	50	50
704	1100	TRAFFIC CONTROL	L SUM	1	1

ESTIMATE NUMBER: 4467 RUN DATE: 03/23/2000 TIME: 10:40:20

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SIM-9-999(139)	3

STRUCTURAL STEEL PAINTING

BASIS OF ESTIMATE

SITE NO.	BRIDGE NO.	LOCATION	GIRDER LENGTH	GIRDER DEPTH	NO. OF GIRDERS	FINISH COAT COLOR	COLOR NUMBER
DICKINSON DISTRICT							
1	94-001.849	BEACH INTERCHANGE	264'-8"	2' & 3'	4	BLUE	25240
2	94-032.963	PAINTED CANYON INTERCHANGE	259'-6"	3'	3	BROWN	20450
BISMARCK DISTRICT							
3	94-915.101	HEART RIVER BRIDGE	281'-0"	5'	4	BLUE	25240
4	94-155.026R	WEST MIDWAY SEPARATION	240'-8 1/2"	3.5'	4	BROWN	20062
5	94-182.488	STERLING INTERCHANGE	240'-0"	3'	4	BLUE	25240

NOTES:

100 SCOPE OF WORK: This project consists of cleaning and painting all exposed structural steel for the five (5) bridge sites listed above.

630 CLEANING AND PAINTING: All exposed structural steel shall be cleaned and painted according to Special Provision 265(97). For three (3) bridges the finish coat shall be blue color number 25240, one (1) bridge the finish coat shall be brown color number 20450, and for one (1) bridge the finish coat shall be brown color number 20062. The finish coats shall meet Federal Standard No. 595B colors.

The contractor shall shroud the work area to protect the motoring public. Shrouding shall be capable of preventing dust and paint overspray from reaching passing traffic and causing vehicle damage or impairing motorist visibility. The cost for protecting traffic shall be included in the lump sum bid item "Cleaning and Painting" for each site.

704 TRAFFIC CONTROL: The traffic control shall be installed according to Standard Drawing D-704-35 for all sites except the Heart River Bridge, which shall have traffic control installed according to Standard Drawing D-704-19, Type F. The traffic control shall be set up only while work is going on at the site during daylight hours. The traffic control shall be removed and normal traffic operations restored at the end of each workday.

All traffic control devices, labor and equipment required to install the traffic control at the five (5) sites shall not be bid separately but shall be included in the lump sum bid item "Traffic Control."

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
630	0121	CLEANING & PAINTING - SITE 1	L SUM	1
630	0122	CLEANING & PAINTING - SITE 2	L SUM	1
630	0123	CLEANING & PAINTING - SITE 3	L SUM	1
630	0124	CLEANING & PAINTING - SITE 4	L SUM	1
630	0125	CLEANING & PAINTING - SITE 5	L SUM	1

The following detail sheets show the approximate surface area of exposed structural steel to be painted at each site. A complete set of plans for each structure can be viewed at the NDDOT Bridge Division.

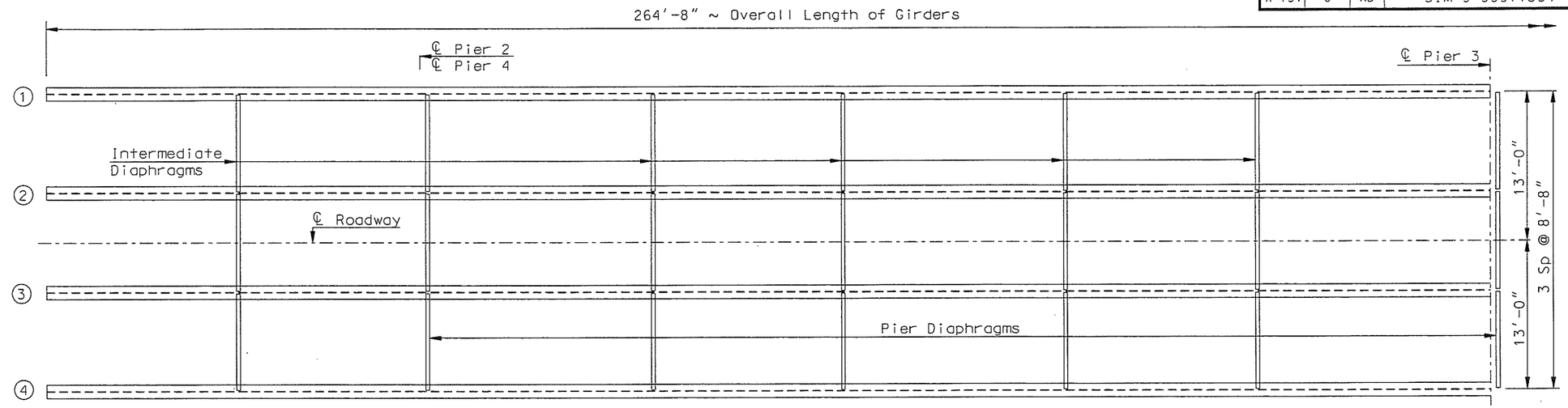
BRIDGE SITES
(FIVE LOCATIONS)

STRUCTURAL STEEL PAINTING

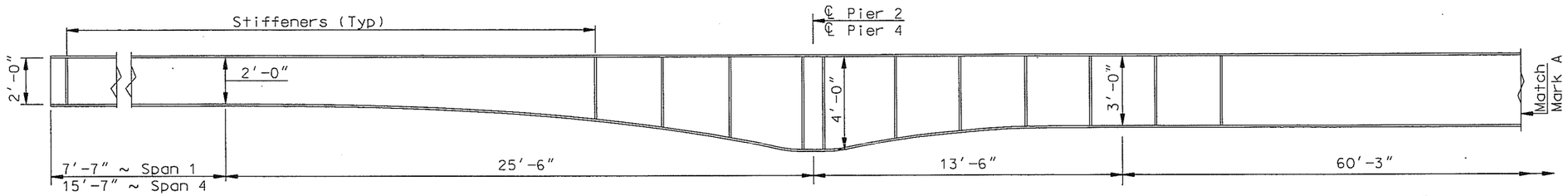
notes&quant 00LCS046 BWR

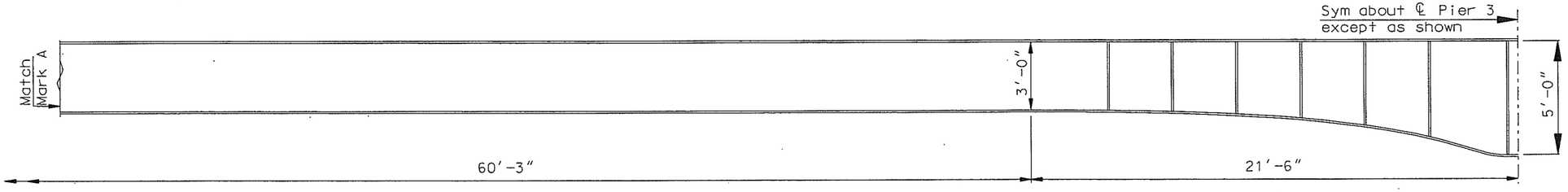
...\BRIDGE\notes&quant.dgn Mar. 23, 2000 10:31:40

BRIDGE CODE	FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
X-731	8	ND	SIM-9-999(139)	4

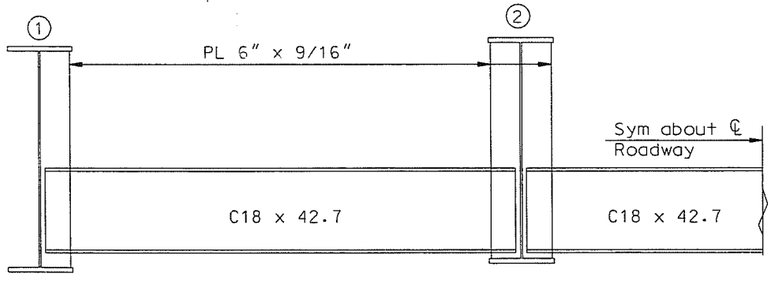


HALF GIRDER LAYOUT

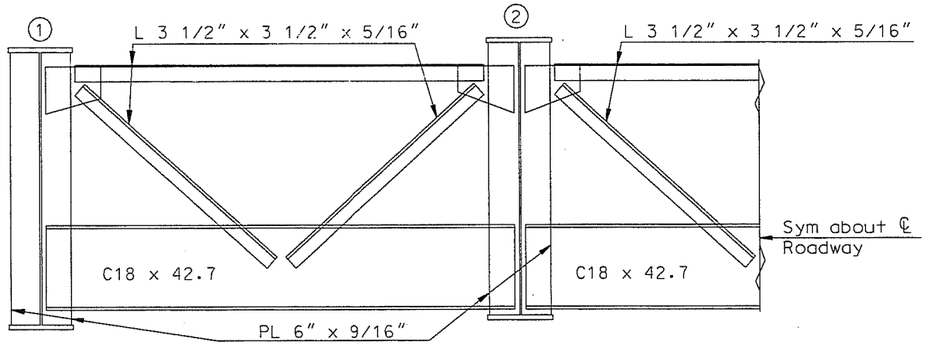




HALF GIRDER PLAN



DIAPHRAGM AT PIERS 2 & 4 AND ALL INTERMEDIATE DIAPHRAGMS



DIAPHRAGM AT PIER 3

SPECIAL PROVISIONS	
SP 265(97)	BRIDGE PAINTING

BEACH INTERCHANGE

STRUCTURAL STEEL PAINTING DETAILS

DESIGN DATA				
Traffic	Average Daily			Est.Max.Hr.
Current 1994	Pass. 975	Trucks 325	Total 1300	130
Forecast 2014	Pass. 1275	Trucks 425	Total 1700	240
Minimum Sight Dist. for:		Design Speed	70 MPH	
Stopping	600 Ft			
Full Control of Access				
No Point of Access Other Than at Interchange Ramps				

JOB# 30

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-5-094(006)000	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

IN GOLDEN VALLEY AND BILLINGS COUNTIES
FEDERAL AID PROJECT NO. IM-5-094(006)000
Shoulder Rehabilitation and Mainline CPR, South Roadway
Beach Interchange Crossroad Reconstruction,
Hot Bituminous Overlay
Beach Weigh Stations, Beach Interchange, Scenic Overlook, West Medora Interchange

GOVERNING SPECIFICATIONS:

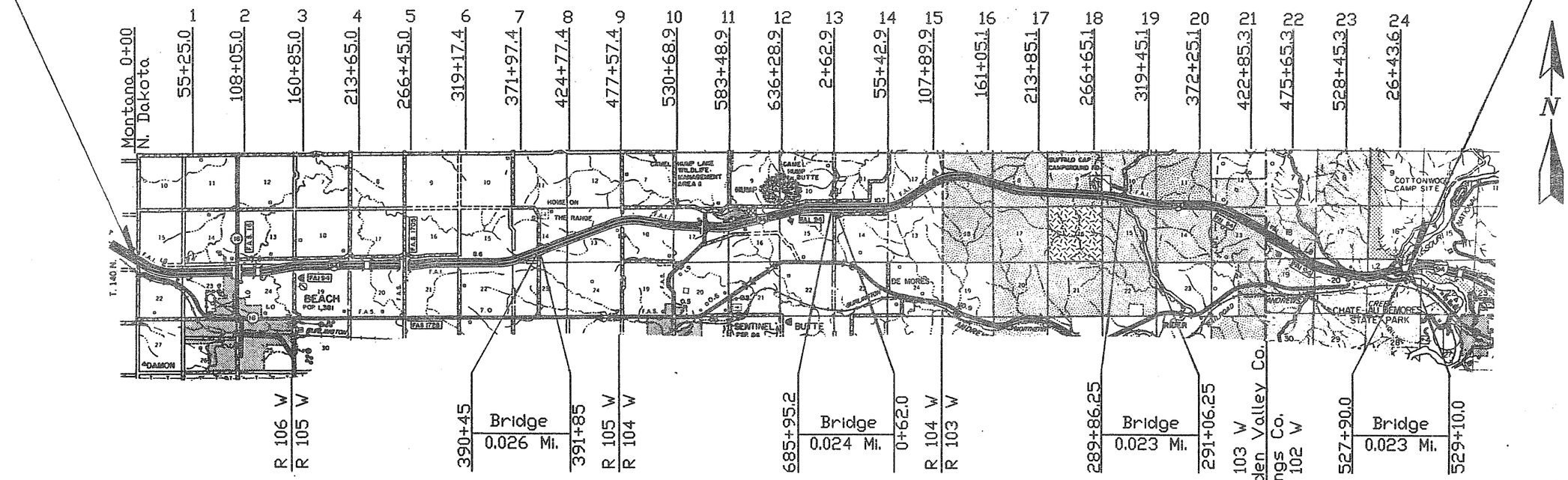
Standard Specifications adopted by the North Dakota Department of Transportation September 1992; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

LENGTH OF PROJECT

Miles-Gross	Miles-Net
24.249	23.154

Begin Proj.IM-5-094(006)000 Sta 0+00
Sec. 15, T 140 N, R 106 W

End Proj. IM-5-094(006)000 Sta 46+53.0
Sec. 21, T 140 N, R 102 W



EQUATION	EQUATION	EQUATION	EQUATION	EQUATION	EQUATION	EQUATION	EQUATION	EQUATION	EQUATION
36+79.7 Bk= 36+59.5 Ahd	44+51.8 Bk= 47+17.0 Ahd	274+99.9 Bk= 274+88.3 Ahd	498+39.7 Bk= 498+71.2 Ahd	664+71.5 Bk= 664+83.7 Ahd	686+58.2 Bk= 0+00.0 Ahd	68+60.9 Bk= 68+27.9 Ahd	157+09.8 Bk= 157+45.0 Ahd	398+43.9 Bk= 396+24.1 Ahd	564+72.2 Bk= 9+90.5 Ahd

PAVING SECTION Scott Woodham
URBAN SECTION
TRAFFIC SECTION George S. Stegall
RURAL SECTION
RECOMMEND APPROVAL 12-28, 1994
DESIGN ENGINEER David K. O. Lee

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

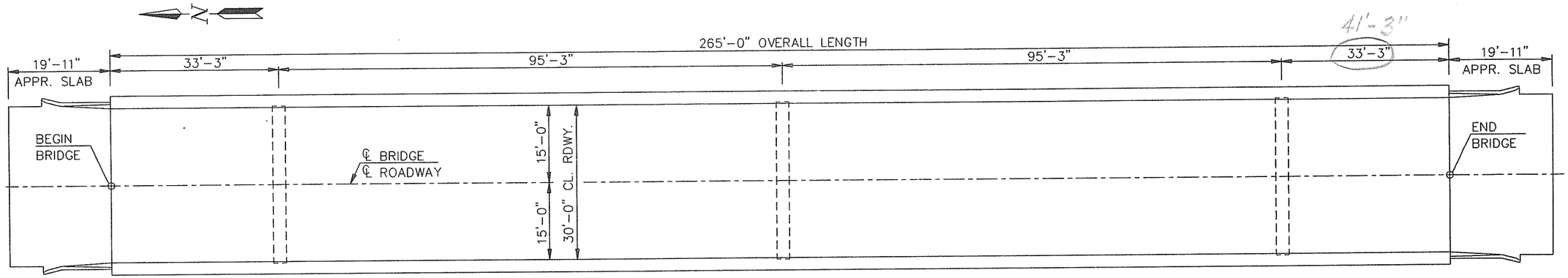
DIVISION ADMINISTRATOR DATE

APPROVED DATE 12/30/94

Marshall W. Moore
DIRECTOR OF HIGHWAYS AND ENGINEERING
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

MARSHALL W. MOORE
REGISTERED PROFESSIONAL ENGINEER
761
NORTH DAKOTA

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-5-094(006)000	119



PLAN

NOTES:

SCOPE OF WORK: THIS SITE CONSISTS OF REMOVING AND REPLACING BRIDGE END POSTS, PLACING APPROACH SLABS AND OVERLAYING THE BRIDGE DECK.

CURB REPAIR: THERE ARE TWO LOCATIONS WHERE THE CURBS HAVE SPALLED AND REQUIRE REPAIR. EACH SPALL IS APPROXIMATELY ONE SQUARE FOOT IN AREA. ONE SPALL IS NEAR THE NORTHWEST CORNER OF THE BRIDGE AND ONE SPALL IS NEAR THE SOUTH-EAST CORNER OF THE BRIDGE. THE CONTRACTOR SHALL REMOVE ANY LOOSE CONCRETE IN THE SPALL AREA AND PLACE PATCH MATERIAL BACK TO THE ORIGINAL CROSS SECTION. THE PATCH SHALL BE SIKAREPAIR 223, DURAPATCH HIWAY, THORITE OR AN APPROVED EQUAL AND SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. THE MATERIALS, LABOR AND EQUIPMENT REQUIRED TO REPAIR THESE TWO SPALL AREAS SHALL BE INCIDENTAL TO THE BID ITEM "BRIDGE END POST MODIFICATION".

DECK CONCRETE REMOVAL: ALL CONCRETE REMOVED FROM THE DECK SHALL BE DISPOSED OF PROPERLY BY THE CONTRACTOR.

OVERLAY CONCRETE: THE OVERLAY CONCRETE SHALL MEET THE REQUIREMENTS OF LOW-SLUMP CONCRETE AS LISTED IN SECTION 650.05.

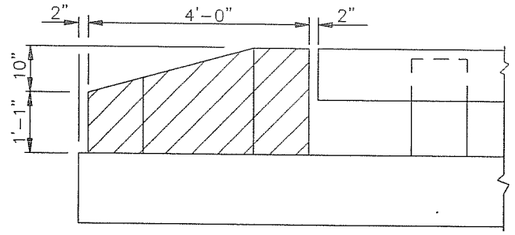
ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
210	0198	SELECT BACKFILL	TON	22.2
550	0215	CONCRETE BRIDGE APPROACH SLAB	SQ.YD.	142.8
602	1210	BRIDGE END POST MODIFICATION	EA.	4.0
650	0704	OVERLAY CONCRETE	CU.YD.	47.1
650	0710	CLASS 1-H REMOVAL	SQ.YD.	883.0
650	0711	CLASS 2-H REMOVAL	SQ.YD.	221.0

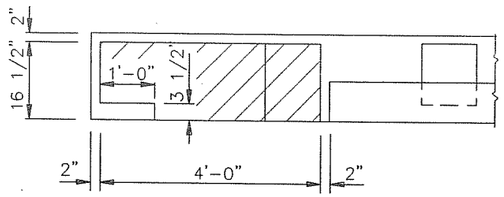
BEACH INTERCHANGE

BRIDGE LAYOUT

94-001.849-1

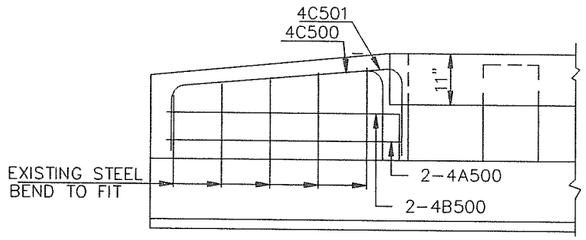


ELEVATION

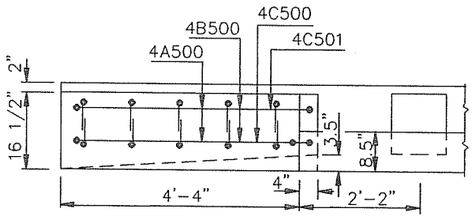


PLAN

SHOWING END POST REMOVAL LIMITS

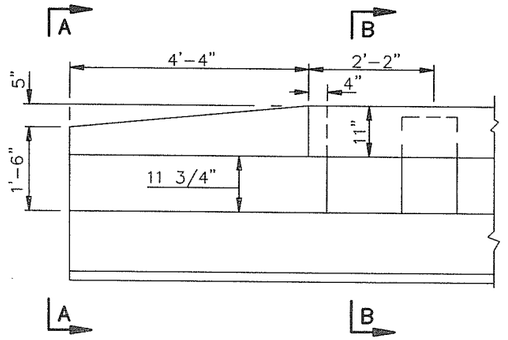


ELEVATION

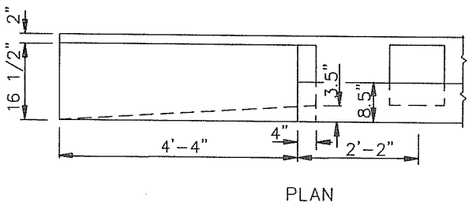


PLAN

NEW END POST
SHOWING REINFORCING

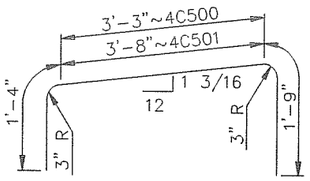


ELEVATION

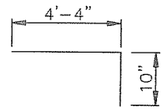


PLAN

NEW END POST
SHOWING DIMENSIONS



C500 & C501



B500

BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-5-094(006)000	120

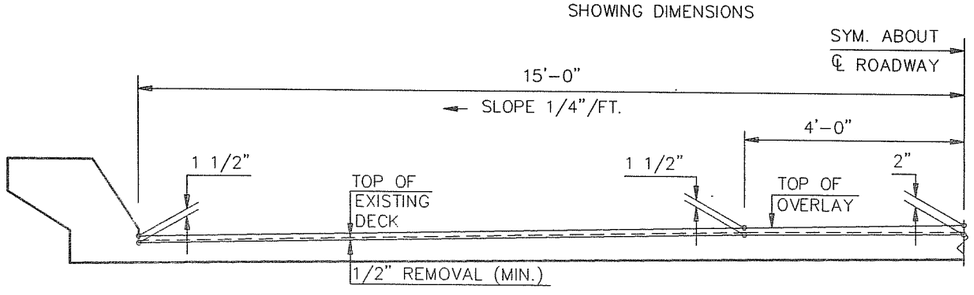
BAR LIST (ONE POST)

SIZE	MARK	NO.	LENGTH	SHAPE
4	A500	2	4'-4"	STR.
4	B500	2	5'-2"	BENT
4	C500	1	6'-4"	BENT
4	C501	1	6'-9"	BENT

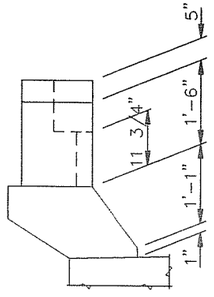
QUANTITIES	(4 POSTS)	
REMOVAL OF CONC.	1.3	C.YD.
CL. AE-3 CONC.	1.5	C.YD.
REINFORCING STEEL	86	LBS.

NOTE:

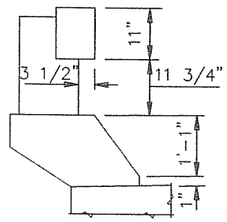
THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.
THE EXISTING END POSTS SHALL BE REMOVED AND PROPERLY DISPOSED OF. THE QUANTITIES SHOWN ABOVE ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, LABOR AND EQUIPMENT INCLUDING CONCRETE AND REINFORCING BARS REQUIRED TO REMOVE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



DECK ELEVATION
SHOWING OVERLAY



A-A



B-B

QUANTITIES		
OVERLAY CONCRETE	47.1	C.Y.
CLASS 1 REMOVAL	883.0	S.Y.
CLASS 2 REMOVAL	221.0	S.Y.
BRIDGE END POST MODIFICATION	4	EA.

BEACH INTERCHANGE

END POST DETAILS & OVERLAY DETAILS

NOTE:

SEE SECTION 650.05 OF THE NORTH DAKOTA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR CLASSIFICATIONS OF HYDRODEMOLITION REMOVAL.

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-5-094(006)000	121

WIDTH = 30'-0" CL. RDWY.

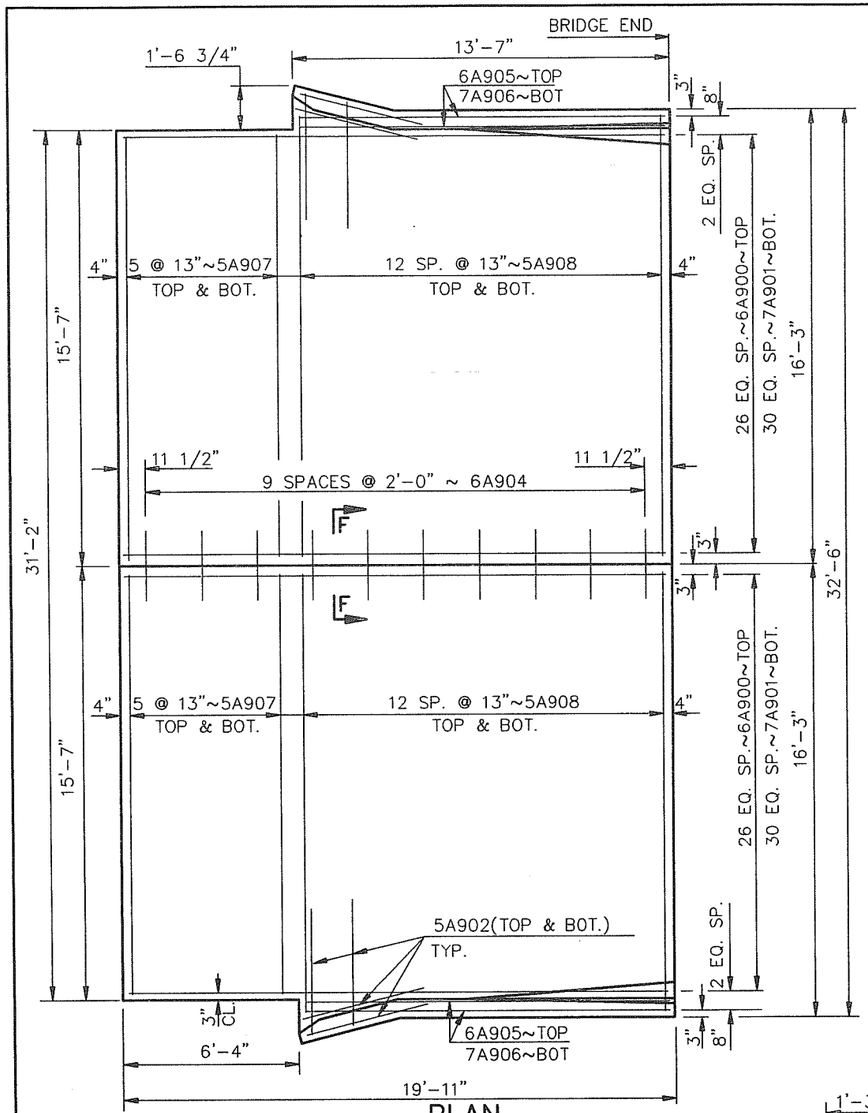
SKEW ANGLE = 0°

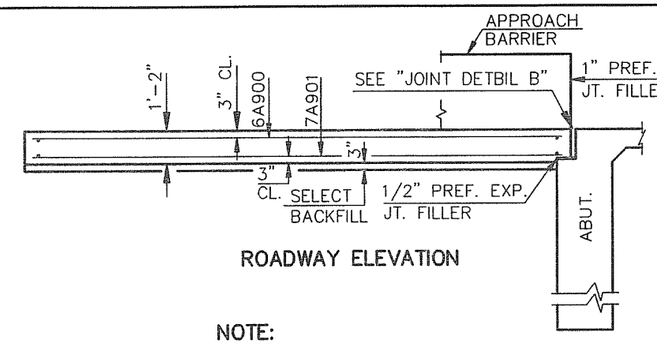
BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
6	A900	54	19'-7"
7	A901	62	19'-7"
5	A902	16	4'-6"
4	XA903	2	7'-6"
6	A904	10	2'-6"
6	A905	4	13'-3"
7	A906	4	13'-3"
5	A907	24	15'-3"
5	A908	52	15'-11"
4	B900	112	4'-0"
4	XT900	18	3'-0"
4	D900	4	4'-0"
4	D901	12	13'-3"

ESTIMATED MATERIAL QUANTITIES

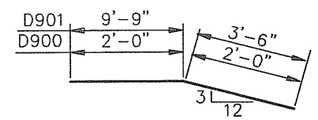
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
6,078	29.5



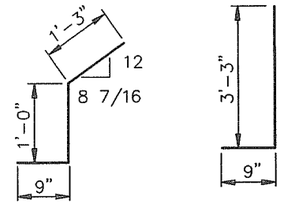


ROADWAY ELEVATION

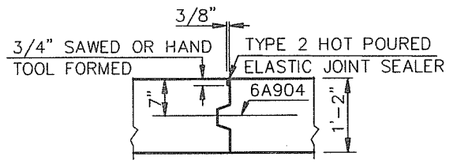
NOTE:
SEE DRAWING NO. 94-001.849-4 FOR DETBIL "B".



D900 & D901

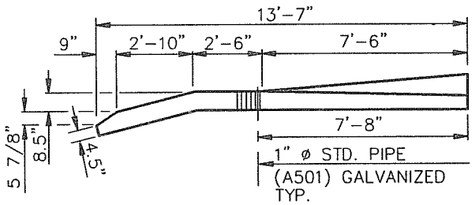


XT900 B900

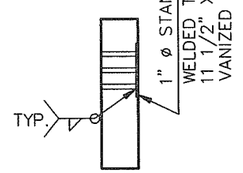


F-F

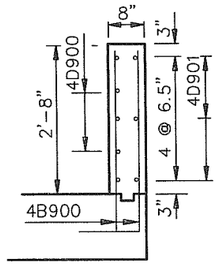
LEAVE JOINT SEALER 0" TO 1/8" BELOW FINISHED SURFACE.



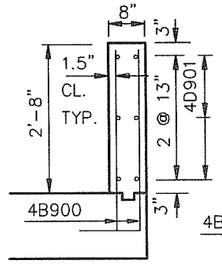
PLAN



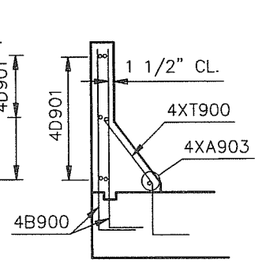
D-D



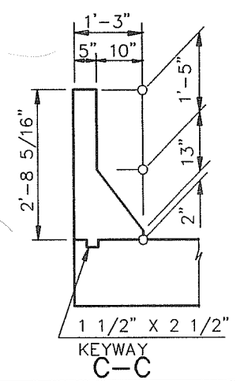
A-A



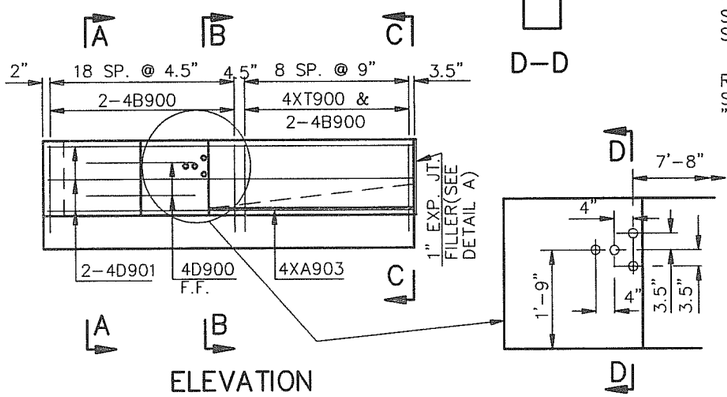
B-B



C-C



C-C



ELEVATION

NOTES:

THE ABOVE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, SILICONE SEALANT, PREF. EXP. JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND THE APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB".

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60.

THE BAR MARKS BEGINNING WITH AN "X" INDICATES AN EPOXY COATED BAR.

SURFACE FINISH "D" SHALL BE REQUIRED FOR THE INSIDE AND TOP SURFACES OF THE CURB TRANSITIONS.

REMOVAL OF ASPHALT BEFORE PLACING APPROACH SLABS SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLABS".

QUANTITIES (ONE SLAB)	
APPROACH SLAB	71.4 S.Y.
SELECT BACKFILL	11.1 TON

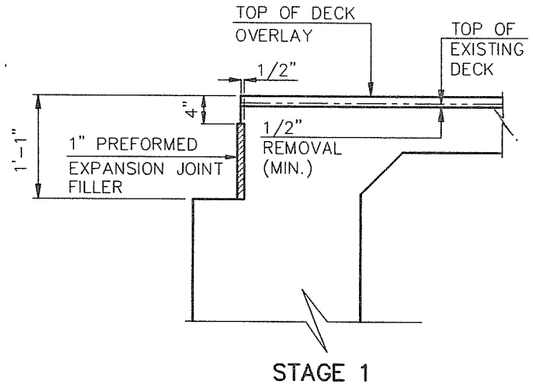
BEACH INTERCHANGE

APPROACH SLAB

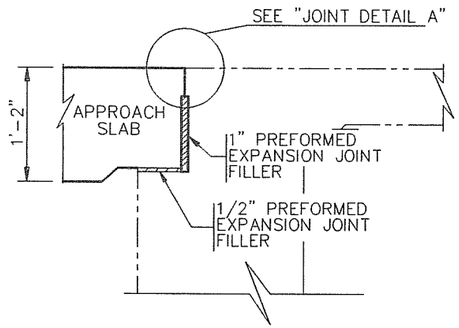
94LCS37 LLS September 13, 1994 2:13 pm

94-001.849-3

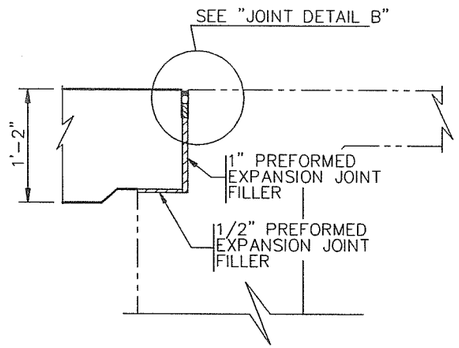
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-5-094(006)000	122



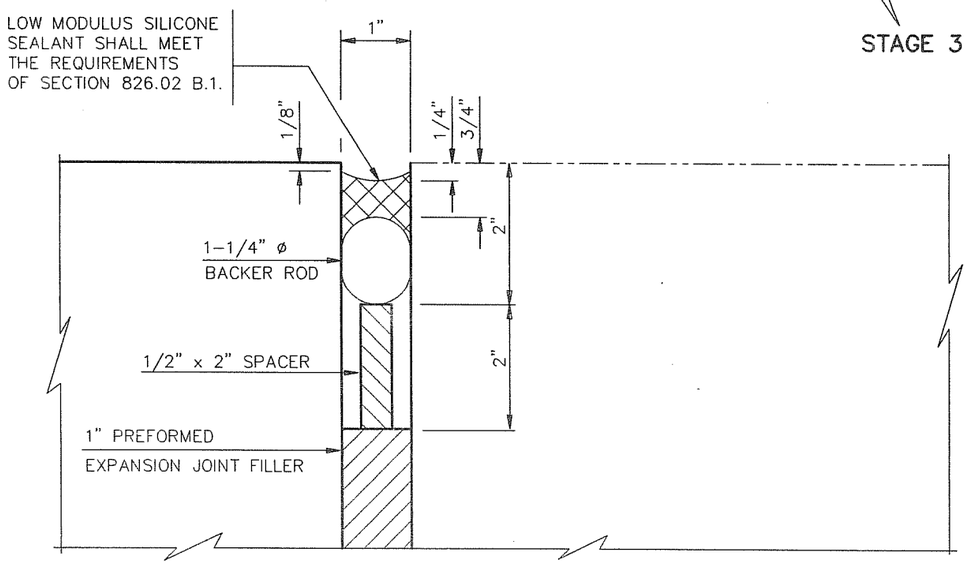
STAGE 1



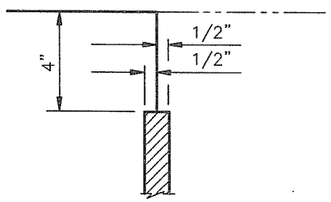
STAGE 2



STAGE 3



JOINT DETAIL B



DETAIL A

APPROACH SLAB – BRIDGE DECK JOINT

STAGE 1:

1. CAST 4"x1/2" LIP DURING PLACEMENT OF DECK OVERLAY..
2. 1" THICK PREFORMED EXPANSION JOINT FILLER TO BE INSTALLED PRIOR TO PLACE-MENT OF DECK OVERLAY

STAGE 2:

3. AFTER PLACING THE 1/2" THICK PREFORMED EXPANSION JOINT FILLER, PLACE THE NEW APPROACH SLAB CONCRETE.

STAGE 3:

4. AFTER THE CONCRETE HAS CURED SAW CUT A 1" WIDE BY 4" DEEP JOINT OUT OF THE CONCRETE BETWEEN THE APPROACH SLAB AND THE BRIDGE DECK END. THE JOINT SHOULD BE CENTERED OVER THE PREFORMED EXPANSION JOINT FILLER.

5. CLEAN THE JOINT AND INSTALL THE 1/2"x2" SPACER, THE BACKER ROD AND THE SILICONE SEALANT ACCORDING TO SECTION 550.04 M.3 OF THE STANDARD SPECS.

GENERAL:

WHEN SAW CUTTING CANNOT EXTEND ALONG THE TOTAL WIDTH OF THE DECK, THE AREA FROM WHERE THE SAW CUT ENDS AND THE SIDE EDGES OF THE DECK SHALL BE FORMED WITH 1" THICK PREFORMED JOINT FILLER AND FINISHED WITH BACKER ROD AND SILICONE SEALANT.
ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO INSTALL JOINT SHALL BE INCIDENTAL TO THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB".

BEACH INTERCHANGE

APPROACH SLAB JOINT DETAIL

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	N.D.	SAP-9-0999(011)000	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

JOB # ——

GOLDEN VALLEY, BILLINGS, STARK, MORTON & BURLEIGH COUNTY

SAP-9-0999(011)000

THIS PROJECT CONSISTS OF PAINTING FACIA GIRDERS AND MISCELLANEOUS SPOT COAT.

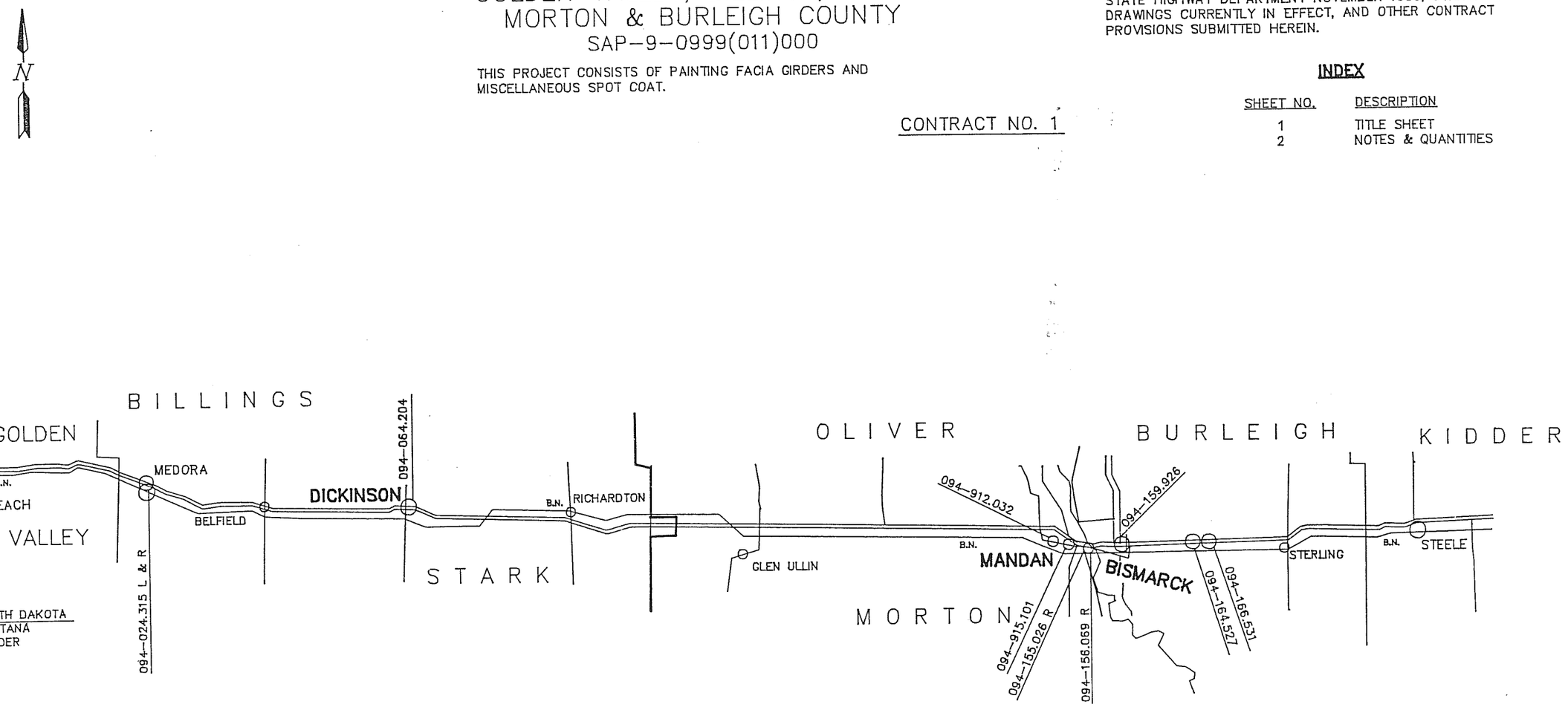
CONTRACT NO. 1

GOVERNING SPECIFICATIONS

STANDARD SPECIFICATIONS ADOPTED BY THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT NOVEMBER 1986, STANDARD DRAWINGS CURRENTLY IN EFFECT, AND OTHER CONTRACT PROVISIONS SUBMITTED HEREIN.

INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	NOTES & QUANTITIES



FOREST D. DUROW REGISTERED PROFESSIONAL 948 ENGINEER NORTH DAKOTA

1-23-91 DATE — Forest D. Durow NAME

APPROVED DATE 1-23-91

Ray Zink

CHIEF ENGINEER
NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

RAY ZINK REGISTERED PROFESSIONAL P.E. 972 ENGINEER NORTH DAKOTA

90LCS123

To PPD Vault

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	SAP--9-0999(011)000	2

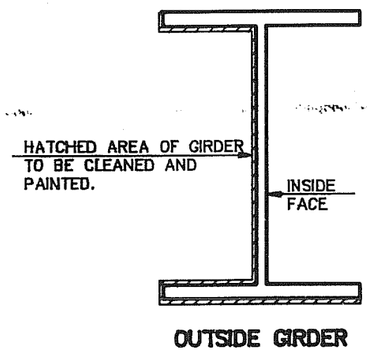
BASIS OF ESTIMATE

SITE NO.	BRIDGE NO.	LOCATION	BRIDGE LENGTH	GIRDER DEPTH	NO. OF GIRDERS	OUTSIDE GIRDER SQ.FT.	SPOT COAT SQ.FT.	FINISH COAT COLOR
DICKINSON DISTRICT								
1	094-001.849	BEACH INT.	265.0'	2.0' & 3.0'	4	2,941.0	365.0	BLUE
2	094-024.315 L & R	LITTLE MISSOURI RIVER	695.0'	4.125'	6	20,200.0	660.0	BLUE
3	094-064.204	EAST DICKINSON INT.	255.0'	3.0'	4	2,581.0	320.0	ALUMINUM
BISMARCK DISTRICT								
4	094-155.026 RT.	WEST MIDWAY SEP.	245.0'	3.5'	4	3,225.0	400.0	ALUMINUM
5	094-156.069 RT.	EAST MIDWAY SEP.	220.0'	3.5'	7	2,856.0	355.0	GREEN
6	094-159.926	19TH ST. SEP.	225.0'	3.5'	7	2,885.0	360.0	BLUE
7	094-164.527	GIBBS TWP. SEP.	240.0'	2.5'	3	2,058.0	255.0	ALUMINUM
8	094-166.531	APPLE CREEK SEP.	240.0'	2.5'	3	2,058.0	255.0	ALUMINUM
9	094-912.032	HEART RIVER 3.5 MI. W HWY 6	277.31'	4.54'	4	4,923.0	615.0	BLUE
10	094-915.101	HEART RIVER 0.5 MI. W HWY 6	283.75'	5.125'	4	5,584.0	695.0	BLUE
					TOTAL	49,311.0	4,280.0	

ESTIMATE OF QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
103	0100	CONTRACT BOND	L.SUM	1.0
630	0100	SANDBLASTING AND PAINTING	L.SUM	1.0
630	0104	PREPARATION AND SPOT COATING	L.SUM	1.0
702	0100	MOBILIZATION	L.SUM	1.0
704	0100	FLAGGING	M.HR.	50.0
704	1100	TRAFFIC CONTROL	L.SUM	1.0

TRAFFIC CONTROL STANDARDS
D-754-1, 2, 3, 4, 5, 5A, 7 AND 11



OUTSIDE GIRDER

GENERAL NOTES

SCOPE OF WORK: THIS PROJECT CONSISTS OF CLEANING AND PAINTING THE FACIA SURFACES OF EXTERIOR GIRDERS AND MISCELLANEOUS SPOT COATING OF DETERIORATED AREAS OF ALL REMAINING PAINTED SURFACES AS DESIG-NATED BY THE ENGINEER AT THE TEN (10) BRIDGE SITES LISTED ABOVE.

PAINTING: THE FACIA SURFACES OF STRUCTURAL STEEL SHALL BE CLEANED AND PAINTED ACCORDING TO THE SUPPLEMENTAL SPECIFICATIONS, EXCEPT FOR SECTION 630.03 D.3. REHABILITATION PAINTING, WHICH SHALL BE REVISED AS FOLLOWS: THE SURFACE OF THE EXTERIOR BEAMS SHALL BE PREPARED BY BLAST CLEANING. THE LEVEL OF PREPARATION SHALL MEET THE REQUIRE-MENTS OF SSPC-SP 7 "BRUSH-OFF BLAST CLEANING".
FOR FIVE (5) STRUCTURES THE FINISH COAT SHALL BE BLUE COLOR NUMBER 25240 AND FOR EAST MIDWAY SEPARATION THE FINISH COAT SHALL BE GREEN COLOR NUMBER 24227 OF THE FEDERAL STANDARD 595B. FOR FOUR (4) STRUCT-URES THE FINISH COAT SHALL BE ALUMINUM. THE ALUMINUM FILLED EPOXY MASTIC PRIMER SHALL BE TINTED TO DIFFERENTIATE THE COLOR FROM THE FINISH COAT. PREPARATION OF THE SPOT COAT AREAS SHALL MEET THE REQUIRE-MENTS OF SSPC-SP 3 "POWER TOOL CLEANING". PAYMENT FOR "SANDBLASTING AND PAINTING" AND "PREPARATION AND SPOT COATING" WILL BE FULL COMPEN-SATION FOR ALL LABOR, EQUIPMENT AND MATERIALS NECESSARY TO COMPLETE THE WORK AS SPECIFIED.

TRAFFIC CONTROL: TRAFFIC SHALL BE CONTROLLED AS SHOWN ON STANDARD D-754-11, TYPE P FOR ALL OF THE SITES EXCEPT THE STRUCTURES OVER THE HEART RIVER. TRAFFIC CONTROL FOR THE HEART RIVER STRUCTURES SHALL BE CONTROLLED AS SHOWN ON STANDARD D-754-7, TYPE F.
ONE LANE OF THE ROADWAY SHALL BE CLOSED ONLY DURING DAYLIGHT HOURS. THE EQUIPMENT AND CONTROL DEVICES SHALL BE REMOVED FROM THE ROADWAY AND REGULAR TRAFFIC RESTORED AT THE END OF EACH WORK DAY. EQUIPMENT THAT MAY BE HAZARDOUS TO ERRANT VEHICLES LEAVING THE ROADWAY WILL HAVE TO BE PARKED BEYOND 50 FEET MEASURED FROM THE EDGE OF THE DRIVING LANE. CONTROL DEVICES SHALL BE PLACED IN LOCATIONS SO THAT MOTORISTS WILL NOT MISTAKE THEM AS REQUIRING THE MOTORIST TO MAKE A MANUEVER. THE CONTRACTOR SHALL NOTIFY THE DISTRICT ENGINEER ONE WEEK PRIOR TO THE START OF THE WORK.

RESPONSIBILITY TO THE PUBLIC: THE CONTRACTOR SHALL SHROUD THE WORK AREA TO PROTECT THE MOTORING PUBLIC. SHROUDING SHALL BE CAPABLE OF PREVENTING DUST AND PAINT OVERSPRAY FROM REACHING PASSING TRAFFIC AND CAUSING VEHICLE DAMAGE OR IMPAIRING MOTORIST VISIBILITY.
THE COST OF MAINTAINING AND PROTECTING TRAFFIC WILL BE CONSIDERED INCIDENTAL TO THE PRICE BID FOR "TRAFFIC CONTROL".

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
8	N. D.	I-94-1(1812	1	45

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT

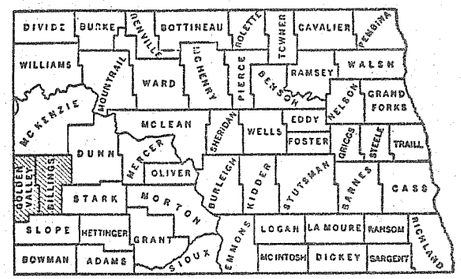
PLANS

FOR THE PROPOSED IMPROVEMENT OF A

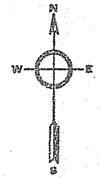
STATE HIGHWAY

IN GOLDEN VALLEY COUNTY

FEDERAL AID PROJECT NO. I-94-1(18)2



SKETCH-MAP OF NORTH DAKOTA
SHOWING COUNTIES



SCALES
- LAYOUT SHEET: 1 IN. = 5000'
- 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.

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

INDEX OF DRAWINGS

SHEET NO.	1	TITLE PAGE & SUMMARY OF QUANTITIES
SHEET NO.	2	TYPICAL SECTIONS
SHEETS NO.	3	TO 7 INCL. PLAN AND PROFILE DRAWINGS
SHEETS NO.	8	TO 9 INCL. INTERCHANGE LAYOUTS
SHEETS NO.	10	TO 24 INCL. STRUCTURAL DRAWINGS
SHEETS NO.	25	TO 28 INCL. SOIL PROFILE
SHEETS NO.	29	TO 45 INCL. CROSS SECTIONS

SHEETS NO. 180 Thru. 185, 190 Thru. 195
199 Thru. 201, 205 Thru. 206
FROM I-94-1(15) 0

LENGTH OF PROJECT		
PROJECT	MILES-GROSS	MILES-NET
I-94-1(1812	0.000	0.000
TOTALS	0.000	0.000

GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota State Highway department Jan. 1955, and approved as standard by the Bureau of Public Roads June 23, 1965. Required Contract Provision (Form PR-1273) dated December 1963 and others submitted herewith.

KEY TO CONVENTIONAL SIGNS

- STATE & NATIONAL LINES
- COUNTY LINE
- TOWNSHIP & RANGE LINES
- GRADE LINE
- CENTERLINE OF CONSTRUCTION (500)
- OLD RIGHT OF WAY LINE
- NEW RIGHT OF WAY LINE
- ABANDONED RIGHT OF WAY LINE
- PROPERTY LINE
- STONE WALL
- OTHER FENCES (KIND)
- POLE LINES (KIND)
- POWER LINES (KIND)
- BRIDGE
- GROUND ELEVATION GRADE (1640.0 / 1645.0 / 245)
- TRAVELED WAY
- RAILROADS (KIND & NAME)
- HEDGES AND TREES (KIND)
- TRAILS
- CITY OR VILLAGE CORPORATE LIMITS
- SECTION CORNER
- QUARTER SECTION CORNER
- BUILDINGS
- OLD CULVERTS
- NEW CULVERTS
- DRAINAGE
- BENCH MARKS (BM)
- WATERS EDGE
- MARSH
- WIRE ROPE GUARD RAIL
- SNOW FENCE
- RIPRAP
- GUARD POSTS
- COBBLE GUTTERS
- CONCRETE GUTTERS (CONCRETE GUTTER)
- SODDING & JUTE MESH

DESIGN DATA

TRAFFIC	AVERAGE DAILY	EST. 30TH MAX. HR.
CURRENT TRAFFIC (19 67)	1241 PASS. 219	TRUCKS 1460 TOTAL 263
TRAFFIC FORECAST (19 87)	3782 PASS. 668	TRUCKS 4450 TOTAL 801

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.

PROJ. NO. I-94-1(18)2
STA. 100+00 ON FUTURE PROJ. I-94-1(16)0
A Point 750.0' South of the NW Corner of Sec. 24, T-140N, R-106W = Sta. 16+00 On Cross Road
100+00 (I-265' BRIDGE)
0.000 MILES

CLEAR RDWY.

STA	WIDTH	DESIGN LOADING
100+00	30'	HS 20 (1944)

STRUCTURAL

LIST OF SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

NAME	NO.
MISCELLANEOUS METALS	SS-1
PILING	SS12, SS21
CONCRETE SLOPE PROTECTION	SS 22
STRUCTURAL STEEL	S.P.
BIDDING REQUIREMENTS AND CONDITIONS	SS-9
AGGREGATE FOR PORTLAND CEMENT CONCRETE, STRUCTURAL AND PAVING; MORTAR SAND AND UNDERDRAIN GRANULAR FILL	SS-15
LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC	SS-16 & SS-16
PAINTING	S.P.

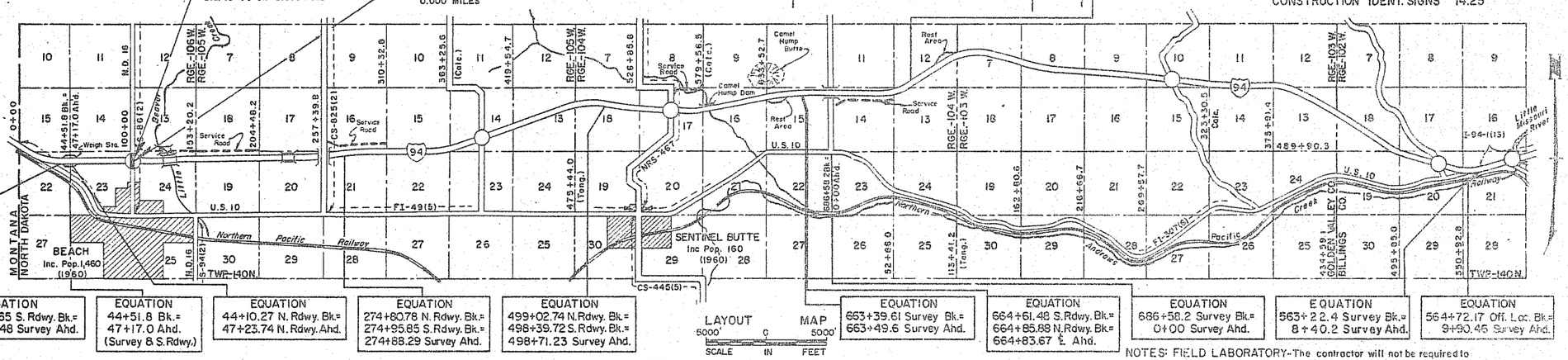
EQUATION
67+94.78 N. Rdwy. Bk. =
68+60.94 S. Rdwy. Bk. =
68+27.86 Survey Ahd.

STRUCTURAL DRAWINGS

94-1	94-1-5	94-1-10
94-1-1	94-1-6	94-1-11
94-1-2	94-1-7	H-0144
94-1-3	94-1-8	H-0311
94-1-4	94-1-9	H-0501

LIST OF STANDARDS

SLOPE PROTECTION	7.5A
BRIDGE BENCH MARKS	7.6
STANDARD SIGNS	14.1A-1 & 2
FEDERAL AID NAME PLATE	14.9B
CONSTRUCTION IDENT. SIGNS	14.25



SKETCH MAP OF PARTS OF GOLDEN VALLEY & BILLINGS COUNTIES

EQUATION 36+79.65 S. Rdwy. Bk. = 36+59.48 Survey Ahd.
EQUATION 44+51.8 Bk. = 47+17.0 Ahd. (Survey & S. Rdwy.)
EQUATION 44+10.27 N. Rdwy. Bk. = 47+23.74 N. Rdwy. Ahd.
EQUATION 274+80.78 N. Rdwy. Bk. = 274+95.85 S. Rdwy. Bk. = 274+88.29 Survey Ahd.
EQUATION 499+02.74 N. Rdwy. Bk. = 498+39.72 S. Rdwy. Bk. = 498+71.23 Survey Ahd.

LAYOUT MAP SCALE 5000' 0 5000' IN FEET

EQUATION 663+39.61 Survey Bk. = 663+49.6 Survey Ahd.
EQUATION 664+61.48 S. Rdwy. Bk. = 664+85.88 N. Rdwy. Bk. = 664+83.67 ℄ Ahd.
EQUATION 686+58.2 Survey Bk. = 0+00 Survey Ahd.
EQUATION 563+22.4 Survey Bk. = 8+40.2 Survey Ahd.
EQUATION 564+72.17 Off. Loc. Bk. = 9+90.46 Survey Ahd.

NOTE: TOPSOIL FROM EXCAVATION AND EMBANKMENT AREAS SHALL BE EXCAVATED TO ITS ACTUAL DEPTH AND STOCKPILED BY THE STRUCTURAL CONTRACTOR AT LOCATIONS DESIGNATED BY THE ENGINEER. TOPSOIL EXCAVATION SHALL BE PAID FOR AS COMMON EXCAVATION.

NOTE: COMMON EXCAVATION SHALL BE MEASURED IN ACCORDANCE WITH SEC. 203-3.2 OF THE STANDARD SPECIFICATIONS.

CONSTRUCTION IDENTIFICATION SIGNS SHALL BE INSTALLED AT STA. 26+00 X-RD. LT.

NOTES: FIELD LABORATORY-The contractor will not be required to furnish Field Laboratory.

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

UTILITIES - Separate plans, if any, showing the relocation or adjustment work to be performed by utility companies to accommodate highway construction will be made available to the contractor upon request to the Engineer.

① Common Excavation shall be placed during the 1967 Construction Season.

QUANTITIES

SPEC. NO.	203	216	208	228	610	610	612	616	616	622			622		724		750	704	746	810
CODE NO.	0100	0100	0100	0100	1112	0138	0100	4412	0362	4650	4660	4690	5390	5430	0120	3000	0100	0100	0100	1134
LOCATION	COMMON EXCAVATION	WATER	CLASS I EXCAVATION	SELECT BACKFILL	CLASS AE-1 CONCRETE (SUB-STRUCTURE)	CLASS AAE-3 CONCRETE (RAILING)	REINFORCING STEEL (Intermediate Grade)	STRUCTURAL STEEL A-441	STRUCTURAL STEEL A-36	TREATED TIMBER PILING 20' LF	TREATED TIMBER PILING 25' LF	TREATED TIMBER PILING 40' LF	TIMBER TEST PILES 30' EA	TIMBER TEST PILES 50' EA	TEMPORARY CROSSING AND DETOUR CLASS A	BRIDGE BENCH MARKS	LINSEED OIL TREATMENT	CONCRETE SLOPE PROTECTION	FLAGGING	CLASS AE-3 CONCRETE (BEAM SUPER STRUCTURE)
	CU YD.	"M" GAL	CU. YD.	CU. YD	CU. YD.	CU. YD.	LBS.	LBS.	LBS.						LUMP SUM	SET	GAL.	SQ. YD.	MAN HOURS	CU. YD.
100+00	66,711	540	230	110	158.0	16.73	108,444	155,480	29,290	828	552	570	2	1	100+00	1	44	490	100	265.6
TOTAL	66,711 ①	540	230	110	158	17	108,444	155,480	29,290	828	552	570	2	1	1 Lump Sum	1	44	490	100	266

APPROVED DATE 4-7-67
CHIEF ENGINEER
NORTH DAKOTA STATE HIGHWAY DEPARTMENT

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

APPROVED

DIVISION ENGINEER DATE

I-94-1(18)2

BRIDGE CODE	FED ROAD DIST NO.	STATE	PROJ. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
X-771	5	N. D.	I-94-1(18)		10	45

REVISIONS	DATE	CK'D BY

TOPOGRAPHY	PLOTTED BY
	CHECKED BY
DETAILS	MADE BY G.A.L.
	CHECKED BY M.E.W.
TRACING	MADE BY F.D.H.
	CHECKED BY G.A.L.
QUANTITIES	MADE BY L.E.G.
	CHECKED BY F.D.H.

PLAN

ELEVATION

TYPICAL BOTH ABUTMENTS

① See Special Provision for Structural Steel & Painting.
See Supplemental Specification No. 1 for Misc. Metal.
② See S.S-No. 12 and 21 for piling.
③ See S.S-No. 22 for Concrete Slope Protection.
The general notes for this project are shown on sheet 94-1-1.
Under Structural Steel; note that each full length girder line shall be shop assembled before reaming of splice plates.

ESTIMATE OF QUANTITIES

SPEC.	CODE	BID ITEM		
205	0100	COMMON EXCAVATION	66711	CU. YD.
208	0100	CLASS I EXCAVATION	230	CU. YD.
208		CLASS 2 "	———	CU. YD.
226	0100	SELECT BACKFILL	110	CU. YD.
604		PRESTRESSED BEAMS		EACH
216	0100	WATER	540	"M" GAL.
610	1112	CLASS AE-1 CONCRETE (SUBSTRUCTURE)	158.0	CU. YD.
610	1154	CLASS AE-3 CONCRETE (I-BEAM SUPERST.)	265.6	CU. YD.
610	0138	CLASS AAE-3 " (RAILING)	16.73	CU. YD.
612	0100	REINFORCING STEEL (INTERMEDIATE GRADE)	108,444	LB.
616	0382	STRUCTURAL STEEL (A-36)①	29,290	LB.
616	4412	STRUCTURAL STEEL (A-441)①	155,480	LB.
620		UNTREATED TIMBER		M.B.M.
620		TREATED TIMBER		M.B.M.
622	4650	TREATED TIMBER PILING② 46 @ 20 FT.	828	LIN. FT.
622	4680	TREATED TIMBER PILING② 24 @ 25 FT.	552	LIN. FT.
622	4690	TREATED TIMBER PILING② 15 @ 40 FT.	570	LIN. FT.
622	5390	TREATED TIMBER TEST PILES② @ 30 FT.	2	EACH
622	5430	TREATED TIMBER TEST PILES② @ 50 FT.	1	EACH
724	0120	TEMPORARY CROSSING AND DETOUR CLASS "A"		LUMP SUM
750	0100	LINSEED OIL TREATMENT	44	GAL.
704	0100	CONCRETE SLOPE PROTECTION③	490	SQ. YD.
	3000	BRIDGE BENCH MARKS	1	SET

VERTICAL CURVE

1967
FEDERAL AID
PROJECT
I-94-1(18)
NORTH DAKOTA
94-1

FEDERAL AID NAME PLATE
2 REQUIRED

DESIGN STRESSES:

fs = 20,000 psi ~ Reinforcing Steel
fc = 1,200 psi ~ Class AE-1 Concrete
fc = 1,700 psi ~ Class AAE-3 Concrete
fs = 27,000 psi ~ Structural Steel (A-441) (3/4" and under)
fs = 25,000 psi ~ Structural Steel (A-441) (3/4" to 1½" inc.)
fs = 23,000 psi ~ Structural Steel (A-441) (1½" to 4")
fs = 20,000 psi ~ Structural Steel (A-36)

DECK SECTION

℄ OUTSIDE GIRDERS	℄ ROADWAY
2789.19	2789.42
2789.21	2789.44
2789.52	2789.75
2789.82	2790.05
2790.14	2790.37
2790.46	2790.69
2790.85	2791.08
2791.24	2791.47
2791.62	2791.85
2791.98	2792.21
2792.30	2792.53
2792.60	2792.83
2792.88	2793.11
2793.15	2793.38
2793.42	2793.65
2793.71	2793.94
2794.01	2794.24
2794.33	2794.56
2794.65	2794.88
2794.97	2795.20
2795.26	2795.49
2795.53	2795.76
2795.77	2796.00
2795.98	2796.21
2796.19	2796.42
2796.39	2796.62
2796.63	2796.86
2796.88	2797.11
2794.19	2797.36
2797.37	2797.60
2797.38	2797.61

6" Begin Bridge — 4 Eq. Sp. = 32'-5" ℄ Brg. Abut. 1 — 10 Equal Spaces ~ 95'-3" ℄ Bent 2 — 10 Equal Spaces ~ 95'-3" ℄ Bent 3 — 4 Eq. Sp. = 40'-9" ℄ Bent 4 — ℄ Brg. Abut. 5 — 6" End Bridge

SCREED ELEVATION
Elevations are to top of finished concrete

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEV.
12	Iron Mon. by Fn. Ln.	Sta. 81+68 ~ 22' Lt.	2788.80
13	Iron Mon. by X-Fn.	Sta. 100+63 ~ 225' Rt.	2770.10
13I-B	Iron Mon. by Feed Lot	X-Rd. Sta. 10+25 ~ 88' Rt.	2767.29

PILE LOADING

LOCATION	DEAD LOAD	LIVE LOAD	EARTH	WIND 50 LB.	WIND 15 LB.	L.F. DUE TO TEMP.	EMBANKMENT SETTLEMENT	DESIGN LOAD	MAXIMUM REQUIRED BEARING	* MINIMUM PENETRATION
Abut. No. 1	6.9 T.	5.8 T.					6.5 T.	19.2 T.	25 T.	*33'
Bent No. 2	12.1 T.	4.4 T.	2.6 T.			7.1 T.		21.0 T.**	27 T.	15'
Bent No. 3	15.9 T.	5.3 T.	1.4 T.					22.6 T.	29 T.	15'
Bent No. 4	12.4 T.	4.4 T.	2.6 T.			8.0 T.		21.9 T.**	28 T.	*19'
Abut. No. 5	9.2 T.	7.2 T.					6.5 T.	22.9 T.	30 T.	*38'

*Below bottom of footing
** Group IV Loading

STRUCTURAL DRAWINGS

GENERAL DRAWING 94-1 (THIS SHEET) 94-1-1, 94-1-2, STD. 7.5A, H-0311
SUBSTRUCTURE 94-1-3 THRU 94-1-6, STD 14.3B
SUPERSTRUCTURE 94-1-7 THRU 94-1-11, H-0144 H-0501, STD. 7.6 (H-0152)

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

NORTH DAKOTA
STATE HIGHWAY DEPARTMENT
BEACH INTERCHANGE
BRIDGE LAYOUT
PROJECT I-94-1(18) STA. 100+00
GOLDEN VALLEY COUNTY

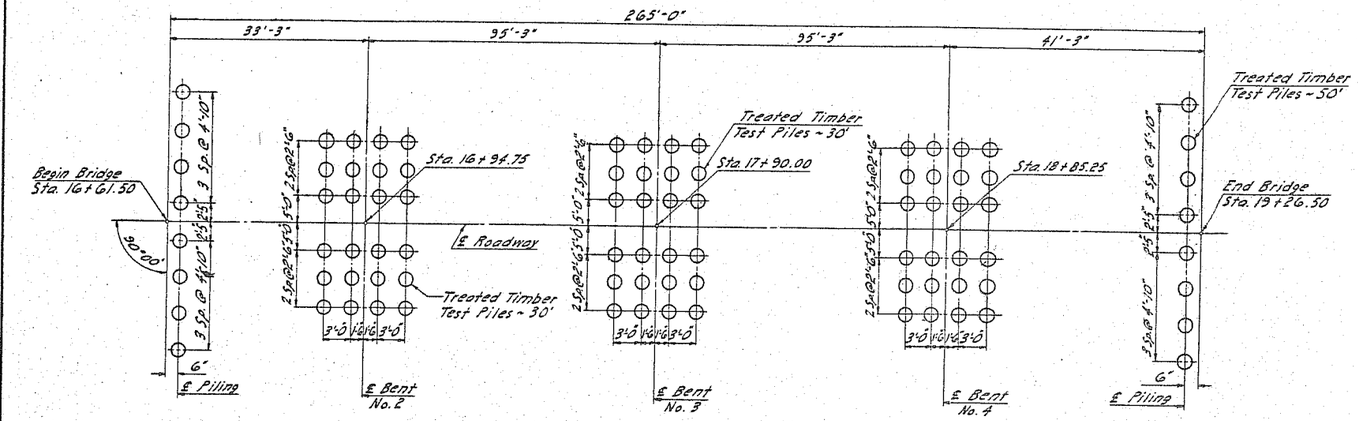
APPROVED
11-17-66 Joseph R. Kirby
DATE BRIDGE ENGINEER

JOSEPH R. KIRBY REGISTERED PROFESSIONAL ENGINEER NORTH DAKOTA

94-1

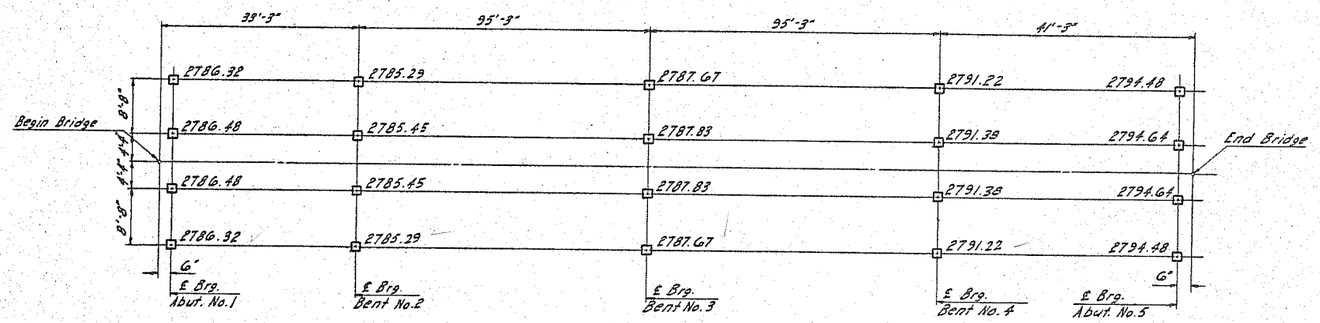
DESIGN	MADE BY	
	CHECKED BY	E.A.L.
DETAILS	MADE BY	E.D.H.
	CHECKED BY	L.E.G.
TRACING	MADE BY	L.E.G.
	CHECKED BY	E.A.L.
QUANTITIES	MADE BY	
	CHECKED BY	

NO.	REVISIONS	CHK'D BY	DATE



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.

ALTERNATE SHEAR DEVICES WILL BE PAID FOR AS CHANNEL SHEAR DEVICES.

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 COMPLETEDLY 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 PIERS SHALL EXTEND FROM THE BOTTOM OF THE FOOTING TO THE FINISHED ELEVATION OF THE INTERSTATE MEDIAN AT PIER 3, AND TO THE FINISHED PROFILE OF THE EMBANKMENT INSLOPES AT PIERS 2 AND 4.

BACKFILL:

ALL BACKFILL SHALL BE PLACED ACCORDING TO SECTION 203-2.3 OF THE STANDARD SPECIFICATIONS. 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 UNLESS OTHERWISE NOTED.

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 MACHING. ALL CONCRETE ABOVE THE TOP OF THE CURBS EXCEPT END POSTS SHALL BE CLASS AAE-3.

ALL CONCRETE SHALL BE COMPACTED BY VIBRATION. THE "RUBBED SURFACE FINISH" WILL BE REQUIRED FOR THE ROADWAY AND OUTSIDE VERTICAL FACES OF CURBS, EDGES OF SLAB, ALL FACES OF THE RAILS, RAIL POSTS AND END POSTS, ALL EXPOSED FACES OF BENTS, AND ALL EXPOSED FACES OF ABUTMENT WINGS. ALL OTHER SURFACES SHALL BE GIVEN THE "ORDINARY SURFACE FINISH".

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.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOT SHE
5	N. D.	I-94(109)		11	45

STRUCTURAL STEEL:

THE GIRDERS SHALL BE CAMBERED IN THE SHOP AS DETAILED ON DRAWING 94-1-7. 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 CORRE LINE AND GRADE BEFORE REAMING. TEMPLATES SHALL NOT BE USED IN LIEU OF COMPLETE ASSEMBLY.

ALTERNATE STUD SHEAR DEVICES SHALL BE MANUFACTURED OF C-101 OR C-1020 COLD ROLLED STEEL WHICH CONFORMS TO ASTM A 108-61 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 302 OF THE 1965 NORTH DAKOTA "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION".

MATERIALS: (STRUCTURAL STEEL)

GIRDER FLANGES, WEBS, FLANGE AND WEB SPLICE PLATES: A-441
STIFFENERS, DIAPHRAGMS, SHEAR CONNECTORS, BEARING PLATES AND ANCHOR BOLTS: A-36

PILING:

THE ATTENTION OF THE CONTRACTOR AND ENGINEER IS SPECIALLY DIRECTED TO PARAGRAPH 622-4.1.17 OF THE STANDARD SPECIFICATIONS.

PAINT:

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

ALL EXPOSED STEEL SURFACES SHALL BE GIVEN ONE SHOP COAT OF RED LEAD PAINT (INCLUDING TOP OF UPPER GIRDER FLANGES BUT NOT SHEAR CONNECTORS), ONE SPOT COAT OF RED LEAD PAINT AFTER ERECTION AND CONCRETE WORK IS COMPLETED, AND TWO FIELD COATS OF ENAMEL. THE COLOR SHALL BE GRAY-BLUE, NO. 25184 AND SHALL MEET THE FEDERAL STANDARD NO. 595 FOR COLOR. THE SUCCESSFUL BIDDER MAY SEE COLOR CHIP NO. 25184 IN THE BRIDGE DEPARTMENT OF THE NORTH DAKOTA STATE HIGHWAY DEPARTMENT, BISMARCK.

THE FIRST FIELD COAT SHALL BE TINTED WITH LAMPBLACK OR OTHER APPROVED PIGMENT TO DISTINGUISH THE FIRST COAT FROM THE SECOND COAT.

LINSEED OIL TREATMENT:

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

QUANTITIES

BEACH INTERCHANGE

BEARING PLATE LAYOUT
PILING LAYOUT
GENERAL NOTES

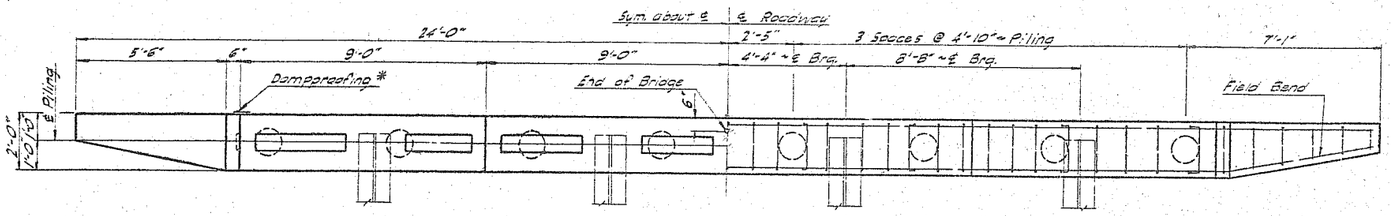
94-1-1

94-1-1

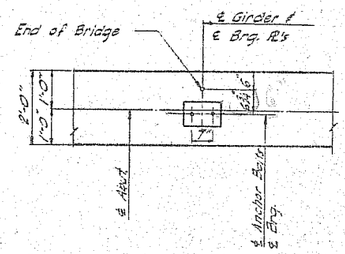
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TO SHE
5	N. D.	I-94-1(18)		13	4

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

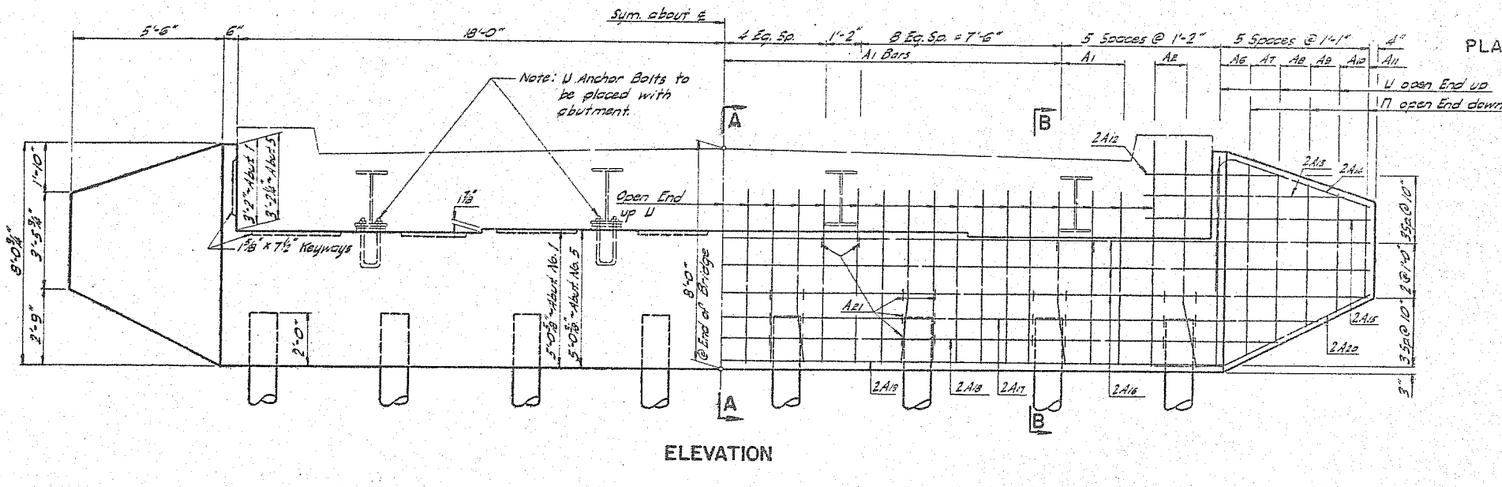
REVISIONS | NO. | DATE | CHK'D BY



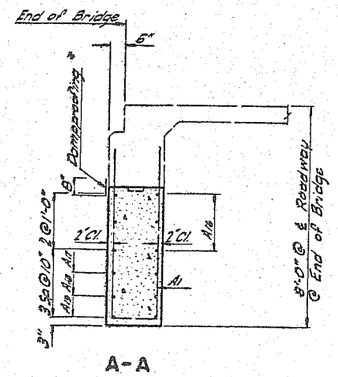
PLAN



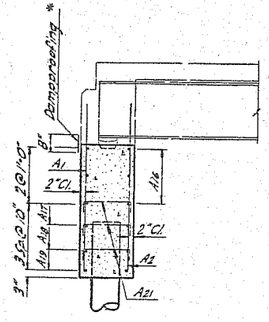
PLACEMENT OF ANCHOR BOLTS



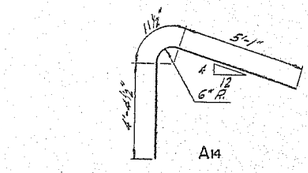
ELEVATION



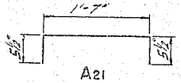
A-A



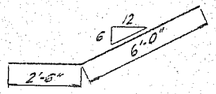
B-B



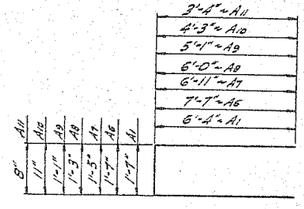
A14



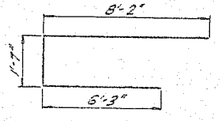
A21



A20



A1, A6 - A11 BARS



A3

BENT BAR DETAILS

ABUTMENT (ONE ABUT.)

MARK	NUMBER WALL		SIZE	LENGTH	SH.
A1	31		6	14'-3"	Be
A2	4		6	16'-0"	"
A6	2		6	16'-9"	"
A7	2		5	15'-4"	"
A8	2		5	13'-4"	"
A9	2		5	11'-3"	"
A10	2		5	9'-5"	"
A11	2		5	7'-4"	"
A12	4		5	5'-0"	St
A13	4		5	7'-5"	"
A14	4		6	10'-5"	Be
A15	4		5	8'-4"	St
A16	12		5	22'-11"	"
A17	4		5	23'-11"	"
A18	4		5	21'-5"	"
A19	4		6	19'-10"	"
A20	4		6	8'-6"	Be
A21	56		4	2'-6"	"
St1 * *		1	4	3'-0"	St
St2 * *		1	5	4'-0"	"
St3 * *		1	6	4'-5"	"
St4 * *		1	7	5'-0"	"
St5 * *		1	8	5'-4"	"

PROJECT I-94-1(18)
DRAWING 94-1-3

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.

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

QUANTITIES (ONE ABUT.)

Class AE-1 Concrete	170 Cu. Yds.
Reinforcing Steel	1838 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

BEACH INTERCHANGE

8'-0" ABUTMENT

30'-0" ROADWAY

HS20 LOADING

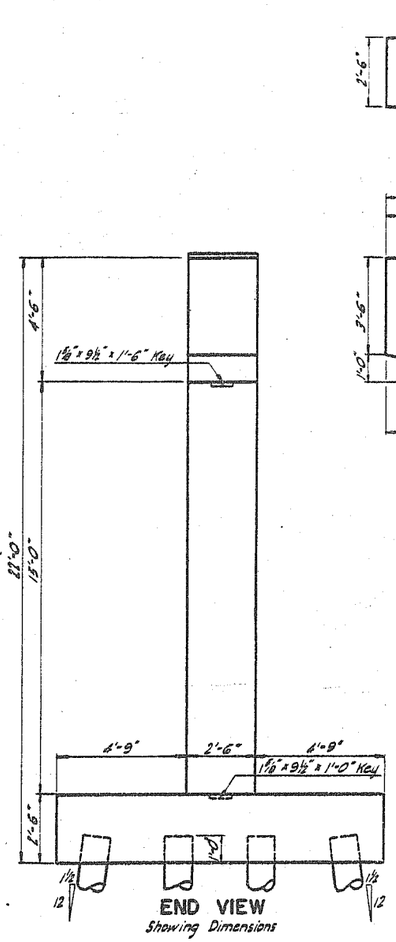
94-1-3

94-1-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-94-1(18)		14	45

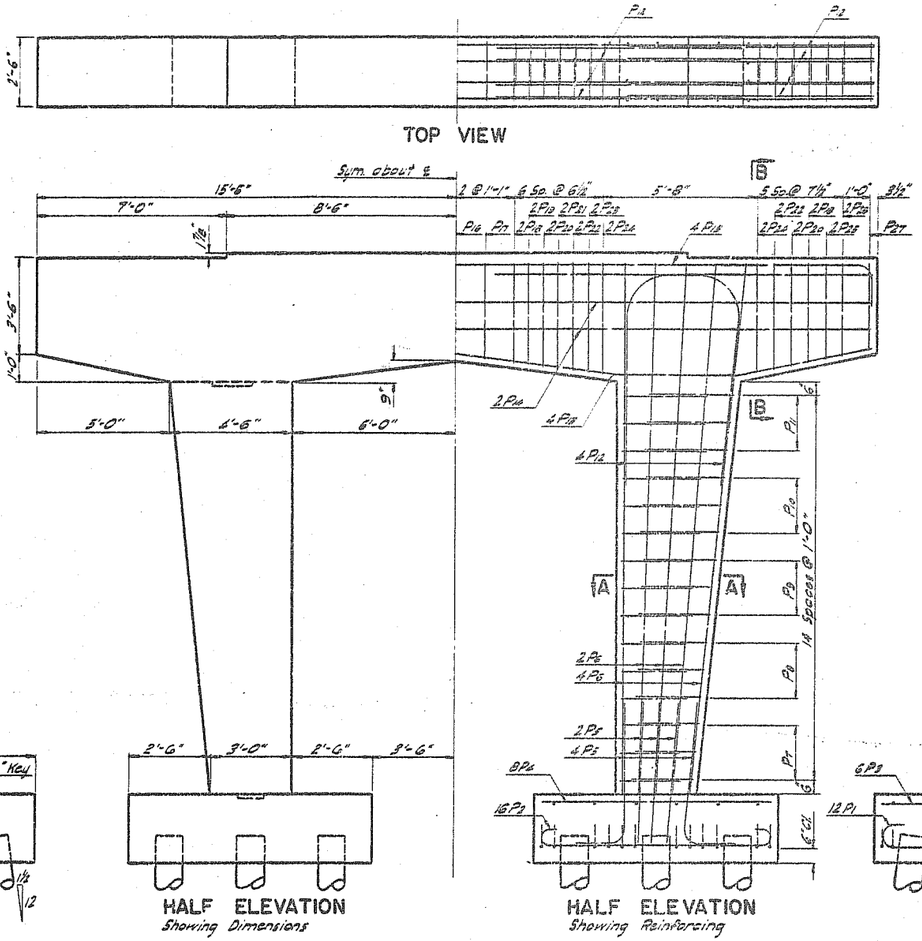
	MADE BY	CHK'D BY	DATE
REVISIONS			
DESIGN	MADE BY M.E.W.		
	CHECKED BY W.E.G.		
DETAILS	MADE BY M.E.W.		
	CHECKED BY G.A.L.		
TRACING	MADE BY G.A.L.		
	CHECKED BY L.E.G.		
QUANTITIES	MADE BY G.A.L.		
	CHECKED BY L.E.G.		

PROJECT I-94-1(18)
DRAWING 94-1-4

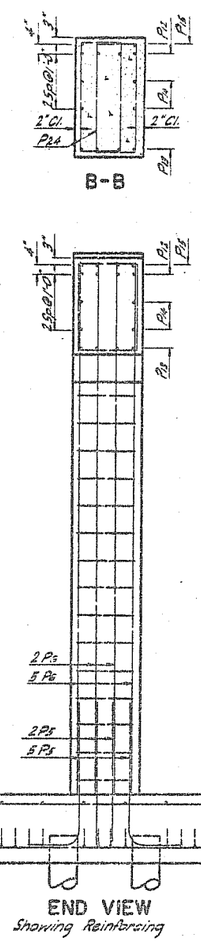


END VIEW
Showing Dimensions

HALF ELEVATION
Showing Dimensions

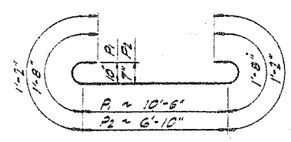


HALF ELEVATION
Showing Reinforcing

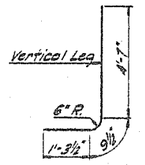


B-B

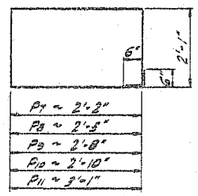
END VIEW
Showing Reinforcing



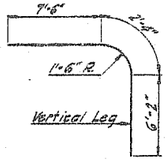
P1 & P2



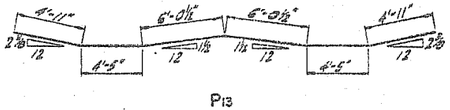
P5



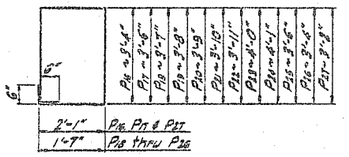
P7 THRU P11



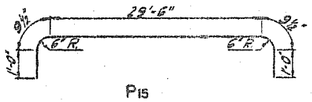
P12



P13



P16 THRU P27



P15

BENT BAR DETAILS

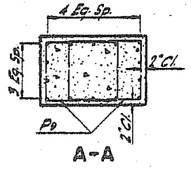
BENT NO. 2

MARK	NUMBER FOOTING	NUMBER COLUMNS	NUMBER CAP	SIZE	LENGTH	SHAPE
P1	24		10		13'-10"	Bent
P2	32		7		9'-2"	"
P3	12		4		11'-6"	Str.
P4	16		4		7'-6"	"
P5	28		8		6'-8"	Bent
P6		28	8		19'-3"	Str.
P7		12	4		9'-6"	Bent
P8		12	6		10'-0"	"
P9		12	4		10'-6"	"
P10		12	4		10'-10"	"
P11		12	4		11'-2"	"
P12		16	9		16'-0"	"
P13			6		30'-9"	"
P14			5		30'-8"	Str.
P15			4	9	23'-1"	Bent
P16			1	5	11'-10"	"
P17			2	5	12'-3"	"
P18			9	5	11'-6"	"
P19			4	5	11'-6"	"
P20			8	5	11'-8"	"
P21			4	5	11'-10"	"
P22			8	5	12'-0"	"
P23			4	5	12'-2"	"
P24			8	5	12'-4"	"
P25			4	5	11'-2"	"
P26			4	5	10'-10"	"
P27			2	5	11'-6"	"

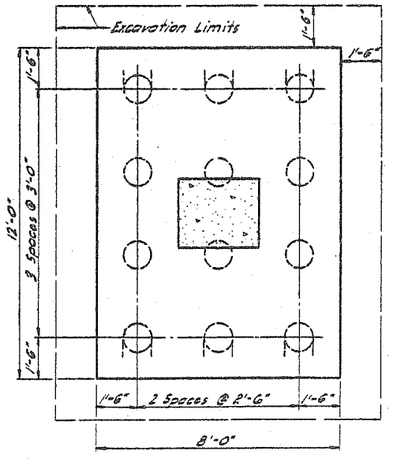
NOTES:

The concrete in the columns shall be allowed to set at least two hours before the remaining concrete is poured.

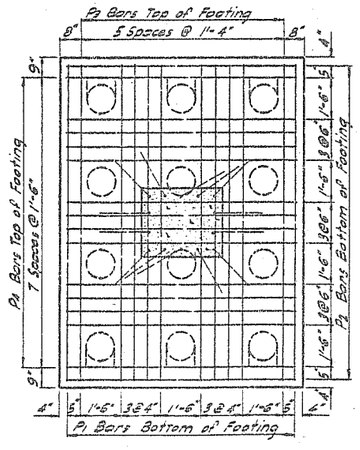
All exposed edges shall be beveled with ¾ triangular molding.



A-A



HALF FOOTING PLAN
Showing Dimensions



HALF FOOTING PLAN
Showing Reinforcing

QUANTITIES

Class AE-1 Concrete	39.7 C.Y.
Reinforcing Steel	6886 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

BEACH INTERCHANGE

BENT NO. 2

30'-0" ROADWAY

HS20 LOADING

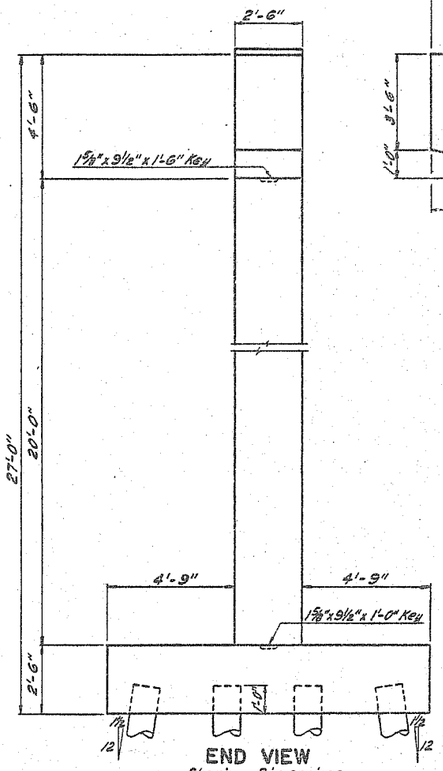
94-1-4

94-1-4

DRAWN BY	CHECKED BY	DATE
GN	M.E.W.	
DETAILS	W.E.G.	
	F.D.H.	
TRACING	C.A.L.	
	F.D.H.	
QUANTITIES	G.A.L.	
	L.E.G.	

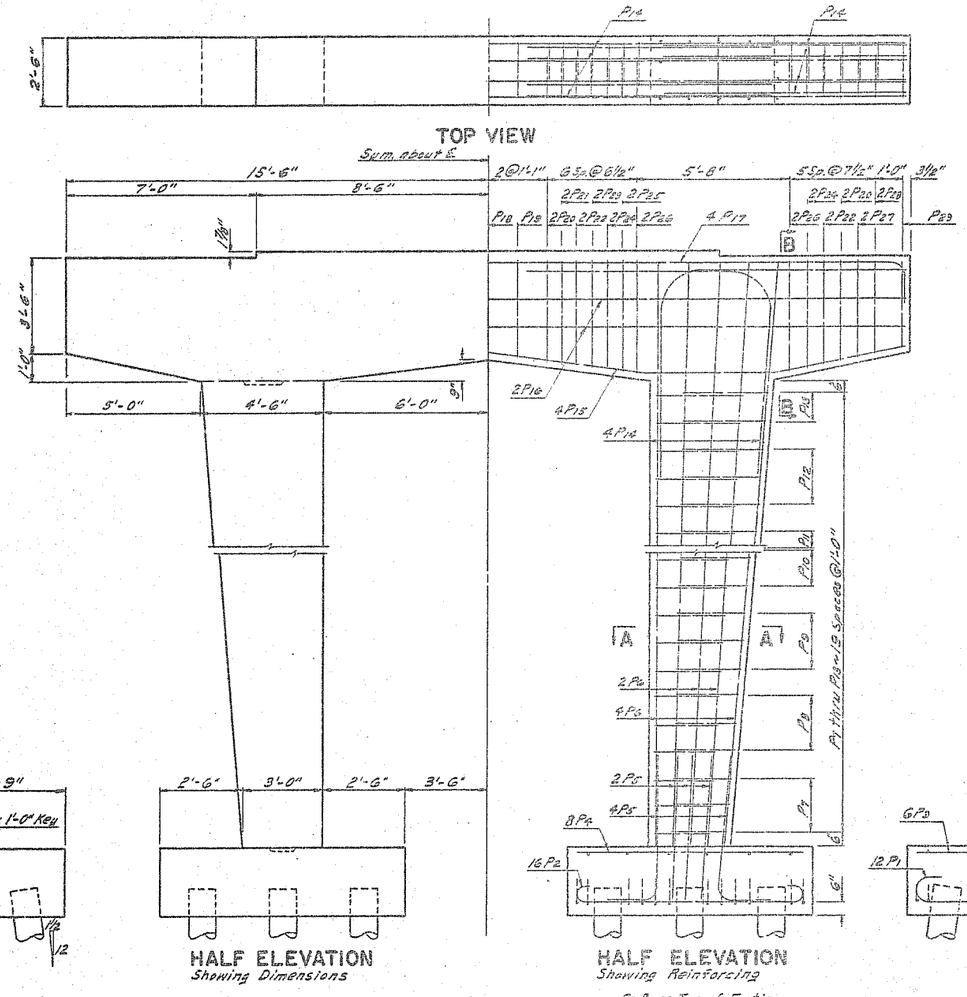
REVISIONS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-94-1(18)		15	45

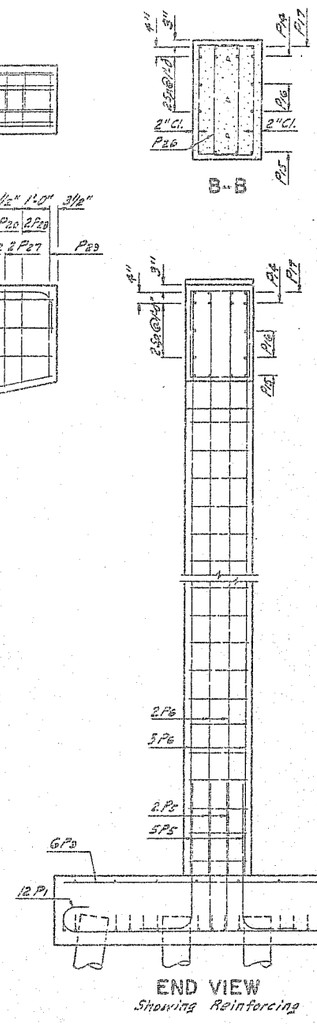


END VIEW
Showing Dimensions

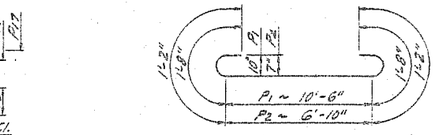
HALF ELEVATION
Showing Dimensions



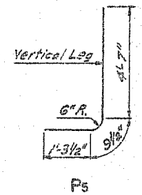
HALF ELEVATION
Showing Reinforcing



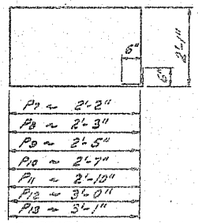
END VIEW
Showing Reinforcing



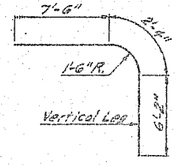
P1 & P2



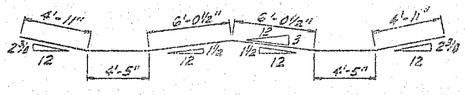
P5



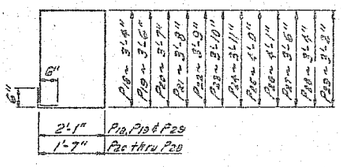
P7 THRU P13



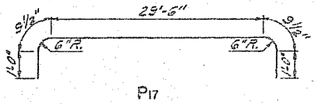
P14



P15

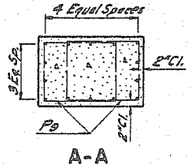


P18 THRU P23

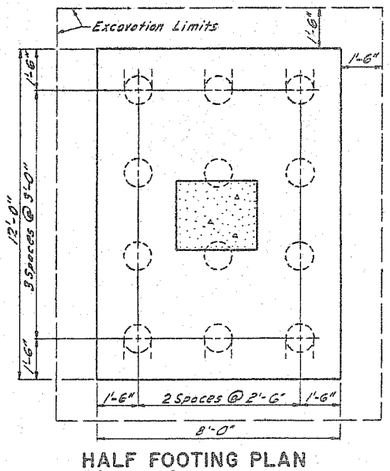


P17

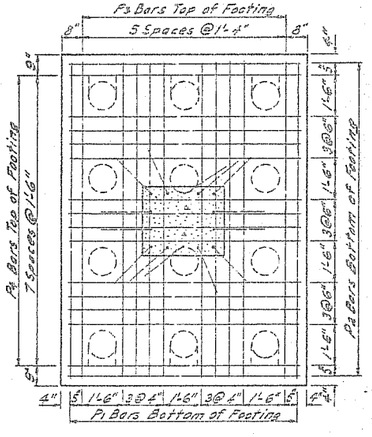
BENT BAR DETAILS



A-A



HALF FOOTING PLAN
Showing Dimensions



HALF FOOTING PLAN
Showing Reinforcing

BENT NO. 3

MARK	NUMBER			SIZE	LENGTH	SHAPE
	Footing	Columns	Cap			
P1	24			10	13'-10"	Bent
P2	32			7	9'-2"	"
P3	12			4	11'-6"	Str.
P4	16			4	7'-6"	"
P5	28			8	6'-8"	Bent
P6		28		3	24'-3"	Str.
P7		12		4	9'-6"	Bent
P8		12		4	9'-8"	"
P9		12		4	10'-0"	"
P10		12		4	10'-2"	"
P11		13		4	10'-10"	"
P12		12		4	11'-2"	"
P13		8		4	11'-4"	"
P14		16		10	16'-0"	"
P15			4	6	30'-9"	"
P16			12	5	30'-3"	Str.
P17			42	9	33'-1"	Bent
P18			1	5	11'-10"	"
P19			2	5	12'-2"	"
P20			8	5	11'-4"	"
P21			4	5	11'-6"	"
P22			8	5	11'-8"	"
P23			4	5	11'-10"	"
P24			8	5	12'-0"	"
P25			4	5	12'-2"	"
P26			8	5	12'-4"	"
P27			4	5	11'-2"	"
P28			4	5	12'-10"	"
P29			2	5	11'-2"	"

PROJECT I-94-1(18)
DRAWING 94-1-5

NOTES:

The concrete in the columns shall be allowed to set at least two hours before the remaining concrete is poured.

All exposed edges shall be beveled with ¾" triangular molding.

QUANTITIES (ONE BENT)	
Class AE-1 Concrete	232 C.Y.
Reinforcing Steel	7395 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

BEACH INTERCHANGE

BENT NO. 3

30'-0" ROADWAY

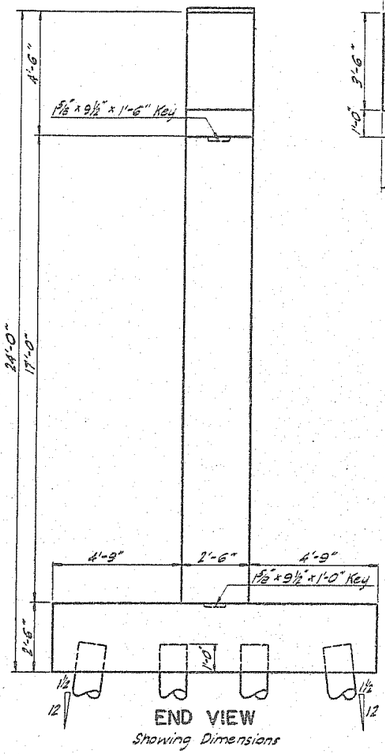
HS20 LOADING

94-1-5

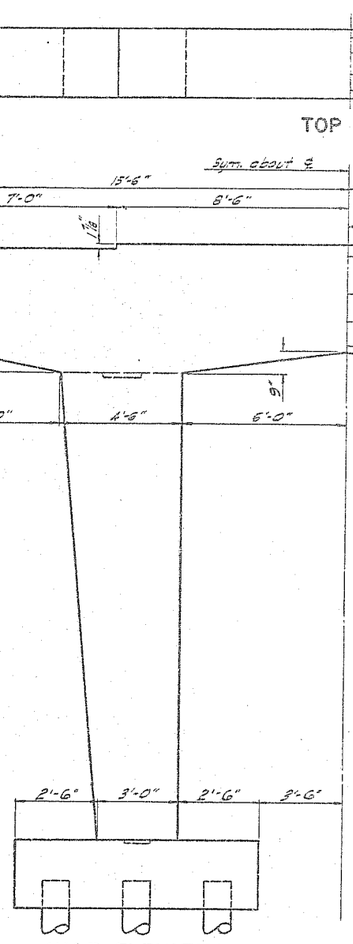
94-1-5

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TO SH
5	N. D.	I-94-1(18)		16	4

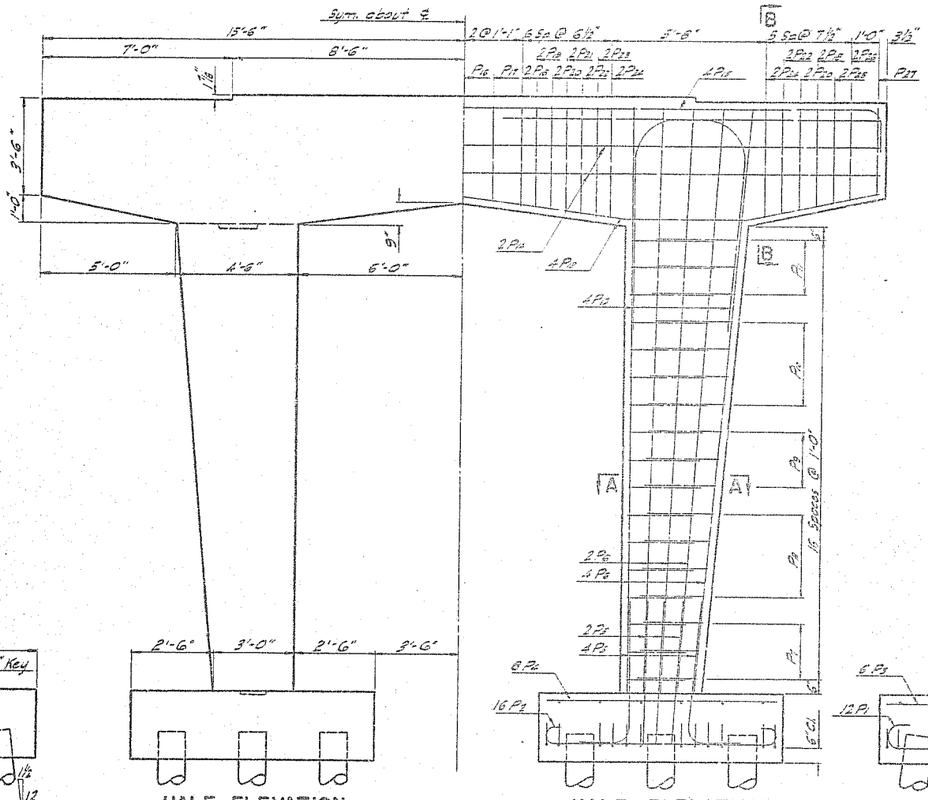
		DATE	CH'D BY
REVISIONS	M		
DESIGN	MADE BY	M.E.W.	
	CHECKED BY	W.E.G.	
DETAILS	MADE BY	W.E.W.	
	CHECKED BY	G.A.L.	
TRACING	MADE BY	L.A.C.	
	CHECKED BY	L.E.G.	
QUANTITIES	MADE BY	L.E.G.	
	CHECKED BY	O.M.Z.	



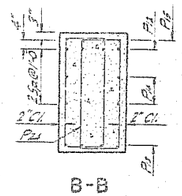
END VIEW
Showing Dimensions



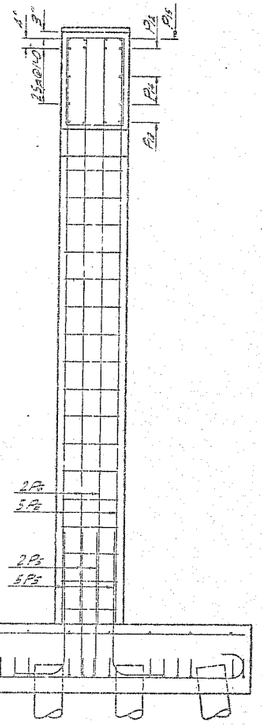
HALF ELEVATION
Showing Dimensions



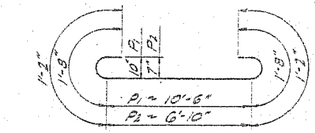
HALF ELEVATION
Showing Reinforcing



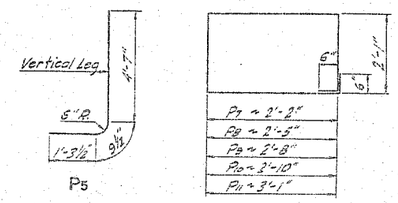
B-B



END VIEW
Showing Reinforcing

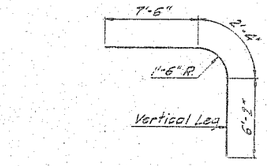


P1 & P2

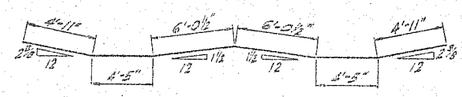


P5

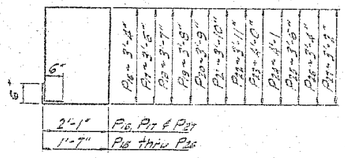
P7 THRU P11



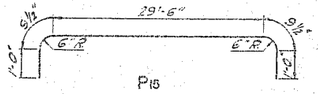
P12



P13

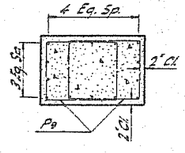


P16 THRU P27

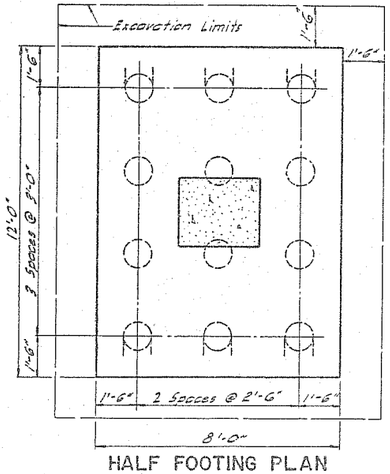


P15

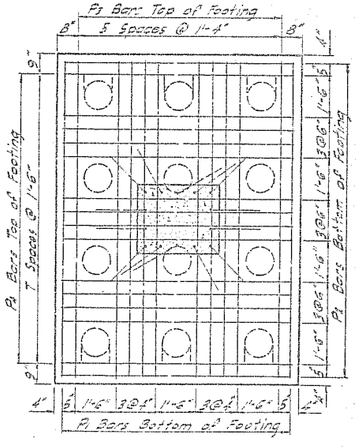
BENT BAR DETAILS



A-A



HALF FOOTING PLAN
Showing Dimensions



HALF FOOTING PLAN
Showing Reinforcing

BENT NO. 4

MARK	NUMBER FOOTING	NUMBER COLUMNS	NUMBER CAP	SIZE	LENGTH	SH
P1	24		10	#3	13'-10"	B
P2	32		7	#3	9'-2"	
P3	12		4	#3	11'-3"	S
P4	16		4	#3	7'-3"	
P5	28		8	#3	6'-8"	B
P6		28	8	#3	21'-3"	S
P7		12	4	#3	3'-6"	B
P8		16	4	#3	10'-0"	"
P9		12	4	#3	10'-6"	"
P10		16	4	#3	10'-10"	"
P11		12	4	#3	11'-4"	"
P12		16	9	#3	16'-0"	"
P13			4	6	30'-5"	"
P14			4	5	32'-5"	S
P15			4	3	33'-1"	B
P16			1	5	11'-10"	"
P17			12	5	12'-2"	"
P18			8	5	11'-2"	"
P19			4	5	11'-6"	"
P20			8	5	11'-8"	"
P21			4	5	11'-10"	"
P22			8	5	12'-0"	"
P23			4	5	12'-2"	"
P24			8	5	12'-4"	"
P25			4	5	11'-2"	"
P26			4	5	10'-10"	"
P27			2	5	11'-6"	"

PROJECT I-94-1(18)
DRAWING 94-1-6

NOTES:

The concrete in the columns shall be allowed to set at least two hours before the remaining concrete is poured.

All exposed edges shall be beveled with ¾ triangular molding.

QUANTITIES	
Class A(P) Concrete	411 C.Y.
Reinforcing Steel	70.91 Lbs.
Excavation (See Layout)	
Piling (See Layout)	

BEACH INTERCHANGE

BENT NO. 4

30'-0" ROADWAY

HS20 LOADING

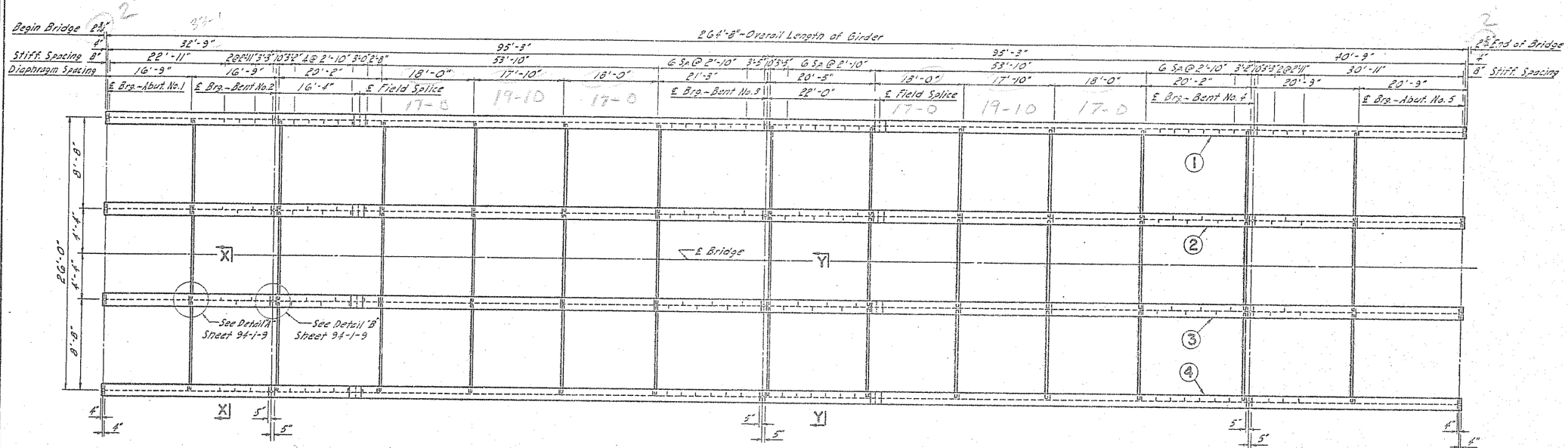
94-1-6

94-1-6

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TO SHT
5	N. D.	I-94-1(18)		17	4

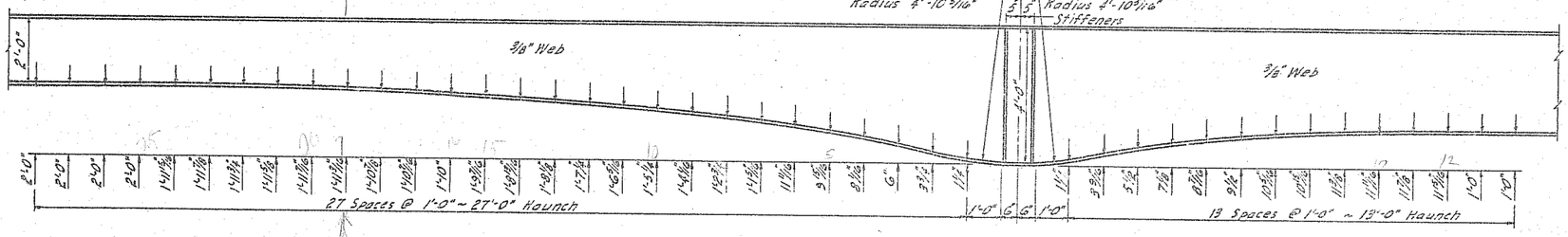
DATE	BY	REVISIONS

SIGN	MADE BY M.E.H.
	CHECKED BY D.A.G.
DETAILS	MADE BY E.E.G.
	CHECKED BY L.E.G.
TRACING	MADE BY G.A.L.
	CHECKED BY G.A.L.
QUANTITIES	MADE BY G.A.L.
	CHECKED BY L.E.G.

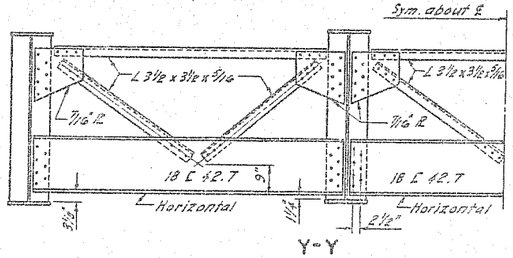


STEEL LAYOUT

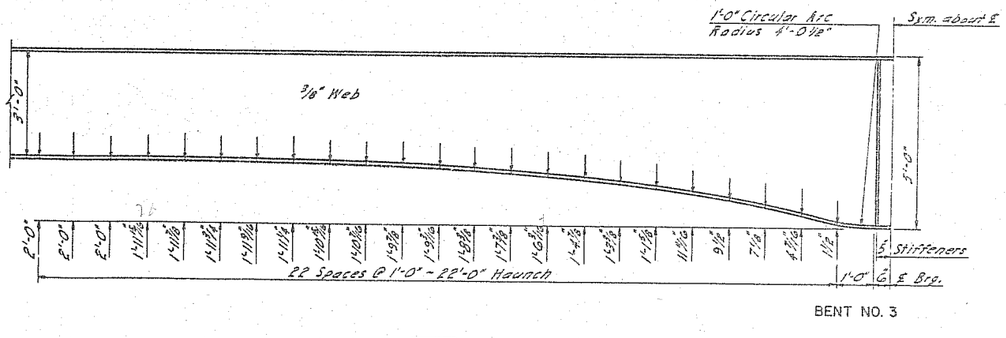
Spans 1 & 4	Spans 2 & 3
1'-0" Circular Arc Radius 4'-10 5/16"	1'-0" Circular Arc Radius 4'-10 5/16"



BENT NO. 2 & 4

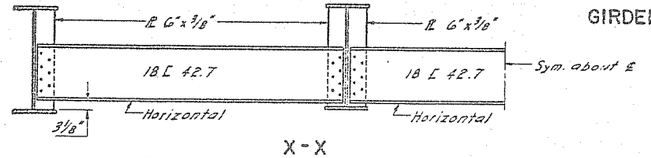


Y-Y
BENT NO. 3



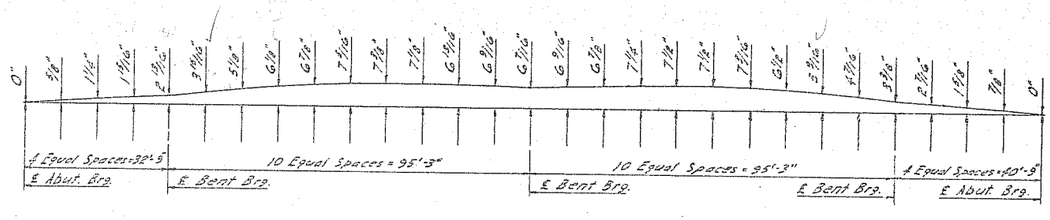
BENT NO. 3

GIRDER HAUNCH DETAILS



X-X

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



SHOP CAMBER DIAGRAM

The shop camber diagram above represents the 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.

QUANTITIES

See Drawing 31-1-3

BEACH INTERCHANGE

SUPERSTRUCTURE DETAILS

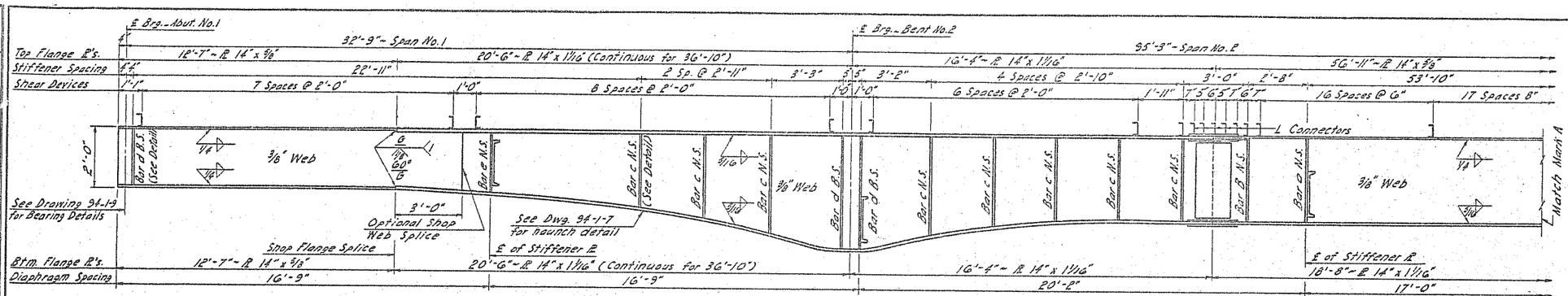
30'-0" ROADWAY

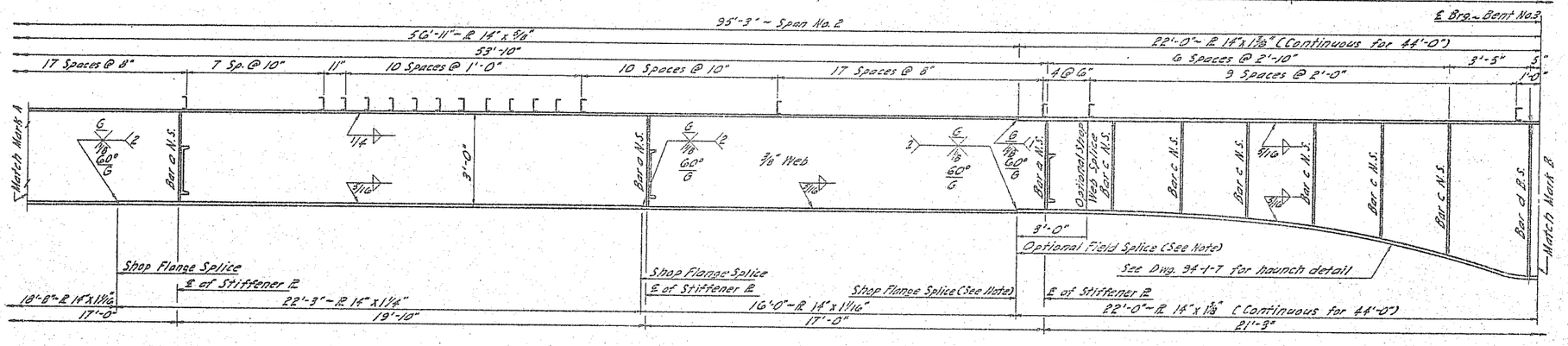
HS20 LOADING

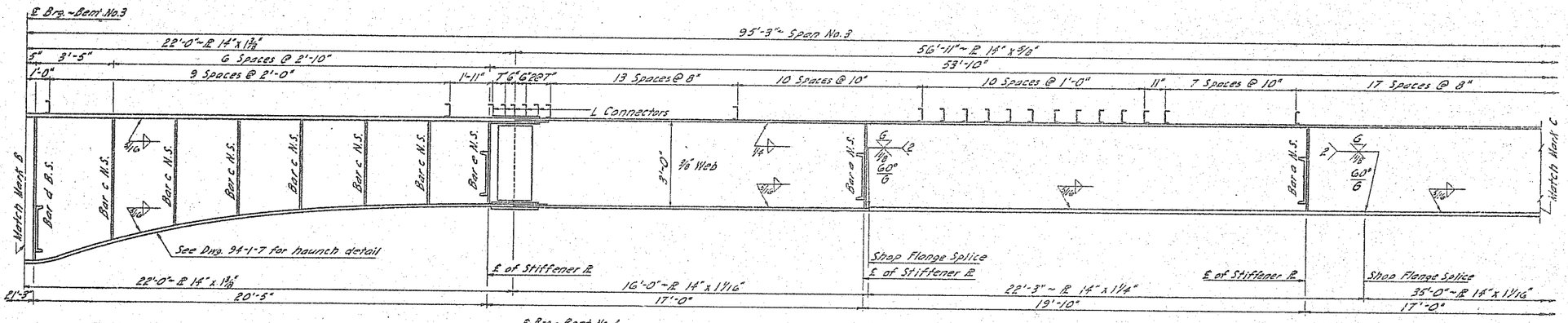
94-1-7

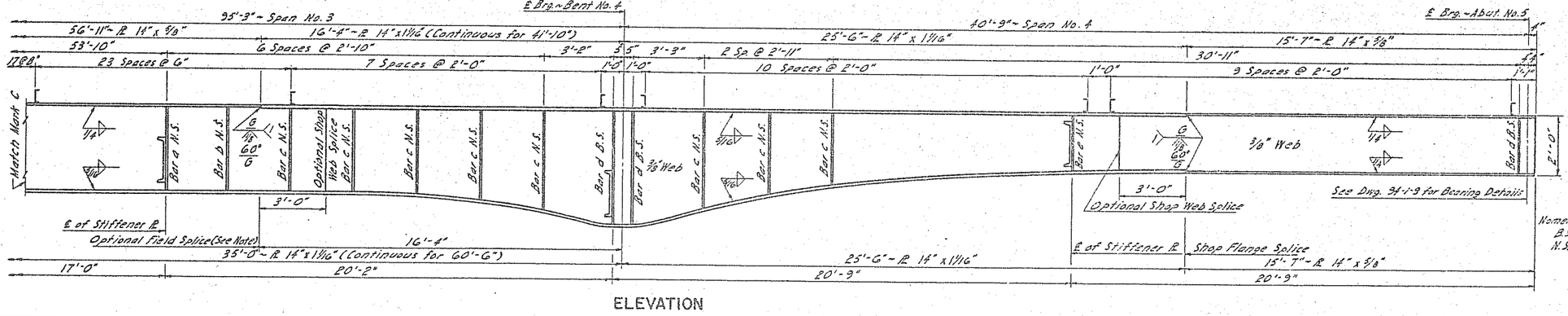
94-1-7

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-94-1(88)		18	4









ELEVATION

FIELD SPLICES:

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

OPTIONAL FIELD SPLICES:

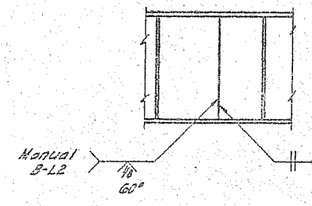
IN ADDITION TO THE TWO FIELD SPLICES SHOWN ON THIS DRAWING TWO OPTIONAL FIELD SPLICES ARE SHOWN. THESE TWO ADDITIONAL FIELD SPLICES MAY BE USED BY THE CONTRACTOR UNDER THE FOLLOWING CONDITIONS.

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 SHEET 94-1-9.
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 SHOP FABRICATION AND ERECTION DRAWING MUST INDICATE FOUR PICK-UP POINTS FOR EACH MEMBER OVER 100 FEET LONG TO BE USED DURING SHIPPING AND ERECTION.

THE DETAILS SHOWN ARE FOR A FOUR SPAN CONTINUOUS WELDED GIRDER AND REPRESENT GIRDER NO. 1 IN A FOUR (4) GIRDER BRIDGE. GIRDERS NO. 2, NO. 3 AND NO. 4 ARE SIMILAR TO GIRDER NO. 1 AND SHALL BE FABRICATED IN ACCORDANCE WITH THESE DETAILS AND DRAWINGS 94-1-7 AND 94-1-9.

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



OPTIONAL SHOP WEB SPLICE

If optional field splices are used in Spans 2 and 3, shop web splice shall not be used in those spans. However optional shop web splices may still be used in spans 1 and 4.

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

QUANTITIES

See Drawing 94-1-9

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

BEACH INTERCHANGE

WELDED GIRDER DETAIL

30'-0" ROADING

HS20 LOADING

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

REVISIONS

NO.	BY	DATE

94-1-8

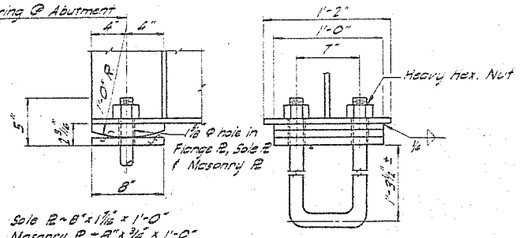
94-1-8

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-94-1(18)		19	45

REVISIONS | DATE | CHK'D BY | MAT

DESIGN — MADE BY M.E.H.; CHECKED BY D.A.B.
DETAILS — MADE BY C.A.D.; CHECKED BY C.A.D.
TRACING — MADE BY C.A.D.; CHECKED BY C.A.D.
QUANTITIES — MADE BY G.A.L.; CHECKED BY G.A.L.

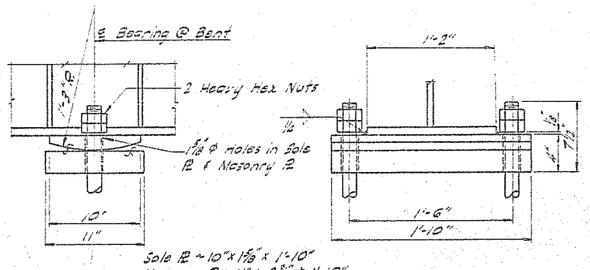
℄ Bearing @ Abutment



Sole 12 ~ 8"x 1 7/16" x 1'-0"
Masonry 12 ~ 8"x 3 1/4" x 1'-0"
U Anchor Bolts ~ 1 1/2" ø x 4'-0"
Note: U Bolts to be cast in abutment

ABUTMENT BEARING DETAILS

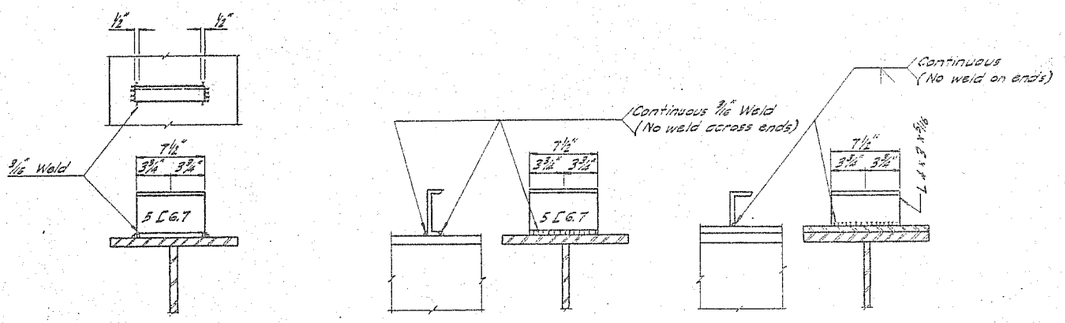
℄ Bearing @ Bent



Sole 12 ~ 10"x 1 7/8" x 1'-10"
Masonry 12 ~ 11" x 2 3/8" x 1'-10"
Swedge Bolts ~ 1 1/2" ø x 2'-0"

BENT BEARING DETAILS

BENT 3

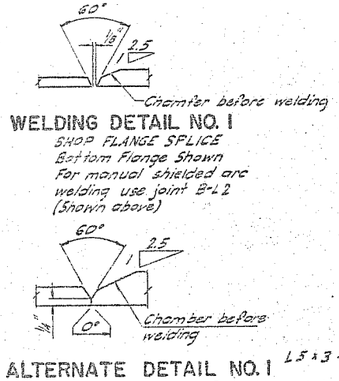


Use in Span 1 and in negative moment regions where spacing is 2'-0"

Use in positive moment region except over splice 12's.

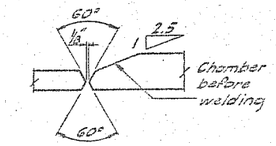
Use over splice 12's

SHEAR DEVICE DETAILS



WELDING DETAIL NO. 1

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

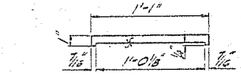


WELDING DETAIL NO. 2

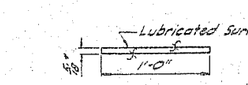
For manual Shielded Metal Arc Welding
Use joint B-U3b (Shown above)
For Submerged Arc Welding use joint B-L3-S

ALTERNATE DETAIL NO. 1

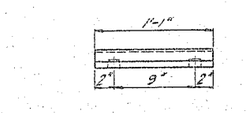
SHOP FLANGE SPLICE
Bottom Flange Shown
Submerged Arc AWS B-L2b-S
If submerged arc welding is used AWS B-L2b-S is an acceptable replacement for B-L2 (Manual)



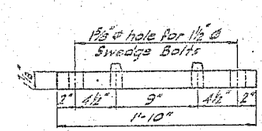
SOLE PLATE



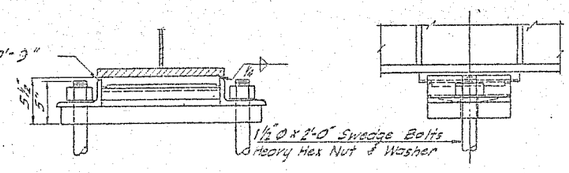
BRONZE PLATE



ROCKER PLATE

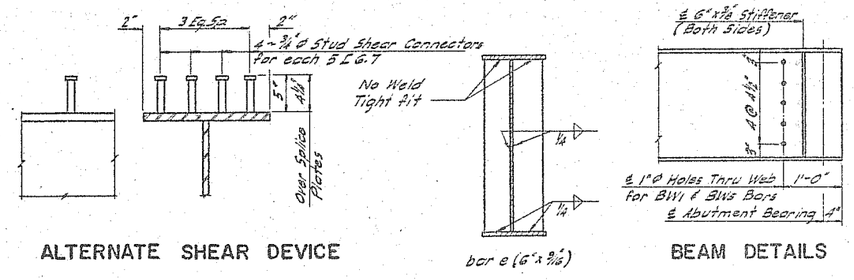


MASONRY PLATE



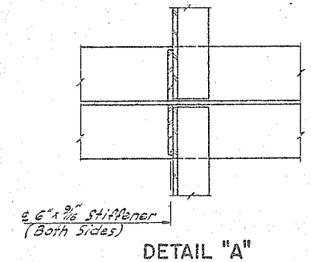
BENT BEARING DETAILS

BENT 2 & 4

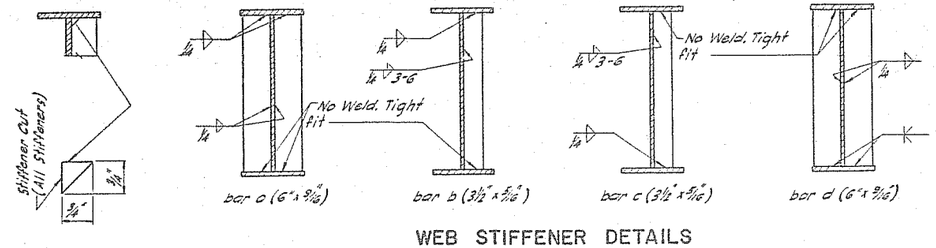


ALTERNATE SHEAR DEVICE

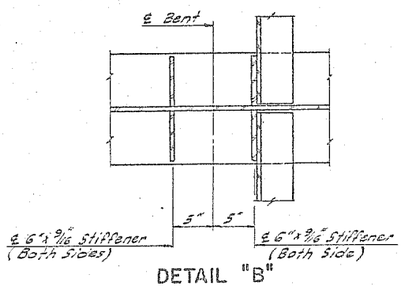
BEAM DETAILS



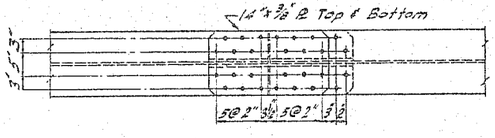
DETAIL "A"

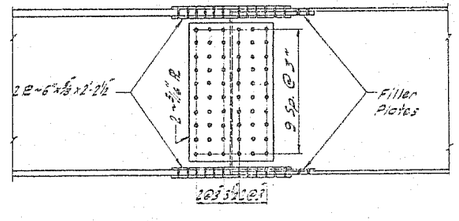


WEB STIFFENER DETAILS



DETAIL "B"





FIELD SPLICE DETAIL

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

QUANTITIES

Structural Steel (A-36)	27,290 Lbs
Structural Steel (A-441)	155,480 Lbs

BEACH INTERCHANGE

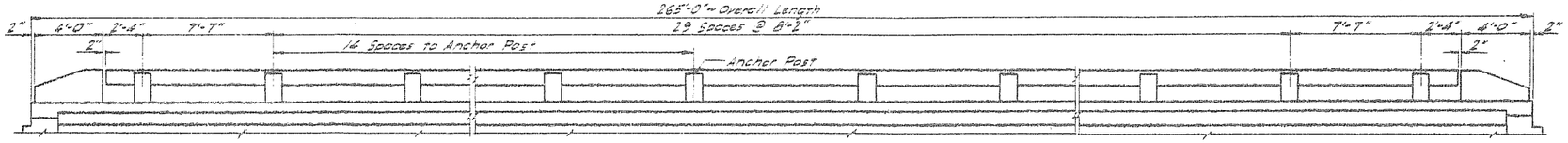
SUPERSTRUCTURE DETAILS

30'-0" ROADWAY
HS20 LOADING

94-1-9

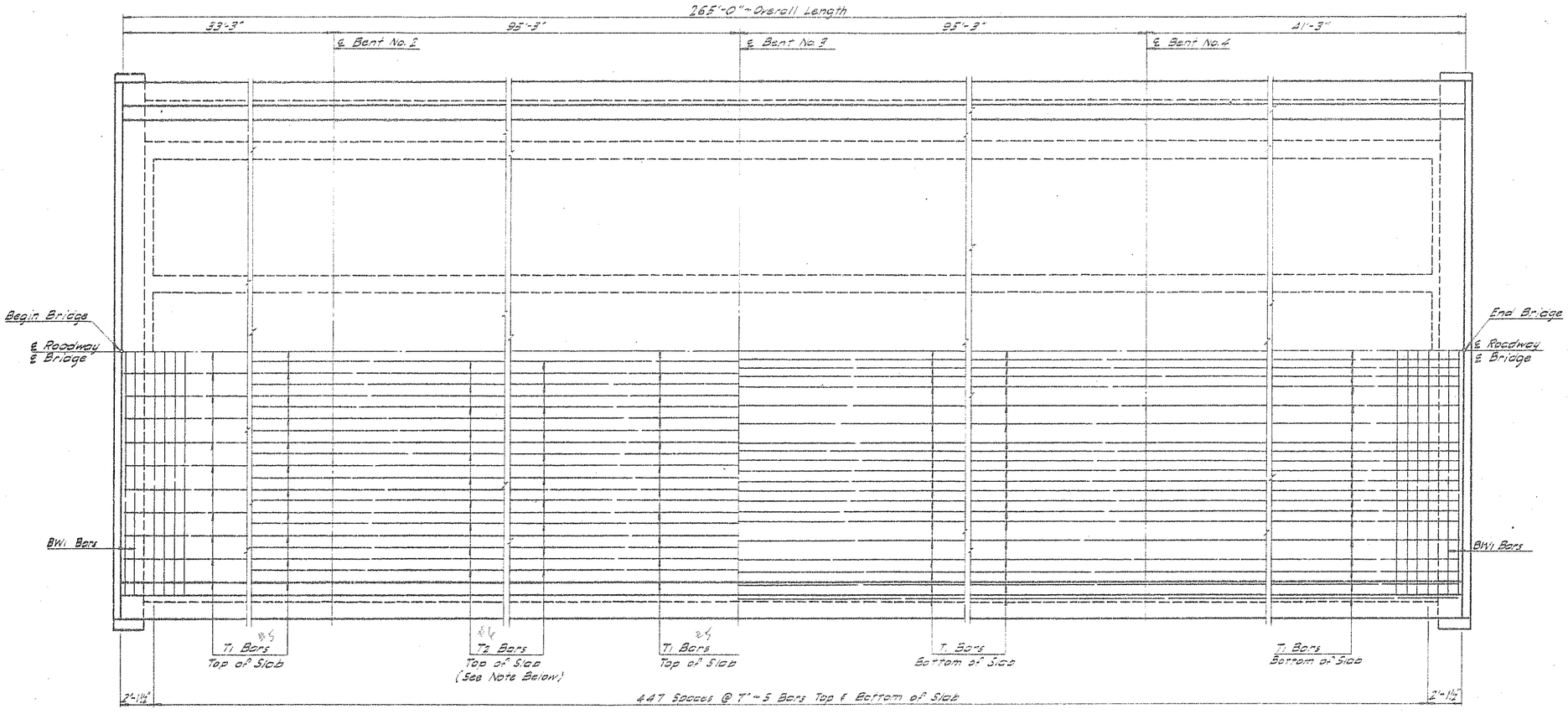
94-1-9

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHTS
5	N. D.	I-94-1(69)		28	4



PART ELEVATION

See H-0144 for Railing Details

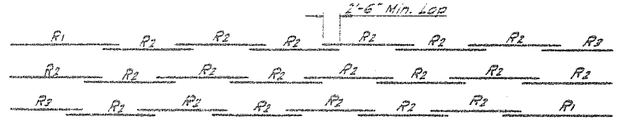


PART PLAN

Half Showing Slab Reinforcing
Typical Both Sides ~ by Rotation

NOTE:

T2 Bar placement:
At Bent #2 - 15 feet in span #1, 25 feet in span #2
At Bent #3 ~ Center over Bent, 20 feet in each 2 of 3
At Bent #4 ~ 25 feet in span #3, 15 feet in span #4



R BAR SPLICING DETAIL

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

QUANTITIES

See Sheet 92-1-11 for Quantities

BEACH INTERCHANGE

SLAB & RAILING DETAILS

30'-0" ROADWAY

HS20 LOADING

C.O.-94-1-10

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

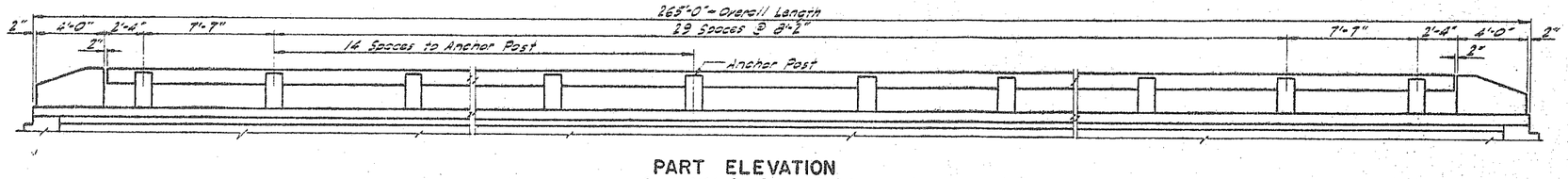
REVISIONS	MADE BY	CHKD BY	DATE

C.O.-94-1-10

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-94-1(18)		20	45

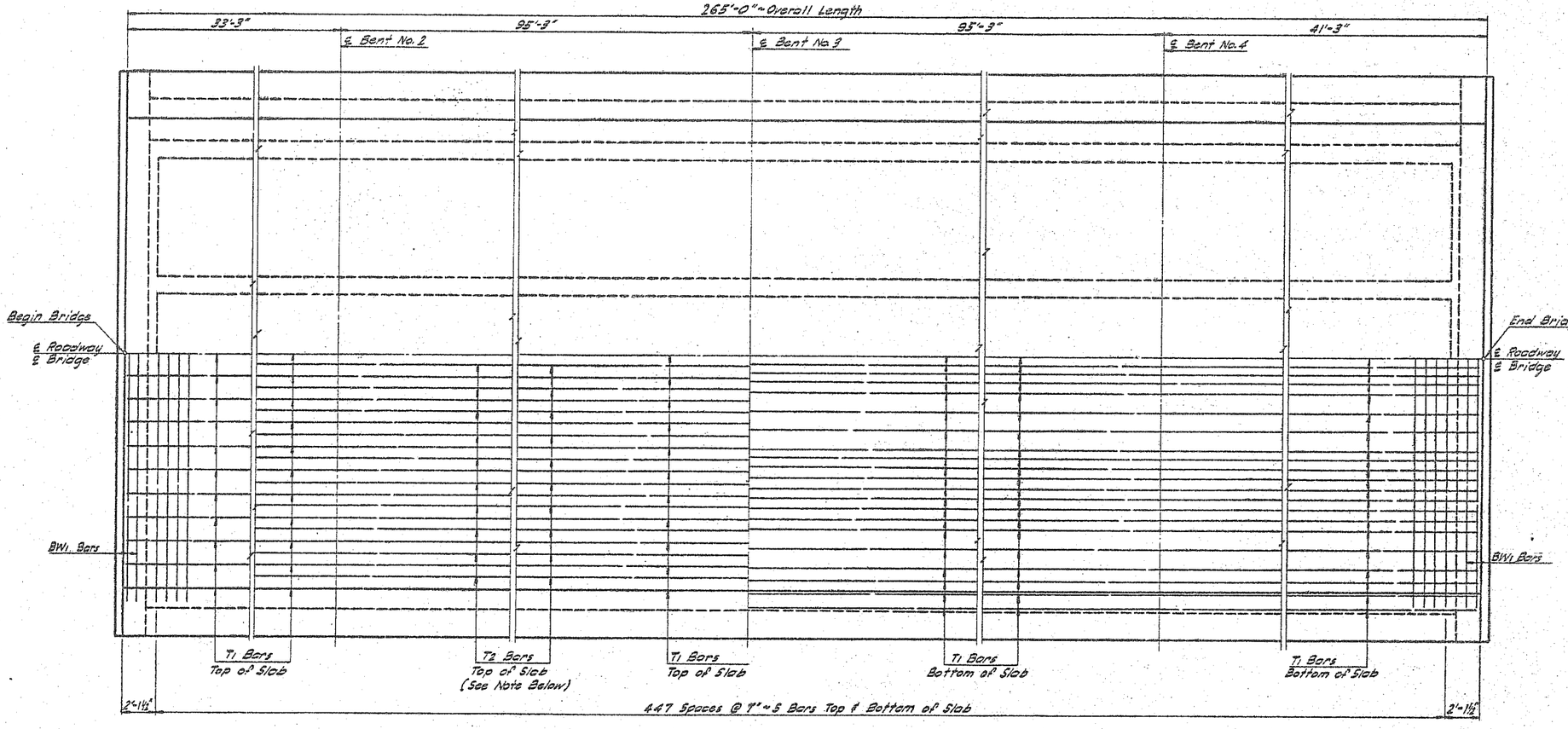
DESIGN	MADE BY	M.E.H.
	CHECKED BY	D.A.B.
DETAILS	MADE BY	L.D.H.
	CHECKED BY	G.A.L.
TRACING	MADE BY	L.E.G.
	CHECKED BY	
QUANTITIES	MADE BY	
	CHECKED BY	

REVISIONS	MAT	CHK'D BY	DATE



PART ELEVATION

See H-0144 for Railing Details

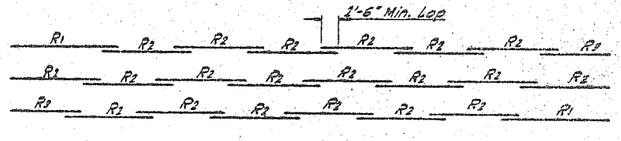


PART PLAN

Half Showing Slab Reinforcing
Typical Both Sides ~ by Rotation

NOTE:

T2 Bar placement:
At Bent #2 - 15 feet in span #1, 25 feet in span #2
At Bent #3 - Center over Bent, 20 feet in each 2 of 3
At Bent #4 - 25 feet in span #3, 15 feet in span #4



R BAR SPLICING DETAIL

VOID

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

QUANTITIES

See Sheet 94-1-11 for Quantities

BEACH INTERCHANGE

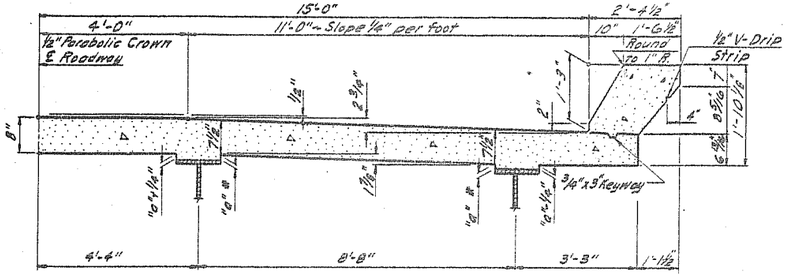
SLAB & RAILING DETAILS

30'-0" ROADWAY

HS20 LOADING

94-1-10

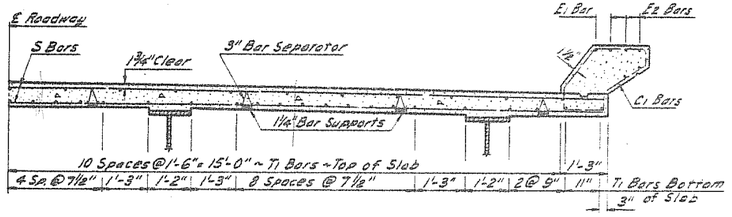
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOT. SHTS.
5	N. D.	I-94-1(89)		21	4



HALF SECTION OF SLAB

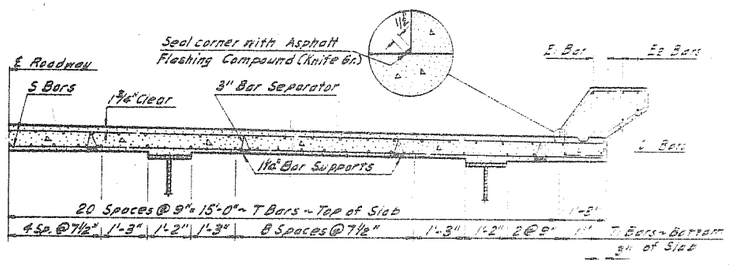
Showing Dimensions

"a" equals 1/8" @ ℄ bearings of bents and abutments. At intermediate points "a" equals screed elevation at ℄ Roadway minus Top of beam elevation minus (.8438' outside beams) (.6875' inside beams).



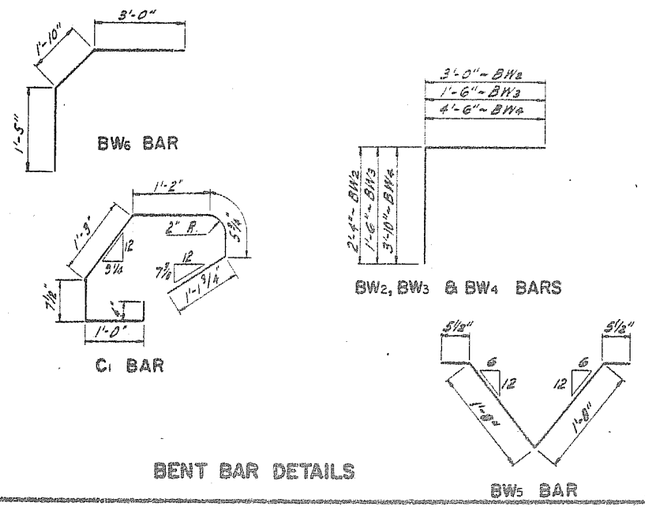
HALF SECTION OF SLAB

Showing Reinforcement between Bents & Abutments.

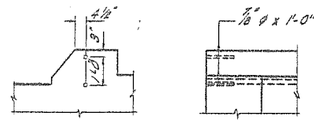


HALF SECTION OF SLAB

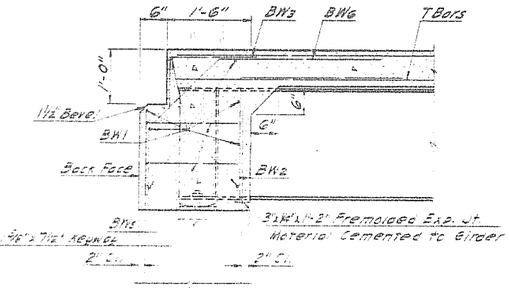
Showing Reinforcement Over Bents



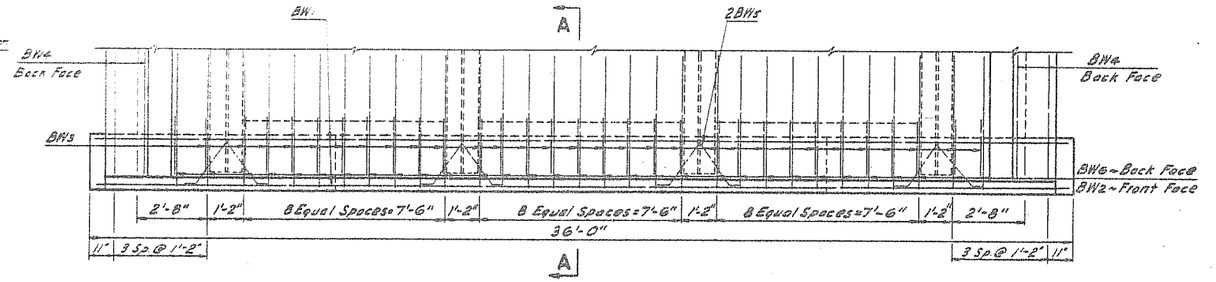
BENT BAR DETAILS



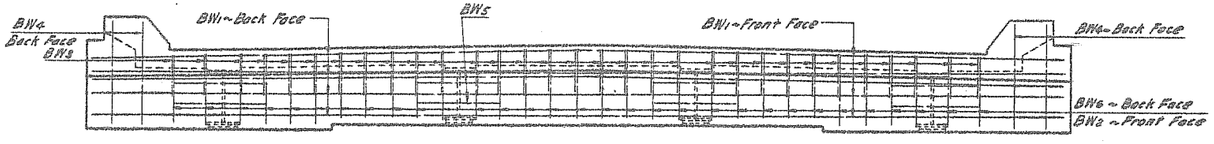
CURB SLEEVE DETAILS



A-A



PLAN



ELEVATION

END BEAM DETAILS

SUPERSTRUCTURE

MARK	NUMBER SLAB	NUMBER RAILING & POSTS	SIZE	LENGTH	SHAPE
AC	446		3	2'-11"	Bent
P1	8		6	37'-3"	Str.
P2	80		6	34'-3"	"
P5	8		6	31'-3"	"
S	B96		6	32'-2"	Str.
T1	558		5	31'-3"	Str.
T2	60		6	40'-0"	"

PROJECT I-94-1(89) DRAWING 94-1-10 B II SHEET 2

SUPERSTRUCTURE

MARK	NUMBER SLAB	NUMBER RAILING & POSTS	NUMBER CURB	SIZE	LENGTH	SHA
BW1	16		6	6	35'-8"	St
BW2	62		6	6	5'-4"	Be
BW3	62		6	6	3'-0"	"
BW4	8		6	6	8'-4"	"
BW5	16		6	5	4'-3"	"
BW6	62		6	5	6'-3"	"
C1	586			5	6'-0"	Be
E1			16	6	35'-8"	St
E2			80	5	35'-0"	"
P1			8	5	4'-2"	Be
P2			4	5	3'-11"	"
P3			4	5	3'-6"	"
P4			4	5	3'-2"	"
P5			8	5	4'-3"	"
P6			4	5	4'-5"	"
P7			4	5	4'-2"	"
P8			4	5	3'-9"	"
P9		4		5	4'-1"	"
P10		4		5	3'-9"	"
P11		8		4	3'-11"	Be
P12		8		4	3'-8"	St
P16			186	6	3'-11"	Be
P15			6	6	4'-8"	"
P16			128	5	4'-11"	"
P17		128		3	3'-10"	"
P18		124		3	2'-10"	"
P19		4		3	4'-4"	"

PROJECT I-94-1(89) DRAWING 94-1-10 B II SHEET 1

*Field Ben

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-0149 for railing details.

See Sheets 94-1-7 thru 94-1-9 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.

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

QUANTITIES

Class AE-3 Concrete	241.0 C.Y.
Class AAE-3 Concrete (Railing)	6.08 C.Y.
Reinforcing Steel	82,523 Lbs.
Railing & End Post Quantities Included	

BEACH INTERCHANGE

SLAB, END BEAM & MISC. DETAILS

30'-0" ROADWAY

HS20 LOADING

C.O.-94-1-11

C.O.-94-1-11

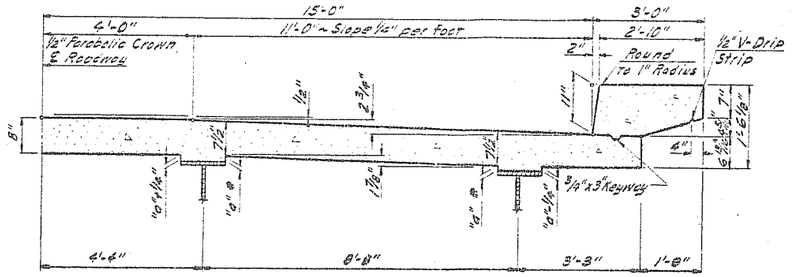
DESIGN — CHECKED BY D.A.R. — MADE BY G.A.L.
DETAILS — CHECKED BY F.D.H. — MADE BY F.D.H.
CHECKING — CHECKED BY G.A.L. — MADE BY G.A.L.
QUANTITIES — CHECKED BY F.D.H. — MADE BY F.D.H.

REVISIONS — DATE — MADE BY — CHECKED BY

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	N. D.	I-94-1(88)		21	43

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

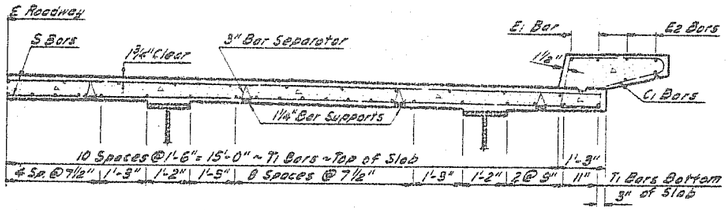
REVISIONS — MAP



HALF SECTION OF SLAB

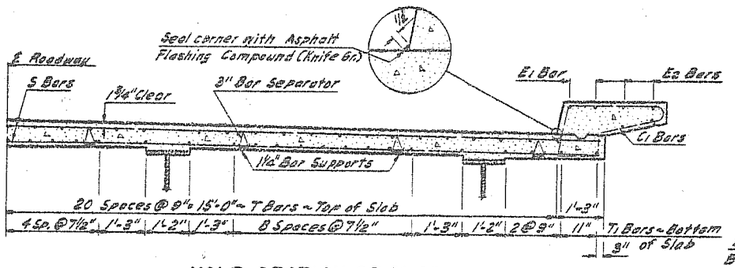
Showing Dimensions

"a" equals 1⅛" @ ℄ bearings of bents and abutments. At intermediate points "a" equals screed elevation at ℄ Roadway minus top of beam elevation minus (.8438' outside beams) (.6875' inside beams).



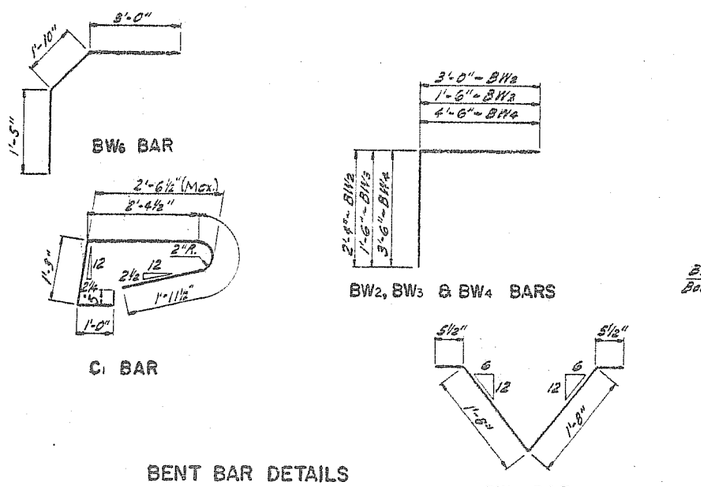
HALF SECTION OF SLAB

Showing Reinforcement between Bents & Abutments.

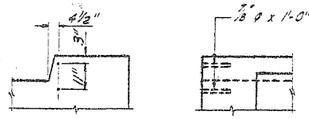


HALF SECTION OF SLAB

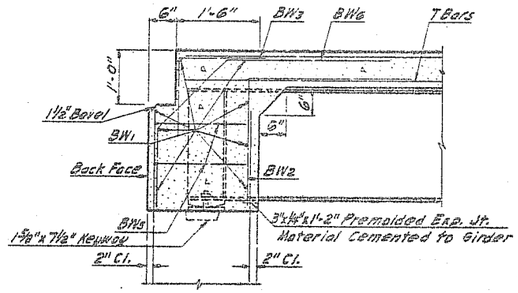
Showing Reinforcement over Bents



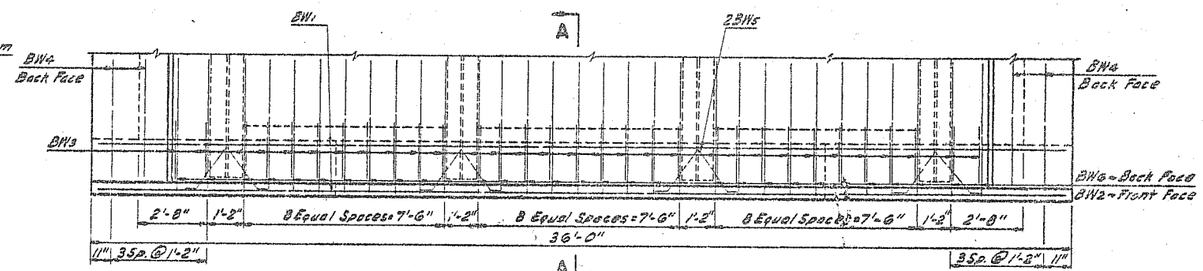
BENT BAR DETAILS



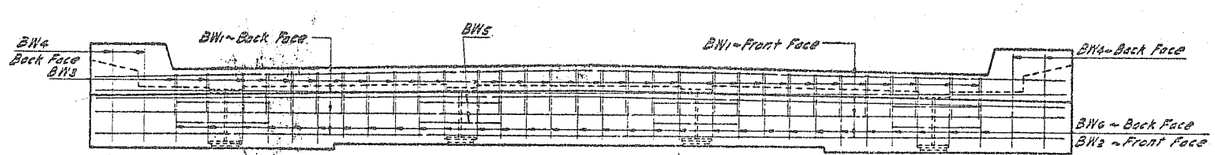
CURB SLEEVE DETAILS



A-A



PLAN



ELEVATION

END BEAM DETAILS

SUPERSTRUCTURE

PROJECT I-94-1(88) DRAWING 94-1-10 B II

MARK	NUMBER SLAB	NUMBER RAILING & POSTS	NUMBER CURB	SIZE	LENGTH	SHAPE
AC	446		3	2'-11"	Bent	
R1	8		6	37'-3"	Str.	
R2	20		6	34'-3"	"	
R3	8		6	31'-3"	"	
S	896		6	32'-2"	Str.	
T1	558		5	31'-3"	Str.	
T2	60		6	40'-0"	"	

SHEET 2

SUPERSTRUCTURE

PROJECT I-94-1(88) DRAWING 94-1-10 B II

MARK	NUMBER SLAB	NUMBER RAILING & POSTS	NUMBER CURB	SIZE	LENGTH	SHAPE
BW1	16		6	35'-3"	Str.	
BW2	62		6	31'-11"	Bent	
BW3	62		6	31'-3"	"	
BW4	8		6	21'-0"	"	
BW5	16		5	41'-3"	"	
BW6	62		5	6'-3"	"	
C1	586		5	7'-0"	Bent	
E1		16	6	35'-3"	Str.	
E2		80	5	35'-0"	"	
P1		8	5	4'-3"	Bent	
P2		4	5	3'-9"	"	
P3		4	5	3'-6"	"	
P4		4	5	3'-2"	"	
P5		8	5	4'-7"	"	
P6		4	5	4'-3"	"	
P7		4	5	3'-11"	"	
P8		4	5	3'-8"	"	
P9	4		5	4'-0"	"	
P10	4		5	3'-9"	"	
P11	8		6	3'-11"	Bent	
P12	8		4	3'-8"	Str.	
P13	8		5	2'-0"	"	
P14		184	6	4'-4"	Bent	
P15		6	6	4'-11"	"	
P16		128	5	5'-3"	"	
P17	196		3	3'-10"	"	
P18	128		3	2'-10"	"	

SHEET 1 — *Field Bent

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 602-3.6.2.4 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-0144 for railing details.

See Sheets 94-1-7 thru 94-1-9 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.

VOID

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

QUANTITIES

Class AA(3)-Concrete	285.6 C.Y.
Class AA(3)-Concrete (Railing)	16.72 C.Y.
Reinforcing Steel	83396 Lbs.
Railing & End Post Quantities Included	

BEACH INTERCHANGE

SLAB, END BEAM & MISC. DETAILS

30'-0" ROADWAY

HS20 LOADING

94-1-11