STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	IM-1-094(179)156	20820	1	1

JOB # 10
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

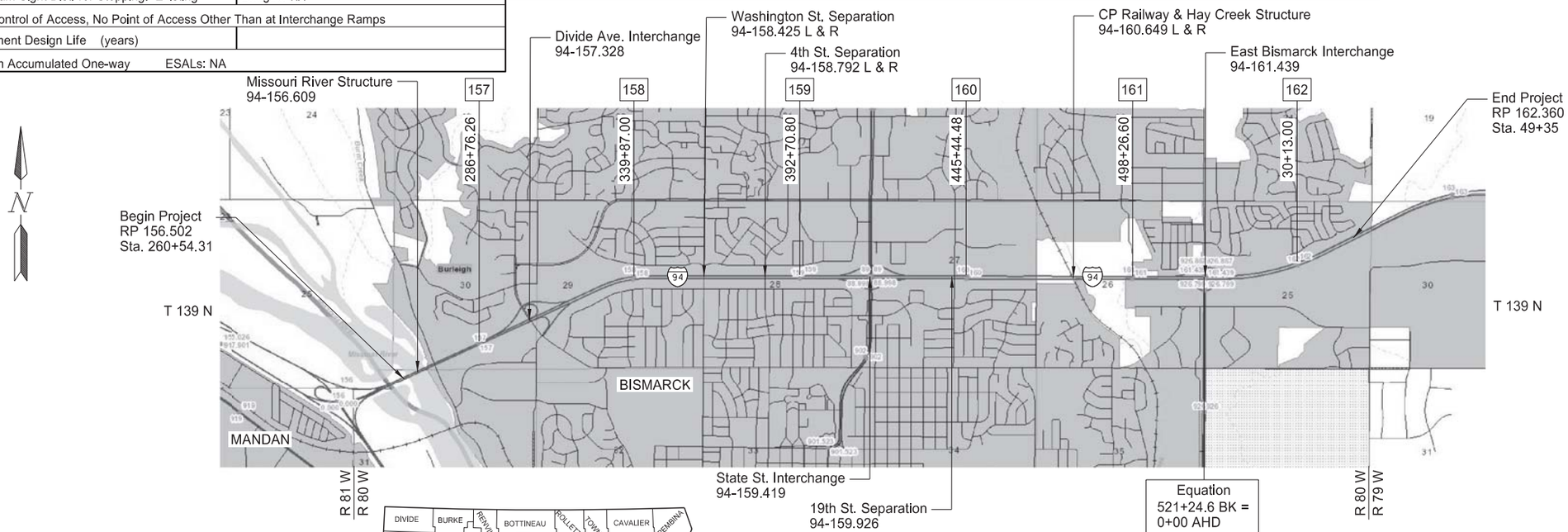
IM-1-094(179)156

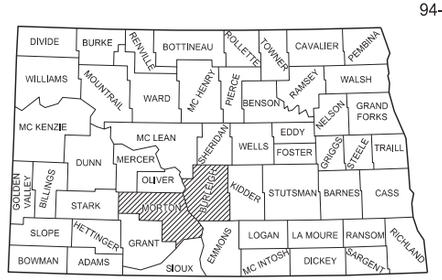
Burleigh & Morton County
Grant Marsh Bridge E to E Bismarck Interchange - EB/WB
CPR and HMA Overlay, WF/WT Beam Joint Repair,
Bridge Barrier Replacements, Deck Drain Replacements, Bridge Deck Overlays,
Approach Slab Replacements, Guardrail, Crossovers

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

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
IM-1-094(179)156	5.858	5.858

DESIGN DATA				
Traffic	Average Daily			
Current 2015 W; E	Pass: 16,820; 16,910	Trucks: 1,385; 1,335	Total: 18,205; 18,245	RP 156.502 to RP 157.33
Forecast 2035 W; E	Pass: 30,445; 30,610	Trucks: 2,275; 2,190	Total: 32,720; 32,800	
Current 2015 W; E	Pass: 11,070; 12,890	Trucks: 1,440; 1,355	Total: 12,510; 14,245	RP 157.33 to RP 159.424
Forecast 2035 W; E	Pass: 20,040; 23,335	Trucks: 2,365; 2,225	Total: 22,405; 25,560	
Current 2015 W; E	Pass: 7,380; 6,795	Trucks: 1,310; 1,255	Total: 8,690; 8,050	RP 159.424 to RP 161.439
Forecast 2035 W; E	Pass: 13,360; 12,300	Trucks: 2,150; 2,060	Total: 15,510; 14,360	
Current 2015 W; E	Pass: 3,320; 3,320	Trucks: 1,430; 1,435	Total: 4,750; 4,755	RP 161.439 to RP 162.360
Forecast 2035 W; E	Pass: 6,010; 6,010	Trucks: 2,345; 2,355	Total: 8,355; 8,365	
RP 156.502 to RP 160.100				
Clear Zone Dist.: Existing		Design Speed: 60		
Minimum Sight Dist. for Stopping: Existing		Bridges: NA		
RP 160.100 to RP 162.360				
Clear Zone Dist.: Existing		Design Speed: 75		
Minimum Sight Dist. for Stopping: Existing		Bridges: NA		
Full Control of Access, No Point of Access Other Than at Interchange Ramps				
Pavement Design Life (years)				
Design Accumulated One-way ESALs: NA				





STATE COUNTY MAP

DESIGNERS

Kristen Leier /s/

Douglas A Schumaker /s/

APPROVED DATE 9/7/16

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 9/7/16

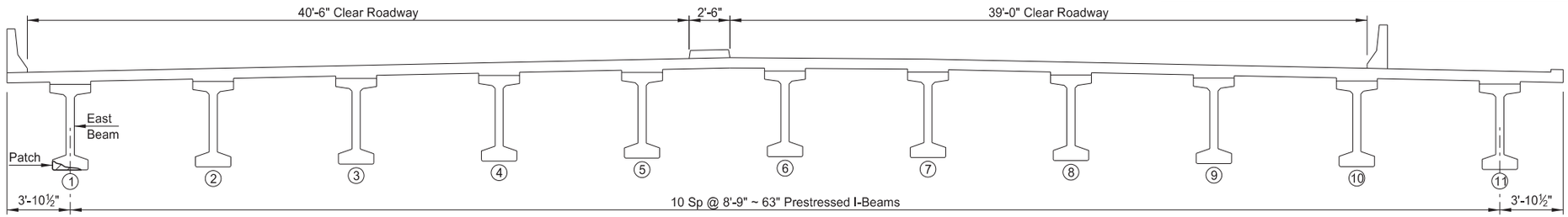
James Douglas Rath /s/
NDDOT DESIGN DIVISION

This document was originally issued and sealed by James Douglas Rath, Registration Number PE- 4288, on 09/07/16 and the original document is stored at the North Dakota Department of Transportation

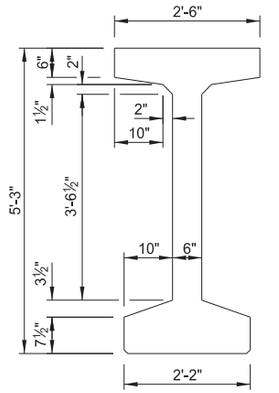
9/7/2016 10:52:08 AM kweninger R:\project\10094156.179\design\001TS_001_Title.dgn

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

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	IM-1-094(179)156	170	13

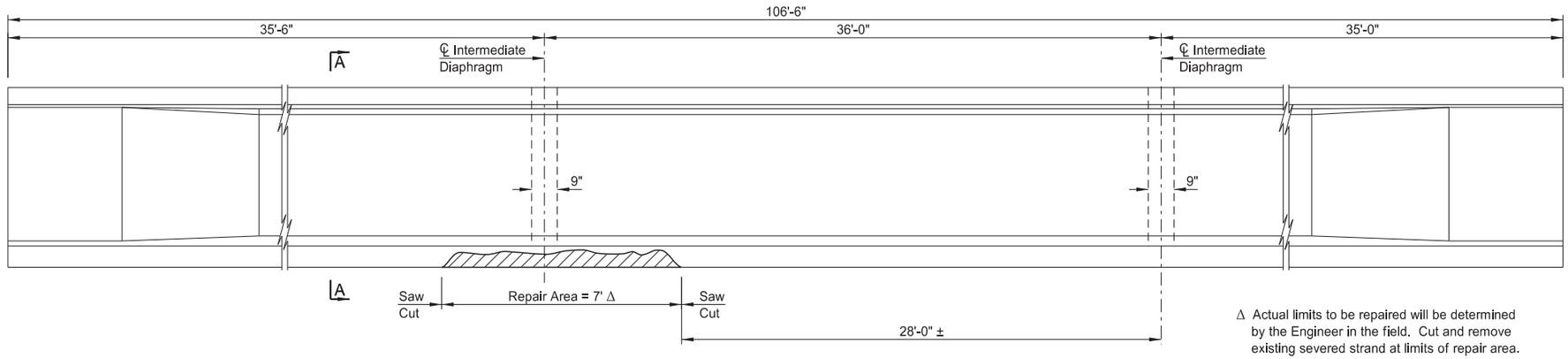


TYPICAL DECK SECTION



(SHOWING DIMENSIONS)

A-A



(SHOWING OUTSIDE FACE ~ LOOKING WEST)

BEAM 1 ELEVATION ~ SPAN OVER WESTBOUND I-94

Δ Actual limits to be repaired will be determined by the Engineer in the field. Cut and remove existing severed strand at limits of repair area.

NOTES:

100 SCOPE OF WORK: Work at this site consists of patching a damaged prestressed beam.

930 PATCHING CONSTRUCTION SEQUENCE (Beam 1):

1. Use a 15 pound maximum size chipping hammer to remove any unsound concrete. For the edges of the repair area produce sharp neat lines, one inch deep, by saw cutting or other means approved by the Engineer. Use care in the removal process so that no damage is done to the prestressing steel or reinforcing steel.

2. After all unsound concrete is removed, clean the existing surface by light sand blasting or high pressure water blasting. After the surface has dried and just before the patch material is placed, coat the surface with an epoxy bonding agent.

3. Restore the beam to its original cross section with concrete material that is specifically intended for patching concrete. This material may be SIKATOP 122 Repair Mortar, Tamms Duraltop Gel, ThoRoc HB2 (ChemRox Incorporated), or an approved equal. It is important to minimize the shrinkage in the patch material, therefore cure the material as recommended by the manufacturer.

4. Include all labor, equipment and materials required to remove all unsound concrete and patch the damaged area on Beam 1 in the bid item "Girder Patching."

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
930	9694	GIRDER PATCHING	L SUM	1

This document was originally issued and sealed by Brian W. Raschke, Registration Number PE 4361, on 09/02/16 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
DIVIDE AVENUE INTERCHANGE
BISMARCK

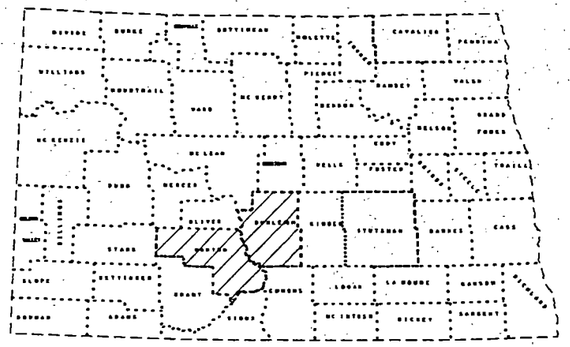
PRESTRESSED CONCRETE GIRDER PATCHING DETAILS
PROJECT: IM-1-094(179)156

BURLEIGH COUNTY

09/06/16 — DATE
Terrence R. Udland — BRIDGE ENGINEER

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	SS-1-999(005)	1

JOB NO. 11

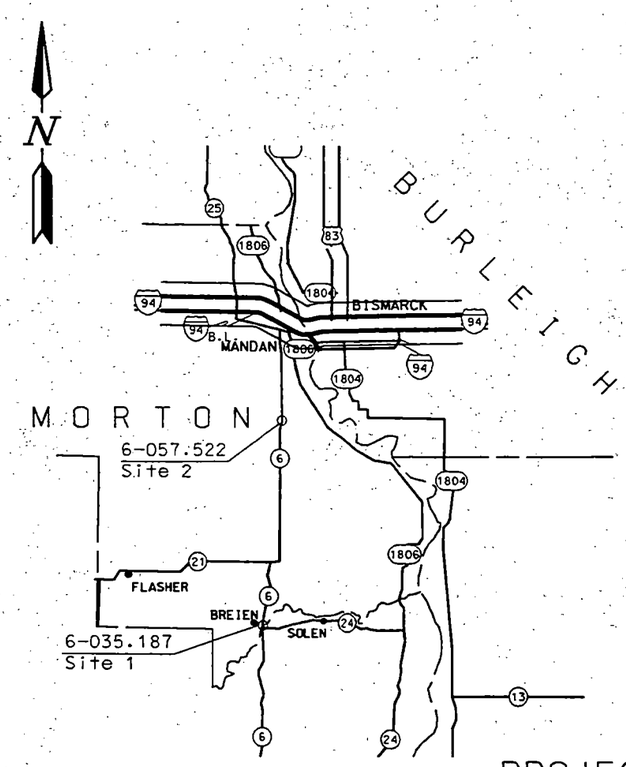


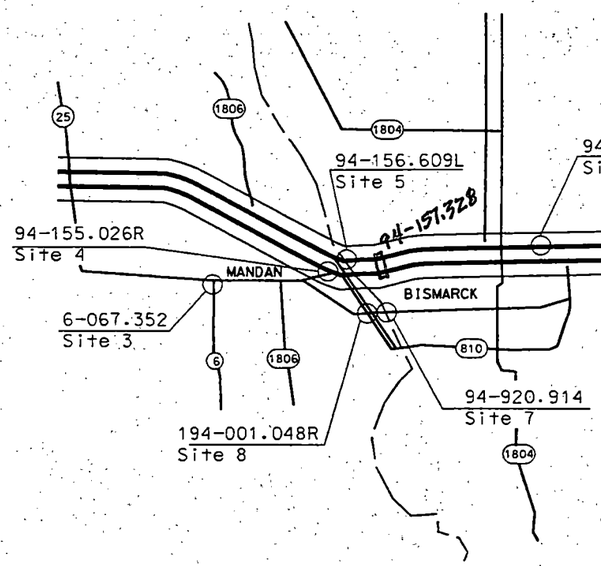
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

BURLEIGH & MORTON COUNTY

SS-1-999(005)

PROJECT SS-1-999 (005) CONSISTS OF PLACING A DECK OVERLAY, A RAIL RETROFIT AND NEW APPROACH SLABS AT ONE SITE; A DECK SPALL REPAIR AT ONE SITE; EXPANSION JOINT MODIFICATIONS AT FOUR SITES; AND APPROACH SLAB JOINT REPAIR AT TWO SITES.





PROJECT LOCATIONS IN BISMARCK DISTRICT

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

LIST OF STANDARD DRAWINGS

D-704-8 BREAKAWAY SYSTEMS FOR CONSTRUCTION ZONE SIGNS
D-704-9 CONSTRUCTION SIGN DETAILS
D-704-10 CONSTRUCTION SIGN DETAILS
D-704-11 CONSTRUCTION SIGN DETAILS
D-704-12 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-704-26 CONSTRUCTION SIGN AND BARRICADE LOCATION DETAILS
D-704-35 SIGN LAYOUT FOR ONE LANE CLOSURE INTERSTATE SYSTEM
D-754-82 HAZARD MARKERS
D-764-1 BEAM GUARDRAIL GENERAL DETAILS
D-764-2B BEAM EATING STEEL TERMINAL ASSEMBLY
D-764-2C FLARED ENERGY ABSORBING TERMINAL
D-764-2D SEQUENTIAL KINKING TERMINAL ASSEMBLY
D-764-2E ET-2000 - LEFT TERMINAL ASSEMBLY
D-764-2F ELT ECCENTRIC LOADER TERMINAL ASSEMBLY
D-764-2G ECCENTRIC LOADER DETAILS
D-764-3 W-BEAM GUARD RAIL AT BRIDGE END
D-764-3A THRIE BEAM TO W-BEAM TRANSITION & CONNECTION
D-764-9 GUARDRAIL AT BRIDGE ENDS
D-764-13 TYPICAL GRADING AT BRIDGE ENDS

APPROVED
5-26-99
DATE
Terrence R. Udland
BRIDGE ENGINEER

TERRENCE R. UDLAND REGISTERED PROFESSIONAL 2674 ENGINEER NORTH DAKOTA

APPROVED DATE 5-26-99
David K. O'Connor
P.E. 1199
DIRECTOR OF HIGHWAYS & ENGINEERING
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

TITLE 99LCS043 LLS

94-157.328

DESIGN DATA I-94 Main Line				
Traffic	Average Daily			Est.Max.Hr.
Current 1991	Pass. 15,000	Trucks 1,300	Total 16,400	1,640
Forecast 2001	Pass. 24,100	Trucks 2,100	Total 26,200	2,620
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# 29

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

IN BURLEIGH AND MORTON COUNTY

FEDERAL AID PROJECT NO.
STI-IM-1-094(013)156, TEU-SU-1-981(032)041 & SIM-1-094(036)155

Grading, Surfacing, Grinding, Storm Drains, Structural, Signals, Lighting, Signing, Marking, Guardrail & Incidentals

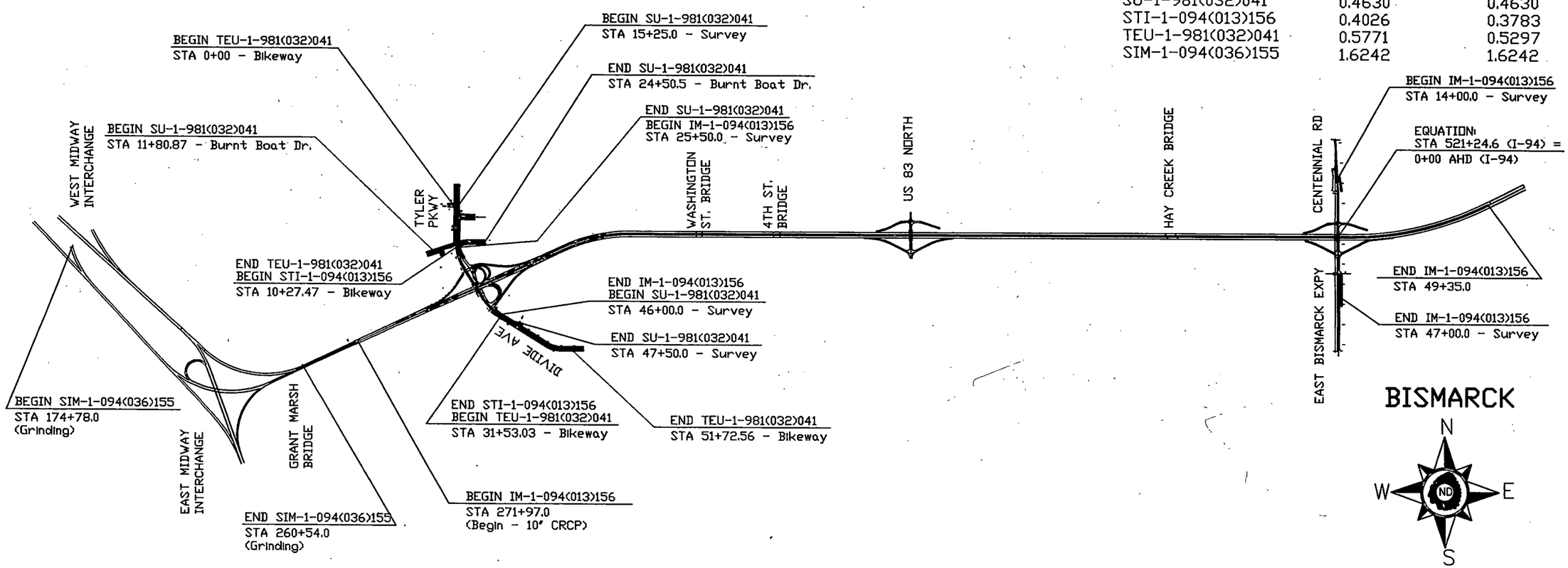
FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	IM-1-094(013)156 SU-1-981(032)041	1

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

PROJECT	MILES-GROSS	MILES-NET
IM-1-094(013)156	6.6691	6.6132
SU-1-981(032)041	0.4630	0.4630
STI-1-094(013)156	0.4026	0.3783
TEU-1-981(032)041	0.5771	0.5297
SIM-1-094(036)155	1.6242	1.6242



PAVING SECTION
URBAN SECTION Arlin Thiesse
TRAFFIC SECTION George St. Pierre
RURAL SECTION
RECOMMEND APPROVAL 12-21 1994
DESIGN ENGINEER David K. O'Loan

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE 1-3-95

Ray Zink

DIRECTOR OF HIGHWAYS AND ENGINEERING
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

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

94ILSHT PS'

SYMBOLS

STATE & NATIONAL LINES

COUNTY LINE

TOWNSHIP & RANGE LINES

SECTION LINE

QUARTER SECTION LINE

SECTION CORNER

QUARTER SECTION CORNER

OLD RIGHT OF WAY LINE

NEW RIGHT OF WAY LINE

GRADE LINE

CENTERLINE OF CONSTRUCTION — 500

RAILROAD RIGHT OF WAY LINE

CITY OR VILLAGE CORPORATE LIMITS

PROPERTY LINE

EASEMENT LINE

FENCES

SNOW FENCE

DRAINAGE

WATERS EDGE

MARSH OR SWAMP

RIPRAP

DRAINAGE DITCH

APPROACH — 502+00

TRAVELED WAY

RAILROADS

GUARD RAIL

GUIDE POSTS

DELINEATORS

HEDGES AND TREES

INTERCHANGE

HIGHWAY GRADE SEPARATION - NO CONNECTION

OTHER BRIDGE

SERVICE ROAD

TERMINATED CROSS-ROAD

BUILDINGS

TELEGRAPH LINES

TELEPHONE LINES

POWER LINES

CULVERTS (In Place)

CULVERTS (Install)

CONCRETE BOX CULVERTS (Install)

BRIDGES (Install)

CONCRETE CURB

CONCRETE CURB AND GUTTER

CONCRETE WALK

CATCH BASIN (Existing)

CATCH BASIN (New)

MANHOLE (Existing)

MANHOLE (New)

CURB INLET (Existing)

CURB INLET (New)

GROUND MOUNTED SIGNS

OVERHEAD SIGNS

HYDRANT

LIGHT STANDARDS

TRAFFIC SIGNALS (Plan & Profile Sheets)

HIGH MAST LIGHTING ASSEMBLY

GROUND ELEVATION 6430 / GRADE 6410 / 245

CENTERLINE

SECTION LINE

DEFLECTION ANGLE (Delta)

SOD OR JUTE MESH

POLES TO BE MOVED

POLES TO BE LOWERED

CONCRETE FOUNDATION

CONDUIT

CONDUCTOR

CONCRETE PULL BOX

FEED POINT

250 WATT LIGHT STANDARDS

400 WATT LIGHT STANDARDS

700 WATT LIGHT STANDARDS

1000 WATT LIGHT STANDARDS

FLASHING BEACON

TRAFFIC SIGNAL - MAST ARM MOUNTED

TRAFFIC SIGNAL - POST MOUNTED

SIGNAL HEAD (3)

PEDESTRIAN PUSHBUTTON POST

TRAFFIC SIGNAL CONTROLLER

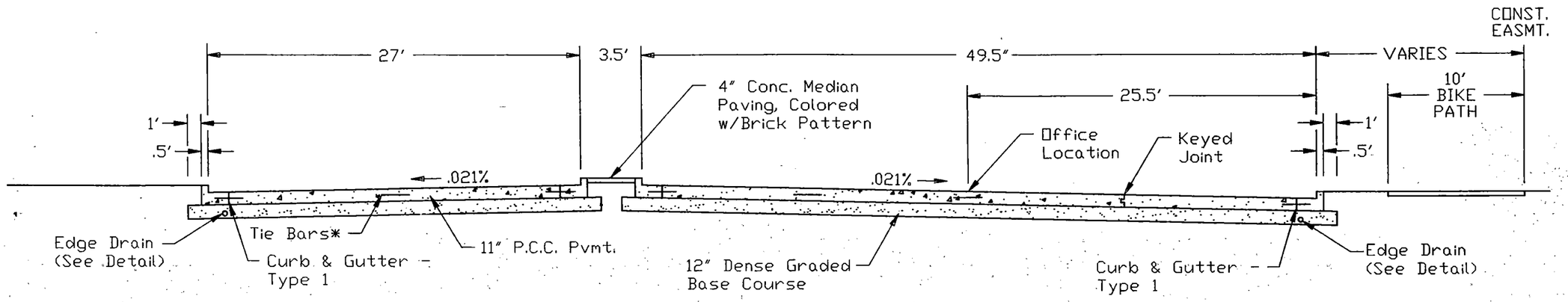
FEED POINT - PAD MOUNTED

ABBREVIATIONS

Aggr	Aggregate
Ahd	Ahead
Alt	Alternate
Approx	Approximate or Approximately
Appr	Approach
Asph Cem or A C	Asphalt Cement
Asph Conc.	Asphaltic Concrete
Bit	Bituminous or Bitumen
Bk	Back
B M	Bench Mark
Bldg.	Building
Br	Bridge
C.A.E.S.	Corrugated Aluminum End Section
C A P	Corrugated Aluminum Pipe
C B	Catch Basin
C B G	Curb and Gutter
Ch Blk	Channel Block
Ch Ch	Channel Change
C.I	Curb Inlet
C I P	Cast Iron Pipe
Cl	Class
C.S.E S	Corrugated Steel End Section
C.S.P.	Corrugated Steel Pipe
CMS	Cationic Medium Setting
Comp	Compression
Const	Construction
Conc	Concrete
Cont. Reinf Conc Pvmt	Continuously Reinforced Concrete Pavement
Contr	Contraction
Crn	Crown
CRS	Cationic Rapid Setting
Crse	Course
C S	Curve to Spiral
C. to C.	Center to Center
C.Y	Cubic Yard
D	Degree of Curvature
D-Load	Dead Load
D.B	Ditch Block
Def	Deformed
Del	Deliver
D G	Ditch Grade
El. or Elev	Elevation
Ellipt	Elliptical
Emb	Embankment
Emul	Emulsified
Engr.	Engineer
Eq	Equation
E R	East Roadway
E S	End Section
Esmt	Easement
Exc	Excavation
Exp.	Expansion
F D	Field Drive
Found	Foundation
F P	Fence Post
Furn	Furnish
Ga	Gage or Gauge
Gr	Gravel
Grd	Graded
G V.	Gate Valve
Hel	Helical
Hyd	Hydrant
Ident	Identification
Inchg	Interchange
I M	Iron Monument
Inst	Install
Inter	Intersection
Inv	Invert
Jt	Joint
L	Length of Curve
Lc	Length of Spiral
Levg	Leveling
L F	Linear or Lineal Foot
Liq	Liquid
Long	Longitudinal
L P	Light Pole
Lt	Left
"M"	One Thousand
Matl	Material
Max	Maximum
MC	Medium Curing
M H	Manhole
Min	Minimum
M L	Main Line
N R	North Roadway
Off Loc	Office Location
O to O	Out to Out
P & P	Plan and Profile
P C	Point of Curvature
P C C	Point of Compound Curve
P C C Pvmt	Portland Cement Concrete Pavement
P D	Private Drive
Pen	Penetration
Perf	Perforated
P I	Point of Intersection
P O C	Point on Curve
P O T	Point on Tangent
P P	Power Pole
P R C	Point of Reverse Curvature
Pref	Preformed
P S D	Passing Sight Distance
P T	Point of Tangency
P V C	Polyvinyl Chloride Sewer Pipe
Quant	Quantity or Quantities
R	Radius
R or Rge	Range
RC	Rapid Curing
R C E S	Reinforced Concrete End Section
R C P	Reinforced Concrete Pipe
R C P S	Reinforced Concrete Pipe Sewer
Rd	Road
Rdbd	Roadbed
Rdwy	Roadway
Refl	Reflectorized
R R	Railroad
Rt	Right
R/W	Right of Way
Salv	Salvage
San	Sanitary
S C	Spiral to Curve
SC	Slow Curing
Sc	Spiral Deflection Angle
S D	Sight Distance
S E	Superelevation
Sec	Section
Sec Line Appr	Section Line Approach
Sep	Separation
Serv	Service
Sgr Prep	Subgrade Preparation
Shldr	Shoulder
SP	Special Provision
S P P	Structural Plate Pipe
S P P A	Structural Plate Pipe Arch
S R	South Roadway
SS	Slow Setting or Supplement Specification
S S D	Stopping Sight Distance
S T	Spiral to Tangent
Sta.	Station
Std	Standard
Std. Specs.	Standard Specifications
Struct	Structure
Surf	Surface or Surfacing
Surv	Survey
S W	Sidewalk
S Y	Square Yard
T	Tangent Length (circular curve)
T or Twp.	Township
Tel	Telephone
Temp	Temporary
T P	Telephone Pole
Tr	Traffic
Trans	Transverse or Transition
Trtd	Treated
Ts	Tangent Length (curve with spirals)
T S	Tangent to Spiral
U.S.C & G.S	United States Coast and Geodetic Survey
V C	Vertical Curve
V C P	Vitrified Clay Pipe
W M	Water Main
W M V	Water Main Valve
W R	West Roadway
Wrng	Wearing
W S V	Water Service Valve
X-Sec	Cross Section
Xc	Spiral Coordinate
Yc	Spiral Coordinate

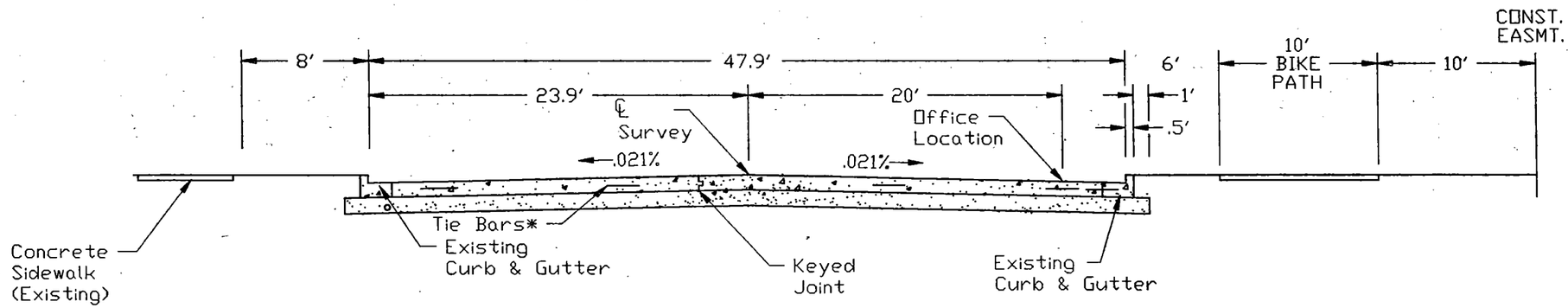
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	61

TYPICAL SECTIONS



STA. 40+00

*NOTE: SEE PAVING DETAILS FOR TIE BAR SIZE AND SPACING.

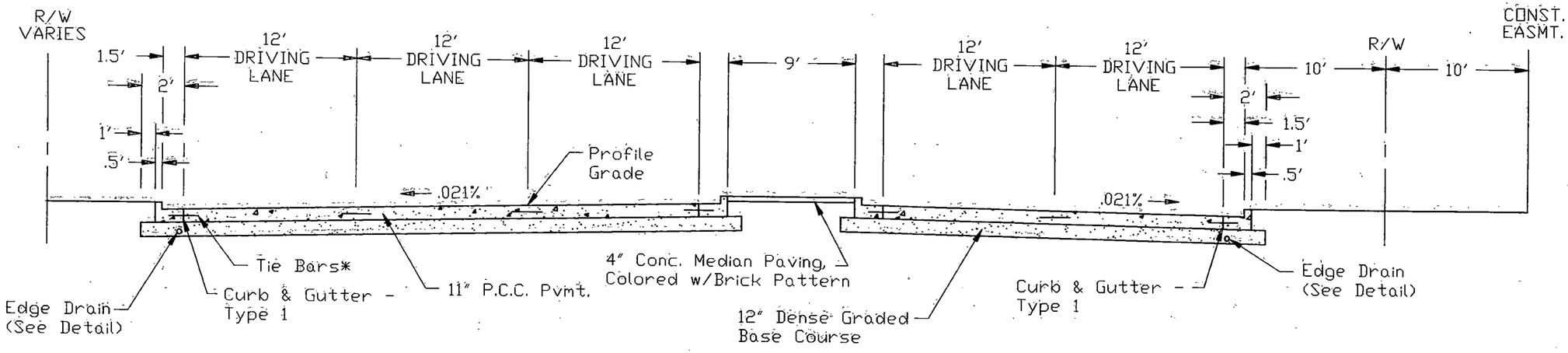


STA. 47+72.74
Tie into existing road

TYPICAL SECTIONS		
DIVIDE AVENUE STA. 40+00 TO 47+72.74		
DATE: 12-23-94	FILE: 94_4000 P8'	DRAWING NO:TYP-13

TYPICAL SECTIONS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	62



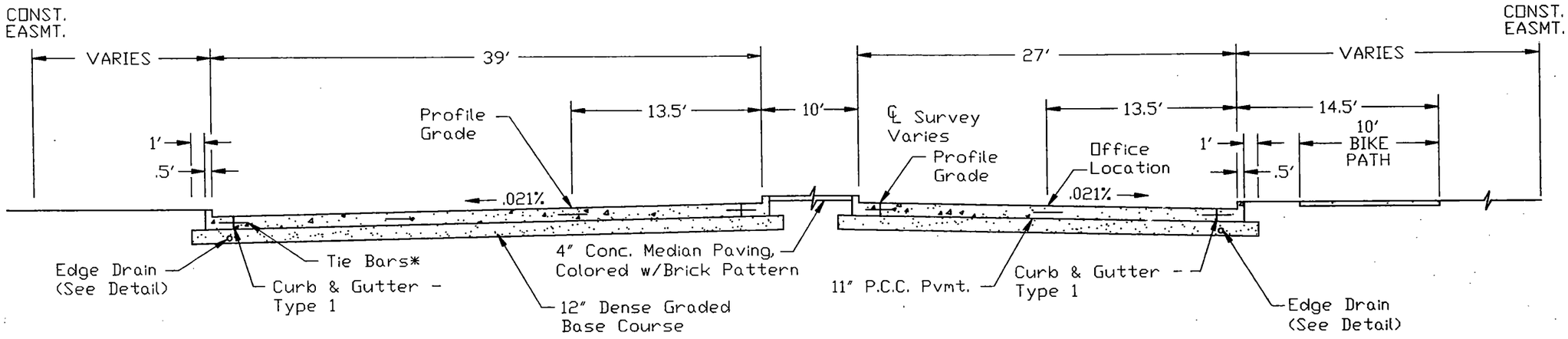
CENTURY AVENUE

*NOTE: SEE PAVING DETAILS FOR TIE BAR SIZE AND SPACING.

TYPICAL SECTIONS		
CENTURY AVENUE STA. 93+81 TO 97+00		
DATE: 12-23-94	FILE: 94_9422 P8'	DRAWING NO:TYP-9

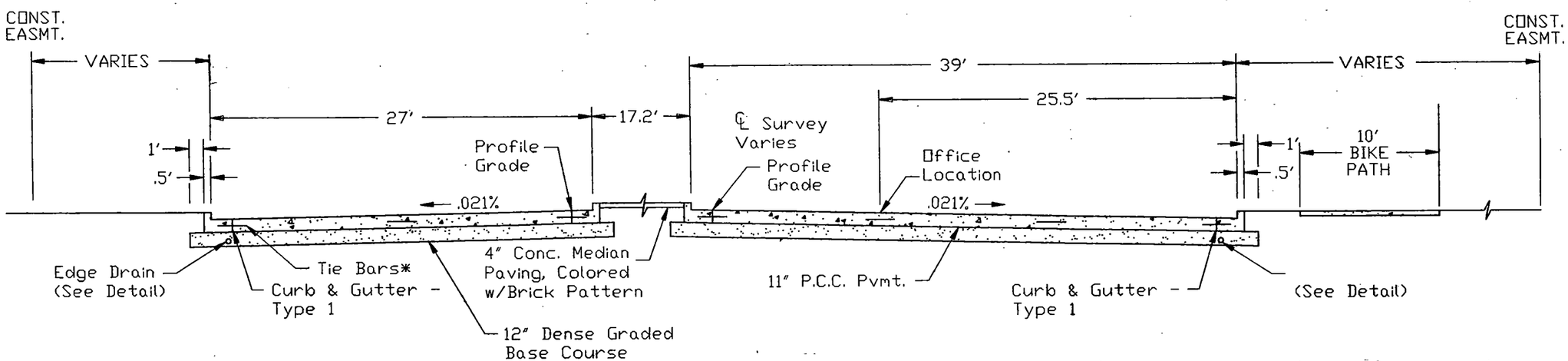
TYPICAL SECTIONS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	59



STA. 26+00

*NOTE: SEE PAVING DETAILS FOR TIE BAR SIZE AND SPACING.

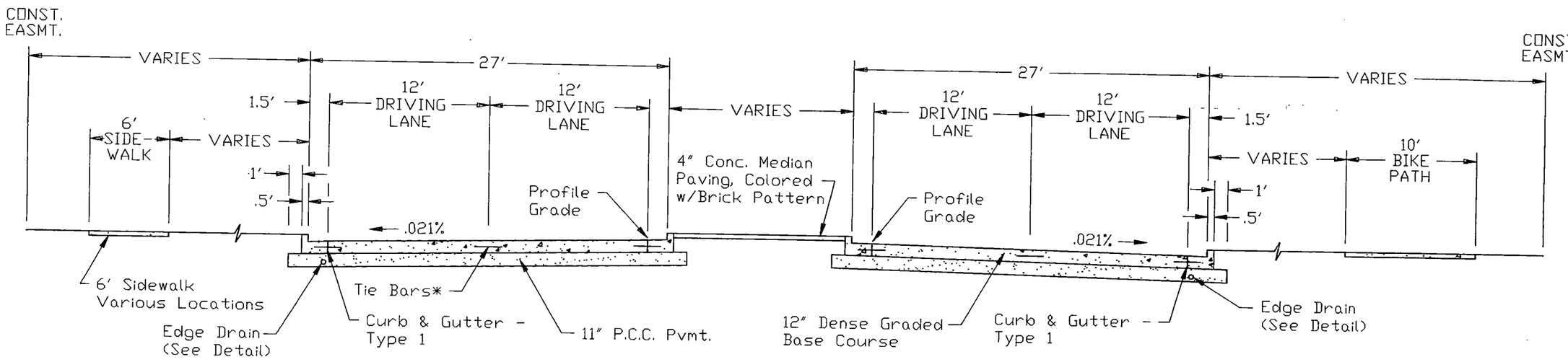


STA. 29+27.4

TYPICAL SECTIONS		
TYLER PARKWAY STA. 26+00 AND 29+27.4		
DATE: 12-23-94	FILE: 94_2600 P8'	DRAWING NO:TYP-12

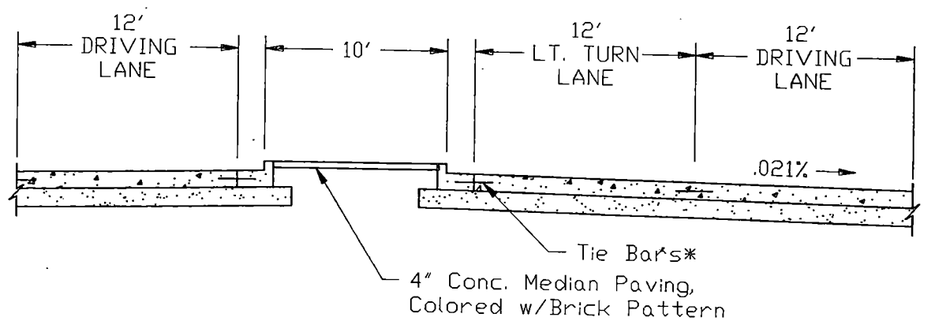
TYPICAL SECTIONS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	60



TYLER PARKWAY

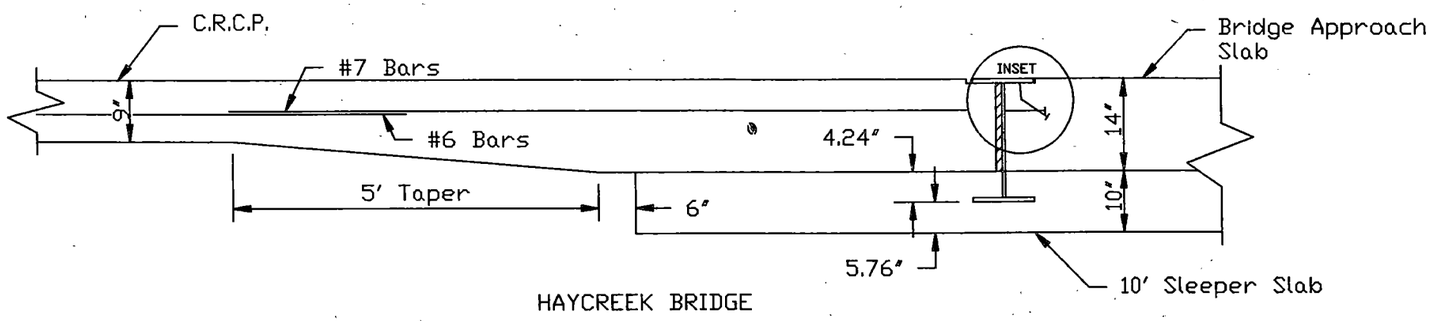
*NOTE: SEE PAVING DETAILS FOR TIE BAR SIZE AND SPACING.



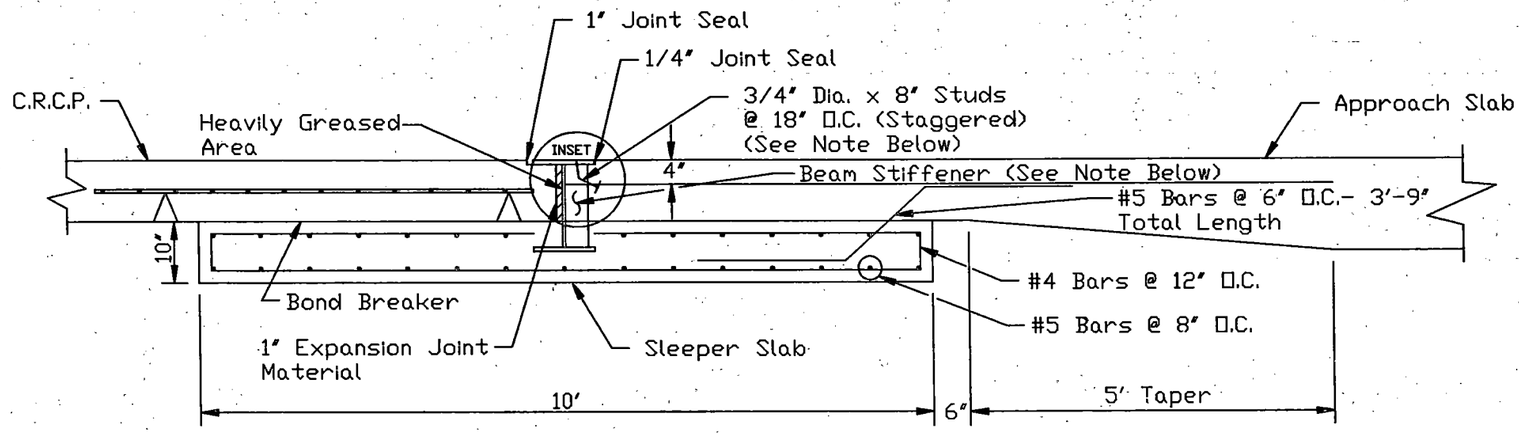
LEFT TURN LANE

TYPICAL SECTIONS		
TYLER PARKWAY TYPICAL LANE LAYOUT WITH LEFT TURN LANE		
DATE: 12-23-94	FILE: 94156TS P8'	DRAWING NO:TYP-14

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	101

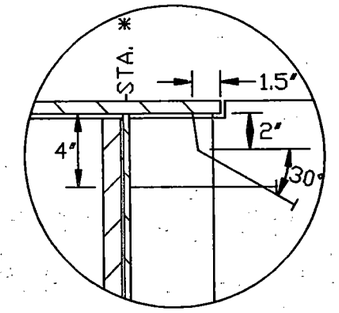


HAYCREEK BRIDGE



WASHINGTON , 4TH. ST. BRIDGE & END OF PROJECT

INSET



WF STEEL BEAM TERMINAL JOINT

STA. 272+19.75	(12 L.F.)	1 EA.
STA. 361+18	(24 L.F.)	1 EA.
STA. 363+43	(24 L.F.)	1 EA.
STA. 380+57.8	(24 L.F.)	1 EA.
STA. 382+82.8	(24 L.F.)	1 EA.
STA. 478+72.8	(24 L.F.)	1 EA.
STA. 481+67.5	(24 L.F.)	1 EA.
STA. 49+35	(24 L.F.)	1 EA.

NOTES:
Weld beam stiffener to ends of beams.
Weld shear connectors to flange and web of beam.

WF BEAM (Weight and Dimensions)					
CRCP Thickness (in.)	Embedment in "Sleeper" slab - in.	WF Beam size	Flange		Web Thickness (in.)
			Width (in.)	Thickness	
9	5	14 x 61	10	5/8	3/8
10	6	16 x 57	7-1/8	11/16	7/16
14	4.24	18 x 60	7-1/2	11/16	7/16

WF STEEL BEAM

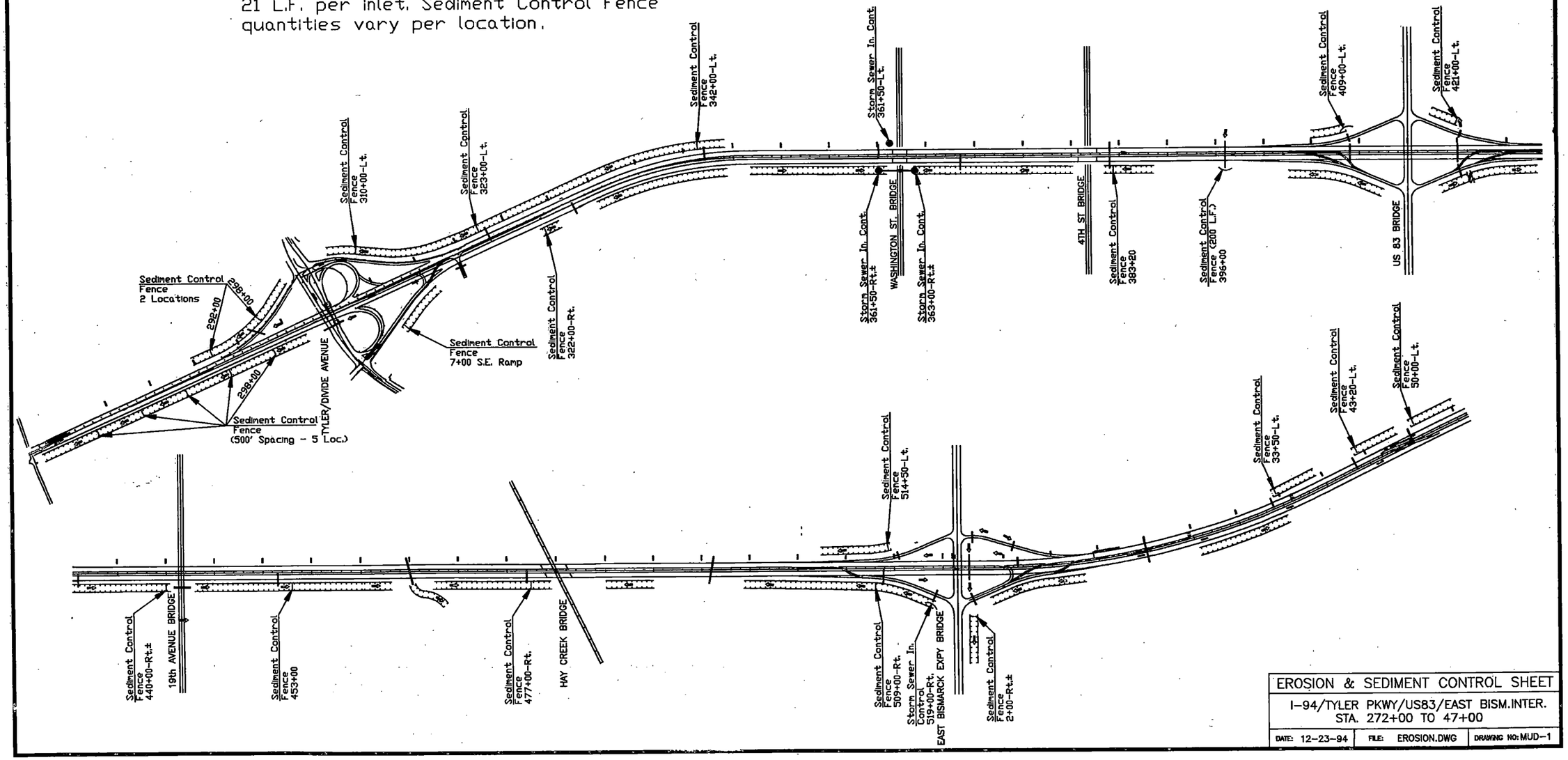
TERMINAL JOINT DESIGN

DWG WF-BEAM R=2

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	102

EROSION CHECKS 84 L.F.
SEDIMENT CONTROL FENCING 560 L.F.

NOTE: See Standard Drawing D-708-2 for layout of Sediment Control Fence and Erosion Checks around Storm Sewer Inlets. Erosion Check quantities are based on 21 L.F. per inlet. Sediment Control Fence quantities vary per location.



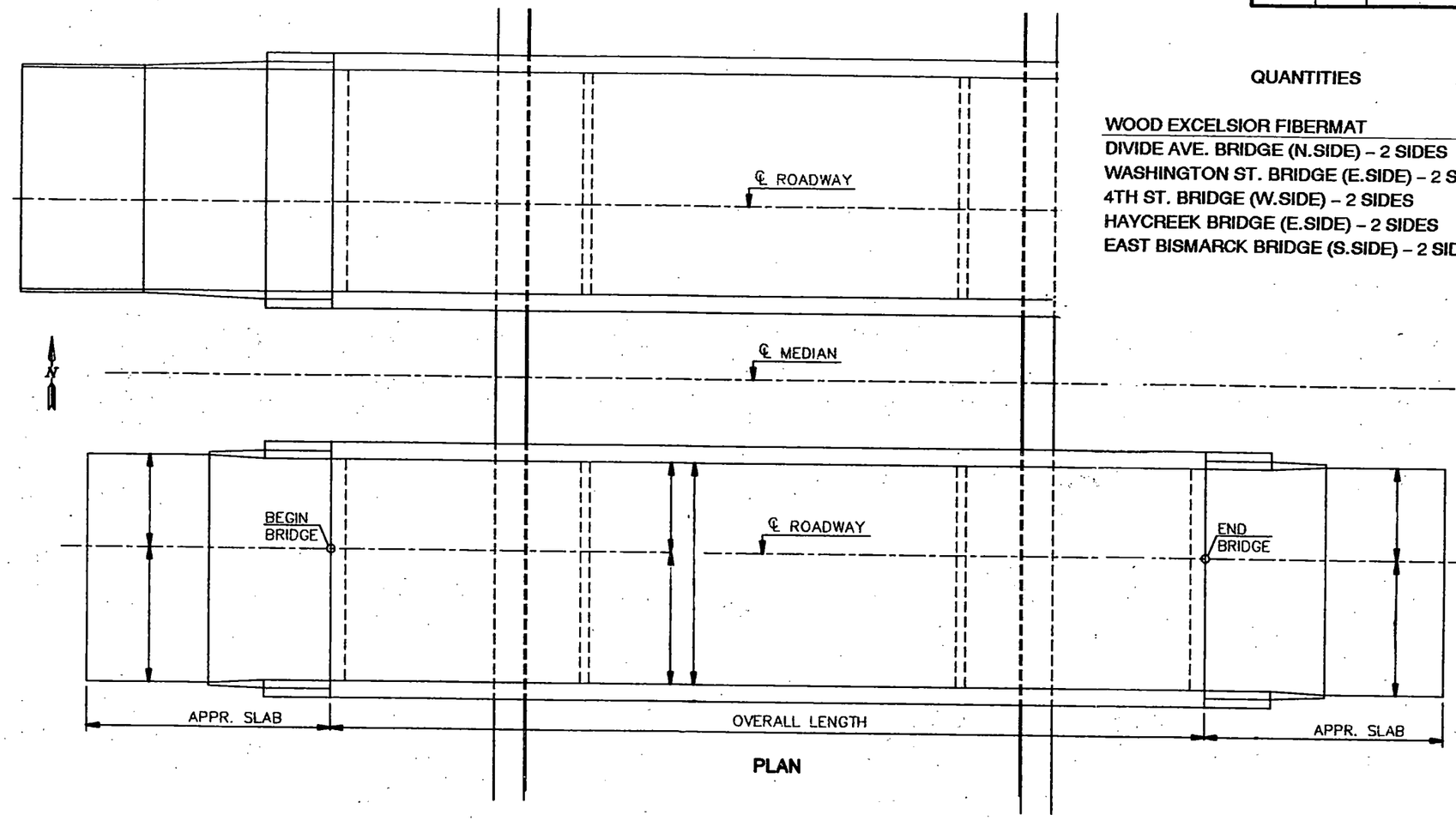
EROSION & SEDIMENT CONTROL SHEET

I-94/TYLER PKWY/US83/EAST BISM.INTER.
STA. 272+00 TO 47+00

DATE: 12-23-94	FILE: EROSION.DWG	DRAWING NO: MUD-1

EROSION CONTROL FOR BRIDGES

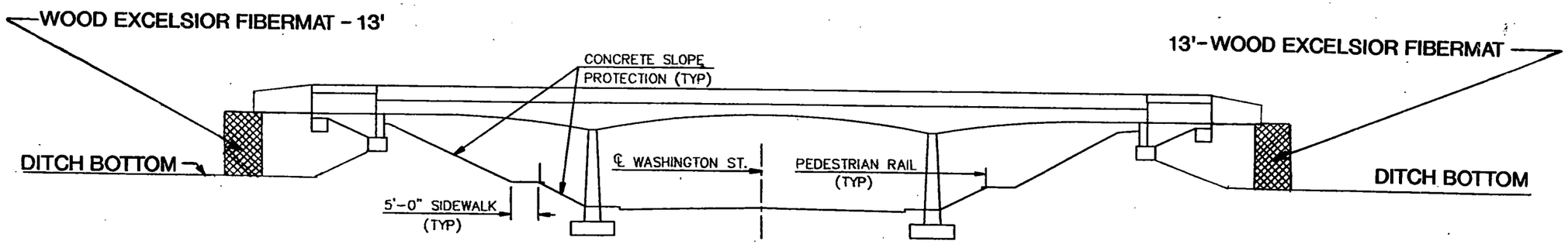
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	103



PLAN

QUANTITIES

WOOD EXCELSIOR FIBERMAT	
DIVIDE AVE. BRIDGE (N.SIDE) – 2 SIDES	144 SY
WASHINGTON ST. BRIDGE (E.SIDE) – 2 SIDES	144 SY
4TH ST. BRIDGE (W.SIDE) – 2 SIDES	144 SY
HAYCREEK BRIDGE (E.SIDE) – 2 SIDES	144 SY
EAST BISMARCK BRIDGE (S.SIDE) – 2 SIDES	144 SY



PART ELEVATION

524172

PROJECT NO.: SU-1-981(032)041

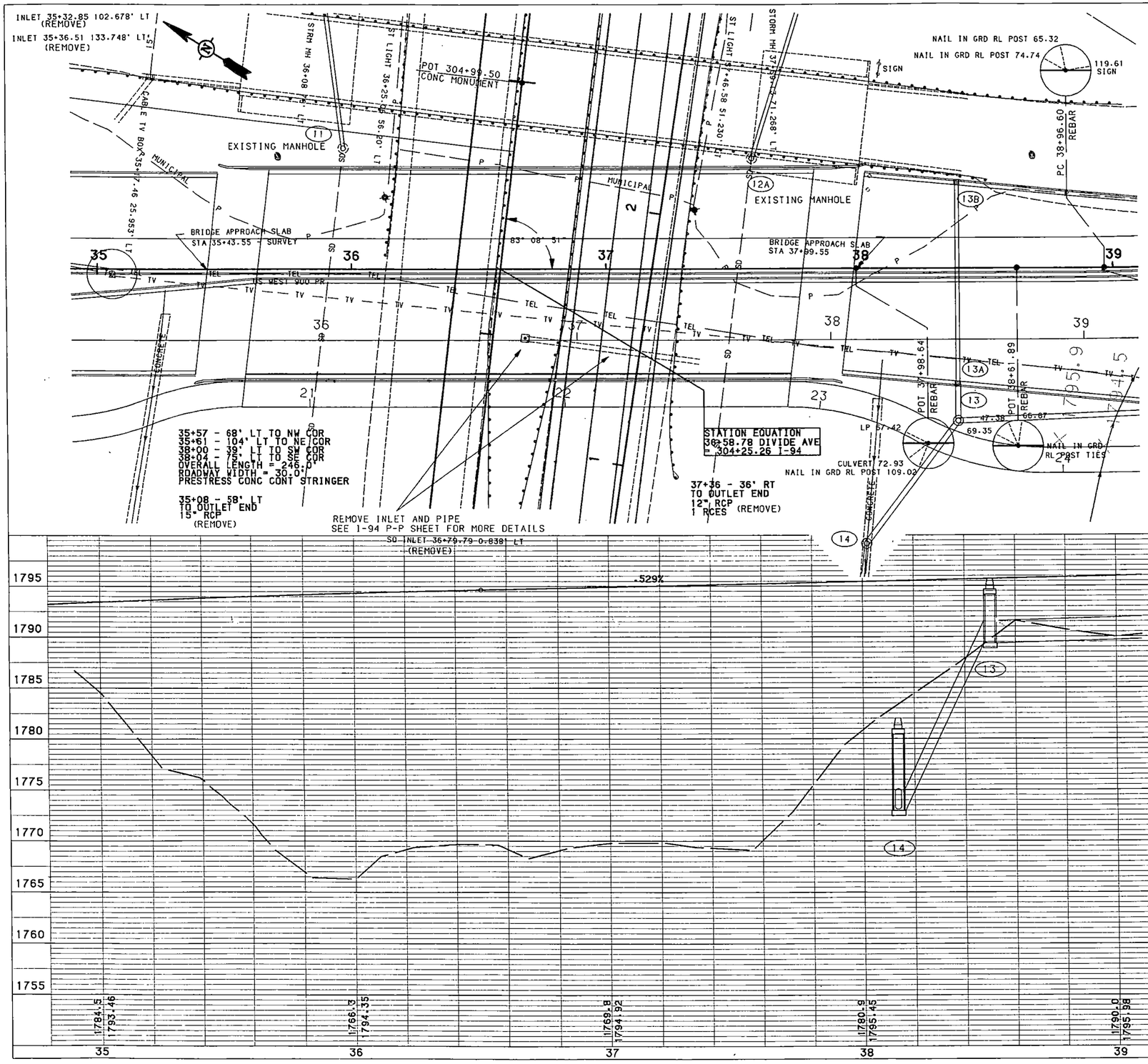
DATE: DECEMBER 1994

SIGN NUMBER	SIGN SIZE	DESCRIPTION	PHASE I	PHASE II	PHASE III	AMOUNT REQUIRED	UNITS PER AMOUNT	UNITS SUB-TOTAL
R1-1-30	30"x 30"	STOP	1	3	5	5	17	85
R1-1-48	48"x 48"	STOP					34	
R1-2-48	48"x48" &	YIELD & TO ONCOMING TRAFFIC					45	
	36"x 30"							
R2-1-48	48"x 60"	SPEED LIMIT __	1	1	1	1	40	40
R2-5A-48	48"x 60"	REDUCED SPEED AHEAD					40	
R2-5c-48	48"x 60"	SPEED ZONE AHEAD					40	
R4-1-48	48"x 60"	DO NOT PASS					40	
R4-2-48	48"x 60"	PASS WITH CARE					40	
R4-7-48	48"x 60"	KEEP RIGHT SYMBOL					40	
R4-8-48	48"x 60"	KEEP LEFT SYMBOL					40	
R10-6-48	48"x 72"	STOP HERE ON RED					44	
R11-2-48	48"x 30"	ROAD CLOSED			4	4	26	104
R11-3a-60	60"x 30"	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY					30	
R11-3b-60	60"x 30"	BRIDGE OUT __ MILES AHEAD LOCAL TRAFFIC ONLY					30	
R11-2a-48	48"x 30"	STREET CLOSED	3	3		3	26	78
R11-3c-48	60"x 30"	STREET CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY					30	
R11-4a-60	60"x 30"	STREET CLOSED TO THRU TRAFFIC					30	
G20-1-60	60"x 36"	ROAD CONSTRUCTION NEXT __ MILES					34	
G20-2-60	60"x 24"	END CONSTRUCTION	2	2	2	2	28	56
G20-2a-48	48"x 24"	END ROAD WORK					24	
G20-4-36	36"x 18"	PILOT CAR FOLLOW ME					10	
G20-50-72	72"x 36"	ROAD CONSTRUCTION NEXT __ MILES RT & LT ARROWS					38	
G20-52-72	72"x 24"	ROAD CONSTRUCTION NEXT __ MILES RT or LT ARROW					30	
G20-54-48	48"x 36"	OVERHEAD BRIDGE PAINTING					30	
G20-8-48	48"x 36"	TEMPORARY SURFACE NEXT __ MILES					30	
M1-4-24	24"x 24"	ROUTE MARKER (POST AND INSTALLATION ONLY)		5	6	6	8	48
M3-1-24	24"x 12"	NORTH (MOUNTED ON ROUTE MARKER POST)					6	
M3-2-24	24"x 12"	EAST (MOUNTED ON ROUTE MARKER POST)		5	5	5	6	30
M3-3-24	24"x 12"	SOUTH (MOUNTED ON ROUTE MARKER POST)					6	
M3-4-24	24"x 12"	WEST (MOUNTED ON ROUTE MARKER POST)		1		1	6	6
M4-8-24	24"x 12"	DETOUR (MOUNTED ON ROUTE MARKER POST)		5	6	6	6	36
M4-10-48	48"x 18"	DETOUR ARROW RIGHT or LEFT		2		2	22	44
M5-1-21	21"x 15"	ARROW AHD AND RT or LT(MTD ON ROUTE MKR POST)		1	2	2	6	12
M6-1-21	21"x 15"	ARROW RT or LT (MOUNTED ON ROUTE MARKER POST)		4	4	4	6	24
W1-1-48	48"x 48"	RIGHT or LEFT SHARP CURVE ARROW					34	
W1-2-48	48"x 48"	RIGHT or LEFT CURVE ARROW					34	
W1-3-48	48"x 48"	RIGHT or LEFT SHARP REVERSE CURVE ARROW					34	
W1-4-48	48"x 48"	RIGHT or LEFT REVERSE CURVE ARROW					34	
W1-6-48	48"x 24"	LARGE ARROW					26	
W3-1a-48	48"x 48"	STOP AHEAD SYMBOL					34	
W3-2a-48	48"x 48"	YIELD AHEAD SYMBOL					34	
W3-3-48	48"x 48"	SIGNAL AHEAD SYMBOL					34	
W4-2-48	48"x 48"	LANE TRANSITION SYMBOL					34	
W5-1-48	48"x 48"	ROAD NARROWS					34	
W6-3-48	48"x 48"	TWO WAY TRAFFIC SYMBOL					34	
W8-1-48	48"x 48"	BUMP					34	
W8-3a-48	48"x 48"	PAVEMENT ENDS SYMBOL					40	
W8-3a-24	24"x 18"	PAVEMENT END PLAQUE						
W8-9-48	48"x 48"	LOW SHOULDER					34	
W8-51-48	48"x 48"	UNEVEN PAVEMENT					34	
W8-53-48	48"x 48"	TRUCKS ENTERING HIGHWAY					34	
W8-54-48	48"x 48"	TRUCKS ENTERING AHEAD OR __ FT.					34	
W8-55-48	48"x 48"	TRUCKS CROSSING AHEAD or __ FT.					34	
W12-2-48	48"x 48"	LOW CLEARANCE SYMBOL						
W13-1-24	24"x 24"	__ MPH ADVISORY SPEED PLATE					10	
W13-4-48	48"x 60"	RAMP ARROW					40	
W14-3-64	64"x 48"	NO PASSING ZONE					27	
W20-1-48	48"x 48"	ROAD CONSTRUCTION - AHEAD, 1/2 MILE, or FT.	5	4	6	6	34	204
W20-2-48	48"x 48"	DETOUR __ FT.					34	
W20-3-48	48"x 48"	ROAD or STREET CLOSED AHEAD or __ FT.					34	
W20-4-48	48"x 48"	ONE LANE ROAD AHEAD or __ FT.					34	
W20-50-48	48"x 48"	BE PREPARED TO STOP					34	
W20-51-48	48"x 48"	EQUIPMENT WORKING					34	
W20-52-54	54"x 12"	NEXT __ MILES					10	
W20-5-48	48"x 48"	RIGHT or LEFT LANE CLOSED AHEAD or __ FT.					34	
W20-7a-48	48"x 48"	FLAGGING SYMBOL					34	
W20-7k-24	24"x 18"	__ FEET					8	
W20-8-48	48"x 48"	STREET CLOSED	1	1	1	1	34	34
W21-1a-48	48"x 48"	MEN WORKING SYMBOL					34	
W21-2-48	48"x 48"	FRESH OIL					34	
W21-50-48	48"x 48"	BRIDGE PAINTING AHEAD or __ FT.					34	
W21-51-48	48"x 48"	MATERIAL ON ROADWAY					34	
W21-5-48	48"x 48"	SHOULDER WORK					34	
W22-7-48	48"x 48"	SINGLE LANE AHEAD or __ FT.					34	
W22-8-48	48"x 48"	FRESH OIL LOOSE ROCK					34	
R1-1a-18	18"x 18"	STOP and SLOW PADDLE Back to Back					8	
R5-2-24	24"x 24"	NO TRUCKS		1	1	1	11	11
		TOTAL UNITS					SPEC&CODE 704-1000	812

TYPE III	8' LONG	BARRICADES	8	14	14	EACH	704-1052	14
TYPE II	2' MIN.	BARRICADES				EACH	704-1051	
TYPE I	6'to 10'	BARRICADES				EACH	704-1050	
18"x 36"	MIN.	DELINEATOR DRUMS	32	64	52	EACH	704-1060	64
28"	MIN.	TRAFFIC CONES				EACH	704-1065	
8" to	12"x 24"	VERTICAL PANELS	23			EACH	704-1080	23
	3"x 8"	DELINEATOR				EACH	704-1070	
		FLEXIBLE DELINEATORS				EACH	704-1072	
		SHORT TERM 4IN LINE - TYPE R	200	4300	2400	LF	762-0420	6900
		SHORT TERM 4IN LINE - TYPE NR	2550			LF	762-0430	2550
		OBLITERATION OF PAVEMENT MARKING	1500			LF	704-0104	1500

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	SU-1-981(032)041	104

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	IM-1-094(013)156	213



MANHOLE 48-IN

13	1 EA
14	1 EA

MANHOLE RISER 48-IN

13	4.77 FT
14	7.44 FT

PIPE CONC REINF 15-IN CL III STORM DRAIN

13A to 13	14 LF
13A to 13B	76 LF

INLET - TYPE 1

13B	1 EA

INLET - TYPE 2

13A	1 EA

END SECT CORR STEEL 21-IN

14 Outfall	1 EA

PIPE, CORR STEEL 21-IN

14 Outfall	10 LF
13 to 14	68 LF

BENCH MARKS

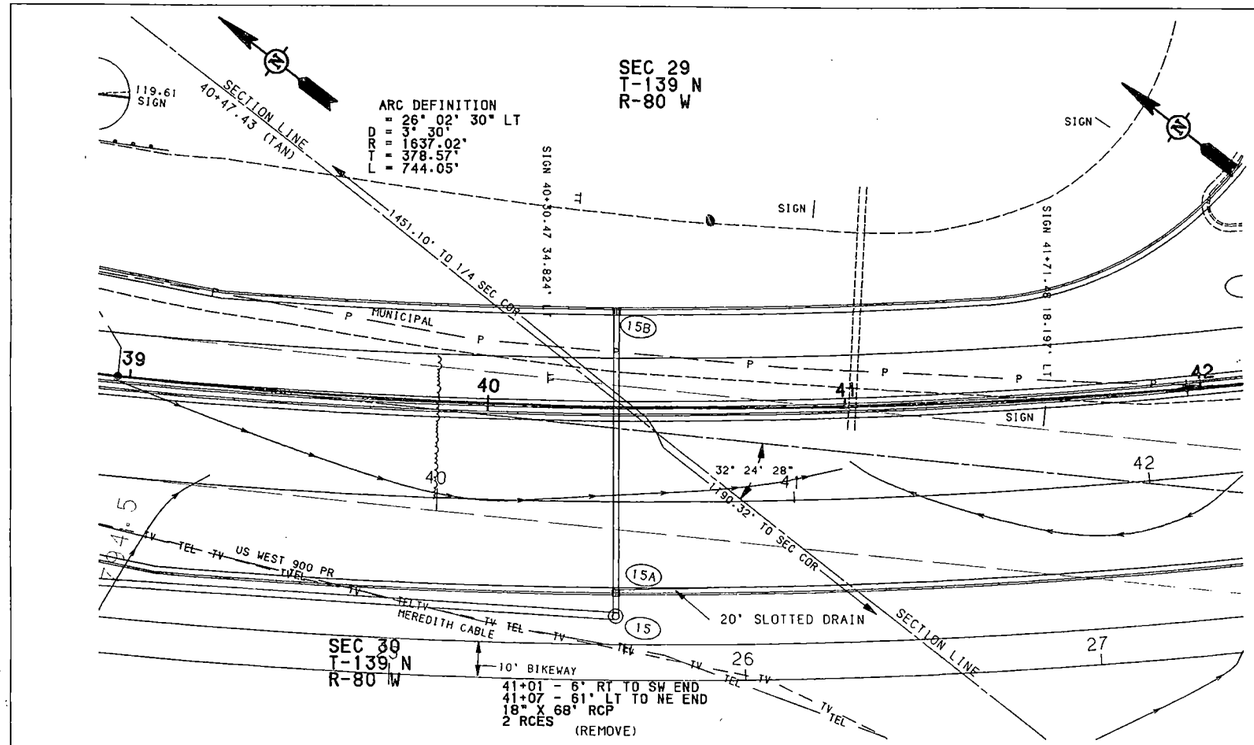
NO.	DESCRIPTION	LOCATION	ELEV.
R-1	BOLT ON CURB NW. CORNER OF EXIST. BRIDGE	35+57-71 Lt	1793.97
BM1	IRON IN PIPE N. OF EXIST. BRIDGE	32+53-215 Lt	1777.02
BM2	IRON IN PIPE S. OF EXIST. BRIDGE	43+68-136 Rt	1796.98

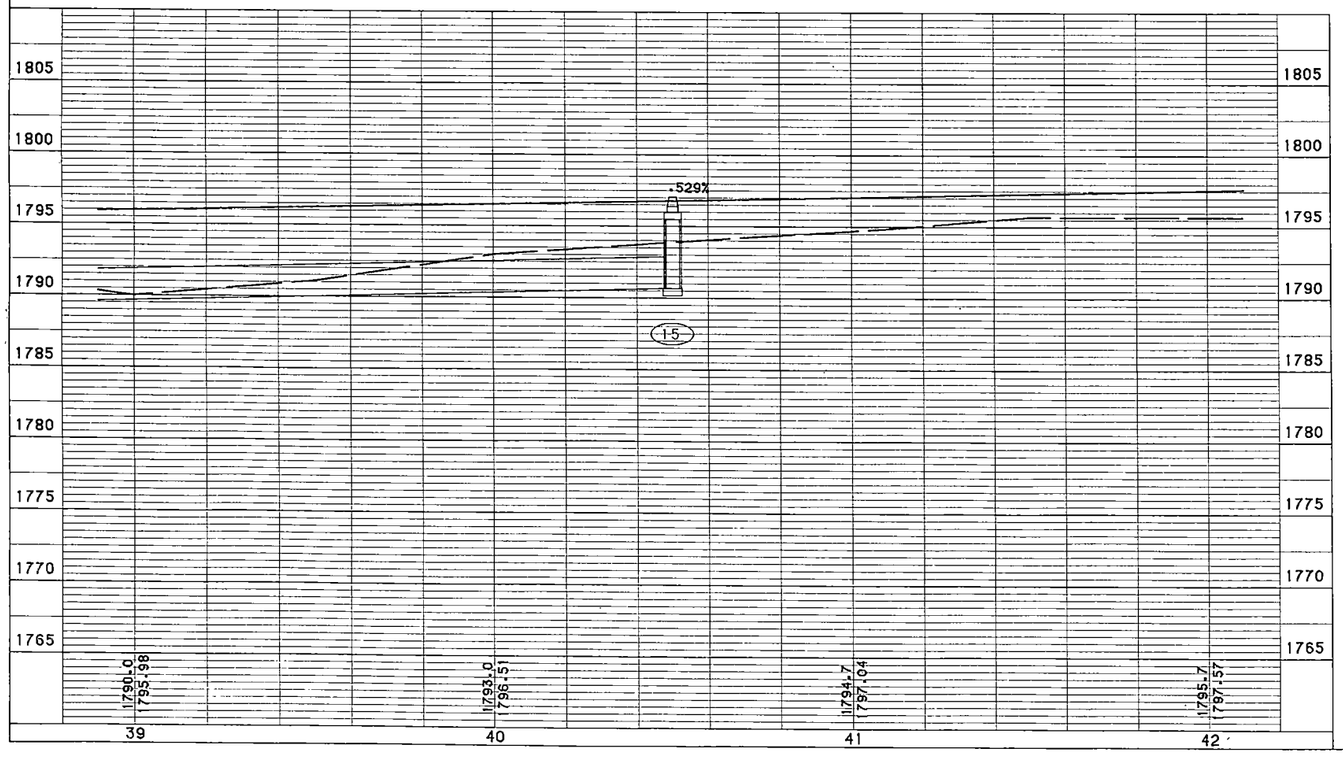
BISMARCK - TYLER PKWY.
STA. 35+00 TO 39+00

DRAWING NO: PP35-39

SCALE IN FEET 0 20 40 60

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	IM-1-094(013)156	2/4





MANHOLE 48-IN
15 1 EA

MANHOLE RISER 48-IN
15 4.81 FT

PIPE CONC REINF 15-IN CL III STORM DRAIN
15B to 15A 76 LF

PIPE CONC REINF 21-IN CL III STORM DRAIN
13 to 15 202 LF
15A to 15 4 LF

INLET - TYPE 2
15A 1 EA

INLET - TYPE 1
15B 1 EA

18" SLOTTED DRAIN
15A TO 40+85 20 LF

BENCH MARKS

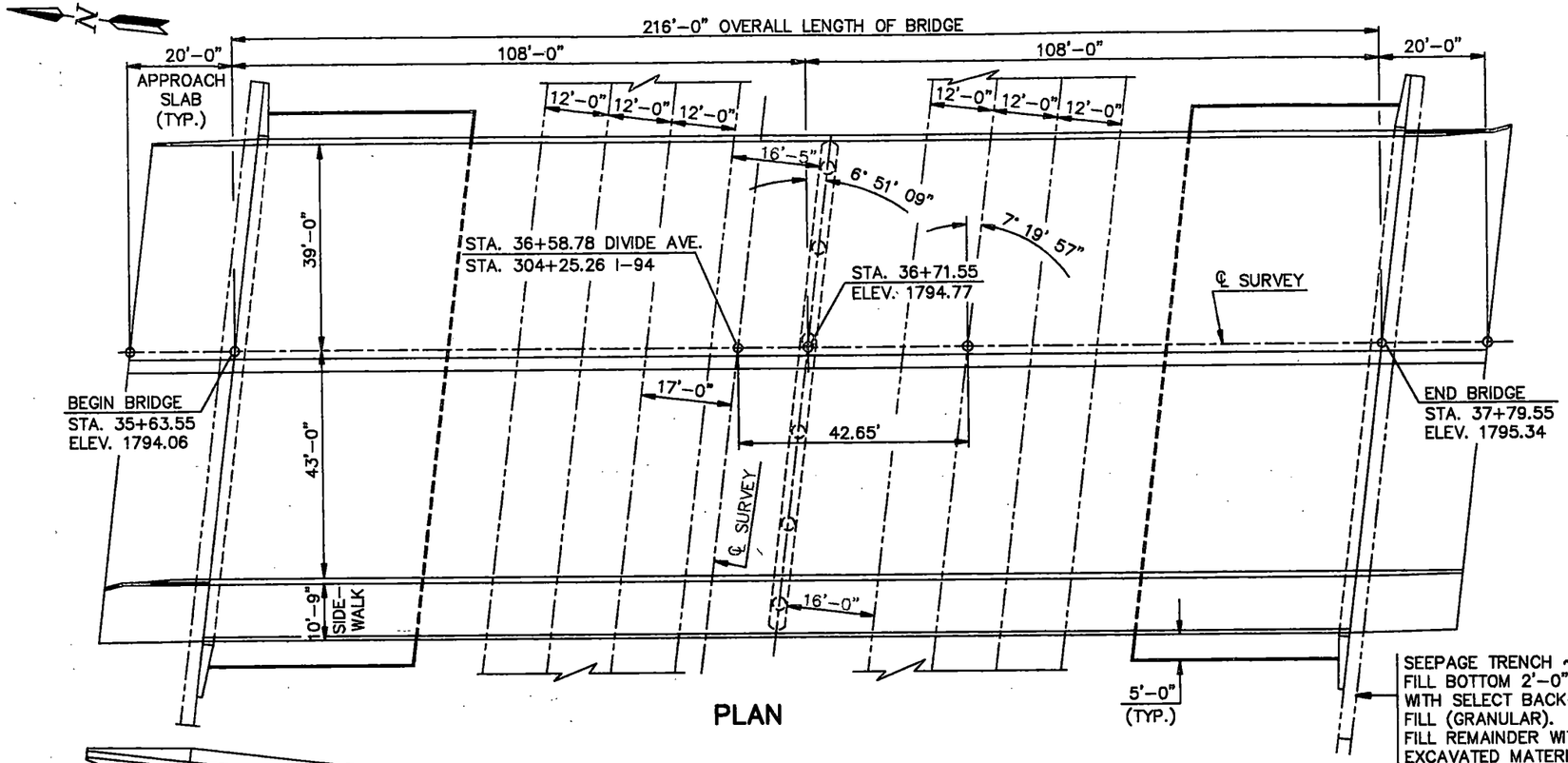
NO.	DESCRIPTION	LOCATION	ELEV.
R-1	BOLT ON CURB NW. CORNER OF EXIST. BRIDGE	35+57-71 Lt	1793.97
BM1	IRON IN PIPE N. OF EXIST. BRIDGE	32+53-215 Lt	1777.02
BM2	IRON IN PIPE S. OF EXIST. BRIDGE	43+68-136 Rt	1796.98

BISMARCK - DIVIDE
STA. 39+00 TO 42+00

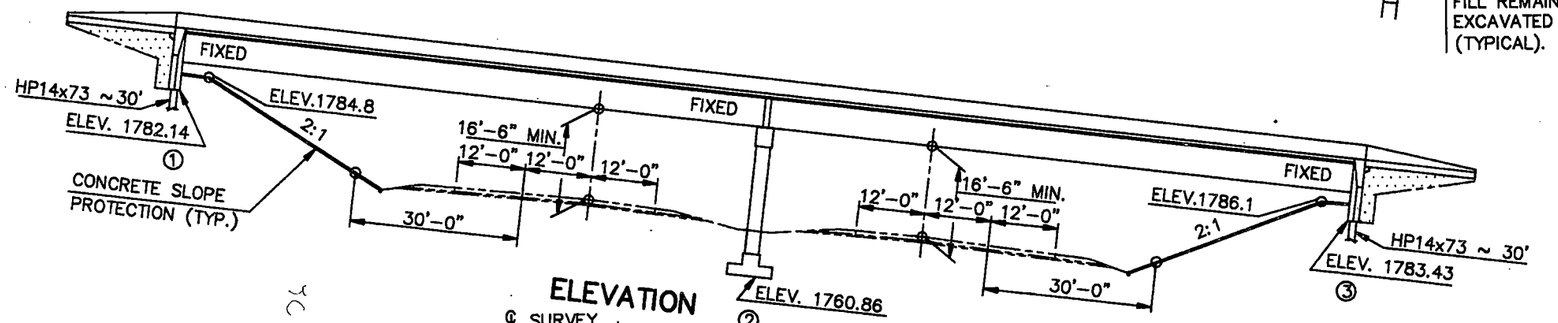
DRAWING NO.: PP39-42

0 20 40 60
SCALE IN FEET

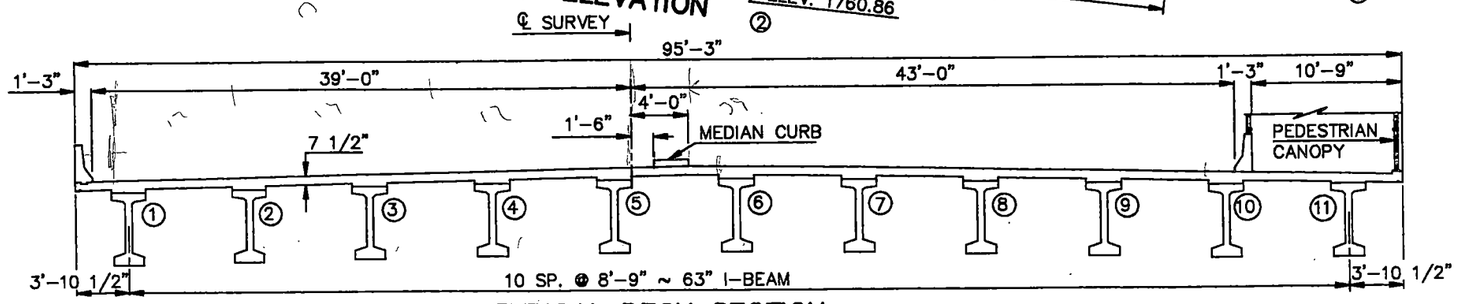
BRIDGE CODE	FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
X-781	8	N.D.	IM-1-094(013)156	553



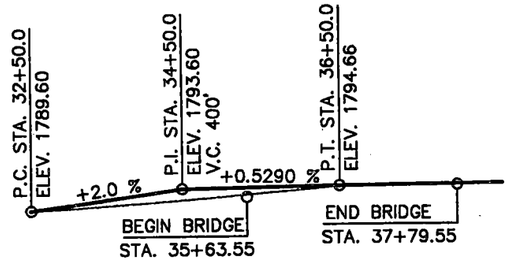
PLAN



ELEVATION



TYPICAL DECK SECTION



VERTICAL CURVE

AT ℄ SURVEY AND 16'-0" RIGHT OF ℄ SURVEY

39. 77
90.5 - =
JT.5

39

Site 1

STEVEN J. MILLER REGISTERED PROFESSIONAL 1360 ENGINEER NORTH DAKOTA

STANDARD DRAWINGS	
D-622-1, D-708-1, D-900-1	
HS 25 DESIGN LOADING	F.W.S. 15 PSF

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

BRIDGE LAYOUT

PROJECT: IM-1-094(013)156
STATION 304+25.26

BURLEIGH COUNTY

APPROVED 12-22-94 DATE

Steven J. Miller BRIDGE ENGINEER

094-157.328

94GAL48 ~ DLS December 13, 1994 3:14 pm

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	554

DIVIDE AVENUE INTERCHANGE

100 SCOPE OF WORK: This work consists of constructing a new bridge for the Divide Avenue Interchange. The new bridge is a two-span structure, 216 feet in length, 95'-3" in width, with 63" prestressed concrete I-girders.

100 CONSTRUCTION SEQUENCE: The east wing of the south abutment and the east portion of the south approach slab cannot be constructed until the southwest corner of the existing structure is removed. The new bridge shall be constructed, except for those two items. Traffic shall then be shifted to the west side of the new structure. The southwest corner of the existing structure shall be removed, and the remainder of the new structure shall be constructed.

100 GENERAL: The cost of furnishing and placing preformed expansion joint filler, concrete inserts, tie wire, bar spacers, bar supports, and other miscellaneous items shall be included in the price bid for Class AE-3 and AAE-3 concrete.

202 REMOVAL OF STRUCTURE: The existing structure is a four-span bridge, 245 feet long with a clear roadway of 30 feet. The substructures are made of concrete. The abutments shall be removed entirely. The abutment piling shall be cut off two feet below the final ground line. The piers shall be removed 2 ft below the final ground line. All materials removed shall become the property of the contractor and shall be disposed of properly.

210 EXCAVATION: Class 1 excavation, at the abutments, shall extend from the bottom of the footing to the upper limits as shown on DWG 094-157.328-4.

210 EXCAVATION: The excavation at the abutments, as shown, and the excavation required to build the piers shall be included in the lump sum bid item, "Class 1 Excavation (Site 1)." The estimated quantity of Class 1 Excavation (Site 1) is 590 cu. yd.

210 SELECT BACKFILL: Select backfill shall meet the requirements of Section 816.03, Class 3. The backfill shall be placed in layers of not more than 6 inches, moistened or dried as required, and thoroughly compacted with mechanical tamping equipment.

550 BRIDGE APPROACH SLABS: Mechanical finishing of the approach slabs shall be required. A mechanical or hand-held transverse metal tine finish shall be applied. Tining shall start 6" from the beginning and end of the approach slabs and 6 inches from the joint on the south slab. A surface tolerance of 3/16" in 10 feet is also required.

550 (Cont)
The contractor shall place the north approach slab in one continuous operation. The south approach slab shall be placed in two operations with a split as shown on the plans.

602 DIAPHRAGMS: The diaphragm concrete shall be placed before the deck concrete and shall cure for at least 72 hours before deck placement.

602 SURFACE FINISH "D": Surface Finish "D" shall be required for the inside, top, and outer surfaces of the barrier and the edges of the deck.

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

602 DECK CONCRETE: The deck concrete shall be placed at a minimum rate of 60 cubic yards per hour.

602 Deflection of the deck shoring shall be computed using the total dead load plus the weight of the finishing machine. The forming shall be adjusted properly to accommodate the deflection and thereby maintain the total slab thickness specified in the plans.

602 PENETRATING WATER REPELLENT TREATMENT: Penetrating water repellent shall be applied to the driving surfaces of the concrete deck and under the concrete median paving.

602 BARRIERS: Barriers shall be constructed according to the provisions of Section 602.03 B.4 except that there shall be no expansion or deflection joints. Make 3/4" V-grooves in all faces of the barriers at each pier and at equal spaces between substructures at approximately 10-foot spacing.

612 DECK TINING: The driving surfaces of the deck shall be tined. Tining shall begin 6 inches from the beginning and the end of the deck. The sidewalk shall be transversely broomed to slightly roughen the surface.

622 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 26,450 foot-pound-tons, as computed by the formula W(E-12,610) + .419E, where W is the weight of the ram in tons and E is the rated hammer energy. In no case shall the ram weight be less than 2,700 pounds.

The contractor shall bore to elevation 1762.0 before driving the piling to at least elevation 1758.0. The holes shall be backfilled with sand or fine gravel. If the piling are difficult to drive, the holes may be backfilled before driving the piling to their final elevation.

708 SLOPE PROTECTION: The concrete slope protection will be limited to the cast-in-place type shown on Standard D-708-1.

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

SHOP DRAWINGS: CAD-generated shop drawings may be submitted on 11-inch by 17-inch detail sheets. The contractor shall submit the following shop drawings to the Construction office for approval:

1. Prestressed girders.

DESIGN STRENGTH:

F'C	3,000 PSI	Cl. AE-3 Concrete
F'C	4,000 PSI	Cl. AAE-3 Concrete
FY	60,000 PSI	GR. 60 Reinforced Steel
F'C	5,300 PSI	Prestressed Girder Concrete

930 ROADWAY CANOPY: The contractor shall construct canopies above the Interstate under both structures to protect traffic from falling material. The canopies are an added safeguard and do not relieve the contractor of any responsibility for the safety of the public.

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

The canopies shall be of a design and material selected by the contractor and approved by the engineer. The minimum vertical clearance shall be 15' above the Interstate. The canopies shall project a minimum distance of 5'-0" beyond the outside edges of the structures.

The canopies shall project a minimum distance of 5'-0" beyond the edge of the driving lanes beneath the structures.

After completion of the structure, the canopy shall be removed and shall remain the property of the contractor.

The roadway canopies shall be paid for at the contract lump sum unit price for "Roadway Canopy (Site 1)." The roadway canopy shall be measured as a lump sum item and shall include construction, maintenance, and removal.

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
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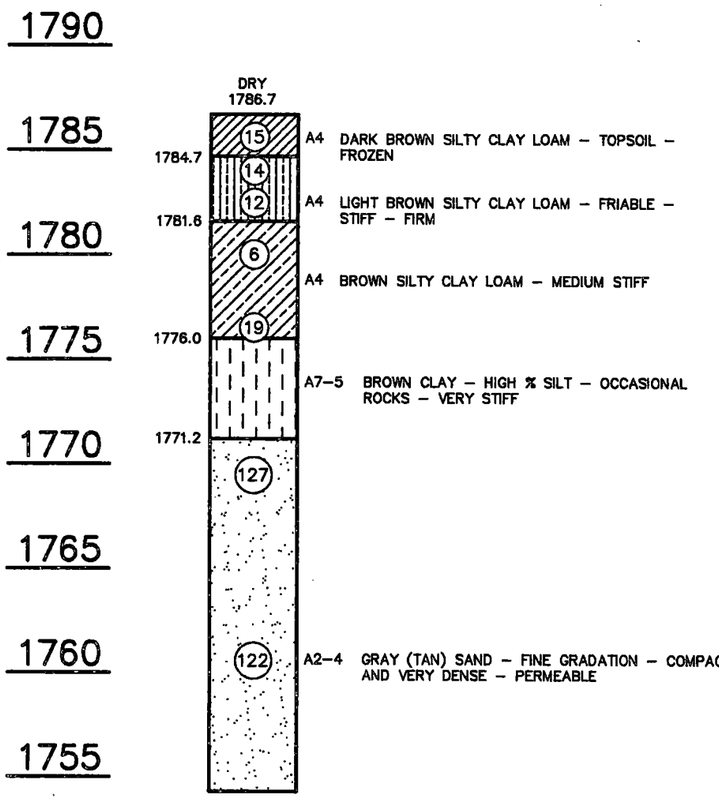
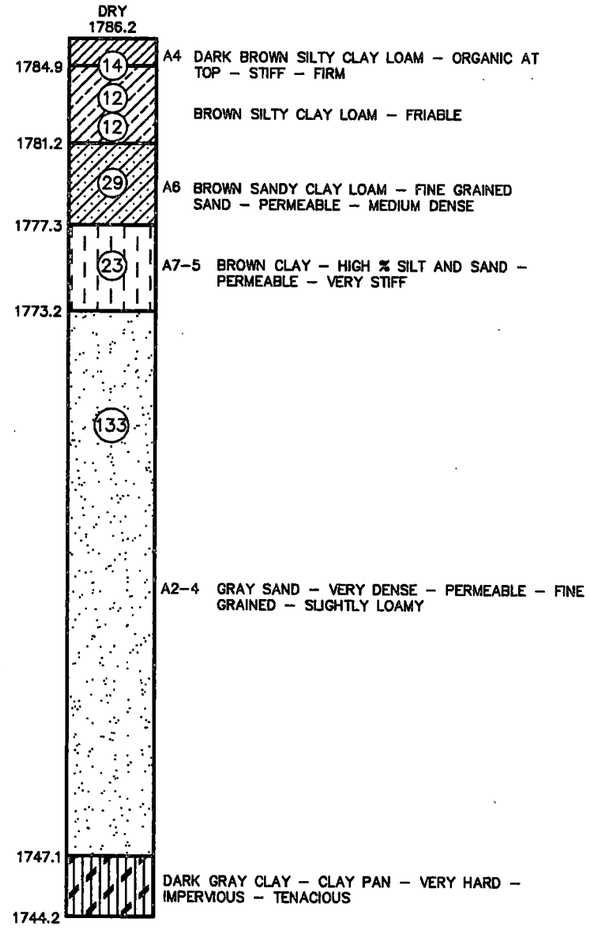
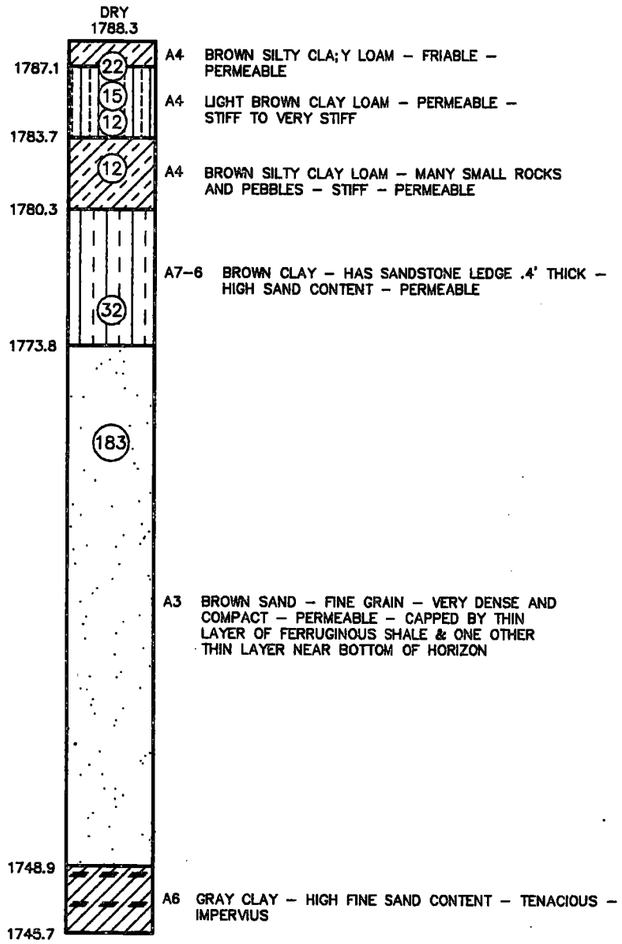


BORING NO. 2
STA. 305+12–13' RT. ℄



BORING NO. 4
STA. 305+12–99.5' LT. ℄



BORING NO. 5
STA. 305+12–125.5' RT. ℄

NOTE:
THESE BORINGS WERE TAKEN FROM THE PLANS OF THE EXISTING BRIDGE. ENCIRCLED NUMBERS INDICATE THE NUMBER OF BLOWS DELIVERED BY A 140 LB. HAMMER FROM A HEIGHT OF 30" TO DRIVE CORE TUBE 1'–0". THE BORING LOG SHOWN IS FOR DESIGN PURPOSES ONLY. THE STATE ASSUMES NO RESPONSIBILITY IF SOIL CONDITION ENCOUNTERED DURING CONSTRUCTION DIFFER FROM THESE SHOWN.

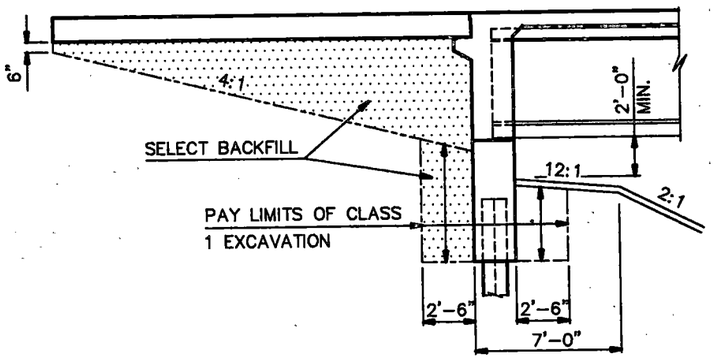
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

BORING LOG

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	557

QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
202	0105	REMOVAL OF STRUCTURE	L. SUM	1.0
210	0102	CLASS 1 EXCAVATION (SITE 1)	L. SUM	1.0
210	0198	SELECT BACKFILL	TON	1060.0
210	0202	FOUNDATION PREPARATION (SITE 1)	L. SUM	1.0
550	0215	CONCRETE BRIDGE APPROACH SLAB	SQ. YD.	419.4
602	0130	CLASS AAE-3 CONCRETE	CU. YD.	687.0
602	1130	CLASS AE-3 CONCRETE	CU. YD.	234.9
602	1250	PENETRATING WATER REPELLENT TR.	SQ. YD.	1968.0
604	9920	PRESTRESSED I-BEAM 63"	L. FT.	2343.0
612	0115	REINFORCING STEEL GRADE 60	LBS.	46,656.0
612	0116	REINFORCING STEEL GRADE 60 EPOXY	LBS.	140,041.0
622	0060	STEEL PILING HP 14X73	L. FT.	720.0
624	0126	PEDESTRIAN CANOPY	L. FT.	215.0
708	1100	SLOPE PROTECTION, CONC.	SQ. YD.	988.0
750	0200	CONCRETE MEDIAN PAVING	SQ. YD.	71.0
930	7013	ROADWAY CANOPY (SITE 1)	L. SUM	1.0



TYPICAL DETAIL AT ABUTMENT

PILING LOADING			
LOCATION	DEAD LOAD	LIVE LOAD	DESIGN LOAD
ABUT. 1 & 3	67.0 T	24.0 T	91.0 T

EARTH PRESSURE					
LOCATION	DEAD LOAD	EARTH LOAD	LIVE LOAD	HORIZONTAL FORCES	DESIGN LOAD
PIER	3.94 KSF	0.66 KSF	1.50 KSF	1.50 KSF	7.60 KSF

℄ GIRDER 1	℄ GIRDER 2	℄ GIRDER 3	℄ GIRDER 4	℄ GIRDER 5	℄ GIRDER 6	℄ GIRDER 7	℄ GIRDER 8	℄ GIRDER 9	℄ GIRDER 10	℄ GIRDER 11
1793.35	1793.53	1793.70	1793.87	1794.05	1794.12	1794.05	1793.86	1793.67	1793.48	1793.29
1793.36	1793.53	1793.71	1793.88	1794.05	1794.13	1794.06	1793.87	1793.68	1793.49	1793.30
.48	.66	.83	1794.01	.18	.26	.19	1794.00	.81	.62	.43
.60	.77	1793.95	.12	.30	.38	.31	.12	1793.93	.74	.55
.70	.88	1794.05	.23	.40	.48	.41	.22	1794.03	.84	.65
.79	1793.97	.14	.32	.49	.57	.51	.32	.13	1793.94	.75
.87	1794.04	.22	.40	.57	.65	.58	.39	.20	1794.02	.83
.93	.10	.28	.46	.63	.71	.64	.46	.27	.08	.89
1793.97	.15	.32	.50	.68	.76	.69	.50	.31	.13	.94
1794.00	.18	.36	.53	.71	.79	.72	.54	.35	.16	.97
.02	.20	.38	.55	.73	.81	.74	.56	.37	.18	1793.99
1794.04	1794.22	1794.39	1794.57	1794.75	1794.83	1794.76	1794.58	1794.39	1794.20	1994.01
1794.05	1794.22	1794.40	1794.58	1794.75	1794.84	1794.77	1794.58	1794.39	1794.21	1794.02
.14	.32	.49	.67	.85	1794.93	.86	.67	.49	.30	.11
.23	.41	.59	.76	1794.94	1795.02	1794.95	.77	.58	.39	.20
.32	.49	.67	.84	1795.02	.10	1795.04	.85	.66	.47	.29
.39	.57	.74	.92	.09	.18	.11	.92	.73	.55	.36
.45	.63	.80	1794.98	.16	.24	.17	1794.98	.80	.61	.42
.50	.68	.85	1795.03	.21	.29	.22	1795.03	.85	.66	.47
.54	.72	.89	.07	.25	.33	.26	.07	.89	.70	.51
.57	.75	.92	.10	.28	.36	.29	.10	.92	.73	.54
.59	.77	.95	.12	.30	.38	.31	.13	.94	.75	.56
1794.61	1794.79	1794.96	1795.14	1795.32	1795.40	1795.33	1795.14	1794.96	1794.77	1794.58
1794.62	1794.79	1794.97	1795.15	1795.32	1795.40	1795.34	1795.15	1794.96	1794.77	1794.59

1'-0" BEGIN BRIDGE | 10 EQ. SP. = 106'-6" BEGIN GIRDER ABUT. NO. 1 | ℄ PIER 2 | 1'-0" | 10 EQ. SP. = 106'-6" END GIRDER ABUT. NO. 3 | 1'-0" END BRIDGE

SCREED ELEVATIONS

ELEVATIONS ARE TO TOP OF FINISHED ROADWAY

BENCH MARKS			
NO.	DESCRIPTION	LOCATION	ELEV.
18	IR. MON. 2x2 GDS. BY T. POLE	297+25 ~ 464' LT.	1765.75
19	IR. MON. 2x2 GDS. BY P. POLE	309+32 ~ 493' LT.	1765.22

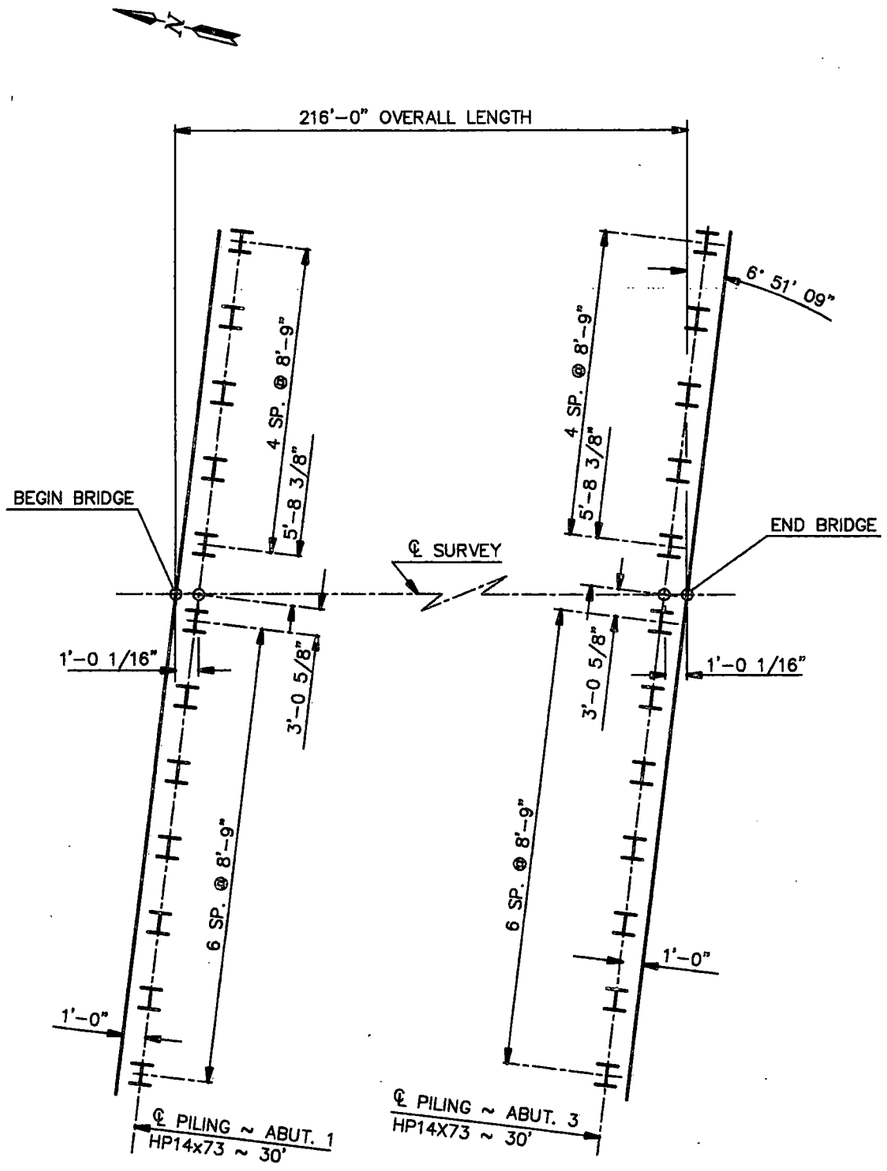
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

SCREED ELEVATIONS, QUANTITIES, MISCELLANEOUS INFORMATION

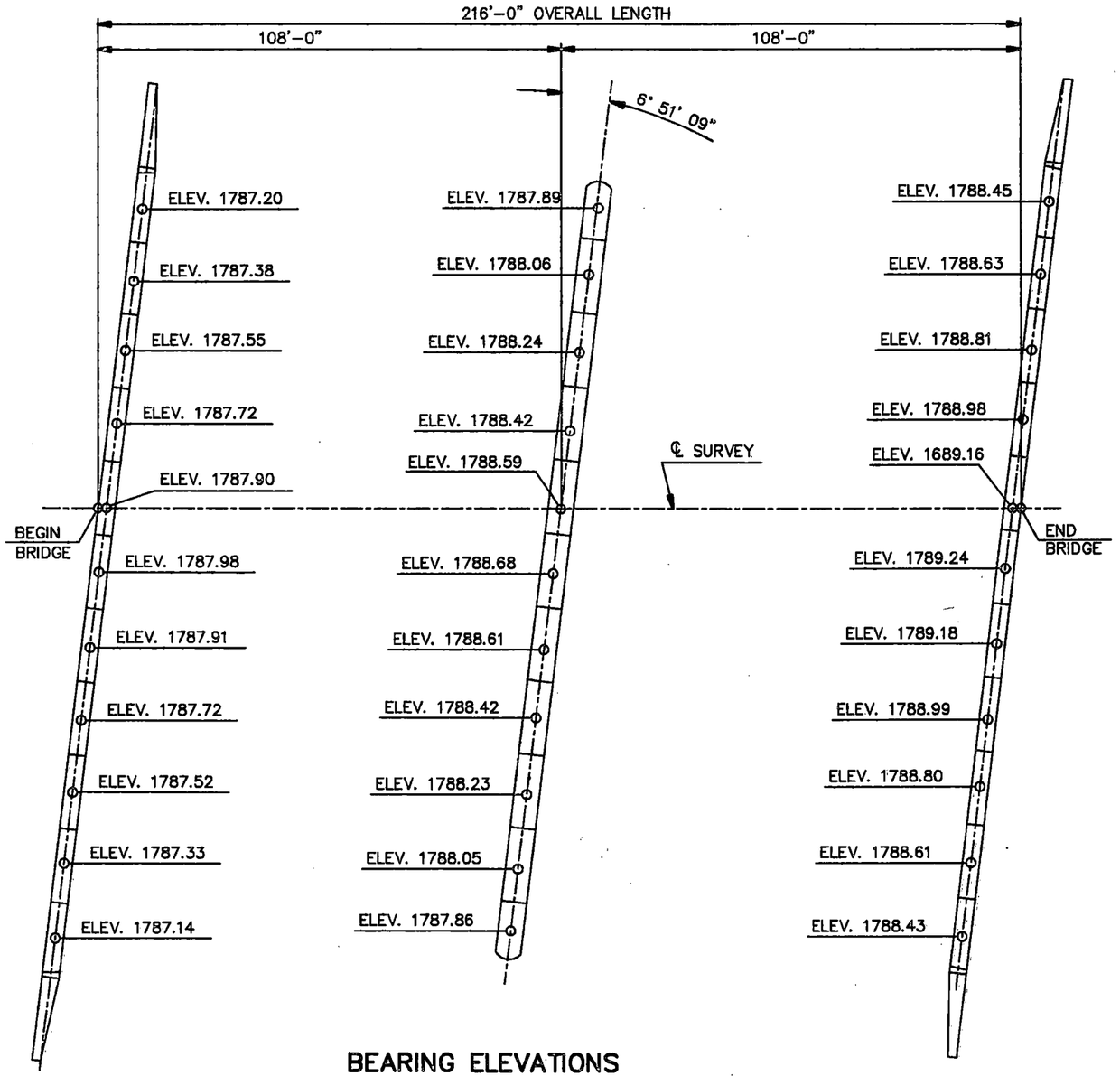
094-157.328-4

94GAL47 ~DLS December 14, 1994 11:44 am

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	558



PILING LAYOUT



BEARING ELEVATIONS

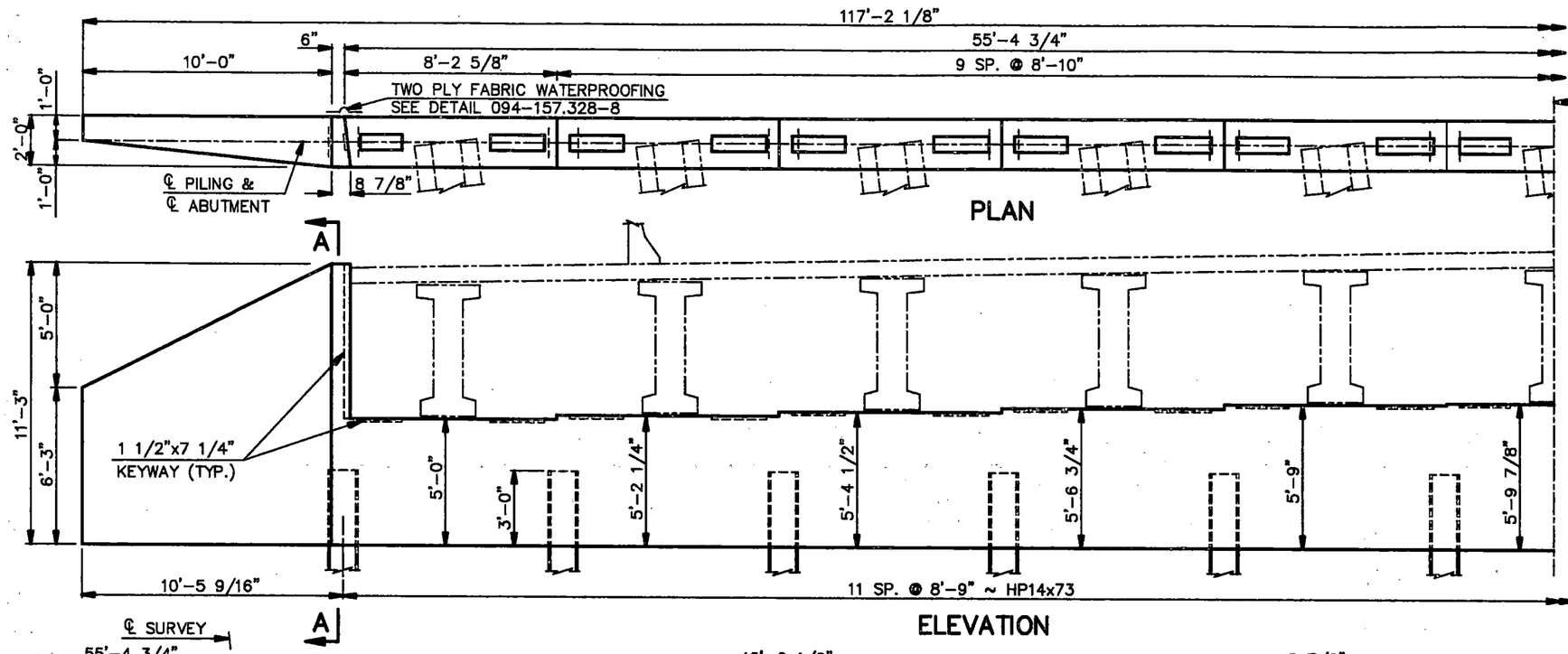
ELEVATIONS SHOWN ARE TO TOP OF FINISHED CONCRETE

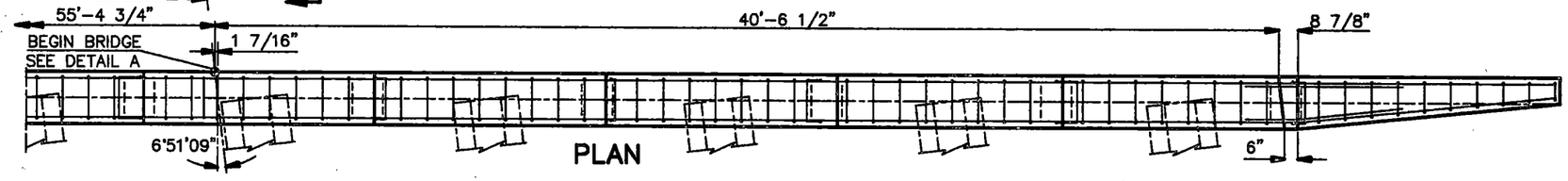
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

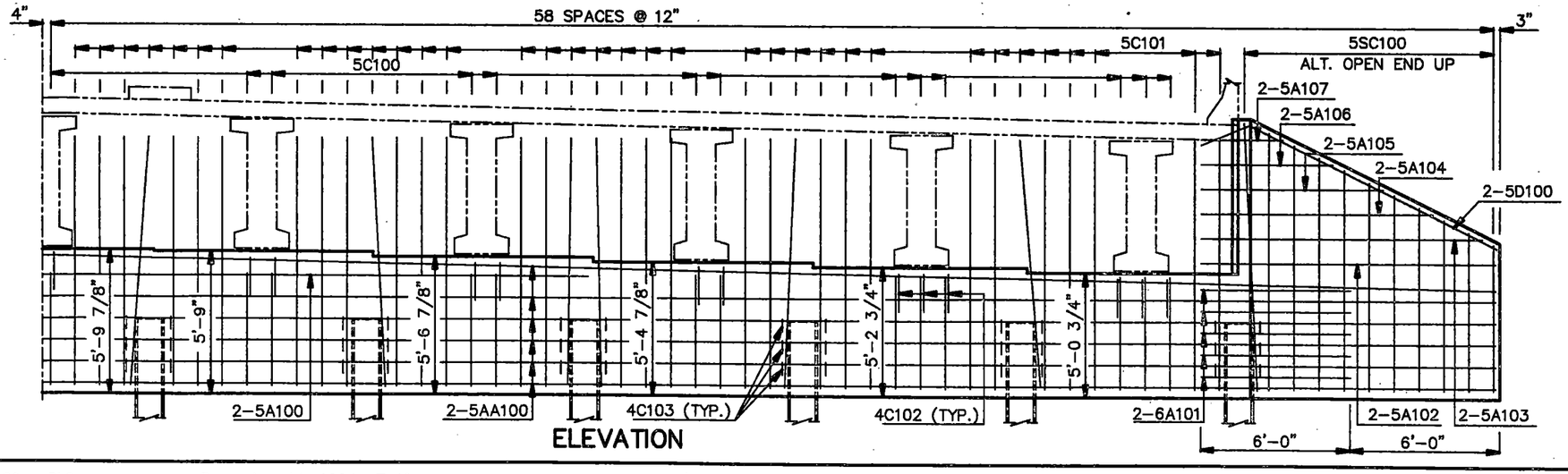
BEARING ELEVATIONS

PILING LAYOUT

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	559







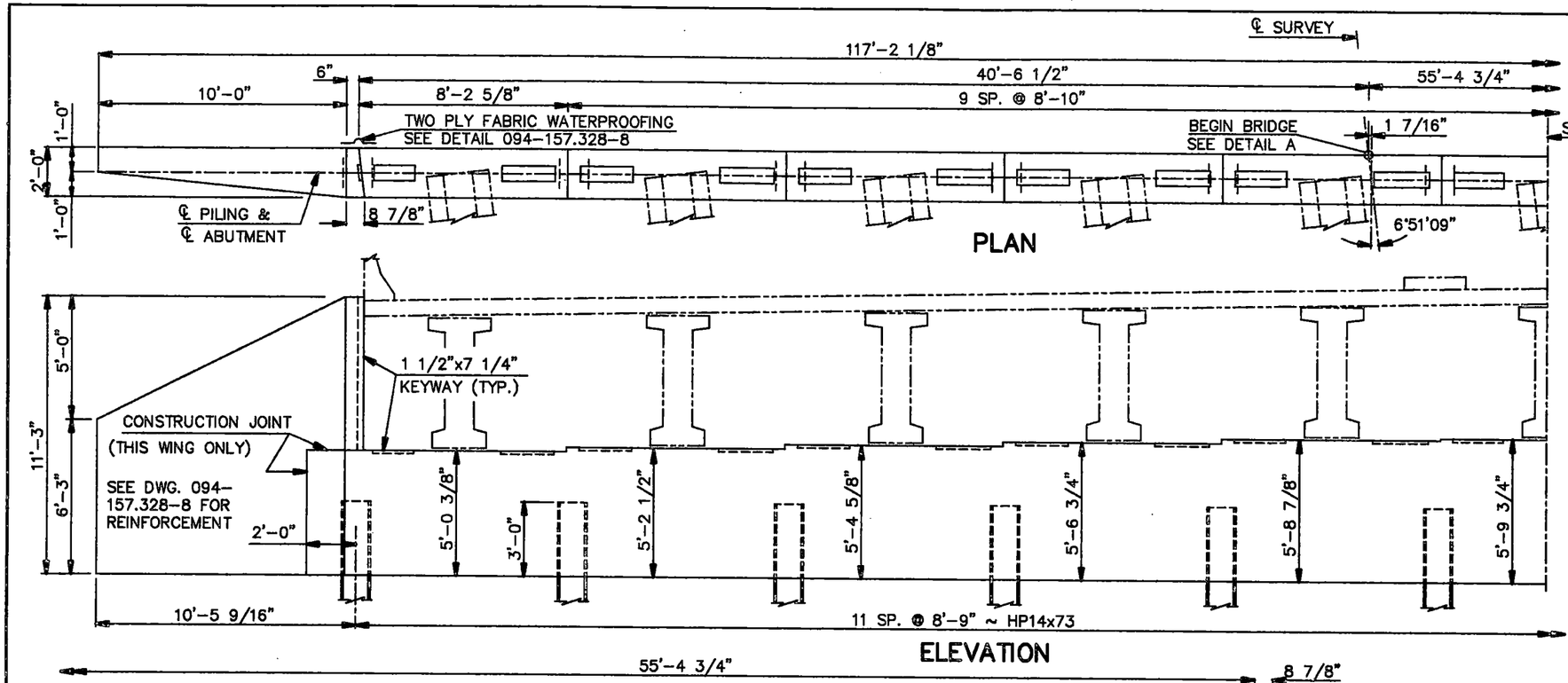
FOR ℄ SECTION & SECTION A-A
SEE DWG. 094-157.328-8

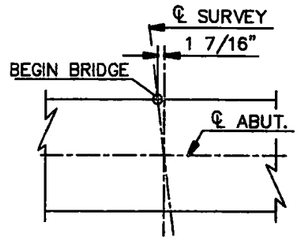
QUANTITIES		
CLASS AE-3 CONC.	49.7	C.Y.
REINFORCING STEEL	4655	LBS.
EXCAVATION & PILING (SEE DWG. 094-157.328-4)		

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

ABUTMENT 1 DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	560





DETAIL A

NOTE:
EAST WING TO BE CONSTRUCTED AFTER THE REMOVAL OF THE SOUTHWEST PORTION OF THE EXISTING BRIDGE.

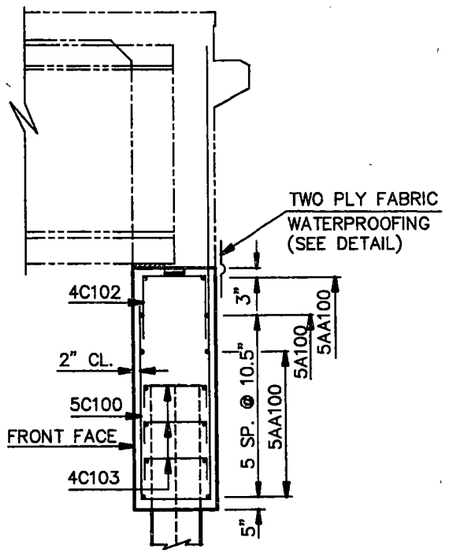
FOR ℄ SECTION & SECTION A-A
SEE DWG. 094-157.328-8

QUANTITIES		
CLASS AE-3 CONC.	49.6	C.Y.
REINFORCING STEEL	4659	LBS.
EXCAVATION & PILING (SEE DWG. 094-157.328-4)		

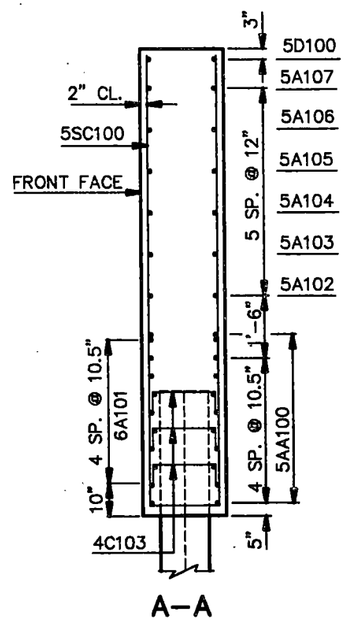
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

ABUTMENT 3 DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	561

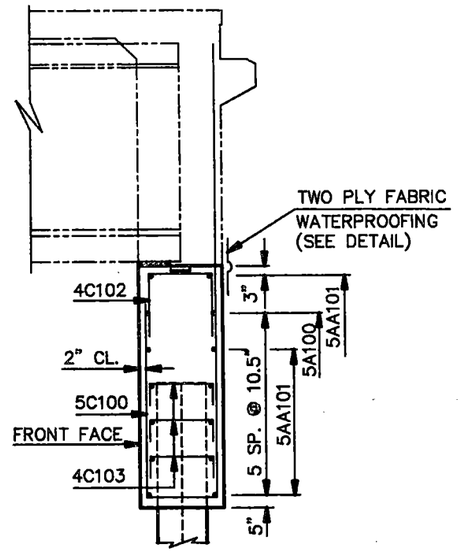


℄ SECTION



A-A

ABUTMENT 1



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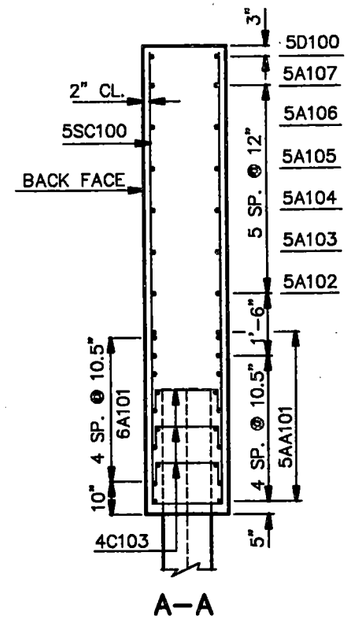
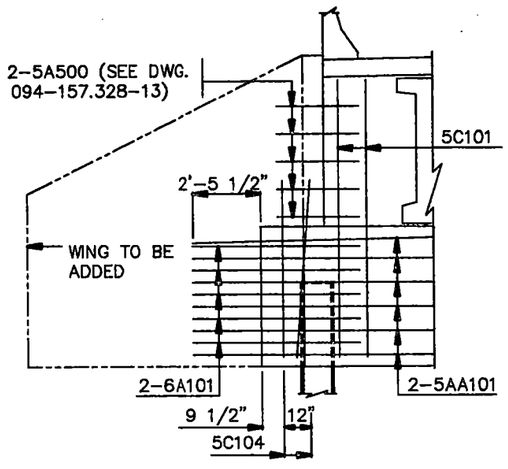
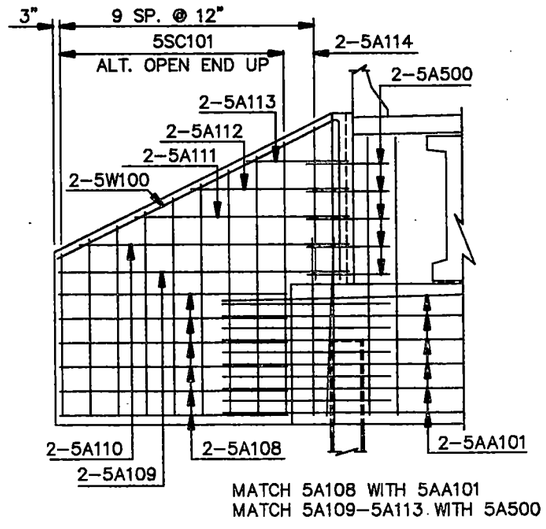


A-A

ABUTMENT 3



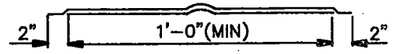
SHOWING DETAIL WITHOUT WING



MATCH 5A108 WITH 5AA101
MATCH 5A109-5A113 WITH 5A500

SHOWING DETAIL WITH WING

EAST WING ABUTMENT 3



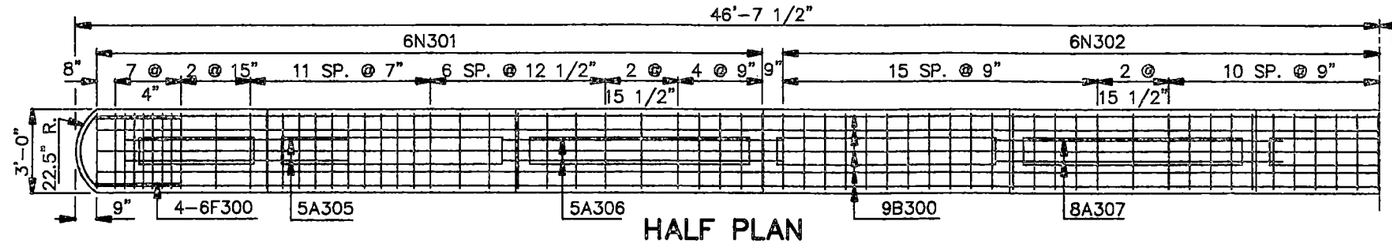
FABRIC WATERPROOFING SHALL BE APPLIED IN ACCORDANCE WITH SECTION 740 OF THE NDDOT SPECIFICATIONS.
ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM FOR CLASS AE-3 CONCRETE.

TWO-PLY FABRIC WATERPROOFING DETAIL

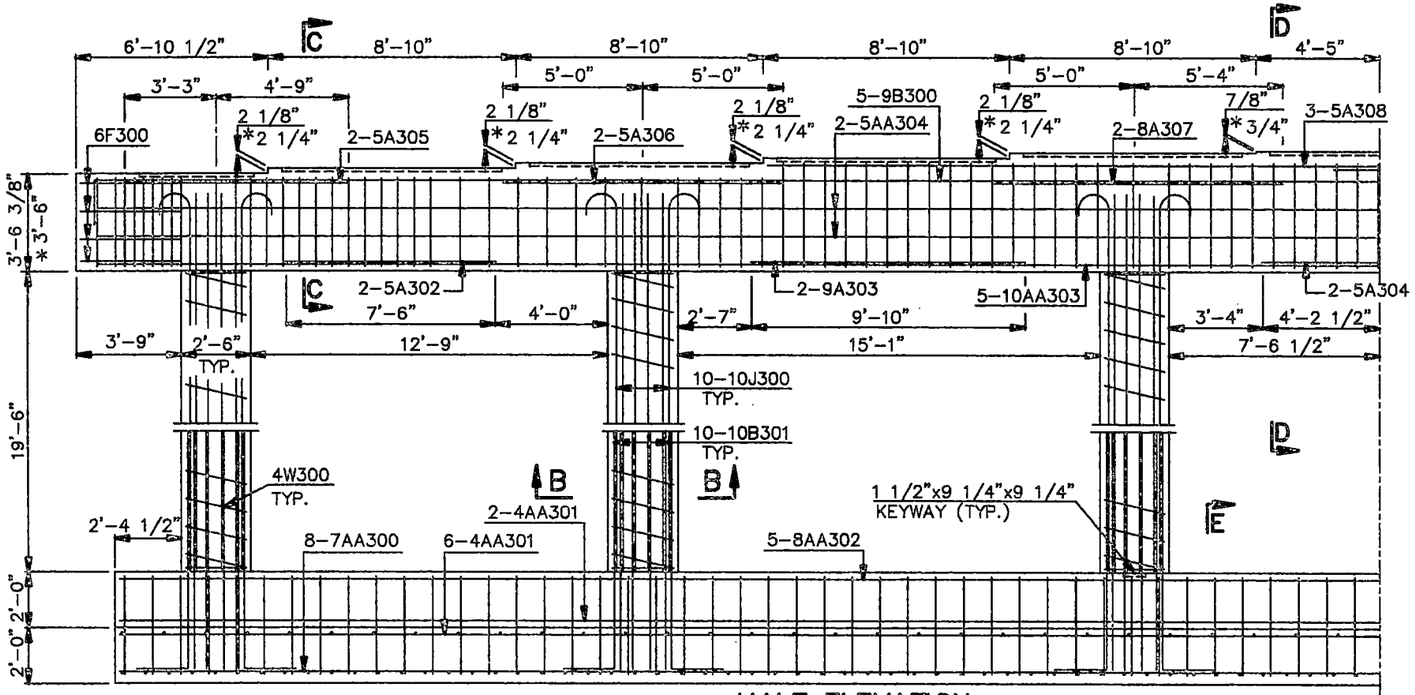
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

ABUTMENT DETAILS

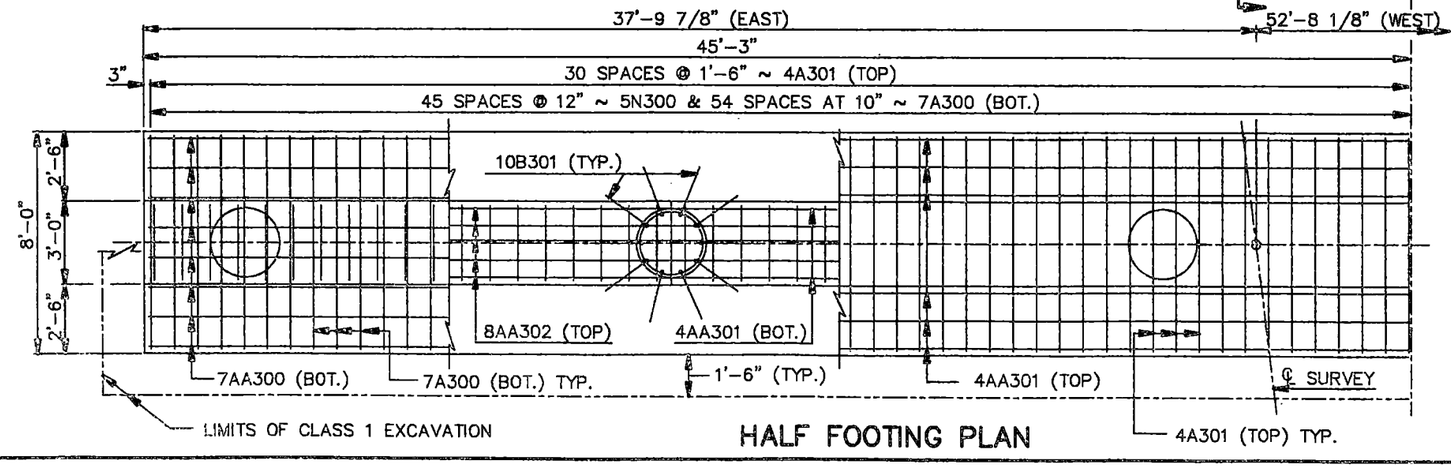
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	562



HALF PLAN

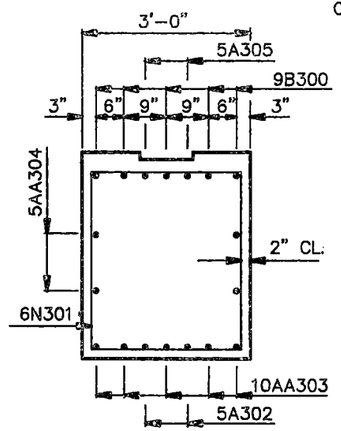


HALF ELEVATION

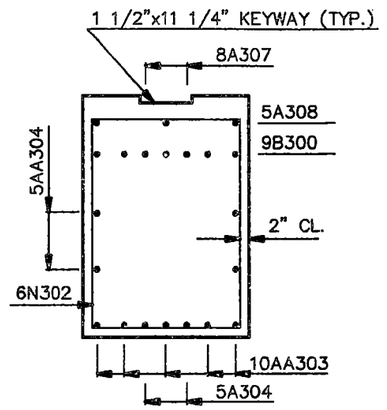


HALF FOOTING PLAN

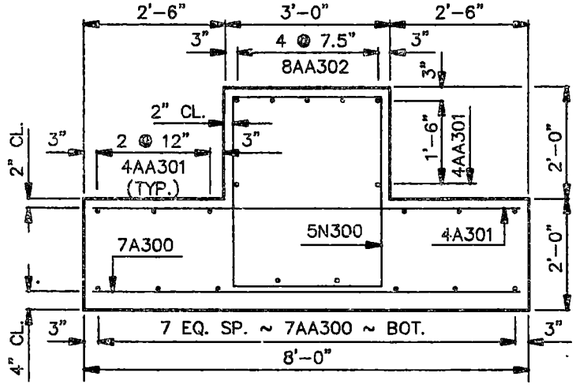
* DIMENSIONS ARE FOR WEST END OF PIER CAP.



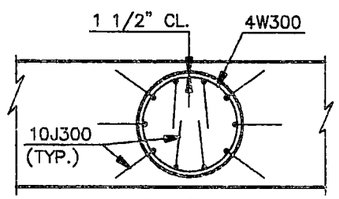
C-C



D-D



E-E



B-B

SHOWING REBARS IN COLUMN ONLY

QUANTITIES		
CLASS AE-3 CONC.	135.6	C.Y.
REINFORCING STEEL	24,095	LBS.

EXCAVATION
(SEE DWG. 094-157.328-4)

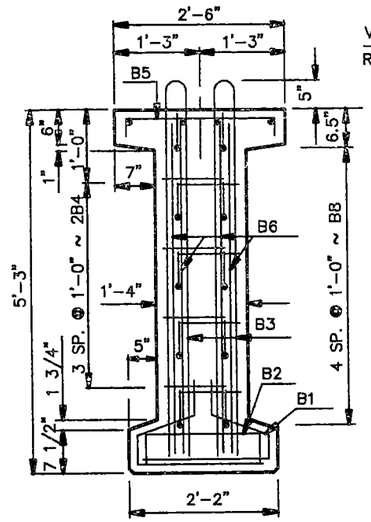
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

PIER DETAIL

94GAL36 ~ DLS December 14, 1994 10:23 am

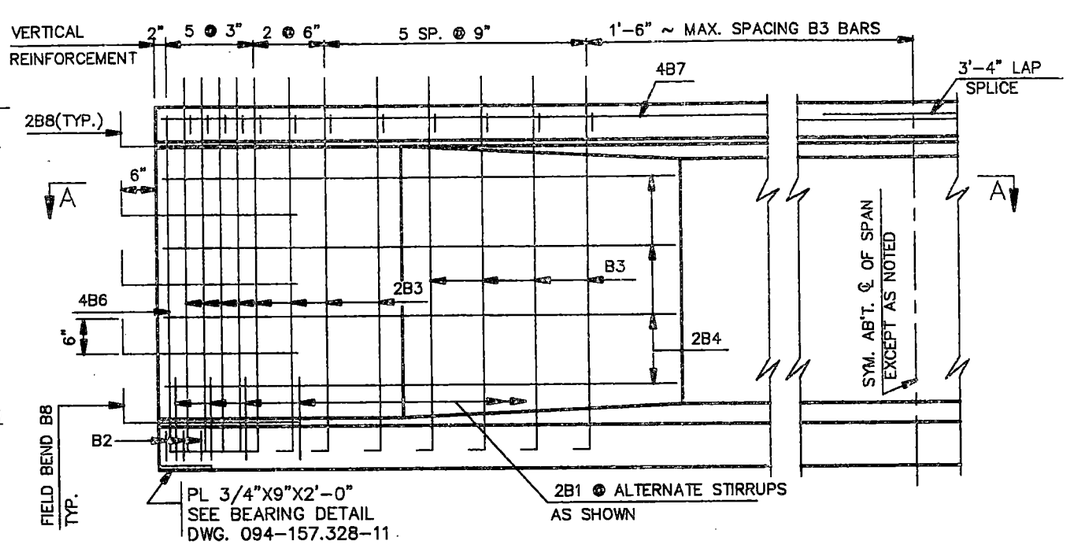
094-157.328-9

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	563

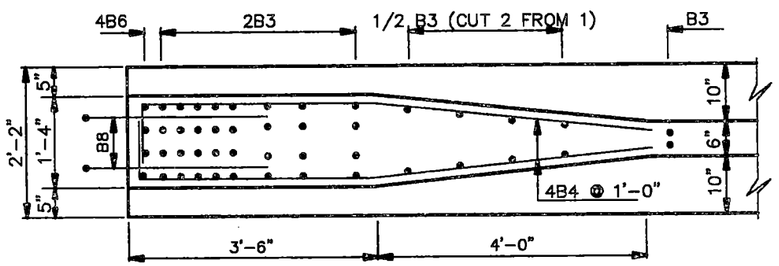


END VIEW

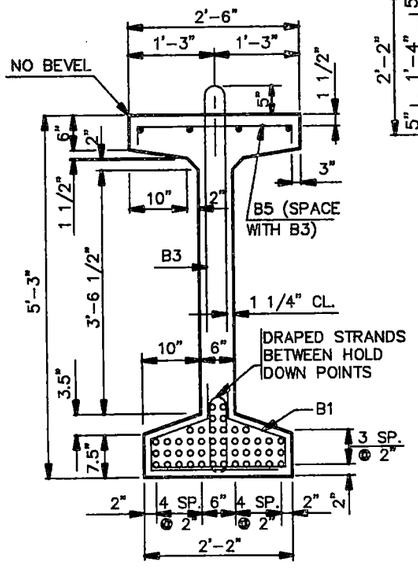
DETAILS NOT SHOWN ARE THE SAME AS THE ℄ SECTION



HALF ELEVATION

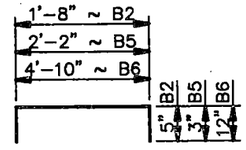


A-A

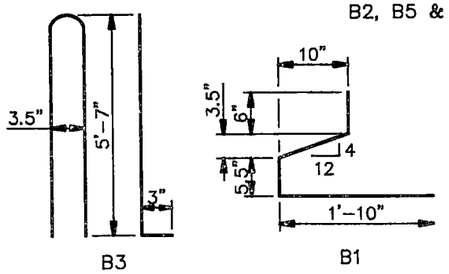


SECTION AT ℄ BEAM

SUGGESTED STRAND PATTERN



B2, B5 & B6



B3 B1 B4

BENT BAR DETAILS

DESIGN AND SHOP DRAWINGS: AT LEAST 14 DAYS PRIOR TO THE FORMING AND POURING OF ANY GIRDERS, THE CONTRACTOR SHALL SUBMIT CHECKED DESIGN FIGURES AND SHOP DRAWINGS FOR THE APPROVAL OF THE CONSTRUCTION ENGINEER OF THE ND DOT. THE DESIGN FIGURES SHALL SHOW THE TOTAL INITIAL PRESTRESS FORCE TAKEN FROM THE CONTRACT DRAWINGS AND THE LOSSES IN PRESTRESS DUE TO ELASTIC SHORTENING, SHRINKING OR CREEPING OF CONCRETE AND THE RELAXATION OF STEEL STRESS AS DETERMINED BY THE CONTRACTOR FOR HIS METHOD OF STRESSING.

SHOP DRAWINGS SHALL SHOW STRAND LAYOUT, PULL DOWN LOCATIONS, TENSIONING FORCES, ELONGATION AND ANY PROPOSED CHANGES IN REINFORCING STEEL.

THE FINAL PRESTRESS FORCE (REMAINING AFTER ALL LOSSES HAVE BEEN ACCOUNTED FOR) AND ITS CORRESPONDING CENTER OF GRAVITY, SHALL BE SELECTED FROM THOSE ON A CURVE DETERMINED BY THE TWO VALUES SHOWN.

THE GIRDERS SHALL BE POURED IN ALL STEEL FORMS.

HOLES AND INSERTS TO ACCOMMODATE THE DIAPHRAGM BARS SHALL BE PROVIDED IN THE GIRDERS AT LOCATIONS AS SHOWN.

ALL REINFORCING STEEL SHALL BE GRADE 60 AND SHALL HAVE A CLEARANCE OF 1 1/4" UNLESS OTHERWISE NOTED.

MINOR CHANGES TO THE SHAPE OF THE GIRDER AND TO REINFORCING STEEL MAY BE MADE TO ACCOMMODATE THE FORMS OF VARIOUS CONTRACTORS AND THEIR CONSTRUCTION METHODS WITH THE APPROVAL OF THE ND DOT CONSTRUCTION ENGINEER.

THE TOPS OF THE BEAMS SHALL BE ROUGH FLOATED AND BROOMED TRANSVERSELY FOR BOND.

PROVIDE HANDLING HOOKS OR DEVICES AS REQUIRED BY CONTRACTOR. HOOKS OR DEVICES PROVIDED WILL BE SUBJECT TO APPROVAL OF THE ENGINEER AND SHALL BE INSTALLED WITHIN 4'-0" OF THE END OF BEAM.

BAR LIST (ONE BEAM)

MARK	NO.	SIZE	LENGTH	SHAPE
B1	88	4	3'-8"	BENT
B2	6	5	2'-6"	BENT
B3	102	4	11'-10"	BENT
B4	16	4	8'-4"	BENT
B5	86	3	2'-8"	BENT
B6	8	5	6'-10"	BENT
B7	8	5	54'-9"	STR.
B8	20	5	3'-0"	STR.

BEAM SECTION DATA

WT. = 763 LBS./FT. + 5170 LBS. FOR END BLOCKS

CROSS SEC. AREA AT ℄ OF SPAN = 732 IN.^{2}

C.G. (FROM BOTTOM) = 31.17 IN.

I = 392,056 IN.^{4}

C.G.	FINAL FORCE	DETENSION STRENGTH	ACCEPTANCE STRENGTH
4.5	992.7 K	5300 PSI	5300 PSI
4.75	998.4 K		

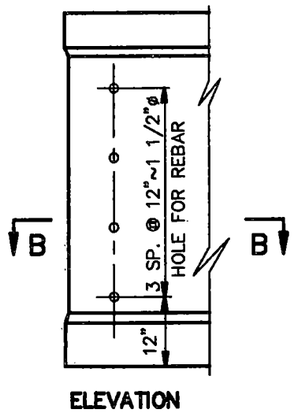
BEAM LENGTH 106'-6"

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

PRE-TENSIONED 63" x 106'-6" PRESTRESSED GIRDER DETAILS

094-157.328-10

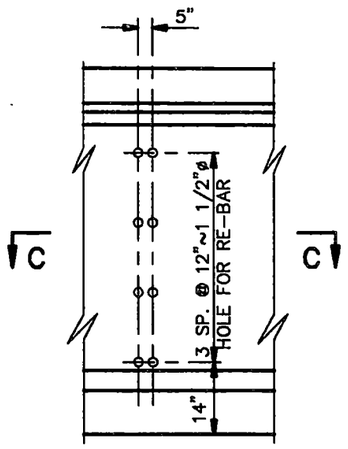
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	564



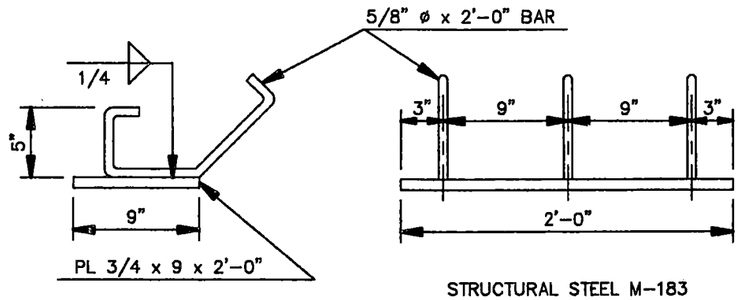
ELEVATION

END BEAM DETAIL

NOTE: USE INSERTS AT THE INTERIOR FACES OF THE EXTERIOR BEAMS AT THE PIER.

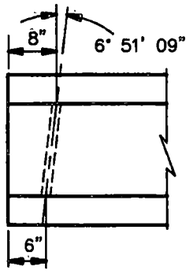


INTERMEDIATE DIAPHRAGM

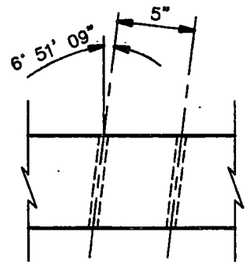


STRUCTURAL STEEL M-183
INCIDENTAL TO BID PRICE
FOR THE GIRDER

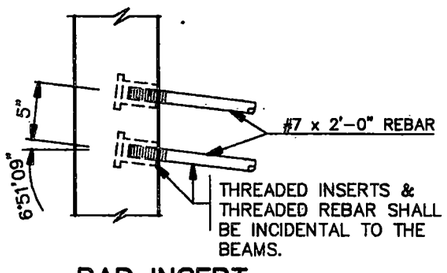
BEARING DETAIL



B-B



C-C

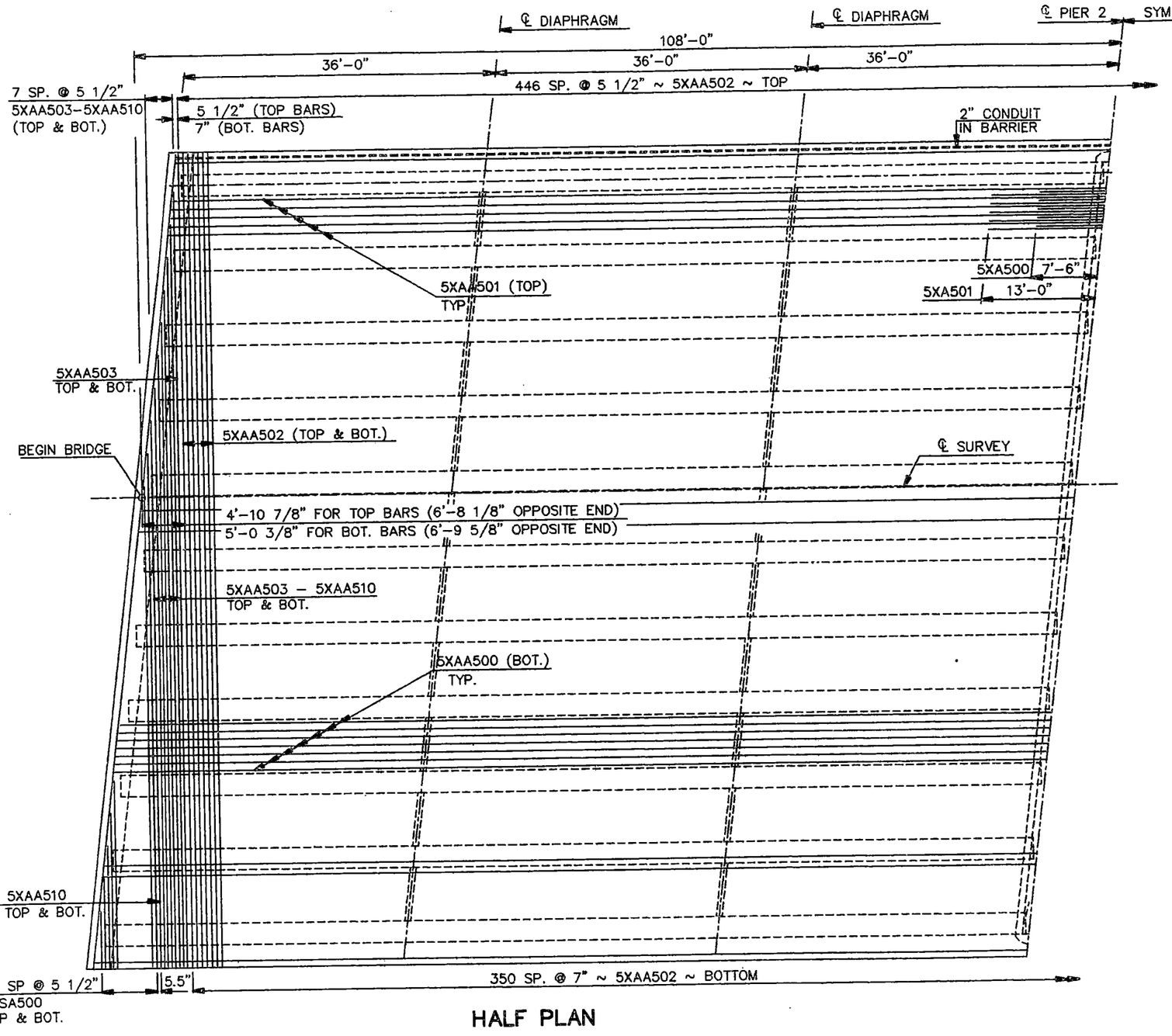


BAR INSERT
OUTER GIRDERS ONLY

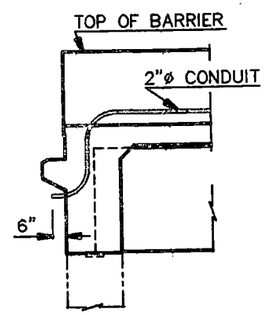
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

PRE-TENSIONED 53" x 106'-6" PRESTRESSED GIRDER DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	565

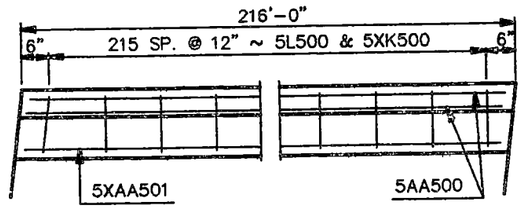


HALF PLAN



CONDUIT DETAIL AT ENDWALLS

CONDUIT SHALL BE INCIDENTAL TO CLASS AAE-3 CONCRETE.



PARTIAL BARRIER PLAN DETAIL

QUANTITIES
SEE DWG. 094-157.328-15

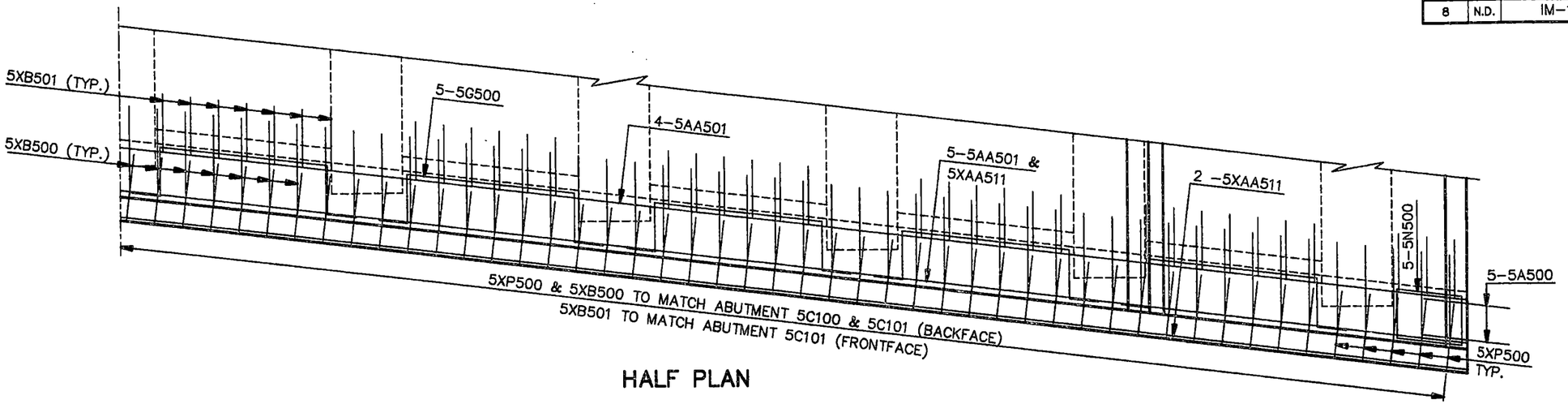
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

SUPERSTRUCTURE DETAILS

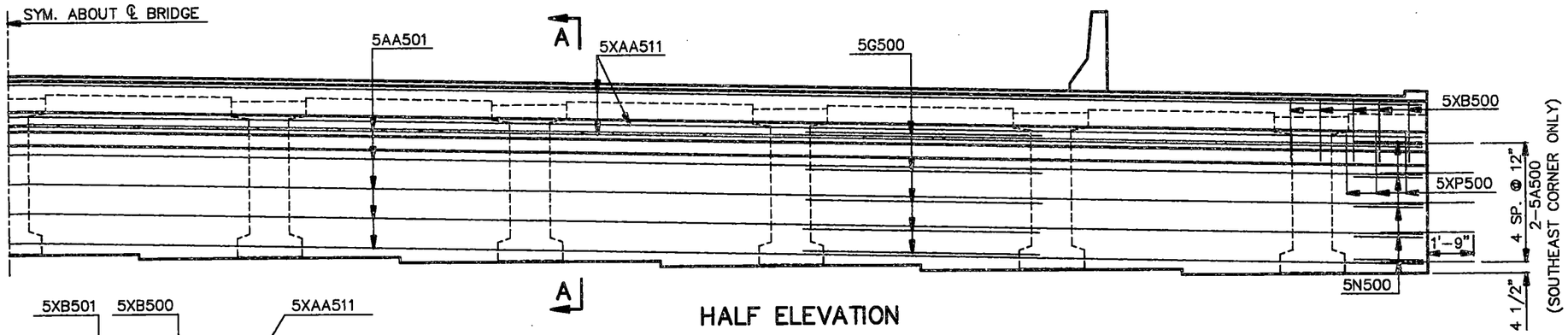
094-157.328-12

94GAL25 ~ DLS January 3, 1995 2:03 pm

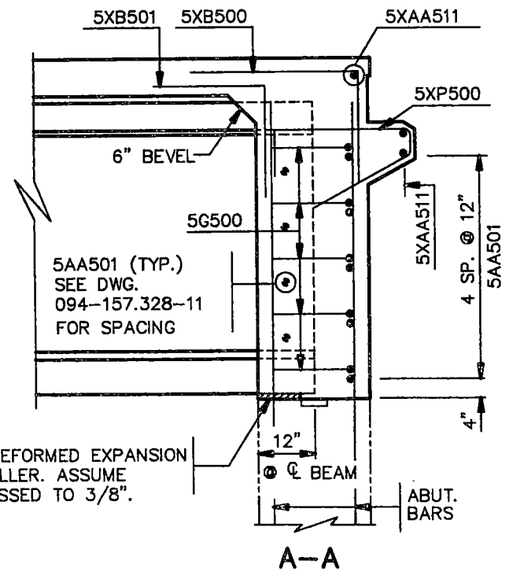
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	566



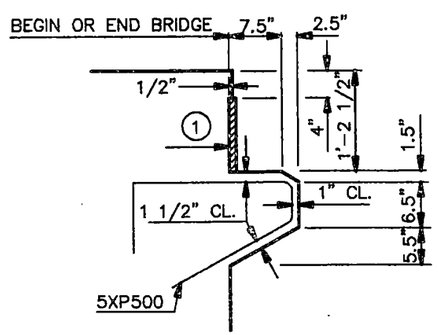
HALF PLAN



HALF ELEVATION



A-A



APPROACH SLAB LIP

① 1" THICK PREFORMED EXPANSION JOINT FILLER TO BE INSTALLED PRIOR TO DECK PLACEMENT.

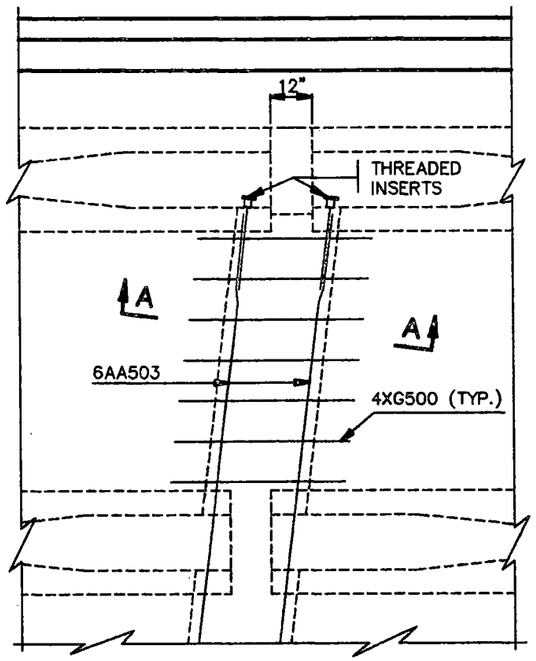
QUANTITIES
SEE DWG. 094-157.328-15

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

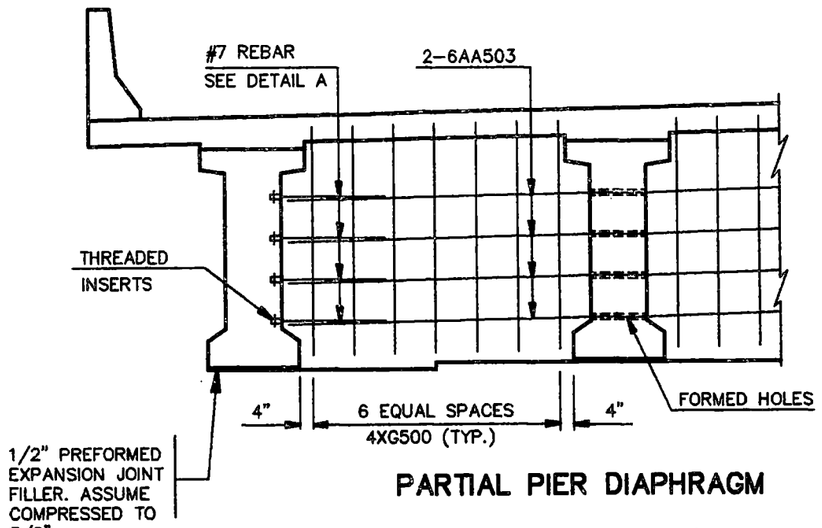
SUPERSTRUCTURE DETAILS

094-157.328-13

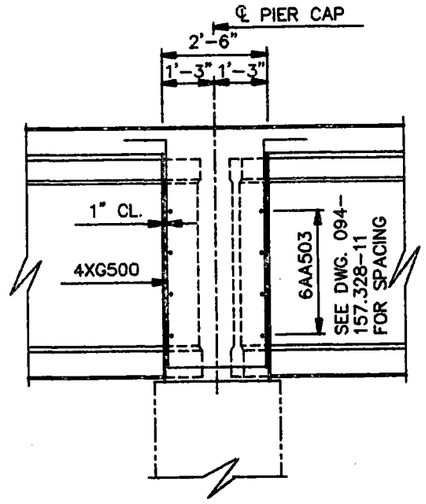
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	567



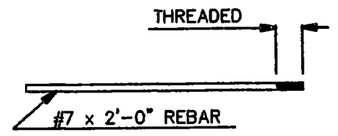
PARTIAL SLAB PLAN AT PIER



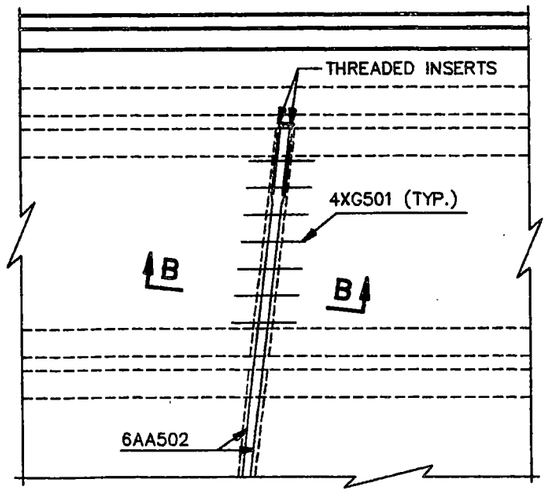
PARTIAL PIER DIAPHRAGM



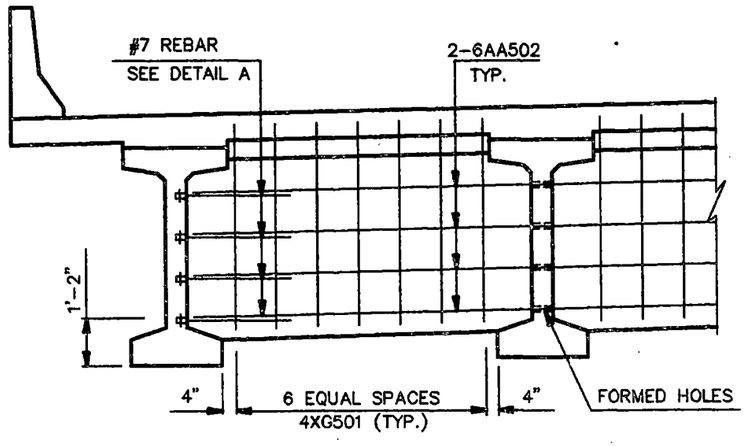
A-A



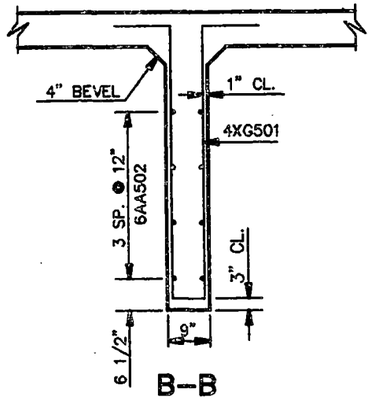
DETAIL A
SUPPLIED BY BEAM MANUFACTURER



PARTIAL SLAB PLAN
AT INTERMEDIATE DIAPHRAGM



INTERMEDIATE DIAPHRAGM



B-B

QUANTITIES
SEE DWG. 094-157.328-15

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

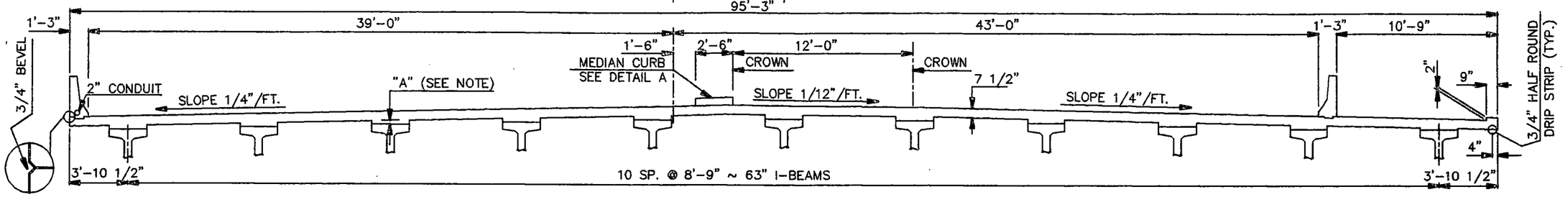
DIAPHRAGM DETAILS

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	568

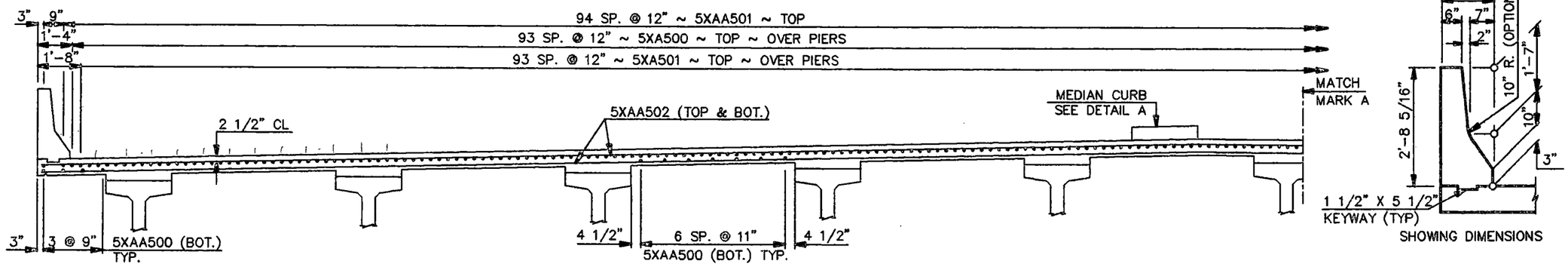
47-1 1/2

℄ SURVEY 7'-4 1/2" ℄ BRIDGE

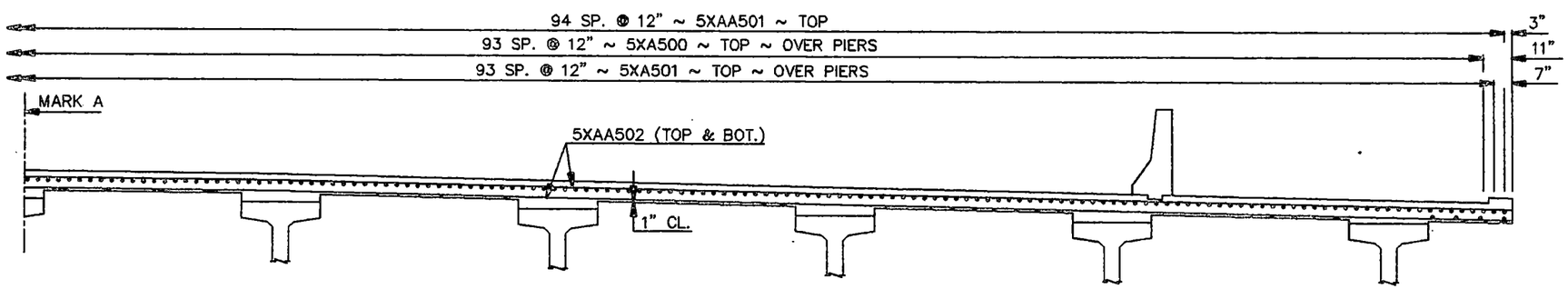
95'-3"



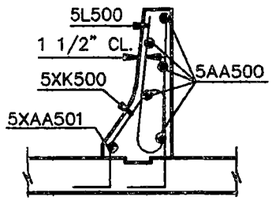
TYPICAL SLAB SECTION
SHOWING DIMENSIONS



SHOWING DIMENSIONS



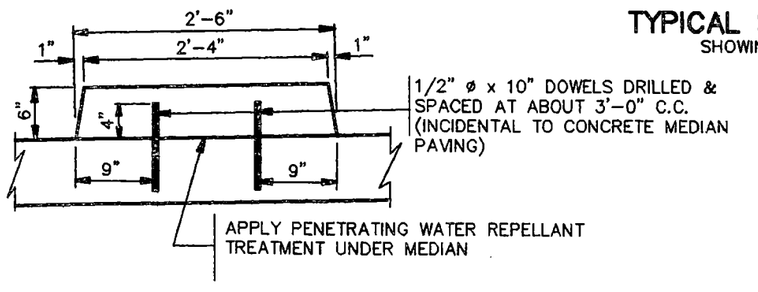
TYPICAL SLAB SECTION
SHOWING REINFORCING



SHOWING REINFORCING
(TYP. BOTH BARRIERS)

BARRIER DETAIL

32.7 (Barrier)



DETAIL A

RISER NOTE:

RISER DIMENSION "A" = 3" AT SUPPORTS
RISER SHALL BE DETERMINED IN THE FIELD
FOR ALL OTHER POINTS.

QUANTITIES		
CLASS AAE-3 CONC.	687.0	C.Y.
REINFORCING STEEL	13,247	LBS.
REINF. STEEL (EPOXY)	140,041	LBS.
CONC. MEDIAN PAVING	71.0	S.Y.

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

SUPERSTRUCTURE DETAILS

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

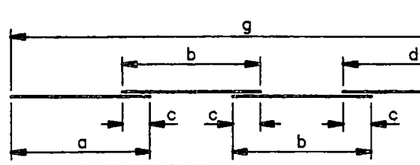
LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
ABUTMENTS	5	A100	4	44'-0"		44'-0"							
	6	A101	40	6'-0"		6'-0"							
	5	A102--A	6	11'-10"		11'-10"							
	5	A103-A	6	11'-4"		11'-4"							
	5	A104-A	6	9'-4"		9'-4"							
	5	A105-A	6	7'-4"		7'-4"							
	5	A106-A	6	5'-4"		5'-4"							
	5	A107-A	6	3'-4"		3'-4"							
	5	A108-3	12	8'-1"		8'-1"							
	5	A109-3	2	10'-4"		10'-4"							
	5	A110-3	2	9'-8"		9'-8"							
	5	A111-3	2	7'-8"		7'-8"							
	5	A112-3	2	5'-9"		5'-9"							
	5	A113-3	2	3'-8"		3'-8"							
	5	A114-3	2	5'-6"		5'-6"							
	5	C100	52	16'-2"		4'-6"	1'-8"	10'-0"					
	5	C101	140	21'-8		10'-0"	1'-8"	10'-0"					
	4	C102	52	4'-8"		1'-6"	1'-8"	1'-6"					
	4	C103	144	2'-8"		6"	1'-8"	6"					
	5	C104-3	2	14'-6"		6'-5"	1'-8"	6'-5"					
	5	D100-A	6	13'-2"		2'-1"	11'-1"					10	12
	5	W100-3	2	16'-7"	11'-0"	5'-7"						12	6
	5	AA100-1	12	118'-11"	58'-11"	60'-0"	2'-1"		1		116'-10"		
	5	AA101-3	12	112'-11"	52'-11"	60'-0"	2'-1"		1		110'-10"		
	5	SC100-A	3	195'-3"	8"	5'-10"	10'-9"	1'-8"	10				
	5	SC101-3	1	150'-9"	8"	5'-10"	9'-10"	1'-6"	8				

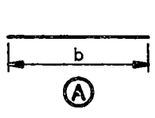
LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
PIER													
	7	AA300	8	93'-2"		46'-7"	3'-0"	46'-7"	1		90'-2"		
	4	AA301	8	91'-5"		60'-0"	1'-3"	31'-5"	1		90'-2"		
	8	AA302	5	95'-5"		56'-5"	5'-3"	39'-0"	1		90'-2"		
	10	AA303	5	96'-5"		57'-0"	4'-8"	39'-5"	1		91'-9"		
	5	AA304	4	93'-0"		46'-6"	1'-3"	46'-6"	1		91'-9"		
	7	A300	109	7'-8"		7'-8"							
	4	A301	61	7'-8"		7'-8"							
	5	A302	4	7'-6"		7'-6"							
	9	A303	4	9'-10"		9'-10"							
	5	A304	2	8'-5"		8'-5"							
	5	A305	4	8'-0"		8'-0"							
	5	A306	4	10'-0"		10'-0"							
	8	A307	4	10'-4"		10'-4"							
	5	A308	3	43'-10"		43'-10"							
	9	B300	10	50'-10"		1'-7"	49'-3"						
	10	B301	60	13'-5"		11'-7"	1'-10"						
	8	F300	6	8'-11"	3'-0"	2'-11"	7"			20.5"			
	10	J300	60	23'-11"	22'-6"								
	5	N300	91	13'-4"	2'-8"	3'-6"	6"					0	12
	6	N301	68	12'-8"	2'-8"	3'-2"	6"					0	12
	6	N302	55	13'-8"	2'-8"	3'-8"	6"					0	12
	4	W300	6	155'-6"	19'-0"	2'-3"	12"						

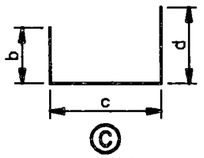
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-094(013)156	569

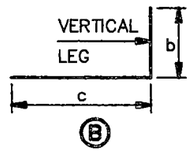
NOTES:

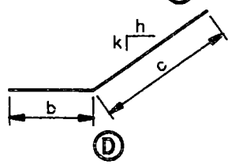
1. FABRICATION AND TOLERANCES SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.
2. ALL DIMENSIONS ARE OUT TO OUT OF BARS.
3. NOMINAL LENGTH OF EACH BENT BAR OR CUT BAR IS THE SUM TOTAL OF THE DETAILING DIMENSIONS FOR THAT BAR, UNLESS OTHERWISE NOTED.
4. ADJACENT AA BARS SHALL BE TURNED END FOR END SO THAT THE SPLICE LOCATIONS ARE STAGGERED.
5. THE "r" DIMENSION INDICATES THE RADIUS.
6. THE NUMBER OR LETTER FOLLOWING THE "DASH" IN THE MARK INDICATES THE ABUTMENT FOR THAT BAR.
   EXAMPLE: A108-3 INDICATES ABUT. 3.
   A103-A (2/3 BARS FOR ABUT. 1)
   (1/3 BARS FOR ABUT. 3)

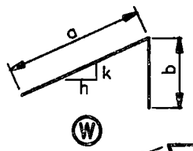


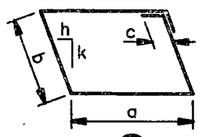


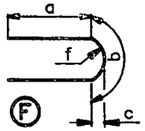


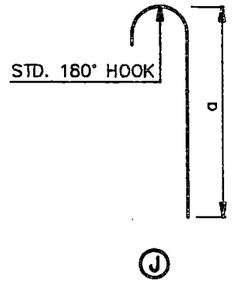


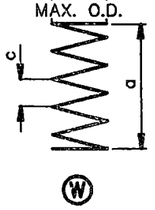


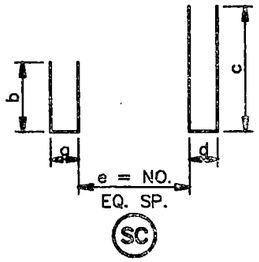












DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

REINFORCING BAR LIST & DETAILS

94GAL28 ~ DLS December 23, 1994 1:22 pm

094-157.328-16

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

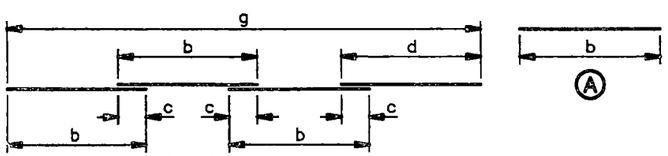
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	570

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
SUPERSTRUCTURE REGULAR	5	A500	10	3'-2"		3'-2"							
	5	G500	100	11'-8"	1'-8"	6'-4"	1'-8"	1'-0"				12	1.44
	5	L500	432	5'-2"	3"	2'-3"	8"	2'-3"		2.5"		12	1.25
	5	N500	20	9'-0"	2'-4"	1'-8"	6"					1.44	12
	5	AA500	10	220'-8"		60'-0"	1'-8"	40'-8"	3		215'-8"		
	5	AA501	18	97'-3"		60'-0"	1'-8"	37'-3"	1		95'-7"		
	6	AA502	32	89'-3"		58'-0"	2'-0"	31'-3"	1		87'-3"		
	6	AA503	8	88'-7"		58'-0"	2'-0"	30'-7"	1		86'-7"		
SUPERSTRUCTURE EPOXY COATED	5	XA500	94	15'-0"		15'-0"							
	5	XA501	94	26'-0"		26'-0"							
	5	XB500	192	6'-1"		3'-0"	3'-1"						
	5	XB501	140	5'-0"		3'-0"	2'-0"						
	4	XG500	70	15'-4"	5'-6"	2'-4"	5'-6"	1'-0"				12	0
	4	XG501	280	12'-1"	4'-9"	7"	4'-9"	1'-0"				12	0
	5	XK500	432	4'-9"	1'-3"	8"	11"	7"	1'-0"	2.5"	8"	8.5	12
	5	XP500	192	5'-6"	5"	2'-1"	2'-2"	10"		1.25"		12	6.5
	5	XAA500	78	225'-8"	34'-10"	52'-0"	2'-6"	34'-10"	3		215'-8"		
	5	XAA501	98	225'-8"	22'-10"	60'-0"	2'-6"	22'-10"	3		215'-8"		
	5	XAA502	798	97'-5"		60'-0"	2'-6"	37'-5"	1		94'-11"		
	5	XAA503	4	92'-11"		60'-0"	2'-6"	32'-11"	1		90'-5"		
	5	XAA504	4	89'-1"		60'-0"	2'-6"	29'-1"	1		86'-7"		
	5	XAA505	4	85'-4"		60'-0"	2'-6"	25'-4"	1		82'-10"		
	5	XAA506	4	81'-6"		60'-0"	2'-6"	21'-6"	1		79'-0"		
	5	XAA507	4	77'-8"		60'-0"	2'-6"	17'-8"	1		75'-2"		
	5	XAA508	4	73'-10"		60'-0"	2'-6"	13'-10"	1		71'-4"		
	5	XAA509	4	70'-1"		60'-0"	2'-6"	10'-1"	1		67'-7"		
	5	XAA510	4	66'-3"		60'-0"	2'-6"	6'-3"	1		63'-9"		
	5	XAA511	6	97'-3"		60'-0"	1'-8"	37'-3"	1		95'-7"		
	5	XSA500	4	499'-4"	6'-7"	60'-0"			14				

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k

NOTES:

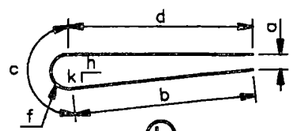
1. FABRICATION AND TOLERANCES SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.
2. ALL DIMENSIONS ARE OUT TO OUT OF BARS.
3. NOMINAL LENGTH OF EACH BENT BAR OR CUT BAR IS THE SUM TOTAL OF THE DETAILING DIMENSIONS FOR THAT BAR, UNLESS OTHERWISE NOTED.
4. ADJACENT AA BARS SHALL BE TURNED END FOR END SO THAT THE SPLICE LOCATIONS ARE STAGGERED.
5. THE "f" DIMENSION INDICATES THE RADIUS.
6. AN "X" PRECEDING A BAR DESIGNATION INDICATES AN EPOXY COATED BAR.



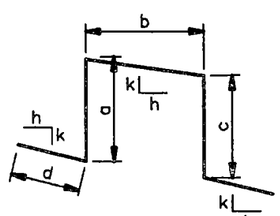
c = LAP SPLICE (TYP.)
e = NO. OF "b" LENGTH PIECES IN A SET
TOTAL LENGTH PER SET = a + e x b + d

(AA)

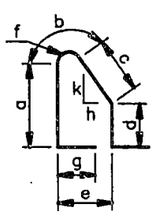
(A)



(L)



(G)



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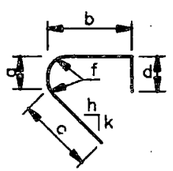

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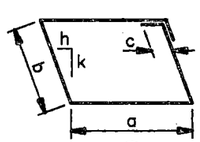

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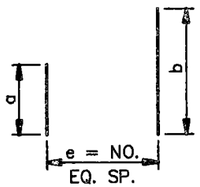

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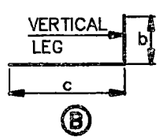
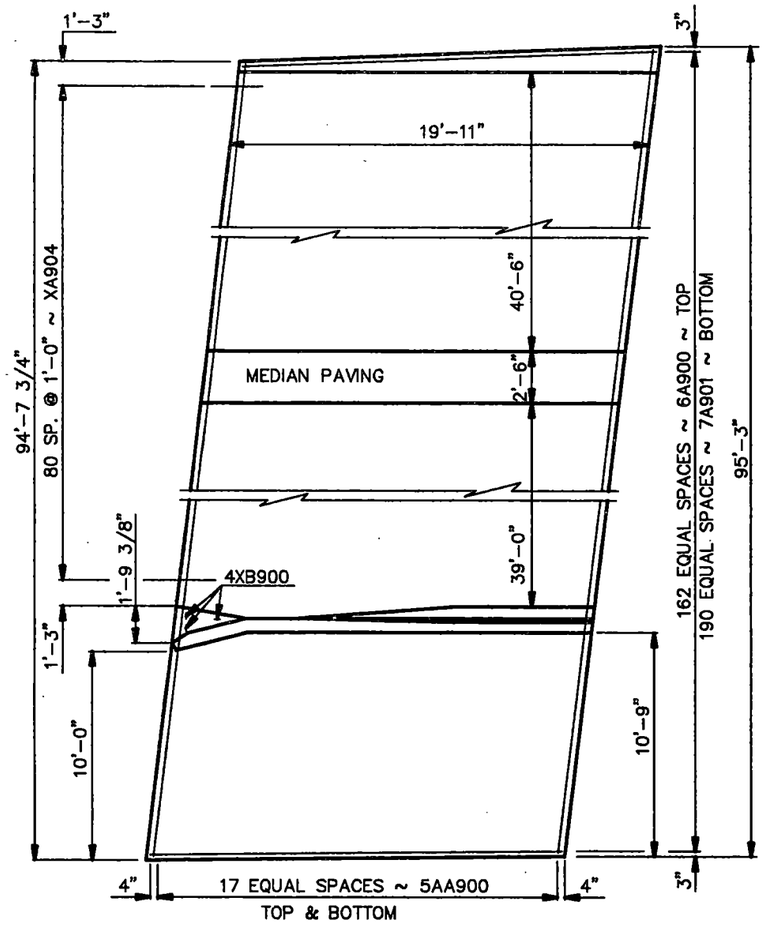


(B)

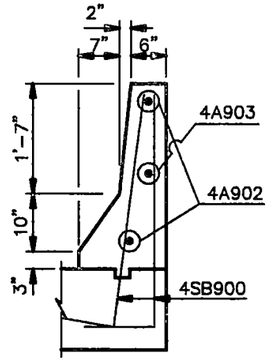
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

REINFORCING BAR LIST & DETAILS

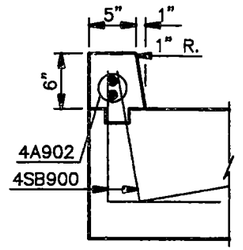
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	571



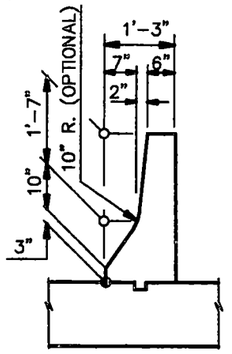
PLAN



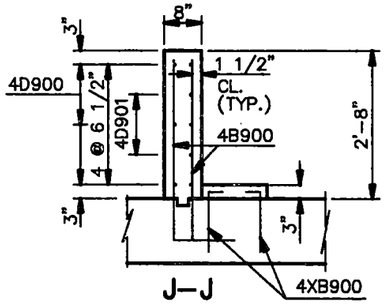
D–D



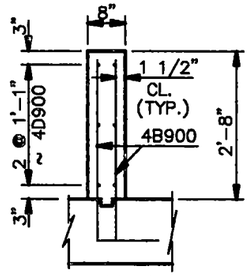
E–E



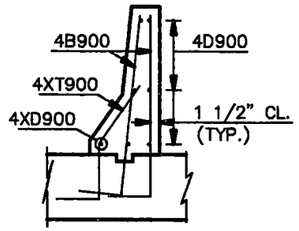
G–G
SHOWING DIMENSIONS



J–J



H–H



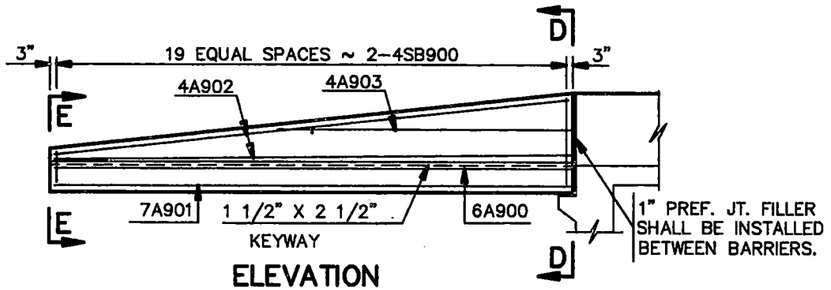
G–G

SKEW ANGLE = 6° 51' 09"			
BAR LIST – ONE SLAB			
SIZE	MARK	NO.	LENGTH
6	A900	163	19'–8"
7	A901	191	19'–8"
4	A902	2	19'–7"
4	A903	1	10'–0"
4	B900	74	4'–0"
4	D900	6	19'–9"
4	D901	2	4'–0"
5	AA900	36	96'–10"
4	SB900	2	66'–8"
*	XA904	81	2'–6"
4	XB900	3	1'–4"
4	XD900	1	14'–3"
4	XT900	19	3'–0"

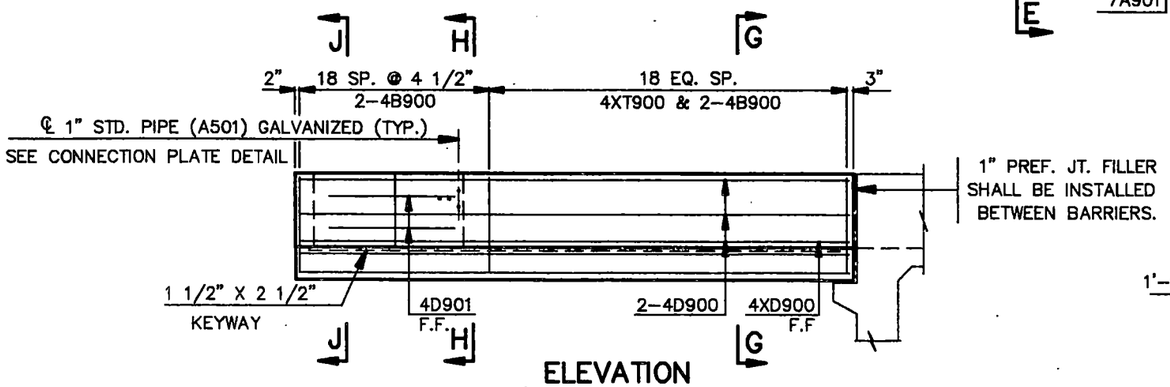
ESTIMATED MATERIAL QUANTITIES	
REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
17,801	84.0

X = EPOXY BARS
* = PLAIN ROUND 1 1/2" DIA. BAR

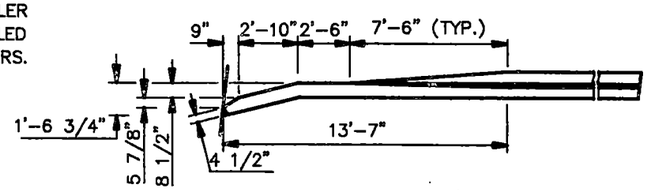
FOR ADDITIONAL DETAILS
SEE DWG. 094–157.328–20



ELEVATION
(EAST SIDE)



ELEVATION
(WEST SIDE)



BARRIER PLAN
(WEST SIDE)

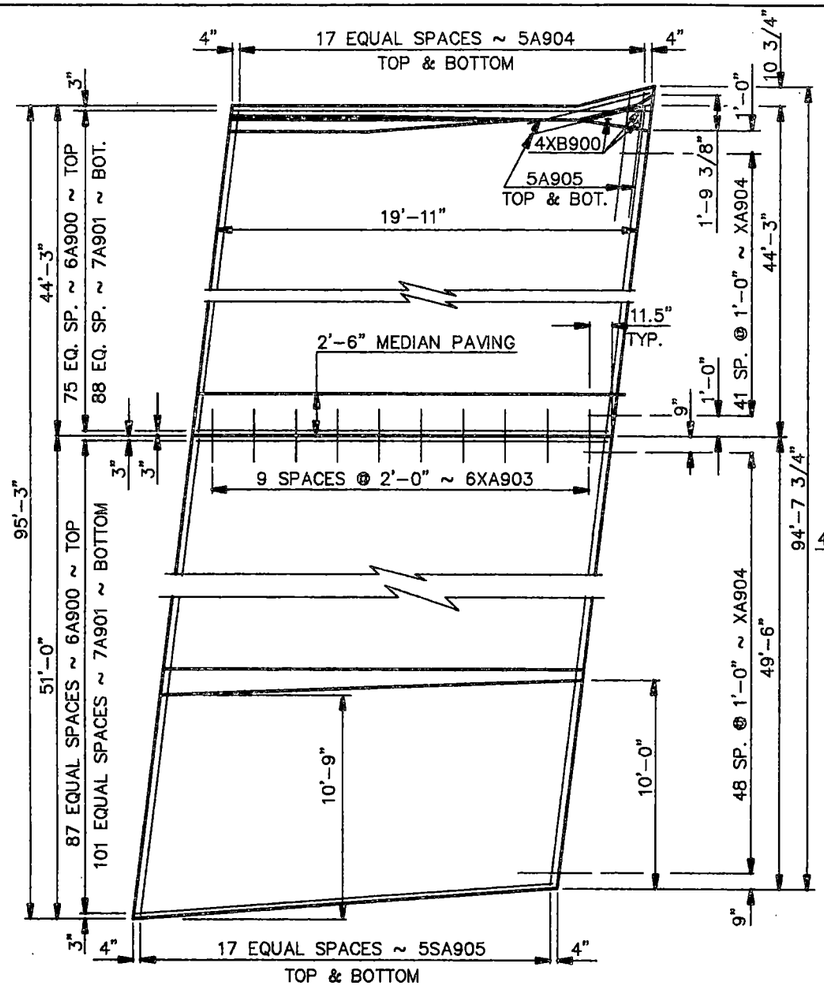
QUANTITIES	(ONE SLAB)
APPROACH SLAB	210.1 SQ. YD.
CONCRETE MEDIAN PAVING (SEE DWG. 094–157.328–15)	

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

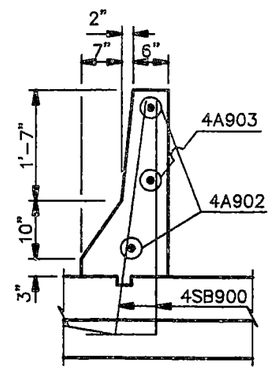
(AT BEGIN BRIDGE)

APPROACH SLAB

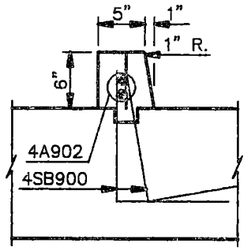
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	572



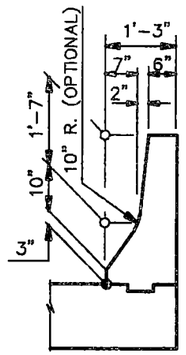
PLAN



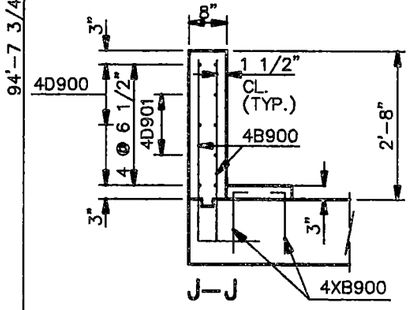
D–D



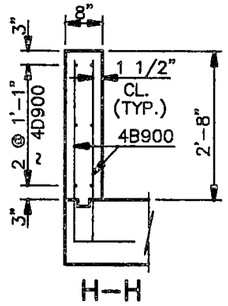
E–E



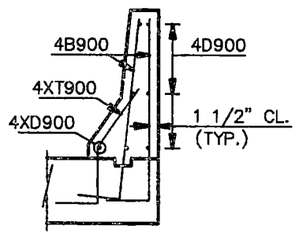
G–G
SHOWING DIMENSIONS



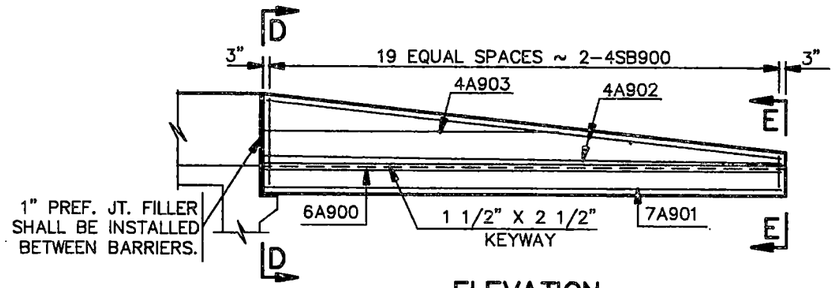
J–J



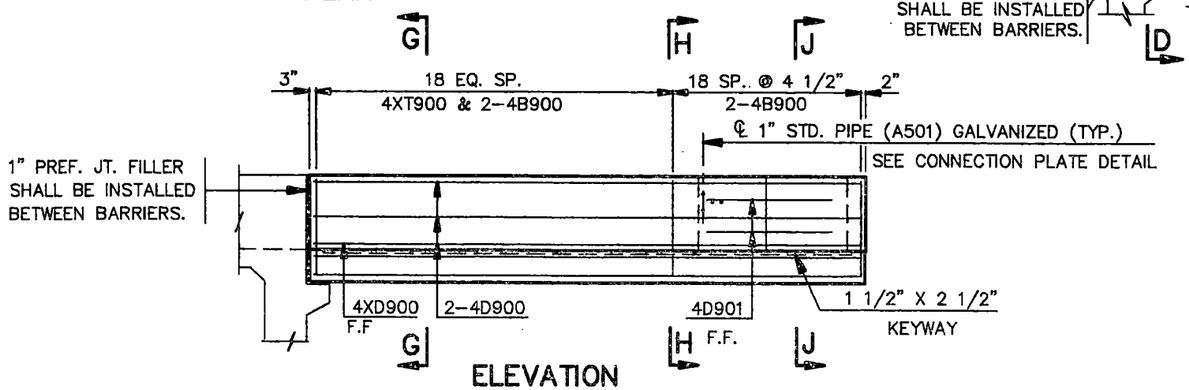
H–H



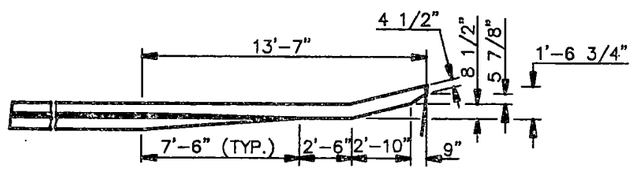
G–G



ELEVATION
(WEST SIDE)



ELEVATION
(EAST SIDE)



BARRIER PLAN
(EAST SIDE)

SKEW ANGLE = 6° 51' 09"

BAR LIST – ONE SLAB

SIZE	MARK	NO.	LENGTH
6	A900	164	19'-8"
7	A901	191	19'-8"
4	A902	2	19'-7"
4	A903	1	10'-0"
5	A904	36	44'-3"
5	A905	8	6'-0"
4	B900	74	4'-0"
4	D900	6	19'-9"
4	D901	2	4'-0"
5	SA905	2	904'-6"
6	XA903	10	2'-6"
*	XA904	91	2'-6"
4	XB900	3	1'-4"
4	XD900	1	14'-3"
4	XT900	19	3'-0"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL (LBS.)	CONCRETE (C.Y.)
17,892	83.7

X = EPOXY BARS
* = PLAIN ROUND 1 1/2" DIA. BAR

FOR ADDITIONAL DETAILS
SEE DWG. 094-157.328-20

QUANTITIES (ONE SLAB)

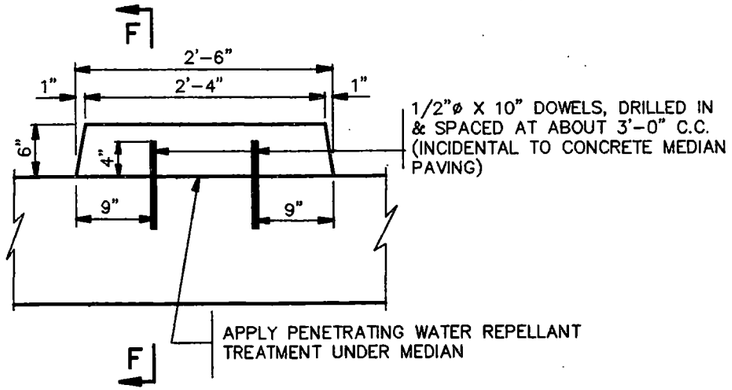
APPROACH SLAB	209.3 SQ. YD.
CONCRETE MEDIAN PAVING (SEE DWG. 094-157.328-15)	

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

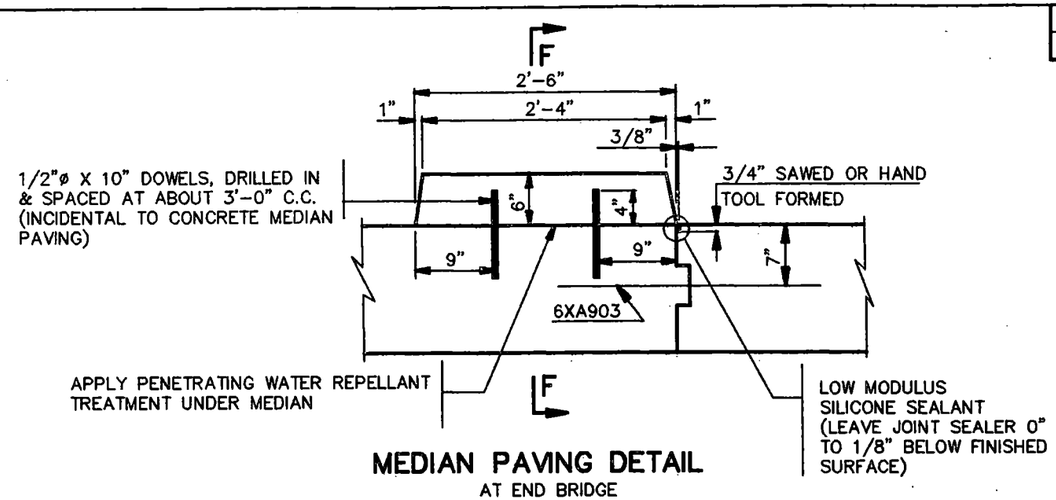
(AT END BRIDGE)

APPROACH SLAB

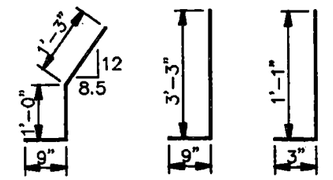
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	573



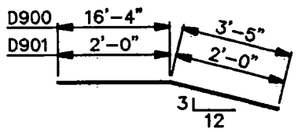
MEDIAN PAVING DETAIL
AT BEGIN BRIDGE



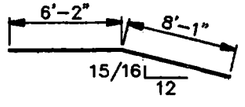
MEDIAN PAVING DETAIL
AT END BRIDGE



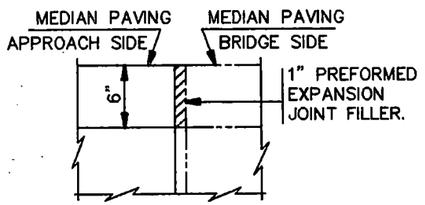
XT900 **B900** **XB900**



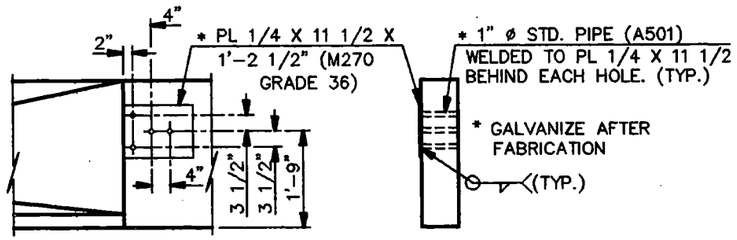
D900 & D901



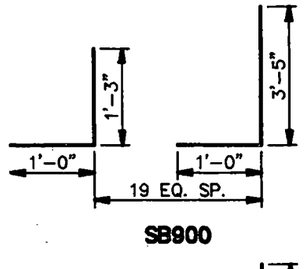
XD900



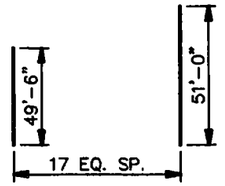
F-F



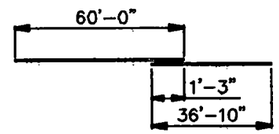
CONNECTION PLATE DETAILS



SB900



SA905



(ALTERNATE SPLICE)
AA900

BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT

NOTE:

SEE DWG. 094-157.328-21 FOR ADDITIONAL DETAILS.

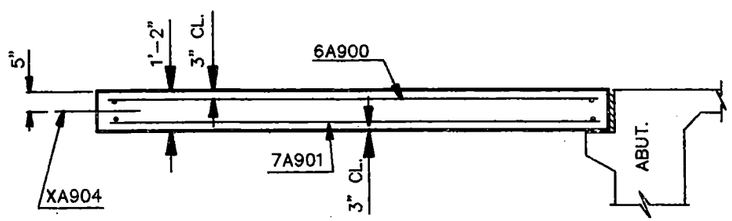
THE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS INCLUDING CONCRETE, REINFORCING BARS, BACKER ROD, POLYETHYLENE MEMBRANE, SILICONE SEALANT, PREFORMED JOINT FILLER AND LABOR REQUIRED TO BUILD THE APPROACH SLABS AND APPROACH SLAB BARRIERS SHALL BE INCIDENTAL TO THE PAY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

THE CONCRETE SHALL BE CLASS AE-3 AND THE REINFORCING STEEL SHALL BE GRADE 60. THE POLYETHYLENE MEMBRANE SHALL MEET THE REQUIREMENTS OF AASHTO M171.

SURFACE FINISH "D" SHALL BE REQUIRED FOR THE EXPOSED SURFACES OF THE BARRIERS AND CURB TRANSITIONS.

ALL XA904 BARS SHALL BE EPOXY COATED AND CONFORM TO AASHTO M-254 TYPE B.

FREE ENDS OF TYPE B EPOXY COATED XA904 BARS (MINIMUM OF ONE-HALF OF BAR LENGTH PLUS 2 INCHES) SHALL BE GIVEN A THIN, UNIFORM COATING OF GREASE. THIS COATING SHALL BE APPLIED WITHIN TWO HOURS BEFORE COVERING WITH CONCRETE.

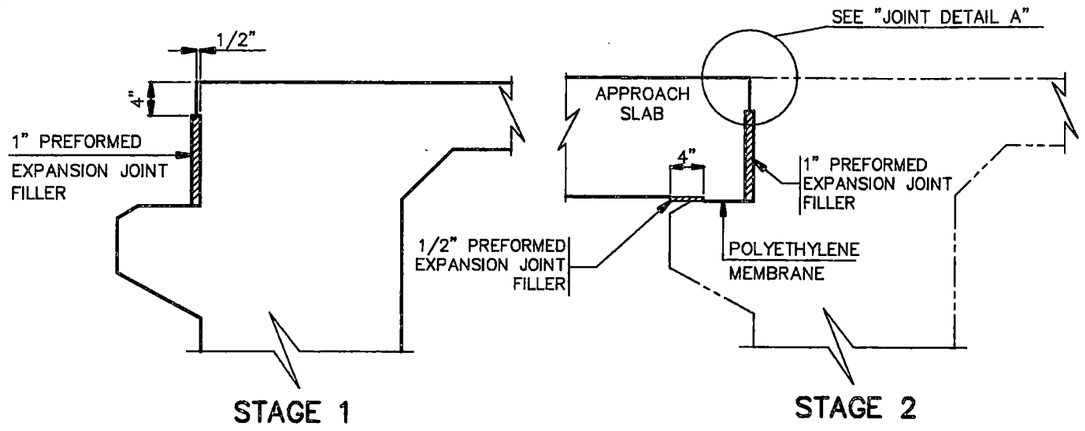


TYPICAL APPROACH SLAB SECTION

DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

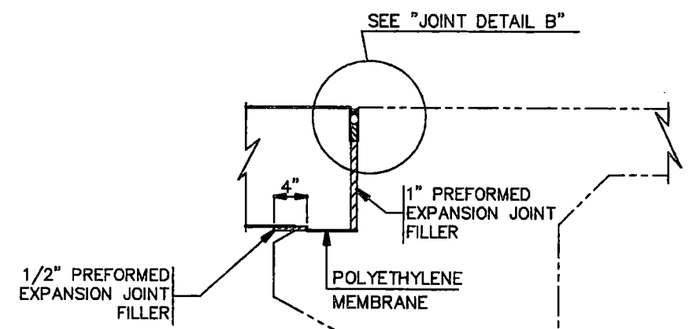
APPROACH SLAB JOINT DETAIL

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	574

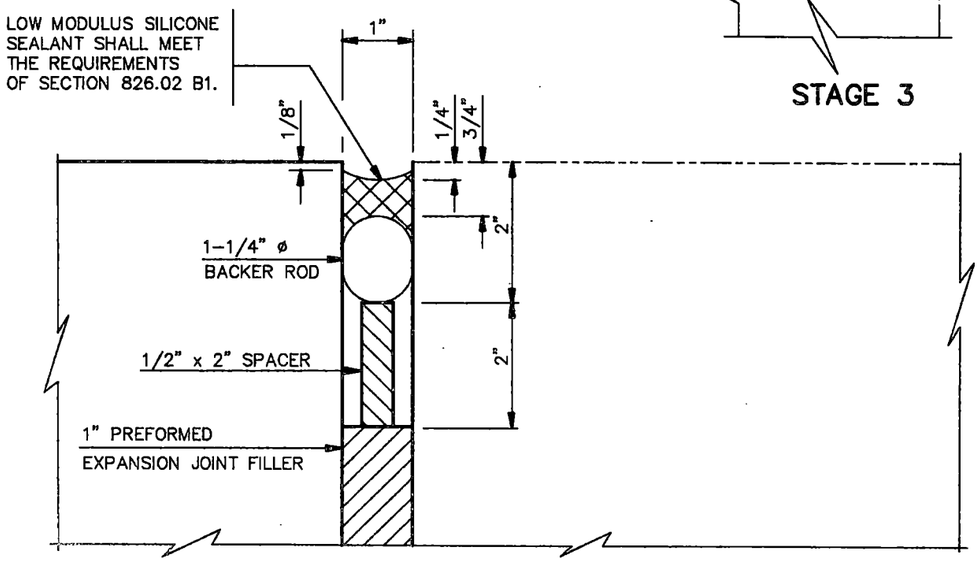


STAGE 1

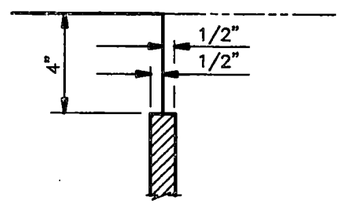
STAGE 2



STAGE 3



JOINT DETAIL B



DETAIL A

APPROACH SLAB – BRIDGE DECK JOINT

STAGE 1:

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

STAGE 2:

3. AFTER PLACING THE 1/2" THICK PREFORMED EXPANSION JOINT FILLER AND POLYETHYLENE MEMBRANE, 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 NEW BRIDGE DECK END. 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.

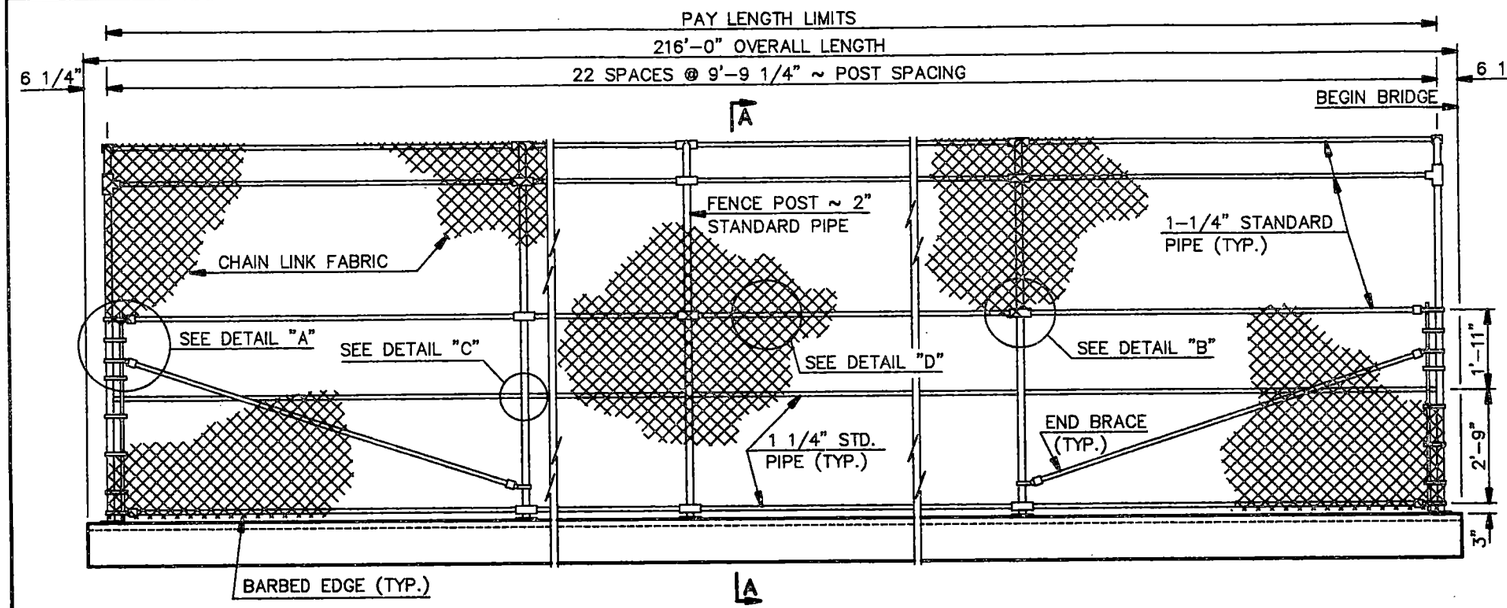
GENERAL:

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.

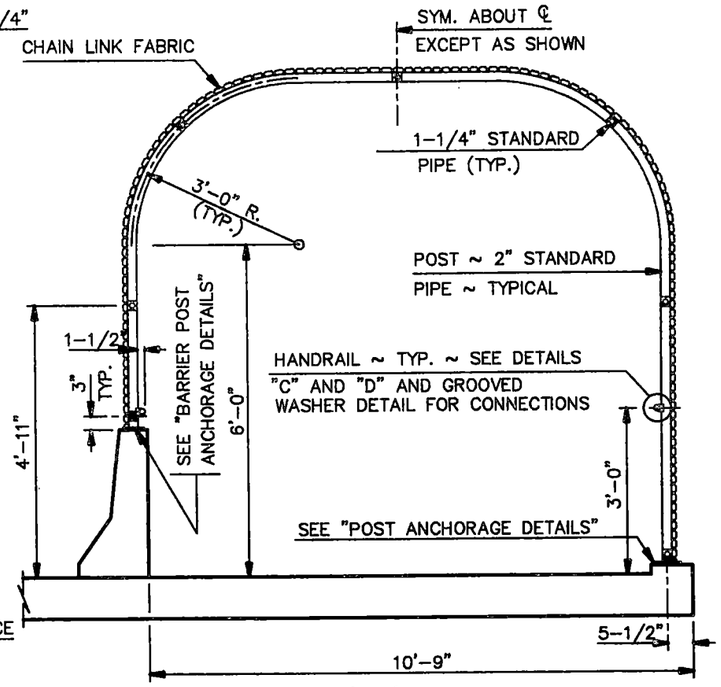
DIVIDE AVENUE INTERCHANGE
BISMARCK, ND

APPROACH SLAB
JOINT DETAIL

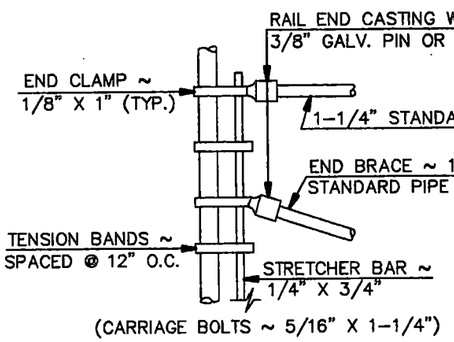
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	IM-1-094(013)156	575



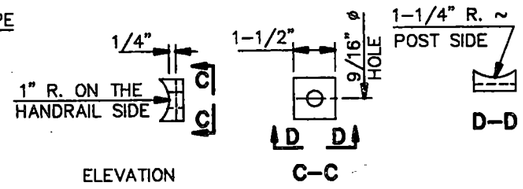
CANOPY ELEVATION



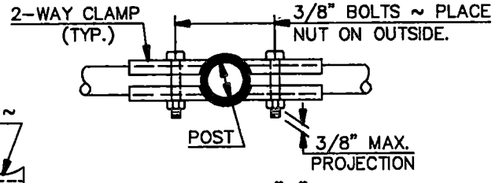
A–A



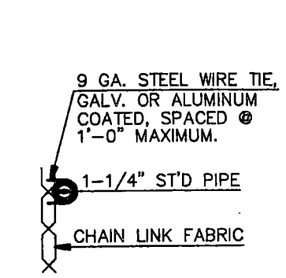
DETAIL "A"



GROOVED WASHER DETAILS

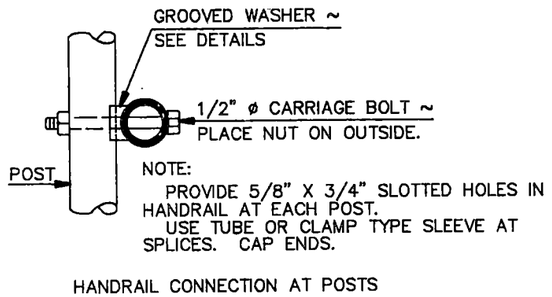


DETAIL "B"



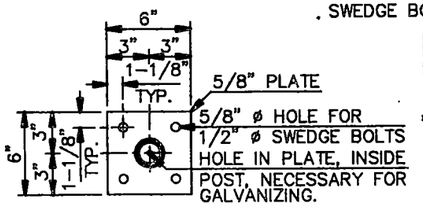
TYPICAL FABRIC ATTACHMENT

DETAIL "D"

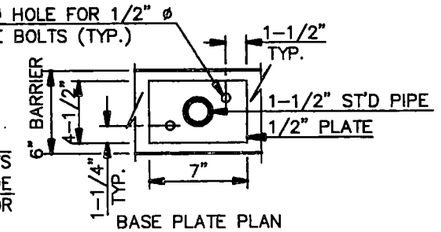


HANDRAIL CONNECTION AT POSTS

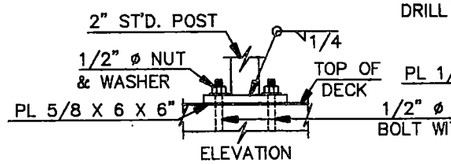
DETAIL "C"



BASE PLATE PLAN

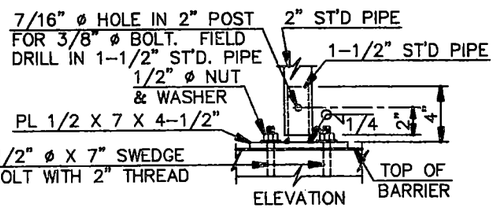


BASE PLATE PLAN



ELEVATION

POST ANCHORAGE DETAILS



ELEVATION

BARRIER POST ANCHORAGE DETAILS

NOTE:

FABRIC SHALL BE AASHTO M181, TYPE I AND SHALL BE OF 9-GAGE WIRE, 2-INCH MESH, 120 INCHES HIGH (MIN.), AND THE BOTTOM SELVAGE BARBED.

POSTS AND FITTINGS SHALL BE AASHTO M181, CLASS I.

ANCHORAGE PLATES SHALL BE AASHTO M183 AND SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH AASHTO M232.

TO ANCHOR BASE PLATES, THE CONTRACTOR HAS THE OPTION TO EITHER DRILL IN 1/2" ø SWEDGE BOLTS OR PLACE THEM IN THE CONCRETE AT THE TIME OF POURING. IF THE CONTRACTOR ELECTS TO DRILL THE BOLT HOLES, EXTREME CAUTION SHALL BE EXERCISED NOT TO DAMAGE THE CONCRETE BARRIERS AND SHALL PLACE THE BASE PLATES LONGITUDINALLY ALONG THE BARRIERS AS SHOWN ON THE "BASE PLATE PLAN" VIEW.

QUANTITIES	
PEDESTRIAN CANOPY	215.0 L.F.

DIVIDE AVENUE INTERCHANGE
BISMARCK,ND

PEDESTRIAN CANOPY DETAILS

NORTH DAKOTA CONCRETE PRODUCTS COMPANY

PRECAST BRIDGE BEAM SHOP DRAWINGS

COUNTY – BURLEIGH
PROJECT NO. – IM-1-094(013)156
ENGINEER – NDDOT
CONTRACTOR – WANZEK CONST.

DESIGN DATA

CONCRETE		
DESIGN	-	6,000 P.S.I.
DETENSION	-	5,410 P.S.I.
STRAND	-	270 K.S.I. LOW-LAX
REINFORCING STEEL (Except as noted)	-	GR. 60
PRESTRESS LOSSES	-	52,943 P.S.I.
LOADING	-	HS-25
WEIGHT	-	90,643 #

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DATE
DLR BY

DRAWN BY:
ROB GROSZ

INDEX OF SHEETS

		SPAN
SKEW	1	2
NO. OF BEAMS	11	11
HEIGHT	63" I-BEAM	
LENGTH	106'-6"	106'-6"

CHECKED BY: HK

HARVEY D. KADRMAS
P.E. 3220
DATE: 2-28-95

HARVEY D. KADRMAS REGISTERED PROFESSIONAL P.E. 3220 ENGINEER NORTH DAKOTA

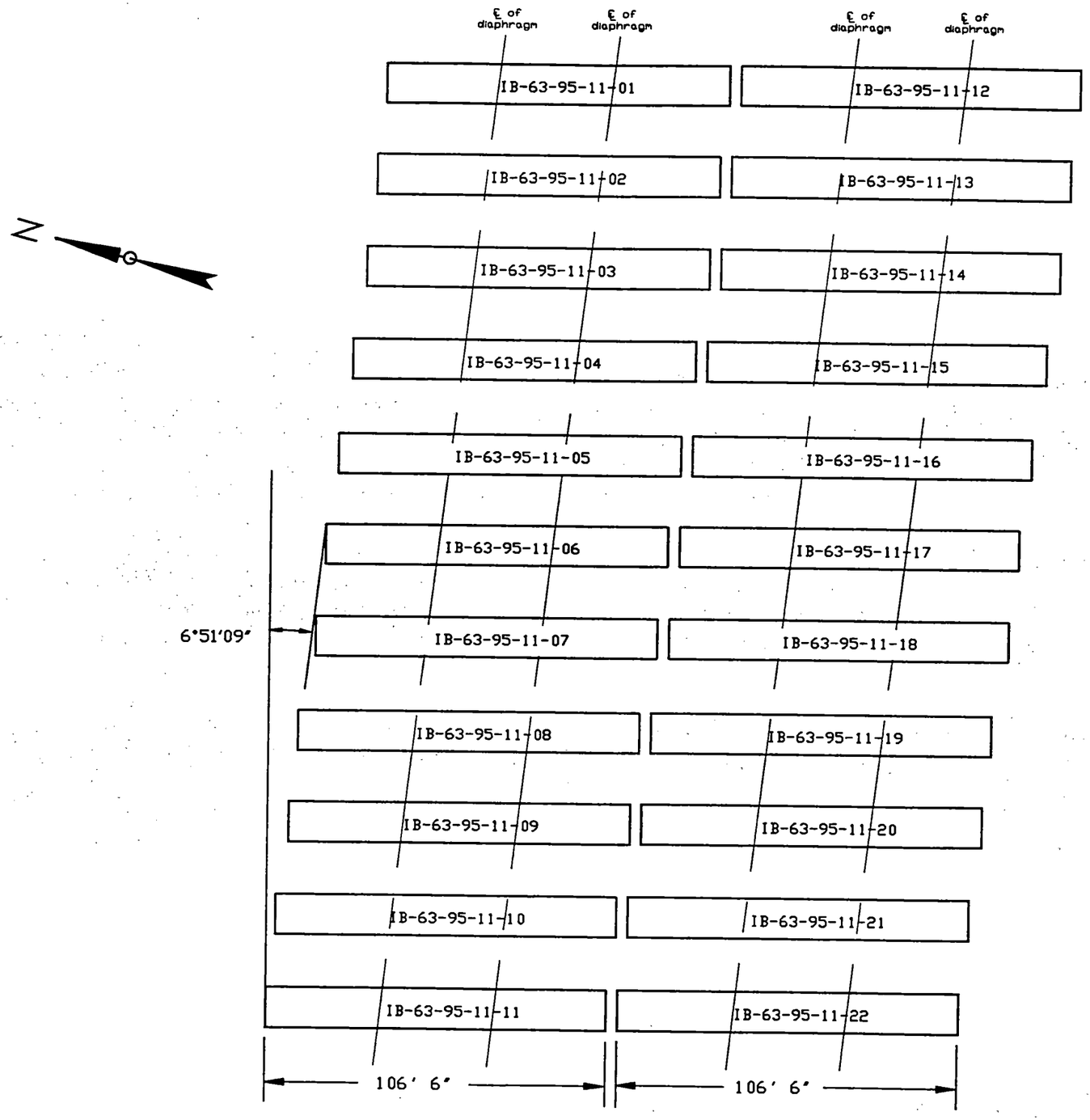
TITLE SHEET

Divide Avenue Interchange

IB-63-95-11

TITLE

#94-157.328



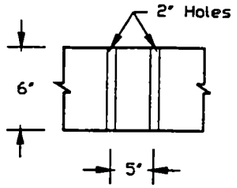
N

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DLR
DATE BY

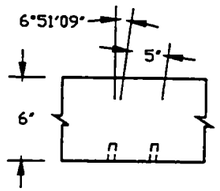
PLAN -
NO SCALE

BRIDGE LAYOUT
ALL SPANS
IB-63-95-11

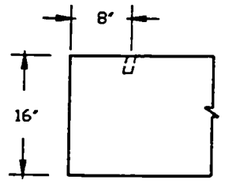
IILAYOUT



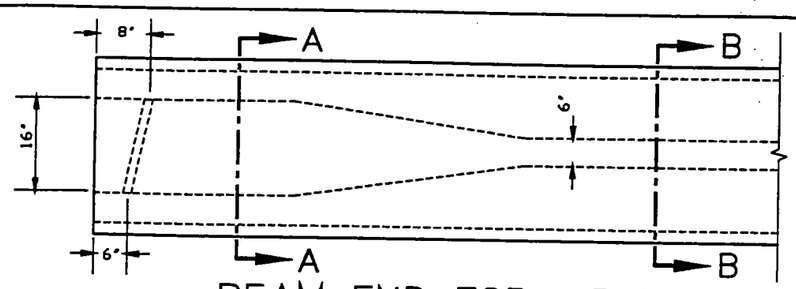
INTERMEDIATE DIAPHRAGM
FOR INTERIOR BEAMS



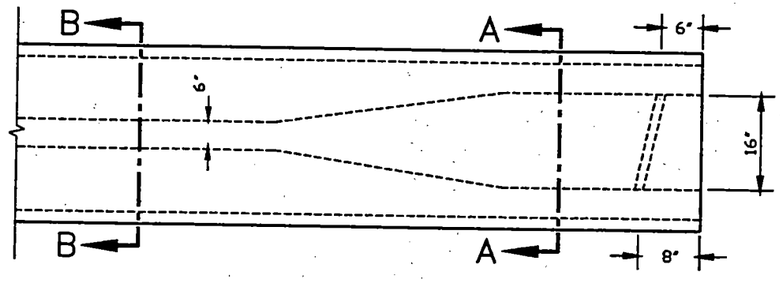
INTERMEDIATE DIAPHRAGM
FOR EXTERIOR BEAMS



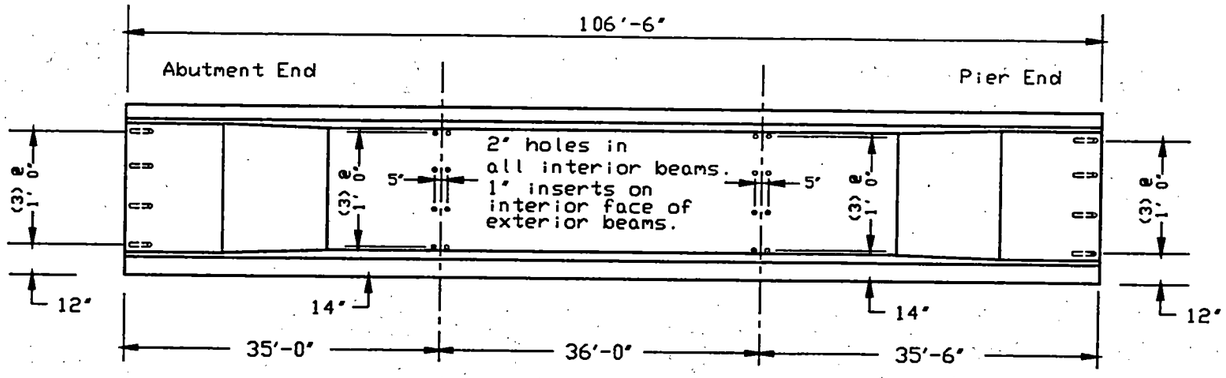
END DIAPHRAGM FOR
PIER EXTERIOR BEAMS



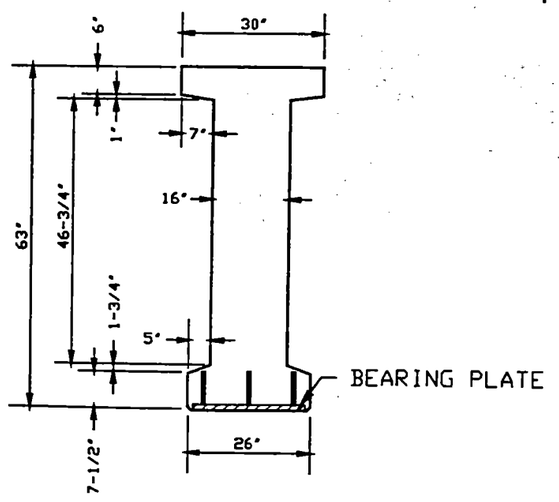
BEAM END TOP VIEW
(Inserts on interior of exterior beams. Pier only)



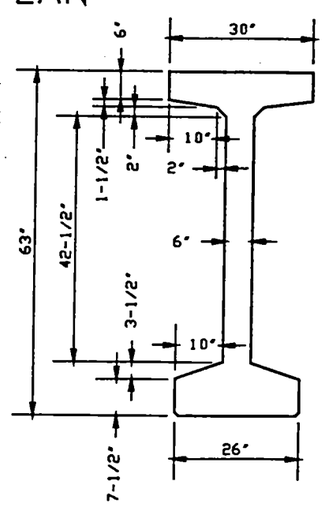
BEAM END TOP VIEW
(Inserts on interior of exterior beams. Pier only)



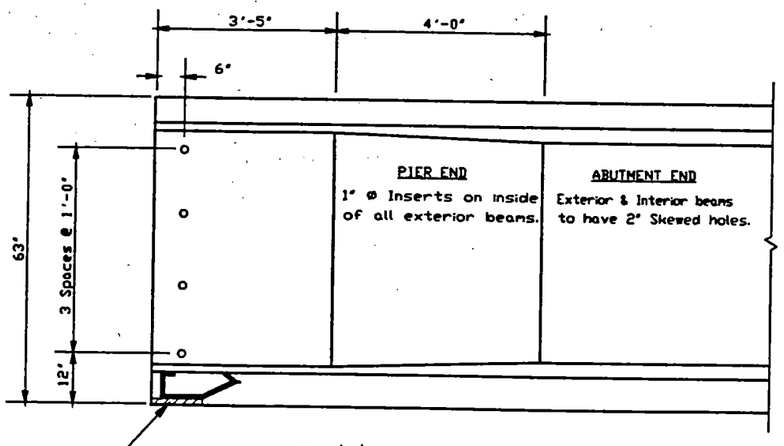
PLAN



SECTION A–A



SECTION B–B



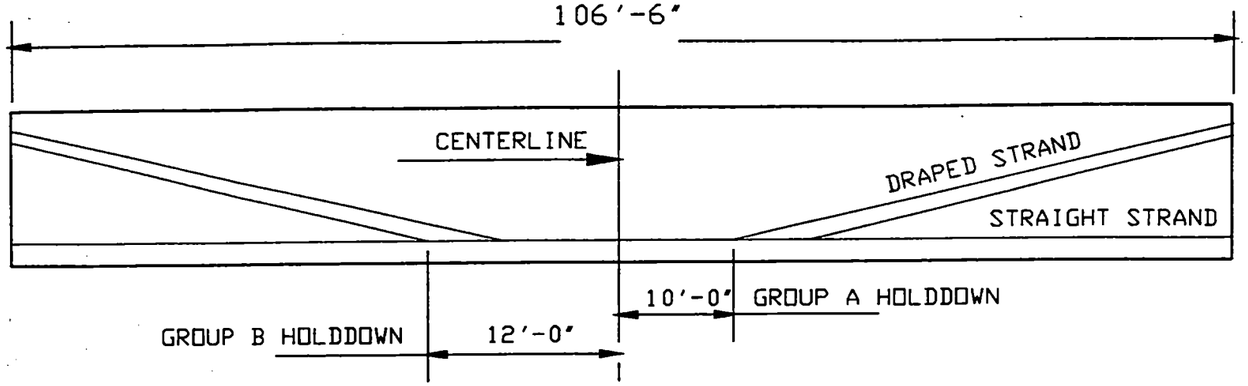
BEAM END SIDE VIEW

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DLR
DATE BY

REVISED: 2/3/95

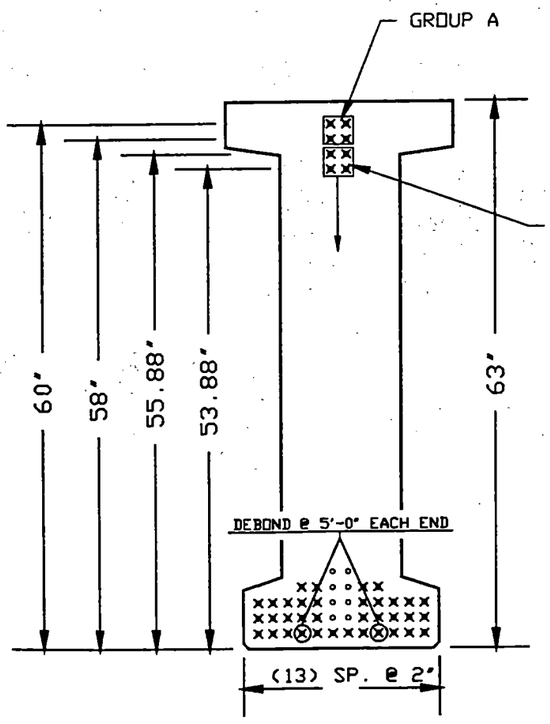
DIMENSIONS
ALL SPANS
IB–63–95–11

IIDIM

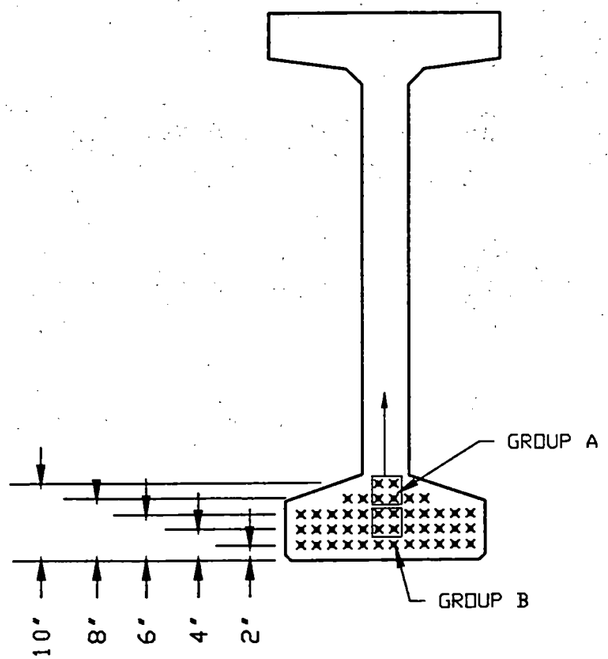


ELEVATION

NO. OF DRAPED STRAND	=	8
NO. OF STRAIGHT STRAND	=	36
TOTAL NO. OF 1/2" ø STRAND	=	44
CENTER OF GRAVITY AT END	=	13.91"
CENTER OF GRAVITY AT CENTERLINE	=	4.82"
INITIAL FORCE	=	1,363.2 K
FINAL FORCE	=	1,006.9 K



SECTION
AT END

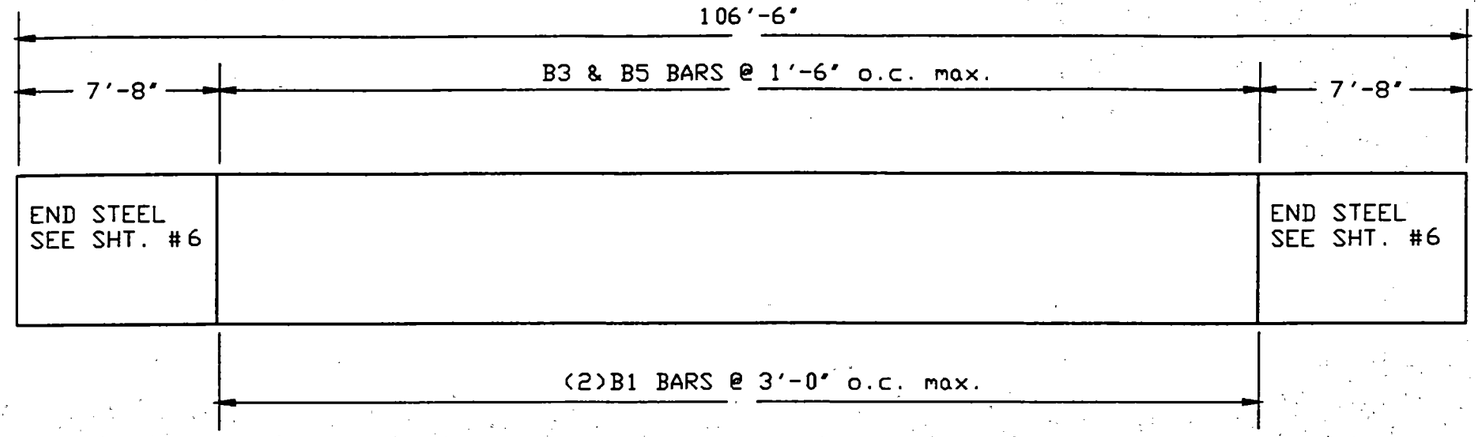


SECTION
AT ℄

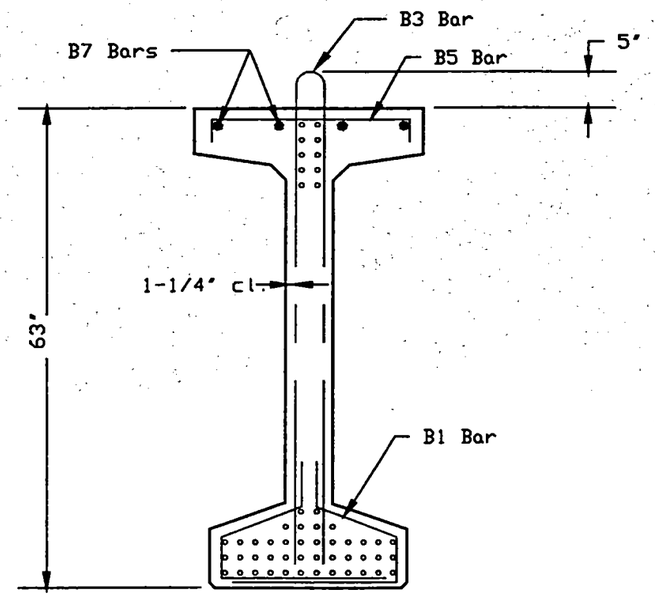
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DLR
DATE BY

STRAND
ALL SPANS
IB-63-95-11

11STRAND



ELEVATION



SECTION

NOTES: B7 BARS ARE TO BE OVERLAPPED A MIN. OF 3'-4" AT ALL SPLICES.

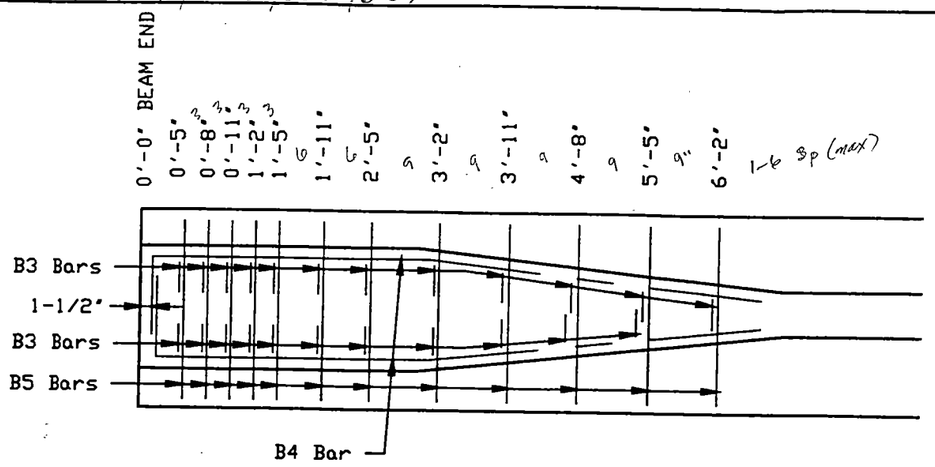
ALL LIFTING LOOPS TO BE A MIN. OF FOUR 1/2" STRAND. PLACE TWO LIFTING LOOPS AT EACH END.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DLR
DATE BY

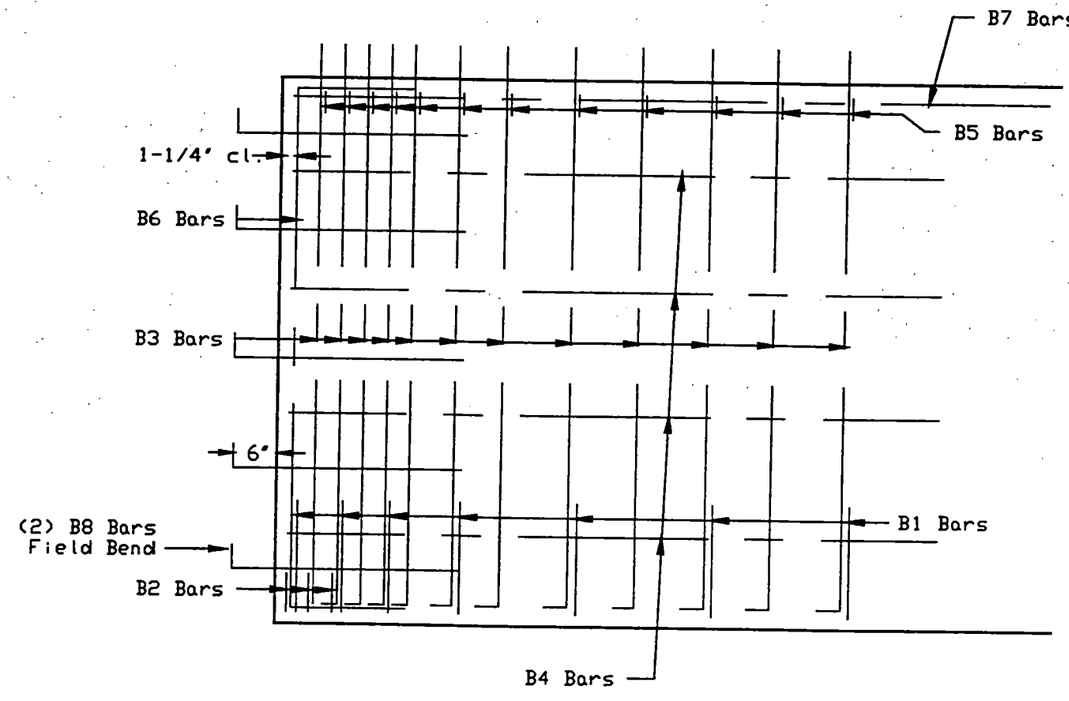
REINFORCING
ALL SPANS
IB-63-95-11

IIREINF

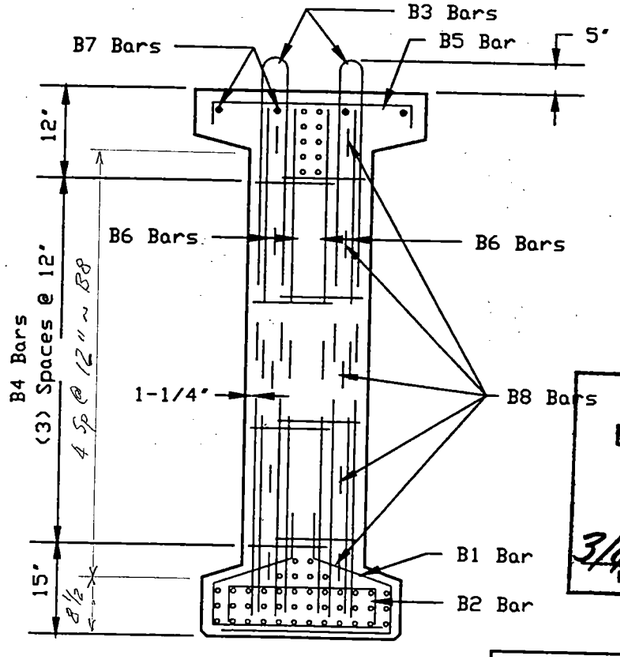
5", #3 @ 3", 2@ 6", 5@ 9"



TOP VIEW



SIDE VIEW



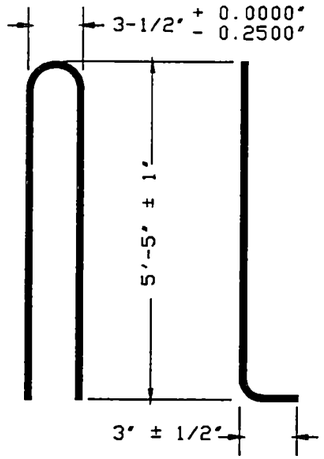
END VIEW

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DATE
DLR BY

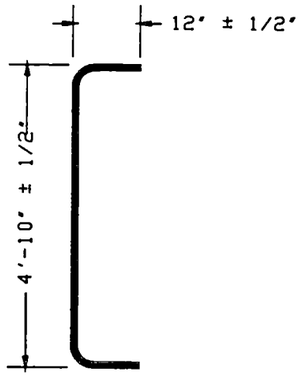
REVISED: 3/2/95

END STEEL
ALL SPANS
IB-63-95-11

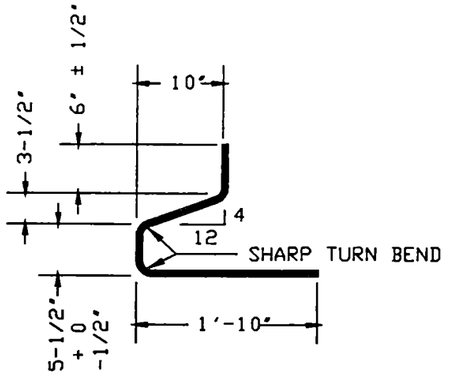
MENDST



B3 BAR



B6 BAR

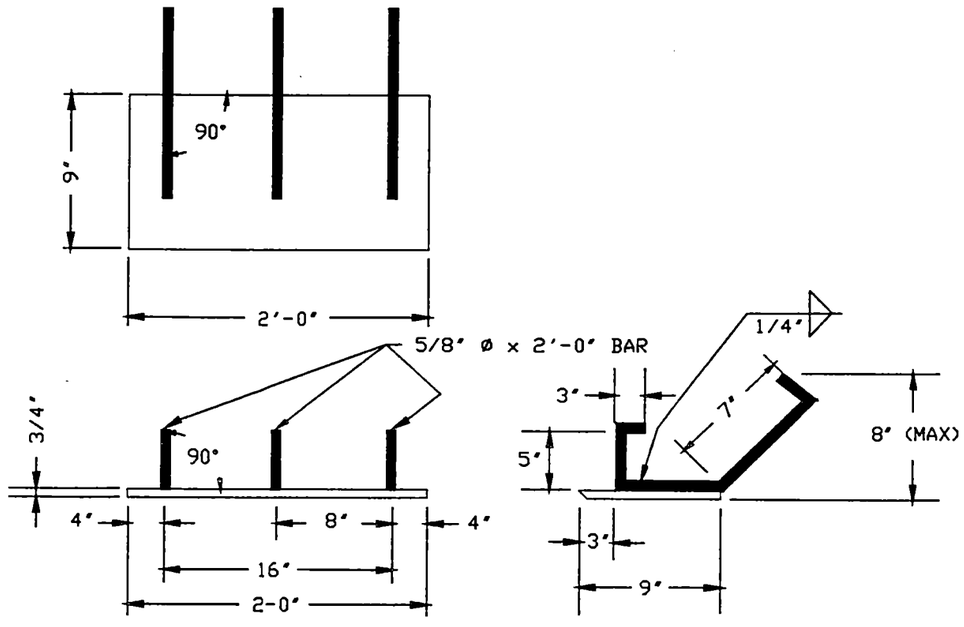


B1 BAR

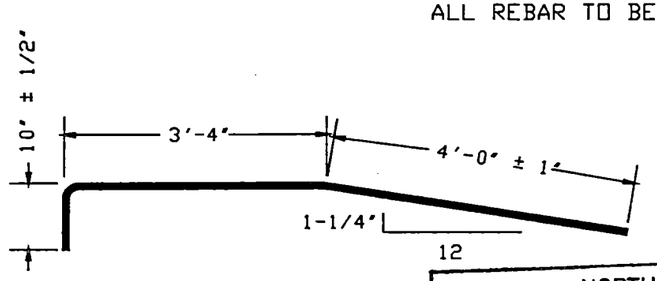
REINFORCING STEEL SCHEDULE					
MARK	TYPE	SIZE	LENGTH	QTY\BEAM	TOTAL
B1	BENT	4	3'-8"	90	1980
B2	BENT	5	2'-6"	6	132
B3	BENT	4	11'-6"	104	2288
B4	BENT	4	8'-2"	16	352
B5	BENT	3	2'-8"	86	1892
B6	BENT	5	6'-10"	8	176
B7	STR.	5	29'-3"	16	352
B8	STR.	5	3'-0"	20	440

ALL DIMENSIONS ARE OUT TO OUT.

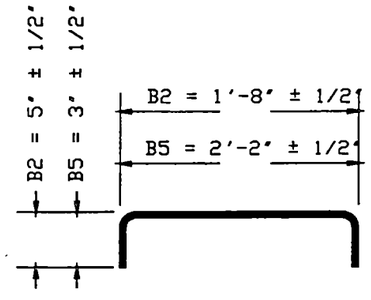
ALL REBAR TO BE GRADE 60



BEARING PLATE



B4 BAR



B2 & B5 BARS

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
3/6/95 DLR
DATE BY

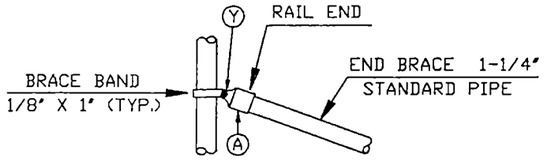
REVISED: 2/27/95

REBAR DETAILS

ALL SPANS

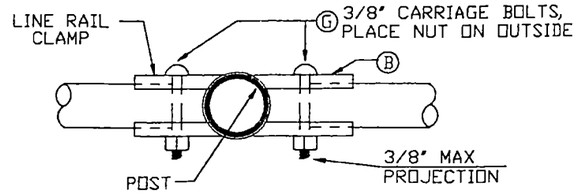
IB-63-95-11

11REBAR

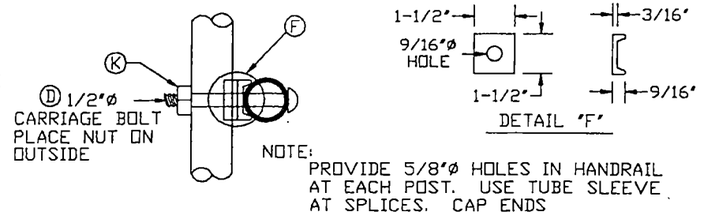


(CARRIAGE BOLTS @ 5/16" X 1-1/4")

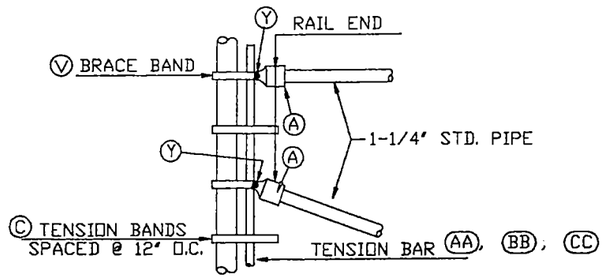
DETAIL "A" 3/4" = 1'



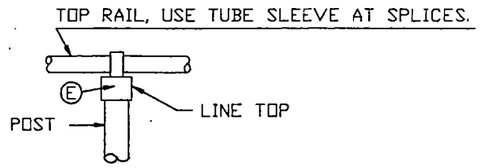
DETAIL "B" 1" = 1'



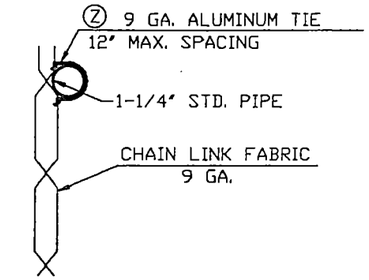
DETAIL "C" 1" = 1'



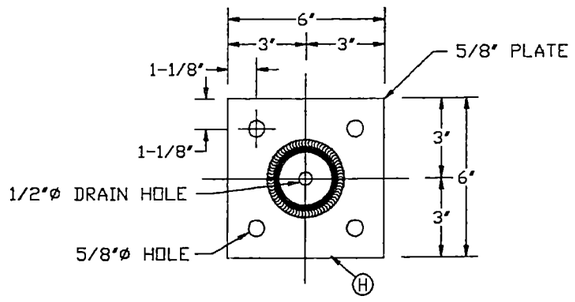
DETAIL "D" 3/4" = 1'



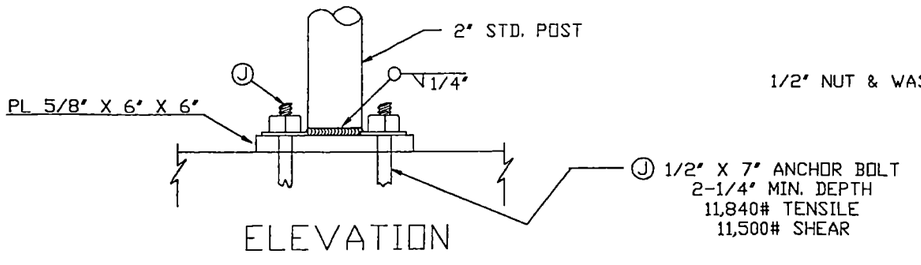
DETAIL "E" 3/4" = 1'



TYPICAL FABRIC ATTACHMENT 1" = 1'



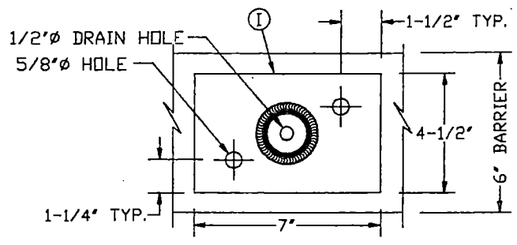
BASE PLATE PLAN



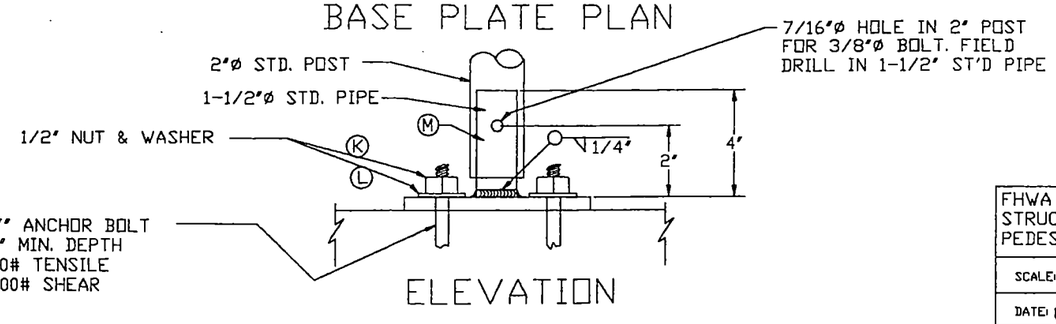
ELEVATION

PARAPET POST ANCHORAGE DETAILS

1" = 1'



BASE PLATE PLAN



ELEVATION

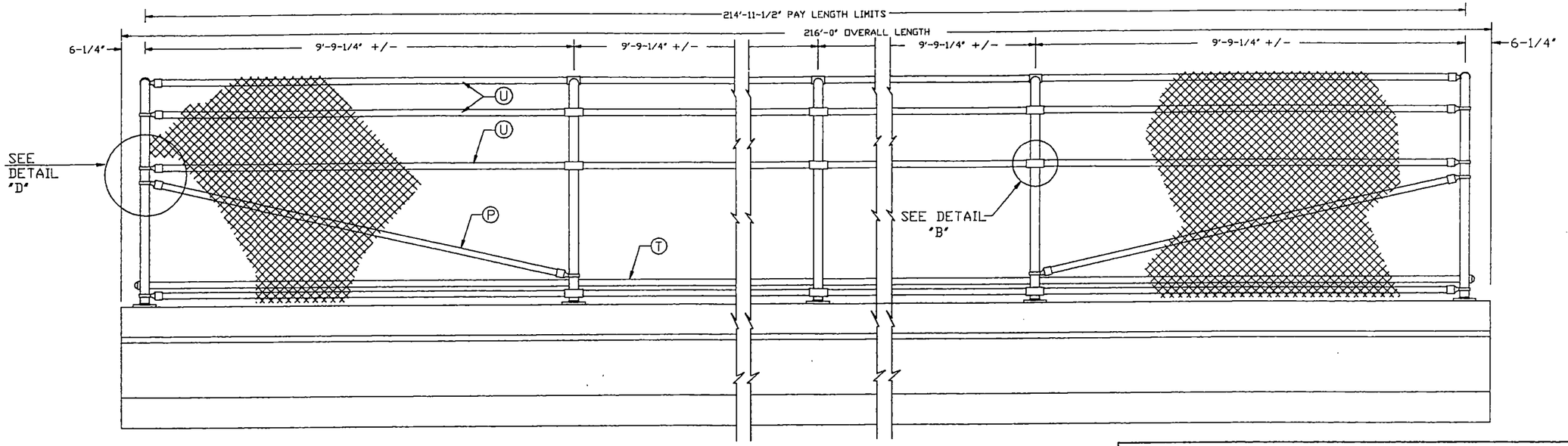
BARRIER POST ANCHORAGE DETAILS.

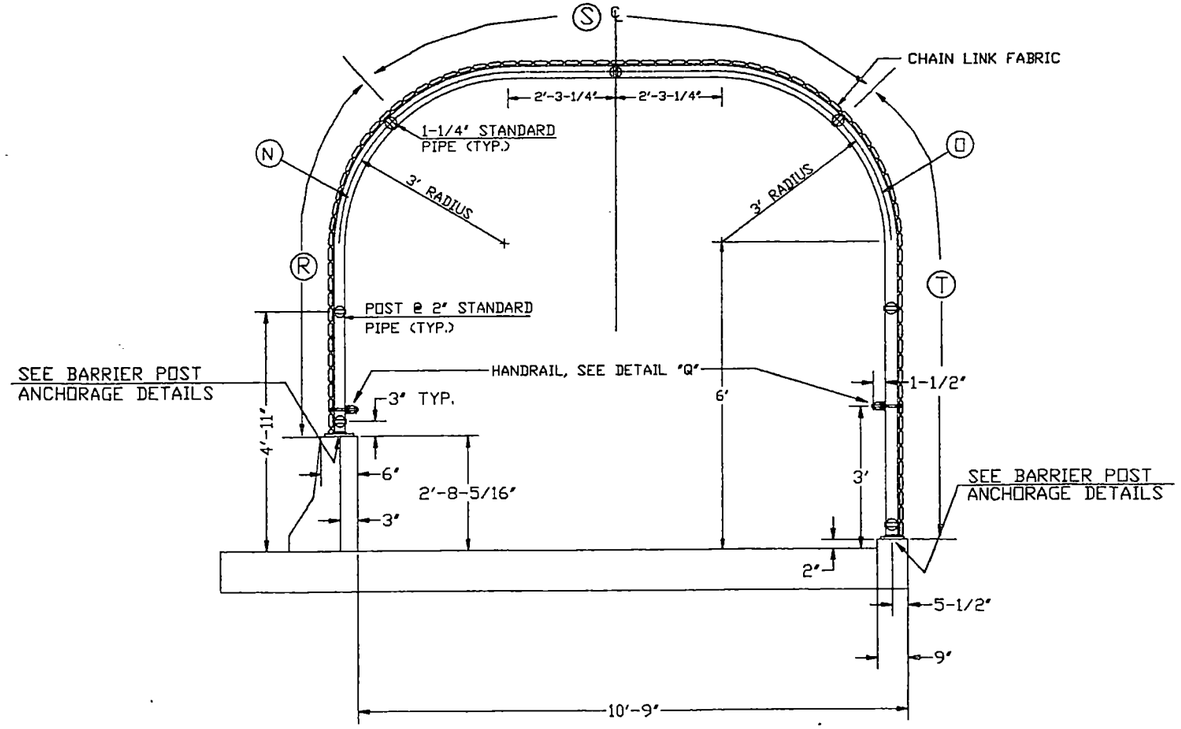
1" = 1'

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
4/21/95 DATE
DLR BY

FHWA REGION 8 FAPN IM-1-094(013)156 STRUCTURE NO. 094-157.328 PEDESTRIAN BRIDGE CANOPY		DIVIDE AV. INTERCHANGE BISMARCK, ND
SCALE: AS NOTED	APPROVED BY:	Drawn By: J. Rieb
DATE: 04.03.1995		REVISED
N.D. DEPARTMENT OF TRANSPORTATION •• ENGINEERS NORTHERN IMPROVMENTS >> PRIME CONTRACTOR		FARGO, ND
DAKOTA FENCE COMPANY SUB CONTRACTOR FARGO BISMARCK MINOT NORTH DAKOTA		DRAWING # 9509

#94-157.328





PARTS LIST

PART#	QTY.	DESCRIPTION		MATERIAL
A	18	RAIL END		GALVANIZED
B	147	LINE RAIL CLAMP		GALVANIZED
C	40	2-1/2" TENSION BANDS		GALVANIZED
D	46	1/2"ø X 4-1/2" CARRIAGE BOLTS	GR-2	GALVANIZED
E				
F	92	C CHANNEL SUPPORTS	A-36	GALVANIZED
G	294	3/8"ø X 3" CARRIAGE BOLTS	GR-2	GALVANIZED
H	23	6" X 6" X 5/8" BASE PLATES	A-36	GALVANIZED
I	23	7" X 4-1/2" X 1/2" BASE PLATES	A-36	GALVANIZED
J	138	1/2"ø X 7" ANCHOR BOLTS	GR-5	GALVANIZED
K	184	1/2"ø NUTS	GR-2	GALVANIZED
L	138	1/2"ø FLAT WASHERS	GR-2	GALVANIZED
M	23	1-1/2" X 4"	STD. PIPE	GALVANIZED
N	23	2" X 10'-2-7/8"	STD. PIPE	GALVANIZED
O	23	2" X 12'-9-1/4"	STD. PIPE	GALVANIZED
P	2	1-1/4" X 9'-8-3/4" +/-	STD. PIPE	GALVANIZED
Q	2	1-1/4" X 214'-0"	STD. PIPE	GALVANIZED
R	214'-0"	9 GAUGE CHAIN LINK 6'-0"	FABRIC	GALVANIZED
S	214'-0"	9 GAUGE CHAIN LINK 8'-0"	FABRIC	GALVANIZED
T	214'-0"	9 GAUGE CHAIN LINK 9'-0"	FABRIC	GALVANIZED
U	154	1-1/4" X 9'-9-1/4"	STD. PIPE	GALVANIZED
V	18	2-1/2" BRACE BANDS		GALVANIZED
W	4	1-5/8" DOME CAPS		GALVANIZED
X				
Y	58	1-1/4" X 5/16" CARRIAGE BOLTS	GR-2	GALVANIZED
Z	2050	9 GA. ALUMINUM FENCE TIES		ALUMINUM
AA	2	6'-0" TENSION BARS		GALVANIZED
BB	2	8'-0" TENSION BARS		GALVANIZED
CC	2	9'-0" TENSION BARS		GALVANIZED

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
4/21/95 DATE
DLR BY

FHWA REGION 8 FAPN IM-1-094(013)156
STRUCTURE NO. 094-157.328 DIVIDE AV. INTERCHANGE
PEDESTRIAN BRIDGE CANOPY BISMARCK, ND

SCALE:	APPROVED BY:	Drawn By: J. Rieb
DATE: 04.03.1995		REVISED

N.D. DEPARTMENT OF TRANSPORTATION •• ENGINEERS
NORTHERN IMPROVMENTS >> PRIME CONTRACTOR FARGO, ND

DAKOTA FENCE COMPANY SUB CONTRACTOR
FARGO BISMARCK MINOT
NORTH DAKOTA

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