April 19 2013

DESIGN DATA				
Traffic	Average Daily			Max.Hr.
Current 2012 EB	Pass: 3700	Trucks: 2695	Total: 6395	640
Forecast 2032 EB	Pass: 6440	Trucks: 5365	Total: 11805	1185
Current 2012 WB	Pass: 3530	Trucks: 2785	Total: 6315	635
Forecast 2032 WB	Pass: 6145	Trucks: 5545	Total: 11690	1170

Clear Zone Distance: See table.	Design Speed: 35 MPH, 50 MPH
Minimum Sight Dist. for Stopping: 267', 425'	Bridges: N/A
Limited Access Control	Design ESALs: 24,468,922 accumulated flexible ESALs
Pavement Design Life 30 (years)	

CLEAR ZONE DISTANCE TABLE			
DESIGN SPEED	DESIGN ADT	FORESLOPE	
		FLAT	1V:6H
35 MPH or less	Over 6,000	14	16
50 MPH	Over 6,000		22

JOB# 61
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

SOIA-7-002(119)053

Williams County
Sec 8, 9, 10, 15, 16, 17 T 156 N, R 97 W
PCC Reconstruction, Turn Lanes, Turn Lane Extensions, Traffic Signal, HAWK System, Guardrail, Sidewalk, Sidewalk Canopy, Bridge Approach Slabs Joint Seal, and Incidentals

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	SOIA-7-002(119)053	19702	1	1

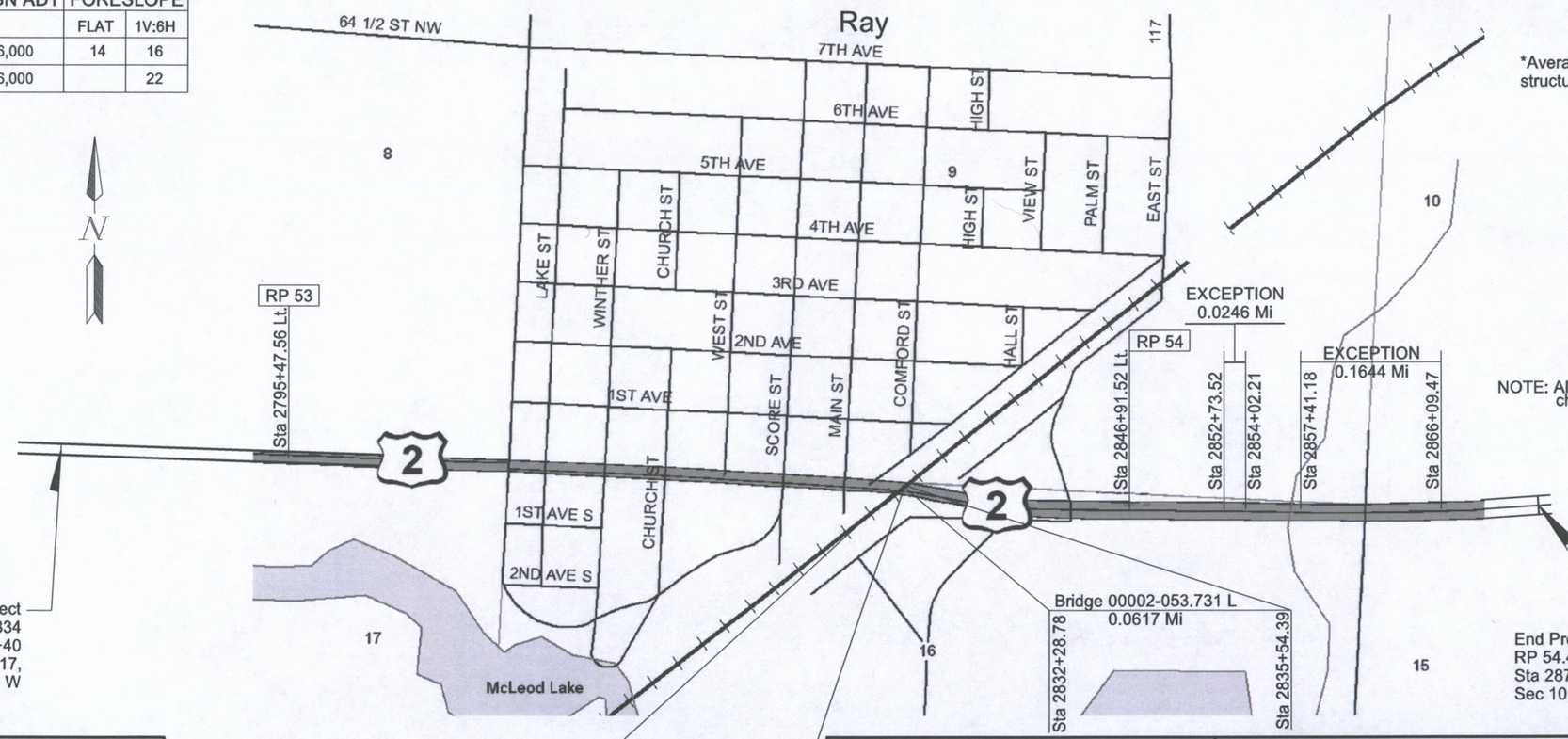
GOVERNING SPECIFICATIONS:
Standard Specifications adopted by the North Dakota Department of Transportation October 2008; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
SOIA-7-002(119)053	1.4589	1.7167

*0.0688 Mi deducted for bridges and bridge approach slabs
0.189 Mi deducted for two exceptions

*Average length was used since each structure has a different length.

NOTE: All stationing is based off of PR2-WB chain, unless otherwise noted.



DESIGNERS
Alayna L. Gottsman /s/
Darell Arne /s/
Douglas A. Schumaker /s/

DISTRICT REVIEW
Joel M. Wilt /s/
WILLISTON DISTRICT

APPROVED DATE 3/01/13
Robert Fode /s/
OFFICE OF PROJECT DEVELOPMENT
ND DEPARTMENT OF TRANSPORTATION

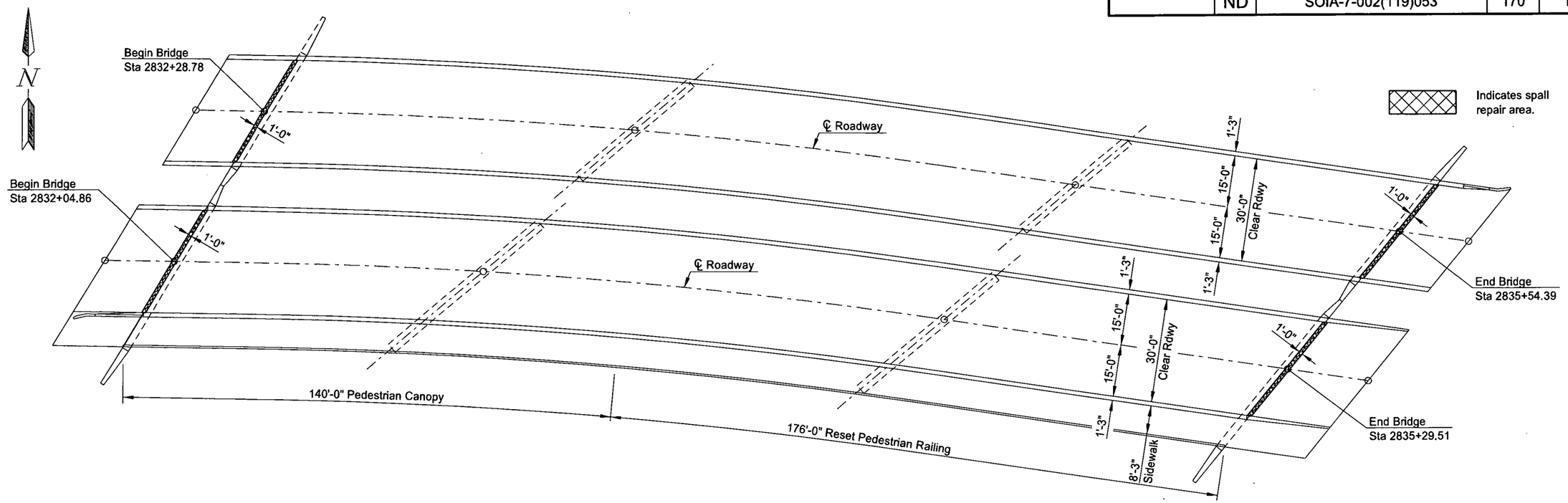
I hereby certify that the attached plans were prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the state of ND.

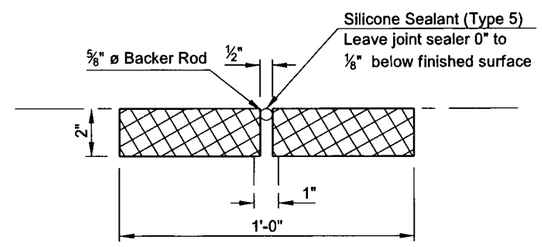
APPROVED DATE 2/28/13
James Douglas Rath /s/
NDDOT DESIGN DIVISION

This document was originally issued and sealed by James Douglas Rath, Registration Number PE- 4288, on 02/28/13 and the original document is stored at the North Dakota Department of Transportation

3/1/2013 11:56:07 AM jcollado R:\project\70002053.119\design\SHEETS\001TS_001.dgn

STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIA-7-002(119)053	170	1





DECK SPALL REPAIR

NOTES:

100 SCOPE OF WORK: Work at this site consists of repairing concrete spall areas on the bridge deck and approach slab surfaces, replacing the damaged pedestrian canopy & modifying the rest of the existing canopy.

930 SILICONE SEALANT: After placing the new concrete, the joint shall be cleaned of all foreign material and sandblasted before the backer rod is installed. A low modulus (Type 5) silicone sealant shall be used. All materials, labor and equipment required to remove and replace the silicone sealant shall be included in the bid item "Silicone Sealant."

930 DECK SPALL REPAIR: The bridge deck and approach slabs have spall areas as shown a both ends of the bridges. The deck spall repair shall be constructed as a Bridge Deck Overlay meeting Section 650 of the NDDOT Standard Specifications with the exception that a mobile mixer will not be required. The minimum depth of removal shall be 2". The perimeter of the repair area shall be saw cut to a depth of 1". The saw cutting and all material, labor and equipment required to remove the concrete and repair the deck spall areas shall be included in the bid item "Deck Spall Repair."

BRIDGE BID ITEMS

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
624	0121	RESET PEDESTRIAN RAILING	LF	176
624	0126	PEDESTRIAN CANOPY	LF	140
930	8644	SILICONE SEALANT	LF	140
930	9610	DECK SPALL REPAIR	SF	140

This document was originally issued and sealed by Tim L Schwagler, Registration Number PE 3151, on 02/14/13 and the original document is stored at the North Dakota Department of Transportation

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
BNSF RR OVERHEAD
RAY

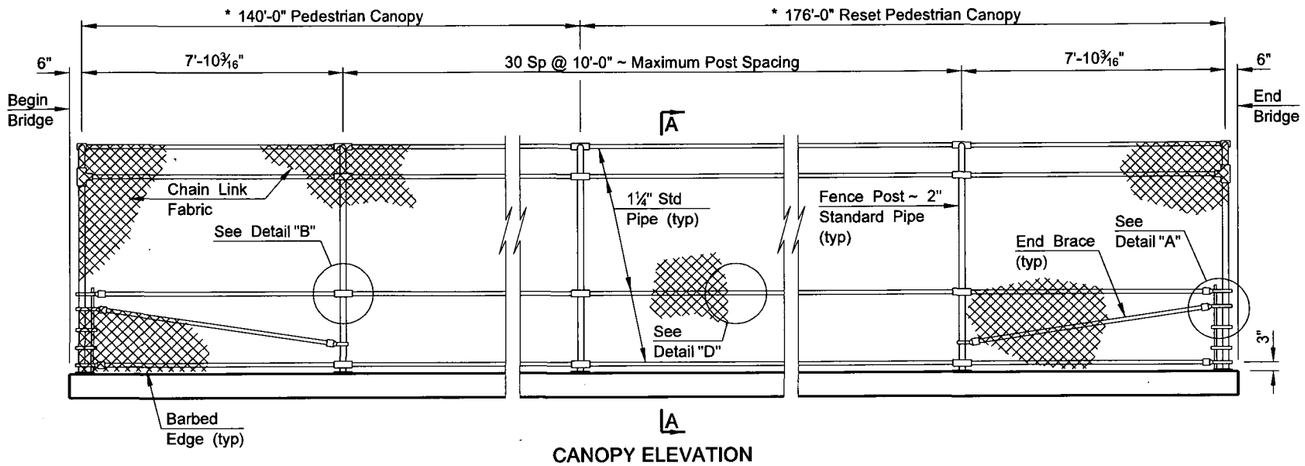
BRIDGE LAYOUT

PROJECT: SOIA-7-002(119)053

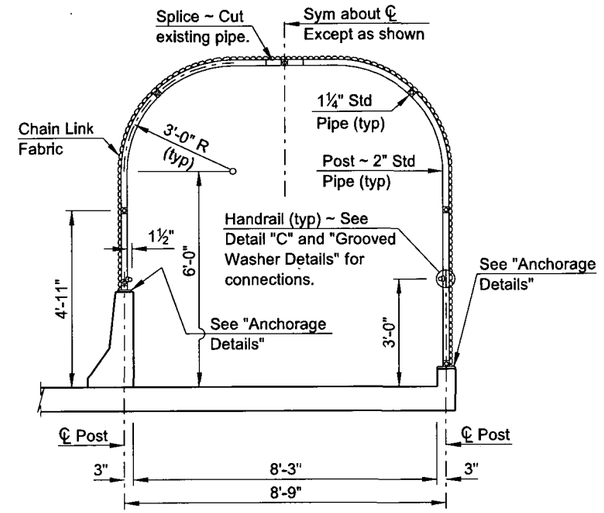
WILLIAMS COUNTY

2-19-13 — DATE
Terrence R. Udland — BRIDGE ENGINEER

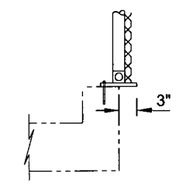
STATE	PROJECT NUMBER	SECTION NO.	SHEET NO.
ND	SOIA-7-002(119)053	170	2



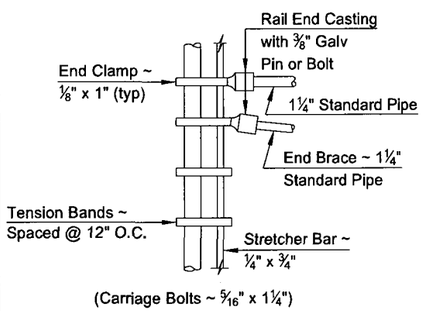
CANOPY ELEVATION



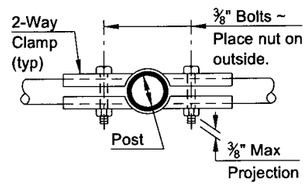
A-A



EXISTING POST DETAIL



DETAIL "A"



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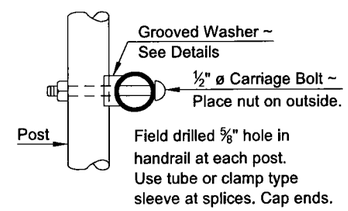
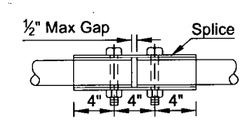


HANDRAIL CONNECTION AT POSTS

DETAIL "C"



SPLICE DETAIL

NOTES:

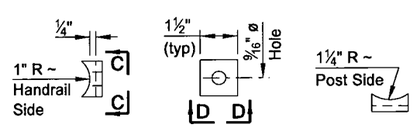
140' of the existing canopy has been damaged and will be replaced. The existing canopy is 3" too wide. The frame will be cut at the top and spliced. The existing curb base plate will be cut off and will be replaced.

Fabric shall be AASHTO M 181 Type 1 and shall be 9 gage wire, 2 inch mesh, 60 inches high and the bottom selvage barbed.

Pipe and fittings shall be AASHTO M 181 Grade 1.

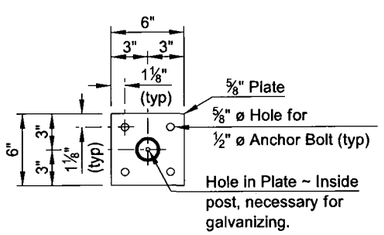
Anchorage plates shall be AASHTO M 270 Grade 36 and shall be hot-dipped galvanized in accordance with Section 854 of the Standard Specifications.

* The pay length is measured along the outside face of the curb. Posts located in the tangent sections shall be placed perpendicular. Posts located in the curve section shall be placed radially.

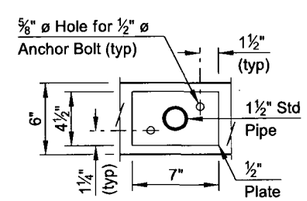


ELEVATION C-C D-D

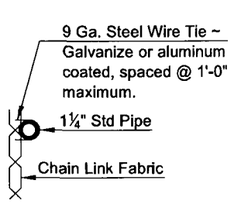
GROOVED WASHER DETAILS



BASE PLATE PLAN
(EXISTING ~ TO BE REMOVED)

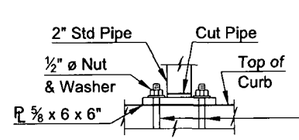


BASE PLATE PLAN
(BARRIER & CURB)



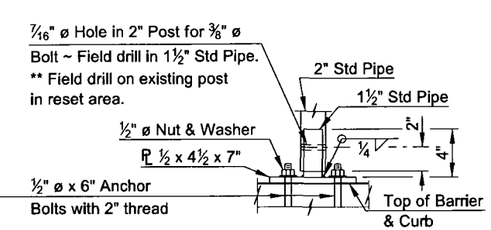
TYPICAL FABRIC ATTACHMENT

DETAIL "D"



ELEVATION

CANOPY POST ANCHORAGE DETAILS
(EXISTING ~ TO BE REMOVED)



ELEVATION

ANCHORAGE DETAILS

This document was originally issued and sealed by Tim L Schwagler, Registration Number PE 3151, on 02/14/13 and the original document is stored at the North Dakota Department of Transportation

QUANTITIES	
RESET PEDESTRIAN RAILING	176.0 LF
PEDESTRIAN CANOPY	140.0 LF

BNSF RR OVERHEAD RAY

PEDESTRIAN CANOPY DETAILS

BNSF RR Overhead Pedestrian Canopy

PAGE INDEX

ND PROJECT # SOIA-7-002(119)053
BRIDGE # 2-053.731R

CITY OF RAY
WILLIAMS COUNTY, ND

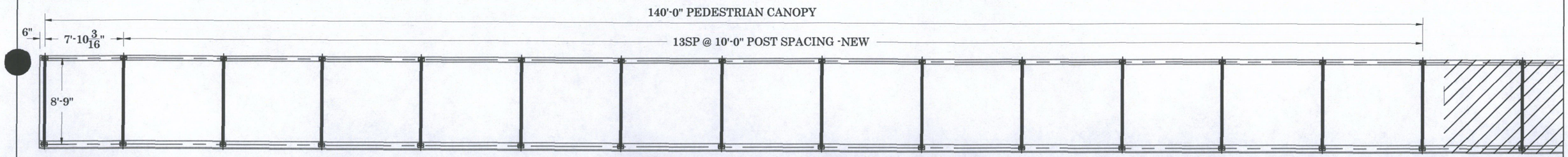
DAKOTA FENCE CO. - SUBCONTRACTOR
ACME CONCRETE PAVING INC. - PRIME CONTRACTOR

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION. - ENGINEER

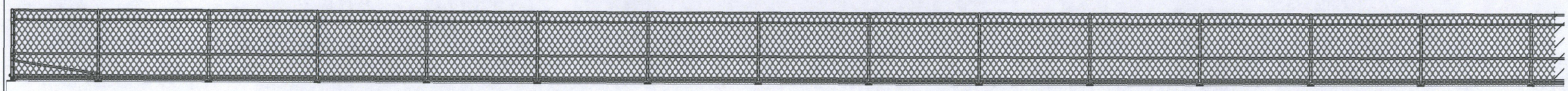
Shop Drawings Have Been Reviewed and Checked As Submitted and Are in Conformance with Contract Documents
Dakota Fence Co.

NO EXCEPTIONS NOTED
Dean L Stolz
Digitally signed by Dean L Stolz
DN: cn=Dean L Stolz, o=ND DOT, ou=Bridge Division, email=dstolz@nd.gov, c=US
Date: 2013.07.03 08:13:24 -05'00'
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

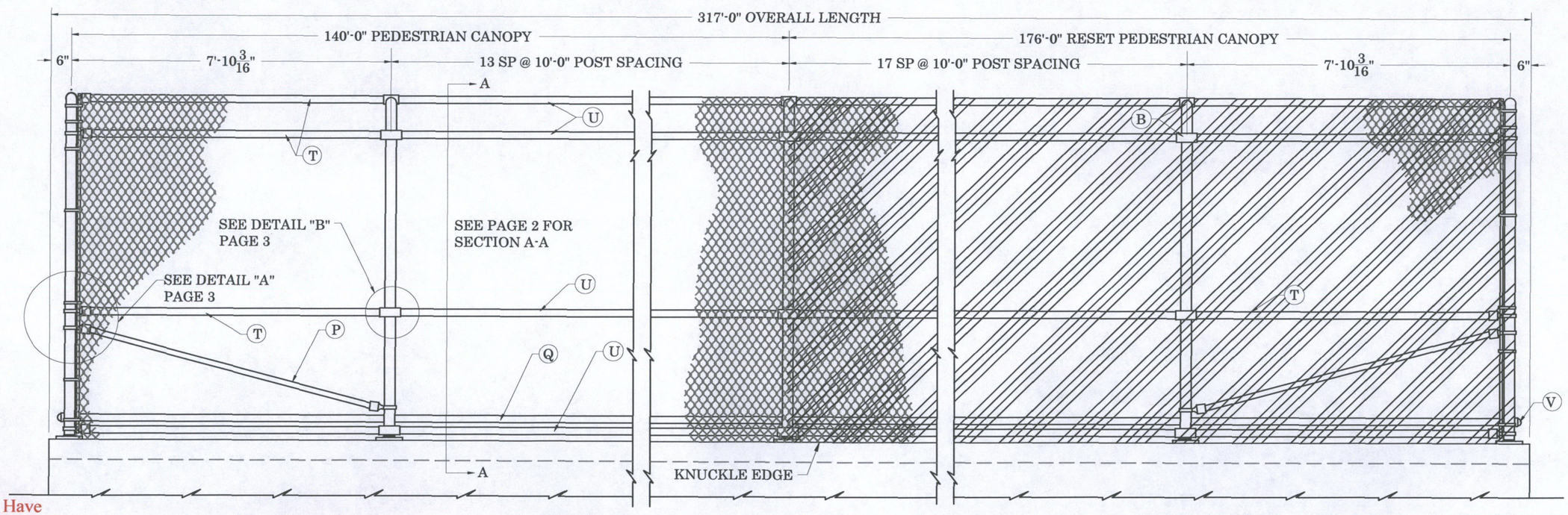
5/30/2013



PEDESTRIAN CANOPY LAYOUT



PEDESTRIAN CANOPY



PEDESTRIAN CANOPY ELEVATION

Shop Drawings Have Been Reviewed and Checked As Submitted and Are in Conformance with Contract Documents
Dakota Fence Co.

No Exceptions Noted
BY: D Stolz
DATE: July 3, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

PROJECT#	DRAWING#	SCALE:	REVISED:
13A4211	13.057	VARIES	5/30/13 NJS
DATE: 6/17/13	DRAWN BY: NJS		

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

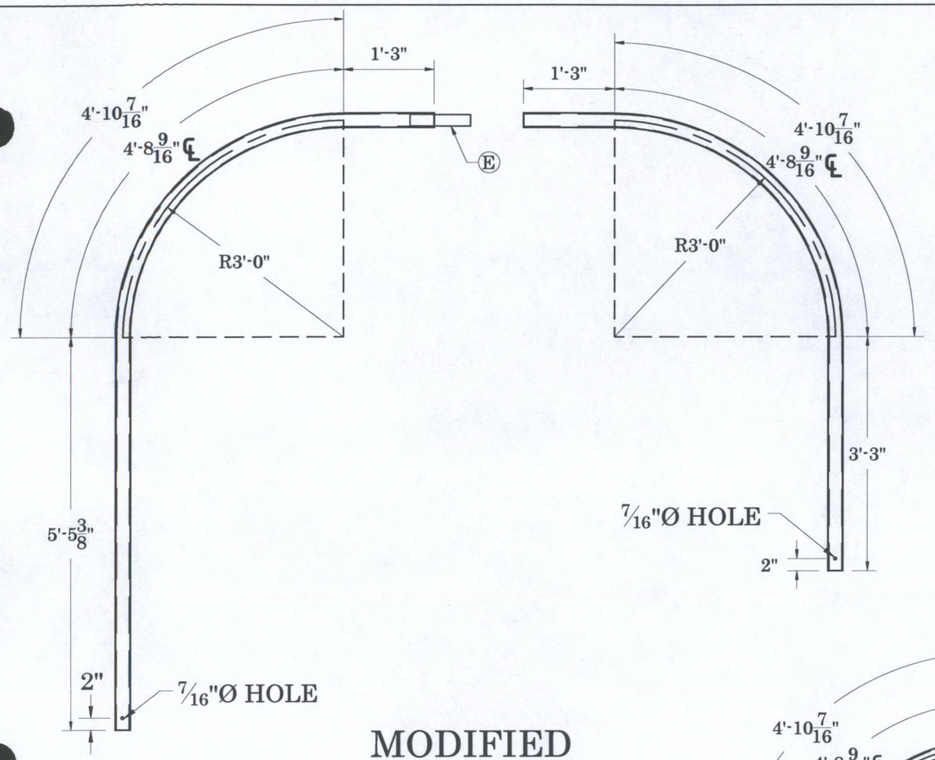
ND PROJECT # SOIA-7-002(119)053 BRIDGE # 2-053.731R
BNSF RR OVERHEAD PEDESTRIAN CANOPY
WILLIAMS COUNTY, ND

ACME CONCRETE PAVING INC.>>PRIME CONTRACTOR
DAKOTA FENCE CO.>> SUB-CONTRACTOR
NDDOT>>ENGINEER

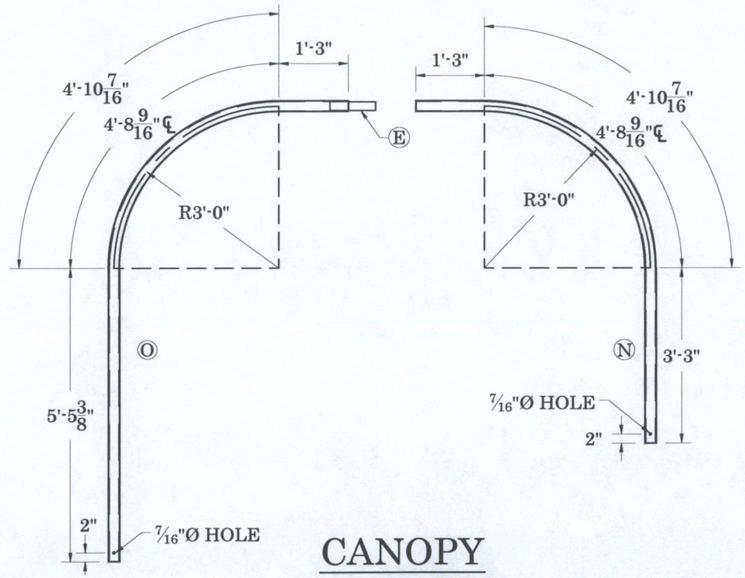
DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN

PAGE: 1 of 4

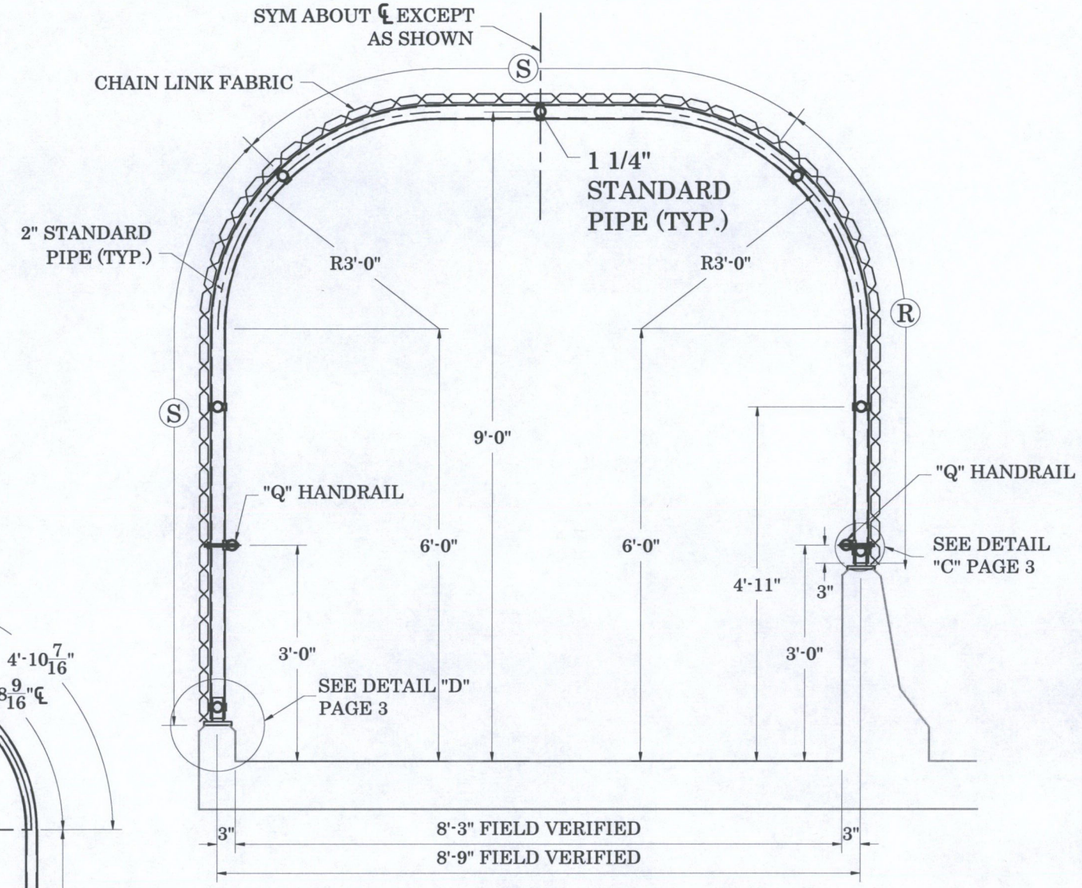
Dakota Fence.
FARGO, BISMARCK, MINOT, WILLISTON
1110 25th Ave N. BOX 1408 Fargo, ND 58107 Phone:(701) 237-6181 Fax: (701) 293-7811
1720 12th St. S. BOX 62 Bismarck, ND 58502 Phone:(701) 258-9095 Fax: (701) 223-3140
1915 20th Ave. SE. BOX 3066 Minot, ND 58702 Phone:(701) 852-6263 Fax: (701) 852-0931
6407 138th Ave. NW. Williston, ND 58802 Phone:(701) 826-6264



MODIFIED CANOPY PIPE DETAIL (RESET)



CANOPY PIPE DETAIL (NEW)



SECTION - A-A

No Exceptions Noted
BY: D Stolz
DATE: July 3, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

Shop Drawings Have Been Reviewed and Checked As Submitted and Are in Conformance with Contract Documents
Dakota Fence Co.

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN

PROJECT#	DRAWING#	SCALE:	REVISED:
13A4211	13.057	VARIES	5/30/13 NJS
DATE: 6/17/13	DRAWN BY: NJS		

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

ND PROJECT # SOIA-7-002(119)053 BRIDGE # 2-053.731R
BNSF RR OVERHEAD PEDESTRIAN CANOPY
WILLIAMS COUNTY, ND

ACME CONCRETE PAVING INC.>>PRIME CONTRACTOR
DAKOTA FENCE CO.>> SUB-CONTRACTOR
NDDOT>>ENGINEER

Dakota Fence.
FARGO, BISMARCK, MINOT, WILLISTON

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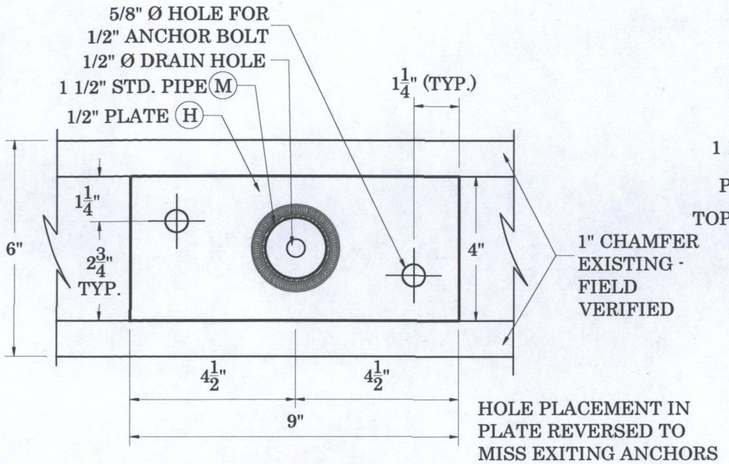
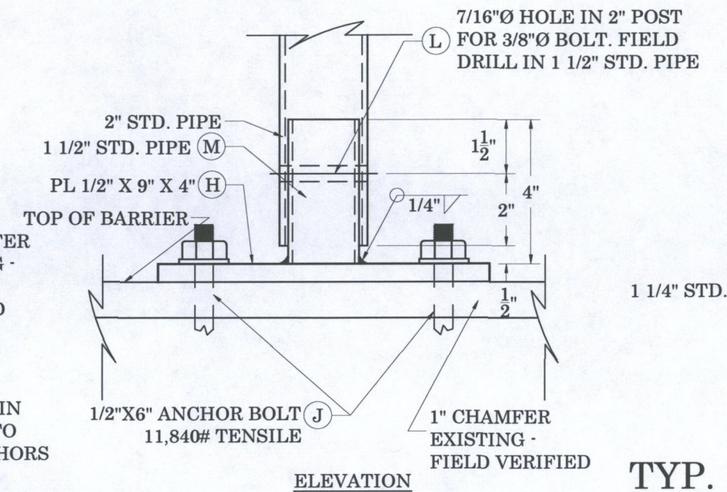


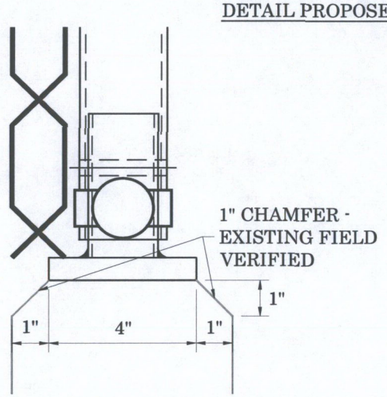
PLAN



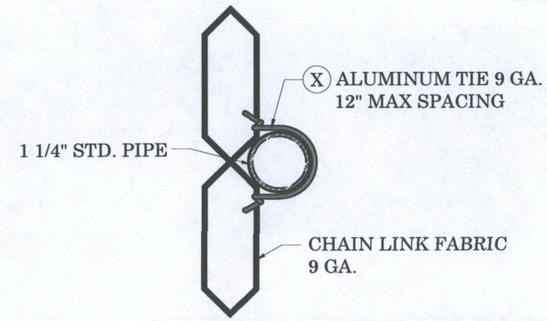
ELEVATION

CURB / BARRIER POST ANCHOR DETAILS

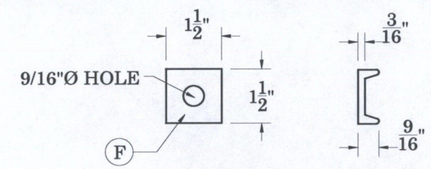
DETAIL PROPOSED AS PER DAKOTA FENCE



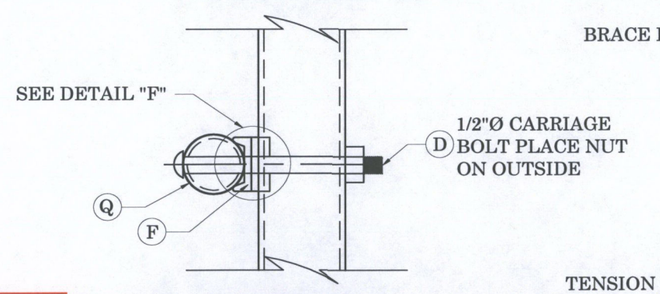
TYP. WALL TOP FINISH DETAIL "D"



TYP. FABRIC ATTACHMENT DETAIL "E"

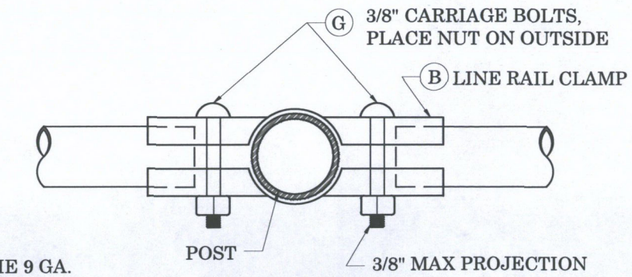


DETAIL - F

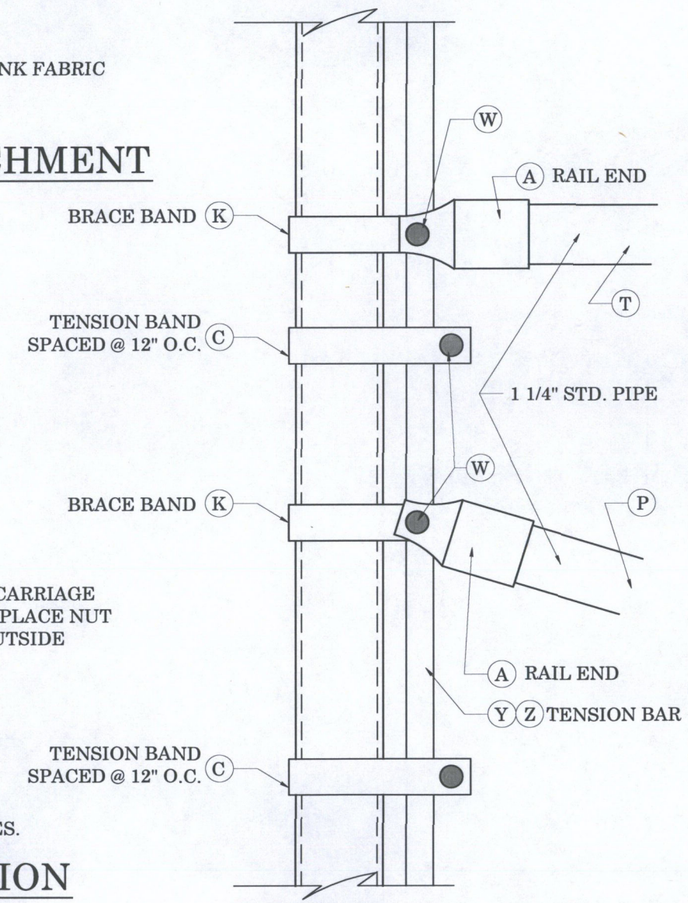


NOTE:
PROVIDE 5/8"Ø HOLES IN HANDRAIL
AT EACH POST. USE TUBE AT SPLICES.
CAP ENDS

HANDRAIL CONNECTION AT POST DETAIL "C"



DETAIL - B



DETAIL - A

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN

Shop Drawings Have
Been Reviewed and
Checked As Submitted
and Are in Conformance
with Contract Documents
Dakota Fence Co.

No Exceptions Noted
BY: D Stolz
DATE: July 3, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

PROJECT#	DRAWING#	SCALE:	REVISED:
13A4211	13.057	VARIES	
DATE: 5/30/13	DRAWN BY: NJS		

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

ND PROJECT # SOIA-7-002(119)053 BRIDGE # 2-053.731R
BNSF RR OVERHEAD PEDESTRIAN CANOPY
WILLIAMS COUNTY, ND

ACME CONCRETE PAVING INC.>>PRIME CONTRACTOR
DAKOTA FENCE CO.>> SUB-CONTRACTOR
NDDOT>>ENGINEER

Dakota Fence.
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6407 138th Ave. NW. Williston, ND 58802 Phone:(701) 826-6264

PARTS LIST

PART	QUANT.	LENGTH	DESCRIPTION	MATERIAL	
A	11	-	1 5/8" RAIL END	FENCE FITTING	GALVANIZED
B	98	-	2 3/8" X 1 5/8" LINE RAIL CLAMP	FENCE FITTING	GALVANIZED
C	22	2 ½"	TENSION BANDS	FENCE FITTING	GALVANIZED
D	30	5 ½"	1/2"Ø CARRIAGE BOLTS	GR-2	GALVANIZED
E	15	10"	1 1/2" X PIPE SLEEVE	STD. PIPE	GALVANIZED
F	60	-	C-CHANNEL SUPPORTS	A-36	GALVANIZED
G	196	2 ¼"	3/8"Ø X CARRIAGE BOLTS/NUTS	GR-2	GALVANIZED
H	48	9"	4" X ½" BASE PLATES	A-36	GALVANIZED
J	96	6"	1/2"Ø ANCHOR BOLTS/NUTS/FLAT WASHERS	GR-2	GALVANIZED
K	11	2 ½"	BRACE BANDS	FENCE FITTING	GALVANIZED
L	48	3"	⅜"Ø BOLT W/ NUT	GR-2	GALVANIZED
M	48	4"	1 1/2" PIPE INSERT	STD. PIPE	GALVANIZED
N	15	9'-2 9/16"	2 3/8" O.D. CANOPY PIPE	STD. PIPE	GALVANIZED
O	15	11'-4 15/16"	2 3/8" O.D. CANOPY PIPE	STD. PIPE	GALVANIZED
P	2	7'-3" ±	1 5/8" O.D. ANGLE PIPE BRACE	STD. PIPE	GALVANIZED
Q	2	140'-4"	1 5/8" O.D. HANDRAIL	STD. PIPE	GALVANIZED
R	140'-0"	6'-0"	9 GAUGE CHAIN LINK KNUCKLE/KNUCKLE	FABRIC	GALVANIZED
S	280'-0"	8'-0"	9 GAUGE CHAIN LINK KNUCKLE/KNUCKLE	FABRIC	GALVANIZED
T	7	7'-4" ±	1 5/8" O.D. HORIZONTAL BRACE PIPES	STD. PIPE	GALVANIZED
U	98	9'-7 ⅝" ±	1 5/8" O.D. HORIZONTAL BRACE PIPES	STD. PIPE	GALVANIZED
V	2	-	1 5/8" DOME CAPS	FENCE FITTING	GALVANIZED
W	33	1 ¼"	5/16" CARRIAGE BOLTS/NUTS	GR-2	GALVANIZED
X	1340	-	9 GAUGE ALUMINUM FENCE TIES	FENCE FITTING	GALVANIZED
Y	1	6'-0"	TENSION BARS	FENCE FITTING	GALVANIZED
Z	2	8'-0"	TENSION BARS	FENCE FITTING	GALVANIZED

NOTES: CANOPY

1. FABRIC SHALL BE AASHTO M181 TYPE 1, AND SHALL BE 9 GA. WIRE, 2" MESH.
2. POST AND FITTINGS SHALL BE AASHTO M 181 GRADE 1.
3. ANCHORAGE PLATES SHALL BE AASHTO M 270 GR. 36 & SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH SECTION 854 OF THE STANDARD SPECIFICATIONS.

No Exceptions Noted
BY: D Stolz
DATE: July 3, 2013
REVIEW DOES NOT RELIEVE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DEVIATIONS FROM CONTRACT REQUIREMENTS
NDDOT

Shop Drawings Have Been Reviewed and Checked As Submitted and Are in Conformance with Contract Documents
Dakota Fence Co.

DUE TO SHOP PROCESS, SPLICES MAY OCCUR OTHER THAN SHOWN

PROJECT#	DRAWING#	SCALE:	REVISED:
13A4211	13.057	VARIES	
DATE: 5/30/13	DRAWN BY: NJS		

ALL VERIFIES WILL BE ASSUMED CORRECT AS SHOWN UNLESS NOTED OTHERWISE BY APPROVER

ND PROJECT # SOIA-7-002(119)053 BRIDGE # 2-053.731R
BNSF RR OVERHEAD PEDESTRIAN CANOPY
WILLIAMS COUNTY, ND

ACME CONCRETE PAVING INC.>>PRIME CONTRACTOR
DAKOTA FENCE CO.>> SUB-CONTRACTOR
NDDOT>>ENGINEER

Dakota Fence.
FARGO, BISMARCK, MINOT, WILLISTON

1110 25th Ave N. BOX 1408 Fargo, ND 58107 Phone:(701) 237-6181 Fax: (701) 293-7811
1720 12th St. S. BOX 62 Bismarck, ND 58502 Phone:(701) 258-9095 Fax: (701) 223-3140
1915 20th Ave. SE. BOX 3066 Minot, ND 58702 Phone:(701) 852-6263 Fax: (701) 852-0931
6407 138th Ave. NW. Williston, ND 58802 Phone:(701) 826-6264

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	RSN-NH-7-002(041)052	1

JOB# ____

DESIGN DATA					
Traffic	Average Daily				Est.Max.Hr.
Current 1993	Pass: 1700	Trucks 225	Total 1925		192
Forecast 2013	Pass:	Trucks 275	Total 2100		210
Minimum Sight Dist. for:		Design Speed		40 MPH.	
Stopping	275 FT.	Bridges			
Safe Passing					
Passing for Marking					

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

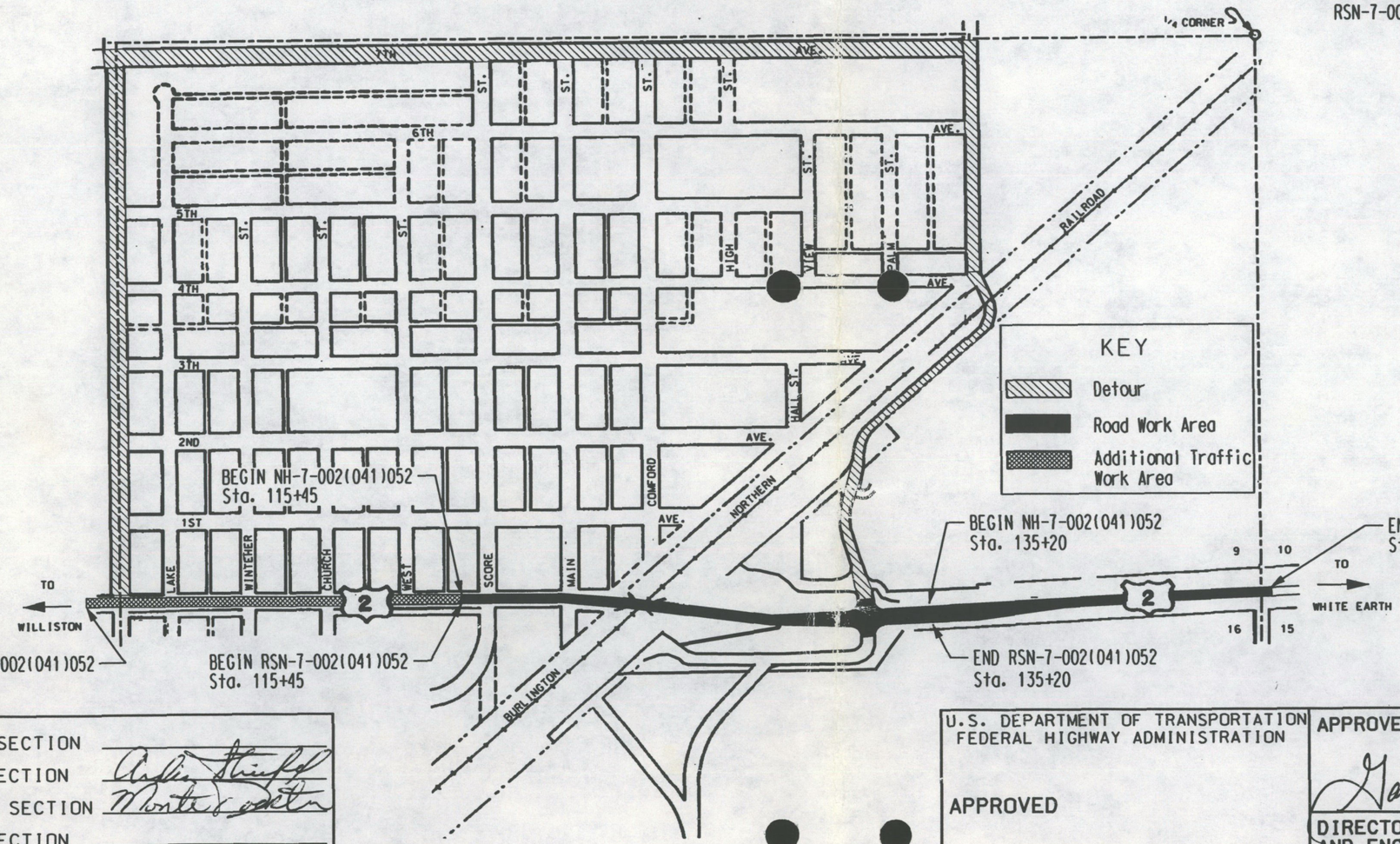
WILLIAMS COUNTY
FEDERAL AID PROJECT NO.
RSN-NH-7-002(041)052
Grading, Surfacing, Storm drains, Structural
Signing, Marking, Guardrail & Incidentals

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
NH-7-002(041)052	0.6794	0.6794
RSN-7-002(041)052	0.3741	0.3741



SEC. 9 & 16
TWP. 156 N.
RGE. 97 W.

RAY

APPROVED 10/7/96
DATE
S D Arnett
NAME
☐ CLEARANCES ONLY
☑ AS NOTED

N W E S

PAVING SECTION
URBAN SECTION Austin Stinefel
TRAFFIC SECTION Monte Carter
RURAL SECTION
RECOMMEND APPROVAL 9-16, 1996
DESIGN ENGINEER David K. Lee

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE 9-16-96

Gary L. Berreth

DIRECTOR OF HIGHWAYS AND ENGINEERING

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

GARY L. BERRETH
REGISTERED
PROFESSIONAL
P.E. 1416
ENGINEER
NORTH DAKOTA

BRIDGE NOTES

100 SCOPE OF WORK: This project consists of building a new 3-span steel girder bridge 320' long with clear roadway width of 30' and an 8'-9" sidewalk. Part of the new structure is on a tangent alignment and part is on a curve.

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.

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

202 REMOVAL OF STRUCTURE: The existing structure is an underpass 107' long with a clear roadway of 30 feet. The substructures are made of concrete, and the superstructure is made of steel. The contractor may have to remove portions of the existing wingwall footings and existing retaining walls to allow for pile driving. The contractor shall remove a minimum amount of material from the wingwall footings. The contractor shall place compacted fill in the existing underpass up to an elevation 6' blow the bottom of the steel beams. The contractor shall entirely fill the pedestrian tunnels and the voids under the sidewalks of the existing structure with either earth or flowable fill. Burlington Northern (BN) Railroad will remove the superstructure and portions of the substructure. BN Railroad will place the removed material on the railroad right of way at a location agreed to by BN Railroad and the engineer. All materials removed by the contractor and BN Raiload shall become the property of the contractor and shall be disposed of properly off the right of way.

203 EMBANKMENT: The embankment at the abutments shall be in place for a minimum of 30 days before piling are driven.

The contractor will be required to bore through the fill at the abutments before driving piling. All pilot holes not completely filled by the piles shall be backfilled with sand or fine gravel before the substructure is placed.

In lieu of the above waiting period, the contractor may begin pile driving operations as soon as the embankment is in place, but all pilot holes shall be extended to a depth of 15 feet into the original ground.

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 2."

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. A surface tolerance of 3/16" in 10 feet is also required.

602 Exterior beams shall be braced to prevent rotation. The strength and spacing of the bracing shall be dependent on the forces induced by the weight of the concrete, forms, equipment, and workers.

602 END BEAMS: The end beam concrete shall be placed before the deck concrete. The concrete shall cure for at least 72 hours before deck placement.

602 SURFACE FINISH "D": Surface Finish "D" shall be required for the inside, outside, and top surfaces of the barrier, and on the outside edge 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 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 surface of the concrete deck.

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.

BRIDGE NOTES

602 DECK TINING: Tining shall begin 6 inches from the beginning and the end of the deck and 6 inches from each deck joint.

602 SIDEWALK BROOMING: The sidewalk on the bridge shall not be tined. The sidewalk shall be transversely broomed to slightly roughen the surface.

612 REINFORCING STEEL: Dimensions for bent bars are given out to out and to tangent intersections unless otherwise noted.

612 The bar fabricator shall add a prefix to all bar designations to differentiate between the different structures on this project.

612 All reinforcing steel shall be Grade 60.

616 STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 50T2, except the diaphragms and swedge bolts may be grade 36T2. The requirement for Charpy V-Notch is waived for the bearings, diaphragms, and diaphragm connection material.

616 Shear connectors on splice plates shall be moved to clear bolt holes.

616 Field connections shall be made with 7/8 inch diameter, AASHTO M 164 high-strength bolts unless otherwise shown.

616 Temporary or permanent attachments or devices that are not shown on the plans as part of the structure shall not be welded to the structural steel members during the fabrication and construction process.

616 The cost of swedge bolts shall be included in the total cost of structural steel.

622 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 55,154 foot-pound-tons, as computed by the formula W(E-13,444)+.821E, 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 2700 pounds.

622 PILING: Cast steel pile tips (ASTM 27 steel) shall be required on all pile driven.

630 PAINT AND PAINTING: The structural steel shall be painted according to the specifications. The finish coats shall be blue, color number 25240, and shall meet Federal Standard No. 595B colors.

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

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. Structural Steel.
2. Preformed Elastomeric Neoprene Expansion Joint.

DESIGN STRENGTH:
F'C 3,000 PSI Cl. AE-3 Concrete
F'C 4,000 PSI Cl. AAE-3 Concrete
FY 36,000 PSI Structural Steel M270 Grade 36T2
FY 50,000 PSI Structural Steel M270 Grade 50T2
FY 60,000 PSI Grade 60 Reinforcing Steel Load Factor Design

930 PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT: The neoprene joint shall have a profile that allows thermal cycles and dynamic loading up to a total range of movement of two inches while providing watertight protection. The neoprene profile shall be bonded to the concrete surfaces with an epoxy adhesive that is chemically resistant to oxidation and corrosion, is impervious to weather extremes and is compatible with the nosing concrete. During installation, the neoprene profile shall be pressurized with compressed air to maximize the adhesion against the gap walls. After curing, the air pressure shall be permanently released. This shall be a Jeene Structural Sealing Joint System (2 W) or an approved equal.

930 NOSING CONCRETE: The nosing concrete material shall be an elastomeric concrete or a polymeric concrete that will provide a durable edge that can withstand live-load traffic without chipping or spalling. The nosing concrete material shall be Ceva Crete 95, manufactured by E-Poxy Industries Inc.; Elastomeric Concrete, as manufactured by the D.S. Brown Company; Silspec 900, as manufactured by Construction Materials Inc.; Elastomeric Concrete as manufactured by Harris Speciality Chemicals Inc., or an approved equal. The nosing shall be mixed and installed according to the manufacturer's recommendations. The cost for the equipment, materials, and labor to install the nosing concrete on each side of the joint shall be included in the lineal foot bid item "Nosing Concrete."

930 ROADWAY CANOPY: The contractor shall construct a canopy above the railroad under the structure to protect traffic from falling material. The canopy is an added safeguard and does not relieve the contractor of any responsibility

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for the safety of the public.

The canopy may be supported from the ground or suspended from the girders. The erection of the canopy and the girder shall be completed in a minimum amount of time and with the least inconvenience to the public and the railroad.

The canopy shall be of a design and material selected by the contractor and approved by the engineer. The minimum vertical clearance shall be 22′ above the railroad tracks. The canopy shall project a minimum distance of 5′-0" beyond the outside edge of curb of the proposed structure.

The canopy shall project a minimum distance of 5′-0" beyond the edge of the driving lanes beneath the structure and 5′-0" beyond the edge of the railroad tracks.

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

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

Sheet 128

Elevation	Depth	Description
2270	2268.7 / 2267.4	BRN, CLAY, TOPSOIL, STIFF, IMPERVIOUS, PLIABLE
2260	2259.2	A-6 BRN, CLAY LOAM, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE *C-87.4 kPa *C-1825 psf
2250		A-6 BRN, CLAY, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE, IRON OXIDE PRESENT THROUGHOUT HORIZON *C-91.0 kPa *C-1900 psf
	2245.7	A-6 BRN, CLAY LOAM, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE
2240	2243.1	A-6 BRN, CLAY, VERY STIFF, IMPERVIOUS, PLIABLE, AMORPHOUS *C-102.2 kPa *C-2135 psf
	2238.2	A-7-6 BRN, CLAY, AMORPHOUS, STIFF, PLIABLE, IMPERVIOUS, COAL LENSES THROUGHOUT HORIZON *C-94.6 kPa *C-1975 psf
	2235.4	A-6 BRN, CLAY, STIFF, PLIABLE, IMPERVIOUS
2230	2233.3	A-7-6 BRN, CLAY, AMORPHOUS, VERY STIFF, PLIABLE, IMPERVIOUS *C-119.7 kPa *C-2500 psf
	2225.7	A-6 BRN, CLAY, AMORPHOUS, VERY STIFF, PLIABLE, IMPERVIOUS *C-129.3 kPa *C-2700 psf
2220	2220.8	A-2-4 LIGHT BRN, SAND, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, IRON OXIDE PRESENT THROUGHOUT HORIZON *Ø-37°
2210	2211.6	A-7-5 GRAY, CLAY, VERY STIFF, IMPERVIOUS, PLIABLE *C-143.6 kPa *C-3000 psf
	2209.3	A-6 GRAY, CLAY LOAM, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *C-143.6 kPa *C-3000 psf
	2200.7	A-3 GRAY, SAND, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, STRATIFIED WITH LIGNITE SEAMS *Ø-35°
2200	2199.1	A-6 GRAY, SILTY CLAY LOAM, LAMINATED & LENTICULAR, VERY STIFF, IMPERVIOUS WITH PERMEABLE LENSES, PLIABLE *C-143.6 kPa *C-3000 psf
	2196.2	A-4 LIGHT BRN, LOAM, STRATIFIED, DENSE, PERMEABLE, NON-PLASTIC
2190	2191.6	A-4 GRAY, SILTY LOAM, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
	2186.7	A-4 GRAY, LOAM, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
2180	2181.8	A-4 GRAY, SILTY CLAY LOAM, STRUCTURELESS, DENSE, PERMEABLE, NON-PLASTIC *C-215.5 kPa *C-4500 psf
	2176.5	A-2-4 GRAY, SANDY LOAM, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-38°
2170	2166.7	A-2-4 GRAY, SAND, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-38°
2160	2161.7	A-3 GRAY, SAND, STRUCTURELESS, MEDIUM DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-32°
2150	2151.2 / 2148.0	A-7-6 GRAY, SILTY CLAY, LENTICULAR, HARD, IMPERVIOUS WITH PERMEABLE LENSES, WATER-BEARING, NON-PLIABLE *C-191.5 kPa *C-4000 psf
2140		

BORING NO. 1

STA. 124+51.4 – RT. 66.6' FROM EXISTING CENTERLINE

Elevation	Depth	Description
2270	2267.7	A-4 TAN, SANDY LOAM, TOPSOIL, MEDIUM STIFF, IMPERVIOUS, PLIABLE *Ø-28°
2260	2260.8	A-6 BRN, CLAY, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE Yd-187.1 kg/m³ Yd-116.8 pcf C-113.5 kPa C-2474 psf M-15.2
	2258.6	A-6 BRN, CLAY LOAM, LENTICULAR, STIFF, PLIABLE, IMPERVIOUS WITH PERMEABLE LENSES
	2254.6	A-6 BRN, CLAY, LENTICULAR, STIFF, PLIABLE, IMPERVIOUS WITH PERMEABLE LENSES C-146.7 kPa C-3063 psf
2250	2252.3	A-7-6 BRN, CLAY, LENTICULAR, STIFF, PLIABLE, IMPERVIOUS WITH PERMEABLE LENSES Ø-19° M-17% C-70.1 kPa C-1465 psf Yd-1767 kg/m³ Yd-110.3 pcf
2240	2240.8	A-6 BRN, CLAY LOAM, LENTICULAR, STIFF, IMPERVIOUS WITH PERMEABLE LENSES, WATER-BEARING, PLIABLE
	2237.2	A-2-4 BRN, SANDY LOAM, LENTICULAR, MEDIUM DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-33°
2230	2229.3	A-6 BRN, CLAY LOAM, LENTICULAR, STIFF, IMPERVIOUS, PLIABLE *C-95.8 kPa *C-2000 psf
2220	2220.1	A-2-4 BRN, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-39°
	2215.6	A-4 LIGHT BRN, SILTY LOAM, LAMINATED & LENTICULAR, MEDIUM DENSE, PERMEABLE, WATER-BEARING, PLIABLE, IMPERVIOUS *C-136.5 kPa *C-2850 psf
	2213.3	A-7-5 LIGHT BRN, CLAY
2210	2210.6	A-2-4 LIGHT BRN/GRAY, SAND, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-35°
	2209.3	A-2-4 LIGHT BRN/GRAY, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, LIGNITE SLACK THROUGHOUT HORIZON *Ø-35°
	2205.1	A-4 GRAY, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, LIGNITE SLACK THROUGHOUT HORIZON
2200	2198.2	A-4 GRAY, SILTY LOAM, LENTICULAR, HARD, IMPERVIOUS, WATER-BEARING, NON-PLASTIC *C-143.6 kPa *C-3000 psf
2190	2190.6	A-4 GRAY, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
	2185.7	A-6 GRAY, CLAY, LENTICULAR, DENSE, IMPERVIOUS, NON-PLASTIC *C-181.9 kPa *C-3800 psf
2180	2180.8	A-4 GRAY, SILTY CLAY LOAM, LENTICULAR, STIFF, IMPERVIOUS, NON-PLASTIC
	2175.5	A-2-4 GRAY, SANDY LOAM, STRUCTURELESS, VERY DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-36°
2160	2165.5	A-2-4 GRAY & BRN, SAND, STRUCTURELESS, VERY DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-33°
2140	2140.7	

BORING NO. 2

STA. 126+81.1 – LT. 51.2' FROM EXISTING CENTERLINE

NOTES: Encircled numbers indicate the number of blows delivered by a 140 lb. hammer from a height of 30" to drive a core tube 1'-0".

The boring log data shown is for design purposes only. The state assumes no responsibility if soil conditions encountered during construction differ from those shown.

SYMBOLS: Ø- Angle of Internal Friction (Degrees)
C- Cohesion (Lbs./Sq. Ft.) (kPa)
M- Moisture (Percent)
Yd- Dry Weight (Lbs./Cu.Ft.) (kg/Cu.m)
*- (These cohesive values & friction angles are estimated from blow count.)

WILLIAMS COUNTY
RAY OVERPASS ON HWY 2

BORING LOG

2-053.731R-4

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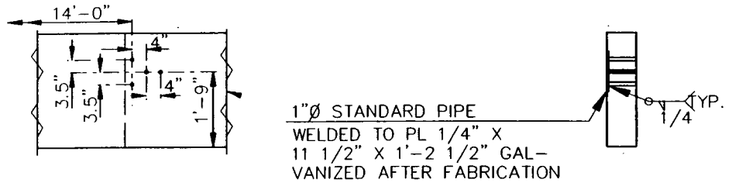
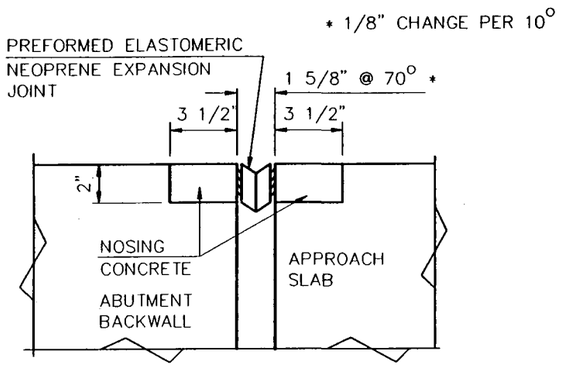
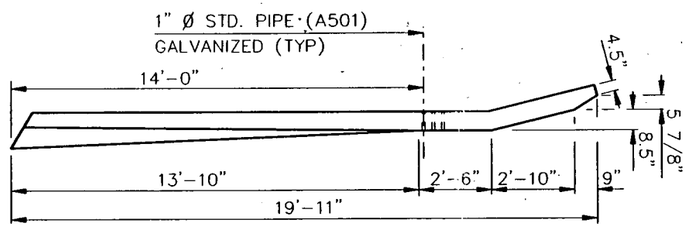
8	ND	RSN-7-002(041)052	123



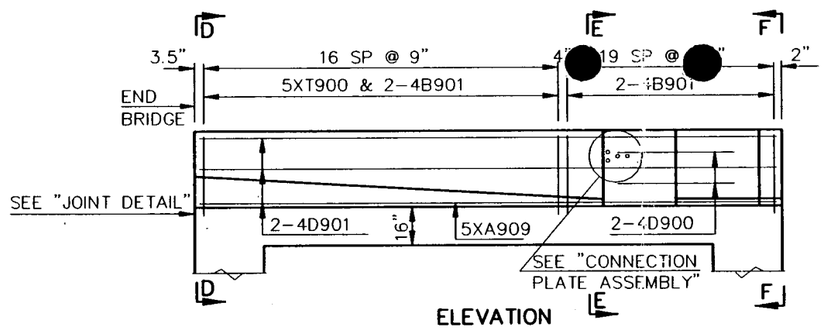
CONNECTION PLATE ASSEMBLY



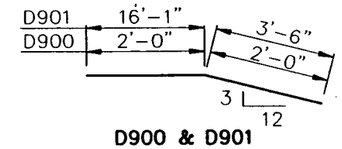
JOINT DETAIL



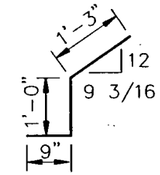
PLAN



ELEVATION

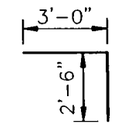


D900 & D901



XT900
FIELD BEND
TO FIT

B901



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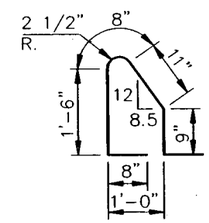

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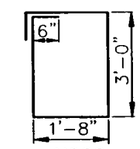

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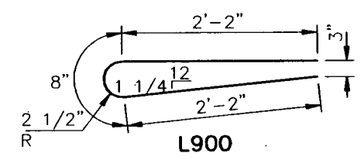


L900

BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT

WIDTH = 30'-0" CL. RDWY.

SKEW ANGLE = 30°

BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
7	A900	12	37'-2"
5	A901	40	37'-2"
8	A903	59	19'-7"
5	A904	36	19'-7"
5	A905	8	6'-0"
9	A906	6	19'-7"
5	A907	5	19'-7"
5	XA908	1	19'-7"
5	XA909	1	13'-10"
5	B900	144	5'-6"
4	B901	74	4'-2"
4	D900	2	4'-0"
4	D901	6	19'-7"
5	XK900	22	5'-2"
5	L900	22	5'-0"
4	N900	56	10'-4"
5	XT900	17	3'-0"

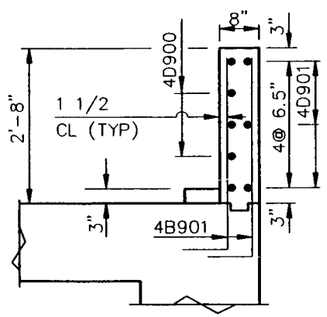
ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL LBS.	CONCRETE C.Y.
8,658	47.3

X = EPOXY COATED BAR

NOTES:

THE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING STEEL AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB". THE PILING, NOSING CONCRETE AND PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT ARE SEPARATE BID ITEMS.



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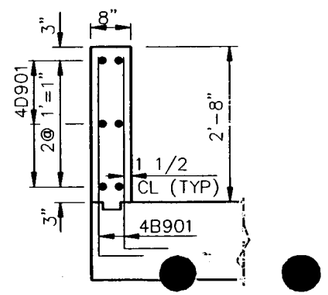

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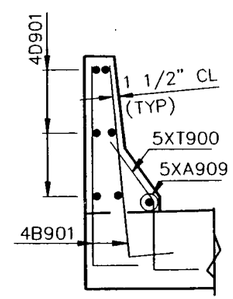

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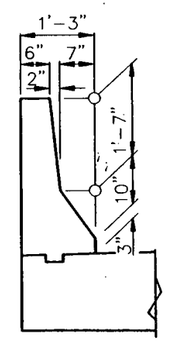


D-D

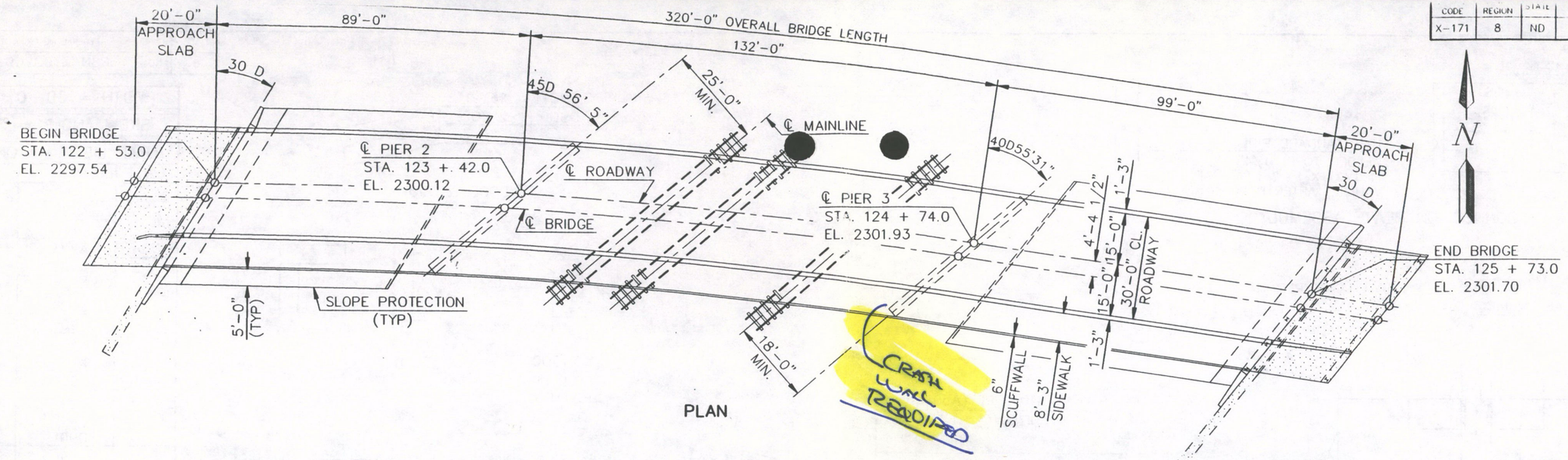
QUANTITIES

APPROACH SLAB	72.1	SY
NOSING CONCRETE	37.5	LF
PREF. ELAST. NEO. EXP. JT.	35.6	LF

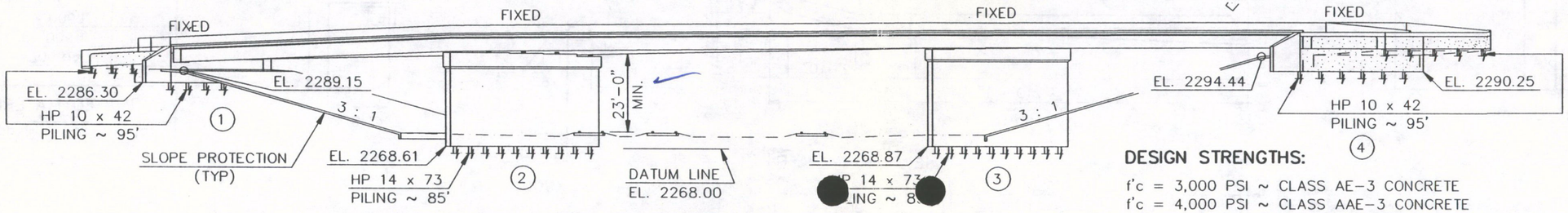
BURLINGTON NORTHERN OVERHEAD RAY

APPROACH SLAB
END BRIDGE

CODE	REGION	STATE	FEDERAL AID PROJECT NUMBER	NO.
X-171	8	ND	RSN-7-002(041)052	124



PLAN

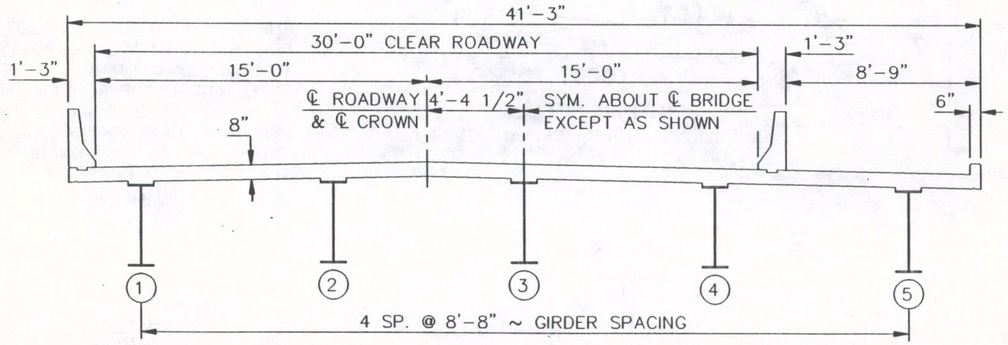


ELEVATION

DESIGN STRENGTHS:

f'c = 3,000 PSI ~ CLASS AE-3 CONCRETE
f'c = 4,000 PSI ~ CLASS AAE-3 CONCRETE
fy = 36,000 PSI ~ AASHTO M-270 GR. 36 STRUCTURAL STEEL
fy = 50,00 PSI ~ AASHTO M-270 GR. 50 STRUCTURAL STEEL
fy = 60,000 PSI ~ REINFORCING STEEL

LOAD FACTOR DESIGN



TYPICAL DECK SECTION

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
107	0100	RAILWAY PROTECTION INSURANCE	L. SUM	.5
202	0105	REMOVAL OF STRUCTURE	L. SUM	.5
210	0103	CLASS 1 EXCAVATION - SITE 2	L. SUM	1
210	0198	SELECT BACKFILL	TON	548
210	0203	FOUNDATION PREPARATION - SITE 2	L. SUM	1
550	0215	CONCRETE BRIDGE APPROACH SLAB	SQ. YD.	182.6
602	0130	CLASS AAE-3 CONCRETE	CU. YD.	414.8
602	1130	CLASS AE-3 CONCRETE	CU. YD.	289.1
602	1250	PENETRATING WATER REPELLENT TR.	SQ. YD.	1066.7
612	0115	REINFORCING STEEL GRADE 60	LBS.	29,549
612	0116	REINFORCING STEEL GRADE 60 EPOXY	LBS.	101,525
616	5889	STRUCTURAL STEEL SITE 2 (APPROXIMATELY 333,018 LBS.)	L. SUM	1
622	0012	STEEL H-PILE TIPS 10x42	EA.	32
622	0016	STEEL H-PILE TIPS 14X73	EA.	20
622	0020	STEEL PILING HP 10x42	L. FT.	3040
622	0060	STEEL PILING HP 14x73	L. FT.	1700
624	0126	PEDESTRIAN CANOPY	L. FT.	316.7
708	1100	SLOPE PROTECTION, CONC.	SQ. YD.	1009
930	3000	BRIDGE BENCH MARKS	SET	.5
930	[illegible]	ROADWAY CANOPY - SITE 2	L. SUM	1
930	[illegible]	NOSING CONCRETE	L. FT.	95.2
930	8650	PREFORMED ELASTOMERIC NEOPRENE EXP. JT.	L. FT.	93.4

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEVATION
BH7	RIVET ON CONCRETE	STA. 123 +83 - .66' LT.	2270.92
1	TOP OF FIRE HYDRANT	STA. 125 +53 - 239' RT.	2268.40

LARRY L. SCHWARTZ
REGISTERED PROFESSIONAL ENGINEER 2099
NORTH DAKOTA

STANDARD DRAWINGS

D-900-1, D-708-1, D-622-1

F.W.S. 15 PSF

HS 25 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

BURLINGTON NORTHERN OVERHEAD RAY

BRIDGE LAYOUT

PROJECT: RSN-7-002(041)052
STATION 124 + 13.0

WILLIAMS COUNTY

19SEP96
DATE

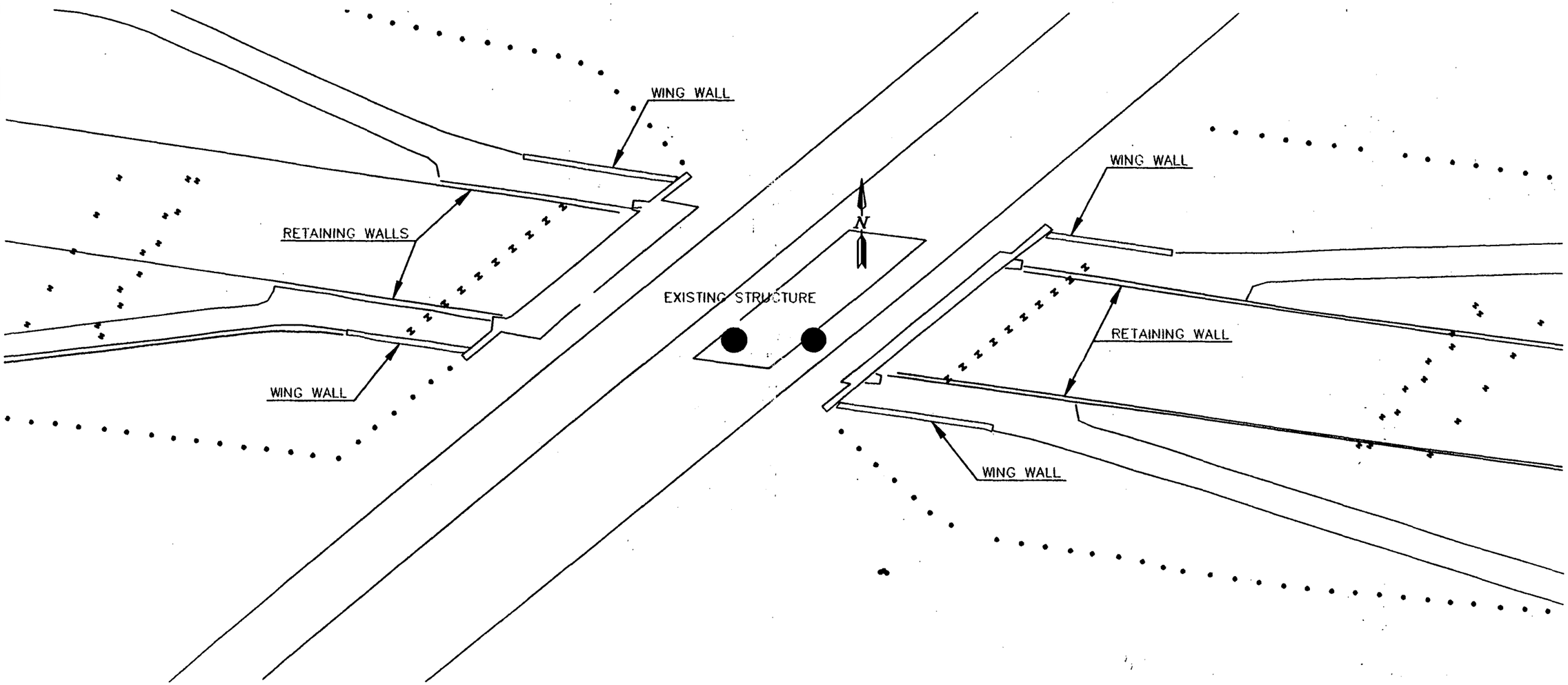
Larry Schwartz
FOR - BRIDGE ENGINEER

BRLO 96DLS50 JDS
c:\dgn\right\brlo.dgn Sep. 19, 1996 14:56:14

SITE 2

2-053.731R

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	129



BURLINGTON NORTHERN OVERHEAD
RAY

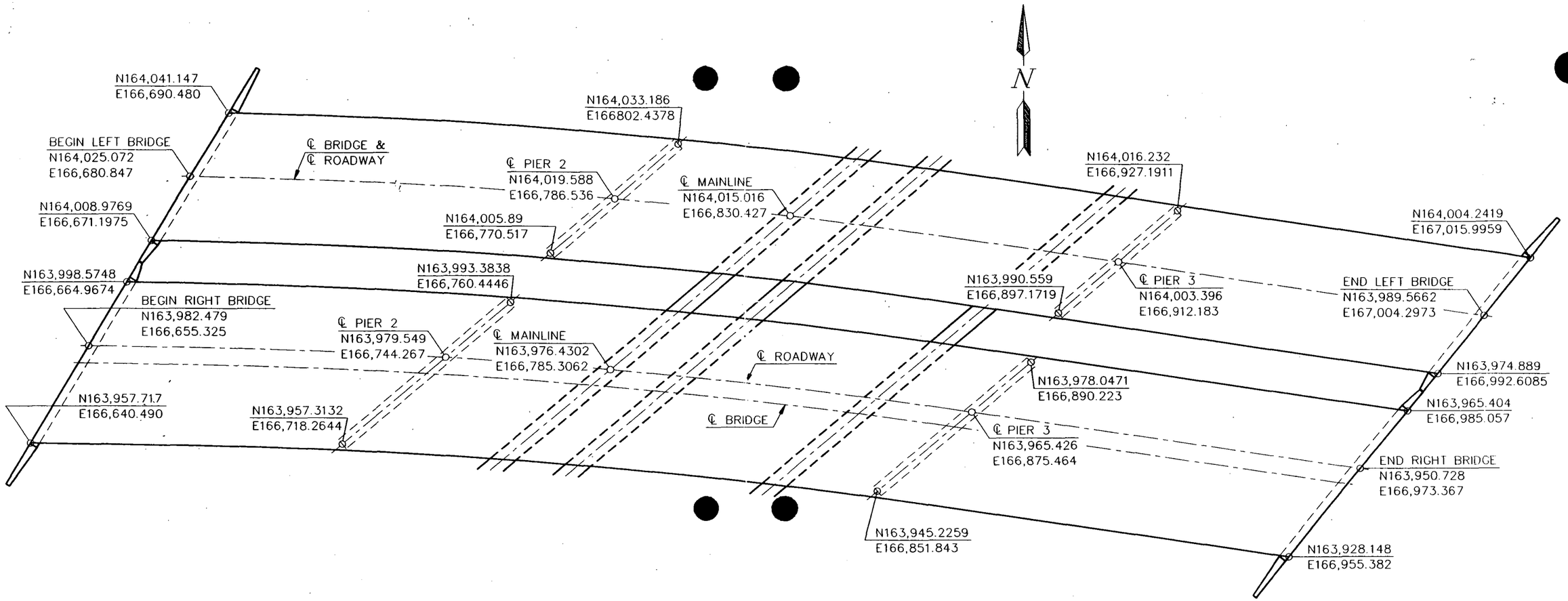
EXISTING STRUCTURE AND NEW PILE LOCATIONS

EXISTRT 96DLS78 (XPILERT) JDS

c:\dgn\right\existrt.dgn Sep. 19, 1996 10:09:49

2-053.731R-5

REGION	STATE	FEDERAL AID PROJECT NUMBER	NO.
8	ND	RSN-7-002(041)052	730



BURLINGTON NORTHERN OVERHEAD
RAY

GENERAL PROJECT LAYOUT

PROJLO 96DLS76 JDS

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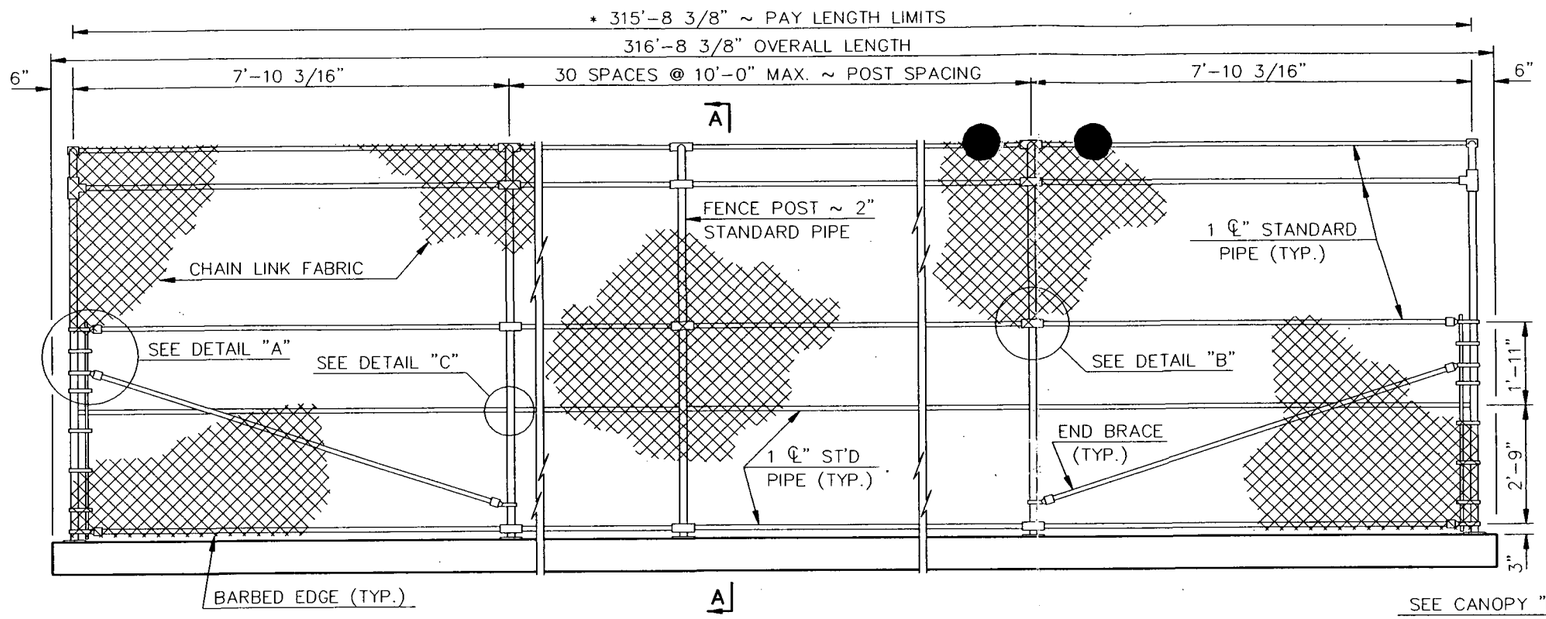
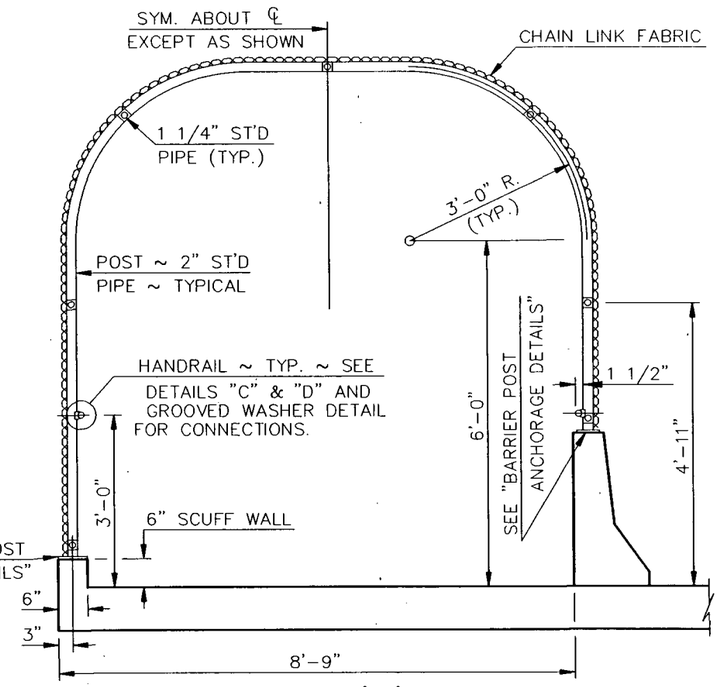
2-053.731R-6

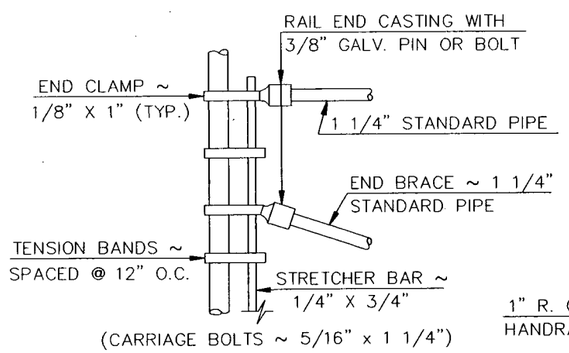
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	RSN-7-002(041)052	157



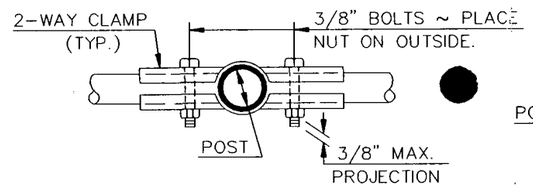
CANOPY ELEVATION



A-A



DETAIL "A"



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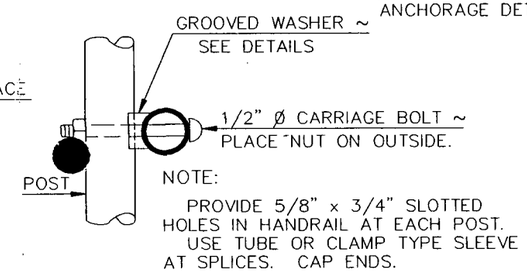
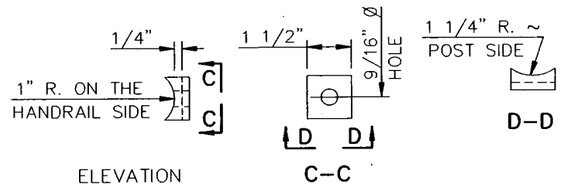
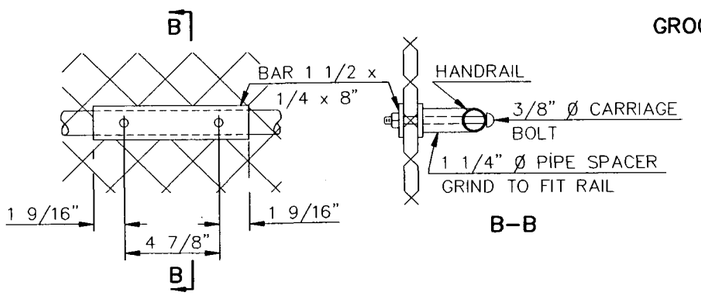


HANDRAIL CONNECTION AT POSTS

DETAIL "C"

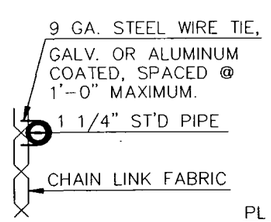


GROOVED WASHER DETAILS



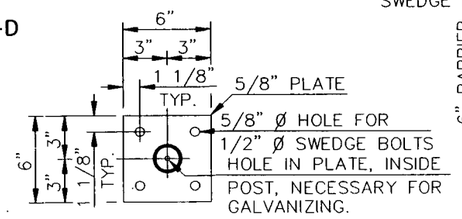
HANDRAIL CONNECTION DETAILS CENTERED BETWEEN POSTS

DETAIL "D"

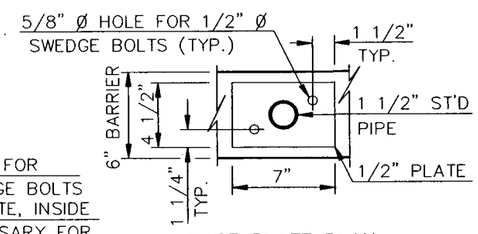


TYPICAL FABRIC ATTACHMENT

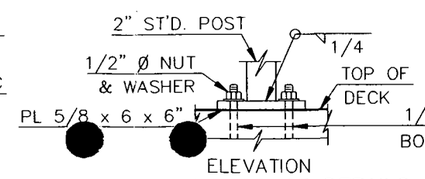
DETAIL "E"



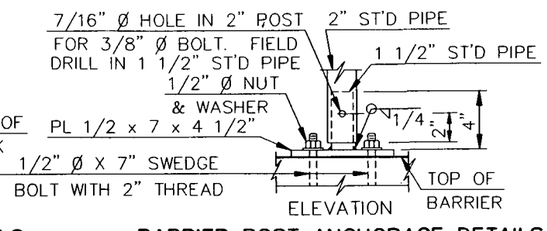
BASE PLATE PLAN



BASE PLATE PLAN



POST ANCHORAGE DETAILS



BARRIER POST ANCHORAGE DETAILS

NOTE:

FABRIC SHALL BE AASHTO M181, TYPE 1 AND SHALL BE 9 GAGE WIRE, 2 INCH MESH, 60 INCHES HIGH, AND THE BOTTOM SELVAGE BARBED.

POSTS AND FITTINGS SHALL BE AASHTO M181, CLASS 1.

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 SHWON ON THE "BASE PLATE PLAN" VIEW.

* THE PAY LENGTH IS MEASURED ALONG THE OUTSIDE FACE OF THE SCUFF WALL. POSTS LOCATED IN THE TANGENT SECTIONS SHALL BE PLACED PERPENDICULAR. POSTS LOCATED IN THE CURVE SECTION SHALL BE PLACED RADIALLY.

QUANTITIES

PEDESTRIAN CANOPY	316.7 LF

BURLINGTON NORTHERN OVERHEAD RAY

PEDESTRIAN CANOPY DETAILS

2-053.731R-33

CANOPY 96DLS75 JDS

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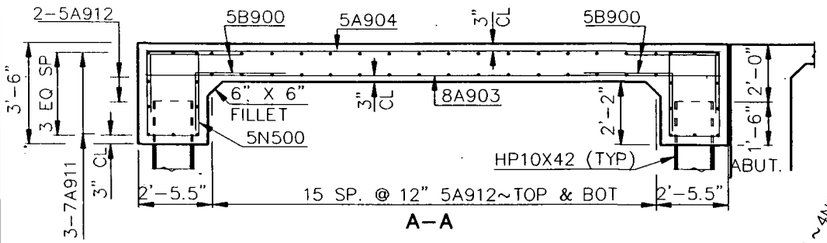
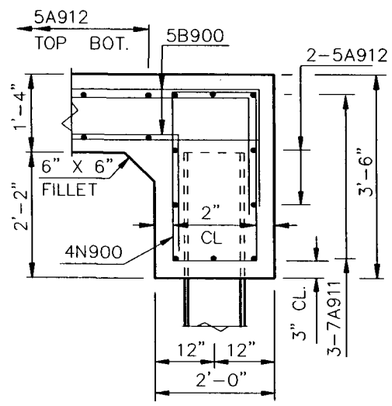
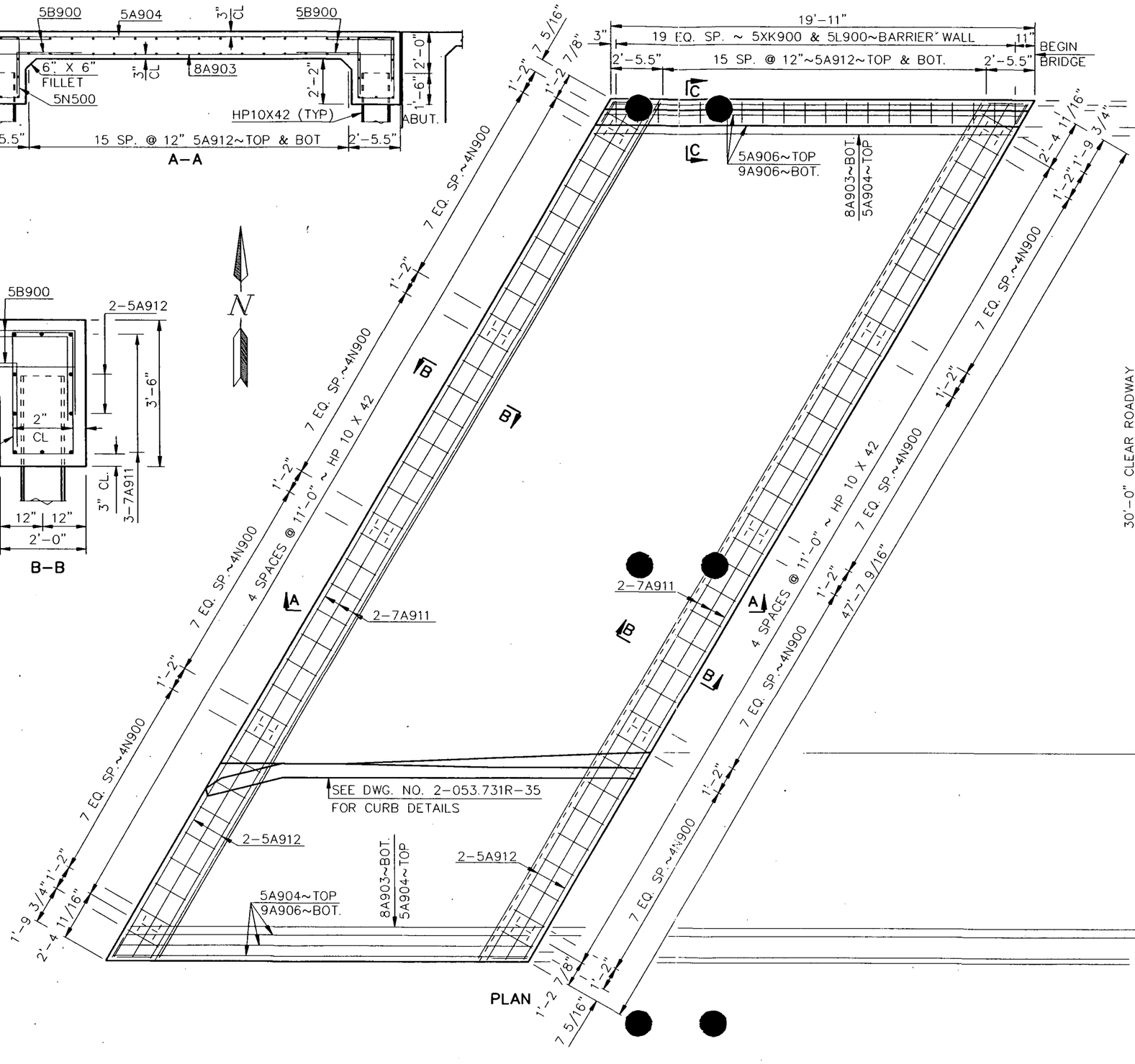
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	158



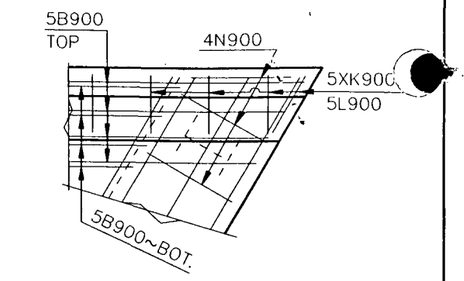
A-A

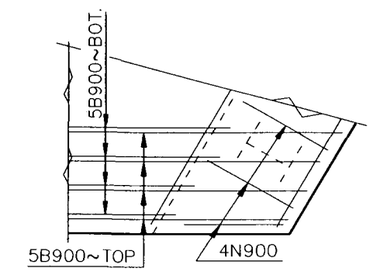


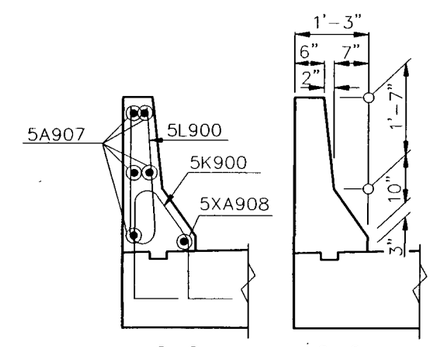
B-B



PLAN







C-C C-C

QUANTITIES
SEE DWG. NO. 2-053.731R-35

BURLINGTON NORTHERN OVERHEAD RAY

APPROACH SLAB
BEGIN BRIDGE

APPSLAB5 96LCS087 JDS

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2-053.731R-34

color needs fading

DESIGN DATA					
Traffic	Average Daily				Est.Max.Hr.
Current 1993	Pass: 1700	Trucks 225	Total 1925		192
Forecast 2013	Pass:	Trucks 275	Total 2100		210
Minimum Sight Dist. for:		Design Speed	40 MPH.		
Stopping	275 FT.	Bridges			
Safe Passing					
Passing for Marking					

JOB# 10

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	RSN-NH-7-002(041)052	1

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

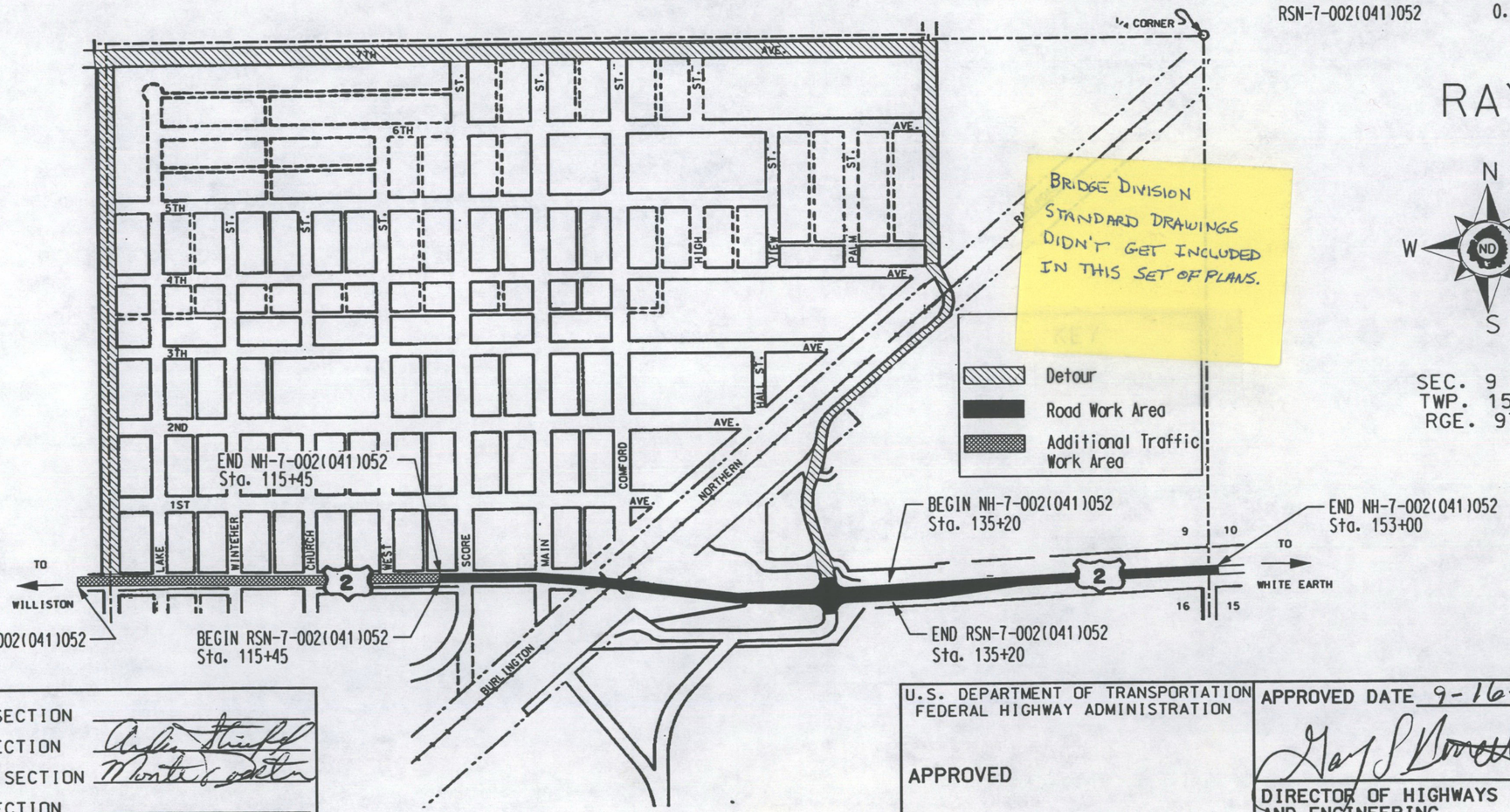
WILLIAMS COUNTY
FEDERAL AID PROJECT NO.
RSN-NH-7-002(041)052
Grading, Surfacing, Storm drains, Structural
Signing, Marking, Guardrail & Incidentals

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.

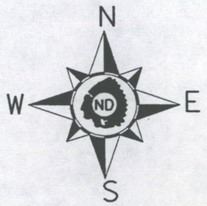
LENGTH OF PROJECT

Project	Miles-Gross	Miles-Net
NH-7-002(041)052	0.6794	0.6794
RSN-7-002(041)052	0.3741	0.3741



BRIDGE DIVISION STANDARD DRAWINGS DIDN'T GET INCLUDED IN THIS SET OF PLANS.

RAY



SEC. 9 & 16
TWP. 156 N.
RGE. 97 W.

PAVING SECTION
URBAN SECTION Arlin Stuffel
TRAFFIC SECTION Monte Worden
RURAL SECTION
RECOMMEND APPROVAL 9-16, 1996
DESIGN ENGINEER David K. Dolan

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED DATE 9-16-96

Gary L. Berreth

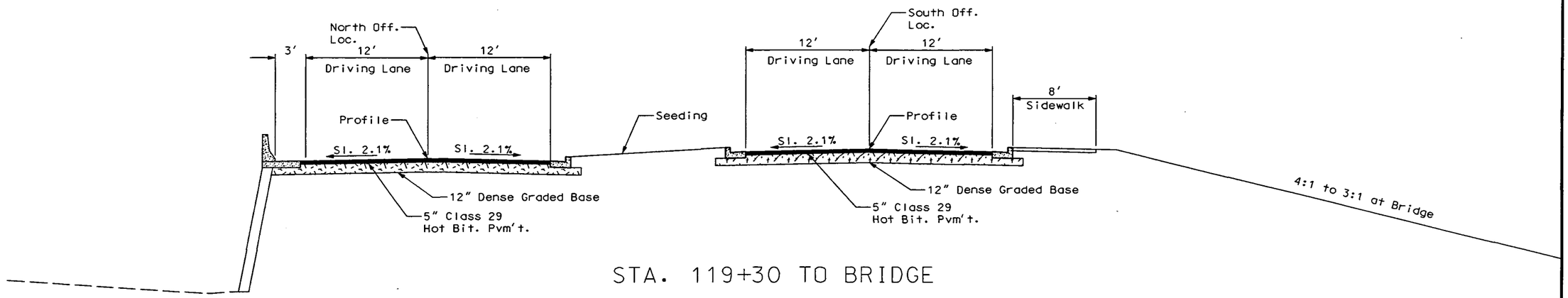
DIRECTOR OF HIGHWAYS AND ENGINEERING

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION

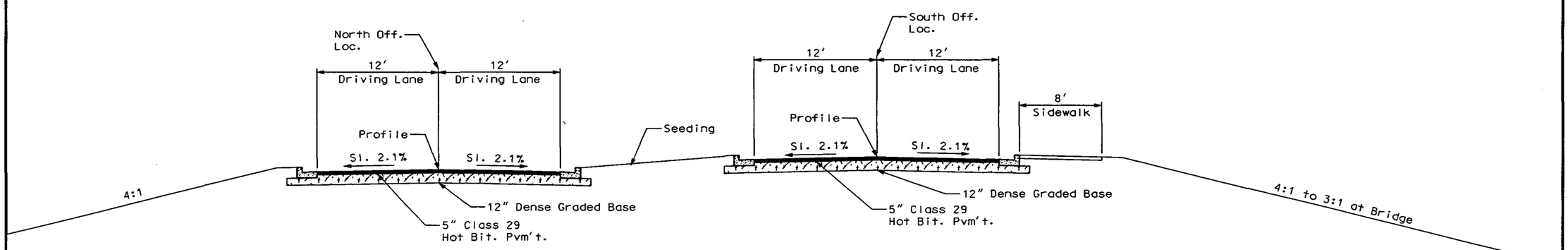
GARY L. BERRETH
REGISTERED
PROFESSIONAL
P.E. 1416
ENGINEER
NORTH DAKOTA

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	RSN-7-002(041)052	21

TYPICAL SECTIONS



STA. 119+30 TO BRIDGE



BRIDGE TO STA. 127+20

TYPICAL SECTIONS

US 2 - RAY, ND

STA. 119+30 TO 127+20

TYPICAL2.DGN 1=10

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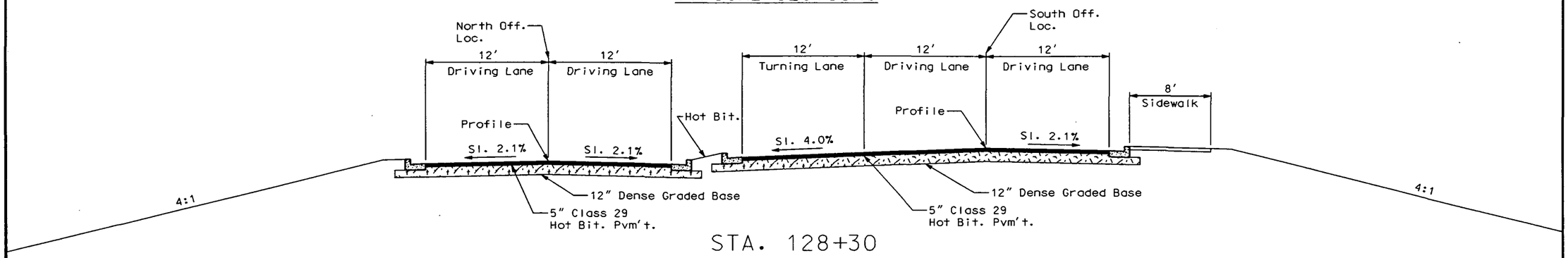
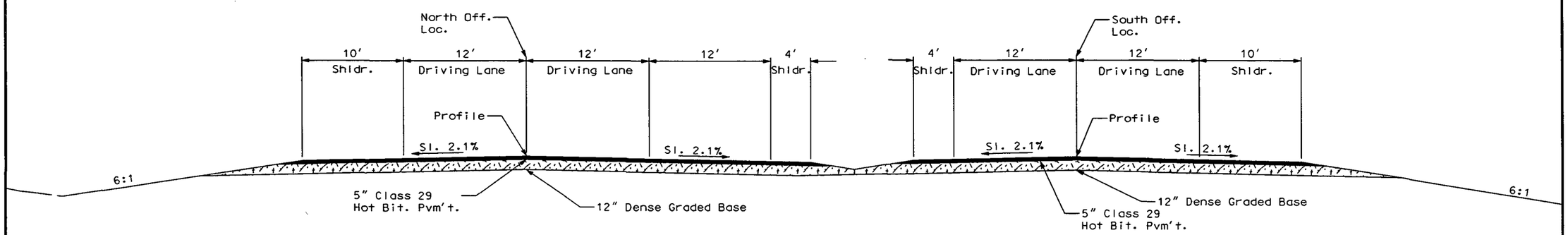
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	RSN-7-002(041)052	22

NH-7-002(041)052

TYPICAL SECTIONS



STA. 128+30



STA. 135+00

TYPICAL SECTIONS

US 2 - RAY, ND

STA. 128+30 TO 135+00

TYPICAL2.DGN 1=10

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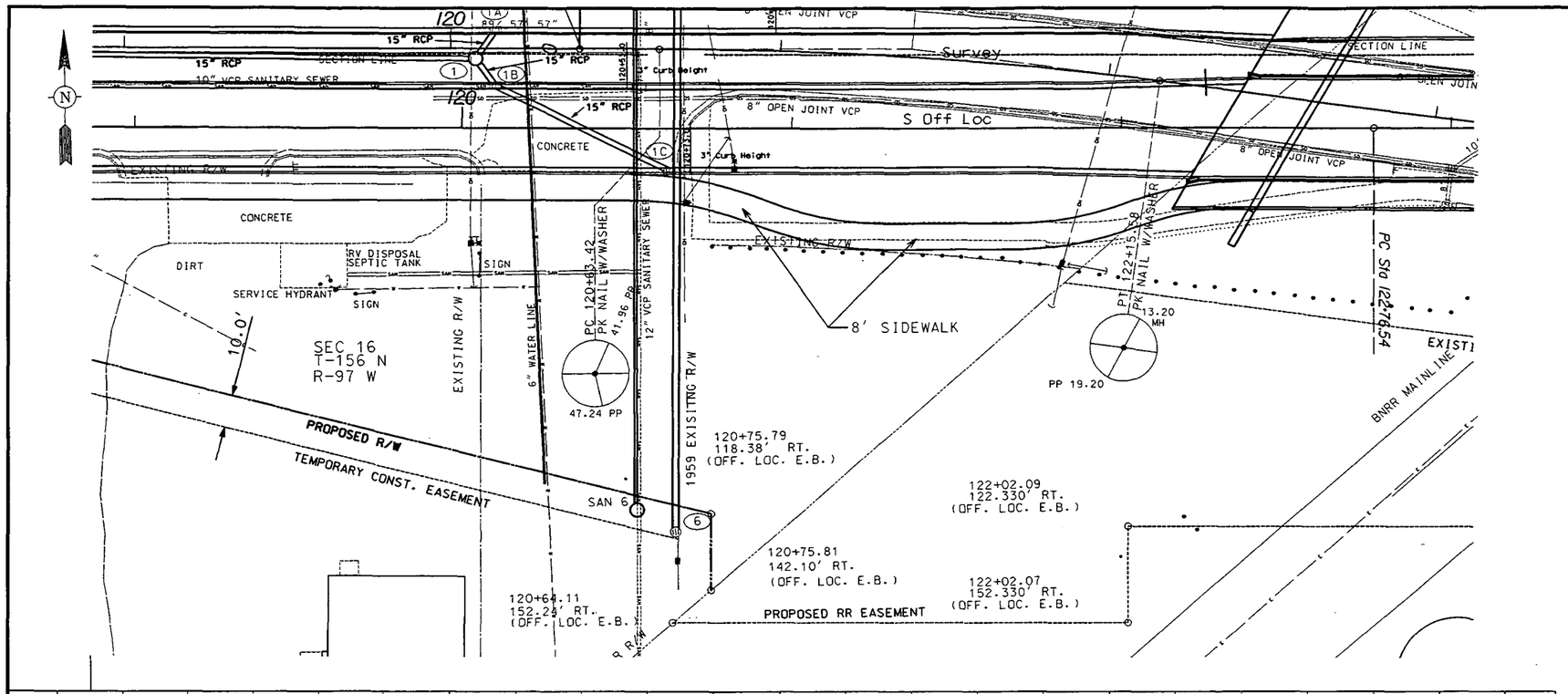
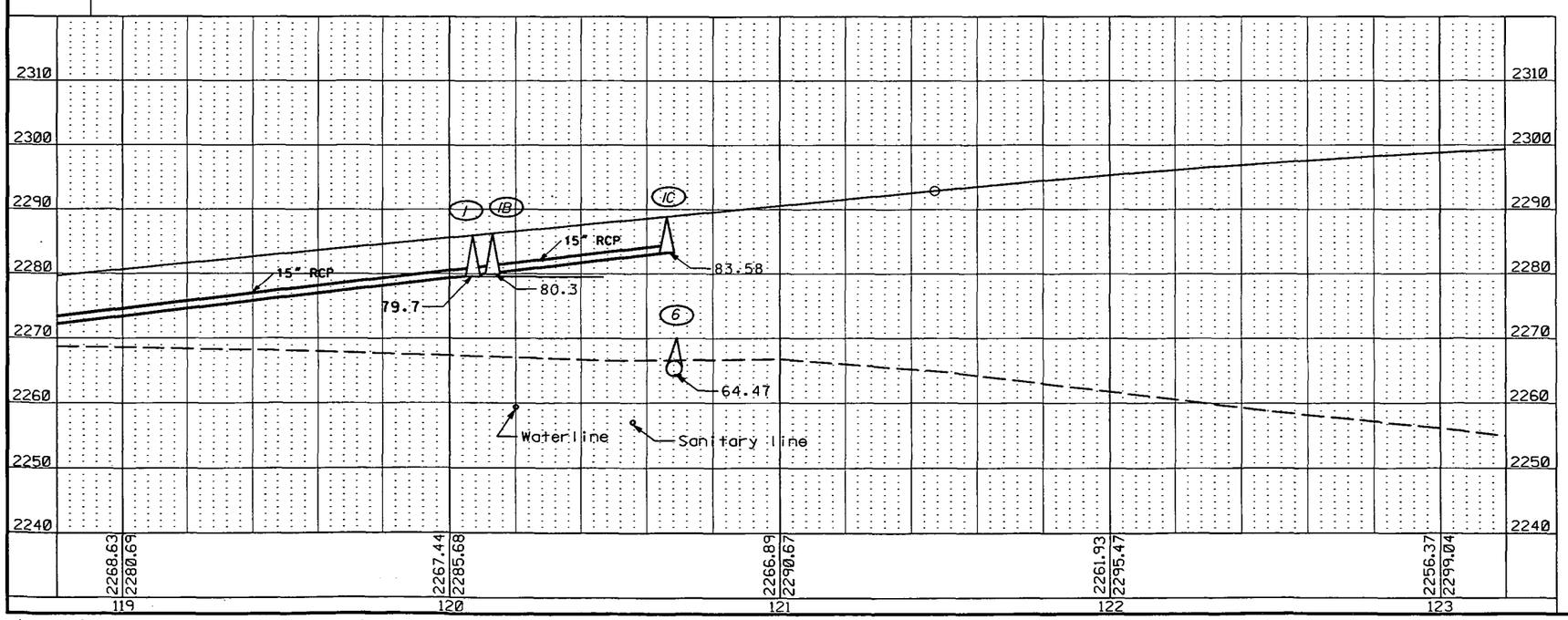
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	RSN-7-002(041)052	43





REMOVE & SALVAGE CONCRETE

Sta 119+00 to 120+06 Rt	270 SY
Sta 120+70 to 121+00 Rt	43 SY
Sta 119+00 to 121+00-Rt	532 SY

REMOVE & SALVAGE BITUMINOUS SURFACING

Sta 119+00 to 120+06-Rt	190 SY
Sta 119+00 to 119+15-34'Rt	36 SY

REMOVAL OF CURB & GUTTER

Sta 119+50 to 120+06-Rt	65 LF

REMOVAL OF MANHOLES

Sta 120+57-11'Rt	1 EA

PIPE CONC REINF 15IN CL III-STORM DRAIN

1B to 1C	56 LF
1B to 1	8 LF

PIPE CONC REINF 18IN CL III-STORM DRAIN

6 to 5	188 LF

INLET-TYPE 1

1B	1 EA
1C	1 EA

INLET CATCH BASIN 6IN BEEHIVE

6	1 EA

CURB & GUTTER MOUNTABLE TYPE 1

121+88 to 122+28.71 LT	41 LF

CURB & GUTTER TYPE 1

119+00 to 121+88 LT	288 LF
119+00 to BRIDGE RT	322 LF

SIDEWALK CONCRETE

119+00 to BRIDGE	289 LF

BENCH MARKS NGVD-29

NO.	DESCRIPTION	LOCATION	ELEV.
-	-	-	-
-	-	-	-

PROJECT LOCATION
STA. 119+00 TO 123+00

FILE: PP04.DGN

SCALE IN FEET 0 20 40 60

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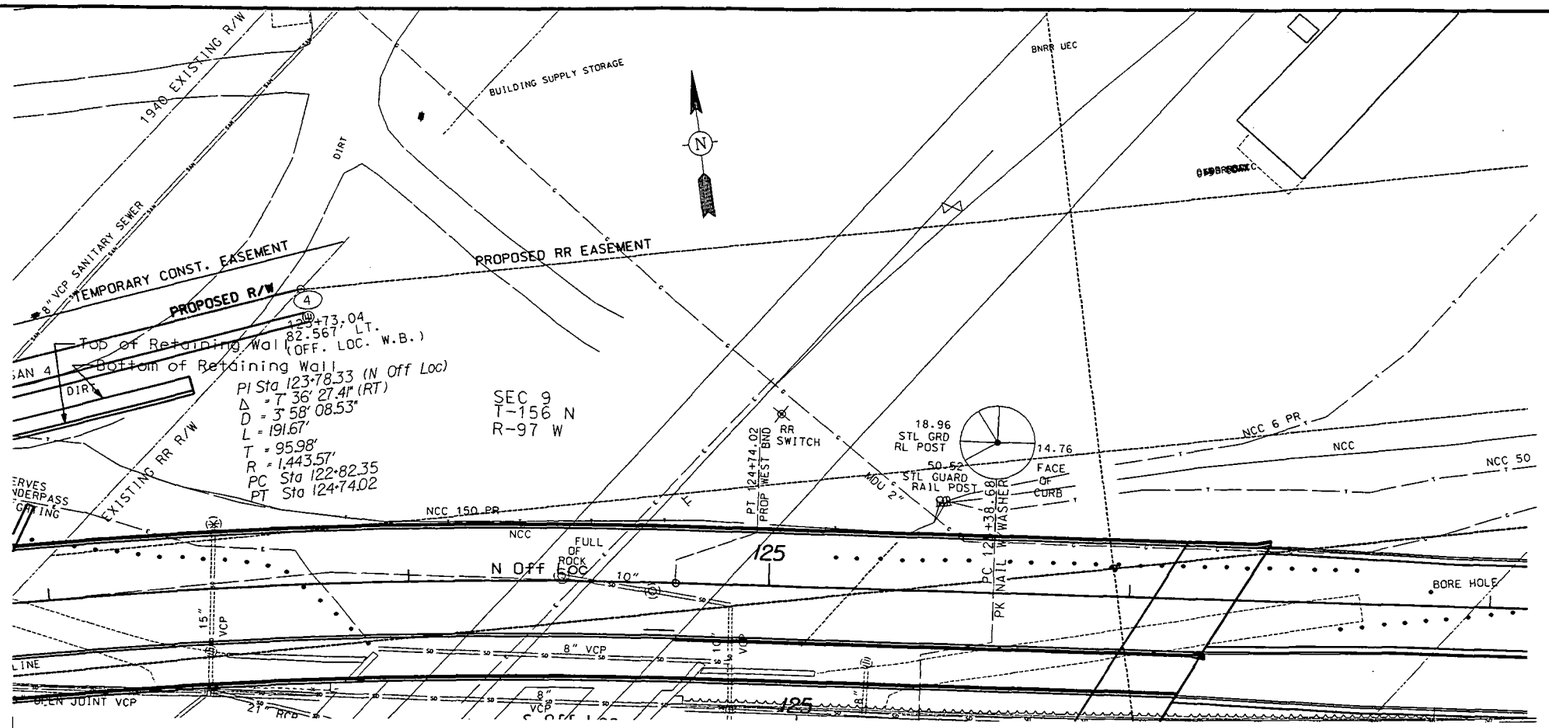
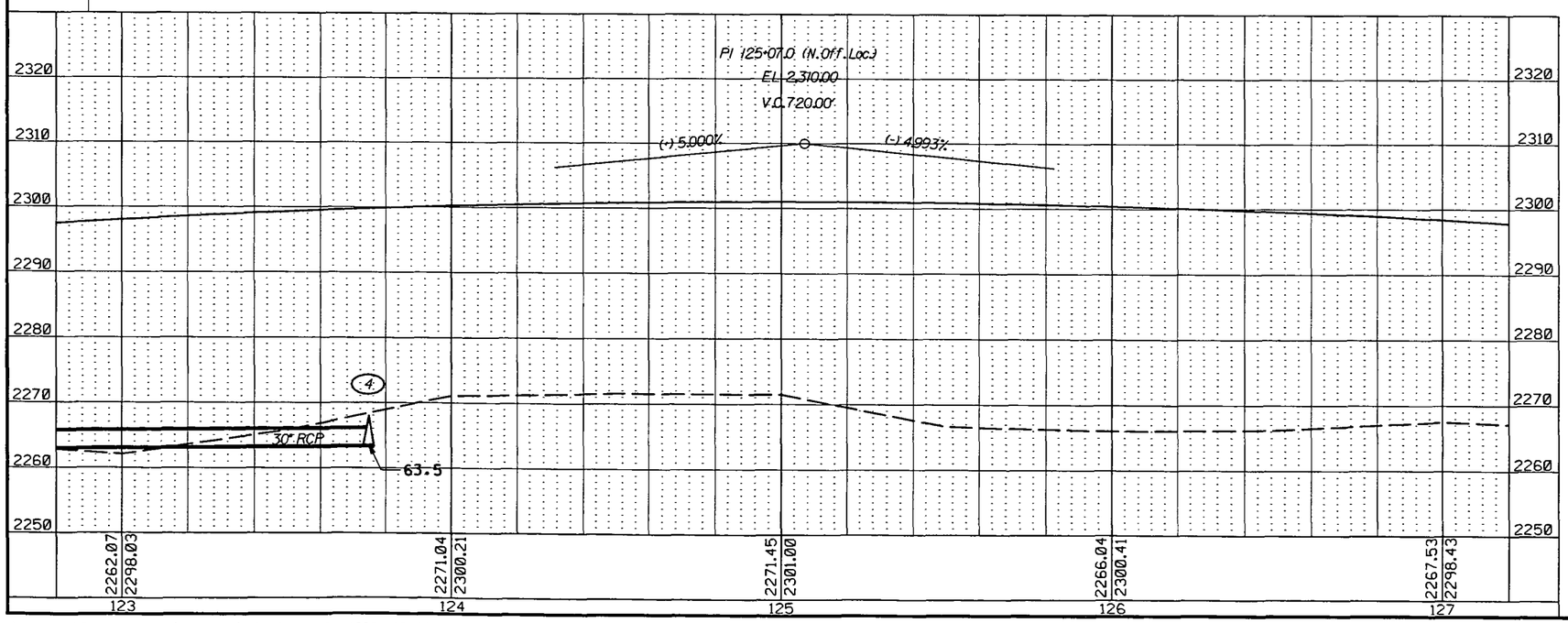


PIPE CONC REINF 30IN CL III-STORM DRAIN
4 to 4A 150 LF

SPECIAL CATCHBASIN 6IN BEEHIVE 48IN
4 1 EA

CURB & GUTTER MOUNTABLE TYPE 1
126+33.79 to 126+71 LT 37.21 LF

CURB & GUTTER TYPE 1
Bridge to 127+00 LT 71 LF
126+71 to 127+00 RT 29 LF



BENCH MARKS			NGVD-29
NO.	DESCRIPTION	LOCATION	ELEV.
B7H	RIVET ON CONC.	123+83-.66'RT.	2270.92
USC&G E 466	BRASS DISC	124+12-17'RT.	2270.46
I	TOP OF FH	125+53-239'RT.	2268.40
-	-	-	-

PROJECT LOCATION
STA. 123+00 TO 127+00

FILE: PP05.DGN

SCALE IN FEET 0 20 40 60

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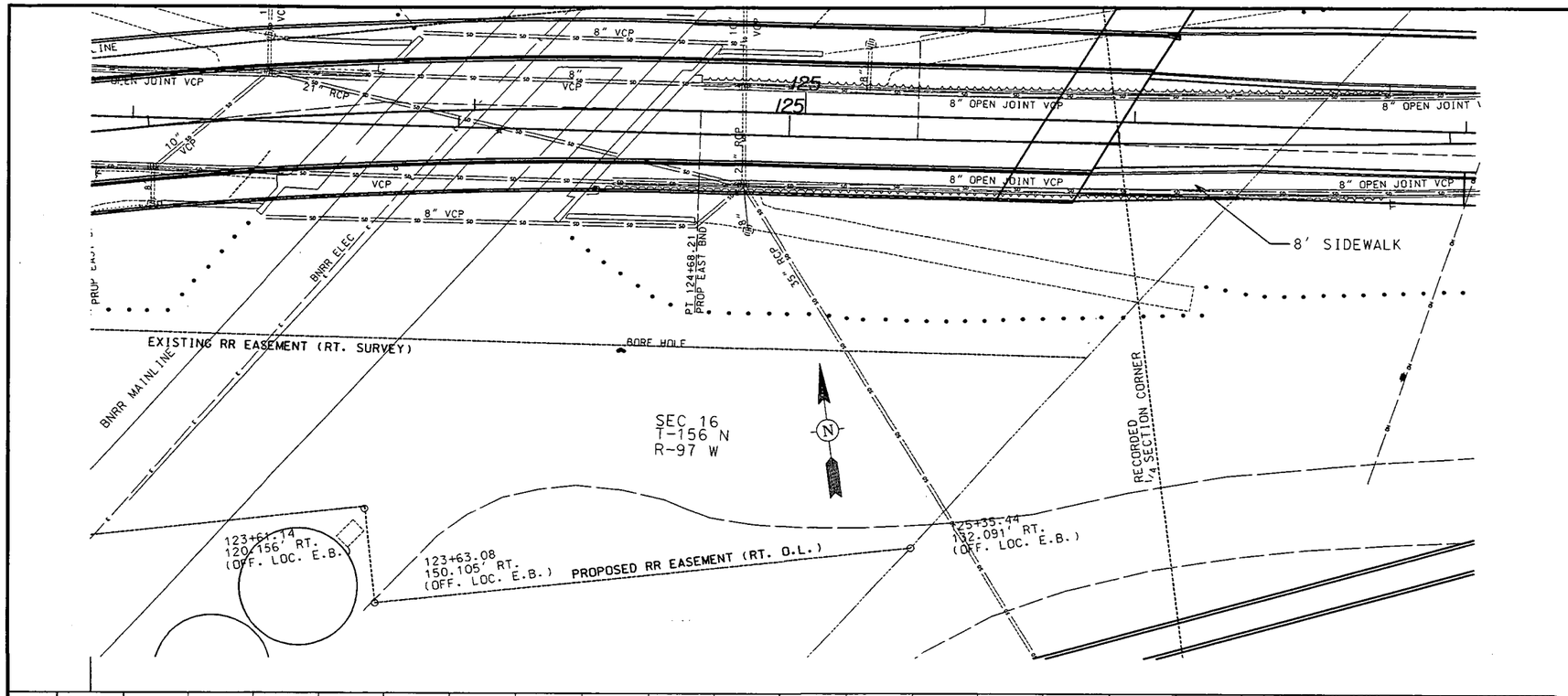
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	RSN-7-002(041)052	45

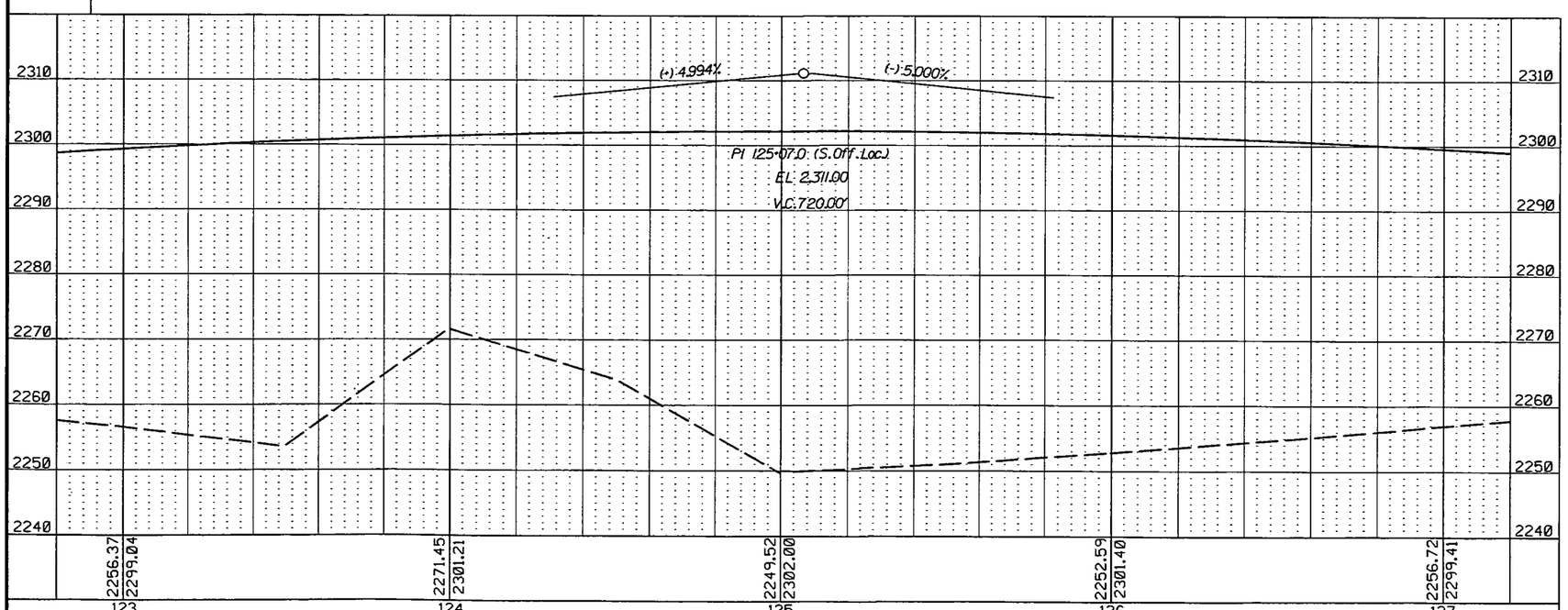


CURB & GUTTER TYPE 1

Bridge to 127+00 LT	95 LF
Bridge to 127+00 RT	95 LF

SIDEWALK CONCRETE

Bridge to 127+00 RT	102 SY



BENCH MARKS			NGVD-29
NO.	DESCRIPTION	LOCATION	ELEV.
-	-	-	-
-	-	-	-

PROJECT LOCATION
STA. 123+00 TO 127+00

FILE: PP06.DGN

SCALE IN FEET 0 20 40 60

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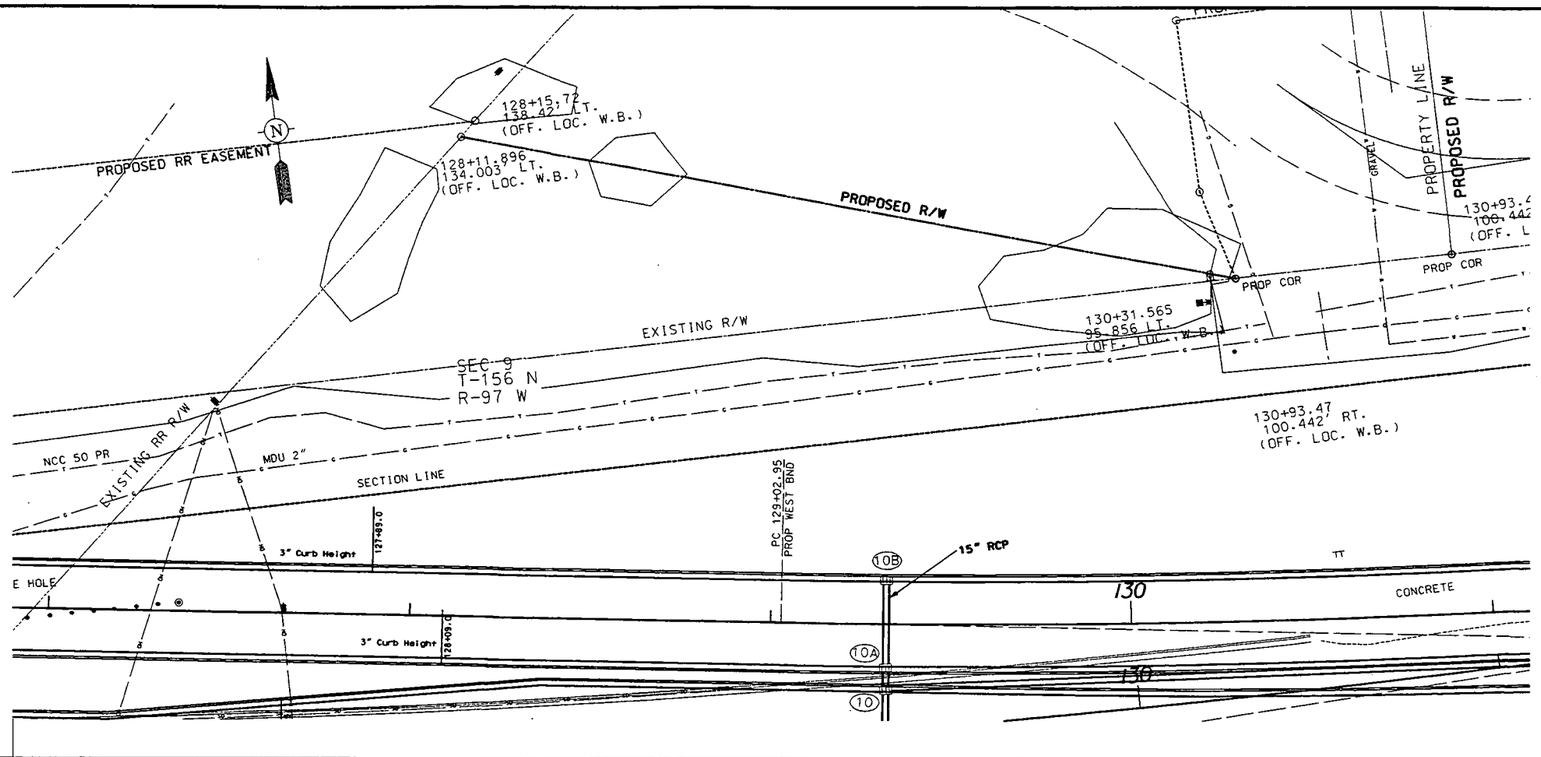
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	ND	RSN-7-002(041)052	46



PIPE CONC REINF 15IN CL III-STORM DRAIN

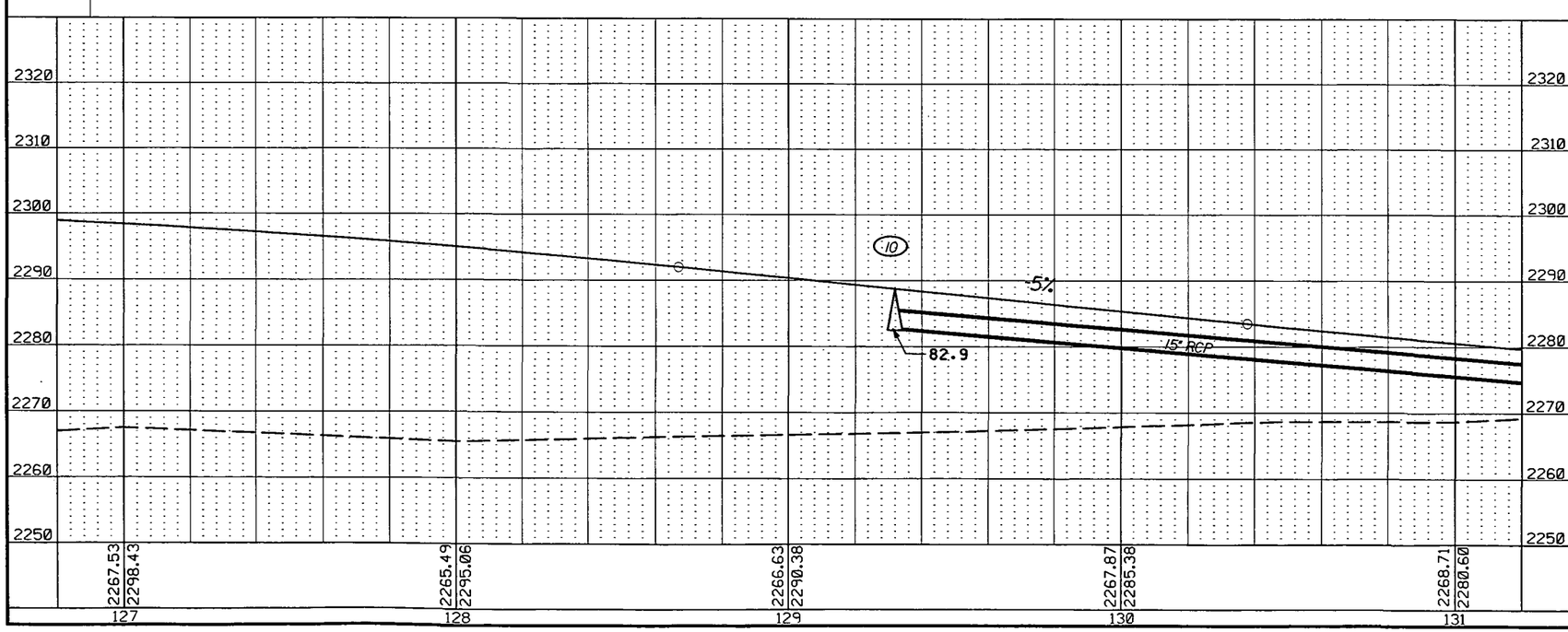
10A to 10	6 LF
10B to 10A	22 LF

INLET-TYPE 1

10A	1 EA
10B	1 EA

CURB & GUTTER TYPE 1

127+00 to 131+00	LT	400 LF
127+00 to 131+00	RT	400 LF



BENCH MARKS			NGVD-29
NO.	DESCRIPTION	LOCATION	ELEV.
BM 1	U-IRON BY PP	127+50-188'RT.	2265.03
-	-	-	-

PROJECT LOCATION
STA. 127+00 TO 131+00

FILE: PP07.DGN

0 20 40 60
SCALE IN FEET

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FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	RSN-NH-7-002(041)052	87

Total Station Layout Sheet

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Curve Data
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"306 308 307" @ curv3
"309 311 310" @ curv4
"312 314 313" @ curv5
"315 316 317" @ curv6
"318 320 319" @ curv20
"321 323 322" @ curv21
"324 326 325" @ curv30
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"330 332 331" @ curv32
"333 335 334" @ curv33
"336 338 337" @ curv37
"339 341 340" @ curv38

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"312 314 313"
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8
9

North Office Location
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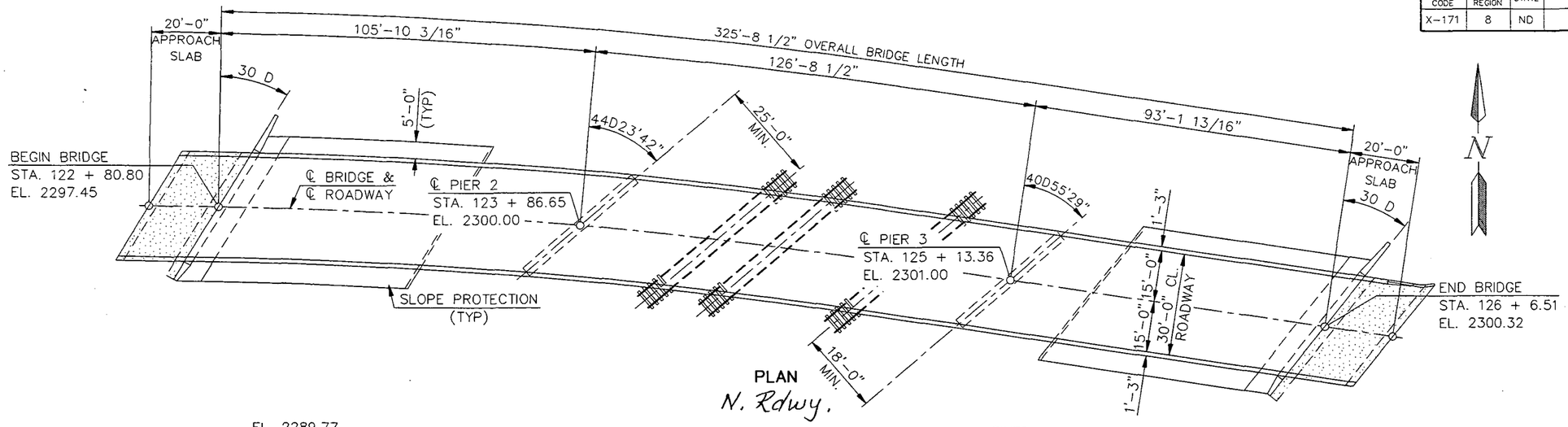
"318 320 319"
"321 323 322"
24
25

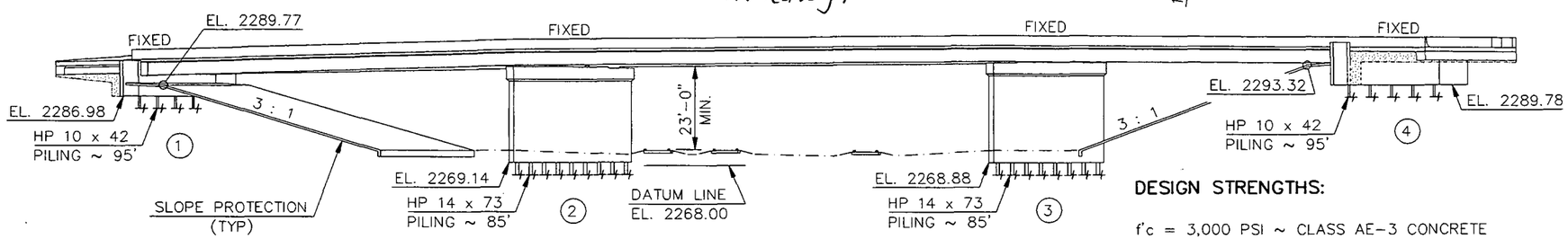
South Office Location
30 10090.73 @ s off loc
"324 326 325"
"327 329 328"
"336 338 337"
"339 341 340"

BRIDGE CODE	FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
X-171	8	ND	RSN-7-002(041)052	88



PLAN

N. Rdwy.



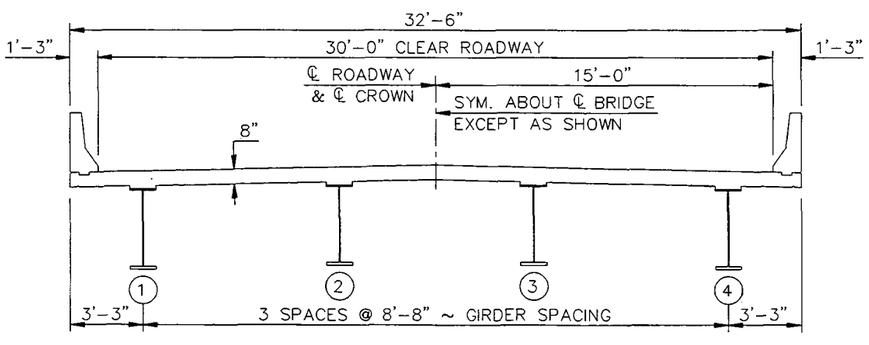
ELEVATION

DESIGN STRENGTHS:

f'c = 3,000 PSI ~ CLASS AE-3 CONCRETE
f'c = 4,000 PSI ~ CLASS AAE-3 CONCRETE
fy = 36,000 PSI ~ AASHTO M-270 GR. 36 STRUCTURAL STEEL
fy = 50,000 PSI ~ AASHTO M-270 GR. 50 STRUCTURAL STEEL
fy = 60,000 PSI ~ REINFORCING STEEL

LOAD FACTOR DESIGN

LARRY L. SCHWARTZ
REGISTERED PROFESSIONAL ENGINEER
2099
NORTH DAKOTA



TYPICAL SLAB SECTION

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
107	0100	RAILWAY PROTECTION INSURANCE	L. SUM	.5
202	0105	REMOVAL OF STRUCTURE	L. SUM	.5
210	0102	CLASS 1 EXCAVATION - SITE 1	L. SUM	1
210	0198	SELECT BACKFILL	TON	389.8
210	0202	FOUNDATION PREPARATION - SITE 1	L. SUM	1
550	0215	CONCRETE BRIDGE APPROACH SLAB	SQ. YD.	144.0
602	0130	CLASS AAE-3 CONCRETE	CU. YD.	340.2
602	1130	CLASS AE-3 CONCRETE	CU. YD.	218.7
602	1250	PENETRATING WATER REPELLENT TR.	SQ. YD.	1085.7
612	0115	REINFORCING STEEL GRADE 60	LBS.	25,029
612	0116	REINFORCING STEEL GRADE 60 EPOXY	LBS.	81,927
616	5888	STRUCTURAL STEEL SITE 1	L. SUM	1
		(APPROXIMATELY 311,691 LBS.)		
622	0012	STEEL H-PILE TIPS 10x42	EA.	26
622	0016	STEEL H-PILE TIPS 14 x 73	EA.	17
622	0020	STEEL PILING HP 10x42	L. FT.	2470
622	0060	STEEL PILING HP 14x73	L. FT.	1445
708	1100	SLOPE PROTECTION, CONC.	SQ. YD.	738
930	3000	BRIDGE BENCH MARKS	SET	.5
930	7013	ROADWAY CANOPY - SITE 1	L. SUM	1
930	8640	NOSING CONCRETE	L. FT.	75.0
930	8650	PREFORMED ELASTOMERIC NEOPRENE EXP. JT.	L. FT.	71.2

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEVATION
B7H	RIVET ON CONCRETE	STA. 123 +83 - .66' RT.	2270.92
I	TOP OF FIRE HYDRANT	STA. 125 +53 - 239' RT.	2268.40

STANDARD DRAWINGS

D-900-1, D-708-1, D-622-1

F.W.S. 15 PSF

HS 25 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

BURLINGTON NORTHERN OVERHEAD RAY

BRIDGE LAYOUT

PROJECT: RSN-7-002(041)052
STATION 124 + 43.6

WILLIAMS COUNTY

19 SEP 96 — DATE

Larry Schwartz — For — BRIDGE ENGINEER

BRLO 96DLS73 JDS

c:\dgn\left\brlo.dgn Sep. 19, 1996 11:48:42

SITE 1

2-053.731L

BRIDGE NOTES

100 SCOPE OF WORK: This project consists of building a new 3-span steel girder bridge 326' long with clear roadway width of 30'. Part of the new structure is on a tangent alignment and part is on a curve.

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.

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

202 REMOVAL OF STRUCTURE: The existing structure is an underpass 107' long with a clear roadway of 30 feet. The substructures are made of concrete, and the superstructure is made of steel. The contractor may have to remove portions of the existing wingwall footings and existing retaining walls to allow for pile driving. The contractor shall remove a minimum amount of material from the wingwall footings. The contractor shall place compacted fill in the existing underpass up to an elevation 6' below the bottom of the steel beams. The contractor shall entirely fill the pedestrian tunnels and the voids under the sidewalks of the existing structure with either earth or flowable fill. Burlington Northern (BN) Railroad will remove the superstructure and portions of the substructure. BN Railroad will place the removed material on the railroad right of way at a location agreed to by BN Railroad and the engineer. All materials removed by the contractor and BN Raiload shall become the property of the contractor and shall be disposed of properly off the right of way. All labor and materials required to perform the work described above shall be included in the bid item "Removal of Structure."

203 EMBANKMENT: The embankment at the abutments shall be in place for a minimum of 30 days before piling are driven.

The contractor will be required to bore through the fill at the abutments before driving piling. All pilot holes not completely filled by the piles shall be backfilled with sand or fine gravel before the substructure is placed.

In lieu of the above waiting period, the contractor may begin pile driving operations as soon as the embankment is in place, but all pilot holes shall be extended to a depth of 15 feet into the original ground.

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."

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. A surface tolerance of 3/16" in 10 feet is also required.

602 Exterior beams shall be braced to prevent rotation. The strength and spacing of the bracing shall be dependent on the forces induced by the weight of the concrete, forms, equipment, and workers.

602 END BEAMS: The end beam concrete shall be placed before the deck concrete. The concrete shall cure for at least 72 hours before deck placement.

602 SURFACE FINISH "D": Surface Finish "D" shall be required for the inside, outside, and top surfaces of the barrier, and on the outside edge 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 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 surface of the concrete deck.

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

BRIDGE NOTES

all faces of the barriers at each pier and at equal spaces between substructures at approximately 10-foot spacing.

602 DECK TINING: Tining shall begin 6 inches from the beginning and the end of the deck and 6 inches from each deck joint.

612 REINFORCING STEEL: Dimensions for bent bars are given out to out and to tangent intersections unless otherwise noted.

612 The bar fabricator shall add a prefix to all bar designations to differentiate between the different structures on this project.

612 All reinforcing steel shall be Grade 60.

616 STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 50T2, except the diaphragms and swedge bolts may be grade 36T2. The requirement for Charpy V-Notch is waived for the bearings, diaphragms, and diaphragm connection material.

616 Shear connectors on splice plates shall be moved to clear bolt holes.

616 Field connections shall be made with 7/8 inch diameter, AASHTO M 164 high-strength bolts unless otherwise shown.

616 Temporary or permanent attachments or devices that are not shown on the plans as part of the structure shall not be welded to the structural steel members during the fabrication and construction process.

616 The cost of swedge bolts shall be included in the total cost of structural steel.

622 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 55,154 foot-pound-tons, as computed by the formula W(E-13,444)+.821E, 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 2700 pounds.

622 PILING: Toothed cast steel pile tips (ASTM A148 steel) shall be required on all pile driven.

630 PAINT AND PAINTING: The structural steel shall be painted according to the specifications. The finish coats shall be blue, color number 25240, and shall meet Federal Standard No. 595B colors.

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

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. Structural Steel.
2. Preformed Elastomeric Neoprene Expansion Joint.

DESIGN STRENGTH:
F'C 3,000 PSI Cl. AE-3 Concrete
F'C 4,000 PSI Cl. AAE-3 Concrete
FY 36,000 PSI Structural Steel M270 Grade 36T2
FY 50,000 PSI Structural Steel M270 Grade 50T2
FY 60,000 PSI Grade 60 Reinforcing Steel Load Factor Design

930 PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT: The neoprene joint shall have a profile that allows thermal cycles and dynamic loading up to a total range of movement of two inches while providing watertight protection. The neoprene profile shall be bonded to the concrete surfaces with an epoxy adhesive that is chemically resistant to oxidation and corrosion, is impervious to weather extremes and is compatible with the nosing concrete. During installation, the neoprene profile shall be pressurized with compressed air to maximize the adhesion against the gap walls. After curing, the air pressure shall be permanently released. This shall be a Jeene Structural Sealing Joint System (2 W) or an approved equal.

930 NOSING CONCRETE: The nosing concrete material shall be an elastomeric concrete or a polymeric concrete that will provide a durable edge that can withstand live-load traffic without chipping or spalling. The nosing concrete material shall be Ceva Crete 95, manufactured by E-Poxy Industries Inc.; Elastomeric Concrete, as manufactured by the D.S. Brown Company; Silspec 900, as manufactured by Construction Materials Inc.; Elastomeric Concrete as manufactured by Harris Speciality Chemicals Inc., or an approved equal. The nosing shall be mixed and installed according to the manufacturer's recommendations. The cost for the equipment, materials, and labor to install the nosing concrete on each side of the joint shall be included in the lineal foot bid item "Nosing Concrete."

930 ROADWAY CANOPY: The contractor shall construct a canopy above the railroad under the structure to protect traffic from falling material. The canopy is an added safeguard and does not relieve the contractor of any responsibility

BRIDGE NOTES

for the safety of the public.

The canopy may be supported from the ground or suspended from the girders. The erection of the canopy and the girder shall be completed in a minimum amount of time and with the least inconvenience to the public and the railroad.

The canopy shall be of a design and material selected by the contractor and approved by the engineer. The minimum vertical clearance shall be 22′ above the railroad tracks. The canopy shall project a minimum distance of 5′-0" beyond the outside edge of curb of the proposed structure.

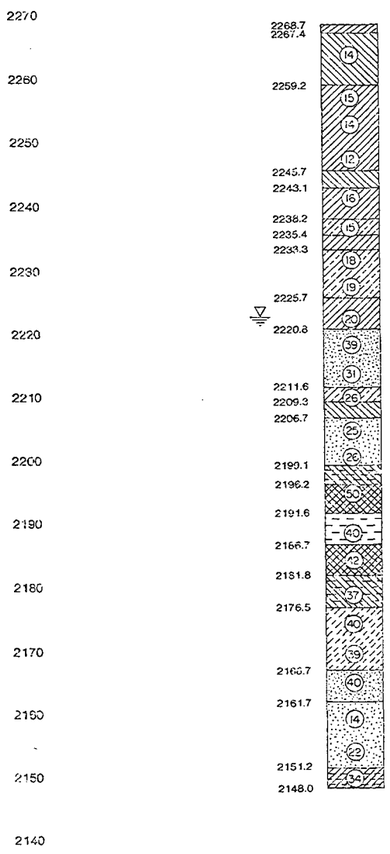
The canopy shall project a minimum distance of 5′-0" beyond the edge of the driving lanes beneath the structure and 5′-0" beyond the edge of the railroad tracks.

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

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

UTILITY ACCOMMODATIONS: Northwest Communications Cooperative plans to place communication cables on the left bridge. To accommodate this, the contractor shall install 2-3" diameter conduits in the north jersey barrier of the left bridge. Northwest Communications will furnish and deliver the conduit to the project site. The contractor shall contact Myron Ranum or Gary Cox (701-568-3331) a minimum of 72 hours before the conduit is needed. The labor to install these conduit shall be incidental to the bid item "Class AAE-3 Concrete."

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N. D.	RSN-7-002(041)052	92



BRN. CLAY, TOPSOIL, STIFF, IMPERVIOUS, PLIABLE

A-6 BRN. CLAY LOAM, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE
*C-87.4 kPa *C-1825 psf

A-6 BRN. CLAY, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE, IRON OXIDE PRESENT THROUGHOUT HORIZON
*C-91.0 kPa *C-1900 psf

A-6 BRN. CLAY LOAM, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE

A-6 BRN. CLAY, VERY STIFF, IMPERVIOUS, PLIABLE, AMORPHOUS *C-102.2 kPa *C-2135 psf

A-7-6 BRN. CLAY, AMORPHOUS, STIFF, PLIABLE, IMPERVIOUS, COAL LENSES THROUGHOUT HORIZON *C-94.6 kPa *C-1975 psf

A-6 BRN. CLAY, STIFF, PLIABLE, IMPERVIOUS

A-7-6 BRN. CLAY, AMORPHOUS, VERY STIFF, PLIABLE, IMPERVIOUS
*C-119.7 kPa *C-2500 psf

A-6 BRN. CLAY, AMORPHOUS, VERY STIFF, PLIABLE, IMPERVIOUS *C-129.3 kPa *C-2700 psf

A-2-4 LIGHT BRN. SAND, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC,
IRON OXIDE PRESENT THROUGHOUT HORIZON *Ø-37°

A-7-5 GRAY, CLAY, VERY STIFF, IMPERVIOUS, PLIABLE *C-143.6 kPa *C-3000 psf

A-6 GRAY, CLAY LOAM, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *C-143.6 kPa *C-3000 psf

A-3 GRAY, SAND, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, STRATIFIED WITH LIGNITE SEAMS
*Ø-35°

A-6 GRAY, SILTY CLAY LOAM, LAMINATED & LENTICULAR, VERY STIFF, IMPERVIOUS WITH PERMEABLE LENSES, PLIABLE *C-143.6 kPa *C-3000 psf

A-4 LIGHT BRN. LOAM, STRATIFIED, DENSE, PERMEABLE, NON-PLASTIC

A-4 GRAY, SILTY LOAM, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC

A-4 GRAY, LOAM, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC

A-4 GRAY, SILTY CLAY LOAM, STRUCTURELESS, DENSE, PERMEABLE, NON-PLASTIC
*C-215.5 kPa *C-4500 psf

A-2-4 GRAY, SANDY LOAM, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
*Ø-38°

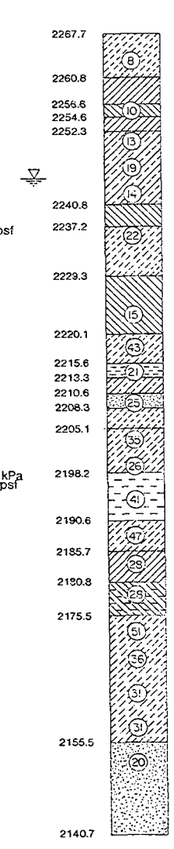
A-2-4 GRAY, SAND, STRUCTURELESS, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
*Ø-38°

A-3 GRAY, SAND, STRUCTURELESS, MEDIUM DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
*Ø-32°

A-7-6 GRAY, SILTY CLAY, LENTICULAR, HARD, IMPERVIOUS WITH PERMEABLE LENSES, WATER-BEARING, NON-PLIABLE
*C-191.5 kPa *C-4000 psf

BORING NO. 1

STA. 124+51.4 – RT. 66.6' FROM EXISTING CENTERLINE



A-4 TAN, SANDY LOAM, TOPSOIL, MEDIUM STIFF, IMPERVIOUS, PLIABLE *Ø-28°

A-6 BRN. CLAY, AMORPHOUS, STIFF, IMPERVIOUS, PLIABLE Yd-1871 kg/m³ Yd-116.8 pcf C-118.5 kPa C-2474 psf M-15.2

A-6 BRN. CLAY LOAM, LENTICULAR, STIFF, PLIABLE, IMPERVIOUS WITH PERMEABLE LENSES

A-6 BRN. CLAY, LENTICULAR, STIFF, PLIABLE, IMPERVIOUS WITH PERMEABLE LENSES
C-146.7 kPa C-3063 psf

A-7-6 BRN. CLAY, LENTICULAR, STIFF, PLIABLE, IMPERVIOUS WITH PERMEABLE LENSES
Ø-19° M-17% C-70.1 kPa C-1465 psf Yd-1767 kg/m³ Yd-110.3 pcf

A-6 BRN. CLAY LOAM, LENTICULAR, STIFF, IMPERVIOUS WITH PERMEABLE LENSES, WATER-BEARING, PLIABLE

A-2-4 BRN. SANDY LOAM, LENTICULAR, MEDIUM DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
*Ø-33°

A-6 BRN. CLAY LOAM, LENTICULAR, STIFF, IMPERVIOUS, PLIABLE
*C-95.8 kPa *C-2000 psf

A-2-4 BRN. SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-39°

A-4 LIGHT BRN. SILTY LOAM, LAMINATED & LENTICULAR, MEDIUM DENSE, PERMEABLE, WATER-BEARING, PLIABLE, IMPERVIOUS *C-136.5 kPa *C-2850 psf

A-7-5 LIGHT BRN. CLAY

A-2-4 LIGHT BRN/GRAY, SAND, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC *Ø-35°

A-2-4 LIGHT BRN/GRAY, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, LIGNITE SLACK THROUGHOUT HORIZON *Ø-35°

A-4 GRAY, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC, LIGNITE SLACK THROUGHOUT HORIZON

A-4 GRAY, SILTY LOAM, LENTICULAR, HARD, IMPERVIOUS, WATER-BEARING, NON-PLASTIC
*C-143.6 kPa *C-3000 psf

A-4 GRAY, SANDY LOAM, LENTICULAR, DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC

A-6 GRAY, CLAY, LENTICULAR, DENSE, IMPERVIOUS, NON-PLASTIC
*C-181.9 kPa *C-3800 psf

A-4 GRAY, SILTY CLAY LOAM, LENTICULAR, STIFF, IMPERVIOUS, NON-PLASTIC

A-2-4 GRAY, SANDY LOAM, STRUCTURELESS, VERY DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
*Ø-36°

A-2-4 GRAY & BRN. SAND, STRUCTURELESS, VERY DENSE, PERMEABLE, WATER-BEARING, NON-PLASTIC
*Ø-33°

BORING NO. 2

STA. 126+81.1 – LT. 51.2' FROM EXISTING CENTERLINE

NOTES: Encircled numbers indicate the number of blows delivered by a 140 lb. hammer from a height of 30" to drive a core tube 1'-0".
The boring log data shown is for design purposes only. The state assumes no responsibility if soil conditions encountered during construction differ from those shown.

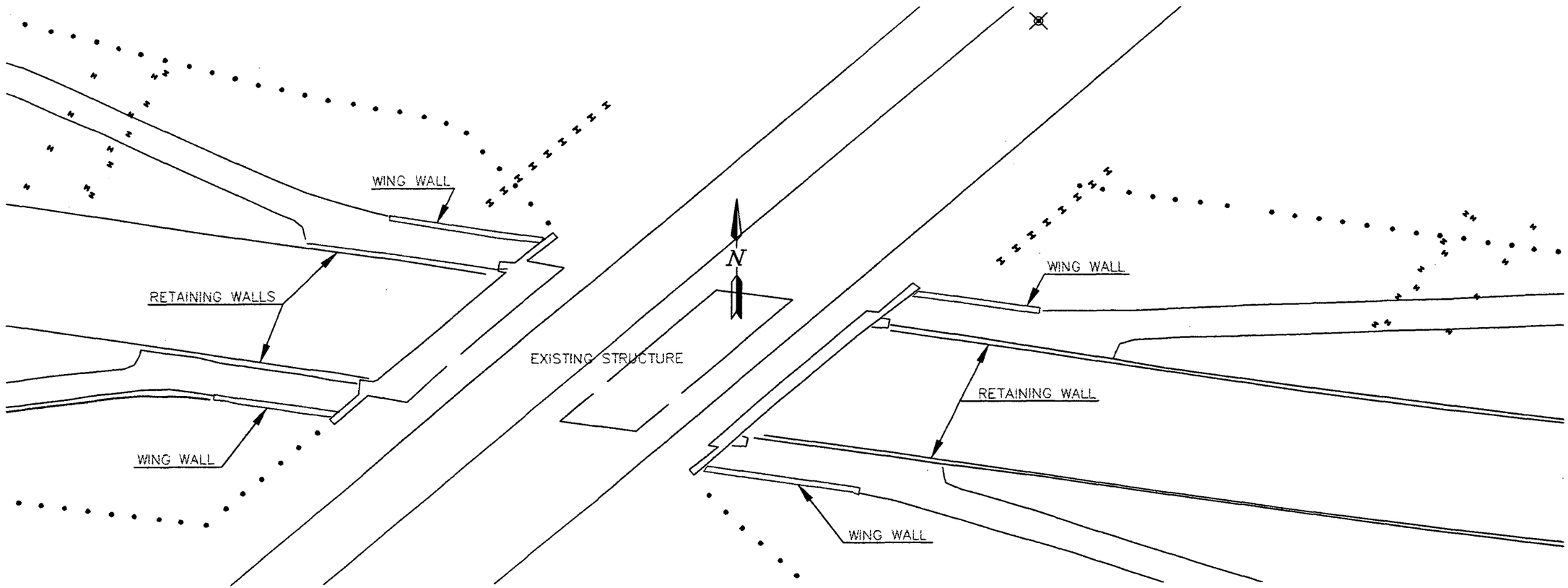
SYMBOLS: Ø- Angle of Internal Friction (Degrees)
C- Cohesion (Lbs./Sq. Ft.) (kPa)
M- Moisture (Percent)
Yd- Dry Weight (Lbs./Cu.Ft.) (kg/Cu.m)
*- (These cohesive values & friction angles are estimated from blow count.)

WILLIAMS COUNTY
RAY OVERPASS ON HWY 2

BORING LOG

2-053.731L-4

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	93



BURLINGTON NORTHERN OVERHEAD RAY

EXISTING STRUCTURE AND NEW PILE LOCATIONS

EXISTLT 96DLS78 (XPILELT) JDS

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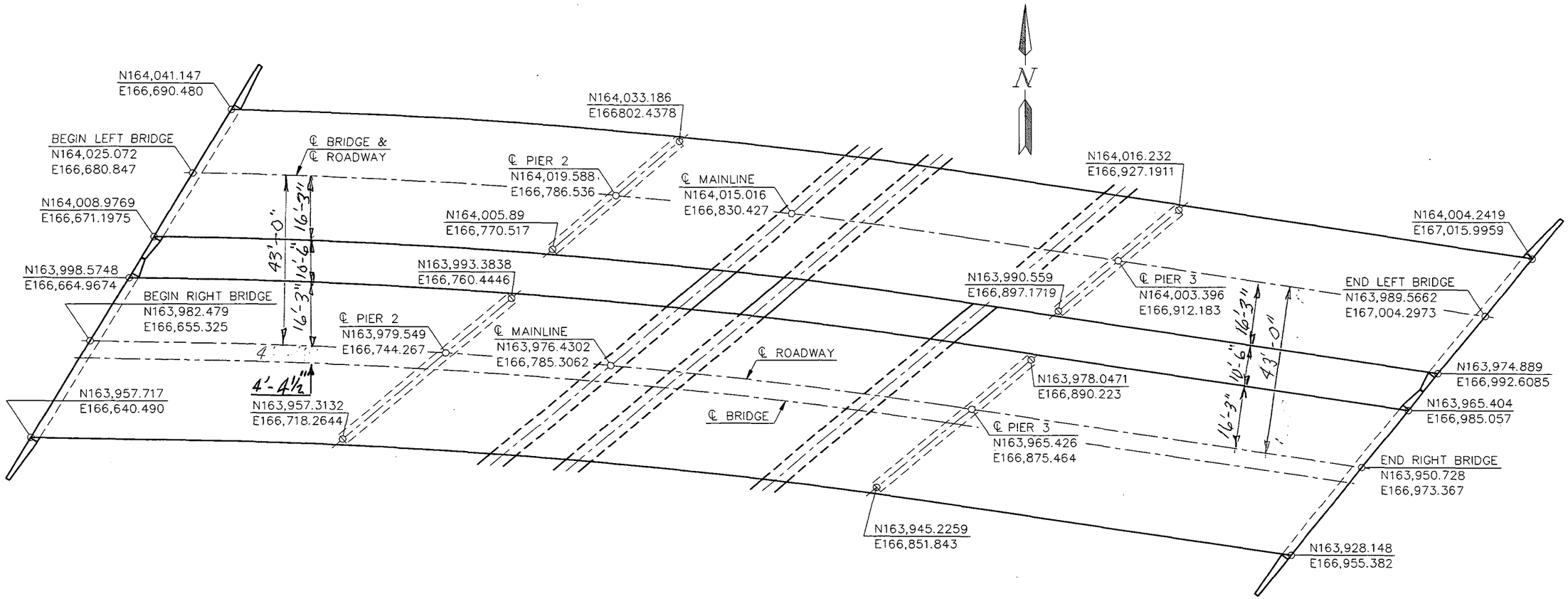
2-053.731L-5

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	94



BURLINGTON NORTHERN OVERHEAD
RAY

GENERAL PROJECT LAYOUT

PROJLO 96DLS74 JDS

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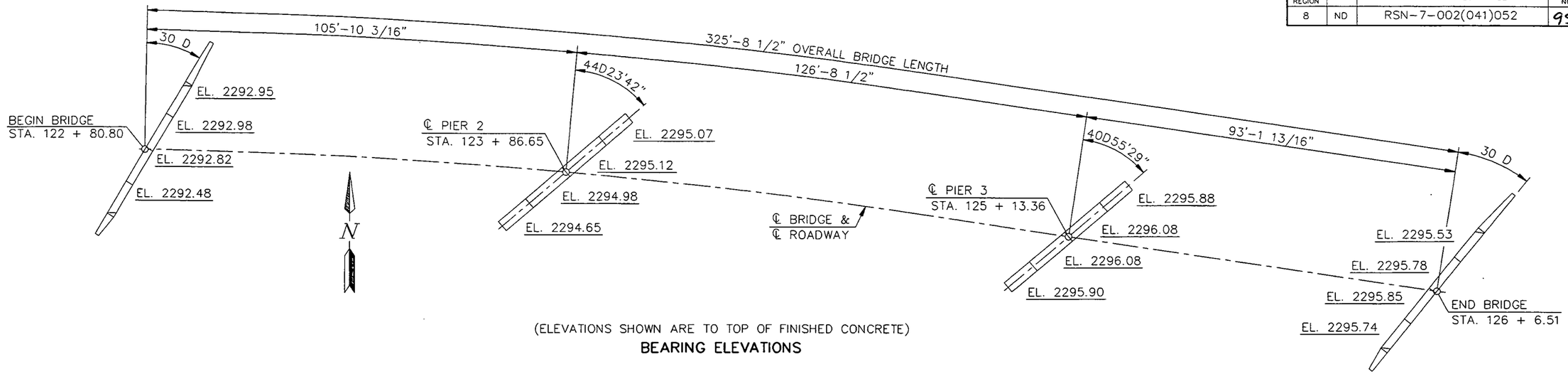
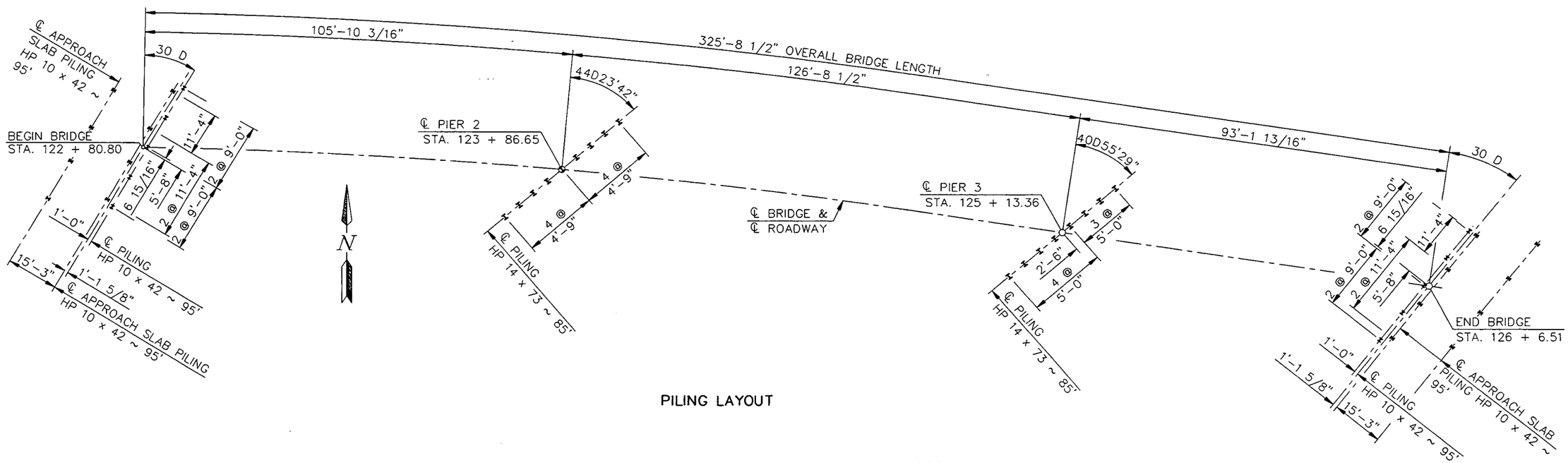
2-053.731L-6

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	95



(ELEVATIONS SHOWN ARE TO TOP OF FINISHED CONCRETE)

BEARING ELEVATIONS



PILING LAYOUT

NOTE:

THE HP 10 x 42 PILE SHALL BE DRIVEN TO 55 T. THE HP 14 x 73 PILE SHALL BE DRIVEN TO 97 T.

BURLINGTON NORTHERN OVERHEAD RAY

BEARING ELEVATIONS & PILING LAYOUT

PILELAY 96DLS72 JDS

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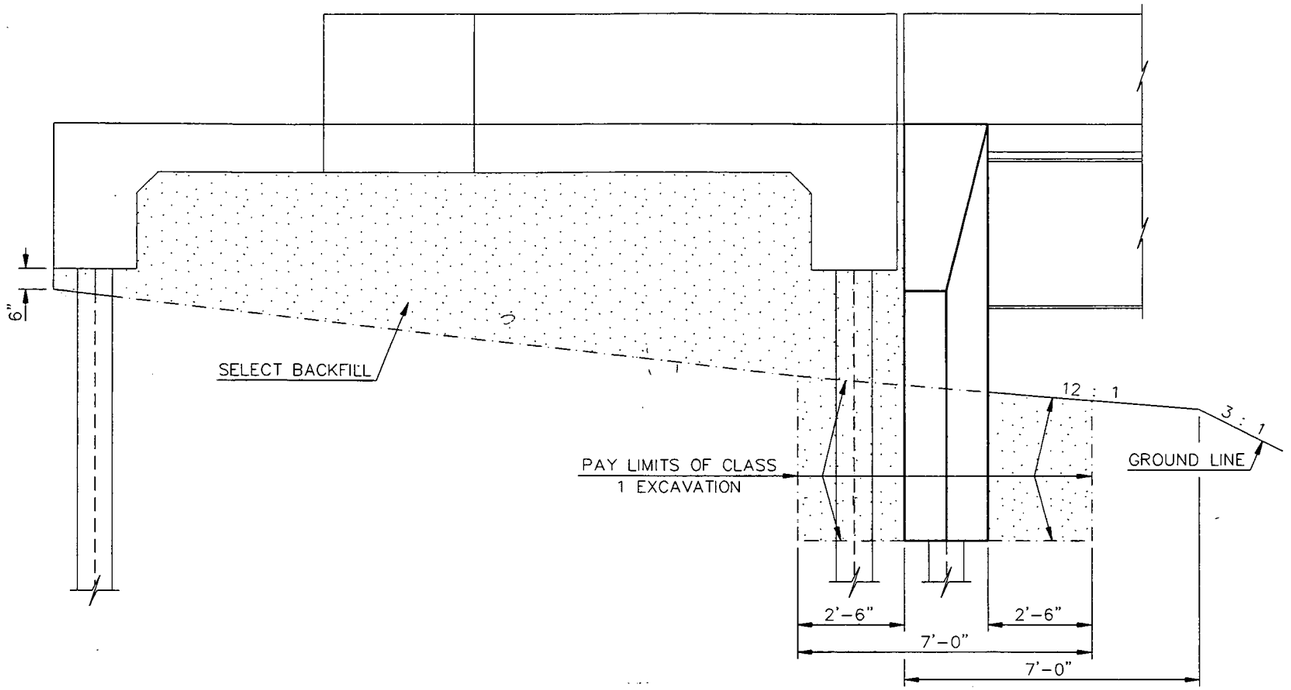
2-053.731L-7

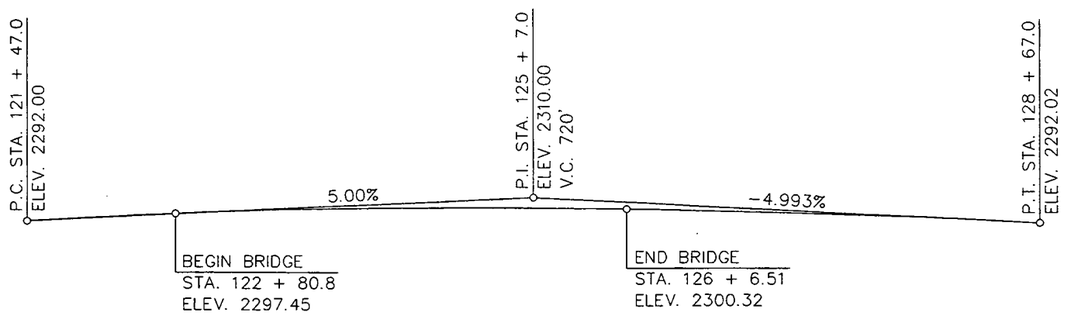
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	96



DETAIL AT ABUTMENT

HORIZONTAL CURVE DATA

P.I. STA. 123 + 78.33
DELTA = 7D 36' 27.24" RT
DEGREE = 3D 58' 8.52"
LENGTH = 191.6731'
TANGENT = 95.9776
RADIUS = 1443.57'
P.C. STA. 122 + 82.35
P.T. STA. 124 + 74.02

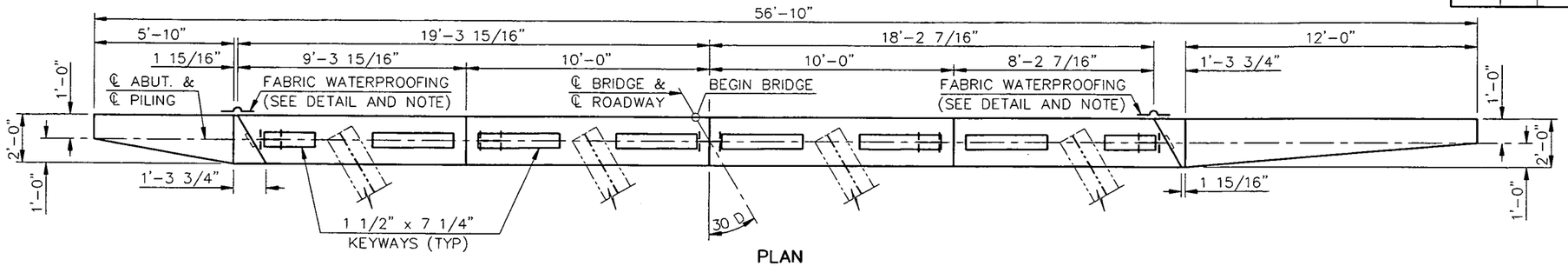


VERTICAL CURVE DATA

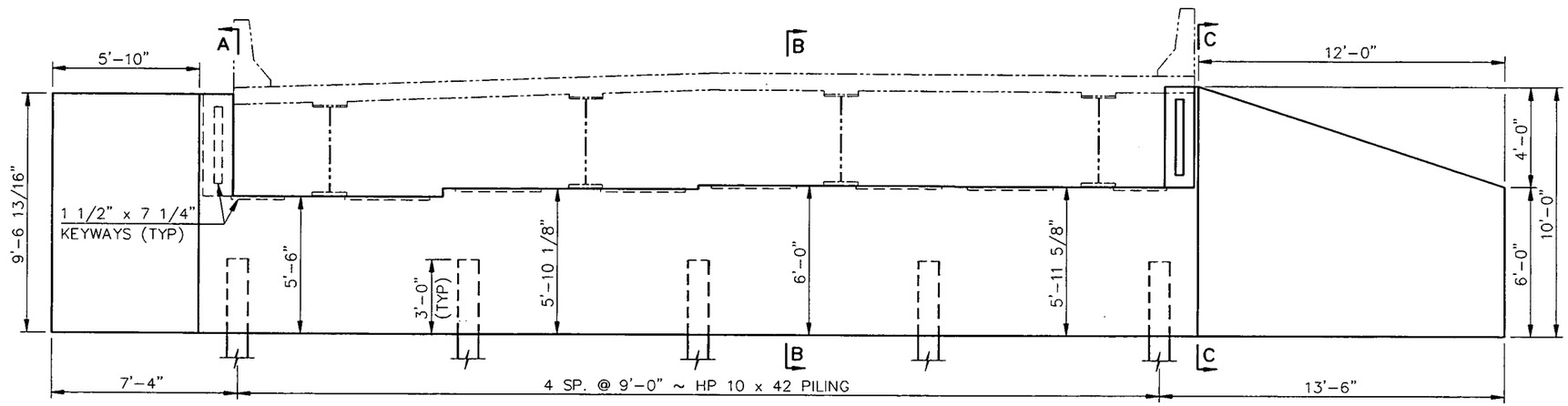
BURLINGTON NORTHERN OVERHEAD RAY

DETAIL AT ABUTMENT, VERTICAL & HORIZONTAL CURVE DATA

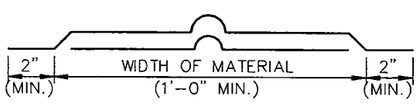
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	97



PLAN



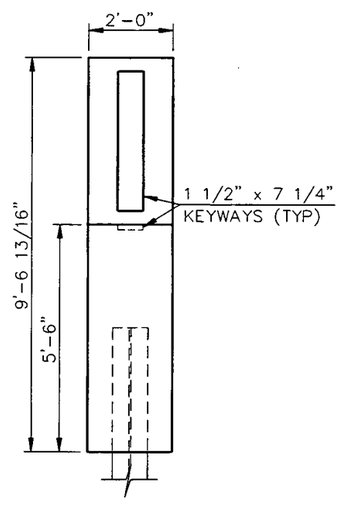
ELEVATION



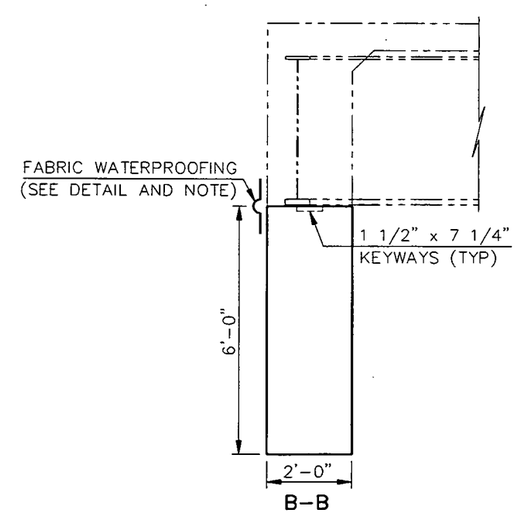
FABRIC WATERPROOFING SHALL BE APPLIED IN ACCORDANCE WITH SECTION 740 OF THE NDDOT SPECIFICATIONS.

ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM OF CLASS AE-3 CONCRETE.

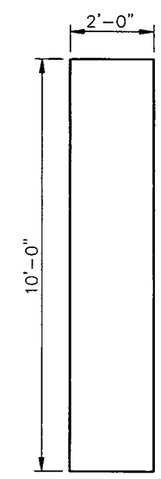
TWO-PLY FABRIC WATERPROOFING DETAIL



A-A



B-B



C-C

NOTE:
THE ELEVATION OF THE TOP OF THE SOUTH WING WALL SHALL MATCH THAT OF THE NORTH WING WALL OF THE ADJACENT STRUCTURE.

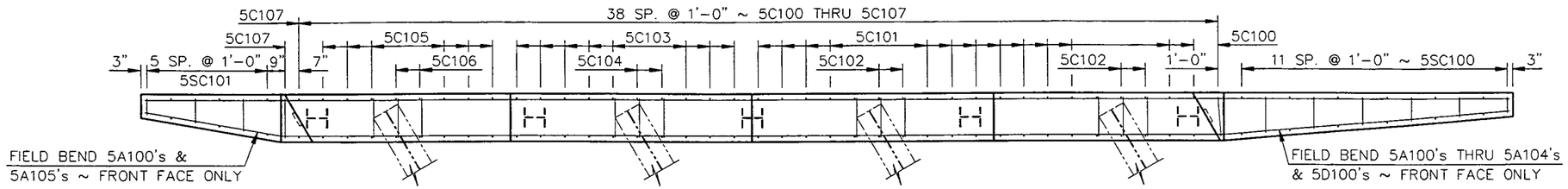
QUANTITIES
SEE DWG. 2-053.731L-10

BURLINGTON NORTHERN OVERHEAD RAY

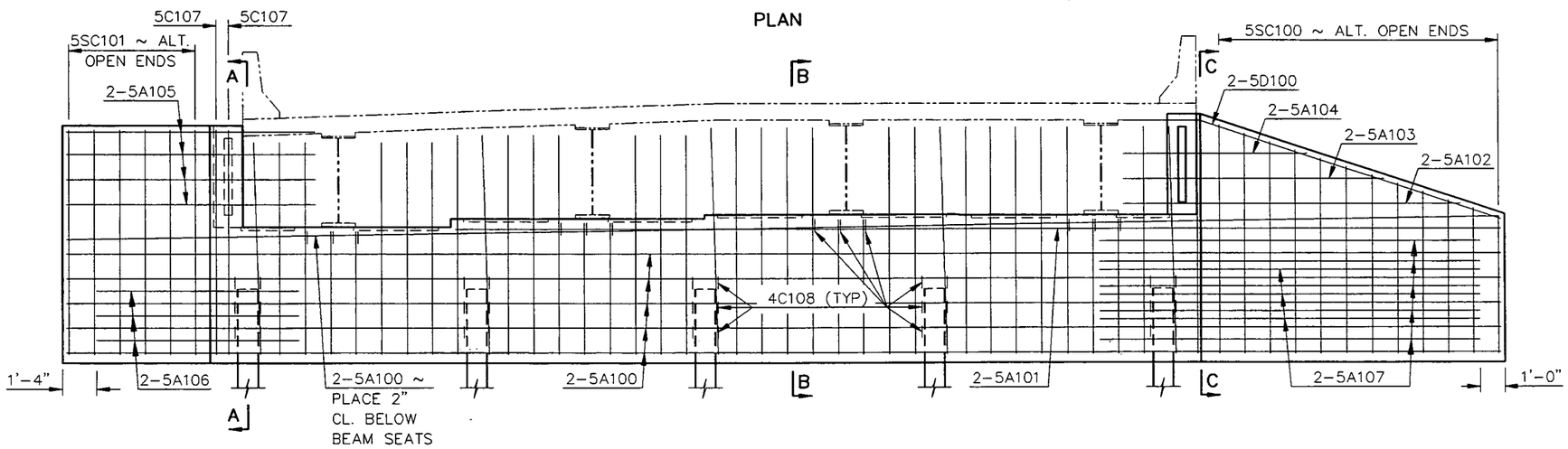
(SHOWING DIMENSIONS)

ABUTMENT 1 DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	98



PLAN



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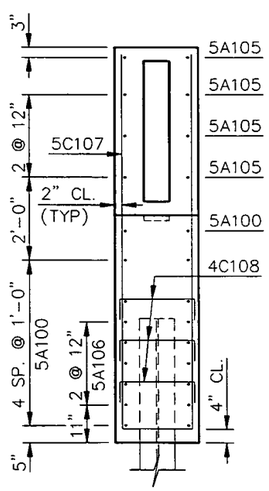

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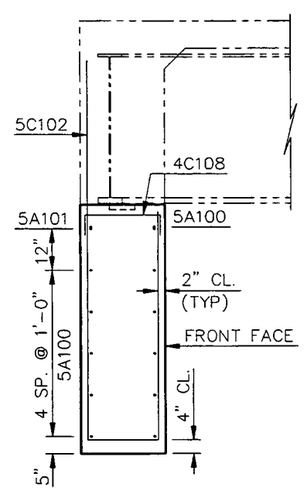
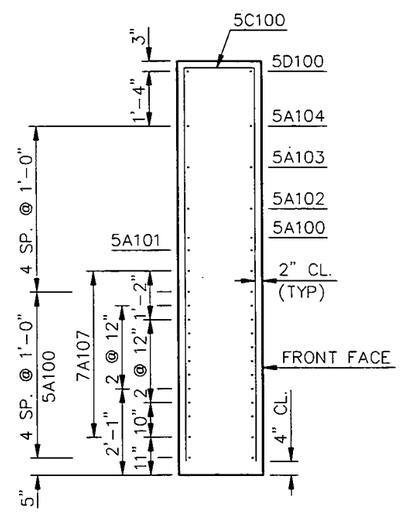


B-B



C-C

QUANTITIES	
CLASS AE-3 CONCRETE	25.8 CY
REINFORCING STEEL	2652 LB

BURLINGTON NORTHERN OVERHEAD RAY

(SHOWING REINFORCING)

ABUTMENT 1 DETAILS

ABUT1A 96DLS53 JDS

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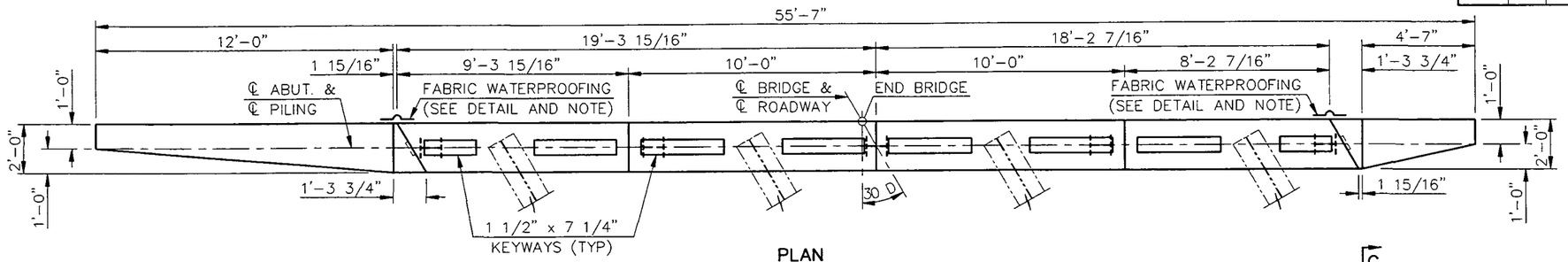
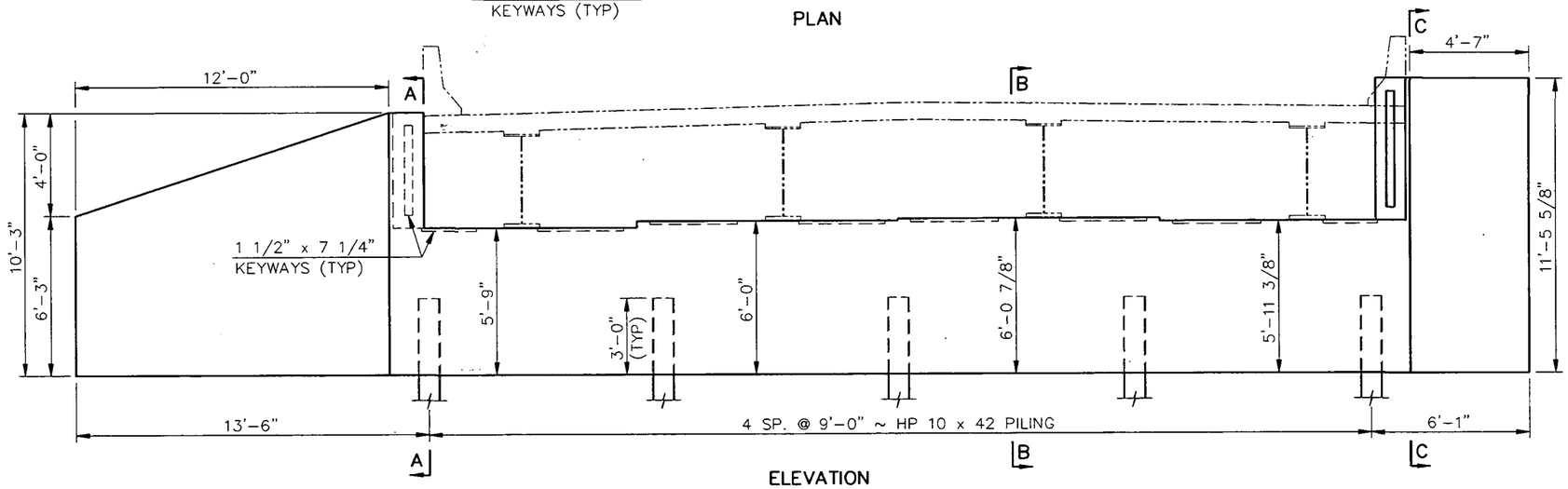
2-053.731L-10

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	99



PLAN



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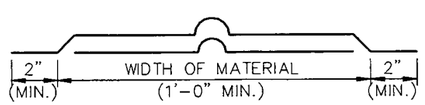
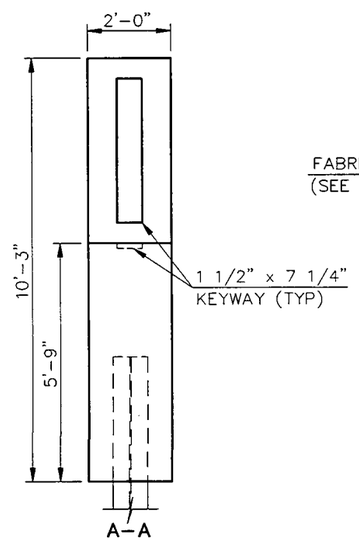


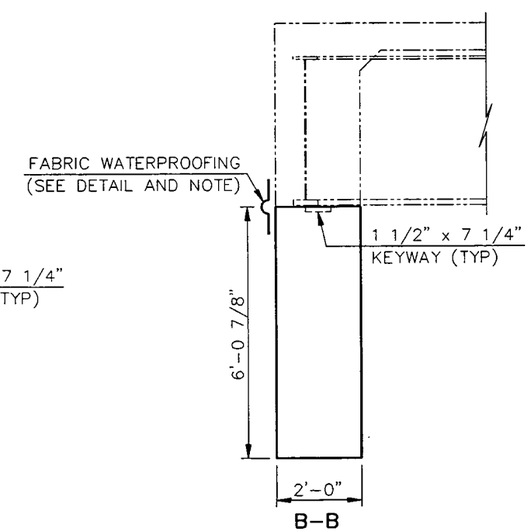
FABRIC WATERPROOFING SHALL BE APPLIED IN ACCORDANCE WITH SECTION 740 OF THE NDDOT SPECIFICATIONS.

ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM OF CLASS AE-3 CONCRETE.

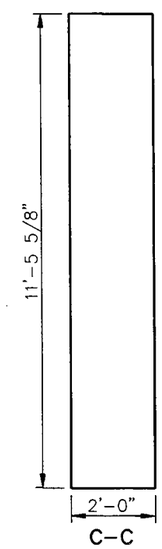
TWO-PLY FABRIC WATERPROOFING DETAIL



A-A



B-B



C-C

NOTE:
THE ELEVATION OF THE TOP OF THE SOUTH WING WALL SHALL MATCH THAT OF THE NORTH WING WALL OF THE ADJACENT ABUTMENT.

QUANTITIES

SEE DWG. 2-053.731L-12

BURLINGTON NORTHERN OVERHEAD RAY

(SHOWING DIMENSIONS)

ABUTMENT 4 DETAILS

ABUT4 96DLS54 JDS

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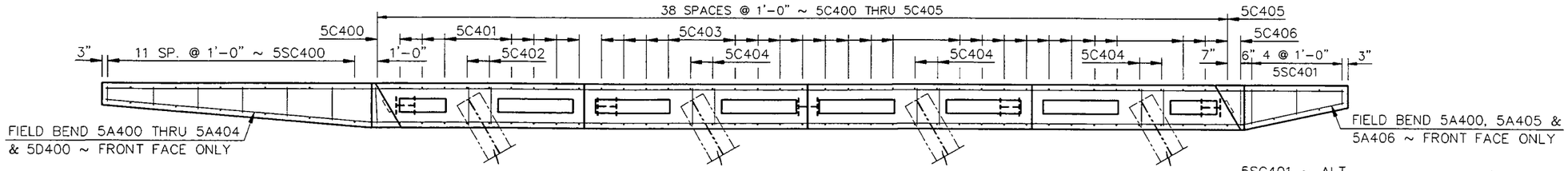
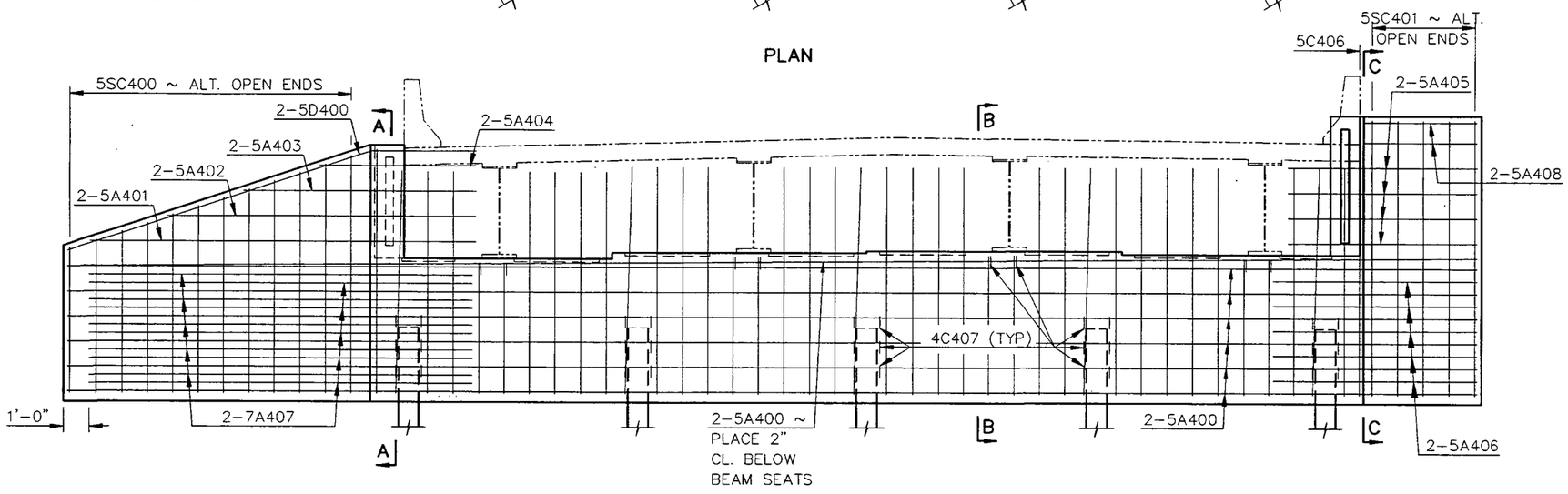
2-053.731L-11

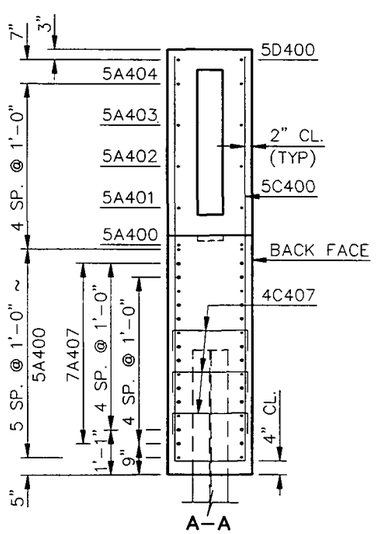
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	100



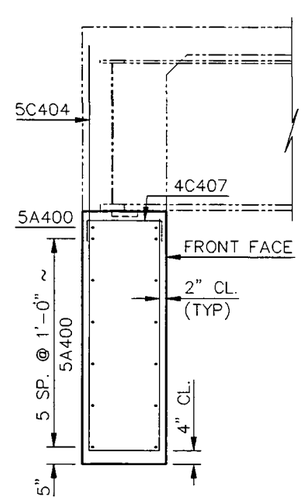
PLAN



ELEVATION



A-A



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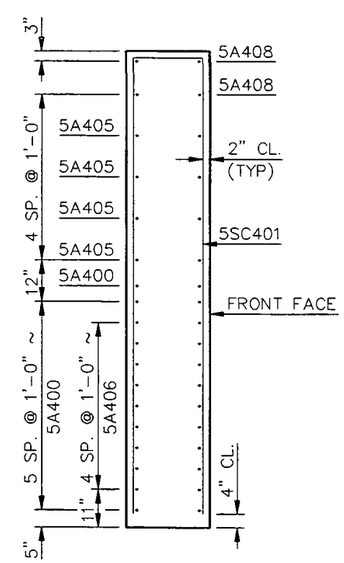


C-C

QUANTITIES	
CLASS AE-3 CONCRETE	26.2 CY
REINFORCING STEEL	2918 LB

BURLINGTON NORTHERN OVERHEAD RAY

(SHOWING REINFORCING)

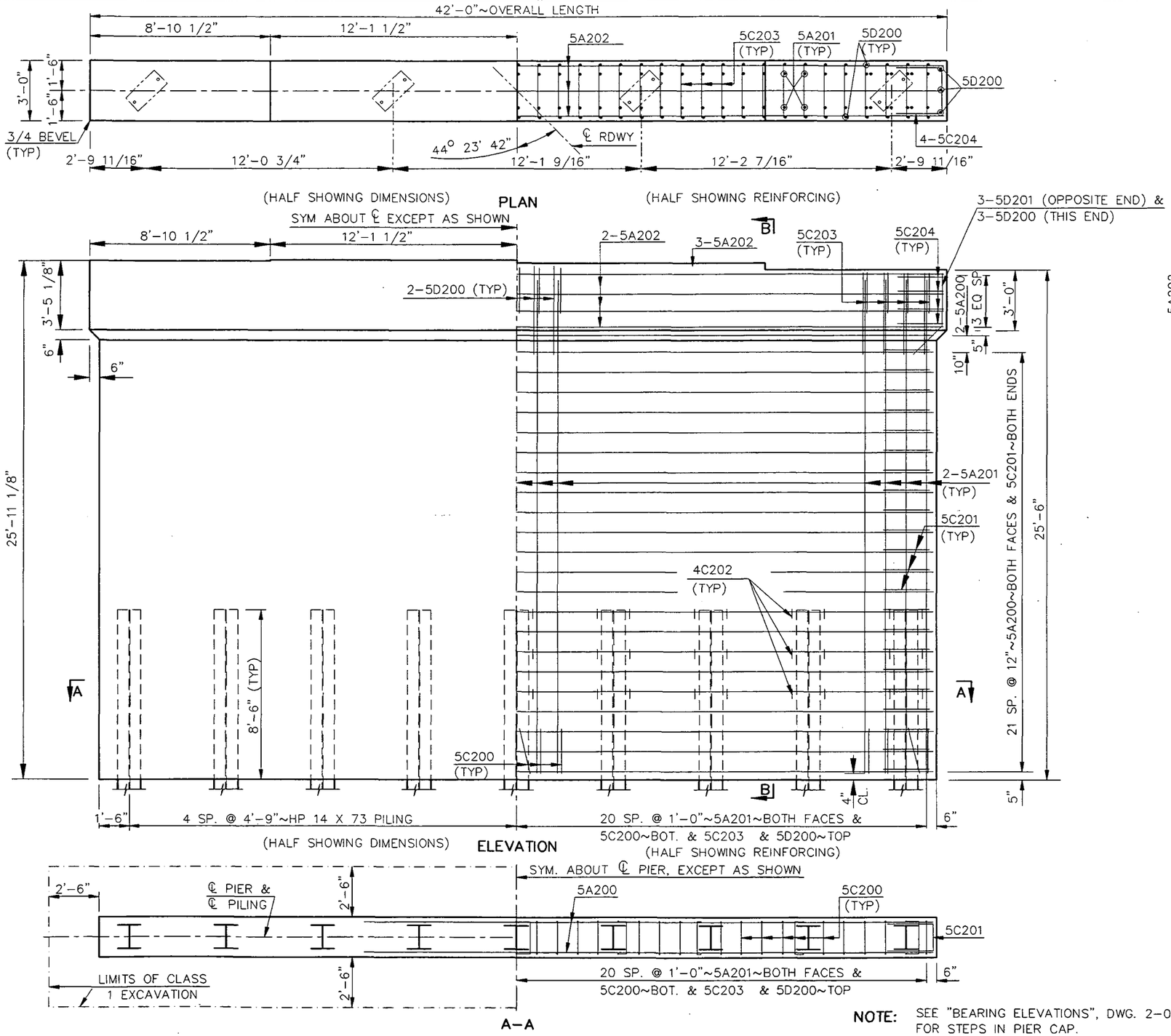
ABUTMENT 4 DETAILS

ABUT4A 96DLS55 JDS

c:\dgn\left\abut4a.dgn Sep. 19, 1996 12:41:47

2-053.731L-12

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	101



NOTE: SEE "BEARING ELEVATIONS", DWG. 2-053.731L-7 FOR STEPS IN PIER CAP.

QUANTITIES	
CLASS AE-3 CONCRETE	84.2 CY
REINFORCING STEEL	5947 LB
EXCAVATION (SEE LAYOUT)	

BURLINGTON NORTHERN OVERHEAD RAY

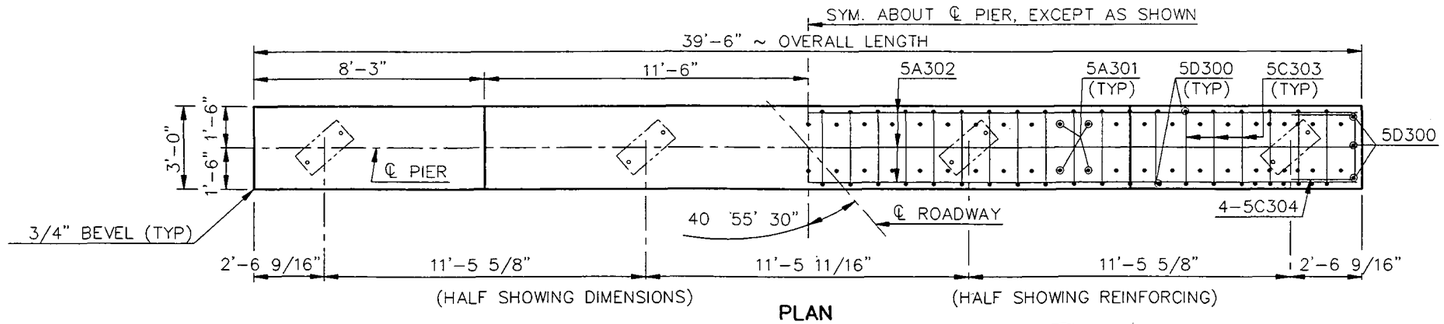
PIER 2 DETAILS

PIER2 96LCS080 JDS

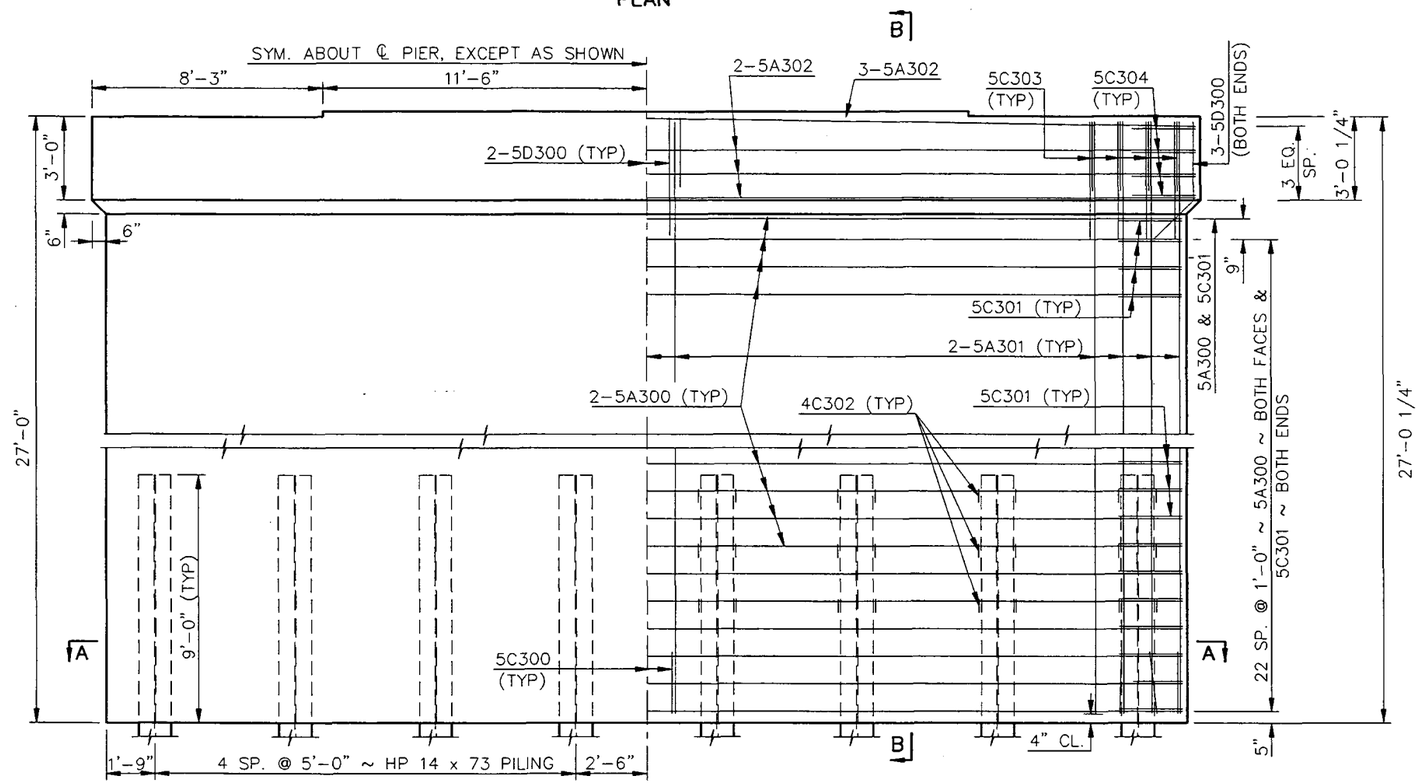
r:\project\70002052.041\bridge\2-0 Sep. 19, 1996 12:42:50

2-053.731L-13

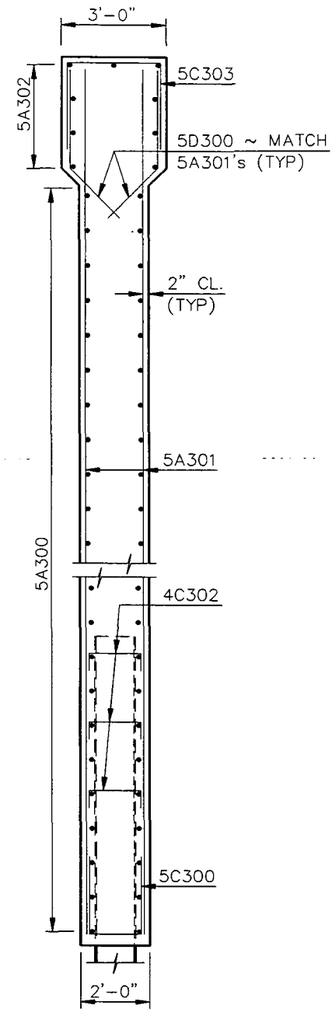
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	102



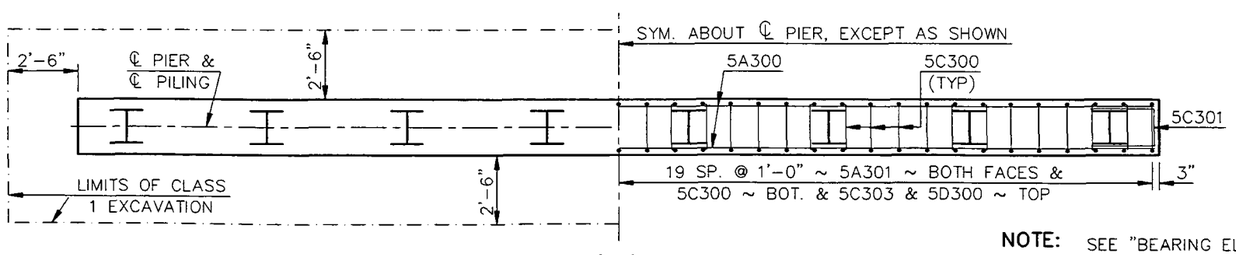
PLAN



ELEVATION



B-B



A-A

NOTE: SEE "BEARING ELEVATIONS", DWG. 2-053.731L-7 FOR STEPS IN PIER CAP.

QUANTITIES	
CLASS AE-3 CONCRETE	82.5 CY
REINFORCING STEEL	5865 LB
EXCAVATION (SEE LAYOUT)	

BURLINGTON NORTHERN OVERHEAD RAY

PIER 3 DETAILS

PIER3 96LCS081 JDS

2-053.731L-14

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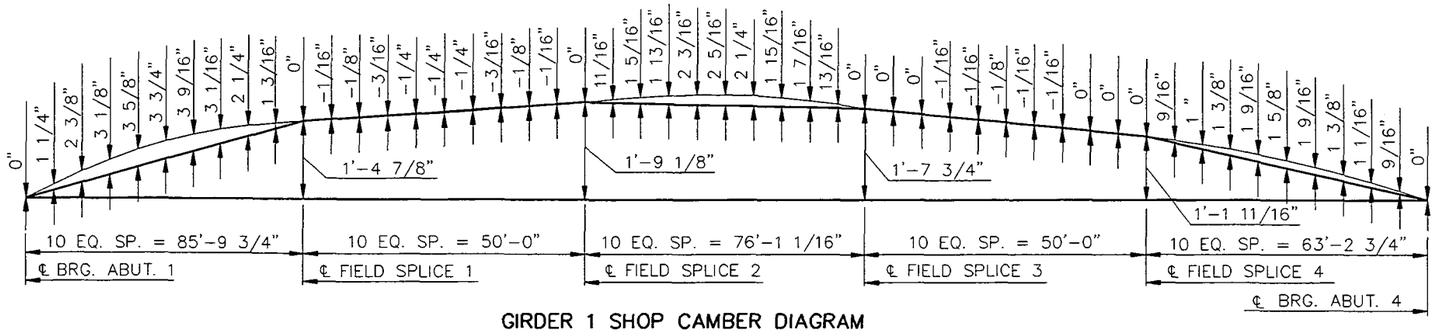
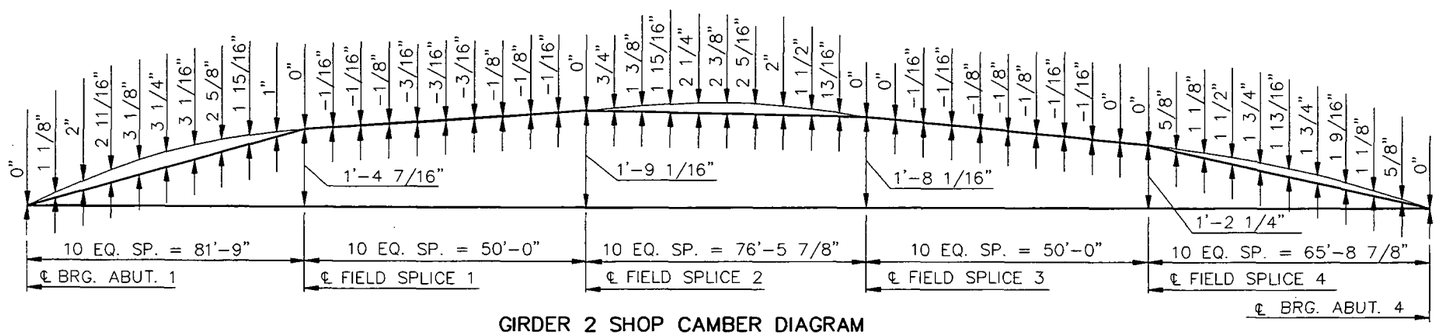
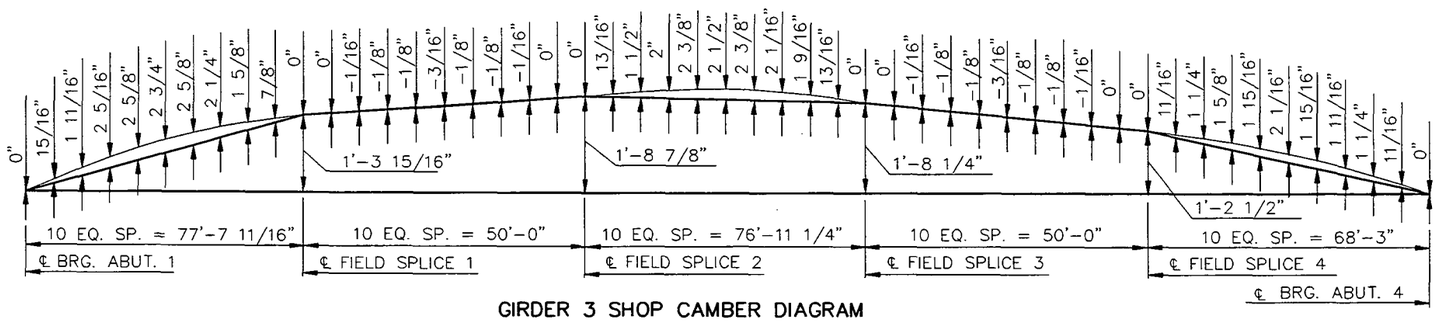
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	103



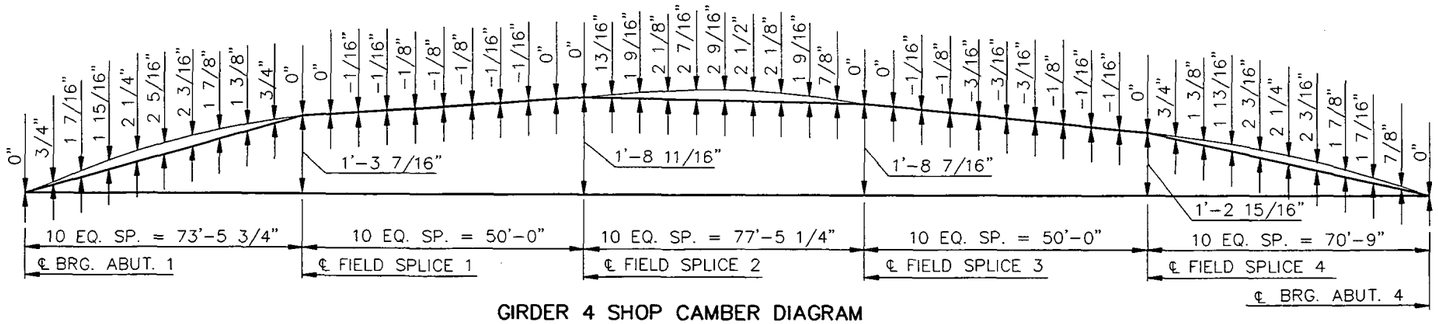
GIRDER 1 SHOP CAMBER DIAGRAM



GIRDER 2 SHOP CAMBER DIAGRAM



GIRDER 3 SHOP CAMBER DIAGRAM



GIRDER 4 SHOP CAMBER DIAGRAM

BURLINGTON NORTHERN OVERHEAD RAY

SHOP CAMBER DIAGRAMS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	104

℄ GIRDER 1																												
2297.41	2297.44	2297.84	2298.21	.54	2298.83	2299.07	.28	.46	.62	2299.78	2299.93	2300.11	.29	.46	.60	.71	.77	.80	.79	.75	2300.72	.69	.67	.63	.59	.54	.46	.37	.25	2300.11	2299.96	2299.94

1'-1 7/8" BEGIN BRIDGE | 10 EQ. SP. = 110'-9 3/4" (℄ BRG. ABUT. 1 – ℄ BRG. PIER 2) | 10 EQ. SP. = 126'-1 1/16" (℄ BRG. PIER 2 – ℄ BRG. PIER 3) | 10 EQ. SP. = 88'-2 3/4" (℄ BRG. PIER 3 – ℄ BRG. ABUT. 4) | 1'-1 7/8" END BRIDGE

GIRDER 1 SCREED ELEVATIONS

℄ GIRDER 2																												
2297.44	2297.47	2297.85	2298.21	.53	2298.82	2299.07	.29	.48	.65	2299.81	2299.98	2300.18	.38	.56	.72	.84	.92	.96	.96	.94	2300.91	.89	.88	.86	.83	.78	.71	.62	.50	2300.37	2300.21	2300.20

1'-1 7/8" BEGIN BRIDGE | 10 EQ. SP. = 106'-9" (℄ BRG. ABUT. 1 – ℄ BRG. PIER 2) | 10 EQ. SP. = 126'-5 7/8" (℄ BRG. PIER 2 – ℄ BRG. PIER 3) | 10 EQ. SP. = 90'-8 7/8" (℄ BRG. PIER 3 – ℄ BRG. ABUT. 4) | 1'-1 7/8" END BRIDGE

GIRDER 2 SCREED ELEVATIONS

℄ GIRDER 3																												
2297.28	2297.32	2297.68	2298.03	.34	.63	2298.88	2299.10	.30	.48	2299.66	2299.83	2300.06	.28	.48	.66	.79	.88	.92	.94	.93	2300.92	.91	.91	.90	.87	.84	.77	.68	.57	.44	2300.28	2300.27

1'-1 7/8" BEGIN BRIDGE | 10 EQ. SP. = 102'-7 11/16" (℄ BRG. ABUT. 1 – ℄ BRG. PIER 2) | 10 EQ. SP. = 126'-11 1/4" (℄ BRG. PIER 2 – ℄ BRG. PIER 3) | 10 EQ. SP. = 93'-3" (℄ BRG. PIER 3 – ℄ BRG. ABUT. 4) | 1'-1 7/8" END BRIDGE

GIRDER 3 SCREED ELEVATIONS

℄ GIRDER 4																												
2296.94	2296.97	2297.32	.66	2297.96	2298.24	.50	.72	2298.93	2299.13	.31	2299.50	.74	2299.98	2300.20	.40	.54	.65	.70	.73	.73	2300.73	.74	.75	.75	.74	.70	.65	.57	.46	2300.32	2300.17	2300.15

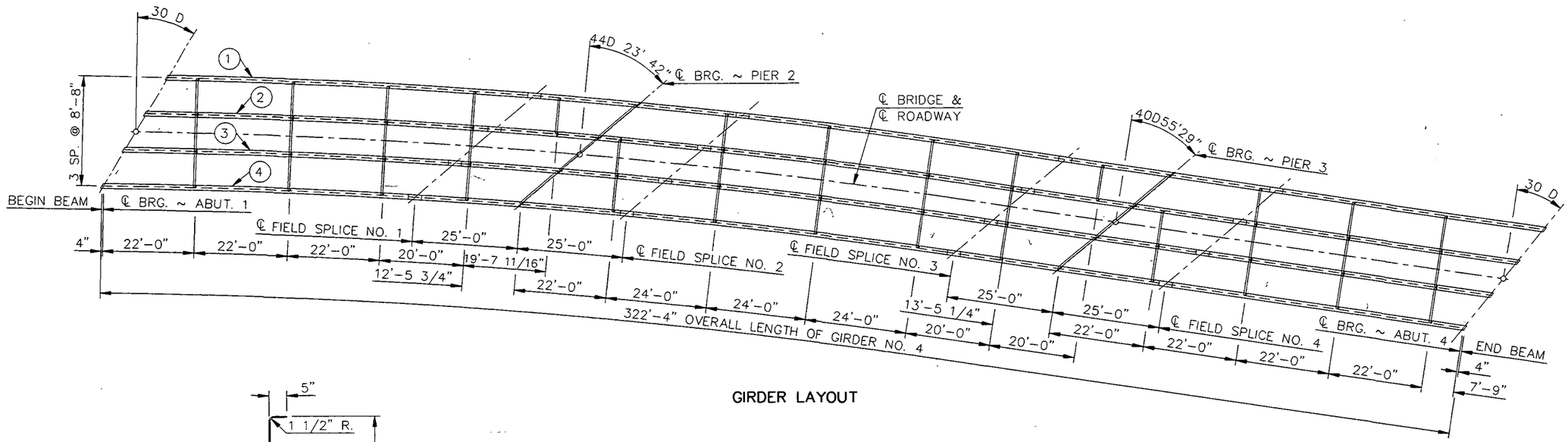
1'-1 7/8" BEGIN BRIDGE | 10 EQ. SP. = 98'-5 3/4" (℄ BRG. ABUT. 1 – ℄ BRG. PIER 2) | 10 EQ. SP. = 127'-5 1/4" (℄ BRG. PIER 2 – ℄ BRG. PIER 3) | 10 EQ. SP. = 95'-9" (℄ BRG. PIER 3 – ℄ BRG. ABUT. 4) | 1'-1 7/8" END BRIDGE

GIRDER 4 SCREED ELEVATIONS

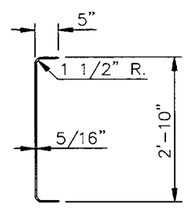
BURLINGTON NORTHERN OVERHEAD RAY

SCREED ELEVATION

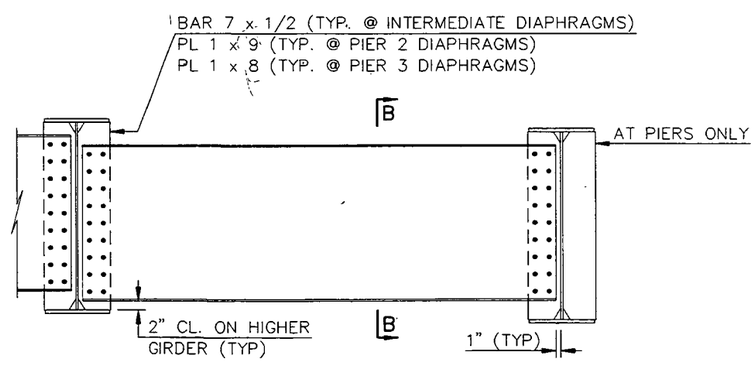
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	165



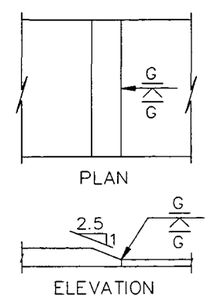
GIRDER LAYOUT



B–B



A–A



TYPICAL SHOP FLANGE SPLICE

NOTE:

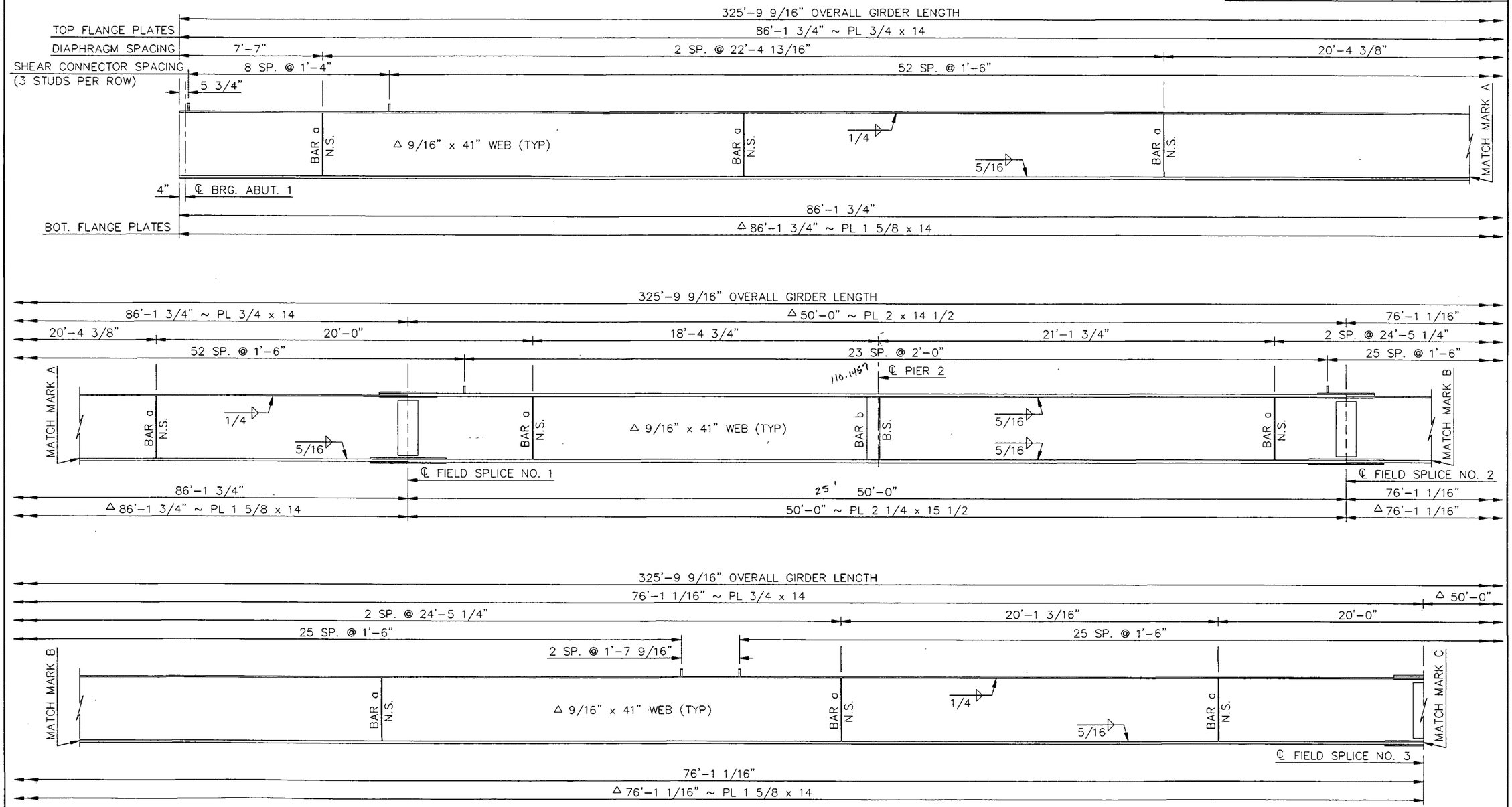
THE DIMENSIONS SHOWN ON THE GIRDER LAYOUT ARE MEASURED ALONG THE CENTERLINE OF THE OUTSIDE GIRDER, GIRDER NO. 4.

ALL INTERMEDIATE DIAPHRAGMS IN THE TANGENT SECTIONS SHALL BE PLACED PERPENDICULAR. ALL INTERMEDIATE DIAPHRAGMS IN THE CURVED SECTION SHALL BE PLACED ALONG THE RADIAL.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	106



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731L-19 FOR MATCH MARK C.

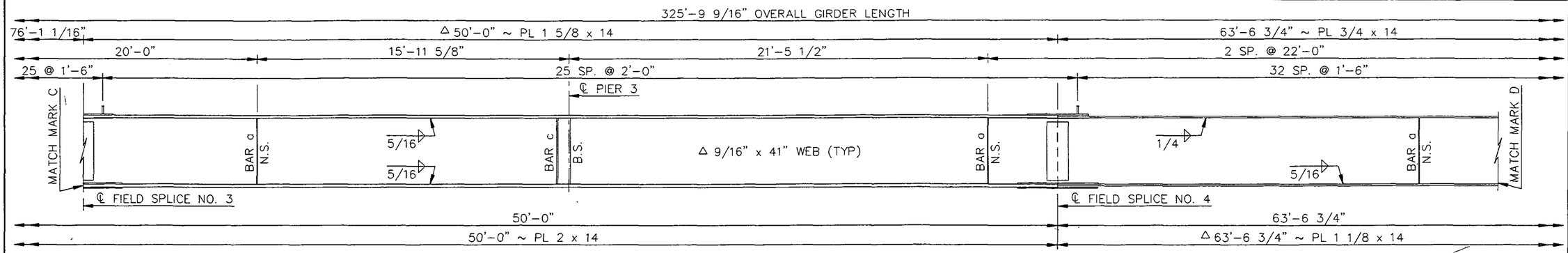
BURLINGTON NORTHERN OVERHEAD RAY

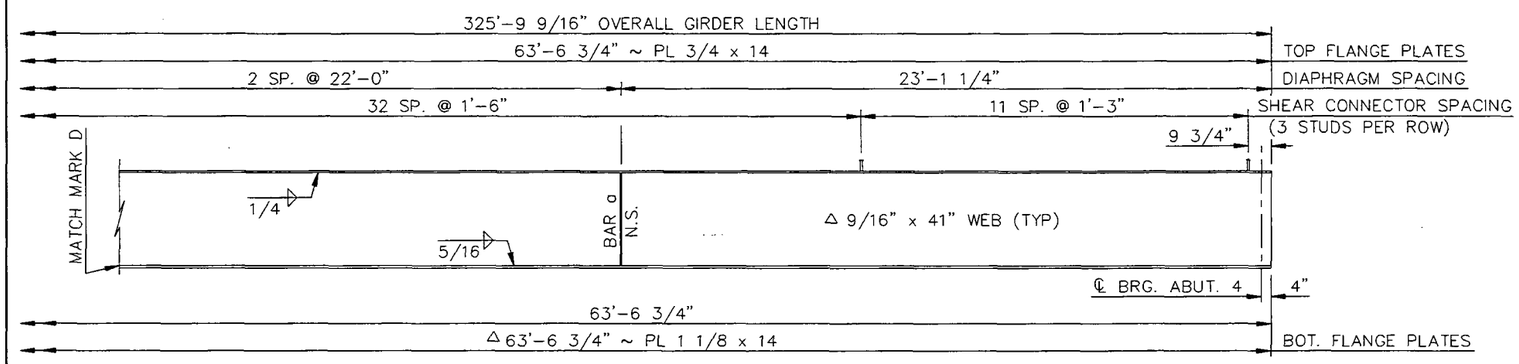
GIRDER 1 ELEVATION DETAILS

GIRDEL1 96DLS69 JDS
c:\dgn\left\girdel1.dgn Sep. 19, 1996 12:45:28

2-053.731L-18

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	107





NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731L-18 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

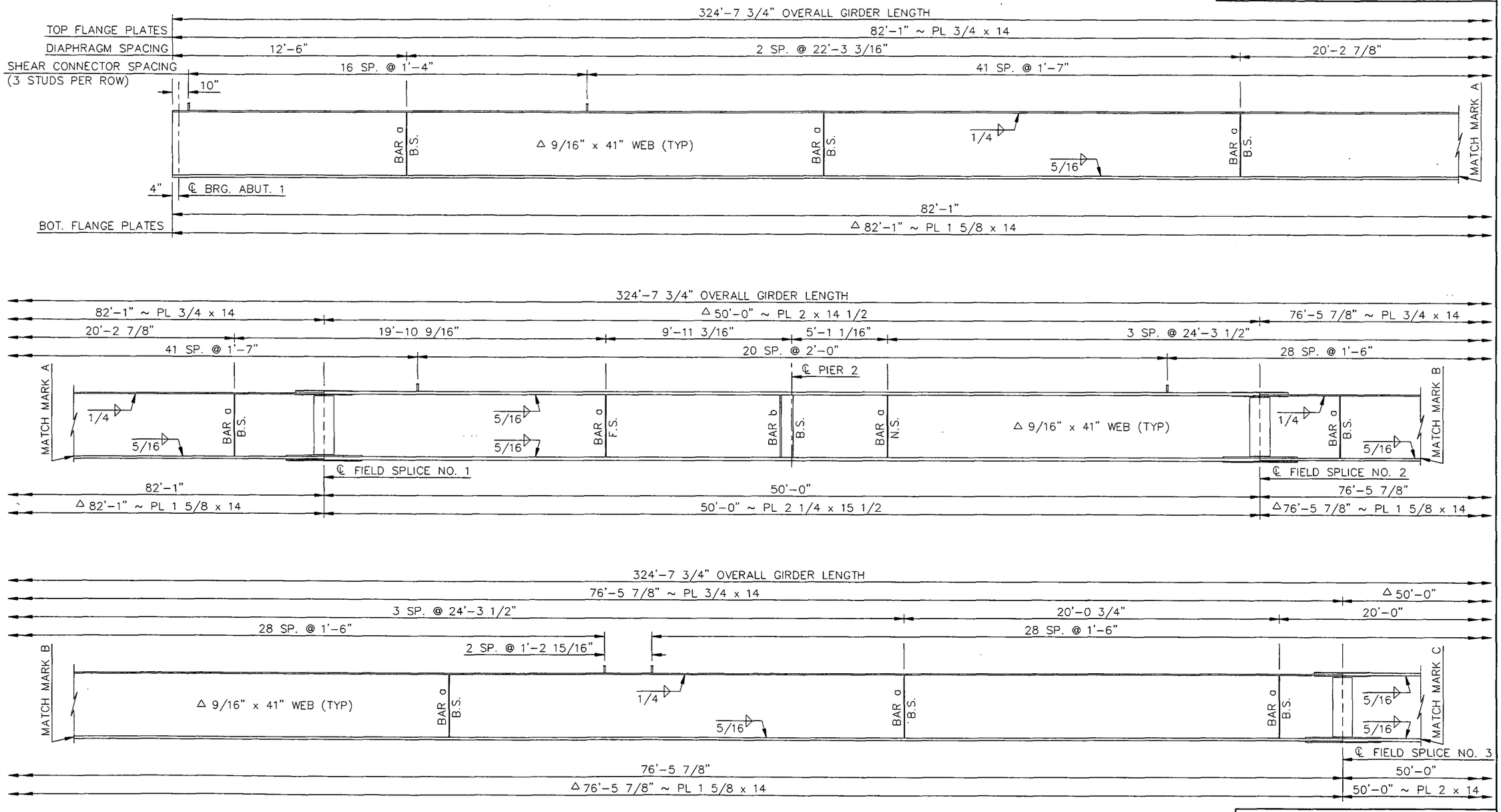
GIRDER 1 ELEVATION DETAILS

GIRDEL1A 96DLS70 JDS

c:\dgn\left\girdel1a.dgn Sep. 19, 1996 12:45:49

2-053.731L-19

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	108



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731L-21 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

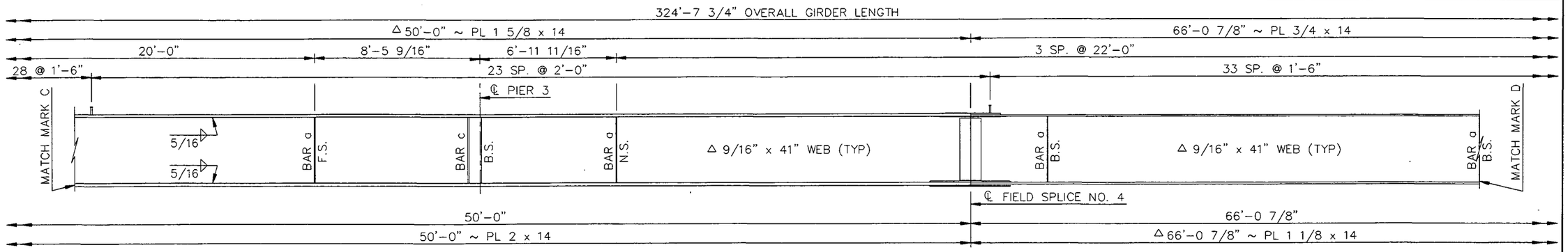
GIRDER 2 ELEVATION DETAILS

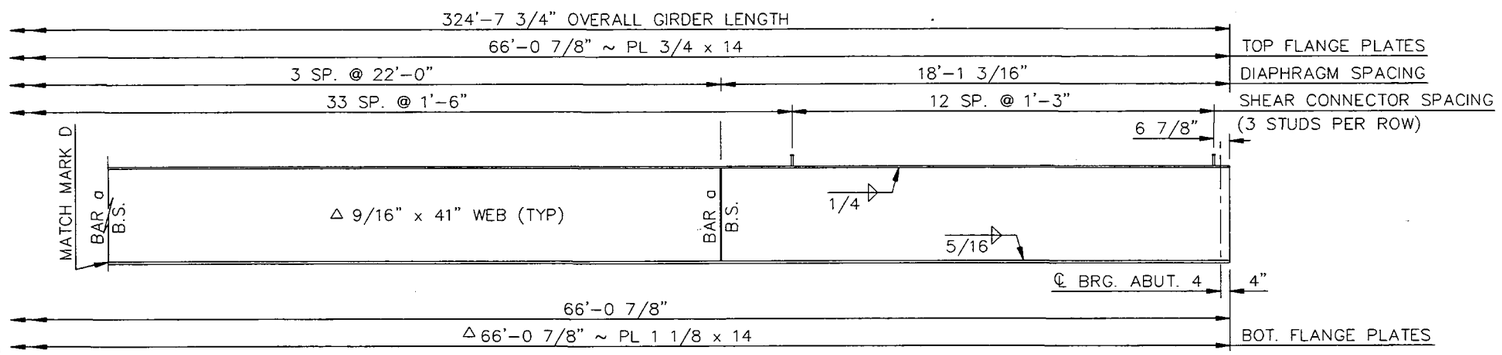
GIRDEL2 96DLS67 JDS

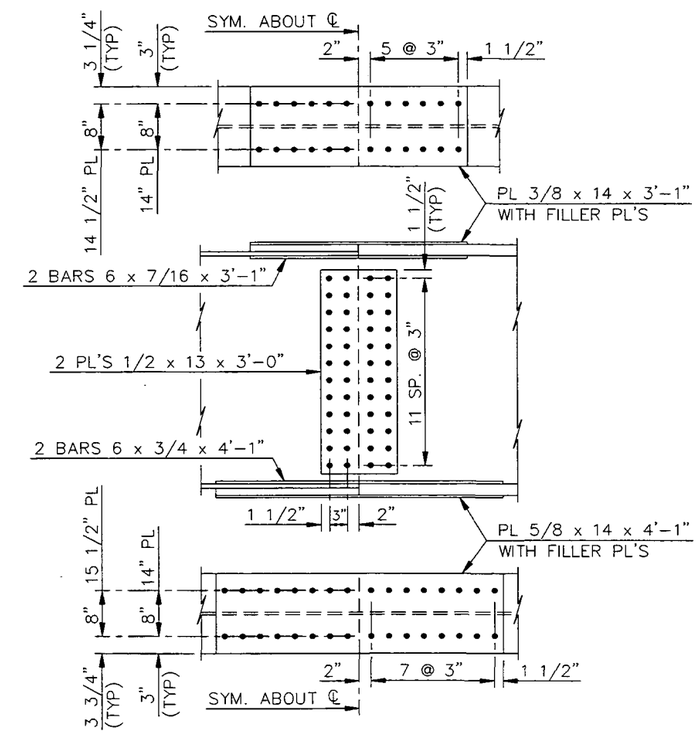
c:\dgn\left\girdel2.dgn Sep. 19, 1996 12:46:11

2-053.731L-20

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER.	SHEET NO.
8	ND	RSN-7-002(041)052	109







FIELD SPLICE DETAILS

NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

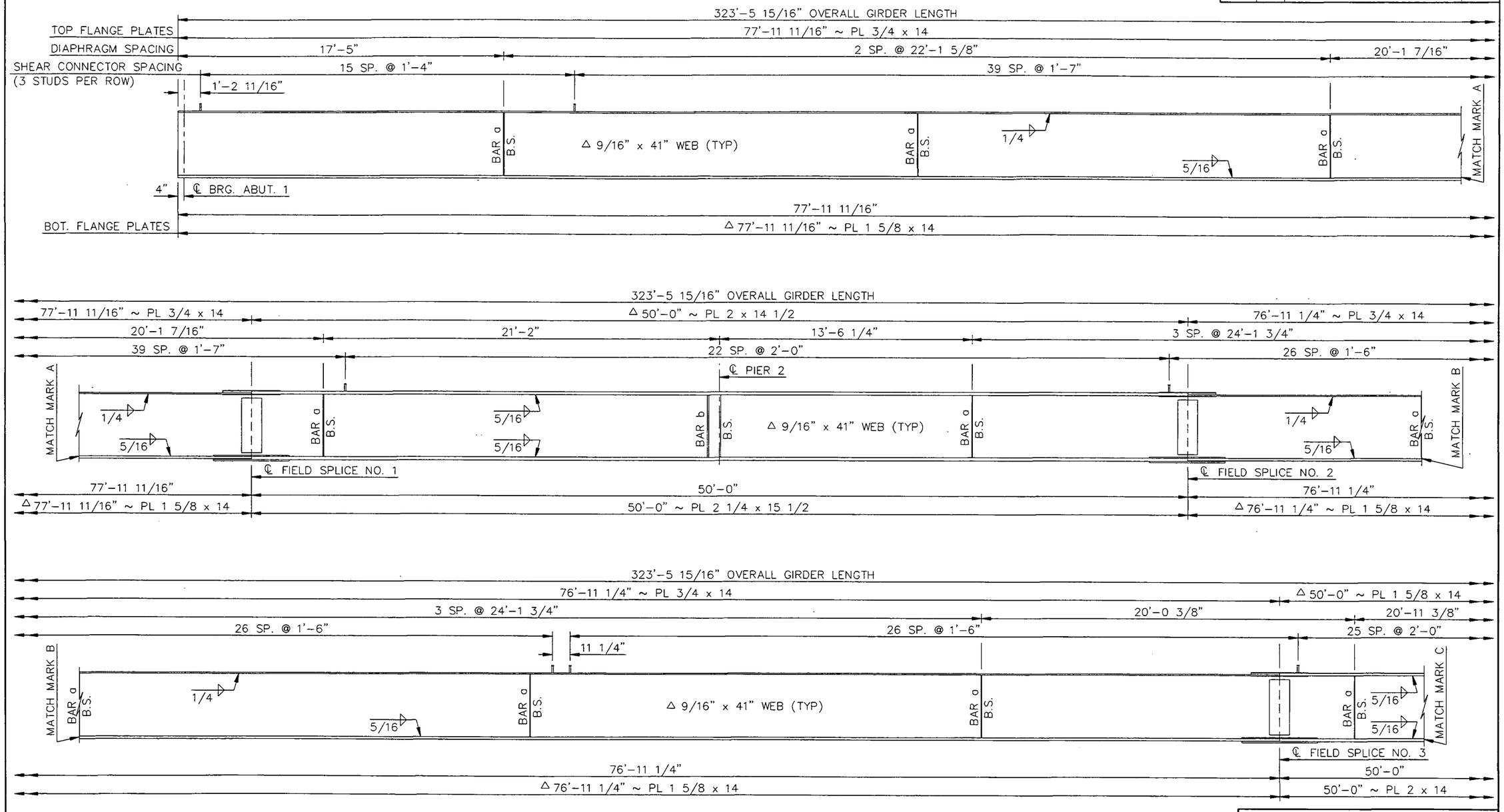
NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731L-20 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 2 ELEVATION DETAILS & FIELD SPLICE DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	110



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731L-23 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

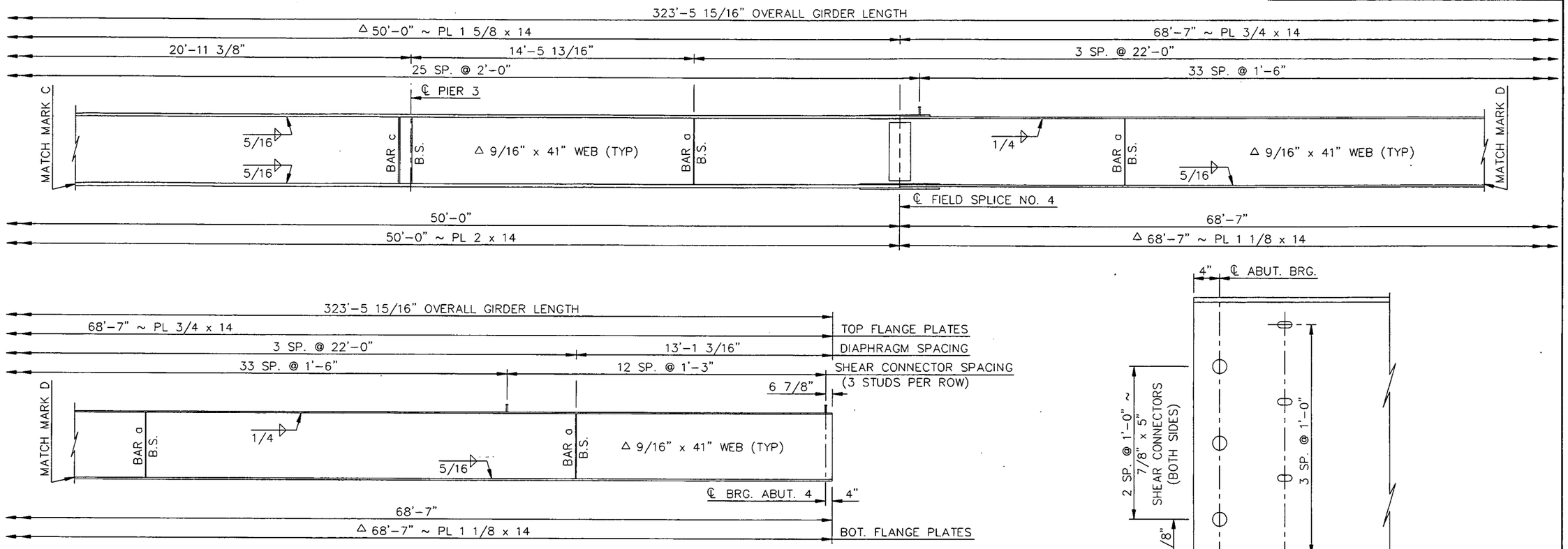
GIRDER 3 ELEVATION DETAILS

GIRDEL3 96DLS65 JDS

c:\dgn\left\girdel3.dgn Sep. 19, 1996 12:46:58

2-053.731L-22

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	111



GIRDER END DETAIL

STIFFENER & DIAPHRAGM CONNECTION PLATE DETAILS

*	WELD SIZE	FLANGE THICKNESS
	1/4	TO 3/4
	5/16	OVER 3/4

NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

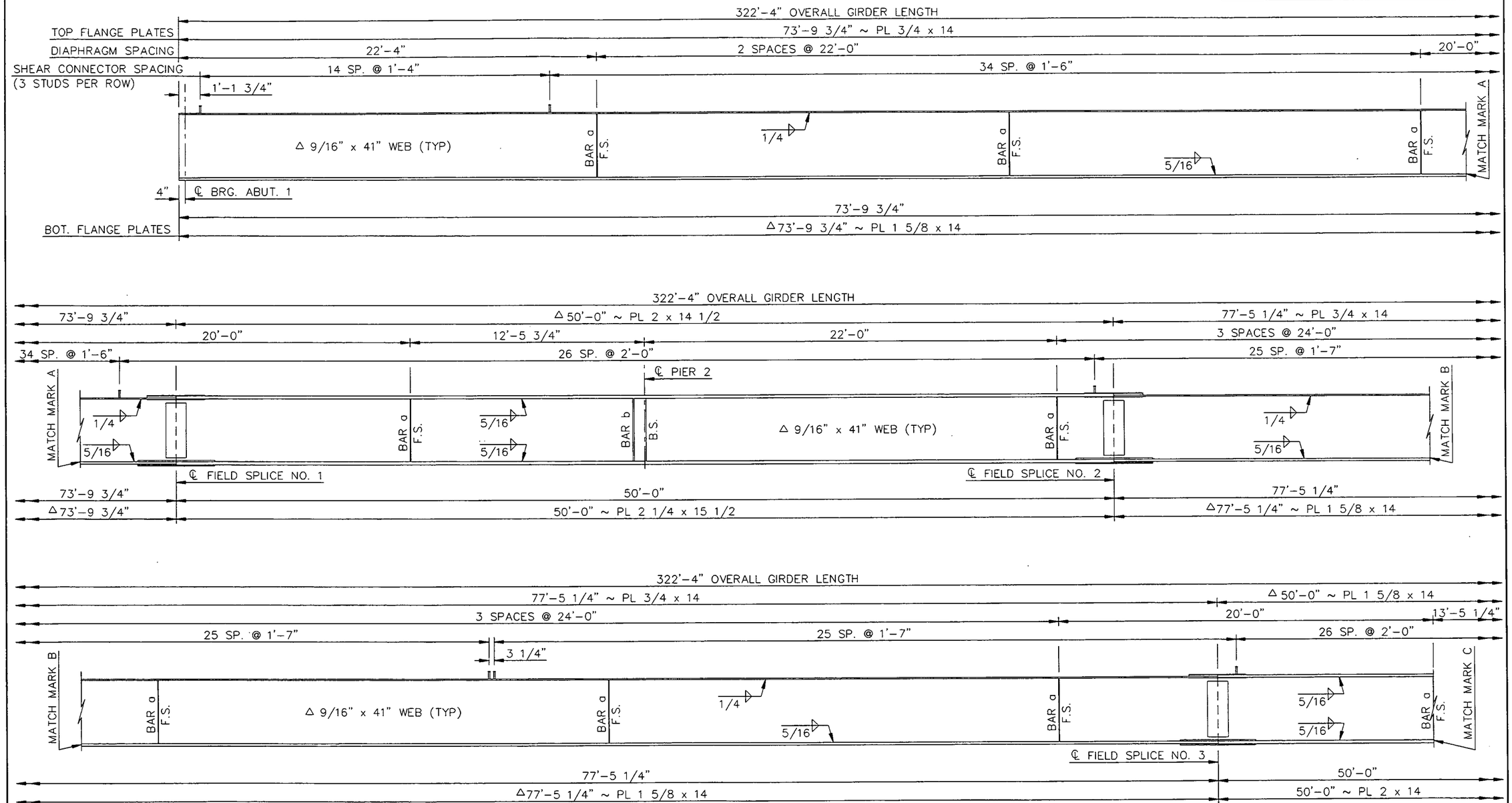
NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731L-22 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 3 ELEVATION DETAILS, GIRDER END DETAIL, STIFFENER & DIAPHR. CONNECTION PL DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	112



NOTES:

Δ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731L-25 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 4 ELEVATION DETAILS

GIRDEL4 96DLS63 JDS

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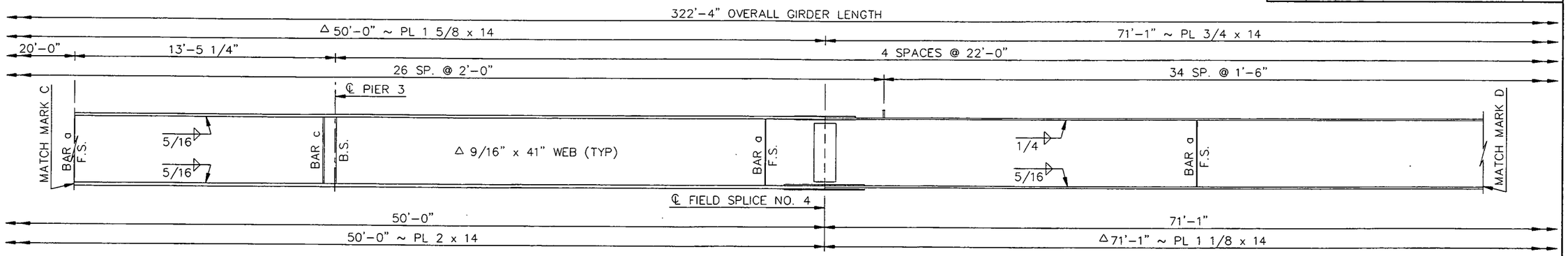
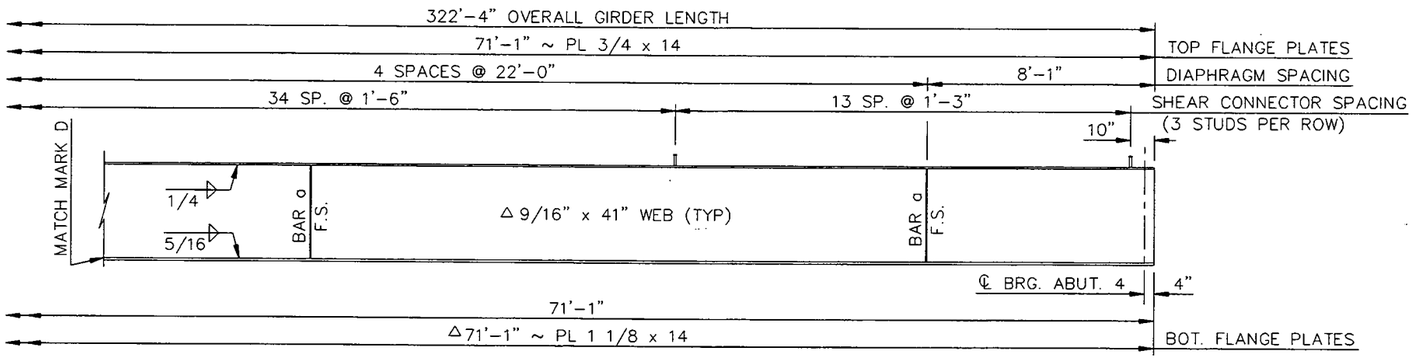
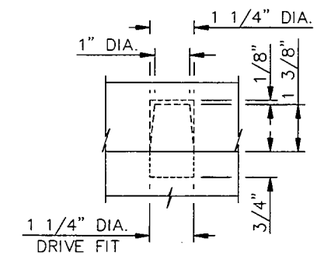
2-053.731L-24

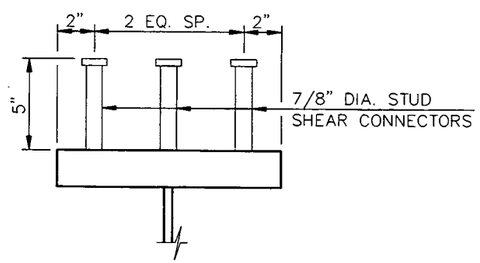
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	113





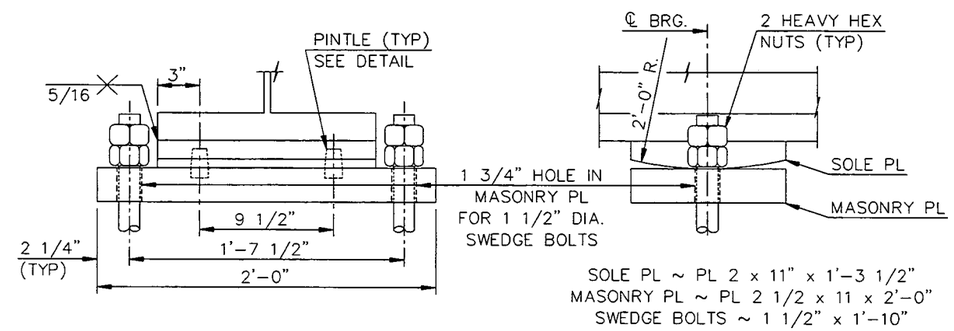


PINTLE DETAIL



(3 STUDS PER ROW)

SHEAR CONNECTOR DETAIL



PIER BEARING DETAILS

NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731L-24 FOR MATCH MARK C.

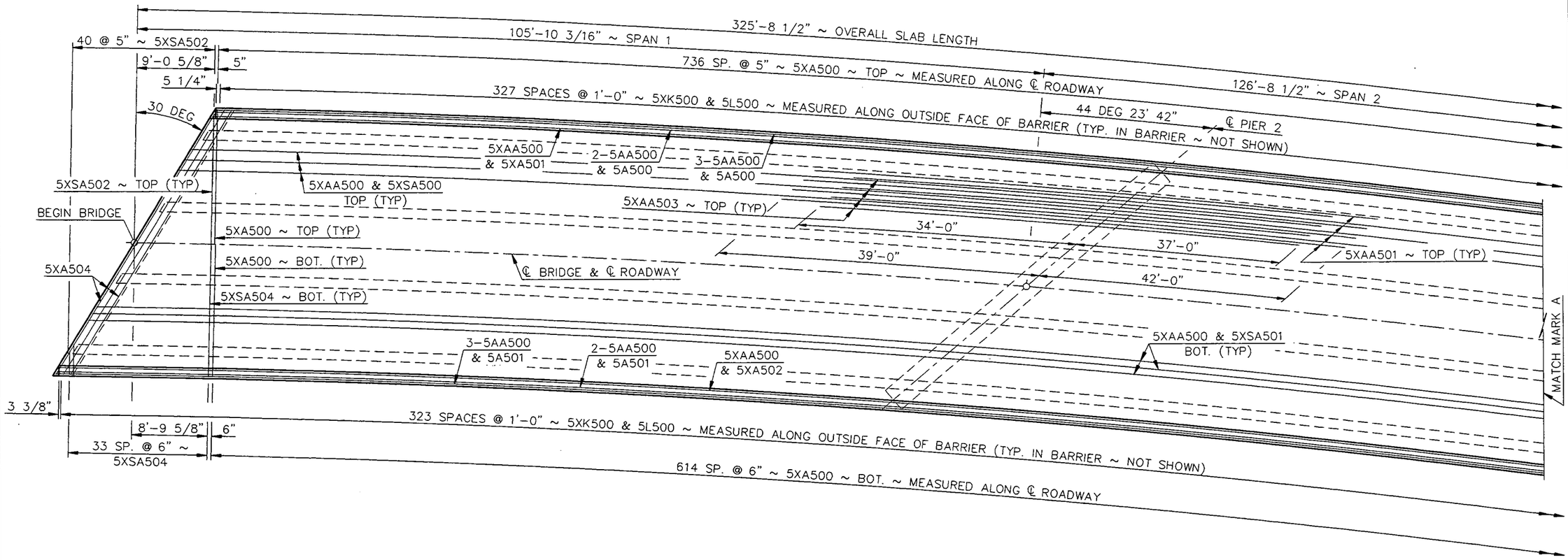
BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 4 ELEVATION DETAILS, PIER BEARING DETAILS & SHEAR CONNECTOR DETAIL

GIRDEL4A 96DLS64 JDS
c:\dgn\left\girdel4a.dgn Sep. 19, 1996 12:49:20

2-053.731L-25

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	114



NOTE:
SEE DWG. 2-053.731L-27 FOR MATCH MARK A.

QUANTITIES
SEE DWG. 2-053.731L-29
BURLINGTON NORTHERN OVERHEAD RAY
SLAB LAYOUT

SLABLO 96DLS57 JDS

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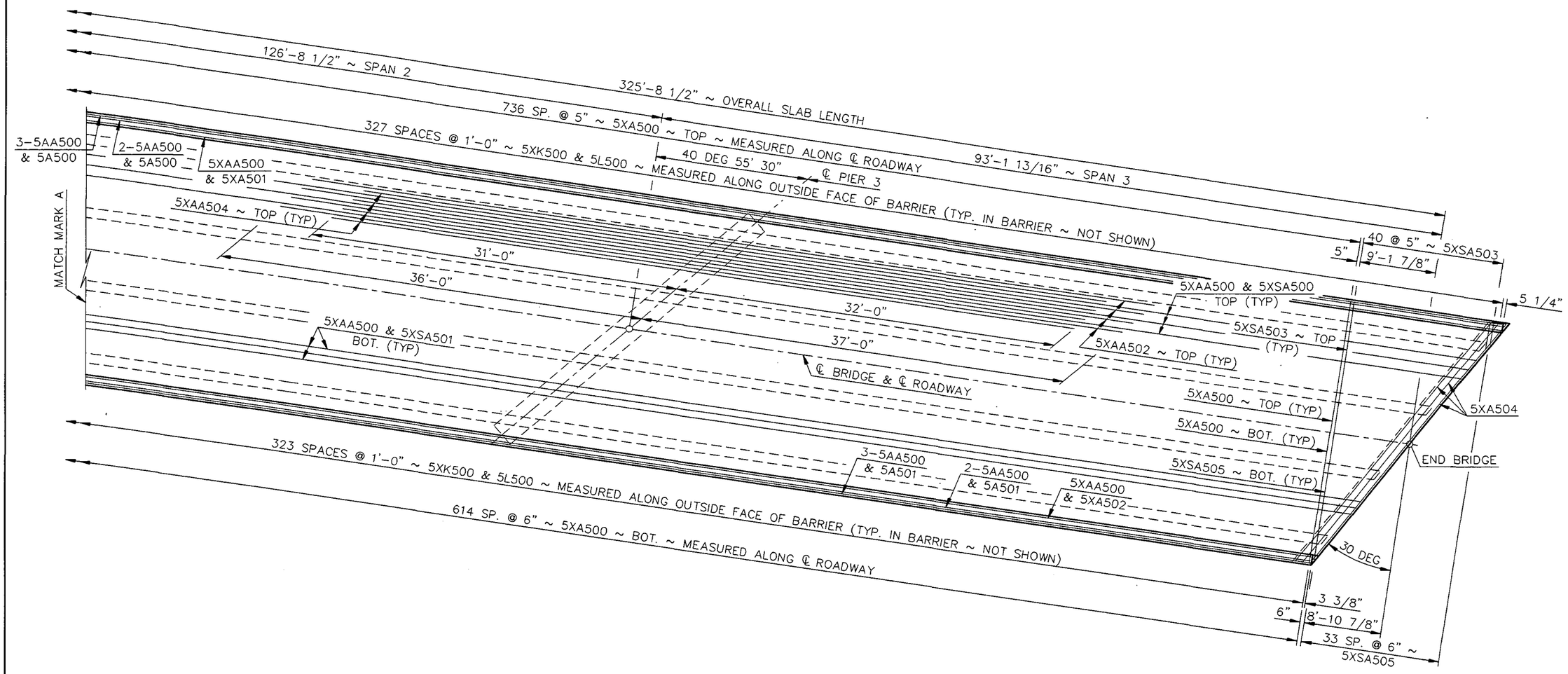
2-053.731L-26

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	115



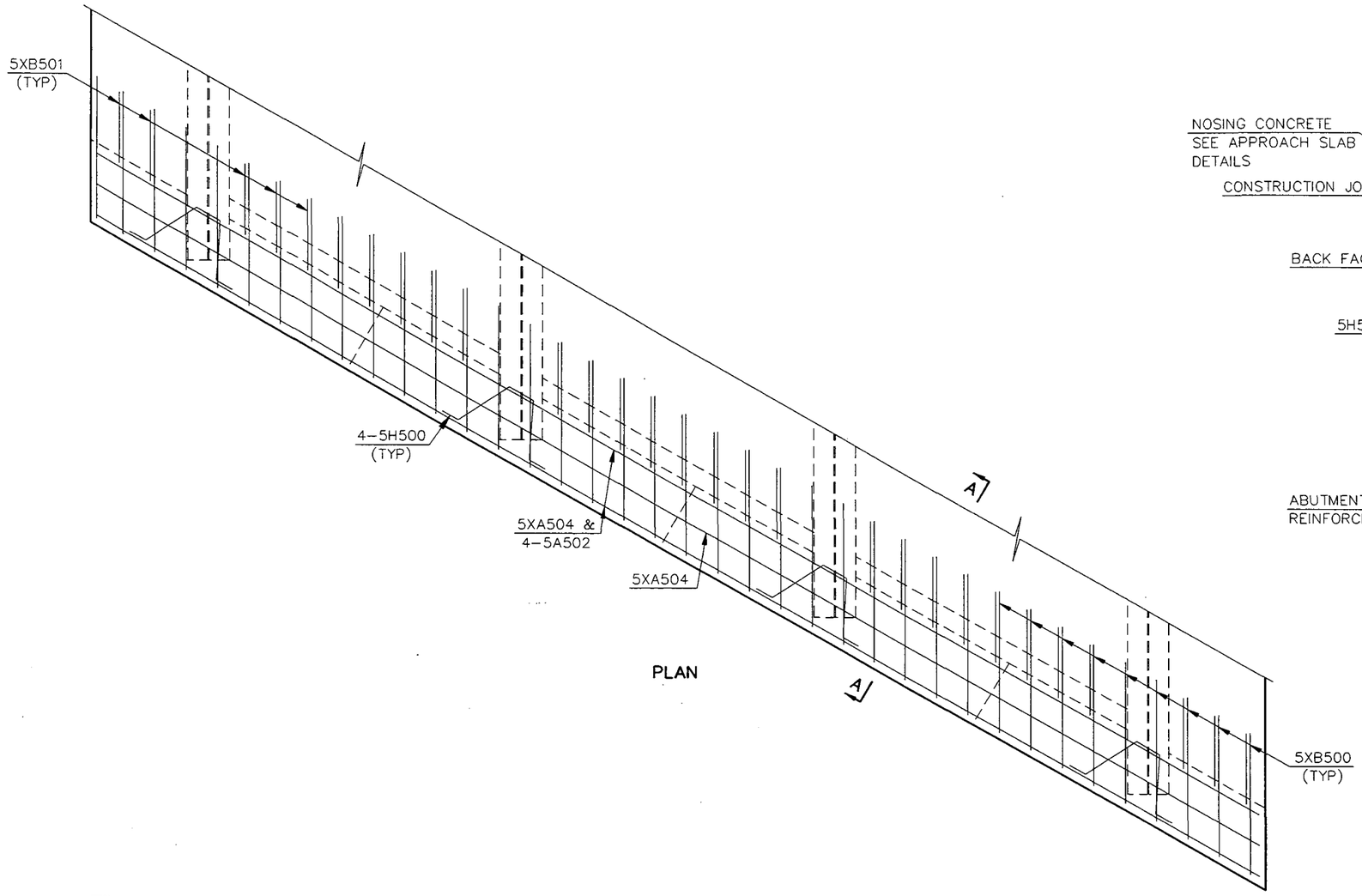
NOTE:
SEE DWG. 2-053.731L-26 FOR MATCH MARK A.

QUANTITIES
SEE DWG. 2-053.731L-29
BURLINGTON NORTHERN OVERHEAD RAY
SLAB LAYOUT

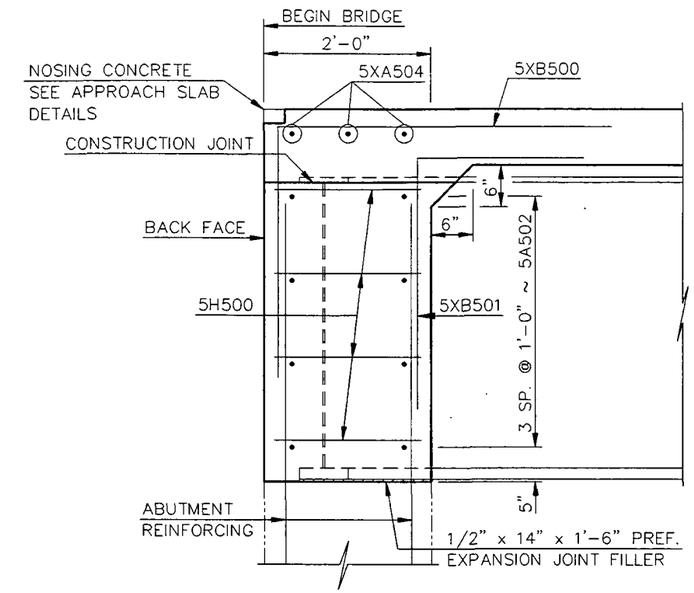
SLABLO1 96DLS58 JDS
c:\dgn\left\slablo1.dgn Sep. 19, 1996 12:50:29

2-053.731L-27

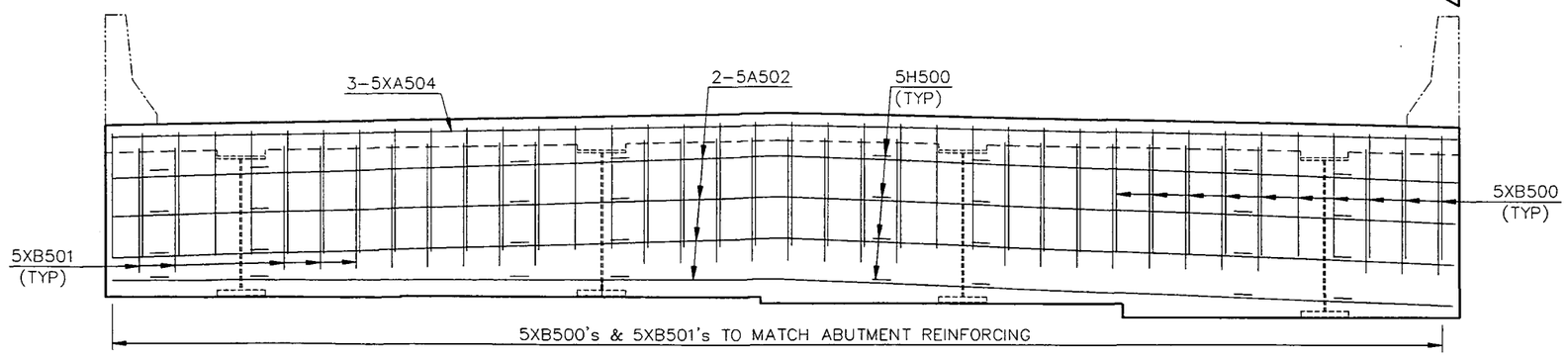
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	116



PLAN



A-A



ELEVATION

QUANTITIES
SEE DWG. 2-053.731L-29
BURLINGTON NORTHERN OVERHEAD RAY
END BEAM DETAILS

ENDBM 96DLS60 JDS

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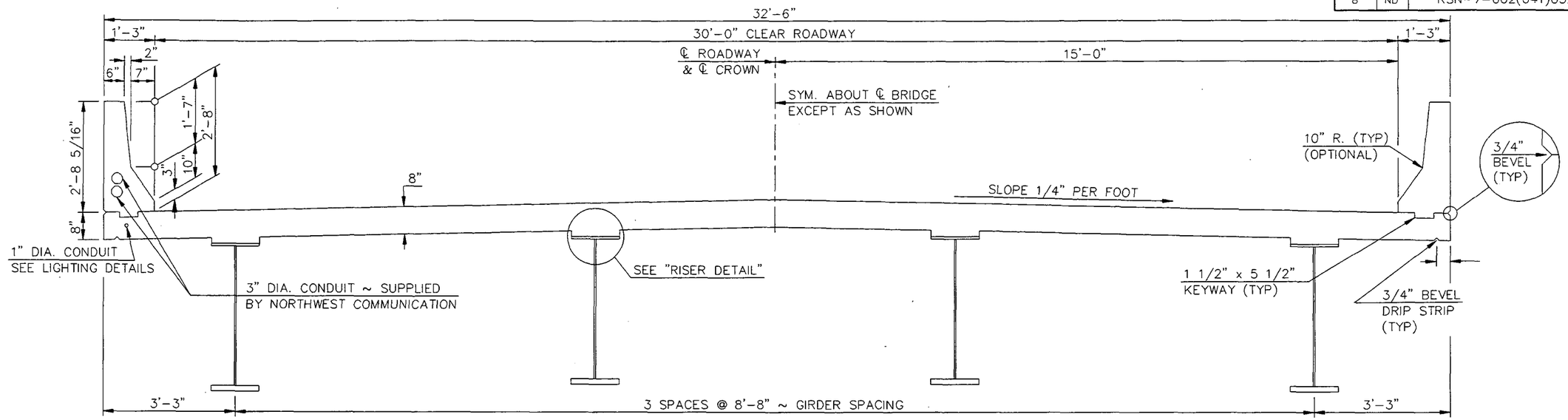
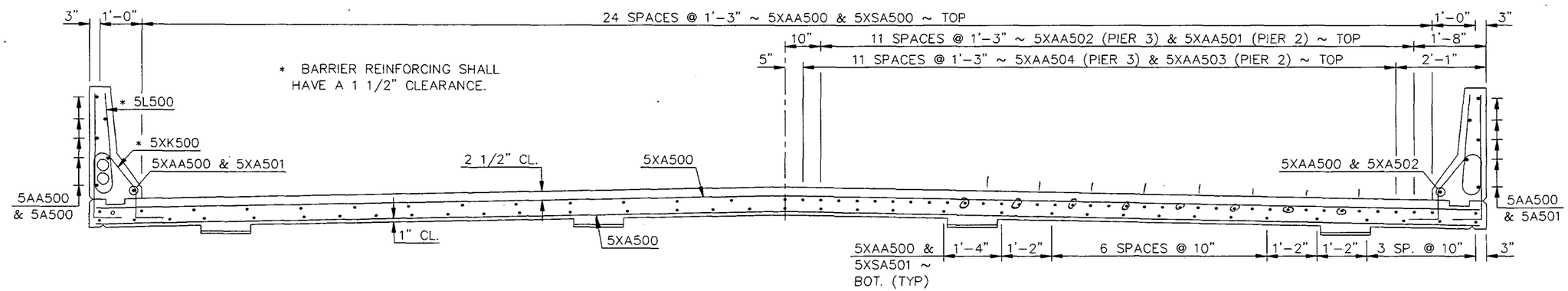
2-053.731L-28

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	117



(SHOWING DIMENSIONS)

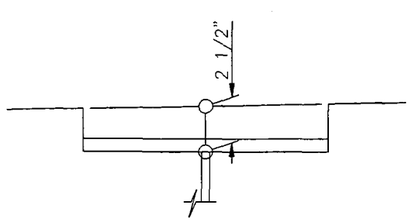
SLAB SECTION



(SHOWING REINFORCING BETWEEN SUPPORTS)

SLAB SECTION

(SHOWING REINFORCING OVER SUPPORTS)



TYPICAL RISER DETAIL

QUANTITIES	
CLASS AAE-3 CONCRETE	340.2 CY
REINFORCING STEEL	7647 LB
REINFORCING STEEL-EC	81,927 LB

BURLINGTON NORTHERN OVERHEAD
RAY

SLAB SECTIONS

SLABSEC 96DLS59 JDS

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2-053.731L-29

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

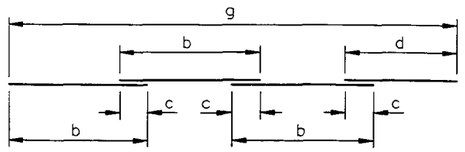
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	118

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
ABUTMENT 1	5	A100	12	56'-6"		56'-6"							
	5	A101	2	41'-2"		41'-2"							
	5	A102	2	13'-0"		13'-0"							
	5	A103	2	10'-0"		10'-0"							
	5	A104	2	7'-0"		7'-0"							
	5	A105	8	9'-10"		9'-10"							
	5	A106	6	8'-0"		8'-0"							
	7	A107	16	15'-0"		15'-0"							
	5	C100	1	20'-8"		9'-6"	1'-8"	9'-6"					
	5	C101	13	20'-0"		9'-2"	1'-8"	9'-2"					
	5	C102	4	16'-4"		5'-6"	1'-8"	9'-2"					
	5	C103	8	19'-4"		8'-10"	1'-8"	8'-10"					
	5	C104	2	15'-10"		5'-4"	1'-8"	8'-10"					
	5	C105	6	18'-10"		8'-7"	1'-8"	8'-7"					
	5	C106	2	15'-3"		5'-0"	1'-8"	8'-7"					
	5	C107	2	19'-10"		9'-1"	1'-8"	9'-1"					
	4	C108	42	2'-8"		6"	1'-8"	6"					
	5	D100	2	15'-5"		3'-0"	12'-5"					12	4
	5	SC100	1	191'-6"	8"	5'-7"	9'-3"	1'-7"	11				
	5	SC101	1	115'-6"	8"	9'-1"	9'-1"	1'-6"	5				

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
ABUTMENT 4	5	A400	14	55'-3"		55'-3"							
	5	A401	2	15'-0"		15'-0"							
	5	A402	2	12'-0"		12'-0"							
	5	A403	2	9'-0"		9'-0"							
	5	A404	2	6'-0"		6'-0"							
	5	A405	8	7'-5"		7'-5"							
	5	A406	10	8'-0"		8'-0"							
	7	A407	20	15'-0"		15'-0"							
	5	A408	4	4'-3"		4'-3"							
	5	C400	1	21'-2"		9'-9"	1'-8"	9'-9"					
	5	C401	7	19'-4"		8'-10"	1'-8"	8'-10"					
	5	C402	2	15'-9"		5'-3"	1'-8"	8'-10"					
	5	C403	23	19'-10"		9'-1"	1'-8"	9'-1"					
	5	C404	6	16'-3"		5'-6"	1'-8"	9'-1"					
	5	C405	1	21'-9"		9'-1"	1'-8"	11'-0"					
	5	C406	1	23'-8"		11'-0"	1'-8"	11'-0"					
	4	C407	38	2'-8"		6"	1'-8"	6"					
	5	D400	2	15'-5"		3'-0"	12'-5"					12	4
	5	SC400	1	197'-6"	8"	5'-10"	9'-6"	1'-7"	11				
	5	SC401	1	115'-5"	8"	11'-0"	11'-0"	1'-6"	4				

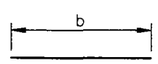
NOTES:

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.



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

(AA)



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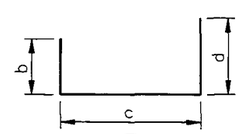

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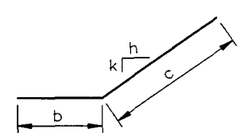

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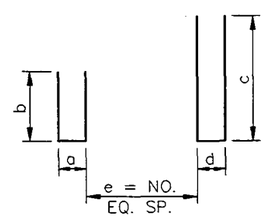

(SC)

BURLINGTON NORTHERN OVERHEAD RAY

ABUTMENT 1 & ABUTMENT 4 REINFORCING BAR LIST & DETAILS

REBAR 96DLS56 JDS

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2-053.731L-30

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

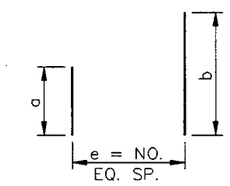
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	119

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
PIER 2	5	A200	46	40'-8"		40'-8"							
	5	A201	82	25'-0"		25'-0"							
	5	A202	9	41'-8"		41'-8"							
	5	C200	41	6'-2"		2'-3"	1'-8"	2'-3"					
	5	C201	44	6'-0"		2'-3"	1'-6"	2'-3"					
	4	C202	54	2'-8"		6"	1'-8"	6"					
	5	C203	41	7'-8"		2'-6"	2'-8"	2'-6"					
	5	C204	8	7'-0"		2'-3"	2'-6"	2'-3"					
	5	D200	85	4'-10"		2'-10"	2'-0"					12	12
	5	D201	3	5'-3"		3'-3"	2'-0"					12	12
PIER 3	5	A300	48	38'-2"		38'-2"							
	5	A301	78	26'-8"		26'-8"							
	5	A302	9	39'-2"		39'-2"							
	5	C300	39	6'-2"		2'-3"	1'-8"	2'-3"					
	5	C301	48	6'-0"		2'-3"	1'-6"	2'-3"					
	4	C302	48	2'-8"		6"	1'-8"	6"					
	5	C303	39	7'-8"		2'-6"	2'-8"	2'-6"					
	5	C304	8	7'-0"		2'-3"	2'-6"	2'-3"					
	5	D300	84	4'-10"		2'-10"	2'-0"					12	12

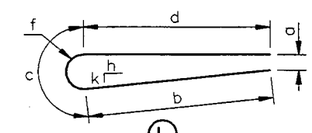
LOCATION		SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
SUPERSTRUCTURE	REGULAR	5	A500	5	33'-8"		33'-8"							
		5	A501	5	29'-5"		29'-5"							
		5	A502	16	37'-1"		37'-1"							
		5	H500	32	5'-1"	6"	1'-8"	9"					6	12
		5	L500	652	5'-0"	3"	2'-2"	8"	2'-2"		2.5"		12	1.25
		5	AA500	10	300'-0"		60'-0"	1'-3"	60'-0"	4		295'-0"		
	EPOXY COATED	5	XA500	1352	32'-2"		32'-2"							
		5	XA501	1	33'-7"		33'-7"							
		5	XA502	1	29'-6"		29'-6"							
		5	XA504	6	37'-1"		37'-1"							
		5	XB500	76	7'-0"		4'-0"	3'-0"						
		5	XB501	60	5'-0"		2'-0"	3'-0"						
		5	XK500	652	4'-11"	1'-4"	8"	11"	8"	1'-0"	2.5"	8"	8.5	12
		5	XAA500	64	300'-0"		60'-0"	1'-3"	60'-0"	4		295'-0"		
		5	XAA501	24	82'-3"		60'-0"	1'-3"	22'-3"	1		81'-0"		
		5	XAA502	24	74'-3"		60'-0"	1'-3"	14'-3"	1		73'-0"		
		5	XAA503	24	72'-3"		60'-0"	1'-3"	12'-3"	1		71'-0"		
		5	XAA504	24	64'-3"		60'-0"	1'-3"	4'-3"	1		63'-0"		
		5	XSA500	1	851'-7"	29'-5"	33'-8"			26				
		5	XSA501	1	1103'-11"	29'-5"	33'-8"			34				
		5	XSA502	1	700'-5"	2'-7"	31'-7"			40				
		5	XSA503	1	703'-10"	2'-9"	31'-7"			40				
		5	XSA504	1	570'-11"	2'-5"	31'-2"			33				
		5	XSA505	1	573'-9"	2'-7"	31'-2"			33				

NOTES:

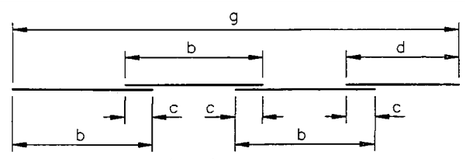
1. FABRICATION AND TOLERANCES SHALL BE IN ACCORDANCE WITH THE CRSI MANUAL OF STANDARD PRACTICE.
2. ALL DIMENSIONS ARE OUT TO OUT OF BARS.
3. NOMINAL LENGTH OF EACH BENT BAR OR CUT BAR IS THE SUM TOTAL OF THE DETAILING DIMENSIONS FOR THAT BAR, UNLESS OTHERWISE NOTED.
4. ADJACENT "AA" BARS SHALL BE TURNED 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.



(SA)

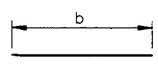


(L)

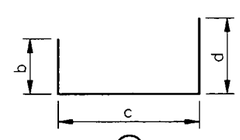


c = LAP SPLICE (TYP.)
e = NO. OF "b" LENGTH PIECES IN A SET
TOTAL LENGTH PER SET = e x b + d

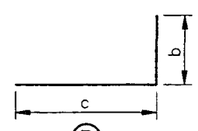
(AA)



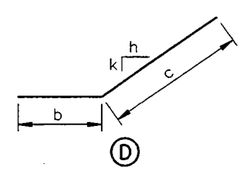
(A)



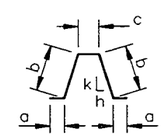
(C)



(B)



(D)



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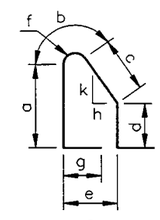


(K)

BURLINGTON NORTHERN OVERHEAD RAY

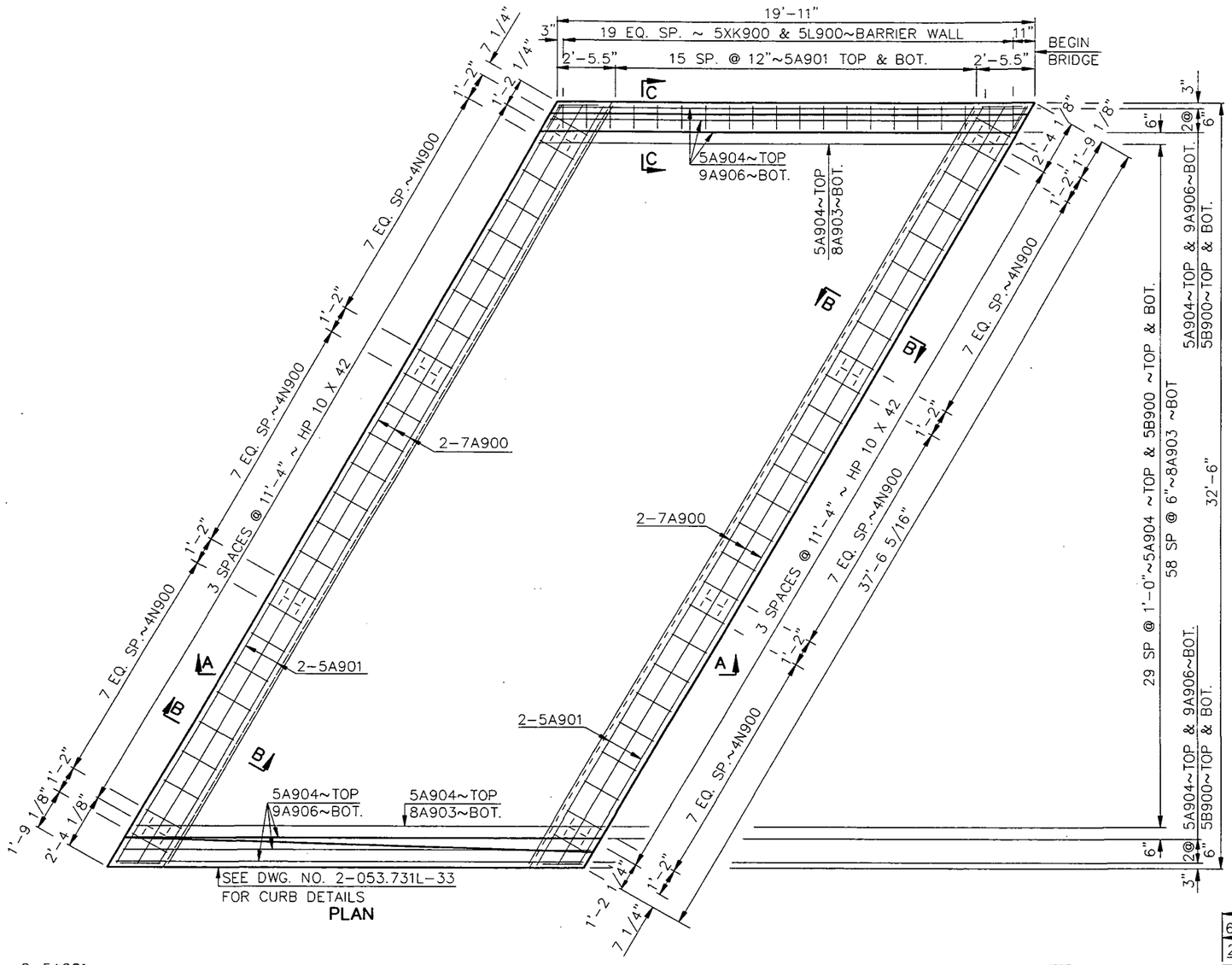
PIER & SUPERSTRUCTURE REINFORCING BAR LIST & DETAILS

REBAR1 96LCS081 JDS

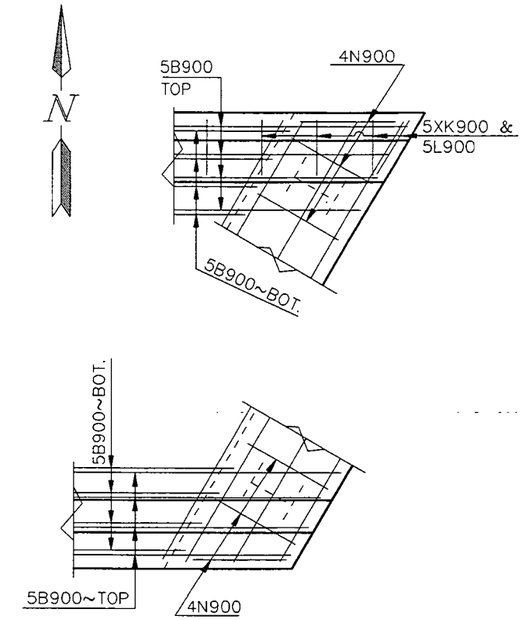
r:\project\70002052.041\bridge\2-0 Sep. 19, 1996 12:52:29

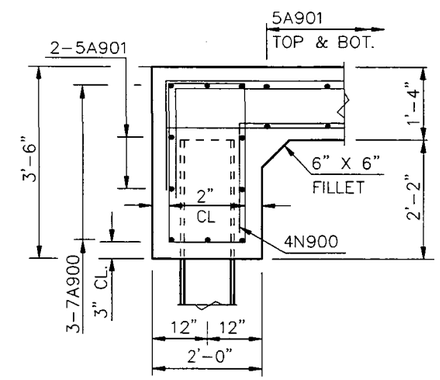
2-053.731L-31

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	120

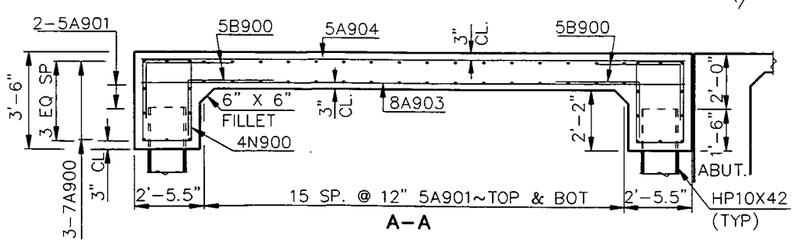


PLAN

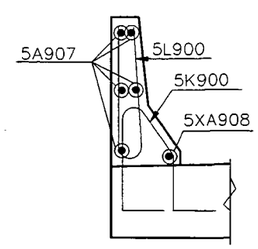




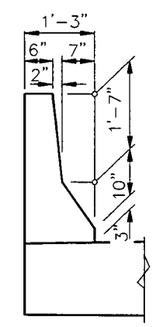
B-B



A-A



C-C



C-C

QUANTITIES
SEE DWG. NO. 2-053.731L-33

BURLINGTON NORTHERN OVERHEAD RAY

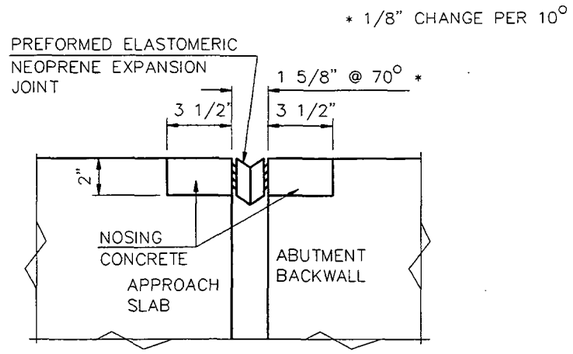
APPROACH SLAB
BEGIN END

APPSLAB3 96LCS085 JDS

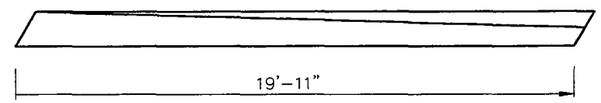
c:\drawings\appslab3.dgn Sep. 19, 1996 15:53:55

2-053.731L-32

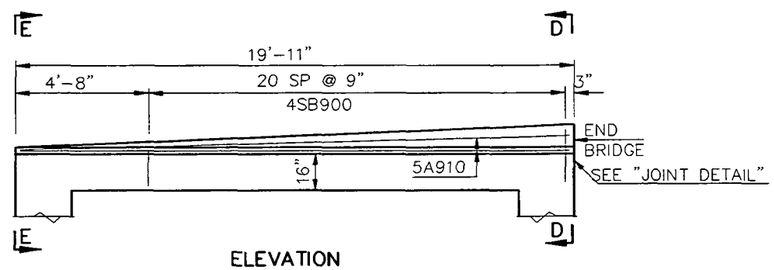
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	121



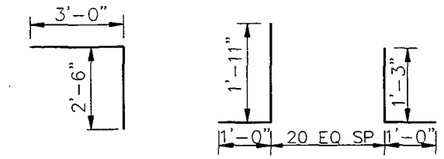
JOINT DETAIL

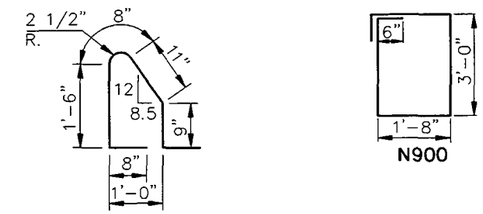


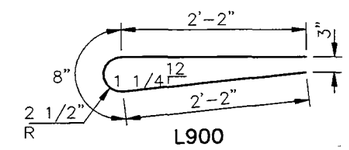
PLAN



ELEVATION







BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT

WIDTH = 30'-0" CL. RDWY.

SKEW ANGLE = 30°

BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
7	A900	12	37'-2"
5	A901	40	37'-2"
8	A903	59	19'-7"
5	A904	36	19'-7"
9	A906	6	19'-7"
5	A907	5	19'-7"
5	XA908	1	19'-7"
5	A910	2	19'-7"
5	B900	144	5'-6"
4	SB900	2 SETS	54'-3"
5	XK900	22	5'-2"
5	L900	22	5'-0"
4	N900	56	10'-4"

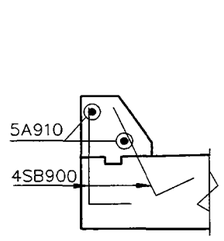
ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL LBS.	CONCRETE C.Y.
8,364	46.4

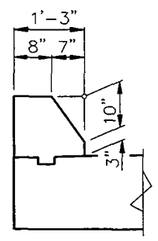
X = EPOXY COATED BAR

NOTES:

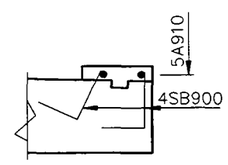
THE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING STEEL AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB". THE PILING, NOSING CONCRETE AND PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT ARE SEPARATE BID ITEMS.
THE PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT SHALL CONTINUE UP THE FRONT FACE OF BARRIER FOR A DISTANCE OF 6" AND TERMINATE.



D-D



D-D



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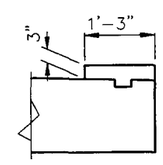


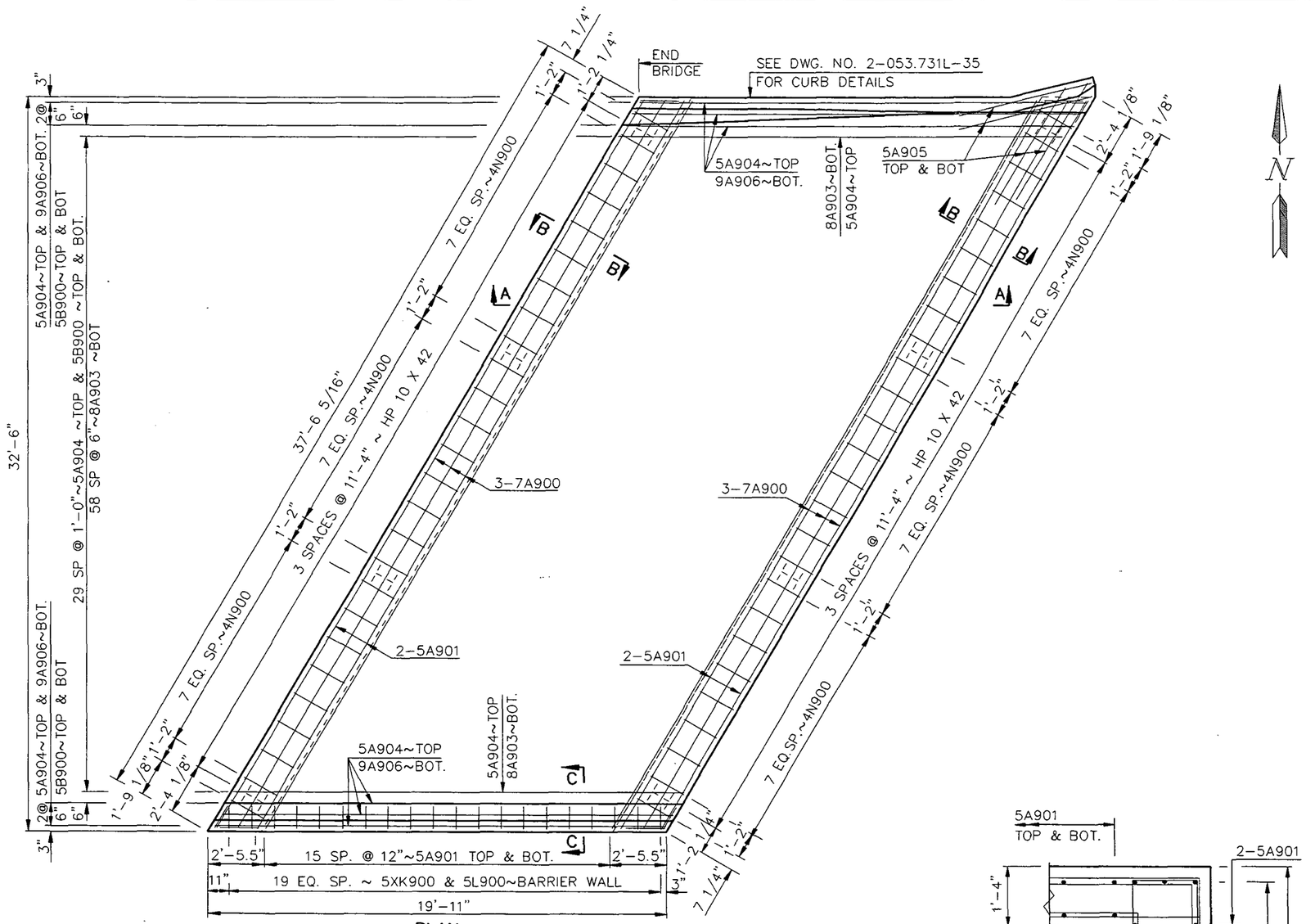
E-E

QUANTITIES		
APPROACH SLAB	71.9	SY
NOSING CONCRETE	37.5	LF
PREF. ELAST. NEO. EXP. JT.	35.6	LF

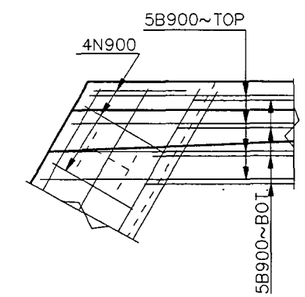
BURLINGTON NORTHERN OVERHEAD RAY

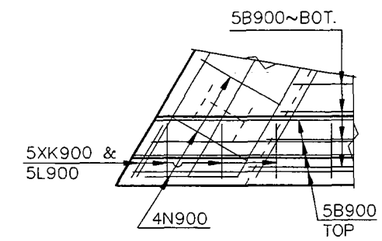
APPROACH SLAB
BEGIN BRIDGE

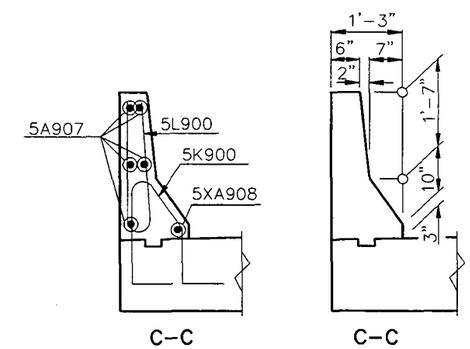
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	122



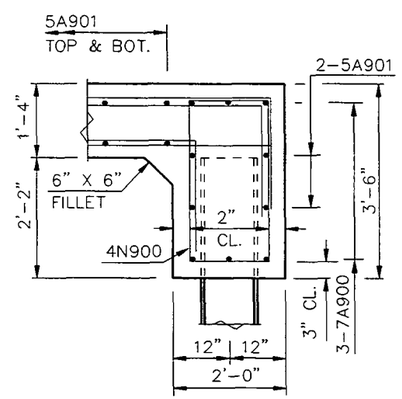
PLAN



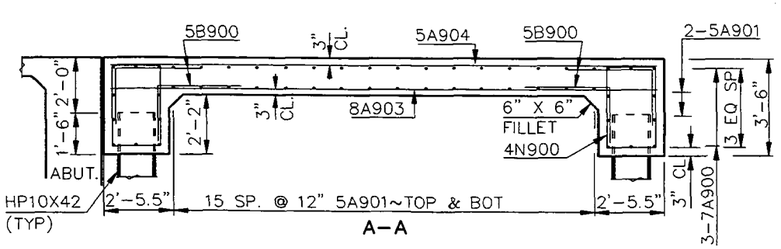




C-C C-C



B-B



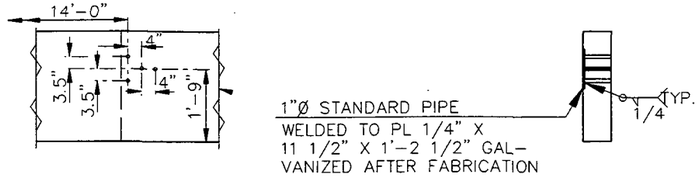
A-A

QUANTITIES
SEE DWG. NO. 2-053.731L-35

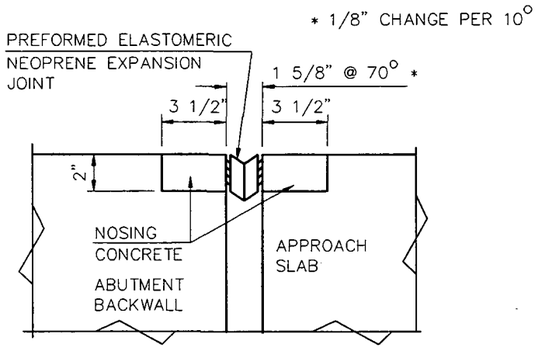
BURLINGTON NORTHERN OVERHEAD RAY

APPROACH SLAB END BRIDGE

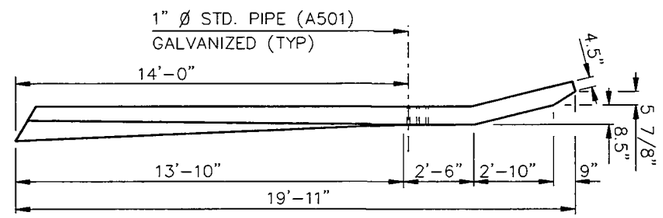
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	123



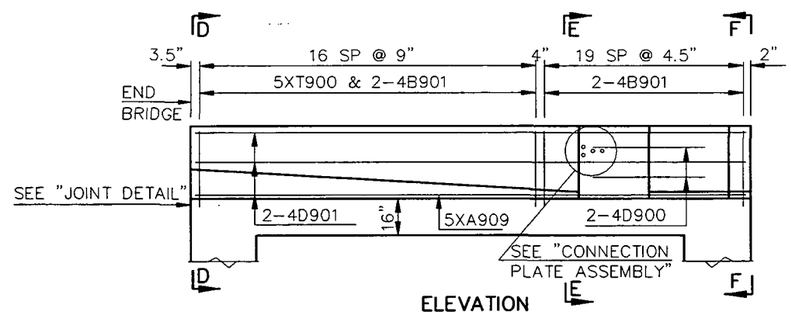
CONNECTION PLATE ASSEMBLY



JOINT DETAIL



PLAN



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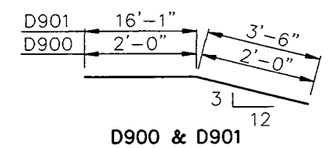
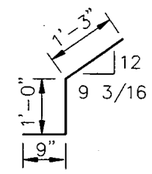
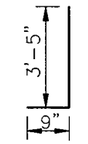


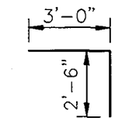
D900 & D901



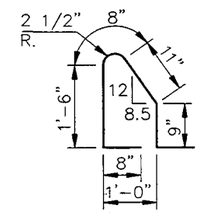
XT900
FIELD BEND
TO FIT



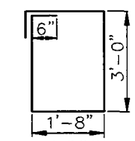
B901



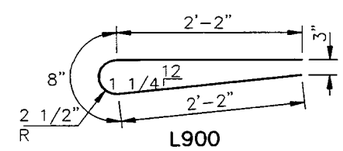
B900



K900



N900



L900

BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT

WIDTH = 30'-0" CL. RDWY.

SKEW ANGLE = 30°

BAR LIST – ONE SLAB

SIZE	MARK	NO.	LENGTH
7	A900	12	37'-2"
5	A901	40	37'-2"
8	A903	59	19'-7"
5	A904	36	19'-7"
5	A905	8	6'-0"
9	A906	6	19'-7"
5	A907	5	19'-7"
5	XA908	1	19'-7"
5	XA909	1	13'-10"
5	B900	144	5'-6"
4	B901	74	4'-2"
4	D900	2	4'-0"
4	D901	6	19'-7"
5	XK900	22	5'-2"
5	L900	22	5'-0"
4	N900	56	10'-4"
5	XT900	17	3'-0"

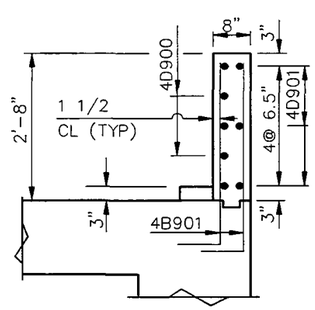
ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL LBS.	CONCRETE C.Y.
8,658	47.3

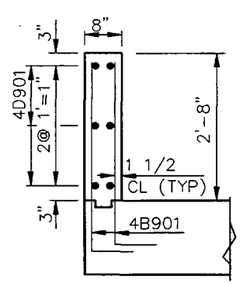
X = EPOXY COATED BAR

NOTES:

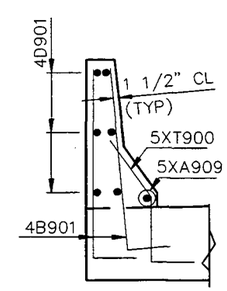
THE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING STEEL AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB". THE PILING, NOSING CONCRETE AND PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT ARE SEPARATE BID ITEMS.



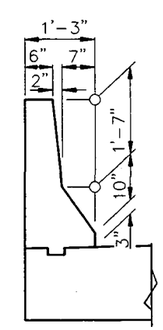
F-F



E-E



D-D



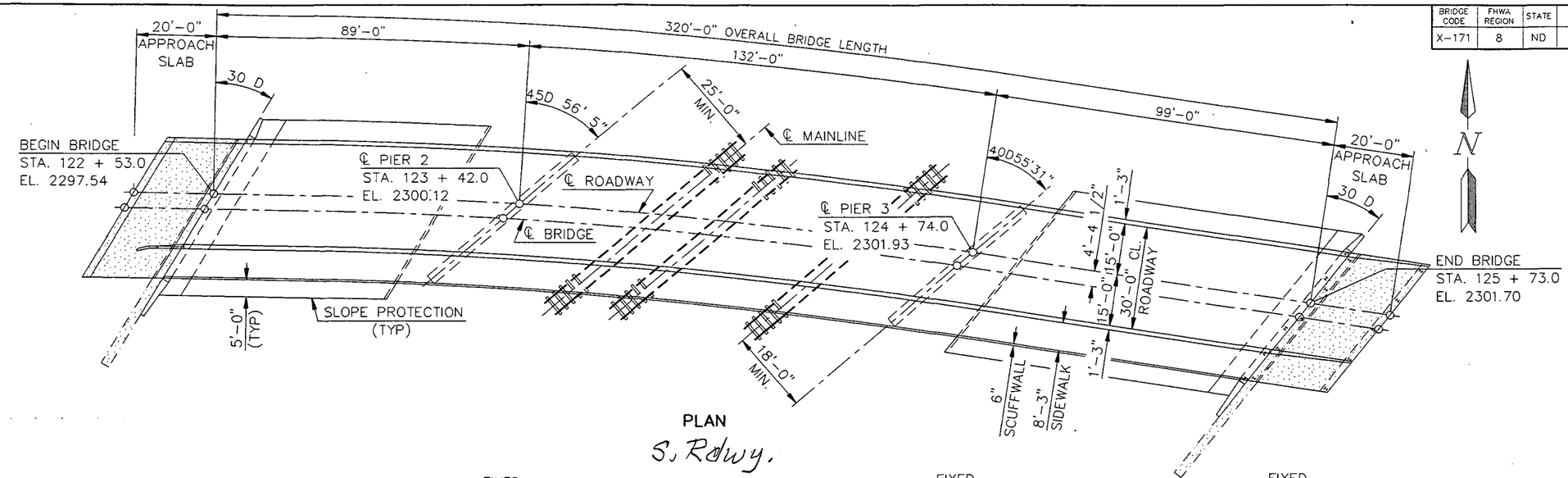
D-D

QUANTITIES		
APPROACH SLAB	72.1	SY
NOSING CONCRETE	37.5	LF
PREF. ELAST. NEO. EXP. JT.	35.6	LF

BURLINGTON NORTHERN OVERHEAD RAY

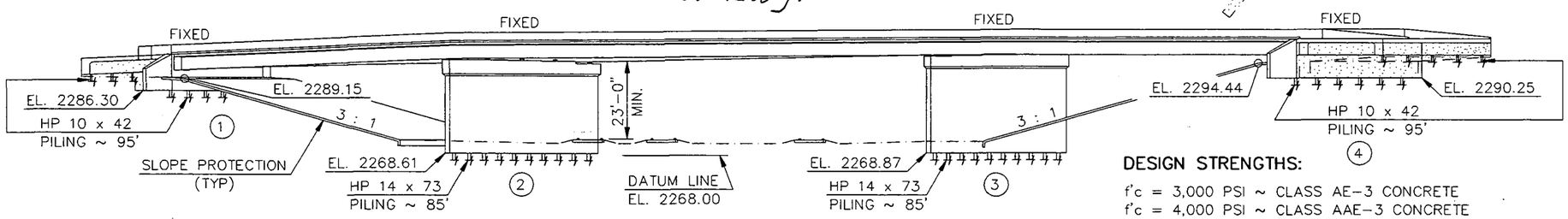
APPROACH SLAB
END BRIDGE

BRIDGE CODE	FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
X-171	8	ND	RSN-7-002(041)052	124



PLAN

S. Rdwy.



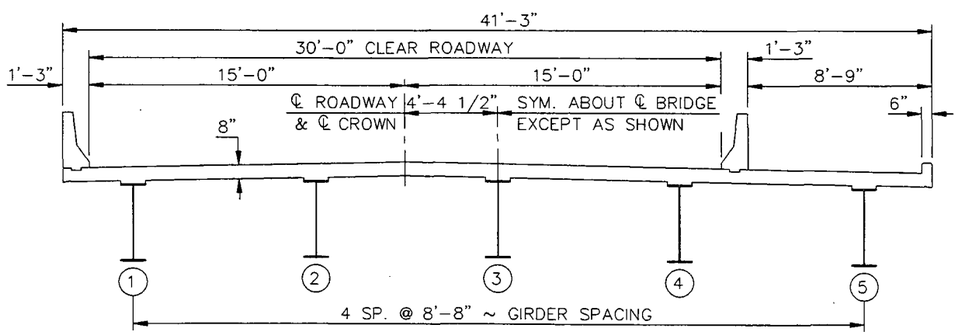
ELEVATION

DESIGN STRENGTHS:

f'c = 3,000 PSI ~ CLASS AE-3 CONCRETE
f'c = 4,000 PSI ~ CLASS AAE-3 CONCRETE
fy = 36,000 PSI ~ AASHTO M-270 GR. 36 STRUCTURAL STEEL
fy = 50,00 PSI ~ AASHTO M-270 GR. 50 STRUCTURAL STEEL
fy = 60,000 PSI ~ REINFORCING STEEL

LOAD FACTOR DESIGN

LARRY L. SCHWARTZ
REGISTERED PROFESSIONAL ENGINEER
2099
NORTH DAKOTA



TYPICAL DECK SECTION

SPEC	CODE	ITEM DESCRIPTION	UNIT	QUANTITY
107	0100	RAILWAY PROTECTION INSURANCE	L. SUM	.5
202	0105	REMOVAL OF STRUCTURE	L. SUM	.5
210	0103	CLASS 1 EXCAVATION - SITE 2	L. SUM	1
210	0198	SELECT BACKFILL	TON	548
210	0203	FOUNDATION PREPARATION - SITE 2	L. SUM	1
550	0215	CONCRETE BRIDGE APPROACH SLAB	SQ. YD.	182.6
602	0130	CLASS AAE-3 CONCRETE	CU. YD.	414.8
602	1130	CLASS AE-3 CONCRETE	CU. YD.	289.1
602	1250	PENETRATING WATER REPELLENT TR.	SQ. YD.	1066.7
612	0115	REINFORCING STEEL GRADE 60	LBS.	29,549
612	0116	REINFORCING STEEL GRADE 60 EPOXY	LBS.	101,525
616	5889	STRUCTURAL STEEL SITE 2 (APPROXIMATELY 333,018 LBS.)	L. SUM	1
622	0012	STEEL H-PILE TIPS 10x42	EA.	32
622	0016	STEEL H-PILE TIPS 14X73	EA.	20
622	0020	STEEL PILING HP 10x42	L. FT.	3040
622	0060	STEEL PILING HP 14x73	L. FT.	1700
624	0126	PEDESTRIAN CANOPY	L. FT.	316.7
708	1100	SLOPE PROTECTION, CONC.	SQ. YD.	1009
930	3000	BRIDGE BENCH MARKS	SET	.5
930	7014	ROADWAY CANOPY - SITE 2	L. SUM	1
930	8640	NOSING CONCRETE	L. FT.	95.2
930	8650	PREFORMED ELASTOMERIC NEOPRENE EXP. JT.	L. FT.	93.4

BENCH MARKS

NO.	DESCRIPTION	LOCATION	ELEVATION
BH7	RIVET ON CONCRETE	STA. 123 +83 - .66' LT.	2270.92
1	TOP OF FIRE HYDRANT	STA. 125 +53 - 239' RT.	2268.40

STANDARD DRAWINGS
D-900-1, D-708-1, D-622-1

F.W.S. 15 PSF

HS 25 DESIGN LOADING

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

BURLINGTON NORTHERN OVERHEAD RAY

BRIDGE LAYOUT

PROJECT: RSN-7-002(041)052
STATION 124 + 13.0

WILLIAMS COUNTY

19SEP96
DATE

Larry Schwartz
FOR - BRIDGE ENGINEER

BRLO 96DLS50 JDS
c:\dgn\right\brlo.dgn Sep. 19, 1996 14:56:14

SITE 2

2-053.731R

BRIDGE NOTES

100 SCOPE OF WORK: This project consists of building a new 3-span steel girder bridge 320' long with clear roadway width of 30' and an 8'-9" sidewalk. Part of the new structure is on a tangent alignment and part is on a curve.

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.

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

202 REMOVAL OF STRUCTURE: The existing structure is an underpass 107' long with a clear roadway of 30 feet. The substructures are made of concrete, and the superstructure is made of steel. The contractor may have to remove portions of the existing wingwall footings and existing retaining walls to allow for pile driving. The contractor shall remove a minimum amount of material from the wingwall footings. The contractor shall place compacted fill in the existing underpass up to an elevation 6' below the bottom of the steel beams. The contractor shall entirely fill the pedestrian tunnels and the voids under the sidewalks of the existing structure with either earth or flowable fill. Burlington Northern (BN) Railroad will remove the superstructure and portions of the substructure. BN Railroad will place the removed material on the railroad right of way at a location agreed to by BN Railroad and the engineer. All materials removed by the contractor and BN Raiload shall become the property of the contractor and shall be disposed of properly off the right of way. All labor and materials required to perform the work described above shall be included in the bid item "Removal of Structure."

203 EMBANKMENT: The embankment at the abutments shall be in place for a minimum of 30 days before piling are driven.

The contractor will be required to bore through the fill at the abutments before driving piling. All pilot holes not completely filled by the piles shall be backfilled with sand or fine gravel before the substructure is placed.

In lieu of the above waiting period, the contractor may begin pile driving operations as soon as the embankment is in place, but all pilot holes shall be extended to a depth of 15 feet into the original ground.

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 2."

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. A surface tolerance of 3/16" in 10 feet is also required.

602 Exterior beams shall be braced to prevent rotation. The strength and spacing of the bracing shall be dependent on the forces induced by the weight of the concrete, forms, equipment, and workers.

602 END BEAMS: The end beam concrete shall be placed before the deck concrete. The concrete shall cure for at least 72 hours before deck placement.

602 SURFACE FINISH "D": Surface Finish "D" shall be required for the inside, outside, and top surfaces of the barrier, and on the outside edge 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 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 surface of the concrete deck.

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

BRIDGE NOTES

between substructures at approximately 10-foot spacing.

602 DECK TINING: Tining shall begin 6 inches from the beginning and the end of the deck and 6 inches from each deck joint.

602 SIDEWALK BROOMING: The sidewalk on the bridge shall not be tined. The sidewalk shall be transversely broomed to slightly roughen the surface.

612 REINFORCING STEEL: Dimensions for bent bars are given out to out and to tangent intersections unless otherwise noted.

612 The bar fabricator shall add a prefix to all bar designations to differentiate between the different structures on this project.

612 All reinforcing steel shall be Grade 60.

616 STRUCTURAL STEEL: Structural steel shall be AASHTO M 270, Grade 50T2, except the diaphragms and swedge bolts may be grade 36T2. The requirement for Charpy V-Notch is waived for the bearings, diaphragms, and diaphragm connection material.

616 Shear connectors on splice plates shall be moved to clear bolt holes.

616 Field connections shall be made with 7/8 inch diameter, AASHTO M 164 high-strength bolts unless otherwise shown.

616 Temporary or permanent attachments or devices that are not shown on the plans as part of the structure shall not be welded to the structural steel members during the fabrication and construction process.

616 The cost of swedge bolts shall be included in the total cost of structural steel.

622 PILING: Piling shall be driven with a steam, air, or diesel hammer with a rated energy and ram weight not less than 55,154 foot-pound-tons, as computed by the formula W(E-13,444)+.821E, 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 2700 pounds.

622 PILING: Toothed cast steel pile tips (ASTM A148 steel) shall be required on all pile driven.

630 PAINT AND PAINTING: The structural steel shall be painted according to the specifications. The finish coats shall be blue, color number 25240, and shall meet Federal Standard No. 595B colors.

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

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. Structural Steel.
2. Preformed Elastomeric Neoprene Expansion Joint.

DESIGN STRENGTH:
F'C 3,000 PSI Cl. AE-3 Concrete
F'C 4,000 PSI Cl. AAE-3 Concrete
FY 36,000 PSI Structural Steel M270 Grade 36T2
FY 50,000 PSI Structural Steel M270 Grade 50T2
FY 60,000 PSI Grade 60 Reinforcing Steel Load Factor Design

930 PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT: The neoprene joint shall have a profile that allows thermal cycles and dynamic loading up to a total range of movement of two inches while providing watertight protection. The neoprene profile shall be bonded to the concrete surfaces with an epoxy adhesive that is chemically resistant to oxidation and corrosion, is impervious to weather extremes and is compatible with the nosing concrete. During installation, the neoprene profile shall be pressurized with compressed air to maximize the adhesion against the gap walls. After curing, the air pressure shall be permanently released. This shall be a Jeene Structural Sealing Joint System (2 W) or an approved equal.

930 NOSING CONCRETE: The nosing concrete material shall be an elastomeric concrete or a polymeric concrete that will provide a durable edge that can withstand live-load traffic without chipping or spalling. The nosing concrete material shall be Ceva Crete 95, manufactured by E-Poxy Industries Inc.; Elastomeric Concrete, as manufactured by the D.S. Brown Company; Silspec 900, as manufactured by Construction Materials Inc.; Elastomeric Concrete as manufactured by Harris Speciality Chemicals Inc., or an approved equal. The nosing shall be mixed and installed according to the manufacturer's recommendations. The cost for the equipment, materials, and labor to install the nosing concrete on each side of the joint shall be included in the lineal foot bid item "Nosing Concrete."

930 ROADWAY CANOPY: The contractor shall construct a canopy above the railroad under the structure to protect traffic from falling material. The canopy is an added safeguard and does not relieve the contractor of any responsibility

BRIDGE NOTES

for the safety of the public.

The canopy may be supported from the ground or suspended from the girders. The erection of the canopy and the girder shall be completed in a minimum amount of time and with the least inconvenience to the public and the railroad.

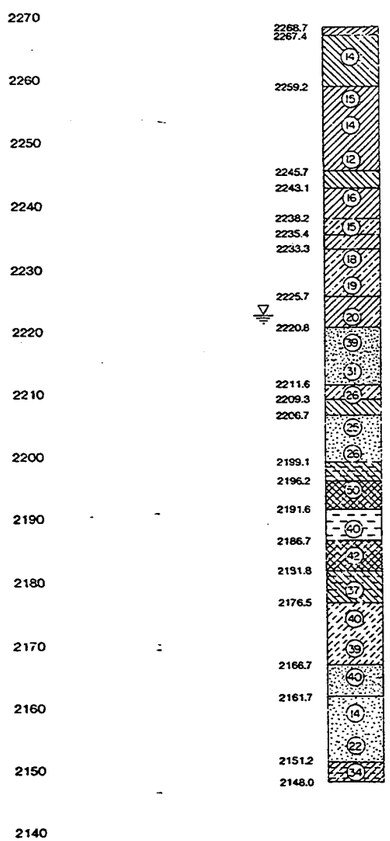
The canopy shall be of a design and material selected by the contractor and approved by the engineer. The minimum vertical clearance shall be 22′ above the railroad tracks. The canopy shall project a minimum distance of 5′-0" beyond the outside edge of curb of the proposed structure.

The canopy shall project a minimum distance of 5′-0" beyond the edge of the driving lanes beneath the structure and 5′-0" beyond the edge of the railroad tracks.

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

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

FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N. D.	RSN-7-002(041)052	128



BRN. CLAY. TOPSOIL. STIFF. IMPERVIOUS. PLIABLE

A-6 BRN. CLAY LOAM. AMORPHOUS. STIFF. IMPERVIOUS. PLIABLE
*C-87.4 kPa *C-1825 psf

A-6 BRN. CLAY. AMORPHOUS. STIFF. IMPERVIOUS. PLIABLE. IRON OXIDE PRESENT THROUGHOUT HORIZON
*C-91.0 kPa *C-1900 psf

A-6 BRN. CLAY LOAM. AMORPHOUS. STIFF. IMPERVIOUS. PLIABLE

A-6 BRN. CLAY. VERY STIFF. IMPERVIOUS. PLIABLE. AMORPHOUS *C-102.2 kPa *C-2135 psf

A-7-6 BRN. CLAY. AMORPHOUS. STIFF. PLIABLE. IMPERVIOUS. COAL LENSES THROUGHOUT HORIZON *C-94.6 kPa *C-1975 psf

A-6 BRN. CLAY. STIFF. PLIABLE. IMPERVIOUS

A-7-6 BRN. CLAY. AMORPHOUS. VERY STIFF. PLIABLE. IMPERVIOUS
*C-119.7 kPa *C-2500 psf

A-6 BRN. CLAY. AMORPHOUS. VERY STIFF. PLIABLE. IMPERVIOUS *C-129.3 kPa *C-2700 psf

A-2-4 LIGHT BRN. SAND. STRUCTURELESS. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC.
IRON OXIDE PRESENT THROUGHOUT HORIZON *Ø-37*

A-7-5 GRAY. CLAY. VERY STIFF. IMPERVIOUS. PLIABLE *C-143.6 kPa *C-3000 psf

A-6 GRAY. CLAY LOAM. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC *C-143.6 kPa *C-3000 psf

A-3 GRAY. SAND. STRUCTURELESS. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC. STRATIFIED WITH LIGNITE SEAMS
Ø-35

A-6 GRAY. SILTY CLAY LOAM. LAMINATED & LENTICULAR. VERY STIFF. IMPERVIOUS WITH PERMEABLE LENSES. PLIABLE *C-143.6 kPa *C-3000 psf

A-4 LIGHT BRN. LOAM. STRATIFIED. DENSE. PERMEABLE. NON-PLASTIC

A-4 GRAY. SILTY LOAM. STRUCTURELESS. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC

A-4 GRAY. LOAM. STRUCTURELESS. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC

A-4 GRAY. SILTY CLAY LOAM. STRUCTURELESS. DENSE. PERMEABLE. NON-PLASTIC
*C-215.5 kPa *C-4500 psf

A-2-4 GRAY. SANDY LOAM. STRUCTURELESS. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC
Ø-38

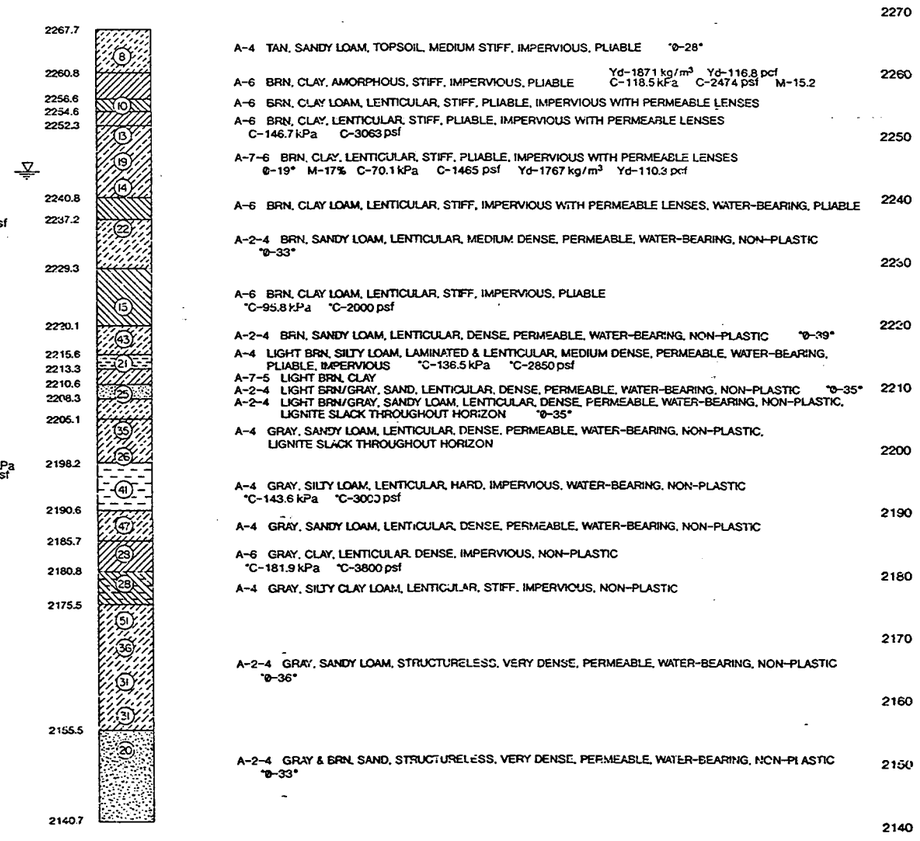
A-2-4 GRAY. SAND. STRUCTURELESS. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC
Ø-38

A-3 GRAY. SAND. STRUCTURELESS. MEDIUM DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC
Ø-32

A-7-6 GRAY. SILTY CLAY. LENTICULAR. HARD. IMPERVIOUS WITH PERMEABLE LENSES. WATER-BEARING. NON-PLIABLE
*C-191.5 kPa *C-4000 psf

BORING NO. 1

STA. 124+51.4 – RT. 66.6' FROM EXISTING CENTERLINE



A-4 TAN. SANDY LOAM. TOPSOIL. MEDIUM STIFF. IMPERVIOUS. PLIABLE *Ø-28*

A-6 BRN. CLAY. AMORPHOUS. STIFF. IMPERVIOUS. PLIABLE Yd-1871 kg/m³ Yd-116.8 pcf C-118.5 kPa C-2474 psf M-15.2

A-6 BRN. CLAY LOAM. LENTICULAR. STIFF. PLIABLE. IMPERVIOUS WITH PERMEABLE LENSES

A-6 BRN. CLAY. LENTICULAR. STIFF. PLIABLE. IMPERVIOUS WITH PERMEABLE LENSES
C-146.7 kPa C-3063 psf

A-7-6 BRN. CLAY. LENTICULAR. STIFF. PLIABLE. IMPERVIOUS WITH PERMEABLE LENSES
Ø-19* M-17% C-70.1 kPa C-1465 psf Yd-1767 kg/m³ Yd-110.3 pcf

A-6 BRN. CLAY LOAM. LENTICULAR. STIFF. IMPERVIOUS WITH PERMEABLE LENSES. WATER-BEARING. PLIABLE

A-2-4 BRN. SANDY LOAM. LENTICULAR. MEDIUM DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC
Ø-33

A-6 BRN. CLAY LOAM. LENTICULAR. STIFF. IMPERVIOUS. PLIABLE
*C-95.8 kPa *C-2000 psf

A-2-4 BRN. SANDY LOAM. LENTICULAR. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC *Ø-39*

A-4 LIGHT BRN. SILTY LOAM. LAMINATED & LENTICULAR. MEDIUM DENSE. PERMEABLE. WATER-BEARING. PLIABLE. IMPERVIOUS *C-136.5 kPa *C-2850 psf

A-7-5 LIGHT BRN. CLAY

A-2-4 LIGHT BRN/GRAY. SAND. LENTICULAR. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC *Ø-35*

A-2-4 LIGHT BRN/GRAY. SANDY LOAM. LENTICULAR. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC. LIGNITE SLACK THROUGHOUT HORIZON *Ø-35*

A-4 GRAY. SANDY LOAM. LENTICULAR. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC. LIGNITE SLACK THROUGHOUT HORIZON

A-4 GRAY. SILTY LOAM. LENTICULAR. HARD. IMPERVIOUS. WATER-BEARING. NON-PLASTIC
*C-143.6 kPa *C-3000 psf

A-4 GRAY. SANDY LOAM. LENTICULAR. DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC

A-6 GRAY. CLAY. LENTICULAR. DENSE. IMPERVIOUS. NON-PLASTIC
*C-181.9 kPa *C-3800 psf

A-4 GRAY. SILTY CLAY LOAM. LENTICULAR. STIFF. IMPERVIOUS. NON-PLASTIC

A-2-4 GRAY. SANDY LOAM. STRUCTURELESS. VERY DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC
Ø-36

A-2-4 GRAY & BRN. SAND. STRUCTURELESS. VERY DENSE. PERMEABLE. WATER-BEARING. NON-PLASTIC
Ø-33

BORING NO. 2

STA. 126+81.1 – LT. 51.2' FROM EXISTING CENTERLINE

NOTES: Encircled numbers indicate the number of blows delivered by a 140 lb. hammer from a height of 30" to drive a core tube 1"-O".
The boring log data shown is for design purposes only. The state assumes no responsibility if soil conditions encountered during construction differ from those shown.

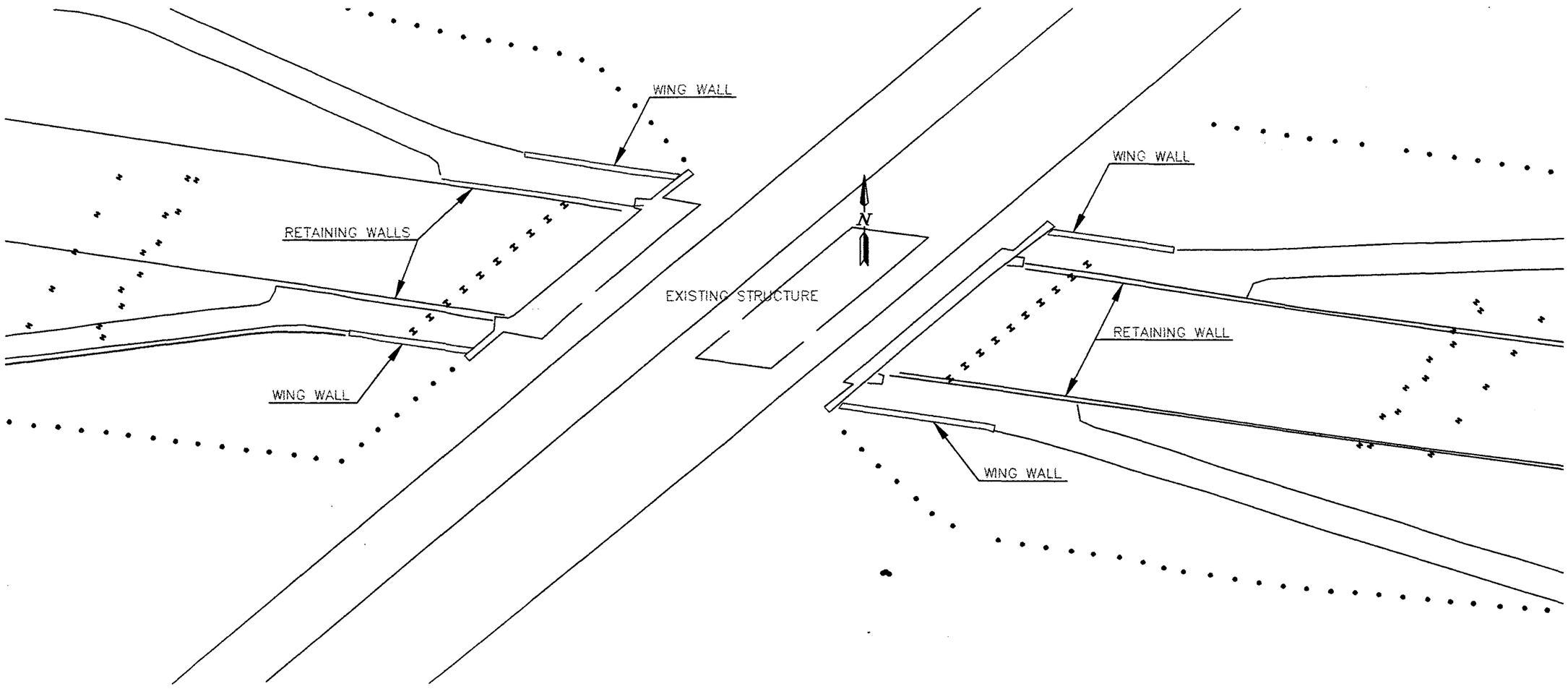
SYMBOLS: Ø- Angle of Internal Friction (Degrees)
C- Cohesion (Lbs./Sq. Ft.) (kPa)
M- Moisture (Percent)
Yd- Dry Weight (Lbs./Cu.Ft.) (kg/Cu.m)
*- (These cohesive values & friction angles are estimated from blow count.)

WILLIAMS COUNTY
RAY OVERPASS ON HWY 2

BORING LOG

2-053.731R-4

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	129



BURLINGTON NORTHERN OVERHEAD
RAY

EXISTING STRUCTURE AND NEW PILE LOCATIONS

EXISTRT 96DLS78 (XPILERT) JDS

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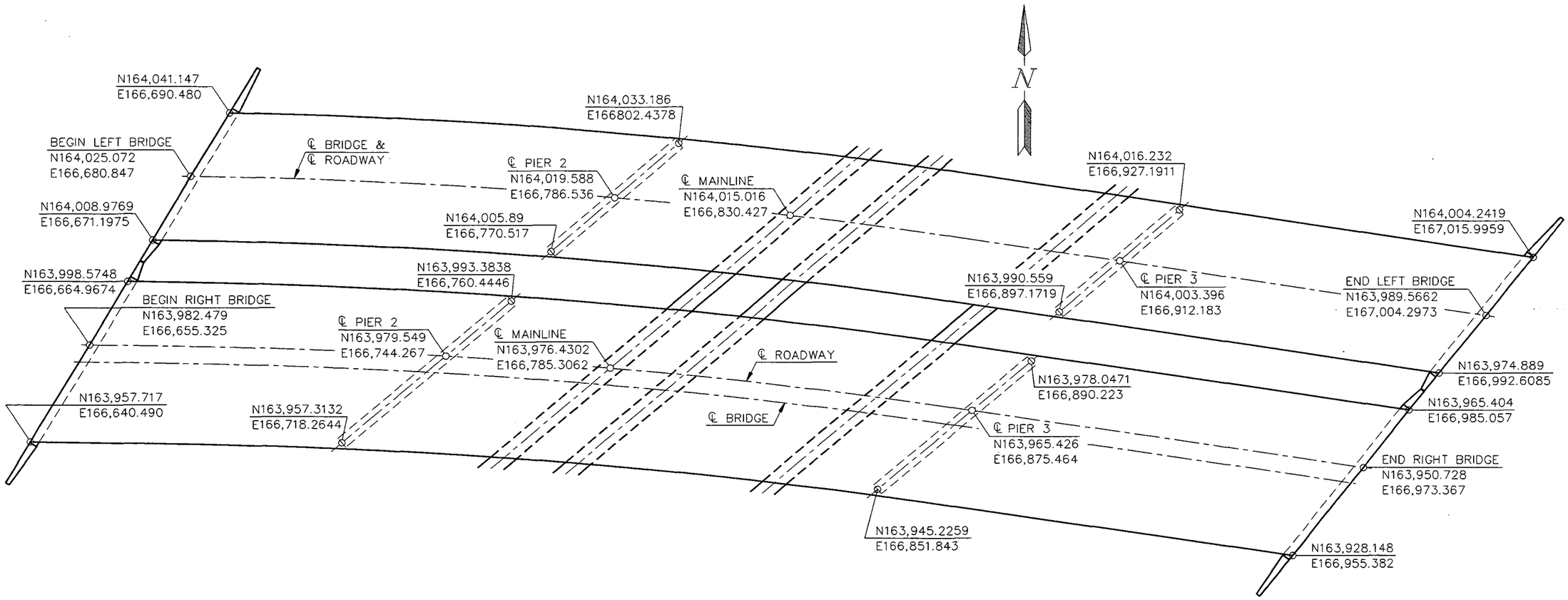
2-053.731R-5

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	130



BURLINGTON NORTHERN OVERHEAD
RAY

GENERAL PROJECT LAYOUT

PROJLO 96DLS76 JDS

2-053.731R-6

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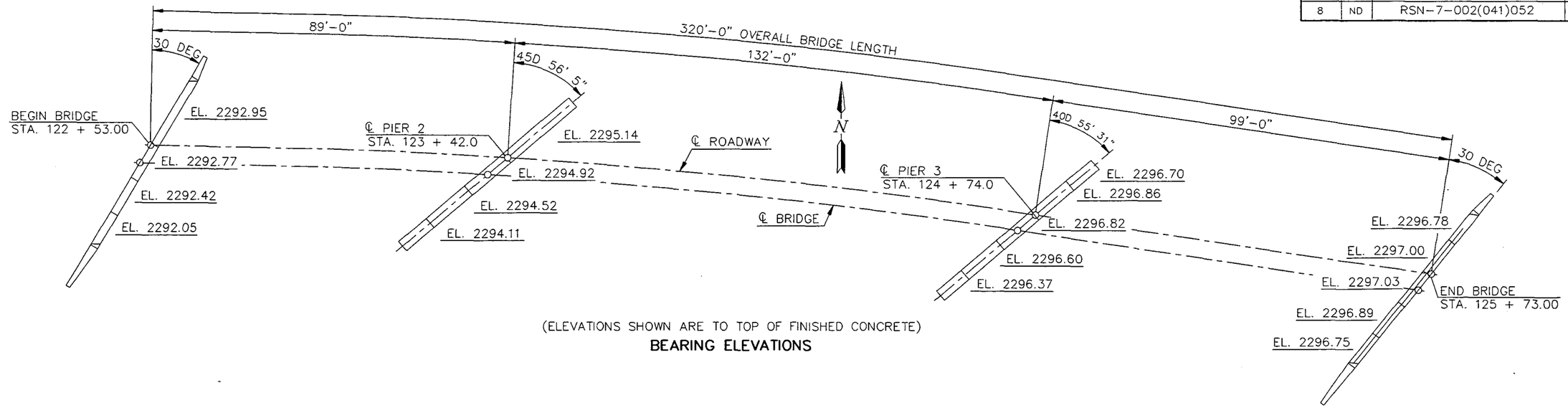
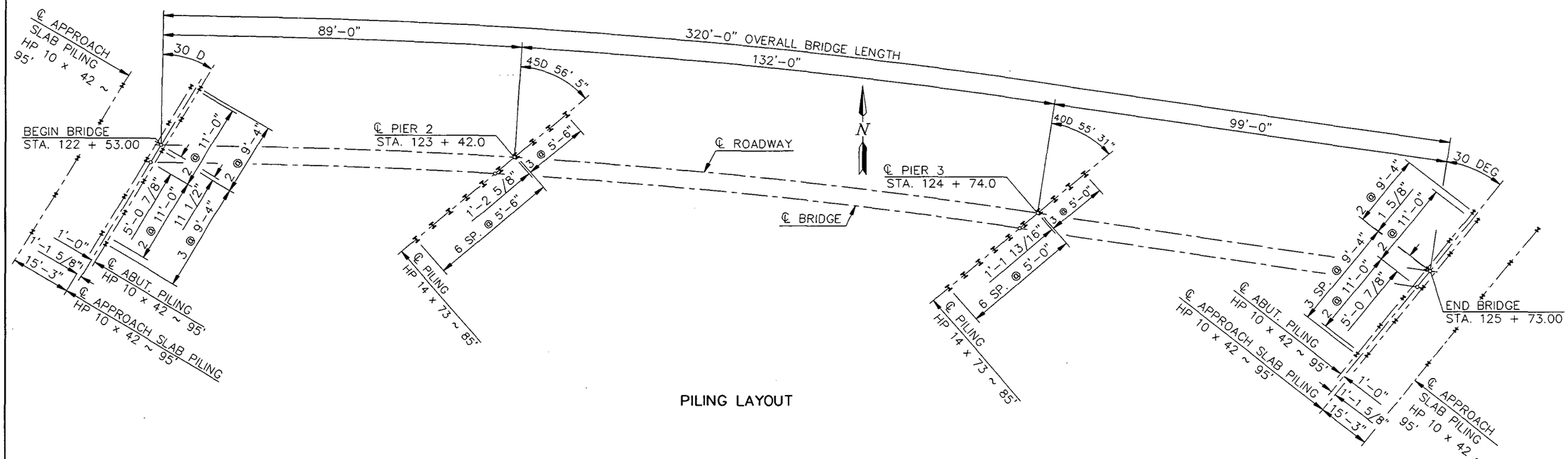
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	131



(ELEVATIONS SHOWN ARE TO TOP OF FINISHED CONCRETE)

BEARING ELEVATIONS



PILING LAYOUT

NOTE:

THE HP 10 x 42 PILE SHALL BE DRIVEN TO 55 T. THE HP 14 x 73 PILE SHALL BE DRIVEN TO 97 T.

BURLINGTON NORTHERN OVERHEAD RAY

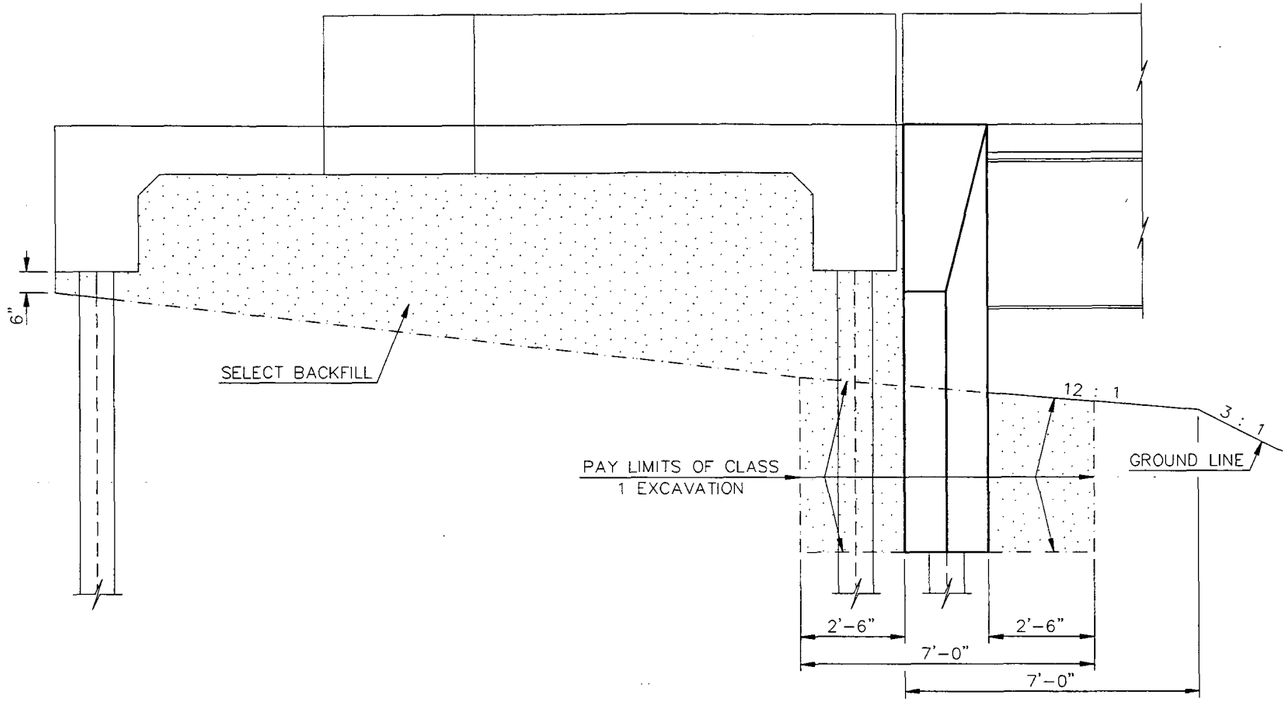
BEARING ELEVATIONS & PILING LAYOUT

PILELAY 96DLS49 JDS

c:\dgn\right\pilelay.dgn Sep. 19, 1996 14:57:37

2-053.731R-7

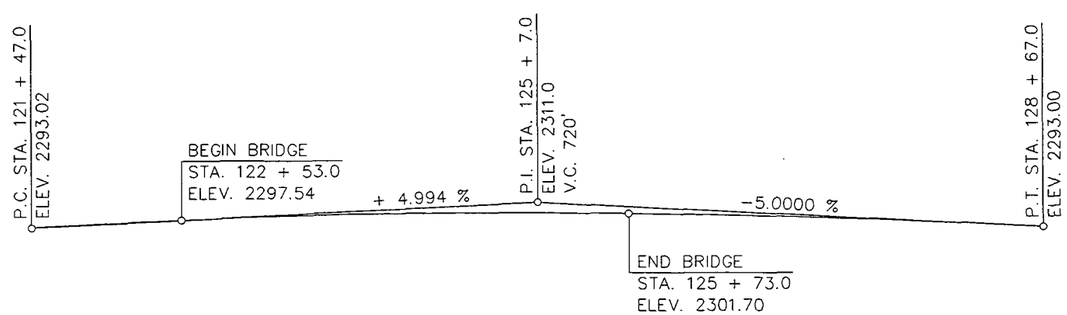
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	132



DETAIL AT ABUTMENT

HORIZONTAL CURVE DATA

P.I. STA. 123 + 72.5
DELTA = 7D 36' 26.49" RT
DEGREE = 3D 58' 8.52"
LENGTH = 191.6677'
TANGENT = 95.9749
RADIUS = 1443.57'
P.C. STA 122 + 76.53
P.T. STA. 124 + 68.2

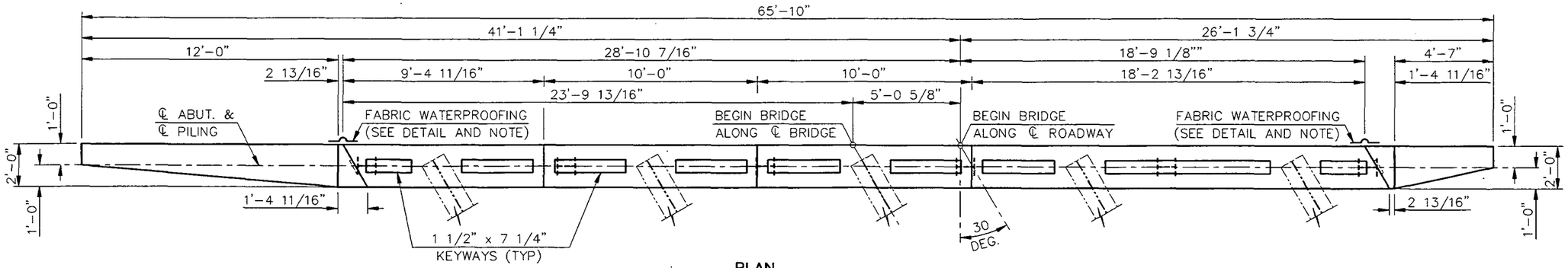


VERTICAL CURVE DATA

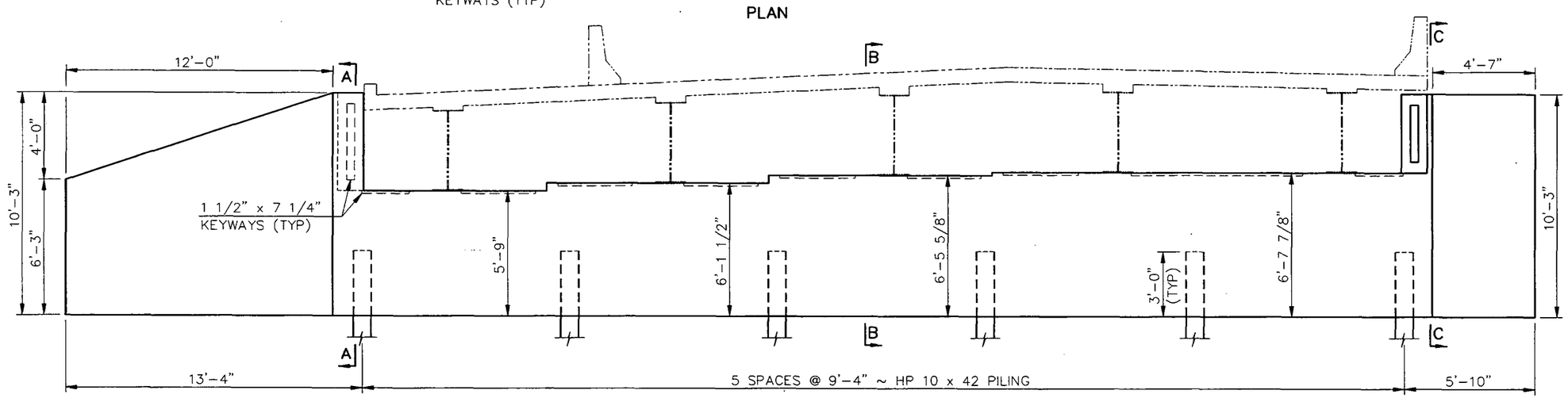
BURLINGTON NORTHERN OVERHEAD
RAY

DETAIL AT ABUTMENT
& VERTICAL CURVE DATA

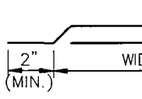
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	133



PLAN



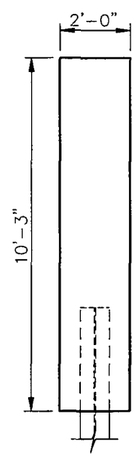
ELEVATION



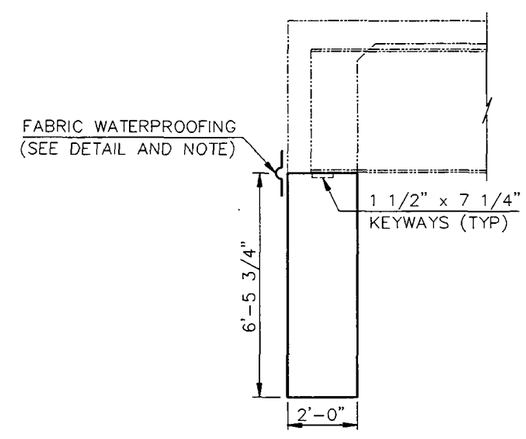
FABRIC WATERPROOFING SHALL BE APPLIED IN ACCORDANCE WITH SECTION 740 OF THE NDDOT SPECIFICATIONS.

ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM OF CLASS AE-3 CONCRETE.

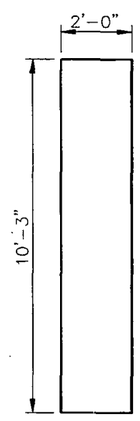
TWO-PLY FABRIC WATERPROOFING DETAIL



A-A



B-B



C-C

NOTE:
THE ELEVATION OF THE TOP OF THE NORTH WING WALL SHALL MATCH THAT OF THE SOUTH WING WALL OF THE ADJACENT ABUTMENT.

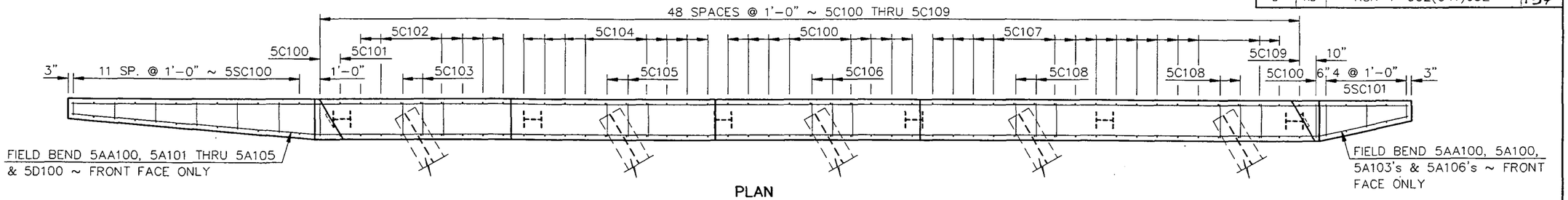
QUANTITIES
SEE DWG. 2-053.731R-10

BURLINGTON NORTHERN OVERHEAD RAY

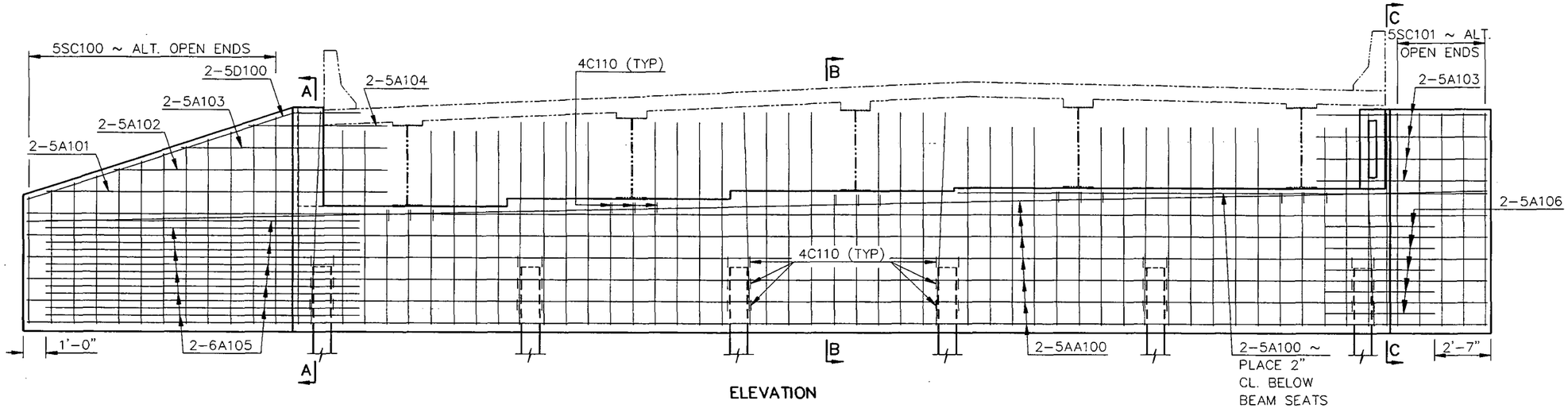
(SHOWING DIMENSIONS)

ABUTMENT 1 DETAILS

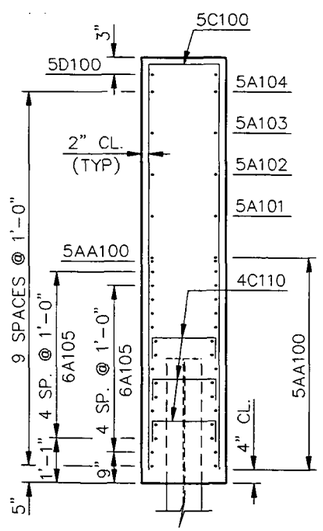
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	134



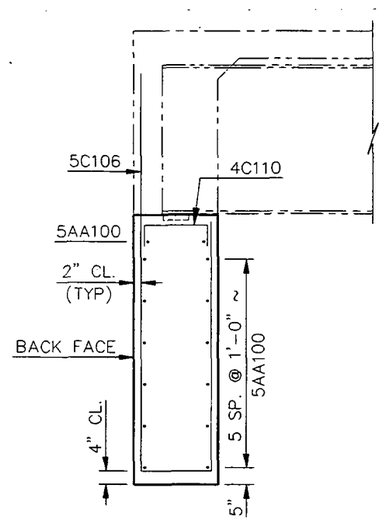
PLAN



ELEVATION



A-A



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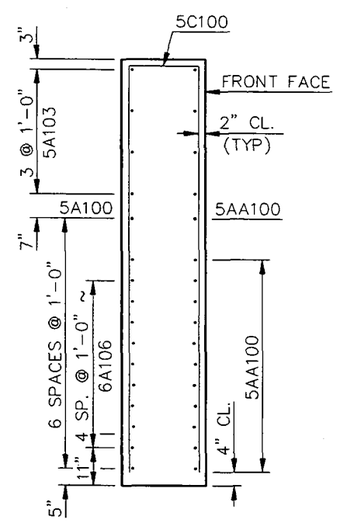

C-C

QUANTITIES	
CLASS AE-3 CONCRETE	31.7 CY
REINFORCING STEEL	3098 LB

BURLINGTON NORTHERN OVERHEAD RAY

(SHOWING REINFORCING)

ABUTMENT 1 DETAILS

ABUT1A 96DLS29 JDS

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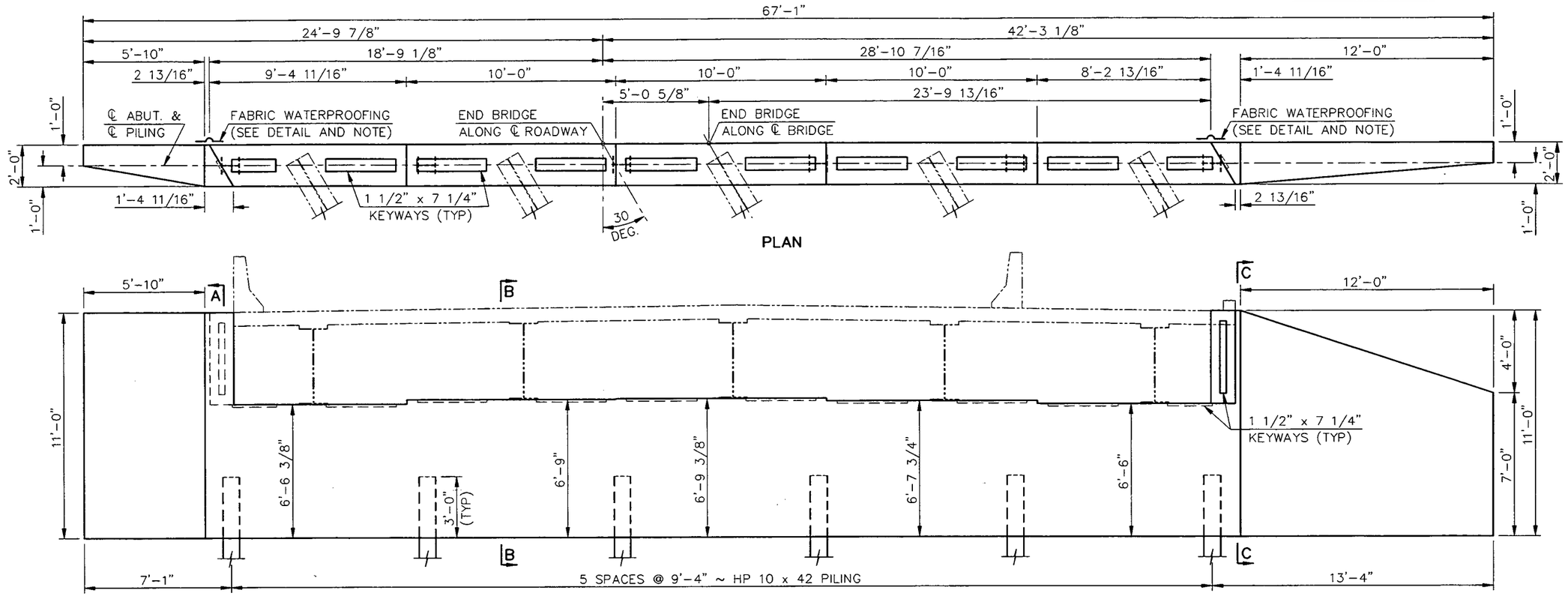
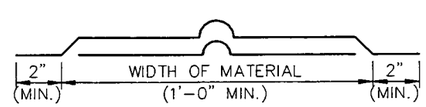
2-053.731R-10

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	135

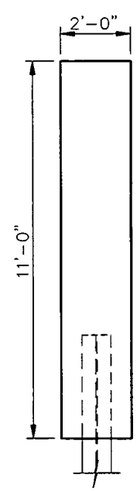




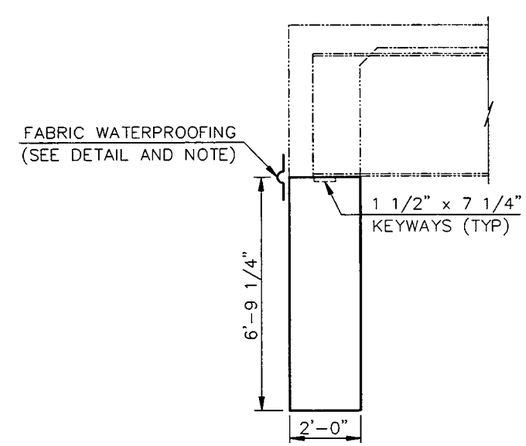
FABRIC WATERPROOFING SHALL BE APPLIED IN ACCORDANCE WITH SECTION 740 OF THE NDDOT SPECIFICATIONS.

ALL MATERIAL AND WORK SHALL BE CONSIDERED INCIDENTAL TO THE PAY ITEM OF CLASS AE-3 CONCRETE.

TWO-PLY FABRIC WATERPROOFING DETAIL



A-A



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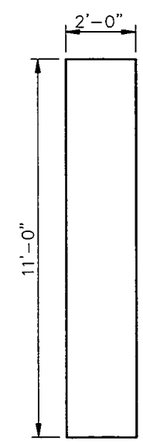

C-C

NOTE:
THE ELEVATION OF THE TOP OF THE NORTH WING WALL SHALL MATCH THAT OF THE SOUTH WING WALL OF THE ADJACENT ABUTMENT.

QUANTITIES
SEE DWG. 2-053.731R-12
BURLINGTON NORTHERN OVERHEAD RAY (SHOWING DIMENSIONS) **ABUTMENT 4 DETAILS**

ABUT4 96DLS30 JDS

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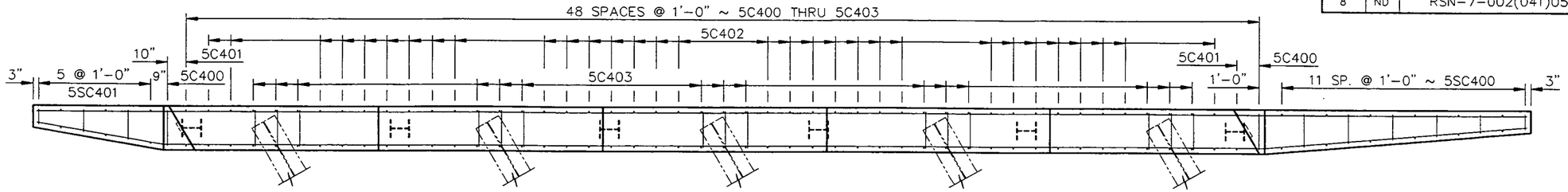
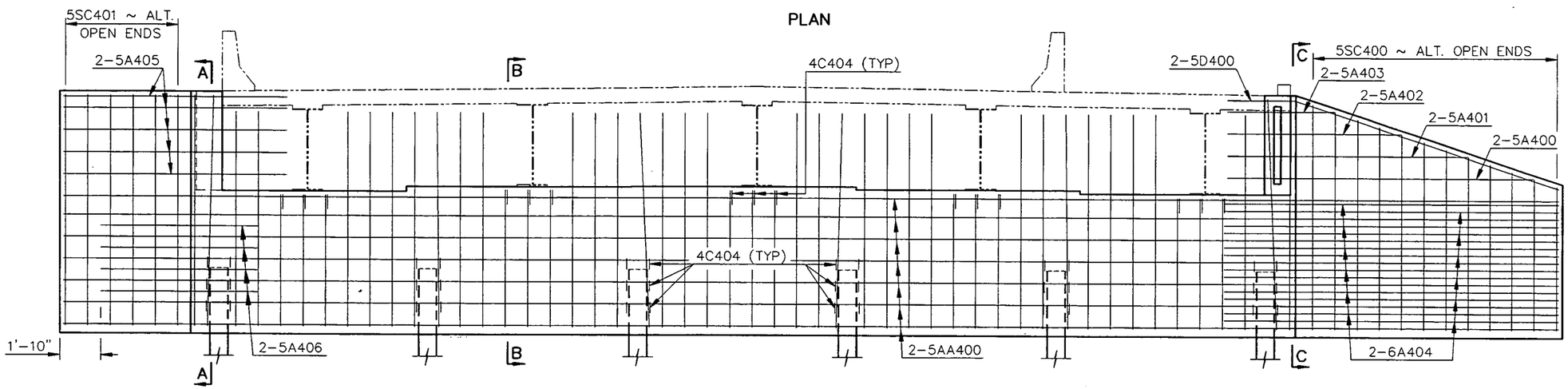
2-053.731R-11

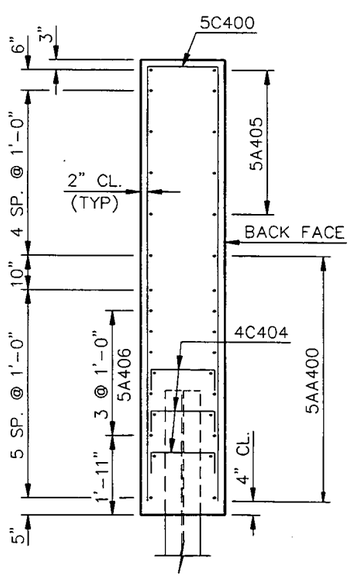
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	136



PLAN



ELEVATION



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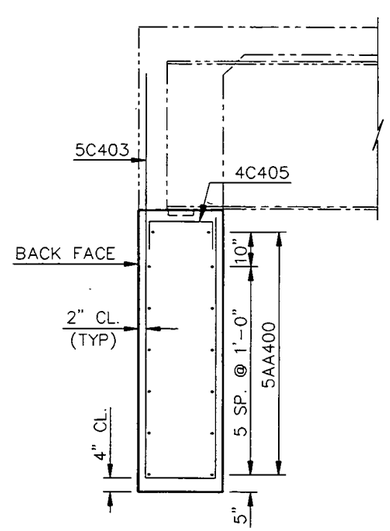
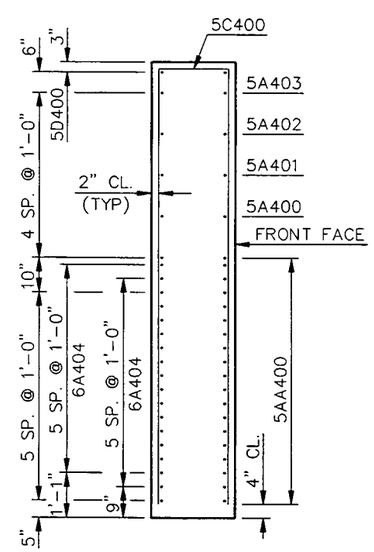


B-B



C-C

QUANTITIES	
CLASS AE-3 CONCRETE	34.4 CY
REINFORCING STEEL	3308 LB

BURLINGTON NORTHERN OVERHEAD RAY

(SHOWING REINFORCING)

ABUTMENT 4 DETAILS

ABUT4A 96DLS31 JDS

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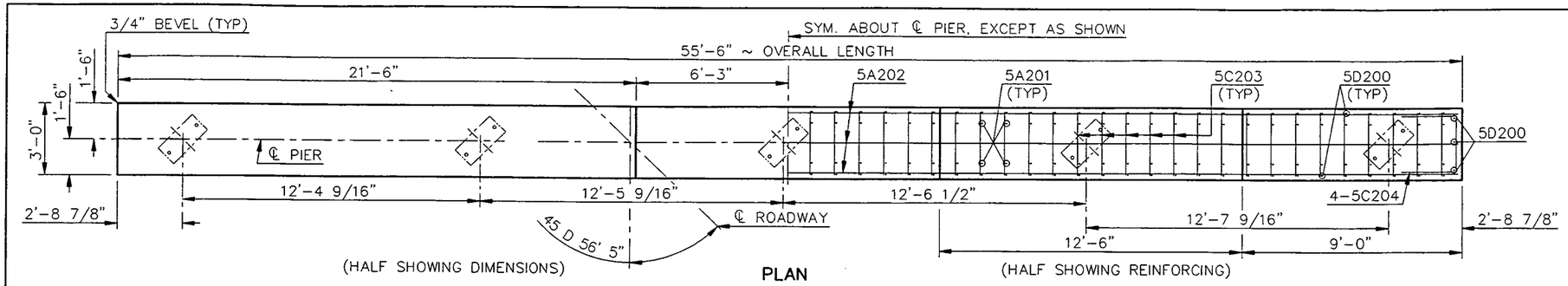
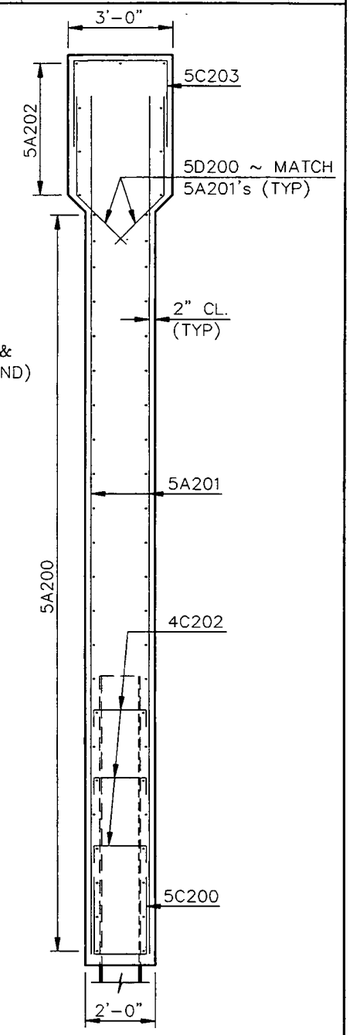
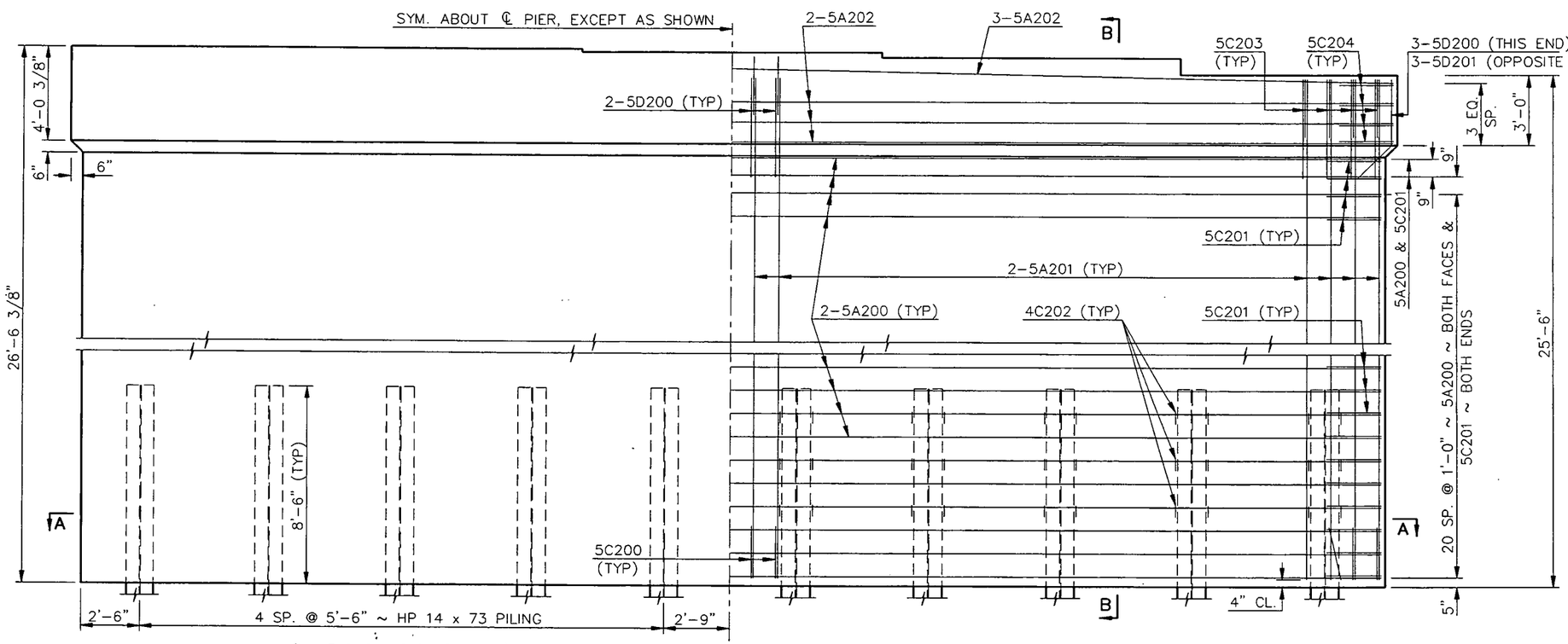
2-053.731R-12

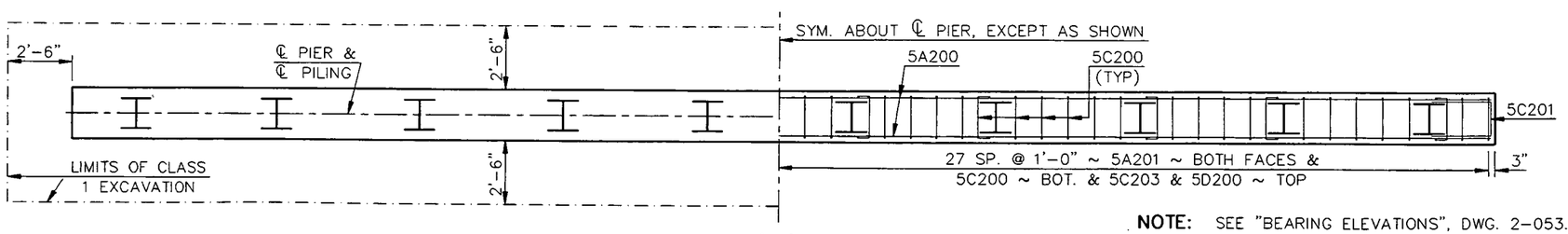
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	137





B-B





A-A

NOTE: SEE "BEARING ELEVATIONS", DWG. 2-053.731R-7 FOR STEPS IN PIER CAP.

QUANTITIES	
CLASS AE-3 CONCRETE	114 CY
REINFORCING STEEL	7820 LB
EXCAVATION (SEE LAYOUT)	

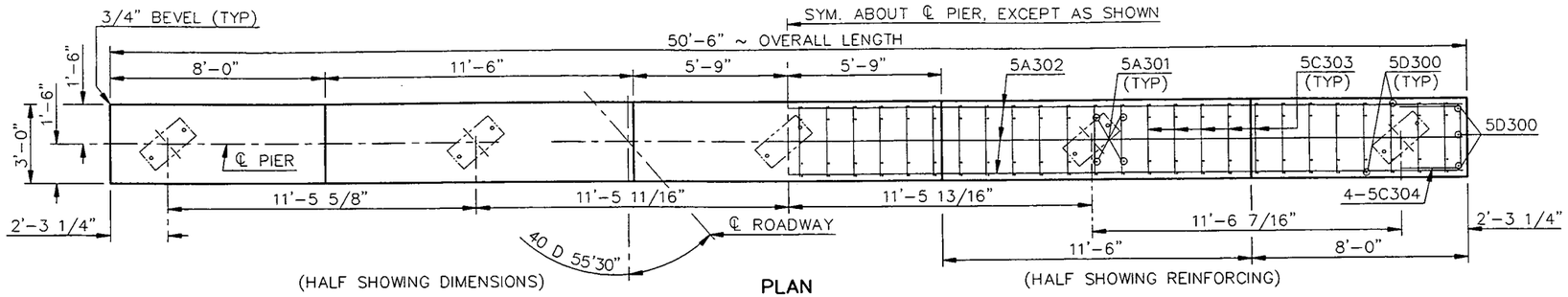
BURLINGTON NORTHERN OVERHEAD RAY

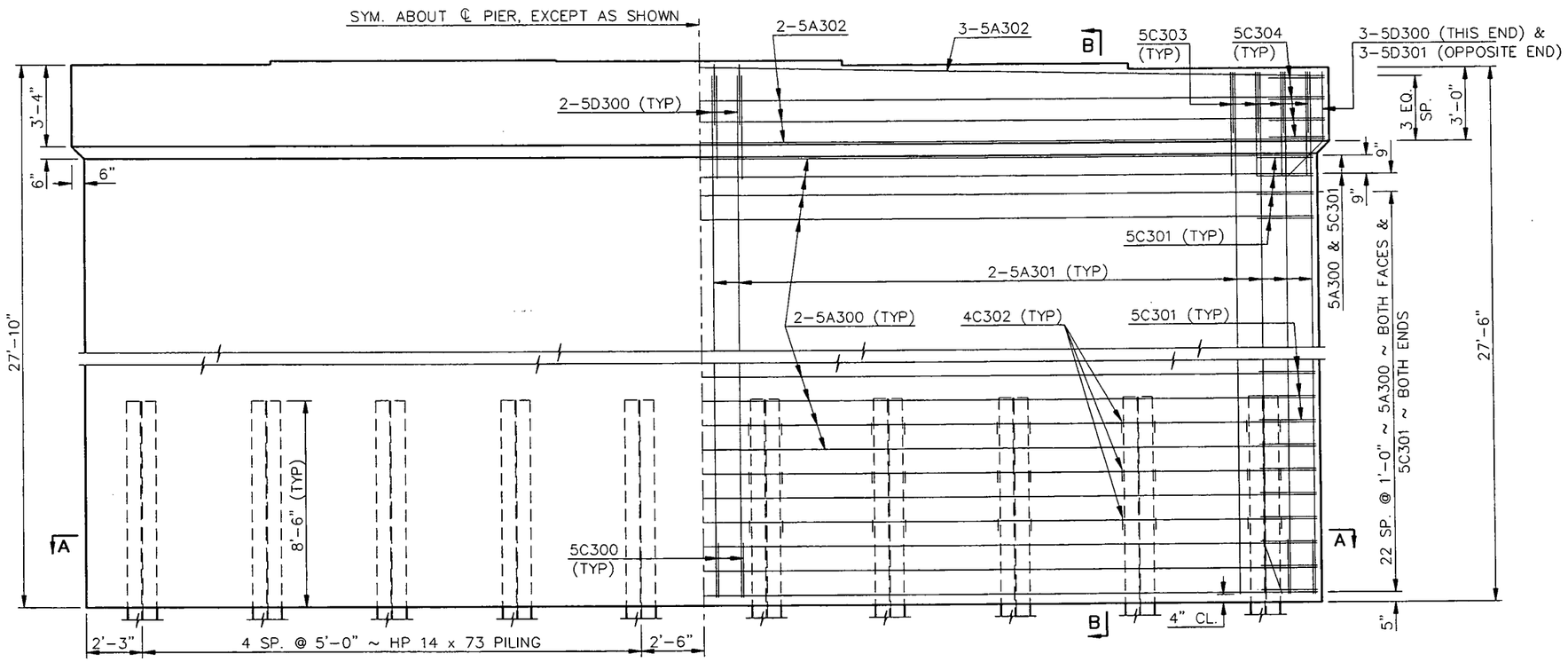
PIER 2 DETAILS

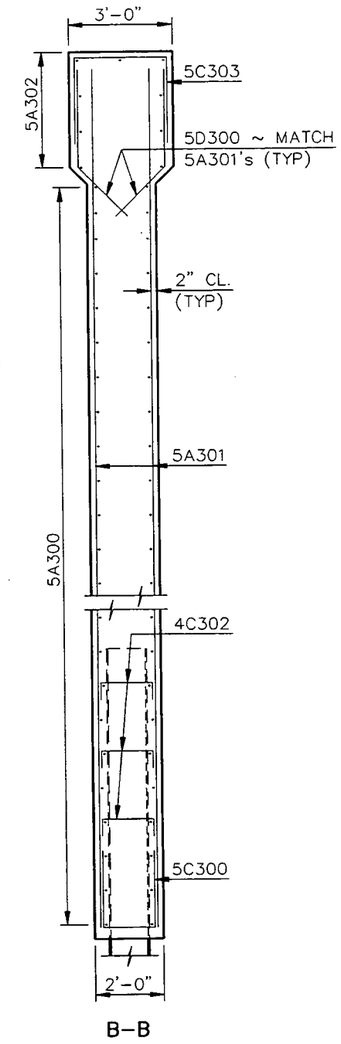
PIER2 96DLS35 JDS
c:\dgn\right\pier2.dgn Sep. 19, 1996 15:00:07

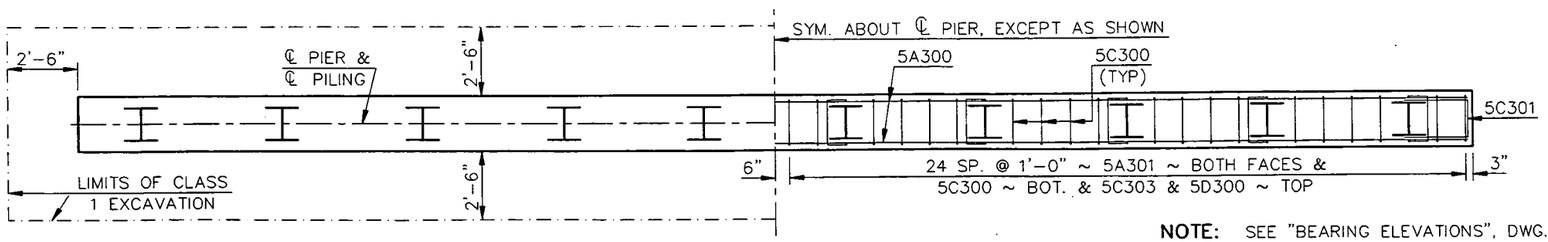
2-053.731R-13

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	138









A-A

NOTE: SEE "BEARING ELEVATIONS", DWG. 2-053.731R-7

QUANTITIES	
CLASS AE-3 CONCRETE	109 CY
REINFORCING STEEL	7586 LB
EXCAVATION (SEE LAYOUT)	

BURLINGTON NORTHERN OVERHEAD RAY

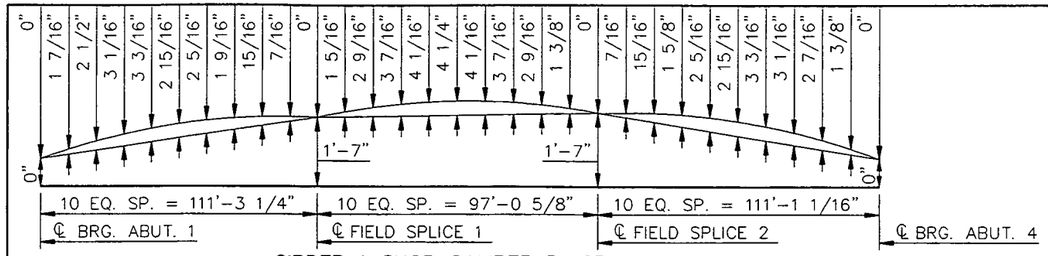
PIER 3 DETAILS

2-053.731R-14

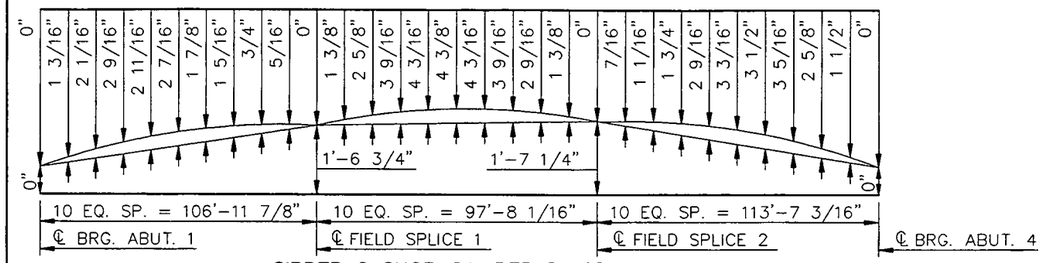
PIER3 96DLS36 JDS

c:\dgn\right\pier3.dgn Sep. 19, 1996 15:00:33

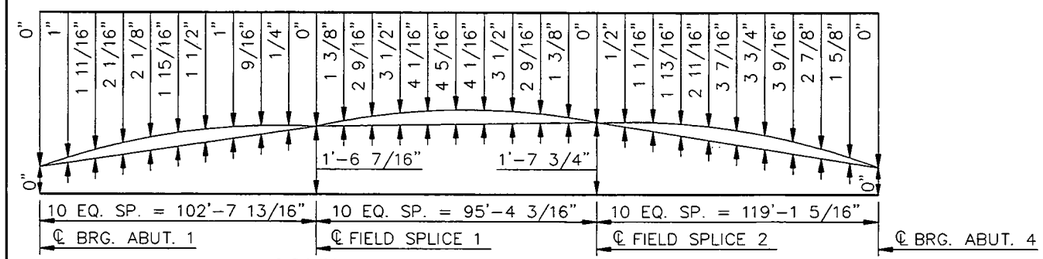
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	139



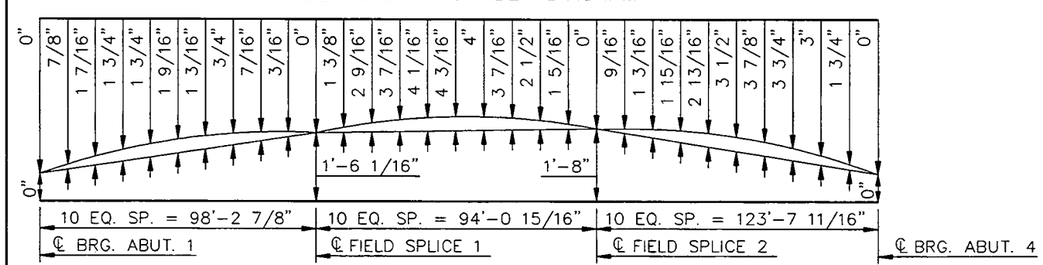
GIRDER 1 SHOP CAMBER DIAGRAM



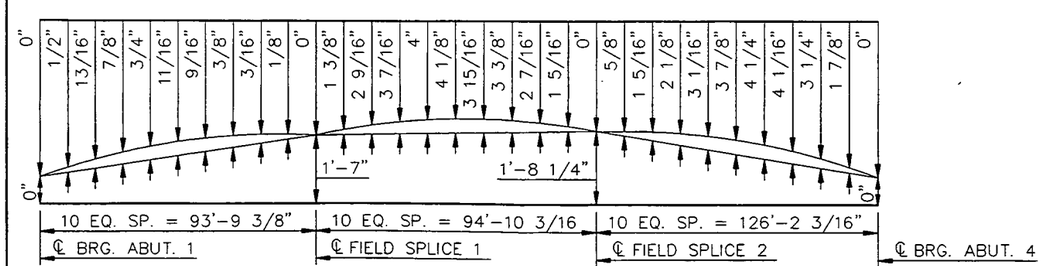
GIRDER 2 SHOP CAMBER DIAGRAM



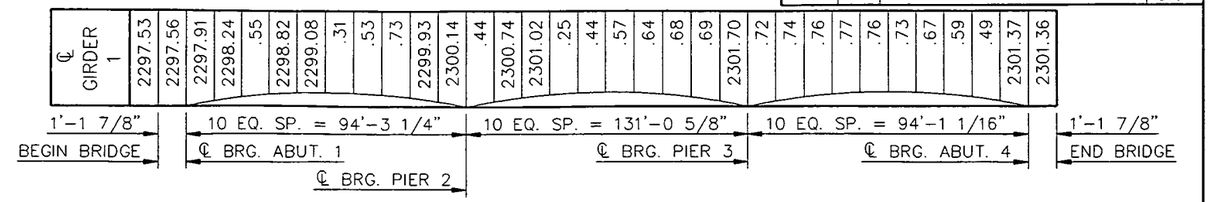
GIRDER 3 SHOP CAMBER DIAGRAM



GIRDER 4 SHOP CAMBER DIAGRAM

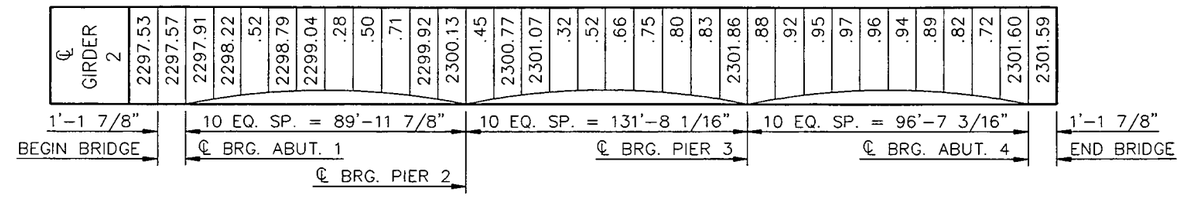


GIRDER 5 SHOP CAMBER DIAGRAM

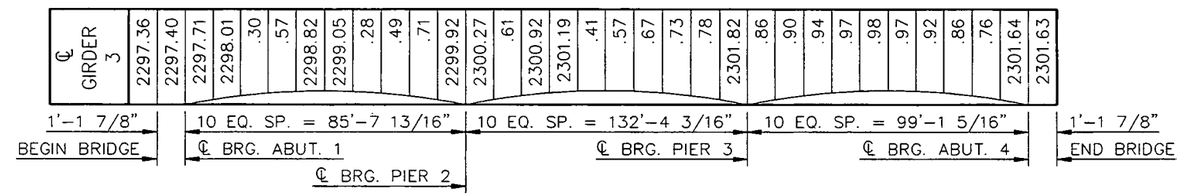


* GIRDER NO. 1 IS THE NORTH GIRDER

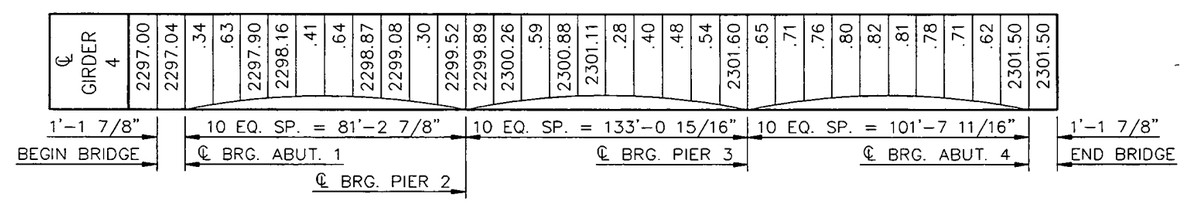
GIRDER 1 SCREED ELEVATIONS



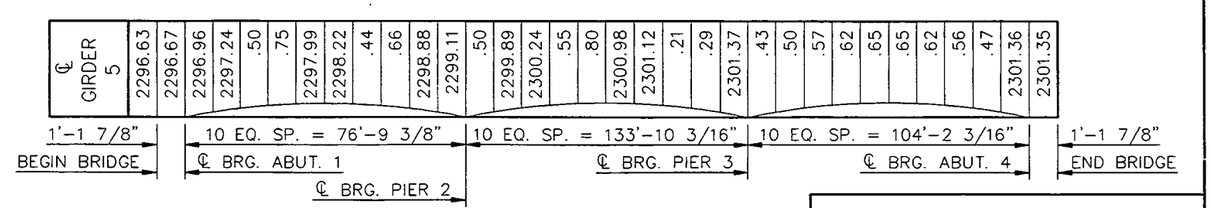
GIRDER 2 SCREED ELEVATIONS



GIRDER 3 SCREED ELEVATIONS



GIRDER 4 SCREED ELEVATIONS



GIRDER 5 SCREED ELEVATIONS

BURLINGTON NORTHERN OVERHEAD RAY

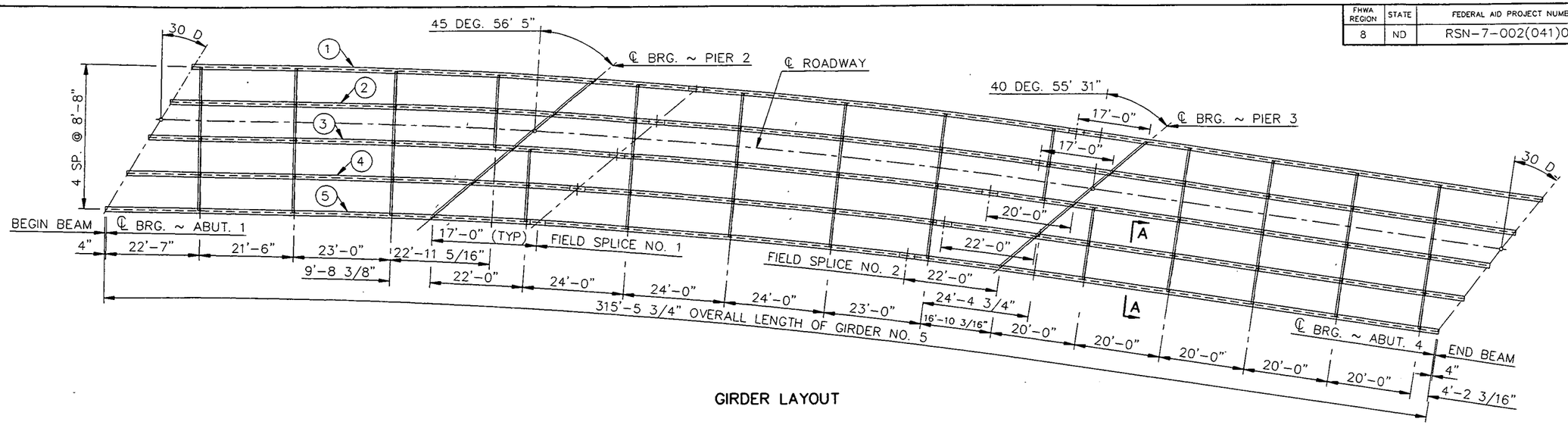
SHOP CAMBER DIAGRAMS & SCREED ELEVATIONS

SCREED 96DLS48 JDS

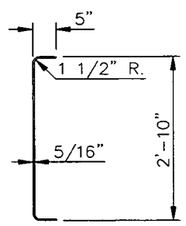
c:\dgn\right\screed.dgn Sep. 19, 1996 15:00:58

2-053.731R-15

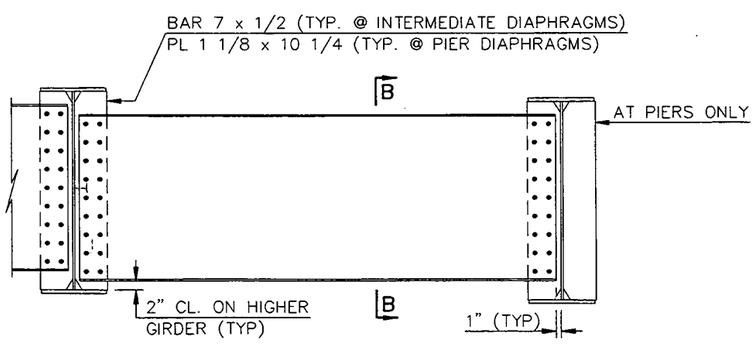
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	140



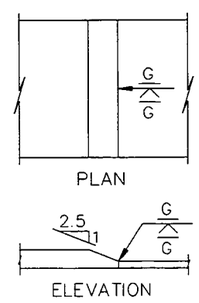
GIRDER LAYOUT



B–B



A–A



TYPICAL SHOP FLANGE SPLICE

NOTE:

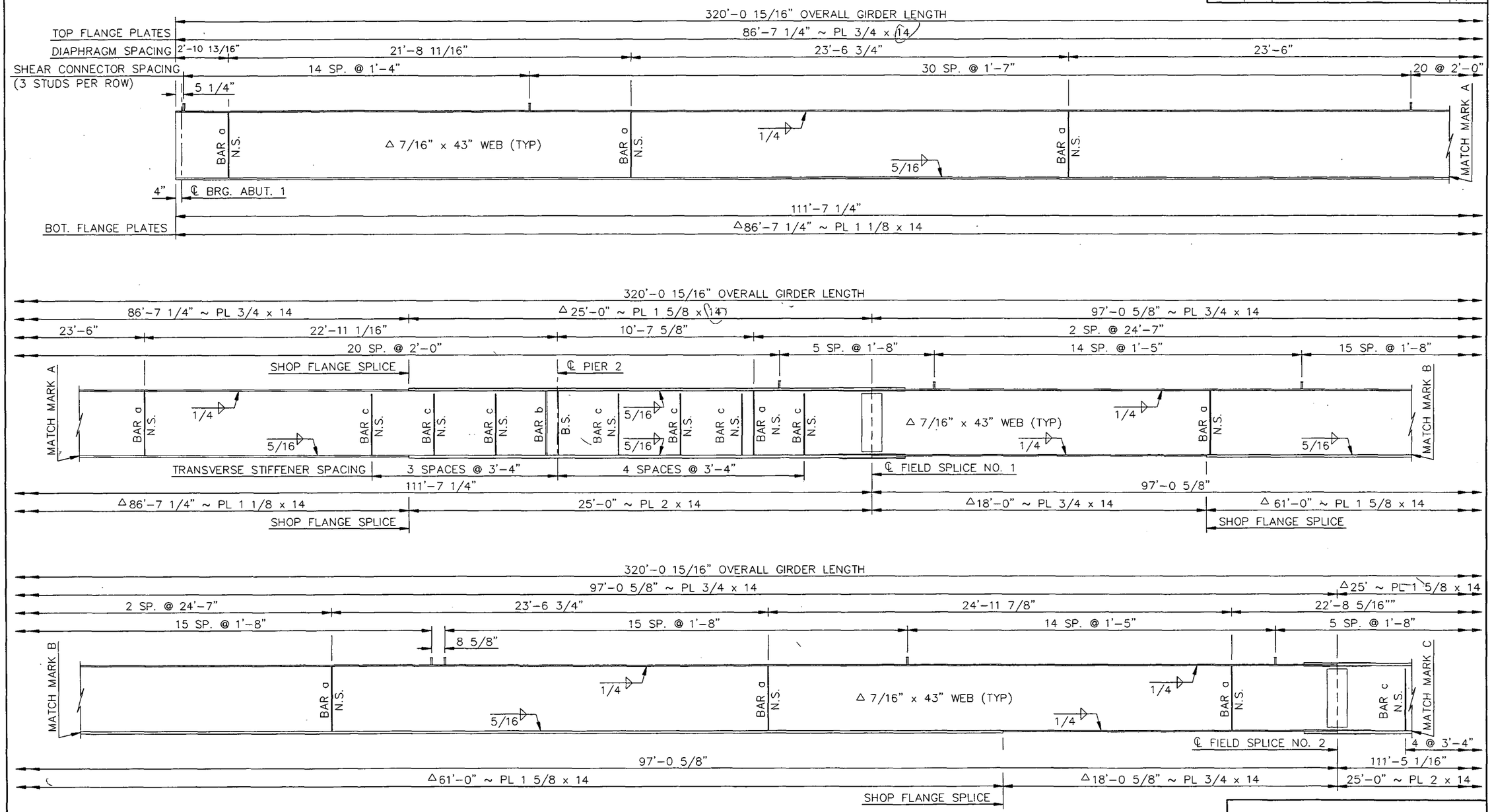
THE DIMENSIONS SHOWN ON THE GIRDER LAYOUT ARE MEASURED ALONG THE CENTERLINE OF THE OUTSIDE GIRDER, GIRDER NO. 5.

ALL INTERMEDIATE DIAPHRAGMS IN THE TANGENT SECTIONS SHALL BE PLACED PERPENDICULAR. ALL INTERMEDIATE DIAPHRAGMS IN THE CURVED SECTION SHALL BE PLACED ALONG THE RADIAL.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	141



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731R-18 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

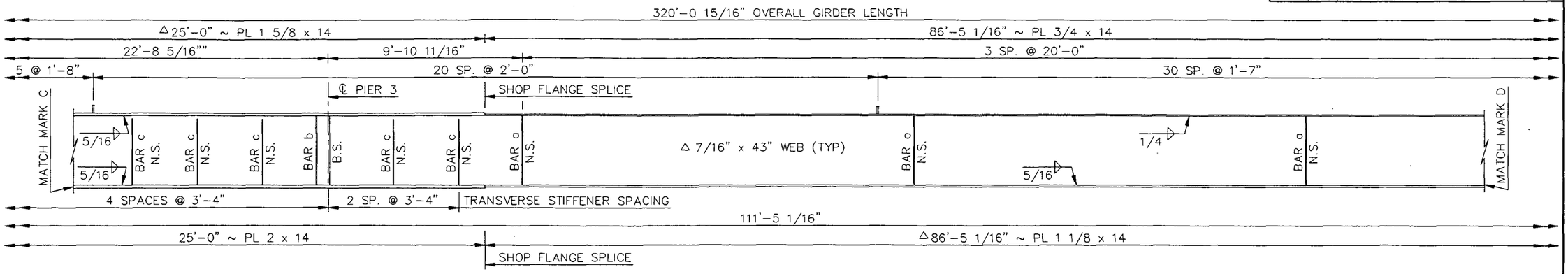
GIRDER 1 ELEVATION DETAILS

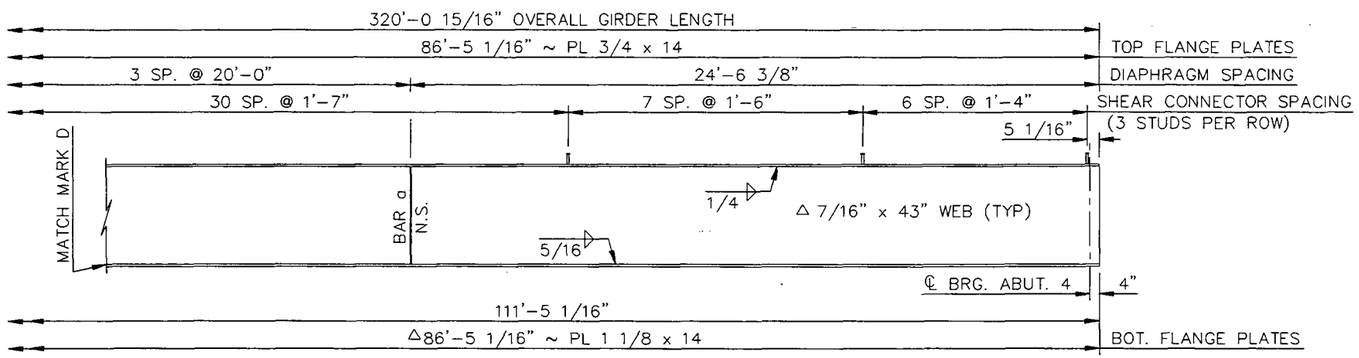
GIRDEL1 96DLS38 JDS

c:\dgn\right\girdel1.dgn Sep. 19, 1996 15:01:53

2-053.731R-17

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	142





NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731R-17 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

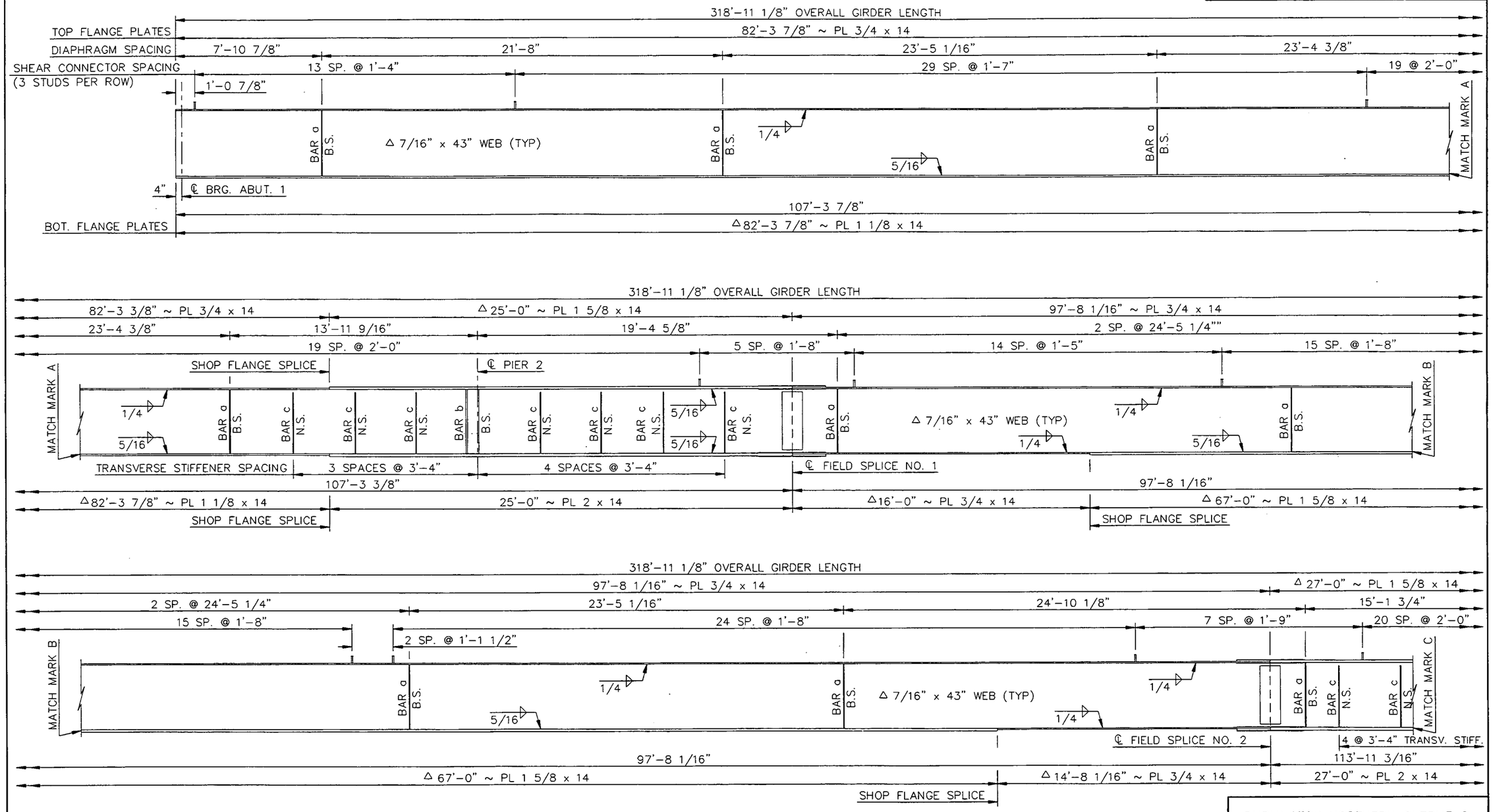
GIRDER 1 ELEVATION DETAILS

GIRDEL1A 96DLS39 JDS

c:\dgn\right\girdel1a.dgn Sep. 19, 1996 15:02:14

2-053.731R-18

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	143



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731R-20 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

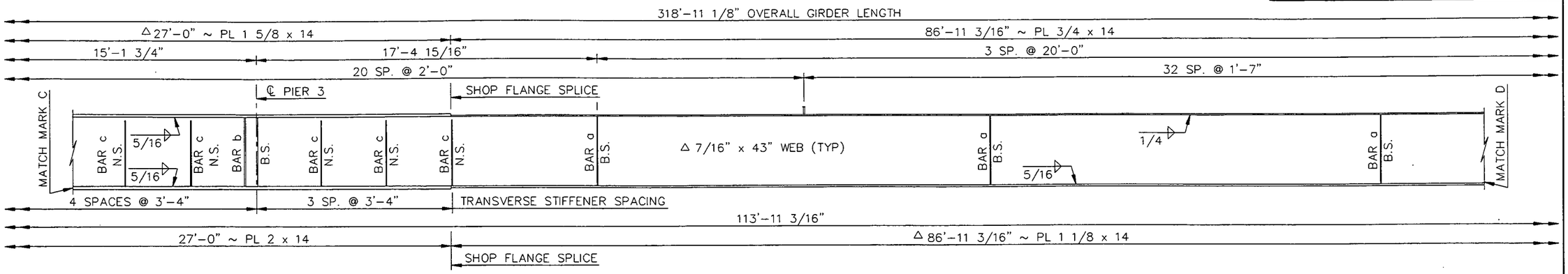
GIRDER 2 ELEVATION DETAILS

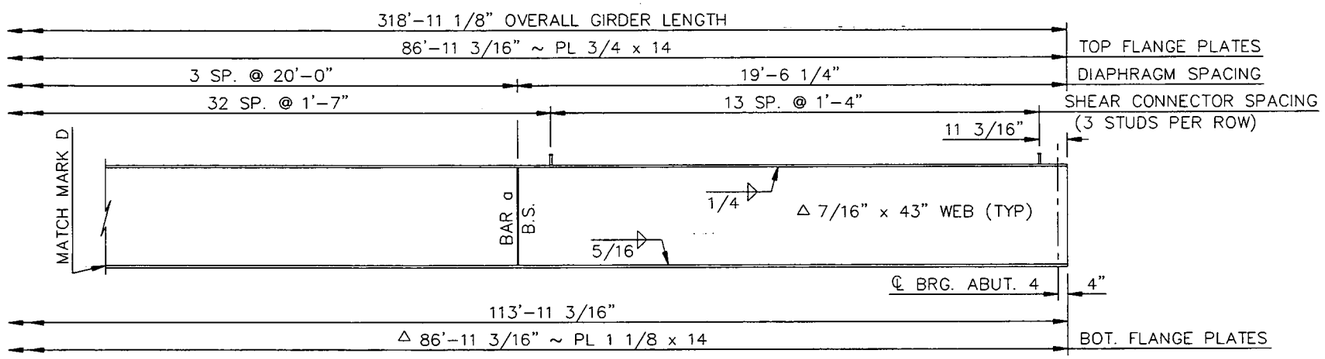
GIRDEL2 96DLS40 JDS

c:\dgn\right\girdel2.dgn Sep. 19, 1996 15:02:34

2-053.731R-19

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	144





NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

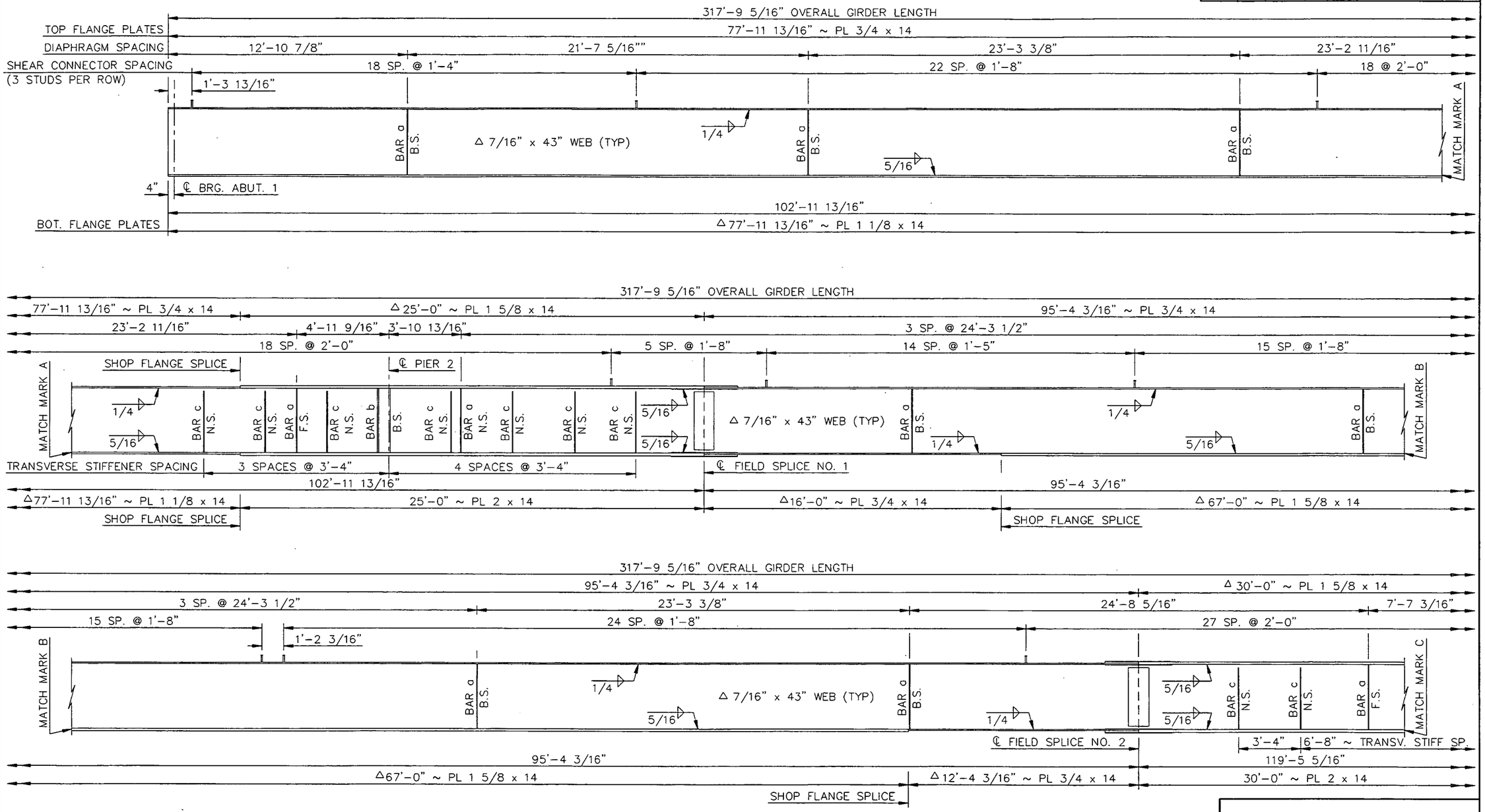
NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731R-19 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 2 ELEVATION DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	145



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731R-22 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

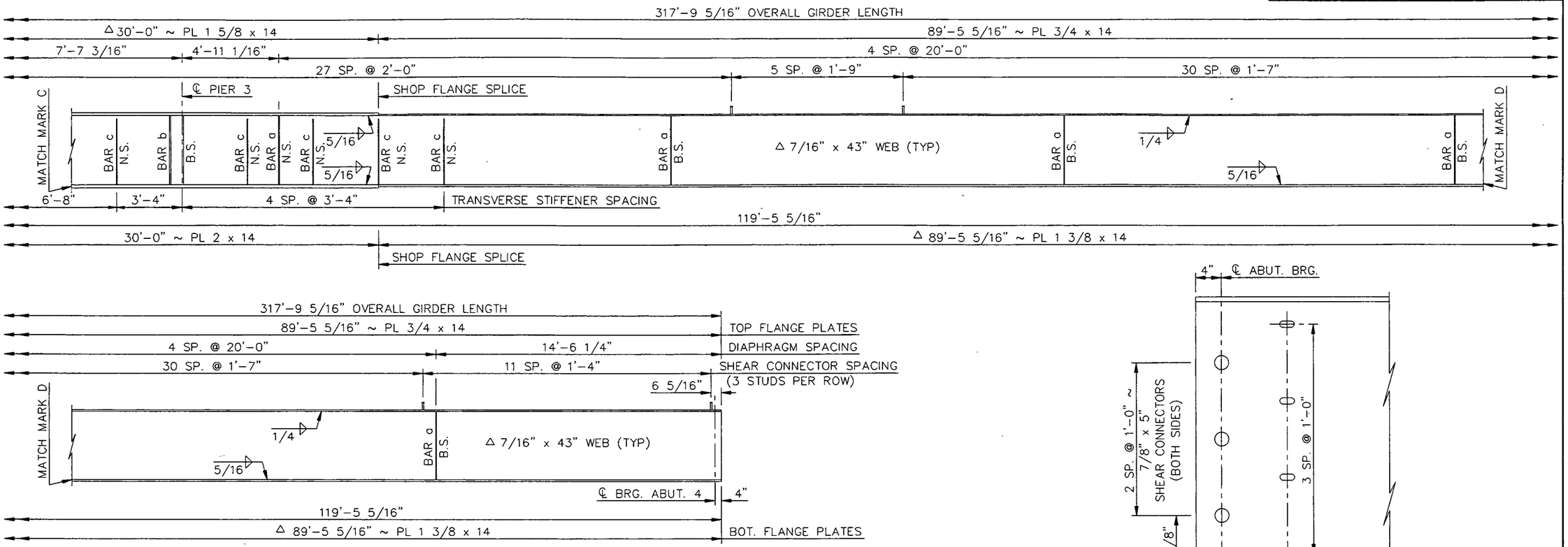
GIRDER 3 ELEVATION DETAILS

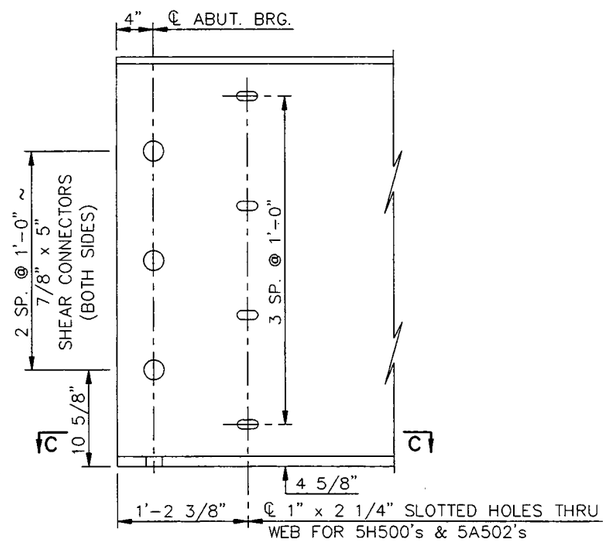
GIRDEL3 96DLS42 JDS

c:\dgn\right\girdel3.dgn Sep. 19, 1996 15:03:23

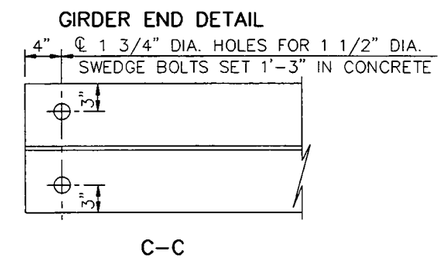
2-053.731R-21

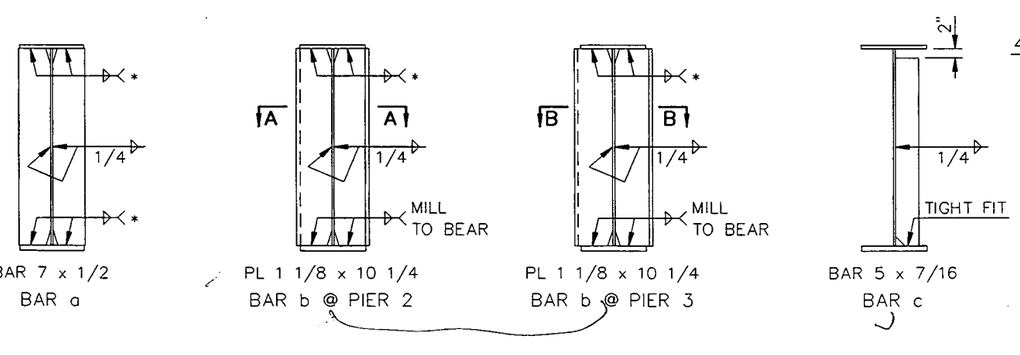
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	146

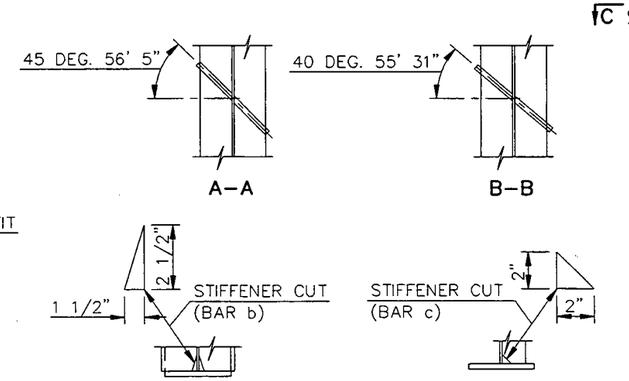




GIRDER END DETAIL







STIFFENER & DIAPHRAGM CONNECTION PLATE DETAILS

*	WELDSIZE	FLANGE THICKNESS
	1/4	TO 3/4
	5/16	OVER 3/4

NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

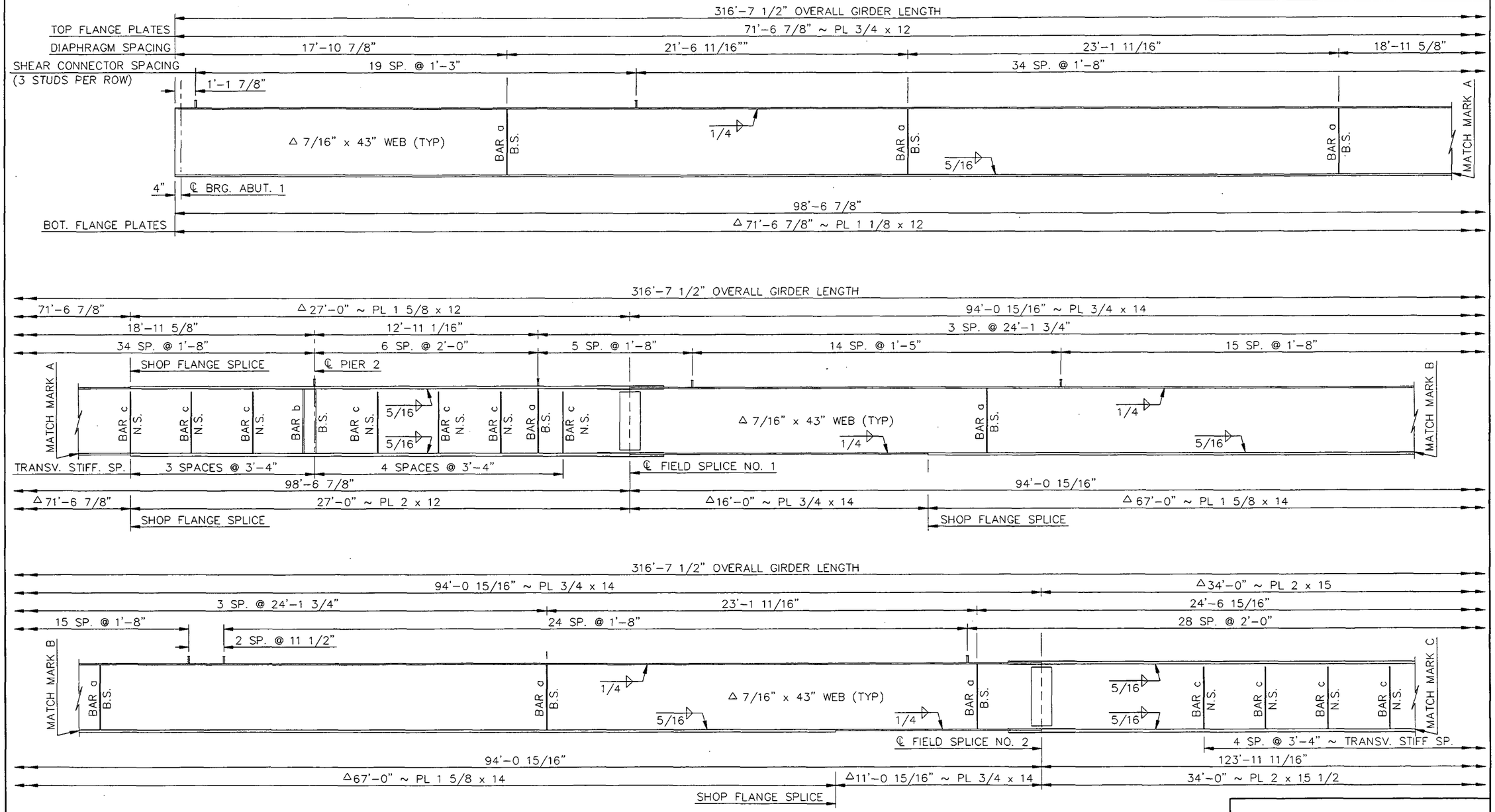
NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731R-21 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 3 ELEVATION DETAILS, GIRDER END DETAIL, STIFFENER & DIAPHR. CONNECTION PL DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	147



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES

SEE DWG. 2-053.731R-24 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

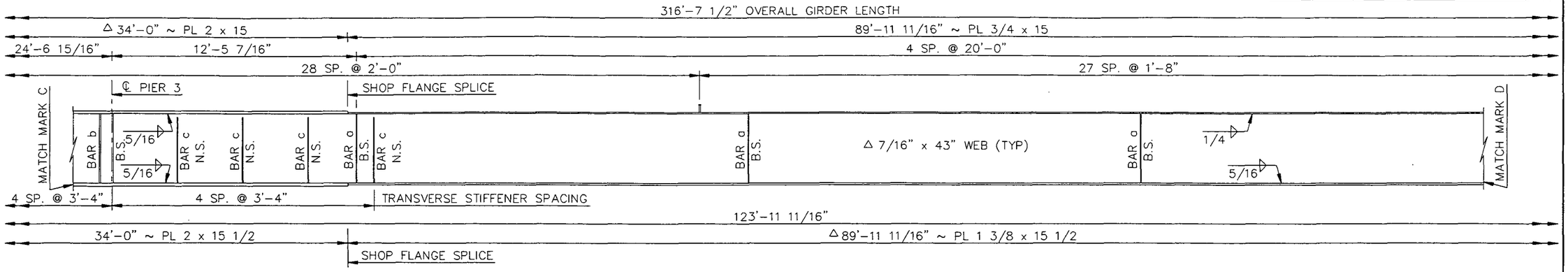
GIRDER 4 ELEVATION DETAILS

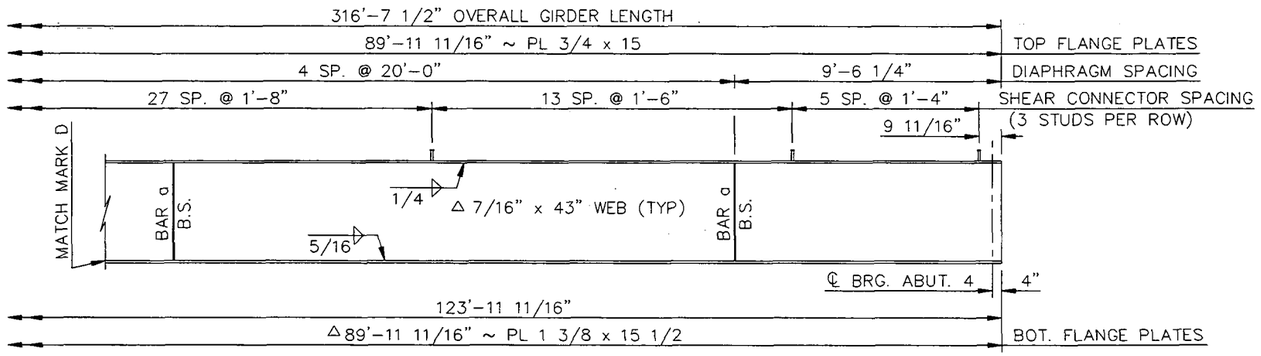
GIRDEL4 96DLS44 JDS

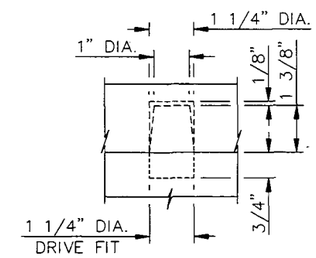
c:\dgn\right\girdel4.dgn Sep. 27, 1996 12:56:55

2-053.731R-23

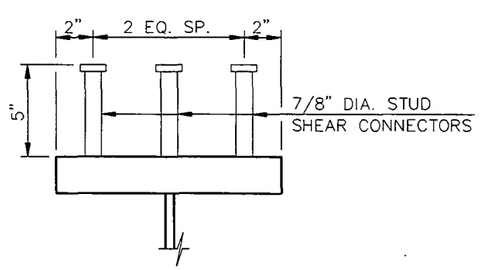
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	148





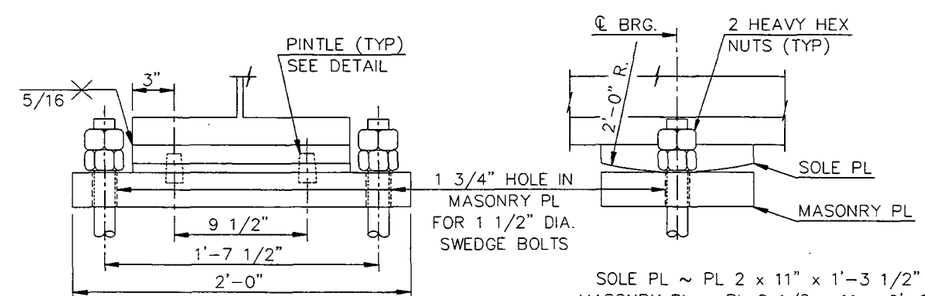


PINTLE DETAIL



(3 STUDS PER ROW)

SHEAR CONNECTOR DETAIL



SOLE PL ~ PL 2 x 11" x 1'-3 1/2"
MASONRY PL ~ PL 2 1/2 x 11 x 2'-0"
SWEDGE BOLTS ~ 1 1/2" x 1'-10"

PIER BEARING DETAILS

NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

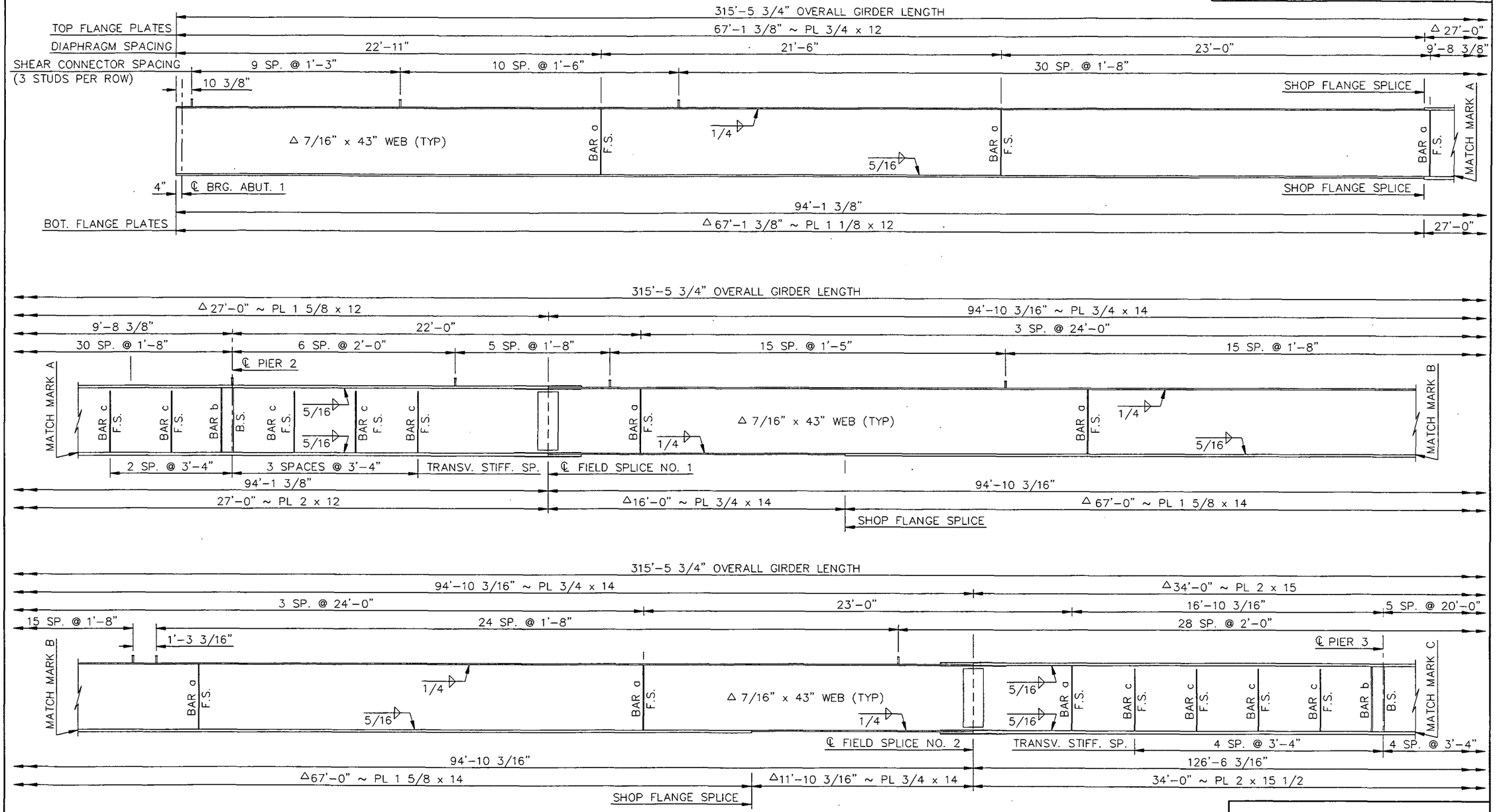
NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731R-23 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 4 ELEVATION DETAILS, PIER BEARING DETAILS & SHEAR CONNECTOR DETAIL

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	149



NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731R-26 FOR MATCH MARK C.

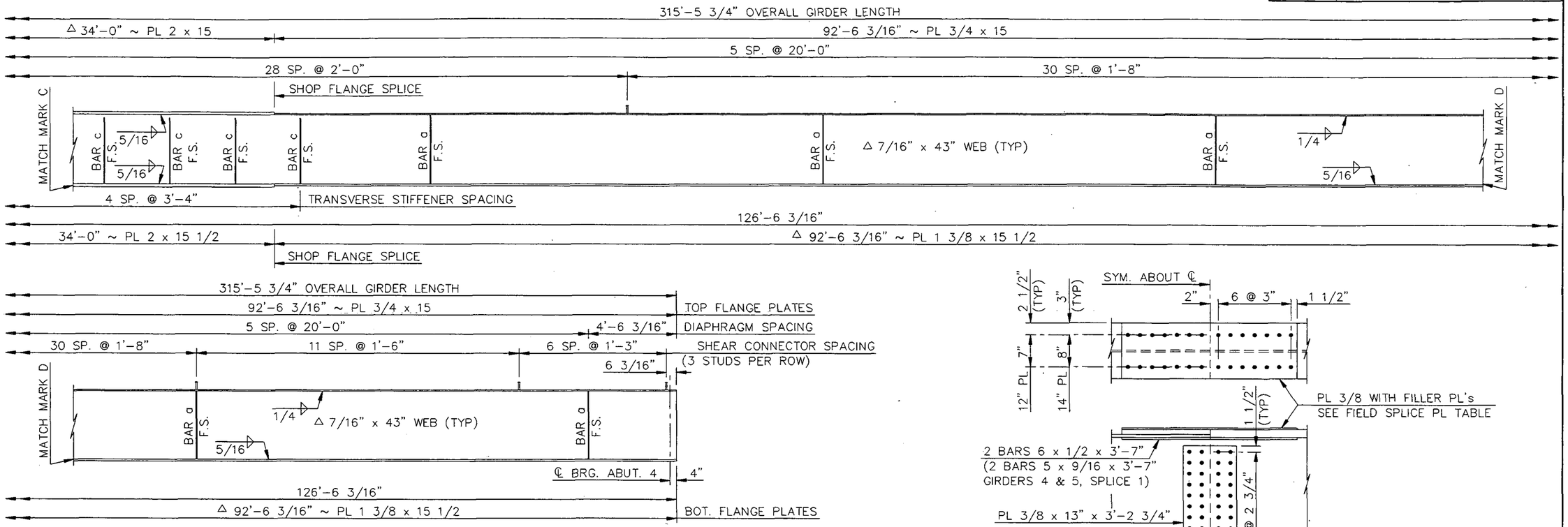
BURLINGTON NORTHERN OVERHEAD RAY

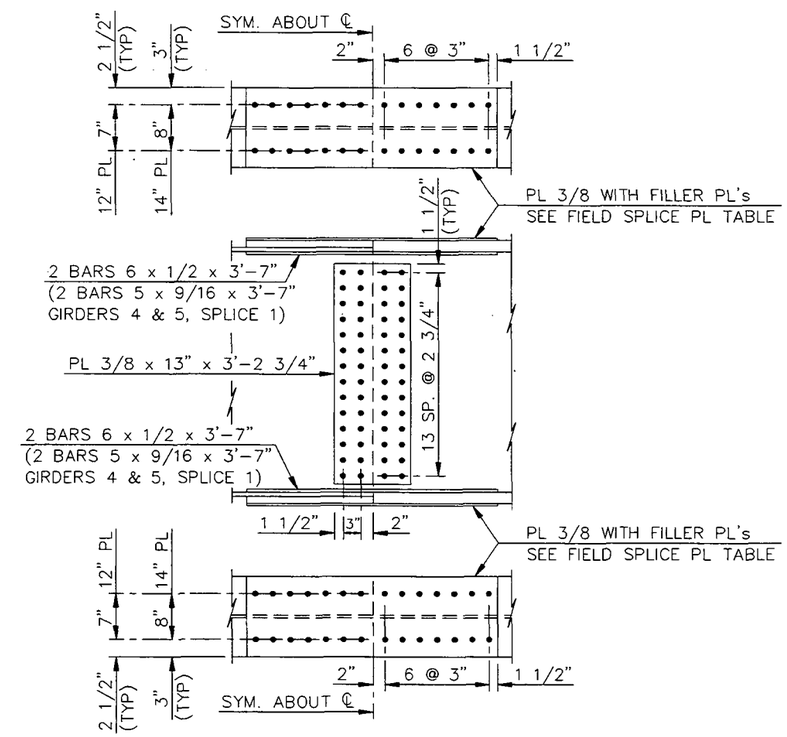
GIRDER 5 ELEVATION DETAILS

GIRDEL5 96DLS46 JDS
c:\dgn\right\girdel5.dgn Sep. 19, 1996 15:05:38

2-053.731R-25

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	150





FIELD SPLICE DETAILS

FIELD SPLICE PLATE TABLE

GIRDER NO.	LOCATION	SPLICE NO. 1	SPLICE NO. 2
1	TOP FLANGE	PL 3/8 x 14 x 3'-7"	PL 3/8 x 14 x 3'-7"
	TOP FILLER PL	PL 7/8 x 14 x 1'-9 1/2"	PL 7/8 x 14 x 1'-9 1/2"
	BOT. FLANGE	PL 3/8 x 14 x 3'-7"	PL 3/8 x 14 x 3'-7"
	BOT. FILLER PL	PL 1 1/4 x 14 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"
2	TOP FLANGE	PL 3/8 x 14 x 3'-7"	PL 3/8 x 14 x 3'-7"
	TOP FILLER PL	PL 7/8 x 14 x 1'-9 1/2"	PL 7/8 x 14 x 1'-9 1/2"
	BOT. FLANGE	PL 3/8 x 14 x 3'-7"	PL 3/8 x 14 x 3'-7"
	BOT. FILLER PL	PL 1 1/4 x 14 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"
3	TOP FLANGE	PL 3/8 x 14 x 3'-7"	PL 3/8 x 14 x 3'-7"
	TOP FILLER PL	PL 7/8 x 14 x 1'-9 1/2"	PL 7/8 x 14 x 1'-9 1/2"
	BOT. FLANGE	PL 3/8 x 14 x 3'-7"	PL 3/8 x 14 x 3'-7"
	BOT. FILLER PL	PL 1 1/4 x 14 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"
4	TOP FLANGE	PL 7/16 x 12 x 3'-7"	PL 3/8 x 14 x 3'-7"
	TOP FILLER PL	PL 7/8 x 12 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"
	BOT. FLANGE	PL 7/16 x 12 x 3'-7"	PL 3/8 x 14 x 3'-7"
	BOT. FILLER PL	PL 1 1/4 x 12 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"
5	TOP FLANGE	PL 7/16 x 12 x 3'-7"	PL 3/8 x 14 x 3'-7"
	TOP FILLER PL	PL 7/8 x 12 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"
	BOT. FLANGE	PL 7/16 x 12 x 3'-7"	PL 3/8 x 14 x 3'-7"
	BOT. FILLER PL	PL 1 1/4 x 12 x 1'-9 1/2"	PL 1 1/4 x 14 x 1'-9 1/2"

NOTES:

△ ALL DESIGNATED MATERIALS SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST REQUIREMENTS FOR ZONE 2.

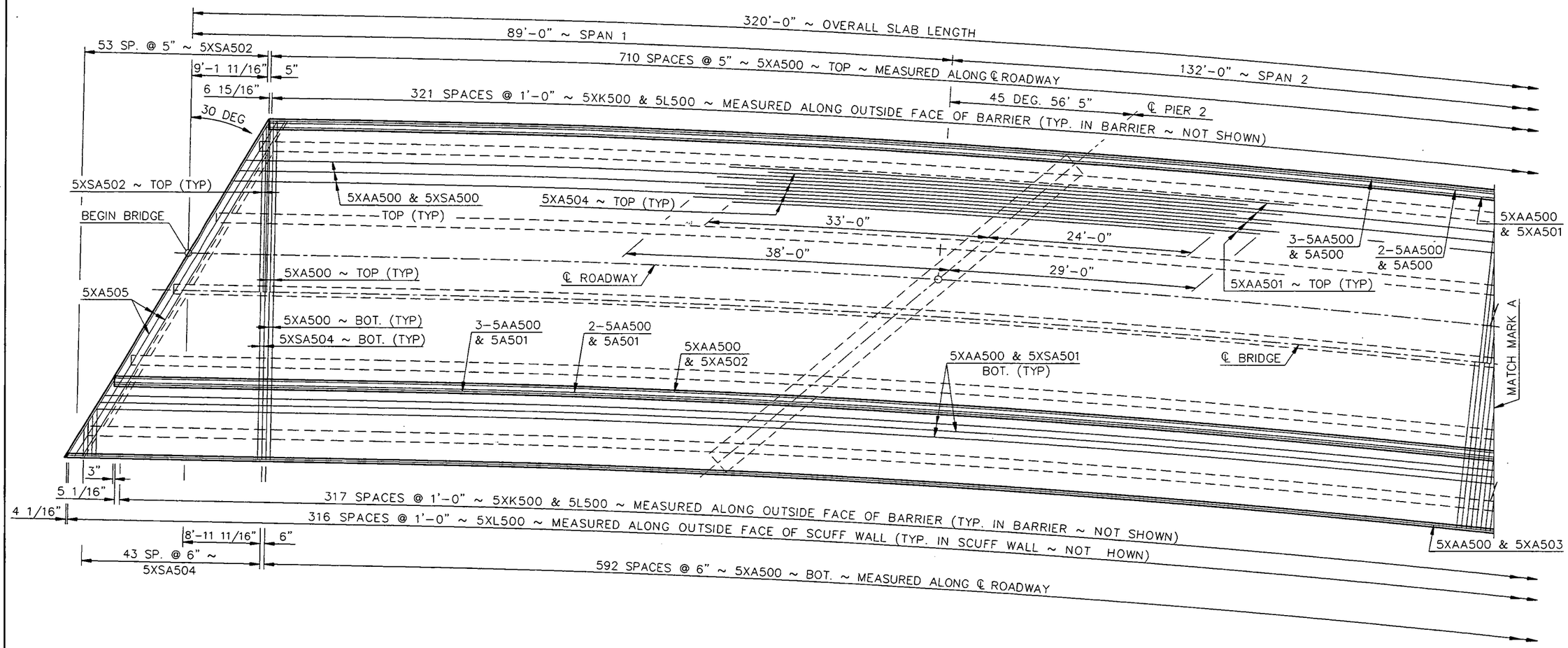
NOMENCLATURE:
N.S. = NEAR SIDE
B.S. = BOTH SIDES
F.S. = FAR SIDE

SEE DWG. 2-053.731R-25 FOR MATCH MARK C.

BURLINGTON NORTHERN OVERHEAD RAY

GIRDER 5 ELEVATION DETAILS & FIELD SPLICE DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	151



NOTE:
SEE DWG. 2-053.731R-28 FOR MATCH MARK A.

QUANTITIES
SEE DWG. 2-053.731R-30
BURLINGTON NORTHERN OVERHEAD RAY
SLAB LAYOUT

SLABLO 96DLS25 JDS
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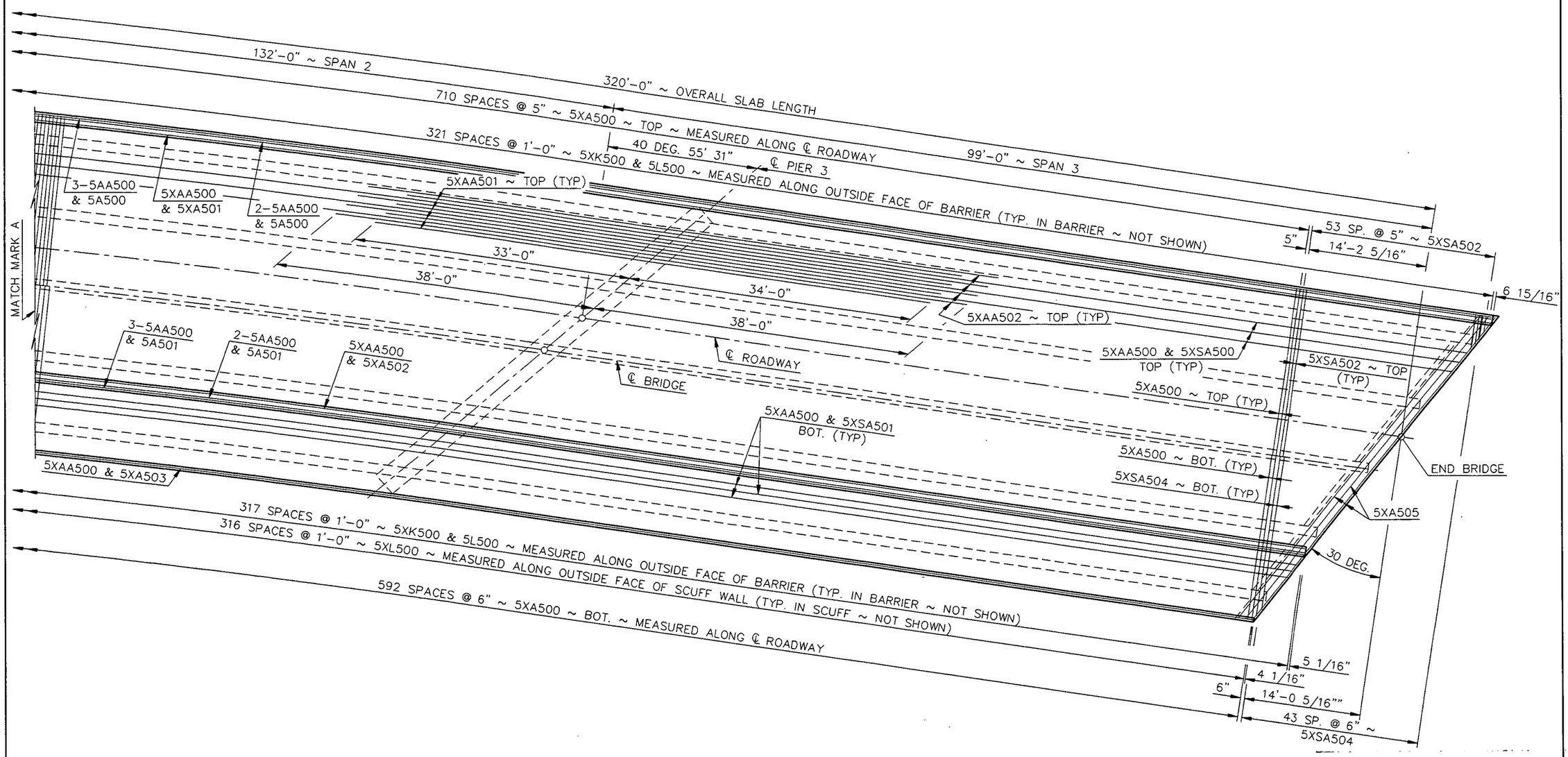
2-053.731R-27

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	152



NOTE:
SEE DWG. 2-053.731R-27 FOR MATCH MARK A.

QUANTITIES
SEE DWG. 2-053.731R-30

BURLINGTON NORTHERN OVERHEAD RAY

SLAB LAYOUT

SLABLO1 96DLS26 JDS
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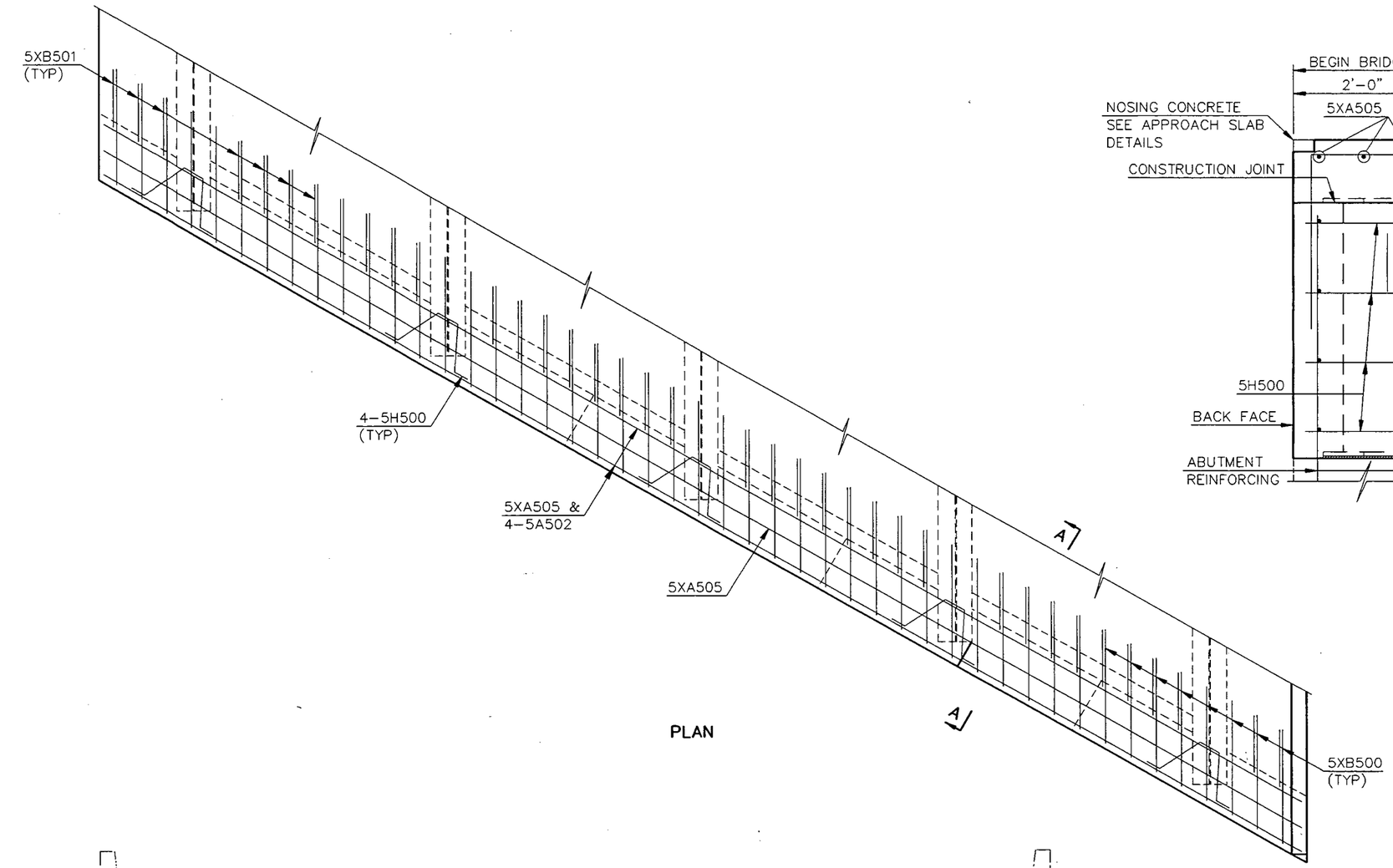
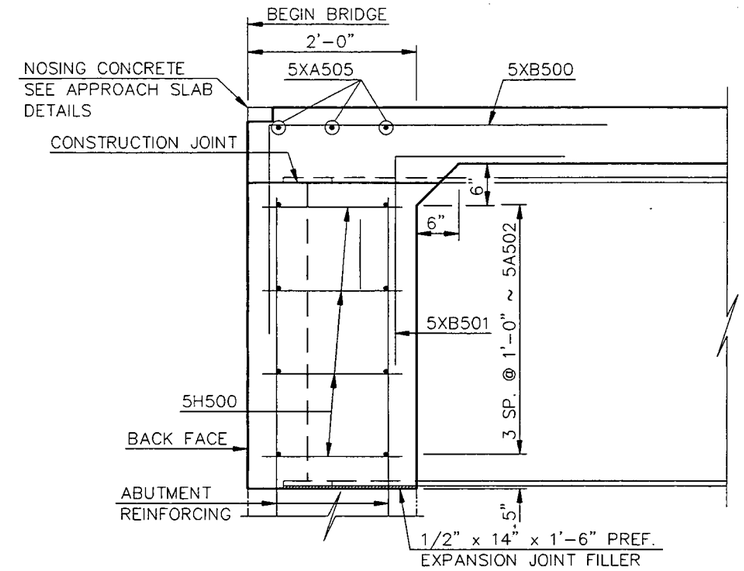
2-053.731R-28

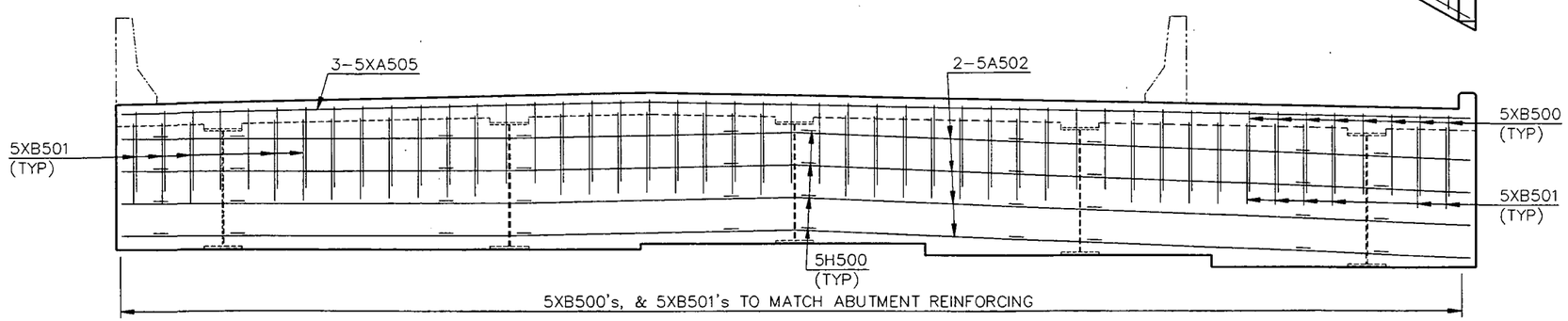
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	153



PLAN



A-A



ELEVATION

QUANTITIES
SEE DWG. 2-053.731R-30
BURLINGTON NORTHERN OVERHEAD RAY
END BEAM DETAILS

ENDBM 96DLS27 JDS

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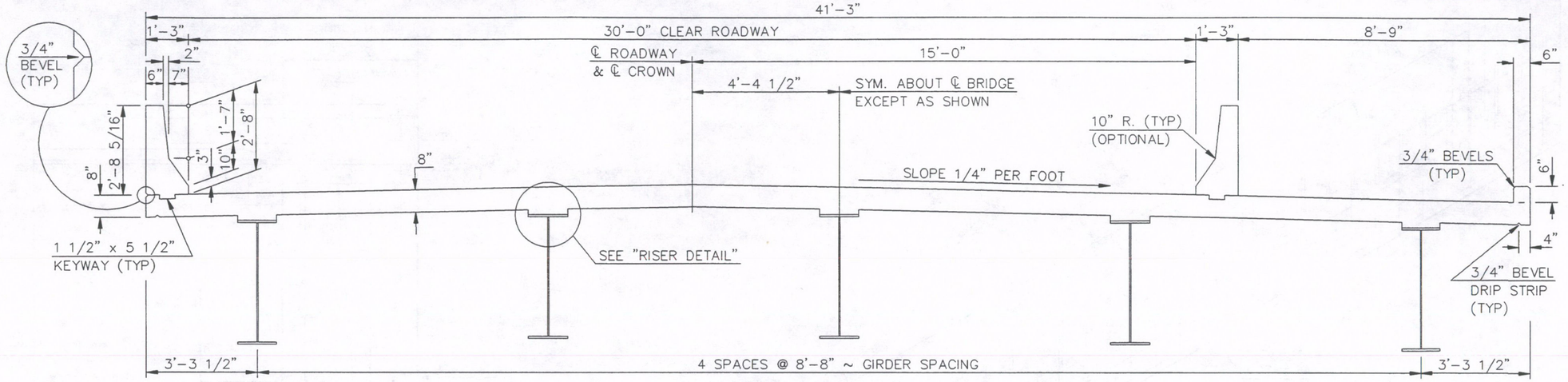
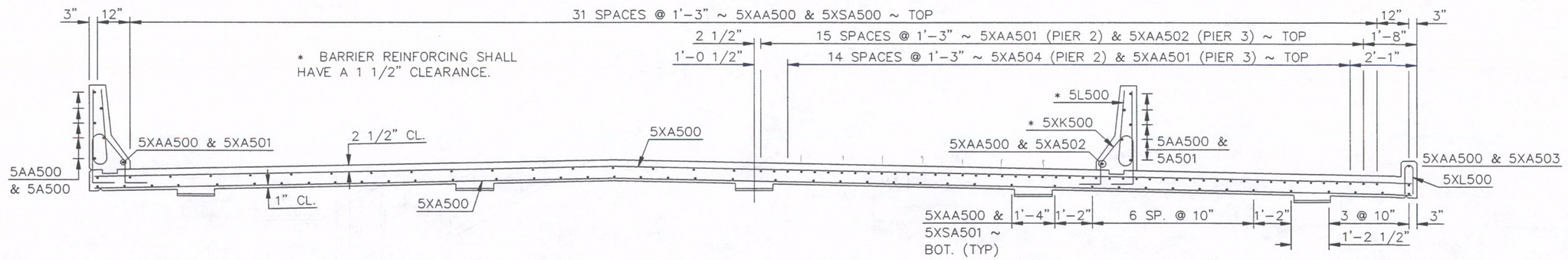
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	154



(SHOWING DIMENSIONS)

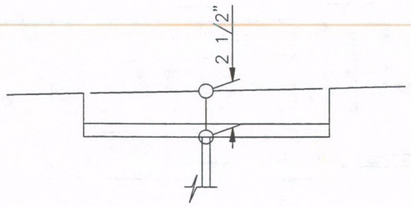
SLAB SECTION



(SHOWING REINFORCING BETWEEN SUPPORTS)

SLAB SECTION

(SHOWING REINFORCING OVER SUPPORTS)



TYPICAL RISER DETAIL

QUANTITIES	
CLASS AAE-3 CONCRETE	414.8 CY
REINFORCING STEEL	7737 LB
REINFORCING STEEL-EC	101,525 LB

BURLINGTON NORTHERN OVERHEAD RAY

SLAB SECTIONS

SLABSEC 96DLS24 JDS

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2-053.731R-30

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	155

ABUTMENT 1

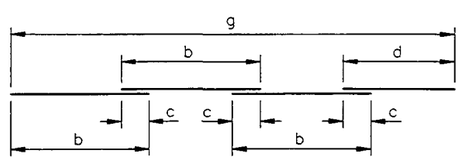
LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	a	b	c	d	e	f	g	h	k
ABUTMENT 1	5	A100	2	23'-10"		23'-10"							
	5	A101	2	15'-0"		15'-0"							
	5	A102	2	12'-0"		12'-0"							
	5	A103	10	7'-7"		7'-7"							
	5	A104	2	6'-0"		6'-0"							
	6	A105	20	14'-0"		14'-0"							
	5	A106	10	5'-0"		5'-0"							
	5	C100	10	21'-2"		9'-9"	1'-8"	9'-9"					
	5	C101	1	20'-3"		8'-10"	1'-8"	9'-9"					
	5	C102	6	19'-4"		8'-10"	1'-8"	8'-10"					
	5	C103	2	15'-9"		5'-3"	1'-8"	8'-10"					
	5	C104	8	20'-2"		9'-3"	1'-8"	9'-3"					
	5	C105	2	16'-6"		5'-7"	1'-8"	9'-3"					
	5	C106	2	17'-5"		6'-0"	1'-8"	9'-9"					
	5	C107	14	19'-10"		9'-1"	1'-8"	9'-1"					
	5	C108	4	16'-11"		6'-2"	1'-8"	9'-1"					
	5	C109	1	20'-6"		9'-1"	1'-8"	9'-9"					
	4	C110	51	2'-8"		6"	1'-8"	6"					
	5	D100	2	15'-5"		3'-0"	12'-5"					12	4
	5	AA100	14	66'-9"		60'-0"	1'-3"	6'-9"	1		65'-6"		
	5	SC100	1	197'-6"	8"	5'-10"	9'-6"	1'-7"	11				
	5	SC101	1	102'-11"	8"	9'-9"	9'-9"	1'-6"	4				

ABUTMENT 4

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	a	b	c	d	e	f	g	h	k
ABUTMENT 4	5	A400	2	14'-0"		14'-0"							
	5	A401	2	11'-0"		11'-0"							
	5	A402	2	8'-0"		8'-0"							
	5	A403	2	5'-0"		5'-0"							
	6	A404	24	15'-0"		15'-0"							
	5	A405	10	9'-8"		9'-8"							
	5	A406	8	7'-0"		7'-0"							
	5	C400	2	22'-8"		10'-6"	1'-8"	10'-6"					
	5	C401	2	21'-11"		9'-9"	1'-8"	10'-6"					
	5	C402	31	21'-2"		9'-9"	1'-8"	9'-9"					
	5	C403	15	17'-5"		6'-0"	1'-8"	9'-9"					
	4	C404	51	2'-8"		6"	1'-8"	6"					
	5	D400	2	15'-5"		3'-0"	12'-5"					12	4
	5	AA400	14	68'-0"		60'-0"	1'-3"	8'-0"	1		66'-9"		
	5	SC400	1	215'-6"	8"	6'-7"	10'-3"	1'-7"	11				
	5	SC401	1	132'-6"	8"	10'-6"	10'-6"	1'-6"	5				

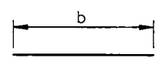
NOTES:

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.

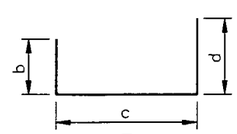


c = LAP SPLICE (TYP.)
e = NO. OF "b" LENGTH PIECES IN A SET
TOTAL LENGTH PER SET = e x b + d

(AA)



(A)



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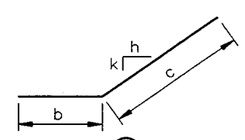

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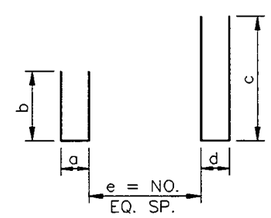

(SC)

BURLINGTON NORTHERN OVERHEAD RAY

ABUTMENT 1 & ABUTMENT 4 REINFORCING BAR LIST & DETAILS

REBAR 96DLS33 JDS

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2-053.731R-31

BILL OF REINFORCING STEEL, GRADE 60

LETTER PREFIX OF BAR MARK DENOTES SHAPE ~ SEE BAR DETAILS

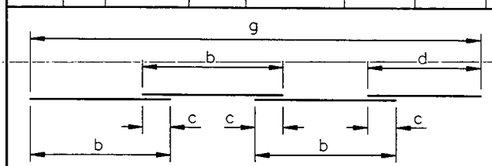
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	156

LOCATION	SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
PIER 2	5	A200	46	54'-2"		54'-2"							
	5	A201	110	25'-0"		25'-0"							
	5	A202	9	55'-2"		55'-2"							
	5	C200	55	6'-2"		2'-3"	1'-8"	2'-3"					
	5	C201	46	6'-0"		2'-3"	1'-6"	2'-3"					
	4	C202	60	2'-8"		6"	1'-8"	6"					
	5	C203	55	7'-8"		2'-6"	2'-8"	2'-6"					
	5	C204	8	7'-0"		2'-3"	2'-6"	2'-3"					
	5	D200	113	4'-10"		2'-10"	2'-0"					12	12
	5	D201	3	5'-10"		3'-10"	2'-0"					12	12
PIER 3	5	A300	50	49'-2"		49'-2"							
	5	A301	100	27'-0"		27'-0"							
	5	A302	9	50'-2"		50'-2"							
	5	C300	50	6'-2"		2'-3"	1'-8"	2'-3"					
	5	C301	50	6'-0"		2'-3"	1'-6"	2'-3"					
	4	C302	60	2'-8"		6"	1'-8"	6"					
	5	C303	50	7'-8"		2'-6"	2'-8"	2'-6"					
	5	C304	8	7'-0"		2'-3"	2'-6"	2'-3"					
	5	D300	103	4'-10"		2'-10"	2'-0"					12	12
	5	D301	3	5'-2"		3'-2"	2'-0"					12	12

LOCATION		SIZE	MARK	NO. EACH /SET	NOMINAL LENGTH	DETAILING DIMENSIONS a	b	c	d	e	f	g	h	k
SUPERSTRUCTURE	REGULAR	5	A500	5	28'-0"		28'-0"							
		5	A501	5	23'-8"		23'-8"							
		5	A502	16	47'-3"		47'-3"							
		5	H500	40	5'-1"	6"	1'-8"	9"					6	12
		5	L500	640	5'-0"	3"	2'-2"	8"	2'-2"		2.5"		12	1.25
		5	AA500	10	300'-0"		60'-0"	1'-3"	60'-0"	4		295'-0"		
	EPOXY COATED	5	XA500	1304	40'-11"		40'-11"							
		5	XA501	1	27'-10"		27'-10"							
		5	XA502	1	23'-2"		23'-2"							
		5	XA503	1	22'-7"		22'-7"							
		5	XA504	31	57'-0"		57'-0"							
		5	XA505	6	47'-3"		47'-3"							
		5	XB500	94	7'-0"		4'-0"	3'-0"						
		5	XB501	69	5'-0"		2'-0"	3'-0"						
		5	XK500	640	4'-11"	1'-4"	8"	11"	8"	1'-0"	2.5"	8"	8.5	12
		5	XL500	317	2'-0"	3"	9 1/2"	5"	9 1/2"		2.5"		12	0
		5	XAA500	81	300'-0"		60'-0"	1'-3"	60'-0"	4		295'-0"		
		5	XAA501	62	68'-3"		60'-0"	1'-3"	8'-3"	1		67'-0"		
		5	XAA502	31	77'-3"		60'-0"	1'-3"	17'-3"	1		76'-0"		
		5	XSA500	1	859'-11"	22'-7"	28'-0"			33				
		5	XSA501	1	1112'-10"	22'-7"	28'-0"			43				
		5	XSA502	2	1145'-3"	2'-1"	40'-4"			53				
		5	XSA504	2	944'-2"	2'-10"	40'-1"			43				

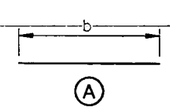
NOTES:

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.

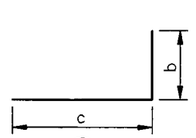


c = LAP SPLICE (TYP.)
e = NO. OF "b" LENGTH PIECES IN A SET
TOTAL LENGTH PER SET = e x b + d

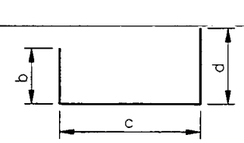
(AA)



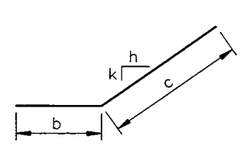
(A)



(B)



(C)



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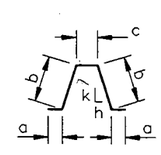
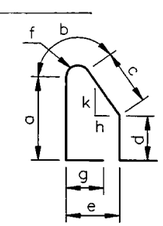


(H)



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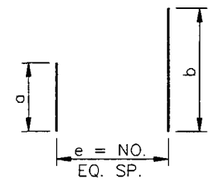
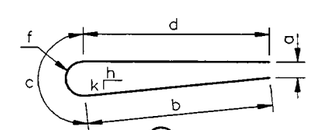


(SA)



(L)

BURLINGTON NORTHERN OVERHEAD RAY

PIER & SUPERSTRUCTURE REINFORCING BAR LIST & DETAILS

REBAR1 96DLS34 JDS

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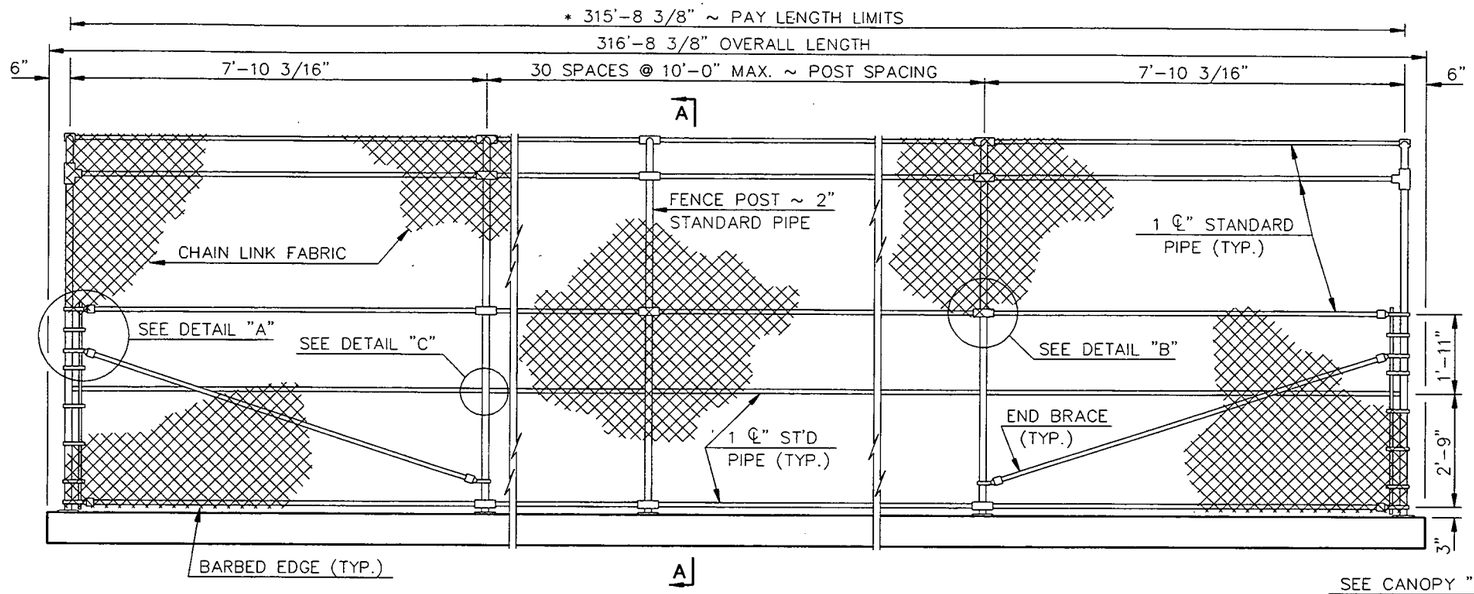
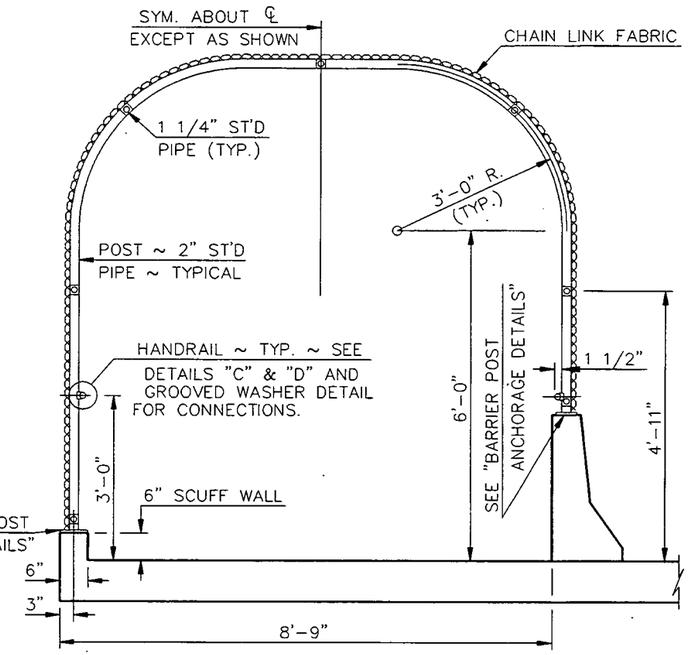
2-053.731R-32

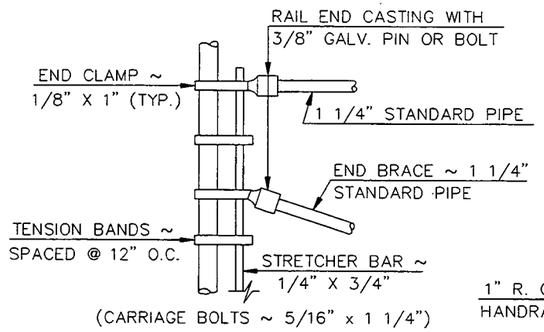
FHWA REGION	STATE	FED. AID PROJ. NO.	SHEET NO.
8	N.D.	RSN-7-002(041)052	157



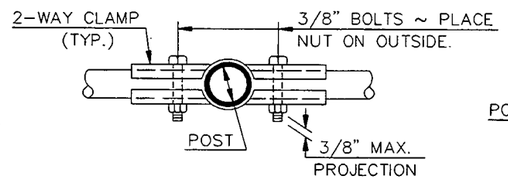
CANOPY ELEVATION



A-A



DETAIL "A"



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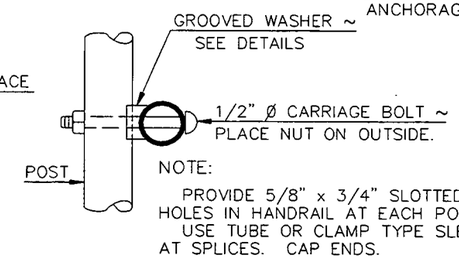
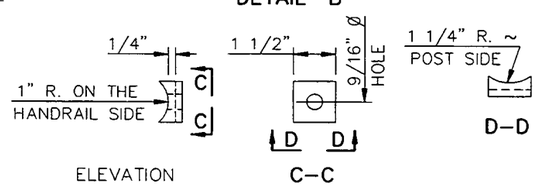


NOTE:

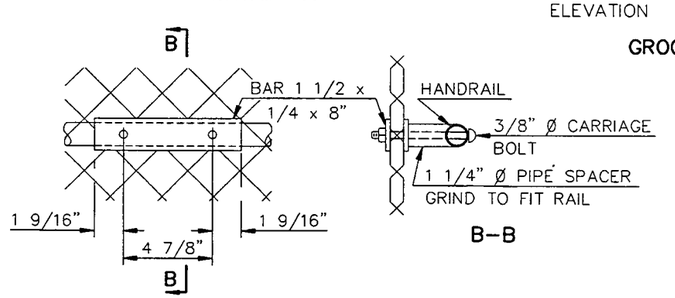
PROVIDE 5/8" x 3/4" SLOTTED HOLES IN HANDRAIL AT EACH POST. USE TUBE OR CLAMP TYPE SLEEVE AT SPLICES. CAP ENDS.

HANDRAIL CONNECTION AT POSTS

DETAIL "C"

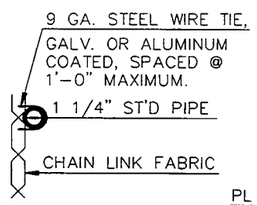


GROOVED WASHER DETAILS



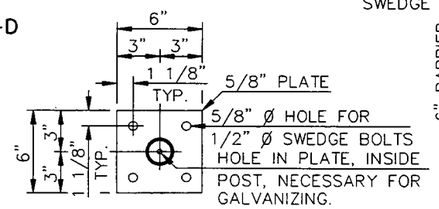
HANDRAIL CONNECTION DETAILS CENTERED BETWEEN POSTS

DETAIL "D"

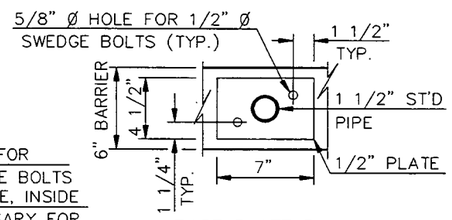


TYPICAL FABRIC ATTACHMENT

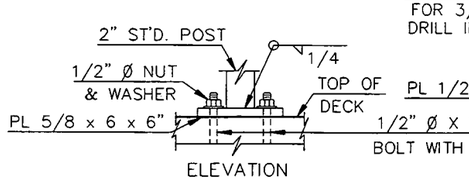
DETAIL "E"



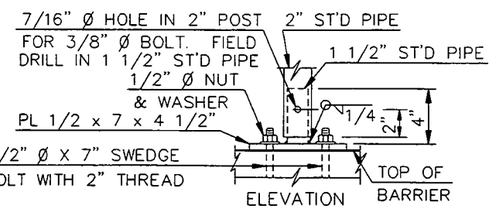
BASE PLATE PLAN



BASE PLATE PLAN



POST ANCHORAGE DETAILS



BARRIER POST ANCHORAGE DETAILS

NOTE:

FABRIC SHALL BE AASHTO M181, TYPE 1 AND SHALL BE 9 GAGE WIRE, 2 INCH MESH, 60 INCHES HIGH, AND THE BOTTOM SELVAGE BARBED.

POSTS AND FITTINGS SHALL BE AASHTO M181, CLASS 1.

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 SHWON ON THE "BASE PLATE PLAN" VIEW.

* THE PAY LENGTH IS MEASURED ALONG THE OUTSIDE FACE OF THE SCUFF WALL. POSTS LOCATED IN THE TANGENT SECTIONS SHALL BE PLACED PERPENDICULAR. POSTS LOCATED IN THE CURVE SECTION SHALL BE PLACED RADIALLY.

QUANTITIES	
PEDESTRIAN CANOPY	316.7 LF

BURLINGTON NORTHERN OVERHEAD RAY

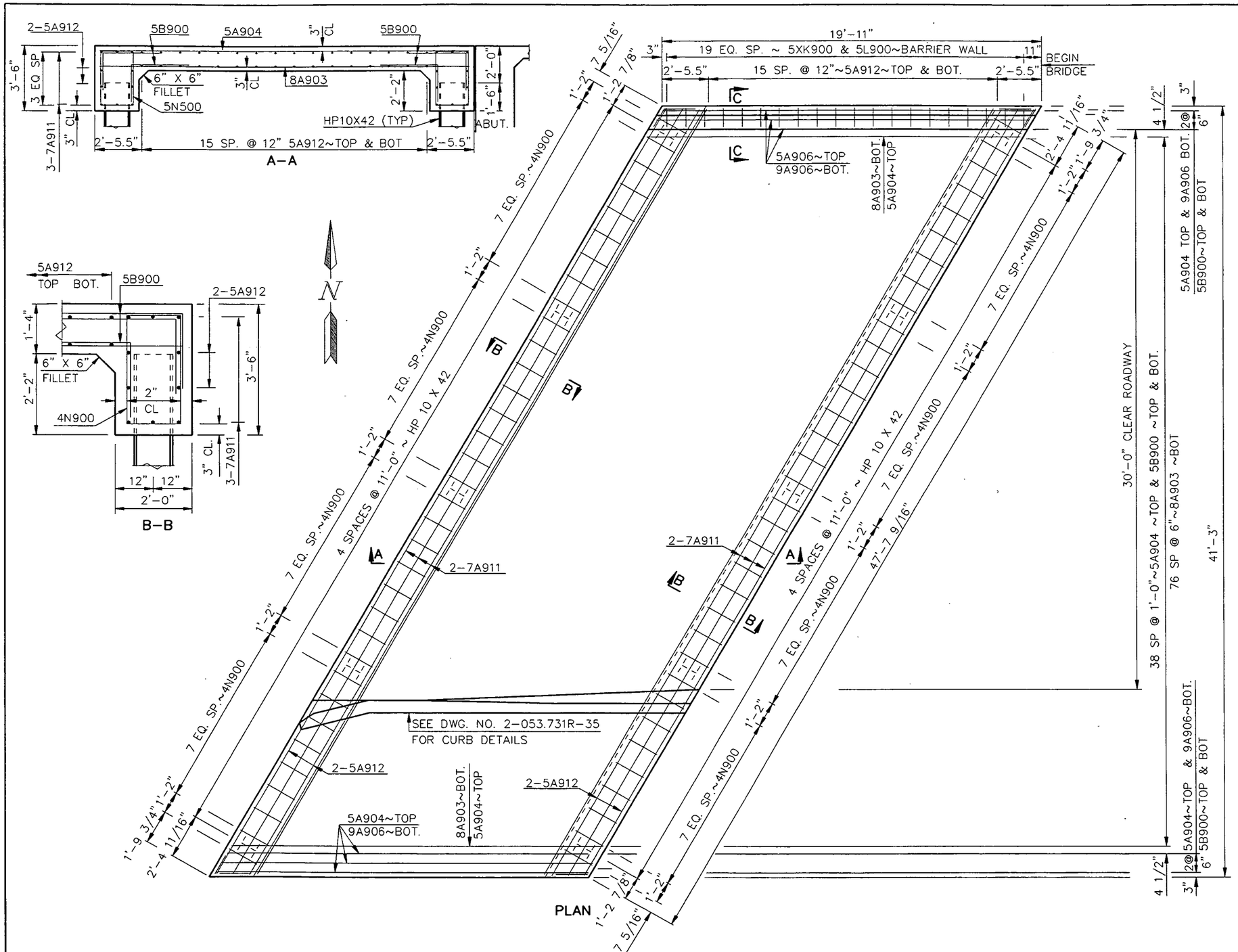
PEDESTRIAN CANOPY DETAILS

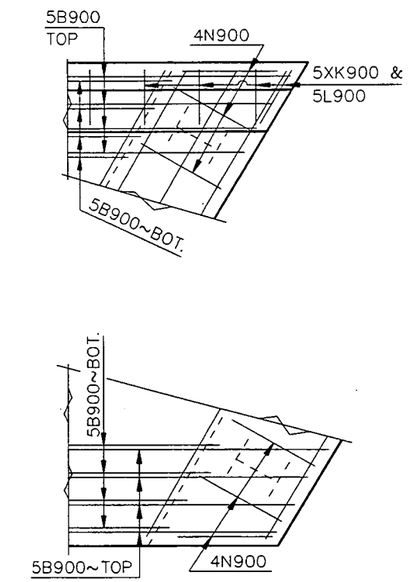
CANOPY 96DLS75 JDS

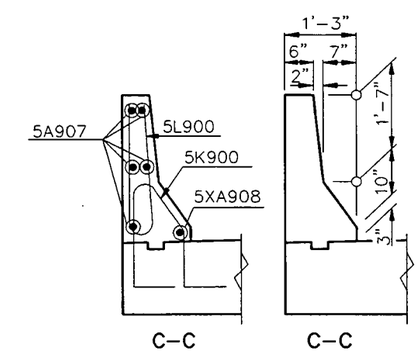
c:\dgn\right\canopy.dgn Sep. 19, 1996 15:08:55

2-053.731R-33

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	158





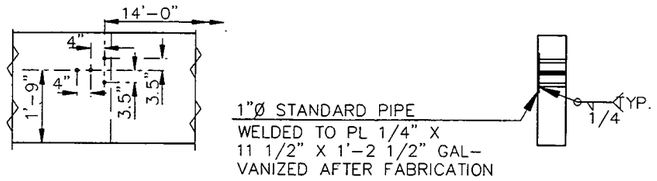


QUANTITIES
SEE DWG. NO. 2-053.731R-35

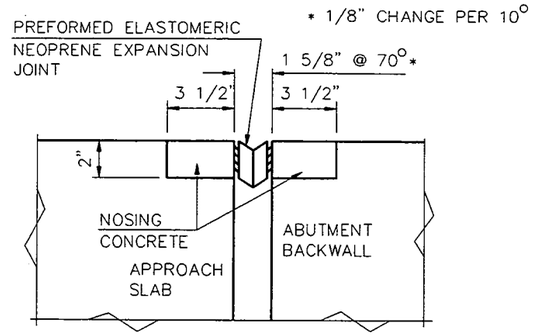
BURLINGTON NORTHERN OVERHEAD RAY

APPROACH SLAB
BEGIN BRIDGE

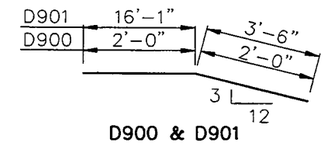
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	159



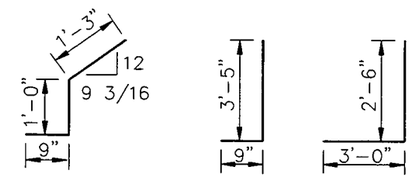
CONNECTION PLATE ASSEMBLY



JOINT DETAIL



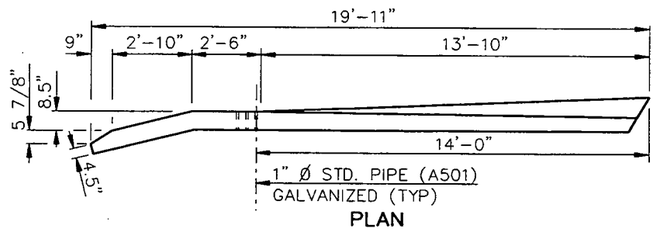
D900 & D901



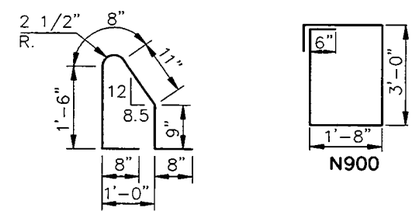
XT900
FIELD BEND
TO FIT

B901

B900

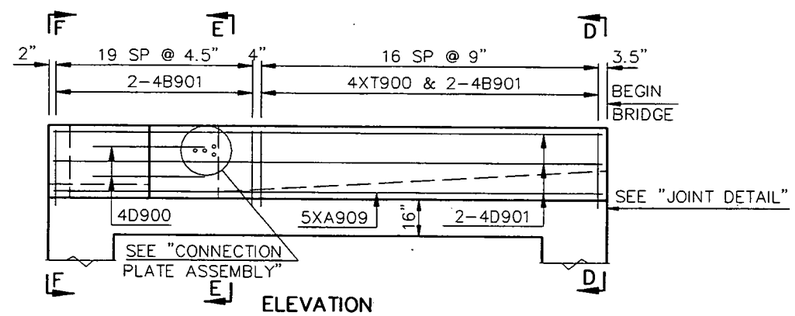


PLAN

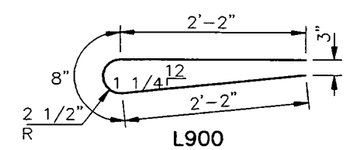


K900

N900

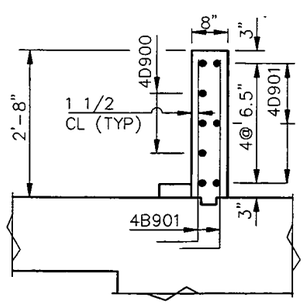


ELEVATION

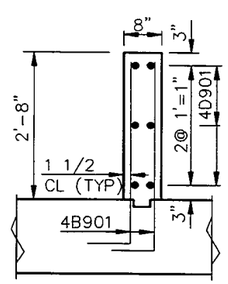


L900

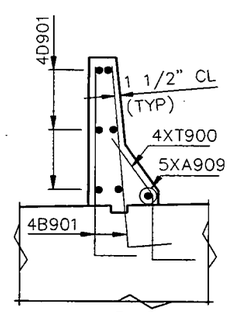
BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT



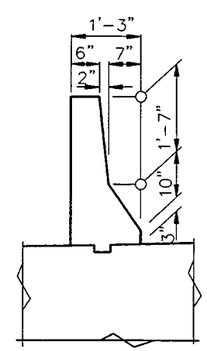
F-F



E-E



D-D



D-D

WIDTH = 30'-0" CL. RDWY.

SKEW ANGLE = 30°

BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
8	A903	77	19'-7"
5	A904	45	19'-7"
9	A906	6	19'-7"
5	A907	5	19'-7"
5	XA908	1	19'-7"
5	XA909	1	13'-10"
7	A911	12	47'-3"
5	A912	40	47'-3"
5	B900	180	5'-6"
4	B901	74	4'-2"
4	D900	2	4'-0"
4	D901	6	19'-7"
5	XK900	22	5'-2"
5	L900	22	5'-0"
4	N900	72	10'-4"
5	XT900	17	3'-0"

ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL LBS.	CONCRETE C.Y.
10,718	59.2

X = EPOXY COATED BAR

NOTES:

THE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING STEEL AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB". THE PILING, NOSING CONCRETE AND PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT ARE SEPARATE PAY ITEMS.

THE PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT SHALL CONTINUE UP THE FRONT FACE OF THE BARRIERS FOR A DISTANCE OF 6" AND TERMINATE, EXCEPT ON THE SIDEWALK SIDE WHERE IT WILL TERMINATE AT THE EDGE OF THE SIDEWALK.

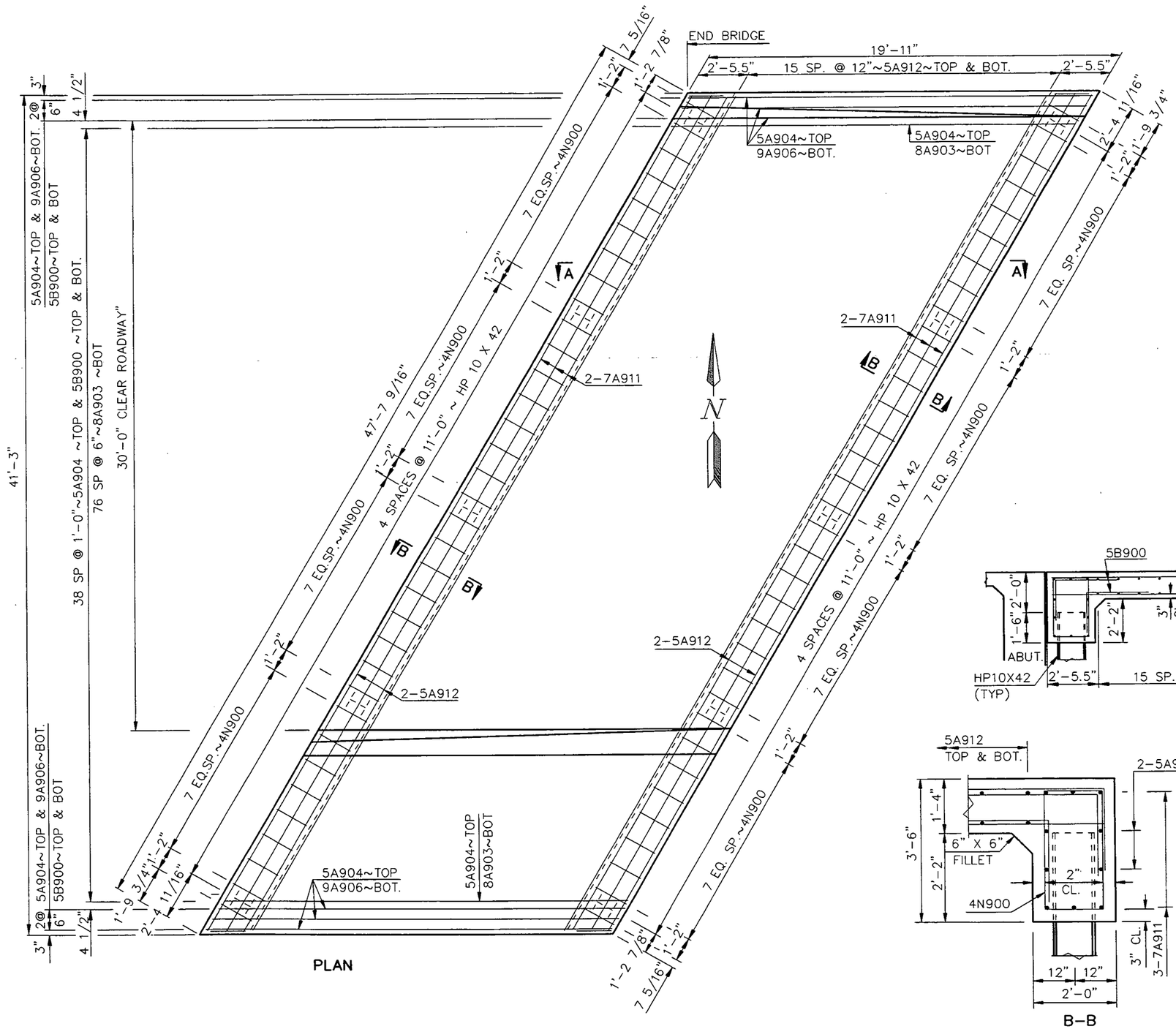
QUANTITIES

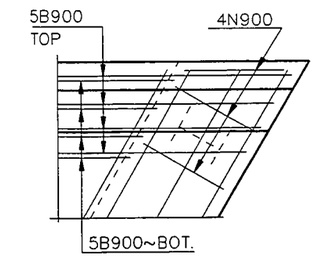
APPROACH SLAB	91.3	SY
NOSING CONCRETE	47.6	LF
PREF. ELAST. NEOP. EXP. JT.	46.7	SY

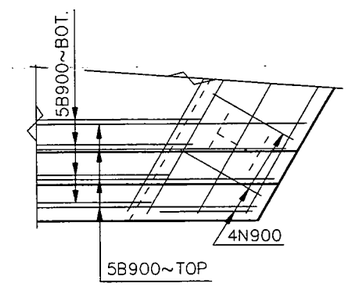
BURLINGTON NORTHERN OVERHEAD RAY

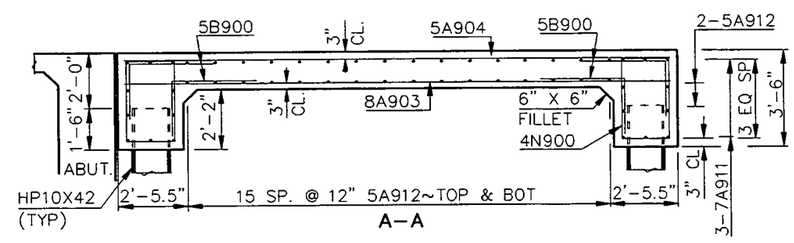
APPROACH SLAB
BEGIN BRIDGE

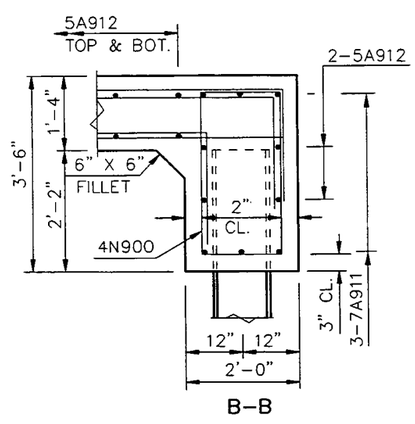
FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	160











SEE DWG. NO. 2-053.731R-37
FOR CURB DETAILS

QUANTITIES
SEE DWG. NO. 2-053.731R-37

BURLINGTON NORTHERN OVERHEAD RAY

APPROACH SLAB
END BRIDGE

APPSLAB7 96LCS089 JDS

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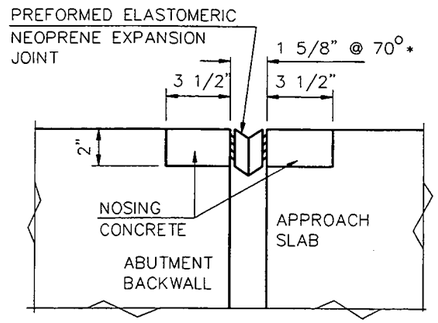
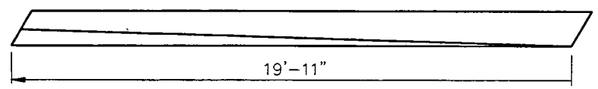
2-053.731R-36

FHWA REGION	STATE	FEDERAL AID PROJECT NUMBER	SHEET NO.
8	ND	RSN-7-002(041)052	161

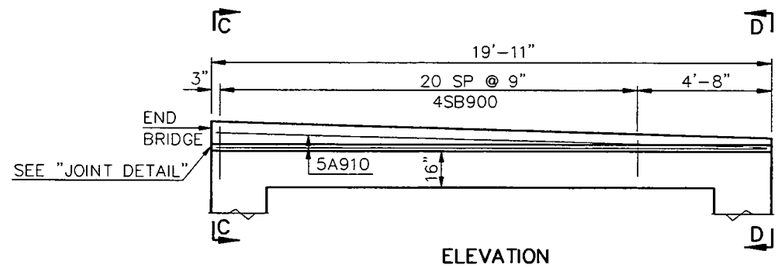
* 1/8" CHANGE PER 10°



JOINT DETAIL

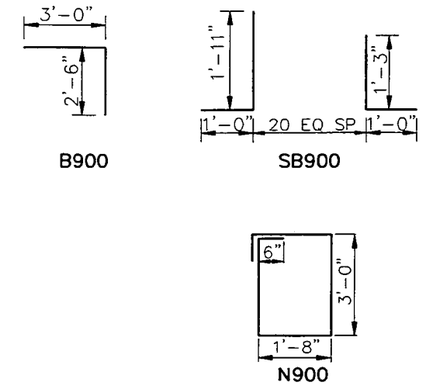


PLAN



ELEVATION

(LEFT CURB SHOWN-RIGHT CURB SIMILAR)



BENT BAR DETAILS
DIMENSIONS SHOWN ARE OUT TO OUT

WIDTH = 30'-0" CL. RDWY.

SKEW ANGLE = 30°

BAR LIST - ONE SLAB

SIZE	MARK	NO.	LENGTH
8	A903	77	19'-7"
5	A904	45	19'-7"
9	A906	6	19'-7"
5	A910	4	19'-7"
7	A911	12	47'-3"
5	A912	40	47'-3"
5	B900	180	5'-6"
4	SB900	4 SETS	54'-3"
4	N900	72	10'-4"

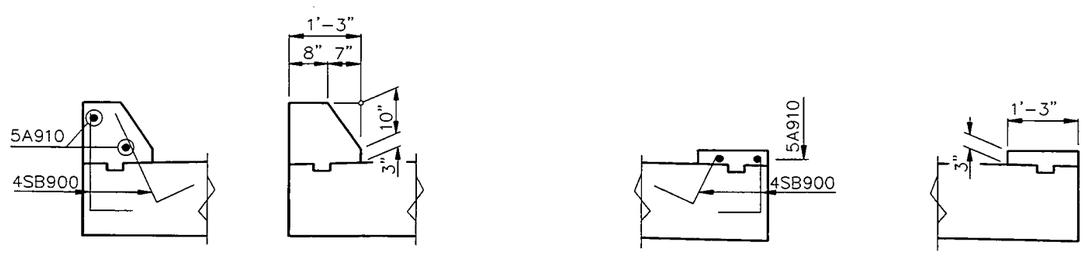
ESTIMATED MATERIAL QUANTITIES

REINFORCING STEEL LBS.	CONCRETE C.Y.
10,231	57.4

X = EPOXY COATED BAR

NOTES:

THE ESTIMATED MATERIAL QUANTITIES ARE FOR INFORMATIONAL PURPOSES ONLY. ALL MATERIALS, INCLUDING CONCRETE, REINFORCING STEEL AND LABOR REQUIRED TO BUILD THE APPROACH SLAB SHALL BE INCLUDED IN THE PAY ITEM "CONCRETE BRIDGE APPROACH SLAB". THE PILING, NOSING CONCRETE AND PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT ARE SEPARATE BID ITEMS.
THE PREFORMED ELASTOMERIC NEOPRENE EXPANSION JOINT SHALL CONTINUE UP THE FRONT FACE OF THE BARRIERS FOR A DISTANCE OF 6" AND TERMINATE, EXCEPT ON THE SIDEWALK SIDE WHERE IT WILL TERMINATE AT THE EDGE OF THE SIDEWALK.

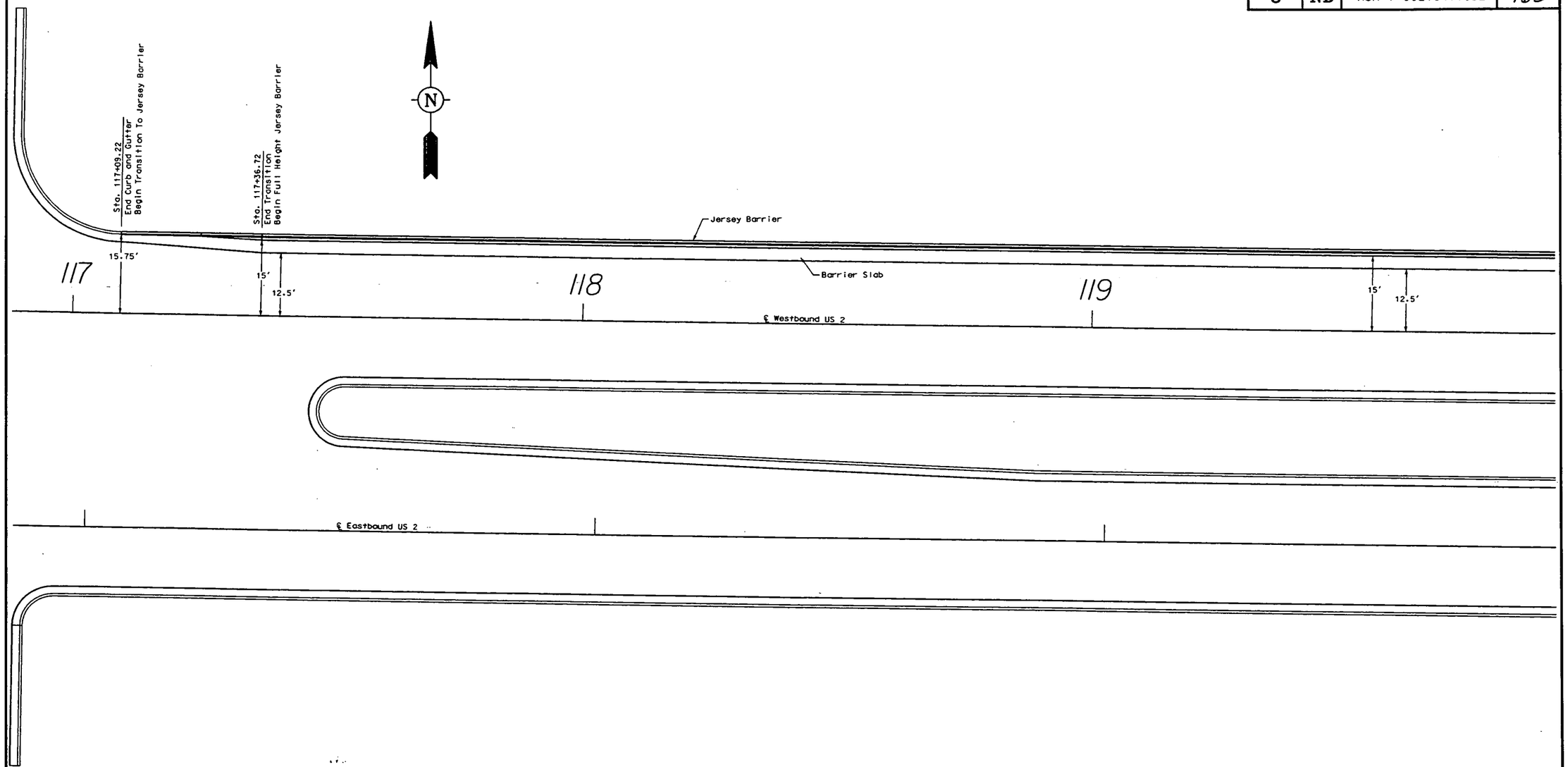


QUANTITIES		
APPROACH SLAB	91.3	SY
NOSING CONCRETE	47.6	LF
PREF. ELAST. NEO. EXP. JT.	46.7	LF

BURLINGTON NORTHERN OVERHEAD RAY

APPROACH SLAB
END BRIDGE

FHWA REGION	STATE	PROJECT NO.	SHEET NO.
8	ND	RSN-7-002(041)052	162



Jersey Barrier Layout

West of BN Railroad Separation

US 2
Ray, ND

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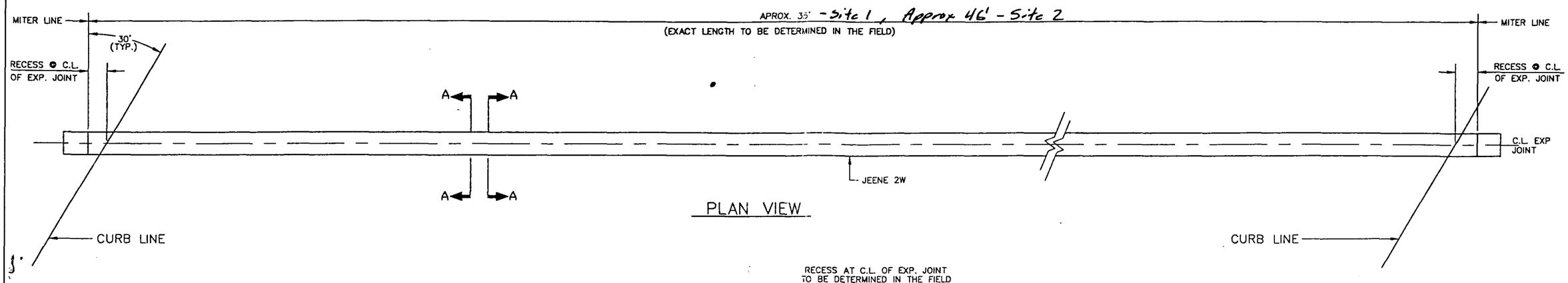
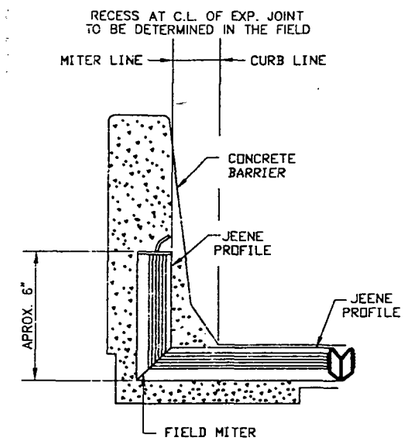
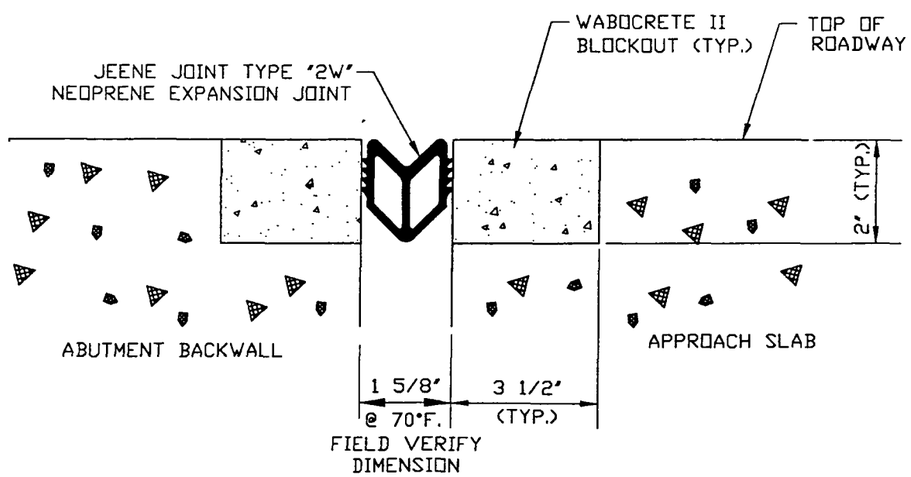


PLAN VIEW



SECTION VIEW
SPLIT BARRIER



SECTION VIEW A – A

GENERAL NOTES:

1. WABOCRETE II SHALL BE INSTALLED IN ACCORDANCE WITH WATSON BOWMAN ACME INSTALLATION PROCEDURES.
2. JEENE PROFILE SHALL BE INSTALLED IN ACCORDANCE WITH WATSON BOWMAN ACME INSTALLATION PROCEDURES.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
8/26/97 DLR
DATE BY

TEMPERATURE ADJUSTMENT

THE CHANGE PER 10°F. IS MEASURED PERPENDICULAR TO THE JOINT FOR BOTH NORMAL AND SKEWED JOINTS.

DIMENSIONS SPANNING THE OPEN JOINT WILL DECREASE OR INCREASE FOR EVERY 10°F. RISE OR FALL RESPECTIVELY.

1/8" INCHES AT STA. 122 + 80.80
1/8" INCHES AT STA. 126 + 6.51

SHEET NUMBER
ITEM DESIGNATION
ITEM NUMBER
2e1
MARK SYSTEM

STATE: NORTH DAKOTA
COUNTY: WILLIAMS
PROJECT NO.: RSN-NH-7-002(041)052
REGION: 8 ROUTE: US 2

NO.	DESCRIPTION	NAME	DATE
4			
3			
2			
1			

REVISIONS

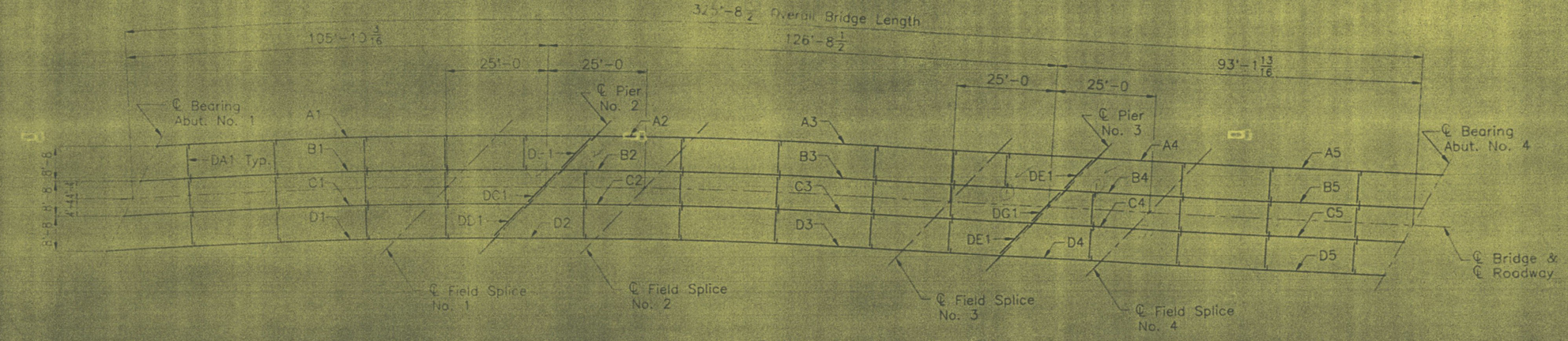
Watson Bowman Acme
JEENE
80 PINEVIEW DRIVE AMHERST, N.Y. 14228 TEL. (716) 691-7988 FAX (716) 691-6536
A DIVISION OF HARRIS SPECIALTY CHEMICALS, INC.

PROJECT: US 2 BURLINGTON NORTHERN RAILROAD SEPARATION IN RAY
JEENE 2W EXPANSION JOINT DETAILS

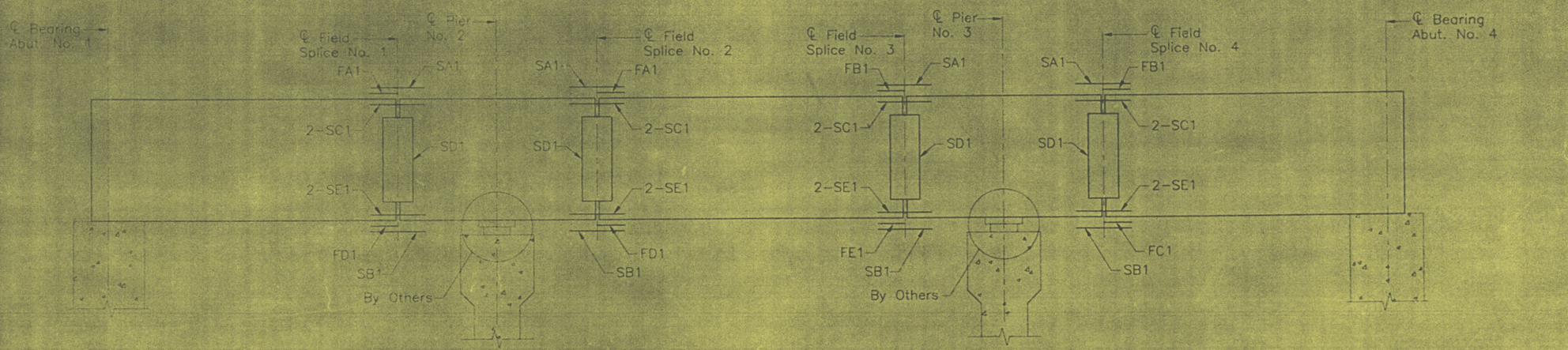
DETAILED BY: MN	DATE: 8/15/97
CHECKED BY: AML	DATE: 8/15/97
SCALE: N.T.S.	WBA JOB NO.: 48289
SHEET NO.: 1 OF 1	DRAWING NO.: B-17076

#2-053.731 L & R

Bon 845



PLAN



STRUCTURAL STEEL ERECTION LAYOUT

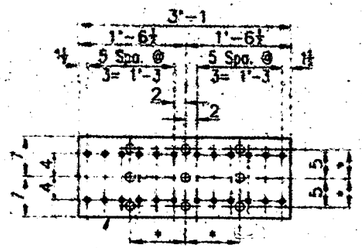
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
June 4, 97 DATE BY DLR

CONTRACT NO.

DESCRIPTION
SUBSTRUCTURAL STEEL ERECTION LAYOUT

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80088, ZIP 68501, PH. 402-476-1021

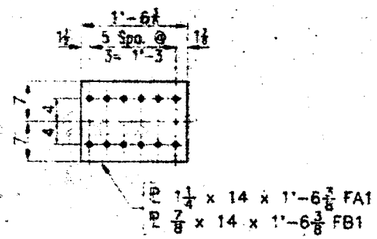
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
50 H. 6° OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO		LOCATION	BURLINGTON NORTHERN OVERHEAD RAY
WELDS AS NOTED		CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT F-43 F-7-002(041)052	COUNTY WILLIAMS
DRAWN 5-5-97 D. CLARK		STATION 124 + 43.6	ROADWAY 30 FT
CHECKED 5-9-97		LOADING H25	SKEW VARIES
BRIDGE NO 2-053.731L		SHEET NO. E1 OF 1	ORDER NO. 4213W



◐ PL $\frac{3}{8}$ x 14 x 3'-1 SA1

16-SPLICE PLATES: SA1

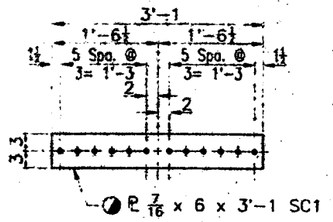
* Space studs to clear bolt holes.



PL $\frac{1}{4}$ x 14 x 1'-6$\frac{7}{8}$ FA1

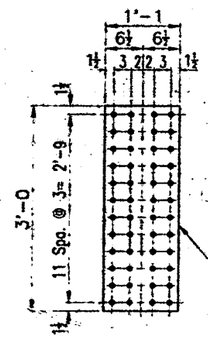
PL $\frac{7}{8}$ x 14 x 1'-6$\frac{3}{8}$ FB1

16-FILL PLATES: 8-FA1, 8-FB1



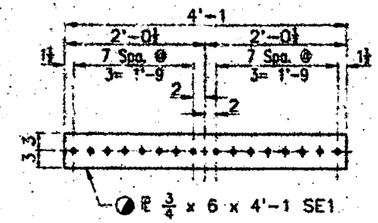
◐ PL $\frac{7}{16}$ x 6 x 3'-1 SC1

32-SPLICE PLATES: SC1



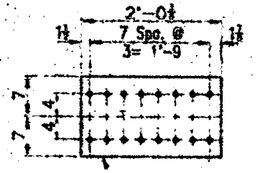
◐ PL $\frac{1}{2}$ x 13 x 3'-0 SD1

32-SPLICE PLATES: SD1



◐ PL $\frac{3}{4}$ x 6 x 4'-1 SE1

32-SPLICE PLATES: SE1

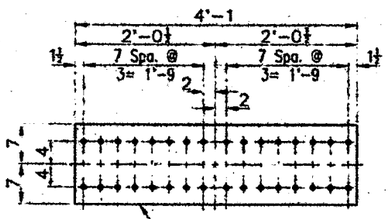


PL $\frac{7}{8}$ x 14 x 2'-0$\frac{3}{8}$ FC1

PL $\frac{5}{8}$ x 14 x 2'-0$\frac{3}{8}$ FD1

PL $\frac{3}{8}$ x 14 x 2'-0$\frac{3}{8}$ FE1

16-FILL PLATES: 4-FC1, 8-FD1, 4-FE1

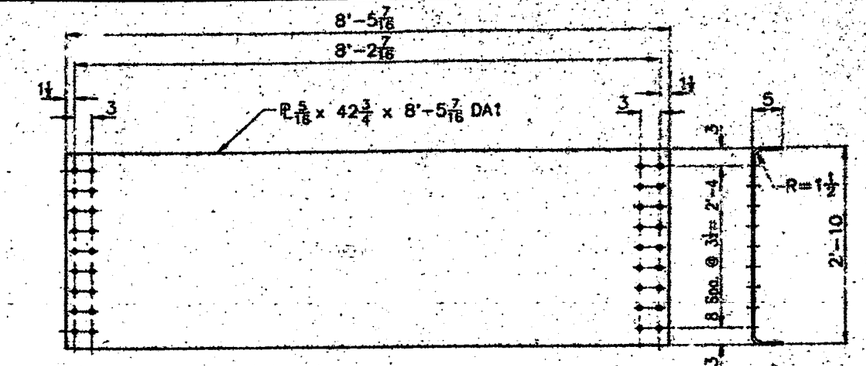


◐ PL $\frac{5}{8}$ x 14 x 4'-1 SF1

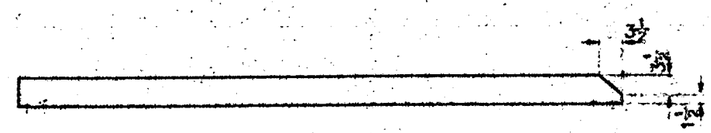
16-SPLICE PLATES: SB1

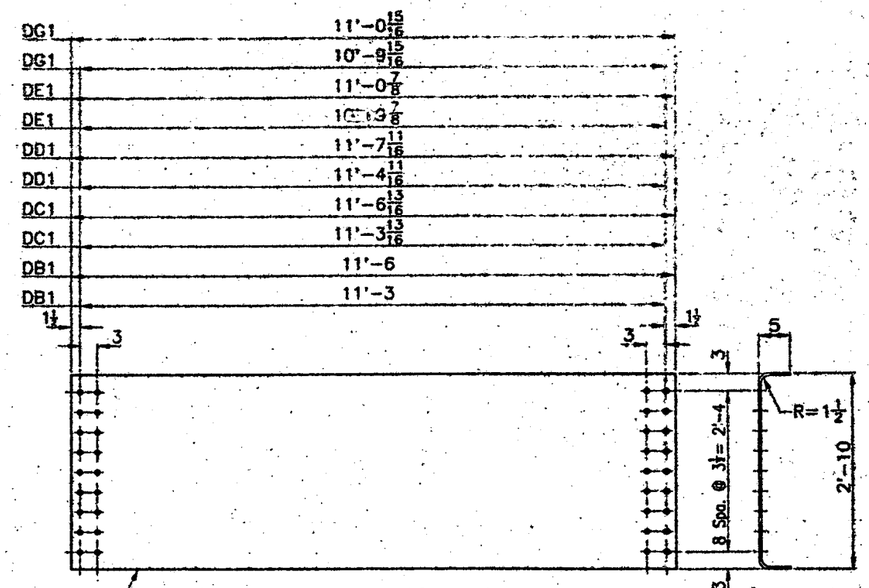
SHOP BILL OF MATERIALS

LINE	NO. PIECES			SHAPE	MINIMUM LENGTH FEET	INCHES	ADD	MARK	REMARKS	CALCULATED WEIGHT EACH
1	1	2	8	SPLICE PLATES 16-SA1, 16-SB1, 32-SC1, 32-SD1, 32-SE1						
2	◐	1	6	PL $\frac{3}{8}$ x 14	3	1		SA1	M270 Gr. 50T2	
3	◐	1	6	PL $\frac{3}{8}$ x 14	4	1		SB1	M270 Gr. 50T2	
4	◐	3	2	PL $\frac{7}{16}$ x 6	3	1		SC1	M270 Gr. 50T2	
5	◐	3	2	PL $\frac{1}{2}$ x 13	3	0		SD1	M270 Gr. 50T2	
6	◐	3	2	PL $\frac{3}{4}$ x 6	4	1		SE1	M270 Gr. 50T2	
7	1	4	4	$\frac{7}{8}$ ø x 5	SHEAR STUD			ma1		
8		3	2	FILL PLATES 8-FA1, 8-FB1, 4-FC1, 8-FD1, 4-FE1						
9			8	PL $\frac{1}{4}$ x 14	1	6	$\frac{1}{8}$	FA1	A709 Gr. 36	
10			8	PL $\frac{7}{8}$ x 14	1	6	$\frac{3}{8}$	FB1	A709 Gr. 36	
11			4	PL $\frac{7}{8}$ x 14	2	0	$\frac{3}{8}$	FC1	A709 Gr. 36	
12			8	PL $\frac{5}{8}$ x 14	2	0	$\frac{3}{8}$	FD1	A709 Gr. 36	
13			4	PL $\frac{3}{8}$ x 14	2	0	$\frac{3}{8}$	FE1	A709 Gr. 36	
14		4	5	DIAPHRAGMS 39-DA1, 1-DB1, 1-DC1, 1-DD1, 2-DE1, 1-DG1						
15		3	9	PL $\frac{5}{16}$ x 42$\frac{3}{4}$	8	5	$\frac{7}{16}$	DA1	A709 Gr. 36	
16			1	PL $\frac{5}{16}$ x 42$\frac{3}{4}$	11	6		DB1	A709 Gr. 36	
17			1	PL $\frac{5}{16}$ x 42$\frac{3}{4}$	11	6	$\frac{13}{16}$	DC1	A709 Gr. 36	
18			1	PL $\frac{5}{16}$ x 42$\frac{3}{4}$	11	7	$\frac{11}{16}$	DD1	A709 Gr. 36	
19			2	PL $\frac{5}{16}$ x 42$\frac{3}{4}$	11	0	$\frac{7}{8}$	DE1	A709 Gr. 36	
20			1	PL $\frac{5}{16}$ x 42$\frac{3}{4}$	11	0	$\frac{15}{16}$	DG1	A709 Gr. 36	



39-DIAPHRAGMS: DA1





6-DIAPHRAGMS: 1-DB1, 1-DC1, 1-DD1, 2-DE1, 1-DG1

PL $\frac{5}{16}$ x 42$\frac{3}{4}$ x 11'-6 DB1

PL $\frac{5}{16}$ x 42$\frac{3}{4}$ x 11'-6$\frac{13}{16}$ DC1

PL $\frac{5}{16}$ x 42$\frac{3}{4}$ x 11'-7$\frac{11}{16}$ DD1

PL $\frac{5}{16}$ x 42$\frac{3}{4}$ x 11'-0$\frac{7}{8}$ DE1

PL $\frac{5}{16}$ x 42$\frac{3}{4}$ x 11'-0$\frac{15}{16}$ DG1

NOTES

All Steel marked thus ▲ shall be A.S.T.M. A709 Grade 50. Steel marked thus ◐ shall conform to the requirements of A.A.S.H.T.O. M270 Grade 50T2 and shall meet the logitudinal Charpy V-notch test of 15 ft. lbs. @ 40° F. All other steel shall be ASTM A709 Grade 36.

Web plates shall be cut to camber using the "Automatic Tourch" with a mechanical guide. See shop drawing details.

Flange plate to web plate welds shall be by the "Automatic Submerged Arc Welder". All other welds shall be by the "Submerged Arc Process," "Flux-Cored Arc Process," or by the Shielded Metal Arc Process," using E7018, or E7028 electrodes.

All Welding shall be done in accordance with the Standard Specifications and shall conform to the American Welding Society and A.A.S.H.T.O. joint publication D1.5-95 and approved Capital Steel Welding procedures.

All surfaces to be painted shall be blast-cleaned in accordance with Steel Structures Painting Council Specification SSPC-SP10. Apply one coat of Inorganic Zinc-Silicate primer with a dry film thickness a minimum of 3.0 mils and a finish coat of Alphatic Polyurethane (See Specifications).

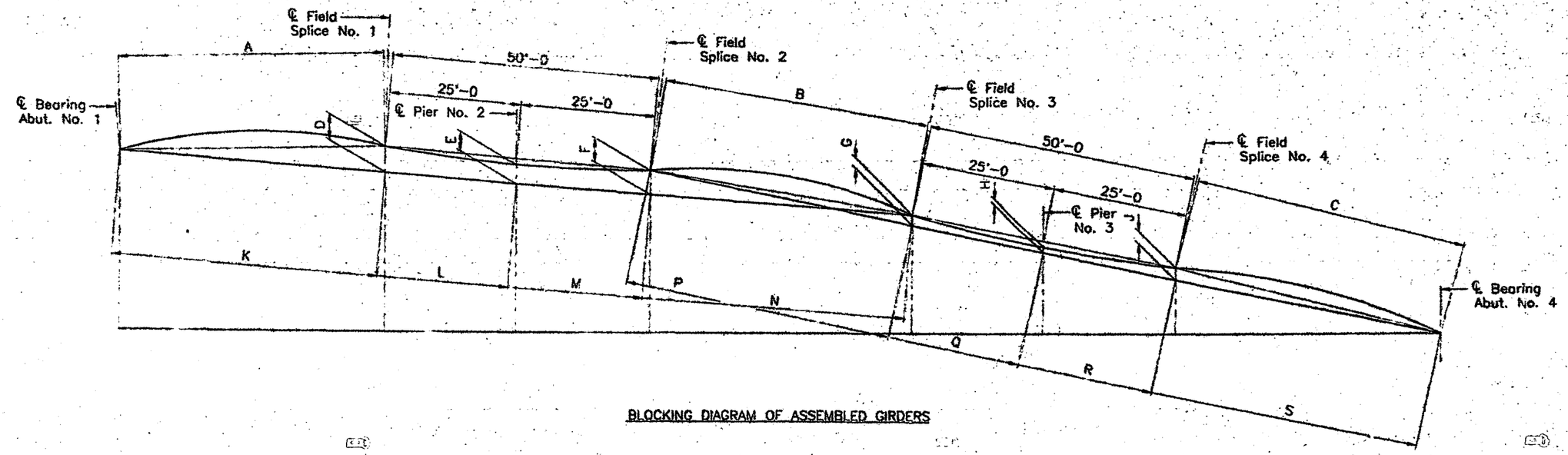
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DATE — BY DLR

CONTRACT NO

DESCRIPTION
SPLICE PLATES, FILL PLATES, DIAPHRAGMS AND NOTES

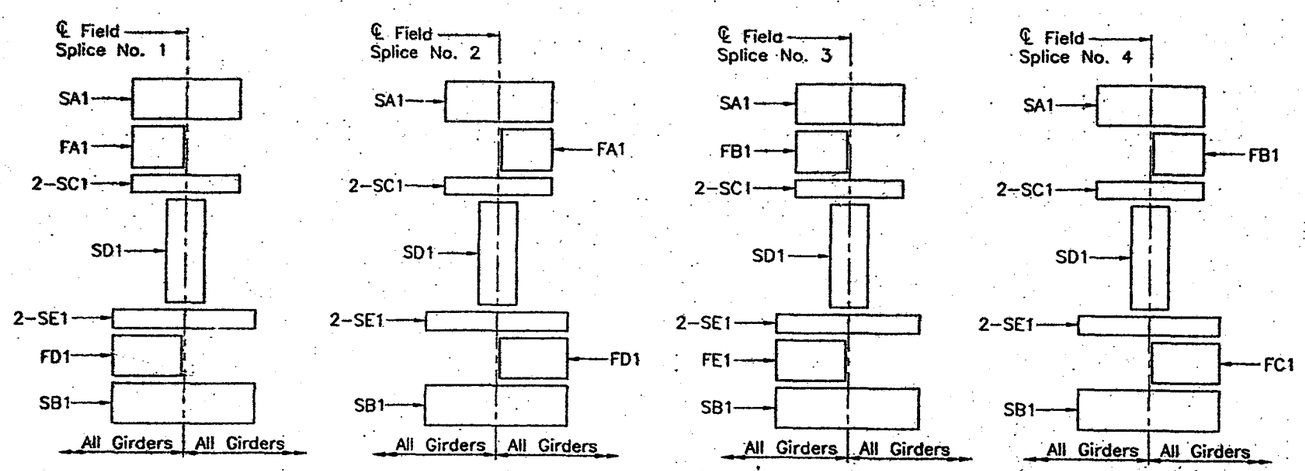
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 E. 9TH STREET, BOX 80003, ZIP 68501, PH. 402-476-1029

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SCALE 1" = 0" OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO		LOCATION BURLINGTON NORTHERN OVERHEAD BRY	
WELDS AS NOTED		CUSTOMER NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
PAINT SEE NOTES		PROJECT BSM-NH-7-002(041)053	COUNTY WILLIAMS
DRAWN 5-30-97 G. CLARK		STATION 124 + 43.6	ROADWAY 30 FT.
CHECKED BY 5-30-97		LOADING HS25	SKEW VARIES
BRIDGE NO. 2-053.731L		SHEET NO. 1 OF 21	ORDER NO. 4213W



BLOCKING DIAGRAM OF ASSEMBLED GIRDERS

Girder Line	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
Line A	85'-10 1/16	76'-1 1/16	83'-2 1/4	8 7/8	8 7/16	8 7/16	7 1/8	6 13/16	6 11/16	85'-9 7/8	110'-9 13/16	135'-9 13/16	211'-11 1/16	76'-1 1/16	101'-1 1/16	126'-1 1/16	189'-3 13/16
Line B	81'-9 3/16	76'-5 7/8	65'-8 7/8	8 5/16	8 5/16	8 3/8	7 7/16	7	7 1/16	81'-9 1/8	106'-9 3/16	131'-9 3/16	208'-3 3/16	76'-5 7/8	101'-5 7/8	126'-5 7/8	192'-2 3/4
Line C	77'-8	76'-11 1/4	68'-3	8 1/4	8 3/16	8 1/4	7 5/8	7 3/16	7 3/16	77'-7 13/16	102'-7 7/8	127'-7 13/16	204'-7 5/8	76'-11 1/4	101'-11 1/4	126'-11 1/4	195'-2 1/4
Line D	73'-6 1/16	77'-5 1/4	70'-9	7 15/16	7 15/16	8 1/8	7 13/16	7 1/4	7 5/16	73'-5 7/8	98'-5 13/16	123'-6	230'-11 7/16	77'-5 1/4	102'-5 1/4	127'-5 1/4	198'-2 1/4



MATCH MARK ILLUSTRATION

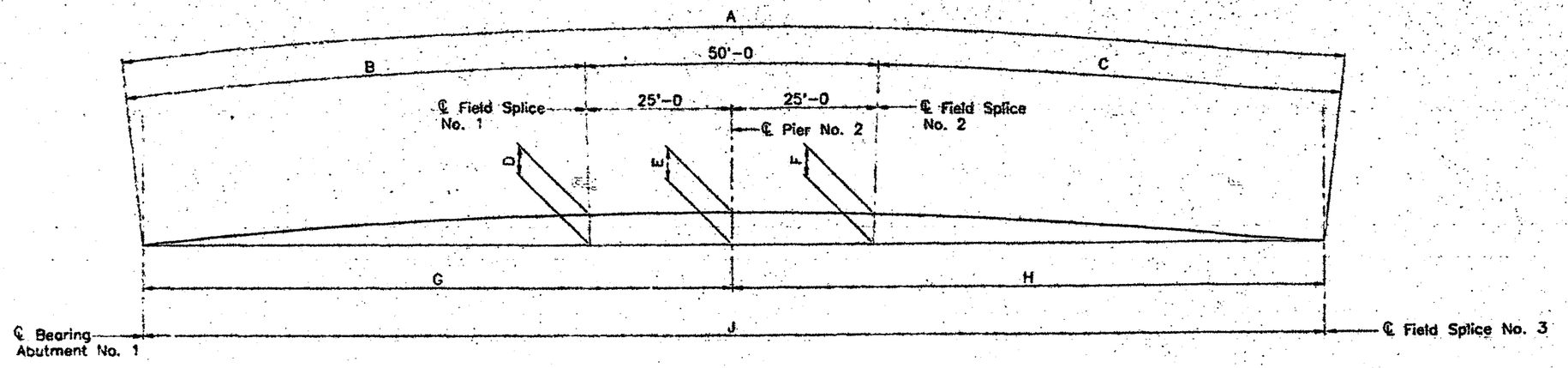
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

CONTRACT NO.

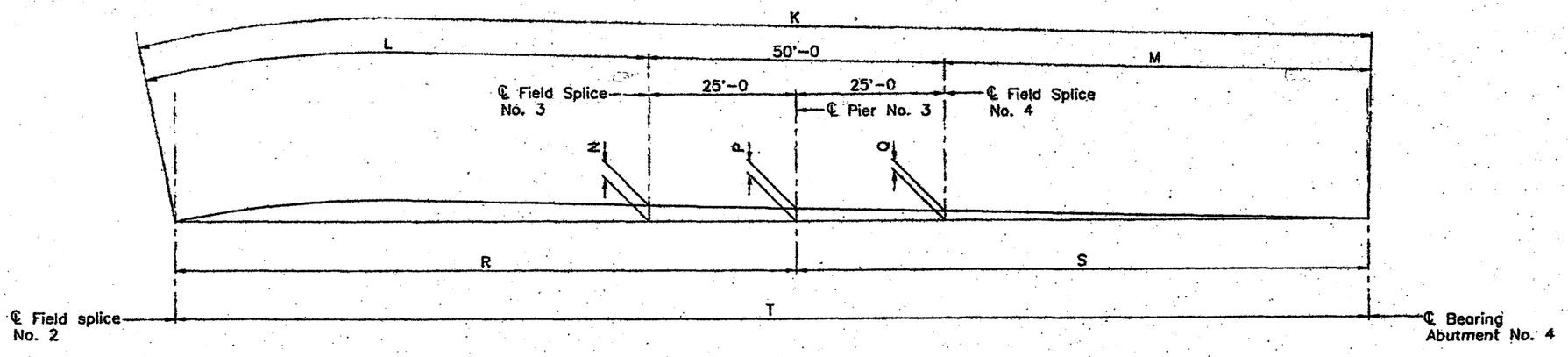
DESCRIPTION
BLOCKING & MATCH MARK ILLUSTRATION

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SQ. FT. OR NOTED	STRUCTURE	3-SPAN W.P.O. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD RAY
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	BRM-MH-3-002(041)052
DRAWN	5-5-97 D. CLARK	STATION	124 + 43.6
CHECKED	5-9-97 DJL	LOADING	HS25
BRIDGE NO.	2-053.731L	SHEET NO.	2 OF 21
COUNTY	WILLIAMS	ROADWAY	30 FT.
SKEW	VARIES	ORDER NO.	42139



HORIZONTAL CURVATURE DETAIL OF ASSEMBLED GIRDERS (SITE 1)



HORIZONTAL CURVATURE DETAIL OF ASSEMBLED GIRDERS (SITE 1)

Girder Line	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
Line A	211'-11 1/16	85'-10 1/16	76'-1	3'-8 5/16	3'-10 1/8	3'-6 5/16	110'-8 13/16	100'-11 7/16	211'-8 7/8	189'-3 13/16	76'-1 1/16	63'-2 3/4	6 1/4	4 13/16	3 7/16	101'-4 5/16	84'-9 3/4	186'-2 1/4
Line B	208'-3 1/16	81'-9 5/16	76'-5 7/8	3'-6 7/8	3'-8 7/8	3'-5 3/4	106'-8 1/4	101'-4 3/4	208'-1 1/16	192'-2 3/4	76'-5 7/8	65'-8 7/8	8 1/2	6 11/16	4 13/16	101'-7 3/8	89'-9 15/16	191'-5 1/4
Line C	204'-7 1/4	77'-8	76'-11 1/4	3'-5 3/16	3'-7 5/8	3'-4 15/16	102'-6 13/16	101'-10 3/16	204'-5 3/16	195'-2 1/4	76'-11 3/4	68'-3 7/8	11 1/16	8 13/16	6 1/2	101'-10 3/4	94'-9 15/16	196'-8 3/8
Line D	200'-11 5/16	73'-6 1/16	77'-5 1/4	3'-3 1/4	3'-6 5/16	3'-4 1/8	98'-5 1/8	102'-4 1/4	200'-9 5/16	198'-2 1/4	77'-5 1/4	70'-9 1/4	1'-2 1/4	11 1/8	8 5/16	102'-2 11/16	99'-10	202'-0 9/16

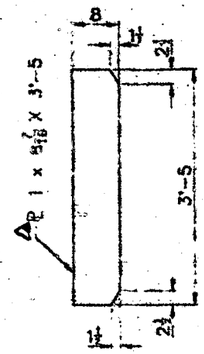
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DATE
BY DLR

CONTRACT NO.

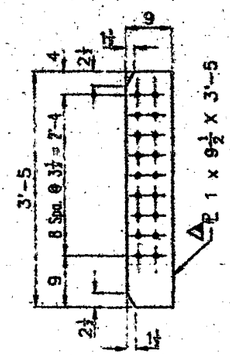
DESCRIPTION
HORIZONTAL CURVATURE DETAIL OF ASSEMBLED GIRDERS (SITE 1)

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1521

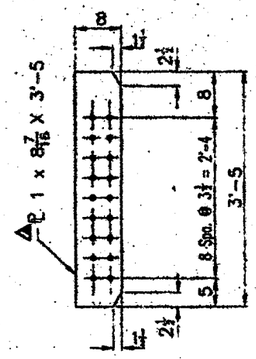
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
30 U.L. 18 OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO		LOCATION	BURLINGTON NORTHERN OVERHEAD RR
WELDS AS NOTED		OWNER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT RSH-194-7-002(041)053	COUNTY WILLIAMS
DRAWN 5-13-97 G. CLARK		STATION 124 + 43.6	ROADWAY 30 FT.
CHECKED DLR 5-12-97		LOADING HS25	SKEW YARD
BRIDGE NO. 2-053.731L		SHEET NO. 3 OF 21	ORDER NO. 42138



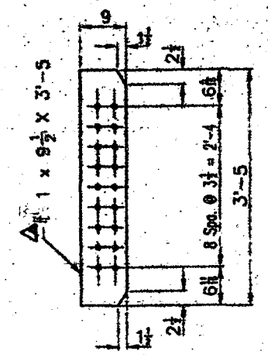
2-STIFFENERS: KA4



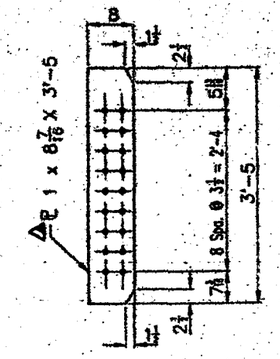
1-STIFFENER: KB4



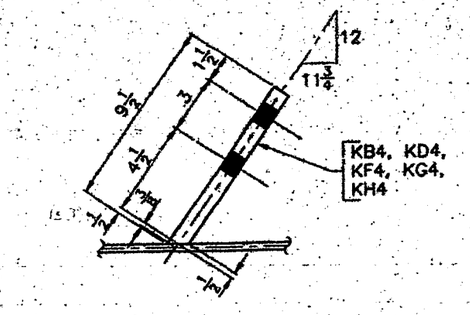
4-STIFFENERS: KC4



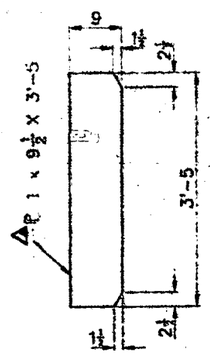
1-STIFFENER: KD4



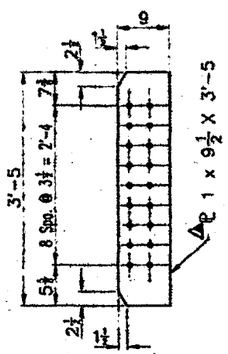
1-STIFFENER: KE4



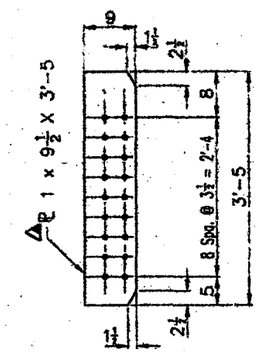
SKEWED STIFFENER DETAIL



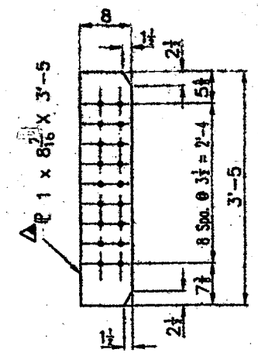
2-STIFFENERS: KF4



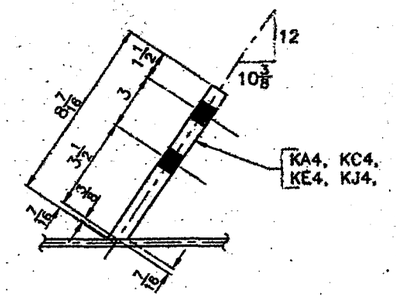
1-STIFFENER: KG4



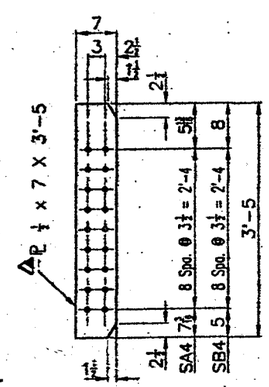
3-STIFFENERS: KH4



1-STIFFENER: KJ4



SKEWED STIFFENER DETAIL



78-STIFFENERS: 26-SA4, 52-SB4 = 77 Correct

SHOP BILL OF MATERIALS

LINE NO.		NO PIECES		SHAPE	MATERIALS LENGTH FEET	INCHES	ADD.		MARK	REMARKS	CALCULATED WEIGHT EACH
1		9	4	STIFFENERS: 2-SA4, 1-SB4, 3-SC4, 1-SD4, 1-SE4, 2-SF4,							
2				1-SG4, 4-SH4, 1-SI4, 18-SJ4							
3	△		2	PL 1 x 8 7/16	3	5	1/4	1/4	KA4	A709 Gr. 50	
4	△		1	PL 1 x 8 7/16	3	5	1/4	1/4	KE4	A709 Gr. 50	
5	△		4	PL 1 x 8 7/16	3	5	1/4	1/4	KC4	A709 Gr. 50	
6	△		1	PL 1 x 8 7/16	3	5	1/4	1/4	KJ4	A709 Gr. 50	
7	△		1	PL 1 x 9 1/2	3	5	1/4	1/4	KB4	A709 Gr. 50	
8	△		2	PL 1 x 9 1/2	3	5	1/4	1/4	KF4	A709 Gr. 50	
9	△		1	PL 1 x 9 1/2	3	5	1/4	1/4	KG4	A709 Gr. 50	
10	△		3	PL 1 x 9 1/2	3	5	1/4	1/4	KH4	A709 Gr. 50	
11	△		1	PL 1 x 9 1/2	3	5	1/4	1/4	KD4	A709 Gr. 50	
12	△	2	6	PL 1/2 x 7	3	5			SA4	A709 Gr. 50	
13	△	5	2	PL 1/2 x 7	3	5			SB4	A709 Gr. 50	
14											
15											
16											
17											
18											
19											
20											

FIELD BOLT LIST

NUMBER	DIA.	DESCRIPTION	LGTH.	CONNECTION	ADD.	SHIP
1,404	7/8ø	A325-1 Hvy. Hex. Hd.	2 1/4	Intermediate Stiffeners to Diaphragm	71	1,475
216	7/8ø	A325-1 Hvy. Hex. Hd.	2 3/4	Pier Stiffeners to Diaphragm	14	230
192	7/8ø	A325-1 Hvy. Hex. Hd.	4 1/4	Top Flange Girder Field Splices No. 1 & 2	13	205
192	7/8ø	A325-1 Hvy. Hex. Hd.	3 1/4	Top Flange Girder Field Splices No. 3 & 4	13	205
768	7/8ø	A325-1 Hvy. Hex. Hd.	3	Girder Web Field Splice	42	810
256	7/8ø	A325-1 Hvy. Hex. Hd.	5	Bottom Flange Girder Field Splices No. 1 & 2	14	270
256	7/8ø	A325-1 Hvy. Hex. Hd.	4 3/4	Bottom Flange Girder Field Splices No. 3 & 4	14	270
3,284	7/8ø	A563-DH Hvy. Hex. Nut			181	3,465
3,284	7/8ø	F436-1 Structural Washers			181	3,465
					Total Weight -	lbs.

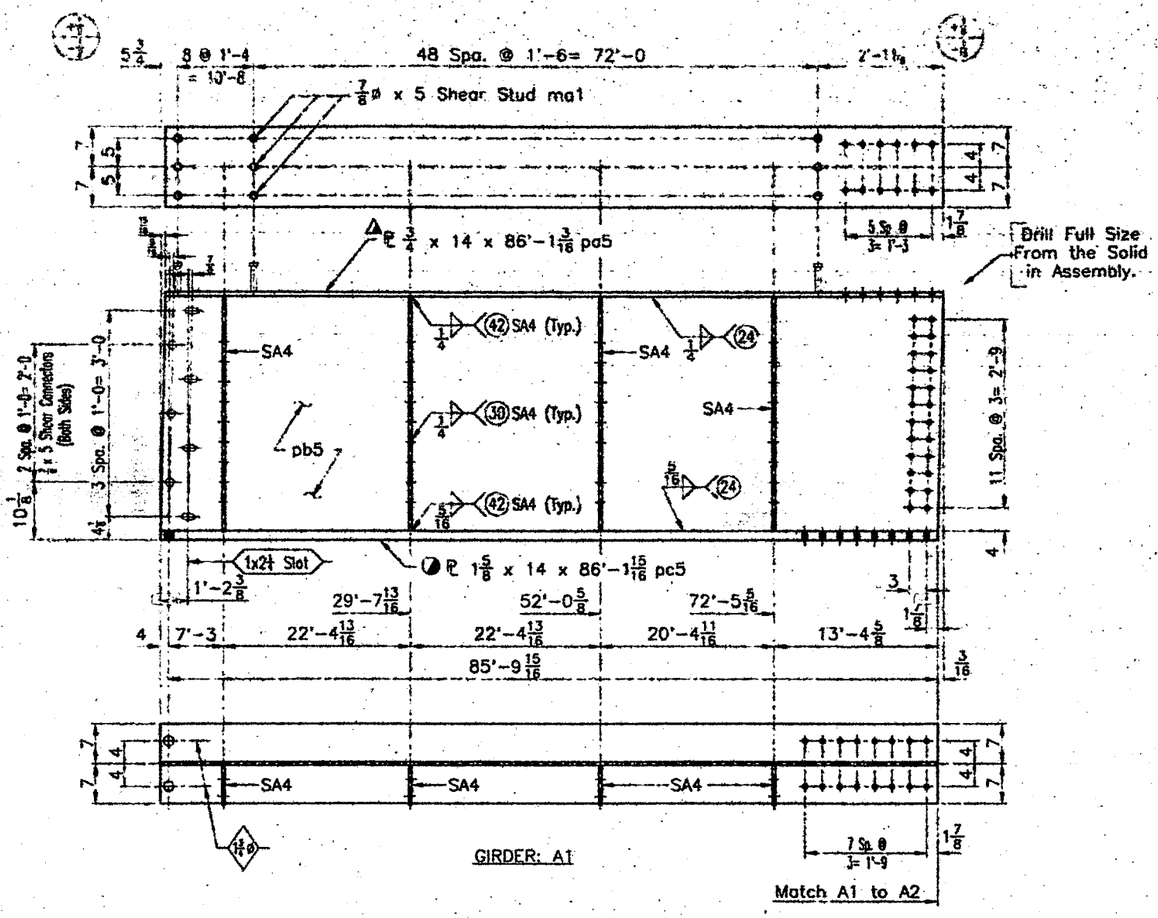
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

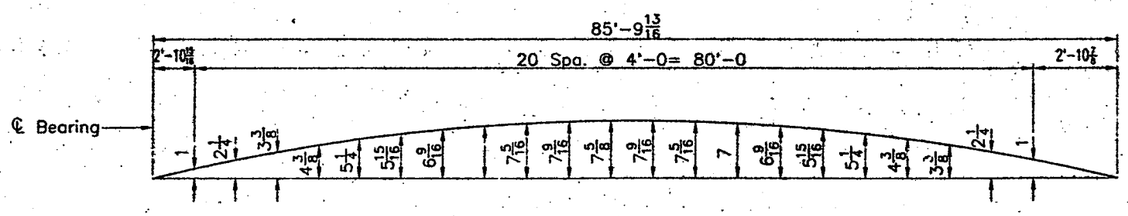
CONTRACT NO.

DESCRIPTION
STIFFENER CONNECTION PLATE DETAILS

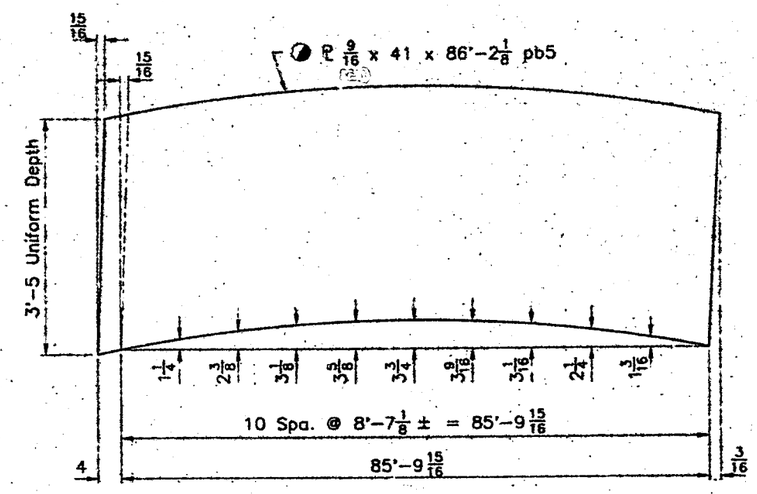
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80090, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
150 ft. 150 OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD RAY
WELDS AS NOTED		CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT	BSN-001-3-002(041)052
DRAWN 5-29-97 G. CLARK		STATION	124 + 43.6
CHECKED DLR 5-30-97		LOADING	HS25
BRIDGE NO.	2-053.73tL	SHEET NO.	4 OF 21
COUNTY	WILLIAMS	ROADWAY	30 FT
SKEW	VARIES	ORDER NO.	4213#





HORIZONTAL CURVE – GIRDER A1



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

UNIT NO.		NO. PIECES	SHAPE	MATERIAL LENGTH FEET	MATERIAL LENGTH INCHES	ADD. MARK	MARK	TOWARDS	CALCULATED WEIGHT EACH
1		1	GIRDER A1						
2	△	1	PL 3/4 x 14	8	6	1	pa5	M270 Gr. 50T	
3	◑	1	PL 9/16 x 41	8	6	2	pb5	M270 Gr. 50T	
4	◑	1	PL 1 5/8 x 14	8	6	1	pc5	M270 Gr. 50T	
5		4	PL 3/4 x 7		3	5	SA4	A709 Gr. 50	
6	1	7	4 7/8ø x 5 Shear Stud				ma1		

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

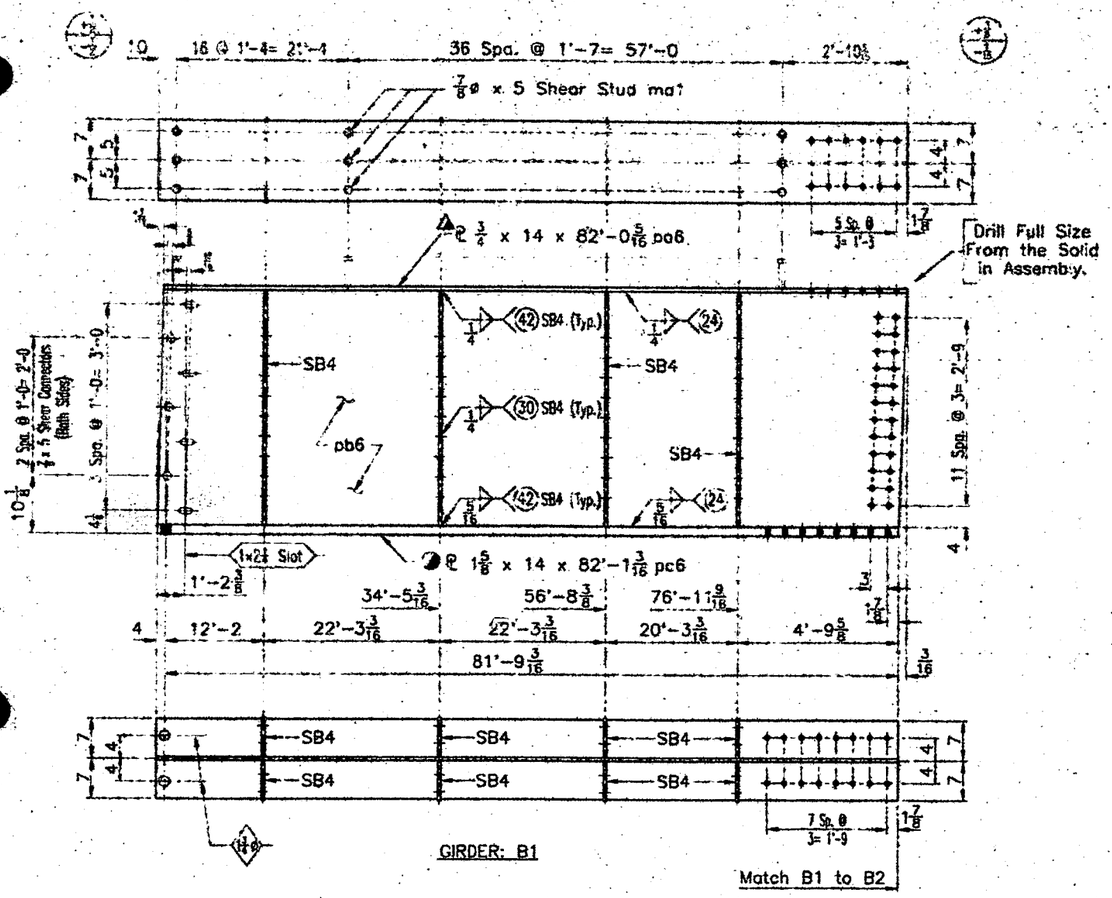
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
6/4/97 DLR
DATE BY

CONTRACT NO.

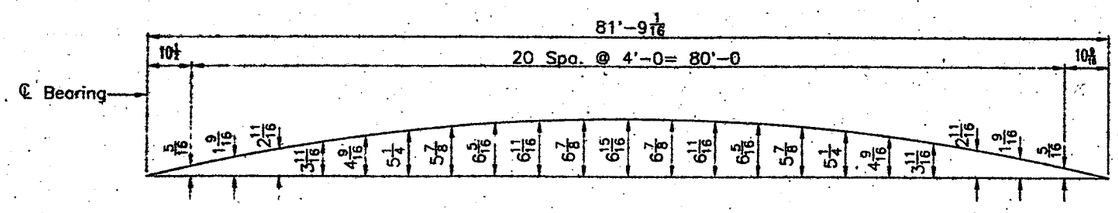
DESCRIPTION: GIRDER A1 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

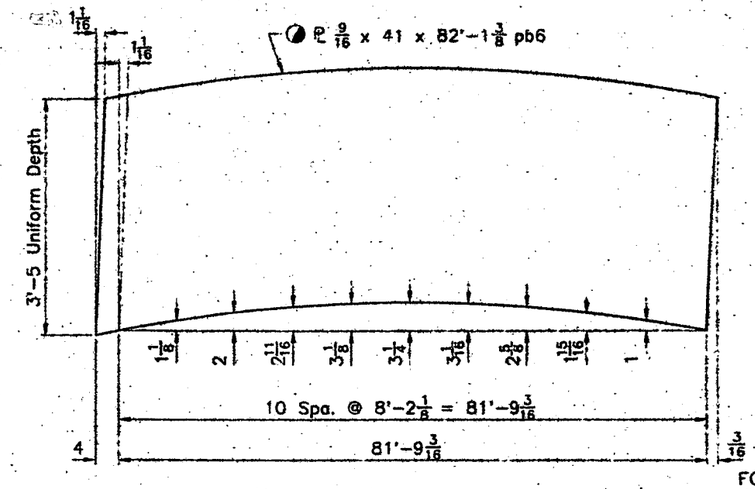
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
250 H. 18P OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD RAY
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	RSR-181-7-002(041)052 — COUNTY: WILLIAMS
DRAWN	5-29-97 G. CLARK	STATION	124 + 43.6 — ROADWAY: 30 FT.
CHECKED	5-30-97	LOADING	HS25 — SKEW: VARIES
BRIDGE NO.	2-053.73'L	SHEET NO.	6 OF 21 — ORDER NO. 4213W



GIRDER: B1



HORIZONTAL CURVE – GIRDER B1



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

Mark	No. Pieces	Shape	Length Feet	Length Inches	Weight	Comments
	1	GIRDER: B1				
△	1	℄ 3/4 x 14	8 2	0 3	pa6	
◑	1	℄ 9/16 x 41	8 2	1 3/8	pb6	
◑	1	℄ 1 5/8 x 14	8 2	1 3/8	pc6	
	8	℄ 1/2 x 7	3	5	SB4	
	6 5	7/8ø x 5 Shear Stud			ma1	

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICE SEE SHEET 5.

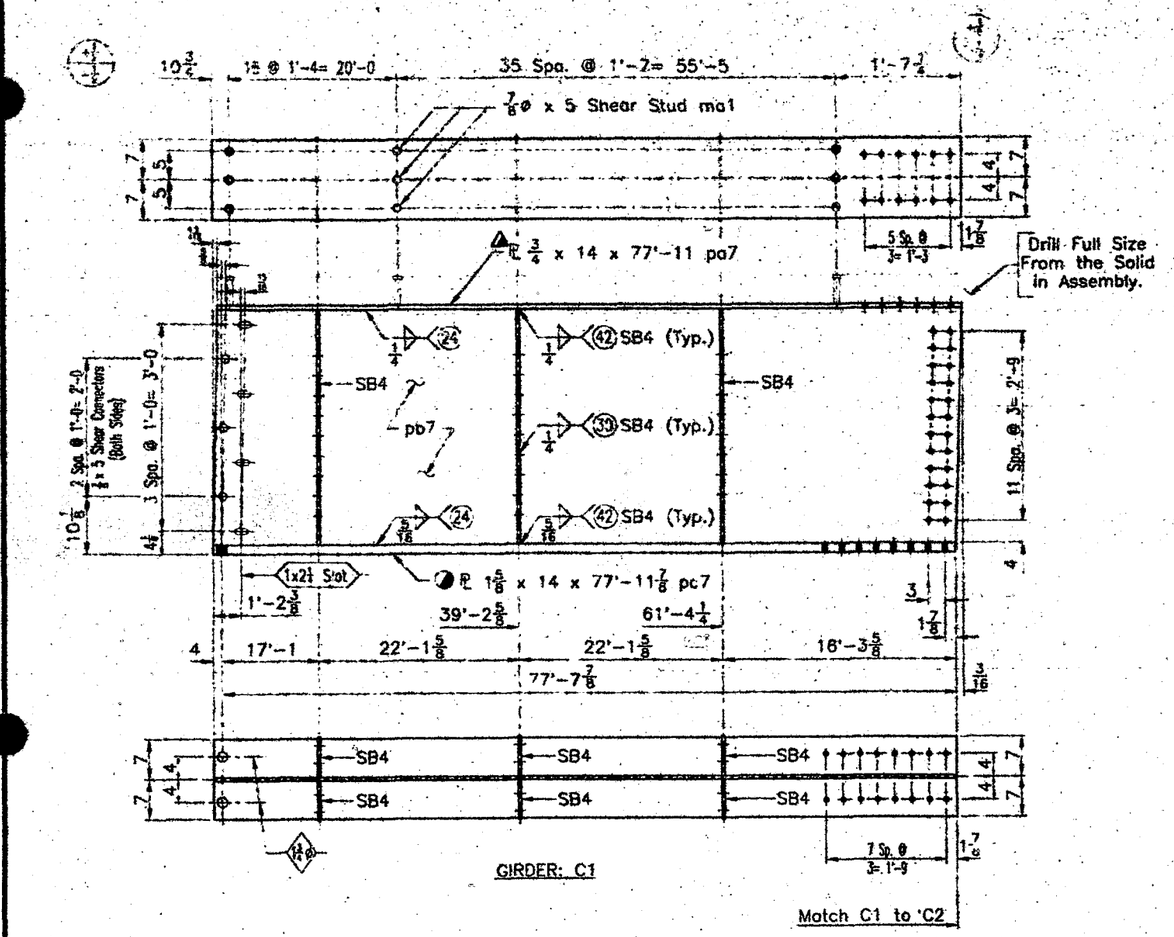
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

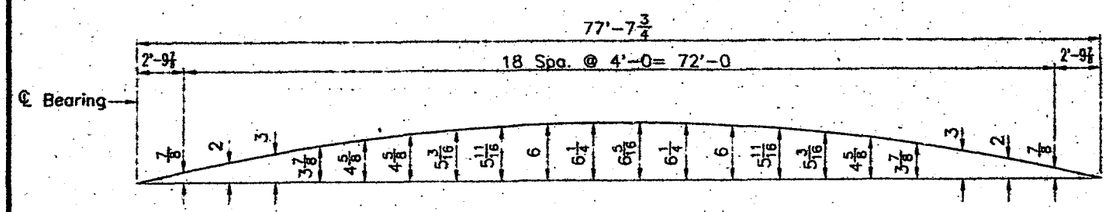
CONTRACT NO.

DESCRIPTION GIRDER B1 DETAILS

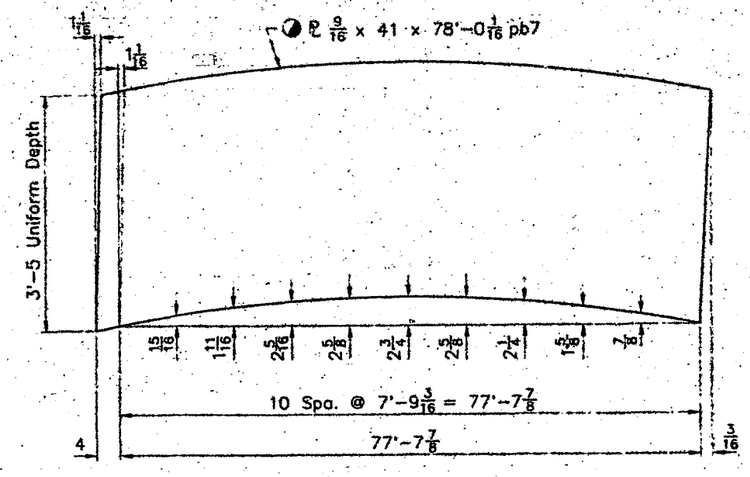
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80096, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
ALL DIMS. IN INCHES OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD RAY
WELDS AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
PAINT SEE NOTES	PROJECT	BSN-104-7-002(041)052	COUNTY WILLIAMS
DRAWN 5-8-97 C. CLARK	STATION	124 + 43.0	ROADWAY 30 FT.
CHECKED DLR 5-30-97	LOADING	HS25	GRADE VARIES
BRIDGE NO. 3-053.731L	SHEET NO. 7 OF 23		ORDER NO. 42138





HORIZONTAL CURVE – GIRDER C1



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

Sq.	No. Pieces	Shape	Length Feet	Length Inches		Acc.	Mark	Remarks	Date Shipped
1	1	GIRDER: C1							
2	1	PL 3/4 x 14	7	7	1		pa7		
3	1	PL 9/16 x 41	7	8	0	1/8	pb7		
4	1	PL 1 5/8 x 14	7	7	1	1/8	pc7		
5	6	PL 1/2 x 7		3		5	SB4		
6	1 5 6	7/8ø x 5 Shedr Stud					ma1		

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

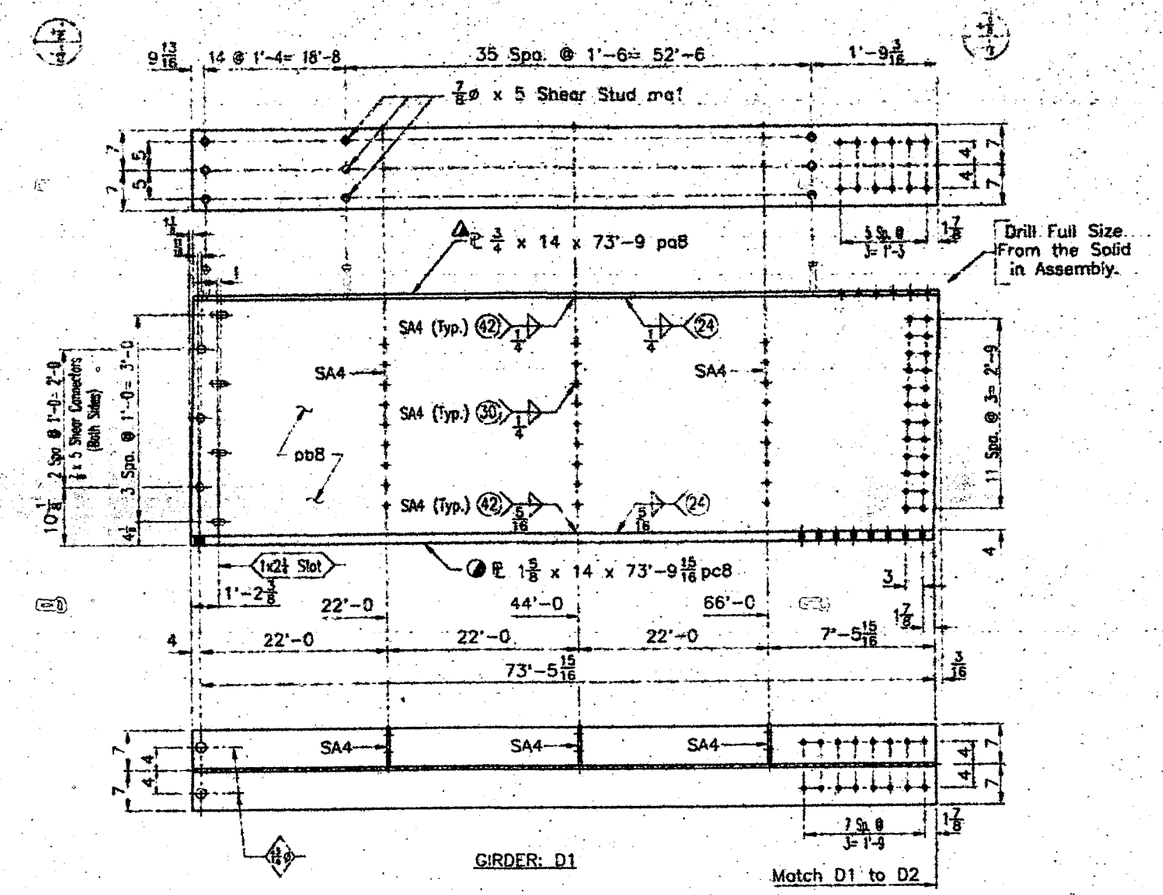
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/9/97 DLR
DATE BY

CONTRACT NO

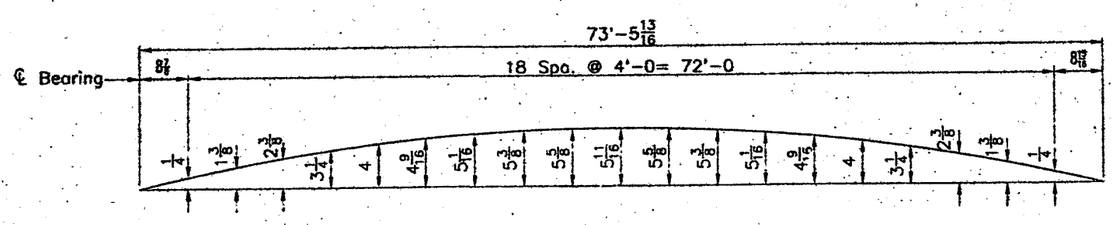
DESCRIPTION GIRDER C1 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1029

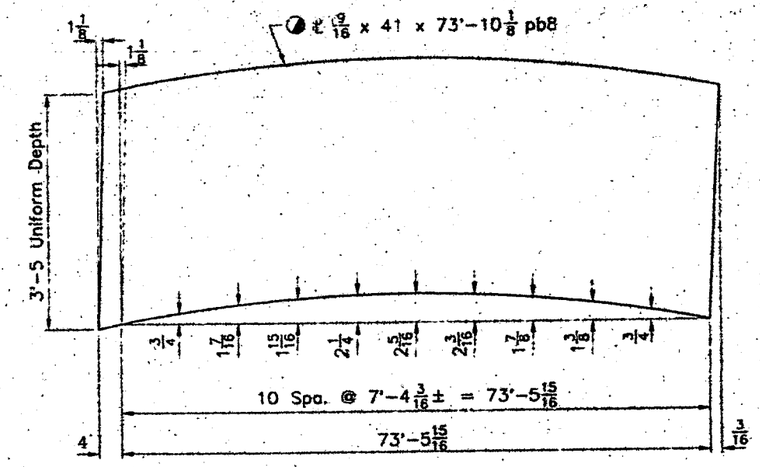
APPROVAL DATE	CONTRACTOR INDUSTRIAL BUILDERS		
1:50 @ 11" OR NOTED	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 1)		
DESIGN NO.	LOCATION BURLINGTON NORTHERN OVERHEAD RAY		
WELDS AS NOTED	CUSTOMER NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		
PAINT SEE NOTES	PROJECT RSN-NH-7-002(041)052	COUNTY WILLIAMS	
DRAWN 5-20-97 G. CLARK	STATION 124 + 43.6	ROADWAY 30 FT.	
CHECKED 5-30-97	LOADING HS25	SKEW VARIES	
BRIDGE NO 2-053.731L	SHEET NO. 8 OF 21	ORDER NO 42138	



GIRDER: D1



HORIZONTAL CURVE – GIRDER D1



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

NO. PIECES	SHAPE	LENGTH FEET	LENGTH INCHES	MARK	REMARKS
1	GIRDER: D1				
1	PL 3/4 x 14	7	3	pa8	M270 Gr. 50W
1	PL 9/16 x 41	7	3	pb8	M270 Gr. 50W
1	PL 1 5/8 x 14	7	3	pc8	M270 Gr. 50W
3	PL 1/4 x 7		3	5	SA4, SB4 A709 Gr. 50
1 5 3	7/8ø x 5 Shear Stud			ma1	

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPACING SEE SHEET 5.

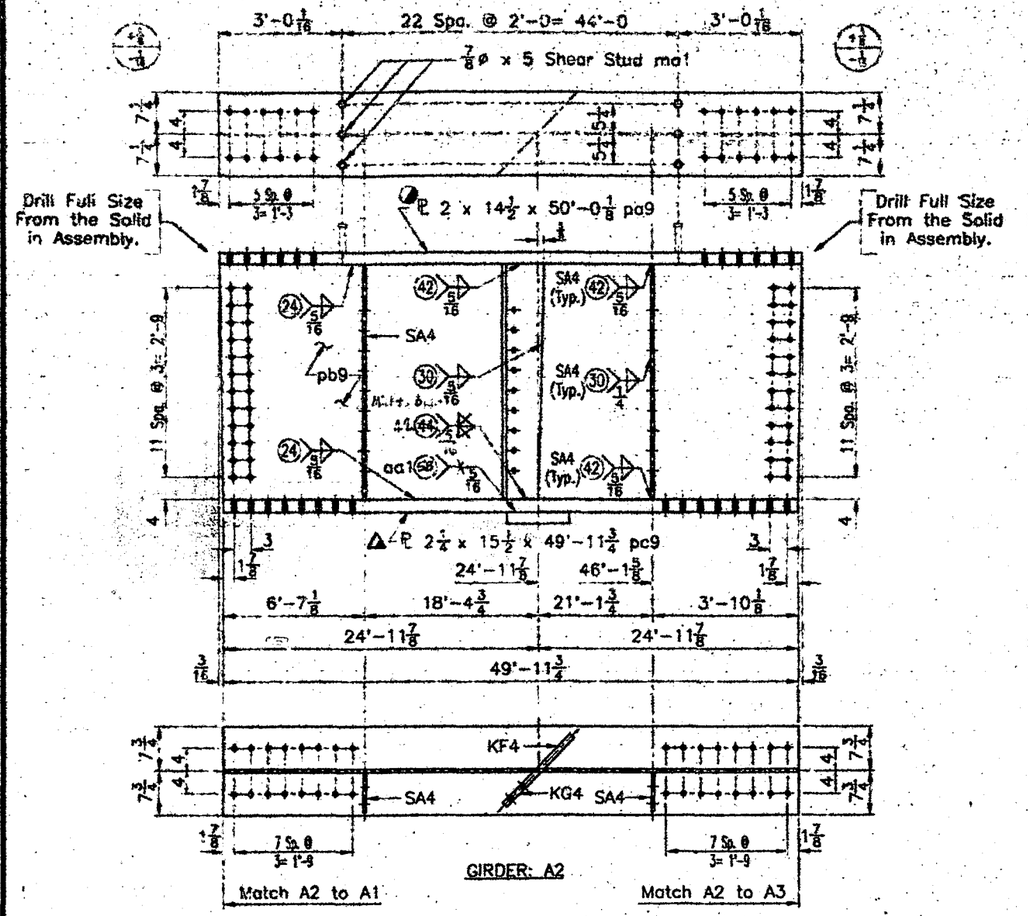
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

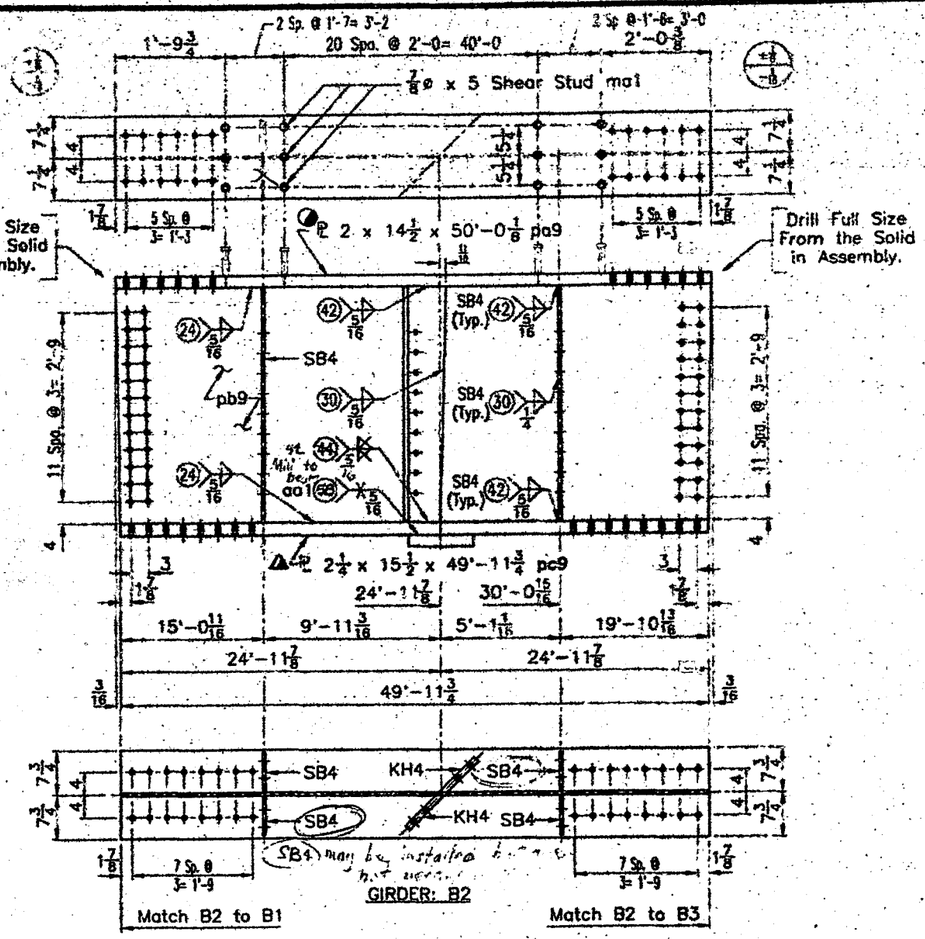
CONTRACT NO.

DESCRIPTION GIRDER D1 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1021

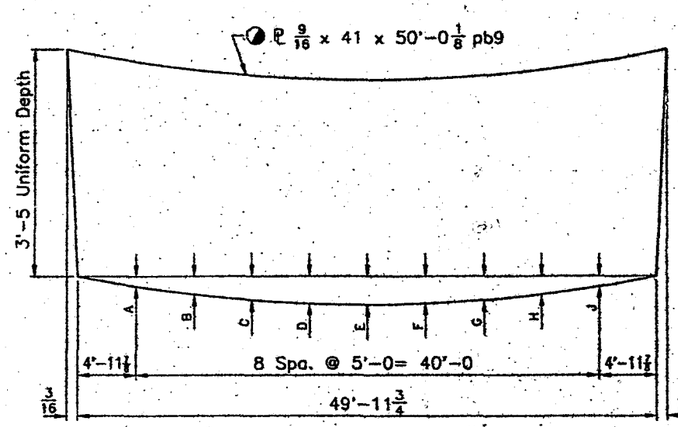
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
50 ft. 8" OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD SAY
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	BRM-NH-7-0C2(041)052
DRAWN	5-29-97 G. CLARK	STATION	124 + 43.8
CHECKED	5-30-97	LOADING	M325
BRIDGE NO.	2-053.731L	SHEET NO.	9 OF 21
COUNTY	WILLIAMS	ROADWAY	30 FT.
SKEW	VARIES	ORDER NO.	42138



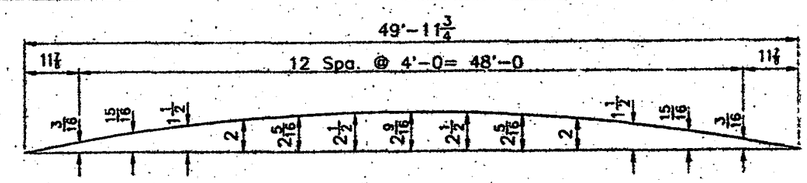


SHOP BILL OF MATERIALS

LINE NO.	NO. PIECES			SHAPE	MATERIALS LENGTH FEET	INCHES	ADD.	MARK	REMARKS	CALCULATED WEIGHT EACH
1			2	GIRDERS: A2 & B2						
2			2	PL 2 x 14 1/2	5	0	0 1/2	pa9	M270 Gr. 50W	
3			2	PL 11/16 x 41	5	0	0 1/2	pb9	M270 Gr. 50W	
4			2	PL 2 1/4 x 15 1/2	4	9	1 3/4	pc9	M270 Gr. 50W	
5			1	PL 1 x 9		3	5 1/2	1/2	KF4	A709 Gr. 50
6			1	PL 1 x 9		3	5 1/2	1/2	KG4	A709 Gr. 50
7			2	PL 1 x 9		3	5 1/2	1/2	KH4	A709 Gr. 50
8			2	PL 1/2 x 7		3	5		SA4	A709 Gr. 50
9		2	2	PL 1/2 x 7		3	5		SB4	A709 Gr. 50
10			2	PL 2 x 11		1	3 1/2		aa1	By Others
11	1	4	4	7/8ø x 5	Shear		Stud		ma1	
12										
13										
14										
15										
16										
17										
18										



WEB PLATE LAYOUT



HORIZONTAL CURVE – GIRDER A2 & B2

Girder	A	B	C	D	E	F	G	H	J
A2	-1/16	-1/8	-3/16	-1/4	-1/4	-1/4	-3/16	-1/8	-1/16
B2	-1/16	-1/16	-1/8	-3/16	-3/16	-3/16	-1/8	-1/8	-1/16

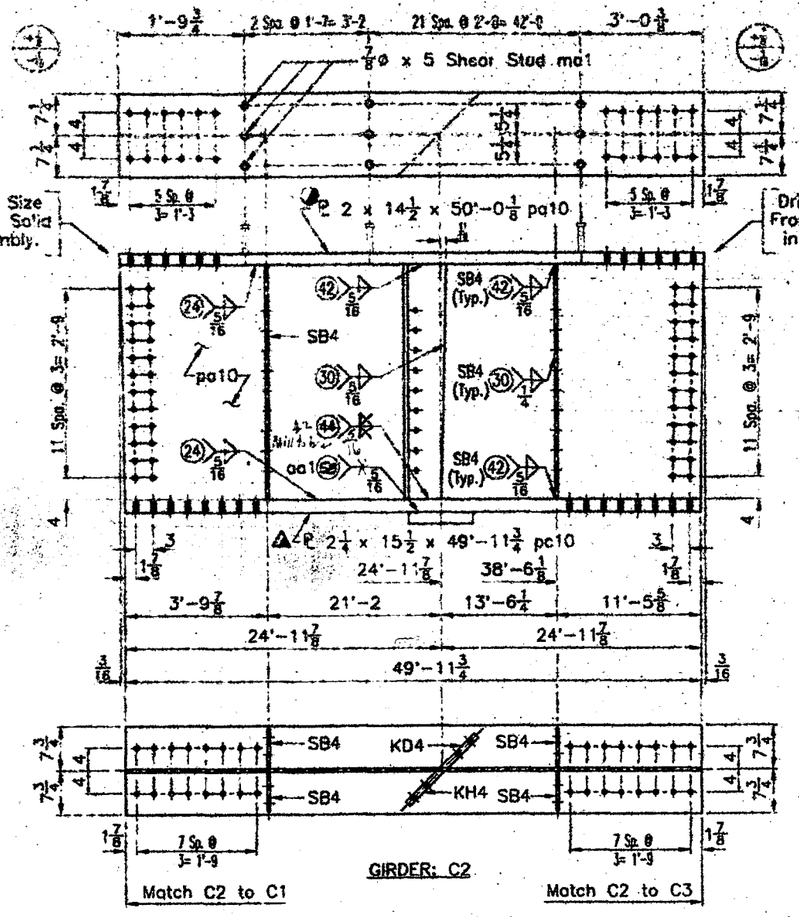
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPROVED AS NOTED
6/4/97 DLR
DATE BY

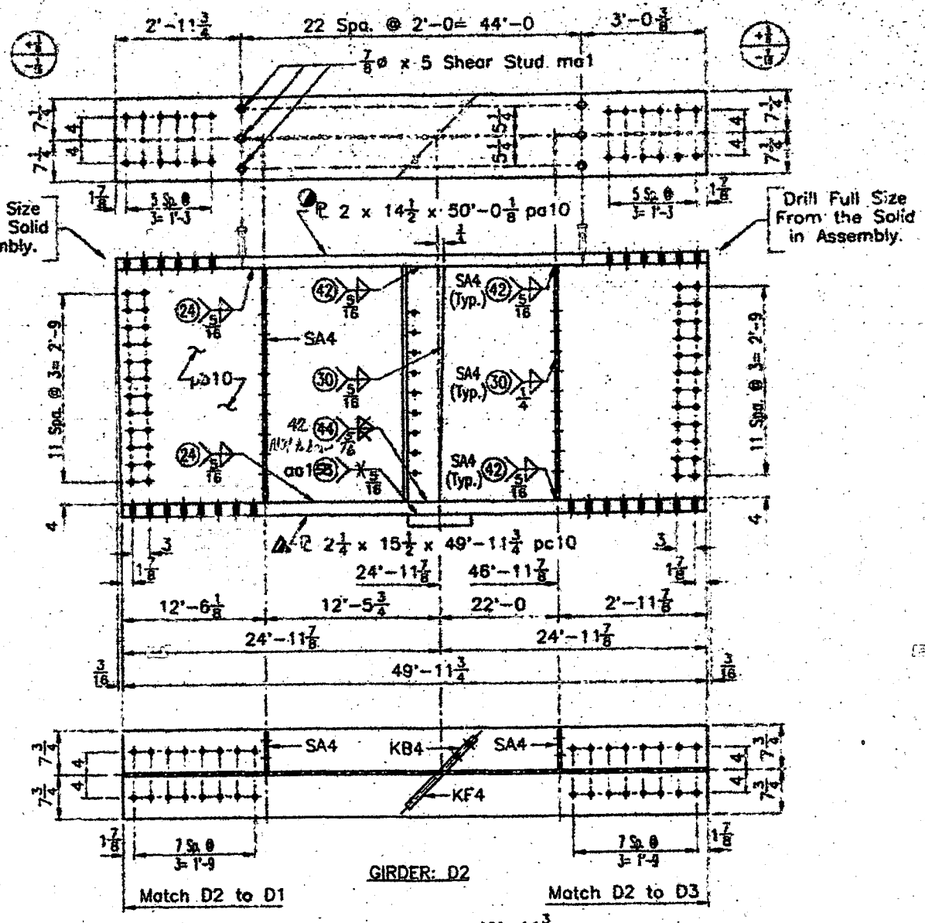
FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

CONTRACT NO.
DESCRIPTION GIRDER A2 & B2 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 W. 9TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1021

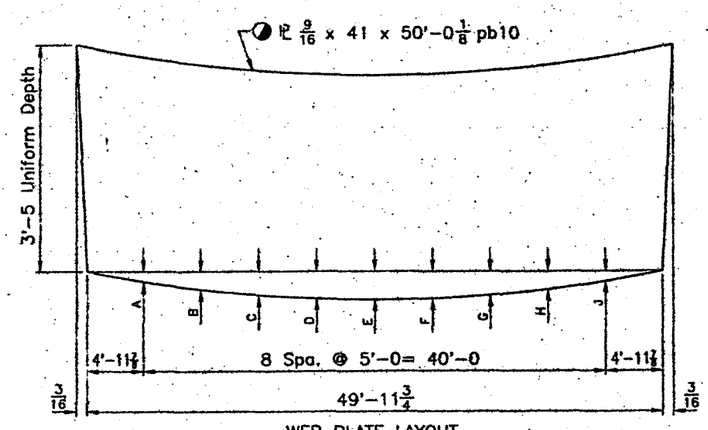
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
AS NOTED OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD PAY
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	BRS-104-7-002(041)052
DRAWN	5-29-97 G. CLARK	STATION	124 + 43.6
CHECKED	5-30-97	LOADING	HS25
BRIDGE NO.	2-053.731L	SHEET NO.	10 OF 21
COUNTY	WILLIAMS	ROADWAY	30 FT.
SKEW	VARIES	ORDER NO.	43138



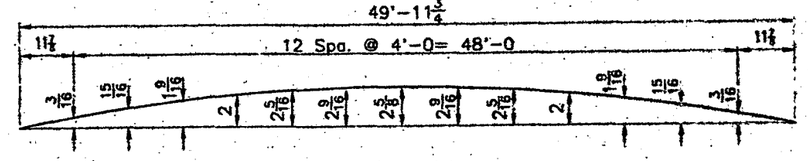


SHOP BILL OF MATERIALS

LINE NO		NO. PIECES	SHAPE	MATERIALS LENGTH FEET	INCHES		ADD.	MARK	REMARKS	CALC. WEIGHT EACH
1		2	GIRDERS: C2 & D2							
2	◐	2	PL 2 x 14 1/2	5	0	0	1/2	pa10	M270 Gr. 50W	
3	◐	2	PL 9/16 x 41	5	0	0	1/2	pb10	M270 Gr. 50W	
4	△	2	PL 2 1/4 x 15 1/2	4	9	11	1/2	pc10	M270 Gr. 50W	
5										
6	△	1	PL 1 x 9		3	5	1/2	KD4	A709 Gr. 50	
7	△	1	PL 1 x 9		3	5	1/2	KH4	A709 Gr. 50	
8	△	1	PL 1 x 9		3	5	1/2	KB4	A709 Gr. 50	
9	△	1	PL 1 x 9		3	5	1/2	KF4	A709 Gr. 50	
10	△	2	PL 1/2 x 7		3	5		SA4	A709 Gr. 50	
11	△	4	PL 1/2 x 7		3	5		SB4	A709 Gr. 50	
12		2	PL 2 x 11		1	3	1/2	aa1	By Others	
13	1, 4	1	7/8ø x 5 Shear Stud					ma1		
14										
15										
16										
17										
18										



WEB PLATE LAYOUT



HORIZONTAL CURVE – GIRDER C2 & D2

Girder	A	B	C	D	E	F	G	H	J
C2	0	-1/16	-1/8	-1/8	-3/16	-1/8	-1/8	-1/16	0
D2	0	-1/16	-1/16	-1/8	-1/8	-1/8	-1/16	-1/16	0

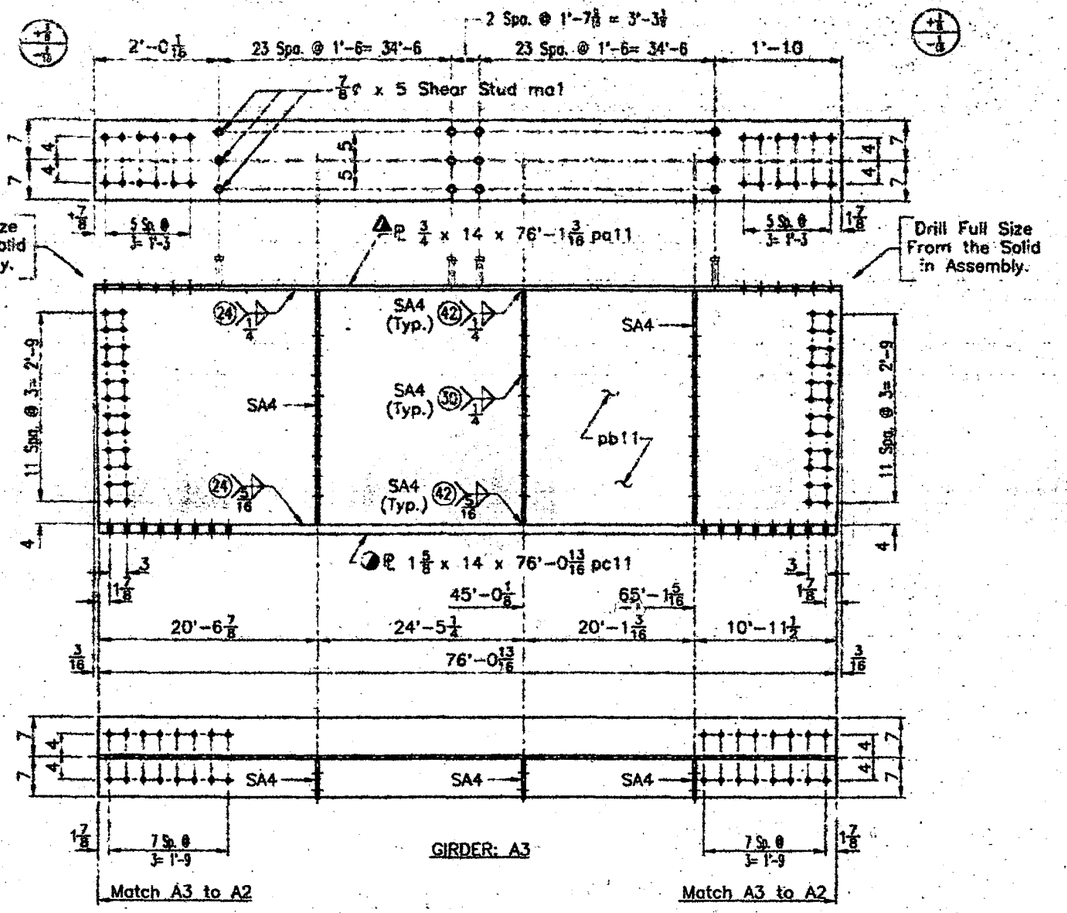
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPROVED AS NOTED
6/11/97 DLR
DATE BY

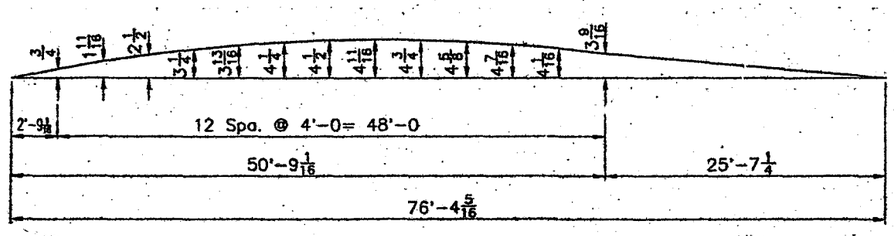
FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

CONTRACT NO
DESCRIPTION GIRDER C2 & D2 DETAILS

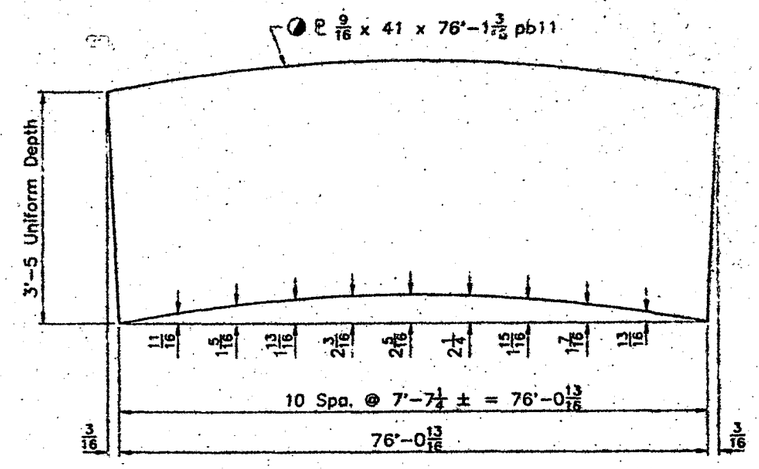
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 S. 9TH STREET, BOX 80028, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SCALE 1/8" ON NOTED	STRUCTURE	3-SPAN W.P.D. BRIDGE (SITE 1)	
DESIGN BY		LOCATION	BURLINGTON NORTHERN OVERHEAD
WELDS AS NOTED		CLIENT	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT	BSN-NH-7-033(041)053 COUNTY WILLIAMS
DRAWN 3-20-97 G. CLARK		STATION	124 + 43.6 ROADWAY 30 FT.
CHECKED 3-26-97		LOADING	HS25 LEVEL VARIES
BRIDGE NO.	2-033731	SHEET NO.	11 OF 21 ORDER NO. 42179





HORIZONTAL CURVE – GIRDER A3



WEB PLATE LAYOUT

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

SHOP BILL OF MATERIALS

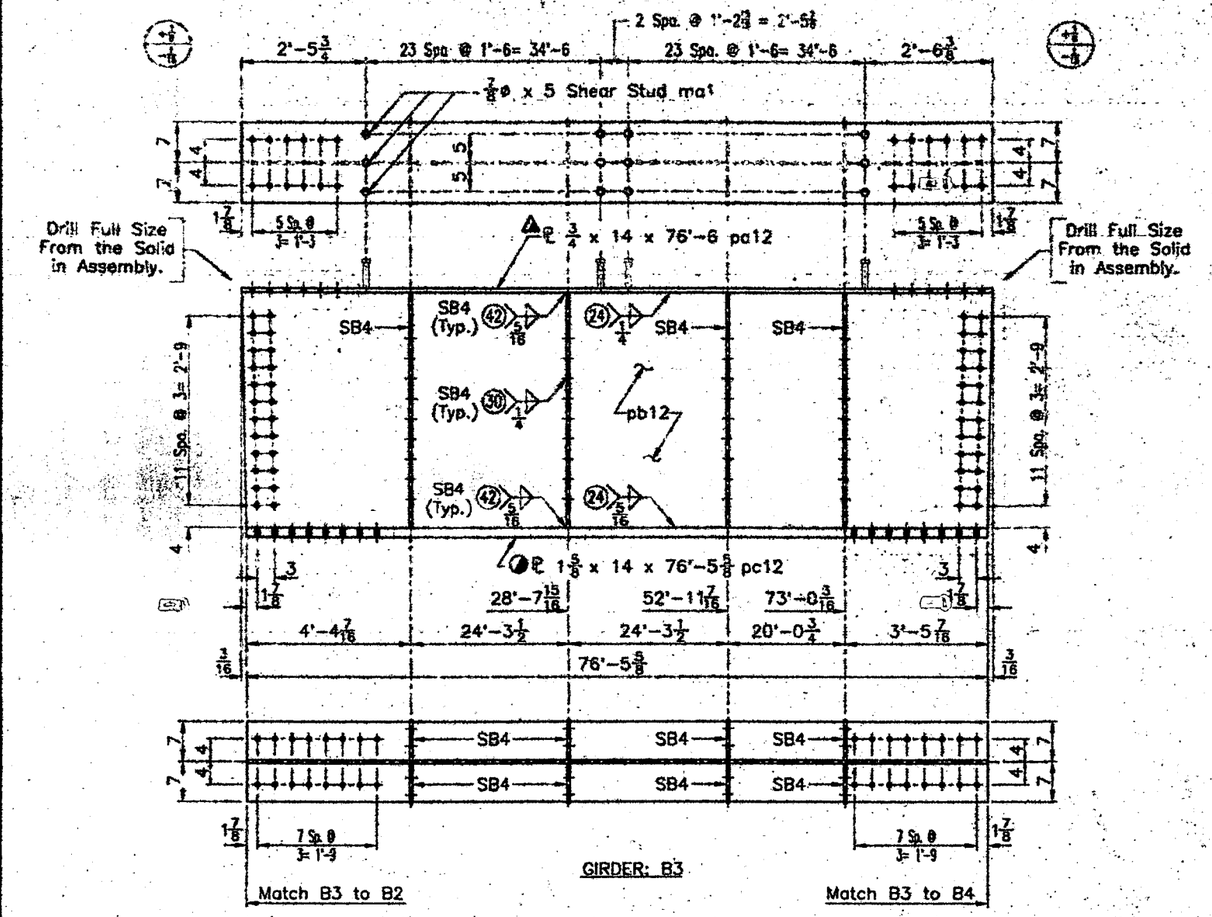
SEQ.	MARK	NO. PIECES	SHAPE	MATERIALS LENGTH FEET	INCHES	ADD. MARK			COMMENTS	CALCULATED WEIGHT EACH
1		1	GIRDER: A3							
2	▲	1	PL 3/4 x 14	7	6		1		pa11	
3	◑	1	PL 9/16 x 41	7	6		1		pb11	
4	◑	1	PL 1 5/8 x 14	7	6		0		pc11	
5	▲	3	PL 3/4 x 7		3		5		SA4	
6		14	7/8 ø x 5 Shear Stud						ma1	

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
DATE 6/4/97 BY DLR

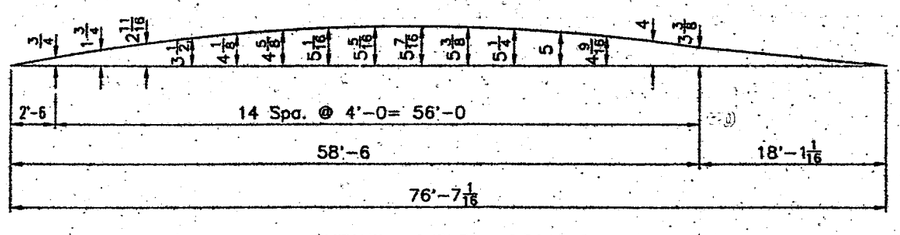
CONTRACT NO.	
DESCRIPTION	GIRDER A3 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

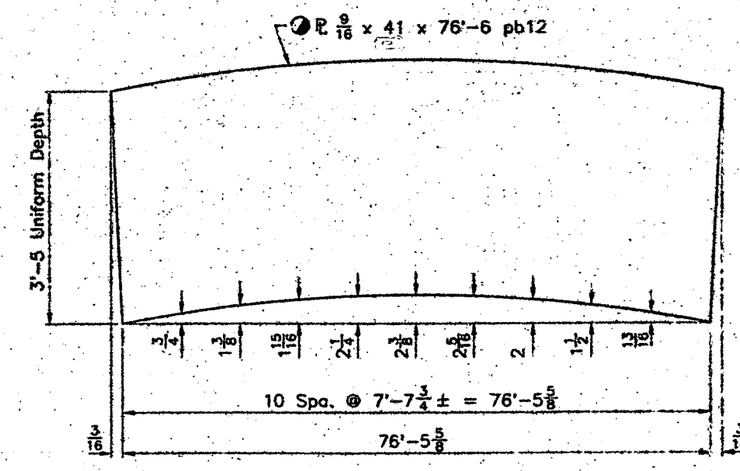
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SQ. IN. (SP OR NOTED)	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD RAIL
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	FSR-001-7-002(041)052 — COUNTY WILLIAMS
DRAWN	5-9-97 G. CLARK	STATION	124 + 43.8 — ROADWAY 30 FT.
CHECKED	5-30-97	LOADING	HS25 — SKEW VARIES
BRIDGE NO.	2-053.731L	SHEET NO. 12 OF 21	ORDER NO. 42139



GIRDER: B3



HORIZONTAL CURVE – GIRDER B3



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

Mk.	Nos. Pieces			Shape	Length Feet	Length Inches		Acc.	Mark	Remarks	Calculated Weight, Each
1			1	GIRDER B3							
2			1	PL 3/4 x 14	6	6			pc12	WPD Gr.50W	
3			1	PL 9/16 x 41	7 6	6			pb12	WPD Gr.50W	
4			1	PL 1 1/8 x 14	7 6	5	1/2		pc12	WPD Gr.50W	
5			8	PL 3/4 x 7	3	5			SB4	A709 Gr. 50	
6	1	4	4	7/8φ x 5 Shear Stud					ma1		

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

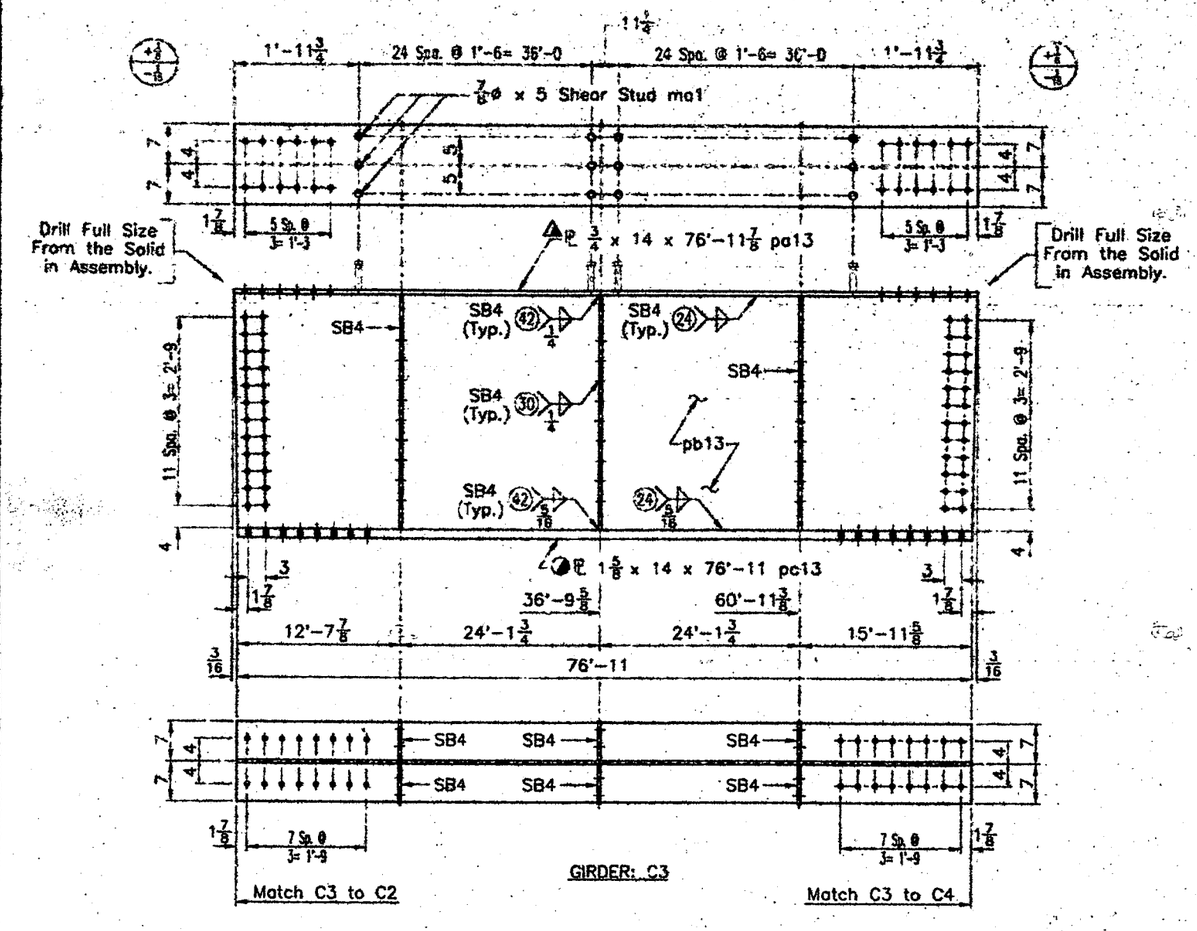
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

CONTRACT NO.

DESCRIPTION: GIRDER B3 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 W. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1081

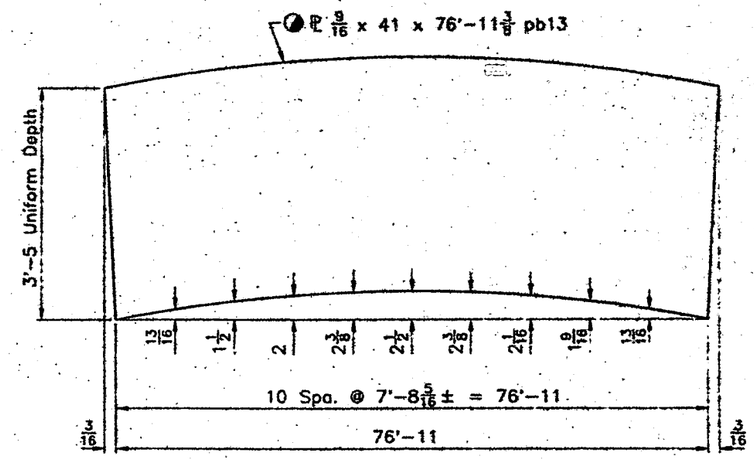
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
12-31-97 IF OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD BRY
WELDS AS NOTED		OWNER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT	RSH-104-7-002(041)062
DRAWN 5-30-97 D. CLARK		STATION	124 + 43.8
CHECKED 5-30-97		LOADING	HS25
BRIDGE NO.	2-053731	SHEET NO. 13 OF 21	
COUNTY	WILLIAMS	ROADWAY	30 FT.
SKEW	VARIES	ORDER NO.	4215W



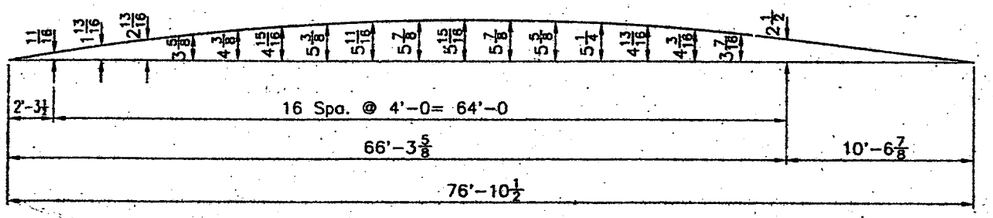
GIRDER: C3

SHOP BILL OF MATERIALS

LOC. NO.	NO. PIECES	SHAPE	MATERIAL LENGTH FEET	MATERIAL LENGTH INCHES	NEED	MARK	REMARKS	CALCULATED WEIGHT EACH
1	1	GIRDER: C3						
2	1	PL 3/4 x 14	7	6 1/1	3/8	pa13	A709 Gr. 50	
3	1	PL 5/8 x 41	7	6 1/1	3/8	pb13	A709 Gr. 50	
4	1	PL 1 5/8 x 14	7	6 1/1		pc13	A709 Gr. 50	
5	6	PL 3/4 x 7		3	5	SB4	A709 Gr. 50	
6	150	7/8ø x 5 Shear Stud				ma1		



WEB PLATE LAYOUT



HORIZONTAL CURVE – GIRDER C3

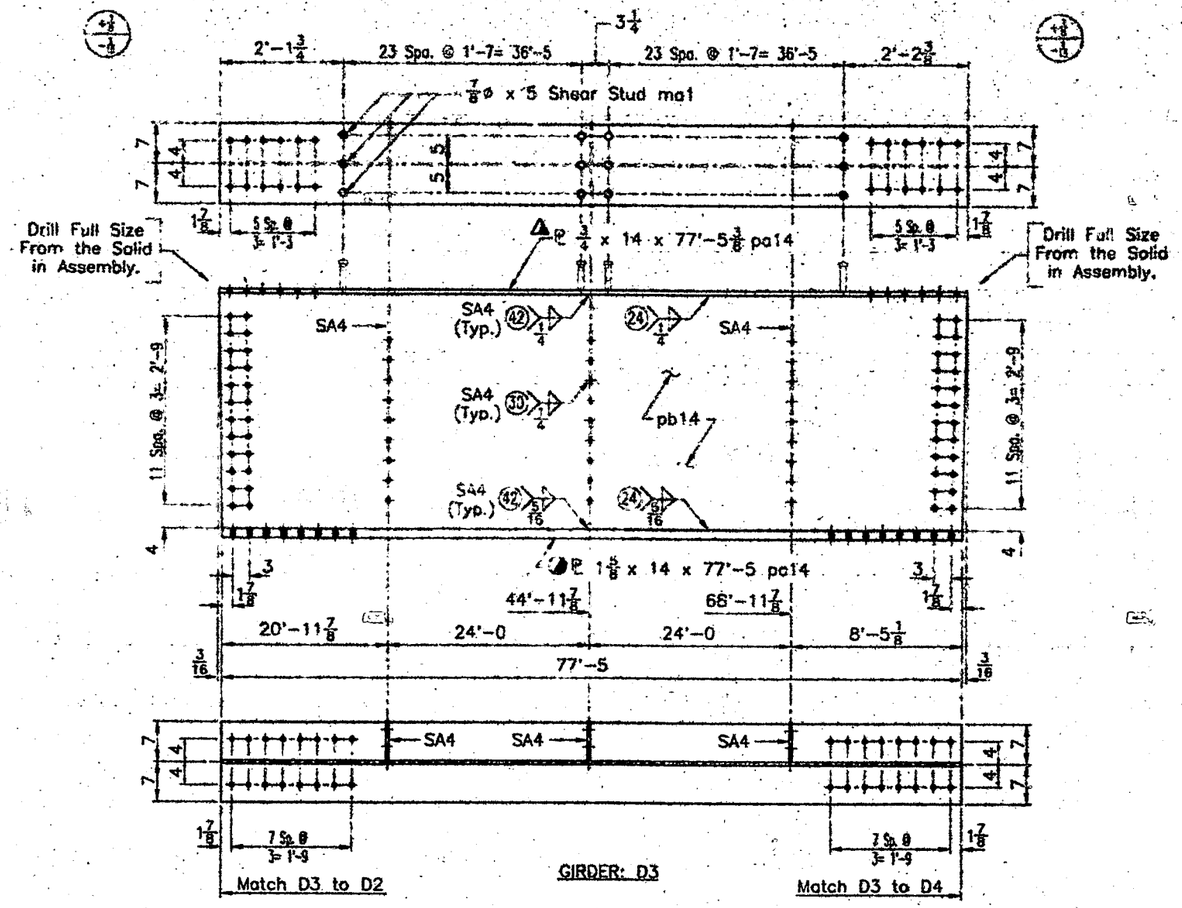
FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

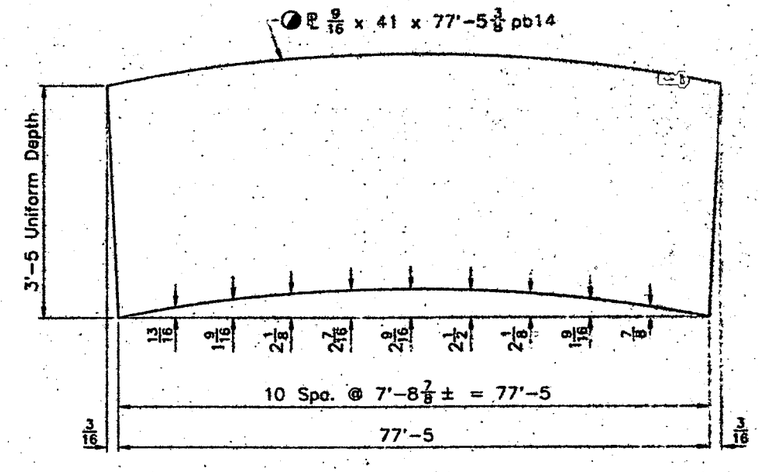
CONTRACT NO.	
DESCRIPTION	GIRDER C3 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

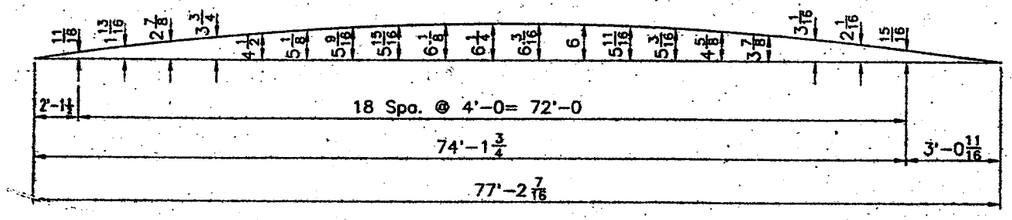
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SQ.& RP OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SIZE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD B
WELDS AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATI	
PAINT SEE NOTES	PROJECT	RSH-RH-7-002(061)052	COUNTY WILLIAMS
DRAWN 5-9-97 C. CLARK	STATION	124 + 43.6	ROADWAY 30 FT.
CHECKED 5-9-97	LOADING	HS25	SKEW VARIES
BRIDGE NO. 3-053.731L	SHEET NO. 14 OF 21		ORDER NO. 4213W



				SHOP BILL OF MATERIALS									
					MATERIAL LENGTH								
		NO. PIECES		SHAPE	FEET		INCHES		ACCY.	MARK	DRAWING	CALCULATED WEIGHT EACH
1			1	GIRDER: D3								
2	△		1	PL 3/4 x 14	7	7	5	1/8		pa14	WD 6.5[illegible]	
3	◑		1	PL 9/16 x 41	7	7	5	1/2		pb14	WD 6.5[illegible]	
4	◑		1	PL 1 5/8 x 14	7	7	5			pc14	WD 6.5[illegible]	
5	△		3	PL 1/2 x 7		3	5			SA4	FIG 6.50	
6		1	4	4	7/8ø x 5 Shear Stud					ma1		



WEB PLATE LAYOUT



HORIZONTAL CURVE – GIRDER D3

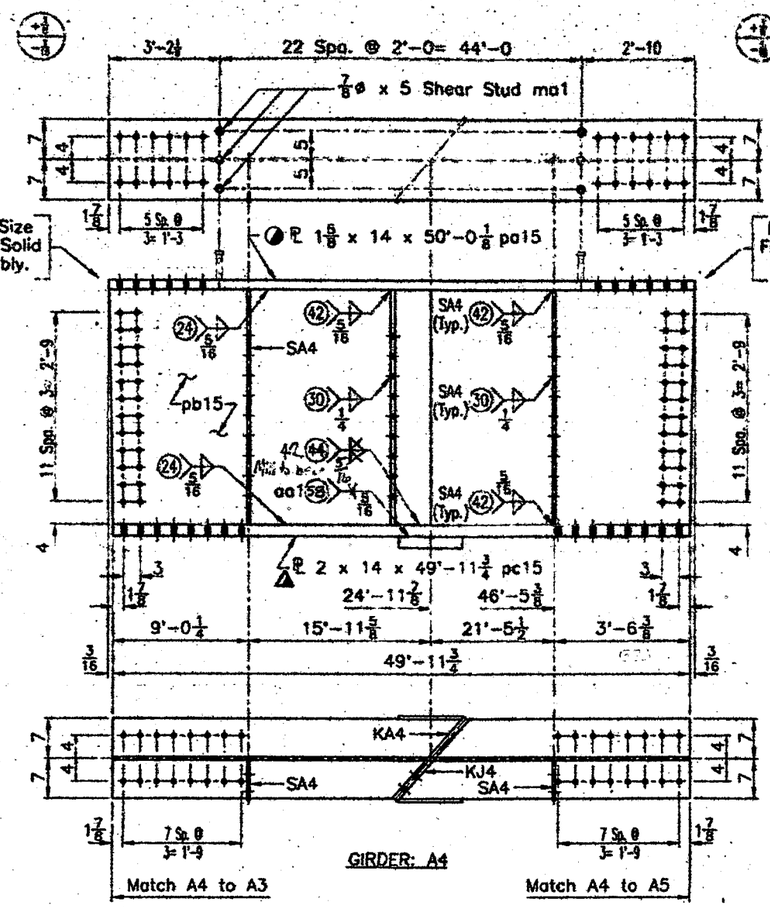
FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

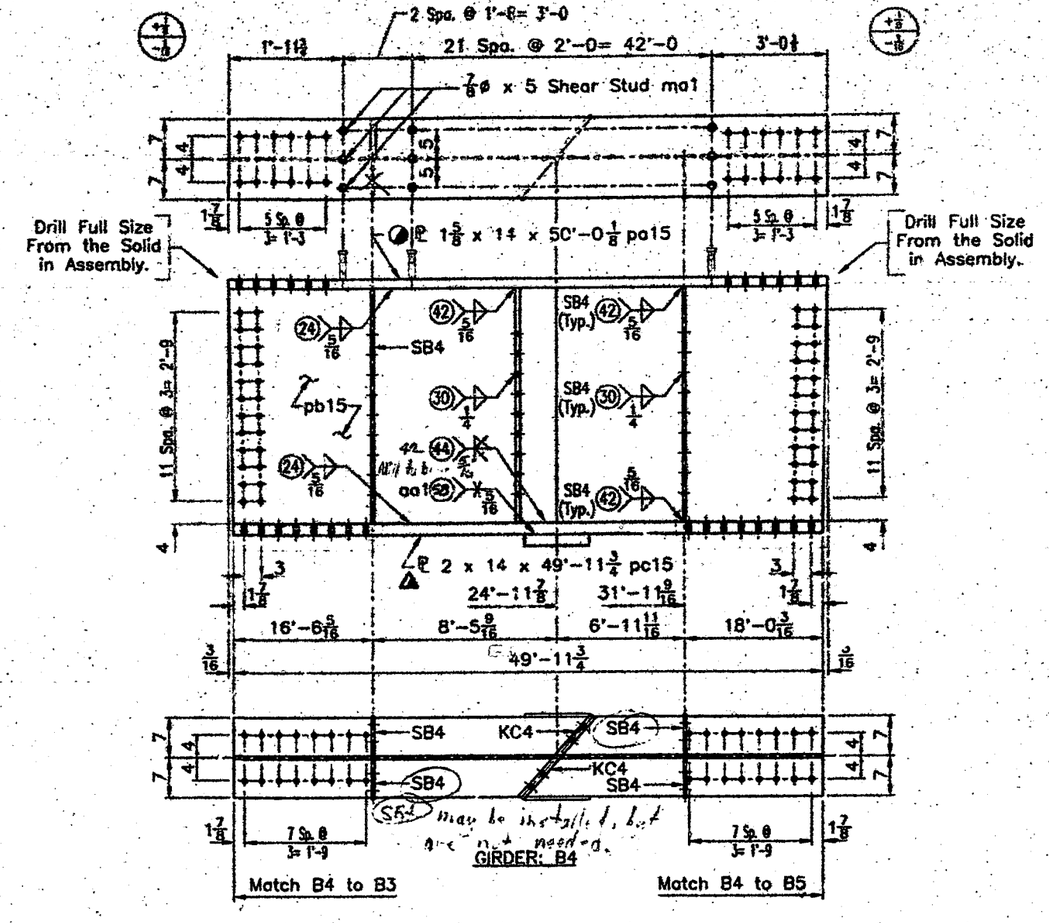
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DATE BY DLR

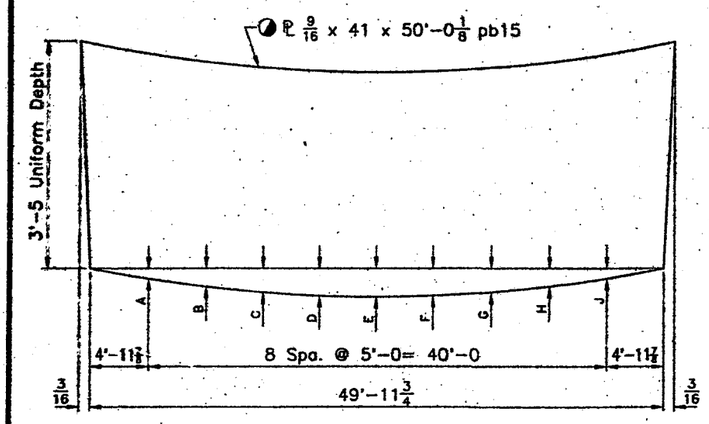
CONTRACT NO.
DESCRIPTION GIRDER D3 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80036, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
U.S. & S.D. OR NOTED	STRUCTURE	3-SPAN W.P.O. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD PAY
WELDS AS NOTED		CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT	BSM-401-7-003(041)053
		COUNTY	WILLIAMS
DRAWN 5-30-97 G. CLASK	STATION	124 + 43.6	ROADWAY 30 FT.
CHECKED 5-30-97	LOADING	HS25	SKEW VARIES
BRIDGE NO. 2-053.7341	SHEET NO. 15 OF 21		ORDER NO. 62139







Girder	A	B	C	D	E	F	G	H	J
A2	0	0	−1/16	−1/16	−1/8	−1/16	−1/16	0	0
B2	0	−1/16	−1/16	−1/8	−1/8	−1/8	−1/16	−1/16	0

SHOP BILL OF MATERIALS

Line No.		No. Pieces		Shape	Materials Length Feet	Inches			Add	Mark	Remarks	Calculated Weight Each
1			2	GIRDERS: A4 & B4								
2	◐		2	PL 1 1/8 x 14	5	0		0	1/8	pa15	M270 Gr. 50W	
3	◐		2	PL 9/16 x 41	5	0		0	1/16	pb15	M270 Gr. 50W	
4	△		2	PL 2 x 14	4	9	1	1	1/4	pc15	M270 Gr. 50W	
5	△		1	PL 1 x 8		3		5	1/2	1/2 KA4	A709 Gr. 50	
6	△		1	PL 1 x 8		3		5	1/2	1/2 KJ4	A709 Gr. 50	
7	△		2	PL 1 x 8		3		5	1/2	1/2 KC4	A709 Gr. 50	
8	△		2	PL 1/2 x 7		3		5		SA4	A709 Gr. 50	
9	△	2	4	PL 1/2 x 7		3		5		SB4	A709 Gr. 50	
10			2	PL 2 x 11		1		3	1/4	aa1	By Others	
11	1	4	1	7/8ø x 5 Shear Stud						ma1		
12												
13												
14												

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPROVED AS NOTED
6/4/97 DLR
DATE BY

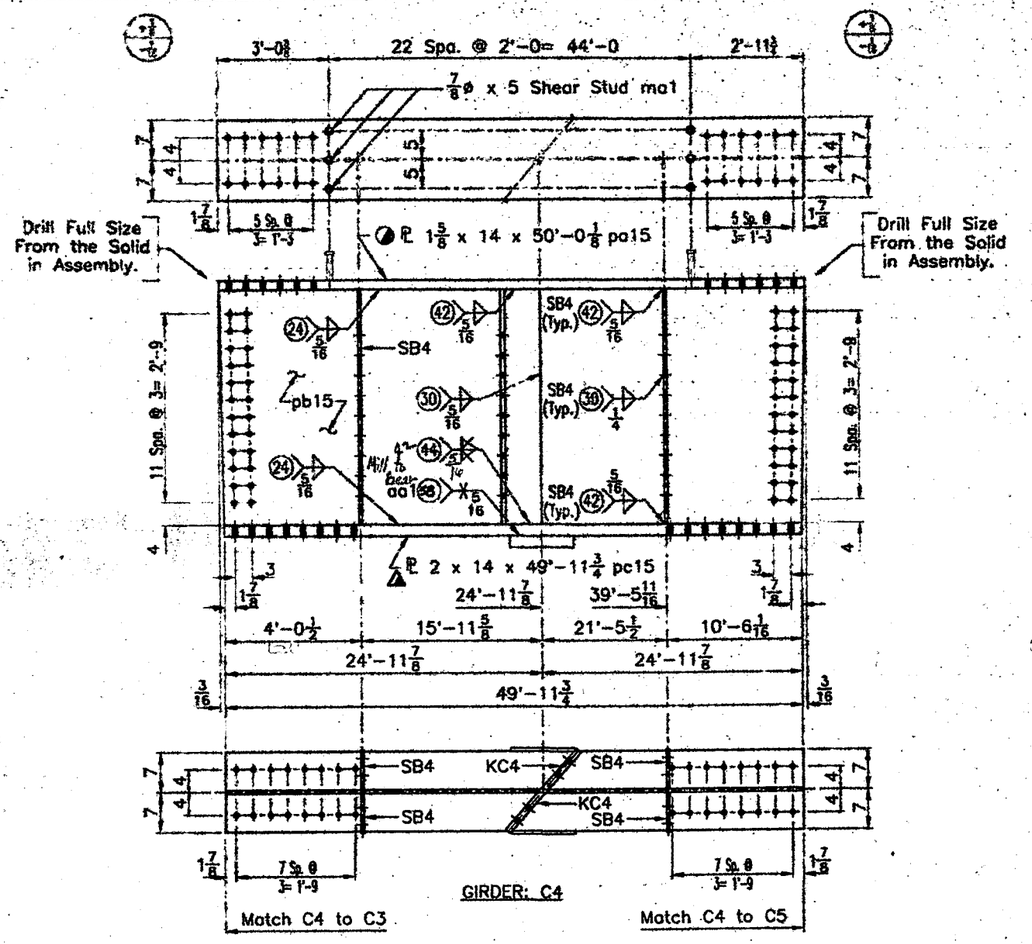
FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

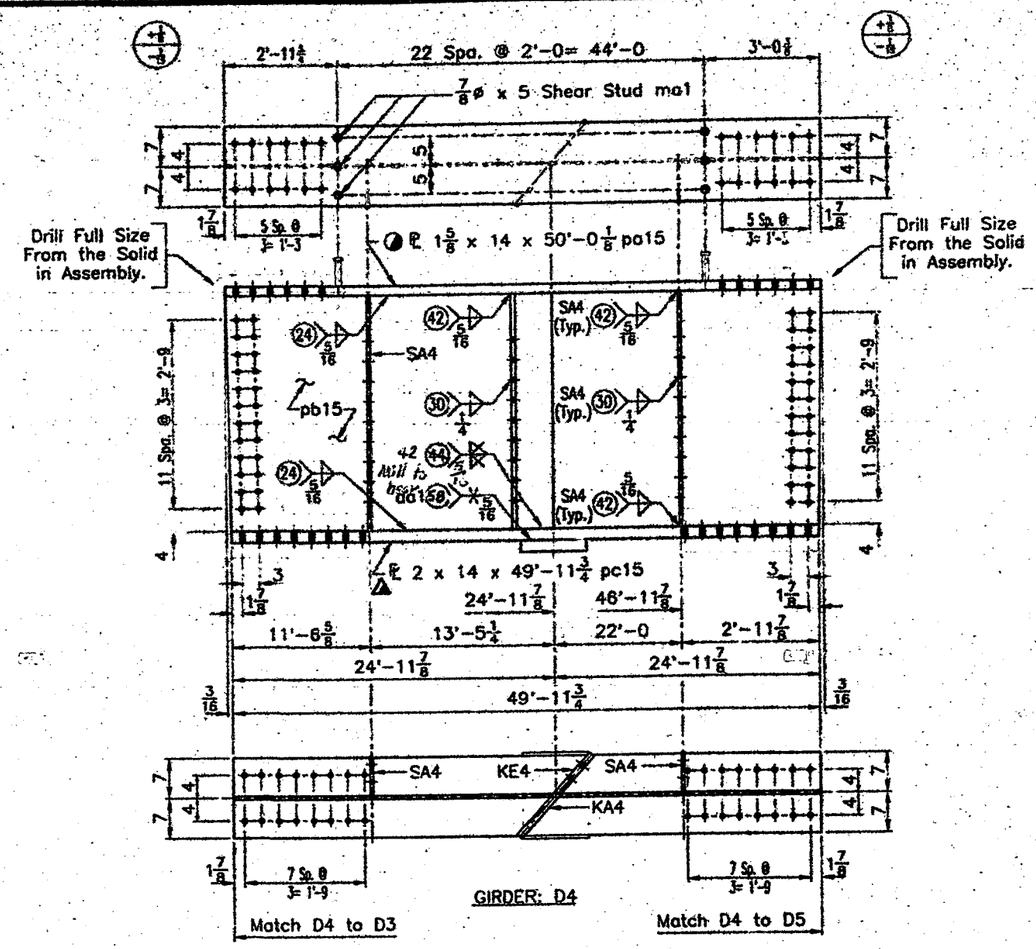
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1021

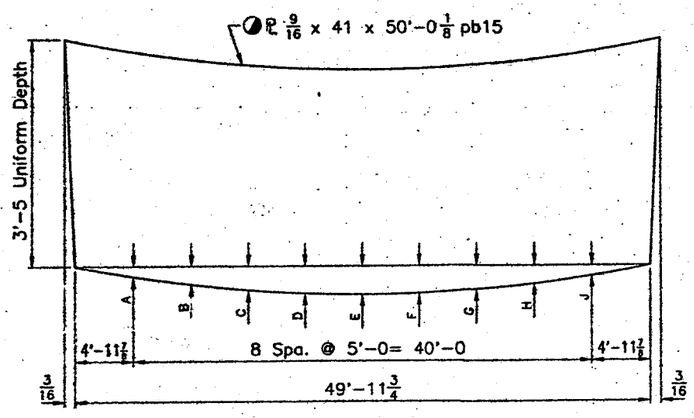
APPROVAL DATE	CONTRACTOR INDUSTRIAL BUILDERS
SQ.# 8 OR NOTED	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 1)
DESIGN NO.	LOCATION BURLINGTON NORTHERN OVERHEAD RR
WELDS AS NOTED	CUSTOMER NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES	PROJECT RSH-181-7-002(041)052 / COUNTY WILLIAMS
DRAWN 5-30-97 G. CLARK	STATION 124 + 43.6 / ROADWAY 30 FT.
CHECKED 5-30-97	LOADING HS25 / SKEW VARIES
BRIDGE NO. Z-053.731L	SHEET NO. 16 OF 21 / ORDER NO. 42139

CONTRACT NO.

DESCRIPTION GIRDER A4 & B4 DETAILS







WEB PLATE LAYOUT

Girder	A	B	C	D	E	F	G	H	J
A2	0	$-\frac{1}{16}$	$-\frac{1}{8}$	$-\frac{1}{8}$	$-\frac{3}{16}$	$-\frac{1}{8}$	$-\frac{1}{8}$	$-\frac{1}{16}$	0
B2	0	$-\frac{1}{16}$	$-\frac{1}{8}$	$-\frac{3}{16}$	$-\frac{3}{16}$	$-\frac{3}{16}$	$-\frac{1}{8}$	$-\frac{1}{16}$	$-\frac{1}{16}$

SHOP BILL OF MATERIALS

SKETCH	NO. PIECES		SHAPE	MATERIALS LENGTH FEET	INCHES			ADD.	MARK	REMARKS	CALCULATED WEIGHT EACH
1		2	GIRDERS:	C4		&	D4				
2		2	PL 1 5/8 x 14	5	0		0	1/2	pa15	M270 Gr. 50W	
3		2	PL 9/16 x 41	5	0		0	9/16	pb15	M270 Gr. 50W	
4		2	PL 2 x 14	4	9	1	1	2	pc15	M270 Gr. 50W	
5		2	PL 1 x 8		3		5	1/2	1/2 KC4	A709 Gr. 50	
6		1	PL 1 x 8		3		5	1/2	1/2 KE4	A709 Gr. 50	
7		1	PL 1 x 8		3		5	1/2	1/2 KA4	A709 Gr. 50	
8		2	PL 1/2 x 7		3		5		SA4	A709 Gr. 50	
9		4	PL 1/2 x 7		3		5		SB4	A709 Gr. 50	
10		2	PL 2 x 11		1		3	1/2	aa1	By Others	
11	1 3	8	7/8ø x 5	Shear		Stud			ma1		
12											
13											
14											

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
APPROVED AS NOTED
6/4/97 DLR
DATE BY

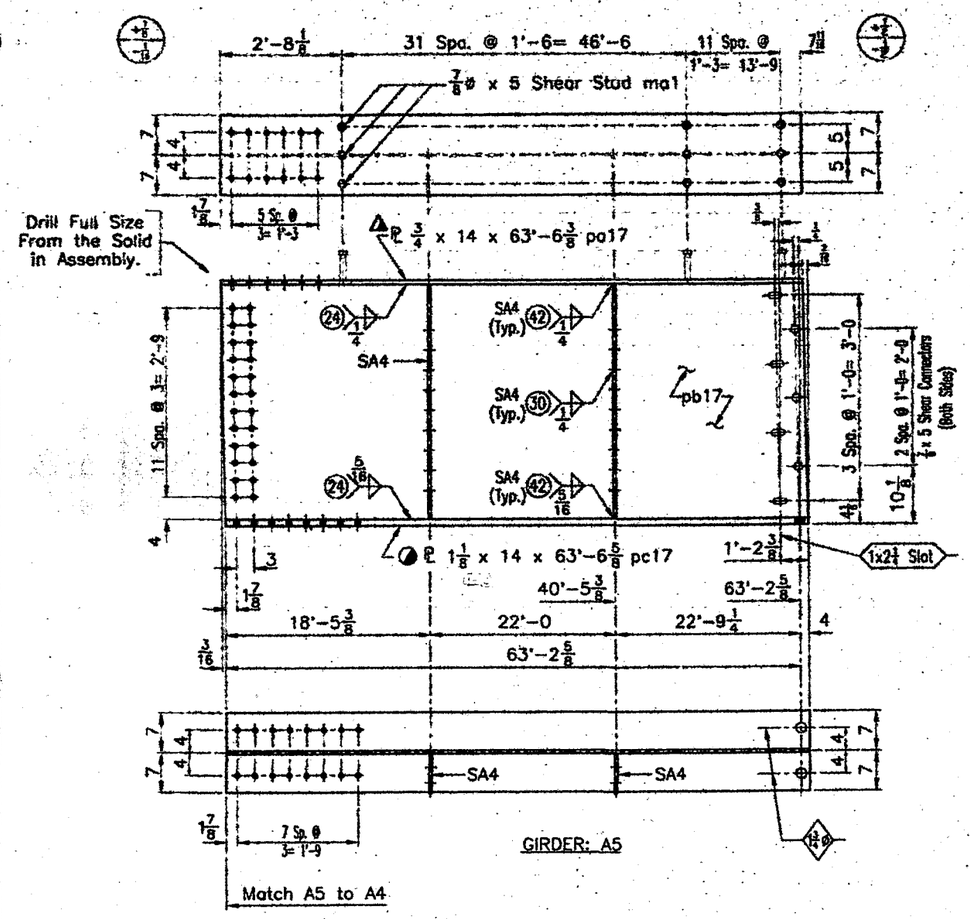
FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

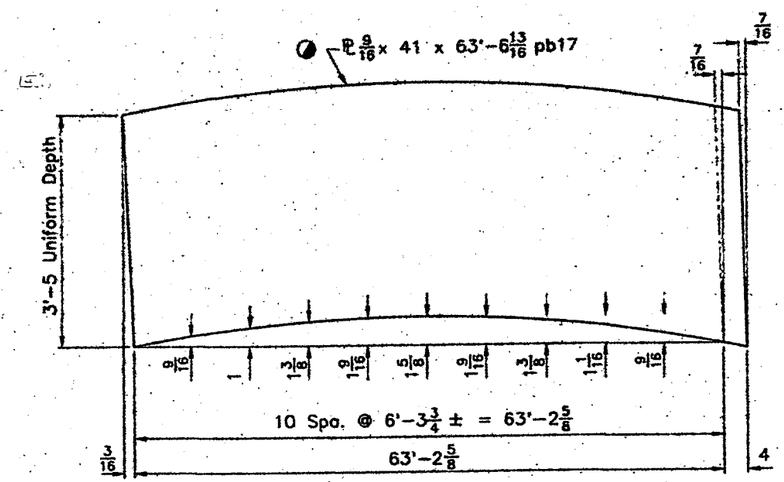
APPROVAL DATE	CONTRACTOR: INDUSTRIAL BUILDERS		
SO.D. OR NOTED	STRUCTURE: 3-SPAN W.P.G. BRIDGE (SITE 1)		
DESIGN NO	LOCATION: BURLINGTON NORTHERN OVERHEAD RAY		
WELDS: AS NOTED	CUSTOMER: NORTH DAKOTA DEPARTMENT OF TRANSPORTATION		
PAINT: SEE NOTES	PROJECT: RSM-NH-7-002(061)052	COUNTY: WILLIAMS	
DRAWN: 5-30-97 G. CLARK	STATION: 124 + 43.6	ROADWAY: 30 FT.	
CHECKED: 5-30-97	LOCATION: MS25	SKEW: VARIES	
BRIDGE NO. 2-053.731L	SHEET NO. 17 OF 21	ORDER NO. 4213W	

CONTRACT NO

DESCRIPTION: GIRDER C4 & D4 DETAILS



GIRDER: A5



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

PIECE MARK	NO. PIECES			SHAPE	MATERIALS LENGTH FEET	INCHES			ASTM	MARK	REMARKS	CALCULATED WEIGHT EACH
1			1	GIRDER: A5								
2			1	PL 3/4 x 14	6	3		6		pa17	W270 Gr. 50	
3			1	PL 9/16 x 41	6	3		6		pb17	W270 Gr. 50W	
4			1	PL 1 1/8 x 14	6	3		6		pc17	W270 Gr. 50W	
5			2	PL 3/4 x 7		3		5		SA4	A709 Gr. 50	
6	1	3	5	7/8ø x 5 Shear Stud						ma1		

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

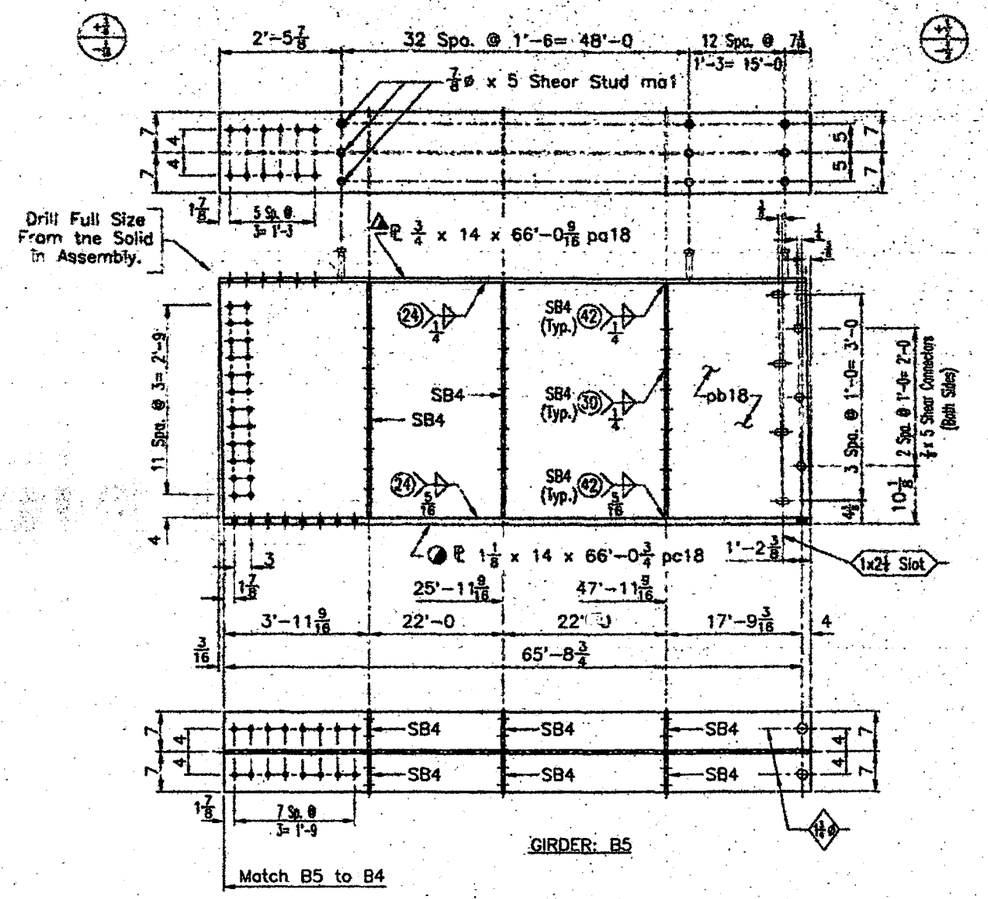
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

CONTRACT NO.

DESCRIPTION
GIRDER A5 DETAILS

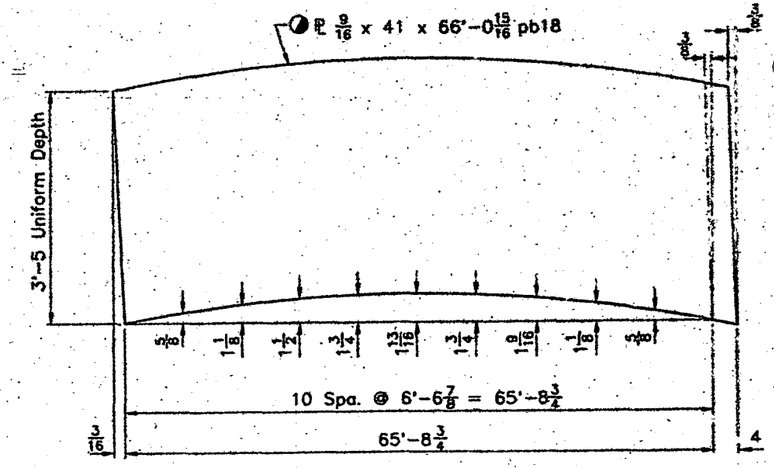
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 8TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SQ. IN. OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD BRY
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	RSH-161-7-002(041)052 — COUNTY: WILLIAMS
DRAWN	5-30-97 G. CLARK	STATION	124 + 43.0 — ROADWAY: 30 FT.
CHECKED	5-30-97	LOADING	HS25 — SKEW: VARIES
BRIDGE NO.	2-053.731L	SHEET NO. 18 OF 21	ORDER NO. 42136



GIRDER: B5

SHOP BILL OF MATERIALS											
SQ.		ED. PIECES		SHAPE	MATERIAL LENGTH FEET	INCHES		ADD.	MARK	REMARKS	CALCULATED WEIGHT EACH
1			1	GIRDER: B5							
2	△		1	PL 3/4 x 14	6	6	0	A	pa18	M270 Gr. 50W	
3	◑		1	PL 9/16 x 41	6	6	0	Beveled	pb18	M270 Gr. 50W	
4	◑		1	PL 1 1/8 x 14	6	6	0	A	pc18	M270 Gr. 50W	
5	△		6	PL 1/2 x 7		3	5		SB4	A709 Gr. 50	
6	1	4	1	7/8ø x 5 Shear Stud					mc1		
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											



WEB PLATE LAYOUT

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

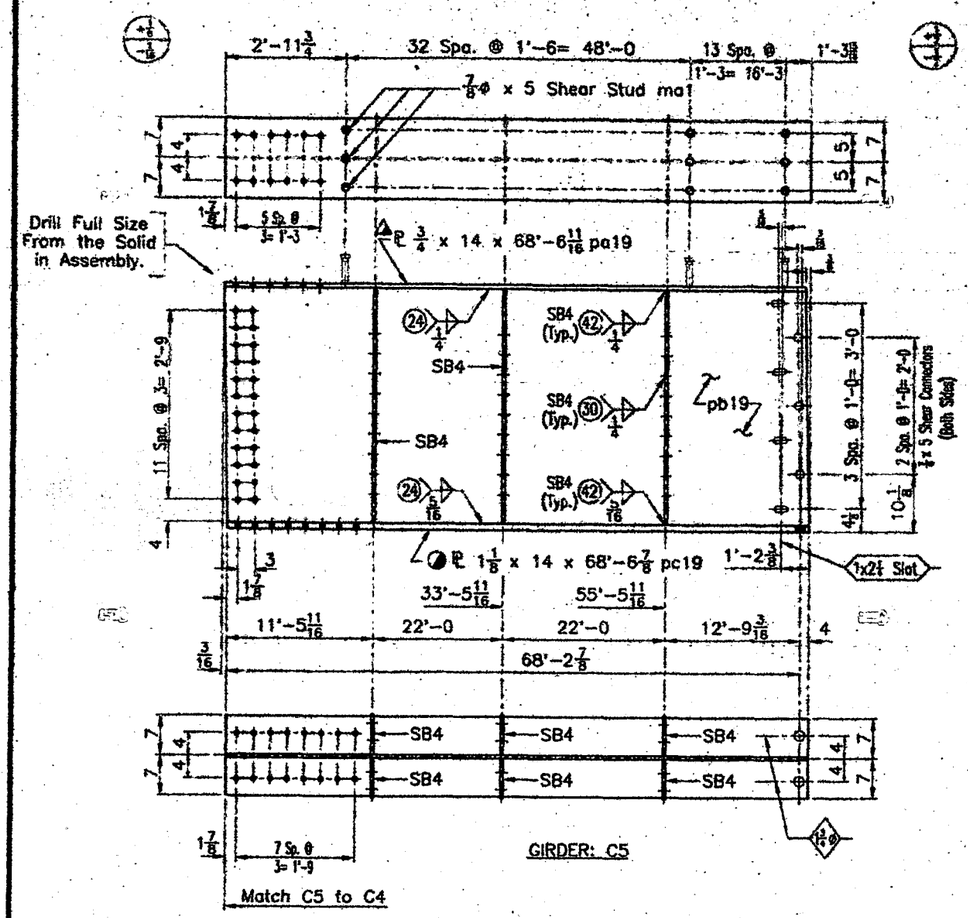
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

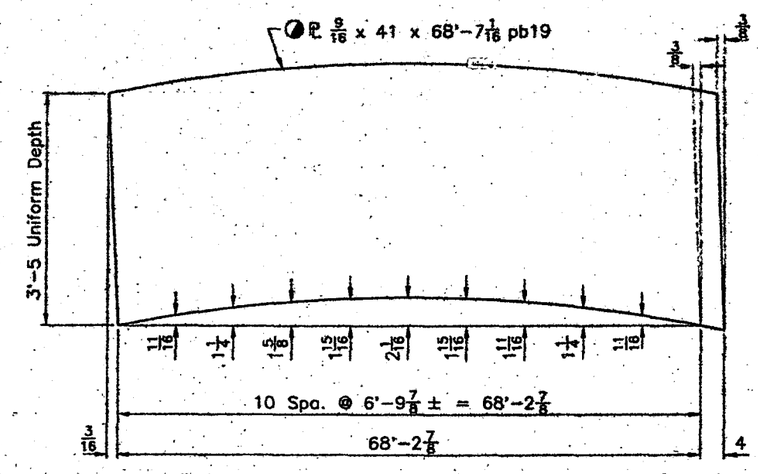
CONTRACT NO.

DESCRIPTION: GIRDER B5 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 K 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SQ.H. OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO		LOCATION	BURLINGTON NORTHERN OVERHEAD RAY
WELDS	AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT	SEE NOTES	PROJECT	BSH-NH-7-002(041)052 — COUNTY WILLIAMS
DRAWN	5-30-97 G. CLARK	STATION	126 + 43.0 — ROADWAY 30 FT.
CHECKED	5-30-97	LOADING	HS25 — SKEW VARIES
BRIDGE NO.	2-053.731L	SHEET NO. 10 OF 21	ORDER NO. 42139





WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

SL		NO. PIECES		SHAPE	MATERIALS LENGTH FEET	INCHES		ADD.	MARK	REMARKS	CALCULATED WEIGHT EACH
1			1	GIRDER: C5							
2	△		1	PL 3/4 x 14	6	8	6	11/16	pa19	W70 & S57	
3	◑		1	PL 9/16 x 41	6	8	7	1/16	pb19	W70 & S57	
4	◑		1	PL 1 1/8 x 14	6	8	6	7/8	pc19	W70 & S57	
5	△		6	PL 3/4 x 7		3	5		SB4	A709 Gr. 50	
0		1	4	7/8φ x 5 Shear Stud					mat		
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

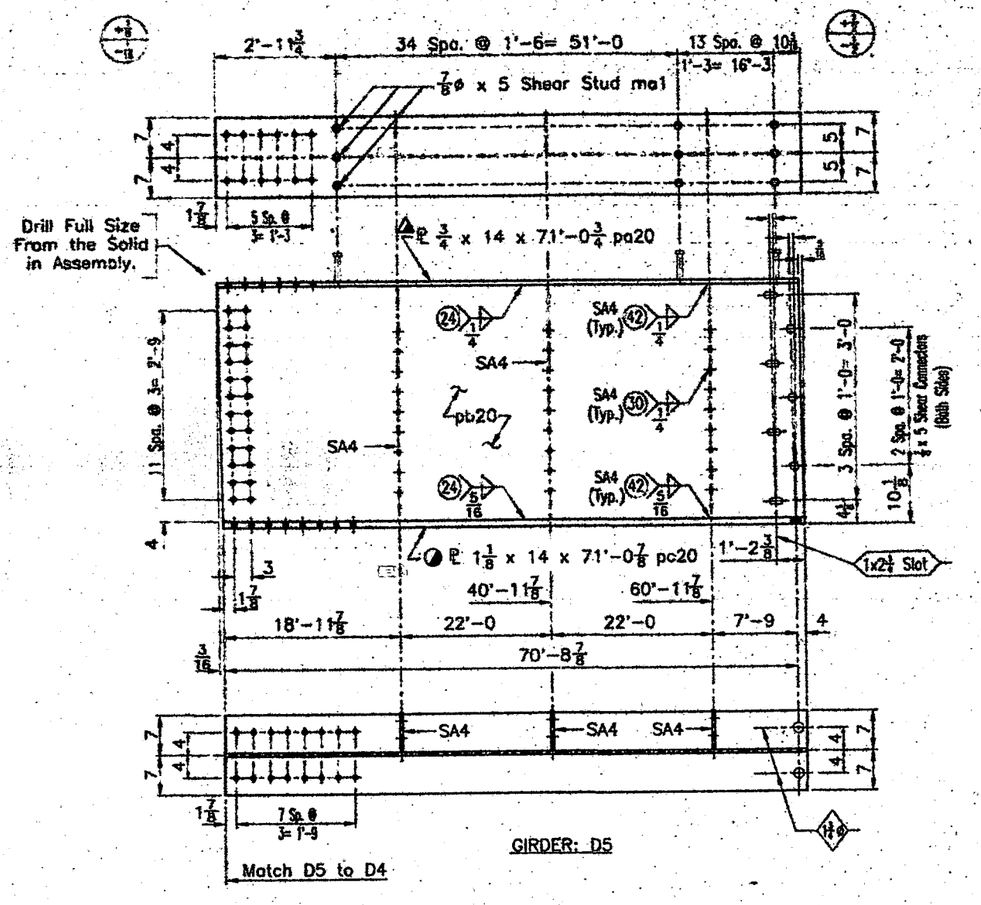
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DLR
DATE BY

CONTRACT NO.

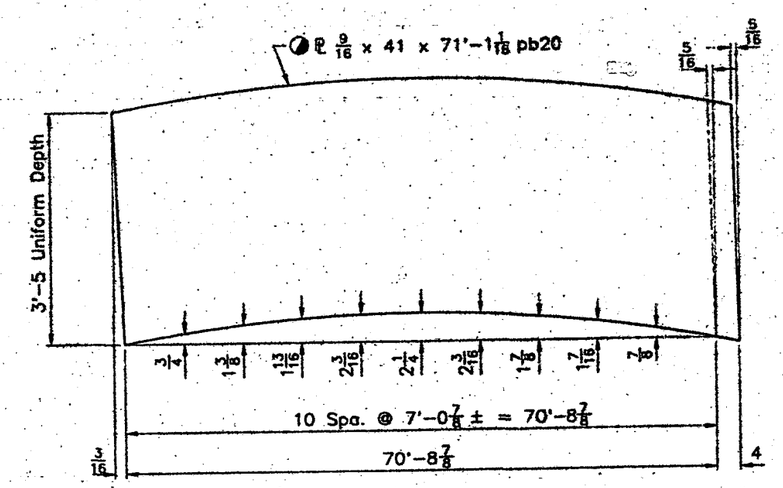
DESCRIPTION GIRDER C5 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-476-1021

APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
SQ.H. ⅓P OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION BURLINGTON NORTHERN OVERHEAD RRY	
WELDS AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
PAINT SEE NOTES	PROJECT	BRM-201-7-002(041)052	COUNTY WILLIAMS
DRAWN 3-30-97 G. CLARK	STATION	124 + 43.6	ROADWAY 30 FT.
CHECKED DATE 5-30-97	LOADING	HS25	SKEW VARIES
BRIDGE NO. 2-053.731L	SHEET NO. 20 OF 41		ORDER NO. 421339



GIRDER: D5



WEB PLATE LAYOUT

SHOP BILL OF MATERIALS

SYM. NO.	NO. PIECES		SHAPE	MATERIALS LENGTH FEET	INCHES		ADD.	MARK	REMARKS	CALCULATED WEIGHT EACH
*		1	GIRDER: D5							
2		1	PL 3/4 x 14	7	1	0 3/4		pa20	ASTM A 709 Gr. 50W	
3		1	PL 1 1/8 x 41	7	1	1 1/8		pb20	ASTM A 709 Gr. 50W	
4		1	PL 1 1/8 x 14	7	1	0 3/4		pc20	ASTM A 709 Gr. 50W	
5		3	PL 3/4 x 7		3	5		SA4	ASTM A 709 Gr. 50	
6	1	5 0	7/8ø x 5 Shear Stud					ma1		
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

FOR NOTES SEE SHEET 1.
STUD SPACING OVER FIELD SPLICES SEE SHEET 5.

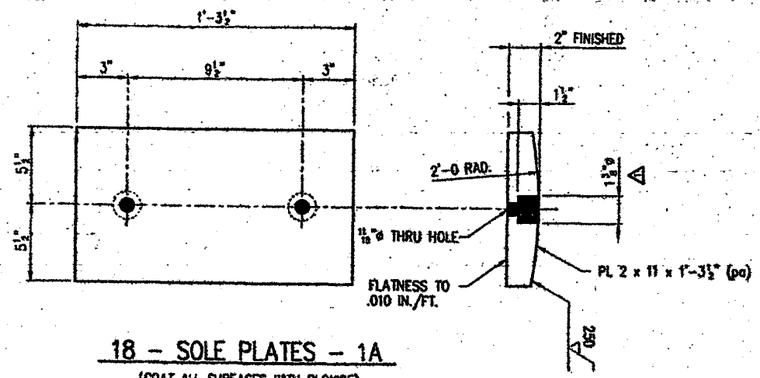
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
6/4/97 DATE — BY DLR

CONTRACT NO.
DESCRIPTION: GIRDER D5 DETAILS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80038, ZIP 68501, PH. 402-476-1081.

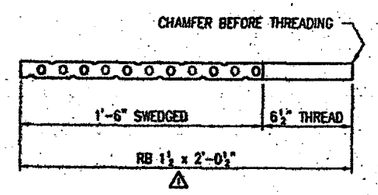
APPROVAL DATE		CONTRACTOR	INDUSTRIAL BUILDERS
29.0 TO OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 1)	
DESIGN NO.		LOCATION	BURLINGTON NORTHERN OVERHEAD RR
WELDS AS NOTED		CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
PAINT SEE NOTES		PROJECT BRN-461-7-002(041)052	COUNTY WILLIAMS
DRAWN 5-30-97 G. CLARK		STATION 124 + 43.8	ROADWAY 30 FT.
CHECKED 5-30-97		LOADING HS25	SKEW VARIES
BRIDGE NO. 2-053.731L		SHEET NO. 21 OF 21	ORDER NO. 42138

Roll 845

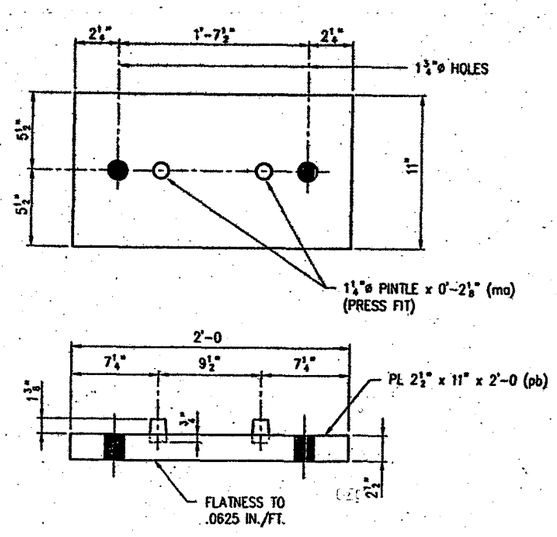


18 – SOLE PLATES – 1A

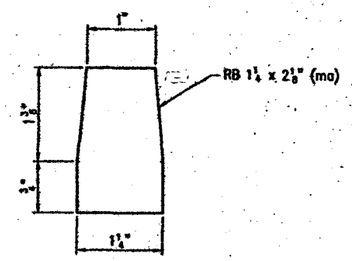
(COAT ALL SURFACES WITH BLOXIDE)



36 – ANCHOR BOLTS – 1C

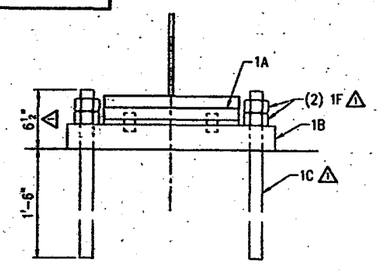


18 – MASONRY PLATES – 1B



PINTLE DETAIL

FIELD USE ONLY



NOTE: 8 BEARINGS REQ'D. AT NORTH BASCULE.
10 BEARINGS REQ'D. AT SOUTH BASCULE.

LINE	NO. REQ'D.	DESCRIPTION	LENGTH	MK	REMARKS	WGHT.	
1	18	SOLE PLATE(S)		1A	P		
2	18	PL 2 A709GR50 x 11	1'-3½"	pa	MACH		
3							
4	18	MASONRY PLATE(S)		1B	P		
5	18	PL 2½ A709GR50 x 11	2'-0	pb			
6	36	RB 1¼ A588	0'-2⅛"	ma			
7							
8	36	ANCHOR BOLT(S)		1C	B		
9	36	RB 1½	2'-0½"	1C	SWEDGE – THRD AS NEED		
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24		FIELD BOLTS :					
25	73	HN 1½ HVY A563AB		1F			72
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							

GENERAL NOTES :

1. MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH ND/DOT "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION – 1992 EDITION" AND THE SPECIAL PROVISIONS.
2. ALL MATERIAL SHALL CONFORM TO ASTM A709 GR 50W U.N.O. ANCHOR BOLTS TO BE ASTM A709 GR 36.
3. CLEAN PER ND/DOT SPEC. 630.03 (SSPC-SP10).
4. COAT PLATE (1A) WITH BLOXIDE. (
5. INSPECTION BY ND/DOT.
6. SHIP SOLE PLATE (1A) TO GIRDER FABRICATOR.
7. PAINT ITEM (1B) WITH ONE COAT OF INORGANIC ZINC-RICH PRIMER (3.0 MILS D.F.T.) USE CARBOZINC CZ11.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION FINAL APPROVED DRAWING
2/24/97 DATE BY DLR

REV.	DESCRIPTION	DATE	INT.
1	REVISED AS NOTED	2/18/97	JSK

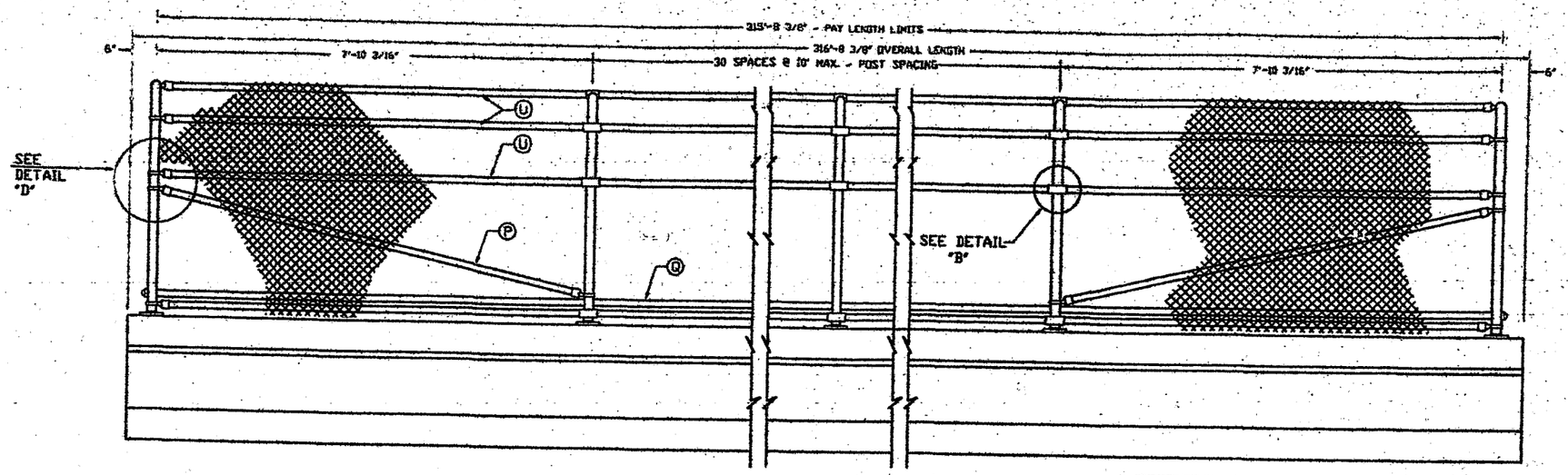
ANY AND ALL BACKCHARGES WILL BE REJECTED UNLESS WRITTEN CONSENT IS GIVEN BY LEWIS ENGINEERING COMPANY PRIOR TO ANY WORK PERFORMED FOR OUR ACCOUNT. SUCH REJECTION MEANS THAT INVOICES WILL NOT BE HONORED OR DEDUCTIONS FROM PAYMENT WILL BE CHARGED BACK.

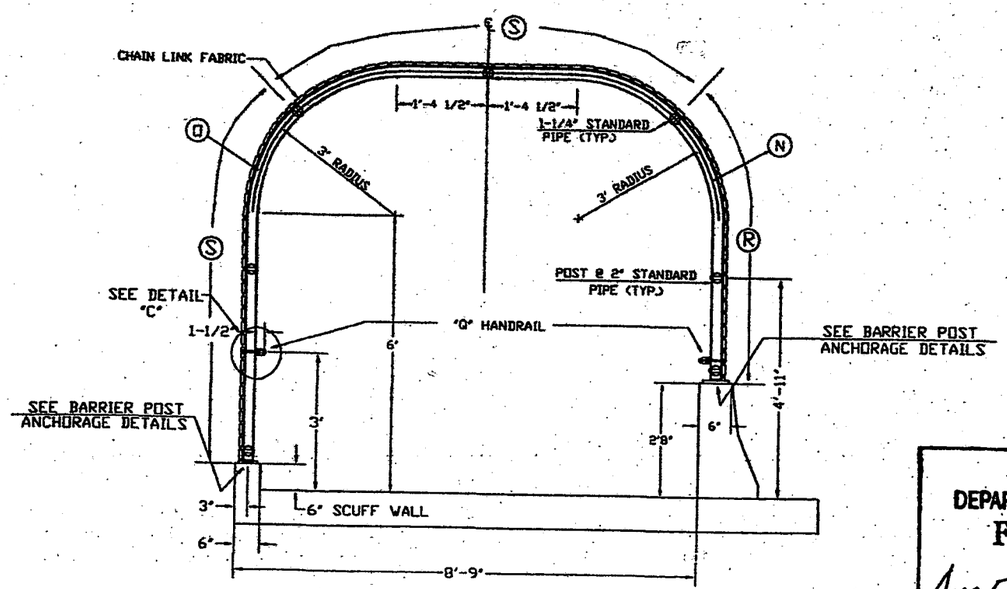
LEWIS ENGINEERING COMPANY
4201 NOREX DRIVE – CHASKA, MINNESOTA 55318 – (612) 368-3000

PROJECT — BURLINGTON NORTHERN OVERHEAD RAY
STATE PROJECT — RSN-7-002 (041) 052
~~FEDERAL PROJECT~~ — BR. No. 2-053.731 L
CUSTOMER — CAPITAL STEEL COMPANY
LOCATION — WILLIAMS COUNTY, ND
DESCRIPTION — FIXED BEARING DETAILS

ORIG
W.P. chk'd NR
Drawn By JSK
Chk'd. By ASC
Date: 2/18/97

SHEET NO. 1 OF 1 | Job. No. : 4443-51





PARTS LIST

PART#	QTY.	DESCRIPTION	MATERIAL	
A	18	RAIL END		GALVANIZED
B	217	LINE RAIL CLAMP		GALVANIZED
C	44	2-1/2" TENSION BANDS		GALVANIZED
D	66	1/2"ø X 4-1/2" CARRIAGE BOLTS	GR-2	GALVANIZED
E				
F	132	C CHANNEL SUPPORTS	A-36	GALVANIZED
G	467	3/8"ø X 3" CARRIAGE BOLTS	GR-2	GALVANIZED
H	33	6" X 6" X 5/8" BASE PLATES	A-36	GALVANIZED
I	33	7" X 4-1/2" X 1/2" BASE PLATES	A-36	GALVANIZED
J	198	1/2"ø X 7" ANCHOR BOLTS	GR-3	GALVANIZED
K	264	1/2"ø NUTS	GR-2	GALVANIZED
L	198	1/2"ø FLAT WASHERS	GR-2	GALVANIZED
M	33	1-1/2" X 4"	STD. PIPE	GALVANIZED
N	33	2" x 9'-4 1/16"	STD. PIPE	GALVANIZED
O	33	2" x 11'-6 7/16"	STD. PIPE	GALVANIZED
P	2	1-1/4" x 8'-5"	STD. PIPE	GALVANIZED
Q	2	1-1/4" x 315'-8 3/8"	STD. PIPE	GALVANIZED
R	316'-0"	9 GAUGE CHAIN LINK 6'-0"	FABRIC	GALVANIZED
S	632'-0"	9 GAUGE CHAIN LINK 8'-0"	FABRIC	GALVANIZED
T	33	1-1/2" x 10"	STD. PIPE	GALVANIZED
U	224	1-1/4" X 10'	STD. PIPE	GALVANIZED
V	18	2-1/2" BRACE BANDS		GALVANIZED
W	4	1-5/8" DOME CAPS		GALVANIZED
X				
Y	62	1-1/4" X 5/16" CARRIAGE BOLTS	GR-2	GALVANIZED
Z	3004	9 GA. ALUMINUM FENCE TIES		ALUMINUM
AA	2	6'-0" TENSION BARS		GALVANIZED
BB	4	8'-0" TENSION BARS		GALVANIZED
CC	2	8'-0" TENSION BARS		GALVANIZED

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
Aug 5, 97 DLR
DATE BY

Br. No. 2-053.731 R

FHWA REGION 8 FAPN RSN-NH-7-002(041)052
STRUCTURE NO. 2--053.731R
PEDESTRIAN BRIDGE CANOPY RAY, NORTH DAKOTA

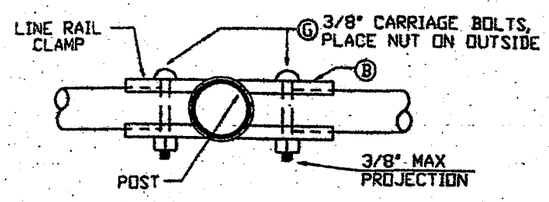
SCALE:	APPROVED BY:	DRAWN BY: E. GARLAND
DATE: 5/14/97		REVISED

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

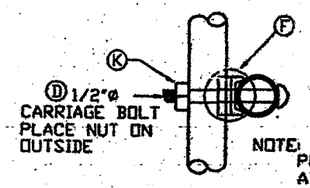
DAKOTA FENCE COMPANY SUB CONTRACTOR
FARGO BISMARCK MINOT
NORTH DAKOTA

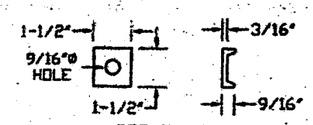
DRAWING # 9616

P 23



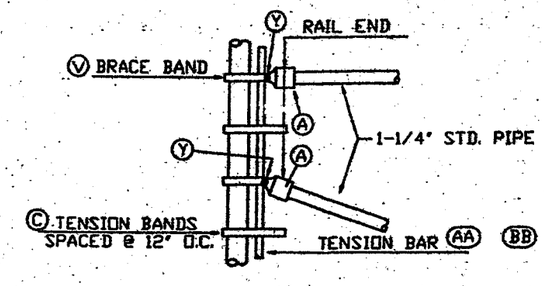
DETAIL "B"



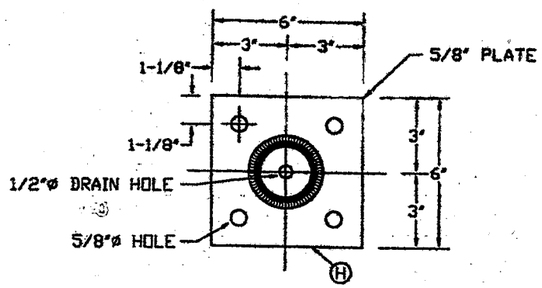


NOTE: PROVIDE 5/8"ø HOLES IN HANDRAIL AT EACH POST. USE TUBE SLEEVE AT SPLICES. CAP ENDS

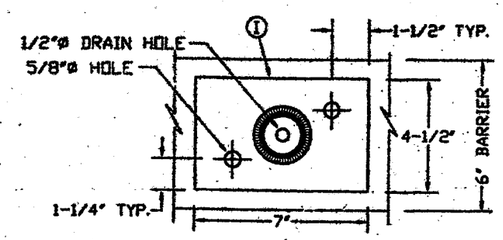
DETAIL "C"



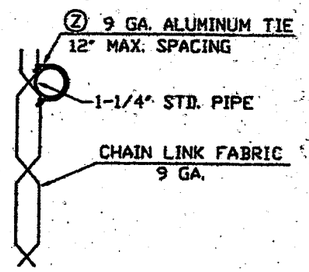
DETAIL "D"



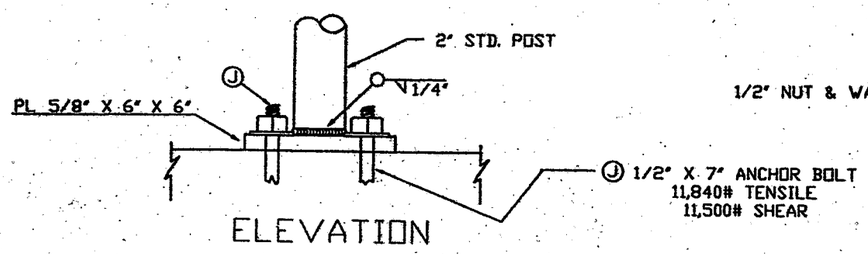
BASE PLATE PLAN



BASE PLATE PLAN

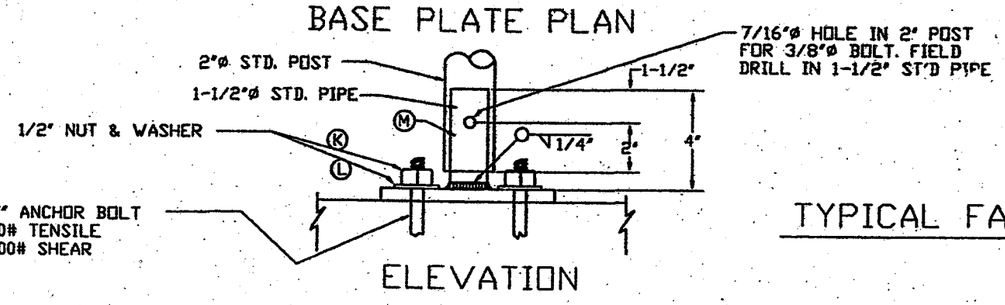


TYPICAL FABRIC ATTACHMENT



ELEVATION

PARAPET POST ANCHORAGE DETAILS

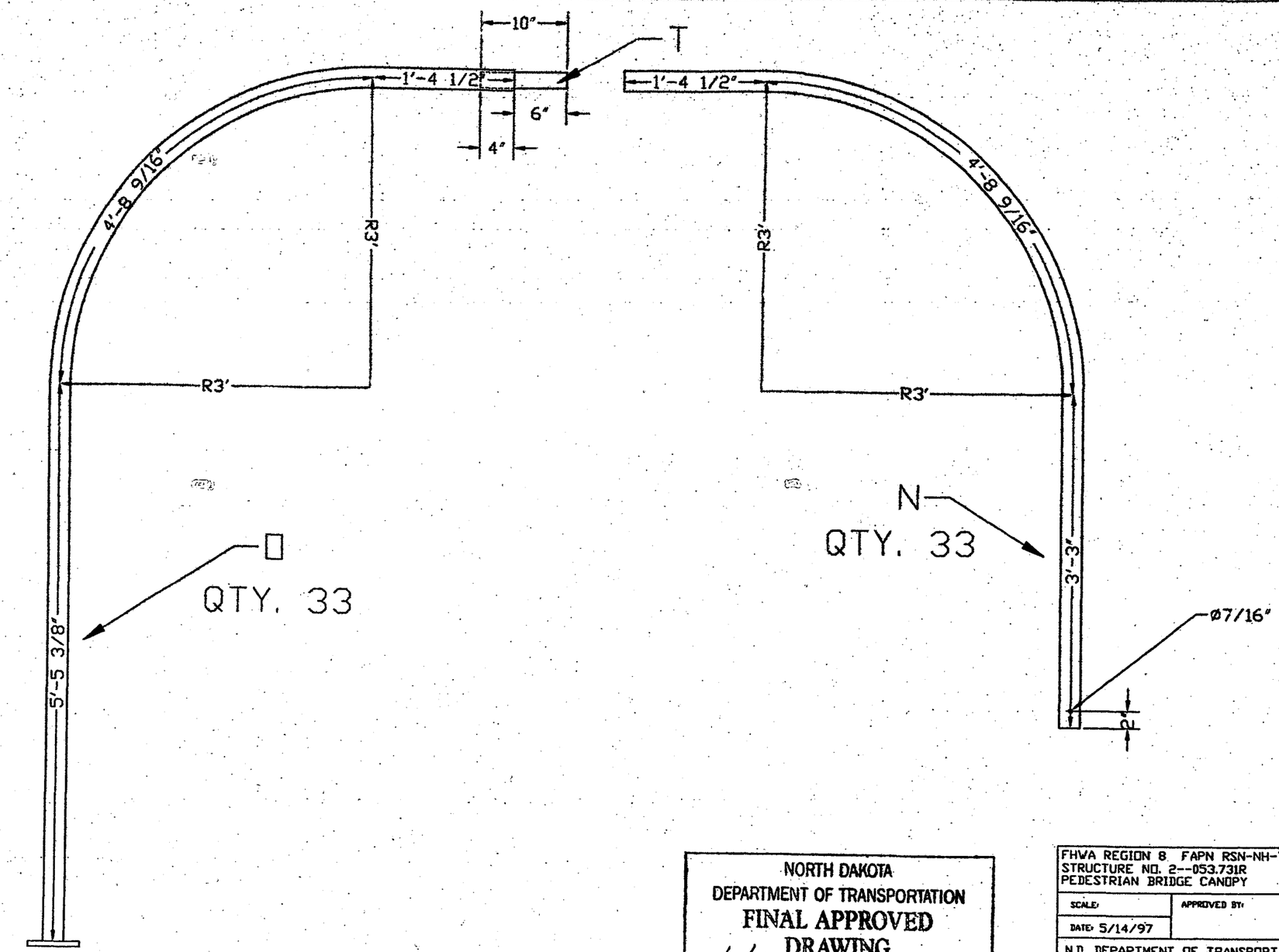


ELEVATION

BARRIER POST ANCHORAGE DETAILS

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
8/5/97 DATE
BY DLR

FHWA REGION 8 FAPN RSN-NH-7-002(041)052 STRUCTURE NO. 2--053.731R PEDESTRIAN BRIDGE CANOPY		RAY, NORTH DAKOTA
SCALE:	APPROVED BY:	DRAWN BY: E. GARLAND
DATE: 5/14/97		REVISED
N.D. DEPARTMENT OF TRANSPORTATION •• ENGINEERS NORTHERN IMPROVMENTS >> PRIME CONTRACTOR		FARGO, ND
DAKOTA FENCE COMPANY SUB CONTRACTOR FARGO BISMARCK MINOT NORTH DAKOTA		DRAWING # 9616



NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
8/5/97 DATE
DLR BY

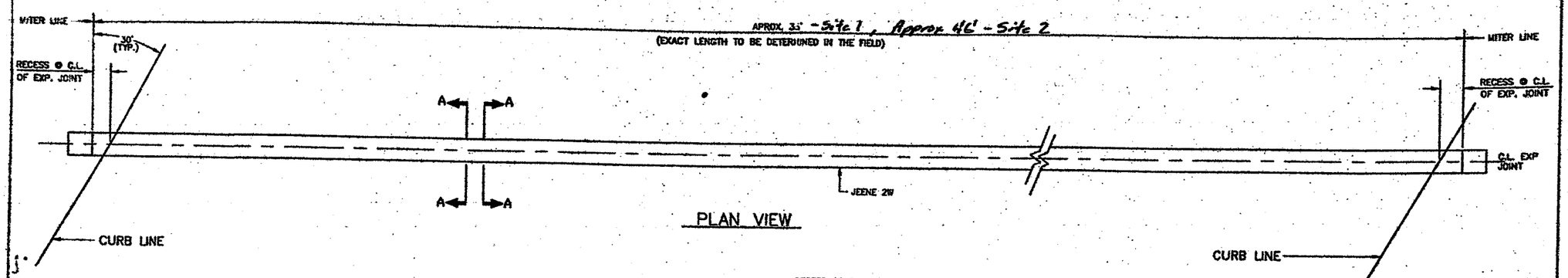
FHWA REGION 8 FAPN RSN-NH-7-002(041)052
STRUCTURE NO. 2--053.731R
PEDESTRIAN BRIDGE CANOPY
RAY, NORTH DAKOTA

SCALE:	APPROVED BY:	DRAWN BY: E. GARLAND
DATE: 5/14/97		REVISED

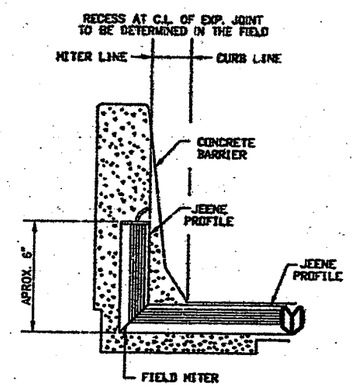
N.D. DEPARTMENT OF TRANSPORTATION •• ENGINEERS
NORTHERN IMPROVMENTS >> PRIME CONTRACTOR FARGO, ND

DAKOTA FENCE COMPANY SUB CONTRACTOR
FARGO BISMARCK MINOT
NORTH DAKOTA

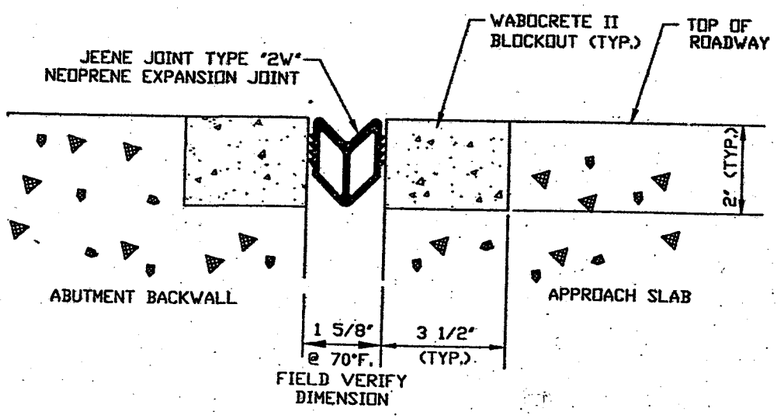
DRAWING #
9616



PLAN VIEW



SECTION VIEW
SPLIT BARRIER



SECTION VIEW A – A

GENERAL NOTES:

1. WABOCRETE II SHALL BE INSTALLED IN ACCORDANCE WITH WATSON BOWMAN ACME INSTALLATION PROCEDURES.
2. JEENE PROFILE SHALL BE INSTALLED IN ACCORDANCE WITH WATSON BOWMAN ACME INSTALLATION PROCEDURES.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
8/26/97 DLR
DATE BY

TEMPERATURE ADJUSTMENT

THE CHANGE PER 10°F. IS MEASURED PERPENDICULAR TO THE JOINT FOR BOTH NORMAL AND SKEWED JOINTS.

DIMENSIONS SPANNING THE OPEN JOINT WILL DECREASE OR INCREASE FOR EVERY 12°F. RISE OR FALL RESPECTIVELY.

1/8" INCHES AT STA 122 + 00.00
1/8" INCHES AT STA 126 + 6.53

2e1
MARK SYSTEM

NO.	DESCRIPTION	SHEET	DATE
4			
3			
2			
1			

REVISIONS

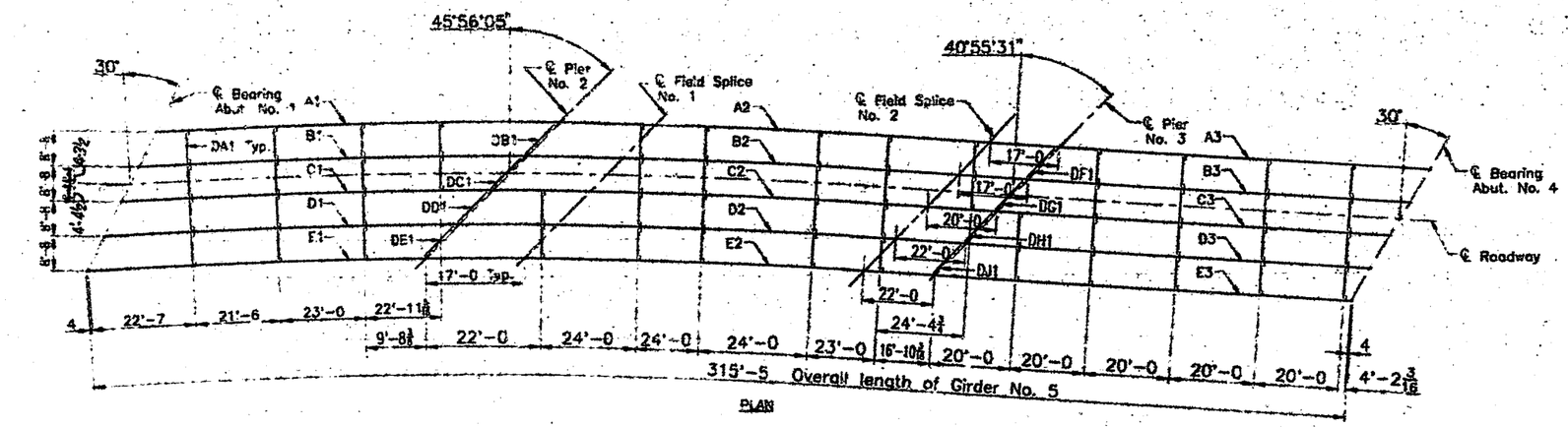
Watson Bowman Acme
JEENE
A DIVISION OF HARRIS SPECIALTY CHEMICALS, INC.

STATE: NORTH DAKOTA
COUNTY: WILLIAMS
PROJECT NO.: RSN-NH-7-002(041)052
REGION: 8 ROUTE: US 2

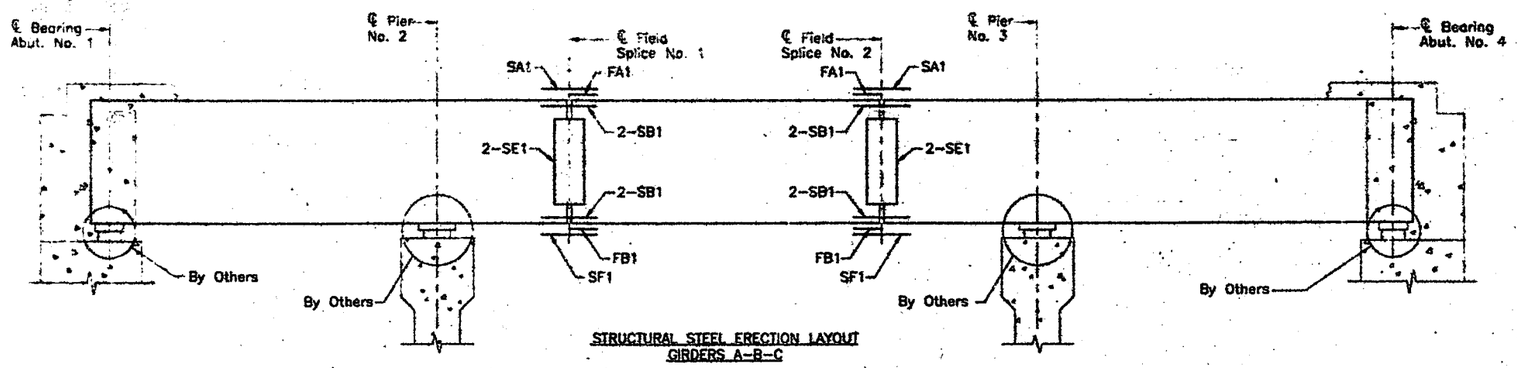
PROJECT: US 2 BURLINGTON NORTHERN RAILROAD SEPARATION IN RAY
JEENE 2W EXPANSION JOINT DETAILS

DETAILED BY: MN	DATE: 8/15/97
CHECKED BY: AML	DATE: 8/15/97
SCALE: N.T.S.	WBA JOB NO.: 48289
SHEET NO.: 1 OF 1	DRAWING NO.: B-17076

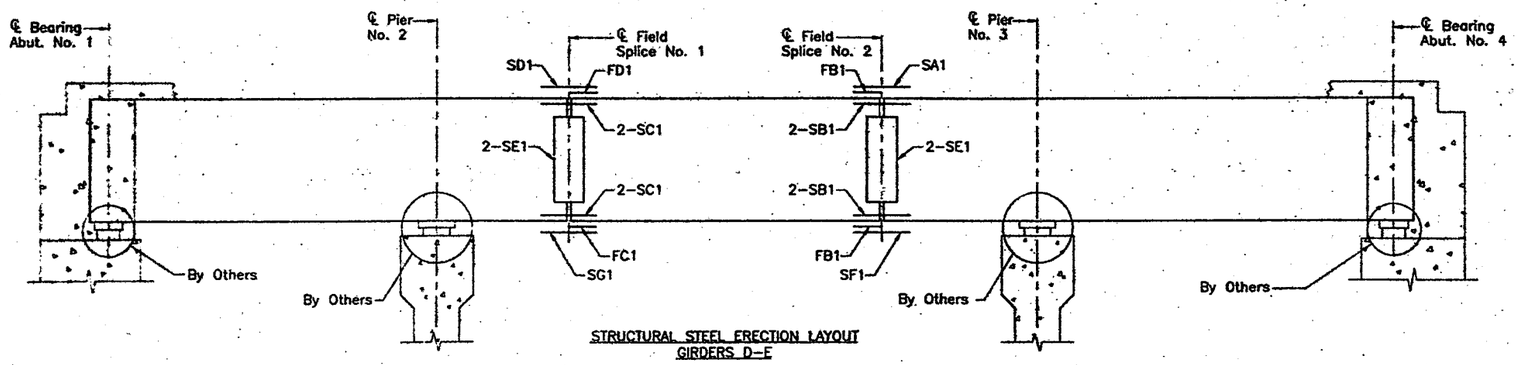
#2-053.731 L&R



PLAN



STRUCTURAL STEEL ERECTION LAYOUT
GIRDERS A-B-C



STRUCTURAL STEEL ERECTION LAYOUT
GIRDERS D-E

BILL OF WEIGHTS

	ITEM	EACH	TOTAL
Diaphragms:	52-DA1	387 lbs.	20,124 lbs.
	1-DB1	531 lbs.	531 lbs.
	1-DC1	535 lbs.	535 lbs.
	1-DD1	538 lbs.	538 lbs.
	1-DE1	542 lbs.	542 lbs.
	1-DF1	489 lbs.	489 lbs.
	1-DG1	490 lbs.	490 lbs.
	1-DH1	490 lbs.	490 lbs.
	1-DJ1	492 lbs.	492 lbs.
Field Bolts:			3,591 lbs.
	Total		27,822 lbs.
Field Splice No. 1 & 2, Girders A,B,C		573 lbs.	3,438 lbs.
Field Splice No. 1, Girders D,E		536 lbs.	1,072 lbs.
Field Splice No. 2, Girders D,E		605 lbs.	1,210 lbs.
Girders:	1-A1	111'-7 5/8	20,182 lbs.
	1-B1	107'-4 1/4	19,645 lbs.
	1-C1	103'-0 3/8	18,965 lbs.
	1-D1	98'-7 1/4	16,891 lbs.
	1-E1	94'-1 13/16	15,992 lbs.
	1-A2	97'-1 13/16	16,042 lbs.
	1-B2	97'-9 3/8	16,546 lbs.
	1-C2	95'-5 3/8	16,223 lbs.
	1-D2	94'-2 1/4	16,051 lbs.
	1-E2	94'-11 13/16	15,985 lbs.
	1-A3	111'-4 13/16	20,074 lbs.
	1-B3	113'-11 1/16	20,766 lbs.
	1-C3	119'-5 3/8	23,071 lbs.
	1-D3	123'-11 1/8	25,947 lbs.
	1-E3	126'-6 1/16	26,458 lbs.

FINAL
FOR CONSTRUCTION

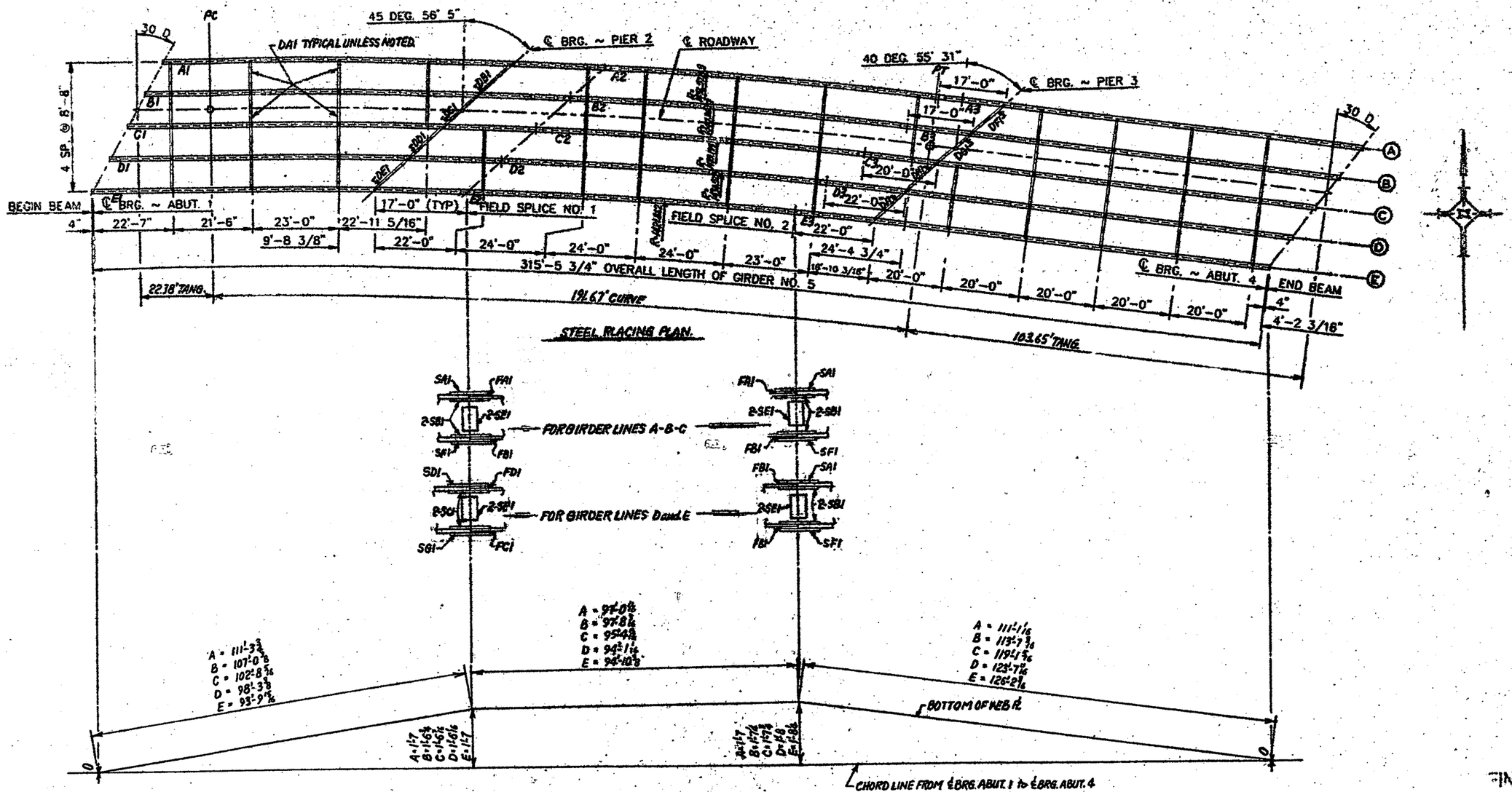
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DLR
DATE BY

CONTRACT NO.

DESCRIPTION
BILL OF WEIGHTS

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80098, ZIP 68501, PH. 402-479-1031

APPROVAL DATE 7-17-97	CONTRACTOR	INDUSTRIAL BUILDERS	
SCALE NONE OR NOTED	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 2)	
DESIGN NO.	LOCATION	BURLINGTON NORTHERN OVERHEAD BRY	
WELDS AS NOTED	CUSTOMER	NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
PAINT SEE NOTES	PROJECT	BSN-4017-002(041)053	COUNTY WILLIAMS
DRAWN 7-14-97 D. CLARK	STATION	124 + 43.6	ROADWAY 30 FT.
CHECKED	LOADING	HS25	SKEW VARIES
BRIDGE NO. 2-053.731R	SHEET NO. 1 OF 11		ORDER NO. 42148



NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DLR
DATE BY

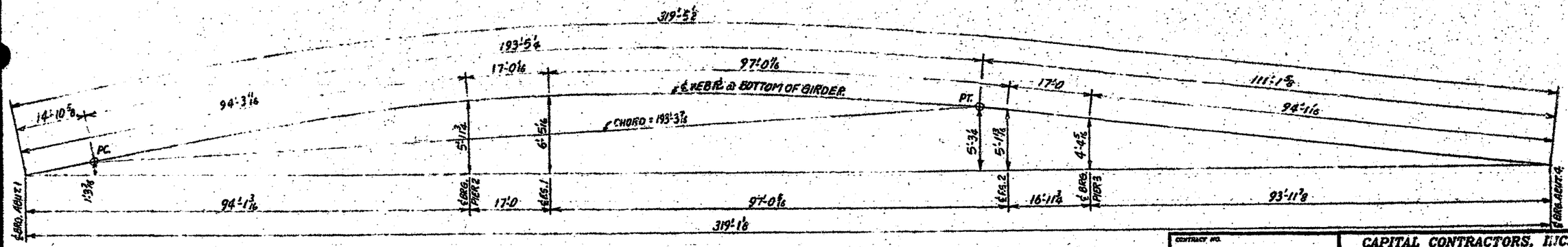
CONTRACT NO.

DESCRIPTION STEEL PLACING PLAN and BLOCKING DIAGRAM

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVED DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS		
G.R.	DESCRIPTION 2-SPAN W.P.G. BRIDGE (SITE 2)		
DRAWN BY —	LOCATION BURLINGTON NORTHERN OVERHEAD XING		
WELDS	OWNER NORTH DAKOTA DEPT. OF TRANS.		
PAINT	PROJECT NH-RNT-002(104) DASC	COUNTY WILLIAMS	
DRAWN Dp	STATION 12A+93.6	SKEW 30 FT.	
CHECKED DD	LOADING HS25	GRADE VARIES	
BRIDGE NO. 2-053.131R	SHEET NO. 8 OF 12	ORDER NO. 4914 W.	

FINAL

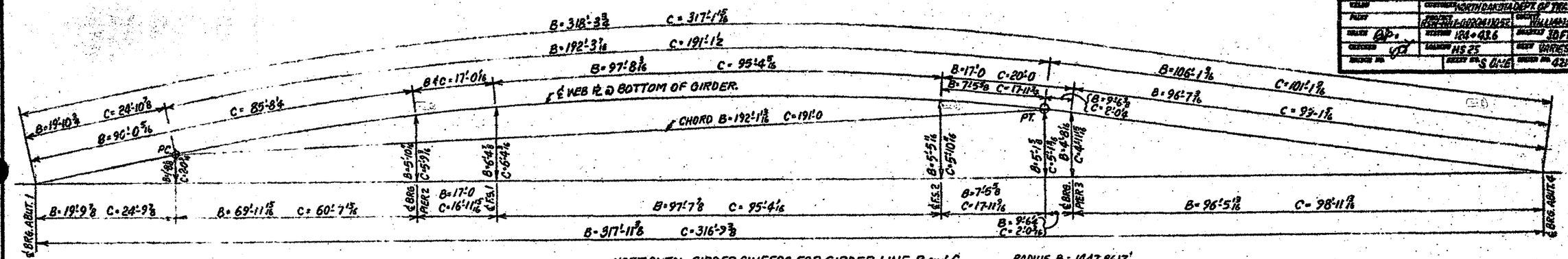


HORIZONTAL GIRDER SWEEPS FOR LINE A. RADIUS = 1456.5283'

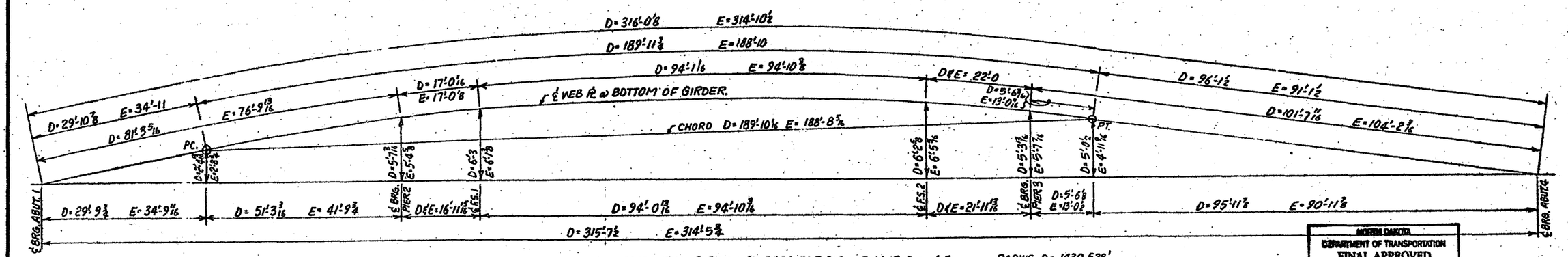
CONTRACT NO.	
DESCRIPTION	HORIZONTAL GIRDER SWEEPS.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVAL DATE	1-12-97	CONTRACTOR	INDUSTRIAL BUILDERS.
STR.	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 2)	
DESIGN NO.		PROJECT	BRIDGE REPLACEMENT ON INTERSTATE ON NORTHERN DIVERSION
STEEL		CONSTRUCTION	NORTH DAKOTA DEPT. OF TRANS.
PILING		PROJECT	BRIDGE-I-0090(113)52
DRAWN	GP.	STATION	124+43.6
CHECKED	GP.	LOADING	HS 25
DESIGN NO.		SHEET NO.	S 0-16
		DESIGN	WILLIAMS.
		SKEW	30 FT.
		SHEET	VARIES.
		DESIGN NO.	4214 W.



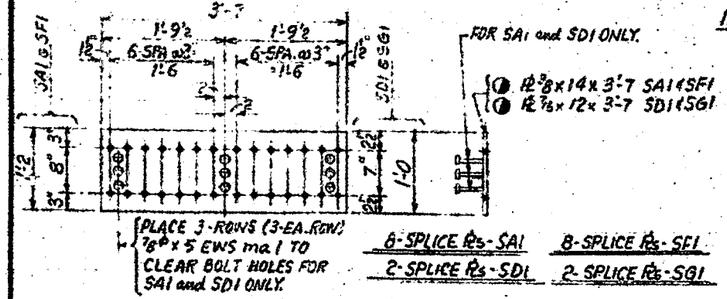
HORIZONTAL GIRDER SWEEPS FOR GIRDER LINE B and C. RADIUS B = 1447.8617'
RADIUS C = 1439.195'

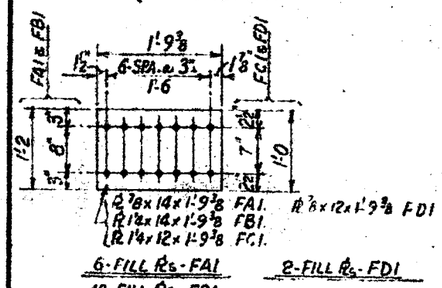


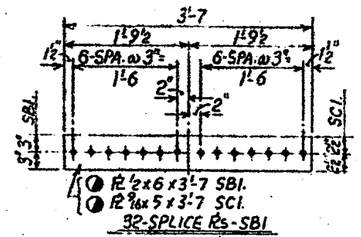
HORIZONTAL GIRDER SWEEPS FOR GIRDER LINE D and E. RADIUS D = 1430.528'
RADIUS E = 1421.862'

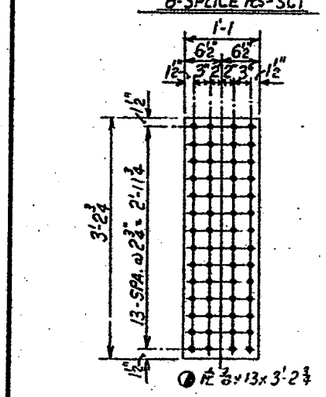
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
1/28/97 DATE BY DLR

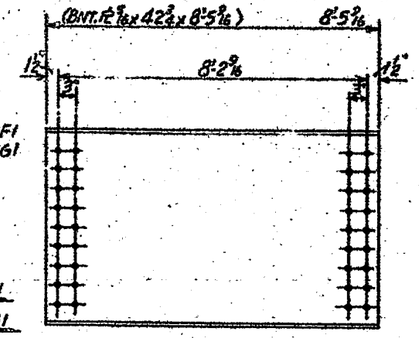
FINAL
FOR CONSTRUCTION

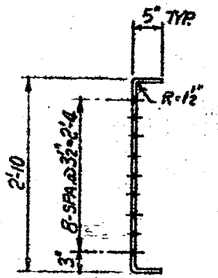


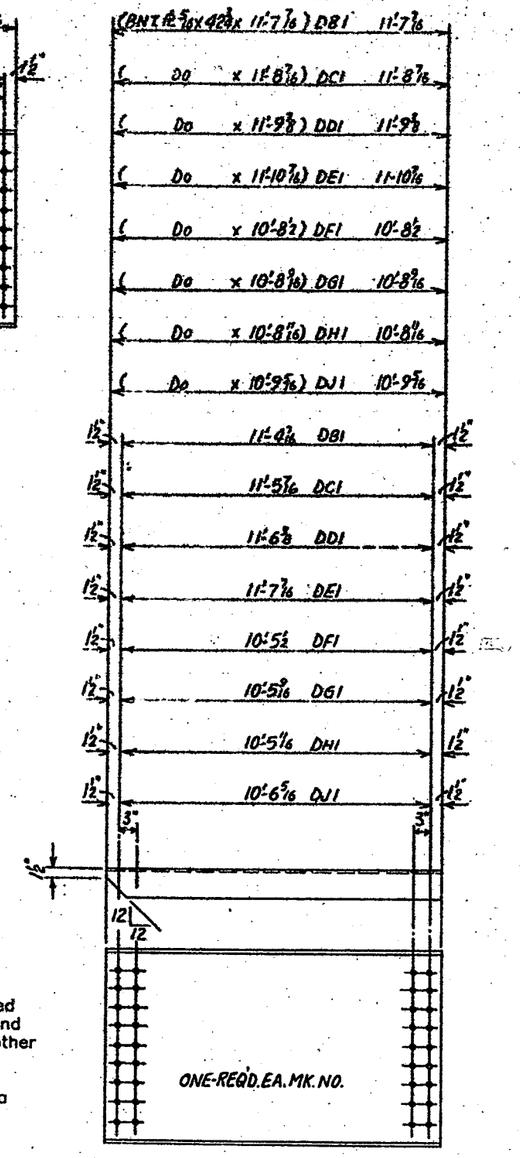












BILL OF MATERIAL

No. Pieces	Mark	Description	Length Feet	Length Inches	Weight Each	Remarks
8	SA1	SPLICE PLATES				
8		PL ⅜ x 14	3	7		◑ M270 GR.50 T2
72	ma1	⅞ϕ x 5 EWS				
8	SF1	SPLICE PLATES				
8		PL ⅜ x 14	3	7		◑ M270 GR.50 T2.
2	SD1	SPLICE PLATES				
2		PL ½ x 12	3	7		◑ M270 GR.50 T2.
18	ma1	⅞ϕ x 5 EWS				
2	SG1	SPLICE PLATES				
2		PL ½ x 12	3	7		◑ M270 GR.50 T2.
		SPLICE PLATES ◑ M270 GR.50 T2.				
32	SB1	PL ½ x 6	3	7		
8	SC1	PL ⅜ x 5	3	7		
20	SE1	PL ⅞ x 13	3	2¾		
		FILL PLATES M270 GR.36				
6	FA1	PL ⅞ x 14	1	9⅜		
10	FB1	PL ½ x 14	1	9⅜		
2	FC1	PL ¼ x 12	1	9⅜		
2	FD1	PL ⅞ x 12	1	9⅜		
		BENT PLATE DIAPHRAGMS M270 GR.36.				
52	DA1	BNT PL ⅝ x 42¾	8	5 9/16		
ONE	DB1	Do	11	7 7/16		
ONE	DC1	Do	11	8 7/16		
ONE	DD1	Do	11	9⅜		
ONE	DE1	Do	11	10 7/16		
ONE	DF1	Do	10	8½		
ONE	DG1	Do	10	8 9/16		
ONE	DH1	Do	10	8 9/16		
ONE	DJ1	Do	10	9 9/16		

NOTES

All Steel [illegible] AASHTO M270 [illegible] unless noted. Steel marked thus ◑ shall conform to the requirements of A.A.S.H.T.O. M270 Grade 50T2 and shall meet the logitudinal Charpy V–notch test of 15 ft. lbs. @ 40° F. All other steel shall be AASHTO M270 Grade 36.

Web plates shall be cut to camber using the "Automatic Tourch" with a mechanical guide. See shop drawing details.

Flange plate to web plate welds shall be by the "Automatic Submerged Arc Welder". All other welds shall be by the "Submerged Arc Process," "Flux–Cored Arc Process," or by the Shielded Metal Arc Process," using E7018, or E7028 electrodes.

All Welding shall be done in accordance with the Standard Specifications and shall conform to the American Welding Society and A.A.S.H.T.O. joint publication D1.5–95 and approved Capital Steel Welding procedures.

All surfaces to be painted shall be blast–cleaned in accordance with Steel Structures Painting Council Specification SSPC–SP10. Apply one coat of Inorganic Zinc–Silicate primer with a dry film thickness a minimum of 3.0 mils and a finish coat of Alphatic Polyurethane (See Specifications).

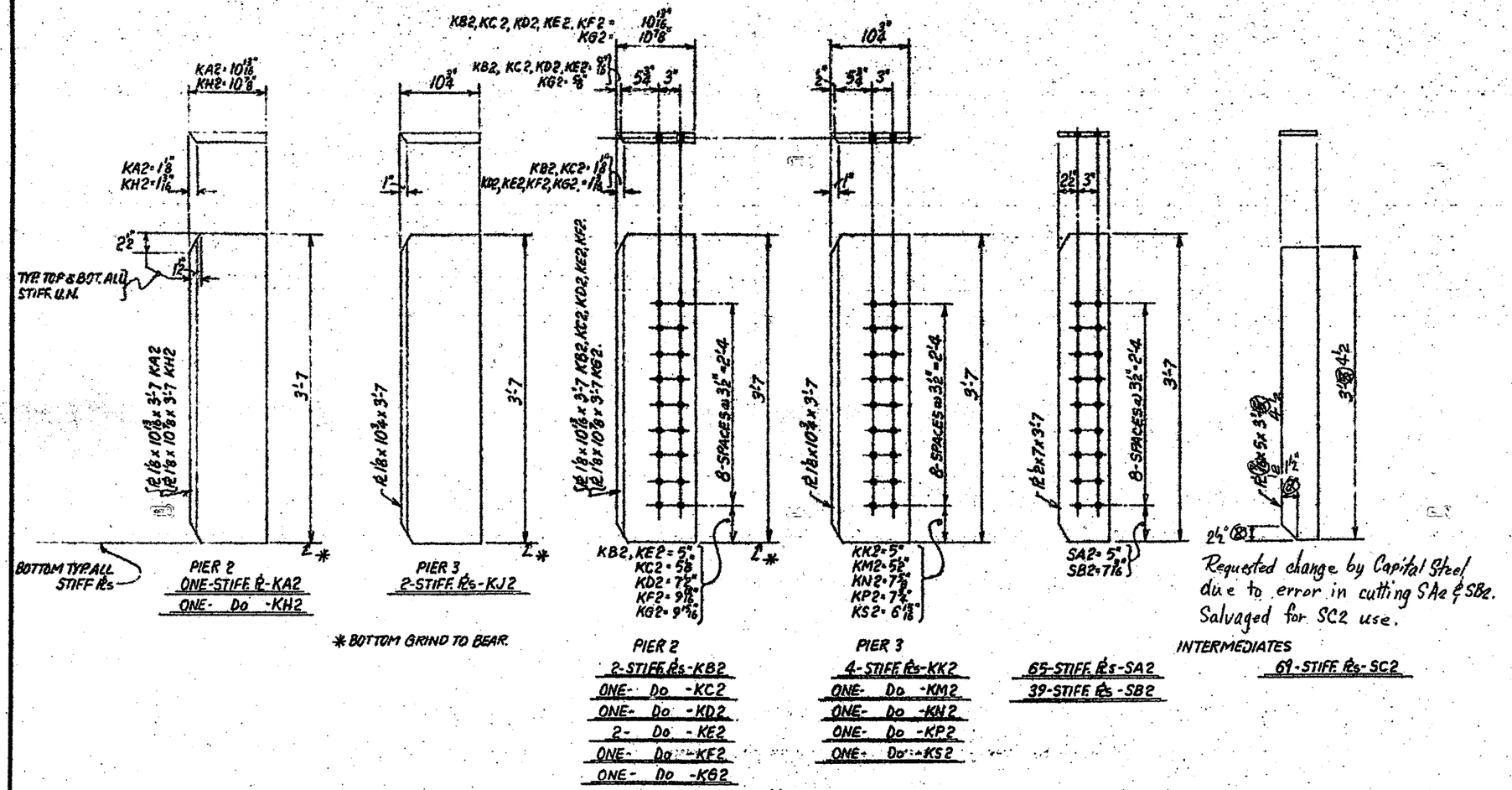
FINAL
FOR CONSTRUCTION

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/07 DLR
DATE BY

CONTRACT NO.
DESCRIPTION SPLICE PLATES NOTES and DIAPHRAGMS.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 12TH STREET, BOX 80608, LINCOLN, NE 68501, PH. 402-476-1521

APPROVAL DATE 7-17-97 CONTRACTOR INDUSTRIAL BUILDERS.
S.E. ⅛ϕ 16 STRUCTURE 3-SPAN P.P.G. BRIDGE (SITE 2)
DESIGN NO. – LOCATION WILLISTON, NORTHERN OVERHEAD RAIL
WELDS OWNER NORTH DAKOTA DEPT. OF TRANS.
PAGE SEE NOTES PROJECT BSN-RAIL-002(041)WSB COUNTY WILLIAMS.
DRAWN [illegible] STATION 124+42.6 SKEW 30 FT.
CHECKED [illegible] LOCATION N5°24' SIZE VARIES
BRIDGE NO. 2-055131R SHEET NO. ONE ORDER NO. 4214-W.



Requested change by Capital Steel due to error in cutting SA2 & SB2. Salvaged for SC2 use.

BILL OF MATERIAL						
NO. PIECES	MARK	DESCRIPTION	LENGTH FT.	LENGTH IN.	WT. EACH	REMARKS
		STIFFENER PLATES - A12 1D OR 50				
ONE	KA2	PL 1/8 x 10 13/16	3	7 1/2	5	
ONE	KH2	PL 1/8 x 10 7/8	3	7 1/2	5	
2	KB2	PL 1/8 x 10 3/4	3	7 1/2	5	
2	KB2	PL 1/8 x 10 7/8	3	7 1/2	5	
ONE	KC2	PL 1/8 x 10 13/16	3	7 1/2	5	
ONE	KD2	PL 1/8 x 10 7/8	3	7 1/2	5	
2	KE2	PL 1/8 x 10 3/4	3	7 1/2	5	
ONE	KF2	PL 1/8 x 10 13/16	3	7 1/2	5	
ONE	KG2	PL 1/8 x 10 7/8	3	7 1/2	5	
4	KK2	PL 1/8 x 10 3/4	3	7 1/2	5	
ONE	KM2	PL 1/8 x 10 3/4	3	7 1/2	5	
ONE	KN2	PL 1/8 x 10 7/8	3	7 1/2	5	
ONE	KP2	PL 1/8 x 10 3/4	3	7 1/2	5	
ONE	KS2	PL 1/8 x 10 7/8	3	7 1/2	5	
65	SA2	PL 1/2 x 7	3	7	-	
39	SB2	PL 1/2 x 7	3	7	-	
69	SC2	PL 1/2 x 5	3	4 1/2	-	

FINAL
FOR CONSTR...

FIELD BOLT LIST

NUMBER	DIA.	DESCRIPTION	LGTH.	CONNECTION	ADD.	SHIP
224	7/8ø	A325-1 Hvy. Hex. Hd., Hex Nut	4	Top Flange Girder Field Splice No. 1, Girders A,B,C,D,E	11	235
				Top Flange Girder Field Splice No. 2, Girders A,B,C		
336	7/8ø	A325-1 Hvy. Hex. Hd., Hex Nut	4 1/2	Top Flange Girder Field Splices No. 2, Girders D,E	19	355
				Bottom Flange Girder Field Splices No. 1 & 2		
560	7/8ø	A325-1 Hvy. Hex. Hd., Hex Nut	2 1/2	Girder Web Field Splice	30	590
288	7/8ø	A325-1 Hvy. Hex. Hd., Hex Nut	2 1/2	Pier Stiffeners to Diaphragm	17	305
1,872	7/8ø	A325-1 Hvy. Hex. Hd., Hex Nut	2 1/2	Intermediate Stiffeners to Diaphragm	98	1,970
3,280	7/8ø	F436-1 Structural Washers		One at each 7/8ø Bolt	175	3,455

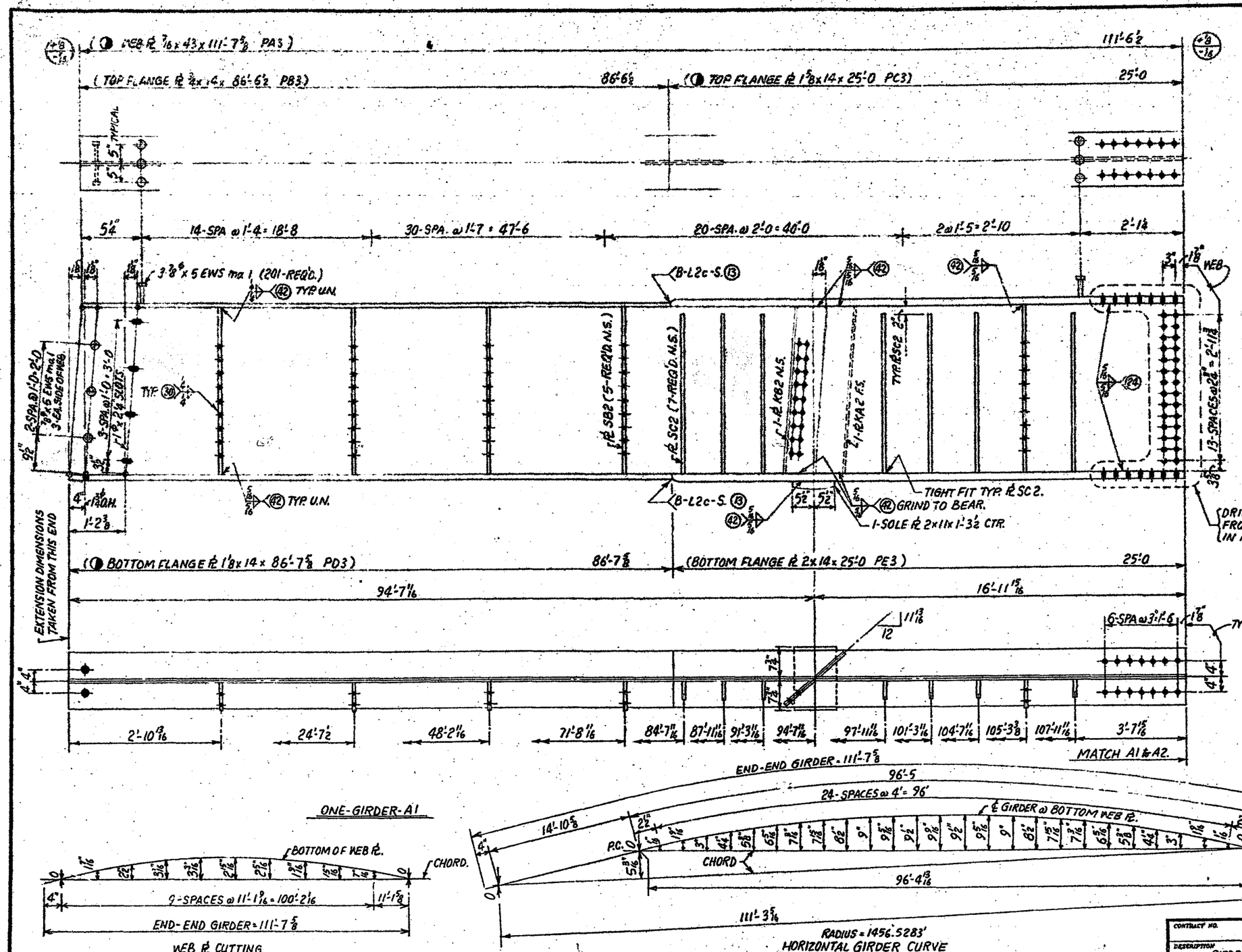
Total Weight – 3,591 lbs.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DLR
DATE BY

CONTRACT NO.
DESCRIPTION: STIFFENER PLATES.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS		
S.N. 12 & 13	DESCRIPTION 3-SPAN K.P.G. BRIDGE (SITE 2)		
SHEET NO. -	LOCATION BURLINGTON NORTHBOUND ON-RAMP		
WELDS	OWNER NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT BRN-NHN7-002(041)VA	CHECKED WILLIAMS	
DRAWN	STATION 124+43.6	SCHEDULE 20 FT.	
CHECKED	LOADING HS 25	SKEW VARIES	
BRIDGE NO. 2-053-731R	ORDER NO. 2	ORDER NO. 4-2-2-1-1	



BILL OF MATERIAL

No. Pieces	Mark	Description	Length Feet	Length Inches	Add	Remarks
ONE	A1	GIRDER				
1	PA3	PL 7/16 x 43	111	7 5/8		(1) M270 GR. 50 T2.
1	PB3	PL 3/4 x 14	86	6 1/2		M270 GR. 50.
1	PC3	PL 1 5/8 x 14	25	0		(1) M270 GR. 50 T2.
1	PD3	PL 1 1/8 x 14	86	7 5/8		(1) M270 GR. 50 T2.
1	PE3	PL 2 x 14	25	0		M270 GR. 50.
201	mat'l	3/8" x 5 E.W.S.				
1		SOLE PL 2 x 11	1	3 1/2		
1	KA2	PL 1 1/8 x 10 15/16	3	7 1/2	1/2	M270 GR. 50.
1	KB2	PL 1 1/8 x 10 5/8	3	7 1/2	1/2	M270 GR. 50.
5	SB2	PL 1/2 x 7	3	7		M270 GR. 50.
7	SC2	PL 3/8 x 5	3	5		M270 GR. 50.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/28/97 DLR
DATE BY

FINAL
FOR CONSTRUCTION

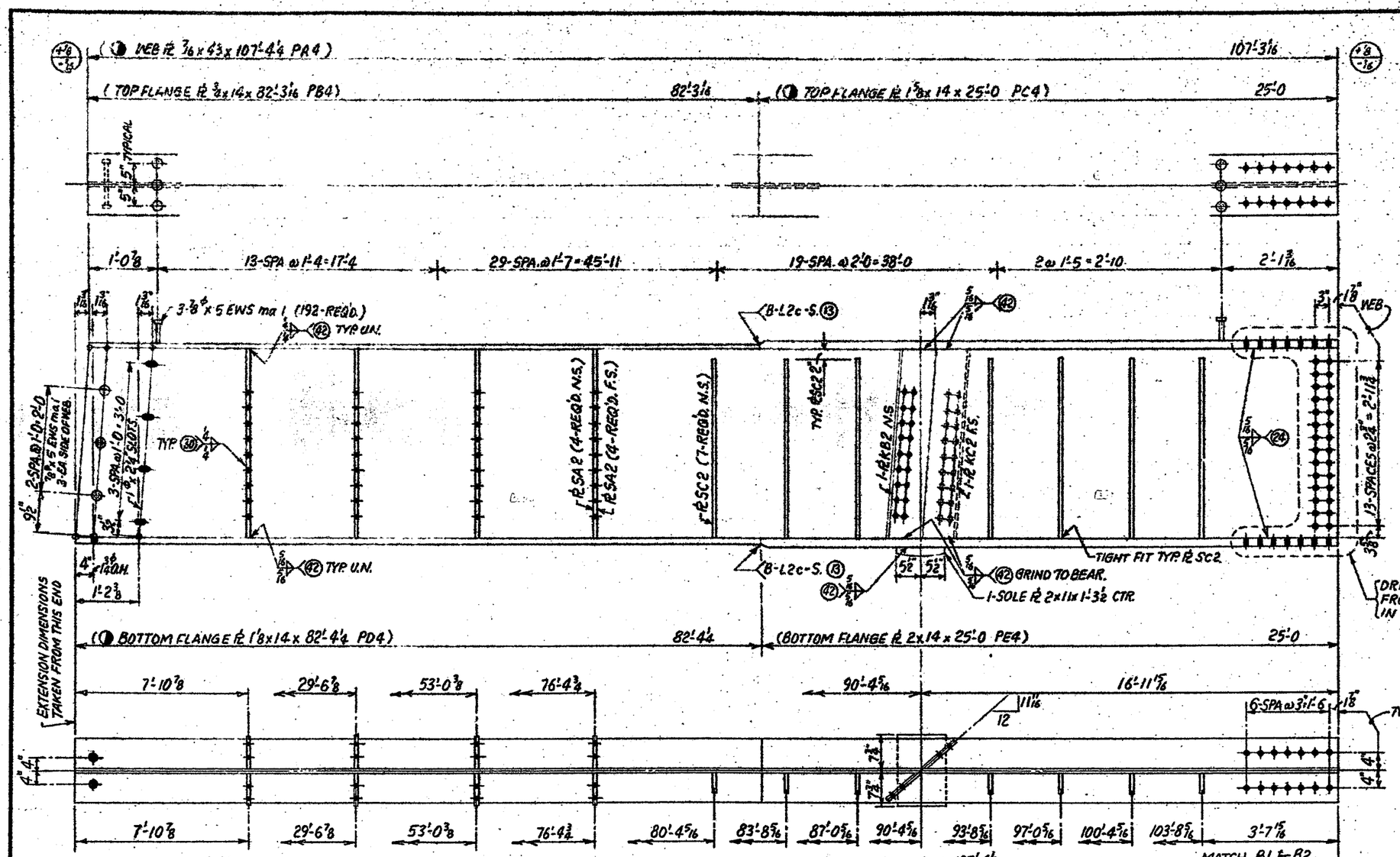
FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 8TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1021

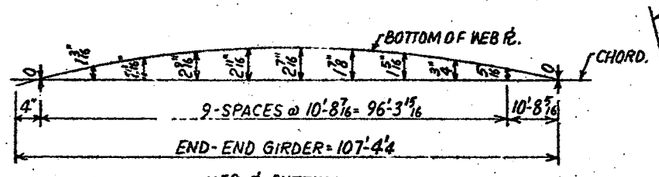
APPROVAL DATE 7-17-97		CONTRACTOR INDUSTRIAL BUILDERS.	
O.S. 15 & O.N. 16	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2.)		
DESIGN NO. -	LOCATION BURLINGTON NORTHERN OVERHEAD BR.		
WELDS AS NOTED	CUSTOMER NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT BRN-1017-002(041)052	COUNTY WILLIAMS.	
DRAWN DP.	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED GO	LOADING HS25	GRADE VARIES.	
BRIDGE NO.	SHEET NO. 3	ORDER NO. 4214-W.	

CONTRACT NO.

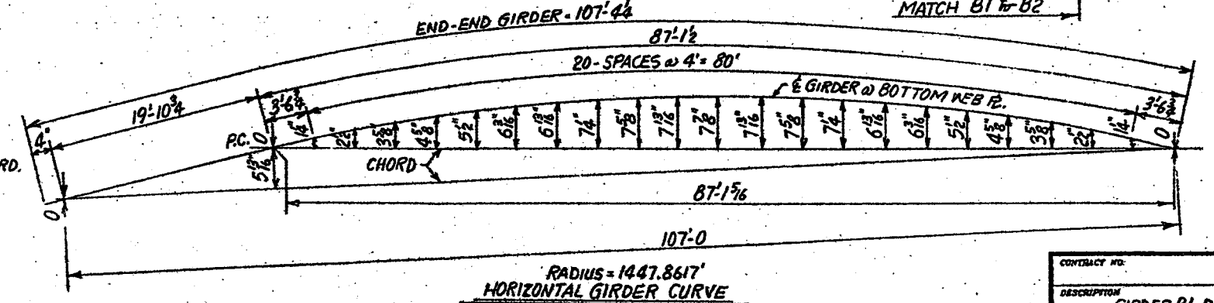
DESCRIPTION GIRDER A1 DETAILS.



ONE-GIRDER-B1



WEB PL CUTTING.



HORIZONTAL GIRDER CURVE

BILL OF MATERIAL

ONE	B1	GIRDER				
1	PA4	PL 3/16 x 43	107	4 1/4		(1) M270 GR. 50 T2.
1	PB4	PL 3/4 x 14	82	3/16		M270 GR. 50.
1	PC4	PL 1 5/8 x 14	25	0		(1) M270 GR. 50 T2.
1	PD4	PL 1 3/8 x 14	82	4 1/4		(1) M270 GR. 50 T2.
1	PE4	PL 2 x 14	25	0		M270 GR. 50.
198	mat	7/8 φ x 5 E.W.S.				
1		SOLE PL 2 x 11	1	3 1/2		
1	KB2	PL 1 3/8 x 10 7/16	3	7 1/2	1/2	M 270 GR. 50
1	KC2	PL 1 3/8 x 10 7/16	3	7 1/2	1/2	M 270 GR. 50.
8	SA2	PL 1/2 x 7	3	7		M 270 GR. 50.
7	SC2	PL 3/16 x 5	3	5		M 270 GR. 50.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/26/97 DLR
DATE BY

FINAL

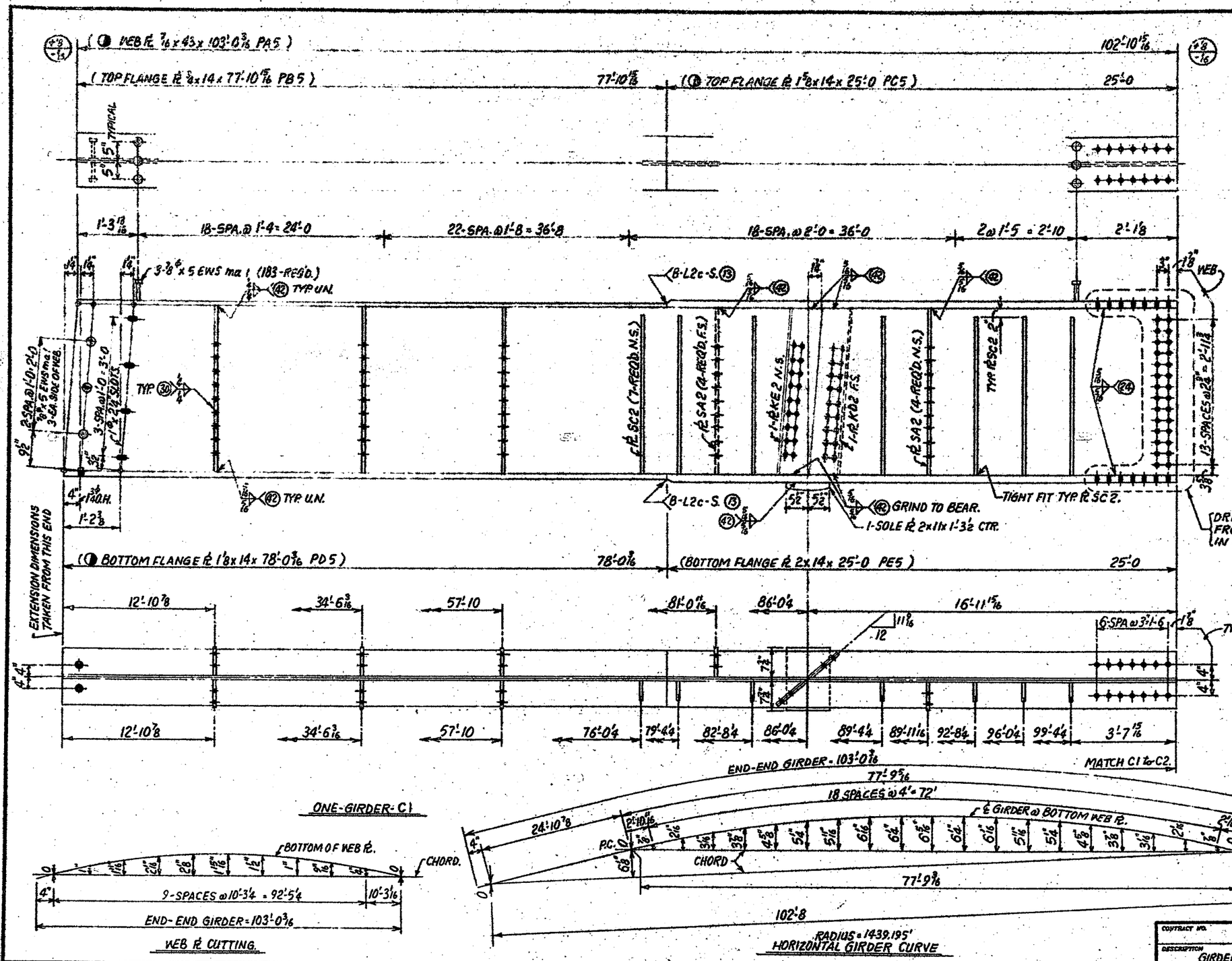
FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVED DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS.		
D.N. 7/8 φ U.N. 1/16	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2.)		
DESIGN NO. -	PROJECT BURLINGTON NORTHERN OVERHEAD BRI		
WELDS AS NOTED	CONTROL NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT BRF-0-0220(41)052	ENGINEER WILLIAMS.	
DRAWN DP.	STATION 184+43.6	SHEET 3D FE	
CHECKED KD	SCALE NS 25	SLOPE VARIES.	
DESIGN NO.	SHEET NO. 4	CAPITAL NO. 4214-W.	

CONTRACT NO:

DESCRIPTION GIRDER B1 DETAILS.



BILL OF MATERIAL

No. of Pieces	Mark	Description	Length	Weight	Grade	Remarks
ONE	C1	GIRDER				
1	PA5	PL 7/16 x 43	103'-0 3/16			M270 GR. 50 T2
1	PB5	PL 3/8 x 14	77	10 15/16		M270 GR. 50.
1	PC5	PL 1 5/8 x 14	25	0		M270 GR. 50 T2
1	PD5	PL 1 1/8 x 14	78	0 3/16		M270 GR. 50 T2
1	PE5	PL 2 x 14	25	0		M270 GR. 50.
189	ma1	3/8" x 5 E.W.S.				
1		SOLE PL 2 x 11	1	3 1/2		
1	KO2	PL 1 1/8 x 10 1/2	3	7 1/2	1/2	M270 GR. 50.
1	KE2	PL 1 1/8 x 10 1/2	3	7 1/2	1/2	M270 GR. 50.
8	SA2	PL 1/2 x 7	3	7		M270 GR. 50.
7	SC2	PL 7/16 x 5	3	5		M270 GR. 50.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/16/97 DATE — DLR BY

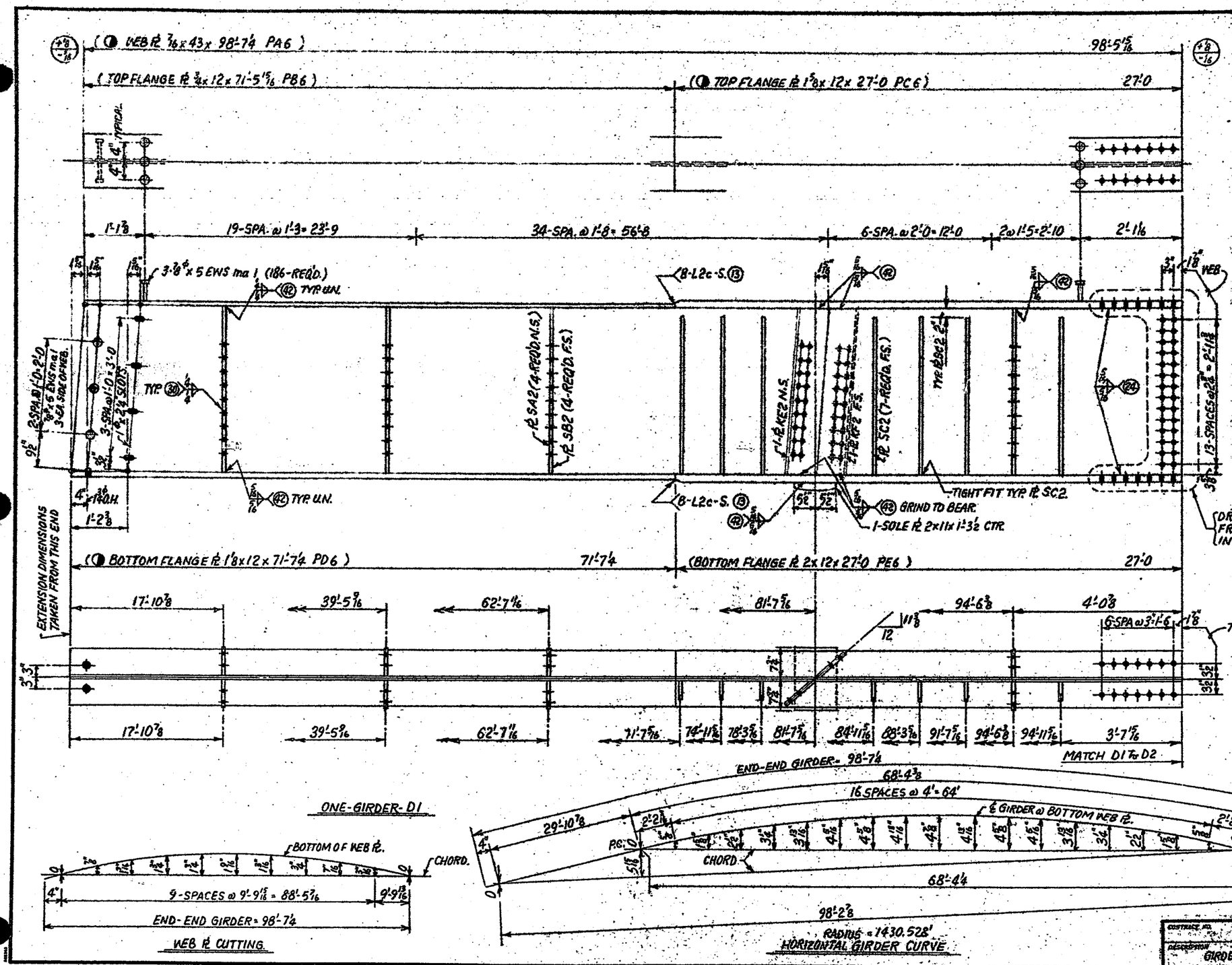
FINAL
FOR CONSTRUCTION

FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS		
DATE 10-14-96	DESCRIPTION 3-SPAN W.P.B. BRIDGE (SITE 2)		
DESIGN NO. -	LOCATION BUILD NORTH NORTHERN OVERHEAD ST		
SCALE AS NOTED	OWNER NORTH DAKOTA DEPT OF TRANS.		
FILE SEE NOTES	PROJECT RSH-RXT-0020(108)E	COUNTY WILLIAMS	
DRAWN DP	STATION 124+41.6	ROADWAY 30 FT.	
CHECKED DP	MARKED HS 25	SKEW VARIES.	
DESIGN NO.	SHEET NO. 5	GIRDER NO. 4216-W.	

CONTRACT NO.
DESCRIPTION GIRDER C1 DETAILS.



BILL OF MATERIAL

No. Pieces	Mark	Description	Length Ft.	Length In.	Length Eth.	Remarks
ONE	D1	GIRDER				
1	PF6	PL 7/16 x 43	98	7¼		① M270 GR. 50 T2
1	PB6	PL ¾ x 12	71	5 15/16		M270 GR. 50.
1	PC6	PL 1 5/8 x 12	27	0		① M270 GR. 50 T2.
1	PD6	PL 1 7/8 x 12	71	7¼		① M270 GR. 50 T2.
1	PE6	PL 2 x 12	27	0		M270 GR. 50.
192	mat	7/8" x 5 E.W.S.				
1		SOLE PL 2 x 11	1	3½		
1	KE2	PL 1 7/8 x 10 3/4	3	7½	½	M270 GR. 50.
1	KF2	PL 1 7/8 x 10 3/4	3	7½	½	M270 GR. 50.
4	SA2	PL ¾ x 7	3	7		M270 GR. 50.
4	SB2	PL ¾ x 7	3	7		M270 GR. 50.
7	SC2	PL 7/16 x 5	3	5		M270 GR. 50.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/28/97 DATE BY DLR

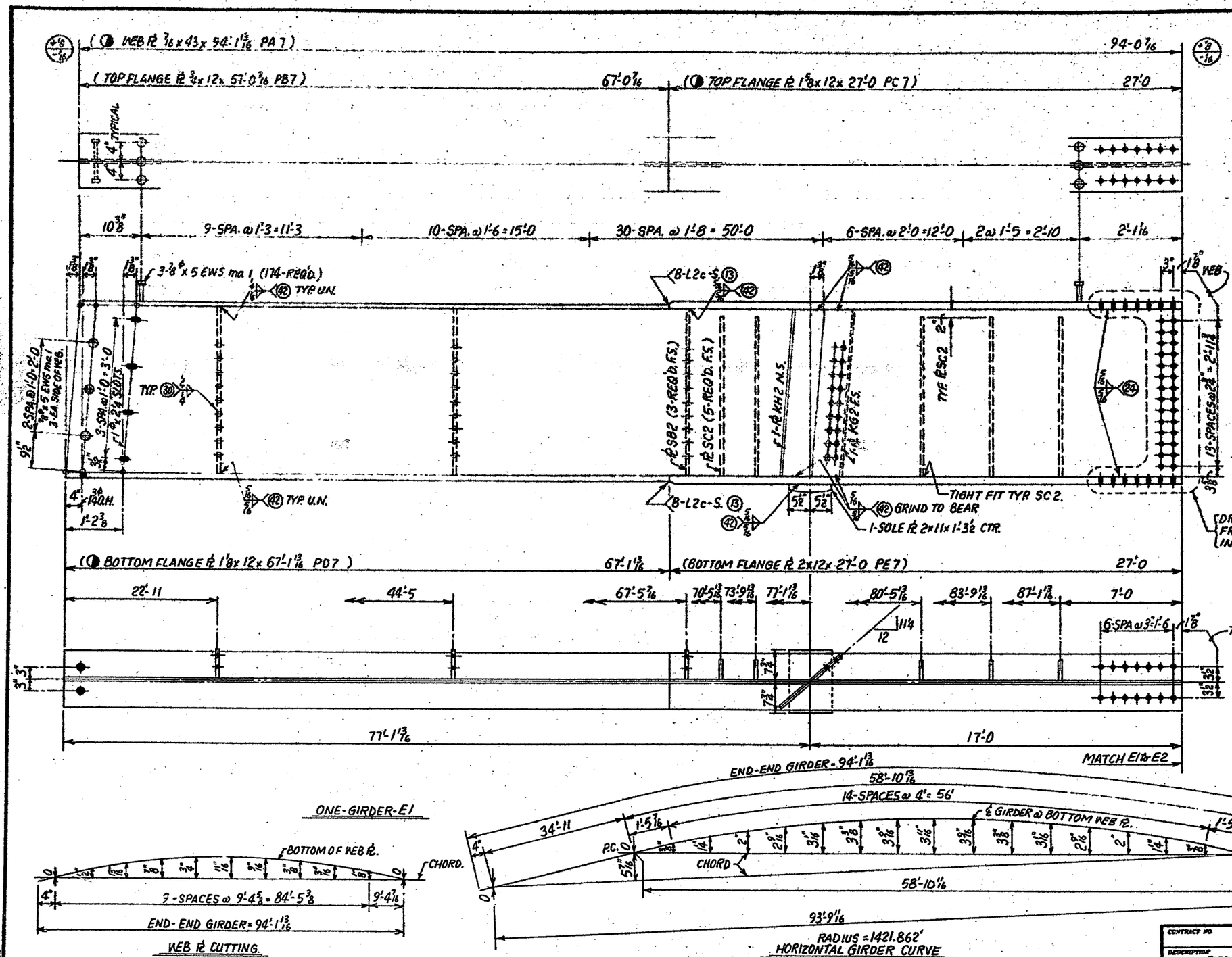
FINAL
FOR CONSTRUCTION

FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVED DATE 7-11-97	CONTRACTOR INDUSTRIAL BUILDERS		
07/16/97	STRUCTURE 3-SPAN W/PB BRIDGE (SITE 2)		
SHEET NO. -	LOCATION WILLISTON NORTHBOUND OVERHEAD		
SCALE AS NOTED	CONTROL NORTH DAKOTA DEPT. OF TRANS.		
PLAN SEE NOTES	PROJECT H.S.P.-N-D029(013)052	COUNTY WILLIAMS	
DRAWN DP	STATION 128+48.6	SHEET 30 OF	
CHECKED DP	STATION HS 25	BRIDGE DWFS.	
REVISED NO.	SHEET NO. 6	CENTER NO. 4201.02	

CONTRACT NO.
DESCRIPTION GIRDER D1 DETAILS.



BILL OF MATERIAL

NO. REQ'D	MARK	DESCRIPTION	LENGTH FT.	LENGTH IN.	ACCD	REMARKS
ONE	E1	GIRDER				
1	PA7	PL 7/16 x 43	94	1 13/16		◑ M270 GR. 50 T2.
1	PB7	PL 3/4 x 12	67	0 7/16		M270 GR. 50.
1	PC7	PL 1 5/8 x 12	27	0		◑ M270 GR. 50 T2.
1	PD7	PL 1 1/8 x 12	67	1 13/16		◑ M270 GR. 50 T2.
1	PE7	PL 2 x 12	27	0		M270 GR. 50.
180	ma1	7/8φ x 5 E.W.S.				
1		SOLE PL 2x11	1	3 1/2		
1	KH2	PL 1 1/8 x 10 3/8	3	7 1/2	1/2	M270 GR. 50.
1	KH2	PL 1 1/8 x 10 3/8	3	7 1/2	1/2	M270 GR. 50.
3	SB2	PL 1/2 x 7	3	7		M270 GR. 50.
5	SC2	PL 7/16 x 5	3	5		M270 GR. 50.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DLR
DATE BY

FINAL
FOR CONSTRUCTION

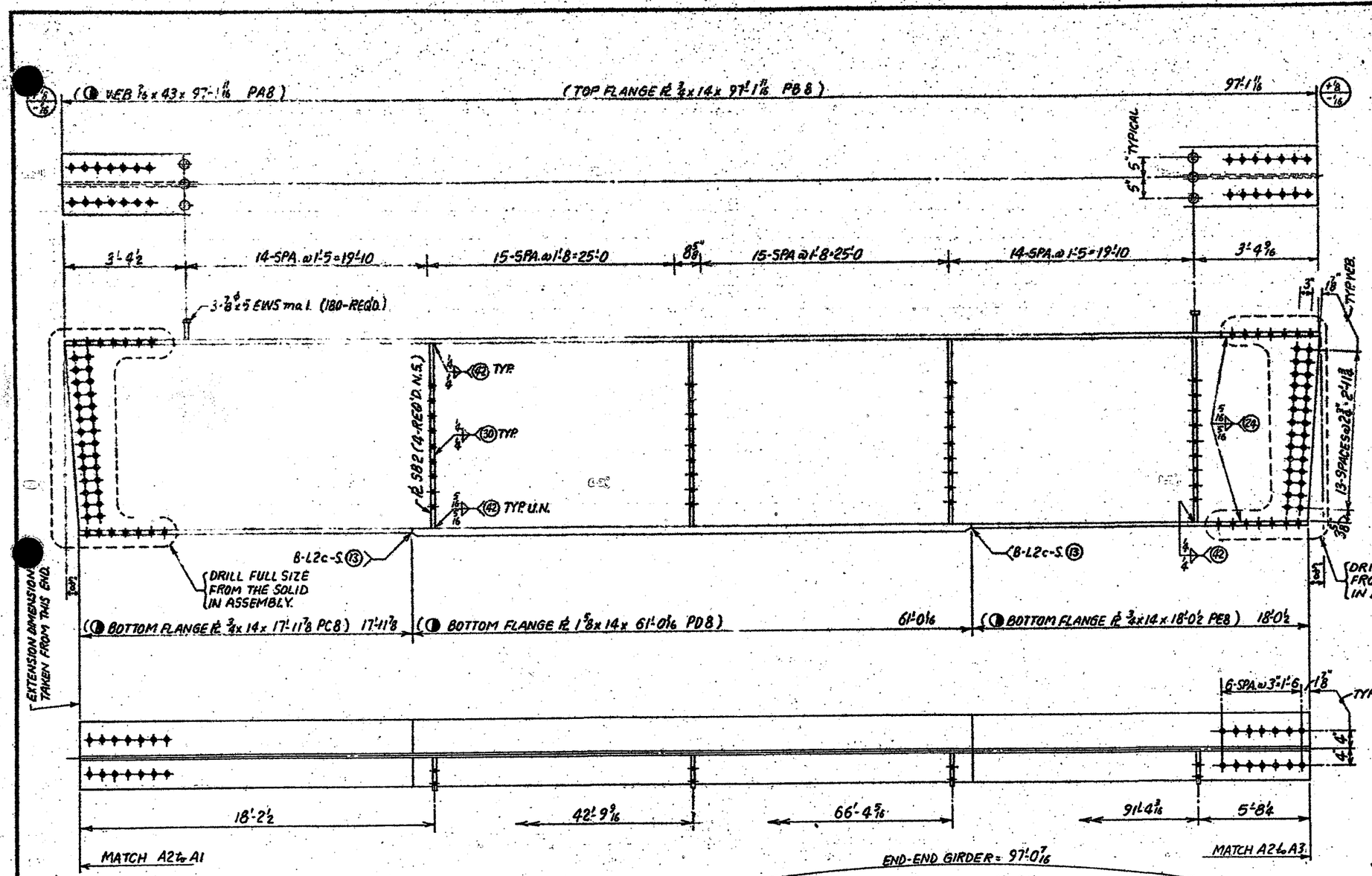
FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

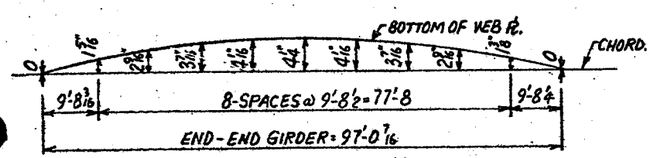
APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS,		
0.10.16	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2.)		
DESIGN NO. -		RAILROAD BURLINGTON NORTHERN OVERHEAD	
WELDS AS NOTED	CONTRACTOR NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT BRF-R(17)-0020(41) WSP	COUNTY WILLIAMS.	
DRAWN DP.	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED DCP	ROUTE NO. US 85	SKEW VARIES.	
BRIDGE NO.	SHEET NO. 7	GIRDER NO. 4214 W.	

CONTRACT NO.

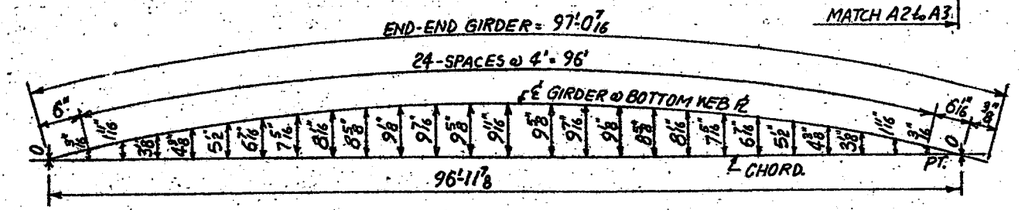
DESCRIPTION GIRDER E1 DETAILS.



ONE-GIRDER-A2



WEB PL CUTTING.



RADIUS = 1456.5283'

HORIZONTAL GIRDER CURVE

BILL OF MATERIAL

ONE	A2	GIRDER				
1	PA8	PL 7/16 x 43	97	1 11/16		M216 GR. 50 T2
1	PB8	PL 3/4 x 14	97	1 11/16		M270 GR. 50
1	PC8	PL 3/4 x 14	17	11 7/8		M270 GR. 50 T2
1	PD8	PL 1 5/8 x 14	61	0 1/16		M270 GR. 50 T2
1	PE8	PL 3/4 x 14	18	0 1/2		M270 GR. 50 T2
180	mat'l	7/8" x 5 EWS				
4	SB2	PL 1/2 x 7	3	7		M270 GR. 50

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/28/97 DLB
DATE BY

FINAL
FOR CONSTRUCTION

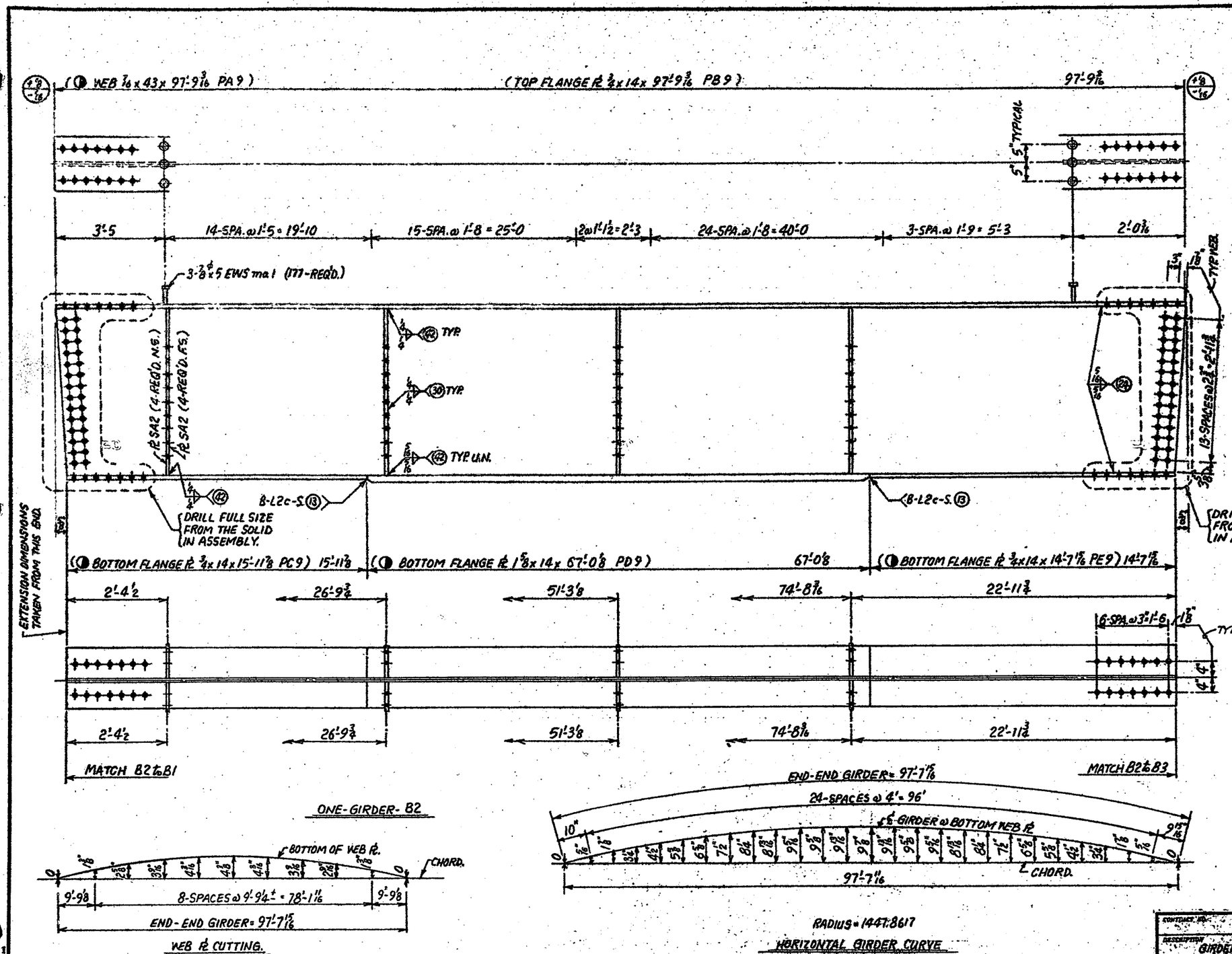
FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 66th STREET, BOX 80868, 402-466-1231

APPROVAL DATE 7-17-97	CONTRACTOR	INDUSTRIAL BUILDERS	
C.S.S. 7/8 ø 18	STRUCTURE	3-SPAN W.P.G. BRIDGE (SITE 2.)	
DRAWN BY —	PROJECT	BURLINGTON NORTHERN OVERHEAD BRIDGE	
WELDS AS NOTED	OWNER	NORTH DAKOTA DEPT. OF TRANS.	
PAINT SEE NOTES	PROJECT	BRN-1171-002 (04) 124	DESIGNED WILLIAMS
DRAWN DLB	STATION	124+43.6	SCALE 50 FT.
CHECKED DLB	LOCATION	HS 25	GRID VARIES
BRIDGE NO.	SHEET NO.	8.	DRAWING NO. 4214 N

CONTRACT NO.

DESCRIPTION GIRDER A2 DETAILS.



BILL OF MATERIAL

ONE	B2	GIRDER				
1	PA9	PL 7/16 x 43	97	9 3/16		M270 GR. 50 T2
1	PB9	PL 3/4 x 14	97	9 3/16		M270 GR. 50
1	PC9	PL 3/4 x 14	15	11 7/8		M270 GR. 50 T2
1	PD9	PL 1 5/8 x 14	67	0 1/8		M270 GR. 50 T2
1	PE9	PL 3/4 x 14	14	7 15/16		M270 GR. 50 T2
177	mat	3/8" x 5 EWS				
8	SA2	PL 1/2 x T	3	7		M270 GR. 50

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION FINAL APPROVED DRAWING 7/23/97 DLR

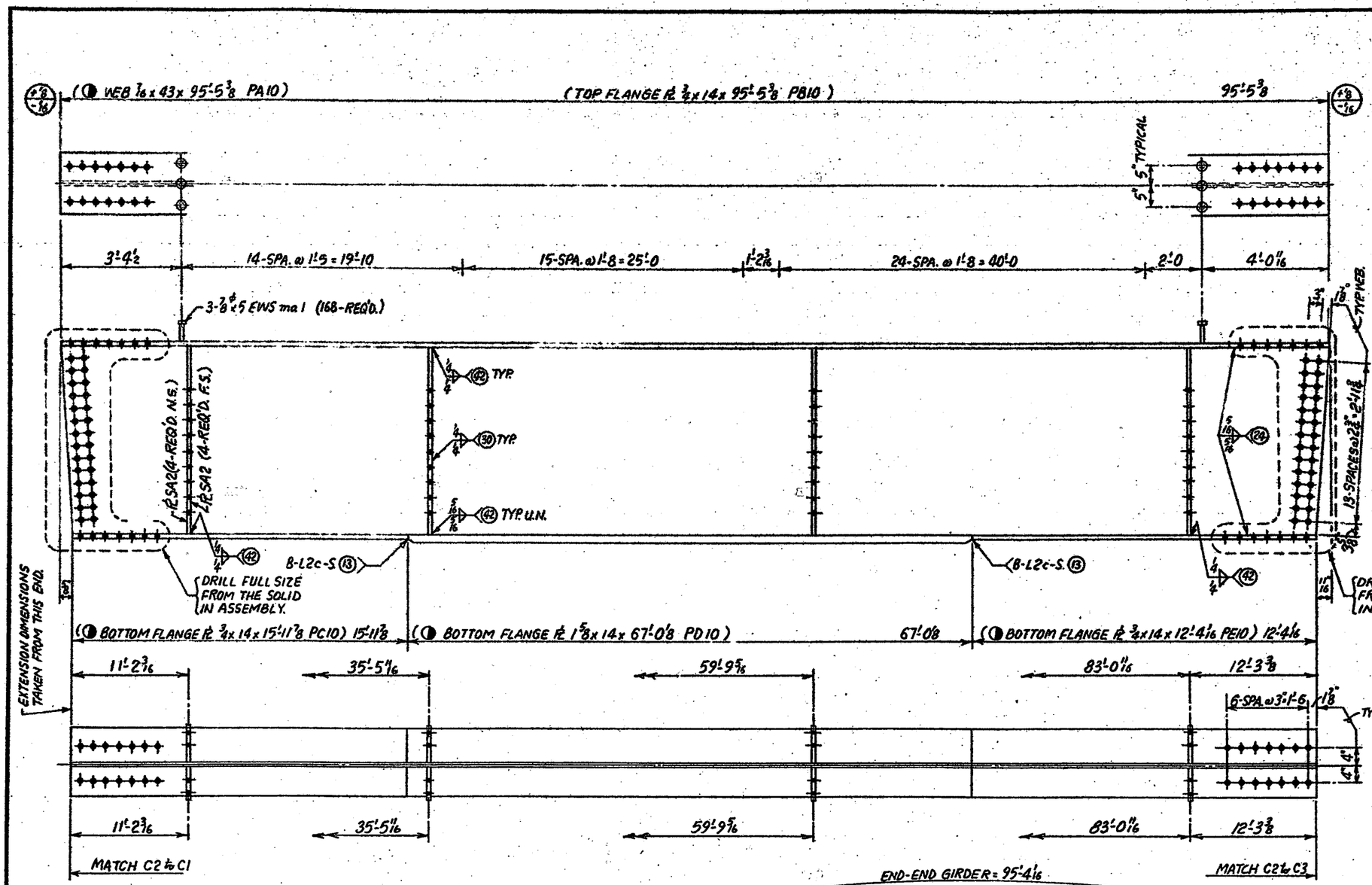
FINAL FOR CONSTRUCTION

FOR NOTES SEE SHEET NO. ONE

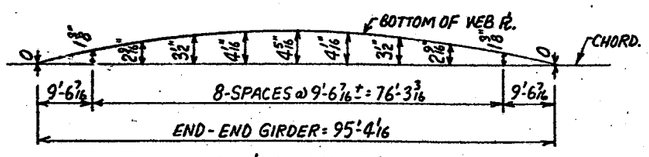
CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS		
C.S.C. 7/16	DESCRIPTION 3-SPAN WING BRIDGE (SITE 2)		
DRAWN BY —	[illegible] NORTH DAKOTA DEPT. OF TRANSP.		
SCALE AS NOTED	CONTRACT NORTH DAKOTA DEPT. OF TRANSP.		
FILED SEE NOTES	PROJECT [illegible]	COUNTY WILLIAMS	
DRAWN BYR	STATION 124+93.6	SHEET SHEET	
CHECKED DLR	FILE NO. FIS 25		
DESIGNED BY	DRAWING NO. 9		

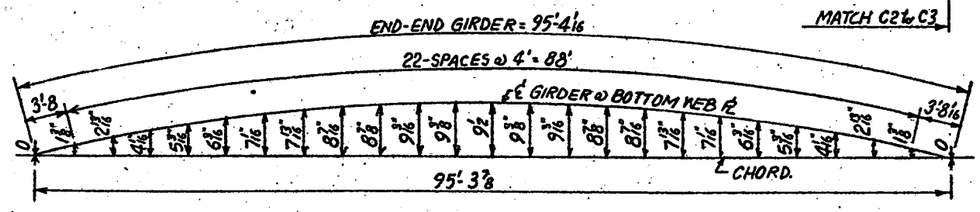
CONTRACT NO.
DESCRIPTION GIRDER B2 DETAILS.



ONE-GIRDER- C2



WEB PL CUTTING.



RADIUS = 1439.195'

HORIZONTAL GIRDER CURVE

BILL OF MATERIAL

ONE	C2	GIRDER				
1	PA10	PL 7/16 x 43	95	5 3/8		(1) M270 GR. 50 T2.
1	PB10	PL 3/4 x 14	95	5 3/8		M270 GR. 50.
1	PD10	PL 1 5/8 x 14	15	11 7/8		(1) M270 GR. 50 T2.
1	PD10	PL 1 5/8 x 14	67	0 1/8		(1) M270 GR. 50 T2.
1	PE10	PL 3/4 x 14	12	4 1/16		(1) M270 GR. 50 T2.
8	SA2	PL 1/2 x 7	3	7		M270 GR. 50.
168	ma1	7/8 φ x 5 EWS.				

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/28/97 DATE BY MLR

FINAL
FOR CONSTRUCTION

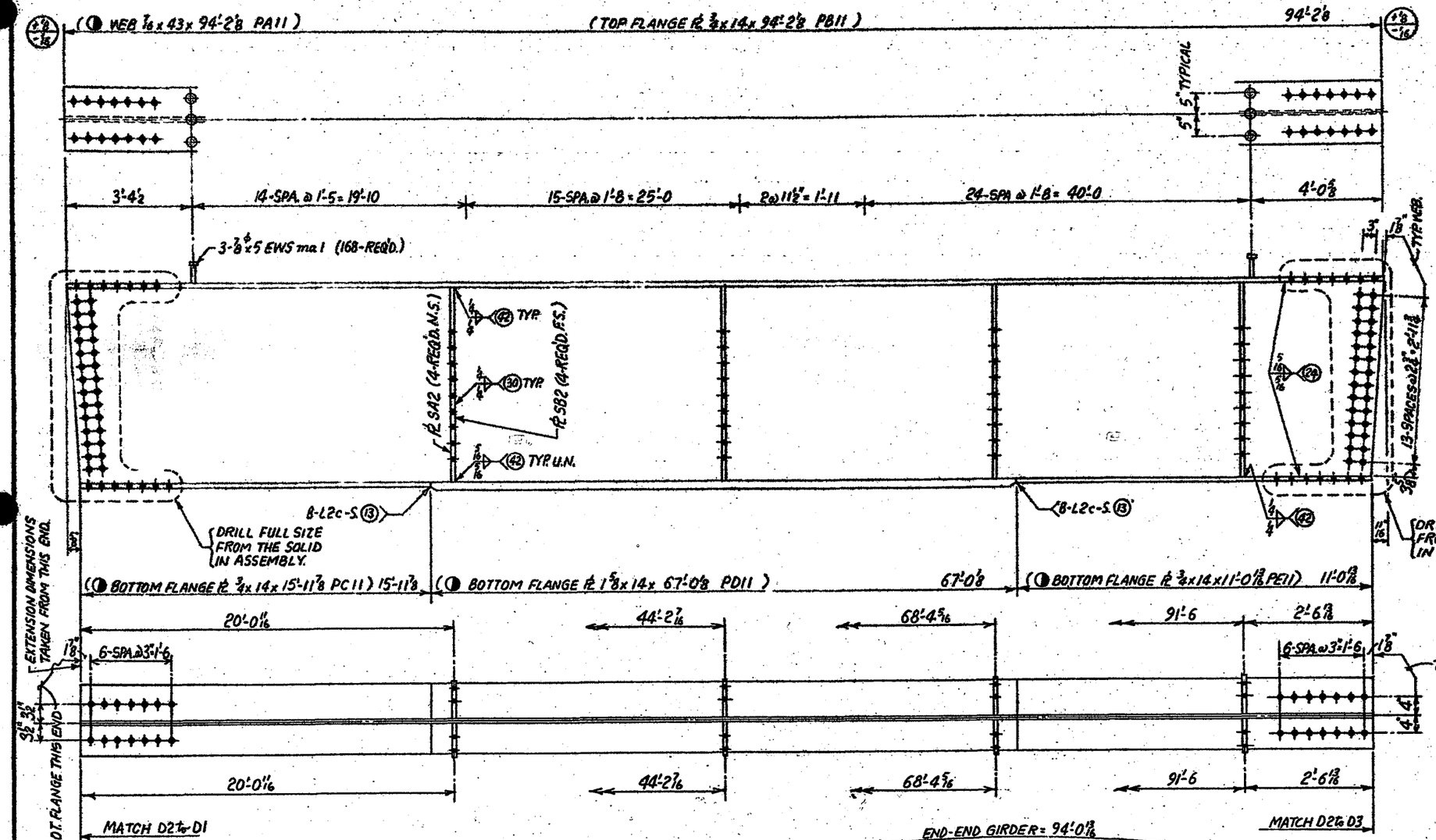
FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

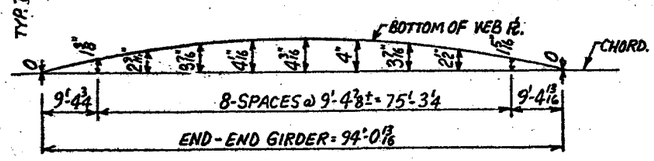
APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS.		
C.E. 7-17-97	DESCRIPTION 3-SPAN W.P.G. BRIDGE (SITE 2.)		
DRAWN BY -	LOCATION BURLINGTON NORTHERN OVERHEAD		
WELDS AS NOTED	CONTRACTOR NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT NO. BRN-187-002 (040)052	CONSULT WILLIAMS.	
DRAWN DJP	STATION 124+43.6	BOMBAY 30 FT.	
CHECKED DJP	LOADING HS 25	SKEW VARIES.	
RECORD NO.	SHEET NO. 10.	DRAWING NO. 0214 W	

CONTRACT NO.

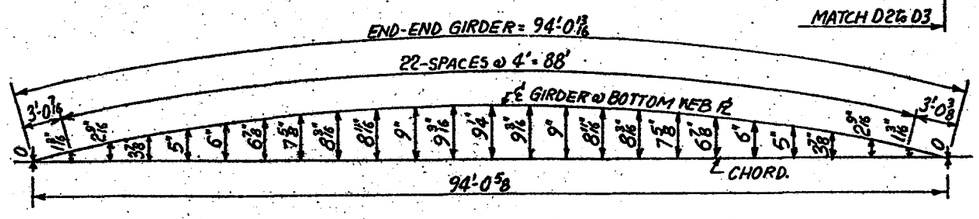
DESCRIPTION GIRDER C2 DETAILS.



ONE-GIRDER-D2



WEB PL CUTTING.



RADIUS = 1430.528'

HORIZONTAL GIRDER CURVE

BILL OF MATERIAL

NO.	MARK	DESCRIPTION	LENGTH		ADD	REMARKS
ONE	D2	GIRDER				
1	PA11	PL 7/16 x 43	94	2 1/8		(1) M270 GR. 50 T2.
1	PB11	PL 3/4 x 14	94	2 1/8		M270 GR. 50.
1	PC11	PL 3/4 x 14	15	11 7/8		(1) M270 GR. 50 T2.
1	PD11	PL 1 5/8 x 14	67	0 1/8		(1) M270 GR. 50 T2.
1	PE11	PL 3/4 x 14	11	0 13/16		(1) M270 GR. 50 T2.
168	mat	7/8" x 5 EWS				
4	SA2	PL 1/2 x 7	3	7		M270 GR. 50.
4	SB2	PL 1/2 x 7	3	7		M270 GR. 50.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION FINAL APPROVED DRAWING 7/28/97 DATE BY DLR

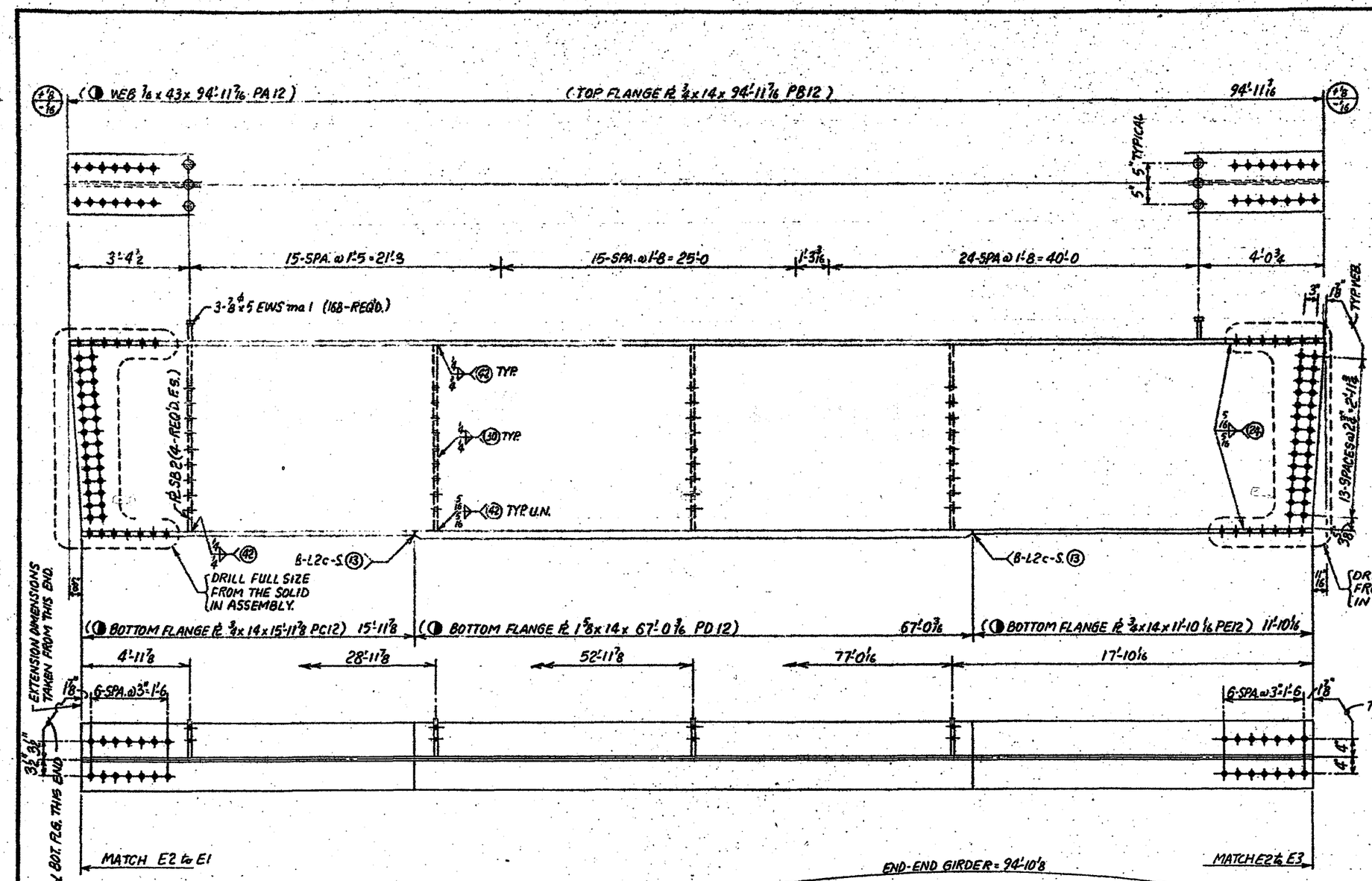
FINAL FOR CONSTRUCTION

FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

APPROVAL DATE 7-23-97	CONSTRUCTION INDUSTRIAL BUILDERS.		
G.R. 7/28/97	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2.)		
DESIGN NO. -	CONTROL BURLINGTON NORTHERN (MERRIFIELD, ND)		
WELDS AS NOTED	CONTRACTOR NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT BRF-1(47)-002 (041013)	ENGINEER WILLIAMS.	
DRAWN DJR	STATION 124+49.5	RADIUS 30 FT.	
CHECKED DM	LOADING HS 25	GRADE VARIES.	
BRIDGE NO.	SHEET NO. 11	OTHER NO. 4214 N.	

CONTRACT NO.	
DESCRIPTION	GIRDER D2 DETAILS.



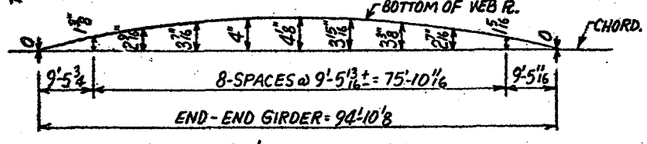
BILL OF MATERIAL

NO. OF PIECES	MARK	DESCRIPTION	LENGTH FT.	LENGTH INCHES	ADD	REMARKS
ONE	E2	GIRDER				
1	PA12	PL 3/8 x 43	94	11 7/16		(◑ M270 GR. 50 T2.
1	PB12	PL 3/4 x 14	94	11 7/16		M270 GR. 50.
1	PC12	PL 3/4 x 14	15	11 7/8		(◑ M270 GR. 50 T2.
1	PD12	PL 1 5/8 x 14	67	0 7/16		(◑ M270 GR. 50 T2.
1	PE12	PL 3/4 x 14	11	10 1/16		(◑ M270 GR. 50 T2.
4	SB2	PL 1/2 x 7	3	7		M270 GR. 50.
168	mal	7/8ϕ x 5 EWS.				

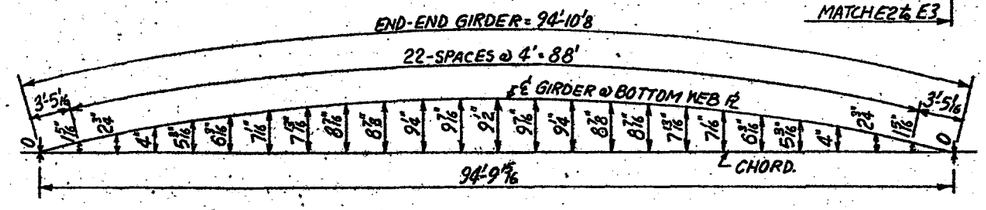
NORTH DAKOTA DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/28/97 DATE BY D.L.R.

FINAL
FOR CONSTRUCTION

ONE-GIRDER-E2



WEB PL CUTTING.



RADIUS = 1421.862

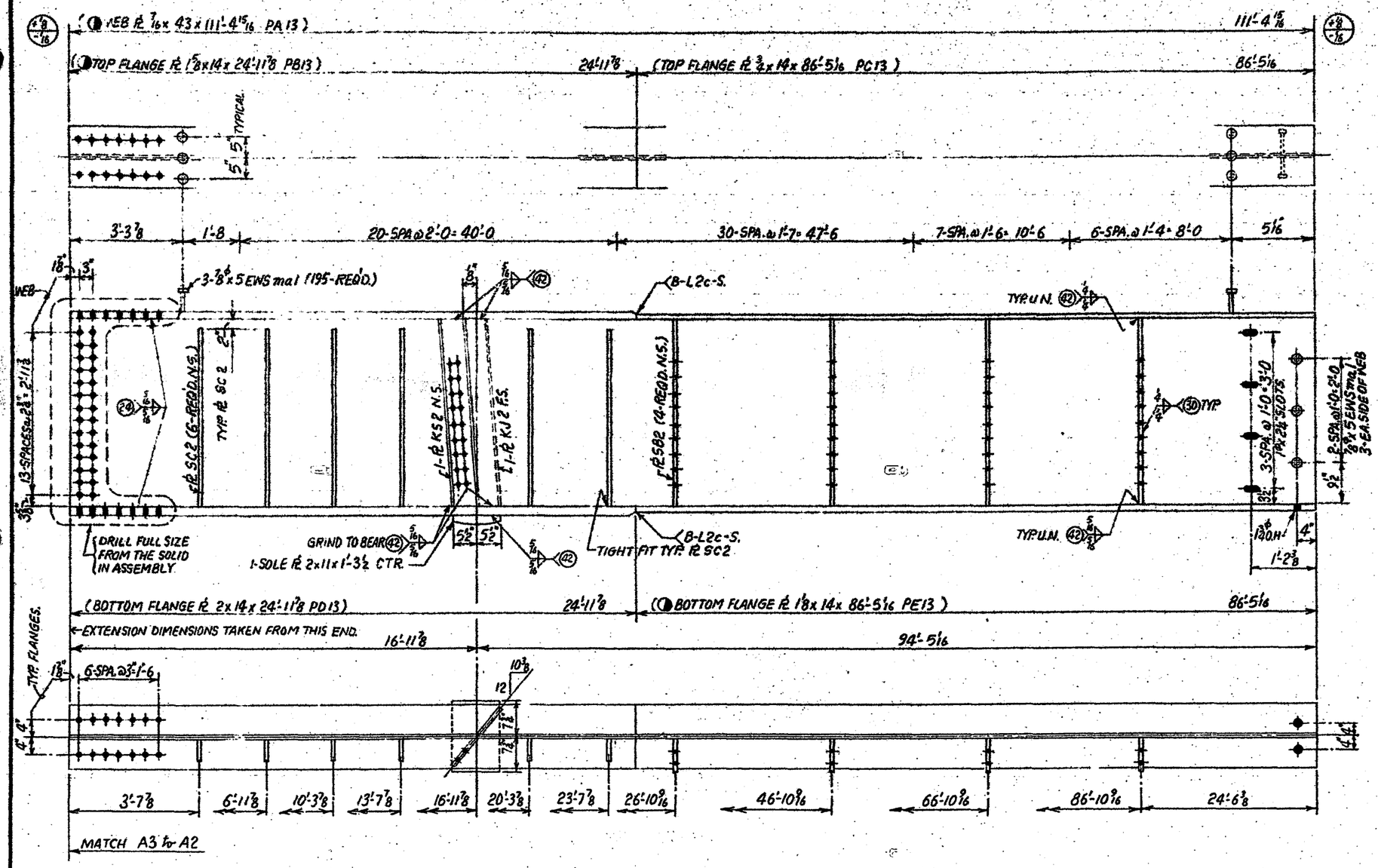
HORIZONTAL GIRDER CURVE

FOR NOTES SEE SHEET NO. ONE.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE

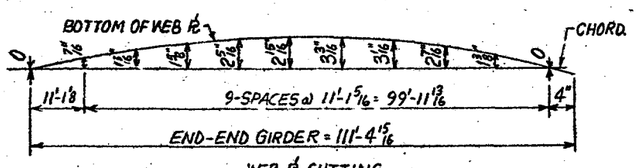
APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS.		
SIZE 1 1/8ϕ	STRUCTURE 3-SPAN W.L.R.G. BRIDGE (SITE 2.)		
DESIGN NO. -	LOCATION WILLISTON NORTHERN OVERHEAD BRI		
WELDS AS NOTED	CONTROL NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT BRF-1-017-(082) (041) 052	COUNTY WILLIAMS.	
DRAWN BXP	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED DRT	LOADING HS 25	SKEW VARIES.	
BRIDGE NO.	SHEET NO. 12	ORDER NO. 4214 W.	

CONTRACT NO.	
DESCRIPTION	GIRDER E2 DETAILS.



ONE-GIRDER-A3

SHOP NOTE: HORIZONTAL GIRDER CURVING NOT REQUIRED FOR THIS GIRDER.



WEB PL CUTTING.

BILL OF MATERIAL

No. ONE	MARK	DESCRIPTION	LENGTH FEET	LENGTH INCHES	ADD.	REMARKS
ONE	A3	GIRDER.				
1	PA13	PL 7/16 x 43	111	4 15/16		◐ M270 GR.50 T2.
1	PB13	PL 1 5/8 x 14	24	11 7/8		◐ M270 GR.50 T2.
1	PC13	PL 3/4 x 14	86	5 1/16		M270 GR.50.
1	PD13	PL 2 x 14	24	11 7/8		M270 GR.50.
1	PE13	PL 1 1/8 x 14	86	5 1/16		◐ M270 GR.50 T2.
201	mal	7/8 ϕ x 5 EWS				
1		SOLE PL 2 x 11	1	3 1/2		
1	KJ2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50.
1	KS2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50.
4	SB2	PL 1/2 x 7	3	7		M270 GR.50.
6	SC2	PL 7/16 x 5	3	5		M270 GR.50.

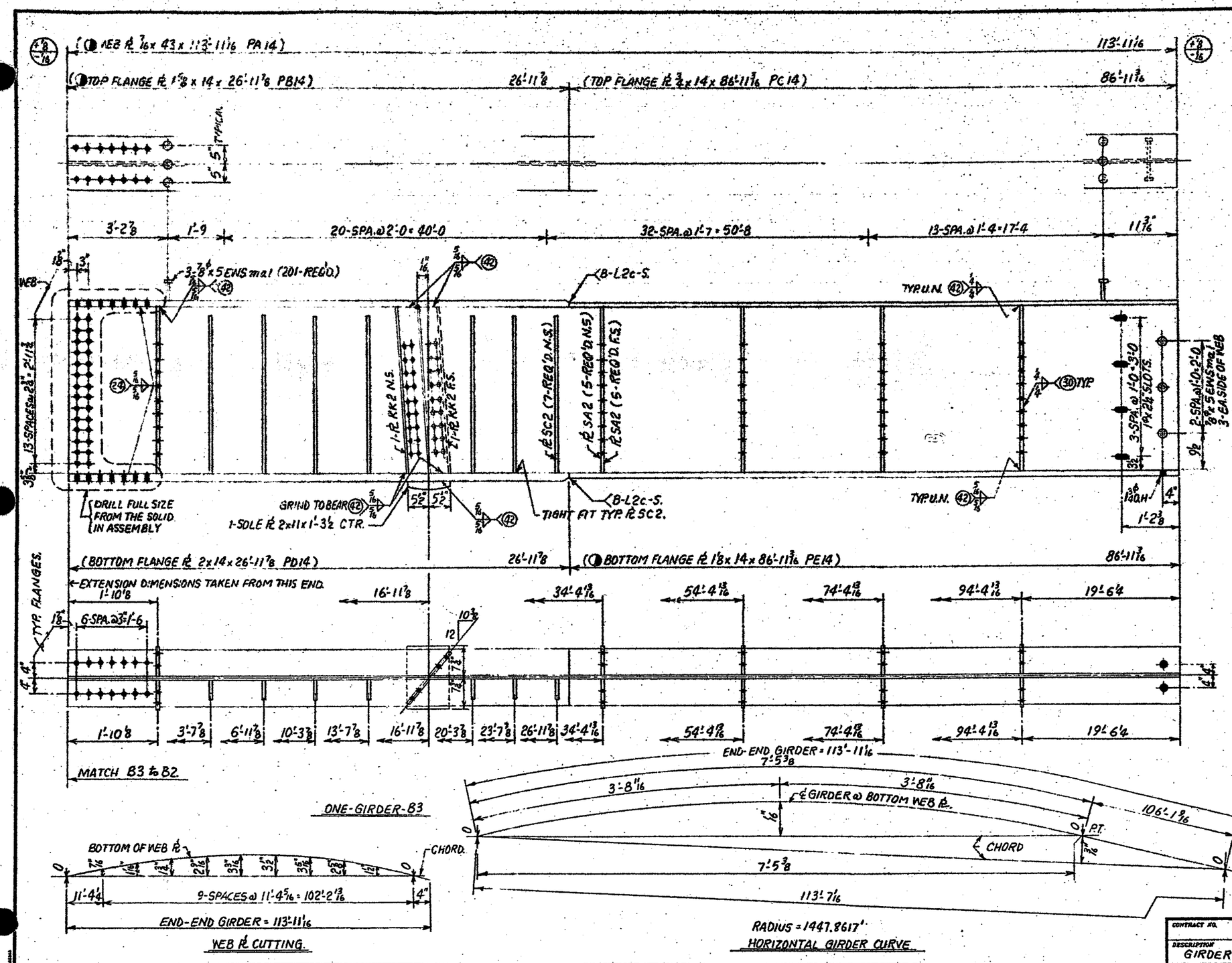
FINAL
FOR CONSTRUCTION

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DATE
DLR BY

CONTRACT NO.
DESCRIPTION GIRDER A3 DETAILS.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 8TH STREET, BOX 80038, ZIP 68501, PH. 402-476-1021

APPROVED DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS.		
C.E.P.S. & U.M.	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE P).		
DESIGN NO. -	LOCATION BURLINGTON NORTHERN OVERHEAD BR.		
WELDS AS NOTED	CUSTOMER NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT RSN-NH-7-002(041) X02	COUNTY WILLIAMS.	
DRAWN D. Jay	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED	LOADING HS 25	SKEW VARIES	
BRIDGE NO.	SHEET NO. 13	ORDER NO. 4214 W	



DILL. OF MATT'RIAL						
NO. MARK	MARK	DESCRIPTION	LENGTH FT	LENGTH IN	400	REMARKS
ONE	B3	GIRDER.				
1	PAW	PL 7/16 x 43	113	11 1/16		◐ M270 GR.50 T2.
1	PBW	PL 1 5/8 x 14	26	11 7/8		◐ M270 GR.50 T2.
1	PCW	PL 3/4 x 14	86	11 7/16		M270 GR.50.
1	PDW	PL 2 x 14	26	11 7/8		M270 GR.50
1	PEW	PL 1 7/8 x 14	86	11 7/16		◐ M270 GR.50 T2.
207	mat	7/8" x 5 EWS				
1		SOLE PL 2 x 11	1	3 1/2		
2	KK2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50
10	SA2	PL 1/2 x 7	3	7		M270 GR.50.
7	SC2	PL 7/16 x 5	3	5		M270 GR.50.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED DRAWING
7/28/97 DLR
DATE BY

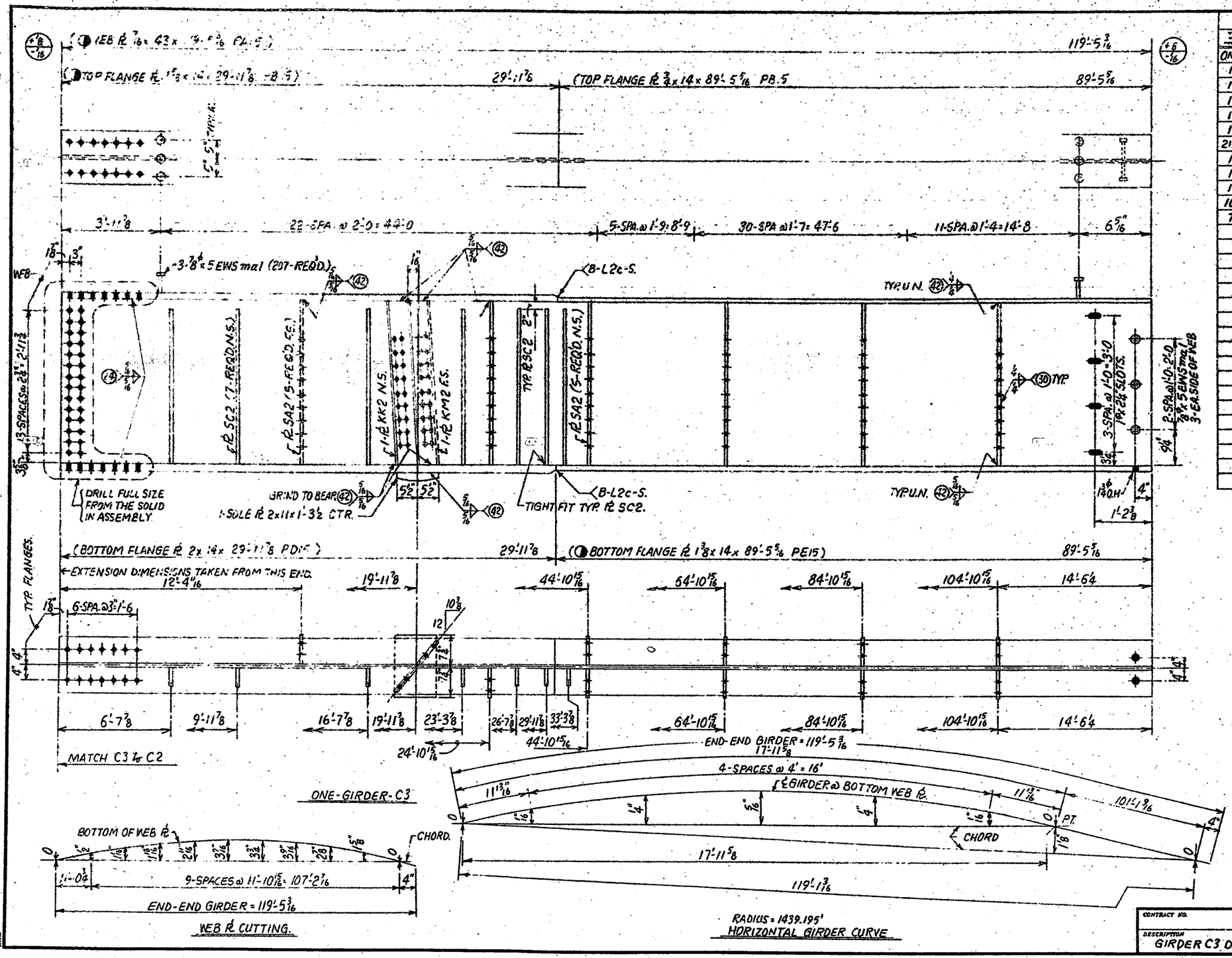
FINAL
FOR CONSTRUCTION

CONTRACT NO.

DESCRIPTION
GIRDER B3 DETAILS.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80206, ZIP 68501, PH. 402-476-1321

APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS.		
G.R. 7/16 U.N.	STRUCTURE 3-SPAN M.P.G. BRIDGE (SITE 2).		
DESIGN NO. -	LOCATION BURLINGTON NORTHERN OVERHEAD RR		
WELDS AS NOTED	CONTRACTOR NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT RSA-NH7-002(041)	COUNTY WILLIAMS.	
DRAWN RWP	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED DDP	LOADING HS25	SKEW VARIES	
BRIDGE NO.	SHEET NO. 14	ORDER NO. 4214 W	



BILL OF MATERIAL

NO. REQ'D	MARK	SIZE & SHAPE	LENGTH FT.	LENGTH IN.	ADD	REMARKS
ONE	C3	GIRDER.				
1	PA15	PL 7/16 x 43	119	5 3/16		◑ M270 GR.50 T2.
1	PB15	PL 1 5/8 x 14	29	11 7/8		◑ M270 GR.50 T2
1	PD15	PL 3/4 x 14	89	5 5/16		M270 GR.50.
1	PD15	PL 2 x 14	29	11 7/8		M270 GR.50
1	PE15	PL 1 3/8 x 14	89	5 5/16		◑ M270 GR.50 T2.
213.	mat	7/8φ x 5 EWS				
1		SOLE PL 2 x 11	1	3 1/2		
1	KK2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50
1	KM2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50.
10	SA2	PL 3/4 x 7	3	7		M270 GR.50.
7	SC2	PL 7/16 x 5	3	5		M270 GR.50.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DLR
DATE BY

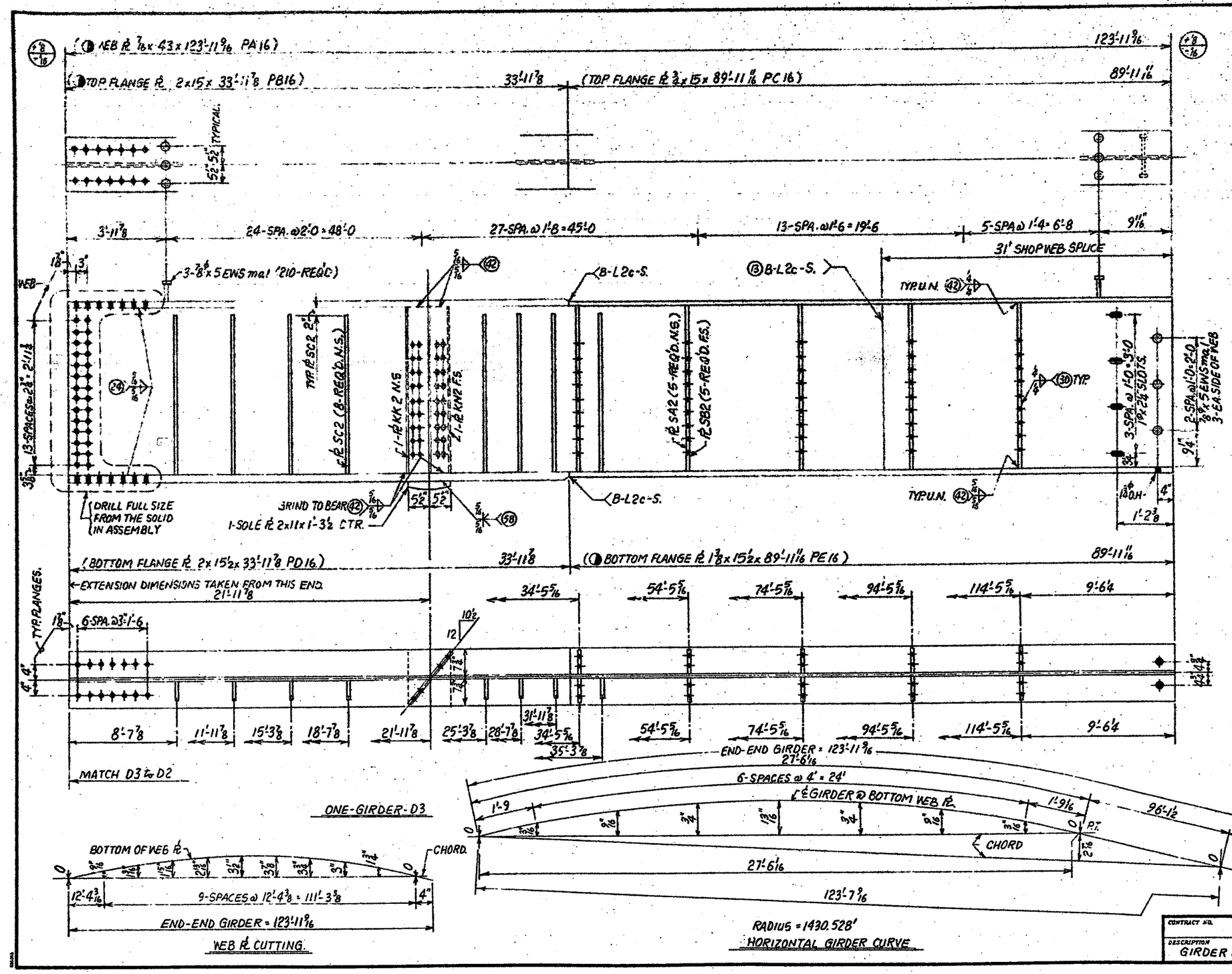
FINAL
FOR CONSTRUCTION

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1051

APPROVAL DATE 7-17-97		CONTRACTOR INDUSTRIAL BUILDERS.	
G.B.J.S.® 16 U.N.	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2).		
DESIGN NO. -	LOCATION BURLINGTON NORTHERN OVERHEAD RR		
WELDS AS NOTED	CUSTOMER NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT (ESN-NH 7-002(041)052	COUNTY WILLIAMS.	
DRAWN Dept	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED JCP	LOADING HS 25	SKEW VARIES	
BRIDGE NO.	SHEET NO. 15	ORDER NO. 4214 W.	

CONTRACT NO.

DESCRIPTION
GIRDER C3 DETAILS.



BILL OF MATERIAL

NO.	MARK	DESCRIPTION	LENGTH FEET	LENGTH INCHES	ADD	REMARKS
ONE	D3	GIRDER.				
1	PA16	PL 7/16 x 43	123	11 9/16		(1) M270 GR.50 T2.
1	PB16	PL 2 x 15	33	11 7/8		(1) M270 GR.50 T2
1	PC16	PL 3/4 x 15	89	11 11/16		M270 GR.50.
1	PD16	PL 2 x 15 1/2	33	11 7/8		M270 GR.50
1	PE16	PL 1 3/8 x 15 1/2	89	11 11/16		(1) M270 GR. 50 T2.
216	mat	7/8" x 5 EWS				
1		SOLE PL 2 x 11	1	3 1/2		
1	KK2	PL 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50.
1	KN2	PL 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50.
5	SA2	PL 1/2 x 7	3	7		M270 GR.50.
5	SB2	PL 1/2 x 7	3	7		M270 GR.50.
8	SC2	PL 7/16 x 5	3	5		M270 GR.50.

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DATE BY DLR

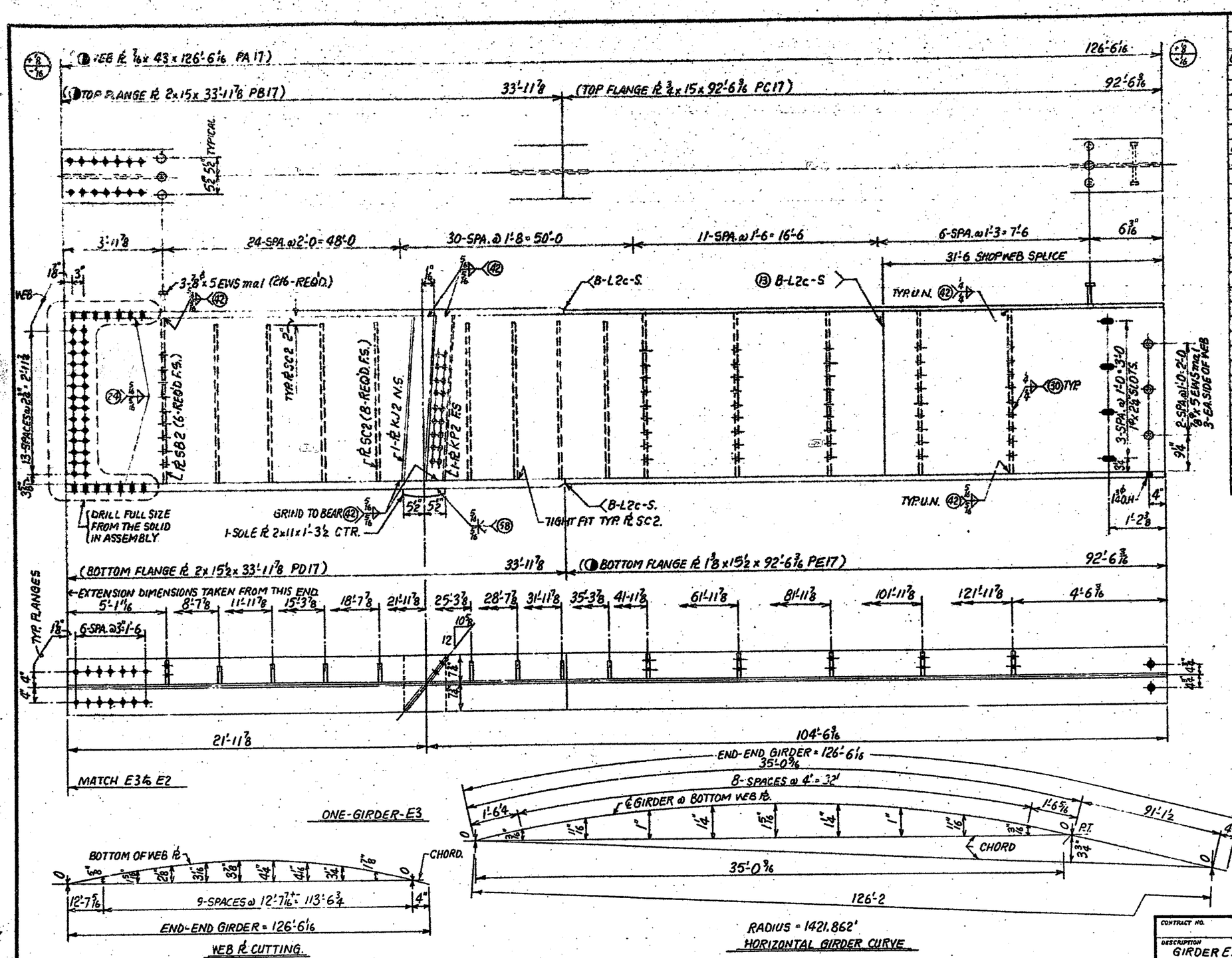
FINAL
FOR CONSTRUCTION

CONTRACT NO.

DESCRIPTION
GIRDER D3 DETAILS.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 27th STREET, BOX 80000, ZIP 68501, PH. 402-476-1021

APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS		
G.R.P.'S 16 U.N.	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2).		
DESIGN NO. -	OPERATING BURLINGTON NORTHERN OVERHEAD		
WELDS AS NOTED	CONTROLLED NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT RSAI-NH7-002(041)	COUNTY WILLIAMS	
DRAWN RWT	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED RCP	LOADING HS 25	SKEW VARIES	
BRIDGE NO.	SHEET NO. 16	GIRDER NO. 4214 W	



BILL OF MATERIAL

MARK		DESCRIPTION	LENGTH FEET	LENGTH INCHES	ADD	REMARKS
ONE	E3	GIRDER.				
1	PA17	PL 7/16 x 43	126	6 1/16		(1) M270 GR.50 T2.
1	PB17	PL 2 x 15	33	11 7/8		(1) M270 GR.50 T2.
1	PC17	PL 3/4 x 15	92	6 3/16		M270 GR.50.
1	PD17	PL 2 x 15 1/2	33	11 7/8		M270 GR.50
1	PE17	PL 1 3/8 x 15 1/2	92	6 3/16		(1) M270 GR. 50 T2.
222	mat	7/8" x 5 EWS				
1		SOLE PL 2 x 11	1	3 1/2		
1	KJ2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50
1	KP2	PL 1 1/8 x 10 3/4	3	7 1/2	1/2	M270 GR.50.
6	SB2	PL 1/2 x 7	3	7		M270 GR.50
8	SC2	PL 7/16 x 5	3	5		M270 GR.50

NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION
FINAL APPROVED
DRAWING
7/28/97 DLR
DATE BY

FINAL
FOR CONSTRUCTION

CONTRACT NO.

DESCRIPTION
GIRDER E3 DETAILS.

CAPITAL CONTRACTORS, INC.
CAPITAL STEEL DIVISION, LINCOLN, NE
1001 N. 9TH STREET, BOX 80008, ZIP 68501, PH. 402-476-1001

APPROVAL DATE 7-17-97	CONTRACTOR INDUSTRIAL BUILDERS.		
O.E./S 16 UM	STRUCTURE 3-SPAN W.P.G. BRIDGE (SITE 2).		
DESIGN NO. -	LOCATION BURLINGTON NORTHERN OVERHEAD BR.		
WELDS AS NOTED	CUSTOMER NORTH DAKOTA DEPT. OF TRANS.		
PAINT SEE NOTES	PROJECT RSN-NH7-002(041)	COUNTY WILLIAMS.	
DRAWN RWP	STATION 124+43.6	ROADWAY 30 FT.	
CHECKED RWP	LOADING HS 25	SKEW VARIES	
BRIDGE NO.	SHEET NO. 17	ORDER NO. 4214 W.	