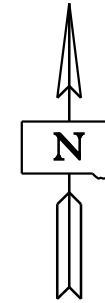


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-B-CR 2292(101)3	1	10

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT IM-B-CR 2292(101)3
INTERSTATE 229
MINNEHAHA COUNTY

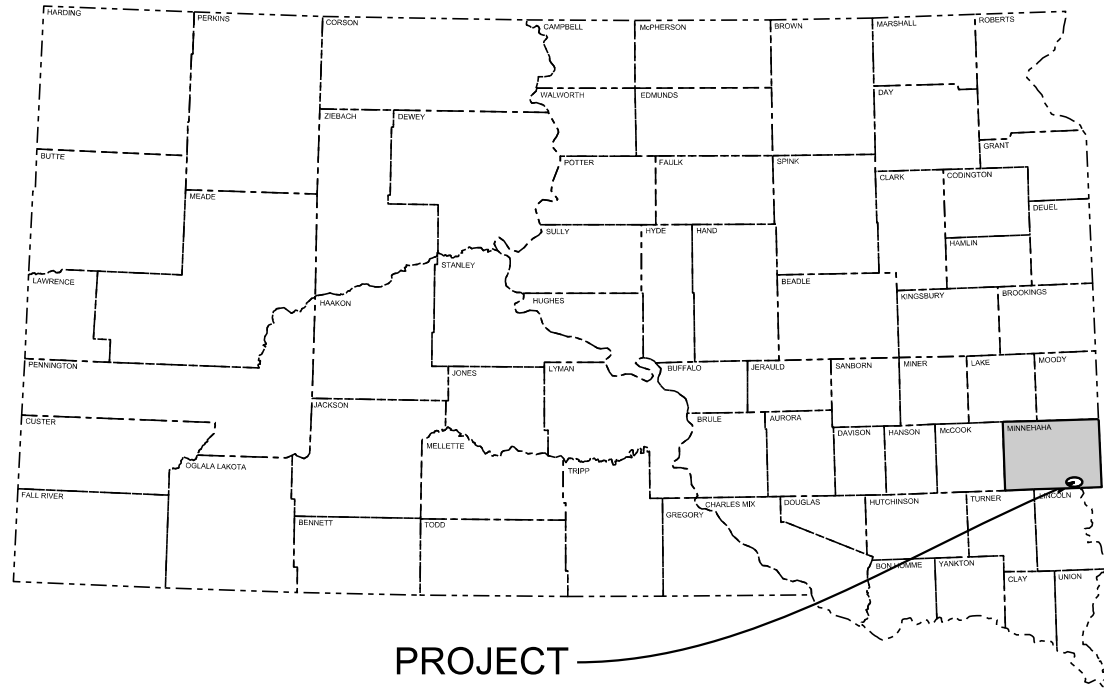


STRUCTURAL STEEL
PCN 09VY

INDEX OF SHEETS -

Sheet E1
Sheet E2
Sheet E3 to E10

Layout Map and Index
Estimate of Structure Quantities
Str. No. 50-211-230 400' - 9 1/8" Steel Girder Bridge



PROJECT

END IM-B-CR 2292(101)3

NB Cliff Ave. 126+02.67
Located 1155.78 feet North and
36.79 feet West of the
southeast corner of Section 28 -
Township 101 North -
Range 49 West of the 5th PM.

Sta. 207 + 15.13 to 211 + 15.89
Str. No. 50-211-230
400' - 9 1/8" Steel Girder Bridge

BEGIN IM-B-CR 2292(101)3

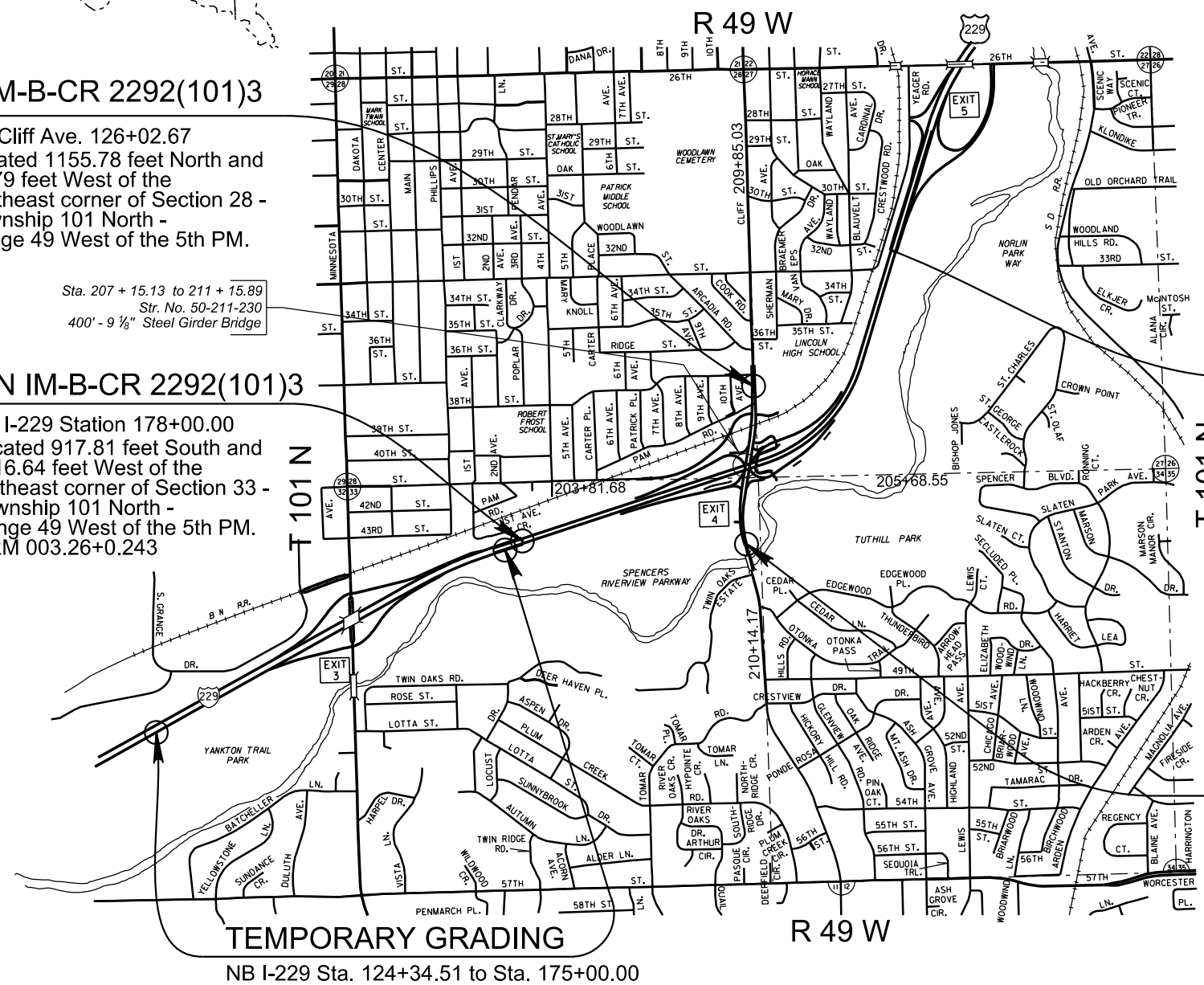
NB I-229 Station 178+00.00
Located 917.81 feet South and
3016.64 feet West of the
northeast corner of Section 33 -
Township 101 North -
Range 49 West of the 5th PM.
MRM 003.26+0.243

END IM-B-CR 2292(101)3

NB I-229 Station 245+03.64
Located 2934.62 feet North and
1765.55 feet East of the
southwest corner of Section 27 -
Township 101 North -
Range 49 West of the 5th PM.
MRM 004.37+0.465

BEGIN IM-B-CR 2292(101)3

NB Cliff Ave. Station 105+40.80
Located 890.68 feet South and
115.85 feet West of the
northeast corner of Section 33 -
Township 101 North -
Range 49 West of the 5th PM.



TEMPORARY GRADING

NB I-229 Sta. 124+34.51 to Sta. 175+00.00

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-B-CR 2292(101)3	2	10

SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

Str. No. 50-211-230

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
410E0025	Structural Steel, Furnish	Lump Sum	LS
411E0100	Bridge Painting	Lump Sum	LS

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
ΔStructural Steel, Furnish	Lump Sum	LS	
≠ Bridge Painting	Lump Sum	LS	

Δ For informational purposes only, the estimated weight of structural steel is 1,425,752 pounds.
 ≠ For informational purposes only, the estimated area to be painted is 55932 sq. ft.

BRIDGE SPECIFICATIONS

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
- All welding and welding inspections will be in conformance with the latest edition of AASHTO/AWS D1.5/D1.5M Bridge Welding Code unless noted otherwise in the plans.

BRIDGE DESIGN LOADING

- AASHTO HL-93.
- Dead Load includes 22 psf for future wearing surface on the roadway.

DESIGN MATERIAL STRENGTHS

Structural Steel (ASTM A709 Gr. 36T2) $f_y = 36,000$ psi
 Structural Steel (ASTM A709 Gr. 50T2) $f_y = 50,000$ psi

CONNECTION OF GIRDER TO PILE

- Steel for the bearing plates will conform to ASTM A709 Gr. 50.
- Payment for furnishing the bearing plates will be incidental to the contract lump sum price for Structural Steel, Furnish.

BENT

All Swedge Bolts will be 1 1/2-inch diameter x 2'-6" F1554, Grade 55 bolts with heavy hex nut and cut washer (listed with structural steel in Superstructure quantities). A minimum of 20% of the embedded bolt surface will be covered with deformations whose radial dimensions are 15 to 20% of the bolt diameter. Payment for furnishing the Swedge Bolts and associated hardware will be incidental to the contract lump sum price for Structural Steel, Furnish.

GIRDERS

- Structural steel will conform to ASTM A709 Gr. 50T2. Steel for diaphragms and stiffeners may conform to ASTM A709 Grade 50. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.
- Bolts, nuts, and washers will conform to ASTM F3125, Grade A325, Type 3.
- Shear connectors will be provided, but not installed. Shear connectors shown are for information only and will be field welded to the girders under a future contract.
- All butt-welded girder splices will be ultrasonically inspected.

- The shear connectors that will be attached to the girder will be 7/8-inch diameter x 5 inches long and will conform to ASTM 108, Gr. 1015, 1018, or 1020. The connectors will meet the following minimum mechanical property requirements for Type B studs,

Tensile Strength	60 ksi
Yield Strength	60 ksi
Elongation	20%
Reduction of Area	50%

- The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel, Furnish.
- Structural steel will be painted in accordance with Section 411 of the Construction Specifications. The topcoat will be an approved brown (AMS STD 595 Color 30045). The fabricator will supply paint for touch-ups. Payment for supplying paint will be incidental to contract lump sum price for Bridge Painting.
- See Diaphragm Details for the notes concerning diaphragms.
- Structural steel used in all girder web plates, girder flanges, and girder splice plates will comply with the Charpy-V-Notch toughness requirements set forth in Section 970 of the Construction Specifications. Material greater than 1 1/2 inches in thickness will require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension and stress reversal areas of girder flanges.
- Dead Load camber will be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.

BEARINGS

- All steel for the bearings will conform to ASTM A709, Gr. 50.
- The pre-formed fabric pads will be composed of multiple layers of 8-ounce cotton duck impregnated and bonded with high quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness, after compression and vulcanization. The finished pads will withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 psi without detrimental reduction in thickness or extrusion.
- The bearing plates will be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. No topcoat of polyurethane will be applied.
- Tolerances and surface finish for Rocker Plates will be as follows:

Convex Radius Dimension	+0.000-inch to -0.010-inch
Surface Finish, Machined Surfaces	125 RMS or Better
Surface Finish, Other Surfaces	230 RMS or Better
- Payment for furnishing the bearings, including the pre-formed fabric pads under the bearing plates and painting, will be incidental to the contract lump sum price for Structural Steel, Furnish.

FIELD BOLTED GIRDER SPLICES

- Steel for splice and filler plates will conform to ASTM A709 Gr. 50T2, except material less than 1/4-inch in thickness may be ASTM A1011 Gr. 36.
- Payment for furnishing splice plates and bolts for girder splices will be incidental to the contract lump sum bid price for Structural Steel, Furnish.

WELDING AND WELD INSPECTION

Main members referred to in Section 6.7 Nondestructive Testing of the Bridge Welding Code are identified as follows: girder webs, girder flanges, and bearing stiffeners. Ultrasonic testing of groove welds will be used in lieu of radiography. See girder layout for locations of tension and stress reversal areas of the girder flanges.

BOLT TESTING

The certified mill test reports for all bolts used on the project will include the test results for all the testing specified in section 972.2 D of the Construction Specifications. Some of these tests are supplemental tests that must be requested at the time the bolts are ordered. It is the responsibility of the fabricator to notify the bolt supplier of these requirements.

DELIVERY OF STRUCTURAL STEEL

- All structural steel will be delivered to the job site (I-229 exit 4, Cliff Ave., Sioux Falls, SD). The contact person regarding delivery arrangements is Sioux Falls Area Engineer, Harry Johnston at (605) 367-5680 or Project Engineer, Mike Schmidt at (605) 940-1000.
- All costs involved with the transportation of the structural steel to the job site will be included in the contract lump sum price for Structural Steel, Furnish.
- Construction phasing may require the girders to be set at night. The girders may have to be delivered accordingly.

TAX LIABILITY

The South Dakota Department of Transportation (SDDOT) is a South Dakota sales tax-exempt government entity. Therefore, a Certificate of Exemption will be provided to the successful bidding party which excuses the party from paying sales tax on the materials being furnished to the SDDOT. It is the responsibility of bidding parties to contact the SD Department of Revenue at 1-800-829-9188 to determine tax licensure requirements. A South Dakota Contractors Excise Tax License is not required for this pre-purchase contract as it is not considered a reality improvement.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

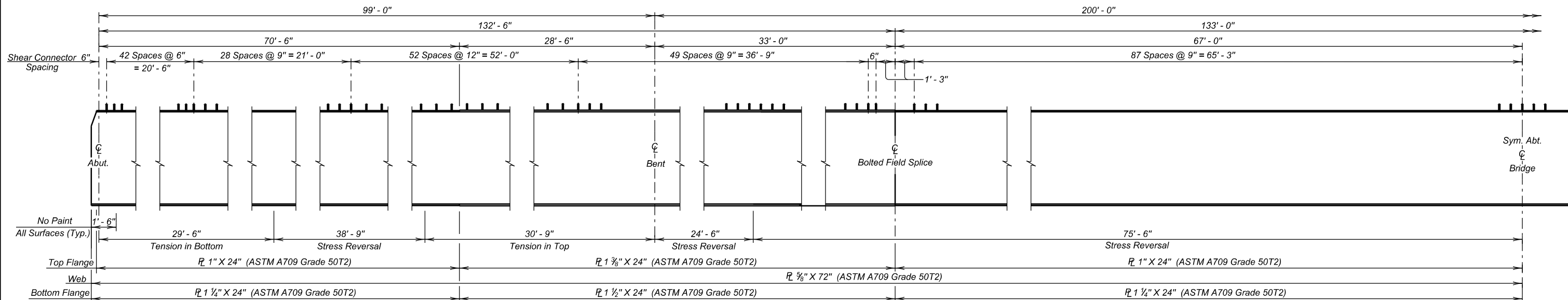
FOR
 400' - 9 1/8" STEEL GIRDER BRIDGE

STR. NO. 50-211-230

NOVEMBER 2024

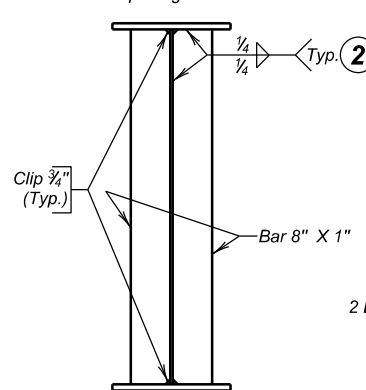
2 OF 8

DESIGNED BY CHM MINN09VY	CK. DES. BY CL 09VYTA02	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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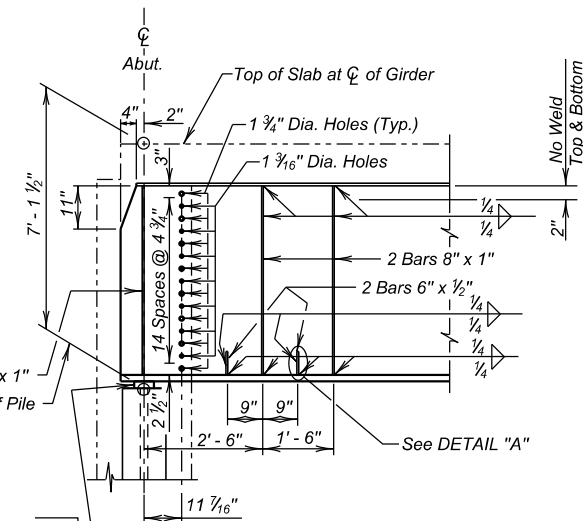
GIRDER LAYOUT

2 All fillet welds will terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.

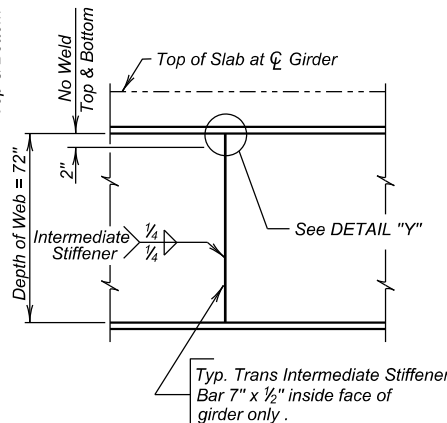


END VIEW

Bar 6" x 1" x 2'-1" Ship loose for Field Weld. See DETAIL "X" on ABUTMENT DETAILS Sheet.

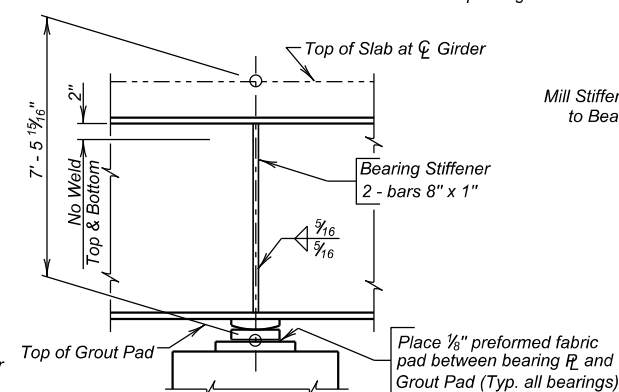


TYPICAL SECTION AT ABUTMENTS

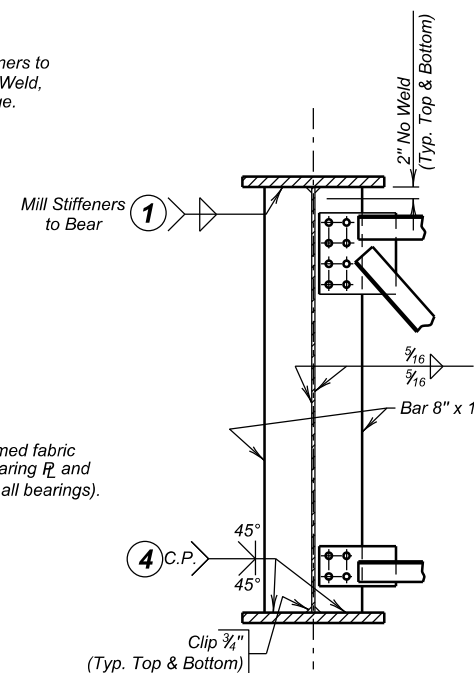


TYPICAL SECTION AT INTERMEDIATE STIFFENER

4 Alternately, Mill Stiffeners to Bear & use 5/16" Fillet Weld, same as at Top Flange.

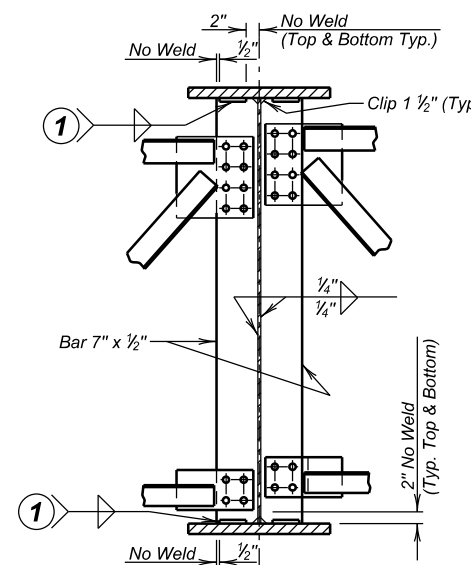


TYPICAL SECTION AT BENT
(Diaphragm not shown)

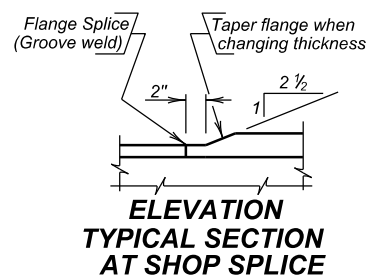


DETAILS OF STIFFENERS AT C BEARINGS
(Exterior Girder shown)

1 All fillet welds attaching diaphragm or bearing stiffeners to girder flanges will terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.

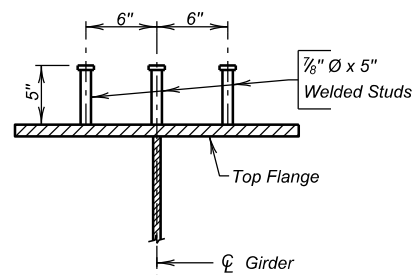


DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS
(See DETAIL "W" on DIAPHRAGM DETAILS sheet.)
(Interior Girder shown)



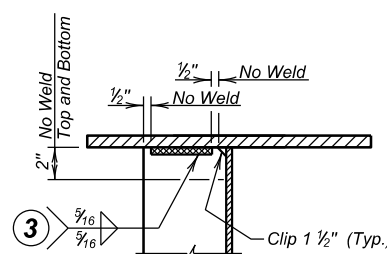
ELEVATION TYPICAL SECTION AT SHOP SPLICE

FLANGE TO WEB WELDS	
Flange Thickness	Fillet Welds
1 1/2"	5/16"
1 3/8"	5/16"
1 1/4"	5/16"
1"	5/16"



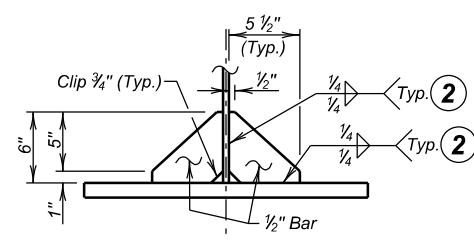
SHEAR CONNECTOR DETAILS

Welded Stud Shear Connectors are spaced as shown on Girder Layout. Shear Connectors will be field installed and are shown here for informational purposes only. Payment for providing Shear Connectors will be included in the Lump Sum bid for Structural Steel, Furnish. 1545 Shear Connectors per Girder.



DETAIL "Y"

3 Transverse Intermediate Stiffeners will be welded to the compression flange as shown in DETAIL "Y". In zones of stress reversal the Transverse Intermediate Stiffener will not be attached to either flange. Ends of Stiffeners not welded will fit tight. See Girder Layout above for location of tension flange and zones of stress reversal.



DETAIL "A"

NOTES:

- See DIAPHRAGM DETAILS Sheet for Diaphragm Details.
- See FRAMING DIAGRAM, CAMBER, AND ERECTION DATA Sheet for spacing of Diaphragms, Stiffeners, and Girder Camber.
- All dimensions shown are horizontal or vertical.
- All Stiffeners and Girder Ends will be made normal to flanges, except bearing stiffeners at bents & abutments will be vertical.
- Stiffeners to have tight fit top and bottom.
- Dimensions shown are for steel temperature of 45° F.
- See SIGNAL BRACKET DETAILS sheets.
- It is permissible to substitute 5/8" bars for the 1/2" bars shown. No additional payment will be made.

GIRDER LAYOUT DETAILS

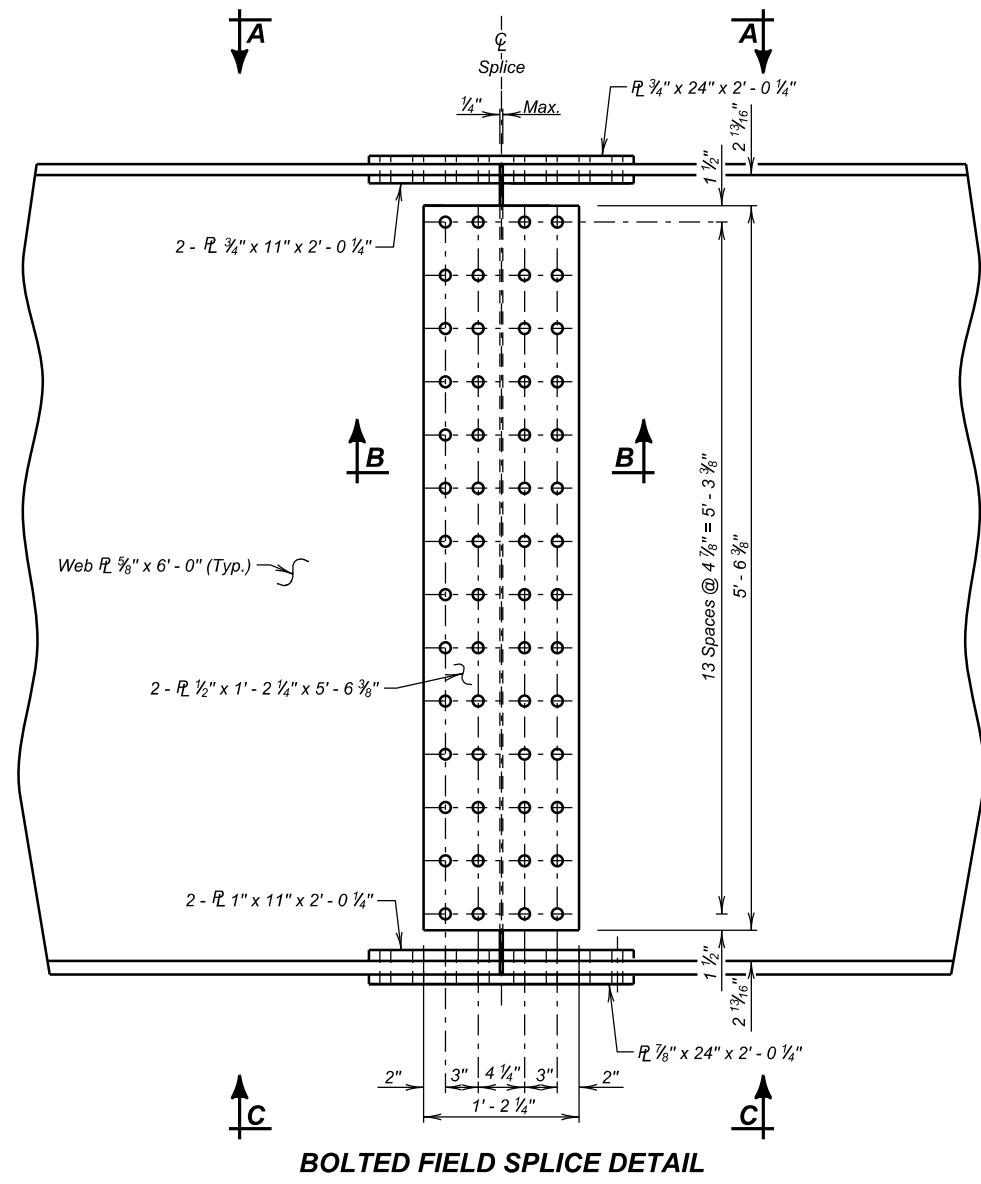
FOR
SOUTHBOUND LANES
400' - 9 1/8" STEEL GIRDER BRIDGE
56' - 0" ROADWAY
OVER CLIFF AVE.
STA. 207 + 15.13 TO 211 + 15.89
STR. NO. 50-211-230

25° LHF SKEW
SEC. 28-T101N-R49W
IM-B-CR 2292(101)3
HL-93

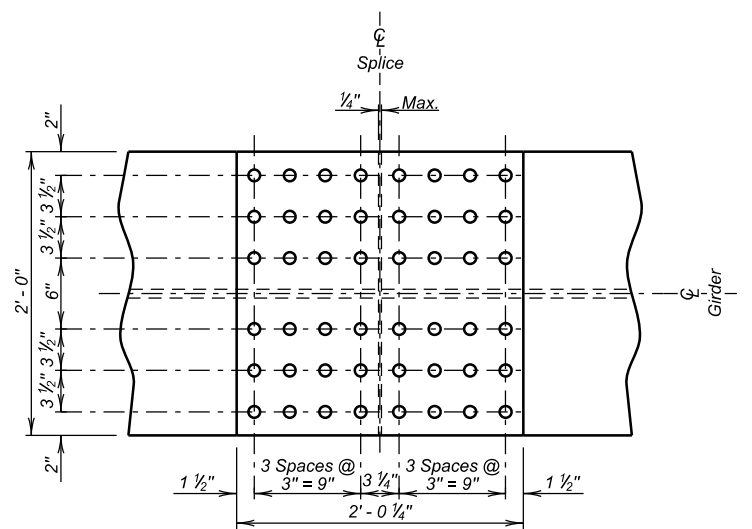
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2024

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-B-CR 2292(101)3	6	10

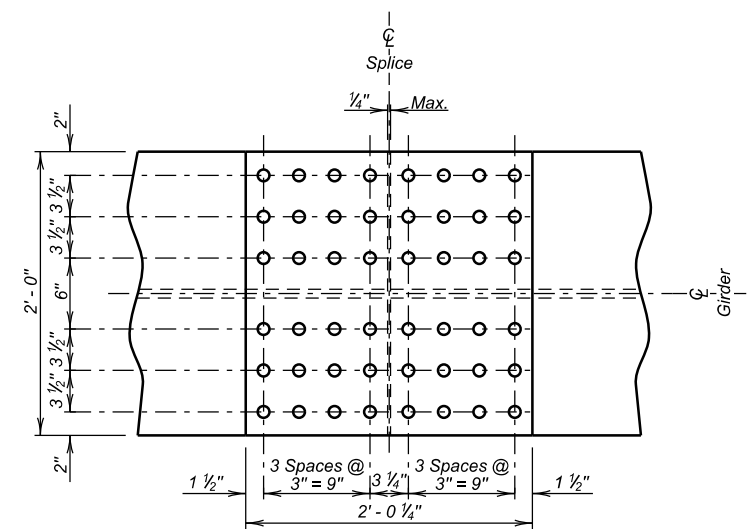
NOTE:
All bolts in splices will be 7/8" A325 High Strength Bolts. (See DIAPHRAGM DETAILS sheet for Direct Tension Indicator Detail.)



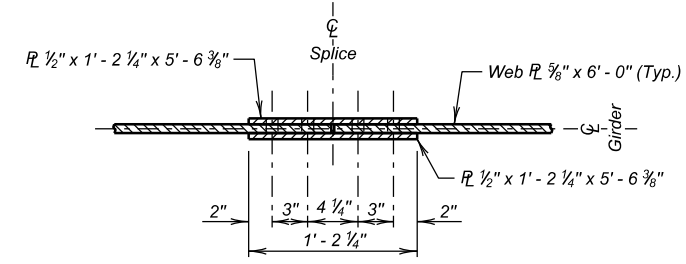
BOLTED FIELD SPLICE DETAIL



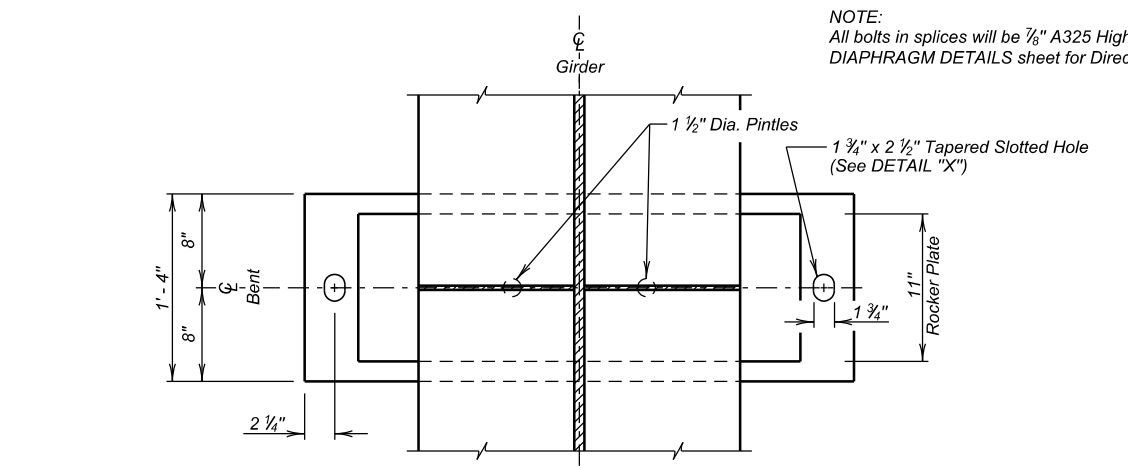
VIEW A - A
(Top Flange)



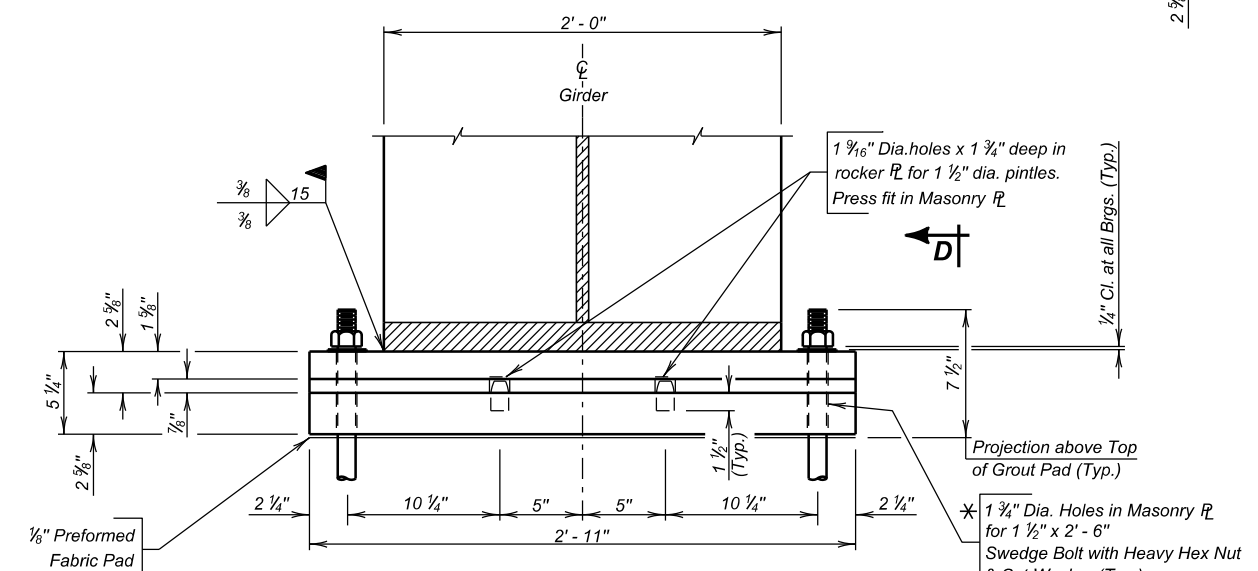
VIEW C - C
(Bottom Flange)



SECTION B - B

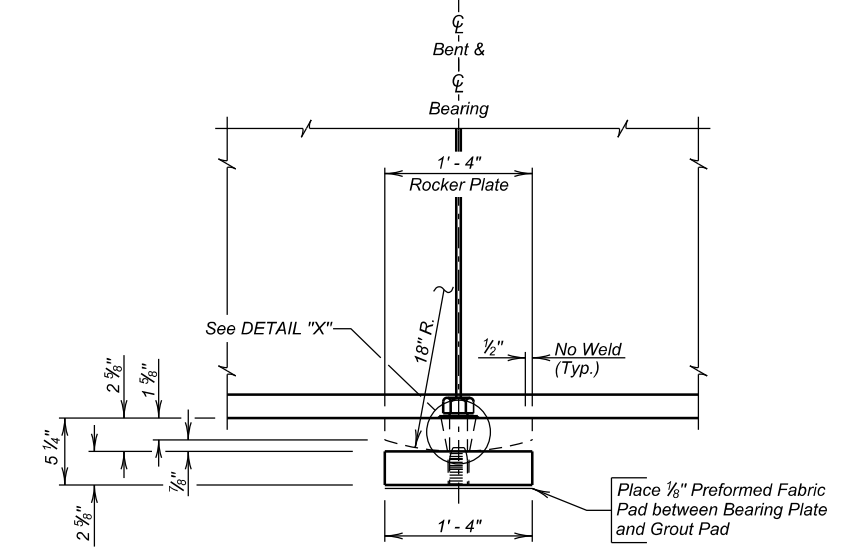


PLAN
(Bolts & Washers Not Shown)

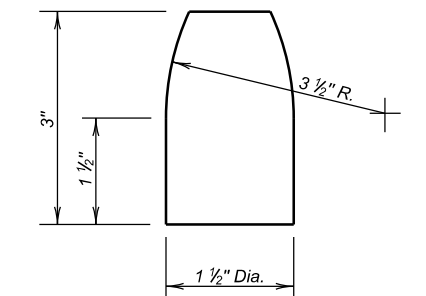


**ELEVATION
FIXED BEARING
BENT NO. 2 & 3**

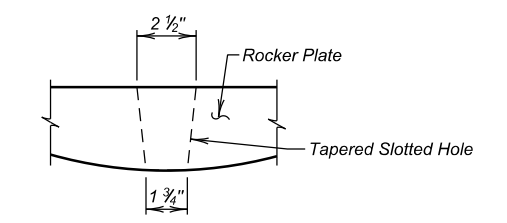
* NOTE -
Punch Mark Threads and Nuts to prevent Rotation



VIEW D - D



PINTLE DETAIL



DETAIL "X"

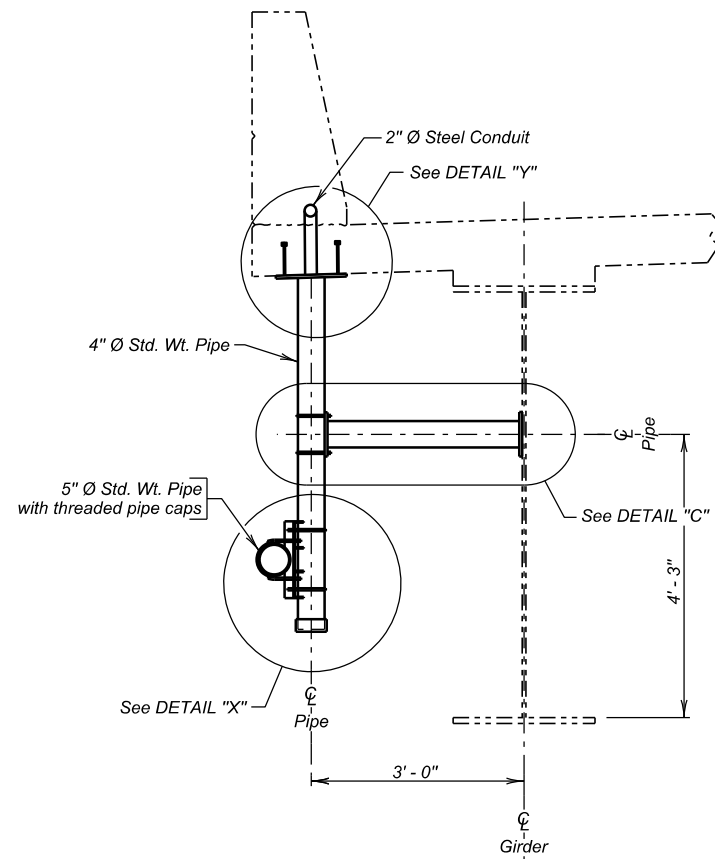
**DETAILS OF BOLTED FIELD SPLICES AND BEARINGS
FOR
SOUTHBOUND LANES
400' - 9 1/8" STEEL GIRDER BRIDGE**
56' - 0" ROADWAY
OVER CLIFF AVE.
STA. 207 + 15.13 TO 211 + 15.89
STR. NO. 50-211-230

25° LHF SKEW
SEC. 28-T101N-R49W
IM-B-CR 2292(101)3
HL-93

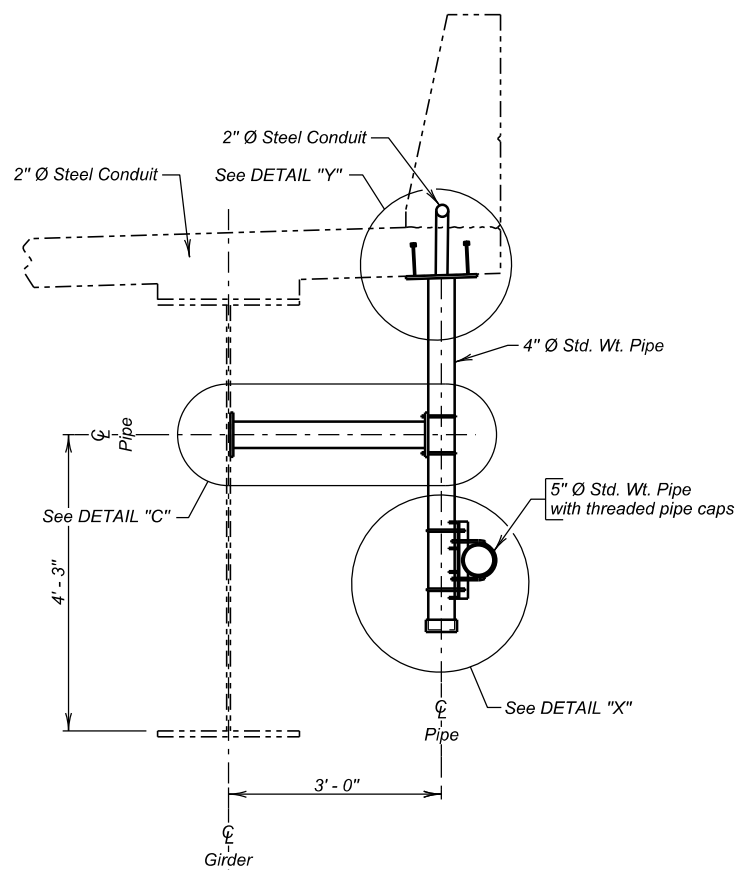
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2024

DESIGNED BY CHM MINN09VY	CK. DES. BY CL 09VYTA04	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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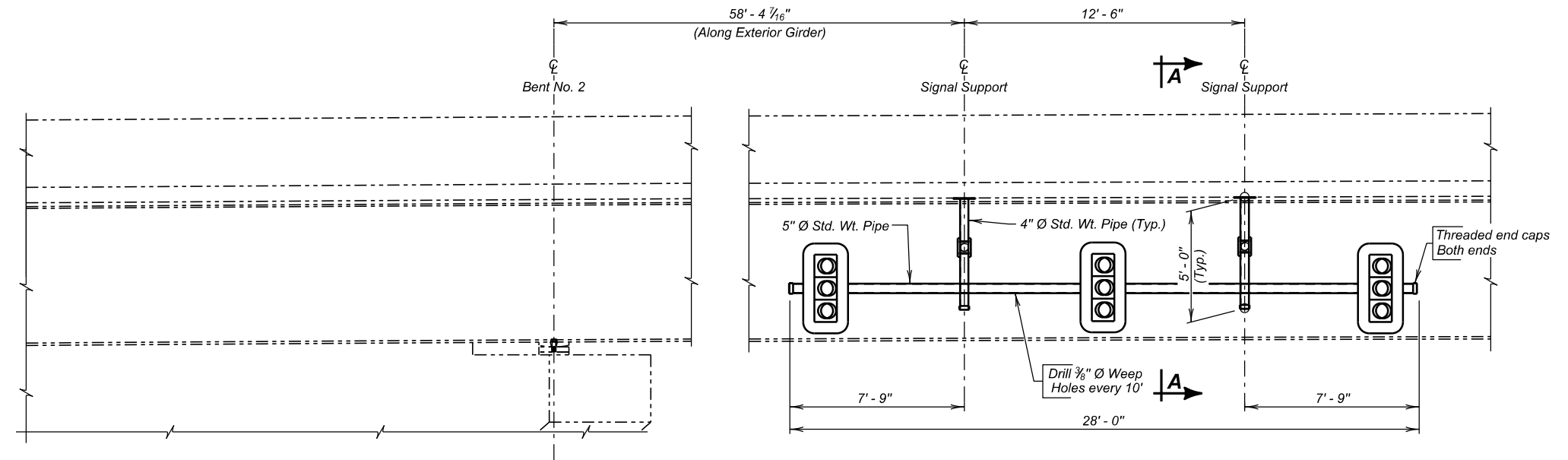
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-B-CR 2292(101)3	9	10



SECTION A - A

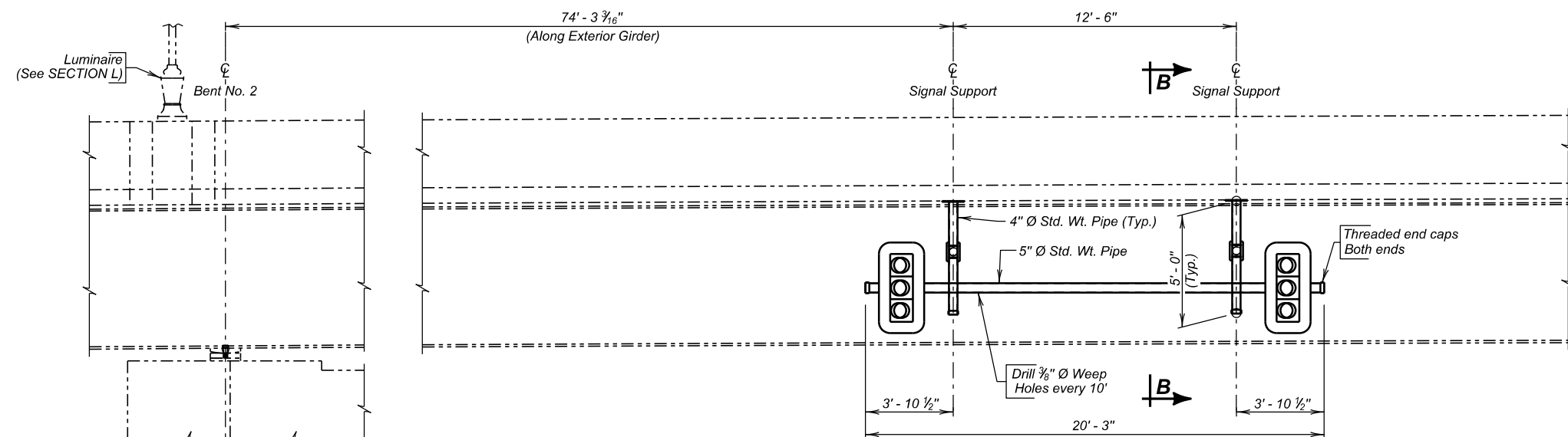


SECTION B - B



ELEVATION

(Head Installation Looking South - Left Side of Bridge)



ELEVATION

(Head Installation Looking North - Right Side of Bridge)

SIGNAL BRACKET DETAILS (A)

FOR

SOUTHBOUND LANES

400' - 9 1/8" STEEL GIRDER BRIDGE

56' - 0" ROADWAY

25° LHF SKEW

OVER CLIFF AVE.

SEC. 28-T101N-R49W

STA. 207 + 15.13 TO 211 + 15.89

IM-B-CR 2292(101)3

STR. NO. 50-211-230

HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

NOVEMBER 2024

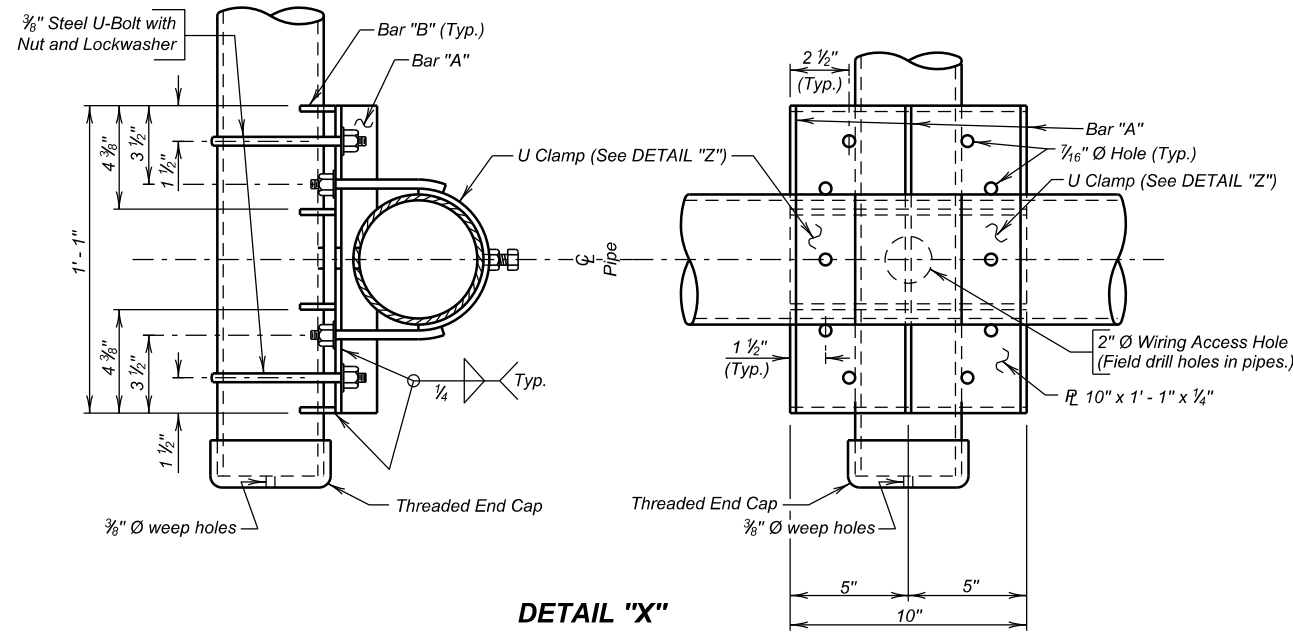
7 OF 8

NOTE:

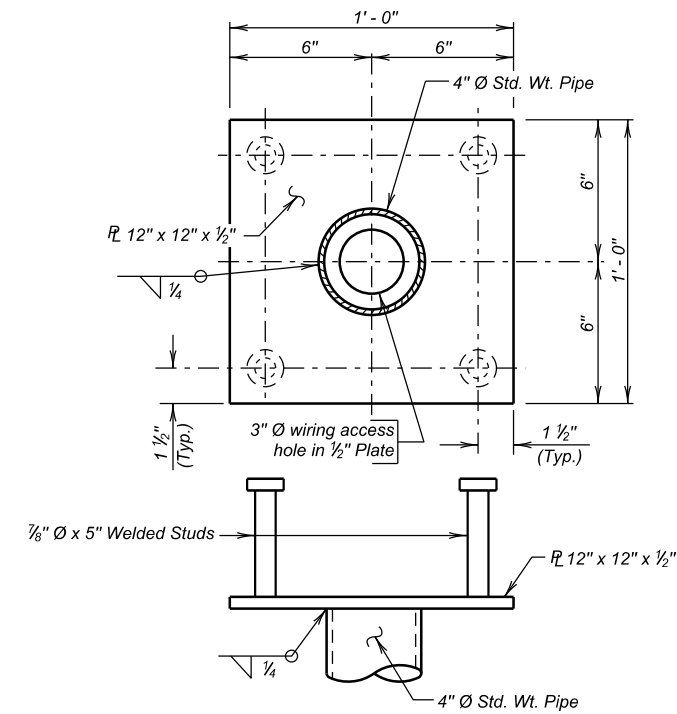
For informational purposes only, the estimated weight of Structural Steel is 1304 lbs.

DESIGNED BY CHM MINN09VY	CK. DES. BY CL 09VYTA07	DRAFTED BY BT	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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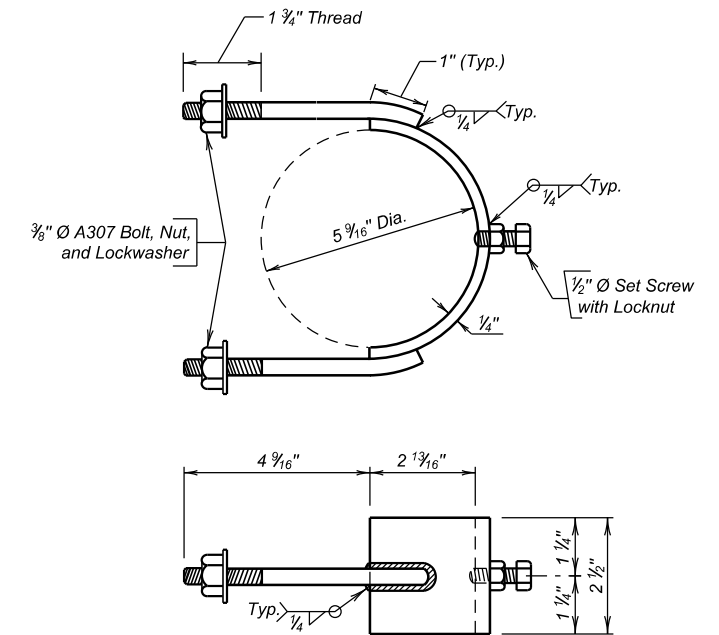
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM-B-CR 2292(101)3	10	10



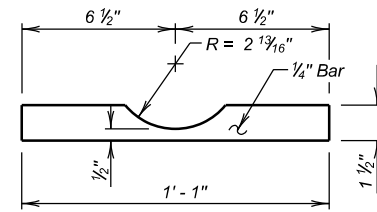
DETAIL "X"



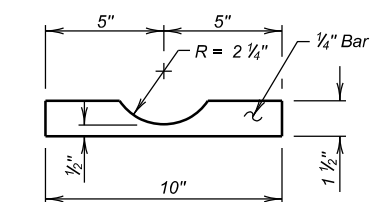
DETAIL "Y"



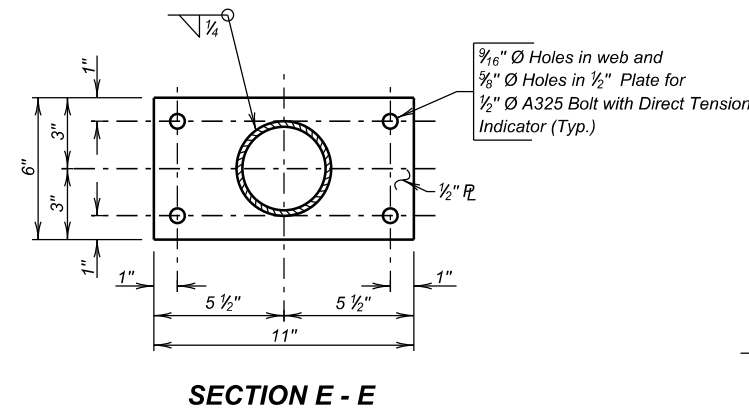
DETAIL "Z"



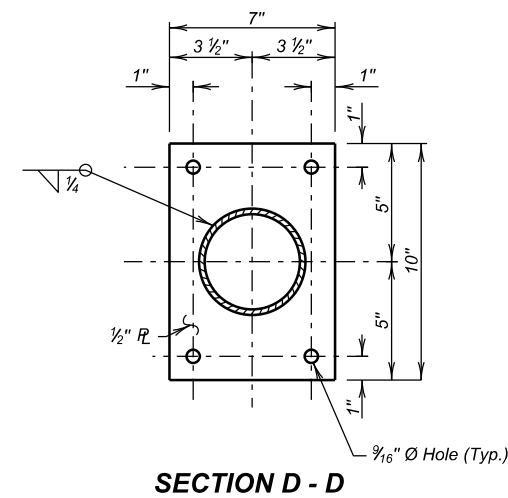
BAR "A"



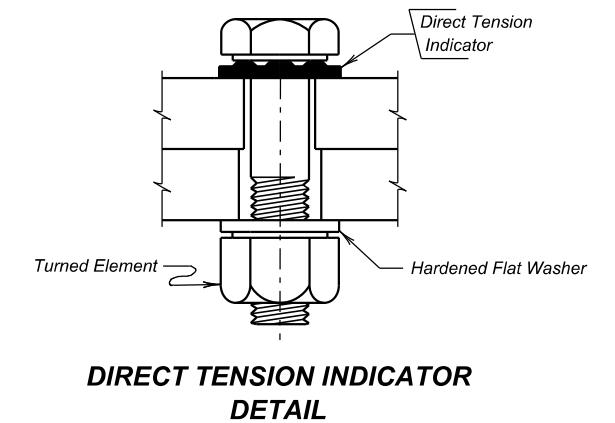
BAR "B"



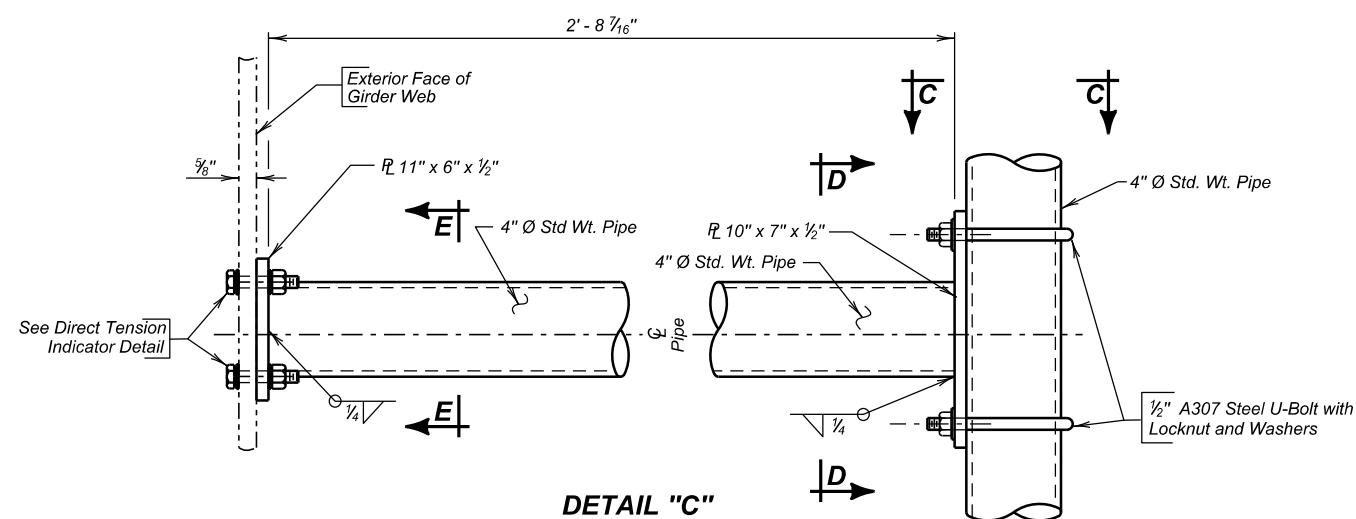
SECTION E - E



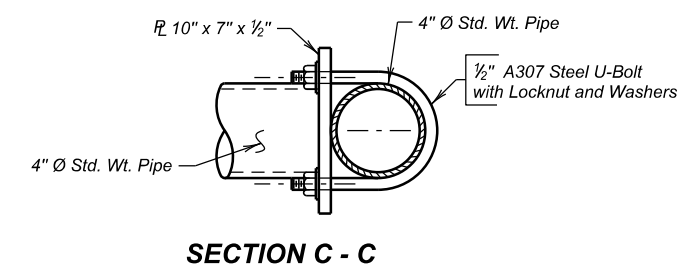
SECTION D - D



DIRECT TENSION INDICATOR DETAIL



DETAIL "C"



SECTION C - C

SIGNAL BRACKET DETAILS (B)
FOR
SOUTHBOUND LANES
400' - 9 1/8" STEEL GIRDER BRIDGE
56' - 0" ROADWAY OVER CLIFF AVE.
STA. 207 + 15.13 TO 211 + 15.89
STR. NO. 50-211-230

25° LHF SKEW
SEC. 28-T101N-R49W
IM-B-CR 2292(101)3
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2024

DESIGNED BY CHM MINN09VY	CK. DES. BY CL 09VYTA08	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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