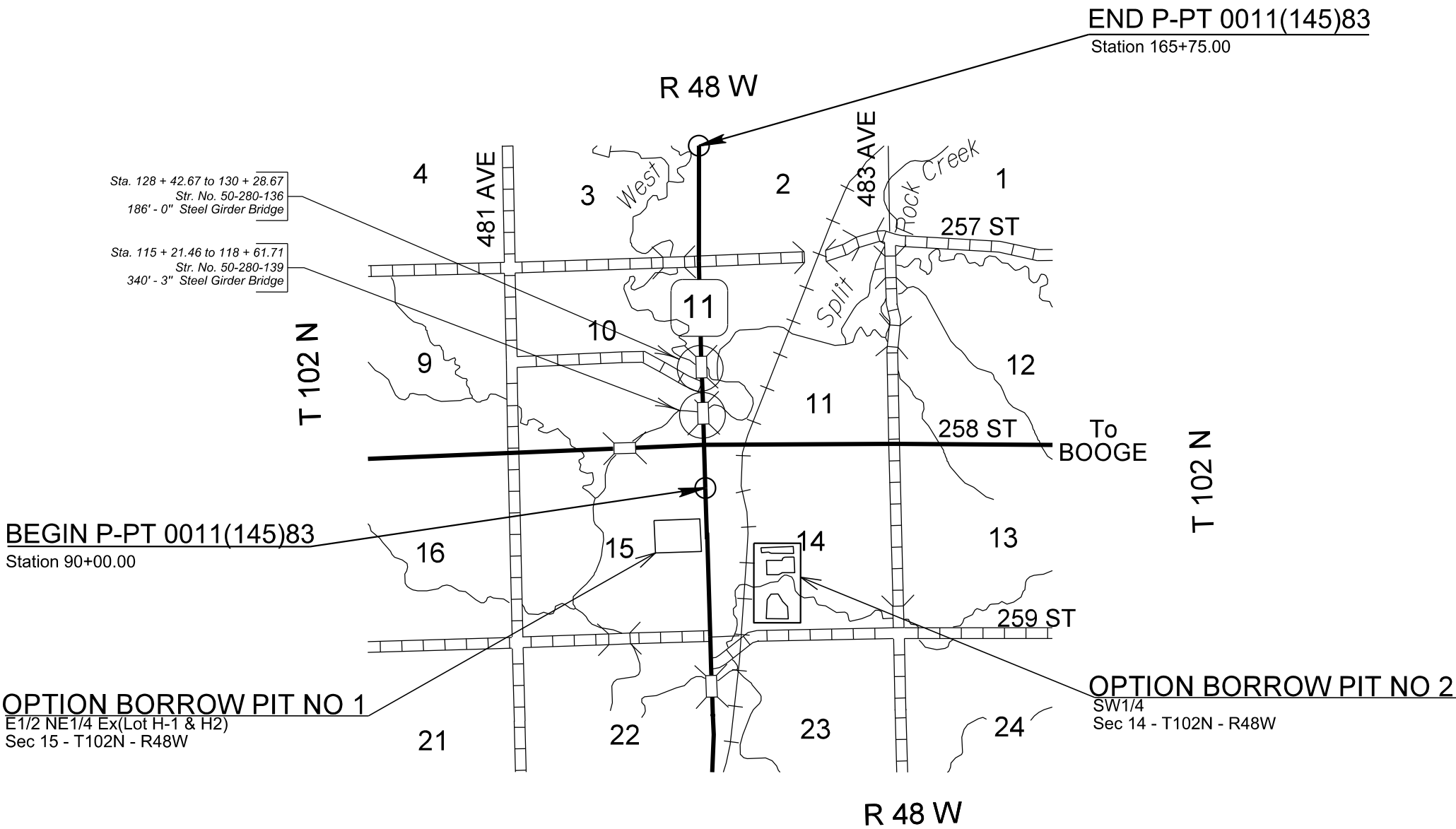
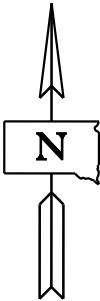


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E1	E59

Section E: Structure Plans

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Sheet E1	Layout Map and Index
Sheet E2	Estimate of Structure Quantities
Sheet E3 to E3I	Str. No. 50-280-I39 340' - 3" Steel Girder Bridge
Sheet E32 to E59	Str. No. 50-280-I36 186' - 0" Steel Girder Bridge



SECTION E – ESTIMATE OF STRUCTURE QUANTITES

Str. No. 50-280-139

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	1,513.0	SqYd
120E7000	Select Granular Backfill	27.0	Ton
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0020	Structural Steel	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
411E0100	Bridge Painting	Lump Sum	LS
420E0100	Structure Excavation, Bridge	488	CuYd
430E0200	Bridge End Embankment	1,482	CuYd
430E0300	Granular Bridge End Backfill	101.1	CuYd
430E0510	Approach Slab Underdrain Excavation	8.0	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	463.4	CuYd
460E0050	Class A45 Concrete, Bridge	288.3	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	41.9	SqYd
460E0500	Deck Drain, Girder Bridge	2	Each
480E0100	Reinforcing Steel	43,610	Lb
480E0200	Epoxy Coated Reinforcing Steel	2,888	Lb
480E0300	Stainless Reinforcing Steel	102,866	Lb
510E0300	Preboring Pile	120	Ft
510E3130	HP 12 Pile Tip Reinforcement	84	Each
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	165	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	2,475	Ft
680E0040	4" Underdrain Pipe	155	Ft
680E2500	Porous Backfill	15.0	Ton
700E0210	Class B Riprap	5,593.5	Ton
700E1100	Overburden Excavation for Riprap	3,190	CuYd
831E0110	Type B Drainage Fabric	6,446	SqYd
831E1030	Perforated Geocell	936	SqFt

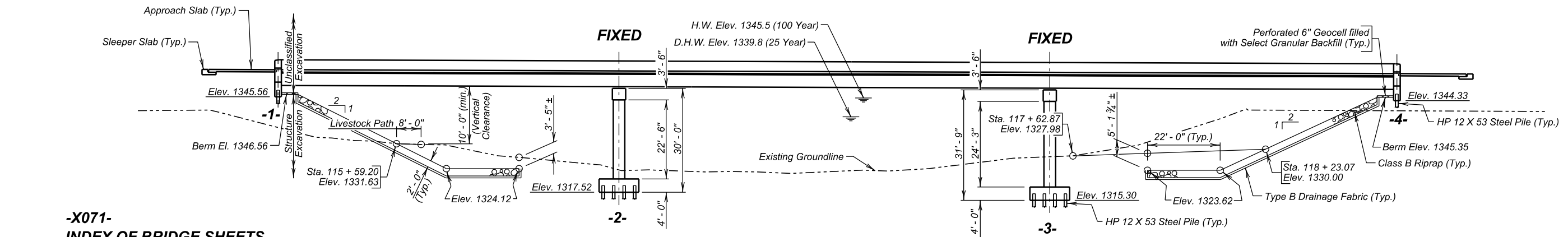
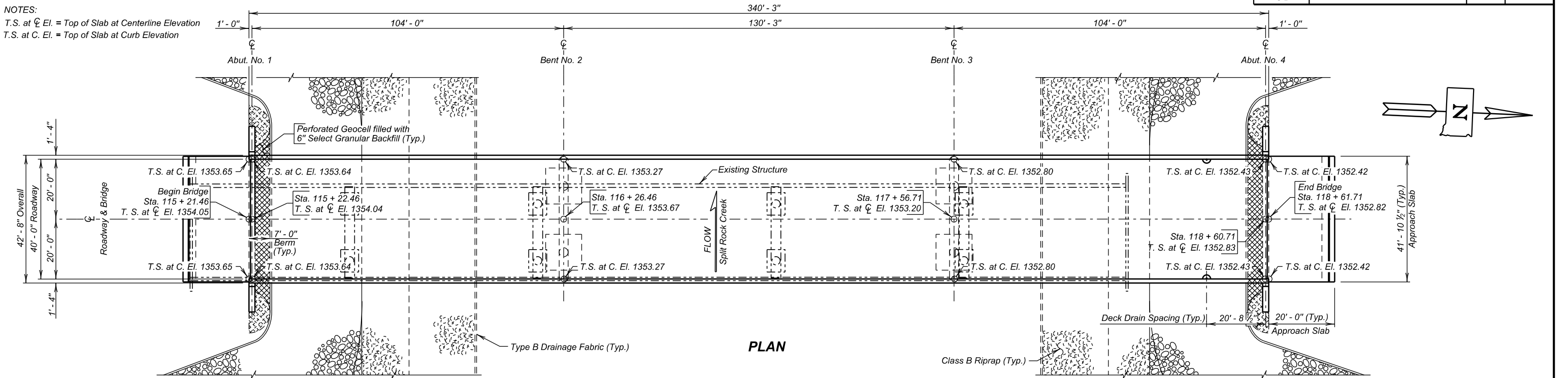
Str. No. 50-280-136

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	823.0	SqYd
120E7000	Select Granular Backfill	25.4	Ton
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0020	Structural Steel	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	83.8	Ft
411E0100	Bridge Painting	Lump Sum	LS
420E0100	Structure Excavation, Bridge	601	CuYd
430E0200	Bridge End Embankment	840	CuYd
430E0300	Granular Bridge End Backfill	84.9	CuYd
430E0510	Approach Slab Underdrain Excavation	8.0	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	253.3	CuYd
460E0050	Class A45 Concrete, Bridge	233.6	CuYd
460E0150	Concrete Approach Slab for Bridge	190.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	41.9	SqYd
460E0382	Install Dowel in Rock	52.5	Ft
480E0100	Reinforcing Steel	37,461	Lb
480E0200	Epoxy Coated Reinforcing Steel	2,722	Lb
480E0300	Stainless Reinforcing Steel	63,287	Lb
510E0300	Preboring Pile	140	Ft
510E3130	HP 12 Pile Tip Reinforcement	14	Each
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	90	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	540	Ft
680E0040	4" Underdrain Pipe	155	Ft
680E2500	Porous Backfill	15.0	Ton
700E0210	Class B Riprap	5,202.6	Ton
700E1100	Overburden Excavation for Riprap	4,058	CuYd
831E0110	Type B Drainage Fabric	5,922	SqYd
831E1030	Perforated Geocell	880	SqFt

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

NOTES:

T.S. at $\varnothing$ El. = Top of Slab at Centerline Elevation
T.S. at C. El. = Top of Slab at Curb Elevation



-X071-

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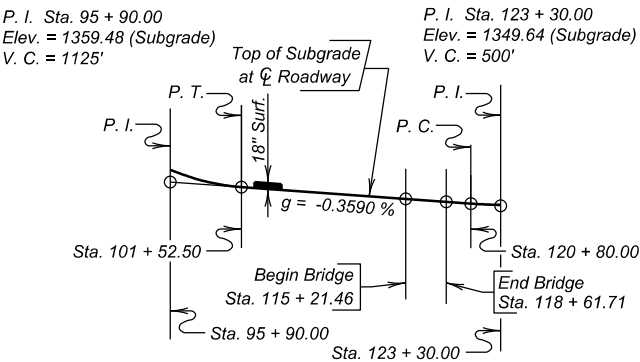
- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Notes (Continued)
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- Sheet No. 7 - Subsurface Investigation and Piling Layout
- Sheet No. 8 - Abutment Details
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- Sheet No. 10 - Superstructure Details (A)
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- Sheet No. 12 - End Block, Barrier Curb, & Deck Drain Details
- Sheet No. 13 - Girder Layout Details
- Sheet No. 14 - Diaphragm Details
- Sheet No. 15 - Framing Diagram, Camber, & Erection Data
- Sheet No. 16 - Slab Form Elevations (A)
- Sheet No. 17 - Slab Form Elevations (B)
- Sheet No. 18 - Details of Bolted Field Splices and Bearings
- Sheet No. 19 - Details of Bridge End Backfill (A)
- Sheet No. 20 - Details of Bridge End Backfill (B)
- Sheet No. 21 - Details of Approach Slab Adjacent to Bridge
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- Sheet No. 23 - Riprap Details
- Sheet No. 24 - As - Built Elevation Survey (A)
- Sheet No. 25 - As - Built Elevation Survey (B)
- Sheet No. 26 - Details of Standard Plate No's. 430.50 and 460.02
- Sheet No. 27 - Details of Standard Plate No's. 460.05 and 510.30
- Sheet No. 28 - Details of Standard Plate No's. 510.40 and 620.17
- Sheet No. 29 - Details of Standard Plate No. 630.92

HYDRAULIC DATA

Q_d	15338 cfs
A_d	3707 sq. ft.
V_d	4.9 fps
Q_F	15338 cfs
Q_{100}	32822 cfs
Q_{OT}	$>Q_{100}$ cfs
V_{max}	7.2 fps

Q_d = Design discharge for the proposed bridge based on 25 year frequency. El. 1339.8.
 Q_{OT} = Overtopping discharge and frequency $>Q_{100}$ year recurrence interval. El. 1351.6 @ Sta. 123 + 50.00. $\pm$
 Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1345.5.
 V_{max} = Maximum computed outlet velocity for the proposed bridge, based on 100 year frequency.

ELEVATION



GRADELINE DATA

GENERAL DRAWING

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139
PCN 05V6

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

-X071-

DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA01	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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PLANS BY:
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	1,513	SqYd	See Special Provision
Select Granular Backfill	27.0	Tons	
Incidental Work, Structure	Lump Sum	LS	
Structural Steel	Lump Sum	LS	
Membrane Sealant Expansion Joint	83.8	Ft	
Bridge Painting	Lump Sum	LS	
Structure Excavation, Bridge	488	CuYd	
Bridge End Embankment	1,482	CuYd	
Granular Bridge End Backfill	101.1	CuYd	
Approach Slab Underdrain Excavation	8.0	CuYd	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	463.4	CuYd	
Class A45 Concrete, Bridge	288.3	CuYd	
Concrete Approach Slab for Bridge	190.6	SqYd	
Concrete Approach Sleeper Slab for Bridge	41.9	SqYd	
Deck Drain, Girder Bridge	2	Each	
Reinforcing Steel	43,610	Lb	
Epoxy Coated Reinforcing Steel	2,888	Lb	
Stainless Reinforcing Steel	102,866	Lb	See Special Provision
Preboring Pile	120	Ft	
HP 12 Pile Tip Reinforcement	84	Each	
HP 12x53 Steel Test Pile, Furnish and Drive	165	Ft	
HP 12x53 Steel Bearing Pile, Furnish and Drive	2,475	Ft	
4" Underdrain Pipe	155	Ft	
Porous Backfill	15.0	Ton	
Class B Riprap	5593.5	Ton	
Overburden Excavation for Riprap	3190	CuYd	
Type B Drainage Fabric	6446	SqYd	
Perforated Geocell	936	SqFt	

BRIDGE SPECIFICATIONS

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
- Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.
- 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

Class A45 Concrete $f'_c = 4,500$ psi
Reinforcing Steel (ASTM A615, Gr. 60) $f_y = 60,000$ psi
Stainless Steel (ASTM A955, Gr. 60) $f_y = 60,000$ psi
Piling (ASTM A572 Grade 50) $f_y = 50,000$ psi
Structural Steel (ASTM A709 Gr. 50T2) $f_y = 50,000$ psi

GENERAL CONSTRUCTION

- All lap splices shown are contact lap splices unless noted otherwise.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
- Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
- The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
- Barrier curbs, and end blocks will be built perpendicular to the roadway grade line.
- Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.11. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
- The elevation of the bridge deck is 18 inches above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 115+01.25 to centerline Sta. 118+15.75 is a 314.5-foot, 5 span steel girder bridge with a 30'-0" clear roadway width. The superstructure consists of a reinforced concrete slab with steel channel rail attached to the back-side of curbs, faced with spacer blocks and steel Thrie-beam continuous across the bridge. The deck has been overlaid with 3-4.5 inches of asphalt. The substructure consists of 2 column reinforced concrete bents supported on spread footings and reinforced concrete sill type abutments; the abutments are supported on timber piling.

- Break down and remove the existing bridge, and approach/sleeper slabs if applicable, to 1-foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Construction Specifications. All portions of the existing bridge will be removed and disposed of by the Contractor at an approved. An appropriate site will be as described in the Environmental Commitments Notes in the plans.
- During demolition of the structure, efforts will be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.
- The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid, it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing structure contains lead. The Contractor should plan operations accordingly and inform employees of the hazards of lead exposure.

DESIGN MIX OF CONCRETE

- All structural concrete will be Class A45 Concrete unless otherwise indicated.
- Type II cement conforming to Section 750 of the Construction Specifications is required in all concrete on the structure except in the abutments. Abutment concrete will use a Type III cement or an approved modified A45 mix. The modified mix will meet the requirements for A45 concrete specified in Section 460 of the Construction Specification with the following modifications: a high range water reducer is required at the manufactures' recommended dosage, the maximum concrete slump is 6 inches, the maximum water/cementitious material ratio will be at least 0.02 less than the A45 mix used in the rest of the substructure, and the minimum concrete temperature at time of placement will be 65 degrees Fahrenheit. If used, type III cement will contain a maximum 8% Tricalcium Aluminate (C₃A) and a maximum 0.6% Alkalis (Na₂O + 0.658K₂O).
- Grout design mix will be as specified in Section 460.2 K of the Construction Specifications. A compressive strength of 2000 psi will be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4-inch. The quantity of grout is included in and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

340' - 3" STEEL GIRDER BRIDGE

STR. NO. 50-280-139

FEBRUARY 2025

ABUTMENTS

1. Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
2. The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. Piling will develop a field verified nominal bearing resistance of 245 tons per pile.
3. One test pile will be driven at each abutment and will become part of the pile group. The test pile will be driven before any other pile and will be driven to the required field verified nominal bearing resistance or as directed by the Engineer prior to driving any portion of the bearing piles.
4. Pile can be driven to elevation 1325.00', but not below, prior to splicing. This will prevent setup of the pile before full bearing depth is reached.
5. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40.
6. Piles will not be driven out of position by more than three inches in the direction parallel to the girder centerline. A pile-driving template will be used to ensure this accuracy.
7. Each finished abutment will include a Bridge Survey Marker. See Standard Plate 460.05
8. Pile tip reinforcement will be required. See Standard Plate 510.30.

CONNECTION OF GIRDER TO PILE

1. Cut off piling at the elevations shown in the plans and weld bearing plates to the piling. Adjust as necessary to make bearing plates level, and to permit proper position of the girders. If piles are driven out of position to the extent that bearing plates will not fit, the Contractor will submit the method of correction to the Engineer for approval. Piles will not be pulled into position.
2. All girder erection will be complete with the splices fully bolted and diaphragms in place, before welding girders to bearing plates. (Diaphragms need not be secured with more than temporary bolting, prior to the pile to girder connections.)
3. An alternate connection, capable of transmitting a direct load of 8000 lbs. to the pile and developing 30,000 lbs. horizontal force, may be submitted to the Office of Bridge Design for prior approval.
4. This connection will not be made when the temperature is greater than 70° F or less than 30° F.
5. Steel for the bearing plates will conform to ASTM A709 Gr. 50.
6. Payment for furnishing and installing the bearing plates will be incidental to the contract lump sum price for Structural Steel.

POURING OF ABUTMENT CONCRETE

1. Abutment concrete will be placed, as directed by the Engineer, at a time when a relatively stable temperature can be expected. A relatively stable temperature is defined as an air temperature deviation of not more than 30° F within 12 hours of completing the abutment pour from the air temperature at the time when the abutment concrete is placed.
2. The forms will be secured to the girders in such a manner that they will be free to move longitudinally with the expansion or contraction of the girder.
3. The girders will be braced near the abutments in such a manner that their lateral movement or rotation will be prevented during the placing of concrete. The Contractor will include details for this bracing with the falsework plans.

BENTS

1. 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.
2. The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. Piling will develop a field verified nominal bearing resistance of 245 tons per pile.
3. One test pile will be driven at each bent and will become part of the pile group. The test pile will be driven before any other pile and will be driven to the required field verified nominal bearing resistance or as directed by the Engineer prior to driving any portion of the bearing piles.
4. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40
5. Pile tip reinforcement will be required. See Standard Plate. 510.30.
6. Spiral reinforcement may be fabricated from cold drawn wire conforming to ASTM A1064 or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.
7. It is anticipated that cofferdams will be necessary. Cofferdams will be designed and constructed in accordance with Section 423 of the Construction Specifications.

PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The following pile hammers were evaluated and found to produce acceptable driving stresses:

Delmag D19-42 APE D19-42 MVE M-19
2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity. Requests for evaluation of hammers not listed will be submitted a minimum of 5 business days prior to installation of piles.
3. Steel piling will obtain bearing on Corson Diabase bedrock. This material is extremely hard and impenetrable by nature. The Site Plan & Subsurface profile sheet should be reviewed to obtain the approximate Corson Diabase elevation prior to pile driving operations. Some piles may be shorter than the projected depth. Extreme care should be taken during pile driving operations not to over-stress the piles when the tips encounter Corson Diabase bedrock.
4. A dense layer of mudstone (Corson Slate) is present from approximately elevation 1312-1322 feet. Below the Corson Slate is a layer of brown claystone, which overlies the Corson Diabase.
5. Sequence pile driving so that abutment pile are driven first. If abutment piling penetrate the Corson Slate, preboring at the bents may not be required. Consult the Bridge Construction Engineer for direction.
6. If abutment piling do not adequately penetrate the Corson Slate, the Contractor will prebore bent piling 5 feet. After the bent piling are driven, backfill the prebore with grout.
7. The Bridge Construction Engineer will be notified a minimum of two weeks prior to the start of pile driving operations.

PILE GROUT

1. Grout will be a low shrink, neat cement grout or a sand-cement grout. The Grout will have a max Water/Cementitious ratio of 0.45 capable of obtaining a compressive strength of at least 4,000 psi. The contractor will submit a proposed grout mix design, along with compressive strength results, to the SDDOT Concrete Engineer, through the Area Engineer, a minimum of 30 working days prior to the first planned use. The proposed mix design will include brands and planned dosages of all admixtures and will explain the method and timing of introduction into the mix. The Concrete Engineer will review the proposed mix design prior to its use.

NOTES (CONTINUED)
FOR
340' - 3" STEEL GIRDER BRIDGE

STR. NO. 50-280-139
FEBRUARY 2025

PILE GROUT (CONTINUED)

- 2. Grout equipment will produce a uniformly mixed grout free of lumps and undispersed cement and be capable of continuously agitating the mix. Use a positive displacement grout pump to place the grout. The grouting equipment will be sized to enable the prebore to be grouted in one continuous operation. The grout will be placed within 60 minutes after mixing or within the time recommended by the admixture manufacturer if admixtures are used. Grout not placed within the time limit will be rejected.
- 3. After all the piling has been seated, grout the piling prebore to the proper elevation as stated in the plans. The piling will be grouted as soon as possible after drilling and seating of the pile. Inject the grout at the lowest point of each prebore through a grout tube. The outlet end of the grout tube will deliver grout below the surface of the grout as the grout tube is withdrawn to prevent the creation of voids. Fill the prebore to the proper elevation in one continuous operation.
- 4. All costs for furnishing and installing the pile grout including, labor materials, equipment, and incidentals necessary to complete the work will be incidental to the contract unit price per foot for the steel pile.

SUPERSTRUCTURE

- 1. Structural steel will conform to ASTM A709 Gr. 50T2. Steel for diaphragms and stiffeners may conform to ASTM A709 Gr. 50. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.
- 2. Bolts, nuts and washers will conform to ASTM F3125, Grade A325.
- 3. The shear connectors will be installed during fabrication. Any request to field install the shear connectors must be approved by the Office of Bridge Design.
- 4. All butt-welded girder splices will be ultrasonically inspected.
- 5. The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel.
- 6. Structural Steel will be painted in accordance with Section 411 of the Specifications. The top coat will be an approved brown (Federal Standard 595 Color 30045).
- 7. The top of the top flange will be shop painted, following the shear connector attachment, with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. No top coat of polyurethane will be applied.
- 8. 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.
- 9. The use of an approved deck finishing machine will be required during placement of bridge deck concrete. The deck finishing machine will be adjusted and operated in such a manner that the screed or screeds are parallel with the centerline of the bridge. The finish machine and concrete placement will be parallel to the skew of the bridge. If the deck finish

machine cannot match the exact skew of the bridge, the difference will need be approved by the Engineer.

- 10. The concrete bridge deck will be placed and finished at a minimum rate of 65 feet of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. If a header is required sometime during the pour operation, its location will be at or as near as possible to the three-quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 65 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.
- 11. 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.
- 12. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.
- 13. The Contractor is required to submit a detailed plan showing the proposed girder erection. The girder erection plan will be designed and stamped by a Professional Engineer registered with the State of South Dakota. The plan must be submitted 30 days prior to the start of work for approval by the Office of Bridge Design. The plan will include. But not limited to, complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details, and temporary bracing details.
- 14. All single girder segments will be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully installed and bolts fully tightened. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected. At no time will a single girder segment be allowed over traffic.
- 15. See Special Provision for Concrete Penetrating Sealer.
- 16. Any concrete mortar that gets on all surfaces of all the superstructure components will be washed off or removed before it is dry.

BEARINGS

- 1. All steel for the bearings will conform to ASTM A709, Gr. 50.
- 2. 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.
- 3. The bearing plates will be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. No top coat of polyurethane will be applied.

- 4. 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

- 5. Payment for furnishing and installing 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.

FIELD BOLTED GIRDER SPLICES

- 1. Steel for splice and filler plates will conform to ASTM A709 Gr. 50T2
- 2. Bolts in flange splices will be placed with the heads down.
- 3. Bolts in web splices of exterior girders will be placed with the heads on the exterior face of girders.
- 4. All bolts will be fully tightened prior to removing temporary supports.

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.

NOTES (CONTINUED)
FOR
340' - 3" STEEL GIRDER BRIDGE

STR. NO. 50-280-139
FEBRUARY 2025

DECK DRAINS

- Deck Drains will be 4-inch diameter x 6'- 3" Fiberglass Pipe conforming to the requirements of ASTM D2996.
- The Fiberglass Pipe Sleeves can be made from a 4-inch diameter Fiberglass Pipe Fitting. They will be attached to the 4-inch diameter Fiberglass Pipe, as shown in the plans, per the manufacturer's recommendation.
- All fiberglass pipe and pipe fittings will be handled and installed according to the guidelines and procedures recommended by the manufacturer. Pipe and pipe fittings must be from the same manufacturer.
- Use fiberglass wear pads to protect against contact with supports or U-bolts.
- The 1/2-inch diameter U-bolts, nuts and washers will conform to ASTM A307 and will be galvanized in accordance with ASTM F2329 then painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).
- Steel for the bent plates and washers will conform to ASTM A36 and will be painted in accordance with Section 411 of the Construction Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).
- Washers will be plate washers or a continuous bar at least 5/16-inch thick with standard holes and completely cover the slot after installation.
- The 1/2-inch diameter bolts and nuts will conform to ASTM F3125, Gr. A325.
- The deck drains to girder connection as shown in the plans allows the deck drain location to be adjusted slightly to clear transverse slab reinforcement.
- All fiberglass pipes and pipe fittings will use pigmented resin throughout the wall. The color will be an approved brown (AMS STD 595 Color 30045).
- Payment for deck drains will be at the contract unit price per each for Deck Drains, Girder Bridge, and will be full compensation for furnishing, fabricating, and installing the deck drains and all attaching hardware in accordance with the plans and Construction Specifications.

FALL PROTECTION

- The Contractor will install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system will be installed. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.
- Modifications to any bridge components used to accommodate the Fall Protection System will be shown on the Falsework Plans and the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System will be incidental to the other contract items.

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 Contractor to notify the bolt supplier of these requirements.

CLASS B COMMERCIAL TEXTURE FINISH

- A Class B commercial texture finish will be applied to the following areas:

Barrier: all exposed surfaces (top** and front**).

** Color will be AMS – STD - 595 37875
- The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications.

SHOP PLANS

Shop plans will be required as specified by the Construction Specifications.

SHEAR STUD CONNECTOR

- Prior to the welding of the studs to the girders, the top surface of the girders that are to have studs welded on will be clean of all dirt, rust, and any other foreign matter.
- The shear connector 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 connector will meet the following minimum mechanical property requirements for Type B studs,

Tensile	60 ksi
Yield Strength	60 ksi
Elongation	20%
Reduction of Area	50%
- The shear connectors will be installed during fabrication. Any request to field install the shear connectors must be approved by the Office of Bridge Design.

APPROACH SLABS

- Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the top pf the sleeper slab riser.
- The portion of the sleeper slab below the construction joint may be precast. If the bottom portion of the sleeper slab is precast, the Contractor will submit proposed lifting and setting plans to the Bridge

Construction Engineer for approval. In addition, if reinforcing or other details differ from those shown in the plans, the Contractor will submit proposed alternate details for approval.

- The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine will be kept parallel to the screed.
- Concrete Approach Sleeper Slab for Bridge, whether cast-in-place or precast, will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.
- Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer, and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment and any incidentals necessary to complete this item of work.

APPROACH SLAB UNDERDRAIN SYSTEM

- An underdrain system will be placed underneath the sleeper slabs and behind the abutments as shown in the plans in accordance with Section 435 of the Construction Specifications.
- The 4-inch diameter Perforated PVC Drain Pipe will be PS 46 Solvent Weld PVC Pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve shall conform to ASTM D6707.
- Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.
- All labor, tools, equipment, and any incidentals necessary for the Installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, 5-inch diameter schedule 40 steel pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

NOTES (CONTINUED)
FOR
340' - 3" STEEL GIRDER BRIDGE

STR. NO. 50-280-139
FEBRUARY 2025

PERFORATED GEOCELL

1. Perforated Geocell will be from the following company or equivalent:

Company: Agtec
Phone: 1-818-724-7657
Website: <http://www.agtec.com>

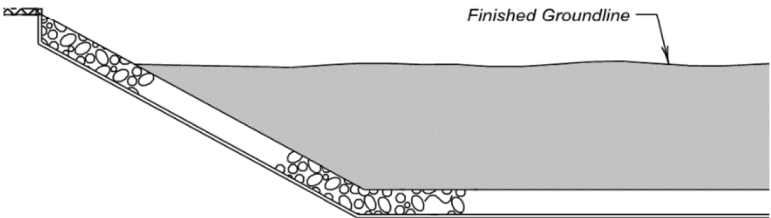
2. Perforated Geocell will be 6 inches tall with Type B Drainage Fabric underlying the perforated Geocell. Installation will adhere to the manufacturer's recommendation.
3. Perforated Geocell will be filled with the Select Granular Backfill in accordance with Section 850 of the Construction Specifications.
4. Perforated Geocell will be paid for at the contract unit price per square foot. Payment will be full compensation for furnishing and installing the Perforated Geocell.
5. Select Granular Backfill will be paid for at the contract unit price per ton of material furnished. Payment will be full compensation for furnishing, loading, hauling, and placing the Select Granular Backfill.

RIPRAP

Riprap gradation and Drainage Fabric will comply with Section 700.2 of Construction Specifications. Placement of Riprap and Drainage Fabric will be in accordance with Section 700.3 of the Construction Specifications and conditions must be free of standing water.

OVERBURDEN EXCAVATION FOR RIPRAP

1. This work will consist of the removal and replacement of material between the limits of the finished groundline and the top of the riprap. See diagram below (overburden is in grey).



2. Excavation is to be completed after temporary diversion method is in place, if required, with minimal standing water to create the profile of slope protection specified in plans.
3. The removed material will be placed on top of the riprap to the natural ground, proposed groundline, or specified shape and elevations shown in plans. When overburden extends into the streambed it will form the channel bottom and profile as specified in plans. The finished ground under the bridge will be shaped to match the upstream and downstream channel and flood plain.

4. The overburden material will be placed on top of the riprap and have a maximum lift depth of 1' – 0" and compacted free of flowing water or standing water in excess of four inches above the riprap at the lowest elevation.
5. Compaction effort will produce a surface that does not pump, rut, or otherwise displace when traveled over with construction equipment to the satisfaction of the Engineer. Material may be added to excavated material to facilitate compaction and handling. Importing, stockpiling, blending, and/or wasting of materials will be incidental to the contract unit price for Overburden Excavation for Riprap.
6. Payment for Overburden Excavation for Riprap will be at the contract unit price and will be full compensation for labor, equipment, tools, and incidentals, including furnishing, installing, and removal of any temporary works necessary to complete the work. Payment will be for plans quantity unless measurement is ordered by the Engineer.
7. Before preparing the bid, it is the responsibility of the Contractor to verify existing conditions to determine if a temporary diversion method and/or dewatering will be required. If required, the Contractor must submit the temporary diversion method and/or dewatering for approval to the Construction Engineer 30 days prior to construction.

AS - BUILT ELEVATION SURVEY

The Contractor will be responsible for producing an as-built elevation survey soon after construction is completed but before the bridge is opened to traffic. The Contractor will be responsible for recording the as-built elevation shown in the plans. The completed table will be given to the Engineer and copies forwarded to the Office of Bridge Design and the Region Bridge Engineer. The elevations will be based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88). The Engineer will provide the Contractor with a description, elevation, and location of the nearest benchmark that has a NAVD88 established elevation for the Contractor's use. The benchmark shown in the plans has not been tied to the NAVD88. The Contractor will be responsible for establishing a NAVD88 elevation for the benchmark provided in the plans. All cost associated with obtaining the NAVD88 elevations at the locations shown in the table and for the benchmark shown in the plans, including all equipment, labor, and any incidentals required will be incidental to the contract lump sum price for Bridge Elevation Survey.

NOTES (CONTINUED)
FOR
340' - 3" STEEL GIRDER BRIDGE

STR. NO. 50-280-139
FEBRUARY 2025

The Corson Diabase is a formation of hard igneous rock that intruded through fractures within the Sioux Quartzite. Dike and sill type structures are present in localized areas. The appearance of the formation is generally a black matrix.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

LEGEND

- Auger Test
- Core Test
- Drive Test
- Water
- Caved
- NQ3 Core
- Sample Zone

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

All auger test holes are drilled with a 4 1/2 inch diameter continuous flight auger.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to collect samples and measure the resistance to penetration of the soil. Samples are collected using a lined Modified California Sampler. Penetration test results are listed as uncorrected "N" values in blows per foot. Blows over inches are listed if refusal is achieved, which is 50 blows within one 6 inch set.

Core tests are conducted with NQ core barrels to obtain 1 1/8 inch nominal diameter samples.

GROUNDWATER ELEVATIONS

AUGUST 2023

A1	1323.8
A2	1323.3
A3	1324.4
A4	1324.6
A5	1324.1
A6	1322.4
A7	1324.3
A8	1324.2
A9	(CAVED) 1325.8

MEASURED SKIN FRICTION

	ELEV.	PSF
A7	1315.8	1644
A8	1315.9	770
A9	1306.8	1604

SUBSURFACE INVESTIGATION AND PILING LAYOUT FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY

OVER SPLIT ROCK CREEK

STA. 115 + 21.46 TO 118 + 61.71

STR. NO. 50-280-139

0° SKEW

SEC. 10/11-T102N-048W

P - PT 0011(145)83

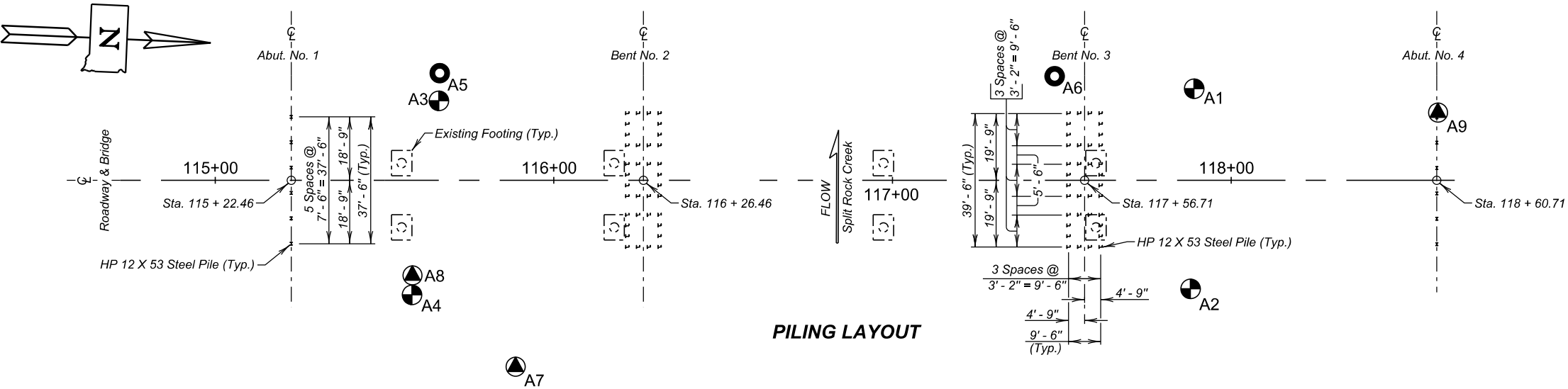
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MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

7 OF 29



PILING LAYOUT

Hole Number	A5
Station	115+66.3
Depth	5.5 ft
Soil Color	Brown
Classification	Sandy Silt
Strength (Qu)	700 psf
Dry Density	90.7 pcf
Wet Density	112.1 pcf
Moisture	23.6 %
Pass No. 10	99.5 %
Pass No. 40	97.6 %
Pass No. 200	57.5 %
Sand Content	42.0 %
Silt Content	37.6 %
Clay Content	19.9 %

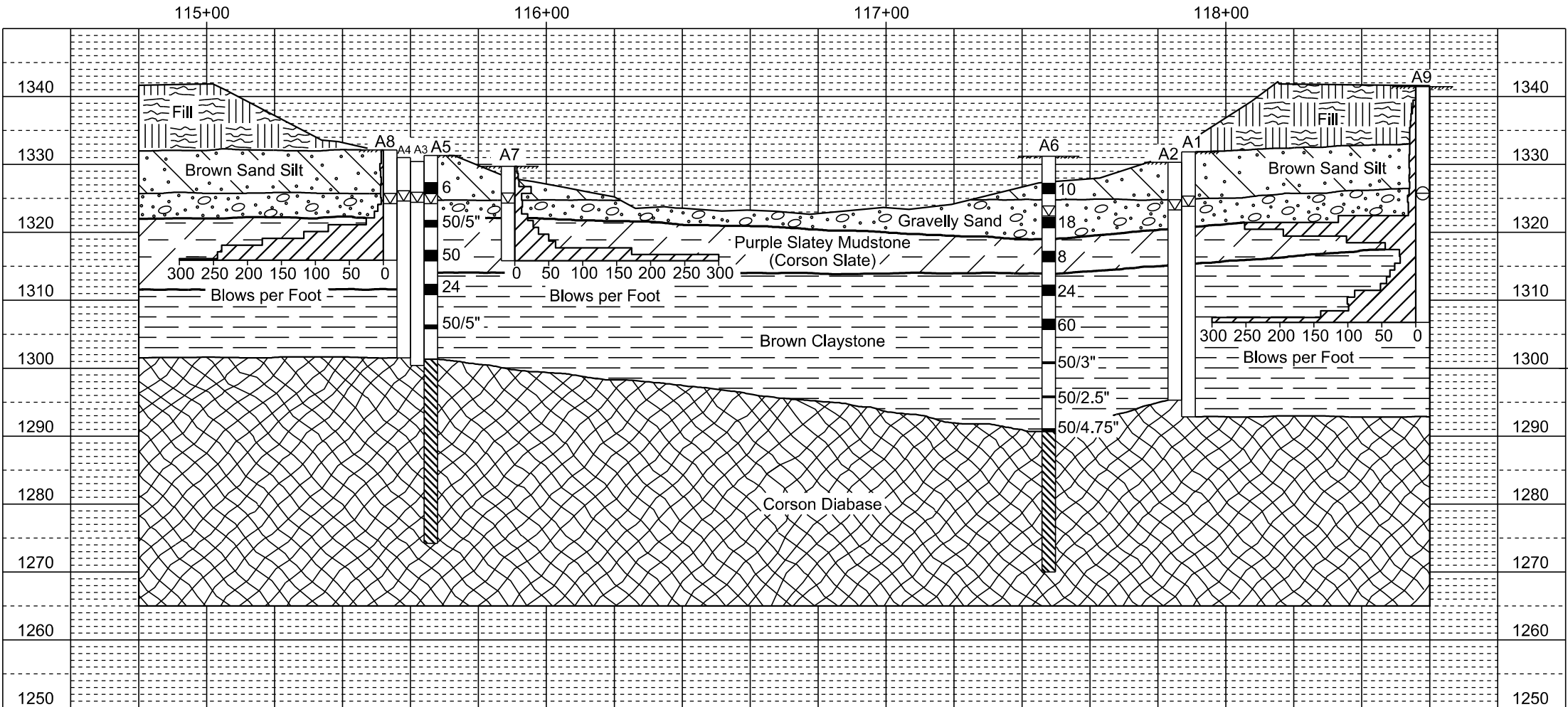
Hole Number	A5
Station	115+66.3
Depth	20.5 ft
Soil Color	Brown
Classification	Silt Clay
Strength (Qu)	4,735 psf
Dry Density	98.8 pcf
Wet Density	126.9 pcf
Moisture	28.5 %
Pass No. 10	100.0 %
Pass No. 40	99.3 %
Pass No. 200	84.2 %
Sand Content	15.8 %
Silt Content	34.2 %
Clay Content	50.0 %

Hole Number	A6
Station	117+47.9
Depth	5.5 ft
Soil Color	Brown
Classification	GRV L SLT SND
Strength (Qu)	No Test
Dry Density	96.1 pcf
Wet Density	104.1 pcf
Moisture	8.3 %
Pass No. 10	63.6 %
Pass No. 40	44.6 %
Pass No. 200	32.1 %
Sand Content	31.5 %
Silt Content	19.4 %
Clay Content	12.7 %

Hole Number	A6
Station	117+47.9
Depth	10.2 ft
Soil Color	Brown
Classification	Gravelly Sand
Strength (Qu)	No Test
Dry Density	119.1 pcf
Wet Density	133.1 pcf
Moisture	11.8 %
Pass No. 10	70.0 %
Pass No. 40	24.3 %
Pass No. 200	4.4 %
Sand Content	65.6 %
Silt Content	2.7 %
Clay Content	1.7 %

Hole Number	A6
Station	117+47.9
Depth	15.5 ft
Soil Color	Brown
Classification	Clay
Strength (Qu)	3,409 psf
Dry Density	96.3 pcf
Wet Density	123.7 pcf
Moisture	28.5 %
Pass No. 10	100.0 %
Pass No. 40	99.9 %
Pass No. 200	87.8 %
Sand Content	12.2 %
Silt Content	33.8 %
Clay Content	54.0 %

Hole Number	A6
Station	117+47.9
Depth	25.5 ft
Soil Color	Brown
Classification	Clay Sand
Strength (Qu)	11,180 psf
Dry Density	118.8 pcf
Wet Density	140.9 pcf
Moisture	18.6 %
Pass No. 10	100.0 %
Pass No. 40	88.2 %
Pass No. 200	54.5 %
Sand Content	45.5 %
Silt Content	28.5 %
Clay Content	26.0 %



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E10	E59

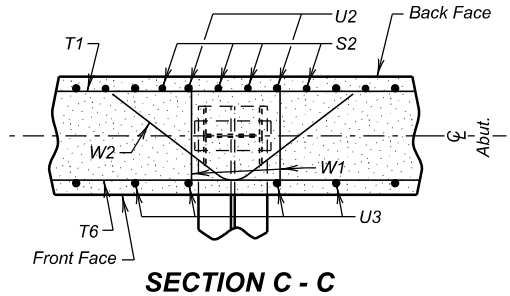
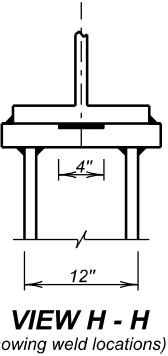
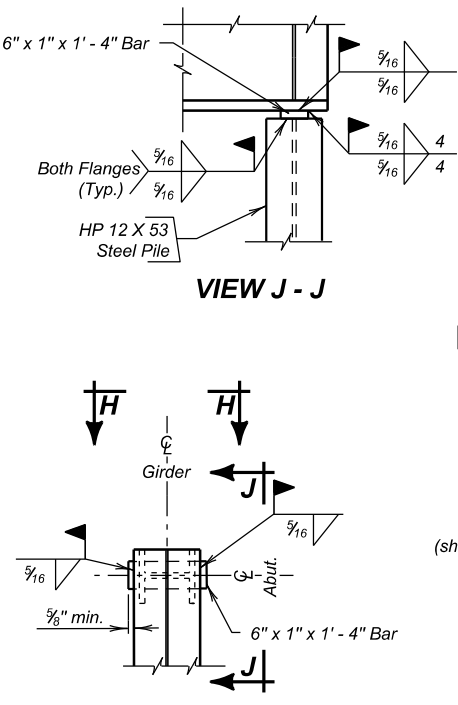
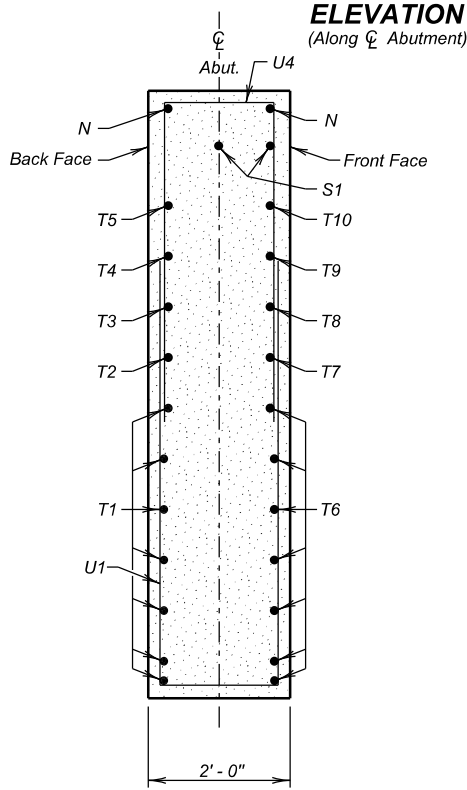
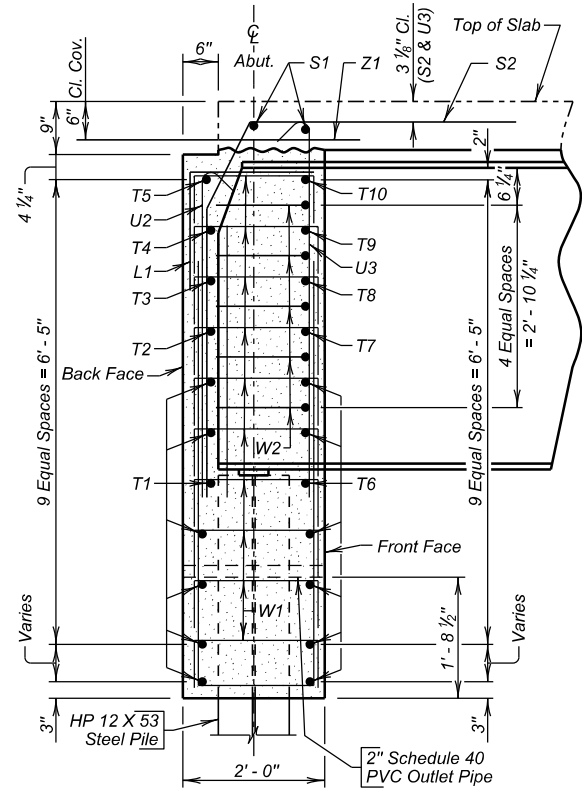
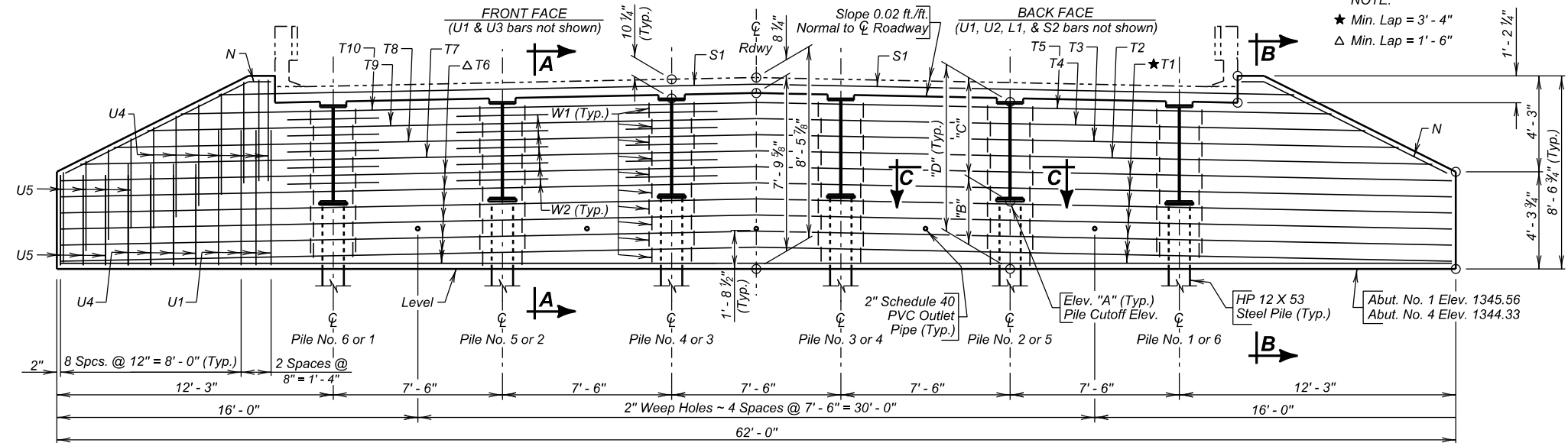
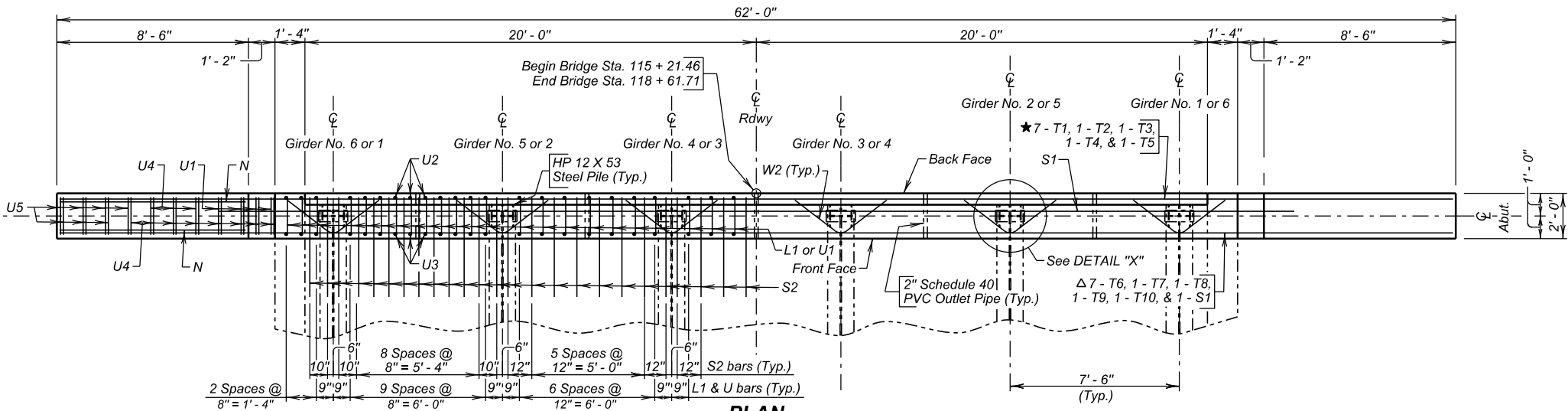


TABLE OF ELEV. & DIMENSIONS				
Pile No.	Elev. "A"	"B"	"C"	"D"
1	1348.40	2' - 10 1/16"	4' - 5 1/16"	7' - 3 1/8"
2	1348.55	2' - 11 1/16"	4' - 5 1/16"	7' - 4 1/16"
3	1348.70	3' - 1 1/16"	4' - 5 1/16"	7' - 6 3/4"
4	1348.70	3' - 1 1/16"	4' - 5 1/16"	7' - 6 3/4"
5	1348.55	2' - 11 1/16"	4' - 5 1/16"	7' - 4 1/16"
6	1348.40	2' - 10 1/16"	4' - 5 1/16"	7' - 3 1/8"
1	1347.17	2' - 10 1/16"	4' - 5 1/16"	7' - 3 1/8"
2	1347.32	2' - 11 1/16"	4' - 5 1/16"	7' - 4 1/16"
3	1347.47	3' - 1 1/16"	4' - 5 1/16"	7' - 6 3/4"
4	1347.47	3' - 1 1/16"	4' - 5 1/16"	7' - 6 3/4"
5	1347.32	2' - 11 1/16"	4' - 5 1/16"	7' - 4 1/16"
6	1347.17	2' - 10 1/16"	4' - 5 1/16"	7' - 3 1/8"

REINFORCING SCHEDULE

(For one Abutment)

Mk.	No.	Size	Length	Type
L1	45	4	3' - 4"	17A
S1	2	9	47' - 8"	Str.
S2	50	6	9' - 3"	14A
T1	14	9	32' - 6"	Str.
T2	1	9	59' - 11"	Str.
T3	1	9	56' - 11"	Str.
T4	1	9	53' - 11"	Str.
T5	1	9	51' - 0"	Str.
T6	14	6	31' - 7"	Str.
T7	1	6	59' - 11"	Str.
T8	1	6	56' - 11"	Str.
T9	1	6	53' - 11"	Str.
T10	1	6	51' - 0"	Str.
N	4	4	10' - 1"	19B
U1	55	6	13' - 8"	17
U2	47	6	4' - 2"	T9B
U3	47	6	6' - 0"	T9B
U4	22	6	10' - 8"	17
U5	14	6	9' - 8"	17
W1	120	6	3' - 0"	17
W2	30	8	5' - 0"	13A

Bending Details

Type 17

Type 14A

Type 17

Type 13A

Type 19B

Type 17A

Type T9B

NOTE: All dimensions are out to out of bars.
 * Bars to be Epoxy Coated.

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Abut. No. 1	Abut. No. 4
Class A45 Concrete, Bridge	Cu. Yd.	33.6	33.6
Reinforcing Steel	Lb.	6450	6450
Epoxy Coated Reinforcing Steel	Lb.	1444	1444
Structure Excavation, Bridge	Cu. Yd.	12	12
HP 12 X 53 Steel Test Pile, Furnish & Drive	Ft.	1 @ 50' = 50'	1 @ 60' = 60'
HP 12 X 53 Steel Bearing Pile, Furnish & Drive	Ft.	5 @ 50' = 250'	5 @ 60' = 300'
HP 12 Pile Tip Reinforcement	Each	6	6
Preboring Pile	Ft.	6 @ 10' = 60'	6 @ 10' = 60'

ABUTMENT DETAILS

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
 OVER SPLIT ROCK CREEK
 STA. 115 + 21.46 TO 118 + 61.71
 STR. NO. 50-280-139

0° SKEW
 SEC. 10/11-T102N-048W
 P - PT 0011(145)83
 HL-93

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 FEBRUARY 2025

DESIGNED BY
 JH
 MINN05V6

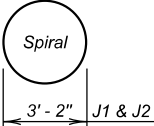
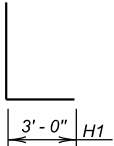
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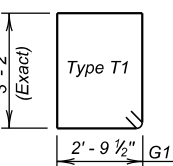
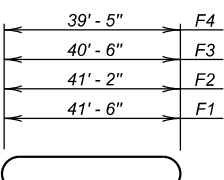
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Steve A. Johnson
 BRIDGE ENGINEER

REINFORCING SCHEDULE

(For One Bent - Two Required)

					Bending Details	
Mk.	No.	Size	Length	Type		
F1	2	10	44' - 4"	1		
F2	2	10	44' - 0"	1		
F3	2	10	43' - 4"	1		
F4	2	10	42' - 3"	1		
F5	2	8	41' - 6"	Str.		
F6	2	8	41' - 2"	Str.		
F7	2	8	40' - 6"	Str.		
F8	2	8	39' - 5"	Str.		
F9	12	4	38' - 8"	Str.		
F10	16	4	11' - 6"	S11		
F11	8	4	7' - 2"	T1	 Type 17A	
G1	88	6	13' - 3"	17		
H1	36	10	11' - 0"	17A		
H2	36	10	25' - 6"	Str.		
J1	3	4	462' - 1"	Spiral		
H3	36	10	27' - 3"	Str.		
J2	3	4	496' - 5"	Spiral		
K1	72	4	11' - 6"	Str.		
K2	84	9	11' - 6"	Str.		

Bent, Bent, No. 3 No. 2			 Type 1	

All dimensions are out to out of bars.

Spirals - Use 6" pitch and 1 ½ extra turns at each end. Use 1 ½ turns for lap at splice as required, or weld as approved by the Office of Bridge Design. Use 3 vertical spacer bars per column. Spirals may be smooth bars, bar length shown does not include splices.

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY	
			Bent No. 2	Bent No. 3
⊕	Class A45 Concrete, Bridge	Cu. Yd.	109.6	111.5
△	Reinforcing Steel	Lb.	15185	15525
⊗	Structure Excavation, Bridge	Cu. Yd.	152	312
	HP 12 X 53 Steel Test Pile, Furnish and Drive	Ft.	1 @ 25' = 25'	1 @ 30' = 30'
	HP 12 X 53 Steel Bearing Pile, Furnish and Drive	Ft.	35 @ 25' = 875'	35 @ 30' = 1050'
	HP 12 Pile Tip Reinforcement	Each	36	36

☐ Includes 0.2 Cu. Yds. for Grout Pads.

△ Includes Spacer Bars: 164 lbs. at each bent. Each spacer bar is computed at $\frac{3}{4}$ bs. per lin. ft. regardless of type furnished.

⊗ Excavation will be neat lined to the exact dimensions of the footing.

◆ *TABLE OF ELEVATIONS*

Bent No.	Elev. "A"	Elev. "B"	Elev. "G1" or "G6"	Elev. "G2" or "G5"	Elev. "G3" or "G4"
2	1347.52	1317.52	1347.65	1347.80	1347.95
3	1347.05	1315.30	1347.18	1347.33	1347.48

NOTES:

◆ Elev. "G1", "G2", "G3", "G4", "G5" and "G6" are on top of grout pads at C Bent .
Top of grout pads will be level and smooth.

BENT DETAILS

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY

OVER SPLIT ROCK CREEK

STA. 115 + 21.46 TO 118 + 61.71

STR. NO. 50-280-139

0° SKEW

SFC 10/11-T102N-048W

P - PT 0011(145)83

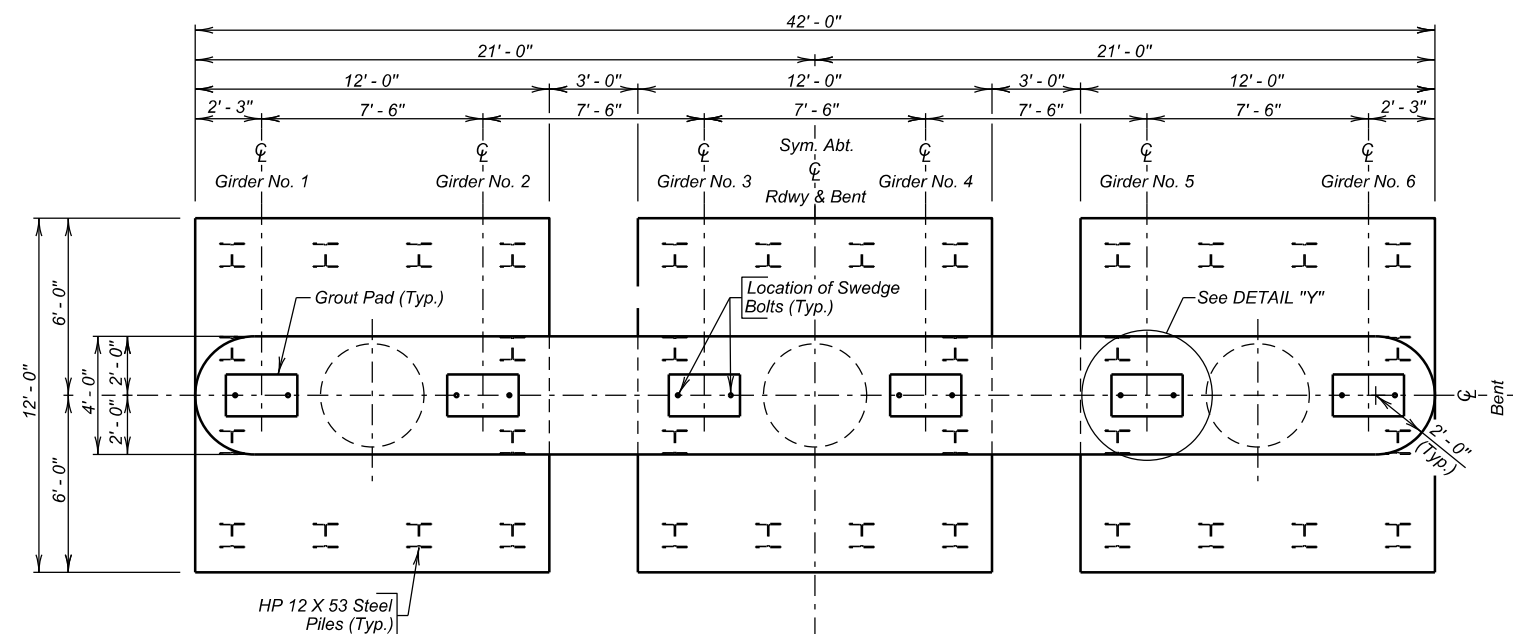
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MINNEHAHA COUNTY

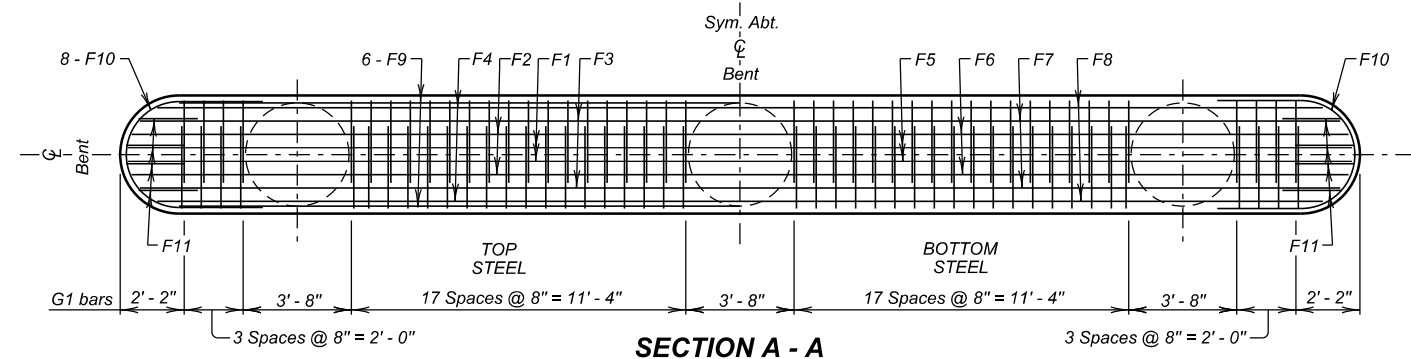
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FEBRUARY 2025

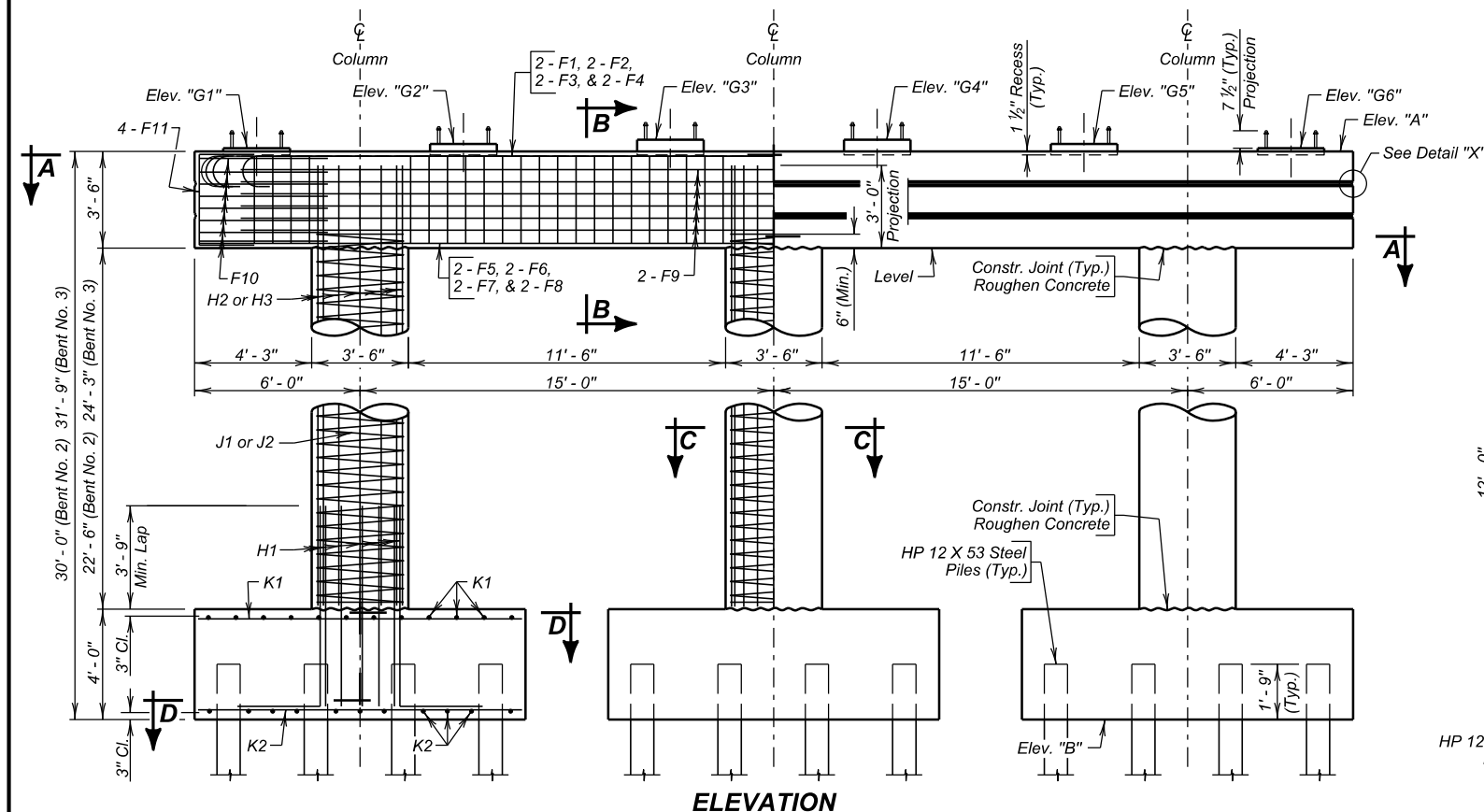
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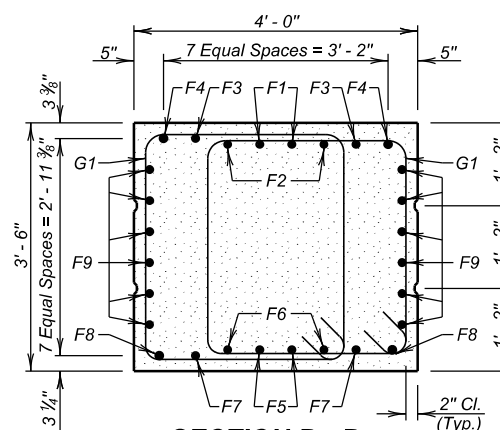
PLAN



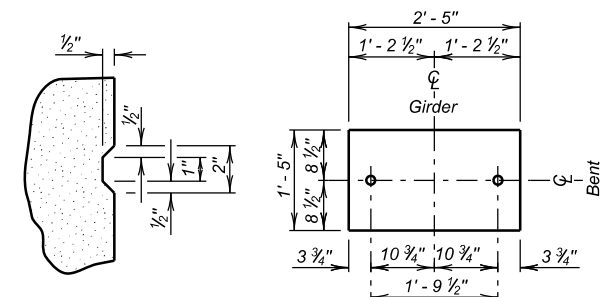
SECTION A - A



ELEVATION

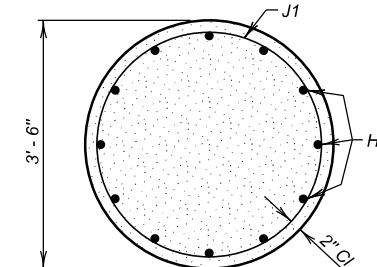


SECTION B - B

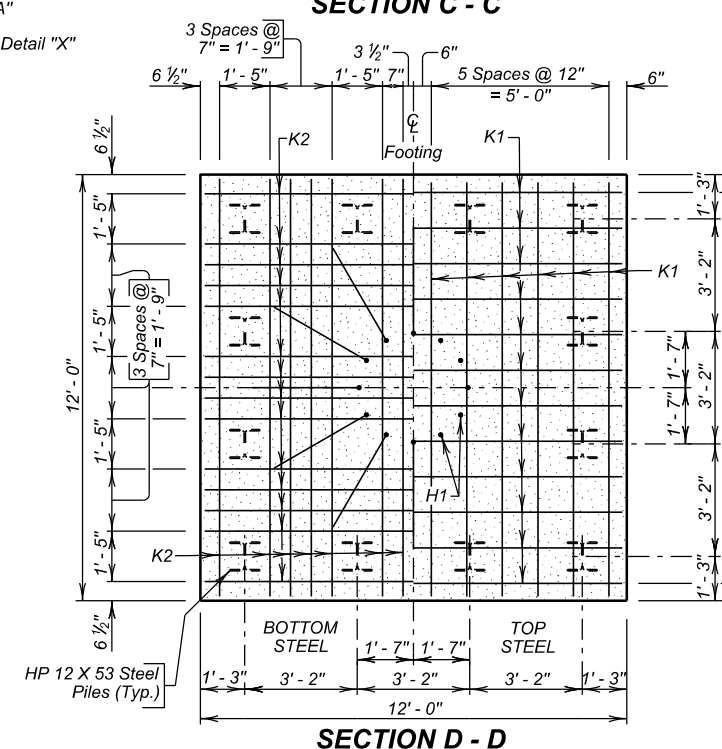


DETAIL "X"

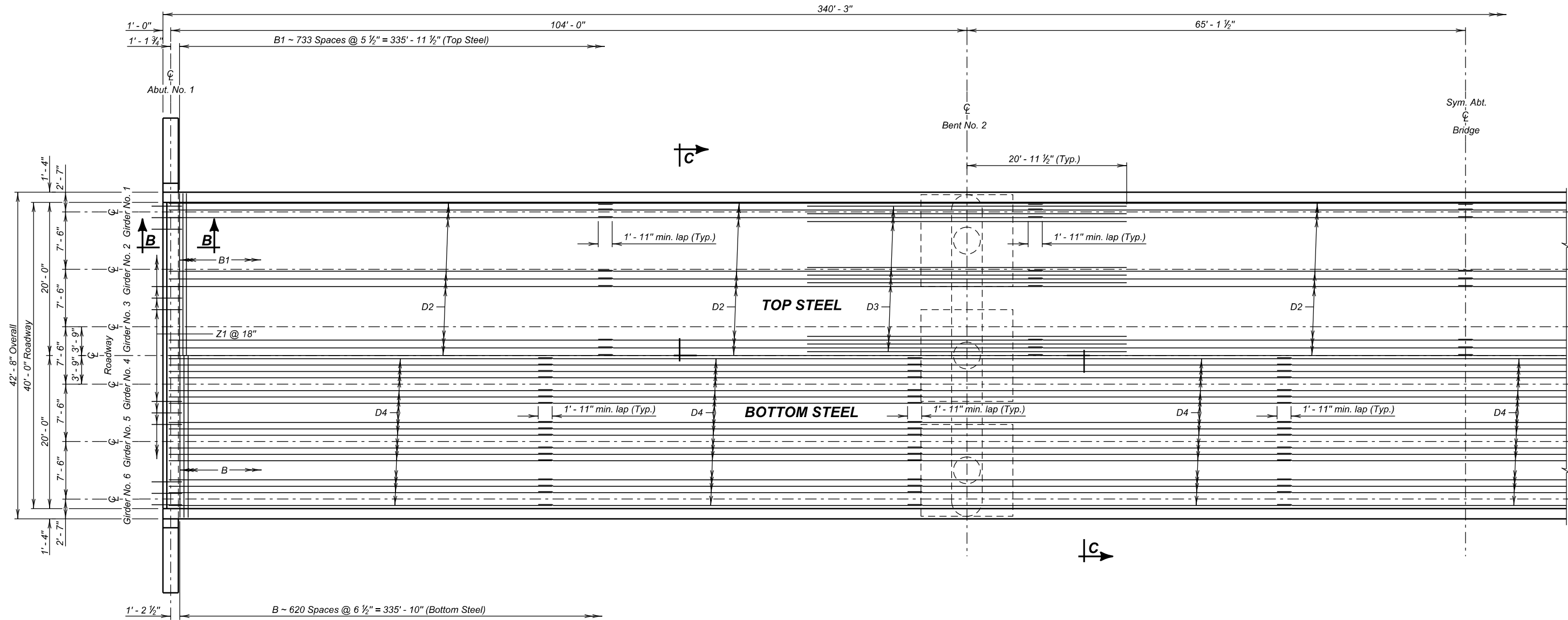
DETAIL "Y"
(Grout Pad)



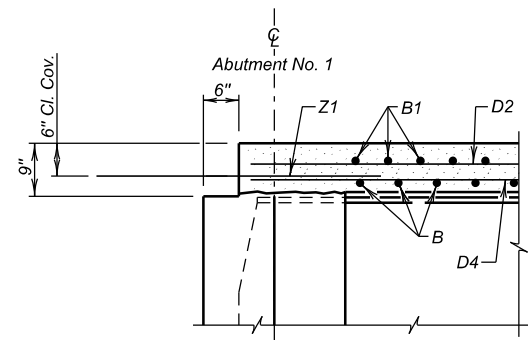
SECTION C - C



SECTION D - D



HALF PLAN



SECTION B - B

SUPERSTRUCTURE DETAILS (A)
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2025

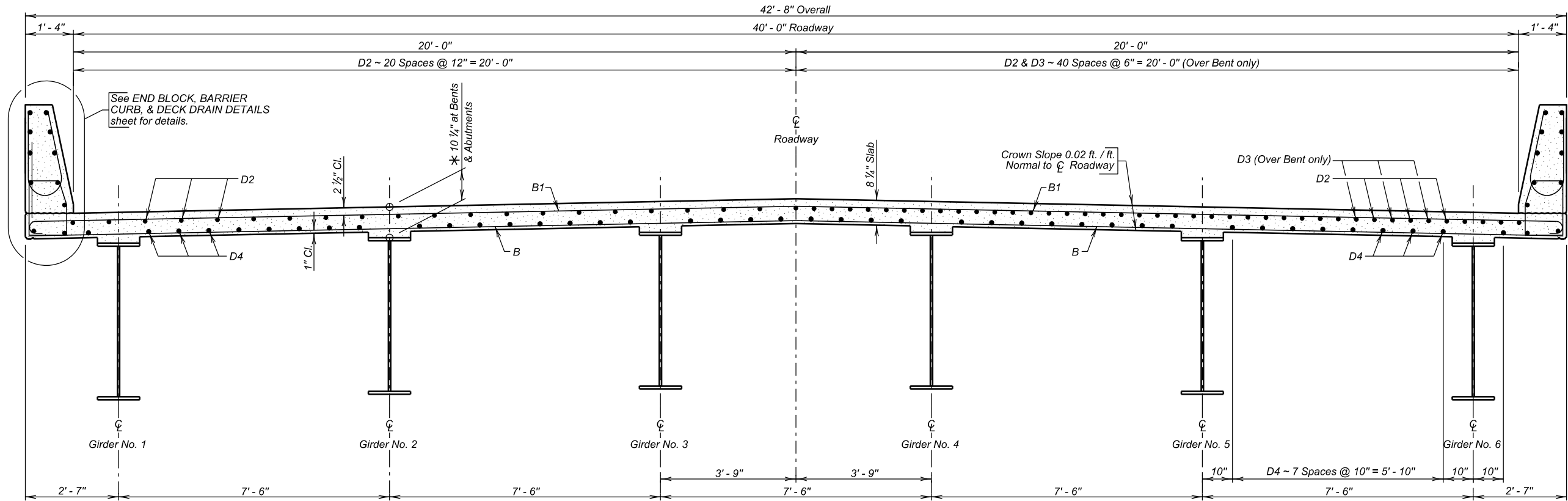
DESIGNED BY
JH
MINN05V6

CK. DES. BY
ER
05V6TA10

DRAFTED BY
BT

Steve A. Johnson
BRIDGE ENGINEER

10 OF 29

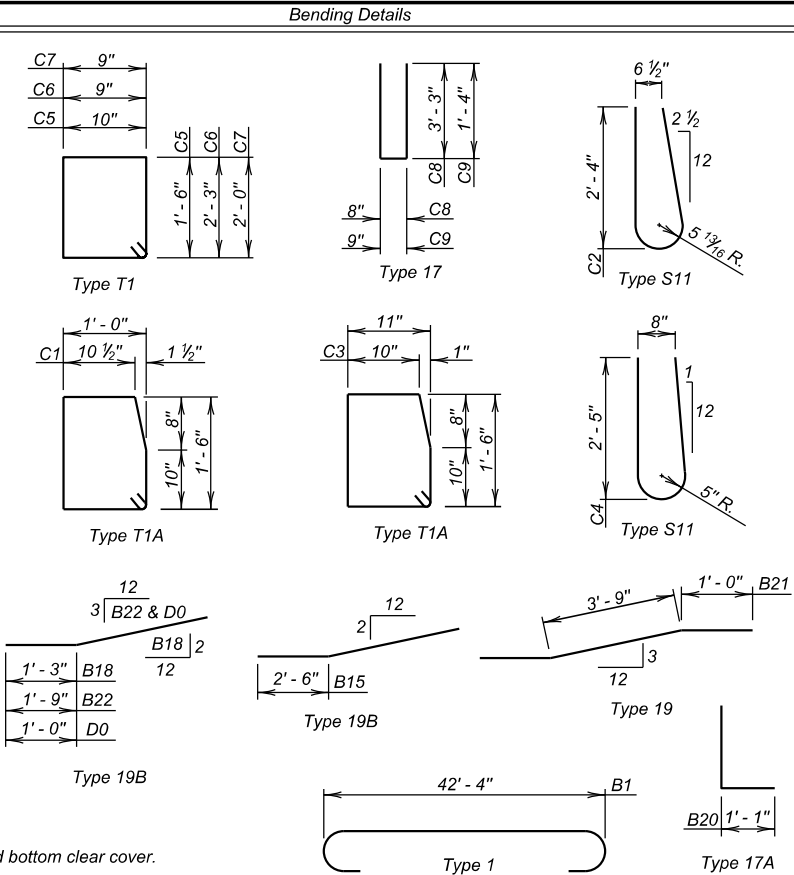


SECTION C - C

* Dimensions are at $\varnothing$ bearing; at other points along the girders this dimension shall be computed as shown on the Slab Form Elevations & Erection Data sheet.

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
B	621	4	42' - 4"	Str.
B1	734	5	43' - 6"	1
B15	12	5	9' - 6"	19B
B17	8	4	5' - 8"	Str.
B18	12	8	3' - 0"	19B
B19	12	5	2' - 0"	Str.
B20	12	6	3' - 6"	17A
B21	4	4	5' - 9"	19
B22	4	4	3' - 3"	19B
C1	658	5	5' - 10"	T1A
C2	662	5	5' - 3"	S11
C3	4	5	5' - 8"	T1A
C4	8	5	5' - 3"	S11
C5	8	5	5' - 7"	T1
C6	12	6	7' - 4"	T1
C7	12	5	6' - 5"	T1
C8	4	6	7' - 3"	17
C9	4	5	3' - 5"	17
D	24	5	57' - 10"	Str.
D0	4	4	2' - 6"	19B
D1	84	5	55' - 11"	Str.
D2	246	5	58' - 1"	Str.
D3	80	6	41' - 11"	Str.
D4	322	5	50' - 1"	Str.
Z1	54	7	4' - 0"	Str.



NOTES-
All reinforcing steel will be stainless steel.
* Bend in field as necessary to fit.
□ Tip bars as required to maintain top and bottom clear cover.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
★ Class A45 Concrete, Bridge Deck	Cu. Yd.	463.4
Stainless Reinforcing Steel	Lb.	102866
△ Structural Steel	Lump Sum	Lump Sum
∅ Bridge Painting	Lump Sum	Lump Sum
Concrete Penetrating Sealer	Sq. Yd.	1513
Deck Drain Girder Bridge	Each	2

★ Concrete quantity for Barrier Curb is 0.1184 Cu. Yd. per foot and for End Block is 0.7184 Cu. Yd. each.

△ For informational purposes only, the estimated weight of the structural steel is 480514 pounds.

∅ For informational purposes only, the estimated area to be painted is 30249 sq. ft.

SUPERSTRUCTURE DETAILS (B)

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

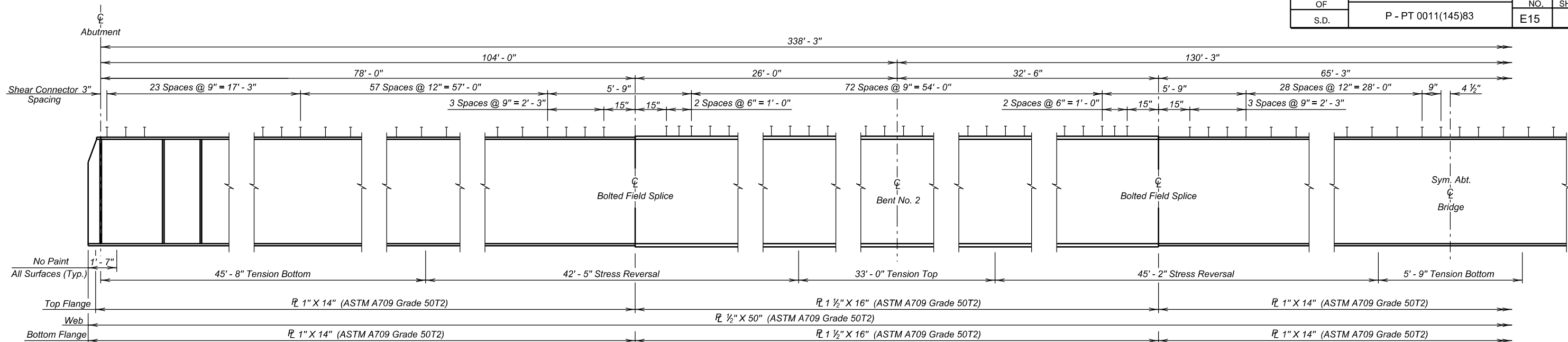
0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
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MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

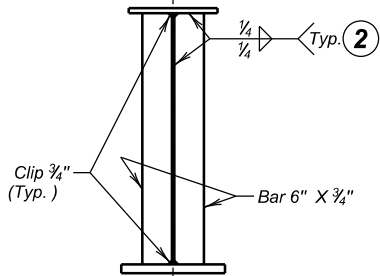
FEBRUARY 2025

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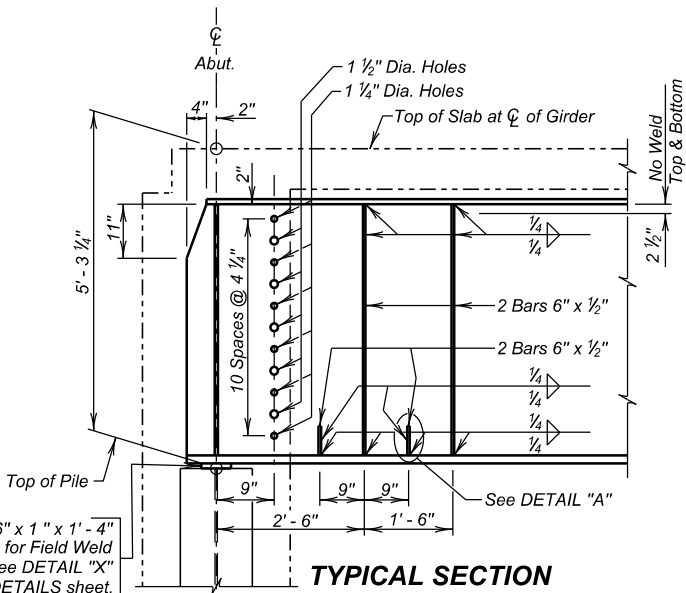


GIRDER LAYOUT

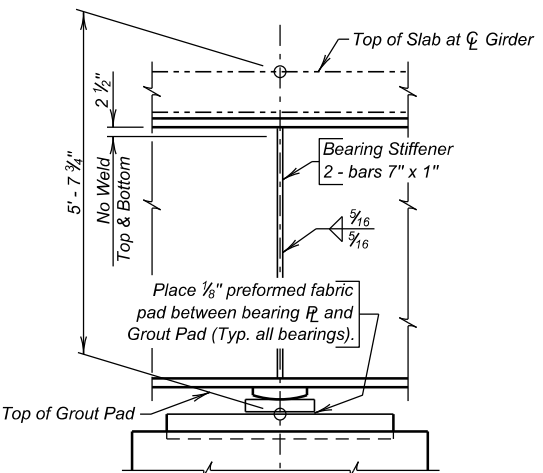
2 NOTE: All fillet welds will terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.



END VIEW

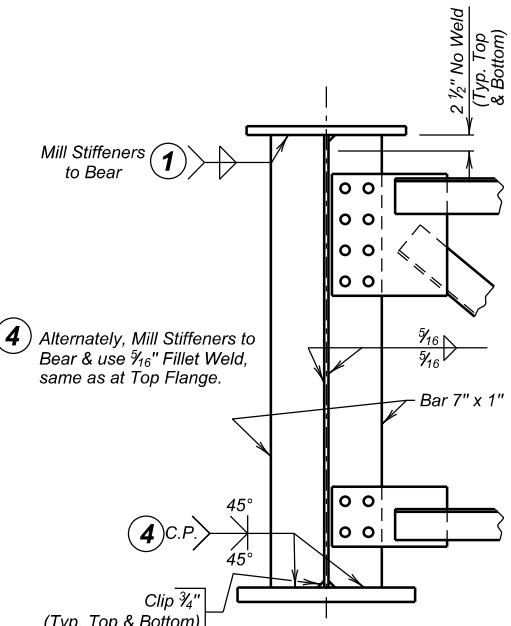


TYPICAL SECTION AT ABUTMENTS

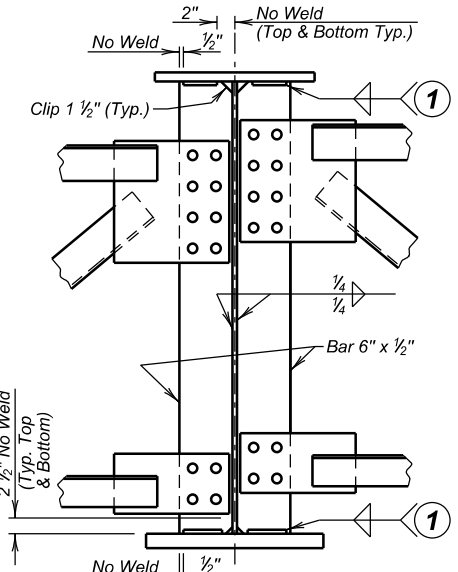


TYPICAL SECTION AT BENTS
(Diaphragm not shown)

1 NOTE: 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 BENTS
(Exterior Girder shown)



DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS
(Interior Girder shown)

GIRDER LAYOUT DETAILS FOR

340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

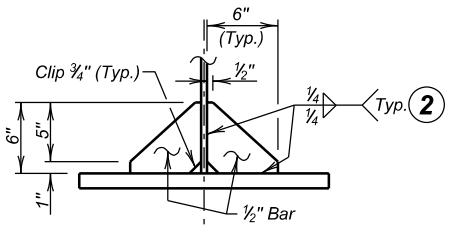
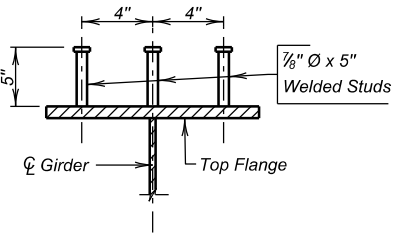
0° SKEW
SEC. 10/11-T102N-048W
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MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

SHEAR CONNECTOR DETAILS

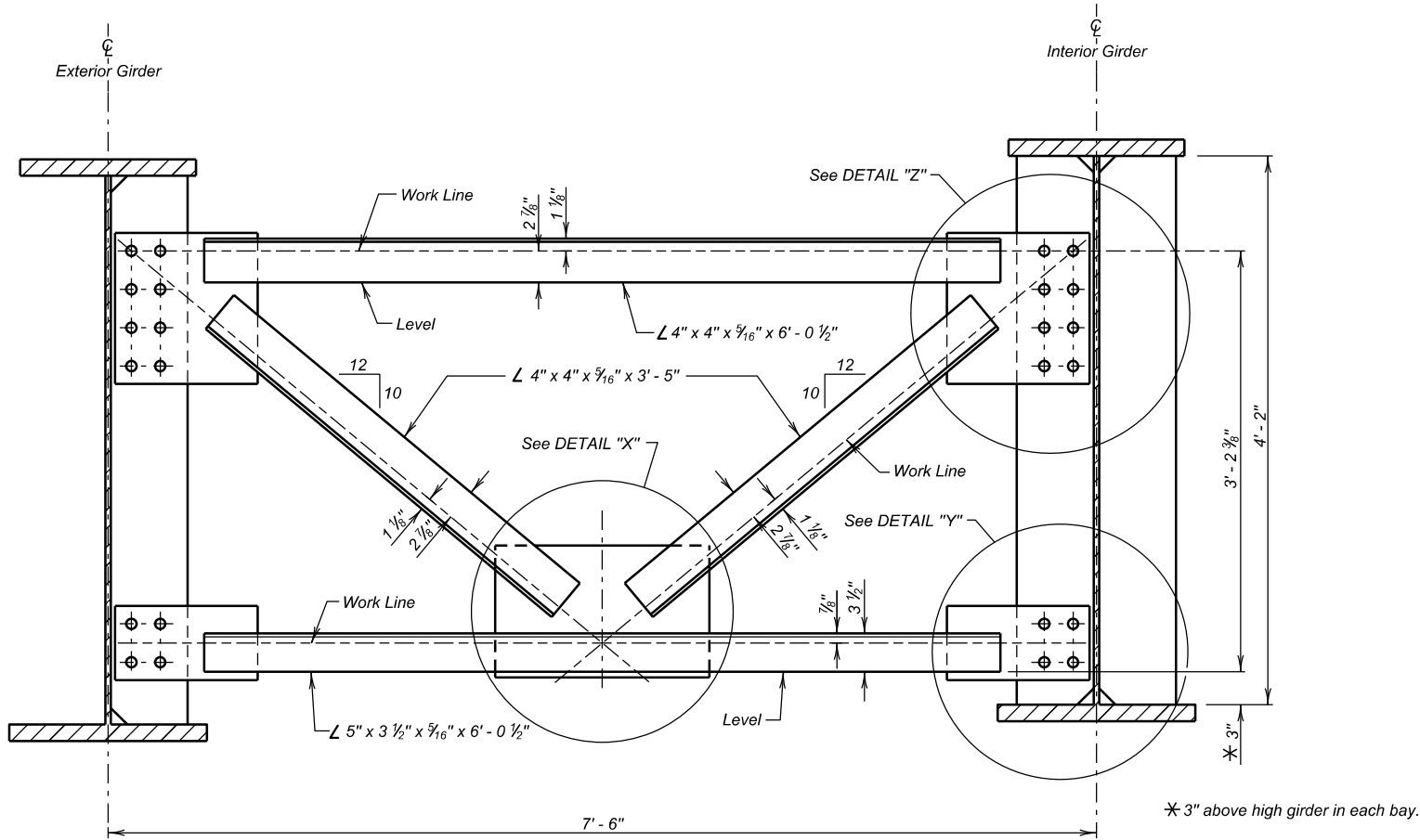
Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Shop Installing Shear Connectors will be included in the Lump Sum bid for Structural Steel. 1170 Shear Connectors per Girder.



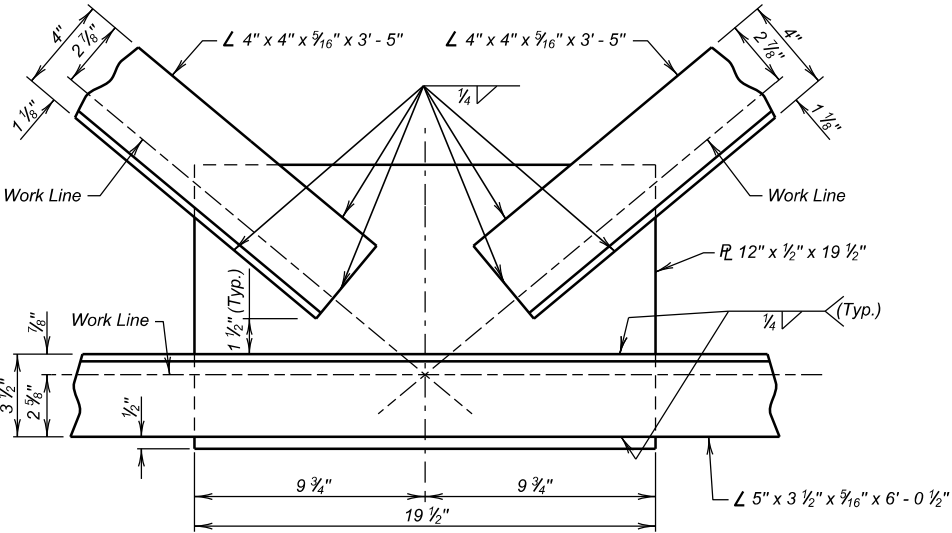
DETAIL "A"

- 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 shall be made normal to flanges, except bearing stiffeners at bent & abutments will be vertical.
 - Stiffeners to have tight fit top and bottom.
 - Dimensions shown are for steel temperature of 45° F.

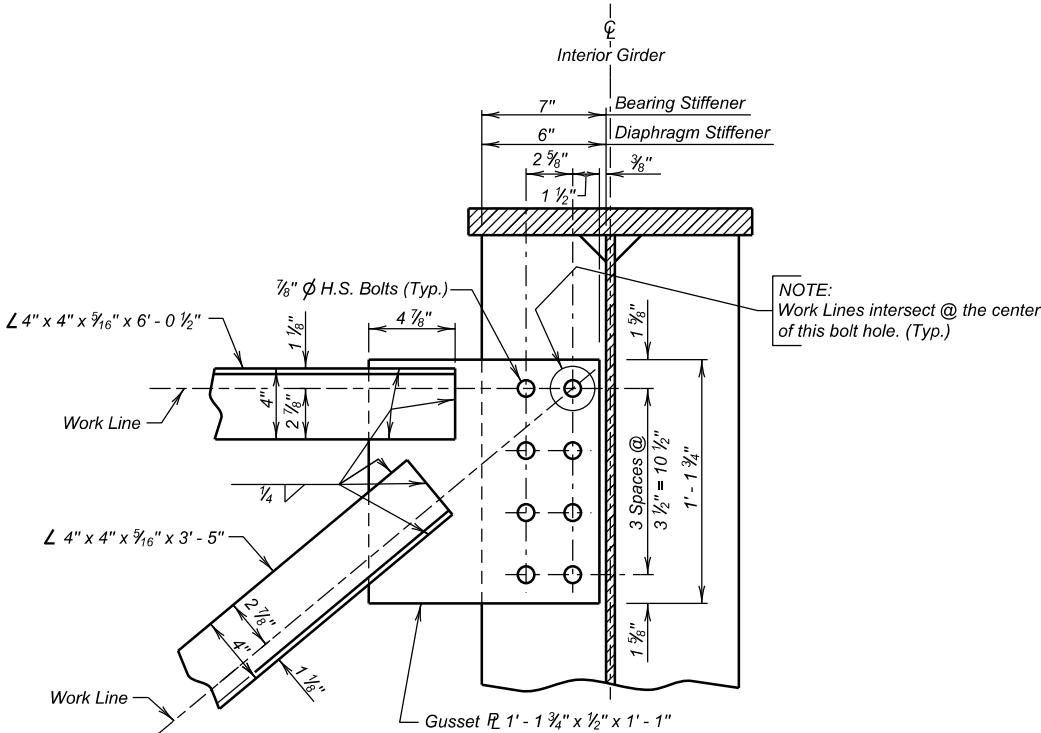
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E16	E59



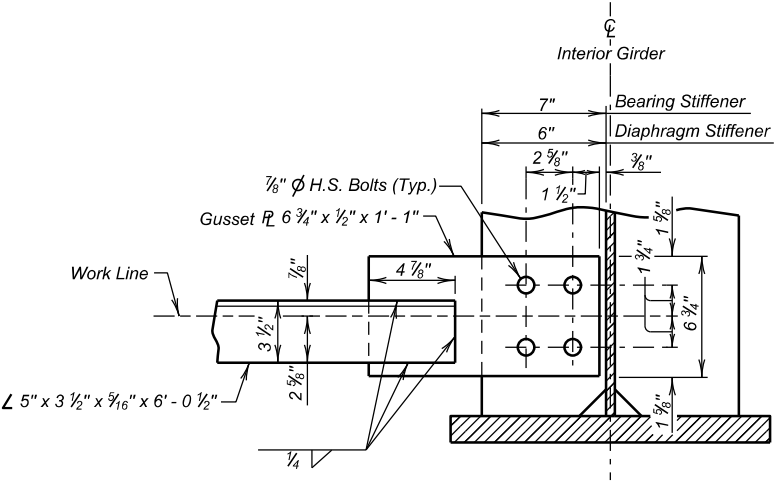
DIAPHRAGM DETAIL
(Weight of One Unit = 353 lbs.)



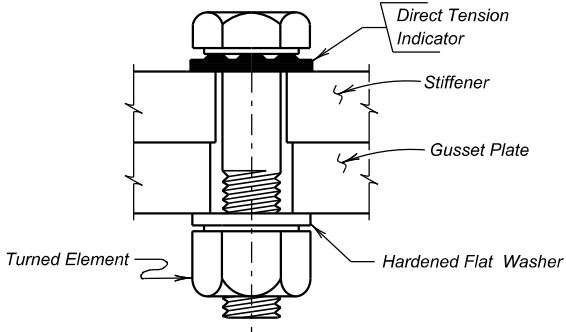
DETAIL "X"



DETAIL "Z"



DETAIL "Y"



**DIRECT TENSION INDICATOR
DETAIL**

GENERAL NOTES

1. The Steel Diaphragms are included in the quantity for Structural Steel, Install.
2. Use 1 1/16" ϕ bolt holes in the 1/2" gusset plates. Use 1 5/16" ϕ bolt holes in the stiffener plates.
3. Install bolt heads on the side of the connection with the 1 5/16" ϕ bolt holes. Install direct tension indicators under the bolt heads.
4. The 7/8" High Strength bolts, nuts, and washers will conform to ASTM F3125 Grade A325. The bolts will be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.
5. Terminate all welds 1/2" from the edges of the bars and plates.

DIAPHRAGM DETAILS

FOR

340' - 3" STEEL GIRDER BRIDGE

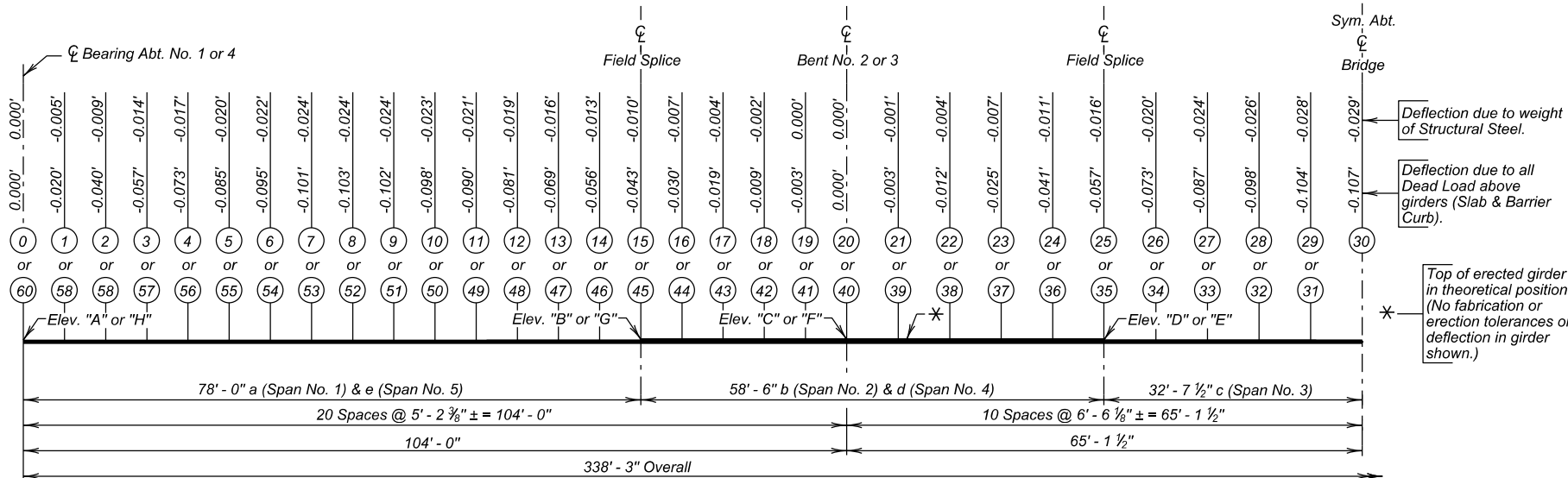
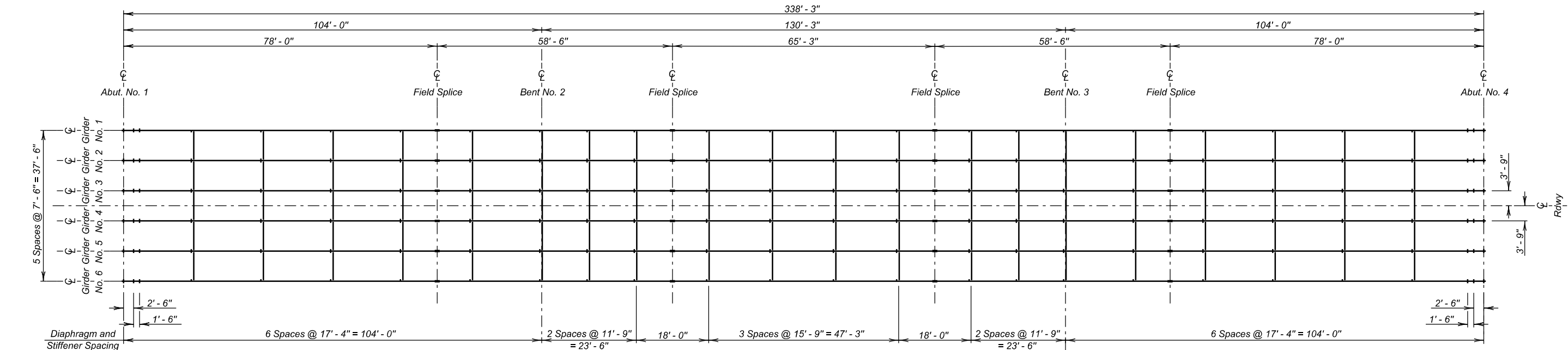
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
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MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

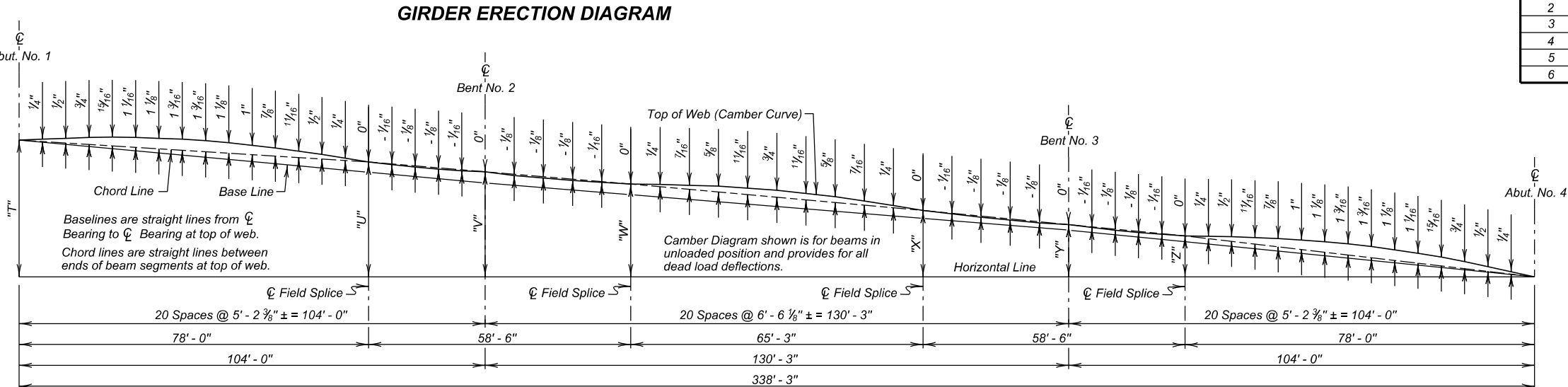
DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA14	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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Ø GIRDER ERECTION ELEVATIONS AND SLOPES													
Girder No.	ELEVATIONS (Top of Girder)								SLOPES (%)				
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	a	b	c	d	e
1	1352.813	1352.618	1352.482	1352.422	1352.188	1352.014	1351.963	1351.599	-0.251	-0.335	-0.358	-0.384	-0.467
2	1352.963	1352.768	1352.632	1352.572	1352.338	1352.164	1352.113	1351.749	-0.251	-0.335	-0.358	-0.384	-0.467
3	1353.113	1352.918	1352.782	1352.722	1352.488	1352.314	1352.263	1351.899	-0.251	-0.335	-0.358	-0.384	-0.467
4	1353.113	1352.918	1352.782	1352.722	1352.488	1352.314	1352.263	1351.899	-0.251	-0.335	-0.358	-0.384	-0.467
5	1352.963	1352.768	1352.632	1352.572	1352.338	1352.164	1352.113	1351.749	-0.251	-0.335	-0.358	-0.384	-0.467
6	1352.813	1352.618	1352.482	1352.422	1352.188	1352.014	1351.963	1351.599	-0.251	-0.335	-0.358	-0.384	-0.467

NOTE-
Ø These elevations and slopes occur at a time after girder erection is completed but prior to any placement of concrete. Slopes shown are an imaginary straight line between points at beam ends and are (+) towards increasing stations.

CAMBER DIMENSIONS							
Girder No.	"T"	"U"	"V"	"W"	"X"	"Y"	"Z"
1	1.214'	1.019'	0.883'	0.823'	0.589'	0.415'	0.364'
2	1.214'	1.019'	0.883'	0.823'	0.589'	0.415'	0.364'
3	1.214'	1.019'	0.883'	0.823'	0.589'	0.415'	0.364'
4	1.214'	1.019'	0.883'	0.823'	0.589'	0.415'	0.364'
5	1.214'	1.019'	0.883'	0.823'	0.589'	0.415'	0.364'
6	1.214'	1.019'	0.883'	0.823'	0.589'	0.415'	0.364'



FRAMING DIAGRAM, CAMBER, & ERECTION DATA

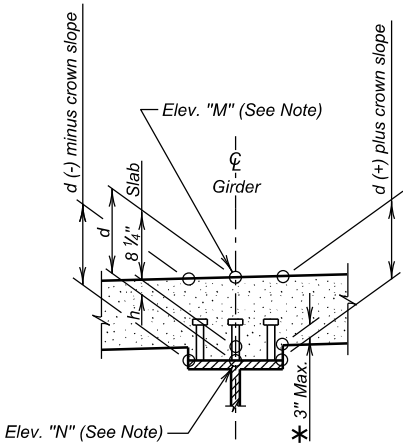
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
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MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2025

		TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS																				
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Girder No. 1	Elev. "M"	1353.667	1353.669	1353.670	1353.669	1353.666	1353.660	1353.650	1353.638	1353.621	1353.602	1353.578	1353.553	1353.524	1353.494	1353.462	1353.430	1353.399	1353.369	1353.341	1353.315	1353.294
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 2	Elev. "M"	1353.817	1353.819	1353.820	1353.819	1353.816	1353.810	1353.800	1353.788	1353.771	1353.752	1353.728	1353.703	1353.674	1353.644	1353.612	1353.580	1353.549	1353.519	1353.491	1353.465	1353.444
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 3	Elev. "M"	1353.967	1353.969	1353.970	1353.969	1353.966	1353.960	1353.950	1353.938	1353.921	1353.902	1353.878	1353.853	1353.824	1353.794	1353.762	1353.730	1353.699	1353.669	1353.641	1353.615	1353.594
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 4	Elev. "M"	1353.967	1353.969	1353.970	1353.969	1353.966	1353.960	1353.950	1353.938	1353.921	1353.902	1353.878	1353.853	1353.824	1353.794	1353.762	1353.730	1353.699	1353.669	1353.641	1353.615	1353.594
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 5	Elev. "M"	1353.817	1353.819	1353.820	1353.819	1353.816	1353.810	1353.800	1353.788	1353.771	1353.752	1353.728	1353.703	1353.674	1353.644	1353.612	1353.580	1353.549	1353.519	1353.491	1353.465	1353.444
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 6	Elev. "M"	1353.667	1353.669	1353.670	1353.669	1353.666	1353.660	1353.650	1353.638	1353.621	1353.602	1353.578	1353.553	1353.524	1353.494	1353.462	1353.430	1353.399	1353.369	1353.341	1353.315	1353.294
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					

		TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS									
		21	22	23	24	25	26	27	28	29	30
Girder No. 1	Elev. "M"	1353.274	1353.260	1353.249	1353.241	1353.234	1353.227	1353.217	1353.205	1353.188	1353.167
	(-) Elev. "N"										
	(=) d										
	(-) 0.688										
	(=) h										
Girder No. 2	Elev. "M"	1353.424	1353.410	1353.399	1353.391	1353.384	1353.377	1353.367	1353.355	1353.338	1353.317
	(-) Elev. "N"										
	(=) d										
	(-) 0.688										
	(=) h										
Girder No. 3	Elev. "M"	1353.574	1353.560	1353.549	1353.541	1353.534	1353.527	1353.517	1353.505	1353.488	1353.467
	(-) Elev. "N"										
	(=) d										
	(-) 0.688										
	(=) h										
Girder No. 4	Elev. "M"	1353.574	1353.560	1353.549	1353.541	1353.534	1353.527	1353.517	1353.505	1353.488	1353.467
	(-) Elev. "N"										
	(=) d										
	(-) 0.688										
	(=) h										
Girder No. 5	Elev. "M"	1353.424	1353.410	1353.399	1353.391	1353.384	1353.377	1353.367	1353.355	1353.338	1353.317
	(-) Elev. "N"										
	(=) d										
	(-) 0.688										
	(=) h										
Girder No. 6	Elev. "M"	1353.274	1353.260	1353.249	1353.241	1353.234	1353.227	1353.217	1353.205	1353.188	1353.167
	(-) Elev. "N"										
	(=) d										
	(-) 0.688										
	(=) h										



✱ If during construction, it is found that this dimension will be exceeded or is less than zero, corrective measures must be taken as approved by the Engineer.

NOTES:
This Table contains the necessary information to determine the depth of concrete, in feet, over the girders at the points shown. All calculations can be carried out in the space provided. Elevation "M" is theoretical top of slab elevation before any concrete has been poured. This elevation includes correction for deflection due to Dead Load above girders. Elevation "N" is a field measured elevation taken on top of girders at points shown. This elevation must be taken after girder erection is complete, but prior to placing any of the slab concrete. Girders will not be supported by construction shoring while elevations are taken.

This sheet is to be used in conjunction with SLAB FORM ELEVATIONS (B) and FRAMING DIAGRAM, CAMBER, & ERECTION DATA Sheets.

SLAB FORM ELEVATIONS (A)
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139
0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025 16 OF 29

		TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS																				
		31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Girder No. 1	Elev. "M"	1353.141	1353.111	1353.077	1353.040	1353.000	1352.961	1352.922	1352.886	1352.853	1352.827	1352.810	1352.798	1352.789	1352.782	1352.776	1352.770	1352.765	1352.758	1352.749	1352.738	1352.723
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 2	Elev. "M"	1353.291	1353.261	1353.227	1353.190	1353.150	1353.111	1353.072	1353.036	1353.003	1352.977	1352.960	1352.948	1352.939	1352.932	1352.926	1352.920	1352.915	1352.908	1352.899	1352.888	1352.873
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 3	Elev. "M"	1353.441	1353.411	1353.377	1353.340	1353.300	1353.261	1353.222	1353.186	1353.153	1353.127	1353.110	1353.098	1353.089	1353.082	1353.076	1353.070	1353.065	1353.058	1353.049	1353.038	1353.023
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 4	Elev. "M"	1353.441	1353.411	1353.377	1353.340	1353.300	1353.261	1353.222	1353.186	1353.153	1353.127	1353.110	1353.098	1353.089	1353.082	1353.076	1353.070	1353.065	1353.058	1353.049	1353.038	1353.023
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 5	Elev. "M"	1353.291	1353.261	1353.227	1353.190	1353.150	1353.111	1353.072	1353.036	1353.003	1352.977	1352.960	1352.948	1352.939	1352.932	1352.926	1352.920	1352.915	1352.908	1352.899	1352.888	1352.873
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 6	Elev. "M"	1353.141	1353.111	1353.077	1353.040	1353.000	1352.961	1352.922	1352.886	1352.853	1352.827	1352.810	1352.798	1352.789	1352.782	1352.776	1352.770	1352.765	1352.758	1352.749	1352.738	1352.723
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					

		TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS								
		52	53	54	55	56	57	58	59	60
Girder No. 1	Elev. "M"	1352.706	1352.685	1352.660	1352.632	1352.601	1352.567	1352.530	1352.492	1352.453
	(-) Elev. "N"									
	(=) d									
	(-) 0.688									
	(=) h									
Girder No. 2	Elev. "M"	1352.856	1352.835	1352.810	1352.782	1352.751	1352.717	1352.680	1352.642	1352.603
	(-) Elev. "N"									
	(=) d									
	(-) 0.688									
	(=) h									
Girder No. 3	Elev. "M"	1353.006	1352.985	1352.960	1352.932	1352.901	1352.867	1352.830	1352.792	1352.753
	(-) Elev. "N"									
	(=) d									
	(-) 0.688									
	(=) h									
Girder No. 4	Elev. "M"	1353.006	1352.985	1352.960	1352.932	1352.901	1352.867	1352.830	1352.792	1352.753
	(-) Elev. "N"									
	(=) d									
	(-) 0.688									
	(=) h									
Girder No. 5	Elev. "M"	1352.856	1352.835	1352.810	1352.782	1352.751	1352.717	1352.680	1352.642	1352.603
	(-) Elev. "N"									
	(=) d									
	(-) 0.688									
	(=) h									
Girder No. 6	Elev. "M"	1352.706	1352.685	1352.660	1352.632	1352.601	1352.567	1352.530	1352.492	1352.453
	(-) Elev. "N"									
	(=) d									
	(-) 0.688									
	(=) h									

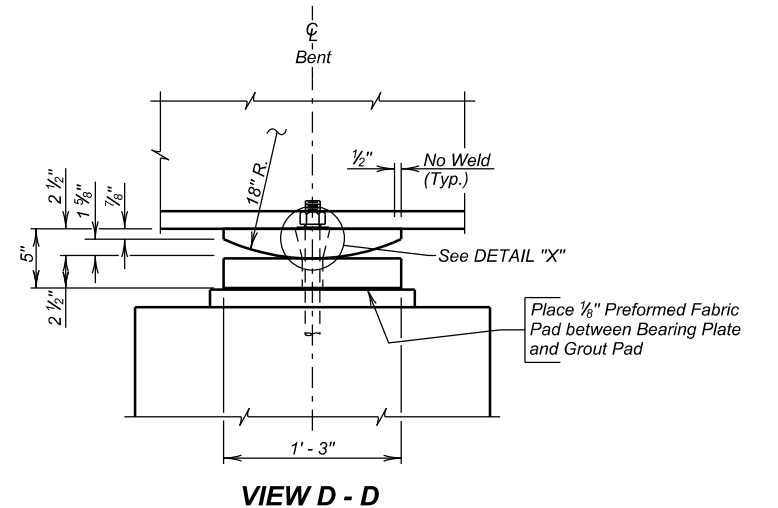
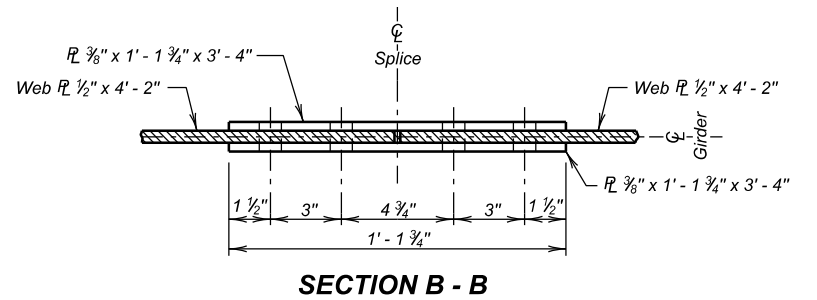
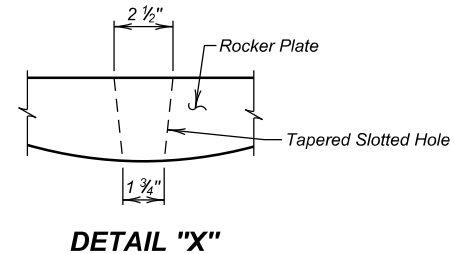
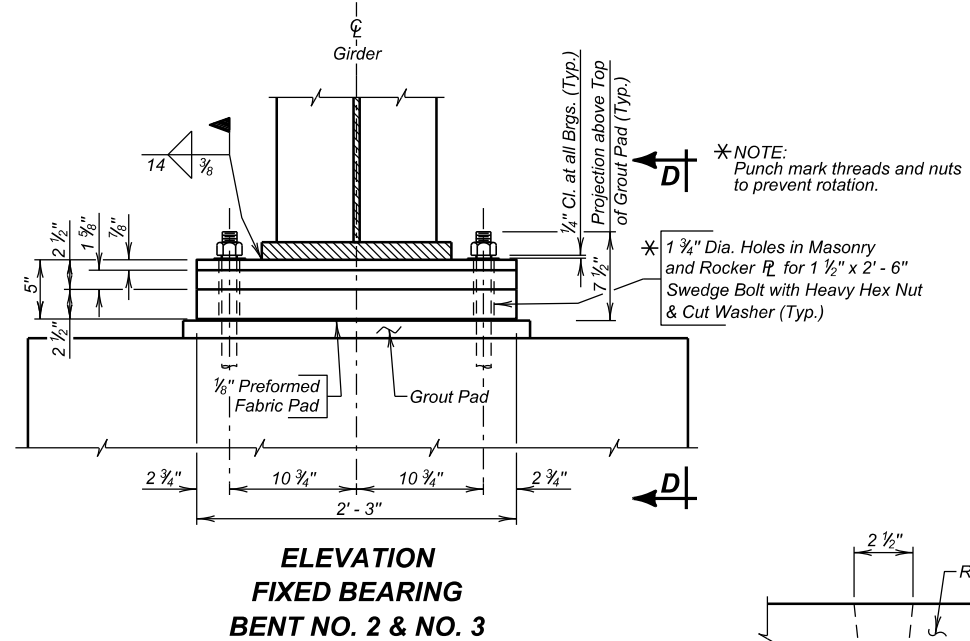
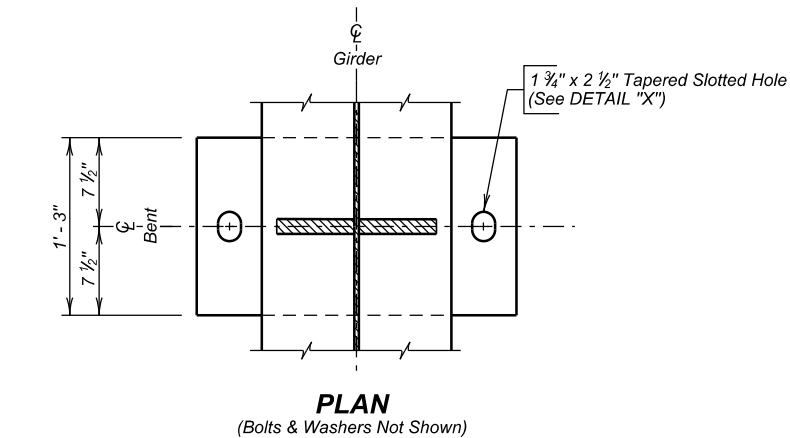
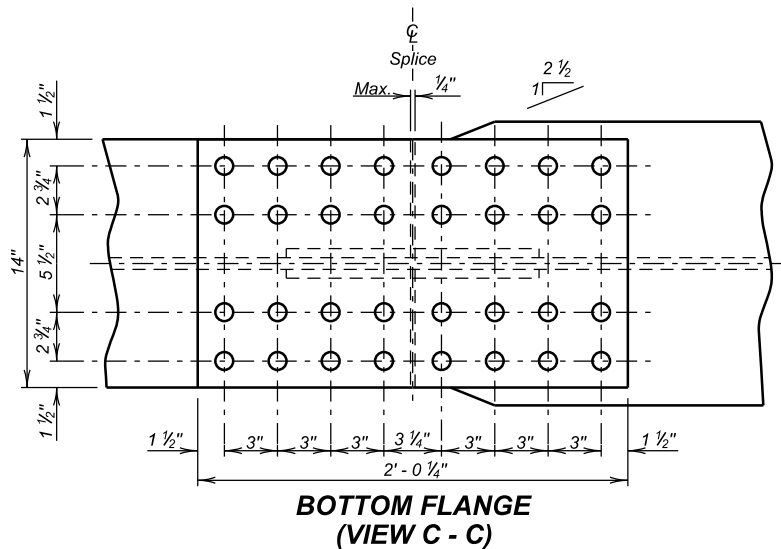
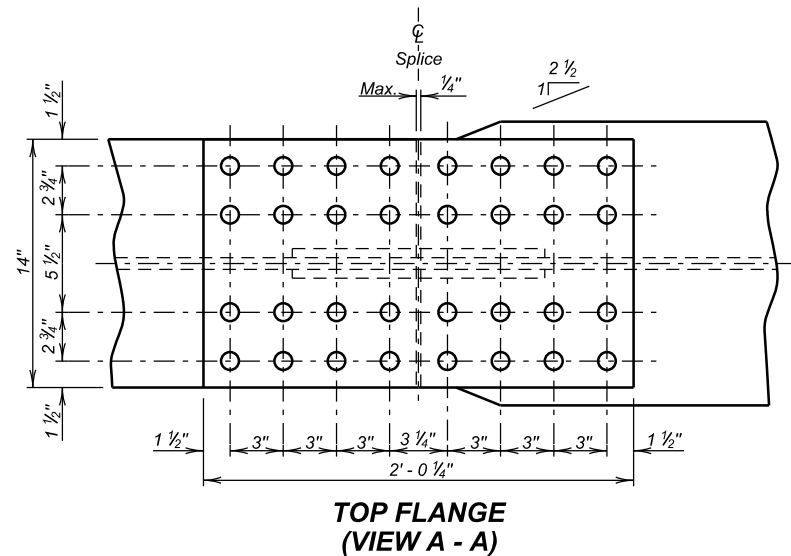
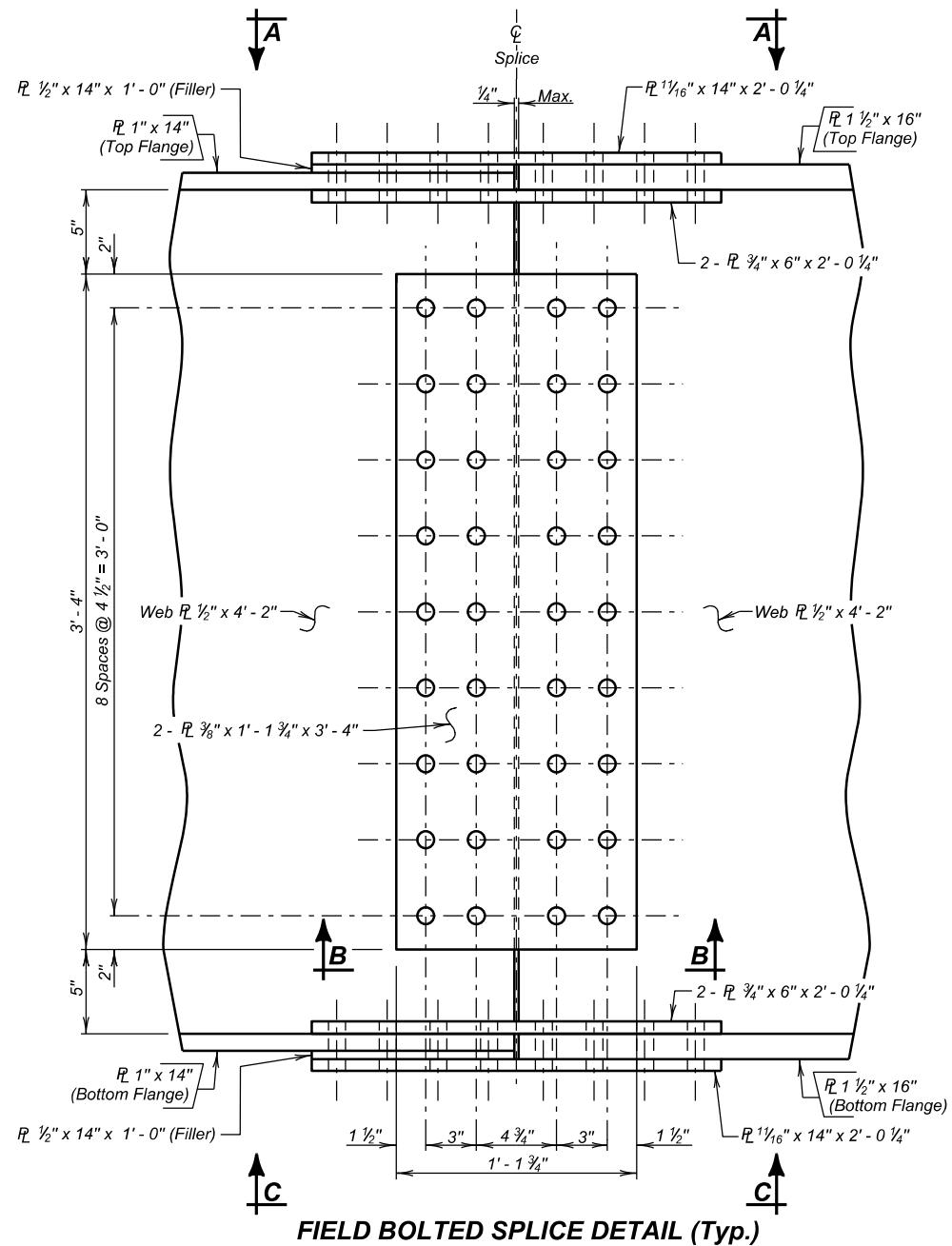
NOTE:
This sheet is to be used in conjunction with SLAB FORM ELEVATIONS (A) and FRAMING DIAGRAM, CAMBER, & ERECTION DATA Sheets.

SLAB FORM ELEVATIONS (B)
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139
0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E20	E59



NOTE:
All bolts in splices shall be $\frac{7}{8}"$ ϕ High Strength Bolts conforming to ASTM Specifications F3125 Grade A325. The bolts will be the heavy semi-finished hexagon nut and hardened washer. (See DIAPHRAGM DETAILS sheet for Direct Tension Indicator Detail.)

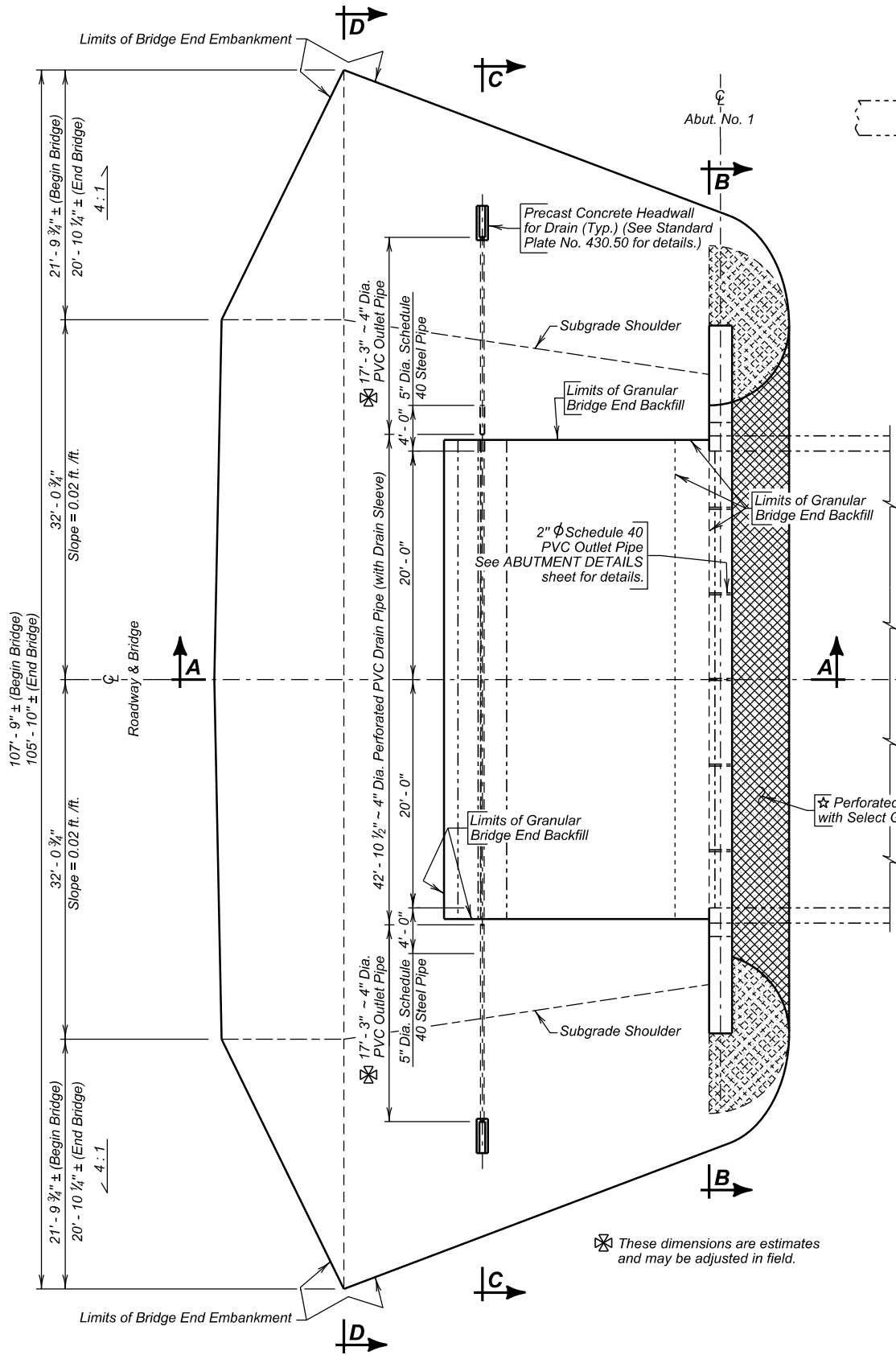
DETAILS OF BOLTED FIELD SPLICES & BEARINGS
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2025

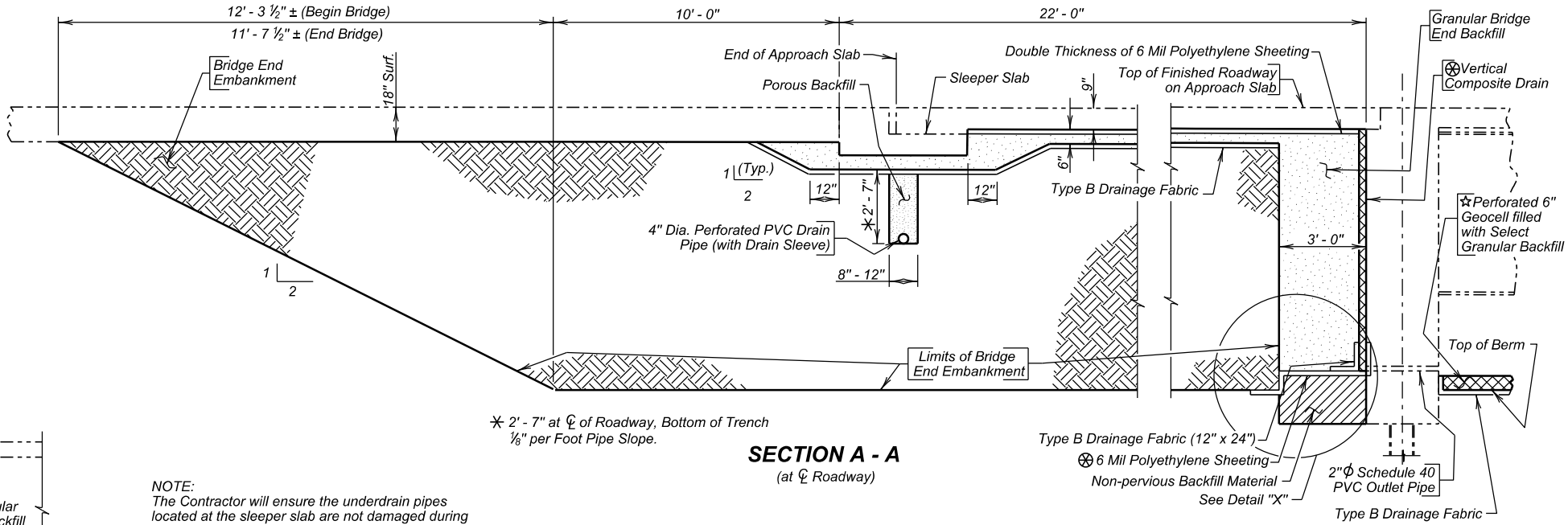
DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA18	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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NOTE:
Perforated Geocell to be installed as shown in
PLAN view. The embankment spill cone will spill
onto the top of the perforated geocell.



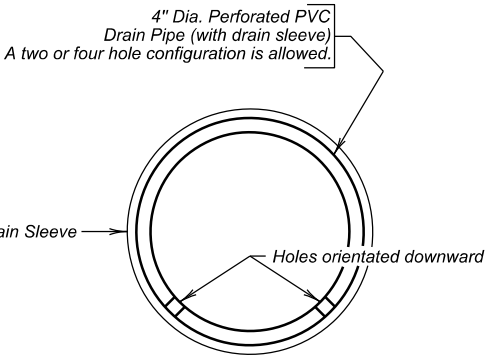
PLAN

(Bridge End Backfill shown adjacent to Abut. No. 1
Abut. No. 4 similar opposite hand except as shown.)



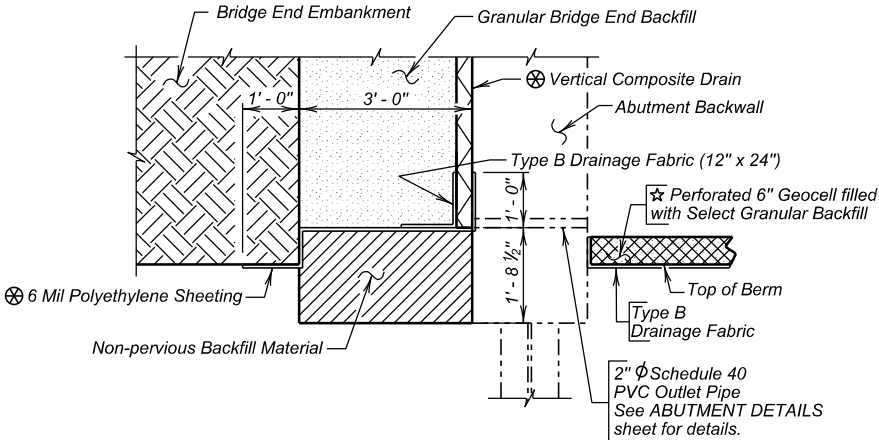
SECTION A - A
(at Centerline Roadway)

NOTE:
The Contractor will ensure the underdrain pipes
located at the sleeper slab are not damaged during
the installation of the guardrail posts. Damaged
underdrain pipes will be replaced at the Contractor's
expense.

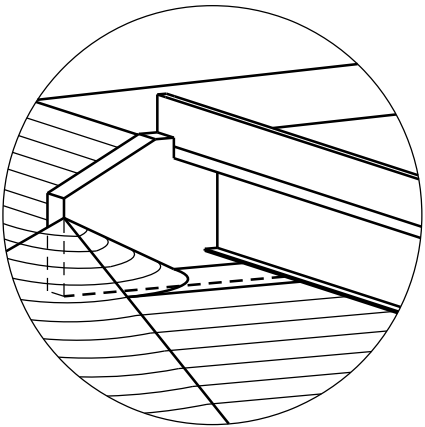


DRAIN DETAIL

- ☆ See PERFORATED GEOCELL notes for payment information.
- ⊗ Provide hole in vertical composite drain and 6 mil polyethylene sheeting to provide drainage through weep holes.



DETAIL "X"



SPILL CONE DETAIL
AT EMBANKMENT

ESTIMATED QUANTITIES

(For Two Abutments)

ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	101.1
Bridge End Embankment	Cu. Yd.	1482
Porous Backfill	Ton	15.0
4" Underdrain Pipe	Ft.	155
Approach Slab Underdrain Excavation	Cu. Yd.	8.0
Precast Concrete Headwall for Drain	Each	4

- 86 ft. 4" dia. Perforated PVC Drain Pipe (with Drain Sleeve).
- 69 ft. 4" dia. PVC Outlet Pipe.
- 16 ft. 5" dia. Schedule 40 Steel Pipe.
- 505 sq. ft. Vertical Composite Drain.

Items 1 thru 4 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.

- 3441 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
- 203 sq. yd. Type B Drainage Fabric.

Items 5 and 6 are approximate quantities contained in the Granular Bridge End Backfill and are for information only.

⊕ For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

⊘ Shrinkage Factor of 1.25 used.

⊕ Quantity based on a 12" wide trench.

DETAILS OF BRIDGE END BACKFILL (A)

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY

OVER SPLIT ROCK CREEK

STA. 115 + 21.46 TO 118 + 61.71

STR. NO. 50-280-139

0° SKEW

SEC. 10/11-T102N-048W

P - PT 0011(145)83

HL-93

MINNEHAHA COUNTY

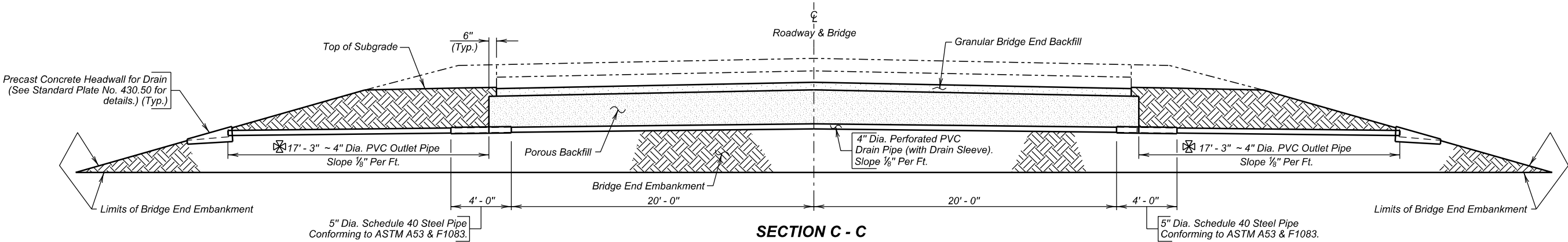
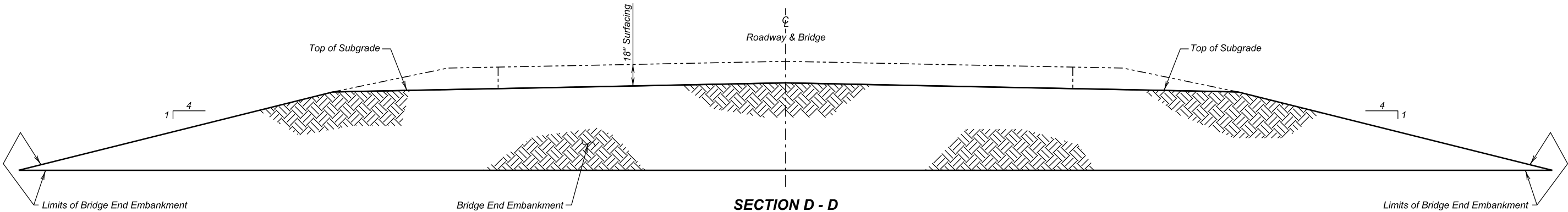
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

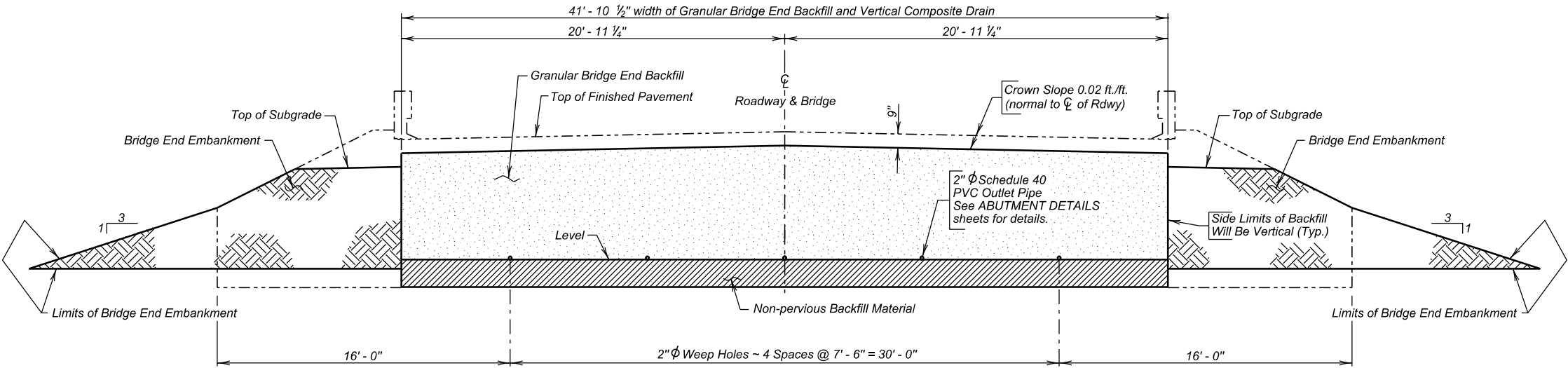
19 OF 29

DESIGNED BY JH	CK. DES. BY ER	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
MINN05V6	05V6TA19		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E22	E59



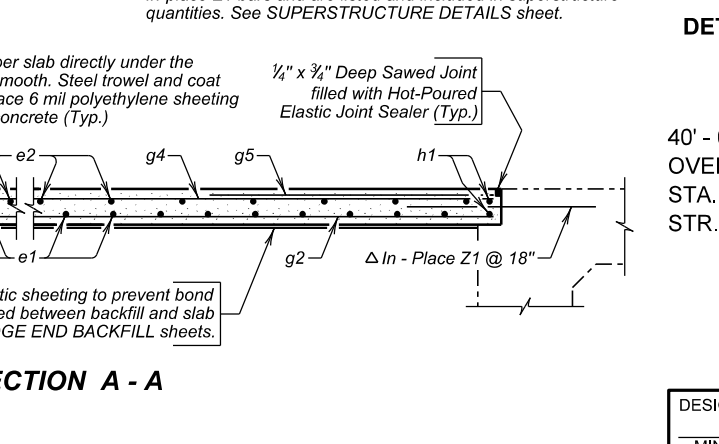
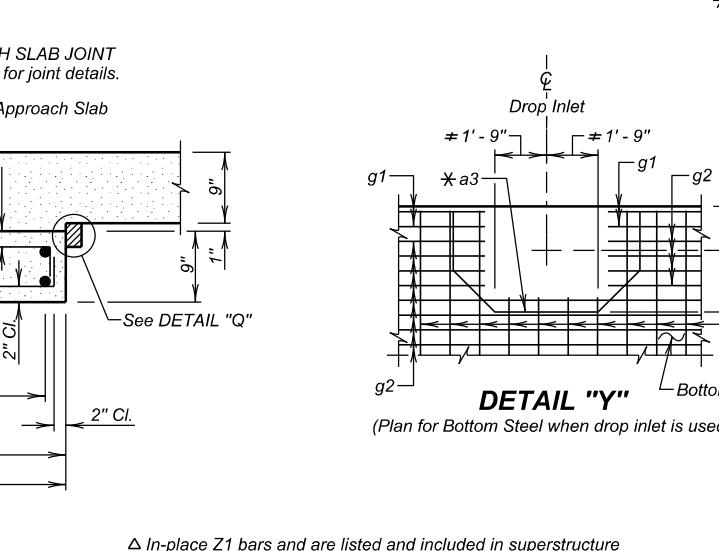
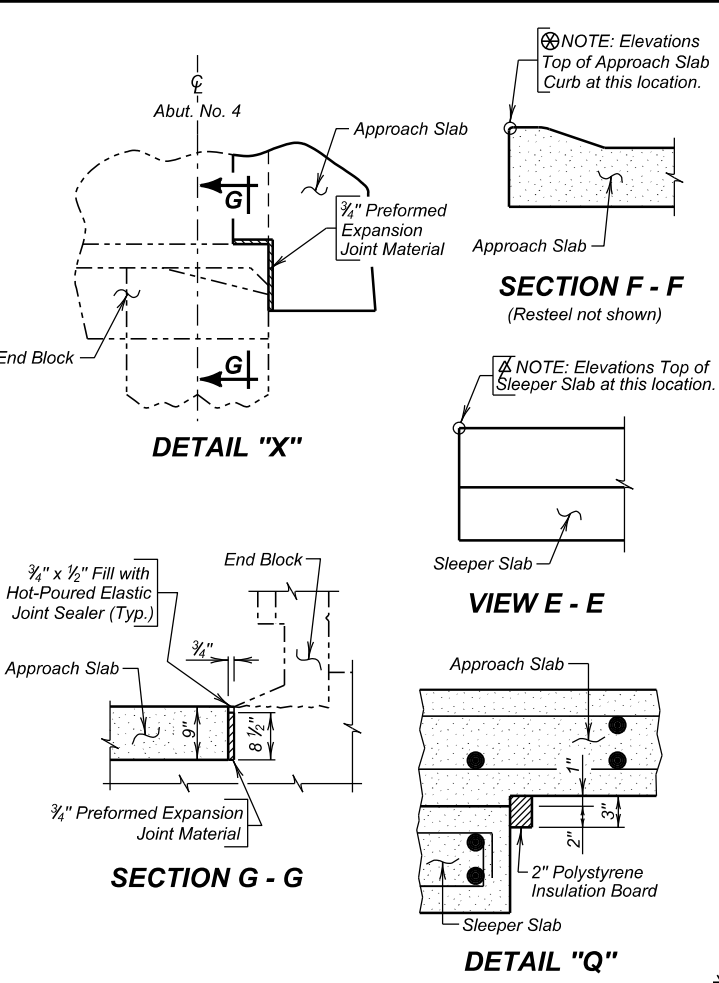
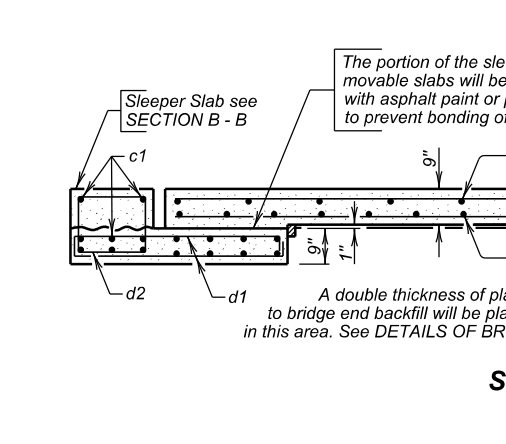
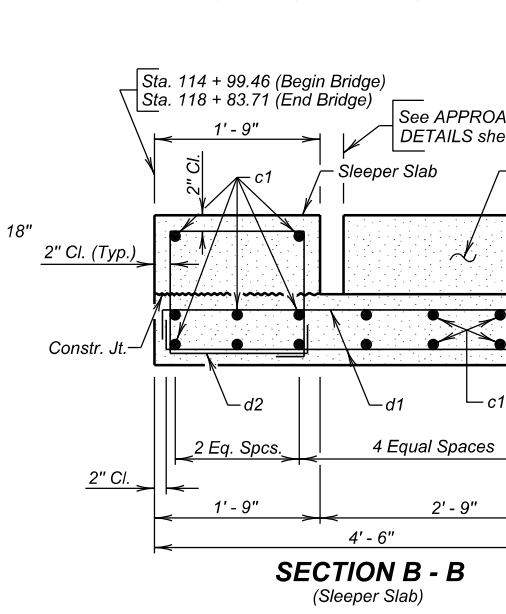
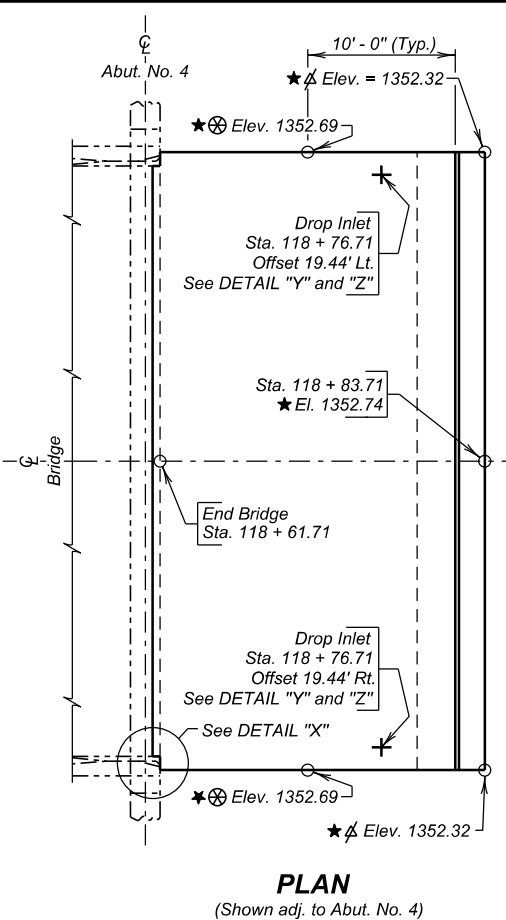
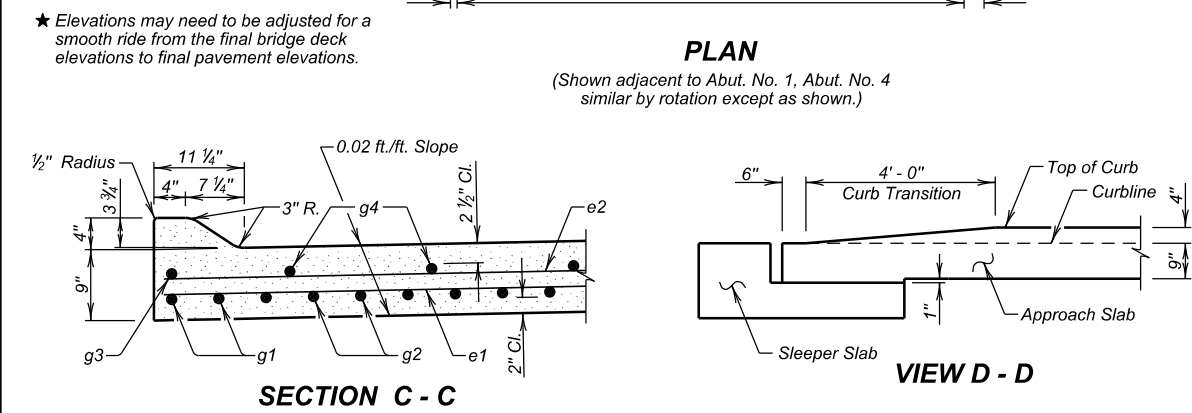
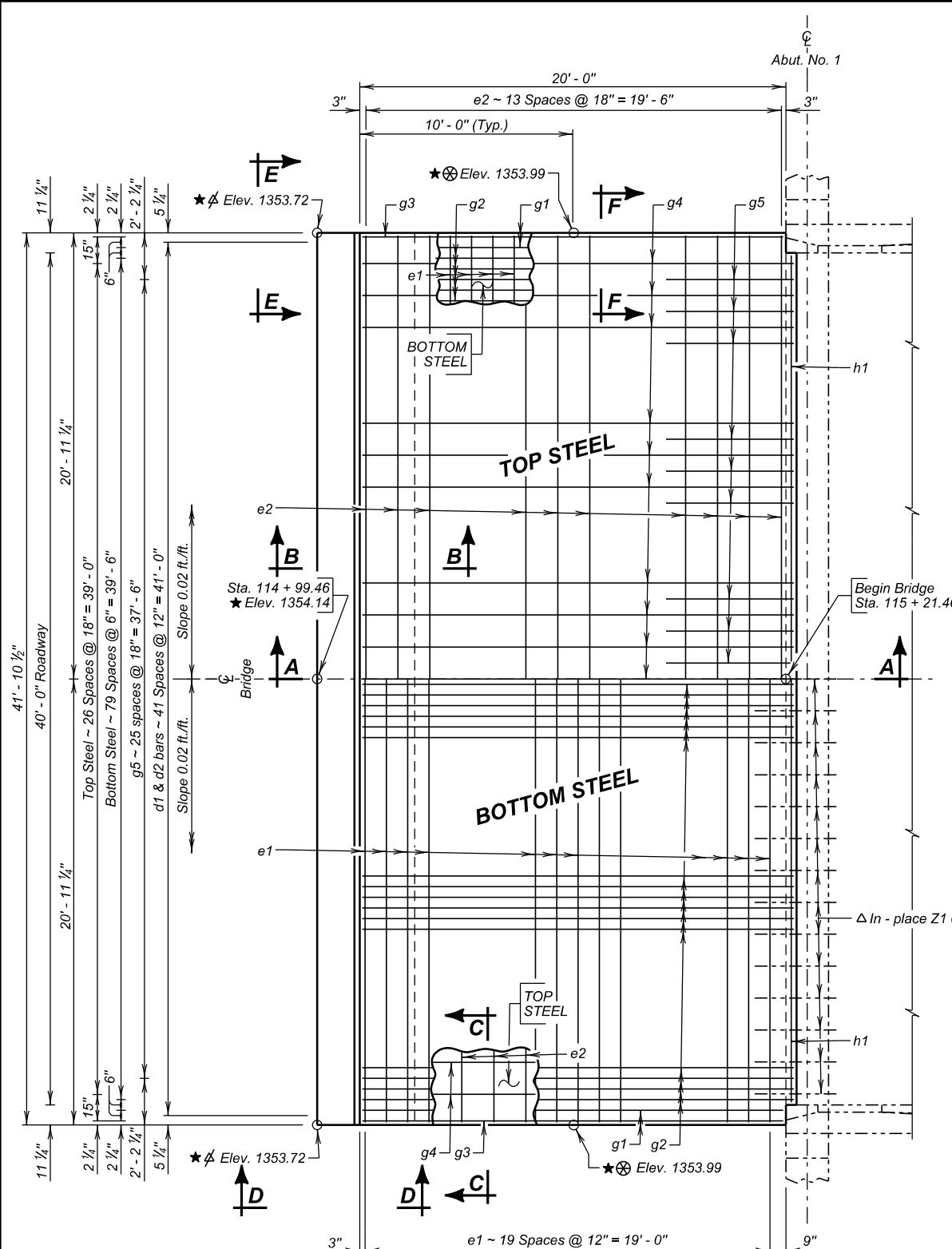
⊗ These dimensions are estimates and may be adjusted in field.



DETAILS OF BRIDGE END BACKFILL (B)
 FOR
340' - 3" STEEL GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER SPLIT ROCK CREEK SEC. 10/11-T102N-048W
 STA. 115 + 21.46 TO 118 + 61.71 P - PT 0011(145)83
 STR. NO. 50-280-139 HL-93

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 FEBRUARY 2025

DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA20	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E23	E59

REINFORCING SCHEDULE (For Two Approach Slabs and Two Sleeper Slabs)					
Mk.	No.	Size	Length	Type	Bending Details
Sleeper Slab					
c1	32	5	41' - 7"	Str.	d1 4' - 2"
d1	168	4	5' - 0"	2	Type 2
d2	84	4	6' - 1"	T2	Type T2
Approach Slab					
a3	6	4	11' - 6"	14	Type 14
e1	40	6	41' - 7"	Str.	
e2	28	4	41' - 7"	Str.	
g1	8	8	19' - 8"	Str.	
g2	160	8	20' - 2"	Str.	
g3	4	4	19' - 8"	Str.	
g4	54	4	20' - 2"	Str.	
g5	52	4	6' - 0"	Str.	
h1	4	6	39' - 8"	Str.	

NOTES:
All bars to be epoxy coated.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES (For Two Approach Slabs and Two Sleeper Slabs)		
ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	190.6
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	41.9

1. 48.3 cu. yds. Concrete in Approach Slabs.
2. 13596 lbs. Epoxy Coated Re-Steel in Approach Slabs.
3. 15.0 cu. yds. Concrete in Sleeper Slabs.
4. 2292 lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
5. 21 sq. ft. of 2" Polystyrene Insulation Board.
Items 1 thru 5 are approximate quantities contained in the above bid items and are for information only.

★ Add a3 bar to bottom layer of steel as shown in DETAIL "Y" and top layer of steel as shown in DETAIL "Z".
✂ Cut all bars in area of drop inlet as shown in DETAIL "Y" and DETAIL "Z".

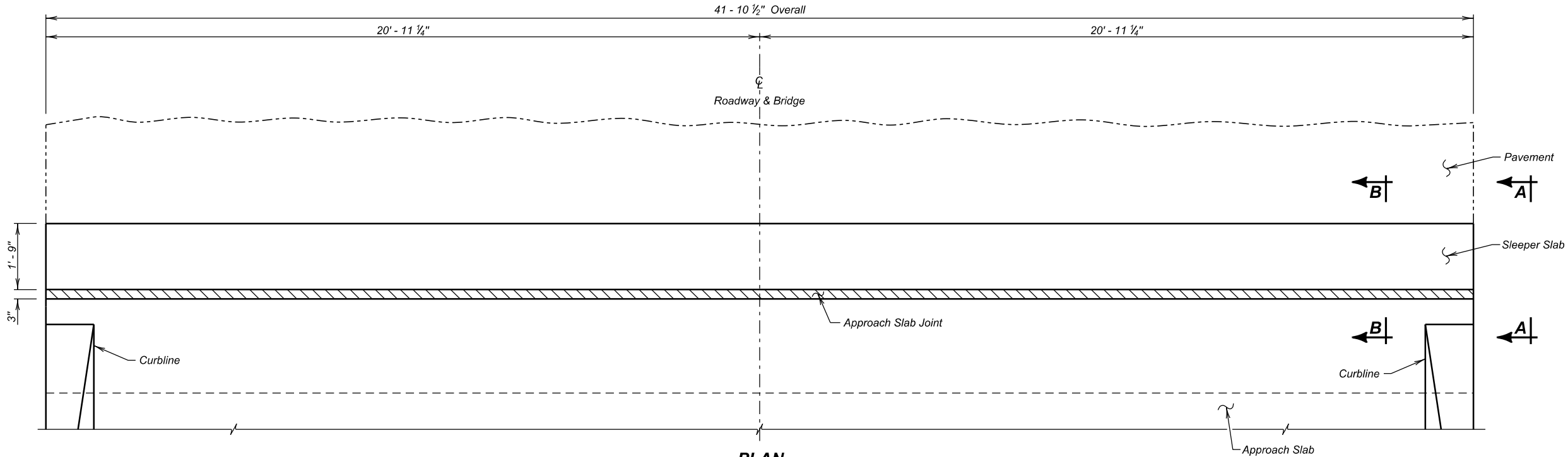
DESIGNED BY: JH MINN05V6
CK. DES. BY: ER 05V6TA21
DRAFTED BY: BT
BRIDGE ENGINEER: Steve A. Johnson

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2025

40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

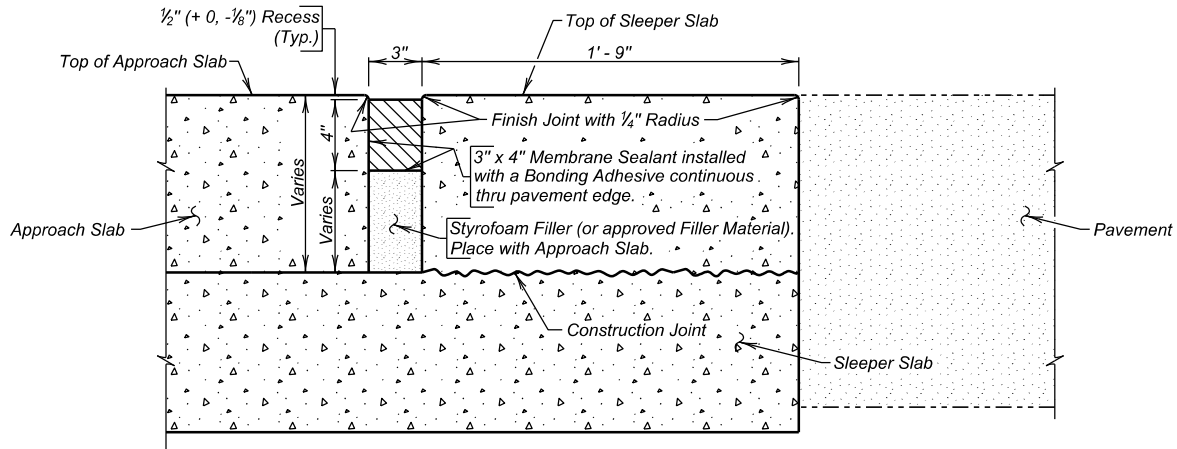
0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

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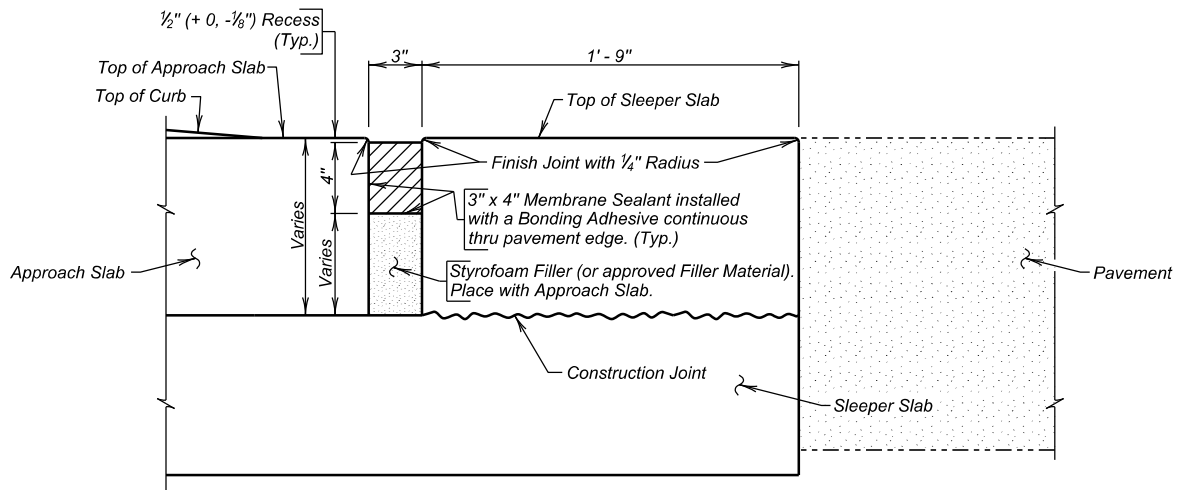


GENERAL NOTES

- The membrane sealant will be on the approved product list for membrane sealant expansion joints.
- The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case will the precompressed dimension exceed 75% of the joint opening width. The foam sealant will be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
- The membrane sealant will be supplied in pieces 5 feet in length or longer. The foam sealant will be ultra-violet and ozone resistant.
- The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
- Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
- If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
- The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40° F.
- A technical representative of the membrane sealant manufacturer will be present at the jobsite during installation. The technical representative will be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.
- Concrete surfaces that will be in contact with the membrane sealant will be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding will not be permitted.
- After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface will be air blasted. The air compressor used for joint cleaning will be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint will be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
- Individual spliced sections will be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer will submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
- Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
- Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spill areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
- The membrane sealant expansion joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The membrane sealant expansion joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.



SECTION B - B



VIEW A - A

ESTIMATED QUANTITIES

(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	83.8

APPROACH SLAB JOINT DETAILS

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY 0° SKEW
OVER SPLIT ROCK CREEK SEC. 10/11-T102N-048W
STA. 115 + 21.46 TO 118 + 61.71 P - PT 0011(145)83
STR. NO. 50-280-139 HL-93

MINNEHAHA COUNTY

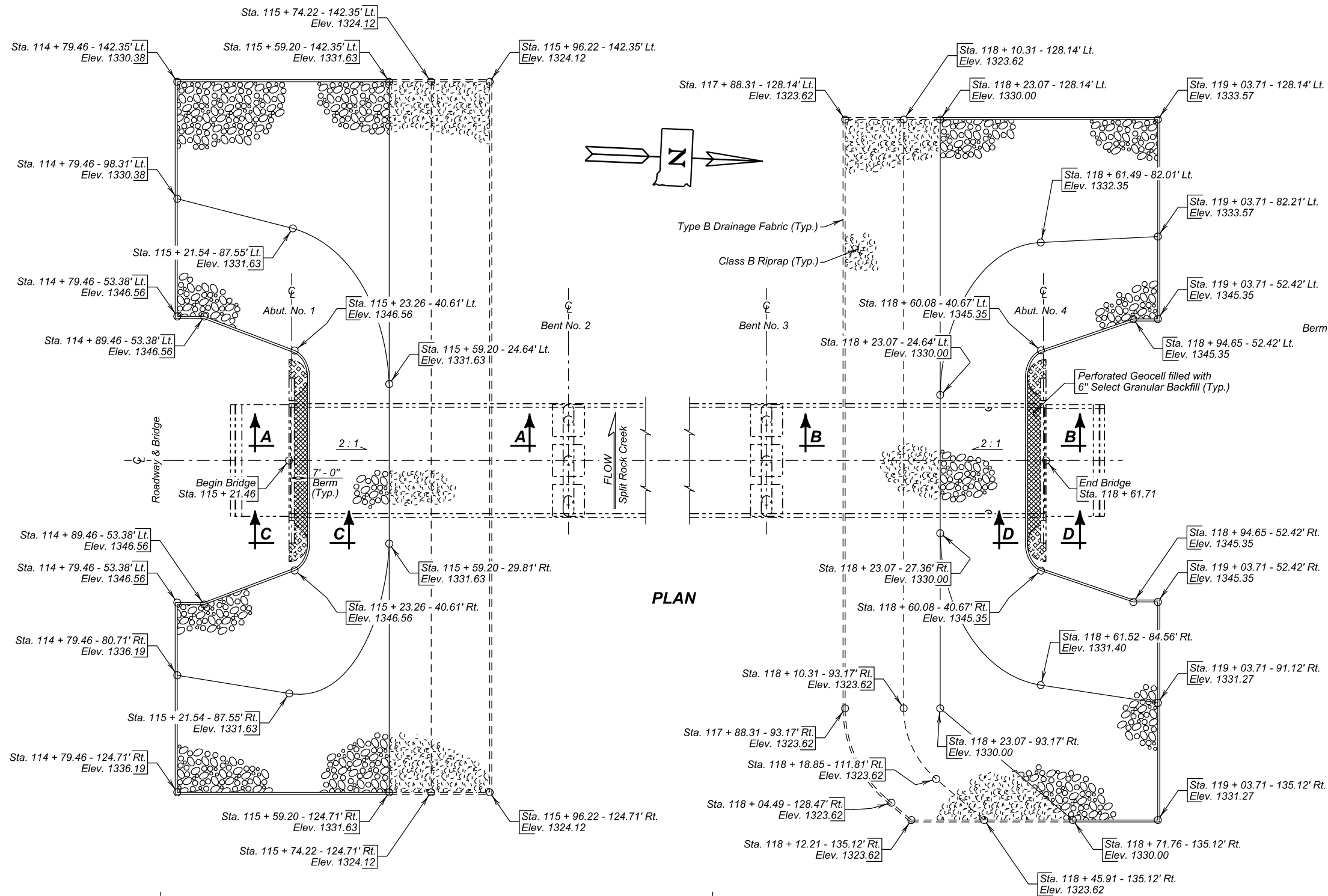
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

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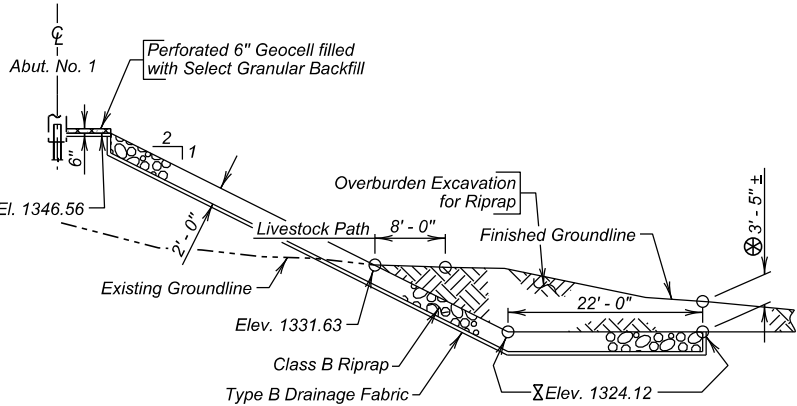
DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA22	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E25	E59

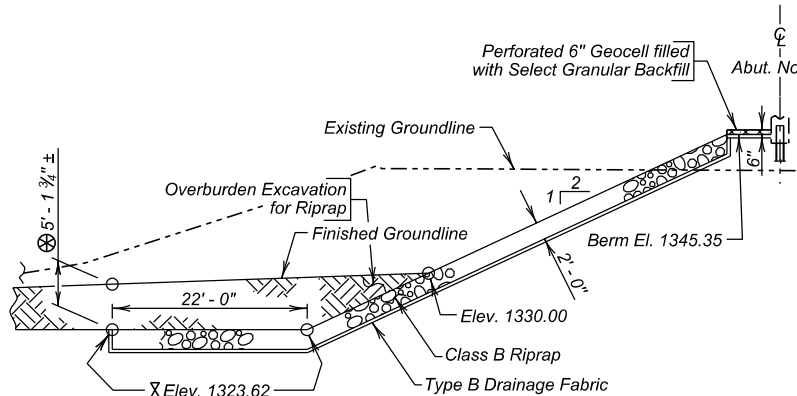


Note:
Restore the channel and channel banks to the existing conditions between the riprap intercepts in accordance with the Overburden Excavation for Riprap notes. This will require a portion of the riprap to be buried.

⊗ Measured to channel intercept. See GENERAL DRAWING Sheet for details.



SECTION A - A



SECTION B - B

⊗ Riprap toe elevations are shown for estimates, riprap will be placed on top of the Purple Slaty Mudstone layer. Depth may vary within the bridge opening.

RIPRAP DETAILS

FOR

340' - 3" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

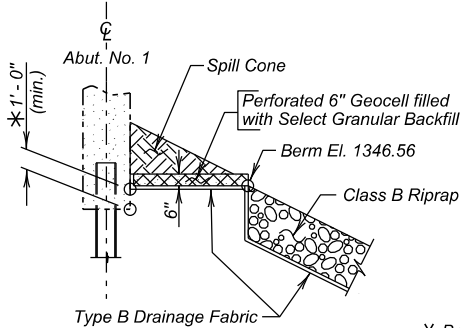
23 OF 29

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
≠ Class B Riprap	Ton	5593.5
Type B Drainage Fabric	Sq. Yd.	6446
Overburden Excavation for Riprap	Cu. Yd.	3190
⊘ Select Granular Backfill	Ton	27.0
☆ Perforated Geocell	Sq. Ft.	936

≠ For estimating purposes only, a factor of 1.4 tons/cu.yd. was used to convert Cu. Yds. to Tons.

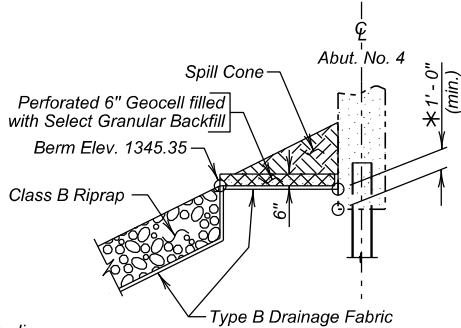
☆ See PERFORATED GEOCELL notes for payment information.

⊘ For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.



SECTION C - C

* Bridge berm will be built according to Standard Plate No. 120.11. (See SECTION B.)



SECTION D - D

DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA23	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E26	E59

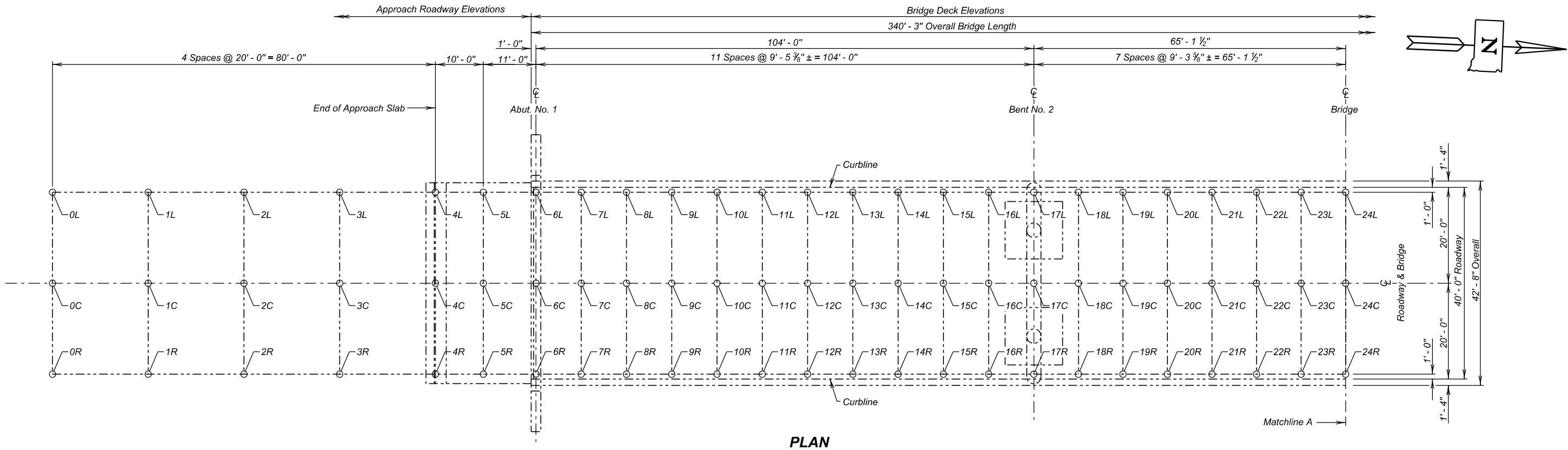


Table of As-Built Elevations - Approach Roadway					
Location	Elevation	Location	Elevation	Location	Elevation
0L		0C		0R	
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	

Table of As-Built Elevations - Bridge Deck					
Location	Elevation	Location	Elevation	Location	Elevation
6L		6C		6R	
7L		7C		7R	
8L		8C		8R	
9L		9C		9R	
10L		10C		10R	
11L		11C		11R	
12L		12C		12R	
13L		13C		13R	
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	
22L		22C		22R	
23L		23C		23R	
24L		24C		24R	

Elevations - Bridge Survey Markers		
Location	Station - Offset	Elevation
Begin Bridge		

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Elevation Survey	L. S.	Lump Sum

NOTE -
The Contractor will be responsible for producing the As - Built Elevation Survey soon after construction is complete and before the bridge is opened to traffic. The As - Built Elevations of the Bridge will be taken and recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Office of Bridge Design and the Region Bridge Office.

AS - BUILT ELEVATION SURVEY (A)
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139
0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

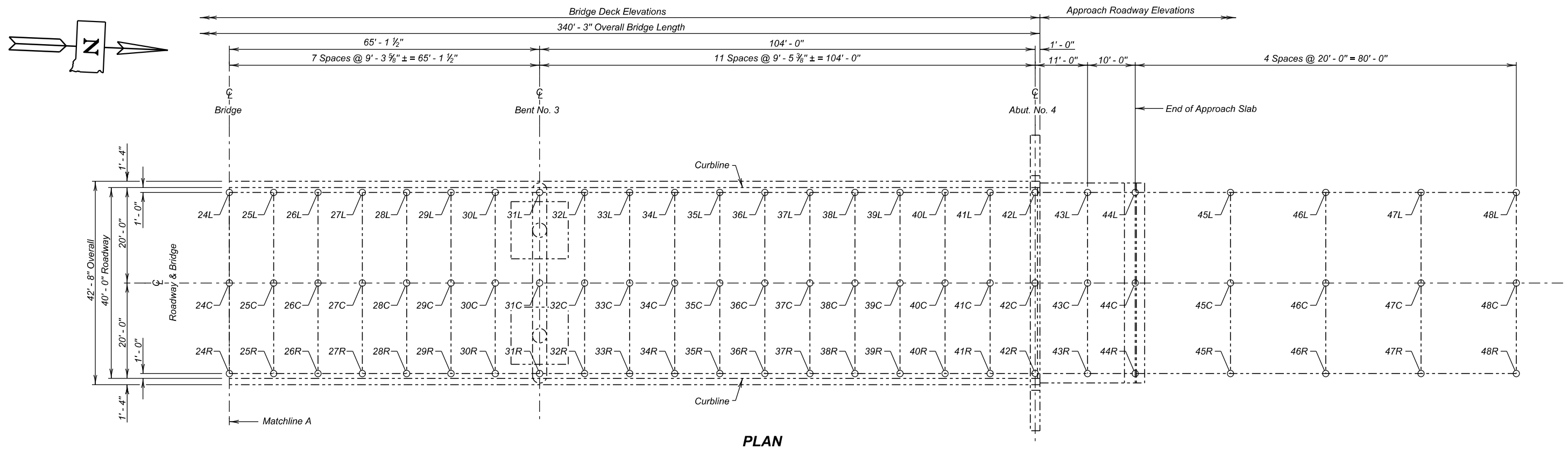
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

24 OF 29

DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA24	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E27	E59



PLAN

Location	Elevation	Location	Elevation	Location	Elevation
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		31R	
32L		32C		32R	
33L		33C		33R	
34L		34C		34R	
35L		35C		35R	
36L		36C		36R	
37L		37C		37R	
38L		38C		38R	
39L		39C		39R	
40L		40C		40R	
41L		41C		41R	
42L		42C		42R	

Table of As-Built Elevations - Approach Roadway					
Location	Elevation	Location	Elevation	Location	Elevation
43L		43C		43R	
44L		44C		44R	
45L		45C		45R	
46L		46C		46R	
47L		47C		47R	
48L		48C		48R	

<i>Elevations - Bridge Survey Markers</i>		
<i>Location</i>	<i>Station - Offset</i>	<i>Elevation</i>
<i>End Bridge</i>		

AS - BUILT ELEVATION SURVEY (B)
FOR
340' - 3" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER SPLIT ROCK CREEK
STA. 115 + 21.46 TO 118 + 61.71
STR. NO. 50-280-139

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

FEBRUARY 2025

(25) OF (29)

DESIGNED BY JH MINN05V6	CK. DES. BY ER 05V6TA25	DRAFTED BY BT	 BRIDGE ENGINEER
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Endblock

Center survey marker on top, level portion of abutment wing

L

L/2

ABUTMENT WITH "STRAIGHT" WINGS

Endblock

Center survey marker on top, level portion of abutment wing

L

L/2

ABUTMENT WITH "SWEEP BACK" WINGS

Endblock

Survey marker

8" ±

Begin or End bridge

Abutment wing

ABUTMENT WITH "SWEEP BACK" WINGS

(Endblock on top of wings)

GENERAL NOTES:

1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.

2. Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a 3/4" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 1/2" top diameter.

3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26, 2012

Published Date: 2026

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T

BRIDGE SURVEY MARKER

PLATE NUMBER
460.05

Sheet 1 of 1

* VIEW C - C

VIEW A - A

* H Pile not shown this view

3

C

B

A

B

H Pile

Pile Tip

* VIEW B - B

ELEVATION

2

See Table 1

3

Typical Both Flanges

H Pile

Pile Tip

1

45°

2

3

ALTERNATE WELD ATTACHMENT

TABLE 1

1 DEPTH OF PREPARATION	PILE
3/8	HP 14 X 102 HP 14 X 89 HP 12 X 74
5/16	HP 14 X 73 HP 12 X 63 HP 10 X 57
1/4	HP 12 X 53 HP 10 X 42 HP 8 X 36

GENERAL NOTES:

1. Pile tip reinforcement shall be one-piece cast steel points commercially available and produced by a manufacturer who regularly produces pile points as a production item available to the public.

2. Material for pile points shall conform to ASTM A27, Grade 65-35, Class 2.

3. Pile points shall contain teeth designed to dig into obstructions and bearing materials in order to develop the maximum carrying capacity of the materials encountered.

4. Welding and weld inspection shall be in conformance with AWS D1.5 - (Current Year) Bridge Welding Code - Steel.

December 23, 2012

Published Date: 2026

S

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T

H PILE TIP REINFORCEMENT

PLATE NUMBER
510.30

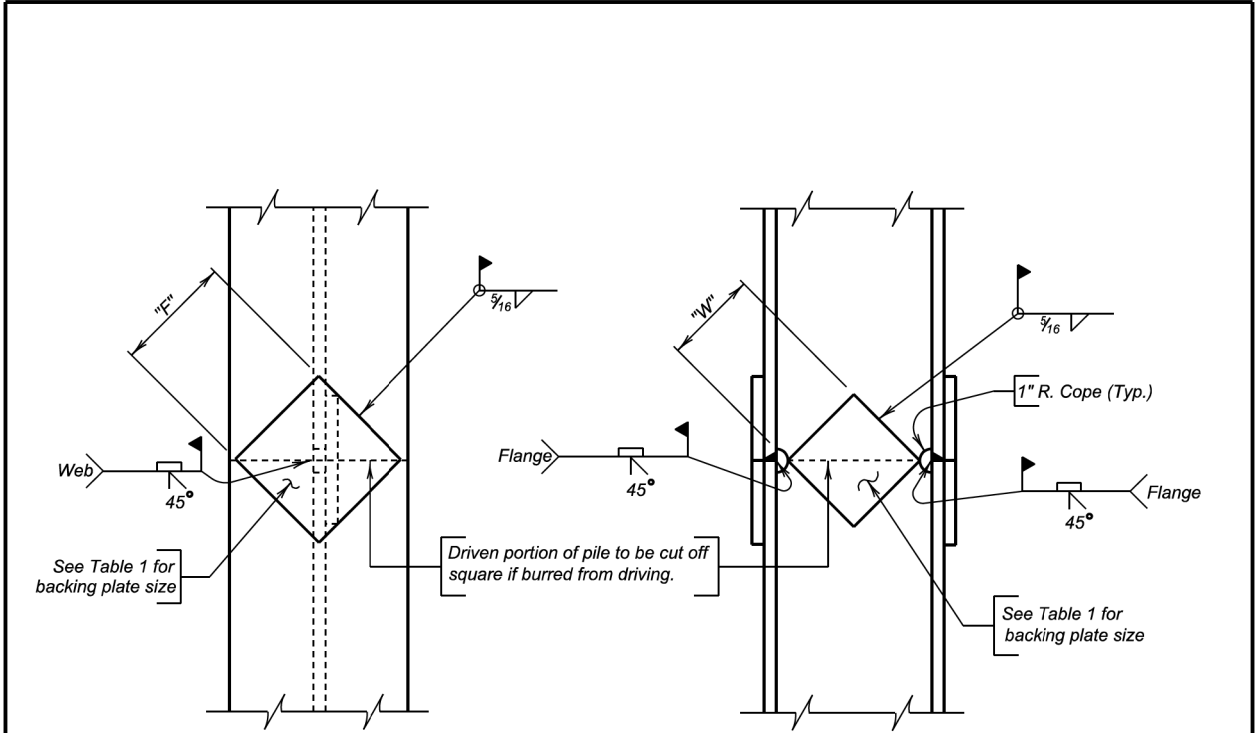
Sheet 1 of 1

340' - 3" STEEL GIRDER BRIDGE

STR. NO. 50-280-139

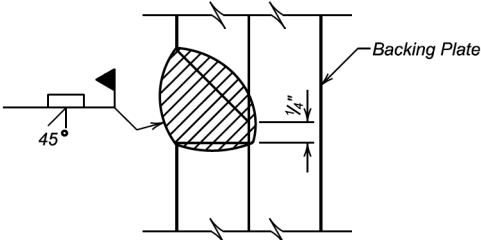
FEBRUARY 2025

27 OF 29



NOTE:
Prepare joint surfaces lower end of upper section on the ground and weld on backing plates; then place upper section on lower section and weld.

COMPLETE JOINT PENETRATION WELD DETAIL



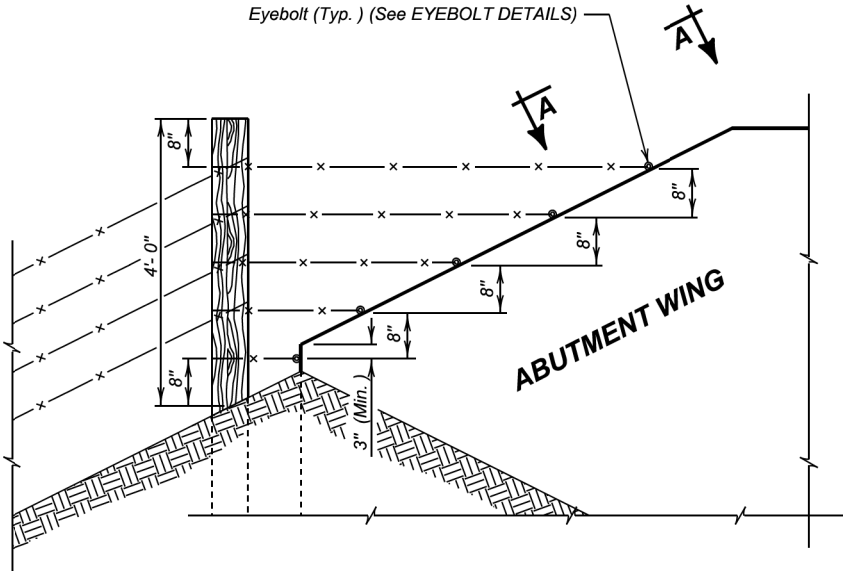
GENERAL NOTES:

- Steel for backing plates shall conform to ASTM A709 Grade 50.
- Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
- Welder must be certified and registered with the SDDOT.
- Backing plate shall at a minimum be as thick as the web of the pile being spliced.
- Web must be coped with 1 inch radius.
- Submit Welding Procedure Specification (WPS) to Bridge Construction Engineer for approval prior to pile driving.

TABLE 1 (BACKING PLATES)			
PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

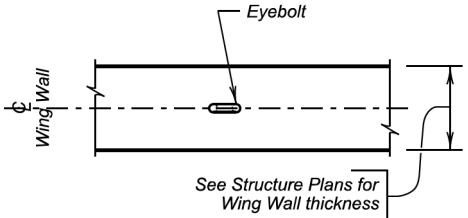
Published Date: 2026	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1



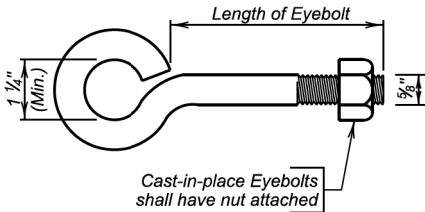
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

- The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- Eyebolts shall be placed on all of the bridge abutment wings.
- Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
- Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
- The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



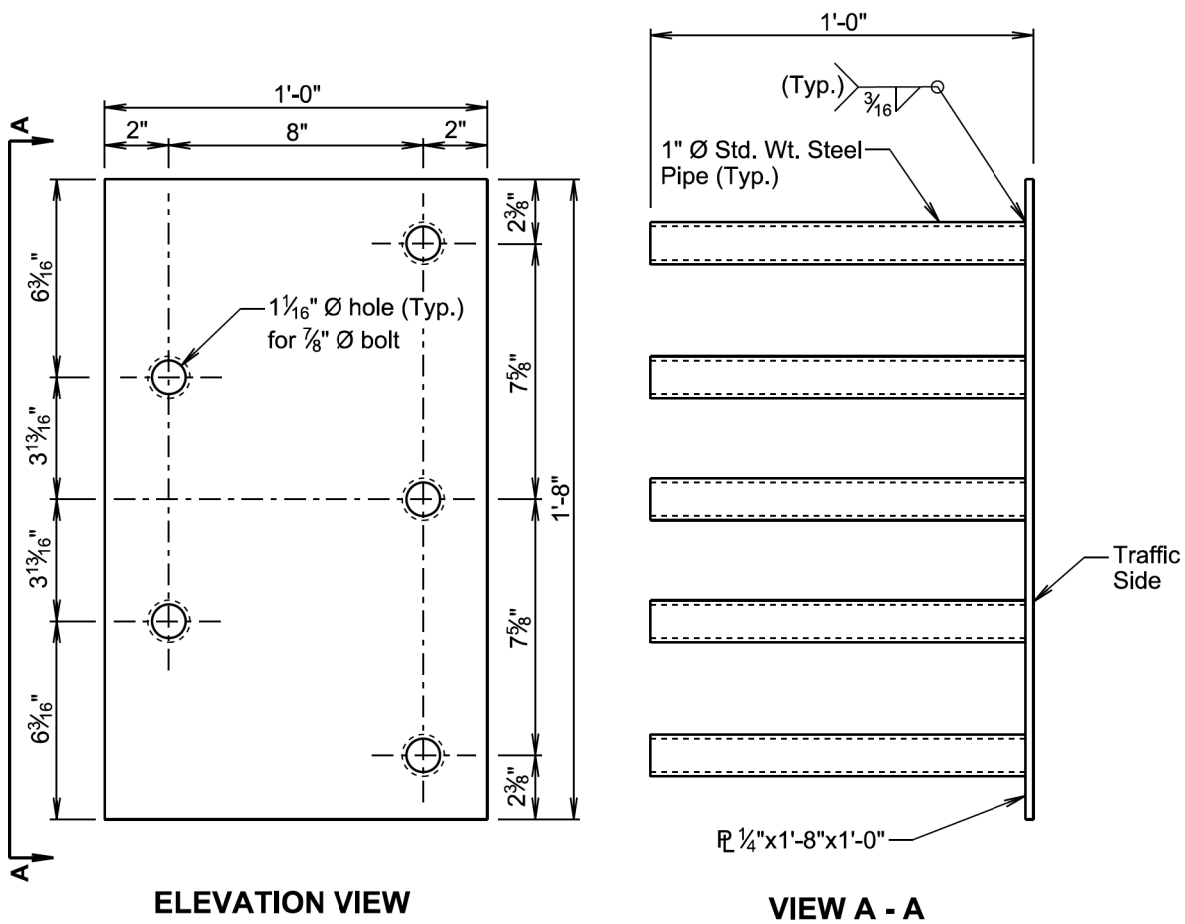
VIEW A - A



EYEBOLT DETAILS

December 23, 2012

Published Date: 2026	S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS LONGER THAN 6')	PLATE NUMBER 620.17
			Sheet 1 of 1



GENERAL NOTES:

Steel plate for the insert assembly will conform to ASTM A709, Grade 36. The steel pipes will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

Welding and weld inspection will be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.

After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

Bolts, nuts, and washers will be provided with each assembly. Bolts will be galvanized and conform to the requirements of ASTM A307, F3125 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing will be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

Apr 11 8, 2025

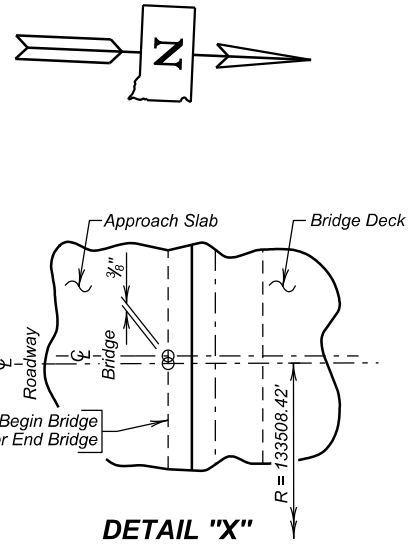
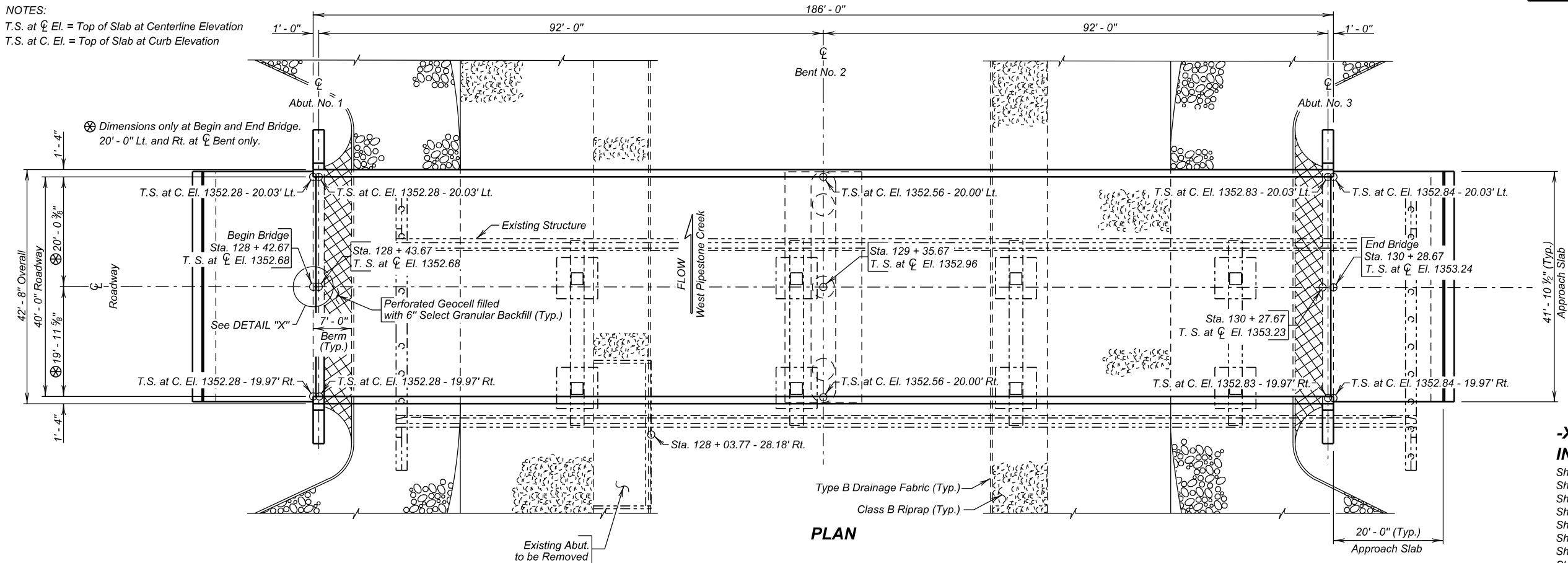
<i>Published Date: 2026</i>	S D D O T	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92
			Sheet 1 of 1

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E32	E59

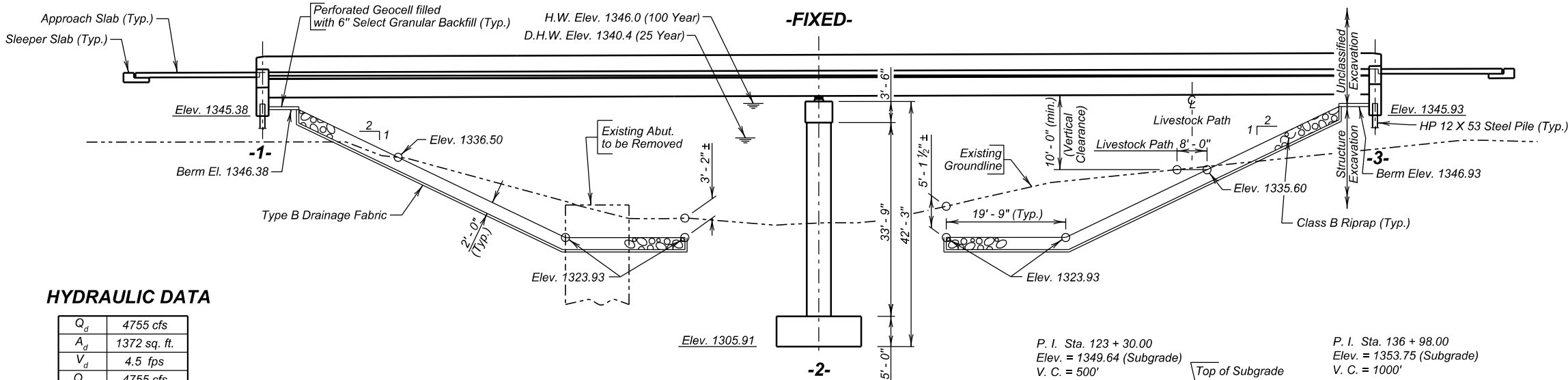
NOTES:

T.S. at ∇ El. = Top of Slab at Centerline Elevation
T.S. at C. El. = Top of Slab at Curb Elevation



-X071-
INDEX OF BRIDGE SHEETS

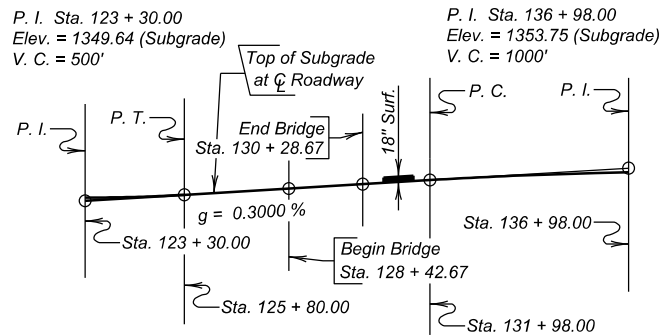
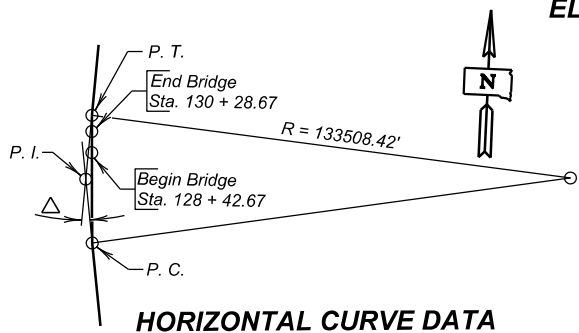
Sheet No. 1 - General Drawing
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Notes (Continued)
Sheet No. 4 - Notes (Continued)
Sheet No. 5 - Notes (Continued)
Sheet No. 6 - Notes (Continued)
Sheet No. 7 - Subsurface Investigation, Piling, & Rock Dowel Layout
Sheet No. 8 - Abutment Details
Sheet No. 9 - Bent Details (A)
Sheet No. 10 - Bent Details (B)
Sheet No. 11 - Superstructure Details (A)
Sheet No. 12 - Superstructure Details (B)
Sheet No. 13 - End Block and Barrier Curb Details
Sheet No. 14 - Girder Layout Details
Sheet No. 15 - Diaphragm Details
Sheet No. 16 - Framing Diagram, Camber, & Erection Data
Sheet No. 17 - Slab Form Elevations
Sheet No. 18 - Details of Bolted Field Splices and Bearings
Sheet No. 19 - Details of Bridge End Backfill (A)
Sheet No. 20 - Details of Bridge End Backfill (B)
Sheet No. 21 - Details of Approach Slab Adjacent to Bridge
Sheet No. 22 - Approach Slab Joint Details
Sheet No. 23 - Riprap Details
Sheet No. 24 - As - Built Elevation Survey
Sheet No. 25 - Details of Standard Plate No's. 430.50 and 460.02
Sheet No. 26 - Details of Standard Plate No's. 460.05 and 510.30
Sheet No. 27 - Details of Standard Plate No's. 510.40 and 620.18
Sheet No. 28 - Details of Standard Plate No. 630.92



HYDRAULIC DATA

Q_d	4755 cfs
A_d	1372 sq. ft.
V_d	4.5 fps
Q_F	4755 cfs
Q_{100}	7748 cfs
Q_{OT}	$>Q_{100}$ cfs
V_{max}	4.6 fps

Q_d = Design discharge for the proposed bridge based on 25 year frequency. El. 1340.4.
 Q_{OT} = Overtopping discharge and frequency $>Q_{100}$ year recurrence interval. El. 1351.6 @ Sta. 123 + 52.00 $\pm$
 Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1346.0.
 V_{max} = Maximum computed outlet velocity for the proposed bridge, based on 100 year frequency.



Topeka Shiner Stream

GENERAL DRAWING
FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 P - PT 0011(145)83
STR. NO. 50-280-136 HL-93
PCN 05V6

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2025

1 OF 28

-X071-

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB01	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	823	SqYd	See Special Provision
Select Granular Backfill	25.4	Ton	
Incidental Work, Structure	Lump Sum	LS	
Structural Steel	Lump Sum	LS	
Membrane Sealant Expansion Joint	83.8	Ft	
Bridge Painting	Lump Sum	LS	
Structure Excavation, Bridge	601	CuYd	
Bridge End Embankment	840	CuYd	
Granular Bridge End Backfill	84.9	CuYd	
Approach Slab Underdrain Excavation	8.0	CuYd	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	253.3	CuYd	
Class A45 Concrete, Bridge	233.6	CuYd	
Concrete Approach Slab for Bridge	190.6	SqYd	
Concrete Approach Sleeper Slab for Bridge	41.9	SqYd	
Install Dowel in Rock	52.5	Ft	
Reinforcing Steel	37,461	Lb	
Epoxy Coated Reinforcing Steel	2,722	Lb	
Stainless Reinforcing Steel	63,287	Lb	See Special Provision
Preboring Pile	140	Ft	
HP 12 Pile Tip Reinforcement	14	Each	
HP 12x53 Steel Test Pile, Furnish and Drive	90	Ft	
HP 12x53 Steel Bearing Pile, Furnish and Drive	540	Ft	
4" Underdrain Pipe	155	Ft	
Porous Backfill	15.0	Ton	
Class B Riprap	5202.6	Ton	
Overburden Excavation for Riprap	4058	CuYd	
Type B Drainage Fabric	5,922	SqYd	
Perforated Geocell	880	SqFt	

BRIDGE SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
2. Standard Specifications for Roads and Bridges, 10-1-25 Version, Required Provisions, and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges are available for download and viewing at <https://dot.sd.gov/doing-business/contractors/standard-specifications>.
3. 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

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

DESIGN MATERIAL STRENGTHS

Class A45 Concrete $f'_c = 4,500$ psi

Reinforcing Steel (ASTM A615, Gr. 60) $f_y = 60,000$ psi

Stainless Steel (ASTM A955, Gr. 60) $f_y = 60,000$ psi

Piling (ASTM A572 Grade 50) $f_y = 50,000$ psi

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

GENERAL CONSTRUCTION

1. All lap splices shown are contact lap splices unless noted otherwise.
2. All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
4. The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
5. Barrier curbs, and end blocks will be built perpendicular to the roadway grade line.
6. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
7. Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.11. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
8. The elevation of the bridge deck is 18 inches above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

1. In place centerline Sta. 128+57.81 to centerline Sta. 130+43.81 is a 186.0-foot, 5 span continuous concrete bridge with a 30'-0" clear roadway width. The superstructure consists of a reinforced concrete slab with block barrier on top of original curb continuous and concrete end blocks. The deck has been overlaid with 2 inches of low slump dense concrete. The substructure consists of 2 column reinforced concrete bents on spread footing and reinforced concrete sill type abutments; the abutments are supported on timber piling. Additionally, a section of the concrete abutment exists from the previous structure.

2. Break down and remove the existing bridge, the previous structures abutment, and approach/sleeper slabs if applicable, to 1-foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Construction Specifications. All portions of the existing bridge will be removed and disposed of by the Contractor at an approved. An appropriate site will be as described in the Environmental Commitments Notes in the plans.
3. During demolition of the structure, efforts will be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.
4. The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid, it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

NOTICE - LEAD BASED PAINT

Be advised that the paint on the steel surfaces of the existing structure contains lead. The Contractor should plan operations accordingly and inform employees of the hazards of lead exposure.

DESIGN MIX OF CONCRETE

1. All structural concrete will be Class A45 Concrete unless otherwise indicated.
2. Type II cement conforming to Section 750 of the Construction Specifications is required in all concrete on the structure except in the abutments. Abutment concrete will use a Type III cement or an approved modified A45 mix. The modified mix will meet the requirements for A45 concrete specified in Section 460 of the Construction Specification with the following modifications: a high range water reducer is required at the manufactures' recommended dosage, the maximum concrete slump is 6 inches, the maximum water/cementitious material ratio will be at least 0.02 less than the A45 mix used in the rest of the substructure, and the minimum concrete temperature at time of placement will be 65 degrees Fahrenheit. If used, type III cement will contain a maximum 8% Tricalcium Aluminate (C₃A) and a maximum 0.6% Alkalis (Na₂O + 0.658K₂O).

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
186' - 0" STEEL GIRDER BRIDGE

STR. NO. 50-280-136
APRIL 2025

DESIGN MIX OF CONCRETE (CONTINUED)

3. Grout design mix will be as specified in Section 460.2 K of the Construction Specifications. A compressive strength of 2000 psi will be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4-inch. The quantity of grout is included in and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

ABUTMENTS

1. Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
2. The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. Piling will develop a field verified nominal bearing resistance of 245 tons per pile.
3. One test pile will be driven at each abutment and will become part of the pile group. The test pile will be driven before any other pile and will be driven to the required field verified nominal bearing resistance or as directed by the Engineer prior to driving any portion of the bearing piles.
4. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40.
5. Piles will not be driven out of position by more than three inches in the direction parallel to the girder centerline. A pile-driving template will be used to ensure this accuracy.
6. Each finished abutment will include a Bridge Survey Marker. See Standard Plate 460.05
7. Pile tip reinforcement will be required. See Standard Plate 510.30.

CONNECTION OF GIRDER TO PILE

1. Cut off piling at the elevations shown in the plans and weld bearing plates to the piling. Adjust as necessary to make bearing plates level, and to permit proper position of the girders. If piles are driven out of position to the extent that bearing plates will not fit, the Contractor will submit the method of correction to the Engineer for approval. Piles will not be pulled into position.
2. All girder erection will be complete with the splices fully bolted and diaphragms in place, before welding girders to bearing plates. (Diaphragms need not be secured with more than temporary bolting, prior to the pile to girder connections.)
3. An alternate connection, capable of transmitting a direct load of 8000 lbs. to the pile and developing 30,000 lbs. horizontal force, may be submitted to the Office of Bridge Design for prior approval.
4. This connection will not be made when the temperature is greater than 70° F or less than 30° F.
5. Steel for the bearing plates will conform to ASTM A709 Gr. 50.
6. Payment for furnishing and installing the bearing plates will be incidental to the contract lump sum price for Structural Steel.

POURING OF ABUTMENT CONCRETE

1. Abutment concrete will be placed, as directed by the Engineer, at a time when a relatively stable temperature can be expected. A relatively stable temperature is defined as an air temperature deviation of not more than 30° F within 12 hours of completing the abutment pour from the air temperature at the time when the abutment concrete is placed.
2. The forms will be secured to the girders in such a manner that they will be free to move longitudinally with the expansion or contraction of the girder.
3. The girders will be braced near the abutments in such a manner that their lateral movement or rotation will be prevented during the placing of concrete. The Contractor will include details for this bracing with the falsework plans.

PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The following pile hammers were evaluated and found to produce acceptable driving stresses:
- Delmag D19-42 APE D19-42 MVE M-19
2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity. Requests for evaluation of hammers not listed will be submitted a minimum of 5 business days prior to installation of piles.
3. Steel piling will obtain bearing on Corson Diabase bedrock. This material is extremely hard and impenetrable by nature. The Site Plan & Subsurface profile sheet should be reviewed to obtain approximate Corson Diabase elevations prior to pile driving operations. Extreme care should be taken during pile driving operations not to overstress the piles when the tips encounter Corson Diabase bedrock.

BENT

1. All Swedge Bolts will be 1 1/4-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.
2. Spiral reinforcement may be fabricated from cold drawn wire conforming to ASTM A1064 or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.

SPREAD FOOTING ON ROCK

1. Before exposure of the foundation area the Geotechnical Engineering Activity will be contacted through proper channels so that a member of the Geotechnical Engineering Activity may be present during excavation of the foundation area.

2. If upon inspection, the Geotechnical Engineering Activity personnel determine that the material at the plan shown footing elevation is unsuitable for foundation support or if sound bedrock is encountered at an elevation other than the plan shown footing elevation, the Engineer will order the footing elevation changed to an elevation approved by the Geotechnical Engineering Activity personnel. If the footing elevations are changed, the Office of Bridge Design will be contacted prior to proceeding with construction to determine if a redesign of the substructure unit is required. If a redesign is required, a maximum of 5 working days may be required to perform this design. Any costs associated to delays within the 5 working day period for redesign will be borne by the Contractor at no additional cost to the Department.
3. If the footing elevations are lowered due to bedrock conditions, the excavation below the plan shown footing elevation ordered by the Engineer will be paid for at the contract unit price per cubic yard for Structure Excavation, Bridge. The additional concrete and reinforcing steel required for bent construction will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge and contract unit price per pound for Reinforcing Steel, respectively.
4. The rock surface will be cleaned of all soil and debris prior to placing reinforcing steel for the spread footing. Cleaning will be accomplished by water washing or air jetting. Material washed from the rock surface will be directed into a sump or low area and physically removed from the exposed rock surface.
5. Vertical fractures in the foundation rock that the Geotechnical Engineer determines to be detrimental to the integrity of the foundation will be repaired. Designated fractures will be repaired by cleaning to remove soil and other relatively weak material to a depth of 1.5 to 2 times the width of the fracture. The cleaned opening will then be filled with grout or a lean concrete mix.
6. The cost of cleaning the rock will be included in the contract unit price per cubic yard for Structure Excavation, Bridge. Payment will be considered full compensation for all materials, labor, equipment and incidentals necessary to satisfactorily complete the work.
7. If cleaning and filling of rock fractures is ordered, the work will be paid for as EXTRA WORK, in accordance with Section 4.4 of the Construction Specifications.
8. Due to the possibility of variance in the final elevations for the bent footings, the reinforcing steel in the bent shall not be ordered until final footing elevations have been approved by the Geotechnical Engineering Activity personnel.

NOTES (CONTINUED)
FOR
186' - 0" STEEL GIRDER BRIDGE

STR. NO. 50-280-136
APRIL 2025

SPREAD FOOTING ON ROCK (CONTINUED)

9. It is anticipated that cofferdams will be necessary to construct the spread footing on rock at the bent. Due to the irregular surface of the bedrock, extra effort may be required to seal the cofferdam. Cofferdams will be designed and constructed in accordance with Section 423 of the Specifications.

ROCK DOWELS

1. The steel dowels will be deformed bars conforming to ASTM A615 Grade 60.
2. Following the engineering evaluation of the foundation rock, the Engineer may order the number of dowels and/or spacing to be increased or decreased in accordance with the Geotechnical Engineer's recommendations. Increases or decreases in quantity will be at the unit price per foot for Install Dowel in Rock.
3. The steel dowel for use with the item Install Dowel in Rock is included in the Reinforcing Schedule and will be paid for at the contract unit price per pound for Reinforcing Steel.
4. Dowel bond material will be a fast set polyester resin rock anchoring system in a 40 mm (minimum) capsule from one of the following manufacturer's: Dywidag Systems International (Falsoc), Minova (Lokset), or Williams Form Engineering Corp. The resin will be suitable for bonding steel dowel bars to rock in the existing moisture conditions. The diameter of the hole, drilled into the rock, will be a maximum of 3/8-inch larger than the diameter of the steel dowel, or as specified by the dowel bond material manufacturer. The drilled holes will be blown out with compressed air using a device that will reach the bottom of the hole to ensure that all debris or loose material has been removed prior to epoxy injection. The Contractor must submit dowel bonding material product data and installation plan to the Engineer for approval.
5. A demonstration of the Contractor's rock dowel installation method must be performed and accepted by the Engineer prior to installation of any production dowels. The demonstration may either conducted within the footprint of the footing or adjacent exposed bedrock as approved by the Engineer. Additional dowels may be required at the expense of the Contractor should the demonstration not yield acceptable results. Dowels used for demonstration will be incidental to the contract unit price per foot for Install Dowel in Rock.
6. Install Dowel in Rock will not be measured unless a change is ordered. Payment will be for the linear foot of embedment into the rock and, will be considered full compensation for all materials, labor, equipment, and incidentals necessary to satisfactorily complete the work.

SUPERSTRUCTURE

1. Structural steel will conform to ASTM A709 Gr. 50T2. Steel for the diaphragms and stiffeners will conform to ASTM A709 Gr. 50. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.
2. Bolts, nuts and washers will conform to ASTM F3125, Grade A325.

3. The shear connectors will be installed during fabrication. Any request to field install the shear connectors must be approved by the Office of Bridge Design.
4. All butt-welded girder splices will be ultrasonically inspected.
5. The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel.
6. Structural Steel will be painted in accordance with Section 411 of the Specifications. The top coat will be an approved brown (AMS STD 595 Color 30045).
7. The top of the top flange will be shop painted, following the shear connector attachment, with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. No top coat of polyurethane will be applied.
8. 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.
9. The use of an approved deck finishing machine will be required during placement of bridge deck concrete. The deck finishing machine will be adjusted and operated in such a manner that the screed or screeds are parallel with the centerline of the bridge. The finish machine and concrete placement will be parallel to the skew of the bridge. If the deck finish machine cannot match the exact skew of the bridge, the difference will need be approved by the Engineer.
10. The concrete bridge deck will be placed and finished at a minimum rate of 50 feet of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. If a header is required sometime during the pour operation, its location will be at or as near as possible to the three-quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 50 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.
11. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.
12. The Contractor is required to submit a detailed plan showing the proposed girder erection. The girder erection plan will be designed and stamped by a Professional Engineer registered with the State of South Dakota. The plan must be submitted 30 days prior to the start of work for approval by the Office of Bridge Design. The plan will include but not limited to, complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details, and temporary bracing details.

13. All single girder segments will be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully installed and bolts fully tightened. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected.
14. See Special Provision for Concrete Penetrating Sealer.
15. Any concrete mortar that gets on all surfaces of all the superstructure components will be washed off or removed before it is dry.

BEARINGS

1. All steel for the bearings will conform to ASTM A709, Gr. 50.
2. 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.
3. The bearing plates will be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Construction Specifications. No top coat of polyurethane will be applied.
4. Tolerances and surface finish for Rocker Plates will be as follows:

Convex Radius Dimension

Surface Finish, Machined Surfaces

Surface Finish, Other Surfaces

+0.000-inch to -0.010-inch

125 RMS or Better

230 RMS or Better
5. Payment for furnishing and installing 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.

FIELD BOLTED GIRDER SPLICES

1. Steel for splice and filler plates will conform to ASTM A709 Gr. 50T2
2. Bolts in flange splices will be placed with the heads down.
3. Bolts in web splices of exterior girders will be placed with the heads on the exterior face of girders.
4. All bolts will be fully tightened prior to removing temporary supports.

NOTES (CONTINUED)

FOR

186' - 0" STEEL GIRDER BRIDGE

STR. NO. 50-280-136

APRIL 2025

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.

FALL PROTECTION

1. The Contractor will install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system will be installed. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.
2. Modifications to any bridge components used to accommodate the Fall Protection System will be shown on the Falsework Plans and the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System will be incidental to the other contract items.

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 Contractor to notify the bolt supplier of these requirements.

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish will be applied to the following areas:

Barrier: all exposed surfaces (top** and front**).

** Color will be AMS – STD - 595 37875 Pearl White
2. The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications.

SHOP PLANS

Shop plans will be required as specified by the Construction Specifications.

SHEAR STUD CONNECTOR

1. Prior to the welding of the studs to the girders, the top surface of the girders that are to have studs welded on will be clean of all dirt, rust, and any other foreign matter.

2. The shear connector 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 connector will meet the following minimum mechanical property requirements for Type B studs,

Tensile	60 ksi
Yield Strength	60 ksi
Elongation	20%
Reduction of Area	50%
3. The shear connectors will be installed during fabrication. Any request to field install the shear connectors must be approved by the Office of Bridge Design.

APPROACH SLABS

1. Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the top pf the sleeper slab riser.
2. The portion of the sleeper slab below the construction joint may be precast. If the bottom portion of the sleeper slab is precast, the Contractor will submit proposed lifting and setting plans to the Bridge Construction Engineer for approval. In addition, if reinforcing or other details differ from those shown in the plans, the Contractor will submit proposed alternate details for approval.
3. The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine will be kept parallel to the screed.
4. Concrete Approach Sleeper Slab for Bridge, whether cast-in-place or precast, will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.
5. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer, and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment and any incidentals necessary to complete this item of work.

APPROACH SLAB UNDERDRAIN SYSTEM

1. An underdrain system will be placed underneath the sleeper slabs and behind the abutments as shown in the plans in accordance with Section 435 of the Construction Specifications.
2. The 4-inch diameter Perforated PVC Drain Pipe will be PS 46 Solvent Weld PVC Pipe conforming to ASTM F758 or SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 with perforations in accordance with ASTM F758. The 4-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be

connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve shall conform to ASTM D6707.

3. The 5-inch diameter schedule 40 steel pipe will conform to ASTM A-53 and F1083.
4. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.
5. All labor, tools, equipment, and any incidentals necessary for the Installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, 5-inch diameter schedule 40 steel pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4” Underdrain Pipe.

PERFORATED GEOCELL

1. Perforated Geocell will be from the following company or equivalent:

Company: Agtec

Phone: 1-818-724-7657

Website: <http://www.agtec.com>
2. Perforated Geocell will be 6 inches tall with Type B Drainage Fabric underlying the perforated Geocell. Installation will adhere to the manufacturer’s recommendation.
3. Perforated Geocell will be filled with the Select Granular Backfill in accordance with Section 850 of the Construction Specifications.
4. Perforated Geocell will be paid for at the contract unit price per square foot. Payment will be full compensation for furnishing and installing the Perforated Geocell.
5. Select Granular Backfill will be paid for at the contract unit price per ton of material furnished. Payment will be full compensation for furnishing, loading, hauling, and placing the Select Granular Backfill.

NOTES (CONTINUED)

FOR
186' - 0" STEEL GIRDER BRIDGE

STR. NO. 50-280-136

APRIL 2025

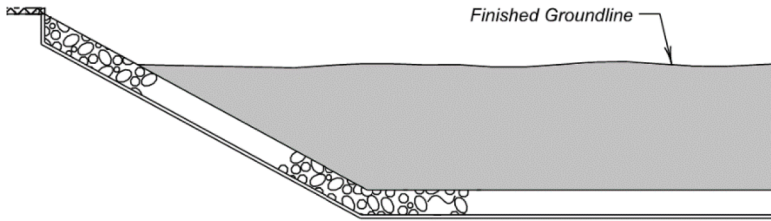
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E37	E59

RIPRAP

Riprap gradation and Drainage Fabric will comply with Section 700.2 of Construction Specifications. Placement of Riprap and Drainage Fabric will be in accordance with Section 700.3 of the Construction Specifications and conditions must be free of standing water.

OVERBURDEN EXCAVATION FOR RIPRAP

1. This work will consist of the removal and replacement of material between the limits of the finished groundline and the top of the riprap. See diagram below (overburden is in grey).



2. Excavation is to be completed after temporary diversion method is in place, if required, with minimal standing water to create the profile of slope protection specified in plans.
3. The removed material will be placed on top of the riprap to the natural ground, proposed groundline, or specified shape and elevations shown in plans. When overburden extends into the streambed it will form the channel bottom and profile as specified in plans. The finished ground under the bridge will be shaped to match the upstream and downstream channel and flood plain.
4. The overburden material will be placed on top of the riprap and have a maximum lift depth of 1' – 0" and compacted free of flowing water or standing water in excess of four inches above the riprap at the lowest elevation.
5. Compaction effort will produce a surface that does not pump, rut, or otherwise displace when traveled over with construction equipment to the satisfaction of the Engineer. Material may be added to excavated material to facilitate compaction and handling. Importing, stockpiling, blending, and/or wasting of materials will be incidental to the contract unit price for Overburden Excavation for Riprap.
6. Payment for Overburden Excavation for Riprap will be at the contract unit price and will be full compensation for labor, equipment, tools, and incidentals, including furnishing, installing, and removal of any temporary works necessary to complete the work. Payment will be for plans quantity unless measurement is ordered by the Engineer.
7. Before preparing the bid, it is the responsibility of the Contractor to verify existing conditions to determine if a temporary diversion method and/or dewatering will be required. If required, the Contractor must submit the temporary diversion method and/or dewatering for approval to the Construction Engineer 30 days prior to construction.

AS - BUILT ELEVATION SURVEY

The Contractor will be responsible for producing an as-built elevation survey soon after construction is completed but before the bridge is opened to traffic. The Contractor will be responsible for recording the as-built elevation shown in the plans. The completed table will be given to the Engineer and copies forwarded to the Office of Bridge Design and the Region Bridge Engineer. The elevations will be based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88). The Engineer will provide the Contractor with a description, elevation, and location of the nearest benchmark that has a NAVD88 established elevation for the Contractor's use. The benchmark shown in the plans has not been tied to the NAVD88. The Contractor will be responsible for establishing a NAVD88 elevation for the benchmark provided in the plans. All cost associated with obtaining the NAVD88 elevations at the locations shown in the table and for the benchmark shown in the plans, including all equipment, labor, and any incidentals required will be incidental to the contract lump sum price for Bridge Elevation Survey.

NOTES (CONTINUED)

FOR

186' - 0" STEEL GIRDER BRIDGE

STR. NO. 50-280-136

APRIL 2025

6 OF 28

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB06	DRAFTED BY BT	 BRIDGE ENGINEER
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The Corson Diabase is a formation of hard igneous rock that intruded through fractures within the Sioux Quartzite. Dike and sill type structures are present in localized areas. The appearance of the formation is generally a black matrix.

The Geotechnical Engineering Activity has all of the boring logs and laboratory test results available for review at the Central Office in Pierre.

LEGEND

-  Auger Test

 Core Test

 Drive Test
-  Water

 Caved

 NQ3 Core
-  Sample Zone

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

All auger test holes are drilled with a 4 1/2 inch diameter continuous flight auger.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to collect samples and measure the resistance to penetration of the soil. Samples are collected using a lined Modified California Sampler. Penetration test results are listed as uncorrected "N" values in blows per foot. Blows over inches are listed if refusal is achieved, which is 50 blows within one 6 inch set.

Core tests are conducted with NQ core barrels to obtain 1 1/8 inch nominal diameter samples.

GROUNDWATER ELEVATIONS

AUGUST 2023

B1	1325.4
B2	1325.5
B3	1324.0
B4	1325.8
B5	(CAVED) 1325.5
B6	1325.4
B7	1325.5

MEASURED SKIN FRICTION

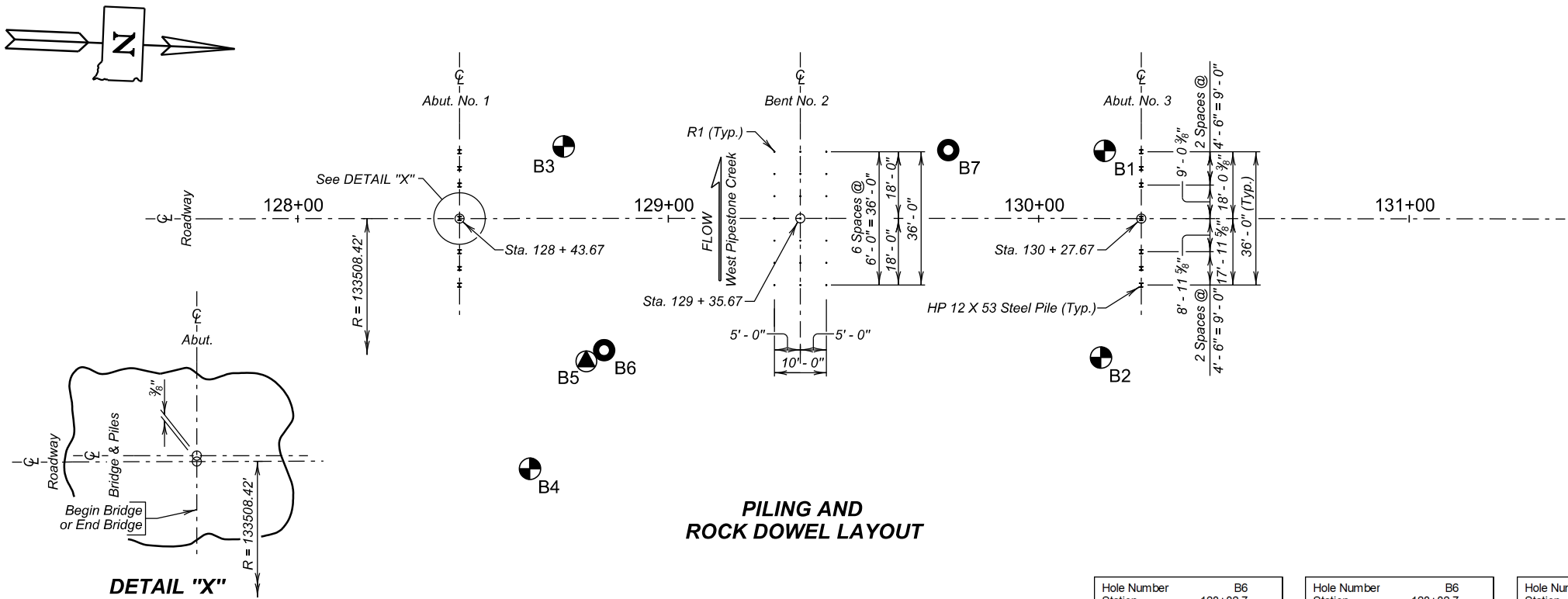
	ELEV.	PSF
B5	1309.5	915

SUBSURFACE INVESTIGATION,
PILING, AND ROCK DOWEL LAYOUT
FOR

186' - 0" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2025



PILING AND
ROCK DOWEL LAYOUT

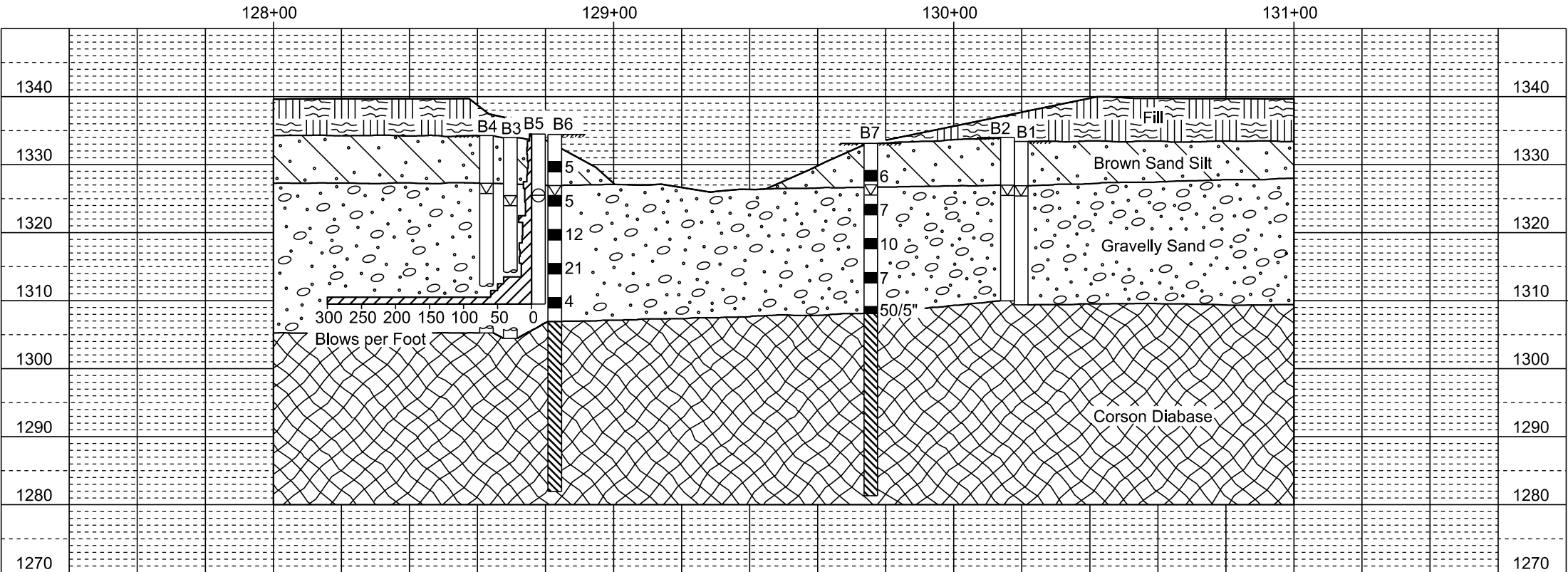
COFFERDAM SOIL PARAMETERS

	Friction Angle (Φ)	Cohesion (c)	Wet Unit Weight (γw)
Gravelly Sand	34°	0 psf	135 pcf

Hole Number	B6
Station	128+82.7
Depth	9.8 ft
Soil Color	Brown
Classification	Gravelly Sand
Strength (Qu)	No Test psf
Dry Density	111.9 pcf
Wet Density	126.0 pcf
Moisture	12.6 %
Pass No. 10	64.6 %
Pass No. 40	29.9 %
Pass No. 200	11.6 %
Sand Content	53.0 %
Silt Content	7.0 %
Clay Content	4.5 %

Hole Number	B6
Station	128+82.7
Depth	25.2 ft
Soil Color	Brown
Classification	Sand
Strength (Qu)	No Test psf
Dry Density	129.0 pcf
Wet Density	145.1 pcf
Moisture	12.5 %
Pass No. 10	88.3 %
Pass No. 40	57.5 %
Pass No. 200	10.5 %
Sand Content	77.8 %
Silt Content	6.9 %
Clay Content	3.5 %

Hole Number	B7
Station	129+75.6
Depth	25.2 ft
Soil Color	Brown
Classification	Sand
Strength (Qu)	317 psf
Dry Density	127.9 pcf
Wet Density	142.0 pcf
Moisture	11.0 %
Pass No. 10	82.6 %
Pass No. 40	30.5 %
Pass No. 200	9.3 %
Sand Content	73.3 %
Silt Content	5.6 %
Clay Content	3.6 %



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E39	E59

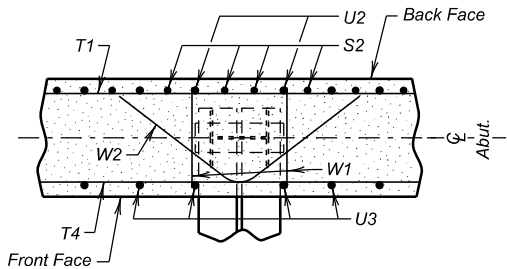
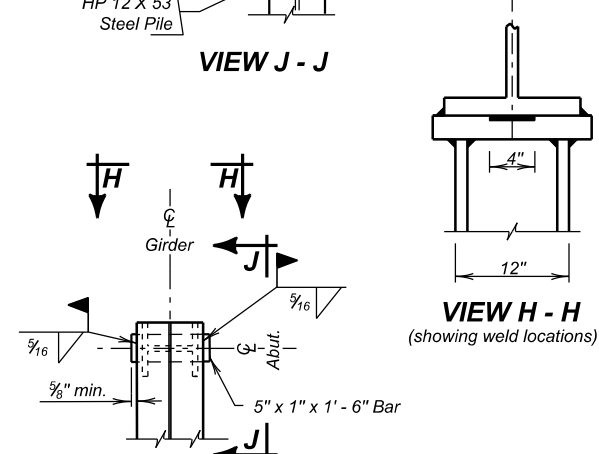
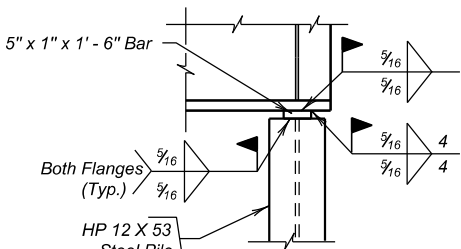
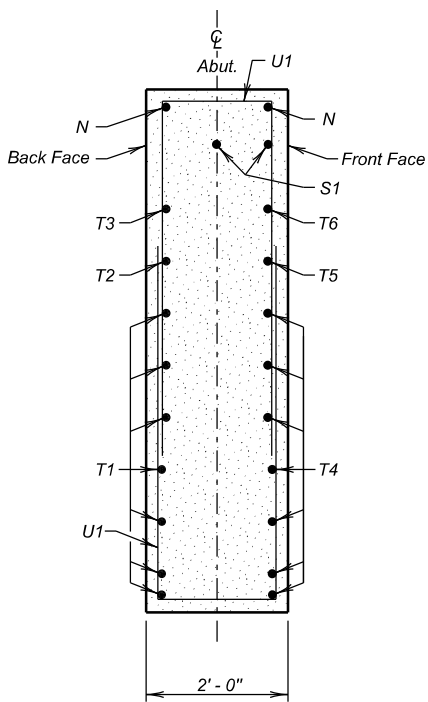
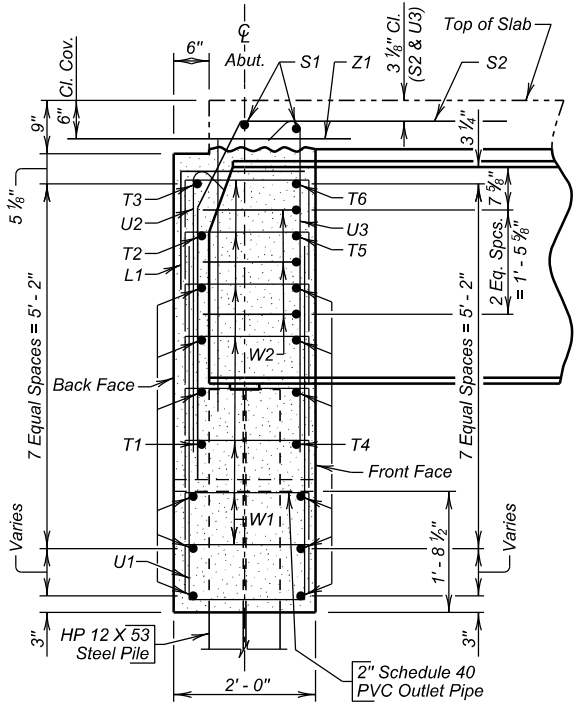
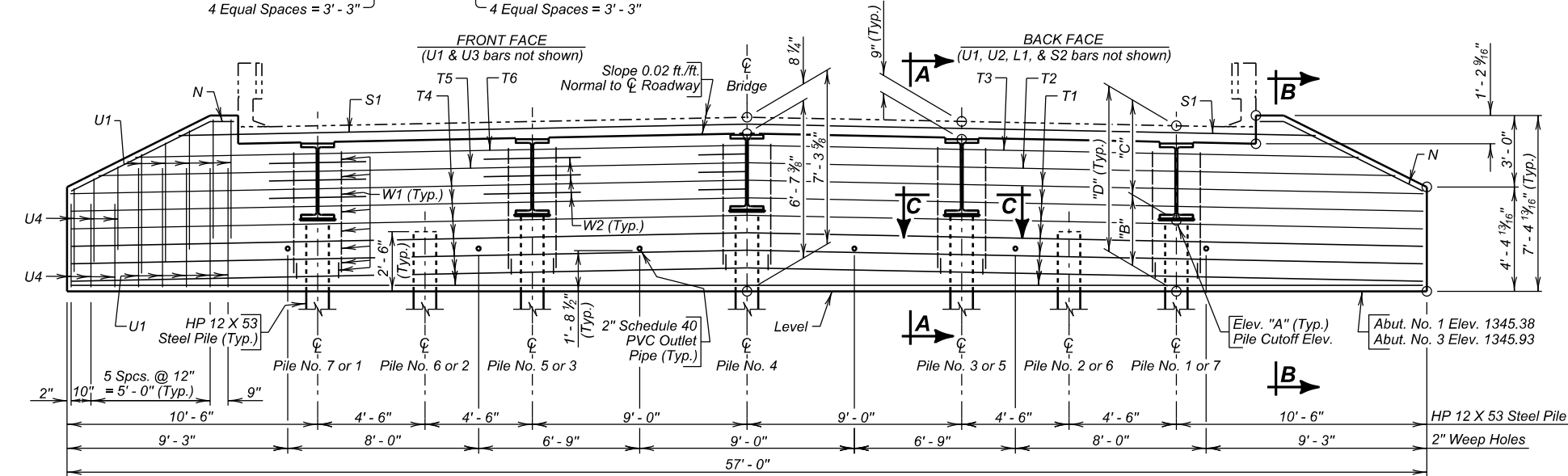
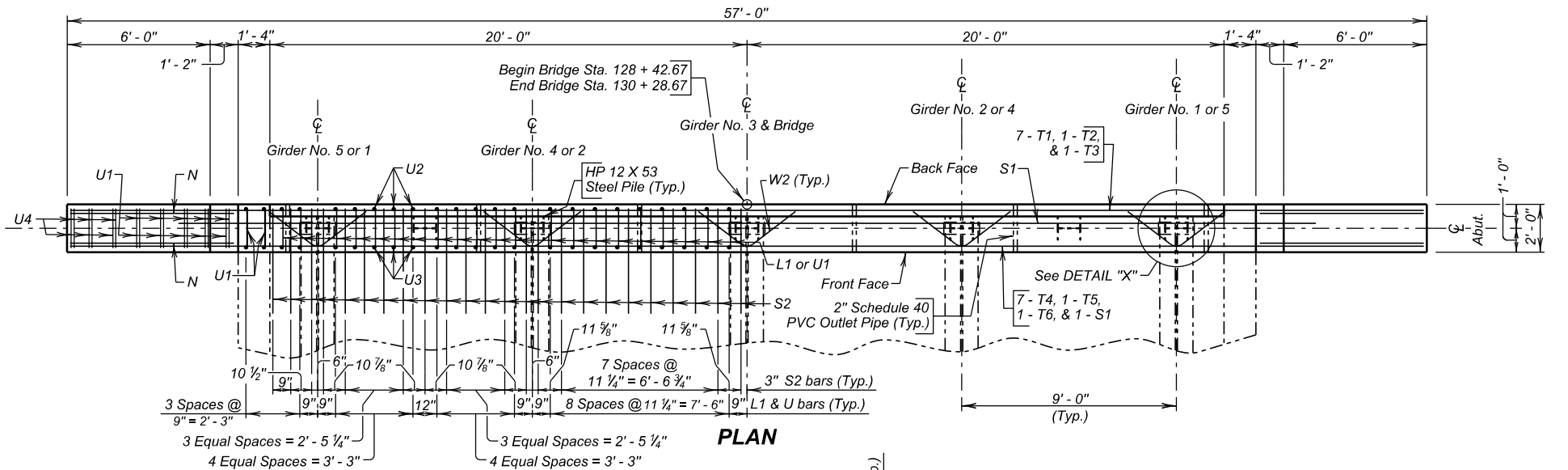


TABLE OF ELEV. & DIMENSIONS					
Pile No.	Elev. "A"	"B"	"C"	"D"	
1	1348.35	2'-11 5/8"	3'-11 1/16"	6'-11 5/16"	
2	1347.88	2'-6"			
3	1348.53	3'-1 3/4"	3'-11 1/16"	7'-1 1/16"	
4	1348.71	3'-3 15/16"	3'-11 1/16"	7'-3 5/8"	
5	1348.53	3'-1 3/4"	3'-11 1/16"	7'-1 1/16"	
6	1347.88	2'-6"			
7	1348.35	2'-11 5/8"	3'-11 1/16"	6'-11 5/16"	
1	1348.90	2'-11 5/8"	3'-11 1/16"	6'-11 5/16"	
2	1347.43	2'-6"			
3	1349.08	3'-1 3/4"	3'-11 1/16"	7'-1 1/16"	
4	1349.26	3'-3 15/16"	3'-11 1/16"	7'-3 5/8"	
5	1349.08	3'-1 3/4"	3'-11 1/16"	7'-1 1/16"	
6	1347.43	2'-6"			
7	1348.90	2'-11 5/8"	3'-11 1/16"	6'-11 5/16"	

REINFORCING SCHEDULE

(For one Abutment)

Mk.	No.	Size	Length	Type
L1	42	4	3'-4"	17A
S1	2	9	47'-10"	Str.
S2	48	6	9'-3"	14A
T1	7	8	56'-8"	Str.
T2	1	8	54'-3"	Str.
T3	1	8	51'-4"	Str.
T4	7	6	56'-8"	Str.
T5	1	6	54'-3"	Str.
T6	1	6	51'-3"	Str.
N	4	4	7'-6"	19B
U1	66	6	11'-8"	17
U2	46	6	3'-6"	T9B
U3	46	6	5'-4"	T9B
U4	12	6	8'-8"	17
W1	80	6	3'-0"	17
W2	15	8	5'-0"	13A

Bending Details

Type 17
W1 1'-8"
8"
3'-6"
5'-0"
U4
U1
1'-8"

Type 14A
9"
S2
1'-6"
3'-10"
5'-4"

Type 13A
105°
5' R
W2 2'-3"
4'-8"
2'-10"
U3
U2
Type T9B

Type 19B
N 1'-0"
6
12

Type 17A
L1 1'-8" (Horizontal Leg)

NOTE:
All dimensions are out to out of bars.
* Bars to be Epoxy Coated.

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Abut. No. 1	Abut. No. 3
Class A45 Concrete, Bridge	Cu. Yd.	26.7	26.7
Reinforcing Steel	Lb.	4329	4329
Epoxy Coated Reinforcing Steel	Lb.	1361	1361
Structure Excavation, Bridge	Cu. Yd.	11	11
HP 12 X 53 Steel Test Pile, Furnish & Drive	Ft.	1 @ 45' = 45'	1 @ 45' = 45'
HP 12 X 53 Steel Bearing Pile, Furnish & Drive	Ft.	6 @ 45' = 270'	6 @ 45' = 270'
HP 12 Pile Tip Reinforcement	Each	7	7
Preboring Pile	Ft.	7 @ 10' = 70'	7 @ 10' = 70'

ABUTMENT DETAILS

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

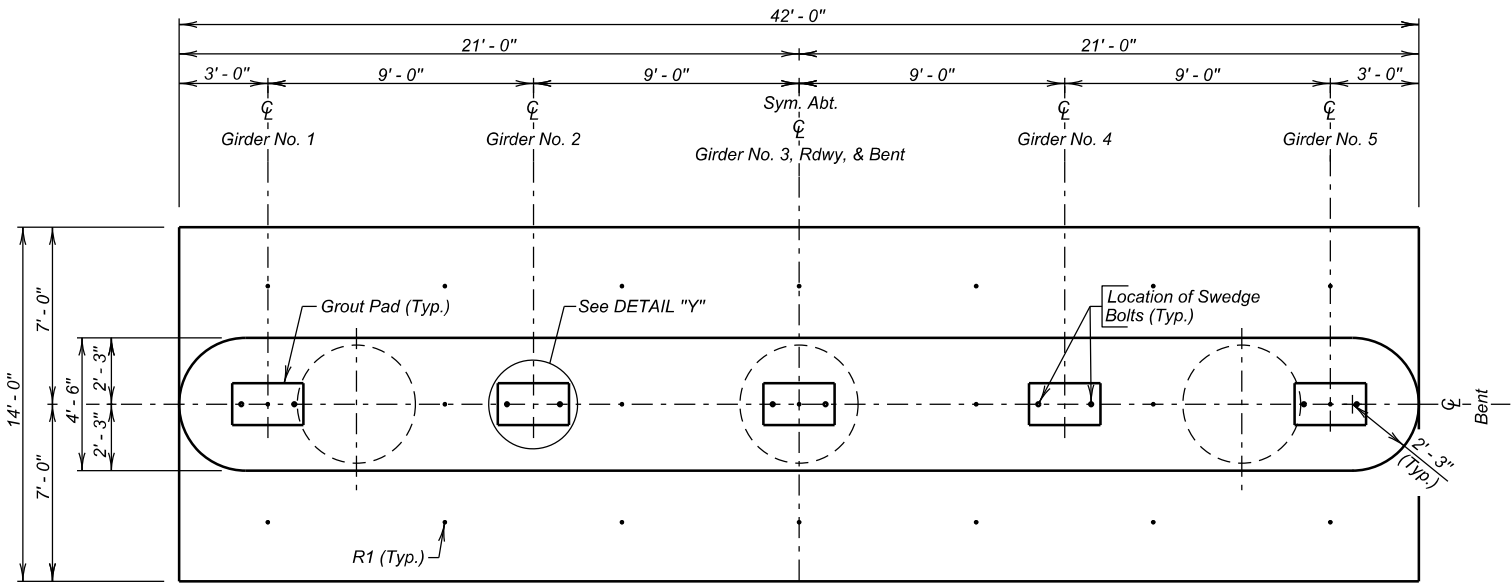
APRIL 2025

DESIGNED BY
JH
MINN05V6

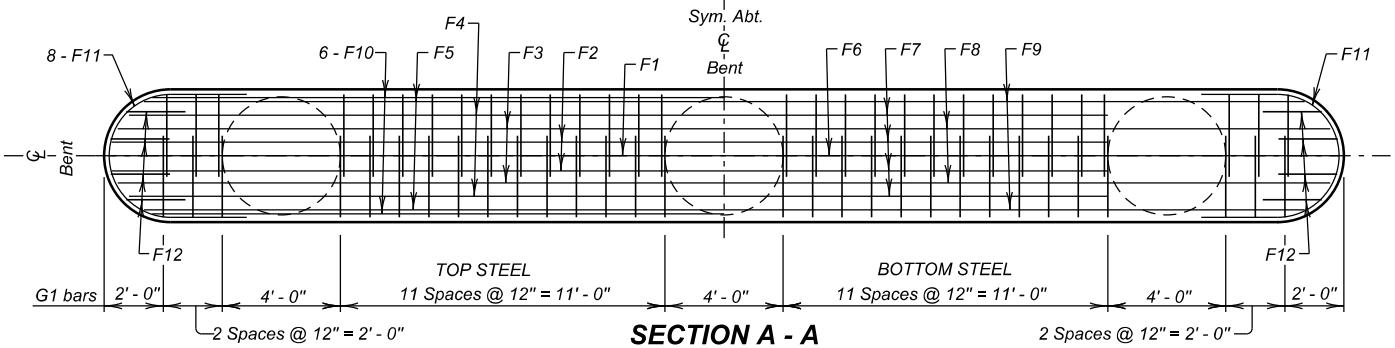
CK. DES. BY
AH
05V6TB08

DRAFTED BY
BT

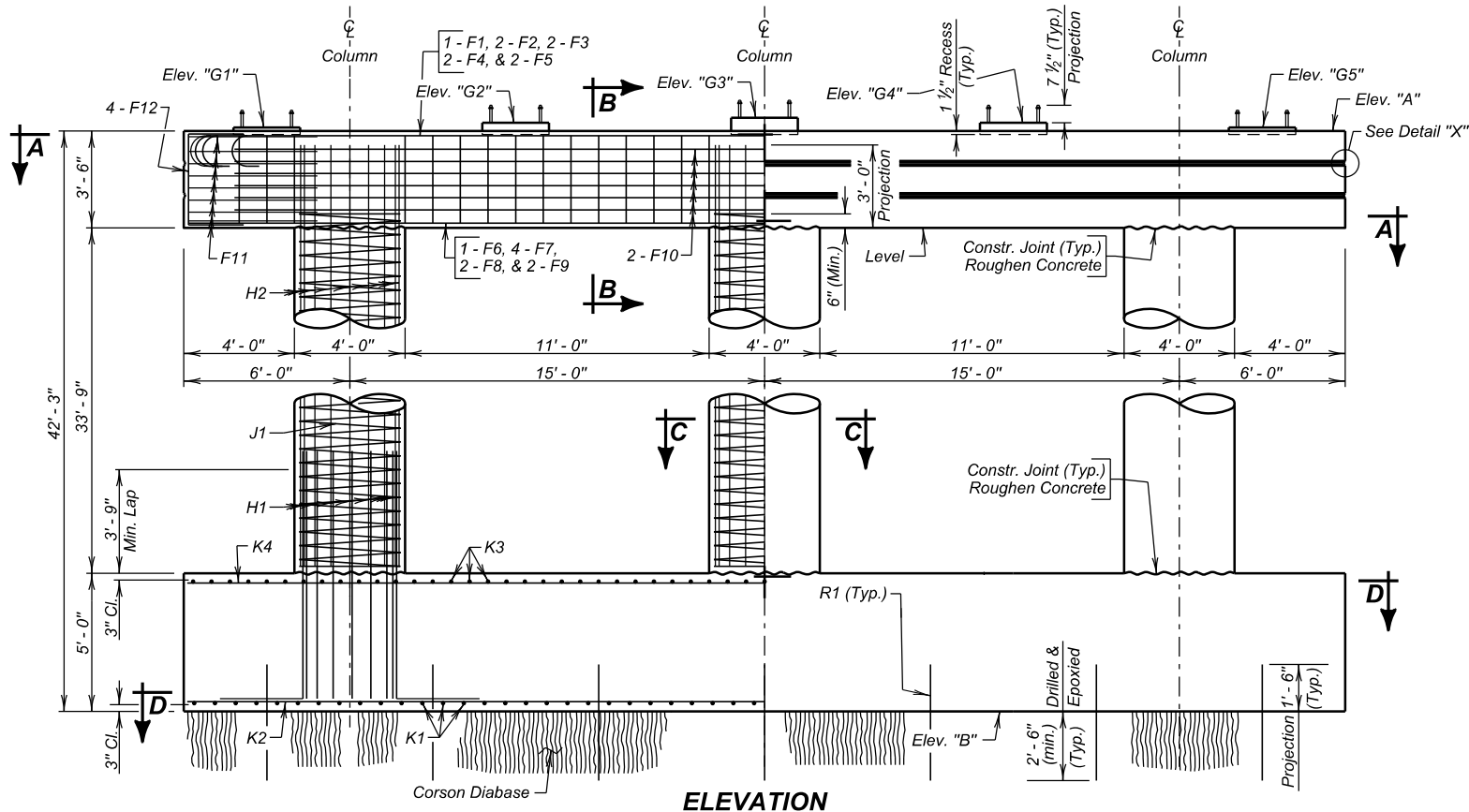
Steve A. Johnson
BRIDGE ENGINEER



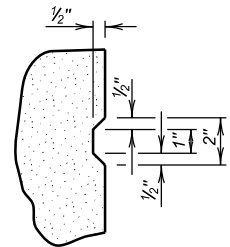
PLAN



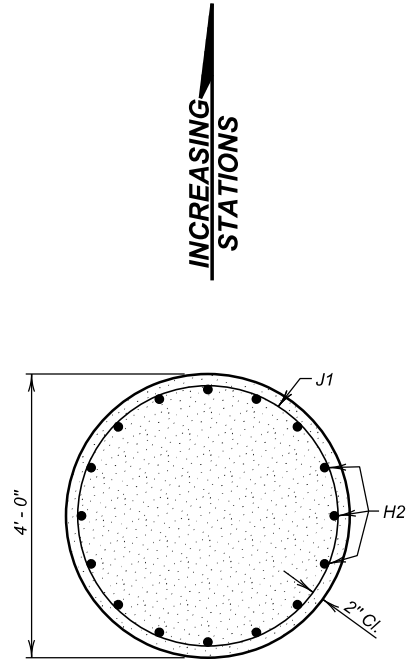
SECTION A - A



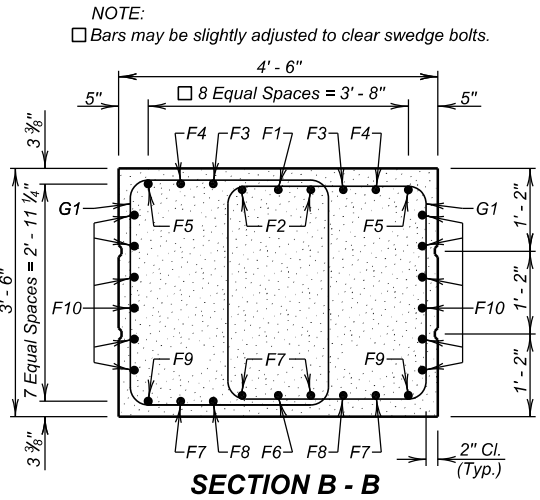
ELEVATION



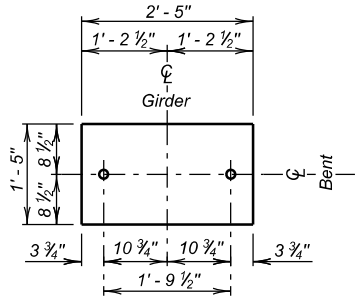
DETAIL "X"



SECTION C - C



SECTION B - B



DETAIL "Y"
(Grout Pad)

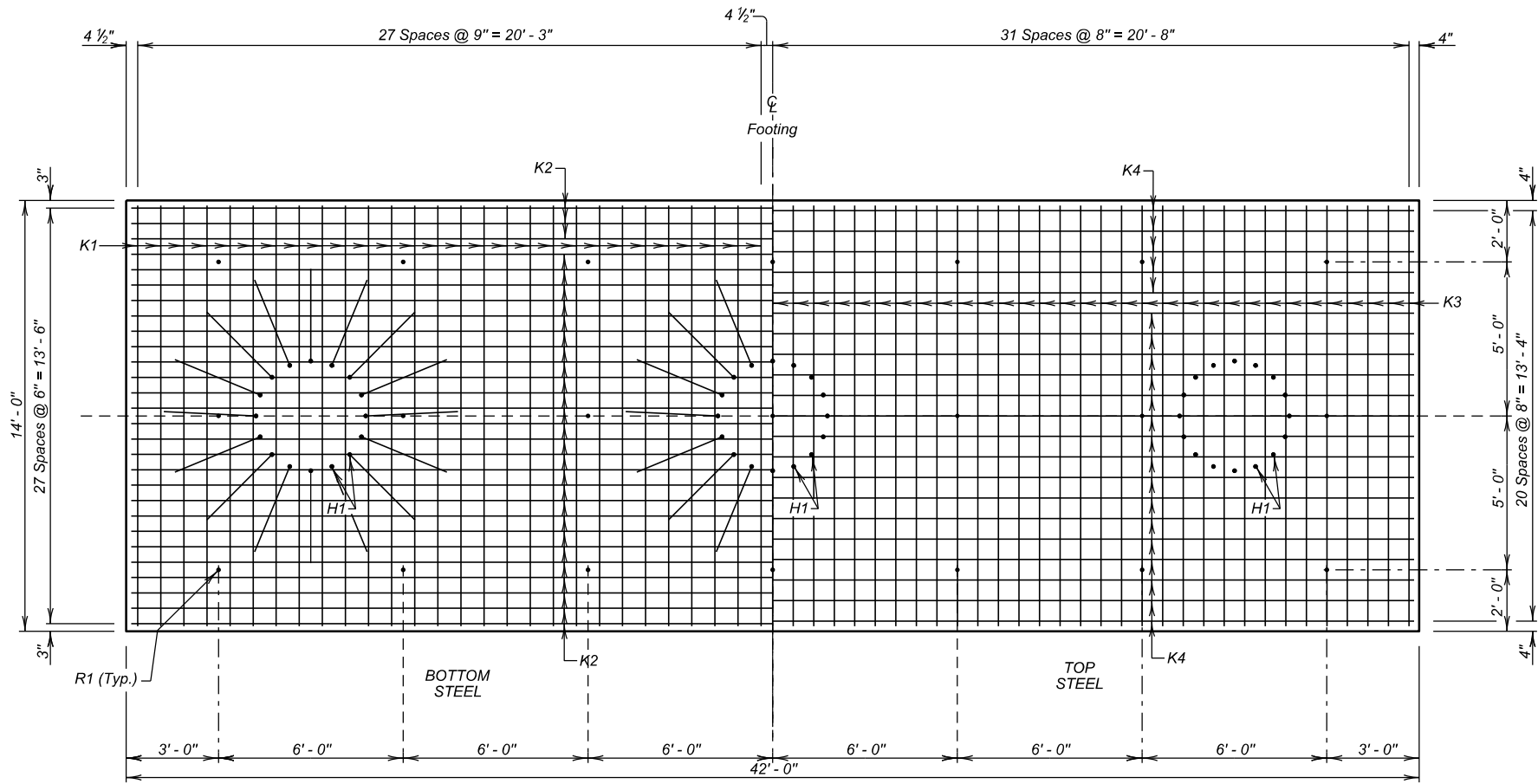
TABLE OF ELEVATIONS							
Bent No.	Elev. "A"	Elev. "B"	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"	Elev. "G5"
2	1348.16	1305.91	1348.29	1348.47	1348.65	1348.47	1348.29

NOTES:
♦ Elev. "G1", "G2", "G3", "G4", and "G5" are on top of grout pads at $\bar{C}$ Bent.
Top of grout pads will be level and smooth.

BENT DETAILS (A)
FOR
186' - 0" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2025



SECTION D - D

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details	
F1	1	10	44' - 6"	1	Spiral	Type 17A
F2	2	10	44' - 4"	1		
F3	2	10	43' - 11"	1	Type T1	Type 17
F4	2	10	43' - 5"	1		
F5	2	10	42' - 3"	1	Type S11	Type 1
F6	1	9	41' - 8"	Str.		
F7	4	9	26' - 0"	Str.	Type 1	Type 1
F8	2	9	41' - 1"	Str.		
F9	2	9	39' - 5"	Str.	Type 1	Type 1
F10	12	4	38' - 6"	Str.		
F11	16	4	11' - 9"	S11	Type 1	Type 1
F12	8	4	7' - 2"	17		
G1	60	6	13' - 3"	T1	Type 1	Type 1
H1	48	10	12' - 3"	17A		
H2	48	10	36' - 9"	Str.	Type 1	Type 1
J1	3	4	815' - 0"	Spiral		
K1	56	10	13' - 8"	Str.	Type 1	Type 1
K2	28	10	41' - 8"	Str.		
K3	63	4	13' - 8"	Str.	Type 1	Type 1
K4	21	9	41' - 8"	Str.		
R1	21	11	4' - 0"	Str.	Type 1	Type 1

NOTES:
All dimensions are out to out of bars.
Spirals - Use 6" pitch and 1 1/2 extra turns at each end.
Use 1 1/2 turns for lap at splice as required, or weld as approved by the Office of Bridge Design. Use 4 vertical spacer bars per column. Spirals may be smooth bars, bar length shown does not include splices.
⊗ Bars may need adjusted depending on bedrock elevation. Designed for a column length of 33' - 9".

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
⊘ Class A45 Concrete, Bridge	Cu. Yd.	180.2
Δ Reinforcing Steel	Lb.	28803
Structure Excavation, Bridge	Cu. Yd.	579
Install Dowel in Rock	Ft.	52.5

⊘ Includes 0.3 Cu. Yds. for Grout Pads.
Δ Includes Spacer Bars: 304 lbs. at bent. Each spacer bar is computed at 3/4 bs. per lin. ft. regardless of type furnished.

BENT DETAILS (B)

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 P - PT 0011(145)83
STR. NO. 50-280-136 HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

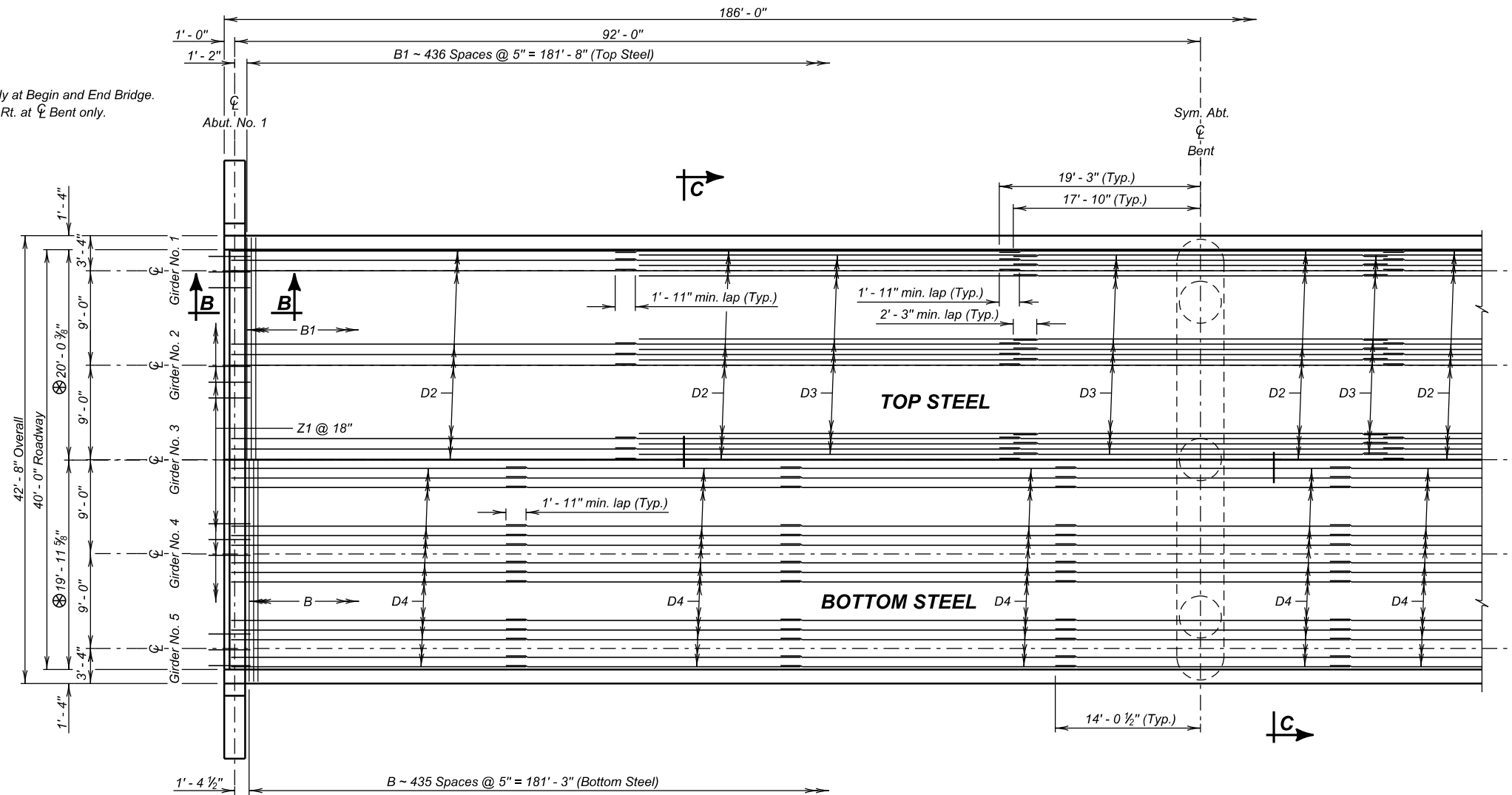
APRIL 2025

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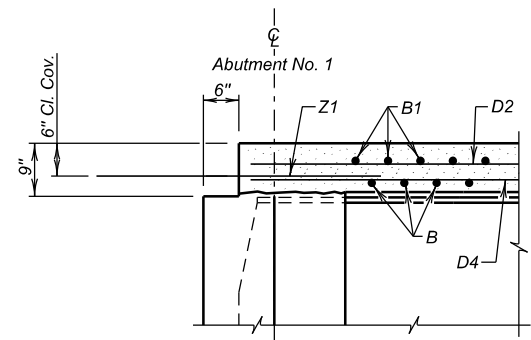
DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6WB10	DRAFTED BY BT Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E42	E59

⊗ Dimensions only at Begin and End Bridge.
20' - 0" Lt. and Rt. at $\bar{C}$ Bent only.



HALF PLAN



SECTION B - B

SUPERSTRUCTURE DETAILS (A)

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

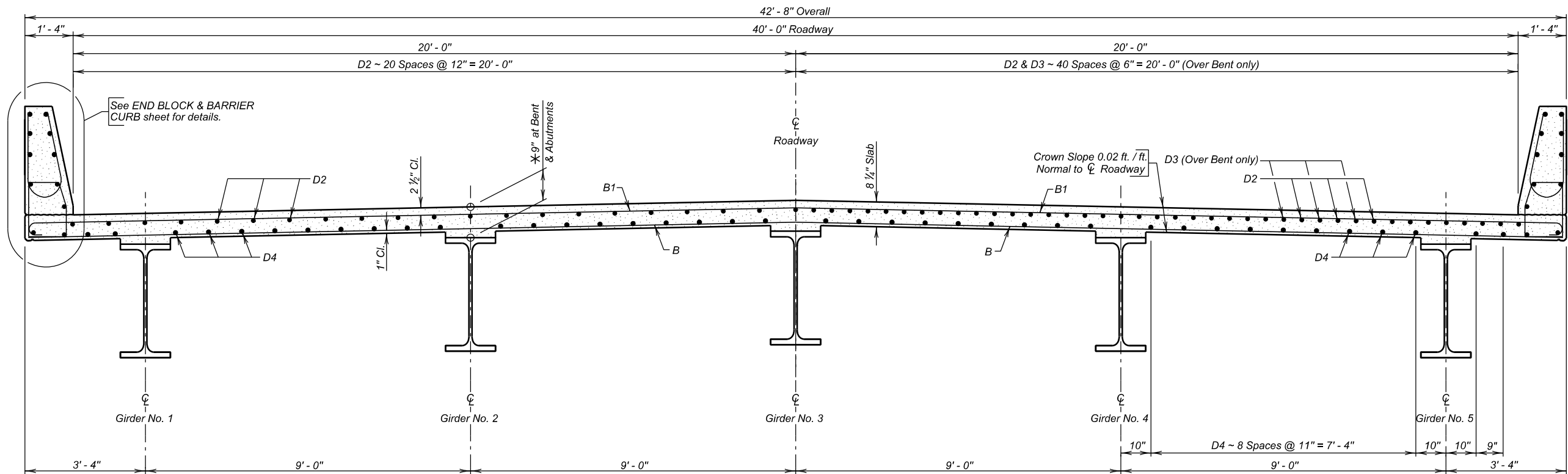
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

APRIL 2025

11 OF 28

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB11	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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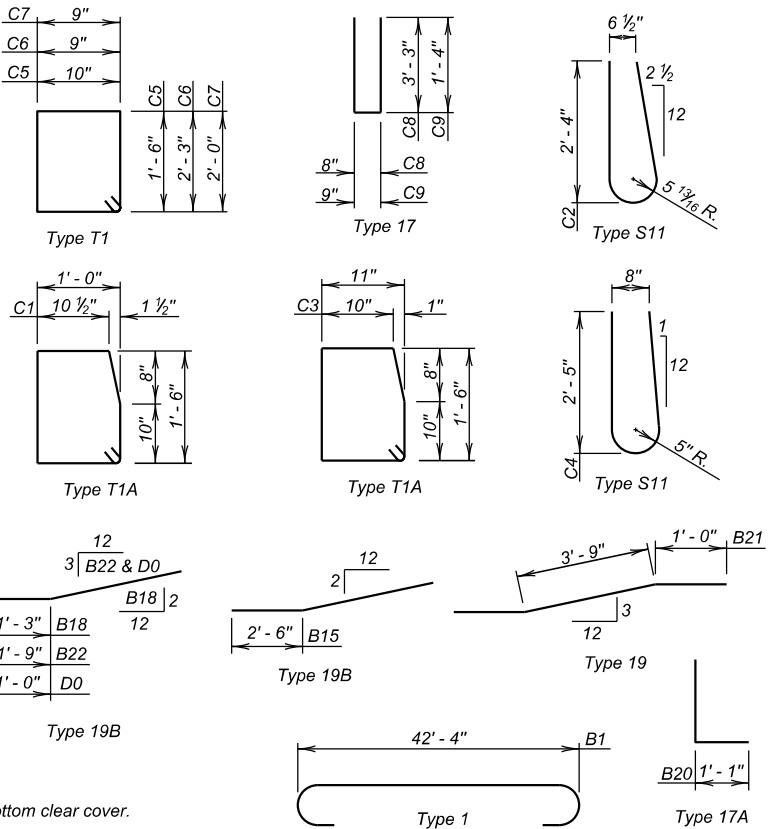
SECTION C - C

★ Dimensions are at $\bar{C}$ bearing; at other points along the girders this dimension will be computed as shown on the Slab Form Elevations & Erection Data sheet.

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
B	436	4	42' - 4'	Str.
B1	437	5	43' - 6"	1
B15	12	5	9' - 6"	19B
B17	8	4	5' - 8"	Str.
B18	12	8	3' - 0"	19B
B19	12	5	2' - 0"	Str.
B20	12	6	3' - 6"	17A
B21	4	4	5' - 9"	19
B22	4	4	3' - 3"	19B
C1	350	5	5' - 10"	T1A
C2	354	5	5' - 3"	S11
C3	4	5	5' - 8"	T1A
C4	8	5	5' - 3"	S11
C5	8	5	5' - 7"	T1
C6	12	6	7' - 4"	T1
C7	12	5	6' - 5"	T1
C8	4	6	7' - 3"	17
C9	4	5	3' - 5"	17
D	16	4	47' - 8"	Str.
D0	4	4	2' - 6"	19B
D1	42	4	58' - 4"	Str.
D2	205	5	38' - 6"	Str.
D3	120	6	35' - 8"	Str.
D4	308	5	28' - 1"	Str.
Z1	54	7	4' - 0"	Str.

Bending Details



NOTES-
All reinforcing steel will be stainless steel.
★ Bend in field as necessary to fit.
□ Tip bars as required to maintain top and bottom clear cover.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
★ Class A45 Concrete, Bridge Deck	Cu. Yd.	253.3
Stainless Reinforcing Steel	Lb.	63287
△ Structural Steel	Lump Sum	Lump Sum
∅ Bridge Painting	Lump Sum	Lump Sum
Concrete Penetrating Sealer	Sq. Yd.	823

★ Concrete quantity for Barrier Curb is 0.1184 Cu. Yd. per foot and for End Block is 0.7184 Cu. Yd. each.

△ For informational purposes only, the estimated weight of the structural steel is 326611 pounds.

∅ For informational purposes only, the estimated area to be painted is 10117 sq. ft.

SUPERSTRUCTURE DETAILS (B)

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

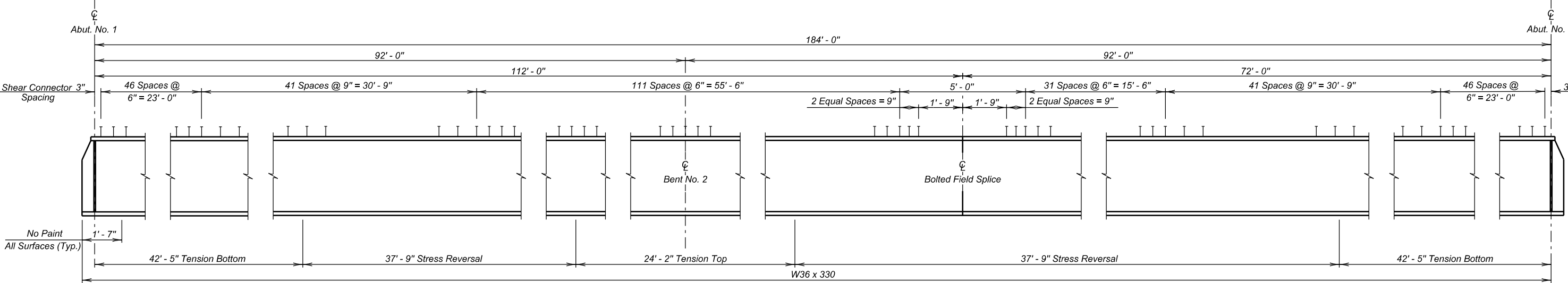
0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

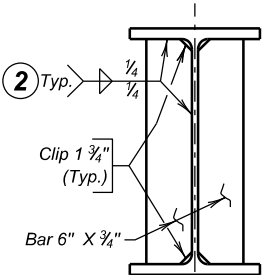
APRIL 2025

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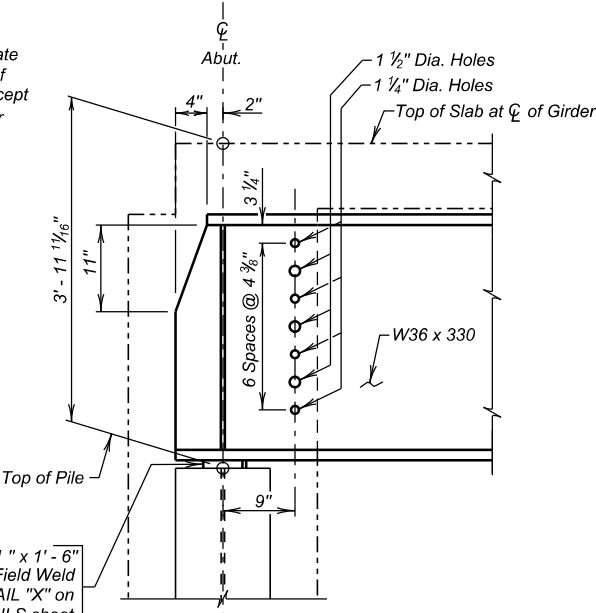


GIRDER LAYOUT

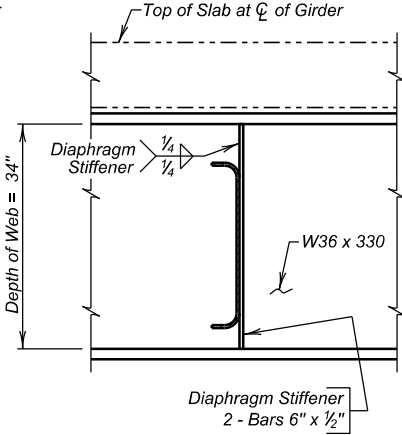
2 NOTE: All fillet welds will terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.



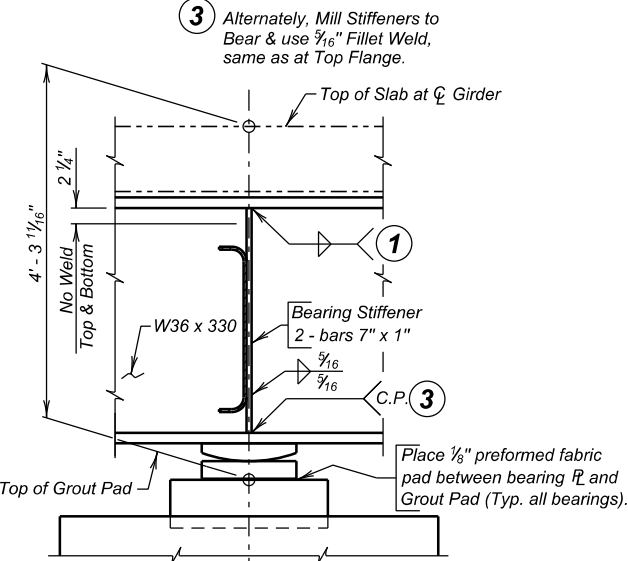
END VIEW



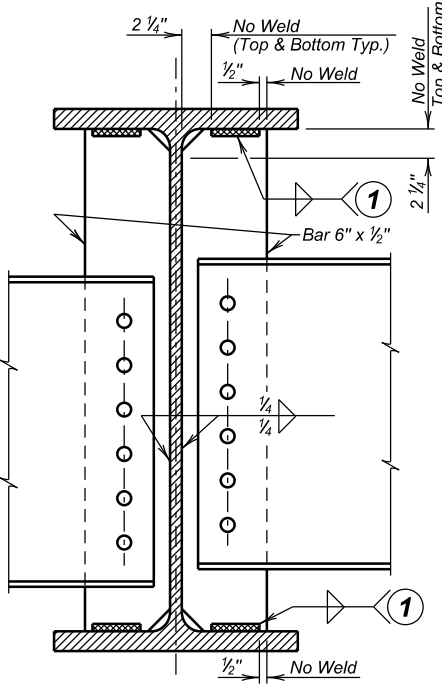
TYPICAL SECTION AT ABUTMENTS



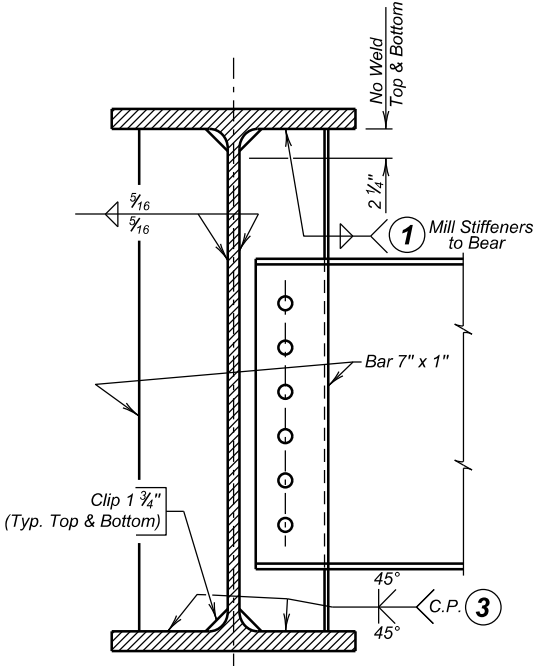
TYPICAL SECTION AT DIAPHRAGM STIFFENER



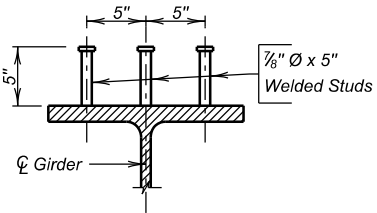
TYPICAL SECTION AT BENT



DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS (Interior Girder shown)



DETAILS OF STIFFENERS AT C BEARINGS (Exterior Girder shown)



SHEAR CONNECTOR DETAILS

Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Field Installing Shear Connectors will be included in the Lump Sum bid for Structural Steel. 966 Shear Connectors per Girder.

- NOTES:
- See DIAPHRAGM DETAILS Sheet for Diaphragm Details.
 - See FRAMING DIAGRAM 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 bent & abutments will be vertical.
 - Stiffeners to have tight fit top and bottom.
 - Dimensions shown are for steel temperature of 45° F.

1 NOTE: 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.

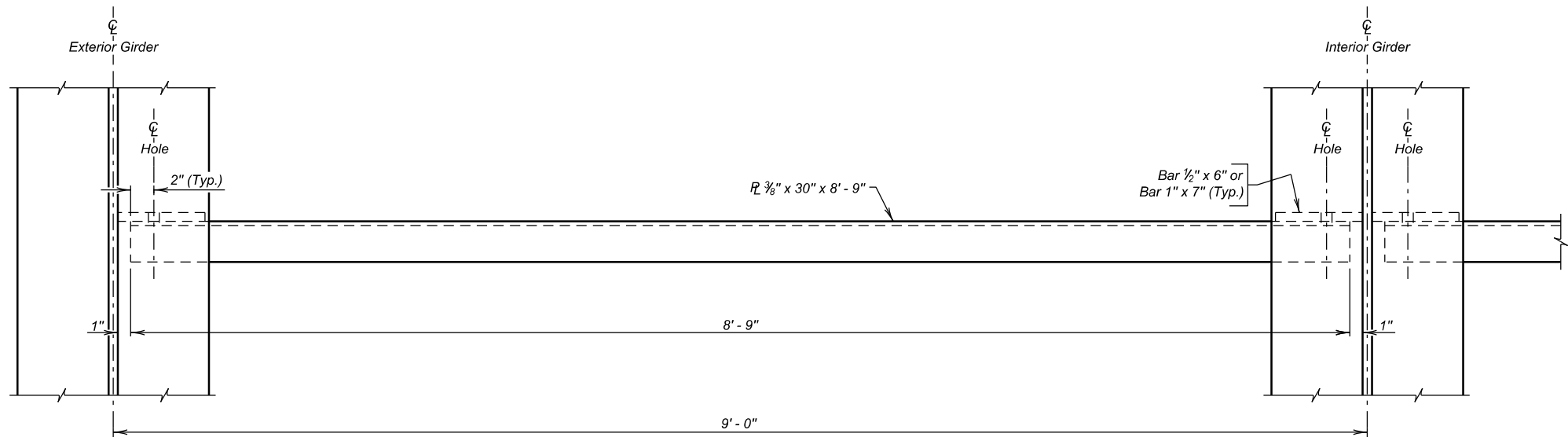
GIRDER LAYOUT DETAILS FOR

186' - 0" STEEL GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 GIRDER LAYOUT DETAILS
STR. NO. 50-280-136 HL-93

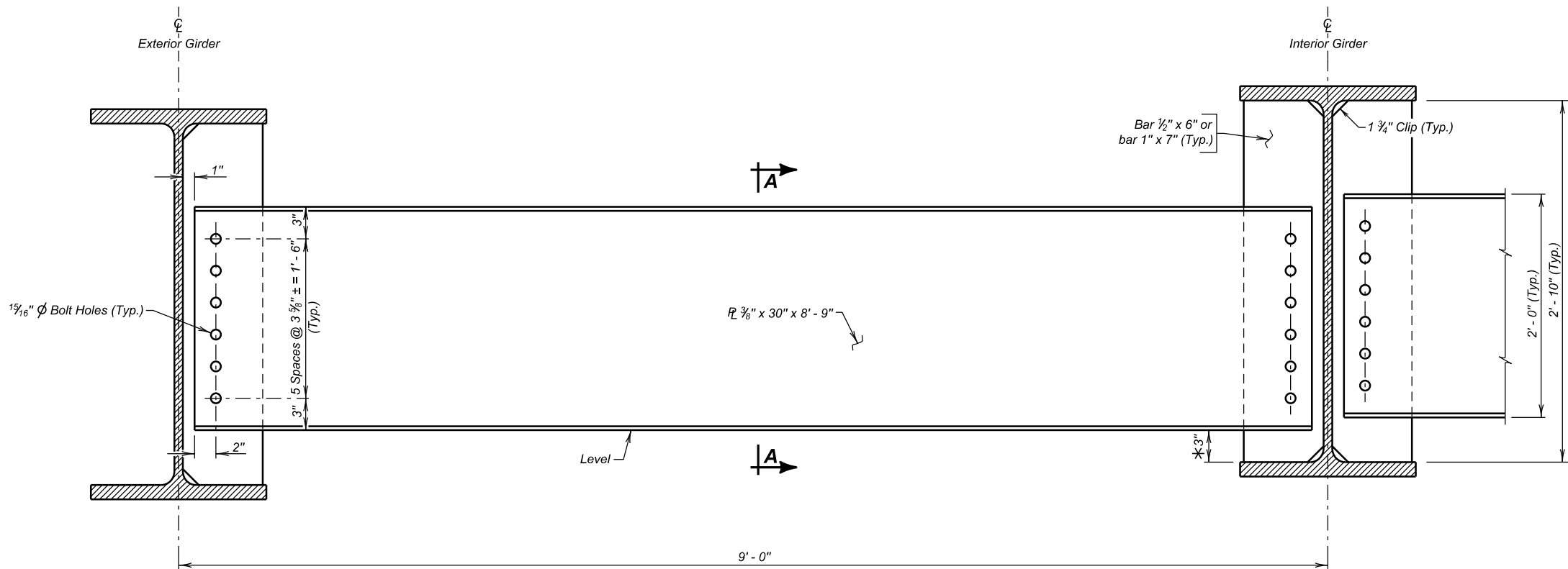
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2025

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E46	E59



PLAN

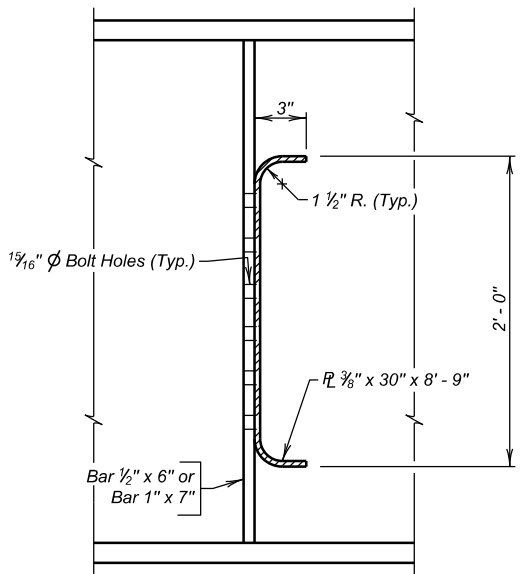


DIAPHRAGM DETAIL
(Weight of One Unit = 346 lbs.)

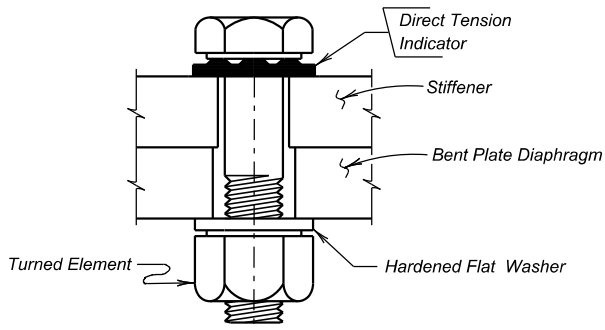
* At high girder in each bay.

GENERAL NOTES

- The Steel Diaphragms are included in the quantity for Structural Steel.
- Install bolt heads on the side of the connection with the 1/16" diameter bolt holes. Install direct tension indicators under the bolt heads.
- The 7/8" High Strength bolts, nuts, and washers will conform to ASTM F3125 Specification A325. The bolts will be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.



SECTION A - A



DIRECT TENSION INDICATOR
DETAIL

DIAPHRAGM DETAILS

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 P - PT 0011(145)83
STR. NO. 50-280-136 HL-93

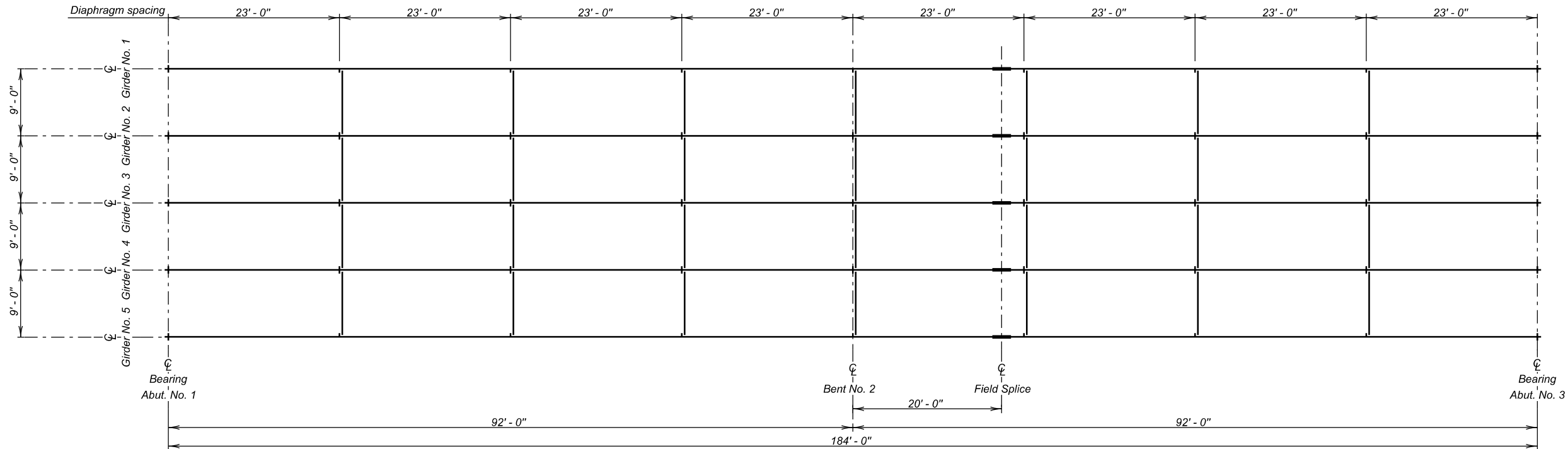
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

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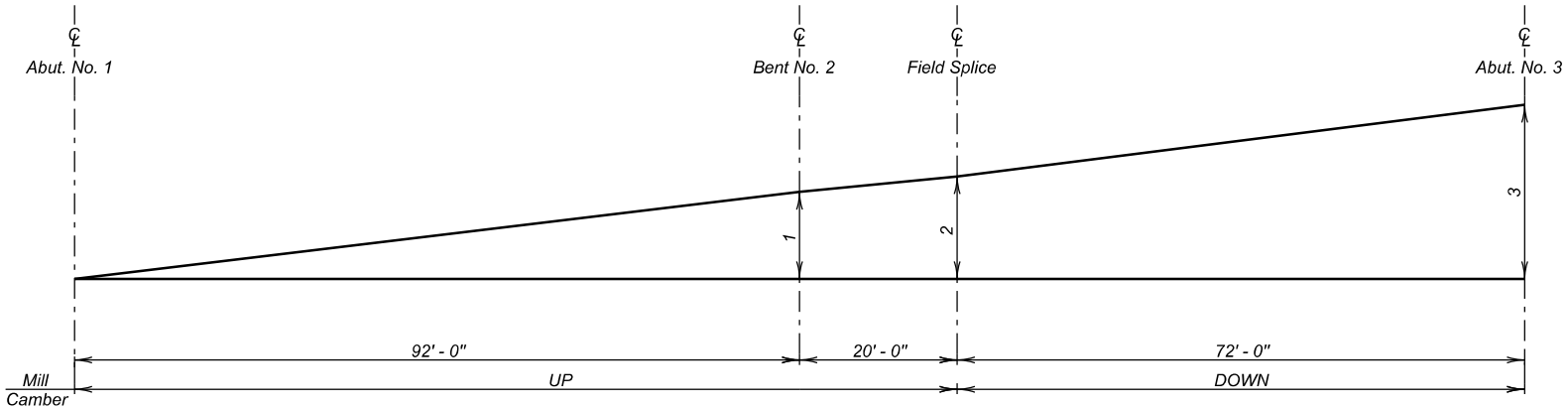
DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB15	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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FRAMING DIAGRAM

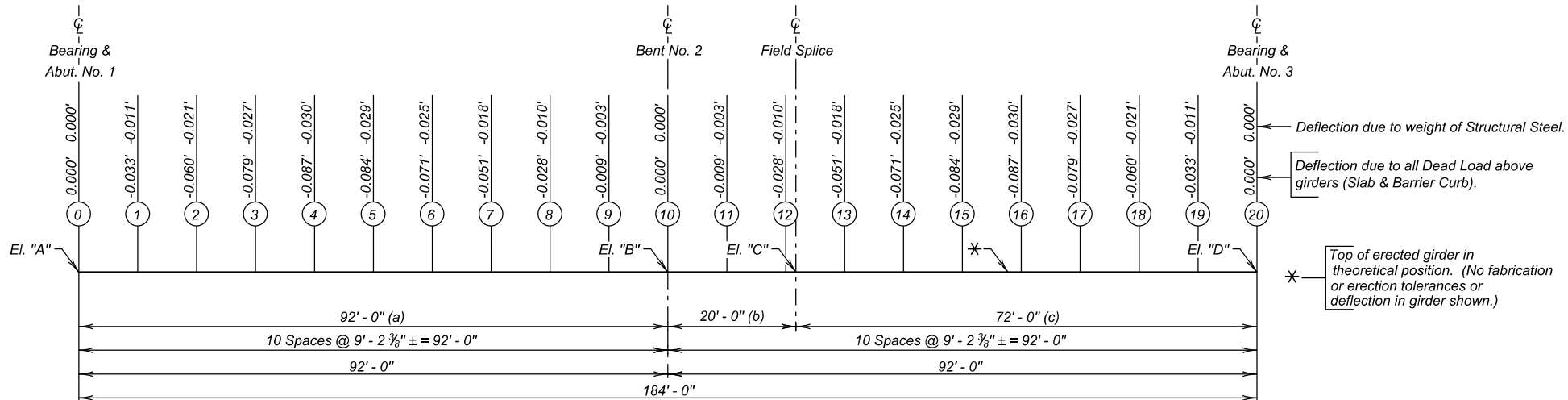
ϕ GIRDER ERECTION ELEVATIONS AND SLOPES							
Girder No.	ELEVATIONS (Top of Girder)				SLOPES (%)		
	"A"	"B"	"C"	"D"	a	b	c
1	1351.570	1351.846	1351.895	1352.122	0.3000	0.2450	-0.3153
2	1351.750	1352.026	1352.075	1352.302	0.3000	0.2450	-0.3153
3	1351.930	1352.206	1352.255	1352.482	0.3000	0.2450	-0.3153
4	1351.750	1352.026	1352.075	1352.302	0.3000	0.2450	-0.3153
5	1351.570	1351.846	1351.895	1352.122	0.3000	0.2450	-0.3153

ϕ NOTE-
These elevations and slopes occur at a time after girder erection is completed but prior to any placement of concrete. Slopes shown are an imaginary straight line between points at beam ends and are (+) towards increasing stations.



BLOCKING DIAGRAM

NOTE :
This sheet is to be used in conjunction with SLAB FORM ELEVATIONS sheet.



GIRDER ERECTION DIAGRAM

BLOCKING ORDINATES	
LOCATION	ORDINATE
1	0.276'
2	0.325'
3	0.552'

FRAMING DIAGRAM AND ERECTION DATA
FOR

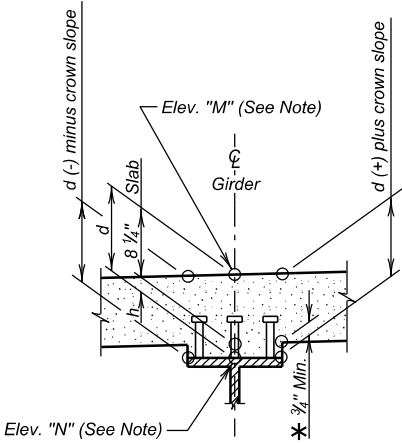
186' - 0" STEEL GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 GIRDER LAYOUT DETAILS
STR. NO. 50-280-136 HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2025

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		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Girder No. 1	Elev. "M"	1352.321	1352.382	1352.436	1352.483	1352.518	1352.543	1352.558	1352.565	1352.570	1352.578	1352.597	1352.634	1352.680	1352.731	1352.778	1352.819	1352.850	1352.869	1352.878	1352.878	1352.873
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 2	Elev. "M"	1352.501	1352.562	1352.616	1352.663	1352.698	1352.723	1352.738	1352.745	1352.750	1352.758	1352.777	1352.814	1352.860	1352.911	1352.958	1352.999	1353.030	1353.049	1353.058	1353.058	1353.053
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 3	Elev. "M"	1352.681	1352.742	1352.796	1352.843	1352.878	1352.903	1352.918	1352.925	1352.930	1352.938	1352.957	1352.994	1353.040	1353.091	1353.138	1353.179	1353.210	1353.229	1353.238	1353.238	1353.233
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 4	Elev. "M"	1352.501	1352.562	1352.616	1352.663	1352.698	1352.723	1352.738	1352.745	1352.750	1352.758	1352.777	1352.814	1352.860	1352.911	1352.958	1352.999	1353.030	1353.049	1353.058	1353.058	1353.053
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 5	Elev. "M"	1352.321	1352.382	1352.436	1352.483	1352.518	1352.543	1352.558	1352.565	1352.570	1352.578	1352.597	1352.634	1352.680	1352.731	1352.778	1352.819	1352.850	1352.869	1352.878	1352.878	1352.873
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					



✱ If during construction, it is found that this dimension will be exceeded or is less than zero, corrective measures must be taken as approved by the Engineer.

NOTES:
This Table contains the necessary information to determine the depth of concrete, in feet, over the girders at the points shown. All calculations can be carried out in the space provided. Elevation "M" is theoretical top of slab elevation before any concrete has been poured. This elevation includes correction for deflection due to Dead Load above girders. Elevation "N" is a field measured elevation taken on top of girders at points shown. This elevation must be taken after girder erection is complete, but prior to placing any of the slab concrete. Girders will not be supported by construction shoring while elevations are taken.
This sheet is to be used in conjunction with FRAMING DIAGRAM & ERECTION DATA Sheet.

SLAB FORM ELEVATIONS
FOR
186' - 0" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

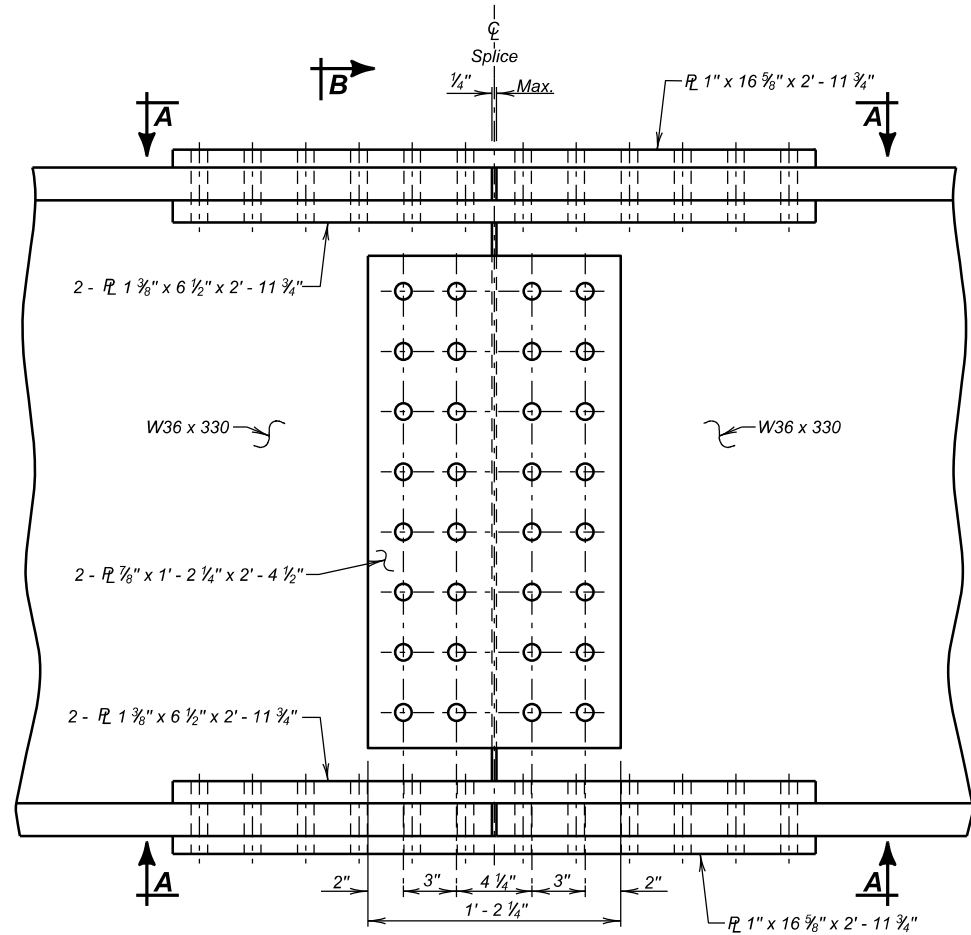
0° SKEW
SEC. 10/11-T102N-048W
GIRDER LAYOUT DETAILS
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2025

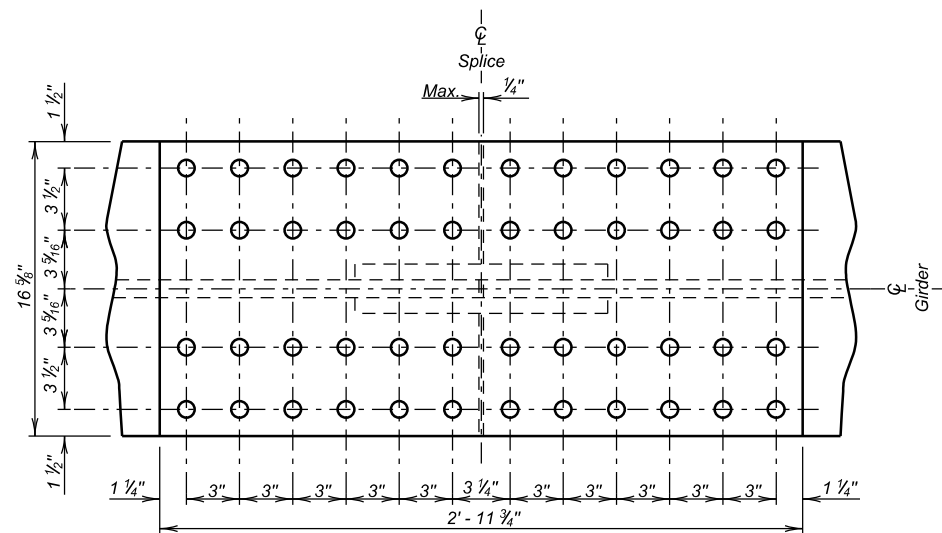
17 OF 28

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB17	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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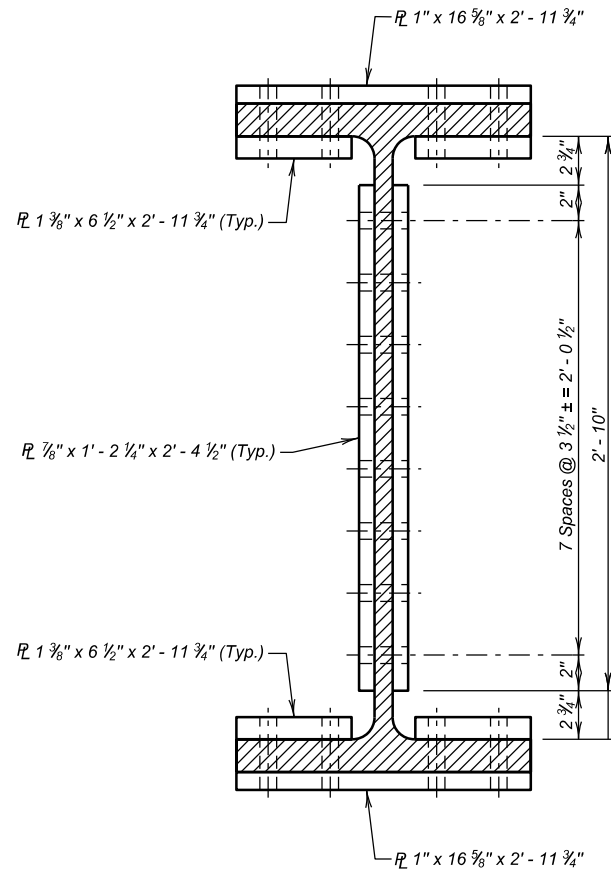
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E49	E59



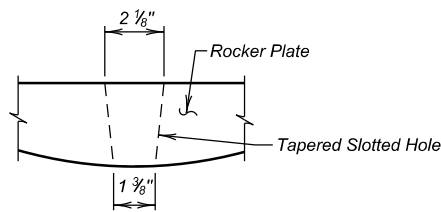
FIELD BOLTED SPLICE DETAIL (Typ.)



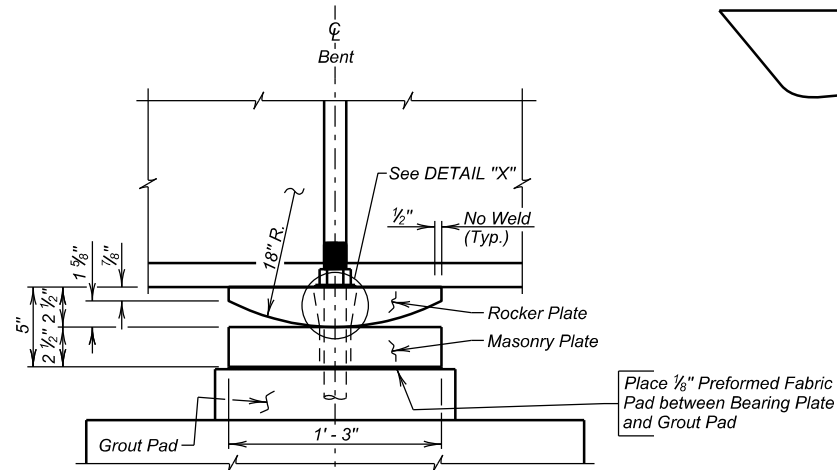
TOP & BOTTOM FLANGE (VIEW A - A)



SECTION B - B

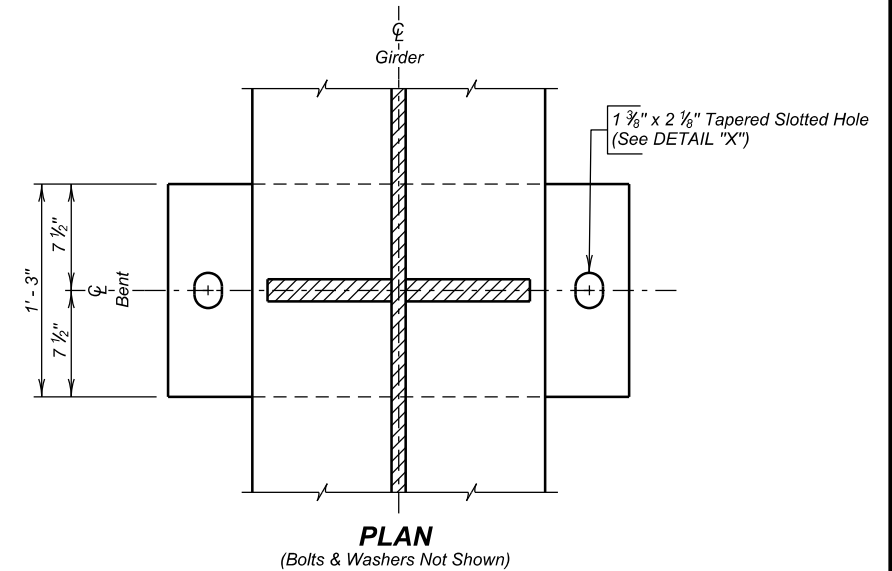


DETAIL "X"

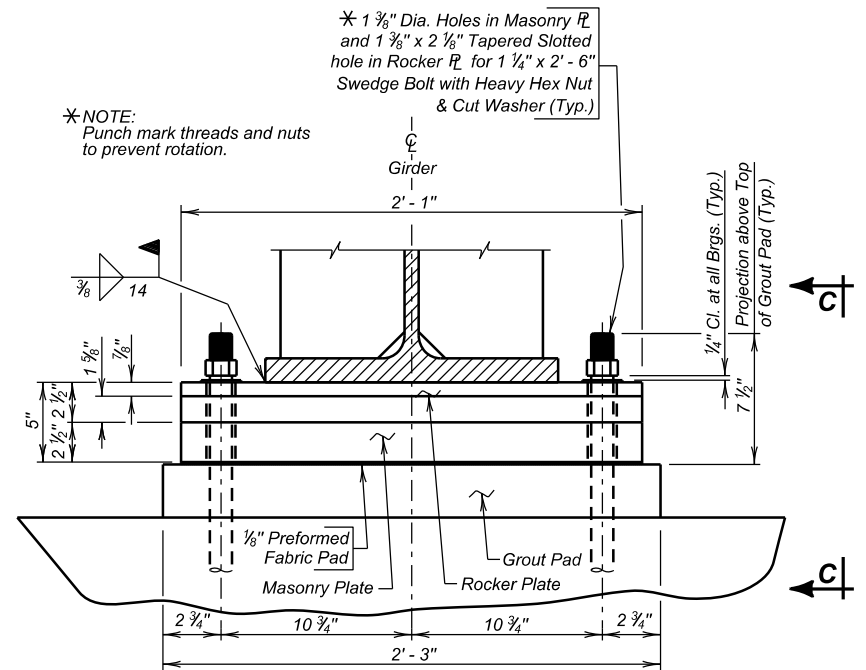


VIEW C - C

NOTE:
All bolts in splices shall be 7/8" Ø High Strength Bolts conforming to ASTM Specifications F3125 Grade A325, Type 3. The bolts will be the heavy semi-finished hexagon nut and hardened washer. (See DIAPHRAGM DETAILS sheet for Direct Tension Indicator Detail.)



PLAN (Bolts & Washers Not Shown)



ELEVATION FIXED BEARING BENT NO. 2

DETAILS OF BOLTED FIELD SPLICES & BEARINGS FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

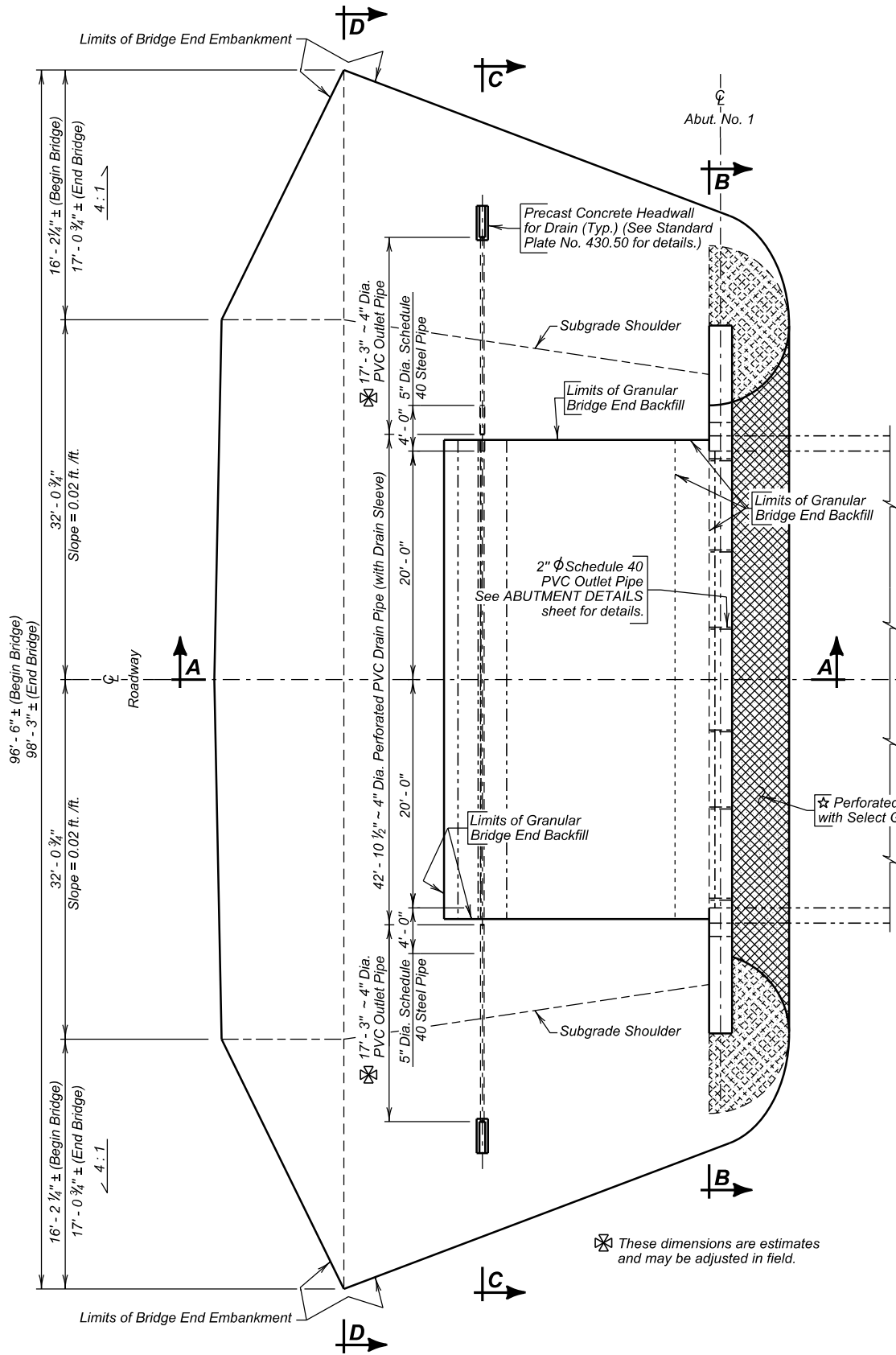
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2025

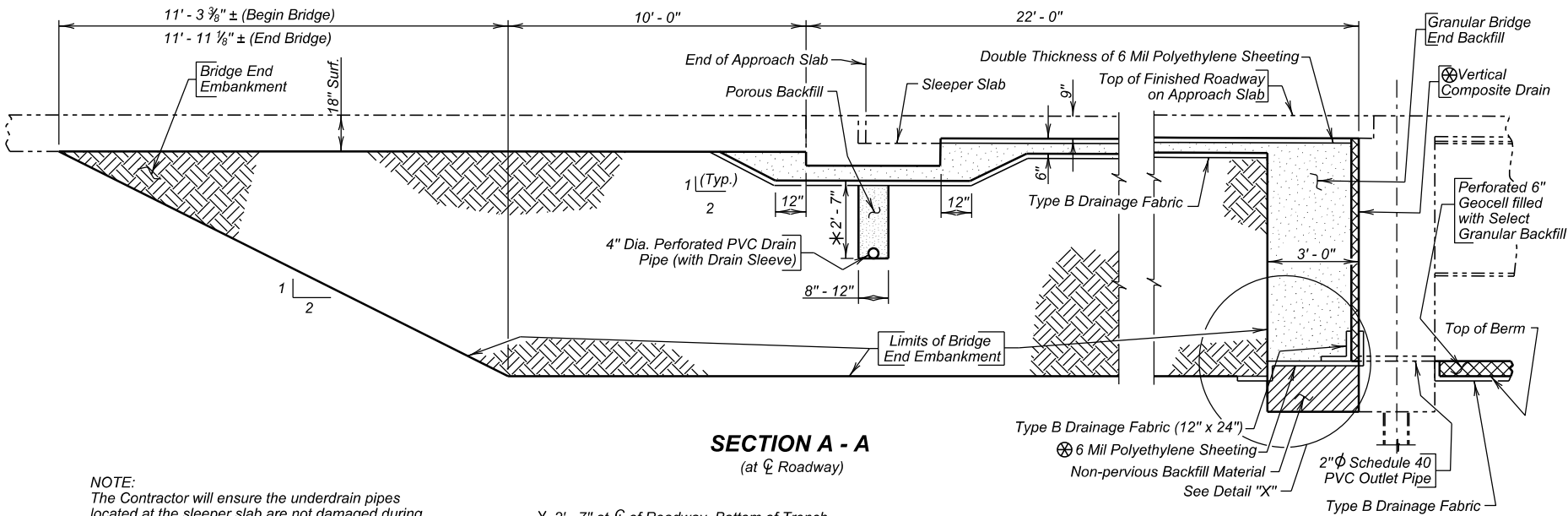
18 OF 28

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB18	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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NOTE:
Perforated Geocell to be installed as shown in
PLAN view. The embankment spill cone will spill
onto the top of the perforated geocell.

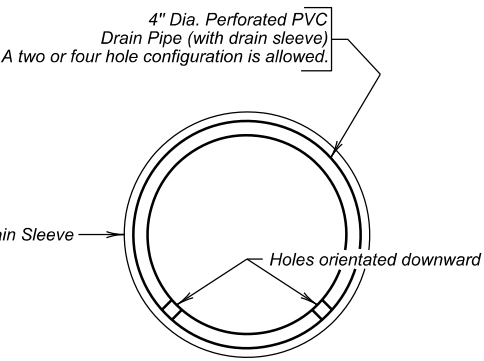


PLAN
(Bridge End Backfill shown adjacent to Abut. No. 1
Abut. No. 3 similar opposite hand except as shown.)



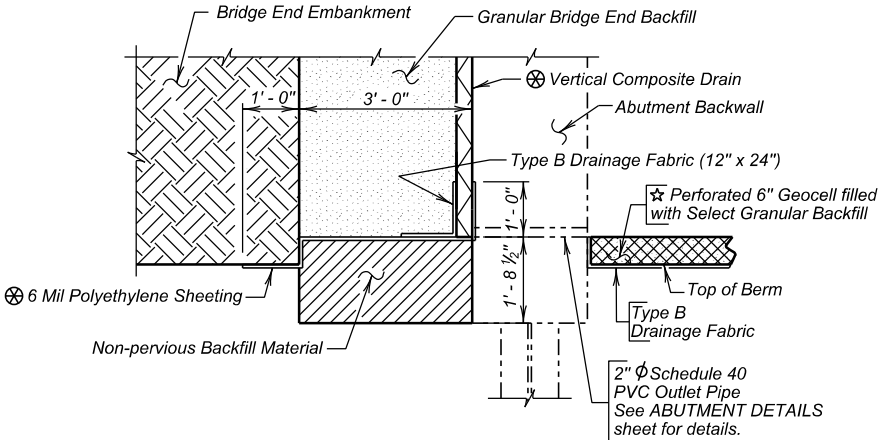
NOTE:
The Contractor will ensure the underdrain pipes located at the sleeper slab are not damaged during the installation of the guardrail posts. Damaged underdrain pipes will be replaced at the Contractor's expense.

* 2' - 7" at CL of Roadway, Bottom of Trench
1/8" per Foot Pipe Slope.

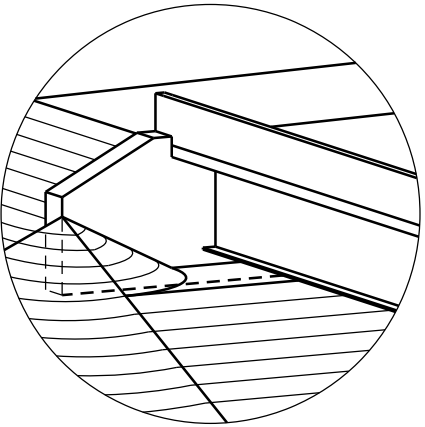


DRAIN DETAIL

- ☆ See PERFORATED GEOCELL notes for payment information.
- ⊗ Provide hole in vertical composite drain and 6 mil polyethylene sheeting to provide drainage through weep holes.



DETAIL "X"



**SPILL CONE DETAIL
AT EMBANKMENT**

ESTIMATED QUANTITIES (For Two Abutments)		
ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	84.9
Bridge End Embankment	Cu. Yd.	840
Porous Backfill	Ton	15.0
4" Underdrain Pipe	Ft.	155
Approach Slab Underdrain Excavation	Cu. Yd.	8.0
Precast Concrete Headwall for Drain	Each	4

- 86 ft. 4" dia. Perforated PVC Drain Pipe (with Drain Sleeve).
- 69 ft. 4" dia. PVC Outlet Pipe.
- 16 ft. 5" dia. Schedule 40 Steel Pipe.
- 406 sq. ft. Vertical Composite Drain.

Items 1 thru 4 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.

- 3441 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
- 205 sq. yd. Type B Drainage Fabric.

Items 5 and 6 are approximate quantities contained in the Granular Bridge End Backfill and are for information only.

⊕ For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

⊘ Shrinkage Factor of 1.25 used.

⊙ Quantity based on a 12" wide trench.

DETAILS OF BRIDGE END BACKFILL (A)

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

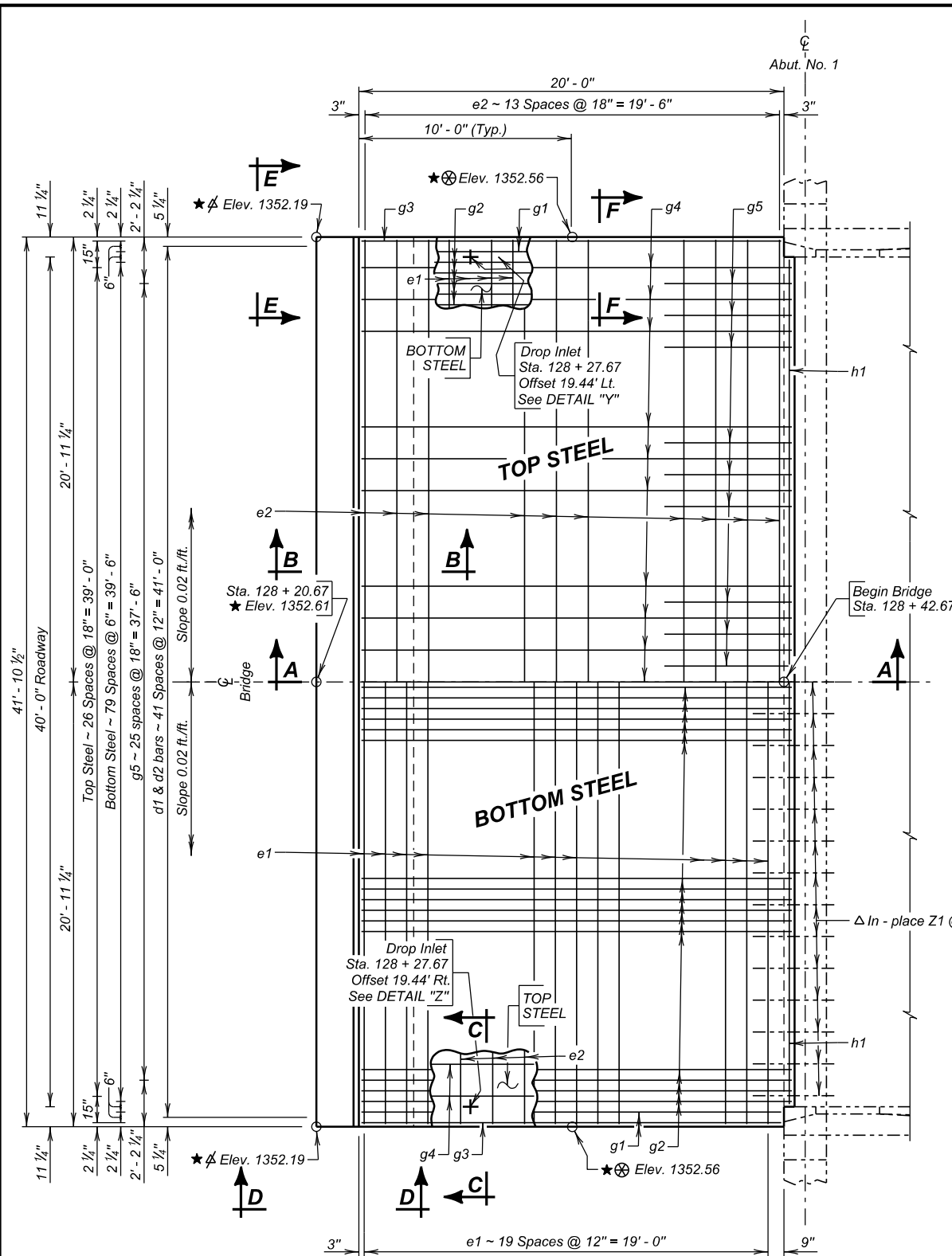
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

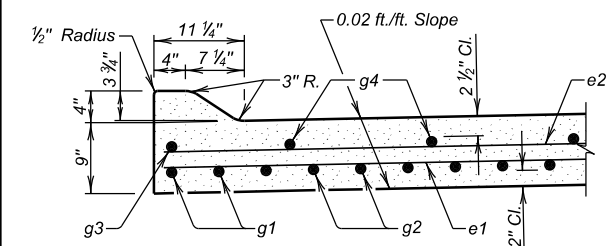
APRIL 2025

19 OF 28

DESIGNED BY JH	CK. DES. BY AH	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
MINN05V6	05V6TB19		

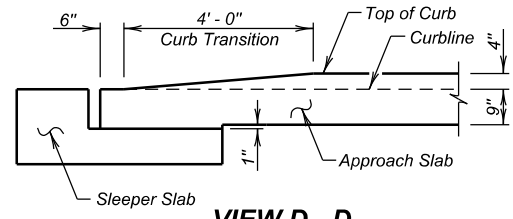


★ Elevations may need to be adjusted for a smooth ride from the final bridge deck elevations to final pavement elevations.

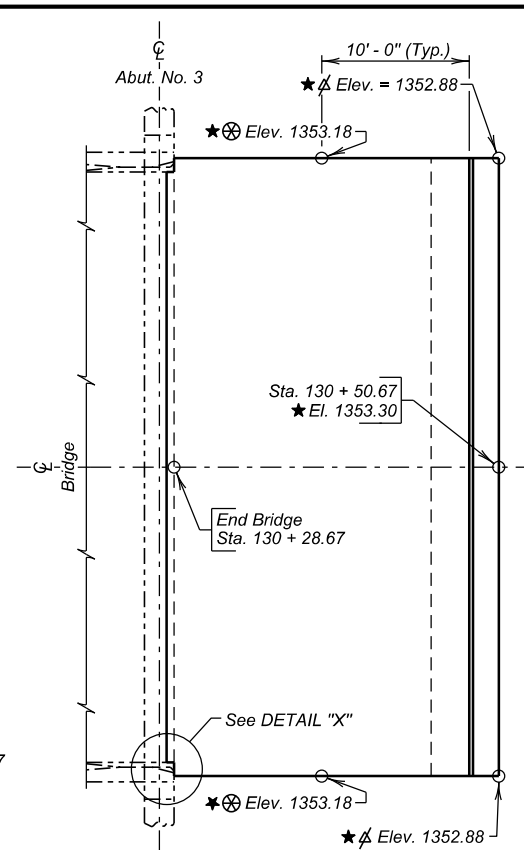


SECTION C - C

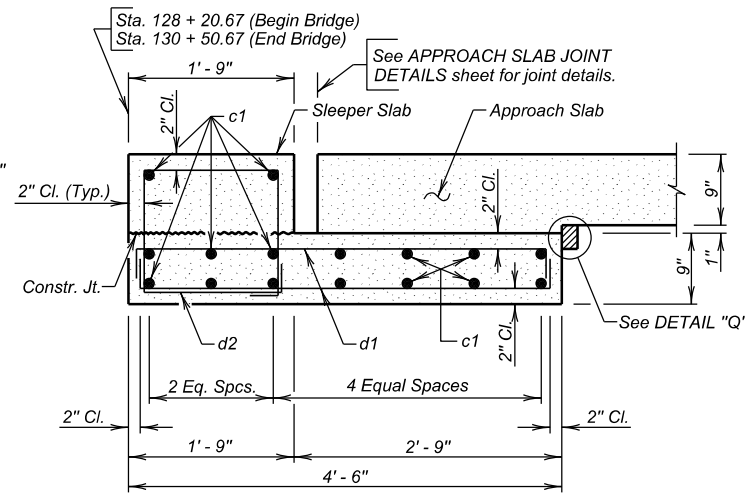
PLAN
(Shown adjacent to Abut. No. 1, Abut. No. 3 similar by rotation except as shown.)



VIEW D - D

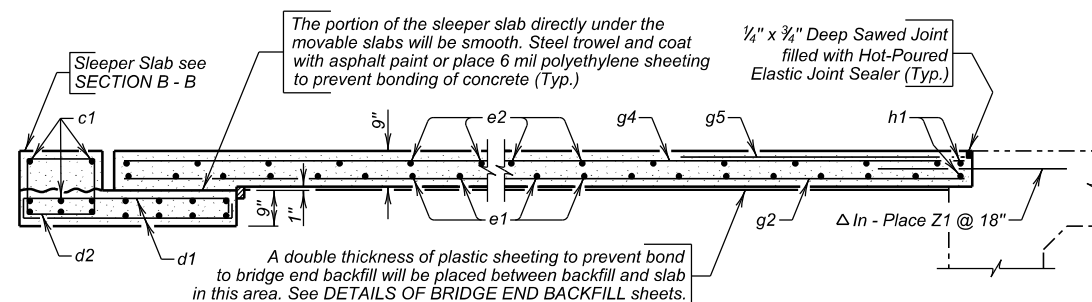


PLAN
(Shown adj. to Abut. No. 3)

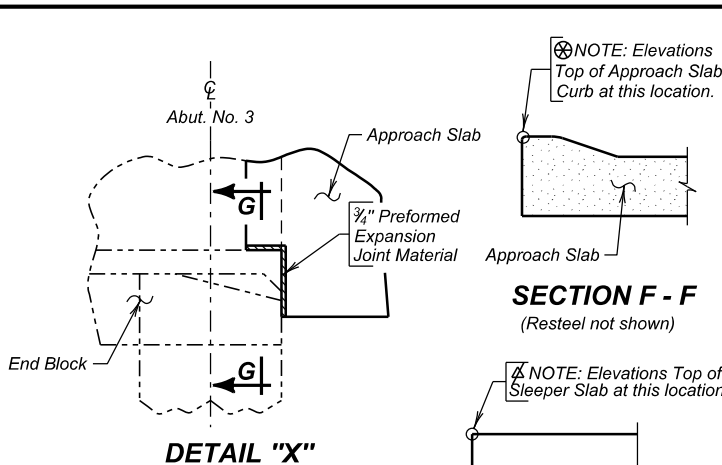


SECTION B - B
(Sleeper Slab)

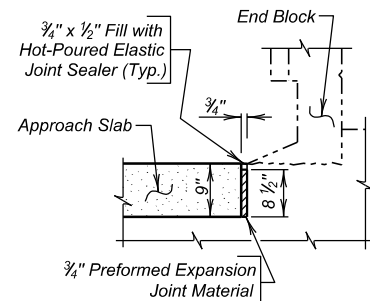
Δ In-place Z1 bars and are listed and included in superstructure quantities. See SUPERSTRUCTURE DETAILS sheet.



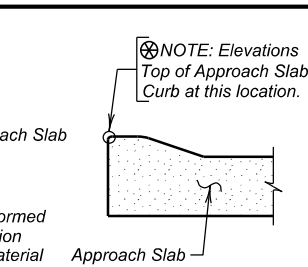
SECTION A - A



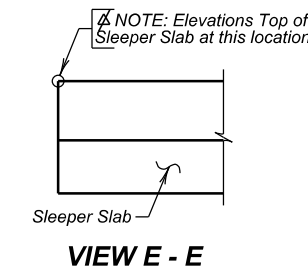
DETAIL "X"



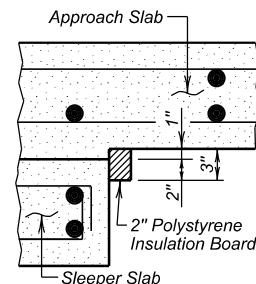
SECTION G - G



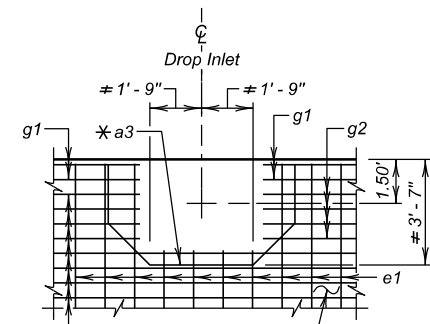
SECTION F - F
(Resteel not shown)



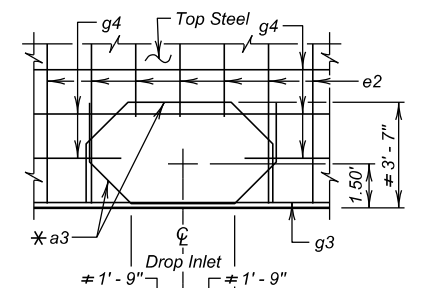
VIEW E - E



DETAIL "Q"



DETAIL "Y"
(Plan for Bottom Steel when drop inlet is used.)



DETAIL "Z"
(Plan for Top Steel when drop inlet is used.)

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE

FOR
186' - 0" STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2025

DESIGNED BY
JH
MINN05V6

CK. DES. BY
AH
05V6TB21

DRAFTED BY
BT

BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E52	E59

REINFORCING SCHEDULE					
(For Two Approach Slabs and Two Sleeper Slabs)					
Mk.	No.	Size	Length	Type	Bending Details
Sleeper Slab					
c1	32	5	41' - 7"	Str.	d1 4' - 2"
d1	168	4	5' - 0"	2	Type 2
d2	84	4	6' - 1"	T2	Type T2
Approach Slab					
a3	6	4	11' - 6"	14	Type 14
e1	40	6	41' - 6"	Str.	
e2	28	4	41' - 6"	Str.	
g1	8	8	19' - 8"	Str.	
g2	160	8	20' - 2"	Str.	
g3	4	4	19' - 8"	Str.	
g4	54	4	20' - 2"	Str.	
g5	52	4	6' - 0"	Str.	
h1	4	6	39' - 8"	Str.	

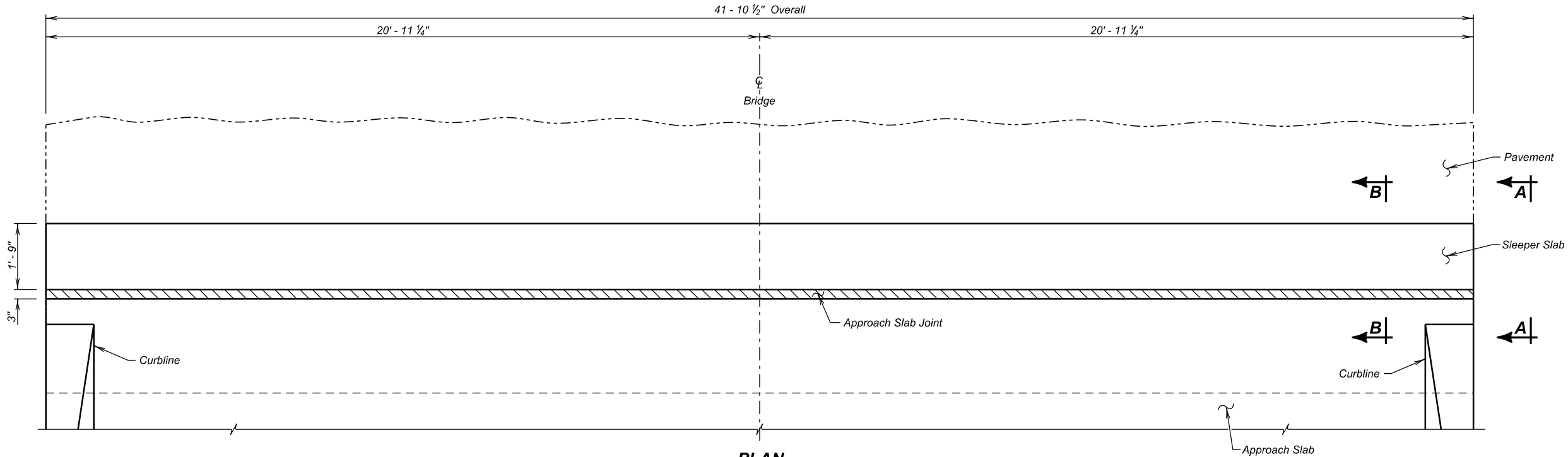
NOTES:
All bars to be epoxy coated.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES		
(For Two Approach Slabs and Two Sleeper Slabs)		
ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	190.6
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	41.9

- 48.3 cu. yds. Concrete in Approach Slabs.
- 13578 lbs. Epoxy Coated Re-Steel in Approach Slabs.
- 15.0 cu. yds. Concrete in Sleeper Slabs.
- 2292 lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
- 21 sq. ft. of 2" Polystyrene Insulation Board.

Items 1 thru 5 are approximate quantities contained in the above bid items and are for information only.

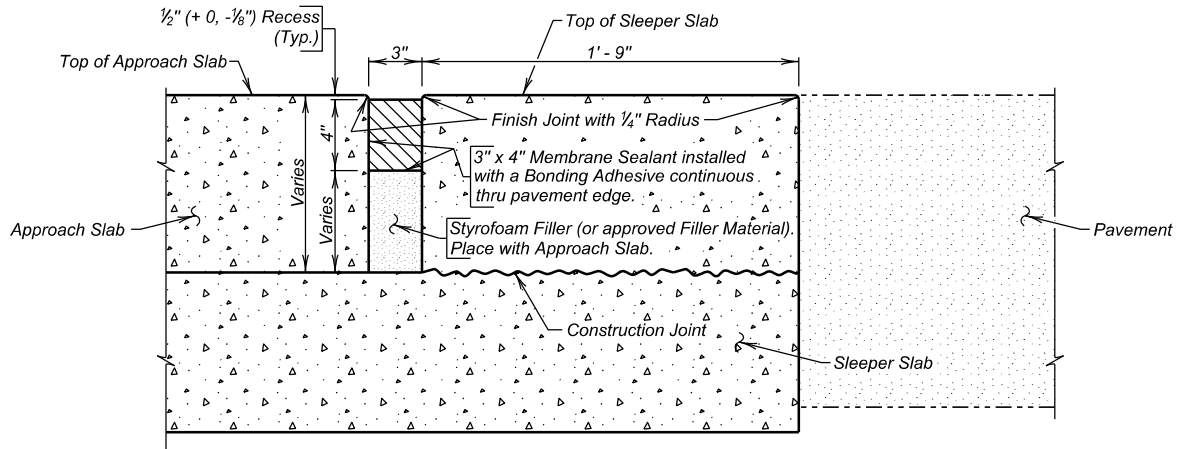
★ Add a3 bar to bottom layer of steel as shown in DETAIL "Y" and top layer of steel as shown in DETAIL "Z".
✂ Cut all bars in area of drop inlet as shown in DETAIL "Y" and DETAIL "Z".



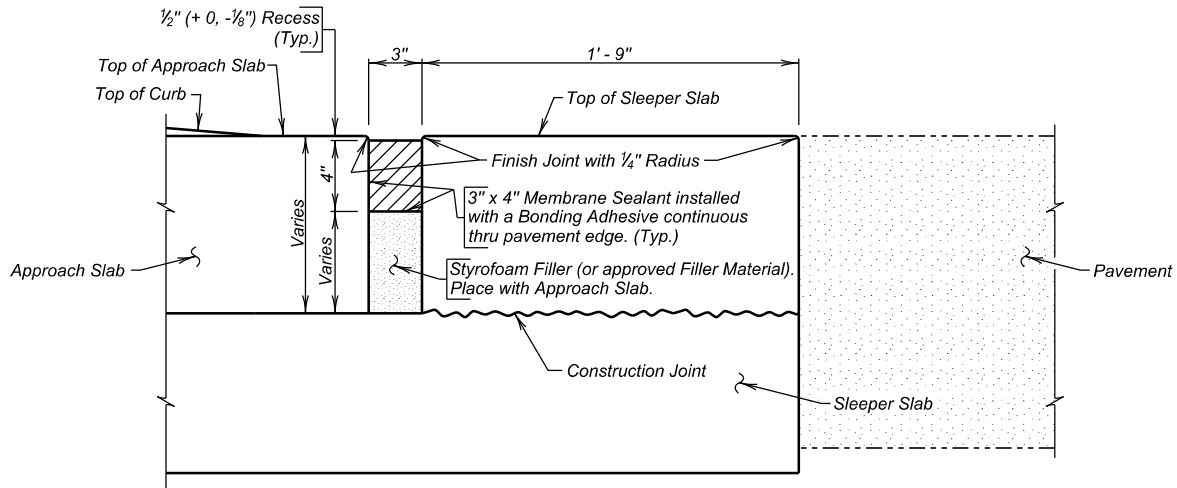
PLAN

GENERAL NOTES

- The membrane sealant will be on the approved product list for membrane sealant expansion joints.
- The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case will the precompressed dimension exceed 75% of the joint opening width. The foam sealant will be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
- The membrane sealant will be supplied in pieces 5 feet in length or longer. The foam sealant will be ultra-violet and ozone resistant.
- The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
- Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
- If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
- The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40° F.
- A technical representative of the membrane sealant manufacturer will be present at the jobsite during installation. The technical representative will be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.
- Concrete surfaces that will be in contact with the membrane sealant will be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding will not be permitted.
- After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface will be air blasted. The air compressor used for joint cleaning will be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint will be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
- Individual spliced sections will be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer will submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
- Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
- Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spill areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
- The membrane sealant expansion joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The membrane sealant expansion joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.



SECTION B - B



VIEW A - A

ESTIMATED QUANTITIES

(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	83.8

APPROACH SLAB JOINT DETAILS

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 P - PT 0011(145)83
STR. NO. 50-280-136 HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

APRIL 2025

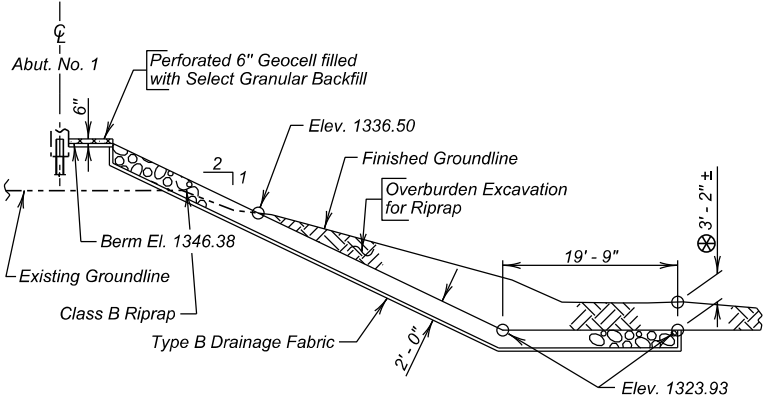
22 OF 28

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB22	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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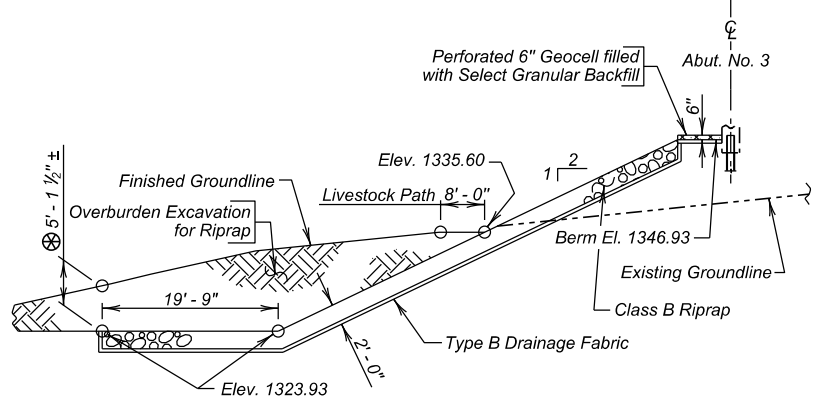
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E54	E59

Note:
Restore the channel and channel banks to the existing conditions between the riprap intercepts in accordance with the Overburden Excavation for Riprap notes. This will require a portion of the riprap to be buried.

⊗ Measured to channel intercept. See GENERAL DRAWING Sheet for details.



SECTION A - A



SECTION B - B

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
≠ Class B Riprap	Ton	5202.6
Type B Drainage Fabric	Sq. Yd.	5922
Overburden Excavation for Riprap	Cu. Yd.	4058
⊘ Select Granular Backfill	Ton	25.4
☆ Perforated Geocell	Sq. Ft.	880

≠ For estimating purposes only, a factor of 1.4 tons/cu.yd. was used to convert Cu. Yds. to Tons.
☆ See PERFORATED GEOCELL notes for payment information.
⊘ For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

RIPRAP DETAILS

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY
OVER WEST PIPESTONE CREEK
STA. 128 + 42.67 TO 130 + 28.67
STR. NO. 50-280-136

0° SKEW
SEC. 10/11-T102N-048W
P - PT 0011(145)83
HL-93

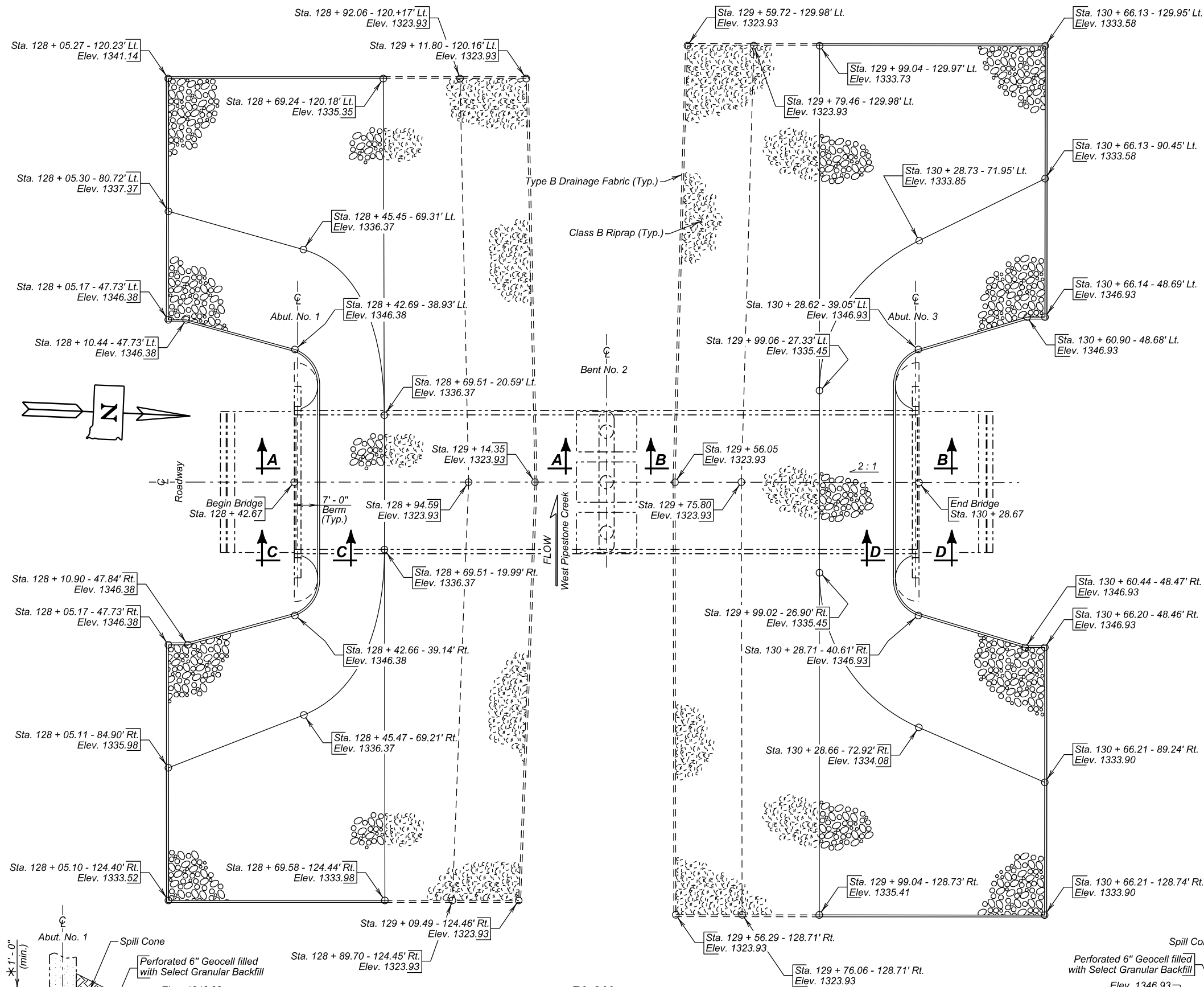
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

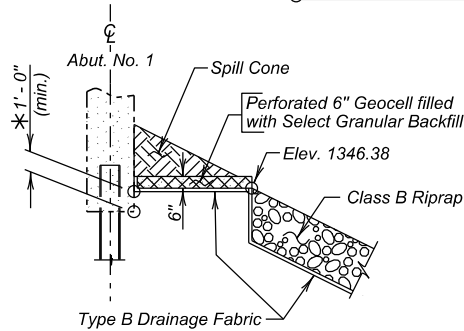
APRIL 2025

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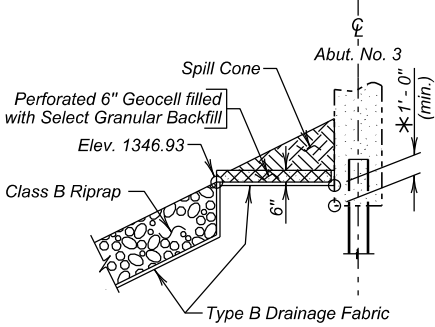
DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6TB23	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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PLAN



SECTION C - C

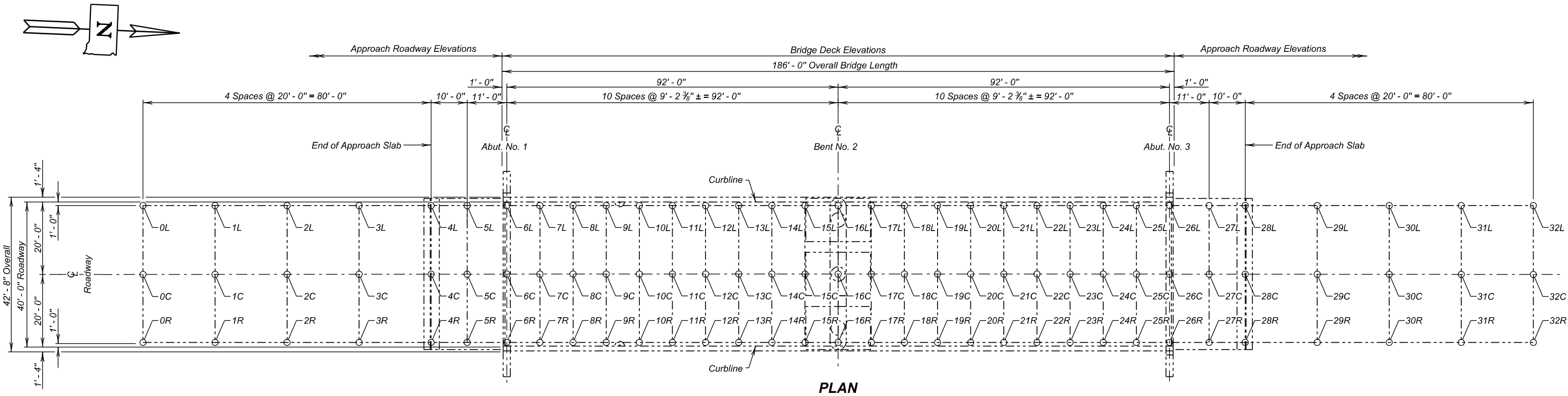


SECTION D - D

* Bridge berm will be built according to Standard Plate No. 120.11. (See SECTION B.)

The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P - PT 0011(145)83	E55	E59



PLAN

Table of As-Built Elevations - Approach Roadway

Location	Elevation	Location	Elevation	Location	Elevation
0L		0C		0R	
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		31R	
32L		32C		32R	

NOTE -
The Contractor will be responsible for producing the As - Built Elevation Survey soon after construction is complete and before the bridge is opened to traffic. The As - Built Elevations of the Bridge will be taken and recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Office of Bridge Design and the Region Bridge Office.

Table of As-Built Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation
6L		6C		6R	
7L		7C		7R	
8L		8C		8R	
9L		9C		9R	
10L		10C		10R	
11L		11C		11R	
12L		12C		12R	
13L		13C		13R	
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	
22L		22C		22R	
23L		23C		23R	
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	

Elevations - Bridge Survey Markers

Location	Station - Offset	Elevation
Begin Bridge		
End Bridge		

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Bridge Elevation Survey	L. S.	Lump Sum

AS - BUILT ELEVATION SURVEY

FOR

186' - 0" STEEL GIRDER BRIDGE

40' - 0" ROADWAY 0° SKEW
OVER WEST PIPESTONE CREEK SEC. 10/11-T102N-048W
STA. 128 + 42.67 TO 130 + 28.67 P - PT 0011(145)83
STR. NO. 50-280-136 HL-93

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

APRIL 2025

24 OF 28

DESIGNED BY JH MINN05V6	CK. DES. BY AH 05V6BB24	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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ABUTMENT WITH "STRAIGHT" WINGS

ABUTMENT WITH "SWEEP BACK" WINGS

ABUTMENT WITH "SWEEP BACK" WINGS
(Endblock on top of wings)

GENERAL NOTES:

- Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
- Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a 3/4" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 1/2" top diameter.
- There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

Published Date: 2026

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BRIDGE SURVEY MARKER

PLATE NUMBER
460.05
Sheet 1 of 1

June 26, 2012

*** VIEW C - C**

VIEW A - A

*** VIEW B - B**

ELEVATION

ALTERNATE WELD ATTACHMENT

① DEPTH OF PREPARATION	PILE
3/8	HP 14 X 102 HP 14 X 89 HP 12 X 74
5/16	HP 14 X 73 HP 12 X 63 HP 10 X 57
1/4	HP 12 X 53 HP 10 X 42 HP 8 X 36

GENERAL NOTES:

- Pile tip reinforcement shall be one-piece cast steel points commercially available and produced by a manufacturer who regularly produces pile points as a production item available to the public.
- Material for pile points shall conform to ASTM A27, Grade 65-35, Class 2.
- Pile points shall contain teeth designed to dig into obstructions and bearing materials in order to develop the maximum carrying capacity of the materials encountered.
- Welding and weld inspection shall be in conformance with AWS D1.5 - (Current Year) Bridge Welding Code - Steel.

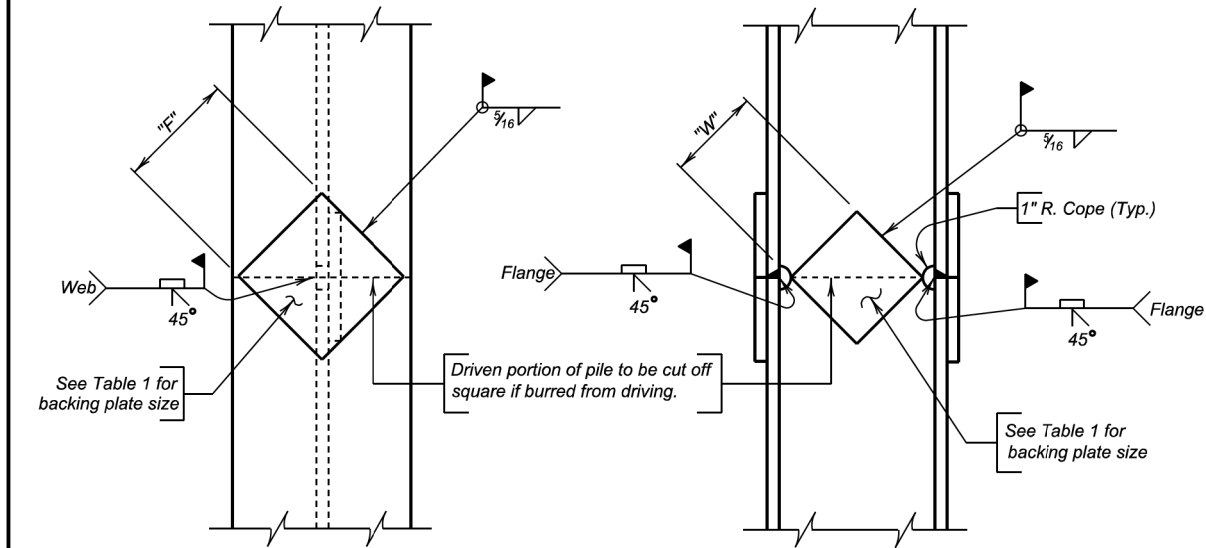
Published Date: 2026

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H PILE TIP REINFORCEMENT

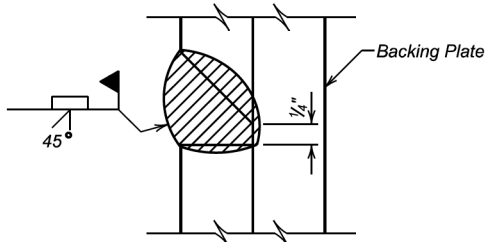
PLATE NUMBER
510.30
Sheet 1 of 1

December 23, 2012



NOTE:
Prepare joint surfaces lower end of upper section on the ground and weld on backing plates; then place upper section on lower section and weld.

COMPLETE JOINT PENETRATION WELD DETAIL



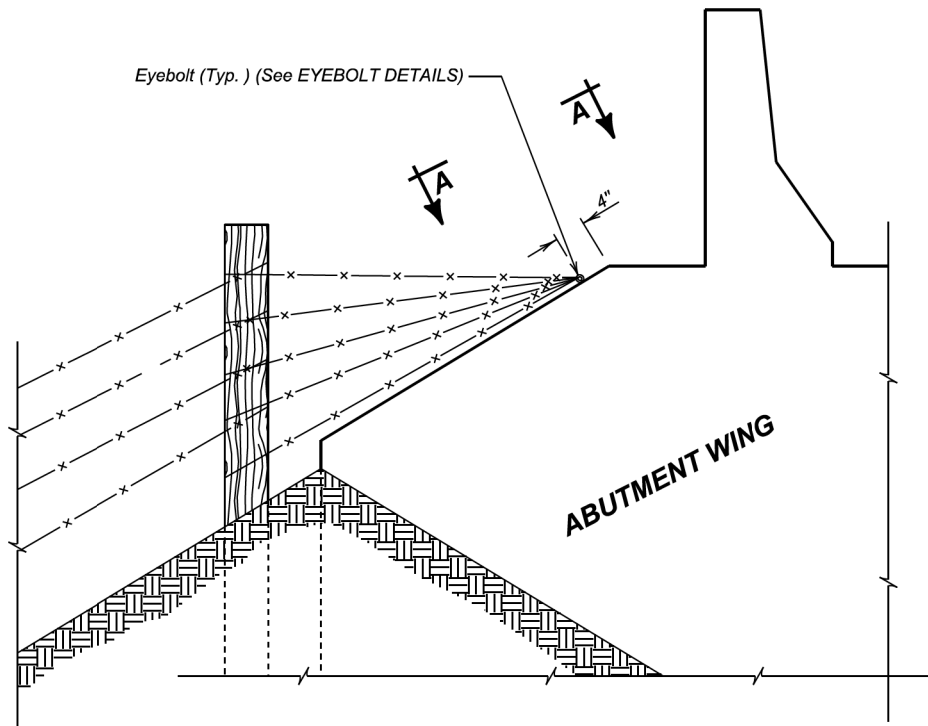
GENERAL NOTES:

- Steel for backing plates shall conform to ASTM A709 Grade 50.
- Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
- Welder must be certified and registered with the SDDOT.
- Backing plate shall at a minimum be as thick as the web of the pile being spliced.
- Web must be coped with 1 inch radius.
- Submit Welding Procedure Specification (WPS) to Bridge Construction Engineer for approval prior to pile driving.

TABLE 1 (BACKING PLATES)			
PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

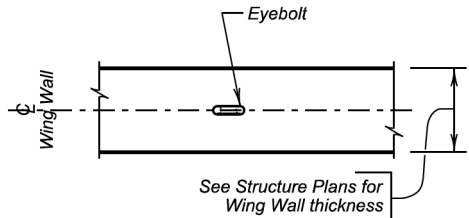
Published Date: 2026	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1



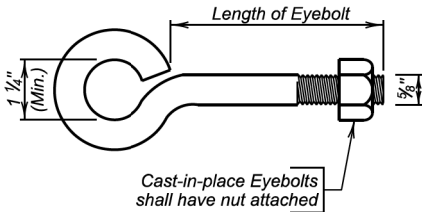
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

- The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- Eyebolts shall be placed on all of the bridge abutment wings.
- Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
- Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
- The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



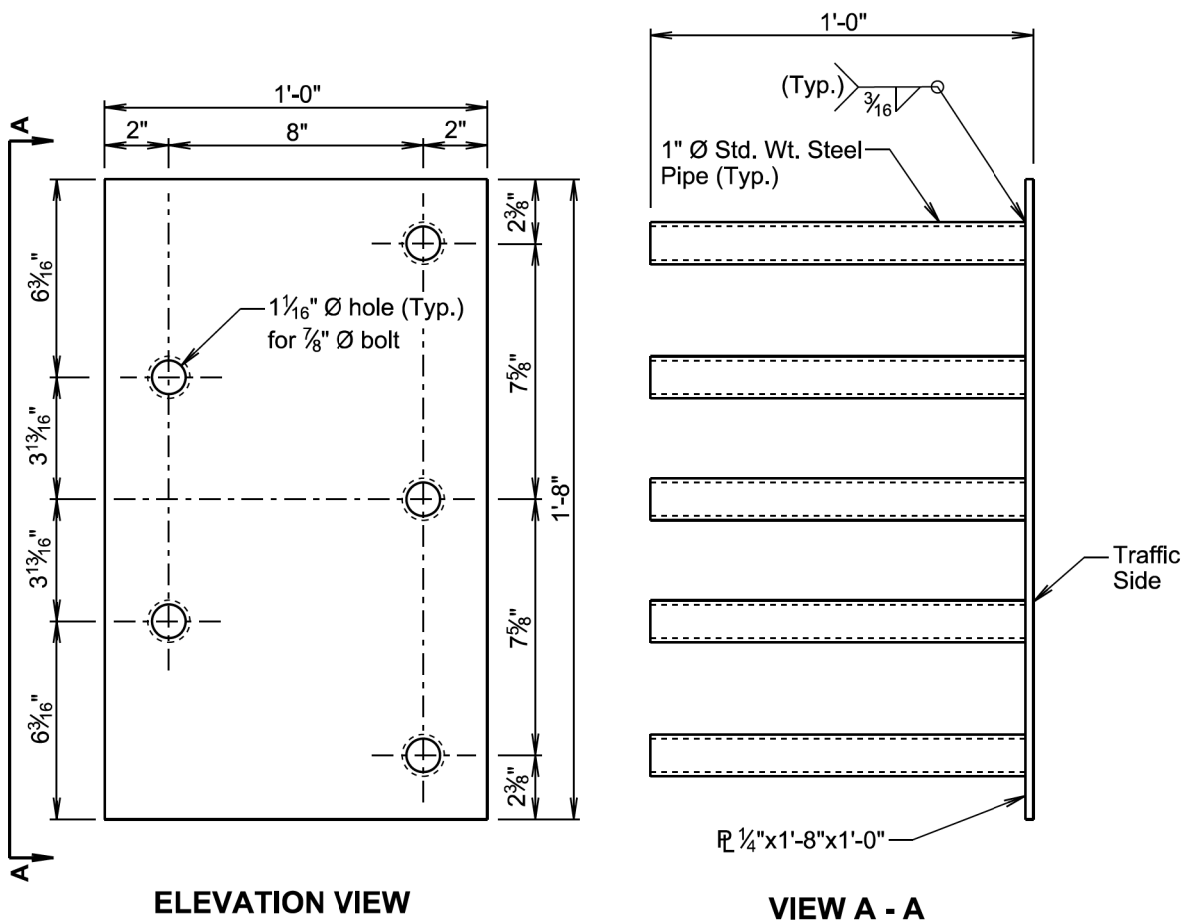
VIEW A - A



EYEBOLT DETAILS

December 23, 2012

Published Date: 2026	S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS 6' AND SHORTER)	PLATE NUMBER 620.18
			Sheet 1 of 1



GENERAL NOTES:

Steel plate for the insert assembly will conform to ASTM A709, Grade 36. The steel pipes will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

Welding and weld inspection will be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.

After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).

Bolts, nuts, and washers will be provided with each assembly. Bolts will be galvanized and conform to the requirements of ASTM A307, F3125 Grade A325, or A449. Plain washers will be galvanized and conform to ASTM F844.

Bolt heads will be placed on the traffic side of the endblock. Bolt projection at the back side of the insert will not exceed 1 inch beyond the nut.

The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing will be incidental to the contract unit price per cubic yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

April 8, 2025

<i>Published Date: 2026</i>	S D D O T	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92
			Sheet 1 of 1