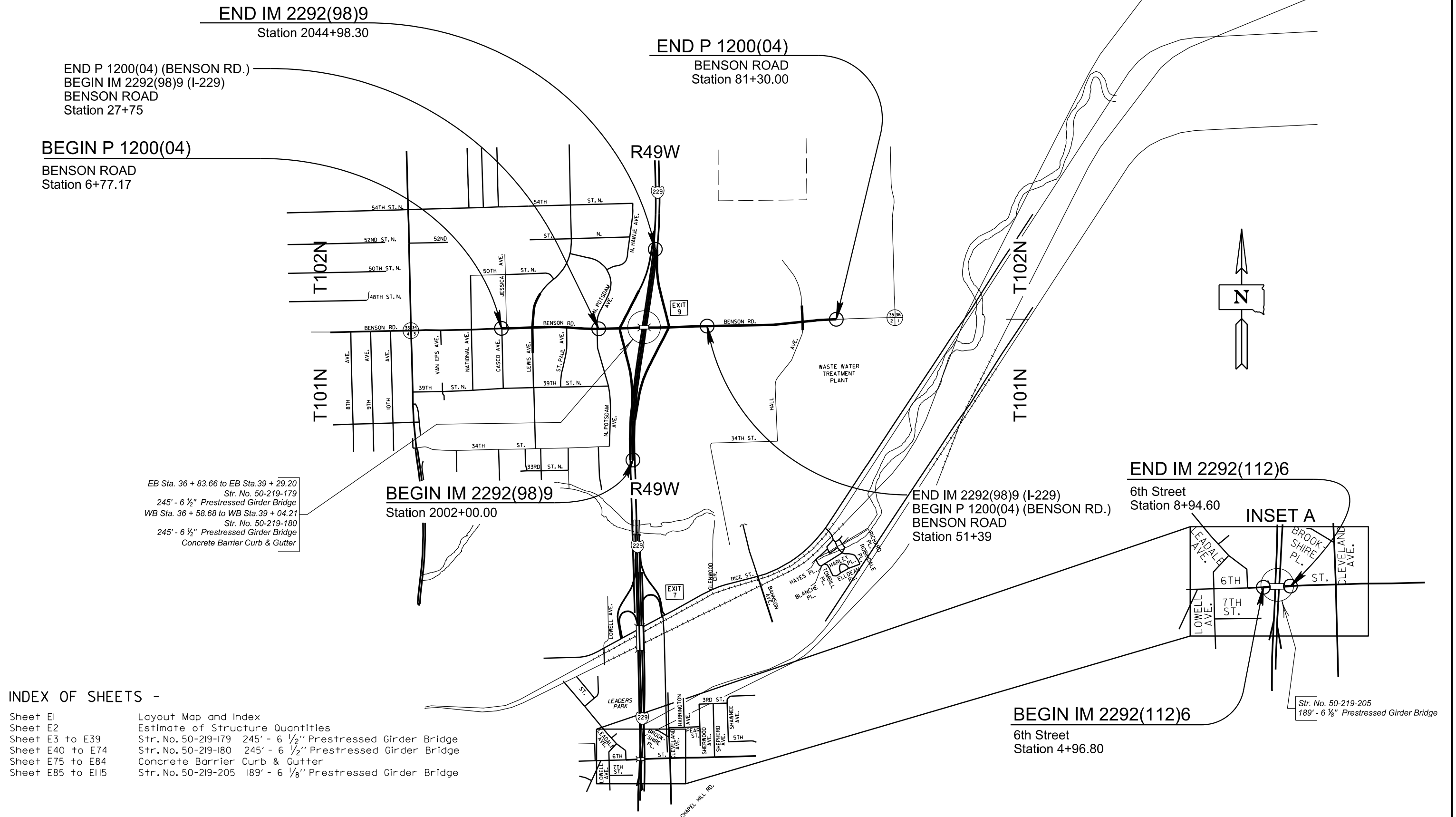


Section E: Structure Plans



SECTION E – ESTIMATE OF STRUCTURE QUANTITES AND NOTES

PCN 04XK
Str. No. 50-219-179

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	1,295.9	SqYd
120E7000	Select Granular Backfill	11.8	Ton
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	116.8	Ft
420E0100	Structure Excavation, Bridge	146	CuYd
430E0200	Bridge End Embankment	2,099	CuYd
430E0300	Granular Bridge End Backfill	135.6	CuYd
430E0510	Approach Slab Underdrain Excavation	4.3	CuYd
430E0700	Precast Concrete Headwall for Drain	2	Each
460E0030	Class A45 Concrete, Bridge Deck	414.9	CuYd
460E0050	Class A45 Concrete, Bridge	269.6	CuYd
460E0150	Concrete Approach Slab for Bridge	152.5	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	59.1	SqYd
460E0380	Install Dowel in Concrete	381	Each
470E0120	Steel Pedestrian Railing on Sidewalk	263.6	Ft
470E0220	Steel Pedestrian Railing on Concrete Barrier	243.3	Ft
480E0100	Reinforcing Steel	45,667	Lb
480E0200	Epoxy Coated Reinforcing Steel	2,110	Lb
480E0300	Stainless Reinforcing Steel	90,137	Lb
510E0300	Preboring Pile	220	Ft
510E3421	HP 12x74 Steel Test Pile, Furnish and Drive	220	Ft
510E3425	HP 12x74 Steel Bearing Pile, Furnish and Drive	3,350	Ft
560E8072	72" Minnesota Shape Prestressed Concrete Beam	1,455	Ft
621E0300	Chain Link Fence for Bridge Sidewalk	264	Ft
635E8020	2" Rigid Galvanized Steel Conduit	12	Ft
651E0160	6" Reinforced Concrete Sidewalk	348	SqFt
680E0040	4" Underdrain Pipe	150	Ft
680E2500	Porous Backfill	8.1	Ton
734E2020	Bridge Berm Slope Protection, Coated Crushed Aggregate	517.1	SqYd
831E1030	Perforated Geocell	345	SqFt

PCN 04XK
Str. No. 50-219-180

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
110E0010	Remove Concrete Bridge Approach Slab	406.2	SqYd
110E0020	Remove Bridge Railing	1,008	Ft
110E0040	Remove Concrete Bridge Slab	311.7	SqYd
120E0600	Contractor Furnished Borrow Excavation	31	CuYd
260E1010	Base Course	79.0	Ton
410E2600	Membrane Sealant Expansion Joint	155.4	Ft
460E0070	Class A45 Concrete, Bridge Repair	44.1	CuYd
460E0150	Concrete Approach Slab for Bridge	314.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	107.4	SqYd
460E0200	Special Surface Finish	3,978	SqFt
460E0300	Breakout Structural Concrete	44.0	CuYd
460E0380	Install Dowel in Concrete	86	Each
460E0650	Roadway Canopy	Lump Sum	LS
480E0200	Epoxy Coated Reinforcing Steel	7,467	Lb
480E5000	Galvanic Anode	246	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	124	CuYd
550E0100	Concrete Removal Type 1A	1,738.9	SqYd
550E0110	Concrete Removal Type 1B	347.8	SqYd
550E0120	Concrete Removal Type 1C	347.8	SqYd
550E0130	Concrete Removal Type 1D	347.8	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	74.9	CuYd
550E0500	Finishing and Curing	1,738.9	SqYd
680E0040	4" Underdrain Pipe	36	Ft
734E2020	Bridge Berm Slope Protection, Coated Crushed Aggregate	214.2	SqYd

PCN 04XK

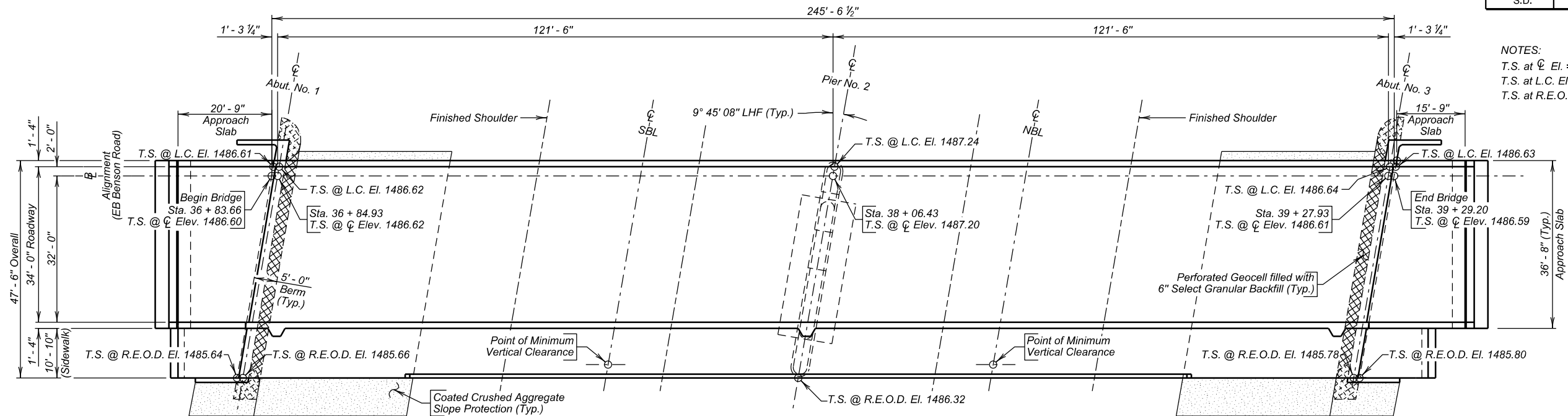
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
650E2000	Concrete Barrier Curb and Gutter	2,330	Ft
650E2001	Concrete Barrier Curb and Gutter End Section	80	Ft

PCN 08QM
Str. No. 50-219-205

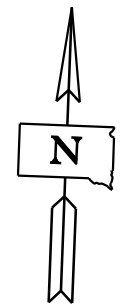
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
110E0010	Remove Concrete Bridge Approach Slab	395.0	SqYd
110E0020	Remove Bridge Railing	756	Ft
120E0600	Contractor Furnished Borrow Excavation	20	CuYd
260E1010	Base Course	40.0	Ton
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	132.8	Ft
460E0010	Class A45 Concrete, Bridge Barrier	3.0	CuYd
460E0150	Concrete Approach Slab for Bridge	271.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	86.0	SqYd
460E0200	Special Surface Finish	2,320	SqFt
460E0300	Breakout Structural Concrete	0.6	CuYd
460E0380	Install Dowel in Concrete	244	Each
470E0120	Steel Pedestrian Railing on Sidewalk	379.0	Ft
470E0220	Steel Pedestrian Railing on Concrete Barrier	375.4	Ft
480E0200	Epoxy Coated Reinforcing Steel	1,112	Lb
480E0504	No. 4 Rebar Splice	30	Each
480E0505	No. 5 Rebar Splice	48	Each
480E0506	No. 6 Rebar Splice	50	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1,089.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1,089.2	SqYd
491E0120	Bridge Deck Grinding	1,089.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
621E0300	Chain Link Fence for Bridge Sidewalk	380	Ft
651E0160	6" Reinforced Concrete Sidewalk	558	SqFt
680E0040	4" Underdrain Pipe	48	Ft
734E2023	Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate	210.0	SqYd
900E8900	Anchor Bolt Coring	15.0	Ft

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

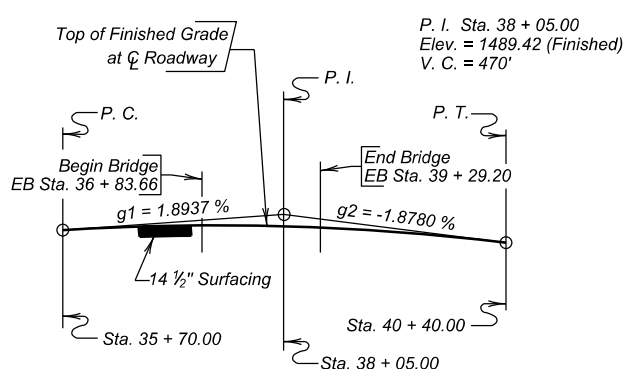
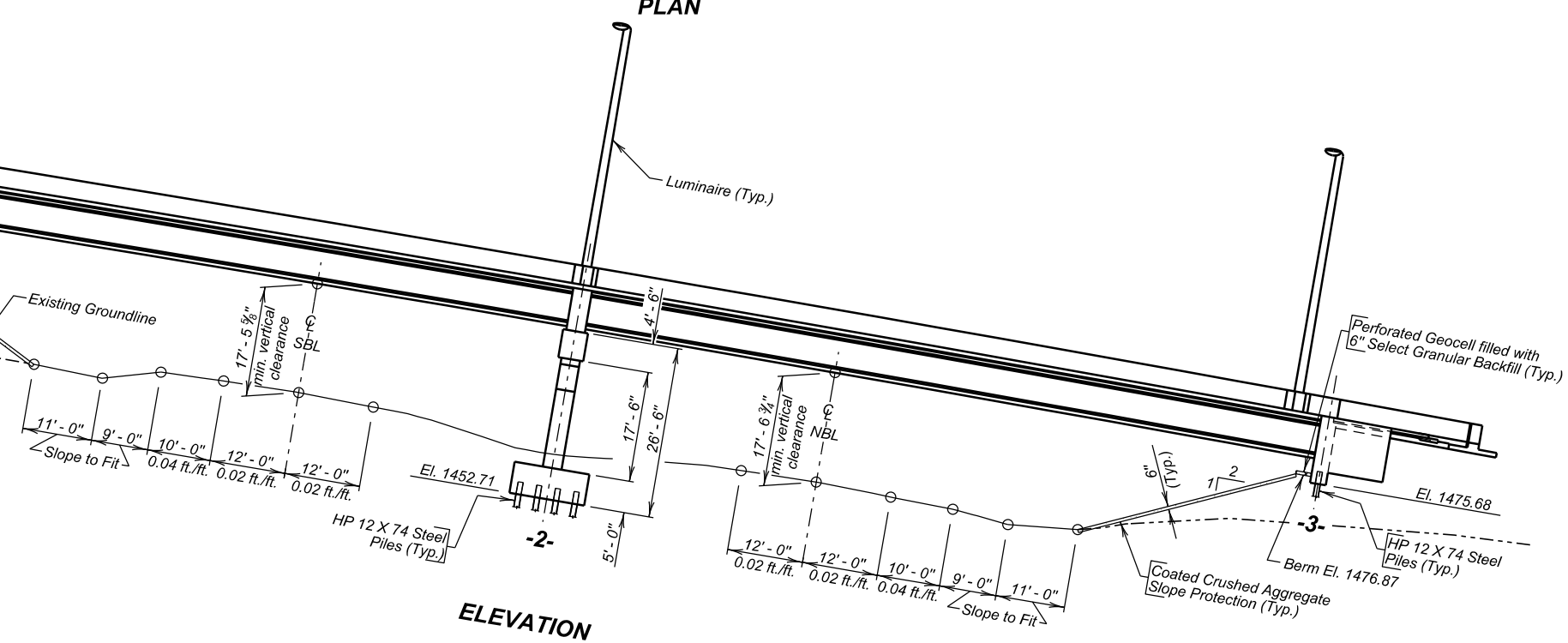
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E3	E115



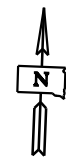
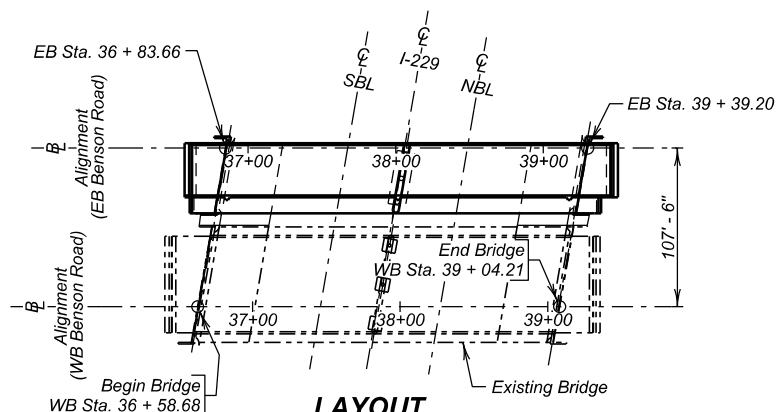
NOTES:
T.S. at $\bar{C}$ El. = Top of Slab at Centerline Elevation
T.S. at L.C. El. = Top of Slab at Left Curb Elevation
T.S. at R.E.O.D. El. = Top of Slab at Right Edge of Deck Elevation



- X281- 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 - Subsurface Investigation and Piling Layout
 - Sheet No. 7 - Abutment No. 1 Details (A)
 - Sheet No. 8 - Abutment No. 1 Details (B)
 - Sheet No. 9 - Abutment No. 3 Details (A)
 - Sheet No. 10 - Abutment No. 3 Details (B)
 - Sheet No. 11 - Pier No. 2 Details (A)
 - Sheet No. 12 - Pier No. 2 Details (B)
 - Sheet No. 13 - Pier No. 2 Details (C)
 - Sheet No. 14 - Superstructure Details (A)
 - Sheet No. 15 - Superstructure Details (B)
 - Sheet No. 16 - Barrier Curb Details
 - Sheet No. 17 - Barrier Curb Railing Details
 - Sheet No. 18 - Sidewalk Railing with Chain Link Fence Details (A)
 - Sheet No. 19 - Sidewalk Railing with Chain Link Fence Details (B)
 - Sheet No. 20 - 121' - 3" Girder Details
 - Sheet No. 21 - Erection Data and Slab Form Elevations
 - Sheet No. 22 - Diaphragm Details
 - Sheet No. 23 - Details of Bridge End Backfill Adjacent to Bridge (A)
 - Sheet No. 24 - Details of Bridge End Backfill Adjacent to Bridge (B)
 - Sheet No. 25 - Slope Protection Details
 - Sheet No. 26 - Details of Approach Slab Adjacent to Bridge (A)
 - Sheet No. 27 - Details of Approach Slab Adjacent to Bridge (B)
 - Sheet No. 28 - Details of Approach Slab Adjacent to Bridge (C)
 - Sheet No. 29 - Approach Slab Barrier Details (A)
 - Sheet No. 30 - Approach Slab Barrier Details (B)
 - Sheet No. 31 - Sidewalk Approach Slab Details
 - Sheet No. 32 - Approach Slab Joint Details (A)
 - Sheet No. 33 - Approach Slab Joint Details (B)
 - Sheet No. 34 - As-Built Elevation Survey
 - Sheet No. 35 - Standard Plate No's. 430.50 and 460.02
 - Sheet No. 36 - Standard Plate No's. 460.05 and 510.40
 - Sheet No. 37 - Standard Plate No's. 620.19 and 630.92



VERTICAL CURVE DATA



GENERAL DRAWING
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 10' - 0" SIDEWALK
OVER I-229 (EB BENSON ROAD)
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20
STR. NO. 50-219-179
PCN 04XK

9° 45' 08" LHF SKEW
SEC. 35-T102N-R49W
IM 2292(98)6
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

DESIGNED BY BB MINN04XK	CK. DES. BY CHM 04XKGA01	DRAFTED BY BT	BRIDGE ENGINEER <i>Steve A. Johnson</i>
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ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	1295.9	SqYd	See Special Provision
Select Granular Backfill	11.8	Ton	
Structural Steel, Miscellaneous	Lump Sum	LS	
Membrane Sealant Expansion Joint	116.8	Ft	
Structure Excavation, Bridge	146	CuYd	
Bridge End Embankment	2099	CuYd	
Granular Bridge End Backfill	135.6	CuYd	
Approach Slab Underdrain Excavation	4.3	CuYd	
Precast Concrete Headwall for Drain	2	Each	
Class A45 Concrete, Bridge Deck	414.9	CuYd	
Class A45 Concrete, Bridge	269.6	CuYd	
Concrete Approach Slab for Bridge	152.5	SqYd	
Concrete Approach Sleeper Slab for Bridge	59.1	SqYd	
Install Dowel in Concrete	381	Each	
Steel Pedestrian Railing on Sidewalk	263.6	Ft	
Steel Pedestrian Railing on Concrete Barrier	243.3	Ft	
Reinforcing Steel	45667	Lb	
Epoxy Coated Reinforcing Steel	2110	Lb	
Stainless Reinforcing Steel	90137	Lb	See Special Provision
Preboring Pile	220	Ft	
HP 12x74 Steel Test Pile, Furnish and Drive	220	Ft	
HP 12x74 Steel Bearing Pile, Furnish and Drive	3350	Ft	
72" Minnesota Shape Prestressed Concrete Beam	1455	Ft	
Chain Link Fence for Bridge Sidewalk	264	Ft	
2" Rigid Galvanized Steel Conduit	12	Ft	
6" Reinforced Concrete Sidewalk	348	SqFt	
4" Underdrain Pipe	150	Ft	
Porous Backfill	8.1	Ton	
Bridge Berm Slope Protection, Coated Crushed Aggregate	517.1	SqYd	
Perforated Geocell	345	SqFt	

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 8th Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications, and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

- Girders are designed continuous for AASHTO HL-93 Live Load.
- Dead Load includes 22 psf for future wearing surface on the roadway.

DESIGN MATERIAL STRENGTHS*

Concrete
Reinforcing Steel (ASTM A615, Gr.60)
Stainless Steel (ASTM A955, Gr. 60)
Piling (ASTM A572 Grade 50)

f'c = 4,500 psi
fy = 60,000 psi
fy = 60,000 psi
fy = 50,000 psi

*For prestressed beams, see notes regarding Prestressed Girders.

GENERAL CONSTRUCTION

- All lap splices shown are contact lap splices unless noted otherwise.
- All exposed concrete corners and edges will be chamfered 3/4" 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 No. 460.02.
- Barrier Curbs will be built normal to the grade.
- Request for construction joints or resteel 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 resteel.
- The elevation of the bridge deck is 15" above subgrade elevation.
- Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate No. 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.

DESIGN MIX OF CONCRETE

- All structural concrete will be Class A45 unless otherwise indicated.
- Type II cement conforming to Section 750 is required except Type III cement may be used for prestressed beams.
- 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 ¾". 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

- Preboring piling at abutments is required to whichever is greater, ten feet or to natural ground.
- The HP 12x74 Piling were designed using a factored bearing resistance of 137 tons per pile. Piling will develop a field verified nominal bearing resistance of 342 tons per pile.

- One test pile will be driven at each abutment and will become part of the pile group.
- The Contractor will have sufficient pile splice material on hand before driving is started. See Standard Plate No. 510.40.
- 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.
- Abutment backwalls above the construction joint may be cast separately from the deck slab. The concrete used for the backwalls and wings will be Class A45 Concrete, Bridge. All abutment and bridge deck concrete will have attained design strength prior to backfilling. Abutment wing walls will not be cast until after the deck has been poured.
- Each finished abutment will include a Bridge Survey Marker. See Standard Plate No. 460.05.

ABUTMENT BACKWALL COATING

The material for waterproofing the abutment backwall will be one of the products from the approved products list. The acceptable abutment backwall coating suppliers are listed on the approved products list at the following Internet address:

<http://apps.sd.gov/applications/HC60ApprovedProducts/ProductList.aspx>

The cost of furnishing and applying the coating will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR

245' - 6 ½" PRESTR. GIRDER BRIDGE

STR. NO. 50-219-179
JANUARY 2022

2 OF 37

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E5	E115

PIER

- The HP 12x74 Piling were designed using a factored bearing resistance of 137 tons per pile. Piling will develop a field verified nominal bearing resistance of 342 tons per pile.
- One test pile will be driven at the pier and will become part of the pile group.
- The Contractor will have sufficient pile splice material on hand before pile driving is started. See Plate 510.40.

PRESTRESSED GIRDERS

- Minimum concrete compressive strength f'c = 7000 psi at 28 days for all girders, f'ci = 5000 psi for all Girders.
- All mild reinforcing steel will be deformed bars conforming to ASTM A615, Grade 60.
- Individual tendons in all pretensioned sections will consist of seven wire uncoated Type 270K Strands having a nominal diameter of 0.6" and a minimum ultimate strength of 58600 lbs. per cable. An initial tensile force of 43500 lbs. will be applied to all 0.6" cables in all girders. All prestressing steel will conform to AASHTO M203. (low- relaxation strands).
- All prestressed girders within a span will be cast within an 8 day period. If not, the newest girder will be at least 6 weeks old before the deck slab is poured. The girders will be poured in all steel forms.
- Prestressed concrete girders will always be lifted by the devices provided in the top flanges near the ends of the girders. Types of lifting devices other than those shown on the plans may be used provided they are approved by the Office of Bridge Design. The design of the lifting devices will be the responsibility of the fabricator.
- Each beam will be marked showing structure number, casting date, and beam number. Marking will be on the face of the beam near the end and the location will be exposed after the diaphragms have been cast. Facia beams will be marked on an inside face. All markings will be stenciled and clearly legible. For beam designations and locations, see superstructure layout plan and Erection Data sheet.
- The physical properties of the elastomeric bearing pads will conform to the requirements of Section 18.2 of the AASHTO LFRD Bridge Construction Specification and the AASHTO Materials Specification M251. The elastomeric bearing pads will conform to Grade 70 (durometer). The cost of the pads will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge. Certification that pads are 70 durometer and meet the requirements of AASHTO LFRD Bridge Construction Specification Section 18.2 and AASHTO Materials Specification M251 will be furnished to the Engineer with the shop drawings. No laminated bearing pads will be allowed.
- All exposed corners will be chamfered 3/4" or rounded to 3/4" radius.

- Dead Load of girder taken as effective at transfer. Cut strands, except those extended and bent, flush with end of girder and coat end of strands with mortar.
- The Contractor will be responsible for ensuring that transportation stresses, handling and erection do not cause damage to the girders.
- Furnish and Install Inserts for T8 Rebars as shown in the plans. All costs involved will be incidental to the contract unit price per foot of 72" Minnesota Shape Prestressed Concrete Beam.

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/or 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.

SUPERSTRUCTURE

- Girder lifting hooks will be cut off before placement of concrete deck slab.
- The diaphragms at the pier will be poured integrally with the deck slab. Placement of diaphragms at the pier will not slow down the rate of deck concrete placement and finishing. The Contractor will place the concrete for the specified diaphragms ahead of the deck concrete in such a manner that advancement of the deck concrete reaches the diaphragm just as placement of concrete in the diaphragm is complete.
- 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.
- The bridge deck must be placed and finished continuously at a minimum rate of 35 ft. of deck per hour measured along Centerline Roadway. This rate is exclusive of concrete placed in the diaphragms. (See note 2 above.) If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 35 ft. of deck per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi..

- 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 coating applied to the new epoxy coated reinforcing steel.
- See Special Provision for Concrete Penetrating Sealer.

CLASS B COMMERCIAL TEXTURE FINISH

- A Class B commercial texture finish will be applied to the following areas:
 - *Abutments: all exposed surfaces to an elevation 1-foot below finished ground line.
 - Barrier: all exposed surfaces (**front, **top, and *back).
 - *Slab: edge of slab.
 - *Girder: Outside face and bottom of facia girders.
 - *Pier: All exposed surfaces.

* Color will be AMS-STD-595 33578.
** 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 Specifications.

SHOP PLANS

Shop plans will be required as specified by the Specifications.

PROJECT LIMITS

The temporary soil support will be used as the limits for the bridge berm and bridge backfill associated with this structure. All costs for furnishing, installing, and removing the temporary soil support will be incidental to the contract unit price per cubic yard for Bridge End Embankment.

NOTES (CONTINUED)
FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

STR. NO. 50-219-179
JANUARY 2022

3 OF 37

DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA03	DRAFTED BY BT	 BRIDGE ENGINEER
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PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). A list of acceptable hammers is provided below.

Delmag D36-23 APE D36-26 SPI D36-26

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.

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.

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 of 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 Specification.
2. The 4" Dia. Perforated PVC Drain Pipe will be SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 and ASTM F758. The 2" and 4" Dia. 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 will conform to ASTM D6707.
3. The 5-inch diameter schedule 40 steel pipe will conform to ASTM A53 and F1083.
4. Care will be taken to ensure that the 4" Dia. Perforated PVC Drain Pipe and the 4" Dia. 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" Dia. Perforated PVC Drain Pipe, 4" Dia. PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

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 Senior 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 contractor lump sum price for Bridge Elevation Survey.

SIDEWALK APPROACH SLABS

1. The reinforced concrete sidewalks adjacent to the bridge will be paid for at the contract unit price per square foot for 6" Reinforced Concrete Sidewalk. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, epoxy coated reinforcing steel, asphalt paint or 6 mil polyethylene sheeting, hot poured elastic joint sealer; for disposal of all excavated, and surplus materials; and for all labor, tools, equipment, and incidentals necessary to complete this item of work.

2. All costs involved in furnishing and placing the sidewalk sleeper slabs will be included in the contract unit price per square foot for 6" Reinforced Concrete Sidewalk.

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 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.

4" RIGID GALVANIZED STEEL CONDUIT

1. The ¼" diameter concrete inserts for conduit clamps will be commercially available inserts threaded for use with a galvanized ¼" diameter A307 bolt. The insets will be capable of developing the strength of A307 bolt and will be galvanized or stainless steel. The cost of furnishing and installing the inserts will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge Deck.
2. The cost for furnishing and installing the 5" sleeves and polyethylene sheeting will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge.

NOTES (CONTINUED)
FOR

245' - 6 ½" PRESTR. GIRDER BRIDGE

STR. NO. 50-219-179
JANUARY 2022

STEEL RAILING – SIDEWALK

- All rail and chain link fence posts will be built vertical.
- All structural steel parts for railing will conform to ASTM A500, Grade B. Material less than 1/4-inch thick may be ASTM A1011, Grade 36. Rail post base plates will conform to ASTM A36.
- Anchor bolts and nuts for railing will conform to ASTM A307. Washers will conform to ASTM F436 and all components will be galvanized in accordance with ASTM F2329. The bolts will be hex head “Structural” type with heavy hex nuts and round washers.
- Anchor bolts will be tightened to a torque of 120 ft-lbs (approximated without the use of a calibrated torque wrench).
- Non-shrink grout used to fill the recess beneath the rail post base plates will be a commercially available non-shrink grout containing no metallic particles and capable of attaining a 28-day compressive strength of 3000 psi. The non-shrink grout will be mixed according to the manufacturer’s recommendations. The cost of furnishing and placing the non-shrink grout will be incidental to the contract unit price per foot for Steel Pedestrian Railing on Sidewalk.
- All steel railing will be galvanized in accordance with ASTM F2329, then will be painted in accordance with Section 411 of the Specifications and the color will be an approved brown (AMS STD 595 Color 30045). The galvanized steel railing will be cleaned in accordance with ASTM D6386 before painting.
- All Welding and Welding Inspection for the hollow structural sections will be in conformance with the latest edition of the AWS D1.1 Structural Steel Welding Code.
- The costs of structural steel, welding, weld inspection, painting, and galvanization will be incidental to the contract unit price per foot for Steel Pedestrian Railing on Sidewalk and Steel Pedestrian Railing on Concrete Barrier.

CHAIN LINK FENCE

- The chain link fence fabric and supports will conform to Section 930 of the Construction Specifications as modified by the following notes.
- The chain link fence fabric, wire ties, and miscellaneous hardware will be galvanized and conform to AASHTO M181. The fence fabric will be Type IV 9-gauge wire woven in a 2-inch diamond mesh. Knuckled selvage will be used on the top and bottom of the fence fabric.
- A brown (AMS STD 595 Color 30045) thermally extruded polyvinyl coating will be applied to the fence fabric, wire ties, and all miscellaneous hardware.
- The item Chain Link Fence for Bridge Sidewalk will be paid for at the contract unit price per linear foot. This payment will be full compensation for furnishing all material, labor, tools, and equipment necessary or incidental to the construction of the chain link fence including chain link fence fabric, posts, rails, wire ties, miscellaneous hardware, painting, and welding all to satisfactorily complete the work.

COATED CRUSHED AGGREGATE SLOPE PROTECTION

- This work will consist of paving the bridge berm slopes with coated crushed aggregate slope protection for control and prevention of berm erosion.
- The aggregate used in the coated crushed aggregate slope protection will conform to the requirements of Section 820 of the Construction Specifications for coarse aggregate for Class A Concrete (Size #1).
- The asphalt material used in the coated crushed aggregate slope protection will be either Asphalt Type MC-70 or MC-250, or emulsified Asphalt Type RS-1, RS-2, CRS-1, or CRS-2 meeting the requirements of Section 890 of the Construction Specifications and AASHTO M81, AASHTO M140, and AASHTO M208 respectively.
- The surface upon which the slope protection is to be placed will be smooth, uniform, and free from foreign material. The top surface of the slope protection will conform to the dimensions, elevations, and slopes shown in the plans.
- The coated crushed aggregate will be shaped and compacted to provide a stable, smooth, and uniform surface.
- The asphalt material will be applied at a rate sufficient to assure penetration and binding of the aggregate in the upper 2 inches of the slope protection. (Estimated Rate = 1.3 gallons per square yard.) The surfaces of the adjacent structure will be protected from spattering or discoloration from the asphalt material.
- Payment for coated crushed aggregate slope protection will be at the contract unit price per square yard for Bridge Berm Slope Protection, Coated Crushed Aggregate and will be full compensation for slope paving, including furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work. Payment will be for plans quantity.

INSTALL DOWEL IN CONCRETE

- Holes drilled in the existing concrete will be true and normal or as shown in the plans. Drilling holes using a core drill will not be allowed. Care will be taken not to damage the existing reinforcing steel. It is likely that some of the existing reinforcing steel shown in the plans may have been placed out of position during construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the in-place reinforcing steel. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes will be completely filled with the epoxy resin as approved by the Engineer.
- The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV (Equivalent to ASTM C881, Type IV). Grade 1, 2, or 3 may be used for vertical dowels.

- The diameter of the drilled holes will be a minimum of 1/8-inch and a maximum of 3/8-inch greater than the diameter of the dowels or as per the Manufacturer’s recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
- Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
- No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
- Dowel bars will be deformed bars conforming to ASTM A615 Grade 60.
- The cost of epoxy resin, dowels, installation, and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

FALSEWORK

Traffic control considerations require some construction activities to be performed over I-229 traffic. To protect traffic, a roadway canopy containment system will be required. Include details for the roadway canopy with the falsework plans. All costs for furnishing, installing and removing the roadway canopy will be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge Deck.

NOTES (CONTINUED)
FOR

245' - 6 ½" PRESTR. GIRDER BRIDGE

STR. NO. 50-219-179
JANUARY 2022

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E8	E115

Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The borings shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

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

LEGEND

- Penetration Test
- ⬤

 Drive Test
- ⊗

 Auger Test
- ▽

 Water
- ⊖

 Caved
- Sample Zone

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

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.

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 obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil. 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.

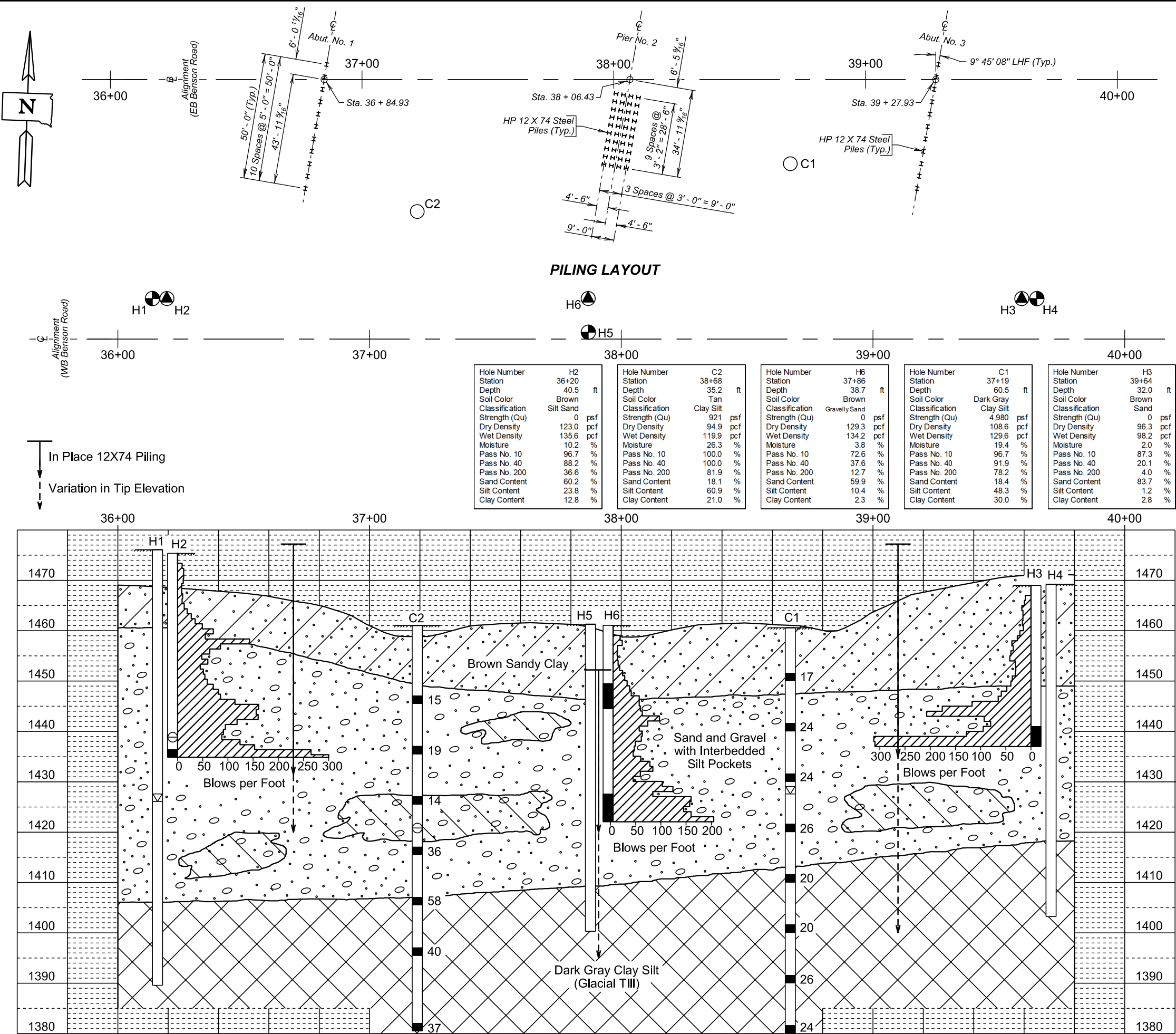
GROUNDWATER ELEVATIONS		MEASURED SKIN FRICTION	
	MARCH 1989		ELEV. PSF
H1	1425.6	H2	1434.9 425
H2	(DRY) 1438.9	H3	1437.0 951
H3	(DRY)	H6	1422.1 401
H4	(DRY)		
H5	(DRY)		
H6	(DRY)		
JULY 2020			
C1	1427.6		
C2	(DRY) 1420.8		

SUBSURFACE INVESTIGATION AND PILING LAYOUT FOR 245' - 6 1/2" PRESTR. GIRDER BRIDGE

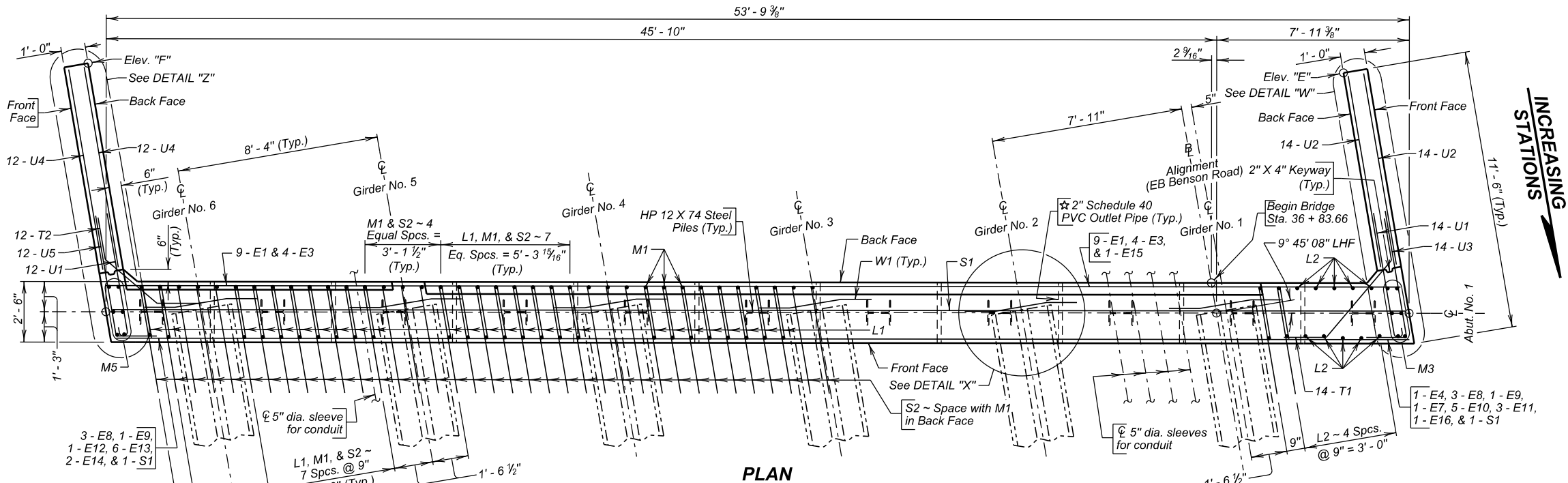
34' - 0" ROADWAY & 10' - 0" SIDEWALK OVER I-229 (EB BENSON ROAD) STR. NO. 50-219-179 9° 45' 08" LHF SKEW SEC. 35-T102N-R49W IM 2292(98)6 HL-93

MINNEHAHA COUNTY S. D. DEPT. OF TRANSPORTATION JANUARY 2022 5 OF 37

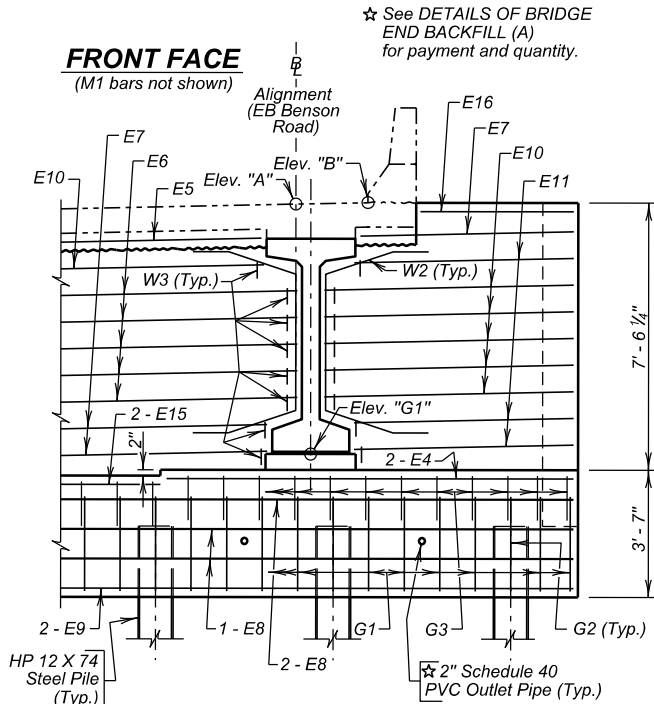
DESIGNED BY BB MINN04XK	CK. DES. BY CHM/KG 04XKGA05	DRAFTED BY BT/HK	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E9	E115

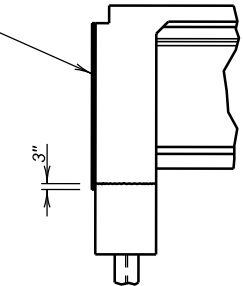


PLAN



ELEVATION

The face on the back side of the abutment between the Abut. Wings will be thoroughly coated with an approved waterproof sealant. (See notes regarding Abutment Backwall Coating.)



ABUT. BACKWALL COATING DETAILS

ABUTMENT NO. 1 DETAILS (A)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 10' - 0" SIDEWALK
OVER I-229 (EB BENSON ROAD)
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20
STR. NO. 50-219-179

9° 45' 08" LHF SKEW
SEC. 35-T102N-R49W
IM 2292(98)6
HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

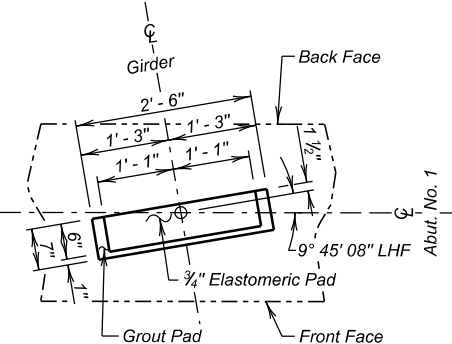
JANUARY 2022

TABLE OF ELEVATIONS						
Abut. No.	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	Elev. "F"
1	1486.62	1486.66	1485.92	1475.55	1486.66	1485.55

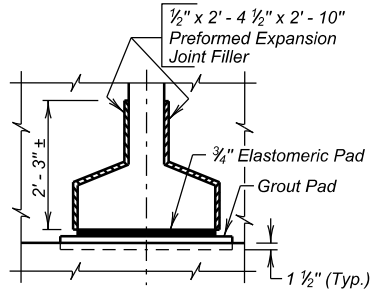
TABLE OF ELEVATIONS						
Abut. No.	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"	Elev. "G5"	Elev. "G6"
1	1479.58	1479.40	1479.22	1479.04	1478.86	1478.68

NOTE - Elev. "A", "B" and "C" are top of slab at ϕ of Abutment. Elev. "E" and "F" are at top of wingwall and top of slab elevation. Elev. "G1", "G2", "G3", "G4", "G5", and "G6" are top of grout pad elevations at ϕ Abutment. Top of Grout Pads shall be Level and Smooth.

ELEVATION
(Along ϕ Abutment)



DETAIL "X"



DETAIL "Y"
(Typical at Girder Ends; Abutments only)

DESIGNED BY	CK. DES. BY	DRAFTED BY	BRIDGE ENGINEER
BB MINN04XK	CHM 04XKGA06	BT	Steve A. Johnson

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
E1	13	8	53' - 6"	Str.	Type 17
E3	4	10	53' - 6"	Str.	
E4	2	4	11' - 6"	Str.	
E5	5	5	5' - 8"	Str.	Type S6
E6	25	5	7' - 8"	Str.	
E7	11	5	6' - 0"	Str.	
E8	5	6	53' - 6"	Str.	Type T2
E9	3	7	53' - 6"	Str.	
E10	10	5	7' - 0"	Str.	
E11	3	5	6' - 2"	Str.	Type 14
E12	1	5	2' - 5"	Str.	
E13	6	5	3' - 5"	Str.	
E14	2	5	2' - 7"	Str.	Type 14A
E15	4	4	8' - 4"	Str.	
E16	2	4	4' - 3"	Str.	
G1	44	5	10' - 8"	T2	Type 17A
G2	11	5	9' - 5"	S6	
G3	29	4	4' - 8"	17	
L1	44	4	4' - 4"	17A	Type 19
L2	10	5	9' - 9"	Str.	
M1	106	5	9' - 0"	Str.	
M2	18	5	8' - 10"	Str.	Type 19A
M3	6	5	10' - 10"	Str.	
M4	18	5	7' - 7"	Str.	
M5	6	5	9' - 10"	Str.	Type 17
S1	2	9	47' - 11"	Str.	
S2	62	5	7' - 9"	14A	
T1	14	6	7' - 10"	19	Type 1A
T2	12	6	6' - 5"	19	
U1	26	5	5' - 11"	1A	
U2	28	5	8' - 0"	Str.	Type 19
U3	14	5	7' - 1"	19A	
U4	24	5	8' - 4"	Str.	
U5	12	5	6' - 10"	19A	Type 19
W1	6	5	4' - 8"	19	
W2	12	4	9' - 10"	14	
W3	96	5	3' - 2"	17	

NOTES:
All dimensions are out to out of bars.
Δ Bars to be Epoxy Coated.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	55.1
Reinforcing Steel	Lb.	7690
Epoxy Coated Reinforcing Steel	Lb.	954
Structure Excavation, Bridge	Cu. Yd.	17.1
HP 12 x 74 Steel Test Pile, Furnish and Drive	Ft.	1 @ 75' = 75'
HP 12 x 74 Steel Bearing Pile, Furnish and Drive	Ft.	10 @ 70' = 700'
Preboring Pile	Ft.	11 @ 10' = 110'

φ Includes 0.2 cu. yds. for grout pads.

NOTE:

Concrete will be placed in the space under the beams (within the backwall width) during the pour. Care will be taken to get the concrete vibrated into this area. If upon form removal the space is not completely filled and consolidated, the contractor will grout the remaining voids.

ABUTMENT NO. 1 DETAILS (B)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

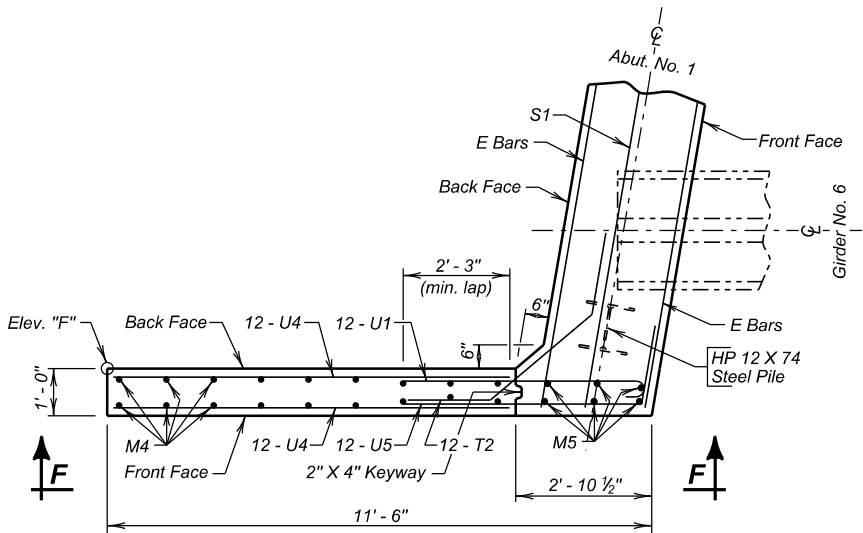
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

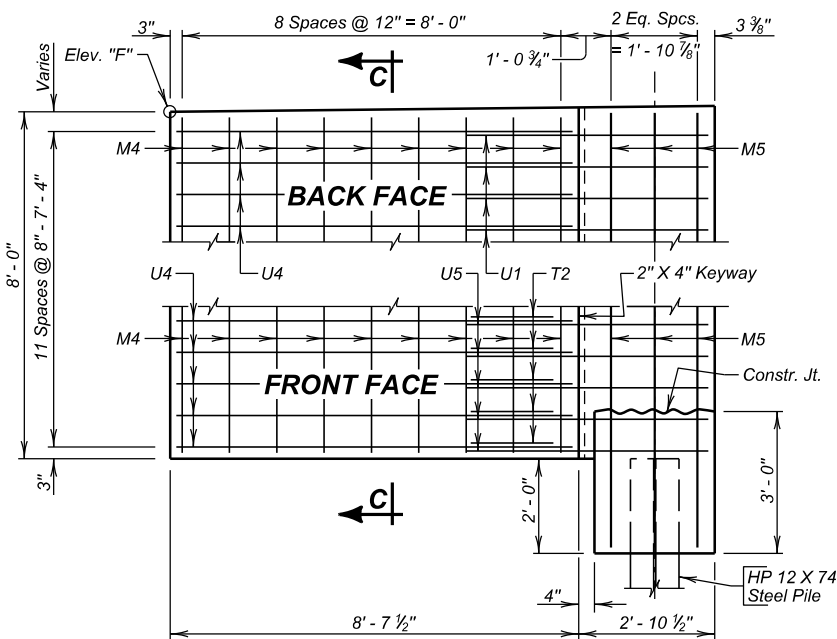
JANUARY 2022

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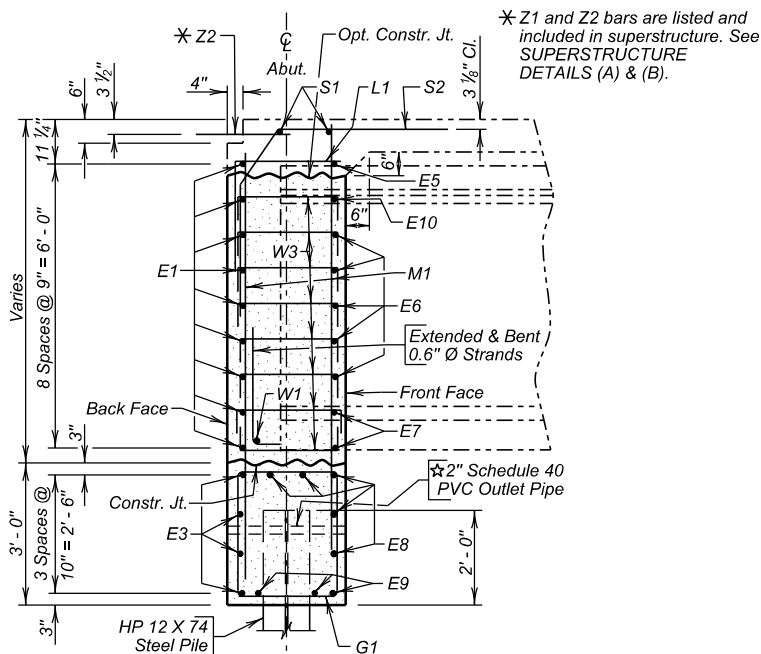
DESIGNED BY BB MINN04XK	CK. DES. BY CHM 04XKGA07	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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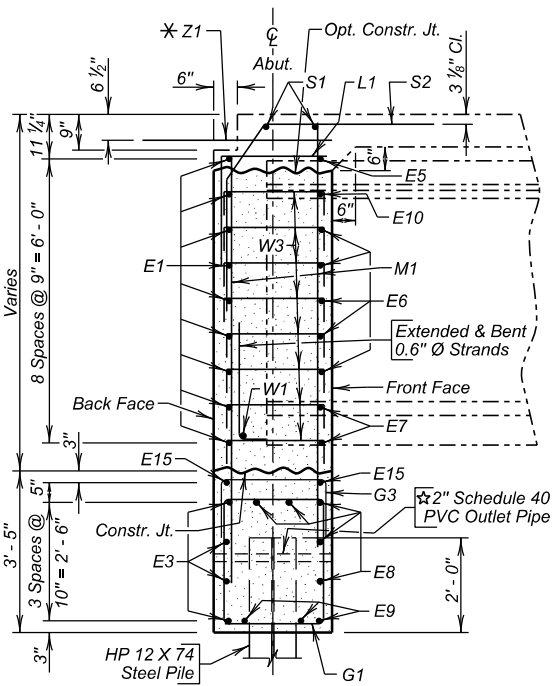
DETAIL 'Z'



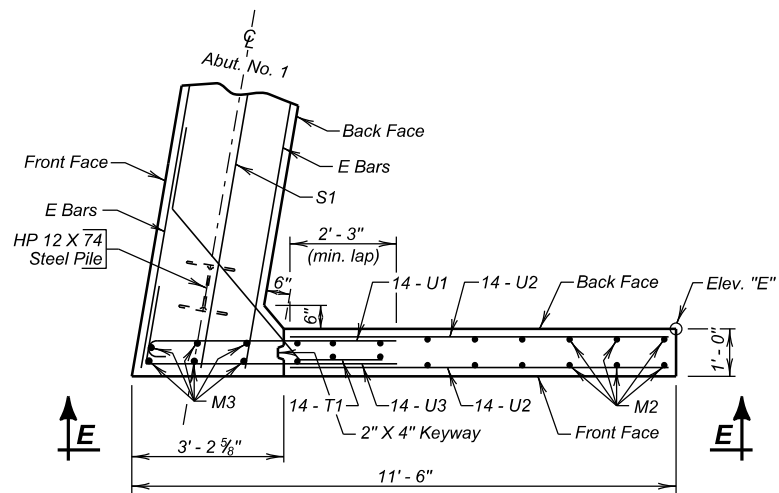
VIEW F - F



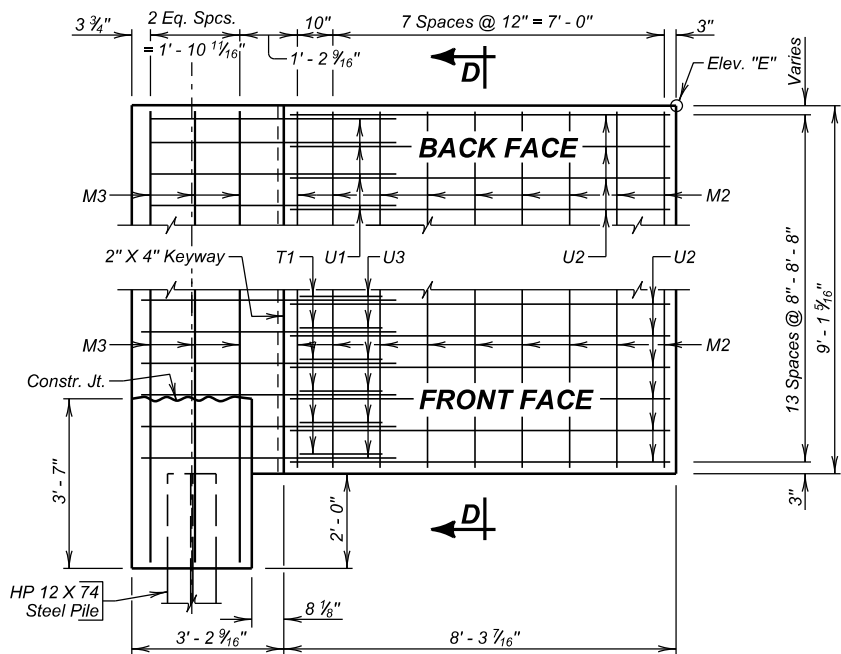
SECTION B - B



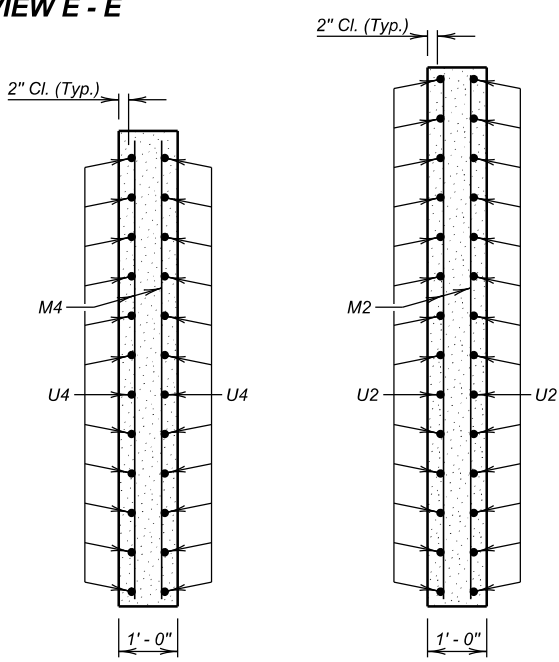
SECTION A - A



DETAIL 'W'



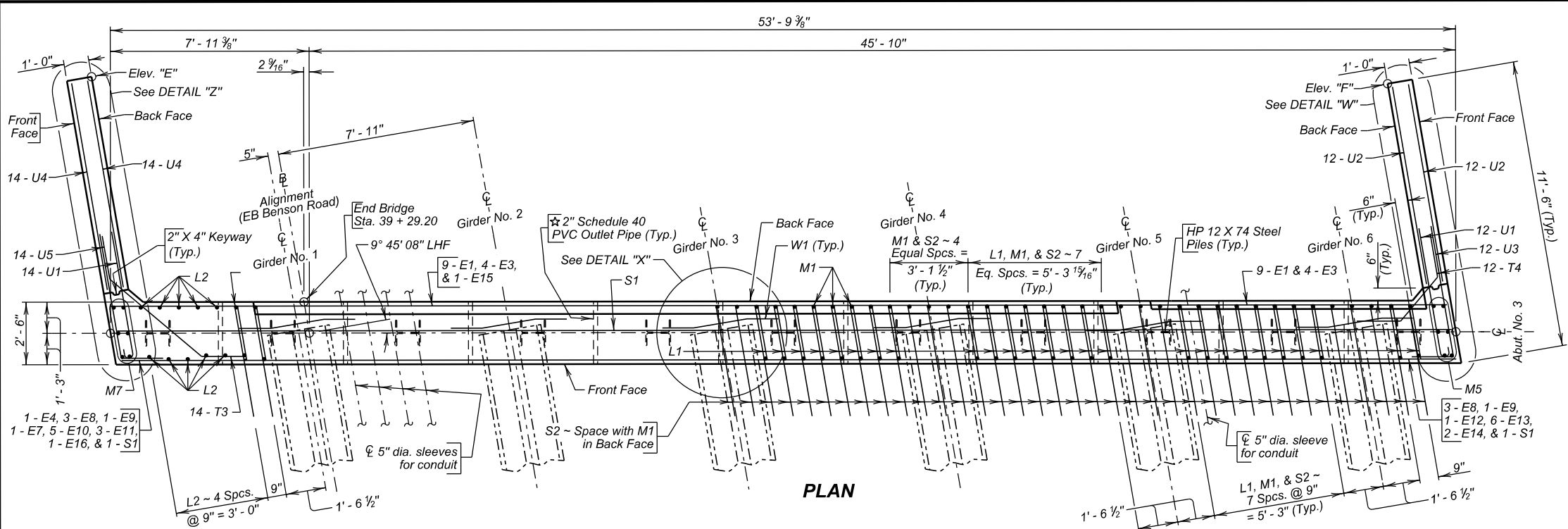
VIEW E - E



SECTION C - C

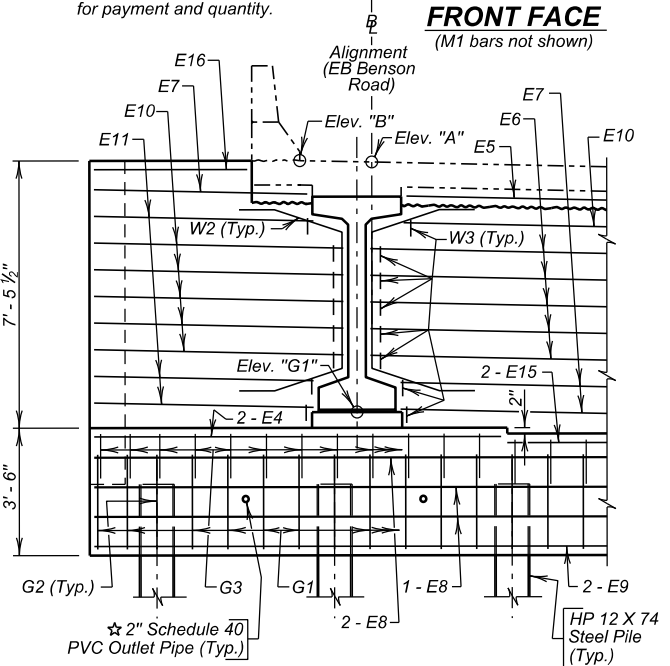
SECTION D - D

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E11	E115



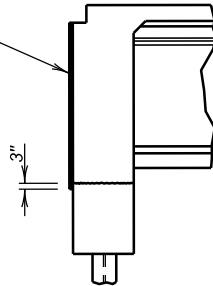
INCREASING STATIONS

☆ See DETAILS OF BRIDGE END BACKFILL (A) for payment and quantity.



ELEVATION

The face on the back side of the abutment between the Abut. Wings will be thoroughly coated with an approved waterproof sealant. (See notes regarding Abutment Backwall Coating.)



ABUT. BACKWALL COATING DETAILS

ABUTMENT NO. 3 DETAILS (A)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 10' - 0" SIDEWALK OVER I-229 (EB BENSON ROAD) EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 STR. NO. 50-219-179

9° 45' 08" LHF SKEW SEC. 35-T102N-R49W IM 2292(98)6 HL-93

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

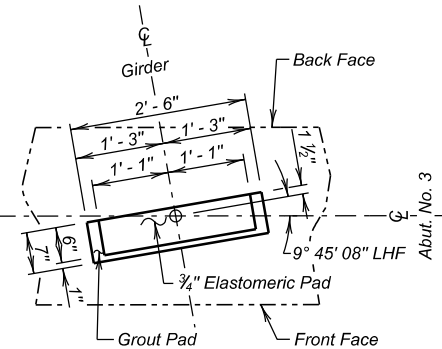
JANUARY 2022

TABLE OF ELEVATIONS						
Abut. No.	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"	Elev. "F"
3	1486.61	1486.02	1486.64	1475.68	1486.63	1485.70

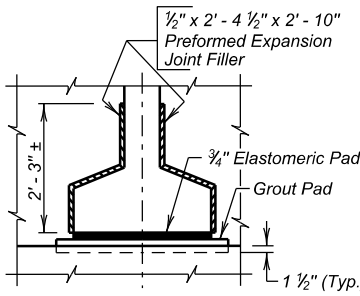
TABLE OF ELEVATIONS						
Abut. No.	Elev. "G1"	Elev. "G2"	Elev. "G3"	Elev. "G4"	Elev. "G5"	Elev. "G6"
3	1479.57	1479.42	1479.27	1479.11	1478.96	1478.81

NOTE - Elev. "A", "B" and "C" are top of slab at ϕ of Abutment. Elev. "E" and "F" are at top of wingwall and top of slab elevation. Elev. "G1", "G2", "G3", "G4", "G5", and "G6" are top of grout pad elevations at ϕ Abutment. Top of Grout Pads shall be Level and Smooth.

ELEVATION
(Along ϕ Abutment)

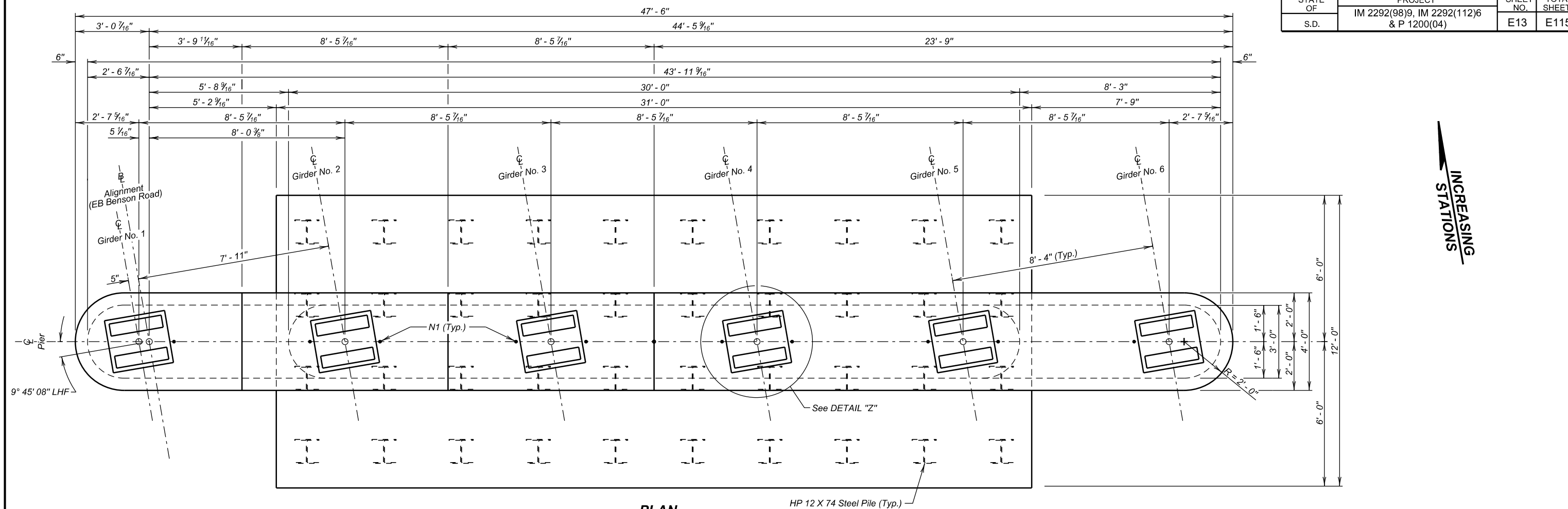


DETAIL "X"

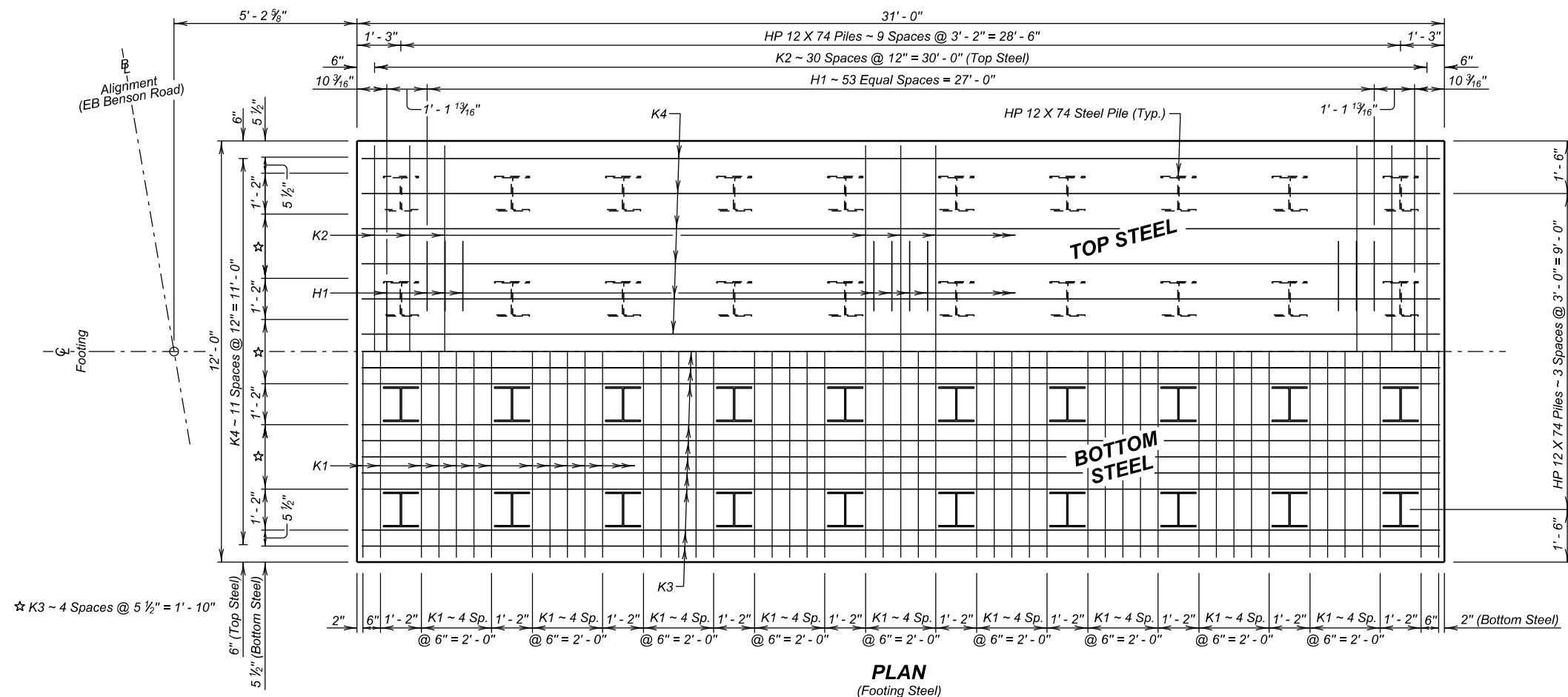


DETAIL "Y"
(Typical at Girder Ends; Abutments only)

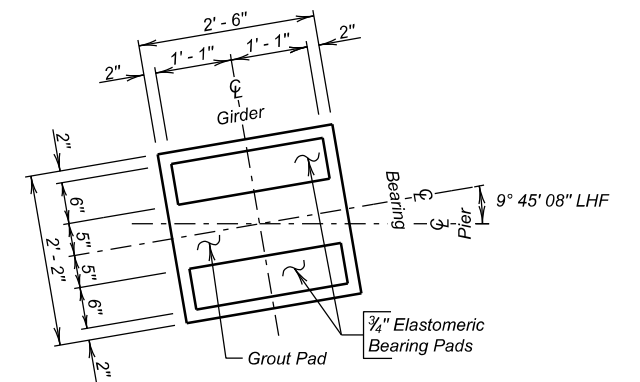
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E13	E115



PLAN



PLAN
(Footing Steel)



DETAIL "Z"

PIER NO. 2 DETAILS (A)

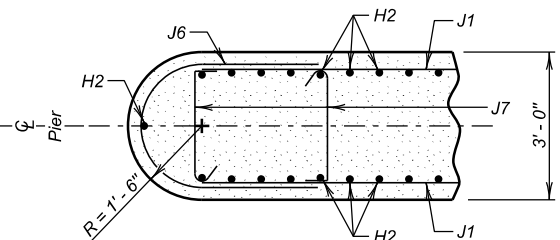
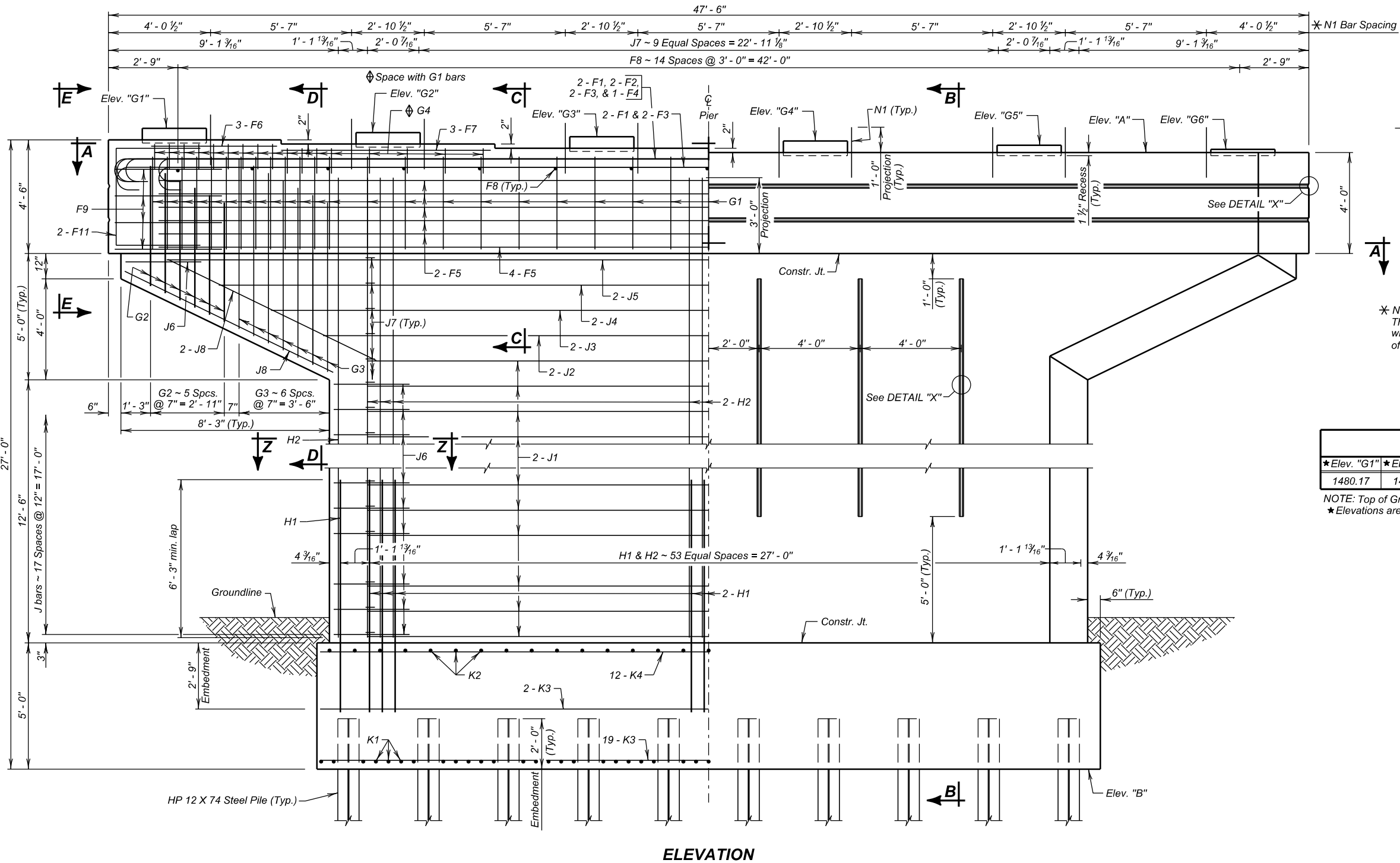
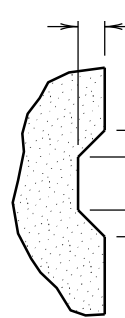
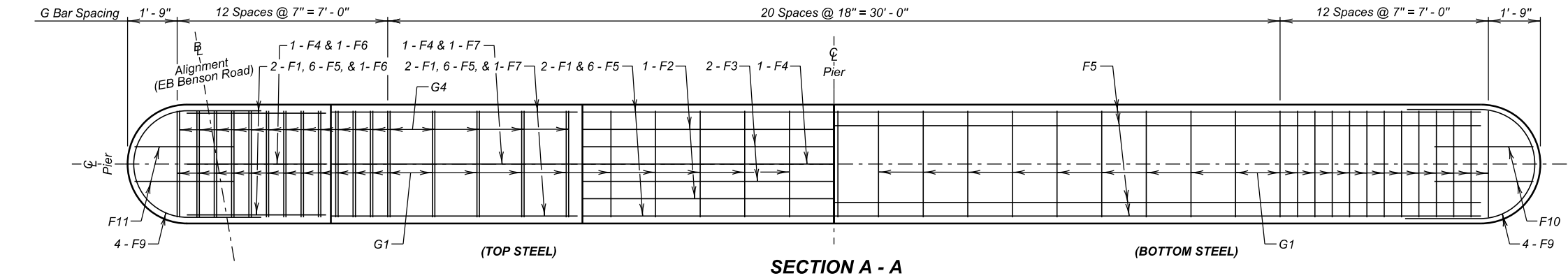
FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY &	9° 45' 08" LHF SKEW
10' - 0" SIDEWALK	SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD)	IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20	HL-93
STR. NO. 50-219-179	

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

DESIGNED BY BB MINN04XK	CK. DES. BY CHM 04XKGA11	DRAFTED BY BT	<i>Steve A Johnson</i> BRIDGE ENGINEER
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NOTE:
The portion of the N1 bar above the pier cap is to be coated with asphalt paint or wrapped with tar paper to a minimum thickness of 1/16". N1 bar may be shifted slightly off C Pier to avoid top mat of resteel.

TABLE OF ELEVATIONS							
★ Elev. "G1"	★ Elev. "G2"	★ Elev. "G3"	★ Elev. "G4"	★ Elev. "G5"	★ Elev. "G6"	Elev. "A"	Elev. "B"
1480.17	1480.00	1479.84	1479.67	1479.50	1479.33	1479.21	1452.71

NOTE: Top of Grout Pad will be level and smooth.
★ Elevations are Top of Grout Pad at centerline of pier.

PIER NO. 2 DETAILS (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

STATE OF S.D.	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E15	E115

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details	
F1	4	10	47'-0"	1		3'-0" J6
F2	2	10	48'-11"	1		6'-8" G3
F3	4	10	49'-7"	1		4'-9" G2
F4	1	10	49'-10"	1		4'-0" F9
F5	14	5	44'-2"	Str.		3'-6" F9
F6	3	4	4'-8"	Str.		2'-7" J6
F7	3	4	8'-3"	Str.		3'-6" F9
F8	15	4	3'-8"	Str.		2'-7" J6
F9	8	4	9'-9"	S11		3'-6" F9
F10	2	5	10'-3"	17		2'-7" J6
F11	2	5	10'-9"	17		3'-6" F9
G1	45	5	15'-4"	T2		2'-7" J6
G2	12	5	10'-11"	S11		3'-6" F9
G3	14	5	14'-9"	S11		2'-7" J6
G4	16	5	5'-7"	17		3'-6" F9
H1	110	11	11'-4"	17A		2'-7" J6
H2	110	11	21'-11"	1A		3'-6" F9
J1	28	5	29'-6"	Str.		2'-7" J6
J2	2	5	30'-6"	Str.		3'-6" F9
J3	2	5	34'-8"	Str.		2'-7" J6
J4	2	5	38'-9"	Str.		3'-6" F9
J5	2	5	42'-10"	Str.		2'-7" J6
J6	28	5	7'-6"	S11		3'-6" F9
J7	216	4	3'-4"	T9		2'-7" J6
J8	6	5	9'-1"	Str.		3'-6" F9
K1	49	9	11'-9"	Str.		2'-7" J6
K2	31	4	11'-9"	Str.		3'-6" F9
K3	21	9	30'-9"	Str.		2'-7" J6
K4	12	4	30'-9"	Str.		3'-6" F9
N1	10	8	2'-0"	Str.		2'-7" J6

NOTE:
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	160.2
Reinforcing Steel	Lb.	30319
Structure Excavation, Bridge	Cu. Yd.	113.3
HP 12 x 74 Steel Test Pile, Furnish and Drive	Ft.	1 @ 65' = 65'
HP 12 x 74 Steel Bearing Pile, Furnish and Drive	Ft.	39 @ 50' = 1950'

Includes 0.6 Cu. Yds. for Grout Pads

PIER NO. 2 DETAILS (C)

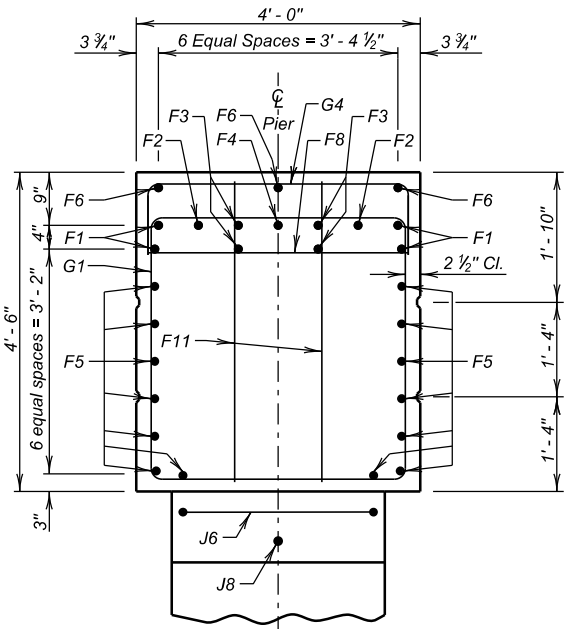
FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

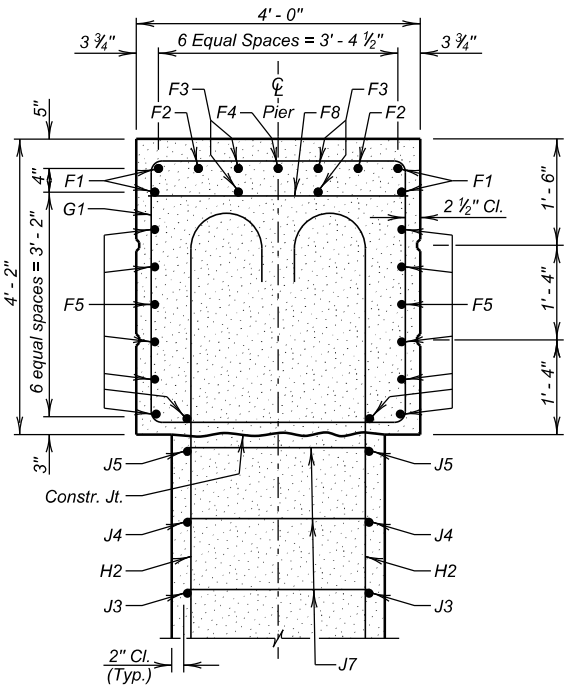
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

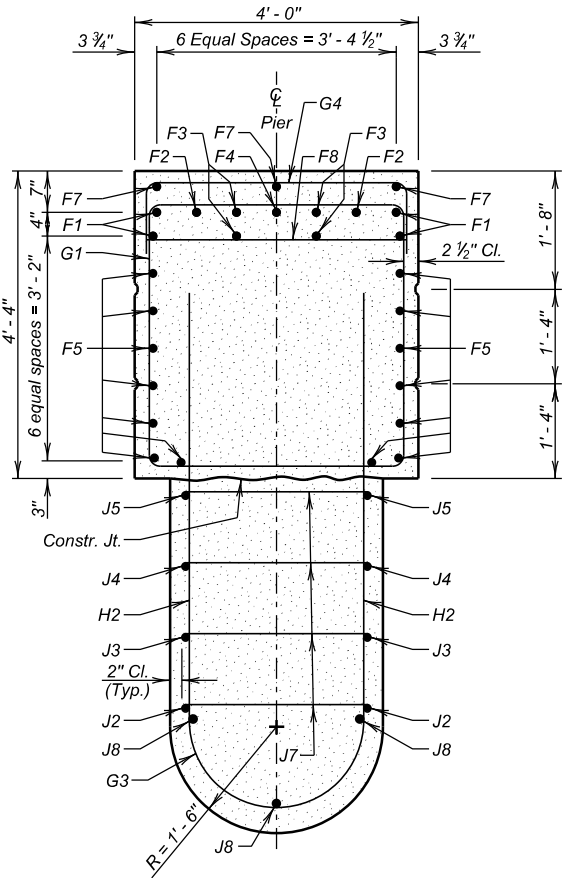
DESIGNED BY BB MINN04XK	CK. DES. BY CHM 04XKGA13	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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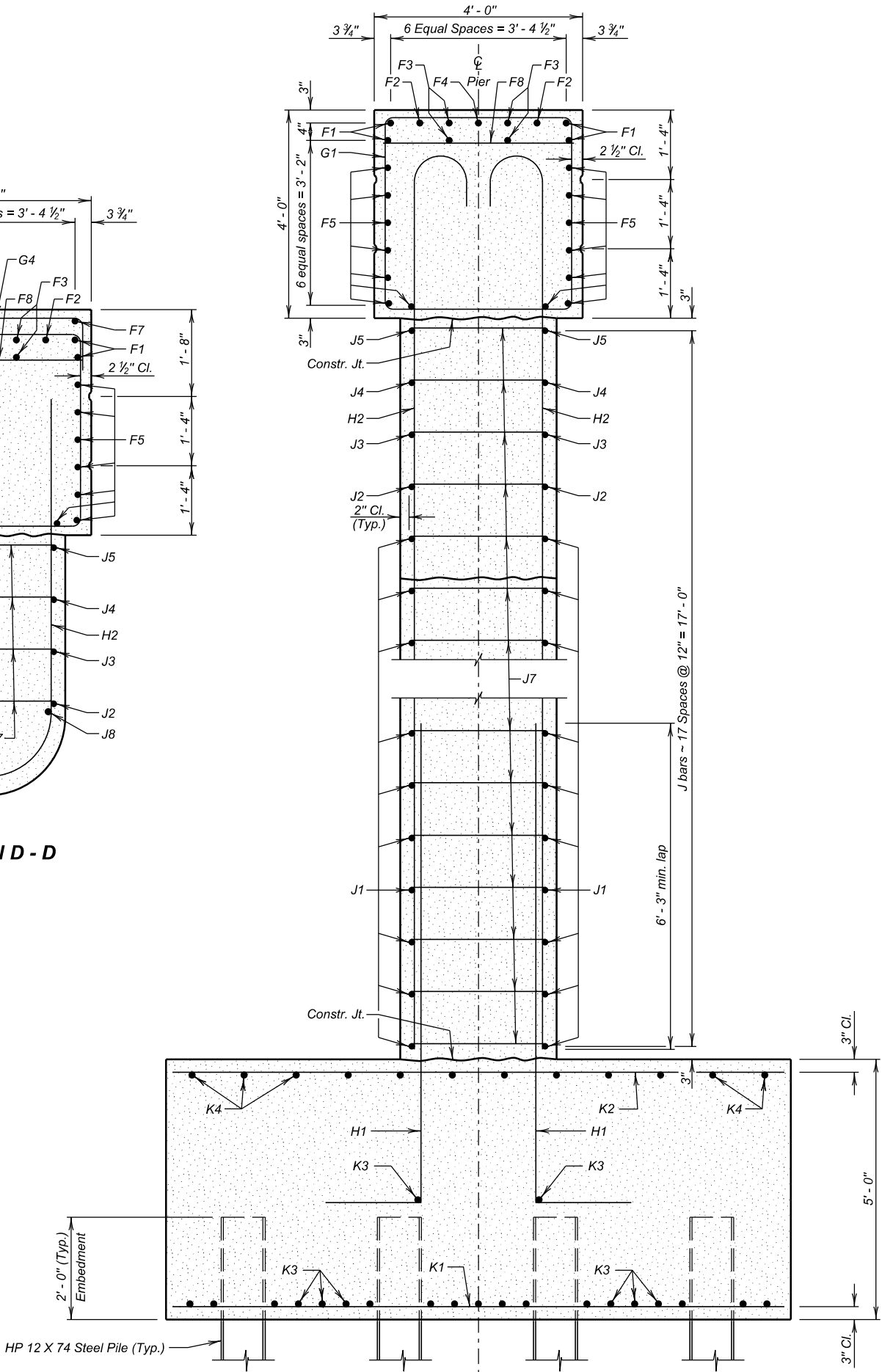
VIEW E - E



SECTION C - C



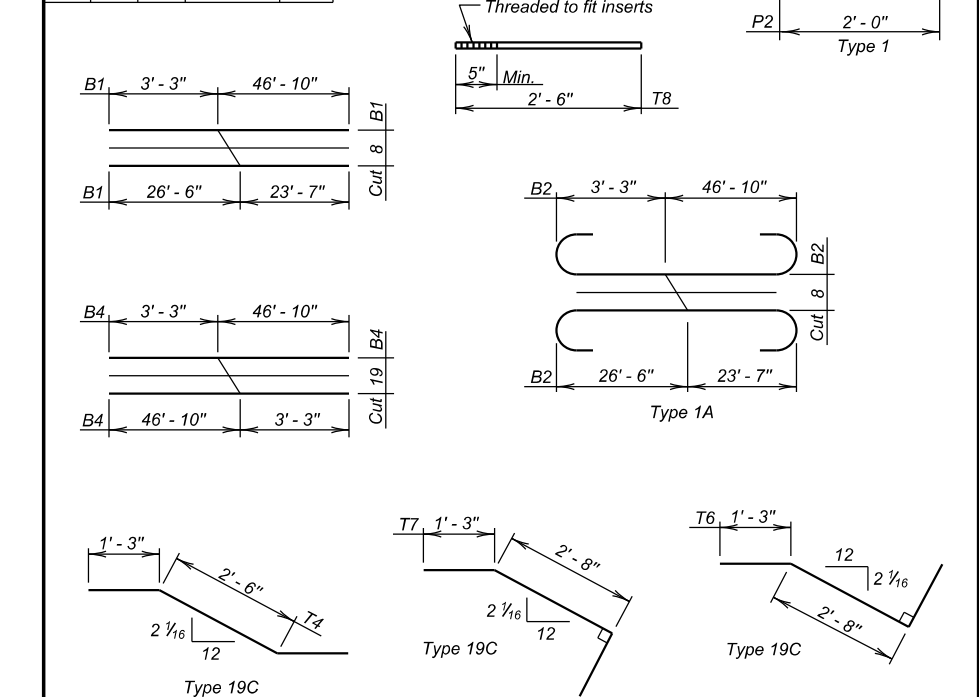
SECTION D - D



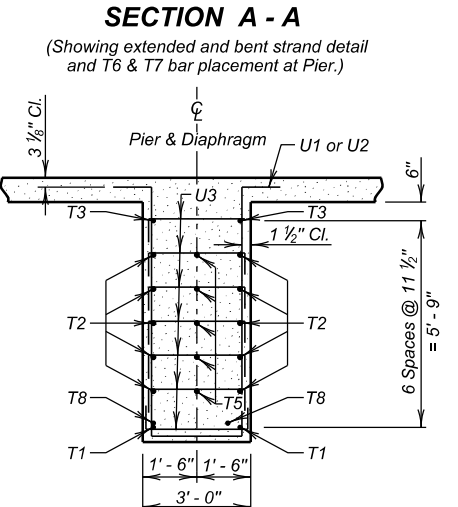
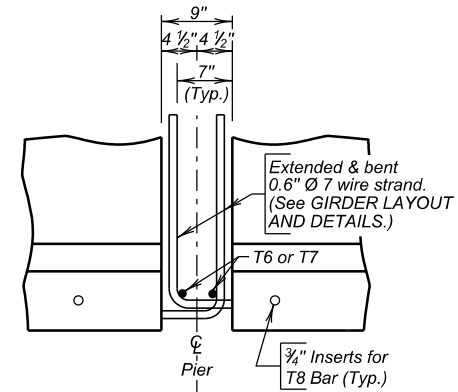
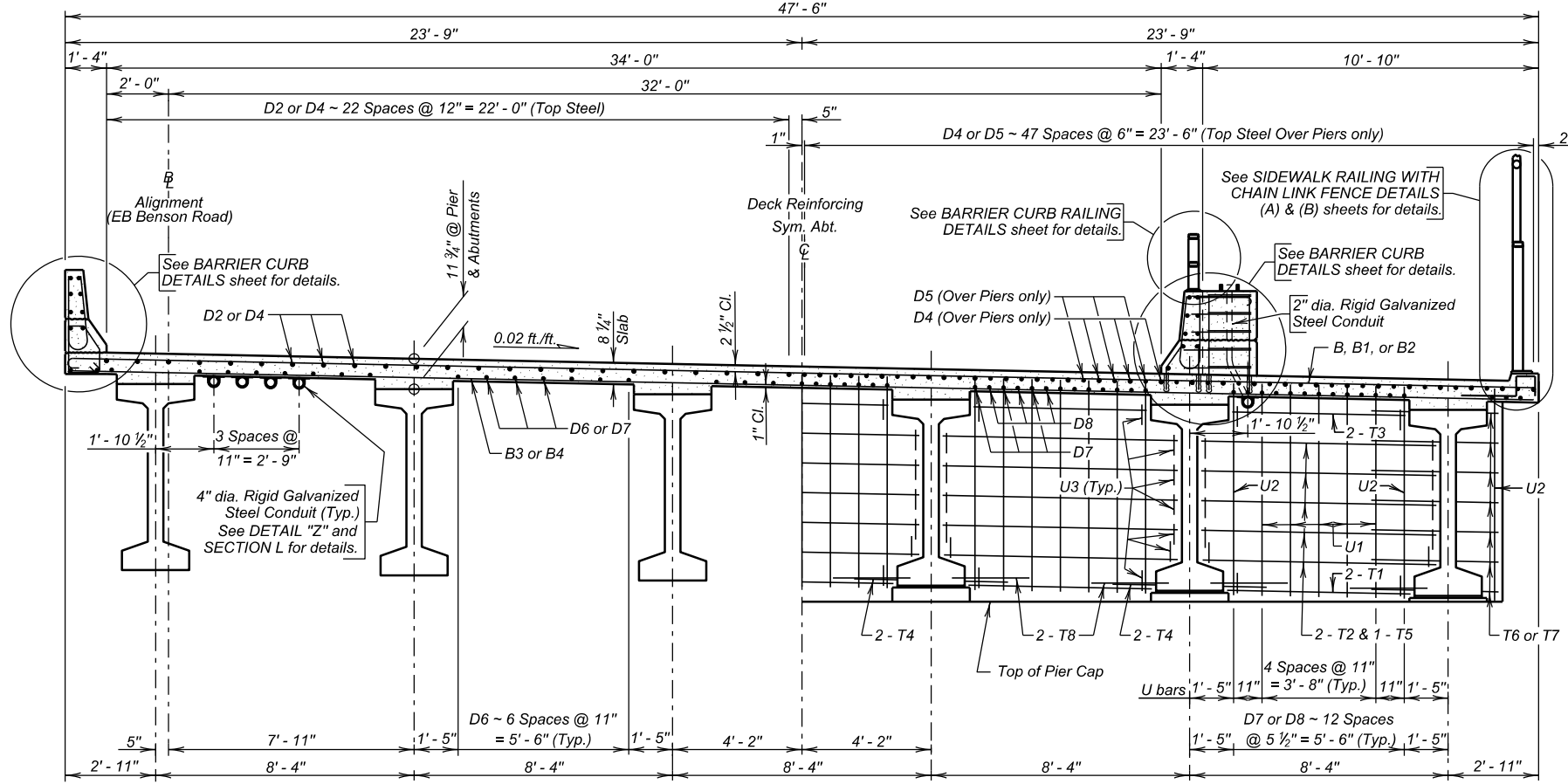
SECTION B - B

REINFORCING SCHEDULE

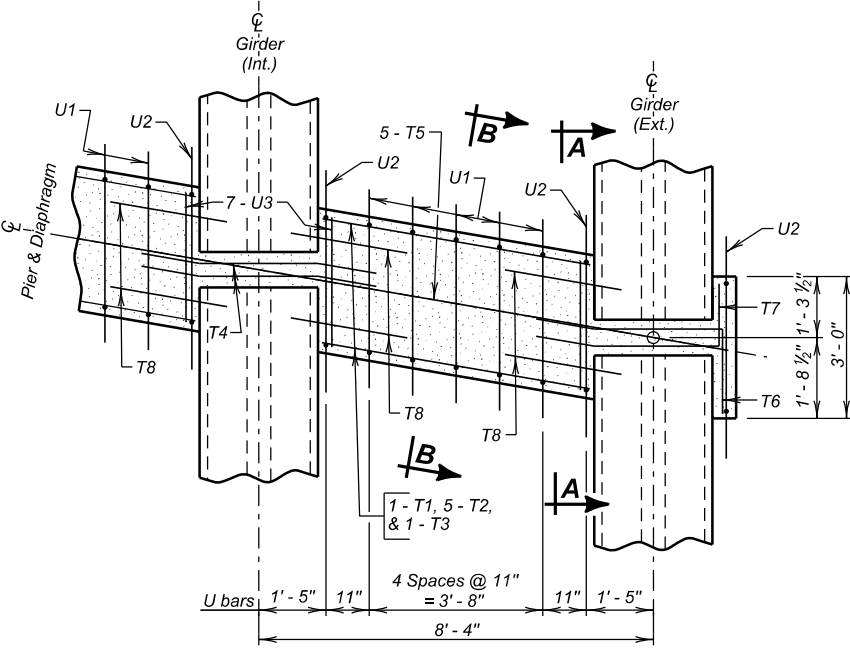
Mk.	No.	Size	Length	Type
B	469	5	47'-9"	1A
B1	8	5	50'-1"	Str.
B2	8	5	51'-3"	1A
B3	563	4	47'-2"	Str.
B4	19	4	50'-1"	Str.
C	123	5	1'-6"	Str.
C0	246	5	1'-7"	19B
C1	246	5	5'-7"	T1A
C2	492	5	5'-1"	S11
D	10	5	51'-4"	Str.
D1	90	4	51'-2"	Str.
D2	188	5	40'-8"	Str.
D4	141	7	32'-9"	Str.
D5	46	7	35'-0"	Str.
D6	152	5	42'-4"	Str.
D7	114	7	31'-4"	Str.
D8	31	7	23'-0"	Str.
P1	12	5	3'-1"	Str.
P2	24	4	3'-0"	1
P3	9	4	6'-9"	7
P4	6	4	7'-6"	7
P5	15	4	6'-5"	T2
T1	10	6	6'-0"	Str.
T2	50	5	7'-8"	Str.
T3	10	5	5'-8"	Str.
T4	8	5	5'-0"	Str.
T5	5	6	45'-6"	Str.
T6	14	5	5'-8"	Str.
T7	14	5	5'-3"	Str.
T8	20	6	2'-6"	Str.
U1	25	4	17'-10"	S4
U2	12	6	18'-4"	S4
U3	70	4	4'-0"	17
W1	36	4	7'-0"	17B
W2	36	4	5'-0"	17
W3	171	4	3'-10"	16
Z1	46	7	4'-0"	Str.
Z2	22	4	2'-0"	Str.



NOTES -
See cutting diagram.
All reinforcing steel will be stainless steel except as noted.
See Approach Slab sheet for location of Z1 bars.
All dimensions are out to out of bars.
* Bars to be epoxy coated.
Tip bars as required to maintain top and bottom clear cover.
* See SIDEWALK RAILING WITH CHAINLINK FENCE DETAILS for placement.
* See SIDEWALK APPROACH SLAB DETAILS for placement.
Drill and epoxy in place. Not included in reinforcing steel quantity.



NOTE -
Concrete will be placed in the space under the beams at Pier 2 (within the diaphragm width) during the diaphragm pour. If upon form removal the space is not completely filled and consolidated, the contractor shall grout in the remaining voids.

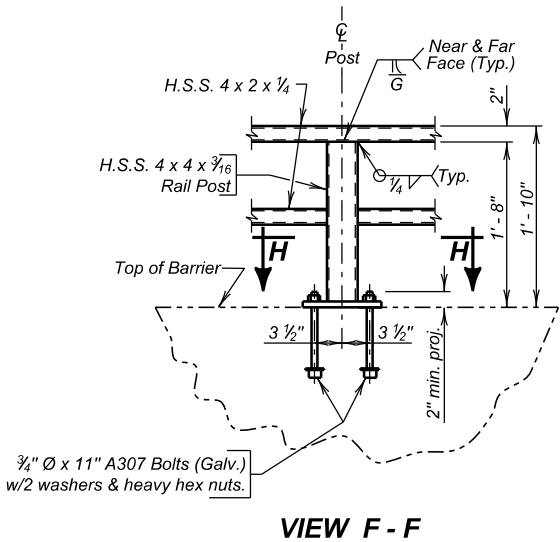
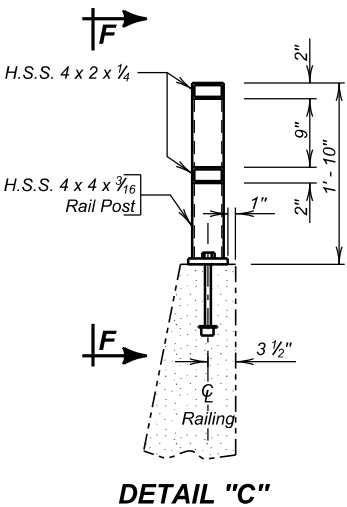
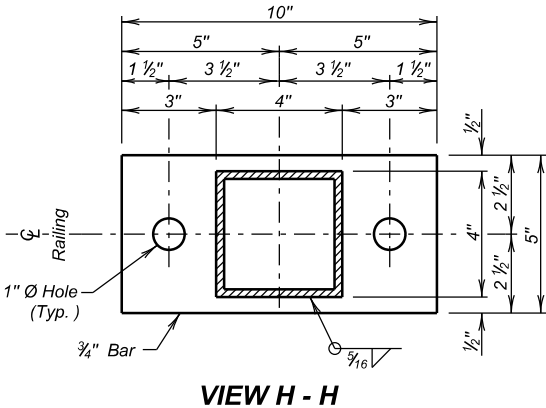
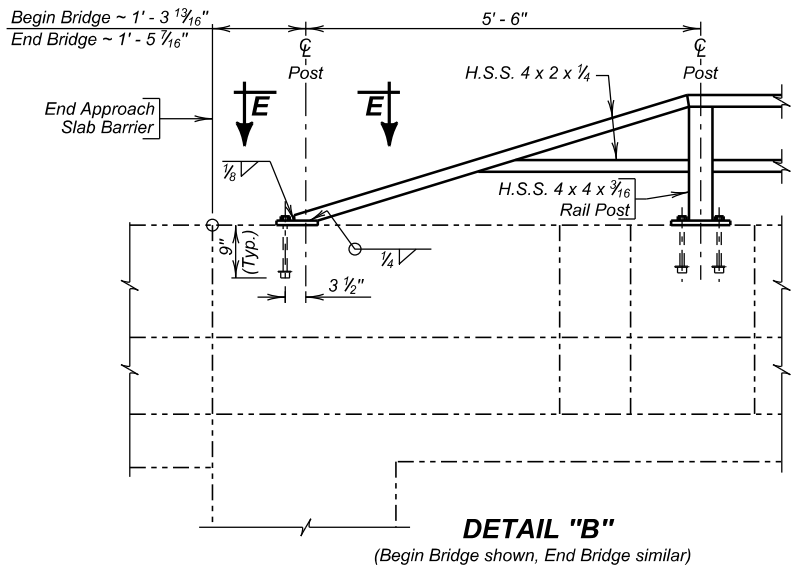
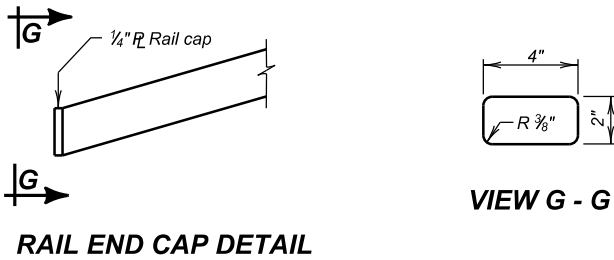
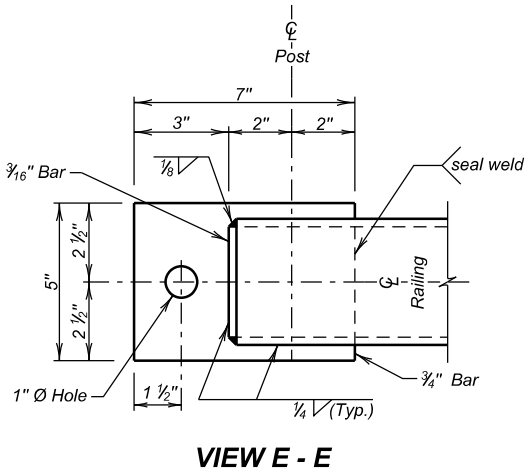
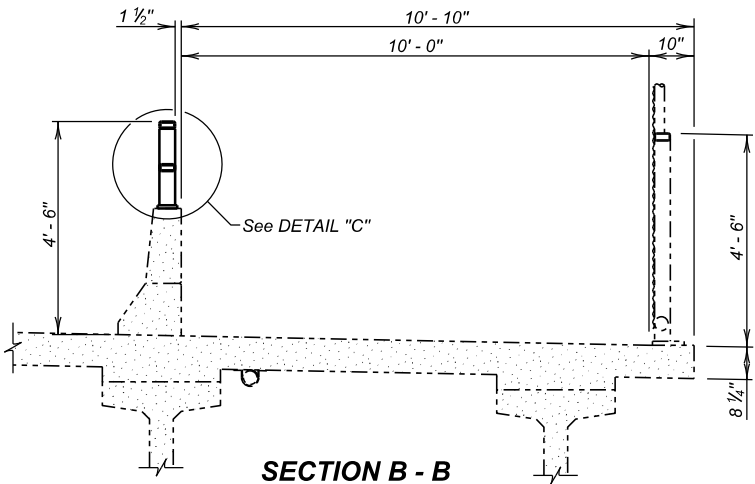
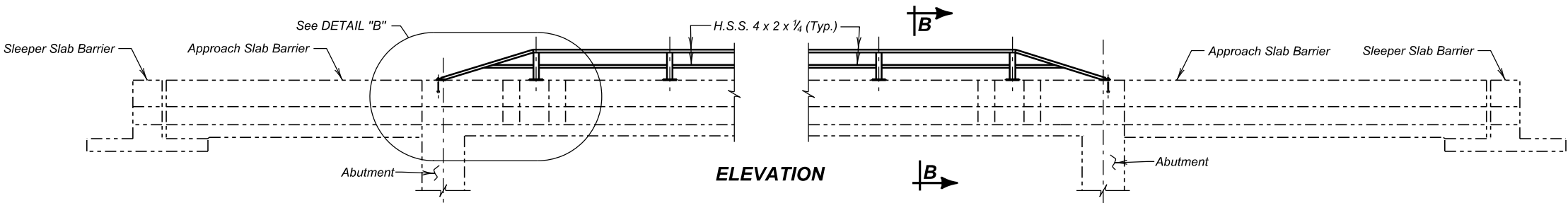
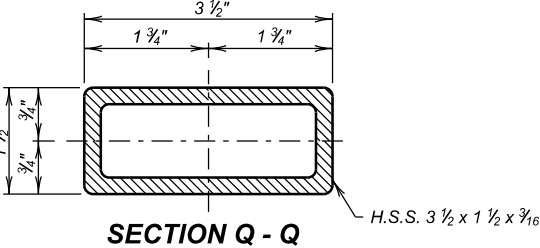
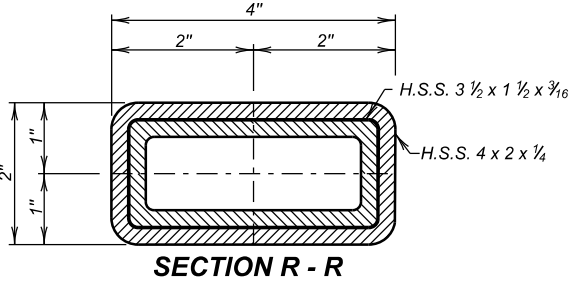
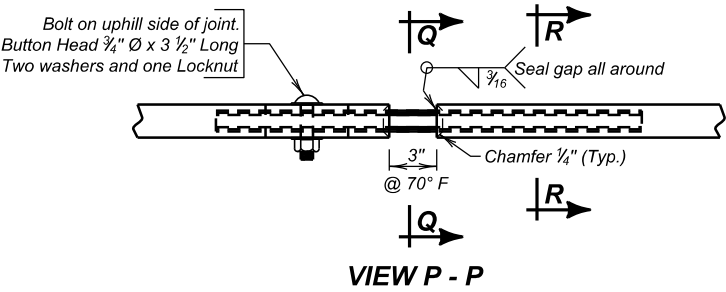
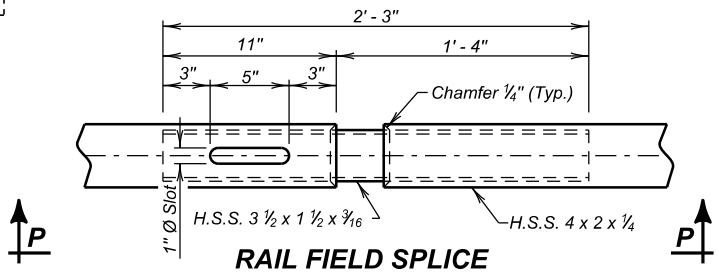
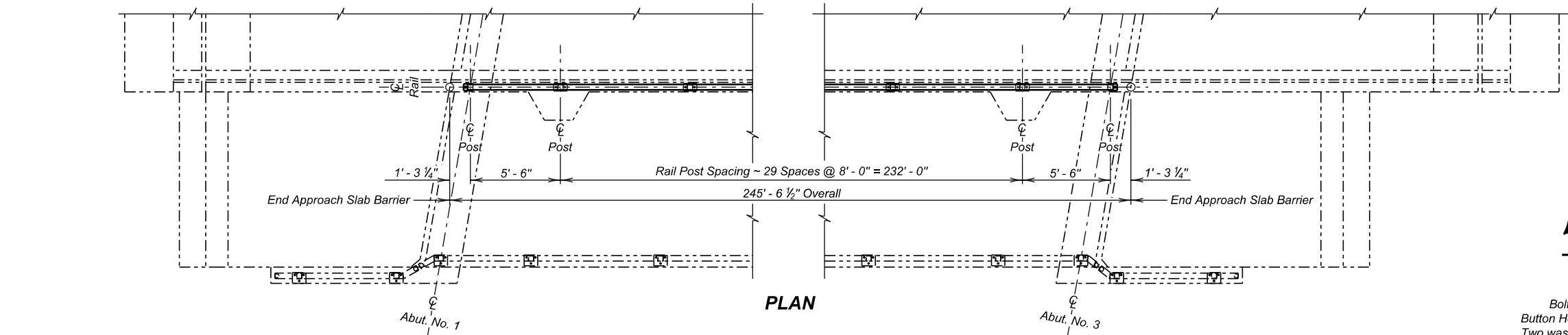


ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu.Yd.	414.9
Stainless Reinforcing Steel	Lb.	90137
Epoxy Coated Reinforcing Steel	Lb.	202
72" Minnesota Shape Prestressed Concrete Beam	Ft.	1455
Concrete Penetrating Sealer	Sq.Yd.	1295.9
Install Dowel in Concrete	Each	381
2" Rigid Galvanized Steel Conduit	Ft.	12

* Pier Diaphragm only.
Includes quantities for Pier Diaphragm, Barrier Curbs, Slab, Haunch, Sidewalk, Sidewalk Curb, and Luminaire Bases.
* Includes quantities for Pier Diaphragm, Barrier Curbs, Slab, Haunch, Sidewalk, Sidewalk Curb, and Luminaire Bases. (Average depth of 2" used for Haunch Quantity.) Concrete Quantity for Barrier Curbs is 0.0842 Cu. Yd. / Ft.

SUPERSTRUCTURE DETAILS (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E19	E115



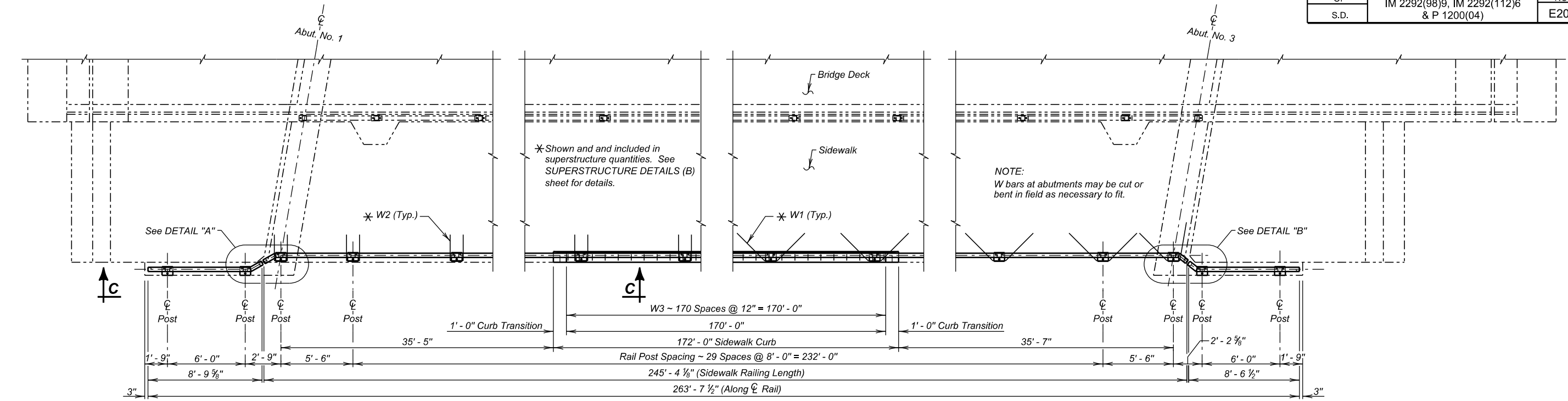
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Steel Pedestrian Railing on Concrete Barrier	Ft.	243.3

BARRIER CURB RAILING DETAILS
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

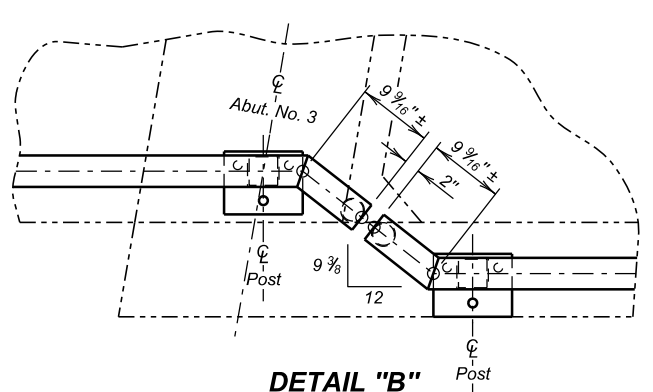
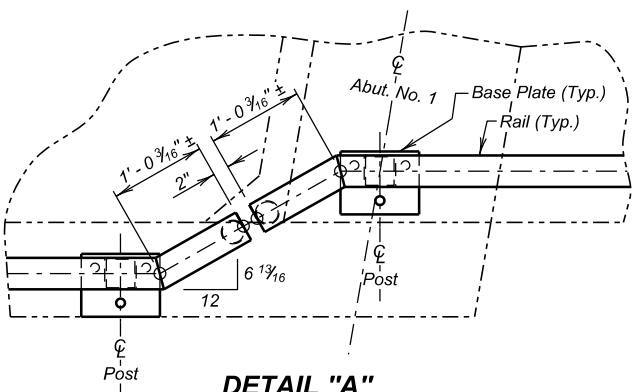
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA17	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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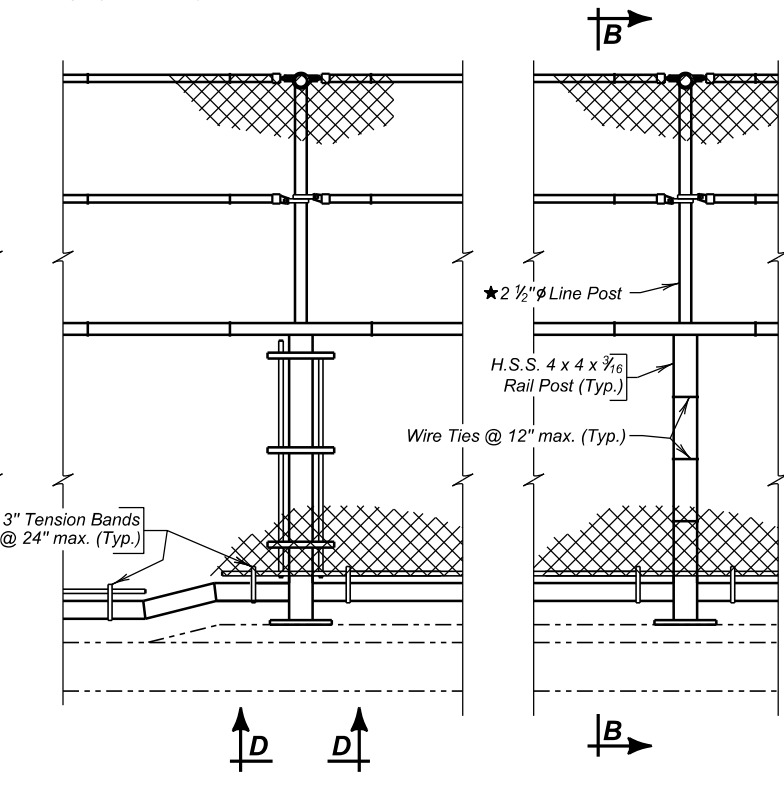
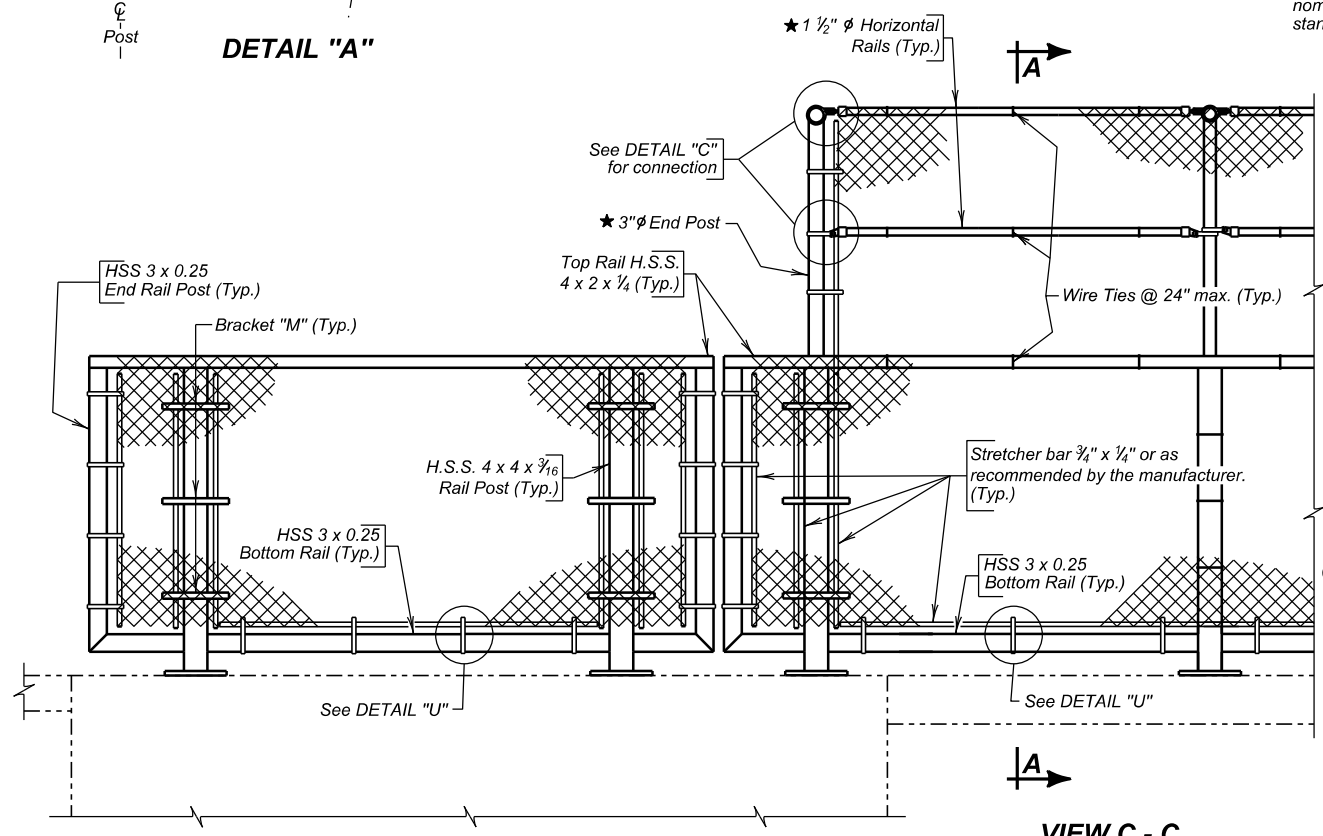
STATE OF S.D.	PROJECT IM 2292(98)9, IM 2292(112)6 & P 1200(04)	SHEET NO. E20	TOTAL SHEETS E115



PLAN



★ NOTE:
Diameter of pipe shown is the nominal diameter. All pipe will be standard weight (schedule 40) pipe.



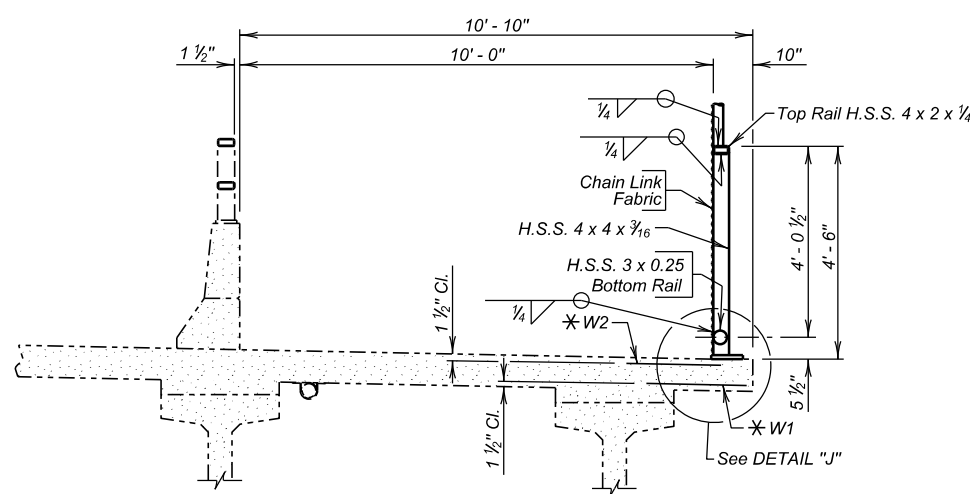
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Steel Pedestrian Railing on Sidewalk	Ft.	263.6
Chain Link Fence for Bridge Sidewalk	Ft.	264

SIDEWALK RAILING WITH CHAINLINK FENCE DETAILS (A)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

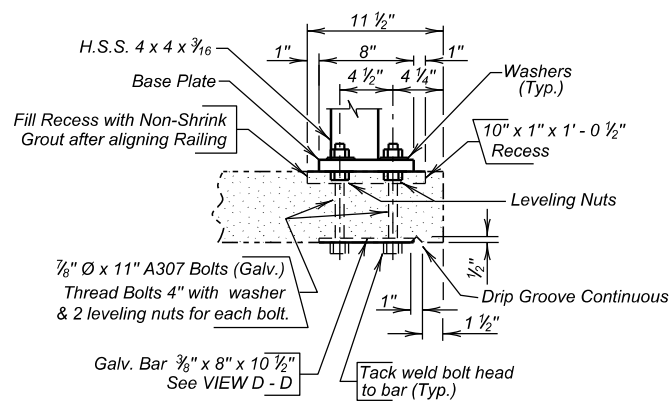
DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA18	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E21	E115

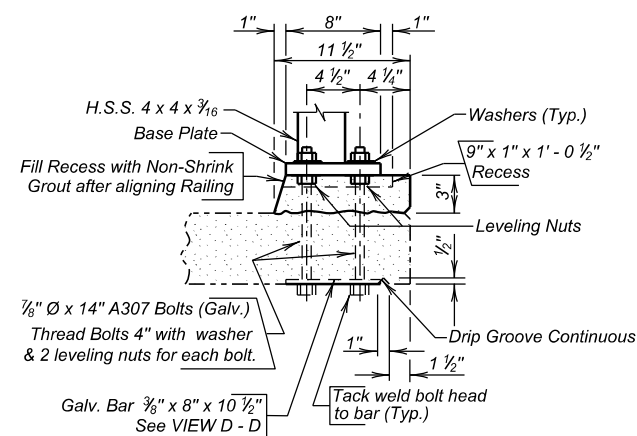


SECTION A - A

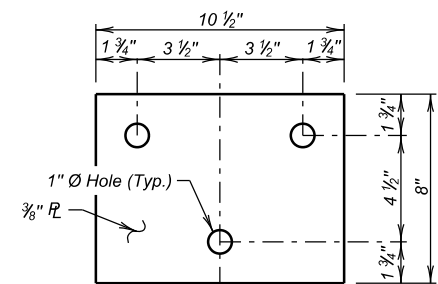
★ NOTE:
Diameter of pipe shown is the nominal diameter. All pipe shall be standard weight (schedule 40) pipe.



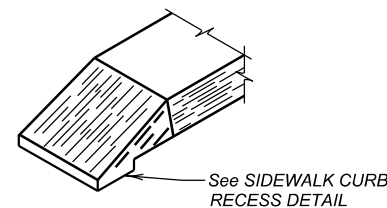
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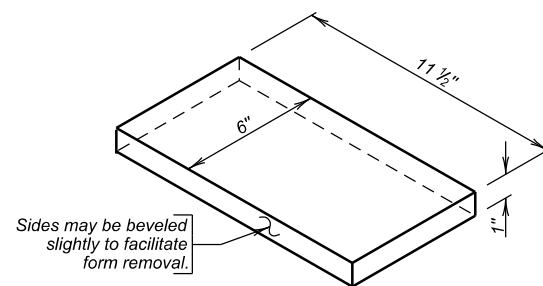
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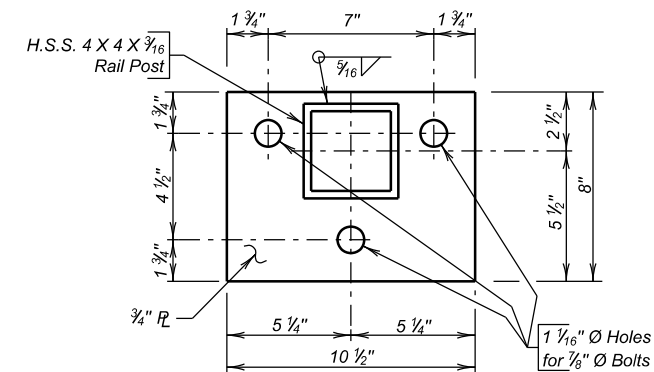
VIEW D - D



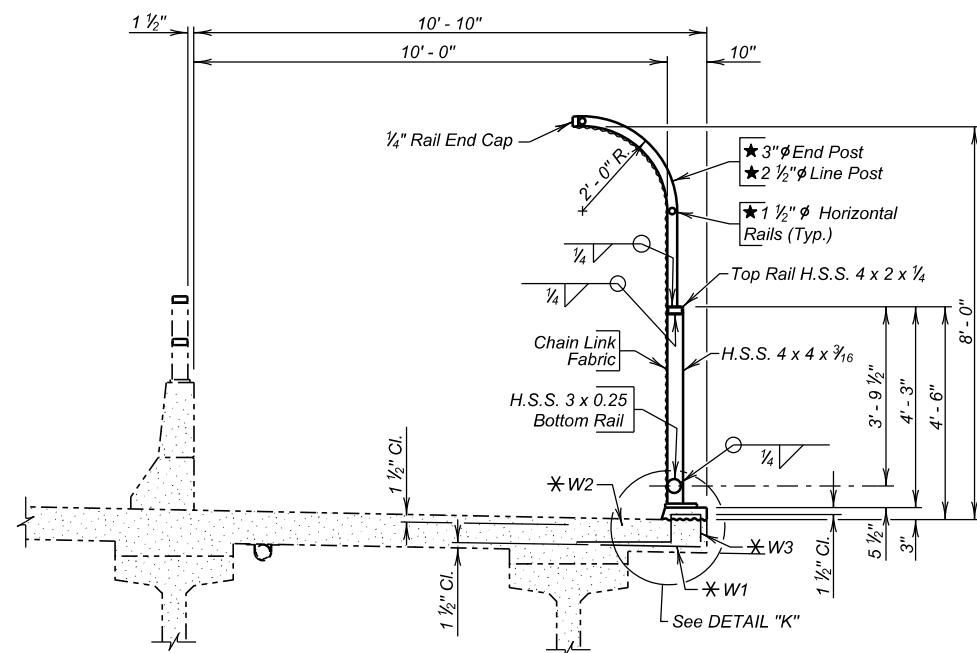
CURB TRANSITION
ISOMETRIC
VIEW



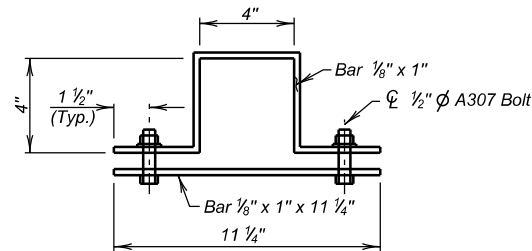
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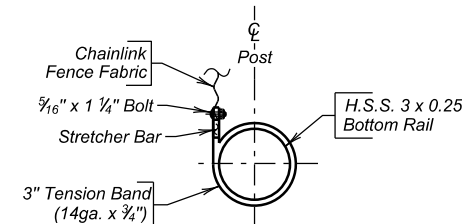
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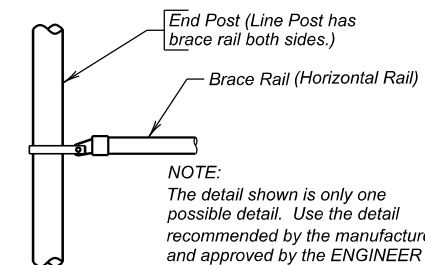
SECTION B - B



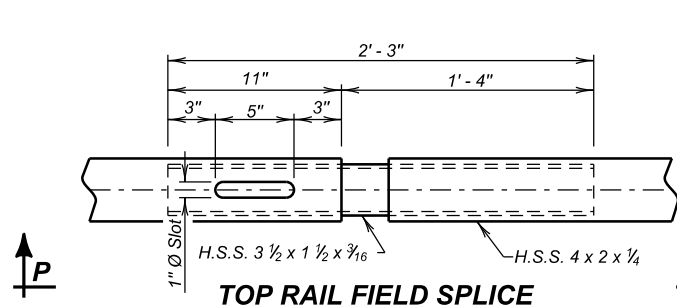
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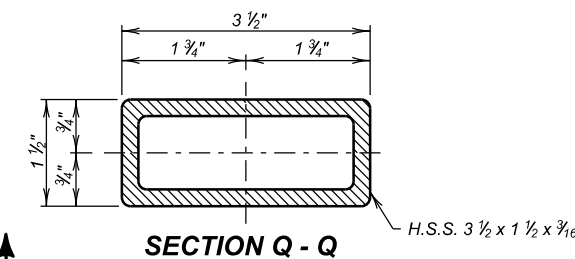
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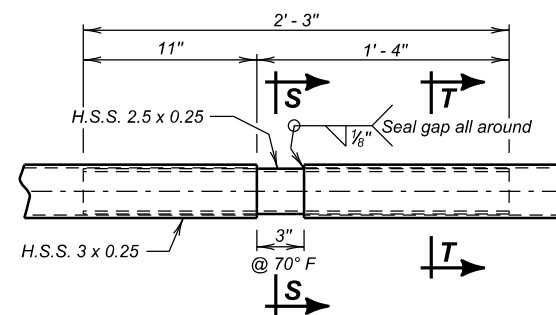
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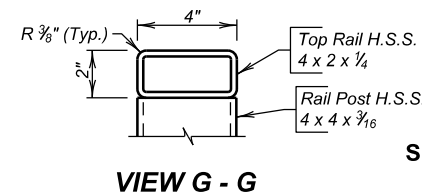
TOP RAIL FIELD SPLICE



SECTION Q - Q



BOTTOM RAIL FIELD SPLICE



VIEW G - G

SIDEWALK RAILING WITH CHAINLINK FENCE DETAILS (B)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

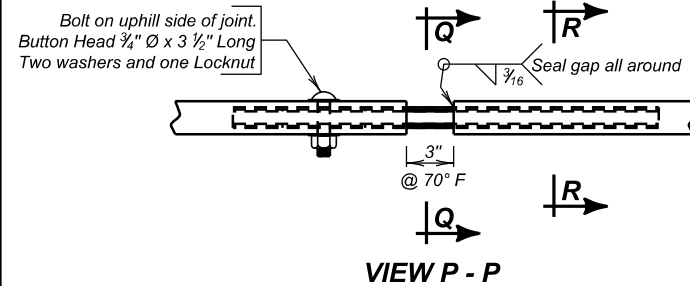
34' - 0" ROADWAY & 10' - 0" SIDEWALK
OVER I-229 (EB BENSON ROAD)
STR. NO. 50-219-179

9° 45' 08" LHF SKEW
SEC. 35-T102N-R49W
IM 2292(98)6
HL-93

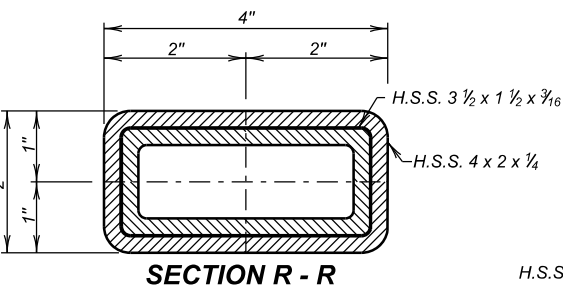
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

19 OF 37

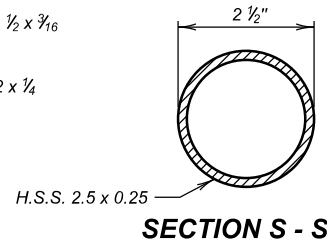
DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA19	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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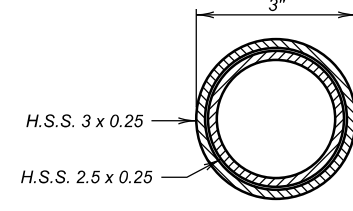
VIEW P - P



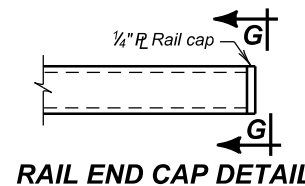
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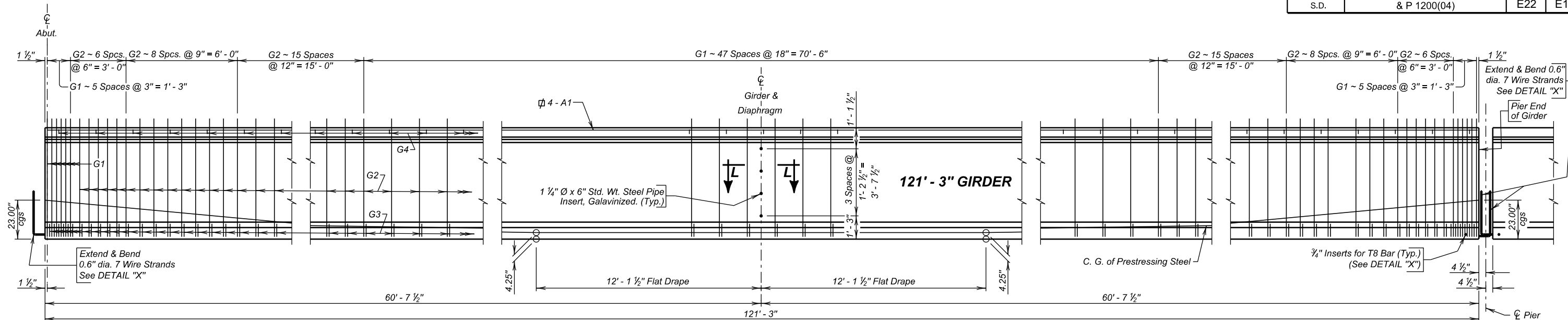
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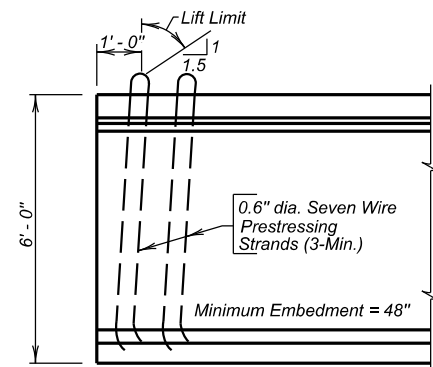
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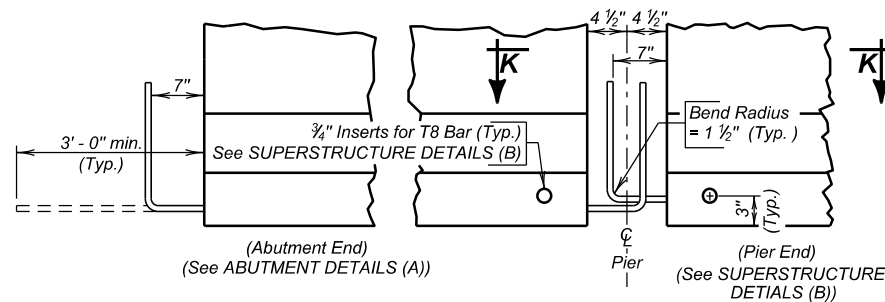
RAIL END CAP DETAIL



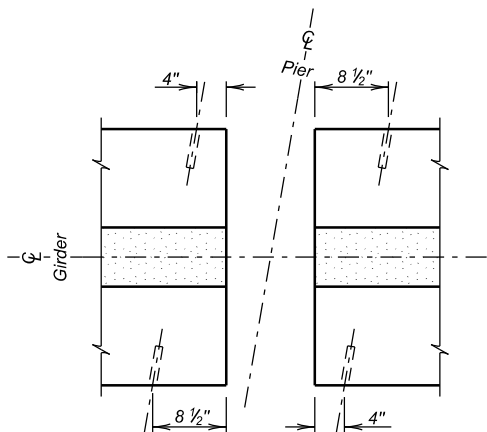
ELEVATION



TYPICAL LIFTING DEVICE



DETAIL "X"

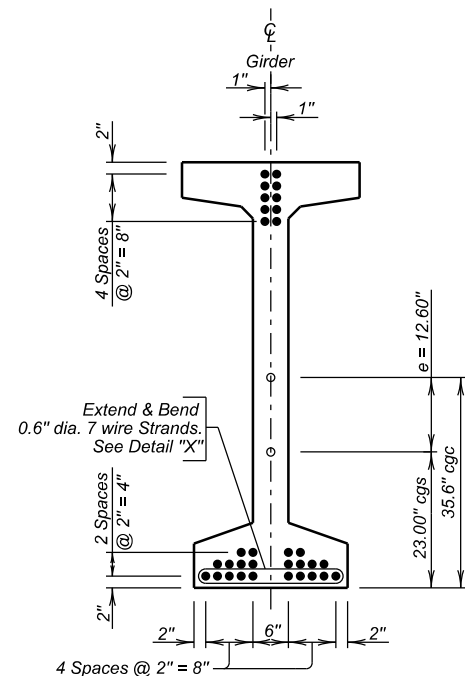


SECTION K - K

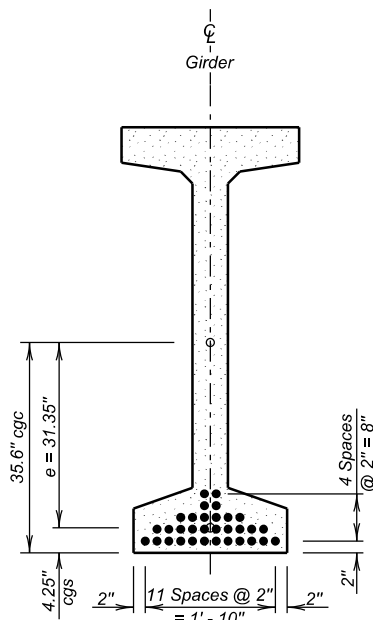
Layout for inserts at beam ends
(Pier only)

REINFORCING SCHEDULE					(For One Girder)	
MK	No.	Size	Length	Type	Bending details	
A1	12	7	42' - 9"	Str.		
G1	12	5	13' - 0"	S11		
G2	104	4	13' - 0"	S11		
G3	116	4	4' - 10"	S3A		
G4	61	4	2' - 8"	17		

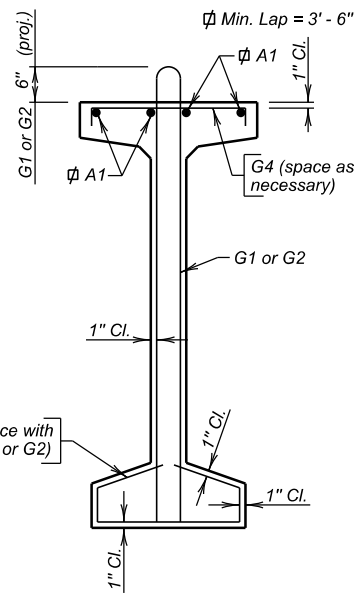
NOTES:
Δ Bars to be epoxy coated.
All dimensions are out to out of bars.



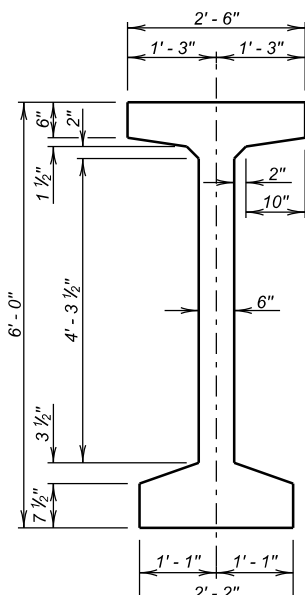
END VIEW



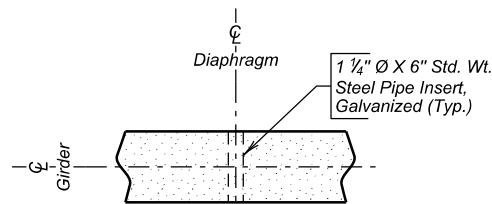
GIRDER SECTION



STIRRUP DETAILS



TYPE 72 GIRDER



SECTION L - L

121' - 3" GIRDER DETAILS

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

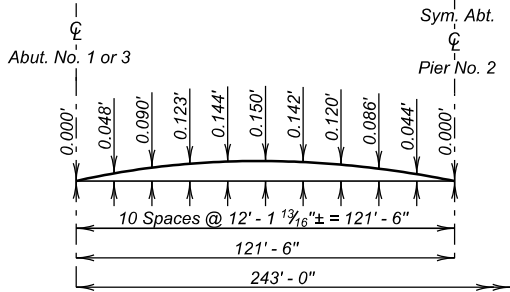
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

JANUARY 2022

20 OF 37

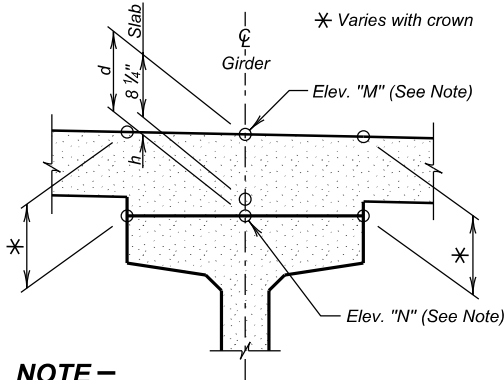
TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

		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"	1486.625	1486.785	1486.928	1487.049	1487.146	1487.217	1487.262	1487.280	1487.276	1487.251	1487.212	1487.250	1487.274	1487.278	1487.258	1487.212	1487.140	1487.042	1486.919	1486.776	1486.615
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
Girder No. 2	(=) h																					
	Elev. "M"	1486.445	1486.606	1486.750	1486.873	1486.971	1487.043	1487.089	1487.110	1487.106	1487.083	1487.046	1487.085	1487.110	1487.115	1487.097	1487.052	1486.982	1486.885	1486.764	1486.622	1486.462
	(-) Elev. "N"																					
	(=) d																					
Girder No. 3	(-) 0.688																					
	(=) h																					
	Elev. "M"	1486.264	1486.426	1486.572	1486.696	1486.796	1486.869	1486.917	1486.939	1486.937	1486.914	1486.879	1486.919	1486.946	1486.952	1486.935	1486.892	1486.823	1486.728	1486.608	1486.468	1486.309
	(-) Elev. "N"																					
Girder No. 4	(=) d																					
	(-) 0.688																					
	(=) h																					
	Elev. "M"	1486.083	1486.247	1486.394	1486.519	1486.620	1486.695	1486.744	1486.767	1486.767	1486.746	1486.712	1486.754	1486.782	1486.790	1486.774	1486.732	1486.665	1486.570	1486.452	1486.313	1486.156
Girder No. 5	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 6	Elev. "M"	1485.902	1486.067	1486.215	1486.342	1486.445	1486.521	1486.571	1486.596	1486.597	1486.577	1486.545	1486.588	1486.617	1486.627	1486.612	1486.572	1486.506	1486.413	1486.296	1486.159	1486.003
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					



CAMBER DIAGRAM

The Camber shown is the amount which has been added to the theoretical slab elevations to get slab elevations shown in the table of Slab Form Elevations and Calculations. Camber shown is for D. L. of slab, traffic barrier, sidewalk, and haunch, but does not include D. L. of beams.



NOTE -

The table contains the information necessary to determine the depth of concrete over the girders at points shown. Calculations may be carried in the spaces provided. Elev. "M" is the design elevation of the top of slab before any concrete has been poured. This elevation includes correction for camber and dead load deflection. Elev. "N" is a field measured elevation taken on top of girders at the points shown with the girders in their positions. This elevation must be taken after erection is completed, but prior to placing any of the concrete. Girders will not be supported between bearings when elevations are taken.

NOTE -

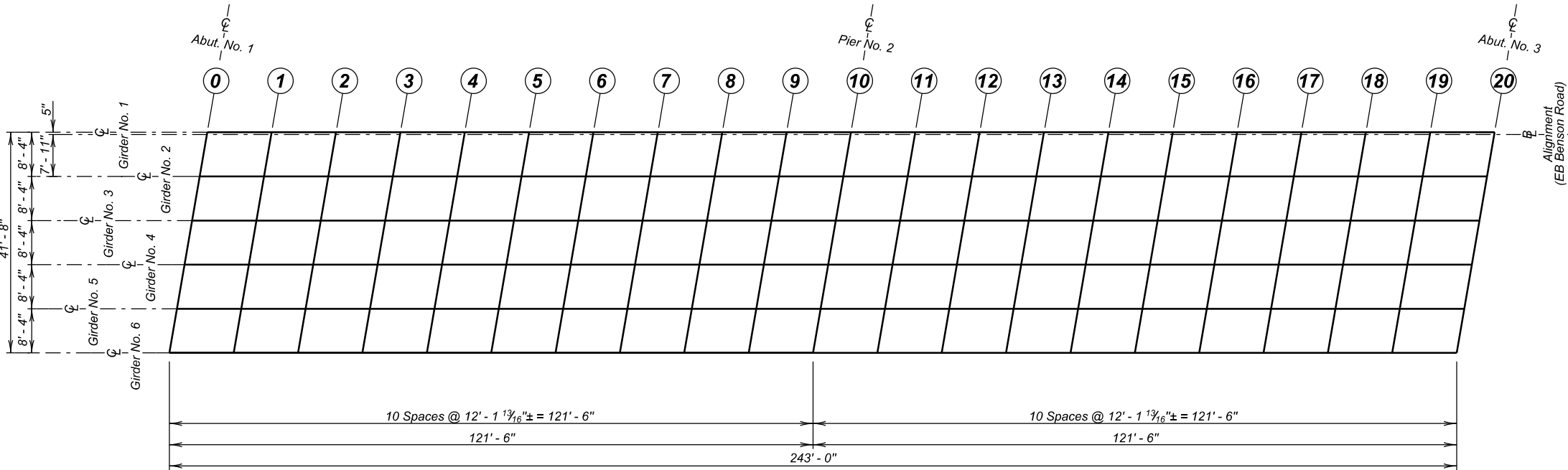
Based on a "d" of 11 3/4" the C of each abutment and 11 3/4" at the C of the Pier (see SEC. C - C on SUPERSTRUCTURE DETAILS (B)), it is anticipated that the midspan haunch dimension "h" over the C of each girder will be 1 1/2". If when computing the dimensions in the table, it is found that any dimension "h" is less than zero or greater than 4" the Office of Bridge Design of the South Dakota Dept. of Transportation will be notified immediately. After the "Table of Slab Form Elevations and Calculations" has been completely filled out and approved for deck forming, a copy will be forwarded to the Office of Bridge Design for review and analysis for the purpose of securing information relative to camber growth in the beams. This information is necessary for preparing plans for future structures of this type.

ERECTION DATA & SLAB FORM ELEVATIONS

FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE

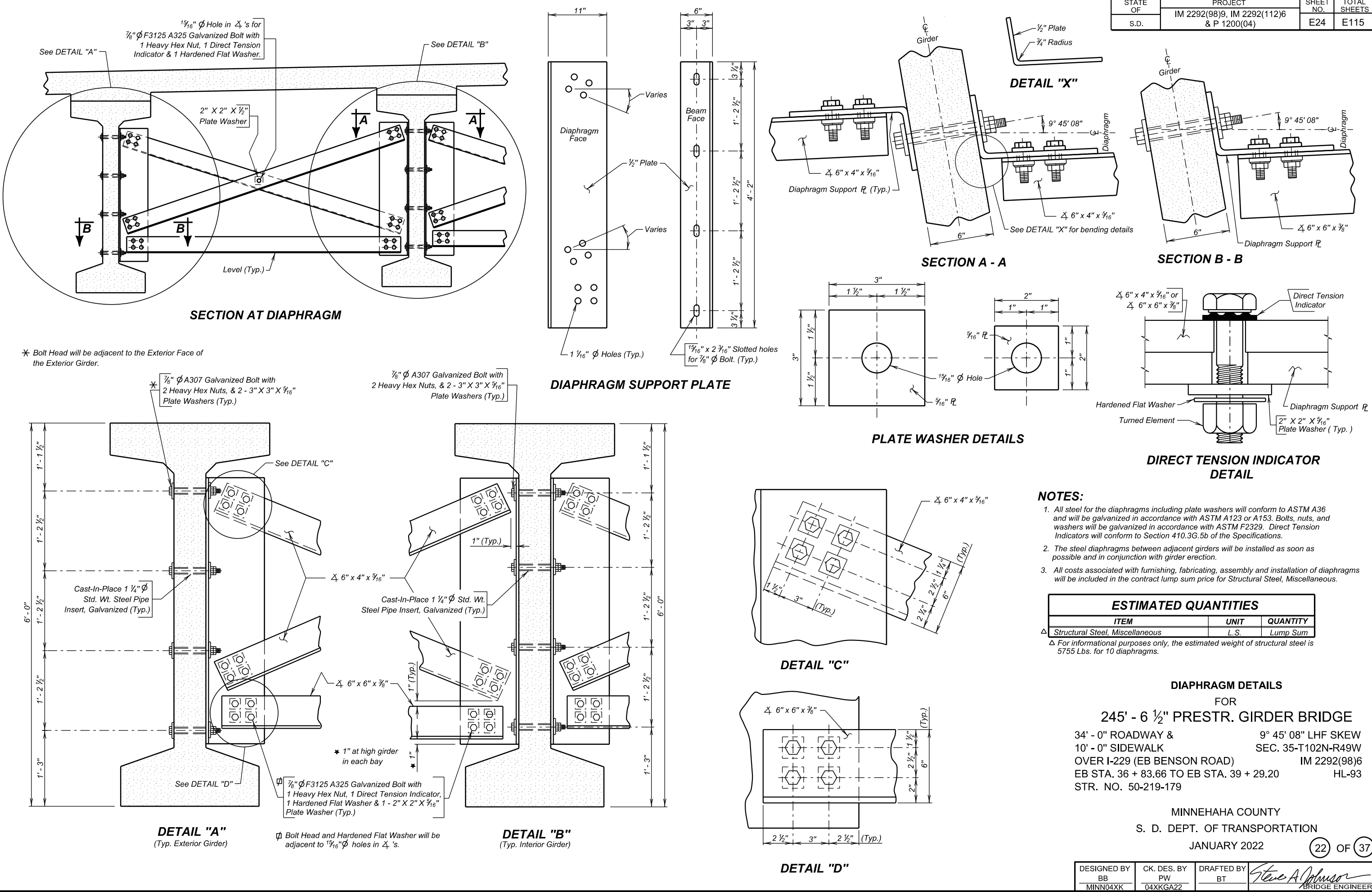
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

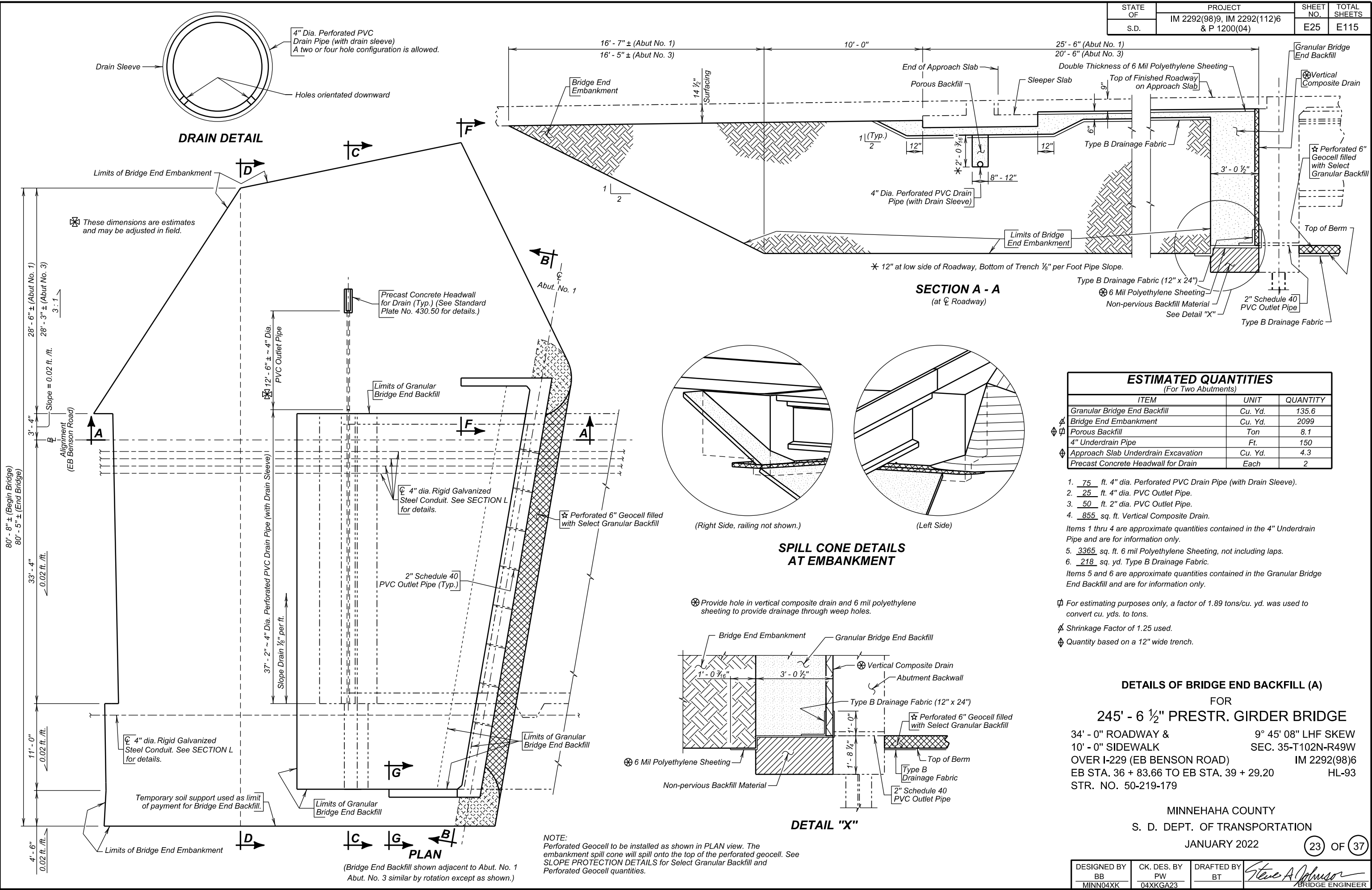
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022



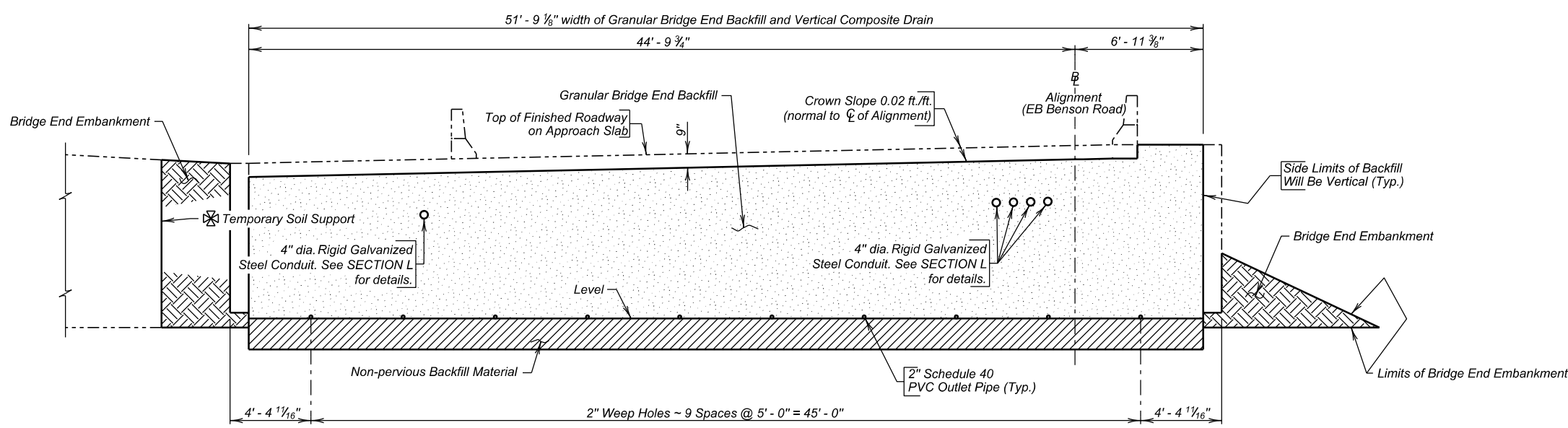
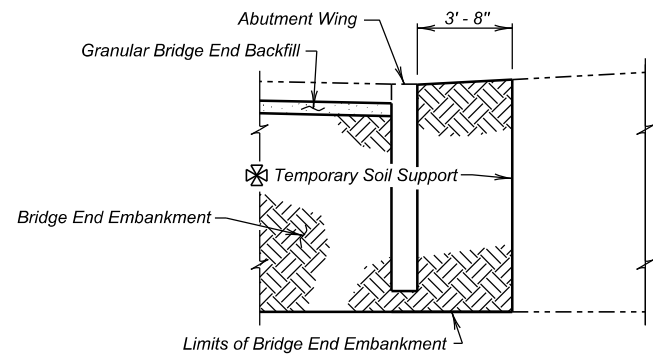
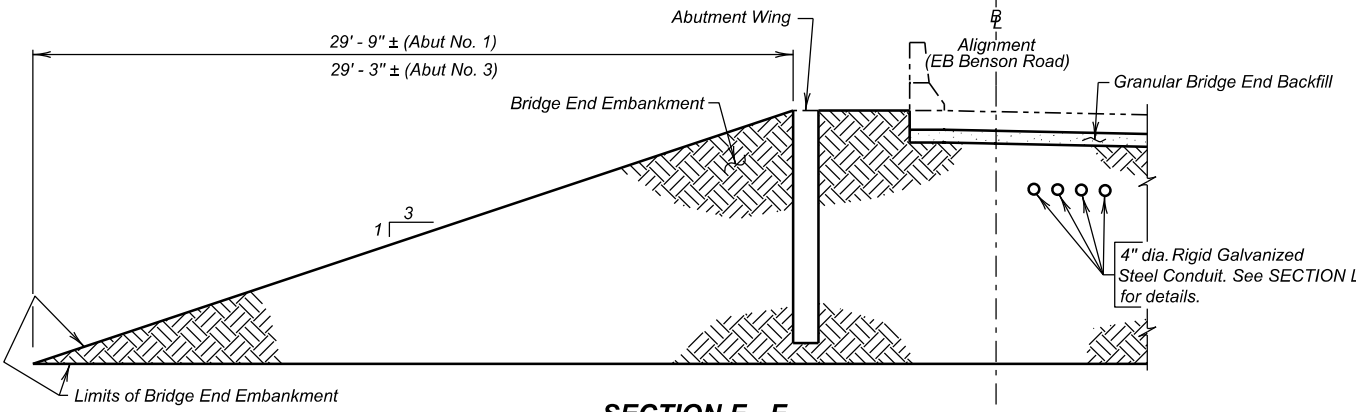
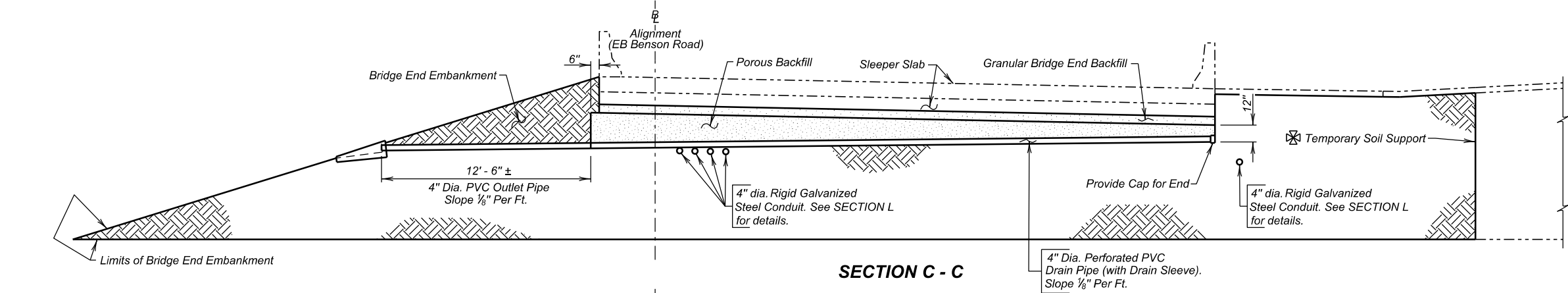
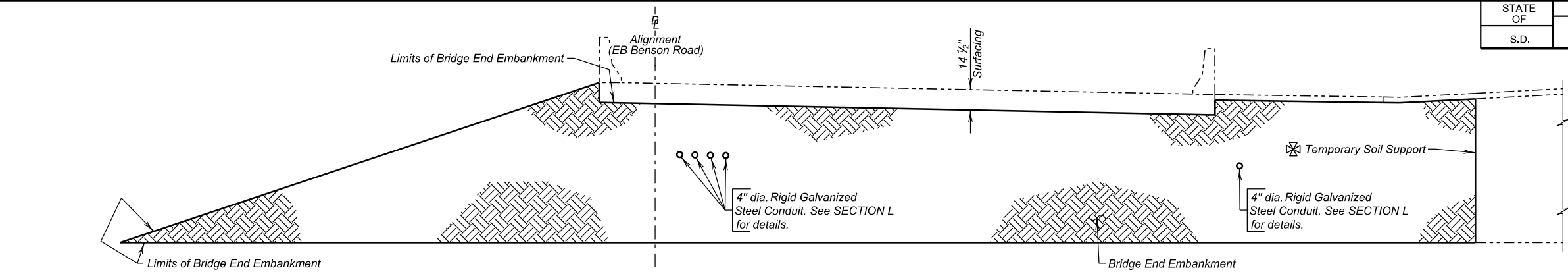
GIRDER LAYOUT

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E24	E115





STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E26	E115



DETAILS OF BRIDGE END BACKFILL (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 10' - 0" SIDEWALK
OVER I-229 (EB BENSON ROAD)
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20
STR. NO. 50-219-179

9° 45' 08" LHF SKEW
SEC. 35-T102N-R49W
IM 2292(98)6
HL-93

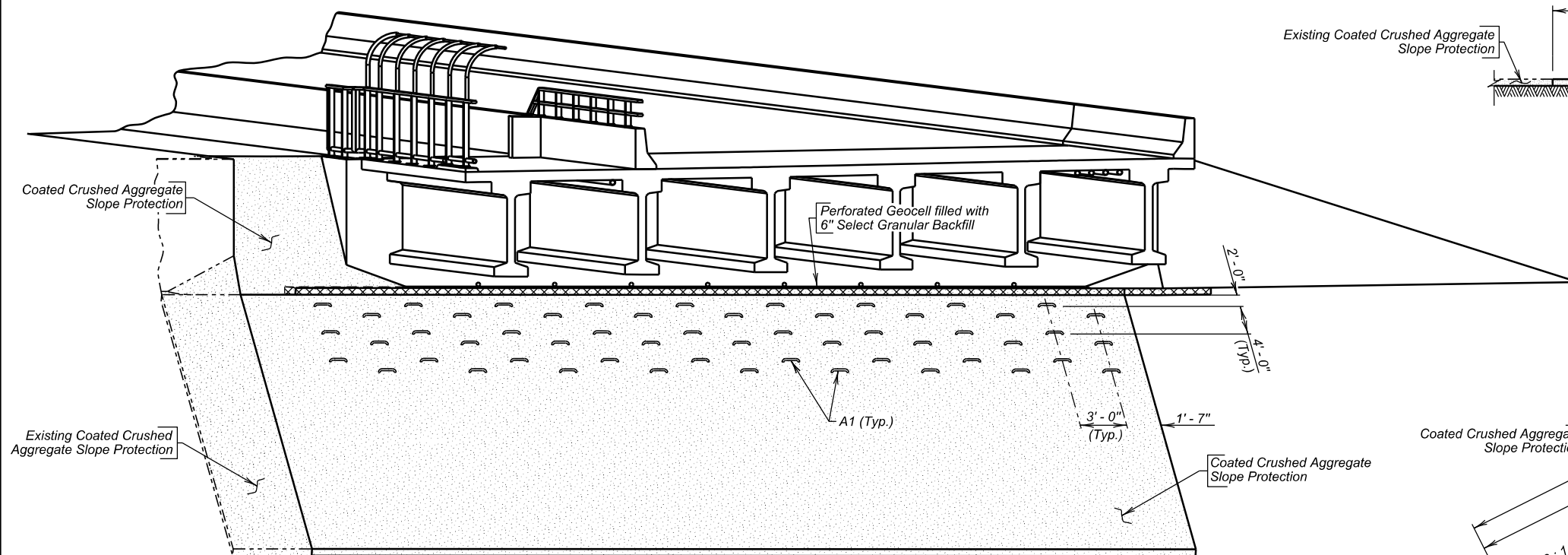
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

DESIGNED BY BB MINN04XK
CK. DES. BY PW 04XKGA24
DRAFTED BY BT

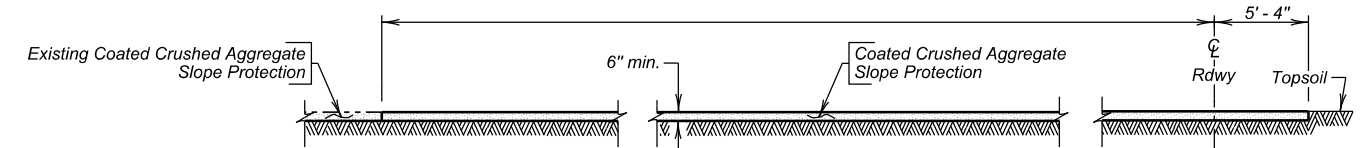
BRIDGE ENGINEER

Revised 8/31/22 BB PW

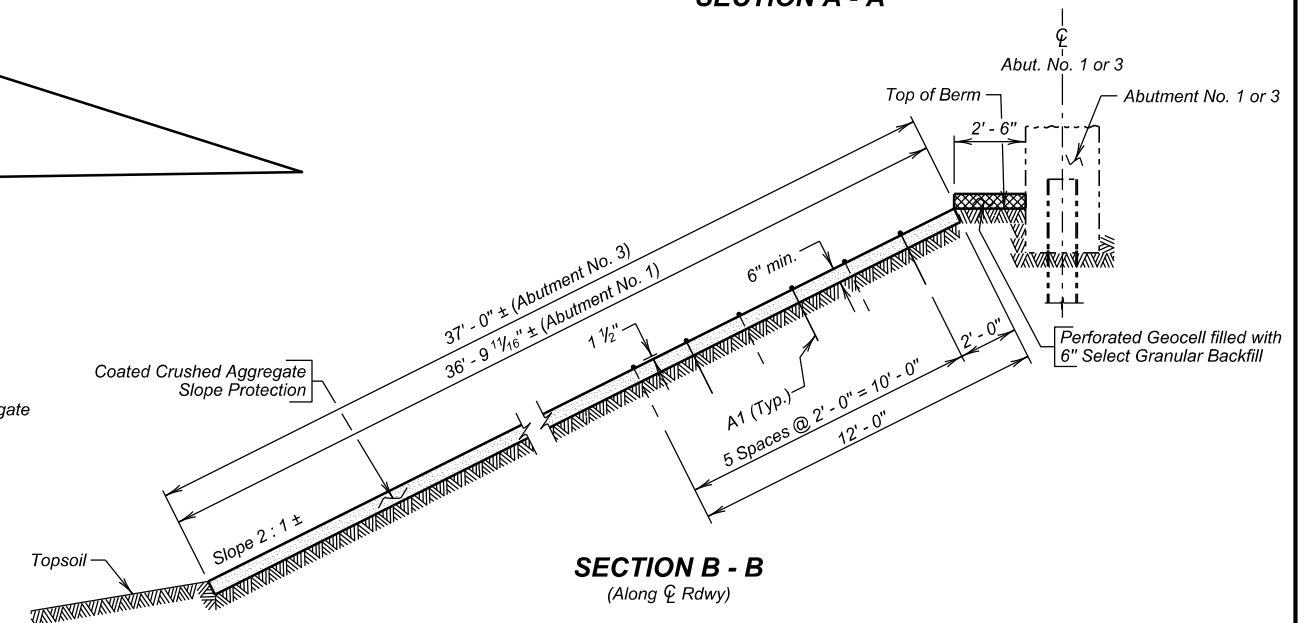
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E27	E115



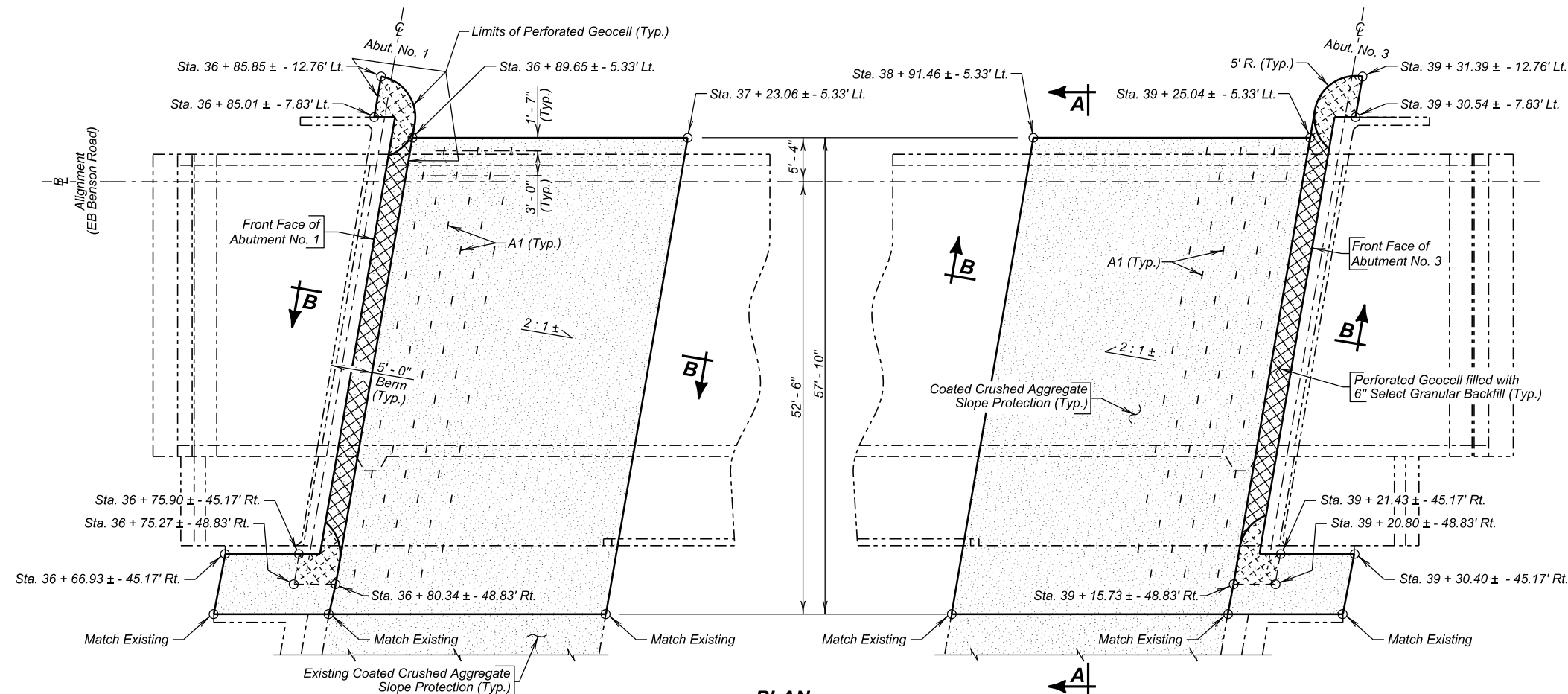
ISOMETRIC VIEW
(Abutment No. 1 shown)



SECTION A - A



SECTION B - B
(Along C Rdwy)

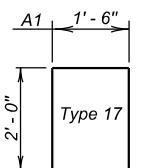


PLAN

REINFORCING SCHEDULE
(For Two Abutments)

Mk.	No.	Size	Length	Type	Bending Details
A1	108	6	5'-6"	17	

NOTE:
A1 bars will be placed prior to placing the coated crushed aggregate slope protection. All costs associated with furnishing and installing A1 bars will be incidental to the contract unit price per sq. yd. for Bridge Berm Slope Protection, Coated Crushed Aggregate.



ESTIMATED QUANTITIES
(For Two Abutments)

ITEM	UNIT	QUANTITY
Bridge Berm Slope Protection, Coated Crushed Aggregate	Sq. Yd.	517.1
Select Granular Backfill	Ton	11.8
Perforated Geocell	Sq. Ft.	345

☆ 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.

SLOPE PROTECTION DETAILS

FOR

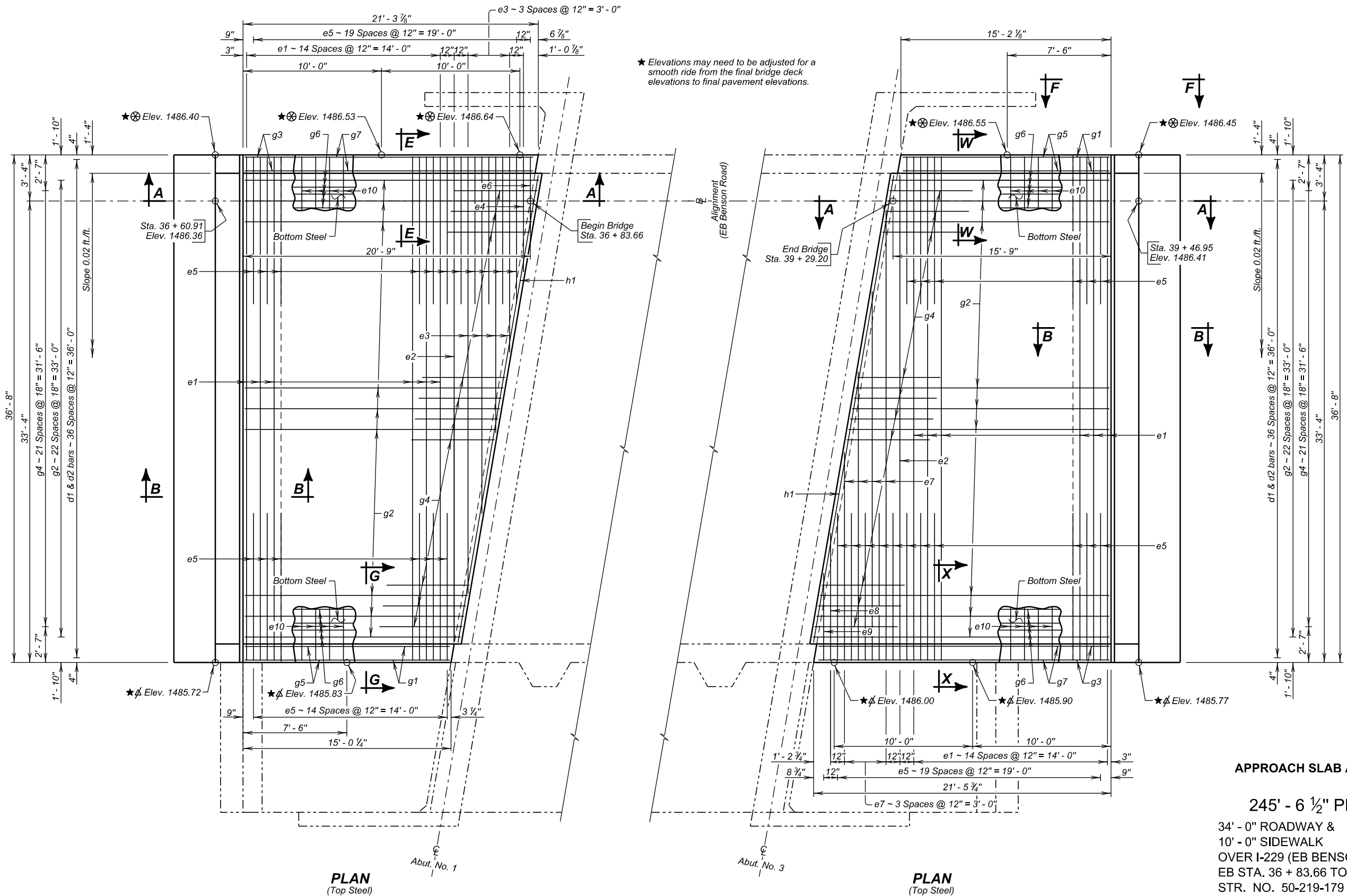
245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA25	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E28	E115



APPROACH SLAB ADJACENT TO BRIDGE DETAILS (A)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

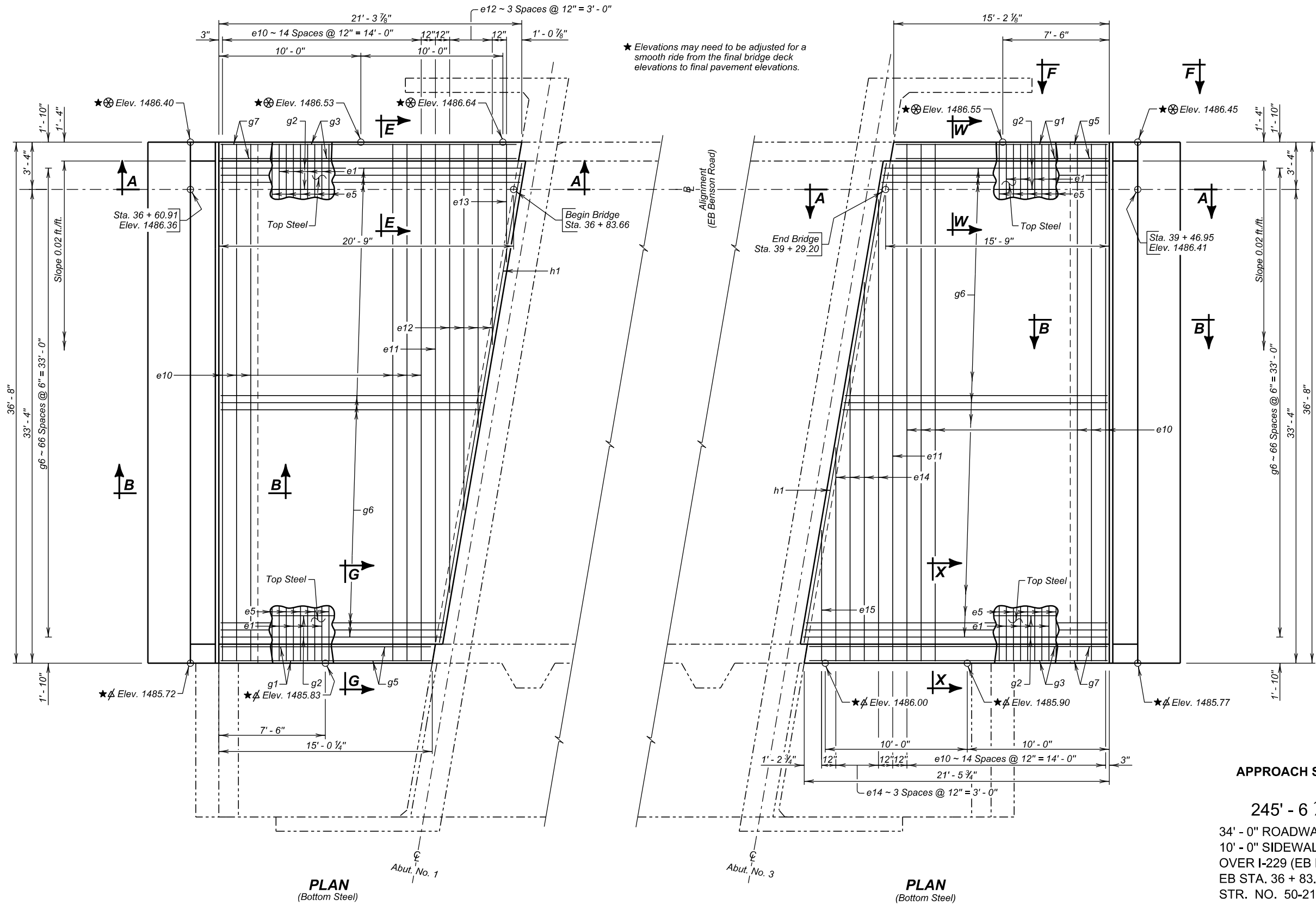
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

(26) OF (37)

DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA26	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E29	E115



APPROACH SLAB ADJACENT TO BRIDGE DETAILS (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

27 OF 37

DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA27	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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REINFORCING SCHEDULE
(For Two Approach Slabs & Two Sleeper Slabs)

Bending Details				
Mk.	No.	Size	Length	Type
Sleeper Slabs				
c1	44	5	36' - 5"	Str.
d1	148	4	7' - 9"	2
d2	74	4	6' - 3"	T2
e1	8	5	37' - 7"	1
Approach Slabs				
e1	30	5	37' - 7"	1
e2	2	5	35' - 8"	1A
e3	2	5	46' - 10"	1A
e4	1	5	8' - 11"	1A
e5	70	5	11' - 3"	1A
e6	1	5	6' - 0"	1A
e7	2	5	48' - 8"	1A
e8	1	5	9' - 10"	1A
e9	1	5	6' - 11"	1A
e10	30	8	36' - 5"	Str.
e11	2	8	35' - 1"	Str.
e12	2	8	45' - 8"	Str.
e13	1	8	8' - 4"	Str.
e14	2	8	47' - 6"	Str.
e15	1	8	9' - 3"	Str.
g1	4	4	14' - 10"	Str.
g2	23	4	37' - 0"	Str.
g3	4	4	20' - 10"	Str.
g4	44	4	6' - 0"	Str.
g5	4	8	14' - 10"	Str.
g6	67	8	37' - 0"	Str.
g7	4	8	20' - 10"	Str.
h1	4	6	34' - 3"	Str.

Type 1

Type 2

Type T2

Type 1A

Type 1A

NOTE: Elevations
Top of Approach Slab
at this location.

NOTE: Elevations
Top of Approach Slab
at this location.

NOTES:
All bars to be epoxy coated.
All dimensions are out to out of bars.
Δ See cutting diagram.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	152.5
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	59.1

- 38.6 Cu. Yds. Concrete in Approach Slabs.
- 13962 Lbs. Epoxy Coated Re-Steel in Approach Slabs.
- 24.4 Sq. Ft. of Polystyrene Insulation Board.
- 19.1 Cu. Yds. Concrete in Sleeper Slabs.
- 3060 Lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
- 6.7 Cu. Yds. Concrete in Approach Slab Barriers and Sleeper Slab Barriers.
- 1708 Lbs. Epoxy Coated Re-Steel in Approach Slab Barriers and Sleeper Slab Barriers.

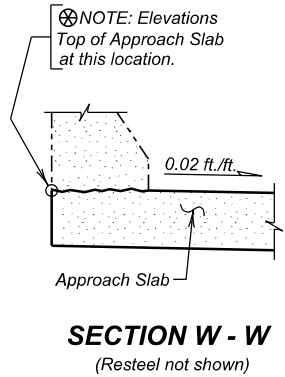
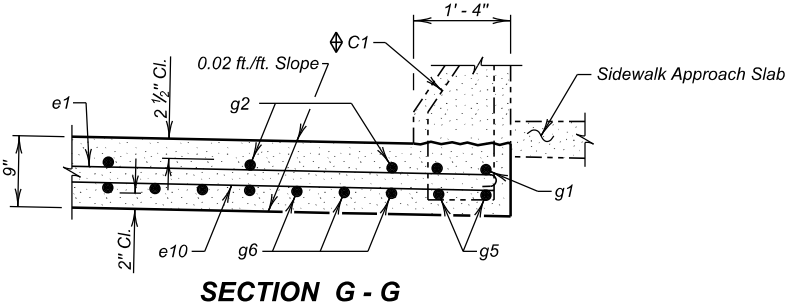
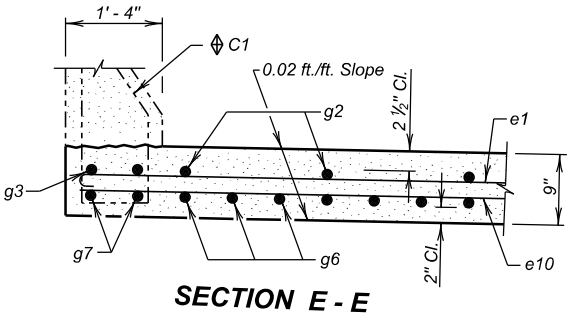
Items 1 thru 7 are approximate quantities contained in the above bid items and are for information only.

APPROACH SLAB ADJACENT TO BRIDGE DETAILS (C)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE

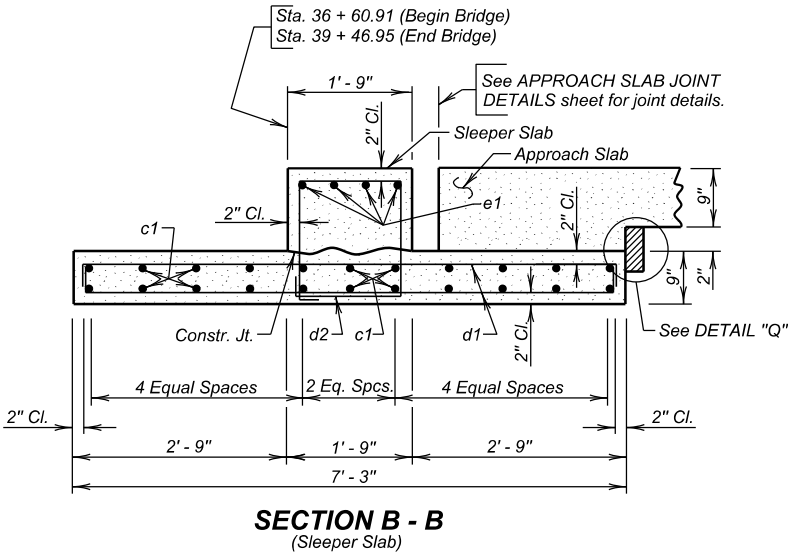
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

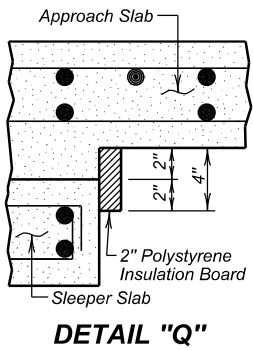
Shown and included in reinforcing schedule for approach slab barriers.
See APPROACH SLAB BARRIER DETAILS (B) sheet for details.



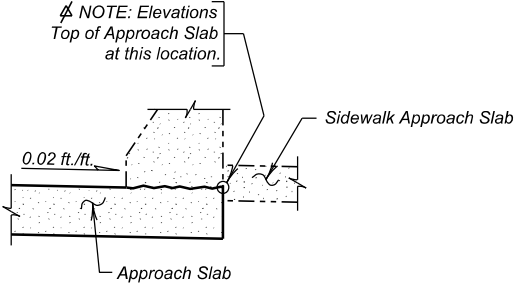
SECTION W - W
(Resteel not shown)



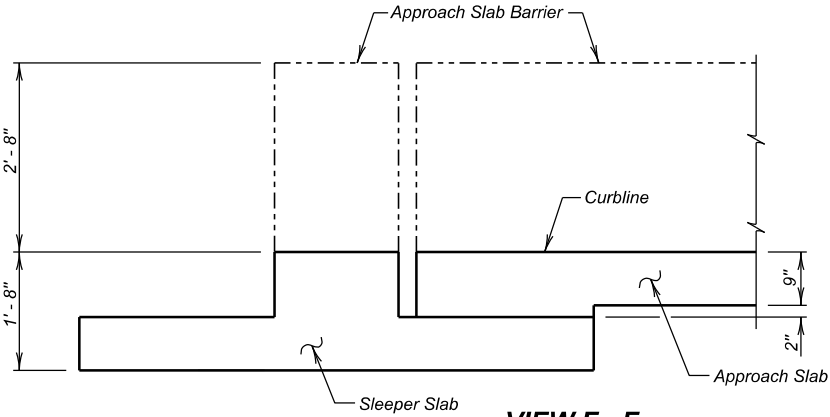
SECTION B - B
(Sleeper Slab)



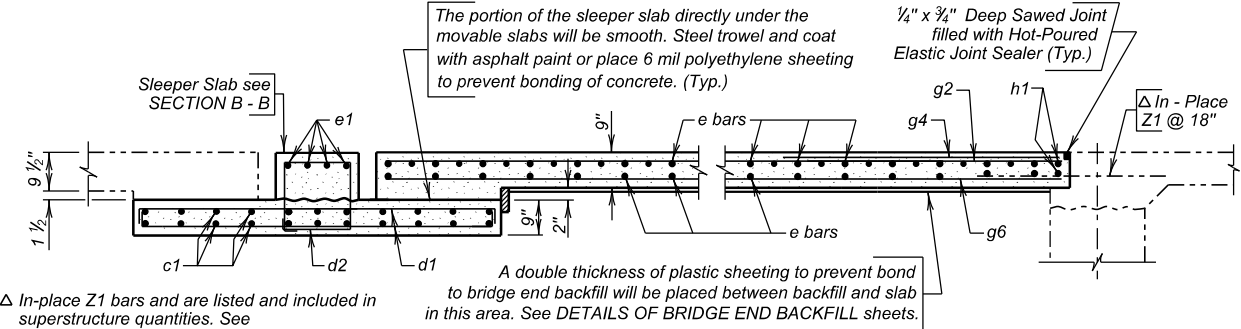
DETAIL "Q"



SECTION X - X
(Resteel not shown)

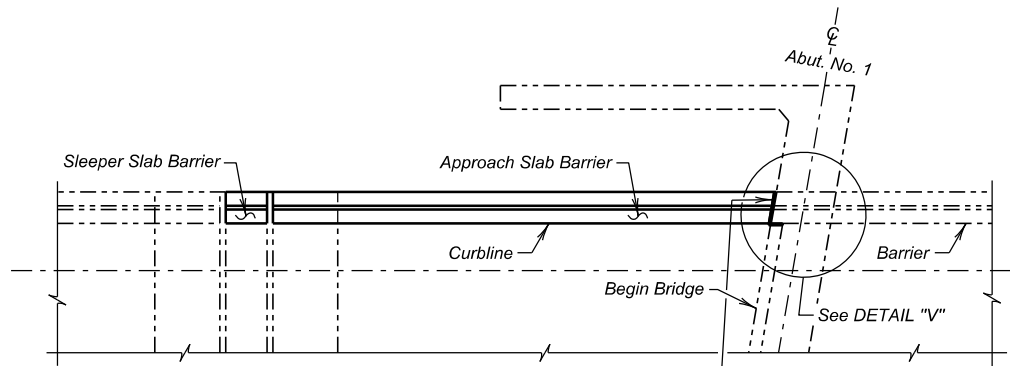


VIEW F - F

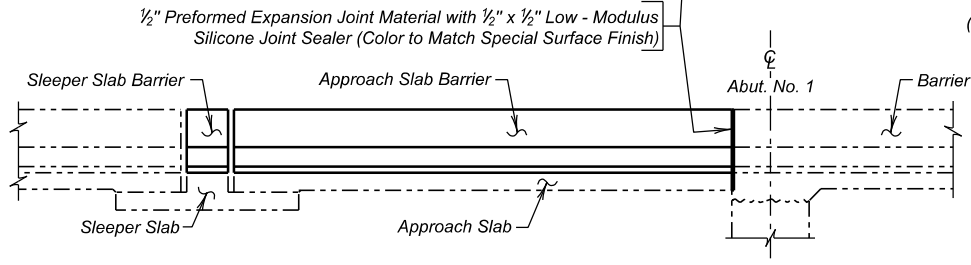


SECTION A - A

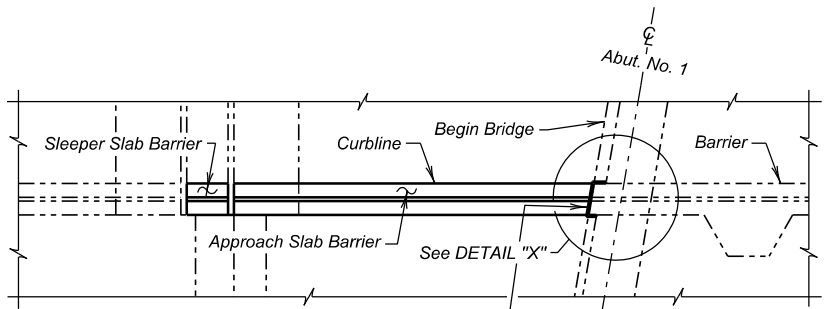
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E31	E115



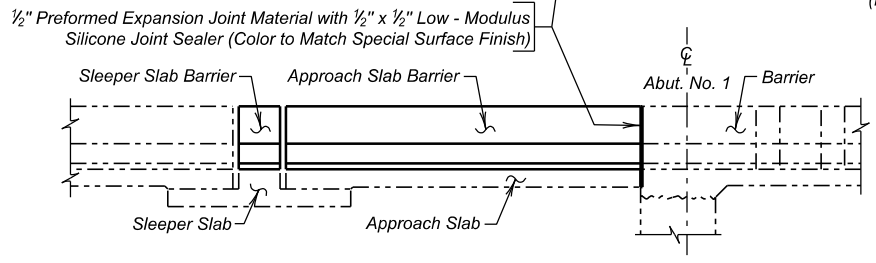
PLAN
(Left Side of Bridge Shown)



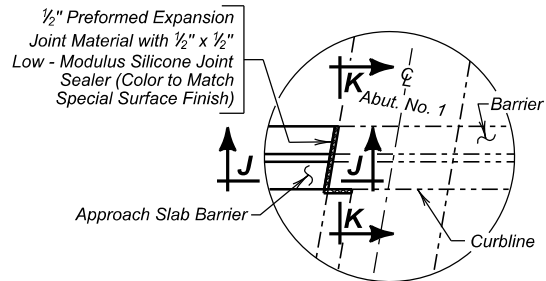
ELEVATION
(Left Side of Bridge Shown)



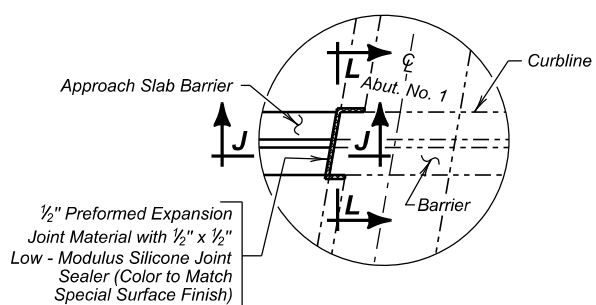
PLAN
(Right Side of Bridge Shown)



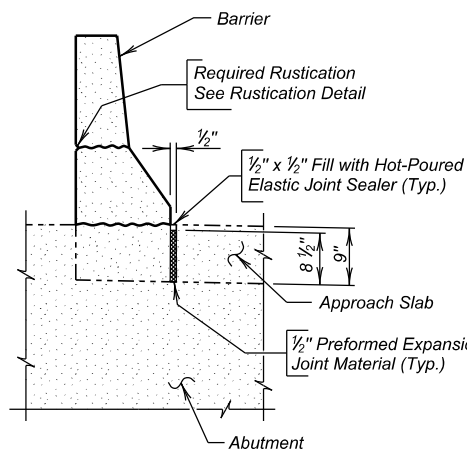
ELEVATION
(Right Side of Bridge Shown)



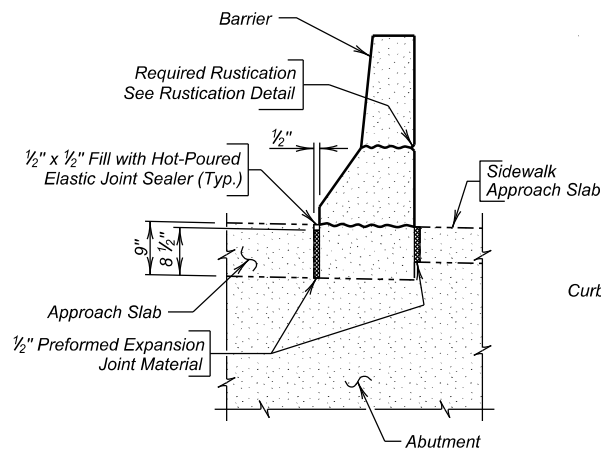
DETAIL "V"



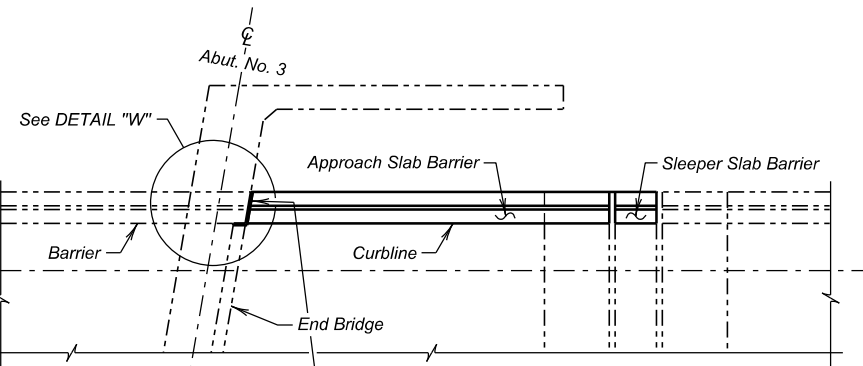
DETAIL "X"



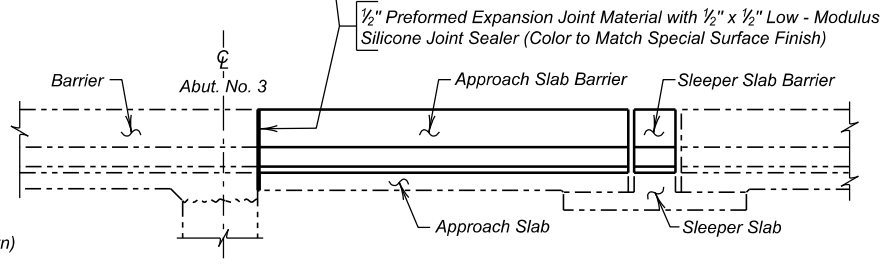
SECTION K - K



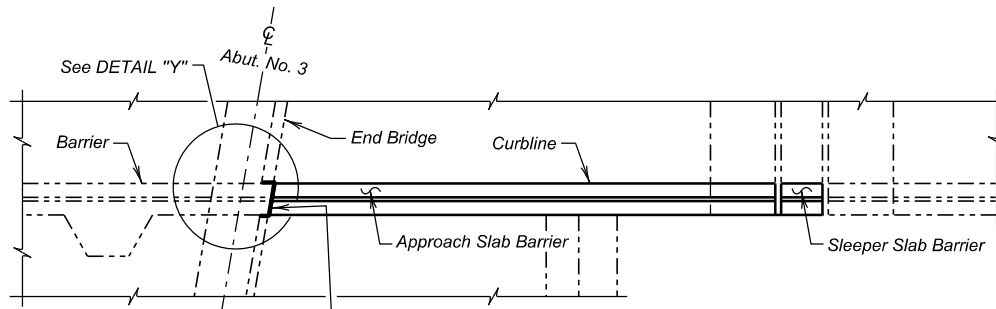
SECTION L - L



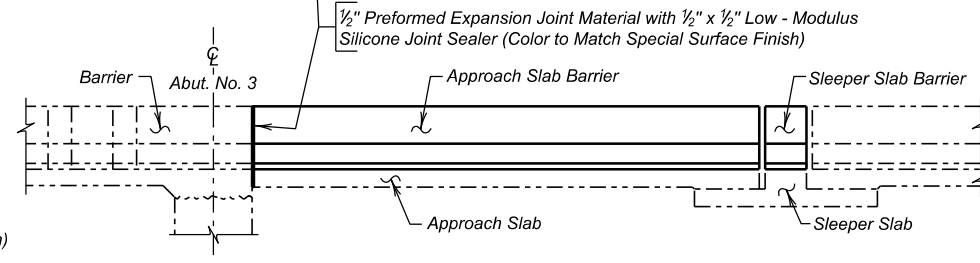
PLAN
(Left Side of Bridge Shown)



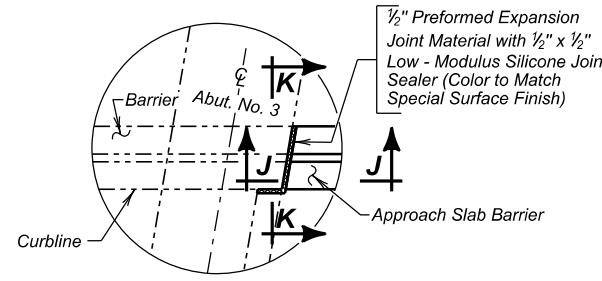
ELEVATION
(Left Side of Bridge Shown)



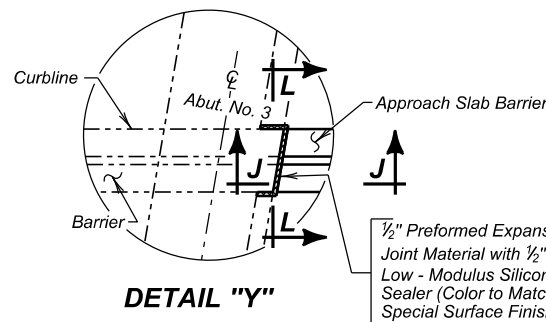
PLAN
(Right Side of Bridge Shown)



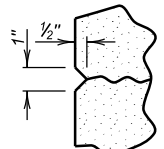
ELEVATION
(Right Side of Bridge Shown)



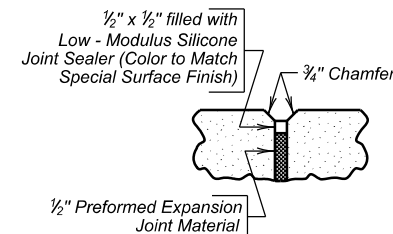
DETAIL "W"



DETAIL "Y"



RUSTICATION DETAIL



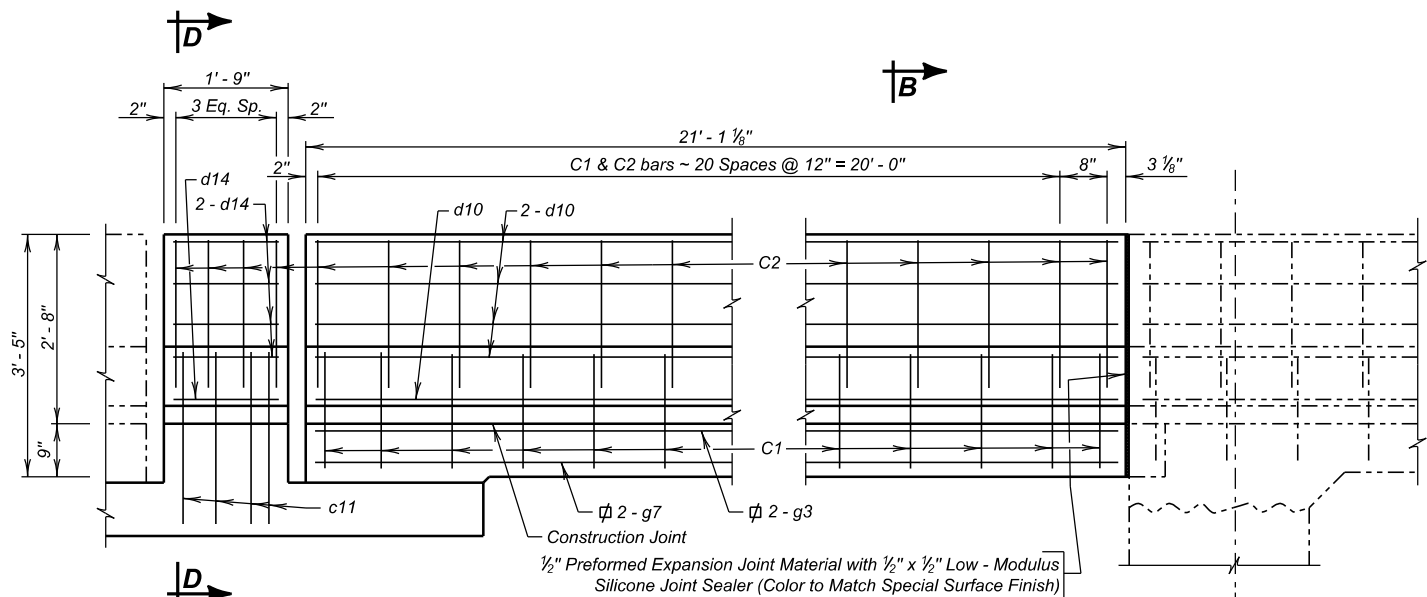
SECTION J - J

APPROACH SLAB BARRIER DETAILS (A)

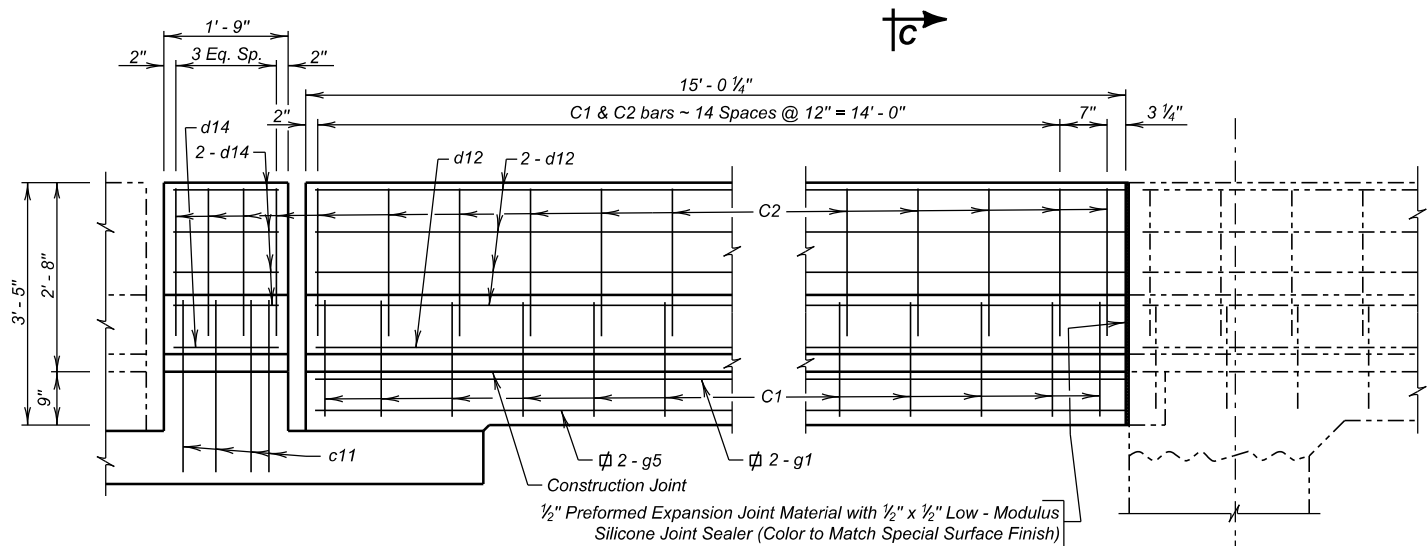
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
 34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
 10' - 0" SIDEWALK SEC. 35-T102N-R49W
 OVER I-229 (EB BENSON ROAD) IM 2292(98)6
 EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
 STR. NO. 50-219-179

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JANUARY 2022

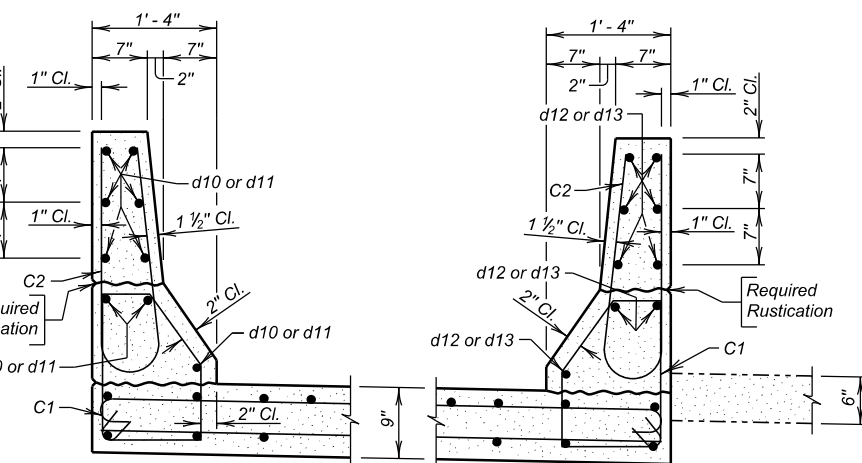
DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA29	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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ELEVATION
(Abut. No. 1 - Left Side)

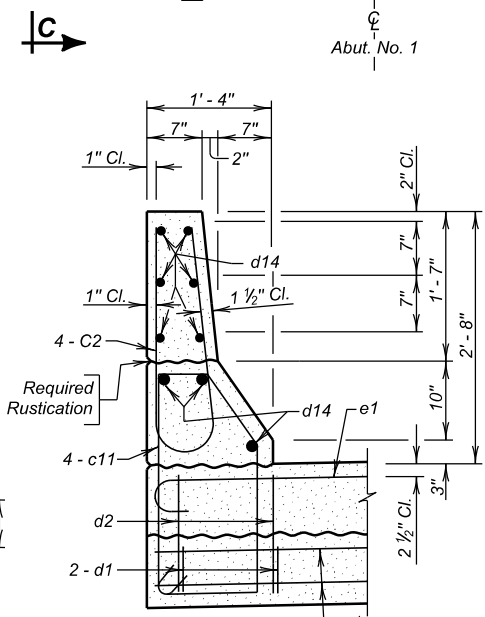


ELEVATION
(Abut. No. 1 - Right Side)

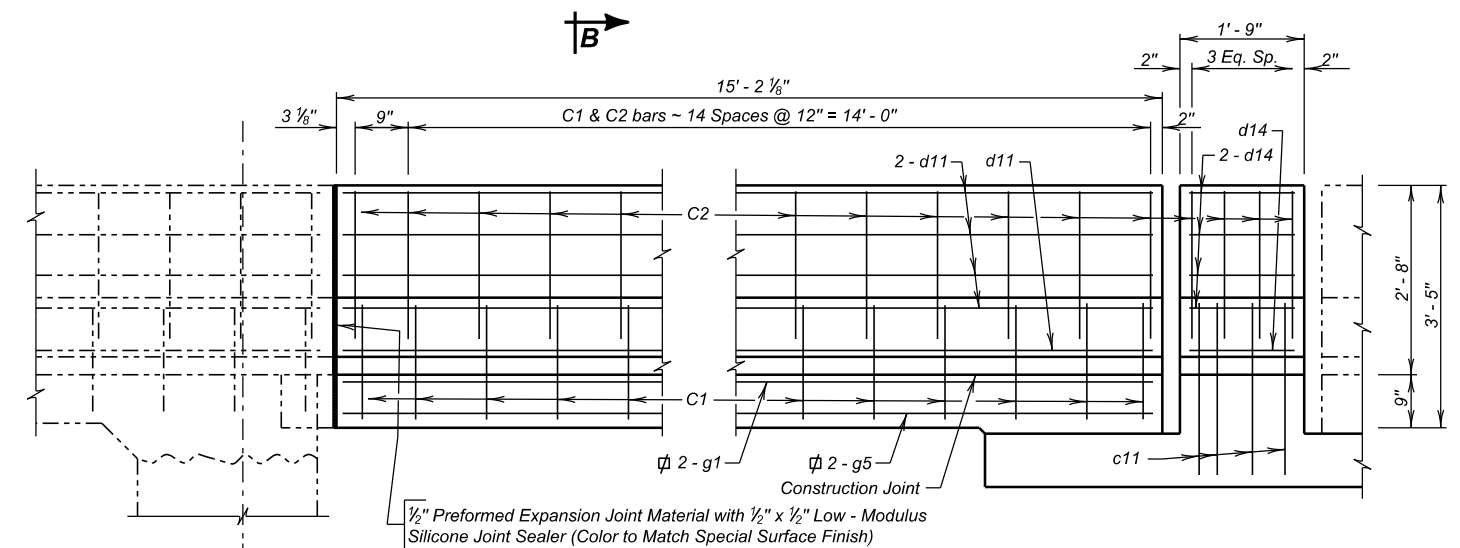


SECTION B - B

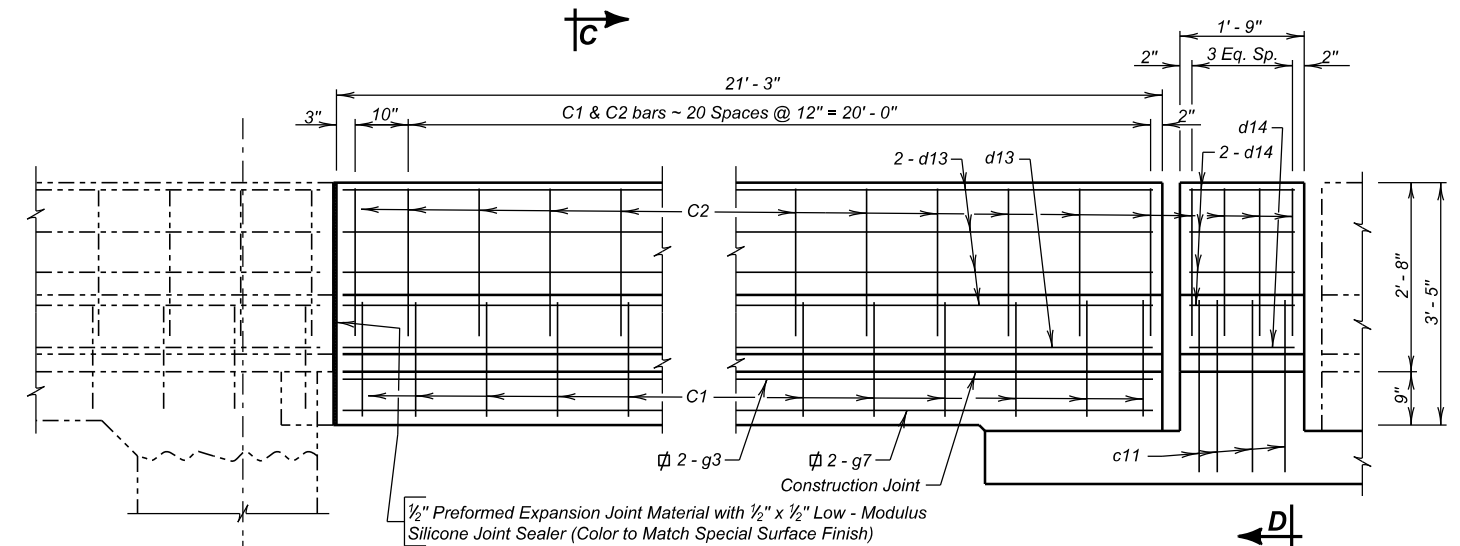
SECTION C - C



SECTION D - D



ELEVATION
(Abut. No. 3 - Left Side)



ELEVATION
(Abut. No. 3 - Right Side)

⊠ Shown and included in approach slab quantities. See APPROACH SLAB ADJACENT TO BRIDGE DETAILS (B) sheet for details.

REINFORCING SCHEDULE					
(For Two Approach Slab Barriers & Two Sleeper Slab Barriers)					
Mk.	No.	Size	Length	Type	Bending Details
4 Approach Slab Barrier Curbs					
C1	76	5	5' - 7"	T1A	
c11	16	5	7' - 0"	T1A	
C2	88	5	5' - 1"	S11	
d10	9	5	20' - 9"	Str.	
d11	9	5	14' - 10"	Str.	
d12	9	5	14' - 8"	Str.	
d13	9	5	20' - 11"	Str.	
d14	9	5	1' - 5"	Str.	
NOTES:					
All dimensions are out to out of bars.					
All bars to be Epoxy Coated.					

NOTE:
For concrete quantities see APPROACH SLAB ADJACENT TO BRIDGE DETAILS (C) sheet for details.

APPROACH SLAB BARRIER DETAILS (B)

FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		E33	E115
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)		

REINFORCING SCHEDULE
(For Two Sidewalk Approach Slabs and Two Sidewalk Sleeper Slabs)

Mk.	No.	Size	Length	Type
d40	22	4	2' - 8"	Str.
e40	36	4	10' - 7"	Str.
e41	2	4	5' - 7"	Str.
g40	15	4	28' - 4"	Str.

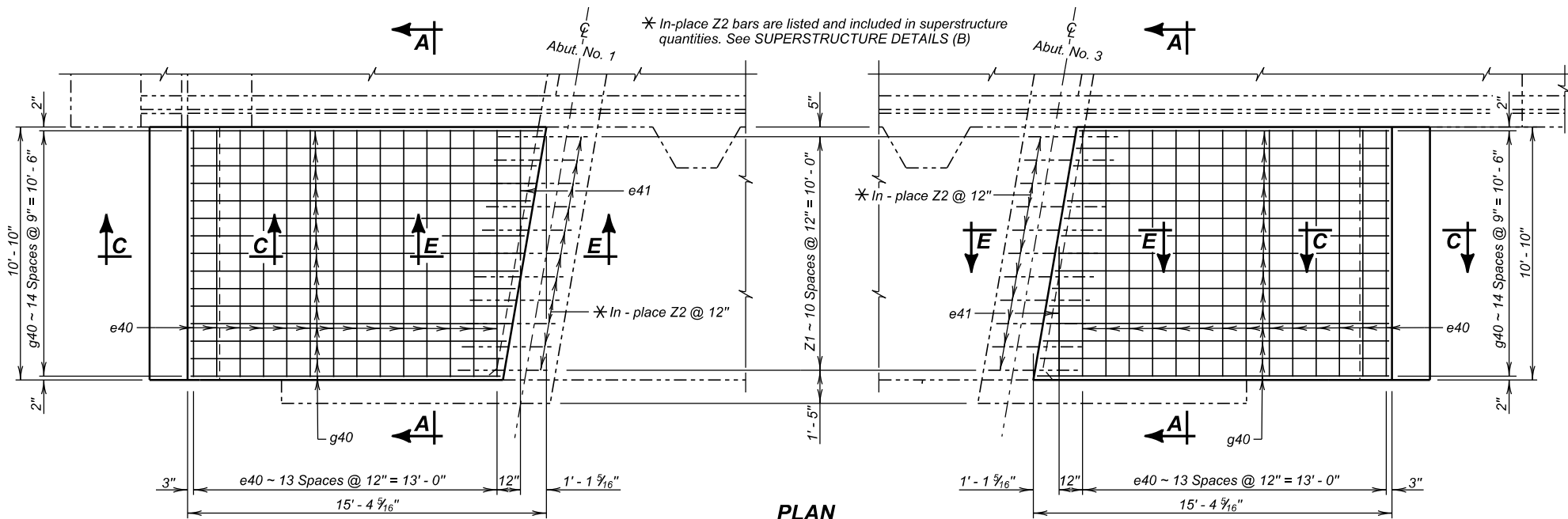
NOTE:
All bars to be Epoxy Coated.
All dimensions are out to out of bars.
See cutting diagram.

ESTIMATED QUANTITIES
(For Two Sidewalk Approach Slabs)

ITEM	UNIT	QUANTITY
6" Reinforced Concrete Sidewalk	Sq. Ft.	348

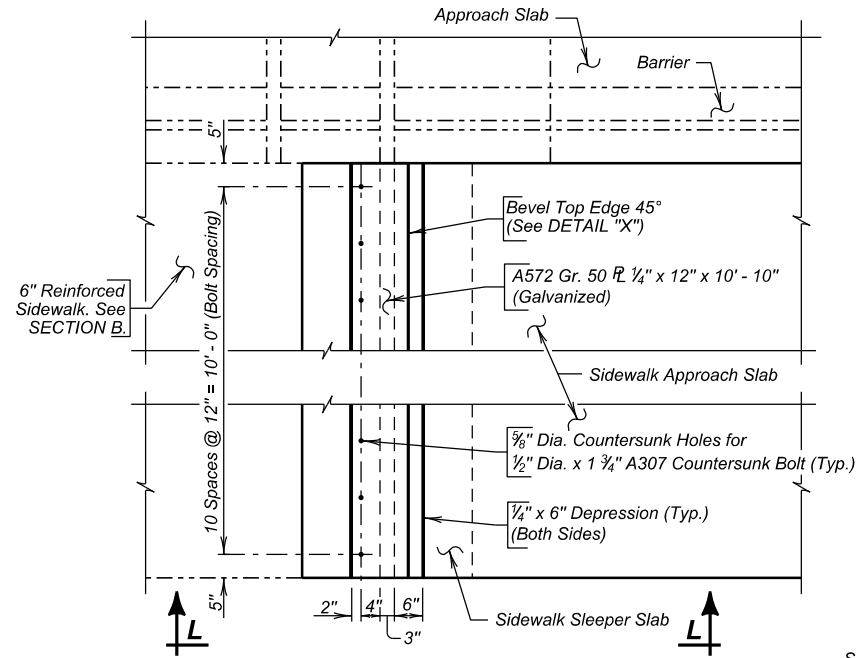
- 5.8 Cu. Yds. Concrete in Sidewalk Approach Slabs.
- 489 Lbs. Epoxy Coated Re-Steel in Sidewalk Approach Slabs.
- 1.2 Cu. Yds. Concrete in Sidewalk Sleeper Slabs.
- 96 Lbs. Epoxy Coated Re-Steel in Sidewalk Sleeper Slabs.
- 283 Sq. Ft. 6 mil Polyethylene sheeting under reinf. conc. sidewalk.

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

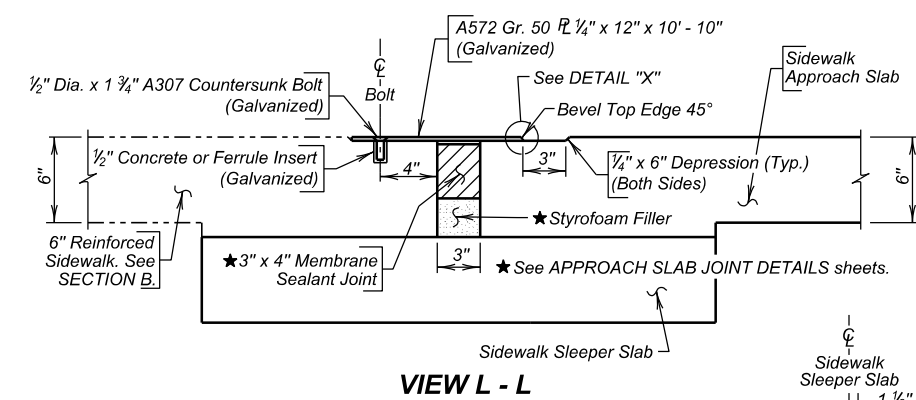


PLAN
(Sidewalk Approach Slabs)

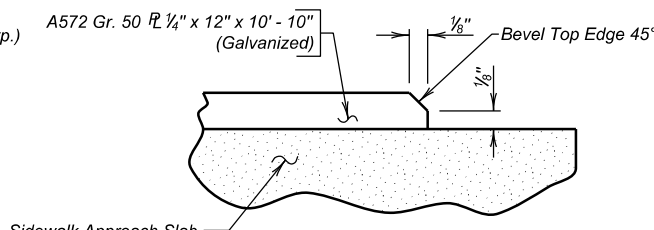
PLAN
(Sidewalk Sleeper Slab shown)



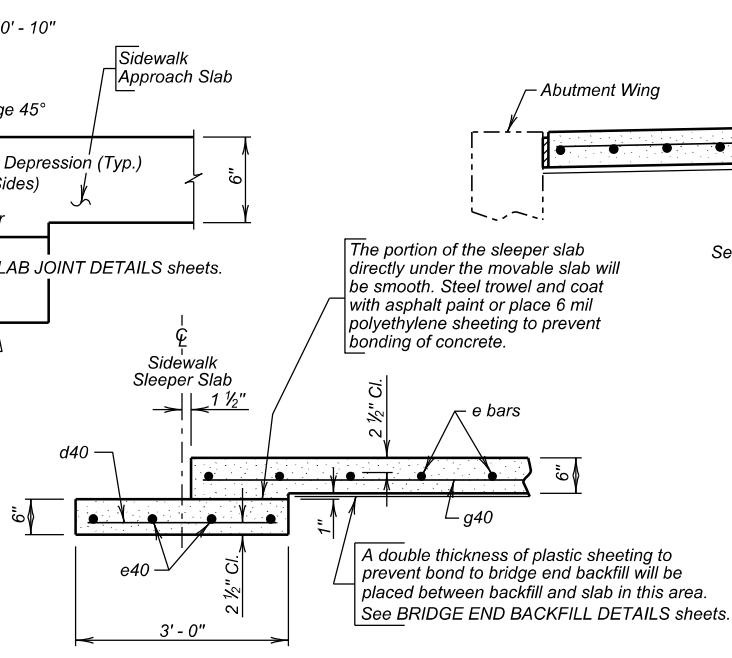
PLAN
(Sidewalk Expansion Joint)



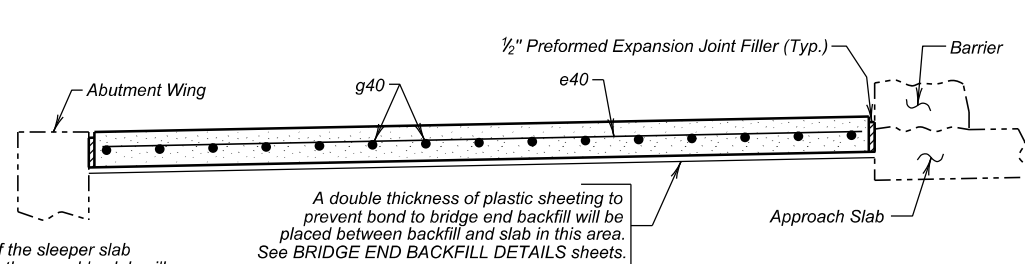
VIEW L - L



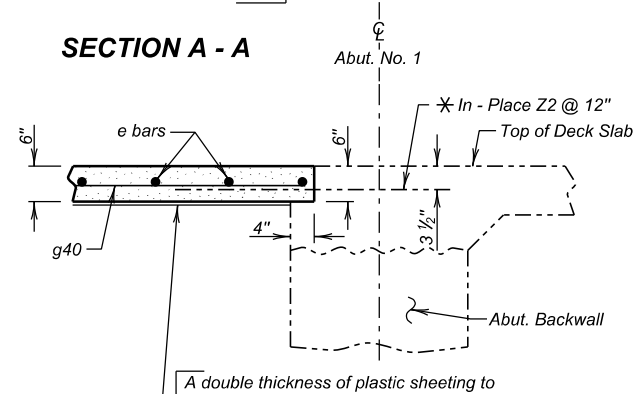
DETAIL "X"



SECTION C - C



SECTION A - A



SECTION E - E

SIDEWALK APPROACH SLAB DETAILS

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY

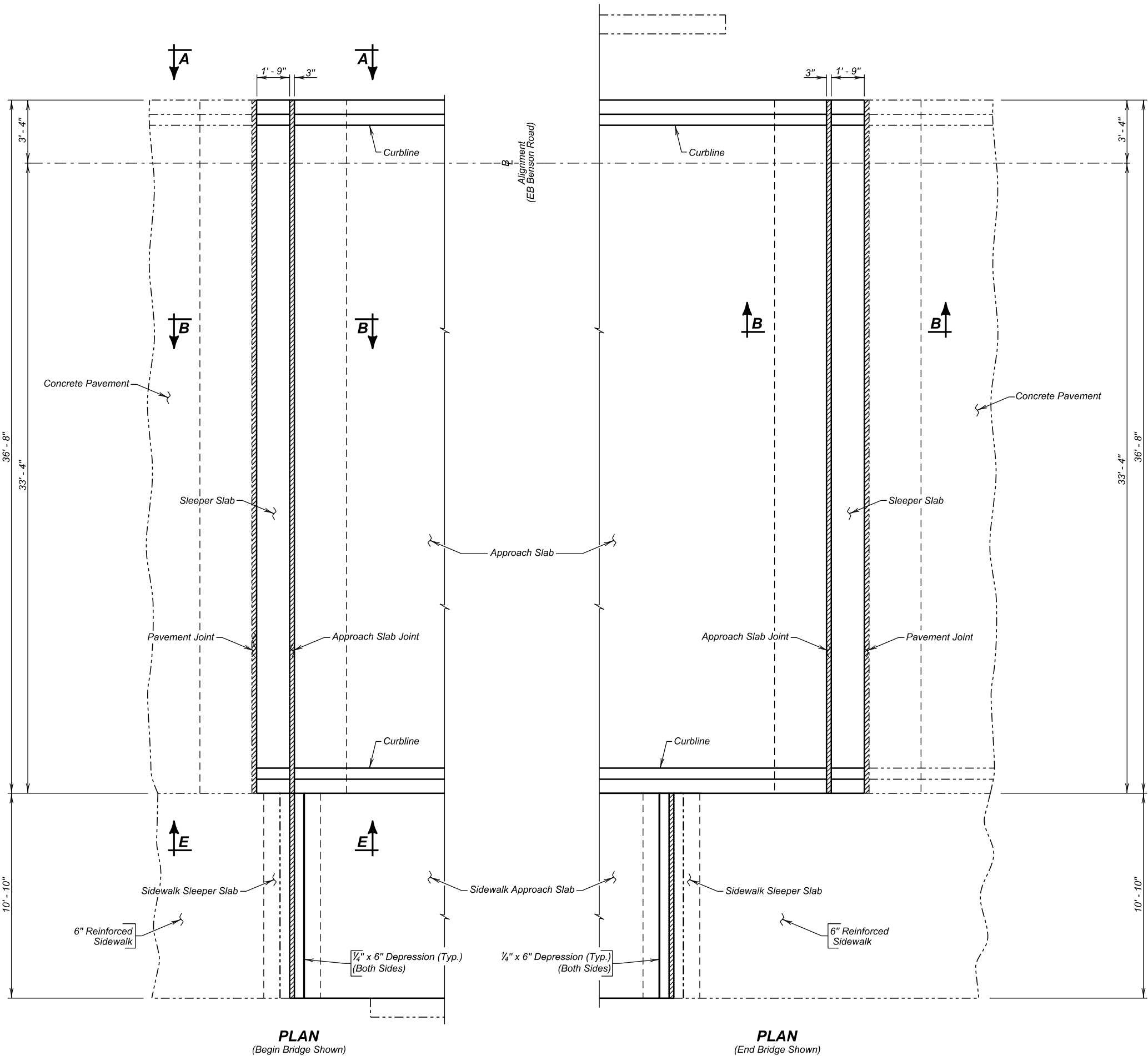
S. D. DEPT. OF TRANSPORTATION

JANUARY 2022

31 OF 37

DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA31	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E34	E115



GENERAL NOTES

1. The membrane sealant will be on the approved product list for membrane sealant expansion joints.
2. 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.
3. The membrane sealant will be supplied in pieces 5 feet in length or longer. The foam sealant will be ultra-violet and ozone resistant.
4. The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
5. Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
6. If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
7. The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40° F.
8. 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.
9. 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.
10. 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.
11. 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.
12. Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
13. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
14. 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.

APPROACH SLAB JOINT DETAILS (A)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

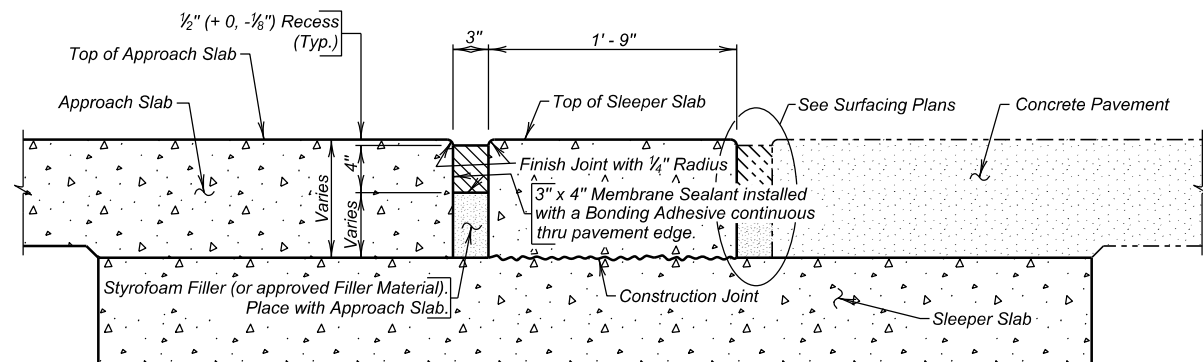
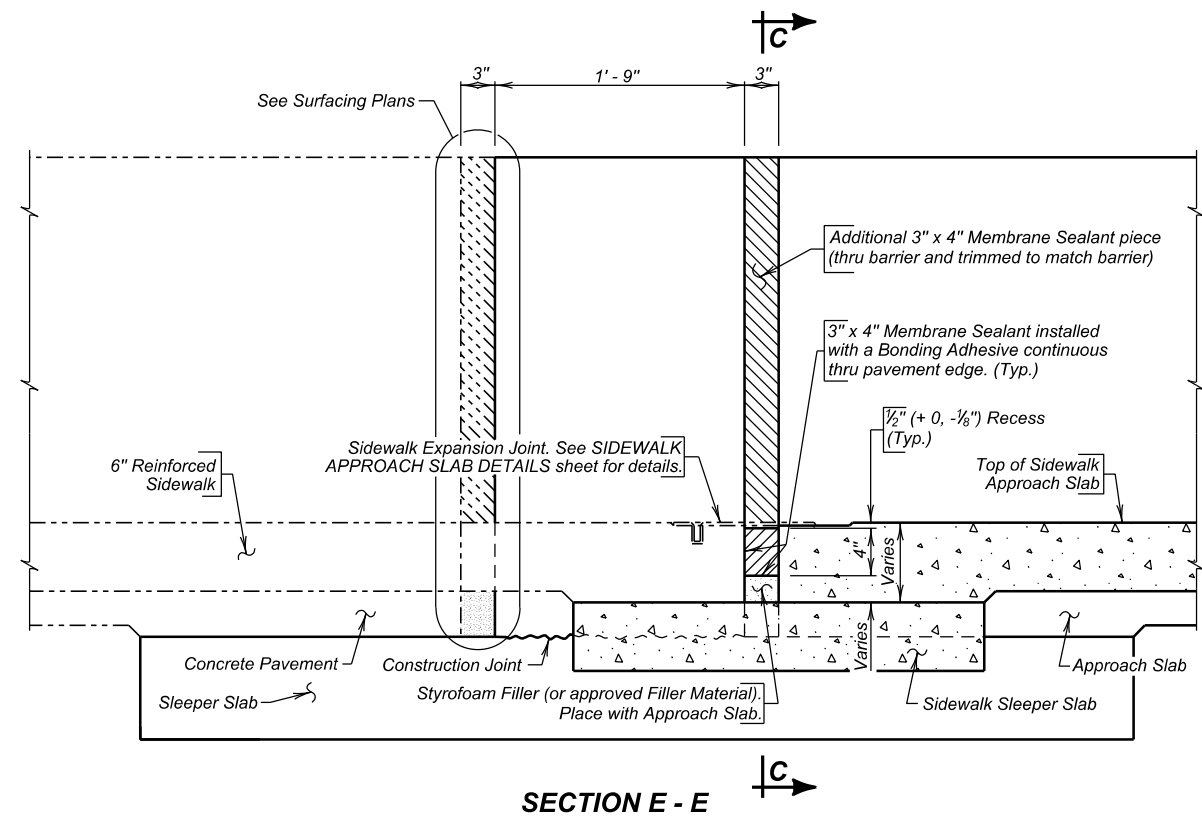
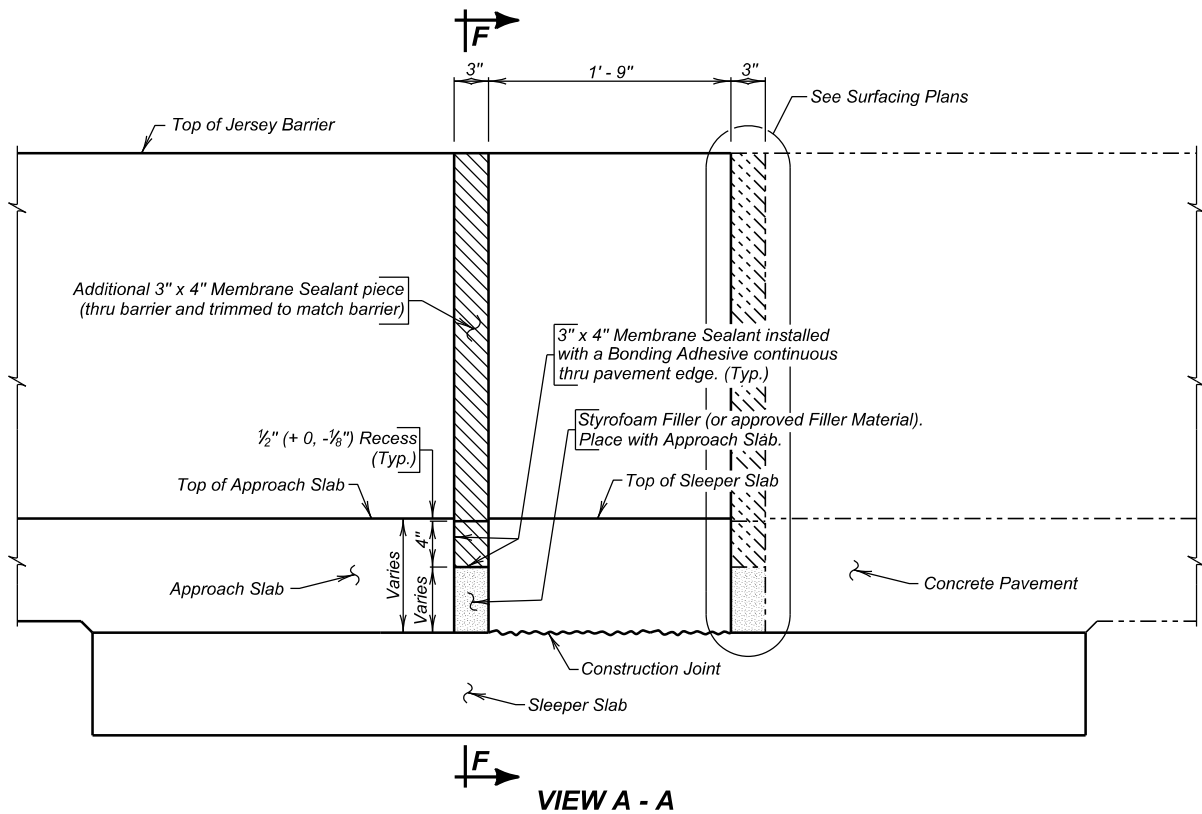
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

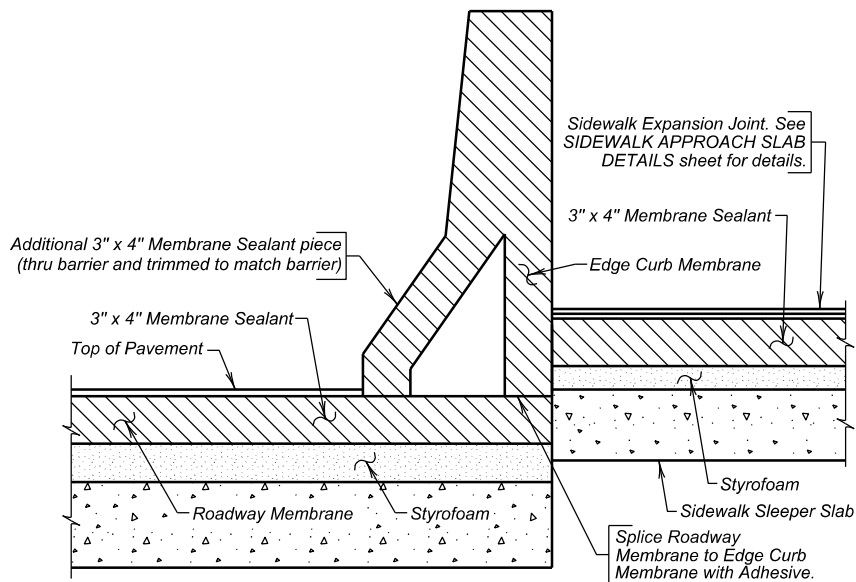
JANUARY 2022

32 OF 37

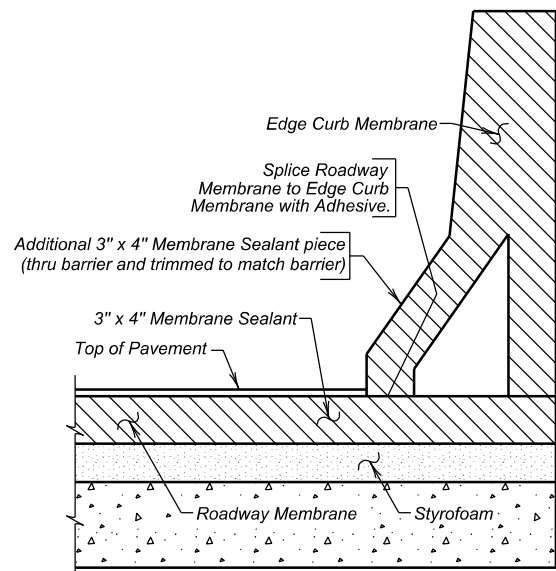
DESIGNED BY BB MINN04XK	CK. DES. BY PW 04XKGA32	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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SECTION B - B



SECTION C - C



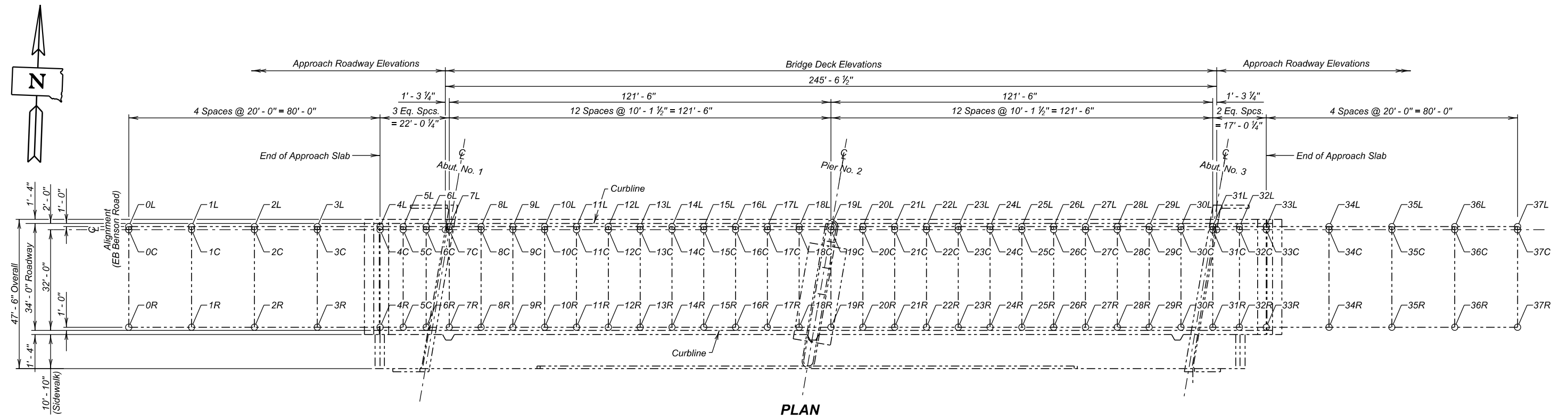
SECTION F - F

ESTIMATED QUANTITIES		
(For Two Approach Slabs)		
ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	116.8

APPROACH SLAB JOINT DETAILS (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E36	E115



PLAN

<i>Location</i>	<i>Elevation</i>	<i>Location</i>	<i>Elevation</i>	<i>Location</i>	<i>Elevation</i>
0L		0C		0R	
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
6L		6C		6R	
7L		—		—	
—		—		31R	
32L		32C		32R	
33L		33C		33R	
34L		34C		34R	
35L		35C		35R	
36L		36C		36R	
37L		37C		37R	

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

Table of As-Built Elevations - Bridge Deck					
Location	Elevation	Location	Elevation	Location	Elevation
—		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		21R	
23L		23C		23R	
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		—	

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

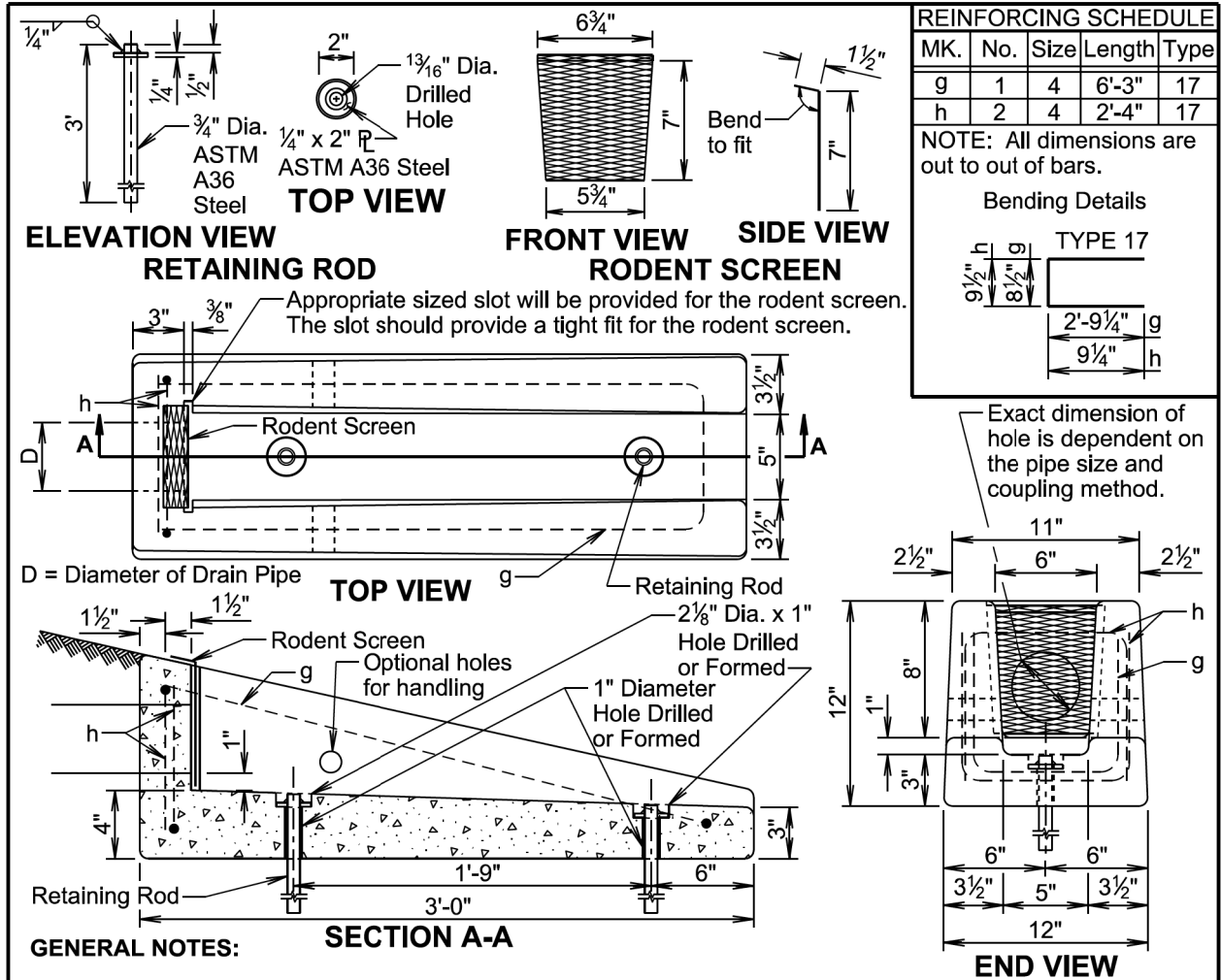
NOTE -
The Contractor will be responsible for producing the As - Built Elevation Survey soon after construction is complete and before the bridge is opened to traffic. The As - Built Elevations of the Bridge will be taken and recorded at the locations shown by the table on this sheet. The completed table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

**AS - BUILT ELEVATION SURVEY
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE**

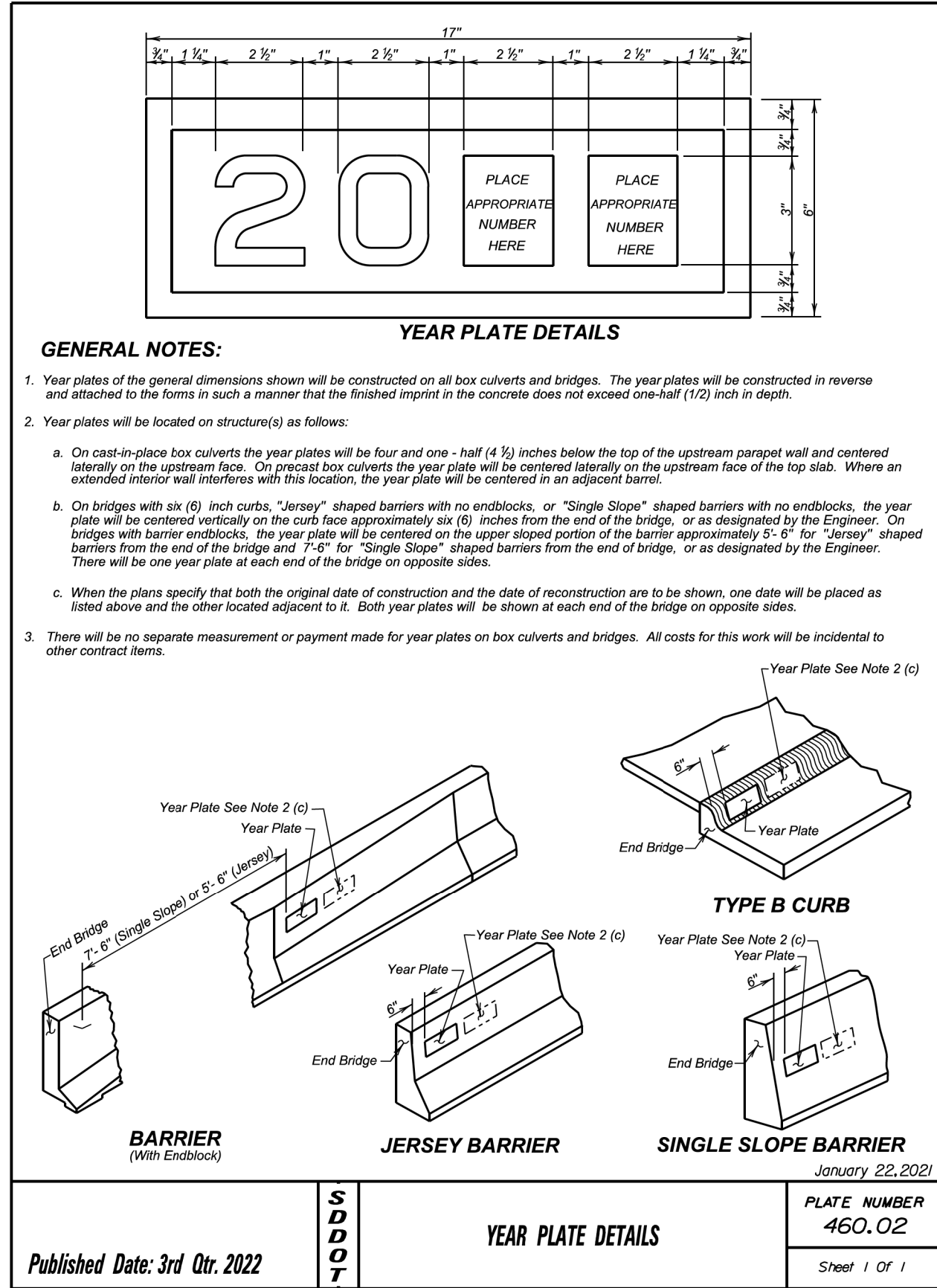
34' - 0" ROADWAY & 9° 45' 08" LHF SKEW
10' - 0" SIDEWALK SEC. 35-T102N-R49W
OVER I-229 (EB BENSON ROAD) IM 2292(98)6
EB STA. 36 + 83.66 TO EB STA. 39 + 29.20 HL-93
STR. NO. 50-219-179

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JANUARY 2022

DESIGNED BY BB	CK. DES. BY PW	DRAFTED BY BT	<i>Steve A Johnson</i> BRIDGE ENGINEER
MINN04XK	04XKGA34		



Published Date: 3rd Qtr. 2022	S D D O T	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50
			Sheet 1 of 1
			November 19, 2021



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.

June 26, 2012

Published Date: 3rd Qtr. 2022

SDDOT

BRIDGE SURVEY MARKER

PLATE NUMBER
460.05

Sheet 1 of 1

COMPLETE JOINT PENETRATION WELD DETAIL

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

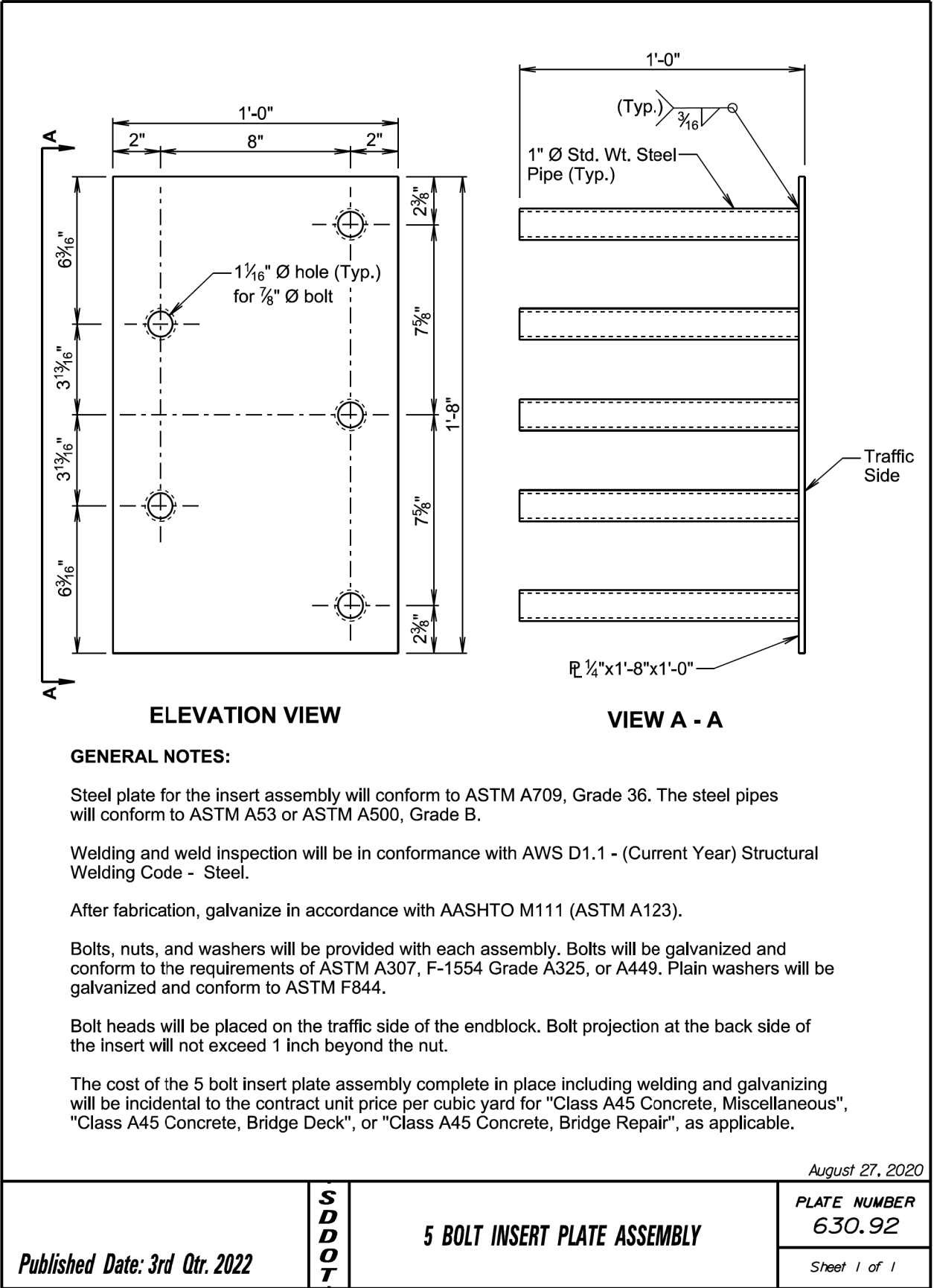
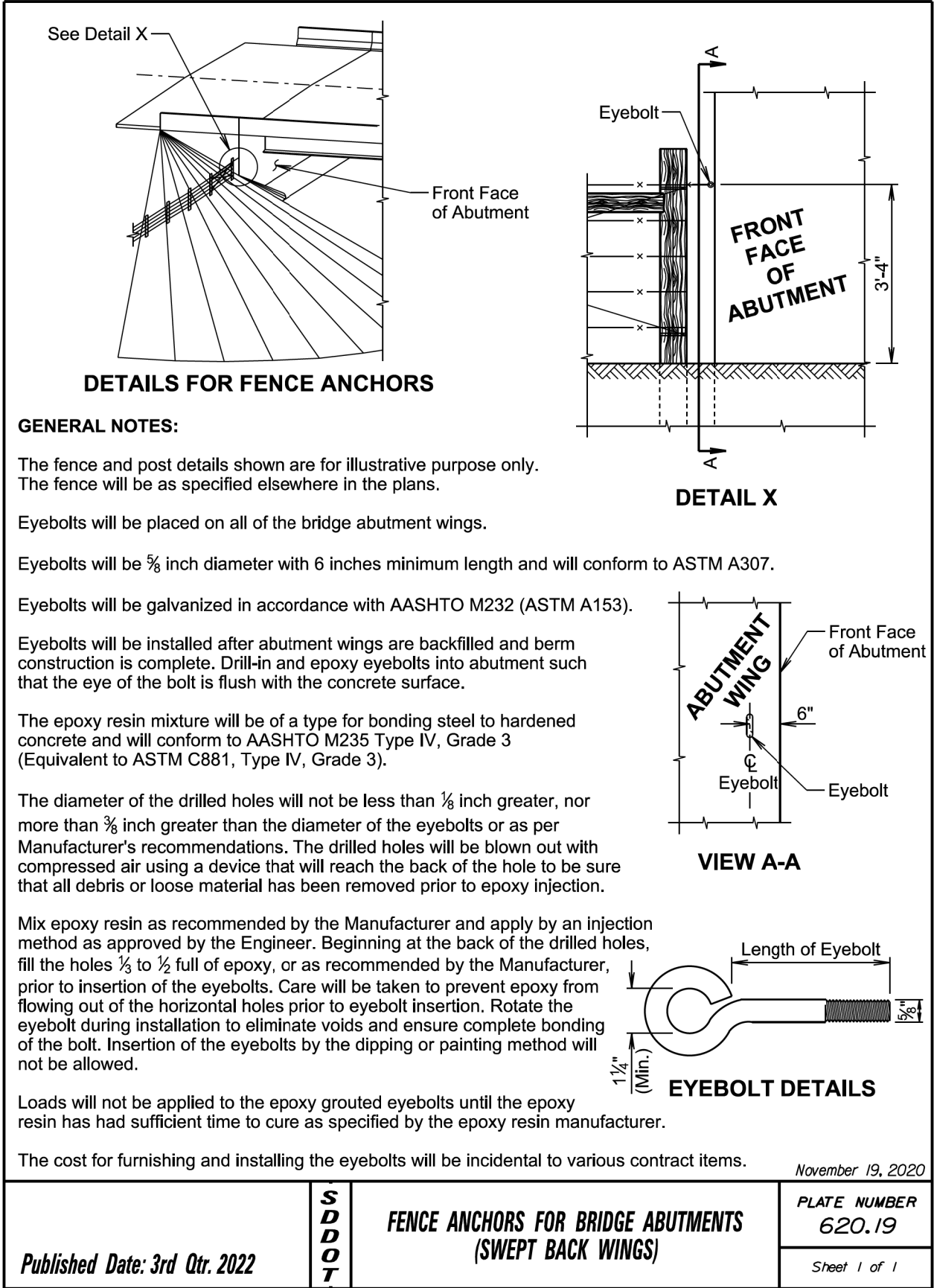
Published Date: 3rd Qtr. 2022

SDDOT

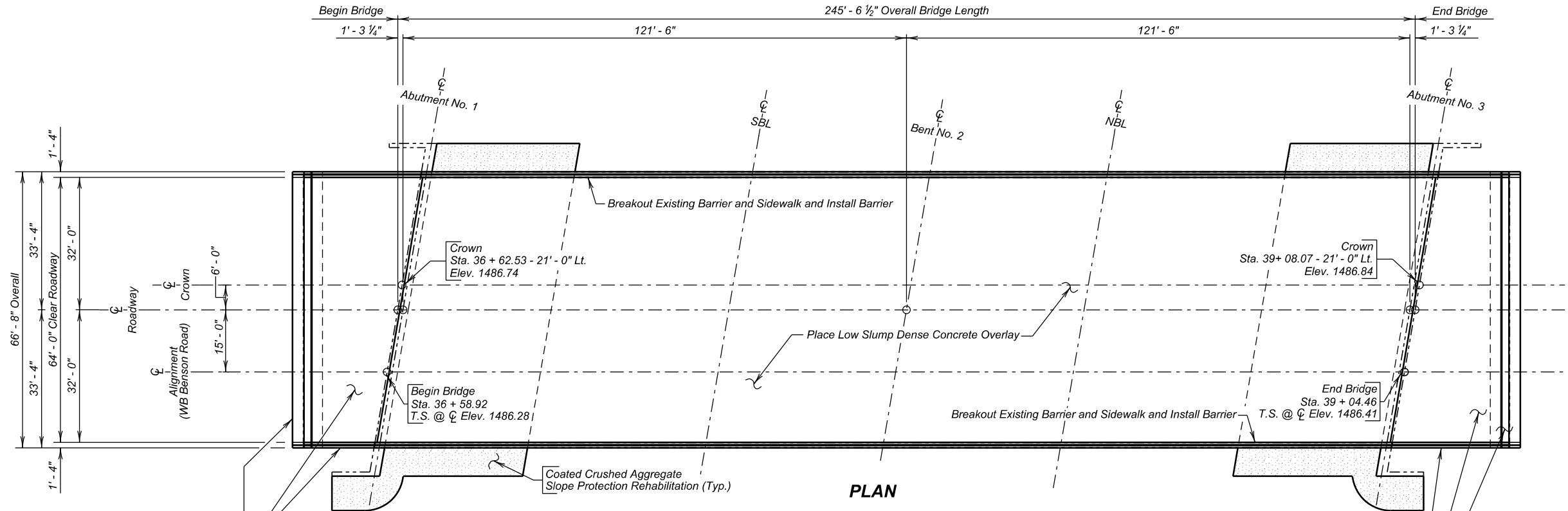
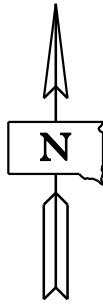
STEEL PILE SPLICE DETAILS

PLATE NUMBER
510.40

Sheet 1 of 1



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 & P 1200(04)	E40	E115

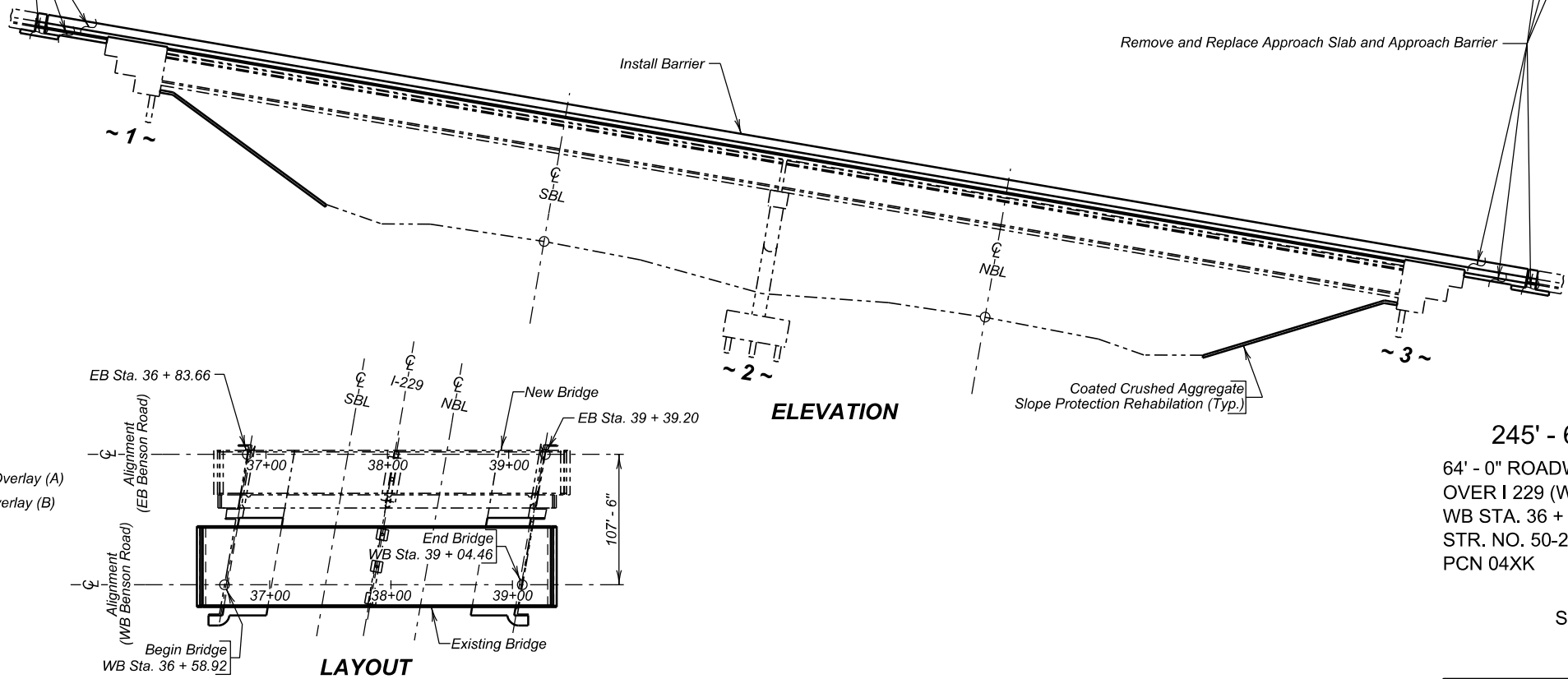


Remove and Replace Approach Slab and Approach Barrier

Remove and Replace Approach Slab and Approach Barrier

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Upgrade
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet Nos. 3 thru 5 - Notes (Continued)
- Sheet No. 6 - Breakout and Removal Details
- Sheet No. 7 - Bridge End Backfill Details
- Sheet No. 8 - Bridge Barrier Details
- Sheet No. 9 - Approach Slab Details (A)
- Sheet No. 10 - Approach Slab Details (B)
- Sheet No. 11 - Approach Slab Details (C)
- Sheet No. 12 - Approach Slab Details (D)
- Sheet No. 13 - Approach Slab Details (E)
- Sheet No. 14 - Approach Slab Joint Details
- Sheet No. 15 - Deck Profiles For Low Slump Dense Concrete Bridge Deck Overlay (A)
- Sheet No. 16 - Deck Profiles for Low Slump Dense Concrete Bridge Deck Overlay (B)
- Sheet No. 17 - As-Built Elevation Survey Request (A)
- Sheet No. 18 - As-Built Elevation Survey Request (B)
- Sheet No. 19 - As-Built Elevation Survey Request (C)
- Sheet No. 20 - Standard Plate 460.02
- Sheet No. 21 thru 35 - Original Construction Plans



LAYOUT FOR UPGRADE FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.92 TO WB STA. 39 + 04.46 IM 2292(98)9
STR. NO. 50-219-180
PCN 04XK

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

1 OF 35

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

DESIGNED BY JH MINN04XK	CK. DES. BY SI 04XKRB01	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
110E0010	Remove Concrete Bridge Approach Slab	406.2	SqYd
110E0020	Remove Bridge Railing	1008	Ft
110E0040	Remove Concrete Bridge Slab	311.7	SqYd
120E0600	Contractor Furnished Borrow Excavation	31	CuYd
260E1010	Base Course	79.0	Ton
410E2600	Membrane Sealant Expansion Joint	155.4	Ft
460E0070	Class A45 Concrete, Bridge Repair	44.1	CuYd
460E0150	Concrete Approach Slab for Bridge	314.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	107.4	SqYd
460E0200	Special Surface Finish	3978	SqFt
460E0300	Breakout Structural Concrete	44.0	CuYd
460E0380	Install Dowel in Concrete	86	Each
460E0650	Roadway Canopy	Lump Sum	LS
480E0200	Epoxy Coated Reinforcing Steel	7467	Lb
480E5000	Galvanic Anode	246	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	124	CuYd
550E0100	Concrete Removal Type 1A	1738.9	SqYd
550E0110	Concrete Removal Type 1B	347.8	SqYd
550E0120	Concrete Removal Type 1C	347.8	SqYd
550E0130	Concrete Removal Type 1D	347.8	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	74.9	CuYd
550E0500	Finishing and Curing	1738.9	SqYd
680E0040	4" Underdrain Pipe	36	Ft
734E2020	Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate	214.2	SqYd

SPECIFICATIONS

1. Design Specifications for Barriers: AASHTO LRFD Bridge Design Specifications 9th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

1. All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.
2. The elevations shown in the original construction plans are not based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown elsewhere in the plans. Alternate sequence of operations may be submitted by the contractor for approval by the engineer a minimum of two weeks prior to the preconstruction meeting.

1. Install the outlet pipes for the north wingwalls before construction of adjacent new structure.
2. Remove bridge sign, railings, and chain-link fencing.
3. Breakout bridge sidewalk and barriers to limits shown in plans.
4. Remove the existing approach and sleeper slabs.
5. Replace outlet pipes and reestablish berm for south wingwalls.
6. Accomplish all Concrete Removal Type 1A, 1B, 1C, 1D, 2A, and B and place Class A45 Concrete Fill to the satisfaction of the Engineer.
7. Place a Low Slump Dense Concrete Bridge Deck Overlay to the elevations shown in the plans on the bridge deck.
8. Place base course to reestablish approach slab grade.
9. Replace approach slabs and sleeper slabs to the correct grade.
10. Install new bridge barriers and approach slab barriers.
11. Replace sleeper slab joints with approved Membrane Sealant Expansion Joint.
12. Rehabilitate and place bridge berm slope protection.

GENERAL CONSTRUCTION - BRIDGE

1. All reinforcing steel will conform to ASTM A615, Grade 60.
2. All exposed concrete corners and edges will be chamfered ¾-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
4. The Contractor will only imprint one year-plate on the structure. The year plate will contain the date the existing bridge was built and will be located as specified and detailed on Standard Plate No. 460.02.
5. Barrier curbs and end blocks will be built perpendicular to the grade.
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. 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.
8. All lap splices are contact lap splices unless noted otherwise.

DESIGN MIX OF CONCRETE

1. Class A45 Concrete will be used for Concrete Approach Slab for Bridge, Concrete Approach Sleeper Slab for Bridge, and Class A45 Concrete, Bridge Repair.

2. The type of cement, concrete strength requirements, aggregate requirements, slump, and air requirements for the contract items Concrete Approach Sleeper Slab for Bridge and Concrete Approach Slab for Bridge will conform to the requirements of Section 460 of the Construction Specifications for bridge decks.

REMOVAL OF CONCRETE BRIDGE APPROACH SLAB

1. The existing concrete approach and sleeper slabs adjacent to the structure will be completely removed by the Contractor.
2. The concrete and reinforcing steel from the removal will be disposed of by the Contractor at an approved site. An appropriate site will be as described in the Environmental Commitment Notes in this set of plans.
3. The quantity provided for Remove Concrete Bridge Approach Slab is computed using the plan area for the sleeper slab and the plan area for the approach slab determined separately.
4. All labor, tools, equipment and any incidentals necessary for removal and disposal of the existing approach slabs, joint, and sleeper slabs will be incidental to the contract unit price per square yard for Remove Concrete Bridge Approach Slab.

DRAINAGE TUBING

1. The outlet pipes will be constructed of a PVC pipe system as shown on the plans and meeting the following requirements:

The 4" Dia. 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 will conform to ASTM D6707.
2. Care will be taken to ensure that the 4" Dia. PVC Outlet Pipe is 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.
3. All labor, tools, equipment, and any incidentals necessary for the installation of the 4" Dia. PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
245' - 6 ½" PRESTR. GIRDER BRIDGE

STR. NO. 50-219-180
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APPROACH SLABS

- Bridge end backfill will be constructed in accordance with Section 430 of the Construction Specifications except the drainage tubing will be as specified in these notes and as detailed in the plans.
- Excavation for placement of new approach slabs, sleeper slabs, bridge, and drainage piping will be done with minimal disturbance to the underlying material.
- Prior to the placement of the approach and sleeper slabs, the existing Granular Bridge End Backfill material will be compacted using at least four complete passes of a smooth face vibratory roller or vibratory plate compactor. Base Course will be placed as required to fill any low spots and to achieve the elevation needed for installation of the new approach and sleeper slabs. The existing and fill material will be thoroughly watered prior to and during compaction. Base Course will be in accordance with Section 882 of the Construction Specifications.
- The top of approach slab elevations will be as provided in the plans and subject to the approval of the Engineer.
- 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 joint.
- The use of a vibratory screed will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the screed will be kept parallel to the screed.
- The concrete in the approach slab will be tined perpendicular to the centerline of the roadway.
- The new approach slabs and sleeper slabs will have a surface finish as specified in Section 460.3 L.4 of the Construction Specifications.
- The concrete approach slabs will be cured in accordance with Section 460.3 M of the Construction Specifications. The minimum 7-day cure time requirement will be waived. The approach slabs will be cured until a minimum compressive strength of 4,000 psi is reached.
- The quantity Base Course required to fill any low spots or voids is based on a 4-inch layer under the area of the approach slab. The actual quantity may vary.
- Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for excavation; furnishing, hauling, and placing all materials including: concrete and reinforcing steel; for disposal of all excavated material and surplus materials; 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 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; labor; tools; equipment; and any incidentals necessary to complete this item of work.

- Any Base Course and compaction required to fill any low spots or voids will be paid for at the contract unit price per ton for Base Course. This payment will be full compensation for furnishing, hauling, and placing all materials including disposal of all surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.

LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY

- The preparation for resurfacing consists of Concrete Removal Type 1A on the entire bridge deck and Type 1B, Type 1C, Type 1D and Type B over the deck surface as detailed on the plan sheets. Such removal will be in conformance with these plans and Section 550 of the Construction Specifications. Extreme care will be taken during the Concrete Removal 1A to assure that the existing reinforcing steel is not damaged. In the event that reinforcing steel damage inadvertently occurs, the Bridge Construction Engineer will be immediately notified. Any damaged reinforcing steel will be repaired by the Contractor, as approved by the Engineer, at no additional cost to the Department.
- Concrete Removal Type 1C, Concrete Removal Type 1D, Concrete Removal Type B and Class A45 Concrete Fill may not be encountered and may be omitted from the project as determined by the Engineer.
- Concrete Removal Type 1C, Concrete Removal Type 1D and Class A45 Concrete Fill is not anticipated to exceed the plan shown quantities. If the Engineer determines that Concrete Removal Type 1C, Concrete Removal Type 1D and/or Class A45 Concrete Fill in excess of the plan shown quantity is necessary, payment for the additional quantity will be conformance with Section 550.5 of the Construction Specifications.
- Class A45 Concrete Fill will be an approved A45 Concrete Mix Design mixed and proportioned in accordance with Section 460 of the construction specifications with the following modifications: the course aggregate gradation will be in accordance with Section 820 of the Construction Specifications and the size #3 will be substituted in lieu of sizes #1 and #15.
- A minimum thickness of 2" of Low Slump Dense Concrete will be maintained on the bridge deck.
- It will be necessary for the Contractor to shape the surface of the Low Slump Dense Concrete Bridge Deck Overlay within one foot of the curb as detailed in the plans to ensure that water drains to the floor drains or off the ends of the bridge.
- The paving notch will be cleaned by abrasive blasting as approved by the Engineer. Reinforcing steel will be placed in the paving notch according to the plans. The modified paving notch will be filled with concrete during the placement of Low Slump Dense Concrete Bridge Deck Overlay. The use of a spud vibrator maybe required to prevent voids in this location.

- No traffic will be allowed to operate on the scarified portion of the bridge deck. If it appears that the entire Low Slump Dense Concrete Bridge Deck Overlay cannot be completed prior to winter, the Type 1A, 1B, 1C, 1D and Type B removal will not be done until work resumes in the spring. In the event that scarification has been started and due to unforeseen circumstances it becomes impossible to complete the placement of the Low Slump Dense Concrete Bridge Deck Overlay on the entire surface of the structure prior to winter, the Office of Bridge Design will be notified. Recommendations for handling winter traffic will then be made. These recommendations may include, but are not limited to: filling extra depth removal areas with Class A45 Concrete, placing an asphalt overlay on the uncompleted area so that the entire roadway width may be opened to traffic, removal of the asphalt overlay when work is resumed, and scarifying an additional 1/4" of depth on the bridge deck. The cost of this work including: asphalt overlay, scarification, Class A45 Concrete, extra Low Slump Dense Concrete, and all other items incidental to this work, will be at the expense of the Contractor.

CONCRETE BREAKOUT

- The existing bridge barriers and sidewalk will be broken out to the limits shown on the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
- Care will be taken to not damage the existing prestress girders during the concrete removal process. In the event damage occurs, the Office of Bridge Design will be immediately notified. All costs involved in repairing any damage, including any non-destructive testing that may be required, will be at the expense of the Contractor.
- All broken out concrete and discarded reinforcing bars will be disposed of by the Contractor. Any disposal of discarded material will be in accordance with the Construction Specifications.

NOTES (CONTINUED)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE

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CONCRETE BREAKOUT (CONTINUED)

- 4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out barrier concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.
- 5. Removal of the bridge deck sidewalk will be per the contract unit price per square yard for Remove Concrete Bridge Slab including breaking out of concrete, cleaning and straightening existing reinforcing steel, and disposal of all broken out material.

INSTALLING DOWELS IN CONCRETE

- 1. Holes drilled in the existing concrete will be true and normal or as shown in the plans. Drilling holes using a core drill will not be allowed. Care will be taken not to damage the existing reinforcing steel. It is likely that some of the existing reinforcing steel shown in the original construction plans may have been placed out of position during original construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the in-place reinforcing steel. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes will be completely filled with the epoxy resin as approved by the Engineer.
- 2. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3). Grade 1, 2 or 3 may be used for vertical dowels and Grade 3 epoxy will be used for all horizontal dowels.
- 3. The diameter of the drilled holes will be 1/8 to 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
- 4. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
- 5. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
- 6. Dowel bars will be deformed bars conforming to ASTM A615 Grade 60.
- 7. The cost of epoxy resin, dowels, installation and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

GALVANIC ANODE

- 1. The Contractor will furnish and place galvanic anodes in the concrete repair areas specified in this plan set.
- 2. The galvanic anodes will be supplied as one of the following:
 - a. Galvashield XP2
Vector Corrosion Technologies
65114 140th Ave.
Wabasha, MN 55981
Phone: (507) 259-2481
Website: www.vector-corrosion.com
 - b. Sentinel Silver
Euclid Chemical Company
19218 Redwood Road
Cleveland, OH 44110
Phone: (800) 321-7628
Website: www.euclidchemical.com
 - c. Sika FerroGard 670
Sika Corporation US
201 Polito Avenue
Lyndhurst, NJ 07071
Phone: (800) 933-7452
Website: <http://usa.sika.com>
- 3. The anodes will be placed in accordance with manufacturer's recommendations and as approved by the Engineer. The anodes have not been shown on the drawings. The Contractor will provide shop drawings of the galvanic anode installation including locations of the individual anodes to the Office of Bridge Design.
- 4. The anodes will be placed with a minimum ¾" cover and will be set in embedding mortar per the manufacturer's recommendations. The anodes will be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket will be chipped out behind the anode to provide sufficient cover. The Contractor may need to chip around the reinforcing bar locally at the anode installation to make the electrical connection. The reinforcing steel at the connection location will be cleaned per the manufacturer's recommendations to provide sufficient electrical connection and mechanical bond.
- 5. The electrical continuity of the connections and reinforcing steel will be confirmed per the manufacturer's recommendations.
- 6. In area of concrete repair where anodes are placed, the epoxy coating on the reinforcing steel will not require touch up.
- 7. The Contractor will provide manufacturer's product literature and installation instructions to the Engineer 10 days prior to installation.
- 8. All costs associated with placing anodes including labor, equipment, materials and incidentals will be included in the contract unit price per each for Galvanic Anode.

- 9. The Contractor has the option of providing galvanic strip anodes in place of the Galvanic Anodes for the curb repair. The galvanic strip anodes will conform to the same requirements listed above for Galvanic Anode. The use of galvanic strip anodes in place of Galvanic Anodes will be at no additional cost to the Department. The galvanic strip anodes will be supplied as the following or an approved equivalent as approved by the Office of Bridge Design:

Galvanode DAS
Vector Corrosion Technologies
65114 140th Ave.
Wabasha, MN 55981
Phone: (507) 259-2481
Website: www.vector-corrosion.com

NOTES (CONTINUED)
FOR
245' - 6 ½" PRESTR. GIRDER BRIDGE

STR. NO. 50-219-180
SEPTEMBER 2022

CRUSHED AGGREGATE SLOPE PROTECTION REHABILITATION

1. This work will consist of repairing the existing coated crushed aggregate slope protection for control and prevention of berm erosion.
2. The aggregate used in the crushed aggregate slope protection will conform to the requirements of Section 820 of the Construction Specifications for coarse aggregate for Class A Concrete (Size #1).
3. The asphalt material used in the crushed aggregate slope protection will be either Asphalt Type MC-70 or MC-250, or emulsified Asphalt Type RS-1, RS-2, CRS-1, or CRS-2 meeting the requirements of Section 890 of the Construction Specifications and AASHTO M81, AASHTO M140, and AASHTO M208 respectively.
4. The surface upon which the slope protection is to be placed will be smooth, uniform, and free from foreign material. The top surface of the slope protection will conform to the dimensions, elevations, and slopes shown in the plans.
5. At locations identified in the plans the Contractor will repair the existing crushed aggregate slope protection. The crushed aggregate will be shaped and compacted to provide a stable, smooth, and uniform surface. It is anticipated that 22 tons of crushed aggregate will be required for repairing the existing bridge berm slope protection.
6. The asphalt material will be applied at a rate sufficient to assure penetration and binding of the aggregate in the upper 2 inches of the slope protection. (Estimated Rate = 1.3 gallons per square yard.) The surfaces of the adjacent structure and retaining walls will be protected from spattering or discoloration from the asphalt material. The entirety of the existing crushed aggregate slope protection will be re-coated with asphalt. It is anticipated that 214.2 sqyds of asphalt coating will be required.
7. Payment for crushed aggregate slope protection rehabilitation will be at the contract unit price per square yard for Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate and will be full compensation for slope paving, including furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work. Payment will be for plans quantity.

AS-BUILT ELEVATION SURVEY

The Contractor will be responsible for producing an as-built elevation survey soon after construction is complete and before the bridge is completely opened to traffic. The Contractor will be responsible for recording the as-built deck elevations at the locations shown by the table of as-built elevations shown in the plans. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Mitchell Senior 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 costs 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.

SPECIAL SURFACE FINISH

1. All of the surfaces visible to the traveling public on the existing concrete piers and abutments will be given a Class B Commercial Texture Finish in accordance with Section 460.3 L.1.c. of the Construction Specifications. Visible surfaces include all exposed surfaces above finished ground line.
2. The concrete surfaces requiring the application of the Commercial Texture Finish will be prepared in accordance with the manufacturer's recommendations. The Contractor will submit a product data sheet, or an approved equal, documenting all pertinent information with regard to preparation of the concrete surfaces, materials and equipment required, mixing requirements, and application procedures to the Engineer in advance of the application of the Commercial Texture Finish for review and approval.
3. The Special Surface Finish for the piers and abutments will match the finish applied to the adjacent new structure's pier and abutments.
4. Any damage to the commercial texture finish during the construction including abrasion from traffic due to the traffic control will be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.
5. The cost of the commercial texture finish will be included in the contract unit price per square foot for Special Surface Finish. This payment will be full compensation for furnishing all materials, removal of existing surface finish, labor, tools, and equipment necessary or incidental to the application of this finish.

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish will be applied to the following areas:
 - a) **Barrier:** All exposed surfaces (front, top, and back).*

* Exterior face of barrier to be painted tan

* Top and interior face to be painted pearl white
2. The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c of the Construction Specifications.
3. The concrete surfaces requiring the application of the Commercial Texture Finish will be prepared in accordance with the manufacturer's recommendations. The Contractor will submit a product data sheet, or an approved equal, documenting all pertinent information with regard to preparation of the concrete surfaces, materials and equipment required, mixing requirements, and application procedures to the Engineer in advance of the application of the Commercial Texture Finish for review and approval.
4. For informational purposes the amount of surface area requiring the Class B Commercial Texture Finish is 3455 square feet..
5. Any damage to the commercial texture finish during the construction will be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.

6. The cost of the commercial texture finish will be included in the contract unit price per cubic yard for Class A45 Concrete, Bridge Repair. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the application of this finish.

ROADWAY CANOPY

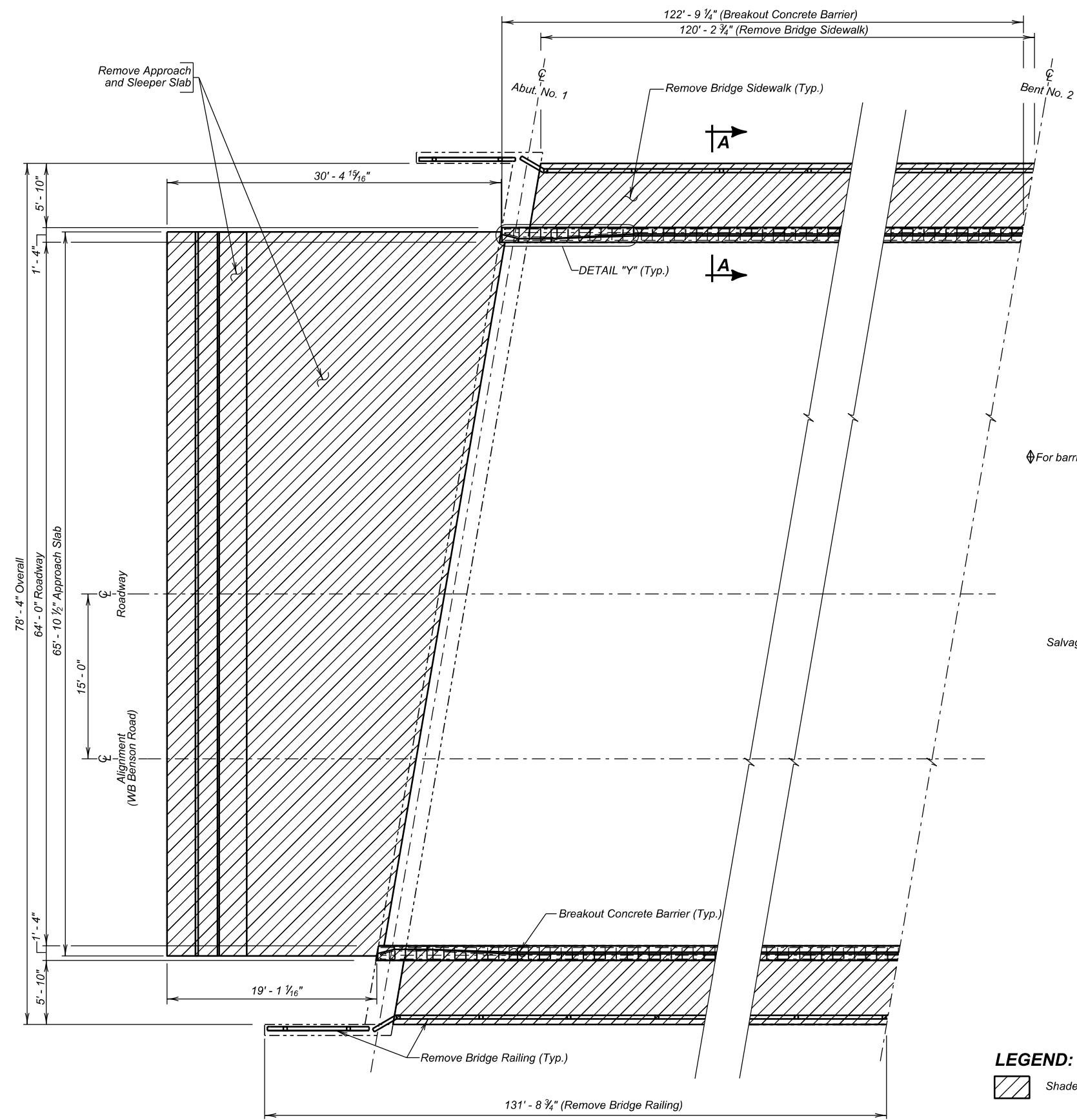
1. The Contractor will construct a rigid canopy above the interstate under the structure. The canopy is intended to capture smaller debris and not act as safety net for falling deck and sidewalk sections. As such, no traffic will be allowed under an area of active deck removal even with the canopy in place. The exception is traffic will be allowed under the canopy if the only removal occurring is using hand tools and chipping hammers. The canopy is an added safeguard and does not relieve the Contractor of any responsibility for the safety of the public. The canopy will meet the following minimum requirements.
 - a. The entire system will be above the bottom of the girders.
 - b. Attachments will not be made to the girders.
 - c. The canopy will be of a design and material which can adequately capture and contain falling debris as selected by the Contractor and approved by the Engineer.
 - d. The canopy will be constructed for an entire span before any breakout can occur in that span.
 - e. The erection of the canopy will be completed in a manner which will cause the least inconvenience to the traveling public.
2. The Contractor will submit a detailed Demolition Plan to the Bridge Construction Engineer, 30 days prior to any bridge deck removal. This Demolition Plan will include all canopy details, bridge deck breakout details, a sequence of traffic control, and a sequence of bridge deck removal.
3. The Roadway Canopy will be paid for at the contract lump sum price for Roadway Canopy. This payment will include all construction, maintenance, and removal of the Roadway Canopy.
4. If the Contactor elects for full closure of Interstate 229 during the concrete removal process, the Roadway Canopy will not be required and can be omitted from the project as directed by the Engineer.

NOTES (CONTINUED)

FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE

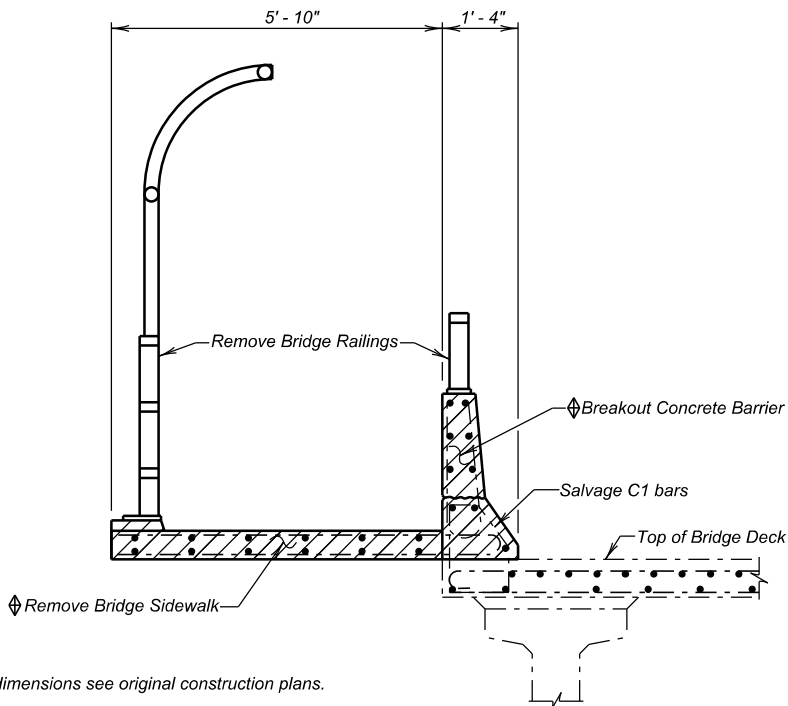
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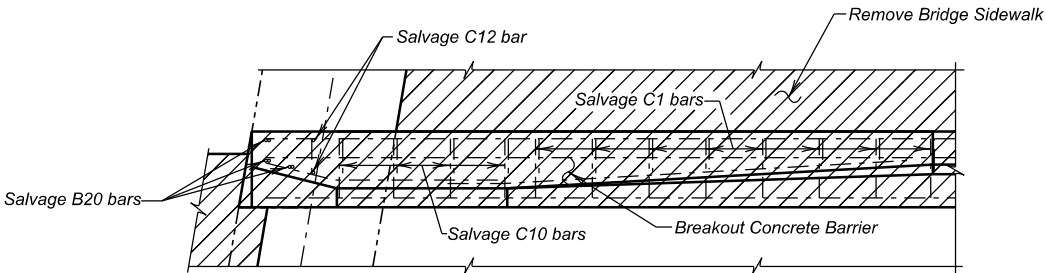


PLAN

(Shown adjacent to Bent 2, opposite half similar by rotation)



SECTION A - A



DETAIL "Y"
(Bridge Railing not shown for clarity)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Remove Concrete Bridge Approach Slab	SqYd	406.2
Remove Bridge Railing	Ft	1008
Remove Concrete Bridge Slab	SqYd	311.7
Breakout Structural Concrete	CuYd	44.0

BREAKOUT AND REMOVAL DETAILS
FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

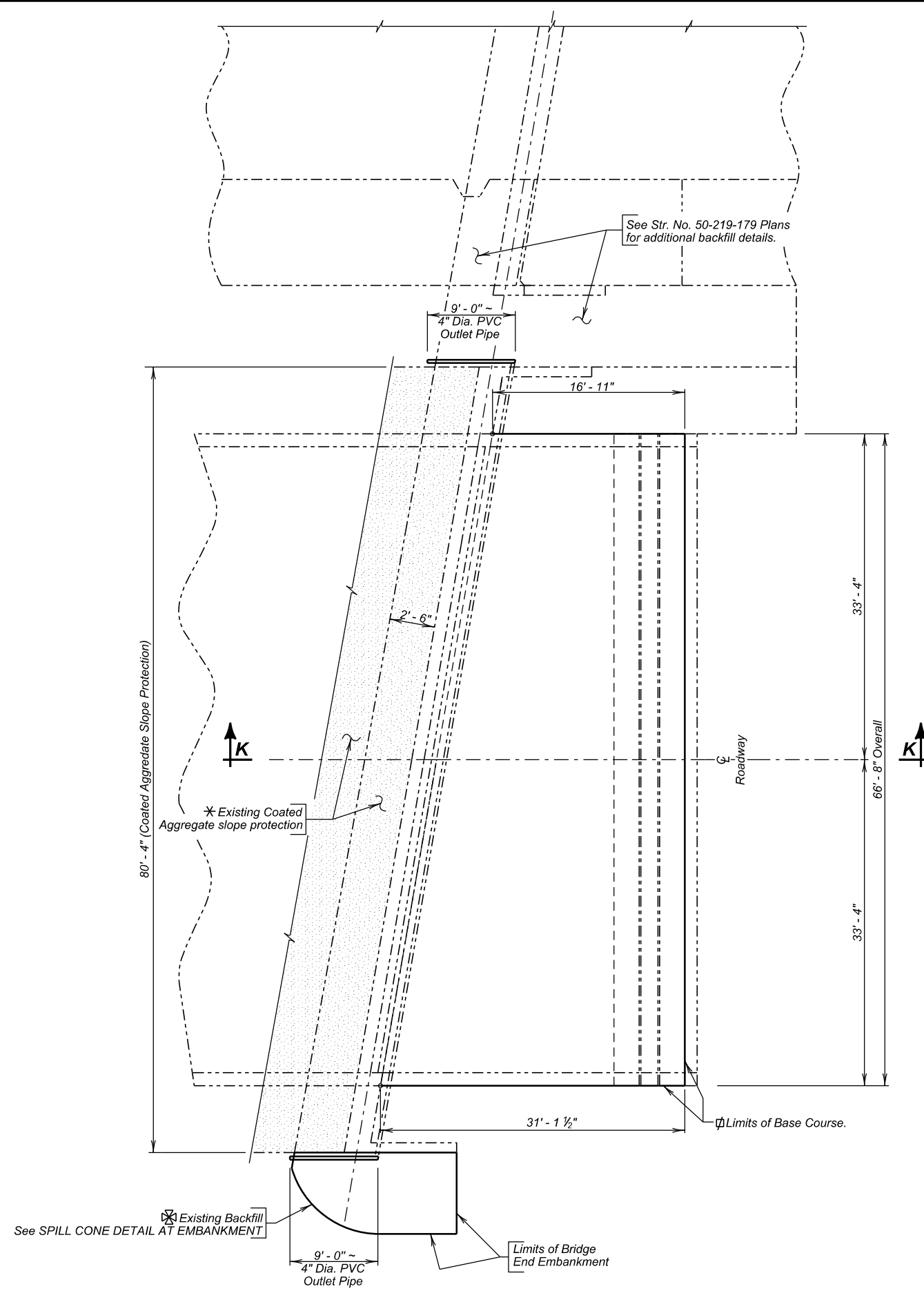
6 OF 35

DESIGNED BY
JH
MINN04XK

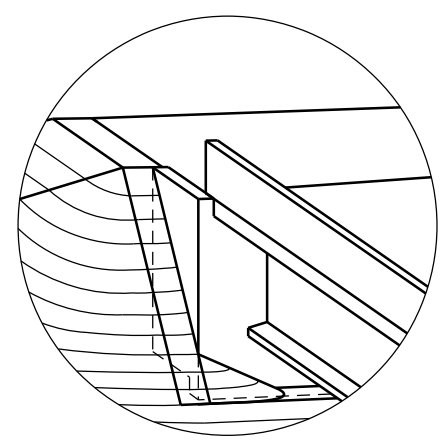
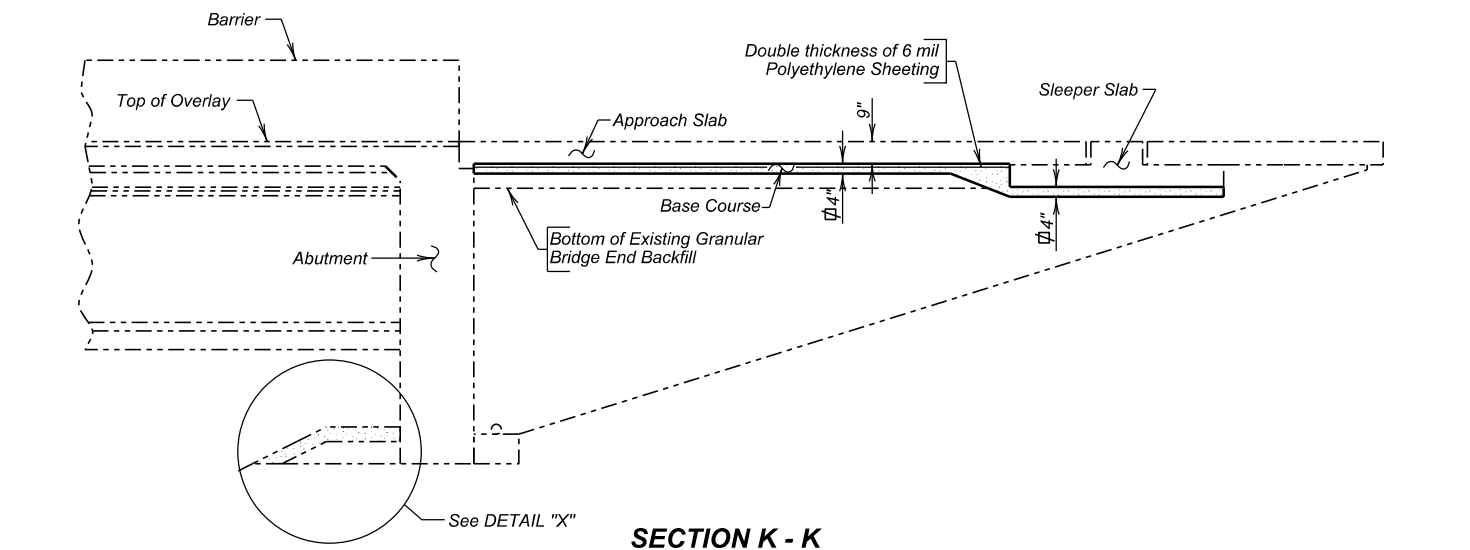
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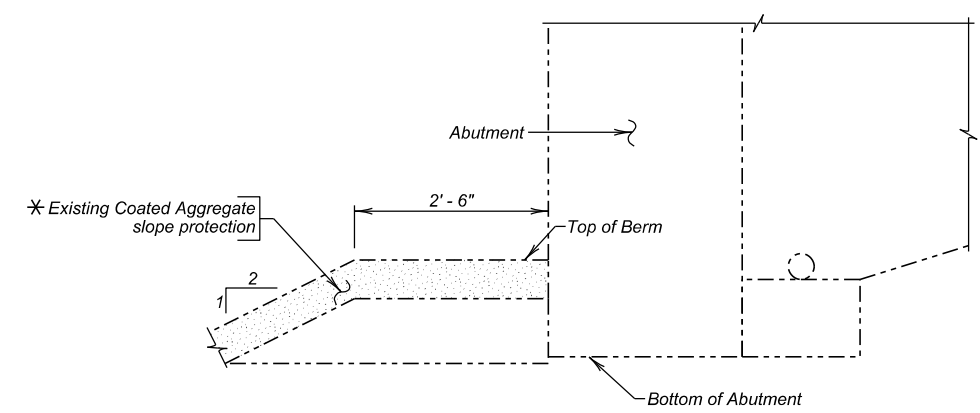
Steve A. Johnson
BRIDGE ENGINEER



(Bridge End Backfill shown adjacent to Abutment No. 3, Abutment No. 1 similar by opposite hand.)



SPILL CONE DETAIL AT EMBANKMENT



GENERAL NOTES:

- 4" of material is used for estimation purposes only. Base Course will be placed and compacted to fill any low spots and bring backfill up to grade.
- Perform excavation in a manner that limits disturbance to the existing bridge berm. Where disturbance can not be minimized or if the existing spill cone has eroded, rebuild as shown.
- Following the replacement of the outlet pipe, the berms and slope protection are to be repaired to match the original templates. The swale below the outlet pipe is also to be filled and reconstructed.
- 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.

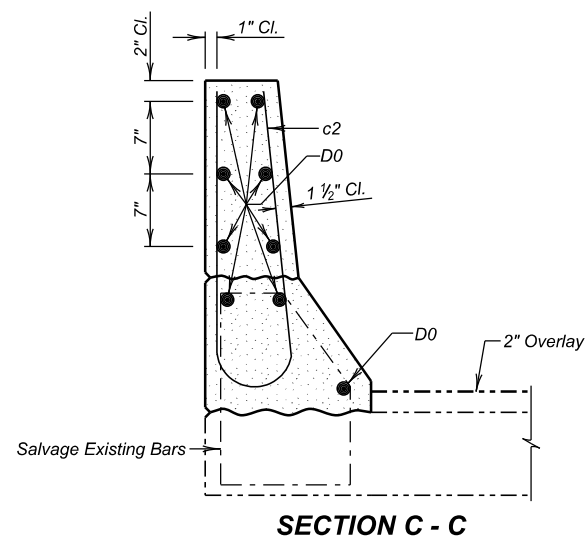
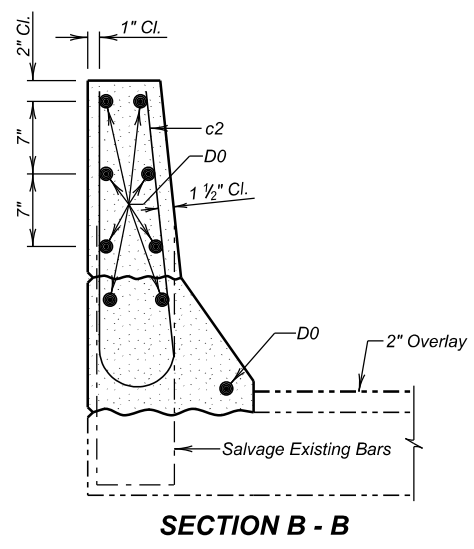
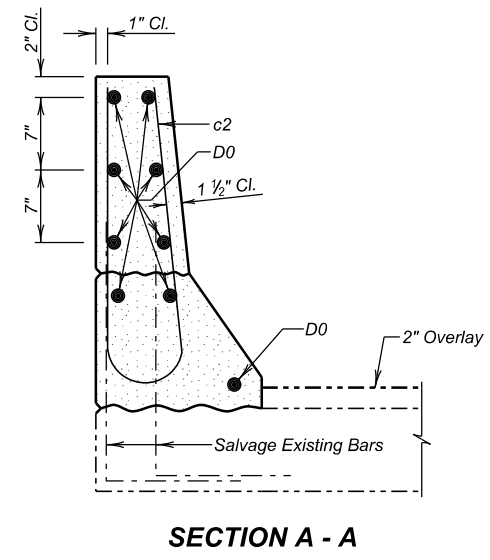
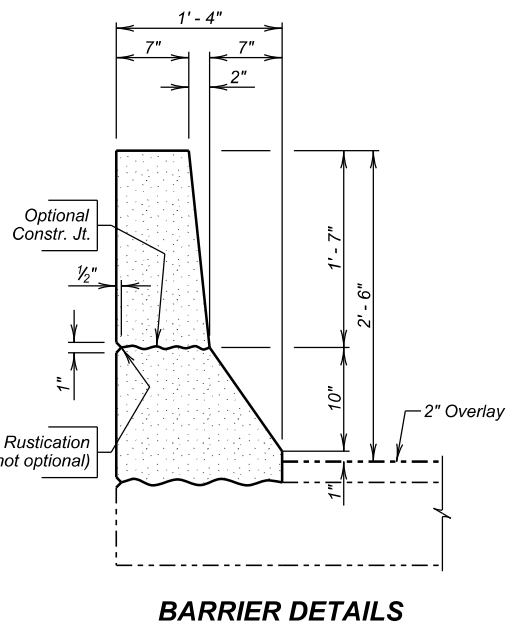
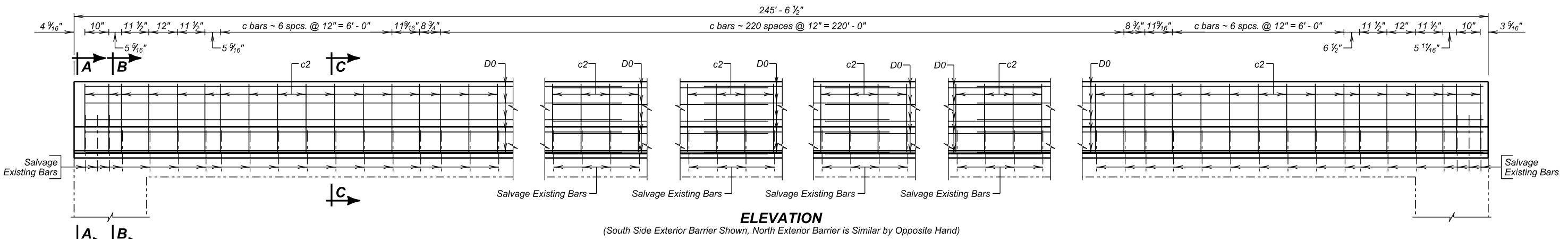
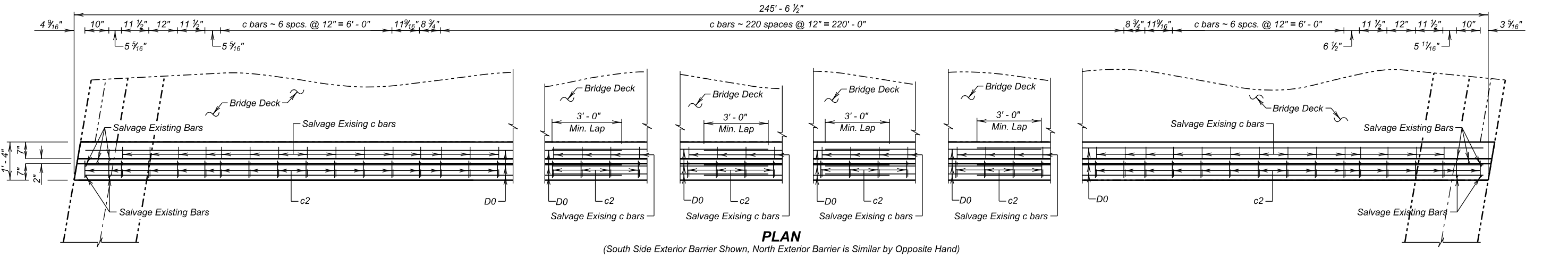
ESTIMATED QUANTITIES		
(For Both Abutments)		
ITEM	UNIT	QUANTITY
Contractor Furnished Borrow Excavation	CuYd	31
Base Course	Ton	79.0
Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate	SqYd	214.2
4" Underdrain Pipe	Ft	36

- Items 1 and 2 are approximate quantities contained in the above contract items and are for information only.
- 538 SqYd 6 mil Polyethylene Sheeting (not including laps)
 - 36 Ft 4" Dia. PVC Outlet Pipe

BRIDGE END BACKFILL DETAILS
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

DESIGNED BY JH MINN04XK	CK. DES. BY SI 04XKRB07	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
-------------------------------	-------------------------------	------------------	-------------------------------------



REINFORCING SCHEDULE					
(For Two Bridge Barriers)					
Mk.	No.	Size	Length	Type	Bending Details
c2	498	5	5' - 1"	S11	
D0	90	5	51' - 5"	Str.	

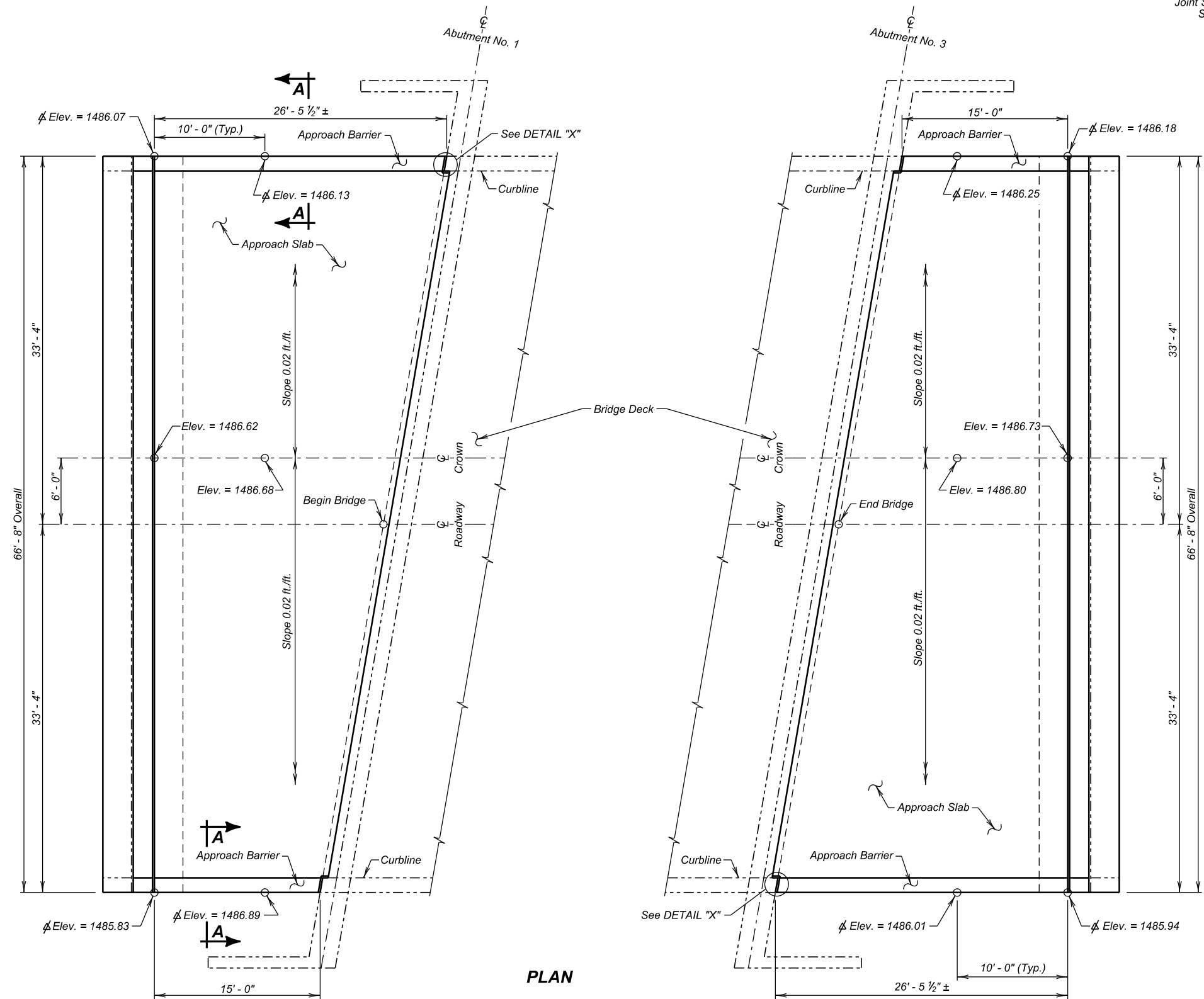
NOTES:
All Dimensions are out to out of bars.
All Bars to be Epoxy Coated.

BRIDGE BARRIER DETAILS
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

ESTIMATED QUANTITIES		
(For Two Bridge Barriers)		
ITEM	UNIT	QUANTITY
Reinforcing Steel	Lb	7,467
Class A45 Concrete Bridge Repair	CuYd	44.1
Galvanic Anode	Each	246

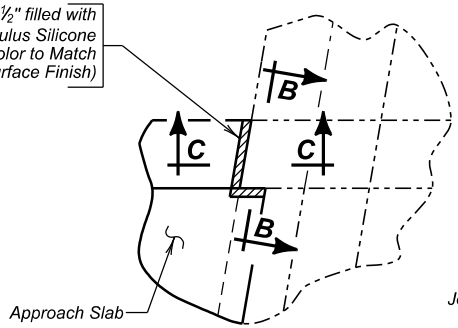
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		E48	E115

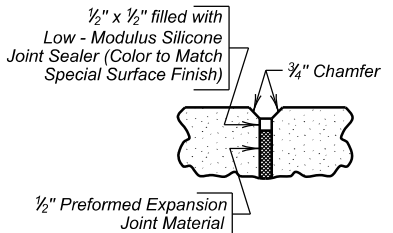


PLAN

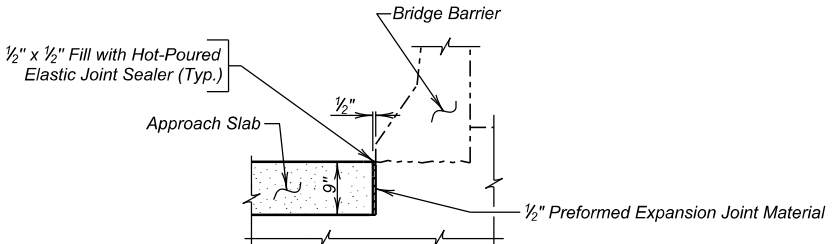
1/2" x 1/2" filled with
Low - Modulus Silicone
Joint Sealer (Color to Match
Special Surface Finish)



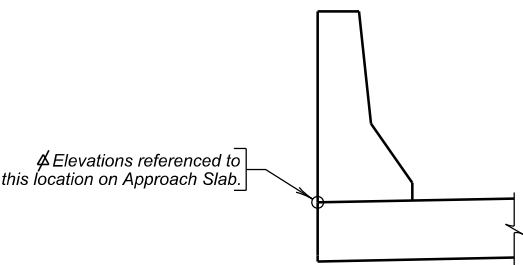
DETAIL "X"



SECTION C - C



SECTION B - B



SECTION A - A
(Sidewalk not shown)

Elevations referenced to
this location on Approach Slab.

APPROACH SLAB DETAILS (A)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

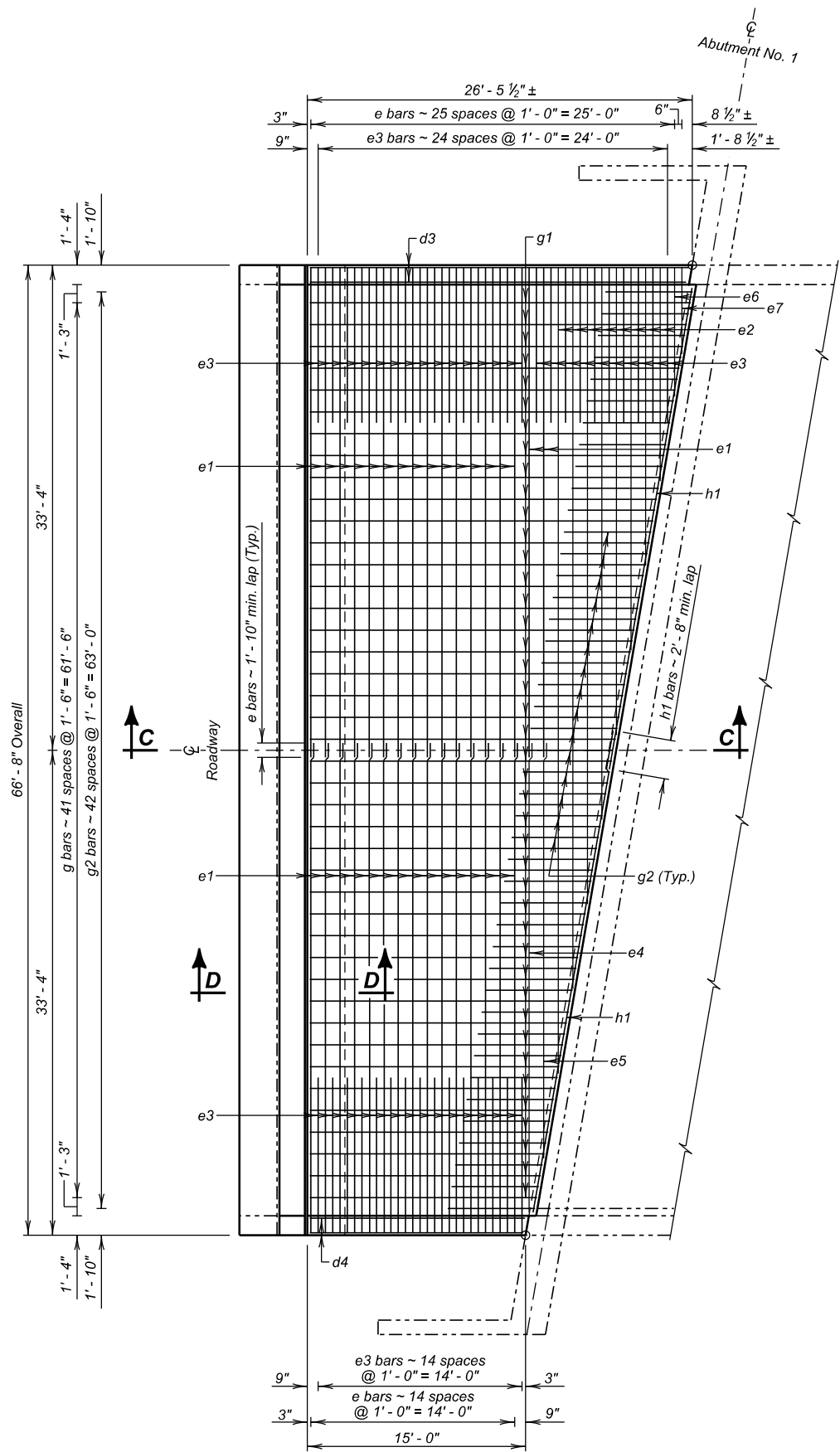
Survey Reference:

B.M. # 1
Top of SW wingwall at the end of wing.
Elevation 1486.23

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

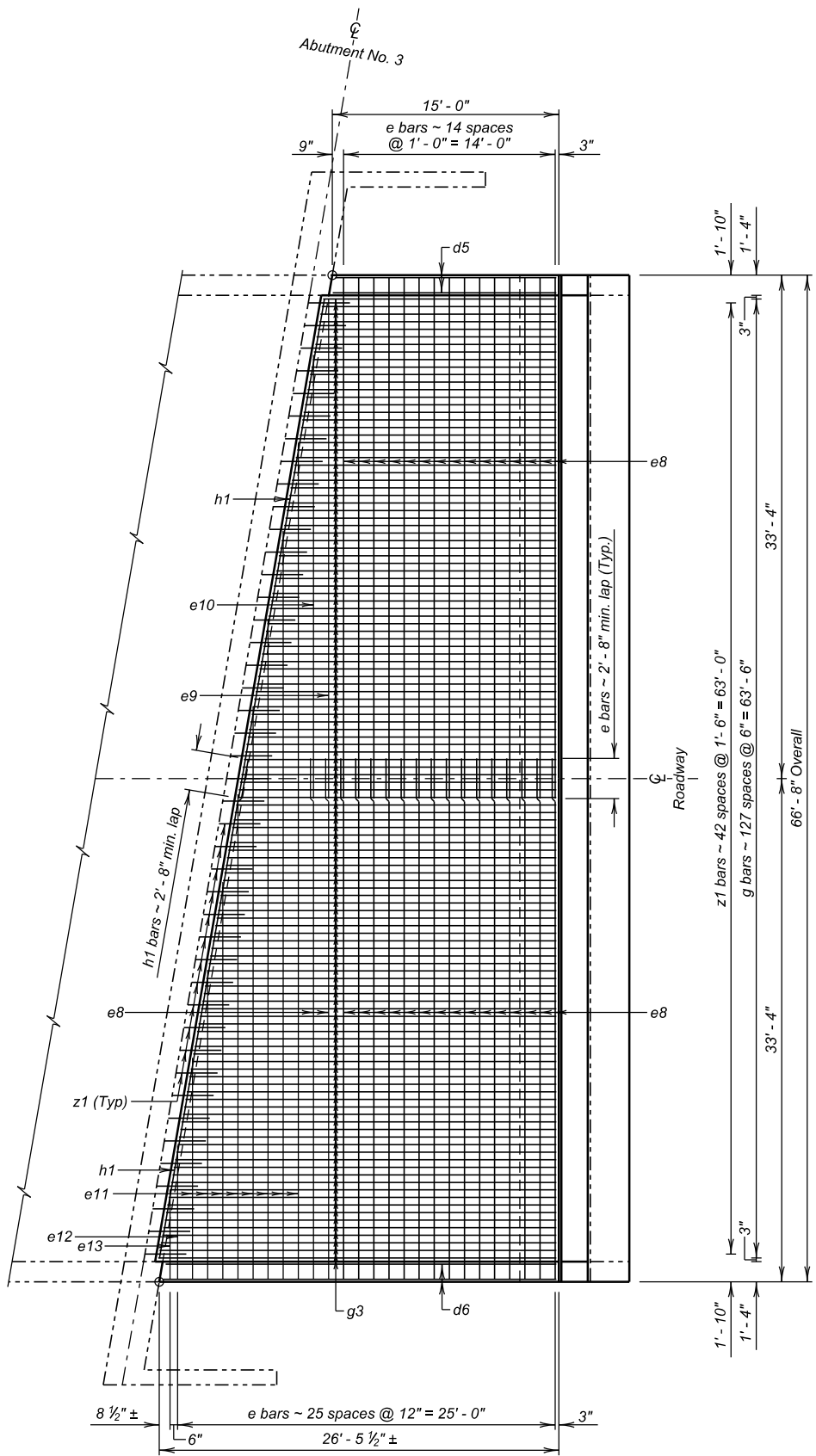
DESIGNED BY JH MINN04XK	CK. DES. BY SI 04XKRB09	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
-------------------------------	-------------------------------	------------------	-------------------------------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		E49	E115



PLAN
(Top Steel)

(Shown adj. to Abut. No. 1 similar by opposite hand except as shown.)



PLAN

(Bottom Steel)

(Shown adj. to Abut. No. 3 similar by opposite hand except as shown.)

APPROACH SLAB DETAILS (B)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

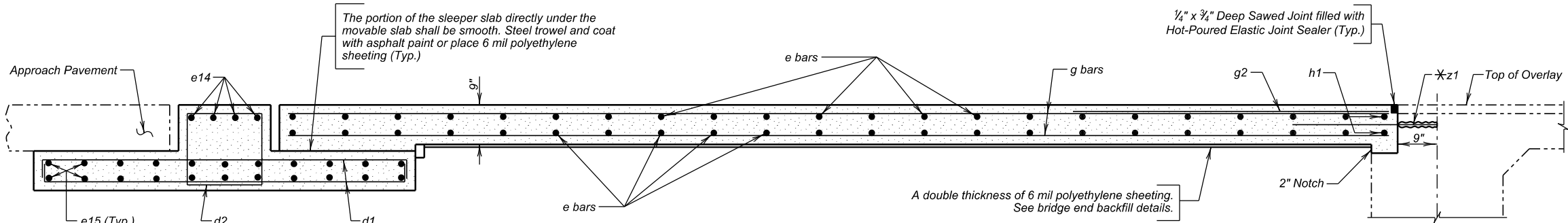
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

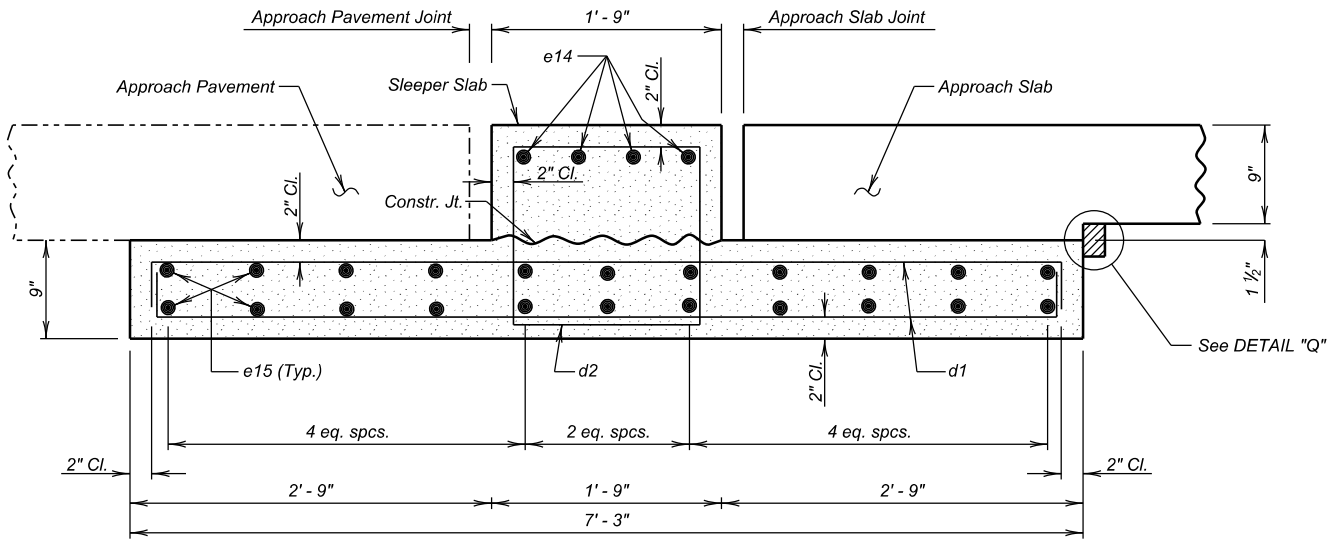
SEPTEMBER 2022

10 OF 35

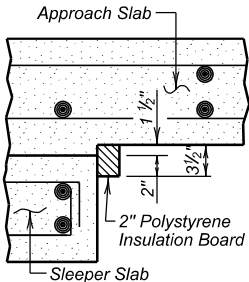
DESIGNED BY JH MINN04XK	CK. DES. BY SKI 04XKRB10	DRAFTED BY KR	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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SECTION C - C



SECTION D - D
(Sleeper Slab)



DETAIL "Q"

REINFORCING SCHEDULE					(For Abut. No. 1 & 3 Approach and Sleeper Slabs including Barriers on Each)	
Mk.	No.	Size	Length	Type	Bending Details	
Approach Slab & Barriers					Type T2	
c1	86	5	5' - 7"	T1A	Type S11	
c2	86	5	5' - 1"	S11	Type 2	
d3	4	5	25' - 11"	Str.	Type 2	
d4	4	5	14' - 7"	Str.	Type 2	
d5	4	8	14' - 7"	Str.	Type 2	
d6	4	8	25' - 11"	Str.	Type 2	
d7	36	5	1' - 5"	Str.	Type 2	
d8	18	5	25' - 11"	Str.	Type 2	
d9	18	5	14' - 8"	Str.	Type 2	
e1	64	4	34' - 7"	1A	Type 2	
e2	8	4	71' - 1"	1	Type 2	
e3	80	5	10' - 7"	1A	Type 2	
e4	2	4	32' - 8"	Str.	Type 2	
e5	2	4	29' - 0"	Str.	Type 2	
e6	2	4	9' - 4"	1A	Type 2	
e7	2	5	6' - 6"	1A	Type 2	
e8	64	6	35' - 2"	1A	Type 2	
e9	2	6	33' - 2"	Str.	Type 2	
e10	2	6	29' - 5"	Str.	Type 2	
e11	8	6	71' - 5"	Str.	Type 2	
e12	2	6	9' - 6"	1A	Type 2	
e13	2	6	6' - 7"	1A	Type 2	
g1	42	4	41' - 9"	Str.	Type 2	
g2	86	4	6' - 0"	Str.	Type 2	
g3	128	8	41' - 9"	Str.	Type 2	
h1	8	6	33' - 7"	Str.	Type 2	
z1	86	7	2' - 9"	Str.	Type 2	
Sleeper Slab & Barriers					Type T1A	
c2	16	5	5' - 1"	S11	Type S11	
c3	16	5	7' - 3"	T1A	Type S11	
d1	268	4	7' - 9"	2	Type S11	
d2	130	4	6' - 1"	T2	Type S11	
e14	16	6	35' - 2"	1A	Type S11	
e15	88	5	34' - 3"	Str.	Type S11	

NOTES:

All Dimensions are out to out of bars.

All Bars to be Epoxy Coated.

✱ Dowel bars

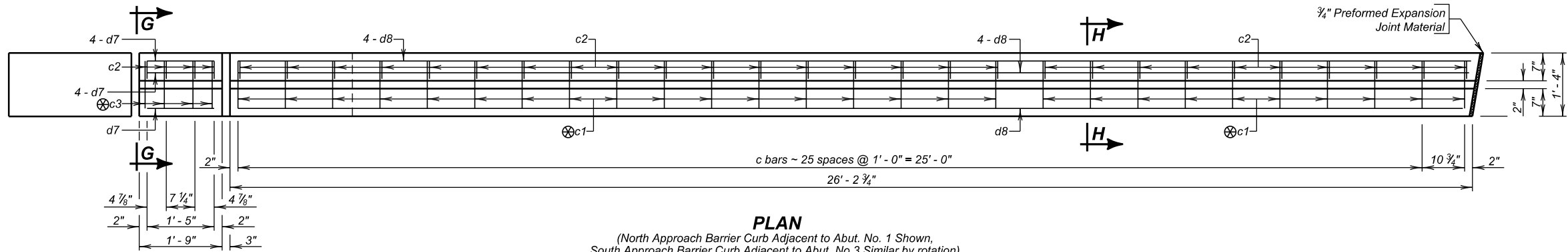
≠ Cut bars

ESTIMATED QUANTITIES		
(For Abut. No. 1 & 3 Approach & Sleeper Slabs incl. Barriers on Each)		
ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	SqYd	314.3
Concrete Approach Sleeper Slab for Bridge	SqYd	107.4
Install Dowel in Concrete	Each	86

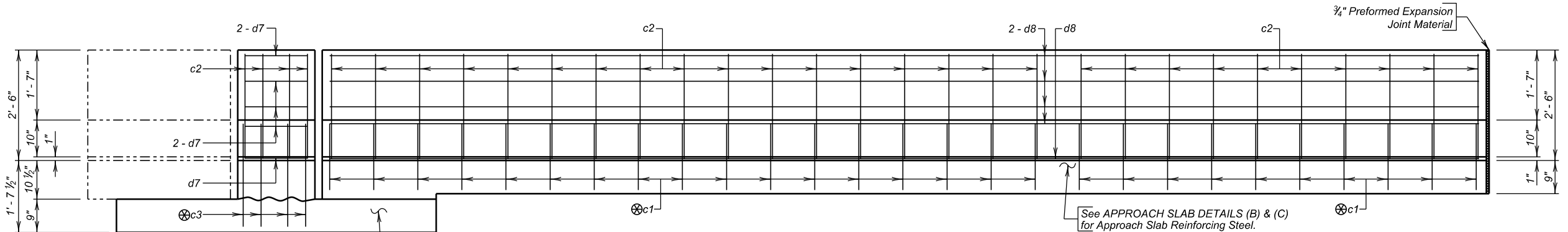
- Items 1 thru 5 are approximate quantities contained in the above contract items and are for information only.
- 84.8 Cu. Yds. Concrete in Approach Slabs.
 - 25,848 Lbs. Epoxy Coated Re-Steel in Approach Slabs.
 - 35.0 Cu. Yds. Concrete in Sleeper Slabs.
 - 6,112 Lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
 - 484 Lbs. Epoxy Coated Re-Steel in Dowels.

APPROACH SLAB DETAILS (C)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022



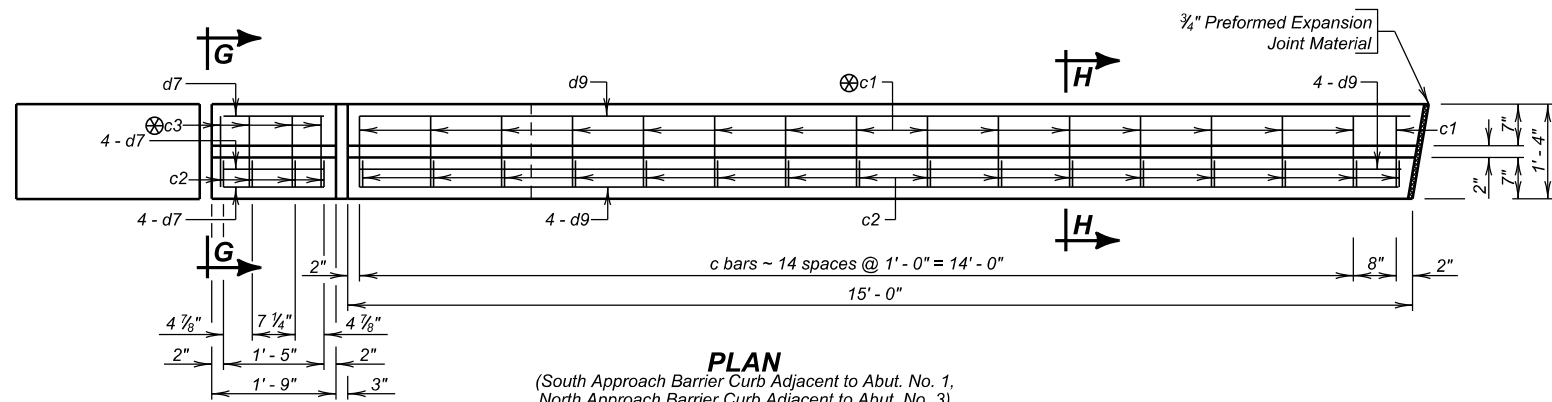
PLAN
(North Approach Barrier Curb Adjacent to Abut. No. 1 Shown,
South Approach Barrier Curb Adjacent to Abut. No.3 Similar by rotation)



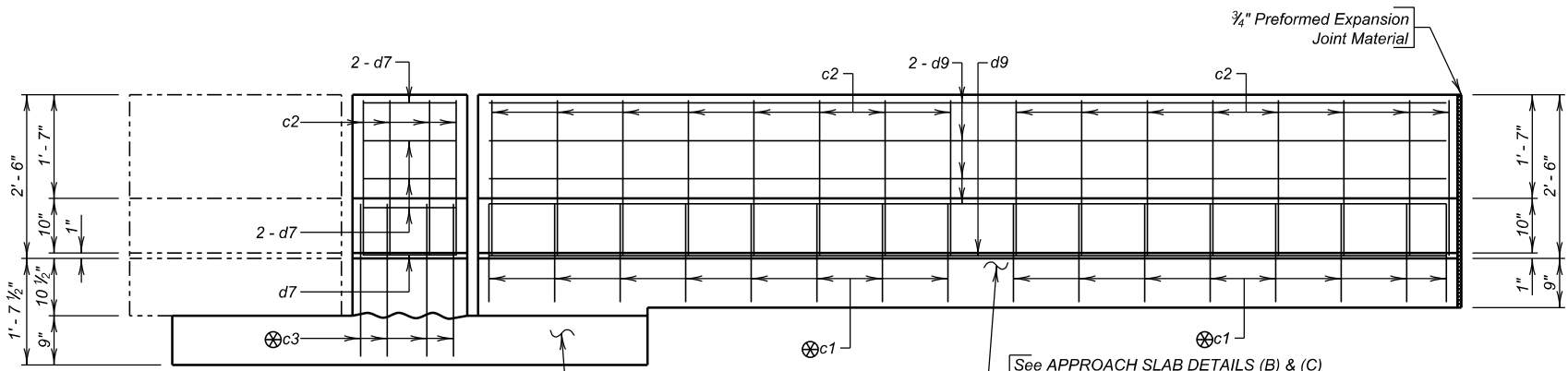
ELEVATION
(North Approach Barrier Curb Adjacent to Abut. No. 1,
South Approach Barrier Curb Adjacent to Abut. No.3)

See APPROACH SLAB DETAILS (C) & (D)
for Sleeper Slab Reinforcing Steel.

- Notes:
1. Reinforcing Schedule included on APPROACH SLAB DETAILS (C).
 2. Approach slab and sleeper slab steel note shown for clarity.



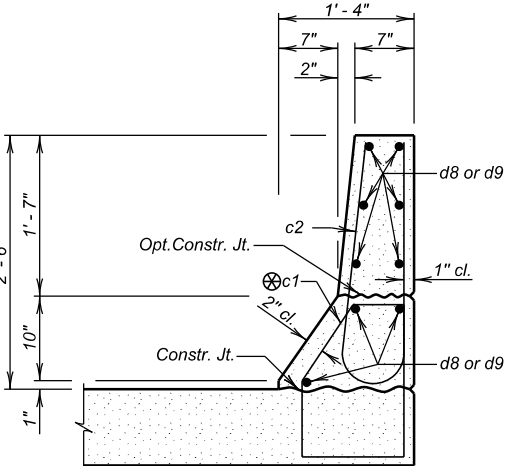
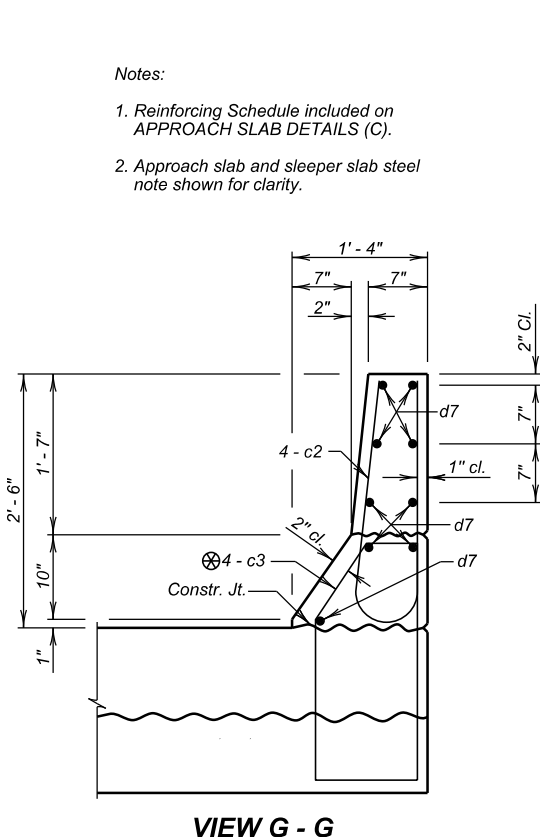
PLAN
(South Approach Barrier Curb Adjacent to Abut. No. 1,
North Approach Barrier Curb Adjacent to Abut. No. 3)



ELEVATION
(South Approach Barrier Curb Adjacent to Abut. No. 1,
North Approach Barrier Curb Adjacent to Abut. No. 3)

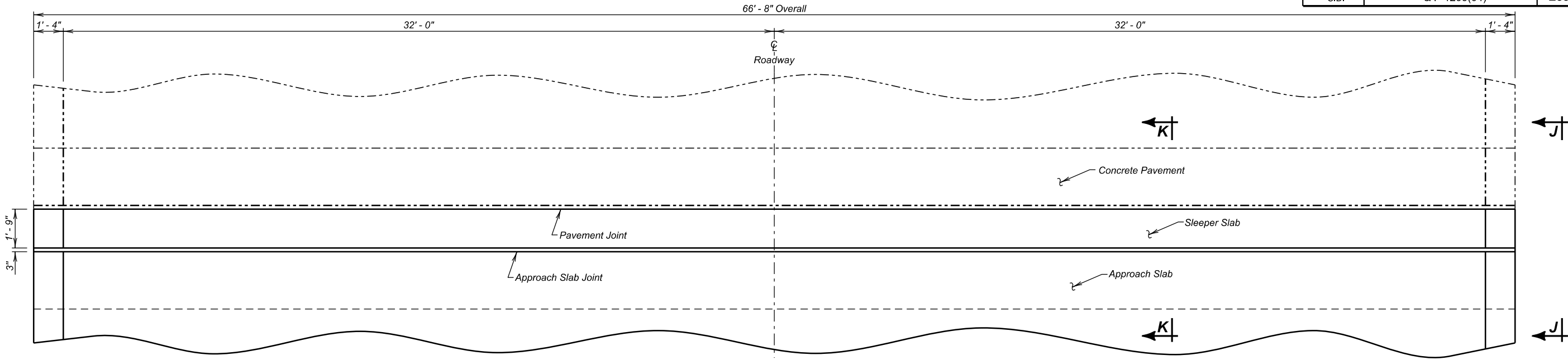
See APPROACH SLAB DETAILS (C) & (D)
for Sleeper Slab Reinforcing Steel.

⊗ Barrier steel will be placed with sleeper slab or approach slab.



APPROACH SLAB DETAILS (E)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

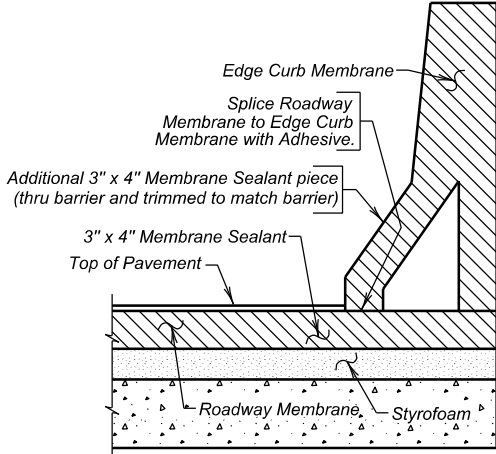
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022



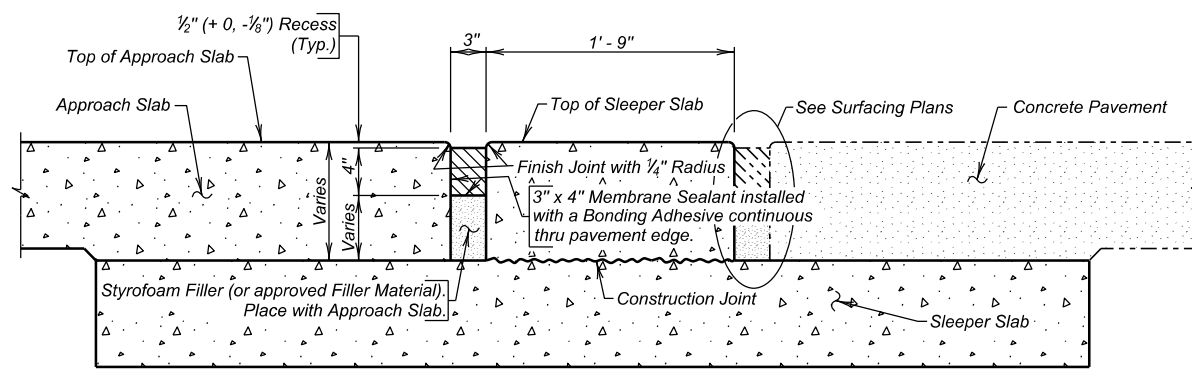
PLAN

GENERAL NOTES

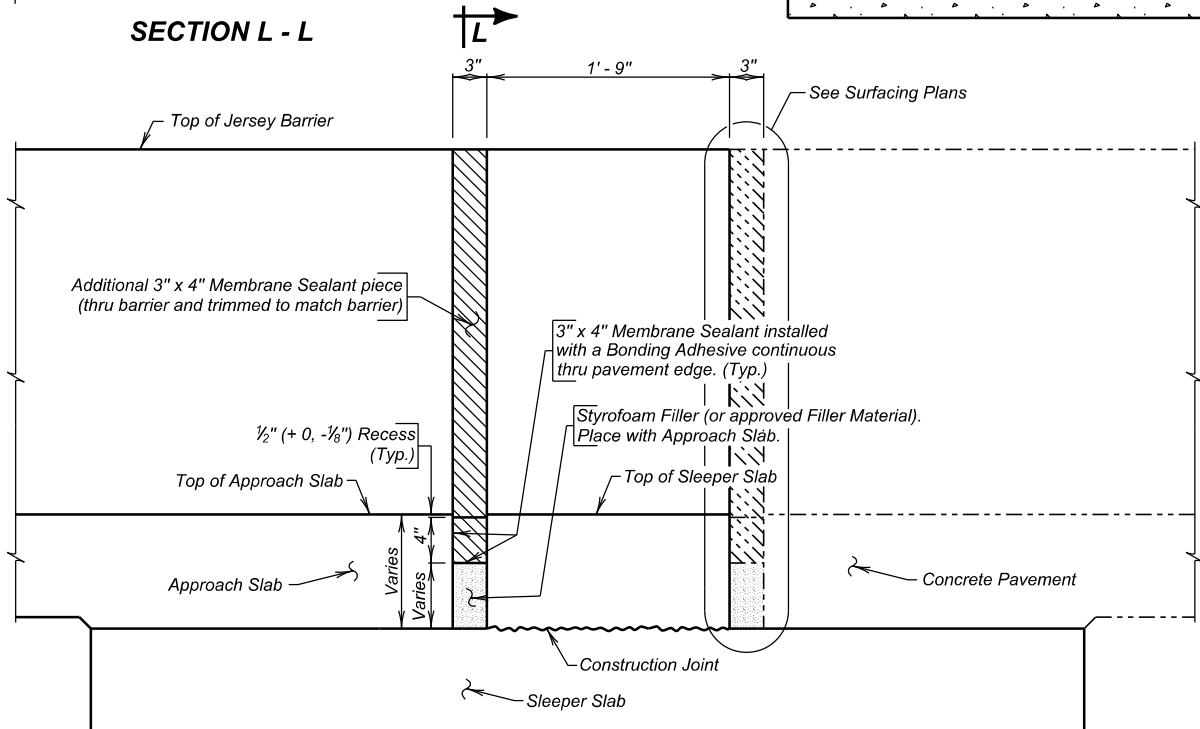
- The Membrane Sealant will be on the approved product list for Membrane Sealant Expansion Joints.
- The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer, however, in no case shall 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 provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension.
- The membrane sealant will be supplied in pieces a minimum of 5 feet in length. 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 ensure the Contractor installs the joint to the manufacturers' recommendations.
- 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 surface. At a minimum, two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding shall 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 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 will 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.
- The membrane sealant will be installed prior to winter. Housing and heating may be required to meet the manufacturer's requirements.



SECTION L - L



SECTION K - K



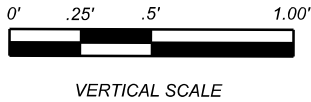
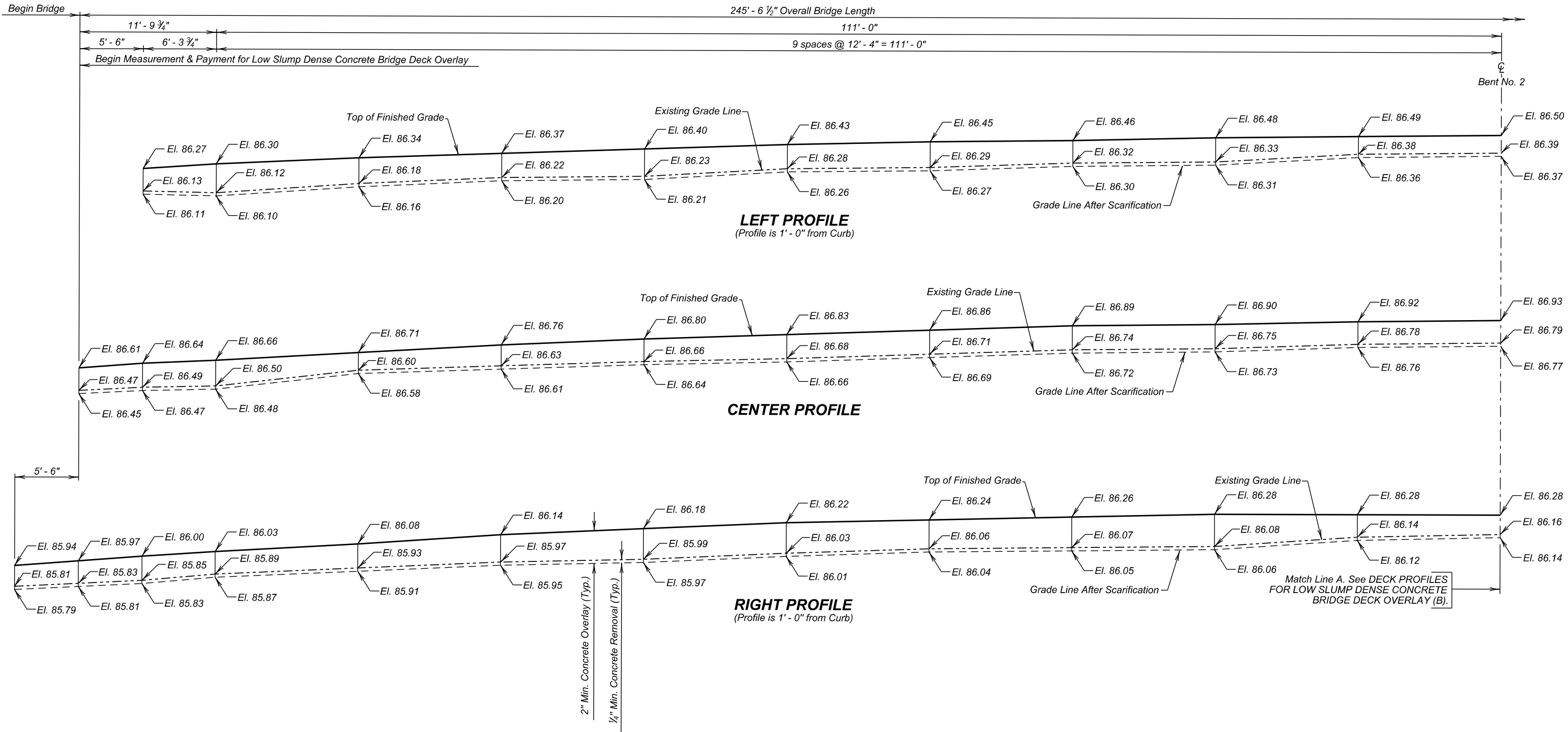
VIEW J - J

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	155.4

APPROACH SLAB JOINT DETAILS
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022



Survey Reference:

B.M. # 1
Top of SW wingwall at the end of wing.
Elevation 1486.23

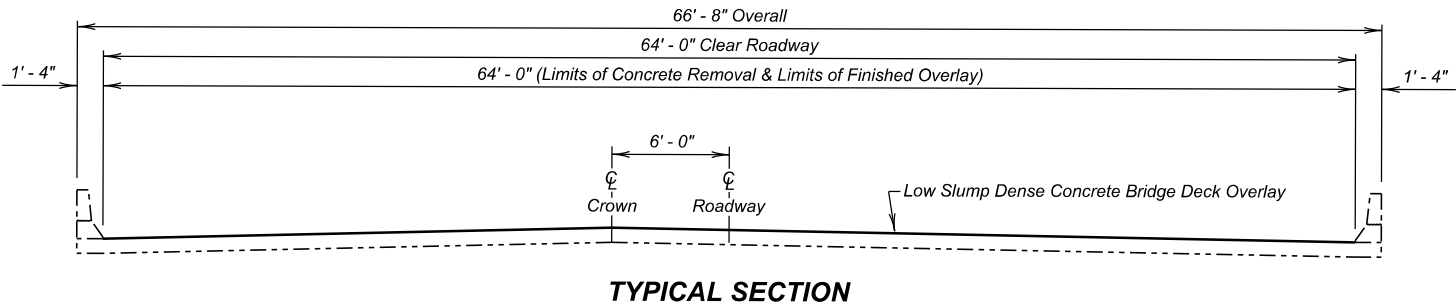
**DECK PROFILES FOR LOW SLUMP
DENSE CONCRETE BRIDGE DECK OVERLAY (A)
FOR**

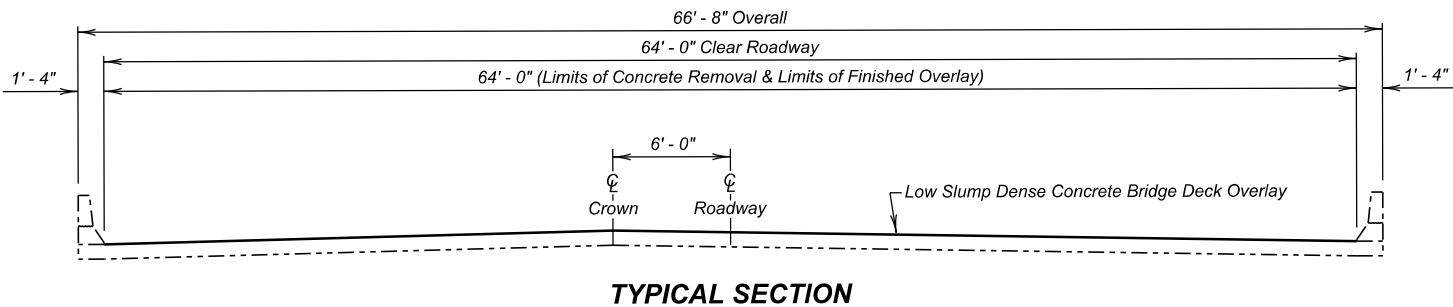
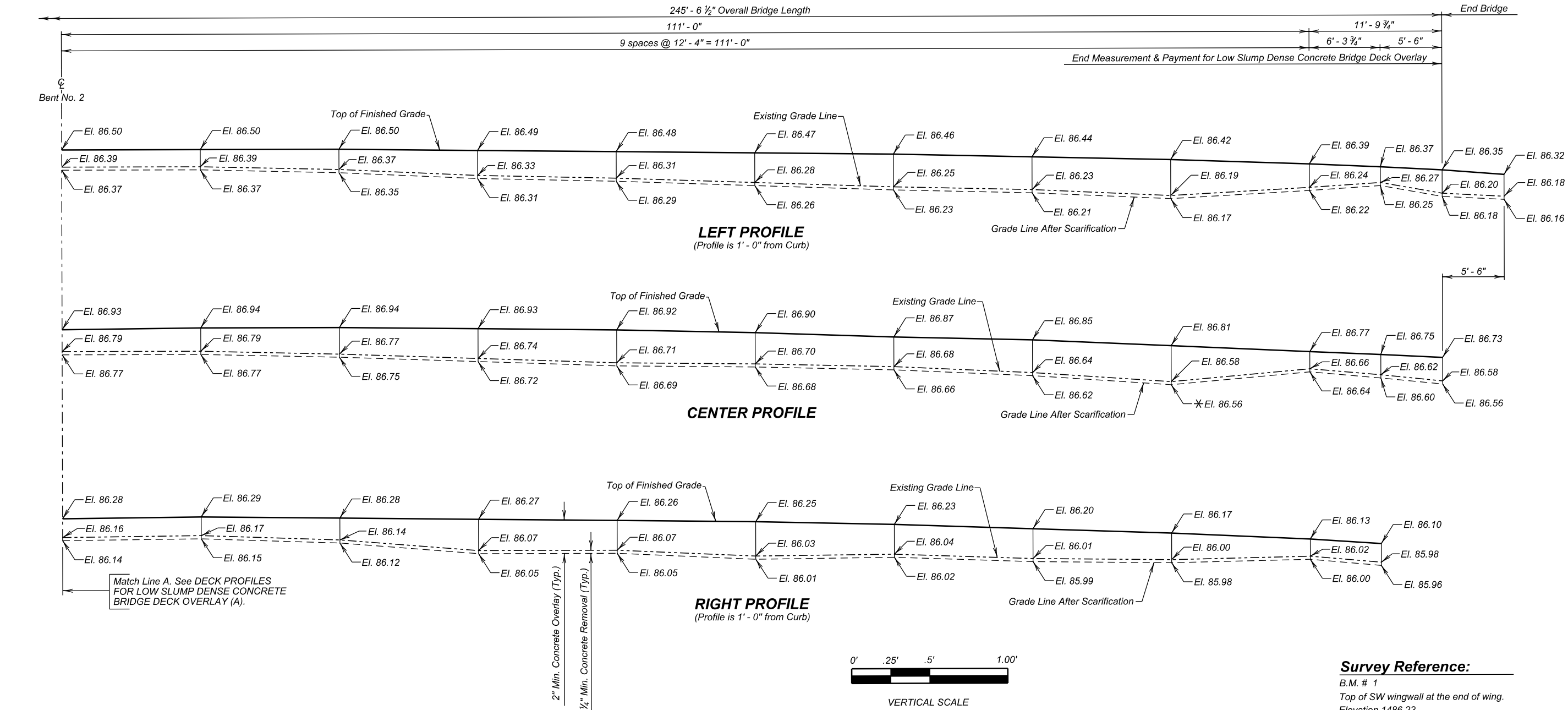
245' - 6 1/2" PRESTR. GIRDER BRIDGE

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
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STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

- NOTES:
- Add 1400.00 to all elevations shown on profiles.
 - * Scarify in excess of 1/4" in these areas.
 - ⊗ Existing Elevation is the same as the Finished Surface Elevation.
 - ⬢ Existing Elevation is higher than the Finished Surface Elevation.





NOTES:
Add 1400.00 to all elevations shown on profiles.
✱ Scarify in excess of 1/4" in these areas.
✳ Existing Elevation is the same as the Finished Surface Elevation.
✧ Existing Elevation is higher than the Finished Surface Elevation.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Low Slump Dense Concrete Bridge Deck Overlay	CuYd	124
Concrete Removal Type 1A	SqYd	1738.9
Concrete Removal Type 1B	SqYd	347.8
Concrete Removal Type 1C	SqYd	347.8
Concrete Removal Type 1D	SqYd	347.8
Concrete Removal Type B	Ft	20
Class A45 Concrete Fill	CuYd	74.9
Finishing and Curing	SqYd	1738.9

**DECK PROFILES FOR LOW SLUMP
DENSE CONCRETE BRIDGE DECK OVERLAY (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE**

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

DESIGNED BY JH MINN04XK	CK. DES. BY SI 04XKRB16	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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16 OF 35

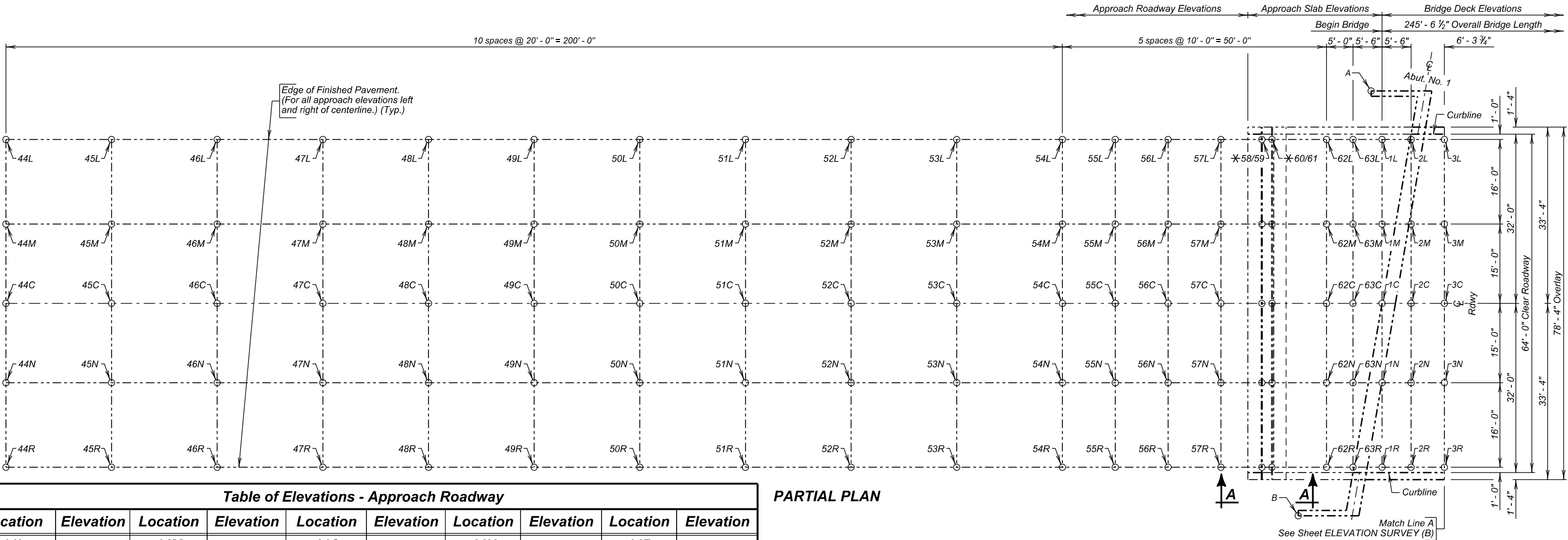


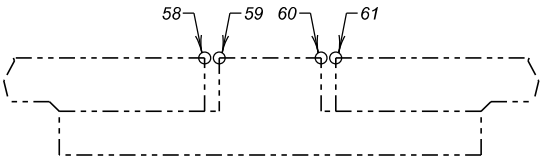
Table of Elevations - Approach Roadway									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
44L		44M		44C		44N		44R	
45L		45M		45C		45N		45R	
46L		46M		46C		46N		46R	
47L		47M		47C		47N		47R	
48L		48M		48C		48N		48R	
49L		49M		49C		49N		49R	
50L		50M		50C		50N		50R	
51L		51M		51C		51N		51R	
52L		52M		52C		52N		52R	
53L		53M		53C		53N		53R	
54L		54M		54C		54N		54R	
55L		55M		55C		55N		55R	
56L		56M		56C		56N		56R	
57L		57M		57C		57N		57R	

Table of Elevations - Approach Slab Joints (See SECTION A - A) and Approach Slab									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
58L		58M		58C		58N		58R	
59L		59M		59C		59N		59R	
60L		60M		60C		60N		60R	
61L		61M		61C		61N		61R	
62L		62M		62C		62N		62R	
63L		63M		63C		63N			
1L		1M							

PARTIAL PLAN

Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
				1C		1N		63R	
2L		2M		2C		2N		1R	
3L		3M		3C		3N		2R	
								3R	

Bridge Ends	
Location	Elevation
A	
B	



* Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are also shown in SECTION A - A.

AS-BUILT ELEVATION SURVEY REQUEST (A)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

NOTE:

The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be 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 Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer.

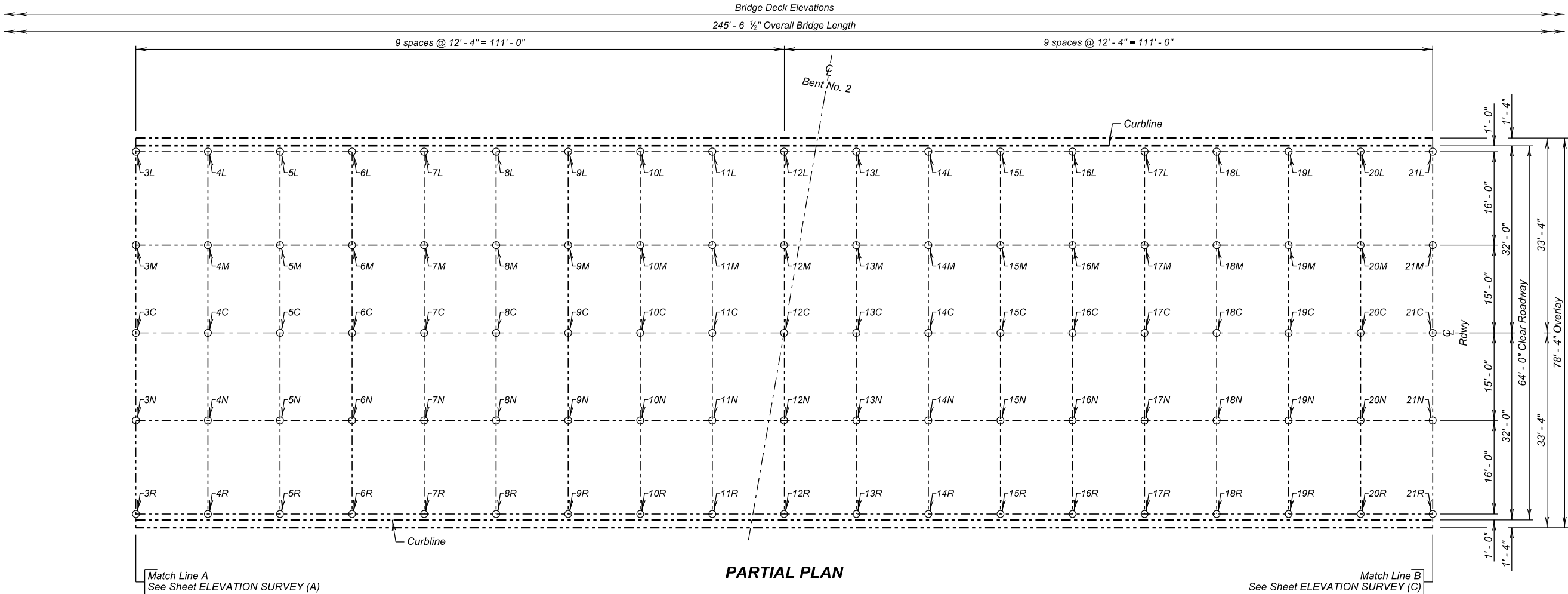


Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
3L		3M		3C		3N		3R	
4L		4M		4C		4N		4R	
5L		5M		5C		5N		5R	
6L		6M		6C		6N		6R	
7L		7M		7C		7N		7R	
8L		8M		8C		8N		8R	
9L		9M		9C		9N		9R	
10L		10M		10C		10N		10R	
11L		11M		11C		11N		11R	
12L		12M		12C		12N		12R	
13L		13M		13C		13N		13R	
14L		14M		14C		14N		14R	
15L		15M		15C		15N		15R	
16L		16M		16C		16N		16R	
17L		17M		17C		17N		17R	
18L		18M		18C		18N		18R	
19L		19M		19C		19N		19R	
20L		20M		20C		20N		20R	
21L		21M		21C		21N		21R	

Benchmark Description:

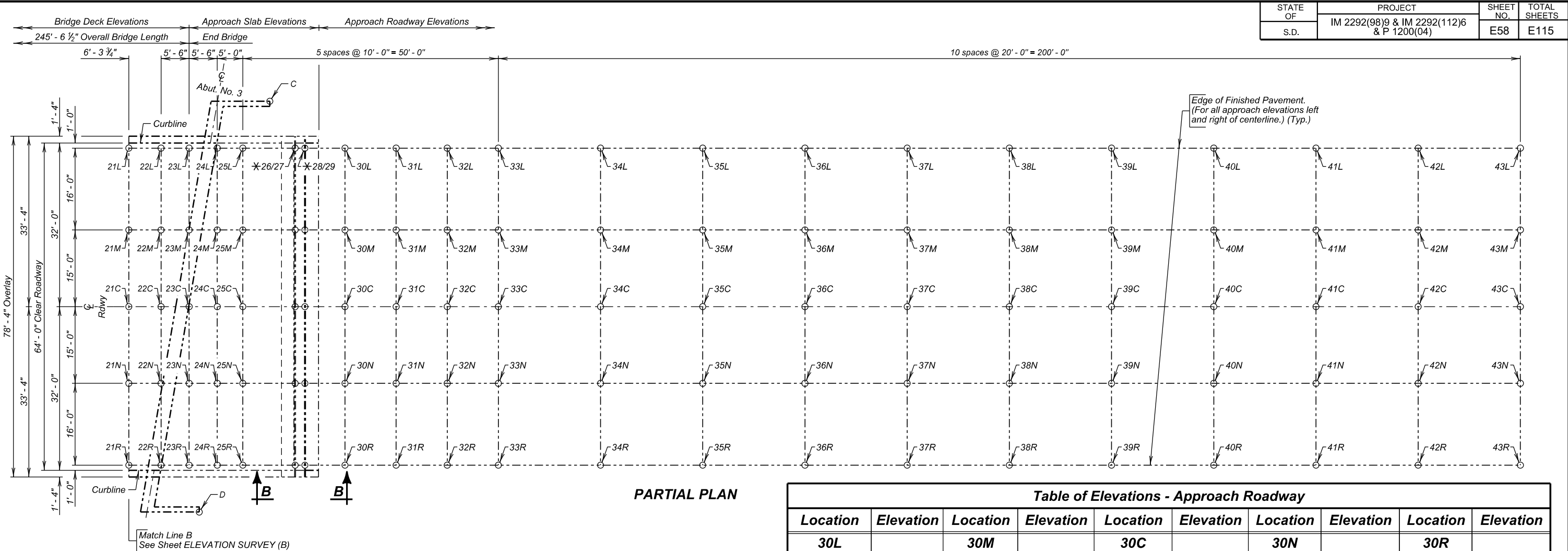
B.M. # _____
Location Description _____
Elevation _____

NOTE:

The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be 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 Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer.

AS-BUILT ELEVATION SURVEY REQUEST (B)
FOR
245' - 6 1/2" PRESTR. GIRDER BRIDGE
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022



PARTIAL PLAN

Table of Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
21L		21M		21C		21N		21R	
22L		22M		22C		22N		22R	
23L		23M		23C					
24L									

Table of Elevations - Approach Slab Joints (See SECTION B - B) and Approach Slab

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
				23N		23R			
		24M		24C		24N		24R	
25L		25M		25C		25N		25R	
26L		26M		26C		26N		26R	
27L		27M		27C		27N		27R	
28L		28M		28C		28N		28R	
29L		29M		29C		29N		29R	

Table of Elevations - Approach Roadway									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
30L		30M		30C		30N		30R	
31L		31M		31C		31N		31R	
32L		32M		32C		32N		32R	
33L		33M		33C		33N		33R	
34L		34M		34C		34N		34R	
35L		35M		35C		35N		35R	
36L		36M		36C		36N		36R	
37L		37M		37C		37N		37R	
38L		38M		38C		38N		38R	
39L		39M		39C		39N		39R	
40L		40M		40C		40N		40R	
41L		41M		41C		41N		41R	
42L		42M		42C		42N		42R	
43L		43M		43C		43N		43R	

Bridge Ends

Location	Elevation
C	
D	

Benchmark Description:

B.M. # _____
Location Description _____
Elevation _____

AS-BUILT ELEVATION SURVEY REQUEST (C)

FOR

245' - 6 1/2" PRESTR. GIRDER BRIDGE

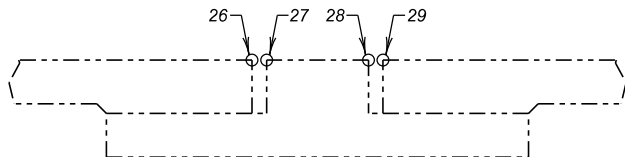
64' - 0" ROADWAY 9° 45' 08" L.H.F. SKEW
OVER I 229 (WB BENSON ROAD) SEC. 3-T101N-R49W
WB STA. 36 + 58.68 TO WB STA. 39 + 04.21 IM 2292(98)9
STR. NO. 50-219-180

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

19 OF 35



SECTION B - B

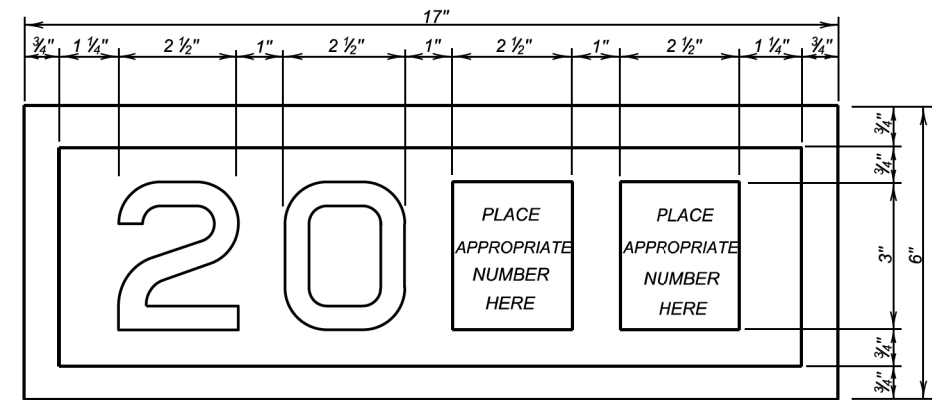
NOTE:

The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be 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 Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Engineer.

* Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are also shown in SECTION B - B.

DESIGNED BY KR MINN04XK	CK. DES. BY SI 04XKRB19	DRAFTED BY KR	Steve A. Johnson BRIDGE ENGINEER
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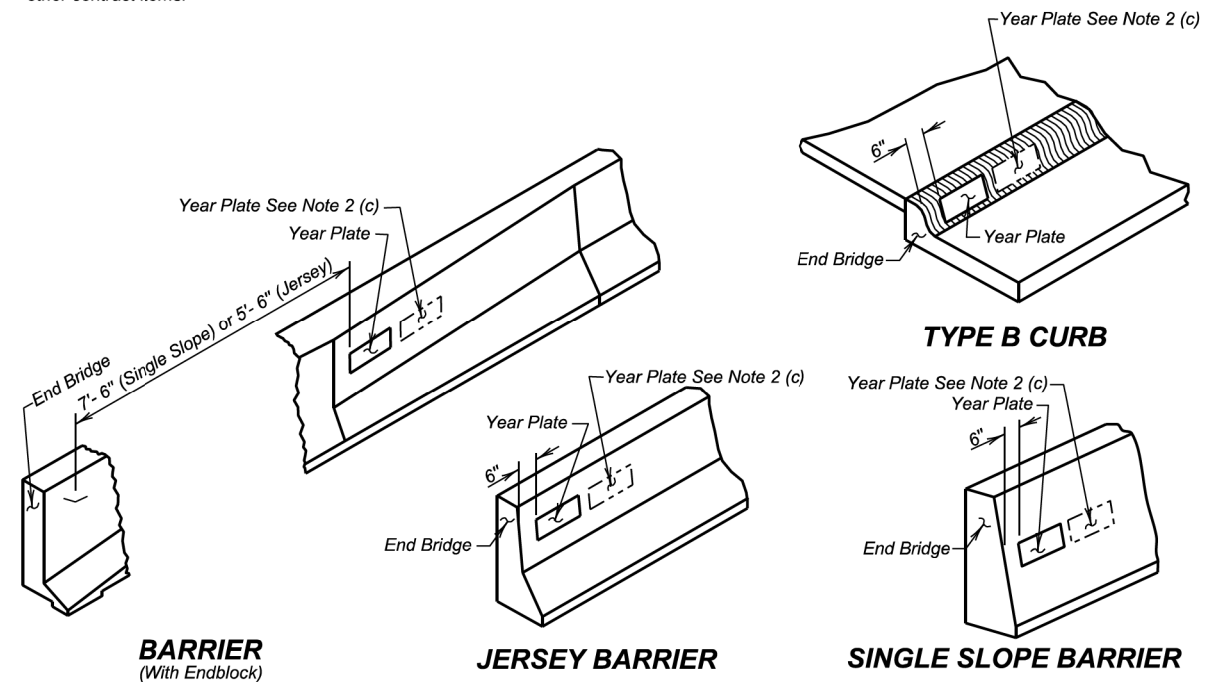
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		E59	E115



YEAR PLATE DETAILS

GENERAL NOTES:

- Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
- Year plates will be located on structure(s) as follows:
 - On cast-in-place box culverts the year plates will be four and one - half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.
 - On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.
 - When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



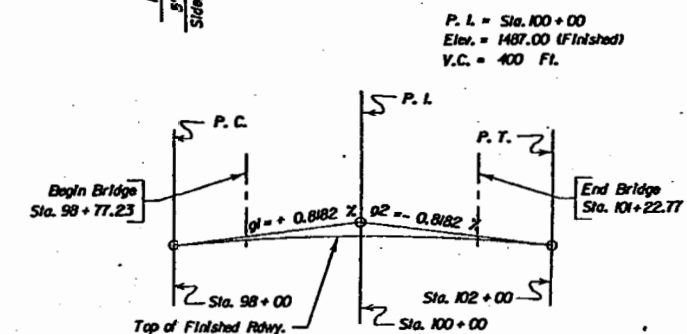
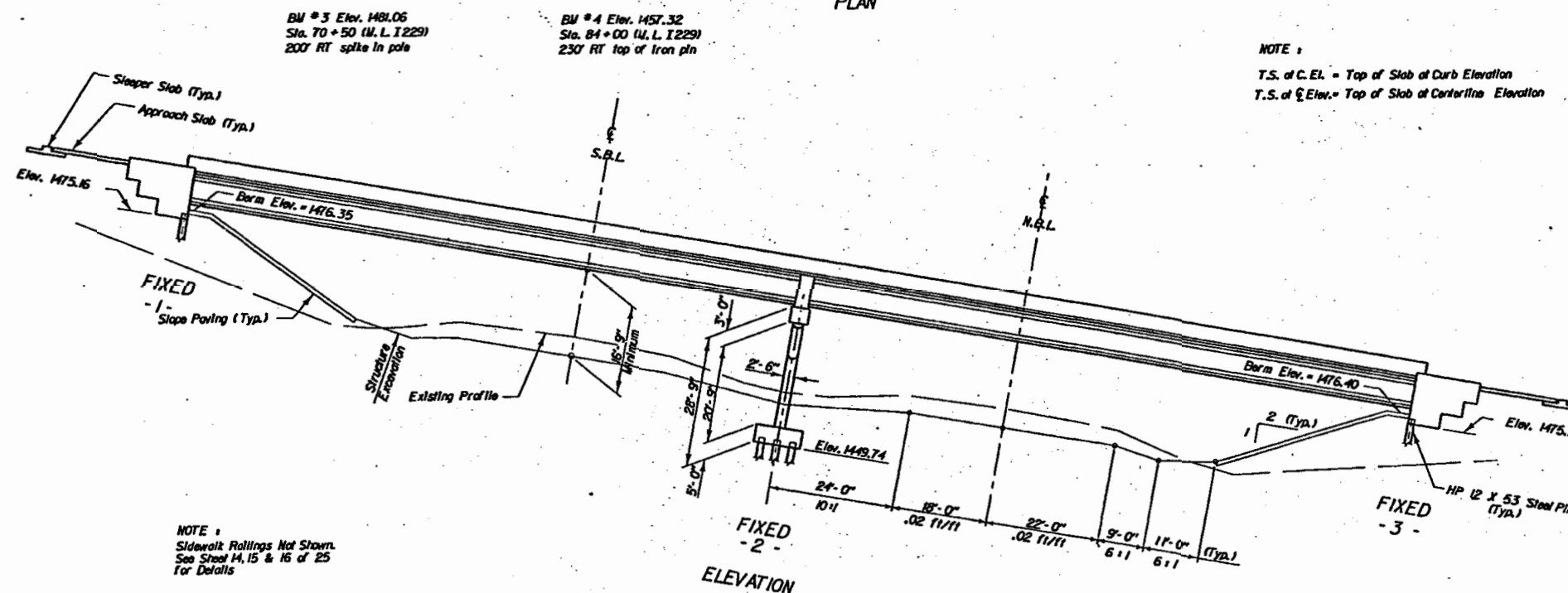
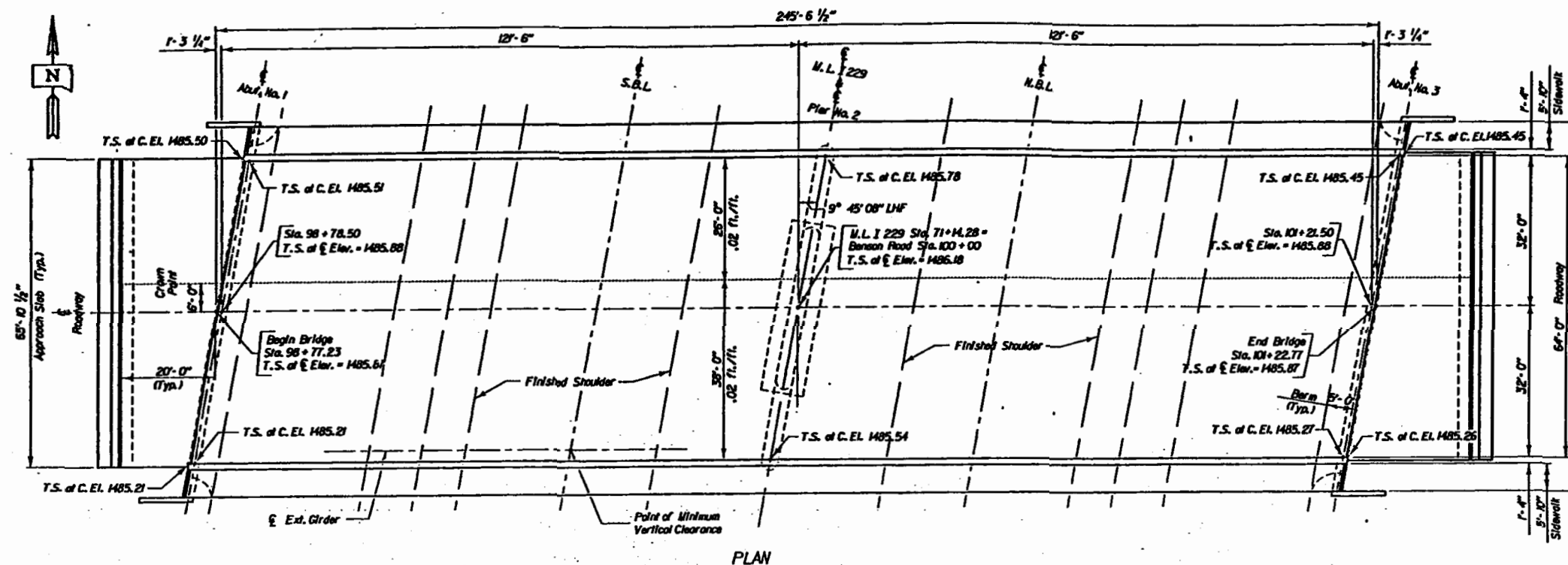
BARRIER
(With Endblock)

JERSEY BARRIER

SINGLE SLOPE BARRIER

TYPE B CURB

Published Date: 3rd Qtr. 2022	S D D O T	YEAR PLATE DETAILS	January 22, 2021
			PLATE NUMBER 460.02
			Sheet 1 Of 1



ORIGINAL CONSTRUCTION PLANS

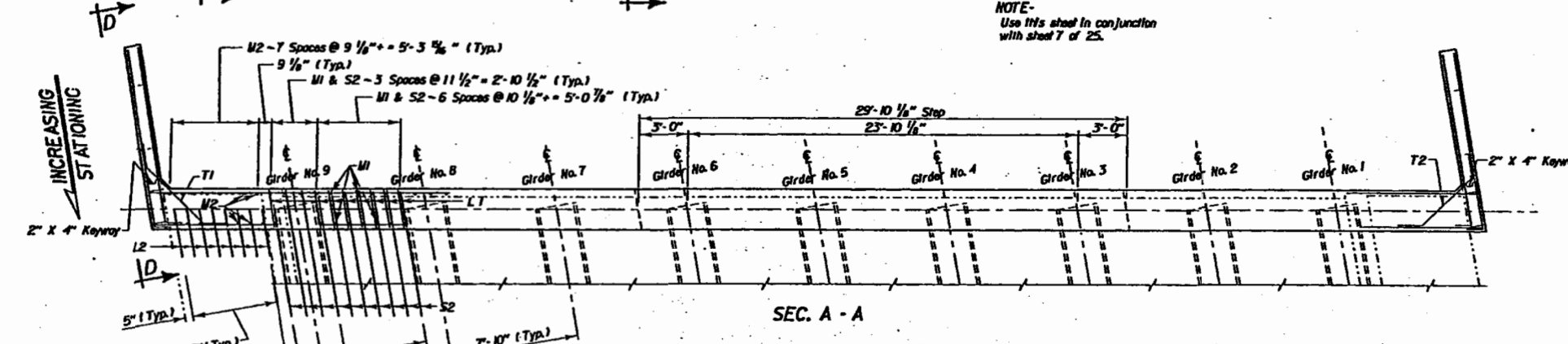
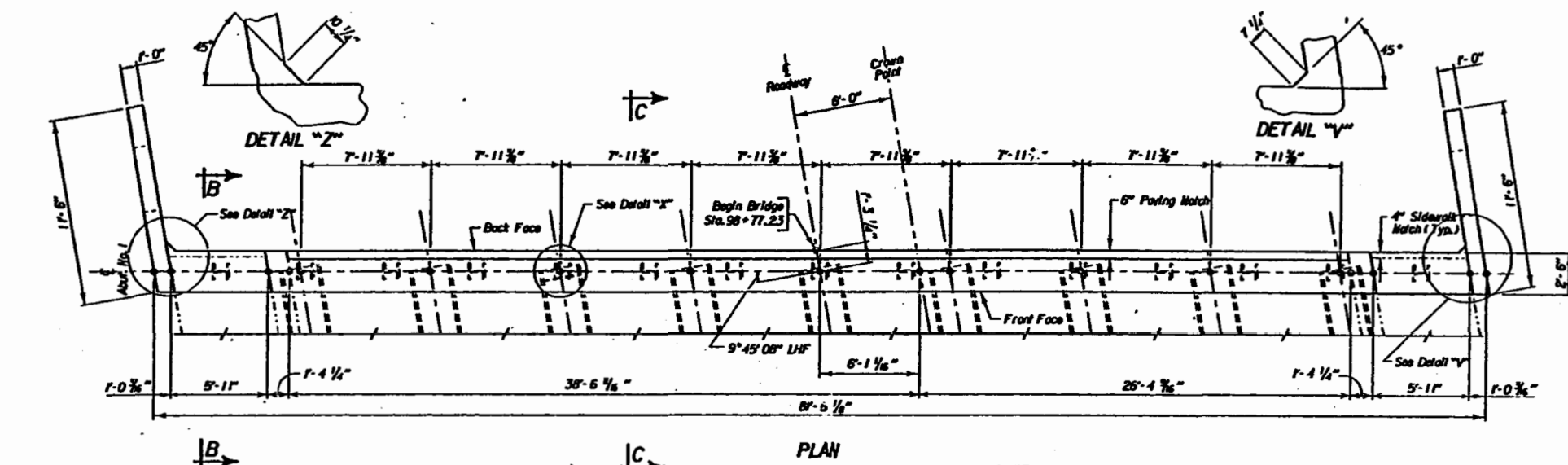
GENERAL DRAWING
FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY
OVER I229 (BENSON ROAD)
STA. 98+77.23 to STA. 101+22.77
STR. NO. 50-219-180
PCEMS NO. 2963

SEC. 3 - T101N - R49W
9° 45' 08" LHF SKEW
IR2292 (63) 9
HS20 - 44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990

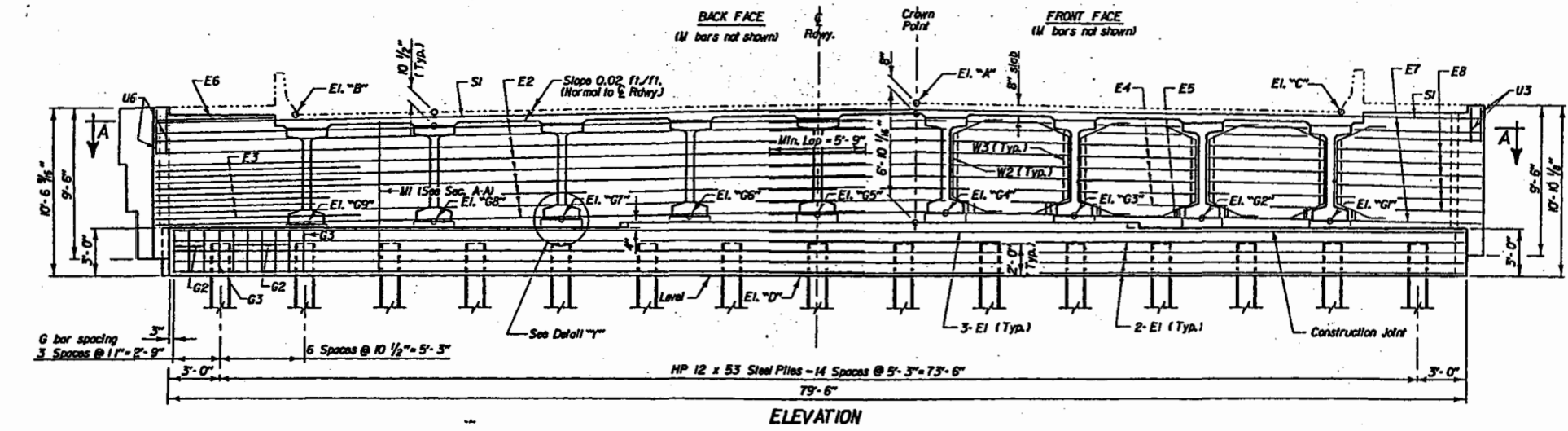
- X281 -

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



ABUTMENT NO.	EL. "A"	EL. "B"	EL. "C"	EL. "D"	EL. "G1"	EL. "G2"	EL. "G3"	EL. "G4"	EL. "G5"	EL. "G6"	EL. "G7"	EL. "G8"	EL. "G9"
1	1486.00	1485.21	1485.51	1475.16	1478.58	1478.73	1478.88	1479.03	1478.94	1478.78	1478.62	1478.45	1478.29

NOTE:
Elevations "A", "B" and "C" are top of slab at centerline of abutment
Elevations "G1", "G2", "G3", "G4", "G5", "G6", "G7", "G8" and "G9" are top of grout pad at centerline of abutment



Bar No.	Size	Length	Type	Bending Details
E1	22	9	42'-6"	Str.
E2	18	9	43'-6"	Str.
E3	10	7	12'-6"	Str.
E4	48	7	7'-1"	Str.
E5	24	7	5'-2"	Str.
E6	2	5	6'-6"	Str.
E7	6	6	7'-4"	Str.
E8	12	6	8'-4"	Str.
G2	76	4	10'-1"	TI
G3	15	5	9'-2"	S3A
L1	58	4	4'-4"	ITA
L2	16	4	3'-0"	ITA
M1	134	5	8'-10"	Str.
M2	32	5	9'-6"	Str.
M3	20	5	11'-7"	IT
M4	20	5	8'-5"	IT
M5	12	5	5'-5"	IT
S1	4	9	43'-6"	Str.
S2	76	5	8'-0"	HA
T1	10	6	8'-3"	IT
T2	10	6	7'-6"	IT
U0	8	6	4'-9"	Str.
U1	4	6	7'-9"	ITB
U2	8	6	11'-9"	ITB
U3	10	6	14'-3"	ITB
U4	4	6	7'-9"	ITB
U5	8	6	11'-9"	ITB
U6	10	6	14'-3"	ITB
W1	9	5	4'-9"	IT
W2	18	4	10'-4"	IT
W3	144	5	3'-6"	IT

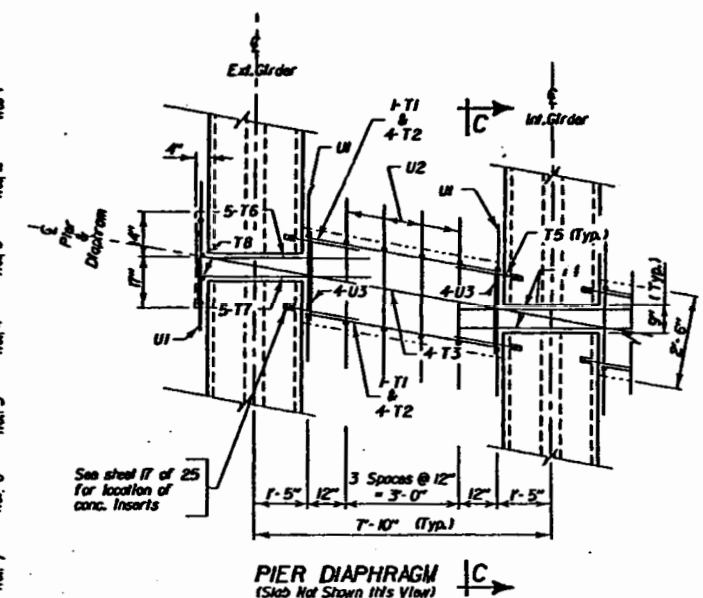
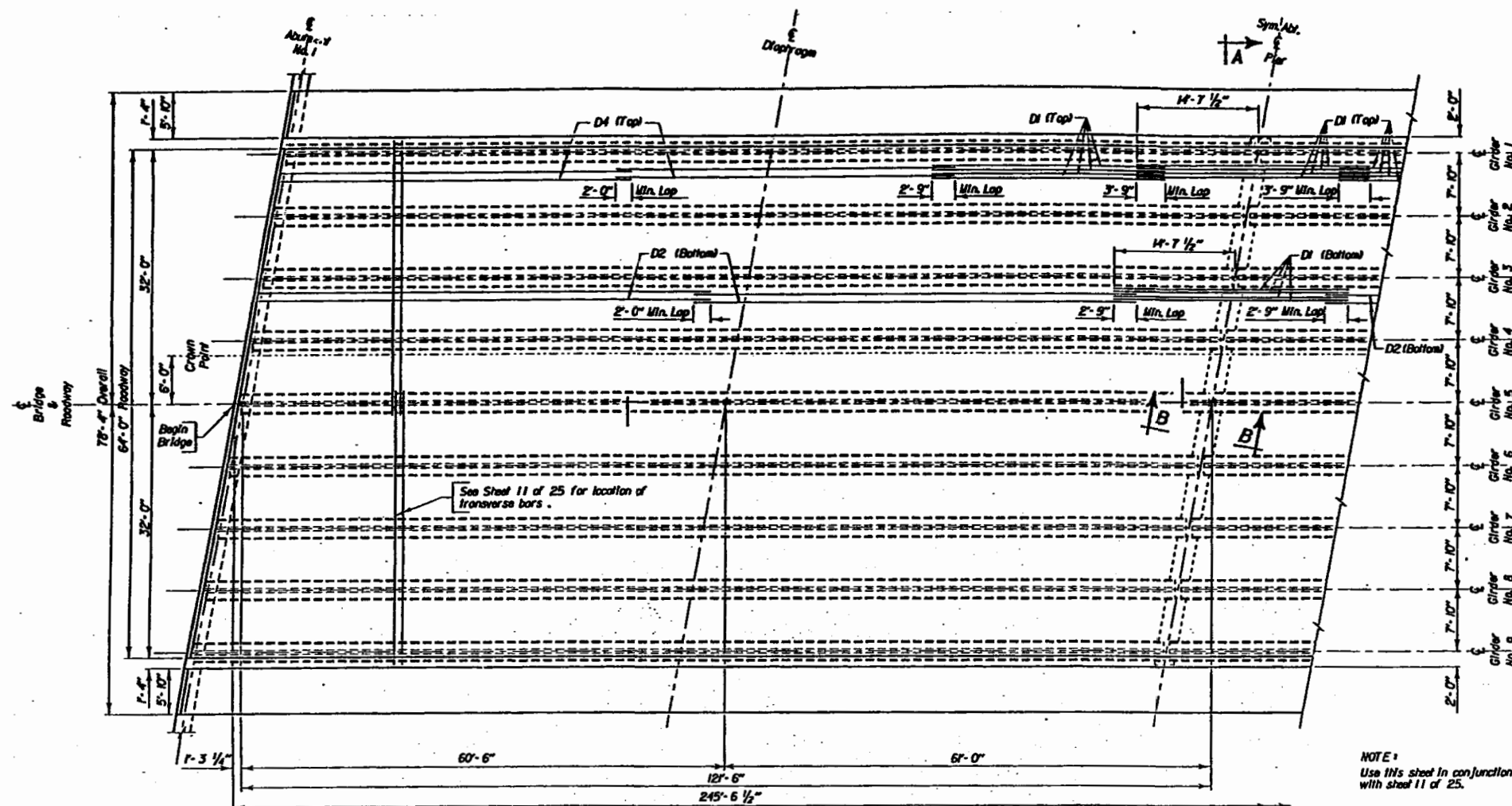
NOTE:
All dimensions are out to out of bars.
Bars to be Epoxy Coated.

ORIGINAL CONSTRUCTION PLANS

ABUTMENT DETAILS (ABUT. NO. 1)
FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY
OVER I229 (BENSON ROAD)
STA. 98+77.23 to STA. 101+22.77
STR. NO. 50-219-180

SEC. 3 - TION - R49W
9° 45' 08" LHF SKEW
IR2292 (63) 9
HS20-44 (& ALT.)

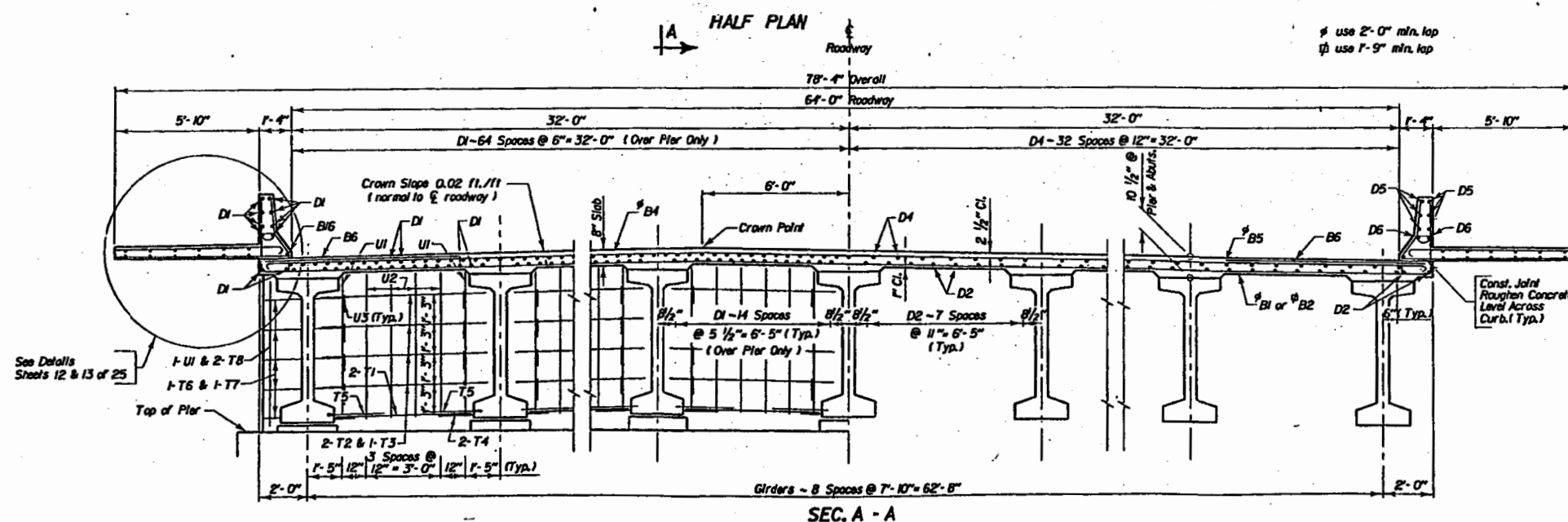
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990



NOTE: Concrete shall be placed in the space under the beams (within the diaphragm width) during the diaphragm pour. Care shall be taken to get the concrete vibrated into this area. If upon form removal the space is not completely filled and consolidated, the contractor shall graut in the remaining voids.

GENERAL NOTES

1. Inserts to accommodate the diaphragms of the Pier and the steel pipe inserts for the diaphragm at midspan shall be provided in the girders at locations shown on Sheet No. 17 of 25.
2. Holes which are left when the forms are removed shall be filled with mortar.
3. Cost of furnishing and installing 1" steel pipe inserts and 3/4" threaded inserts shall be included in the unit price bid for the Prestressed Concrete Beams.
4. The diaphragms of the pier and the abutment backwalls shall be poured integrally with deck slab.

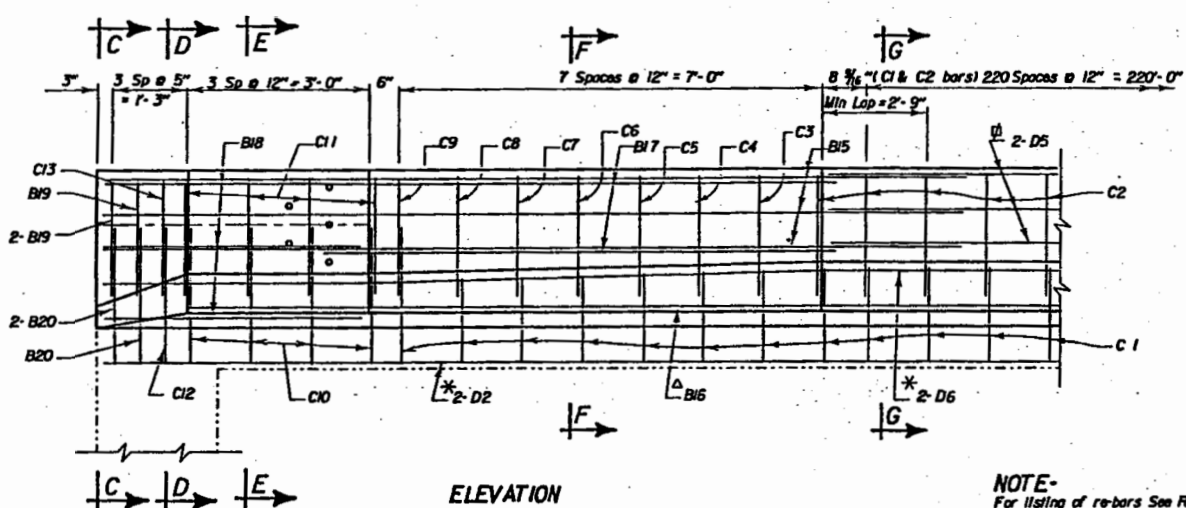
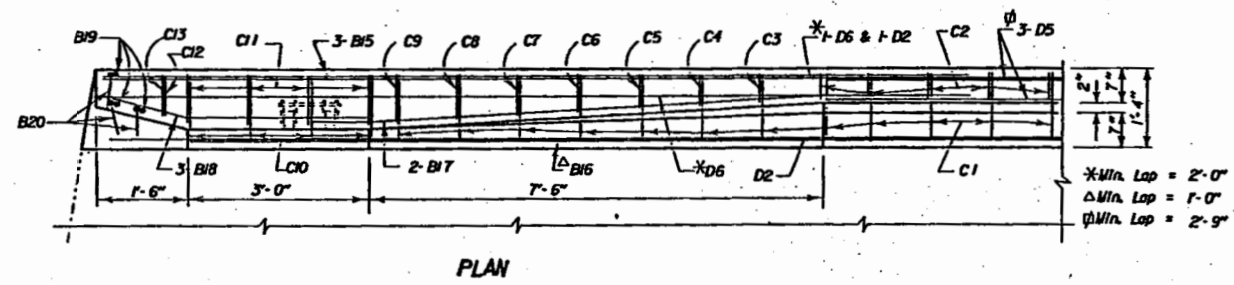
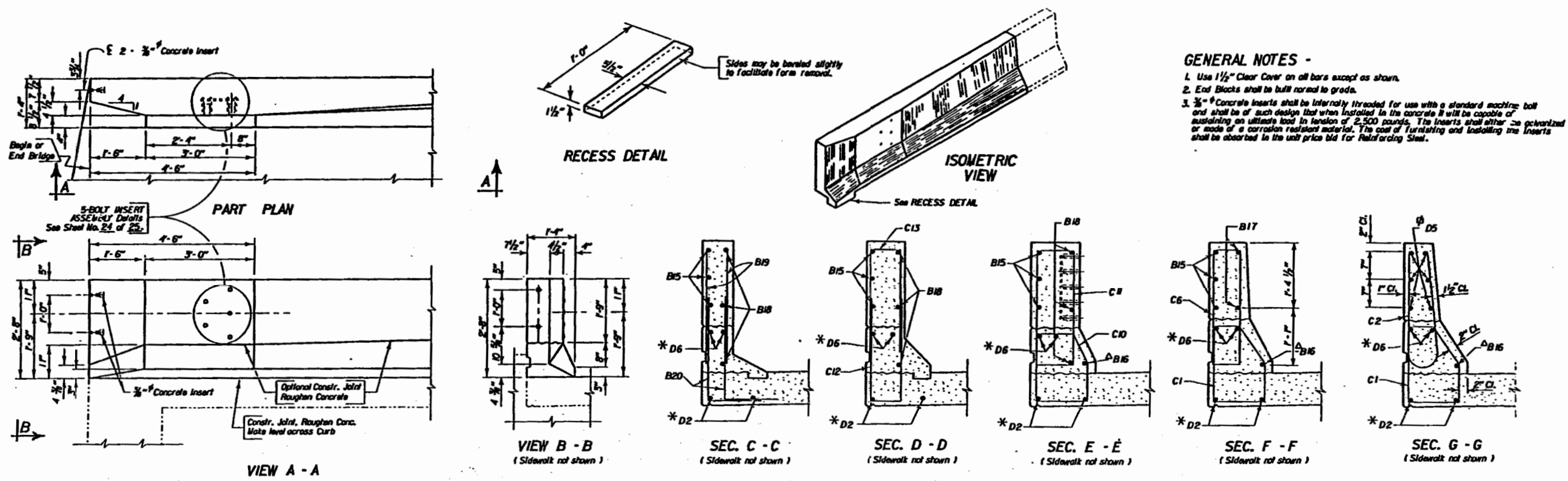


ORIGINAL CONSTRUCTION PLANS

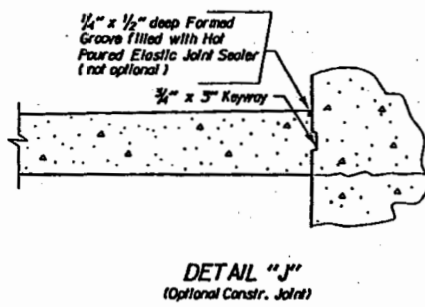
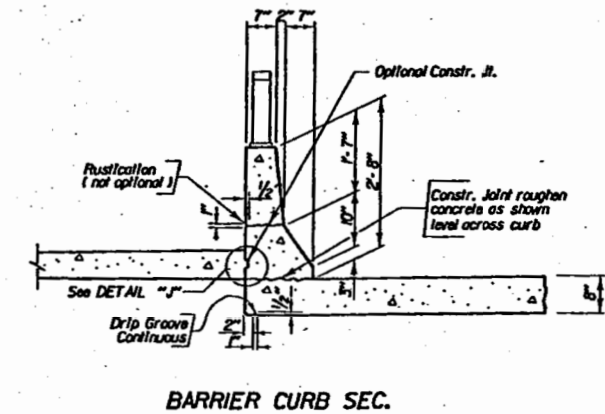
SUPERSTRUCTURE DETAILS
FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY
OVER I229 (BENSON ROAD)
STA. 98+77.23 to STA. 101+22.77
STR. NO. 50-219-180

SEC. 3 - T101N - R49W
9° 45' 08" LHF SKEW
IR2292 (63) 9
HS20 - 44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990



NOTE-
For listing of re-bars See Reinforcing Schedule Sheet No. 11 of 25.

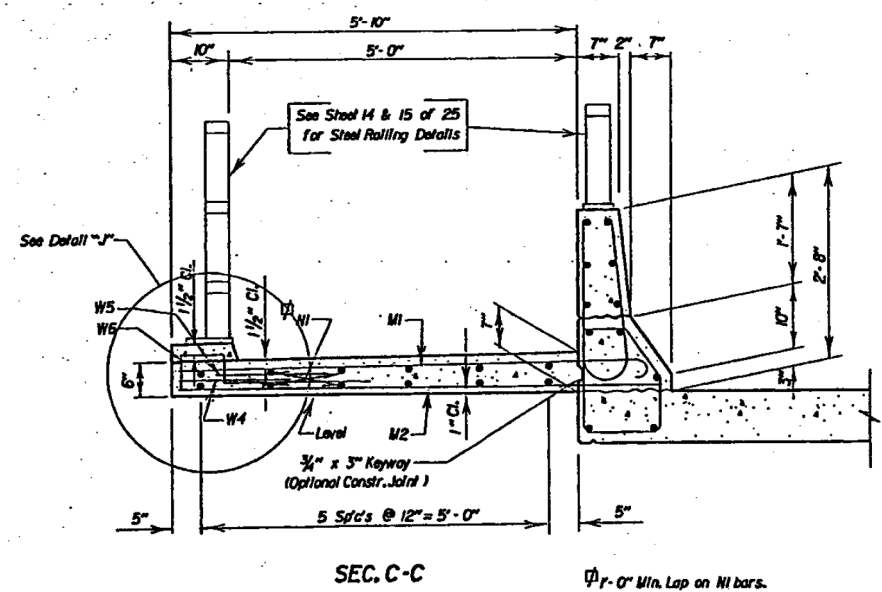
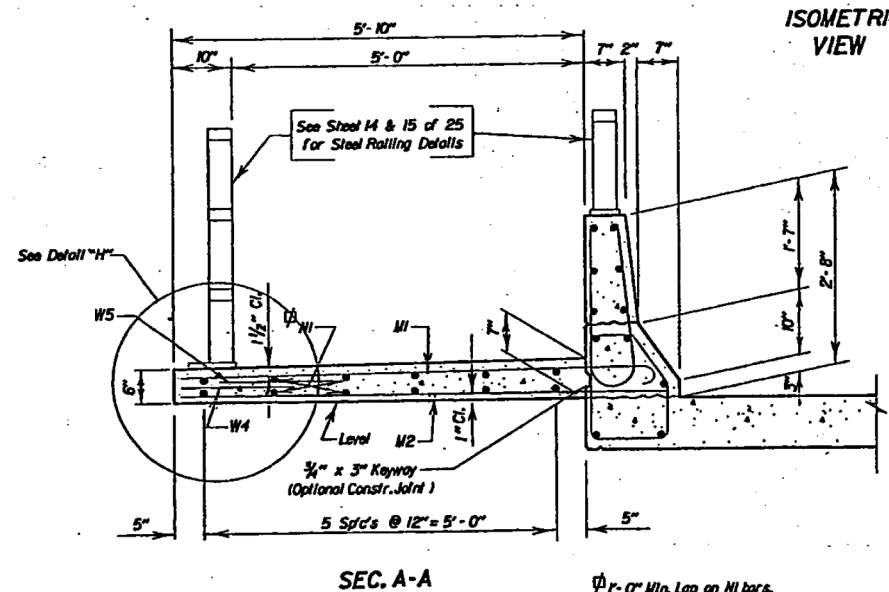
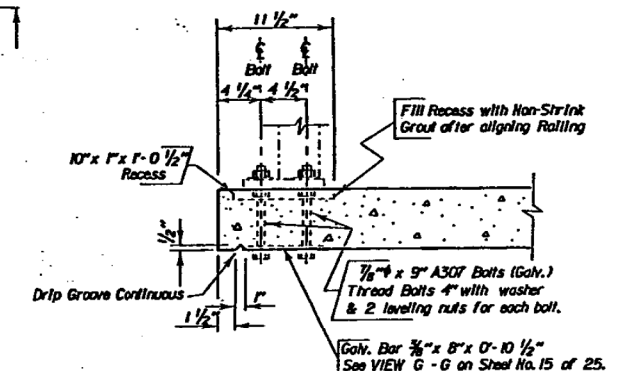
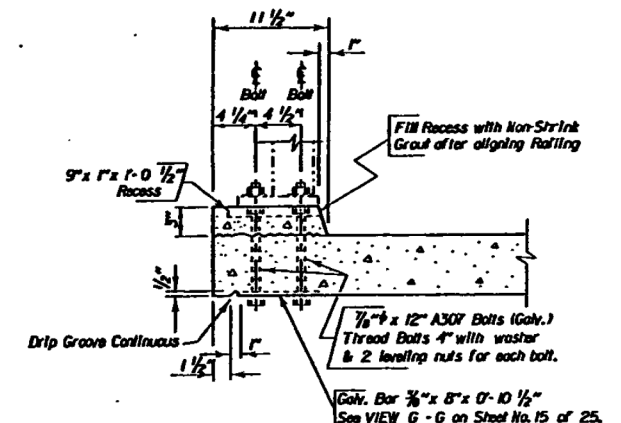
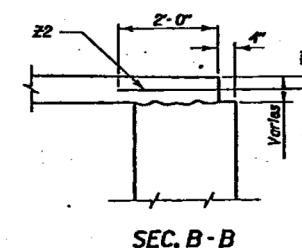
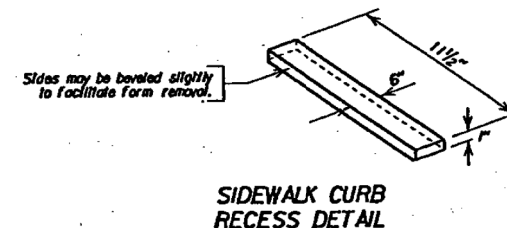
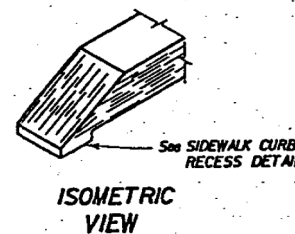
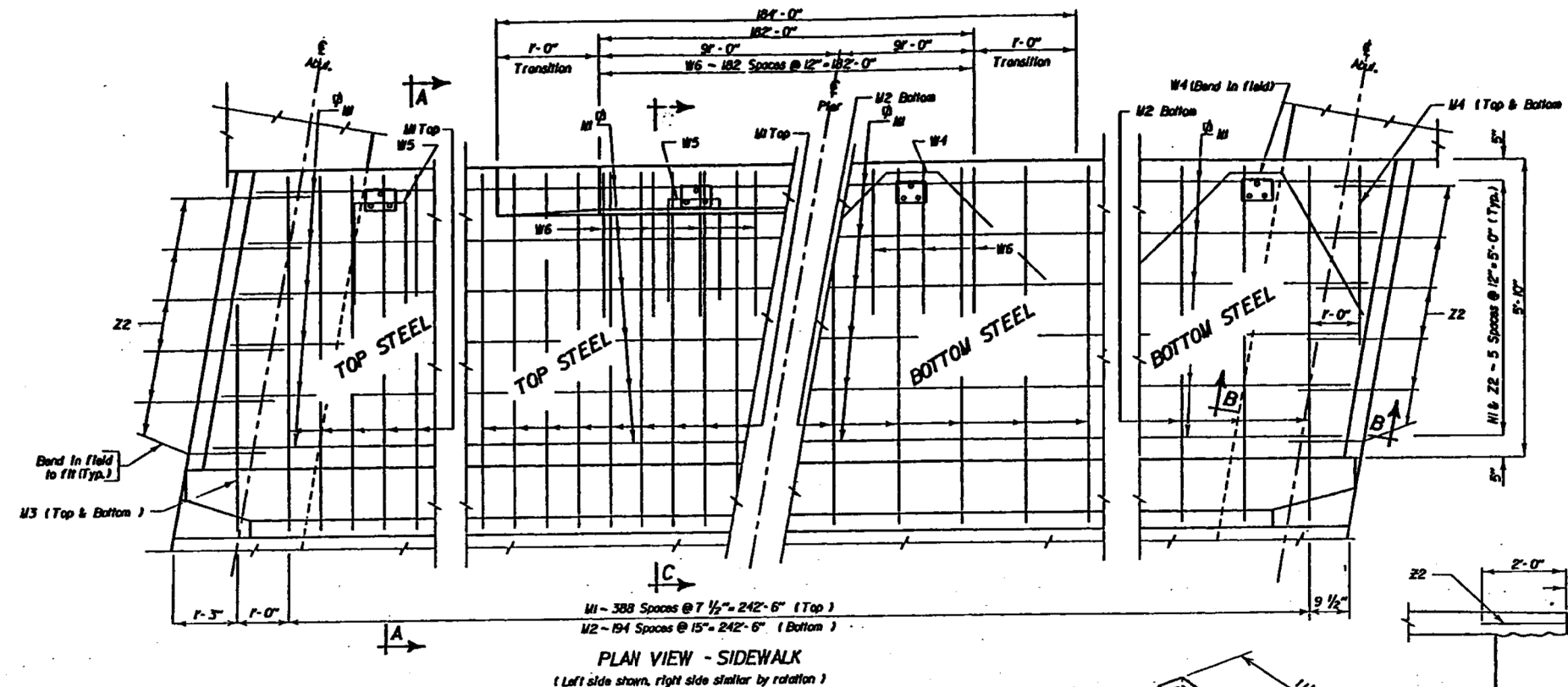


END BLOCK AND BARRIER CURB DETAILS FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY
OVER I229 (BENSON ROAD)
STA. 98+77.23 to STA. 101+22.77
STR. NO. 50-219-180

SEC. 3 - TION - R49W
9° 45' 08" LHF SKEW
IR2292 (63) 9
HS20 - 44 (& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH, 1990

ORIGINAL CONSTRUCTION PLANS

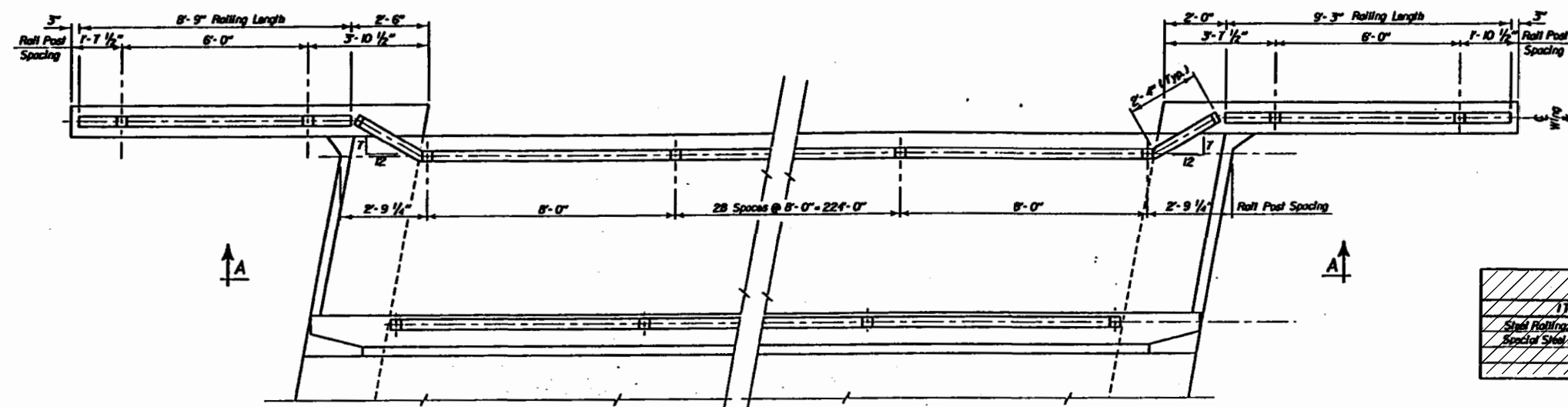


ORIGINAL CONSTRUCTION PLANS

SIDEWALK DETAILS FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY
OVER I229 (BENSON ROAD)
STA. 98+77.23 to STA. 101+22.77
STR. NO. 50-219-180

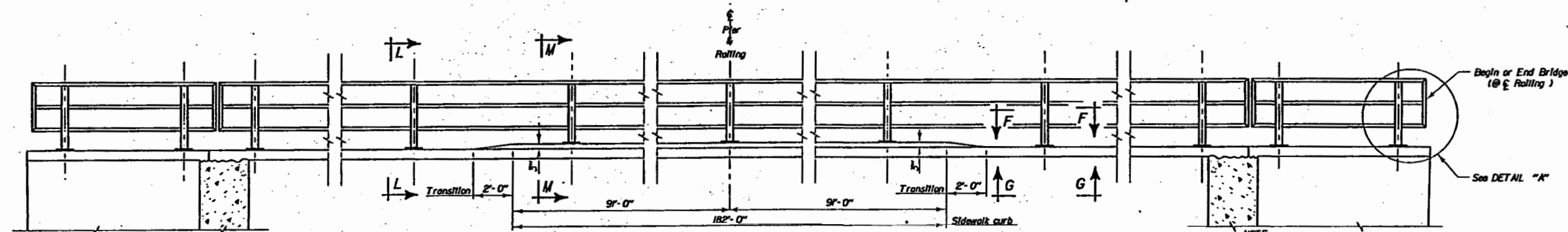
SEC. 3 - T101N - R49W
9° 45' 08" LHF SKEW
IR2292 (63) 9
HS20 - 44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990



PLAN VIEW OF SIDEWALK RAILING
(Left side shown, Right side similar by rotation)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Steel Railing Sidewalk	Lin. Ft	526.4
Special Steel Railing (Atop Barrier)	Lin. Ft	480.7



SEC. A-A
ELEVATION OF STEEL RAILING, SIDEWALK

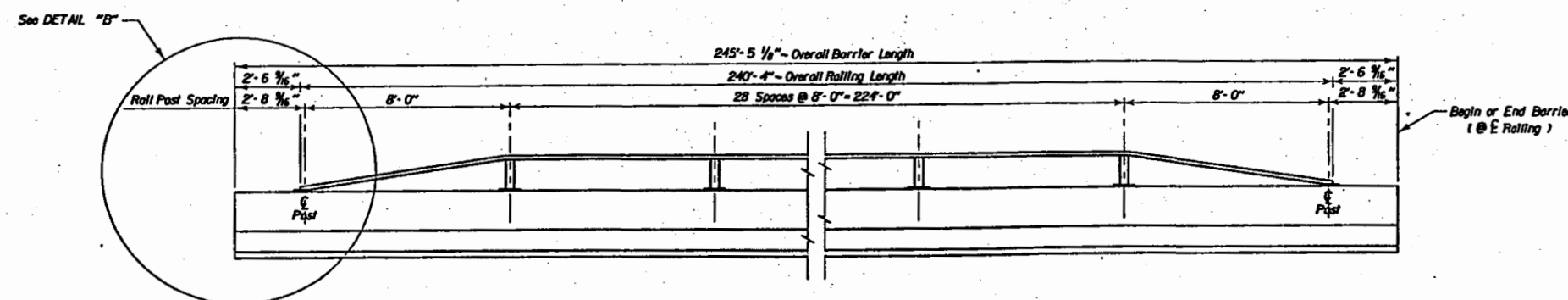
ORIGINAL CONSTRUCTION PLANS

SIDEWALK RAILING & BARRIER CURB RAILING DETAILS

FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY
OVER I229 (BENSON ROAD)
STA. 98+77.23 to STA. 101+22.77
STR. NO. 50-219-180

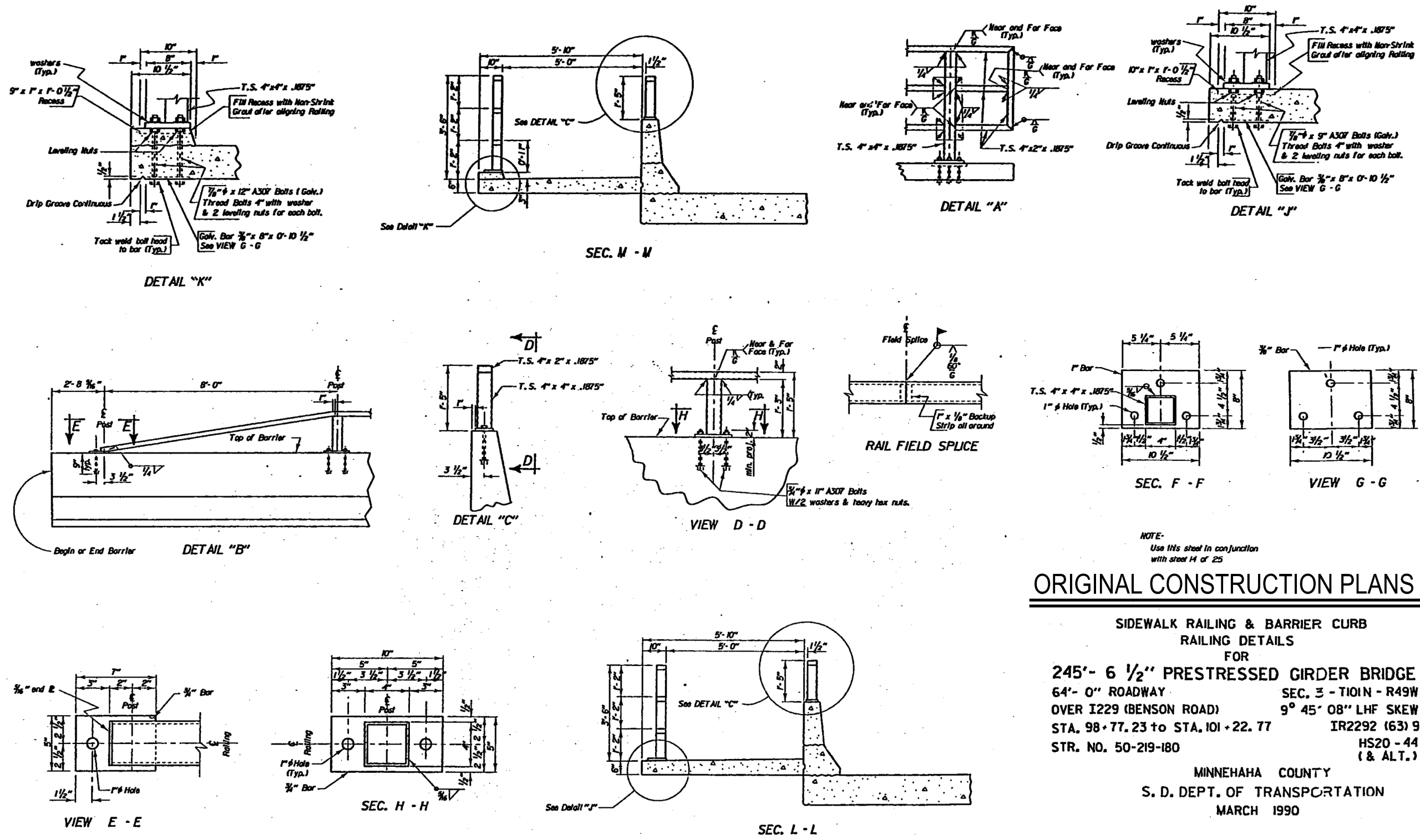
SEC. 3 - T101N - R49W
9° 45' 08" LHF SKEW
IR2292 (63) 9
HS20 - 44
(& ALT.)

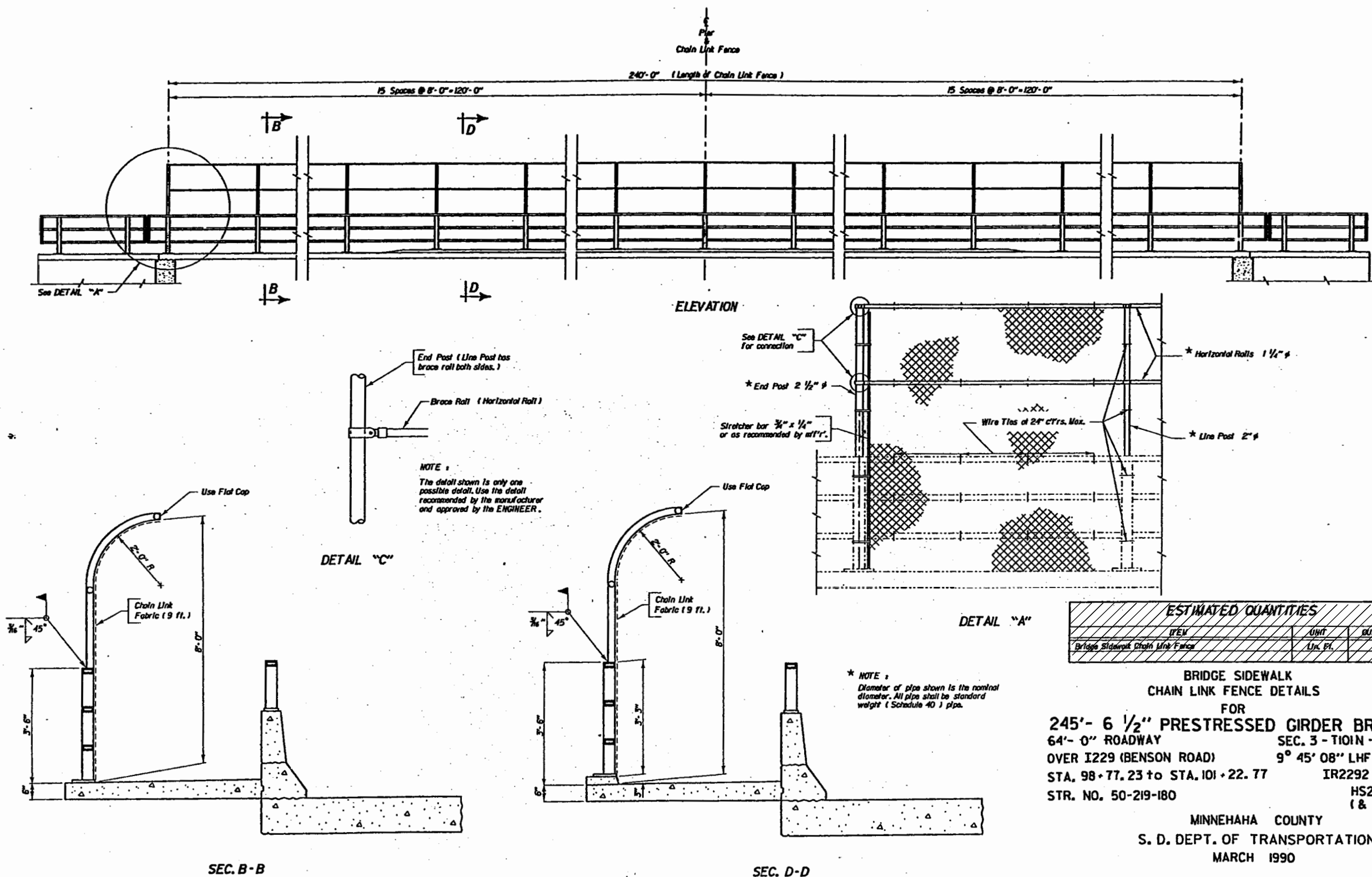
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990

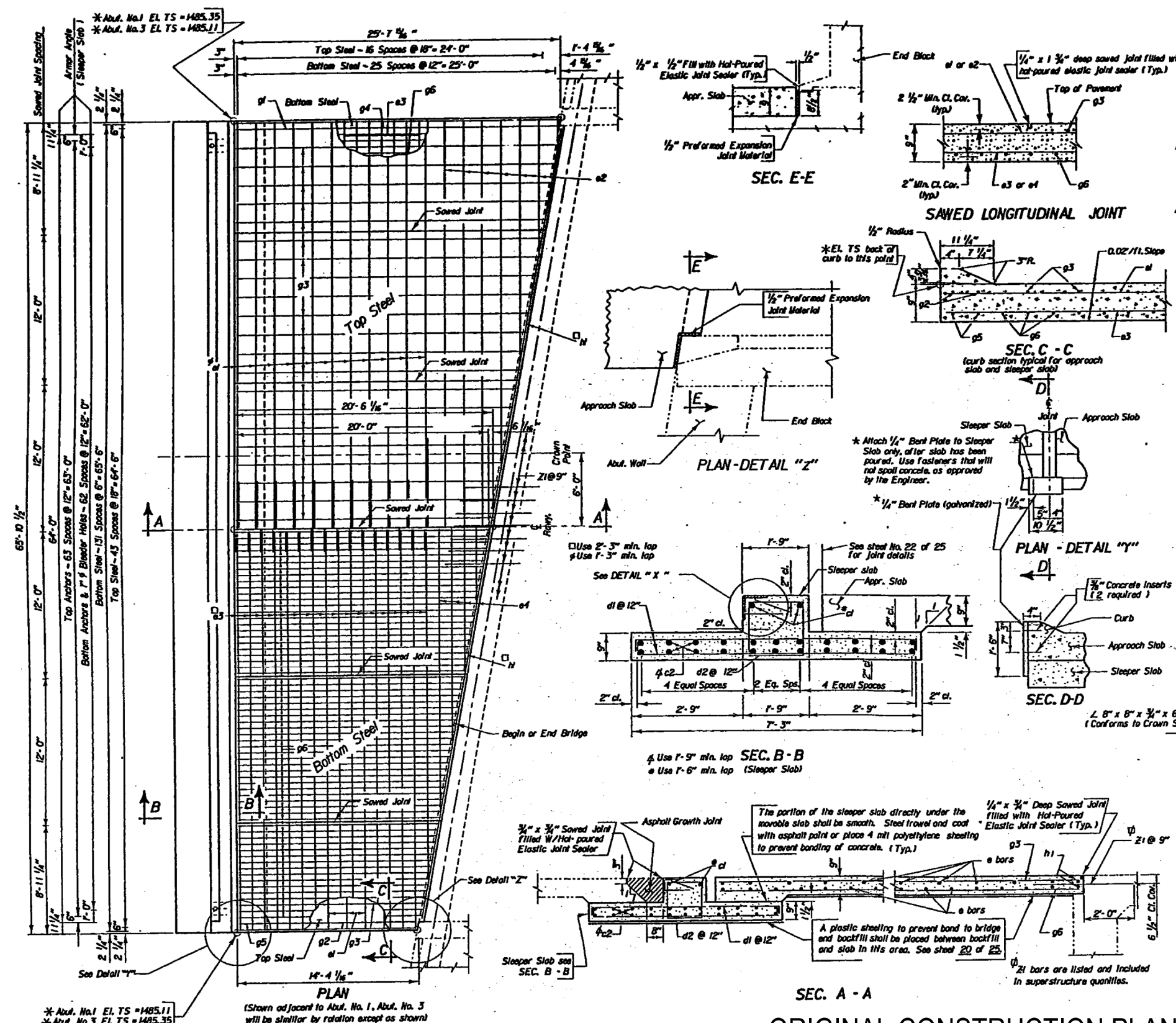


ELEVATION OF SPECIAL STEEL RAILING ATOP BARRIER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 & P 1200(04)	E69	E115







Bar	No.	Size	Length	Type	Bonding Details
a1	8	4	33'-8"	Str.	
a2	88	5	33'-8"	Str.	
a3	264	4	7'-9"	Str.	
a4	132	4	8'-1"	T2	
b1	44	4	33'-5"	Str.	
b2	6	4	62'-8"	Str.	
b3	64	6	33'-11"	Str.	
b4	10	6	59'-9"	Str.	
c1	4	4	25'-2"	Str.	
c2	4	4	14'-0"	Str.	
c3	42	4	40'-3"	Str.	
c4	4	8	25'-2"	Str.	
d1	10	6	59'-9"	Str.	
d2	4	4	14'-0"	Str.	
d3	42	4	40'-3"	Str.	
d4	4	8	25'-2"	Str.	
e1	8	8	14'-0"	Str.	
e2	128	8	40'-3"	Str.	
e3	14	8	33'-6"	Str.	
e4	14	8	33'-6"	Str.	

NOTE
 * Indicates Bars to be Epoxy Coated.
 Δ See Cutting Diagram
 All dimensions are out to out of bars.

ITEM	UNIT	QUANTITY
Comp. Approach Slab Adj. to Bridge	Sq. Yd.	300.0
Bridge Approach Sleeper Slab	Sq. Yd.	106.1

1.	77.2	Cu. Yds. Concrete In Approach Slabs.
2.	2870	Lbs. Epoxy Coated Re-Steel In Approach Slabs.
3.	18332	Lbs. Re-Steel In Approach Slabs.
4.	34.0	Cu. Yds. Concrete In Sleeper Slabs.
5.	716	Lbs. Epoxy Coated Re-Steel In Sleeper Slabs.
6.	4457	Lbs. Re-Steel In Sleeper Slabs.
7.	524	Lbs. Structural Steel In Armor Assembly & 1/4" Bent Plates

Items 1 thru 7 are approximate quantities contained in the above bid items and are for information only.

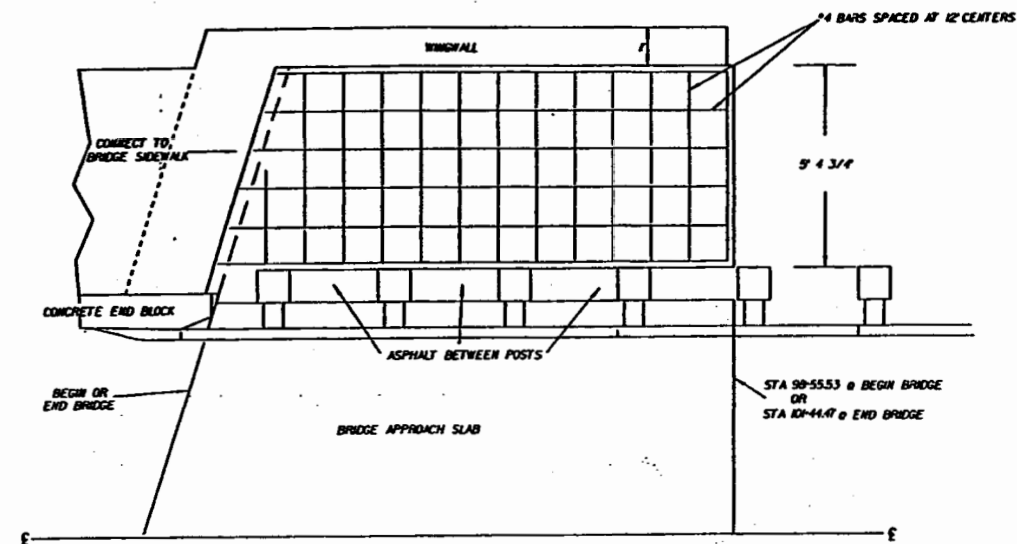
DETAILS OF APPROACH SLAB ADJ. TO BRIDGE
FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
 64'- 0" ROADWAY
 OVER I229 (BENSON ROAD)
 STA. 98+77.23 to STA. 101+22.77
 STR. NO. 50-219-180

SEC. 3 - TION - R49W
 9° 45' 08" LHF SKEW
 IR2292 (63) 9
 HS20 - 44
 (& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 & P 1200(04)	E73	E115

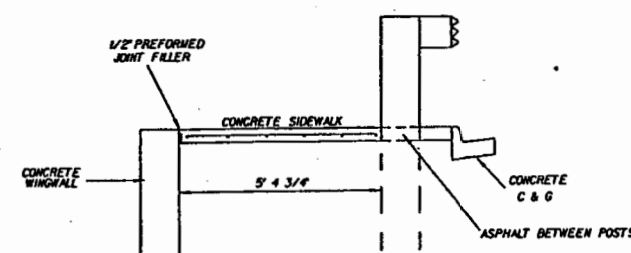
DETAILS FOR APPROACH SLAB SIDEWALK



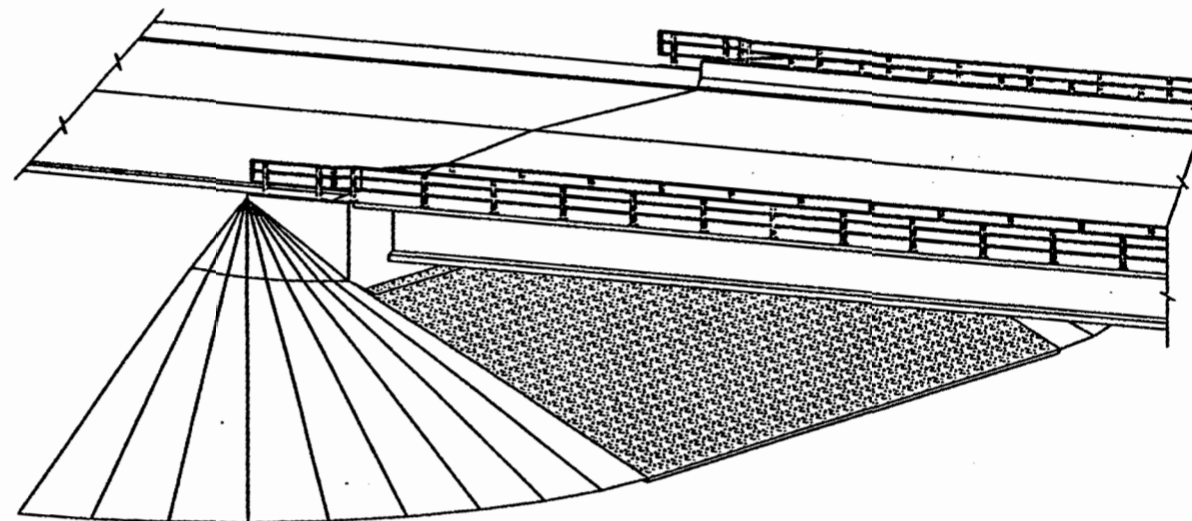
NOTES:

Concrete sidewalk shall be constructed as shown and in accordance with Section 651 of the Standard Specifications.

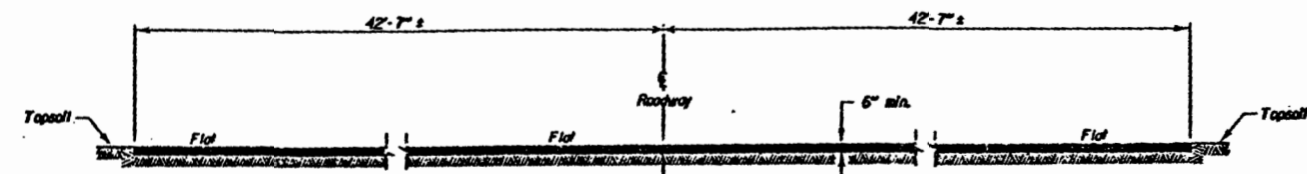
Sidewalks shall be constructed using 1/2" preformed joint filler between the sidewalk and concrete wingwalls as shown to the left.



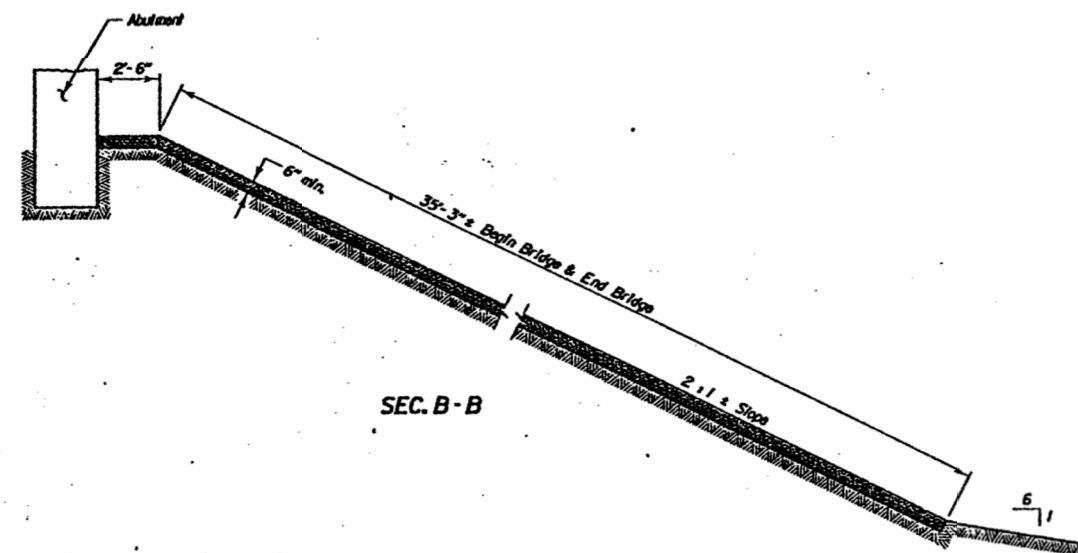
ORIGINAL CONSTRUCTION PLANS



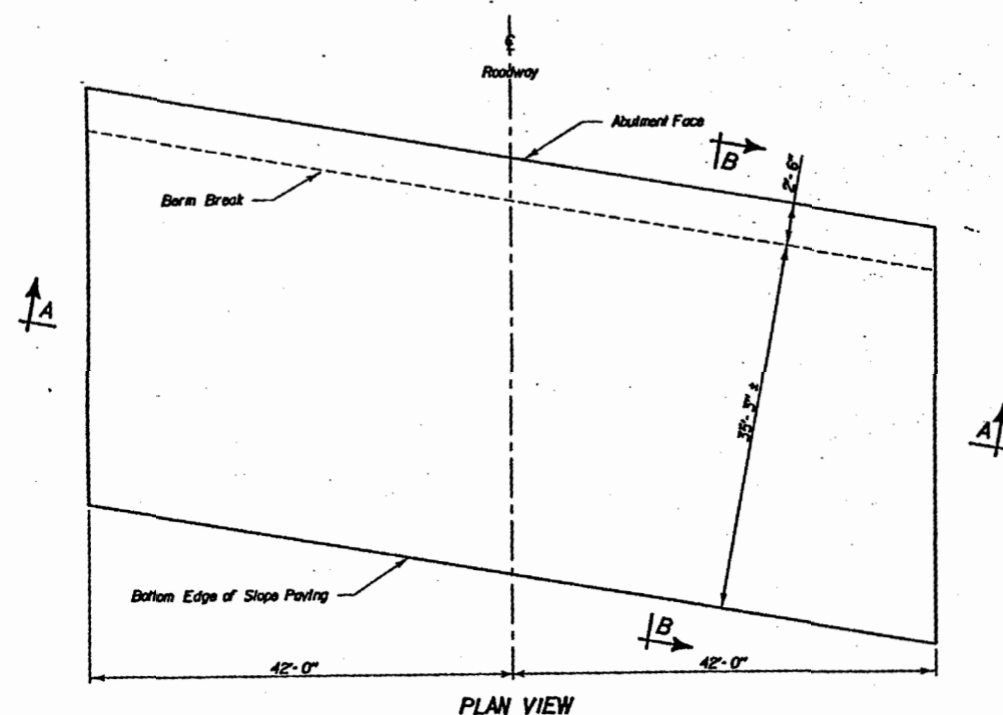
SLOPE PAVING UNDER STRUCTURE



SEC. A-A



SEC. B-B



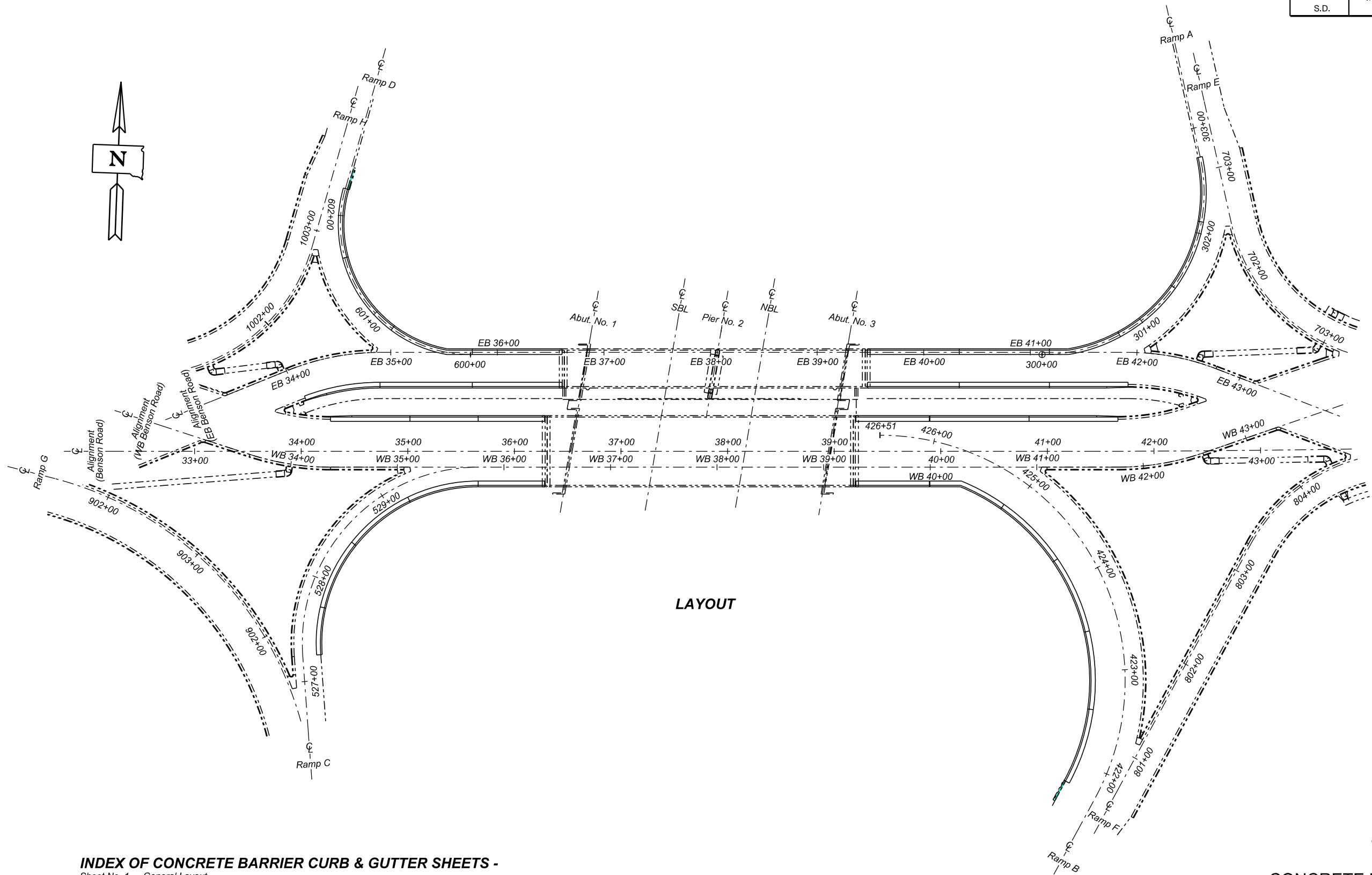
PLAN VIEW

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Crushed Aggregate Slope Paving	Sq. Yd.	115

DETAILS FOR CRUSHED AGGREGATE SLOPE PAVING
FOR
245'- 6 1/2" PRESTRESSED GIRDER BRIDGE
64'- 0" ROADWAY SEC. 3 - TION - R49W
OVER I229 (BENSON ROAD) 9° 45' 08" LHF SKEW
STA. 98+77.23 to STA. 101+22.77 IR2292 (63) 9
STR. NO. 50-219-180 HS20 - 44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 1990

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E75	E115



INDEX OF CONCRETE BARRIER CURB & GUTTER SHEETS -

- Sheet No. 1 - General Layout
- Sheet No. 2 - Estimate of Quantities and Notes
- Sheet No. 3 - General Layout (EB Benson Road)
- Sheet No. 4 - Details and Quantities (EB Benson Road)
- Sheet No. 5 - Tapered Barrier and Concrete Barrier Panel 6 Details (EB Benson Road)
- Sheet No. 6 - Tapered Barrier and Concrete Barrier Panel 10 Details (EB Benson Road)
- Sheet No. 7 - General Layout (WB Benson Road)
- Sheet No. 8 - Details and Quantities (WB Benson Road)
- Sheet No. 9 - Tapered Barrier and Concrete Barrier Panel 12 Details (WB Benson Road)
- Sheet No. 10 - Tapered Barrier and Concrete Barrier Panel 14 Details (WB Benson Road)

GENERAL LAYOUT
FOR
CONCRETE BARRIER CURB & GUTTER
ADJ. TO BENSON ROAD SEC. 2 & 3-T101N-R49W
PCN 04XK SEC. 34 & 35-T102N-R49W
IM 2292(98)6

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2022

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Concrete Barrier Curb and Gutter	2330	Ft	
Concrete Barrier Curb and Gutter End Section	80	Ft	

BRIDGE SPECIFICATIONS

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

GENERAL NOTES

- Concrete will be Class A45 in accordance with Section 460.
- Design Material Strengths: Concrete f'c = 4,500 psi
Reinforcing Steel fy = 60,000psi
- Reinforcing steel will conform to ASTM A615, Grade 60.
- Use 1" clear cover on all reinforcing steel except as shown.
- All exposed concrete corners and edges will be chamfered ¾" unless noted otherwise.
- The Concrete Barrier Curb and Gutter may be either cast-in-place or slipformed. If slipformed, the finished Concrete Barrier Curb will be true to the specified line and grade within a tolerance of ± ¼" in 10 feet.
- The transverse sawed or formed joints in the Concrete Barrier Curb and Gutter will align with the transverse joints in the PCC pavement. The joint grooves may either be formed or saw cut. If saw cut, the concrete will have attained a compressive strength of 2,000 psi prior to sawing. Keyed joints will be used between concrete barrier curb and gutter and concrete barrier curb and gutter end section and between separate pours. Saw cut and seal same as adjacent PCC pavement.
- Snap ties, if used, will be epoxy coated. The epoxy coating will be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The contract unit price per foot for Concrete Barrier Curb and Gutter and Concrete Barrier Curb and Gutter End Section will include the cost of all materials, labor, equipment, and incidentals necessary to furnish the barrier complete in place in accordance with these plans and specifications.

COMMERCIAL TEXTURE FINISH

- A commercial texture finish will be applied to the front, top, and back face of the barrier curbs.
- The commercial texture finish used will be on the Department's approved list.
- The commercial texture finish will be applied in accordance with Section 460.3 L.1.c
- Where the commercial texture finish is to be applied, curing will be accomplished with cotton or burlap mats and polyethylene sheeting. Curing will continue for not less than seven days after placing concrete before the commercial texture finish is applied. Various commercial texture finish products require that the concrete be 28 days old before application. Therefore, the commercial texture surface finish will be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.
- No separate payment will be made for the commercial texture finish. All costs for the surface preparation, furnishing, and installing the commercial texture finish will be incidental to the Concrete Curb and Gutter and Concrete Curb and Gutter End Section items to which the finish is applied.
- The color of the back face will be "Tan" to match the barrier on the bridges.
- The color of the top and front face will be "Pearl White", Federal Standard No. 26622 to match the barrier on the bridge.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

CONCRETE BARRIER CURB & GUTTER

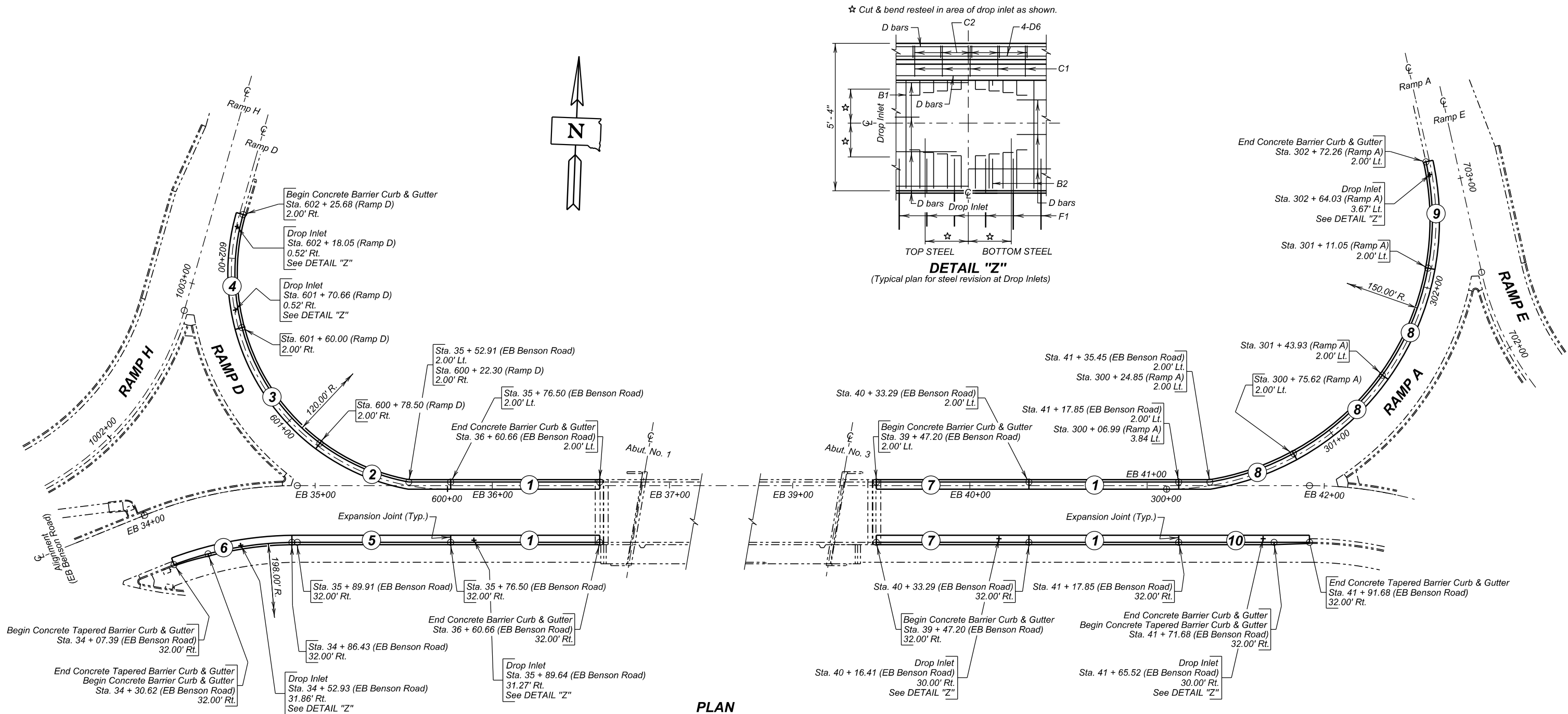
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

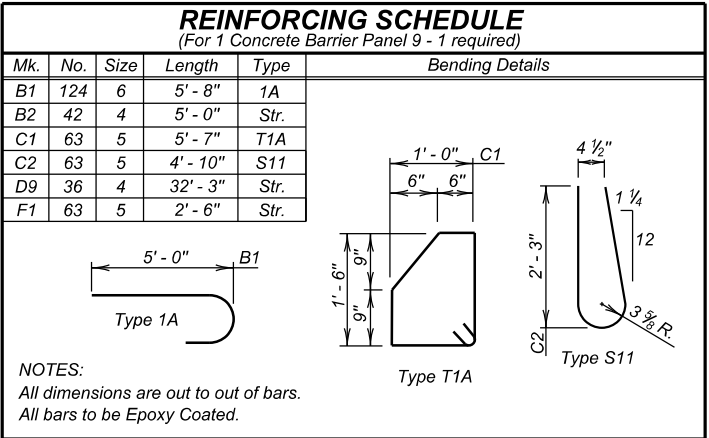
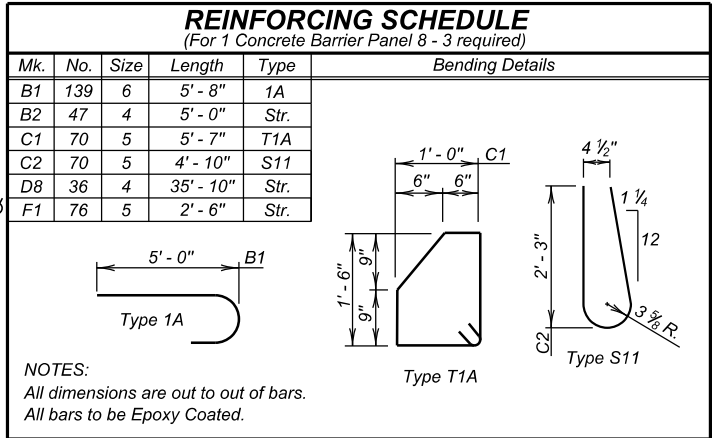
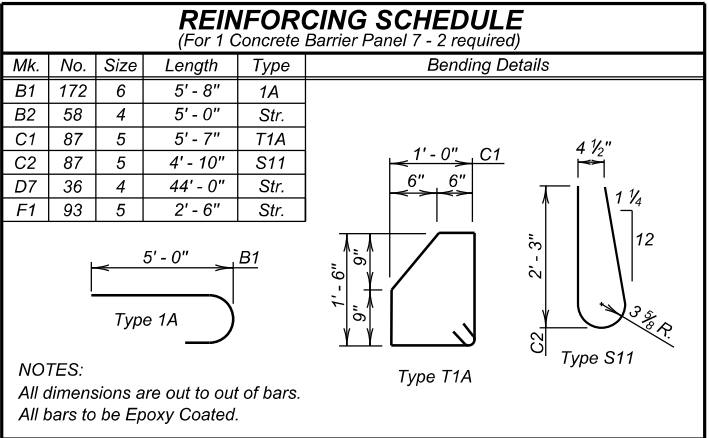
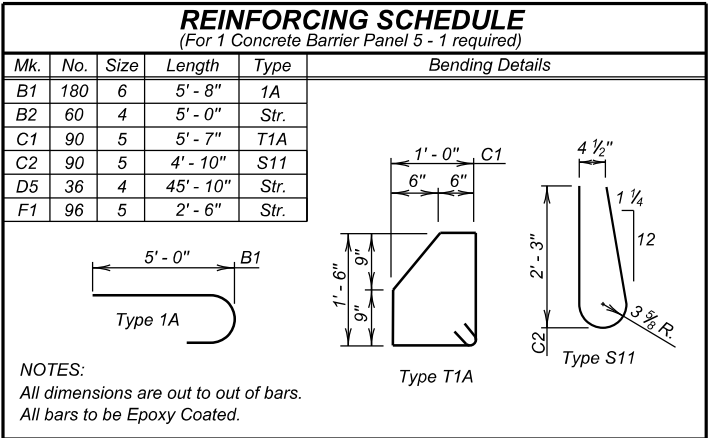
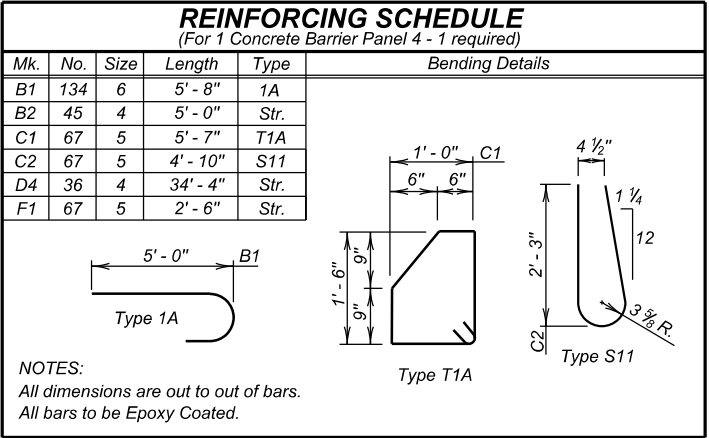
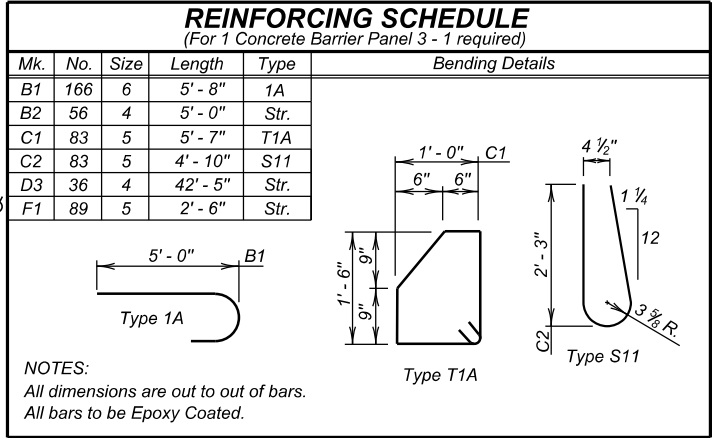
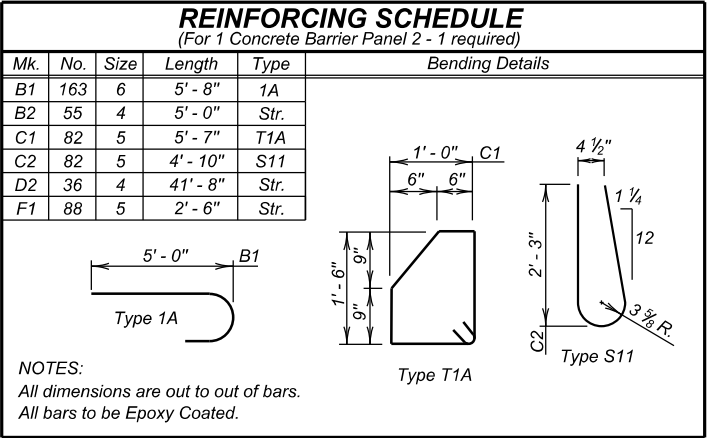
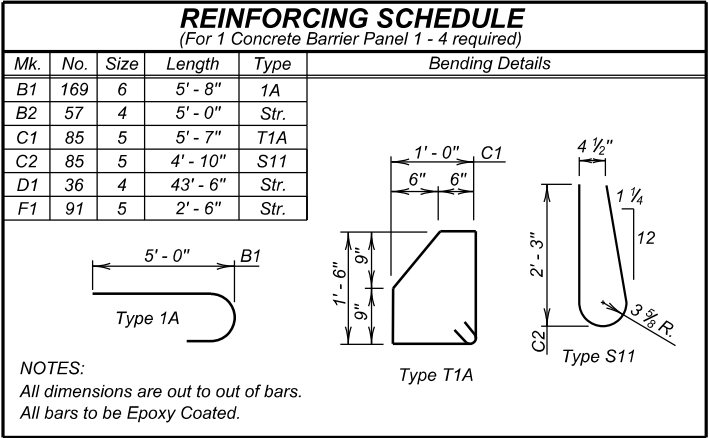
MARCH 2022

2 OF 10

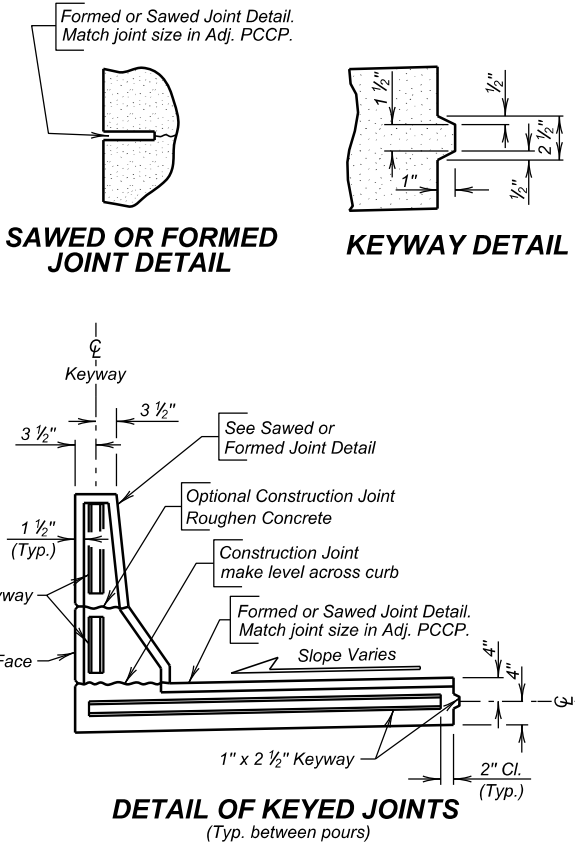
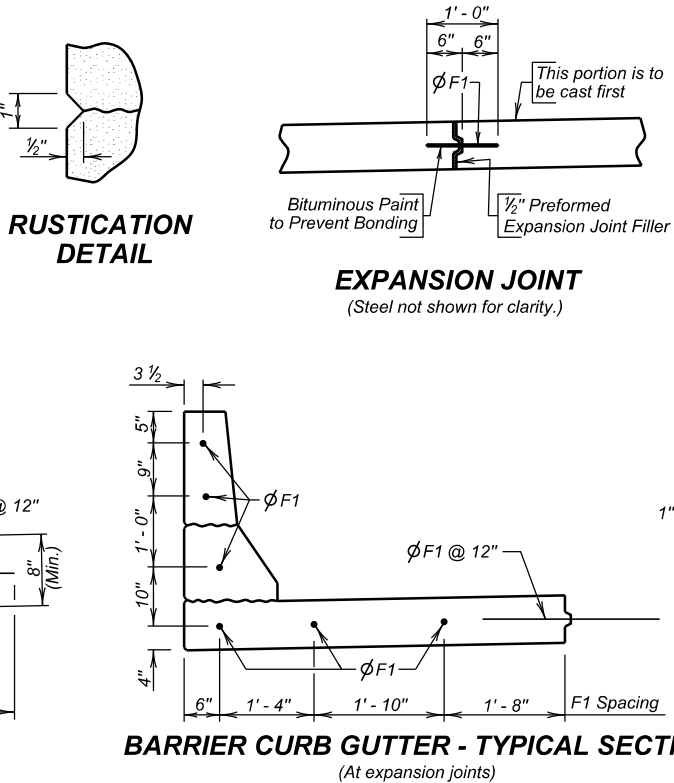
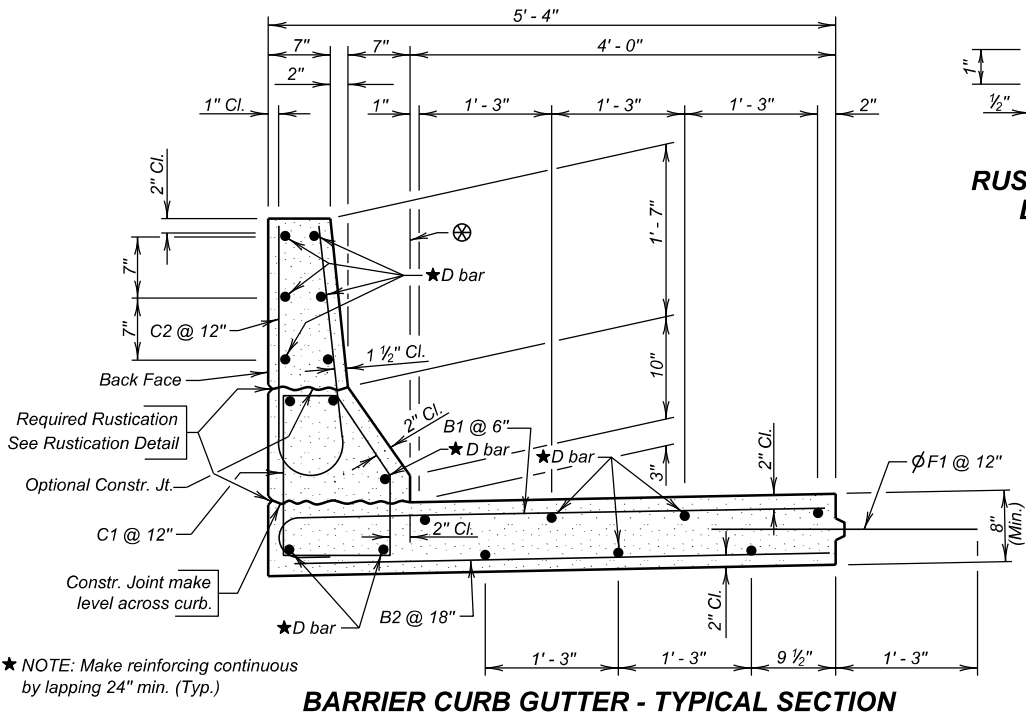
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E77	E115



DESIGNED BY BT MINN04XK	CK. DES. BY PW 04XKTD03	DRAFTED BY BT Steve A. Johnson BRIDGE ENGINEER
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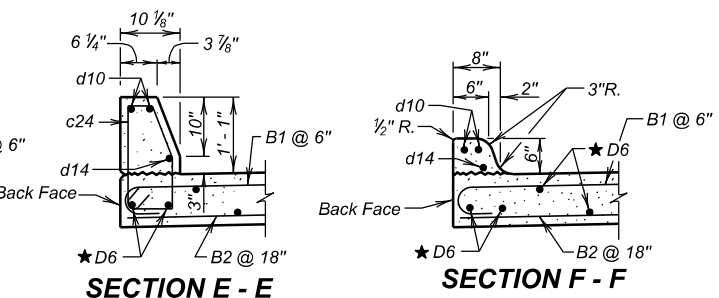
NOTES:
Place F1 bar as shown on the TYPICAL SECTIONS at the expansion joints and the outside face of the slab. See GENERAL LAYOUT (EB Benson Road) for number and location of expansion joints required.
The stated radii on the plans and cross sections refer to this line and it will also be the basis for horizontal linear foot measurement and payment.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Barrier Curb and Gutter	Ft.	1085

- Items 1 thru 3 are approximate quantities contained in the above bid item and are for information only.
- 0.2 Cu. Yds. of Concrete per foot of Concrete Barrier Curb & Gutter Section.
 - 45 Lbs. Epoxy Coated Re-Steel per foot of Concrete Barrier Curb & Gutter Section. NOT including laps.
 - 16 Lbs. of Re-Steel per Expansion Joint

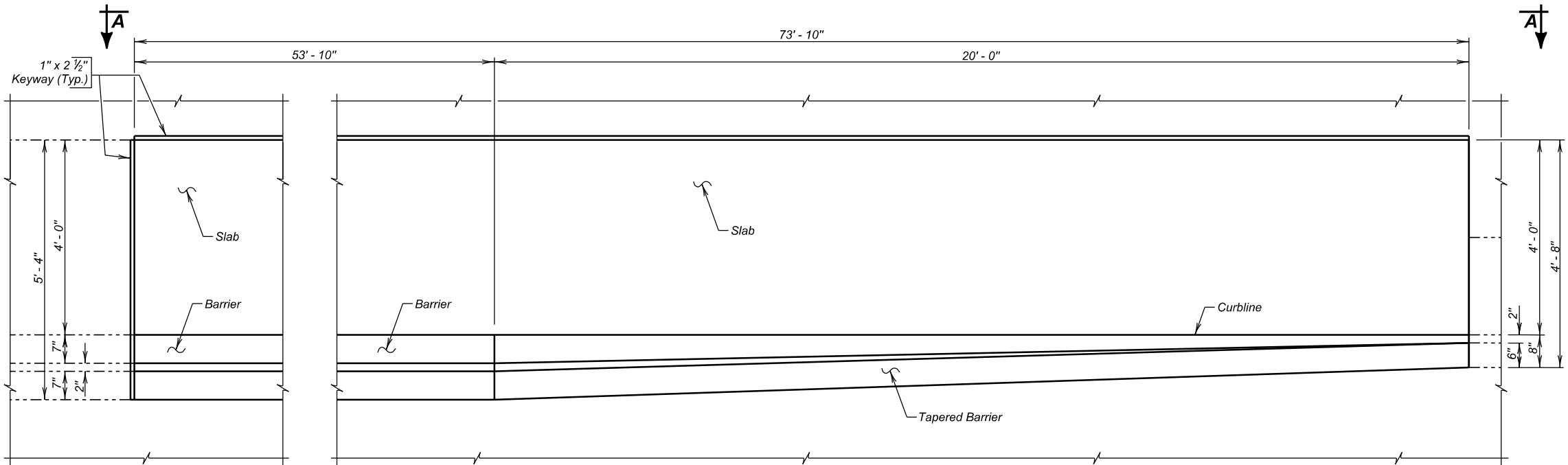
DETAILS AND QUANTITIES (EB BENSON ROAD)
FOR
CONCRETE BARRIER CURB & GUTTER
ADJ. TO BENSON ROAD SEC. 2 & 3-T101N-R49W
SEC. 34 & 35-T102N-R49W IM 2292(98)6
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2022



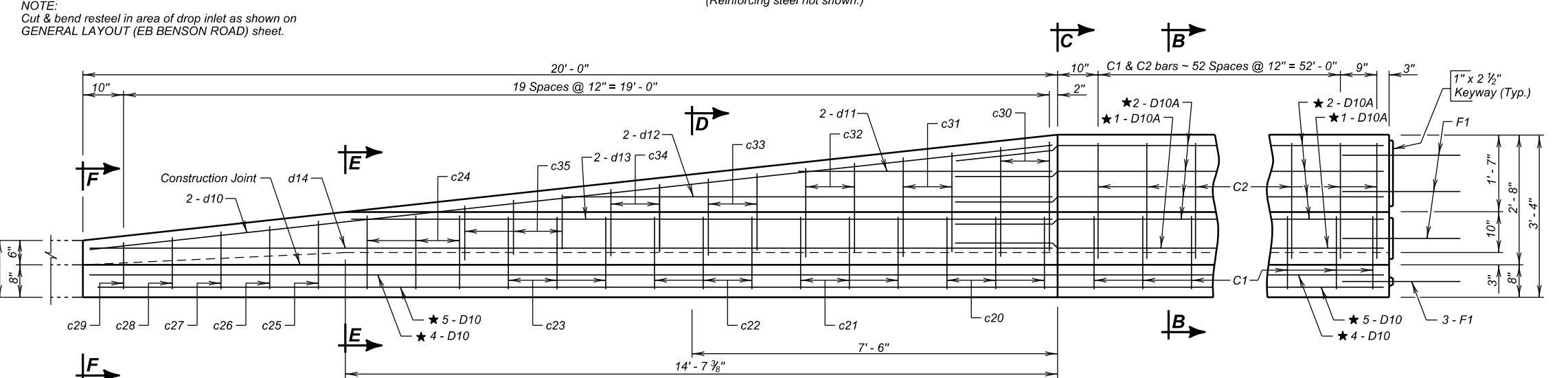
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		E80	E115
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)		

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
Tapered Barrier					
c20	3	5	5'-8"	T1A	
c21	3	5	5'-5"	T1A	
c22	3	5	5'-3"	T1A	
c23	3	5	5'-1"	T1A	
c24	3	5	4'-11"	T1A	
c25	1	5	4'-6"	T7	
c26	1	5	4'-3"	T7	
c27	1	5	4'-0"	T7	
c28	1	5	3'-9"	T7	
c29	1	5	3'-6"	T7	
c30	2	5	4'-10"	S11	
c31	2	5	4'-5"	S11	
c32	2	5	4'-0"	S11	
c33	2	5	3'-6"	S11	
c34	2	5	3'-1"	S11	
c35	3	5	2'-7"	S11	
d10	2	5	19'-9"	Str.	
d11	2	5	4'-9"	Str.	
d12	2	5	9'-9"	Str.	
d13	2	5	14'-6"	Str.	
d14	1	4	19'-8"	Str.	
Slab					
B1	148	6	5'-8"	1A	
B2	50	4	5'-0"	Str.	
D10	18	4	37'-11"	Str.	
F1	77	5	2'-6"	Str.	
Barrier					
C1	54	5	5'-7"	T1A	
C2	54	5	4'-10"	S11	
D10A	9	4	55'-10"	Str.	
F1	3	5	2'-6"	Str.	



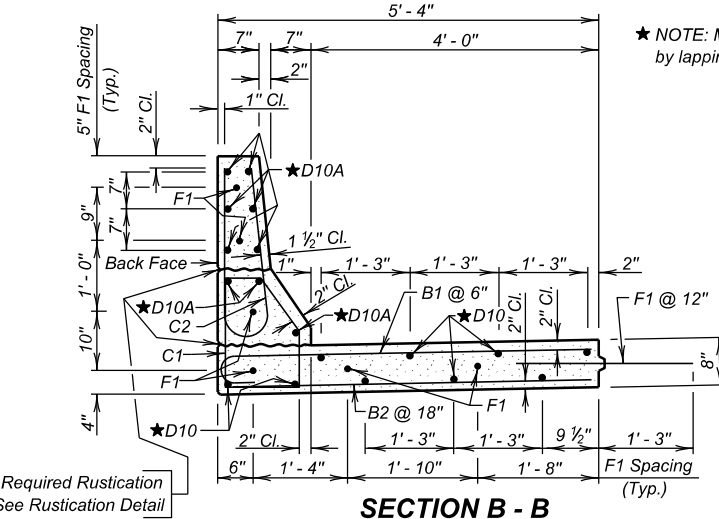
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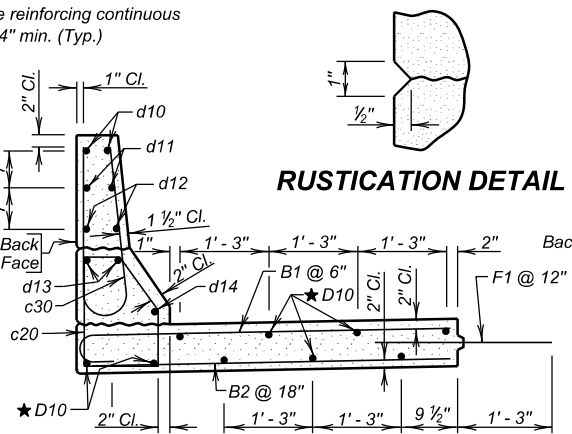
VIEW A - A
(Slab reinforcing steel not shown.)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Barrier Curb and Gutter	Ft.	54
Concrete Barrier Curb and Gutter End Section	Ft.	20

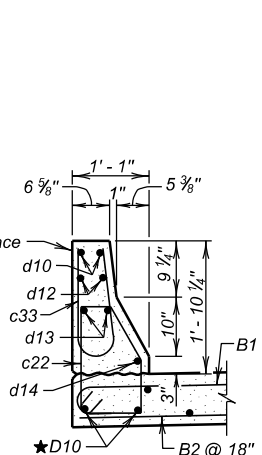
- Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.
- 3.4 Cu. Yds. Concrete in one Tapered Barrier End Section.
 - 732 Lbs. Epoxy Coated Re-Steel in one Tapered Barrier End Section.
 - 0.2 Cu. Yds. of Concrete per foot in Regular Barrier Section.
 - 45 Lbs. Epoxy Coated Re-Steel per foot of Regular Barrier Section.



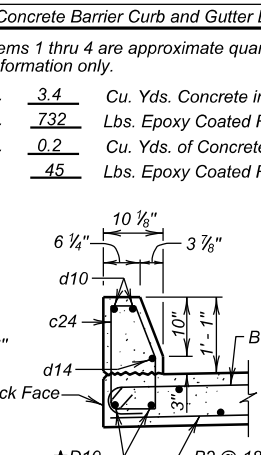
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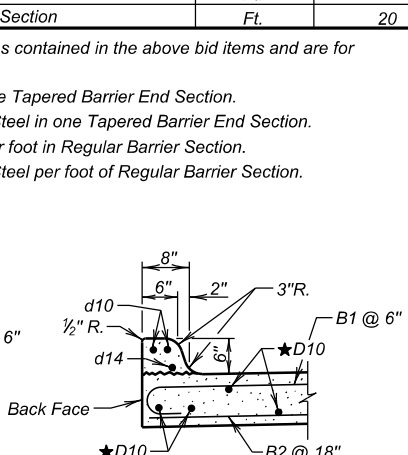
SECTION C - C



SECTION D - D



SECTION E - E



SECTION F - F

RUSTICATION DETAIL

Required Rustication
See Rustication Detail

TAPERED BARRIER AND CONCRETE BARRIER
PANEL 10 DETAILS (EB BENSON ROAD)
FOR
CONCRETE BARRIER CURB & GUTTER

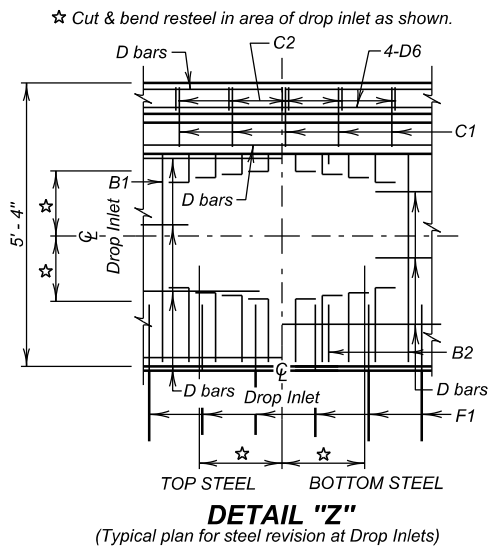
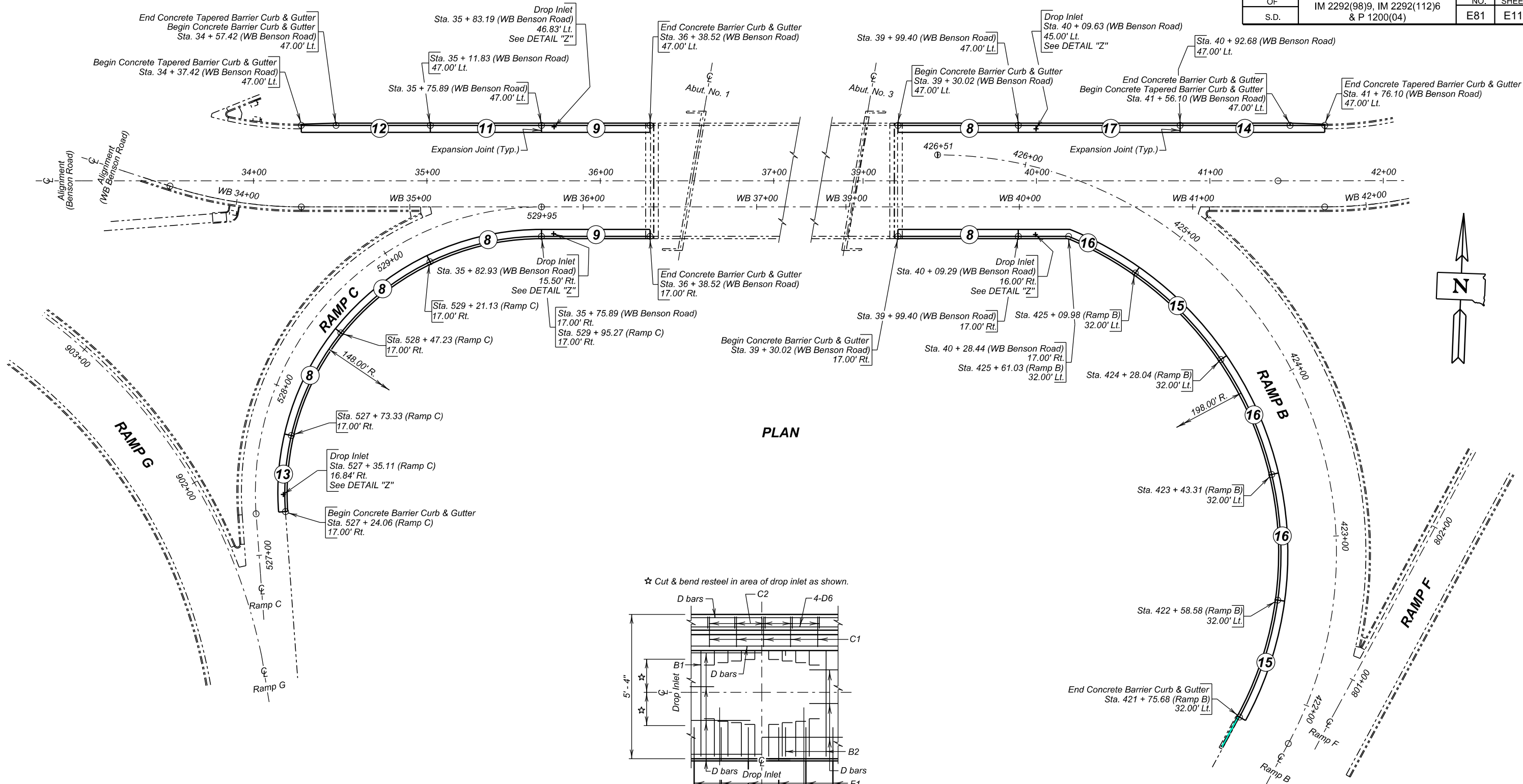
ADJ. TO BENSON ROAD SEC. 2 & 3-T101N-R49W
SEC. 34 & 35-T102N-R49W
IM 2292(98)6

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

MARCH 2022

DESIGNED BY BT MINN04XK	CK. DES. BY PW 04XKTD06	DRAFTED BY BT Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E81	E115

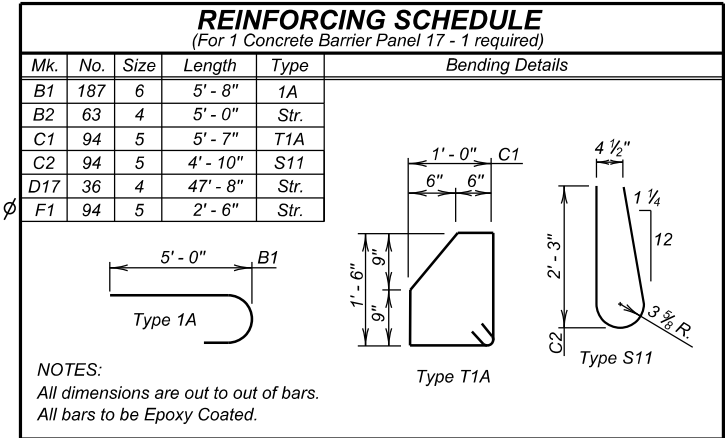
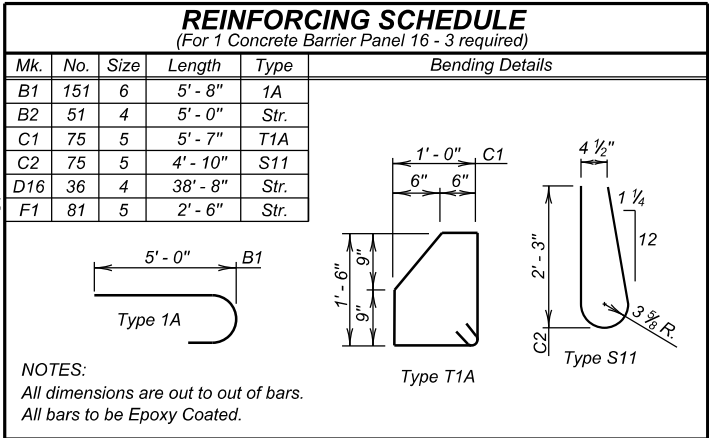
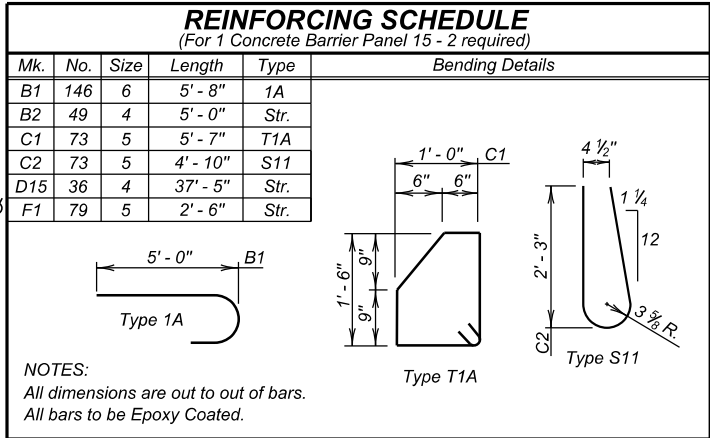
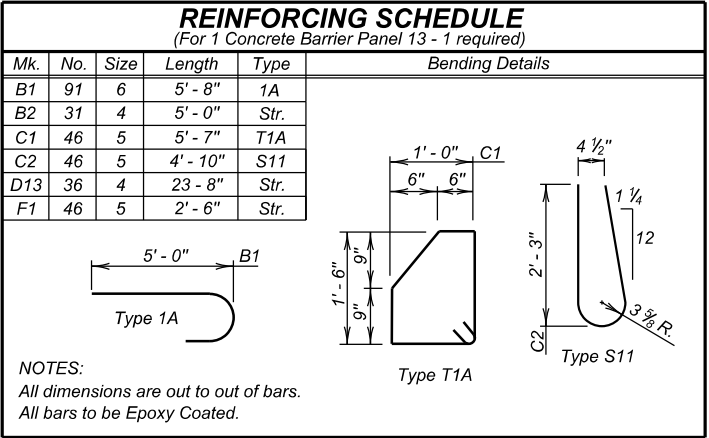
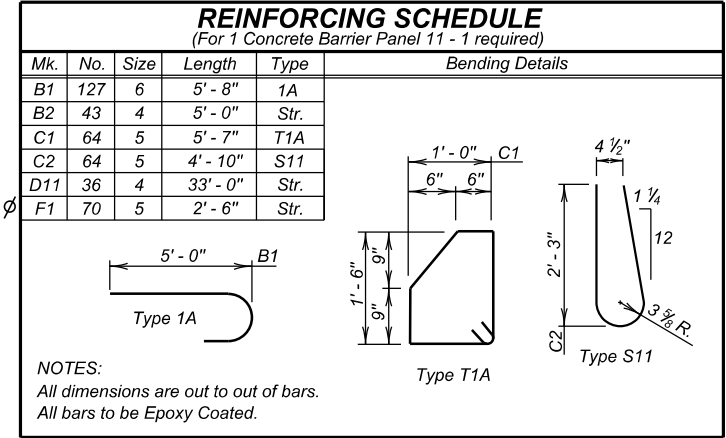
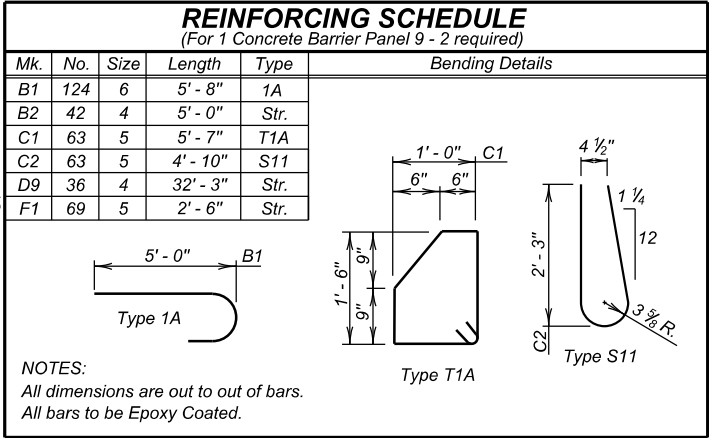
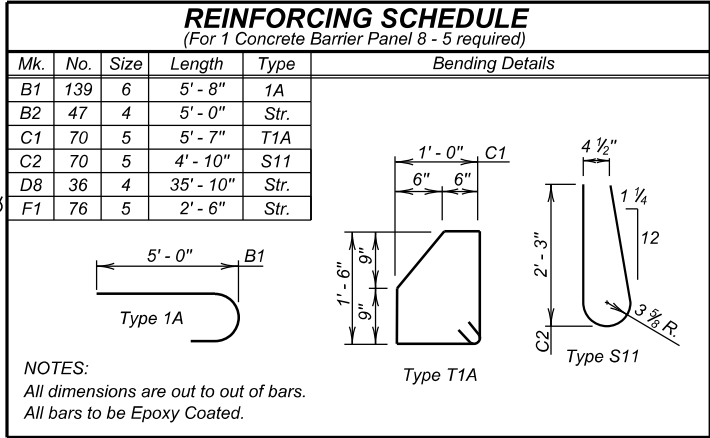


GENERAL LAYOUT (WB BENSON ROAD)
FOR
CONCRETE BARRIER CURB & GUTTER
ADJ. TO BENSON ROAD SEC. 2 & 3-T101N-R49W
SEC. 34 & 35-T102N-R49W
IM 2292(98)6

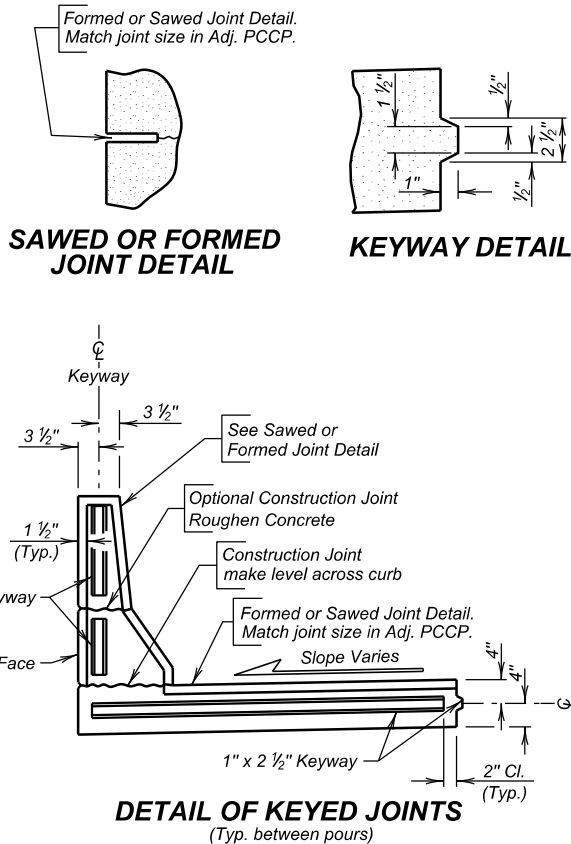
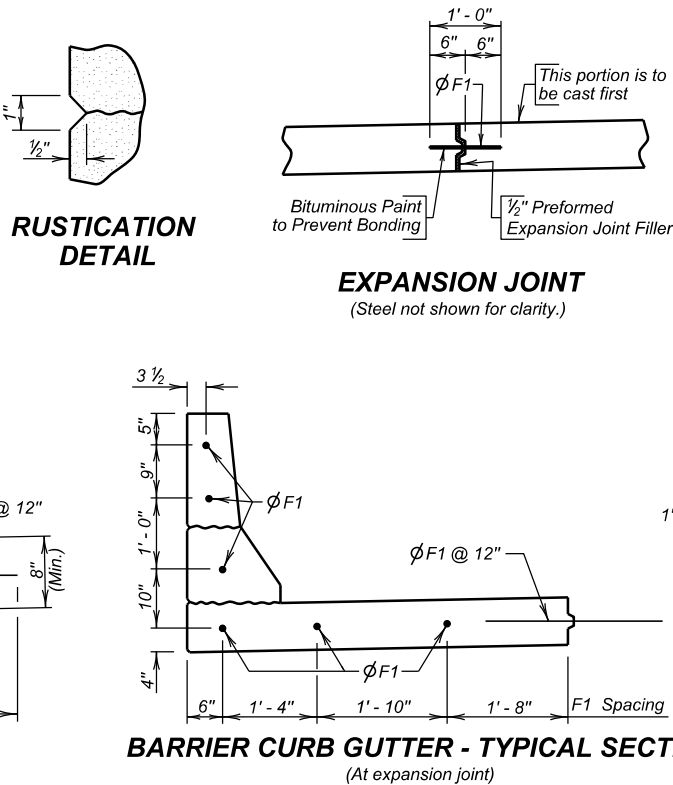
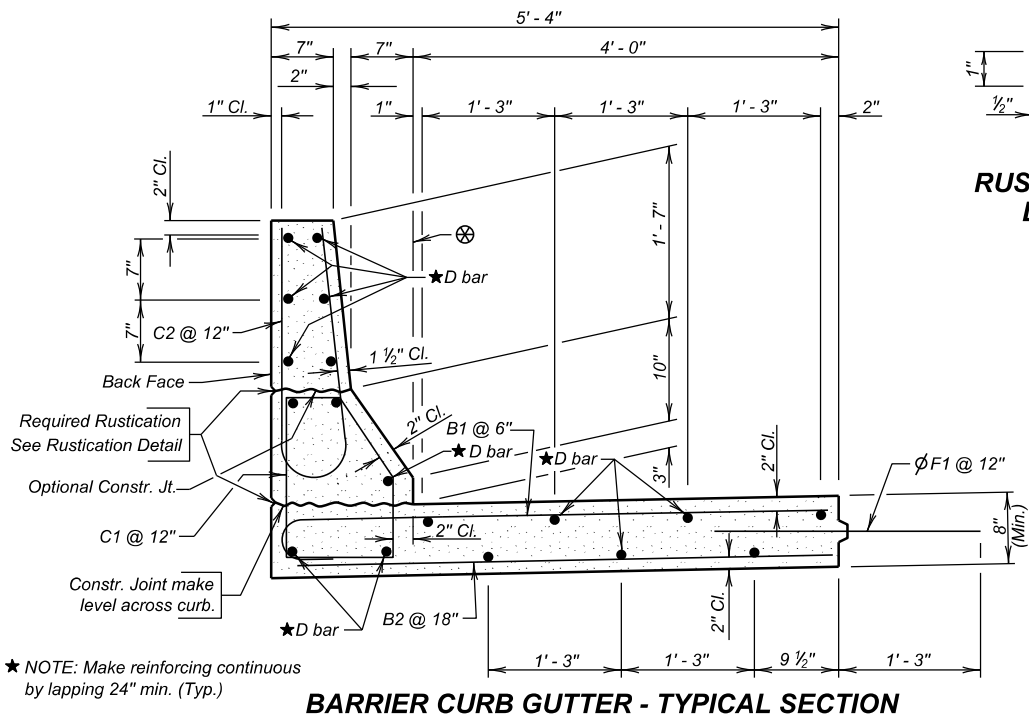
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

MARCH 2022 7 OF 10

DESIGNED BY BT MINN04XK	CK. DES. BY PW 04XKTD07	DRAFTED BY BT Steve A. Johnson BRIDGE ENGINEER
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NOTES:
Place F1 bar as shown on the TYPICAL SECTIONS at the expansion joints and the outside face of the slab. See GENERAL LAYOUT (WB Benson Road) for number and location of expansion joints required.
The stated radii on the plans and cross sections refer to this line and it will also be the basis for horizontal linear foot measurement and payment.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Barrier Curb and Gutter	Ft.	1025

- Items 1 thru 3 are approximate quantities contained in the above bid item and are for information only.
- 0.2 Cu. Yds. of Concrete per foot of Concrete Barrier Curb & Gutter Section.
 - 45 Lbs. Epoxy Coated Re-Steel per foot of Concrete Barrier Curb & Gutter Section. NOT including laps.
 - 16 Lbs. of Re-Steel per Expansion Joint

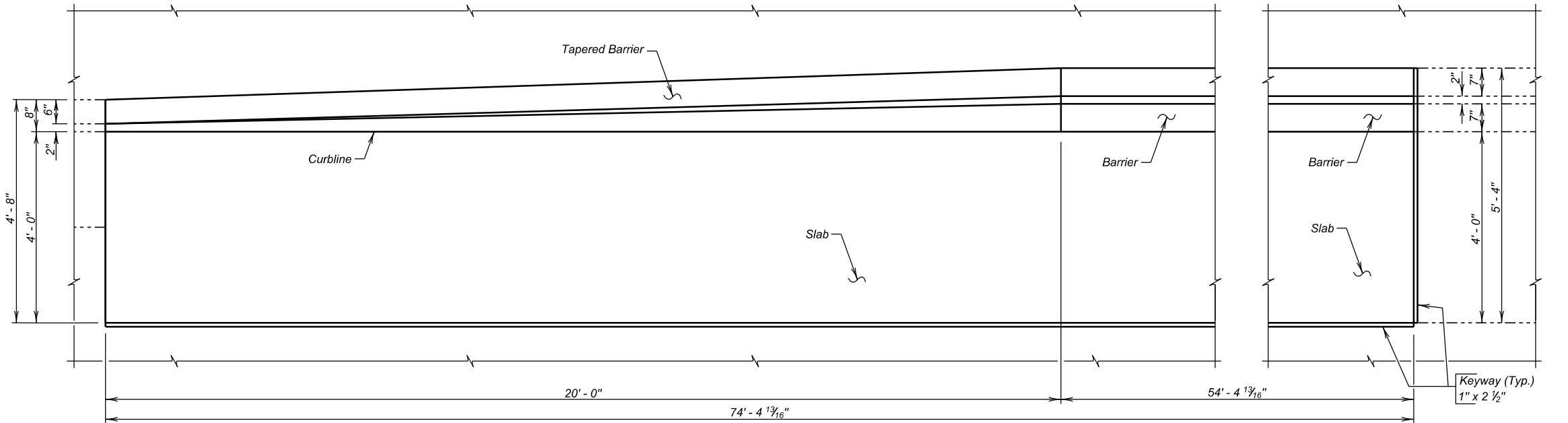
DETAILS AND QUANTITIES (WB BENSON ROAD)
FOR
CONCRETE BARRIER CURB & GUTTER
ADJ. TO BENSON ROAD SEC. 2 & 3-T101N-R49W
SEC. 34 & 35-T102N-R49W IM 2292(98)6
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2022

DESIGNED BY BT MINN04XK	CK. DES. BY PW 04XKTD08	DRAFTED BY BT	Steve A. Johnson BRIDGE ENGINEER
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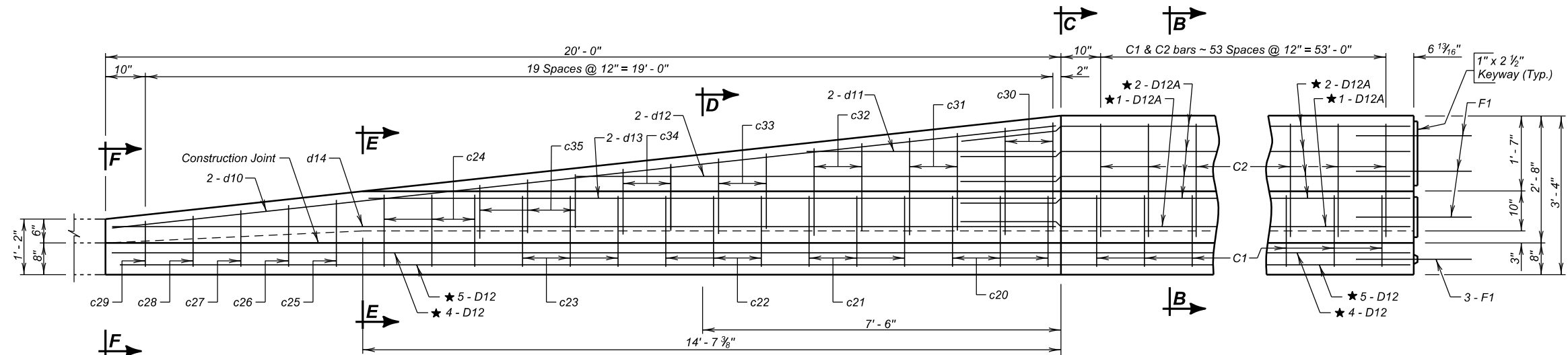
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E83 E115

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
Tapered Barrier					
c20	3	5	5'-8"	T1A	4" 3 1/2" c24
c21	3	5	5'-5"	T1A	5" 4" c23
c22	3	5	5'-3"	T1A	5" 5" c22
c23	3	5	5'-1"	T1A	5 1/2" 5 1/2" c21
c24	3	5	4'-11"	T1A	6 1/2" 6" c20
c25	1	5	4'-6"	T7	
c26	1	5	4'-3"	T7	
c27	1	5	4'-0"	T7	
c28	1	5	3'-9"	T7	
c29	1	5	3'-6"	T7	
c30	2	5	4'-10"	S11	
c31	2	5	4'-5"	S11	
c32	2	5	4'-0"	S11	
c33	2	5	3'-6"	S11	
c34	2	5	3'-1"	S11	
c35	3	5	2'-7"	S11	
d10	2	5	19'-9"	Str.	
d11	2	5	4'-9"	Str.	
d12	2	5	9'-9"	Str.	
d13	2	5	14'-6"	Str.	
d14	1	4	19'-8"	Str.	
Slab					
B1	149	6	5'-8"	1A	
B2	50	4	5'-0"	Str.	
D12	18	4	38'-2"	Str.	
F1	78	5	2'-6"	Str.	
Barrier					
C1	54	5	5'-7"	T1A	
C2	54	5	4'-10"	S11	
D12A	9	4	56'-5"	Str.	
F1	3	5	2'-6"	Str.	



PLAN
(Reinforcing steel not shown.)

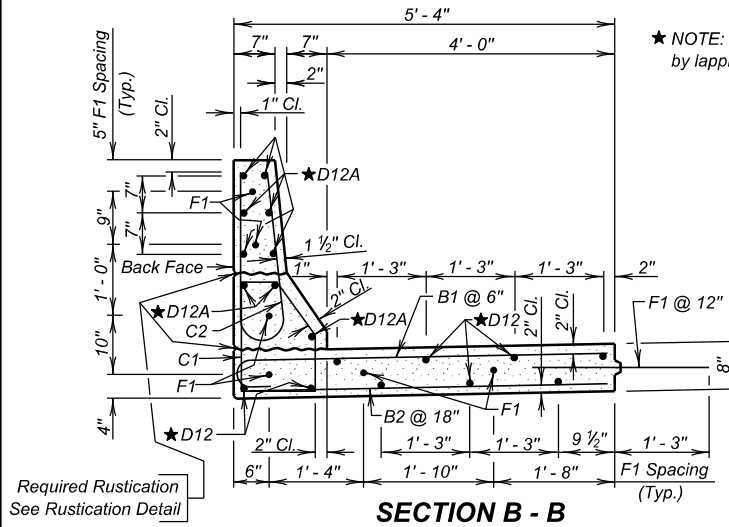


ELEVATION
(Slab reinforcing steel not shown.)

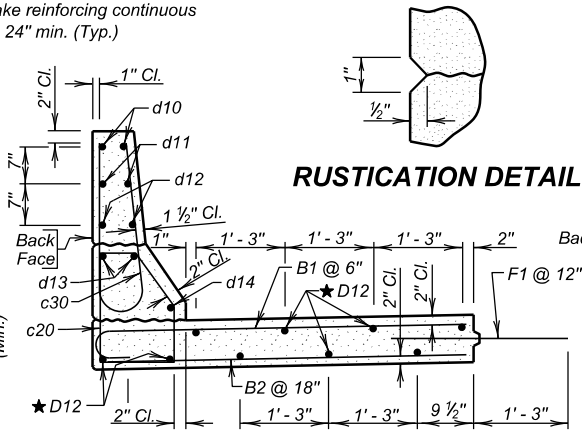
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Barrier Curb and Gutter	Ft.	54
Concrete Barrier Curb and Gutter End Section	Ft.	20

Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.

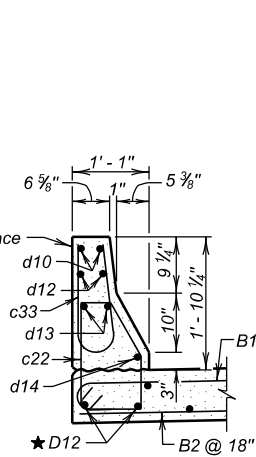
- 3.4 Cu. Yds. Concrete in one Tapered Barrier End Section.
- 732 Lbs. Epoxy Coated Re-Steel in one Tapered Barrier End Section.
- 0.2 Cu. Yds. of Concrete per foot in Regular Barrier Section.
- 45 Lbs. Epoxy Coated Re-Steel per foot of Regular Barrier Section.



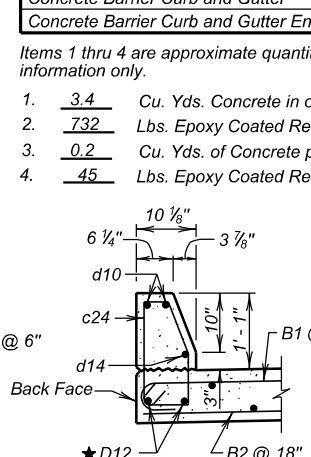
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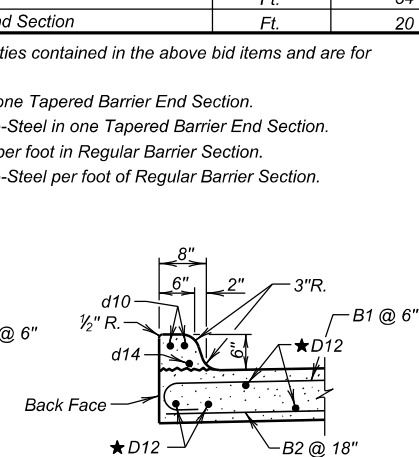
SECTION C - C



SECTION D - D



SECTION E - E



SECTION F - F

TAPERED BARRIER AND CONCRETE BARRIER
PANEL 12 DETAILS (WB BENSON ROAD)
FOR

CONCRETE BARRIER CURB & GUTTER

ADJ. TO BENSON ROAD SEC. 2 & 3-T101N-R49W
SEC. 34 & 35-T102N-R49W
IM 2292(98)6

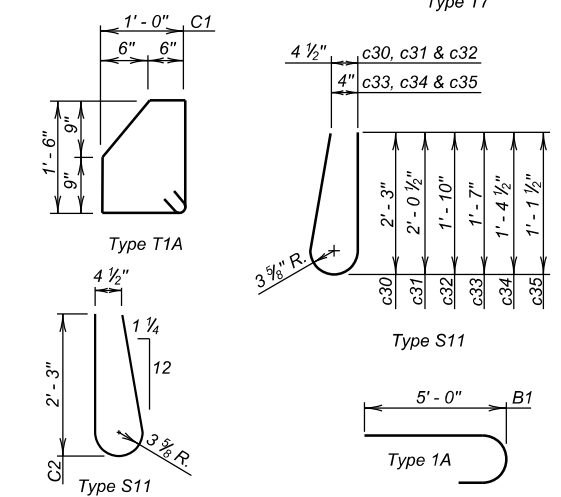
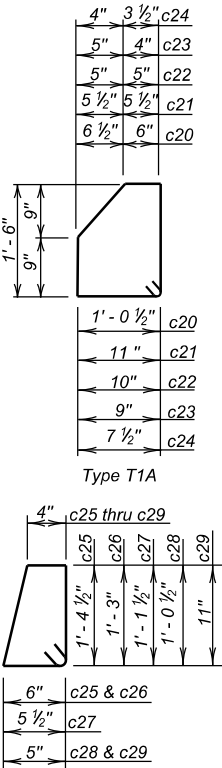
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2022

DESIGNED BY BT MINN04XK	CK. DES. BY PW 04XKTD09	DRAFTED BY BT Steve A. Johnson BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
		IM 2292(98)9, IM 2292(112)6 & P 1200(04)	E84 E115

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
Tapered Barrier					
c20	3	5	5'-8"	T1A	4" 3 1/2" c24
c21	3	5	5'-5"	T1A	5" 4" c23
c22	3	5	5'-3"	T1A	5" 5" c22
c23	3	5	5'-1"	T1A	5 1/2" 5 1/2" c21
c24	3	5	4'-11"	T1A	6 1/2" 6" c20
c25	1	5	4'-6"	T7	
c26	1	5	4'-3"	T7	
c27	1	5	4'-0"	T7	
c28	1	5	3'-9"	T7	
c29	1	5	3'-6"	T7	
c30	2	5	4'-10"	S11	
c31	2	5	4'-5"	S11	
c32	2	5	4'-0"	S11	
c33	2	5	3'-6"	S11	
c34	2	5	3'-1"	S11	
c35	3	5	2'-7"	S11	
d10	2	5	19'-9"	Str.	
d11	2	5	4'-9"	Str.	
d12	2	5	9'-9"	Str.	
d13	2	5	14'-6"	Str.	
d14	1	4	19'-8"	Str.	
Slab					
B1	167	6	5'-8"	1A	
B2	56	4	5'-0"	Str.	
D14	18	4	42'-8"	Str.	
F1	87	5	2'-6"	Str.	
Barrier					
C1	63	5	5'-7"	T1A	
C2	63	5	4'-10"	S11	
D14A	9	4	63'-5"	Str.	
F1	3	5	2'-6"	Str.	



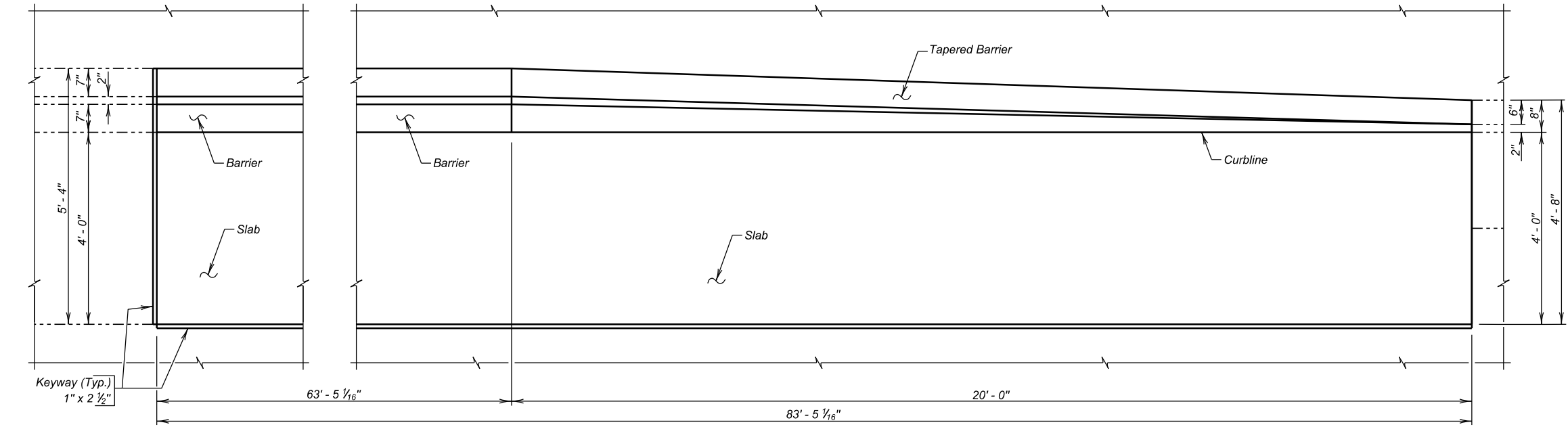
NOTES:
All dimensions are out to out of bars.
All bars to be Epoxy Coated.

TAPERED BARRIER AND CONCRETE BARRIER
PANEL 14 DETAILS (WB BENSON ROAD)
FOR
CONCRETE BARRIER CURB & GUTTER

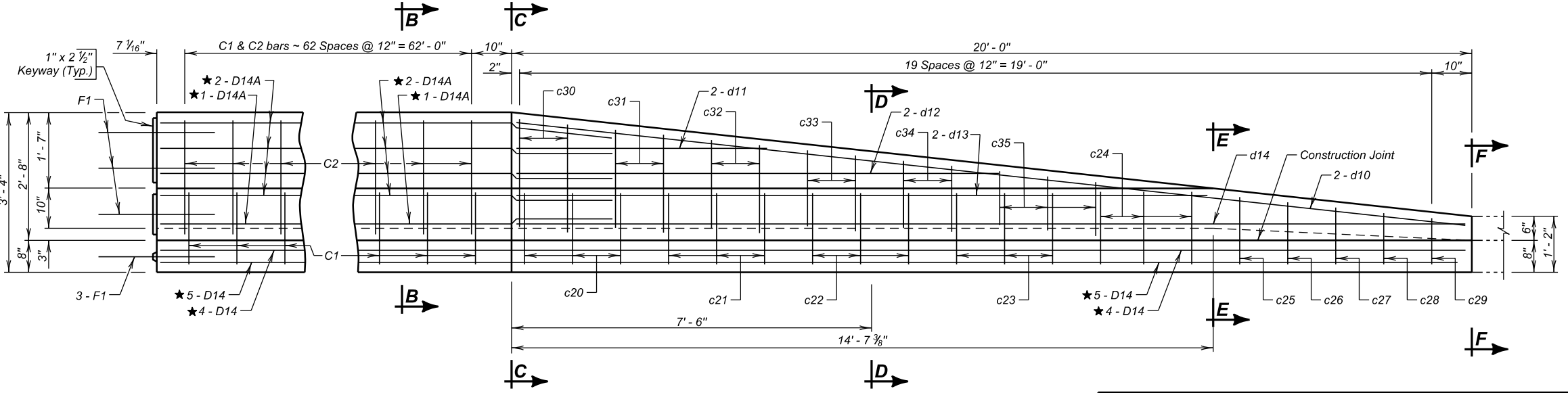
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SEC. 34 & 35-T102N-R49W
IM 2292(98)6

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2022

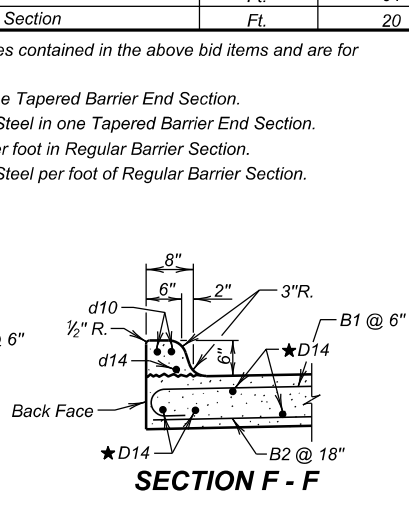
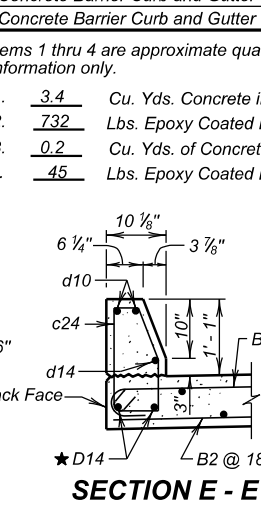
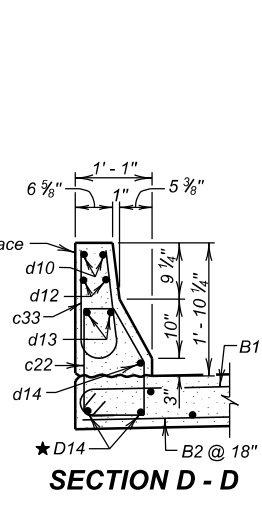
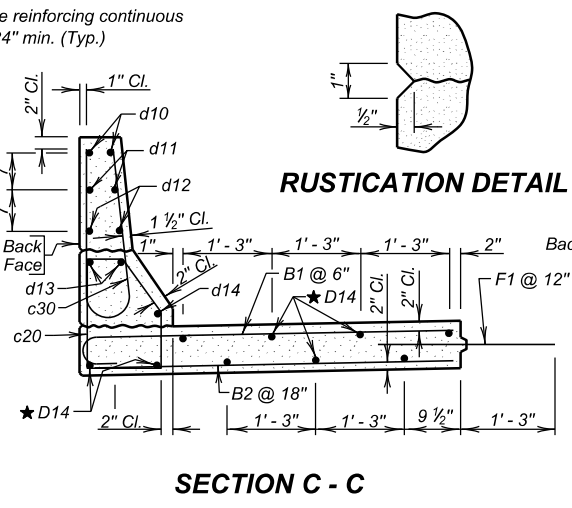
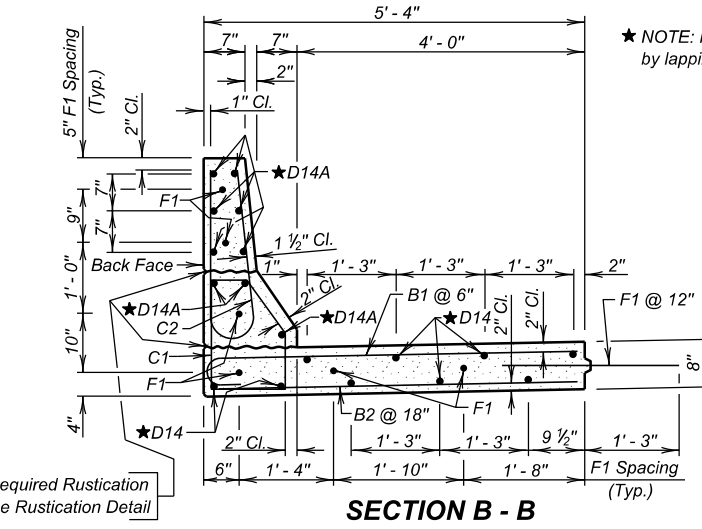
DESIGNED BY BT MINN04XK	CK. DES. BY PW 04XKTD10	DRAFTED BY BT Steve A. Johnson BRIDGE ENGINEER
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PLAN
(Reinforcing steel not shown.)



ELEVATION
(Slab reinforcing steel not shown.)



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Concrete Barrier Curb and Gutter	Ft.	64
Concrete Barrier Curb and Gutter End Section	Ft.	20

Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.

- 3.4 Cu. Yds. Concrete in one Tapered Barrier End Section.
- 732 Lbs. Epoxy Coated Re-Steel in one Tapered Barrier End Section.
- 0.2 Cu. Yds. of Concrete per foot in Regular Barrier Section.
- 45 Lbs. Epoxy Coated Re-Steel per foot of Regular Barrier Section.

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
110E0010	Remove Concrete Bridge Approach Slab	395.0	SqYd
110E0020	Remove Bridge Railing	756	Ft
120E0600	Contractor Furnished Borrow Excavation	20	CuYd
260E1010	Base Course	40	Ton
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	132.8	Ft
460E0010	Class A45 Concrete, Bridge Barrier	3.0	CuYd
460E0150	Concrete Approach Slab for Bridge	271.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	86.0	SqYd
460E0200	Special Surface Finish	2320	SqFt
460E0300	Breakout Structural Concrete	0.6	CuYd
460E0380	Install Dowel in Concrete	244	Each
470E0120	Steel Pedestrian Railing on Sidewalk	379.0	Ft
470E0220	Steel Pedestrian Railing on Concrete Barrier	375.4	Ft
480E0200	Epoxy Coated Reinforcing Steel	1112	Lb
480E0504	No. 4 Rebar Splice	30	Each
480E0505	No. 5 Rebar Splice	48	Each
480E0506	No. 6 Rebar Splice	50	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1089.2	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1089.2	SqYd
491E0120	Bridge Deck Grinding	1089.2	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
491E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
621E0300	Chain Link Fence for Bridge Sidewalk	380	Ft
651E0160	6" Reinforced Concrete Sidewalk	558	SqFt
680E0040	4" Underdrain Pipe	48	Ft
734E2023	Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate	210.0	SqYd
900E8900	Anchor Bolt Coring	15.0	Ft

SPECIFICATIONS

- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
- All Welding and Welding Inspection for the hollow structural section will be in conformance with the latest edition of the AWS D1.1M/D1.1 Structural Steel Welding Code.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

- All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.
- The elevations shown in the original construction plans are not based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure will be accomplished with the traffic control shown in the plans. Alternate sequence of operations may be submitted by the Contractor for approval by the Engineer two weeks prior to the pre-construction meeting.

- Remove and replace bridge railings, post, pedestrian railing, and chain-link fencing for the first phase of construction.
- Remove the existing approach slabs, sleeper slabs, approach barrier, and sidewalk for first phase of construction.
- Place base course to reestablish approach slab grade for first phase of construction.
- Replace approach slabs, sleeper slabs, approach barrier and sidewalk to the correct grade for first phase of construction.
- Replace sleeper slab joints with approved Membrane Sealant Expansion Joint for first phase of construction.
- Perform Bridge Deck Grinding for the first phase of construction.
- Where necessary, repair the bridge deck by removing and patching all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction.
- Place the Two Coat Bridge Deck Polymer Chip Seal for the first phase of construction.
- Switch traffic and repeat steps 1 through 9 for the second phase of construction.
- Replace outlet pipes and rehabilitate berm slope protection.

GENERAL CONSTRUCTION - BRIDGE

- All reinforcing steel will conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.
- Use 2-inch clear cover on all reinforcing steel except as shown otherwise.
- Barriers will be built perpendicular to the grade.
- 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.
- Snap ties, if used in the barrier formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The polymer will conform to Type I per the Department's Approved Products List for Bridge Deck Polymer Chip Seal.

CONCRETE PATCHING MATERIAL, BRIDGE DECK

- In lieu of the 48-hour wet cure, the contractor may use a wax-based curing compound after 4 hours of wet cure. The wax-based curing compound will be white pigmented and will be applied to the patch until the entire surface is white. After the 48-hour cure period, the curing compound will be completely sand blasted off and the surface of the patch will be allowed to air dry for a minimum of 48 hours before application of the polymer chip seal.
- A thicker layer of the Two Coat Bridge Deck Polymer Chip Seal will not be used in place of Concrete Patching Material, Bridge Deck. Joint Nosing Material from the Department's Approved Products List may be used in limited amounts for Concrete Patching Material, Bridge Deck provided it is compatible with the polymer used for the chip seal and is approved by the manufacturer's representative. Patching with nosing material will not be allowed if the patch area is more than 9 square feet or goes below the top mat of reinforcing steel. Joint Nosing Material will be fully cured before application of the chip seal. If Joint Nosing Material is substituted for Concrete Patching Material it will be paid for at the contract unit price per cubic foot for Concrete Patching Material, Bridge Deck.

DESIGN MIX OF CONCRETE

- Class A45 Concrete will be used for Concrete Approach Slab for Bridge and Concrete Approach Sleeper Slab for Bridge.
- The type of cement, concrete strength requirements, aggregate requirements, slump, and air requirements for the contract items Concrete Approach Sleeper Slab for Bridge and Concrete Approach Slab for Bridge will conform to the requirements of Section 460 of the Construction Specifications for bridge decks.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
189' - 6 1/8 " PRESTRESSED GIRDER BRIDGE
STR. NO. 50-219-205
SEPTEMBER 2022

REMOVAL OF CONCRETE BRIDGE APPROACH SLAB

- The existing concrete approach slabs, sleeper slabs, sidewalk approach slabs, sidewalk sleeper slabs, and tapered barrier adjacent to the structure will be completely removed by the Contractor.
- The concrete and reinforcing steel from the removal will be disposed of by the Contractor at an approved site. An appropriate site will be as described in the Environmental Commitment Notes in this set of plans.
- The quantity provided for Remove Concrete Bridge Approach Slab is computed using the plan areas for the approach slabs, sleeper slabs, sidewalk approach slabs, and sidewalk sleeper slabs slab determined separately.
- All labor, tools, equipment, and any incidentals necessary for removal and disposal of the existing approach slabs, sidewalk approach slabs, sidewalk sleeper slabs, and tapered barrier, joint, and sleeper slabs will be incidental to the contract unit price per square yard for Remove Concrete Bridge Approach Slab.

DRAINAGE TUBING

- The outlet pipes will be constructed of a PVC pipe system as shown on the plans and meeting the following requirements:

The 4" Dia. 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..
- Care will be taken to ensure that the 4" Dia. PVC Outlet Pipe is 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 the 4" Dia. PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

INSTALLING DOWELS IN CONCRETE

- Holes drilled in the existing concrete will be true and normal or as shown in the plans. Drilling holes using a core drill will not be allowed. Care will be taken not to damage the existing reinforcing steel. It is likely that some of the existing reinforcing steel shown in the original construction plans may have been placed out of position during original construction. Therefore, prior to the start of drilling any holes in the concrete, an effort will be made by Department forces to mark on the concrete surface where practical any locations of the in-place reinforcing steel. In spite of this precaution, the Contractor can still expect to encounter and have to drill through reinforcing steel or shift the dowel spacing as approved by the Engineer to miss the existing reinforcing steel. If the Contractor shifts the dowel spacing, the unused drill holes will be completely filled with the epoxy resin as approved by the Engineer.

- The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV (Equivalent to ASTM C881, Type IV). Grade 1, 2 or 3 may be used for vertical dowels.
- The diameter of the drilled holes will not be less than 1/8 inch greater, nor more than 3/8 inch greater than the diameter of the dowels or as per the Manufacturer's recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.
- Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.
- No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.
- Dowel bars will be deformed bars conforming to ASTM A615 Grade 60.
- The cost of epoxy resin, dowels, installation and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

APPROACH SLABS

- Bridge end backfill will be constructed in accordance with Section 430 of the Construction Specifications except the drainage tubing will be as specified in these notes and as detailed in the plans.
- Excavation for placement of new approach slabs, sleeper slabs, bridge, and drainage piping will be done with minimal disturbance to the underlying material.
- Prior to the placement of the approach and sleeper slabs, the existing Granular Bridge End Backfill material will be compacted using at least four complete passes of a smooth face vibratory roller or vibratory plate compactor. Base Course will be placed as required to fill any low spots and to achieve the elevation needed for installation of the new approach and sleeper slabs. The existing and fill material will be thoroughly watered prior to and during compaction. Base Course will be in accordance with Section 882 of the Construction Specifications.
- The top of approach slab elevations will be as provided in the plans and subject to the approval of the Engineer.
- 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 joint.

- 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 a vibratory screed will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the screed will be kept parallel to the screed.
- The concrete in the approach slab will be tined perpendicular to the centerline of the roadway.
- The new approach slabs and sleeper slabs will have a surface finish as specified in Section 460.3 L.4 of the Construction Specifications.
- The concrete approach slabs will be cured in accordance with Section 460.3 M of the Construction Specifications. The minimum 7-day cure time requirement will be waived. The approach slabs will be cured until a minimum compressive strength of 4,000 psi is reached.
- The quantity Base Course required to fill any low spots or voids is based on a 2-inch layer under the area of the approach slab. The actual quantity may vary.
- Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for excavation; furnishing, hauling, and placing all materials including: concrete and reinforcing steel; for disposal of all excavated material and surplus materials; 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 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; labor; tools; equipment; and any incidentals necessary to complete this item of work.
- Any Base Course and compaction required to fill any low spots or voids will be paid for at the contract unit price per ton for Base Course. This payment will be full compensation for furnishing, hauling, and placing all materials including disposal of all surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.

NOTES (CONTINUED)

FOR

189' - 6 1/8 " PRESTRESSED GIRDER BRIDGE

STR. NO. 50-219-205

SEPTEMBER 2022

3 OF 31

CORE DRILL HOLES

1. In locations where the existing rail anchors cannot be reused, the Contractor will have the option of Type I or Type II replacement. A minimum 1 3/4" diameter core hole will be drilled through the bottom of the sidewalk to allow for a nut to be attached. The hole size may need to be larger to accommodate grouting operations. The Contractor can expect to drill through reinforcing steel and or anchor bolts.
2. Sides of core holes will be roughened by an approved method to improve grout bond. Clean out holes to the satisfaction of the Engineer.
3. Grout new anchor bolts into the cored holes with an approved grout and method. Grout will be a commercially available non-shrink non-metallic grout with a 5000-psi minimum final strength. Grout will be injected into the bottom of the hole with the use of a grout pump.
4. The plans quantity is for Type II replacement occurring at 24 of the anchor locations. This will be reflected in the contract unit price per foot for Anchor Bolt Coring
5. All cost for coring, roughening holes, cleaning out holes, and grouting new anchors bolts into the abutment including materials, labor, tools, and any incidentals will be incidental to the contract unit price per foot for Anchor Bolt Coring.

STEEL RAILING - SIDEWALK

1. All rail and chain link fence posts will be built vertical.
2. All structural steel parts for railing will conform to ASTM A500, Grade B. Material less than 1/4" thick may be ASTM A1011, Grade 36 and rail post base plates may be ASTM A709, Grade 36.
3. All anchor bolts and nuts for railing will conform to ASTM F1554, Grade 36. Washers will conform to ASTM F436 and all components will be galvanized in accordance with ASTM F-2329. The bolts will be hex head "structural" type with heavy hex nuts and round washers.
4. All anchor bolts will be tightened to a torque of 120 ft.-lbs. (approximated without the use of a calibrated torque wrench).
6. All steel railing will be galvanized in accordance with Section 411 of the South Dakota Standard Specifications.
7. Welding & Weld Inspection will be done in accordance with the current edition of AWS D1.1 Structural Welding Code-Steel.
8. The costs of structural steel, bolts, washers, nuts, welding, weld inspection, painting and galvanizing will be incidental to the contract unit price per foot for Steel Pedestrian Railing and Steel Pedestrian Railing on Barrier.

CHAIN LINK FENCE

1. The chain link fence fabric and supports will conform to the Construction Specification Section 930 as modified by the following notes.
2. The chain link fence fabric, wire ties and miscellaneous hardware will be galvanized and conform to AASHTO M181. The fence fabric will be Type IV 9 gauge wire woven in a 2 inch diamond mesh. Knuckled selvage will be used on the top and bottom of the fence fabric.
4. The item Bridge Sidewalk Chain Link Fence will be paid for by the linear foot. This payment will be full compensation for furnishing all material, labor, tools and equipment necessary or incidental to the construction of the chain link fence including chain link fence fabric, posts, rails, wire ties, miscellaneous hardware, galvanizing, and welding, all to satisfactorily complete this work.

CRUSHED AGGREGATE SLOPE PROTECTION REHABILITATION

1. This work will consist of repairing the existing coated crushed aggregate slope protection for control and prevention of berm erosion.
2. The aggregate used in the crushed aggregate slope protection will conform to the requirements of Section 820 of the Construction Specifications for coarse aggregate for Class A Concrete (Size #1).
3. The asphalt material used in the crushed aggregate slope protection will be either Asphalt Type MC-70 or MC-250, or emulsified Asphalt Type RS-1, RS-2, CRS-1, or CRS-2 meeting the requirements of Section 890 of the Construction Specifications and AASHTO M81, AASHTO M140, and AASHTO M208 respectively.
4. The surface upon which the slope protection is to be placed will be smooth, uniform, and free from foreign material. The top surface of the slope protection will conform to the dimensions, elevations, and slopes shown in the plans.
5. At locations identified in the plans the Contractor will repair the existing crushed aggregate slope protection. The crushed aggregate will be shaped and compacted to provide a stable, smooth, and uniform surface. It is anticipated that 22 tons of crushed aggregate will be required for repairing the existing bridge berm slope protection.
6. The asphalt material will be applied at a rate sufficient to assure penetration and binding of the aggregate in the upper 2 inches of the slope protection. (Estimated Rate = 1.3 gallons per square yard.) The surfaces of the adjacent structure and retaining walls will be protected from spattering or discoloration from the asphalt material. The entirety of the existing crushed aggregate slope protection will be re-coated with asphalt. It is anticipated that 210.0 sqyds of asphalt coating will be required.

7. Payment for crushed aggregate slope protection rehabilitation will be at the contract unit price per square yard for Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate and will be full compensation for slope paving, including furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work. Payment will be for plans quantity.

SPECIAL SURFACE FINISH

1. All of the surfaces visible to the traveling public on the existing concrete barriers will be given a Class B Commercial Texture Finish in accordance with Section 460.3 L.1.c. of the Construction Specifications. Visible surfaces include the front face, back face, and top of barriers.
2. The concrete surfaces requiring the application of the Commercial Texture Finish will be prepared in accordance with the manufacturer's recommendations. The Contractor will submit a product data sheet, or an approved equal, documenting all pertinent information with regard to preparation of the concrete surfaces, materials and equipment required, mixing requirements, and application procedures to the Engineer in advance of the application of the Commercial Texture Finish for review and approval.
3. The Special Surface Finish for the existing barrier will match the finish applied to the approach slab barriers.
4. Any damage to the commercial texture finish during the construction including abrasion from traffic due to the traffic control will be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.
5. The cost of the commercial texture finish will be included in the contract unit price per square foot for Special Surface Finish. This payment will be full compensation for furnishing all materials, removal of existing surface finish, labor, tools, and equipment necessary or incidental to the application of this finish.

NOTES (CONTINUED)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

STR. NO. 50-219-205

SEPTEMBER 2022

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E89	E115

AS-BUILT ELEVATION SURVEY

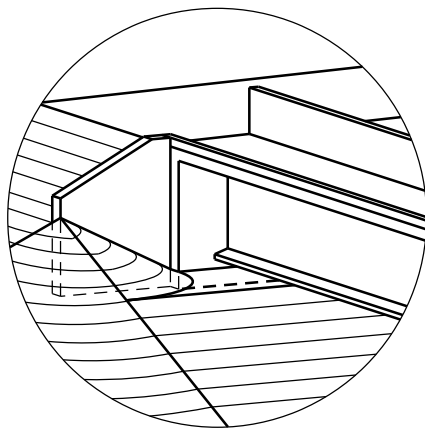
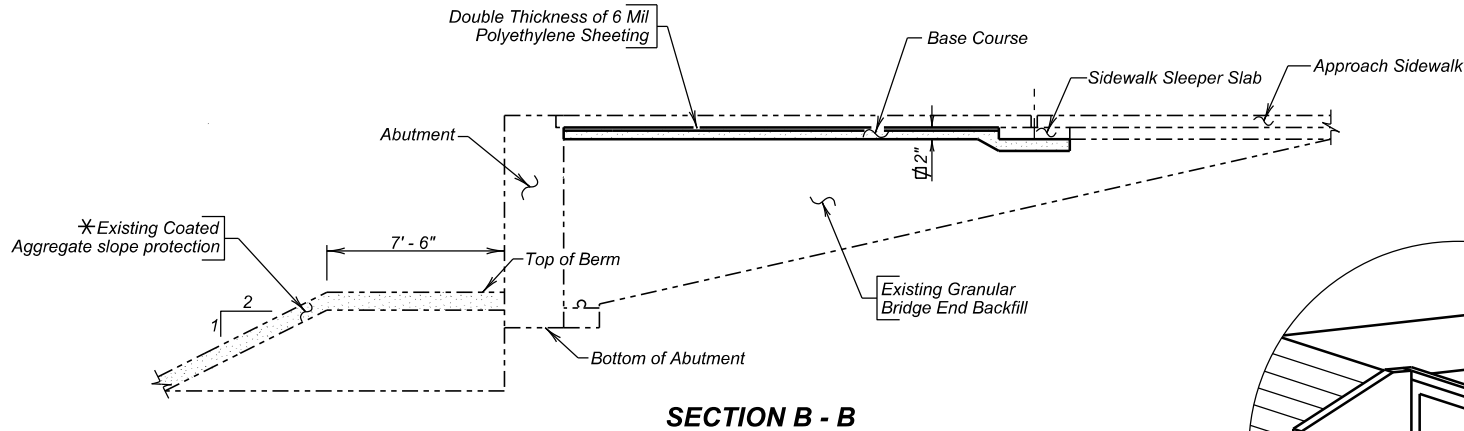
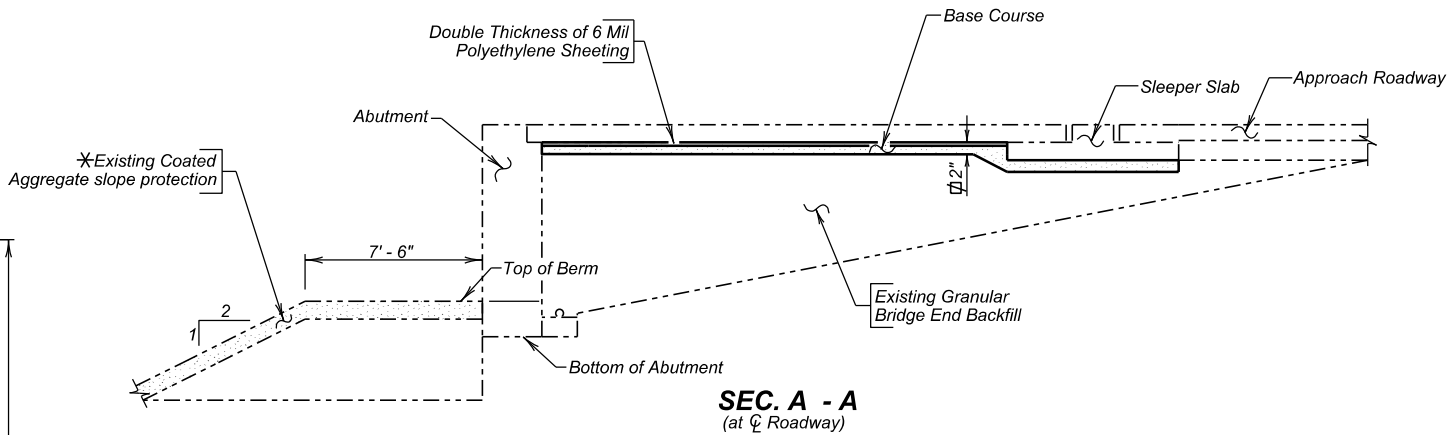
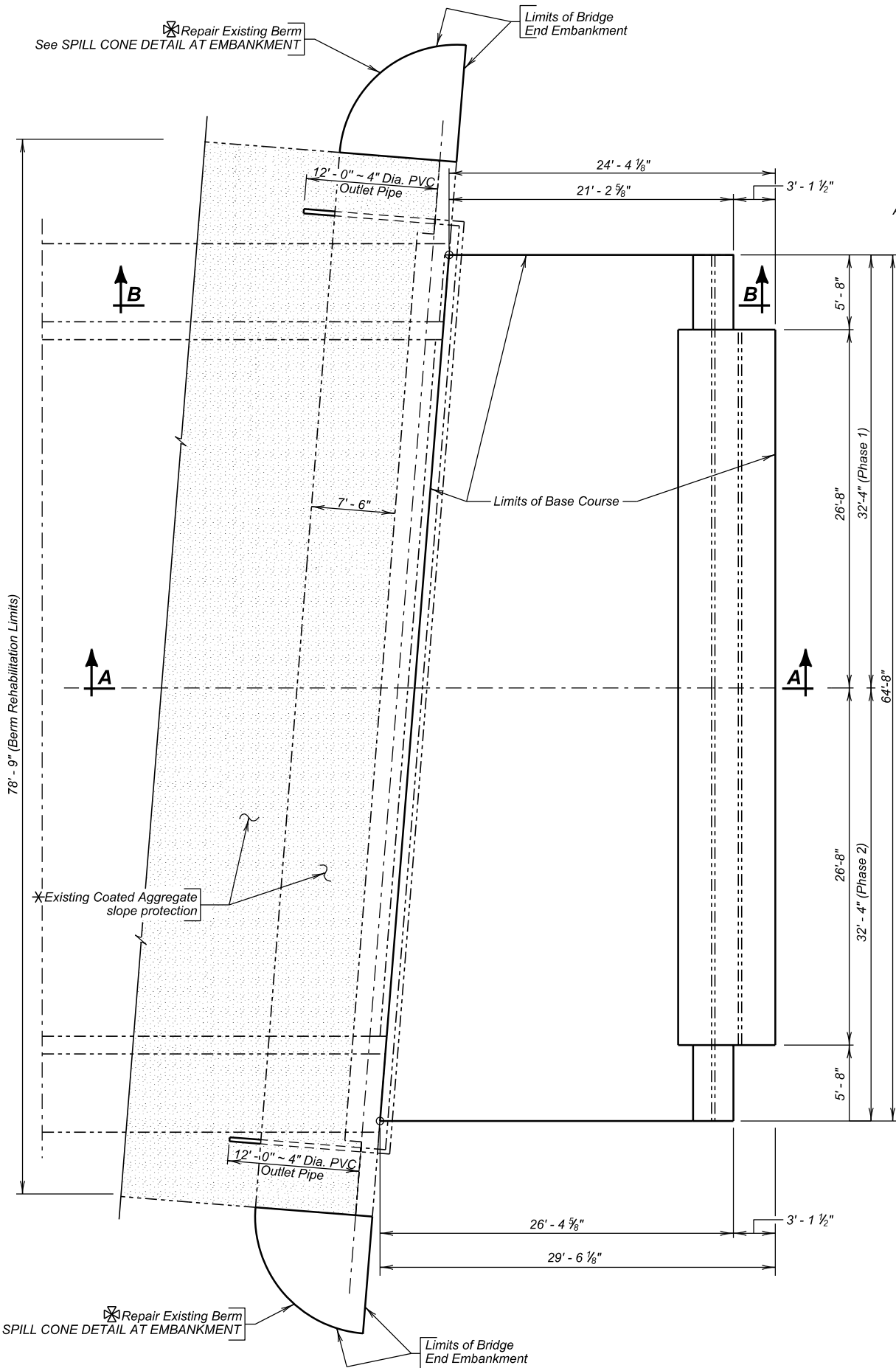
The Contractor will be responsible for producing an as-built elevation survey soon after construction is complete and before the bridge is completely opened to traffic The Contractor will be responsible for recording the as-built elevations at the locations shown by the table of as-built elevations shown in the plans. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer. The elevations will be based on the control points provided in the plans. The Contractor will be responsible for verifying the control points provided in the plans. All costs associated with obtaining the 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.

CONCRETE BREAKOUT

1. The existing deck broke around the rail post as shown in the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.
2. All broken out concrete and discarded reinforcing bars will be disposed of by the Contractor. Any disposal of discarded material will be in accordance with the Construction Specifications.
3. During concrete removal operations, no concrete will be allowed to fall onto the interstate.
4. The quantity for breakout is based on Type 1 anchor bolt repair occurring at 10 post locations.
5. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

NOTES (CONTINUED)
FOR
189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
STR. NO. 50-219-205
SEPTEMBER 2022

DESIGNED BY JH MINN08QM	CK. DES. BY TJM 08QMHD05	DRAFTED BY JH	 BRIDGE ENGINEER
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GENERAL NOTES:

- 2" of material is used for estimation purposes only. Base Course will be placed and compacted to fill any low spots and bring backfill up to grade.
- Perform excavation in a manner that limits disturbance to the existing bridge berm. Where disturbance can not be minimized or if the existing spill cone has eroded, rebuild as shown.
- Following the replacement of the outlet pipe, the berms and slope protection are to be repaired to match the original templates. The swale below the outlet pipe is also to be filled and reconstructed.
- 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.

ESTIMATED QUANTITIES

(For Both Abutments)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Contractor Furnished Borrow Excavation	CuYd	10.0	10.0
Base Course	Ton	20	20
Bridge Berm Slope Protection Rehabilitation, Coated Crushed Aggregate	SqYd	105.0	105.0
4" Underdrain Pipe	Ft	24	24

Items 1 and 2 are approximate quantities contained in the above contract items and are for information only.

	Phase 1	Phase 2
1. 6 mil Polyethylene Sheeting (not including laps)	142.8 SqYd	142.8 SqYd
2. 4" Dia. PVC Outlet Pipe	24 Ft	24 Ft

BRIDGE END BACKFILL DETAILS

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY 4° 34' L.H.F. SKEW

2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W

OVER I 229 (S.F. 6TH ST.) IM 2292(98)9

STR. NO. 50-219-205

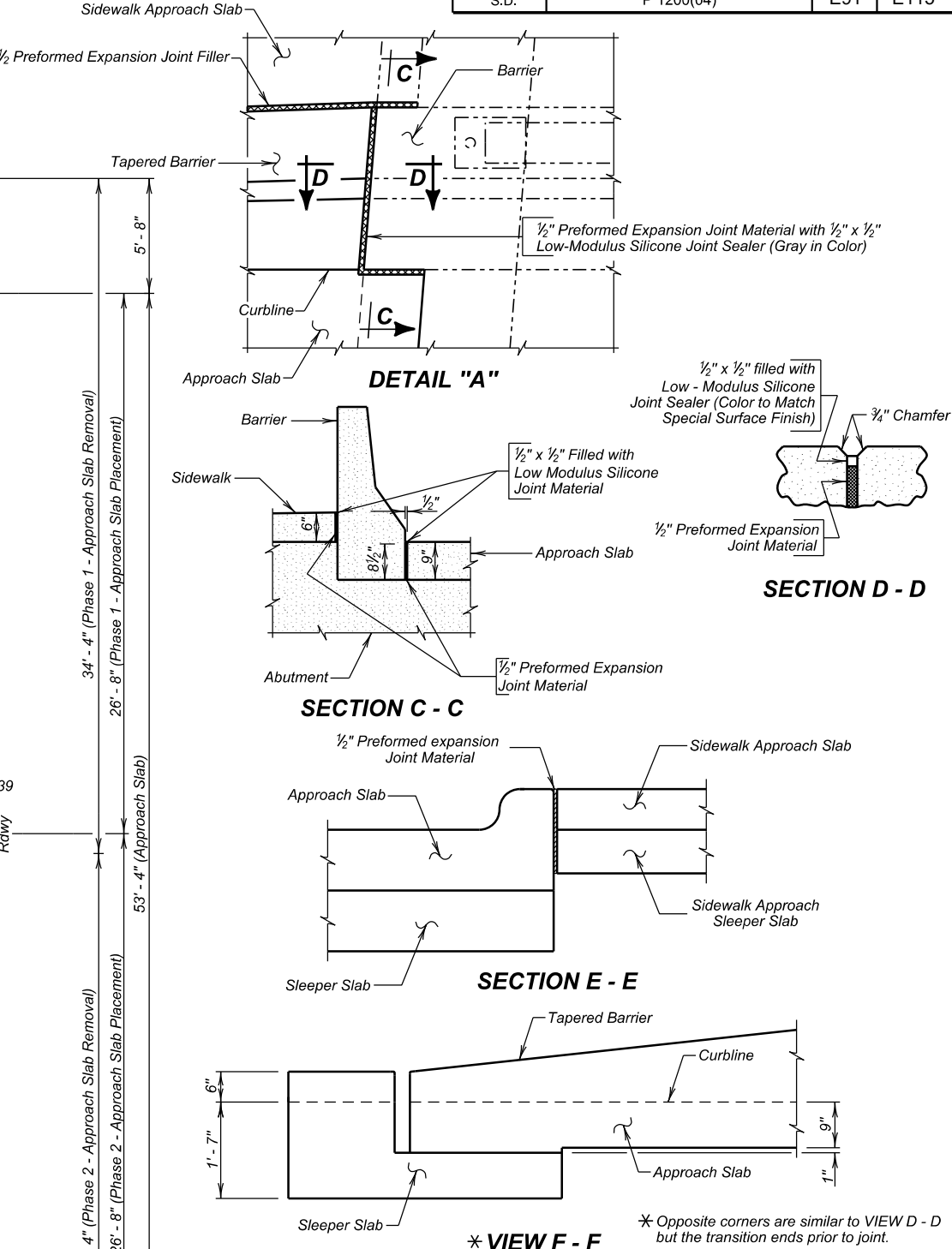
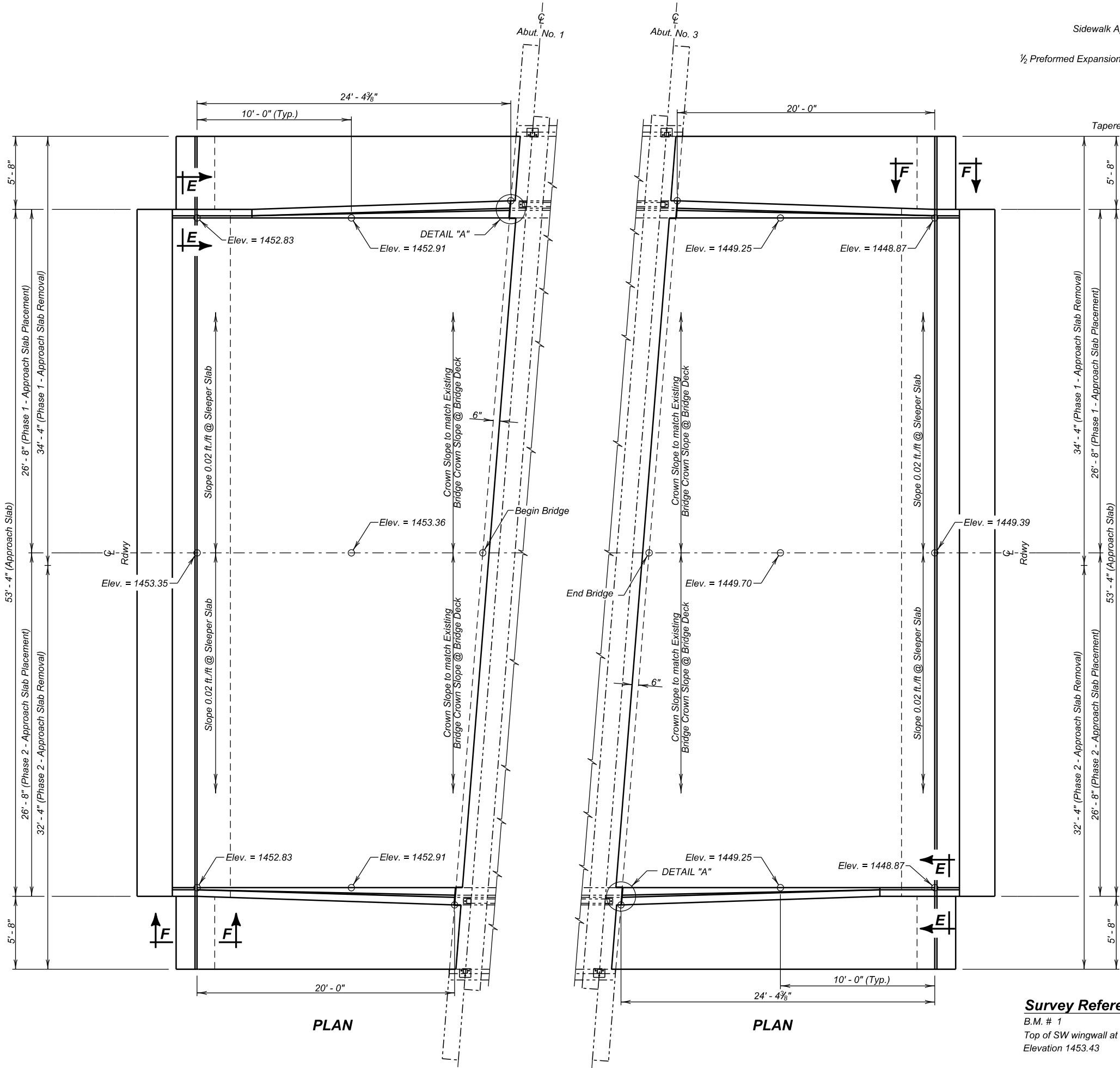
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

6 OF 31

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E91	E115



APPROACH SLAB LAYOUT
FOR
189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
52' - 0" ROADWAY
2 ~ 5' - 0" SIDEWALK
OVER I 229 (S.F. 6TH ST.)
STR. NO. 50-219-205

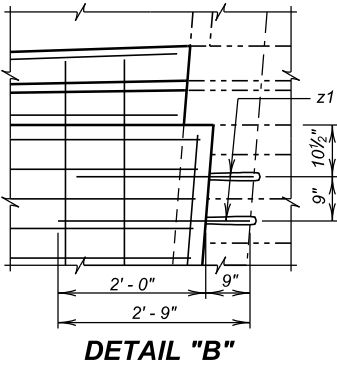
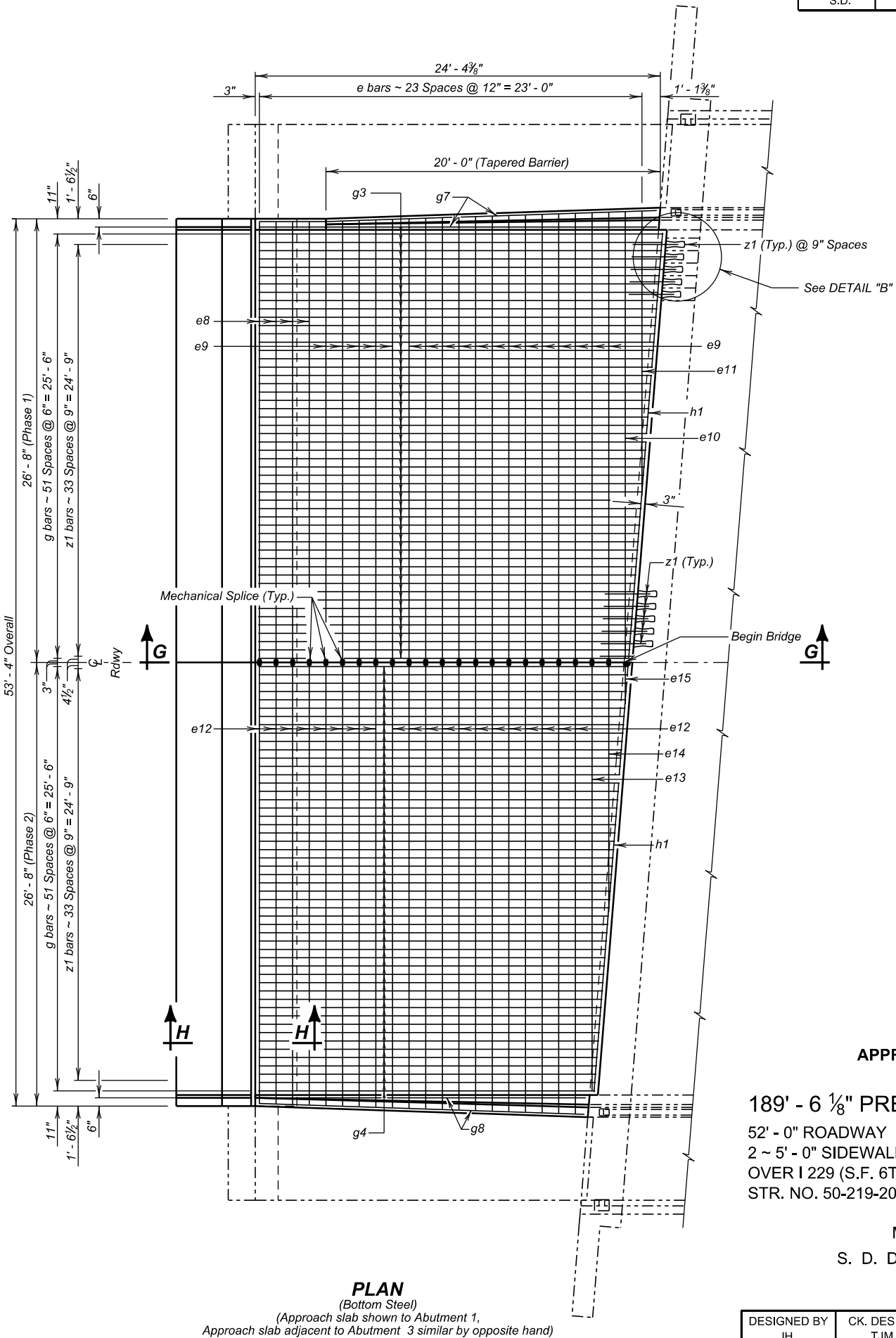
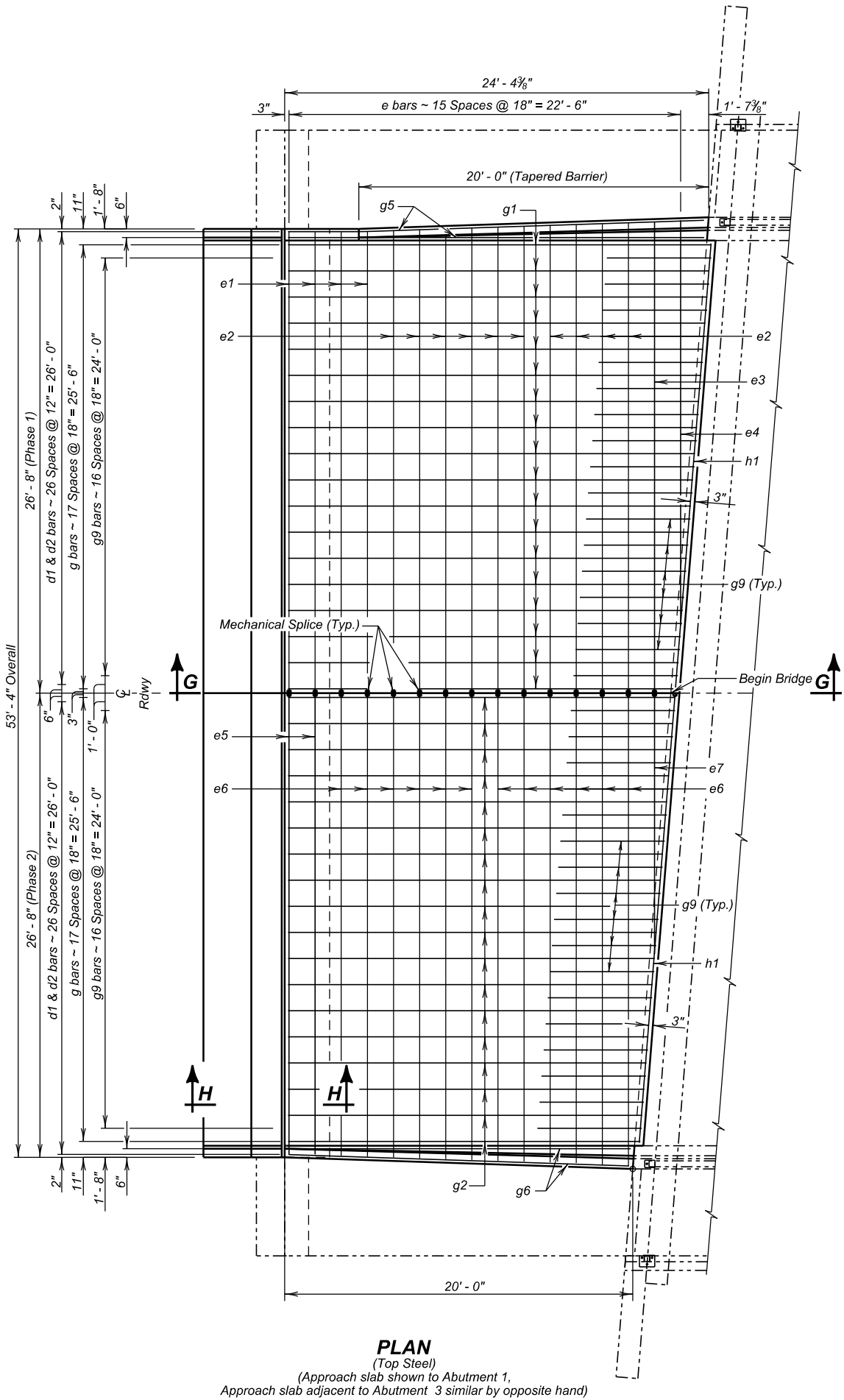
4° 34' L.H.F. SKEW
SEC. 15-T101N-R49W
IM 2292(112)6

Survey Reference:
B.M. # 1
Top of SW wingwall at the end of wing.
Elevation 1453.43

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

DESIGNED BY JH MINN08QM	CK. DES. BY TJM 08QMBD07	DRAFTED BY JB	<i>Steve A. Johnson</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E92	E115



APPROACH SLAB DETAILS (A)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY
2 ~ 5' - 0" SIDEWALK
OVER I 229 (S.F. 6TH ST.)
STR. NO. 50-219-205

4° 34' L.H.F. SKEW
SEC. 15-T101N-R49W
IM 2292(112)6

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

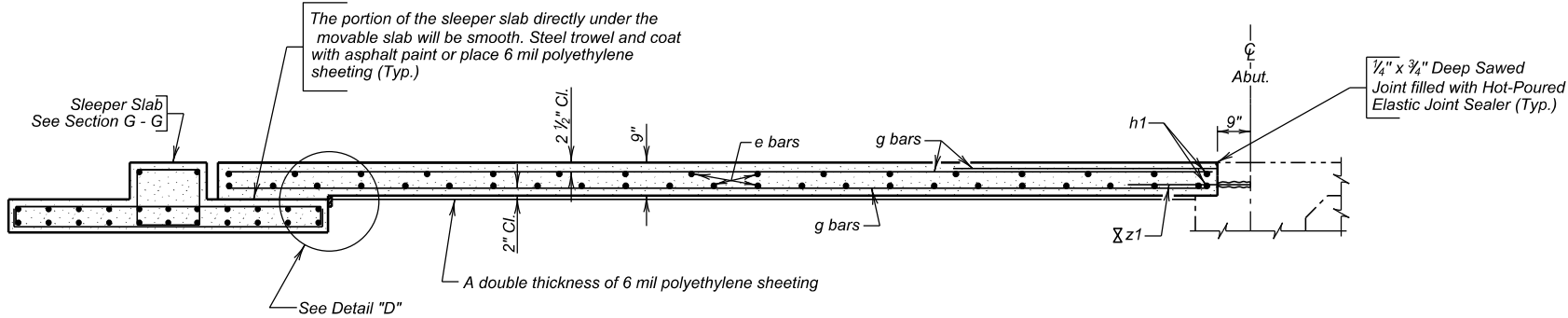
SEPTEMBER 2022

DESIGNED BY
JH
MINN08QM

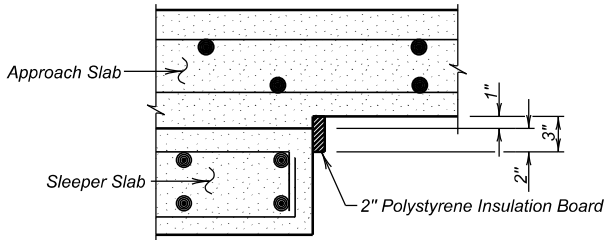
CK. DES. BY
TJM
08QMBD08

DRAFTED BY
JB

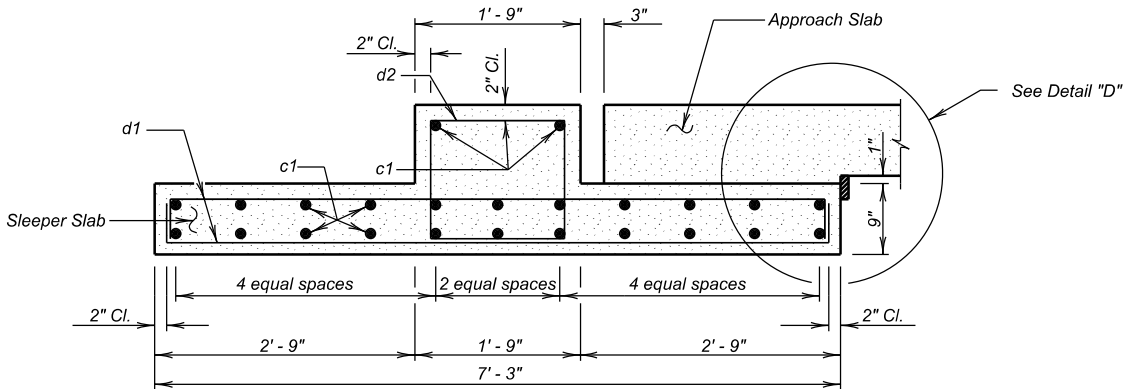
Steve A. Johnson
BRIDGE ENGINEER



SECTION G - G



DETAIL "D"



SECTION H - H
(Sleeper Slab)

REINFORCING SCHEDULE
(For Two Approach Slabs and Sleeper Slabs)

Mk.	No.	Size	Length	Type	Bending Details										Mk.	No.	Size	Length	Type			
Phase 1					Phase 2										Phase 2							
Δ	c1	48	5	26' - 6"	Str.											Δ	c1	48	5	26' - 6"	Str.	
	d1	108	4	7' - 9"	2											Δ	d1	108	4	7' - 9"	2	
	d2	54	4	6' - 1"	T2											Δ	d2	54	4	6' - 1"	T2	
	e1	4	4	26' - 6"	Str.											Δ	e1	4	4	26' - 6"	Str.	
	e2	5	4	53' - 7"	Str.											Δ	e2	5	4	53' - 7"	Str.	
Δ	e3	1	4	27' - 1"	Str.	e12	26' - 10"	26' - 10"			Δ	e3	1	4	27' - 1"	Str.						
Δ	e4	1	4	23' - 3"	Str.	e9	26' - 10"	26' - 10"			Δ	e4	1	4	23' - 3"	Str.						
Δ	e5	2	4	26' - 6"	Str.	e6	26' - 11"	26' - 10"			Δ	e5	2	4	26' - 6"	Str.						
Δ	e6	6	4	53' - 9"	Str.	e2	26' - 10"	26' - 9"			Δ	e6	6	4	53' - 9"	Str.						
Δ	e7	1	4	15' - 0"	Str.							Δ	e7	1	4	15' - 0"	Str.					
Δ	e8	4	6	26' - 6"	Str.							Δ	e8	4	6	26' - 6"	Str.					
Δ	e9	9	6	53' - 8"	Str.							Δ	e9	9	6	53' - 8"	Str.					
Δ	e10	1	6	27' - 1"	Str.							Δ	e10	1	6	27' - 1"	Str.					
Δ	e11	1	6	17' - 1"	Str.							Δ	e11	1	6	17' - 1"	Str.					
Δ	e12	10	6	53' - 8"	Str.	e2	27' - 0"	26' - 7"	Cut 5	e2	Cut 6	e6	Cut 9	e9	Cut 10	e12	Δ	e12	10	6	53' - 8"	Str.
Δ	e13	1	6	25' - 9"	Str.	e6	27' - 2"	26' - 7"									Δ	e13	1	6	25' - 9"	Str.
Δ	e14	1	6	15' - 0"	Str.	e9	27' - 1"	26' - 7"									Δ	e14	1	6	15' - 0"	Str.
Δ	e15	1	6	2' - 6"	Str.	e12	27' - 2"	26' - 6"									Δ	e15	1	6	2' - 6"	Str.
∅	g1	9	4	46' - 8"	Str.											∅	g1	9	4	46' - 8"	Str.	
∅	g2	9	4	42' - 6"	Str.											∅	g2	9	4	42' - 6"	Str.	
∅	g3	26	8	46' - 8"	Str.											∅	g3	26	8	46' - 8"	Str.	
∅	g4	26	8	42' - 6"	Str.											∅	g4	26	8	42' - 6"	Str.	
	g5	2	4	23' - 11"	Str.												g5	2	4	23' - 11"	Str.	
	g6	2	4	19' - 7"	Str.												g6	2	4	19' - 7"	Str.	
	g7	2	8	23' - 11"	Str.												g7	2	8	23' - 11"	Str.	
	g8	2	8	19' - 7"	Str.												g8	2	8	19' - 7"	Str.	
	g9	34	4	6' - 0"	Str.												g9	34	4	6' - 0"	Str.	
Δ	h1	4	6	25' - 11"	Str.											Δ	h1	4	6	25' - 11"	Str.	
⊗	z1	68	7	2' - 9"	Str.											⊗	z1	68	7	2' - 9"	Str.	

NOTES:

∅ See cutting diagram.

Δ Mechanical Splice

⊗ Dowel Bars

NOTES:

Δ See cutting diagram.

Δ Mechanical Splice

Δ Dowel Bars

ESTIMATED QUANTITIES
(For Two Approach Slabs and Sleeper Slabs)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Remove Concrete Bridge Approach Slab	SqYd	197.5	197.5
Concrete Approach Slab for Bridge	SqYd	135.8	135.8
Concrete Approach Sleeper Slab for Bridge	SqYd	43.0	43.0
Install Dowel in Concrete	Each	68	68
No. 4 Rebar Splice	Each	30	-
No. 5 Rebar Splice	Each	48	-
No. 6 Rebar Splice	Each	50	-

	Phase 1	Phase 2
1. Concrete in Approach Slabs.	34.0 CuYd	34.0 CuYd
2. Epoxy Coated Re-Steel in Approach Slabs.	9683 Lb	9683 Lb
3. Concrete in Sleeper Slabs	13.6 CuYd	13.6 CuYd
4. Epoxy Coated Re-Steel in Sleeper Slabs.	2105 Lb	2105 Lb
5. 2" Polystyrene Insulation Board	13.3 SqFt	13.3 SqFt
6. Reinforcing Steel for Dowel	383 Lb	383 Lb

Items 1 thru 6 are approximate quantities contained in the above bid items and are for information only.

APPROACH SLAB DETAILS (B)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY 4° 34' L.H.F. SKEW

2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W

OVER I 229 (S.F. 6TH ST.) IM 2292(112)6

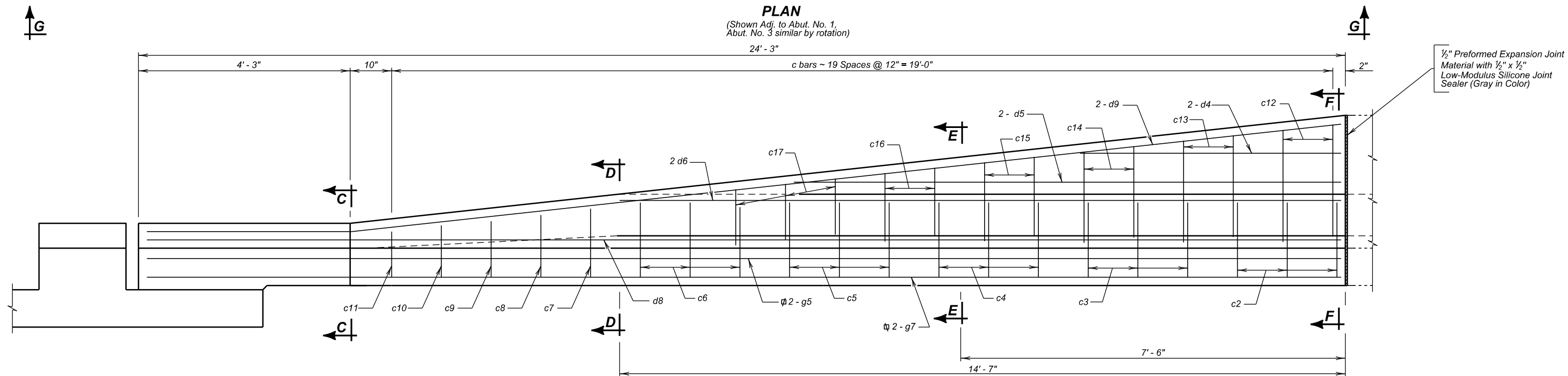
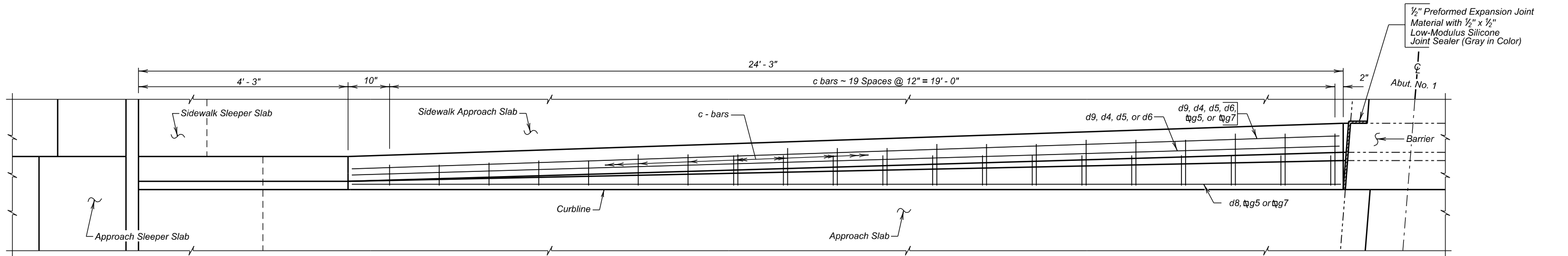
STR. NO. 50-219-205

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

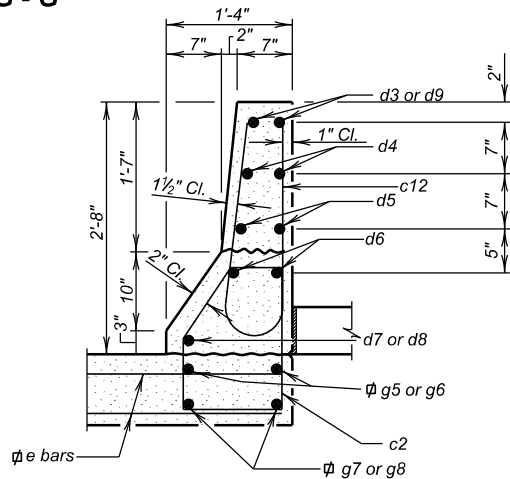
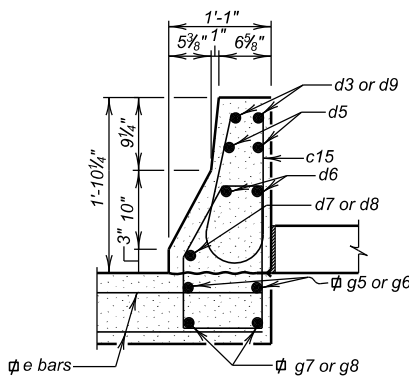
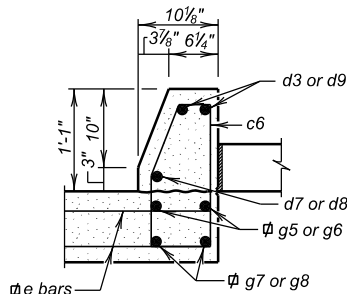
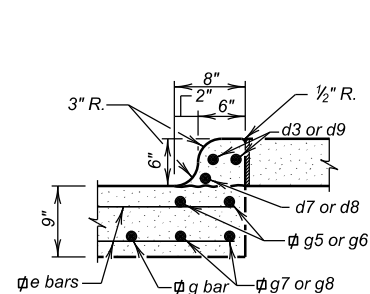
SEPTEMBER 2022

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Note:
This sheet is to be used in conjunction
with APPROACH SLAB DETAILS (A) & (B).

ϕ Shown and listed with Approach Slab Details



TAPERED BARRIER DETAILS (A)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY

2 ~ 5' - 0" SIDEWALK

OVER I 229 (S.F. 6TH ST.)

STR. NO. 50-219-205

4° 34' L.H.F. SKEW

SEC. 15-T101N-R49W

IM 2292(112)9

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

NOVEMBER 2022

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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E95	E115

REINFORCING SCHEDULE
(For Four Tapered Barrier Curbs)

Mk.	No.	Size	Length	Type	Bending Details
c2	12	5	5' - 9"	T2A	
c3	12	5	5' - 6"	T2A	
c4	12	5	5' - 5"	T2A	
c5	12	5	5' - 3"	T2A	
c6	12	5	5' - 1"	T2A	
c7	4	5	4' - 6"	T7	
c8	4	5	4' - 3"	T7	
c9	4	5	4' - 0"	T7	
c10	4	5	3' - 9"	T7	
c11	4	5	3' - 6"	T7	
c12	8	5	4' - 10"	S11	
c13	8	5	4' - 5"	S11	
c14	8	5	4' - 0"	S11	
c15	8	5	3' - 6"	S11	
c16	8	5	3' - 1"	S11	
c17	12	5	2' - 7"	S11	
d3	4	5	20' - 0"	Str.	
d4	4	5	5' - 0"	Str.	
d5	8	5	10' - 6"	Str.	
d6	8	5	14' - 6"	Str.	
d7	2	4	19' - 10"	Str.	
d8	2	4	23' - 11"	Str.	
d9	4	5	23' - 11"	19A	

NOTE -
All dimensions are out to out of bars.
All bars to be Epoxy Coated.

TAPERED BARRIER DETAILS (B)

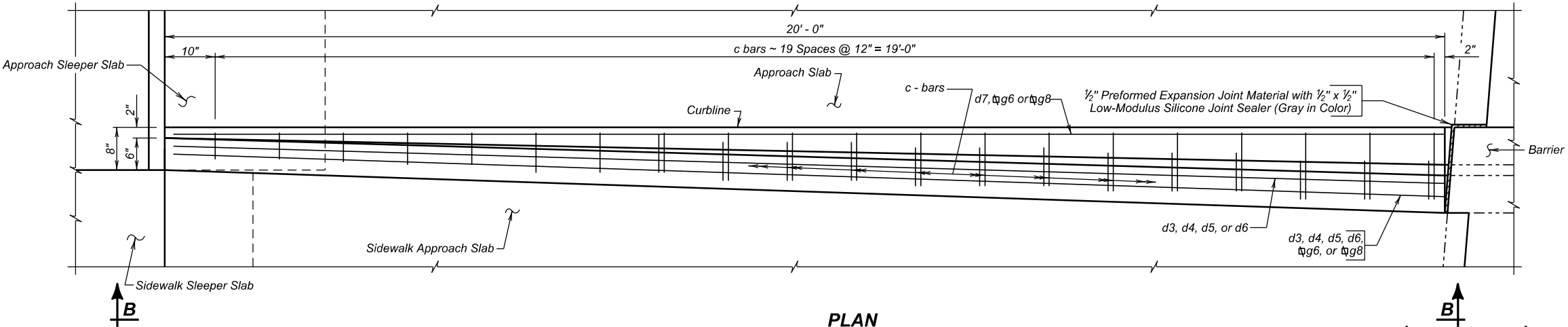
FOR
189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
52' - 0" ROADWAY
2 ~ 5' - 0" SIDEWALK
OVER I 229 (S.F. 6TH ST.)
STR. NO. 50-219-205

4° 34' L.H.F. SKEW
SEC. 15-T101N-R49W
IM 2292(98)9

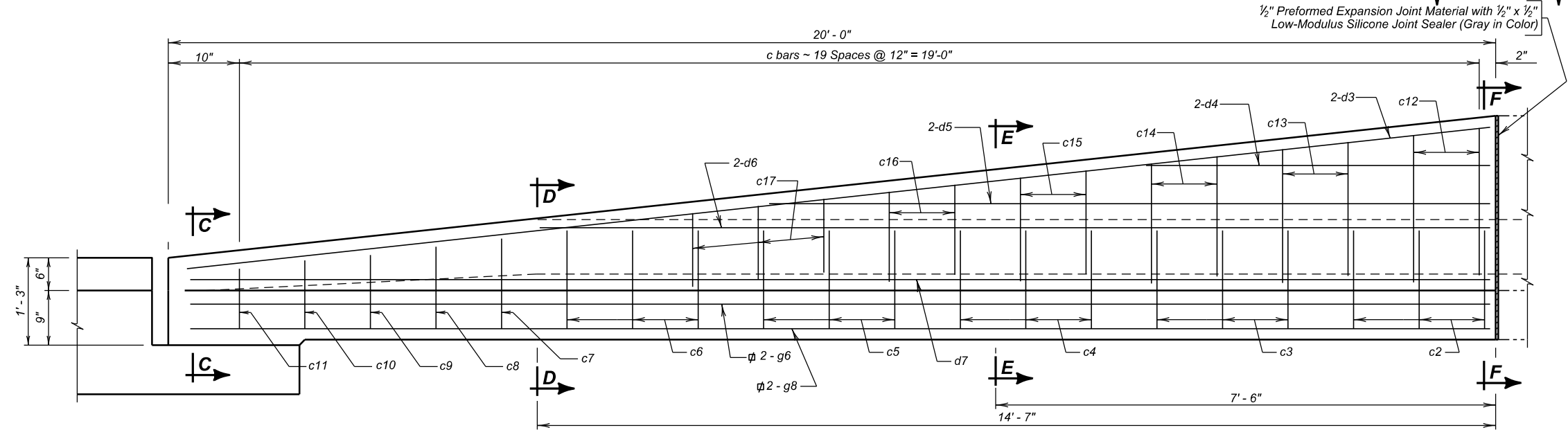
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2022

11 OF 31

DESIGNED BY JH MINN08QM	CK. DES. BY TJM 08QMBD11	DRAFTED BY JB	Steve A. Johnson BRIDGE ENGINEER
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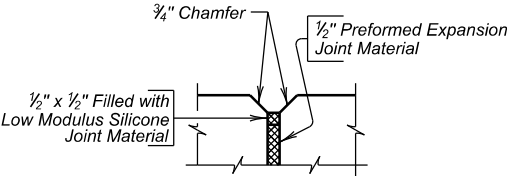


PLAN
(Shown Adj. to Abut. No. 1,
Abut. No. 3 similar by rotation)



VIEW B - B

ESTIMATED QUANTITIES (For 4 Tapered Barriers)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Class A45 Concrete, Bridge Barrier	CuYd	1.2	1.2
Epoxy Coated Reinforcing Steel	Lbs.	556	556



VIEW A - A

Note: This sheet to be used in conjunction with
APPROACH SLAB DETAILS (A) & (B)

STATE OF	PROJECT		SHEET NO.	TOTAL SHEETS
	IM 2292(98)9 & IM 2292(112)6 P 1200(04)		E96	E115

REINFORCING SCHEDULE

(For Four Sidewalk Approach Slabs and Four Sidewalk Sleeper Slabs)

Mk.	No.	Size	Length	Type	
Phase 1					
c18	8	4	5' - 4"	Str.	
d8	12	4	2' - 8"	Str.	
e15	5	4	5' - 4"	Str.	
e16	20	4	10' - 0"	Str.	
g10	3	4	49' - 2"	Str.	
g11	1	4	24' - 4"	Str.	
g12	1	4	21' - 0"	Str.	
g13	3	4	39' - 6"	Str.	
g14	1	4	20' - 0"	Str.	
g15	1	4	17' - 0"	Str.	
h2	2	4	4' - 8"	Str.	
z2	10	4	2' - 6"	Str.	
Phase 2					
c18	8	4	5' - 4"	Str.	
d8	12	4	2' - 8"	Str.	
e15	5	4	5' - 4"	Str.	
e16	20	4	10' - 0"	Str.	
g10	3	4	49' - 2"	Str.	
g11	1	4	24' - 4"	Str.	
g12	1	4	21' - 0"	Str.	
g13	3	4	39' - 6"	Str.	
g14	1	4	20' - 0"	Str.	
g15	1	4	17' - 0"	Str.	
h2	2	4	4' - 8"	Str.	
z2	10	4	2' - 6"	Str.	

NOTE:
All bars to be Epoxy Coated.
All dimensions are out to out of bars.
See cutting diagram.
Dowel Bars
Requires cut sets for each phase

ESTIMATED QUANTITIES

(For Four Sidewalk Approach Slabs)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Structural Steel, Miscellaneous	LS	Lump Sum	Lump Sum
Install Dowels in Concrete	Each	10	10
6" Reinforced Concrete Sidewalk	SqFt	279	279

	Phase 1	Phase 2
1. Concrete in Sidewalk Approach Slabs.	4.5 CuYd	4.5 CuYd
2. Epoxy Coated Re-Steel in Sidewalk Approach Slabs.	391 Lb	391 Lb
3. Concrete in Sidewalk Sleeper Slabs	0.7 CuYd	0.7 CuYd
4. Epoxy Coated Re-Steel in Sidewalk Sleeper Slabs.	50 Lb	50 Lb
5. Reinforcing steel in dowel.	18 Lb	18 Lb
6. Structural steel for cover plates including plates, bolts, and inserts.	116 Lb	116 Lb

Items 1 thru 6 are approximate quantities contained in the above bid item and are for information only.

APPROACH SIDEWALK DETAILS

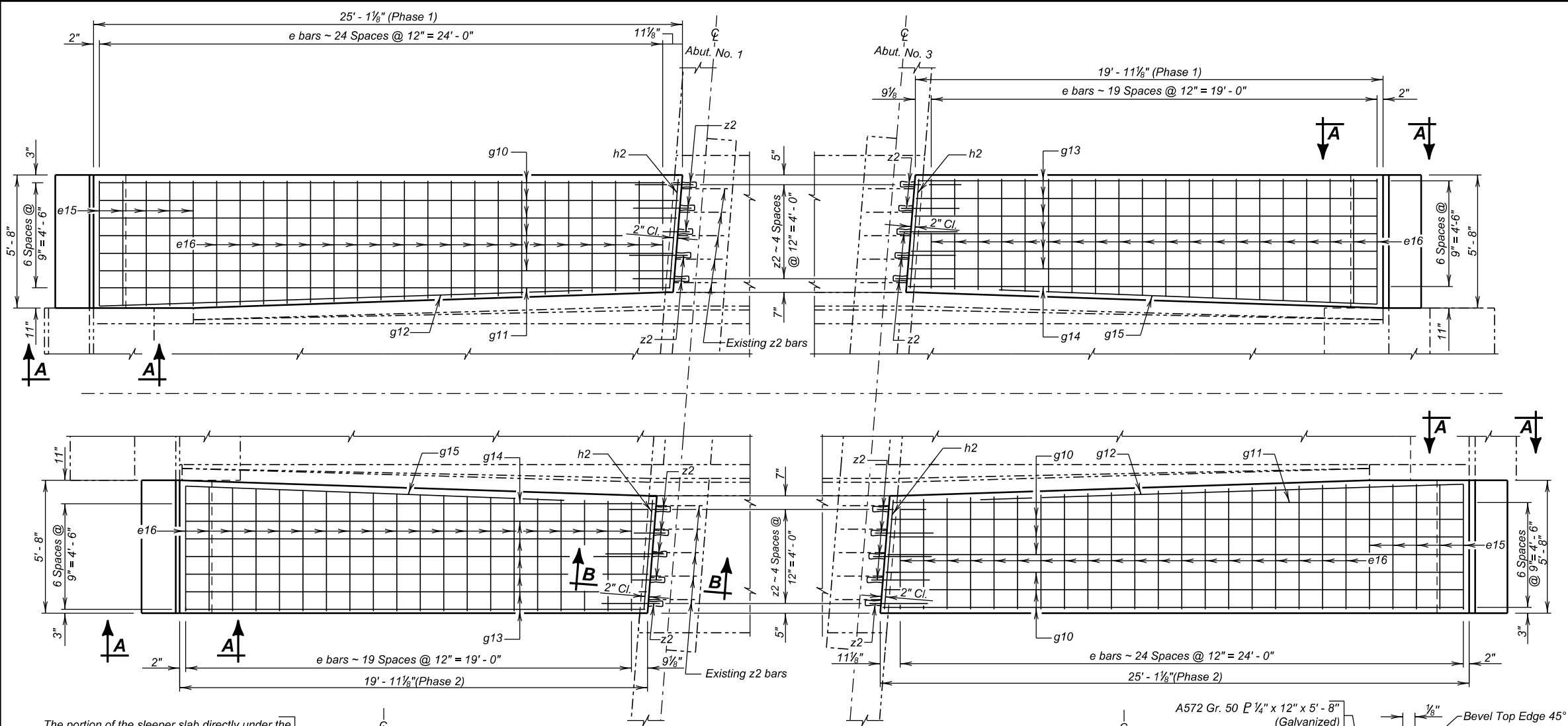
FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
52' - 0" ROADWAY 4° 34' L.H.F. SKEW
2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W
OVER I 229 (S.F. 6TH ST.) IM 2292(98)9
STR. NO. 50-219-205

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

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DESIGNED BY JH MINN08QM	CK. DES. BY TJM 08QMBD12	DRAFTED BY JB	Steve A. Johnson BRIDGE ENGINEER
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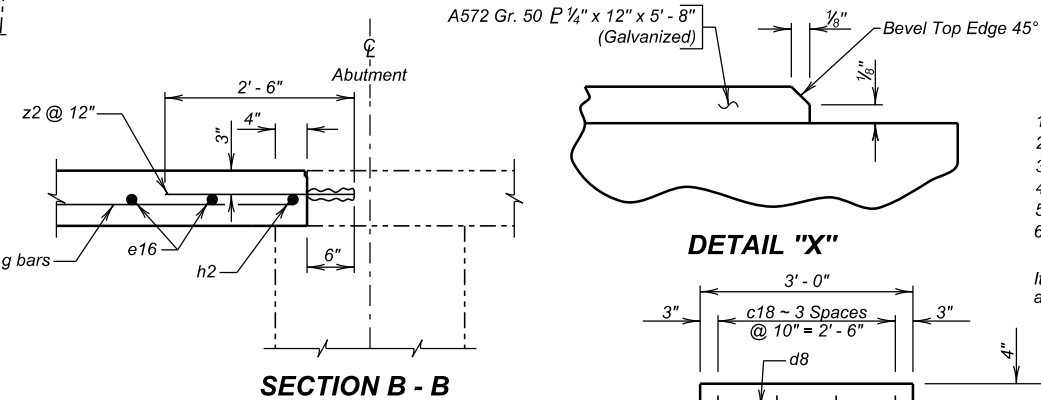
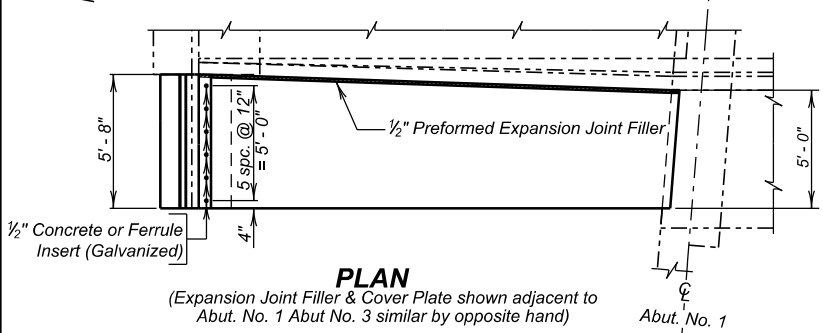
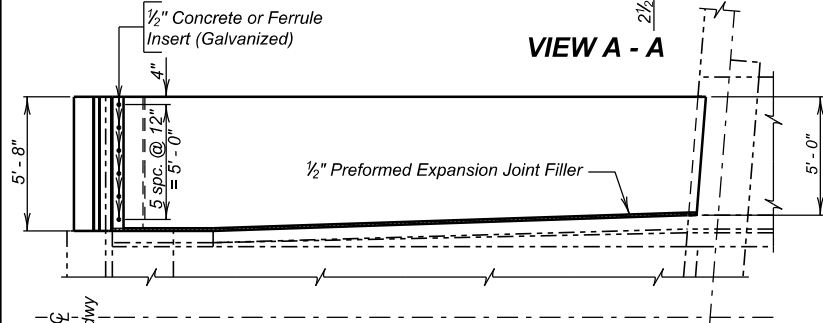
The portion of the sleeper slab directly under the movable slab will be smooth. Steel trowel and coat with asphalt paint or place 6 mil polyethylene sheeting (Typ.)

Sidewalk Sleeper Slab

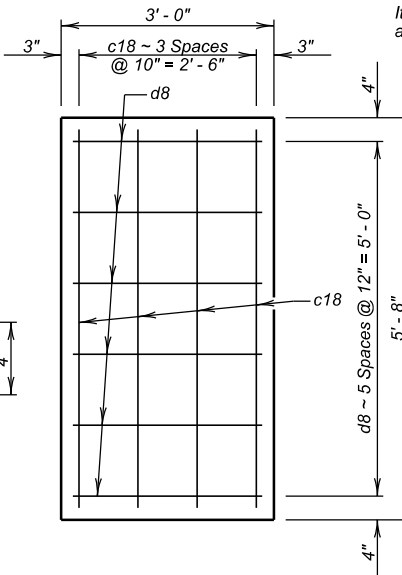
e15 or e16

g bars

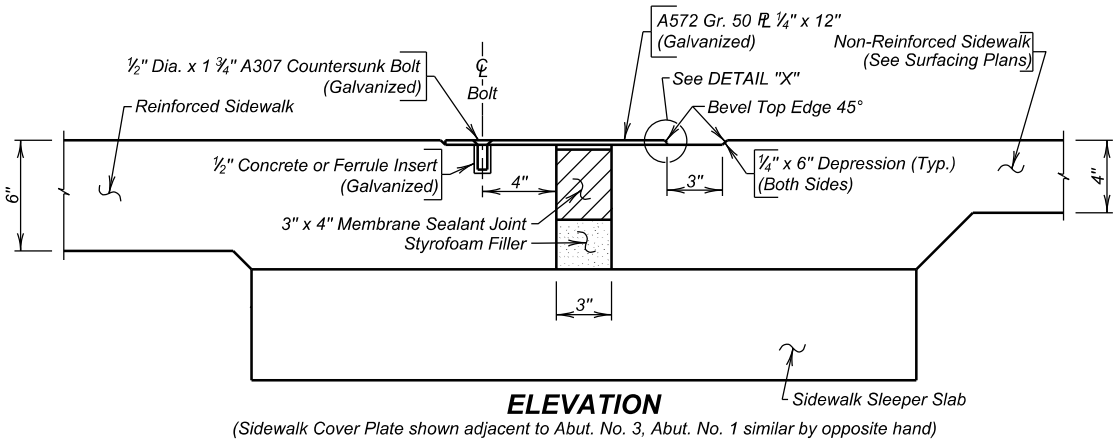
A double thickness of 6 mil polyethylene sheeting.

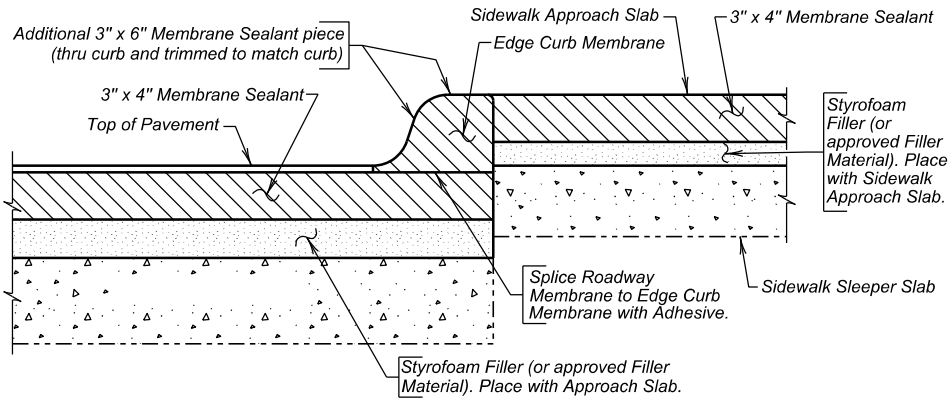


DETAIL "X"

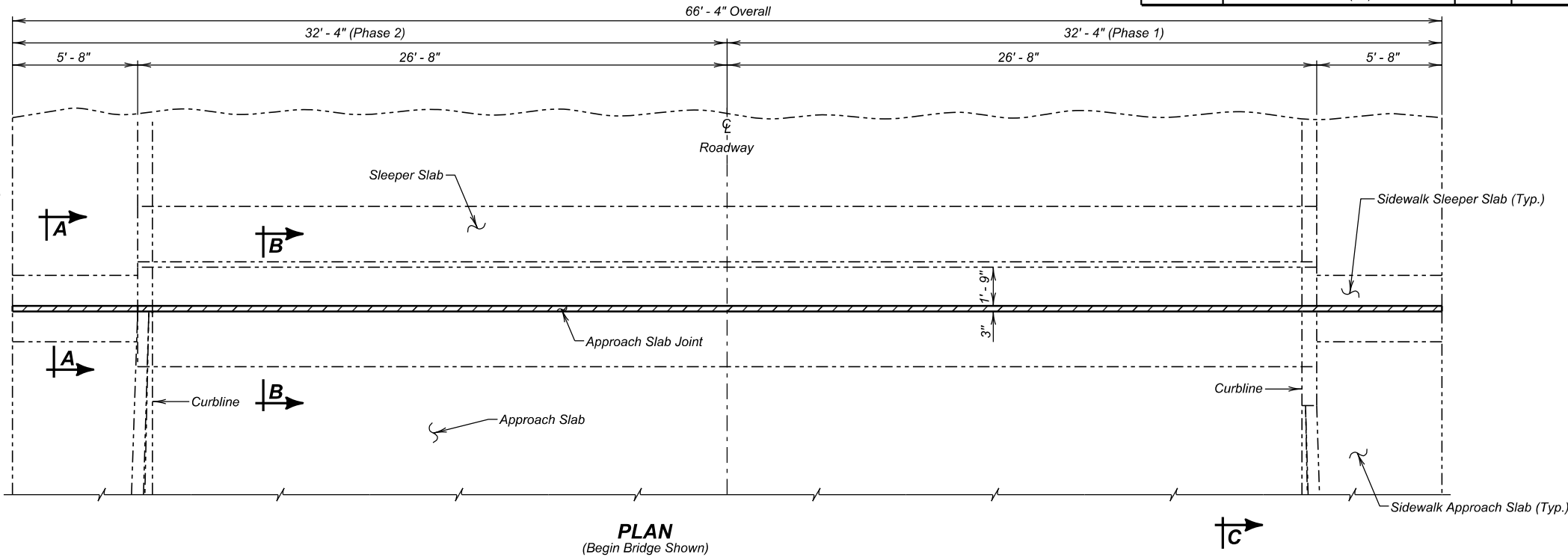


SLEEPER SLAB (TYP.)





SECTION C - C

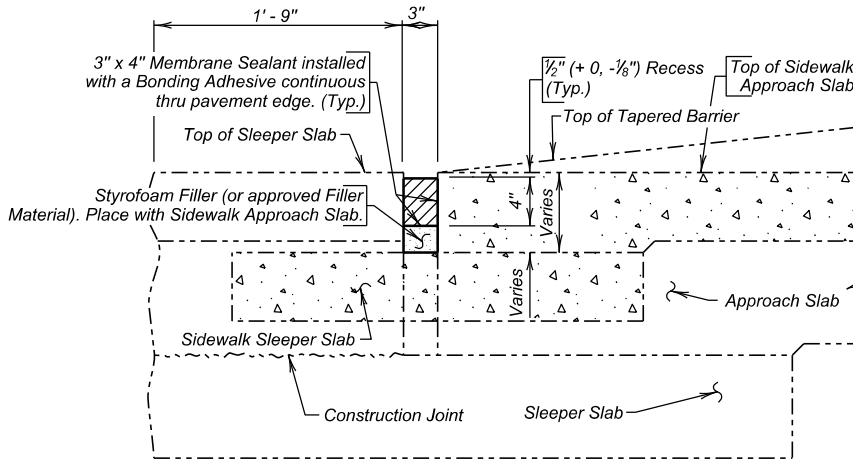


PLAN
(Begin Bridge Shown)

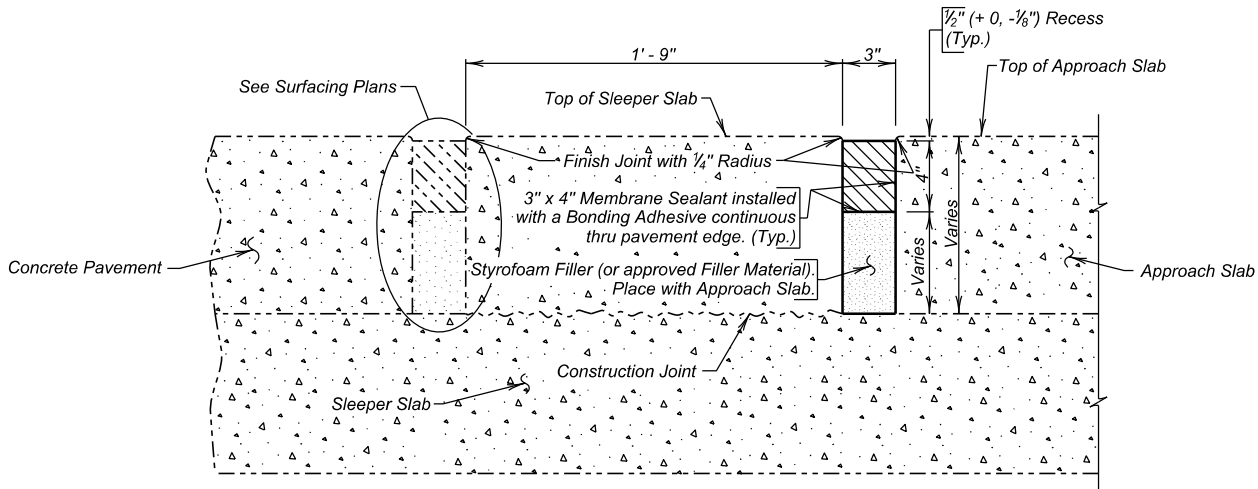
GENERAL NOTES

- 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, however, in no case shall 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 provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension.
- The membrane sealant will be supplied in pieces a minimum of 5 feet in length. 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 ensure the Contractor installs the joint to the manufacturers' recommendations.
- 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 surface. At a minimum, two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding shall 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 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 will 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.
- The membrane sealant will be installed prior to winter. Housing and heating may be required to meet the manufacturer's requirements.

ESTIMATED QUANTITIES (For Two Approach Slabs)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Membrane Sealant Expansion Joint	Ft	66.4	66.4



SECTION A - A



SECTION B - B

APPROACH SLAB JOINT DETAILS

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY 4° 34' L.H.F. SKEW
2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W
OVER I 229 (S.F. 6TH ST.) IM 2292(112)6
STR. NO. 50-219-205

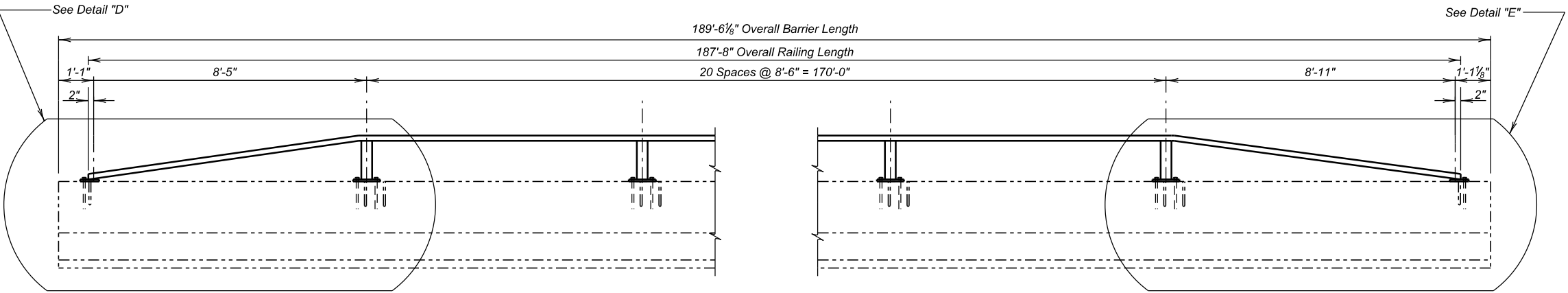
MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

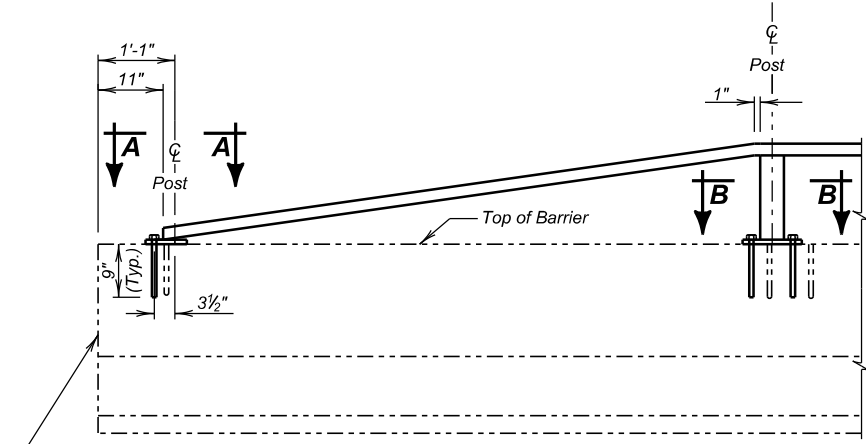
SEPTEMBER 2022

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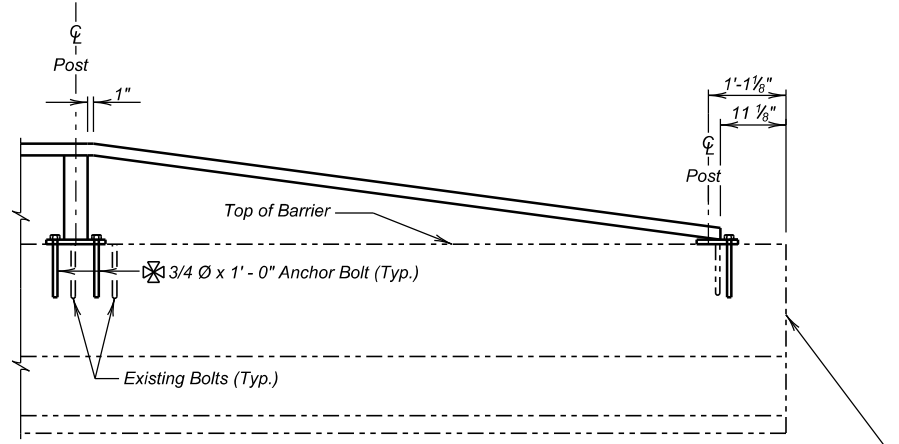
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E99	E115



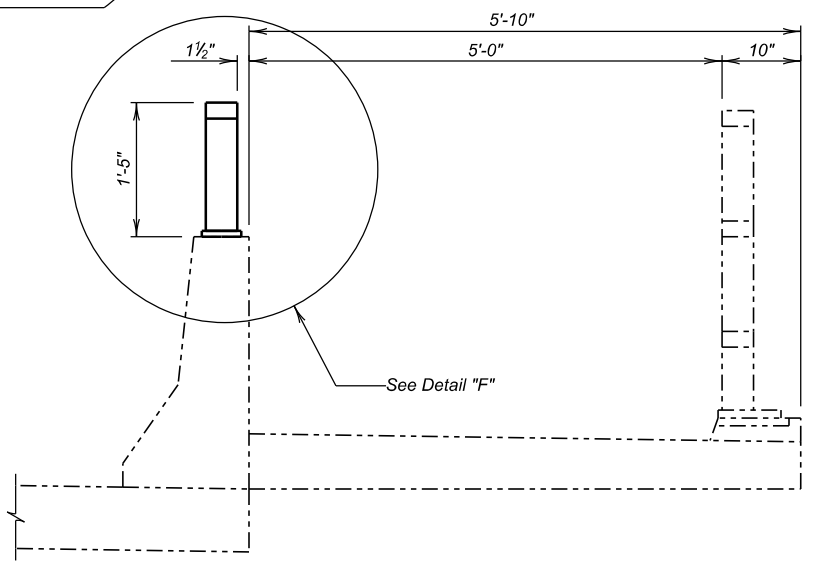
ELEVATION OF BARRIER RAILING



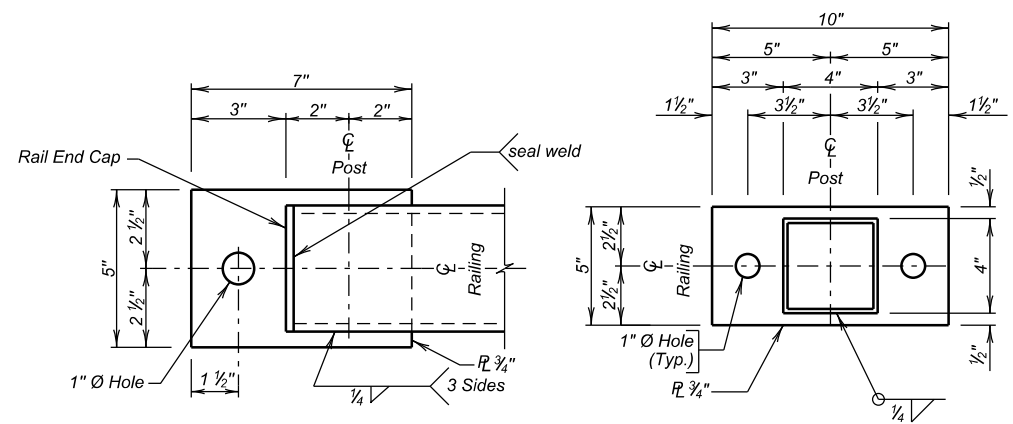
DETAIL "D"



DETAIL "E"

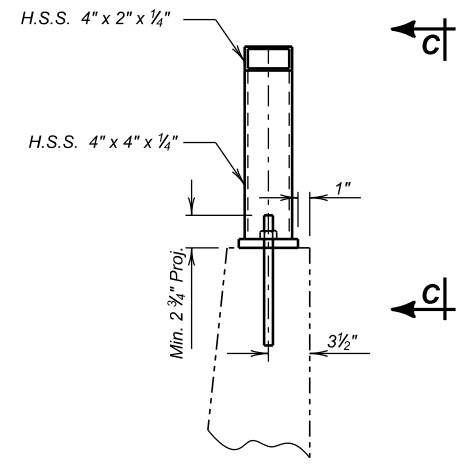


TYPICAL SECTION
(With Sidewalk Curb)

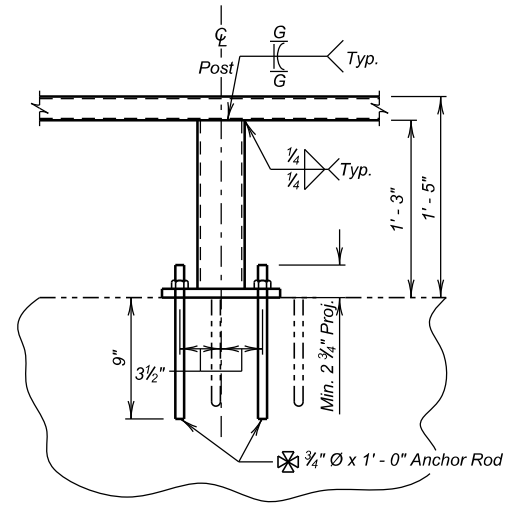


VIEW A - A

VIEW B - B

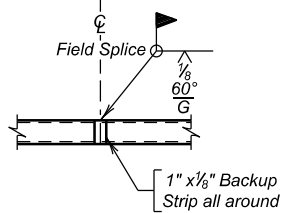


DETAIL "F"



VIEW C - C

ASTM F1554 Grade 36



RAIL FIELD SPLICE

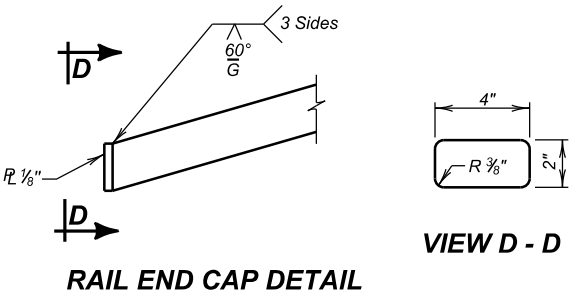
BARRIER CURB RAILING DETAILS
FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
52' - 0" ROADWAY 4° 34' L.H.F. SKEW
2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W
OVER I 229 (S.F. 6TH ST.) IM 2292(112)6
STR. NO. 50-219-205

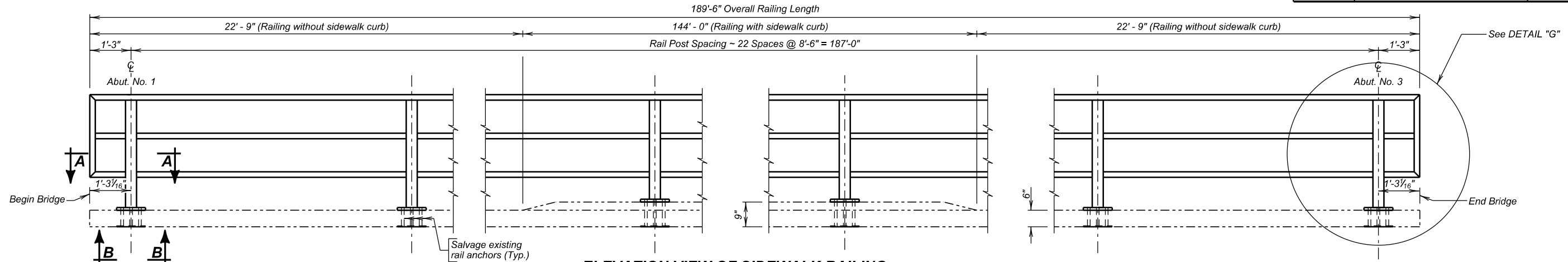
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Install Dowel in Concrete	Each	44	44
Steel Pedestrian Railing on Concrete Barrier	Ft	187.7	187.7
Remove Bridge Railing	Ft	188	188

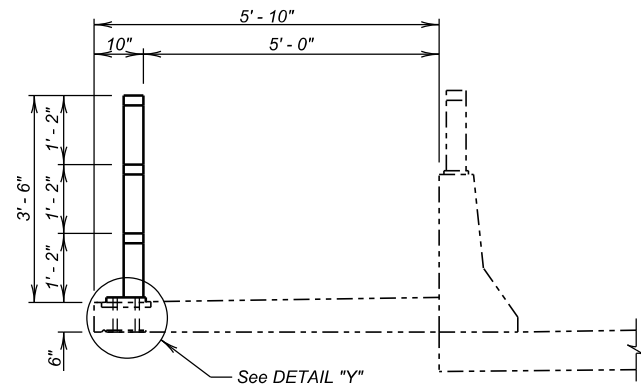
- Notes:
- The existing railing is similar to new railing and will be removed. For exact dimensions see Original Construction Plans.
 - Cut Existing Anchor bolts flush with top of barrier and coat with commercially available silicone, gray in color.



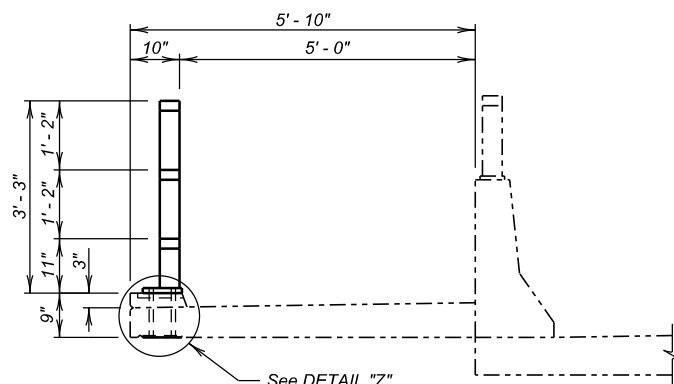
STATE OF S.D.	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E100	E115



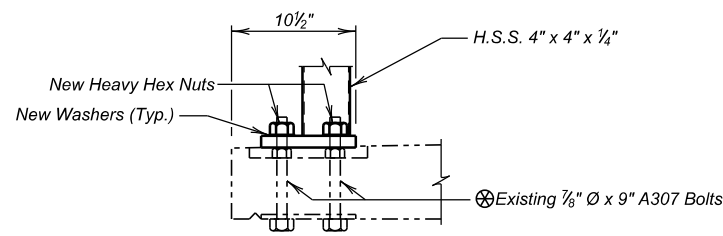
ELEVATION VIEW OF SIDEWALK RAILING
(Chain Link Fence & Posts Not Shown for clarity)



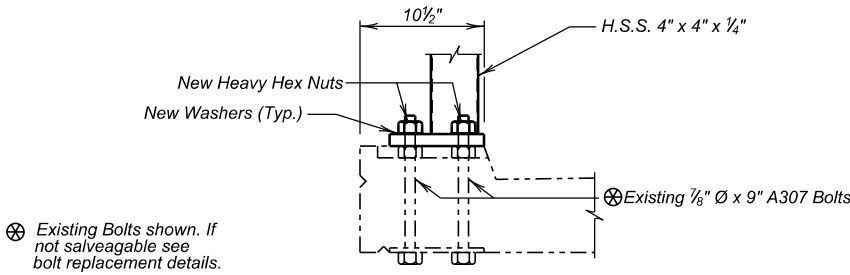
TYPICAL SECTION
(Without sidewalk curb)



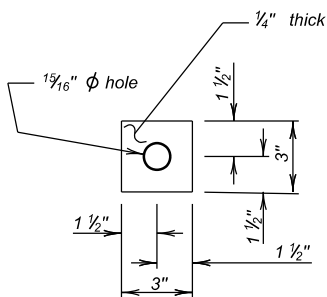
TYPICAL SECTION
(With sidewalk curb)



DETAIL "Y"

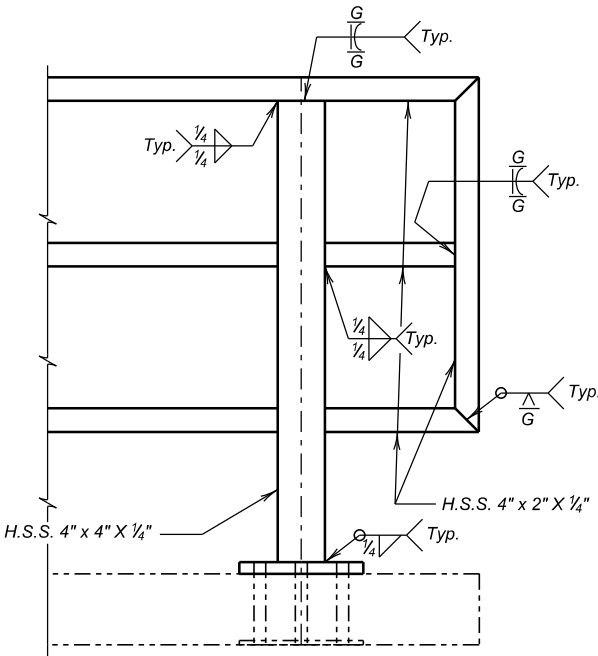


DETAIL "Z"

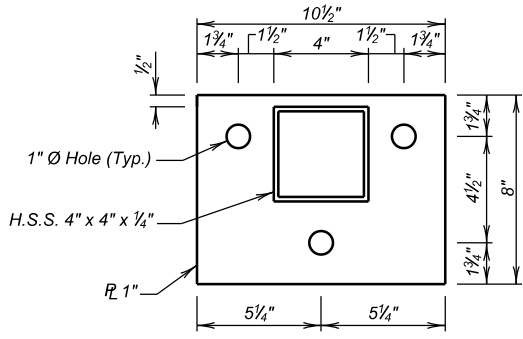


Cut Washer
Σ (24 required)

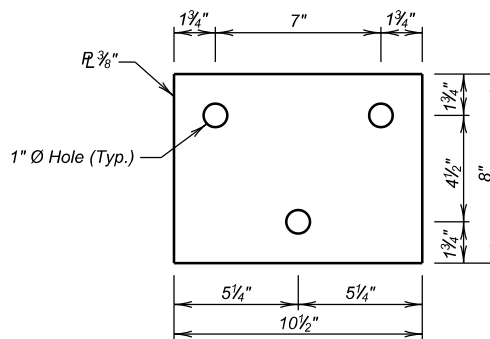
Σ Quantity based on 24 bolt locations where Bolt Replacement Type II will be used, actual quantity may vary.



DETAIL "G"

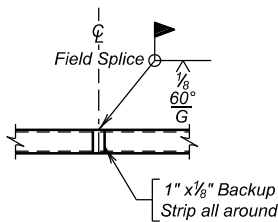


VIEW A - A
(46 required)



VIEW B - B
*(10 required)

* Quantity based on 10 post locations where Bolt Replacement Type I will be used, actual quantity may vary.



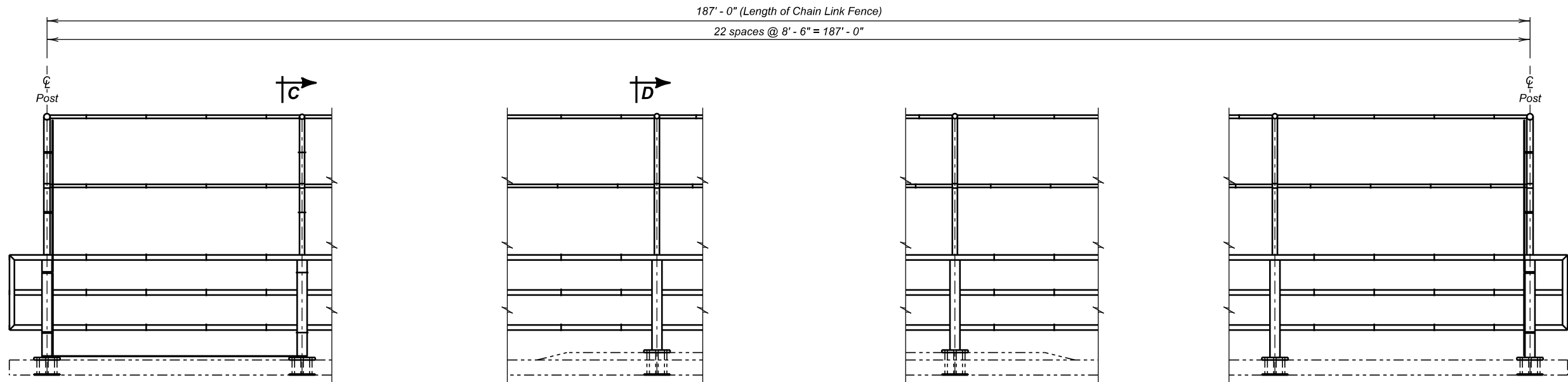
RAIL FIELD SPLICE

SIDEWALK RAILING DETAILS (A)
FOR
189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
52' - 0" ROADWAY
2 ~ 5' - 0" SIDEWALK
OVER I 229 (S.F. 6TH ST.)
STR. NO. 50-219-205

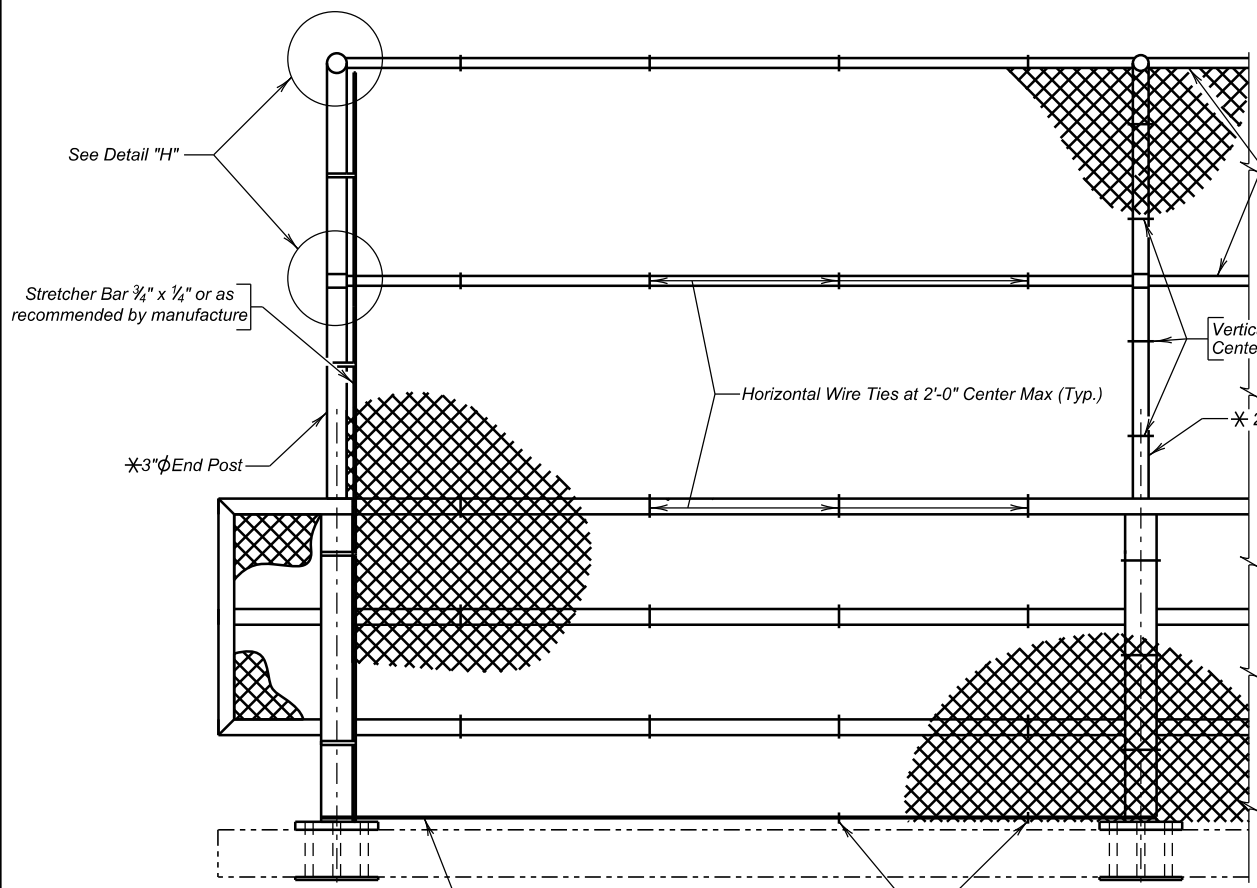
4° 34' L.H.F. SKEW
SEC. 15-T101N-R49W
IM 2292(112)6

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2022

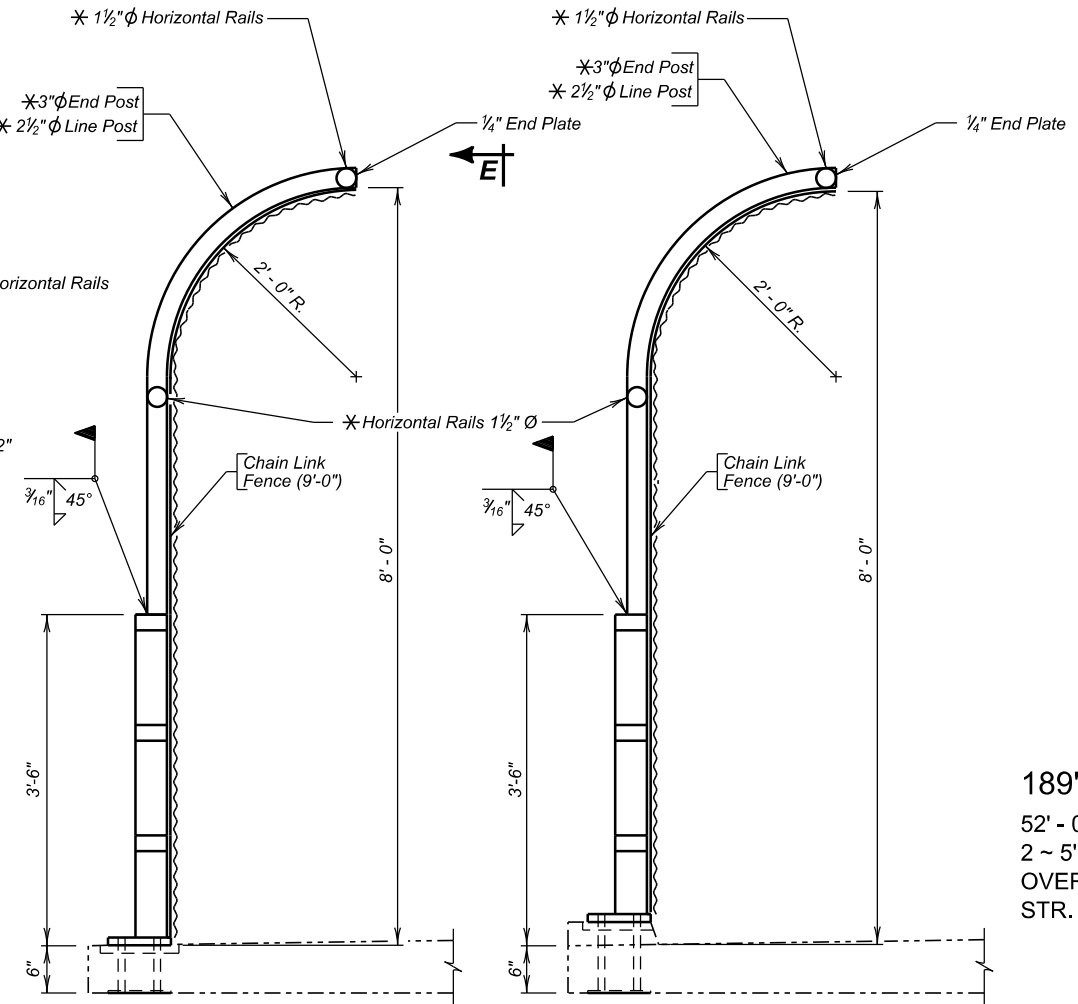
DESIGNED BY JH MINN08QM	CK. DES. BY TJM 08QMBD16	DRAFTED BY JB	Steve A. Johnson BRIDGE ENGINEER
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ELEVATION SIDEWALK RAILING
(Chainlink not shown for clarity)

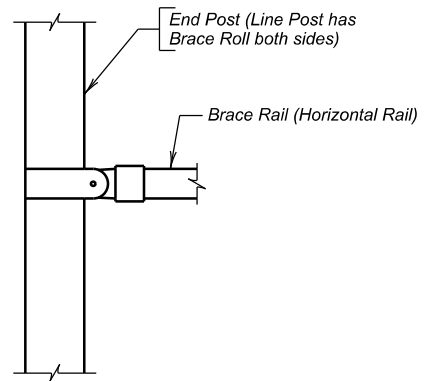


VIEW E - E
(Curb not shown)



SECTION C - C

SECTION D - D



DETAIL "H"

Note:
The detail shown is only one possible detail. Use detail recommended by manufacturer and approved by ENGINEER.

SIDEWALK RAILING DETAILS (B)

FOR
189' - 6 1/8" PRESTRESSED GIRDER BRIDGE
52' - 0" ROADWAY
2 ~ 5' - 0" SIDEWALK
OVER I 229 (S.F. 6TH ST.)
STR. NO. 50-219-205

4° 34' L.H.F. SKEW
SEC. 15-T101N-R49W
IM 2292(112)6

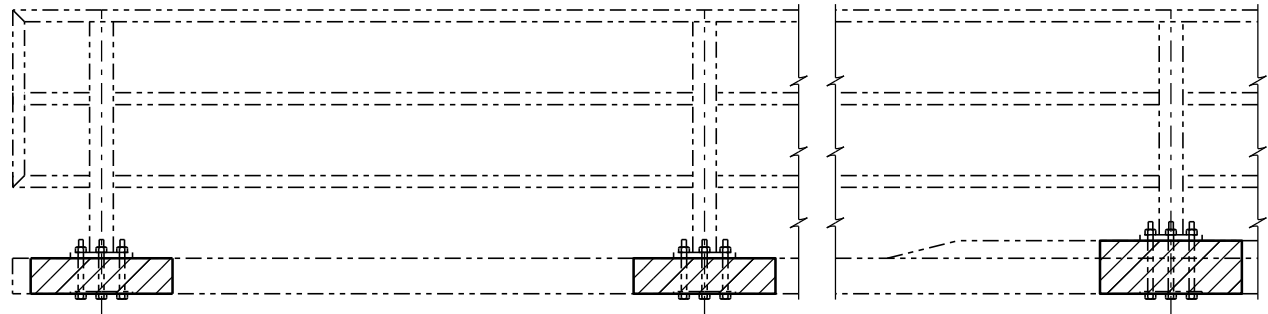
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

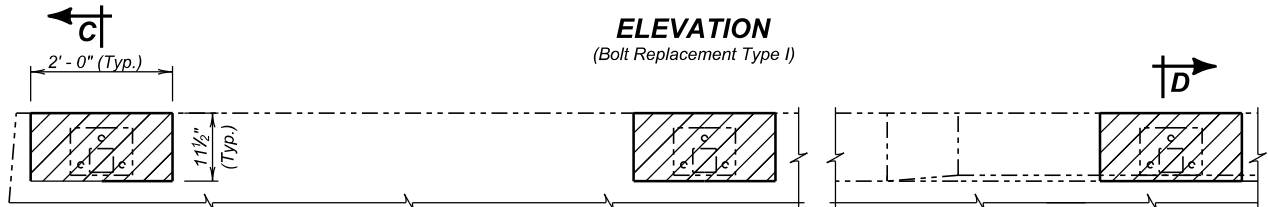
* Diameter of pipe shown in the nominal diameter. All pipe will be standard weight (schedule 40) pipe.

Tension wire 7 Gauge Galvanized Coil Spring Wire

9 Ga. Hog rings Spaced 24 c. to c.



ELEVATION
(Bolt Replacement Type I)

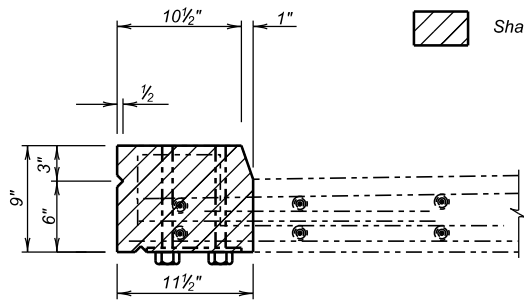


PLAN
(Bolt Replacement Type I)

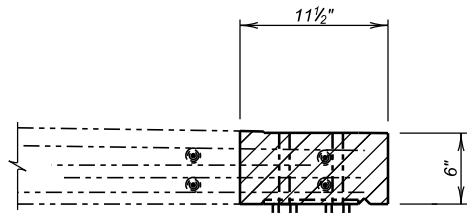
LEGEND:



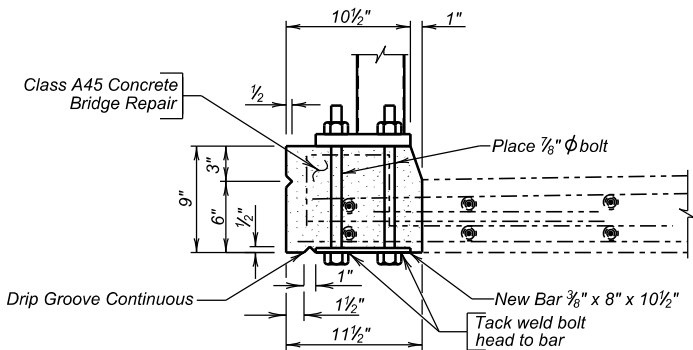
Shaded areas indicate limits of Concrete Breakout.



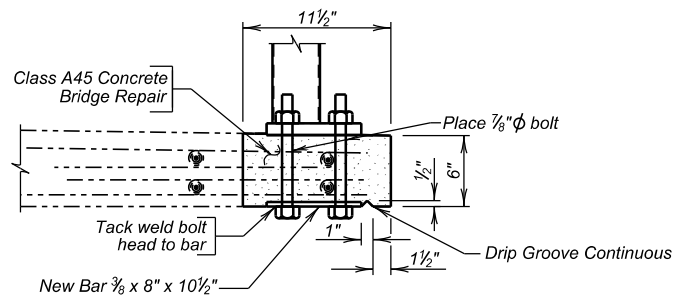
SECTION D - D
(Salvage Existing Reinforcing Steel)



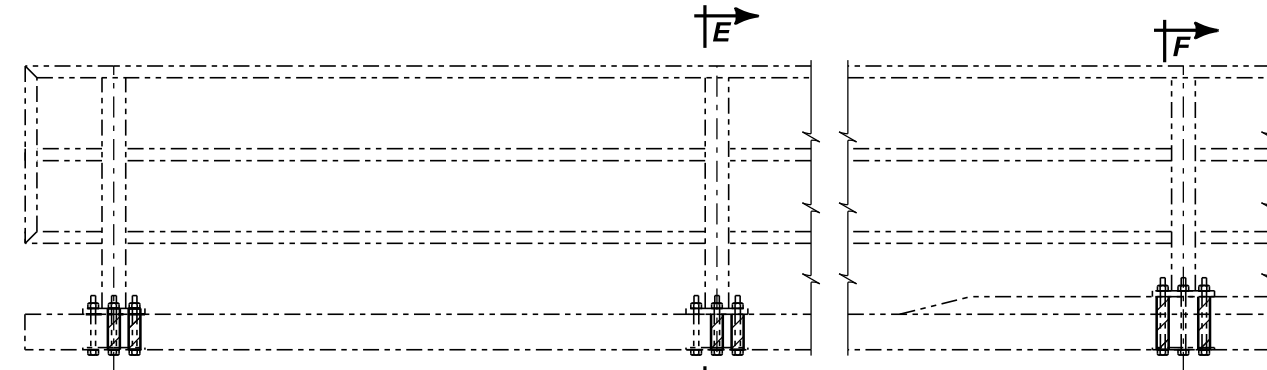
SECTION C - C
(Salvage Existing Reinforcing Steel)



SECTION D - D
(Bolt Replacement Type I)



SECTION C - C
(Bolt Replacement Type I)



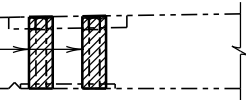
ELEVATION
(Bolt Replacement Type II)



PLAN
(Bolt Replacement Type II)

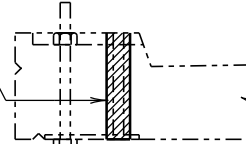
★ If the existing plate is removed prior to coring, the new plate washer is not necessary.

Core out existing 7/8" phi bolts and leveling nuts with 1 3/4" phi hole



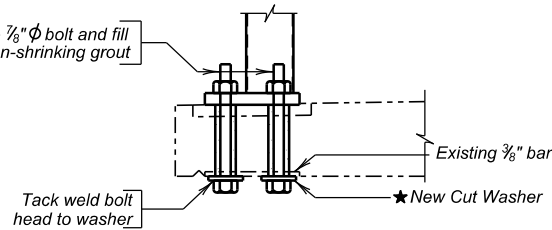
SECTION E - E
(Coring & Removal)

Core out existing 7/8" phi bolts and leveling nuts with 1 3/4" phi hole



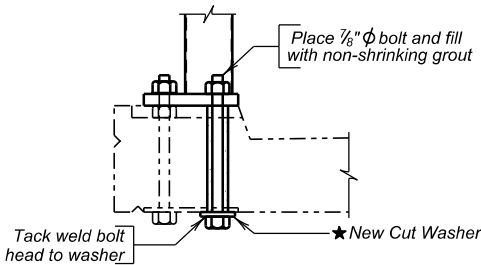
SECTION F - F
(Coring & Removal)

Place 7/8" phi bolt and fill with non-shrinking grout



SECTION E - E
(New Bolts & Plates)

Place 7/8" phi bolt and fill with non-shrinking grout



SECTION F - F
(New Bolts & Plates)

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Phase I	Phase 2
Remove Bridge Railing	Ft	190	190
Breakout Structural Concrete	CuYd	0.3	0.3
Class A45 Concrete, Bridge Barrier	CuYd	0.3	0.3
Steel Pedestrian Railing on Sidewalk	Ft	189.5	189.5
Chainlink Fence for Bridge Sidewalk	Ft	190	190
Anchor Bolt Coring	Ft	7.5	7.5

◆ Quantity is based on the assumption that in 10 post locations none of the existing nuts can be removed and Type I Bolt Replacement will occur. Of the 10 locations, 5 are assumed to be in locations with a curb.

⊗ Quantity is based on the assumption that in 24 bolt locations the existing nuts can not be removed and Type II Bolt Replacement will occur. Of the 24 bolt locations, 12 are assumed to be in a location with a curb. The actual number and configuration of may differ from what is shown.

SIDEWALK RAILING DETAILS (C)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY

4° 34' L.H.F. SKEW

2 ~ 5' - 0" SIDEWALK

SEC. 15-T101N-R49W

OVER I 229 (S.F. 6TH ST.)

IM 2292(98)9

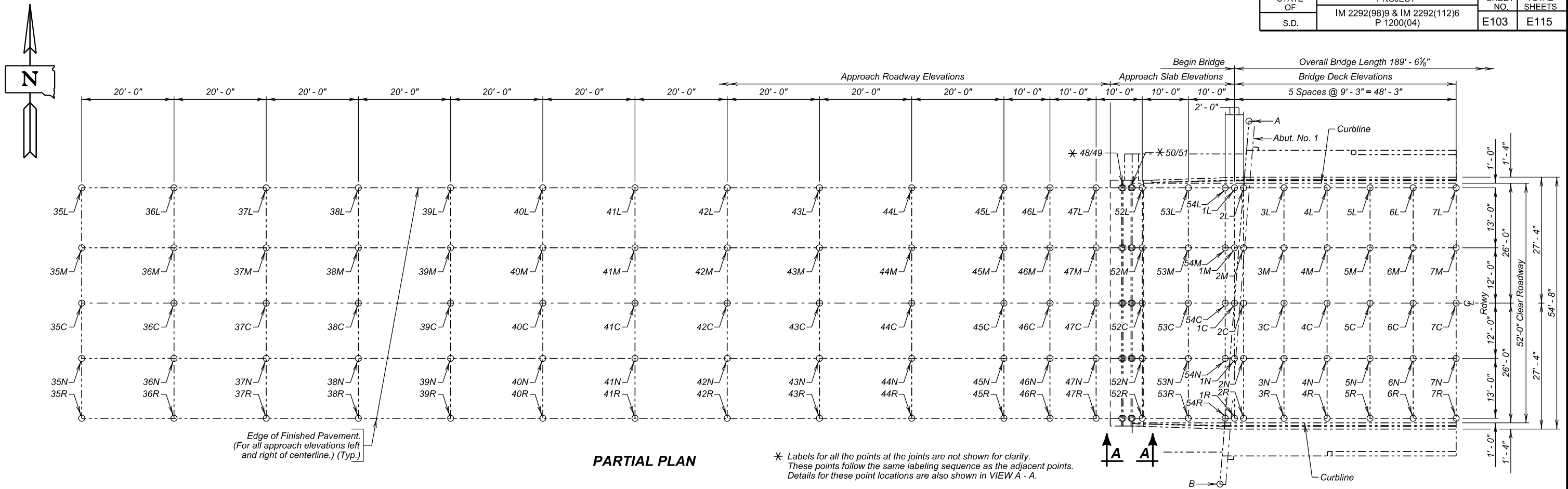
STR. NO. 50-219-205

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

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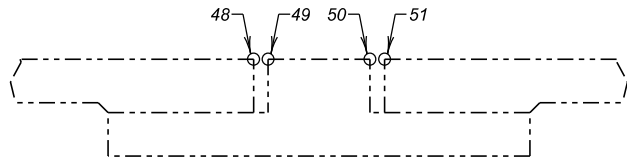


* Labels for all the points at the joints are not shown for clarity. These points follow the same labeling sequence as the adjacent points. Details for these point locations are also shown in VIEW A - A.

Table of Elevations - Approach Roadway									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
35L		35M		35C		35N		35R	
36L		36M		36C		36N		36R	
37L		37M		37C		37N		37R	
38L		38M		38C		38N		38R	
39L		39M		39C		39N		39R	
40L		40M		40C		40N		40R	
41L		41M		41C		41N		41R	
42L		42M		42C		42N		42R	
43L		43M		43C		43N		43R	
44L		44M		44C		44N		44R	
45L		45M		45C		45N		45R	
46L		46M		46C		46N		46R	
47L		47M		47C		47N		47R	

Table of Elevations - Approach Slab Joints (See VIEW A - A) and Approach Slab									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
48L		48M		48C		48N		48R	
49L		49M		49C		49N		49R	
50L		50M		50C		50N		50R	
51L		51M		51C		51N		51R	
52L		52M		52C		52N		52R	
53L		53M		53C		53N		53R	
54L		54M		54C		54N			
1L		1M							

Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
				1C		1N		54R	
								1R	
2L		2M		2C		2N		2R	
3L		3M		3C		3N		3R	
4L		4M		4C		4N		4R	
5L		5M		5C		5N		5R	
6L		6M		6C		6N		6R	
7L		7M		7C		7N		7R	



VIEW A - A

NOTE:

The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be 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 Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer.

Bridge Ends	
Location	Elevation
A	
B	

Survey Reference:

B.M. # 1
Top of SW wingwall at the end of wing.
Elevation 1453.43

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Elevation Survey	LS	Lump Sum

AS-BUILT SURVEY REQUEST (A)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY 4° 34' L.H.F. SKEW
2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W
OVER I 229 (S.F. 6TH ST.) IM 2292(112)6
STR. NO. 50-219-205

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2022

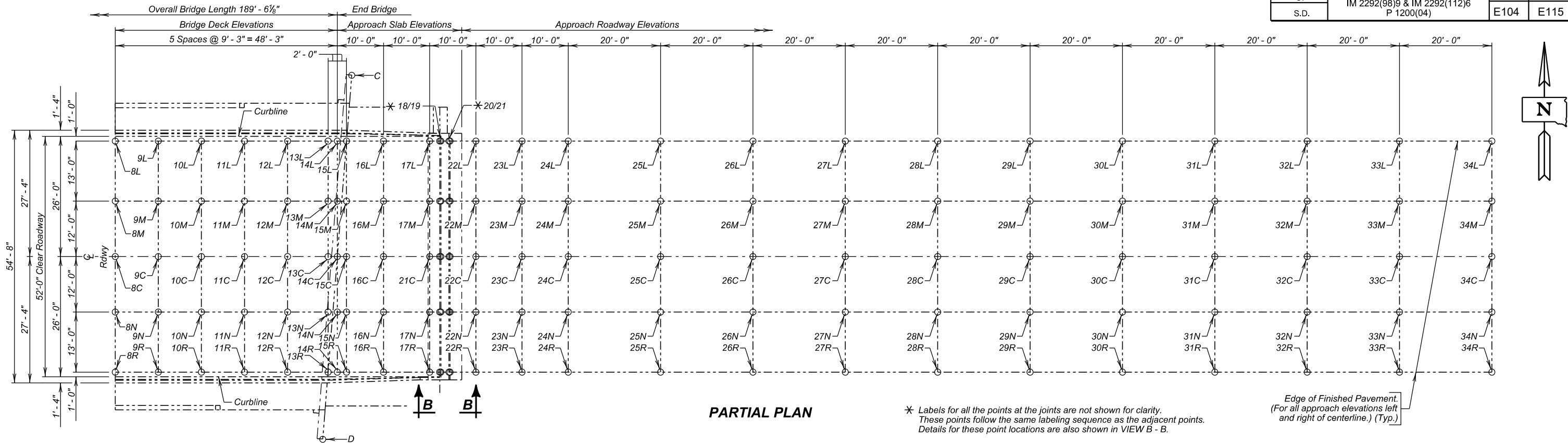


Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
8L		8M		8C		8N		8R	
9L		9M		9C		9N		9R	
10L		10M		10C		10N		10R	
11L		11M		11C		11N		11R	
12L		12M		12C		12N		12R	
13L		13M		13C		13N		13R	
14L		14M		14C					
15M									

Table of Elevations - Approach Slab Joints (See VIEW B - B) and Approach Slab									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
						23N		23R	
		24M		24C		24N		24R	
25L		25M		25C		25N		25R	
26L		26M		26C		26N		26R	
27L		27M		27C		27N		27R	
28L		28M		28C		28N		28R	
29L		29M		29C		29N		29R	
30L		30M		30C		30N		30R	

Table of Elevations - Approach Roadway									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
31L		31M		31C		31N		31R	
32L		32M		32C		32N		32R	
33L		33M		33C		33N		33R	
34L		34M		34C		34N		34R	
35L		35M		35C		35N		35R	
36L		36M		36C		36N		36R	
37L		37M		37C		37N		37R	
38L		38M		38C		38N		38R	
39L		39M		39C		39N		39R	
40L		40M		40C		40N		40R	
41L		41M		41C		41N		41R	
42L		42M		42C		42N		42R	
43L		43M		43C		43N		43R	

Bridge Ends	
Location	Elevation
C	
D	

Survey Reference:

B.M. # 1
Top of SW wingwall at the end of wing.
Elevation 1453.43

AS-BUILT SURVEY REQUEST (B)

FOR

189' - 6 1/8" PRESTRESSED GIRDER BRIDGE

52' - 0" ROADWAY 4° 34' L.H.F. SKEW
2 ~ 5' - 0" SIDEWALK SEC. 15-T101N-R49W
OVER I 229 (S.F. 6TH ST.) IM 2292(112)6
STR. NO. 50-219-205

MINNEHAHA COUNTY

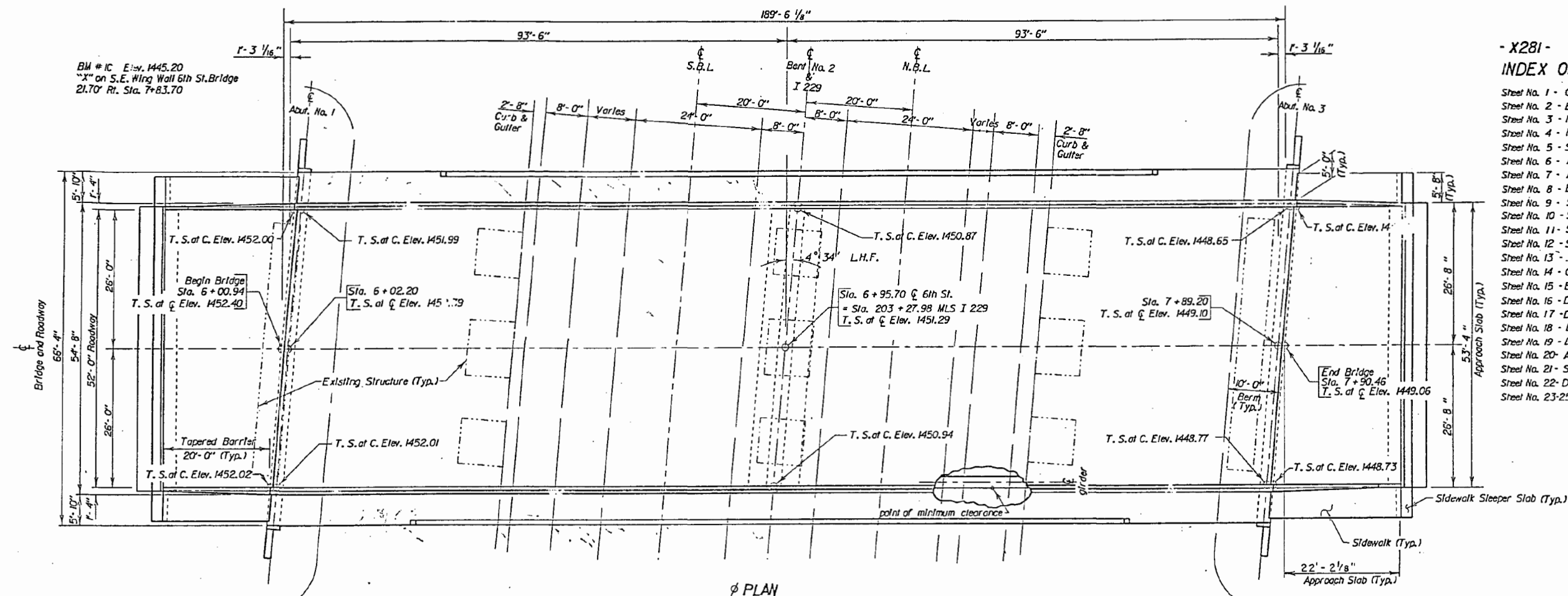
S. D. DEPT. OF TRANSPORTATION

NOVEMBER 2022

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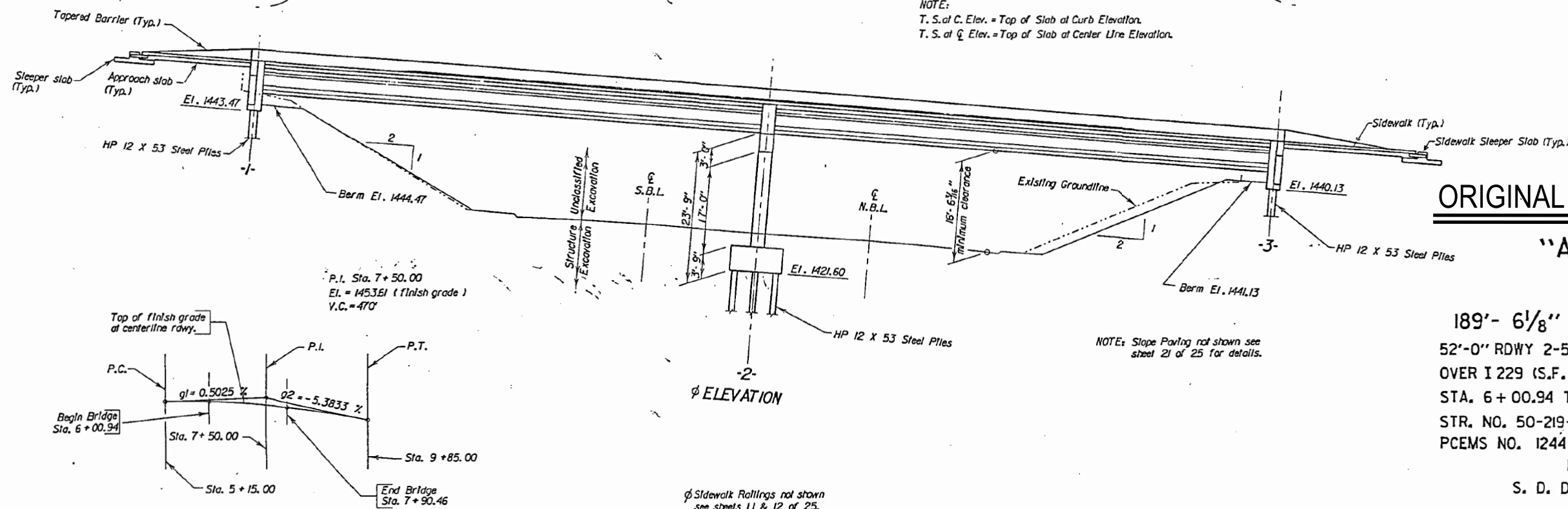
NOTE:

The elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be 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 Bridge Maintenance Engineer in the Office of Bridge Design and the Senior Region Bridge Engineer.



- X281 - INDEX OF BRIDGE SHEETS-

- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Subsurface Investigation & Piling Layout
- Sheet No. 6 - Abutment No. 1 Details
- Sheet No. 7 - Abutment No. 3 Details
- Sheet No. 8 - Bent No. 2 Details
- Sheet No. 9 - Superstructure Details
- Sheet No. 10 - Superstructure Details
- Sheet No. 11 - Sidewalk, Barrier Curb & Conduit Attachment Details
- Sheet No. 12 - Sidewalk Railing & Barrier Curb Railing Details
- Sheet No. 13 - Edge Sidewalk Chain Link Fence Details
- Sheet No. 14 - Girder Details
- Sheet No. 15 - Erection Data
- Sheet No. 16 - Diaphragm Details
- Sheet No. 17 - Details of Bridge End Backfill
- Sheet No. 18 - Details of Approach Slab Adj. to Bridge
- Sheet No. 19 - Details of Approach Slab Adj. to Bridge
- Sheet No. 20 - Approach Slab Joint Details
- Sheet No. 21 - Slope Paving Details
- Sheet No. 22 - Details of Standard Plans No. 302 & No. 303
- Sheet No. 23-25 - Original Construction Plans



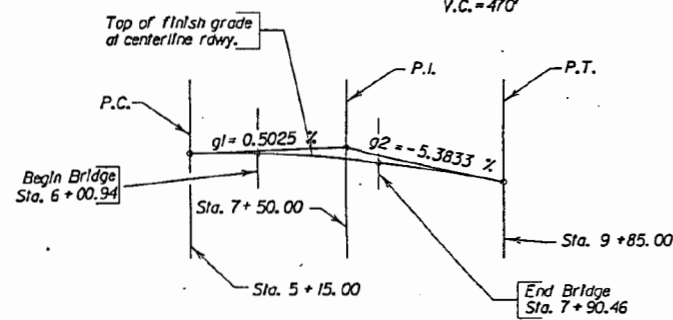
ORIGINAL CONSTRUCTION PLANS

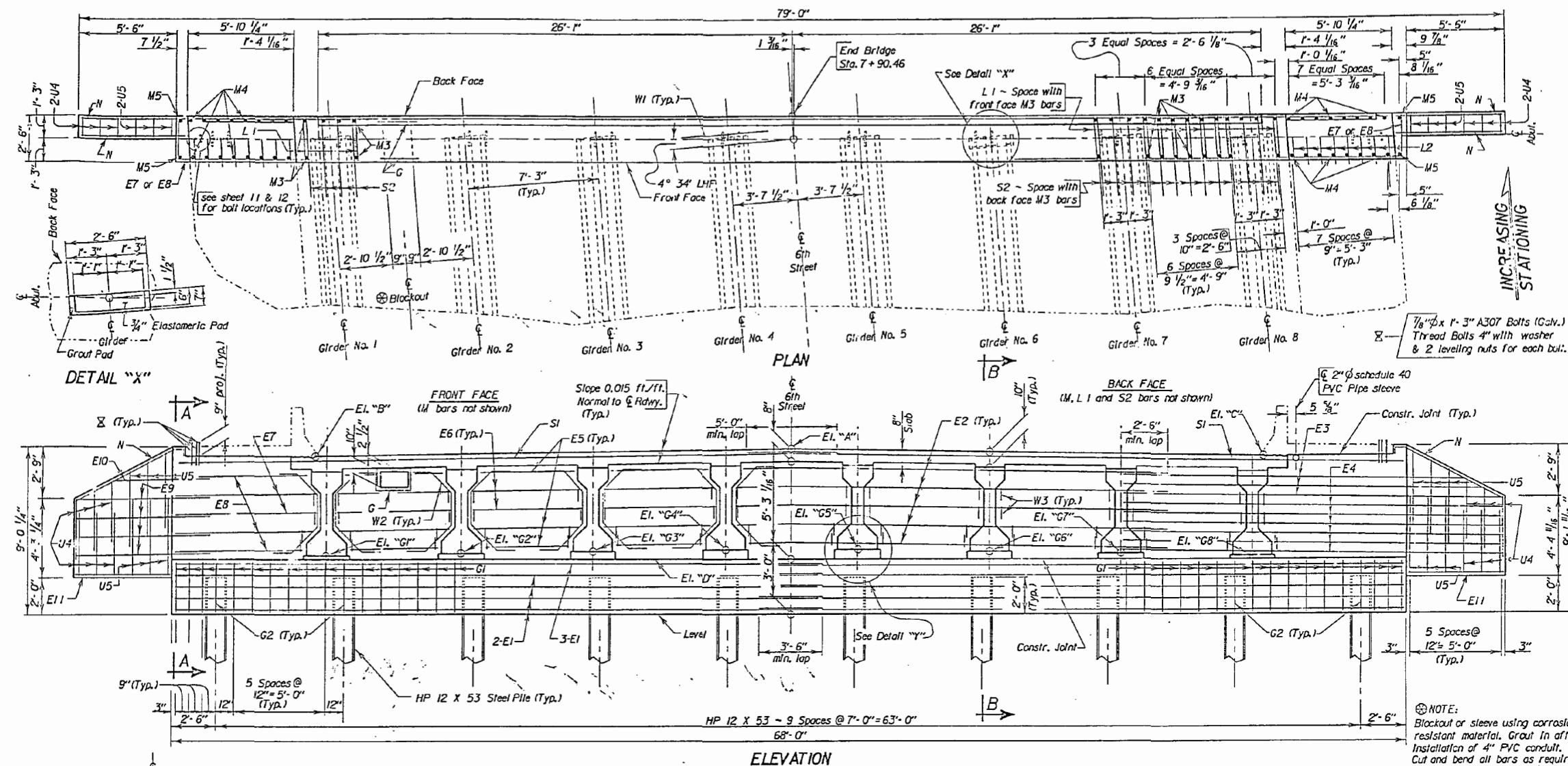
"ALTERNATE A" GENERAL DRAWING FOR

189'- 6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44
PCEMS NO. 1244 (& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991

VERTICAL CURVE DATA



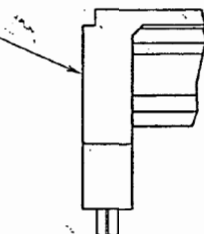


ORIGINAL CONSTRUCTION PLANS

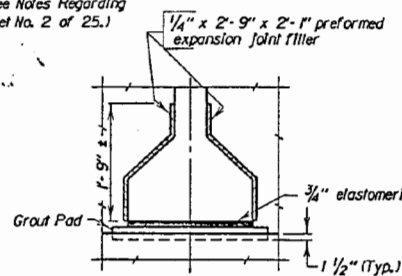
TABLE OF ELEVATIONS												
ABUTMENT	EL. "A"	EL. "B"	EL. "C"	EL. "D"	EL. "G"	EL. "G2"	EL. "G3"	EL. "G4"	EL. "G5"	EL. "G6"	EL. "G7"	EL. "G8"
NO. 3	1449.10	1448.65	1448.77	1443.13	1443.26	1443.39	1443.51	1443.64	1443.66	1443.57	1443.47	1443.38

NOTE: Elevations "A", "B" and "C" are top of slab at centerline of abutment.
Elevations "G1", "G2", "G3", "G4", "G5", "G6", "G7" & "G8" are top of grout pad at centerline of abutment.
Top of Grout Pad shall be level and smooth.

The face on the back side of the abutment between the abut. wings shall be thoroughly coated with an approved waterproof sealant. (See Notes Regarding Abutment Backwall Coating on sheet No. 2 of 25.)



ABUT. BACKWALL COATING DETAILS



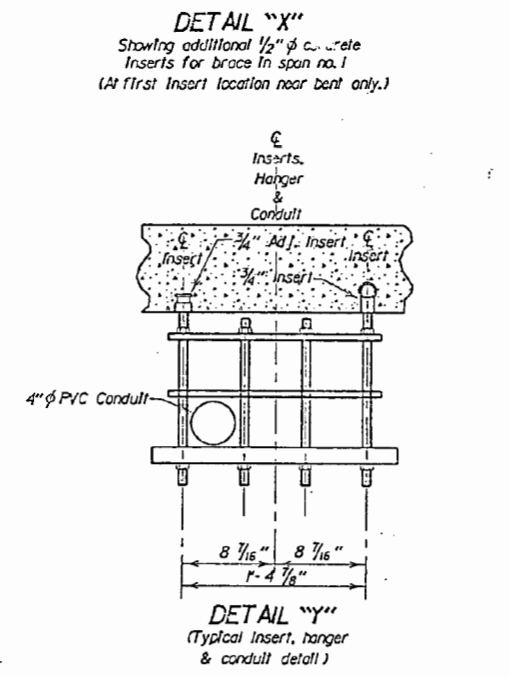
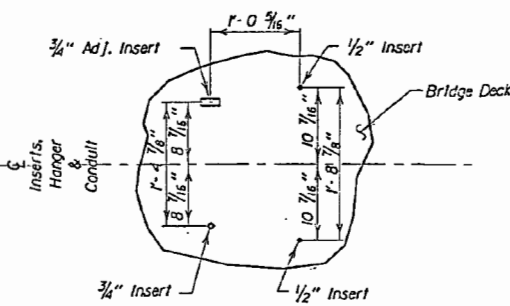
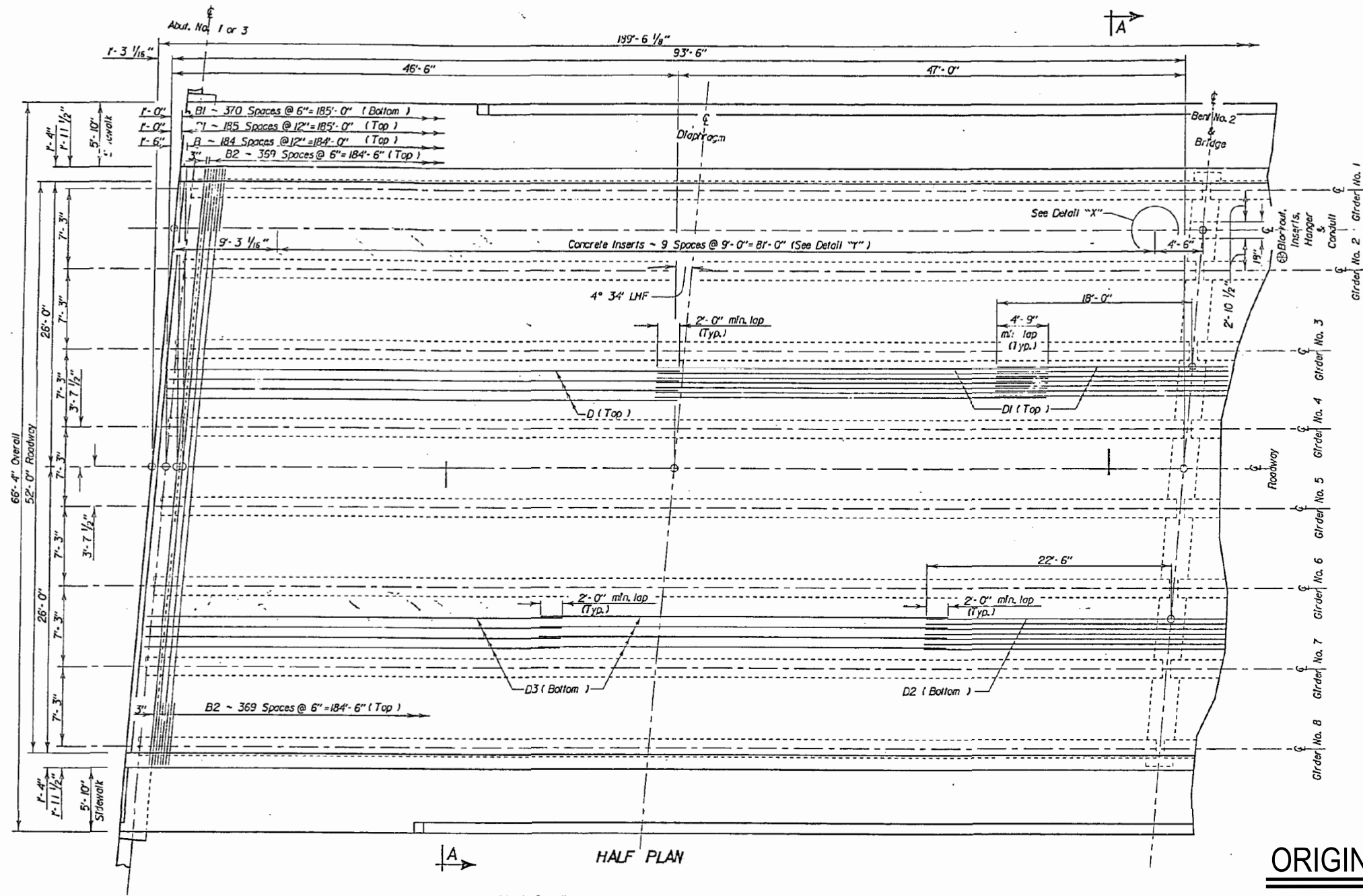
DETAIL "Y"
(Typical at girder ends; abutments only)

REINFORCING SCHEDULE									
MARK	NO.	SIZE	LENGTH	TYPE	BENDING				
E1	22	8	35'-8"	Sir.					
E2	5	6	41'-5"	Sir.					
E3	3	8	39'-5"	Sir.					
E4	12	8	21'-2"	Sir.					
E5	21	6	4'-11"	Sir.					
E6	14	6	6'-3"	Sir.					
E7	4	6	10'-0"	17A					
E8	6	6	9'-3"	17A					
E9	8	5	6'-9"	Sir.					
E10	2	5	4'-9"	Sir.					
E11	4	5	5'-3"	Sir.					
G	2	5	7'-0"	T2					
G1	60	4	10'-1"	T2					
G2	10	4	9'-2"	S3A					
L1	51	4	4'-4"	17A					
L2	16	4	3'-0"	17A					
M3	118	5	7'-7"	Sir.					
M4	32	5	8'-3"	Sir.					
M5	4	5	8'-9"	Sir.					
N	4	5	7'-6"	19A					
S1	4	9	36'-4"	Sir.					
S2	67	5	8'-0"	14A					
U4	12	4	7'-5"	17					
U5	12	4	8'-11"	17					
W1	8	5	4'-9"	Sir.					
W2	16	4	7'-4"	14					
W3	64	5	3'-6"	17					

"ALTERNATE A"
ABUTMENT NO. 3 DETAILS
FOR
189'- 6 1/8" PRESTR. GIRDER BRIDGE
52'-0" ROWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4° 34' L.H.F. SKEW
STA. 6 + 00.94 TO STA. 7 + 90.46 IR229-215216
STR. NO. 50-219-205 HS20-44
(& ALT.)

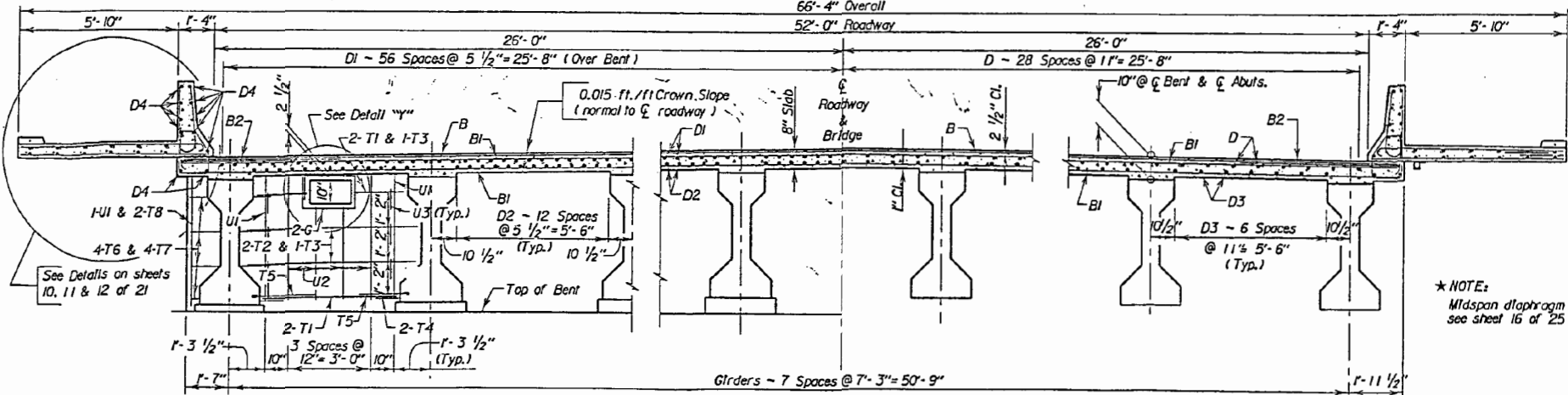
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(98)9 & IM 2292(112)6 P 1200(04)	E108	E115



NOTE:
Blockout or sleeve using corrosion resistant material. Cut and bend all bars as required to place blockout through Bent Diaphragm.

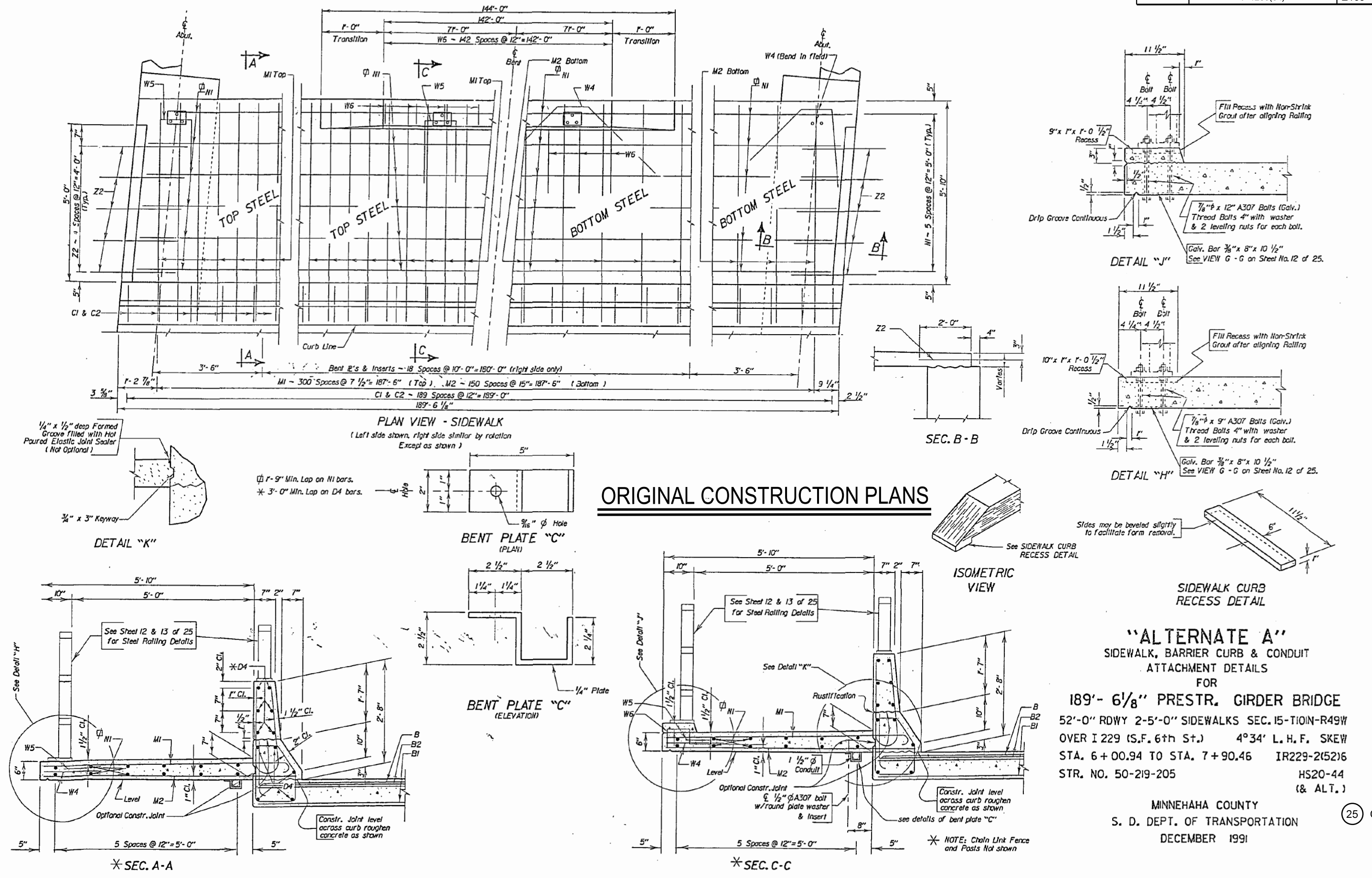
ORIGINAL CONSTRUCTION PLANS



NOTE:
Midspan diaphragm not shown this view see sheet 16 of 25 for details.

"ALTERNATE A"
SUPERSTRUCTURE DETAILS
FOR
189'- 6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44 (& ALT.)
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991

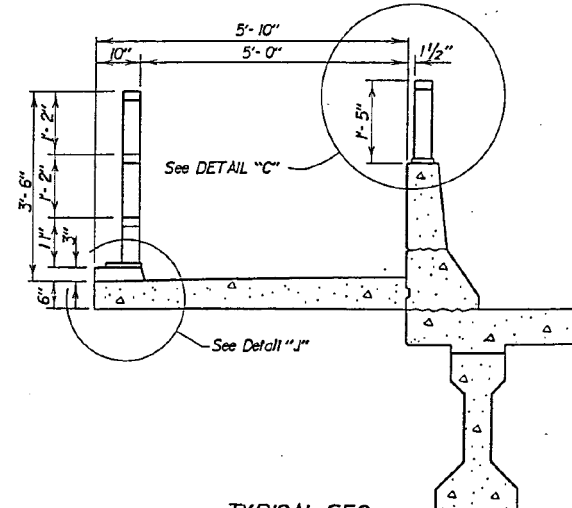
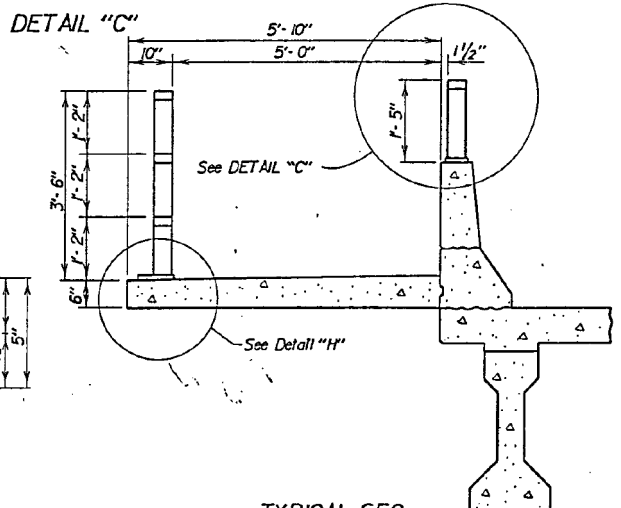
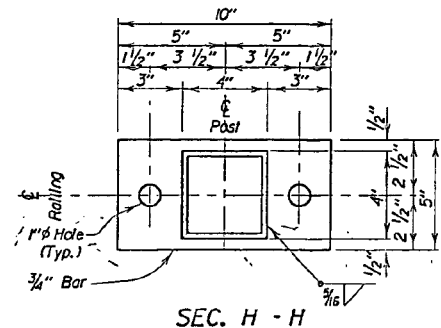
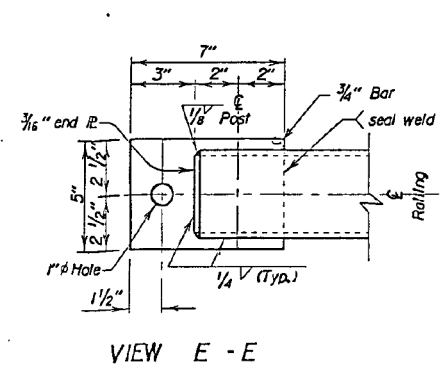
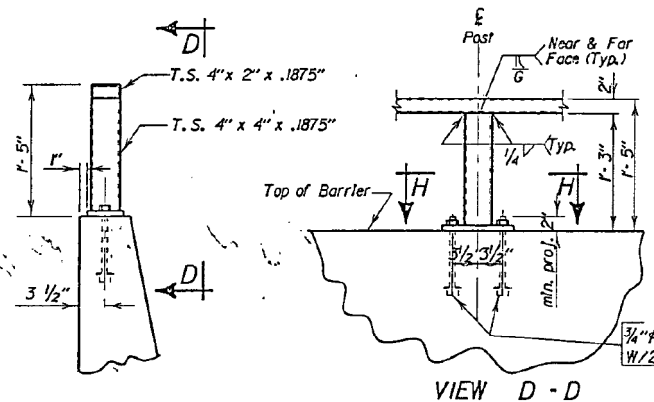
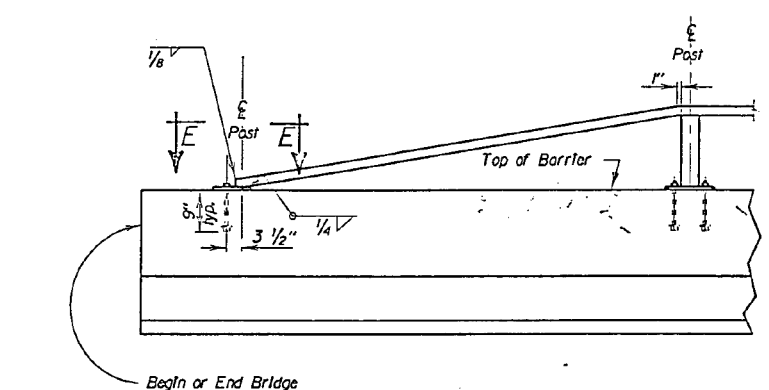
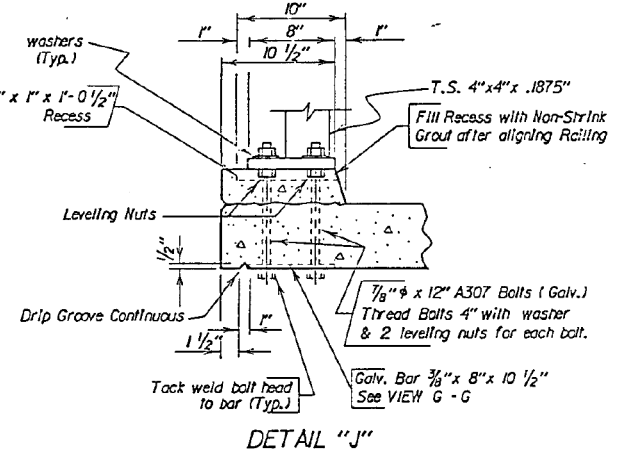
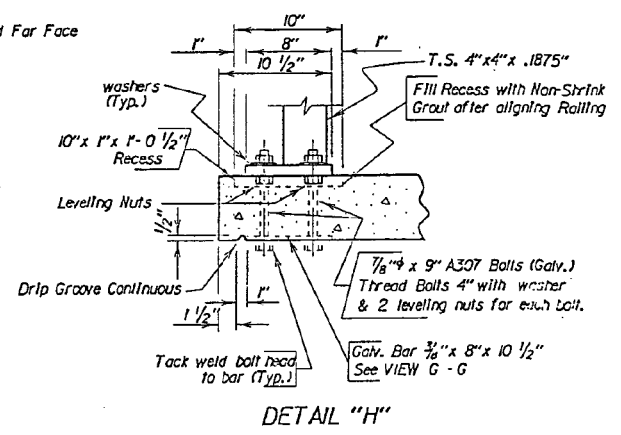
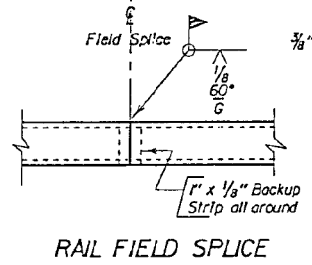
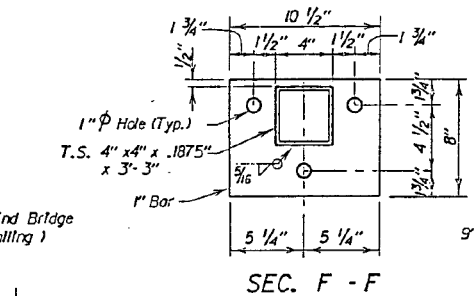
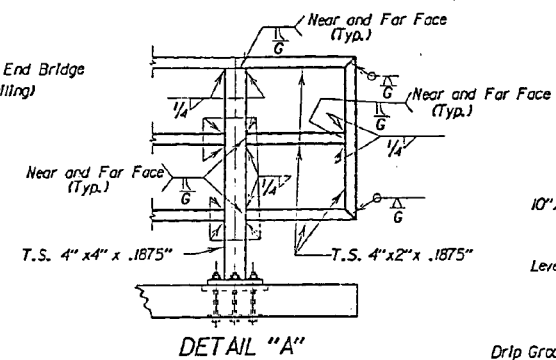
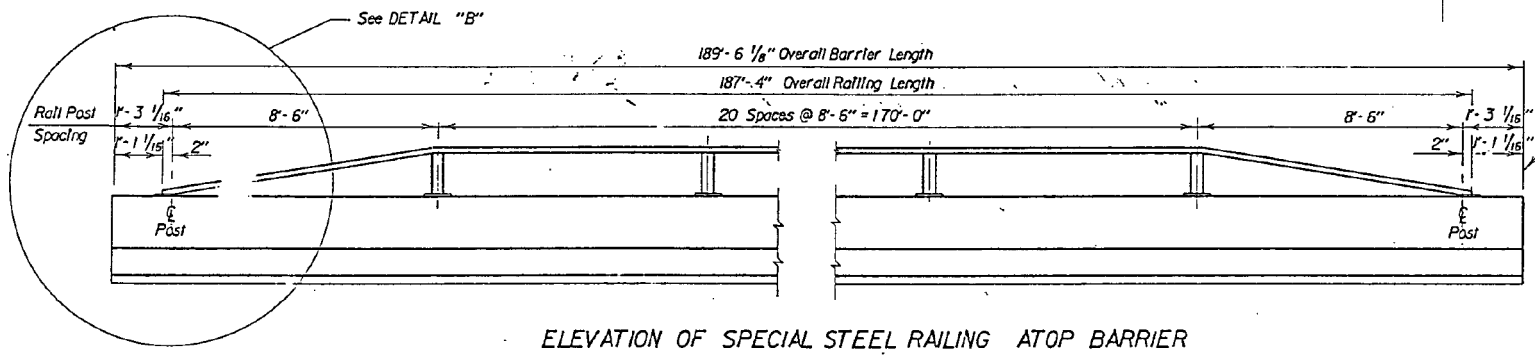
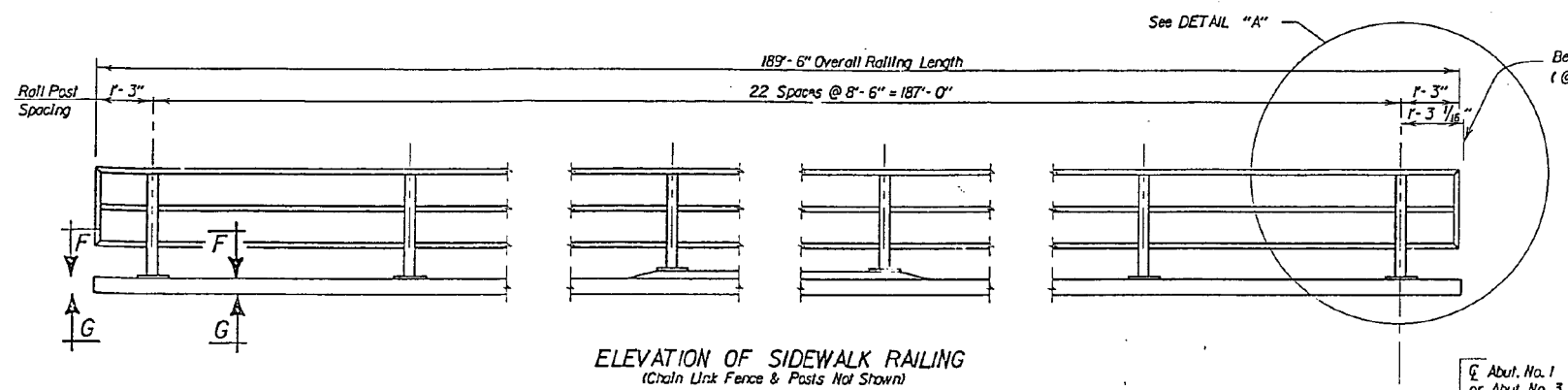
STATE OF S.D.	PROJECT IM 2292(98)9 & IM 2292(112)6 P 1200(04)	SHEET NO.	TOTAL SHEETS
		E109	E115



ORIGINAL CONSTRUCTION PLANS

"ALTERNATE A"
SIDEWALK, BARRIER CURB & CONDUIT
ATTACHMENT DETAILS
FOR
189'-6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991



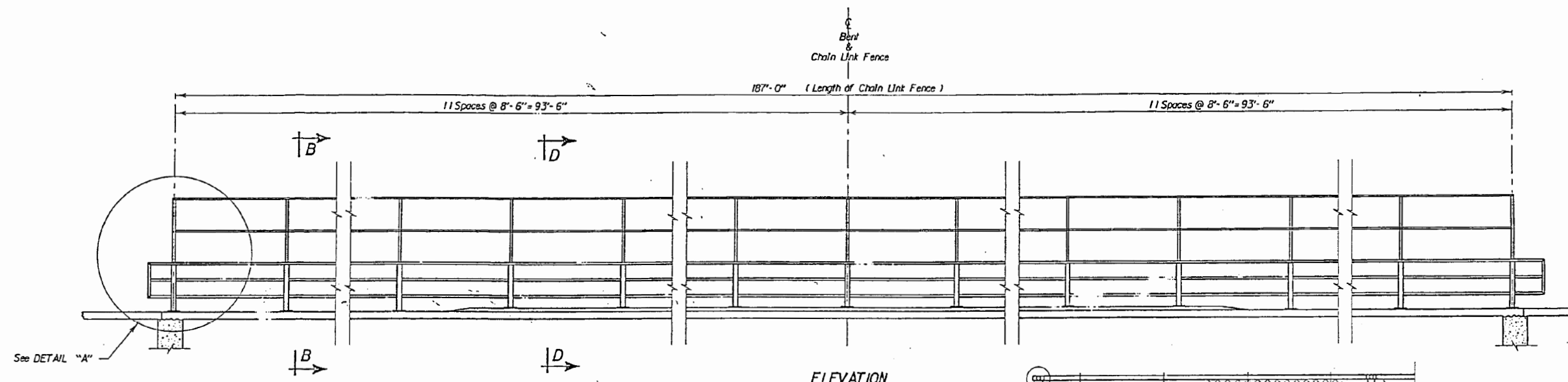
ORIGINAL CONSTRUCTION PLANS

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Steel Railing/Sidewalk	L.F.	579.0
Special Steel Railing (top 1/2 sidewalk)	L.F.	574.7

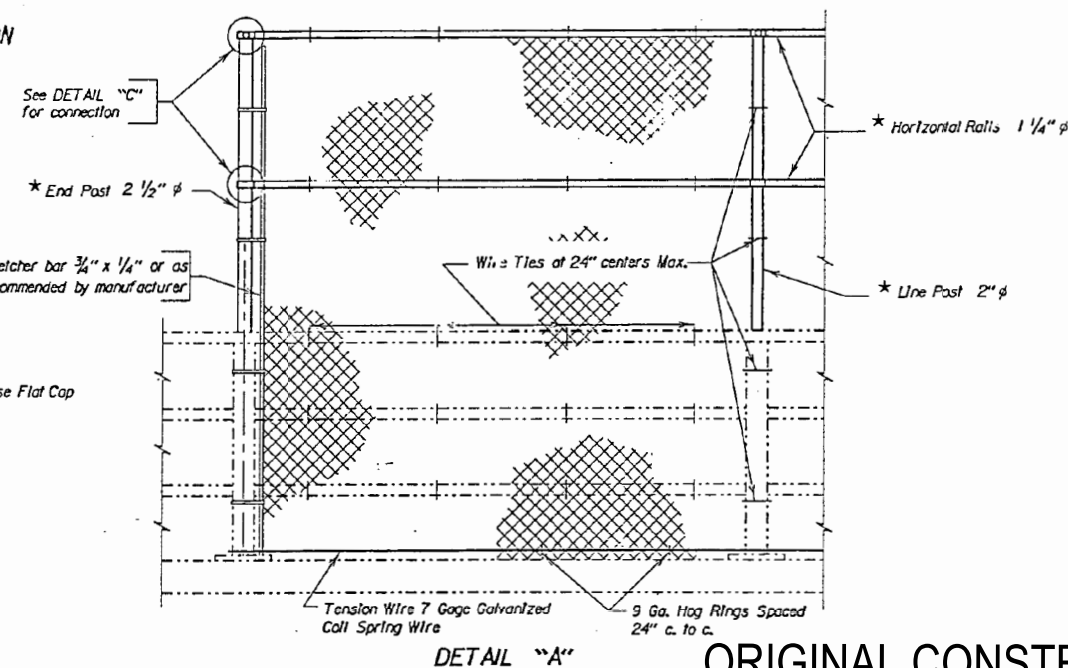
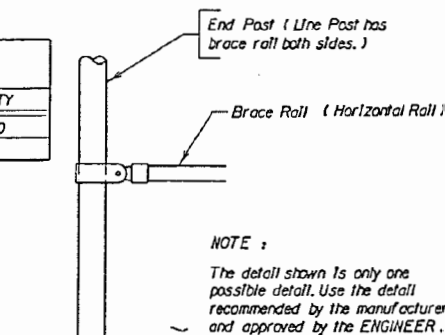
"ALTERNATE A" SIDEWALK RAILING & BARRIER CURB RAILING DETAILS FOR

189'- 6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44 (& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Sidewalk Chain Link Fence	L. F.	374.0



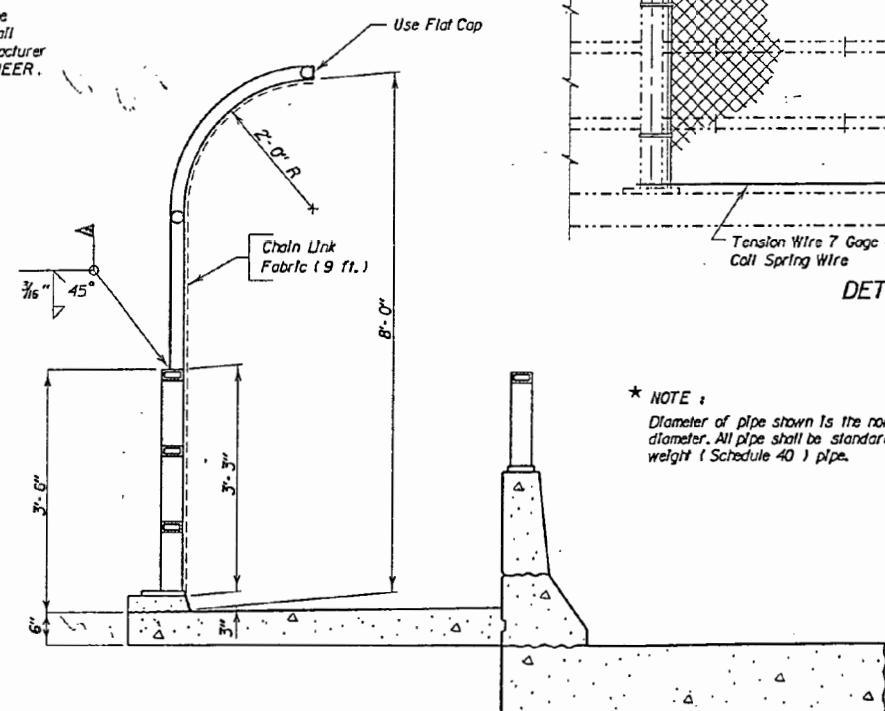
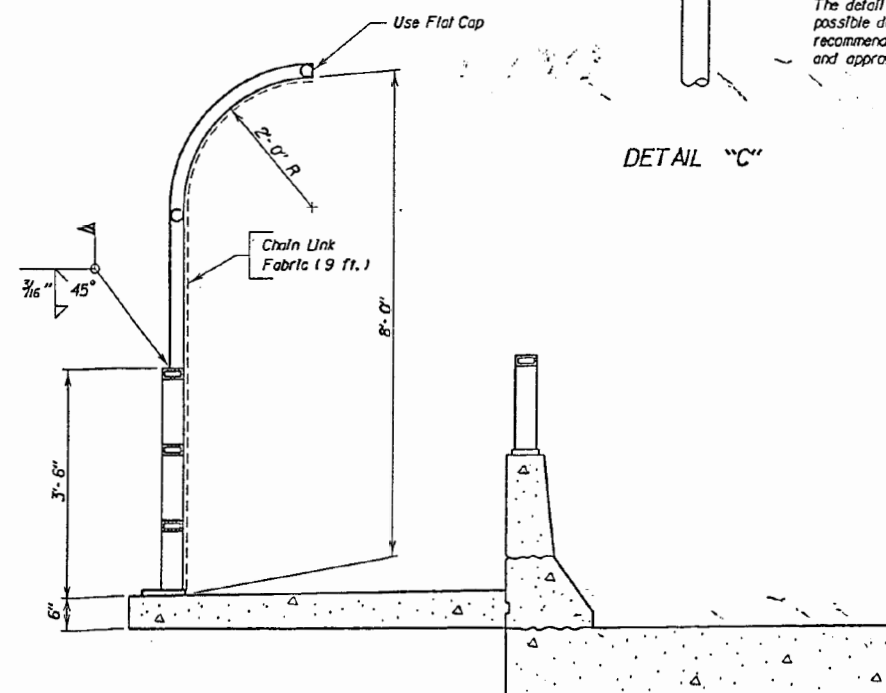
ORIGINAL CONSTRUCTION PLANS

"ALTERNATE A"

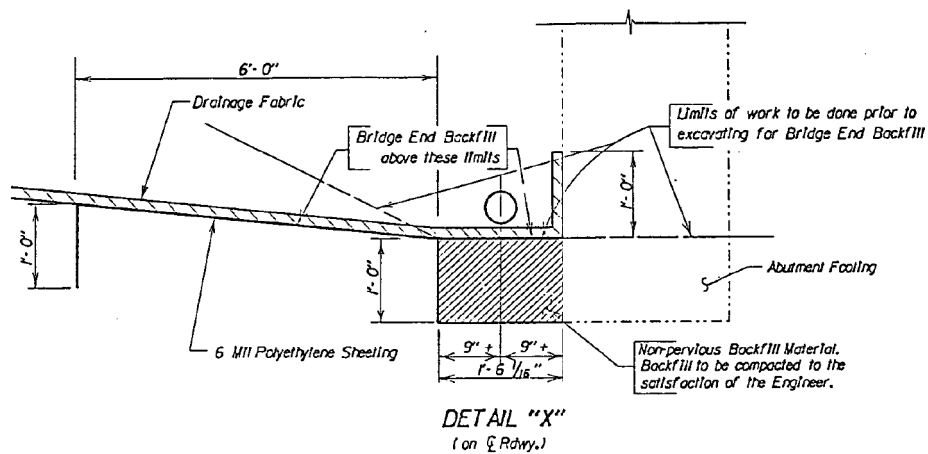
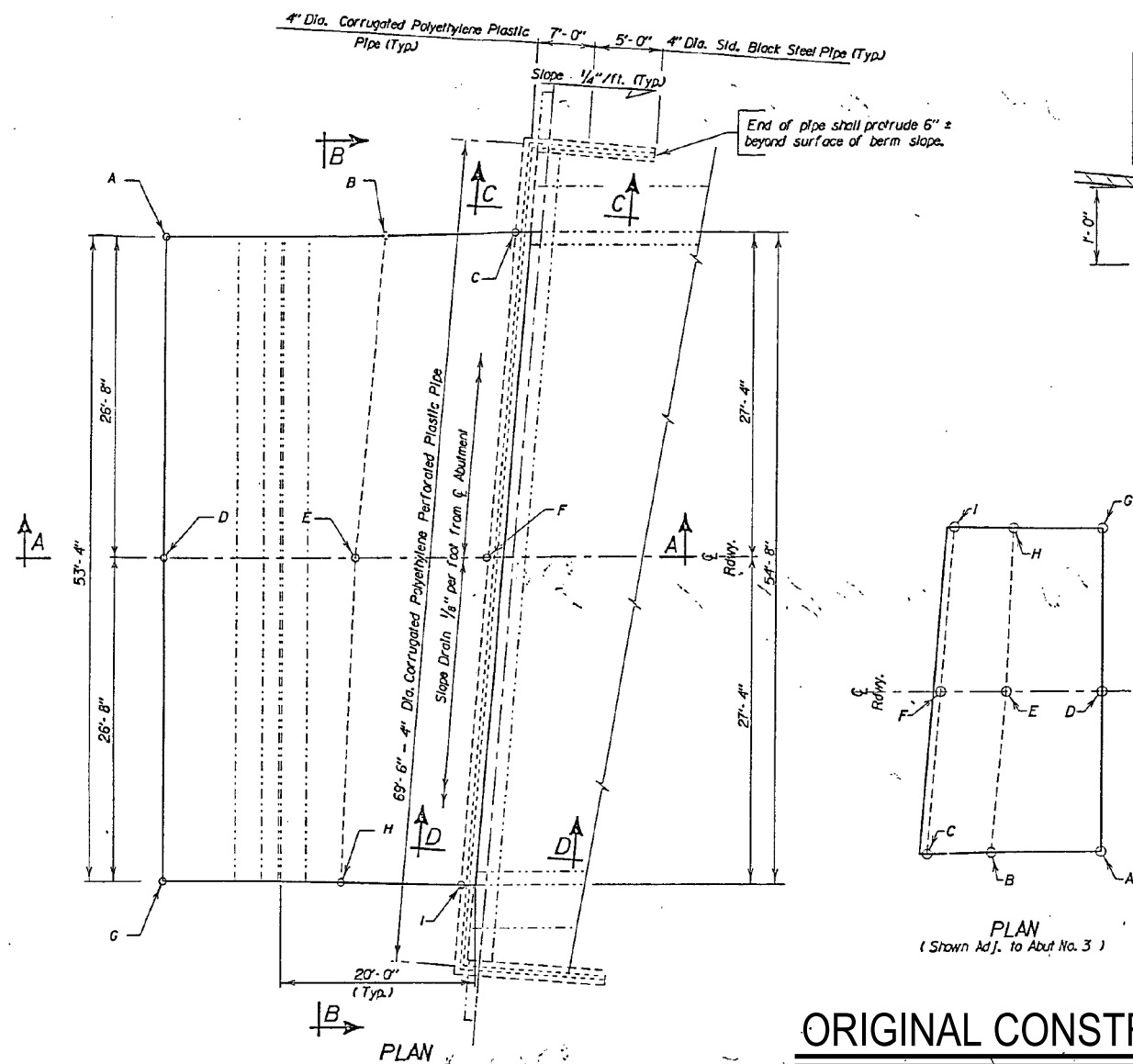
BRIDGE SIDEWALK
CHAIN LINK FENCE DETAILS
FOR

189'- 6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991



* NOTE:
Diameter of pipe shown is the nominal diameter. All pipe shall be standard weight (Schedule 40) pipe.



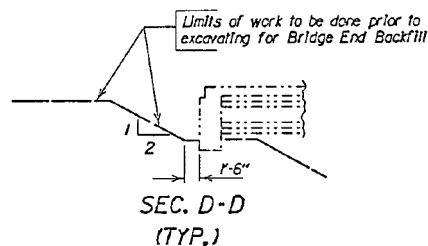
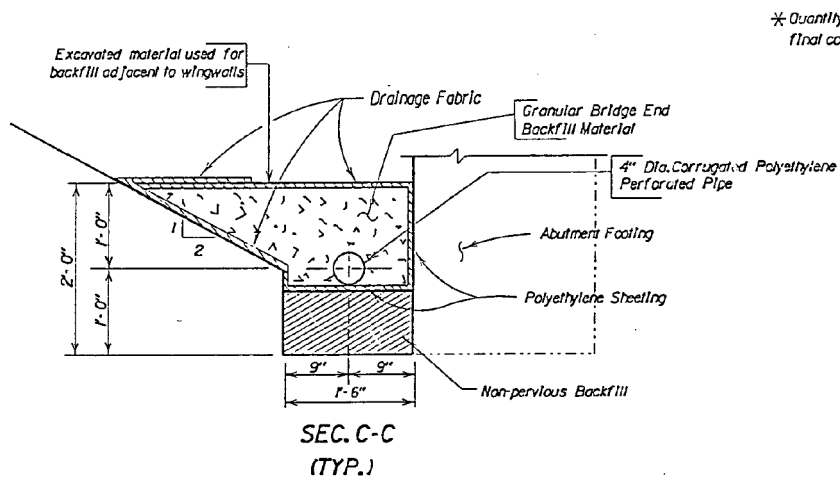
ESTIMATED QUANTITIES (for 2 abutments)		
ITEM	UNIT	QUANTITY
Bridge End Backfill Underdrain Pipe	L.F.	187
Bridge End Backfill Excavation	Cu.Yd.	255.2
Granular Bridge End Backfill	Cu.Yd.	648
Drainage Fabric	Sq.Yd.	901

- 139 ft. 4" dia. Corrugated Polyethylene Perforated Plastic Pipe for 2 Abut.
- 28 ft. 4" dia. Corrugated Polyethylene Plastic Pipe for 2 Abut.
- 22 ft. 4" dia. Std. Black Steel Pipe for 2 Abut.
- 6165 sq. ft. 6 mil Polyethylene Sheeting, not including laps.

Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.

Bridge End Backfill Excavation will not be measured. Plans quantity payment will be full compensation for this item.

*Quantity has been adjusted by a "Shrinkage" factor of 1.3 to convert final compacted volume to loose volume.



ORIGINAL CONSTRUCTION PLANS

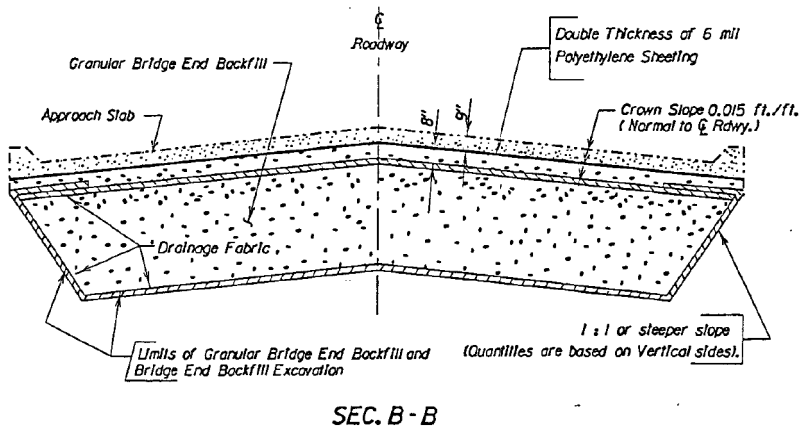
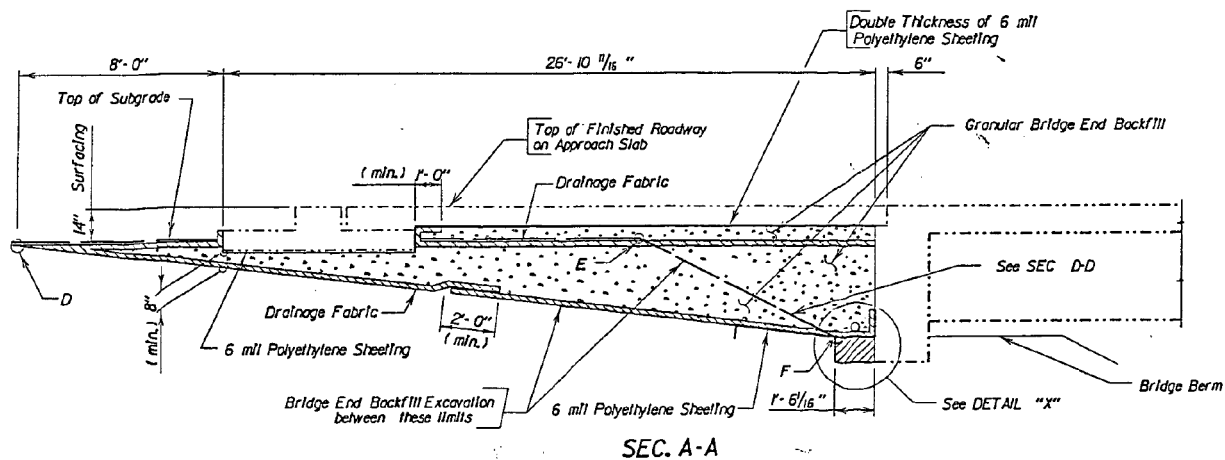
TABLE OF STATIONS AND ELEVATIONS									
POINT		A	B	C	D	E	F	G	H
Begin Bridge	Station	5+66.05	5+88.68	6+01.62	5+66.05	5+85.73	5+92.44	5+66.05	5+84.39
End Bridge	Elevation	1450.96	1450.89	1444.47	1451.36	1451.30	1444.47	1450.96	1450.91
Begin Bridge	Station	8+25.35	8+01.91	7+89.78	8+25.35	8+04.67	7+91.96	8+25.35	8+05.92
End Bridge	Elevation	1446.39	1447.15	1441.13	1446.79	1447.46	1441.13	1446.39	1447.02

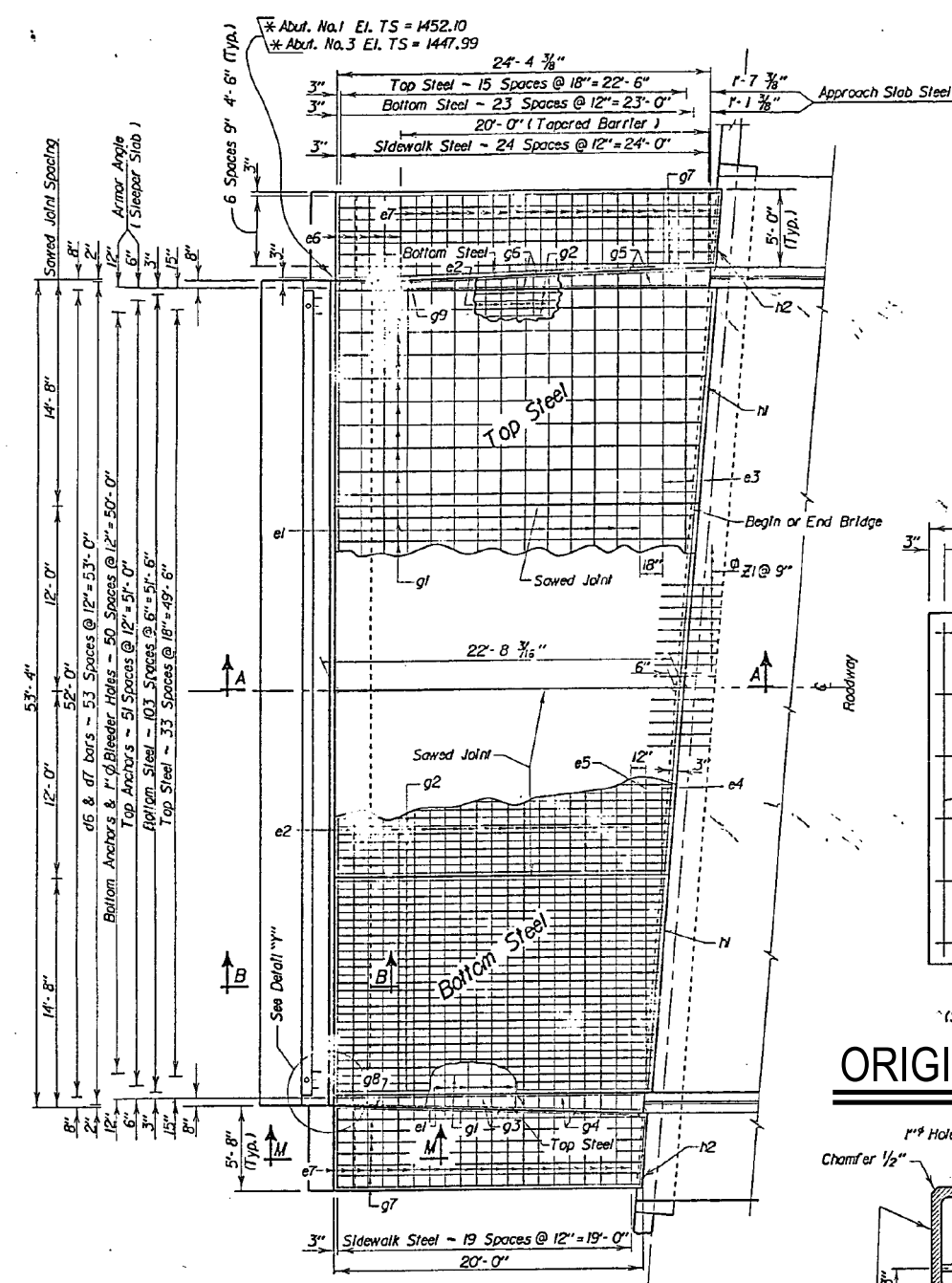
"ALTERNATE A"

DETAILS OF BRIDGE END BACKFILL
FOR

189'-6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991

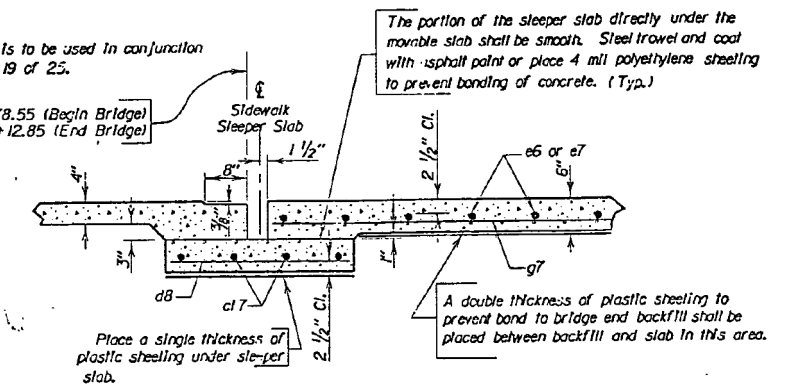




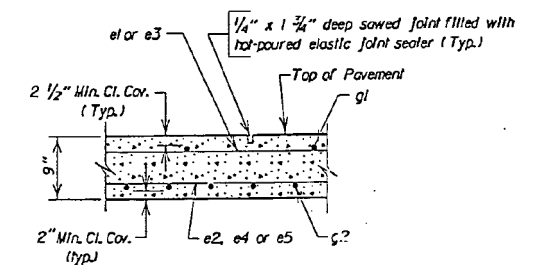
NOTE-

This sheet is to be used in conjunction with sheet 19 of 25.

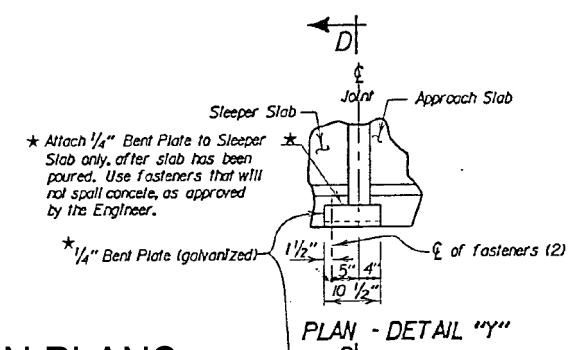
Sta. 5 + 78.55 (Begin Bridge)
Sta. 8 + 12.85 (End Bridge)



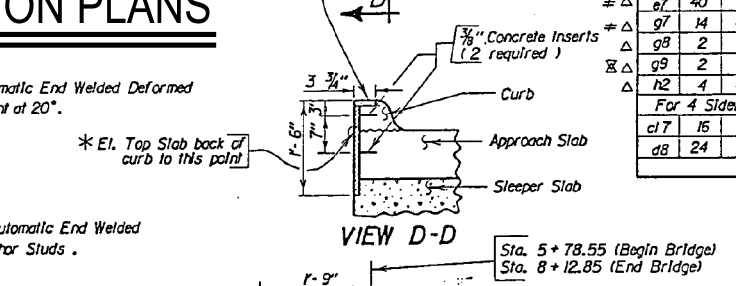
SEC. M-M



SAWED LONGITUDINAL JOINT

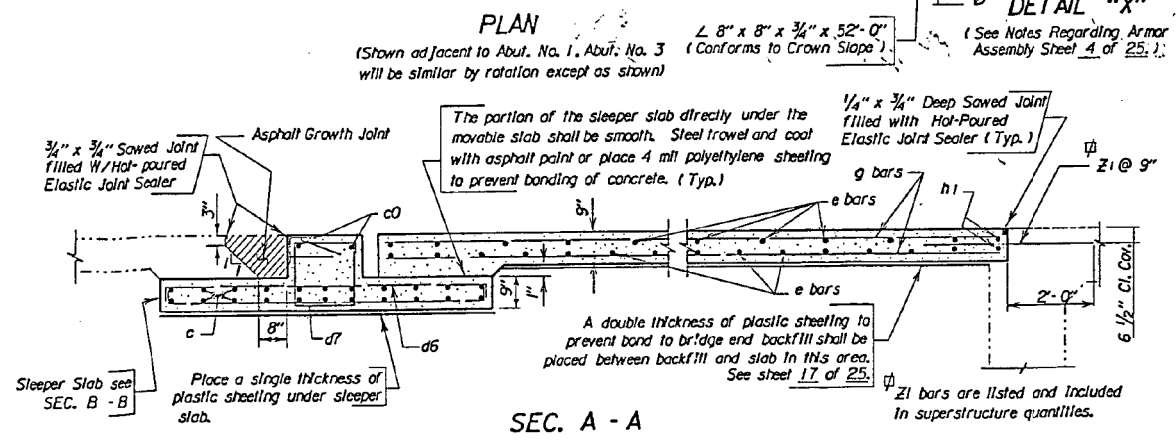


PLAN - DETAIL "Y"

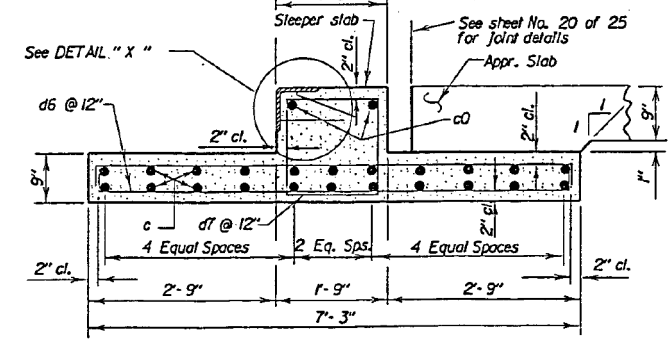


VIEW D-D

ORIGINAL CONSTRUCTION PLANS



SEC. A-A



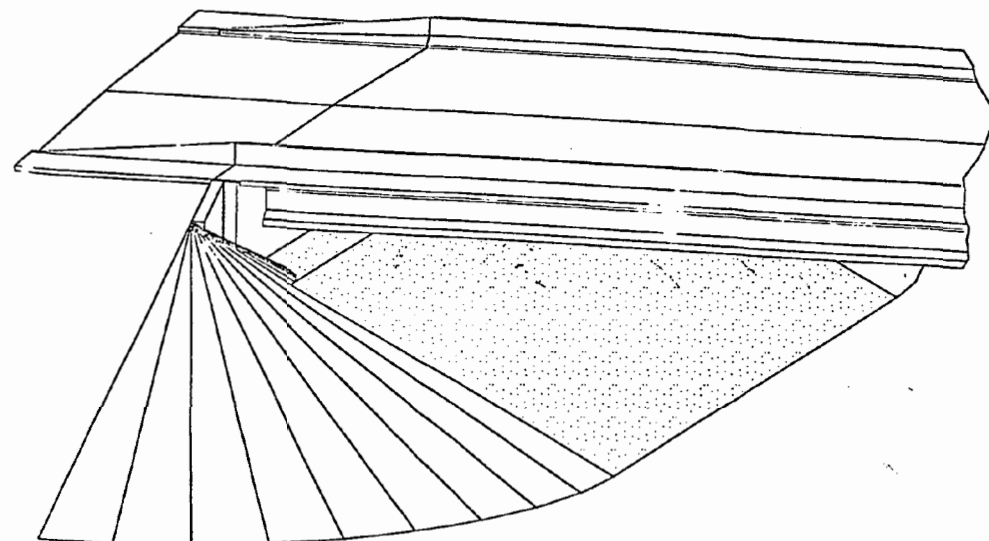
SEC. B-B

REINFORCING SCHEDULE

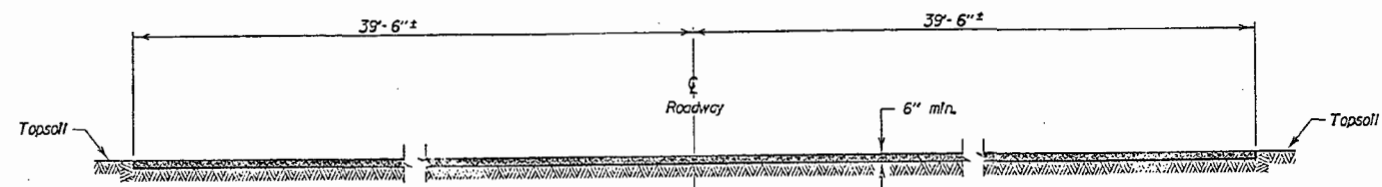
Wk.	No.	Size	Length	Type	Bending Details
For 2 Approach Slabs					
#	Δ	e1	14	4	10'-0" Str.
#	Δ	e2	20	6	10'-0" Str.
#	Δ	e3	2	4	6'-0" Str.
#	Δ	e4	3	6	5'-0" Str.
#	Δ	e5	2	6	5'-0" Str.
#	Δ	g1	34	4	44'-7" Str.
#	Δ	g2	104	8	44'-7" Str.
#	Δ	g3	4	4	19'-10" Str.
#	Δ	g4	4	8	19'-10" Str.
#	Δ	g5	4	4	24'-0" Str.
#	Δ	g6	4	8	24'-0" Str.
#	Δ	N	4	6	5'-10" Str.
For 4 Tapered Barrier Curbs					
#	Δ	c1	12	5	5'-9" T2A
#	Δ	c2	12	5	5'-6" T2A
#	Δ	c3	12	5	5'-5" T2A
#	Δ	c4	12	5	5'-3" T2A
#	Δ	c5	12	5	5'-1" T2A
#	Δ	c6	4	5	4'-6" T7
#	Δ	c7	4	5	4'-3" T7
#	Δ	c8	4	5	3'-9" T7
#	Δ	c9	4	5	3'-6" T7
#	Δ	c10	4	5	3'-6" T7
#	Δ	c11	8	5	4'-10" SII
#	Δ	c12	8	5	4'-5" SII
#	Δ	c13	8	5	4'-0" SII
#	Δ	c14	8	5	3'-6" SII
#	Δ	c15	8	5	3'-1" SII
#	Δ	c16	12	5	2'-7" SII
#	Δ	d1	8	5	20'-0" Str.
#	Δ	d2	8	5	5'-3" Str.
#	Δ	d3	8	5	1'-0" Str.
#	Δ	d4	8	5	14'-6" Str.
#	Δ	d5	4	4	19'-10" Str.
#	Δ	e6	60	4	2'-0" Str.
For 2 Sleeper Slabs					
#	Δ	c0	4	4	5'-0" Str.
#	Δ	c	44	5	5'-0" Str.
#	Δ	d6	216	4	7'-9" 2
#	Δ	d7	108	4	6'-1" T2
For 4 Sidewalks					
#	Δ	e6	10	4	5'-4" Str.
#	Δ	e7	40	4	10'-0" Str.
#	Δ	g7	14	4	44'-4" Str.
#	Δ	g8	2	4	17'-0" Str.
#	Δ	g9	2	4	21'-0" Str.
#	Δ	h2	4	4	4'-8" Str.
For 4 Sidewalk Sleeper Slabs					
#	Δ	c17	16	4	5'-4" Str.
#	Δ	d8	24	4	2'-8" Str.

"ALTERNATE A"

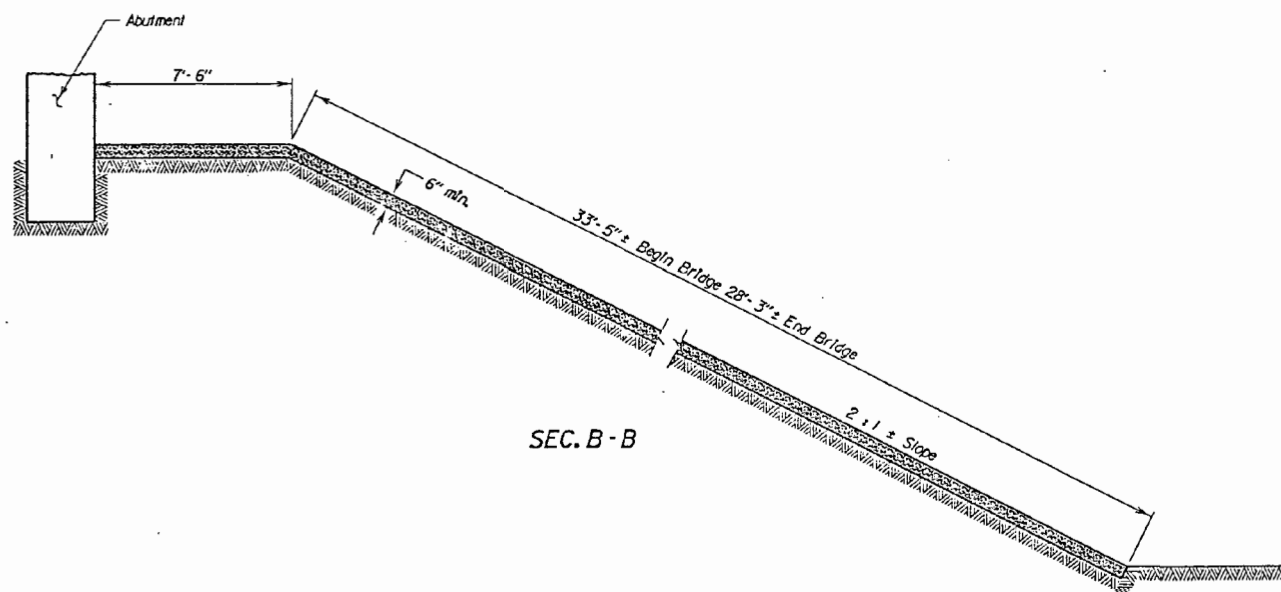
DETAILS OF APPROACH SLAB ADJ. TO BRIDGE
FOR
189'- 6 1/8" PRESTR. GIRDER BRIDGE
52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W
OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW
STA. 6 + 00.94 TO STA. 7 + 90.46 IR229-2(52)6
STR. NO. 50-219-205 HS20-44 (& ALT.)
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 1991



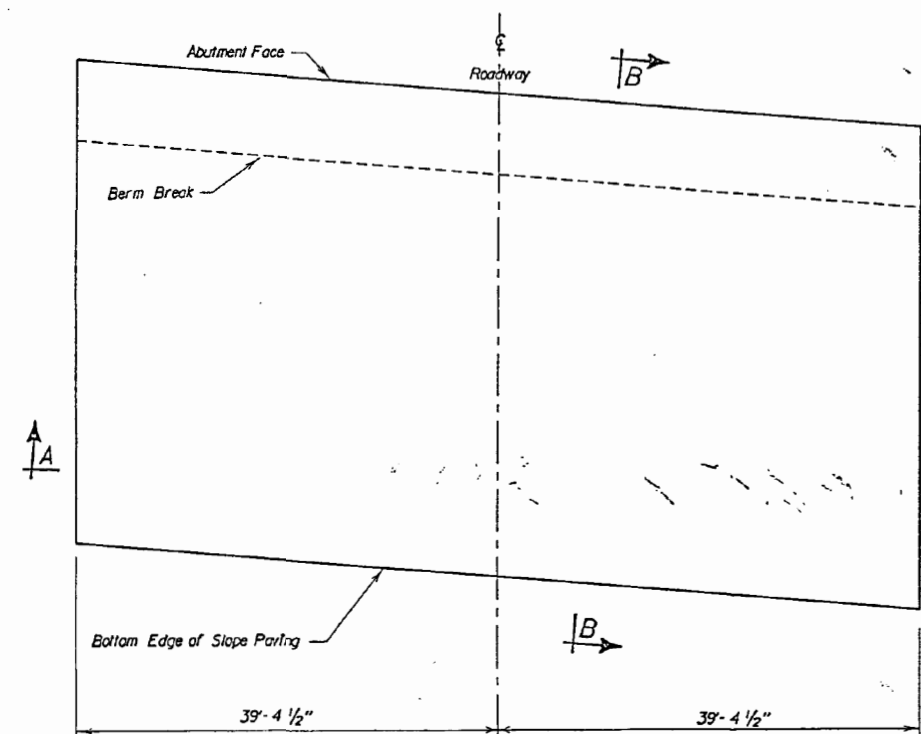
SLOPE PAVING UNDER STRUCTURE
(Sidewalk Rolling and Barrier Curb Rolling not shown)



SEC. A-A



SEC. B-B



PLAN VIEW

ORIGINAL CONSTRUCTION PLANS

"ALTERNATE A"

SLOPE PAVING DETAILS
FOR

189'- 6 1/8" PRESTR. GIRDER BRIDGE

52'-0" RDWY 2'-5'-0" SIDEWALKS SEC. 15-TION-R49W

OVER I 229 (S.F. 6th St.) 4°34' L.H.F. SKEW

STA. 6+00.94 TO STA. 7+90.46 IR229-2(52)6

STR. NO. 50-219-205 HS20-44

(& ALT.)

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

DECEMBER 1991

ESTIMATED QUANTITIES (For 2 Abutments)		
ITEM	UNIT	QUANTITY
Crushed Aggregate Slope Paving	Sq. Yd.	673