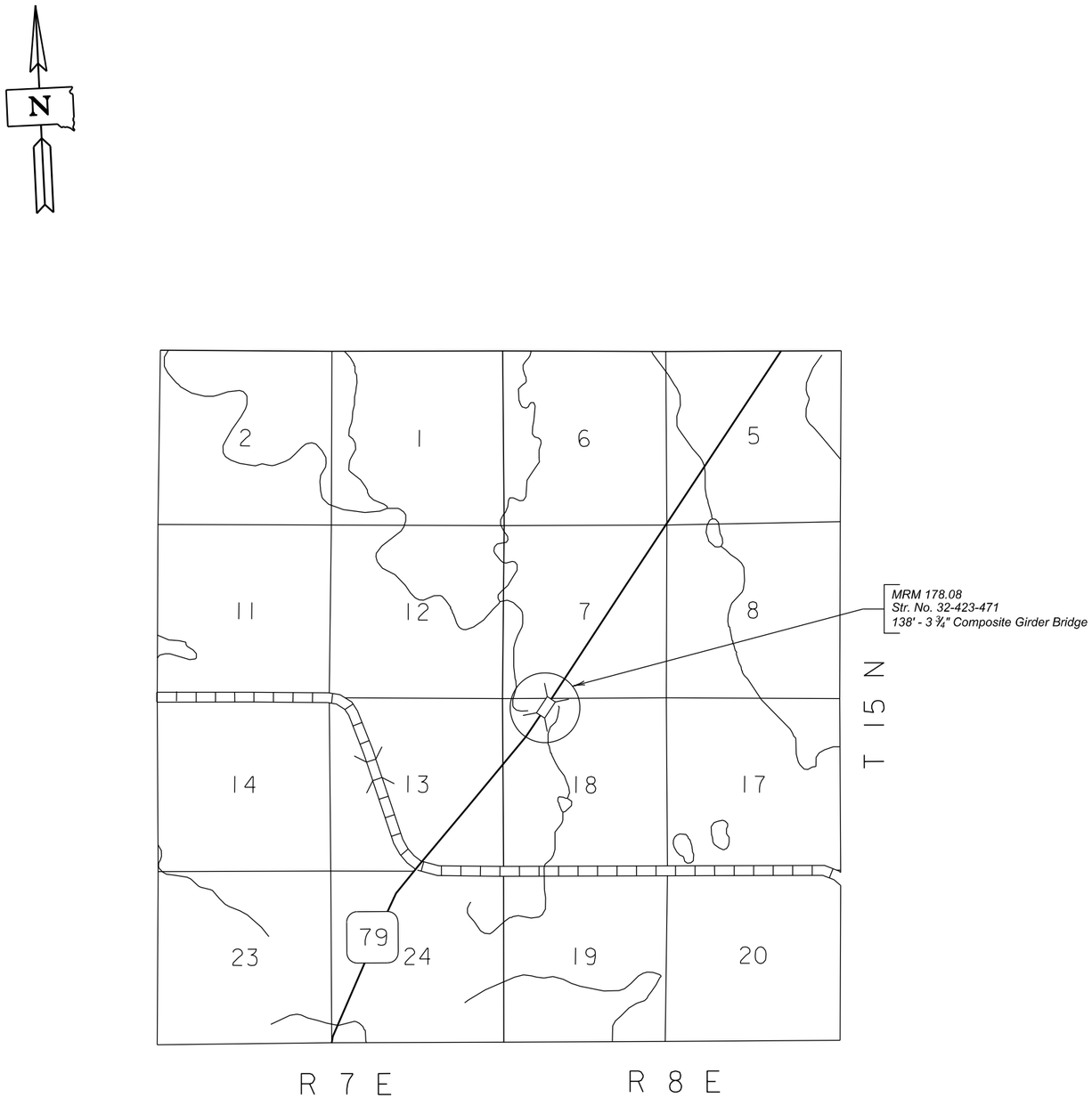
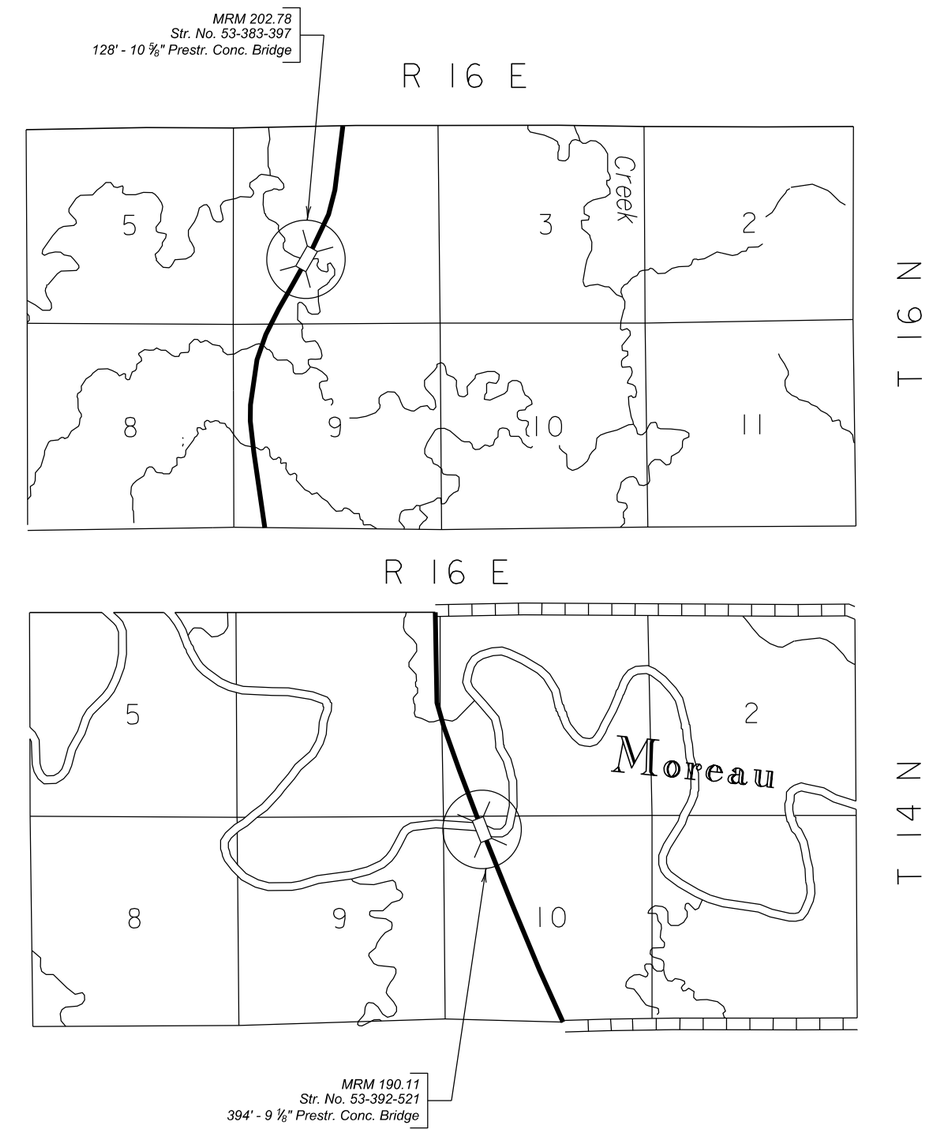
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	1/50

Section E: Structure Plans

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Sheet E21 to E33	Str. No. 53-383-397 128' - 10 ⅝" Prestr. Conc. Bridge
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SECTION E – ESTIMATE OF STRUCTURE QUANTITIES

PCN 07WM

Str. No. 32-423-471

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0020	Remove Bridge Railing	276	Ft
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	6.5	Ton
320E7510	Asphalt Bridge Joint	60	Ft
460E0010	Class A45 Concrete, Bridge Barrier	17.0	CuYd
460E0300	Breakout Structural Concrete	1.2	CuYd
460E0380	Install Dowel in Concrete	282	Each
464E0100	Controlled Density Fill	4.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	1,528	Lb
480E5000	Galvanic Anode	20	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	53	CuYd
550E0100	Concrete Removal Type 1A	446.3	SqYd
550E0105	Concrete Removal Type 2A	111.6	SqYd
550E0110	Concrete Removal Type 1B	44.6	SqYd
550E0120	Concrete Removal Type 1C	22.3	SqYd
550E0130	Concrete Removal Type 1D	22.3	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	3.9	CuYd
550E0500	Finishing and Curing	446.2	SqYd
700E0210	Class B Riprap	163.9	Ton
734E0090	Perforated Geocell	187	SqFt
831E0110	Type B Drainage Fabric	202	SqYd

PCN 09E0

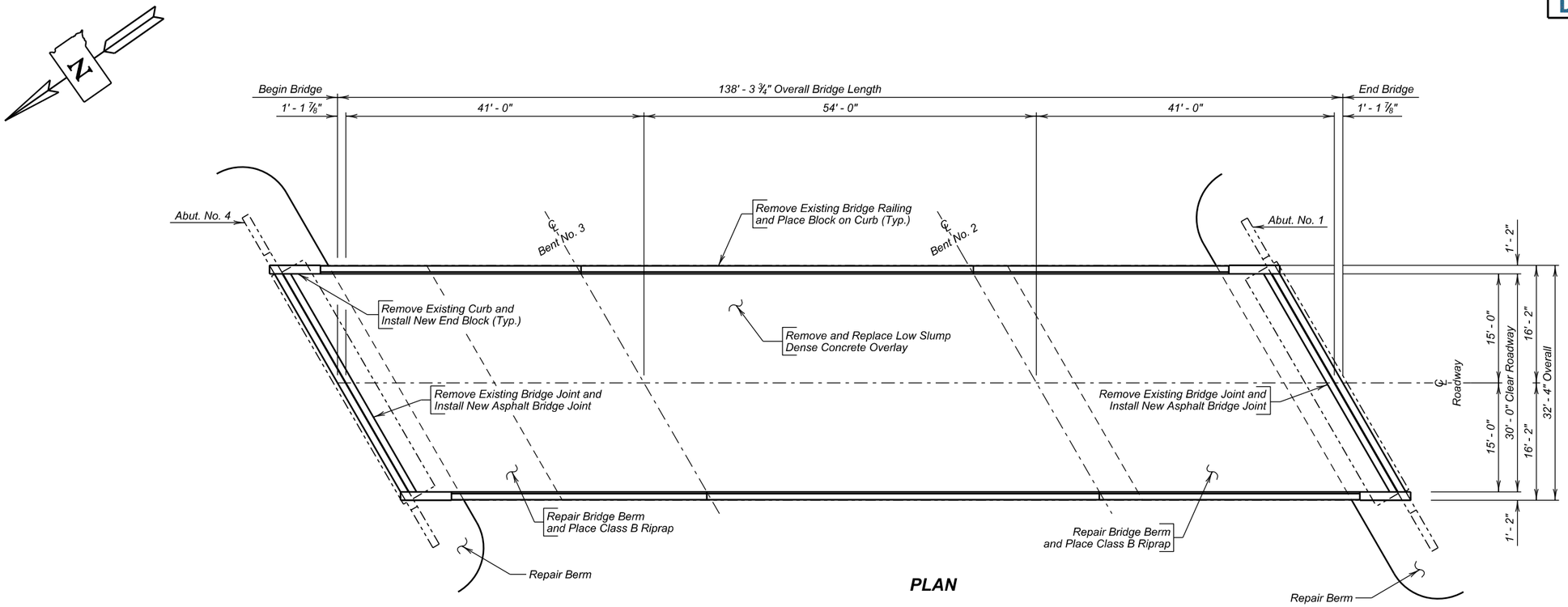
Str. No. 53-383-397

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	227.3	SqYd
410E2600	Membrane Sealant Expansion Joint	112.4	Ft
430E0300	Granular Bridge End Backfill	28.6	CuYd
460E0150	Concrete Approach Slab for Bridge	178.4	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	33.8	SqYd
480E0504	No. 4 Rebar Splice	32	Each
480E0505	No. 5 Rebar Splice	32	Each
480E0506	No. 6 Rebar Splice	52	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	36	CuYd
550E0100	Concrete Removal Type 1A	454.2	SqYd
550E0110	Concrete Removal Type 1B	45.4	SqYd
550E0120	Concrete Removal Type 1C	22.7	SqYd
550E0130	Concrete Removal Type 1D	22.7	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	5.2	CuYd
550E0500	Finishing and Curing	454.2	SqYd

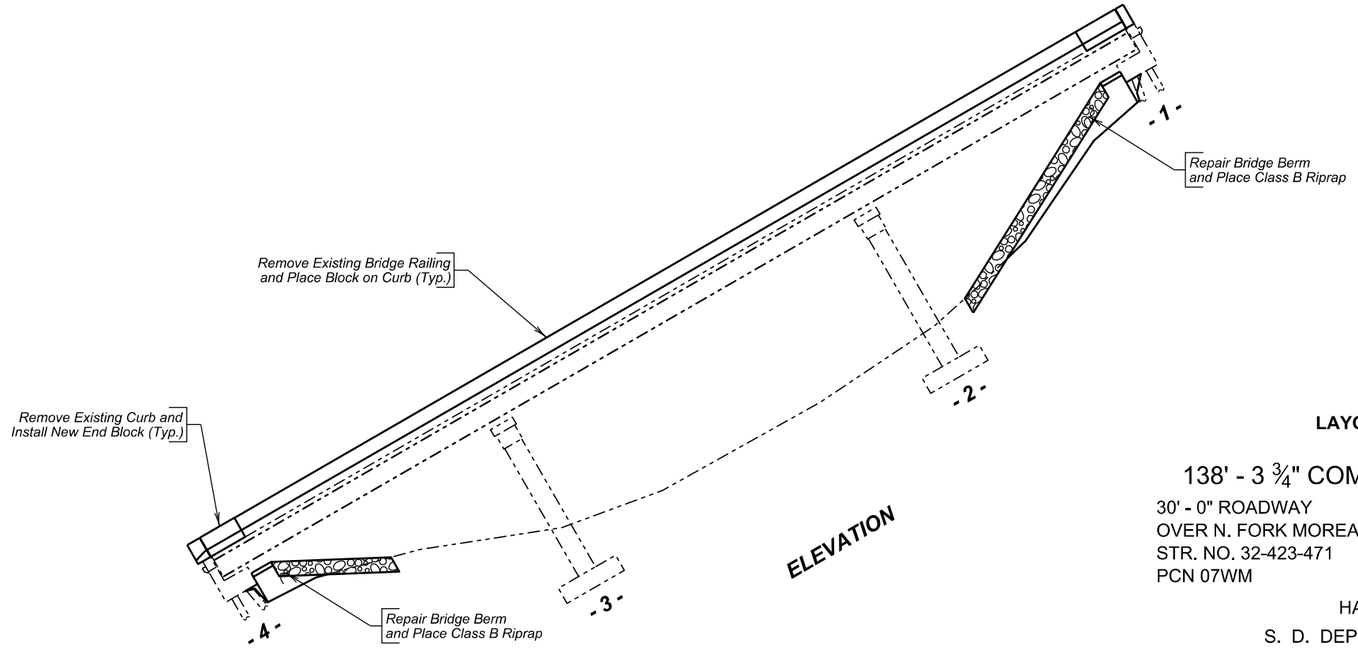
Str. No. 53-392-521

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	180.1	SqYd
410E2600	Membrane Sealant Expansion Joint	112.0	Ft
430E0200	Bridge End Embankment	6	CuYd
430E0300	Granular Bridge End Backfill	12.4	CuYd
430E0510	Approach Slab Underdrain Excavation	3.4	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0150	Concrete Approach Slab for Bridge	165.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	33.8	SqYd
460E0230	Concrete Penetrating Sealer	1,400.1	SqYd
480E0504	No. 4 Rebar Splice	30	Each
480E0505	No. 5 Rebar Splice	32	Each
480E0506	No. 6 Rebar Splice	48	Each
491E0120	Bridge Deck Grinding	12.3	SqYd
680E0040	4" Underdrain Pipe	124	Ft
680E2500	Porous Backfill	6.6	Ton

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	3/50



PLAN



ELEVATION

-X281-

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Sheet No. 10 - End Block and Rail Modification (A)
Sheet No. 11 - End Block and Rail Modification (B)
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Sheet No. 14 thru 18 - Original Construciton Plans

LAYOUT FOR UPGRADE

FOR

138' - 3 3/4" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R.H.F.
OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E
STR. NO. 32-423-471 — P-B 0079(91)178
PCN 07WM

HARDING COUNTY

S. D. DEPT. OF TRANSPORTATION

MAY 2026

-X281-

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A. Johnson
HARD07WM	07WMRA01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0020	Remove Bridge Railing	276	Ft
120E3120	Bridge Berm Repair	2	Each
120E7000	Select Granular Backfill	6.5	Ton
320E7510	Asphalt Bridge Joint	60	Ft
460E0010	Class A45 Concrete, Bridge Barrier	17.0	CuYd
460E0300	Breakout Structural Concrete	1.2	CuYd
460E0380	Install Dowel in Concrete	282	Each
464E0100	Controlled Density Fill	4.7	CuYd
480E0200	Epoxy Coated Reinforcing Steel	1528	Lb
480E5000	Galvanic Anode	20	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	53	CuYd
550E0100	Concrete Removal Type 1A	446.3	SqYd
550E0105	Concrete Removal Type 2A	111.6	SqYd
550E0110	Concrete Removal Type 1B	44.6	SqYd
550E0120	Concrete Removal Type 1C	22.3	SqYd
550E0130	Concrete Removal Type 1D	22.3	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	3.9	CuYd
550E0500	Finishing and Curing	446.2	SqYd
700E0210	Class B Riprap	163.9	Ton
734E0090	Perforated Geocell	187	SqFt
831E0110	Type B Drainage Fabric	202	SqYd

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Design.

2. Construction Specifications: Standard Specifications for Roads and Bridges, 10-7-26 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

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. 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 stationing shown in the original construction plans is reversed from the current project. As such, labels for the begin and end of bridge as well as the substructure units are reversed.

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. 460.03.

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. The Department will complete the as-built survey for this project. The Contractor will coordinate with the Department to get the survey completed prior to fully opening to traffic.

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.

1. Place Controlled Density Fill in voids under the abutment.

2. Repair Bridge Berm and inslopes at the abutments.

3. Place Type B drainage fabric and Class B Riprap.

4. Place Perforated Geocell filled with Select Granular Backfill on the berm top.

5. Accomplish all Concrete Removal Type 1A, 1B, 1C, 1D, 2A, and B and place Class A45 Concrete Fill to the satisfaction of the Engineer for the first phase of construction.

6. Place a Low Slump Dense Concrete Bridge Deck Overlay to the elevations shown in the plans on the bridge deck for the first phase of construction.

7. Remove material in the existing paving notch and fill with concrete as detailed in the plans for the first phase of construction.

8. First phase of construction, remove the steel rail and concrete as detail in plans for new end blocks. Place new end blocks at the bridge ends to allow for the attachment of thrie beam approach railing and placing a concrete bridge block on top of the existing bridge curb.

9. Remove and replace asphalt bridge joints at the abutments for first phase of construction.

10. Apply Commercial Texture Finish to the newly constructed barrier, curb, and end block surfaces as outlined in the plans for the first phase of construction.

11. Switch traffic and repeat steps 5 through 10 for the second phase of construction.

BRIDGE BERM REPAIR

1. The bridge berms have significant material loss due to a flood event and will need rebuilt and shaped to their original template with Class B Riprap incorporated into the berm slope.

2. Fill voids under the abutments using Controlled Density Fill. The actual quantity of material may vary.

3. Due to material loss at the site, borrow is to be provided to rebuild the berm and fill any erosion features on the berm slope. Reconstruct the berms to at least 1-foot above the bottom of the abutment backwall. The berm slope will be benched into stable embankment during reshaping and reconstruction. The soil will be placed in horizontal lifts perpendicular to the centerline of the abutment. For informational purposes the estimated borrow material required is 65 cubic yards.

4. Shape the fill in front of the wing walls to divert runoff from the inslopes away from the face of the berm slope. Reshape the inslopes near the wing walls to approximately 20 feet out from the bridge.

5. At the upper part of the berm slope, clearance between the structure and berm will prohibit the use of large compaction equipment. The soil in this area will be compacted using hand operated compaction equipment. Berm material will be placed in reduced lift thicknesses with adequate moisture to obtain density requirements.

6. Soil used to reconstruct the berm slope will be furnished by the Contractor and approved by the Engineer. The soil will have 100% passing the 1 ½ inch sieve, a maximum of 70% passing the #4 sieve, have a maximum Liquid Limit (LL) of 45 and a Plastic Index (PI) greater than 10 but less than 25. The Contractor will be responsible for one gradation, LL and PI test for each borrow source for berm reconstruction. The test results will be supplied to the Engineer in writing.

7. Compaction of the reconstructed berm and inslopes will be governed by the Ordinary Compaction Method.

8. Quantities provided are an estimate for this work. It is the responsibility of the Contractor to visit the site prior to starting construction to determine quantities needed.

9. The cost of the berm reconstruction will be incidental to the contract unit price per each for Bridge Berm Repair. This payment will be full compensation for furnishing all materials, labor, tools, and equipment necessary or incidental to the reconstruction of the bridge berm.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

138' - 3 ¾" COMPOSITE GIRDER BRIDGE

STR. NO. 32-423-471

MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A. Johnson BRIDGE ENGINEER
HARD07WM	07WMRA02		

RIPRAP

1. The cross section shown in this plan set is provided as a guide for riprap placement and are based on the existing ground locations at the time of inspection. The location of the toe of the riprap may vary to suit local site conditions provided the following items are adhered to:

   a. The opening provided under the structure for water flow is not reduced from what is shown on the cross section.

   b. Any changes in the riprap configuration are approved by the Engineer.

2. Excavation is not anticipated for riprap placement on the repaired berm. Some excavation may be required where the riprap transitions back to the existing profile as directed by the Engineer. All material excavated to allow for riprap placement will be disposed of by the Contractor.

3. A factor of 1.4 tons/CuYd was used to convert the riprap quantity from CuYd to Tons.

4. The Class B Riprap will be constructed to the configuration, limits, and elevations shown. All costs associated with placement of the riprap including all material, excavation, labor, and equipment will be included in the contract unit price per ton for Class B Riprap.

LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY

1. The preparation for resurfacing consists of Concrete Removal Type 1A on the entire bridge deck; 2A as specified by the Engineer; 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.

2. Type 1A Removal will consist of removing the existing concrete overlay to a depth of 2 ¼ inches. There are some specific areas, identified on the Deck Profile plan sheets that require Type 1A Removal in excess of 2 ¼ inches.

3. Extreme care will be taken during the Type 1B Removal, Type 1C Removal, Type 1D Removal and Type B Removal to ensure 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.

4. Type 2A Removal, Type 1B Removal, Type 1C Removal, Type 1D Removal, Type B Removal and Class A45 Concrete Fill may not be encountered and may be omitted from the project as determined by the Engineer.

5. 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.

6. 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 coarse 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.

7. A minimum thickness of 2 inches of Low Slump Dense Concrete Bridge Deck Overlay will be maintained on the bridge deck.

8. 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 will not be done until work resumes in the spring. If scarification has been started and due to unforeseen circumstances it becomes impossible to complete the placement of the 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 ¼ inch 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.

9. 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 Low Slump Dense Concrete during the placement of the Low Slump Dense Concrete Bridge Deck Overlay. The use of a spud vibrator maybe required to prevent voids in this location.

10. 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 to ensure that water drains to the deck drains or off the ends of the bridge.

11. During placement of the Low Slump Dense Concrete Bridge Deck Overlay all vehicular traffic on the lane open for travel will be stopped by flaggers before entering onto the bridge and then allowed to proceed at a maximum of 5 MPH. To safely slow traffic to cross the bridge during the deck overlay period two advance flaggers may be required.

REMOVAL OF EXISTING BRIDGE RAIL

1. The existing rail, rail posts, wood spacer blocks, and W-beam rail on the bridge will be completely removed by the Contractor and disposed of in accordance with the Environmental Commitments. If the Contractor elects to salvage the rail materials for personal use, the material must be removed from view of the ROW to the satisfaction of the Engineer prior to project completion.

2. The existing rail anchor bolts protruding from the concrete will be cut off and ground flush with the concrete surface as approved by the Engineer. The exposed ends will be coated with a zinc-rich galvanizing paint in conformance with ASTM A780.

3. The bridge railing to be removed consists of the steel rail, wood spacer blocks, w-beam rail, and any hardware attaching the railing to the bridge. Payment limits for this item will be as shown by the plans. The cost of all labor, tools, materials, and incidentals necessary to cut and remove the steel rail, cut off the anchor bolts, and paint their exposed ends will be incidental to the contract price per foot for Remove Bridge Railing.

CONCRETE BREAKOUT

1. The existing curbs and end blocks will be broken out to the limits shown on the plans. Breakout limits will be defined with a ¼ inch 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 steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.

3. During concrete removal operations, no concrete will be allowed to fall into N. Fork Moreau River.

4. 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.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

138' - 3 ¾" COMPOSITE GIRDER BRIDGE

STR. NO. 32-423-471

MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	BRIDGE ENGINEER
HARD07WM	07WMRA03		

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. Despite 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 (Equivalent to ASTM C881, Type IV). Grade 1, 2 or 3 may be used for vertical dowels.

3. 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.

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. 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 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
   800 Winchester Road, Suite 175
   Lexington, KY 40505
   Phone: (612) 248-5651

   b. Sentinel Silver
   Euclid Chemical Company
   19215 Redwood Road
   Cleveland, OH 44110
   Phone: (800) 321-7628

   c. Sika FerroGard 670
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (201) 933-8800

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 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 inch 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 minimum 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 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:

   Galvashield DAS
   Vector Corrosion Technologies
   800 Winchester Road, Suite 175
   Lexington, KY 40505
   Phone: (612) 248-5651

SURFACE FINISH

1. All of the surfaces visible to the traveling public on the new concrete barriers on curb and end blocks 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 and top of the block on curb and all faces of the end blocks.

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. For informational purposes the amount of surface area requiring the Class B Commercial Texture Finish is 473 square feet for Phase 1 and 473 square feet for Phase 2.

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 cubic yard for Class A45 Concrete, Bridge Barrier. This payment will be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the application of this finish.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
138' - 3 ¾" COMPOSITE GIRDER BRIDGE

STR. NO. 32-423-471
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	BRIDGE ENGINEER
HARD07WM	07WMRA04		

ASPHALT BRIDGE JOINT

1. An asphalt bridge joint will be placed over the existing bridge joint at Abutment Number 1 or 4. The asphalt bridge joint system will be one of the asphalt bridge growth joints from the Department's Approved Products List.

2. The LSDC and Asphalt Concrete Overlays at Abutment No. 1 or 4 will be completed prior to the placing of the Asphalt Bridge Joint. The respective overlays will be extended past the ends of the asphalt bridge joint and then sawed to the limits of the joint in order to create a joint blockout area.

3. All concrete breakout and removal areas shown by the plans to install the asphalt bridge joint system will be in accordance with the Concrete Breakout notes shown in this set of plans.

4. Care will be taken during the removal of the existing asphalt joint system as to not damage the adjacent concrete surfaces. Any concrete that is damaged during the existing joint materials will be repaired as approved by the Engineer at no additional cost to the Department.

5. The asphalt bridge joint will be installed in accordance with the manufacturer's recommendations. The Contractor will submit the installation instructions in writing to the Engineer a minimum of 7 days prior to joint installation.

6. The asphalt bridge joint will not be installed when the bridge deck surface temperature is below 40° F or at the manufacturer's minimum temperature requirement if more stringent. The joint will not be installed when rain is expected for the duration of the period of time required for joint installation.

7. The cost of removing existing joint plus furnishing and placing all material for the joint system including sawing and removing overlay material for the joint blockout and all labor, equipment, tools, materials and any incidentals necessary to complete the work satisfactorily will be paid for at the contract unit price per foot for Asphalt Bridge Joint.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

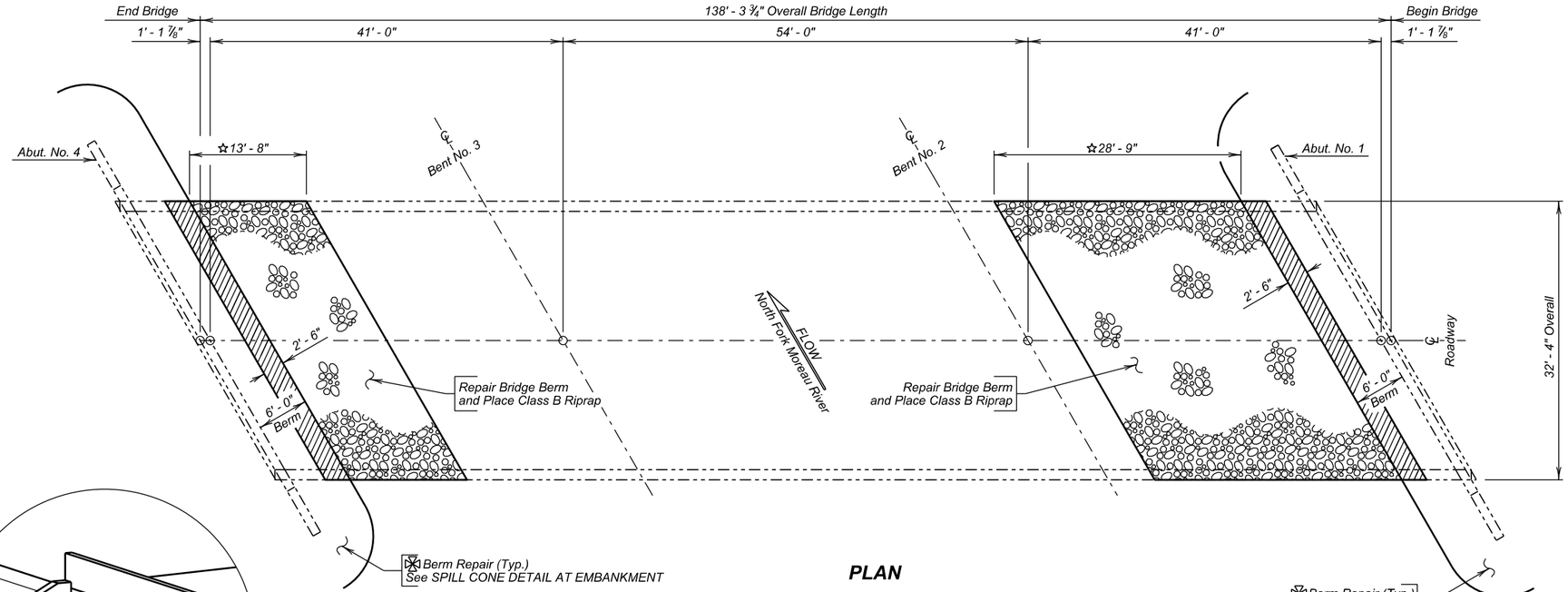
138' - 3 ¾" COMPOSITE GIRDER BRIDGE

STR. NO. 32-423-471

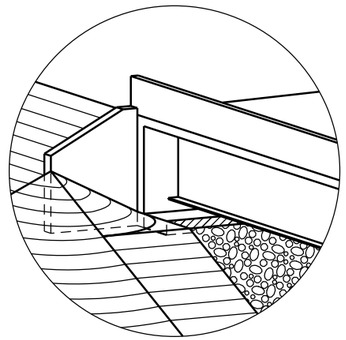
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	BRIDGE ENGINEER
HARD07WM	07WMRA05		

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	8/50



PLAN



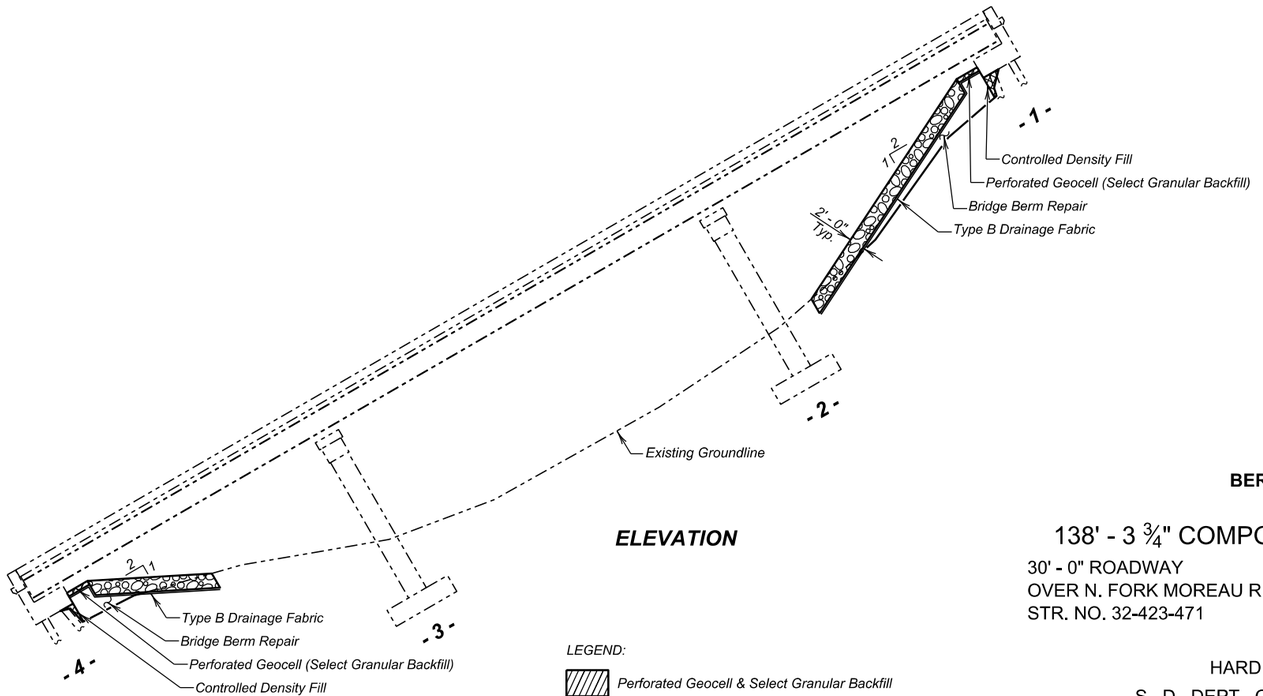
SPILL CONE DETAIL AT EMBANKMENT

GENERAL NOTES:

- 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.
- The berms and slope protection are to be repaired to match the original templates.
- ☆ For estimating purposes only, a factor of 1.4 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.
- For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.

ESTIMATED QUANTITIES
(For Both Abutments)

	ITEM	UNIT	QUANTITY
✳	Bridge Berm Repair	Each	2
◈	Select Granular Backfill	Ton	6.5
	Controlled Density Fill	CuYd	4.7
☆	Class B Riprap	Ton	163.9
	Type B Drainage Fabric	SqYd	202
	Perforated Geocell	SqFt	187



ELEVATION

LEGEND:

- Perforated Geocell & Select Granular Backfill
- Class B Riprap

BERM REPAIR
FOR
138' - 3 ¾" COMPOSITE GIRDER BRIDGE

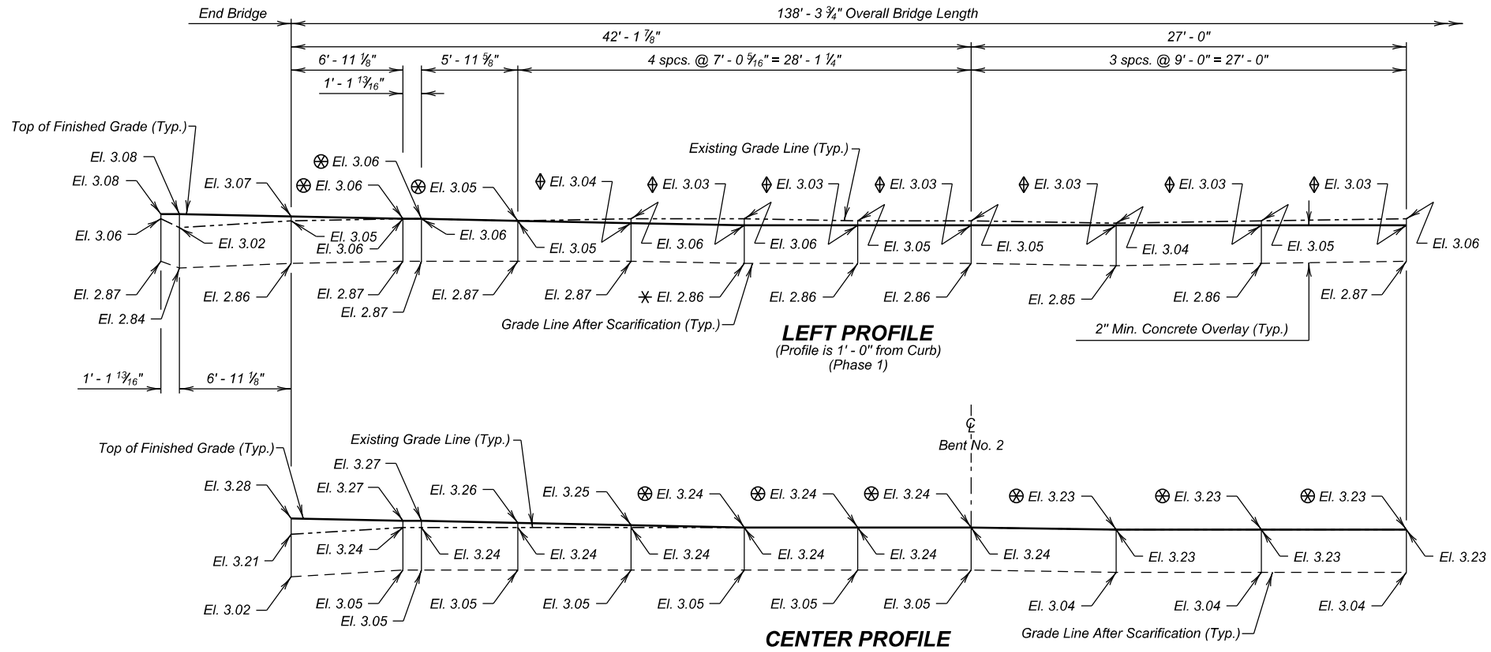
30' - 0" ROADWAY
OVER N. FORK MOREAU RIVER
STR. NO. 32-423-471

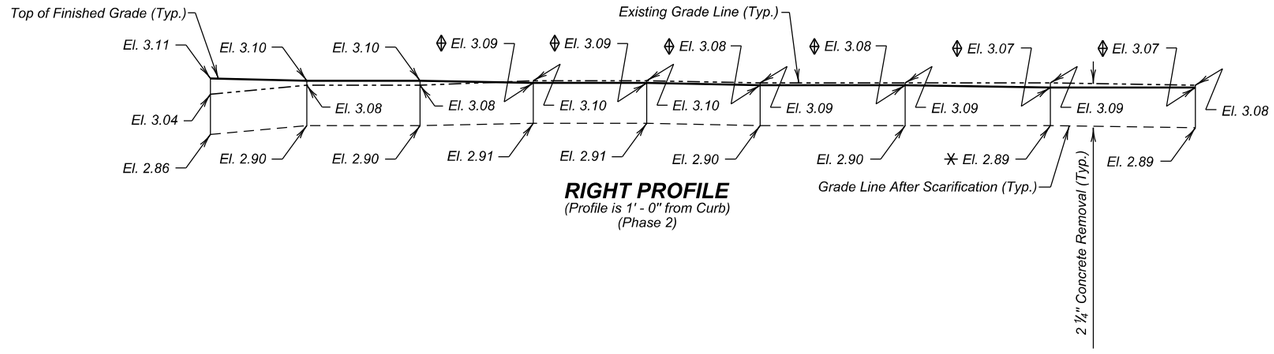
30° SKEW R.H.F.
SEC. 18-T15N-R8E
P-B 0079(91)178

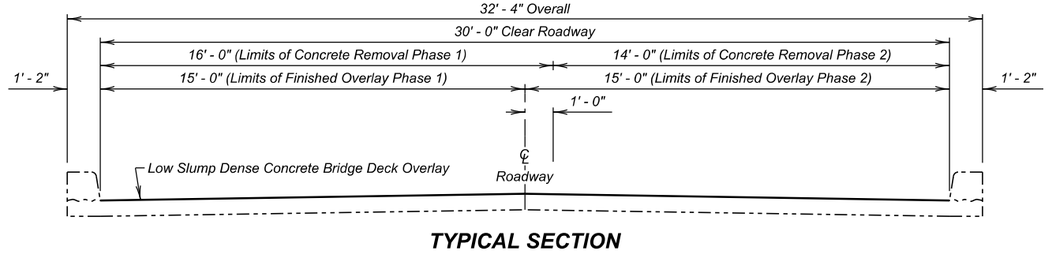
HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A Johnson
HARD07WM	07WMRA06		BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	9/50







TYPICAL SECTION

Survey Reference:

Location Description: S.E. Abutment
Elevation: 2811.271

0' 0.25' 0.5' 1.00'

VERTICAL SCALE

NOTE :

Add 2810.00 all elevations shown on profiles.

⊛ *Existing Elevation is the same as the Finished Surface Elevation.*

⧫ *Existing Elevation is higher than the Finished Surface Elevation.*

✳ *Scarify in excess of 2 ¼" in these areas.*

PROFILE FOR LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY (A)

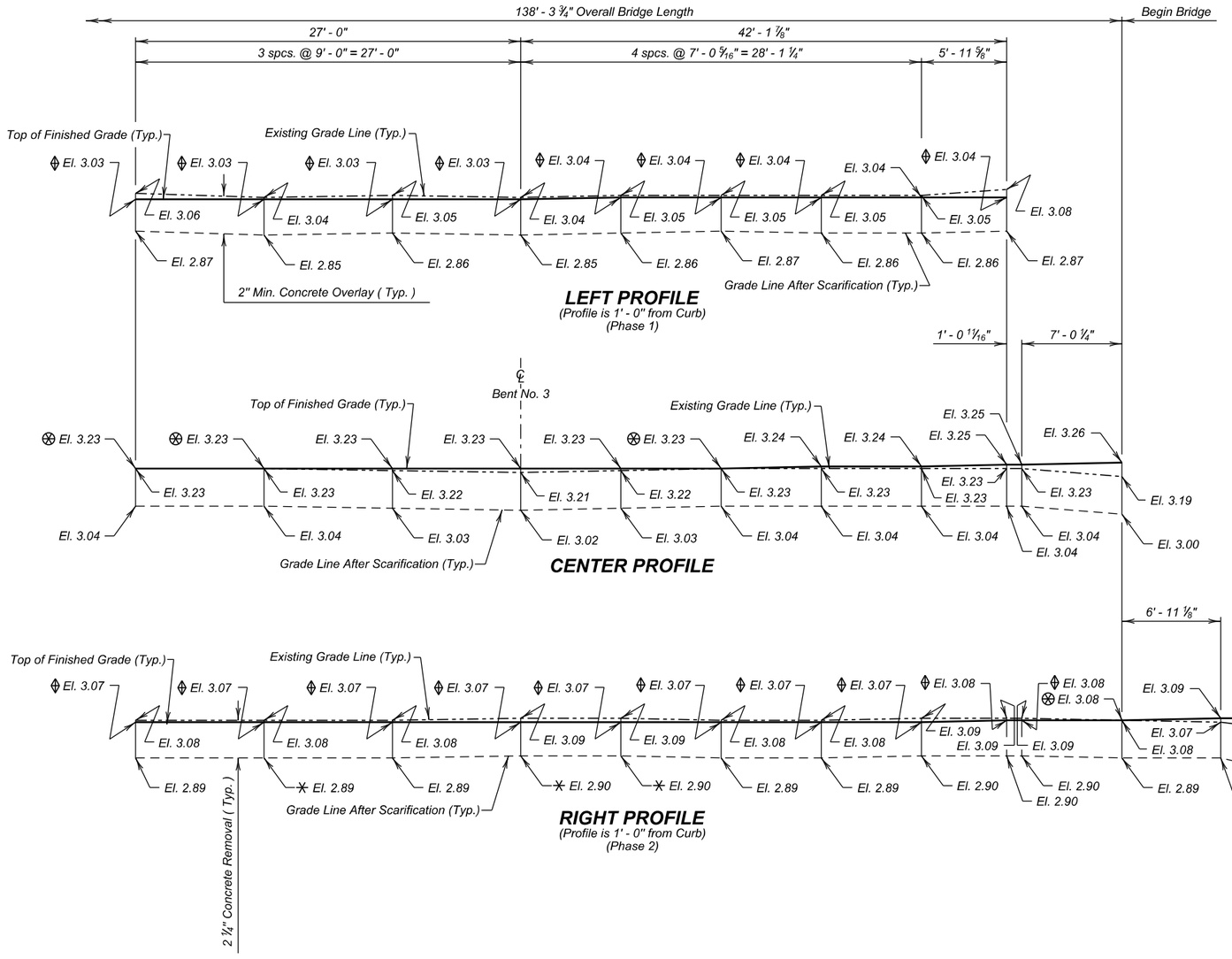
FOR

138' - 3 3/4" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R.H.F.
OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E
STR. NO. 32-423-471 — P-B 0079(91)178

HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM HARD07WM	AP 07WMRA07	KR	Steve A. Johnson BRIDGE ENGINEER



NOTE :

Add 2810.00 all elevations shown on profiles.

⊛ Existing Elevation is the same as the Finished Surface Elevation.

⟠ Existing Elevation is higher than the Finished Surface Elevation.

⚹ Scarify in excess of 2 ¼" in these areas.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Low Slump Dense Concrete Deck Overlay	CuYd	25	26
Concrete Removal Type 1A	SqYd	238.0	208.3
Concrete Removal Type 2A	SqYd	59.5	52.1
Concrete Removal Type 1B	SqYd	23.8	20.8
Concrete Removal Type 1C	SqYd	11.9	10.4
Concrete Removal Type 1D	SqYd	11.9	10.4
Concrete Removal Type B	Ft	10.0	10.0
Class A45 Concrete Fill	CuYd	2.1	1.8
Finishing and Curing	SqYd	223.1	223.1

PROFILE FOR LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY (B)

FOR

138' - 3 ¾" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R.H.F.

OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E

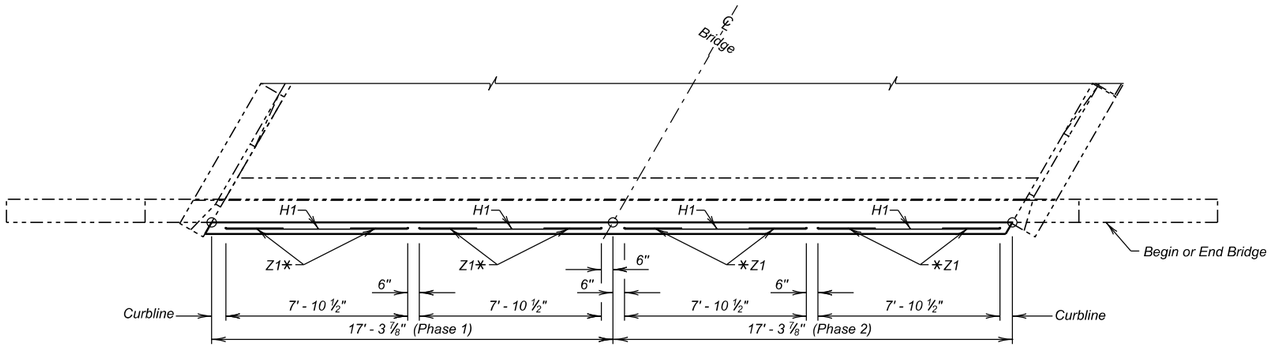
STR. NO. 32-423-471 — P-B 0079(91)178

HARDING COUNTY

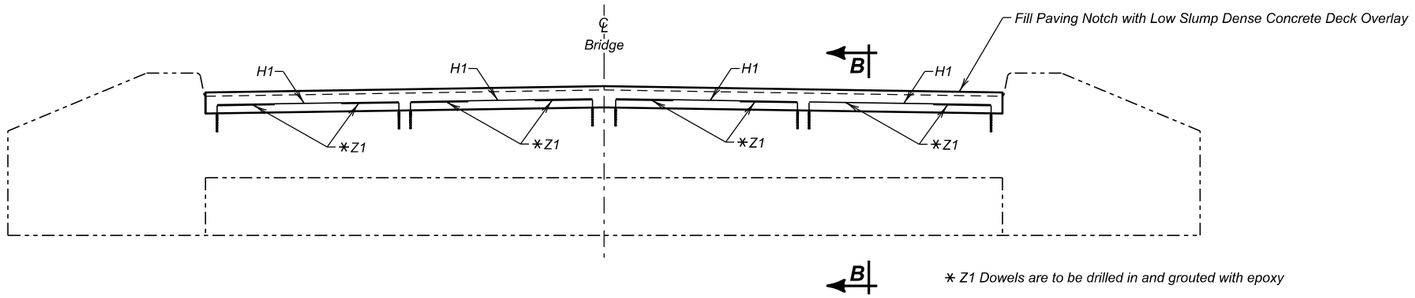
S. D. DEPT. OF TRANSPORTATION

MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
HARD07WM	07WMRA08		

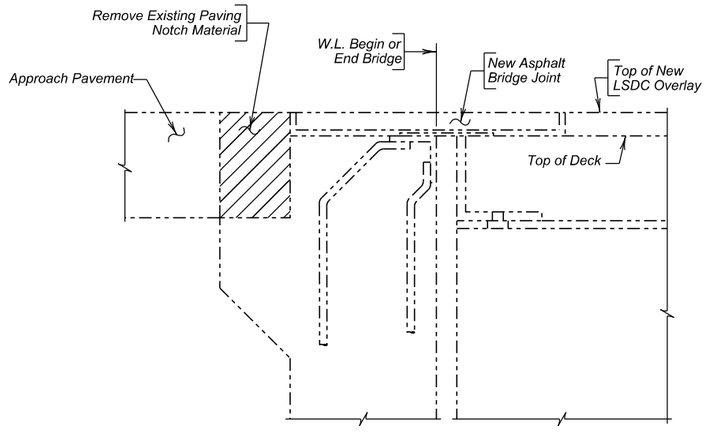


PLAN
(Other Side Similar by Rotation)

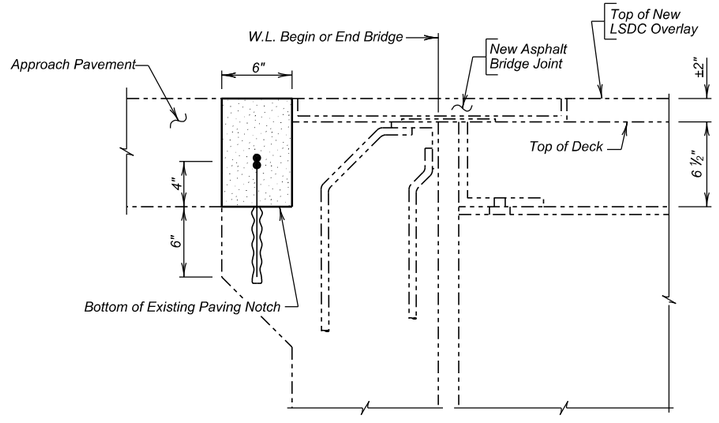


* *Z1 Dowels are to be drilled in and grouted with epoxy*

ELEVATION
(Bridge Barrier Not Shown)



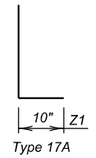
SECTION B - B



SECTION B - B
(Section after Reconstruction)

REINFORCING SCHEDULE
(For Both Ends of Bridge)

	Mk.	No.	Size	Length	Type	Bending Details
Phase 1	△Z1	8	5	2' - 3"	17A	
	H1	4	5	7' - 10"	Str.	
Phase 2	△Z1	8	5	2' - 3"	17A	
	H1	4	5	7' - 10"	Str.	



Type 17A

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

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY Phase 1	QUANTITY Phase 2
Low Slump Dense Concrete Deck Overlay	CuYd	1	1
Install Dowel in Concrete	Each	8	8
⊛ Epoxy Coated Reinforcing Steel	Lb	33	33

⊛ *Does not include the following quantities for Z1 bars as these are incidental to the contract unit price per each for Install Dowel in Concrete.*

	PHASE 1	PHASE 2
Epoxy Coated Reinforcing Steel Dowel	19 Lb.	19 Lb.

The informational quantity is an approxmiate quantity contained in the above contract item and is for information only.

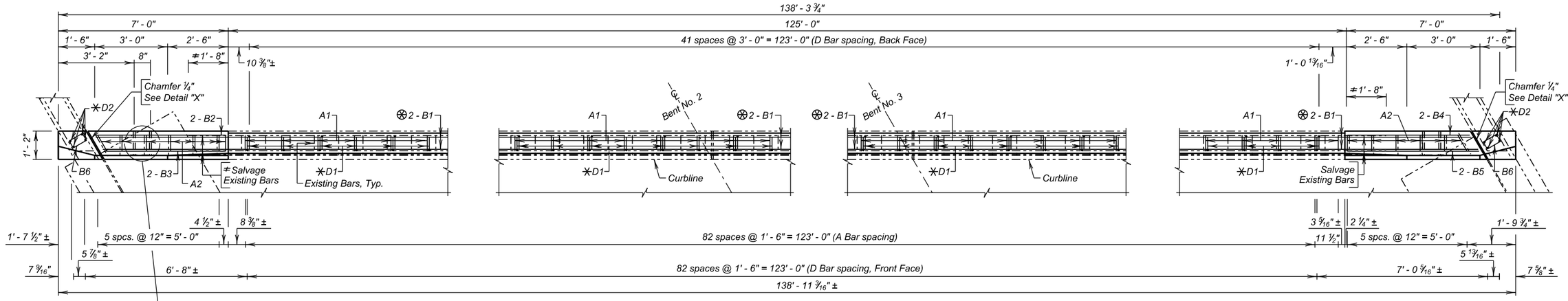
PAVING NOTCH MODIFICATION DETAILS
FOR
138' - 3 ¾" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R.H.F.
OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E
STR. NO. 32-423-471 — P-B 0079(91)178

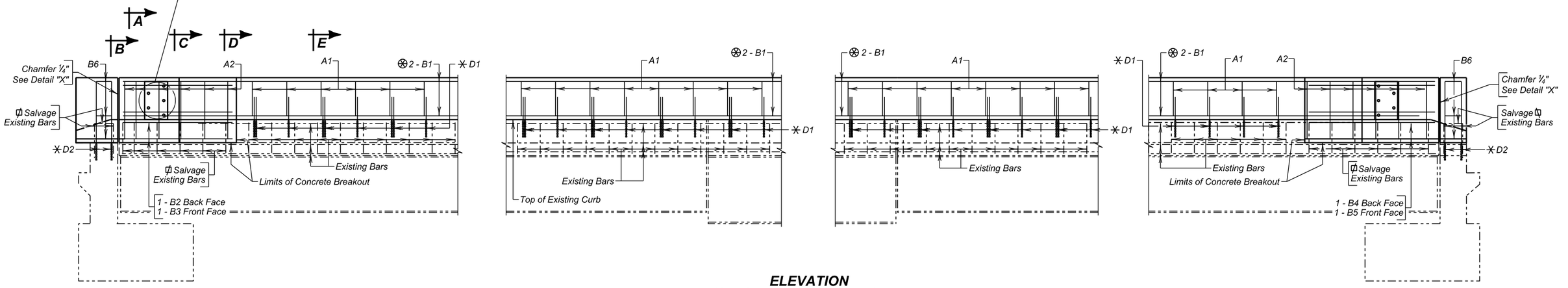
HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
HARD07WM	07WMRA09		

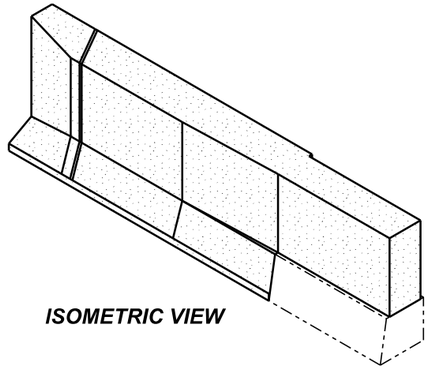
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	12/50



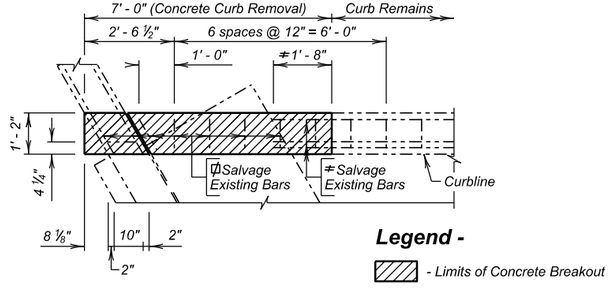
PLAN
(Phase 1 shown, Phase 2 similar opposite hand)



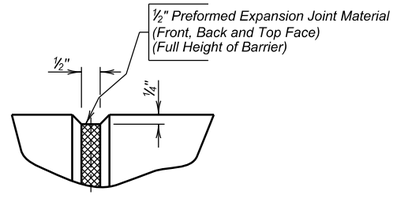
ELEVATION
(Phase 1 shown, Phase 2 similar opposite hand)



ISOMETRIC VIEW



PARTIAL PLAN
(Showing Curb Breakout for New End Block at Abut. No. 1)
(Similar at All End Blocks)



DETAIL "X"

NOTES -

If existing reinforcing steel is struck while drilling holes for Dowels, the spacing can be shifted 2" longitudinally, 1" transversely, or as approved by the Engineer to miss existing reinforcing steel.

- *Bend Existing Bars where necessary to maintain 2" clear cover.*
- *D1 and D2 are to be drilled in and grouted with epoxy.*
- *≠ Extend Existing Bars into new section (1' - 8")*
- *Minimum Lap 1' - 6"*

END BLOCK AND RAIL MODIFICATIONS (A)

FOR

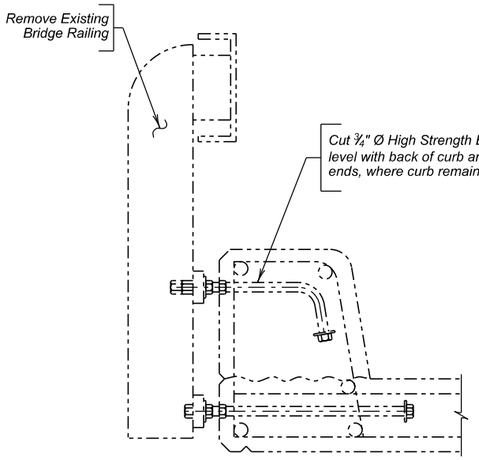
138' - 3 ¾" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R.H.F.
OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E
STR. NO. 32-423-471 — P-B 0079(91)178

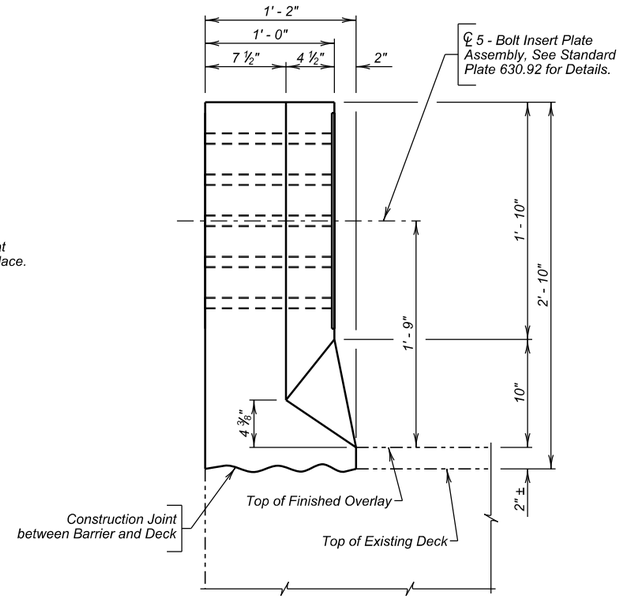
HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM HARD07WM	AP 07WMRA10	KR	Steve A Johnson BRIDGE ENGINEER

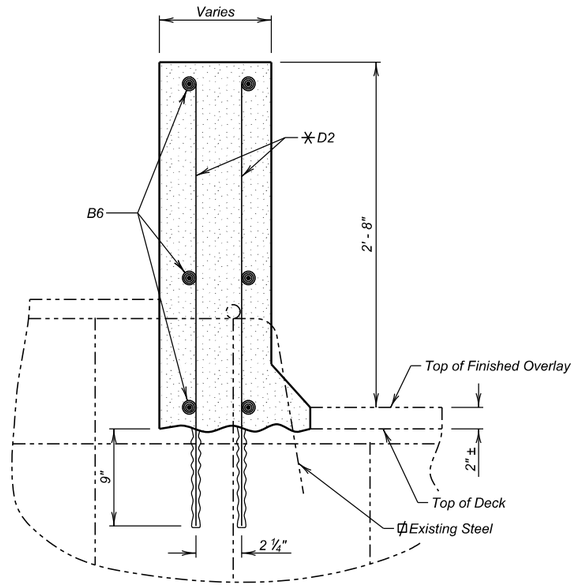
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	13/50



EXISTING CURB & RAIL



VIEW A - A

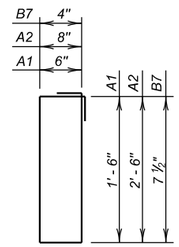


SECTION B - B

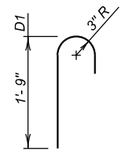
REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	Phase 1				
	A1	84	4	4' - 9"	T2
	A2	12	4	7' - 1"	T2
	B1	12	4	46' - 2"	Str.
	B2	2	4	5' - 4"	Str.
	B3	2	4	5' - 0"	Str.
	B4	2	4	4' - 11"	Str.
	B5	2	4	5' - 3"	Str.
	B6	6	4	2' - 7"	T2
△	D1	125	6	2' - 6"	1A
△	D2	8	6	3' - 5"	Str.
	Phase 2				
	A1	84	4	4' - 9"	T2
	A2	12	4	7' - 1"	T2
	B1	12	4	46' - 2"	Str.
	B2	2	4	5' - 4"	Str.
	B3	2	4	5' - 0"	Str.
	B4	2	4	4' - 11"	Str.
	B5	2	4	5' - 3"	Str.
	B6	6	4	2' - 7"	T2
△	D1	125	6	2' - 6"	1A
△	D2	8	6	3' - 5"	Str.

Bending Details



Type T2



Type 1A

NOTES :
△ *Dowels*
All bars are epoxy coated.
All dimensions are out to out of bars.

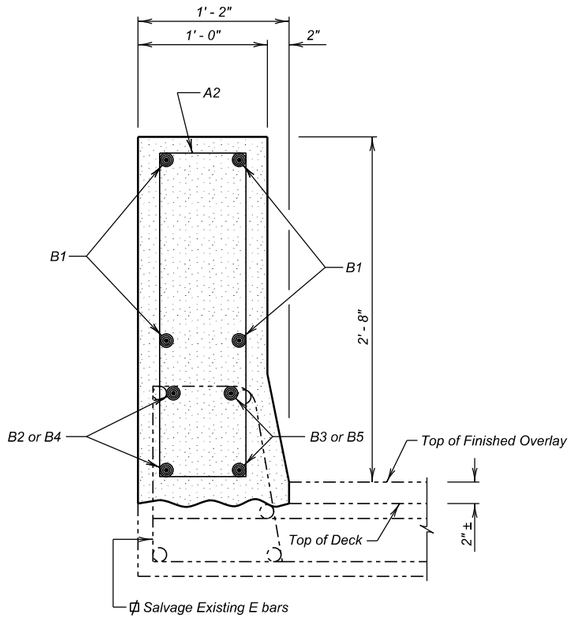
ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY PHASE 1	QUANTITY PHASE 2
	Remove Bridge Railing	Ft	138	138
	Class A45 Concrete, Bridge Barrier	CuYd	8.5	8.5
	Breakout Structural Concrete	CuYd	0.6	0.6
	Install Dowel in Concrete	Each	133	133
⊛	Epoxy Coated Reinforcing Steel	Lb	731	731
	Galvanic Anode	Each	10	10

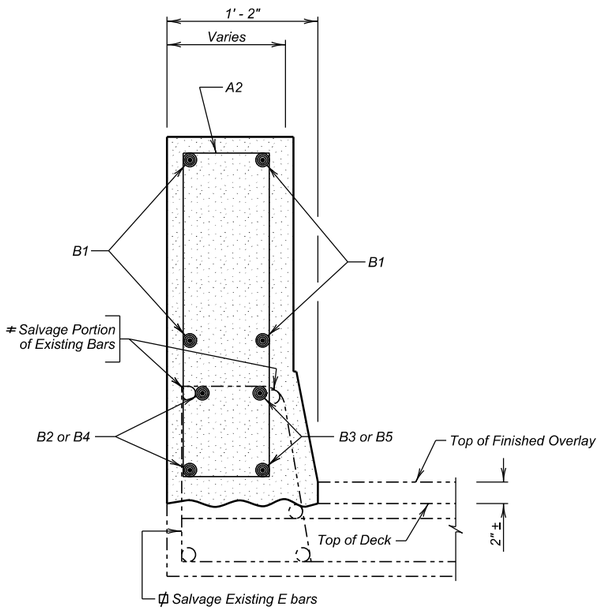
⊛ *Does not include the following quantities for D1 & D2 bars as these are incidental to the contract unit price per each for Install Dowel in Concrete.*

PHASE 1	PHASE 2
511 Lbs	511 Lbs

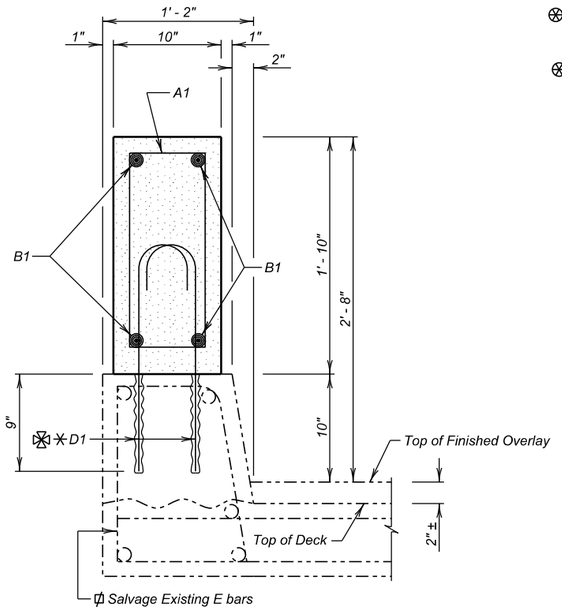
℄ *Bend existing reinforcing steel where necessary to maintain 2" clear cover.*
≠ *Extend existing bars into new section (1'- 8")*
⚹ *D1 and D2 Dowels are to be drilled in and grouted with epoxy.*
⊠ *Rotate bars as necessary to maintain 2" clear cover.*



SECTION C - C



SECTION D - D



SECTION E - E

END BLOCK AND RAIL MODIFICATIONS (B)

FOR

138' - 3 ¾" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY
OVER N. FORK MOREAU RIVER
STR. NO. 32-423-471

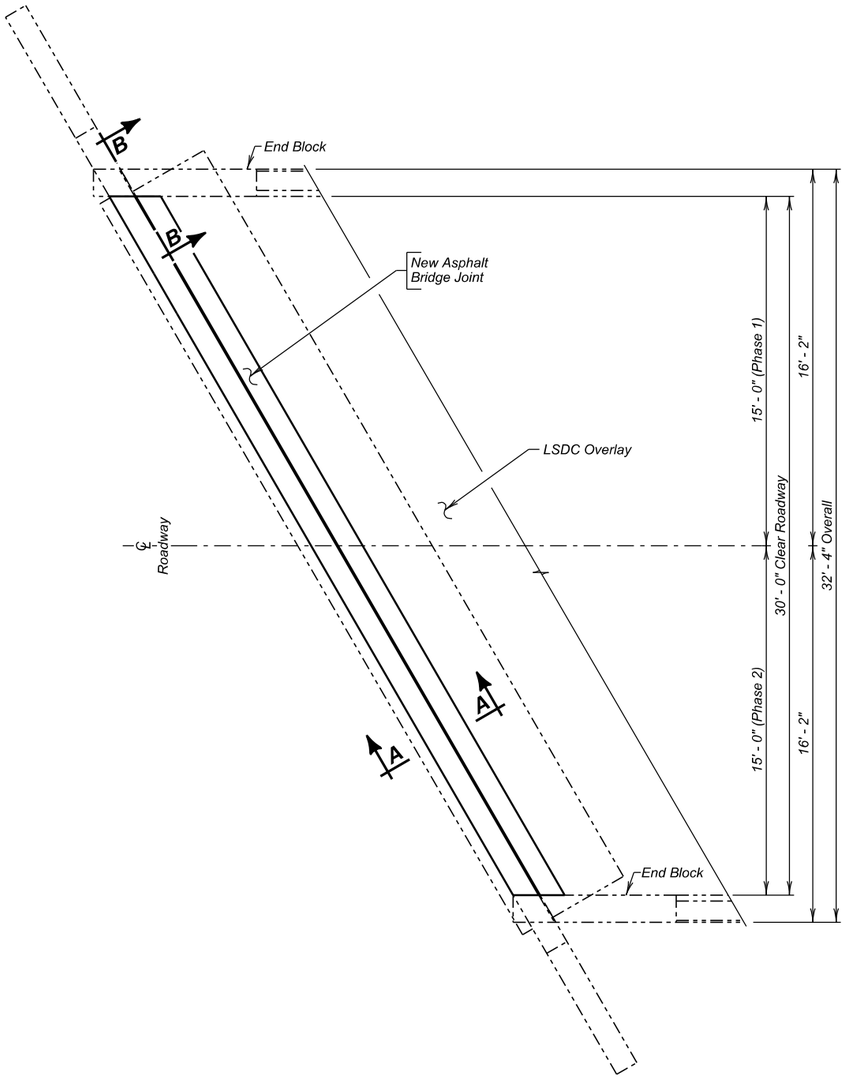
30° SKEW R.H.F.
SEC. 18-T15N-R8E
P-B 0079(91)178

HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

11 OF 18

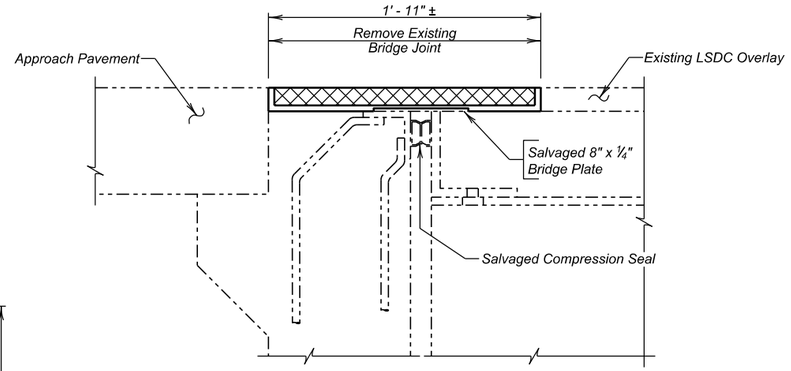
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
HARD07WM	07WMRA11		

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	14/50



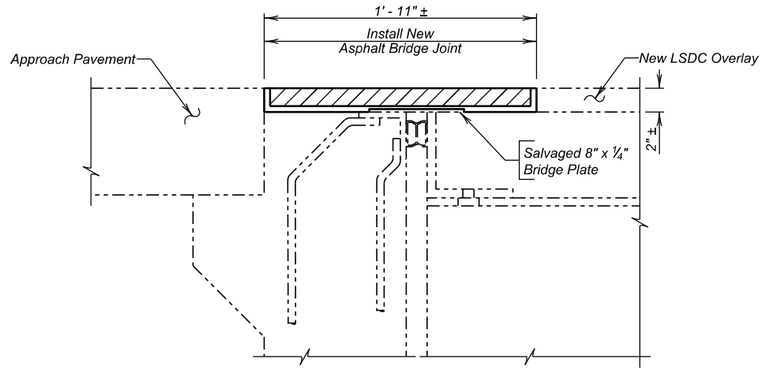
PLAN

(Abut. No. 4 Shown, Abut. No. 1 similair opposite hand)



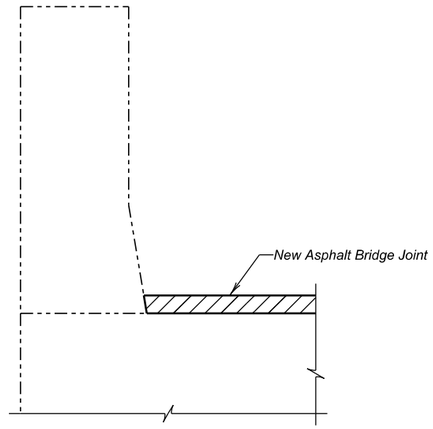
SECTION A - A

(Concrete shading and reinforcing steel not shown for clarity)



SECTION A - A

(Concrete shading and reinforcing steel not shown for clarity)



SECTION B - B

(Concrete shading and reinforcing steel not shown for clarity)

ESTIMATED QUANTITIES

(For Two Abutments)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Asphalt Bridge Joint	Ft	30	30

JOINT REPLACEMENT AT ABUTMENTS

FOR

138' - 3 ¾" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R.H.F.

OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E

STR. NO. 32-423-471 — P-B 0079(91)178

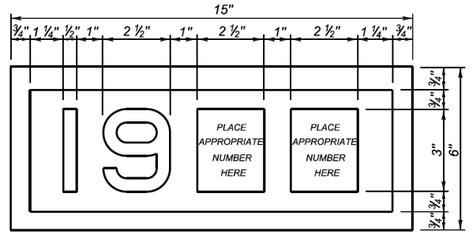
HARDING COUNTY

S. D. DEPT. OF TRANSPORTATION

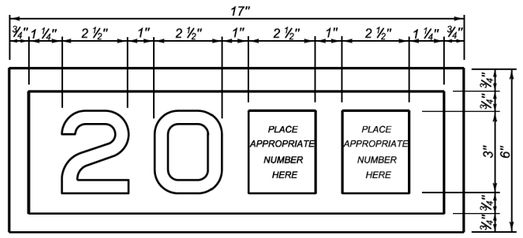
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM/KR	Steve A Johnson BRIDGE ENGINEER
HARD07WM	07WMRA12		

YEAR PLATE DETAILS FOR ORIGINAL CONSTRUCTION

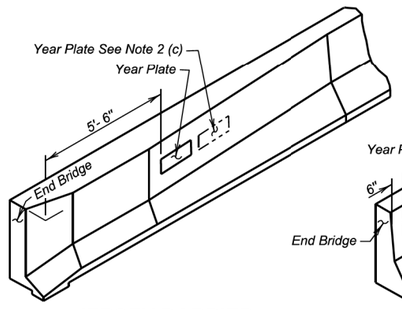


YEAR PLATE DETAILS FOR NEW CONSTRUCTION

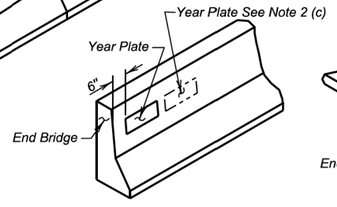


GENERAL NOTES:

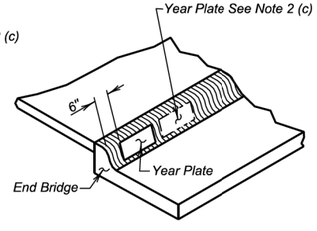
1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (½) inch in depth.
2. Year plates shall be located on structure(s) as follows:
   a. On cast-in-place box culverts the year plates shall be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
   b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall 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 "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'- 6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



JERSEY BARRIER
(With Endblock)



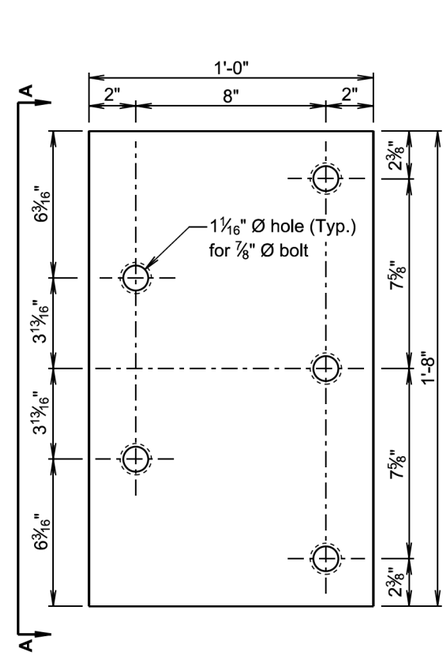
JERSEY BARRIER



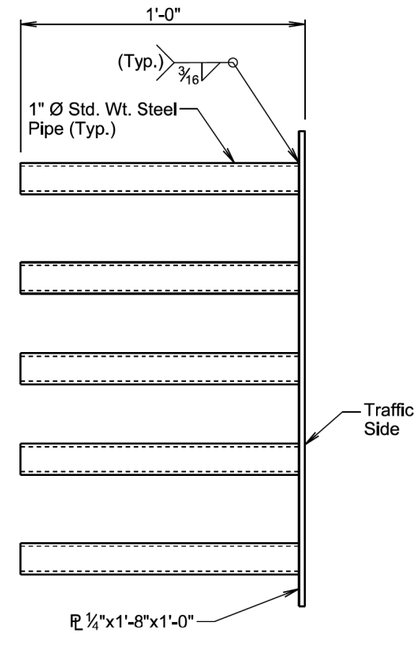
TYPE B CURB

June 26, 2012

Published Date: 2027	SDDOT	DUAL DATE YEAR PLATE DETAILS	PLATE NUMBER 460.03
			Sheet 1 of 1



ELEVATION VIEW



VIEW A - A

GENERAL NOTES:

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

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

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

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

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

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

April 17, 2026

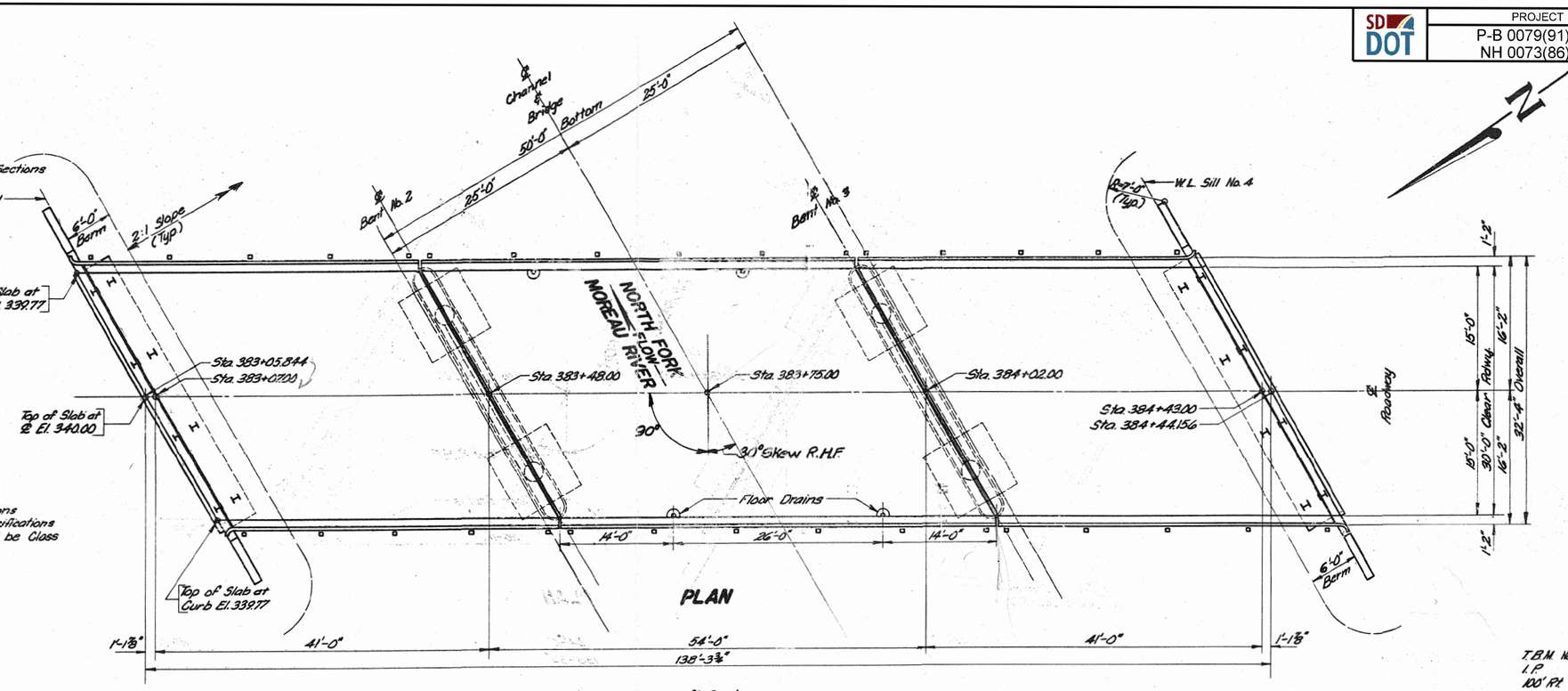
Published Date: 2027	SDDOT	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92
			Sheet 1 of 1

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	16/50

-X071-

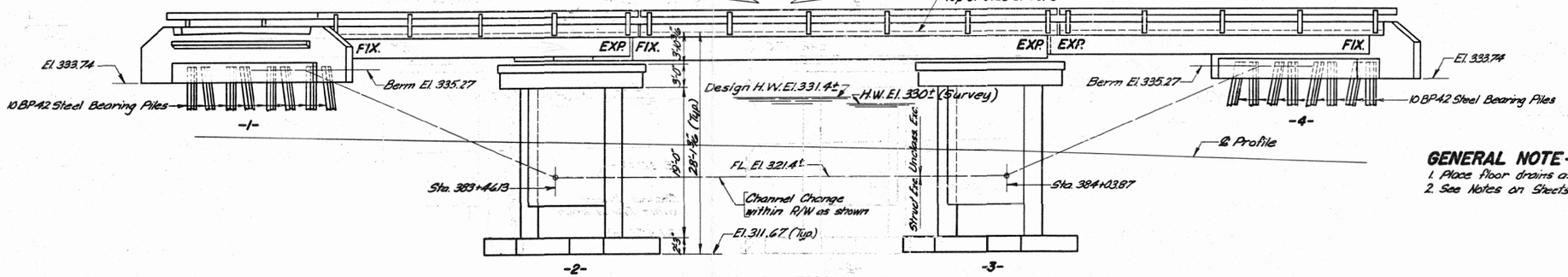
INDEX OF BRIDGE SHEETS—

Sheet No. 1 - General Drawing and Quantities
Sheet No. 2 - Subsurface Investigations
Sheet No. 3 - Details of Sills No. 1 & No. 4
Sheet No. 4 - Details of Bents No. 2 & No. 3
Sheet No. 5 - Details of Superstructure for 41' Span
Sheet No. 6 - Details of Superstructure for 54' Span
Sheet No. 7 - Details of Armored Joint, Exp. Device and Sections
Sheet No. 8 - Type RRA-1 Steel Railing and Drain Details



T.B.M. No. 33 - Elev. 338.75
I.P.
100' Rt. Sta. 374+89.2

T.B.M. No. 34 - Elev. 329.40
I.P.
100' Rt. Sta. 380+06.5



ELEVATION

Q	3720 c.f.s.
A	600 sq. ft.
V	6.2 f.p.s.

SPECIFICATION NOTE—

Use current South Dakota Standard Specifications for Roads and Bridges and the Supplemental Specifications as included in the Proposal. All concrete shall be Class "A" (Type II Cement) with air entrainment.

GENERAL NOTE—

1. Place floor drains as shown in Plan. (4 Req'd)
2. See Notes on Sheets 3, 4, 5, 6, 7, & 8.

EXCAVATION NOTES—

1. Footings for Bents No. 2 and No. 3 shall be cast against Blue Sandy Clay and carried into same approximately depth of footings. Limits of Blue Sandy Clay excavation for these footings shall be bound as nearly as practicable by the neat lines as shown in detail of footings for Bents No. 2 and No. 3 on Sheet No. [redacted] of (8)
2. Blue Sandy Clay shall develop a minimum bearing value of 35 tons per sq. ft. If the bearing value is less than 35 tons per sq. ft. communicate with the BRIDGE SECTION.
3. Final footing elevations for Bents No. 2 and No. 3 shall be established before ordering column reinforcing steel for the respective Bents.

ESTIMATED QUANTITIES

ITEM	Cl. "A" Conc. Cu. Yds.	Steel - Lbs. Reinf.	Steel - Lbs. Struct.	Type "A" Steel Railing Lin. Ft.	10 BP 42 Steel Brg. Piles # Lgs.	Excavation - Cu. Yds. Struct.	Excavation - Cu. Yds. #Unclass.
Superstr. - 2-41' Comp. I-Bm. Spans	61.6	20,590	51,460	171.0			
Superstr. - 1-54' Comp. I-Bm. Spans	40.6	13,590	39,170	107.9			
Substr. - Sills No. 1 & 4	50.4	5,390			16 @ 25'-4.2" = 16800	42	
Substr. - Bents No. 2 & 3	81.8	14,390				198	
Totals	234.4	53,950	90,630	278.9	# 16800	240	Δ

#One Steel Test Pile shall be driven at Sills No. 1 & 4 before the remaining piles are ordered.
ΔSee Grading Plans for Unclassified Excavation.
Pile Note: Piles driven at Sills No. 1 and No. 4, including Test Piles shall obtain their full bearing (37 Tons) in the natural ground below the new embankment elevations 327± and 323± respectively. Pre-bored holes through the fill are required and shall be not less than 14" in diameter.

ORIGINAL CONSTRUCTION PLANS

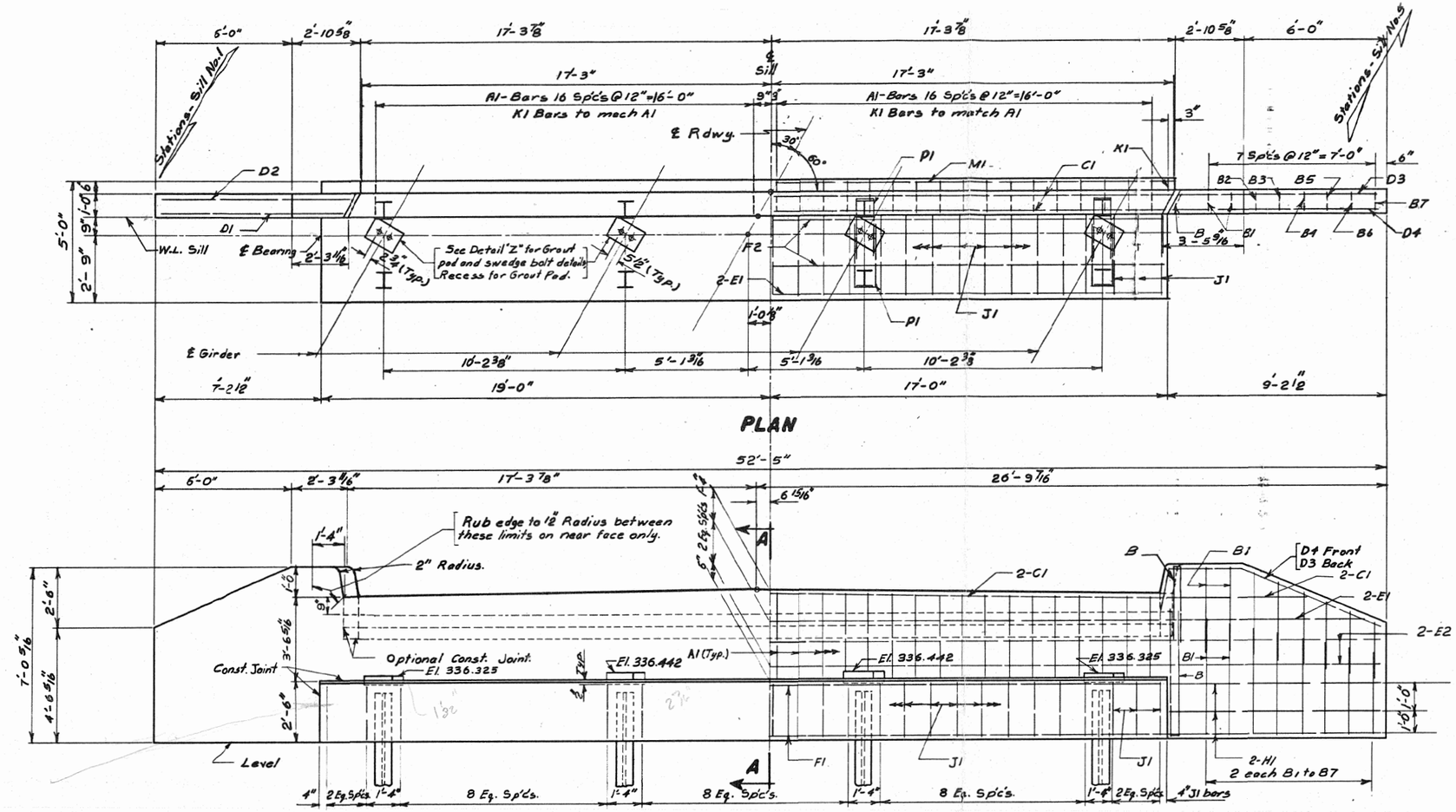
GENERAL DRAWING AND QUANTITIES
FOR
138'-3¾" COMPOSITE I-BEAM VIADUCT

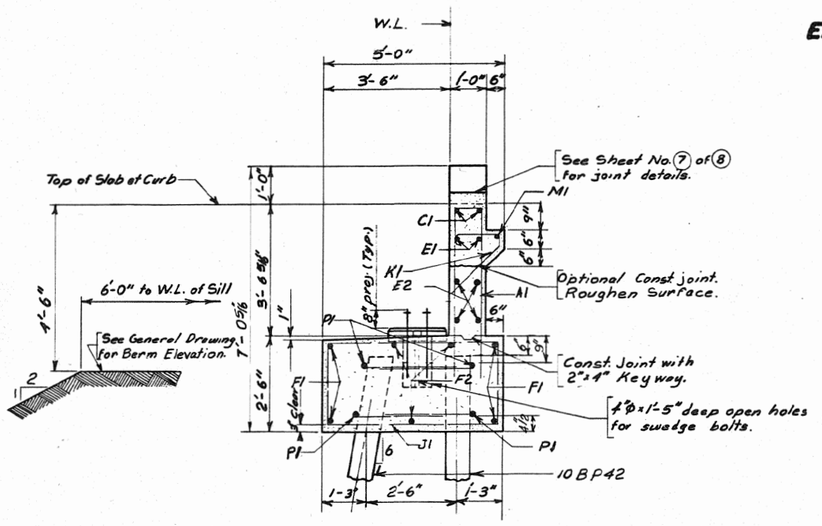
30'-0" ROADWAY — 30° SKEW R.H.F.
OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R8E
STA. 383+05.844 TO 384+44.156 — S 7250 (2)
Str. #32-423-471 HARDING COUNTY — H20-44
SOUTH DAKOTA
DEPARTMENT OF HIGHWAYS
STR. NO. 32-423-471 DEC. 1962 (14) OF (18)

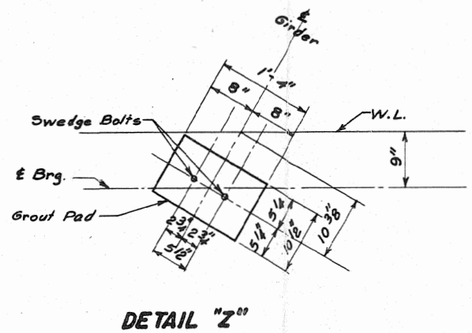
-X071-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	L.G.	R.d.	BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	17/50



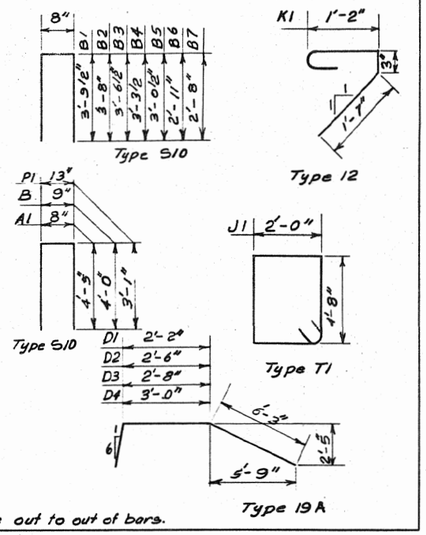




REINFORCING SCHEDULE (ONE SILL)

Mk	No.	Size	Length	Type
A1	34	4	9'-6"	S10
B1	8	4	8'-3	S10
B2	4	4	8'-0"	S10
B3	4	4	7'-9"	S10
B4	4	4	7'-3"	S10
B5	4	4	6'-9"	S10
B6	4	4	6'-6"	S10
B7	4	4	6'-0"	S10
C1	4	8	23'-0"	Str.
D1	1	5	10'-6"	19A
D2	1	5	10'-9"	19A
D3	1	5	11'-0"	19A
D4	1	5	11'-3"	19A
E1	2	4	25'-3"	Str.
E2	8	4	26'-9"	Str.
F1	4	11	35'-6"	Str.
F2	3	6	35'-6"	Str.
H1	12	6	10'-6"	Str.
J1	33	4	14'-3"	T1
K1	35	4	3'-6"	12
M1	1	4	36'-0"	Str.
B	4	4	8'-9"	S10
P1	16	8	7'-3"	S10

Bending Details



Note: All dimensions are out to out of bars.

ESTIMATED QUANTITIES (ONE SILL)

ITEM	Unit	Quantity
* Class "A" Concrete	Cu. Yds.	23.2
Reinforcing Steel	Lbs.	2695
Structure Excavation	Cu. Yds.	21
Steel Bearing Piles (10 BP 42)	No.	8

* Includes 0.1 Cu. Yds. for grout pads.

GENERAL NOTES—

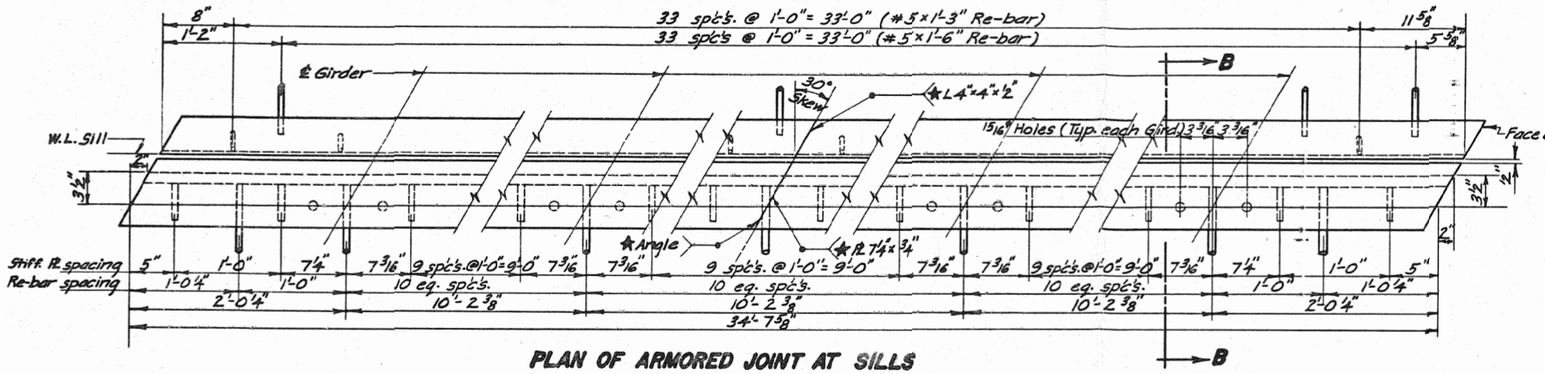
1. All exposed edges shall be chamfered 1" except as shown.
2. Chamfer grout pads ¾".
3. Use 2" clear cover on all reinforcing except as shown.
4. Specifications for grout shall be the same as for Class "A" Concrete except that maximum size of aggregate shall be reduced to ¼". The quantity of Portland Cement Grout is included in and shall be paid for as Class "A" Concrete.
5. Piling shall develop a minimum bearing value of 37 tons per pile.
6. See General Drawing for lengths of Steel Bearing Piles.
7. Design Loading: H20-44 (T-Current) A.A.S.H.O.
8. Unit Stresses: Re-Steel f_s = 20,000 p.s.i. (Int. Grade) Concrete f_c = 1,600 p.s.i.
9. All reinforcing steel shall conform to A.S.T.M.A 305 (T-Current) and A15 (T-Current) Intermediate Grade.
10. All steel swedge bolts shall be 1¼" Ø with heavy hex. nut and cut washer. Length = 1'-9" at Sills No. 1 and 2. (Listed as structural Steel in Superstructure.)

ORIGINAL CONSTRUCTION PLANS

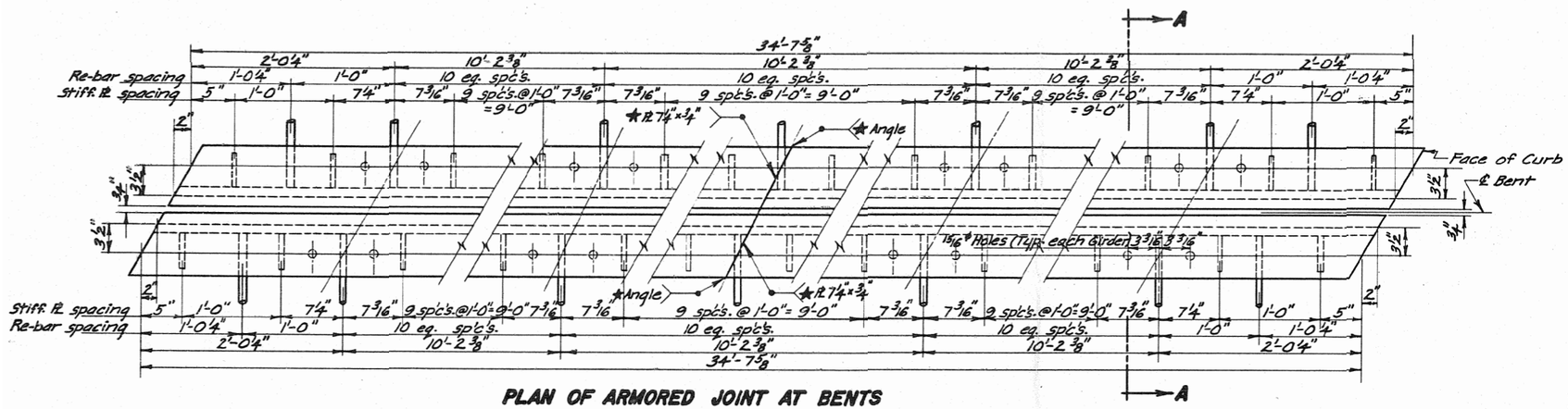
DETIALS OF SILLS NO. 1 AND NO. 4
FOR
138'-3 3/4" COMPOSITE I-BEAM VIADUCT
30'-0" ROADWAY — 30 SKEW R.H.F.
OVER N. FORK MOREAU RIVER SEC. 18—T15N-R8E
STA. 383+05.844 TO 384+44.156 — S 7250(2)
HARDING COUNTY
SOUTH DAKOTA — H20-44
DEPARTMENT OF HIGHWAYS
STR. NO. 32-423-471 DEC. 1962

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	A.K.	R.K.	BRIDGE ENGINEER

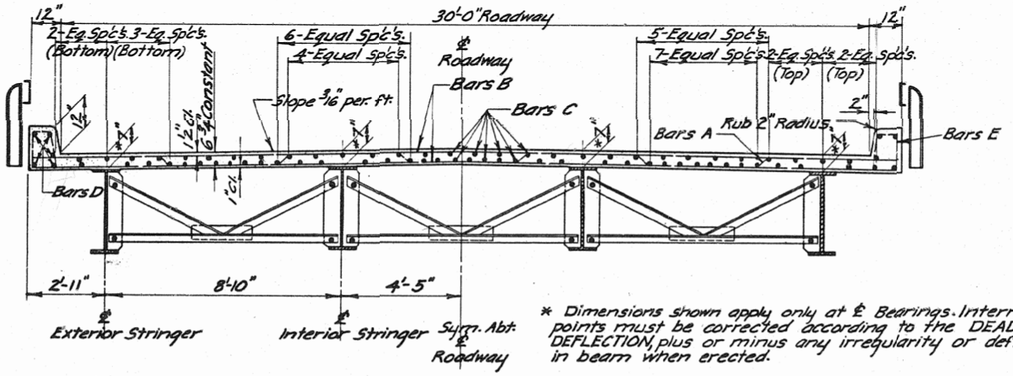
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	18/50



PLAN OF ARMORED JOINT AT SILLS



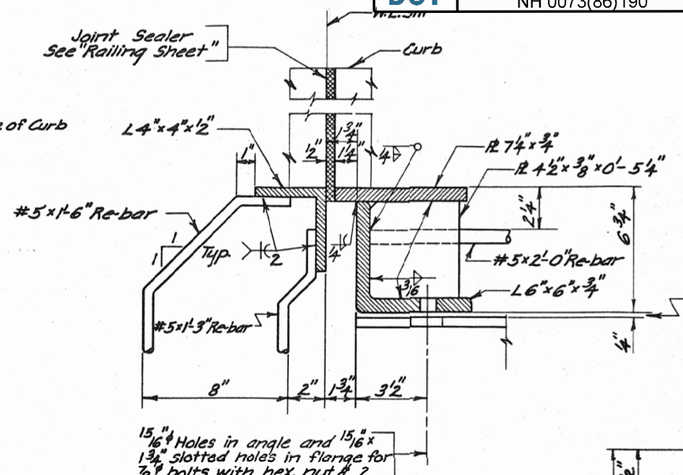
PLAN OF ARMORED JOINT AT BENTS



CROSS SECTION

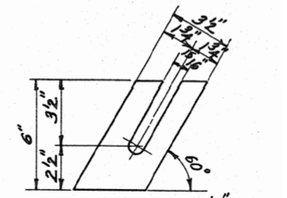
* Dimensions shown apply only at ℄ Bearings. Intermediate points must be corrected according to the DEAD LOAD DEFLECTION, plus or minus any irregularity or deflection in beam when erected.

★WELDING NOTE: The two shop fabricated pieces of the armored joint shall be joined in the field by butt-welds, in accordance with the latest Specifications of the American Welding Society. Type of welds shall be shown on shop plans for the Bridge Department's approval.



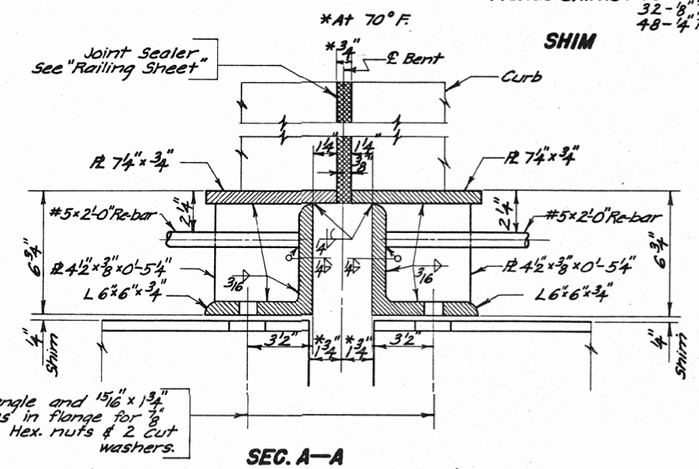
SECTION B—B

Dimensions are normal to W.L. Sill.



Provide Shims: 48-1/16" Thick
32-1/8" Thick
48-1/4" Thick

SHIM



SEC. A—A

Dimensions are normal to ℄ Bent

GENERAL NOTES—

1. Cost of welding shall be included in the unit price bid for Structural Steel.
2. Lead washer shall be paid for as structural steel.
3. Beams do not require mill cambering.
4. Cost of canvas and red lead or preformed fabric pads under bearing plates shall be included in the unit price bid for class "A" Concrete.
5. All exposed concrete edges shall be chamfered 1 unless otherwise noted.
6. See Standard Railing Sheet for details of handrails and drains.
7. Design Loading: H20-S16-44 (T-Current) A.A.S.H.O.
8. Unit Stresses: Re-Steel fs = 20,000 p.s.i. (Int. Grade)
   Concrete fc = 1,600 p.s.i.
9. Structural steel beams shall conform to A.S.T.M. A36 (Current) steel. All other structural members shall conform to A.S.T.M. A373 (Current) steel. Steel produced under other specifications, but shown to possess the chemical and physical properties of A373 (current) steel will be accepted for use where the latter is specified.
10. Electrodes for manual shielded metal arc welding of A.S.T.M. A36 steel shall conform to requirements for Class E 7016 electrodes and their use shall be in strict accordance with Sec. 301(b) A.W.S. Specifications for Welded Highway and Railway Bridges.
11. Structural steel shall be painted with one shop coat of Red Lead Paint (A.A.S.H.O. Designation M72 Type I) or Red Lead Iron Oxide Paint (A.A.S.H.O. Designation M72 Type III) with the requirement calling for cleaning by means of sand-blasting being waived and two field coats of Aluminum Paint (A.A.S.H.O. Designation M69) cost of painting shall be included in the unit price bid for structural steel.

ORIGINAL CONSTRUCTION PLANS

DETAILS OF ARMORED JOINT AND SECTIONS FOR

138'-3 3/4" COMPOSITE I-BEAM VIADUCT

30'-0" ROADWAY — 30° SKEW R.H.F.

OVER N. FORK MOREAU RIVER — SEC. 18-T15N-R9E

STA. 383+05.844 TO 384+44.156 — S 7250 (2)

HARDING COUNTY — H20-44

SOUTH DAKOTA

DEPARTMENT OF HIGHWAYS

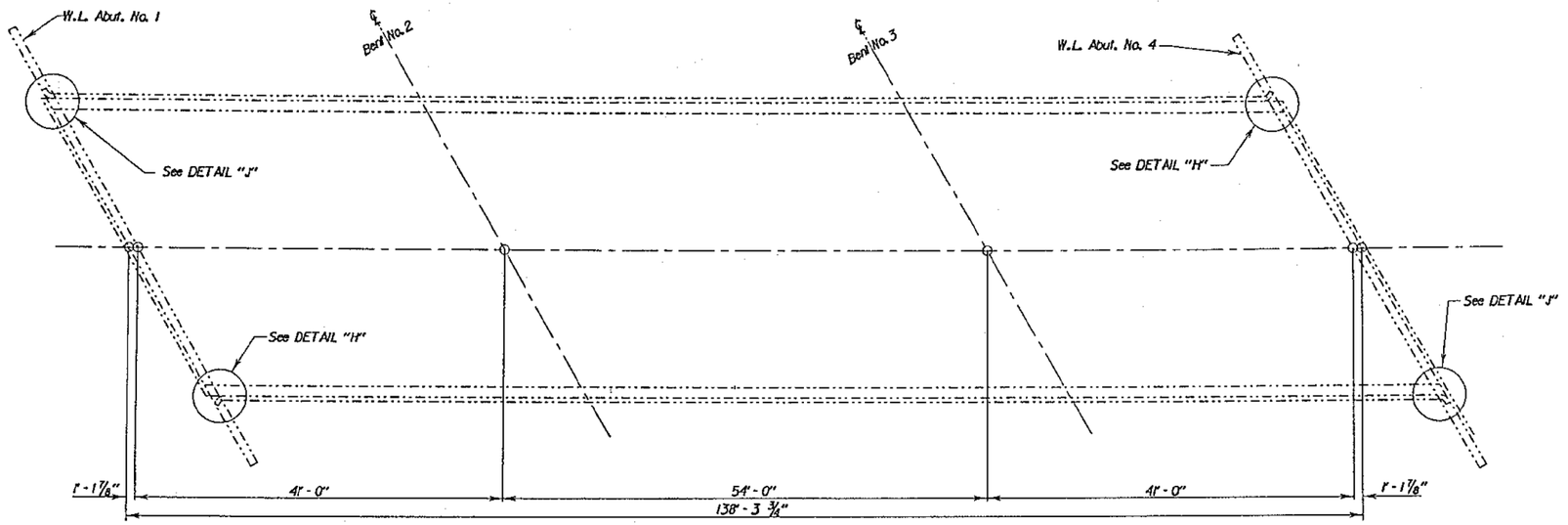
STR. NO. 32-423-471 DEC. 1962

-X071-

16 OF 18

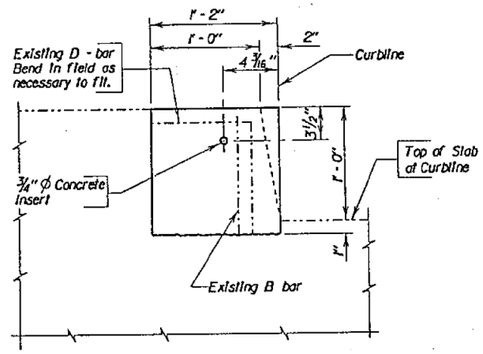
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	K.C.P.	K.L.	BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	19/50



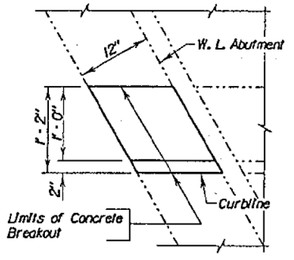
BRIDGE LAYOUT

(All circled locations will require curb modification.)



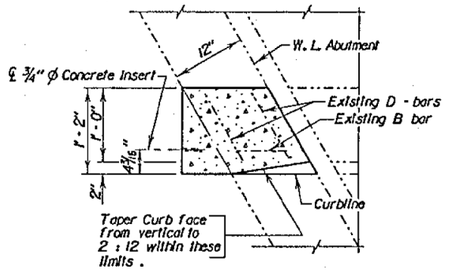
VIEW B - B

(View is opposite hand for Detail "H")



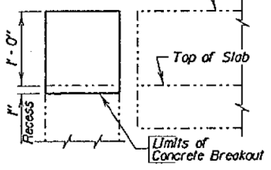
PLAN - DETAIL "J"

(Removal)



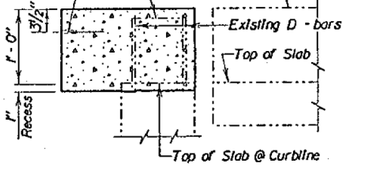
PLAN - DETAIL "J"

(Reconstruction)



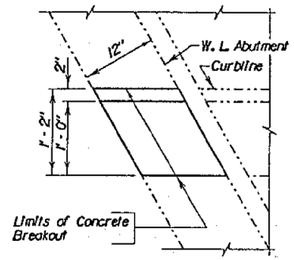
ELEVATION - DETAIL "J"

(Removal)



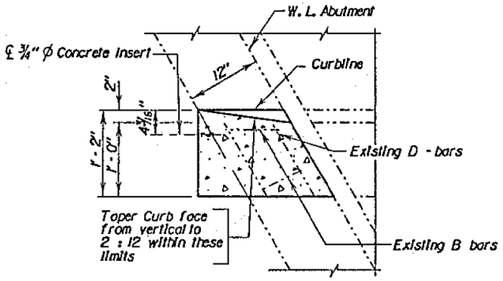
ELEVATION - DETAIL "J"

(Reconstruction)



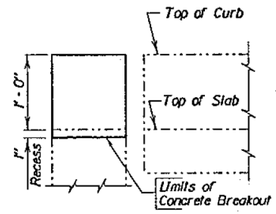
PLAN - DETAIL "H"

(Removal)



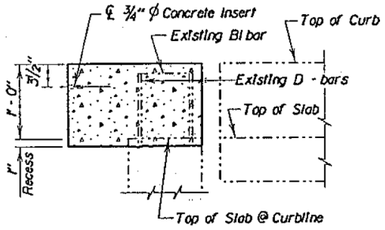
PLAN - DETAIL "H"

(Reconstruction)



ELEVATION - DETAIL "H"

(Removal)



ELEVATION - DETAIL "H"

(Reconstruction)

ORIGINAL CONSTRUCTION PLANS

LAYOUT & CURB MODIFICATION DETAILS
FOR
138'- 3 3/4" COMPOSITE I-BEAM BRIDGE

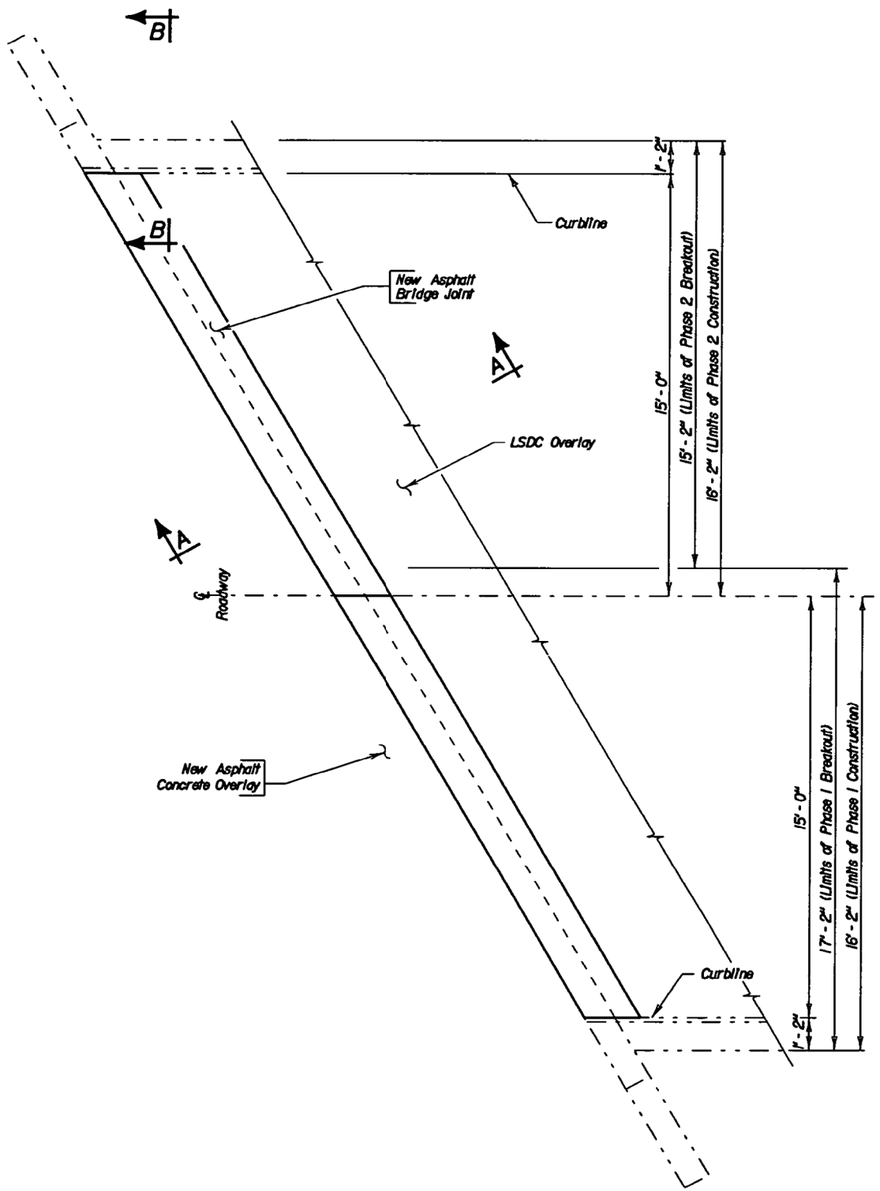
30'- 0" ROADWAY — SEC. 18-T15N-R8E
OVER N. FORK MOREAU RIVER — 30° SKEW R.
STA. 383+05.84 TO STA. 384+44.16 — RS 3079(10)78
STR. NO. 32-423-471 — H20-44

HARDING COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1992 — (17) OF (18)

PCEMS 3580

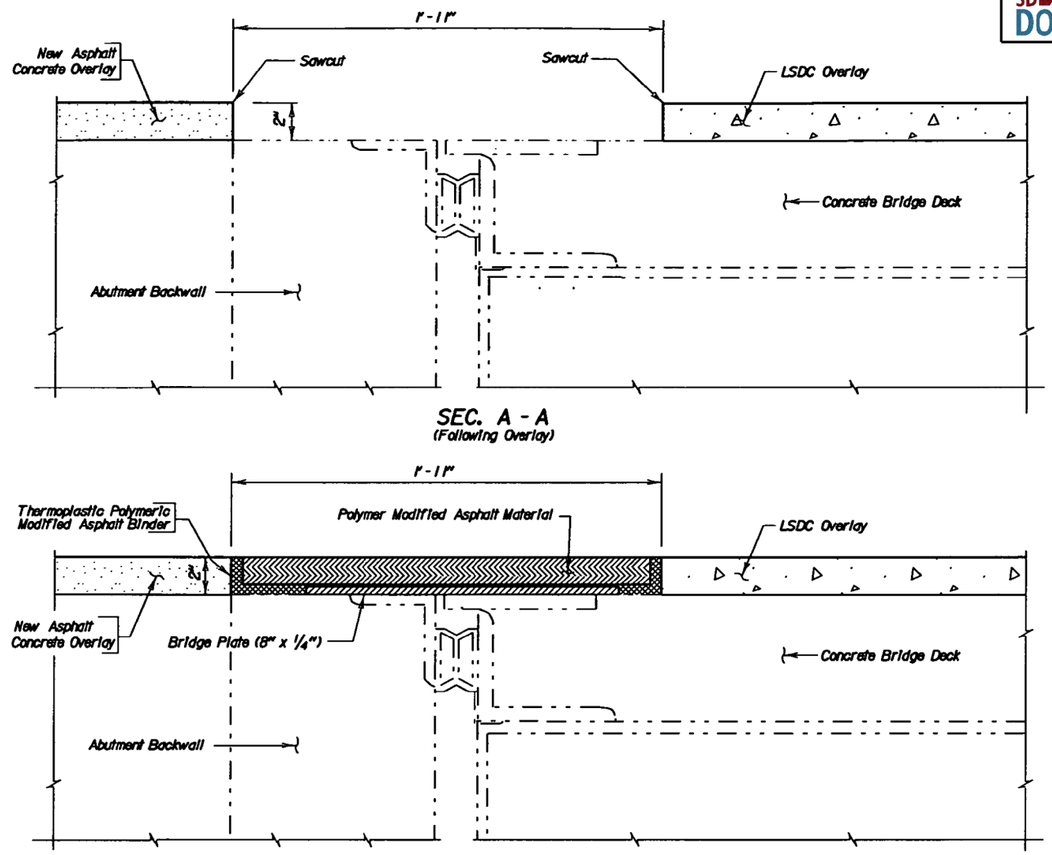
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
TFC/EJA	TFC	CWM	BRIDGE ENGINEER
BHARD3580	3580CB01		

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	20/50



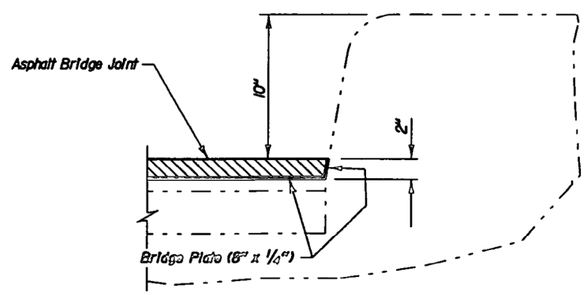
PLAN VIEW

(Abut. No. 1 Shown. Abut. No. 4 similar by opposite hand)



SEC. A - A
(Following Overlay)

SEC. A - A
(Joint Completed)



SEC. B - B

ESTIMATED QUANTITIES
(For Two Abutments)

	ITEM	UNIT	QUANTITY
△	Joint, Asphalt Bridge	Ft.	68.2

△ For informational purposes, the estimated quantity for Phase 1 is 17.3 Ft. per abutment, and Phase 2 is 17.3 Ft. per abutment.

ORIGINAL CONSTRUCTION PLANS

JOINT MODIFICATION AT ABUTMENTS FOR

138' - 3 3/4" COMPOSITE GIRDER BRIDGE

30' - 0" ROADWAY — 30° SKEW R. H. F.

STR. NO. 32-423-471 — SEC. 18-T15N-R8E

OVER N. FORK MOREAU RIVER — **P 3079(11)157**

HARDING COUNTY

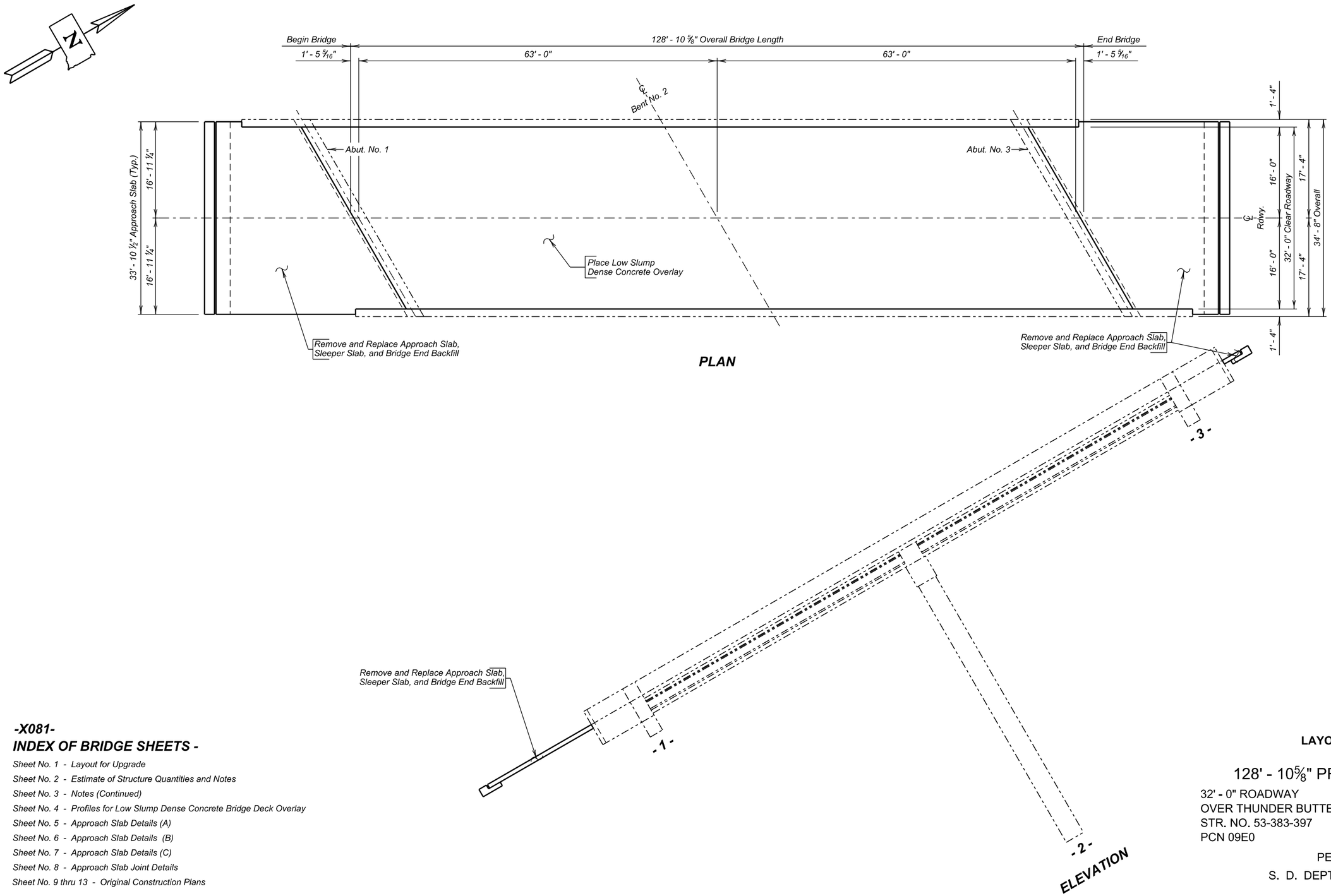
S. D. DEPT. OF TRANSPORTATION

JANUARY 2002

18 OF 18

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
EJA/CJD BUTE5989	CJD 59895C09	CJD/EJA	John C. Cole BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	21/50



PLAN

ELEVATION

-X081-

INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Layout for Upgrade
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Notes (Continued)
Sheet No. 4 - Profiles for Low Slump Dense Concrete Bridge Deck Overlay
Sheet No. 5 - Approach Slab Details (A)
Sheet No. 6 - Approach Slab Details (B)
Sheet No. 7 - Approach Slab Details (C)
Sheet No. 8 - Approach Slab Joint Details
Sheet No. 9 thru 13 - Original Construction Plans

LAYOUT FOR UPGRADE

FOR

128' - 10⅝" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY — 30° SKEW R.H.F.
OVER THUNDER BUTTE CREEK — SEC. 4-T16N-R16E
STR. NO. 53-383-397 — NH 0073(86)202
PCN 09E0

PERKINS COUNTY

S. D. DEPT. OF TRANSPORTATION

MAY 2026

-X081-

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson
PERK09E0	09E0RB01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	227.3	SqYd
410E2600	Membrane Sealant Expansion Joint	112.4	Ft
430E0300	Granular Bridge End Backfill	28.6	CuYd
460E0150	Concrete Approach Slab for Bridge	178.4	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	33.8	SqYd
480E0504	No. 4 Rebar Splice	32	Each
480E0505	No. 5 Rebar Splice	32	Each
480E0506	No. 6 Rebar Splice	52	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	36	CuYd
550E0100	Concrete Removal Type 1A	454.2	SqYd
550E0110	Concrete Removal Type 1B	45.4	SqYd
550E0120	Concrete Removal Type 1C	22.7	SqYd
550E0130	Concrete Removal Type 1D	22.7	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	5.2	CuYd
550E0500	Finishing and Curing	454.2	SqYd

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Design.

2. Construction Specifications: Standard Specifications for Roads and Bridges, 10-7-26 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

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. Remove the existing approach and sleeper slabs for the first phase of construction.

2. Accomplish all Concrete Removal Type 1A, 1B, 1C, 1D, and B and place Class A45 Concrete Fill to the satisfaction of the Engineer for the first phase of construction.

3. Place a Low Slump Dense Concrete Bridge Deck Overlay to the elevations shown in the plans on the bridge deck for the first phase of construction.

4. Replace approach slabs and sleeper slabs to the correct grade for the first phase of construction.

5. Replace sleeper slab joints with approved Membrane Sealant Expansion Joint for the first phase of construction.

6. Switch traffic and repeat steps 1 through 5 for the second phase of construction.

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. 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.

GENERAL CONSTRUCTION – BRIDGE

1. All mild 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. 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.

5. The Department will complete the as-built survey for this project. The Contractor will coordinate with the Department to get the survey completed prior to fully opening to traffic.

LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY

1. 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.

2. 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.

3. 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.

4. 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.

5. A minimum thickness of 2" of Low Slump Dense Concrete will be maintained on the bridge deck.

6. 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 to ensure that water drains to the deck drains or off the ends of the bridge.

7. 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.

8. 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.

DESIGN MIX OF CONCRETE

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

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

128' - 10 5/8" PRESTR. CONC. BRIDGE

STR. NO. 53-383-397

MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	BRIDGE ENGINEER
PERK09E0	09E0RB02		

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.

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, strip seal expansion joint, and sleeper slabs will be incidental to the contract unit price per square yard for Remove Concrete Bridge Approach Slab.

APPROACH SLABS

1. As the backfill is only required to bring up grade, it is anticipated minimal excavation will be required for the removal of the existing approach and sleeper slabs. Removal will be done with minimal disturbance to the underlying material.

2. Prior to the placement of the approach and sleeper slabs, the existing Select Granular Backfill material will be compacted using at least four complete passes of a smooth face vibratory roller or vibratory plate compactor. A layer of type B drainage fabric will be placed and Base Course will be used 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.

3. The top of approach slab elevations will be subject to the approval of the Engineer. Care will be taken to provide a smooth transition from the bridge deck elevations to the new pavement elevations established in the field so as to prevent any dips or bumps in the areas of the bridge ends or ends of the new approach slabs.

4. 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.

5. The quantity of 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.

6. 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, concrete anchors, 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.

7. 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.

8. Any Base Course, type B drainage fabric, and compaction required to fill any low spots or voids will be paid for at the contract unit price per cubic yard for Granular Bridge End Backfill. 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

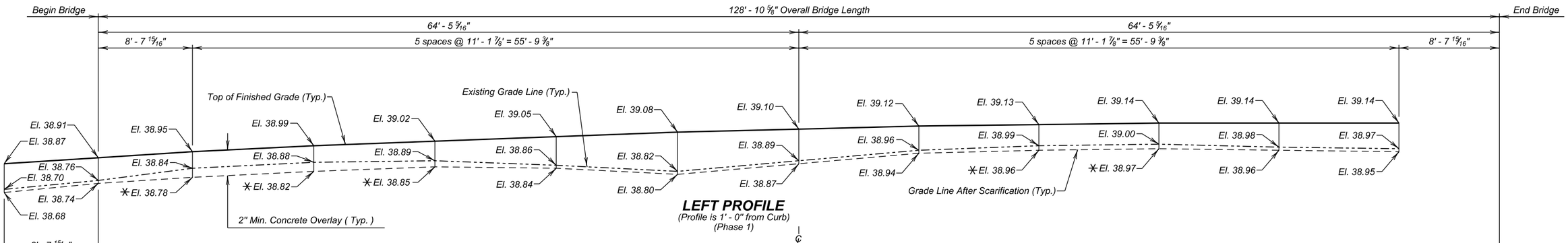
128' - 10⅝" PRESTR. CONC. BRIDGE

STR. NO. 53-383-397

MAY 2026

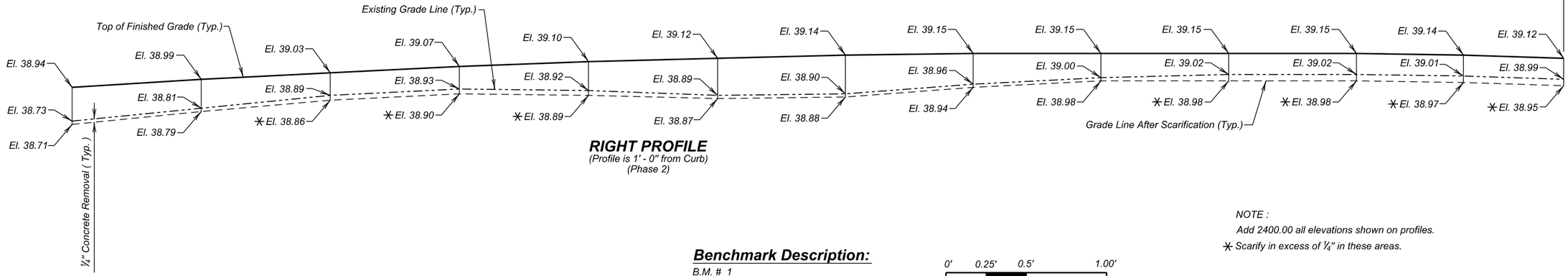
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RB03		

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	24/50



LEFT PROFILE
(Profile is 1' - 0" from Curb)
(Phase 1)

CENTER PROFILE

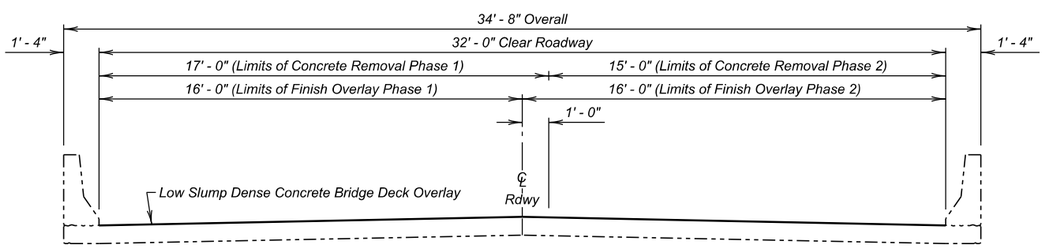


RIGHT PROFILE
(Profile is 1' - 0" from Curb)
(Phase 2)

NOTE :
Add 2400.00 all elevations shown on profiles.
⚹ Scarify in excess of ¼" in these areas.

Benchmark Description:
B.M. # 1
S. E. Corner Brass Cap
Elevation 2441.331

0' 0.25' 0.5' 1.00'
VERTICAL SCALE



TYPICAL SECTION

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Phase I	Phase 2
Low Slump Dense Concrete Deck Overlay	CuYd	18	18
Concrete Removal Type 1A	SqYd	241.3	212.9
Concrete Removal Type 1B	SqYd	24.1	21.3
Concrete Removal Type 1C	SqYd	12.1	10.6
Concrete Removal Type 1D	SqYd	12.1	10.6
Concrete Removal Type B	Ft	10.0	10.0
Class A45 Concrete Fill	CuYd	2.8	2.4
Finishing and Curing	SqYd	227.1	227.1

PROFILE FOR LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY
FOR
128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

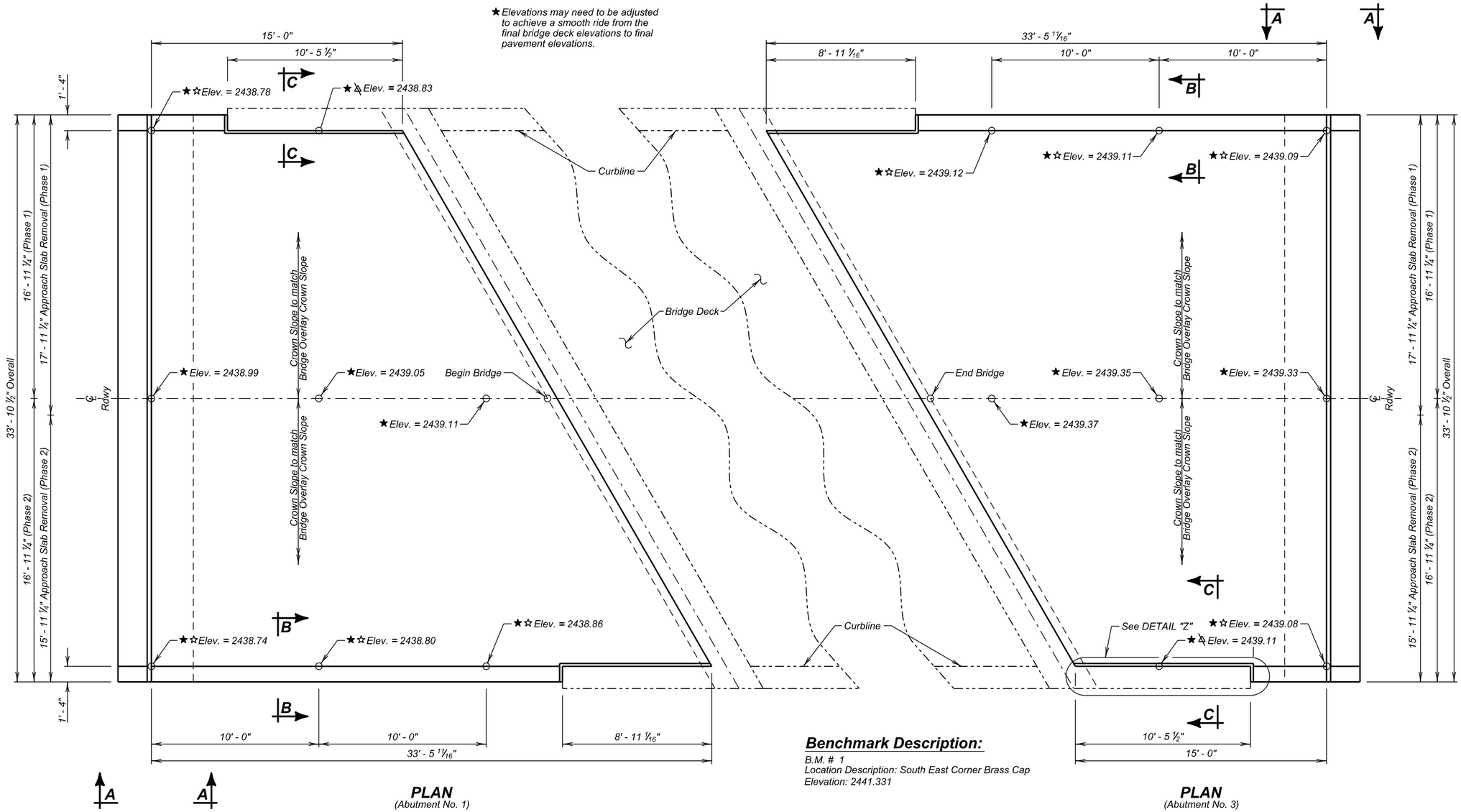
30° SKEW R.H.F.
SEC. 4-T16N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RB04		

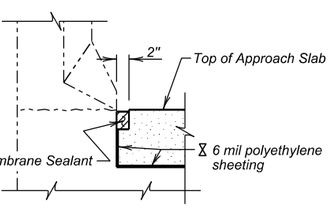
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	25/50

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

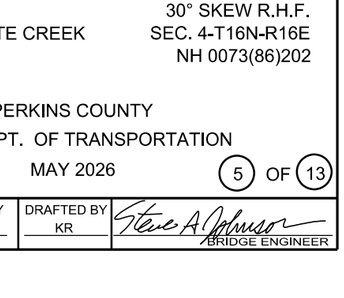


PLAN
(Abutment No. 1)

PLAN
(Abutment No. 3)



SECTION B - B
(Concrete shading and reinforcing steel not shown for clarity)

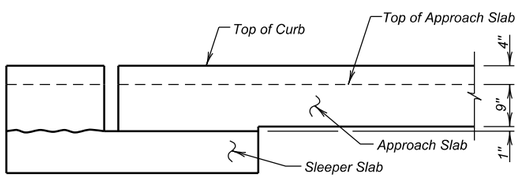


SECTION C - C
(Varies Along Barrier Taper and Reinforcing steel not shown for clarity)

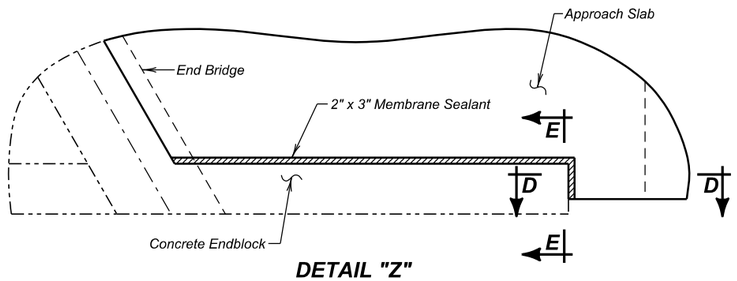
SECTION E - E

Benchmark Description:

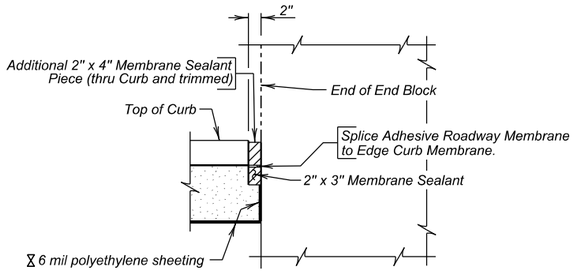
B.M. # 1
Location Description: South East Corner Brass Cap
Elevation: 2441.331



VIEW A - A



DETAIL "Z"



SECTION D - D

6 mil polyethylene sheeting shall not interfere with the bond between the Membrane Sealant and the approach slab.

APPROACH SLAB DETAILS (A)
FOR
128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

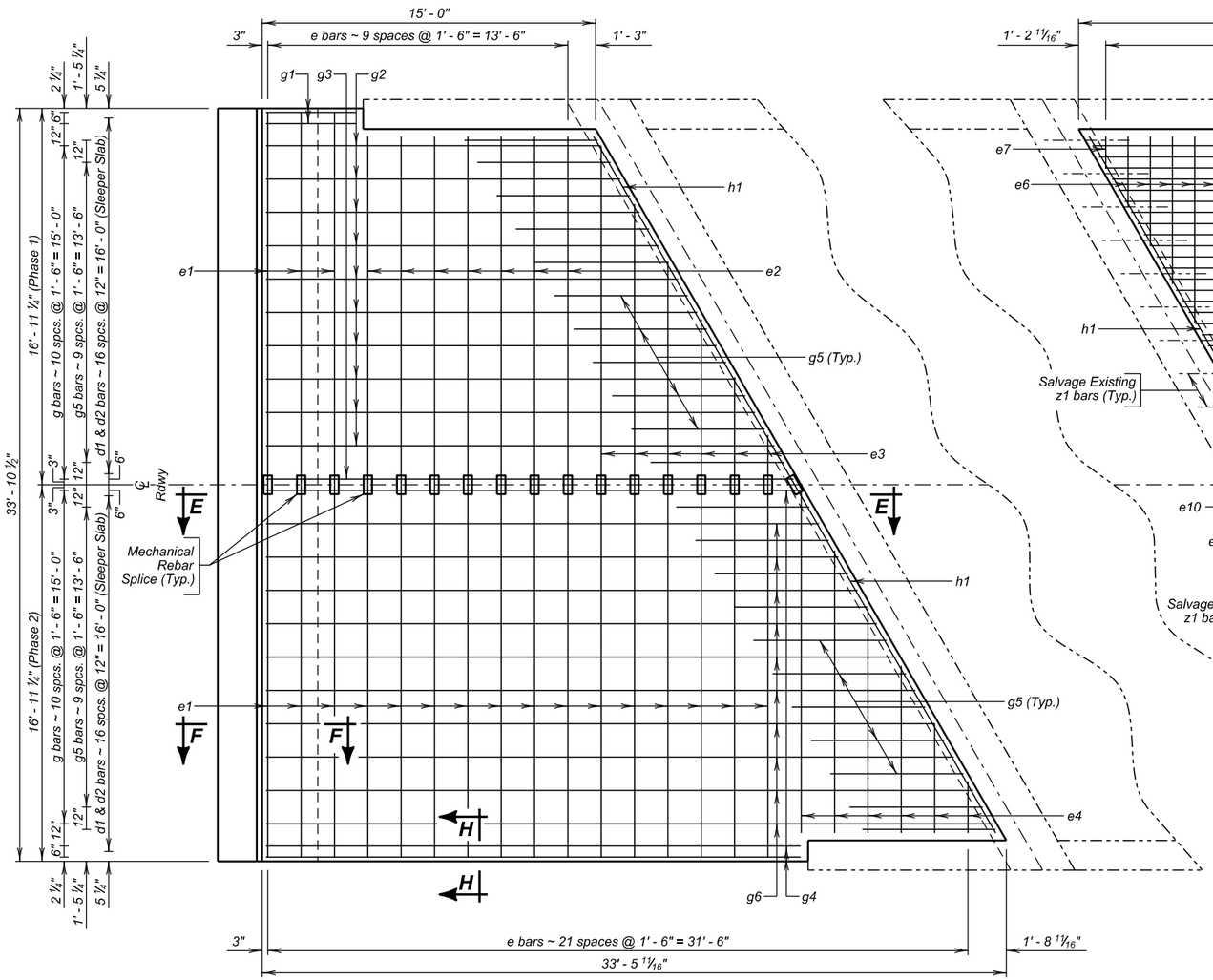
30° SKEW R.H.F.
SEC. 4-T16N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

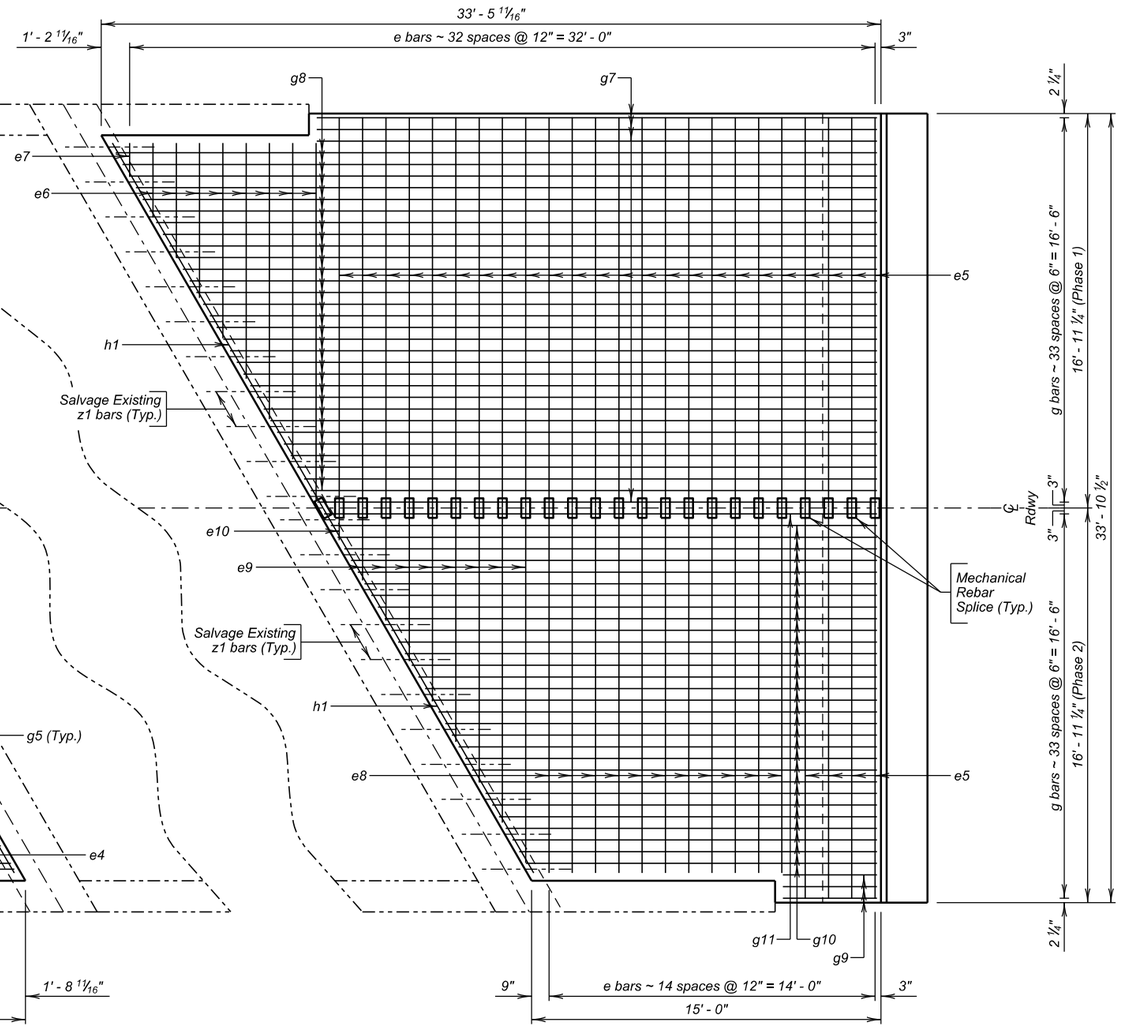
5 OF 13

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM PERK09E0	AP 09E0RB05	KR	Steve A Johnson BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	26/50



PLAN
(TOP STEEL)
(Adjacent to Abut. No. 1 Shown, Abut. No. 3 similar by rotation)



PLAN
(BOTTOM STEEL)
(Adjacent to Abut. No. 3 Shown, Abut. No. 1 similar by rotation)

APPROACH SLAB DETAILS (B)
FOR
128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

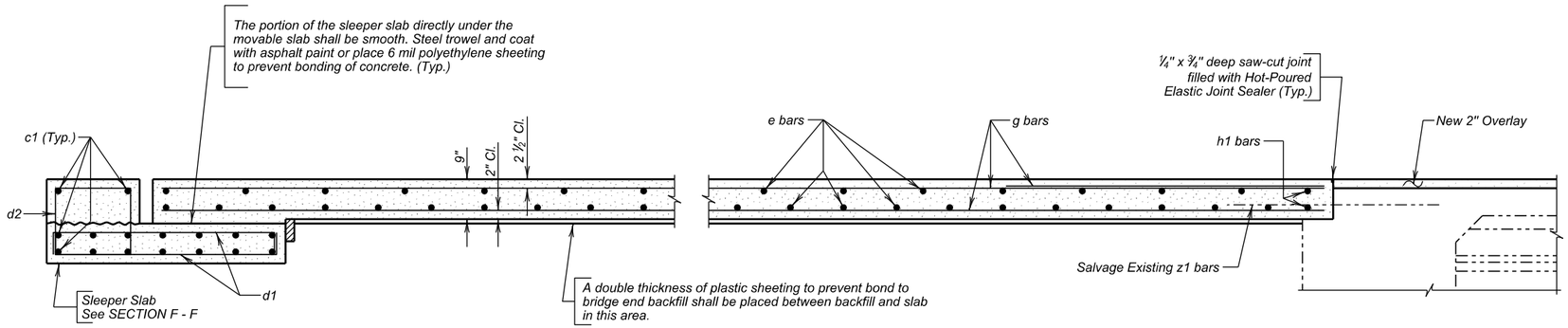
30° SKEW R.H.F.
SEC. 4-T16N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

6 OF 13

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RB06		

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	27/50

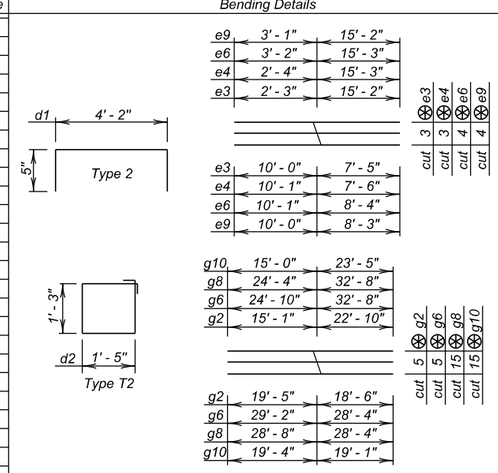


SECTION E - E

REINFORCING SCHEDULE - APPROACH SLABS

(For Two Approach Slabs)

Mk.	No.	Size	Length	Type
Phase 1				
c1	32	5	16' - 9"	Str.
d1	68	4	5' - 0"	2
d2	34	4	6' - 1"	T2
e1	19	4	16' - 9"	Str.
e2	7	4	15' - 8"	Str.
e3	3	4	17' - 5"	Str.
e4	3	4	17' - 7"	Str.
e5	28	6	16' - 9"	Str.
e6	4	6	18' - 5"	Str.
e7	1	6	1' - 5"	Str.
e8	11	6	15' - 8"	Str.
e9	4	6	18' - 3"	Str.
e10	1	6	1' - 4"	Str.
g1	2	4	4' - 0"	Str.
g2	5	4	37' - 11"	Str.
g3	1	4	23' - 9"	Str.
g4	3	4	24' - 0"	Str.
g5	22	4	6' - 0"	Str.
g6	5	4	57' - 6"	Str.
g7	4	8	24' - 0"	Str.
g8	15	8	57' - 0"	Str.
g9	3	8	4' - 0"	Str.
g10	15	8	38' - 5"	Str.
g11	1	8	23' - 9"	Str.
h1	2	6	18' - 1"	Str.



Mk.	No.	Size	Length	Type
Phase 2				
c1	32	5	16' - 9"	Str.
d1	68	4	5' - 0"	2
d2	34	4	6' - 1"	T2
e1	19	4	16' - 9"	Str.
e2	7	4	15' - 8"	Str.
e3	3	4	17' - 5"	Str.
e4	3	4	17' - 7"	Str.
e5	28	6	16' - 9"	Str.
e6	4	6	18' - 5"	Str.
e7	1	6	1' - 5"	Str.
e8	11	6	15' - 8"	Str.
e9	4	6	18' - 3"	Str.
e10	1	6	1' - 4"	Str.
g1	2	4	4' - 0"	Str.
g2	5	4	37' - 11"	Str.
g3	1	4	23' - 9"	Str.
g4	3	4	24' - 0"	Str.
g5	22	4	6' - 0"	Str.
g6	5	4	57' - 6"	Str.
g7	4	8	24' - 0"	Str.
g8	15	8	57' - 0"	Str.
g9	3	8	4' - 0"	Str.
g10	15	8	38' - 5"	Str.
g11	1	8	23' - 9"	Str.
h1	2	6	18' - 1"	Str.

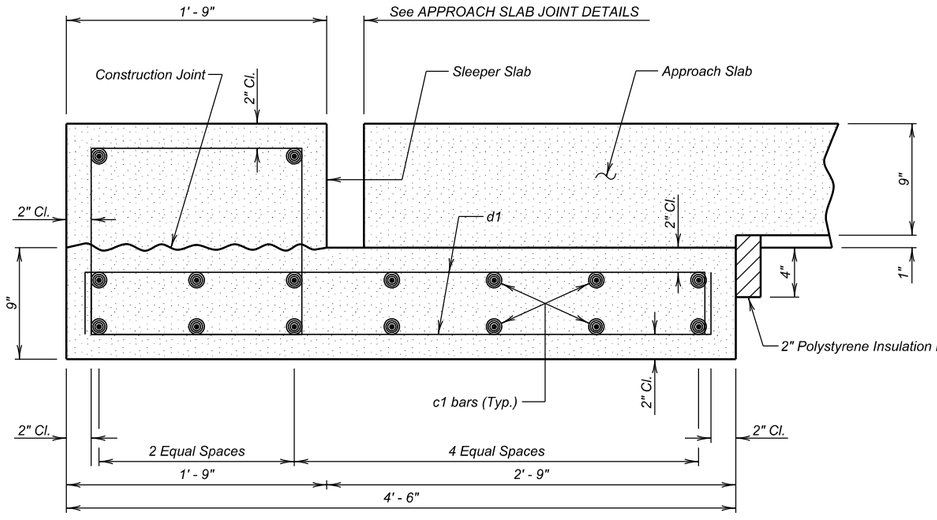
Note -

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

⊼ Cut Bars

⊛ Requires cut set for each phase

⏍ Splice (Mechanically Spliced)



SECTION F - F

(Sleeper Slab)

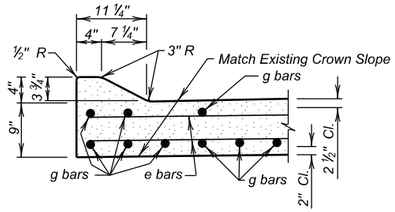
ESTIMATED QUANTITIES

(For Two Approach Slabs and Sleeper Slabs)

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Granular Bridge End Backfill	CuYd	14.3	14.3
Remove Concrete Bridge Approach Slab	SqYd	120.5	106.8
Concrete Approach Slab for Bridge	SqYd	89.2	89.2
Concrete Approach Sleeper Slab for Bridge	SqYd	16.9	16.9
No. 4 Rebar Splice	Each	32	-
No. 5 Rebar Splice	Each	32	-
No. 6 Rebar Splice	Each	52	-
Membrane Sealant Expansion Joint	Ft	22.3	22.3

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

	Phase 1	Phase 2
1. Concrete in Approach Slabs	22.3 CuYd	22.3 CuYd
2. Epoxy Coated Re-Steel in Approach Slabs	6247 Lb	6247 Lb
3. Concrete in Sleeper Slabs	6.2 CuYd	6.2 CuYd
4. Epoxy Coated Re-Steel in Sleeper Slabs	946 Lb	946 Lb
5. 2" Polystyrene Insulation Board	14.1 SqFt	14.1 SqFt



SECTION H - H

APPROACH SLAB DETAILS (C)

FOR

128' - 10 ⅝" PRESTR. CONC. BRIDGE

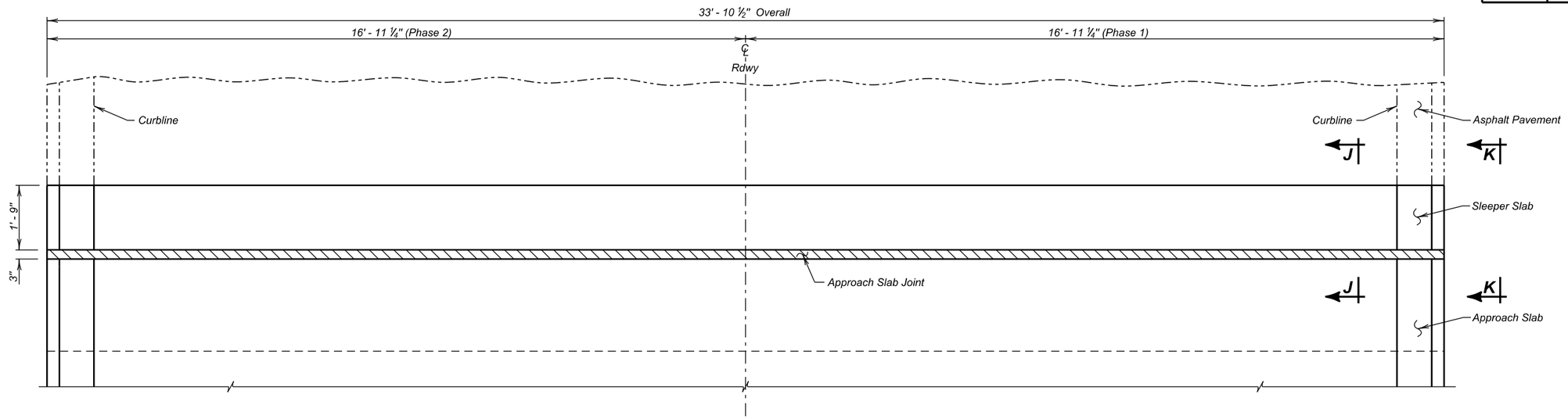
32' - 0" ROADWAY
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

30° SKEW R.H.F.
SEC. 4-T16N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

7 OF 13

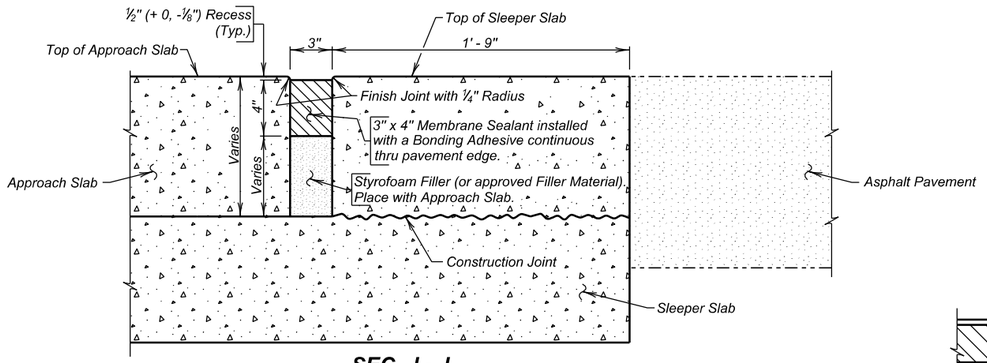
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM PERK09E0	AP 09E0RB07	KR	Steve A Johnson BRIDGE ENGINEER



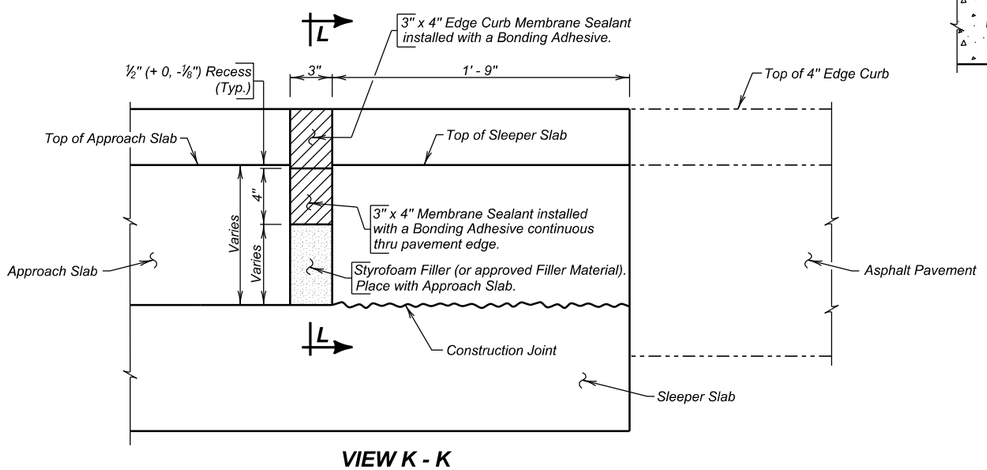
PLAN

GENERAL NOTES

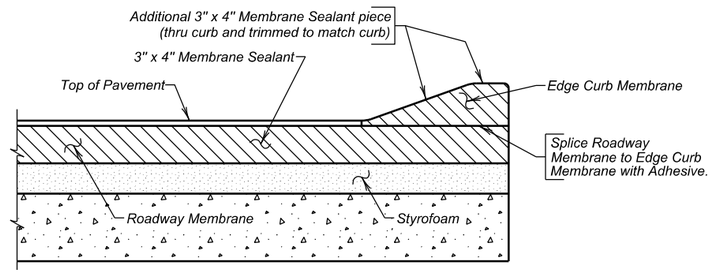
1. The membrane sealant will be on the approved product list for Membrane Sealant Expansion Joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer to provide a water 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.



SEC. J - J



VIEW K - K



SEC. L - L

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Phase I	Phase 2
Membrane Sealant Expansion Joint	Ft	33.9	33.9

APPROACH SLAB JOINT DETAILS
FOR
128' - 10 ⅝" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

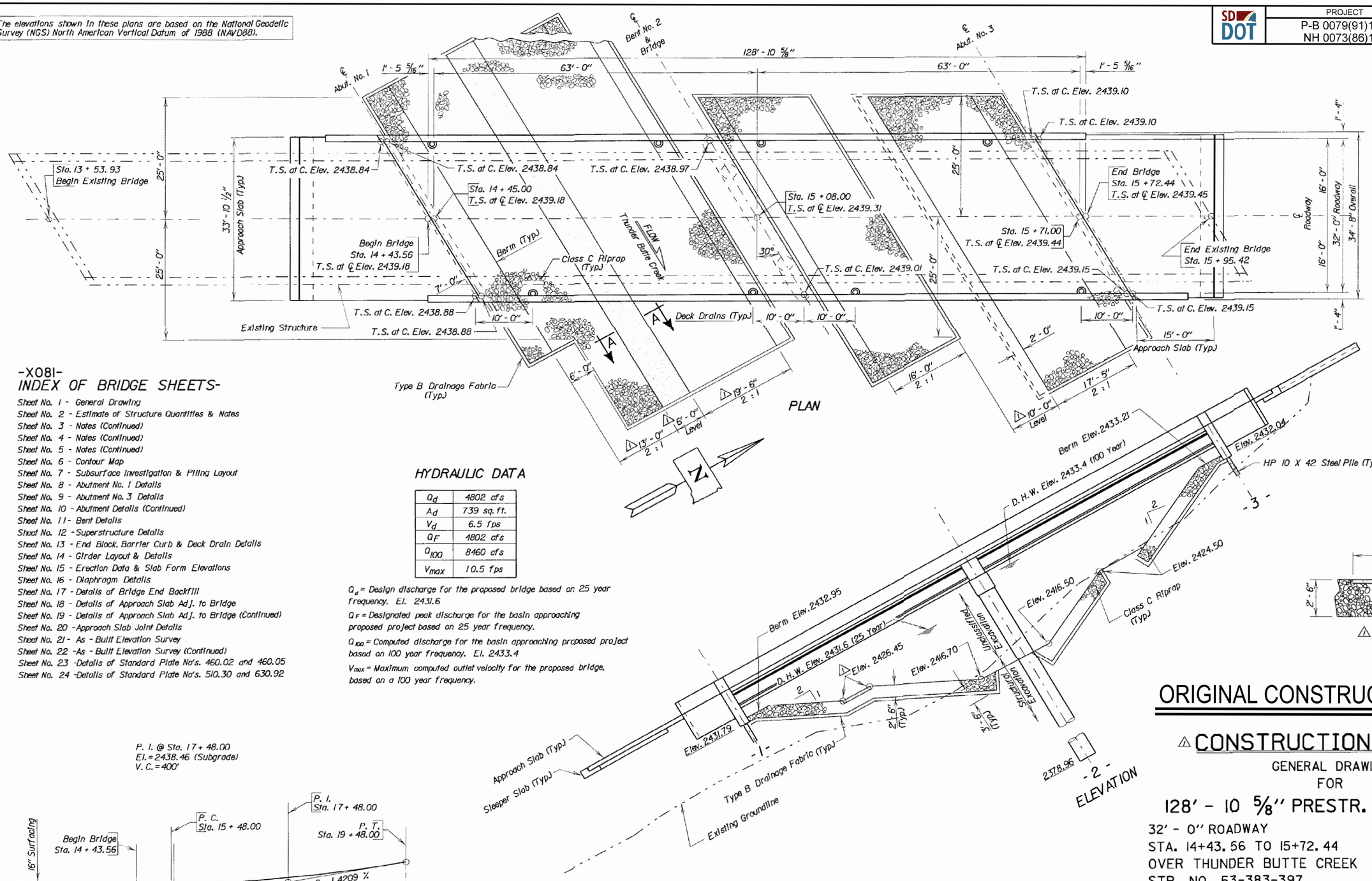
30° SKEW R.H.F.
SEC. 4-T16N-R16E
NH 0073(86)202

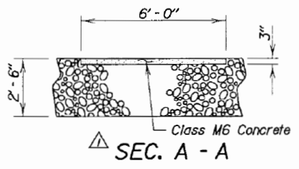
PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	KR	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RB08		

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

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	29/50





-X08I-

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 - Notes (Continued)
Sheet No. 6 - Contour Map
Sheet No. 7 - Subsurface Investigation & Piling Layout
Sheet No. 8 - Abutment No. 1 Details
Sheet No. 9 - Abutment No. 3 Details
Sheet No. 10 - Abutment Details (Continued)
Sheet No. 11 - Bent Details
Sheet No. 12 - Superstructure Details
Sheet No. 13 - End Block, Barrier Curb & Deck Drain Details
Sheet No. 14 - Girder Layout & Details
Sheet No. 15 - Erection Data & Slab Form Elevations
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 (Continued)
Sheet No. 20 - Approach Slab Joint Details
Sheet No. 21 - As - Built Elevation Survey
Sheet No. 22 - As - Built Elevation Survey (Continued)
Sheet No. 23 - Details of Standard Plate No's. 460.02 and 460.05
Sheet No. 24 - Details of Standard Plate No's. 510.30 and 630.92

HYDRAULIC DATA

Q_d	4802 cfs
A_d	739 sq. ft.
V_d	6.5 fps
Q_F	4802 cfs
Q_{100}	8460 cfs
V_{max}	10.5 fps

Q_d = Design discharge for the proposed bridge based on 25 year frequency. El. 2431.6

Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 2433.4

V_{max} = Maximum computed outlet velocity for the proposed bridge, based on a 100 year frequency.

P. I. @ Sta. 17 + 48.00
El. = 2438.46 (Subgrade)
V. C. = 400'

VERTICAL CURVE DATA

NOTE: T.S. at C. Elev. = Top of Slab at Curb Elevation
T.S. at ℄ Elev. = Top of Slab at Centerline Elevation

ORIGINAL CONSTRUCTION PLANS

⚠ CONSTRUCTION CHANGE

GENERAL DRAWING
FOR

128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY — 30° RHF SKEW
STA. 14+43.56 TO 15+72.44 — SEC. 4-T16N-R16E
OVER THUNDER BUTTE CREEK — BRF 0073(20)202
STR. NO. 53-383-397 — HS 25-44
PCN 5134 — (& ALT.)

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2004

9 OF 13

-X08I-

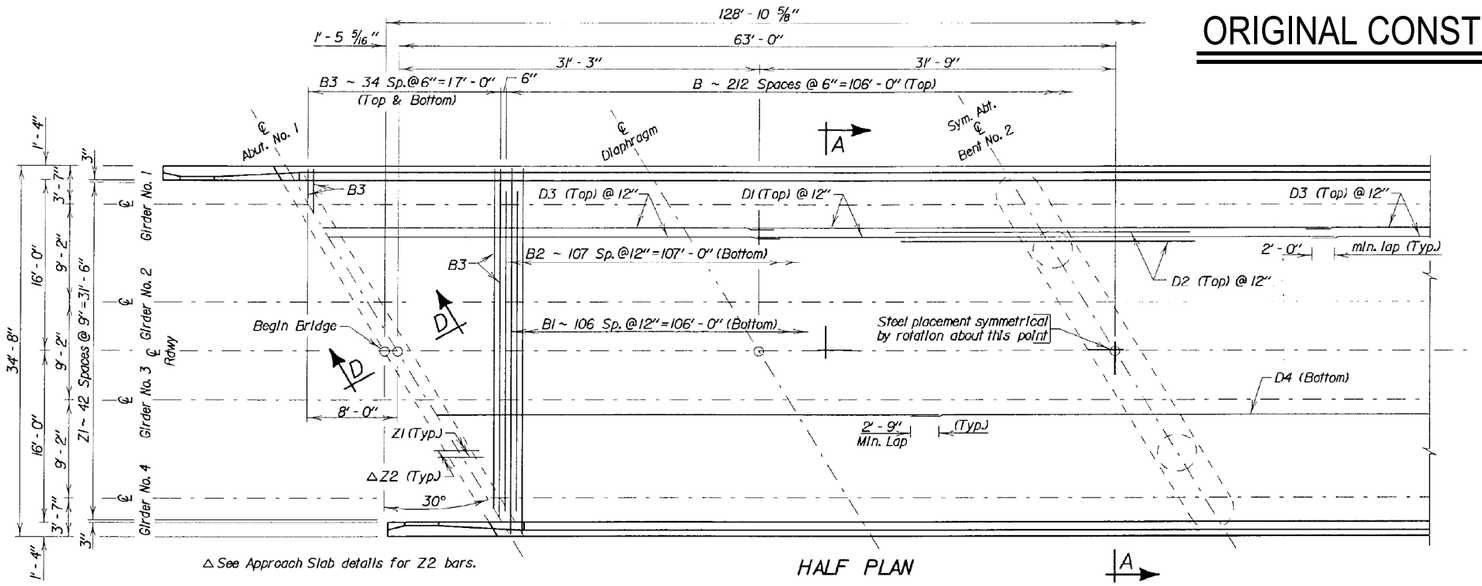
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
A.V./D.M.	B.K.	A.V./D.M.	BRIDGE ENGINEER
PERK5134	5134KA01		

⚠ 7-12-05 DM

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

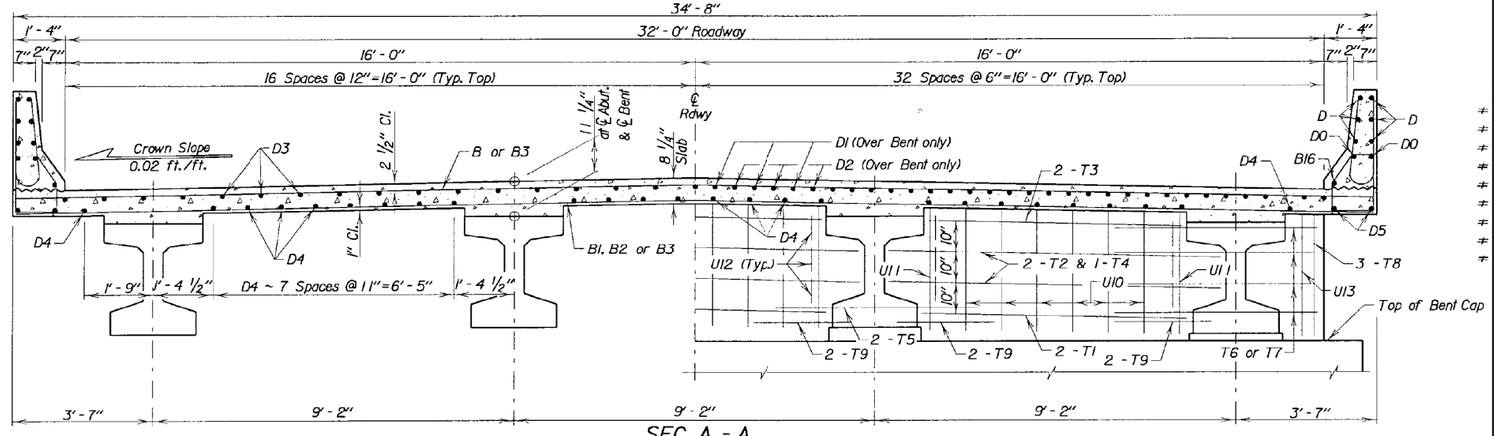
ORIGINAL CONSTRUCTION PLANS

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	30/50

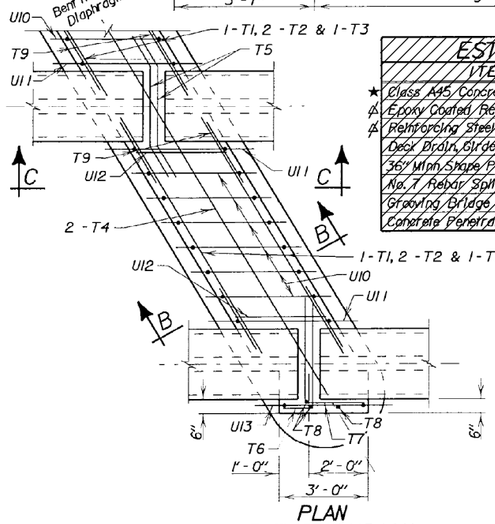


△ See Approach Slab details for Z2 bars.

HALF PLAN



SEC. A - A

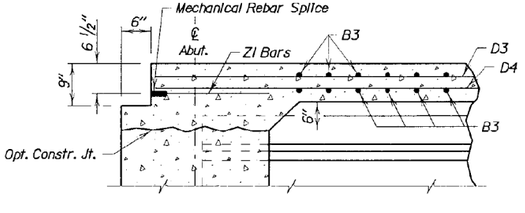


PLAN
BENT DIAPHRAGM
(Slab Not Shown this View)

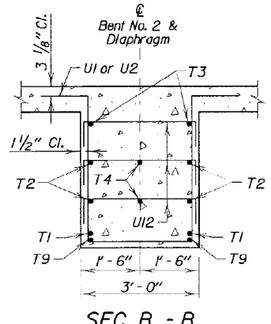
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
★ Class A45 Concrete, Bridge Deck	Cu.Yd.	△ 155.0
△ Epoxy Coated Reinforcing Steel	Lb.	△ 36895
△ Reinforcing Steel	Lb.	480
Deck Drain, Girder Bridge	Each	8
36" Mod. Shape Prestr. Conc. Beam	Ft.	502
No. 7 Rebar Splice	Each	86
Grooving, Bridge Deck	Sq. Yd.	426
Concrete Penetrating Sealer	Sq. Yd.	454

△ Includes quantities for Diaphragms, Barrier Curbs and Slab.
★ Includes quantities for Diaphragms, Barrier Curbs, Abutment Backwalls and Wing Walls above Construction Joint and Slab. Concrete quantity for Barrier Curbs is 0.0842 cu. yd./ft. and Concrete quantity for one 12 ft. End Block is 1.1659 cu. yd.

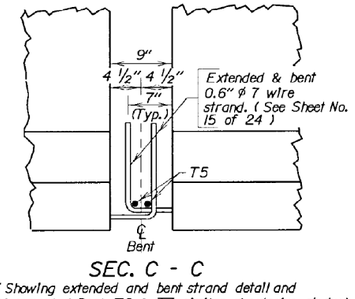
NOTE-
Concrete shall be placed in the spaces under the beams (within the diaphragm width) during the diaphragm pour. Care shall be taken to get the concrete vibrated into this area. If upon form removal the space is not completely filled and consolidated, the contractor shall grout in the remaining voids.



SEC. D - D



SEC. B - B
(Girders Not Shown)



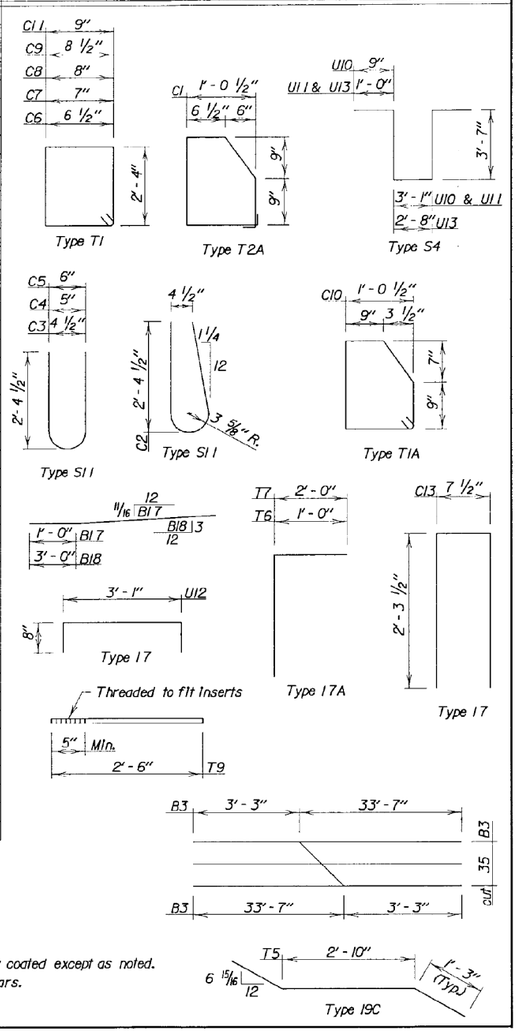
SEC. C - C
(Showing extended and bent strand detail and T5 bar placement at Bent. T6 & T7 similar at exterior girder).

△1 3-18-05 DM △2 8-30-05 AV

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
B	213	5	34' - 4"	Str.
B1	107	4	34' - 4"	Str.
B2	108	5	30' - 0"	Str.
B3	70	5	36' - 10"	Str.
B15	12	5	14' - 6"	Str.
B16	6	4	49' - 9"	Str.
B17	8	4	8' - 6"	19B
B18	12	8	4' - 3"	19B
B19	12	5	2' - 4"	Str.
C1	278	5	5' - 9"	T2A
C2	250	5	5' - 1"	S11
C3	4	5	5' - 0"	S11
C4	4	5	5' - 0"	S11
C5	4	5	5' - 0"	S11
C6	4	5	6' - 8"	T1
C7	4	5	6' - 9"	T1
C8	4	5	6' - 11"	T1
C9	4	5	7' - 0"	T1
C10	16	5	5' - 6"	T1A
C11	16	5	7' - 1"	T1
C13	4	5	5' - 3"	17
D	36	5	42' - 9"	Str.
D0	12	5	49' - 11"	Str.
D1	33	8	51' - 0"	Str.
D2	32	8	26' - 0"	Str.
D3	66	5	40' - 3"	Str.
D4	△78	5	44' - 4"	Str.
D5	12	5	51' - 2"	Str.
D6	4	5	11' - 8"	Str.
D7	2	5	11' - 0"	Str.
D8	2	5	12' - 3"	Str.
# T1	6	6	7' - 9"	Str.
# T2	12	5	9' - 8"	Str.
# T3	6	5	7' - 3"	Str.
# T4	2	5	33' - 9"	Str.
# T5	4	5	5' - 4"	19C
# T6	8	5	4' - 9"	17A
# T7	8	5	5' - 9"	17A
# T8	6	5	3' - 0"	Str.
# T9	12	6	2' - 6"	Str.
U10	18	4	11' - 9"	S4
U11	6	6	12' - 3"	S4
U12	18	4	4' - 5"	17
U13	2	6	11' - 10"	S4
Z1	86	7	2' - 0"	Str.

Bending Details



NOTES-
All reinforcing steel shall be epoxy coated except as noted.
All dimensions are out to out of bars.
Bars not to be epoxy coated.
℄ See cutting diagram.

△ CONSTRUCTION CHANGE

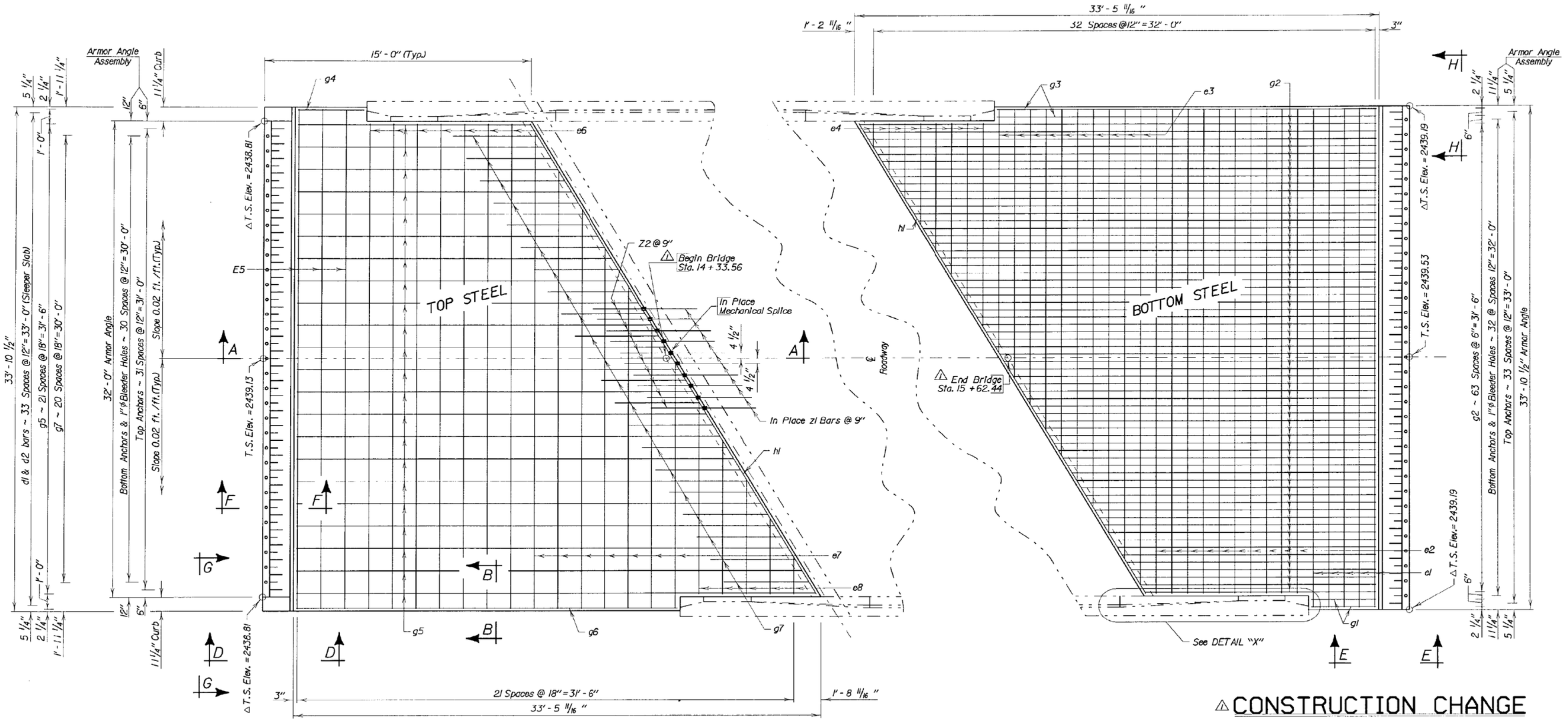
SUPERSTRUCTURE DETAILS
FOR
128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY — 30° RHF SKEW
△STA. 14+33.56 TO 15+62.44 — SEC. 4-T16N-R16E
OVER THUNDER BUTTE CREEK — BRF 0073(20)202
STR. NO. 53-383-397 — HS 25-44 (& ALT.)

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2004 — (10) OF (13)

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
AV/DM PERK5134	BK 5134KAI2	AV/DM	John C. Cole BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	31/50



PLAN

NOTE-
Use this Sheet In Conjunction with Sheet No. 19 of 24.

⚠ CONSTRUCTION CHANGE

DETAILS APPROACH SLAB ADJACENT TO BRIDGE
FOR

128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY — 30° RHF SKEW
⚠ STA. 14+33.56 TO 15+62.44 — SEC. 4-T16N-R16E
OVER THUNDER BUTTE CREEK — BRF 0073(20)202
STR. NO. 53-383-397 — HS 25-44 (& ALT.)

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2004 — (11) OF (13)

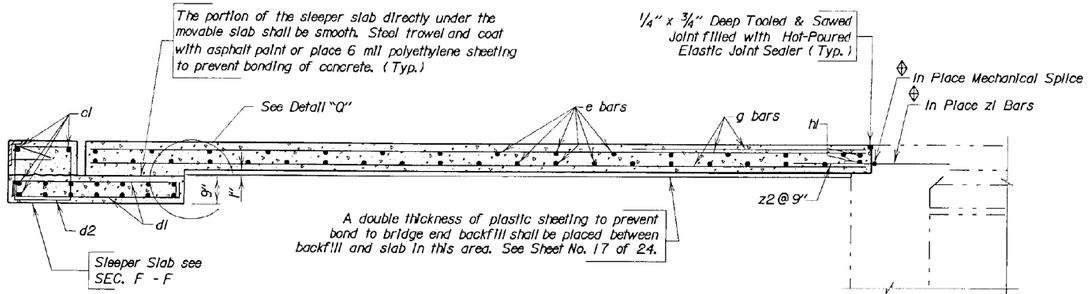
ORIGINAL CONSTRUCTION PLANS

⚠ 3-18-05 DM

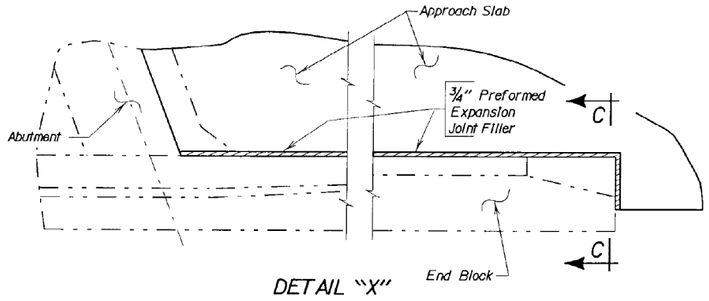
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
AV/DM	BK	AV/DM	BRIDGE ENGINEER
PERK5134	5134KA18		

ORIGINAL CONSTRUCTION PLANS

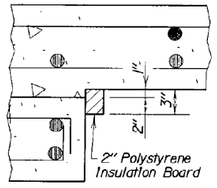
◊ NOTE:
Z1 bars & Mechanical Splices are listed and included in Superstructure quantities.



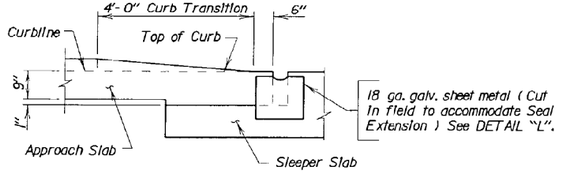
SEC. A - A



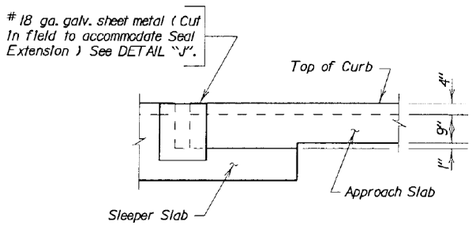
DETAIL "X"



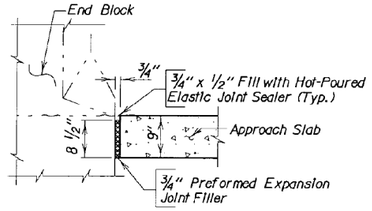
DETAIL "Q"



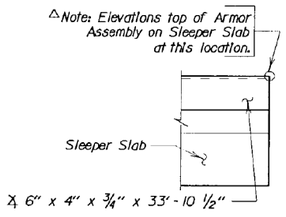
VIEW E - E
(at End Bridge)



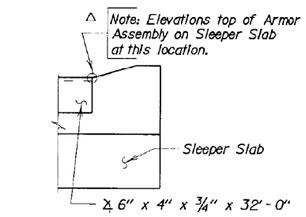
VIEW D - D
(at Begin Bridge)



SEC. C - C

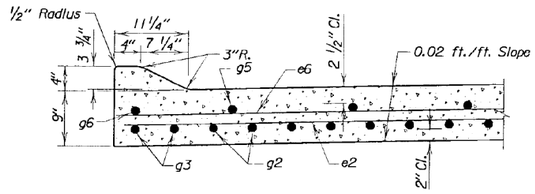


VIEW H - H
(at End Bridge)

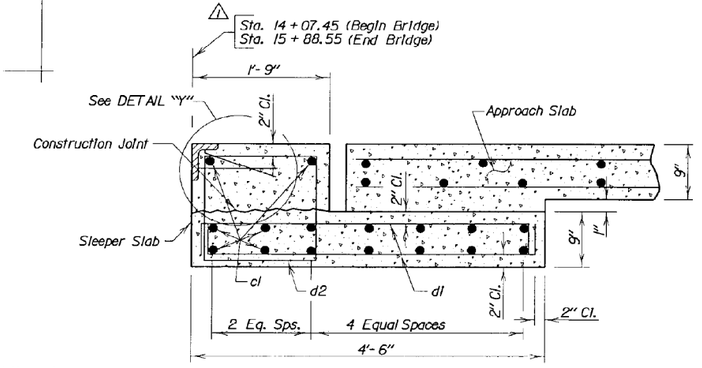


VIEW G - G
(at Begin Bridge)

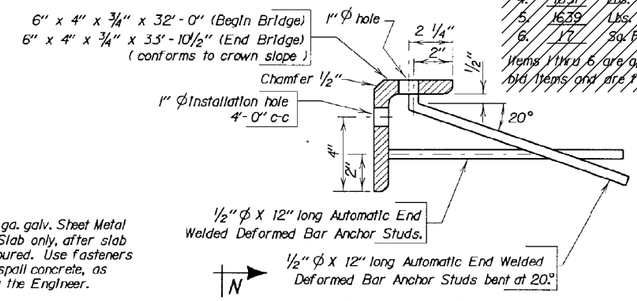
NOTE-
Use this Sheet In Conjunction with Sheet No. 18 of 24.



SEC. B - B

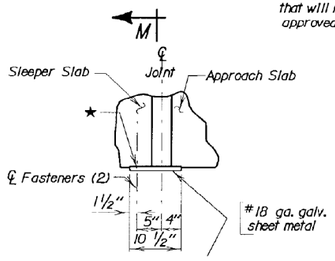


SEC. F - F

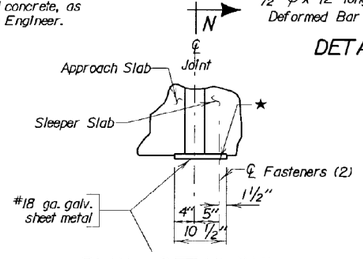


DETAIL "Y"

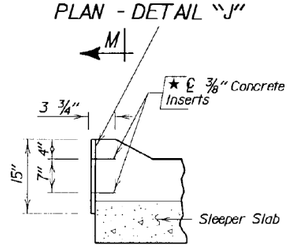
★ Attach #18 ga. galv. Sheet Metal to Sleeper Slab only, after slab has been poured. Use fasteners that will not spall concrete, as approved by the Engineer.



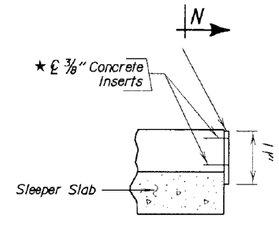
PLAN - DETAIL "J"



PLAN - DETAIL "L"



SEC. M - M
(at Begin Bridge)



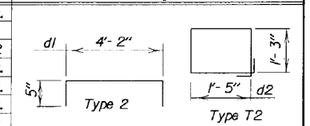
SEC. N - N
(at End Bridge)

PROJECT	SECTION	SHEET
P-B 0079(91)178; NH 0073(86)190	E	32/50

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

	Mk.	No.	Size	Length	Type
	c1	32	5	33' - 7"	Str.
	d1	136	4	5' - 0"	2
	d2	68	4	6' - 1"	T2
	e1	10	6	33' - 7"	Str.
	e2	20	6	32' - 8"	Str.
◊	e3	10	6	48' - 5"	Str.
◊	e4	8	6	15' - 4"	Str.
	e5	6	4	33' - 7"	Str.
	e6	14	4	32' - 8"	Str.
◊	e7	7	4	48' - 5"	Str.
◊	e8	5	4	15' - 3"	Str.
	g1	4	8	4' - 2"	Str.
◊	g2	64	8	47' - 8"	Str.
	g3	4	8	24' - 2"	Str.
	g4	2	4	4' - 2"	Str.
◊	g5	22	4	47' - 8"	Str.
	g6	2	4	24' - 2"	Str.
	g7	42	4	6' - 0"	Str.
	h1	4	6	36' - 6"	Str.
	z2	86	7	2' - 0"	Str.

Bending Details



Cut	22	g5	Cut	64	g2	Cut	5	e8	Cut	7	e7	Cut	8	e4	Cut	10	e3

g5	14' - 9"	32' - 11"
g2	14' - 9"	32' - 11"
e8	2' - 5"	12' - 10"
e7	16' - 5"	32' - 0"
e4	1' - 7"	13' - 9"
e3	16' - 5"	32' - 0"

e3	32' - 0"	16' - 5"
e4	13' - 9"	1' - 7"
e7	32' - 0"	16' - 5"
e8	12' - 10"	2' - 5"
g2	32' - 11"	14' - 9"
g5	32' - 11"	14' - 9"

NOTE –
All Bars to be Epoxy Coated.
All dimensions are out to out of bars.
◊ See cutting diagram.

ESTIMATED QUANTITIES
(For Two Approach Slabs and Two Sleeper Slabs)

	ITEM	UNIT	QUANTITY
	Concrete Approach Slab for Bridge	Sq.Yd.	178.1
	Concrete Approach Sleeper Slab for Bridge	Sq.Yd.	33.9
1.	45.6	Cu. Yds.	Concrete in Approach Slab.
2.	13040	Lbs.	Epoxy Coated Re-Steel in Approach Slab.
3.	12.1	Cu. Yds.	Concrete in Sleeper Slab.
4.	1851	Lbs.	Epoxy Coated Re-Steel in Sleeper Slab.
5.	1639	Lbs.	Structural Steel in Armor Assembly
6.	17	Sq. Ft.	of 2" Polystyrene Insulation Board

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

△ CONSTRUCTION CHANGE

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (CONTINUED) FOR

128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
△ STA. 14+33.56 TO 15+62.44
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

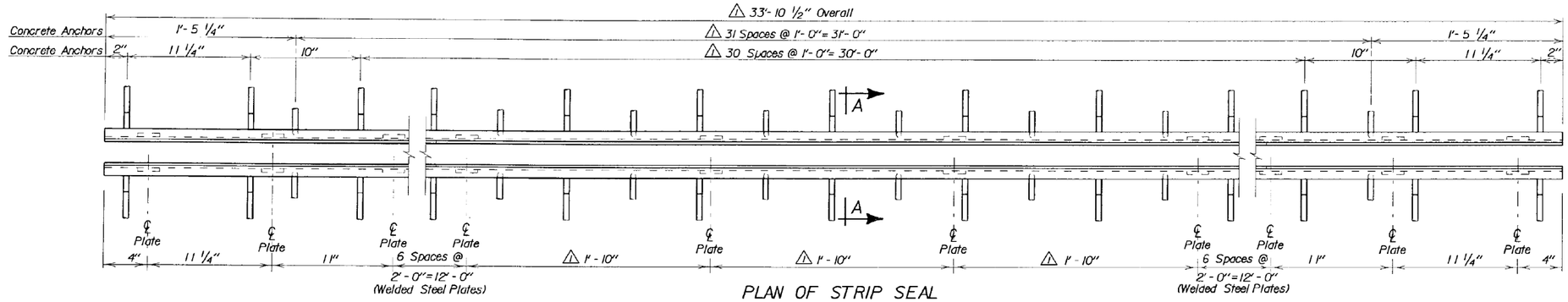
30° RHF SKEW
SEC. 4-T16N-R16E
BRF 0073(20)202
HS 25-44
(& ALT.)

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2004

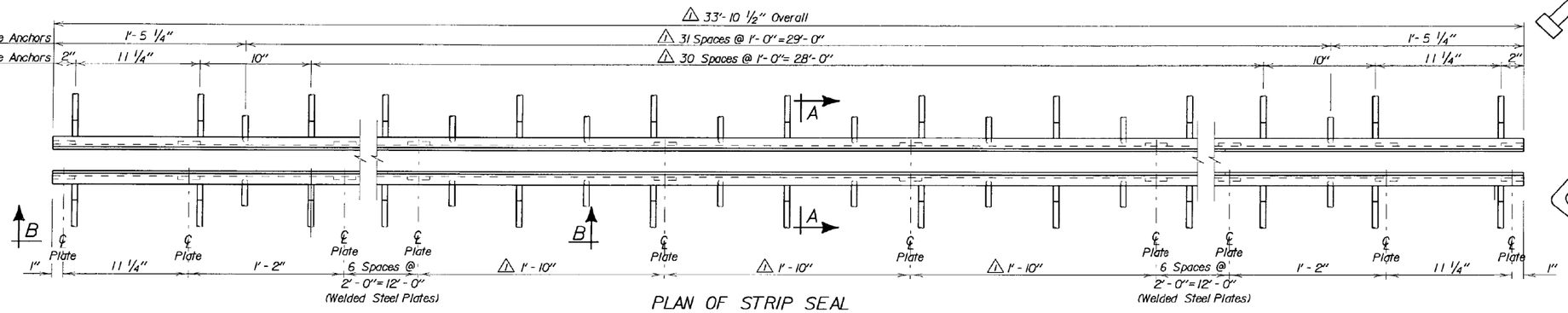
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DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
AV/DM	BK	AV/DM	BRIDGE ENGINEER
PERK5134	5134KA19		

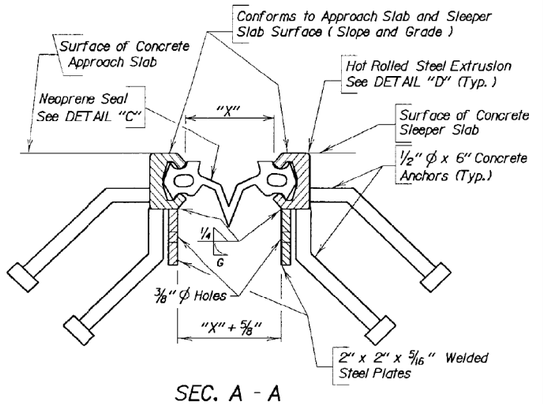
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	33/50



PLAN OF STRIP SEAL
(At Begin Bridge, Neoprene Seal not shown)



PLAN OF STRIP SEAL
(At End Bridge, Neoprene Seal not shown)



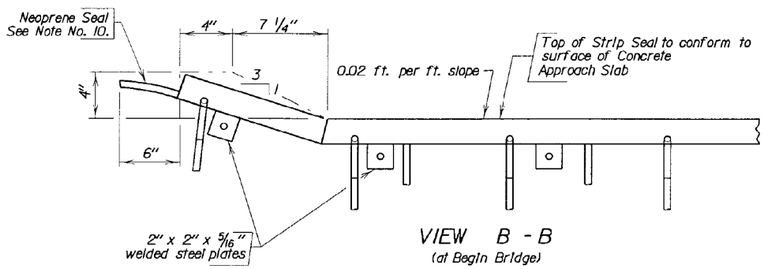
SEC. A - A



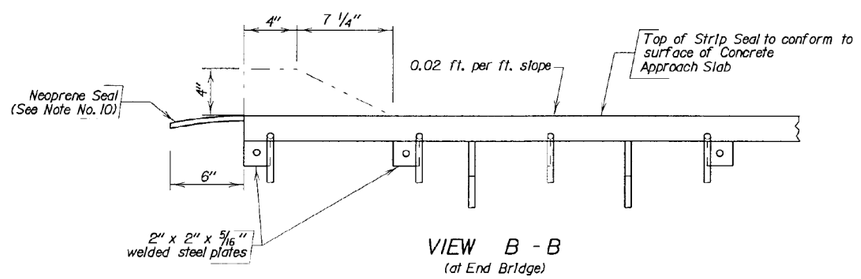
DETAIL "C"
Neoprene Seal shall have a 3" movement capability.

GENERAL NOTES:

1. Materials for the Steel Extrusion shall conform to ASTM-A36, A242 or A588. Materials for the 2" x 2" x 5/16" welded steel plates shall conform to ASTM-A36. Material for the 1/2" diameter x 6" Concrete Anchors shall conform to Type A steel studs of Section 7 of the latest edition of the ANSI / AWS D1.1 Structural Welding Code-Steel.
2. Material for the neoprene seal shall conform to ASTM D2628 modified to omit the recovery test. No splices will be permitted in the neoprene seal.
3. The lubricant-adhesive used to install the neoprene seal shall conform to the requirements of ASTM D4070. The neoprene seal and the lubricant adhesive should be supplied or recommended by the same source as they must be compatible.
4. The installation of the neoprene seal shall be as recommended by its Manufacturer and approved by the Engineer, but in general shall be as follows: The neoprene seal shall be installed and bonded to the steel extrusion with a high-solids lubricant adhesive. The neoprene surfaces shall be roughened with a wire brush before the application of the lubricant adhesive. The neoprene seal may be installed either prior to or after the time the steel extrusions are concreted in the approach slabs. The steel extrusion shall be dry, clean, free from dirt, grease and contaminants at the time the neoprene seal is installed.
5. Due to the length of the steel extrusions, splices are permitted. No welds shall be permitted in the internal section of the extrusion where the neoprene seal is located. Weld details shall be shown on the shop plans for approval by the Engineer. Welding shall be in accordance with latest edition of the ANSI/AWS D1.1 Structural Welding Code-Steel. Galvanize the steel extrusions and anything welded to them after all welding is completed. They shall be galvanized in accordance with AASHTO M111 (ASTM A123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repairing the galvanizing after welding shall be included with the shop plans. Repair of galvanizing shall be by the zinc-based solder method in conformance with ASTM A780.
6. The thickness and shape of the neoprene seal may vary from the sketch shown (Detail "C" on this sheet) according to the manufacturer's design; however, the wedge lugs must properly fit the groove in the steel extrusion. Before installation, the shop plans of the proposed neoprene seal showing the fixed dimensions, thickness of neoprene seal, and dimensions pertinent to the fit of the neoprene seal in the steel extrusion shall be submitted to and approved by the Engineer.
7. Since the configuration and dimensions of the steel extrusion may vary according to each manufacturer's design, they need not conform exactly to that shown in DETAIL "D", however, any deviations from the plan shown configuration or dimensions must be approved by the Office of Bridge Design.
8. The Strip Seal Expansion Joint supplier shall submit a detailed gland installation procedure with the shop plans.
9. The cost of welding shall be incidental to the contract unit price per foot for Strip Seal Expansion Joint.
10. The neoprene seal shall be of sufficient length such that a minimum length of 6" shall extend beyond each end of the steel extrusions.
11. The Strip Seal Expansion Joint will be measured in linear feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Strip Seal Expansion Joint will be paid for at the contract unit price per linear foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with plans and the foregoing specifications.

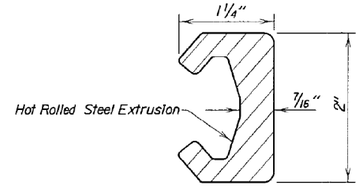


VIEW B - B
(at Begin Bridge)



VIEW B - B
(at End Bridge)

TEMP.	DIMENSION "X"
30°	2 1/4"
40°	2 3/16"
50°	2 1/8"
60°	2 1/16"
70°	2"
80°	1 15/16"
90°	1 7/8"



DETAIL "D"

ESTIMATED QUANTITIES (For Two Approach Slabs)		
ITEM	UNIT	QUANTITY
Strip Seal Expansion Joint	Ft.	△ 67.8

ORIGINAL CONSTRUCTION PLANS

△ CONSTRUCTION CHANGE

APPROACH SLAB JOINT DETAILS
FOR
128' - 10 5/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
STA. 14+43.56 TO 15+72.44
OVER THUNDER BUTTE CREEK
STR. NO. 53-383-397

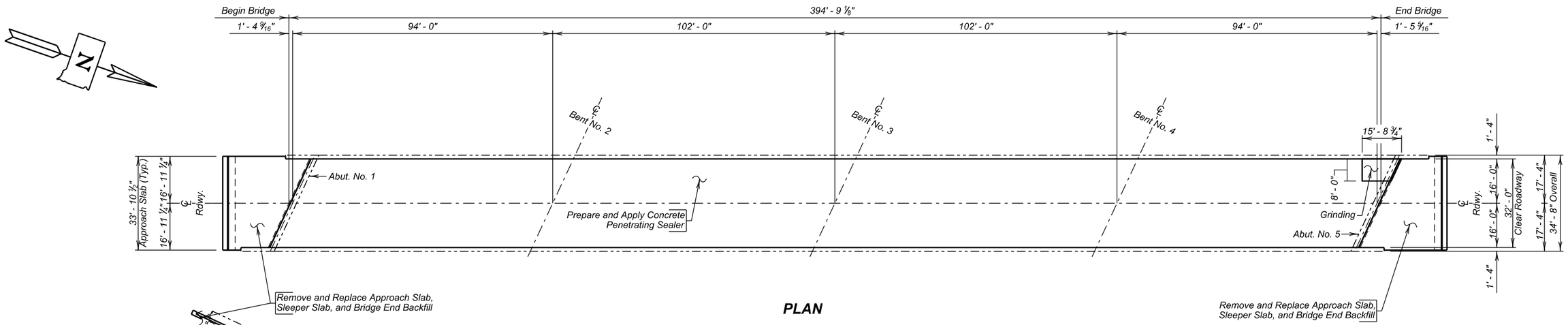
30° RHF SKEW
SEC. 4-T16N-R16E
BRF 0073(20)202
HS 25-44
(& ALT.)

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2004

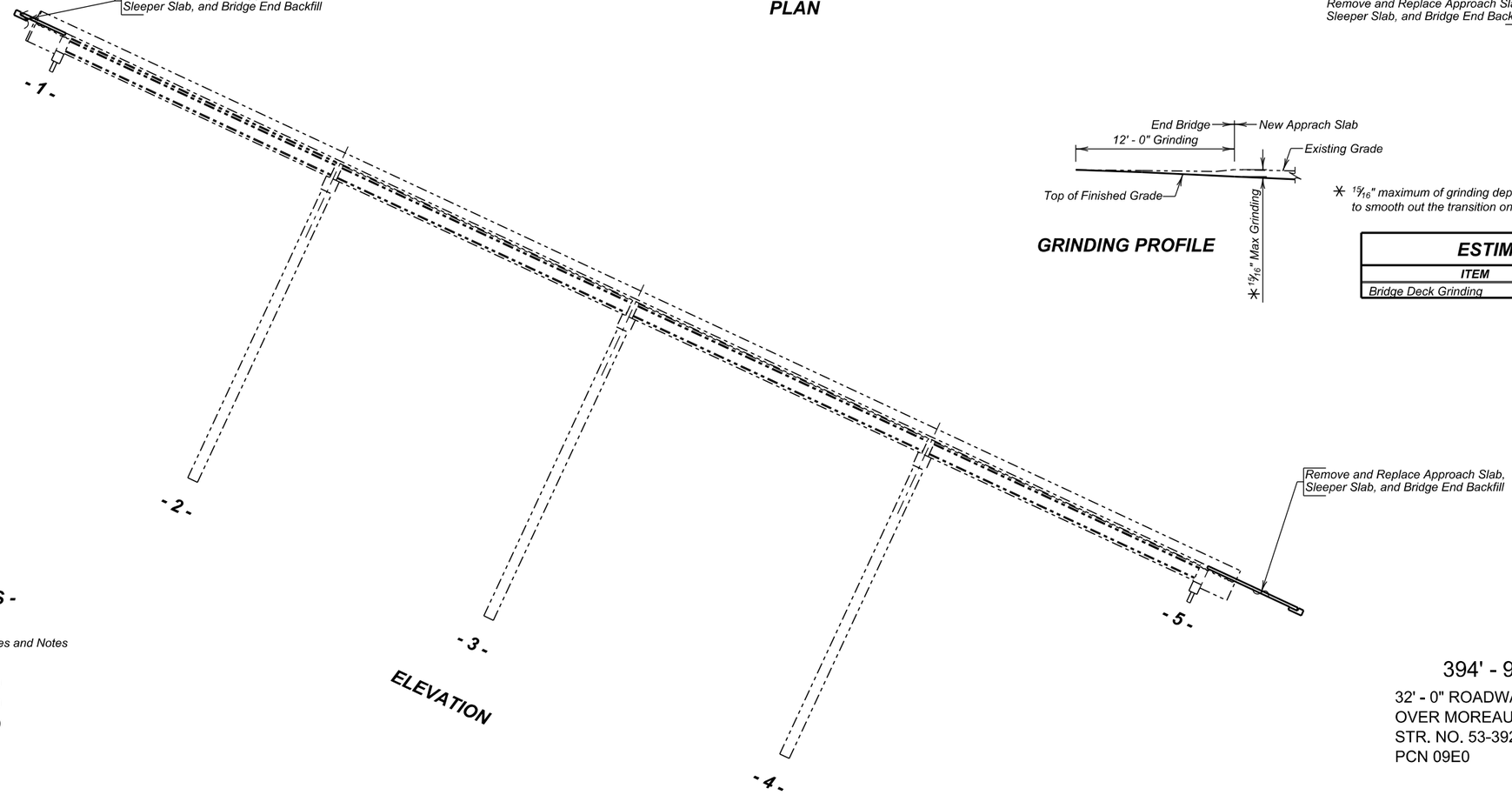
△ 7-12-05 DM

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
AV/DM	BK	AV/DM	BRIDGE ENGINEER
PERK5134	5134KA20		

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	34/50



PLAN



ELEVATION

GRINDING PROFILE

* $15/16$" maximum of grinding depth will be allowed to smooth out the transition onto the new Approach Slab

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Bridge Deck Grinding	SqYd	12.3

-X081-
INDEX OF BRIDGE SHEETS -

Sheet No. 1 - Layout for Upgrade
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Notes (Continued)
Sheet No. 4 - Bridge End Backfill Details (A)
Sheet No. 5 - Bridge End Backfill Details (B)
Sheet No. 6 - Bridge End Backfill Details (C)
Sheet No. 7 - Approach Slab Details (A)
Sheet No. 8 - Approach Slab Details (B)
Sheet No. 9 - Approach Slab Details (C)
Sheet No. 10 - Approach Slab Joint Details
Sheet No. 11 - Std. Plt. 430.50
Sheet No. 12 thru 17 - Original Construciton Plans

LAYOUT FOR UPGRADE
FOR
394' - 9 1/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521
PCN 09E0

25° SKEW L.H.F.
SEC. 10-T14N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

1 OF 17

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

-X081-

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM PERK09E0	AP 09E0RC01	CMM	Steven A Johnson BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	180.1	SqYd
410E2600	Membrane Sealant Expansion Joint	112.0	Ft
430E0200	Bridge End Embankment	6	CuYd
430E0300	Granular Bridge End Backfill	12.4	CuYd
430E0510	Approach Slab Underdrain Excavation	3.4	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0150	Concrete Approach Slab for Bridge	165.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	33.8	SqYd
460E0230	Concrete Penetrating Sealer	1400.1	SqYd
480E0504	No. 4 Rebar Splice	30	Each
480E0505	No. 5 Rebar Splice	32	Each
480E0506	No. 6 Rebar Splice	48	Each
491E0120	Bridge Deck Grinding	12.3	SqYd
680E0040	4" Underdrain Pipe	124	Ft
680E2500	Porous Backfill	6.6	Ton

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Working Stress Design.

2. Construction Specifications: Standard Specifications for Roads and Bridges, 10-7-26 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

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. Perform Bridge Deck Grinding to smooth out transition onto new Approach Slab for the first phase of construction.

2. Prepare deck surface and applying concrete penetrating sealer for the first phase of construction.

3. Remove the existing approach and sleeper slabs for the first phase of construction.

4. Perform underdrain excavation for the first phase of construction.

5. Place bridge end backfill and underdrain system material for the first phase of construction.

6. Replace approach slabs and sleeper slabs to the correct grade for the first phase of construction.

7. Replace sleeper slab joints with approved Membrane Sealant Expansion Joint for the first phase of construction.

8. Switch traffic and repeat steps 2 to 7 for the second phase of construction.

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. 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.

GENERAL CONSTRUCTION – BRIDGE

1. All mild 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. 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.

5. The Department will complete the as-built survey for this project. The Contractor will coordinate with the Department to get the survey completed prior to fully opening to traffic.

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.

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, strip seal expansion joint, and sleeper slabs will be incidental to the contract unit price per square yard for Remove Concrete Bridge Approach Slab.

APPROACH SLABS

1. As the backfill is only as required to bring up grade, it is anticipated minimal excavation will be required outside of the trenched area for the underdrain pipe. Removal of the existing approach and sleeper slabs and underdrain will be done with minimal disturbance to the underlying material.

2. Prior to the placement of the approach and sleeper slabs, the existing Select Granular Backfill material will be compacted using at least four complete passes of a smooth face vibratory roller or vibratory plate compactor. A layer of type B drainage fabric will be placed and Base Course will be used 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.

3. The top of approach slab elevations will be subject to the approval of the Engineer. Care will be taken to provide a smooth transition from the bridge deck elevations to the new pavement elevations to prevent any dips or bumps in the areas of the bridge ends or ends of the new approach slabs.

4. 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.

5. The quantity of 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.

6. 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, concrete anchors, 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.

7. 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.

8. Any Base Course, type B drainage fabric, and compaction required to fill any low spots or voids will be paid for at the contract unit price per cubic yard for Granular Bridge End Backfill. 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.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

394' - 9 ⅛" PRESTR. CONC. BRIDGE

STR. NO. 53-392-521

MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RC02		

APPROACH SLAB UNDERDRAIN SYSTEM

The existing underdrain pipe under the sleeper slab will be completely removed from the subgrade. In the event the existing sleeper trench will not be reused, the existing under drain trench will be backfilled with cohesive soil placed with moisture density control up to the bottom of the Granular Bridge end Backfill. Removal and disposal of the existing underdrain pipe and trench relocation efforts if required will be incidental to the contract unit price per cubic yard for Approach Slab Underdrain Excavation.

CONCRETE PENETRATING SEALER

1. This work consists of furnishing and applying a concrete penetrating sealer to a prepared deck surface.

2. The sealers will be per the Department's Approved Products List for Concrete Penetrating Sealer. The Contractor will furnish the Engineer the manufacturer's technical data sheets, materials safety data sheet (MSDS), and sufficient evidence that the material to be used has not exceeded the manufacturer's specified shelf life. This documentation will be furnished to the Engineer a minimum of 5 days prior to application of the sealer.

3. Concrete surfaces will be cleaned by power washing such that all traces of laitance, dirt, dust, salt, and foreign materials, and deleterious substances are removed. Oil, grease, or other contaminants on the concrete surface will require removal with detergent cleaning and abrasive blast on the affected areas. If necessary, solvents and hand tools will be used to remove bonded materials detrimental to the treatment of the concrete surface. The cleaning process will not cause undue damage to the concrete surface, remove or alter the existing surface finish, or expose the coarse aggregate of the concrete. The method of cleaning will be performed in such a manner as to provide a reasonably uniform appearing surface color and texture. Surface preparation will at a minimum as listed above, additional preparation maybe be required by the Manufacturer. Other methods and equipment for surface preparation may be used if prior approval is obtained from the Engineer.

4. Once the deck surface has been cleaned, the deck will be protected from contamination from traffic and construction operations. The concrete surfaces will be allowed to dry a minimum of 3 days after power washing or precipitation. The Engineer will determine when the surface is sufficiently dry.

5. The sealer may be harmful to materials such as rubber, asphalt, and joint compounds; therefore, the Contractor will be required to mask off all joints, strip seals, etc. prior to applying the sealer. The Engineer will approve the prepared surface prior to application of the penetrating sealer.

6. The Contractor will have enough sealer on the project prior to the start of application such that the Manufacturer's maximum rate of coverage (minimum ft^2 /gal) can be attained. Sealer application will conform to the Manufacturer's recommendations and the following:

   a. The penetrating sealer will only be applied when the ambient air and concrete surface temperatures are between 40 ºF and 100 ºF unless otherwise recommended by the Manufacturer.

   b. The treatment solution will not be sprayed when blowing winds or other conditions prevent proper application. The sealer will not be applied during inclement weather or rain, or if inclement weather or rain is anticipated within 24 hours.

   c. Spray equipment for the application of the treatment solution will be a low-pressure airless sprayer with a maximum application pressure of 15 psi.

   d. All surfaces will be dry prior to application of the sealer. The concrete surfaces will be allowed to dry for 3 days after power washing or precipitation. The Engineer will determine when the surface is sufficiently dry.

   e. All loose dust and debris will be blown off of the concrete surface with compressed air immediately prior to application of the sealer.

   f. The sealer will be used as supplied by the manufacturer and will not be diluted or altered in any way. The solution will be sprayed on to the concrete surfaces at the manufacturer's recommended maximum rate of coverage (minimum ft^2/gal) or to refusal, whichever is achieved first. Refusal is defined such that additional spray applications remain on the concrete surface and do not soak in, as determined by the Engineer.

   g. Traffic will not be permitted on treated surfaces until the solution has completely penetrated and the treated surface is dry. The Engineer will determine when the treated surface is sufficiently dry.

7. Concrete Penetrating Sealer will be measured to the nearest 0.1 square yard.

8. Concrete Penetrating Sealer will be paid for at the contract unit price per square yard. Payment will be full compensation for equipment, labor, materials, concrete surface preparation and cleaning, and all other incidental items required to furnish and apply the Concrete Penetrating Sealer.

DESIGN MIX OF CONCRETE

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

NOTES (CONTINUED)

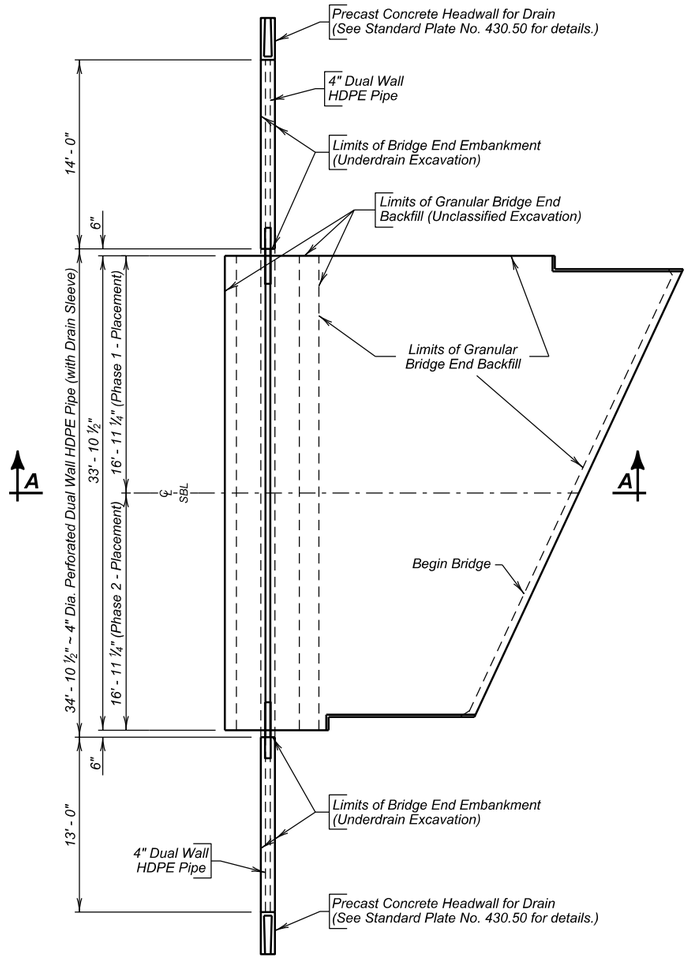
FOR

394' - 9 ⅛" PRESTR. CONC. BRIDGE

STR. NO. 53-392-521

MAY 2026

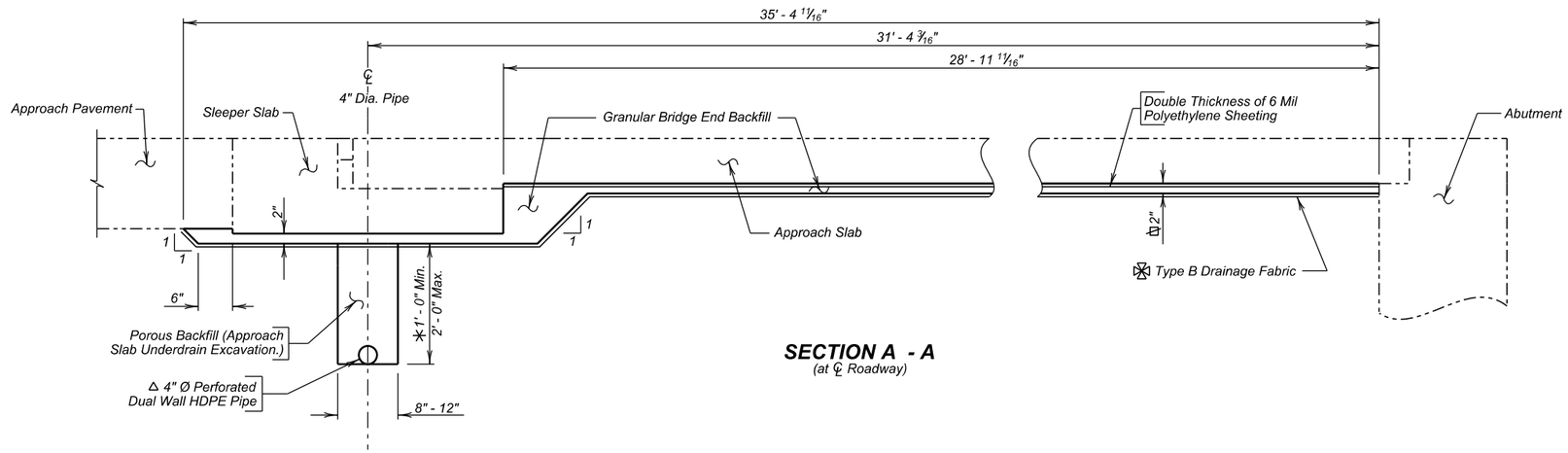
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RC03		



PLAN
(Abutment No. 1)

GENERAL NOTES:

- 2" of material is used for estimating purposes only. Granuler Bridge End Backfill will be placed and compacted to fill any low spots and bring backfill up to grade.
- The centerline of the trench may be adjusted by one foot toward or away from the bridge, as approved by the Engineer, to miss the location of the guardrail posts.
- 12" (min.) at ℄, slope bottom of trench and pipe at ⅛" per foot.
- The new drain pipe location and profile will match or be lower than the existing drain pipe. If the existing pipe location can not be reused, such as locations of interference with guardrail posts, the existing porous backfill in the existing trench will need to be removed and backfilled. A new trench can then be created under the sleeper, as approved by the Engineer.
- If the Granular Bridge End Backfill required to bring the approach up to grade is 2" or less and the existing drainage fabric is in good condition, a new layer of drainage fabric will not be required. Drainage fabric will be required over the area that is trenched for the placement of the drainage pipe and under the sleeper slab if excavation was required for placement.



SECTION A - A
(at ℄ Roadway)

BRIDGE END BACKFILL DETAILS (A)
FOR
394' - 9 ⅛" PRESTR. GIRDER BRIDGE

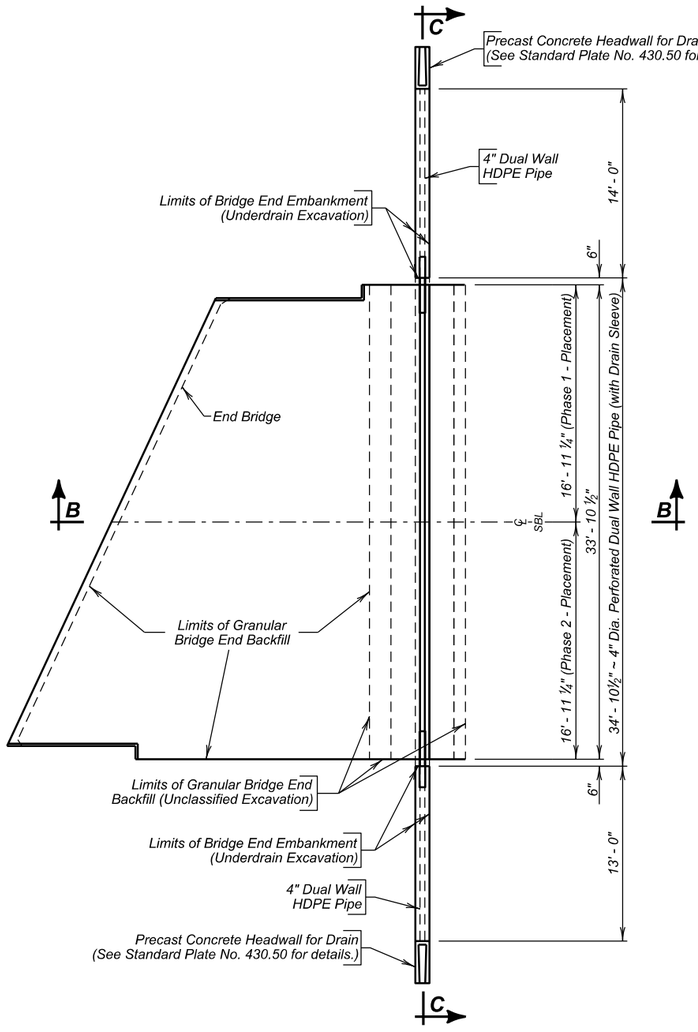
32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521

25° SKEW L.H.F.
SEC. 10-T14N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RC04		

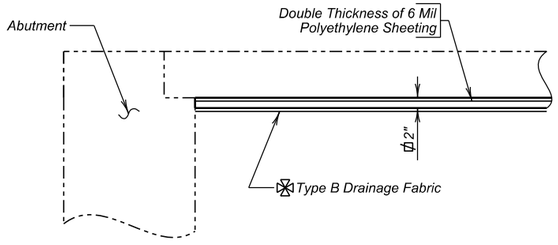
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	38/50

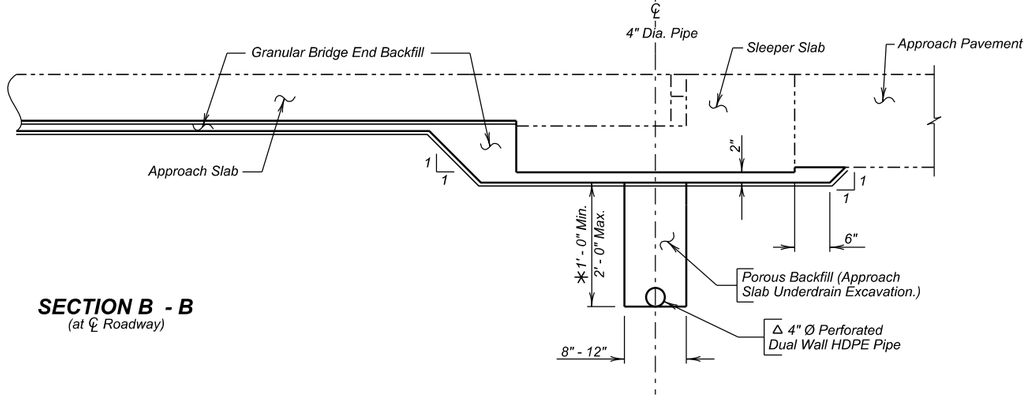


PLAN
(Abutment No. 5)

GENERAL NOTES:

- *2" of material is used for estimating purposes only. Granuler Bridge End Backfill will be placed and compacted to fill any low spots and bring backfill up to grade.*
- *The centerline of the trench may be adjusted by one foot toward or away from the bridge, as approved by the Engineer, to miss the location of the guardrail posts.*
- *12" (min.) at ℄, slope bottom of trench and pipe at ⅛" per foot.*
- *The new drain pipe location and profile will match or be lower than the existing drain pipe. If the existing pipe location can not be reused, such as locations of interference with guardrail posts, the existing porous backfill in the existing trench will need to be removed and backfilled. A new trench can then be created under the sleeper, as approved by the Engineer.*
- *If the Granular Bridge End Backfill required to bring the approach up to grade is 2" or less and the existing drainage fabric is in good condition, a new layer of drainage fabric will not be required. Drainage fabric will be required over the area that is trenched for the placement of the drainage pipe and under the sleeper slab if excavation was required for placement.*





SECTION B - B
(at ℄ Roadway)

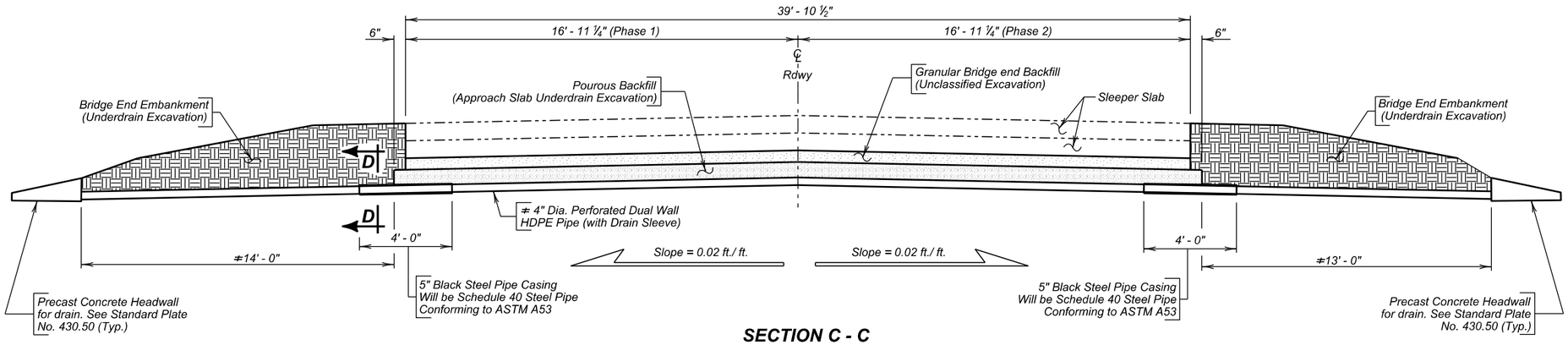
BRIDGE END BACKFILL DETAILS (B)
FOR
394' - 9 ⅛" PRESTR. GIRDER BRIDGE

32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521

25° SKEW L.H.F.
SEC. 10-T14N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM PERK09E0	AP 09E0RC05	CMM	Steve A Johnson BRIDGE ENGINEER



SECTION C - C

(Abut No. 5 Shown, Abut. 1 Similar)

GENERAL NOTES:

- ☆ For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.
- ⊛ Shrinkage Factor of 1.25 used.
- ⧫ Quantity under sleeper slab based on a 12" wide trench.
- ≠ The exact lengths of the 4" Dia. Perforated Dual Wall HDPE Pipe (with Drain Sleeve) and 4" Dia. Dual Wall HDPE Pipe will be field determined. The lengths shown are a best estimate based on the original construction plans.
- ϕ The 5" black steel pipe sleeve will be incidental to the contract unit price per foot for 4" Underdrain Pipe. The quantity shown for 4" Underdrain Pipe is the end to end length of the 4" pipe and does not include the additional length of 5" pipe sleeve.

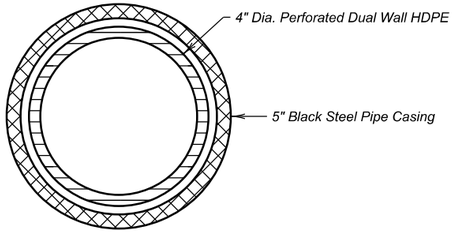
ESTIMATED QUANTITIES

(For Both Abutments)

	ITEM	UNIT	QUANTITY Phase 1	QUANTITY Phase 2
⊛	Bridge End Embankment	CuYd	3	3
	Granular Bridge End Backfill	CuYd	6.2	6.2
⧫	Approach Slab Underdrain Excavation	CuYd	1.8	1.6
	Precast Concrete Headwall for Drain	Each	2	2
ϕ ≠	4" Underdrain Pipe	Ft	61	63
⧫ ☆	Porous Backfill	Ton	3.3	3.3

Items 1 thru 5 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)	66 SqYd	66 SqYd
	2. Type B Drainage Fabric	93 SqYd	93 SqYd
	3. 4" Dia. Perforated Dual Wall HDPE Pipe (with Drain Sleeve)	36 Ft	36 Ft
≠	4. 4" Dia. Dual Wall HDPE Pipe	28 Ft	26 Ft
ϕ	5. 5" Black Steel Pipe Sleeve	8 Ft	8 Ft



SECTION D - D

(Center 4 Ft. Section of 5" Pipe at Location of Guard Rail Post)

BRIDGE END BACKFILL DETAILS (C)
FOR
394' - 9 ⅛" PRESTR. GIRDER BRIDGE

32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521

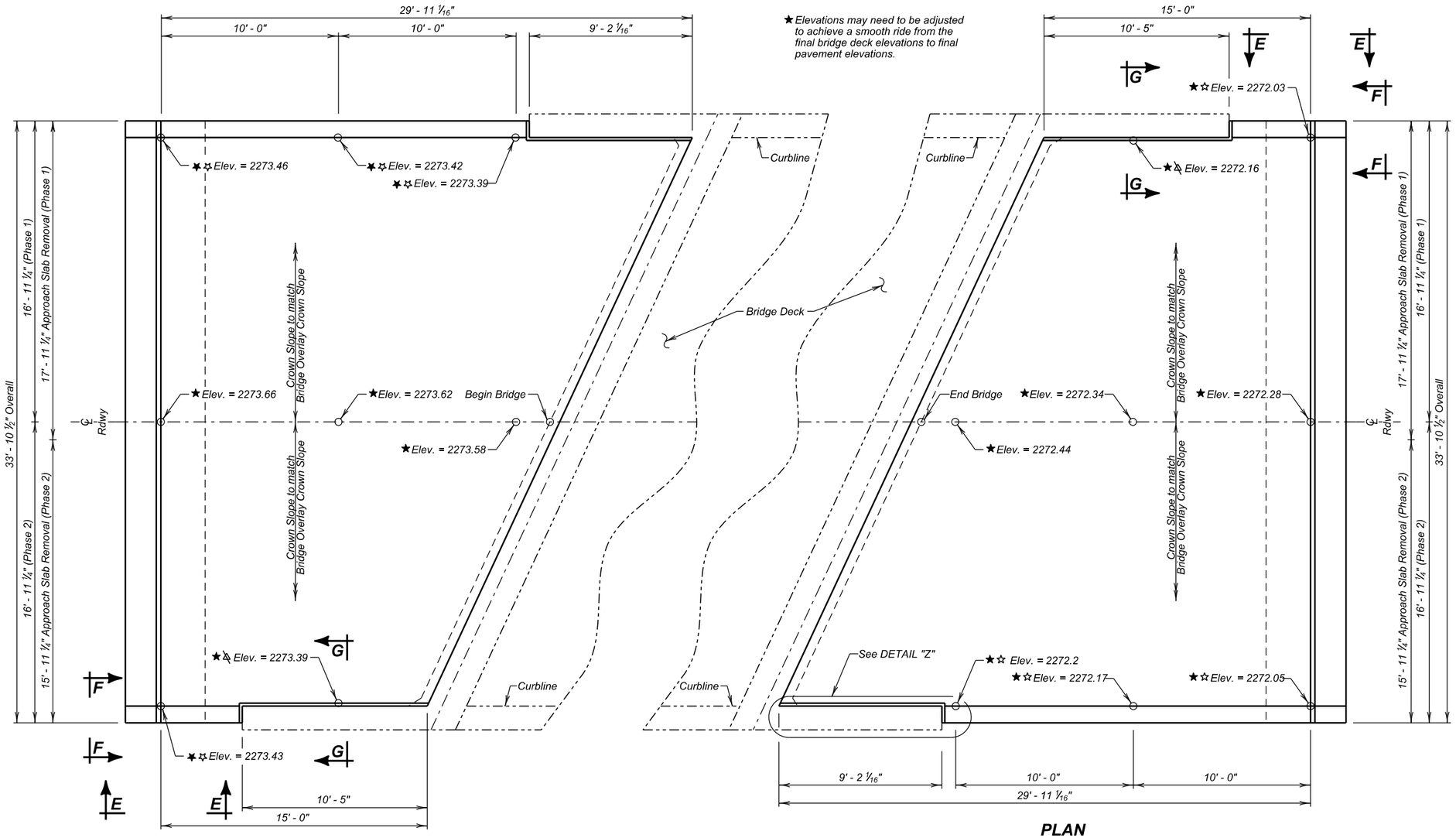
25° SKEW L.H.F.
SEC. 10-T14N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A. Johnson BRIDGE ENGINEER
PERK09E0	09E0RC06		

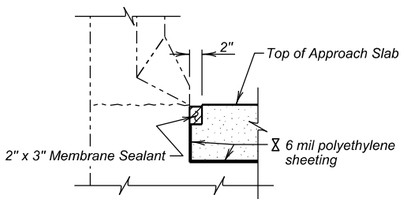
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	40/50

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

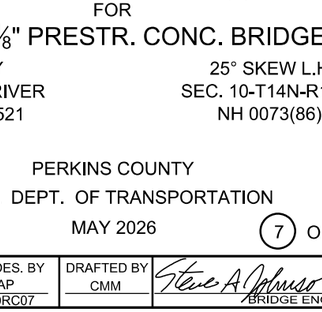


PLAN
(Abutment No. 1)

PLAN
(Abutment No. 5)

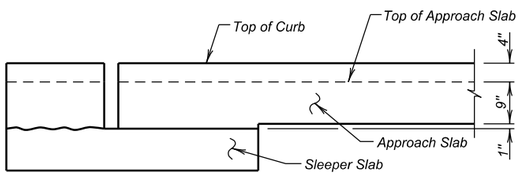


SECTION F - F
(Concrete shading and reinforcing steel not shown for clarity)

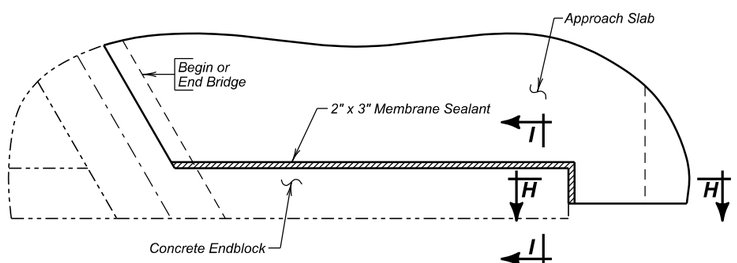


SECTION G - G
(Varies Along Barrier Taper)

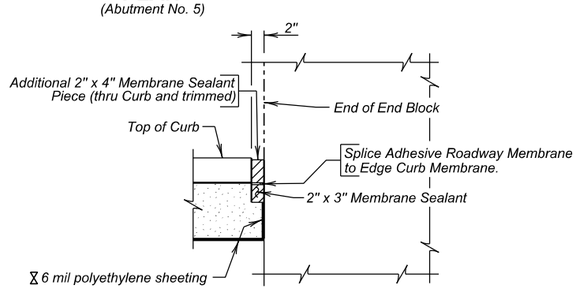
SECTION I - I



VIEW E - E



DETAIL "Z"



SECTION H - H

6 mil polyethylene sheeting shall not interfere with the bond between the Membrane Sealant and the approach slab.

APPROACH SLAB DETAILS (A)
FOR
394' - 9 1/8" PRESTR. CONC. BRIDGE

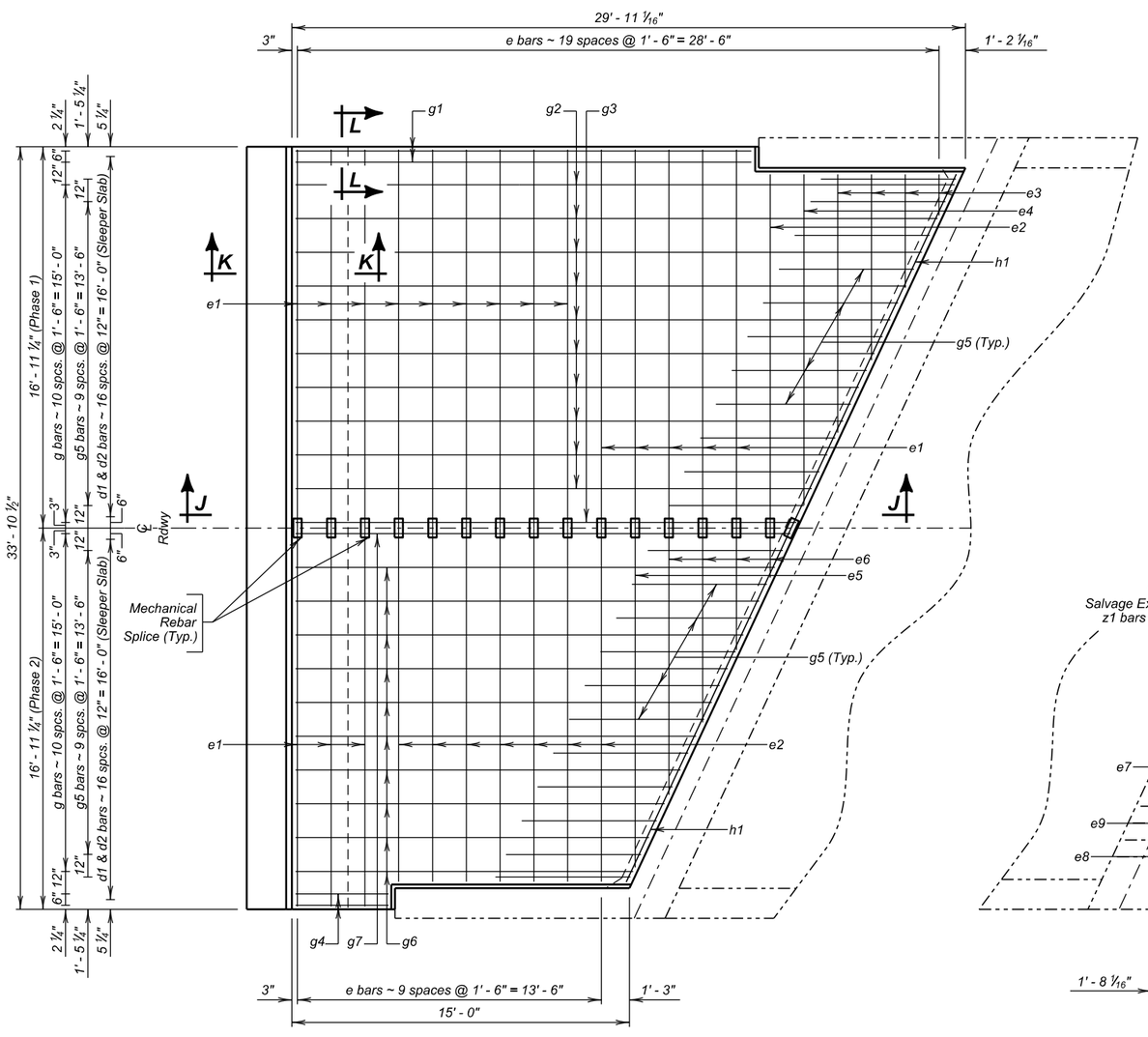
32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521

25° SKEW L.H.F.
SEC. 10-T14N-R16E
NH 0073(86)202

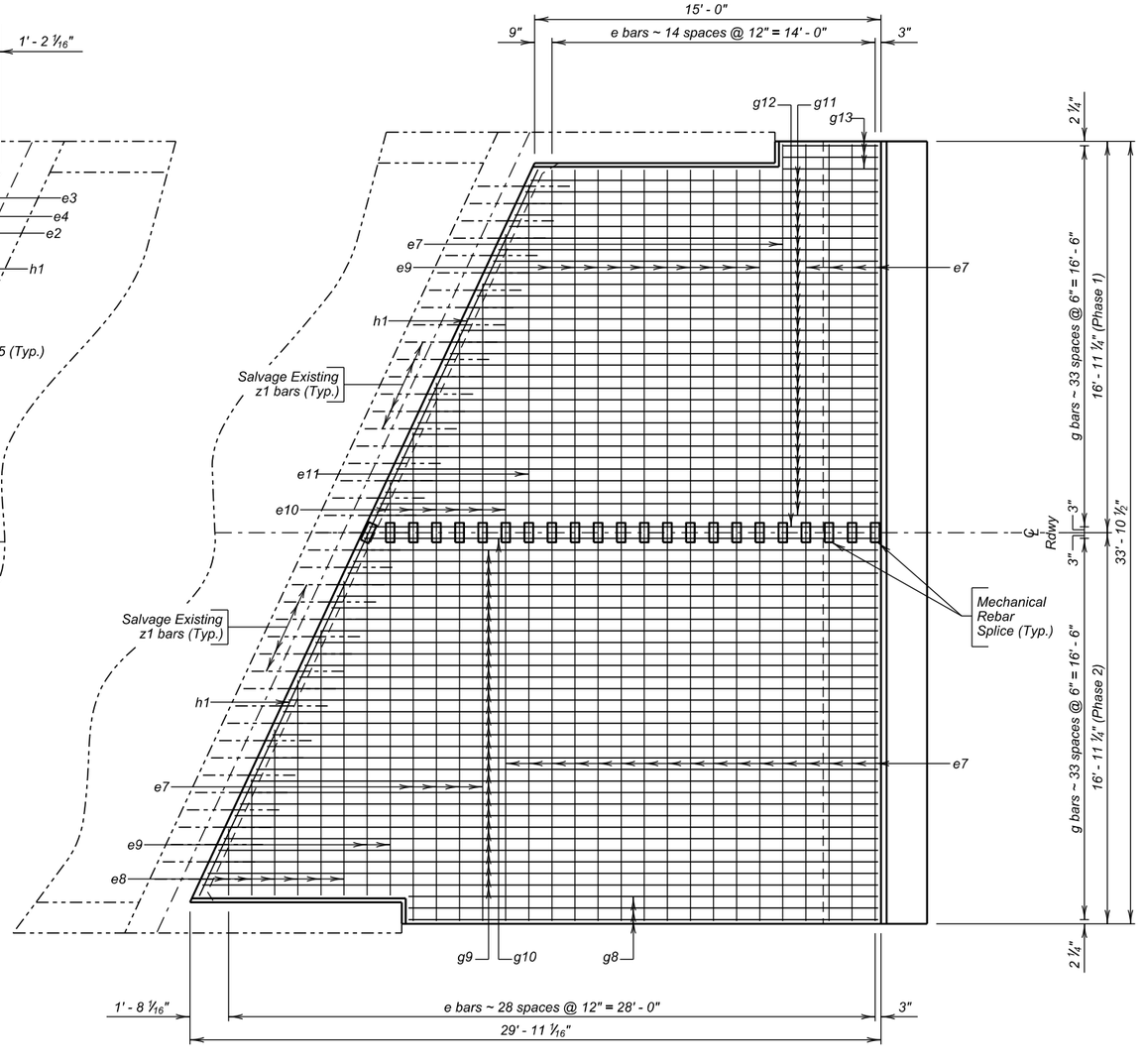
PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A Johnson
PERK09E0	09E0RC07		BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	41/50



PLAN
(TOP STEEL)
(Adjacent to Abut. No. 1 Shown, Abut. No. 5 similar by rotation)



PLAN
(BOTTOM STEEL)
(Adjacent to Abut. No. 5 Shown, Abut. No. 1 similar by rotation)

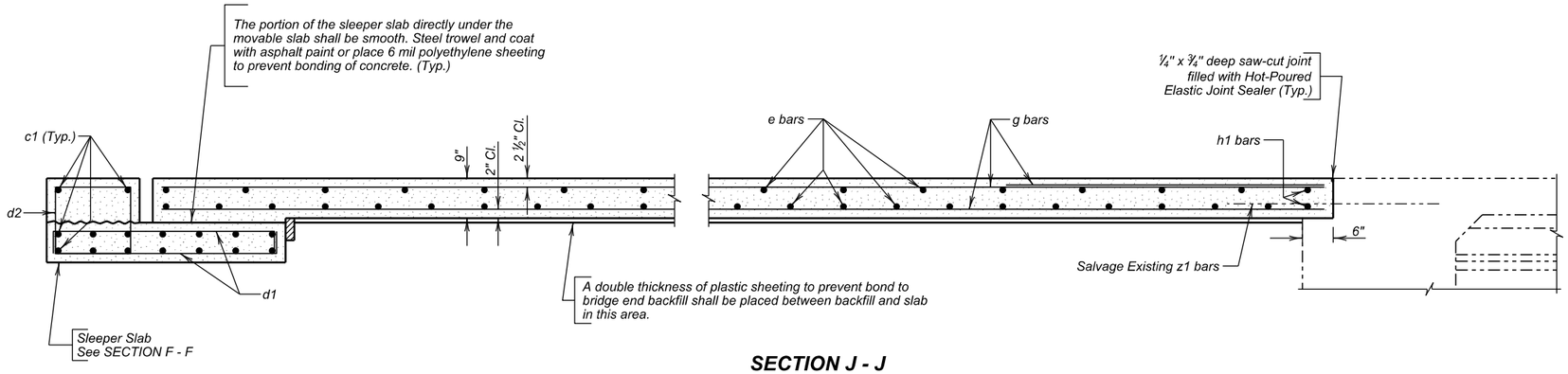
APPROACH SLAB DETAILS (B)
FOR
394' - 9 1/8" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521

25° SKEW L.H.F.
SEC. 10-T14N-R16E
NH 0073(86)202

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

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CMM	AP	CMM	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RC08		



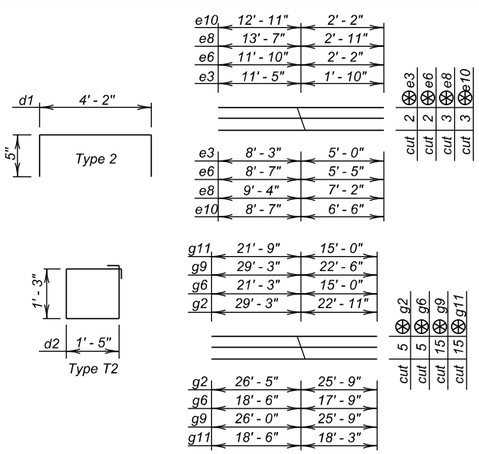
SECTION J - J

REINFORCING SCHEDULE - APPROACH SLABS

(For Two Approach Slabs)

	Mk.	No.	Size	Length	Type
	Phase 1				
⌀	c1	32	5	16' - 9"	Str.
	d1	68	4	5' - 0"	2
	d2	34	4	6' - 1"	T2
⌀	e1	17	4	16' - 9"	Str.
⌀	e2	8	4	15' - 8"	Str.
✳	e3	2	4	13' - 3"	Str.
	e4	1	4	14' - 8"	Str.
⌀	e5	1	4	15' - 0"	Str.
⌀ ✳	e6	2	4	14' - 0"	Str.
⌀	e7	26	6	16' - 9"	Str.
✳	e8	3	6	16' - 6"	Str.
⌀	e9	12	6	15' - 8"	Str.
⌀ ✳	e10	3	6	15' - 1"	Str.
⌀	e11	1	6	15' - 0"	Str.
	g1	2	4	20' - 3"	Str.
✳	g2	5	4	52' - 2"	Str.
	g3	1	4	22' - 3"	Str.
	g4	2	4	4' - 1"	Str.
	g5	22	4	6' - 0"	Str.
✳	g6	5	4	36' - 3"	Str.
	g7	1	4	22' - 0"	Str.
	g8	3	8	20' - 3"	Str.
✳	g9	15	8	51' - 9"	Str.
	g10	1	8	22' - 3"	Str.
✳	g11	15	8	36' - 9"	Str.
	g12	1	8	22' - 0"	Str.
	g13	3	8	4' - 1"	Str.
⌀	h1	4	6	17' - 4"	Str.

Bending Details



	Mk.	No.	Size	Length	Type
	Phase 2				
	c1	32	5	16' - 9"	Str.
	d1	68	4	5' - 0"	2
	d2	34	4	6' - 1"	T2
	e1	17	4	16' - 9"	Str.
	e2	8	4	15' - 8"	Str.
✳	e3	2	4	13' - 3"	Str.
	e4	1	4	14' - 8"	Str.
	e5	1	4	15' - 0"	Str.
✳	e6	2	4	14' - 0"	Str.
	e7	26	6	16' - 9"	Str.
✳	e8	3	6	16' - 6"	Str.
	e9	12	6	15' - 8"	Str.
✳	e10	3	6	15' - 1"	Str.
	e11	1	6	15' - 0"	Str.
	g1	2	4	20' - 3"	Str.
✳	g2	5	4	52' - 2"	Str.
	g3	1	4	22' - 3"	Str.
	g4	2	4	4' - 1"	Str.
	g5	22	4	6' - 0"	Str.
✳	g6	5	4	36' - 3"	Str.
	g7	1	4	22' - 0"	Str.
	g8	3	8	20' - 3"	Str.
✳	g9	15	8	51' - 9"	Str.
	g10	1	8	22' - 3"	Str.
✳	g11	15	8	36' - 9"	Str.
	g12	1	8	22' - 0"	Str.
	g13	3	8	4' - 1"	Str.
	h1	4	6	17' - 4"	Str.

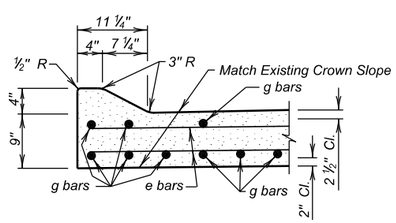
Note -

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

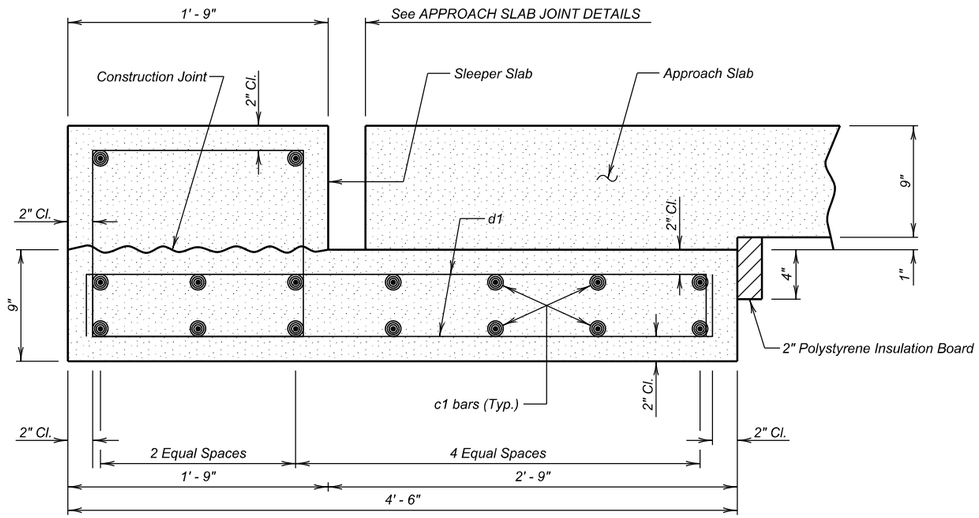
✳ Cut Bars

⊛ Requires cut set for each phase

⌀ Splice (Mechanically Spliced)



SECTION L - L



SECTION K - K

(Sleeper Slab)

ESTIMATED QUANTITIES

(For Two Approach Slabs and Sleeper Slabs)

ITEM	UNIT	QUANTITY Phase 1	QUANTITY Phase 2
Remove Concrete Bridge Approach Slab	SqYd	95.5	84.6
Concrete Approach Slab for Bridge	SqYd	82.5	82.5
Concrete Approach Sleeper Slab for Bridge	SqYd	16.9	16.9
No. 4 Rebar Splice	Each	30	-
No. 5 Rebar Splice	Each	32	-
No. 6 Rebar Splice	Each	48	-
⟠ Membrane Sealant Expansion Joint	Ft	22.1	22.1

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

	Phase 1	Phase 2
1. Concrete in Approach Slabs	20.6 CuYd	20.6 CuYd
2. Epoxy Coated Re-Steel in Approach Slabs	5843 Lb	5843 Lb
3. Concrete in Sleeper Slabs	6.2 CuYd	6.2 CuYd
4. Epoxy Coated Re-Steel in Sleeper Slabs	924 Lb	924 Lb
5. 2" Polystyrene Insulation Board	14.1 SqFt	14.1 SqFt

⟠ Requirements for Membrane Sealant Expansion Joint are located in the GENERAL NOTES on Sheet APPROACH SLAB JOINT DETAILS.

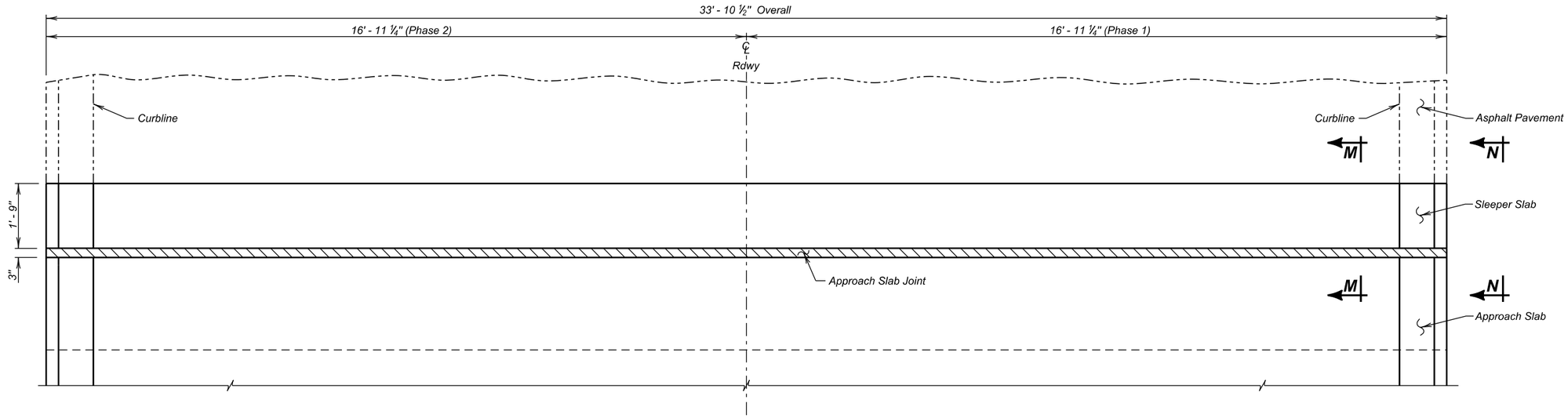
APPROACH SLAB DETAILS (C)
FOR
394' - 9 ⅛" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER MOREAU RIVER
STR. NO. 53-392-521

25° SKEW L.H.F.
SEC. 10-T14N-R16E
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PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

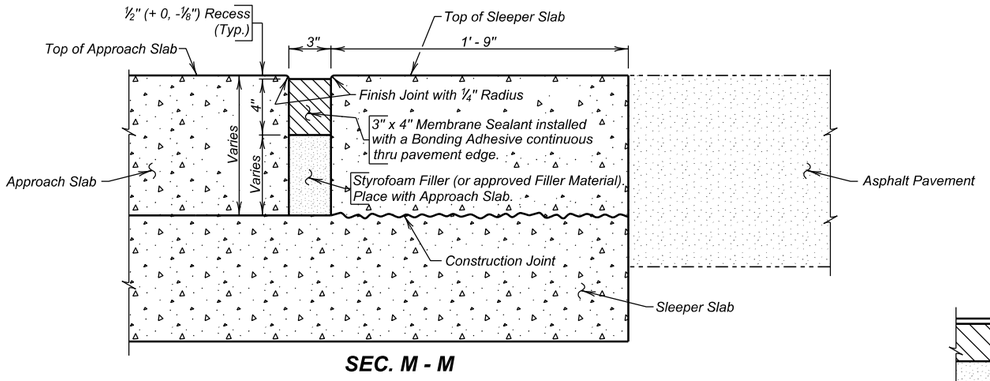
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CMM	AP	CMM	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RC09		



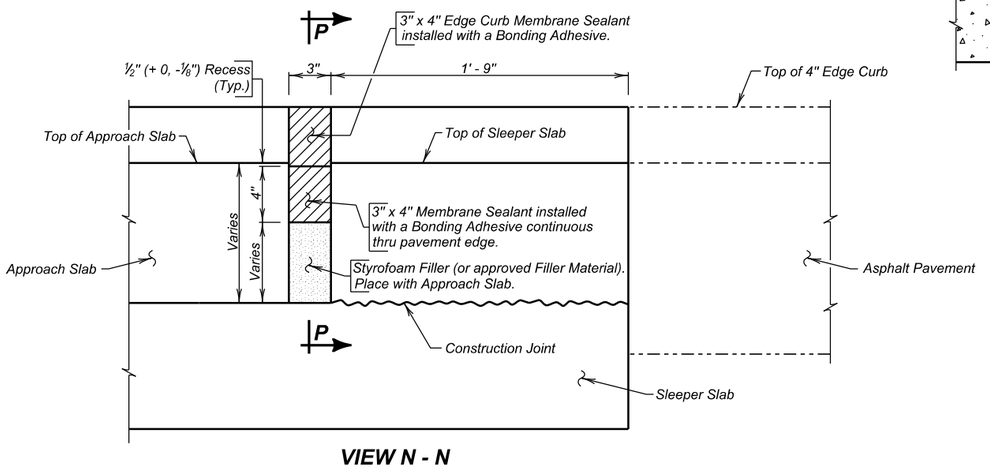
PLAN

GENERAL NOTES

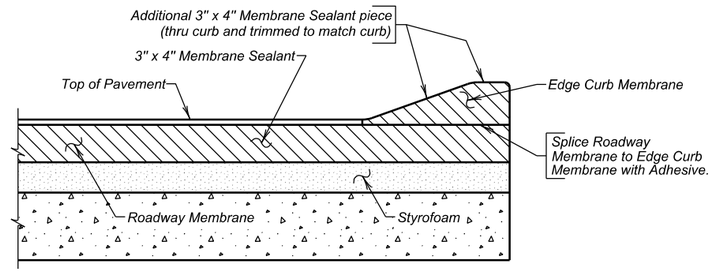
1. The membrane sealant will be on the approved product list for Membrane Sealant Expansion Joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer to provide a water 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.



SEC. M - M



VIEW N - N



SEC. P - P

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Membrane Sealant Expansion Joint	Ft	33.9	33.9

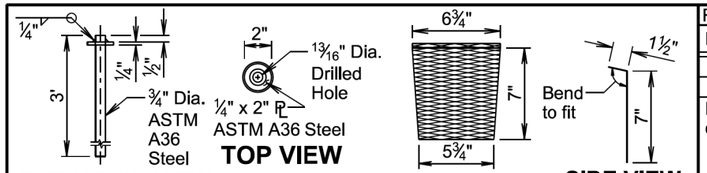
APPROACH SLAB JOINT DETAILS
FOR
394' - 9 ⅛" PRESTR. CONC. BRIDGE

32' - 0" ROADWAY
OVER MOREAU RIVER
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PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2026

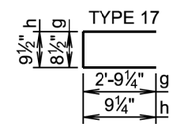
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CMM	AP	CMM	Steve A Johnson BRIDGE ENGINEER
PERK09E0	09E0RC10		

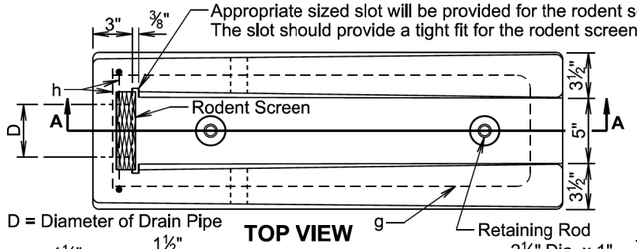


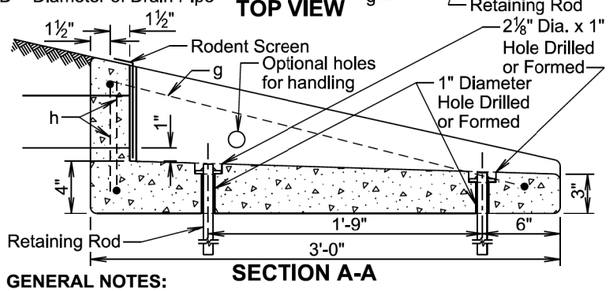
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

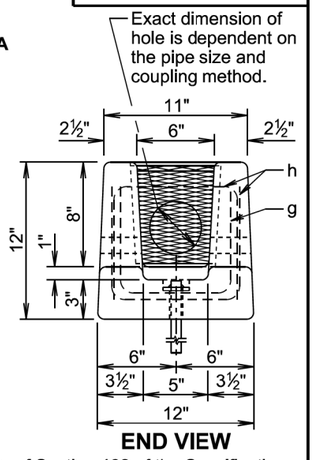
NOTE: All dimensions are out to out of bars.

Bending Details









GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

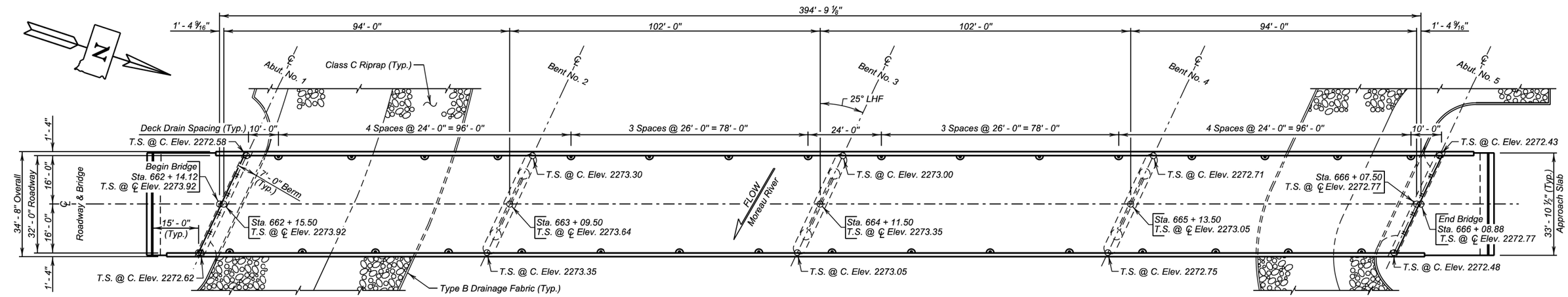
November 19, 2021

Published Date: 2027	SDDOT	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50 Sheet 1 of 1

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

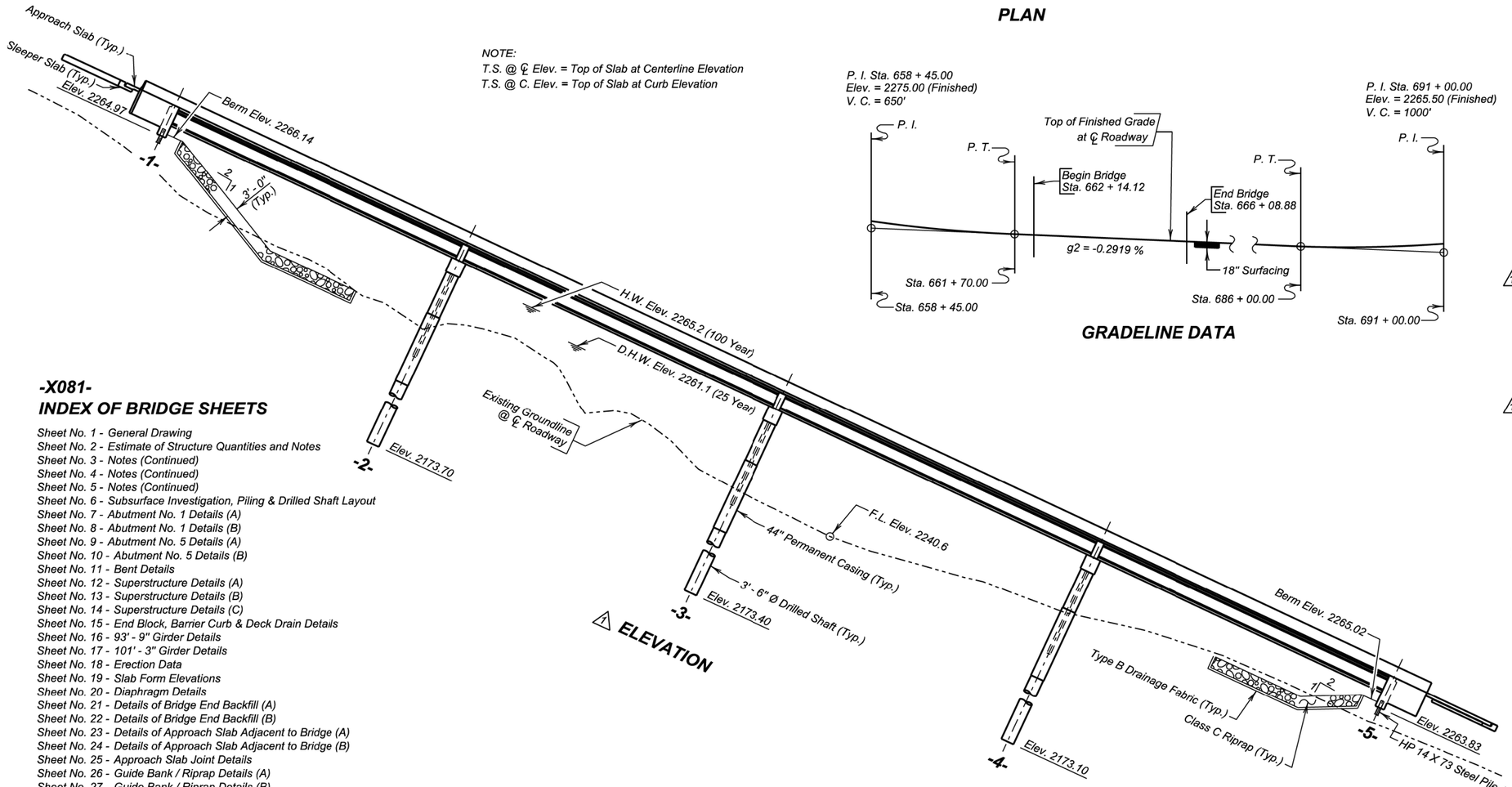
1 Revised December 18, 2014

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	45/50



PLAN

NOTE:
T.S. @ ℄ Elev. = Top of Slab at Centerline Elevation
T.S. @ C. Elev. = Top of Slab at Curb Elevation



ELEVATION

P. I. Sta. 658 + 45.00
Elev. = 2275.00 (Finished)
V. C. = 650'

GRADELINE DATA

P. I. Sta. 691 + 00.00
Elev. = 2265.50 (Finished)
V. C. = 1000'

HYDRAULIC DATA

1 Q_d	19700 cfs
1 A_d	3717 sq. ft.
1 V_d	5.3 fps
Q_F	19700 cfs
Q_{100}	31700 cfs
Q_{OT}	>Q_{100} cfs
1 V_{max}	6.3 fps

1 Q_d = Design discharge for the proposed bridge based on 25 year frequency. El. 2261.1.

Q_{OT} = Overtopping discharge and frequency > Q_{100} yr. recurrence interval. El. 2267.5. Location Sta. 687 + 00.00

Q_F = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 2265.2.

1 V_{max} = Maximum computed outlet velocity for the proposed bridge, based on 100 year frequency.

-X081-
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, Piling & Drilled Shaft Layout
Sheet No. 7 - Abutment No. 1 Details (A)
Sheet No. 8 - Abutment No. 1 Details (B)
Sheet No. 9 - Abutment No. 5 Details (A)
Sheet No. 10 - Abutment No. 5 Details (B)
Sheet No. 11 - Bent Details
Sheet No. 12 - Superstructure Details (A)
Sheet No. 13 - Superstructure Details (B)
Sheet No. 14 - Superstructure Details (C)
Sheet No. 15 - End Block, Barrier Curb & Deck Drain Details
Sheet No. 16 - 93' - 9" Girder Details
Sheet No. 17 - 101' - 3" Girder Details
Sheet No. 18 - Erection Data
Sheet No. 19 - Slab Form Elevations
Sheet No. 20 - Diaphragm Details
Sheet No. 21 - Details of Bridge End Backfill (A)
Sheet No. 22 - Details of Bridge End Backfill (B)
Sheet No. 23 - Details of Approach Slab Adjacent to Bridge (A)
Sheet No. 24 - Details of Approach Slab Adjacent to Bridge (B)
Sheet No. 25 - Approach Slab Joint Details
Sheet No. 26 - Guide Bank / Riprap Details (A)
Sheet No. 27 - Guide Bank / Riprap Details (B)
Sheet No. 28 - Details of Standard Plate No.'s 460.02 and 460.05
Sheet No. 29 - Details of Standard Plate No.'s 510.40 and 520.19
Sheet No. 30 - Details of Standard Plate No.'s 630.92 and 680.03

ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING
FOR
394' - 9⅛" PRESTR. GIRDER BRIDGE

32' - 0" ROADWAY — 25° LHF SKEW
OVER MOREAU RIVER — SEC. 10-T14N-R16E
STA. 662 + 14.12 TO 666 + 08.88 — NH 0073(63)182
STR. NO. 53-392-521 — HL-93
PCN 02S7

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2013

12 OF 17

-X081-

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JMH	MM	MG	Kevin N. Goeden
PERK02S7	02S7GB01		BRIDGE ENGINEER

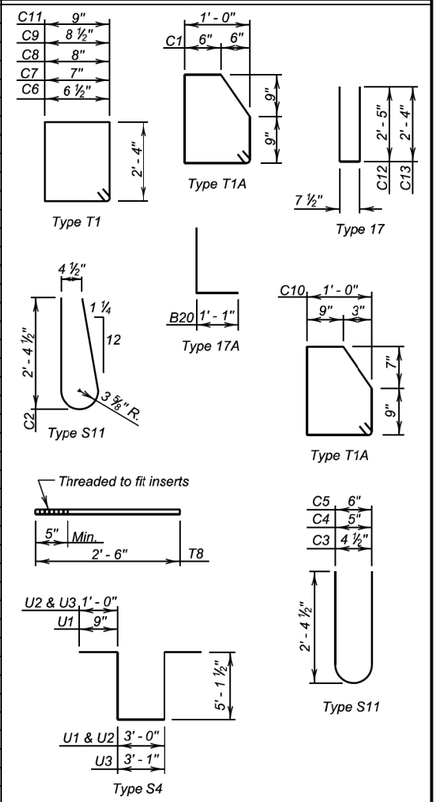
PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

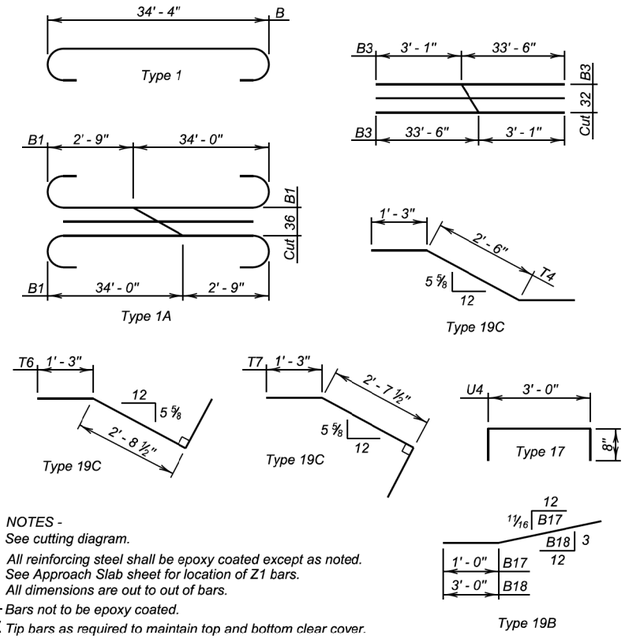
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	46/50

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
∡	B	902	5	35' - 6"	1
# ∡	B1	36	5	37' - 11"	1A
	B2	821	4	34' - 4"	Str.
#	B3	32	4	36' - 7"	Str.
	B15	12	5	14' - 6"	Str.
	B16	16	4	52' - 2"	Str.
	B17	8	4	8' - 6"	19B
	B18	12	8	4' - 3"	19B
	B19	12	5	2' - 4"	Str.
	B20	12	6	3' - 6"	17A
	C1	810	5	5' - 7"	T1A
	C2	782	5	5' - 1"	S11
	C3	4	5	5' - 0"	S11
	C4	4	5	5' - 0"	S11
	C5	4	5	5' - 0"	S11
	C6	4	5	6' - 8"	T1
	C7	4	5	6' - 9"	T1
	C8	4	5	6' - 11"	T1
	C9	4	5	7' - 0"	T1
	C10	16	6	5' - 11"	T1A
	C11	16	5	7' - 1"	T1
	C12	4	6	5' - 6"	17
	C13	4	5	5' - 4"	17
	D	32	4	53' - 3"	Str.
	D0	32	5	54' - 6"	Str.
	D1	84	4	57' - 6"	Str.
	D2	132	5	39' - 5"	Str.
	D3	168	7	29' - 6"	Str.
	D4	99	7	43' - 10"	Str.
	D5	132	5	34' - 4"	Str.
	D6	231	5	58' - 5"	Str.
✶	T1	18	6	7' - 5"	Str.
✶	T2	54	5	9' - 4"	Str.
✶	T3	18	5	7' - 2"	Str.
✶	T4	12	5	5' - 0"	19C
✶	T5	9	5	33' - 6"	Str.
✶	T6	30	5	6' - 4"	19C
✶	T7	30	5	5' - 0"	19C
✶	T8	36	6	2' - 6"	Str.
	U1	54	4	14' - 9"	S4
	U2	18	6	15' - 3"	S4
	U3	6	6	15' - 4"	S4
✶	U4	72	4	4' - 4"	17
	Z1	86	7	2' - 0"	Str.

Bending Details





NOTES -

≠ See cutting diagram.

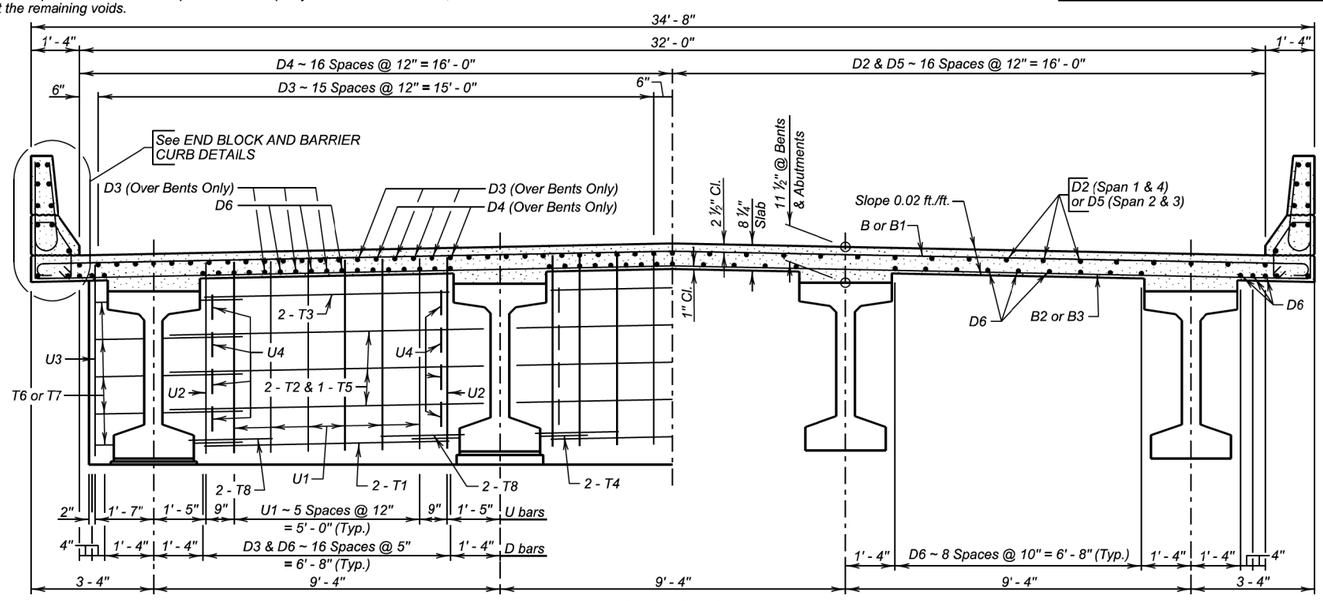
All reinforcing steel shall be epoxy coated except as noted. See Approach Slab sheet for location of Z1 bars. All dimensions are out to out of bars.

✶ Bars not to be epoxy coated.

∡ Tip bars as required to maintain top and bottom clear cover.

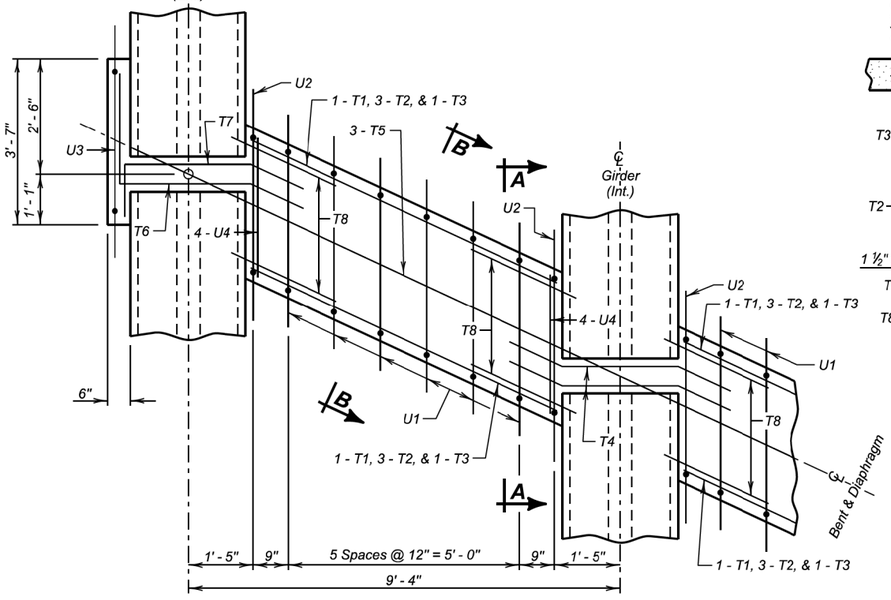
NOTE -

Concrete shall be placed in the space under the beams at Bents 2, 3, & 4 (within the diaphragm width) during the diaphragm pour. If upon form removal the space is not completely filled and consolidated, the contractor shall grout the remaining voids.



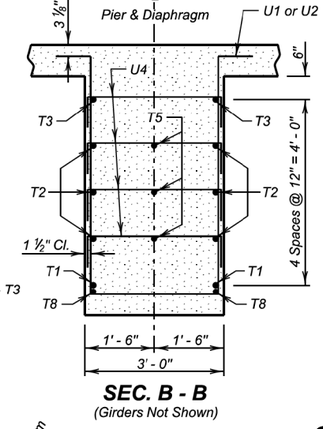
SEC. C - C

(Midspan diaphragm not shown in this section, see DIAPHRAGM DETAILS sheet.)



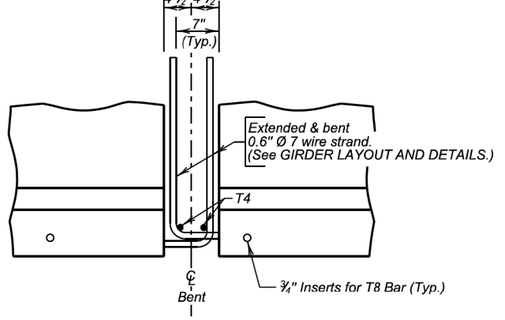
BENT DIAPHRAGMS

(Slab Not Shown)



SEC. B - B

(Girders Not Shown)



SEC. A - A

(Showing extended and bent strand detail and T4 bar placement at Bent. T6 & T7 similar at exterior girder.)

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
☆	Class A45 Concrete, Bridge Deck	Cu.Yd.	512.5
⌀	Epoxy Coated Reinforcing Steel	Lb.	115647
⌀	Reinforcing Steel	Lb.	1936
	54" Minnesota Shape Prestressed Concrete Beam	Ft.	1560
	No. 7 Rebar Splice	Each	68
	Concrete Penetrating Sealer	Sq.Yd.	1400
	Deck Drain, Girder Bridge	Each	32

⌀ *Includes quantities for Bent Diaphragms, Barrier Curbs, and Slab.*

☆ *Includes quantities for Bent Diaphragms, Barrier Curbs, Slab and Haunch. (Average depth of 2 ½" used for Haunch Quantity.) Concrete Quantity for Barrier Curbs is 0.0842 Cu.Yd. / Ft. and for End blocks is 1.1659 Cu.Yd. each.*

ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS (C)

FOR

394' - 9⅛" PRESTR. GIRDER BRIDGE

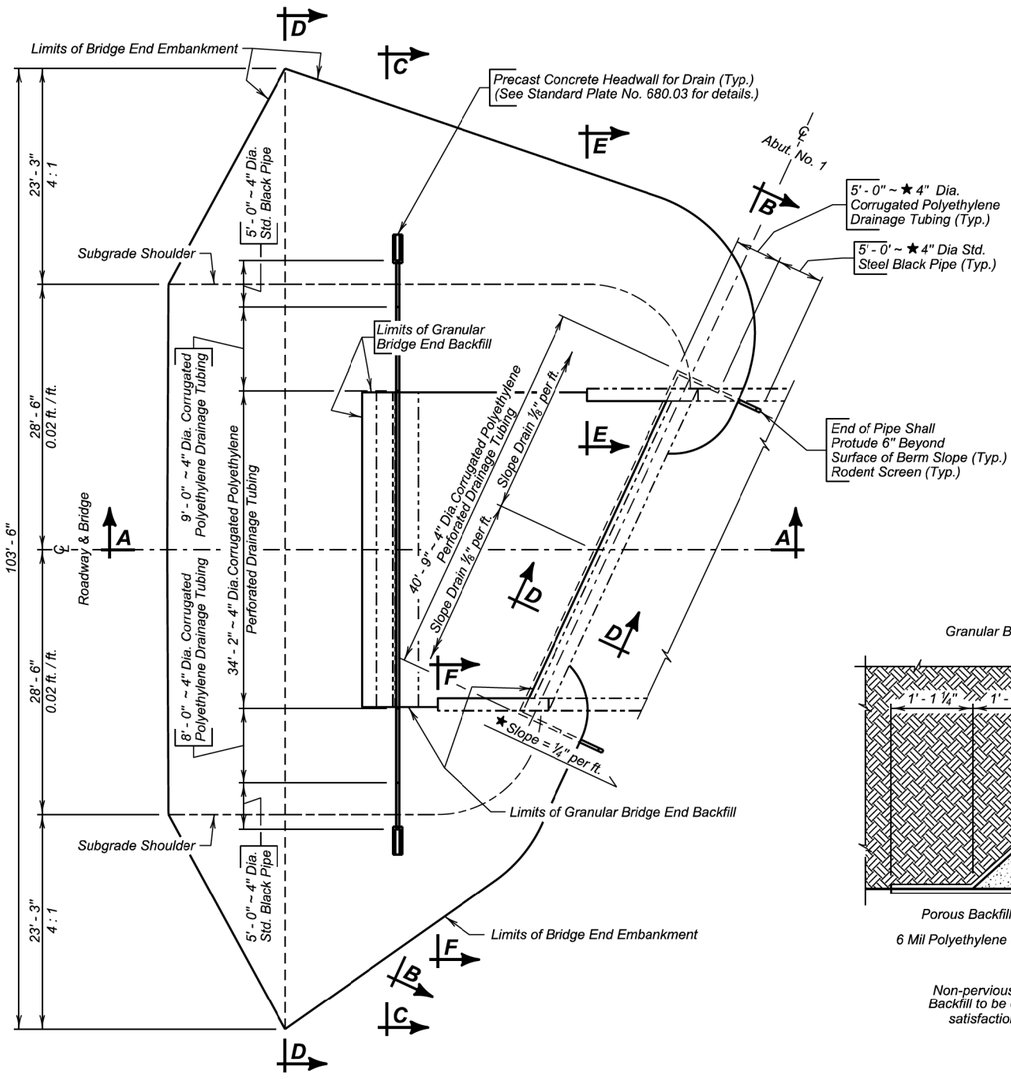
32' - 0" ROADWAY — 25° LHF SKEW
OVER MOREAU RIVER — SEC. 10-T14N-R16E
STA. 662 + 14.12 TO 666 + 08.88 — NH 0073(63)182
STR. NO. 53-392-521 — HL-93

PERKINS COUNTY

S. D. DEPT. OF TRANSPORTATION

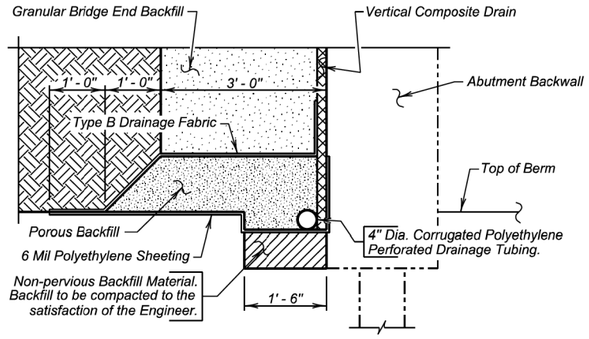
NOVEMBER 2013 — 13 OF 17

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JMH	MM	MG	Kevin N. Goeden
PERK02S7	02S7GB14		BRIDGE ENGINEER

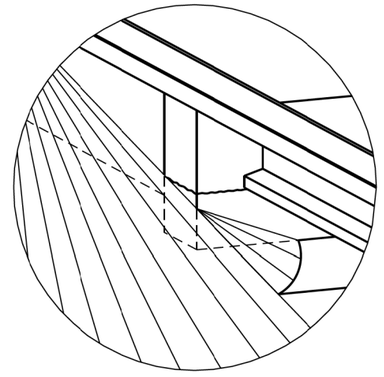


PLAN

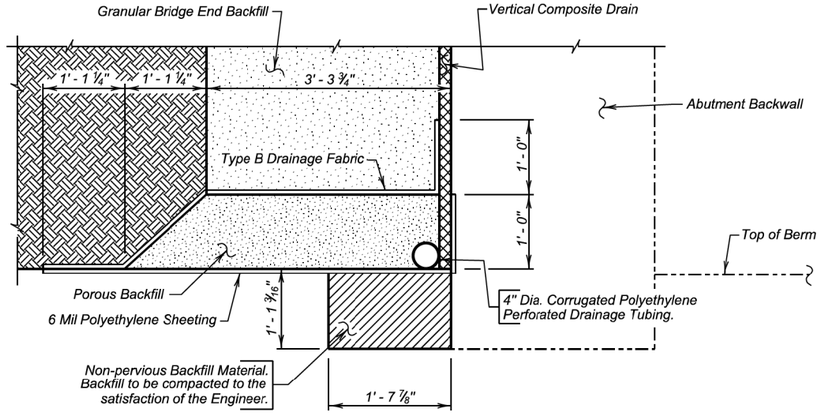
(Bridge End Backfill shown adjacent to Abut. No. 1, Abut. No. 5 similar by rotation.)



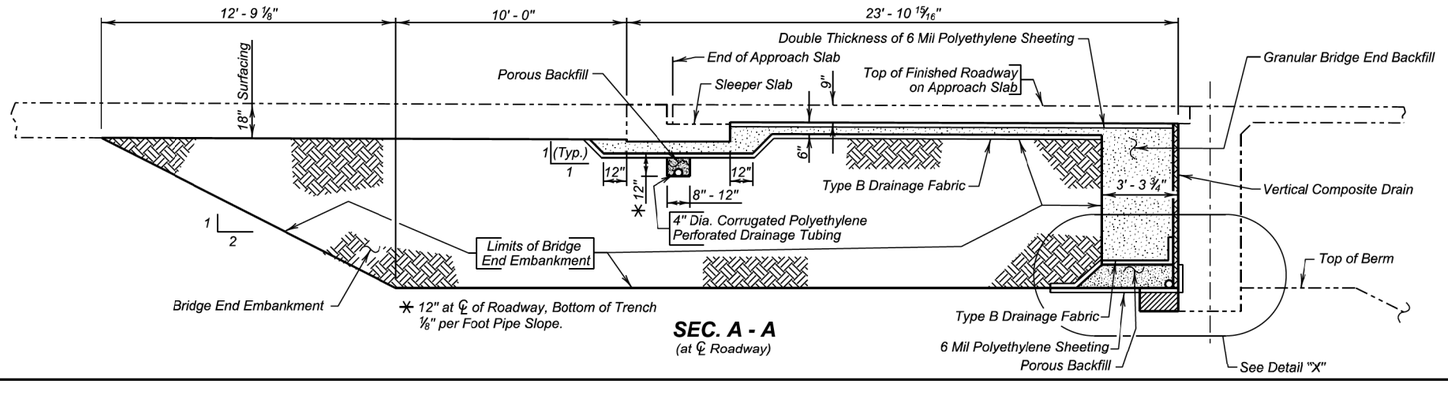
SEC. D - D



SPILL CONE DETAIL AT EMBANKMENT



DETAIL "X"



SEC. A - A
(at ℄ Roadway)

ESTIMATED QUANTITIES
(For Two Abutments)

ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	78.5
⚠ Bridge End Embankment	Cu. Yd.	1480
⧫ ⚠ Porous Backfill	Ton	25.2
4" Underdrain Pipe	Ft.	244
⧫ Approach Slab Underdrain Excavation	Cu. Yd.	4.7
Precast Concrete Headwall for Drain	Each	4

1. 150 ft. 4" dia. Corrugated Polyethylene Perforated Drainage Tubing.
2. 54 ft. 4" dia. Corrugated Polyethylene Drainage Tubing.
3. 40 ft. 4" dia. Std. Black Steel Pipe with Rodent Screens.
4. 469 sq. ft. Vertical Composite Drain

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

5. 3042 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
6. 250 sq. yd. Type B Drainage Fabric.

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

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

⚠ Shrinkage Factor of 1.25 Used.

⧫ Quantity based on a 12" wide trench.

ORIGINAL CONSTRUCTION PLANS

DETAILS OF BRIDGE END BACKFILL (A)

FOR

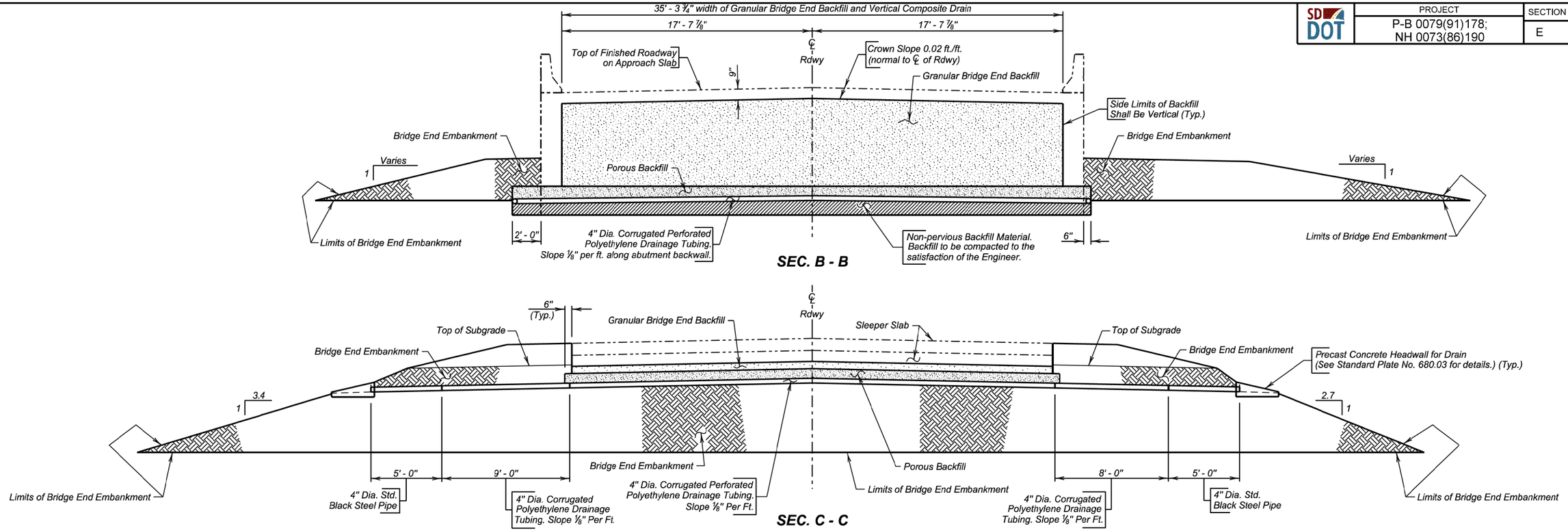
394' - 9⅛" PRESTR. GIRDER BRIDGE

32' - 0" ROADWAY — 25° LHF SKEW
OVER MOREAU RIVER — SEC. 10-T14N-R16E
STA. 662 + 14.12 TO 666 + 08.88 — NH 0073(63)182
STR. NO. 53-392-521 — HL-93

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2013 (14) OF (17)

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JMH	MM	MG	Kevin N. Goeden
PERK02S7	02S7GB21		BRIDGE ENGINEER

SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	48/50



ORIGINAL CONSTRUCTION PLANS

DETAILS OF BRIDGE END BACKFILL (B)

FOR

394' - 9⅛" PRESTR. GIRDER BRIDGE

32' - 0" ROADWAY	25° LHF SKEW
OVER MOREAU RIVER	SEC. 10-T14N-R16E
STA. 662 + 14.12 TO 666 + 08.88	NH 0073(63)182
STR. NO. 53-392-521	HL-93

PERKINS COUNTY

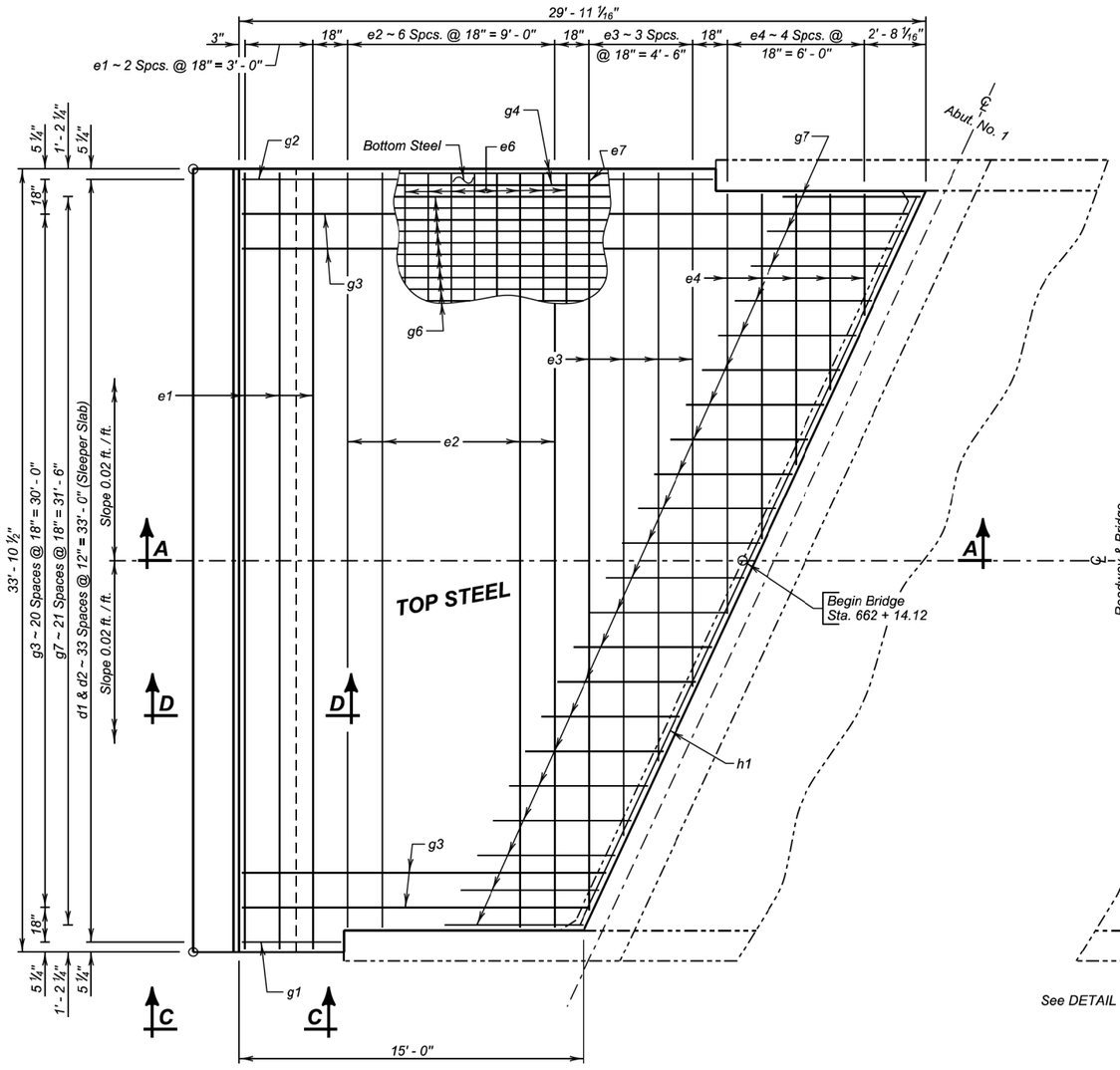
S. D. DEPT. OF TRANSPORTATION

NOVEMBER 2013

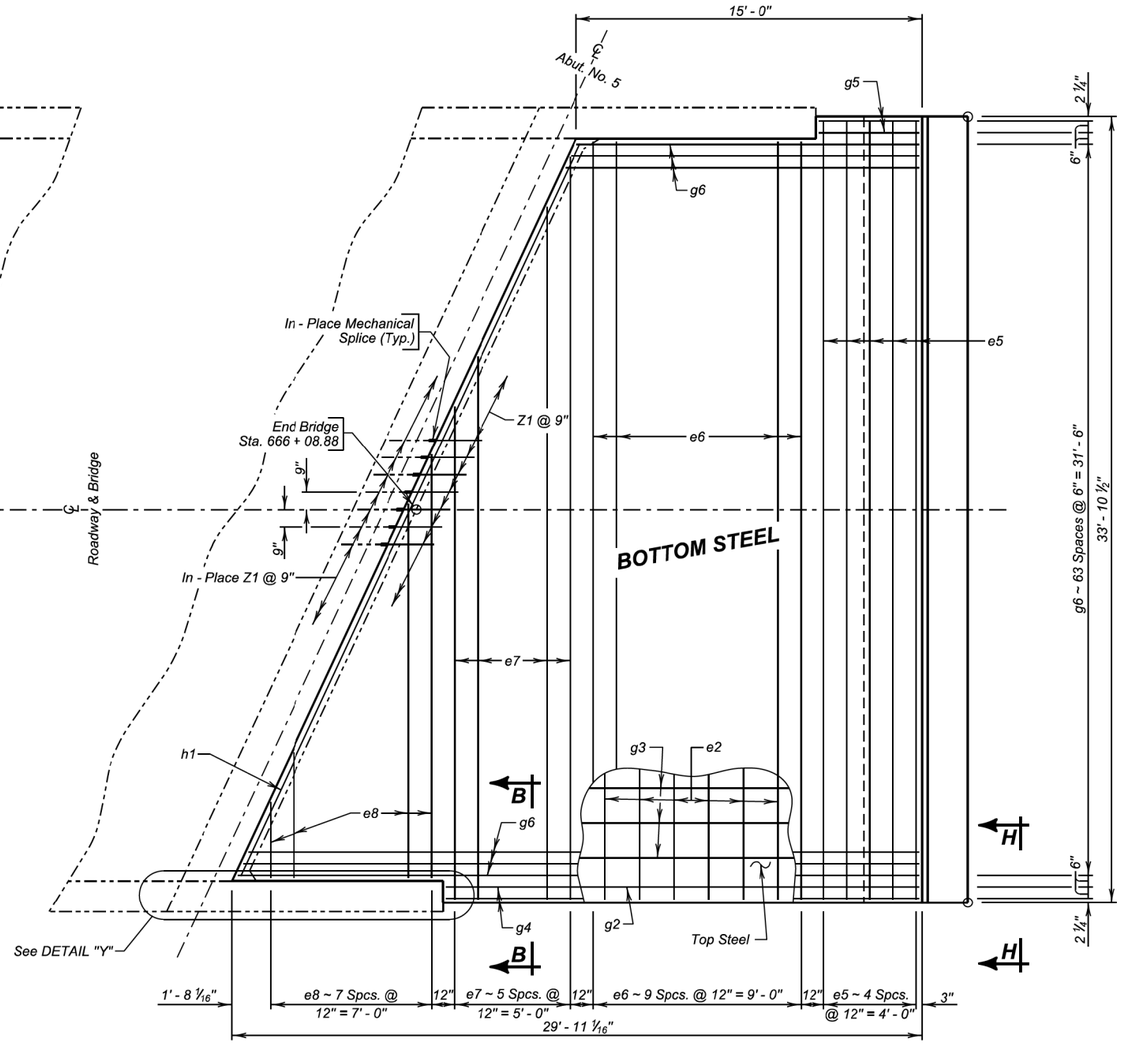
15 OF 17

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JMH	MM	MG	Kevin N. Goeden
PERK02S7	02S7GB22		BRIDGE ENGINEER

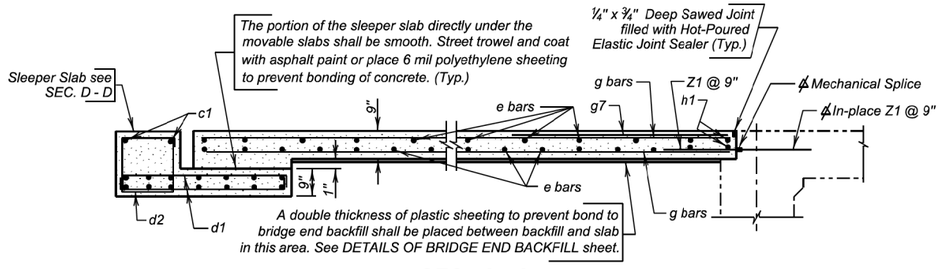
SD DOT	PROJECT	SECTION	SHEET
	P-B 0079(91)178; NH 0073(86)190	E	49/50



PLAN
(Begin Bridge)



PLAN
(End Bridge)



SEC. A - A

℄ *In-place Z1 bars and Mechanical Splices are listed and included in superstructure quantities. See SUPERSTRUCTURE DETAILS (C).*

ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (A)

FOR

394' - 9⅛" PRESTR. GIRDER BRIDGE

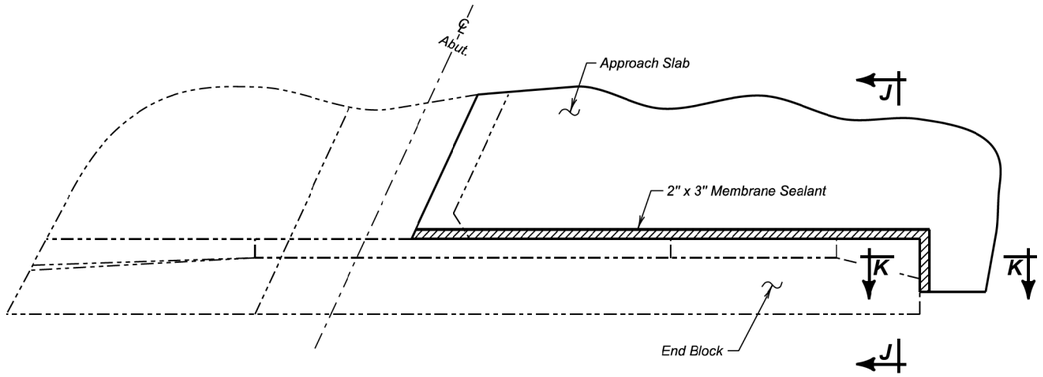
32' - 0" ROADWAY	25° LHF SKEW
OVER MOREAU RIVER	SEC. 10-T14N-R16E
STA. 662 + 14.12 TO 666 + 08.88	NH 0073(63)182
STR. NO. 53-392-521	HL-93

PERKINS COUNTY

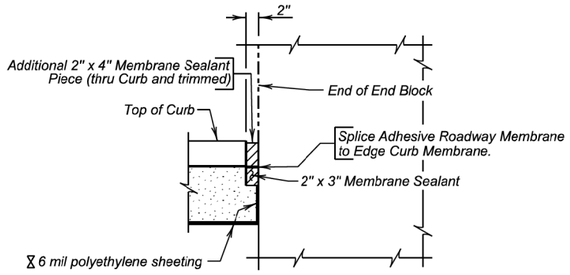
S. D. DEPT. OF TRANSPORTATION

NOVEMBER 2013 (16) OF (17)

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JMH	MM	MG	Kevin N. Goeden
PERK02S7	02S7GB23		BRIDGE ENGINEER



DETAIL "Y"

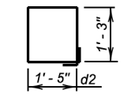


SEC. K - K

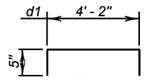
⧖ 6 mil polyethylene sheeting shall not interfere with the bond between the Membrane Sealant and the approach slab.

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

	Mk.	No.	Size	Length	Type
	Approach Slabs				
	e1	6	4	33' - 7"	Str.
	e2	14	4	32' - 5"	Str.
℄	e3	4	4	53' - 8"	Str.
℄	e4	5	4	22' - 5"	Str.
	e5	10	6	33' - 7"	Str.
	e6	20	6	32' - 5"	Str.
℄	e7	6	6	52' - 7"	Str.
℄	e8	8	6	20' - 4"	Str.
	g1	2	4	4' - 1"	Str.
	g2	2	4	20' - 4"	Str.
℄	g3	21	4	44' - 2"	Str.
	g4	4	8	20' - 4"	Str.
	g5	4	8	4' - 1"	Str.
℄	g6	64	8	44' - 4"	Str.
	g7	44	4	6' - 0"	Str.
	h1	4	6	34' - 10"	Str.
	Z1	86	7	2' - 0"	Str.
	Sleeper Slabs				
	c1	32	5	33' - 7"	Str.
	d1	136	4	5' - 0"	2
	d2	68	4	6' - 1"	T2



Type T2

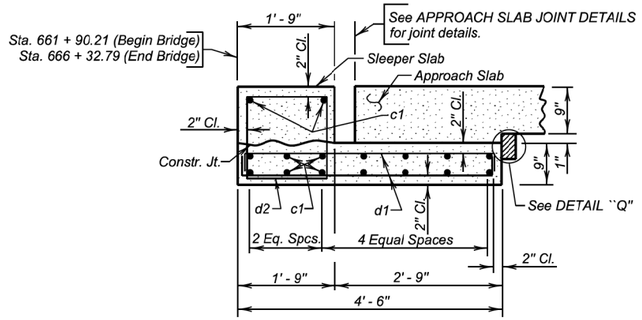


Type 2

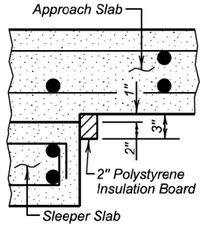
Cut	g6			
Cut	64	g3		
Cut	21	e8		
Cut	8	e7		
Cut	6	e4		
Cut	5	e3		
Cut	4			

14' - 10"	29' - 6"	g6
15' - 2"	29' - 0"	g3
2' - 8"	17' - 8"	e8
20' - 11"	31' - 8"	e7
4' - 9"	17' - 8"	e4
22' - 0"	31' - 8"	e3
31' - 8"	22' - 0"	e3
17' - 8"	4' - 9"	e4
31' - 8"	20' - 11"	e7
17' - 8"	2' - 8"	e8
29' - 0"	15' - 2"	g3
29' - 6"	14' - 10"	g6

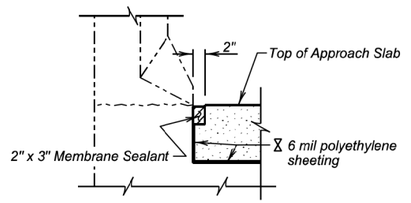
NOTE -
All bars to be Epoxy Coated.
All dimensions are out to out of bars.
℄ See cutting diagram.



SEC. D - D
(Sleeper Slab)



DETAIL "Q"



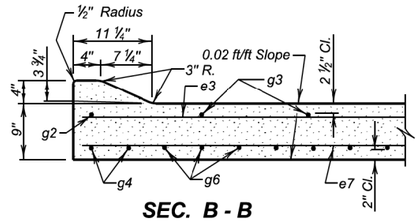
SEC. J - J

ESTIMATED QUANTITIES
(For Two Approach Slabs & Two Sleeper Slabs)

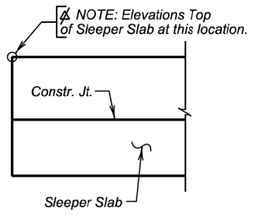
ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	155.0
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	33.9

1. 41.8 Cu. Yds. Concrete in Approach Slabs.
2. 12078 Lbs. Epoxy coated Re-Steel in Approach Slabs.
3. 12.1 Cu. Yds. Concrete in Sleeper Slabs.
4. 1851 Lbs. Epoxy coated Re-Steel in Sleeper Slab.
5. 17 Sq. Ft. of 2" Polystyrene Insulation Board.
6. 44 Ft. of Membrane Sealant adjacent to wings.

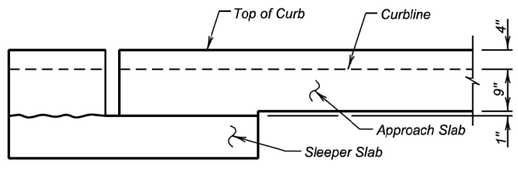
Items 1 thru 6 are approximate quantities contained in the above bid items and are for information only.



SEC. B - B



VIEW H - H



VIEW C - C

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (B)

FOR

394' - 9⅛" PRESTR. GIRDER BRIDGE

32' - 0" ROADWAY — 25° LHF SKEW
OVER MOREAU RIVER — SEC. 10-T14N-R16E
STA. 662 + 14.12 TO 666 + 08.88 — NH 0073(63)182
STR. NO. 53-392-521 — HL-93

PERKINS COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2013 (17) OF (17)

ORIGINAL CONSTRUCTION PLANS

DESIGNED BY	CK. DES. BY	DRAFTED BY	
JMH	MM	MG	Kevin N Boeder
PERK02S7	02S7GB24		BRIDGE ENGINEER