

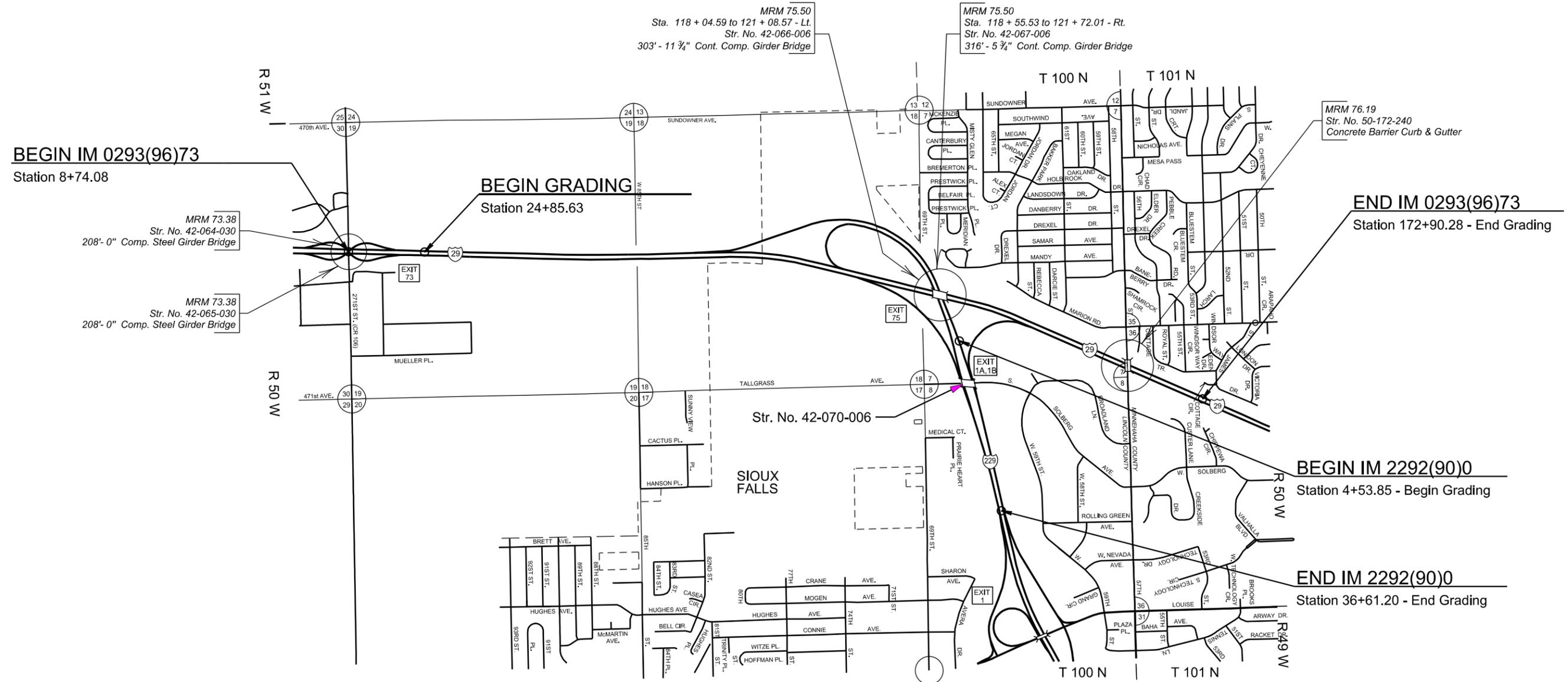
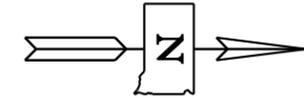
FOR BIDDING PURPOSES ONLY

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Section E: Structure Plans

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BEGIN IM 0293(96)73
Station 8+74.08

BEGIN GRADING
Station 24+85.63

MRM 76.19
Str. No. 50-172-240
Concrete Barrier Curb & Gutter

END IM 0293(96)73
Station 172+90.28 - End Grading

BEGIN IM 2292(90)0
Station 4+53.85 - Begin Grading

END IM 2292(90)0
Station 36+61.20 - End Grading

SIoux FALLS

SECTION E - ESTIMATE OF STRUCTURE QUANTITIES

DISMANTLING AND DELIVERY

- After the temporary bridge is no longer required, the Contractor shall dismantle and deliver the bridge to the Sioux Falls SDDOT Maintenance yard at 5316 W 60th St. N. Sioux Falls, SD 57107 and stockpile parts. Contact: Travis Dressen with the Sioux Falls Area at work (605) 367-5680 ext.; 2110: Travis.Dressen@state.sd.us. The temporary bridge and all associated hardware shall remain property of the SDDOT.
- The Contractor shall be responsible for any damage to the temporary bridge that occurs during the handling and dismantling operations, as well as during transportation to Sioux Falls SDDOT yard.
- Break down and remove the temporary bridge abutments in accordance with Section 110 of the Specifications. All portions of the temporary bridge abutments, except the bearing plates and the keeper angles, shall become property of the Contractor and shall be removed and disposed of on site obtained by the Contractor and approved by the Engineer in accordance with the Environmental Commitments.
- All costs for dismantling of the temporary structure, delivery to the Sioux Falls SDDOT yard, and removing the temporary abutments shall be paid for by the lump sum contract price for Salvage and Relocate Bridge.
- A bridge assembly scope with approximate assembly times, crew requirements, tools and equipment needed is available upon request from Acrow (phone 303-279-9088).
- The gravity large block retaining walls shall be removed and transported to the Sioux Falls SDDOT maintenance yard. See above address and contact information.
- For informational purposes only, the limits of the gravity large block retaining walls along I-229 ramp C alignment are Sta. 59 + 56.88 - 16.00' Rt. to Sta. 60 + 16.88 - 16.00' Rt. and Sta. 60 + 71.33 - 16.00' Lt. to Sta. 61 + 31.33 - 16.00' Lt.
- All costs for dismantling and delivery of the gravity large block retaining walls shall be paid for by the contract unit price per sq. ft. for Salvage Large Block Retaining Wall.

IM 0293(96)73
Str. No. 42-064-030
208' - 0" Composite Steel Girder Bridge

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	233.2	SqYd
410E2600	Membrane Sealant Expansion Joint	87.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	3.8	CuYd
460E0150	Concrete Approach Slab for Bridge	186.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	68.1	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
460E0380	Install Dowel in Concrete	110	Each
480E0200	Epoxy Coated Reinforcing Steel	274	Lb
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	52	Each
480E0506	No. 6 Rebar Splice	44	Each
491E0007	Two Coat Bridge Deck Polymer High Friction Chip Seal	920.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	920.0	SqYd
491E0120	Bridge Deck Grinding	920.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope Protection, Crushed Aggregate	211.2	SqYd

IM 0293(96)73
Str. No. 42-065-030
208' - 0" Composite Steel Girder Bridge

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	233.2	SqYd
410E2600	Membrane Sealant Expansion Joint	87.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	3.8	CuYd
460E0150	Concrete Approach Slab for Bridge	186.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	68.1	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
460E0380	Install Dowel in Concrete	110	Each
480E0200	Epoxy Coated Reinforcing Steel	274	Lb
480E0504	No. 4 Rebar Splice	28	Each
480E0505	No. 5 Rebar Splice	52	Each
480E0506	No. 6 Rebar Splice	44	Each
491E0007	Two Coat Bridge Deck Polymer High Friction Chip Seal	920.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	920.0	SqYd
491E0120	Bridge Deck Grinding	920.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope Protection, Crushed Aggregate	211.2	SqYd

IM 0293(96)73
Str. No. 42-066-006
303' - 11 3/4" Composite Steel Girder Bridge

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	1,884.0	SqYd
260E1010	Base Course	3,222.0	Ton
410E0020	Structural Steel	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	115.8	Ft
411E0100	Bridge Painting	Lump Sum	LS
420E0100	Structure Excavation, Bridge	212	CuYd
430E0200	Bridge End Embankment	1,662	CuYd
430E0300	Granular Bridge End Backfill	113.0	CuYd
460E0030	Class A45 Concrete, Bridge Deck	510.4	CuYd
460E0050	Class A45 Concrete, Bridge	515.4	CuYd
460E0150	Concrete Approach Slab for Bridge	432.2	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	93.2	SqYd
480E0100	Reinforcing Steel	66,633	Lb
480E0507	No. 7 Rebar Splice	150	Each
480E0514	No. 14 Rebar Splice	66	Each
510E0300	Preboring Pile	260	Ft
510E3521	HP 14x73 Steel Test Pile, Furnish and Drive	330	Ft
510E3525	HP 14x73 Steel Bearing Pile, Furnish and Drive	8,285	Ft
680E0040	4" Underdrain Pipe	186	Ft
680E2500	Porous Backfill	32.8	Ton
734E2020	Bridge Berm Slope Protection, Crushed Aggregate	1,028.6	SqYd
831E1010	Geogrid Reinforcement	3,559	SqYd

IM 0293(96)73
Str. No. 42-066-006
303' - 11 3/4" Composite Steel Girder Bridge
Alternate A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
480E0300	Stainless Reinforcing Steel	137,967	Lb

IM 0293(96)73
Str. No. 42-066-006
303' - 11 3/4" Composite Steel Girder Bridge
Alternate B

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
480E0250	Zinc and Epoxy Dual-Coated Reinforcing Steel	137,967	Lb

Revised October 23, 2015 MG
FOR BIDDING PURPOSES ONLY

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IM 0293(96)73
Str. No. 42-067-006
316' - 5 3/4" Composite Steel Girder Bridge

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	1,541.0	SqYd
260E1010	Base Course	2,584.0	Ton
410E0020	Structural Steel	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	91.8	Ft
411E0100	Bridge Painting	Lump Sum	LS
420E0100	Structure Excavation, Bridge	198	CuYd
430E0200	Bridge End Embankment	1,723	CuYd
430E0300	Granular Bridge End Backfill	85.8	CuYd
460E0030	Class A45 Concrete, Bridge Deck	435.0	CuYd
460E0050	Class A45 Concrete, Bridge	347.9	CuYd
460E0150	Concrete Approach Slab for Bridge	310.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	73.9	SqYd
480E0100	Reinforcing Steel	44,019	Lb
480E0507	No. 7 Rebar Splice	118	Each
480E0514	No. 14 Rebar Splice	48	Each
510E0300	Preboring Pile	220	Ft
510E3521	HP 14x73 Steel Test Pile, Furnish and Drive	330	Ft
510E3525	HP 14x73 Steel Bearing Pile, Furnish and Drive	5,955	Ft
680E0040	4" Underdrain Pipe	156	Ft
680E2500	Porous Backfill	28.6	Ton
734E2020	Bridge Berm Slope Protection, Crushed Aggregate	926.5	SqYd
831E1010	Geogrid Reinforcement	2,598	SqYd

IM 0293(96)73
Str. No. 42-067-006
316' - 5 3/4" Composite Steel Girder Bridge
Alternate A

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
480E0300	Stainless Reinforcing Steel	114,998	Lb

IM 0293(96)73
Str. No. 42-067-006
316' - 5 3/4" Composite Steel Girder Bridge
Alternate B

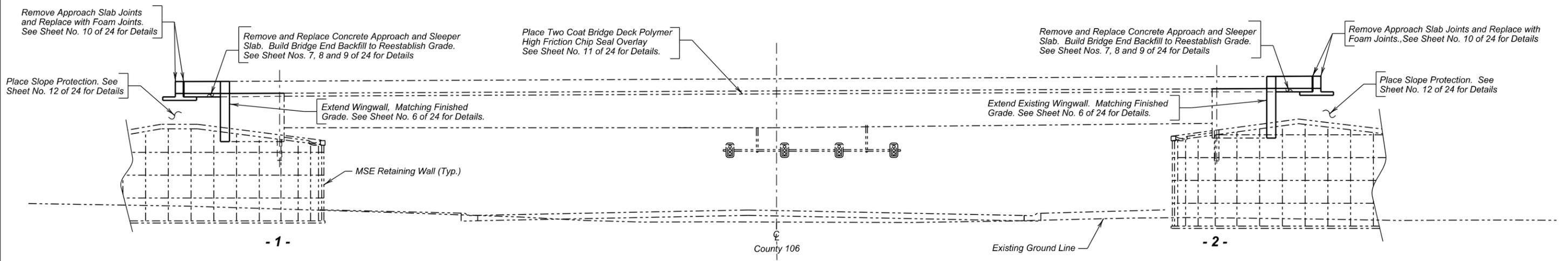
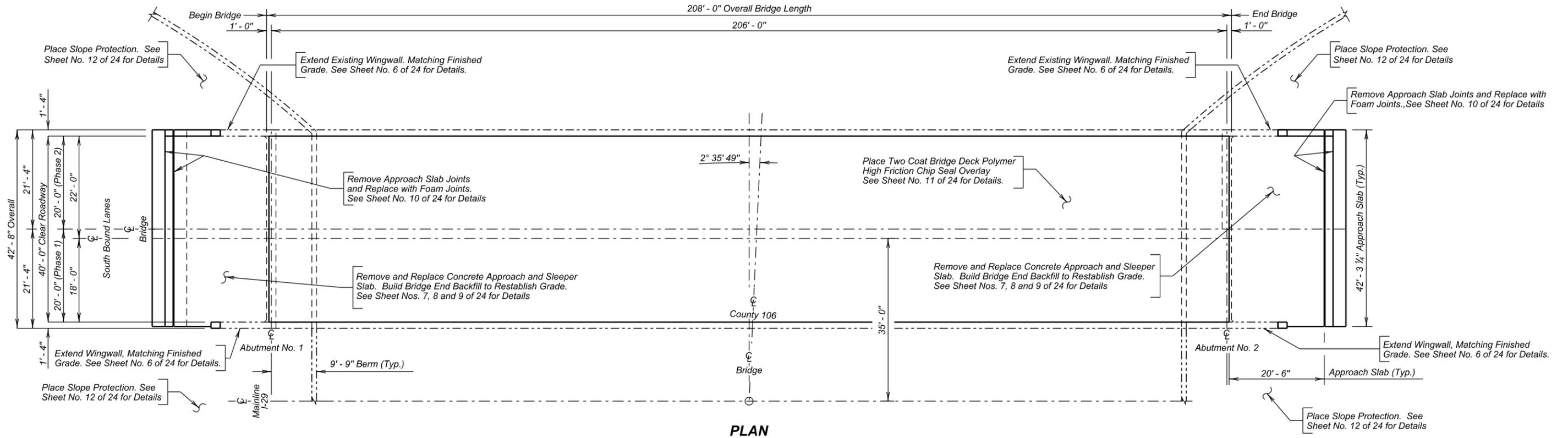
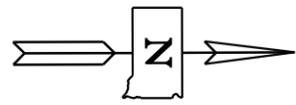
BID ITEM NUMBER	ITEM	QUANTITY	UNIT
480E0250	Zinc and Epoxy Dual-Coated Reinforcing Steel	114,998	Lb

IM 0293(96)73

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E3470	Salvage Large Block Retaining Wall	555	SqFt
250E0030	Incidental Work, Structure	Lump Sum	LS
380E2431	Concrete Barrier and 8' Plain Jointed Concrete Shoulder	180	Ft
380E2451	Concrete Barrier and 10' Plain Jointed Concrete Shoulder	190	Ft
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E4002	Salvage and Relocate Bridge	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.2	CuYd
460E0300	Breakout Structural Concrete	0.2	CuYd
632E0072	4' Diameter Fixed Support Concrete Footing	413.0	Ft
632E0074	4.5' Diameter Fixed Support Concrete Footing	20.0	Ft
635E5040	4' Diameter Footing	352.0	Ft
650E2000	Concrete Barrier Curb and Gutter	328	Ft
650E2001	Concrete Barrier Curb and Gutter End Section	28	Ft

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- Sheet No. 3 - Notes (Continued)
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- Sheet No. 6 - Wingwall Modification
- Sheet No. 7 - Approach Slab Layout
- Sheet No. 8 - Approach Slab Details
- Sheet No. 9 - Approach Slab Details (Continued)
- Sheet No. 10 - Approach Slab Joint Details
- Sheet No. 11 - Polymer High Friction Chip Seal Details
- Sheet No. 12 - Slope Protection Details
- Sheet No. 13 thru 24 - Original Construction Plans

**(SOUTH BOUND LANES)
LAYOUT FOR UPGRADING**

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER COUNTY ROAD 106
STR. NO. 42 - 064 - 030
PCN 01QS

0° SKEW
SEC. 19/30-T100N-R50W
IM 0293(96)73

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

JULY 2015

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

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSR01	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	233.2	SqYd
410E2600	Membrane Sealant Expansion Joint	87.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	3.8	CuYd
460E0150	Concrete Approach Slab for Bridge	186.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	68.1	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
460E0380	Install Dowel in Concrete	110	Each
480E0200	Epoxy Coated Reinforcing Steel	274	Lb
480E0504	No 4 Rebar Splice	28	Each
480E0505	No 5 Rebar Splice	52	Each
480E0506	No 6 Rebar Splice	44	Each
491E0007	Two Coat Deck Polymer High Friction Chip Seal	920.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	920.0	SqYd
491E0120	Bridge Deck Grinding	920.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope protection, Crushed Aggregate	211.2	SqYd

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 Edition with 2003 Interim Specifications using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall 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 at the pre-construction meeting.

- Remove existing approach slabs, sleeper slabs, and steel extrusion and compression seal joints for the first phase of construction.
- Extend swept back wing walls as shown for the first phase of construction.
- Replace approach slabs and sleeper slabs to the correct grade for the first phase of construction.

- Replace sleeper slab joints with approved membrane foam sealant for the first phase of construction.
- Perform Bridge Deck Grinding for the first phase of construction
- Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction
- Place the Two Coat Deck Polymer High Friction Chip Seal for the first phase of construction
- Reshape embankment slopes to correct grade and place new slope protection for the first phase of construction.
- Switch traffic control and repeat steps 1 through 9 for second phase of construction.

GENERAL CONSTRUCTION NOTES

- All exposed concrete edges or corners shall be chamfered 3/4 inch except where noted otherwise in the plans. Match the existing chamfer if chamfer differs.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Use 2 inch clear cover on all reinforcing steel except as shown.
- The concrete barriers shall be cured in accordance with Section 460.3.M. of the Construction Specifications except that no curing compounds shall be allowed.
- Barrier Curbs shall be built normal to the grade.
- Surfaces of fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.
- Snap ties, if used in the barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The type of vibratory screed shall be approved by the Engineer.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid items Class A45 Concrete Bridge Repair, Concrete Approach Slab for Bridge, and Concrete Approach Sleeper Slab for Bridge.
- The Type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract items Class A45 Concrete Bridge Repair, Concrete Approach Sleeper Slab for Bridge and Concrete Approach Slab for Bridge shall conform to the requirements of Section 460 of the Construction Specification.

MECHANICAL REBAR SPLICES

The mechanical rebar splices shall be in accordance with Section 480 of the Construction Specifications.

REMOVAL OF CONCRETE BRIDGE APPROACH SLAB

- The existing concrete approach and sleeper slabs adjacent to the structure shall be completely removed by the Contractor.
- All portions of the approach slab from the removal, not salvaged for highway use, shall be disposed of by the Contractor at an approved site. An appropriate site will be as described in the Waste Disposal Site notes in this set of plans.
- All labor, tools, equipment and any incidentals necessary for removal and disposal of the existing approach and sleeper slabs shall be incidental to the contract unit price per square yard for "Remove Concrete Bridge Approach Slab".

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 208' - 0" COMPOSITE STEEL GIRDER BRIDGE

STR. NO. 42-064-030
JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRA02	DRAFTED BY KR	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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INSTALLING DOWELS IN CONCRETE

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

APPROACH SLABS

- Excavation for placement of new approach slabs and sleeper slabs shall be done with minimal disturbance to the underlying material.
- The bottom area, where the approach slabs will be located, will be covered with type B drainage fabric and backfilled to the original grade with compacted Base Course. The Base Course material shall be in accordance with Section 882 of the Construction Specifications

- Sleeper slab riser shall be cast with or later than the Approach Slab. Care shall be taken to ensure the correct grade is maintained across the joint.
- The top of approach slab elevations shall be established during construction and shall be subject to the approval of the Engineer. Care shall 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. The maximum rate of grade transition through the approach slab shall be 1/8 inch per 10 feet.
- The use of a vibratory screed will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the screed shall be kept parallel to the screed.
- The concrete in the approach slab shall be tined parallel with the skew of the bridge.
- The new approach slabs and sleeper slabs shall have a surface finish as stipulated in Section 460.3.L.4 of the Construction Specifications.
- The Concrete Approach Slabs Adjacent to Bridge shall be cured in accordance with Section 460.3 M of the Construction Specifications.
- Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, and reinforcing steel; for disposal of all excavated material and surplus materials; and for labor, tools, equipment and any incidentals necessary to complete this item of work.
- Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling and placing all materials including type B drainage fabric, base course material, concrete, asphalt paint or 6 mil polyethylene sheeting, reinforcing steel; disposal of all excavated material and surplus materials, labor, tools, equipment and any incidentals necessary to complete this item of work.

CONTRACTOR FURNISHED BORROW

- The Contractor shall provide a suitable site for Contractor furnished borrow material. The borrow material shall be approved by the Engineer.
- Restoration of the Contractor furnished borrow site shall be the responsibility of the Contractor.
- All materials and labor associated with bridge berm repair including contractor furnished borrow shall be incidental to contract unit price per square yard for "Bridge Berm Slope Protection, Crushed Aggregate."

CRUSHED AGGREGATE SLOPE PROTECTION

- This work shall consist of placing crushed aggregate slope protection for control and prevention of berm erosion on the bridge berm slope between the abutments and MSE walls. Details for crushed aggregate slope protection are shown on the Slope Protection Details sheet.
- The aggregate used in the crushed aggregate slope protection shall be composed of durable fragments of quarried quartzite or an approved alternative, The material shall be well graded with 90-100% smaller than ten inches and no more than 10% smaller than two inches.
- The surface upon which the slope protection is to be placed shall be smooth, uniform, and free from foreign material. The top surface of the slope protection shall conform to the dimensions, elevations, and slopes shown in the plans.
- The crushed aggregate shall be shaped and compacted to provide a stable, smooth and uniform surface..
- Payment for crushed aggregate slope protection shall be at the contract unit price per square yard for Bridge Berm Slope Protection, Crushed Aggregate and shall be full compensation for type B drainage fabric and slope paving, including furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work.

NOTES (CONTINUED)

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE

STR. NO. 42-064-030

JULY 2015

3 OF 24

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSR03	DRAFTED BY KR	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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MEMBRANE SEALANT EXPANSION JOINT

- The Membrane Sealant shall be on the approved product list for Membrane Sealant Expansion Joints.
- The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer, however, in no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
- The membrane sealant shall provide a water tight seal throughout a joint movement range of +25% (minimum) from specified joint opening dimension.
- The membrane sealant shall be supplied in pieces a minimum of 5 feet in length. The foam sealant shall be ultra-violet and ozone resistant.
- The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.
- Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
- If Styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.
- 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.
- The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.
- A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall be knowledgeable in the correct procedures for the preparation and installation of the joint material to ensure the Contractor installs the joint to the manufacturers recommendations.
- Surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding shall not be permitted.

- After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall 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 shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
- Individual spliced sections shall be installed as per the manufacturer's recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
- Traffic shall not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacture.
- 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 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 the plans and the foregoing specifications.

CLASS B COMMERCIAL TEXTURE FINISH

- All surfaces of the new concrete barrier curb in the area of the barrier reconstruction and all visible surfaces of the newly constructed wingwall shall be given a Class B Commercial Texture Finish in accordance with Section 460.3.L.1.c. of the Construction Specifications.
- The concrete surfaces requiring the application of the Commercial Texture Finish shall be prepared in accordance with the manufacturer's recommendations. The Contractor shall 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.
- For informational purposes the amount of surface area requiring the Class B Commercial Texture Finish is 175 square feet.
- The Class B commercial texture finish used shall be on the Departments approved list.
- The color of the Class B Commercial Texture Finish shall match the colors of the existing structure. Color samples shall be submitted to Area Engineer for approval.

- Any damage to the commercial texture finish during the construction including abrasion from traffic due to the traffic control shall be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.
- The cost of the commercial texture finish shall be included in the contract price per cubic yard for "Class A45 Concrete, Bridge Repair". This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the application of this finish.

TWO COAT BRIDGE DECK POLYMER HIGH FRICTION CHIP SEAL

- The Two Coat Bridge Deck Polymer High Friction Chip Seal shall be furnished and installed in accordance with Section 491 of the Construction Specification except as modified by these notes.
- The calcined bauxite aggregate shall be used in lieu of the aggregate specified in Section 491. Properties of the calcined bauxite aggregate are listed in the High Friction Surface Aggregate notes
- Measurement will not be made for the Two Coat Bridge Deck Polymer High Friction Chip Seal. The plans quantity will be the basis of payment.
- The two coat bridge deck polymer high friction chip seal will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment material and all incidental work required to furnish and install the two coat bridge deck polymer high friction chip seal and to remove and dispose of the excess cover aggregate. Payment will also be full compensation for all manufacturer approved representative expenses.

NOTES (CONTINUED)

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE

STR. NO. 42-064-030

JULY 2015

4 OF 24

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSR04	DRAFTED BY KR	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E7	E127

HIGH FRICTION SURFACE AGGREGATE

1. The material shall be clean, dry, and free from foreign matter. The Contractor shall deliver the calcined bauxite aggregate to the construction site in clearly labeled containers. The calcined bauxite aggregate shall be certified to meet the requirements of Table 1.
2. The Contractor shall ensure the coverage rate of the retained calcined bauxite aggregate is a minimum of 13 lbs/yd².

TABLE 1

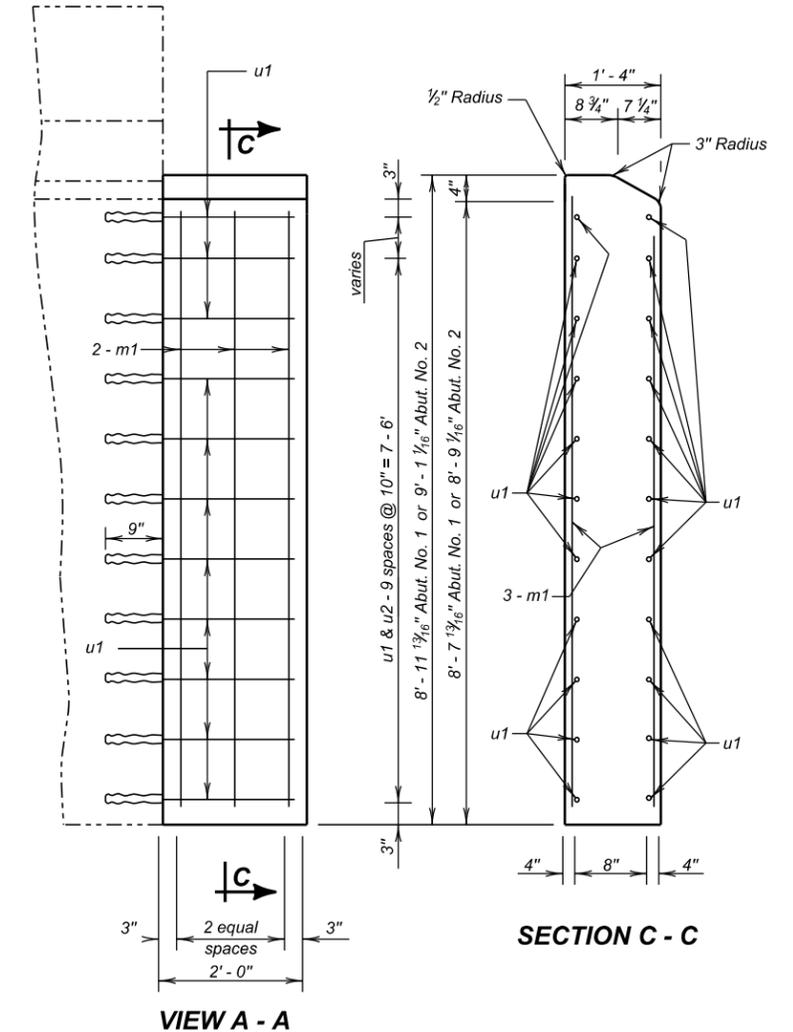
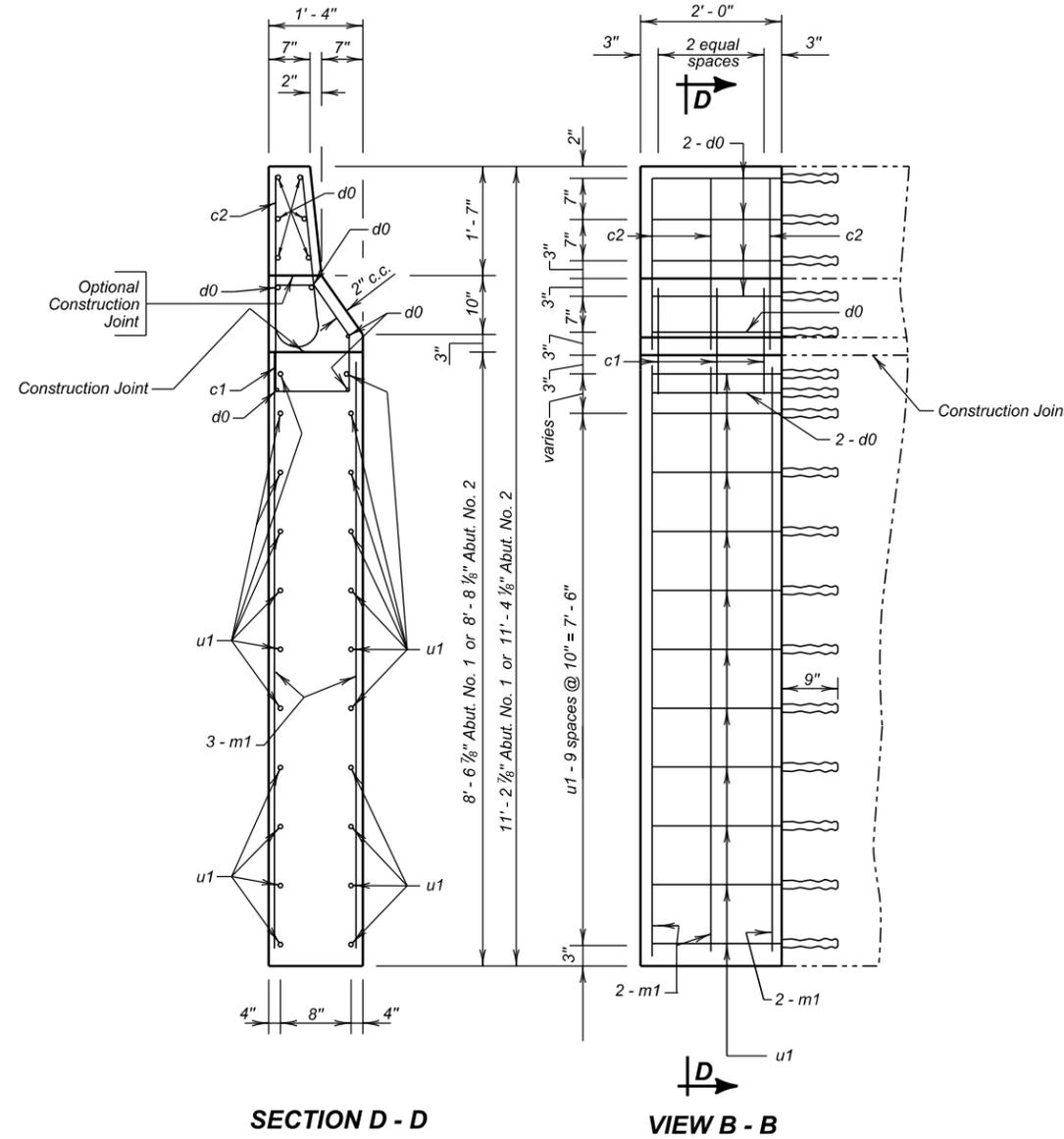
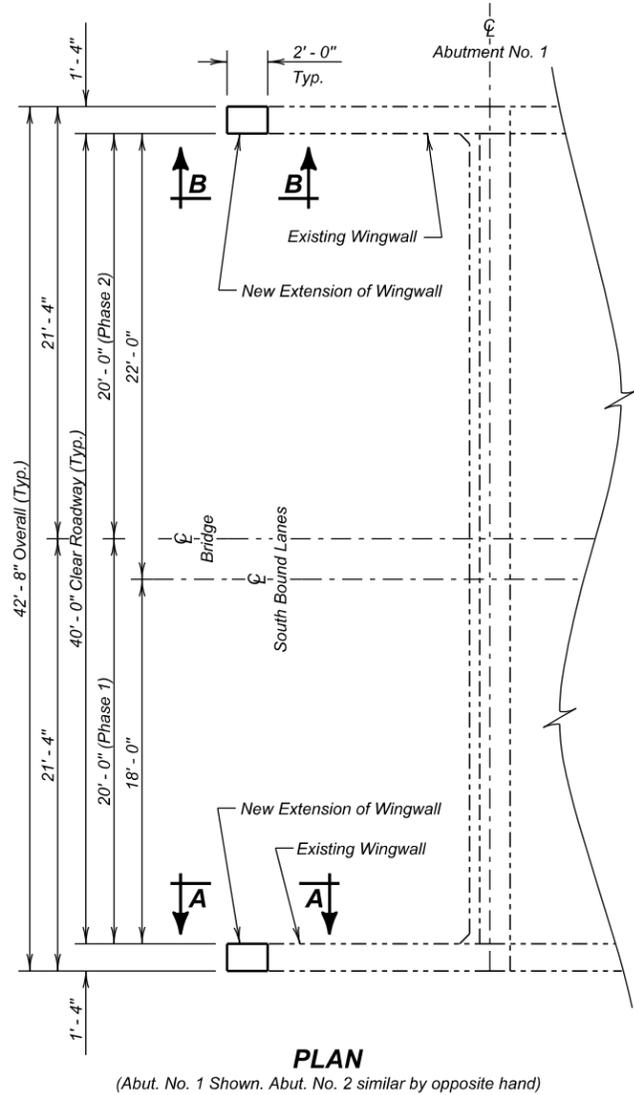
Calcined Bauxite Aggregate Requirements		
Property	Requirements	Test Method
Mohs Hardness	7.0 Minimum	Mohs
Polish Stone Value	65 Minimum	ASTM E660
Gradation	100.0% Passing No. 4	AASHTO T 27
	95.0% - 100.0% Passing No. 6	
	0.0% - 5.0% Passing No. 16	
Moisture Content	0.2% Maximum	AASHTO T 255
Aluminum Oxide	87% Minimum	ASTM C25
Apparent Specific Gravity	3.1 Minimum	AASHTO T 84
Sodium Sulfate Soundness	12% Maximum	AASHTO T 104
LA Abrasion Test	30% Maximum. Test sample gradation differs from gradation requirements.	AASHTO T 96 (C grading)

NOTES (CONTINUED)
 FOR
 208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 STR. NO. 42-064-030
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRA05	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E8	E127



REINFORCING SCHEDULE					Bending Details	
(All Four Bridge Corners)						
	Mk.	No.	Size	Length	Type	
PHASE 1	m1	12	5	8'-3"	Str.	
	u1	44	6	2'-7"	Str.	
PHASE 2	c1	6	5	5'-9"	T2A	
	c2	6	5	5'-1"	S11	
	d0	22	5	2'-7"	Str.	
	m1	12	5	8'-3"	Str.	
	u1	44	6	2'-7"	Str.	

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

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Class A45 Concrete, Bridge Repair	Cu. Yd.	1.8	2.0
★ Epoxy Coated Reinforcing Steel	Lb.	103	171
Install Dowel in Concrete	Each	44	66

★ Does not include the following quantities for u1 & d0 Bars as these are paid for in the Bid Item "Install Dowel in Concrete."

PHASE 1	PHASE 2
171 Lb	230 Lb

(SOUTH BOUND LANES)
 WINGWALL MODIFICATION
 FOR
 208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY
 OVER COUNTY ROAD 106
 STR. NO. 42 - 064 - 030

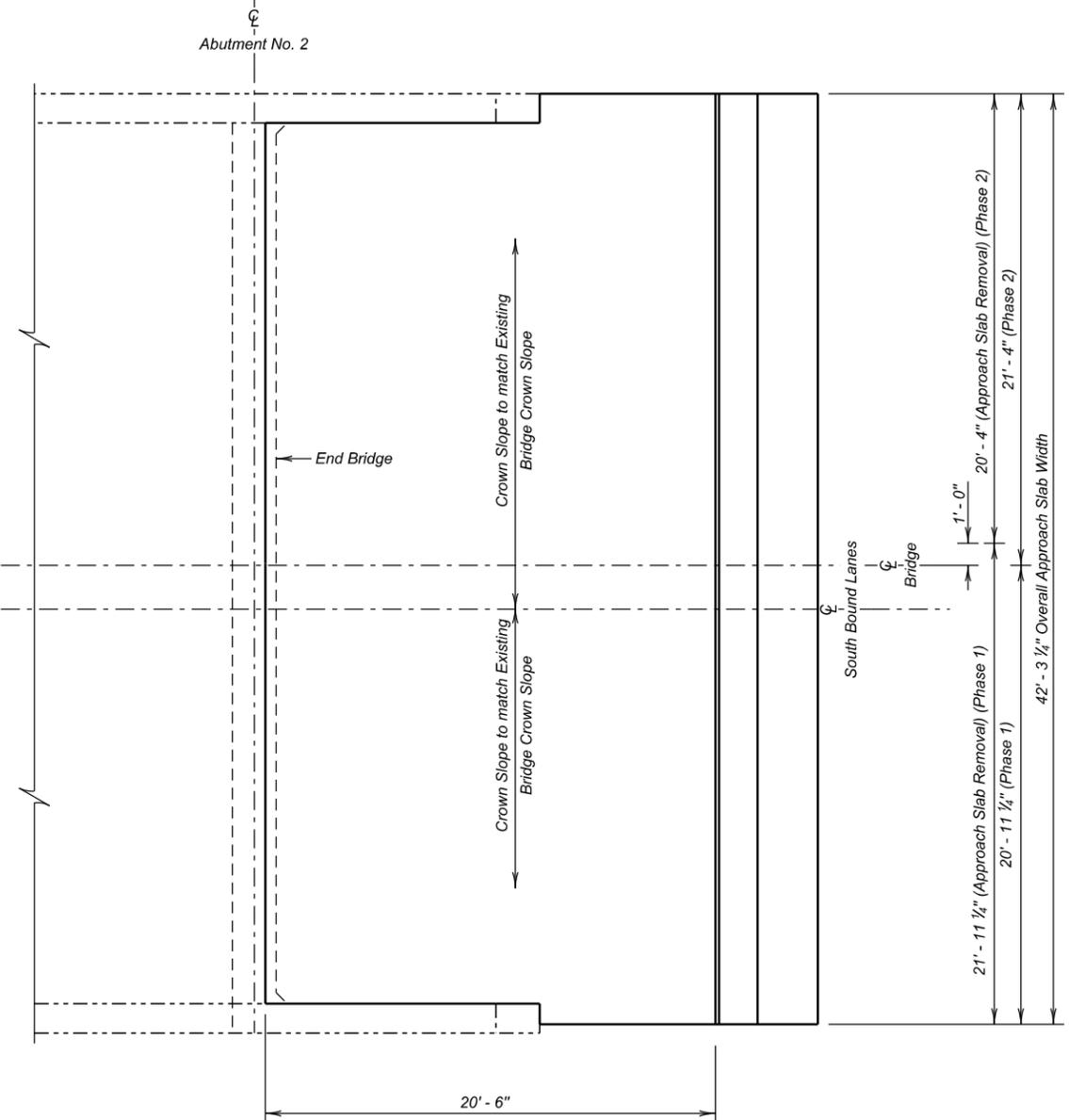
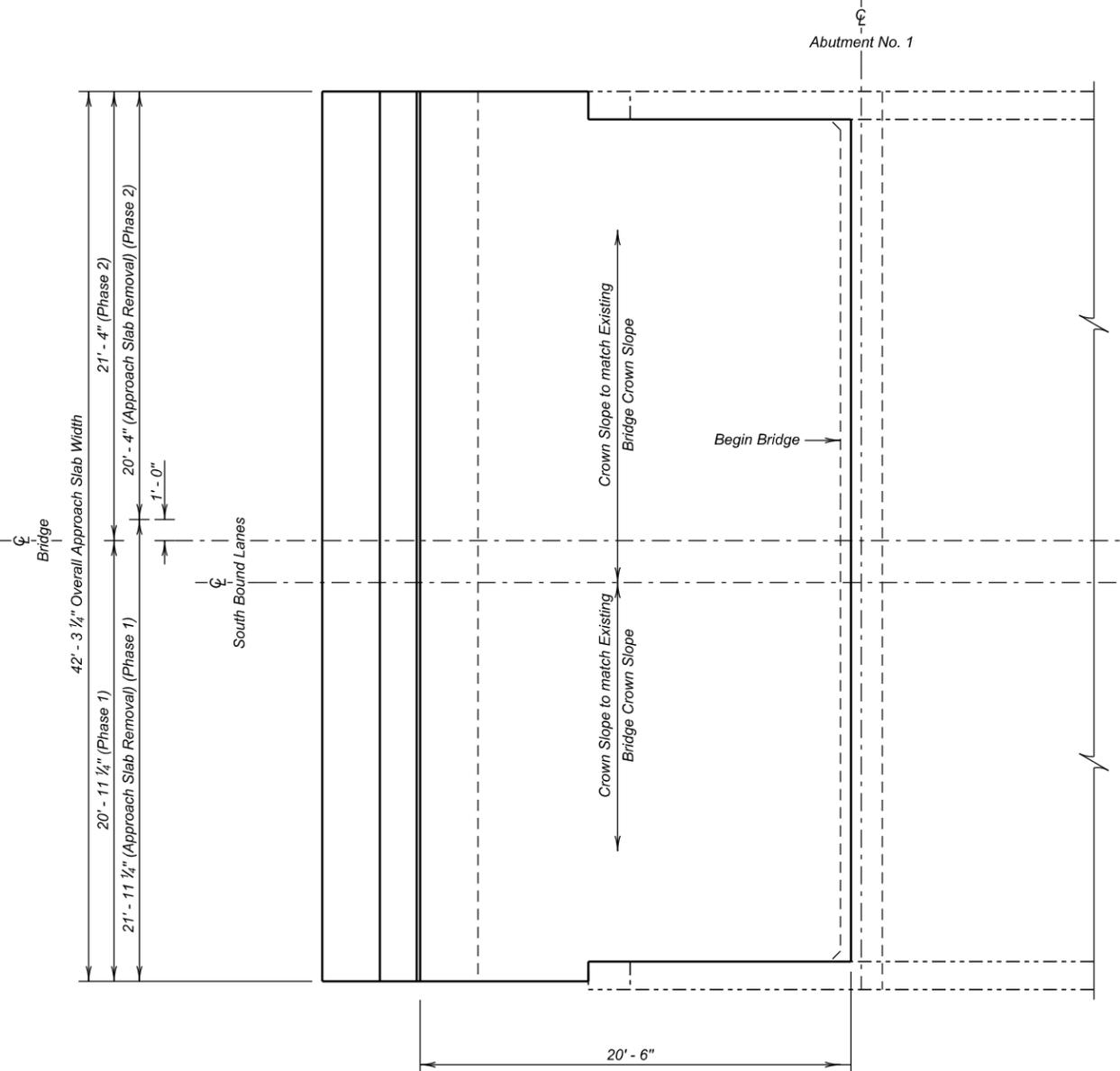
0° SKEW
 SEC. 19/30-T100N-R50W
 IM 0293(96)73

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSR006	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E9	E127



PLAN

(SOUTH BOUND LANES)
APPROACH SLAB LAYOUT

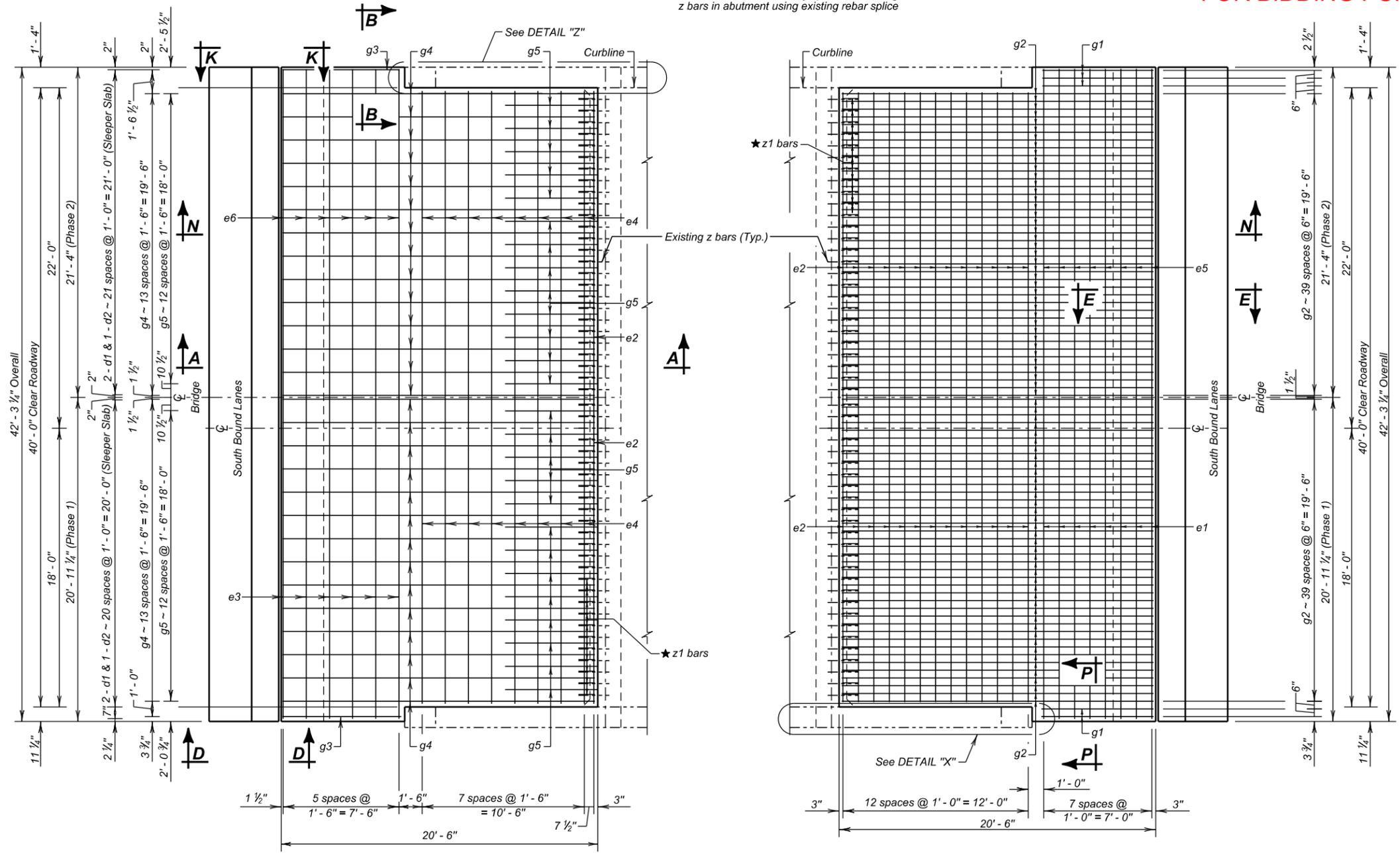
FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
STR. NO. 42 - 064 - 030 IM 0293(96)73

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSR07	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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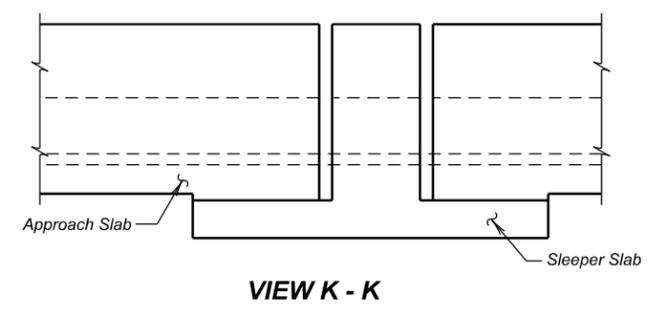
FOR BIDDING PURPOSES ONLY

★ z1 bars to be mechanically spliced to existing z bars in abutment using existing rebar splice

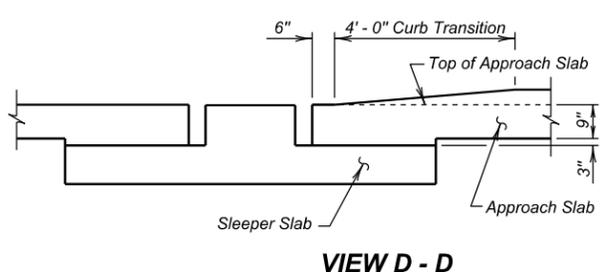


PLAN
(Abutment No. 1 Top Steel Shown)
(Abutment No. 2 similar by rotation)

PLAN
(Abutment No. 2 Bottom Steel Shown)
(Abutment No. 1 similar by rotation)



VIEW K - K



VIEW D - D

REINFORCING SCHEDULE					Bending Details	
(For Two Approach and Sleeper Slabs)						
Mk.	No.	Size	Length	Type		
PHASE 1					Type S11	
c3	52	5	20' - 8"	Str.	4 1/2"	
d1	88	4	7' - 9"	2	1 1/4"	
d2	44	4	6' - 7"	T2	2'-4 1/2"	
e1	16	6	20' - 8"	Str.	12	
e2	28	6	19' - 7"	Str.	3/8" R	
e3	12	4	20' - 8"	Str.		
e4	16	4	19' - 7"	Str.		
g1	4	8	7' - 5"	Str.		
g2	80	8	20' - 2"	Str.		
g3	2	4	7' - 5"	Str.		
g4	28	4	20' - 2"	Str.		
g5	26	4	6' - 0"	Str.		
z1	54	7	2' - 0"	Str.		
PHASE 2					Type T2A	
c1	24	5	5' - 9"	T2A	1' - 0 1/2"	
c2	24	5	5' - 1"	S11	6 1/2" 6"	
c3	52	5	21' - 1"	Str.	9"	
d1	88	4	7' - 9"	2	9"	
d2	44	4	6' - 7"	T2	1' - 6"	
d3	22	5	7' - 5"	Str.		
d4	22	5	1' - 5"	Str.		
e2	28	6	19' - 7"	Str.	1' - 5"	
e4	16	4	19' - 7"	Str.		
e5	16	6	21' - 1"	Str.		
e6	12	4	21' - 1"	Str.		
g1	6	8	7' - 5"	Str.	1' - 5"	
g2	80	8	20' - 2"	Str.	d2	
g3	2	4	7' - 5"	Str.		
g4	28	4	20' - 2"	Str.	4' - 0"	
g5	26	4	6' - 0"	Str.		
z1	54	7	2' - 0"	Str.	Type 2	

NOTES:
All bars are epoxy coated.
All dimensions are out to out of bars.
These bars shall be spliced with mechanical splice devices.

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Concrete Approach Slab for Bridge	Sq. Yd.	92.8	93.5
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	33.7	34.4
Remove Concrete Approach	Sq. Yd.	116.0	117.2
No. 4 Rebar Splice	Each	28	-
No. 5 Rebar Splice	Each	52	-
No. 6 Rebar Splice	Each	44	-

ITEM	UNIT	Phase 1	Phase 2
		1. Concrete Approach	23.2 Cu. Yd.
2. Epoxy Rebar	6794 Lb.	7321 Lb.	
3. Concrete In Sleeper	11.1 Cu. Yd.	11.4 Cu. Yd.	
4. Epoxy Rebar in Sleeper	1770 Lb.	1793 Lb.	
5. 2" Polystyrene Insulation Board	17 Sq. Ft.	18 Sq. Ft.	
6. Membrane Sealant Adjacent to Wings	26 Ft.	29 Ft.	
7. Type B Drainage Fabric	92.8 Sq. Yd.	93.5 Sq. Yd.	

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

(SOUTH BOUND LANES)
APPROACH SLAB DETAILS
FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER COUNTY ROAD 106
STR. NO. 42 - 064 - 030

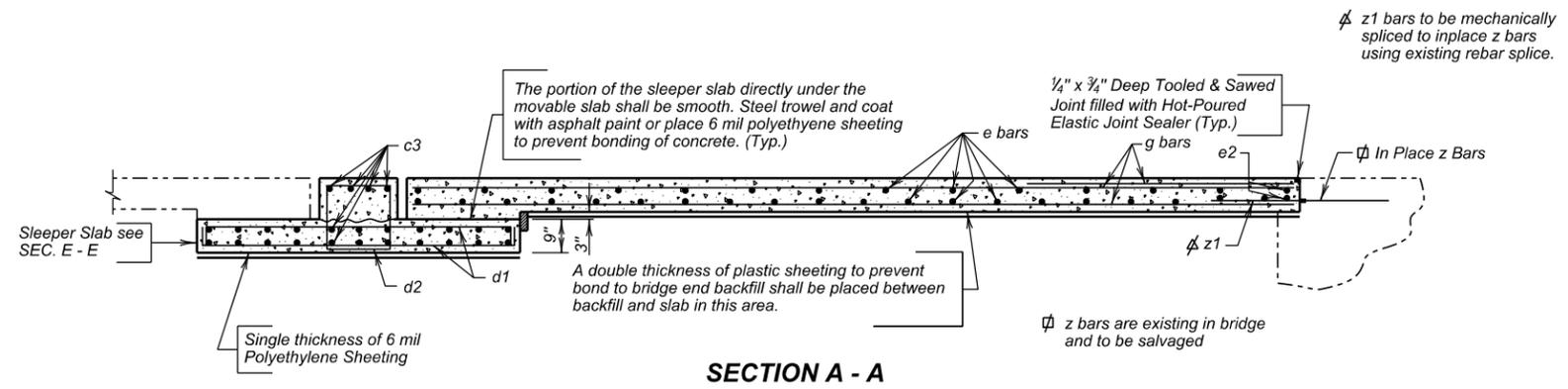
0° SKEW
SEC. 19/30-T100N-R50W
IM 0293(96)73

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

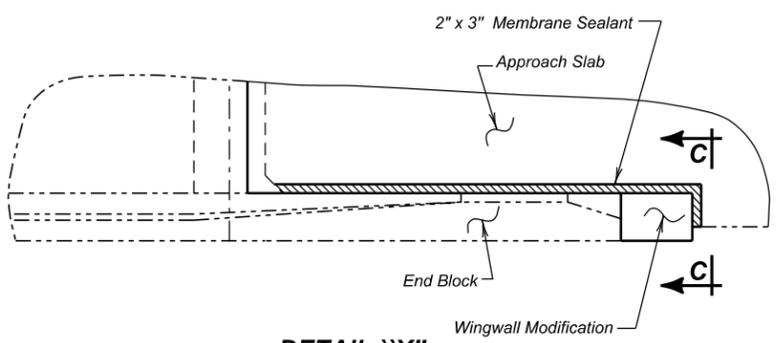
JULY 2015

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E11	E127

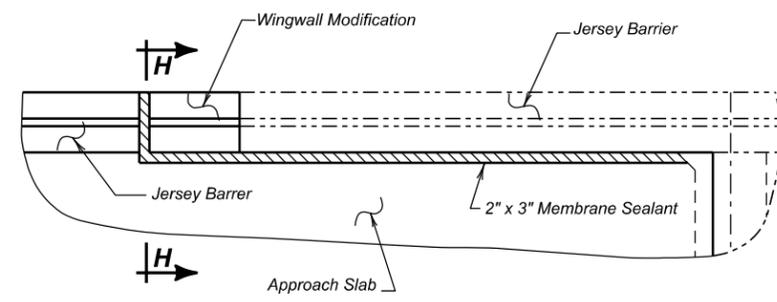
FOR BIDDING PURPOSES ONLY



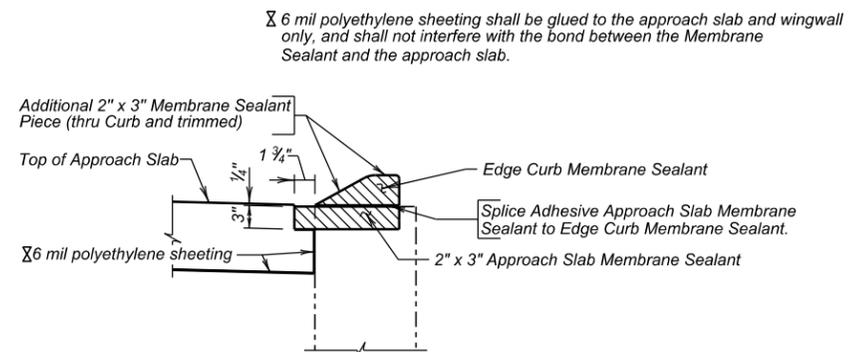
SECTION A - A



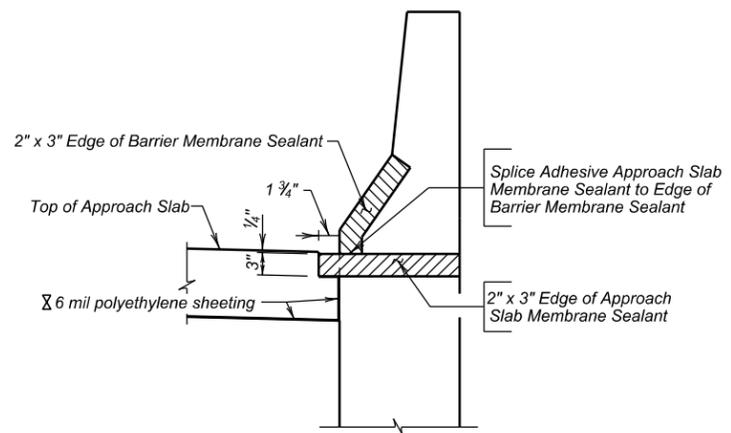
DETAIL "X"



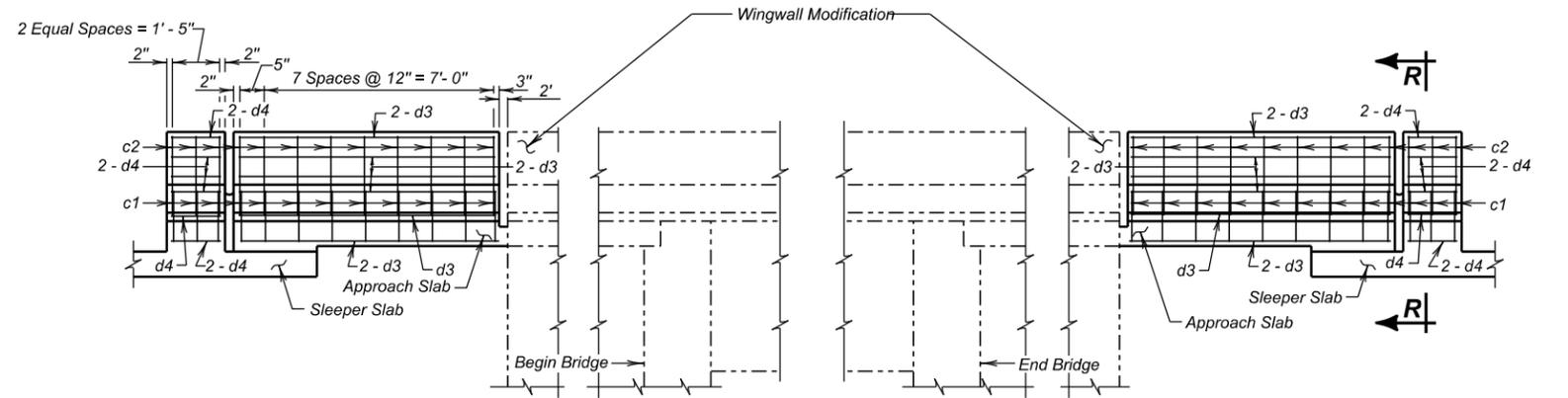
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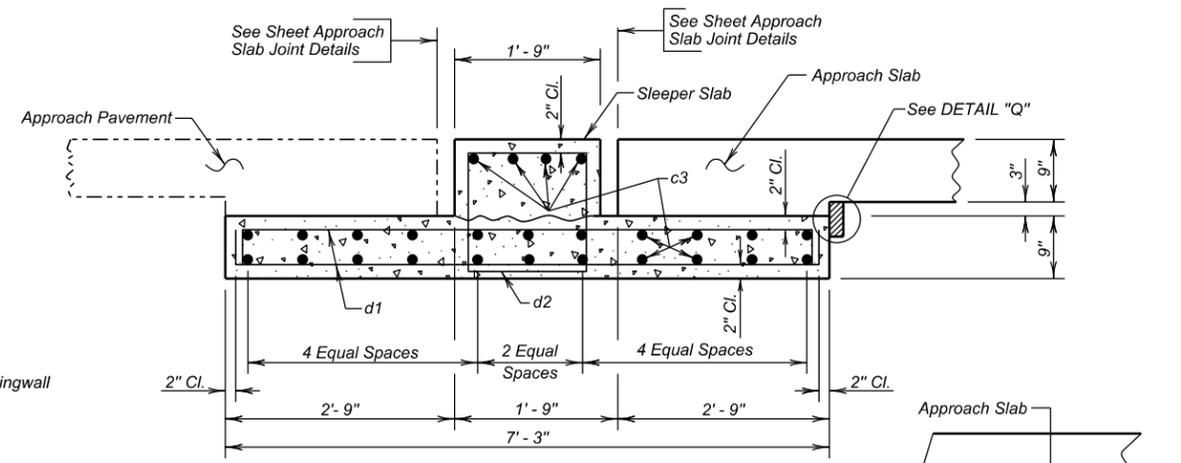
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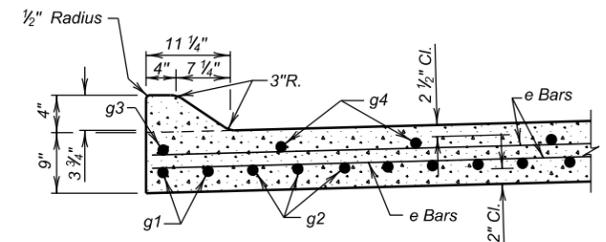
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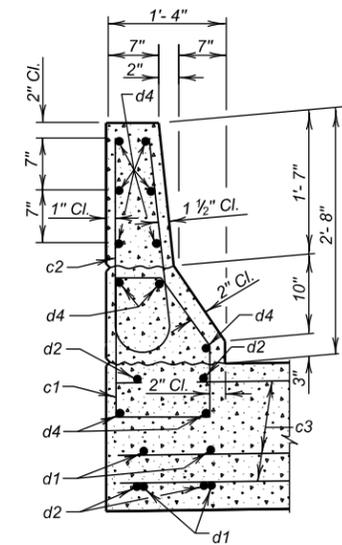
SECTION N - N
(Elevation - Barrier)



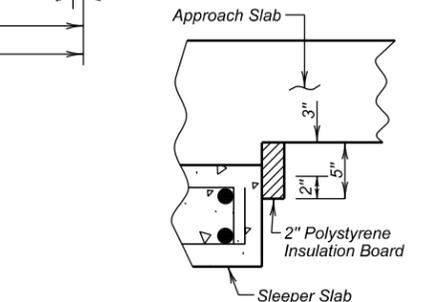
SEC. E - E
(Sleeper Slab)



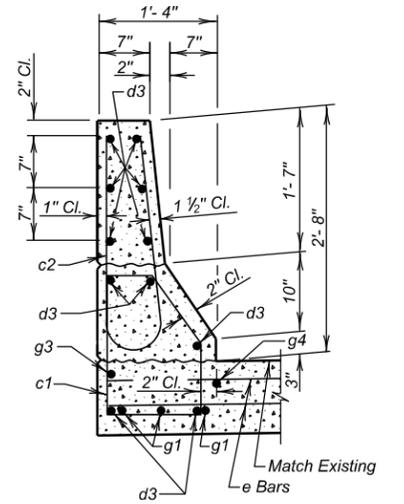
SEC. P - P



SEC. R - R



DETAIL "Q"



SEC. B - B

(SOUTH BOUND LANES)
APPROACH SLAB DETAILS (CONTINUED)
 FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY
 OVER COUNTY ROAD 106
 STR. NO. 42 - 064 - 030

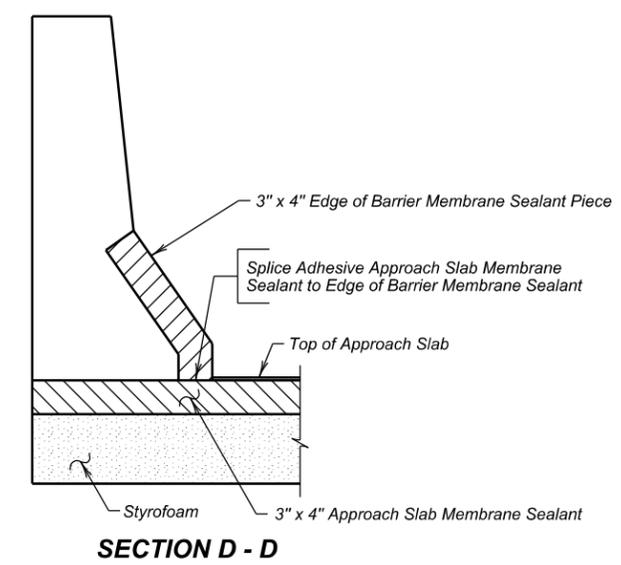
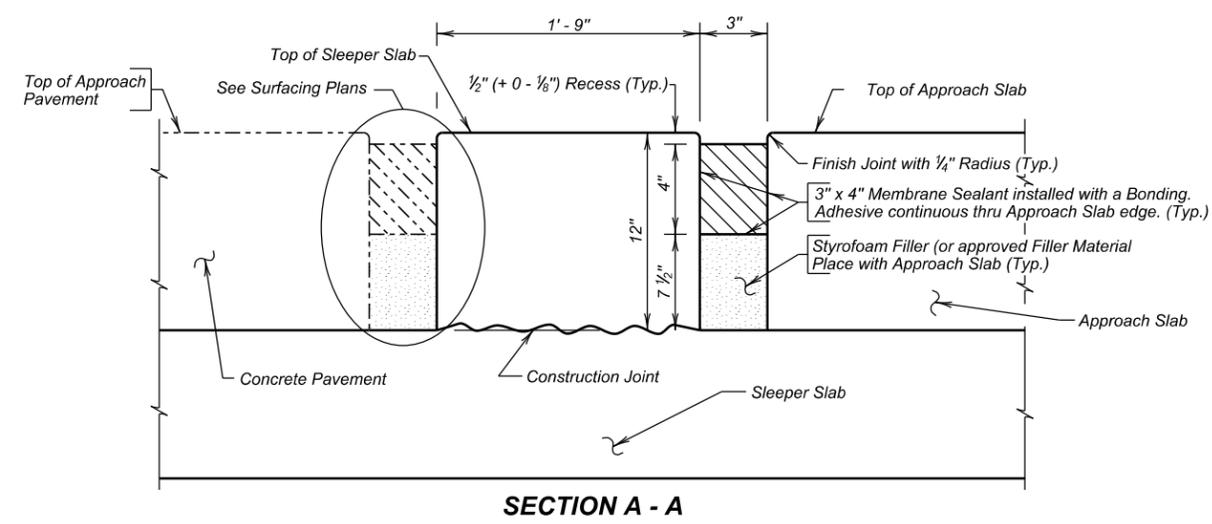
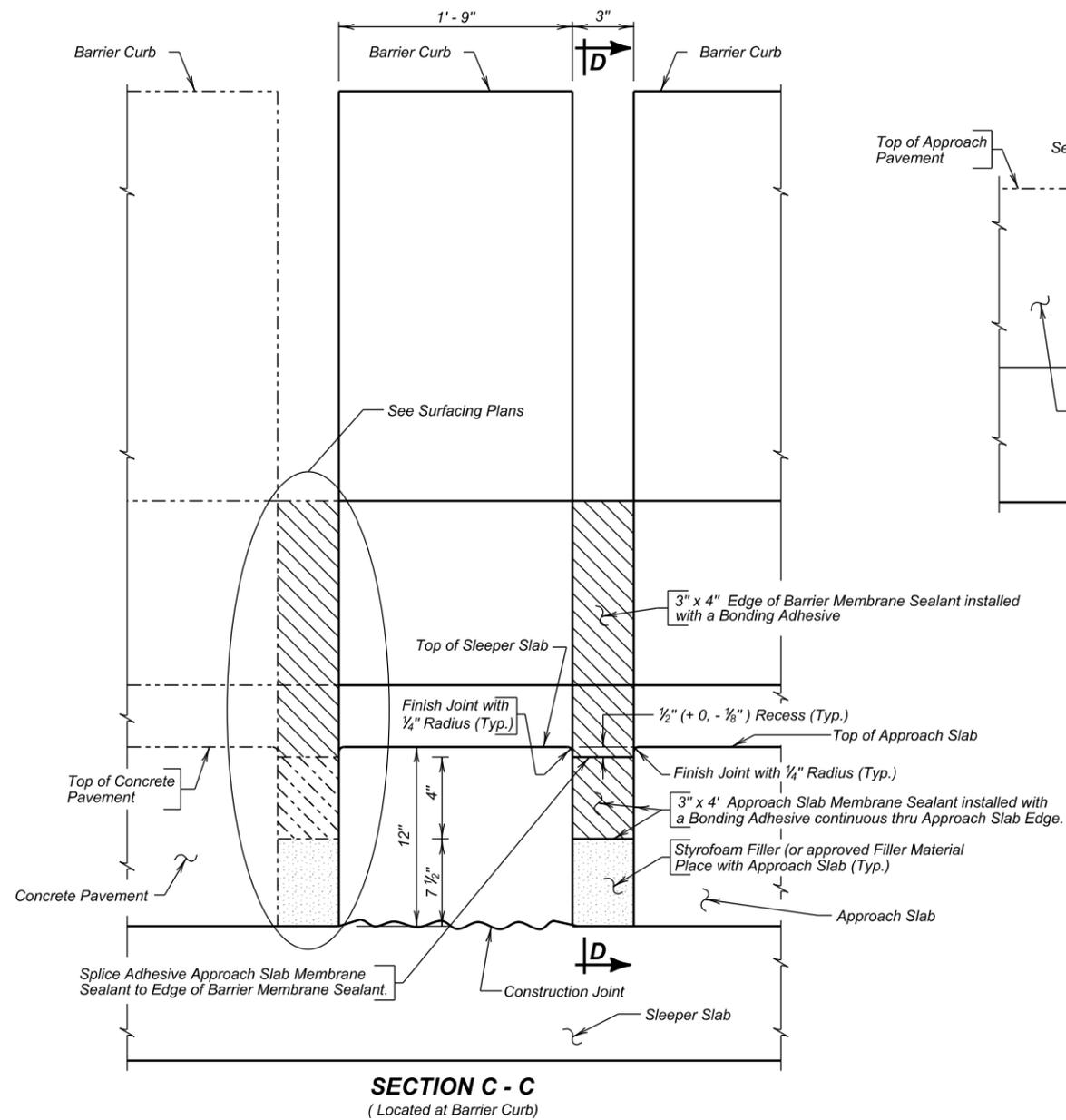
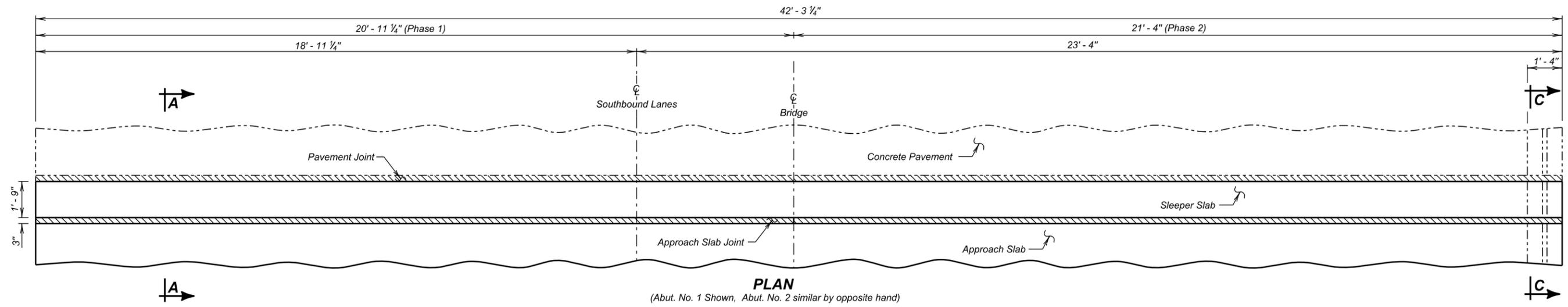
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

JULY 2015

DESIGNED BY MM LINC010S	CK. DES. BY JM 01QSRB09	DRAFTED BY KR	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E12	E127



ESTIMATED QUANTITIES			
(For Two Approach Slabs)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Membrane Sealant Expansion Joint	Ft.	41.9	45.2

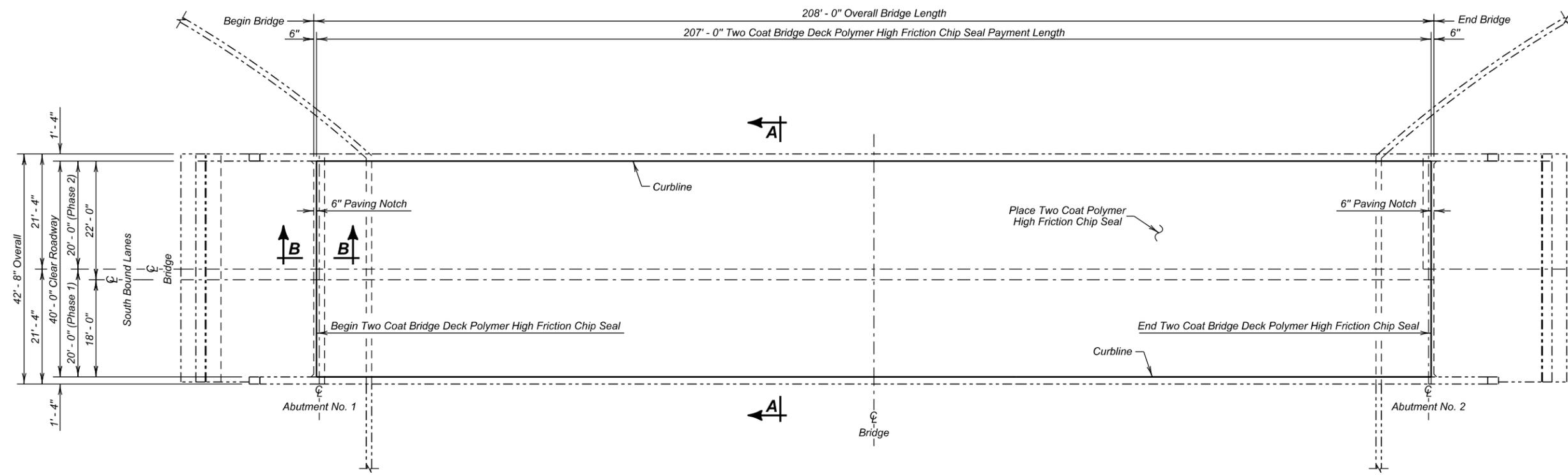
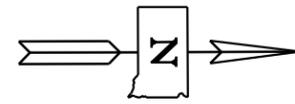
(SOUTH BOUND LANES)
APPROACH SLAB JOINT DETAILS
 FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
 STR. NO. 42 - 064 - 030 IM 0293(96)73

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSR10	DRAFTED BY KR	Kevin N. Boeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

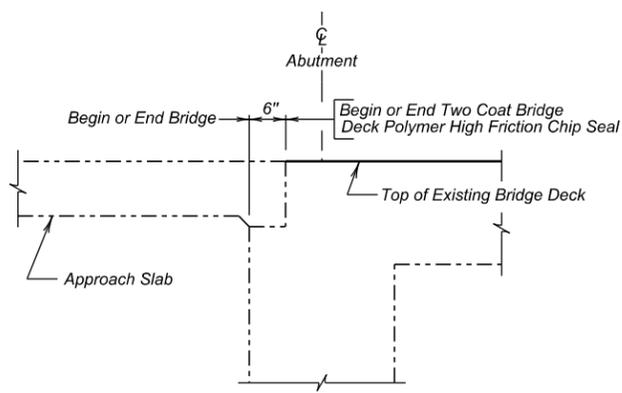
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E13	E127



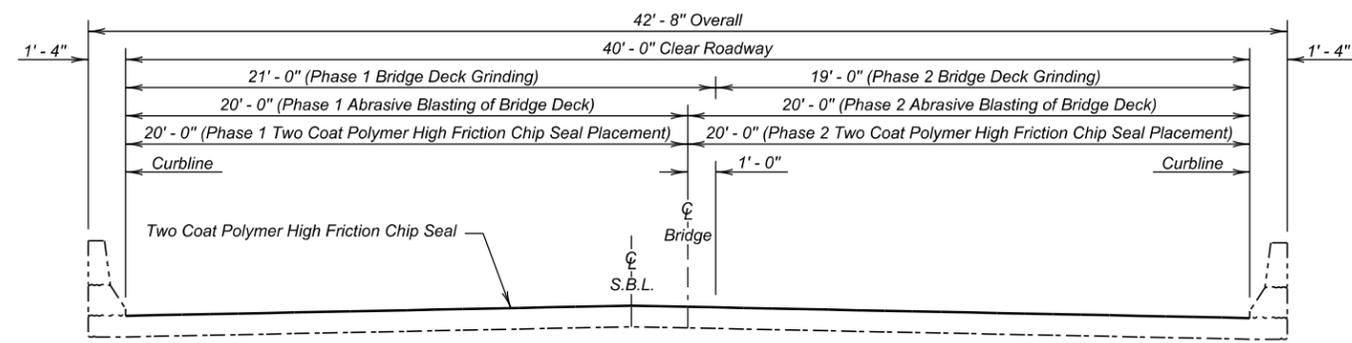
PLAN

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
* Concrete Patching Material, Bridge Deck	Cu. Ft.	12.0	12.0
Two Coat Bridge Deck Polymer High Friction Chip Seal	Sq. Yd.	460.0	460.0
Abrasive Blasting of Bridge Deck	Sq. Yd.	460.0	460.0
Bridge Deck Grinding	Sq. Yd.	483.0	437.0
* Concrete Removal, Class A	Sq. Yd.	2.0	2.0
* Concrete Removal, Class B	Sq. Yd.	2.0	2.0

* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.



SECTION B - B



SECTION A - A

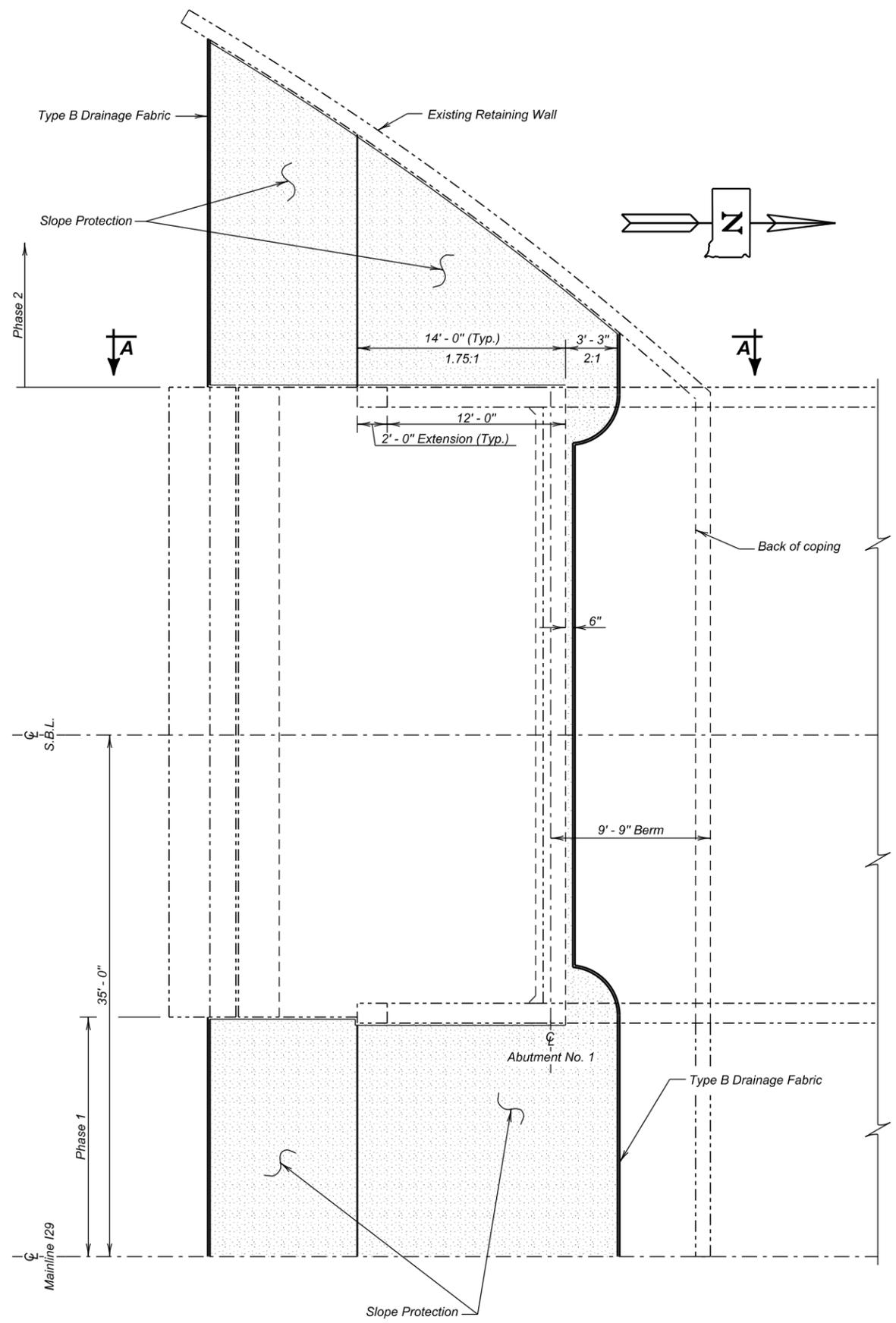
(SOUTH BOUND LANES)
POLYMER HIGH FRICTION CHIP SEAL DETAILS
 FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY
 OVER COUNTY ROAD 106
 STR. NO. 42 - 064 - 030

0° SKEW
 SEC. 19/30-T100N-R50W
 IM 0293(96)73

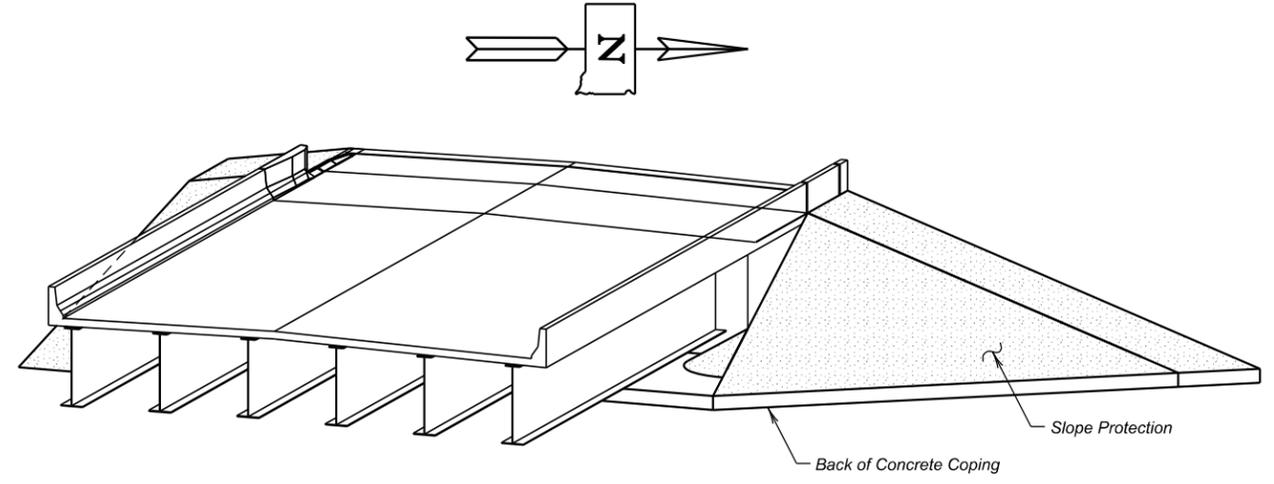
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSR11	DRAFTED BY KR	Kevin N. Goeden BRIDGE ENGINEER
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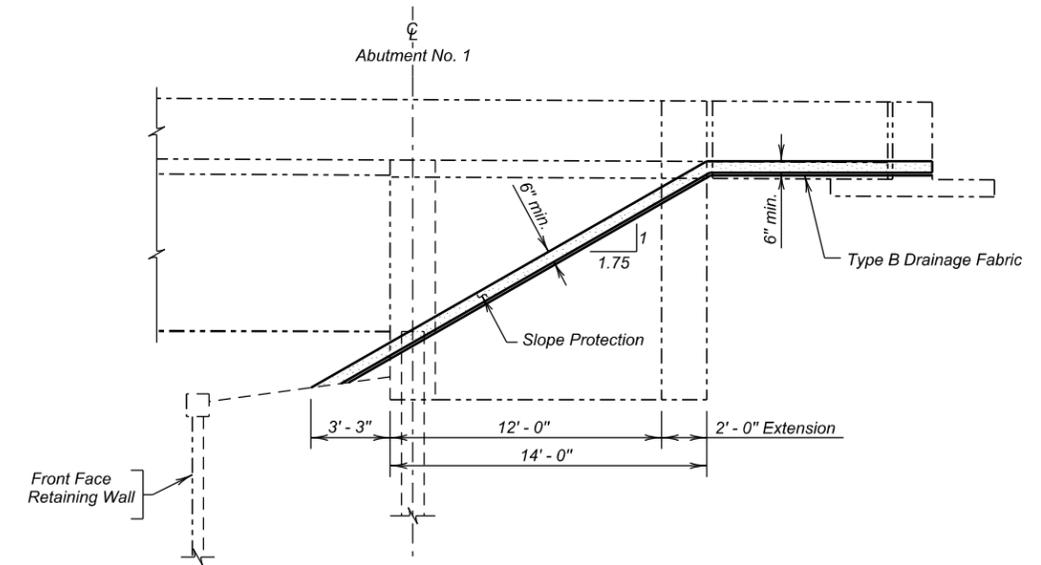
FOR BIDDING PURPOSES ONLY



PLAN
(Abutment No. 1 Shown)
(Abutment No. 2 Similar by Opposite Hand)



ISOMETRIC VIEW



SECTION A - A

(SOUTH BOUND LANES)
SLOPE PROTECTION DETAILS
FOR

208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
STR. NO. 42 - 064 - 030 IM 0293(96)73

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	115.8	95.4

Item 1 is approximate quantity contained in the above bid item and is for information only.

1. Type B Drainage Fabric	Phase 1 115.8 Sq. Yd.	Phase 2 95 Sq. Yd.
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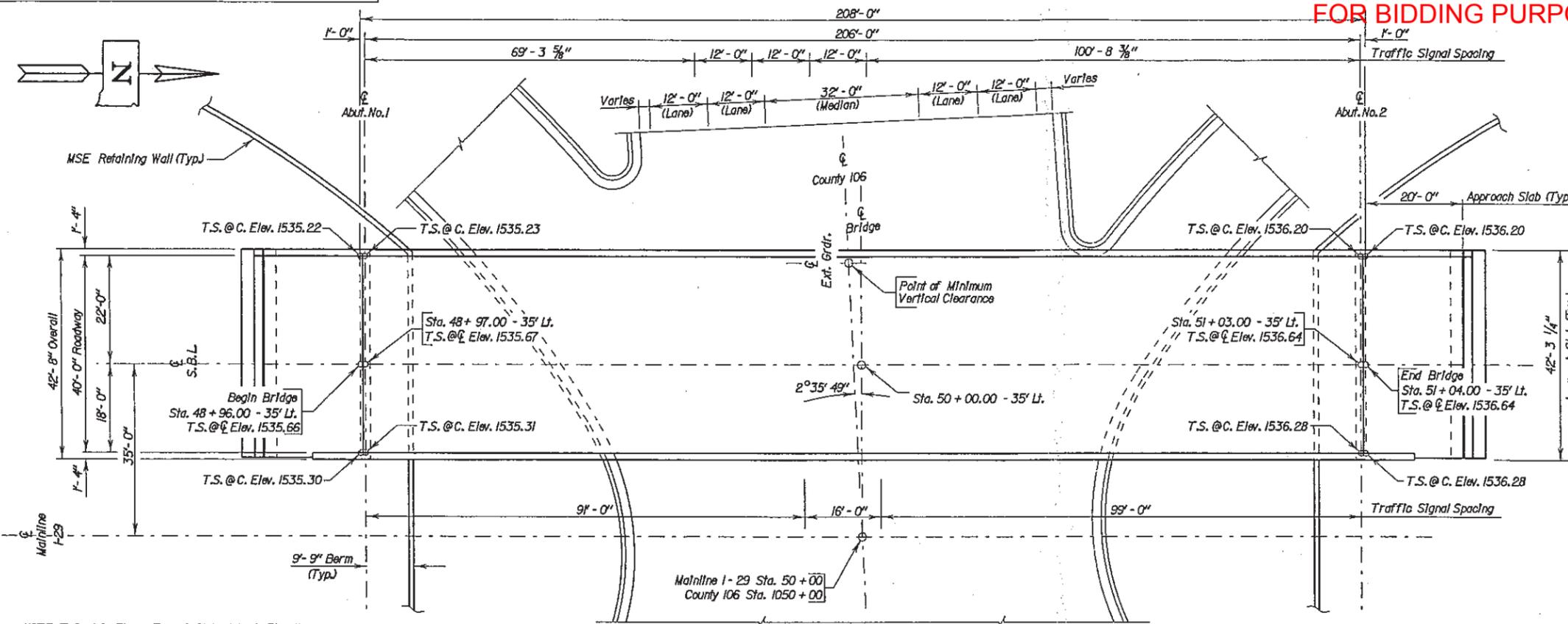
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSRA12	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E15	E127

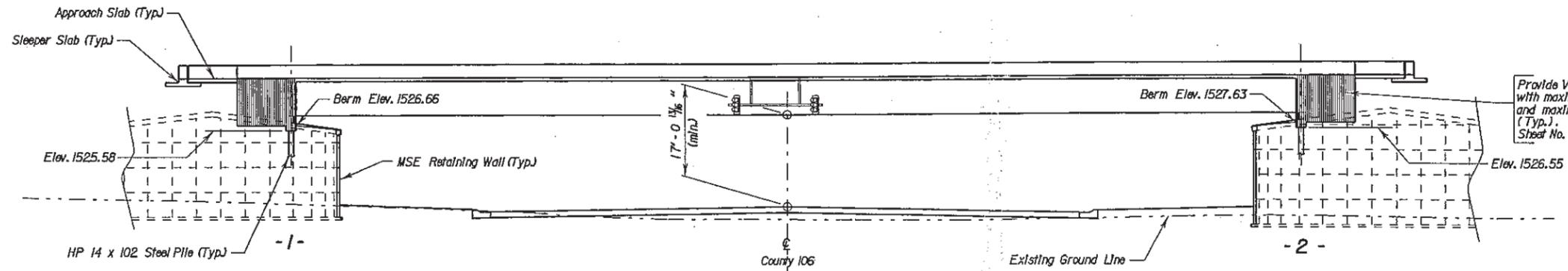
FOR BIDDING PURPOSES ONLY



- X271-
INDEX OF BRIDGE SHEETS-**
- Sheet No. 1 - General Drawing & Layout
 - 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 - Subsurface Investigation & Piling Layout
 - Sheet No. 7 - Abutment No. 1 Details
 - Sheet No. 8 - Abutment No. 2 Details
 - Sheet No. 9 - Abutment Details (Continued)
 - Sheet No. 10 - Superstructure Details
 - Sheet No. 11 - End Block & Barrier Curb Details
 - Sheet No. 12 - Girder Layout & Details
 - Sheet No. 13 - Details of Bolted Field Splices
 - Sheet No. 14 - Diaphragm Details
 - Sheet No. 15 - Framing Diagram, Camber Details & Erection Data
 - Sheet No. 16 - Slab Form Elevations
 - 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 - Barrier Expansion Device Details
 - Sheet No. 22 - Slope Protection Details
 - Sheet No. 23 - Signal Bracket Details
 - Sheet No. 24 - Signal Bracket Details (Continued)
 - Sheet No. 25 - As-Built Elevation Survey
 - Sheet No. 26 - Details of Standard Plate Nos. 460.02 and 460.05
 - Sheet No. 27 - Details of Standard Plate Nos. 510.40 and 630.92

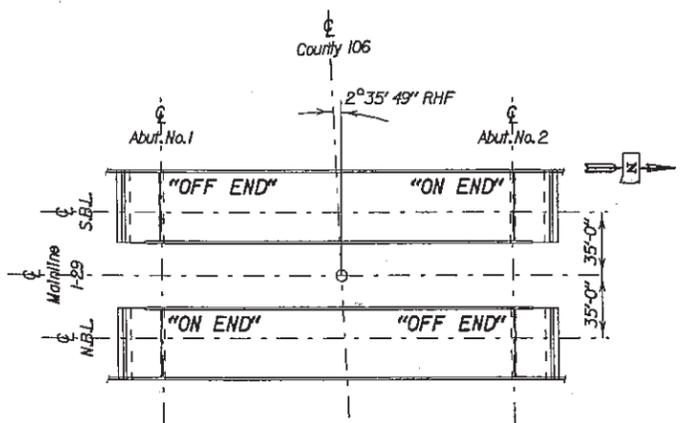
NOTE: T.S. at C. Elev. = Top of Slab at Curb Elevation
T.S. at ϕ Elev. = Top of Slab at Centerline Elevation

PLAN

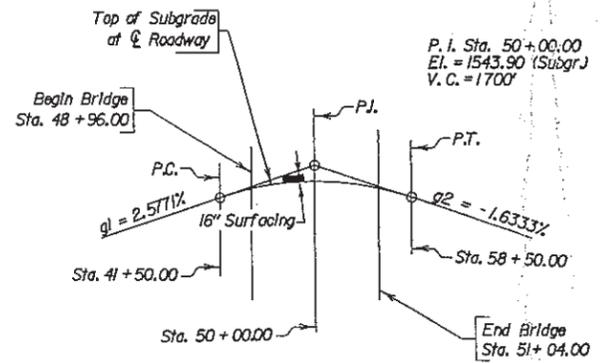


ELEVATION

GENERAL DRAWING & LAYOUT
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44
PCEMS NO. 1948 (& ALT.)



LAYOUT



VERTICAL CURVE DATA

ORIGINAL CONSTRUCTION PLANS

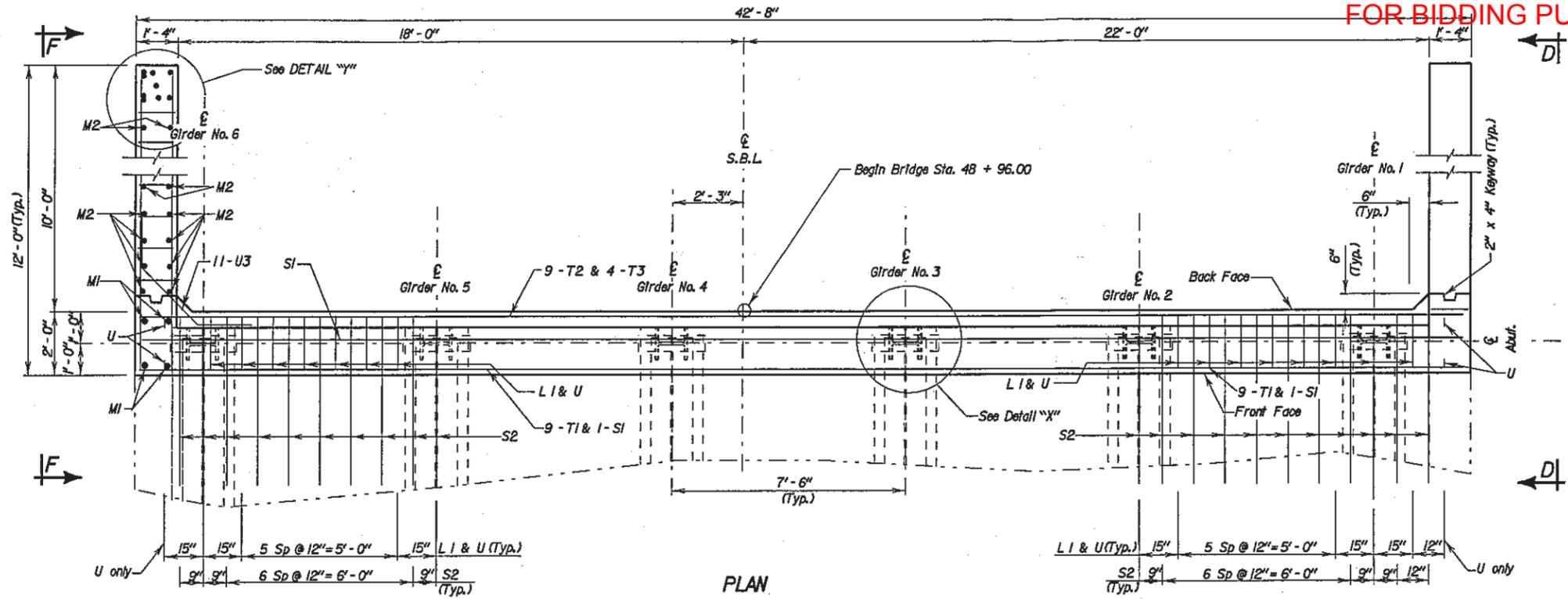
PLANS BY: OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

-X271-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/DC	BK	SJ/DC	<i>John C. Cole</i>
LINC1948	1948(BK)		BRIDGE ENGINEER

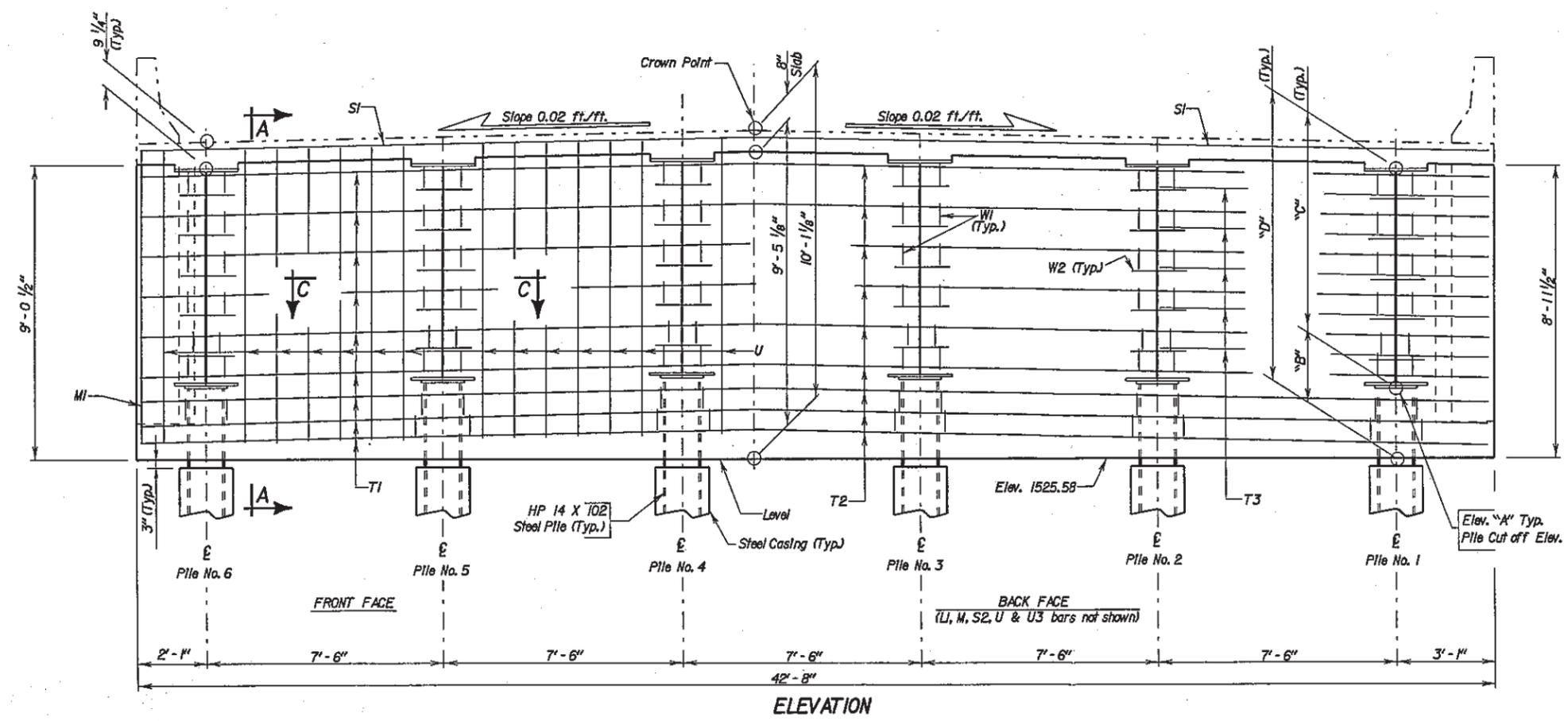
FOR BIDDING PURPOSES ONLY



NOTE-
This sheet is to be used in conjunction with Sheet No. 9 of 27.

Pile No.	Elev. "A"	"B"	"C"	"D"
1	1527.58	2'-0"	6'-11"	8'-11"
2	1527.73	2'-1 1/8"	6'-11"	9'-0 1/8"
3	1527.88	2'-3 3/8"	6'-11"	9'-2 3/8"
4	1527.94	2'-4 7/8"	6'-11"	9'-3 7/8"
5	1527.79	2'-2 1/2"	6'-11"	9'-1 1/2"
6	1527.64	2'-0 3/4"	6'-11"	8'-11 3/4"
Z	1527.49	-	-	-
Y	1527.34	-	-	-

See Subsurface Investigation & Piling Layout for additional piles.



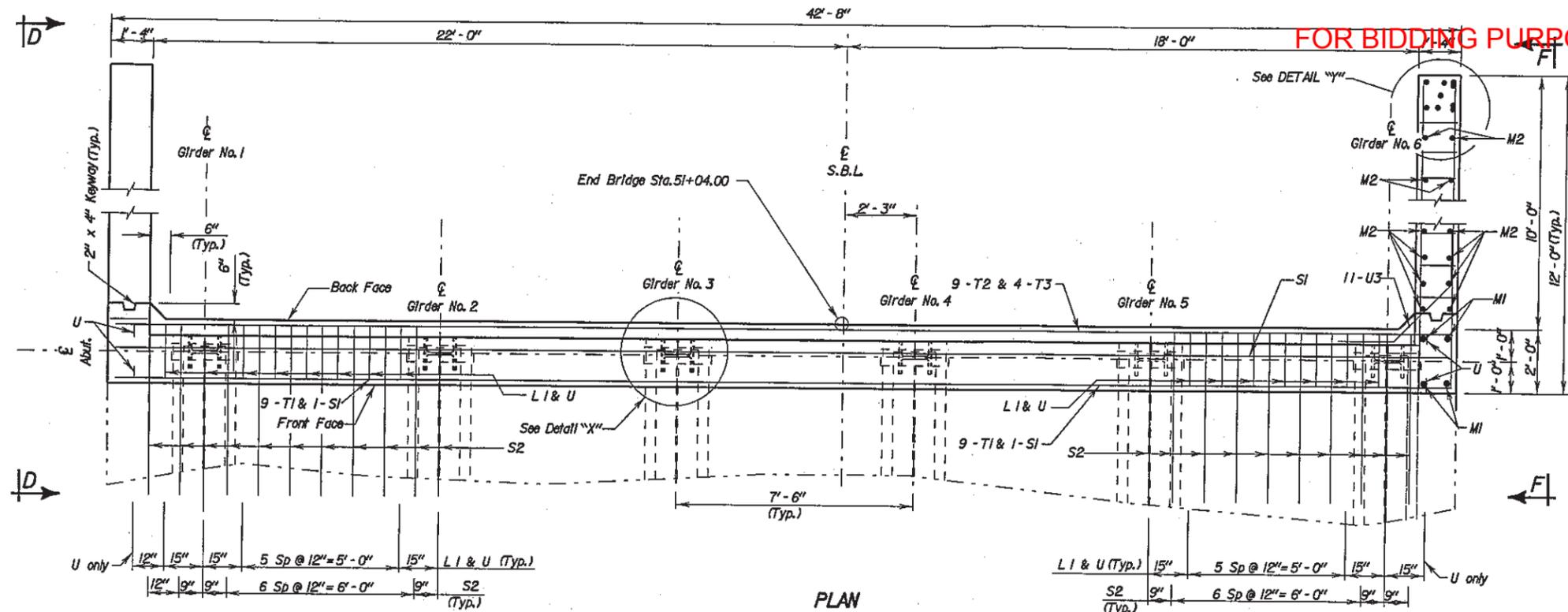
ORIGINAL CONSTRUCTION PLANS

ABUTMENT NO. 1 DETAILS
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-TIOON-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY SJ/DC LINC948	DRAWN BY BK 1948JB07	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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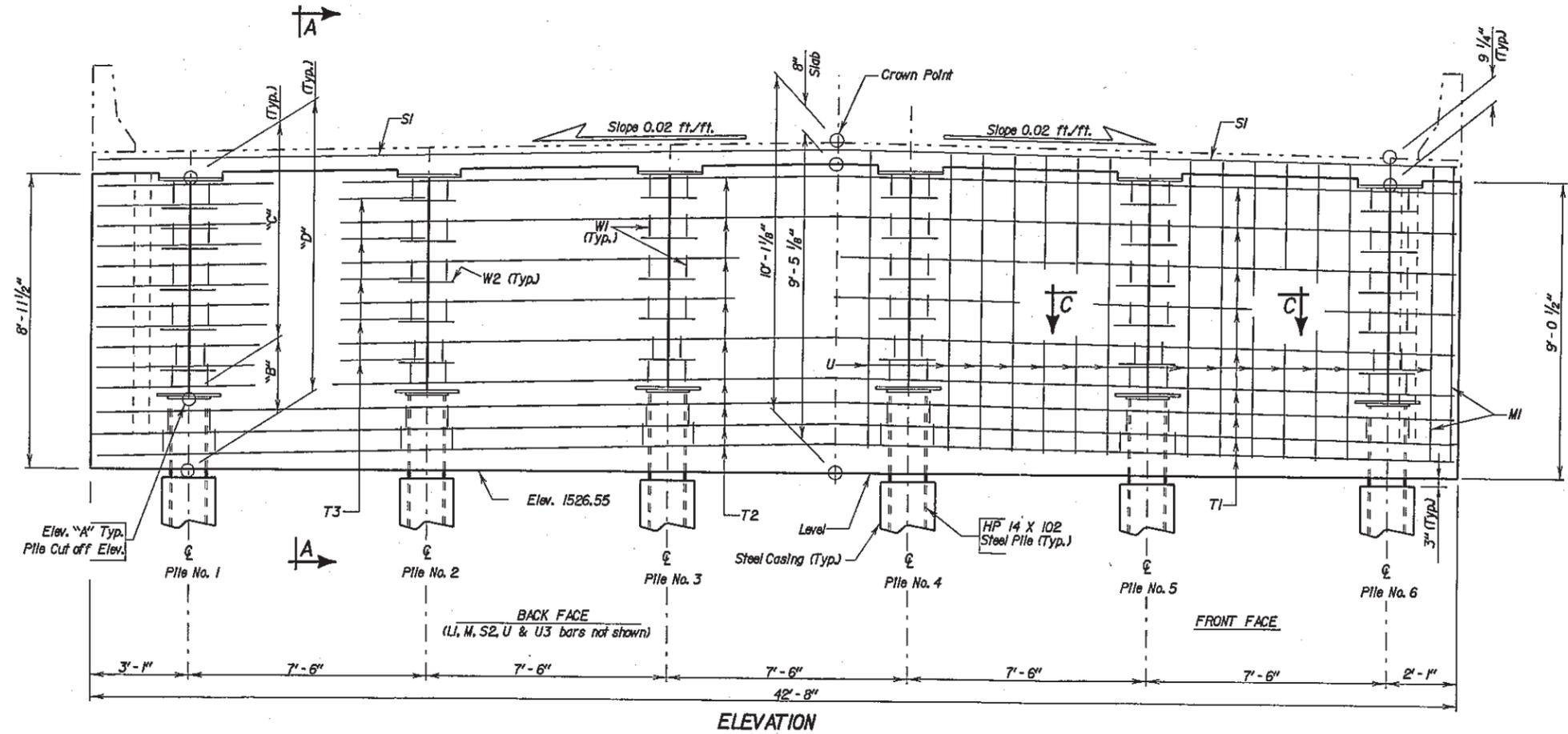
FOR BIDDING PURPOSES ONLY



NOTE-
This sheet is to be used in conjunction with Sheet No. 9 of 27.

TABLE OF ELEV. & DIMENSIONS				
Pile No.	Elev. "A"	"B"	"C"	"D"
1	1528.55	2'-0"	6'-1"	8'-1"
2	1528.70	2'-1 1/8"	6'-1"	9'-0 1/8"
3	1528.85	2'-3 3/8"	6'-1"	9'-2 3/8"
4	1528.91	2'-4 3/8"	6'-1"	9'-3 3/8"
5	1528.76	2'-2 1/2"	6'-1"	9'-1 1/2"
6	1528.61	2'-0 3/4"	6'-1"	8'-11 3/4"
Z	1528.46	-	-	-
Y	1528.31	-	-	-

See Subsurface Investigation & Piling Layout for additional piles.



ORIGINAL CONSTRUCTION PLANS

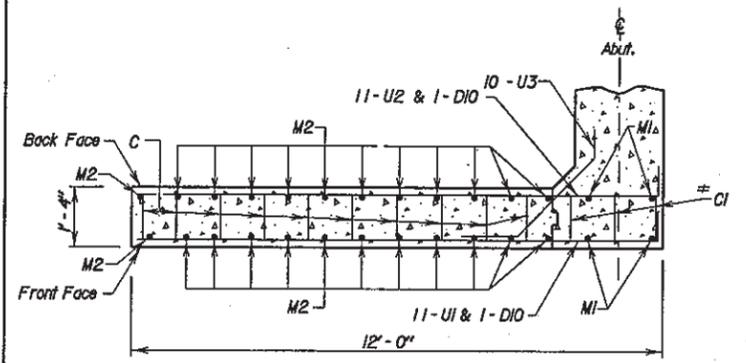
ABUTMENT NO. 2 DETAILS
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

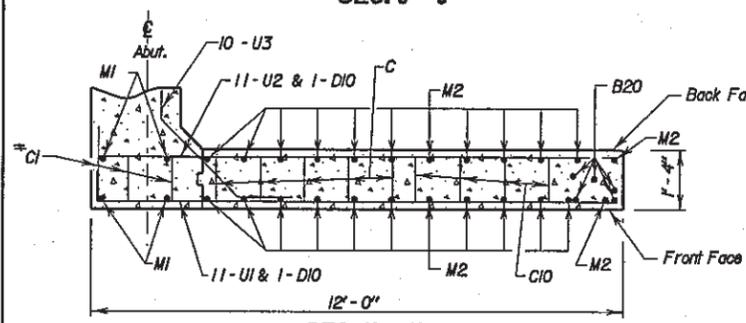
DESIGNED BY SJ/DC LINC948	DRAWN BY BK 1948JRB8	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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NOTE-
This sheet is to be used in conjunction with Sheet Nos. 7 and 8 of 27.

FOR BIDDING PURPOSES ONLY

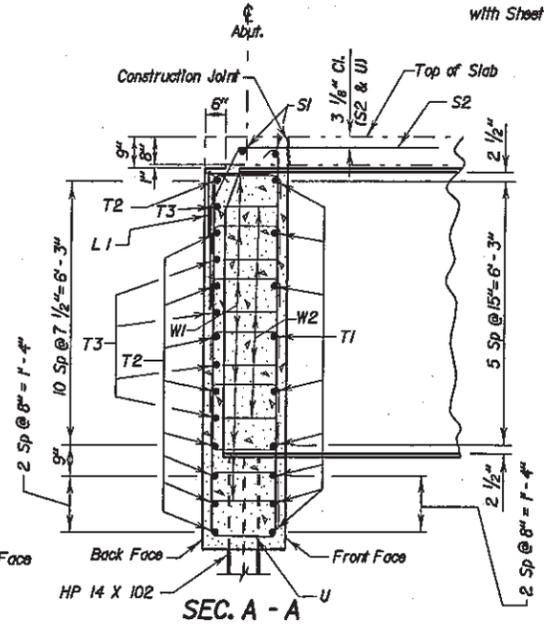


SEC. J - J

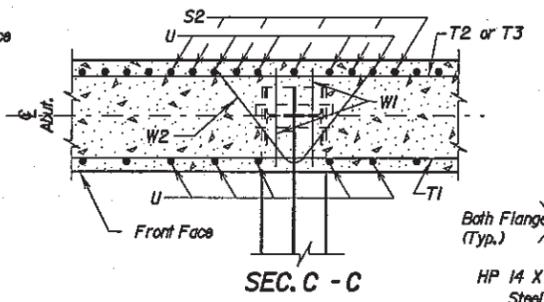


SEC. K - K

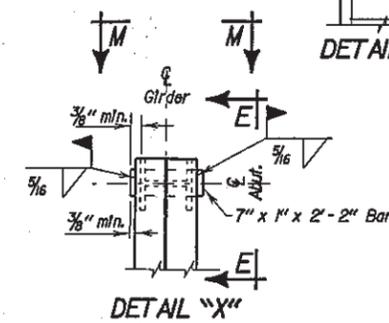
Notes: Provide Vertical Rib Finish on Front Face of Wingwalls.



SEC. A - A

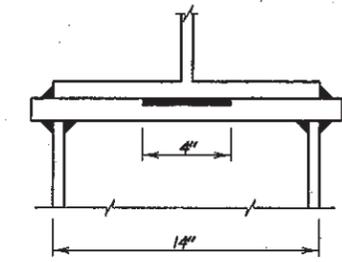


SEC. C - C

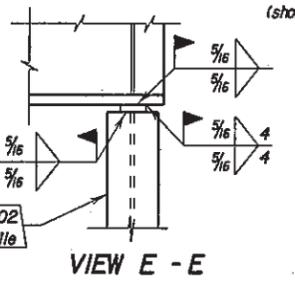


DETAIL 'X'

DETAIL 'Y'



VIEW M - M (showing weld locations)

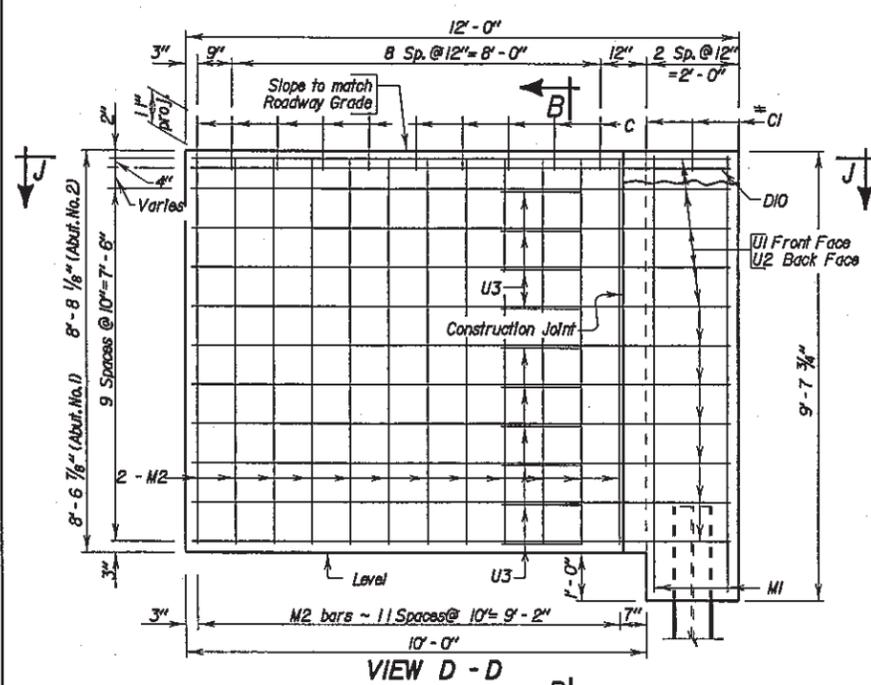


VIEW E - E

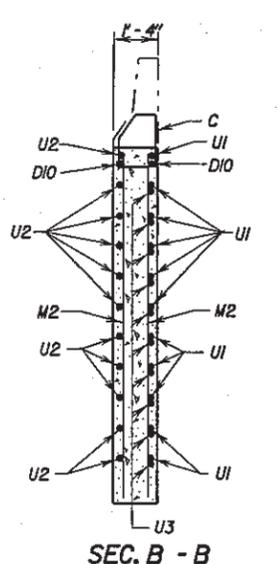
REINFORCING SCHEDULE				Bending Details	
Mk. No.	Size	Length	Type		
B20	5	6	3'-6" Str.	Type 17	Type 14A
C	15	5	5'-9" T2A		
C10	4	6	5'-10" T1A	Type 17A	Type 13A
D10	4	4	1'-6" Str.		
L1	31	4	3'-4" 17A	Type 19	Type T2A
M1	8	5	9'-4" Str.		
M2	48	5	8'-5" Str.	Type S9A	
S1	2	9	42'-4" Str.		
S2	44	6	9'-0" 14A	Type 17A	Type 13A
T1	9	7	42'-4" Str.		
T2	9	8	42'-4" Str.	Type 17A	Type 13A
T3	10	8	10'-6" Str.		
U	33	6	20'-8" S9A	Type 17A	Type 13A
UI	22	4	12'-4" 17A		
U2	22	7	12'-10" 17A	Type 17A	Type 13A
U3	20	6	5'-11" 19		
W1	96	6	3'-0" 17	Type 17A	Type 13A
W2	30	8	5'-0" 13A		

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

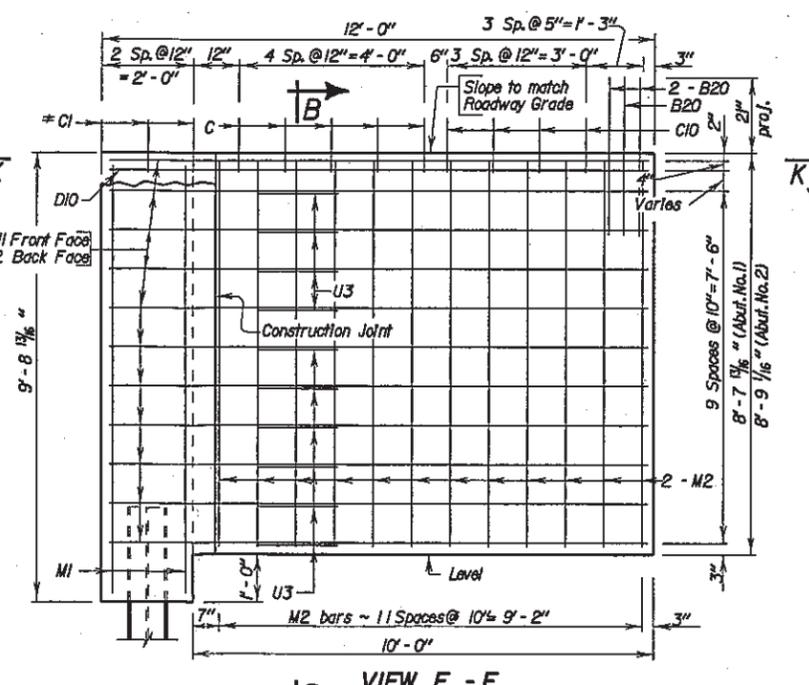
ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Abut No.1	Abut No.2
Class M5 Concrete, Bridge	Cu. Yd.	37.7	37.8
Reinforcing Steel	Lb.	3156	3156
Epoxy Coated Reinforcing Steel	Lb.	3347	3347
HP 14 X 102 Steel Test Pile, Furnish & Drive	Ft.	1 @ 108'-108'	1 @ 99'-99'
HP 14 X 102 Steel Bearing Pile, Furnish & Drive	Ft.	7 @ 103'-72'	7 @ 94'-65'



VIEW D - D

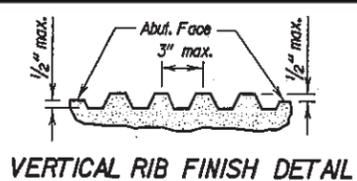


SEC. B - B



VIEW F - F

ORIGINAL CONSTRUCTION PLANS



ABUTMENT DETAILS (CONTINUED)

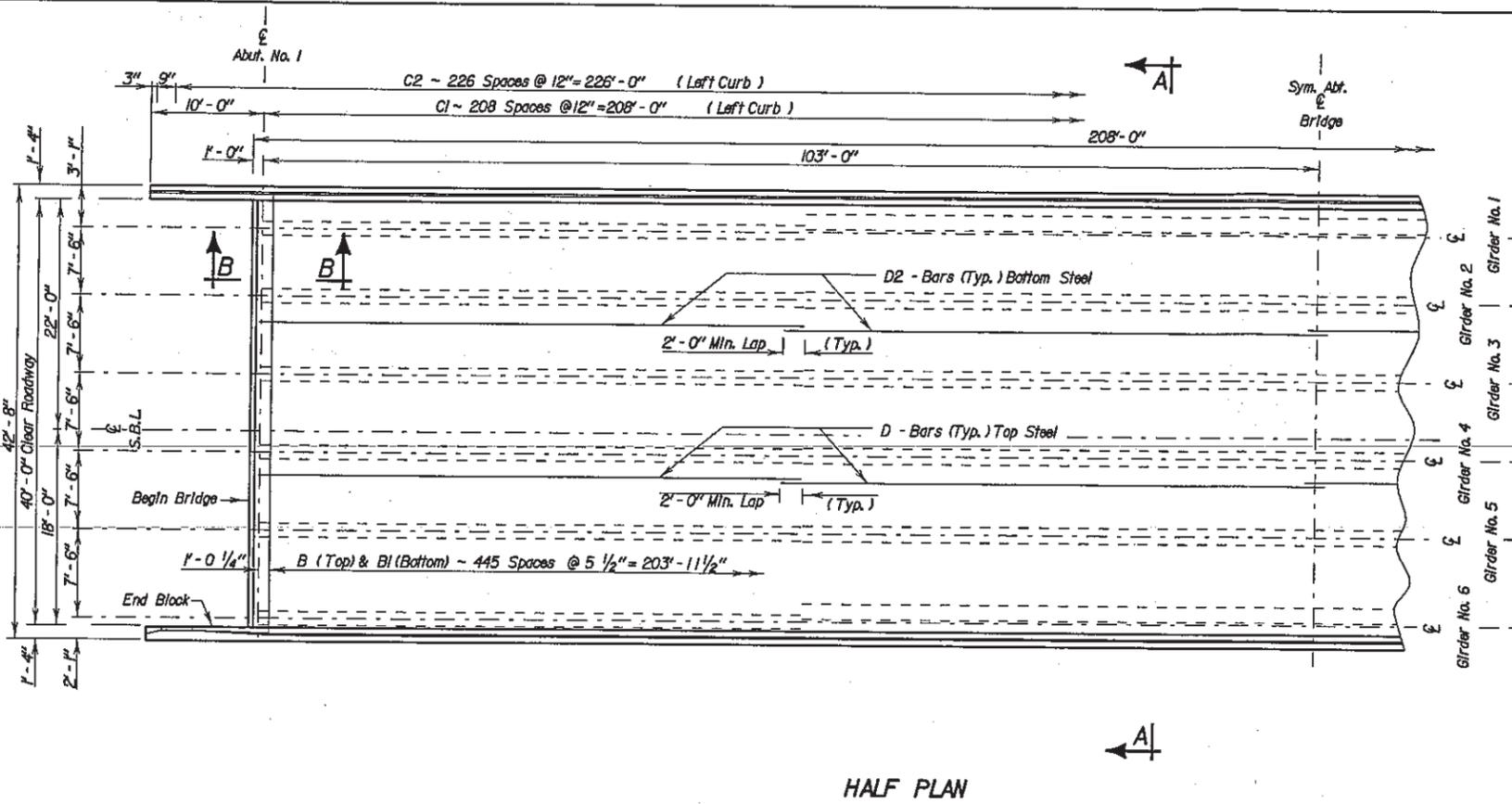
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-TION-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY SJ/DC LINC1948	DRAWN BY BK 1948JB09	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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* Listed and Included In Superstructure Details

FOR BIDDING PURPOSES ONLY



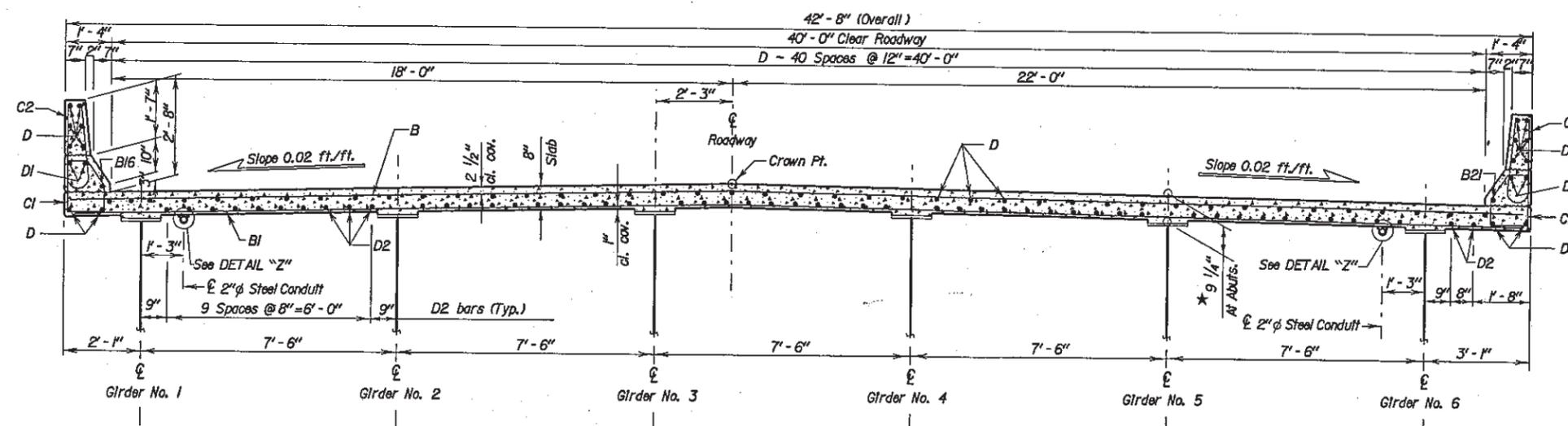
REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
B	445	5	42'-4"	Str.
BI	445	4	42'-4"	Str.
BI5	6	5	14'-6"	Str.
BI6	4	4	57'-5"	Str.
BI7	4	4	8'-6"	19B
BI8	6	8	4'-3"	19B
BI9	6	5	2'-4"	Str.
B2I	4	4	58'-1"	Str.
CI	418	5	5'-9"	T2A
C2	434	5	5'-1"	SII
C3	2	5	5'-0"	SII
C4	2	5	5'-0"	SII
C5	2	5	5'-0"	SII
C6	2	5	6'-8"	TI
C7	2	5	6'-9"	TI
C8	2	5	6'-1"	TI
C9	2	5	7'-0"	TI
CI1	8	5	7'-1"	TI
CI3	2	5	5'-3"	17
D	204	5	53'-2"	Str.
DI	40	5	58'-6"	Str.
D2	208	4	53'-2"	Str.
ZI	108	7	2'-0"	Str.

Banding Details	
Type 17	
Type SII	
Type 19B	
Type T1	
Type SII	

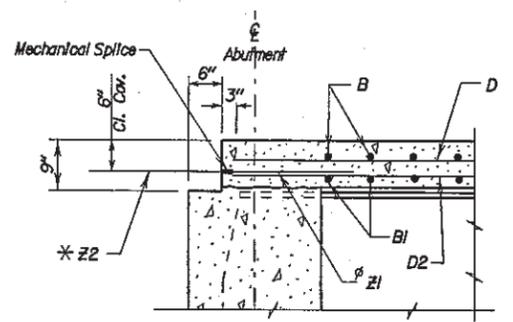
NOTES-

- All reinforcing steel shall be epoxy coated
- See Sheet No. 18 of 27 for location of ZI bars.
- All dimensions are out to out of bars.

HALF PLAN



SEC. A - A



SEC. B - B

NOTE-
All barrier curb details shown on Sheet No. 11 of 27.

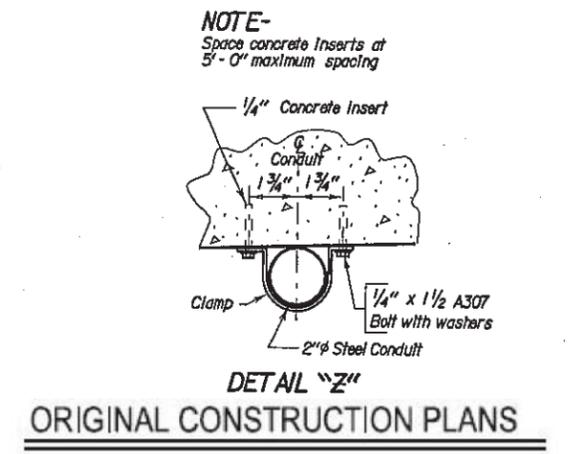
* Dimensions are at bearing; at other points along the girders this dimension shall be computed as shown on the Framing Diagram, Camber details & Erection Data sheet.

* Z2 bars are listed and included in approach slab quantities on Sheet No. 18 of 27.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu. Yd.	262.7
Epoxy Coated Reinforcing Steel	Lb.	59357
Structural Steel	Lump Sum	Lump Sum
No. 7 Rebar Splice	Each	108
Grooving Bridge Deck	Sq. Yd.	974
Concrete Penetrating Sealer	Sq. Yd.	920

For informational purposes only, the estimated weight of the structural steel is 466216 pounds.

* Concrete quantity for Barrier Curb is 0.0842 Cu. Yd. per foot. Each 12' End Block contains 1.1659 Cu. Yd. of concrete.



ORIGINAL CONSTRUCTION PLANS
SUPERSTRUCTURE DETAILS
FOR
(SOUTHBOUND LANES)

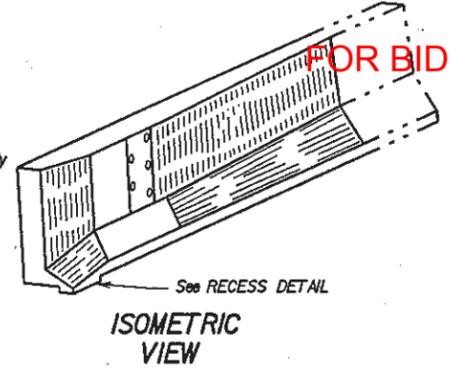
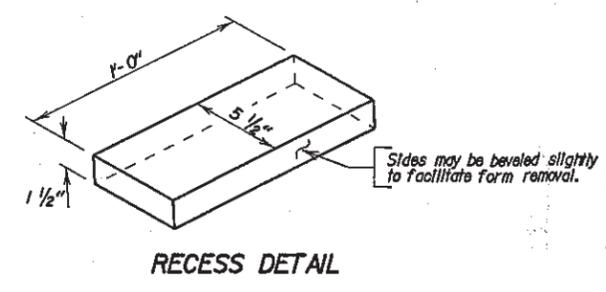
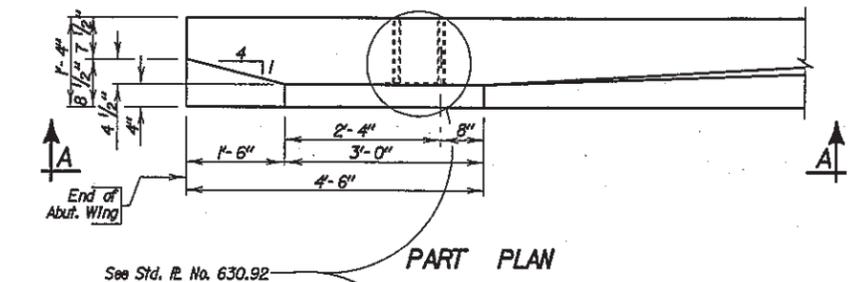
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-TIOON-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

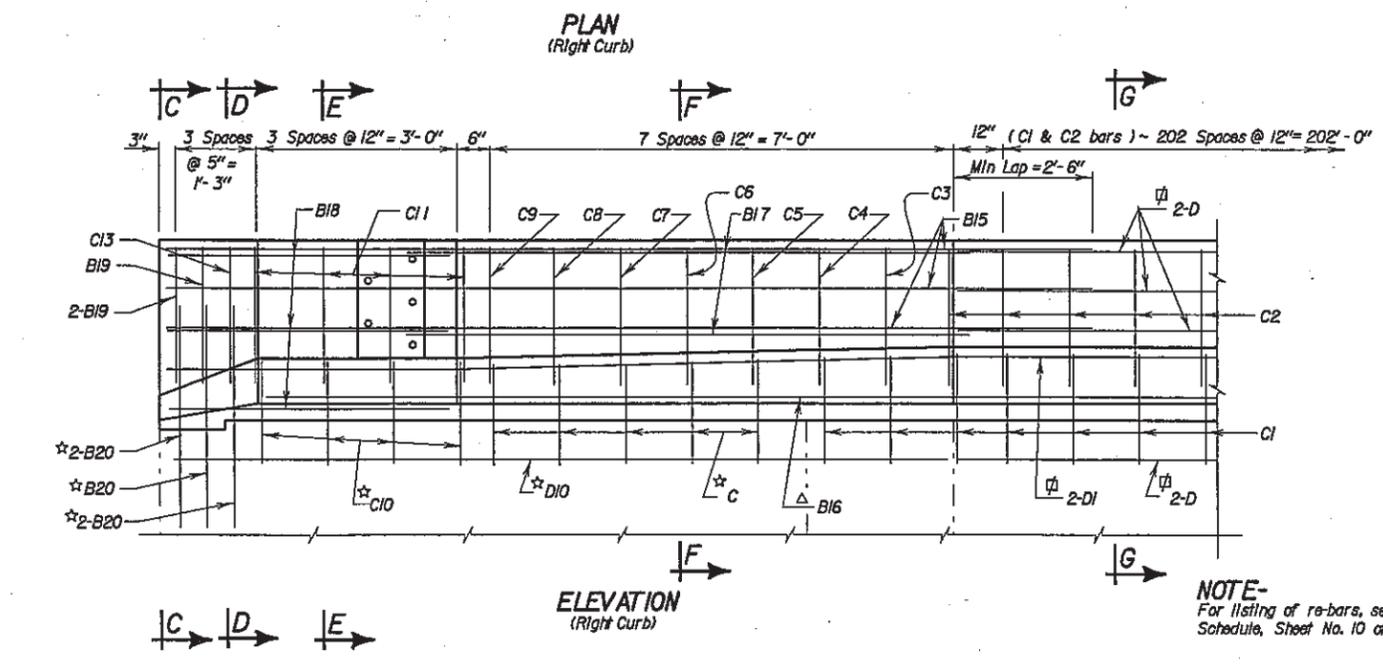
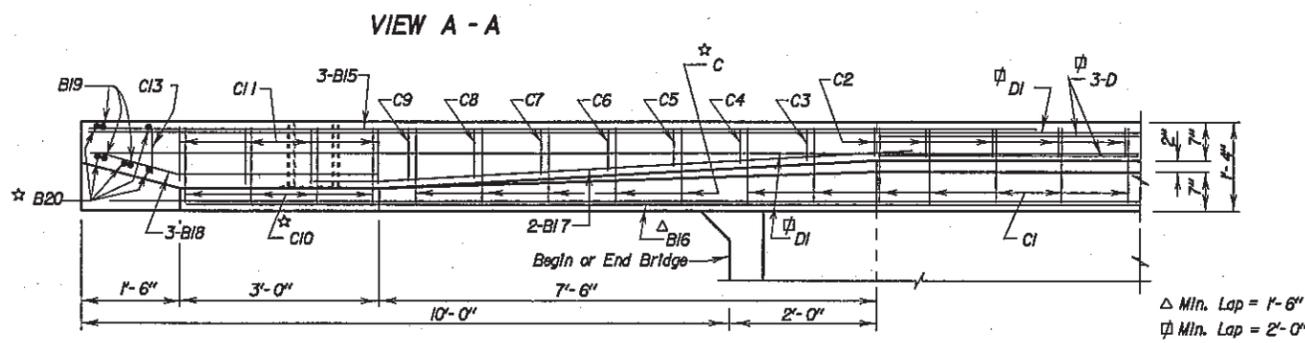
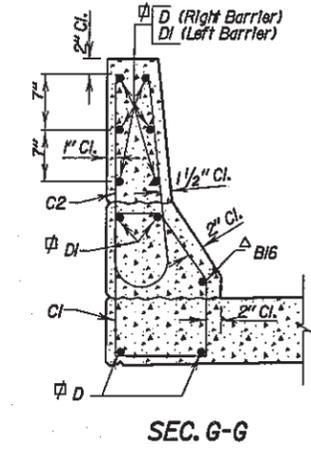
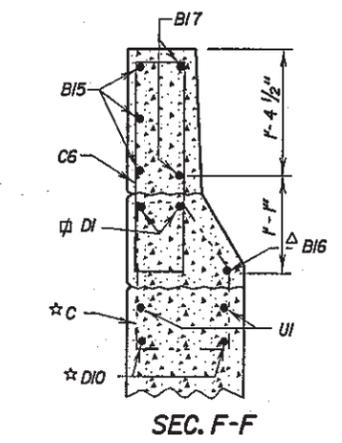
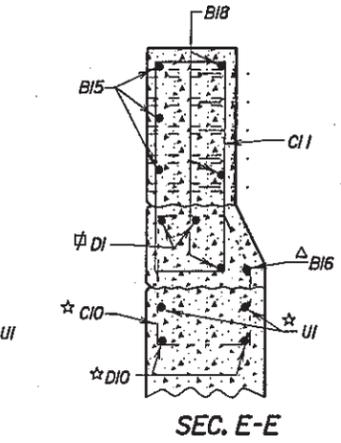
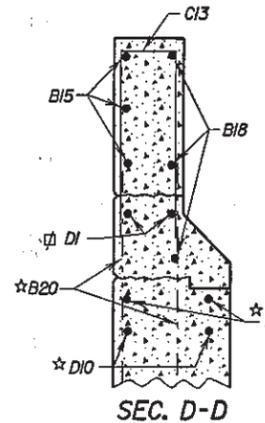
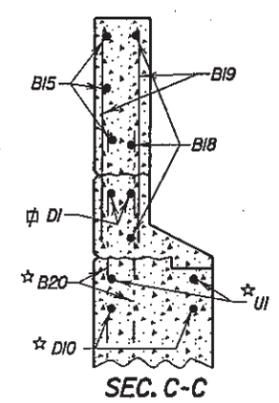
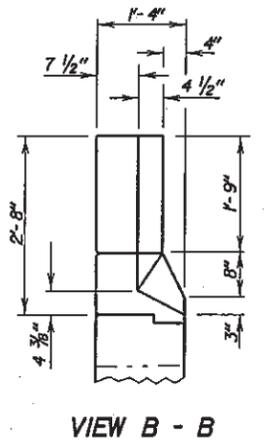
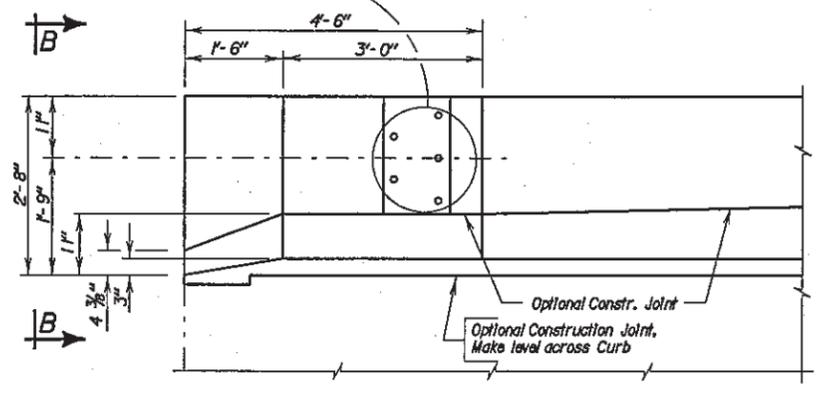
DESIGNED BY SJ/DC LINC948	DRAWN BY BK 1948JBIO	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

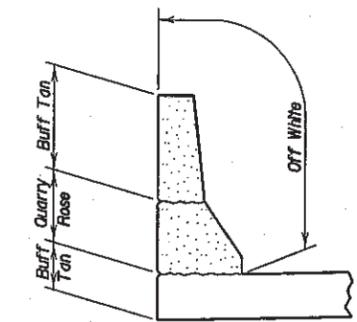
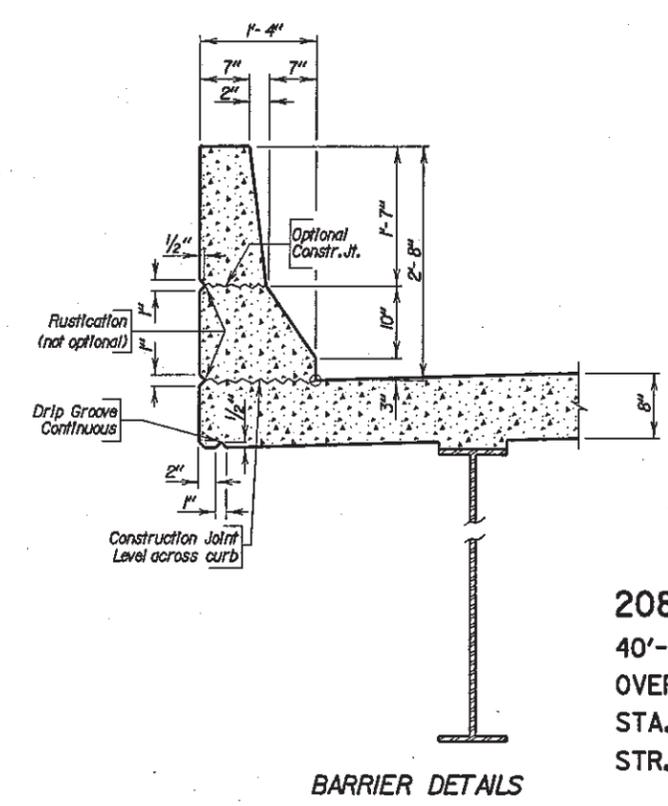
Use 1/2" Clear Cover on all bars except as shown.



* Included in Abutment quantities. See Sheet No. 9 of 27.



NOTE-
For listing of re-bars, see Reinforcing Schedule, Sheet No. 10 of 27.



* COMMERCIAL TEXTURE FINISH COLORS
* See notes on Commercial Texture Finish Class B

END BLOCK AND BARRIER CURB DETAILS FOR (SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

ORIGINAL CONSTRUCTION PLANS

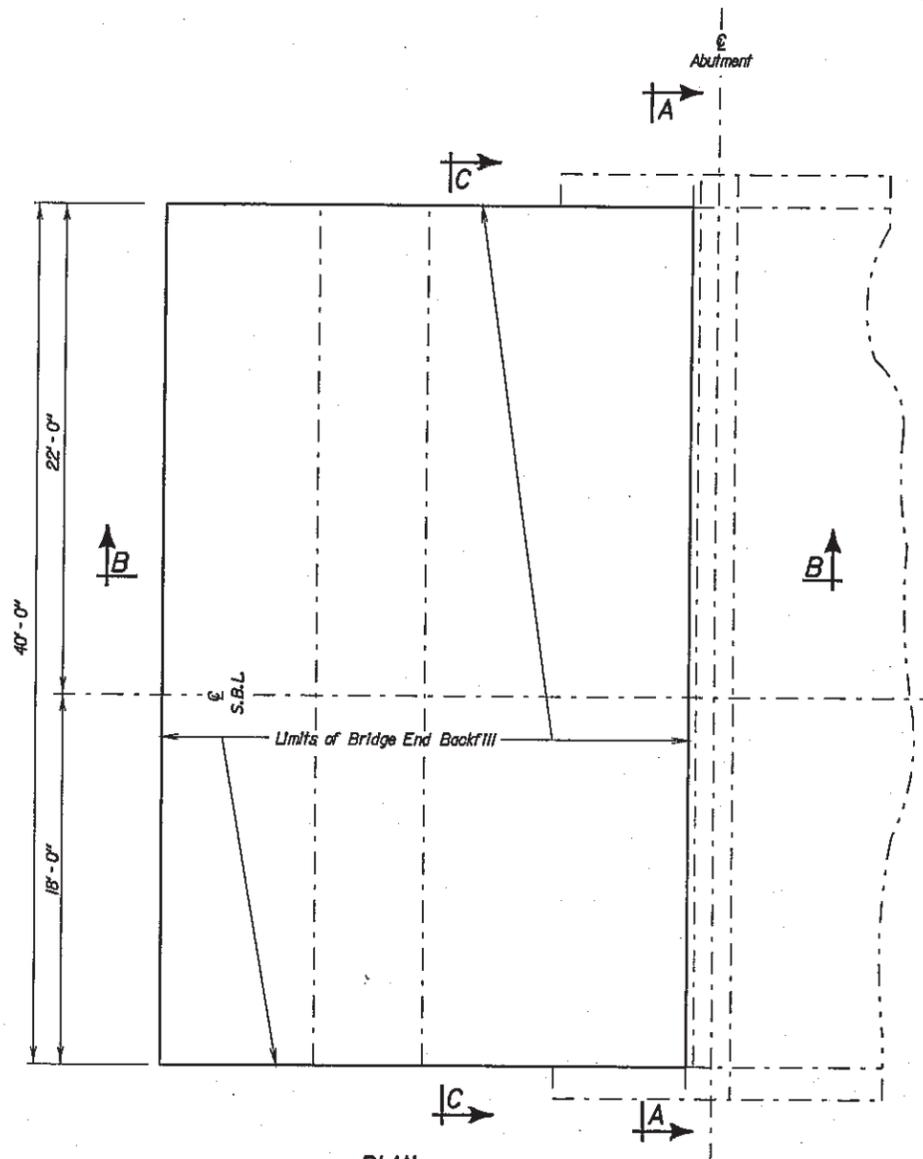
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY S.J/DC LINC948	DRAWN BY BK 1948JBI	CHECKED BY S.J/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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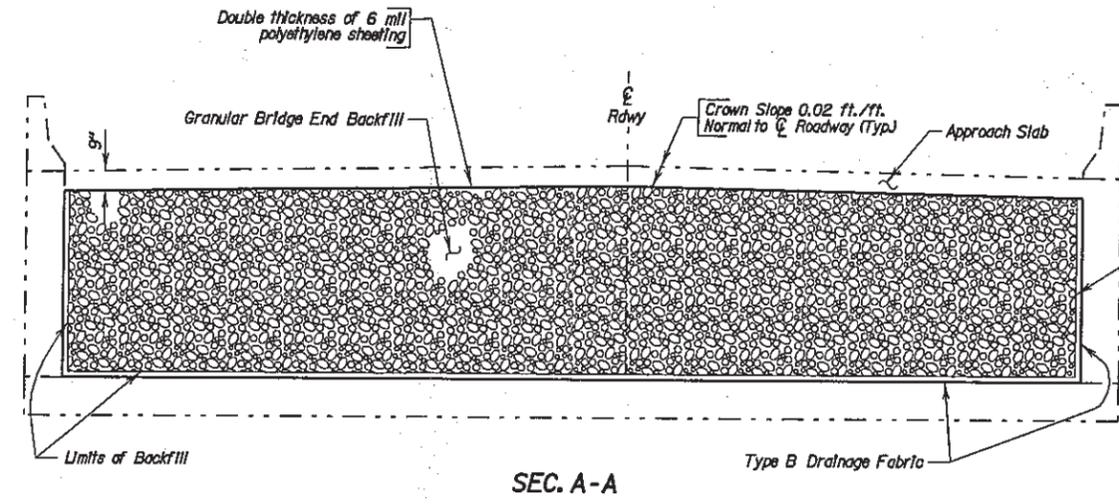
FOR BIDDING PURPOSES ONLY

ESTIMATED QUANTITIES (for 2 abutments)		
ITEM	UNIT	QUANTITY
Bridge End Backfill	Cu. Yd.	646

- 2863 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
 - 409 sq. yds. Type B Drainage Fabric.
 - 739 sq. ft. Vertical Composite Drain
- Items 1 thru 3 are approximate quantities contained in the above bid item and are for information only.



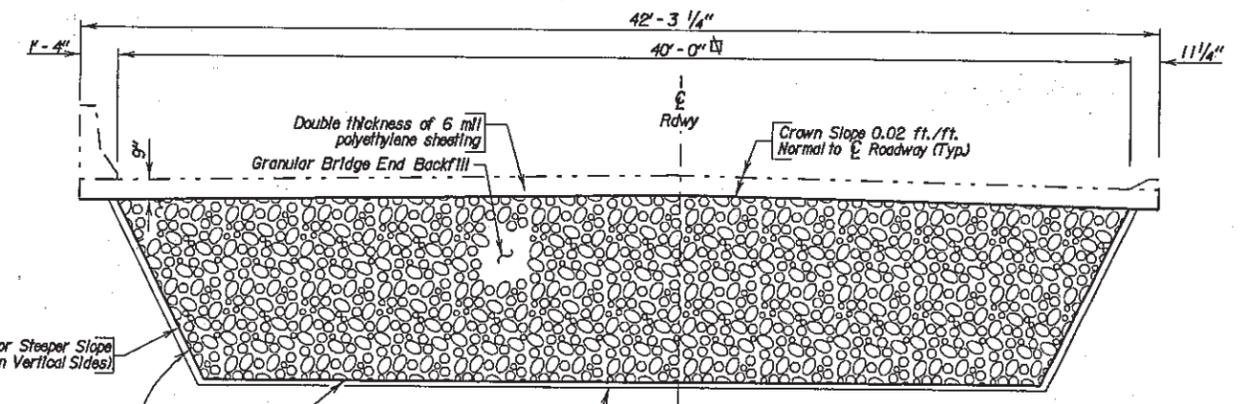
PLAN
(Shown adj. to Abut. 1, Abut. No. 2 similar opposite hand)



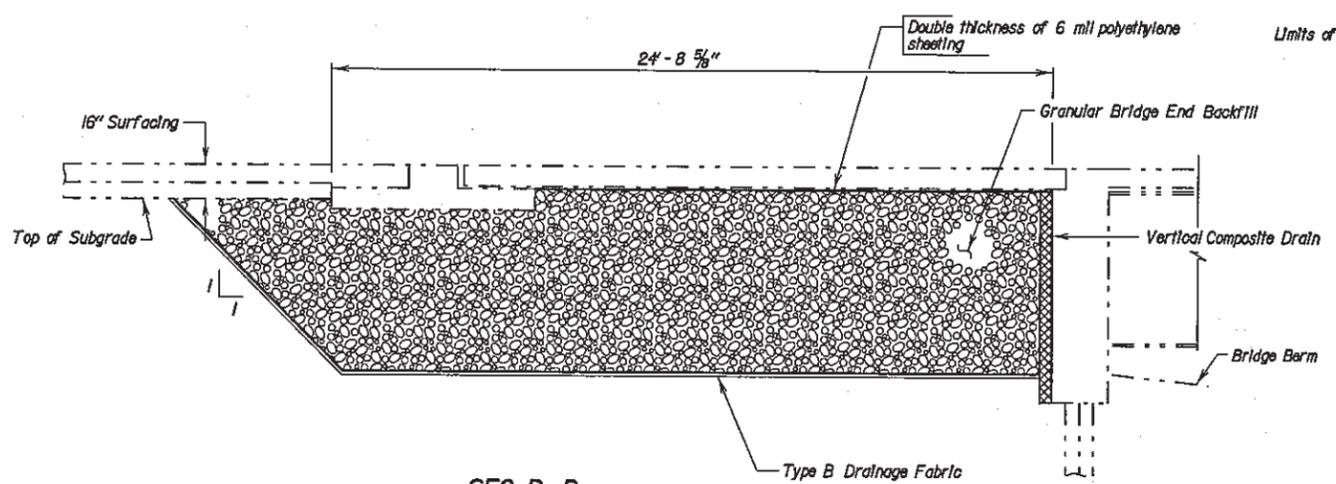
SEC. A-A

Side Limits of Backfill shall be VERTICAL between Abutment Wings

To allow for future driving of guardrail posts, granular bridge end backfill must not extend beyond limits shown.



SEC. C-C



SEC. B-B
(at \bar{C} Roadway)

ORIGINAL CONSTRUCTION PLANS

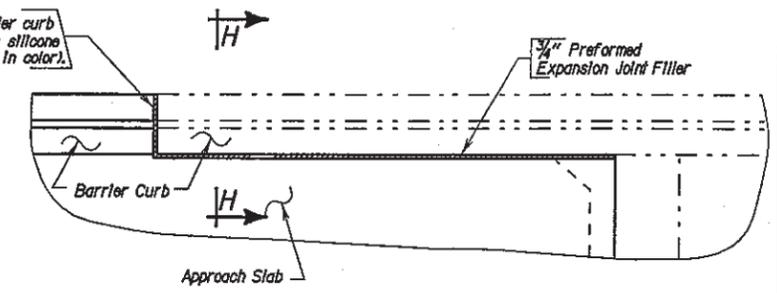
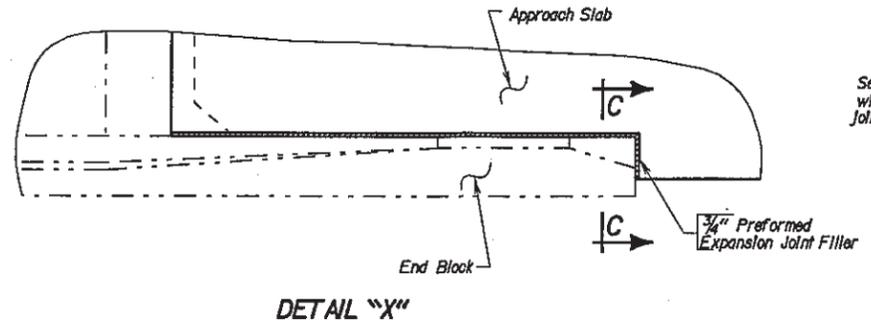
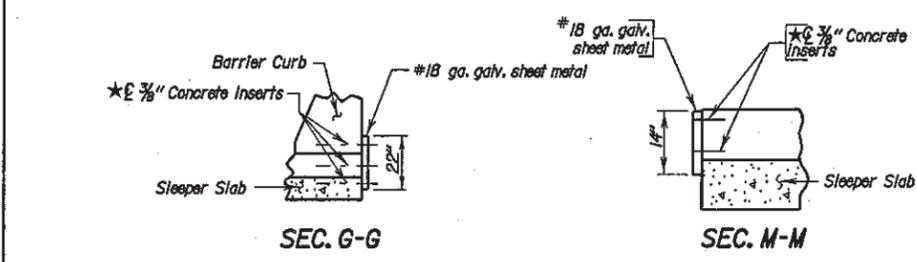
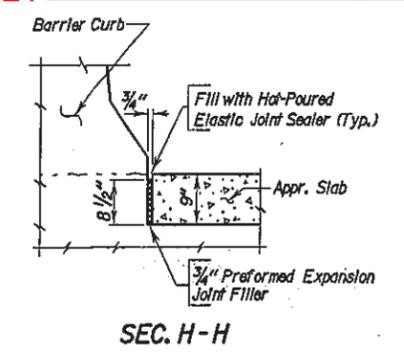
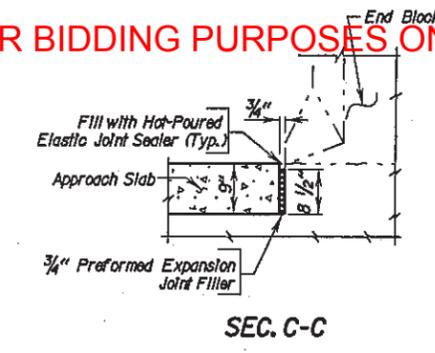
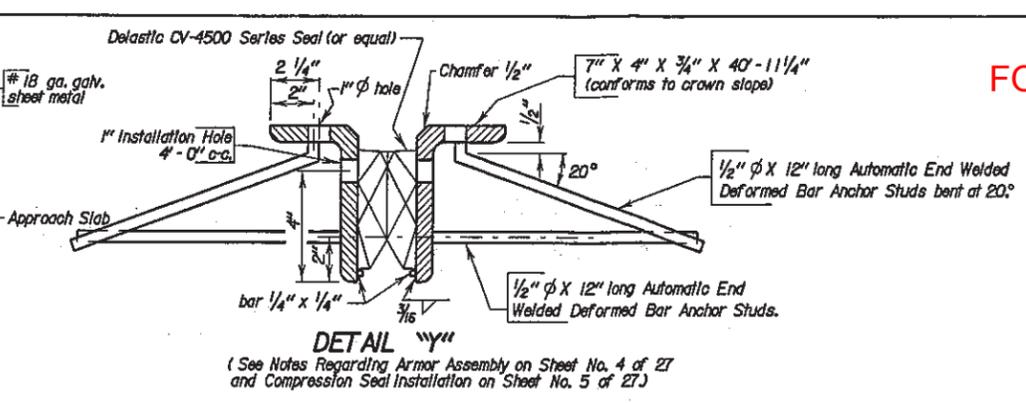
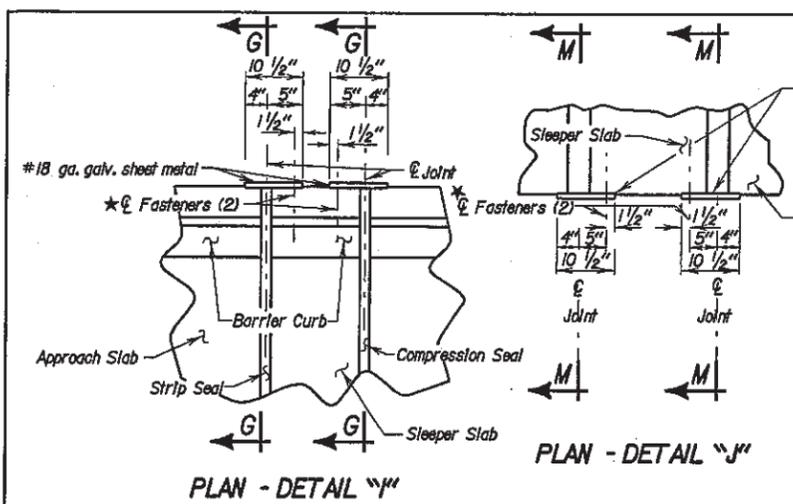
DETAILS OF BRIDGE END BACKFILL
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

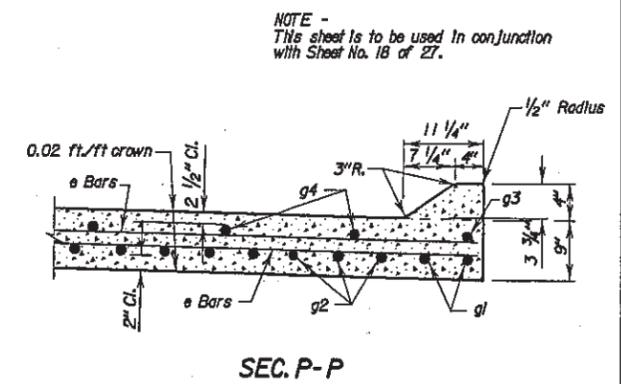
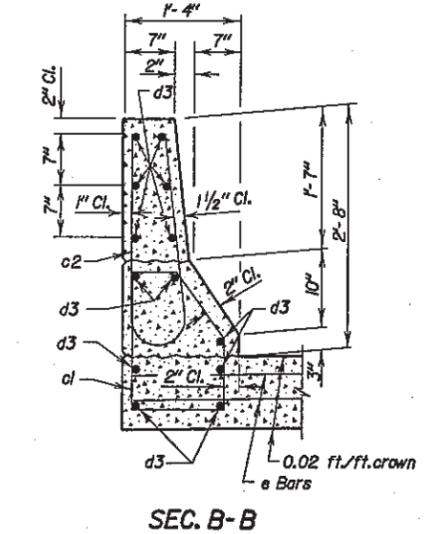
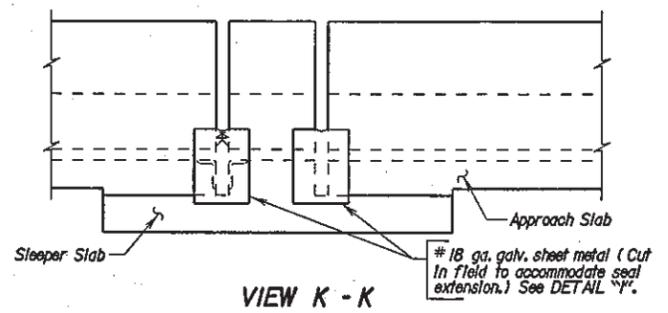
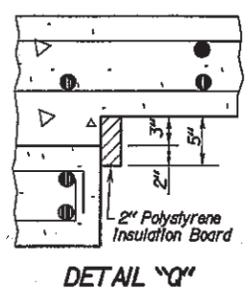
DESIGNED BY S.J./DC LIN 948	DRAWN BY BK 1948 JBI 7	CHECKED BY S.J./DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E 23	E 127

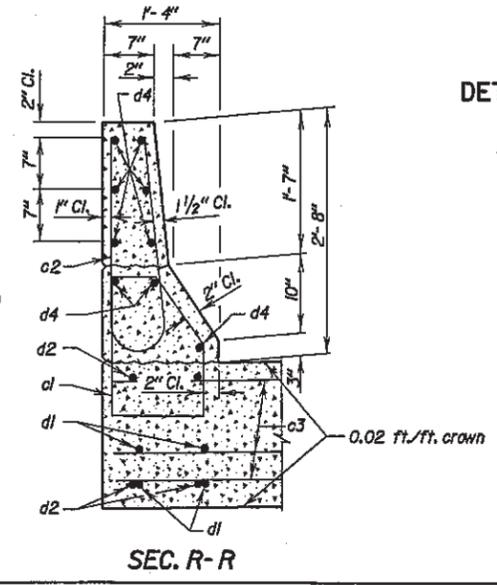
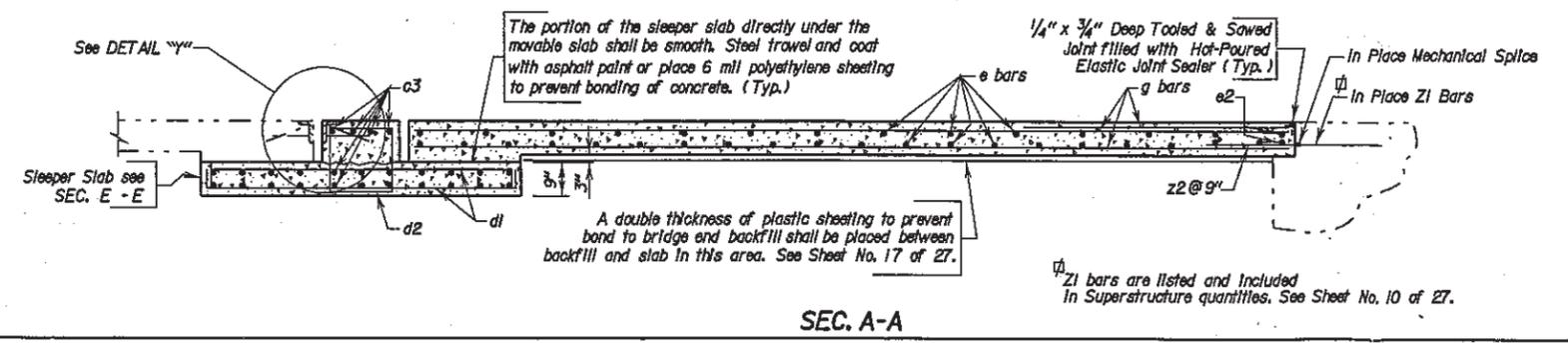
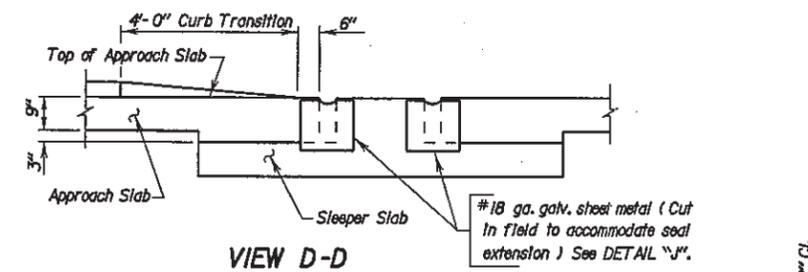
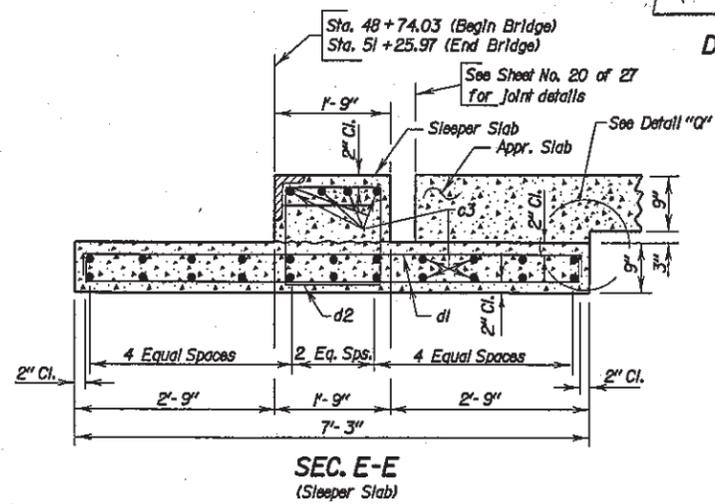
FOR BIDDING PURPOSES ONLY



★ 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.



NOTE - This sheet is to be used in conjunction with Sheet No. 18 of 27.



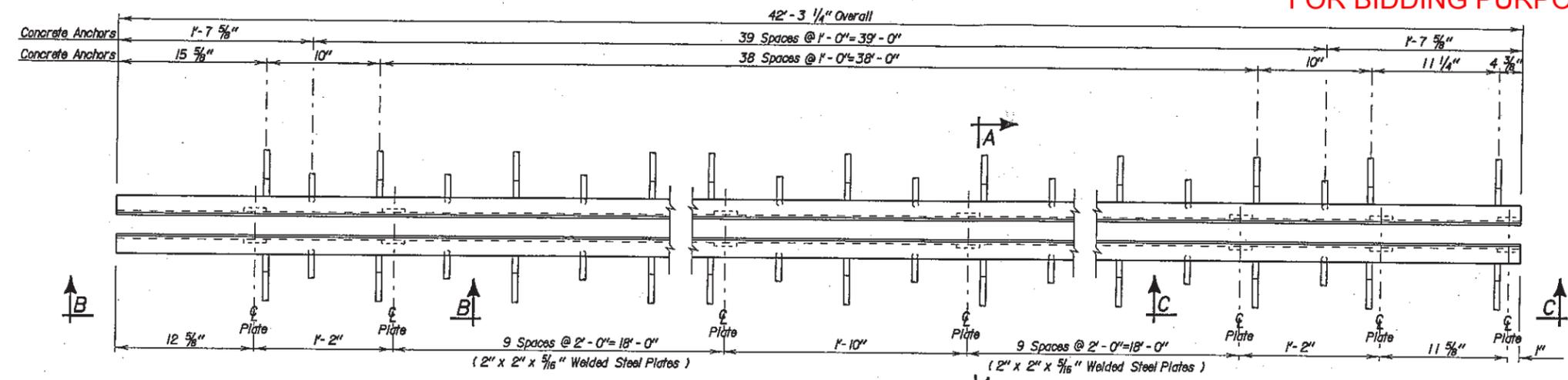
ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJ. TO BRIDGE (CONT.)
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY **0° SKEW**
OVER CO. RD. 106 **SEC. 19/30-T100N-R50W**
STA. 48+96.00 TO 51+04.00 **IM 29-2(52)72**
STR. NO. 42-064-030 **HS25-44**
(& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY SJ/DC LIN1948	DRAWN BY SJ 1948.JB19	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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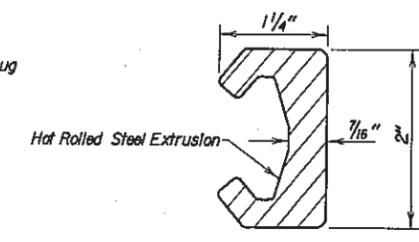


TEMP.	DIMENSION "X"
30°	2 3/8"
40°	2 5/8"
50°	2 7/8"
60°	2 1/8"
70°	2"
80°	1 7/8"
90°	1 1/2"

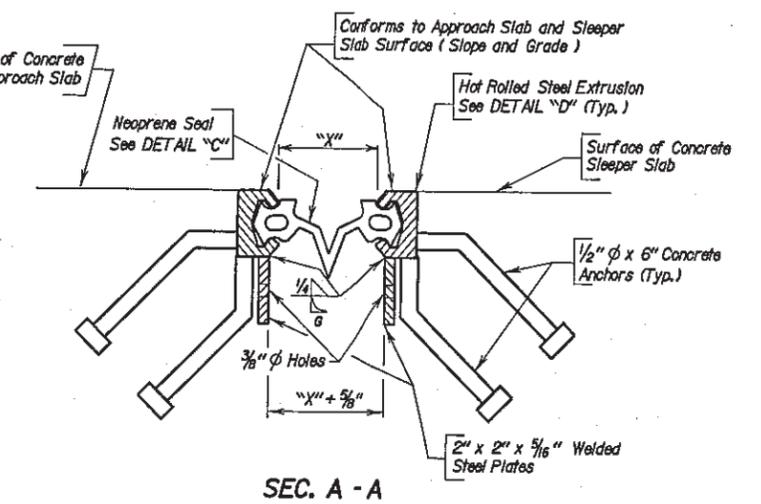
PLAN OF STRIP SEAL
(Neoprene Seal not shown)



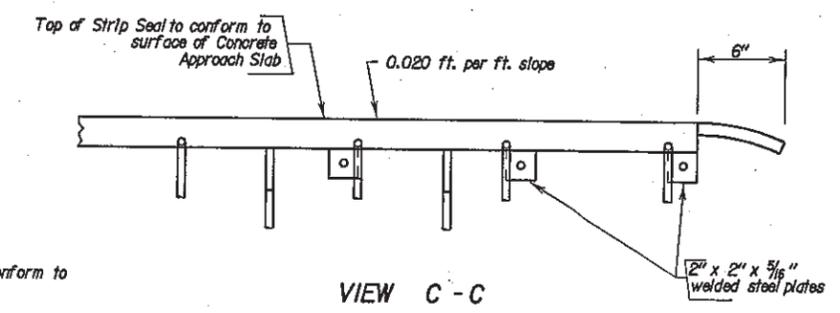
DETAIL "C"
Neoprene Seal shall have a 4" movement capability.



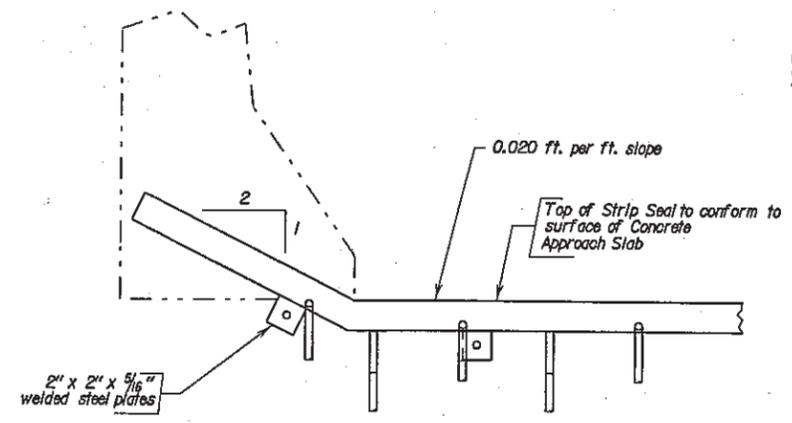
DETAIL "D"



SEC. A - A



VIEW C - C



VIEW B - B

ORIGINAL CONSTRUCTION PLANS

APPROACH SLAB JOINT DETAILS FOR SOUTHBOUND LANES

208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44 (& ALT.)

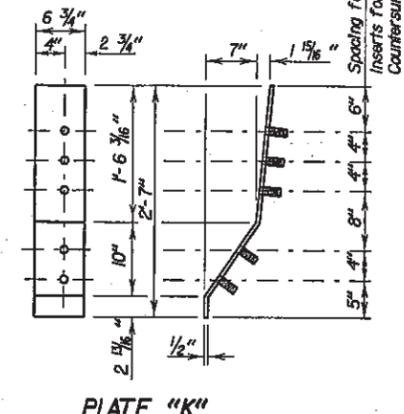
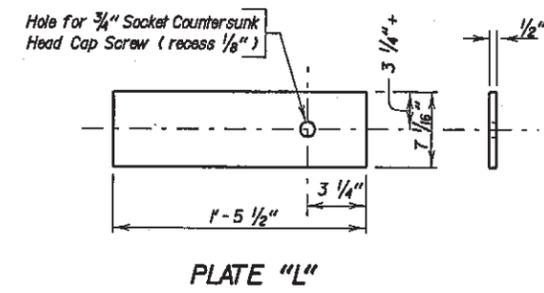
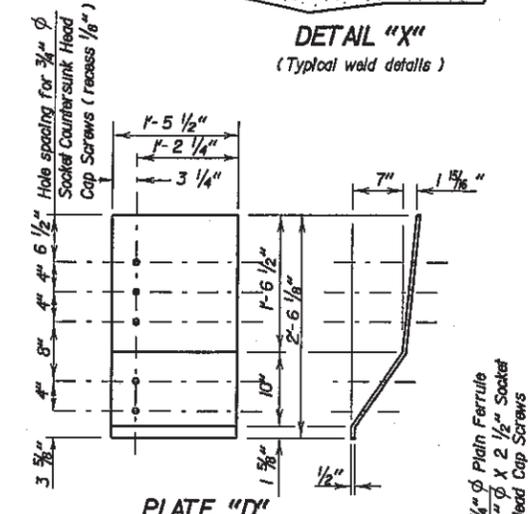
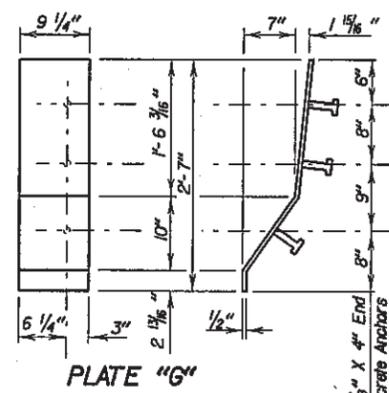
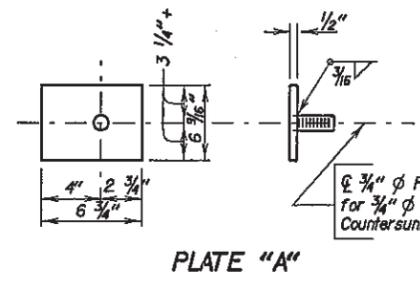
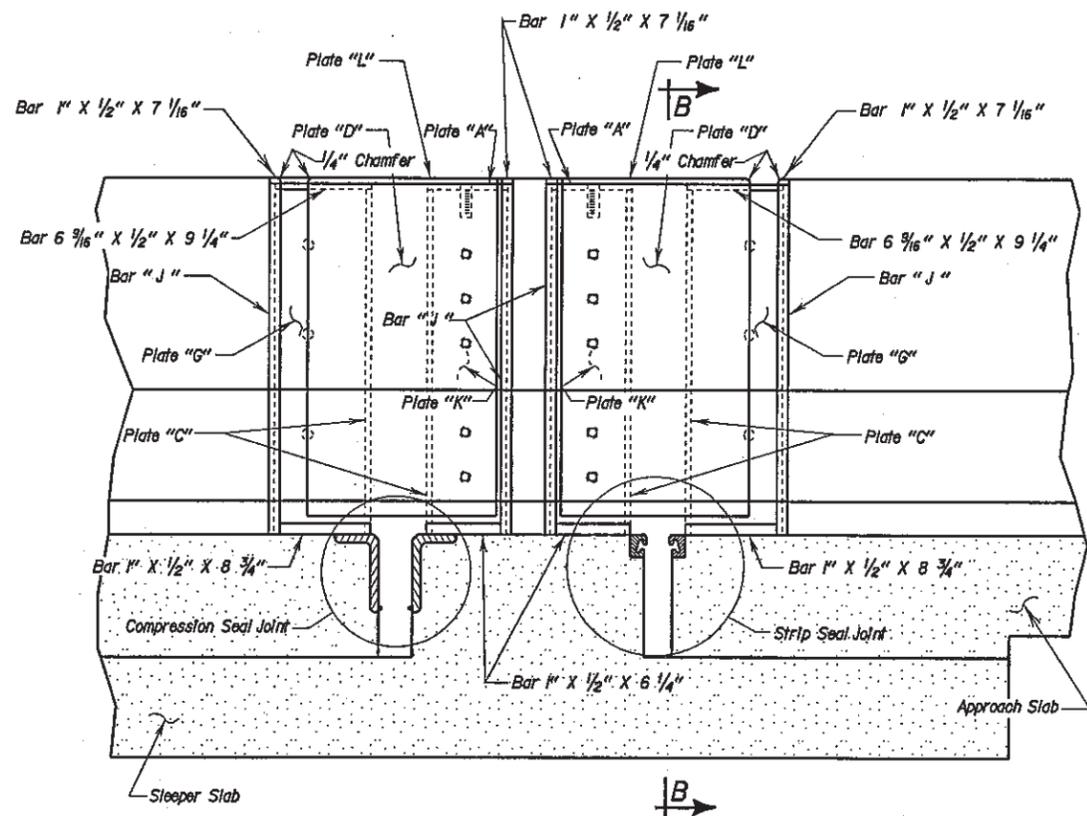
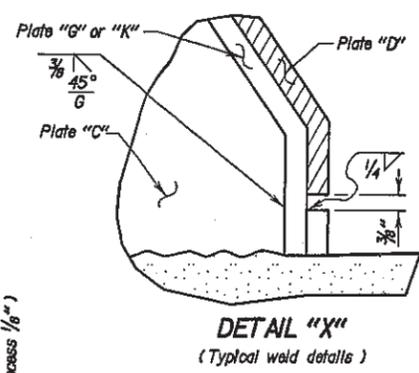
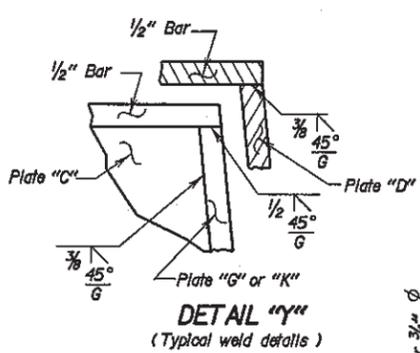
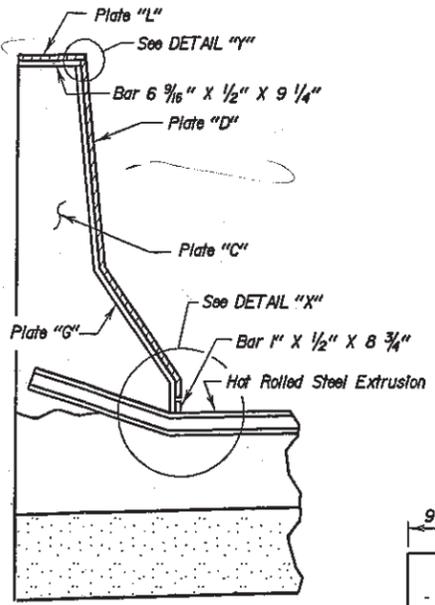
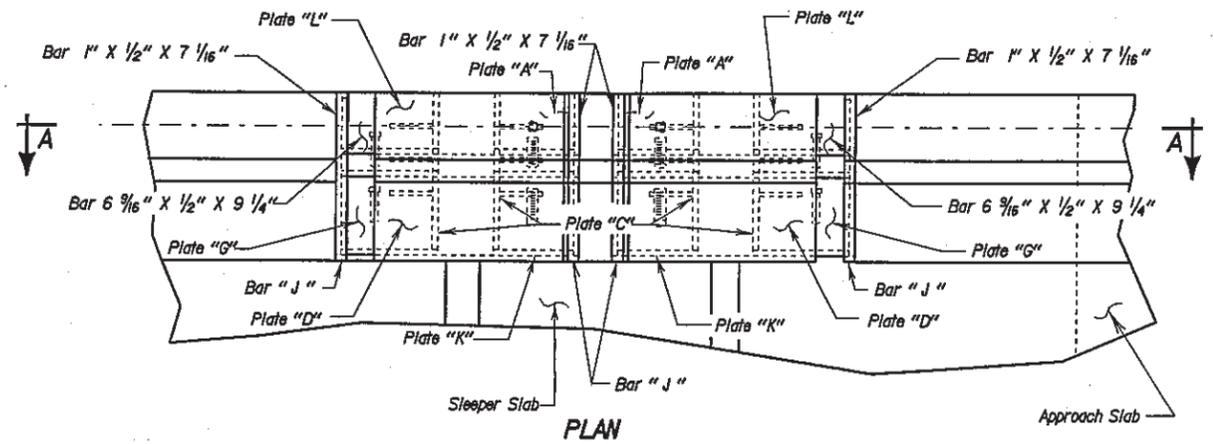
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

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 D262B 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 unit cost for Strip Seal Expansion Joint.
10. The neoprene seal shall be of sufficient length such that a minimum length of 6" shall extend beyond the right 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.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Strip Seal Expansion Joint	Ft.	84.5

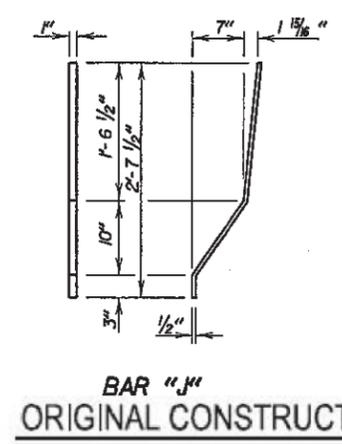
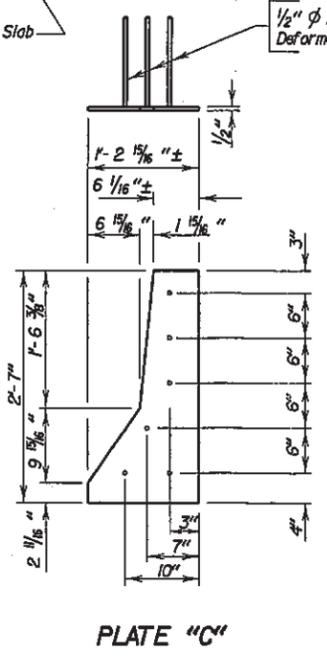
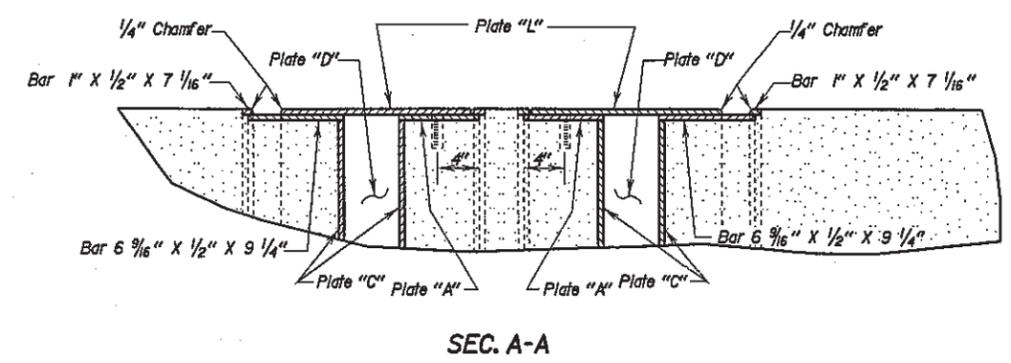
FOR BIDDING PURPOSES ONLY



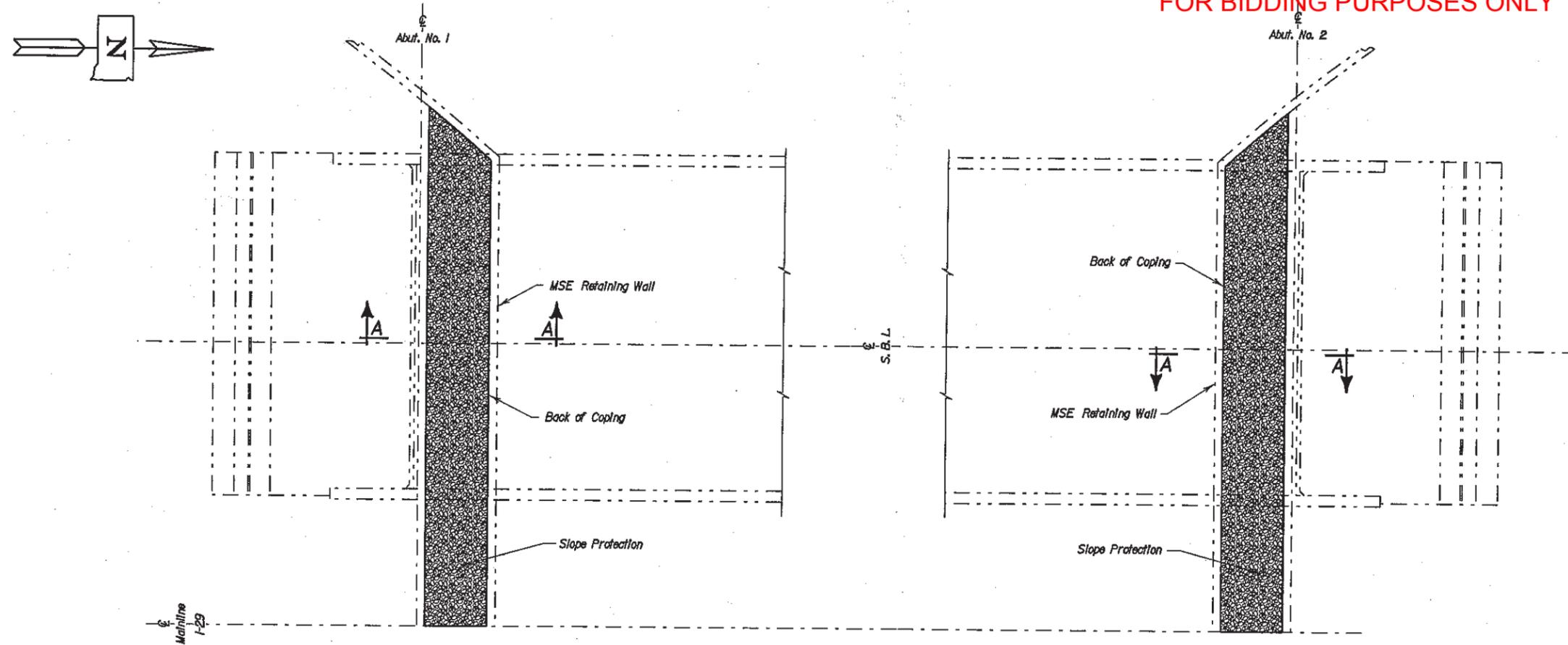
BARRIER EXPANSION DEVICE DETAILS FOR (SOUTHBOUND LANES)

208'-0" COMP. STEEL GIRDER BRIDGE
 40'-0" ROADWAY 0° SKEW
 OVER CO. RD. 106 SEC. 19/30-T100N-R50W
 STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
 STR. NO. 42-064-030 HS25-44 (& ALT.)

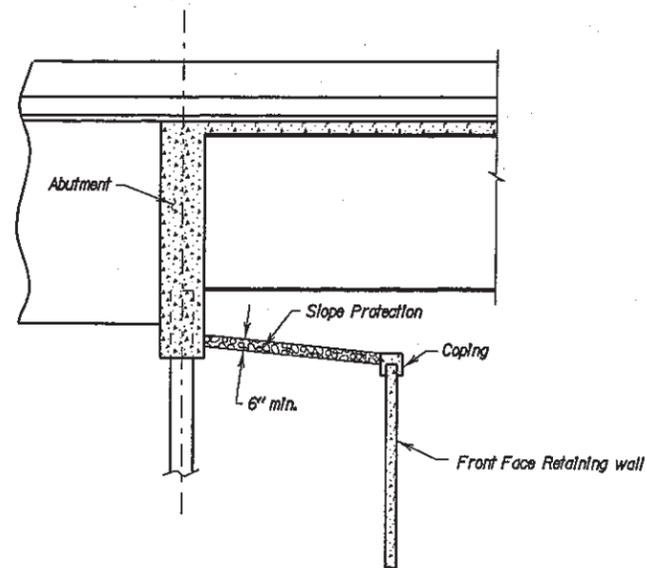
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2003



FOR BIDDING PURPOSES ONLY



PLAN



SEC. A - A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	105

ORIGINAL CONSTRUCTION PLANS

SLOPE PROTECTION DETAILS
FOR
(SOUTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-064-030 HS25-44
(& ALT.)

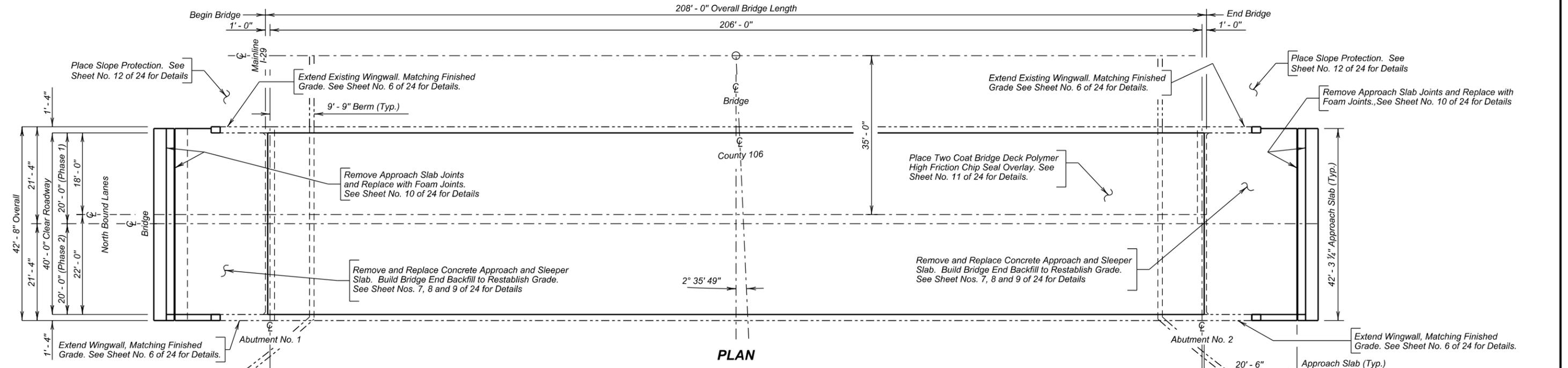
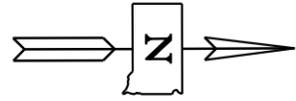
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

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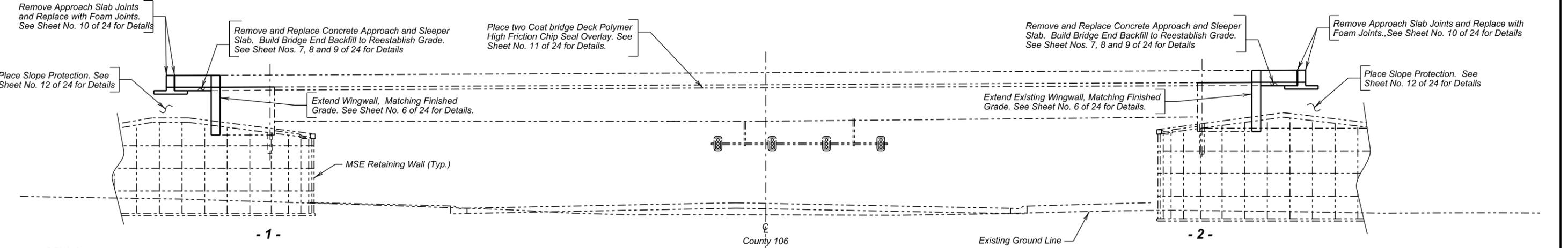
DESIGNED BY SJ/DC LINC948	DRAWN BY SJ 1948JB22	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E27	E127

FOR BIDDING PURPOSES ONLY



PLAN



ELEVATION

**-X021-
INDEX OF BRIDGE SHEETS -**

- Sheet No. 1 - Layout for Upgrading
- 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 - Wingwall Modification
- Sheet No. 7 - Approach Slab Layout
- Sheet No. 8 - Approach Slab Details
- Sheet No. 9 - Approach Slab Details (Continued)
- Sheet No. 10 - Approach Slab Joint Details
- Sheet No. 11 - Polymer High Friction Chip Seal Details
- Sheet No. 12 - Slope Protection Details
- Sheet No. 13 thru 24 - Original Construction Plans

**(NORTH BOUND LANES)
LAYOUT FOR UPGRADING**

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
 STR. NO. 42 - 065 - 030 IM 0293(96)73
 PCN 01QS

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

JULY 2015

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

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSRB01	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E28	E127

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	233.2	SqYd
410E2600	Membrane Sealant Expansion Joint	87.1	Ft
460E0070	Class A45 Concrete, Bridge Repair	3.8	CuYd
460E0150	Concrete Approach Slab for Bridge	186.3	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	68.1	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.0	CuFt
460E0380	Install Dowel in Concrete	110	Each
480E0200	Epoxy Coated Reinforcing Steel	274	Lb
480E0504	No 4 Rebar Splice	28	Each
480E0505	No 5 Rebar Splice	52	Each
480E0506	No 6 Rebar Splice	44	Each
491E0007	Two Coat Deck Polymer High Friction Chip Seal	920.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	920.0	SqYd
491E0120	Bridge Deck Grinding	920.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope protection, Crushed Aggregate	211.2	SqYd

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 Edition with 2003 Interim Specifications using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing bridge, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall 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 at the pre-construction meeting.

- Remove existing approach slabs, sleeper slabs, and steel extrusion and compression seal joints for the first phase of construction.
- Extend swept back wing walls as shown for the first phase of construction.
- Replace approach slabs and sleeper slabs to the correct grade for the first phase of construction.

- Replace sleeper slab joints with approved membrane foam sealant for the first phase of construction.
- Perform Bridge Deck Grinding for the first phase of construction
- Repair the bridge deck by removing all loose and delaminated concrete from the bridge deck surface for the first phase of construction.
- Clean the bridge deck surface with abrasive blasting for the first phase of construction
- Place the Two Coat Deck Polymer High Friction Chip Seal for the first phase of construction
- Reshape embankment slopes to correct grade and place new slope protection for the first phase of construction.
- Switch traffic control and repeat steps 1 through 9 for second phase of construction.

GENERAL CONSTRUCTION NOTES

- All exposed concrete edges or corners shall be chamfered 3/4 inch except where noted otherwise in the plans. Match the existing chamfer if chamfer differs.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Use 2 inch clear cover on all reinforcing steel except as shown.
- The concrete barriers shall be cured in accordance with Section 460.3.M. of the Construction Specifications except that no curing compounds shall be allowed.
- Barrier Curbs shall be built normal to the grade.
- Surfaces of fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.
- Snap ties, if used in the barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The type of vibratory screed shall be approved by the Engineer.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid items Class A45 Concrete Bridge Repair, Concrete Approach Slab for Bridge, and Concrete Approach Sleeper Slab for Bridge.
- The Type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract items Class A45 Concrete Bridge Repair, Concrete Approach Sleeper Slab for Bridge and Concrete Approach Slab for Bridge shall conform to the requirements of Section 460 of the Construction Specification.

MECHANICAL REBAR SPLICES

The mechanical rebar splices shall be in accordance with Section 480 of the Construction Specifications.

REMOVAL OF CONCRETE BRIDGE APPROACH SLAB

- The existing concrete approach and sleeper slabs adjacent to the structure shall be completely removed by the Contractor.
- All portions of the approach slab from the removal, not salvaged for highway use, shall be disposed of by the Contractor at an approved site. An appropriate site will be as described in the Waste Disposal Site notes in this set of plans.
- All labor, tools, equipment and any incidentals necessary for removal and disposal of the existing approach and sleeper slabs shall be incidental to the contract unit price per square yard for "Remove Concrete Bridge Approach Slab".

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 208' - 0" COMPOSITE STEEL GIRDER BRIDGE

STR. NO. 42-065-030
JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRB02	DRAFTED BY KR	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E29	E127

INSTALLING DOWELS IN CONCRETE

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

APPROACH SLABS

- Excavation for placement of new approach slabs and sleeper slabs shall be done with minimal disturbance to the underlying material.
- The bottom area, where the approach slabs will be located, will be covered with type B drainage fabric and backfilled to the original grade with compacted Base Course. The Base Course material shall be in accordance with Section 882 of the Construction Specifications

- Sleeper slab riser shall be cast with or later than the Approach Slab. Care shall be taken to ensure the correct grade is maintained across the joint.
- The top of approach slab elevations shall be established during construction and shall be subject to the approval of the Engineer. Care shall 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. The maximum rate of grade transition through the approach slab shall be 1/8 inch per 10 feet.
- The use of a vibratory screed will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the screed shall be kept parallel to the screed.
- The concrete in the approach slab shall be tined parallel with the skew of the bridge.
- The new approach slabs and sleeper slabs shall have a surface finish as stipulated in Section 460.3.L.4 of the Construction Specifications.
- The Concrete Approach Slabs Adjacent to Bridge shall be cured in accordance with Section 460.3 M of the Construction Specifications.
- Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, and reinforcing steel; for disposal of all excavated material and surplus materials; and for labor, tools, equipment and any incidentals necessary to complete this item of work.
- Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling and placing all materials including type B drainage fabric, base course material, concrete, asphalt paint or 6 mil polyethylene sheeting, reinforcing steel; disposal of all excavated material and surplus materials, labor, tools, equipment and any incidentals necessary to complete this item of work.

CONTRACTOR FURNISHED BORROW

- The Contractor shall provide a suitable site for Contractor furnished borrow material. The borrow material shall be approved by the Engineer.
- Restoration of the Contractor furnished borrow site shall be the responsibility of the Contractor.
- All materials and labor associated with bridge berm repair including contractor furnished borrow shall be incidental to contract unit price per square yard for "Bridge Berm Slope Protection, Crushed Aggregate."

CRUSHED AGGREGATE SLOPE PROTECTION

- This work shall consist of placing crushed aggregate slope protection for control and prevention of berm erosion on the bridge berm slope between the abutments and MSE walls. Details for crushed aggregate slope protection are shown on the Slope Protection Details sheet.
- The aggregate used in the crushed aggregate slope protection shall be composed of durable fragments of quarried quartzite or an approved alternative. The material shall be well graded with 90-100% smaller than ten inches and no more than 10% smaller than two inches.
- The surface upon which the slope protection is to be placed shall be smooth, uniform, and free from foreign material. The top surface of the slope protection shall conform to the dimensions, elevations, and slopes shown in the plans.
- The crushed aggregate shall be shaped and compacted to provide a stable, smooth and uniform surface..
- Payment for crushed aggregate slope protection shall be at the contract unit price per square yard for Bridge Berm Slope Protection, Crushed Aggregate and shall be full compensation for type B drainage fabric and slope paving, including furnishing all materials, labor, and equipment necessary or incidental to the satisfactory completion of this work.

NOTES (CONTINUED)

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE

STR. NO. 42-065-030

JULY 2015

3 OF 24

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRB03	DRAFTED BY KR Kevin N. Boeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E30	E127

MEMBRANE SEALANT EXPANSION JOINT

1. The Membrane Sealant shall be on the approved product list for Membrane Sealant Expansion Joints.
2. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer, however, in no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall 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 shall provide a water tight seal throughout a joint movement range of +25% (minimum) from specified joint opening dimension.
4. The membrane sealant shall be supplied in pieces a minimum of 5 feet in length. The foam sealant shall be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.
6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
7. If Styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.
8. 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.
9. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.
10. A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall be knowledgeable in the correct procedures for the preparation and installation of the joint material to ensure the Contractor installs the joint to the manufacturers recommendations.
11. Surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding shall not be permitted.

12. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall 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 shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
13. Individual spliced sections shall be installed as per the manufacturer's recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
14. Traffic shall not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacture.
15. 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 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 the plans and the foregoing specifications.

CLASS B COMMERCIAL TEXTURE FINISH

1. All surfaces of the new concrete barrier curb in the area of the barrier reconstruction and all visible surfaces of the newly constructed wingwall shall be given a Class B Commercial Texture Finish in accordance with Section 460.3.L.1.c. of the Construction Specifications.
2. The concrete surfaces requiring the application of the Commercial Texture Finish shall be prepared in accordance with the manufacturer's recommendations. The Contractor shall 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 175 square feet.
4. The Class B commercial texture finish used shall be on the Departments approved list.
5. The color of the Class B Commercial Texture Finish shall match the colors of the existing structure. Color samples shall be submitted to Area Engineer for approval.

6. Any damage to the commercial texture finish during the construction including abrasion from traffic due to the traffic control shall be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.
7. The cost of the commercial texture finish shall be included in the contract price per cubic yard for "Class A45 Concrete, Bridge Repair". This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the application of this finish.

TWO COAT BRIDGE DECK POLYMER HIGH FRICTION CHIP SEAL

1. The Two Coat Bridge Deck Polymer High Friction Chip Seal shall be furnished and installed in accordance with Section 491 of the Construction Specification except as modified by these notes.
2. The calcined bauxite aggregate shall be used in lieu of the aggregate specified in Section 491. Properties of the calcined bauxite aggregate are listed in the High Friction Surface Aggregate notes
3. Measurement will not be made for the Two Coat Bridge Deck Polymer High Friction Chip Seal. The plans quantity will be the basis of payment.
4. The two coat bridge deck polymer high friction chip seal will be paid for at the contract unit price per square yard. Payment will be full compensation for all labor, equipment material and all incidental work required to furnish and install the two coat bridge deck polymer high friction chip seal and to remove and dispose of the excess cover aggregate. Payment will also be full compensation for all manufacturer approved representative expenses.

NOTES (CONTINUED)

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE

STR. NO. 42-065-030

JULY 2015

4 OF 24

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRB04	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E31	E127

HIGH FRICTION SURFACE AGGREGATE

1. The material shall be clean, dry, and free from foreign matter. The Contractor shall deliver the calcined bauxite aggregate to the construction site in clearly labeled containers. The calcined bauxite aggregate shall be certified to meet the requirements of Table 1.
2. The Contractor shall ensure the coverage rate of the retained calcined bauxite aggregate is a minimum of 13 lbs/yd².

TABLE 1

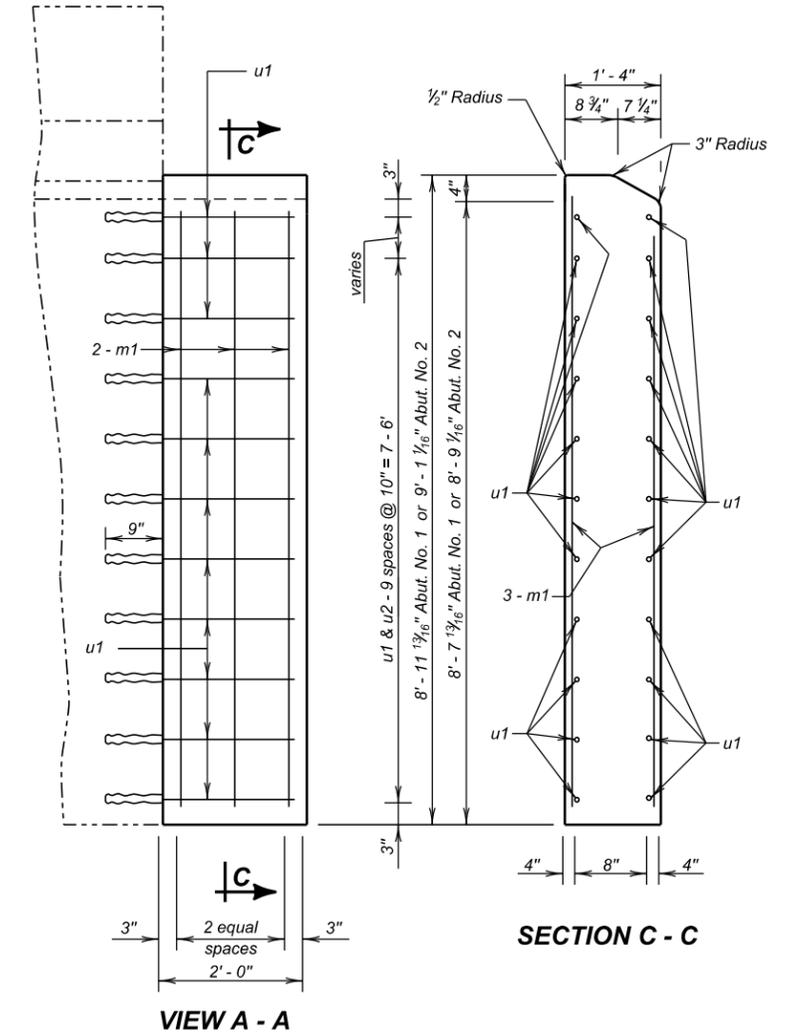
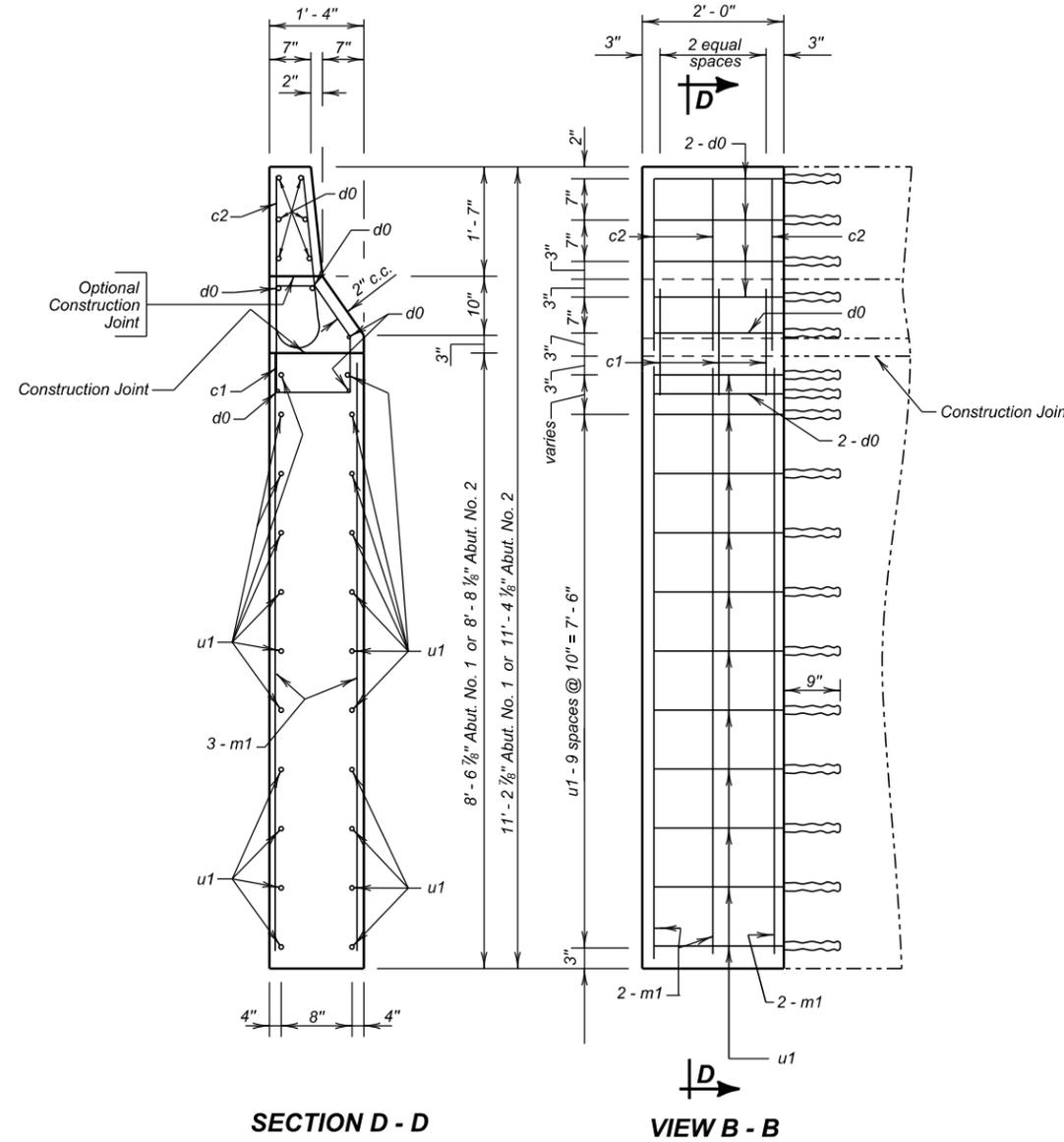
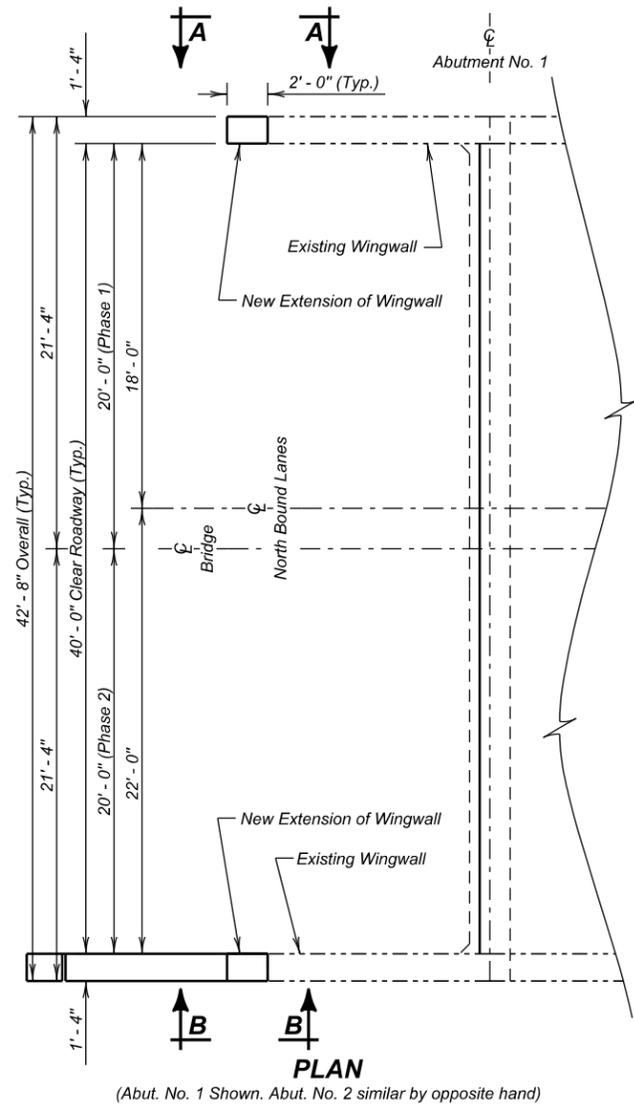
Calcined Bauxite Aggregate Requirements		
Property	Requirements	Test Method
Mohs Hardness	7.0 Minimum	Mohs
Polish Stone Value	65 Minimum	ASTM E660
Gradation	100.0% Passing No. 4	AASHTO T 27
	95.0% - 100.0% Passing No. 6	
	0.0% - 5.0% Passing No. 16	
Moisture Content	0.2% Maximum	AASHTO T 255
Aluminum Oxide	87% Minimum	ASTM C25
Apparent Specific Gravity	3.1 Minimum	AASHTO T 84
Sodium Sulfate Soundness	12% Maximum	AASHTO T 104
LA Abrasion Test	30% Maximum. Test sample gradation differs from gradation requirements.	AASHTO T 96 (C grading)

NOTES (CONTINUED)
 FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 STR. NO. 42-065-030
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRB05	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E32	E127



REINFORCING SCHEDULE						
(All Four Bridge Corners)						
Mk.	No.	Size	Length	Type	Bending Details	
PHASE 1	m1	12	5	8'-3"	Str.	
	u1	44	6	2'-7"	Str.	
PHASE 2	c1	6	5	5'-9"	T2A	
	c2	6	5	5'-1"	S11	
	d0	22	5	2'-7"	Str.	
	m1	12	5	8'-3"	Str.	
u1	44	6	2'-7"	Str.		

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

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Class A45 Concrete, Bridge Repair	Cu. Yd.	1.8	2.0
★ Epoxy Coated Reinforcing Steel	Lb.	103	171
Install Dowel in Concrete	Each	44	66

★ Does not include the following quantities for u1 & d0 Bars as these are paid for in the Bid Item "Install Dowel in Concrete."

PHASE 1	PHASE 2
171 Lb	230 Lb

(NORTH BOUND LANES)
 WINGWALL MODIFICATION
 FOR
 208' - 0" COMP. STEEL GIRDER BRIDGE
 40' - 0" ROADWAY
 OVER COUNTY ROAD 106
 STR. NO. 42 - 065 - 030

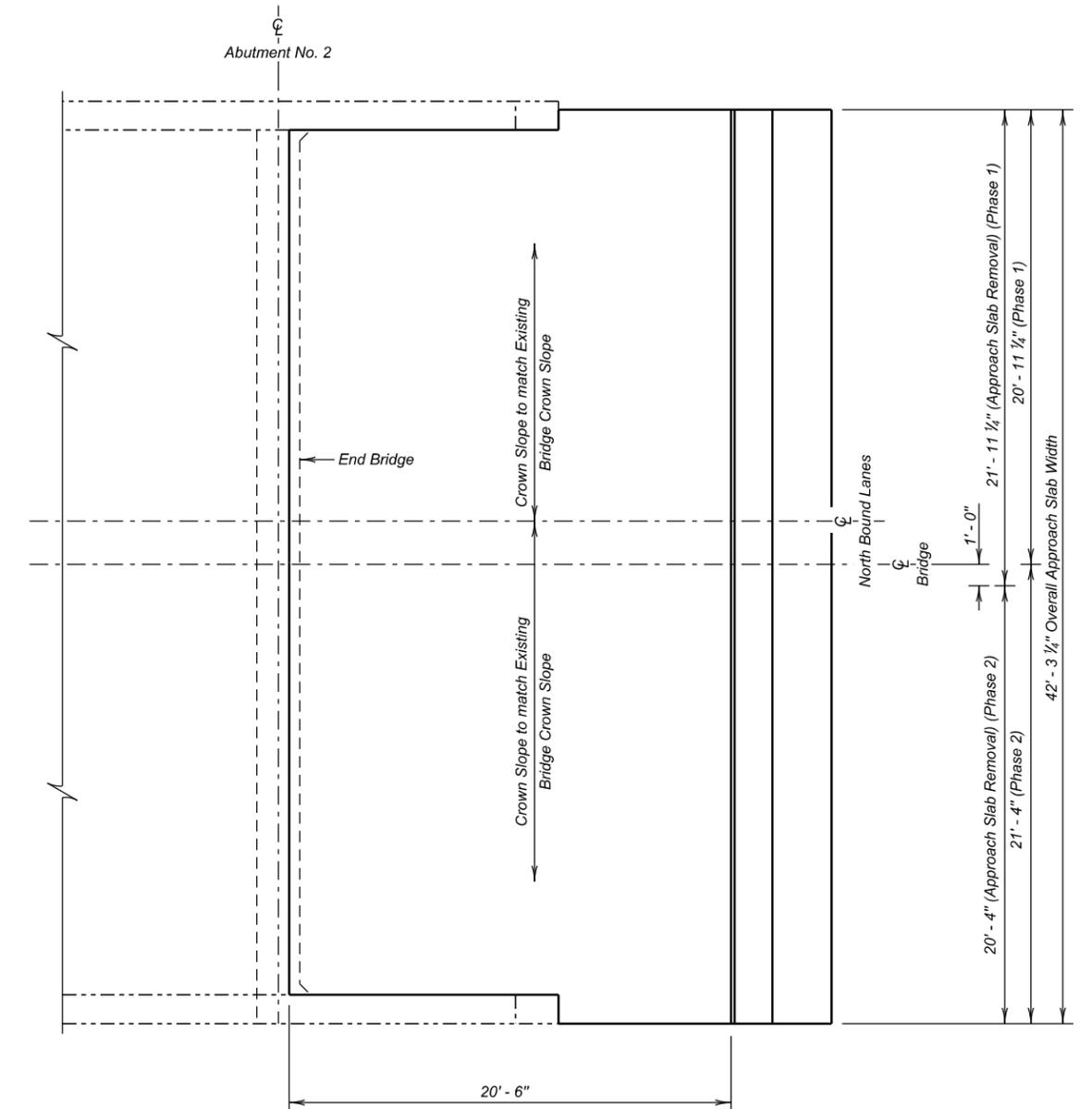
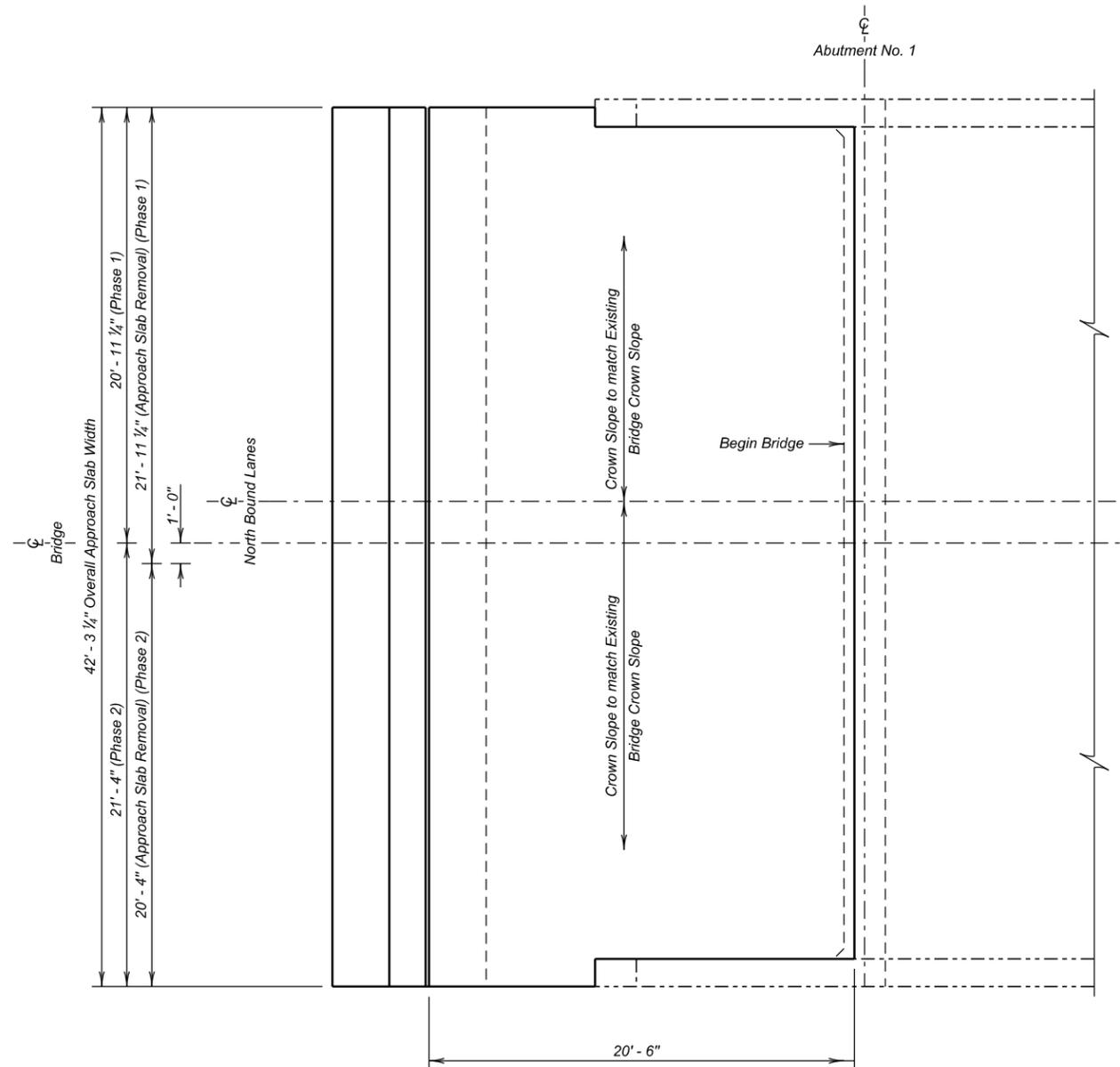
0° SKEW
 SEC. 19/30-T100N-R50W
 IM 0293(96)73

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSRB06	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E33	E127



PLAN

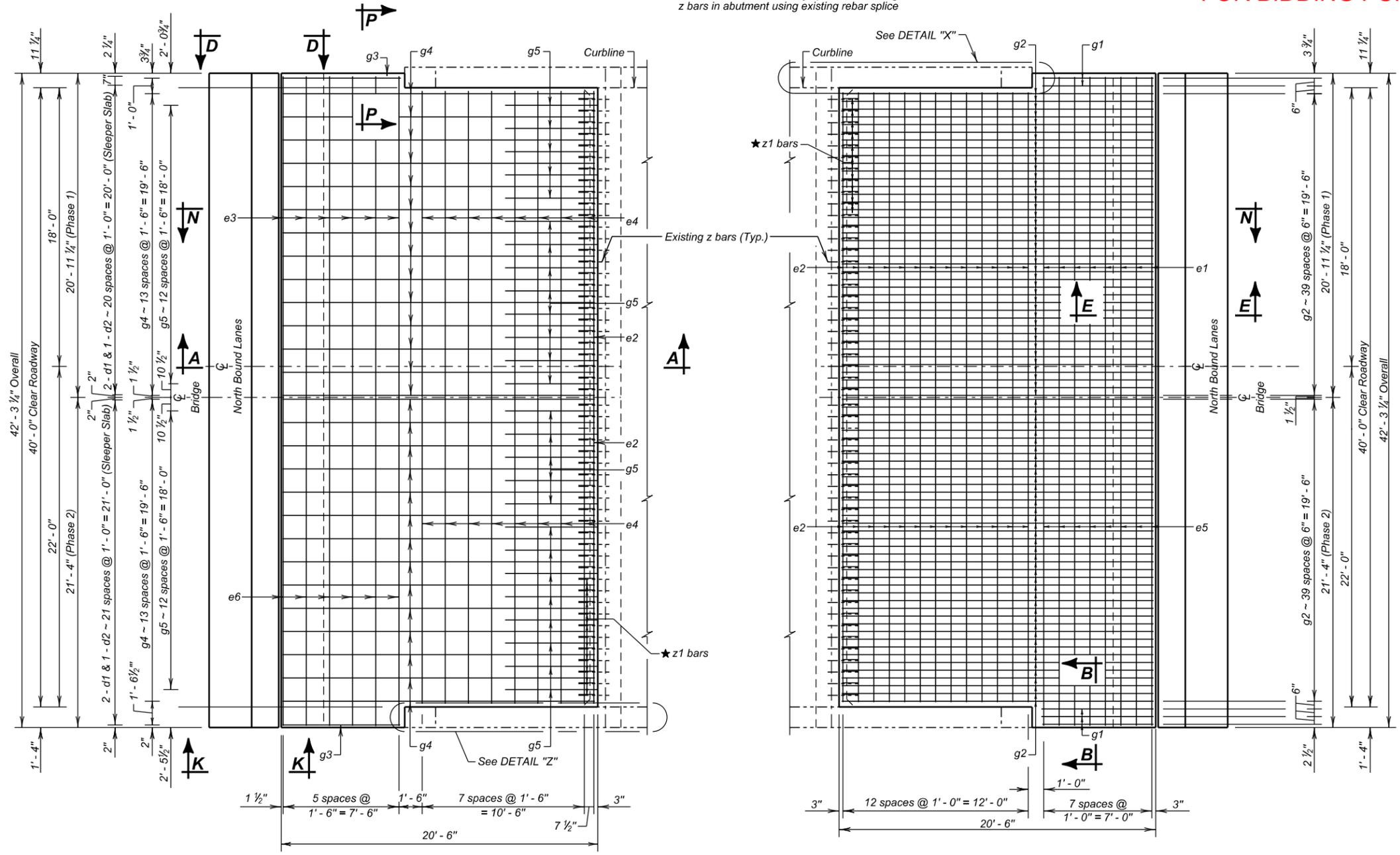
(NORTH BOUND LANES)
 APPROACH SLAB LAYOUT
 FOR
 208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
 STR. NO. 42 - 065 - 030 IM 0293(96)73

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY XXX 01QSRB07	DRAFTED BY KR	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

★ z1 bars to be mechanically spliced to existing z bars in abutment using existing rebar splice



REINFORCING SCHEDULE					Bending Details	
(For Two Approach and Sleeper Slabs)						
Mk.	No.	Size	Length	Type		
PHASE 1					Type S11	
c3	52	5	20'-8"	Str.	4 1/2"	
d1	88	4	7'-9"	2	1 1/4"	
d2	44	4	6'-7"	T2	2'-4 1/2"	
e1	16	6	20'-8"	Str.	12	
e2	28	6	19'-7"	Str.	3 3/4" R	
e3	12	4	20'-8"	Str.		
e4	16	4	19'-7"	Str.		
g1	4	8	7'-5"	Str.		
g2	80	8	20'-2"	Str.		
g3	2	4	7'-5"	Str.		
g4	28	4	20'-2"	Str.		
g5	26	4	6'-0"	Str.		
z1	54	7	2'-0"	Str.		
PHASE 2					Type T2A	
c1	24	5	5'-9"	T2A	1'-0 1/2"	
c2	24	5	5'-1"	S11	6 1/2" 6"	
c3	52	5	21'-1"	Str.	9"	
d1	88	4	7'-9"	2	9"	
d2	44	4	6'-7"	T2	1'-6"	
d3	22	5	7'-5"	Str.		
d4	22	5	1'-5"	Str.		
e2	28	6	19'-7"	Str.	1'-5"	
e4	16	4	19'-7"	Str.		
e5	16	6	21'-1"	Str.		
e6	12	4	21'-1"	Str.		
g1	6	8	7'-5"	Str.		
g2	80	8	20'-2"	Str.		
g3	2	4	7'-5"	Str.		
g4	28	4	20'-2"	Str.		
g5	26	4	6'-0"	Str.		
z1	54	7	2'-0"	Str.	4'-0"	

NOTES:
 All bars are epoxy coated.
 All dimensions are out to out of bars.
 These bars shall be spliced with mechanical splice devices.

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Concrete Approach Slab for Bridge	Sq. Yd.	92.8	93.5
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	33.7	34.4
Remove Concrete Approach	Sq. Yd.	116.0	117.2
No. 4 Rebar Splice	Each	28	-
No. 5 Rebar Splice	Each	52	-
No. 6 Rebar Splice	Each	44	-

ITEM	UNIT	Phase 1	Phase 2
		23.2 Cu. Yd.	25 Cu. Yd.
6794 Lb.	7321 Lb.		
11.1 Cu. Yd.	11.4 Cu. Yd.		
1770 Lb.	1793 Lb.		
17 Sq. Ft.	18 Sq. Ft.		
26 Ft.	29 Ft.		
92.8 Sq. Yd.	93.5 Sq. Yd.		

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

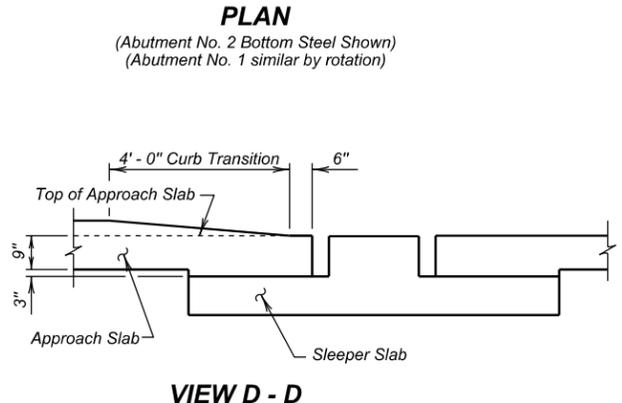
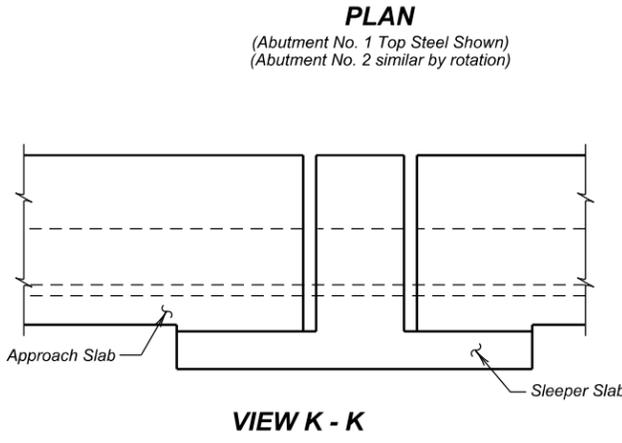
**(NORTH BOUND LANES)
 APPROACH SLAB DETAILS**

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY
 OVER COUNTY ROAD 106
 STR. NO. 42 - 065 - 030

0° SKEW
 SEC. 19/30-T100N-R50W
 IM 0293(96)73

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

JULY 2015

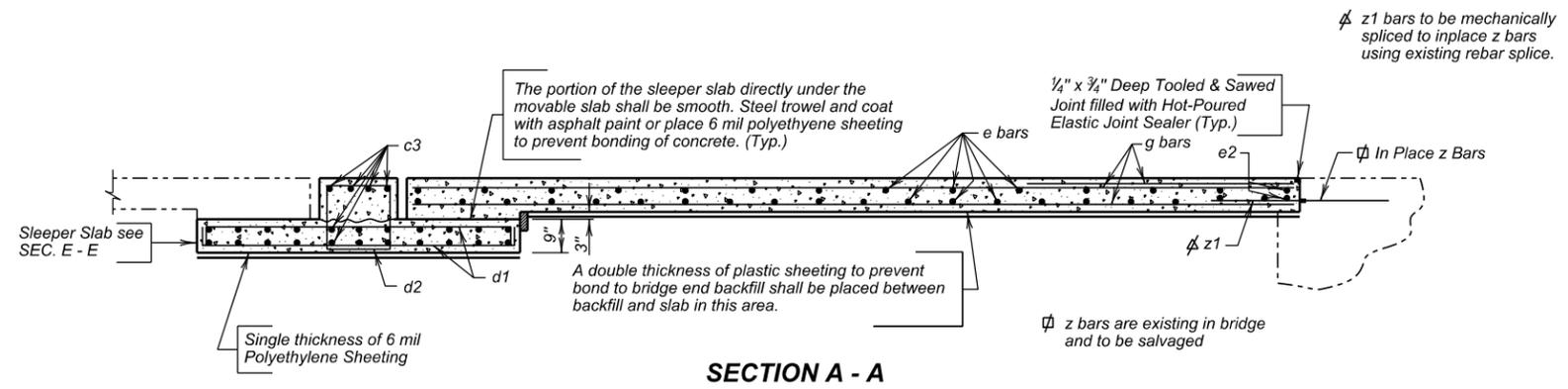


PLAN
 (Abutment No. 1 Top Steel Shown)
 (Abutment No. 2 similar by rotation)

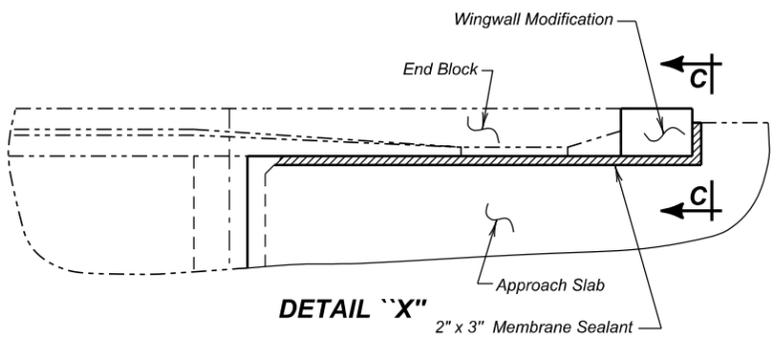
PLAN
 (Abutment No. 2 Bottom Steel Shown)
 (Abutment No. 1 similar by rotation)

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E35	E127

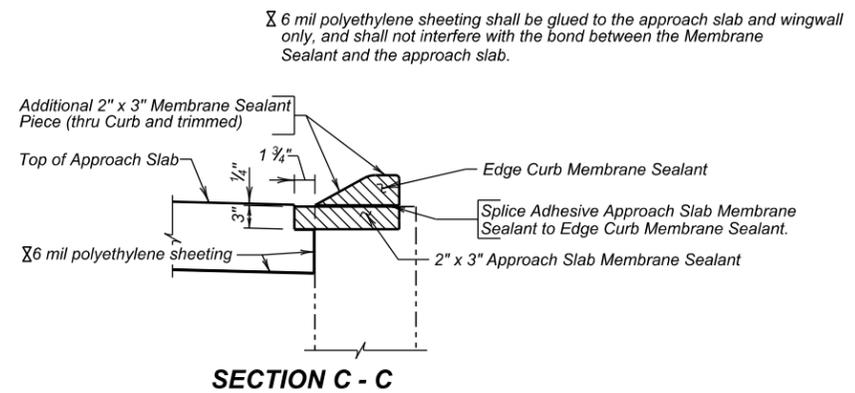
FOR BIDDING PURPOSES ONLY



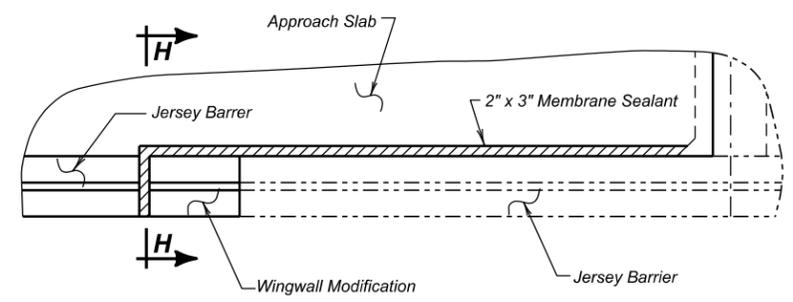
SECTION A - A



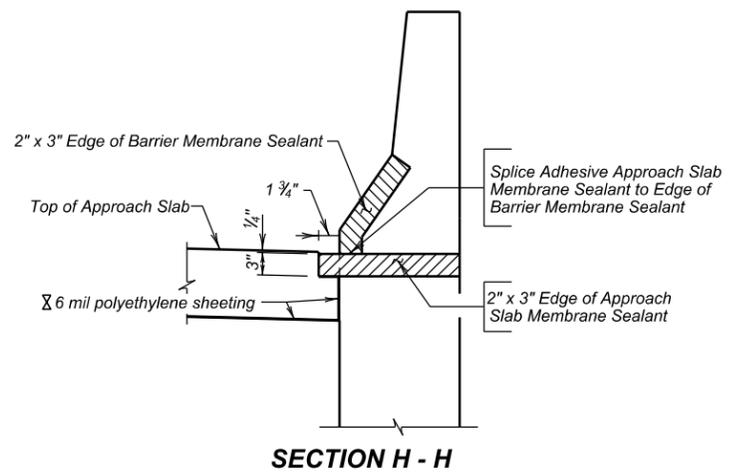
DETAIL "X"



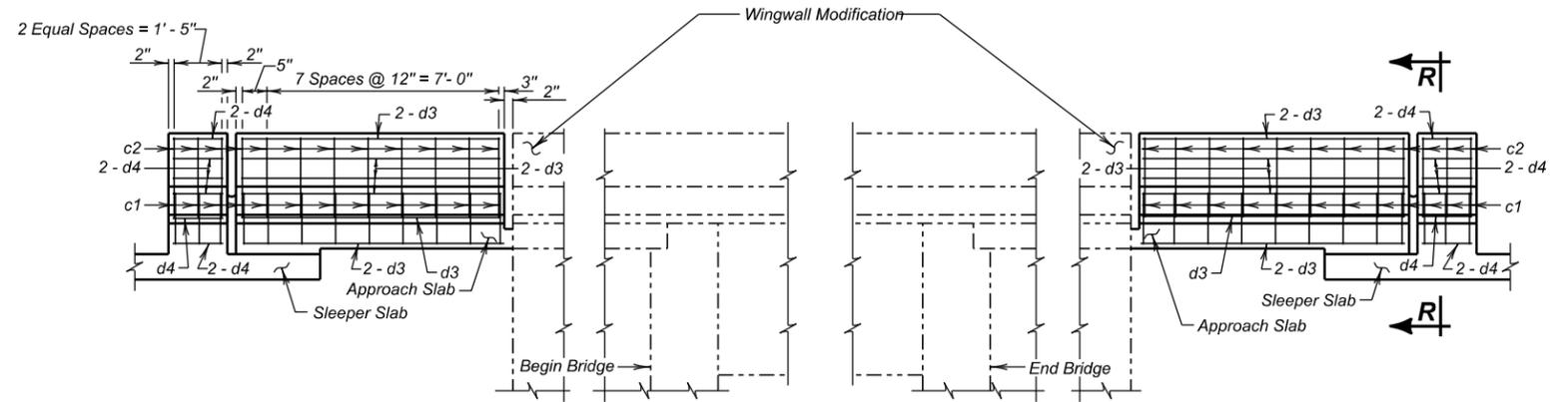
SECTION C - C



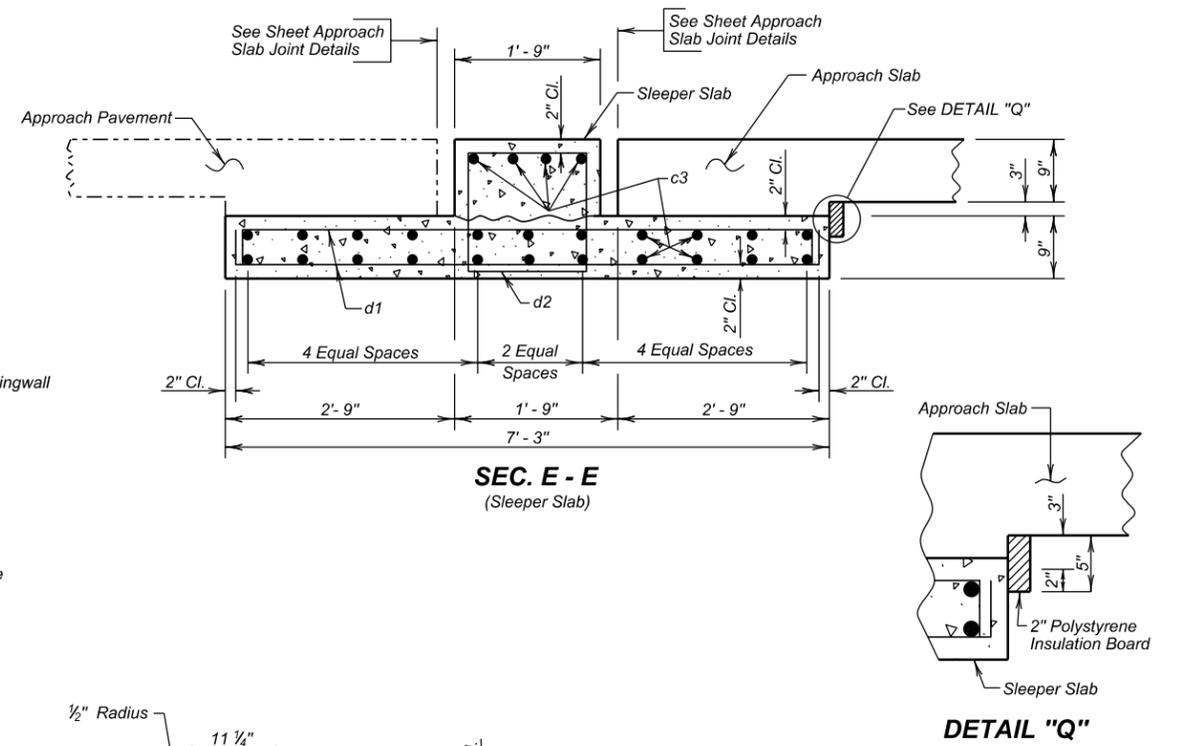
DETAIL "Z"



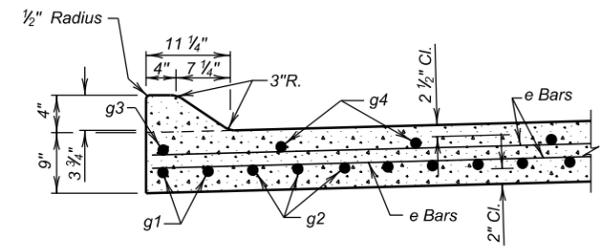
SECTION H - H



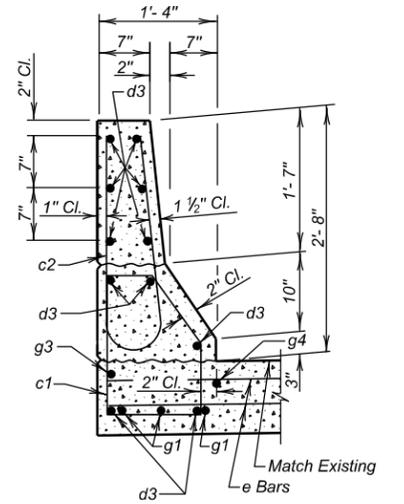
SECTION N - N
(Elevation - Barrier)



SEC. E - E
(Sleeper Slab)



SEC. P - P



SEC. B - B

**(NORTH BOUND LANES)
APPROACH SLAB DETAILS (CONTINUED)**

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER COUNTY ROAD 106
STR. NO. 42 - 065 - 030

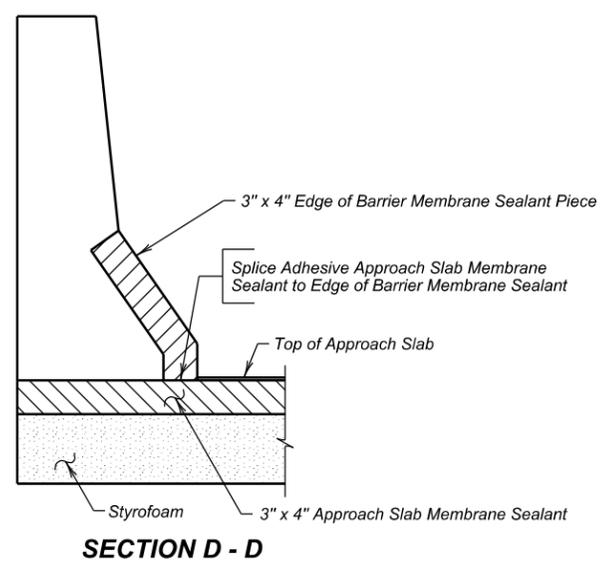
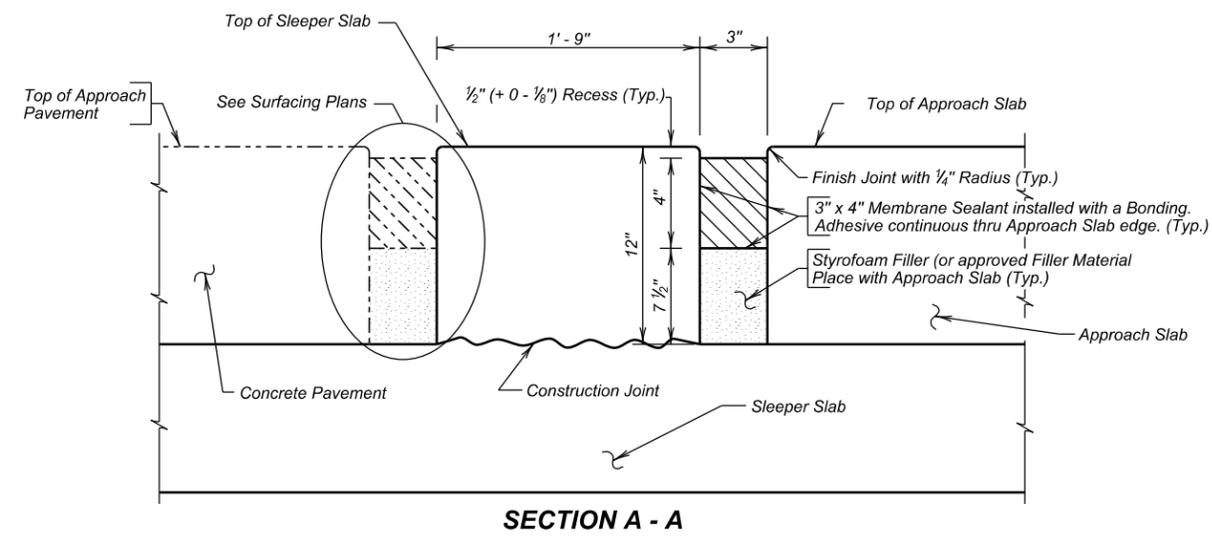
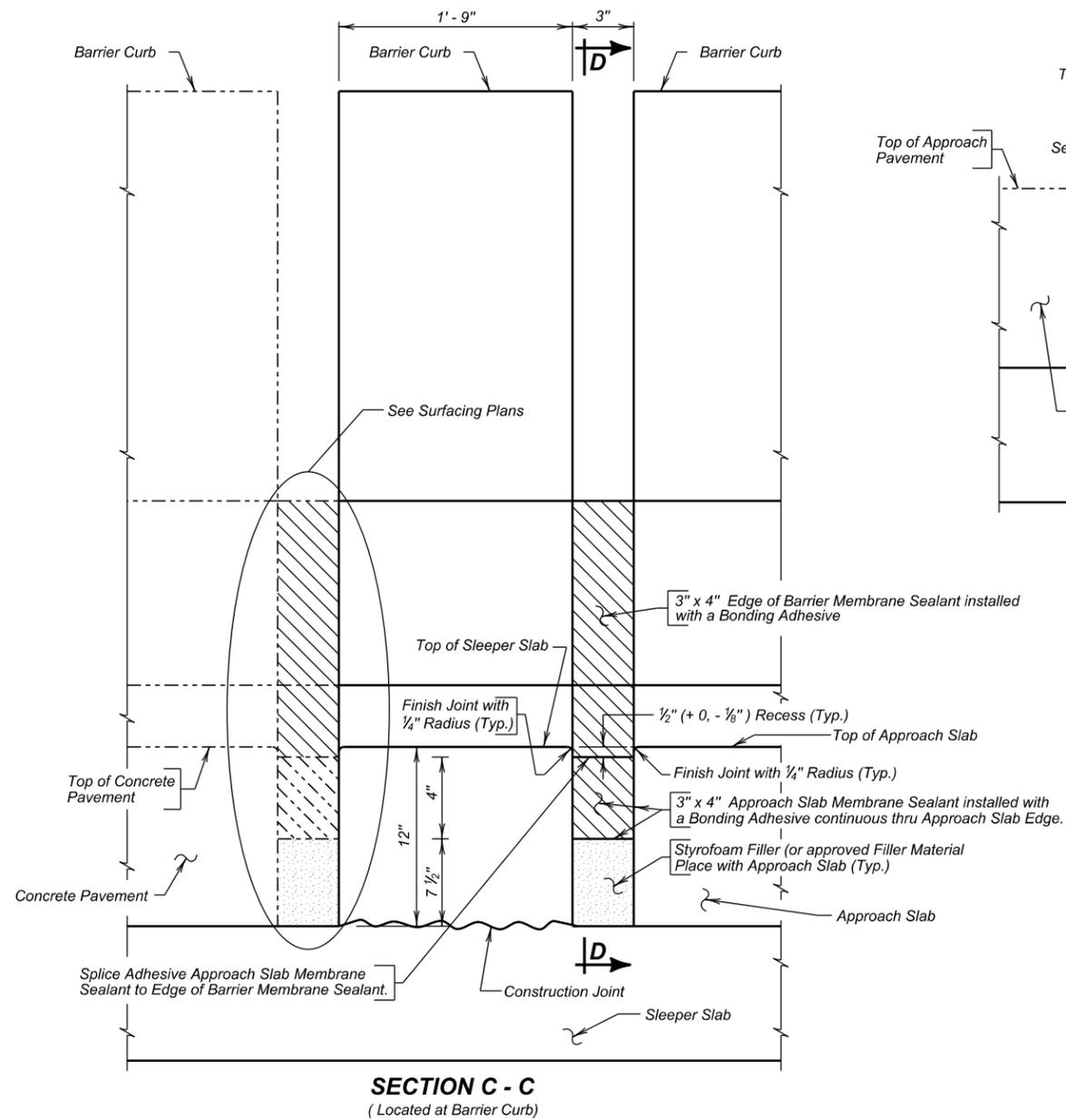
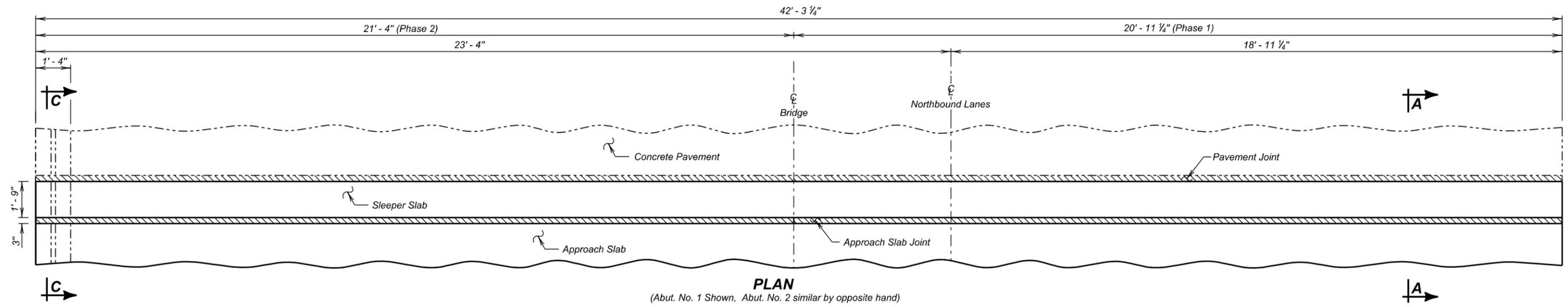
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

JULY 2015

DESIGNED BY MM LINC01GS	CK. DES. BY JM 01QSRB09	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E36	E127



ESTIMATED QUANTITIES			
(For Two Approach Slabs)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Membrane Sealant Expansion Joint	Ft.	41.9	45.2

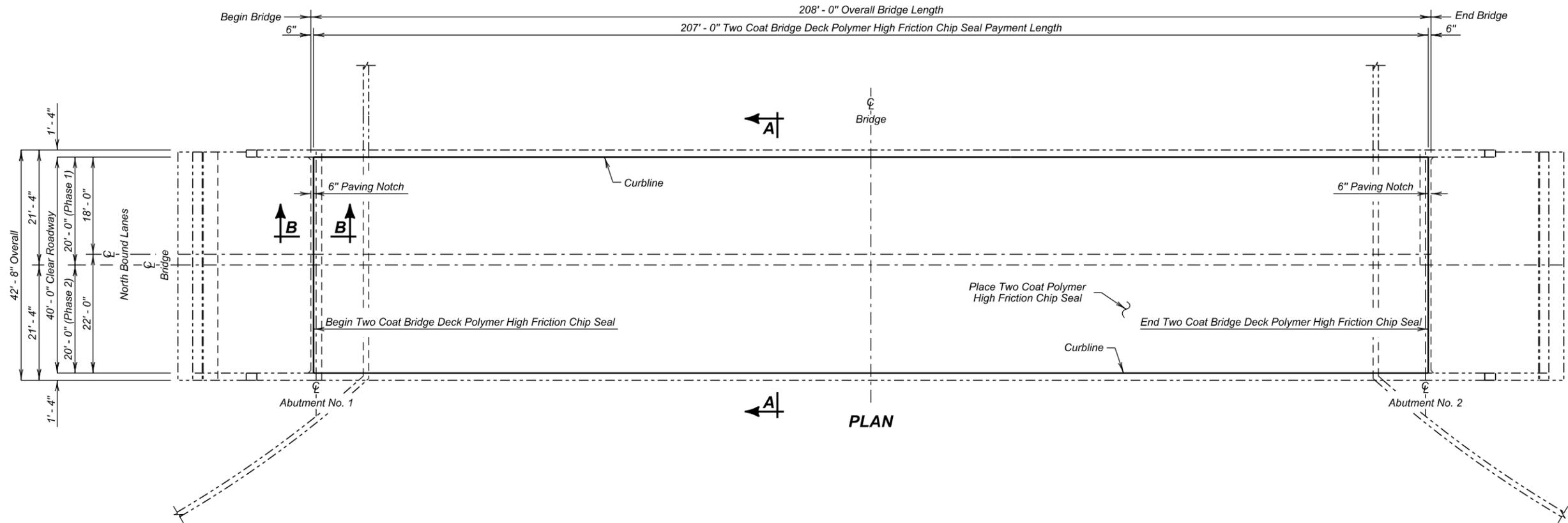
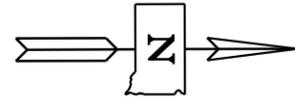
(NORTH BOUND LANES)
APPROACH SLAB JOINT DETAILS
 FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
 40' - 0" ROADWAY 0° SKEW
 OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
 STR. NO. 42 - 065 - 030 IM 0293(96)73

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY JM 01QSRB10	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E37	E127



PLAN

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
* Concrete Patching Material, Bridge Deck	Cu. Ft.	12.0	12.0
Two Coat Bridge Deck Polymer High Friction Chip Seal	Sq. Yd.	460.0	460.0
Abrasive Blasting of Bridge Deck	Sq. Yd.	460.0	460.0
Bridge Deck Grinding	Sq. Yd.	483.0	437.0
* Concrete Removal, Class A	Sq. Yd.	2.0	2.0
* Concrete Removal, Class B	Sq. Yd.	2.0	2.0

* Concrete Removal, Class A; Concrete Removal, Class B; and Concrete Patching Material may not be encountered and may be removed from the project at the direction of the Engineer.

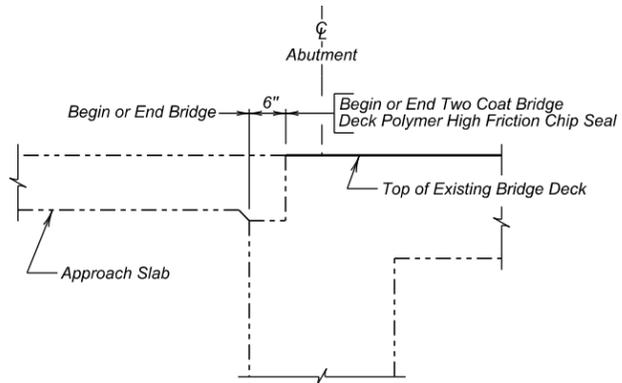
(NORTH BOUND LANES)
POLYMER HIGH FRICTION CHIP SEAL DETAILS

FOR
208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY
OVER COUNTY ROAD 106
STR. NO. 42 - 065 - 030

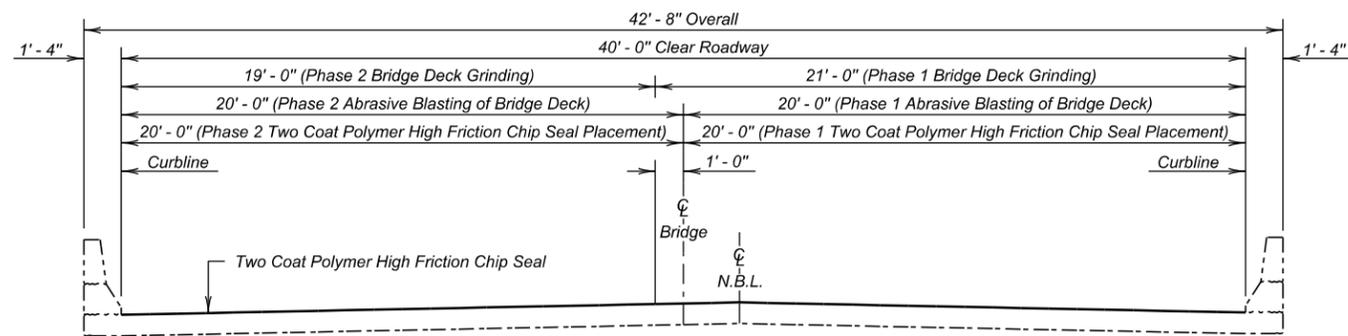
0° SKEW
SEC. 19/30-T100N-R50W
IM 0293(96)73

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

JULY 2015 (11) OF (24)



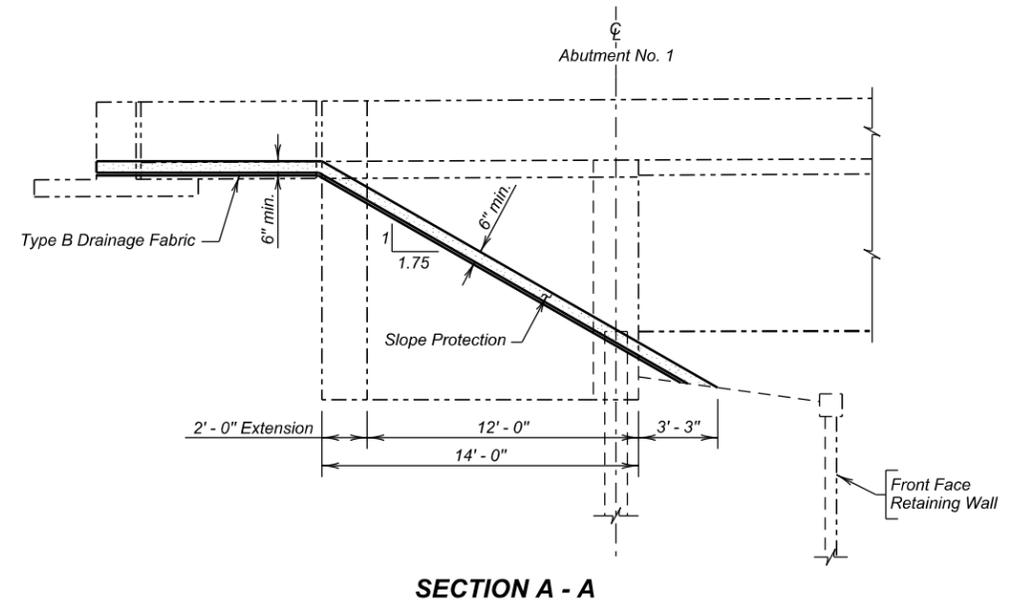
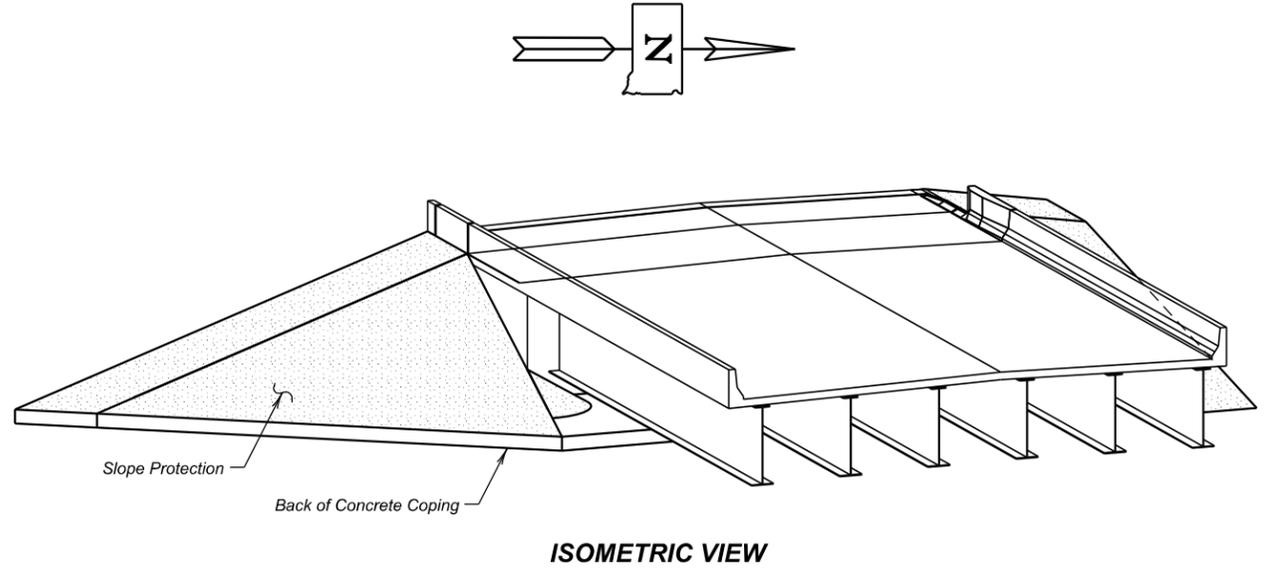
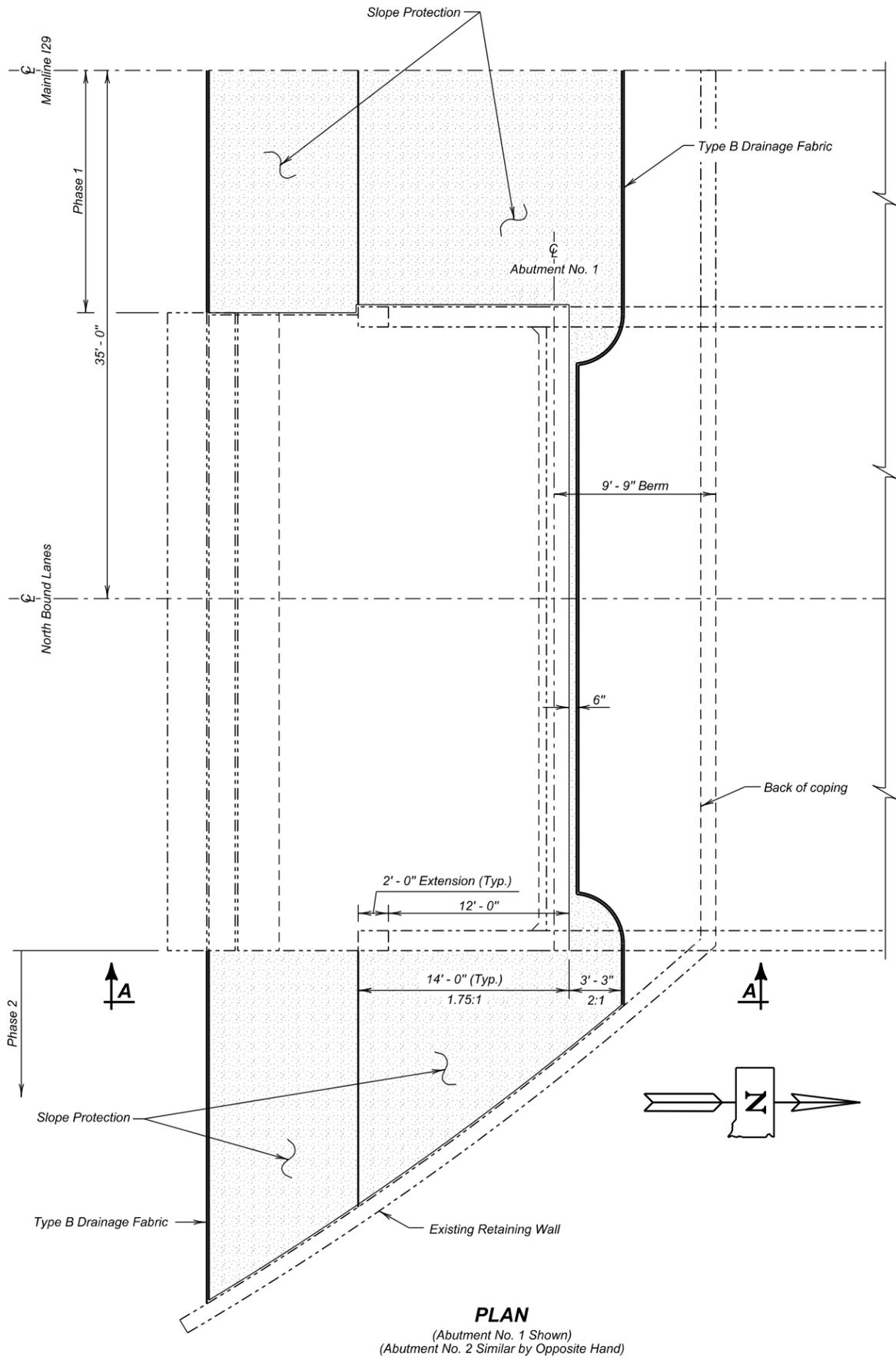
SECTION B - B



SECTION A - A

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRB11	DRAFTED BY KR	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY



(NORTH BOUND LANES)
SLOPE PROTECTION DETAILS
FOR

208' - 0" COMPOSITE STEEL GIRDER BRIDGE
40' - 0" ROADWAY 0° SKEW
OVER COUNTY ROAD 106 SEC. 19/30-T100N-R50W
STR. NO. 42 - 065 - 030 IM 0293(96)73

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	115.8	95.4

Item 1 is approximate quantity contained in the above bid item and is for information only.

1. Type B Drainage Fabric	Phase 1 115.8 Sq. Yd.	Phase 2 95 Sq. Yd.
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LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2015

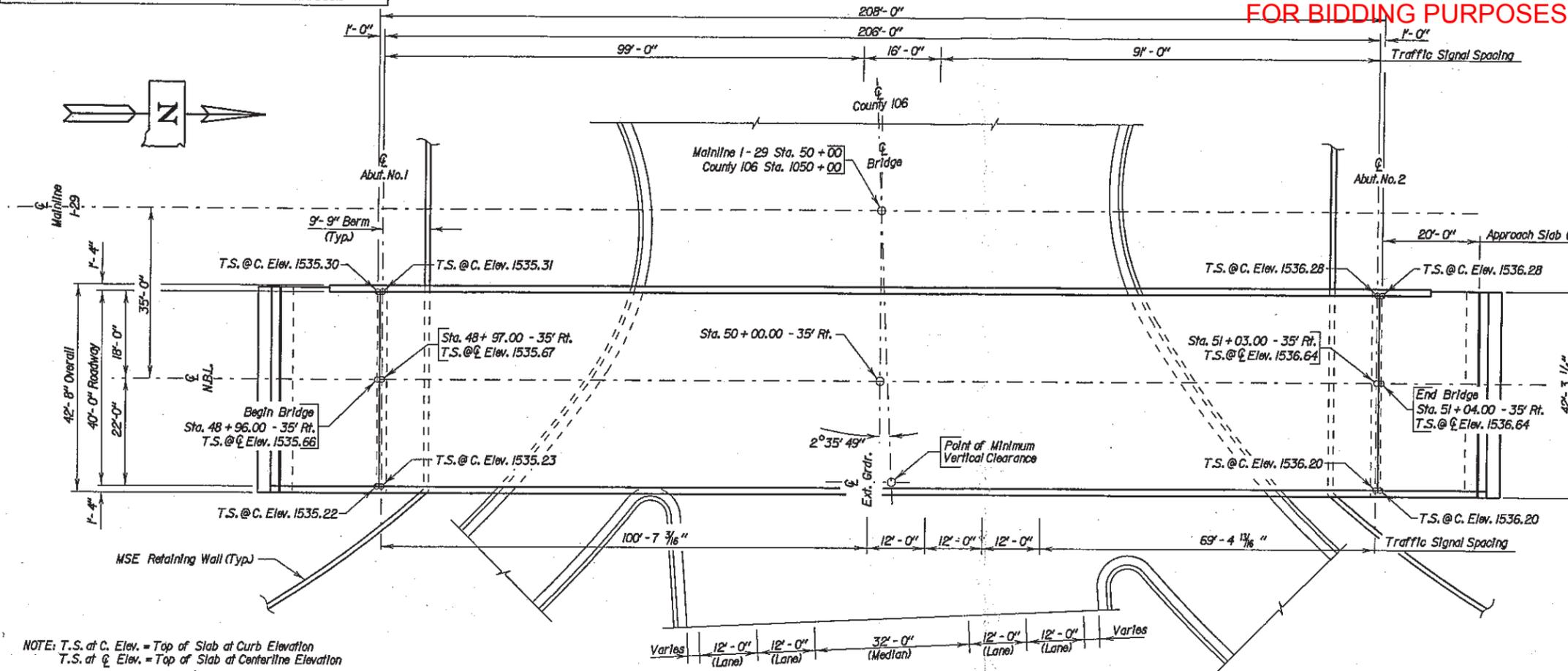
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

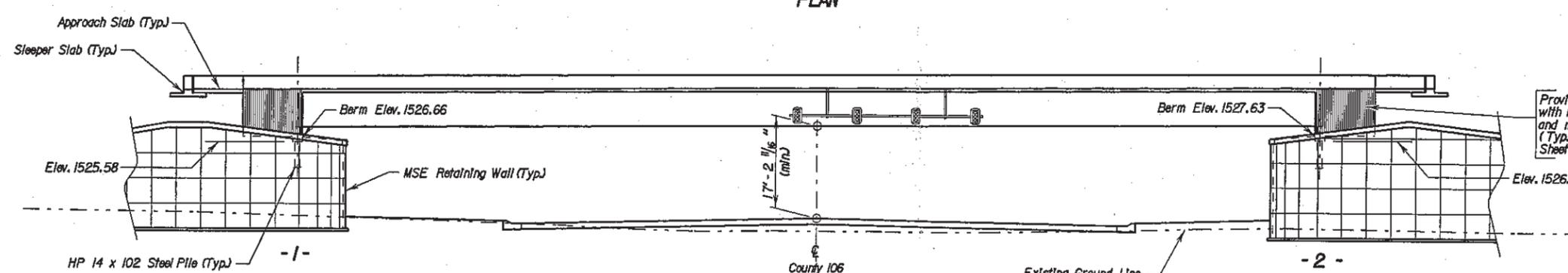
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E39	E127

**-X271-
INDEX OF BRIDGE SHEETS-**

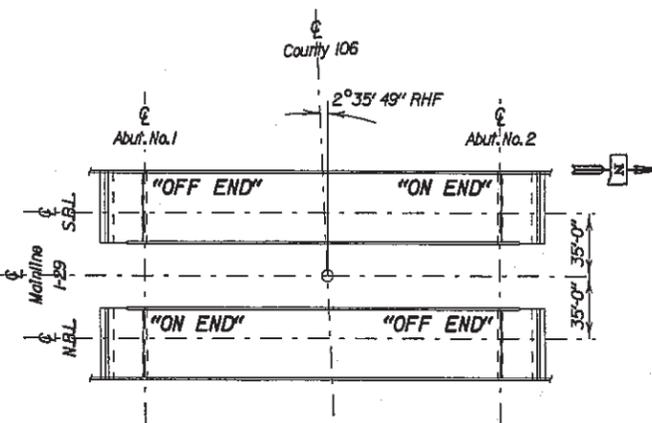
- Sheet No. 1 - General Drawing & Layout
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Notes (Continued)
- Sheet No. 6 - Subsurface Investigation & Piling Layout
- Sheet No. 7 - Abutment No. 1 Details
- Sheet No. 8 - Abutment No. 2 Details
- Sheet No. 9 - Abutment Details (Continued)
- Sheet No. 10 - Superstructure Details
- Sheet No. 11 - End Block & Barrier Curb Details
- Sheet No. 12 - Girder Layout & Details
- Sheet No. 13 - Details of Bolted Field Splices
- Sheet No. 14 - Diaphragm Details
- Sheet No. 15 - Framing Diagram, Camber Details & Erection Data
- Sheet No. 16 - Slab Form Elevations
- 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 - Barrier Expansion Device Details
- Sheet No. 22 - Slope Protection Details
- Sheet No. 23 - Signal Bracket Details
- Sheet No. 24 - Signal Bracket Details (Continued)
- Sheet No. 25 - As-Built Elevation Survey
- Sheet No. 26 - Details of Standard Plate No's. 460.02 and 460.05
- Sheet No. 27 - Details of Standard Plate No's. 510.40 and 630.92



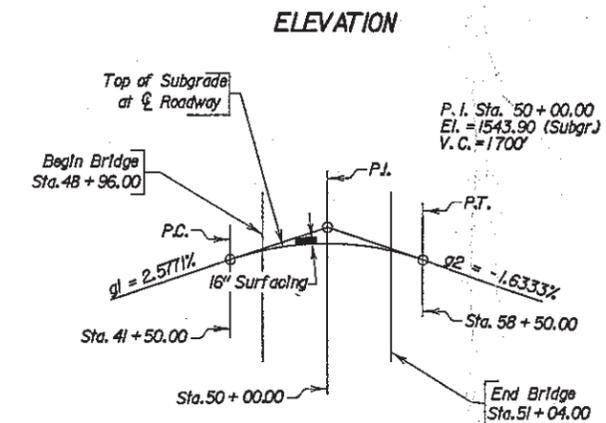
NOTE: T.S. at C. Elev. = Top of Slab at Curb Elevation
T.S. at ϕ Elev. = Top of Slab at Centerline Elevation



Provide Vertical Rib Finish with maximum relief of 1/2" and maximum rib spacing of 3" (Typ.). See DETAIL "Y" on Sheet No. 9 of 27.



LAYOUT



VERTICAL CURVE DATA

GENERAL DRAWING AND LAYOUT
FOR
(NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48 + 96.00 TO 51 + 04.00 IM 29-2(52)72
STR. NO. 42-065-030 HS25-44
PCEMS NO. 1948 (& ALT.)

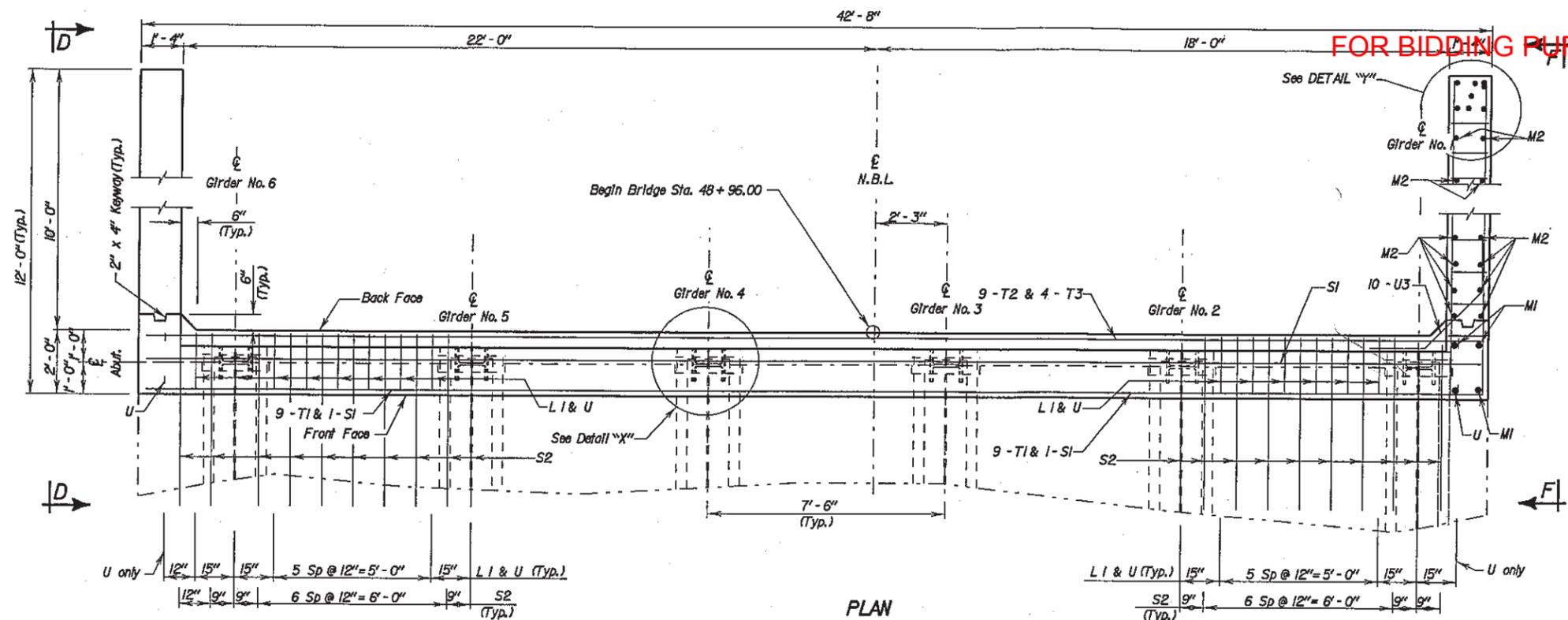
ORIGINAL CONSTRUCTION PLANS

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

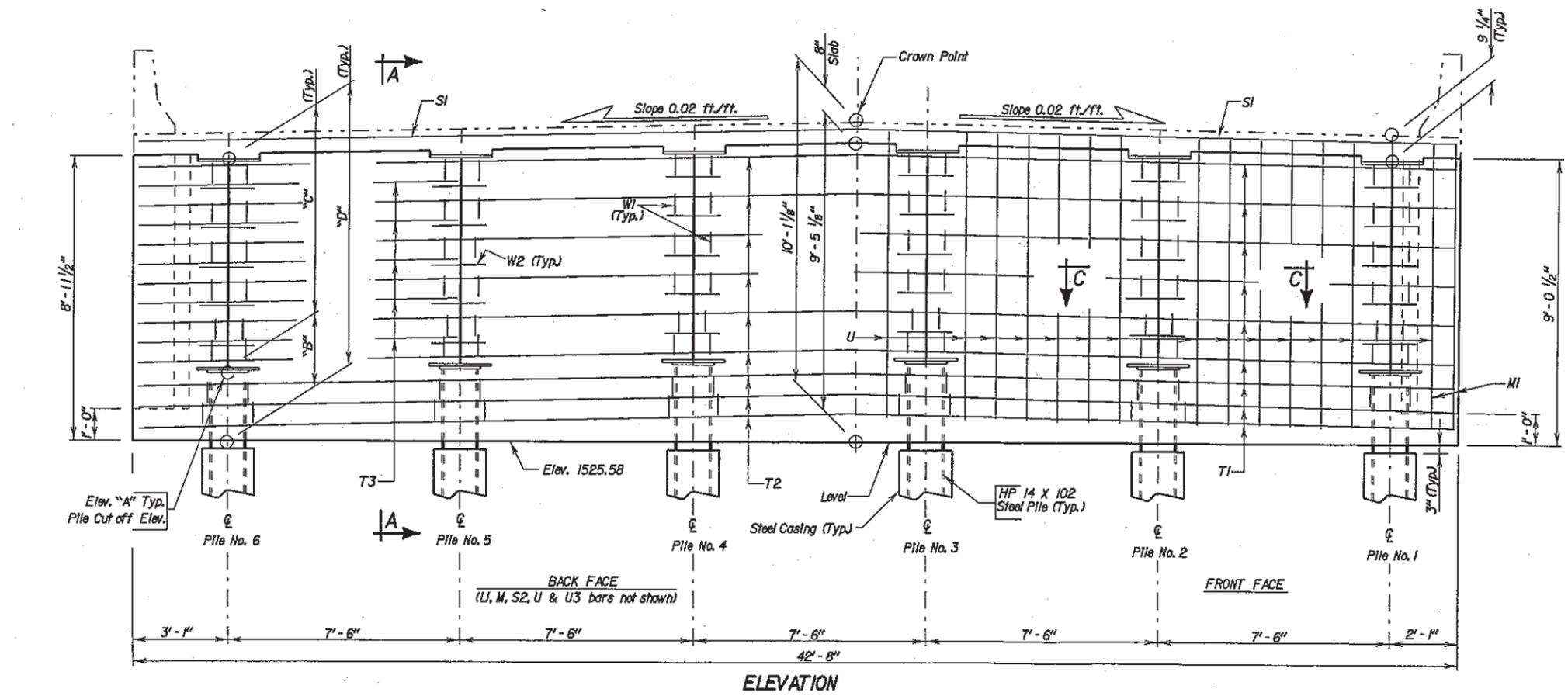
DESIGNED BY SJ/DC LINC1948	DRAWN BY BK 1948JA01	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

INCREASING STATIONS



NOTE-
This sheet is to be used in conjunction with Sheet No. 9 of 27.



Pile	Elev. "A"	"B"	"C"	"D"
Y	1527.34	—	—	—
Z	1527.49	—	—	—
1	1527.64	2'-0 3/4"	6'-1"	8'-11 3/4"
2	1527.79	2'-2 1/2"	6'-1"	9'-1 1/2"
3	1527.94	2'-4 3/8"	6'-1"	9'-3 3/8"
4	1527.88	2'-3 3/8"	6'-1"	9'-2 3/8"
5	1527.73	2'-1 1/8"	6'-1"	9'-0 3/8"
6	1527.58	2'-0"	6'-1"	8'-1"

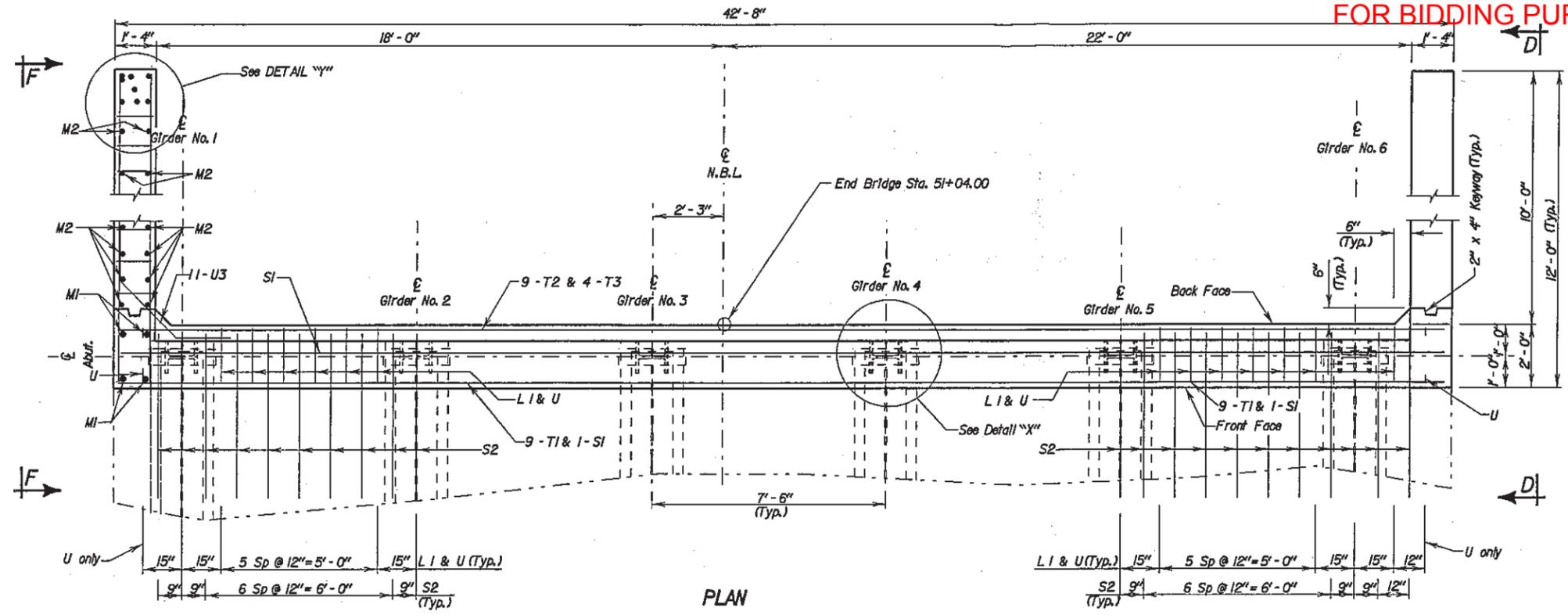
See Subsurface Investigation & Piling Layout for additional piles.

ORIGINAL CONSTRUCTION PLANS

ABUTMENT NO. 1 DETAILS
FOR
(NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-065-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

FOR BIDDING PURPOSES ONLY

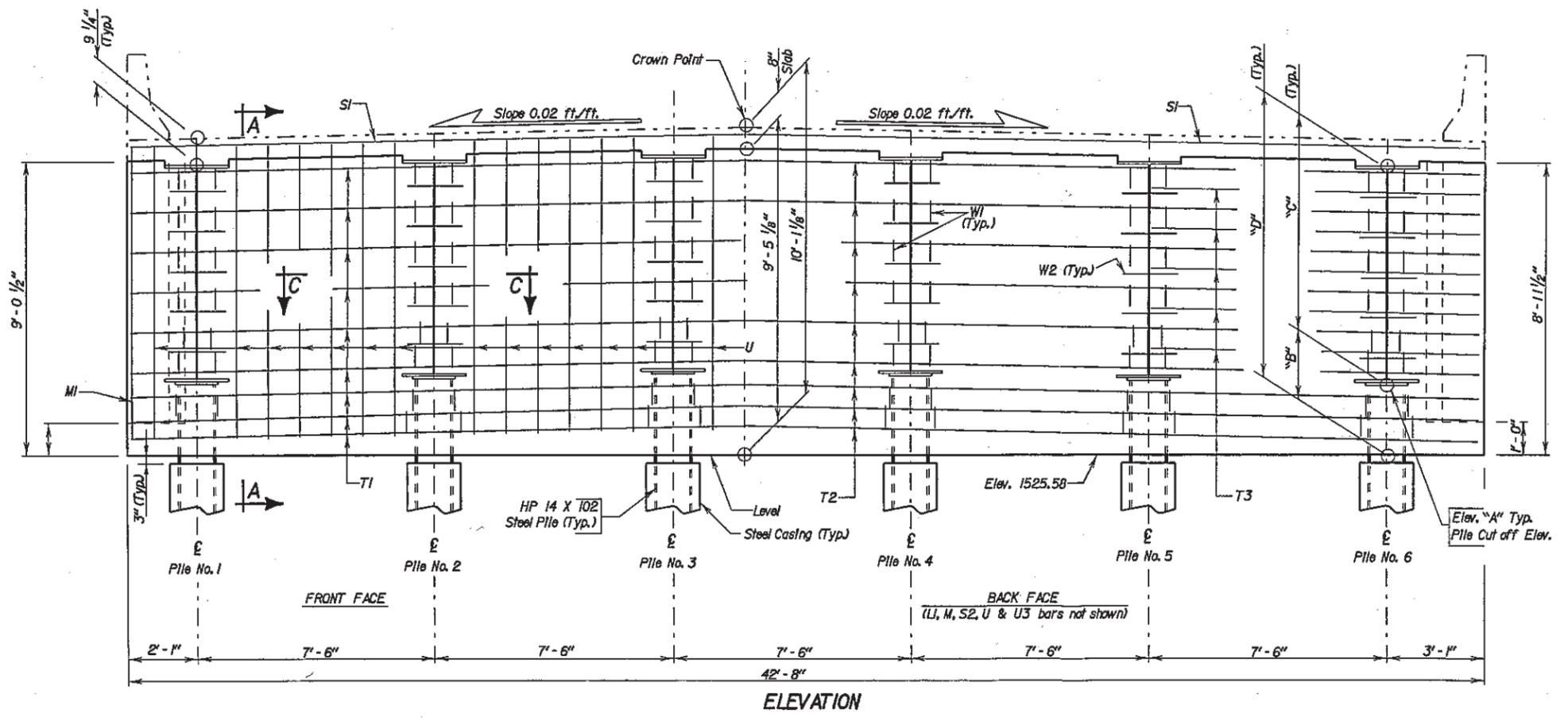


INCREASING STATIONS

NOTE-
This sheet is to be used in conjunction with Sheet No. 9 of 27.

Pile	Elev. "A"	"B"	"C"	"D"
Y	1528.31	-	-	-
Z	1528.46	-	-	-
1	1528.61	2'-0 3/4"	6'-11"	8'-11 3/4"
2	1528.76	2'-2 1/2"	6'-11"	9'-1 1/2"
3	1528.91	2'-4 5/8"	6'-11"	9'-3 7/8"
4	1528.85	2'-3 3/8"	6'-11"	9'-2 3/8"
5	1528.70	2'-1 1/8"	6'-11"	9'-0 1/8"
6	1528.55	2'-0"	6'-11"	8'-11"

See Subsurface Investigation & Piling Layout for additional piles.



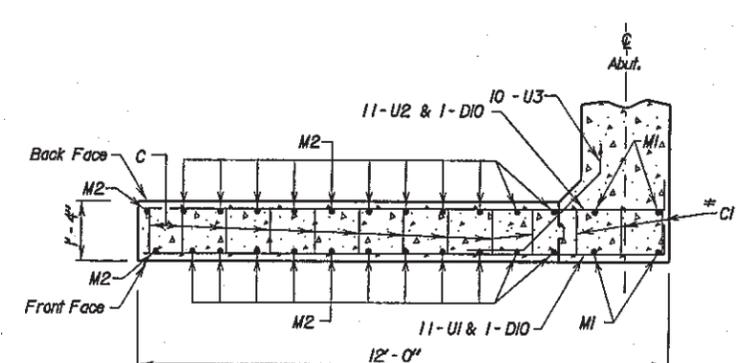
ORIGINAL CONSTRUCTION PLANS

ABUTMENT NO. 2 DETAILS
FOR
(NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-065-030 HS25-44 (& ALT.)

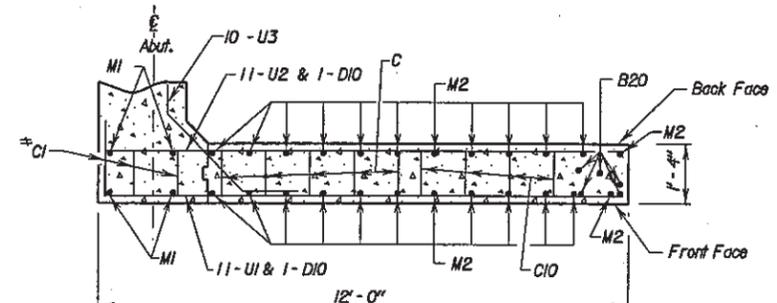
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003 (15) OF (24)

NOTE-
This sheet is to be used in conjunction with Sheet Nos. 1 and 2.

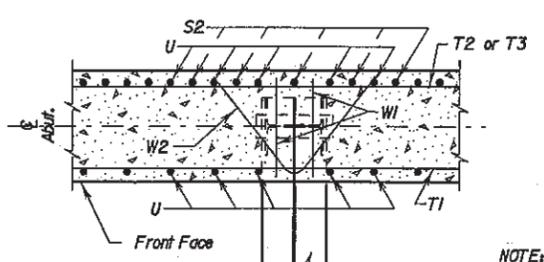
FOR BIDDING PURPOSES ONLY



SEC. J - J

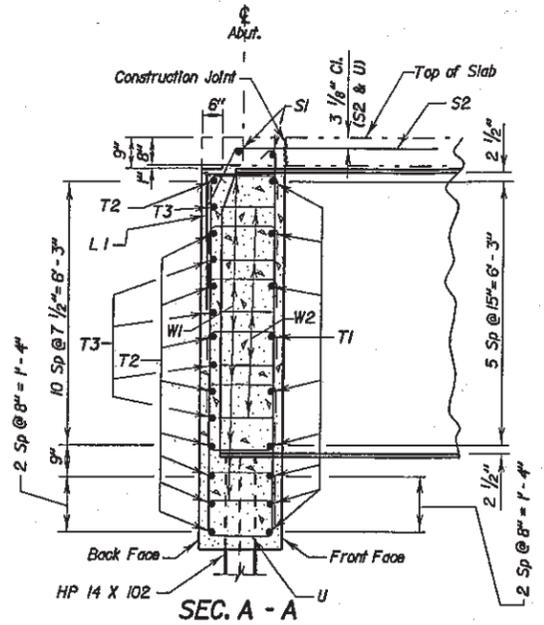


SEC. K - K

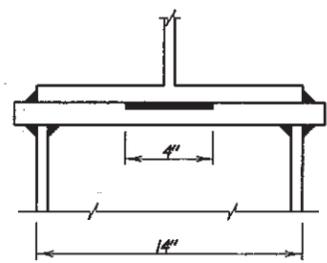


SEC. C - C

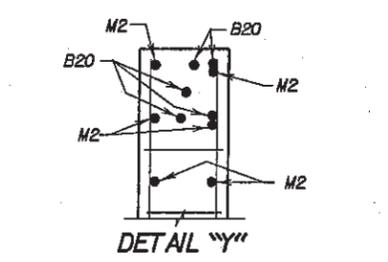
NOTE: Provide vertical Rib Finish on front face of wingwalls.



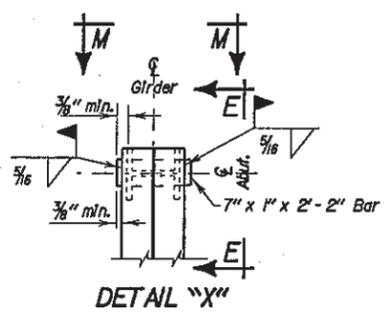
SEC. A - A



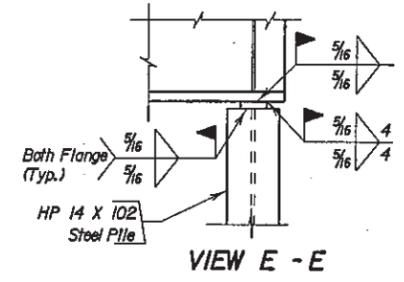
VIEW M - M
(showing weld locations)



DETAIL 'Y'



DETAIL 'X'

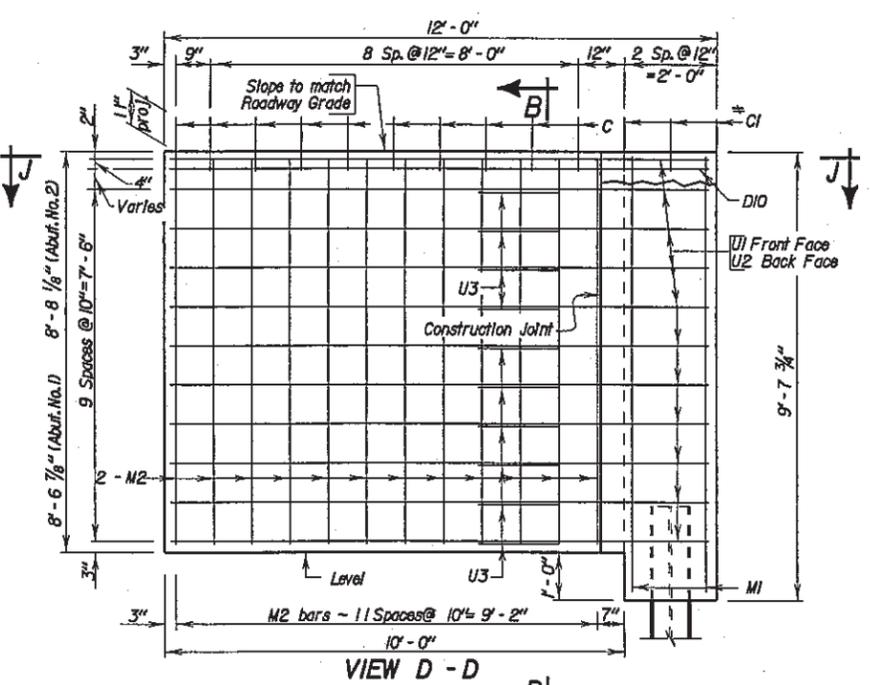


VIEW E - E

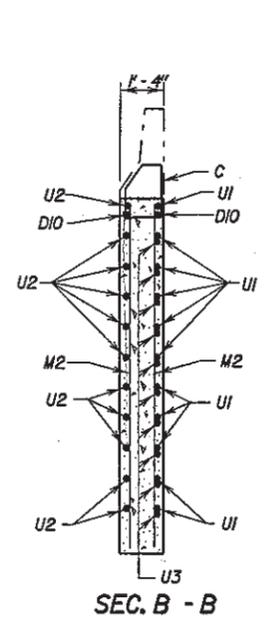
REINFORCING SCHEDULE (For One Abutment)					
Mk.	No.	Size	Length	Type	
Ø	B20	5	6	3'-6"	Str.
Ø	C	15	5	5'-9"	T2A
Ø	C10	4	6	5'-10"	T1A
Ø	D10	4	4	1'-6"	Str.
Ø	L1	3	4	3'-4"	Str.
Ø	M1	8	5	9'-4"	Str.
Ø	M2	48	5	8'-5"	Str.
Ø	S1	2	9	42'-4"	Str.
Ø	S2	44	6	9'-0"	14A
Ø	T1	9	7	42'-4"	Str.
Ø	T2	9	8	42'-4"	Str.
Ø	T3	10	8	10'-6"	Str.
Ø	U	33	6	20'-8"	S9A
Ø	U1	22	4	12'-4"	17A
Ø	U2	22	7	12'-10"	17A
Ø	U3	20	6	5'-11"	19
Ø	W1	96	6	3'-0"	17
Ø	W2	30	8	5'-0"	13A

Bending Details		
WI	1'-8"	Type 17
S2	8"	Type 14A
C10	1'-0 1/2"	Type T1A
L1	1'-8"	Type 17A
U	1'-8"	Type S9A
U3	2'-5"	Type 19
U1	1'-8"	Type 17A
U2	1'-8"	Type 17A
U3	2'-5"	Type 19
W1	3'-0"	Type 17
W2	5'-0"	Type 13A
C10	1'-0 1/2"	Type T1A
M1	9'-4"	Str.
M2	8'-5"	Str.
T1	42'-4"	Str.
T2	42'-4"	Str.
T3	10'-6"	Str.

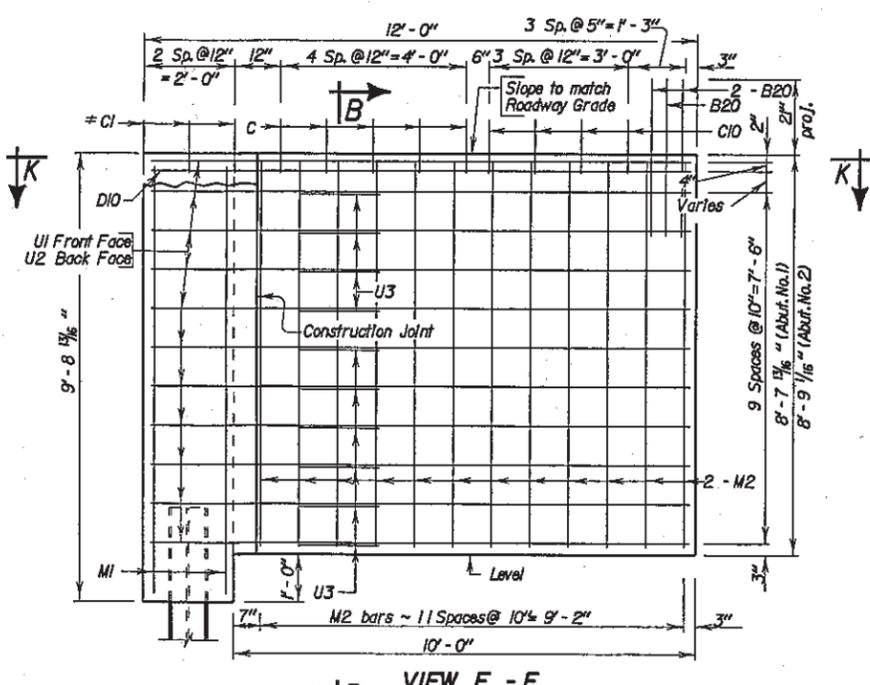
NOTE: All dimensions are out to out of bars. Bars to be Epoxy Coated.



VIEW D - D



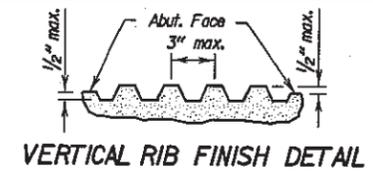
SEC. B - B



VIEW F - F

ESTIMATED QUANTITIES			
ITEM	UNIT	Abut. No.1	Abut. No.2
Class M45 Concrete, Bridge	Cu. Yd.	37.7	37.8
Reinforcing Steel	Lb.	3156	3156
Epoxy Coated Reinforcing Steel	Lb.	3347	3347
HP 14 X 102 Steel Test Pile, Furnish & Drive	Ft.	1 @ 108'-108"	1 @ 109'-109"
HP 14 X 102 Steel Bearing Pile, Furnish & Drive	Ft.	7 @ 103'-72"	7 @ 104'-72"

ORIGINAL CONSTRUCTION PLANS



VERTICAL RIB FINISH DETAIL

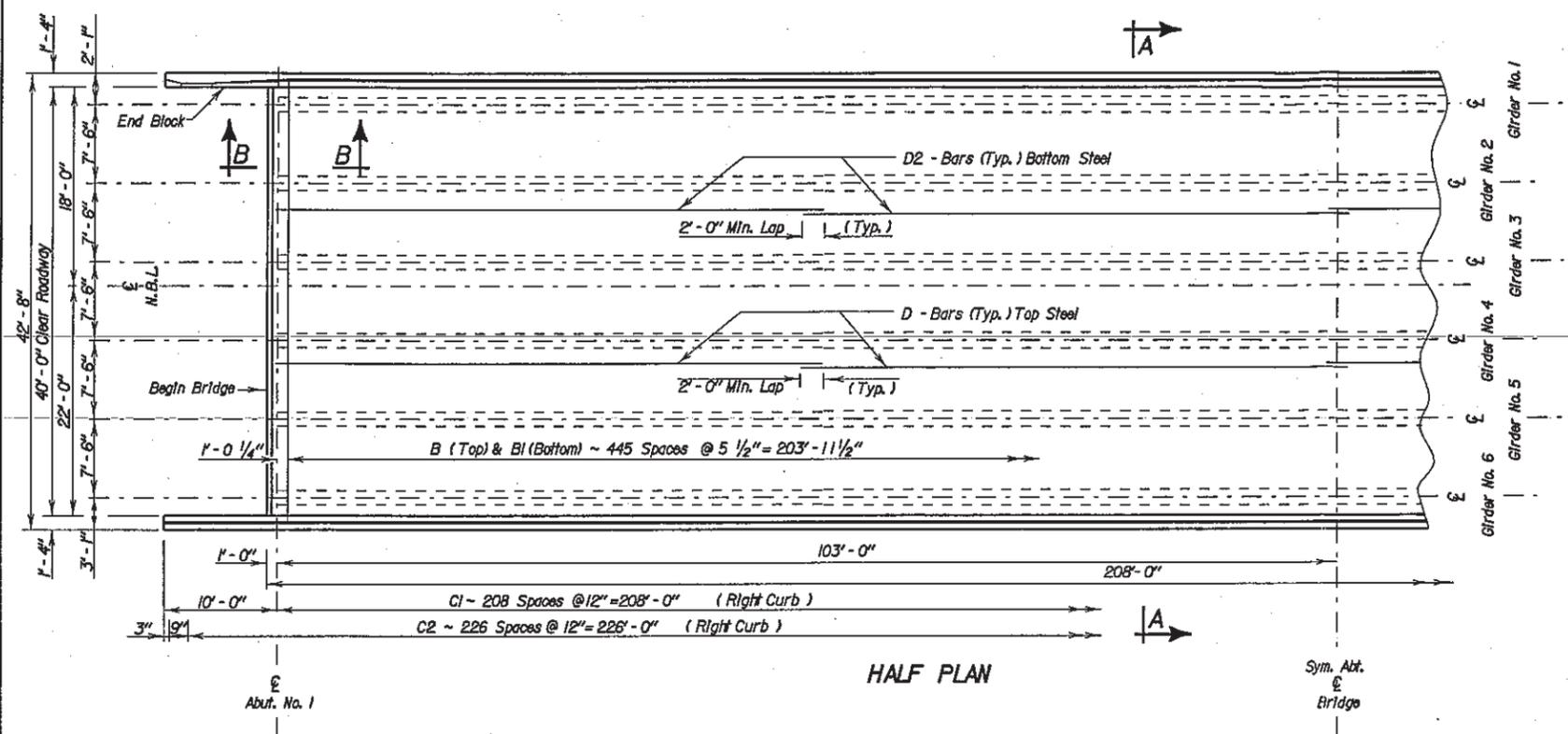
ABUTMENT DETAILS (CONTINUED)
FOR
(NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-065-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY SJ/DC LINC948	DRAWN BY BK 1948JA09	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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* Listed and Included in Superstructure Details

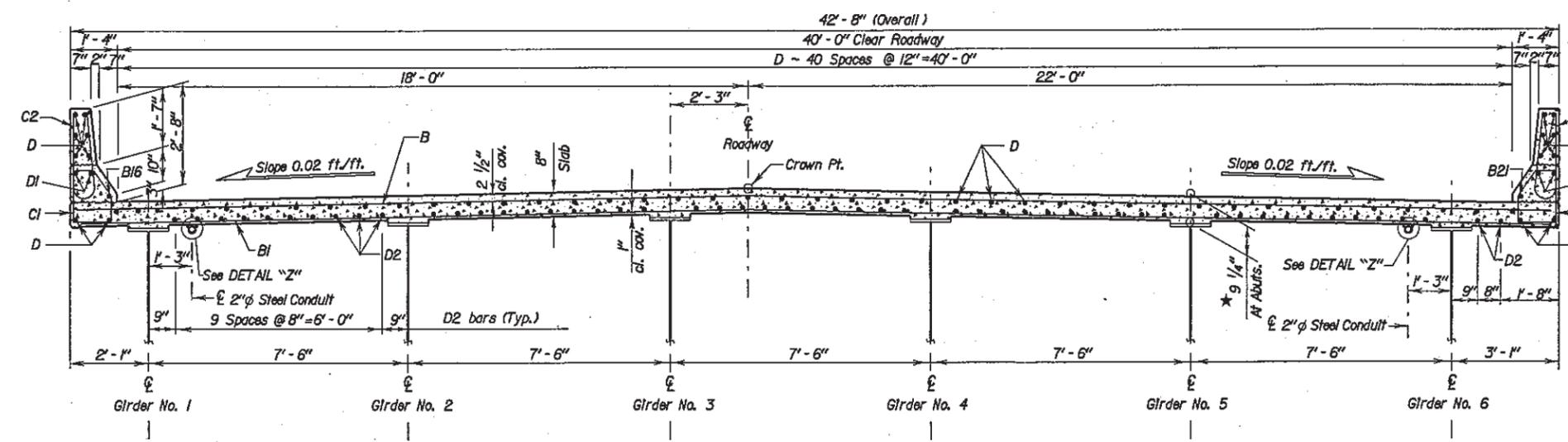
FOR BIDDING PURPOSES ONLY



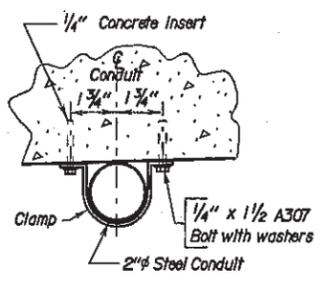
REINFORCING SCHEDULE

Mk. No.	Size	Length	Type	Bending Details	
B	446	5	42'-4"	Str.	
BI	446	4	42'-4"	Str.	
BI5	6	5	14'-6"	Str.	
BI6	4	4	57'-5"	Str.	
BI7	4	4	8'-6"	19B	
BI8	6	8	4'-3"	19B	
BI9	6	5	2'-4"	Str.	
B21	4	4	58'-1"	Str.	
CI	418	5	5'-9"	T2A	
C2	434	5	5'-1"	SI1	
C3	2	5	5'-0"	SI1	
C4	2	5	5'-0"	SI1	
C5	2	5	5'-0"	SI1	
C6	2	5	6'-8"	TI	
C7	2	5	6'-9"	TI	
C8	2	5	6'-11"	TI	
C9	2	5	7'-0"	TI	
CI1	8	5	7'-1"	TI	
CI3	2	5	5'-3"	17	
D	204	5	53'-2"	Str.	
DI	40	5	58'-6"	Str.	
D2	208	4	53'-2"	Str.	
Z1	108	7	2'-0"	Str.	

NOTES-
 All reinforcing steel shall be epoxy coated
 See Sheet No. 18 of 27 for location of Z1 bars.
 All dimensions are out to out of bars.



NOTE-
 Space concrete inserts at 5'-0" maximum spacing



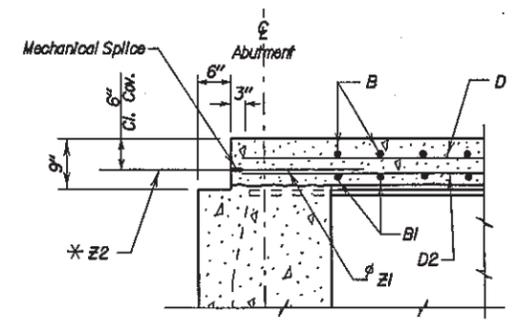
DETAIL "Z"
 ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS
 FOR
 (NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
 40'-0" ROADWAY 0° SKEW
 OVER CO. RD. 106 SEC. 19/30-T100N-R50W
 STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
 STR. NO. 42-065-030 HS25-44
 (& ALT.)

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu. Yd.	262.7
Epoxy Coated Reinforcing Steel	Lb.	59357
Structural Steel	Lump Sum	Lump Sum
No. 7 Rebar Splice	Each	108
Grooving Bridge Deck	Sq. Yd.	974
Concrete Penetrating Sealer	Sq. Yd.	920

For informational purposes only, the estimated weight of the structural steel is 466216 pounds.
 * Concrete quantity for Barrier Curb is 0.0842 Cu. Yd. per foot. Each 12' End Block contains 1.1659 Cu. Yd. of concrete.

NOTE-
 All barrier curb details shown on Sheet No. 11 of 27.
 * Dimensions are at bearing; at other points along the girders this dimension shall be computed as shown on the Framing Diagram, Camber details & Erection Data sheet.
 * Z2 bars are listed and included in approach slab quantities on Sheet No. 18 of 27.



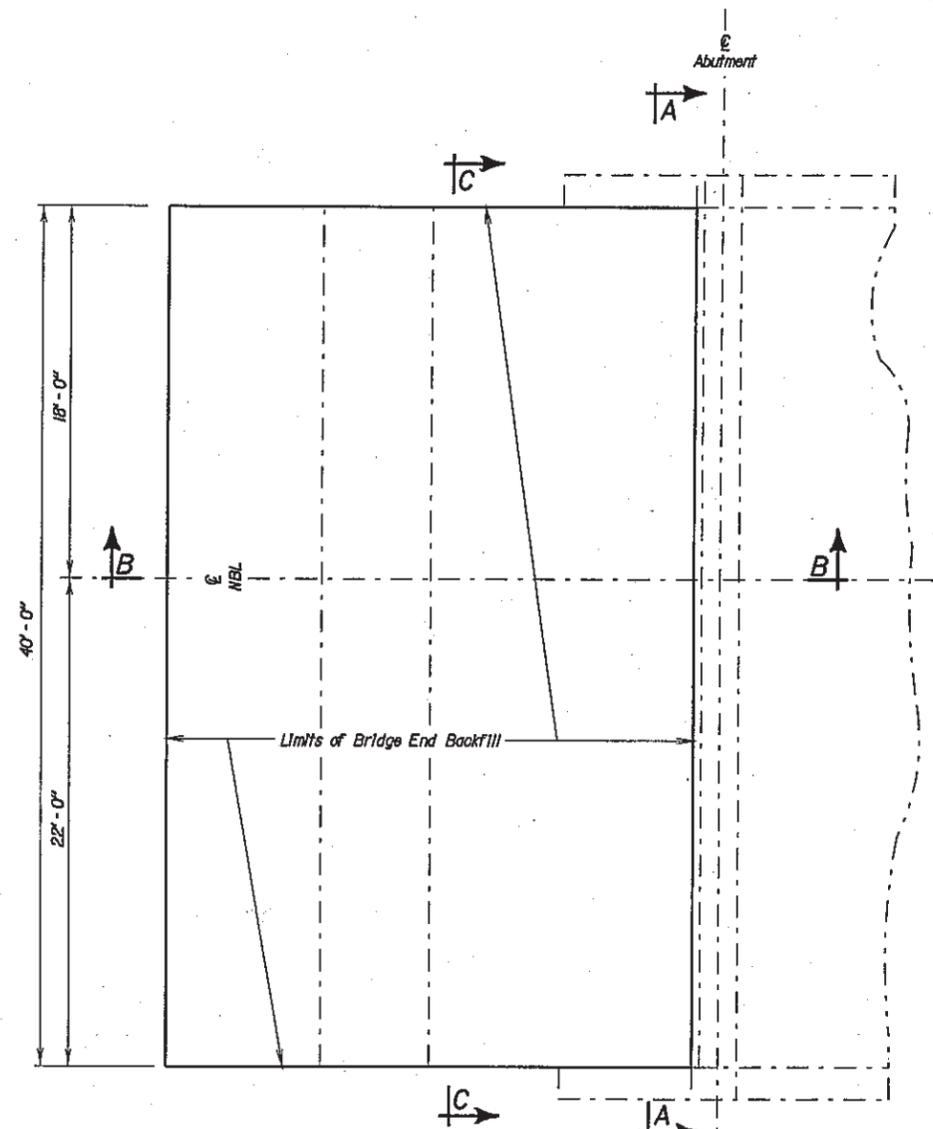
SEC. B - B

FOR BIDDING PURPOSES ONLY

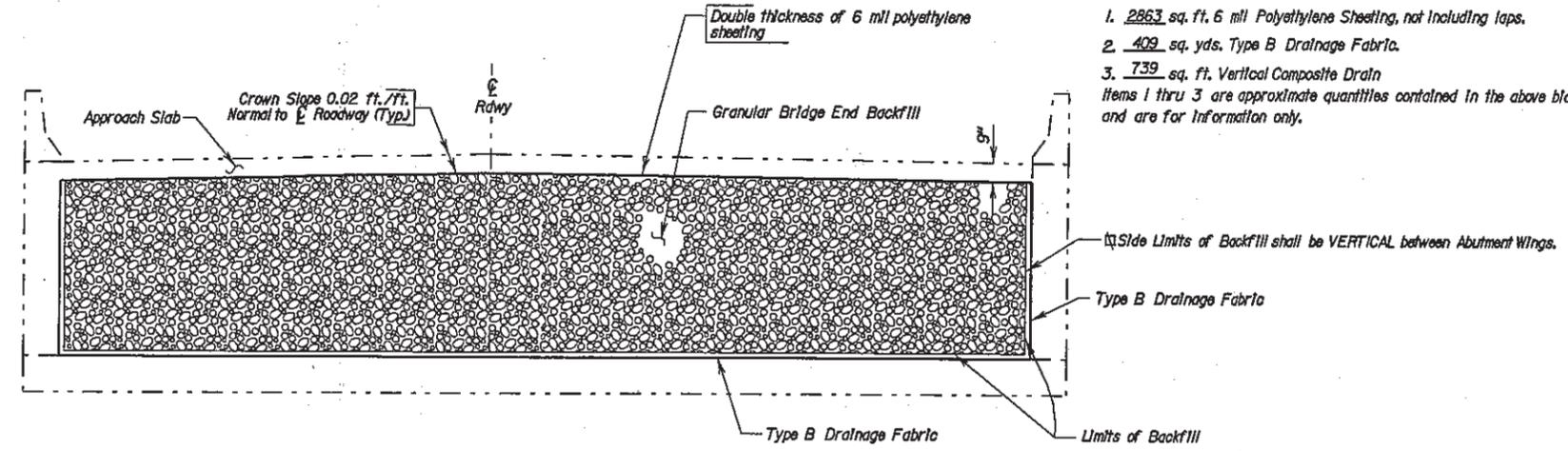
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge End Backfill	Cu. Yd.	0.19

- 2863 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
 - 409 sq. yds. Type B Drainage Fabric.
 - 739 sq. ft. Vertical Composite Drain
- Items 1 thru 3 are approximate quantities contained in the above bid item and are for information only.

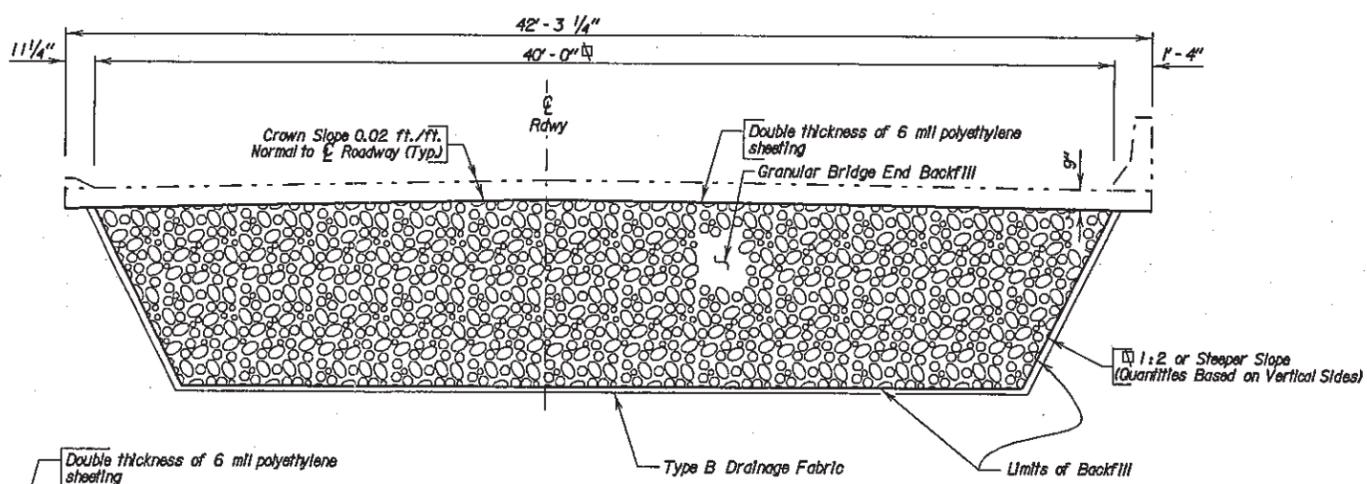
To allow for future driving of guardrail posts, granular bridge end backfill must not extend beyond limits shown.



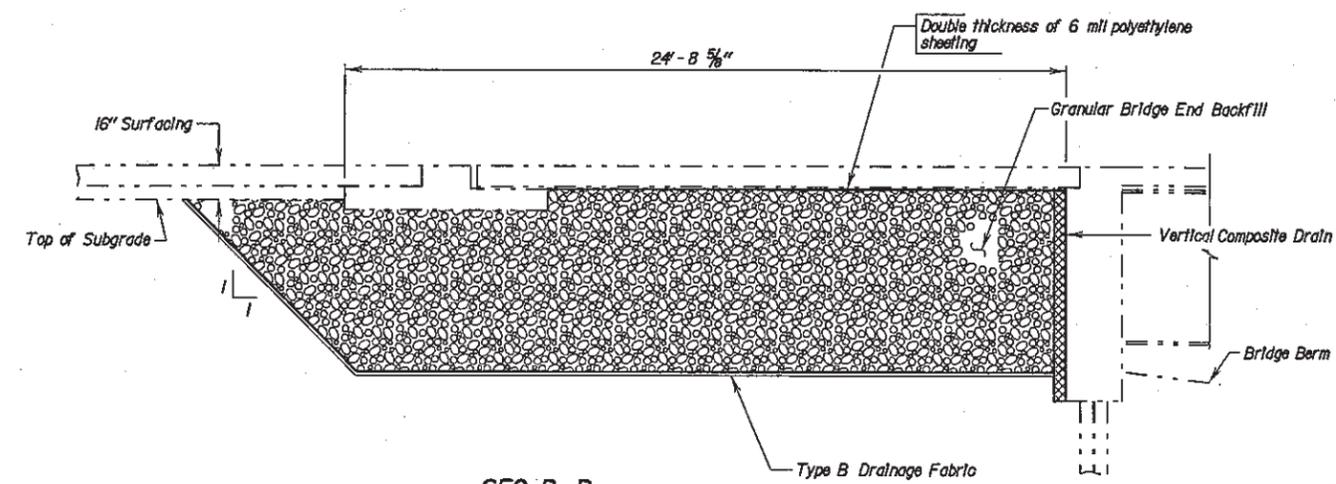
PLAN
(Shown adj. to Abut. 1, Abut. No. 2 similar opposite hand)



SEC. A-A



SEC. C-C



SEC. B-B
(at \bar{C} Roadway)

DETAILS OF BRIDGE END BACKFILL FOR (NORTHBOUND LANES)

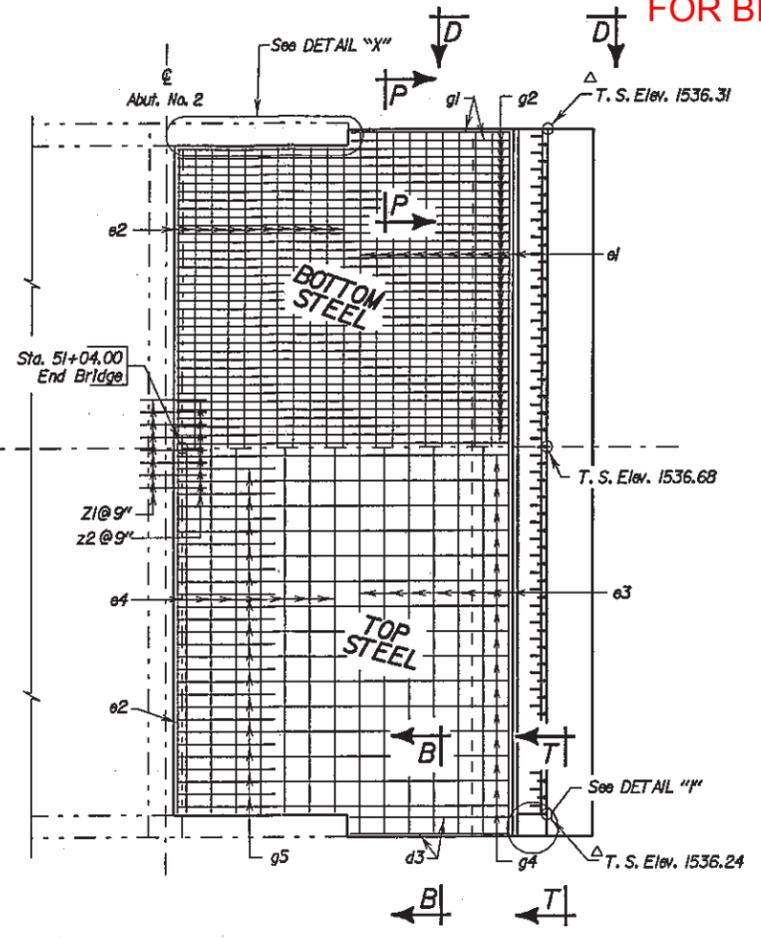
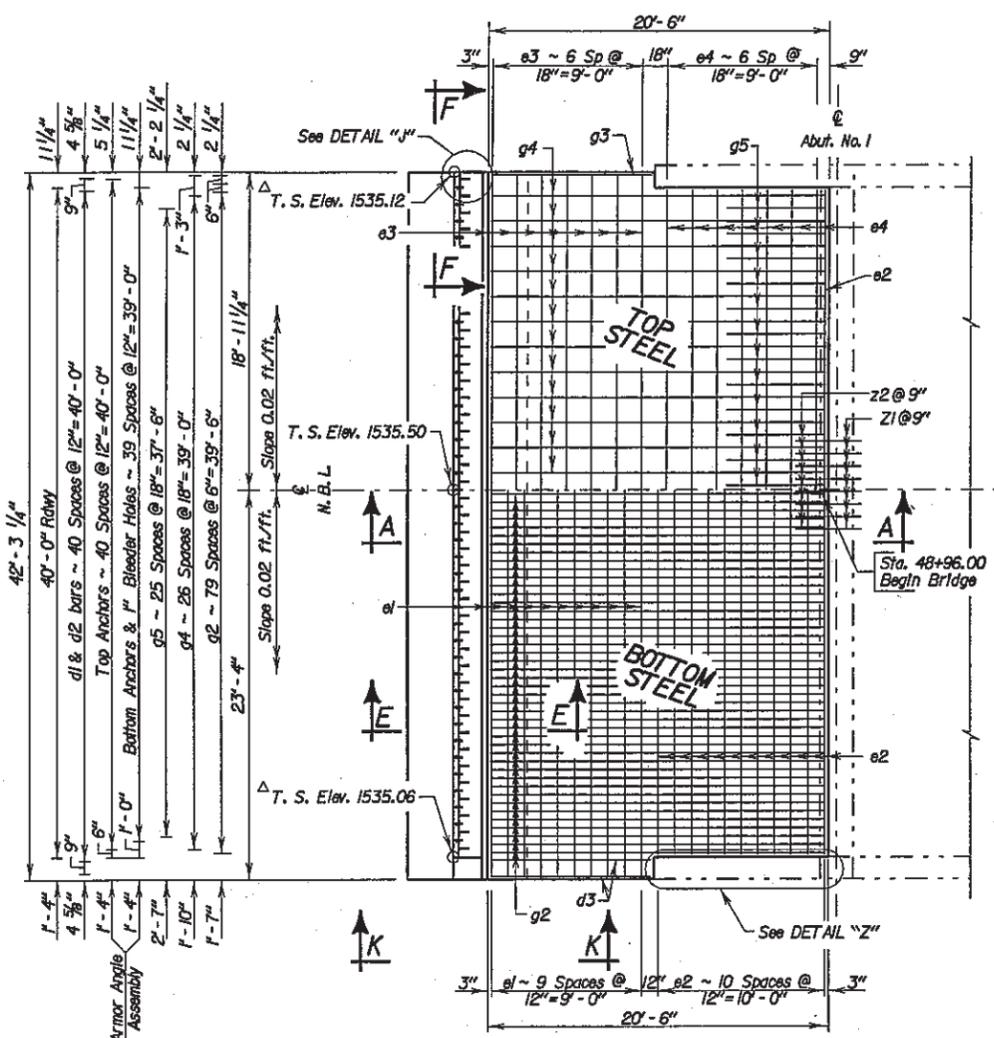
208'-0" COMP. STEEL GIRDER BRIDGE
 40'-0" ROADWAY 0° SKEW
 OVER CO. RD. 106 SEC. 19/30-T100N-R50W
 STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
 STR. NO. 42-065-030 HS25-44 (& ALT.)

ORIGINAL CONSTRUCTION PLANS

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2003

DESIGNED BY S.J./DC LINCOLN	DRAWN BY BK 1948 JAL	CHECKED BY S.J./DC	APPROVED John C. Cole BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY



REINFORCING SCHEDULE

(For Two Approach Slabs, Two Sleeper Slabs and Barrier Curbs)

Mk.	No.	Size	Length	Type	Bending Details
Sleeper Slabs					
c1	6	5	5'-11"	T2A	
c3	52	5	4'-11"	Str.	
d1	72	4	7'-9"	2	
d2	86	4	6'-7"	T2	
Barrier Curbs					
e2	28	5	5'-1"	S11	
d3	26	5	9'-9"	Str.	
d4	18	5	1'-5"	Str.	
Approach Slabs					
cl	22	5	5'-11"	T2A	
el	20	6	4'-11"	Str.	
e2	24	6	39'-8"	Str.	
e3	14	4	4'-11"	Str.	
e4	14	4	39'-8"	Str.	
g1	4	8	9'-8"	Str.	
g2	160	8	20'-2"	Str.	
g3	2	4	9'-8"	Str.	
g4	54	4	20'-2"	Str.	
g5	52	4	6'-0"	Str.	
z2	108	7	2'-0"	Str.	

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

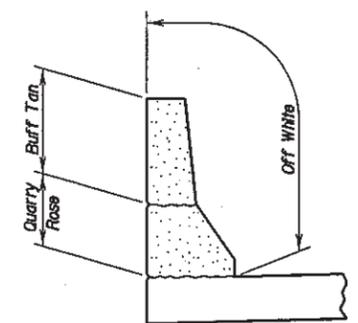
ESTIMATED QUANTITIES

(For Two Approach Slabs and Two Sleeper Slabs)

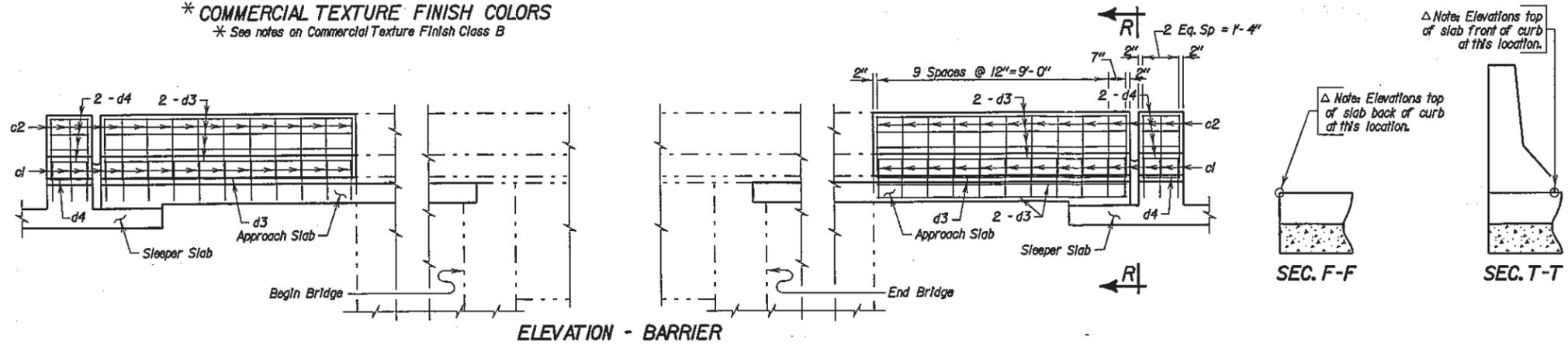
ITEM	UNIT	QUANTITY
Concrete Approach Slab for Dwg	Sq. Yd.	187.3
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	68.1
Compression Seal	Ft.	84.5

- 48.9 Cu. Yds. Concrete In Approach Slab.
- 13697 Lbs. Epoxy Coated Re-Steel In Approach Slab.
- 22.5 Cu. Yds. Concrete In Sleeper Slab.
- 3569 Lbs. Epoxy Coated Re-Steel In Sleeper Slab.
- 4542 Lbs. Structural Steel In Armor Assembly.
- 2.0 Cu. Yds. Concrete In Barrier Curbs.
- 439 Lbs. Re-steel In Barrier Curbs.
- 35 Sq. Ft. of 2" Polystyrene Insulation Board.

Items 1 thru 8 are approximate quantities contained in the above bid items and are for information only.



* COMMERCIAL TEXTURE FINISH COLORS
* See notes on Commercial Texture Finish Class B



NOTE -
This sheet is to be used in conjunction with Sheet No. 19 of 27.

ORIGINAL CONSTRUCTION PLANS

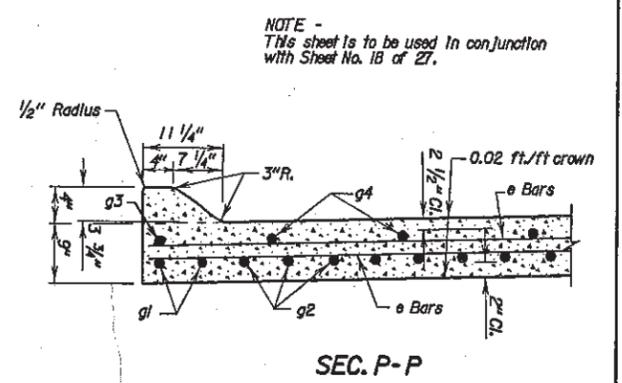
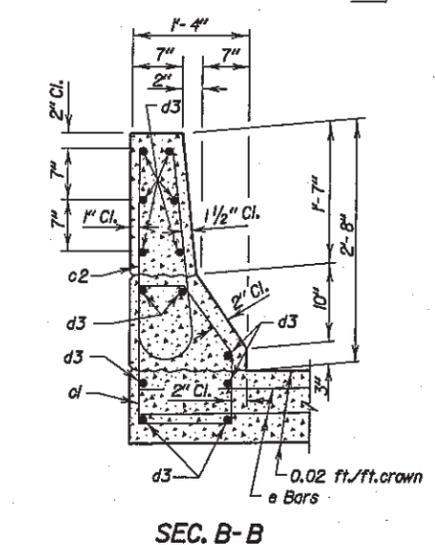
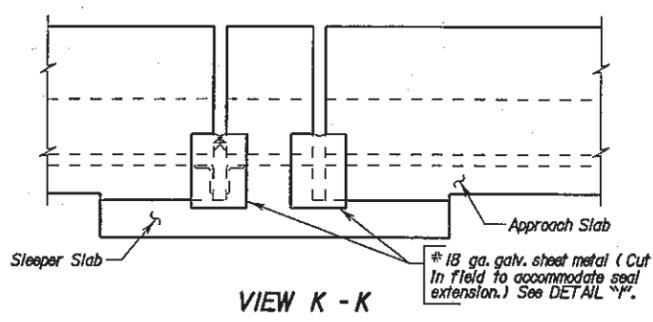
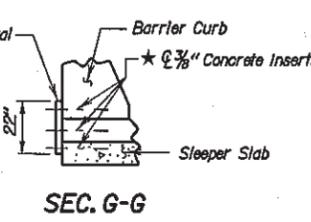
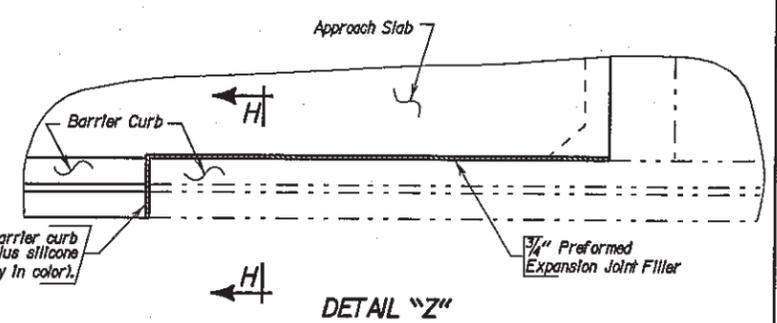
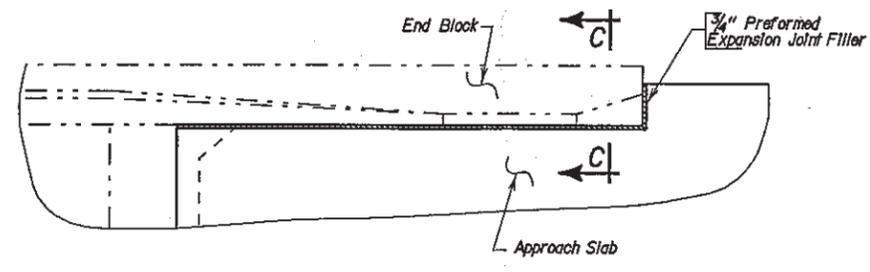
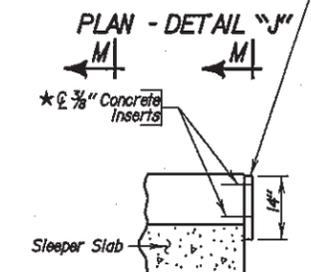
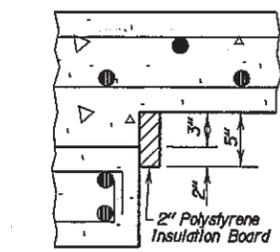
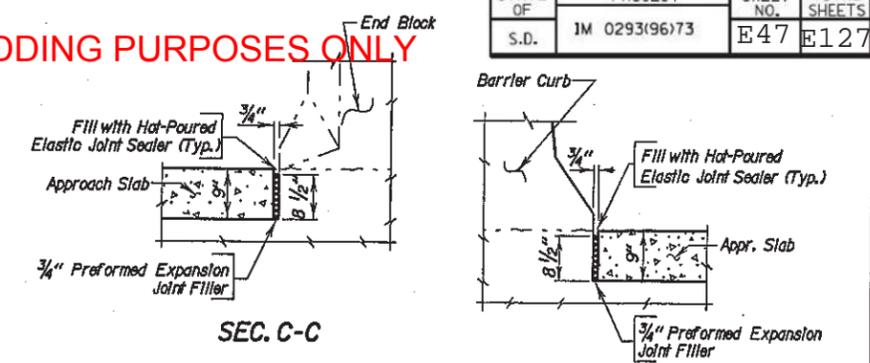
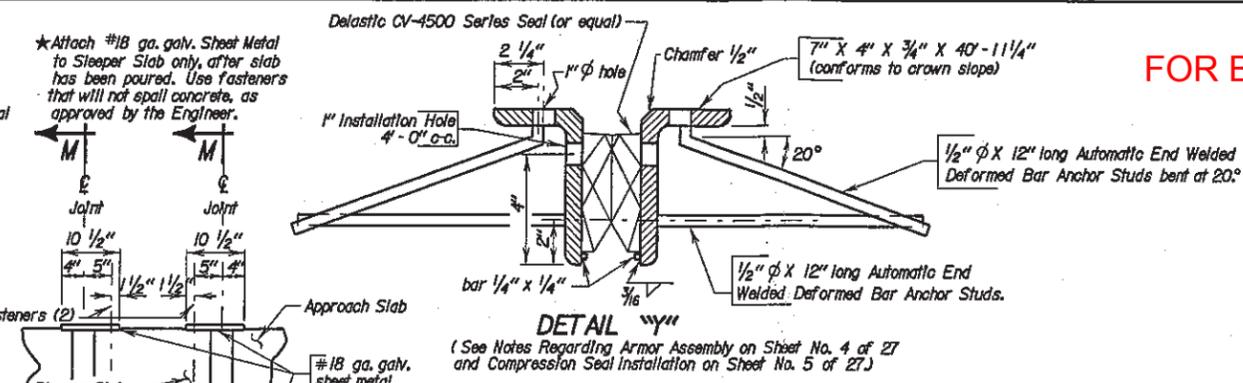
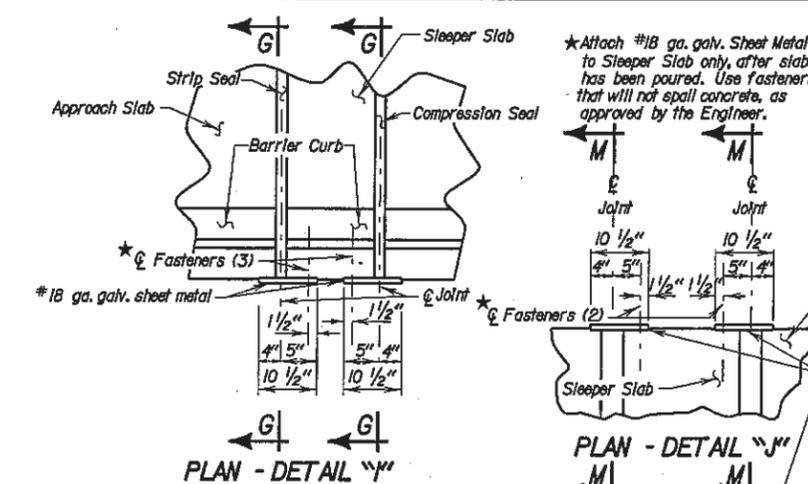
DETAILS OF APPROACH SLAB ADJ. TO BRIDGE
FOR
(NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-065-030 HS25-44 (& ALT.)

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY SJ/DC LINC948	DRAWN BY SJ 1948JAIB	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E47	E127

FOR BIDDING PURPOSES ONLY

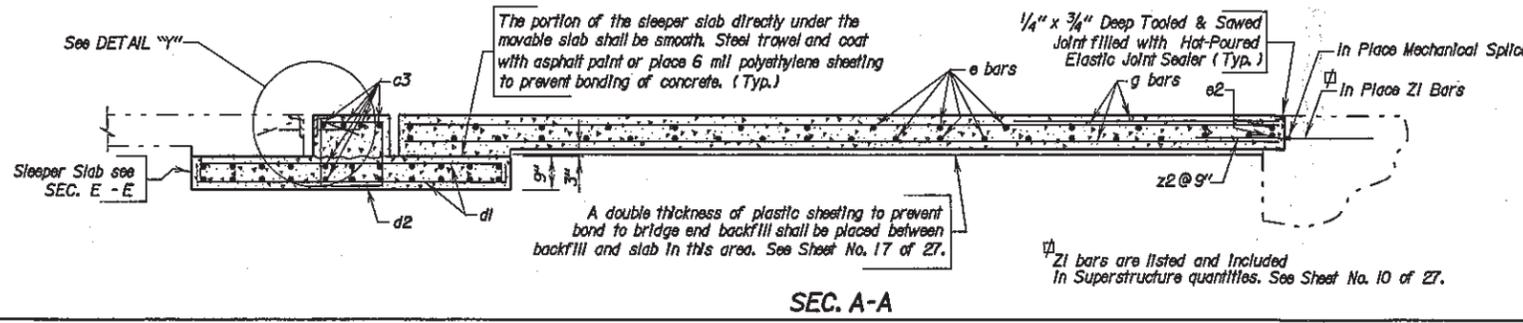
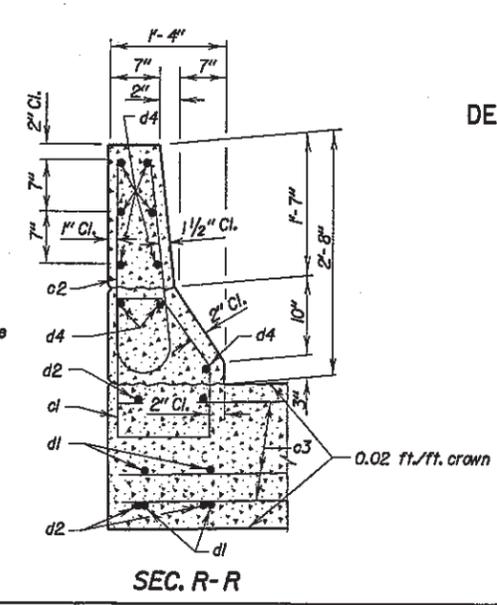
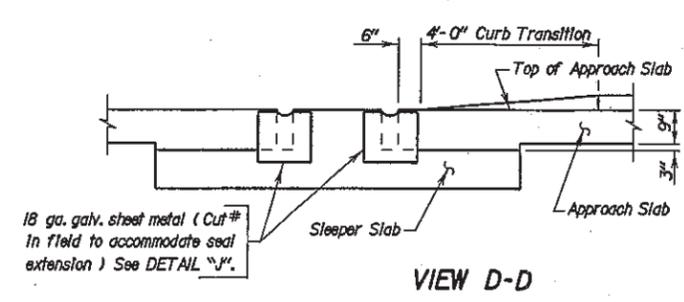
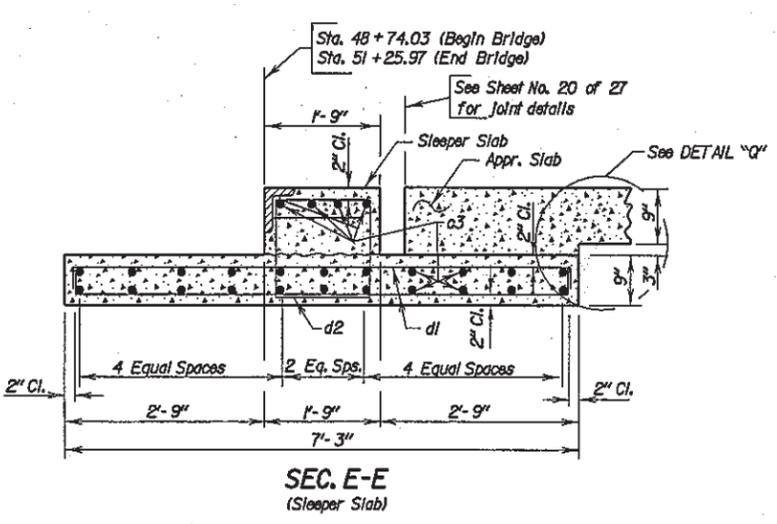


ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJ. TO BRIDGE (CONT.)
 FOR
 (NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
 40'-0" ROADWAY 0° SKEW
 OVER CO. RD. 106 SEC. 19/30-T100N-R50W
 STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
 STR. NO. 42-065-030 HS25-44 (& ALT.)

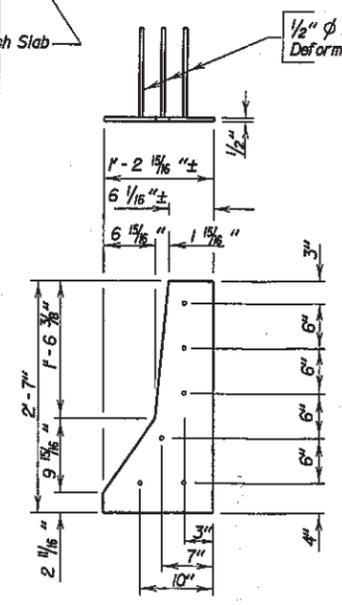
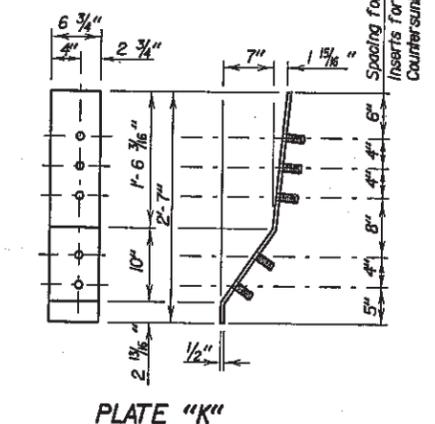
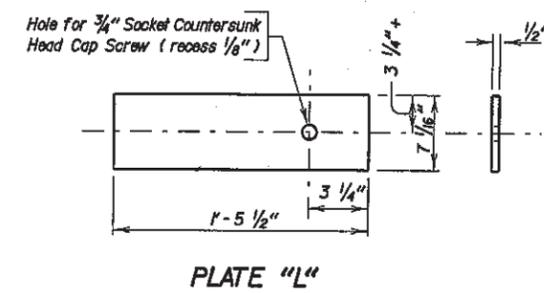
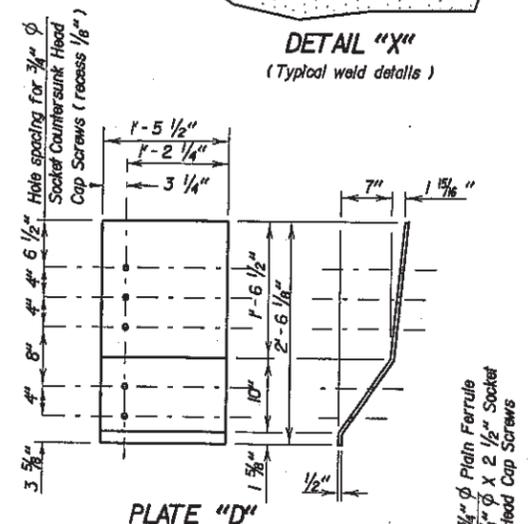
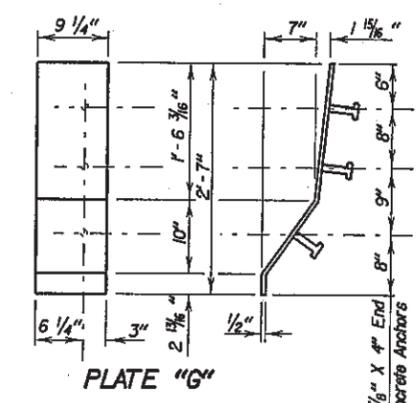
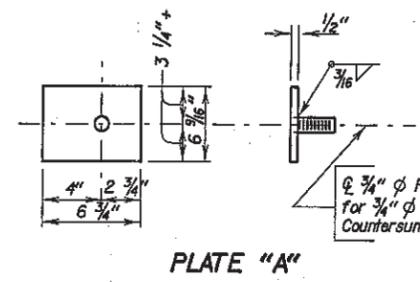
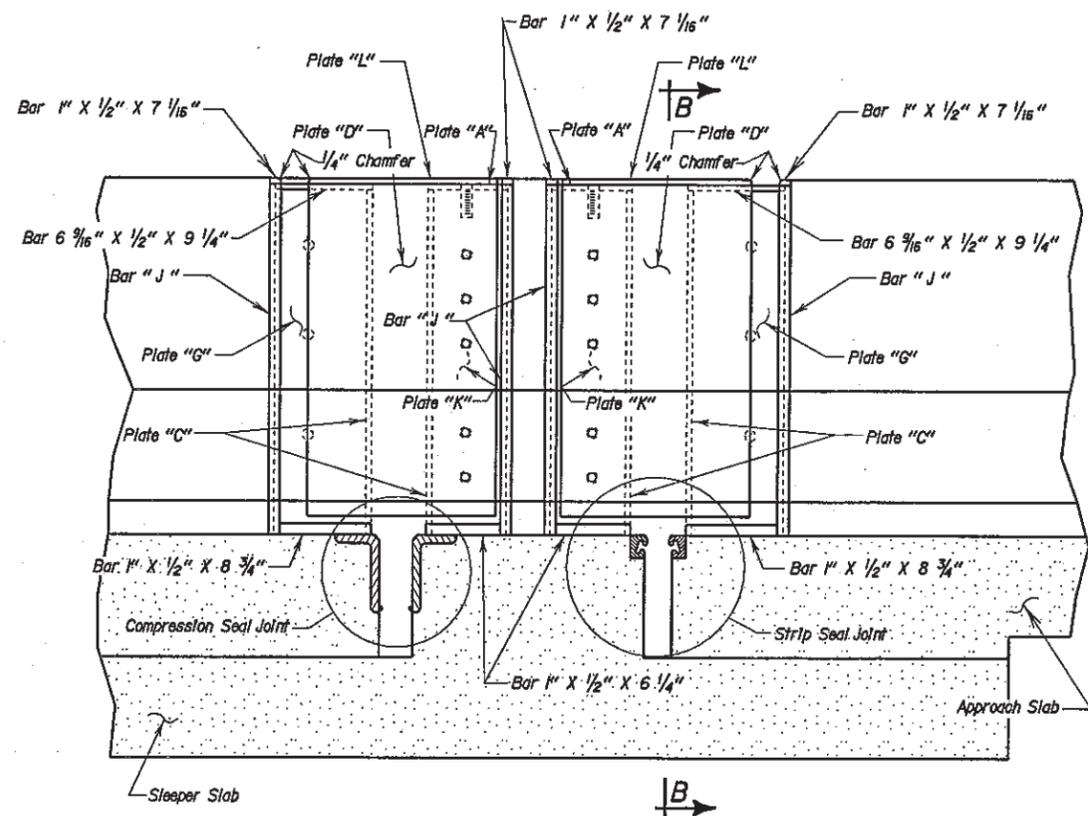
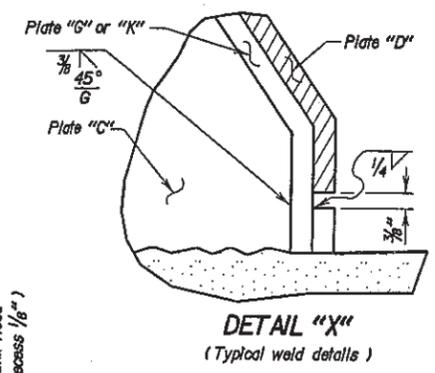
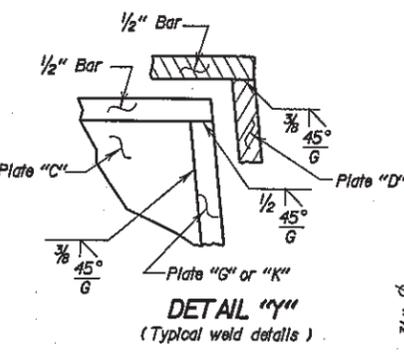
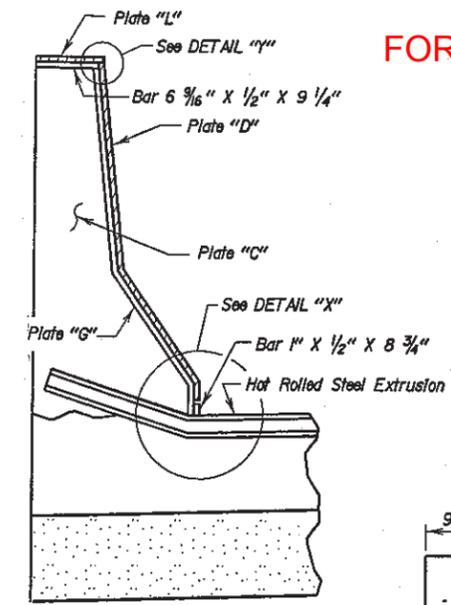
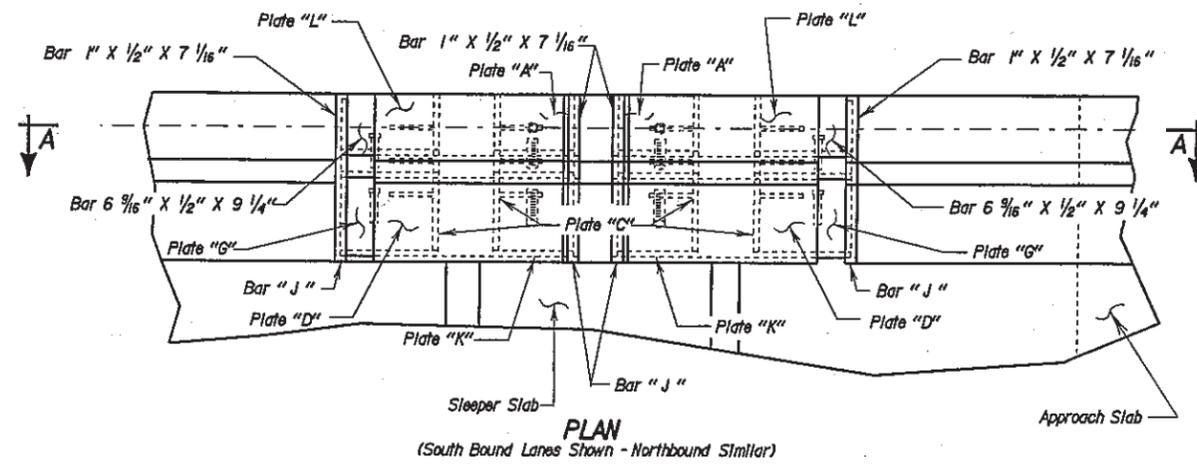
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2003

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/DC	SJ	SJ/DC	John C. Cole
LINC1948	1948JAI9		BRIDGE ENGINEER

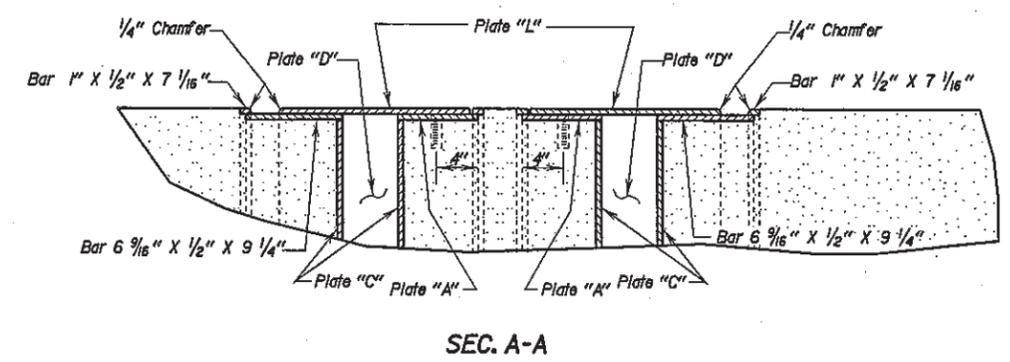
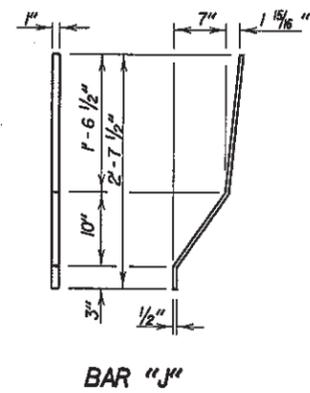


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293196/73	E48	E127

FOR BIDDING PURPOSES ONLY



ORIGINAL CONSTRUCTION PLANS



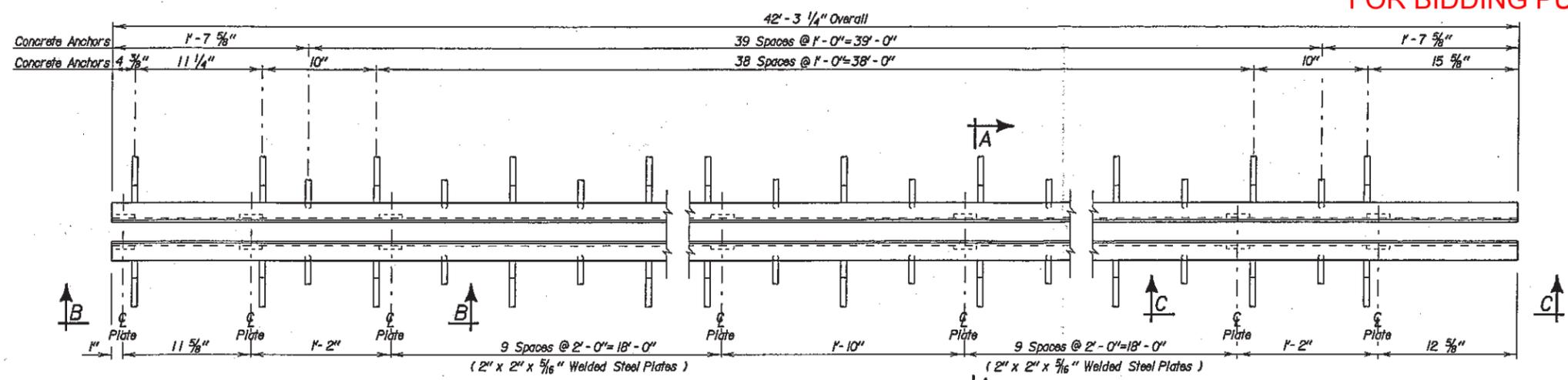
BARRIER EXPANSION DEVICE DETAILS FOR (NORTHBOUND LANES)

208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
 OVER CO. RD. 106 SEC. 19/30-T100N-R50W
 STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
 STR. NO. 42-065-030 HS25-44 (& ALT.)

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2003

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/DC	SJ	SJ/DC	John C. Cole
LINC948	1948JA21		BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

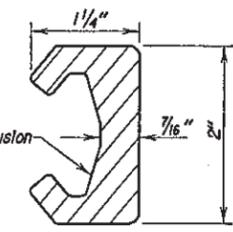


TEMP.	DIMENSION "X"
30°	2 3/8"
40°	2 5/16"
50°	2 3/16"
60°	2 1/8"
70°	2"
80°	1 7/8"
90°	1 5/8"

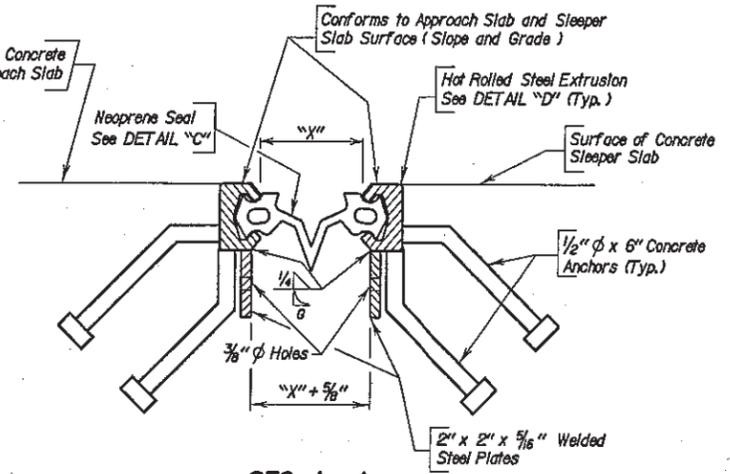
PLAN OF STRIP SEAL
(Neoprene Seal not shown)



DETAIL "C"
Neoprene Seal shall have a 4" movement capability.



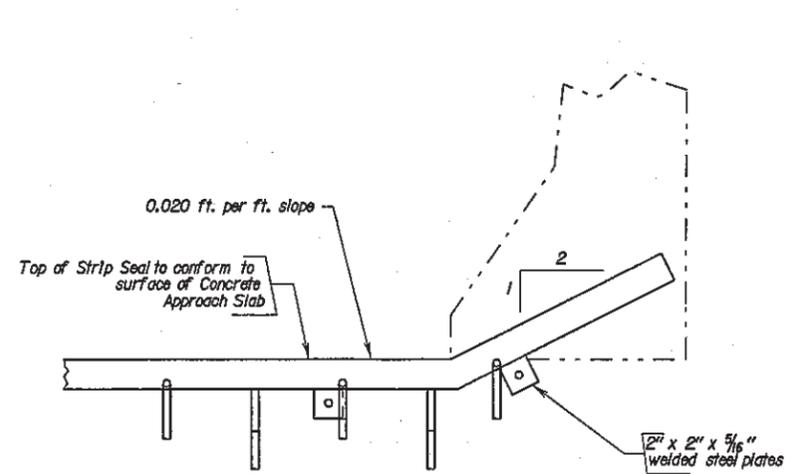
DETAIL "D"



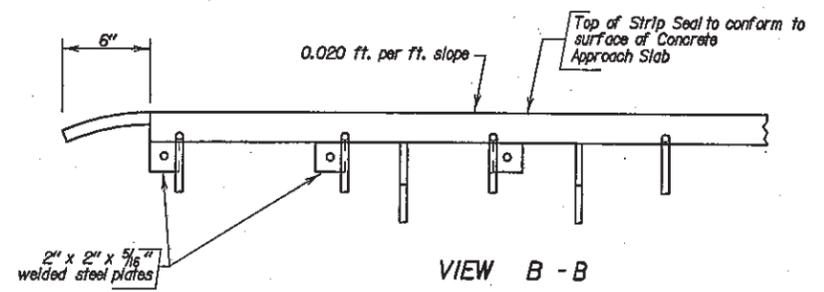
SEC. A - A

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 D262B 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 unit cost for Strip Seal Expansion Joint.
10. The neoprene seal shall be of sufficient length such that a minimum length of 6" shall extend beyond the left 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 C - C



VIEW B - B

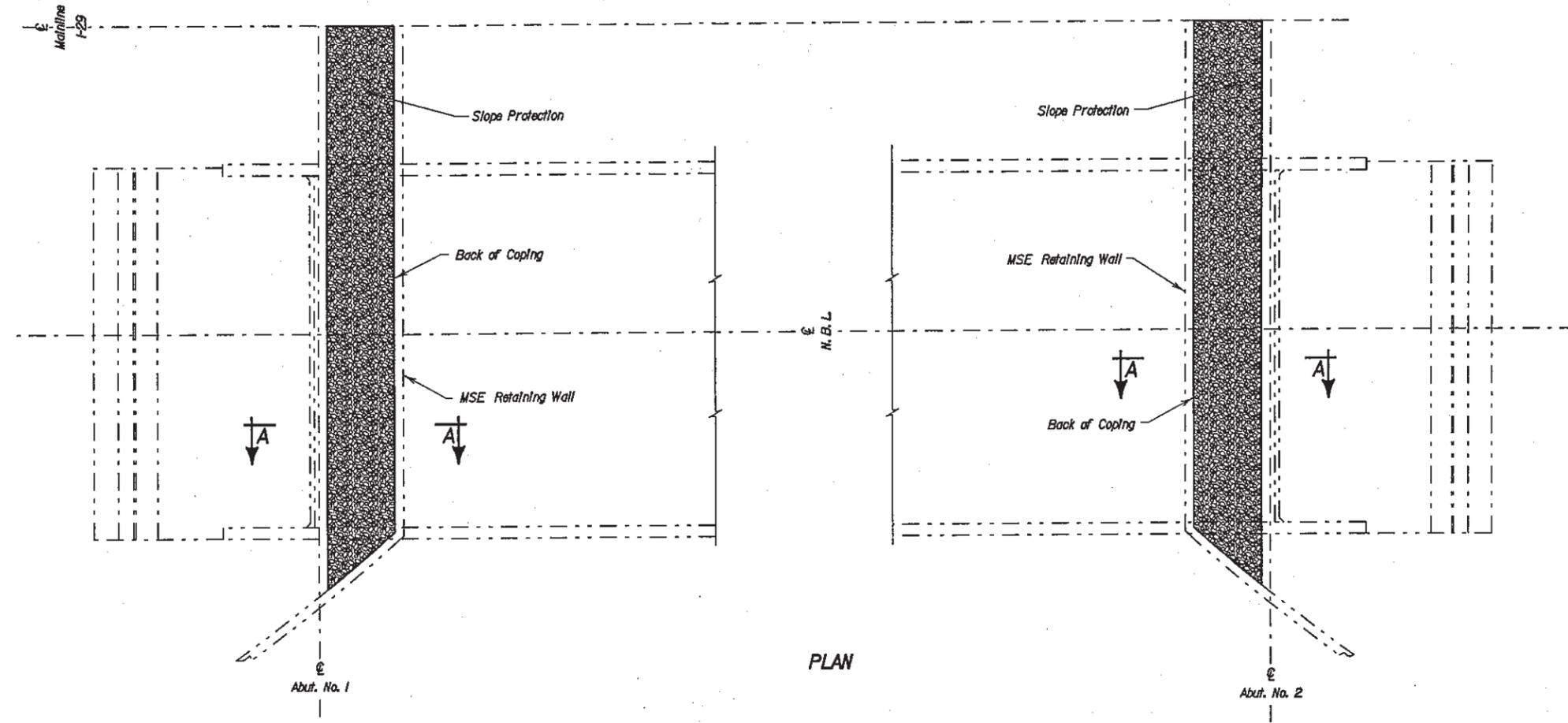
APPROACH SLAB JOINT DETAILS
FOR
(NORTHBOUND LANES)

208'-0" COMP. STEEL GIRDER BRIDGE
 40'-0" ROADWAY 0° SKEW
 OVER CO. RD. 106 SEC. 19/30-T100N-R50W
 STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
 STR. NO. 42-065-030 HS25-44 (& ALT.)

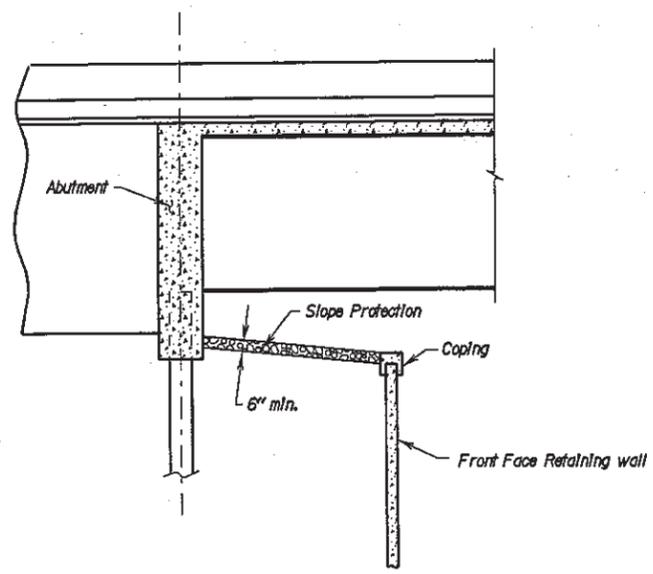
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2003

ESTIMATED QUANTITIES		
For Two Approach Slabs		
ITEM	UNIT	QUANTITY
Strip Seal Expansion Joint	L.F.	84.5

FOR BIDDING PURPOSES ONLY



PLAN



SEC. A - A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yds.	105

ORIGINAL CONSTRUCTION PLANS

SLOPE PROTECTION DETAILS
FOR
(NORTHBOUND LANES)
208'-0" COMP. STEEL GIRDER BRIDGE
40'-0" ROADWAY 0° SKEW
OVER CO. RD. 106 SEC. 19/30-T100N-R50W
STA. 48+96.00 TO 51+04.00 IM 29-2(52)72
STR. NO. 42-065-030 HS25-44
(& ALT.)

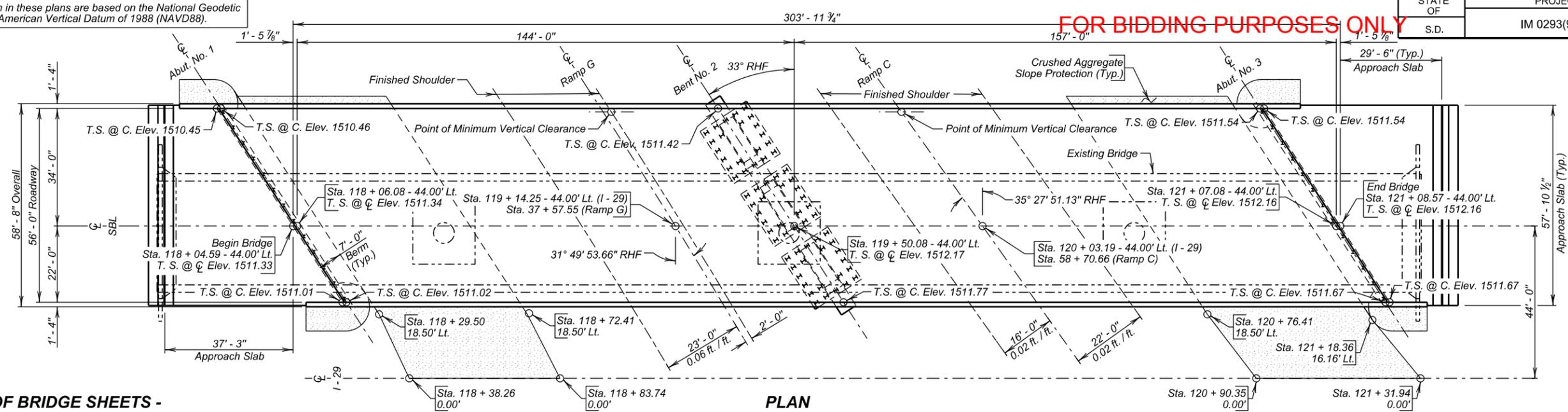
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2003

DESIGNED BY SJ/DC LINC948	DRAWN BY SJ 1948JA22	CHECKED BY SJ/DC	APPROVED <i>John C. Cole</i> BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E51	E127

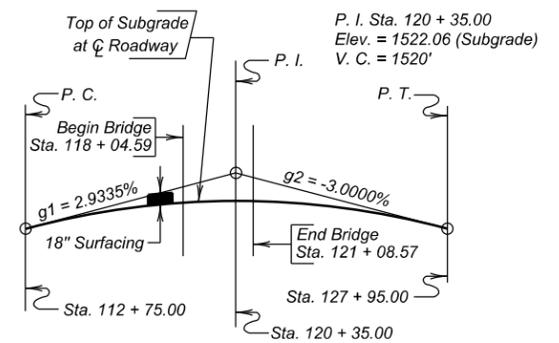
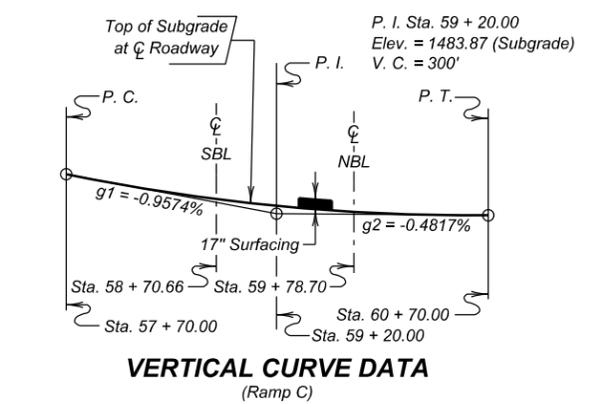
FOR BIDDING PURPOSES ONLY



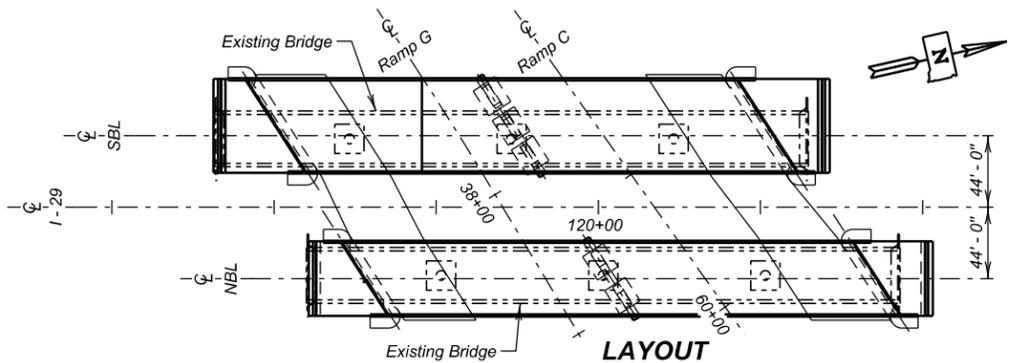
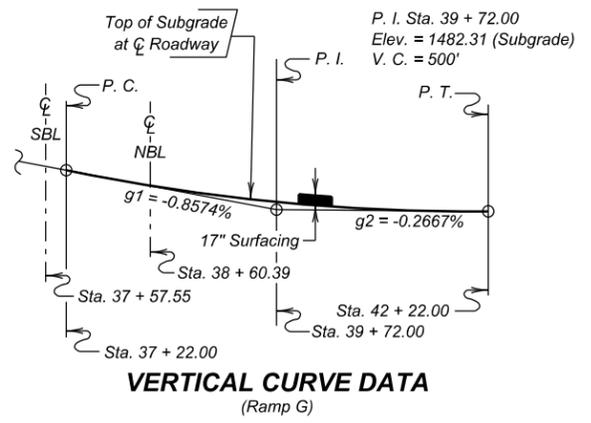
PLAN

**-X271-
INDEX OF BRIDGE SHEETS -**

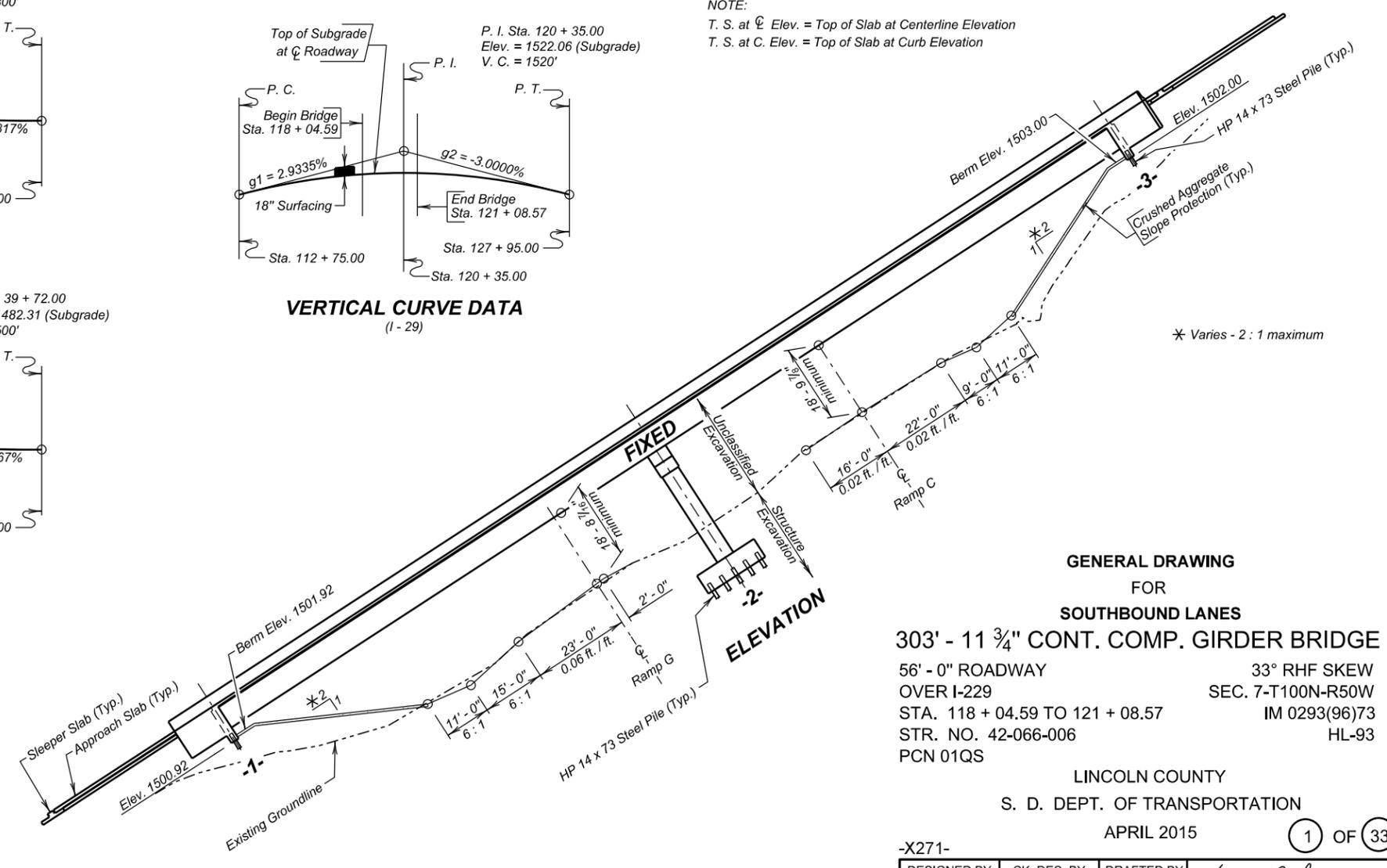
- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Notes (Continued)
- Sheet No. 6 - Subsurface Investigation and Piling Layout
- Sheet No. 7 - Piling Layout Details
- Sheet No. 8 - Abutment No. 1 Details (A)
- Sheet No. 9 - Abutment No. 1 Details (B)
- Sheet No. 10 - Abutment No. 3 Details (A)
- Sheet No. 11 - Abutment No. 3 Details (B)
- Sheet No. 12 - Bent Details (A)
- Sheet No. 13 - Bent Details (B)
- Sheet No. 14 - Superstructure Details (A)
- Sheet No. 15 - Superstructure Details (B)
- Sheet No. 16 - Superstructure Details (C)
- Sheet No. 17 - End Block and Barrier Curb Details
- Sheet No. 18 - Girder Layout Details
- Sheet No. 19 - Diaphragm Details
- Sheet No. 20 - Framing Diagram, Camber, & Erection Data
- Sheet No. 21 - Slab Form Elevations
- Sheet No. 22 - Details of Bolted Field Splices & Bearings
- Sheet No. 23 - Slope Protection Details
- Sheet No. 24 - Details of Bridge End Backfill (A)
- Sheet No. 25 - Details of Bridge End Backfill (B)
- Sheet No. 26 - Details of Approach Slab Adjacent to Bridge (A)
- Sheet No. 27 - Details of Approach Slab Adjacent to Bridge (B)
- Sheet No. 28 - Approach Slab Joint Details
- Sheet No. 29 - As - Built Elevation Survey (A)
- Sheet No. 30 - As - Built Elevation Survey (B)
- Sheet No. 31 - Details of Standard Plate No.'s 460.02 & 460.05
- Sheet No. 32 - Details of Standard Plate No.'s 510.40 & 629.30
- Sheet No. 33 - Details of Standard Plate No. 630.92



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



LAYOUT



**GENERAL DRAWING
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006
PCN 01QS**

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2015

-X271-

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

DESIGNED BY DM LINC01QS	CK. DES. BY PW 01QSGB01	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	1884	SqYd	See Special Provision
Incidental Work, Structure	Lump Sum	LS	
Base Course	3222	Ton	
Structural Steel	Lump Sum	LS	See Special Provision
Membrane Sealant Expansion Joint	115.8	Ft	
Granular Bridge End Backfill	113.0	Cu Yd	
Class A45 Concrete, Bridge Deck	510.4	Cu Yd	
Class A45 Concrete, Bridge	515.4	Cu Yd	
Concrete Approach Slab for Bridge	432.2	SqYd	
Concrete Approach Sleeper Slab for Bridge	93.2	SqYd	
Reinforcing Steel	66633	Lb	
No. 7 Rebar Splice	150	Ea.	
No. 14 Rebar Splice	66	Ea.	
HP 14x73 Steel Test Pile, Furnish and Drive	330	Ft	
HP 14x73 Steel Bearing Pile, Furnish and Drive	8285	Ft	
Bridge Berm Slope Protection, Crushed Aggregate	1028.6	Sq Yd	
Geogrid Reinforcement	3559	Sq Yd	
Bridge End Embankment	1662	Cu Yd	
Bridge Painting	Lump Sum	LS	
4" Underdrain Pipe	186	Ft	
Porous Backfill	32.8	Ton	
Structure Excavation, Bridge	212	Cu Yd	
Preboring Pile	260	Ft	

ALTERNATE A

Stainless Reinforcing Steel	137967	Lb	See Special Provision
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ALTERNATE B

Zinc and Epoxy Dual Coated Reinforcing Steel	137967	Lb	ASTM 1055
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SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2014 Edition with 2015 interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

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

DESIGN MATERIAL STRENGTHS

Concrete	$f_c = 4,500$ psi
Reinforcing Steel	$f_y = 60,000$ psi
Piling (ASTM A572 Grade 50)	$f_y = 50,000$ psi
Structural Steel (ASTM A709 Gr. 36T2)	$f_y = 36,000$ psi
Structural Steel (ASTM A709 Gr. 50T2)	$f_y = 50,000$ psi

GENERAL CONSTRUCTION

- All mild reinforcing steel shall conform to ASTM A615, Grade 60. If Alternate A is chosen, all stainless reinforcing steel shall conform to ASTM 955, Grade 60. If Alternate B is chosen, all zinc and epoxy dual coated reinforcing steel shall conform to ASTM 1055, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.
- Use 2" clear cover on all reinforcing steel except as shown.
- Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02.
- Barrier Curbs and End blocks shall be built normal to the grade.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of resteel.
- The elevation of the bridge deck is 1' - 6" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 117+72.72 - 42.0' Lt. to centerline Sta. 121+36.15 - 42.0' Lt. is a 365.2' 4 span concrete box girder bridge with a 30'-0" clear roadway. The superstructure consists of reinforced concrete box girders with concrete jersey barrier continuous across the bridge. The deck has been overlaid with 3 1/2 inches of asphalt. The substructure consists of single column reinforced concrete piers and reinforced concrete vertical abutments, all of which are supported on timber piling.
- Break down and remove the existing bridge and approach/sleeper slabs to 1 foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Specifications. All portions of the existing bridge shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the WASTE DISPOSAL SITE note found in Section A.
- The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid it shall be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

DESIGN MIX OF CONCRETE

- All structural concrete shall be Class A45 unless otherwise indicated.
- Type II cement conforming to Section 750 is required except, Type III cement is required in the abutments. Type III cement shall contain a maximum 8% Tricalcium Aluminate (C_3A) and a maximum 0.6% Alkalies ($Na_2O + 0.658K_2O$).

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

ABUTMENTS

- Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
- The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling shall develop a field verified nominal bearing resistance of 335 tons per pile.
- One test pile shall be driven at each abutment and will become part of the pile group.
- The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40.
- Piles shall not be driven out of position by more than two inches in the direction parallel to the girder centerline. A pile-driving template shall be used to insure this accuracy.
- Each finished abutment shall include a Bridge Survey Marker. See Standard Plate No. 460.05
- Abutment backwalls and wings shall not be cast until after the deck has been poured.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-066-006

APRIL 2015

2 OF 33

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB02	DRAFTED BY BT	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E53	E127

CONNECTION OF GIRDER TO PILE

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

POURING OF ABUTMENT CONCRETE

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

BENTS

1. All Swedge Bolts shall be 1 1/2" diameter x 2' - 6" F1554, Grade 55 bolts with heavy hex nut and cut washer (listed with structural steel in Superstructure quantities). A minimum of 20% of the embedded bolt surface shall be covered with deformations whose radial dimensions are 15% to 20% of the bolt diameter.
2. The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling shall develop a field verified nominal bearing resistance of 335 tons per pile.
3. One test pile shall be driven at each bent and will become part of the pile group.
4. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Plate No. 510.40

SUPERSTRUCTURE

1. Structural Steel shall conform to ASTM A709 Gr. 50T2. Angles in the diaphragms shall conform to ASTM A588 Grade 50. Shear connectors shall conform to Section 7.3 Type B. of the AASHTO/AWS D1.5 Bridge Welding Code.
2. Bolts, nuts, and washers shall conform to ASTM A325 Type 1.
3. Shear Connectors shall be field welded to the girders in accordance with the Shear Connector Field Installation Special Provision.
4. All butt welded girder splices shall be ultrasonically inspected. See notes regarding Welding and Weld inspection.
5. Cost of welding and weld inspection shall be included in the lump sum bid for Structural Steel.
6. Structural Steel shall be painted in accordance with Section 411 of the Specifications. The top coat shall be an approved brown (Federal Standard 595B Color 30045).
7. See diaphragm details for notes concerning diaphragms.
8. Structural Steel used in all girder web plates, girder flanges, and girder splice plates shall comply with the Charpy-V-Notch toughness requirements set forth in Section 970 of the Specifications. Material greater than 1 1/2 inches in thickness shall require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension and stress reversal areas of girder flanges.
9. The deck-finishing machine shall be adjusted and operated in such a manner that the roller screed or screeds are parallel with the centerline of the bridge and the finish machine is perpendicular to the centerline of the bridge. Concrete placement in front of the finish machine shall be kept parallel to the skew of the bridge.
10. An admixture is required to ensure the concrete remains plastic for 4 hours after placement. The concrete bridge deck shall be placed and finished at a minimum rate of 40 ft. of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer shall order a header installed and operations stopped. If a header is required sometime during the pour operation, its location shall be at or as near as possible to the three quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 40 ft. per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.
11. Dead Load camber shall be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.
12. Snap ties, if used in the barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.

13. The Contractor shall submit a detailed girder erection plan 30 days prior to girder erection. The plan shall include complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details and temporary bracing details. The girder erection plan shall be stamped by a Professional Engineer registered in South Dakota.
14. All single girder segments shall be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully connected. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected. At no time will a single girder segment be allowed over traffic.
15. If Alternative A is chosen for reinforcing steel, see Special Provision for Stainless Reinforcing Steel. If Alternative B is chosen, reinforcing steel shall conform to ASTM 1055. Mixing of reinforcing types will not be allowed.

BEARINGS

1. All steel for the bearings shall conform to ASTM A709, Gr. 50.
2. The pre-formed fabric pads shall be composed of multiple layers of 8 ounce cotton duck impregnated and bonded with high quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness, after compression and vulcanizing. The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 pounds per square inch without detrimental reduction in thickness or extrusion.
3. The bearing plates shall be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Specifications.
4. Tolerances and surface finish for Rocker Plates shall be as follows:

Convex Radius Dimension	+0.000 mm - 0.010"
Surface Finish, Machined Surfaces	125 RMS or Better
Surface Finish, Other Surfaces	230 RMS or Better
5. Payment for furnishing and installing the bearings, including the pre-formed fabric pads under the bearing plates and painting, shall be included in the contract lump sum price for Structural Steel.

NOTES (CONTINUED)

FOR
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-066-006

APRIL 2015

3 OF 33

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB03	DRAFTED BY BT	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E54	E127

FIELD BOLTED GIRDER SPLICES

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

WELDING AND WELD INSPECTION

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

FALSEWORK

The Contractor shall be required to include with the Falsework Plans, details for the construction of an adequate "Walk-Way" including railing.

FALL PROTECTION

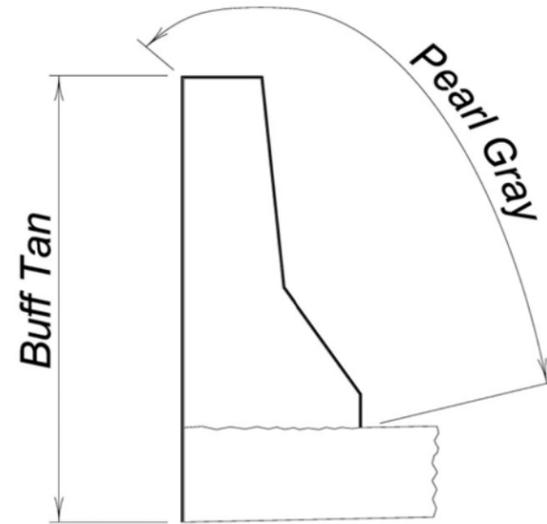
1. The Contractor shall install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system shall be installed. The Contractor shall have one Personal Fall Arrest System (PFAS) available for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

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish shall be applied to the following areas:
 - a) ***Abutments:** all exposed surfaces to an elevation 1-foot below finished ground line.
 - b) **Barrier Rail:** all exposed surfaces (**front, **top and *back).
 - c) ***Slab:** edge of slab.
 - d) ***Bents:** all exposed surfaces.

** Color shall be "Pearl Gray" Federal Standard No. 26622
 * Color shall be "Buff Tan"

The "Buff Tan" color shall match the tan color on the Solberg-Tallgrass structure over I-90.



2. The Class B commercial texture finish shall be applied in accordance with Section 460.3 L.1.c of the Specifications.
3. Where the Class B commercial texture finish is to be applied, concrete curing shall be accomplished with cotton or burlap mats and polyethylene sheeting. Curing shall continue for not less than seven days after placing concrete before the commercial texture finish is applied. The commercial texture finish shall be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.

SHOP PLANS

Shop plans shall be required as specified by the Specifications.

BOLT TESTING

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

PILE DRIVING

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

Delmag D-30-32 SPI D-30 APE D36-26

2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity.

AS - BUILT ELEVATION SURVEY

The Contractor shall be responsible for recording the As-built deck elevations and bridge survey marker elevations at the locations shown in the Table of As-Built Elevations shown in the plans. All costs associated with obtaining the elevations including all equipment, labor, and any incidentals required shall be incidental to the contract lump sum price for Bridge Elevation Survey.

SDDOT's LRFD PILE DRIVING EQUATIONS

To determine the field verified nominal pile bearing resistance of driven piles the SDDOT uses the formulas below for timber, concrete, steel H-piling, and shell type piles.

For single action steam or air hammers and open cylinder top diesel hammers:

$$Q \text{ (drive)} = \frac{10.5WH}{S + 0.1} \times \frac{W}{W + M}$$

Where:

- Q = the field verified nominal pile bearing resistance in tons.
- W = the weight of the ram of an energy hammer in tons.
- H = the height of free fall of the hammer or ram in feet.
- M = the weight in tons of the driven mass and shall include the weight of the pile, the weight of the driving cap and the weight of the anvil, if used.
- E = the energy per blow in foot-tons.
- S = the average penetration in inches of the pile per blow for the last 10 blows for energy hammers.

NOTES (CONTINUED)

FOR
 303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-066-006

APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB04	DRAFTED BY BT	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E55	E127

APPROACH SLABS

1. Sleeper slab riser shall be cast with the approach slab or cast after the approach slab is placed. Care shall be taken to ensure the correct grade is maintained across the joint.
2. The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine shall be kept parallel to the screed.
3. The concrete in the approach slab shall be tined normal to centerline roadway.
4. Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all excavated material and surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.
5. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling and placing all materials including concrete, asphalt paint, or 4 mil polyethylene sheeting, elastic joint sealer and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment, and any incidentals necessary to complete this item of work.

CRUSHED AGGREGATE SLOPE PROTECTION

1. This work shall consist of paving the bridge berm slopes with crushed aggregate slope protection for control and prevention of berm erosion.
2. The aggregate used in the crushed aggregate slope protection shall conform to the requirements of Section 820 of the Specifications for coarse aggregate for Class A Concrete (size no. 1).
3. The asphalt material used in the crushed aggregate slope protection shall be either Asphalt Type MC-70 or MC-250, or emulsified Asphalt Type RS-1, RS-2, CRS-1 or CRS-2 meeting the requirements of Section 890 of the Specifications and AASHTO M81, AASHTO M140, AASHTO M 82, and AASHTO M208 respectively.
4. The surface upon which the slope protection is to be placed shall be smooth, uniform, and free from foreign material. The top surface of the slope protection shall conform to the dimensions, elevations, and slopes shown in the plans.
5. The crushed aggregate shall be shaped and compacted to provide a stable, smooth, and uniform surface.
6. The asphalt material shall be applied at a rate sufficient to assure penetration and binding of the aggregate in the upper 2 inches of the slope protection. (Estimated Rate = 1.3 gallons per square yard.) The surfaces of the adjacent structure shall be protected from spattering or discoloration from the asphalt material.

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

REINFORCED GRANULAR EMBANKMENT FOR BRIDGE END EMBANKMENT

1. The geogrid will be a biaxial grid of single layer construction. Vibratory welded, integrally formed, or woven and coated geogrids will be acceptable. Grids with laser welded grid junctions will not be allowed. The geogrid will be certified by the supplier to meet the following specification prior to installation:

Property	Test	MARV
Wide Width Strip Tensile Strength (Ultimate)	ASTM D 6637 Method B	850lb/ft MD and XD

2. Geogrid will be paid for at the contract unit price per sq. yd. for Geogrid Reinforcement. Payment quantities will be based on area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the geogrid only.
3. Granular Material will conform to the specification for Base Course in Section 882 of the Specifications. Granular Material will be paid for at the contract unit price per ton for Base Course. Payment will be full compensation for furnishing and placing this material.
4. The geogrid shall be placed on a level surface and overlapped a minimum of 2 feet.
5. The geogrid will be placed as taut as possible with minimal wrinkles. Placement will be done so that subsequent granular cover material does not shove, wrinkle or distort the in place geogrid. The overlaps will be shingled in a manner that assures granular material will not be forced under the geogrid during backfilling operations. The geogrid may be held in place with small piles of granular material or staples.
6. Base course will be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. No traffic will be allowed on the uncovered geogrid.
7. The base course and adjacent soil embankment shall be built simultaneously in horizontal layers. Base course shall be placed in 6 inch maximum lifts and compacted to 97 percent of maximum standard proctor dry density using a smooth face vibratory roller or vibratory plate compactor. Each layer of granular material shall be thoroughly watered prior to and during compaction.

8. Density tests within the berm limits shall consist of tests conducted both in the soil embankment and the base course according to the modified zone requirements below:

Zone	Depth (ft.)	Min. required tests
1	0-1	1
2	1-3	1
3	3-5	1
4	5 to Bottom	1 per 3 vertical feet

9. The zone requirement will be in force at both bridge berms.

NOTES (CONTINUED)

FOR
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-066-006

APRIL 2015

(5) OF (33)

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB05	DRAFTED BY BT	 BRIDGE ENGINEER
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Hole Number	H3	Hole Number	H3	Hole Number	H3	Hole Number	H3
Station	120+77	Station	120+77	Station	120+77	Station	120+77
Depth	25.2 ft	Depth	55.2 ft	Depth	104.2 ft	Depth	124.2 ft
Soil Color	BROWN	Soil Color	GRAY	Soil Color	BROWN	Soil Color	GRAY
Classification	SANDY CLAY	Classification	SANDY CLAY	Classification	SAND	Classification	SILTY SAND
Strength (Qu)	2,520 psf	Strength (Qu)	5,178 psf	Strength (Qu)	---- psf	Strength (Qu)	---- psf
Dry Density	107.0 pcf	Dry Density	108.0 pcf	Dry Density	---- pcf	Dry Density	110.2 pcf
Wet Density	128.7 pcf	Wet Density	129.5 pcf	Wet Density	---- pcf	Wet Density	129.3 pcf
Moisture	20.3 %	Moisture	19.9 %	Moisture	20.1 %	Moisture	17.3 %
Pass No. 10	97.5 %	Pass No. 10	97.5 %	Pass No. 10	100.0 %	Pass No. 10	99.1 %
Pass No. 40	89.6 %	Pass No. 40	89.8 %	Pass No. 40	82.6 %	Pass No. 40	83.5 %
Pass No. 200	68.4 %	Pass No. 200	69.5 %	Pass No. 200	5.6 %	Pass No. 200	26.5 %
Sand Content	29.1 %	Sand Content	28.0 %	Sand Content	94.4 %	Sand Content	72.6 %
Silt Content	27.8 %	Silt Content	30.9 %	Silt Content	4.0 %	Silt Content	17.0 %
Clay Content	40.5 %	Clay Content	38.6 %	Clay Content	1.6 %	Clay Content	9.5 %

MEASURED SKIN FRICTION FOR BIDDING PURPOSES ONLY

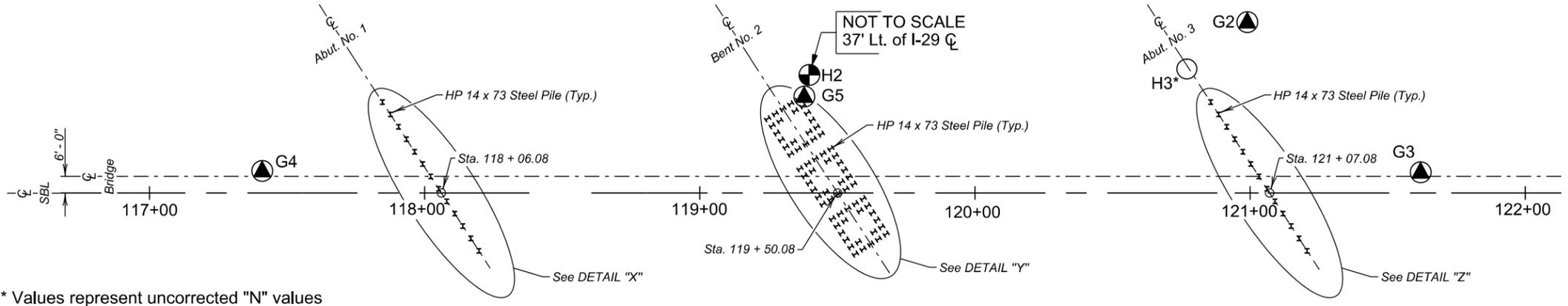
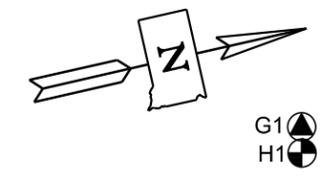
ELEV.	PSF	as of	SEPTEMBER 2013	
G1	1427.7	795	H1	1479.3
G2	1421.3	688	H2	1422.4
G3	1446.8	614	H3	1477.1
G4	1446.6	710	G1	(DRY) 1449.5
G5	1427.4	582	G2	(DRY) 1446.3
			G3	(DRY) 1464.8
			G4	(DRY) 1481.8
			G5	(DRY) 1482.4

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

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.

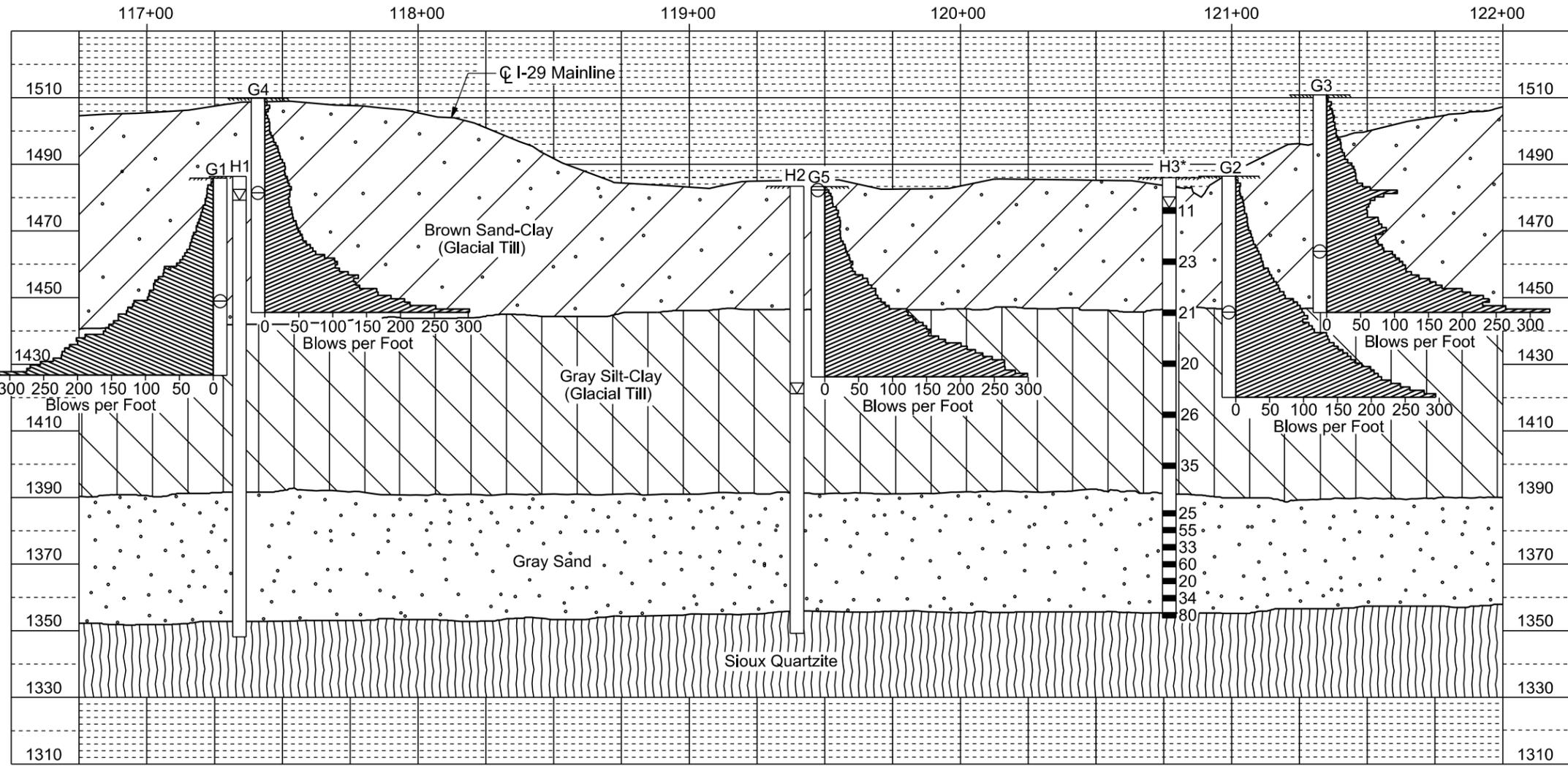
LEGEND

- Penetration Test
- ⊕ Auger Test
- ⊙ Drive Test
- ▽ Water
- ⊖ Caved
- Sample Zone



* Values represent uncorrected "N" values from Penetration Test.

Blows Per Foot 48 Sample Zone



H1, G3, G5 moved in profile view for clarity.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.

Auger holes are drilled with a 4 1/2 inch diameter continuous flight auger. Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

NOTE: This sheet is to be used in conjunction with the PILING LAYOUT DETAILS sheet.

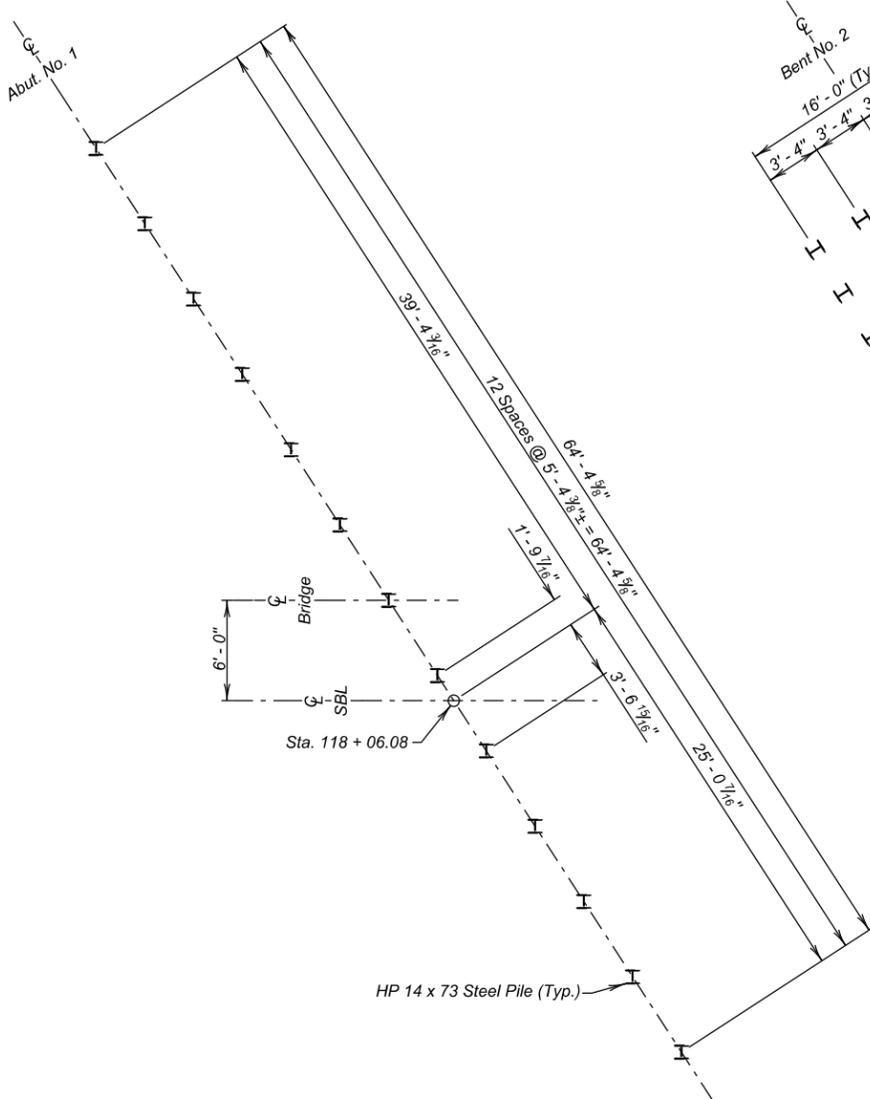
SUBSURFACE INVESTIGATION AND PILING LAYOUT
 FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

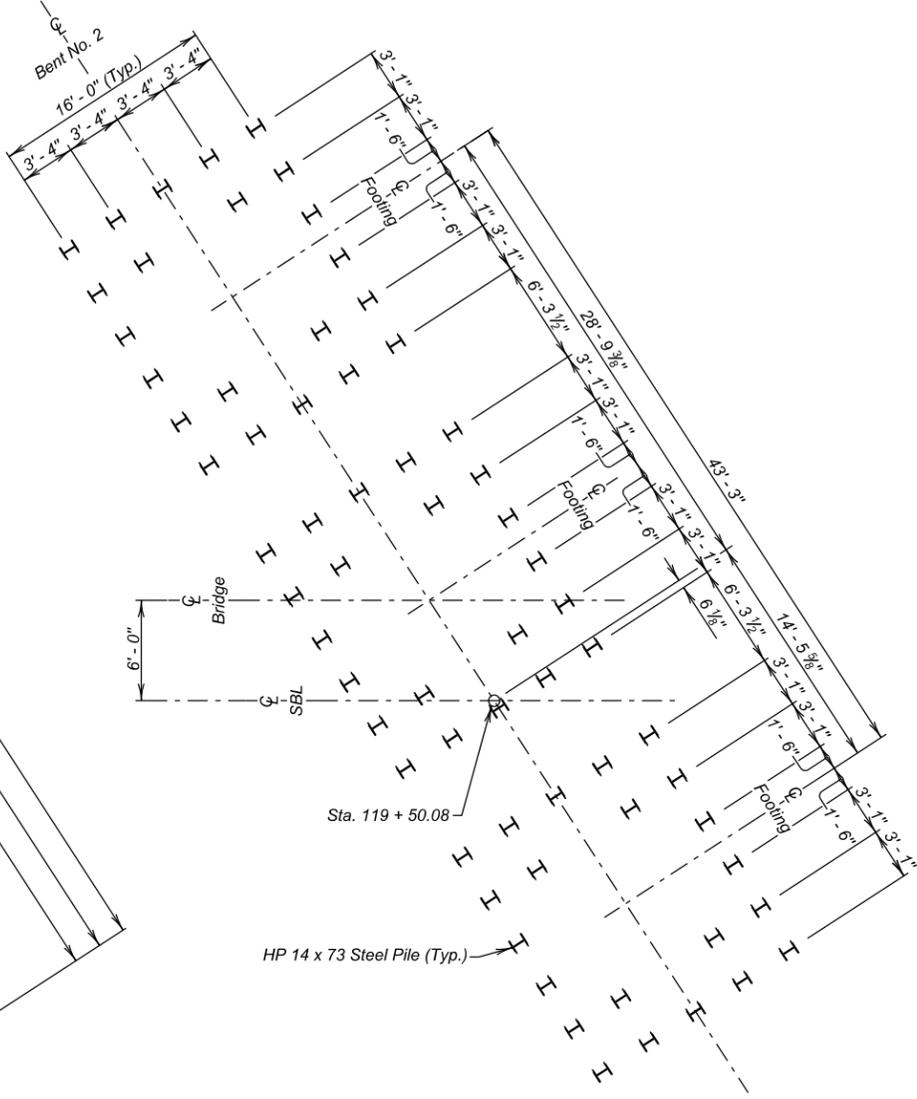
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

FOR BIDDING PURPOSES ONLY

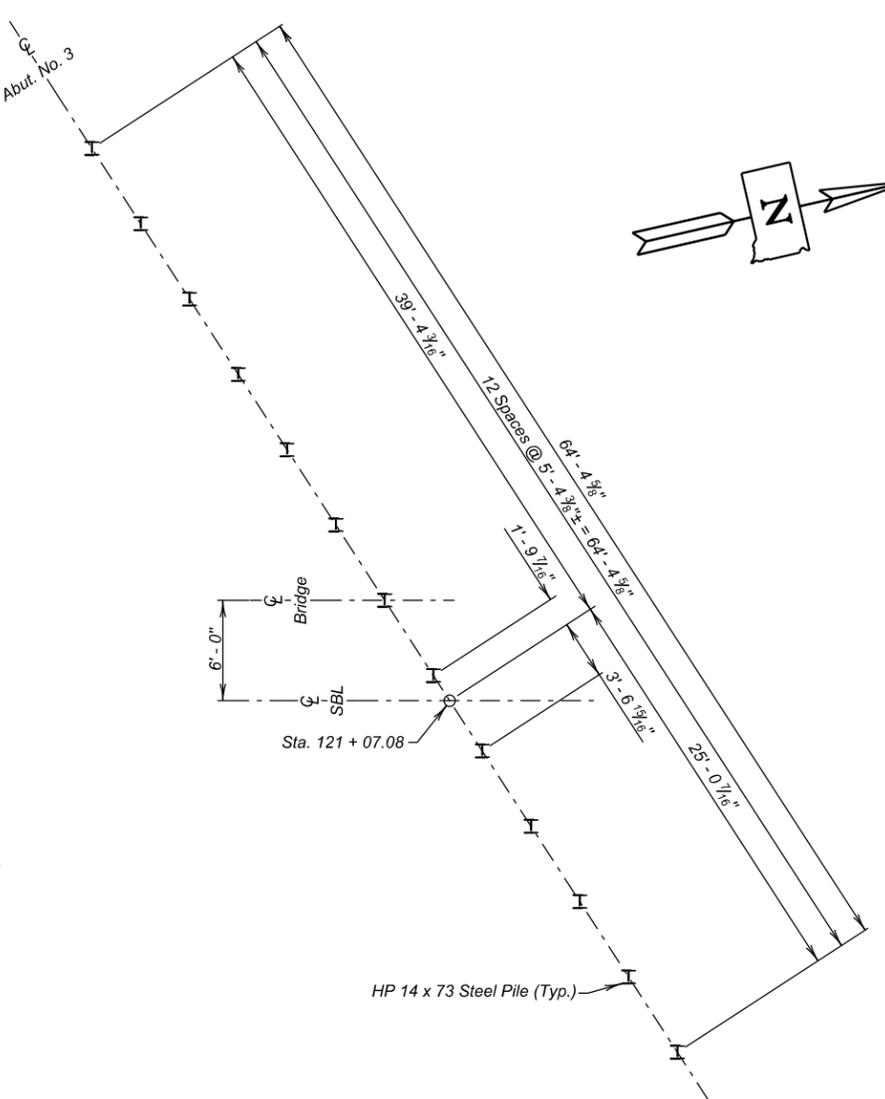
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E57	E127



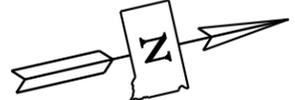
DETAIL "X"



DETAIL "Y"



DETAIL "Z"



NOTE:
This sheet is to be used in conjunction with the
SUBSURFACE INVESTIGATION AND PILING LAYOUT sheet.

PILING LAYOUT DETAILS
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

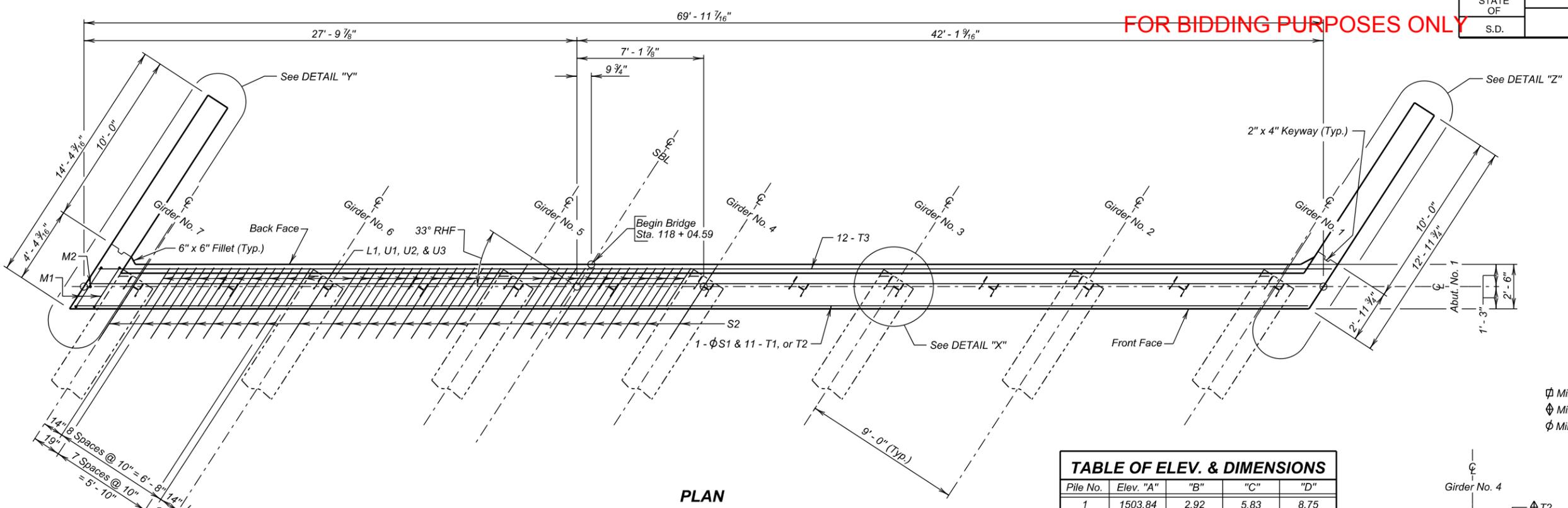
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2015

7 OF 33

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB07	DRAFTED BY BT	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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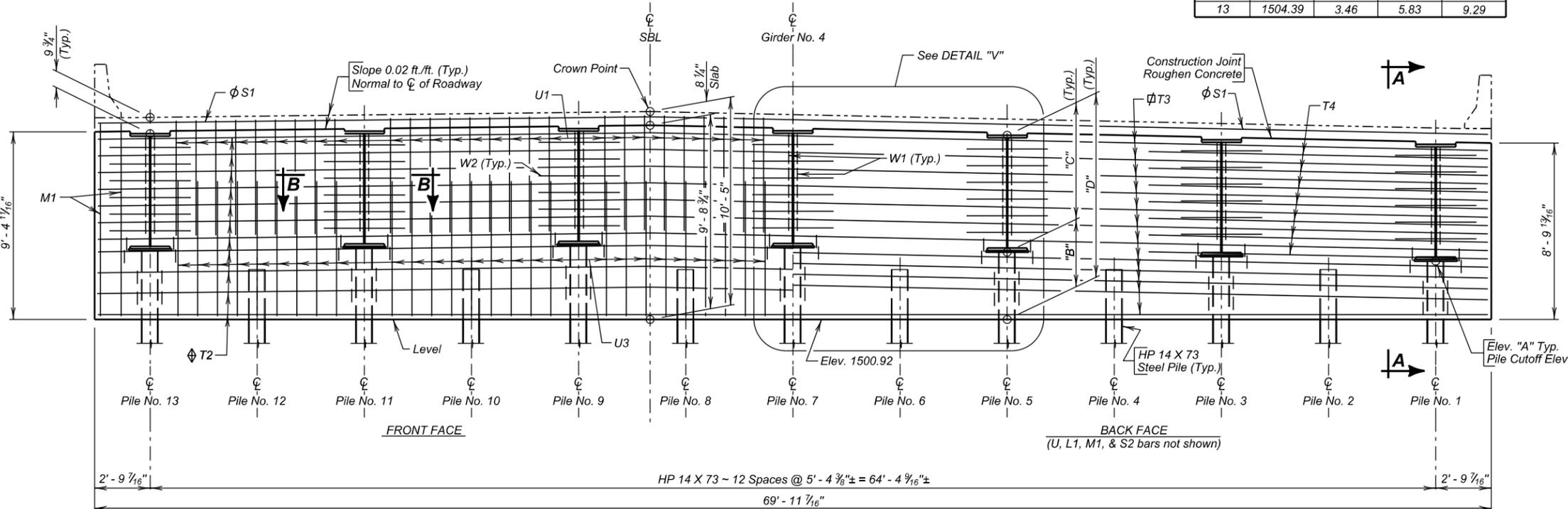
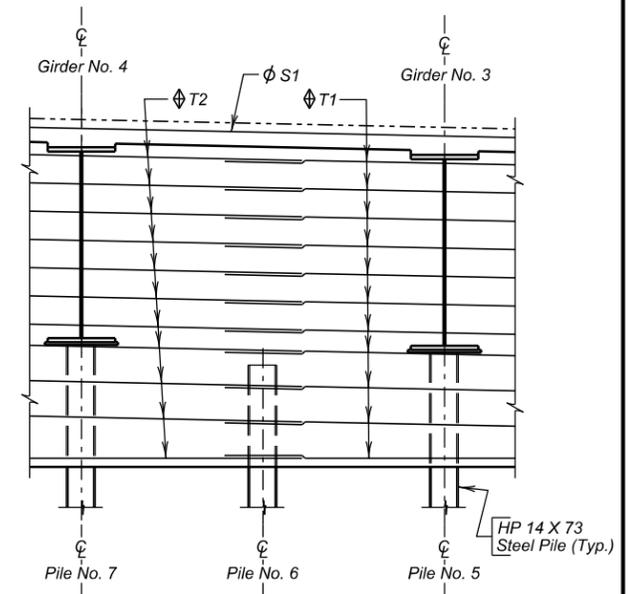
FOR BIDDING PURPOSES ONLY



INCREASING STATIONS

- ϕ Minimum Lap = 3' - 0"
- ϕ Minimum Lap = 2' - 0"
- ϕ Minimum Lap = 4' - 11"

Pile No.	Elev. "A"	"B"	"C"	"D"
1	1503.84	2.92	5.83	8.75
2	1503.42	2.50	—	—
3	1504.08	3.15	5.83	8.98
4	1503.42	2.50	—	—
5	1504.31	3.39	5.83	9.22
6	1503.42	2.50	—	—
7	1504.54	3.62	5.83	9.45
8	1503.42	2.50	—	—
9	1504.65	3.73	5.83	9.56
10	1503.42	2.50	—	—
11	1504.52	3.60	5.83	9.43
12	1503.42	2.50	—	—
13	1504.39	3.46	5.83	9.29



303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

FOR BIDDING PURPOSES ONLY

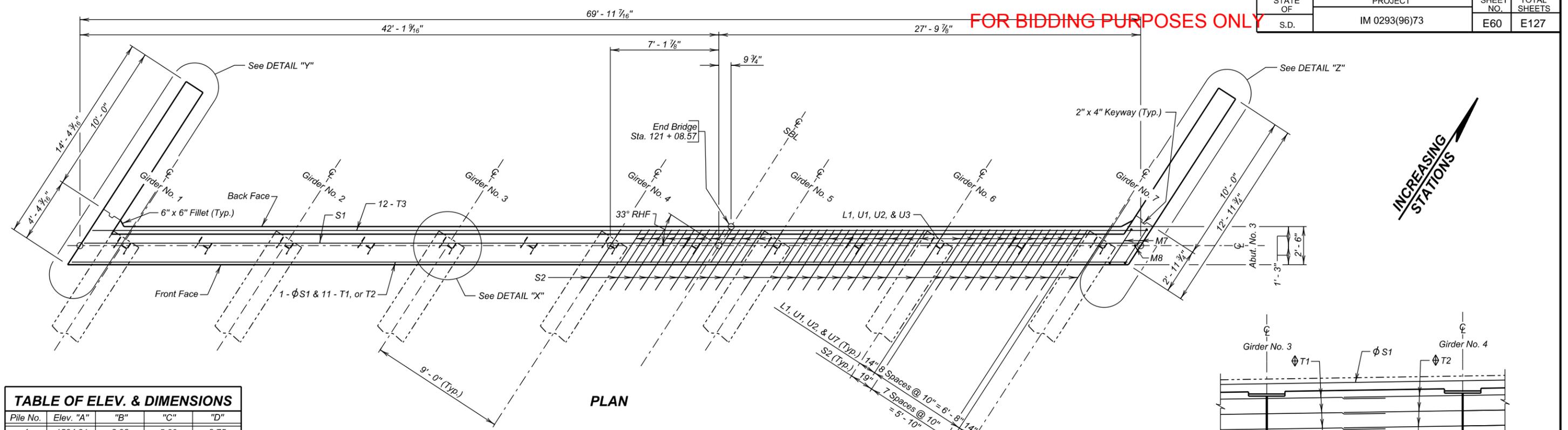
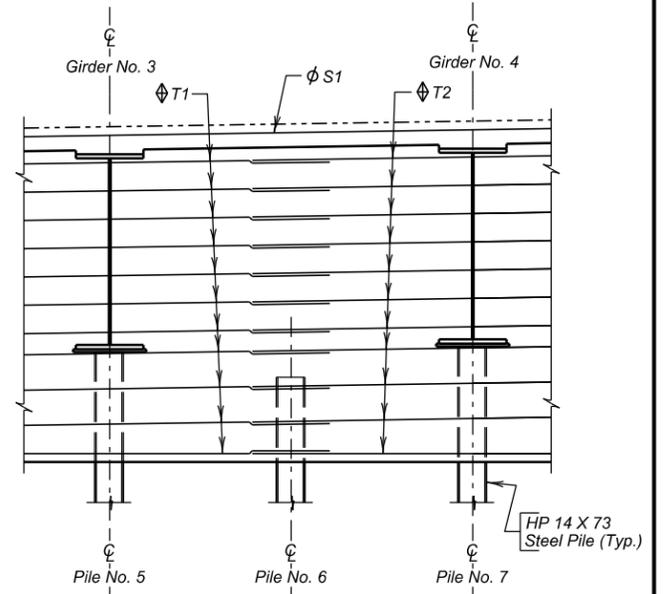
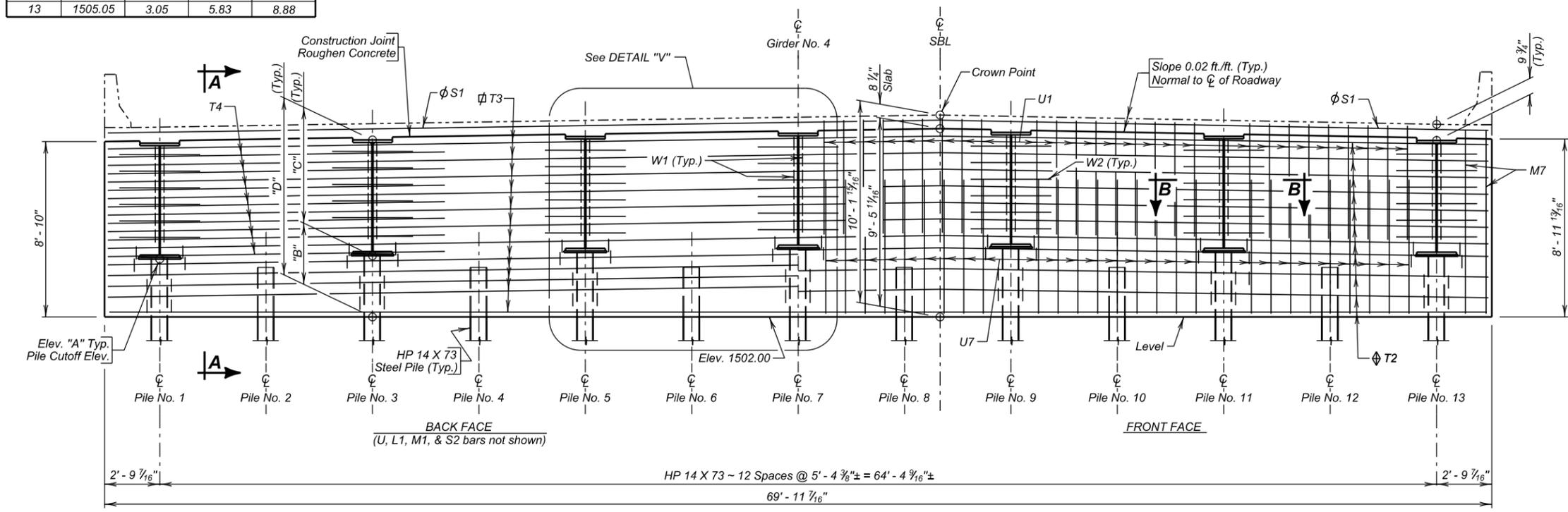


TABLE OF ELEV. & DIMENSIONS

Pile No.	Elev. "A"	"B"	"C"	"D"
1	1504.91	2.92	5.83	8.75
2	1504.50	2.50		
3	1505.08	3.08	5.83	8.91
4	1504.50	2.50		
5	1505.24	3.25	5.83	9.07
6	1504.50	2.50		
7	1505.41	3.41	5.83	9.24
8	1504.50	2.50		
9	1505.45	3.45	5.83	9.28
10	1504.50	2.50		
11	1505.25	3.25	5.83	9.08
12	1504.50	2.50		
13	1505.05	3.05	5.83	8.88



**DETAIL "V"
FRONT FACE**
(Front Face showing S1, T1, & T2 bars only)

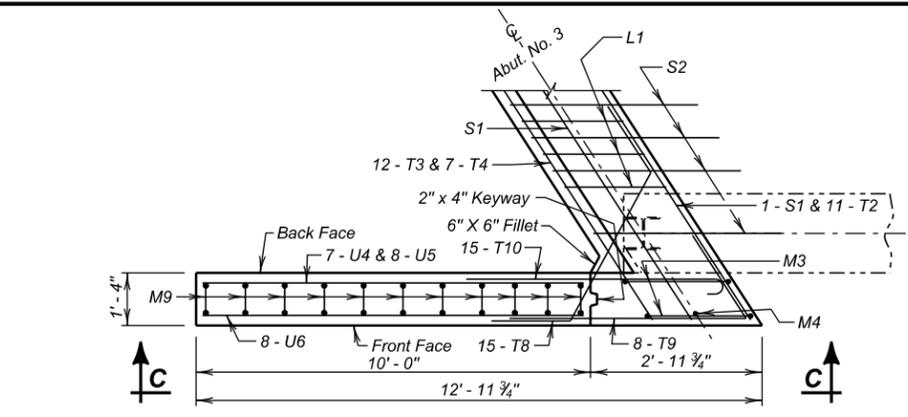
**ABUTMENT NO. 3 DETAILS (A)
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006**

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

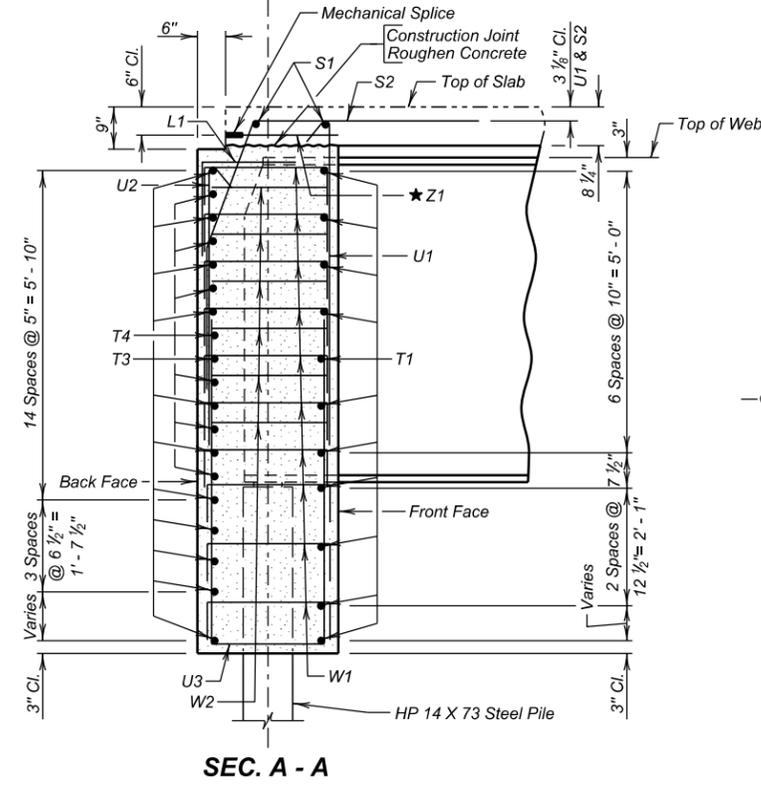
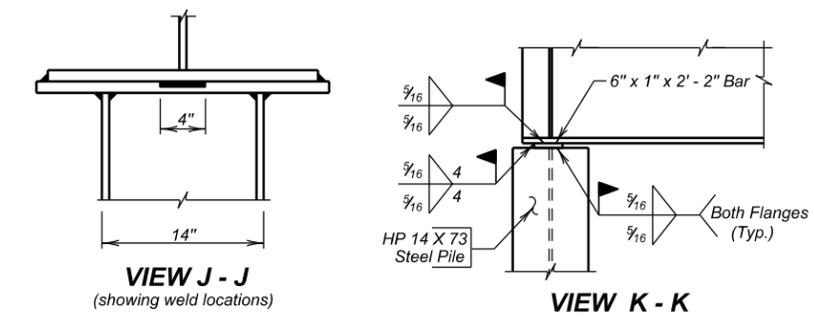
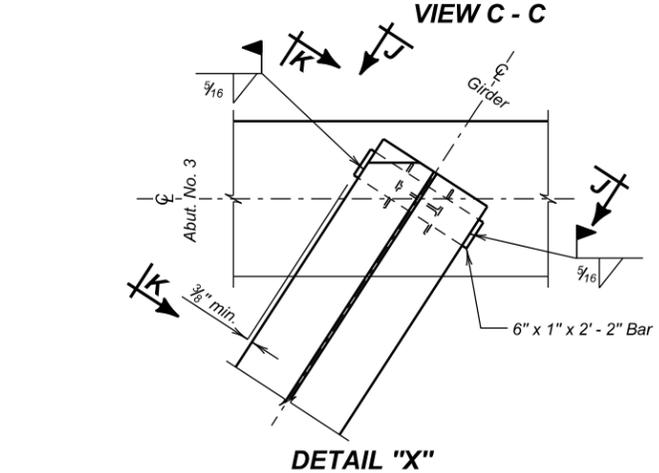
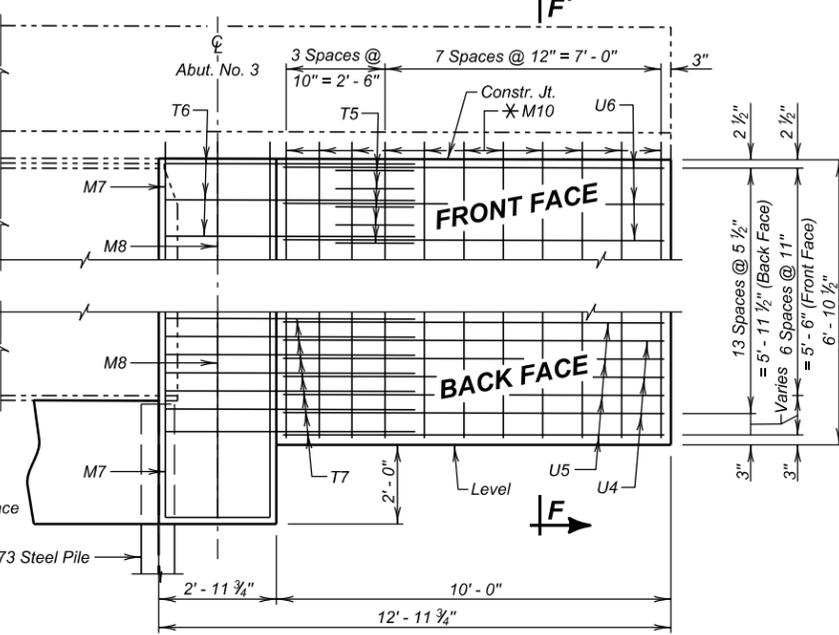
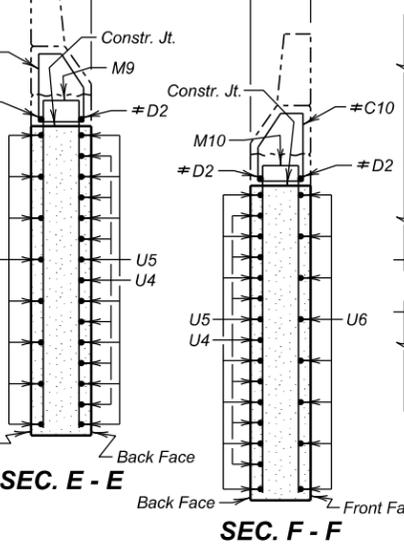
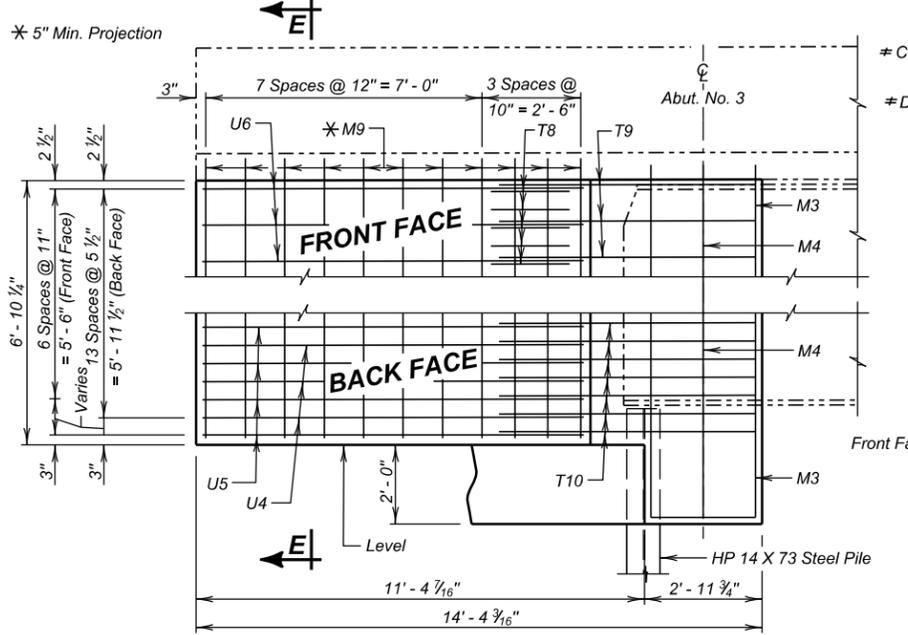
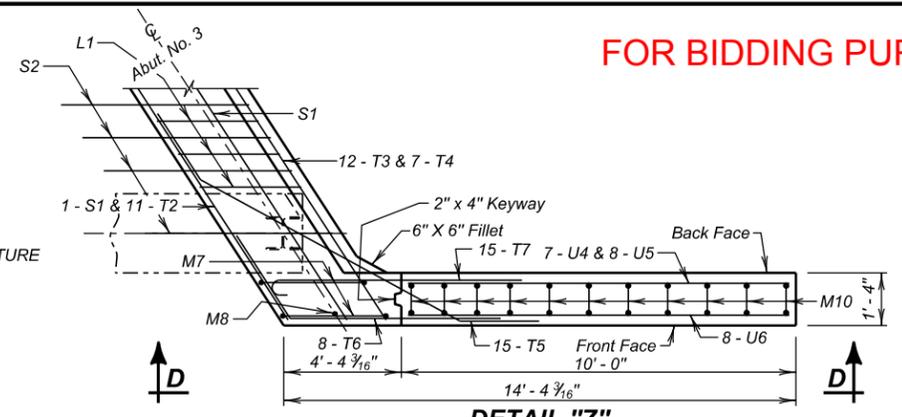
ELEVATION
(Along ϕ Abutment)

FOR BIDDING PURPOSES ONLY

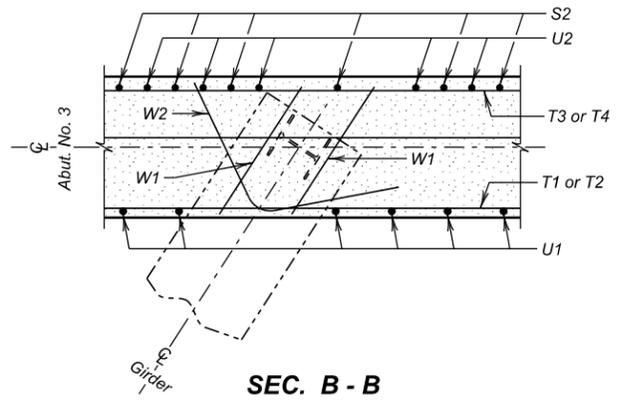
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E61	E127



* C10 and D2 bars are listed and included in Superstructure Quantities. See SUPERSTRUCTURE DETAILS (C).



* Z1 bars and mechanical splices are listed and included in Superstructure Quantities. See SUPERSTRUCTURE DETAILS (B).



REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
L1	54	4	4'-3"	17A
M3	2	5	20'-9"	17
M4	1	5	9'-1"	Str.
M7	2	5	21'-1"	17
M8	1	5	9'-3"	Str.
M9	11	5	15'-1"	17
M10	11	5	15'-4"	17
S1	4	9	37'-4"	Str.
S2	55	6	8'-9"	14A
T1	11	4	30'-7"	Str.
T2	11	4	41'-4"	Str.
T3	24	6	36'-5"	Str.
T4	14	6	17'-0"	Str.
T5	15	6	8'-1"	19
T6	8	5	7'-8"	19B
T7	15	6	7'-0"	1A
T8	15	6	6'-4"	19
T9	8	5	8'-10"	19B
T10	15	8	7'-2"	1A
U1	54	6	6'-5"	T9B
U2	54	6	5'-7"	T9B
U4	14	8	9'-8"	Str.
U5	16	7	9'-8"	Str.
U6	16	5	9'-8"	Str.
U7	54	6	15'-7"	17
W1	140	6	3'-11"	17
W2	42	8	5'-0"	13A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	66.5
Reinforcing Steel	Lb.	7654
Structure Excavation, Bridge	Cu. Yd.	15.0
HP 14 X 73 Steel Test Pile, Furnish & Drive	Ft.	1 @ 120' = 120'
HP 14 X 73 Steel Bearing Pile, Furnish & Drive	Ft.	12 @ 115' = 1380'
Preboring Pile	Ft.	13 @ 10' = 130'

ALTERNATE A		
ITEM	UNIT	QUANTITY
Stainless Reinforcing Steel	Lb.	1751

ALTERNATE B		
ITEM	UNIT	QUANTITY
Zinc and Dual Coated Reinforcing Steel	Lb.	1751

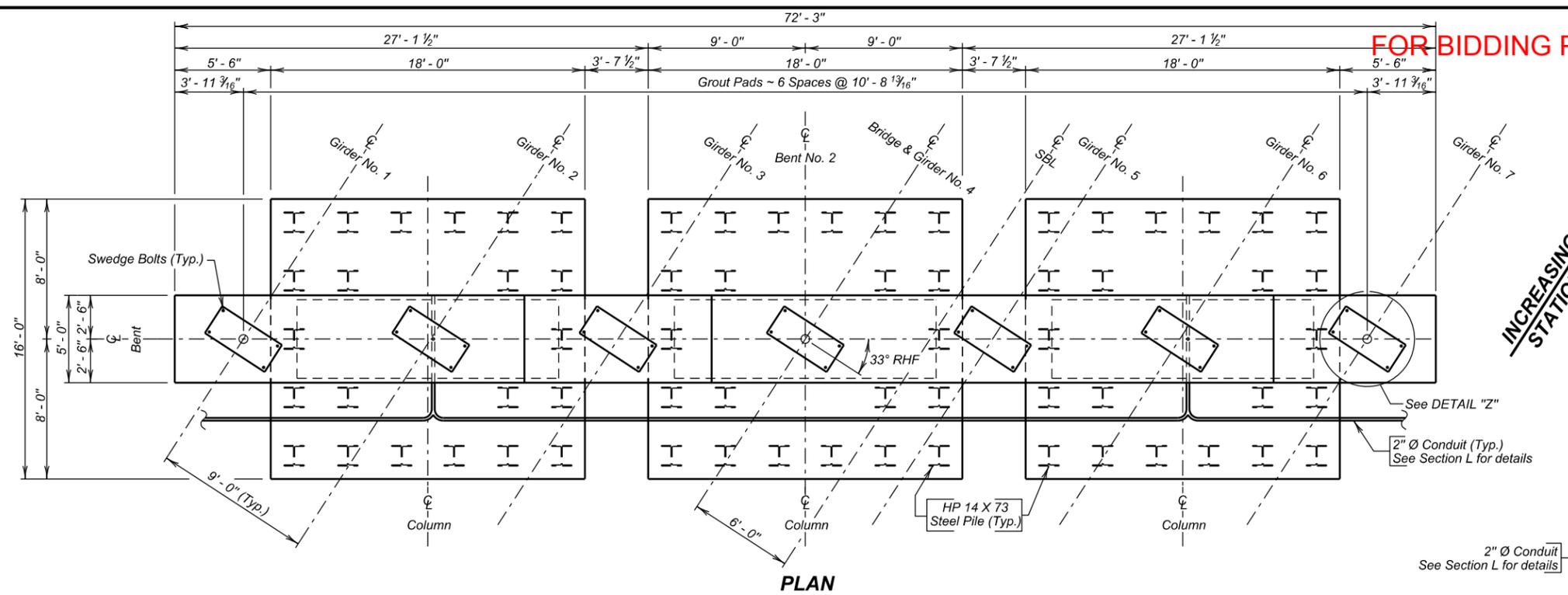
ABUTMENT NO. 3 DETAILS (B)
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

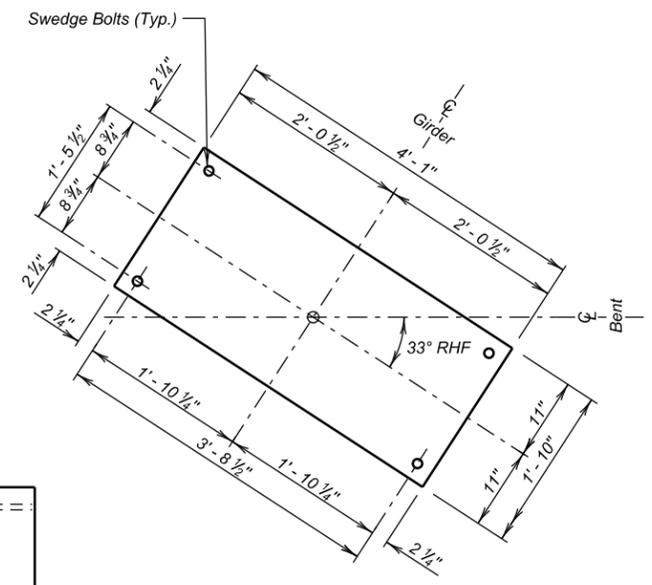
DESIGNED BY DM	CK. DES. BY PW	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
LINC01QS	01QSGB11		

FOR BIDDING PURPOSES ONLY



PLAN

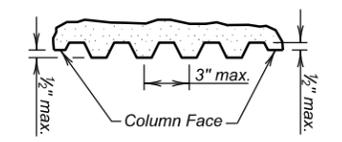
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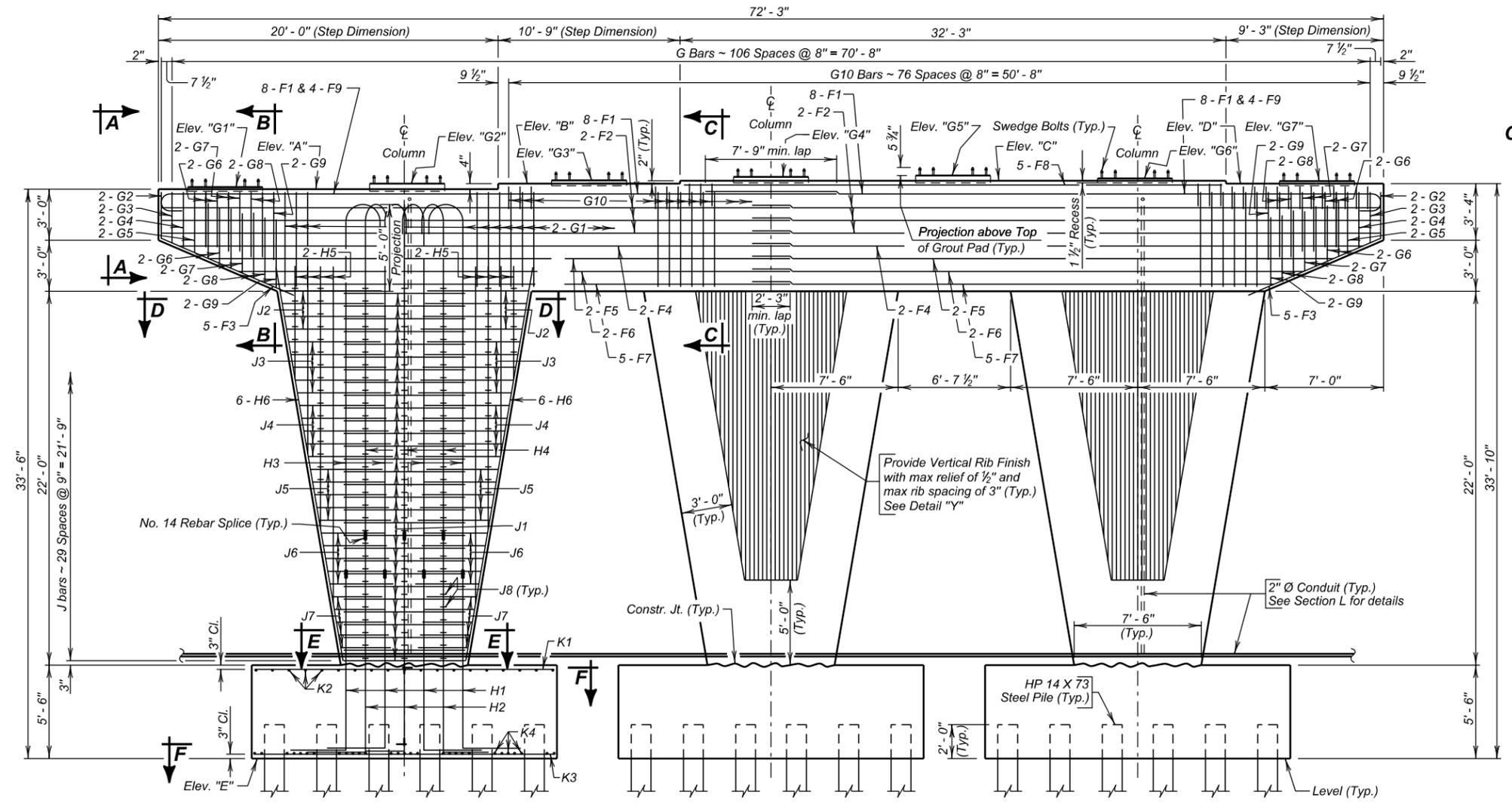
DETAIL "Z"
(Grout Pad)

2" Ø Conduit
See Section L for details

CONDUIT DETAILS
(Resteel not shown)



DETAIL "Y"



ELEVATION

Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"	Elev. "E"
1504.31	1504.65	1504.81	1504.65	1470.81

★Elev. "G1"	★Elev. "G2"	★Elev. "G3"	★Elev. "G4"	★Elev. "G5"	★Elev. "G6"	★Elev. "G7"
1504.44	1504.64	1504.84	1505.04	1505.12	1504.95	1504.79

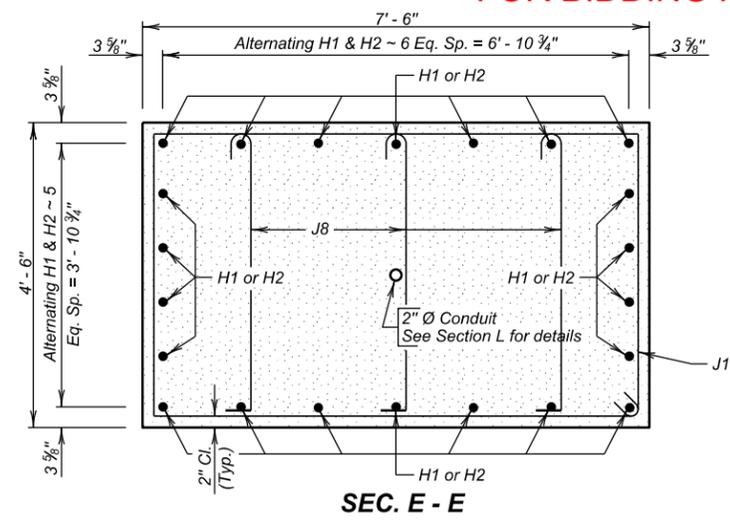
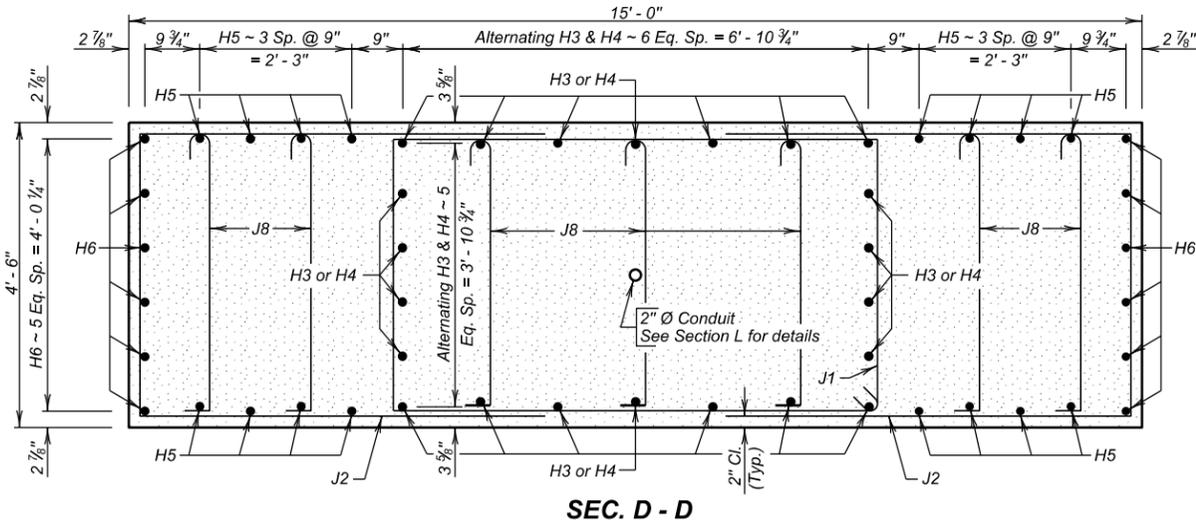
NOTE: Top of Grout Pad shall be level and smooth.
★Elevations are Top of Grout Pad at centerline of bent.

BENT DETAILS (A)
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E63	E127

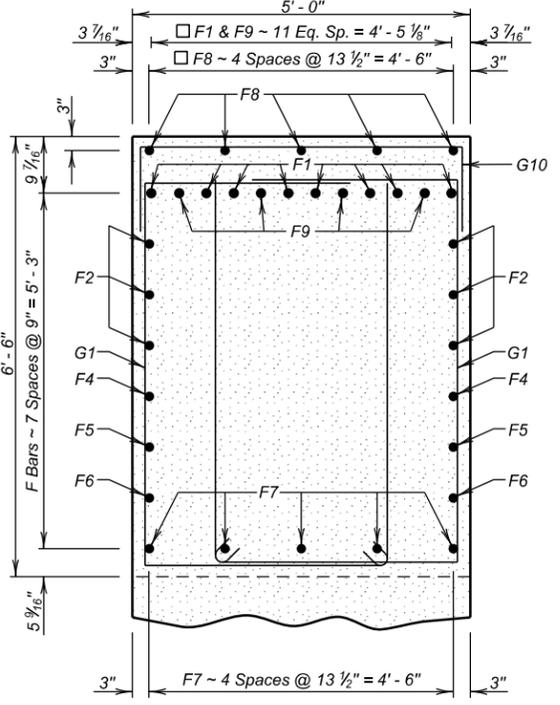
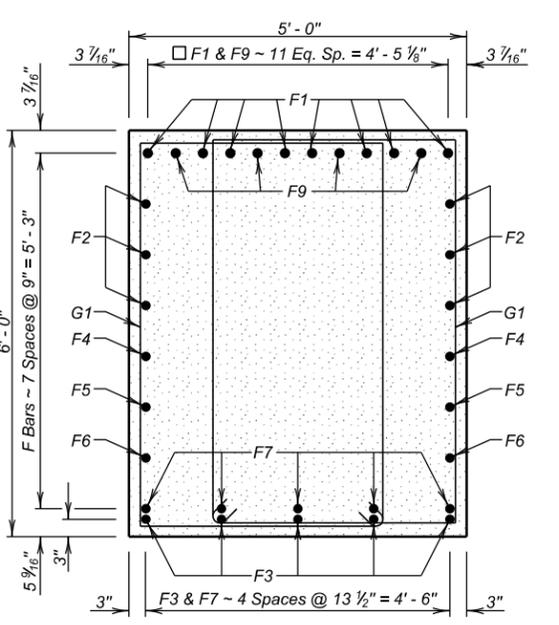
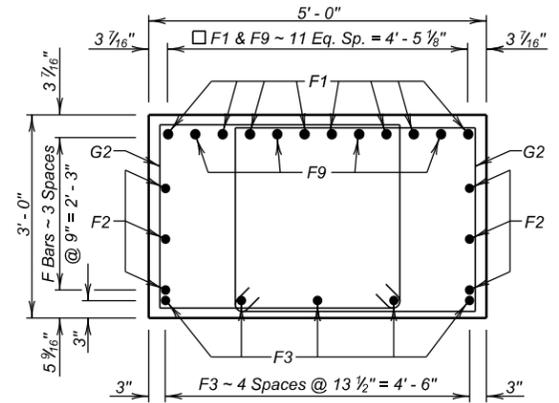
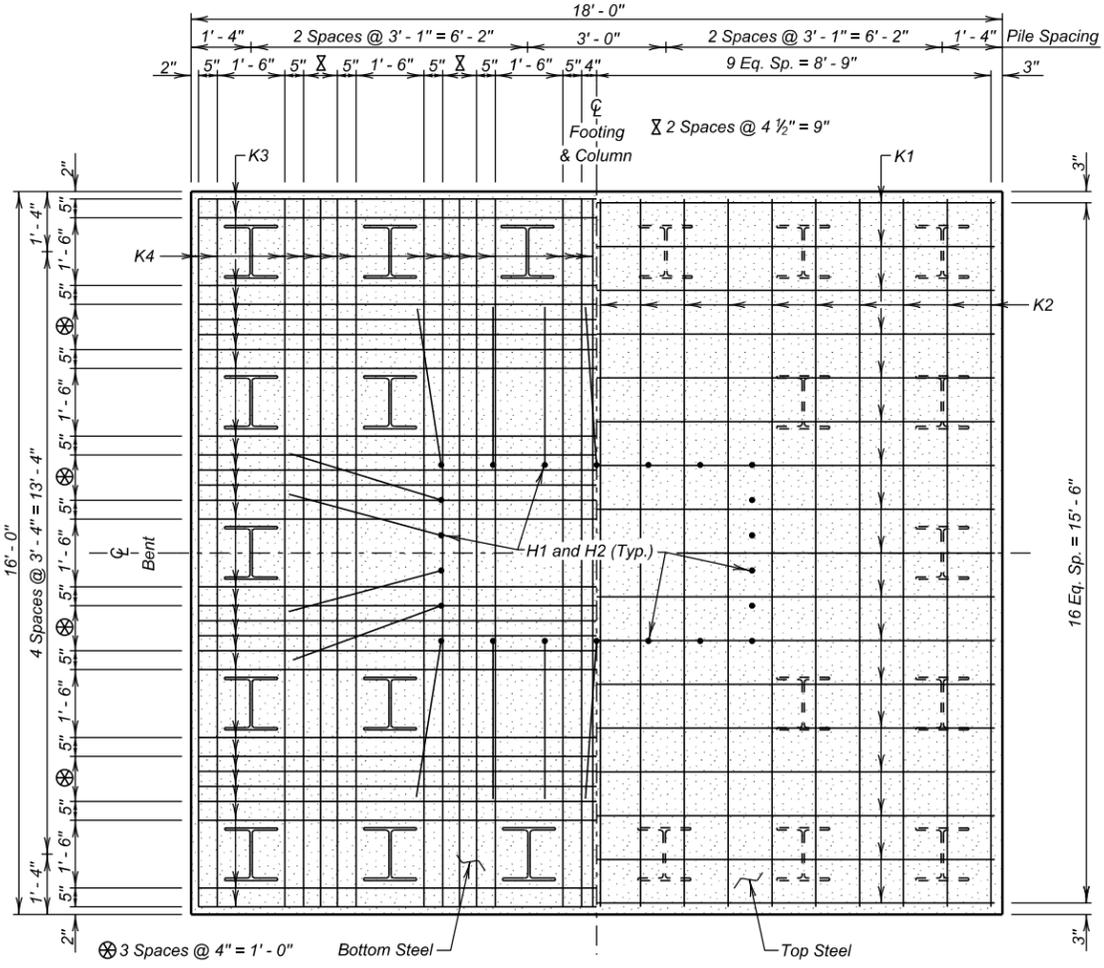


REINFORCING SCHEDULE			
Mk.	No.	Size	Length
F1	16	11	41'-8"
F2	12	6	37'-1"
F3	10	6	8'-6"
F4	4	6	36'-1"
F5	4	6	34'-4"
F6	4	6	32'-7"
F7	10	6	30'-10"
F8	5	6	31'-9"
F9	8	11	25'-2"
G1	174	6	19'-4"
G2	4	6	13'-5"
G3	4	6	14'-0"
G4	4	6	14'-6"
G5	4	6	15'-1"
G6	16	6	10'-0"
G7	16	6	10'-6"
G8	16	6	11'-2"
G9	8	6	11'-6"
G10	77	6	7'-4"
H1	33	14	14'-0"
H2	33	14	16'-3"
H3	33	14	24'-1"
H4	33	14	21'-10"
H5	24	6	26'-6"
H6	36	6	23'-6"
J1	90	4	23'-5"
J2	24	4	16'-2"
J3	30	4	15'-2"
J4	30	4	14'-2"
J5	30	4	12'-8"
J6	30	4	11'-8"
J7	30	4	10'-1"
J8	408	5	5'-0"
K1	51	4	17'-8"
K2	57	4	15'-8"
K3	84	9	17'-8"
K4	87	9	15'-8"

Bending Details	
Type T1	Diagram showing bar bending for Type T1 with dimensions like 4'-8", 3'-6 1/2", 3'-3", 3'-0", 2'-8 1/2", 5'-8", 3'-6".
Type 17	Diagram showing bar bending for Type 17 with dimensions like 1'-4", 10'-7", 3'-5", 4'-0", 3'-10", 3'-6", 3'-3".
Type 17A	Diagram showing bar bending for Type 17A with dimensions like 12'-10", 10'-7", 3'-5", 4'-0", 3'-10", 3'-6", 3'-3".
Type T1	Diagram showing bar bending for Type T1 with dimensions like 19'-10", 6'-8", 4'-2", 7'-2".
Type T9	Diagram showing bar bending for Type T9 with dimensions like 4'-1", 4'-2".
Type 17	Diagram showing bar bending for Type 17 with dimensions like 6'-0", 5'-6", 5'-0", 4'-3", 3'-9", 2'-11 1/2".
Type 1A	Diagram showing bar bending for Type 1A with dimensions like 19'-6", 21'-9", 23'-4 1/2", 39'-10 1/2".

NOTE: □ Bars may be adjusted to clear swedge bolts.

NOTES:
 All dimensions are out to out of bars.
 □ See cutting diagram.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	380.8
Reinforcing Steel	Lb.	51275
Structure Excavation, Bridge	Cu. Yd.	181.8
HP 14 X 73 Steel Test Pile, Furnish & Drive	Ft.	1 @ 90' = 90'
HP 14 X 73 Steel Bearing Pile, Furnish & Drive	Ft.	65 @ 85' = 5525'
No. 14 Rebar Splice	Each	66

* Includes 0.4 Cu. Yds. for Grout Pads.

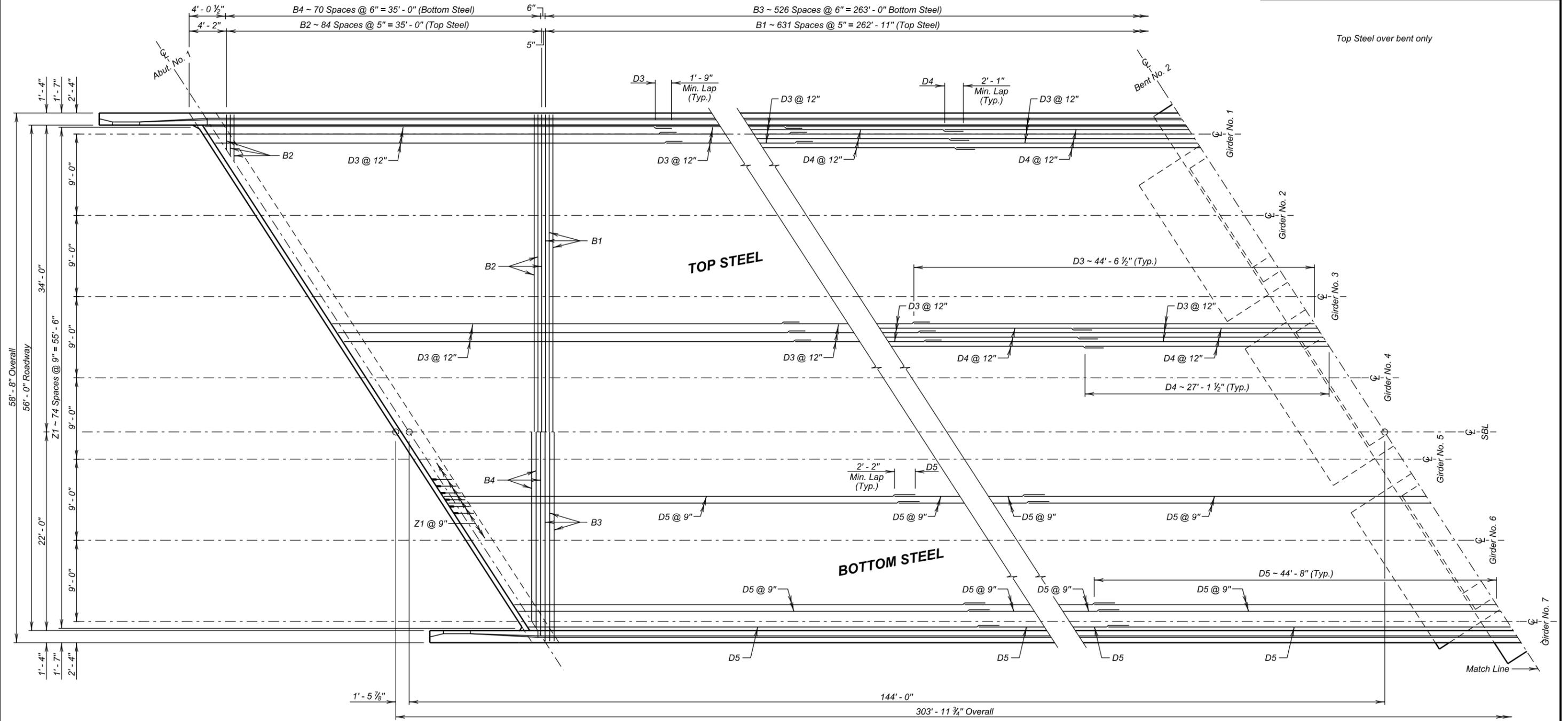
BENT DETAILS (B)
 FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56'-0" ROADWAY
 OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY JMH	CK. DES. BY SK	DRAFTED BY BT	Kevin N. Goeden BRIDGE ENGINEER
LINC01QS	01QSGB13		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E64	E127

FOR BIDDING PURPOSES ONLY



PARTIAL PLAN

SUPERSTRUCTURE DETAILS (A)

FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

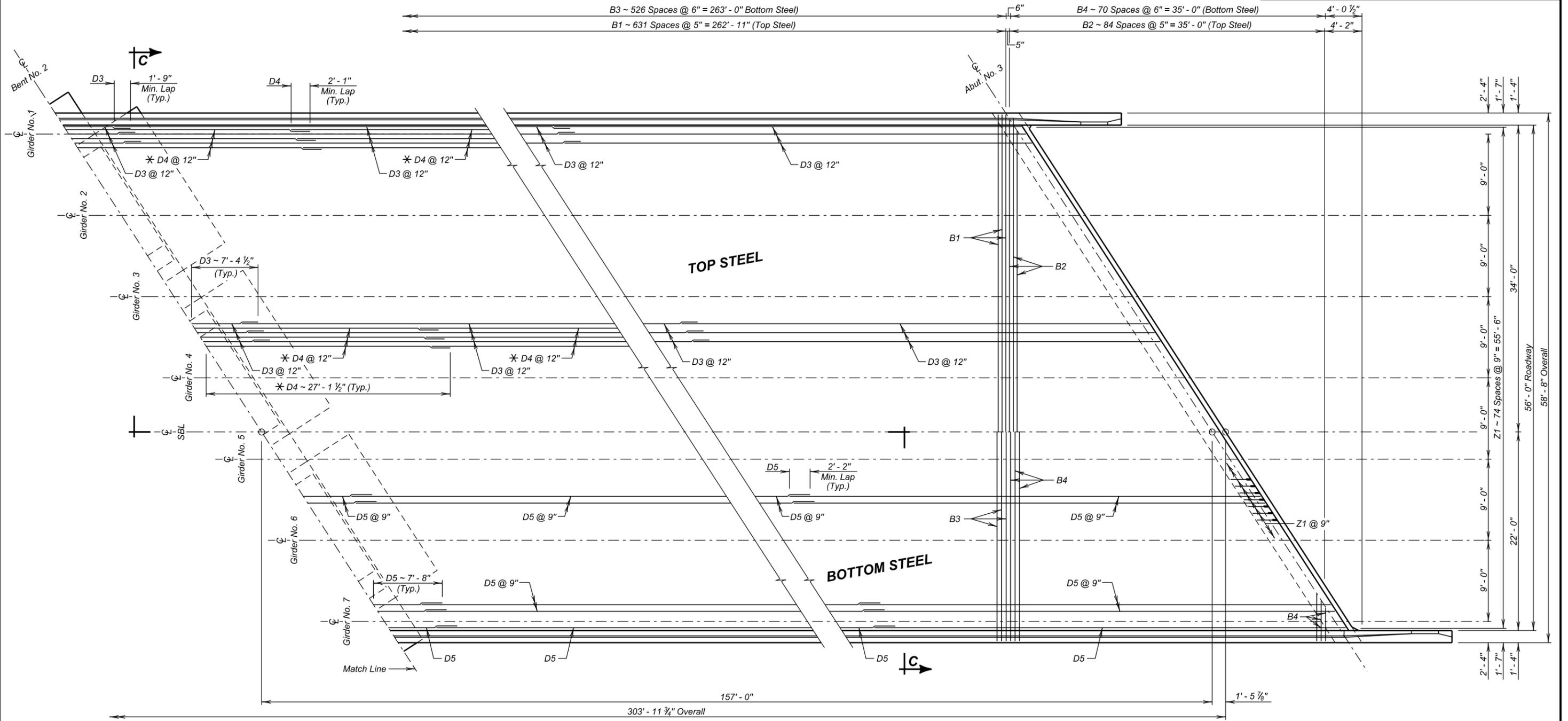
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB14	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E65	E127

FOR BIDDING PURPOSES ONLY

* Top Steel over bent only



PARTIAL PLAN

SUPERSTRUCTURE DETAILS (B)
FOR

SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY
 OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

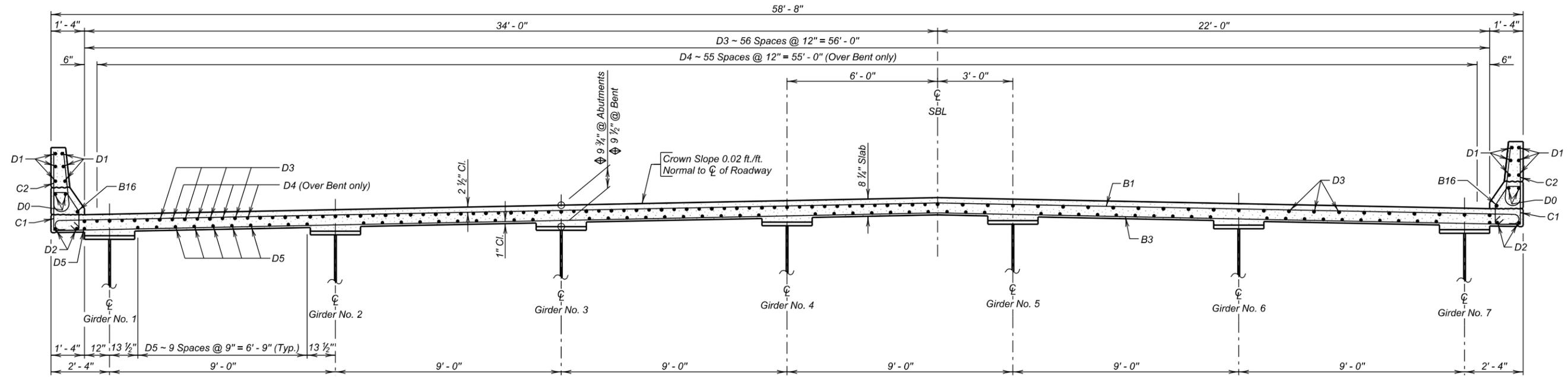
33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB15	DRAFTED BY MG	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E66	E127



SEC. C - C

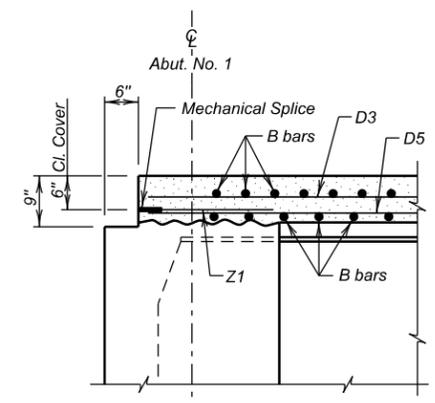
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	
∅	B1	632	5	59'-6"	1
∅	B2	85	5	62'-11"	1
∅	B3	527	4	58'-4"	Str.
∅	B4	71	4	61'-4"	Str.
∅	B15	12	5	14'-6"	Str.
∅	B16	12	4	54'-6"	Str.
∅	B17	8	4	8'-6"	19B
∅	B18	12	8	4'-3"	19B
∅	B19	12	5	4'-2"	17
∅	C1	634	5	5'-7"	T1A
∅	C2	606	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'-9"	T1A
∅	C11	16	5	7'-1"	T1
∅	C12	4	6	5'-6"	17
∅	C13	4	5	5'-4"	17
∅	D0	24	4	56'-8"	Str.
∅	D1	72	4	52'-9"	Str.
∅	D2	24	5	56'-1"	Str.
∅	D3	342	5	51'-11"	Str.
∅	D4	168	6	54'-3"	Str.
∅	D5	372	5	52'-4"	Str.
∅	Z1	150	7	2'-0"	Str.

Bending Details	

∅ Dimensions are at ϕ bearing; at other points along the girders this dimension shall be computed as shown on the SLAB FORM ELEVATIONS & ERECTION DATA sheets.

NOTE: Barrier curb details are shown on END BLOCK AND BARRIER CURB DETAILS sheet.



SEC. B - B

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
★ Class A45 Concrete, Bridge Deck	Cu. Yd.	510.4
△ Structural Steel	Lump Sum	Lump Sum
△ No. 7 Rebar Splice	Each	150
☆ Bridge Painting	Lump Sum	Lump Sum
∅ Concrete Penetrating Sealer	Sq. Yd.	1884

ALTERNATE A		
ITEM	UNIT	QUANTITY
Stainless Reinforcing Steel	Lb.	134465

ALTERNATE B		
ITEM	UNIT	QUANTITY
Zinc and Dual Coated Reinforcing Steel	Lb.	134465

★ Concrete quantity for Barrier Curb is 0.0842 Cu. Yd. per foot and for End Block is 1.1580 Cu. Yd. per 12' End Block.
 △ For informational purposes only, the estimated weight of the structural steel is 915246 pounds.
 ☆ For informational purposes only the estimated area to be painted is 45895 sq. ft.
 ∅ Apply to bridge deck between barrier curbs.

SUPERSTRUCTURE DETAILS (C)
 FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY
 OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

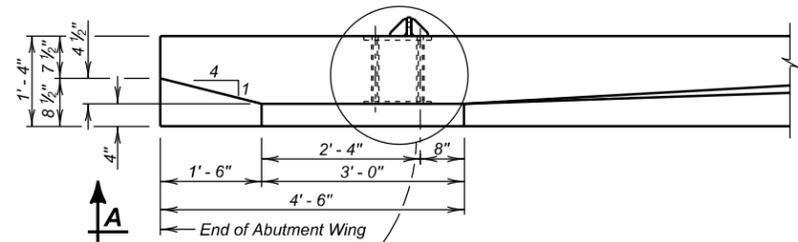
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSG16	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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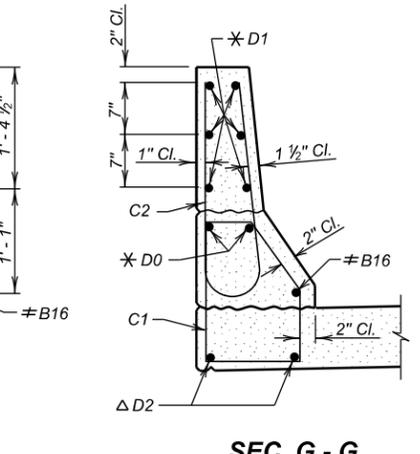
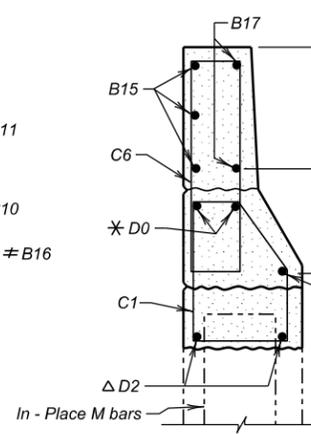
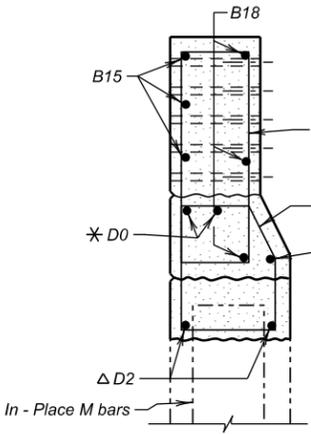
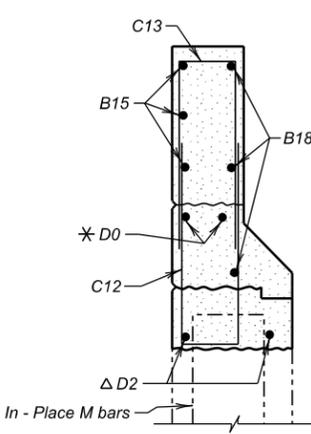
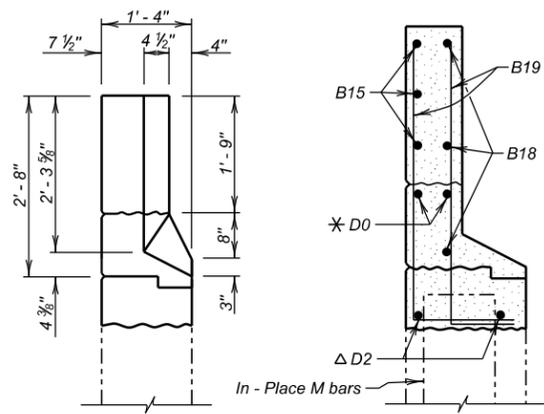
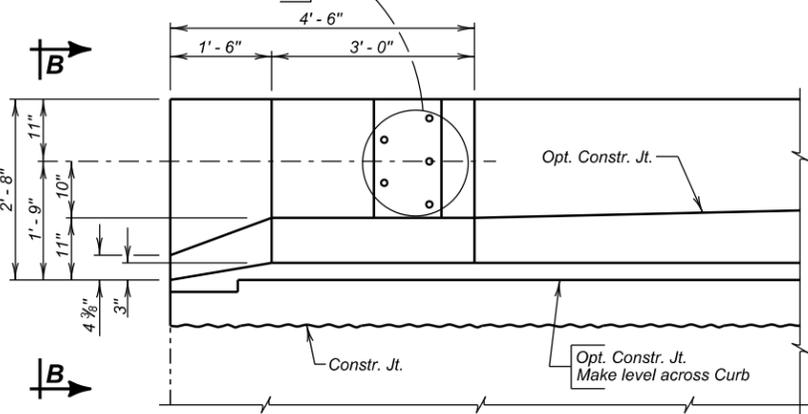
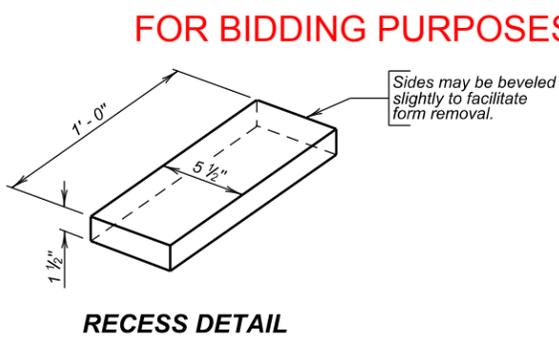
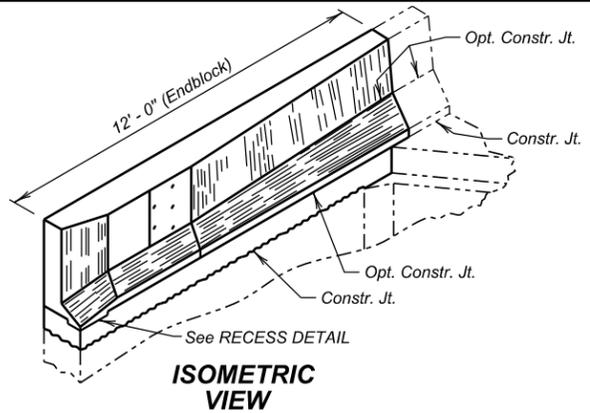
NOTES-
 ∅ See cutting diagram.
 ∅ Tip bars as required to maintain top and bottom clear cover.
 All dimensions are out to out of bars.

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E67	E127

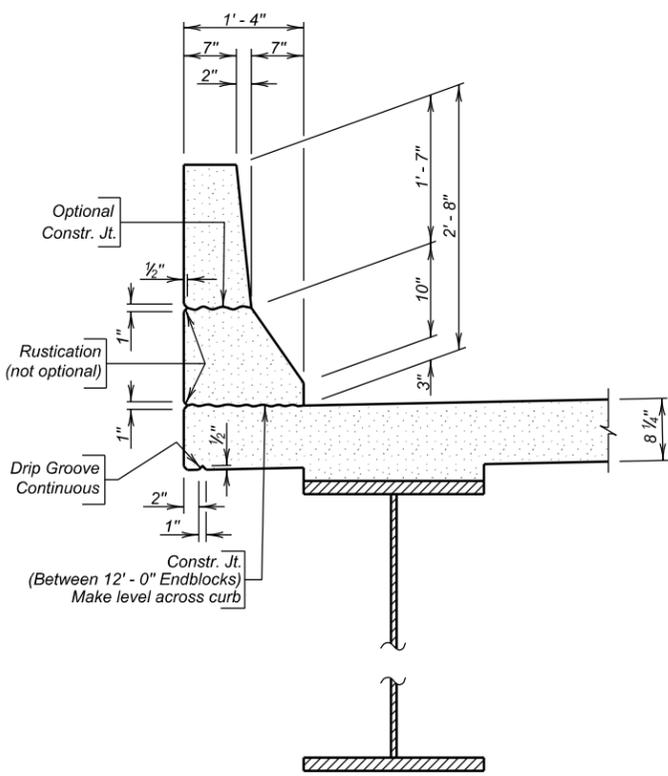
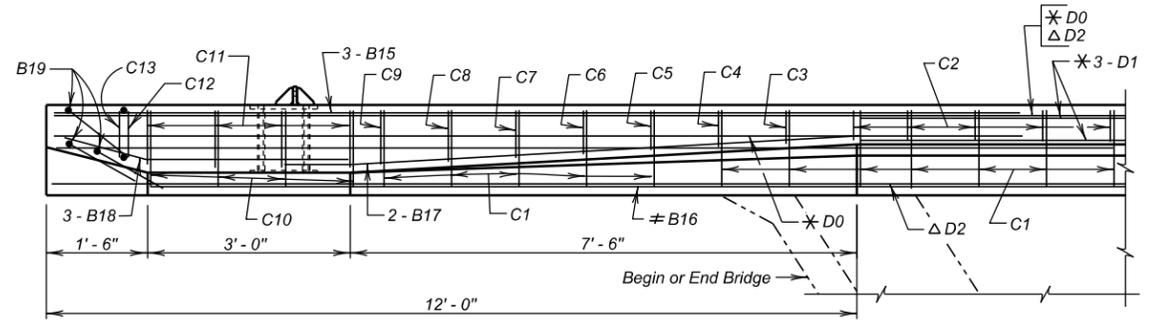
NOTE:
See Section B for location of 3 CABLE GUARDRAIL CONNECTION ASSEMBLY.



5-BOLT INSERT PLATE ASSEMBLY
(4 Required) and 3 CABLE GUARDRAIL CONNECTION ASSEMBLY (2 Required).
See Standard Plate No.'s 629.30 and 630.92.



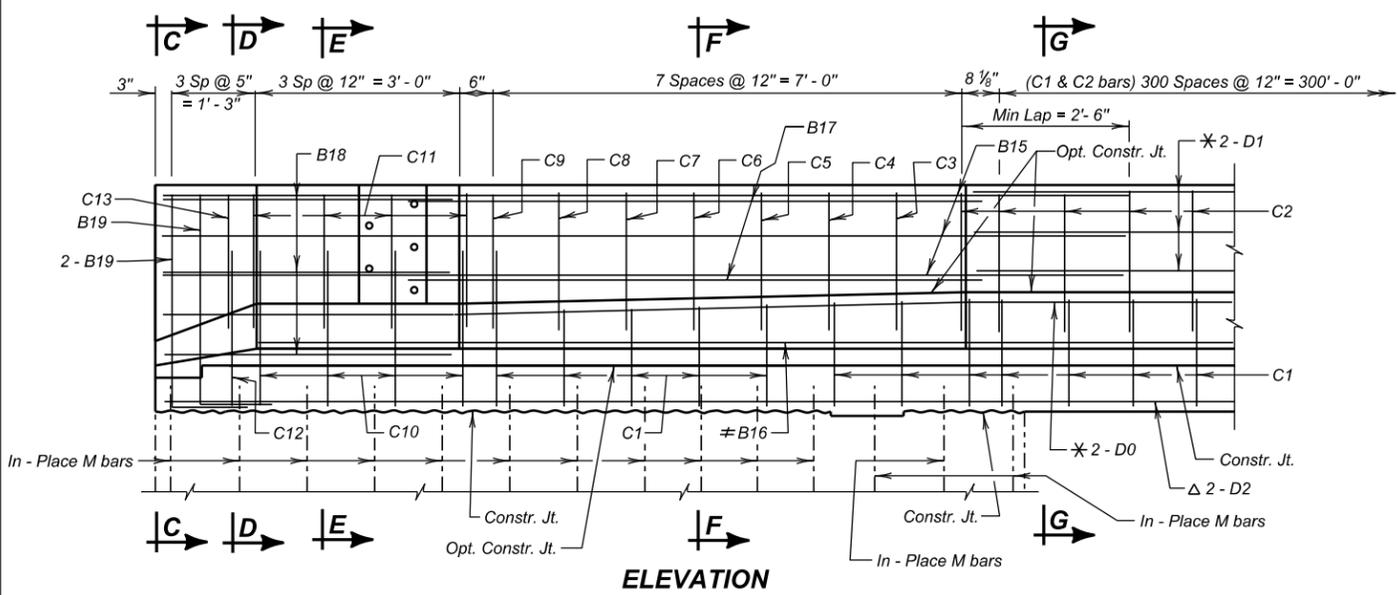
Δ Min. Lap = 2'-2"
* Min. Lap = 2'-11"
≠ Min. Lap = 1'-0"



NOTE:
For listing of re-bars see Reinforcing Schedule on SUPERSTRUCTURE DETAILS (C).

ENDBLOCK AND BARRIER CURB DETAILS
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93



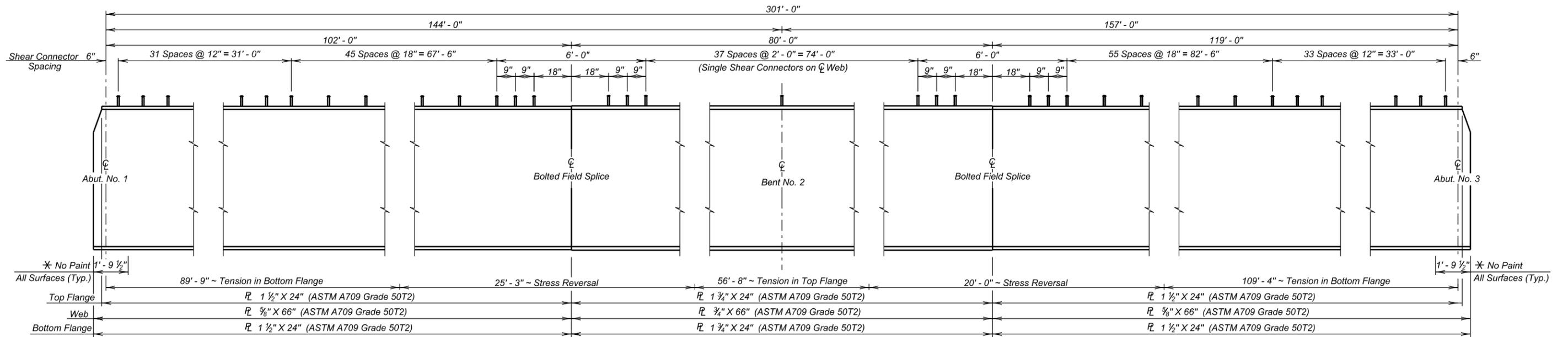
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSG17	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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* Measured along ϕ web

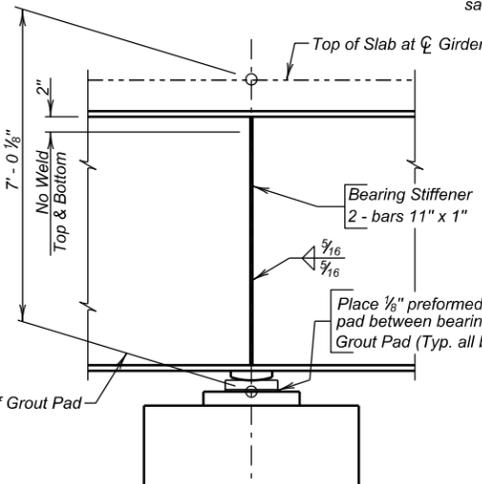
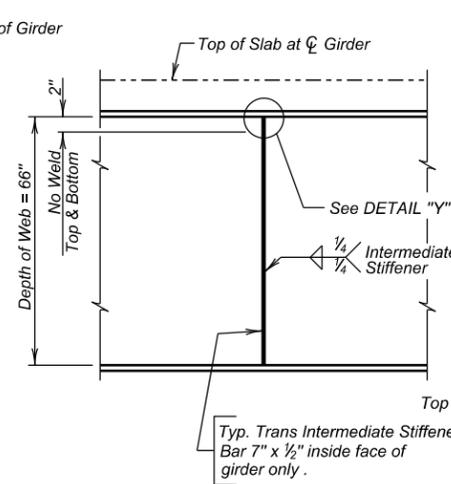
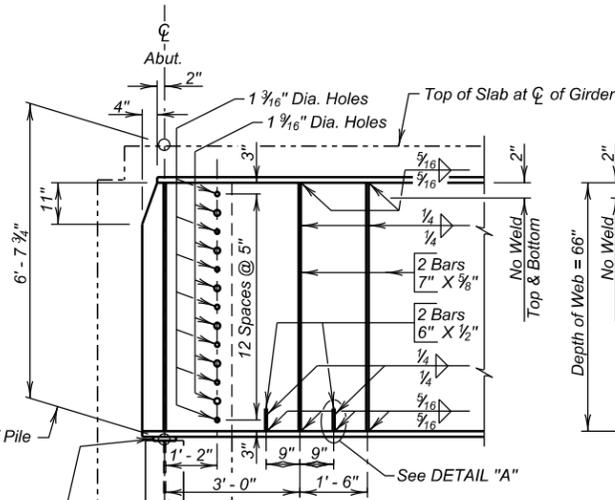
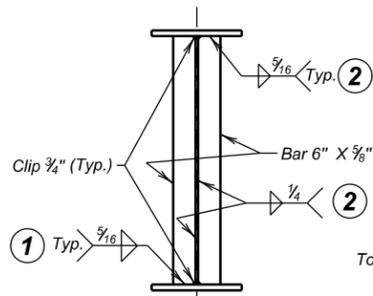
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E68	E127



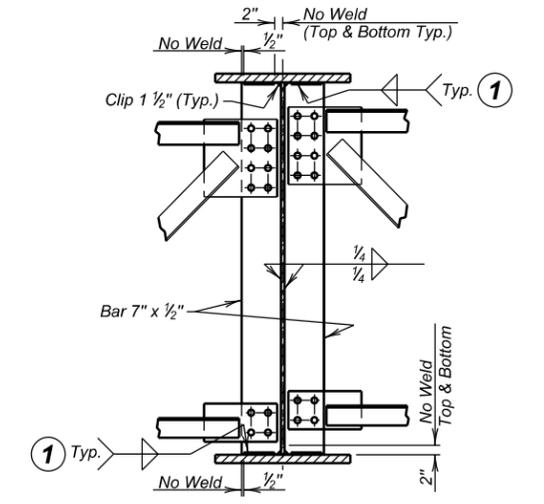
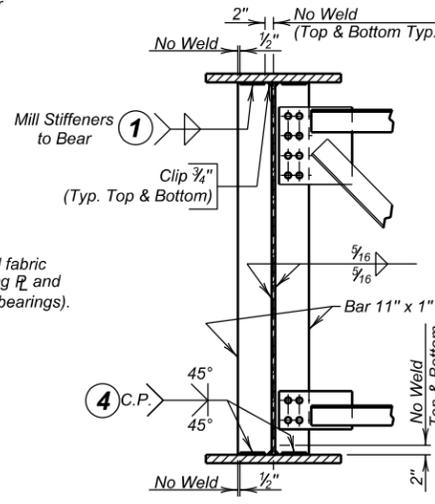
GIRDER LAYOUT

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



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

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



END VIEW

Bar 6" x 1" x 2' - 2" Ship loose for Field Weld See DETAIL "X" on ABUTMENT NO. 1 DETAILS (B) and on ABUTMENT NO. 3 DETAILS (B) Sheets.

TYPICAL SECTION AT ABUTMENTS

TYPICAL SECTION AT INTERMEDIATE STIFFENER

TYPICAL SECTION AT BENT

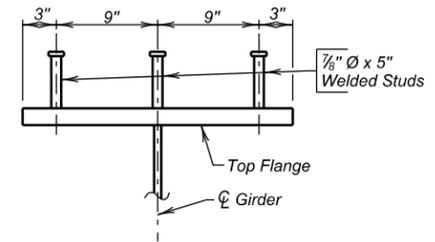
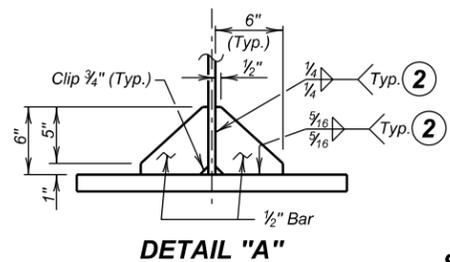
DETAILS OF STIFFENERS AT BEARINGS

DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS

- NOTES:
- See DIAPHRAGM DETAILS Sheet for Diaphragm Details.
 - See FRAMING DIAGRAM, CAMBER, AND ERECTION DATA Sheet for spacing of Diaphragms, Stiffeners, and Girder Camber.
 - All dimensions shown are horizontal or vertical.
 - All Stiffeners and Girder Ends shall be made normal to flanges, except bearing stiffeners at abutments shall be vertical.
 - Stiffeners to have tight fit top and bottom.
 - Dimensions shown are for steel temperature of 45° F.

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

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



GIRDER LAYOUT DETAILS

FOR SOUTHBOUND LANES

303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

56' - 0" ROADWAY OVER I-229

33° RHF SKEW

SEC. 7-T100N-R50W

STA. 118 + 04.59 TO 121 + 08.57

STR. NO. 42-066-006

IM 0293(96)73

HL-93

LINCOLN COUNTY

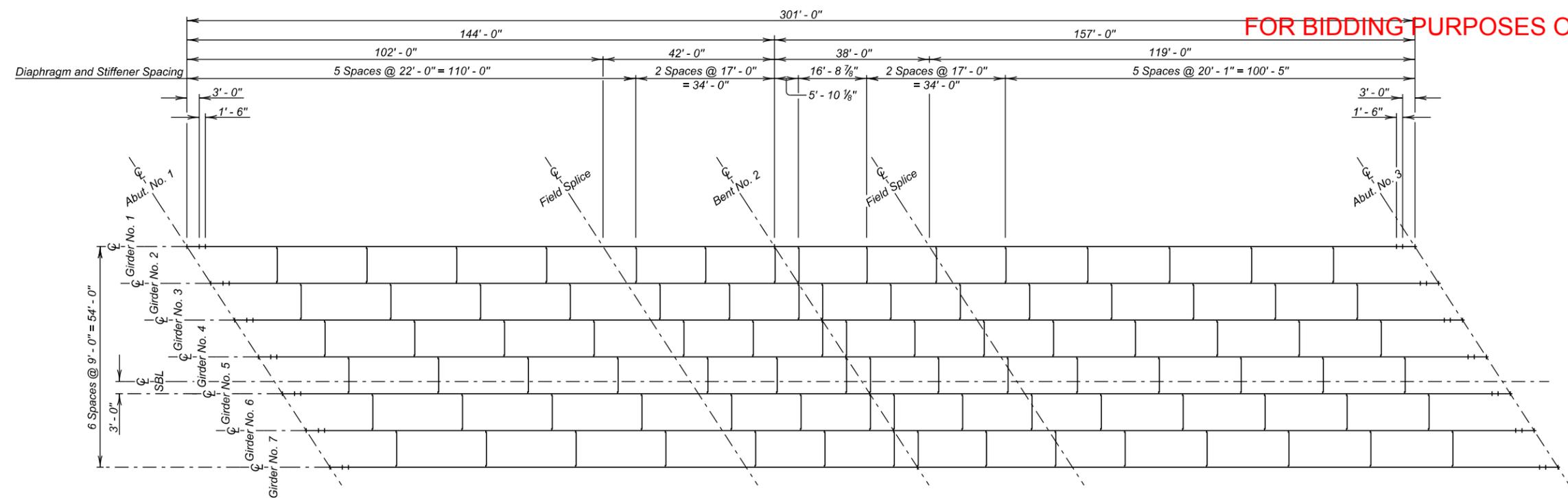
S. D. DEPT. OF TRANSPORTATION

APRIL 2015

18 OF 33

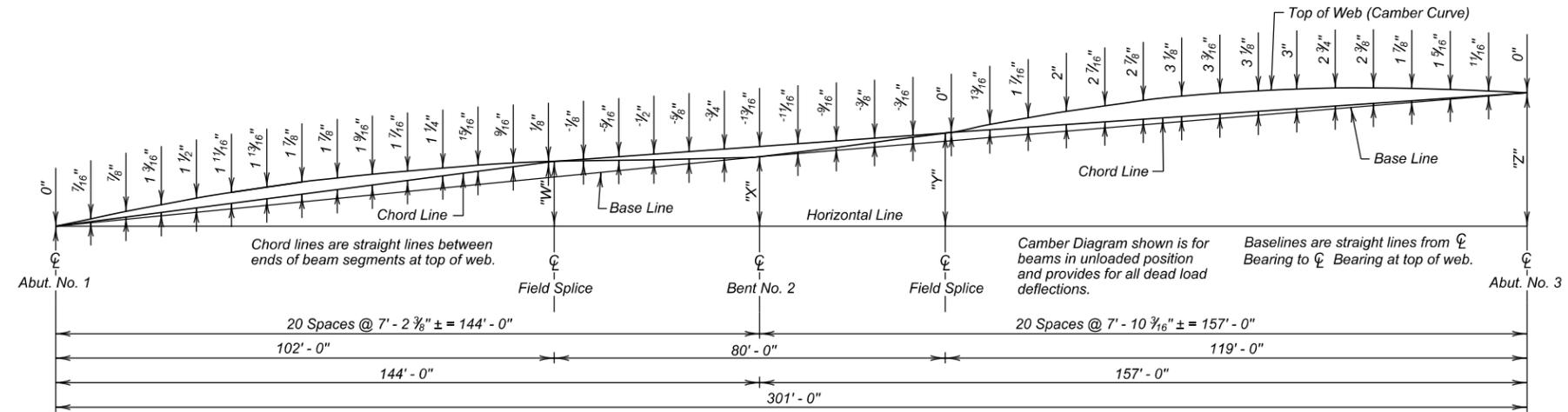
DESIGNED BY	CK. DES. BY	DRAFTED BY	Kevin N. Goeden BRIDGE ENGINEER
PW	DM	BT	
LINC01QS	01QSG18		

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FRAMING DIAGRAM

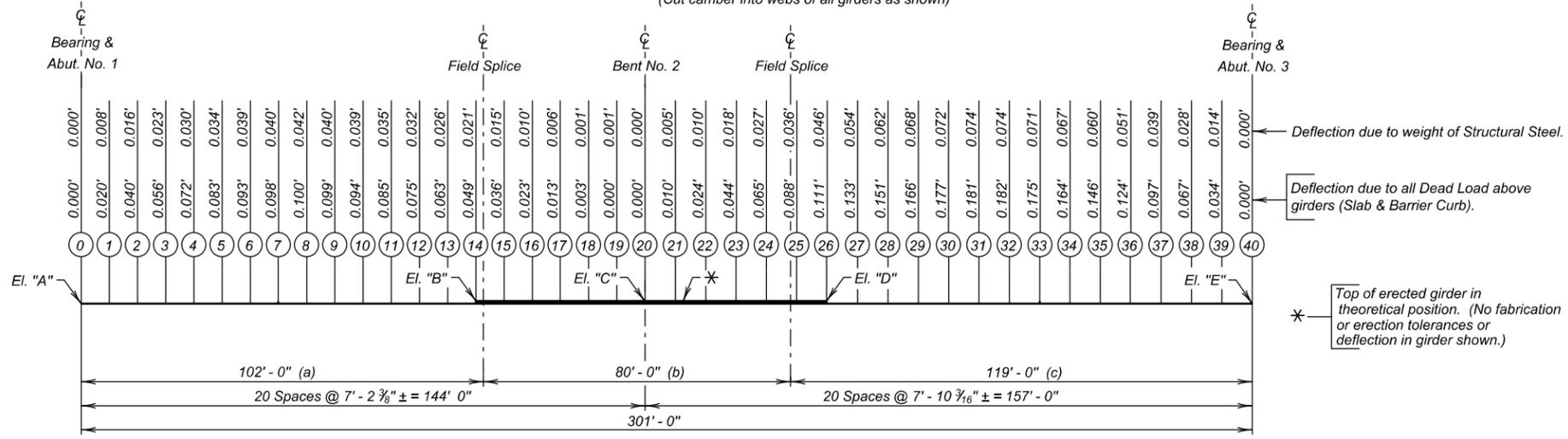
Girder No.	CAMBER DIMENSIONS			
	"W"	"X"	"Y"	"Z"
1	0.828	0.955	1.193	1.073
2	0.804	0.922	1.151	1.004
3	0.781	0.889	1.110	0.936
4	0.758	0.856	1.068	0.867
5	0.735	0.820	1.027	0.799
6	0.711	0.790	0.985	0.729
7	0.689	0.758	0.944	0.661



CAMBER CUTTING DIAGRAM
(Cut camber into webs of all girders as shown)

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

Girder No.	ELEVATIONS (Top of Girder)					SLOPES (%)		
	"A"	"B"	"C"	"D"	"E"	a	b	c
	1	1509.673	1510.502	1510.649	1510.851	1510.746	0.792	0.436
2	1509.908	1510.713	1510.851	1511.044	1510.912	0.769	0.414	-0.093
3	1510.141	1510.923	1511.051	1511.236	1511.077	0.746	0.391	-0.116
4	1510.373	1511.132	1511.250	1511.426	1511.240	0.724	0.368	-0.139
5	1510.483	1511.219	1511.324	1511.494	1511.282	0.701	0.345	-0.161
6	1510.353	1510.065	1511.164	1511.323	1511.082	0.677	0.323	-0.185
7	1510.220	1510.910	1510.999	1511.149	1510.888	0.656	0.299	-0.208



GIRDER ERECTION DIAGRAM

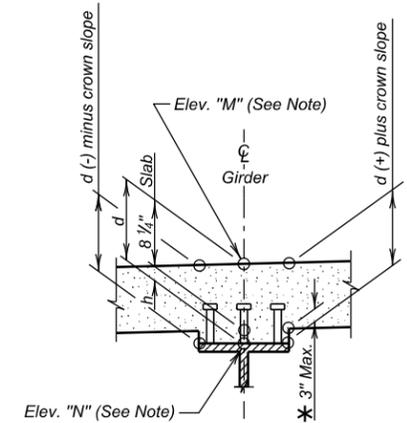
FRAMING DIAGRAM, CAMBER, & ERECTION DATA FOR SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006
 33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E71	E127

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS	Girder No. 1	Elev. "M"	1510.486	1510.573	1510.658	1510.738	1510.814	1510.885	1510.951	1511.012	1511.066	1511.116	1511.160	1511.198	1511.232	1511.263	1511.290	1511.315	1511.338	1511.361	1511.385	1511.411	1511.441
		(-) Elev. "N"																					
		(=) d																					
		(-) 0.688'																					
		(=) h																					
		Elev. "M"	1510.721	1510.806	1510.889	1510.968	1511.042	1511.111	1511.175	1511.235	1511.288	1511.336	1511.378	1511.414	1511.447	1511.476	1511.501	1511.525	1511.546	1511.568	1511.590	1511.615	1511.643
		(-) Elev. "N"																					
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Elev. "M"	1510.954	1511.038	1511.119	1511.196	1511.269	1511.336	1511.399	1511.456	1511.508	1511.554	1511.595	1511.629	1511.661	1511.688	1511.711	1511.734	1511.753	1511.773	1511.794	1511.817	1511.843	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Elev. "M"	1511.186	1511.268	1511.348	1511.423	1511.494	1511.560	1511.621	1511.677	1511.726	1511.771	1511.810	1511.843	1511.873	1511.898	1511.920	1511.941	1511.959	1511.978	1511.996	1512.017	1512.042	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Elev. "M"	1511.296	1511.377	1511.455	1511.528	1511.598	1511.662	1511.721	1511.776	1511.824	1511.867	1511.905	1511.935	1511.963	1511.988	1512.008	1512.027	1512.043	1512.059	1512.077	1512.096	1512.120	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Elev. "M"	1511.166	1511.244	1511.321	1511.393	1511.460	1511.523	1511.581	1511.633	1511.680	1511.721	1511.757	1511.786	1511.813	1511.835	1511.850	1511.871	1511.886	1511.901	1511.916	1511.935	1511.956	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Elev. "M"	1511.033	1511.110	1511.186	1511.256	1511.322	1511.383	1511.439	1511.490	1511.535	1511.574	1511.608	1511.636	1511.661	1511.682	1511.699	1511.714	1511.727	1511.741	1511.755	1511.771	1511.791	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						



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

		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS	Girder No. 1	Elev. "M"	1511.479	1511.520	1511.563	1511.608	1511.650	1511.689	1511.726	1511.756	1511.780	1511.799	1511.807	1511.811	1511.803	1511.790	1511.767	1511.738	1511.701	1511.659	1511.610	1511.559
		(-) Elev. "N"																				
		(=) d																				
		(-) 0.688'																				
		(=) h																				
		Elev. "M"	1511.679	1511.718	1511.759	1511.802	1511.843	1511.897	1511.915	1511.943	1511.966	1511.982	1511.989	1511.991	1511.982	1511.967	1511.942	1511.911	1511.872	1511.828	1511.778	1511.725
		(-) Elev. "N"																				
	(=) d																					
	(-) 0.688'																					
	(=) h																					
	Elev. "M"	1511.877	1511.915	1511.954	1511.995	1512.034	1512.069	1512.103	1512.129	1512.150	1512.165	1512.171	1512.170	1512.159	1512.142	1512.115	1512.082	1512.042	1511.996	1511.944	1511.890	
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
	Elev. "M"	1512.077	1512.110	1512.148	1512.187	1512.224	1512.257	1512.289	1512.314	1512.333	1512.346	1512.349	1512.347	1512.335	1512.316	1512.287	1512.253	1512.211	1512.163	1512.109	1512.053	
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
	Elev. "M"	1512.153	1512.184	1512.220	1512.258	1512.293	1512.324	1512.354	1512.377	1512.395	1512.405	1512.407	1512.403	1512.389	1512.368	1512.338	1512.302	1512.258	1512.209	1512.153	1512.095	
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
	Elev. "M"	1511.985	1512.017	1512.051	1512.087	1512.120	1512.150	1512.178	1512.199	1512.215	1512.224	1512.224	1512.218	1512.198	1512.180	1512.148	1512.109	1512.064	1512.013	1511.955	1511.895	
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					
	Elev. "M"	1511.818	1511.849	1511.881	1511.915	1511.946	1511.974	1512.001	1512.020	1512.034	1512.041	1512.039	1512.032	1512.014	1511.989	1511.956	1511.916	1511.868	1511.815	1511.756	1511.694	
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688'																					
	(=) h																					

NOTES:

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

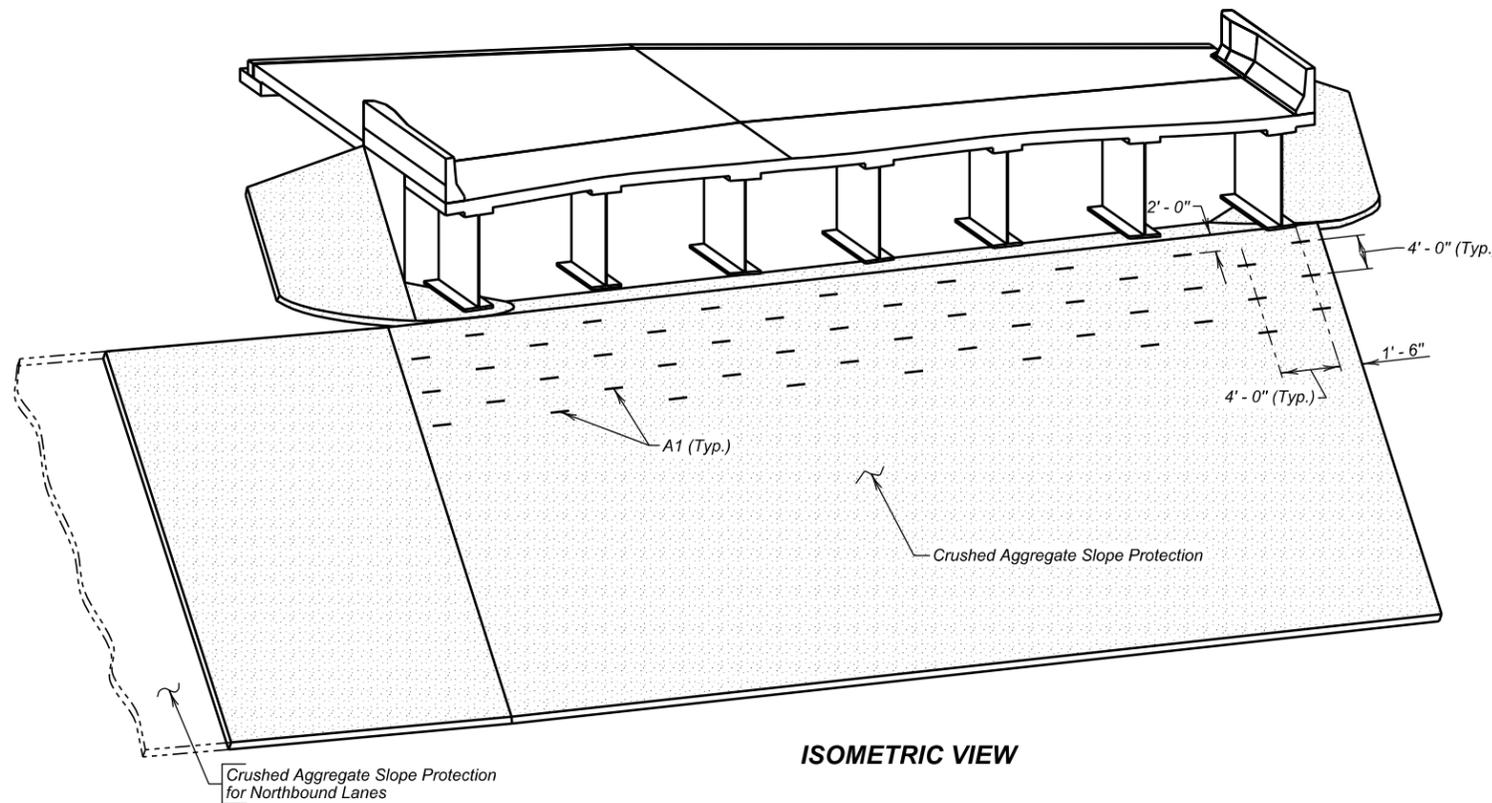
SLAB FORM ELEVATIONS
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

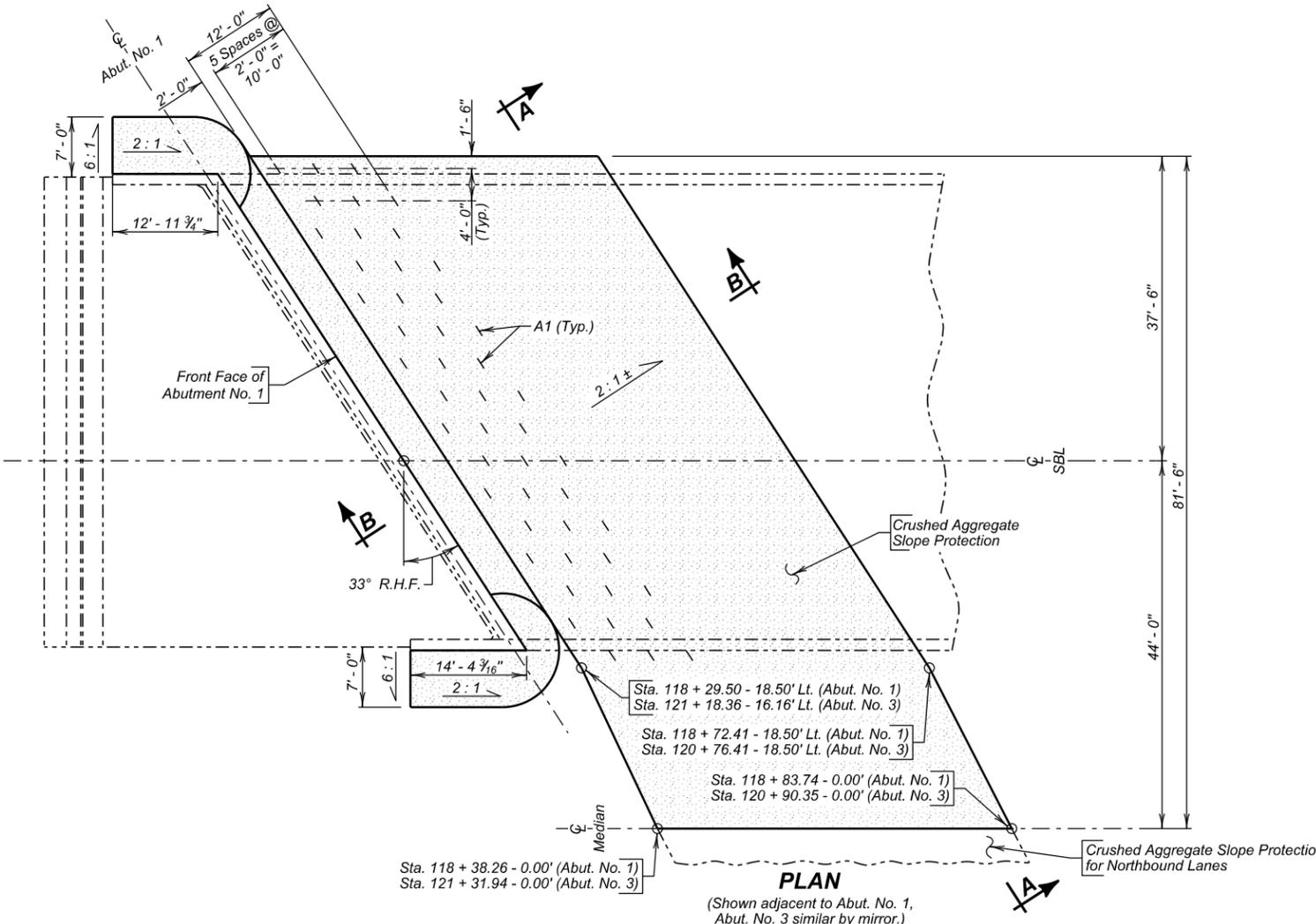
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E73	E127

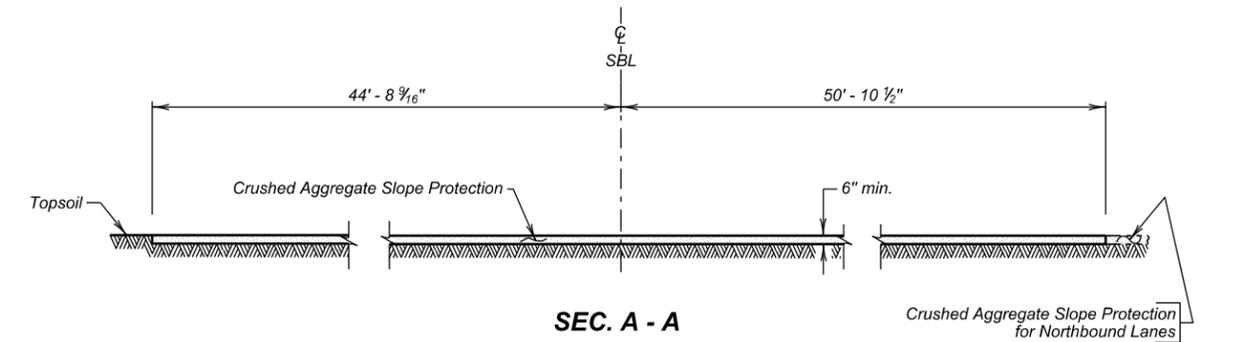


ISOMETRIC VIEW

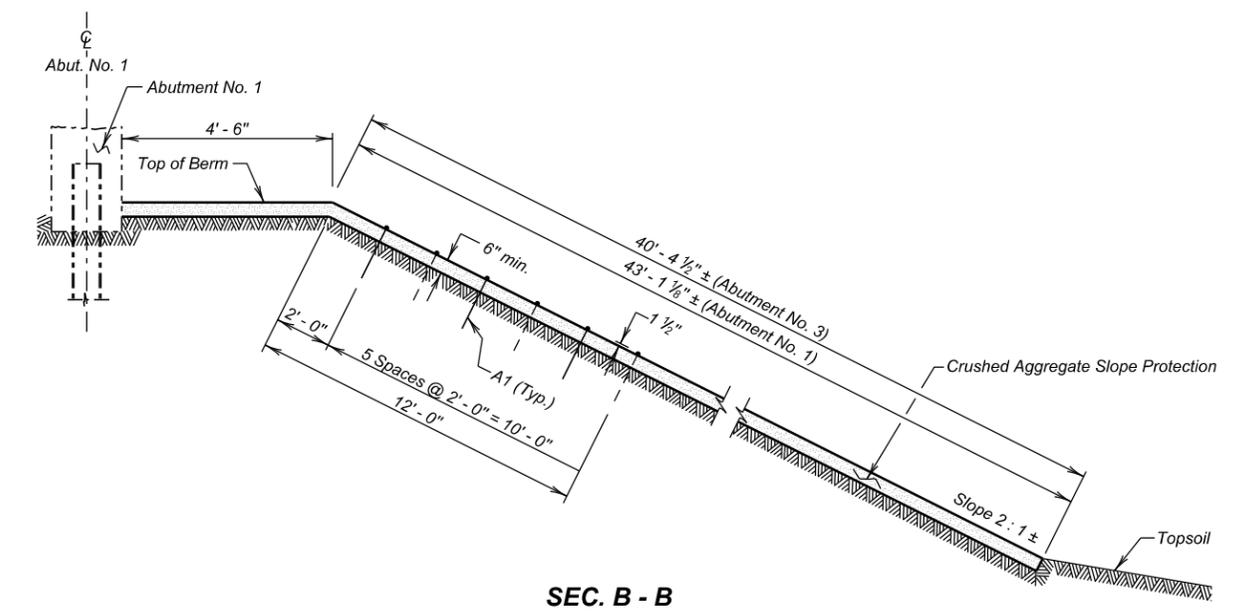


PLAN

(Shown adjacent to Abut. No. 1, Abut. No. 3 similar by mirror.)



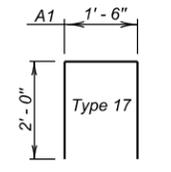
SEC. A - A



SEC. B - B

REINFORCING SCHEDULE					
(For Two Abutments)					
Mk.	No.	Size	Length	Type	Bending Details
A1	96	6	5'-6"	17	

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



ESTIMATED QUANTITIES		
(For Two Abutments)		
ITEM	UNIT	QUANTITY
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	1028.6

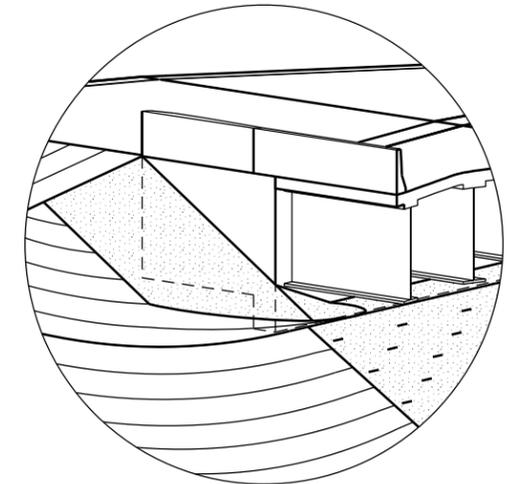
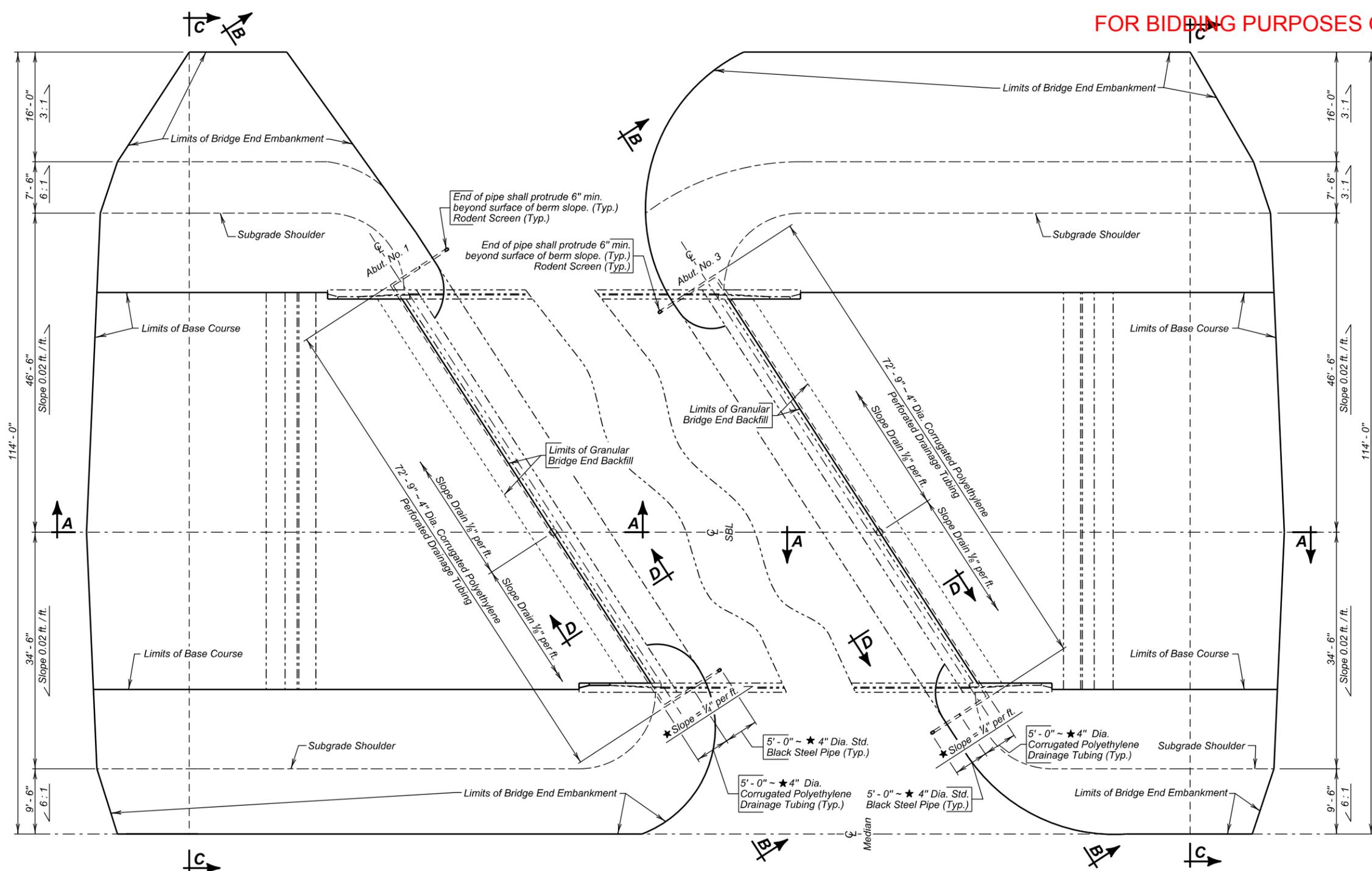
SLOPE PROTECTION DETAILS
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY JMH 01QSGB23	DRAFTED BY BT	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E74	E127



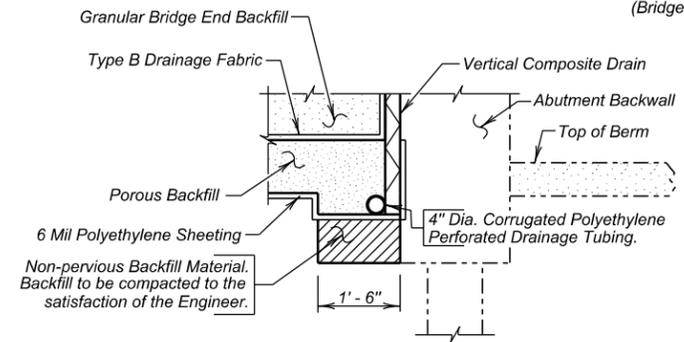
SPILL CONE DETAIL AT EMBANKMENT

ESTIMATED QUANTITIES		
(For Two Abutments)		
ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	113
Bridge End Embankment	Cu. Yd.	1662
Base Course	Ton	3222
Porous Backfill	Ton	32.8
4" Underdrain Pipe	Ft.	186
Geogrid Reinforcement	Sq. Yd.	3559

- 146 ft. 4" dia. Corrugated Polyethylene Perforated Drainage Tubing.
 - 20 ft. 4" dia. Corrugated Polyethylene Drainage Tubing.
 - 20 ft. 4" dia. Std. Black Steel Pipe with Rodent Screens.
 - 1107 sq. ft. Vertical Composite Drain
- Items 1 thru 4 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.
- 9065 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
 - 981 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.
- Payment quantities will be based on area covered plus 15% to account for overlaps.

PLAN
(Bridge End Backfill shown adjacent to Abut. No. 1)

PLAN
(Bridge End Backfill shown adjacent to Abut. No. 3)



SEC. D - D

DETAILS OF BRIDGE END BACKFILL (A)
FOR

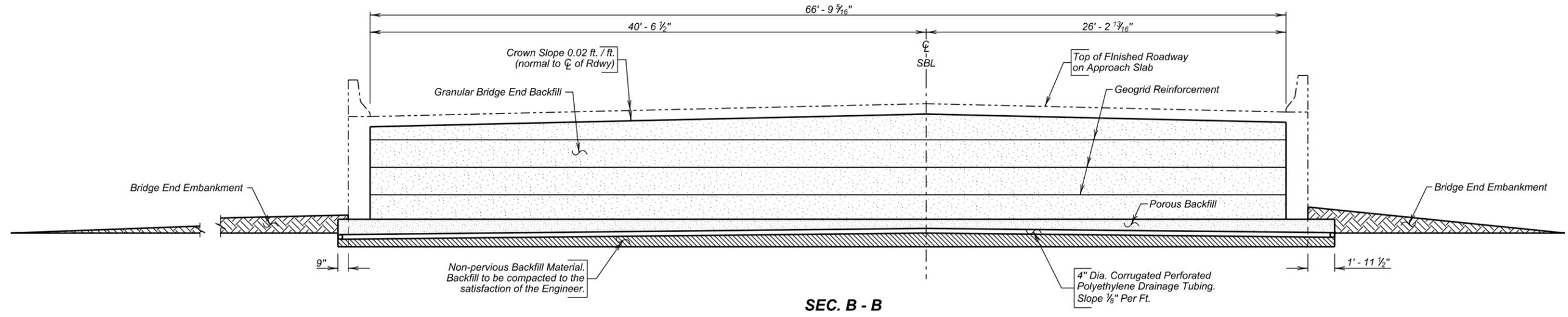
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY OVER I-229
 33° RHF SKEW
 SEC. 7-T100N-R50W
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

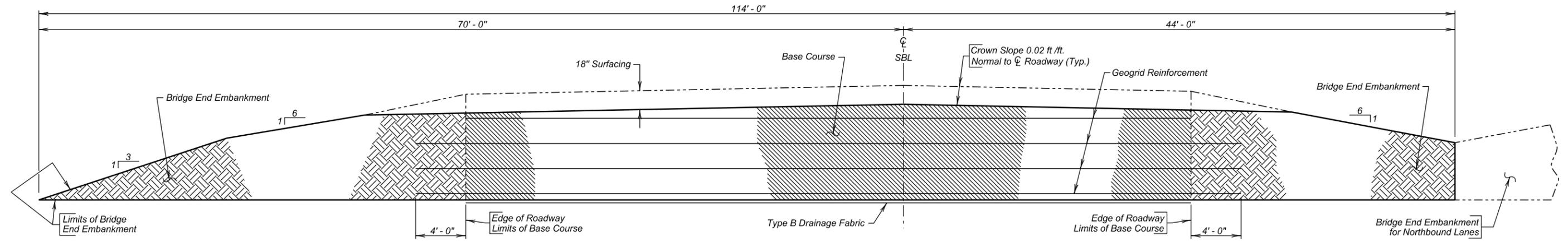
DESIGNED BY JMH LINC01QS	CK. DES. BY PW 01QSGB24	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

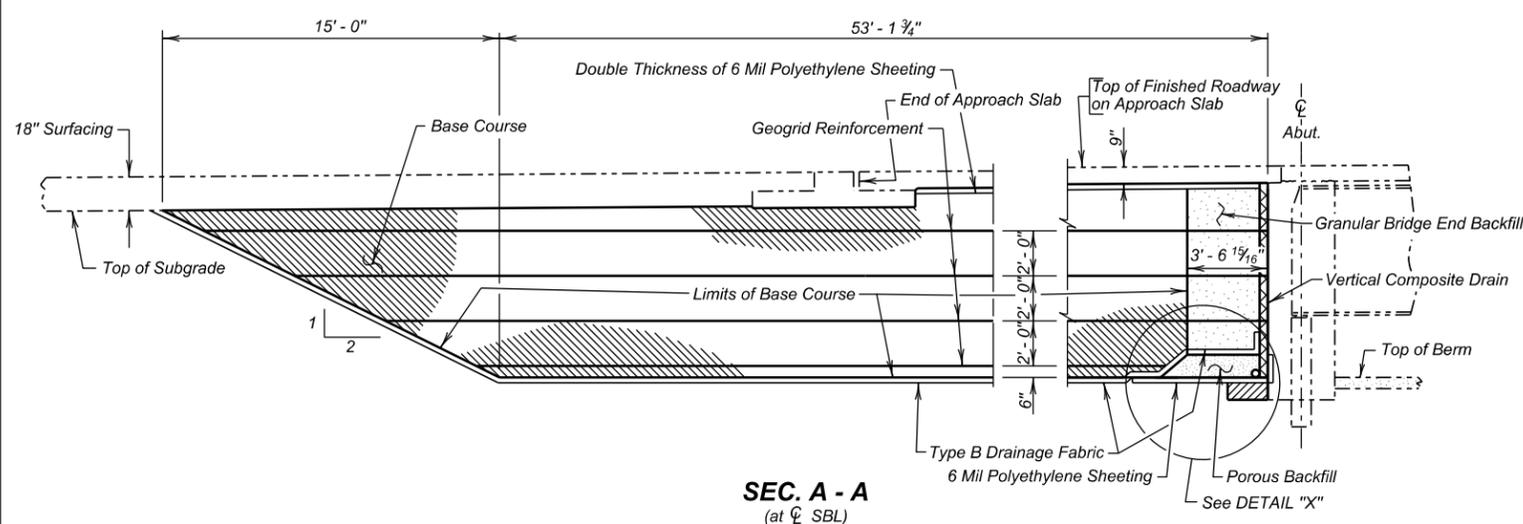
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E75	E127



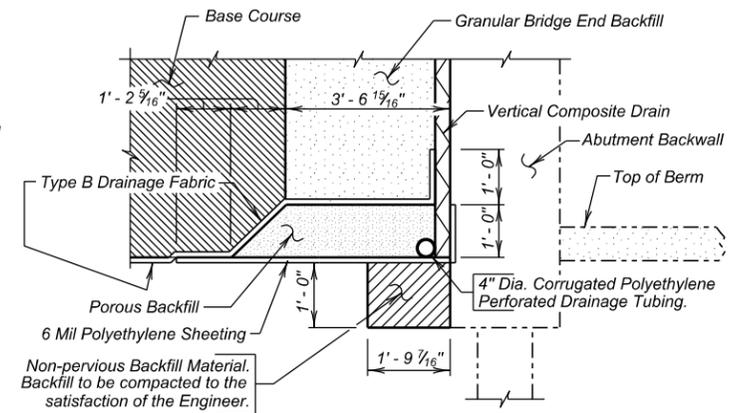
SEC. B - B



SEC. C - C



SEC. A - A
(at CL SBL)



DETAIL "X"

DETAILS OF BRIDGE END BACKFILL (B)
 FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY
 OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

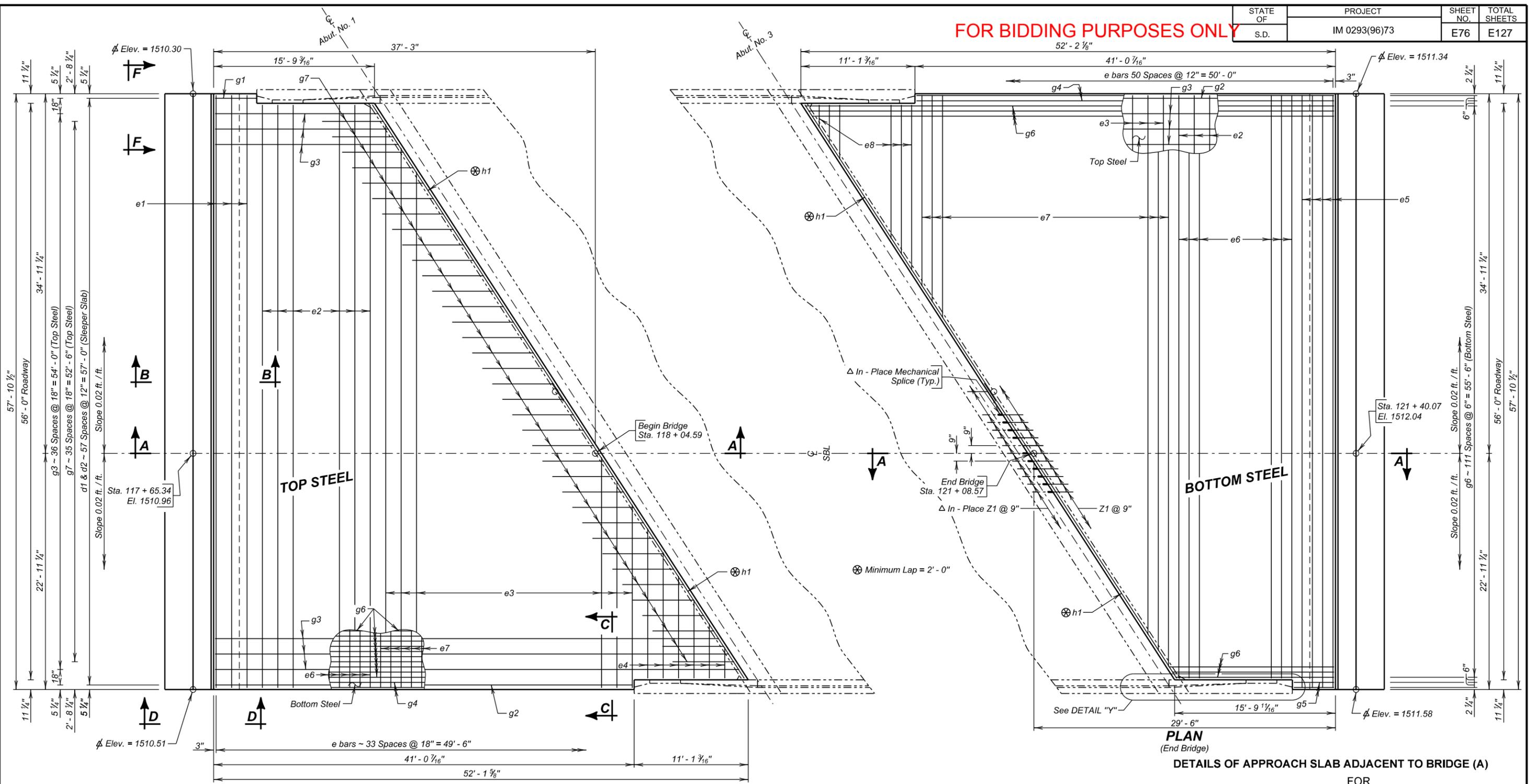
33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY JMH LINC01QS	CK. DES. BY PW 01QSGB25	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E76	E127

FOR BIDDING PURPOSES ONLY



TOP STEEL

BOTTOM STEEL

PLAN
(Begin Bridge)

PLAN
(End Bridge)

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (A)

FOR

SOUTHBOUND LANES

303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

56' - 0" ROADWAY
OVER I-229

33° RHF SKEW
SEC. 7-T100N-R50W

STA. 118 + 04.59 TO 121 + 08.57

IM 0293(96)73

STR. NO. 42-066-006

HL-93

LINCOLN COUNTY

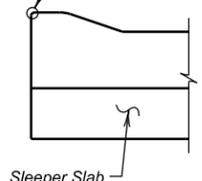
S. D. DEPT. OF TRANSPORTATION

APRIL 2015

26 OF 33

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

NOTE: Elevations Top of Sleeper Slab Curb at this location.



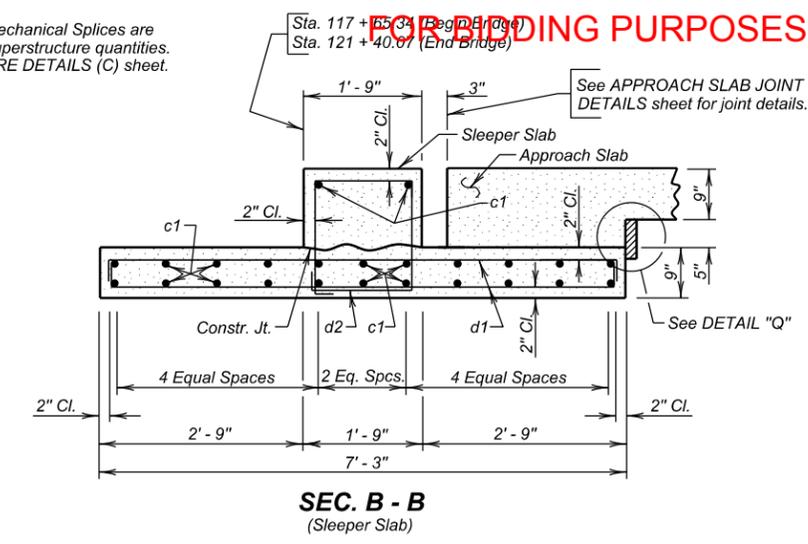
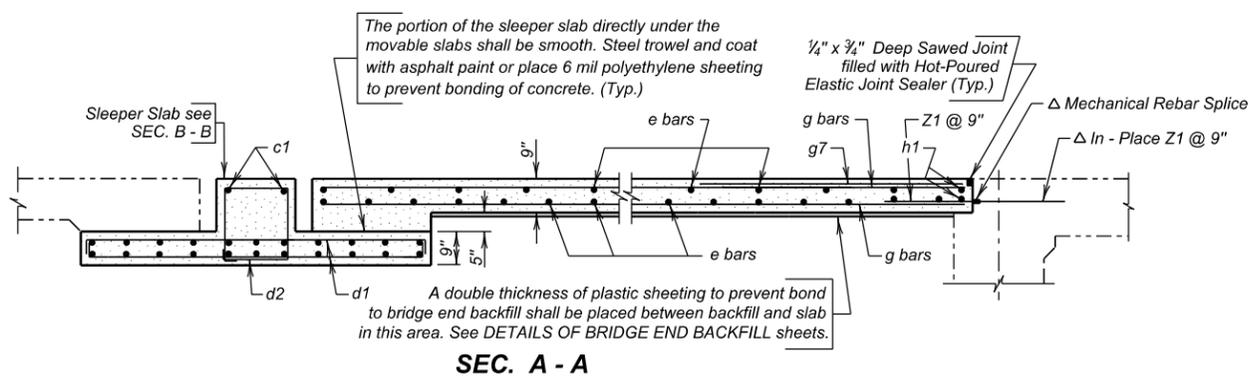
VIEW F - F

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB26	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E77	E127

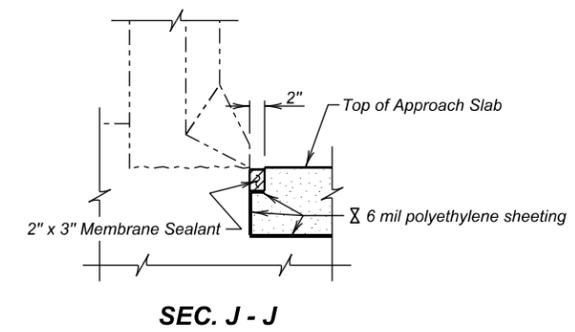
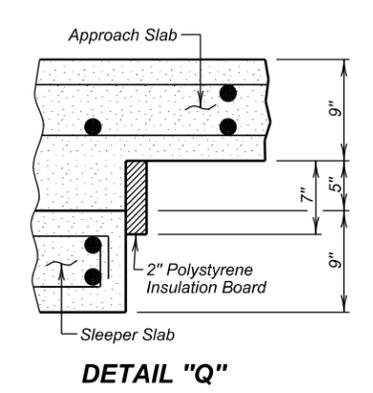
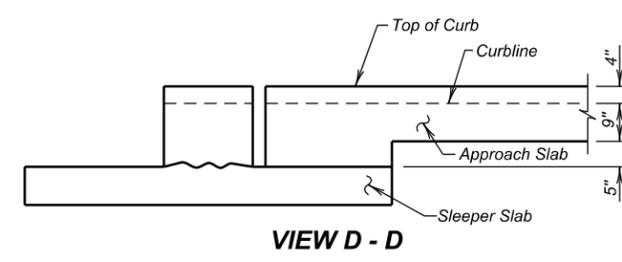
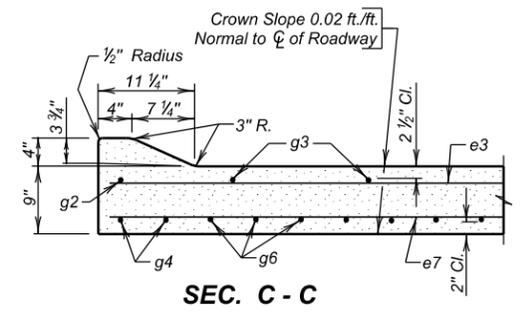
FOR BIDDING PURPOSES ONLY

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

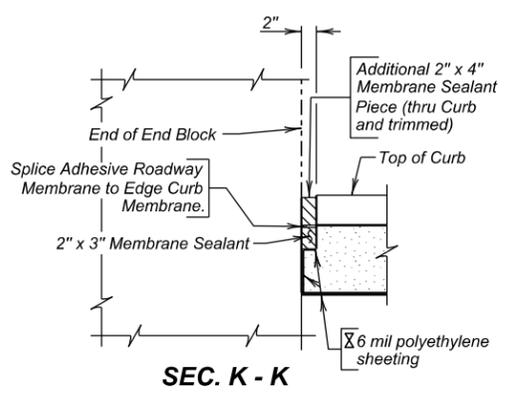


REINFORCING SCHEDULE					Bending Details		
(For Two Approach Slabs and Two Sleeper Slabs)							
Mk. No.	Size	Length	Type				
Approach Slabs							
e1	6	4	57'-7"	Str.	<p>Type T2</p>		
e2	16	4	56'-7"	Str.			
e3	17	4	72'-11"	Str.			
e4	6	4	17'-11"	Str.			
e5	8	6	57'-7"	Str.			
e6	24	6	56'-7"	Str.			
e7	25	6	74'-7"	Str.			
e8	10	6	18'-10"	Str.			
Sleeper Slabs							
g1	2	4	4'-0"	Str.	<p>Type 2</p>		
g2	2	4	40'-8"	Str.			
g3	37	4	67'-1"	Str.			
g4	4	8	40'-9"	Str.			
g5	4	8	4'-0"	Str.			
g6	112	8	67'-2"	Str.			
h1	8	6	34'-3"	Str.			
Z1	150	7	2'-0"	Str.			
Cutting Diagram							
c1	48	5	57'-7"	Str.	15'-7"	51'-7"	g6
d1	232	4	7'-9"	2	16'-0"	51'-1"	g3
d2	116	4	6'-9"	T2	2'-6"	16'-4"	e8
					18'-10"	55'-9"	e7
					3'-2"	14'-9"	e4
					18'-0"	54'-11"	e3
					54'-11"	18'-0"	e3
					14'-9"	3'-2"	e4
					55'-9"	18'-10"	e7
					16'-4"	2'-6"	e8
					51'-1"	16'-0"	g3
					51'-7"	15'-7"	g6

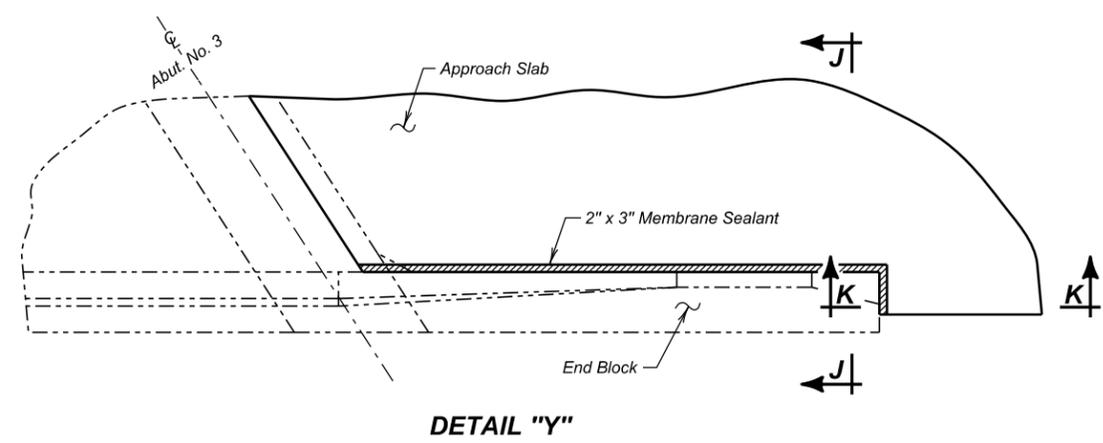
NOTE - All bars to be Epoxy Coated. All dimensions are out to out of bars. See cutting diagram.



NOTE: See APPROACH SLAB JOINT DETAILS sheet for notes regarding Membrane Sealant Expansion Joint.



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



ESTIMATED QUANTITIES		
(For Two Approach Slabs & Two Sleeper Slabs)		
ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	432.2
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	93.2
1. 112.5 Cu. Yds. Concrete in Approach Slabs.		
2. 31001 Lbs. Epoxy coated Re-Steel in Approach Slabs.		
3. 32.1 Cu. Yds. Concrete in Sleeper Slabs.		
4. 4607 Lbs. Epoxy coated Re-Steel in Sleeper Slab.		
5. 67.5 Sq. Ft. of 2" Polystyrene Insulation Board		
6. 49 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.

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (B)
 FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
 56' - 0" ROADWAY
 OVER I-229
 STA. 118 + 04.59 TO 121 + 08.57
 STR. NO. 42-066-006

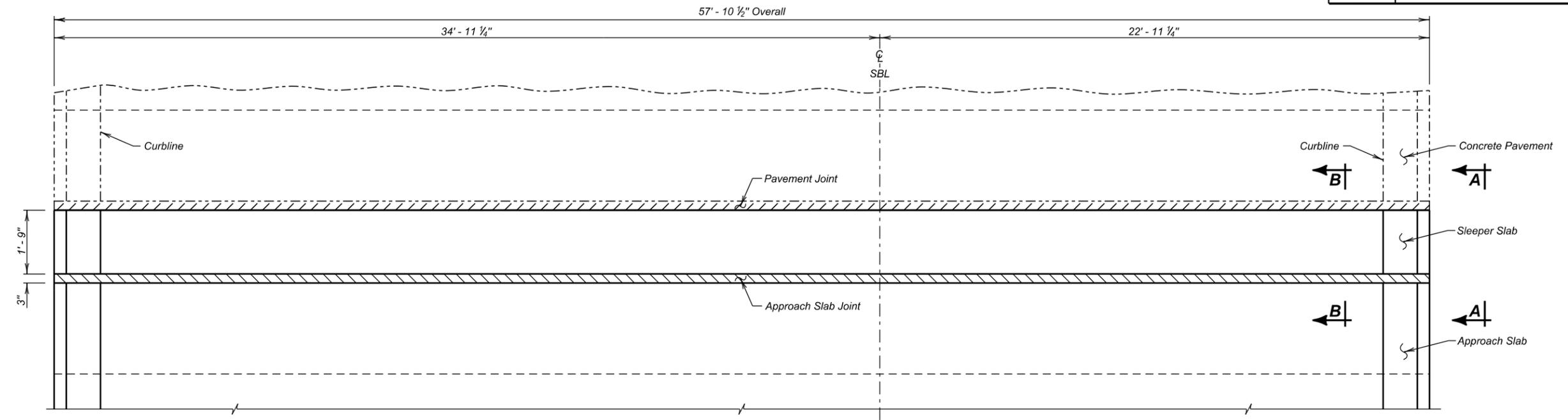
33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB27	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

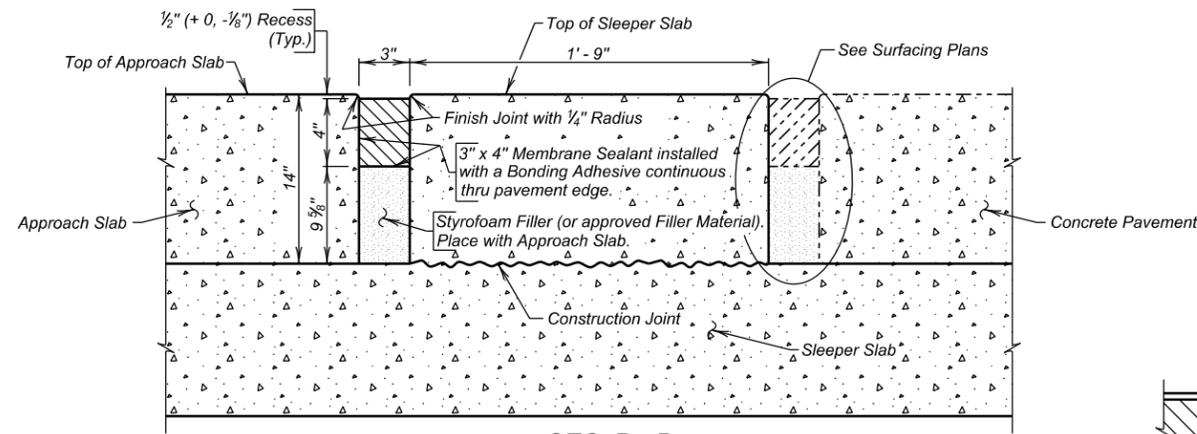
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E78	E127



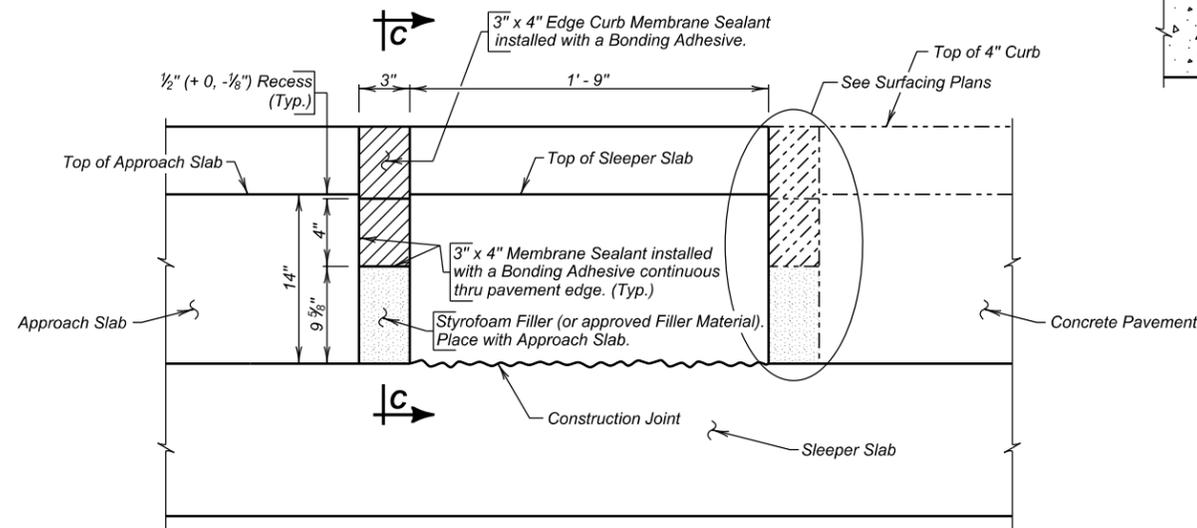
PLAN

GENERAL NOTES

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

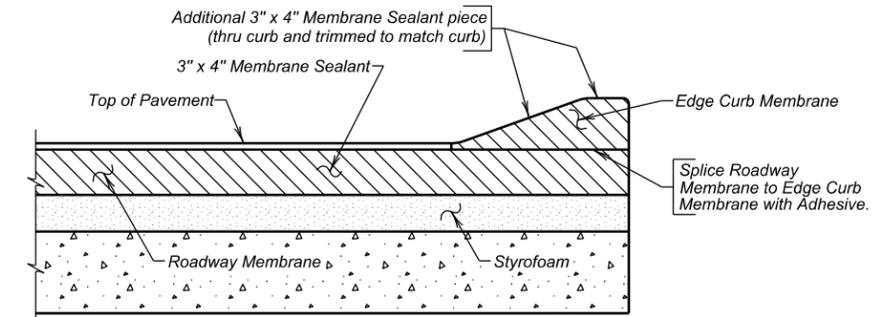


SEC. B - B



VIEW A - A

ESTIMATED QUANTITIES		
(For Two Approach Slabs)		
ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	115.8



SEC. C - C

APPROACH SLAB JOINT DETAILS
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY **33° RHF SKEW**
OVER I-229 **SEC. 7-T100N-R50W**
STA. 118 + 04.59 TO 121 + 08.57 **IM 0293(96)73**
STR. NO. 42-066-006 **HL-93**

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2015

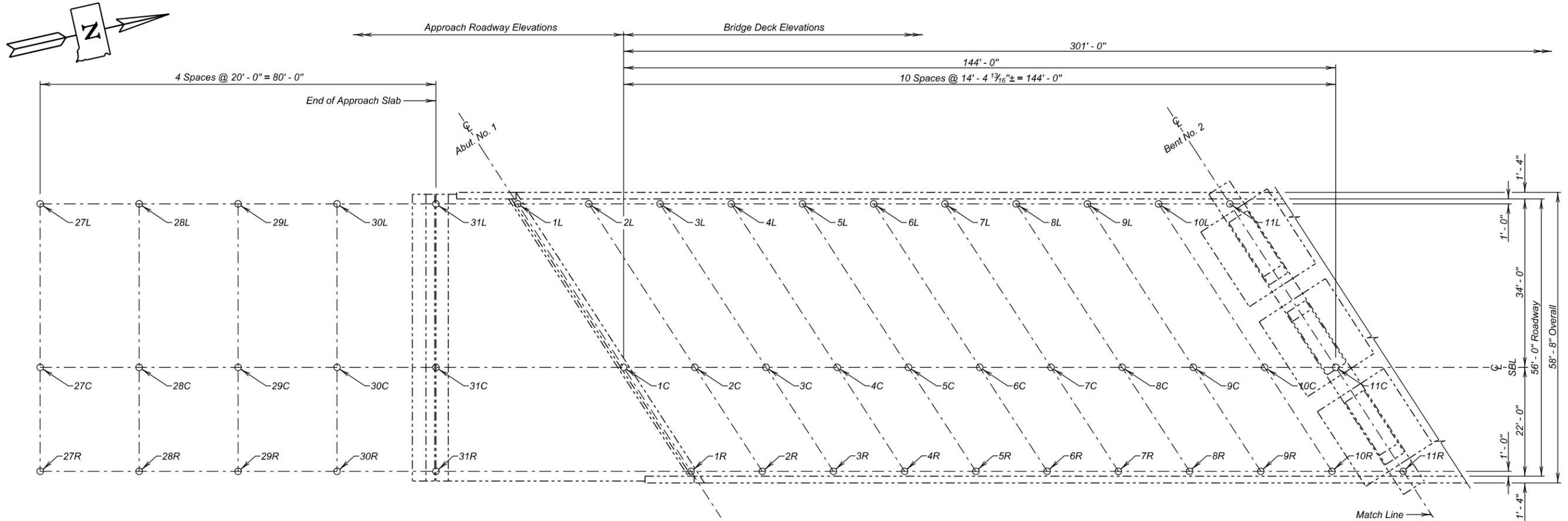
28 OF 33

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB28	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E79	E127



PLAN

Table of As-Built Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
6L		6C		6R	
7L		7C		7R	
8L		8C		8R	
9L		9C		9R	
10L		10C		10R	
11L		11C		11R	

Table of As-Built Elevations - Approach Roadway

Location	Elevation	Location	Elevation	Location	Elevation
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		31R	

Table of Elevations - Bridge Survey Markers

Location	Station - Offset	Elevation
Begin Bridge		

ESTIMATED QUANTITIES

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

AS-BUILT ELEVATION SURVEY (A)

FOR

SOUTHBOUND LANES

303' - 11 3/4" CONT. COMP. GIRDER BRIDGE

56' - 0" ROADWAY

OVER I-229

STA. 118 + 04.59 TO 121 + 08.57

STR. NO. 42-066-006

33° RHF SKEW

SEC. 7-T100N-R50W

IM 0293(96)73

HL-93

LINCOLN COUNTY

S. D. DEPT. OF TRANSPORTATION

APRIL 2015

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NOTE:

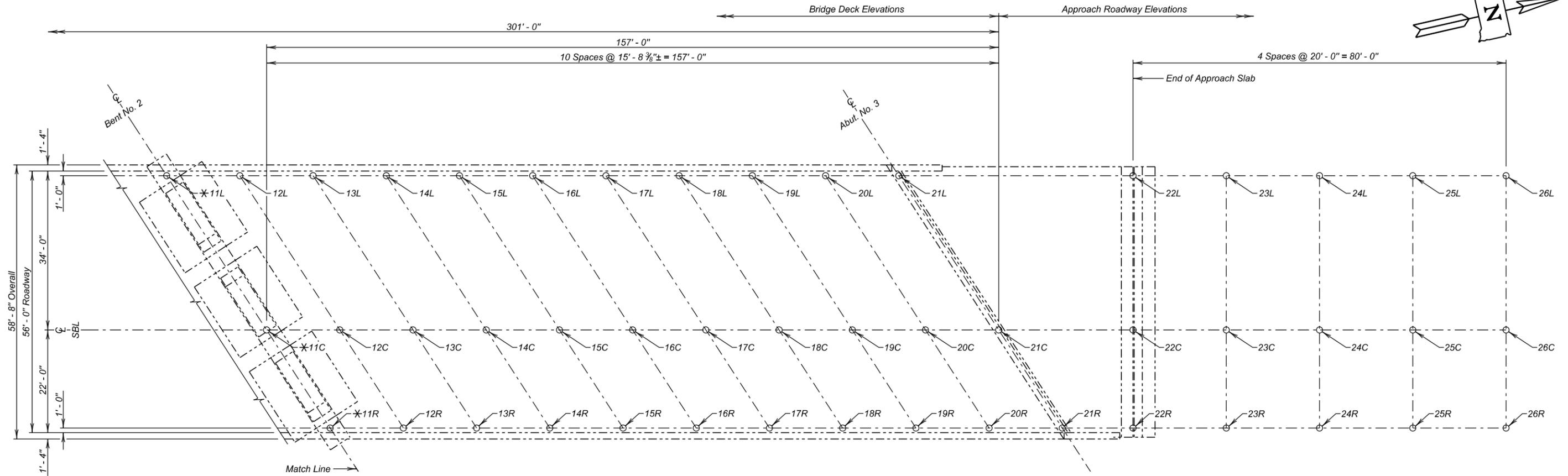
The Contractor shall be responsible for producing the As-Built Elevation Survey soon after construction is complete and before the bridge is opened to traffic. The As-Built Elevations of the Bridge shall be taken and recorded at the locations shown by the table on this sheet. The completed table shall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

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB29	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E80	E127



* Included in As-Built Elevation Survey (A)

PLAN

Location	Elevation	Location	Elevation	Location	Elevation
12L		12C		12R	
13L		13C		13R	
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	

Location	Elevation	Location	Elevation	Location	Elevation
22L		22C		22R	
23L		23C		23R	
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	

Location	Station - Offset	Elevation
End Bridge		

NOTE:

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

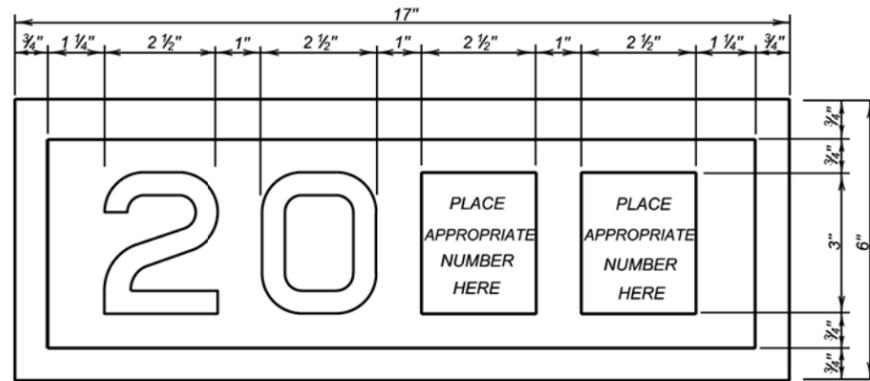
AS-BUILT ELEVATION SURVEY (B)
FOR
SOUTHBOUND LANES
303' - 11 3/4" CONT. COMP. GIRDER BRIDGE
56' - 0" ROADWAY
OVER I-229
STA. 118 + 04.59 TO 121 + 08.57
STR. NO. 42-066-006
33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

APRIL 2015

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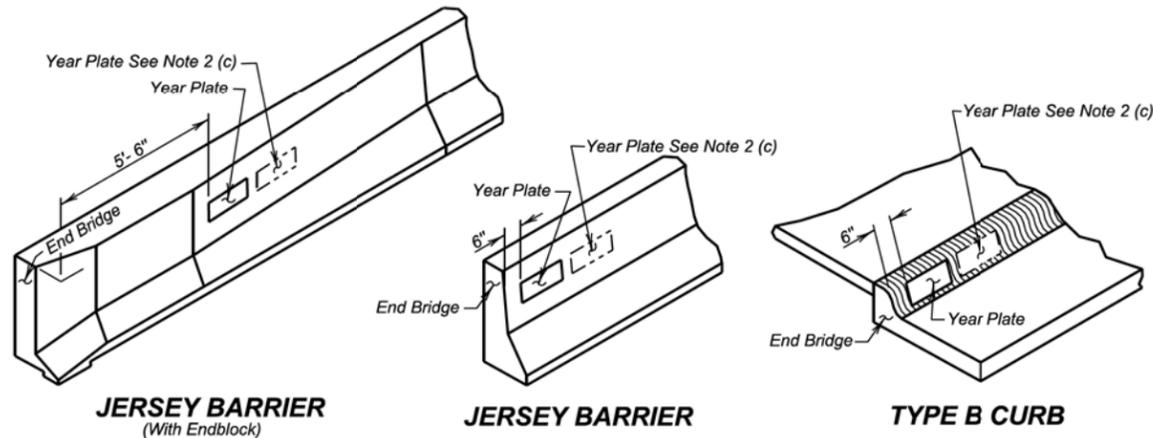
DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGB30	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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YEAR PLATE DETAILS

GENERAL NOTES:

- 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 (1/2) inch in depth.
- Year plates shall be located on structure (s) as follows:
 - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate 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.
 - 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.
 - 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.
- 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.



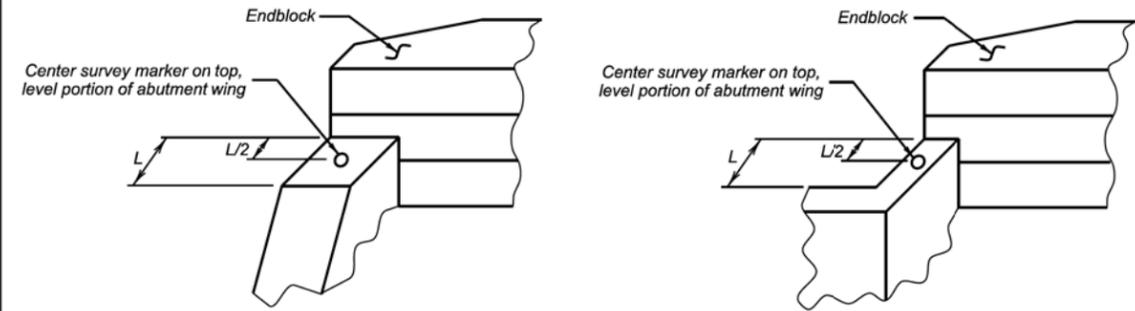
JERSEY BARRIER
(With Endblock)

JERSEY BARRIER

TYPE B CURB

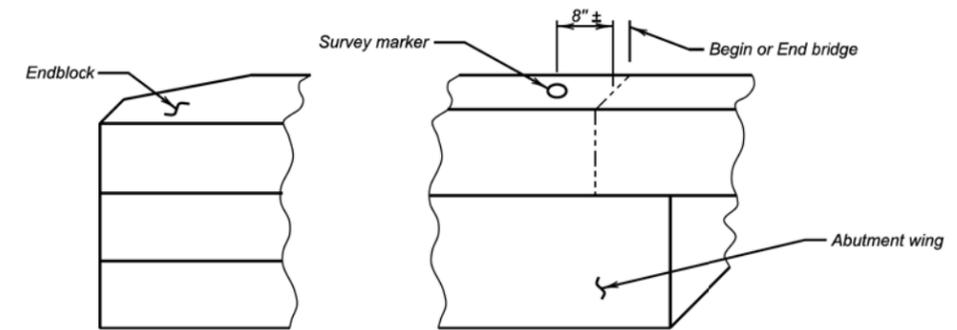
June 26, 2012

Published Date: 3rd Qtr. 2015	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



ABUTMENT WITH "STRAIGHT" WINGS

ABUTMENT WITH "SWEEP BACK" WINGS



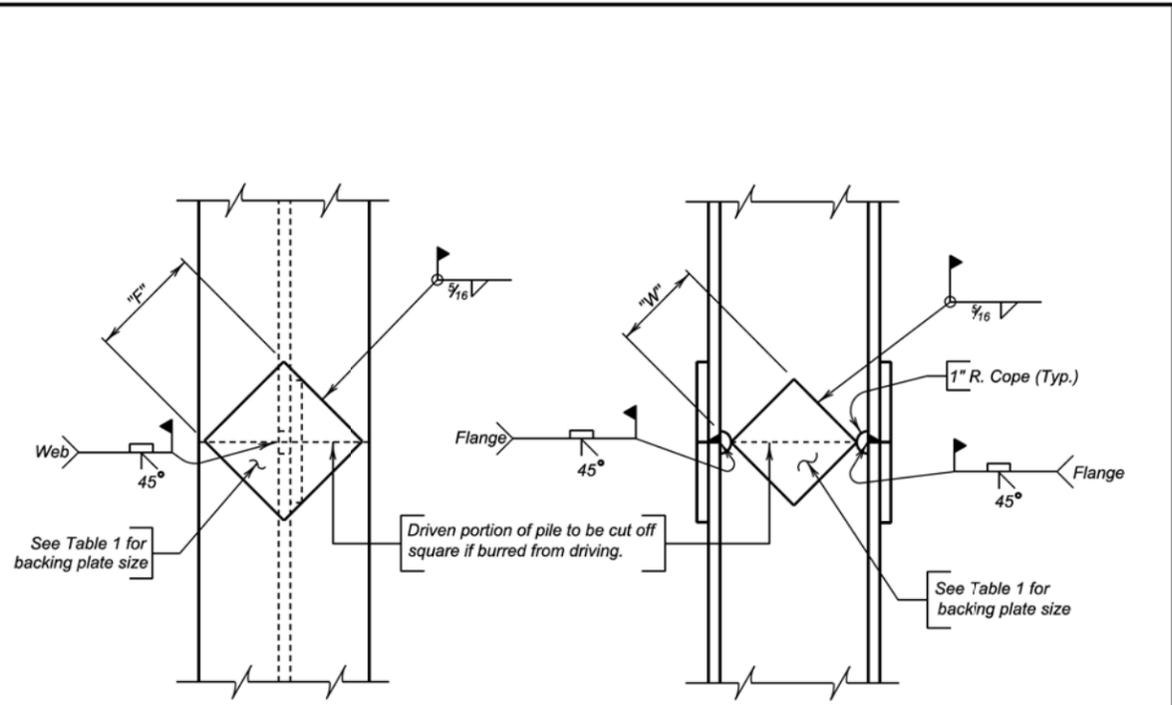
ABUTMENT WITH "SWEEP BACK" WINGS
(Endblock on top of wings)

GENERAL NOTES:

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

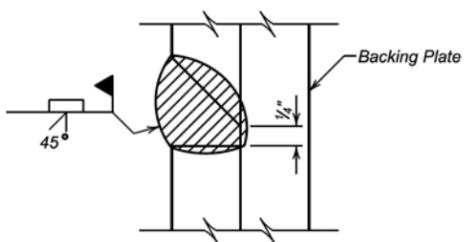
June 26, 2012

Published Date: 3rd Qtr. 2015	S D D O T	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1



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

COMPLETE JOINT PENETRATION WELD DETAIL



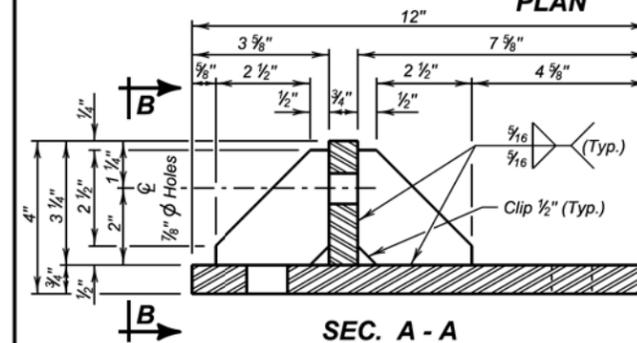
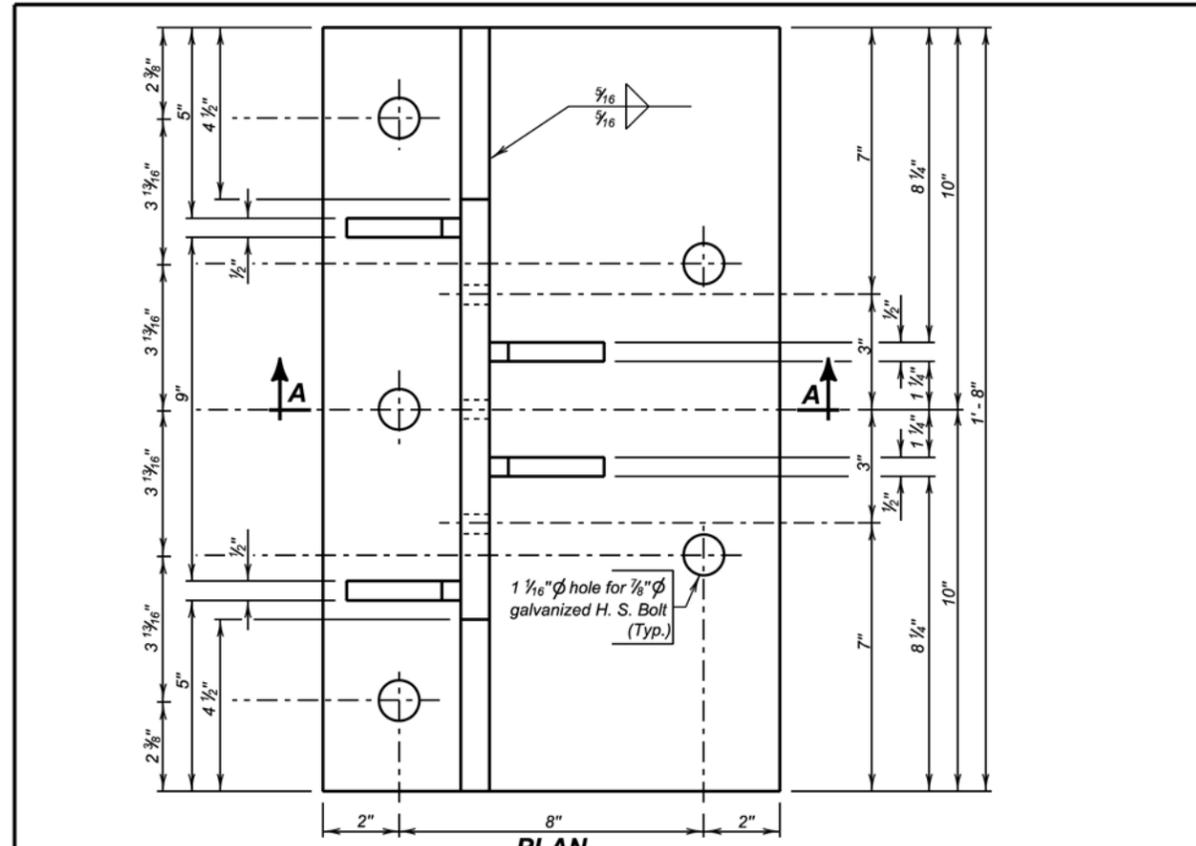
GENERAL NOTES:

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

PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

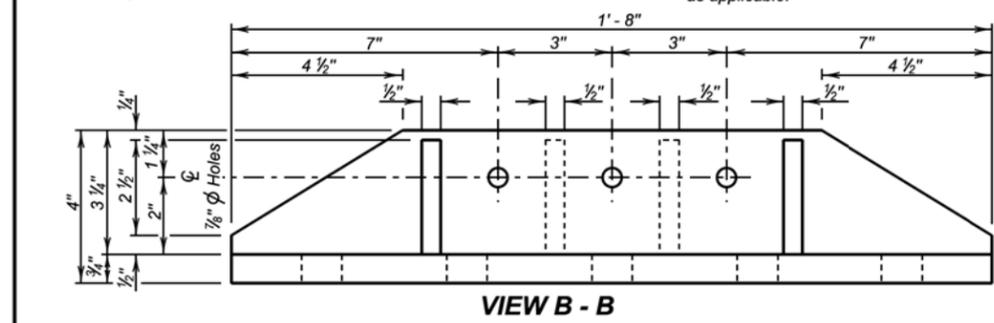
December 23, 2012

S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
	Published Date: 3rd Qtr. 2015	Sheet 1 of 1



GENERAL NOTES:

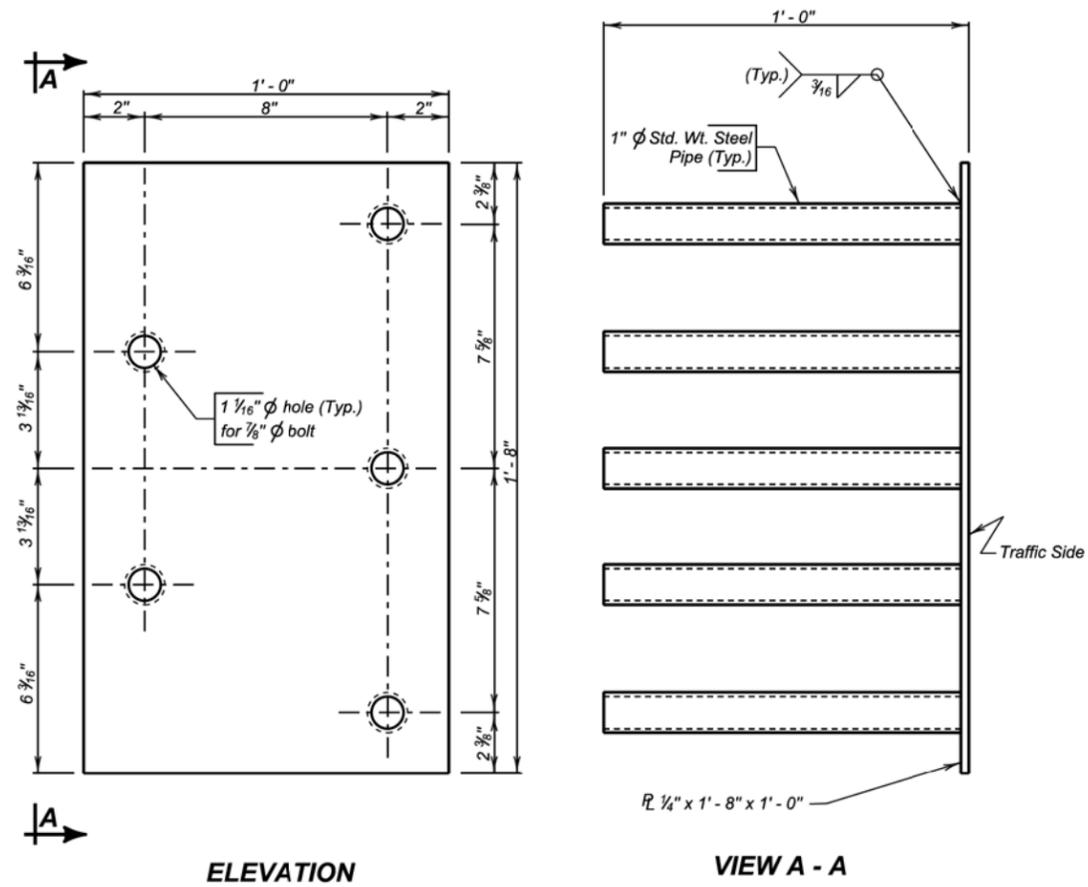
1. All steel shall conform to ASTM A709 Grade 36.
2. Welding and weld inspection shall be in conformance with AWS/ANSI D1.1 (Current Year) Structural Welding Code - Steel.
3. After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).
4. Bolts, nuts, and washers shall be provided with each assembly. Bolts shall be galvanized and conform to the requirements of ASTM A307 or A449. Plain washers shall be galvanized and conform to ASTM F844.
5. All Costs associated with furnishing and installing the 3 cable guardrail connection assembly shall be incidental to the contract unit price for the bid items "Class A45 Concrete, Bridge Deck", "Class A45 Concrete, Bridge Repair", or "3 Cable Guardrail", as applicable.



June 26, 2012

S D D O T	3 CABLE GUARDRAIL CONNECTION ASSEMBLY	PLATE NUMBER 629.30
	Published Date: 3rd Qtr. 2015	Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E83	E127



ELEVATION

VIEW A - A

GENERAL NOTES:

1. Steel plate for the insert assembly shall conform to ASTM A709 Grade 36. The steel pipes shall conform to ASTM A53 or ASTM A500 Grade B.
2. Welding and weld inspection shall be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.
3. After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).
4. Bolts, nuts, and washers shall be provided with each assembly. Bolts shall be galvanized and conform to the requirements of ASTM A307, A325, or A449. Plain washers shall be galvanized and conform to ASTM F844.
5. Bolt heads shall be placed on the traffic side of the endblock. Bolt projection at the back side of the insert shall not exceed 1 inch beyond the nut.
6. The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing shall be incidental to the contract unit price per Cubic Yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

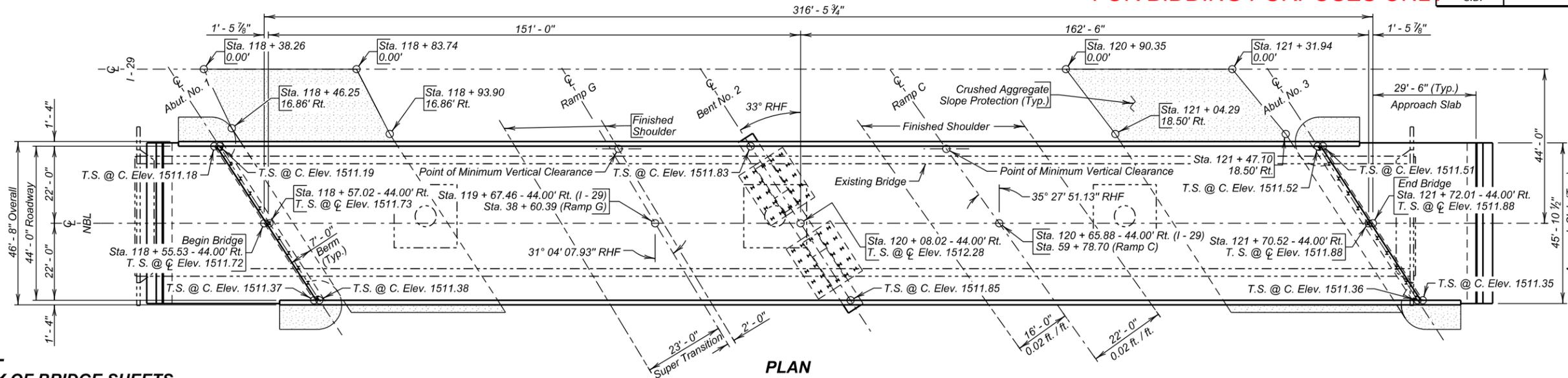
December 23, 2013

<p>S D D O T</p>	<p>5 BOLT INSERT PLATE ASSEMBLY</p>	PLATE NUMBER
		630.92
Published Date: 3rd Qtr. 2015		Sheet 1 of 1

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

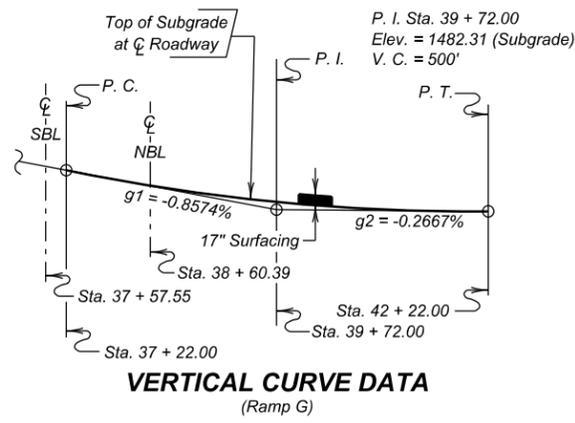
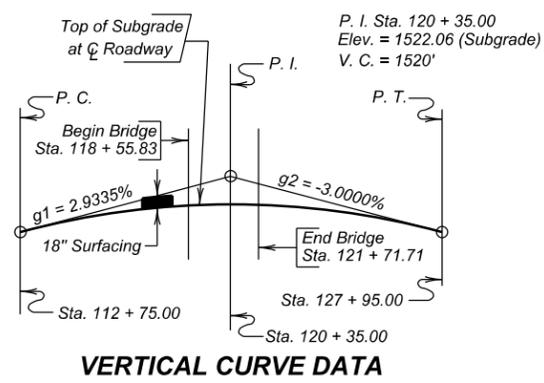
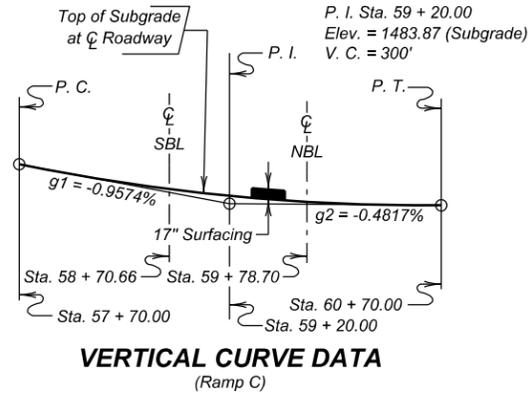
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E84	E127

FOR BIDDING PURPOSES ONLY

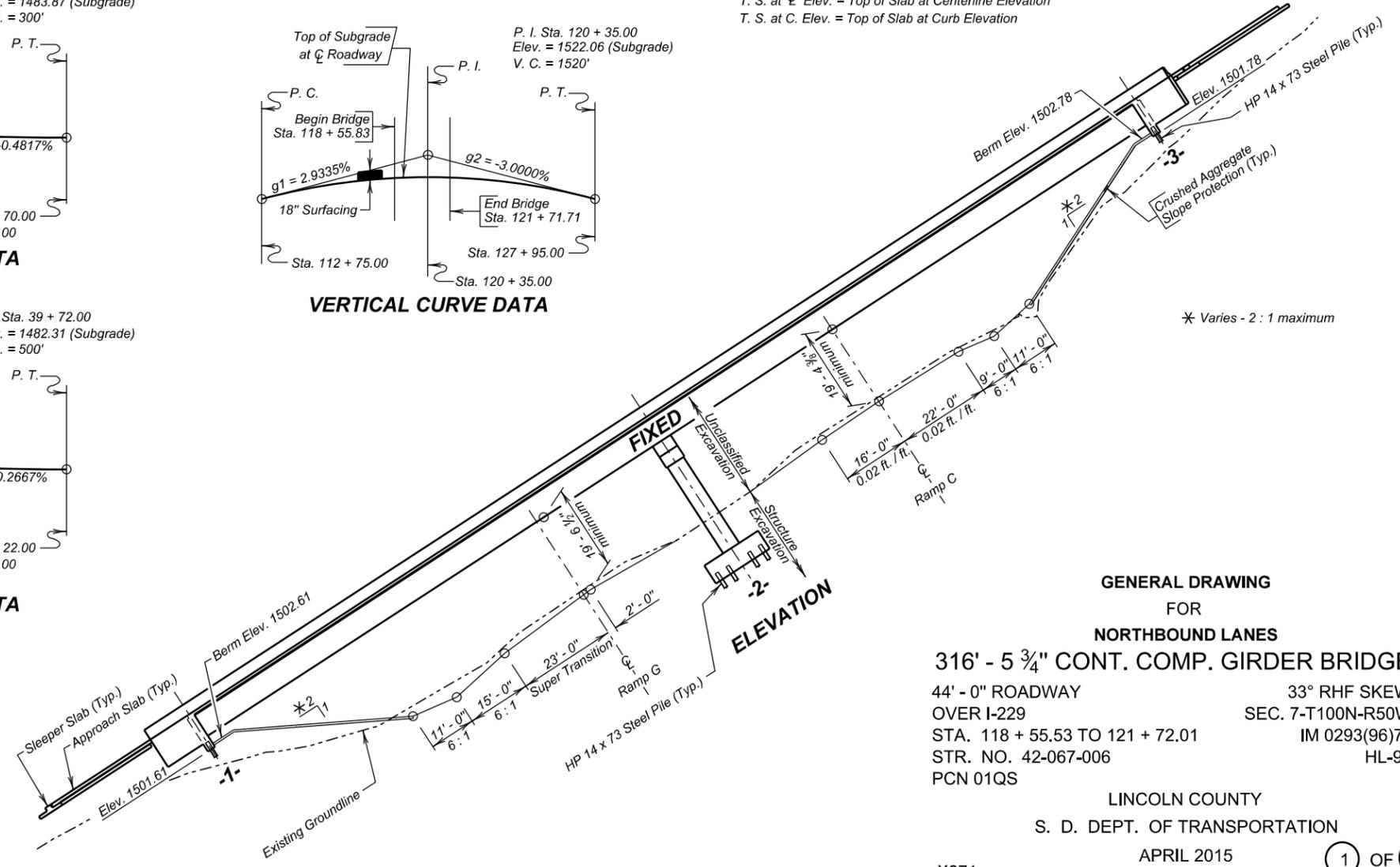
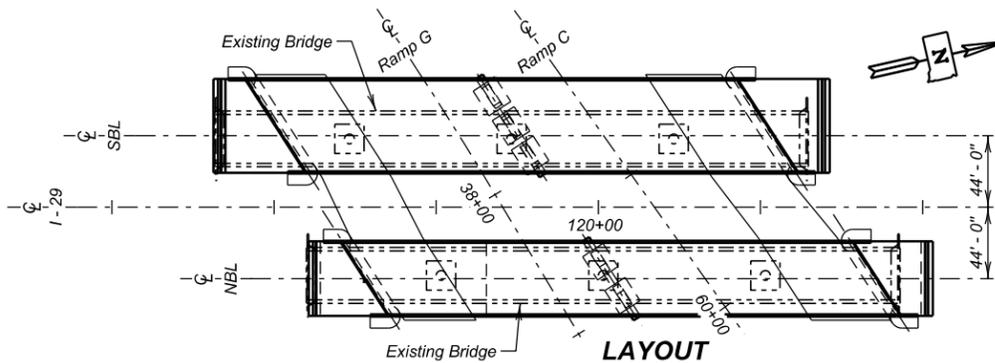


-X271- INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - General Drawing
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Notes (Continued)
- Sheet No. 6 - Subsurface Investigation and Piling Layout
- Sheet No. 7 - Piling Layout Details
- Sheet No. 8 - Abutment No. 1 Details (A)
- Sheet No. 9 - Abutment No. 1 Details (B)
- Sheet No. 10 - Abutment No. 3 Details (A)
- Sheet No. 11 - Abutment No. 3 Details (B)
- Sheet No. 12 - Bent Details (A)
- Sheet No. 13 - Bent Details (B)
- Sheet No. 14 - Superstructure Details (A)
- Sheet No. 15 - Superstructure Details (B)
- Sheet No. 16 - Superstructure Details (C)
- Sheet No. 17 - End Block and Barrier Curb Details
- Sheet No. 18 - Girder Layout Details
- Sheet No. 19 - Diaphragm Details
- Sheet No. 20 - Framing Diagram, Camber, & Erection Data
- Sheet No. 21 - Slab Form Elevations
- Sheet No. 22 - Details of Bolted Field Splices & Bearings
- Sheet No. 23 - Slope Protection Details
- Sheet No. 24 - Details of Bridge End Backfill (A)
- Sheet No. 25 - Details of Bridge End Backfill (B)
- Sheet No. 26 - Details of Approach Slab Adjacent to Bridge (A)
- Sheet No. 27 - Details of Approach Slab Adjacent to Bridge (B)
- Sheet No. 28 - Approach Slab Joint Details
- Sheet No. 29 - As - Built Elevation Survey (A)
- Sheet No. 30 - As - Built Elevation Survey (B)
- Sheet No. 31 - Details of Standard Plate No.'s 460.02 & 460.05
- Sheet No. 32 - Details of Standard Plate No.'s 510.40 & 630.92



NOTE:
T. S. at \bar{C} Elev. = Top of Slab at Centerline Elevation
T. S. at C. Elev. = Top of Slab at Curb Elevation



GENERAL DRAWING FOR NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY OVER I-229
 33° RHF SKEW
 SEC. 7-T100N-R50W
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006
 PCN 01QS
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

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

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA01	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	1541	SqYd	See Special Provision
Incidental Work, Structure	Lump Sum	LS	
Base Course	2584	Ton	
Structural Steel	Lump Sum	LS	See Special Provision
Membrane Sealant Expansion Joint	91.8	Ft	
Granular Bridge End Backfill	85.8	Cu Yd	
Class A45 Concrete, Bridge Deck	435.0	Cu Yd	
Class A45 Concrete, Bridge	347.9	Cu Yd	
Concrete Approach Slab for Bridge	310.0	SqYd	
Concrete Approach Sleeper Slab for Bridge	73.9	SqYd	
Reinforcing Steel	44019	Lb	
No. 14 Rebar Splice	48	Ea.	
No. 7 Rebar Splice	118	Ea.	
HP 14x73 Steel Test Pile, Furnish and Drive	330	Ft	
HP 14x73 Steel Bearing Pile, Furnish and Drive	5955	Ft	
Bridge Berm Slope Protection, Crushed Aggregate	926.5	Sq Yd	
Geogrid Reinforcement	2598	Sq Yd	
Bridge End Embankment	1723	Cu Yd	
Bridge Painting	Lump Sum	L.S.	
4" Underdrain Pipe	156	Ft	
Porous Backfill	28.6	Ton	
Structure Excavation, Bridge	198	Cu Yd	
Preboring Pile	220	Ft	

ALTERNATE A

Stainless Reinforcing Steel	114998	Lb	See Special Provision
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ALTERNATE B

Zinc and Epoxy Dual Coated Reinforcing Steel	114998	Lb	ASTM 1055
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SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2014 Edition with 2015 interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

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

DESIGN MATERIAL STRENGTHS

Concrete	$f_c = 4,500$ psi
Reinforcing Steel	$f_y = 60,000$ psi
Piling (ASTM A572 Grade 50)	$f_y = 50,000$ psi
Structural Steel (ASTM A709 Gr. 36T2)	$f_y = 36,000$ psi
Structural Steel (ASTM A709 Gr. 50T2)	$f_y = 50,000$ psi

GENERAL CONSTRUCTION

- All mild reinforcing steel shall conform to ASTM A615, Grade 60. If Alternate A is chosen, all stainless reinforcing steel shall conform to ASTM 955, Grade 60. If Alternate B is chosen, all zinc and epoxy dual coated reinforcing steel shall conform to ASTM 1055, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.
- Use 2" clear cover on all reinforcing steel except as shown.
- Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02.
- Barrier Curbs and End blocks shall be built normal to the grade.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of resteel.
- The elevation of the bridge deck is 1' - 6" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 118+32.93 – 42.0" Rt. to centerline Sta. 121+95.93 – 42.0' Rt. is a 365.2' 4 span concrete box girder bridge with a 30'-0" clear roadway. The superstructure consists of reinforced concrete box girders with concrete jersey barrier continuous across the bridge. The deck has been overlaid with 3 1/2 inches of asphalt. The substructure consists of single column reinforced concrete piers and reinforced concrete vertical abutments, all of which are supported on timber piling.
- Break down and remove the existing bridge and approach/sleeper slabs to 1 foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Specifications. All portions of the existing bridge shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the WASTE DISPOSAL SITE note found in Section A.
- The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid it shall be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved. If desired by the Contractor, a copy of the original construction plans may be obtained through the Office of Bridge Design.

DESIGN MIX OF CONCRETE

- All structural concrete shall be Class A45 unless otherwise indicated.
- Type II cement conforming to Section 750 is required except, Type III cement is required in the abutments. Type III cement shall contain a maximum 8% Tricalcium Aluminate (C_3A) and a maximum 0.6% Alkalies ($Na_2O + 0.658K_2O$).

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

ABUTMENTS

- Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
- The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling shall develop a field verified nominal bearing resistance of 335 tons per pile.
- One test pile shall be driven at each abutment and will become part of the pile group.
- The contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40.
- Piles shall not be driven out of position by more than two inches in the direction parallel to the girder centerline. A pile-driving template shall be used to insure this accuracy.
- Each finished abutment shall include a Bridge Survey Marker. See Standard Plate No. 460.05
- Abutment backwalls and wings shall not be cast until after the deck has been poured.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-067-006

APRIL 2015

2 OF 32

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA02	DRAFTED BY BT	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E86	E127

CONNECTION OF GIRDER TO PILE

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

POURING OF ABUTMENT CONCRETE

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

BENTS

1. All Swedge Bolts shall be 1 1/2" diameter x 2' - 6" F1554, Grade 55 bolts with heavy hex nut and cut washer (listed with structural steel in Superstructure quantities). A minimum of 20% of the embedded bolt surface shall be covered with deformations whose radial dimensions are 15% to 20% of the bolt diameter.
2. The HP 14x73 Piling were designed using a factored bearing resistance of 134 tons per pile. Piling shall develop a field verified nominal bearing resistance of 335 tons per pile.
3. One test pile shall be driven at each bent and will become part of the pile group.
4. The contractor shall have sufficient pile splice material on hand before pile driving is started. See Plate No. 510.40

SUPERSTRUCTURE

1. Structural Steel shall conform to ASTM A709 Gr. 50T2. Angles in the diaphragms shall conform to ASTM A588 Grade 50. Shear connectors shall conform to Section 7.3 Type B. of the AASHTO/AWS D1.5 Bridge Welding Code.
2. Bolts, nuts, and washers shall conform to ASTM A325 Type 1.
3. Shear Connectors shall be field welded to the girders in accordance with the Shear Connector Field Installation Special Provision.
4. All butt welded girder splices shall be ultrasonically inspected. See notes regarding Welding and Weld inspection.
5. Cost of welding and weld inspection shall be included in the contract lump sum price for Structural Steel.
6. Structural Steel shall be painted in accordance with Section 411 of the Specifications. The top coat shall be an approved brown (Federal Standard 595B Color 30045).
7. See diaphragm details for notes concerning diaphragms.
8. Structural Steel used in all girder web plates, girder flanges, and girder splice plates shall comply with the Charpy-V-Notch toughness requirements set forth in Section 971 of the Specifications. Material greater than 1 1/2 inches in thickness shall require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension and stress reversal areas of girder flanges.
9. The deck-finishing machine shall be adjusted and operated in such a manner that the roller screed or screeds are parallel with the centerline of the bridge and the finish machine is perpendicular to the centerline of the bridge. Concrete placement in front of the finish machine shall be kept parallel to the skew of the bridge.
10. An admixture is required to ensure the concrete remains plastic for 3 hours after placement. The concrete bridge deck shall be placed and finished at a minimum rate of 55 ft. of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer shall order a header installed and operations stopped. If a header is required sometime during the pour operation, its location shall be at or as near as possible to the three quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 55 ft. per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.
11. Dead Load camber shall be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.
12. Snap ties, if used in the barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.

13. The Contractor shall submit a detailed girder erection plan 30 days prior to girder erection. The plan shall include complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details and temporary bracing details. The girder erection plan shall be stamped by a Professional Engineer registered in South Dakota.
14. All single girder segments shall be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully connected. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected. At no time will a single girder segment be allowed over traffic.
15. If Alternative A is chosen for reinforcing steel, see Special Provision for Stainless Reinforcing Steel. If Alternative B is chosen, reinforcing steel shall conform to ASTM 1055. Mixing of reinforcing types will not be allowed.

BEARINGS

1. All steel for the bearings shall conform to ASTM A709, Gr. 50.
2. The pre-formed fabric pads shall be composed of multiple layers of 8 ounce cotton duck impregnated and bonded with high quality natural rubber or of equivalent and equally suitable materials compressed into resilient pads of uniform thickness, after compression and vulcanizing. The finished pads shall withstand compression loads perpendicular to the plane of the laminations of not less than 10,000 pounds per square inch without detrimental reduction in thickness or extrusion.
3. The bearing plates shall be shop painted with 3 mils of inorganic zinc primer in accordance with Section 411 of the Specifications.
4. Tolerances and surface finish for Rocker Plates shall be as follows:

Convex Radius Dimension	+0.000 mm - 0.010"
Surface Finish, Machined Surfaces	125 RMS or Better
Surface Finish, Other Surfaces	230 RMS or Better
5. Payment for furnishing and installing the bearings, including the pre-formed fabric pads under the bearing plates and painting, shall be included in the contract lump sum price for Structural Steel.

NOTES (CONTINUED)

FOR
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-067-006

APRIL 2015

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DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA03	DRAFTED BY BT	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E87	E127

FIELD BOLTED GIRDER SPLICES

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

WELDING AND WELD INSPECTION

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

FALSEWORK

The Contractor shall be required to include with the Falsework Plans, details for the construction of an adequate "Walk-Way" including railing.

FALL PROTECTION

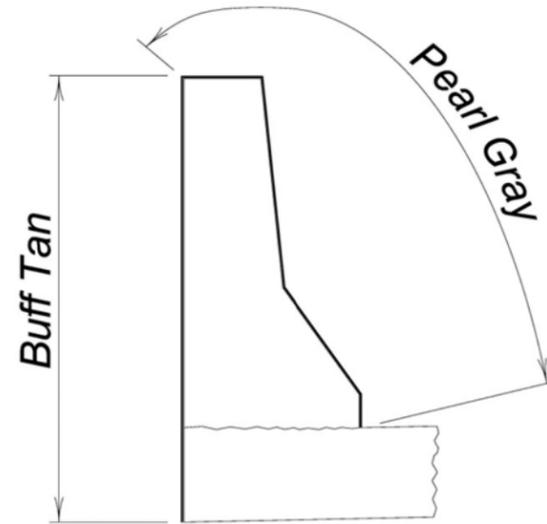
1. The Contractor shall install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system shall be installed. The Contractor shall have one Personal Fall Arrest System (PFAS) available for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

CLASS B COMMERCIAL TEXTURE FINISH

1. A Class B commercial texture finish shall be applied to the following areas:
 - a) ***Abutments:** all exposed surfaces to an elevation 1-foot below finished ground line.
 - b) **Barrier Rail:** all exposed surfaces (**front, **top and *back).
 - c) ***Slab:** edge of slab.
 - d) ***Bents:** all exposed surfaces.

** Color shall be "Pearl Gray" Federal Standard No. 26622
 * Color shall be "Buff Tan"

The "Buff Tan" color shall match the tan color on the Solberg-Tallgrass structure over I-90.



2. The Class B commercial texture finish shall be applied in accordance with Section 460.3 L.1.c of the Specifications.
3. Where the Class B commercial texture finish is to be applied, concrete curing shall be accomplished with cotton or burlap mats and polyethylene sheeting. Curing shall continue for not less than seven days after placing concrete before the commercial texture finish is applied. The commercial texture finish shall be applied in accordance with the manufacturer's recommendations. The commercial texture finish itself does not require a specific cure except for drying.

SHOP PLANS

Shop plans shall be required as specified by the Specifications.

BOLT TESTING

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

PILE DRIVING

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

Delmag D-30-32 SPI D-30 APE D36-26

2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity.

AS - BUILT ELEVATION SURVEY

The Contractor shall be responsible for recording the As-built deck elevations and bridge survey marker elevations at the locations shown in the Table of As-Built Elevations shown in the plans. All costs associated with obtaining the elevations including all equipment, labor, and any incidentals required shall be incidental to the contract lump sum price for Bridge Elevation Survey.

SDDOT's LRFD PILE DRIVING EQUATIONS

To determine the field verified nominal pile bearing resistance of driven piles the SDDOT uses the formulas below for timber, concrete, steel H-piling, and shell type piles.

For single action steam or air hammers and open cylinder top diesel hammers:

$$Q \text{ (drive)} = \frac{10.5WH}{S + 0.1} \times \frac{W}{W + M}$$

Where:

- Q = the field verified nominal pile bearing resistance in tons.
- W = the weight of the ram of an energy hammer in tons.
- H = the height of free fall of the hammer or ram in feet.
- M = the weight in tons of the driven mass and shall include the weight of the pile, the weight of the driving cap and the weight of the anvil, if used.
- E = the energy per blow in foot-tons.
- S = the average penetration in inches of the pile per blow for the last 10 blows for energy hammers.

NOTES (CONTINUED)

FOR
 316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-067-006

APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA04	DRAFTED BY BT	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E88	E127

APPROACH SLABS

- Sleeper slab riser shall be cast with the approach slab or cast after the approach slab is placed. Care shall be taken to ensure the correct grade is maintained across the joint.
- The use of an approved finishing machine will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the machine shall be kept parallel to the screed.
- The concrete in the approach slab shall be tined normal to centerline roadway.
- Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all excavated material and surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.
- Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment shall be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete, asphalt paint, or 4 mil polyethylene sheeting, elastic joint sealer and reinforcing steel; for disposal of all excavated material and surplus materials and for labor, tools, equipment, and any incidentals necessary to complete this item of work.

CRUSHED AGGREGATE SLOPE PROTECTION

- This work shall consist of paving the bridge berm slopes with crushed aggregate slope protection for control and prevention of berm erosion.
- The aggregate used in the crushed aggregate slope protection shall conform to the requirements of Section 820 of the Specifications for coarse aggregate for Class A Concrete (size no. 1).
- The asphalt material used in the crushed aggregate slope protection shall be either Asphalt Type MC-70 or MC-250, or emulsified Asphalt Type RS-1, RS-2, CRS-1 or CRS-2 meeting the requirements of Section 890 of the Specifications and AASHTO M81, AASHTO M140, AASHTO M 82, and AASHTO M208 respectively.
- The surface upon which the slope protection is to be placed shall be smooth, uniform, and free from foreign material. The top surface of the slope protection shall conform to the dimensions, elevations, and slopes shown in the plans.
- The crushed aggregate shall be shaped and compacted to provide a stable, smooth, and uniform surface.
- The asphalt material shall be applied at a rate sufficient to assure penetration and binding of the aggregate in the upper 2 inches of the slope protection. (Estimated Rate = 1.3 gallons per square yard.) The surfaces of the adjacent structure shall be protected from spattering or discoloration from the asphalt material.

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

REINFORCED GRANULAR EMBANKMENT FOR BRIDGE END EMBANKMENT

- The geogrid will be a biaxial grid of single layer construction. Vibratory welded, integrally formed, or woven and coated geogrids will be acceptable. Grids with laser welded grid junctions will not be allowed. The geogrid will be certified by the supplier to meet the following specification prior to installation:

Property	Test	MARV
Wide Width Strip Tensile Strength (Ultimate)	ASTM D 6637 Method B	850lb/ft MD and XD

- Geogrid will be paid for at the contract unit price per sq. yd. for Geogrid Reinforcement. Payment quantities will be based on area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the geogrid only.
- Granular Material will conform to the specification for Base Course in Section 882 of the Specifications. Granular Material will be paid for at the contract unit price per ton for Base Course. Payment will be full compensation for furnishing and placing this material.
- The geogrid shall be placed on a level surface and overlapped a minimum of 2 feet.
- The geogrid will be placed as taut as possible with minimal wrinkles. Placement will be done so that subsequent granular cover material does not shove, wrinkle or distort the in place geogrid. The overlaps will be shingled in a manner that assures granular material will not be forced under the geogrid during backfilling operations. The geogrid may be held in place with small piles of granular material or staples.
- Base course will be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. No traffic will be allowed on the uncovered geogrid.
- The base course and adjacent soil embankment shall be built simultaneously in horizontal layers. Base course shall be placed in 6 inch maximum lifts and compacted to 97 percent of maximum standard proctor dry density using a smooth face vibratory roller or vibratory plate compactor. Each layer of granular material shall be thoroughly watered prior to and during compaction.
- Density tests within the berm limits shall consist of tests conducted both in the soil embankment and the base course according to the modified zone requirements below:

Zone	Depth (ft.)	Min. required tests
1	0-1	1
2	1-3	1
3	3-5	1
4	5 to Bottom	1 per 3 vertical feet

- The zone requirement will be in force at both bridge berms.

NOTES (CONTINUED)

FOR
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

STR. NO. 42-067-006

APRIL 2015

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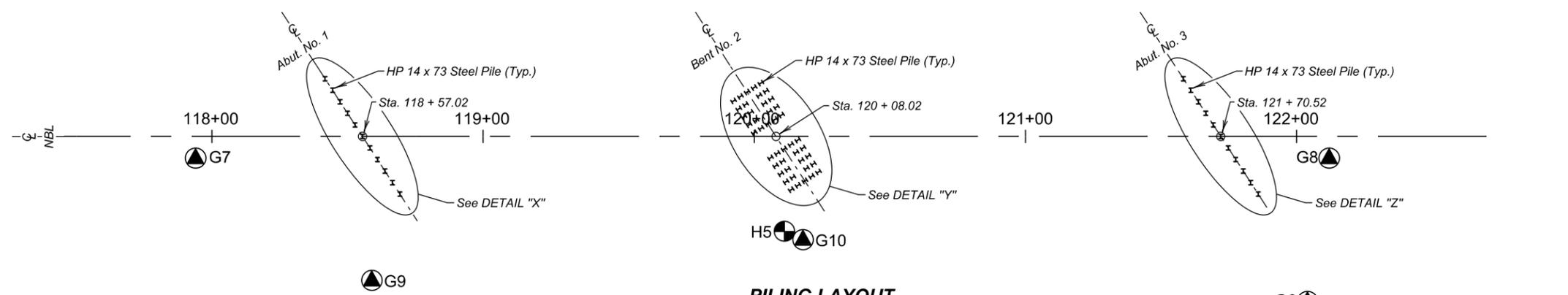
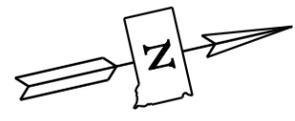
Hole Number	H4	Hole Number	H4	Hole Number	H4	Hole Number	H4
Station	118+60	Station	118+60	Station	118+60	Station	118+60
Depth	20.2 ft	Depth	50.2 ft	Depth	80.2 ft	Depth	109.2 ft
Soil Color	BROWN	Soil Color	GRAY	Soil Color	GRAY	Soil Color	GRAY
Classification	SANDY CLAY	Classification	SANDY CLAY	Classification	SANDY CLAY	Classification	SAND
Strength (Qu)	5,752 psf	Strength (Qu)	6,193 psf	Strength (Qu)	6,542 psf	Strength (Qu)	---
Dry Density	110.0 pcf	Dry Density	109.8 pcf	Dry Density	112.3 pcf	Dry Density	---
Wet Density	131.5 pcf	Wet Density	130.8 pcf	Wet Density	132.7 pcf	Wet Density	---
Moisture	19.6 %	Moisture	19.1 %	Moisture	18.2 %	Moisture	22.0 %
Pass No. 10	96.4 %	Pass No. 10	96.3 %	Pass No. 10	97.1 %	Pass No. 10	100.0 %
Pass No. 40	84.9 %	Pass No. 40	87.4 %	Pass No. 40	88.2 %	Pass No. 40	90.0 %
Pass No. 200	61.4 %	Pass No. 200	66.9 %	Pass No. 200	67.6 %	Pass No. 200	5.3 %
Sand Content	35.0 %	Sand Content	29.4 %	Sand Content	29.5 %	Sand Content	94.6 %
Silt Content	29.0 %	Silt Content	28.7 %	Silt Content	34.9 %	Silt Content	3.7 %
Clay Content	32.4 %	Clay Content	38.1 %	Clay Content	32.6 %	Clay Content	1.6 %

MEASURED SKIN FRICTION **FOR BIDDING PURPOSES ONLY**

	ELEV.	PSF		ELEV.	PSF
G6	1417.1	667	H4	1473.6	
G7	1437.2	593	H5	1474.2	
G8	1448.6	590	H6	1456.5	
G9	1422.3	786	G6 (DRY)	1478.6	
G10	1416.7	438	G7 (DRY)	1509.2	
			G8 (DRY)	1504.6	
			G9	1475.1	
			G10	1474.7	

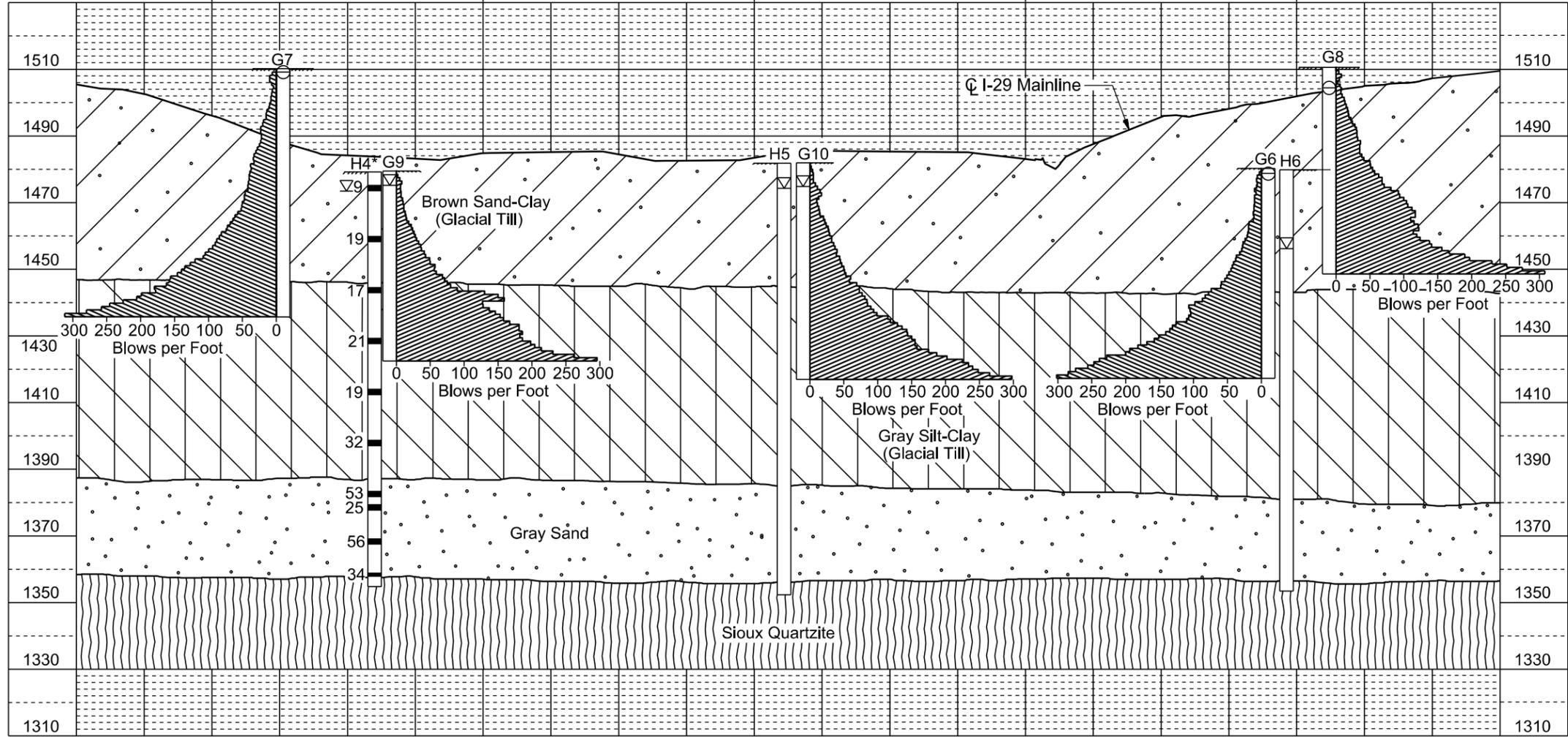
as of SEPTEMBER 2013

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E89	E127



* Values represent uncorrected "N" values from Penetration Test.

Blows Per Foot 48 Sample Zone H4*



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

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.

LEGEND

- Penetration Test
- Auger Test
- Drive Test
- Water
- Caved
- Sample Zone

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.

Auger holes are drilled with a 4 1/2 inch diameter continuous flight auger. Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

NOTE:
This sheet is to be used in conjunction with the PILING LAYOUT DETAILS sheet.

SUBSURFACE INVESTIGATION AND PILING LAYOUT
FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006

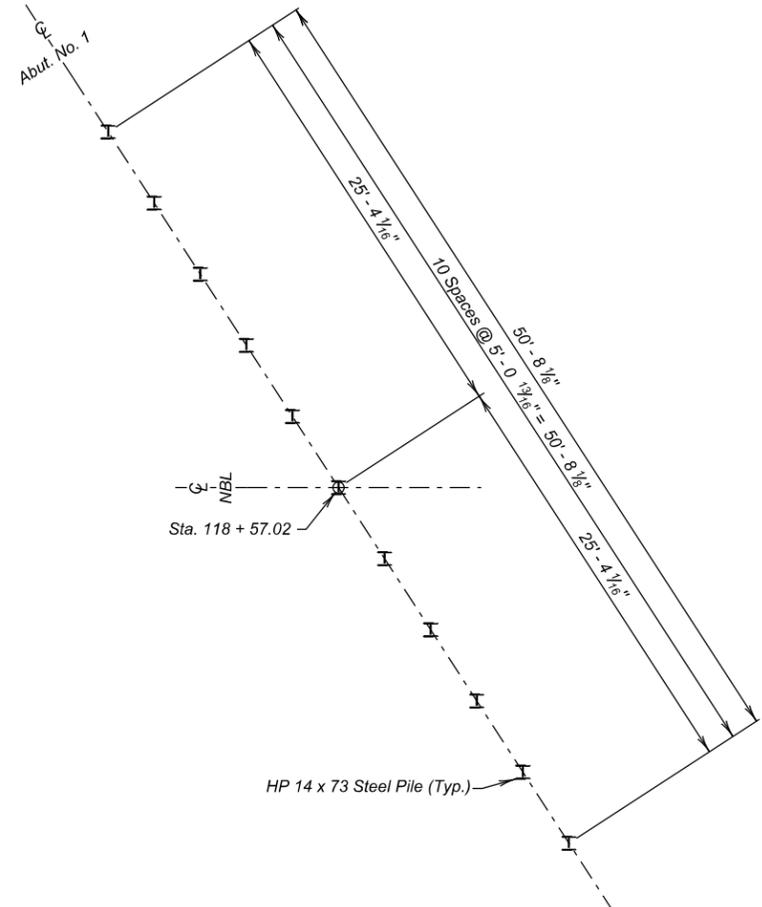
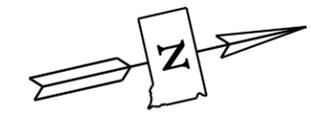
33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

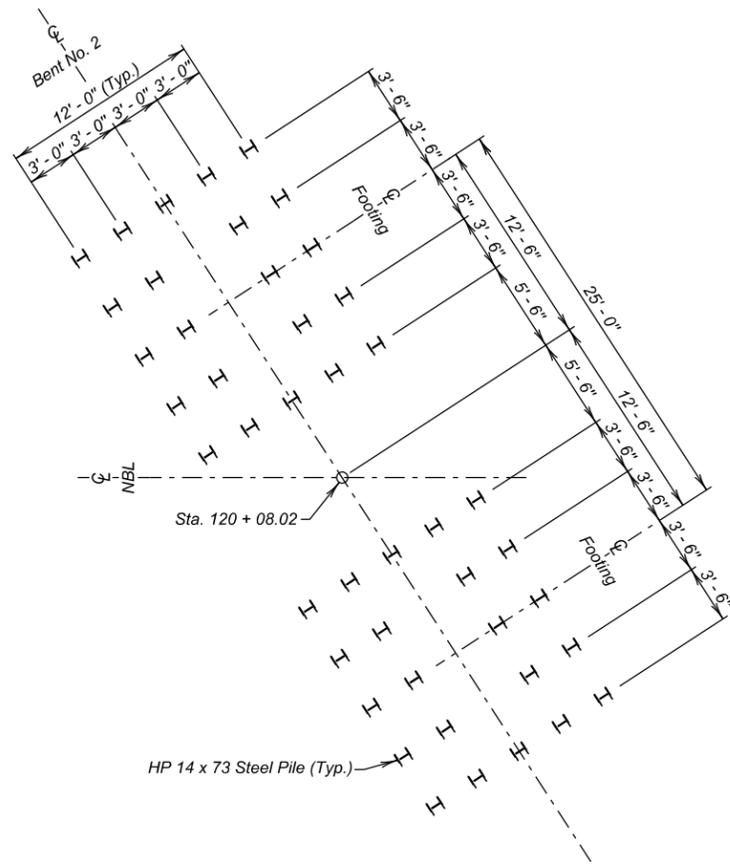
DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA06	DRAFTED BY BT	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

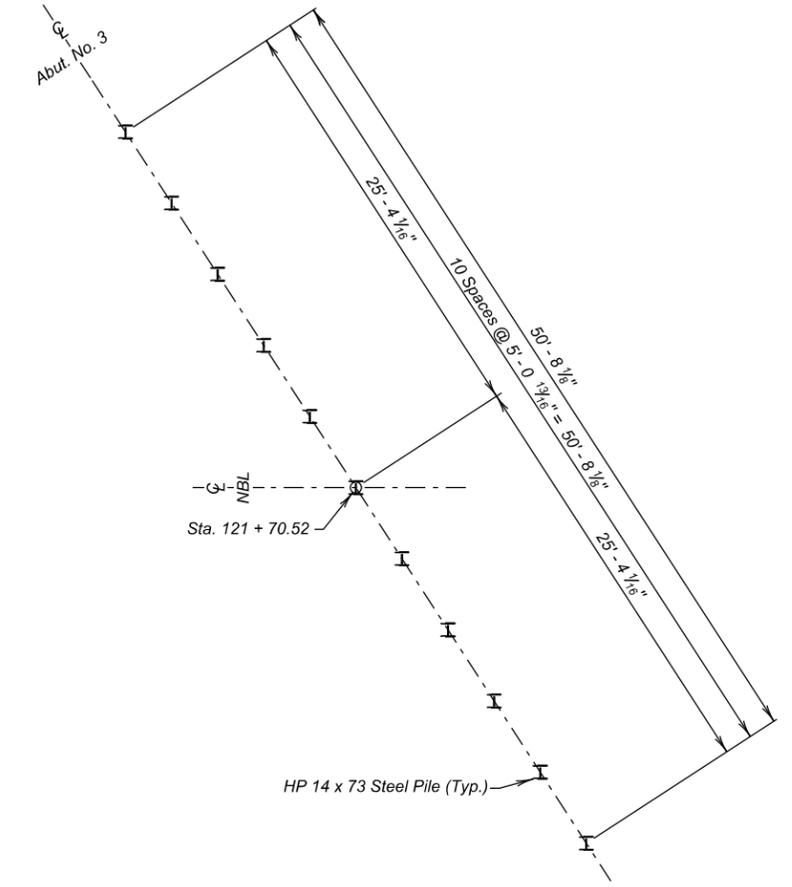
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E90	E127



DETAIL "X"



DETAIL "Y"



DETAIL "Z"

NOTE:
This sheet is to be used in conjunction with the
SUBSURFACE INVESTIGATION AND PILING LAYOUT sheet.

PILING LAYOUT DETAILS
FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006

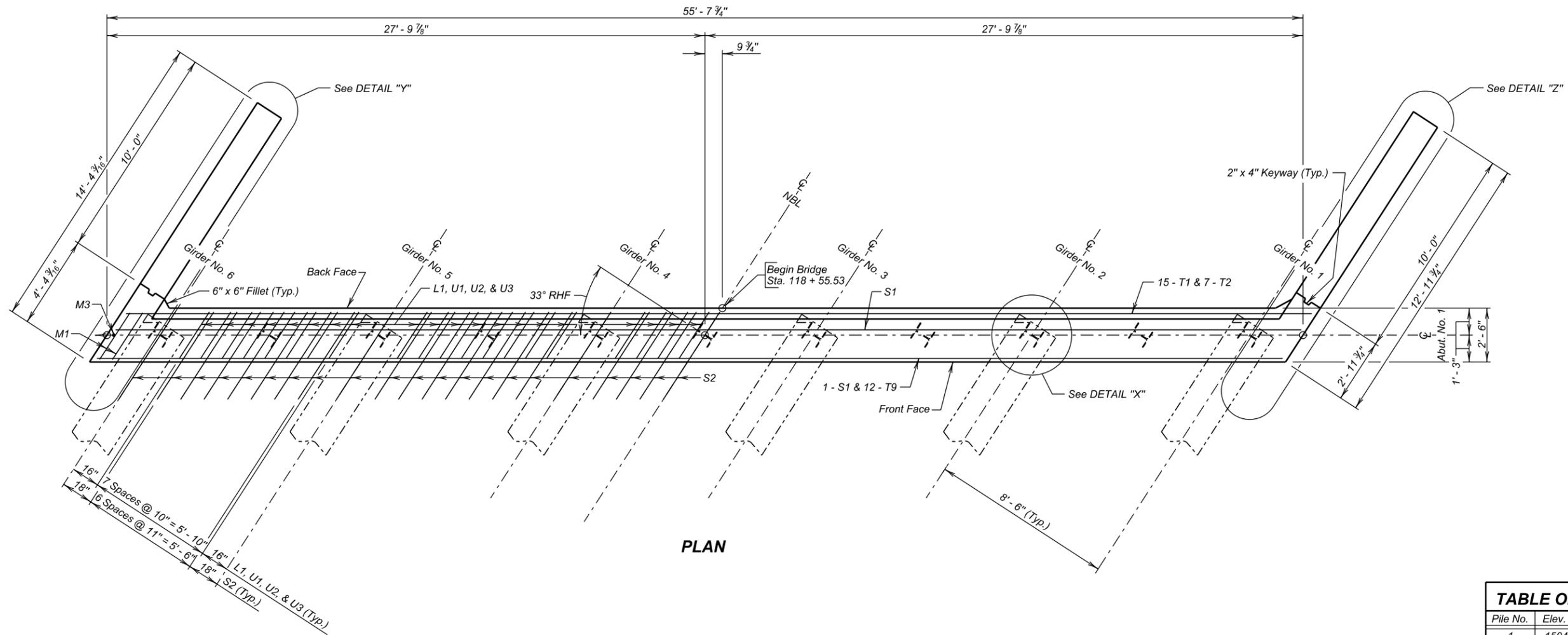
33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

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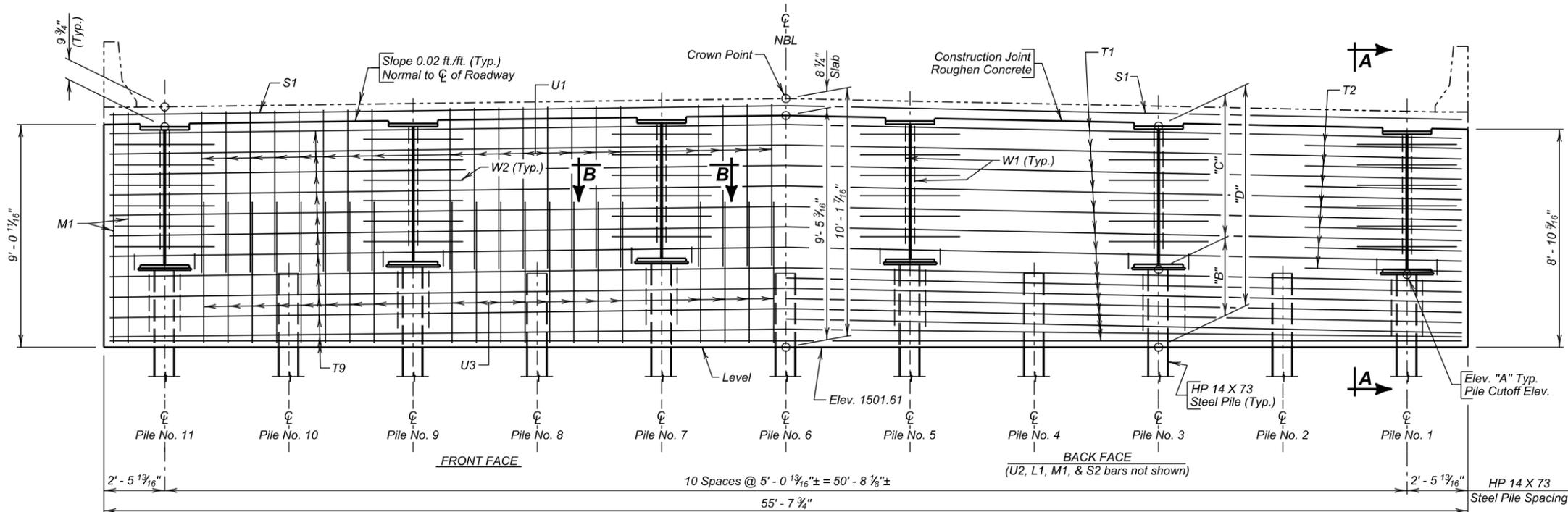
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E91	E127



INCREASING STATIONS

PLAN



ELEVATION
(Along Centerline of Abutment)

TABLE OF ELEV. & DIMENSIONS

Pile No.	Elev. "A"	"B"	"C"	"D"
1	1504.77	3.16	5.83	8.99
2	1504.11	2.50	—	—
3	1504.90	3.29	5.83	9.12
4	1504.11	2.50	—	—
5	1505.04	3.43	5.83	9.26
6	1504.11	2.50	—	—
7	1505.00	3.39	5.83	9.22
8	1504.11	2.50	—	—
9	1504.79	3.18	5.83	9.01
10	1504.11	2.50	—	—
11	1504.59	2.98	5.83	8.81

ABUTMENT NO. 1 DETAILS (A)

FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

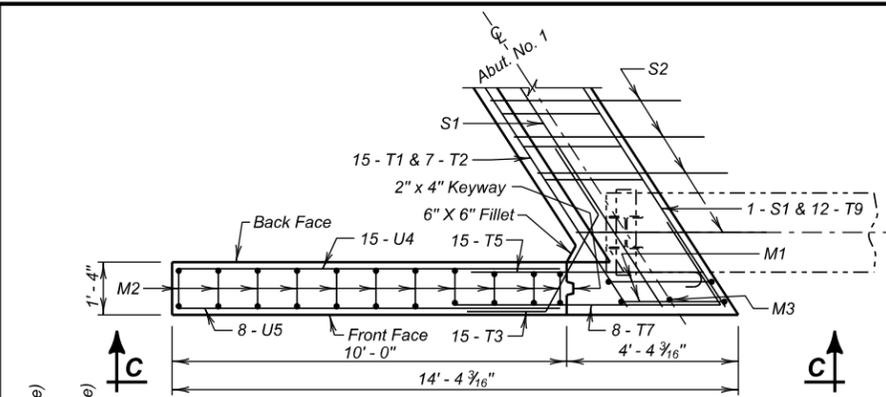
APRIL 2015

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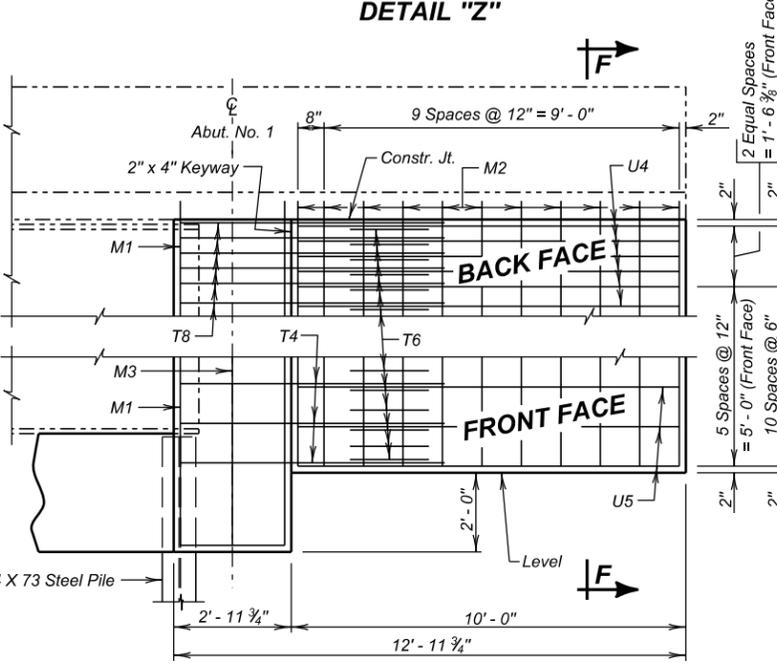
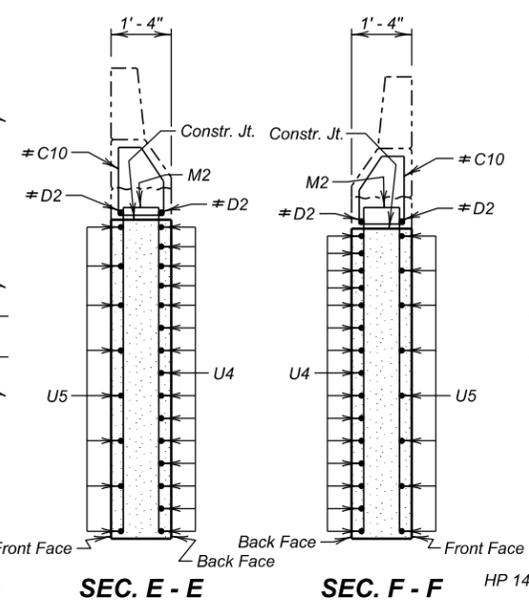
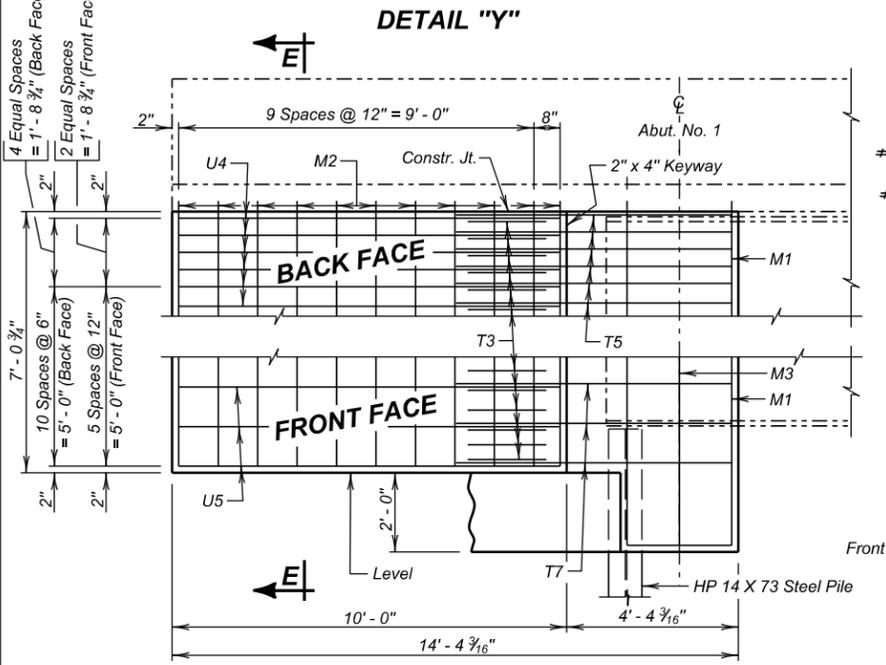
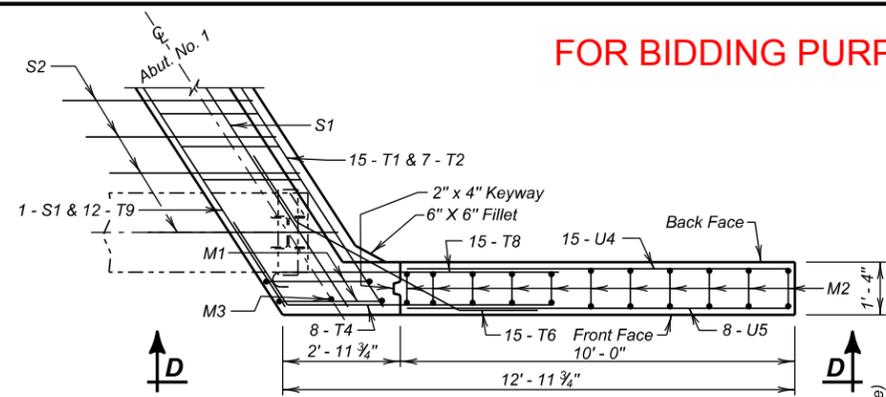
DESIGNED BY PW LINC01QS	CK. DES. BY SK 01QSGA08	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E92	E127



* C10 and D2 bars are listed and included in Superstructure Quantities. See SUPERSTRUCTURE DETAILS (C).



REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
L1	40	4	4'-3"	17A
M1	4	5	20'-10"	17
M2	22	5	14'-11"	17
M3	2	5	8'-11"	Str.
S1	2	9	55'-2"	Str.
S2	41	6	8'-11"	14A
T1	15	7	55'-2"	Str.
T2	14	7	6'-9"	Str.
T3	15	6	6'-6"	19
T4	8	5	7'-10"	19B
T5	15	6	6'-6"	1A
T6	15	6	8'-0"	19
T7	8	5	9'-3"	19B
T8	15	6	7'-11"	1A
T9	12	4	55'-2"	Str.
U1	40	6	6'-5"	T9B
U2	40	6	5'-7"	T9B
U3	40	6	15'-1"	17
U4	30	8	9'-8"	Str.
U5	16	5	9'-8"	Str.
W1	120	6	3'-11"	17
W2	36	8	5'-0"	13A

NOTE: All dimensions are out to out of bars. Match Superstructure reinforcing steel.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	54.1
Reinforcing Steel	Lb.	7046
Structure Excavation, Bridge	Cu. Yd.	12.1
HP 14 X 73 Steel Test Pile, Furnish & Drive	Ft.	1 @ 120' = 120'
HP 14 X 73 Steel Bearing Pile, Furnish & Drive	Ft.	10 @ 115' = 1150'
Preboring Pile	Ft.	11 @ 10' = 110'

ALTERNATE A		
ITEM	UNIT	QUANTITY
Stainless Reinforcing Steel	Lb.	1310

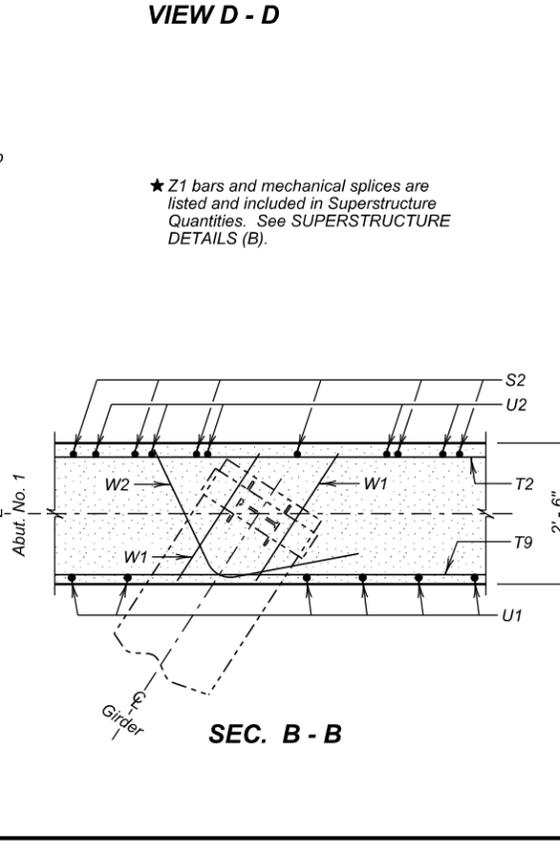
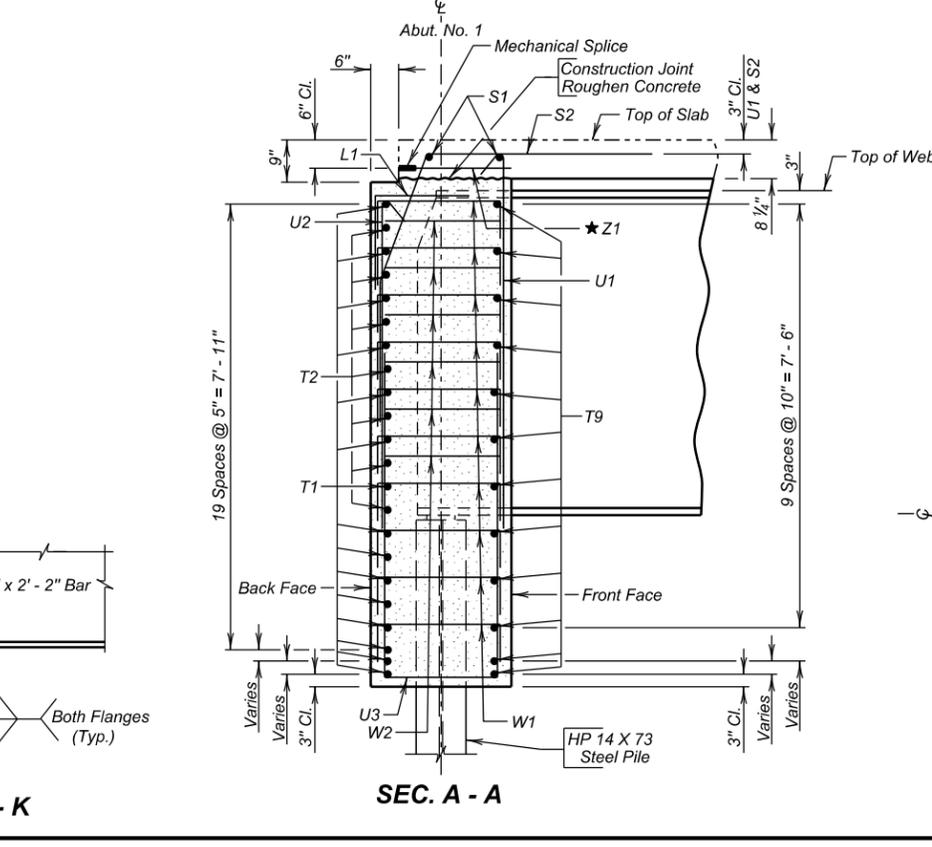
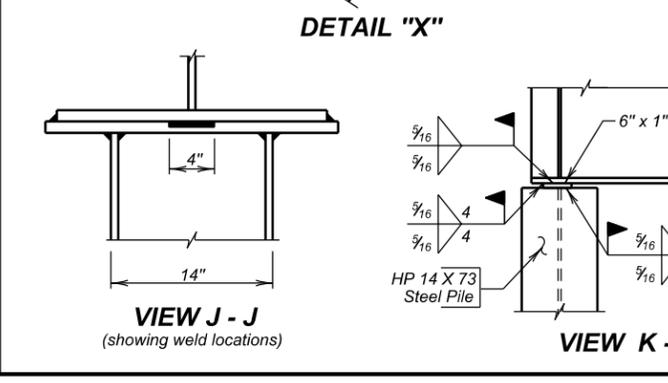
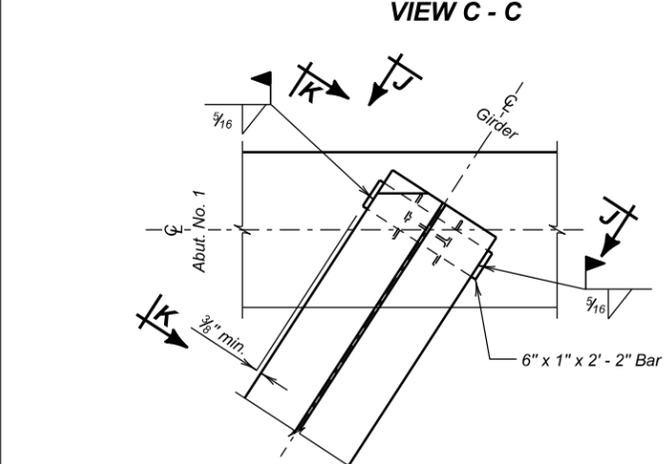
ALTERNATE B		
ITEM	UNIT	QUANTITY
Zinc and Dual Coated Reinforcing Steel	Lb.	1310

Match Superstructure reinforcing steel.

ABUTMENT NO. 1 DETAILS (B)
 FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY
 OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

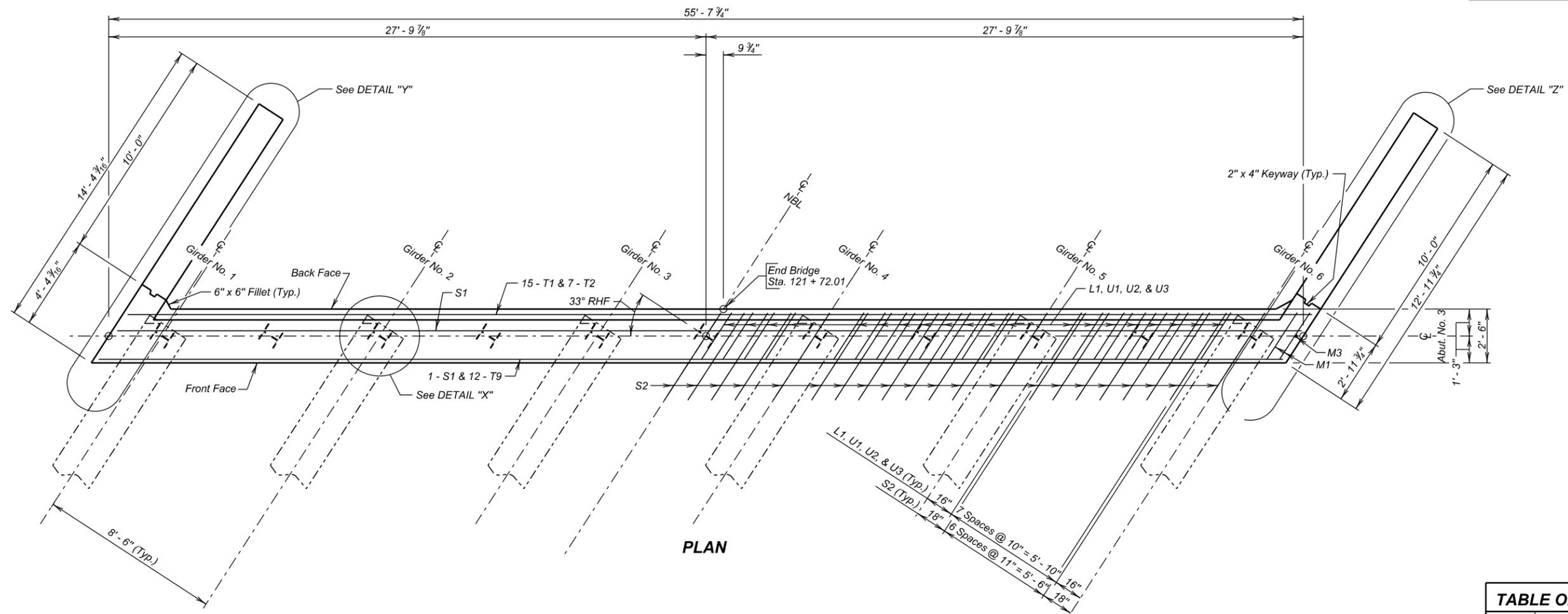
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* Z1 bars and mechanical splices are listed and included in Superstructure Quantities. See SUPERSTRUCTURE DETAILS (B).

FOR BIDDING PURPOSES ONLY

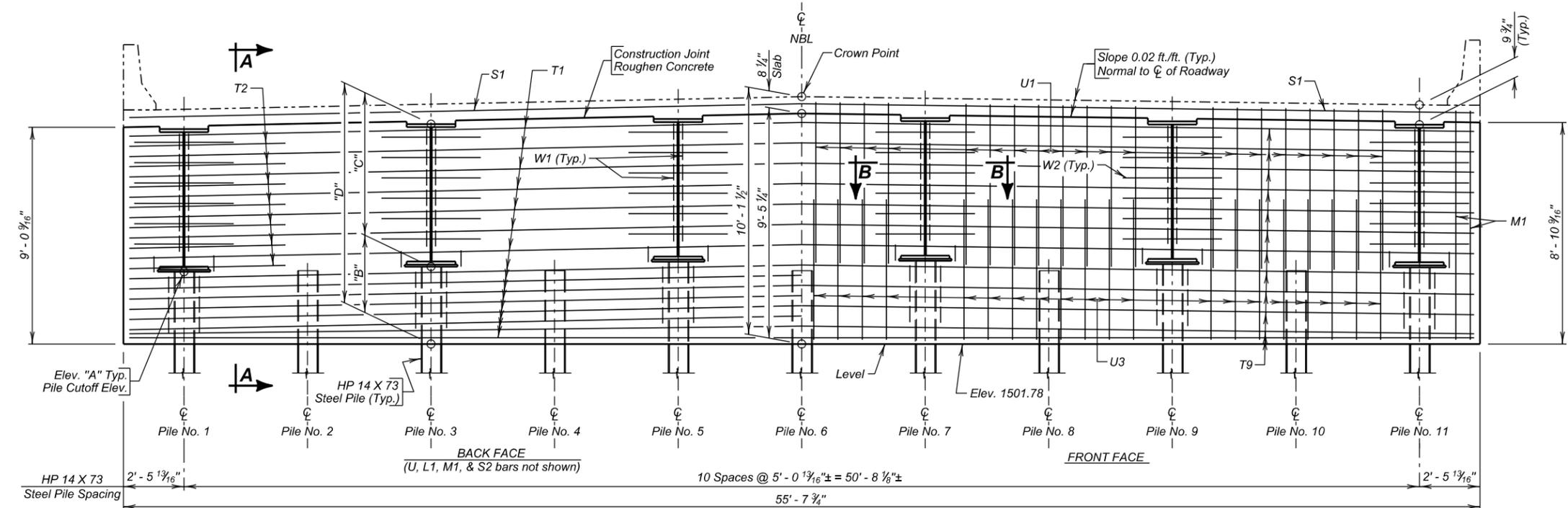
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E93	E127



PLAN

TABLE OF ELEV. & DIMENSIONS

Pile No.	Elev. "A"	"B"	"C"	"D"
1	1504.91	3.13	5.83	8.96
2	1504.28	2.50	—	—
3	1505.05	3.27	5.83	9.10
4	1504.28	2.50	—	—
5	1505.18	3.40	5.83	9.23
6	1504.28	2.50	—	—
7	1505.16	3.38	5.83	9.21
8	1504.28	2.50	—	—
9	1504.95	3.17	5.83	9.00
10	1504.28	2.50	—	—
11	1504.76	2.98	5.83	8.81



ELEVATION
(Along Centerline of Abutment)

ABUTMENT NO. 3 DETAILS (A)
FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY SK 01QSGA10	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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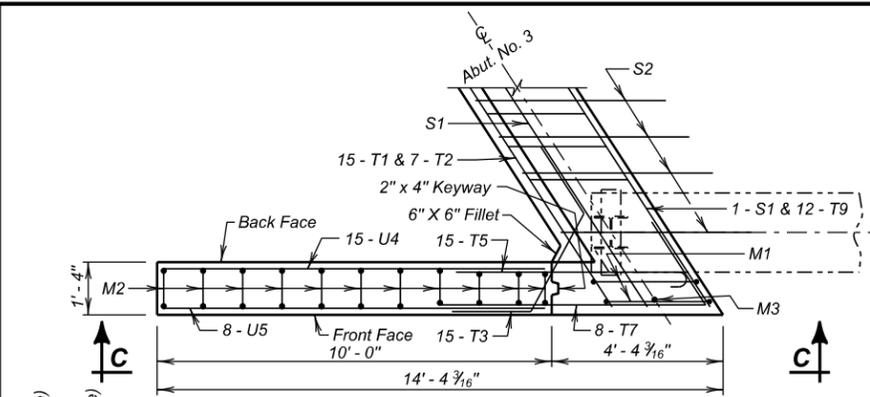
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E94	E127

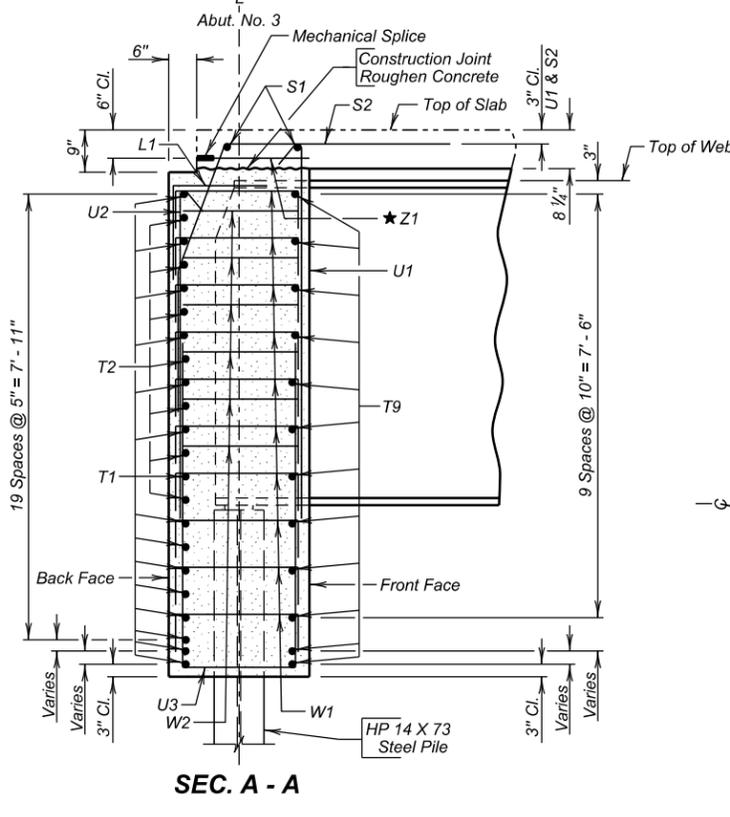
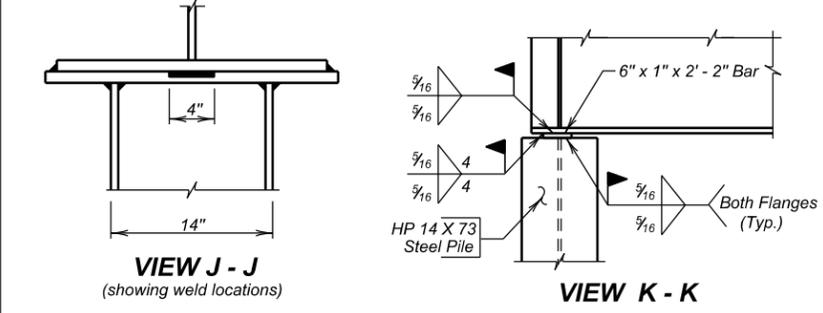
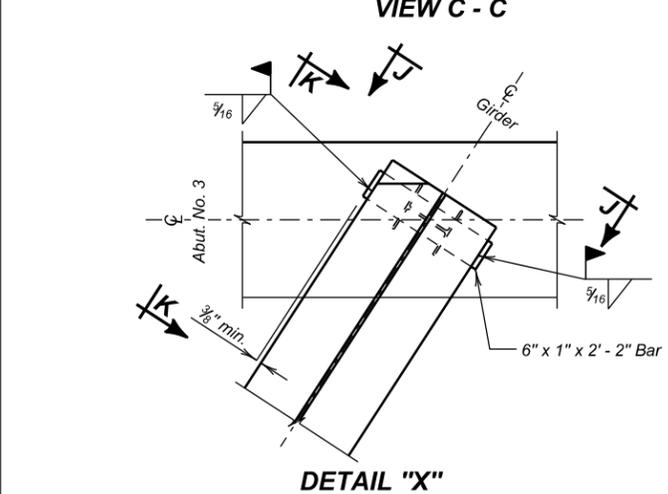
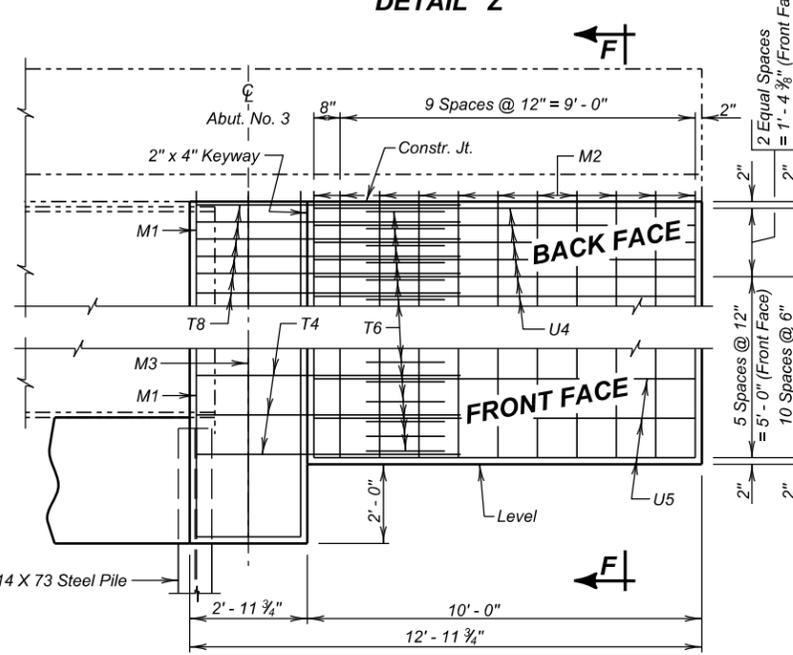
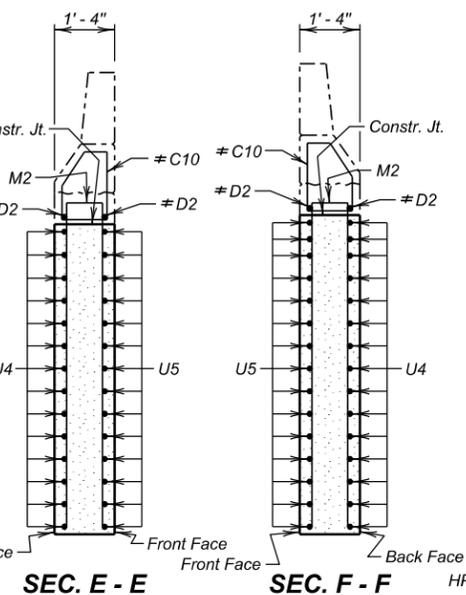
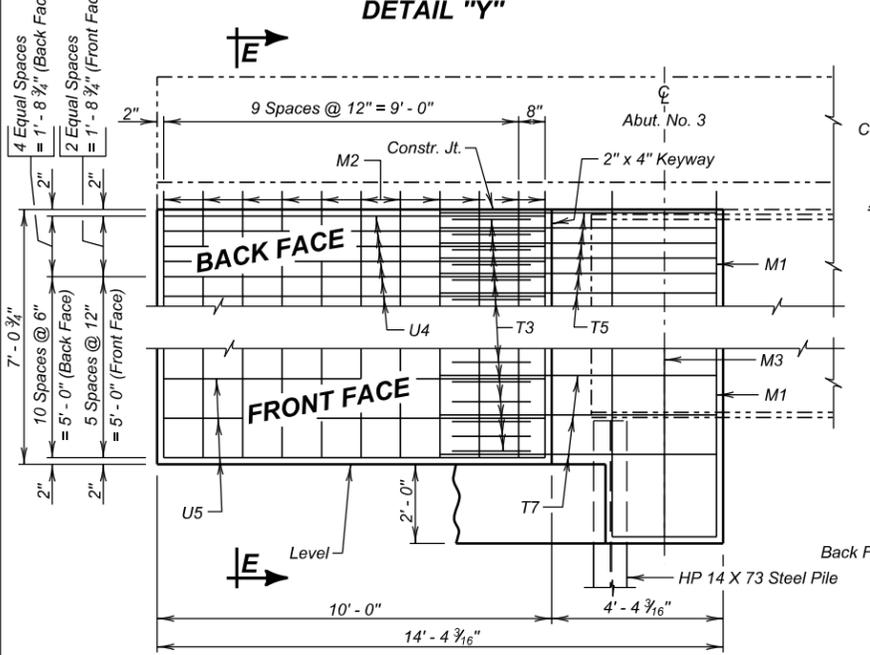
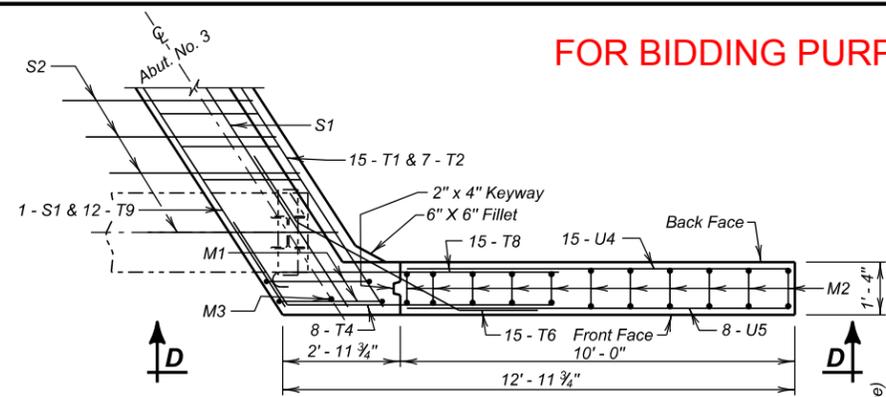
REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
L1	40	4	4'-3"	17A
M1	4	5	20'-10"	17
M2	22	5	14'-11"	17
M3	2	5	8'-11"	Str.
S1	2	9	55'-2"	Str.
S2	41	6	8'-11"	14A
T1	15	7	55'-2"	Str.
T2	14	7	6'-9"	Str.
T3	15	6	6'-6"	19
T4	8	5	7'-10"	19B
T5	15	6	6'-6"	1A
T6	15	6	8'-0"	19
T7	8	5	9'-3"	19B
T8	15	6	7'-11"	1A
T9	12	4	55'-2"	Str.
U1	40	6	6'-5"	T9B
U2	40	6	5'-7"	T9B
U3	40	6	15'-1"	17
U4	30	8	9'-8"	Str.
U5	16	5	9'-8"	Str.
W1	120	6	3'-11"	17
W2	36	8	5'-0"	13A

Bending Details	

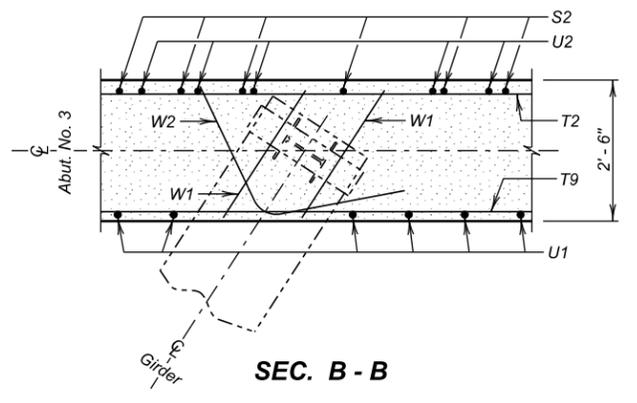
NOTE:
All dimensions are out to out of bars.
Match Superstructure reinforcing steel.



* C10 and D2 bars are listed and included in Superstructure Quantities. See SUPERSTRUCTURE DETAILS (C).



* Z1 bars and mechanical splices are listed and included in Superstructure Quantities. See SUPERSTRUCTURE DETAILS (B).



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	54.1
Reinforcing Steel	Lb.	7046
Structure Excavation, Bridge	Cu. Yd.	12.1
HP 14 X 73 Steel Test Pile, Furnish & Drive	Ft.	1 @ 120' = 120'
HP 14 X 73 Steel Bearing Pile, Furnish & Drive	Ft.	10 @ 115' = 1150'
Preboring Pile	Ft.	11 @ 10' = 110'

ALTERNATE A		
ITEM	UNIT	QUANTITY
Stainless Reinforcing Steel	Lb.	1310

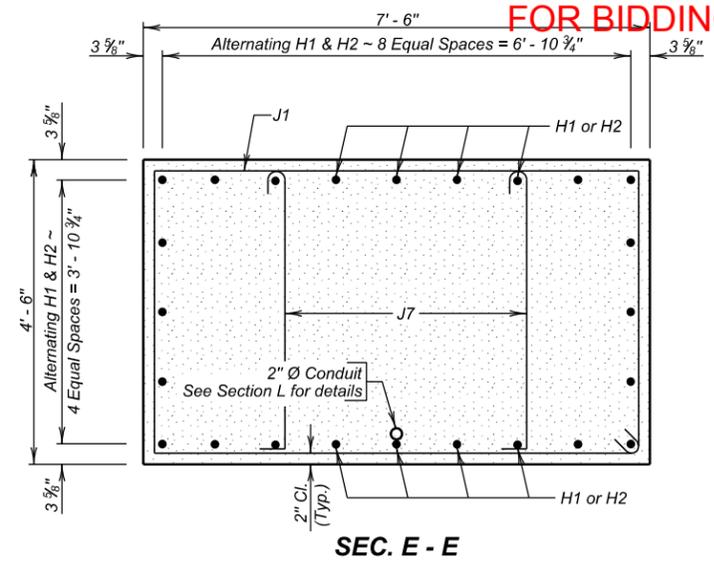
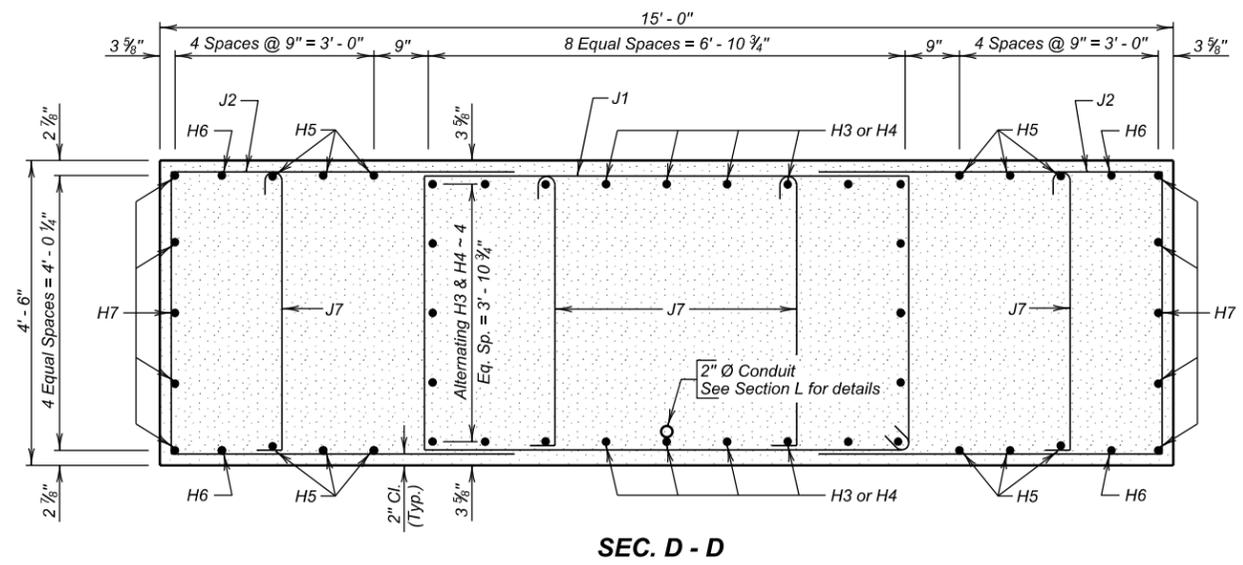
ALTERNATE B		
ITEM	UNIT	QUANTITY
Zinc and Dual Coated Reinforcing Steel	Lb.	1310

ABUTMENT NO. 3 DETAILS (B)
FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.83 TO 121 + 71.71
STR. NO. 42-067-006

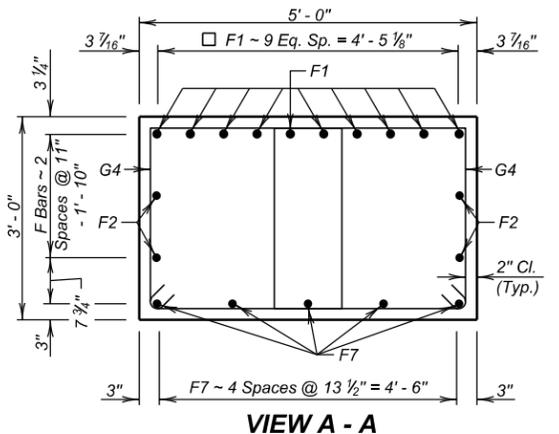
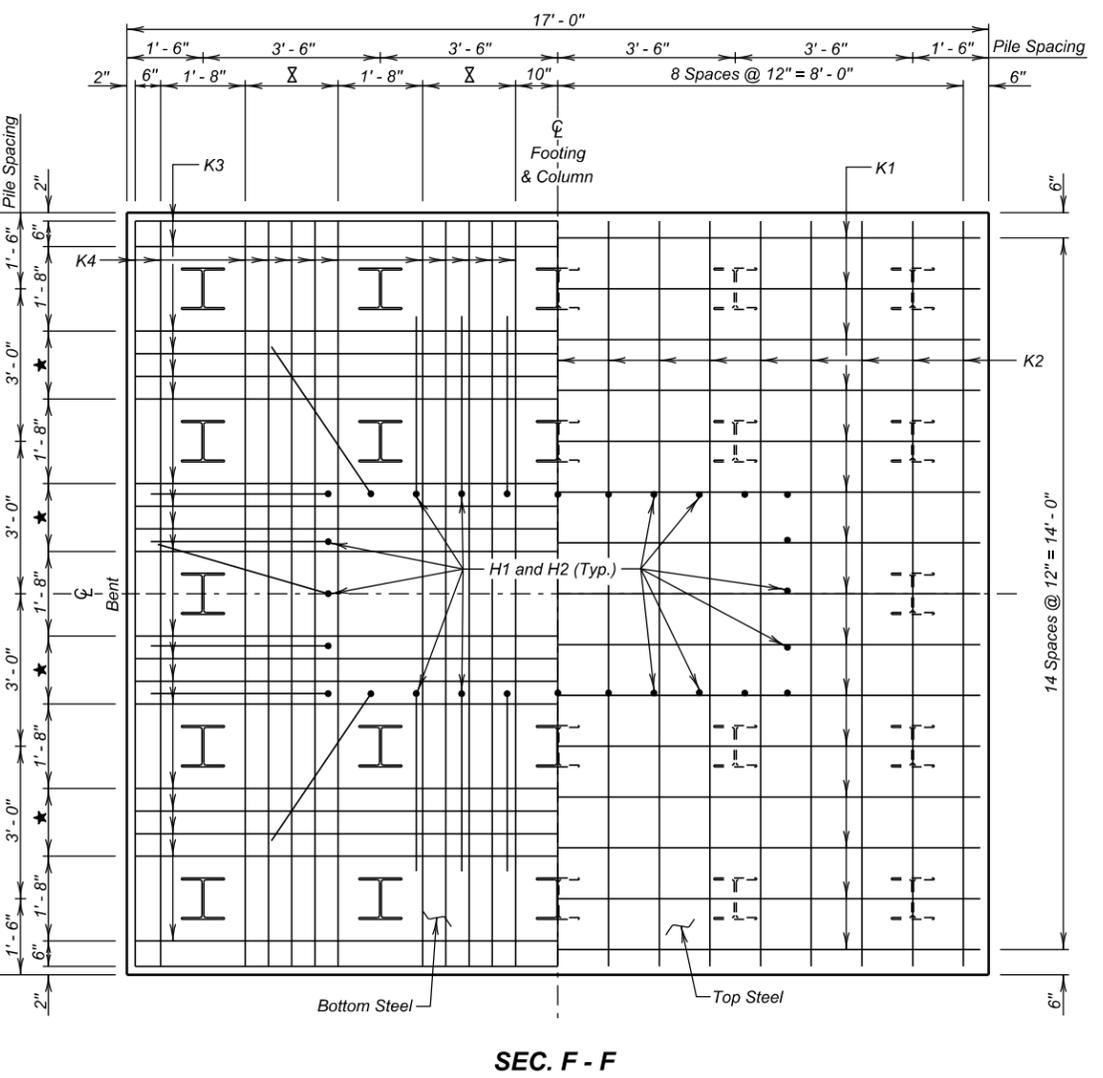
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY SK 01QSGA11	DRAFTED BY MG	Kevin N. Boeden BRIDGE ENGINEER
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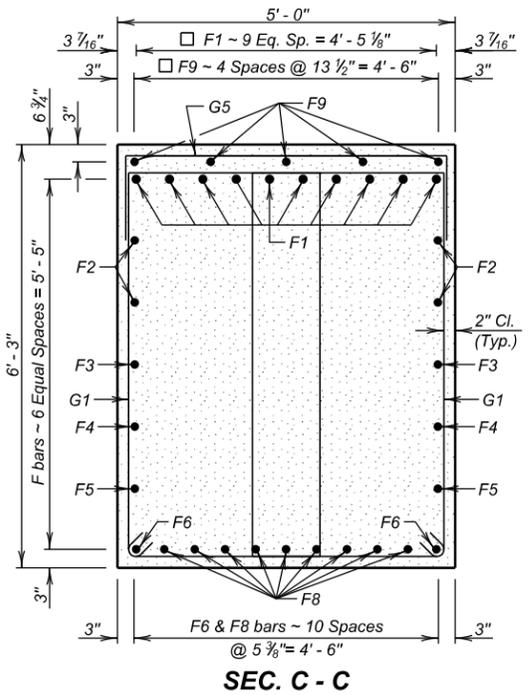
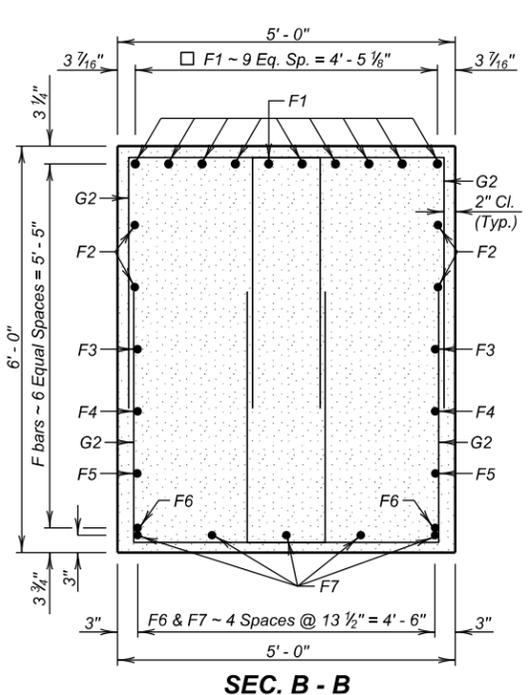
FOR BIDDING PURPOSES ONLY



⊠ 4 Spaces @ 5 1/2" = 1' - 10"
 ★ 3 Equal Spaces = 1' - 4"



NOTE:
 □ Bar may be adjusted to clear swedge bolts.



REINFORCING SCHEDULE					Bending Details	
Mk.	No.	Size	Length	Type		
F1	20	11	34'-5"	1A		
F2	4	6	57'-8"	Str.		
F3	2	6	56'-11"	Str.		
F4	2	6	51'-5"	Str.		
F5	2	6	45'-11"	Str.		
F6	2	6	40'-5"	Str.		
F7	10	6	11'-2"	Str.		
F8	9	9	39'-11"	Str.		
F9	5	6	19'-8"	Str.		
G1	66	5	18'-11"	T1		
G2	40	5	10'-9"	17		
G3	24	5	9'-1"	17		
G4	4	5	12'-11"	T1		
G5	13	5	7'-3"	17		
H1	24	14	14'-0"	17A		
H2	24	14	16'-3"	17A		
H3	24	14	22'-9"	1A		
H4	24	14	20'-9"	1A		
H5	12	6	28'-1"	Str.		
H6	8	6	6'-1"	Str.		
H7	20	6	21'-4"	Str.		
J1	40	4	21'-4"	T1		
J2	16	4	14'-4"	17		
J3	16	4	12'-10"	17		
J4	16	4	11'-4"	17		
J5	16	4	9'-10"	17		
J6	12	4	8'-4"	17		
J7	112	4	5'-0"	T9		
K1	30	4	16'-8"	Str.		
K2	34	4	14'-8"	Str.		
K3	40	9	16'-8"	Str.		
K4	48	9	14'-8"	Str.		

NOTES-
 All dimensions are out to out of bars.
 □ See cutting diagram.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge	Cu. Yd.	239.7
Reinforcing Steel	Lb.	29927
Structure Excavation, Bridge	Cu. Yd.	173.3
HP 14 X 73 Steel Test Pile, Furnish & Drive	Ft.	1 @ 90' = 90'
HP 14 X 73 Steel Bearing Pile, Furnish & Drive	Ft.	43 @ 85' = 3655'
No. 14 Rebar Splice	Each	48

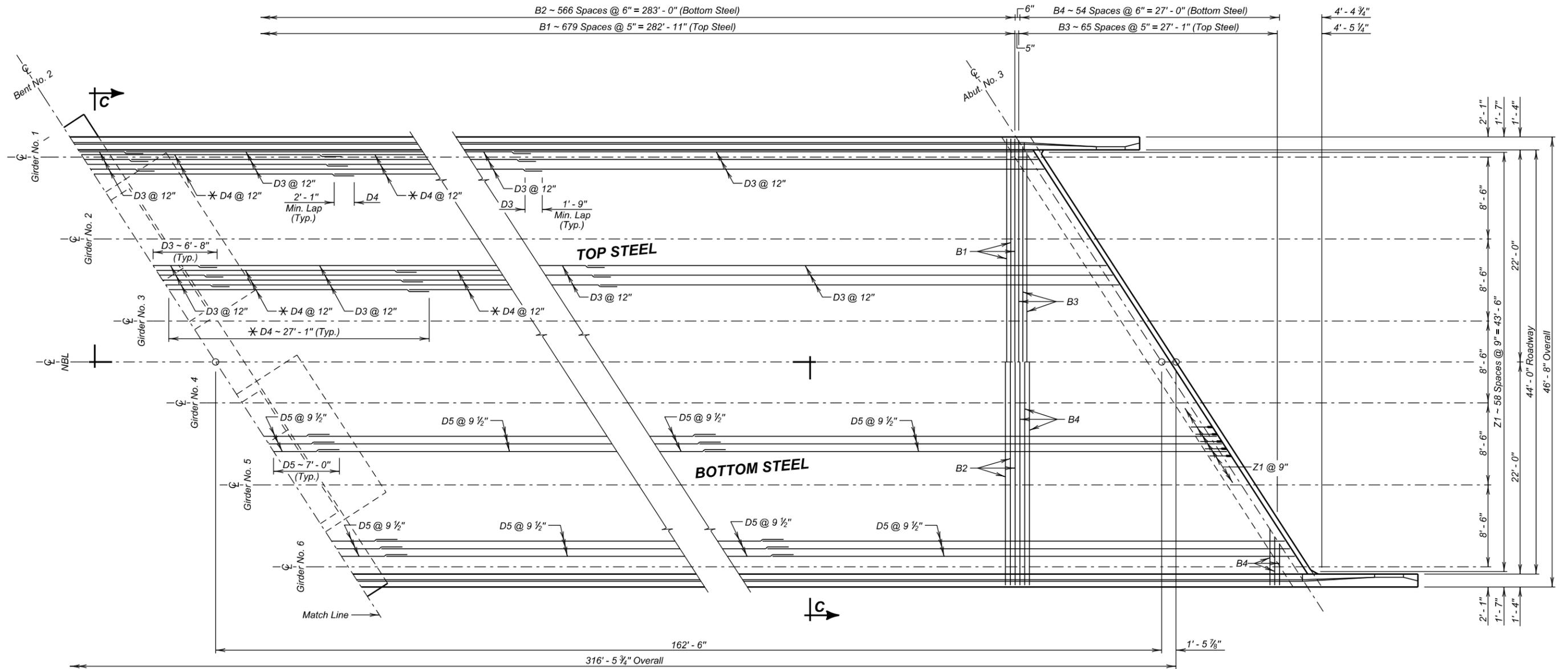
* Includes 0.4 Cu. Yds. for Grout Pads.

BENT NO. 2 DETAILS (B)
 FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY
 OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

* Top Steel over bent only

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E98	E127



PARTIAL PLAN

SUPERSTRUCTURE DETAILS (B)

FOR

NORTHBOUND LANES

316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

44' - 0" ROADWAY

OVER I-229

STA. 118 + 55.53 TO 121 + 72.01

STR. NO. 42-067-006

33° RHF SKEW

SEC. 7-T100N-R50W

IM 0293(96)73

HL-93

LINCOLN COUNTY

S. D. DEPT. OF TRANSPORTATION

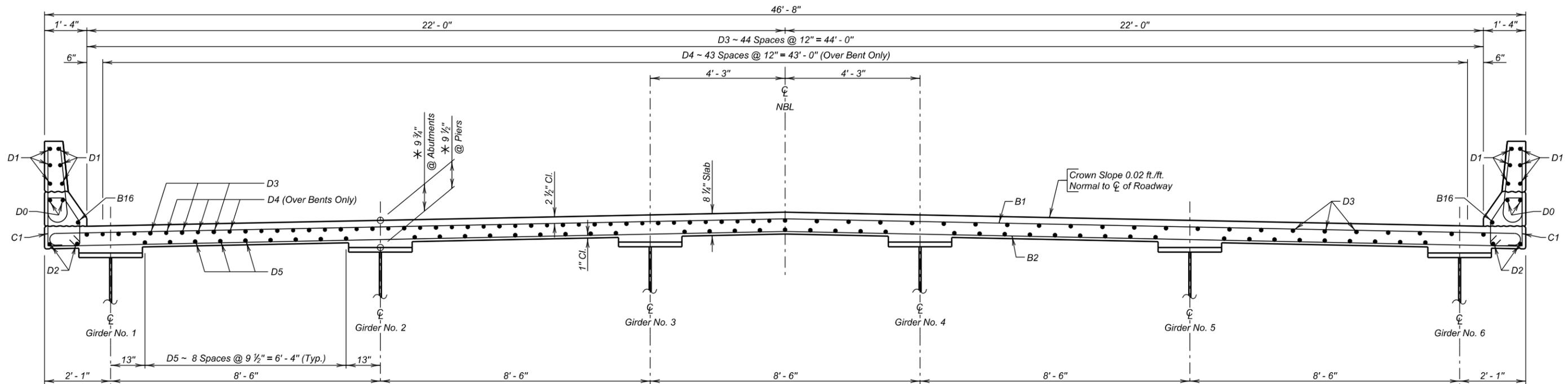
APRIL 2015

15 OF 32

DESIGNED BY PW	CK. DES. BY DM	DRAFTED BY MG	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
LINC01QS	01QSGA15		

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E99	E127



SEC. C - C

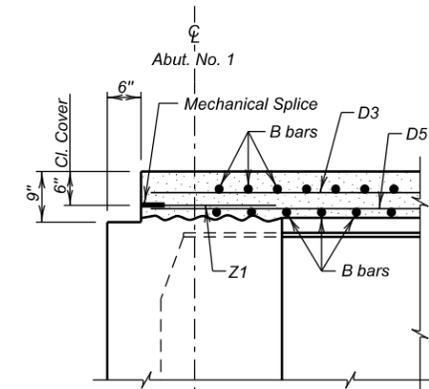
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details	
∅	B1	680	5	47'-6"	1	
∅	B2	567	4	46'-4"	Str.	
∅	B3	66	5	51'-7"	1	
∅	B4	58	4	50'-1"	Str.	
∅	B15	12	5	14'-6"	Str.	
∅	B16	12	4	56'-9"	Str.	
∅	B17	8	4	8'-6"	19B	
∅	B18	12	8	4'-3"	19B	
∅	B19	12	5	4'-2"	Str.	
∅	C1	658	5	5'-7"	T1A	
∅	C2	630	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'-9"	T1A	
∅	C11	16	5	7'-1"	T1	
∅	C12	4	6	5'-6"	17	
∅	C13	4	5	5'-4"	17	
∅	D0	24	4	58'-9"	Str.	
∅	D1	72	4	54'-10"	Str.	
∅	D2	24	5	58'-2"	Str.	
∅	D3	270	5	54'-0"	Str.	
∅	D4	132	6	55'-10"	Str.	
∅	D5	270	5	54'-5"	Str.	
∅	Z1	118	7	2'-0"	Str.	

NOTES-
 ∅ See cutting diagram.
 ∅ Tip bars as required to maintain top and bottom clear cover.
 All dimensions are out to out of bars.

* Dimensions are at \bar{C} bearing; at other points along the girders this dimension shall be computed as shown on the SLAB FORM ELEVATIONS & ERECTION DATA sheets.

NOTE:
 Barrier curb details are shown on END BLOCK AND BARRIER CURB DETAILS sheet.



SEC. B - B

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
★ Class A45 Concrete, Bridge Deck	Cu. Yd.	435.0
△ Structural Steel	Lump Sum	Lump Sum
△ No. 7 Rebar Splice	Each	118
☆ Bridge Painting	Lump Sum	Lump Sum
∅ Concrete Penetrating Sealer	Sq. Yd.	1541

ALTERNATE A

ITEM	UNIT	QUANTITY
Stainless Reinforcing Steel	Lb.	112378

ALTERNATE B

ITEM	UNIT	QUANTITY
Zinc and Dual Coated Reinforcing Steel	Lb.	112378

★ Concrete quantity for Barrier Curb is 0.0842 Cu. Yd. per foot and for End Block is 1.1580 Cu. Yd. per 12' End Block.
 △ For informational purposes only, the estimated weight of the structural steel is 823043 pounds.
 ☆ For informational purposes only the estimated area to be painted is 40474 sq. ft.
 ∅ Apply to bridge deck between barrier curbs.

SUPERSTRUCTURE DETAILS (C)

FOR
 NORTHBOUND LANES
 316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY
 OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

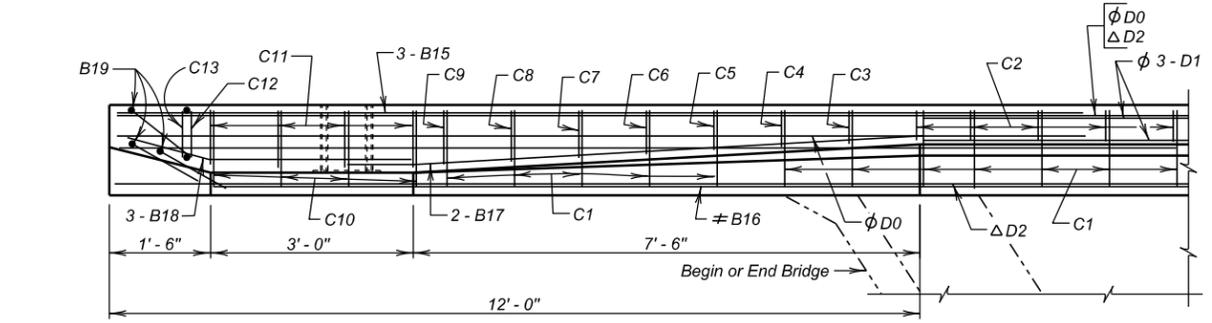
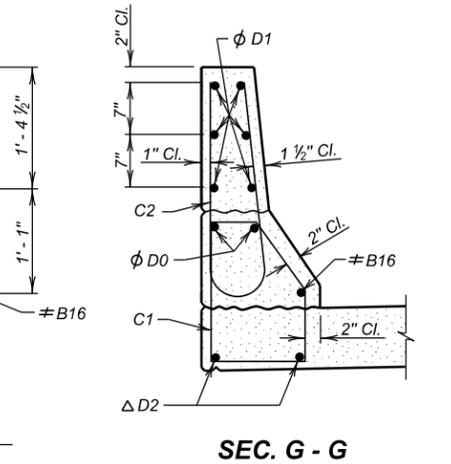
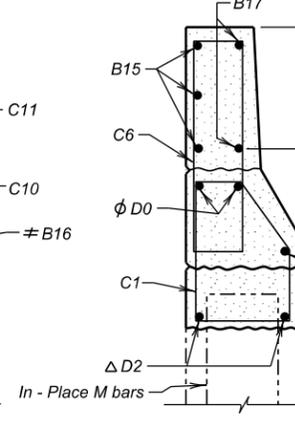
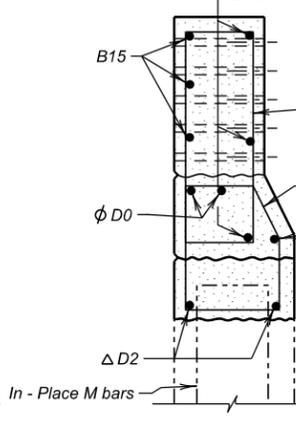
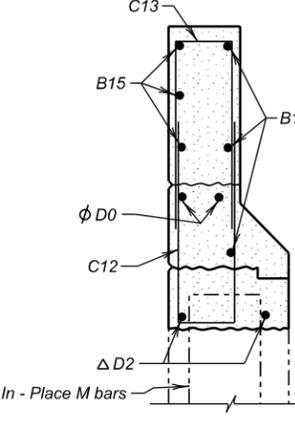
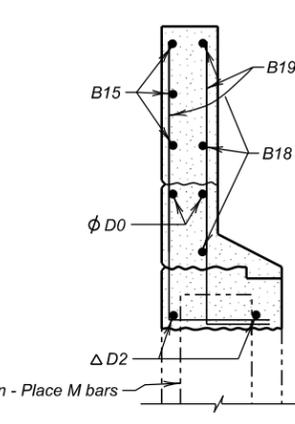
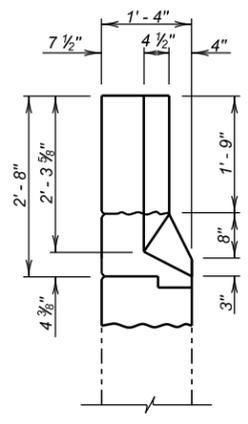
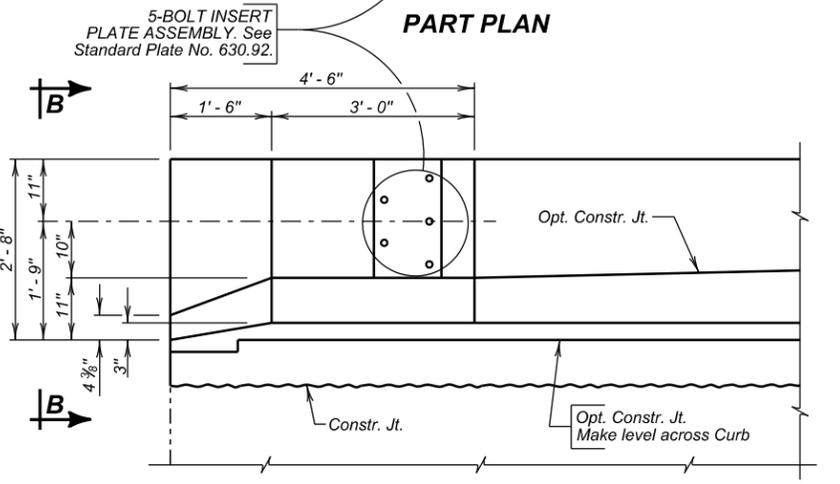
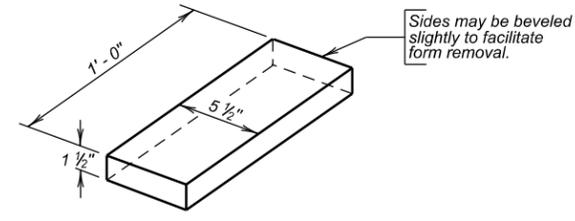
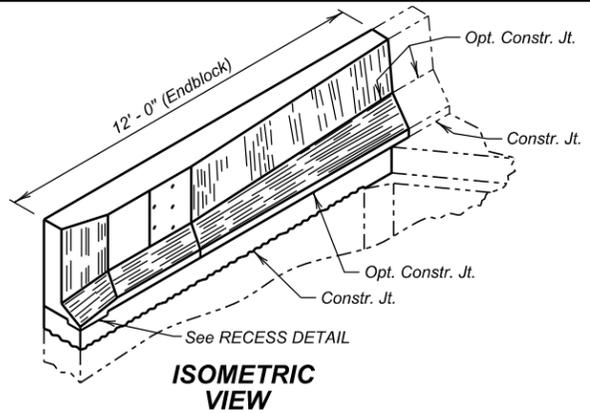
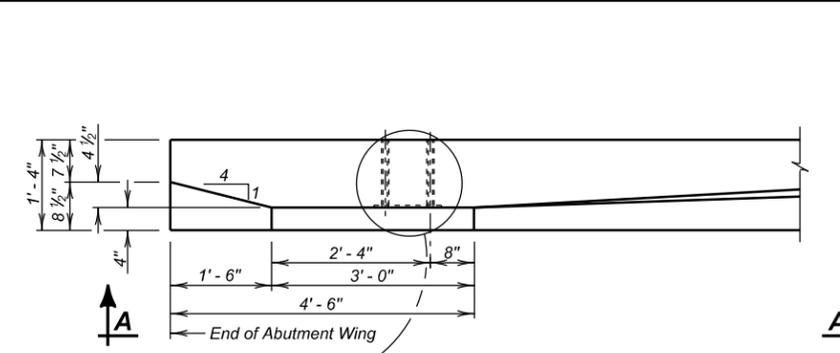
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2015

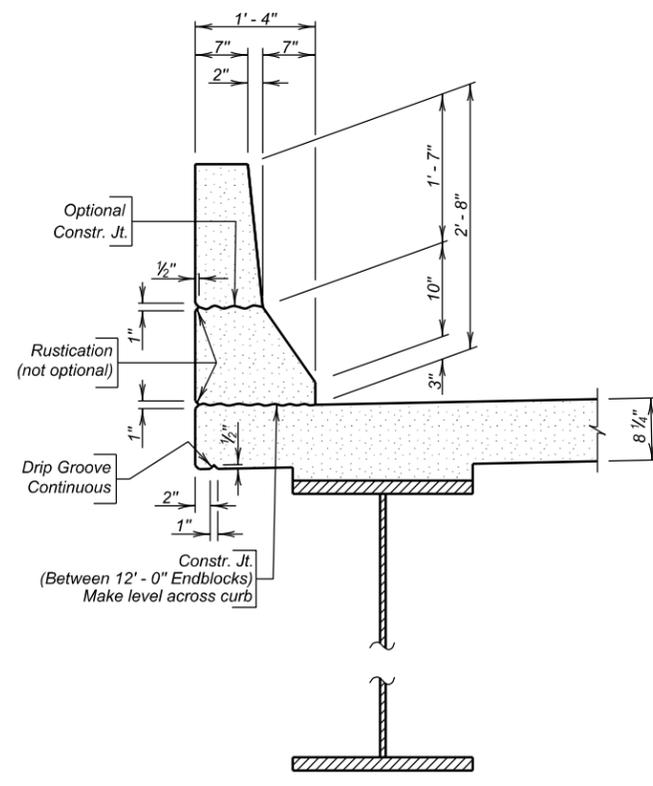
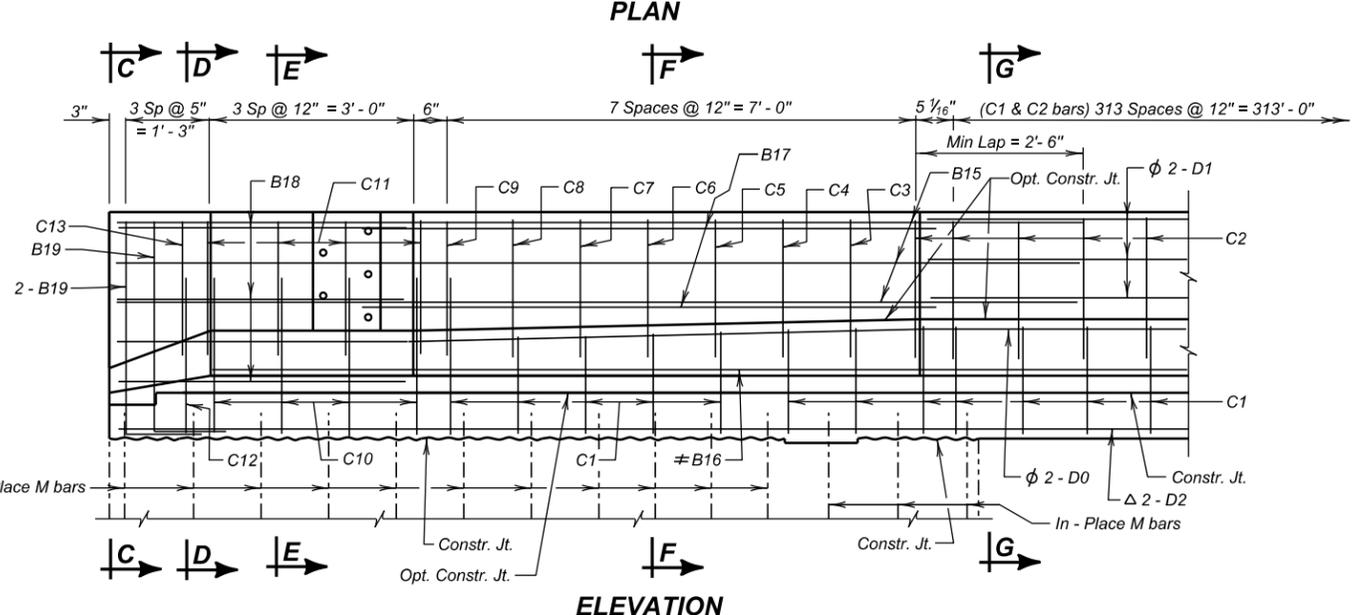
DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA16	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E100	E127

FOR BIDDING PURPOSES ONLY



φ Min. Lap = 2' - 11"
 Δ Min. Lap = 2' - 2"
 ≠ Min. Lap = 1' - 0"



NOTE:
 For listing of re-bars see Reinforcing Schedule on SUPERSTRUCTURE DETAILS (C).

ENDBLOCK AND BARRIER CURB DETAILS

FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

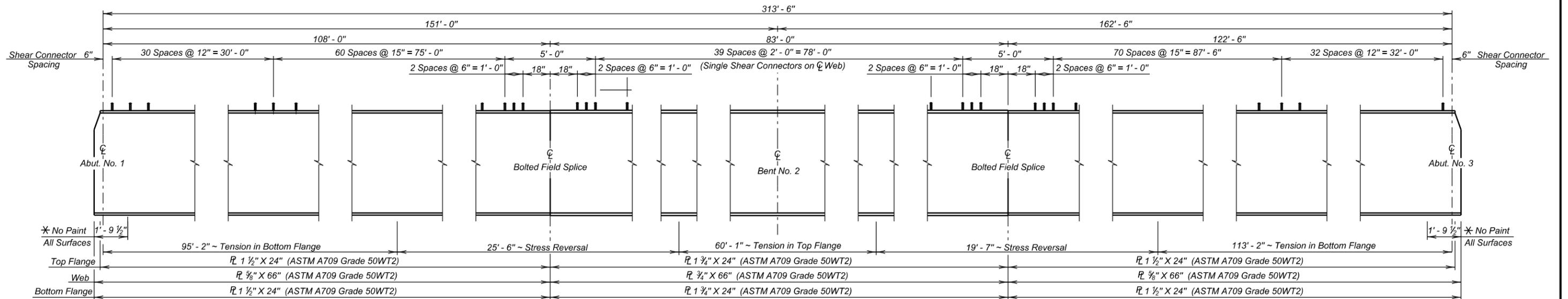
APRIL 2015 **17** OF **32**

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA17	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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* Measured along ϕ web

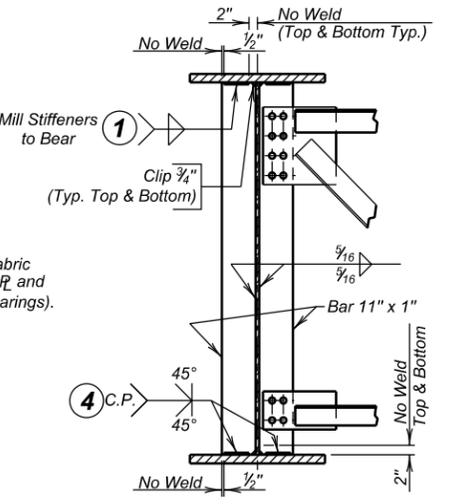
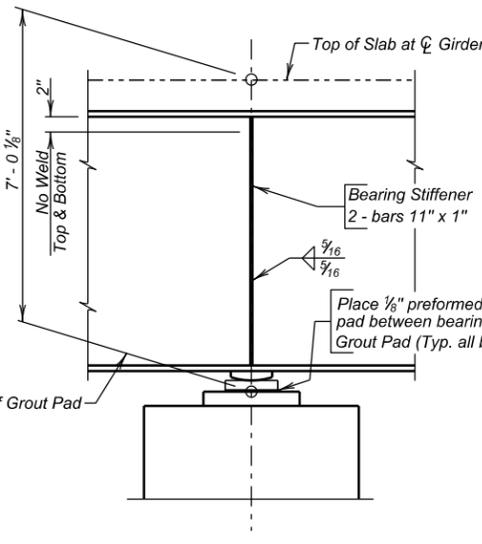
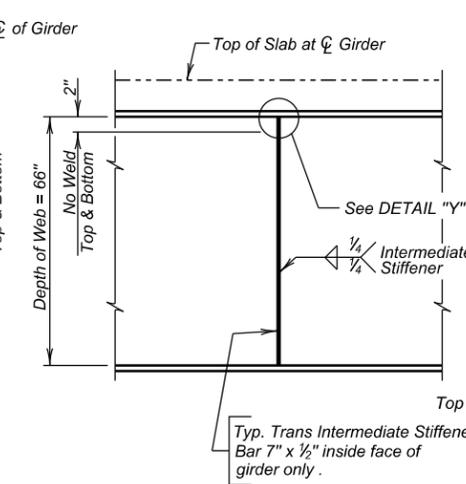
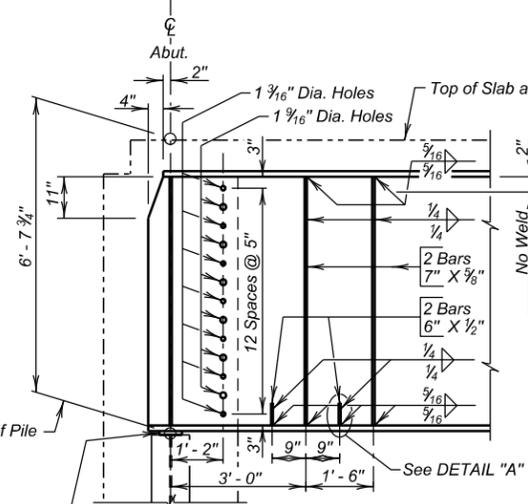
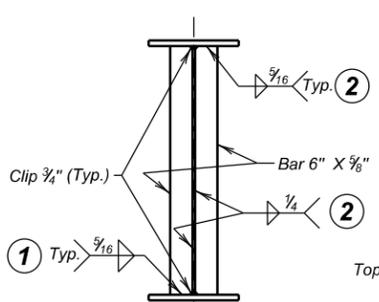
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E101	E127

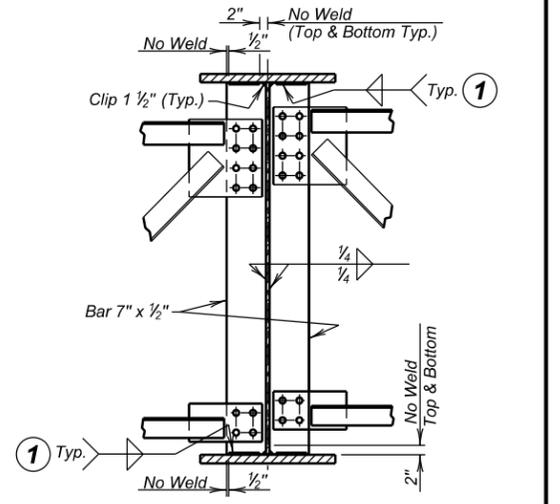


GIRDER LAYOUT

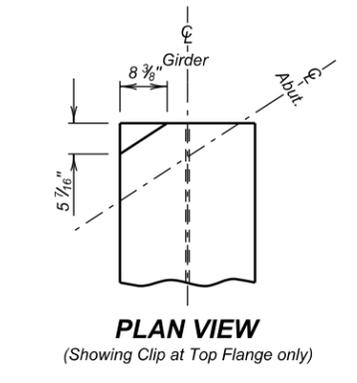
2 NOTE: All fillet welds shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.



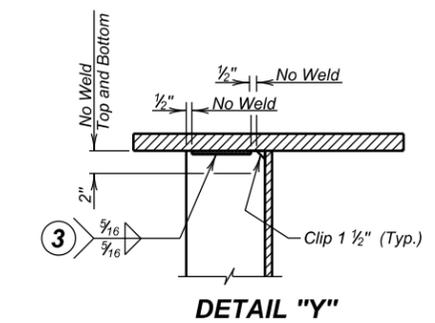
1 NOTE: All fillet welds attaching diaphragm or bearing stiffeners to girder flanges, shall terminate 1/2" from edge of stiffener, edge of flange, or clip as appropriate. Weld size to be as indicated in the table of Flange to Web Welds.



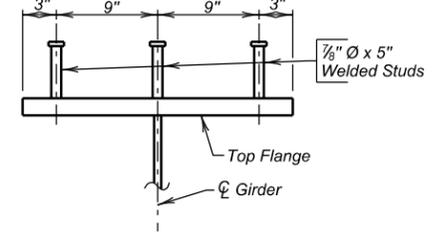
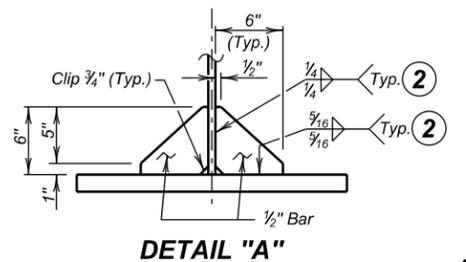
- NOTES:
- See DIAPHRAGM DETAILS Sheet for Diaphragm Details.
 - See FRAMING DIAGRAM, CAMBER, AND ERECTION DATA Sheet for spacing of Diaphragms, Stiffeners, and Girder Camber.
 - All dimensions shown are horizontal or vertical.
 - All Stiffeners and Girder Ends shall be made normal to flanges, except bearing stiffeners at abutments shall be vertical.
 - Stiffeners to have tight fit top and bottom.
 - Dimensions shown are for steel temperature of 45° F.



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



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



Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Field Installing Shear Connectors will be included in the Contract Lump Sum Price for Structural Steel. 650 Shear Connectors per Girder.

GIRDER LAYOUT DETAILS FOR NORTHBOUND LANES

316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

44' - 0" ROADWAY OVER I-229

33° RHF SKEW

SEC. 7-T100N-R50W

STA. 118 + 55.53 TO 121 + 72.01

IM 0293(96)73

STR. NO. 42-067-006

HL-93

LINCOLN COUNTY

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CK. DES. BY DM 01QSGA18

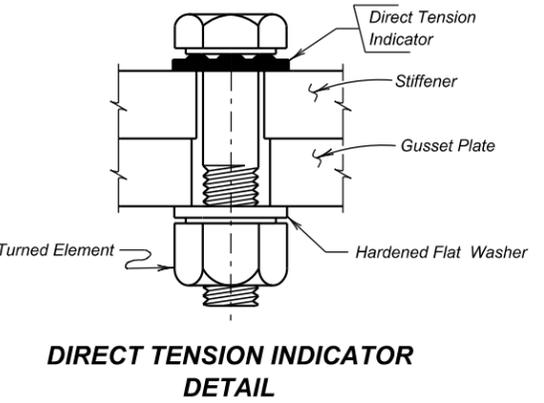
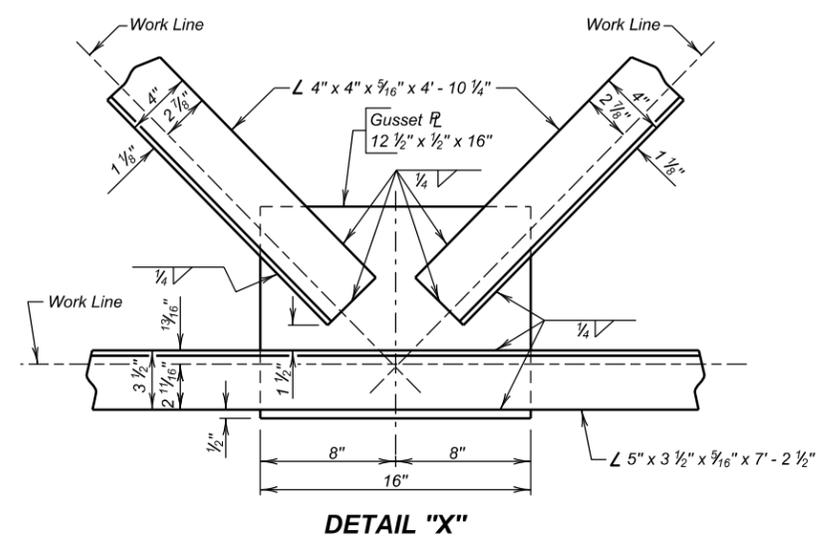
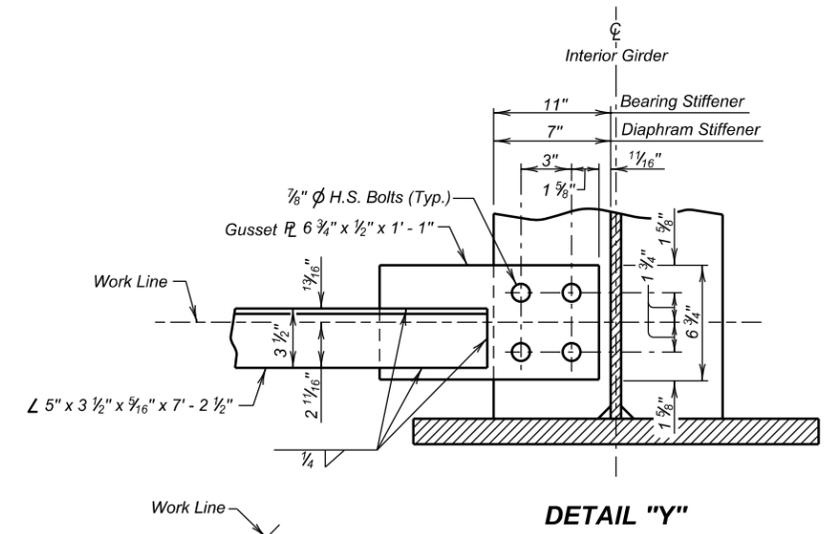
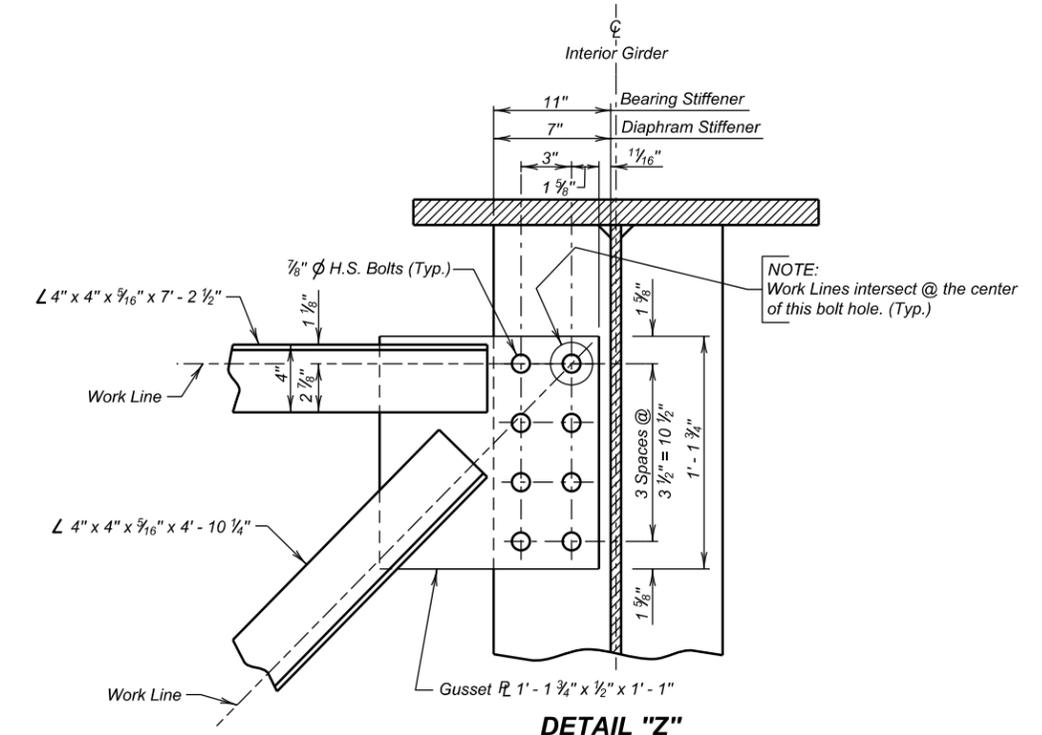
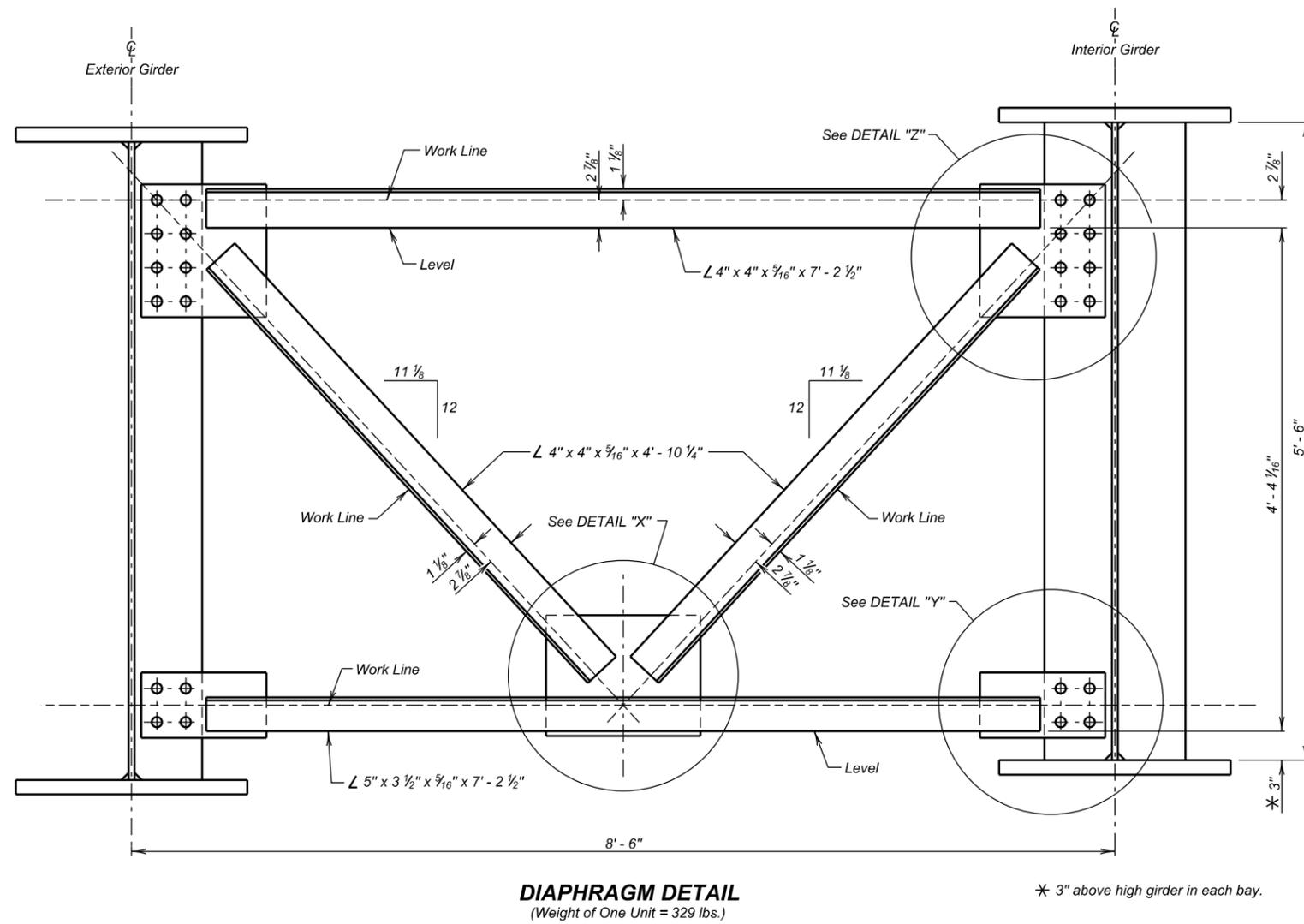
DRAFTED BY MG

Kevin N. Goeden BRIDGE ENGINEER

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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E102	E127



GENERAL NOTES

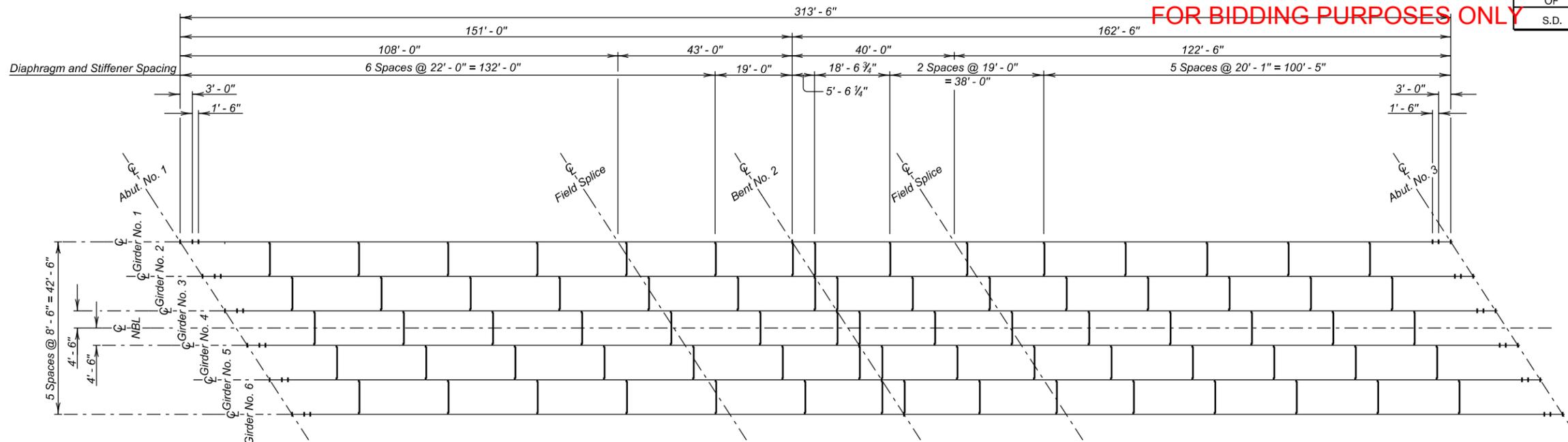
1. The Steel Diaphragms are included in the quantity for Structural Steel.
2. Use $1 \frac{1}{16}$ " ϕ bolt holes in the $\frac{1}{2}$ " gusset plates. Use $1 \frac{3}{16}$ " ϕ bolt holes in the stiffener plates.
3. Install bolt heads on the side of the connection with the $1 \frac{3}{16}$ " ϕ bolt holes. Install direct tension indicators under the bolt heads.
4. The $\frac{7}{8}$ " High Strength bolts, nuts, and washers shall conform to ASTM Specification A-325. The bolts shall be the heavy hexagon head structural type with heavy semi-finished hexagon nut and hardened washer.
5. Terminate all welds $\frac{1}{2}$ " from the edges of the gusset plates.

DIAPHRAGM DETAILS FOR NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

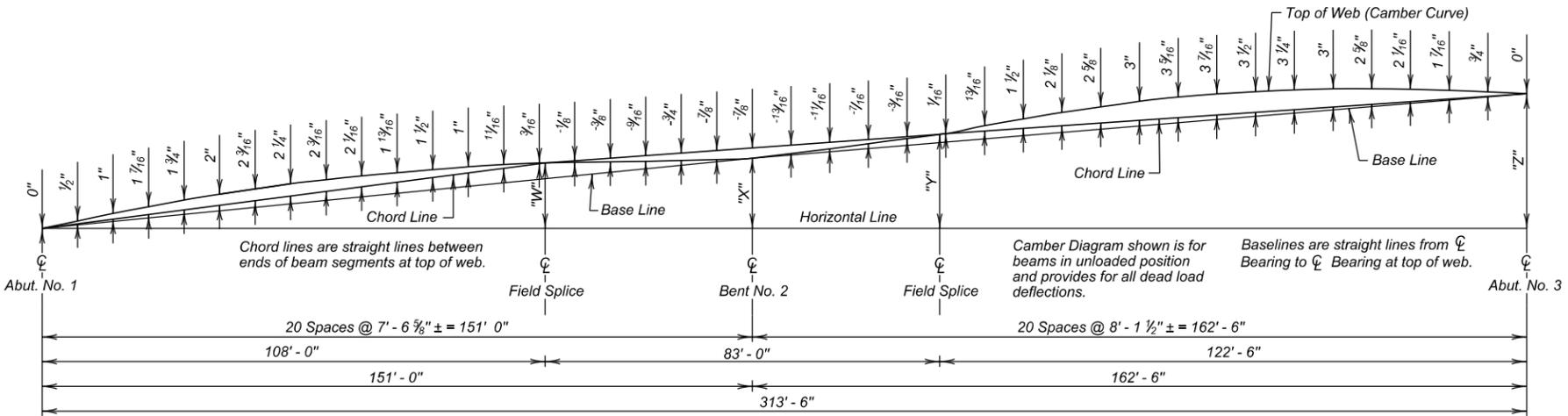
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FRAMING DIAGRAM

Girder No.	CAMBER DIMENSIONS				
	"V"	"W"	"X"	"Y"	"Z"
1	0.013'	0.639'	0.649'	0.802'	0.338'
2	0.013'	0.616'	0.616'	0.760'	0.270'
3	0.013'	0.592'	0.585'	0.719'	0.202'
4	0.013'	0.570'	0.551'	0.678'	0.135'
5	0.013'	0.546'	0.518'	0.636'	0.067'
6	0.013'	0.522'	0.485'	0.595'	0.000'

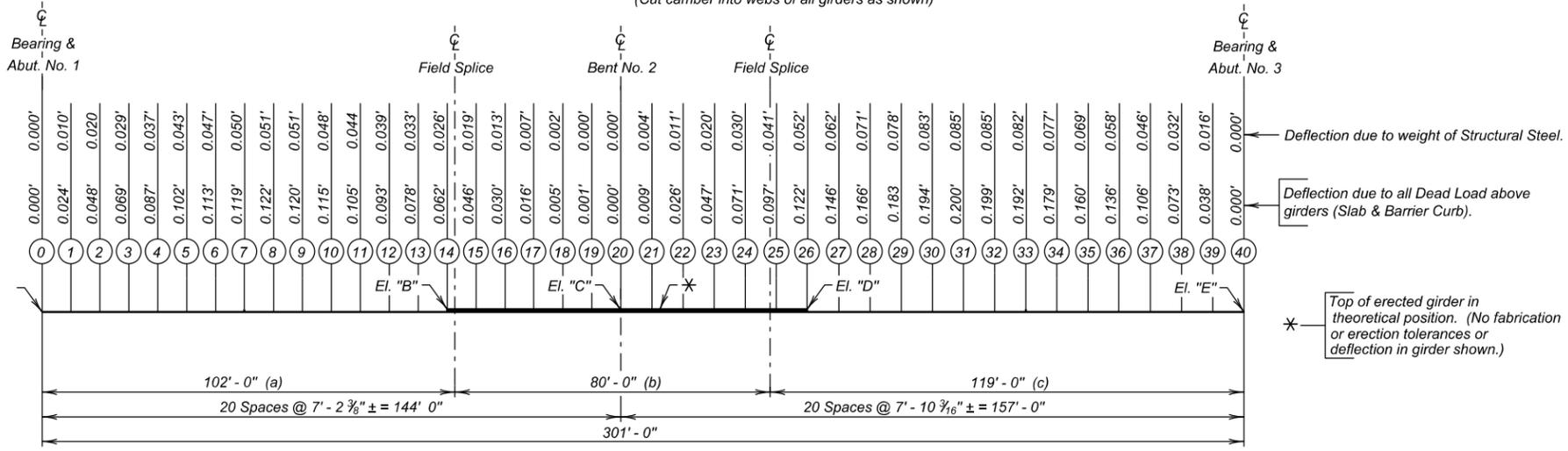


CAMBER CUTTING DIAGRAM
(Cut camber into webs of all girders as shown)

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

Girder No.	ELEVATIONS (Top of Girder)					SLOPES (%)		
	"A"	"B"	"C"	"D"	"E"	a	b	c
	1	1510.394	1511.017	1511.051	1511.164	1510.719	0.557	0.177
2	1510.603	1511.203	1511.227	1511.331	1510.860	0.536	0.154	-0.367
3	1510.811	1511.387	1511.402	1511.498	1511.000	0.514	0.133	-0.389
4	1510.847	1511.401	1511.406	1511.493	1510.969	0.494	0.111	-0.411
5	1510.713	1511.243	1511.239	1511.317	1510.767	0.471	0.089	-0.432
6	1510.577	1511.083	1511.070	1511.140	1510.564	0.449	0.069	-0.453

Φ GIRDER ERECTION ELEVATIONS AND SLOPES



GIRDER ERECTION DIAGRAM

FRAMING DIAGRAM, CAMBER, & ERECTION DATA FOR NORTHBOUND LANES

316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006

33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

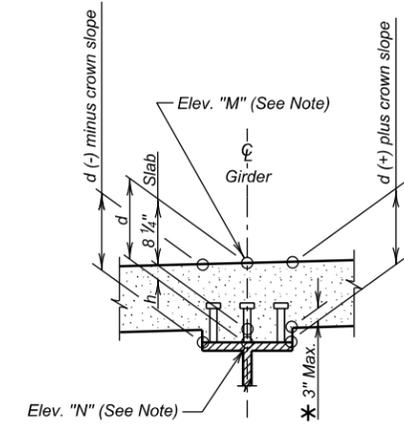
LINCOLN COUNTY
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APRIL 2015 20 OF 32

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E104	E127

		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS	Girder No. 1	Elev. "M"	1511.207	1511.284	1511.358	1511.427	1511.492	1511.551	1511.603	1511.649	1511.689	1511.722	1511.750	1511.771	1511.788	1511.799	1511.807	1511.812	1511.817	1511.820	1511.824	1511.832	1511.843
		(-) Elev. "N"																					
		(=) d																					
		(-) 0.688'																					
		(=) h																					
	Girder No. 2	Elev. "M"	1511.416	1511.491	1511.564	1511.631	1511.694	1511.751	1511.802	1511.846	1511.885	1511.917	1511.943	1511.962	1511.978	1511.987	1511.994	1511.997	1512.000	1512.001	1512.004	1512.010	1512.019
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 3	Elev. "M"	1511.624	1511.698	1511.768	1511.834	1511.895	1511.951	1512.000	1512.043	1512.080	1512.110	1512.134	1512.152	1512.166	1512.174	1512.178	1512.180	1512.181	1512.181	1512.182	1512.187	1512.194
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 4	Elev. "M"	1511.660	1511.733	1511.801	1511.866	1511.925	1511.979	1512.027	1512.068	12.103	1512.131	1512.154	1512.170	1512.183	1512.189	1512.192	1512.192	1512.192	1512.190	1512.189	1512.192	1512.198
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 5	Elev. "M"	1511.526	1511.596	1511.663	1511.726	1511.784	1511.836	1511.883	1511.922	1511.956	1511.982	1512.004	1512.018	1512.029	1512.033	1512.035	1512.033	1512.031	1512.028	1512.025	1512.027	1512.031
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 6	Elev. "M"	1511.390	1511.459	1511.524	1511.585	1511.642	1511.692	1511.737	1511.775	1511.807	1511.832	1511.851	1511.864	1511.873	1511.876	1511.876	1511.873	1511.869	1511.864	1511.863	1511.860	1511.862
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						



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

		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS	Girder No. 1	Elev. "M"	1511.861	1511.883	1511.908	1511.933	1511.957	1511.979	1511.996	1512.007	1512.012	1512.010	1511.998	1511.979	1511.950	1511.913	1511.867	1511.813	1511.751	1511.683	1511.610	1511.532	
		(-) Elev. "N"																					
		(=) d																					
		(-) 0.688'																					
		(=) h																					
	Girder No. 2	Elev. "M"	1512.036	1512.056	1512.079	1512.102	1512.125	1512.144	1512.160	1512.169	1512.173	1512.169	1512.155	1512.134	1512.103	1512.065	1512.017	1511.962	1511.898	1511.828	1511.753	1511.673	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 3	Elev. "M"	1512.209	1512.227	1512.249	1512.270	1512.291	1512.309	1512.324	1512.330	1512.332	1512.326	1512.311	1512.288	1512.256	1512.216	1512.166	1512.109	1512.043	1511.972	1511.895	1511.813	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 4	Elev. "M"	1512.212	1512.228	1512.247	1512.267	1512.287	1512.302	1512.315	1512.320	1512.320	1512.313	1512.296	1512.271	1512.237	1512.195	1512.144	1512.085	1512.017	1511.944	1511.865	1511.782	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 5	Elev. "M"	1512.043	1512.057	1512.075	1512.093	1512.111	1512.125	1512.135	1512.139	1512.137	1512.128	1512.109	1512.083	1512.047	1512.003	1511.950	1511.890	1511.820	1511.745	1511.665	1511.580	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						
	Girder No. 6	Elev. "M"	1511.873	1511.885	1511.901	1511.918	1511.934	1511.946	1511.955	1511.957	1511.953	1511.942	1511.922	1511.894	1511.856	1511.811	1511.756	1511.693	1511.622	1511.546	1511.463	1511.377	
	(-) Elev. "N"																						
	(=) d																						
	(-) 0.688'																						
	(=) h																						

NOTES:

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

This sheet is to be used in conjunction with FRAMING DIAGRAM, CAMBER, & ERECTION DATA Sheet.

SLAB FORM ELEVATIONS
FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006

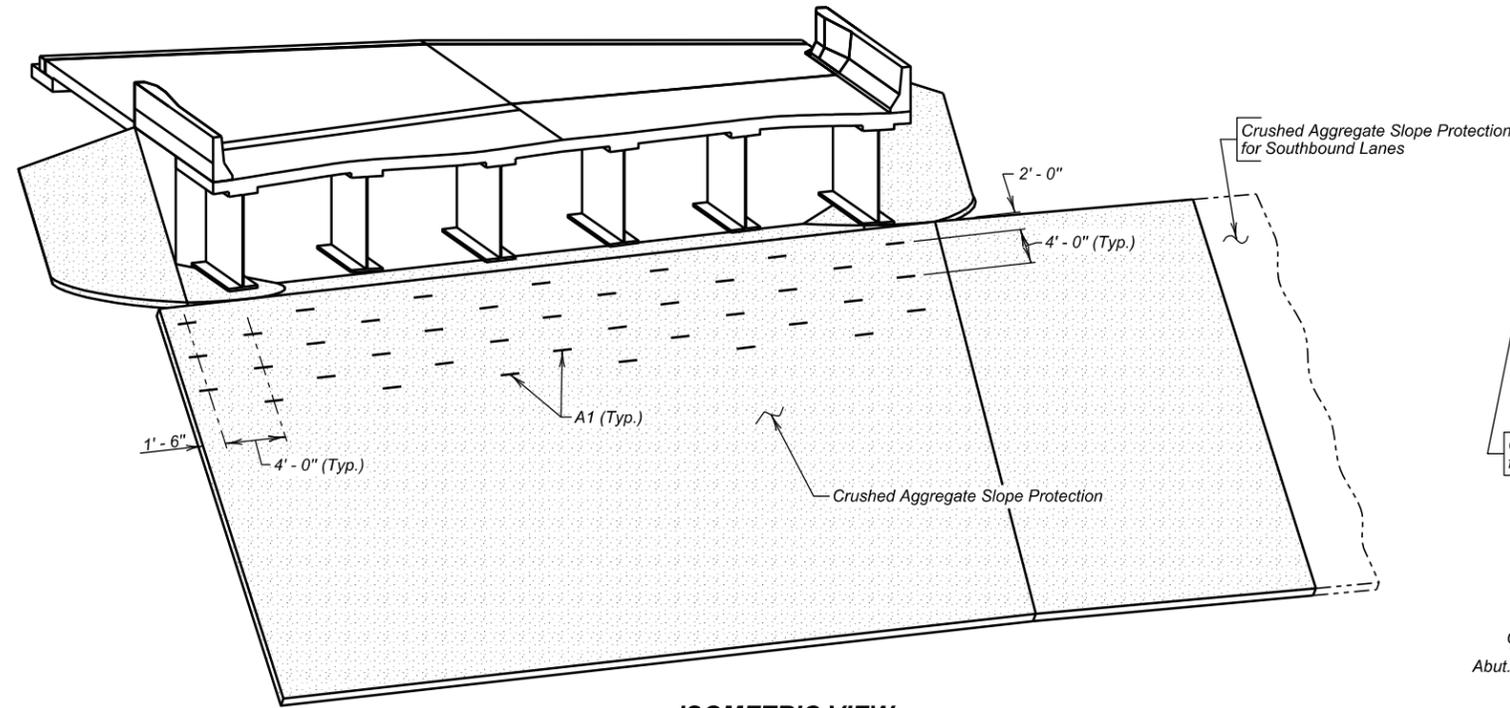
33° RHF SKEW
SEC. 7-T100N-R50W
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LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

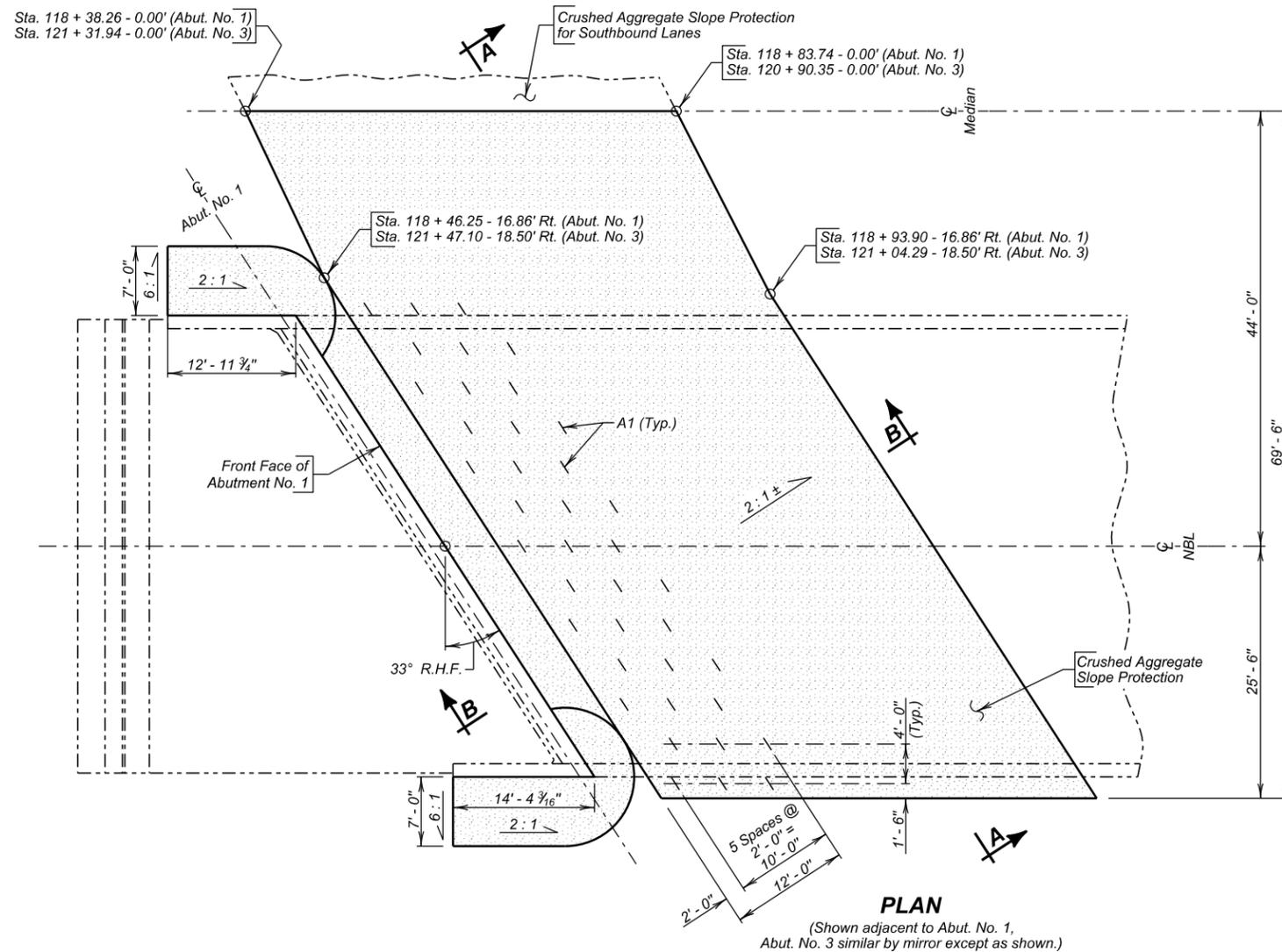
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E106	E127

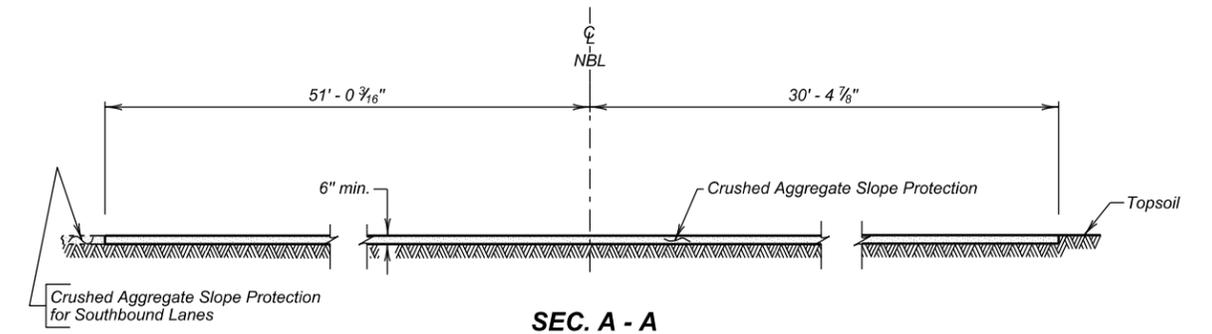


ISOMETRIC VIEW

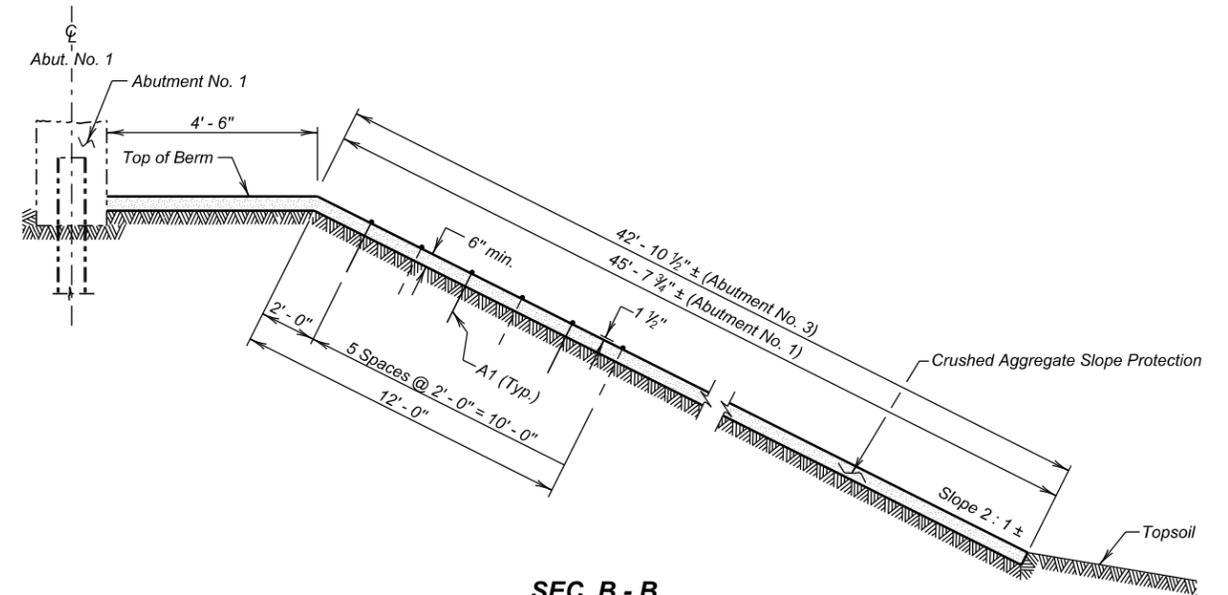


PLAN

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



SEC. A - A



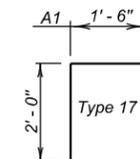
SEC. B - B

REINFORCING SCHEDULE

(For Two Abutments)

Mk.	No.	Size	Length	Type	Bending Details
A1	78	6	5'-6"	17	

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



ESTIMATED QUANTITIES

(For Two Abutments)

ITEM	UNIT	QUANTITY
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	926.5

SLOPE PROTECTION DETAILS

FOR

NORTHBOUND LANES

316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

44' - 0" ROADWAY

OVER I-229

STA. 118 + 55.53 TO 121 + 72.01

STR. NO. 42-067-006

33° RHF SKEW

SEC. 7-T100N-R50W

IM 0293(96)73

HL-93

LINCOLN COUNTY

S. D. DEPT. OF TRANSPORTATION

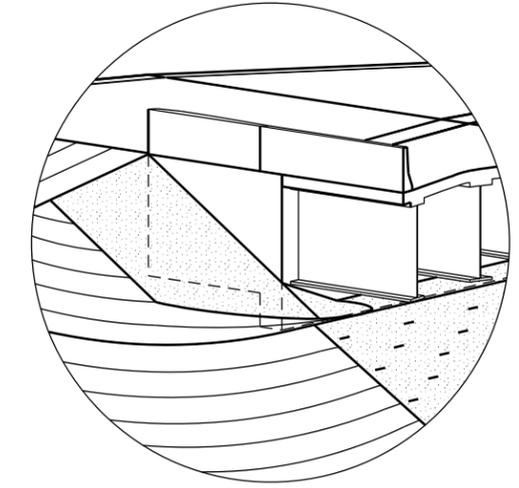
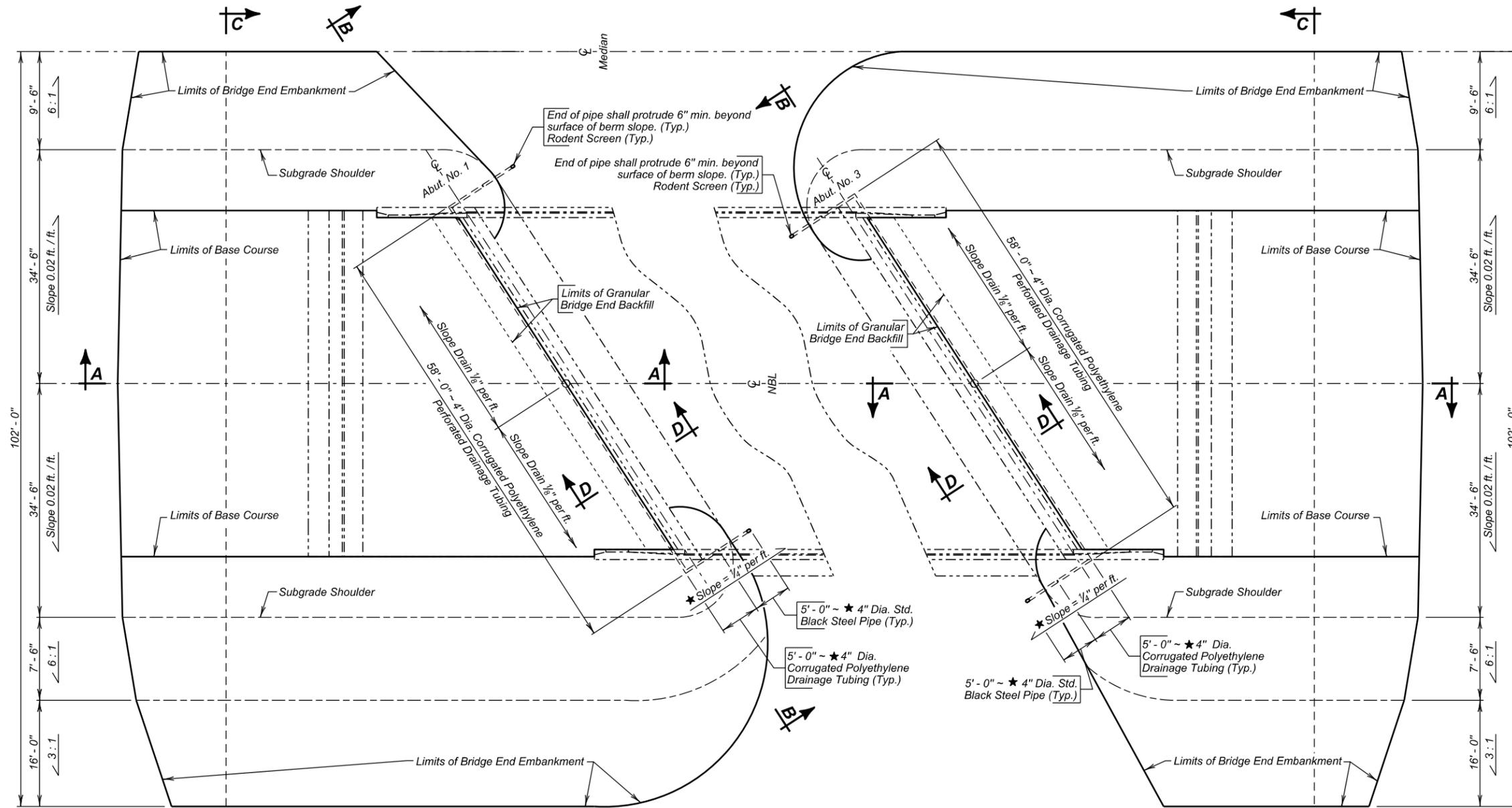
APRIL 2015

23 OF 32

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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E107	E127



SPILL CONE DETAIL AT EMBANKMENT

ESTIMATED QUANTITIES		
(For Two Abutments)		
ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	85.8
Bridge End Embankment	Cu. Yd.	1723
Base Course	Ton	2584
Porous Backfill	Ton	28.6
4" Underdrain Pipe	Ft.	156
Geogrid Reinforcement	Sq. Yd.	2598

- 116 ft. 4" dia. Corrugated Polyethylene Perforated Drainage Tubing.
 - 20 ft. 4" dia. Corrugated Polyethylene Drainage Tubing.
 - 20 ft. 4" dia. Std. Black Steel Pipe with Rodent Screens.
 - 870 sq. ft. Vertical Composite Drain
- Items 1 thru 4 are approximate quantities contained in the 4" Underdrain Pipe and are for information only.
- 5639 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
 - 638 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.

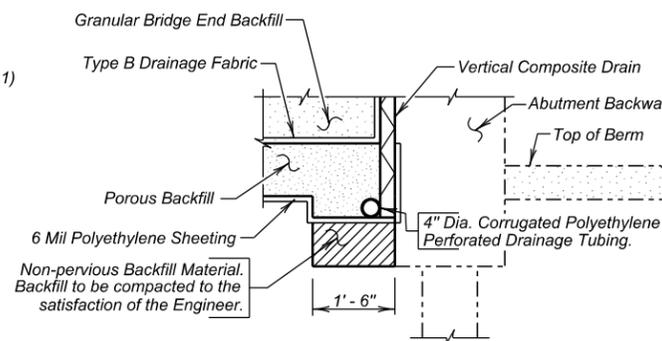
For estimating purposes only, a factor of 1.89 tons/cu. yd. was used to convert cu. yds. to tons.

Shrinkage Factor of 1.25 Used.

Payment quantities will be based on area covered plus 15% to account for overlaps.

PLAN
(Bridge End Backfill shown adjacent to Abut. No. 1)

PLAN
(Bridge End Backfill shown adjacent to Abut. No. 3)



SEC. D - D

DETAILS OF BRIDGE END BACKFILL (A)
FOR

NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY
 OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

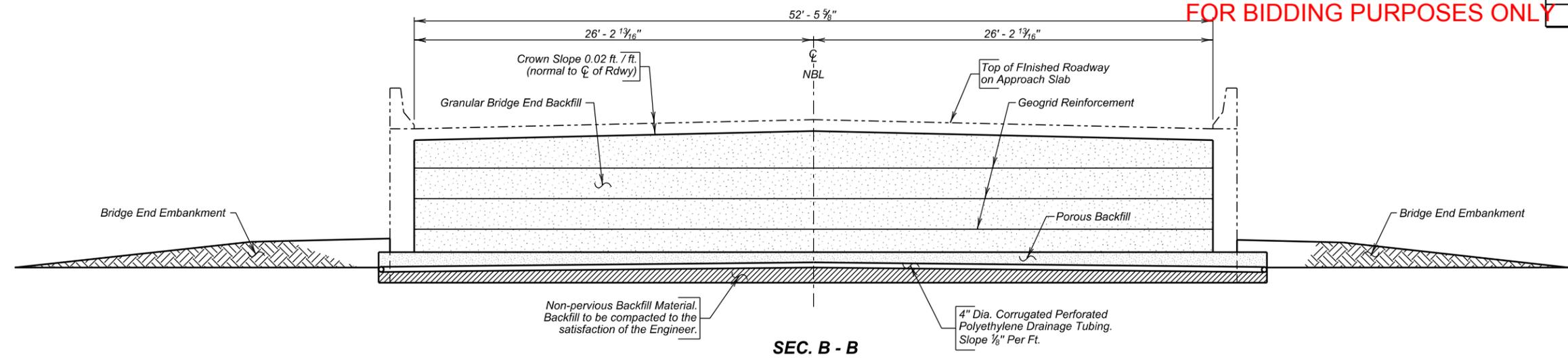
33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

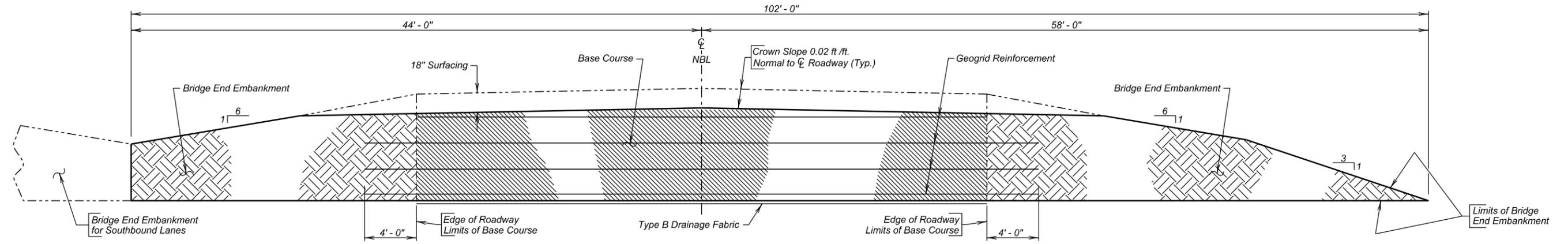
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E108	E127

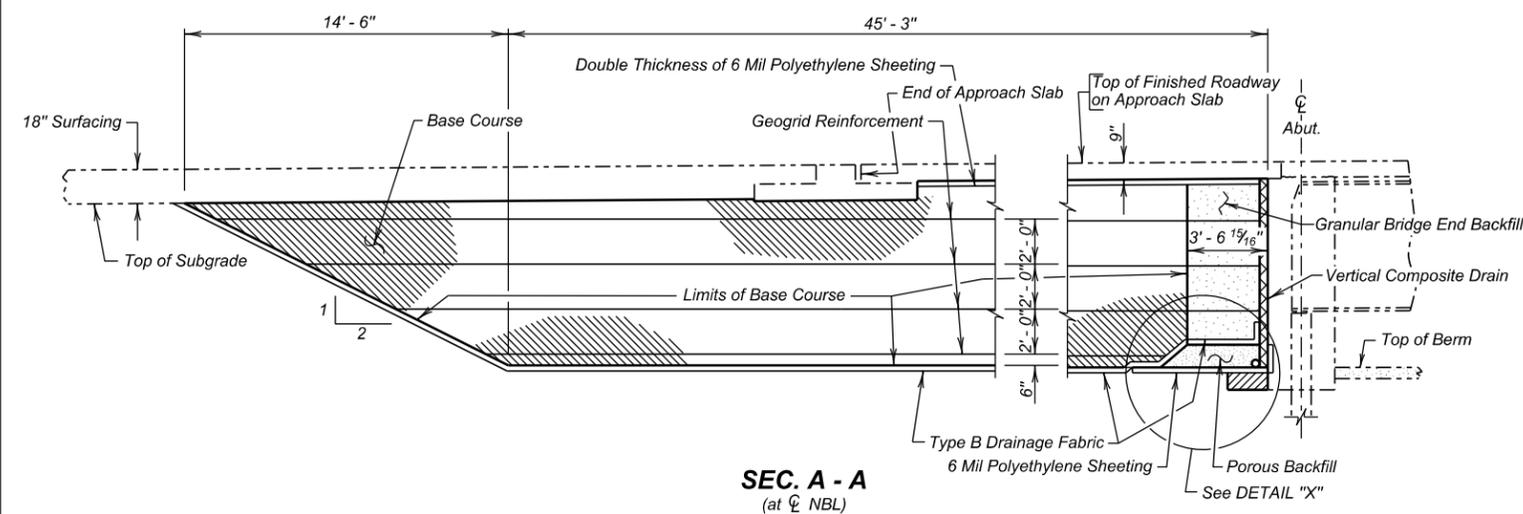
FOR BIDDING PURPOSES ONLY



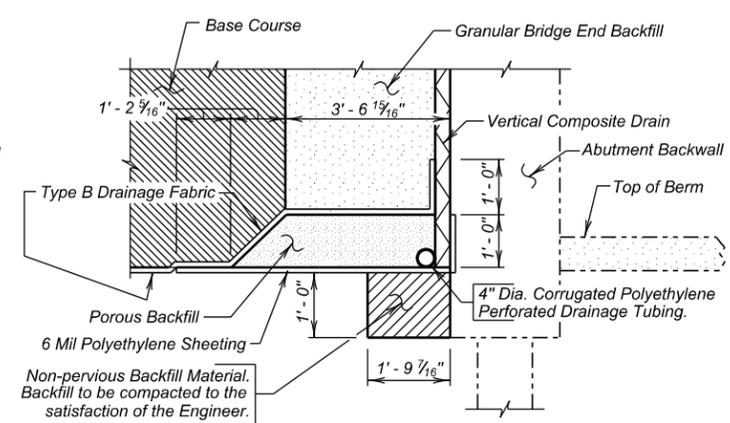
SEC. B - B



SEC. C - C



SEC. A - A
(at C of NBL)



DETAIL "X"

DETAILS OF BRIDGE END BACKFILL (B)

FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY
 OVER I-229
 STA. 118 + 55.53 TO 121 + 72.01
 STR. NO. 42-067-006

33° RHF SKEW
 SEC. 7-T100N-R50W
 IM 0293(96)73
 HL-93

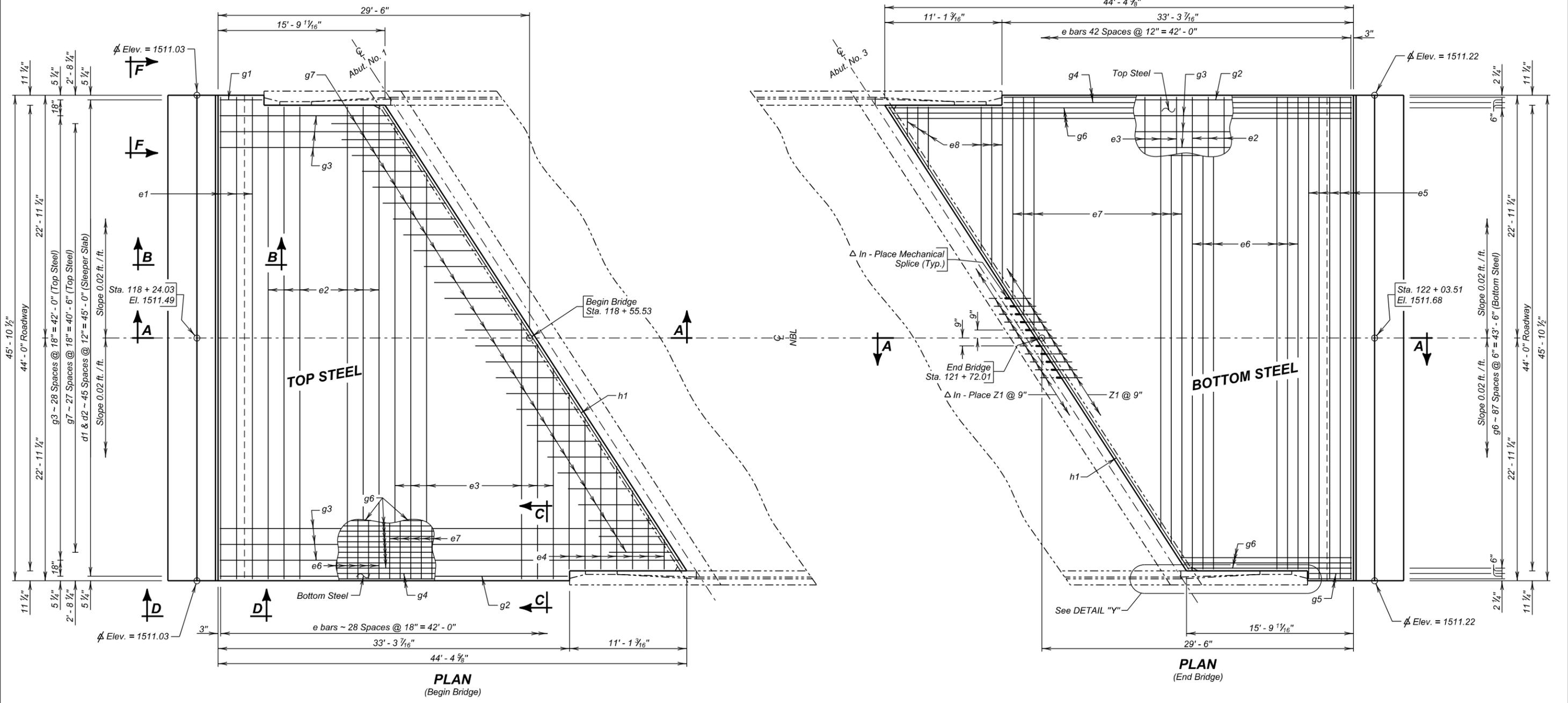
LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION

APRIL 2015 (25) OF (32)

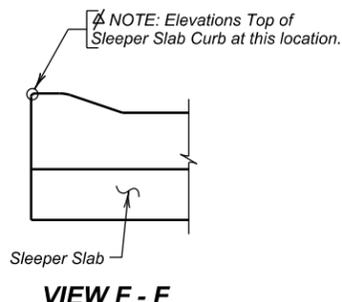
DESIGNED BY PW LINC01QS	CK. DES. BY JMH 01QSGA25	DRAFTED BY BT	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E109	E127



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



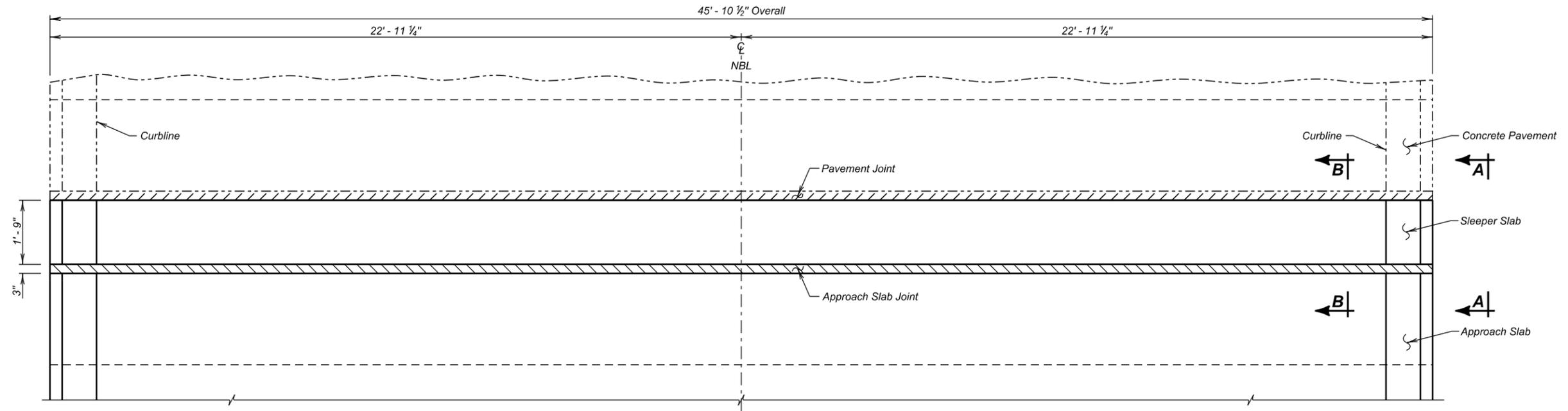
DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (A)
 FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
 44' - 0" ROADWAY OVER I-229
 33° RHF SKEW
 STA. 118 + 55.53 TO 121 + 72.01
 SEC. 7-T100N-R50W
 STR. NO. 42-067-006
 IM 0293(96)73
 HL-93

LINCOLN COUNTY
 S. D. DEPT. OF TRANSPORTATION
 APRIL 2015

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA26	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

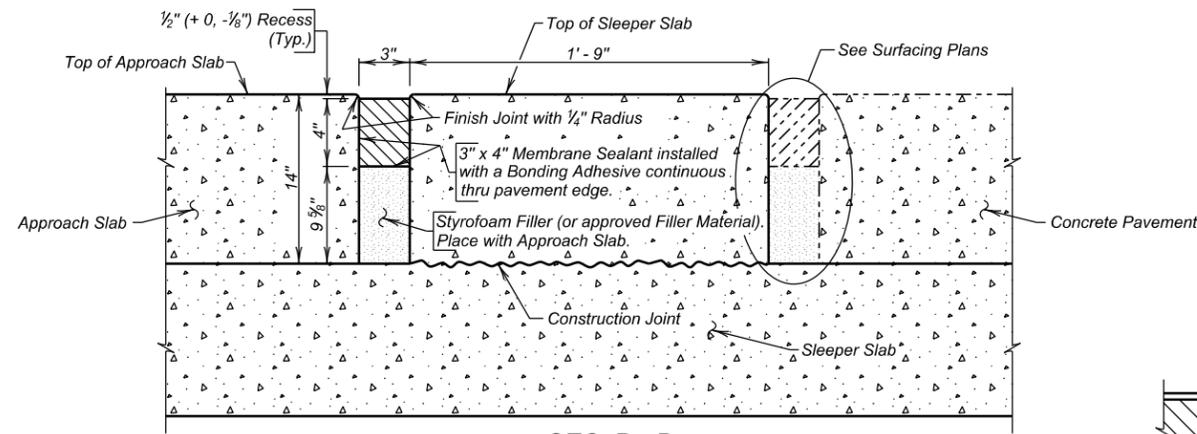
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E111	E127



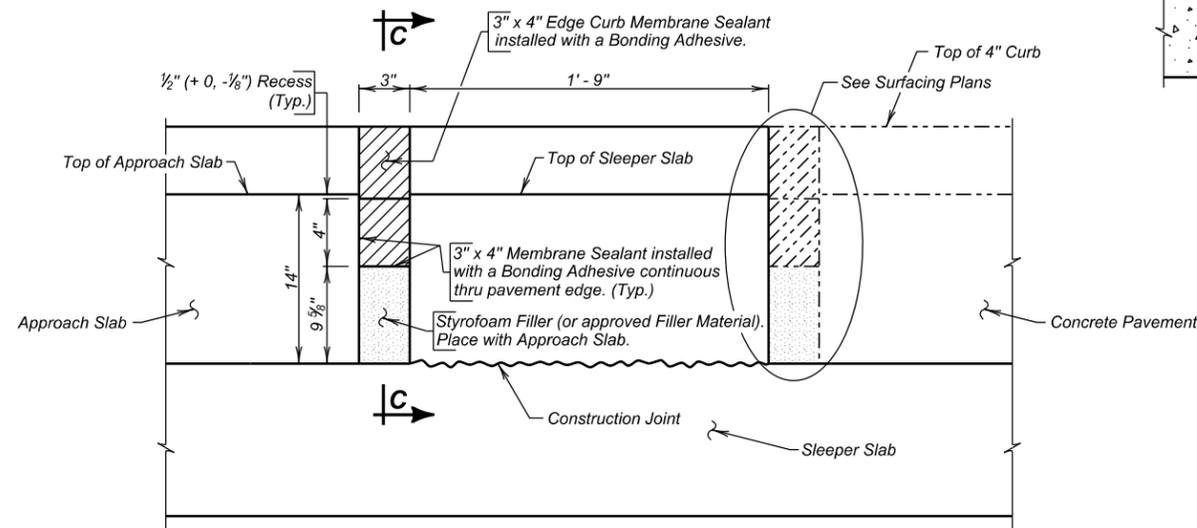
PLAN

GENERAL NOTES

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

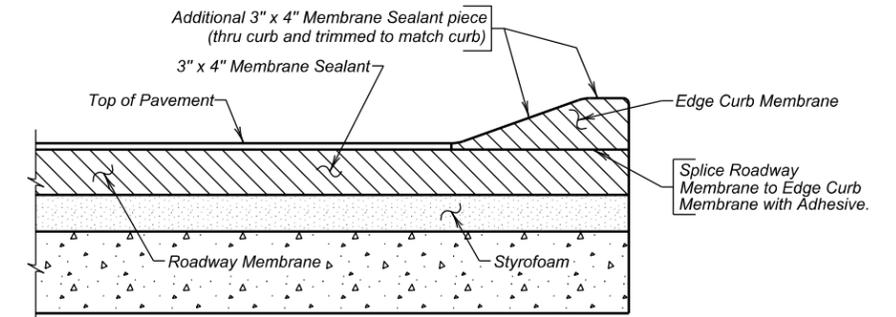


SEC. B - B



VIEW A - A

ESTIMATED QUANTITIES		
(For Two Approach Slabs)		
ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	91.8



SEC. C - C

APPROACH SLAB JOINT DETAILS

FOR

NORTHBOUND LANES

316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

44' - 0" ROADWAY

33° RHF SKEW

OVER I-229

SEC. 7-T100N-R50W

STA. 118 + 55.53 TO 121 + 72.01

IM 0293(96)73

STR. NO. 42-067-006

HL-93

LINCOLN COUNTY

S. D. DEPT. OF TRANSPORTATION

APRIL 2015

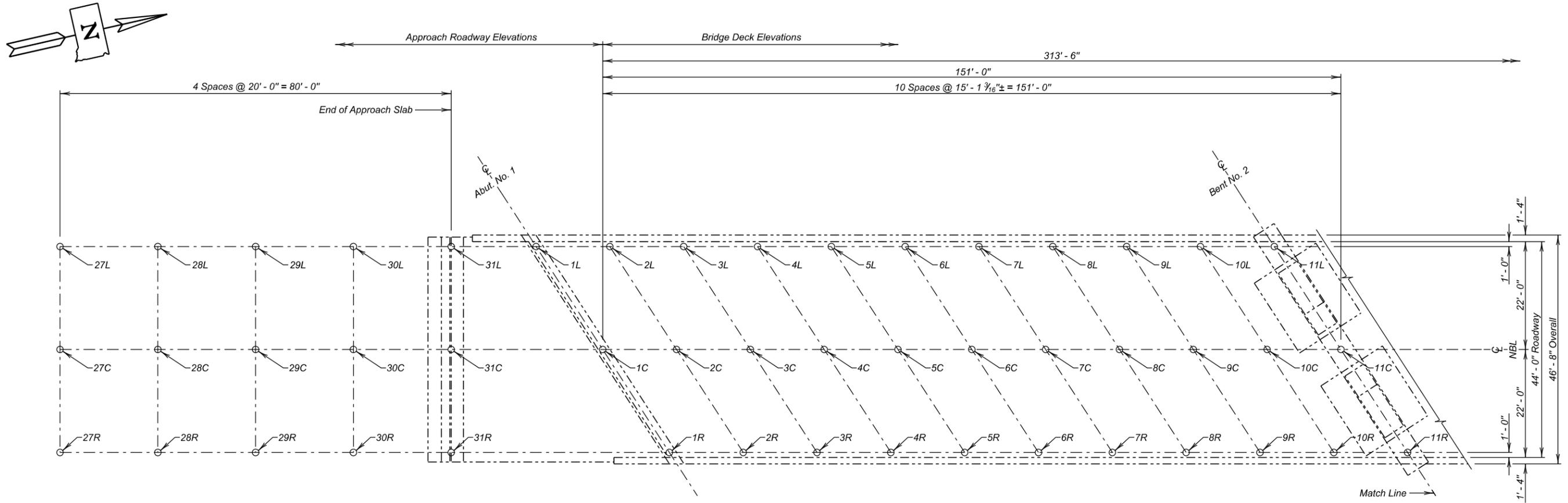
28 OF 32

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA28	DRAFTED BY MG	Kevin N. Coeden BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E112	E127



PLAN

Table of As-Built Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
6L		6C		6R	
7L		7C		7R	
8L		8C		8R	
9L		9C		9R	
10L		10C		10R	
11L		11C		11R	

Table of As-Built Elevations - Approach Roadway

Location	Elevation	Location	Elevation	Location	Elevation
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		31R	

NOTE:

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

Table of Elevations - Bridge Survey Markers

Location	Station - Offset	Elevation
Begin Bridge		

ESTIMATED QUANTITIES

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

AS-BUILT ELEVATION SURVEY (A)

FOR

NORTHBOUND LANES

316' - 5 3/4" CONT. COMP. GIRDER BRIDGE

44' - 0" ROADWAY 33° RHF SKEW

OVER I-229 SEC. 7-T100N-R50W

STA. 118 + 55.53 TO 121 + 72.01 IM 0293(96)73

STR. NO. 42-067-006 HL-93

LINCOLN COUNTY

S. D. DEPT. OF TRANSPORTATION

APRIL 2015

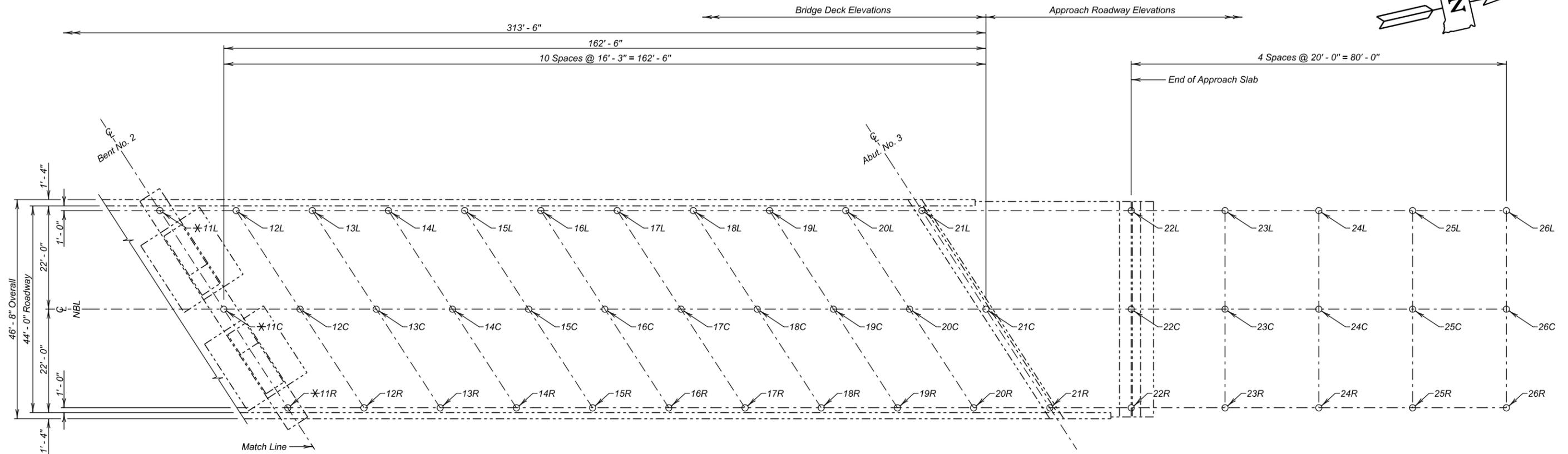
29 OF 32

DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA29	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E113	E127



* Included in As-Built Elevation Survey (A)

PLAN

Location	Elevation	Location	Elevation	Location	Elevation
12L		12C		12R	
13L		13C		13R	
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	

Location	Elevation	Location	Elevation	Location	Elevation
22L		22C		22R	
23L		23C		23R	
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	

Location	Station - Offset	Elevation
End Bridge		

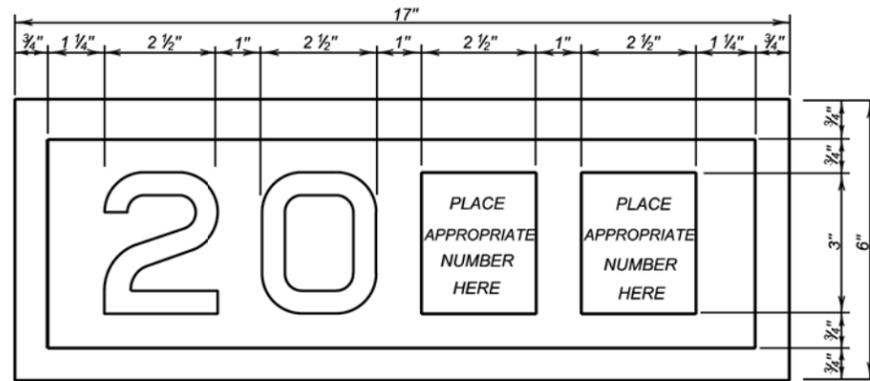
NOTE:

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

AS-BUILT ELEVATION SURVEY (B)
FOR
NORTHBOUND LANES
316' - 5 3/4" CONT. COMP. GIRDER BRIDGE
44' - 0" ROADWAY
OVER I-229
STA. 118 + 55.53 TO 121 + 72.01
STR. NO. 42-067-006
33° RHF SKEW
SEC. 7-T100N-R50W
IM 0293(96)73
HL-93

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
APRIL 2015

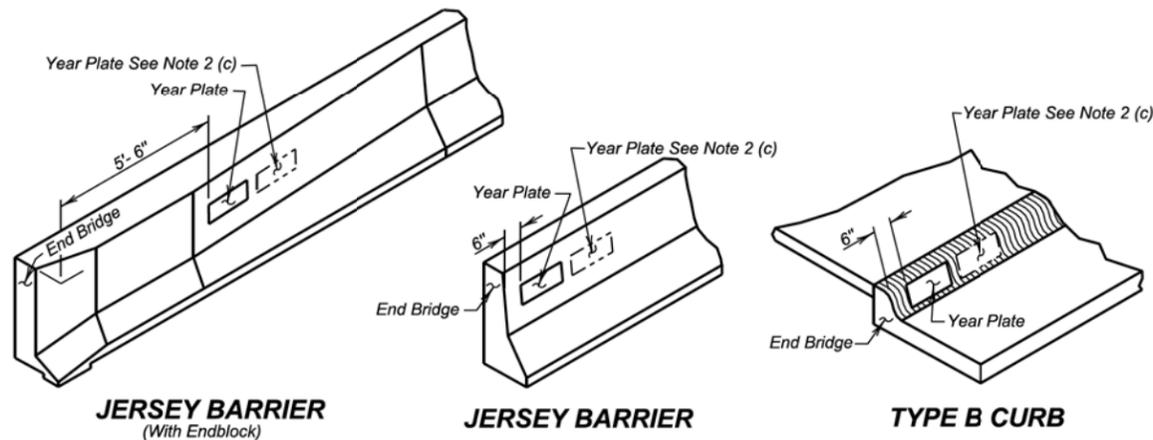
DESIGNED BY PW LINC01QS	CK. DES. BY DM 01QSGA30	DRAFTED BY MG	Kevin N. Goeden BRIDGE ENGINEER
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YEAR PLATE DETAILS

GENERAL NOTES:

- 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 (1/2) inch in depth.
- Year plates shall be located on structure (s) as follows:
 - On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate 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.
 - 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.
 - 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.
- 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.



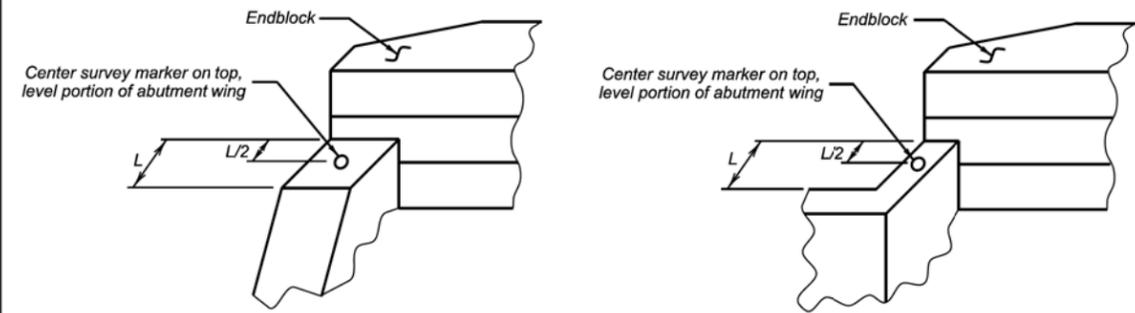
JERSEY BARRIER
(With Endblock)

JERSEY BARRIER

TYPE B CURB

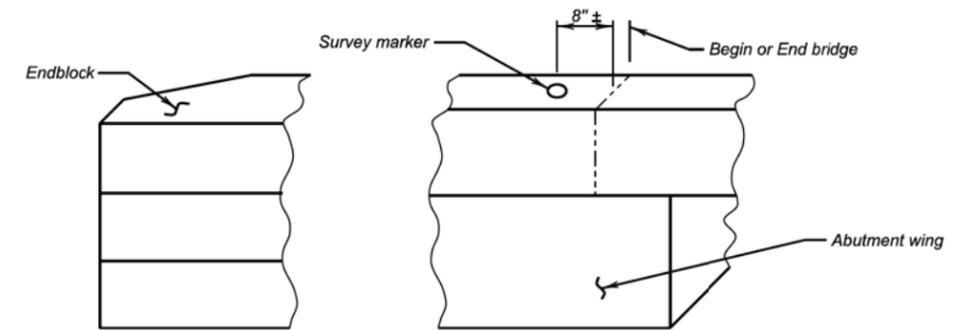
June 26, 2012

Published Date: 3rd Qtr. 2015	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



ABUTMENT WITH "STRAIGHT" WINGS

ABUTMENT WITH "SWEEP BACK" WINGS



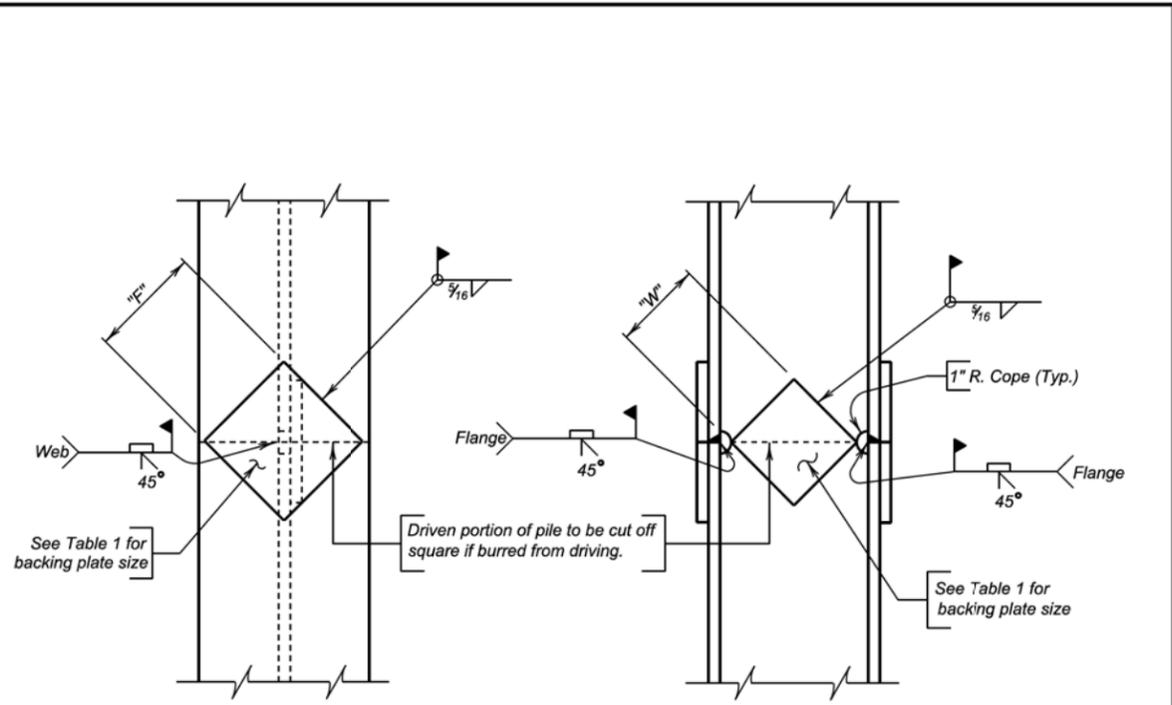
ABUTMENT WITH "SWEEP BACK" WINGS
(Endblock on top of wings)

GENERAL NOTES:

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

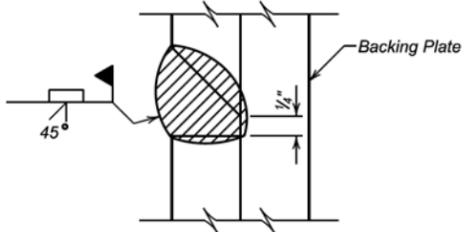
June 26, 2012

Published Date: 3rd Qtr. 2015	S D D O T	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1



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

COMPLETE JOINT PENETRATION WELD DETAIL



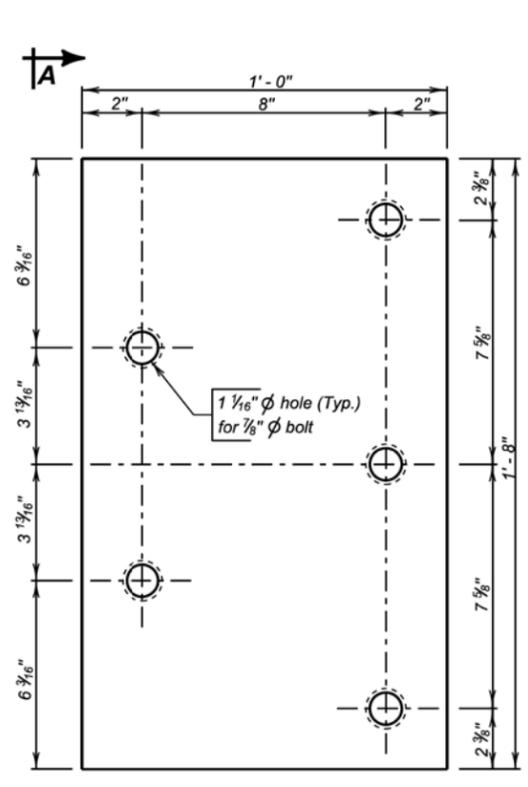
- GENERAL NOTES:**
1. Steel for backing plates shall conform to ASTM A709 Grade 50.
 2. Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
 3. Welder must be certified and registered with the SDDOT.
 4. Backing plate shall at a minimum be as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

PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

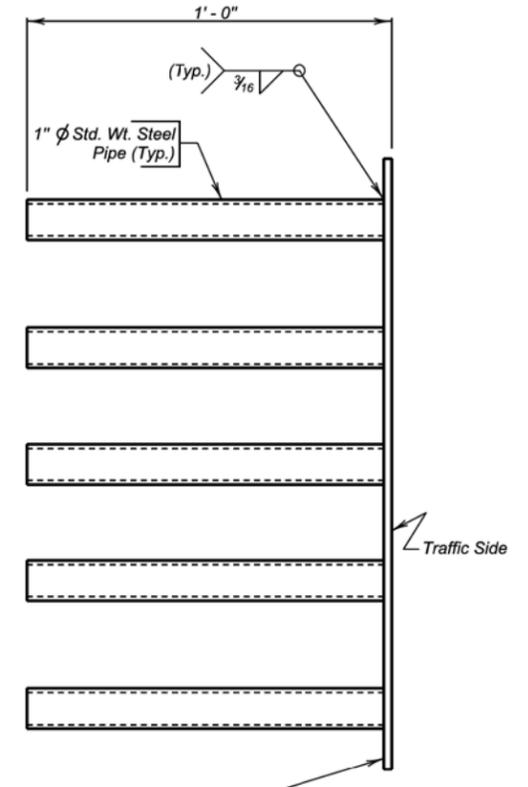
December 23, 2012

S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
		Sheet 1 of 1

Published Date: 3rd Qtr. 2015



ELEVATION



VIEW A - A

- GENERAL NOTES:**
1. Steel plate for the insert assembly shall conform to ASTM A709 Grade 36. The steel pipes shall conform to ASTM A53 or ASTM A500 Grade B.
 2. Welding and weld inspection shall be in conformance with AWS D1.1 - (Current Year) Structural Welding Code - Steel.
 3. After fabrication, galvanize in accordance with AASHTO M111 (ASTM A123).
 4. Bolts, nuts, and washers shall be provided with each assembly. Bolts shall be galvanized and conform to the requirements of ASTM A307, A325, or A449. Plain washers shall be galvanized and conform to ASTM F844.
 5. Bolt heads shall be placed on the traffic side of the endblock. Bolt projection at the back side of the insert shall not exceed 1 inch beyond the nut.
 6. The cost of the 5 bolt insert plate assembly complete in place including welding and galvanizing shall be incidental to the contract unit price per Cubic Yard for "Class A45 Concrete, Miscellaneous", "Class A45 Concrete, Bridge Deck", or "Class A45 Concrete, Bridge Repair", as applicable.

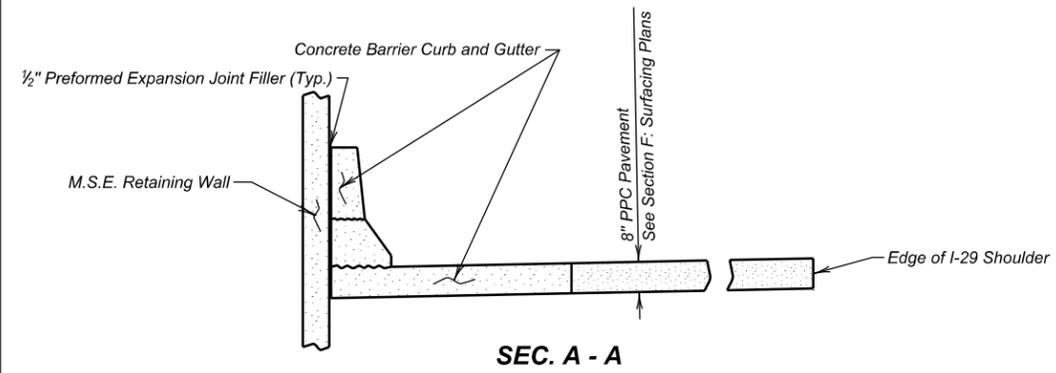
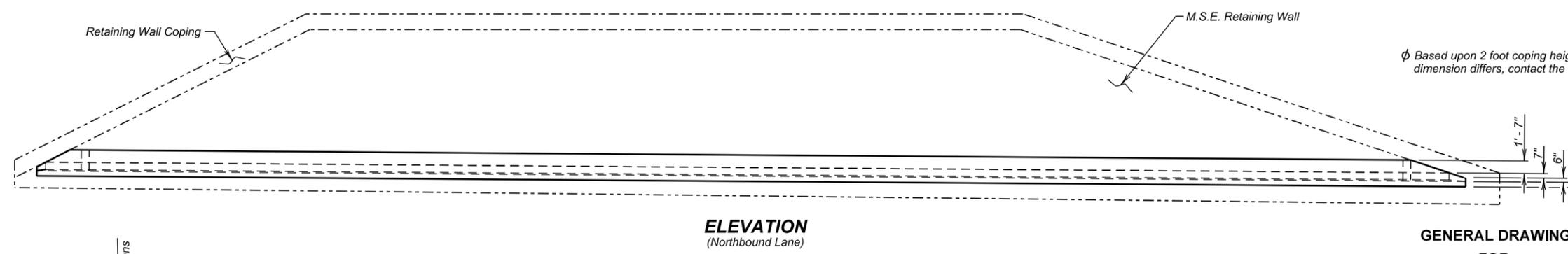
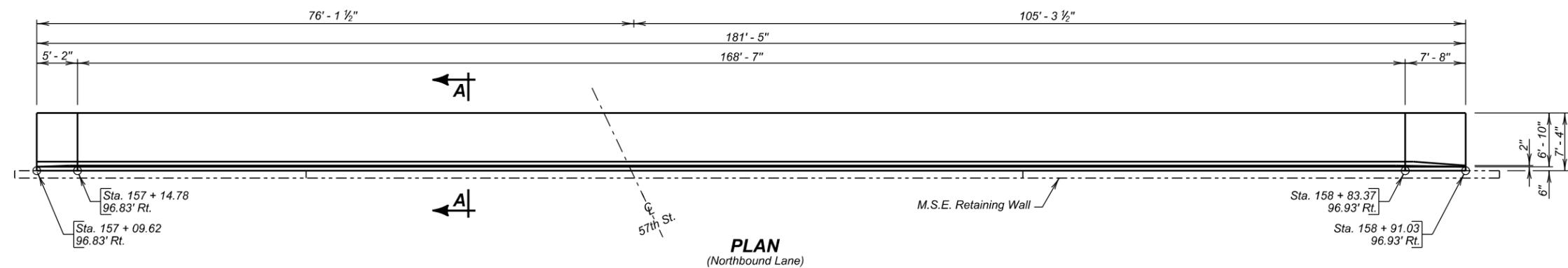
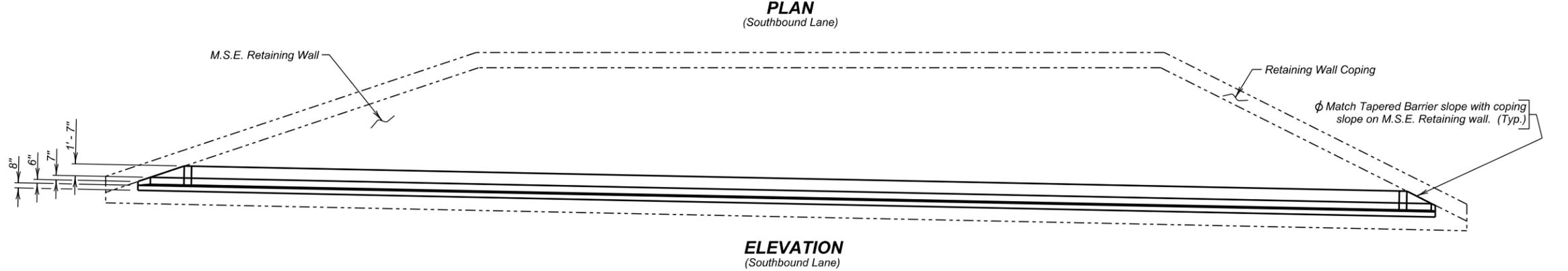
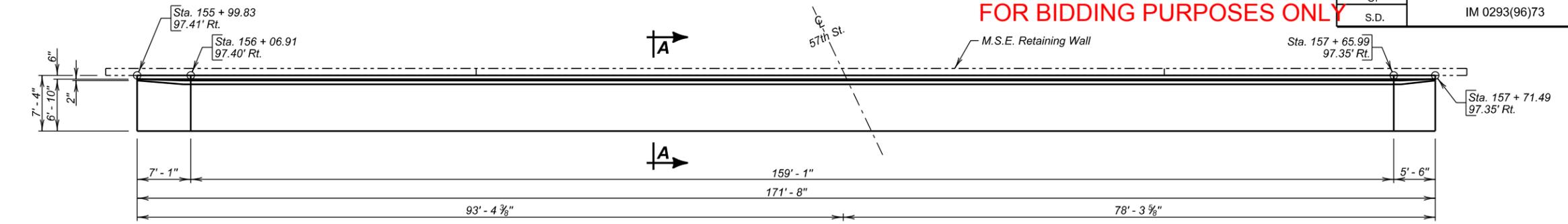
December 23, 2013

S D D O T	5 BOLT INSERT PLATE ASSEMBLY	PLATE NUMBER 630.92
		Sheet 1 of 1

Published Date: 3rd Qtr. 2015

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E116	E127

FOR BIDDING PURPOSES ONLY



NOTE:
The Contractor shall verify that the barrier is a minimum of 30' from the edge of the driving lane. If less than 30', contact the Office of Bridge Design before proceeding.

GENERAL DRAWING
FOR
CONCRETE BARRIER CURB & GUTTER
ADJACENT TO I 29 SEC. 7-T100/101N-R50W
STA. 155 + 99.83 TO 158 + 91.03 IM 0293(96)73
PCN 01QS

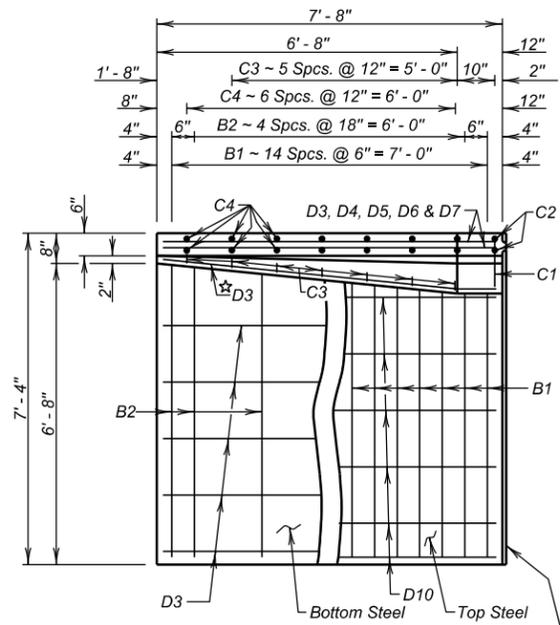
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2015

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

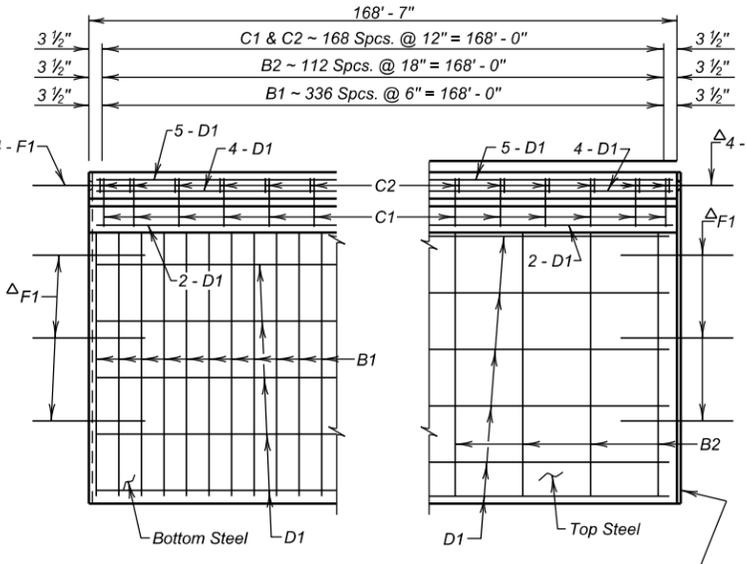
DESIGNED BY PW LINC01QS	CK. DES. BY JMH 01QSWA01	DRAFTED BY GW	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

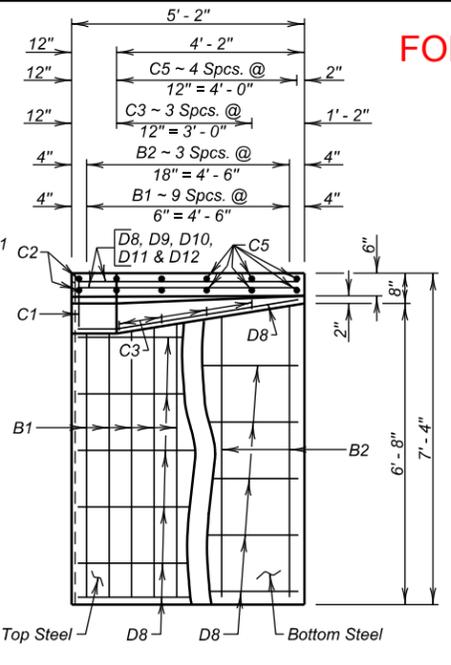
NOTE:
2' - 9" min. lap on D6 bars.
2' - 6" min. lap on D1 bars.



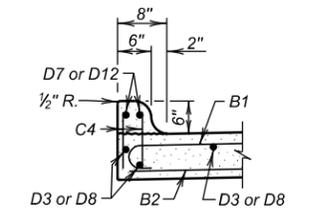
PLAN
(End Section)



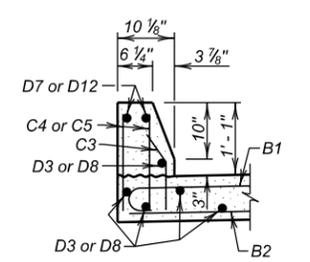
PLAN
(Regular Section)



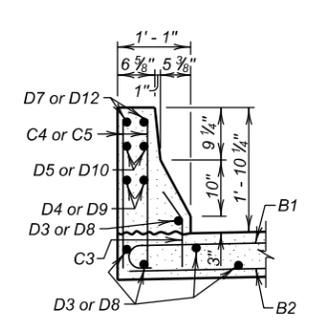
PLAN
(End Section)



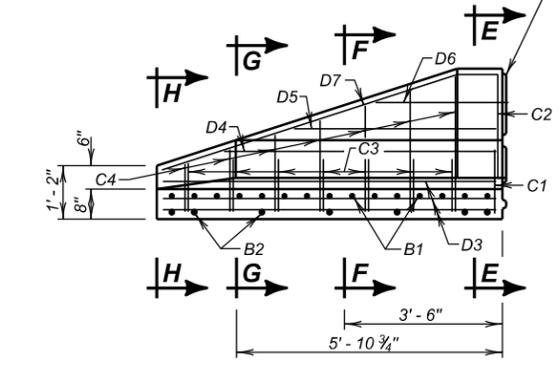
SEC. H - H



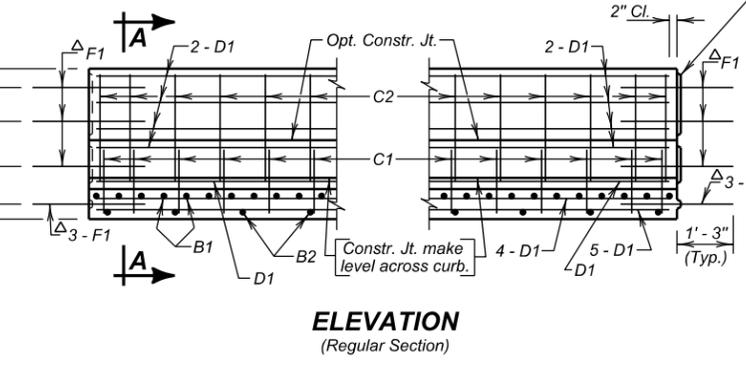
SEC. G - G



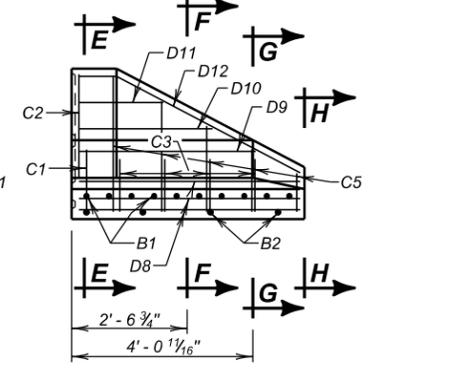
SEC. F - F



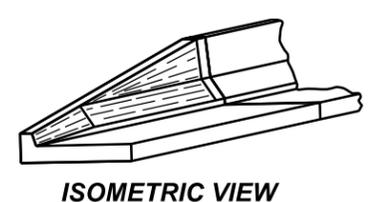
ELEVATION
(End Section)



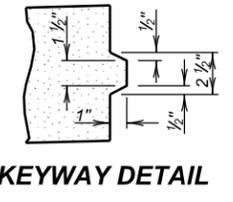
ELEVATION
(Regular Section)



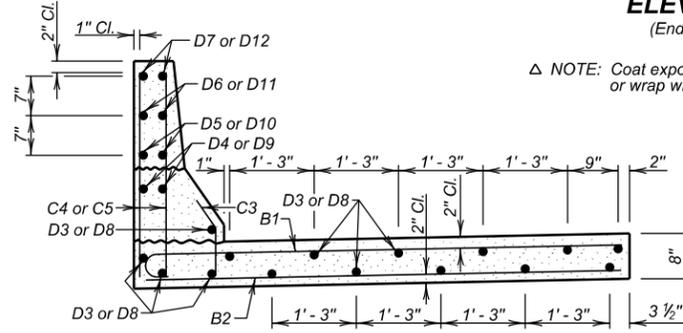
ELEVATION
(End Section)



ISOMETRIC VIEW



KEYWAY DETAIL



SEC. E - E

NOTE: Coat exposed portion of F1 bars with asphalt paint or wrap with tar paper to prevent bond to concrete.

SPECIFICATIONS

- Design Specifications: AASHTO Specifications for Highway Bridges, 2014 Edition with 2015 Interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES

- Concrete shall be Class A45 in accordance with Section 460.
- Design Unit Stresses: Concrete $f_c = 1800$ p.s.i.
Reinforcing Steel $f_s = 24000$ p.s.i.
- Reinforcing steel shall conform to ASTM A615, Grade 60.
- Use 1" clear cover on all reinforcing steel except as shown.
- All exposed concrete corners and edges shall be chamfered $\frac{3}{4}$ inches unless noted otherwise.
- The joint groove may either be formed or saw cut. If saw cut, the concrete shall have attained a compressive strength of 2000 p.s.i. prior to sawing. Keyed joints shall be used between concrete barrier curb and gutter and concrete barrier curb and gutter end section and between separate pours.
- Snap ties, if used, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The contract unit price per foot for Concrete Barrier Curb and Gutter and Concrete Barrier Curb and Gutter End Section shall include all materials, labor, equipment and incidentals necessary to furnish the Barrier complete in place in accordance with these plans and specifications.

REINFORCING SCHEDULE (Northbound Lane)				
Mk.	No.	Size	Length	Type
For 1 Reg. Sec.				
B1	337	6	7' - 8"	1A
B2	113	4	7' - 0"	Str.
C1	169	5	5' - 7"	T1A
C2	169	5	5' - 0"	S11
D1	66	4	5' - 10"	Str.
Δ F1	14	4	2' - 6"	Str.
For 7 - 8" End Section				
B1	15	6	7' - 8"	1A
B2	7	4	7' - 0"	Str.
C1	1	5	5' - 7"	T1A
C2	1	5	5' - 0"	S11
C3	7	5	1' - 2"	19B
Δ C4	7	5	4' - 2"	Str.
D3	15	4	7' - 4"	Str.
D4	2	4	5' - 10"	Str.
D5	2	4	4' - 7"	Str.
D6	2	4	2' - 9"	Str.
D7	2	4	7' - 10"	19B
For 5' - 2" End Section				
B1	10	6	7' - 8"	1A
B2	4	4	7' - 0"	Str.
C1	1	5	5' - 7"	T1A
C2	1	5	5' - 0"	S11
C3	4	5	1' - 2"	19B
Δ C5	5	5	4' - 0"	Str.
D8	15	4	4' - 10"	Str.
D9	2	4	4' - 1"	Str.
D10	2	4	3' - 3"	Str.
D11	2	4	2' - 2"	Str.
D12	2	4	5' - 6"	19B

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Conc. Barrier Curb and Gutter	Ft.	169
Conc. Barrier Curb and Gutter End Sections	Ft.	13

- 44.8 Cu. Yds. Concrete in Regular Barrier Section.
 - 8848 Lbs. Epoxy Coated Re-Steel in Regular Barrier Section.
 - 1.8 Cu. Yds. Concrete in 7' - 8" Tapered Barrier End Section.
 - 357 Lbs. Epoxy Coated Re-Steel in 7' - 8" Tapered Barrier End Section.
 - 1.2 Cu. Yds. Concrete in 5' - 2" Tapered Barrier End Section.
 - 239 Lbs. Epoxy Coated Re-Steel in 5' - 2" Tapered Barrier End Section.
- Items 1 and 6 are approximate quantities contained in the above bid item and are for information only.

DETAILS FOR NORTHBOUND LANE
CONCRETE BARRIER CURB & GUTTER
ADJACENT TO I 29 SEC. 7-T100/101N-R50W
STA. 155 + 99.83 TO 158 + 91.03 IM 0293(96)73
PCN 01QS

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2015

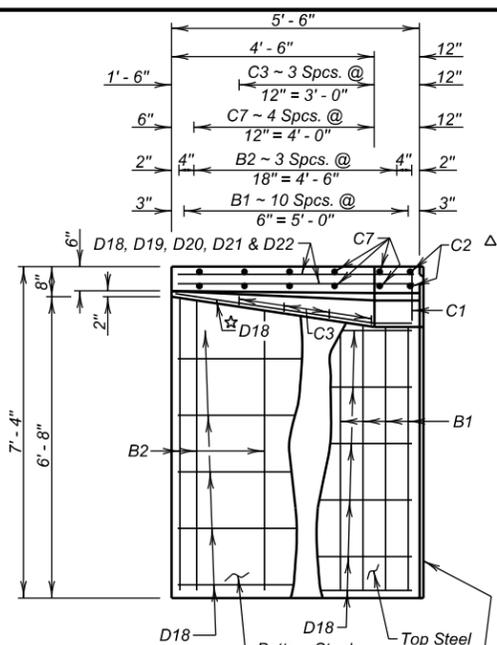
DESIGNED BY PW LINC01QS
CK. DES. BY JMH 01QSWA02
DRAFTED BY GW

Kevin N. Boeden
BRIDGE ENGINEER

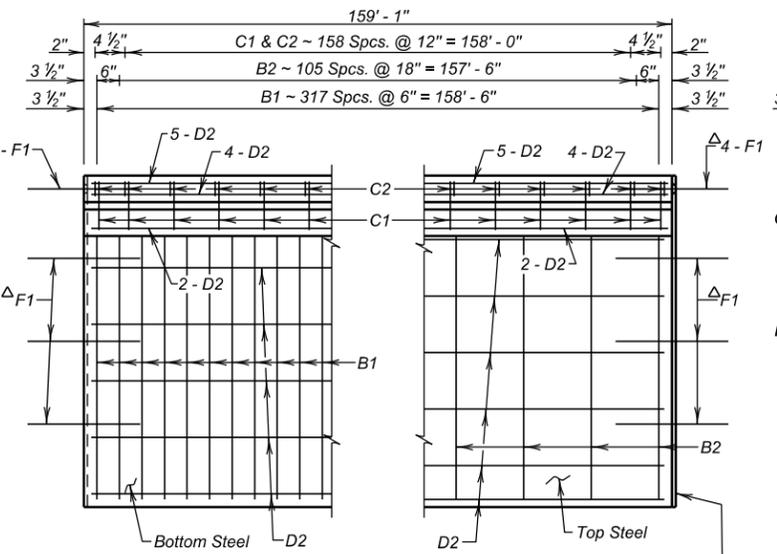
2 OF 3

FOR BIDDING PURPOSES ONLY

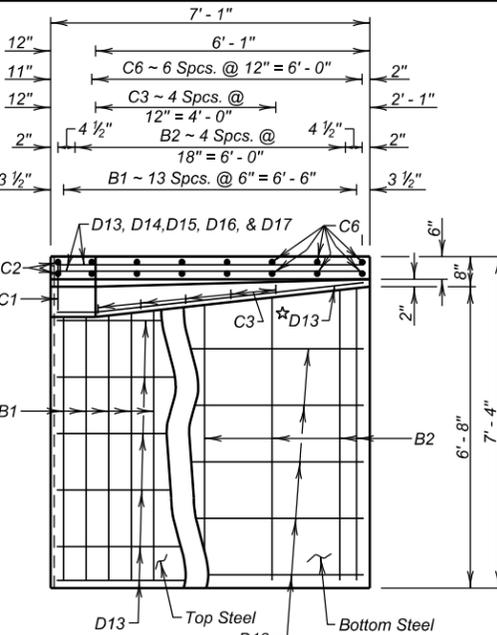
NOTE:
2' - 9" min. lap on D13 bars.
2' - 6" min. lap on D2 bars.



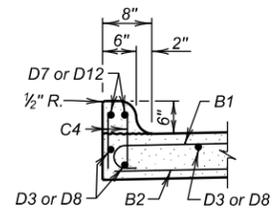
PLAN
(End Section)



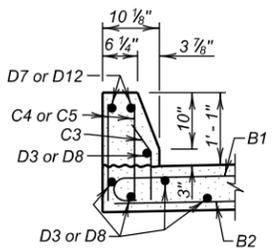
PLAN
(Regular Section)



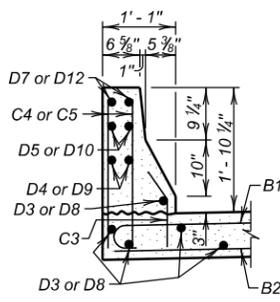
PLAN
(End Section)



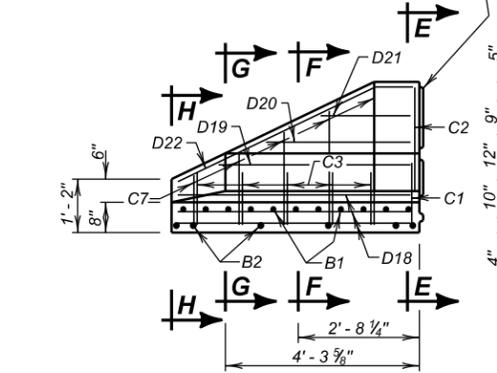
SEC. H - H



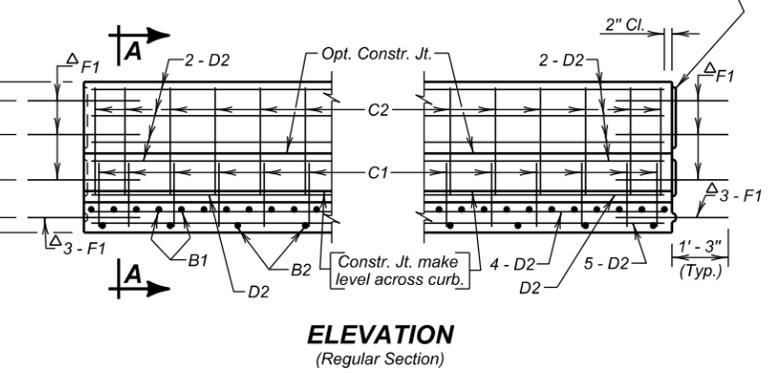
SEC. G - G



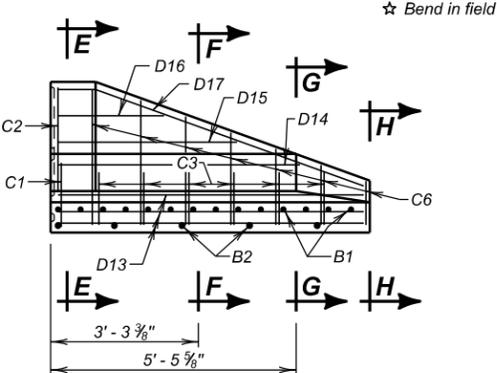
SEC. F - F



ELEVATION
(End Section)



ELEVATION
(Regular Section)



ELEVATION
(End Section)

★ Bend in field as necessary to fit.

Δ NOTE: Coat exposed portion of F1 bars with asphalt paint or wrap with tar paper to prevent bond to concrete.

REINFORCING SCHEDULE					Bending Details	
Mk.	No.	Size	Length	Type		
For 1' Reg. Sec.					C7 1'-2" 3'-1"	
B1	318	6	7'-8"	1A	C6 1'-0" 3'-1"	
B2	108	4	7'-0"	Str.	C6 3'-1" 1'-0"	
C1	161	5	5'-7"	T1A	C7 3'-1" 1'-2"	
C2	161	5	5'-0"	S11		
D2	66	4	54'-8"	Str.		
Δ F1	14	4	2'-6"	Str.		
For 7'-1" End Section					C1 1'-0"	
B1	14	6	7'-8"	1A	Type S11	
B2	7	4	7'-0"	Str.	Type 19B	
C1	1	5	5'-7"	T1A	Type 19B	
C2	1	5	5'-0"	S11	Type 19B	
C3	5	5	1'-2"	19B	Type 19B	
Δ C6	7	5	4'-1"	Str.	Type 19B	
D13	15	4	6'-9"	Str.	Type 19B	
D14	2	4	5'-7"	Str.	Type 19B	
D15	2	4	4'-4"	Str.	Type 19B	
D16	2	4	2'-9"	Str.	Type 19B	
D17	2	4	7'-3"	19B	Type 19B	
For 5'-6" End Section					Type 1A	
B1	11	6	7'-8"	1A	Type 1A	
B2	6	4	7'-0"	Str.	Type 1A	
C1	1	5	5'-7"	T1A	Type 1A	
C2	1	5	5'-0"	S11	Type 1A	
C3	4	5	1'-2"	19B	Type 1A	
Δ C7	5	5	4'-3"	Str.	Type 1A	
D18	15	4	5'-2"	Str.	Type 1A	
D19	2	4	4'-4"	Str.	Type 1A	
D20	2	4	3'-5"	Str.	Type 1A	
D21	2	4	2'-3"	Str.	Type 1A	
D22	2	4	5'-9"	19B	Type 1A	

NOTES:
All Dimensions are out to out of bars.
All Bars to be Epoxy Coated.
See cutting diagram.
Δ Bars shall be smooth. Shall conform to ASTM A36 or Equivalent.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Conc. Barrier Curb and Gutter	Ft.	159
Conc. Barrier Curb and Gutter End Sections	Ft.	13

- 42.4 Cu. Yds. Concrete in Regular Barrier Section.
 - 8378 Lbs. Epoxy Coated Re-Steel in Regular Barrier Section.
 - 1.7 Cu. Yds. Concrete in 7'-1" Tapered Barrier End Section.
 - 335 Lbs. Epoxy Coated Re-Steel in 7'-1" Tapered Barrier End Section.
 - 1.3 Cu. Yds. Concrete in 5'-6" Tapered Barrier End Section.
 - 266 Lbs. Epoxy Coated Re-Steel in 5'-6" Tapered Barrier End Section.
- Items 1 and 6 are approximate quantities contained in the above bid item and are for information only.

SPECIFICATIONS

- Design Specifications: AASHTO Specifications for Highway Bridges, 2014 Edition with 2015 Interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES

- Concrete shall be Class A45 in accordance with Section 460.
- Design Unit Stresses: Concrete $f_c = 1800$ p.s.i.
Reinforcing Steel $f_s = 24000$ p.s.i.
- Reinforcing steel shall conform to ASTM A615, Grade 60.
- Use 1" clear cover on all reinforcing steel except as shown.
- All exposed concrete corners and edges shall be chamfered 3/4 inches unless noted otherwise.
- The joint groove may either be formed or saw cut. If saw cut, the concrete shall have attained a compressive strength of 2000 p.s.i. prior to sawing. Keyed joints shall be used between concrete barrier curb and gutter and concrete barrier curb and gutter end section and between separate pours.
- Snap ties, if used, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The contract unit price per foot for Concrete Barrier Curb and Gutter and Concrete Barrier Curb and Gutter End Section shall include all materials, labor, equipment and incidentals necessary to furnish the Barrier complete in place in accordance with these plans and specifications.

DETAILS FOR SOUTHBOUND LANE

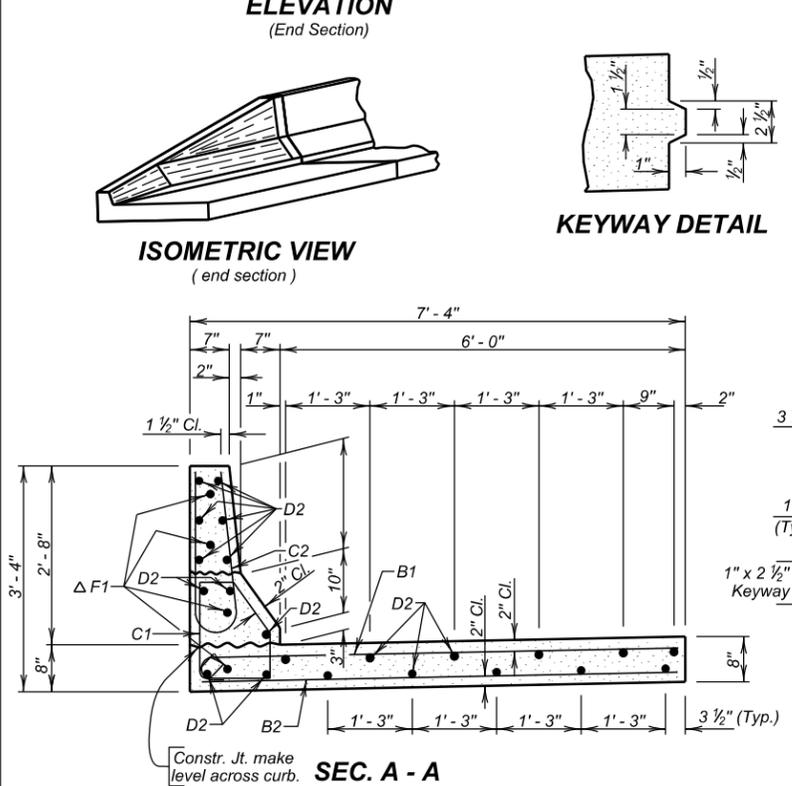
CONCRETE BARRIER CURB & GUTTER

ADJACENT TO I 29 SEC. 7-T100/101N-R50W
STA. 155 + 99.83 TO 158 + 91.03 IM 0293(96)73
PCN 01QS

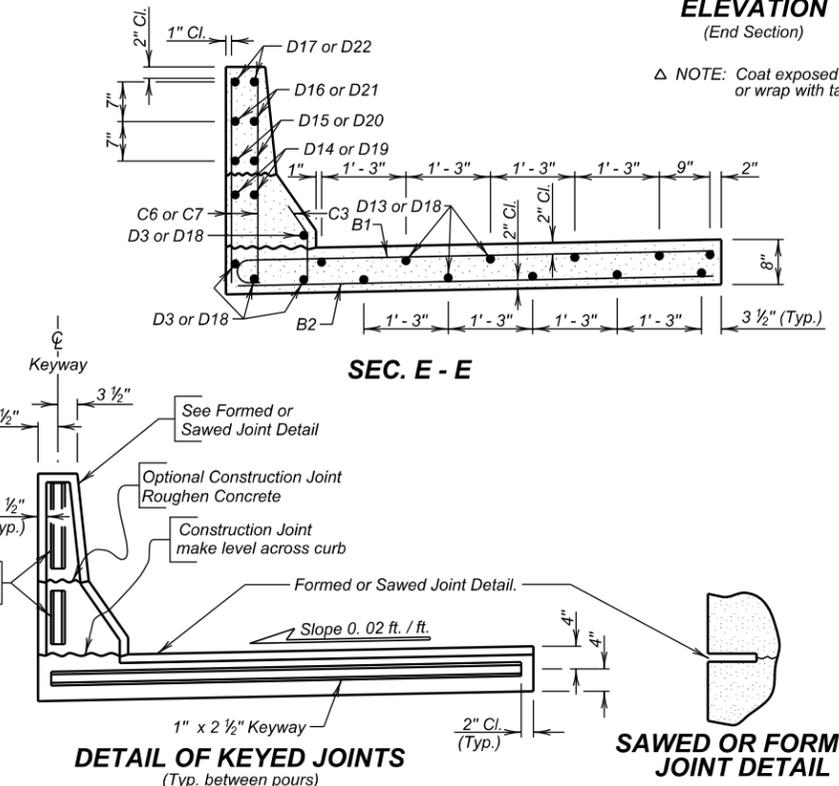
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

JUNE 2015 3 OF 3

DESIGNED BY PW LINC01QS	CK. DES. BY JMH 01QSWA03	DRAFTED BY GW	Kevin N. Boeden BRIDGE ENGINEER
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SEC. A - A



DETAIL OF KEYED JOINTS
(Typ. between pours)

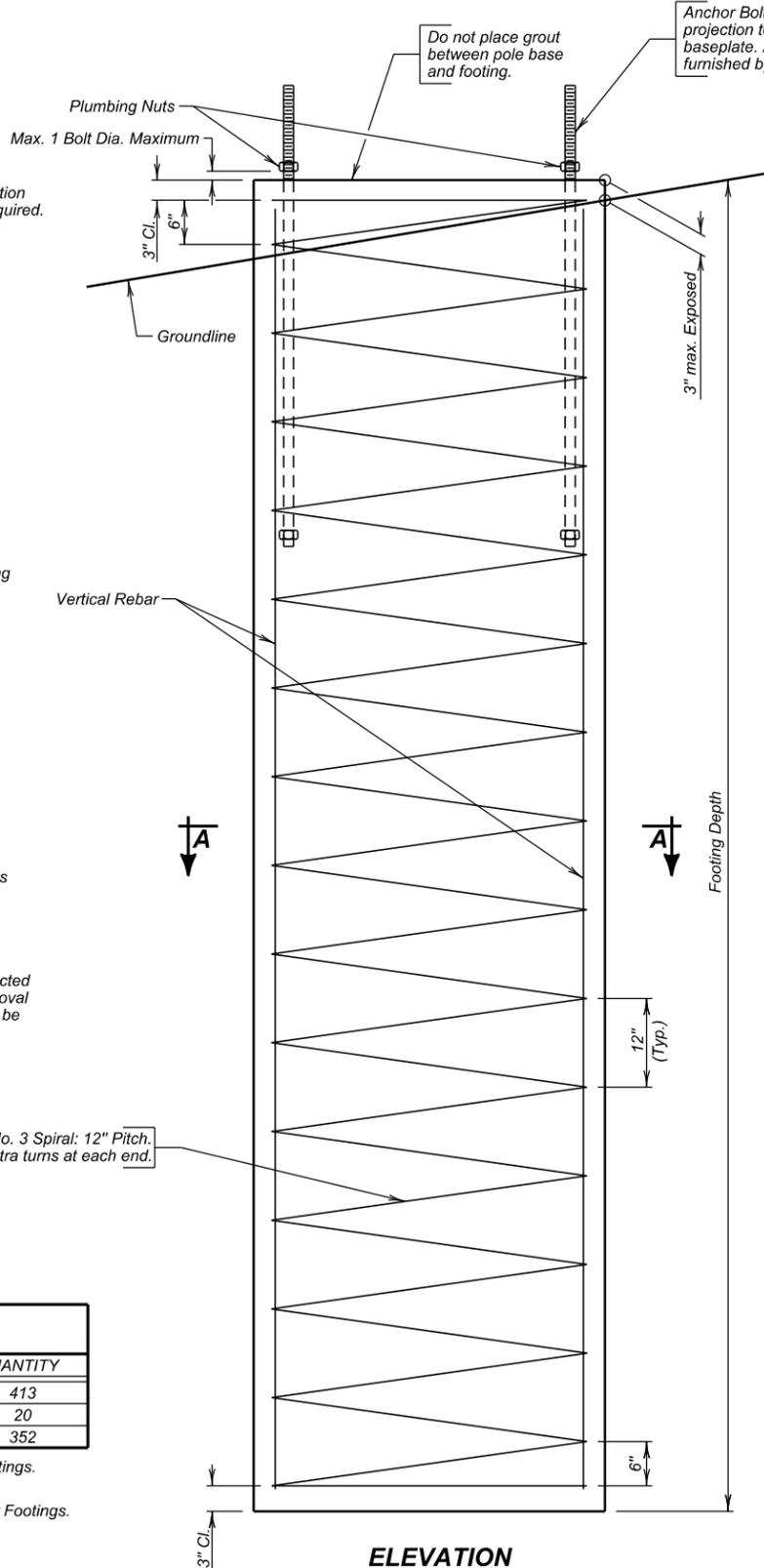
SAWED OR FORMED JOINT DETAIL

SPECIFICATIONS-

- Design Specifications: AASHTO Standard Specifications for Highway Bridges, 2012 Edition and AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals, 2009 Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES-

- High Mast Light Towers and Sign Footings shall be drilled shafts constructed in conformance with Section 465 of the Specifications. Drilled Shaft Construction except sections 465.3 A, 465.3 H, 465.3 I, 464.3 J and 465.3 K will not be required.
- Someone from the Geotechnical Engineering Activity shall be present to observe the placement of the footings. Notify the Geotechnical Engineering Activity a minimum of 2 weeks prior to footing excavation.
- All exposed edges shall be chamfered 3/4".
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All concrete shall be Class A45.
- Unit Stresses: Concrete $f'c = 1800$ psi
Reinforcing Steel $f's = 24000$ psi
- The Contractor should be aware that any of the footing locations that contain gravel and/or sand or have high water tables are potential candidates for caving soils. If these soils are encountered during excavation it may be necessary to use temporary casing to complete the excavation and concrete placement of the drilled shaft type footing. The Contractor shall be prepared to utilize the Temporary Casing Construction Method.
- Payment for 4' Diameter Footing, 4' Diameter Fixed Support Concrete Footing or 4'-6" Diameter Fixed Support Concrete Footing shall be full compensation for all Drilled Shaft Excavation, Class A45 Concrete, Reinforcing Steel, disposal of all excavated material and surplus materials; and for labor, tools equipment and any incidentals necessary to complete this item of work.
- Cylindrical footings for the cantilever signs and sign bridges will be primarily be placed through 2 to 4 feet of new fill at the surface after the proposed grading has taken place except at CL-1 and SB-8 which are outside of the grading limits for this project. The bottom of the footings will encounter in-situ soils except at SB-9 which will be installed completely in new and existing fill.
- Subsurface conditions within the limits of the project predominately consist of brown to gray sand-clay to silt-clay (glacial till). Groundwater near the cantilever sign and sign bridge locations has been observed from the surface to greater than 13.3 feet below the surface. Borings completed within the limits of the project have remained open to depths below the bottom of the footings. Classification results of both the existing embankments and in-situ soils consist primarily of sand-clay to silt-clay.
- It is anticipated a work platform will be required to install the high mast light tower footings for TL5 and TL10. The inslope shall be constructed prior to installation of the cylindrical footings. Excavation of the new inslope will not be allowed to construct the work platform. The work platform shall be constructed out of fill placed on the newly constructed inslope. Both construction and removal of the work platform required to install the high mast light tower footings shall be incidental to the contract unit price per foot for 4' Diameter Footing.



* No. 3 Spiral: 12" Pitch, 1 1/2" extra turns at each end.

* Circular Ties may be used in lieu of Spiral Ties. The ties shall be spaced 12" apart except for the top two which shall be spaced 6" apart. The ties shall be lapped 20" which will be staggered around the cage.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
4' Diameter Fixed Support Concrete Footing	Ft.	413
4' - 6" Diameter Fixed Support Concrete Footing	Ft.	20
4' Diameter Footing	Ft.	352

- 163.5 Cu. Yds. Class A45 Concrete in High Mast Light Tower Footings.
 - 22723 Lbs. Re-Steel in High Mast Light Tower Footings.
 - 163.5 Cu. Yds. Drilled Shaft Excavation for High Mast Light Tower Footings.
 - 203.9 Cu. Yds. Class A45 Concrete in Sign Footings.
 - 28274 Lbs. Re-Steel in Sign Footings.
 - 203.9 Cu. Yds. Drilled Shaft Excavation for Sign Footings.
- Items 1 thru 6 are approximate quantities contained in the above bid items and are for information only.

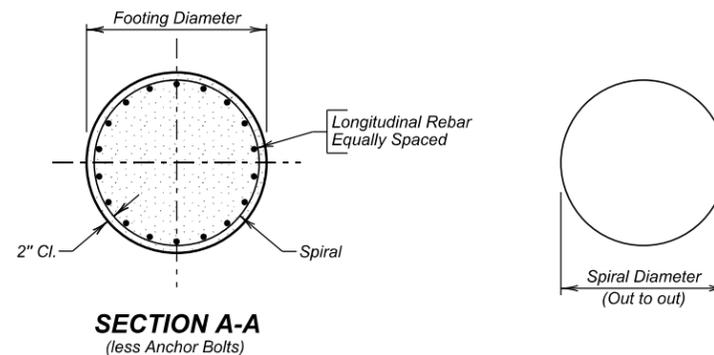
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E119	E127

LIGHT TOWER NUMBER	ALIGNMENT	STATION	OFFSET	SUPPORT DESCRIPTION	FOOTING DIMENSIONS		LONGITUDINAL STEEL			SPIRAL STEEL		CONCRETE QUANTITY
					DIA.	DEPTH	NO.	SIZE	LENGTH	DIA.	LENGTH	CU. YD.
TL1	I 29	Sta. 106 + 66.00	145.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL2	I 229 Ramp G	Sta. 12 + 69.00	232.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL3	I 229 Ramp G	Sta. 21 + 63.00	111.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL4	I 229 Ramp G	Sta. 28 + 22.00	55.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL5	I 29	Sta. 113 + 17.00	126.00 R	150' High Mast Light Tower	4' - 0"	25' - 0"	18	9	24' - 6"	3' - 8"	315' - 0"	11.6
TL6	I 229 Ramp G	Sta. 33 + 38.00	58.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL7	I 29	Sta. 119 + 73.00	200.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL8	I 229 Ramp B	Sta. 35 + 65.00	50.00 L	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL9	I 29	Sta. 121 + 19.00	161.35 L	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL10	I 29	Sta. 126 + 00.00	185.40 R	150' High Mast Light Tower	4' - 0"	22' - 0"	18	9	21' - 6"	3' - 8"	281' - 0"	10.2
TL11	I 29	Sta. 132 + 97.00	117.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL12	I 229 Ramp A	Sta. 17 + 00.00	75.00 R	150' High Mast Light Tower	4' - 0"	28' - 0"	18	9	27' - 6"	3' - 8"	350' - 0"	13.0
TL13	I 229 Ramp C	Sta. 72 + 83.00	83.00 R	150' High Mast Light Tower	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8
TL14	I 229 SBL	Sta. 78 + 20.00	92.00 R	150' High Mast Light Tower	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8
TL15	I 229 SBL	Sta. 84 + 23.00	78.00 R	150' High Mast Light Tower	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8
TL16	I 229 SBL	Sta. 90 + 34.00	60.00 L	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3
TL17	I 229 NBL	Sta. 176 + 58.00	50.00 R	150' High Mast Light Tower	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3

SIGN NUMBER	ALIGNMENT	SITE LOCATION	OFFSET	SUPPORT DESCRIPTION	FOOTING DIMENSIONS		LONGITUDINAL STEEL			SPIRAL STEEL		CONCRETE QUANTITY	
					DIA.	DEPTH	NO.	SIZE	LENGTH	DIA.	LENGTH	CU. YD.	
CL1	I 29	Sta. 22 + 25.00	100.00 L	Cantilever Support	4' - 0"	23' - 0"	18	9	22' - 6"	3' - 8"	292' - 0"	10.7	
CL2	I 29	Sta. 41 + 75.00	88.00 L	Cantilever Support	4' - 0"	21' - 0"	18	9	20' - 6"	3' - 8"	269' - 0"	9.8	
CL3	I 29	Sta. 141 + 35.00	88.00 L	Cantilever Support	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8	
SB-1 (1)	I 29	Sta. 52 + 80.00	8.00 R	Sign Bridge Support	4' - 0"	21' - 0"	18	9	20' - 6"	3' - 8"	269' - 0"	9.8	
SB-1 (2)	I 29	Sta. 52 + 80.00	88.00 R	Sign Bridge Support	4' - 0"	21' - 0"	18	9	20' - 6"	3' - 8"	269' - 0"	9.8	
SB-2 (1)	I 29	Sta. 69 + 30.00	8.00 L	Sign Bridge Support	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8	
SB-2 (2)	I 29	Sta. 69 + 30.00	88.00 L	Sign Bridge Support	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8	
SB-3 (1)	I 29	Sta. 79 + 20.00	8.00 R	Sign Bridge Support	4' - 0"	22' - 0"	18	9	21' - 6"	3' - 8"	281' - 0"	10.2	
SB-3 (2)	I 29	Sta. 79 + 20.00	108.00 R	Sign Bridge Support	4' - 0"	22' - 0"	18	9	21' - 6"	3' - 8"	281' - 0"	10.2	
SB-4 (1)	I 29	Sta. 105 + 60.00	9.00 R	Sign Bridge Support	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8	
SB-4 (2)	I 29	Sta. 105 + 60.00	99.00 R	Sign Bridge Support	4' - 0"	19' - 0"	18	9	18' - 6"	3' - 8"	246' - 0"	8.8	
SB-8 (1)	I 229	Sta. 61 + 50.00	8.00 L	Sign Bridge Support	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3	
SB-8 (2)	I 229	Sta. 61 + 50.00	88.00 L	Sign Bridge Support	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3	
SB-9 (1)	I 29	Sta. 115 + 00.00	8.00 L	Sign Bridge Support	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3	
SB-9 (2)	I 29	Sta. 115 + 00.00	88.00 L	Sign Bridge Support	4' - 0"	20' - 0"	18	9	19' - 6"	3' - 8"	258' - 0"	9.3	
SB-10 (1)	I 229	Sta. 9 + 10.00	48.00 R	Sign Bridge Support	4' - 0"	18' - 0"	18	9	17' - 6"	3' - 8"	235' - 0"	8.4	
SB-10 (2)	I 229	Sta. 9 + 10.00	128.00 R	Sign Bridge Support	4' - 0"	18' - 0"	18	9	17' - 6"	3' - 8"	235' - 0"	8.4	
SB-11 (1)	I 229	Sta. 13 + 00.00	58.74 L	Sign Bridge Support	4' - 0"	18' - 0"	18	9	17' - 6"	3' - 8"	235' - 0"	8.4	
SB-11 (2)	I 229	Sta. 13 + 00.00	138.74 L	Sign Bridge Support	4' - 0"	18' - 0"	18	9	17' - 6"	3' - 8"	235' - 0"	8.4	
SB-12 (1)	I 229	Sta. 31 + 65.00	11.42 L	Sign Bridge Support	4' - 0"	18' - 0"	18	9	17' - 6"	3' - 8"	235' - 0"	8.4	
SB-12 (2)	I 229	Sta. 31 + 65.00	91.42 L	Sign Bridge Support	4' - 0"	18' - 0"	18	9	17' - 6"	3' - 8"	235' - 0"	8.4	
SB-13 (1)	I 29	Sta. 158 + 25.00	10.00 L ±	Existing Sign Bridge Support	Existing Footing to remaining in place.								
SB-13 (2)	I 29	Sta. 158 + 25.00	90.00 L ±	Existing Sign Bridge Support	Existing Footing to remaining in place.								
DS-1	I 29	Sta. 55 + 00.00	110.00 L	Dynamic Message Sign	4' - 6"	20' - 0"	23	9	19' - 6"	4' - 2"	293' - 0"	11.8	

Ø All spiral reinforcing steel shall be #3 bars.



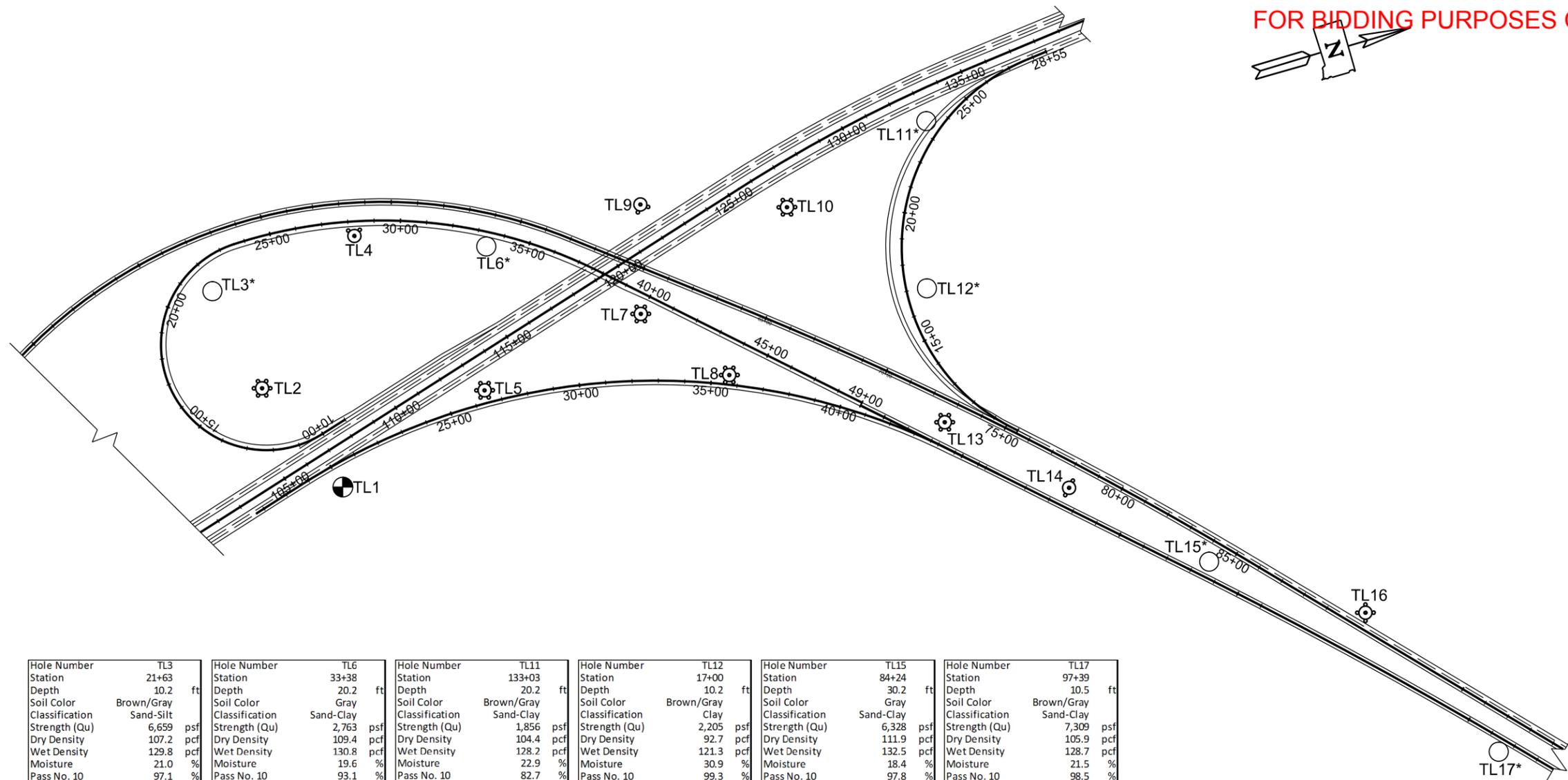
**DETAILS FOR
FOR
HIGH MAST & SIGN FOOTINGS**
IM 0293(96)73
PCN 01QS
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2014

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

DESIGNED BY	CK. DES. BY	DRAFTED BY
TB	BB	GW
LINC01QS	01QSWA01	

Kevin N. Goeden
BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY



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

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.

LEGEND

- Penetration Test
- ⊙ Auger Test
- ▽ Water
- ⊖ Caved
- █ Sample Zone

All auger holes are drilled with a 4½ inch diameter continuous flight auger.

Penetration test holes are drilled with a 6⅝ inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.

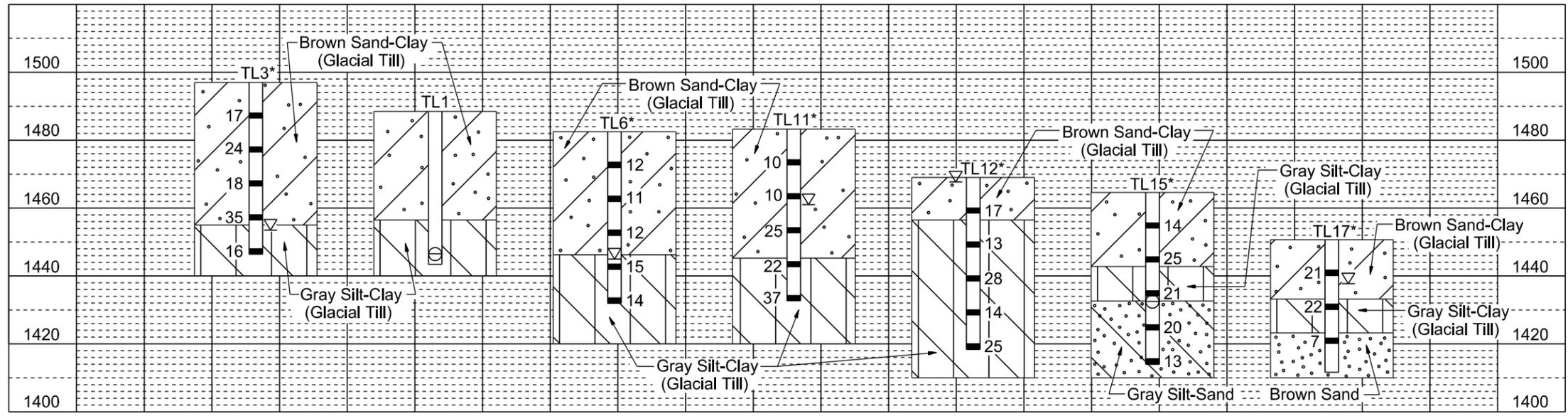
Hole Number	TL3	Hole Number	TL6	Hole Number	TL11	Hole Number	TL12	Hole Number	TL15	Hole Number	TL17
Station	21+63	Station	33+38	Station	133+03	Station	17+00	Station	84+24	Station	97+39
Depth	10.2 ft	Depth	20.2 ft	Depth	20.2 ft	Depth	10.2 ft	Depth	30.2 ft	Depth	10.5 ft
Soil Color	Brown/Gray	Soil Color	Gray	Soil Color	Brown/Gray	Soil Color	Brown/Gray	Soil Color	Gray	Soil Color	Brown/Gray
Classification	Sand-Silt	Classification	Sand-Clay	Classification	Sand-Clay	Classification	Clay	Classification	Sand-Clay	Classification	Sand-Clay
Strength (Qu)	6,659 psf	Strength (Qu)	2,763 psf	Strength (Qu)	1,856 psf	Strength (Qu)	2,205 psf	Strength (Qu)	6,328 psf	Strength (Qu)	7,309 psf
Dry Density	107.2 pcf	Dry Density	109.4 pcf	Dry Density	104.4 pcf	Dry Density	92.7 pcf	Dry Density	111.9 pcf	Dry Density	105.9 pcf
Wet Density	129.8 pcf	Wet Density	130.8 pcf	Wet Density	128.2 pcf	Wet Density	121.3 pcf	Wet Density	132.5 pcf	Wet Density	128.7 pcf
Moisture	21.0 %	Moisture	19.6 %	Moisture	22.9 %	Moisture	30.9 %	Moisture	18.4 %	Moisture	21.5 %
Pass No. 10	97.1 %	Pass No. 10	93.1 %	Pass No. 10	82.7 %	Pass No. 10	99.3 %	Pass No. 10	97.8 %	Pass No. 10	98.5 %
Pass No. 40	87.6 %	Pass No. 40	82.9 %	Pass No. 40	73.4 %	Pass No. 40	92.9 %	Pass No. 40	88.4 %	Pass No. 40	89.4 %
Pass No. 200	67.7 %	Pass No. 200	62.4 %	Pass No. 200	56.7 %	Pass No. 200	76.6 %	Pass No. 200	67.6 %	Pass No. 200	68.6 %
Sand Content	29.4 %	Sand Content	30.7 %	Sand Content	26.1 %	Sand Content	22.7 %	Sand Content	30.2 %	Sand Content	29.9 %
Silt Content	27.3 %	Silt Content	27.4 %	Silt Content	22.2 %	Silt Content	19.0 %	Silt Content	28.9 %	Silt Content	27.3 %
Clay Content	40.4 %	Clay Content	35.0 %	Clay Content	34.4 %	Clay Content	57.6 %	Clay Content	38.7 %	Clay Content	41.4 %

* Values represent uncorrected "N" values from Penetration Test.

Blows Per Foot 48 █ Sample Zone

GROUND WATER ELEVATIONS
as of JANUARY and FEBRUARY 2015

TL1	(DRY)	1446.5
TL3		1453.5
TL6		1445.0
TL11		1461.0
TL12		1467.7
TL15	(DRY)	1432.5
TL17		1437.7

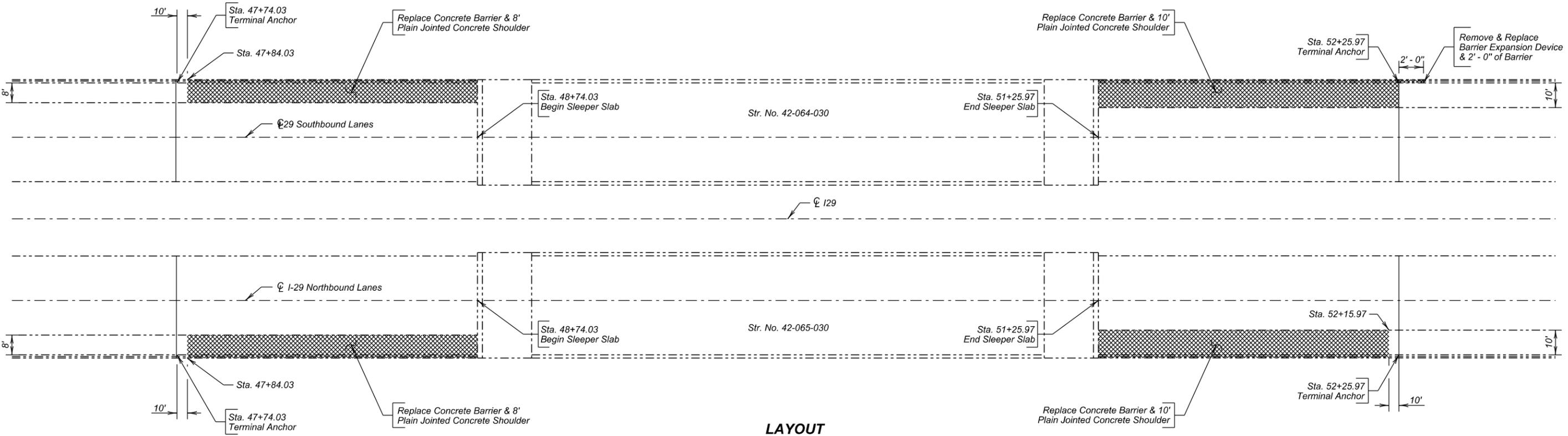
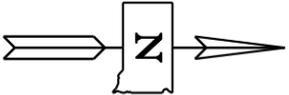


HIGH MAST SUBSURFACE PROFILES

IM 0293(96)73
PCN 01QS
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 2014

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E121	E127



INDEX OF BARRIER SHEETS -

- Sheet No. 1 - General Layout
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Barrier with 8' Plain Jointed Concrete Shoulder Details
- Sheet No. 5 - Barrier with 10' Plain Jointed Concrete Shoulder Details
- Sheet No. 6 - Barrier Expansion Device Details
- Sheet No. 7 - Barrier Expansion Device Details (Continued)

**GENERAL LAYOUT
FOR
CONC. BARRIER & 8' PLAIN
JOINTED CONC. SHOULDER
AND
CONC. BARRIER & 10' PLAIN
JOINTED CONC. SHOULDER**

PCN 01QS IM 0293(96)73
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2015

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

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRA01	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E122	E127

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
380E2431	Concrete Barrier and 8' Plain Jointed Concrete Shoulder	180	Ft
380E2451	Concrete Barrier and 10' Plain Jointed Concrete Shoulder	190	Ft
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
460E0070	Class A45 Concrete, Bridge Repair	0.2	CuYd
460E0300	Breakout Structural Concrete	0.2	CuYd

SPECIFICATIONS

- Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 Edition with 2003 Interim Specifications using Working Stress Design.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
- All Welding and Welding Inspection shall be in conformance with the AASHTO/AWS Bridge Welding Code D1.5M/D1.5:2010 unless otherwise noted in this plan set.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

All details and dimensions of the existing barrier and shoulder, contained in these plans, are based on the original construction plans and shop plans and are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

GENERAL CONSTRUCTION NOTES

- All new reinforcing steel shall conform to ASTM-A615, Grade 60.
- All exposed concrete edges or corners shall be chamfered 3/4 inch except where noted otherwise in the plans. Match the existing chamfer if chamfer differs.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.
- Use 2 inch clear cover on all reinforcing steel except as shown otherwise.
- The concrete barriers shall be cured in accordance with Section 460.3.N. of the Construction Specifications except that no curing compounds shall be allowed.
- Barrier Curbs shall be built normal to the grade.

- Surfaces of fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.
- Snap ties, if used in the barrier curb formwork, shall be epoxy coated. The epoxy coating shall be inert in concrete and compatible with the coating applied to the new epoxy coated reinforcing steel.
- The transverse sawed or formed joints in the Concrete Barrier and the 8' Plain Jointed Concrete Shoulder and Concrete Barrier and the 10' Plain Jointed Concrete Shoulder shall align with the transverse joints in the PCC Pavement. The joint groove may either be formed or saw cut. If saw cut, the concrete shall have attained a compressive strength of 2000psi prior to sawing.
- The contract unit price per foot for Concrete Barrier and 8' Plain Jointed Concrete Shoulder or Concrete barrier and 10' Plain Jointed Concrete Shoulder shall include cost of all material, labor, equipment and incidentals necessary to furnish the barrier and shoulder or pavement complete in place in accordance with these plans and specifications. The removal and resetting of the 2 in place drop inlets frame and grates shall be incidental to the contract unit price per foot for Concrete Barrier and 8' Plain Jointed Concrete Shoulder or Concrete Barrier and 10' Plain Jointed Concrete Shoulder.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid items: Concrete Barrier and 8' Plain Jointed Concrete Shoulder and Concrete Barrier and 10' Plain Jointed Concrete Shoulder
- The Type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract items Class A45 Concrete Bridge Repair, Concrete Barrier and 8' Plain Jointed Concrete Shoulder and Concrete Barrier and 10' Plain Jointed Concrete Shoulder shall conform to the requirements of Section 460 of the Construction Specification.

CONCRETE BREAKOUT

- The existing Concrete Barrier Curb and Concrete Shoulder shall be broken out to the limits shown on the plans. Breakout limits shall be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned and straightened to the satisfaction of the Engineer. Care shall 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 shall be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department. The existing reinforcing steel that is to be reused in the new construction and that is exposed during concrete breakout shall be epoxy coated in accordance with the "Epoxy Coating Existing Reinforcing Steel" notes.

- All broken out concrete, discarded reinforcing bars and expansion devices shall be disposed of by the Contractor. All disposal of discarded material shall be in accordance with the Environmental Commitments
- Care shall be taken not to damage the existing terminal pavement anchor during breakout operations. If the terminal anchor is damaged, it shall be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department
- The contract unit price per cubic yard for "Breakout Structural Concrete" shall include breaking out concrete, cleaning, straightening existing reinforcing steel, and disposal of all broken out material for the Jersey Barrier Curb at the Northwest Corner.
- The contract unit price per foot for Concrete Barrier and 8' Plain Jointed Concrete Shoulder or Concrete barrier and 10' Plain Jointed Concrete Shoulder shall include cost of all breakout, disposal of all broken out material, labor, and incidentals necessary to remove the barrier and shoulder complete in accordance with these plans and specifications.
- The existing reinforcing steel in the Jersey Barrier Curb is epoxy coated. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned of all adhering concrete and rust (if present) with a wire brush and straightened to the satisfaction of the Engineer. Any reinforcing steel that is damaged during concrete breakout shall be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department. After all concrete removal and rebar straightening, the Contractor shall visually inspect the epoxy coating on the salvaged reinforcing steel with the Engineer and repair all areas of damaged epoxy coating as approved by the Engineer. The damaged coating areas shall be repaired with a touch up coating material supplied by an epoxy coating manufacturer who supplies coating material for new epoxy coated reinforcing steel. This coating shall be inert in concrete and compatible with the existing coating on the reinforcing steel. The coating shall be allowed to cure for 24 hours or as per the manufacturer's recommendations, whichever is more stringent, before concrete can be placed. These bars shall be clean and free from all surface contaminants before coating. The cost of cleaning and placing the epoxy touch up coating to the existing reinforcing steel shall be incidental to the various bid items.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR
**CONC. BARRIER & 8' PLAIN
 JOINTED CONC. SHOULDER**
 AND
**CONC. BARRIER & 10' PLAIN
 JOINTED CONC. SHOULDER**

JULY 2015

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRA01	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E123	E127

CLASS B COMMERCIAL TEXTURE FINISH

1. All surfaces of the new concrete barrier curb in the area of the barrier reconstruction shall be given a Class B Commercial Texture Finish in accordance with Section 460.3.L.1.c. of the Construction Specifications.
2. The concrete surfaces requiring the application of the Commercial Texture Finish shall be prepared in accordance with the manufacturer's recommendations. The Contractor shall submit a product data sheet, documenting all pertinent information with regard to preparation of the concrete surfaces, materials and equipment required, mixing requirements, and application procedures to the Engineer in advance of the application of the Commercial Texture Finish for review and approval.
3. The Class B commercial texture finish used shall be on the Departments' approved list .
4. For informational purposes only, the amount of surface area requiring the Class B commercial texture finish is 2273 square feet.
5. The color of the Class B Commercial Texture Finish shall match the colors of the existing barrier. Color samples shall be submitted to Area Engineer for approval.
6. Any damage to the commercial texture finish during construction, including abrasion from traffic due to the traffic control, shall be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.
7. The cost of the commercial texture finish shall be included in the contract price per cubic yard for "Class A45 Concrete, Bridge Repair", in the contract unit price per foot for the "Concrete Barrier and 8' Jointed Concrete Shoulder", and in the contract unit price per foot for the "Concrete Barrier and 10' Jointed Concrete Shoulder", as applicable. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the application of this finish.

5. Payment for furnishing and installing the barrier expansion joints shall be incidental to the contract lump sum price for Structural Steel, Miscellaneous. For informational purposes only, the weight of structural steel is 331 lbs

SHOP PLANS

Shop plans shall be required as specified by Section 410.3.A. of the Construction Specifications.

BARRIER EXPANSION DEVICES

1. Steel for plates and bars shall conform to ASTM A709 Gr. 36. The end welded deformed bar anchors shall conform to ASTM A496.
2. All steel components shall be galvanized after shop welding in accordance with AASHTO M111 (ASTM A123).
3. The plain ferrule inserts in the expansion device shall be 3/4" dia. commercially available regular steel inserts to be positioned by welding onto the plate of the expansion device as shown on these plans.
4. The bolts used to attach the sliding plates to the expansion device shall be 3/4" dia., Group 2, Type 316 stainless steel socket countersunk head flat screws furnished with a thread type compatible with the thread type in the plain ferrule inserts of the expansion joints. All bolts are to be coated with a liquid thread locking material that is intended to allow for future removal.

NOTES (CONTINUED)
FOR
CONC. BARRIER & 8' PLAIN
JOINTED CONC. SHOULDER
AND
CONC. BARRIER & 10' PLAIN
JOINTED CONC. SHOULDER

JULY 2015

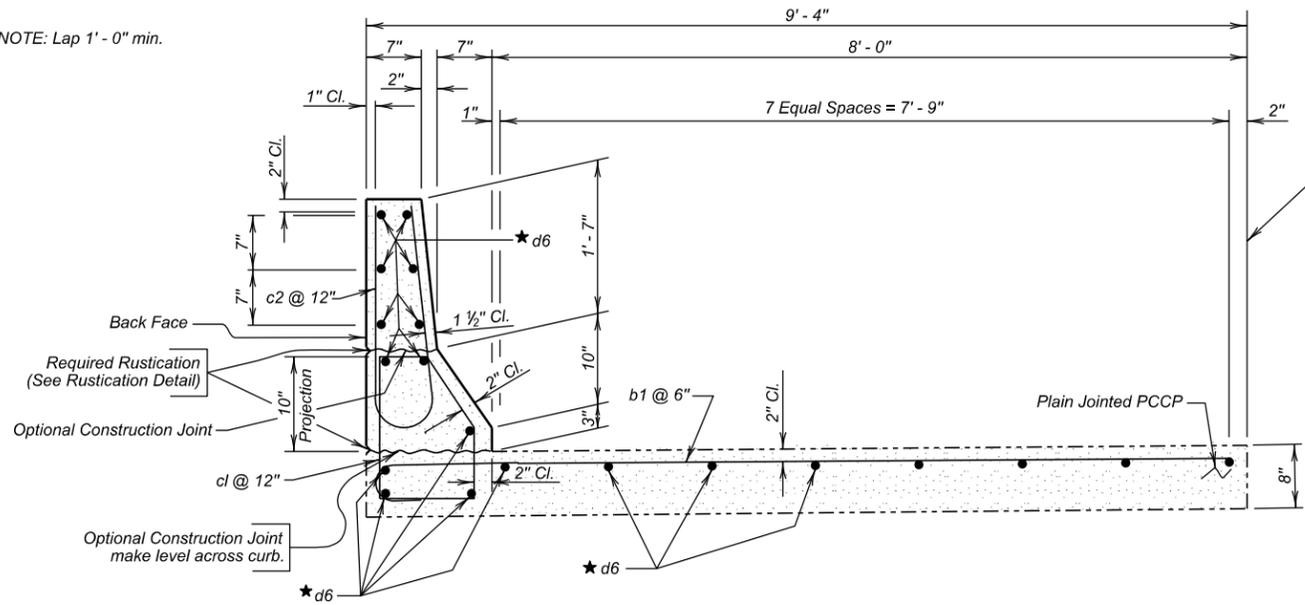
3 OF 7

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSRA01	DRAFTED BY KR <i>Kevin N. Boeden</i> BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E124	E127

★ NOTE: Lap 1' - 0" min.



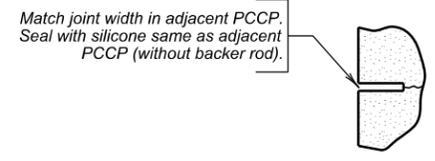
**TYPICAL SECTION
PLAIN JOINTED BARRIER**

REINFORCING SCHEDULE				
Mk.	No.	Size	Length	Type
b1	360	6	9' - 8"	IA
c1	180	5	5' - 5"	T2A
c2	180	5	5' - 1"	S11
d6	80	4	46' - 0"	Str.

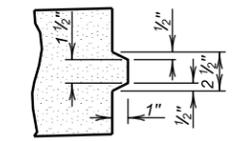
Bending Details

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

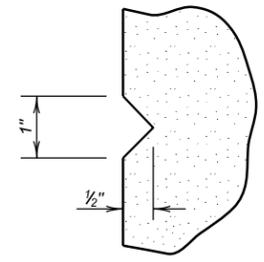
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Conc. Barrier & 8' Plain Jointed Conc. Shoulder	Ft.	180



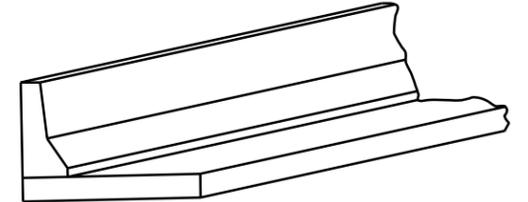
**SAWED OR FORMED
JOINT DETAIL**



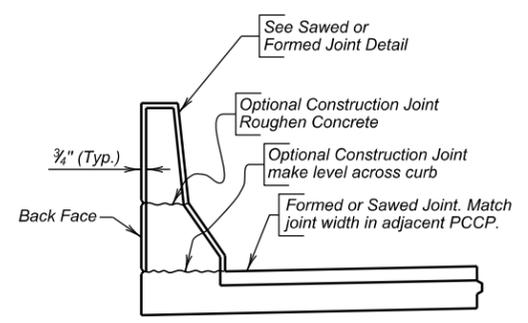
KEYWAY DETAIL



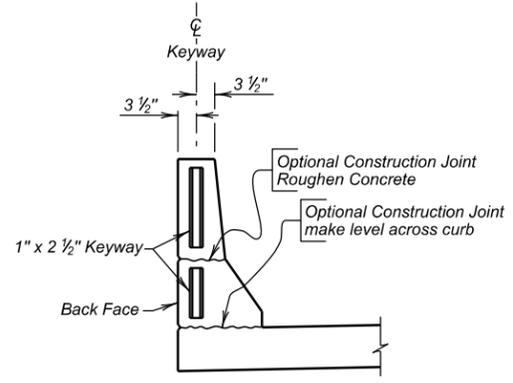
RUSTICATION DETAIL



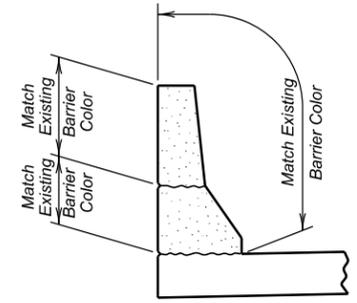
ISOMETRIC VIEW



CRACK CONTROL DETAIL



**DETAIL OF KEYED JOINTS
(Typ. between pours)**



*** COMMERICAL TEXTURE FINISH COLORS**
* See notes on Commerical Texture Finish Class B

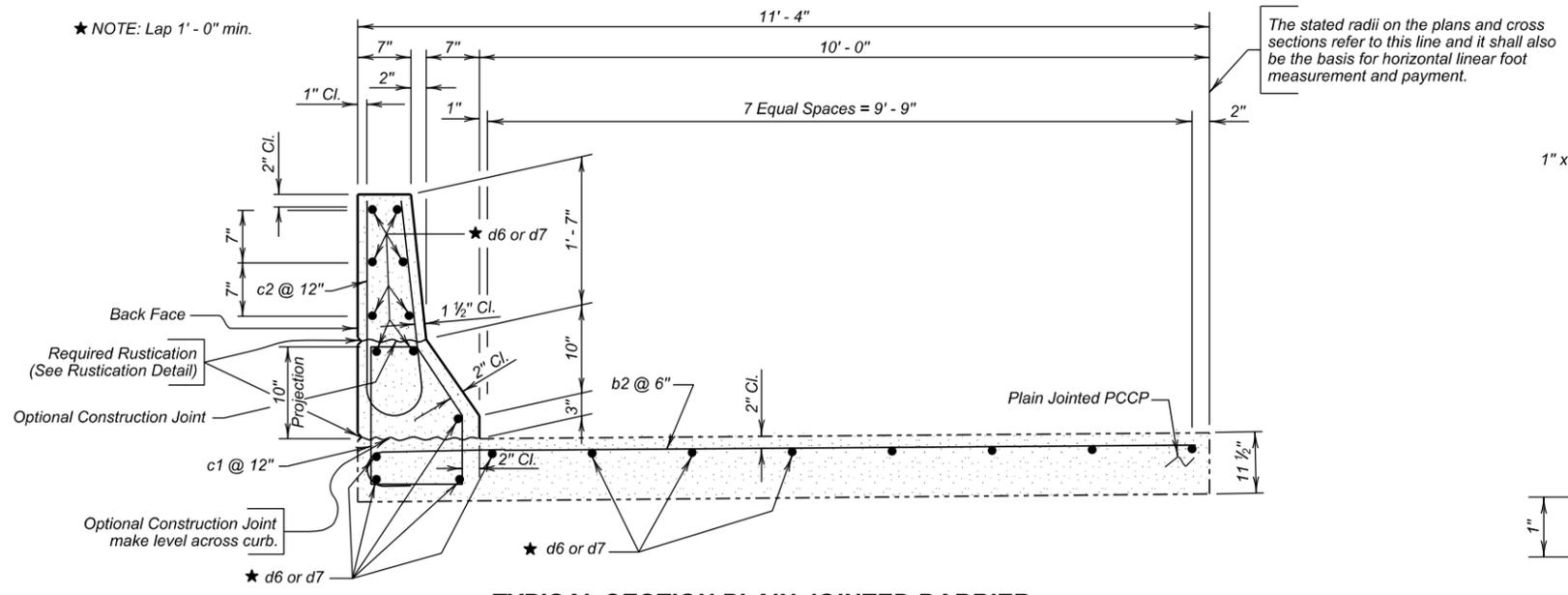
**CONC. BARRIER & 8' PLAIN
JOINTED CONC. SHOULDER DETAILS**
PCN 01QS IM 0293(96)73

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2015

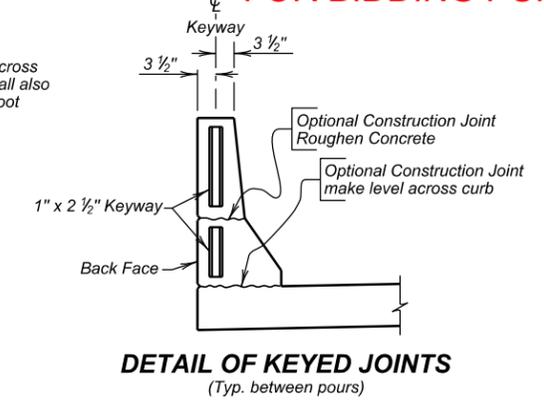
DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSR04	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

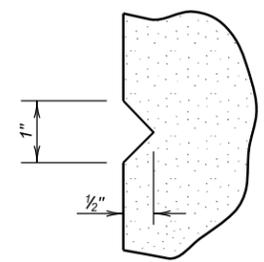
★ NOTE: Lap 1' - 0" min.



TYPICAL SECTION PLAIN JOINTED BARRIER



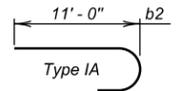
DETAIL OF KEYED JOINTS
(Typ. between pours)



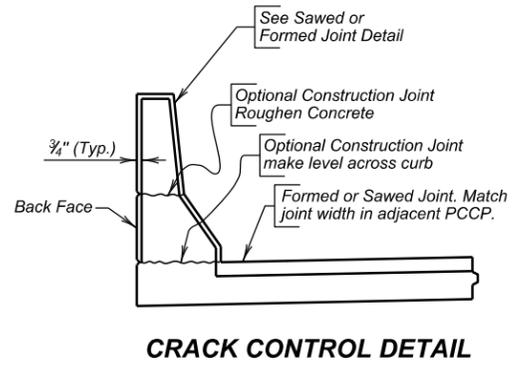
RUSTICATION DETAIL

REINFORCING SCHEDULE					Bending Details	
Mk.	No.	Size	Length	Type		
NorthWest Barrier	b2	200	6	11' - 8"	IA	
	c1	100	5	5' - 5"	T2A	
	c2	100	5	5' - 1"	S11	
d7	40	4	51' - 0"	Str.		
NorthEast Barrier	b2	180	6	11' - 8"	IA	
	c1	90	5	5' - 5"	T2A	
	c2	90	5	5' - 1"	S11	
	d6	40	4	46' - 0"	Str.	

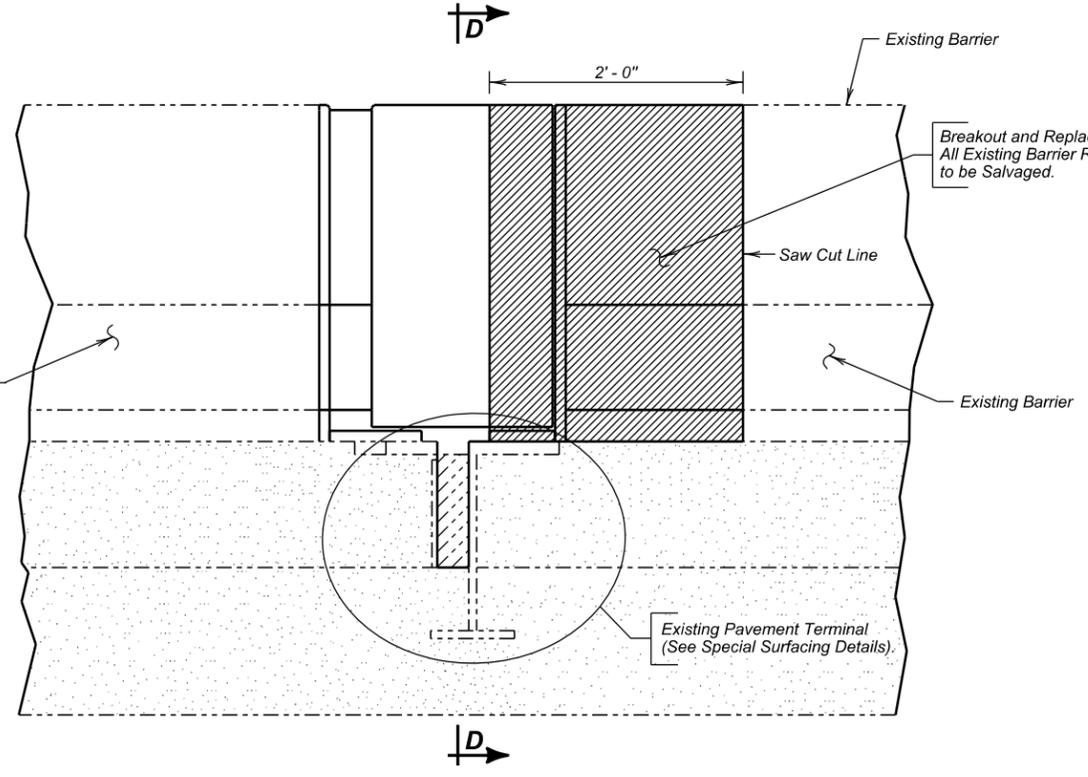
NOTES:
All Bars to be Epoxy Coated.
All dimensions are out to out of bars.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Conc. Barrier & 10' Plain Jointed Conc. Shoulder	Ft.	190
Class A45 Concrete, Bridge Repair	Cu. Yd.	0.2
Breakout Structural Concrete	Cu. Yd.	0.2

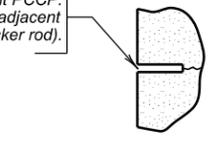


CRACK CONTROL DETAIL

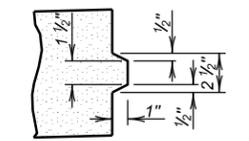


BARRIER BREAKOUT AND REPLACEMENT LIMITS
(Northwest Corner Only)

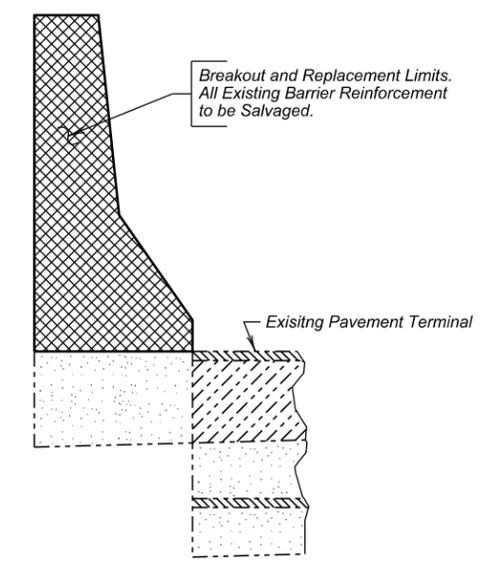
Match joint width in adjacent PCCP. Seal with silicone same as adjacent PCCP (without backer rod).



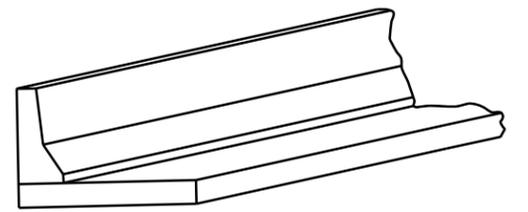
SAWED OR FORMED JOINT DETAIL



KEYWAY DETAIL



SECTION D - D



ISOMETRIC VIEW

CONC. BARRIER & 10' PLAIN JOINTED CONC. SHOULDER DETAILS

PCN 01QS LINCOLN COUNTY IM 0293(96)73

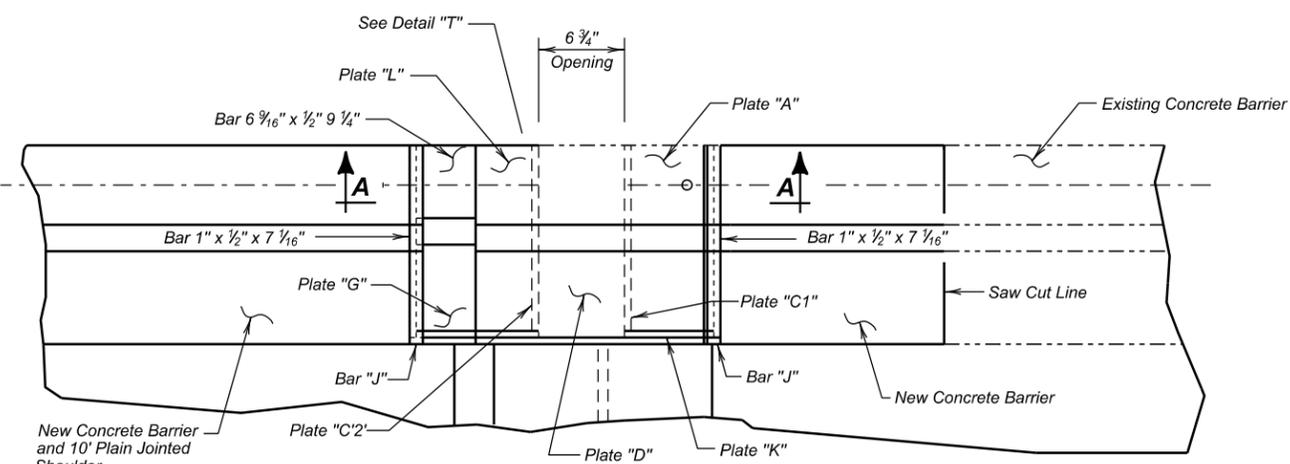
S. D. DEPT. OF TRANSPORTATION

JULY 2015

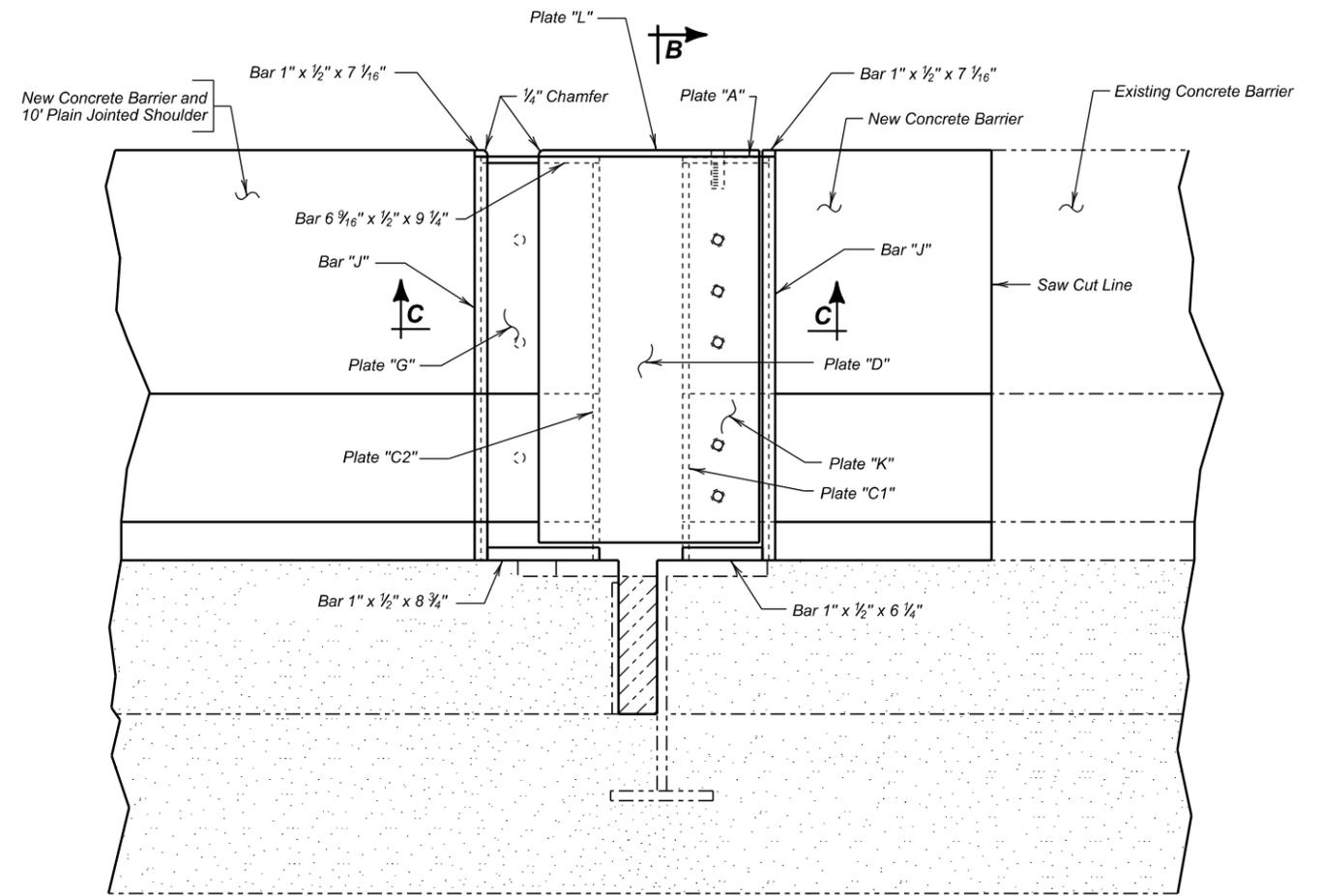
* COMMERCIAL TEXTURE FINISH COLORS
* See notes on Commercial Texture Finish Class B

FOR BIDDING PURPOSES ONLY

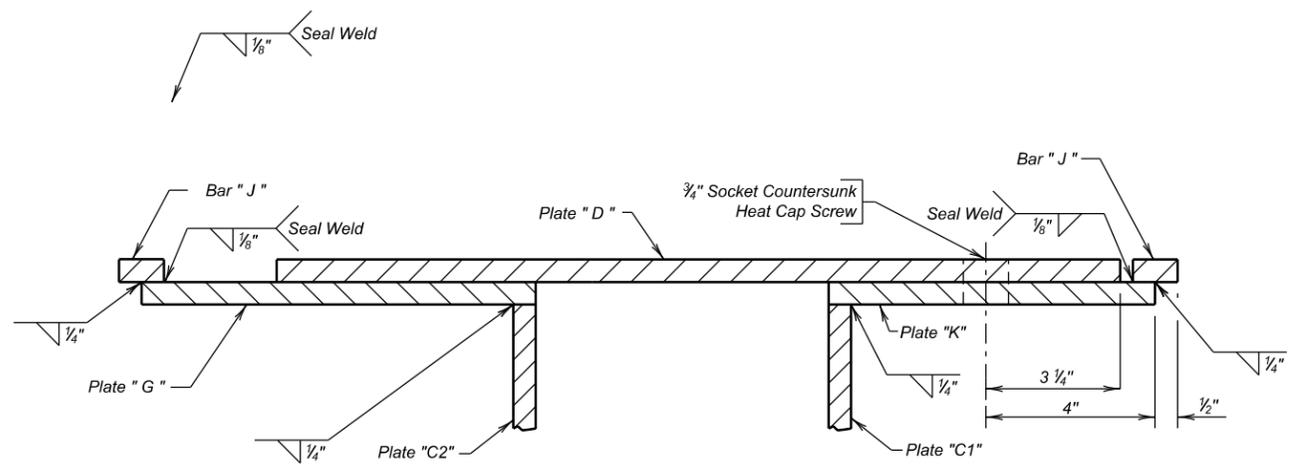
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E126	E127



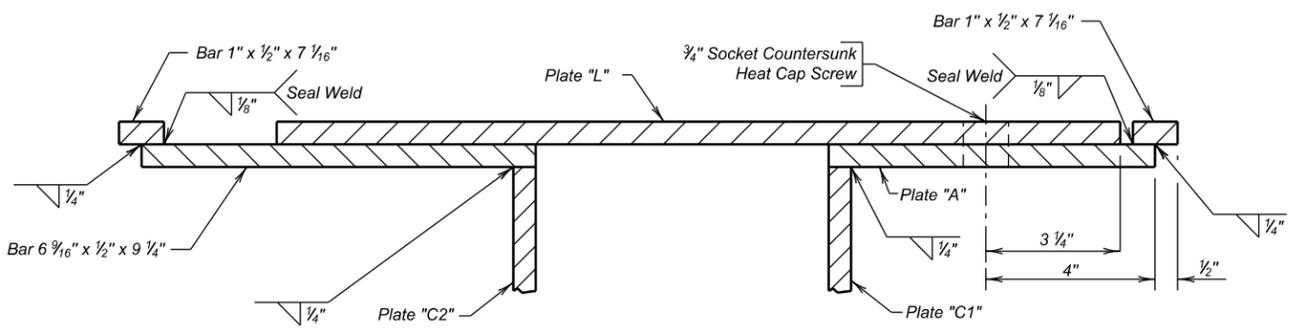
PLAN
(Northwest Corner Only)



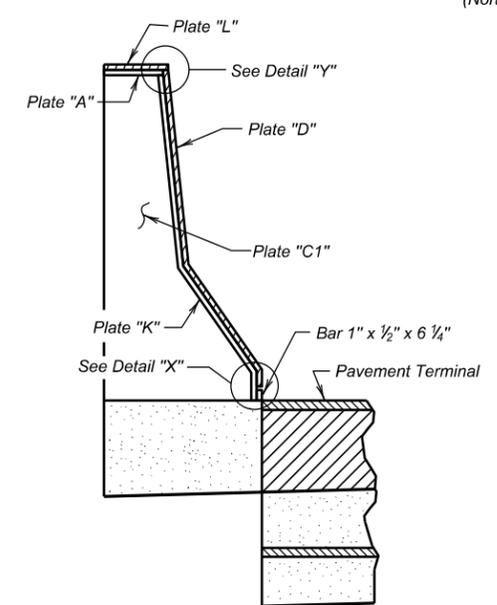
ELEVATION
(Northwest Corner Only)



SEC C - C



SEC A - A



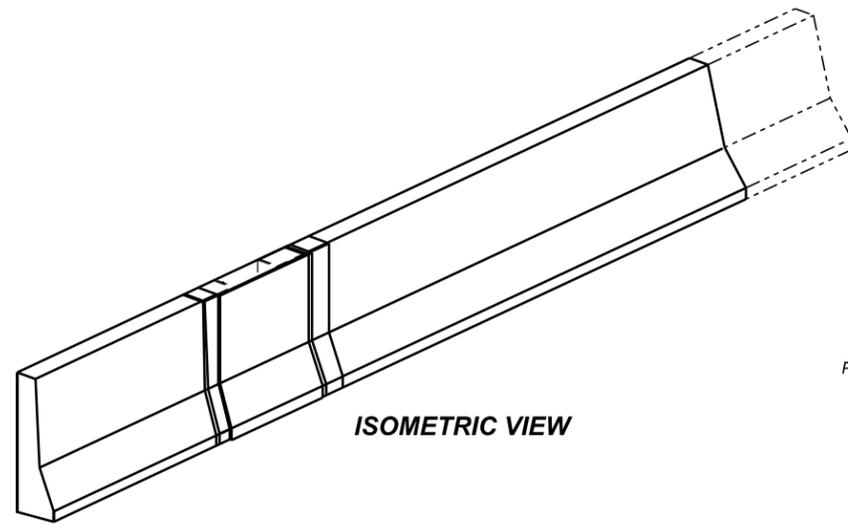
SECTION B - B

BARRIER EXPANSION DEVICE DETAILS
PCN 01QS IM 0293(96)73
LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2015

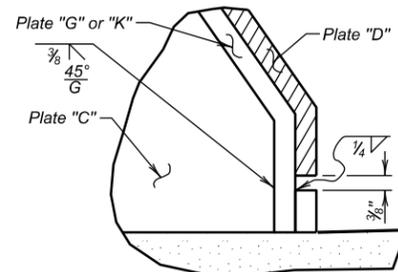
DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSR06	DRAFTED BY KR	<i>Kevin N. Goeden</i> BRIDGE ENGINEER
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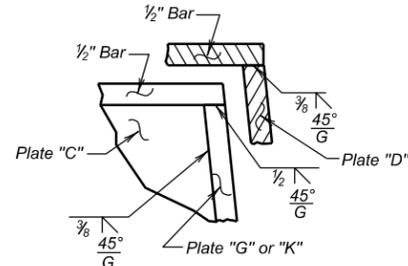
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 0293(96)73	E127	E127



ISOMETRIC VIEW



DETAIL "X"
(Typical weld details)



DETAIL "Y"
(Typical weld details)

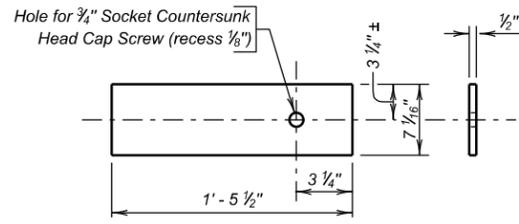


PLATE "L"

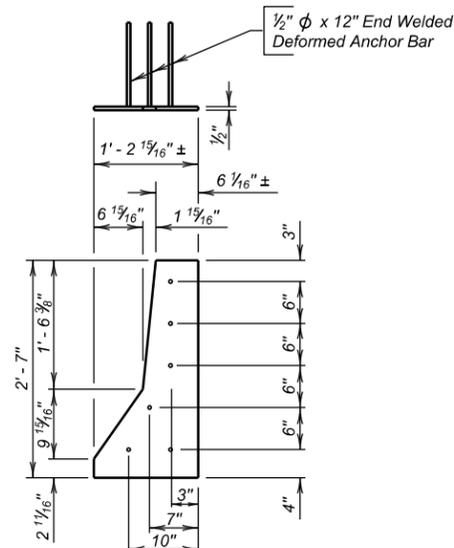


PLATE "C2"

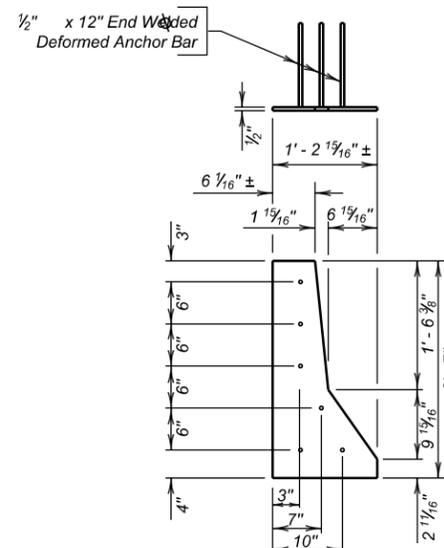


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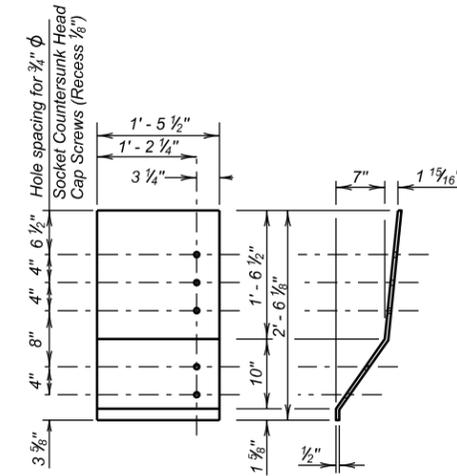


PLATE "D"

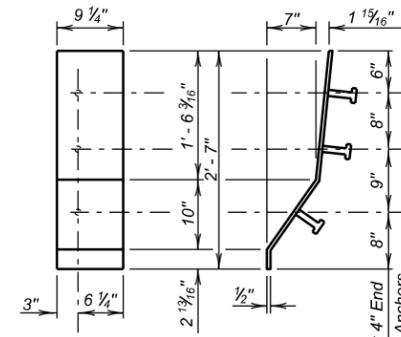


PLATE "G"

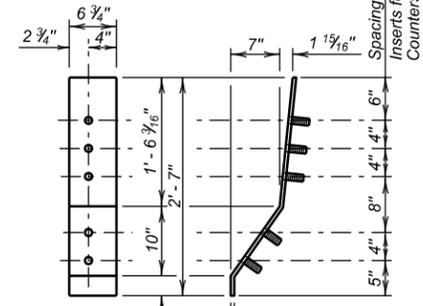
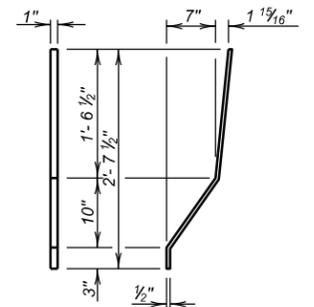


PLATE "K"



BAR "J"

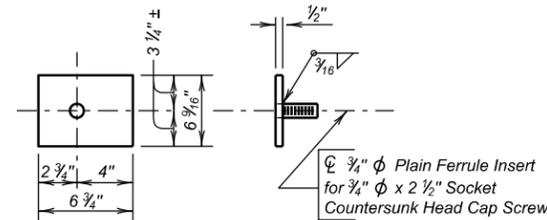


PLATE "A"

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Steel, Miscellaneous	LS	Lump Sum

BARRIER EXPANSION DEVICE DETAILS
(CONTINUED)

PCN 01QS

IM 0293(96)73

LINCOLN COUNTY
S. D. DEPT. OF TRANSPORTATION

JULY 2015

7 OF 7

DESIGNED BY MM LINC01QS	CK. DES. BY BWS 01QSR07	DRAFTED BY KR	Kevin N. Goeden BRIDGE ENGINEER
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