

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT IM 2292(97)7
INTERSTATE 229
MINNEHAHA COUNTY

APPROACH SLABS, APPROACH PCC PAVEMENT,
JOINT REPLACEMENT, BRIDGE DECK POLYMER CHIP SEAL,
BERM RECONSTRUCTION, MEDIAN RESHAPING,
PAVEMENT MARKING & GUARDRAIL

PCN 04VX

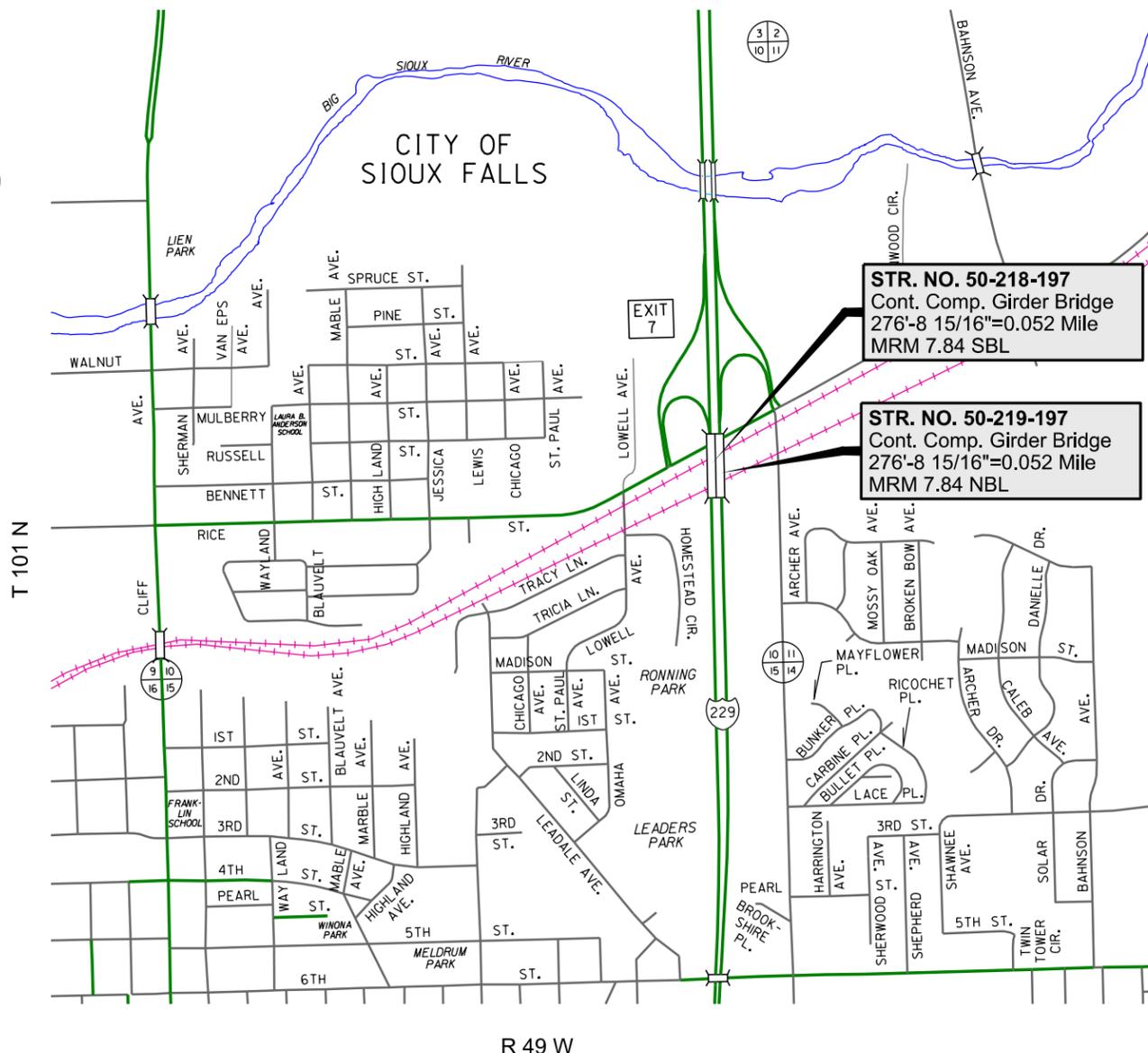
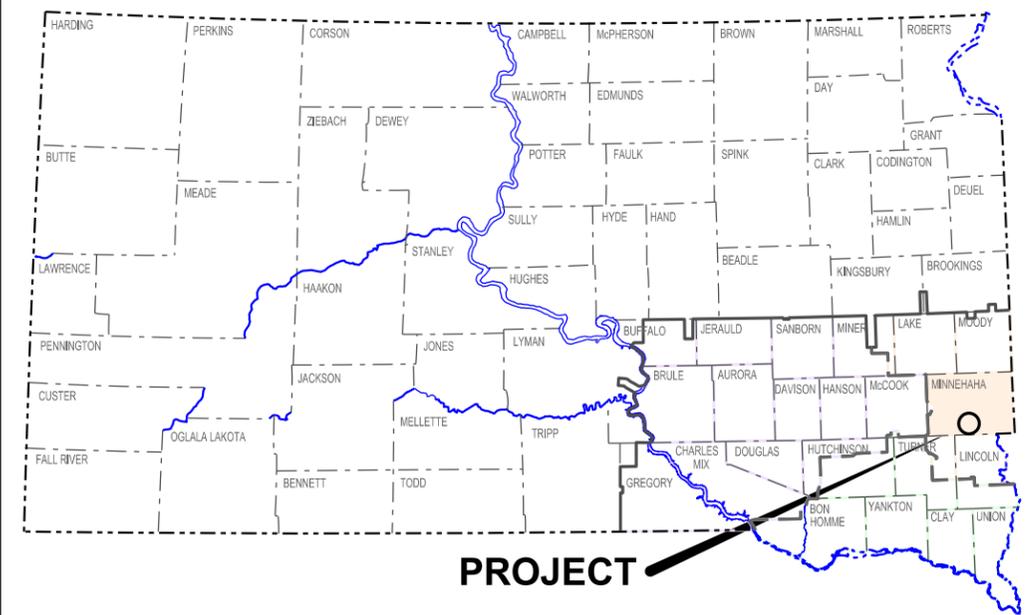
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	1	76

Plotting Date: 11/23/2015

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PLOT SCALE - 1"=1400'



STORM WATER PERMIT
(None required)

DESIGN DESIGNATION

ADT(2014)	28,080
ADT(2034)	43,300
DHV	5,022.8
D	54%
T DHV	5%
T ADT	11%
V	65 MPH

8

PLOTTED FROM - TRM11118

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ESTIMATE OF QUANTITIES

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Rev. 11/30/15 GAW

IM 2292(97)7 – PCN 04VX

IM 2292(97)7 – PCN 04VX (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1100	Remove Concrete Pavement	212.0	SqYd
110E1690	Remove Sediment	1.0	CuYd
110E1693	Remove Erosion Control Wattle	208	Ft
110E6000	Remove 3 Cable Guardrail for Reset	164	Ft
110E6200	Remove Double Thrie Beam Guardrail for Reset	50.0	Ft
110E6230	Remove W Beam Guardrail for Reset	100.0	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	4	Each
110E7700	Remove Drop Inlet Frame and Grate Assembly for Reset	4	Each
120E0010	Unclassified Excavation	353	CuYd
250E0010	Incidental Work	Lump Sum	LS
380E0100	10.5" Nonreinforced PCC Pavement	206.0	SqYd
380E6110	Insert Steel Bar in PCC Pavement	96	Each
462E0100	Class M6 Concrete	0.1	CuYd
629E0200	Reset 3 Cable Guardrail	164	Ft
630E2110	Beam Guardrail Post and Block	48	Each
630E5130	Reset Double Thrie Beam Rail	50.0	Ft
630E5160	Reset W Beam Rail	100.0	Ft
630E5200	Reset W Beam to Thrie Beam Transition Rail	4	Each
633E3000	Durable Pavement Marking, 4" White	3,377	Ft
633E3005	Durable Pavement Marking, 4" Yellow	2,683	Ft
633E3010	Durable Pavement Marking, 8" White	305	Ft
633E3020	Durable Pavement Marking, 12" White	440	Ft
633E5050	Surface Preparation for Pavement Marking	4,742	Ft
633E5100	Grooving for Durable Pavement Marking, 4"	680	Ft
634E0110	Traffic Control Signs	510	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Board	2	Each
634E0525	Linear Delineation System Panel, Barrier Mounted	135	Each
634E0560	Remove Pavement Marking, 4" or Equivalent	6,411	Ft
634E0640	Temporary Pavement Marking	14,903	Ft
634E0700	Traffic Control Movable Concrete Barrier	130	Each
634E0750	Temporary Concrete Barrier End Protection	3	Each
634E0760	Temporary Concrete Barrier End Protection Module Set or Repair Kit	1	Each
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
670E7000	Reset Drop Inlet Frame and Grate Assembly	4	Each
734E0010	Erosion Control	Lump Sum	LS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
734E0154	12" Diameter Erosion Control Wattle	208	Ft
998E0100	Railroad Protective Insurance	Lump Sum	LS

Structure 50-218-197

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	365.7	SqYd
410E2600	Membrane Sealant Expansion Joint	199.6	Ft
460E0150	Concrete Approach Slab for Bridge	313.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	80.4	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.8	CuFt
480E0504	No. 4 Rebar Splice	38	Each
480E0505	No. 5 Rebar Splice	48	Each
480E0506	No. 6 Rebar Splice	60	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1,470.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1,470.0	SqYd
491E0120	Bridge Deck Grinding	1,470.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope Protection, Crushed Aggregate	1,161.0	SqYd

Structure 50-219-197

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	365.7	SqYd
410E2600	Membrane Sealant Expansion Joint	199.6	Ft
460E0150	Concrete Approach Slab for Bridge	313.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	80.4	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.8	CuFt
480E0504	No. 4 Rebar Splice	38	Each
480E0505	No. 5 Rebar Splice	48	Each
480E0506	No. 6 Rebar Splice	60	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1,470.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1,470.0	SqYd
491E0120	Bridge Deck Grinding	1,470.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope Protection, Crushed Aggregate	1,161.0	SqYd

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

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ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the State ROW.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the General Permit for Highway, Road, and Railway Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of Environment and Natural Resources.

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements shall apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

TABLE FOR REMOVAL AND INSTALLATION OF GUARDRAIL AND RELATED ITEMS

LOCATION			REMOVE 3 CABLE GUARDRAIL FOR RESET	REMOVE DOUBLE THRIE BEAM GUARDRAIL FOR RESET (CLASS A)	REMOVE W BEAM GUARDRAIL FOR RESET (CLASS A)	REMOVE W BEAM TO THRIE BEAM GUARDRAIL TRANSITION FOR RESET	RESET 3 CABLE GUARDRAIL	W BEAM GUARDRAIL POST AND BLOCK	THRIE BEAM GUARDRAIL POST AND BLOCK	RESET DOUBLE THRIE BEAM RAIL (CLASS A)	RESET W BEAM RAIL (CLASS A)	RESET W BEAM TO THRIE BEAM TRANSITION RAIL
BRIDGE CORNER	LANE-SHOULDER		Ft	Ft	Ft	Each	Ft	Each	Each	Ft	Ft	Each
STR.NO. 50-218-197												
MRM 7.84 SBL												
Southwest Corner	SBL	Outside	32	-	-	-	32	-	-	-	-	-
Northwest Corner	SBL	Outside	37.5	12.5	37.5	1	37.5	5	9	12.5	37.5	1
Northeast Corner	SBL	Median	12.5	12.5	12.5	1	12.5	1	9	12.5	12.5	1
STR.NO. 50-219-197												
MRM 7.84 NBL												
Southwest Corner	NBL	Median	12.5	12.5	12.5	1	12.5	1	9	12.5	12.5	1
Southeast Corner	NBL	Outside	37.5	12.5	37.5	1	37.5	5	9	12.5	37.5	1
Northeast Corner	NBL	Outside	32	-	-	-	32	-	-	-	-	-
TOTALS:			164	50	100	4	164	12	36	50	100	4

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UTILITIES

The Contractor shall contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It shall be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

EXISTING NRC PAVEMENT

The existing mainline pavement is 10.5" x 24' Nonreinforced PCC Pavement with 8" Nonreinforced PCC Pavement shoulders. The on and off ramps are 10.5" x 12' Nonreinforced PCC Pavement except for the on ramp at the north end of Str. No. 50-218-197 where the pavement is 9" x 12' Nonreinforced PCC Pavement.

Existing contraction joints are spaced at approximately 20' for the mainline/ramps and 10' for the shoulders. Longitudinal joints are reinforced with No. 5 x 30" deformed tie bars spaced 48" center to center. Transverse joints are reinforced with 1 1/4" x 18" plain round dowel bars spaced 12" center to center.

The aggregate in the existing PCC Pavement is quartzite.

RESTORATION OF GRAVEL CUSHION

An inspection of the gravel cushion shall be made after removing concrete from each pavement replacement area. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose material shall be removed. Each replacement area shall be leveled and compacted to the satisfaction of the Engineer.

If additional gravel cushion material is required, the Contractor shall furnish, place and compact gravel cushion to the satisfaction of the Engineer at no additional cost to the State.

Cost for this work shall be incidental to the contract unit price per square yard for 10.5" Nonreinforced PCC Pavement.

GRAVEL CUSHION

If quarried ledge rock is used in the Gravel Cushion, a maximum blend of 40% quarried ledge rock will be allowed.

10.5" NONREINFORCED PCC PAVEMENT

The aggregate may require screening as determined by the Engineer.

Fine aggregate shall conform to Section 800.2 D Alkali Silica Reactivity (ASR) Requirements of the Specifications.

The concrete mix shall be A45 with Fly Ash according to section 460.

In lieu of an automatic subgrader operating from a preset line, a motor grader or other suitable equipment may be used to trim the gravel cushion to final grade prior to placement of concrete. There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement.

Automatic dowel bar inserters will not be allowed on this project.

10.5" NONREINFORCED PCC PAVEMENT (CONTINUED)

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement.

The transverse contraction joints shall be perpendicular to the centerline as detailed in the standard plates 380.01 and 380.08. In multilane areas the transverse contraction joints shall be perpendicular to the centerline and be in a straight line across the width of the pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. All nonconforming transverse contraction joints that are not pre-approved shall be removed at the Contractor's expense. Any method of placement that cannot produce these requirements shall not be allowed to continue.

In addition to traditional field inspection of reinforcement, a Ground Penetrating Radar (GPR) unit may be used to verify reinforcement locations in the hardened concrete. The GPR may be used anytime prior to the Acceptance of Field Work being issued. All costs related to corrective measures, including but not limited to concrete removal or cutting of reinforcement, price deducts, and delays to the project schedule shall be the responsibility of the Contractor.

The surface of the mainline paving shall be longitudinally tined. All other areas shall be tined as directed by the Engineer. The surface of the mainline paving shall be tined to within 2 or 3 feet of the face of the curb. A self-propelled mechanical tiner will not be required.

TIE BARS AND LONGITUDINAL JOINTS

The use of automatic tie bar inserters will only be allowed on the vertical edge of longitudinal construction joints. The use of automatic tie bar inserters will not be allowed on sawed longitudinal joints.

Tie bars shall be held in the specified position parallel to the slab surface and perpendicular to the centerline by a supporting device. Tie bars or tie bar baskets shall be securely staked to the roadbed and shall hold the bar at the correct spacing, alignment, and elevation.

Tie bars will not require supports if inserted into the side of the pavement during slip form paving of the longitudinal construction joint operation. Failure to acquire the correct tie bar locations or position in the construction joint shall require the bars to be corrected and a change made to the operation which may include drilling and epoxy bars or other methods as approved by the engineer.

The final position of each tie bar shall be within the following tolerances:

- Vertical Placement: $\pm T/6$ for any part of the tie bar (T = slab thickness)
- Transverse Placement (side shift): ± 3 inches when measured perpendicular to the longitudinal joint line

If the tie bar does not meet the requirements and tolerances specified, corrective action shall be performed at the Contractor's expense to the satisfaction of the engineer.

STEEL BAR INSERTION

Locations and quantities of concrete replacement are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor shall insert the steel bars (1 1/2" x 18" epoxy coated plain round dowel bars and No. 11 x 18" epoxy coated deformed tie bars for transverse joints and No. 5 x 24" epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

Plain round dowel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing will not be permitted.

Steel bars shall be inserted in the transverse joint on 18" centers. The first steel bar in the transverse joint shall be placed 9" from the edge of the slab closest to centerline. Steel bars shall be inserted in the longitudinal joint on 30" centers and shall be a minimum of 15" from either transverse joint. A typical one-lane patch 12' wide and 6' long will require 18 steel bars (8 in each transverse joint and 2 in the longitudinal joint). It will be necessary to laterally adjust the location of some of the inserted steel bars when the dimensions above interfere with existing steel bar locations.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer's designated rate and be equipped with an automatic shut-off. The pump shall shut off when any of the components are not being metered at the designated rate.

Cost for the epoxy resin adhesive, steel bars, drilling of holes, inserting the steel bars into the drilled holes and all other items incidental to the insertion of the steel bars shall be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

SAW AND SEAL JOINTS

All longitudinal and transverse joints at concrete replacement areas shall be sawed and sealed.

Joints shall not be sealed unless they are thoroughly clean and dry. Cleaning shall be accomplished by sand blasting and other tools as necessary. Just prior to sealing, each joint shall be blown out using a jet of compressed air to remove all traces of dust.

Longitudinal and Transverse joints may be sealed with either Hot Poured Elastic Joint Sealer or Low Modulus Silicone Sealant.

Acceptance of the Low Modulus Silicone Sealant and Hot Poured Elastic Joint Sealer will be based on visual inspection by the Engineer.

Cost for sawing and sealing of the longitudinal construction joint and transverse joints shall be incidental to the contract unit price per square yard for 10.5" Nonreinforced PCC Pavement.

RESET DROP INLET FRAME & GRATE

The Contractor shall reset drop inlet frame and grates on drop inlets that are in place at structures shown in the table below.

The elevations of the frame and grate shall be flush with the top of the finished approach slab.

STR.NO.	LANE-SHOULDER	CLASS M6 CONCRETE CU.YDS.	REMOVE & RESET FRAME & GRATE EACH
50-218-197 – MRM 7.84			
North End	SBL-Median	0.01	1
North End	SBL-Outside	0.01	1
50-219-197 – MRM 7.84			
North End	NBL-Median	0.01	1
North End	NBL-Outside	0.01	1
TOTALS:		0.04	4

UNCLASSIFIED EXCAVATION

Compaction of the material reused from Unclassified Excavation shall be to the satisfaction of the Engineer.

UNCLASSIFIED EXCAVATION FOR CRUSHED AGGREGATE SLOPE PROTECTION

Existing material including embankment and crushed aggregate removed and shaped so that Crushed Aggregate Slope Protection can be placed as shown in the details for the bridge upgrades.

Included in the Estimate of Quantities is 265 cubic yards of Unclassified Excavation. This is based on six inch depth of removal which includes any crushed aggregate and topsoil in between bridges. It is expected that 165 cubic yards will be wasted and the remaining will be placed and shaped in preparation of the Crushed Aggregate Slope Protection.

TABLE OF INCIDENTAL WORK

The contract lump sum price for Incidental Work shall be comprised of the following:

LOCATION	TYPE OF WORK
Str.No. 50-218-197 – Abutment 1	Remove & Replace 5'x4" Standard Black Steel Pipes at each end of the Bridge End Backfill Drain.
Str.No. 50-218-197 – Abutment 3	Remove & Replace 5'x4" Standard Black Steel Pipe at each end of the Bridge End Backfill Drain.
Str.No. 50-219-197 – Abutment 1	Remove & Replace 5'x4" Standard Black Steel Pipe at each end of the Bridge End Backfill Drain.
Str.No. 50-219-197 – Abutment 3	Remove & Replace 5'x4" Standard Black Steel Pipe at each end of the Bridge End Backfill Drain.

PERMANENT SEEDING AND MULCHING

The areas to be seeded and mulched include all disturbed areas within the right-of-way resulting from the work required by this contract.

Type C Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
Total:		18

The areas to be seeded and mulched are estimated at 0.4 acre.

Cost for seeding and mulching shall be incidental to the contract lump sum price for Erosion Control.

DRILLS

In addition to the drills specified in Section 730 of the Specifications, other types of drills including no-till drills will be allowed as long as they have baffles, partitions, agitators, or augers which keep the seed distributed throughout the seed box and the seed is planted at a depth of 1/4" to 1/2".

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

- Glomus intraradices* 25%
- Glomus aggregatu* 25%
- Glomus mosseae* 25%
- Glomus etunicatum* 25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract lump sum price for Erosion Control.

The mycorrhizal inoculum shall be as shown below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 http://www.mycorrhizae.com/

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

Erosion control wattles shall remain on the project until vegetation has been established and then they shall be removed in accordance with the Engineer.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://sddot.com/business/certification/products/Default.aspx>

Ditch shaping as noted in the Standard Plate will not be required.

TABLE OF EROSION CONTROL WATTLE

Diameter (Inch)	Location	Quantity (Ft)
12	Drain in South Median	8
Additional Quantity:		200
Total:		208

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SEQUENCE OF OPERATIONS

The following Sequence of Operations shall be followed by the Contractor unless an alternate Sequence of Operations is submitted in writing two weeks prior to the preconstruction meeting and approved by the Engineer.

Enough traffic control has been provided to work on both structures simultaneously.

PHASE 1 – I-229 SB AND NB INSIDE LANES

South Bound lanes

- Remove all conflicting pavement markings and install traffic control as per the details provided and in these plans such that one-half of the structure can be completed.
- Replace sleeper slabs as indicated in these plans for this phase of construction.
- Complete all approach slab and pavement replacements as indicated in these plans for this phase of construction.
- Complete portion of berm reconstruction.
- Complete polymer chip seal.

North Bound lanes

- Remove all conflicting pavement markings and install traffic control as per the details provided and in these plans such that one-half of the structure can be completed.
- Replace sleeper slabs as indicated in these plans for this phase of construction.
- Complete all approach slab and pavement replacements as indicated in these plans for this phase of construction.
- Complete portion of berm reconstruction.
- Complete polymer chip seal.

PHASE 2 – I-229 SB AND NB OUTSIDE LANES

South Bound lanes

- Remove all conflicting pavement markings and install traffic control as per the details provided in these plans such that the remainder of the structure can be completed.
- Replace sleeper slabs as indicated in these plans for this phase of construction.
- Complete all approach slab and pavement replacements as indicated in these plans for this phase of construction.
- Complete portion of berm reconstruction.
- Complete polymer chip seal.
- Apply permanent pavement markings prior to opening to traffic.

North Bound lanes

- Remove all conflicting pavement markings and install traffic control as per the details provided in these plans such that the remainder of the structure can be completed.
- Replace sleeper slabs as indicated in these plans for this phase of construction.
- Complete all approach slab and pavement replacements as indicated in these plans for this phase of construction.
- Complete portion of berm reconstruction.
- Complete polymer chip seal.
- Apply permanent pavement markings prior to opening to traffic.

INCIDENTS

An incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic such as an accident, hazardous materials spill, or similar event.

The Contractor shall set up a meeting prior to start of work to plan and coordinate responses to an incident. The Contractor will invite the Department of Transportation, the South Dakota Highway Patrol, and local emergency response entities to the meeting.

The Contractor will assist to maintain traffic as required by these plan notes and as agreed to at the meeting.

Emergency vehicle access through the project to the lanes where head-to-head traffic is maintained shall be considered and discussed at the meeting.

The Contractor will be required to modify messages on portable changeable message signs or relocate portable changeable message signs. The Contractor may be asked to provide flaggers to direct or detour of traffic. The Contractor should be prepared to relocate advance warning signs if determined to be necessary for a major traffic incident lasting for more than two hours. Ground mounted advance warning signs may be covered and additional portable warning signs provided.

No additional payment will be made for the modification of portable changeable message sign messages or the relocation of portable changeable message signs. Cost for flagging shall be paid as per the Special Provision for Miscellaneous Items per hour for FLAGGING. Cost for the relocation of an advanced warning sign due to an incident shall be 50% of the designated sign rate as per section 634.5 Basis of Payment. Cost for additional signs shall be paid at the contract unit price per square foot for Traffic Control Signs.

TEMPORARY PAVEMENT MARKING

The Contractor shall place and maintain temporary pavement marking in accordance with Section 634 of the Standard Specifications and the details in these plans.

4" Temporary Pavement Marking Tape shall be used for all lane shift/merge lines and temporary pavement marking across the bridges. Measurements will be made and quantities will be paid for the actual quantities used.

Temporary Raised Pavement Markers shall be used in lieu of Temporary Pavement Marking Paint in mainline areas which will not be covered by permanent pavement marking. Measurements will be made and quantities will be paid for the actual quantities used.

The Contractor shall be required to remove the Temporary Raised Pavement Markers and Temporary Pavement Marking Tape. The Contractor shall use equipment that is not detrimental to the roadway surface or the new polymer chip seal.

All costs for applying and for removing Temporary Raised Pavement Markers and Temporary Pavement Marking Tape shall be included in the contract unit price per foot for Temporary Pavement Marking.

REMOVAL OF CONFLICTING PAVEMENT MARKINGS

The Contractor will be required to remove conflicting pavement markings as directed by the Engineer. Removing the existing pavement markings will be paid at the contract unit price per foot for Remove Pavement Marking, 4" or Equivalent. Field measured quantities will be the basis of payment for this work.

GENERAL MAINTENANCE OF TRAFFIC

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Warning lights shall be placed on top of any temporary R1-2 (yield) signs left over night as per section 634.3.E.3 and shall be yellow in color. Warning lights shall be incidental to the contract lump sum price for Traffic Control Miscellaneous.

All conflicting Speed Limit or Added Lane (W4-3) signs shall be removed or covered during construction. Costs for covering or removing and resetting of these signs shall be incidental to Traffic Control Miscellaneous.

Application of durable pavement markings shall be applied under mobile works operations between the hours of 6:30 pm and 6:00 am or under lane closures.

All Signs shall be ground mounted fixed location supports.

TRAFFIC CONTROL MOVABLE CONCRETE BARRIER

The Contractor will be required to pick up and haul the barrier to the project site, install them, perform lane closure changes and return them to the Sioux Falls Maintenance Yard upon completion of the project. The Contractor shall contact Greg Aalberg (605-367-4970 Ext 2116) at the Sioux Falls Area Office to arrange for pickup and return of the barrier.

All barriers are and shall remain the property of the Department of Transportation.

Estimated Barriers for North Bound Lanes:

Phase 1 = 62

Phase 2 = 65

Estimated Barriers for South Bound Lanes:

Phase 1 = 56

Phase 2 = 65

The number of barrier used shall be approved by the Engineer. Payment will be based on the actual number of barrier used on construction.

If connecting pins are not available with the barrier sections, the Contractor shall furnish new pins as shown on Standard Plate 628.01. All new connecting pins shall meet the requirements of NCHRP 350 TL-3. The connecting pins assemblies shall become the property of the SD DOT and remain with the barrier sections upon completion of the project.

No payment will be made for moving barrier from one lane closure to the adjacent lane closure.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	8	76

Plotting Date: 10/15/2015

PLOT SCALE - 1:140

PLOT NAME - 4

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PLOTTED FROM - IRSE12114

TEMPORARY CONCRETE BARRIER END PROTECTION & TEMPORARY CONCRETE BARRIER END PROTECTION MODULE SET OR REPAIR KIT

The Contractor shall furnish crash tested and approved end protection on movable concrete barrier installed on this project.

End protection shall be installed parallel to the roadway and a minimum of two concrete barriers shall be installed in line with and behind the end protection. The end protection shall be attached to the concrete barrier as specified by the manufacturer.

Costs for furnishing, installing, maintaining, and removing the end protection will be paid for at the contract unit price per each for Temporary Concrete Barrier End Protection. The concrete barrier end protection shall meet the requirements of TL3 for NCHRP 350 or MASH.

As the temporary concrete barrier end protections will not be required to be moved from site to site, no payment will be made for movements or adjustments of the temporary concrete barrier end protections from phase to phase. All costs for this work shall be included in the contract unit price per each for Temporary Concrete Barrier End Protection.

The Contractor will be required to have immediately available replacement parts for the end protection. The Contractor will be expected to repair the end protection within 24 hours after impact or damage. Costs for replacement modules shall be paid for at the contract unit price per each for Temporary Concrete Barrier End Module Set or Repair Kit.

BARRIER MOUNTED LINEAR DELINEATION SYSTEM PANELS

A linear delineation system panel shall be attached to each side of the barrier section. The color shall be the same as the nearest pavement marking. The linear delineation system shall be 34 inches long and 6 inches in height and be constructed of aluminum formed into a shape to provide retroreflective properties across a wide range of angles. It shall be sheeted with Type XI sheeting conforming to ASTM D4956. The Contractor shall furnish, install, and maintain one panel on each barrier. The panels shall be installed at the center of the barrier when measured along the length, with the top of the panel 4 inches below the top of the barrier. Installation shall be as per the manufacturer's recommendation using stainless steel inserts and bolts. This will allow for easy removal for replacement of damaged panels or to replace with an alternate color.

Some of the provided barriers may already have linear delineation system panels attached. Only barriers that are missing the delineation panels or have damaged delineation panels will require new delineation panels. Only new delineation panels actually installed on the barriers will be accepted for payment.

Replacement of damaged linear delineation system panels shall be furnished and replaced by the Contractor. All costs associated with furnishing, installing, and maintaining the linear delineation system shall be included in the contract unit price per each for Linear Delineation System Panel, Barrier Mounted. Five extra panels are included in the plans quantity and are intended to be used for replacements. No payment will be made for switching of colors or locations of linear delineation systems panels between phases.

All linear delineation system panels shall remain attached to the barrier sections and shall become the property of the State of South Dakota upon completion of the project.

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

Contractor Furnished Portable Changeable Message Signs shall be utilized on this project to advise the traveling public of project conditions. The Contractor shall furnish, position, and maintain the message signs at locations as directed by the Engineer.

Each message sign shall be in a new or nearly new condition and consist of a message board, power supply, and a message control system, all mounted on a heavy duty trailer. The message signs shall remain the property of the Contractor upon completion of the project.

The overall dimensions of the message board shall be a minimum of 108" wide x 72" high. The message board shall be enclosed in a rigidly framed, weather tight housing.

The message board shall contain a minimum of three message lines. Each message line shall be capable of displaying a minimum of 8 characters. Each character shall be approximately 18" high and shall be formed by 35 dots in a 5 x 7 matrix. The message boards shall be capable of changing the entire message content in not more than 100 milliseconds. No more than 2 displays shall be used within any message cycle.

The Contractor shall provide advance notice about the upcoming construction on I-229 to the public by placing the portable changeable message signs at a location approved by the Engineer 1 week in advance of construction.

For work in all Phases the Contractor shall program the portable changeable message signs near the project work limits with the following messages for use during normal traffic flow:

NARROW LANES AHEAD	USE CAUTION
--------------------------	----------------

During peak times when traffic queues exist or during incident management:

TRAFFIC CONG AHEAD	BE PREPARED TO STOP
--------------------------	---------------------------

The Engineer may approve alternate messages to fit project conditions.

All costs associated with obtaining, positioning, re-positioning, programming, re-programming, maintaining, and removing the message signs shall be incidental to the contract unit price per each for Contractor Furnished Portable Changeable Message Sign.

DURABLE PAVEMENT MARKINGS

Existing paving markings shall be replaced approximately 700' prior to each approach slab on the "on" side and approximately 300' from each approach slab on the "off" side of the bridge. Bridges, approach slabs, and new approach pavement will also receive new pavement markings. All permanent pavement markings shall be durable.

SURFACE PREPARATION FOR PAVEMENT MARKINGS & GROOVING FOR DURABLE PAVEMENT MARKING 4"

No grooving or surface preparation will be allowed on bridges. All markings applied to bridges shall be surface applied.

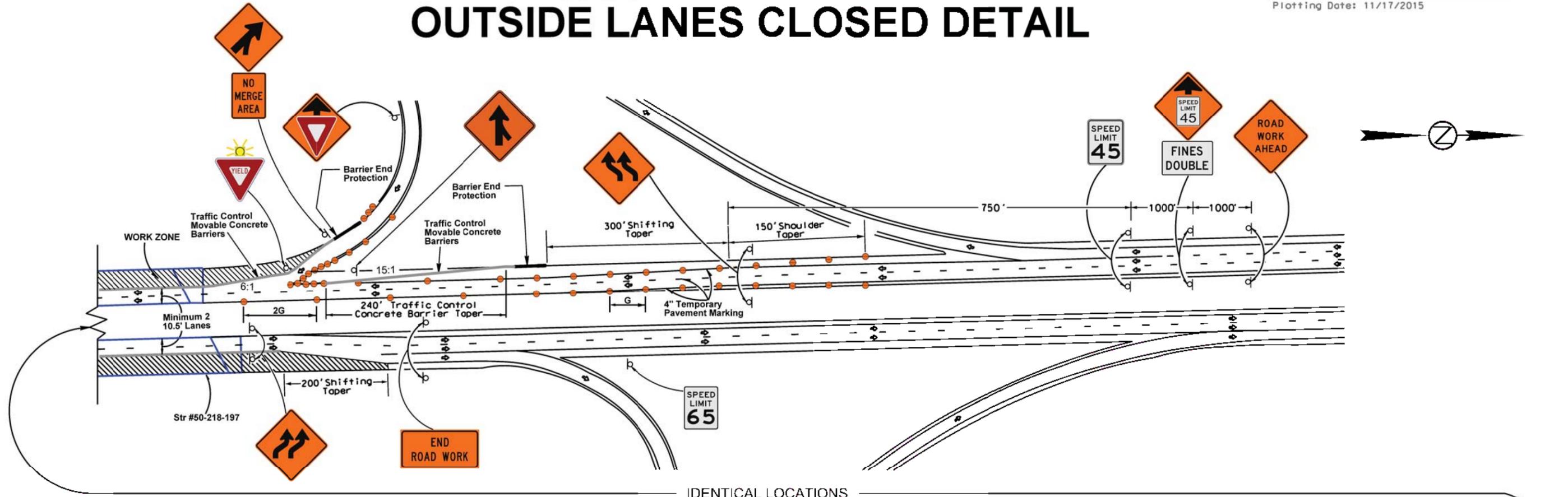
Approach slabs and new approach pavement will require grooving. All other markings (excluding bridges) will require surface preparation.

TRAFFIC CONTROL OUTSIDE LANES CLOSED DETAIL

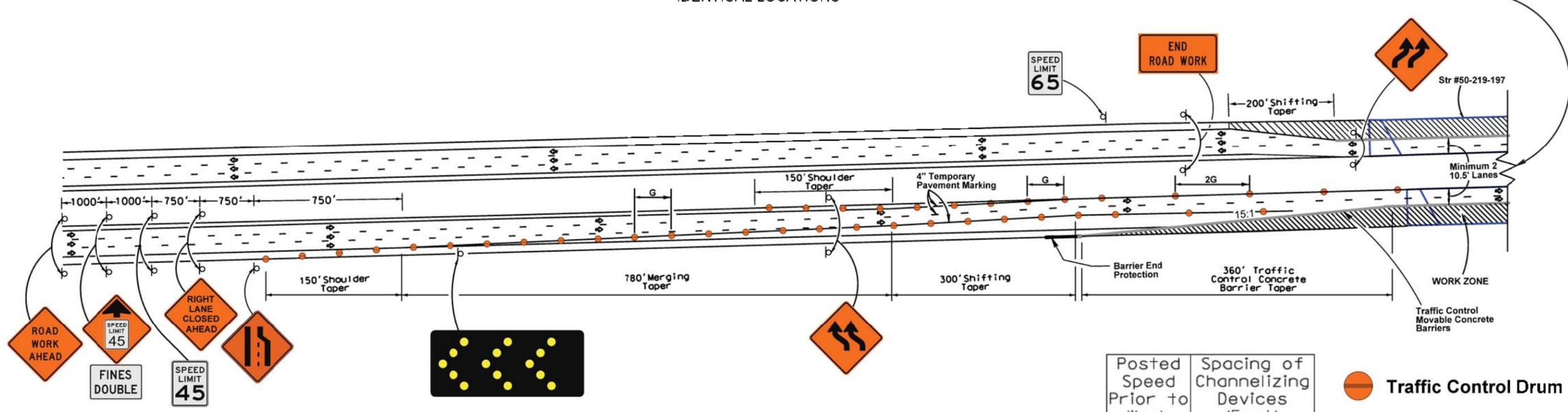
Plotting Date: 11/17/2015

PLOT SCALE - 1:140

PLOT NAME -



IDENTICAL LOCATIONS



Notes: -Drawing not to Scale

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 40	25
≥ 45	50

-  Traffic Control Drum
-  Direction of Traffic
-  Traffic Control Movable Concrete Barrier

PLOTTED FROM - IRSE12114

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ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	EXPRESSWAY / INTERSTATE			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-2	YIELD	1	60" x 60"	25	25
R2-1	SPEED LIMIT 45	4	36" x 48"	12	48
R2-1	SPEED LIMIT 65	2	36" x 48"	12	24
R2-6aP	FINES DOUBLE (plaque)	4	36" x 24"	6	24
W3-2	YIELD AHEAD (symbol)	1	48" x 48"	16	16
W3-5	SPEED REDUCTION AHEAD (45 MPH)	4	48" x 48"	16	64
W4-1	MERGE (symbol)	1	48" x 48"	16	16
W4-2	LEFT or RIGHT LANE ENDS (symbol)	1	48" x 48"	16	16
W4-5	ENTERING ROADWAY MERGE (symbol)	1	48" x 48"	16	16
W4-5P	NO MERGE AREA (plaque)	1	24" x 30"	5	5
W20-1	ROAD WORK AHEAD	4	48" x 48"	16	64
W20-5	LEFT or RIGHT LANE CLOSED AHEAD	2	48" x 48"	16	32
W24-1b	DOUBLE REVERSE CURVE (two lanes shift) (L or R)	8	48" x 48"	16	128
G20-2	END ROAD WORK	4	48" x 24"	8	32
EXPRESSWAY / INTERSTATE					510
TRAFFIC CONTROL SIGNS SQFT					

ARROW BOARDS

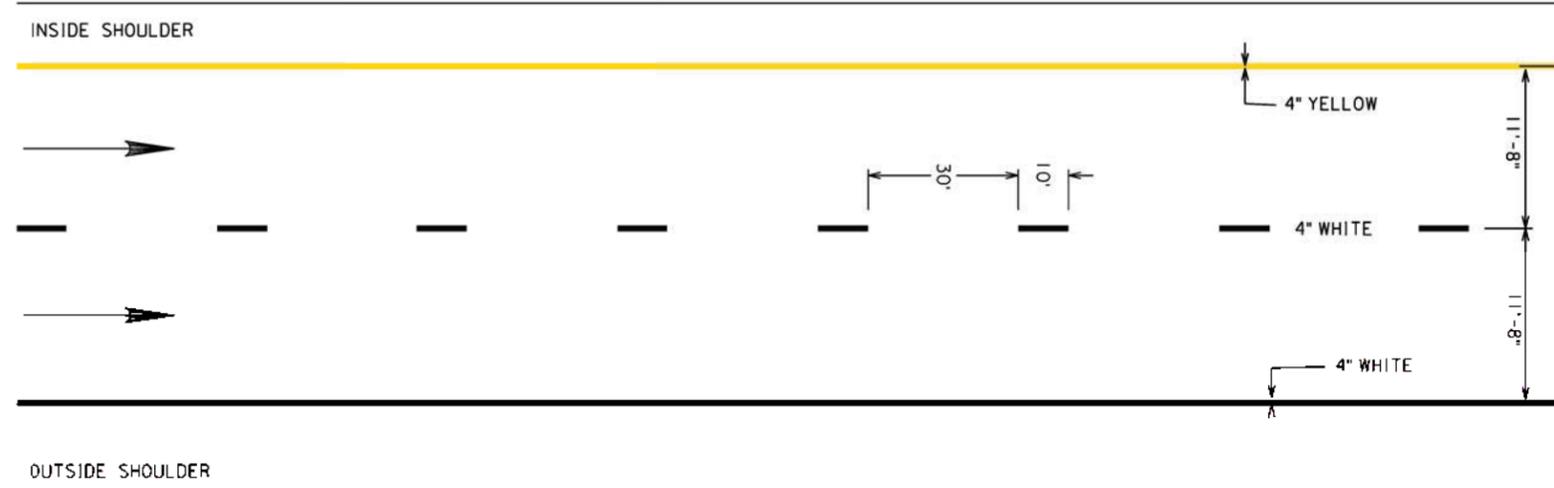
ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	2 Each

LAYOUT FOR APPLICATION OF DURABLE MARKINGS (TYPICAL)

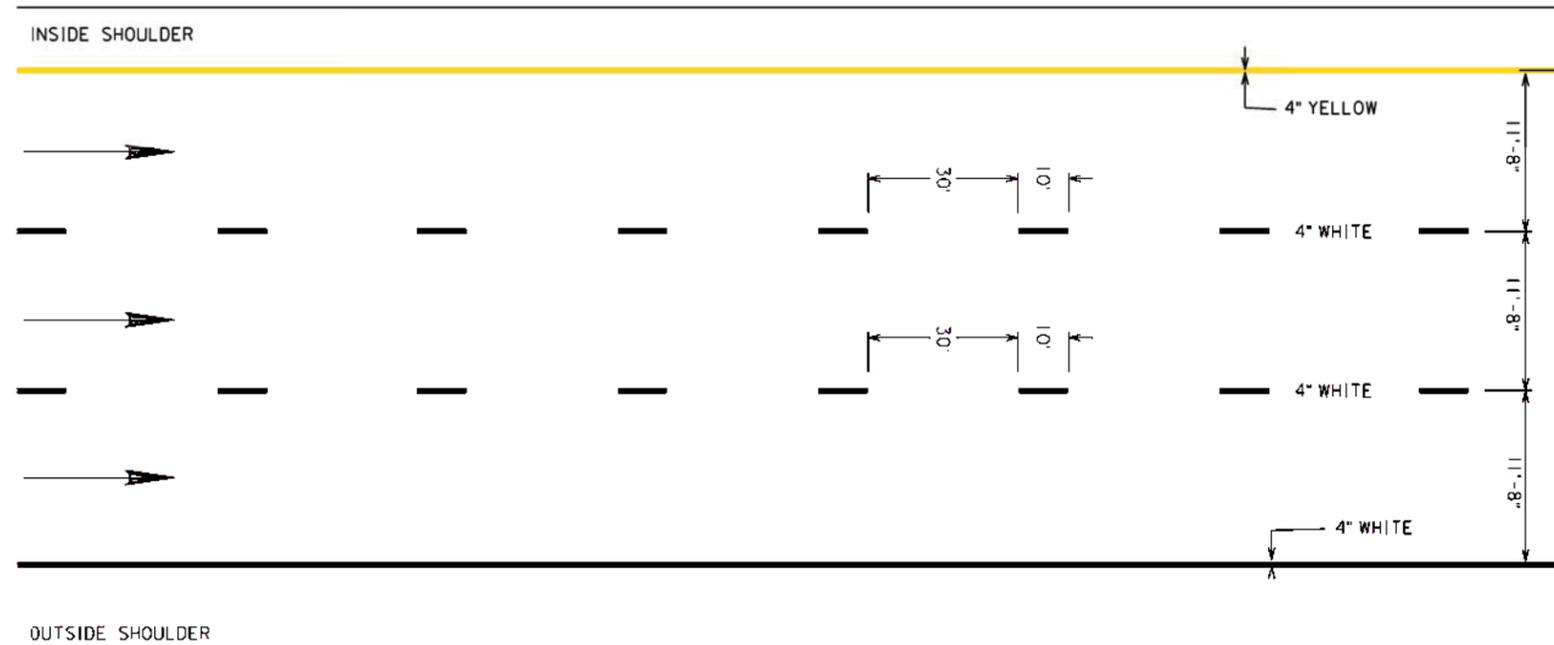
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	12	76

Plotting Date: 10/15/2015

DIVIDED ROADWAY-TWO LANE SECTION (One direction shown)



DIVIDED ROADWAY-THREE LANE SECTION (One direction shown)



NOTE:

EDGELINES AND LANELINES SHALL MATCH THE EXISTING MARKINGS AT THE BEGIN AND END OF THE PROJECT.

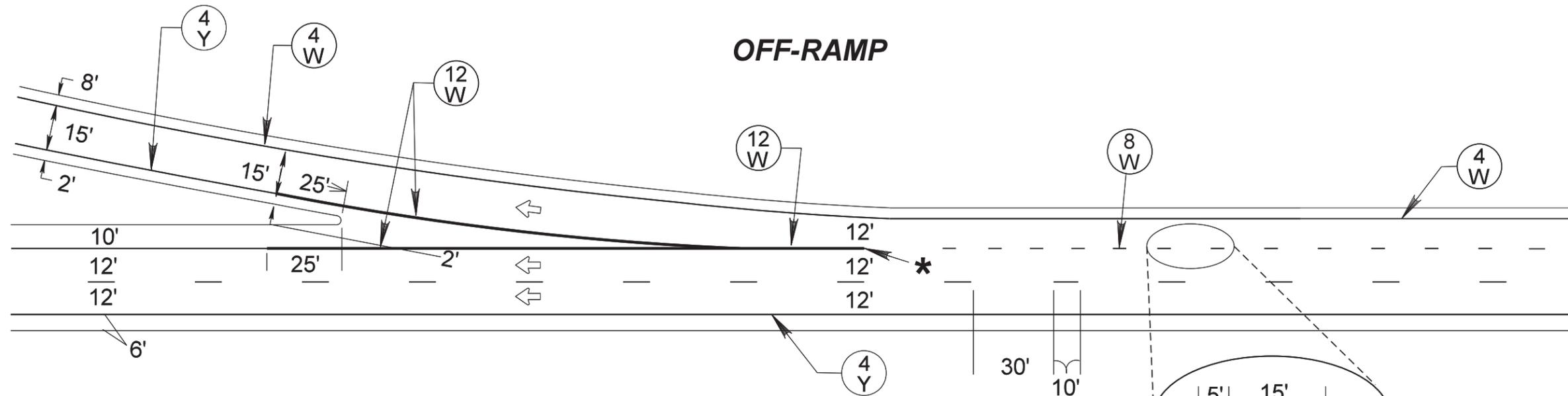
PLOT SCALE - 1:45.6

PLOTTED FROM - IRSE12114

PLOT NAME - 1

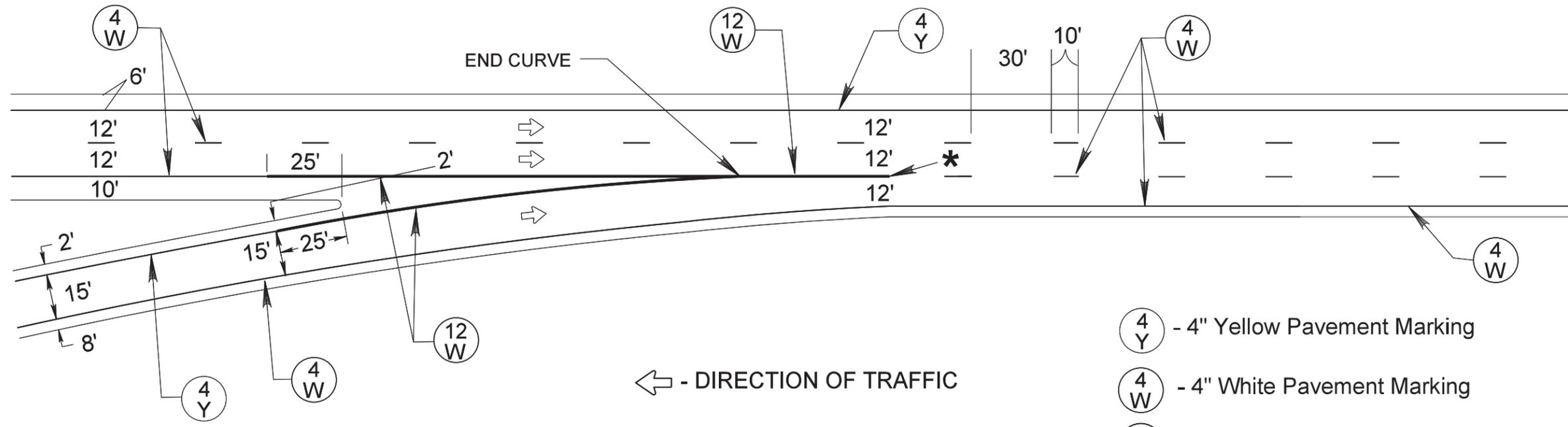
FILE - ... \2&3 LANE TYPICAL MARKINGS.DGN

PAVEMENT MARKING LAYOUT (TYPICAL)



* GORE POINT

ON-RAMP



← - DIRECTION OF TRAFFIC

A = LENGTH OF PARALLEL ACCELERATION LANE
D = LENGTH OF PARALLEL DECELERATION LANE

- (4 Y) - 4" Yellow Pavement Marking
- (4 W) - 4" White Pavement Marking
- (8 W) - 8" White Pavement Marking
- (12 W) - 12" White Pavement Marking

PLOT SCALE - 1:140

PLOTTED FROM - IRSE12114

PLOT NAME - 3

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MOBILE OPERATIONS ON MULTI-LANE ROAD (TYPICAL)

Notes for Mobile Operation on Multi-lane Road (Typical)

Standard:

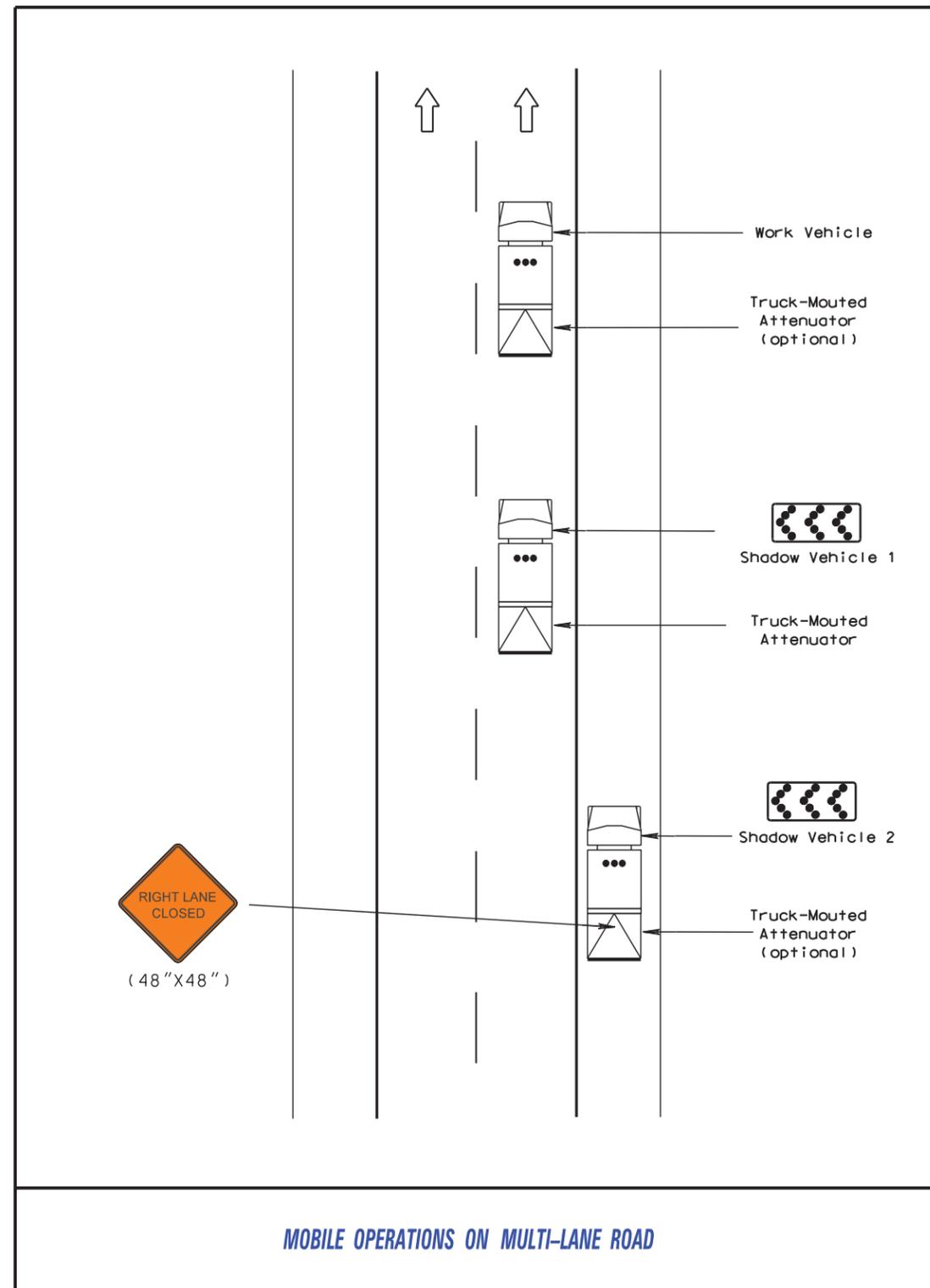
1. Arrow panels shall, as a minimum, be Type B, with a size of 1500 x 750 mm (60 x 30 in).

Guidance:

2. Vehicles used for these operations should be made highly visible with appropriate equipment, such as: high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow panels.
3. Shadow Vehicle 1 should be equipped with an arrow panel and truck-mounted attenuator.
4. Shadow Vehicle 2 should be equipped with an arrow panel. An appropriate lane closure sign should be placed on Shadow Vehicle 2 so as not to obscure the arrow panel.
5. Shadow Vehicle 2 should travel at a varying distance from the work operation so as to provide adequate sight distance for vehicular traffic approaching from the rear.
6. The spacing between the work vehicles and the shadow vehicles, and between each shadow vehicle should be minimized to deter road users from driving in between.
7. Work should normally be accomplished during off-peak hours.
8. The advanced warning sign shall read LEFT LANE CLOSED and the chevron direction shall be changed when working within the left passing lane.

Option:

9. A truck-mounted attenuator may be used on Shadow Vehicle 2.
10. On high-speed roadways, a third shadow vehicle (not shown) may be used with Shadow Vehicle 1 in the closed lane, Shadow Vehicle 2 straddling the edge line, and Shadow Vehicle 3 on the shoulder.
11. Where adequate shoulder width is not available, Shadow Vehicle 3 may drive partially in the lane.



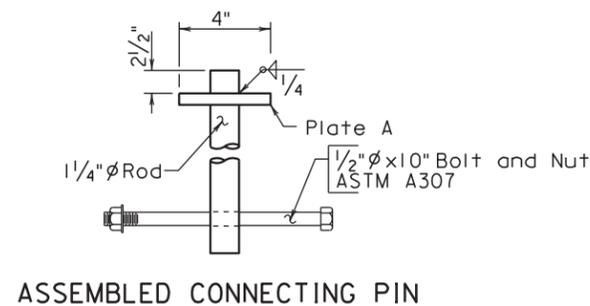
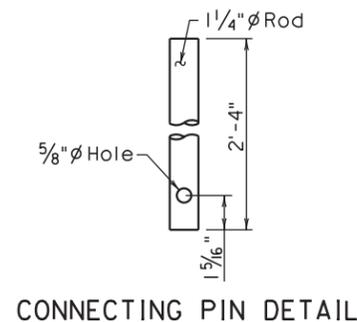
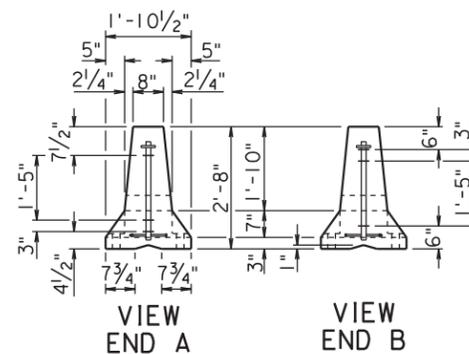
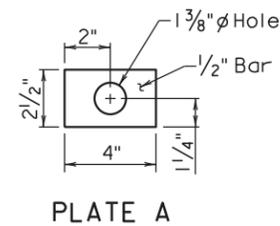
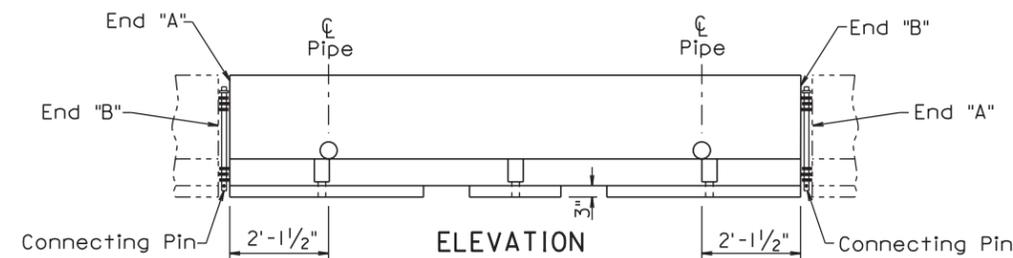
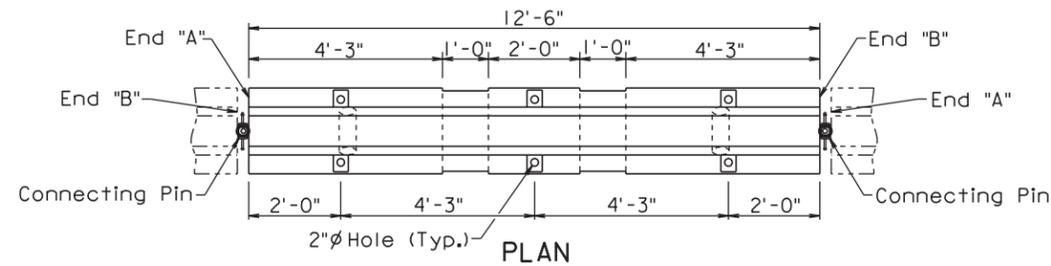
PLOT SCALE - 1:140

PLOTTED FROM - IRSE12114

PLOT NAME - 4

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Plotting Date: 10/15/2015



June 26, 2009

June 26, 2009

Published Date: 4th Qtr. 2015	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
			Sheet 1 of 2

Published Date: 4th Qtr. 2015	S D D O T	TRAFFIC CONTROL MOVABLE CONCRETE BARRIERS (F SHAPE INTERIOR SECTION)	PLATE NUMBER 628.01
			Sheet 2 of 2

GENERAL NOTES:

The detailed drawings are for illustrative purpose and depicts the current version of the F shape concrete barrier. If new movable concrete barriers are requested on a project, they shall be constructed according to the F shape movable concrete barrier details on standard plate 628.10.

Each movable concrete barrier section weighs 5030 \pm pounds.

Each movable concrete barrier section is detailed to provide end "A" to end "B" connection by insertion of a pin through steel loops.

The Jersey shape or any version of the F shape traffic control movable concrete barriers may be used on a project, however, only the same type or version shall be used for each run of barriers.

Movable concrete barrier sections shall be placed to provide uniform bearing of the sections with the paved surface as approved by the Engineer.

Movable concrete barrier sections shall never be moved or lifted using the end loops.

Movable concrete barrier sections that have been damaged shall not be used. Barrier sections are considered damaged if the loops are end welded onto existing damaged loops, loops are fractured, or there is exposed rebar from fractured concrete.

All cost for transporting the barriers from the specified location to the project site, installing, and returning the barriers to the specified location shall be incidental to the contract unit price per each for "Traffic Control Movable Concrete Barrier".

If the concrete barriers need to be moved and reset on the project, requiring the barriers to be transported by truck, all cost for removing, transporting, and resetting the barriers shall be incidental to the contract unit price per each for "Remove and Reset Traffic Control Movable Concrete Barrier". All cost for small shifts in alignment of the barriers, not requiring the barriers to be transported by truck, shall be incidental to various contract items.

PLOT SCALE - 1:140

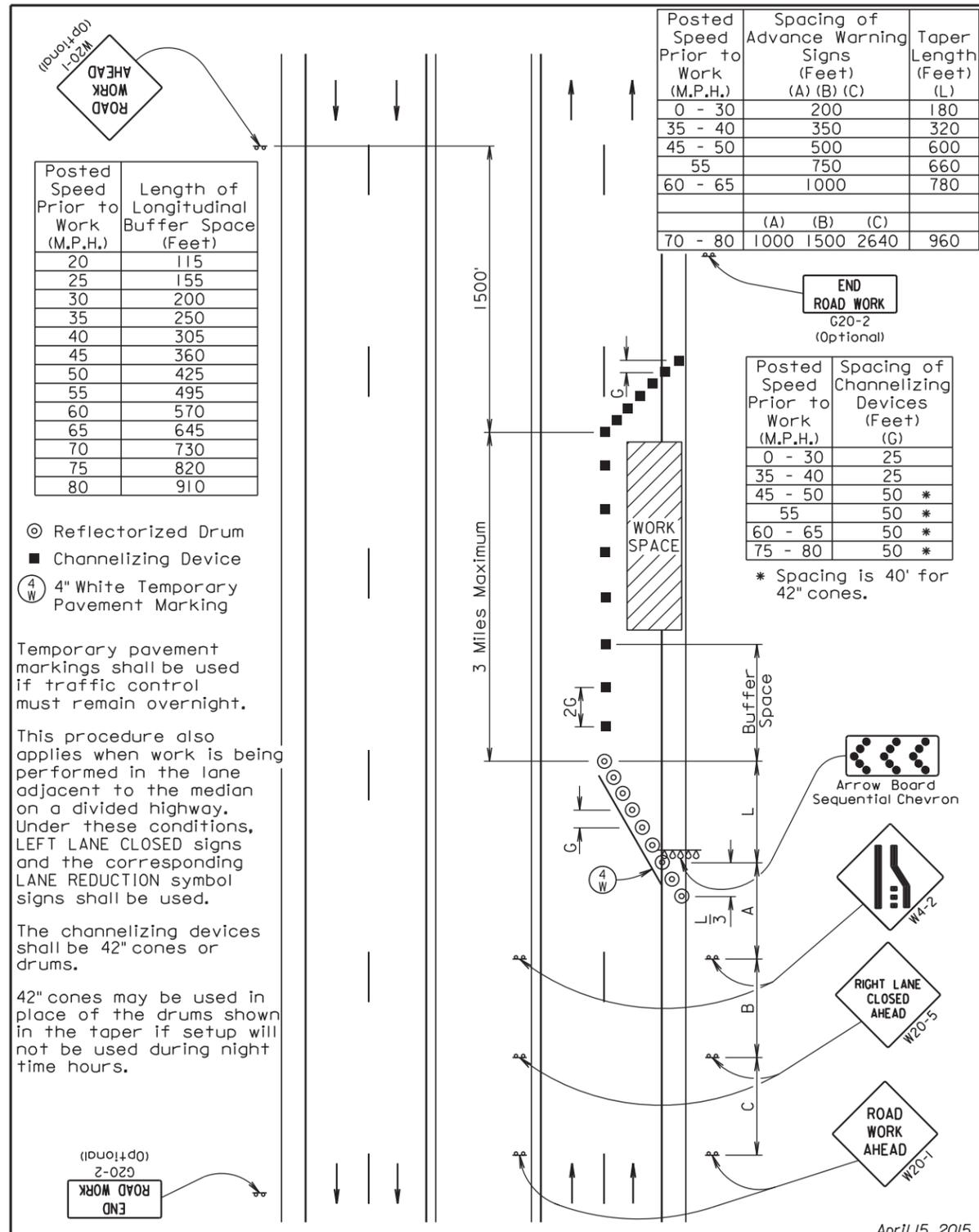
PLOTTED FROM - IRSE12114

PLOT NAME - 4

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Plotting Date: 10/15/2015

PLOT SCALE - 1:140



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet)			Taper Length (Feet) (L)
	(A)	(B)	(C)	
0 - 30	200			180
35 - 40	350			320
45 - 50	500			600
55	750			660
60 - 65	1000			780
		(A)	(B)	(C)
70 - 80	1000	1500	2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	
	(A)	(B)
0 - 30	25	
35 - 40	25	
45 - 50	50 *	
55	50 *	
60 - 65	50 *	
75 - 80	50 *	

* Spacing is 40' for 42" cones.

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

- ⊙ ReflectORIZED Drum
- Channelizing Device
- ④ 4" White Temporary Pavement Marking

Temporary pavement markings shall be used if traffic control must remain overnight.

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs shall be used.

The channelizing devices shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

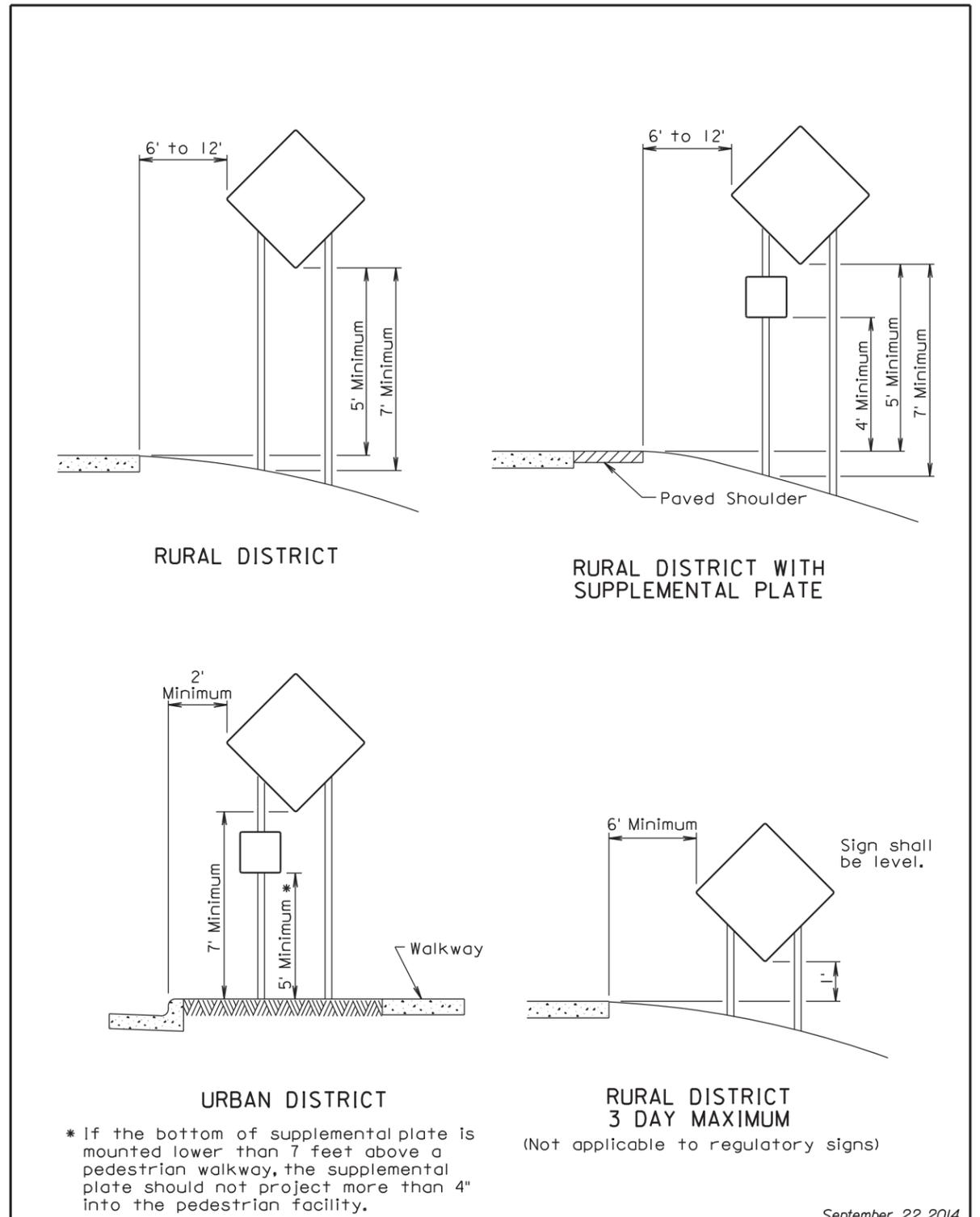
April 15, 2015

SDOT GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER Published Date: 4th Qtr. 2015	PLATE NUMBER 634.64
	Sheet 1 of 1

PLOT NAME - 4

FILE - ... \PRJ\INNOV4\XTC-DESIGN\MAP.DGN

PLOTTED FROM - IRSE12114



* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

SDOT CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing) Published Date: 4th Qtr. 2015	PLATE NUMBER 634.85
	Sheet 1 of 1

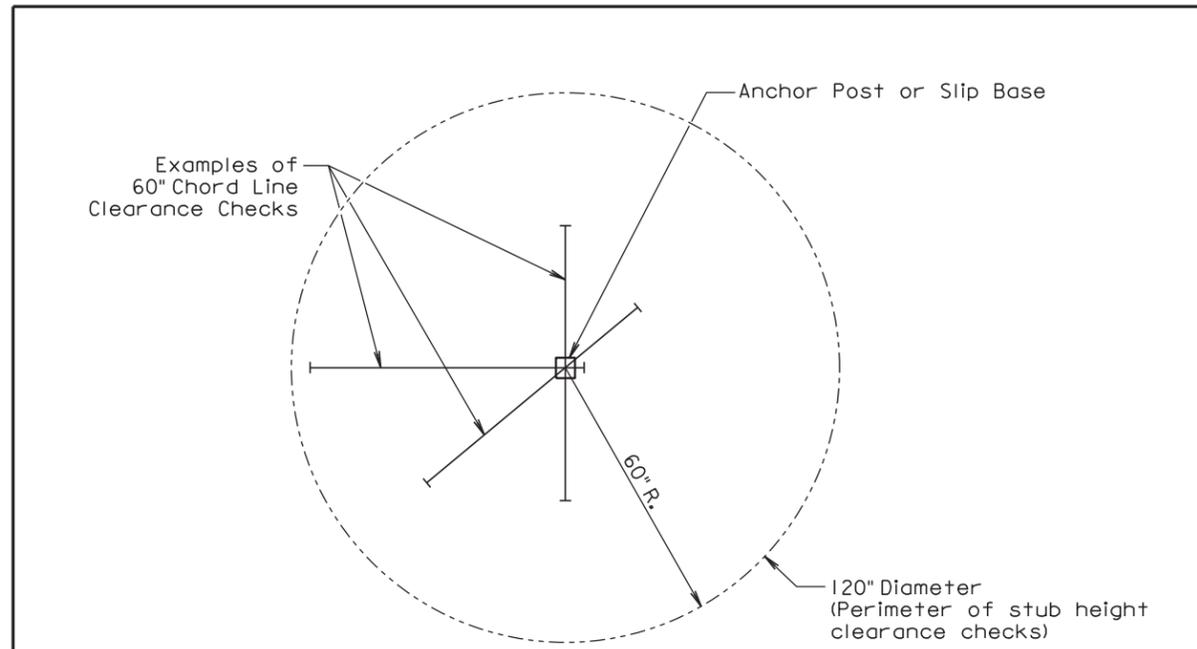
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	17	76

Plotting Date: 10/15/2015

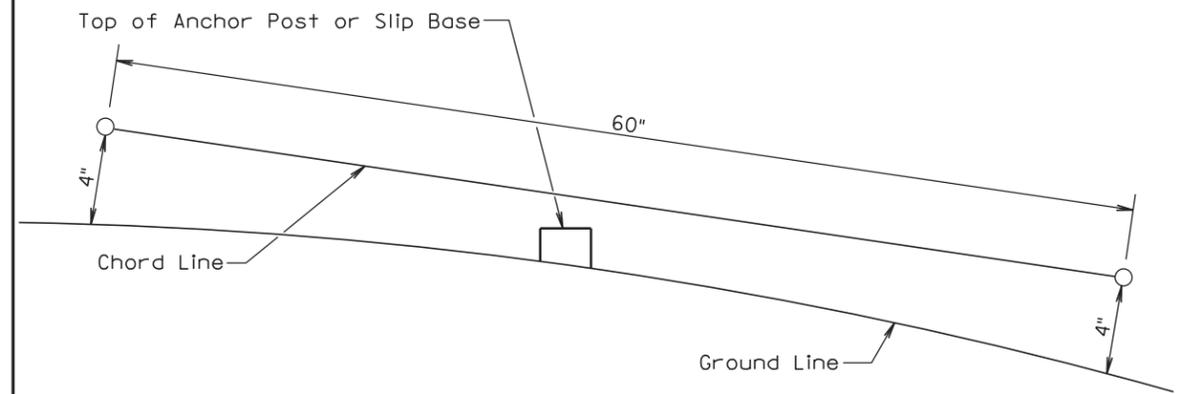
PLOT SCALE - 1:140

PLOT NAME - 4

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PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 4th Qtr. 2015	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	365.7	SqYd
410E2600	Membrane Sealant Expansion Joint	199.6	Ft
460E0150	Concrete Approach Slab for Bridge	313.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	80.4	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.8	CuFt
480E0504	No 4 Rebar Splice	38	Each
480E0505	No 5 Rebar Splice	48	Each
480E0506	No 6 Rebar Splice	60	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1470.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1470.0	SqYd
491E0120	Bridge Deck Grinding	1470.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope protection, Crushed Aggregate	1161.0	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 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.
- Replace approach slabs and sleeper slabs to the correct grade for the first phase of construction.
- Replace sleeper slab joints with approved membrane 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 Polymer Bridge Deck 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 7 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.
- 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.
- The type of vibratory screed shall be approved by the Engineer.
- All mild reinforcing steel shall conform to ASTM A615, Grade 60.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid items Concrete Approach Slab for Bridge, Concrete Approach Sleeper Slab for Bridge and Concrete Patching Material, Bridge Deck.
- The Type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract items Concrete Approach Sleeper Slab for Bridge, Concrete Approach Slab for Bridge and Concrete Patching Material, Bridge Deck 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, shall be disposed of by the Contractor at an approved site 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 276' - 8¹⁵/₁₆" CONT. COMP GIRDER BRIDGE

STR. NO. 50-218-197
SEPTEMBER 2015

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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	20	76

APPROACH SLABS

- Excavation for placement of new approach slabs and sleeper slabs shall be done with minimal disturbance to the underlying material.
- Those areas with predominately 3/8" diameter or larger in-place aggregate shall be covered with Type B Drainage fabric prior to placement of the compacted base course as determined by the engineer. The area for approach slab placement shall then be 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.

BRIDGE BERM REPAIR

- Reconstruct the berms to at least one foot above the bottom of the abutment backwall seat and fill in erosion channels on the berm slope. The berm slope will be benched into stable embankment during reshaping and reconstruction. The soil shall be placed in horizontal lifts perpendicular to the centerline of the structure. Shape the fill in front of the wing walls to divert runoff from the inslopes away from the face of the berm slope. Compaction of the reconstructed embankment will be governed by the Ordinary Compaction Method.
- At the upper part of the berm slope clearance between the structure and berm will prohibit the use of compaction equipment. The soil in this area will be placed by a method approved by and compacted to the satisfaction of the Engineer.

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. Details for crushed aggregate slope protection are shown on Sheet No. 9 of 18
- 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 the Specifications and AASHTO M81, AASHTO M140 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 dimension and slopes shown on Sheet 9 of 18.
- 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.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The Two Coat Bridge Deck Polymer Chip Seal shall be applied in accordance with the Construction Specifications

NOTES (CONTINUED)

FOR
276' - 8¹⁵/₁₆" CONT. COMP. GIRDER BRIDGE

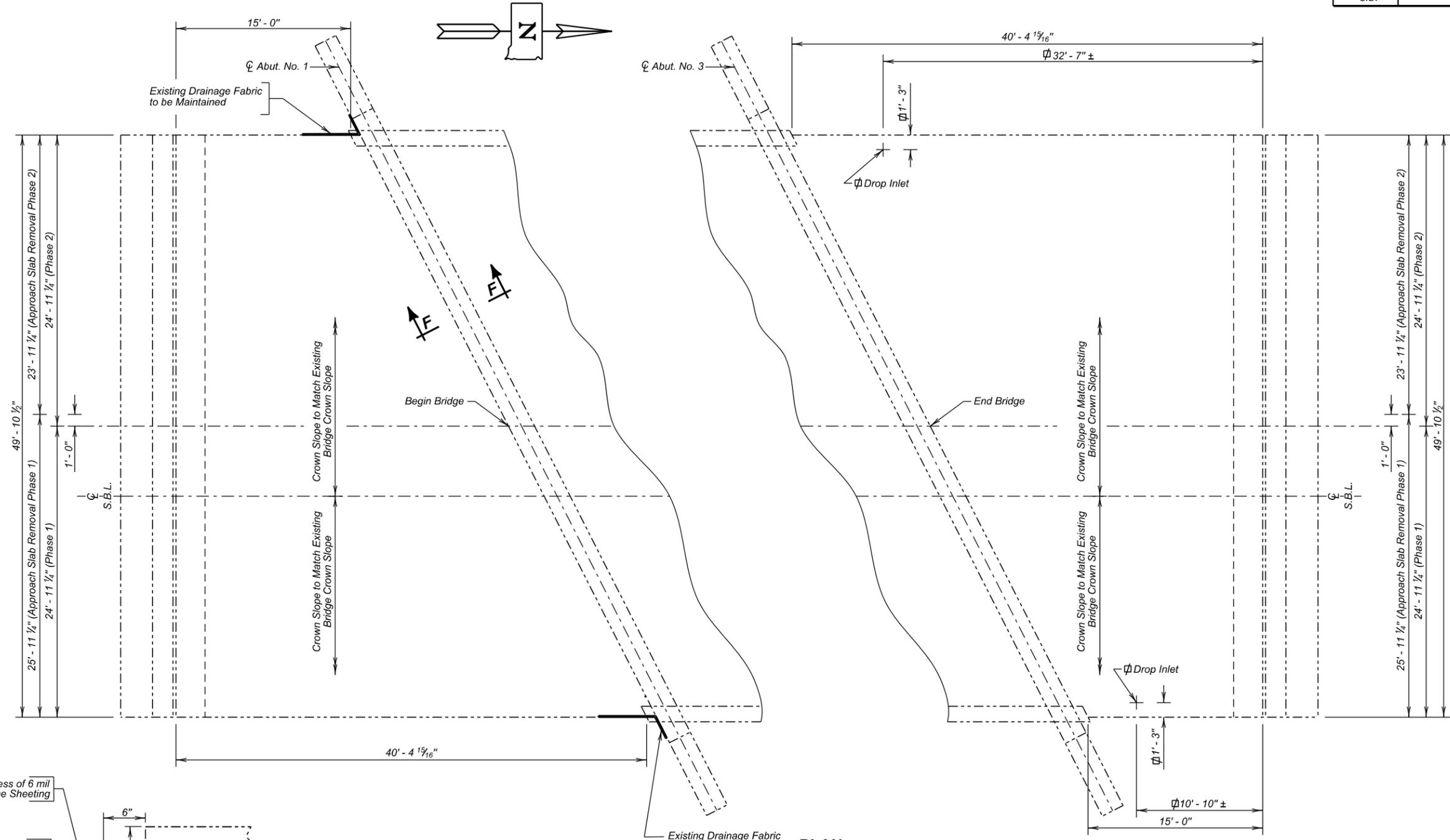
STR. NO. 50-218-197

SEPTEMBER 2015

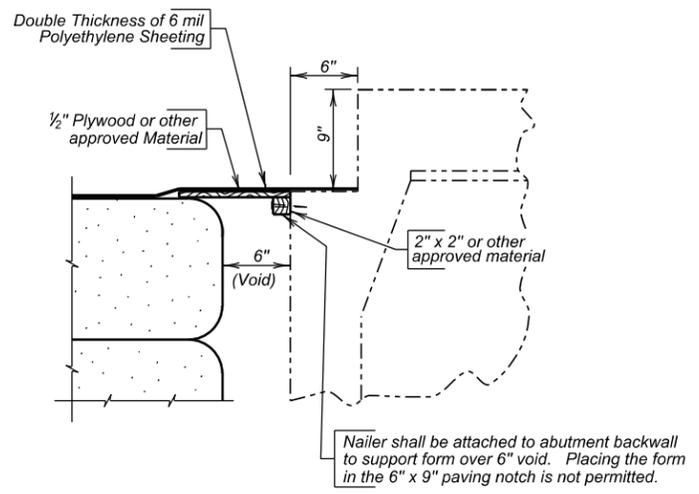
3 OF 18

DESIGNED BY MM	CK. DES. BY BWS	DRAFTED BY KR	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
MINN04VX	04VXRA03		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	21	76



PLAN



SECTION F - F
(South Abutment Only)

∅ The Drop Inlet will be placed as shown in North Approach Slab only. See Detail "W" on sheet 6 of 18.

**SOUTHBOUND LANES
APPROACH SLAB LAYOUT**
FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE
48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-218-197

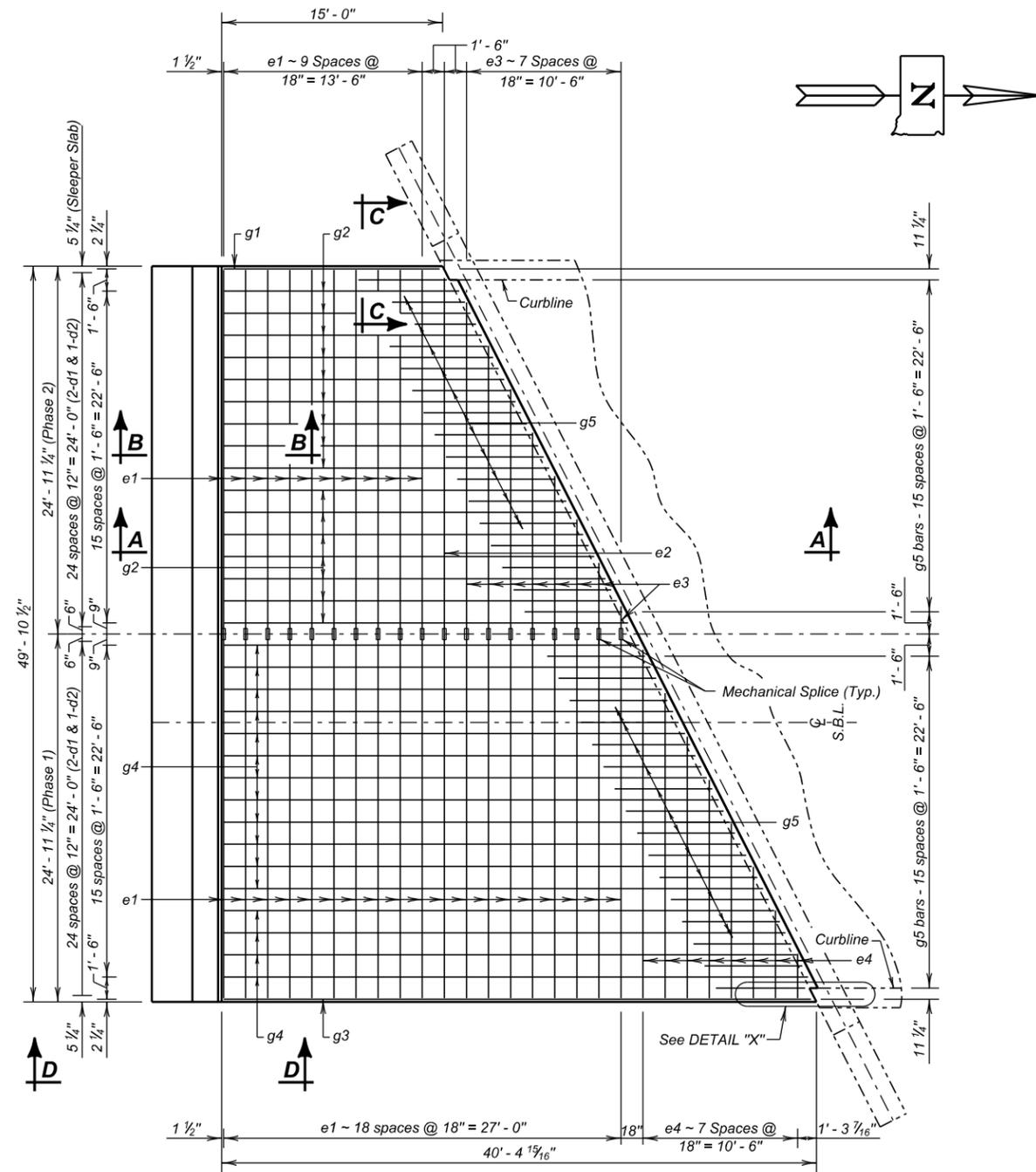
27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHABA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2015

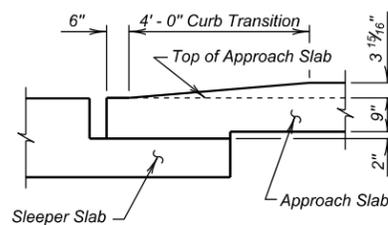
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	22	76

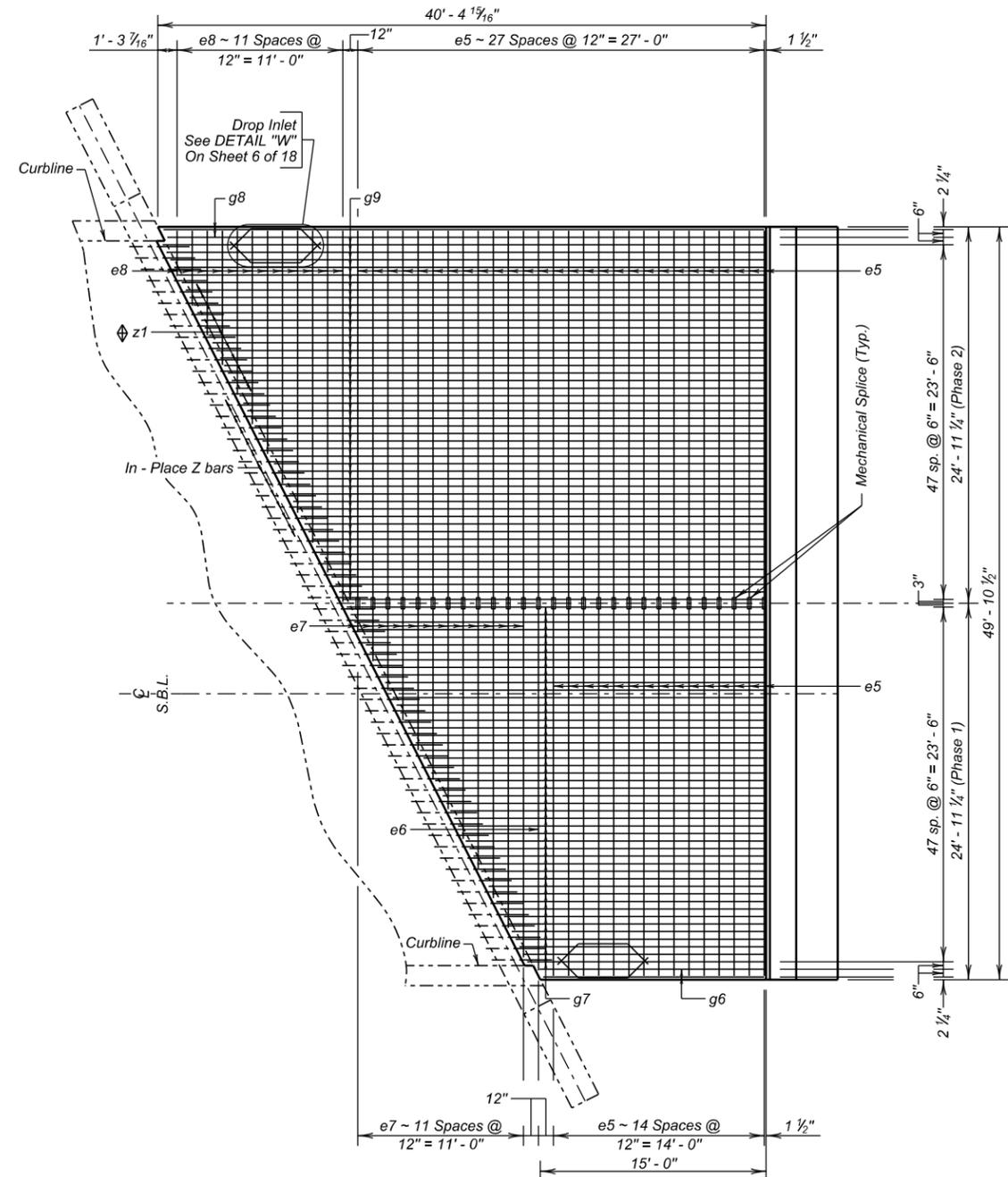
z1 bars to be mechanically spliced to the existing z bars in abutment using existing rebar splice



PLAN
(Top Steel Shown)
(Abutment No. 3 similar by rotation)



VIEW D - D



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

**SOUTHBOUND LANES
APPROACH SLAB DETAILS
FOR**

276' - 8 15/16" CONT. COMP. GIRDER BRIDGE

48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-218-197

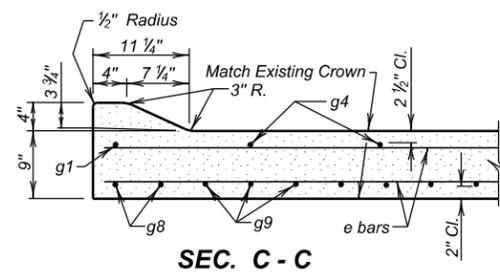
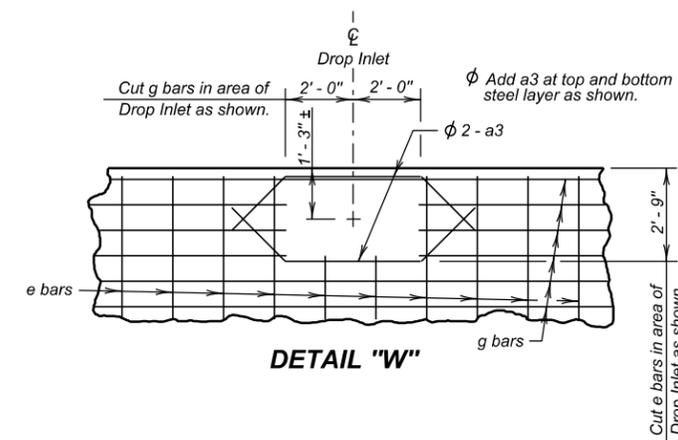
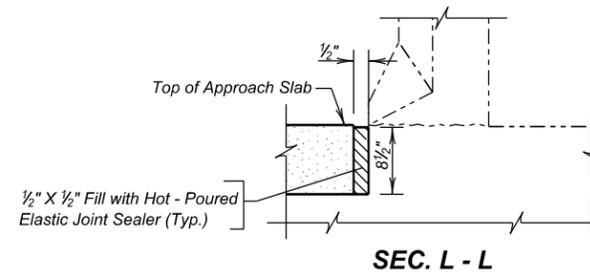
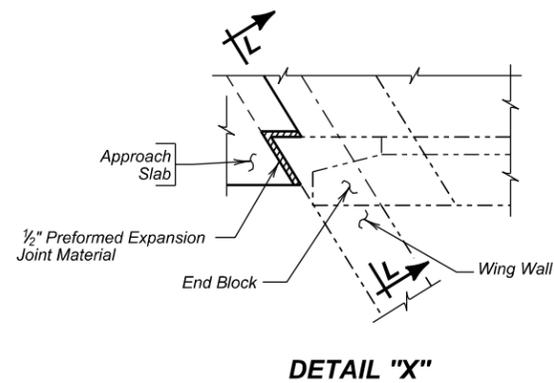
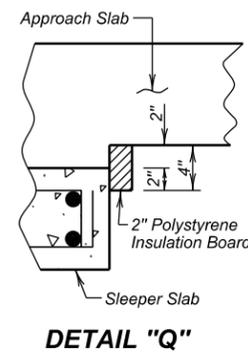
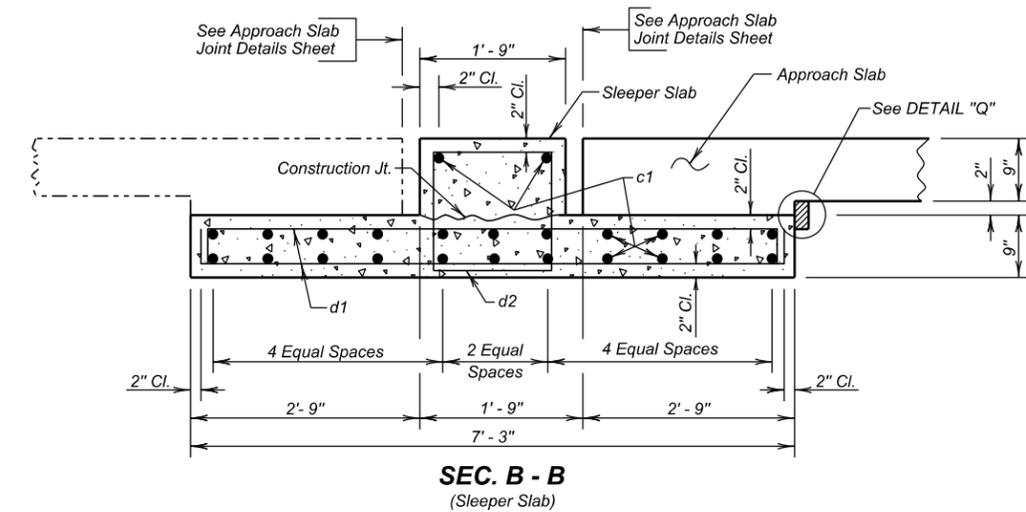
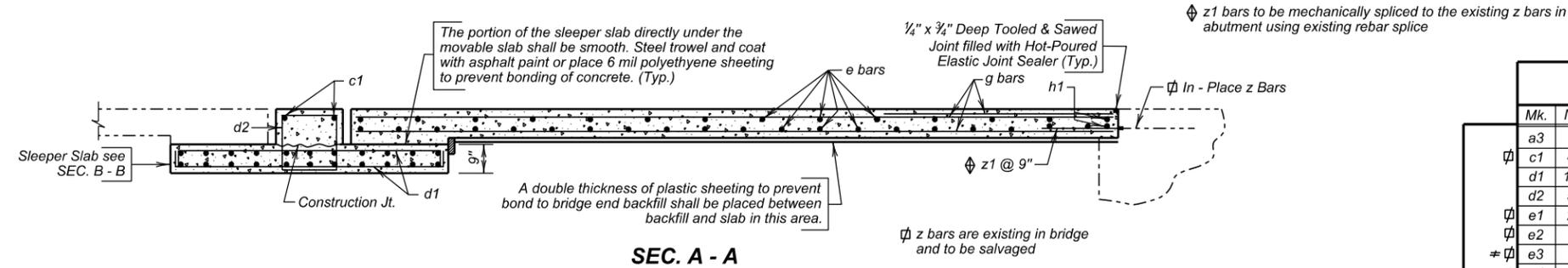
27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2015

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DESIGNED BY MM MINNO4VX	CK. DES. BY BWS 04VXRA05	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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REINFORCING SCHEDULE

(For Two Approach and Sleeper Slabs)

Mk.	No.	Size	Length	Type	Bending Details	
					Phase 1	Phase 2
a3	4	4	7'-4"	19A		
c1	48	5	24'-8"	Str.		
d1	100	4	7'-9"	2		
d2	50	4	6'-3"	T2	e4 3'-0" 23'-7"	
e1	29	4	24'-8"	Str.	e3 1'-10 1/2" 22'-5 1/2"	e3 e4
e2	1	4	24'-2"	Str.		
e3	4	4	24'-4"	Str.		
e4	4	4	26'-7"	Str.		
e5	43	6	24'-8"	Str.	e3 10'-8 1/2" 13'-7 1/2"	Cut 4 Cut 4
e6	1	6	24'-4"	Str.	e4 11'-10" 14'-9"	
e7	6	6	25'-4"	Str.		
e8	6	6	27'-7"	Str.		
g1	1	4	14'-8"	Str.		
g2	8	4	43'-6"	Str.		
g3	1	4	39'-11"	Str.	g4 28'-3" 39'-8"	
g4	8	4	67'-11"	Str.	g2 16'-0" 27'-6"	
g5	32	4	6'-0"	Str.		
g6	2	8	14'-8"	Str.		
g7	24	8	43'-6"	Str.		
g8	2	8	39'-5"	Str.		
g9	24	8	67'-11"	Str.	g2 21'-4" 22'-2"	Cut 8 Cut 8
h1	4	6	26'-9"	Str.	g4 33'-7" 34'-4"	
z1	64	7	2'-0"	Str.		
a3	4	4	7'-4"	19A		
c1	48	5	24'-8"	Str.		
d1	100	4	7'-9"	2		
d2	50	4	6'-3"	T2	g9 27'-11 1/2" 39'-11 1/2"	
e1	29	4	24'-8"	Str.	g7 15'-9" 27'-9"	
e2	1	4	24'-2"	Str.		
e3	4	4	24'-4"	Str.		
e4	4	4	26'-7"	Str.		
e5	43	6	24'-8"	Str.		
e6	1	6	24'-4"	Str.	g7 21'-7 1/2" 21'-10 1/2"	Cut 24 Cut 24
e7	6	6	25'-4"	Str.	g9 33'-10" 34'-1"	
e8	6	6	27'-7"	Str.		
g1	1	4	14'-8"	Str.		
g2	8	4	43'-6"	Str.		
g3	1	4	39'-11"	Str.	e8 3'-0" 24'-7"	
g4	8	4	67'-11"	Str.	e7 1'-10 1/2" 23'-5 1/2"	
g5	32	4	6'-0"	Str.		
g6	2	8	14'-8"	Str.		
g7	24	8	43'-6"	Str.		
g8	2	8	39'-5"	Str.		
g9	24	8	67'-11"	Str.	e7 11'-8" 13'-8"	Cut 6 Cut 6
h1	4	6	26'-9"	Str.	e8 12'-10" 14'-9"	
z1	64	7	2'-0"	Str.		

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

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Concrete Approach Slab for Bridge	Sq. Yd.	156.5	156.5
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	40.2	40.2
Remove Concrete Approach	Sq. Yd.	190.2	175.5
No. 4 Rebar Splice	Each	38	-
No. 5 Rebar Splice	Each	48	-
No. 6 Rebar Splice	Each	60	-

	Phase 1	Phase 2
1. Concrete in Approach Slabs	39.1 Cu. Yd.	39.1 Cu. Yd.
2. Epoxy Rebar in Approach Slabs	11368 Lb.	11368 Lb.
3. Concrete in Sleeper Slabs	13.0 Cu. Yd.	13.0 Cu. Yd.
4. Epoxy Rebar in Sleeper Slabs	1961 Lb.	1961 Lb.
5. 2" Polystyrene Insulation Board	17 Sq. Ft.	17 Sq. Ft.

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

SOUTHBOUND LANES APPROACH SLAB DETAILS (CONTINUED) FOR

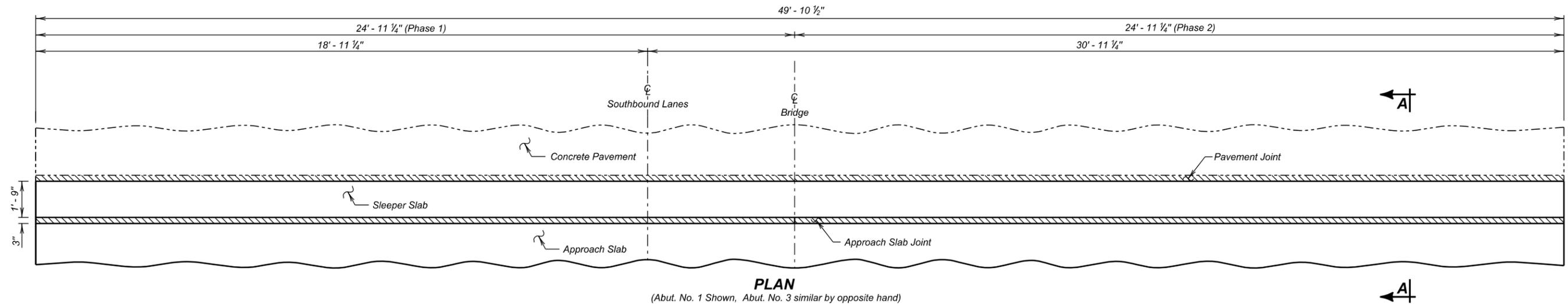
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE

48' - 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STR. NO. 50-218-197

27° R.H.F. SKEW
 SEC. 10-T101N-R49W
 IM 2292(97)7

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION

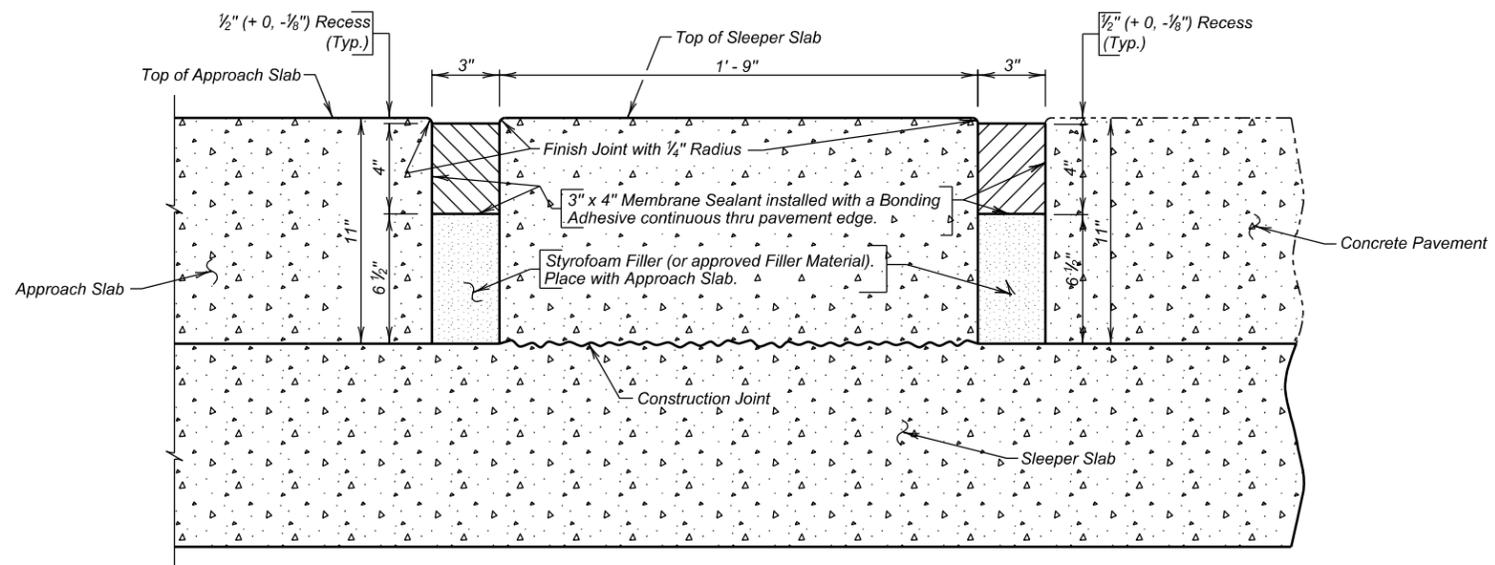
SEPTEMBER 2015



PLAN
(Abut. No. 1 Shown, Abut. No. 3 similar by opposite hand)

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. A - A

**SOUTHBOUND LANES
APPROACH SLAB JOINT DETAILS
FOR**

276' - 8 15/16" CONT. COMP. GIRDER BRIDGE

48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-218-197

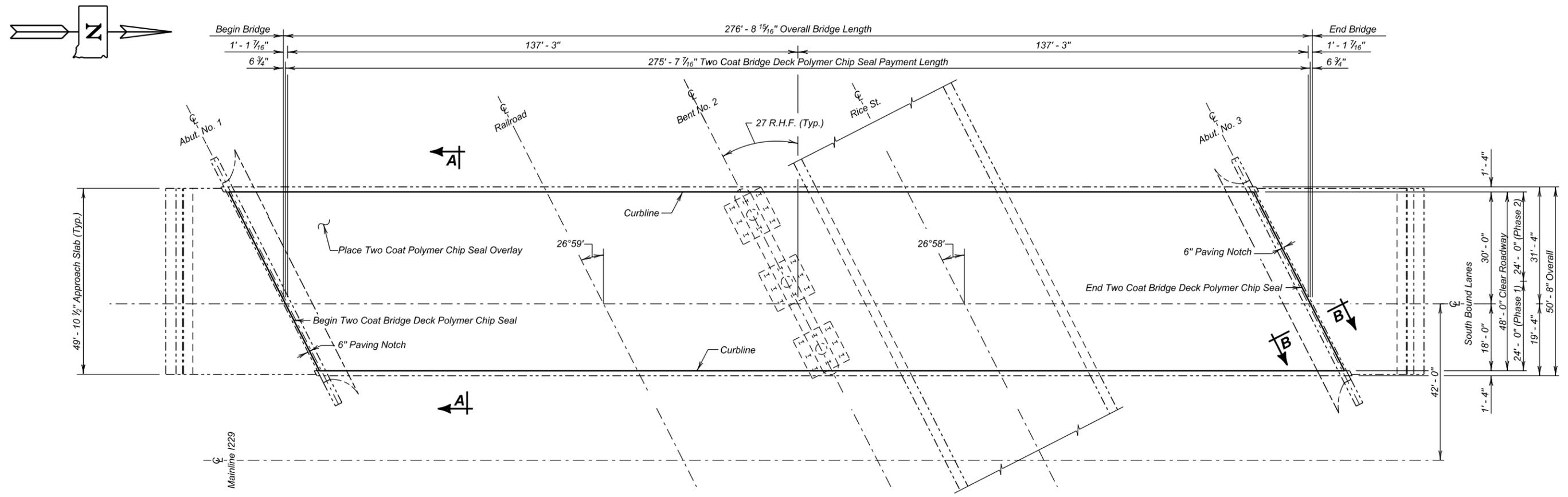
27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2015

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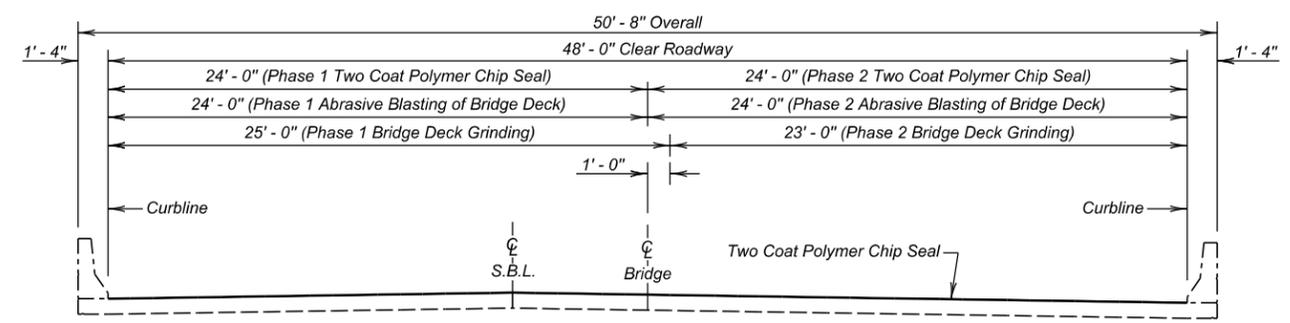
ESTIMATED QUANTITIES			
(For Two Approach Slabs)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Membrane Sealant Expansion Joint	Ft.	99.8	99.8



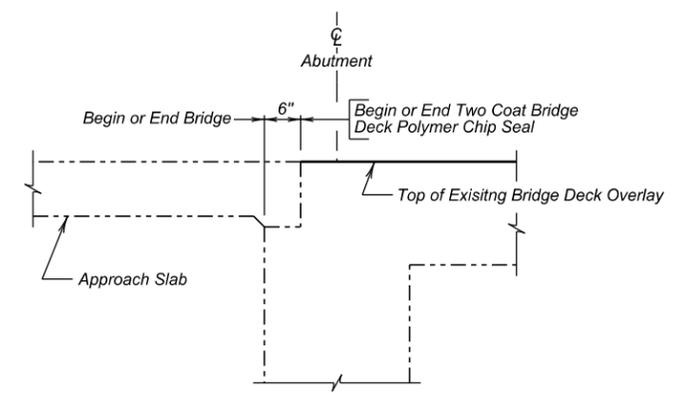
PLAN

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
* Concrete Patching Material, Bridge Deck	Cu. Ft.	12.4	12.4
Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	735.0	735.0
Abrasive Blasting of Bridge Deck	Sq. Yd.	735.0	735.0
Bridge Deck Grinding	Sq. Yd.	765.6	704.4
* 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.



SEC. A - A

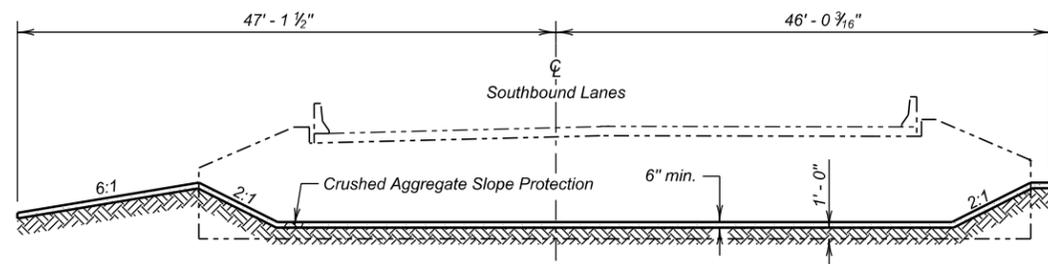
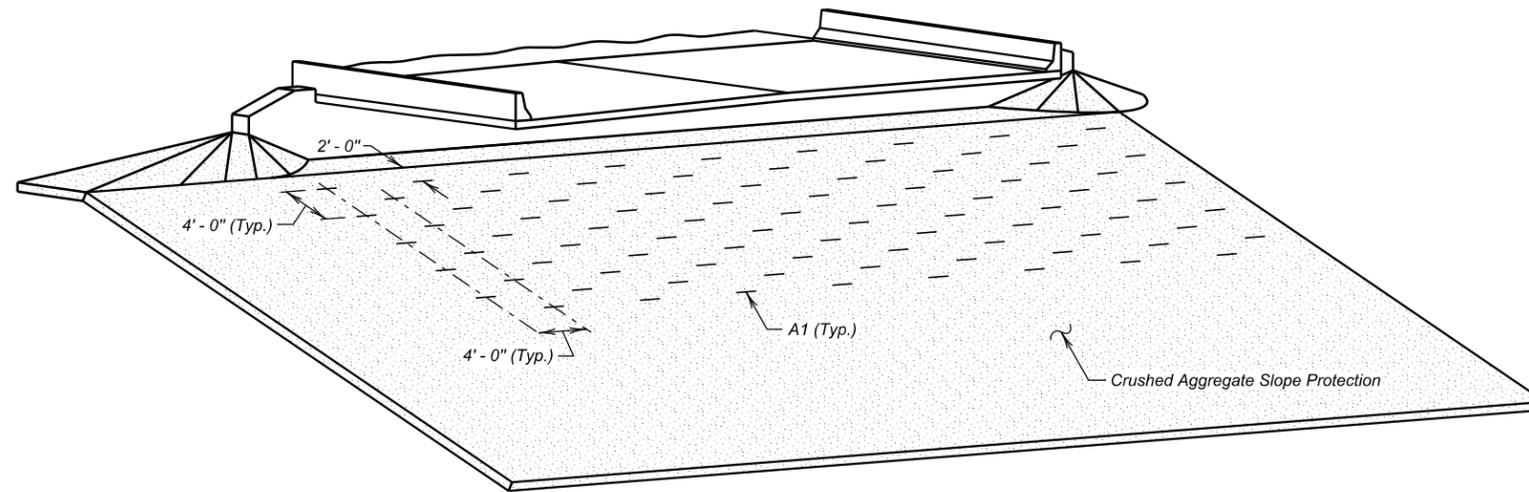
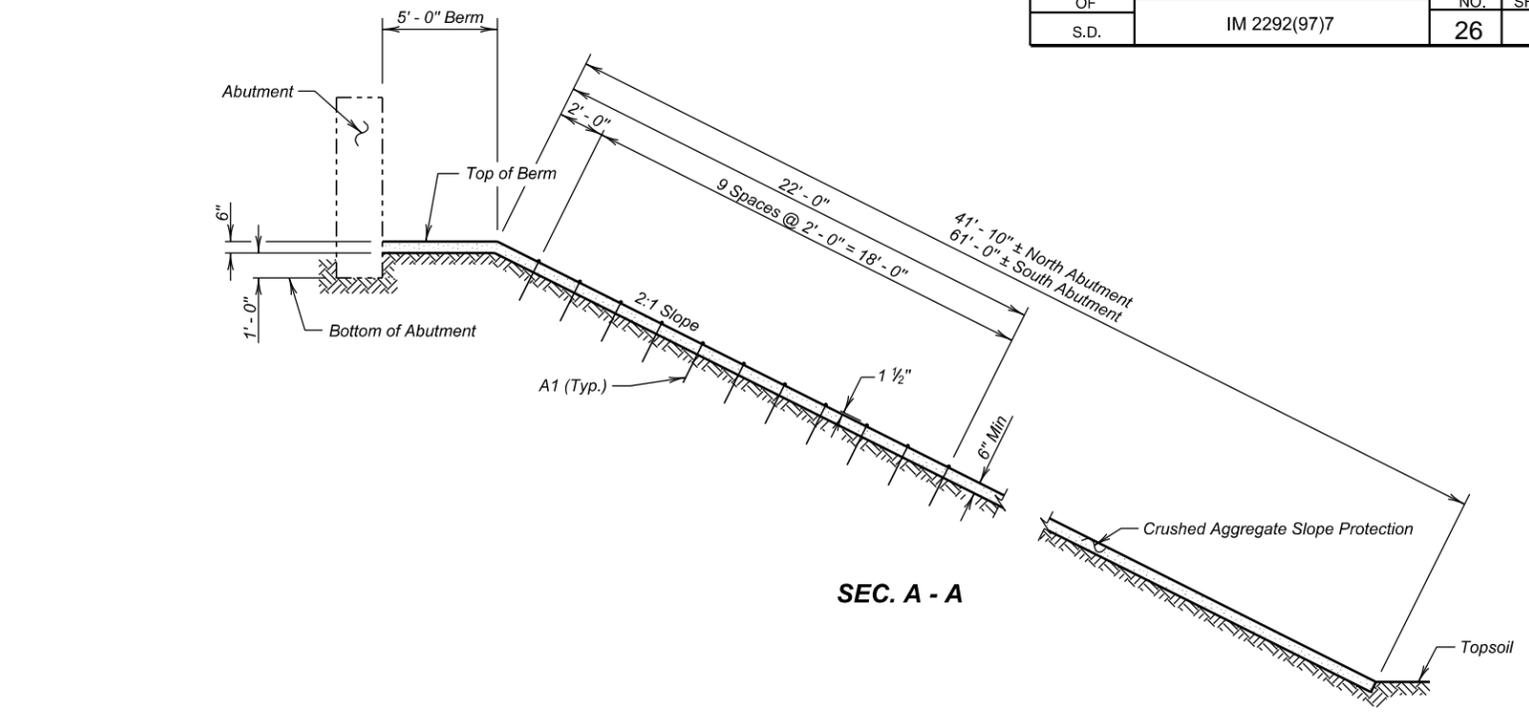
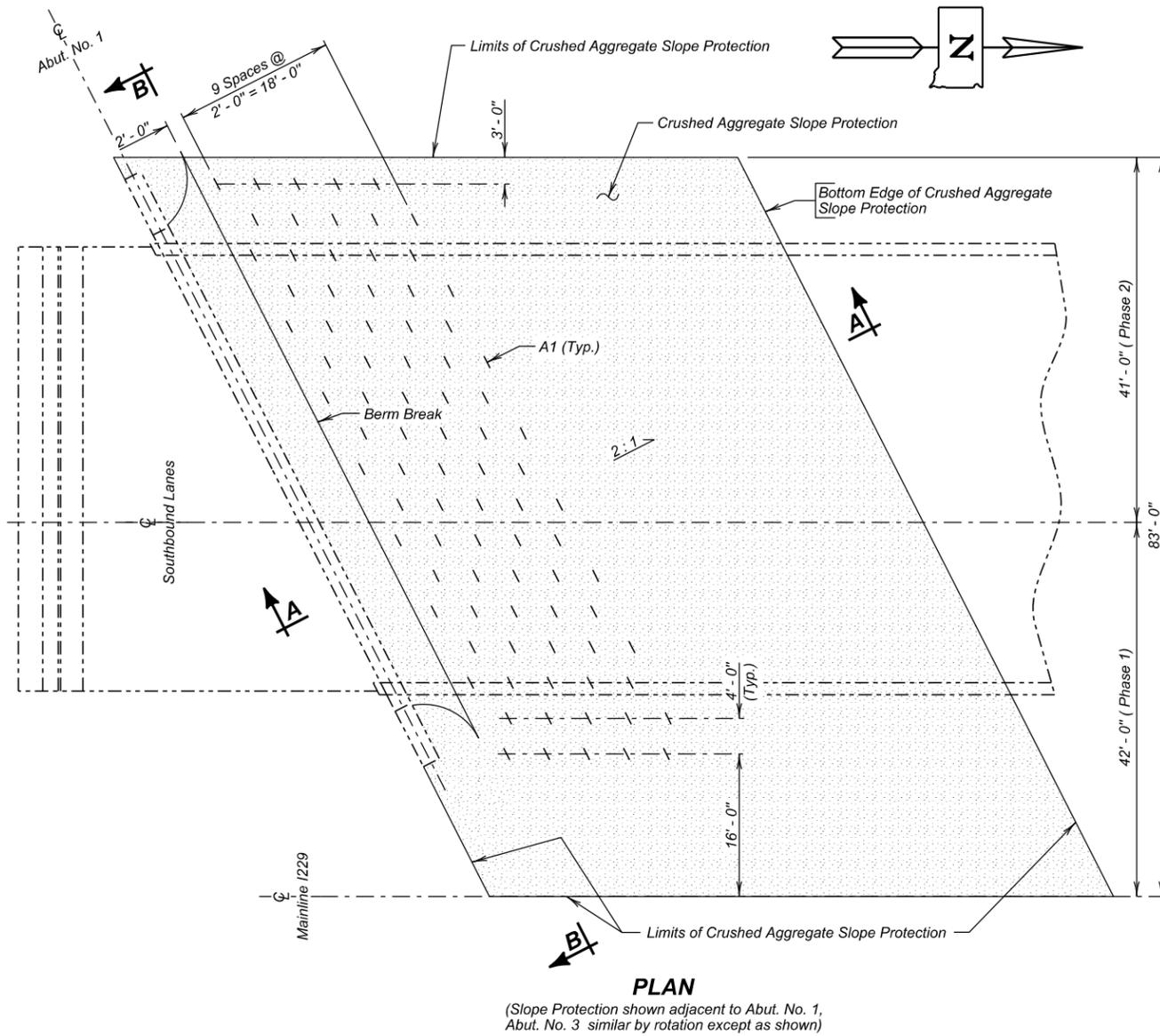


SEC. B - B

**SOUTHBOUND LANES
POLYMER CHIP SEAL LAYOUT**
FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE
48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-218-197

27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2015



REINFORCING SCHEDULE				
(For Two Abutments)				
Mk.	No.	Size	Length	Type
A1	170	6	5'-6"	17

Bending Details

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			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	603	558

SOUTHBOUND LANES SLOPE PROTECTION DETAILS
 FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE
 48' - 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STR. NO. 50-218-197

27° R.H.F. SKEW
 SEC. 10-T101N-R49W
 IM 2292(97)7

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2015

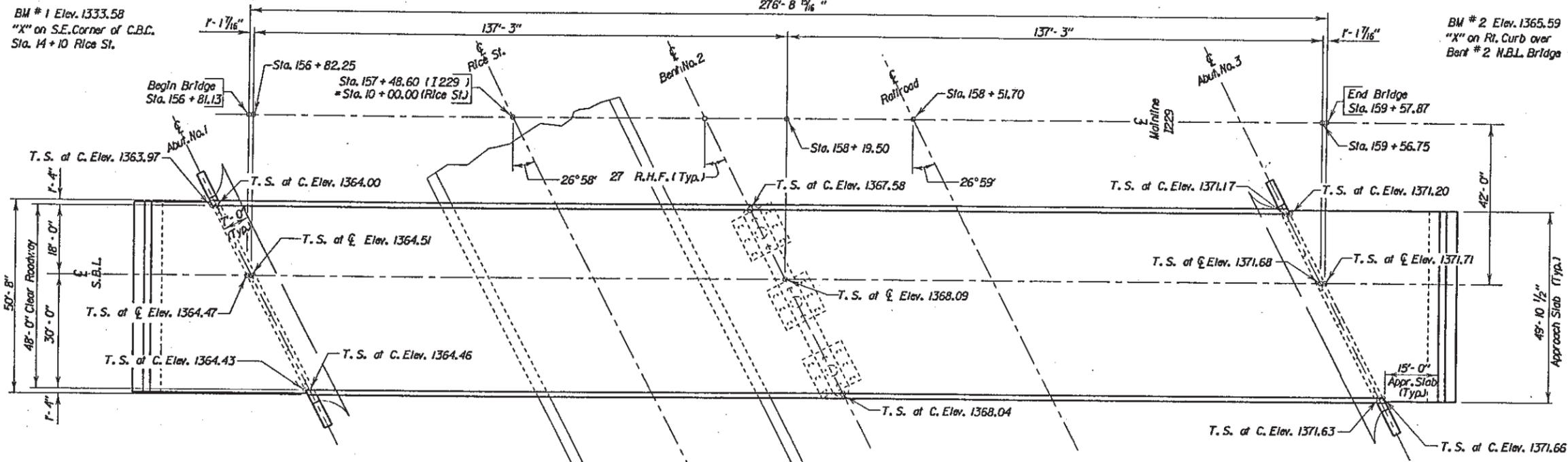
DESIGNED BY: MM
 CK. DES. BY: BWS
 DRAFTED BY: KR

Kevin N. Goeden
 BRIDGE ENGINEER

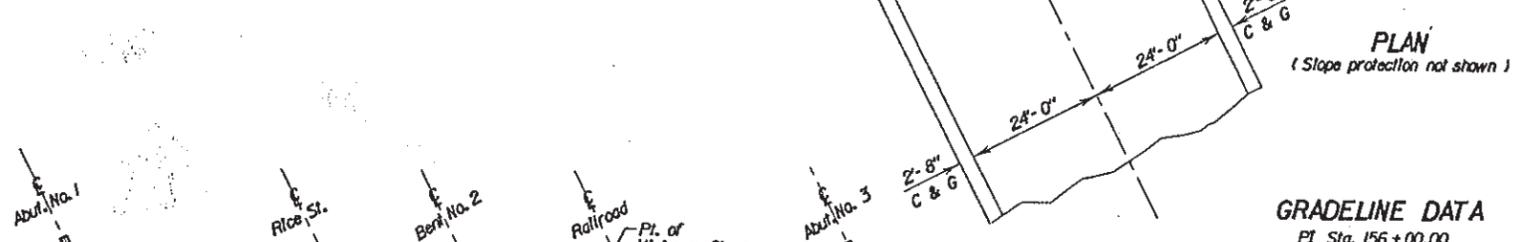
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	27	76

INDEX OF BRIDGE SHEETS-

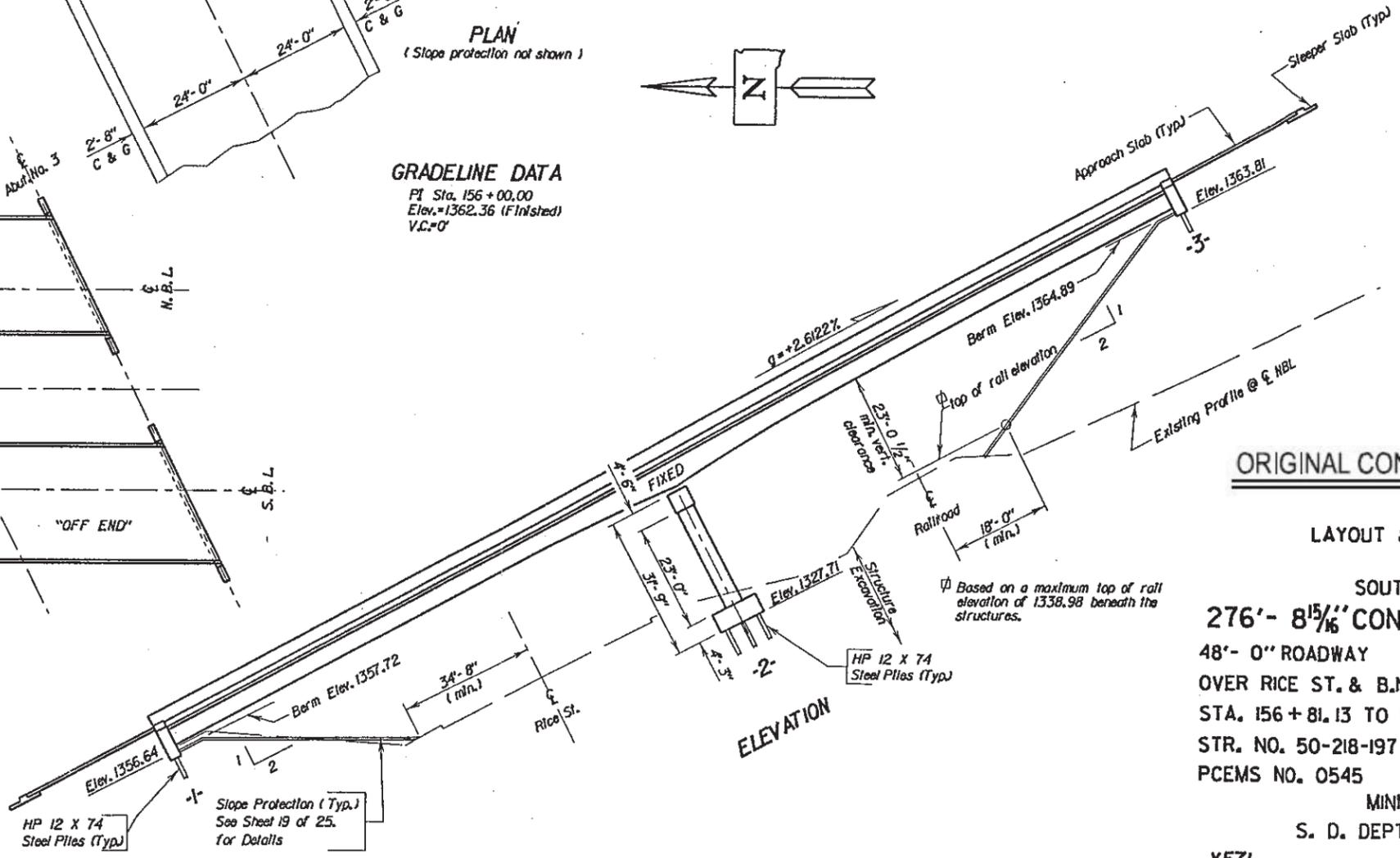
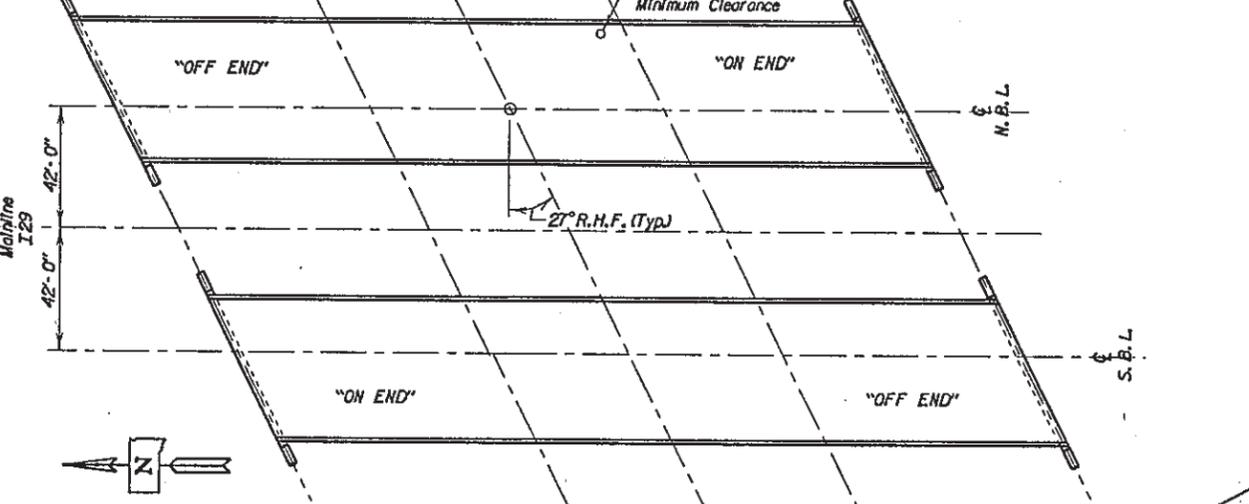
- Sheet No. 1 - Layout & General Drawing
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Subsurface Investigation & Piling Layout
- Sheet No. 6 - Abutment No. 1 Details
- Sheet No. 7 - Abutment No. 3 Details
- Sheet No. 8 - Bent Details
- Sheet No. 9 - Superstructure Details
- Sheet No. 10 - End Block and Barrier Curb Details
- Sheet No. 11 - Diaphragm Details
- Sheet No. 12 - Girder Layout & Details
- Sheet No. 13 - Framing Diagram Data
- Sheet No. 14 - Slab Form Elevation & Erection Data
- Sheet No. 15 - Details of Bolted Field Splices & Bearings
- Sheet No. 16 - Details of Bridge End Backfill
- Sheet No. 17 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 18 - Approach Slab Joint Details
- Sheet No. 19 - Slope Protection Details
- Sheet No. 20 - Details of Standard Plates No. 302 and No. 308
- Sheet No. 21 - Details of 3 - Cable Guard Rail Connection & 5 - Ball Insert Assembly
- Sheet No. 22-25 - Original Construction Plans



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



GRADELINE DATA
PI Sta. 156+00.00
Elev. = 1362.36 (Finished)
V.C. = 0'



ORIGINAL CONSTRUCTION PLANS

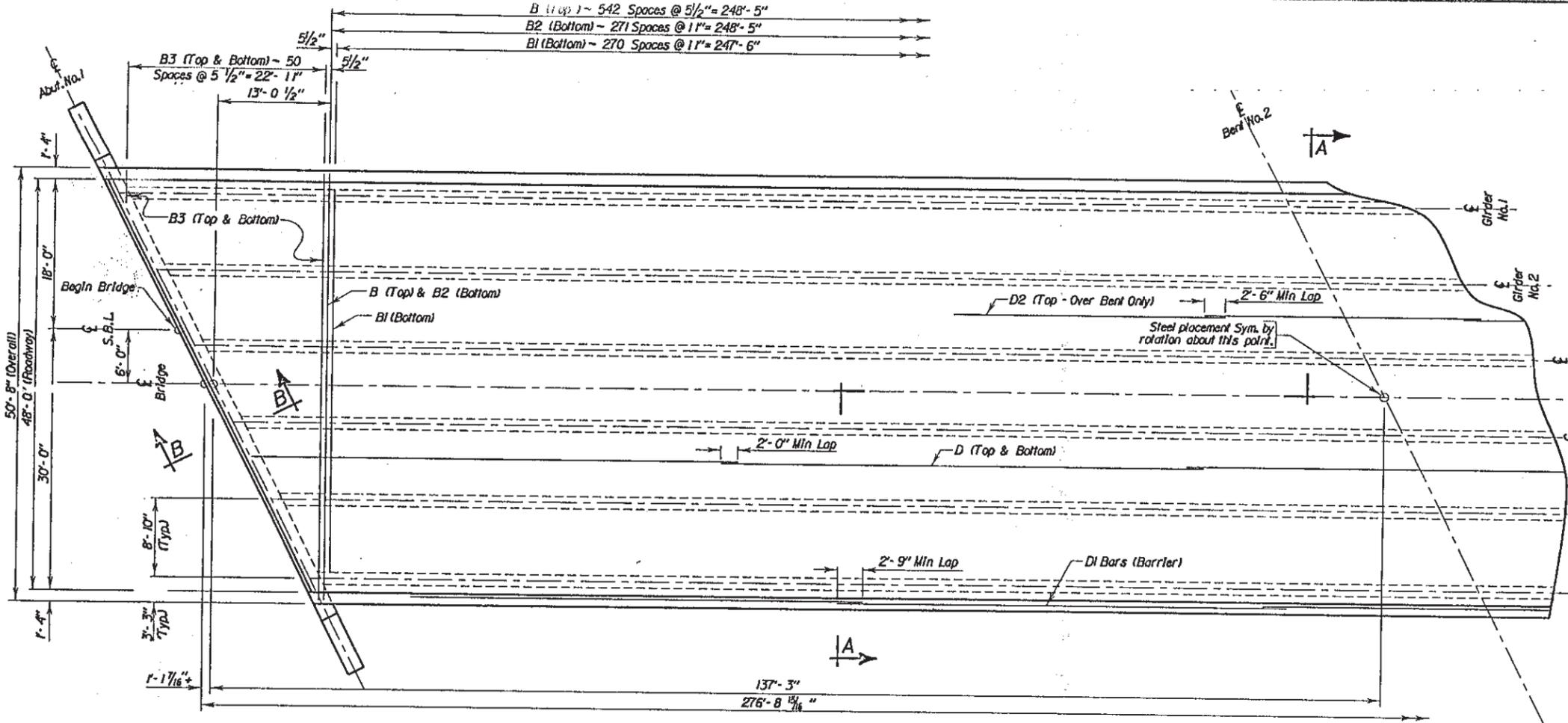
LAYOUT & GENERAL DRAWING FOR
SOUTHBOUND LANES
276'- 8⁵/₁₆' CONT. COMP. GRDR. BRIDGE
48'- 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-218-197
PCEMS NO. 0545

SEC. 10-TION-R49W
27° R. H. F. SKEW
IM 229-2(43)7
HS25-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

-X571- JUNE 1993 10 OF 18

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/DL	SR	SJ/DL	<i>Clyde H. Jundt</i>
MINN0545	0545R001		BRIDGE ENGINEER

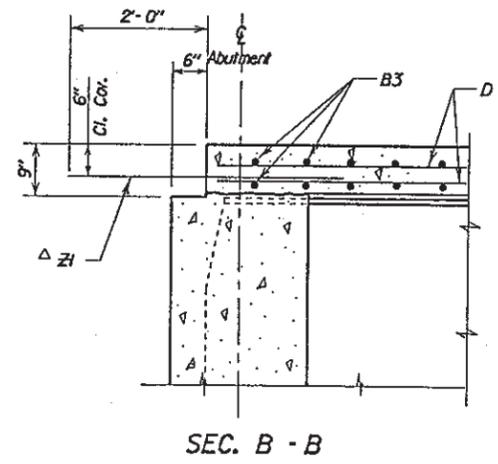
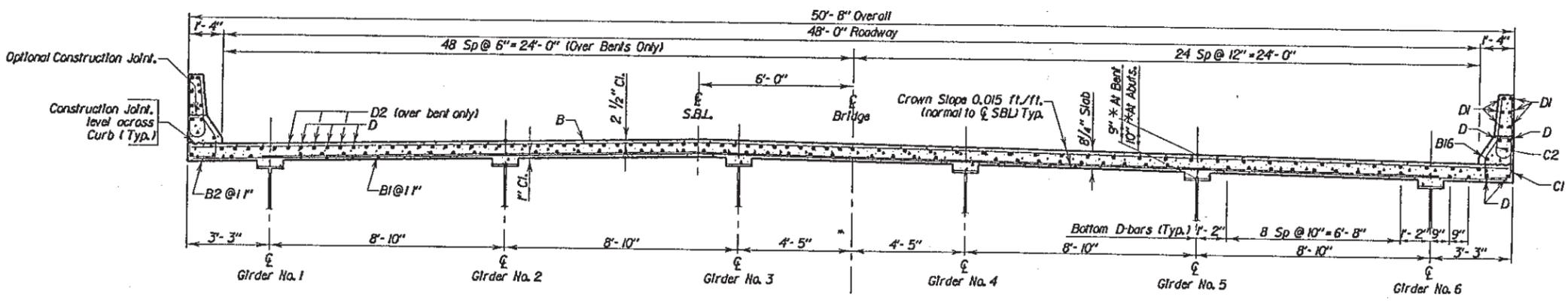


REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
B	543	5	50'-4"	Str.
B1	271	5	45'-2"	Str.
B2	272	4	50'-4"	Str.
B3	102	5	54'-9"	Str.
B15	12	5	14'-6"	Str.
B16	10	4	55'-7"	Str.
B17	8	4	8'-6"	19B
B18	12	8	4'-3"	19B
B19	12	5	2'-4"	Str.
B20	12	6	3'-2"	17A
C1	536	5	5'-10"	T2A
C2	508	5	5'-1"	S11
C3	4	5	6'-4"	T1
C4	4	5	6'-5"	T1
C5	4	5	6'-7"	T1
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	6'-0"	T1A
C11	16	5	7'-1"	T1
C12	4	6	4'-9"	17
C13	4	5	5'-3"	17
D	530	5	56'-9"	Str.
D1	60	4	52'-9"	Str.
D2	144	6	32'-0"	Str.
Z1	106	7	4'-0"	Str.

Bending Details

NOTES:
 All reinforcing steel shall be epoxy coated.
 See sheet 17 of 25 for placement of Z1 bars.
 All dimensions are out to out of bars.
 See cutting diagram.



* Dimensions are at \bar{c} bearings; at other points along the girders this dimension shall be computed as shown on the Slab Form Elevation Sheet.

NOTE: All Barrier Curb Details Shown on sheet 10 of 25.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu.Yd.	410.6
Epoxy Coated Reinforcing Steel	Lb.	104798
Structural Steel	Lump Sum	Lump Sum
Bridge Paint	Lump Sum	Lump Sum
Special Surface Finish	Sq.Ft.	3764

For Informational purposes only, the estimated weight of the structural steel is 503789 pounds.

For Informational purposes only, the estimated area to be painted is 24000 Sq. Ft. for girders only.

ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS
 FOR
 SOUTHBOUND LANES
 276'- 8 15/16" CONT. COMP. GRDR. BRIDGE
 48'- 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STA. 156 + 81.13 TO 159 + 57.87
 STR. NO. 50-218-197

SEC. 10-T10IN-R49W
 27° R. H. F. SKEW
 IM 229-2(43)7
 HS25-44
 (& ALT.)

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 1993

08/25/01
 I-229*SB-AS-BUILTS*ICE_APPROACH*ice_sbapplsib.dgn

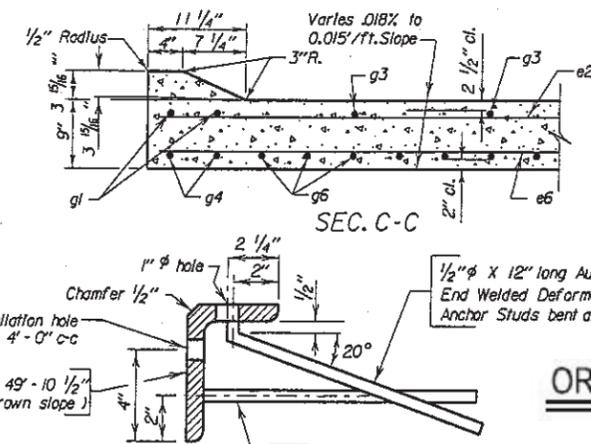
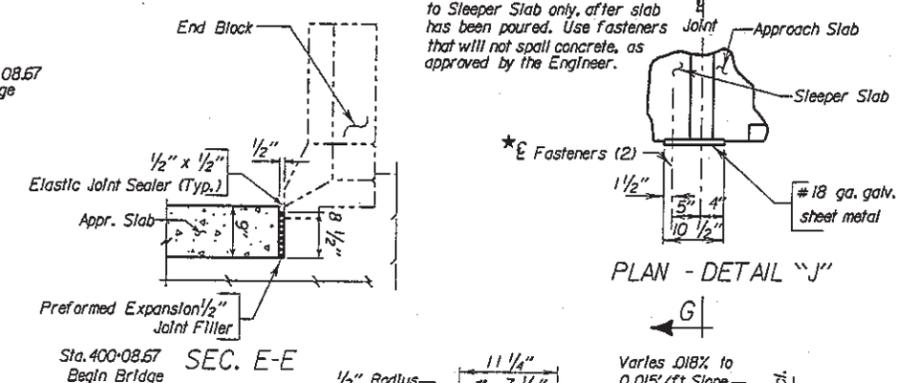
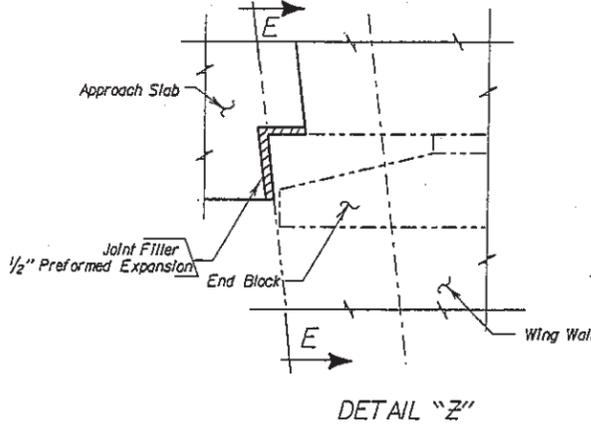
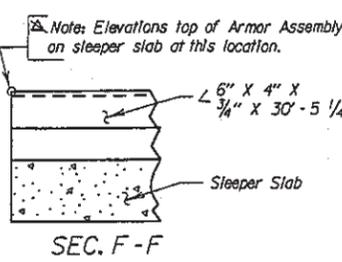
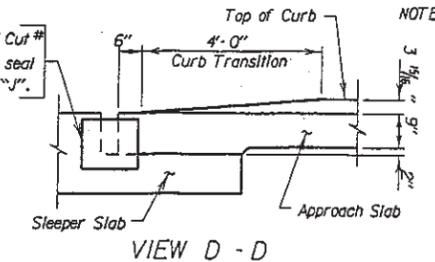
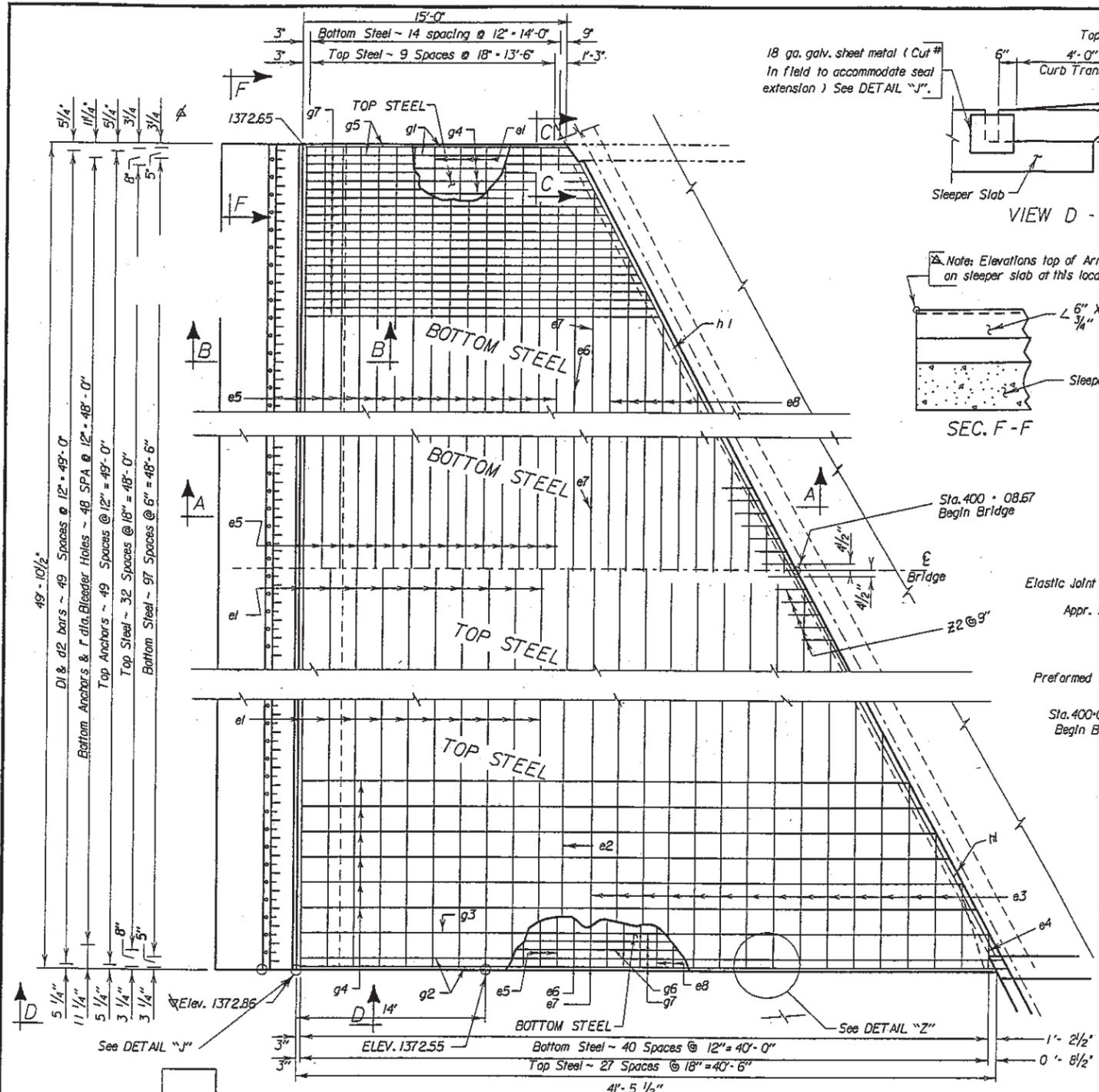
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 229(197)7	29	76

REINFORCING SCHEDULE

(For Approach Slab and One Sleeper Slab)

Mk.	No.	Size	Length	Type	Bending Details
Approach Slab					
e1	10	4	49'-6"	STR.	
e2	1	4	48'-10"	STR.	
e3	8	4	51'-6"	STR.	
e4	1	4	1'-10"	STR.	
e5	15	6	49'-6"	STR.	
e6	1	6	48'-7"	STR.	
e7	1	6	47'-11"	STR.	
e8	12	6	48'-10"	STR.	
Sleeper Slab					
g1	2	4	14'-9"	STR.	
g2	2	4	40'-7"	STR.	
g3	1	4	40'-3"	STR.	
g4	15	4	55'-11"	STR.	
g5	2	8	14'-9"	STR.	
g6	2	8	40'-7"	STR.	
g7	48	8	56'-8"	STR.	
h1	2	6	53'-9"	STR.	
h2	2	6	53'-9"	STR.	
c1	26	5	49'-7"	STR.	
c2	26	5	49'-7"	STR.	
d1	100	4	7'-9"	2	
d2	50	4	6'-3"	T2	

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



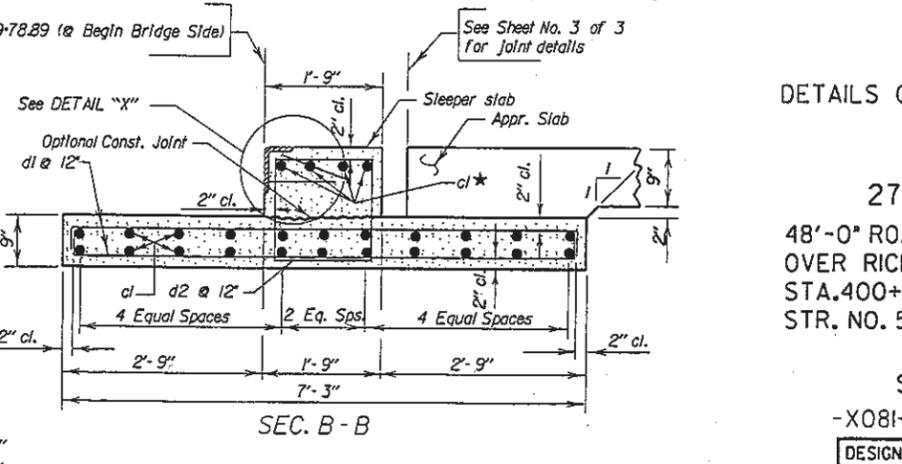
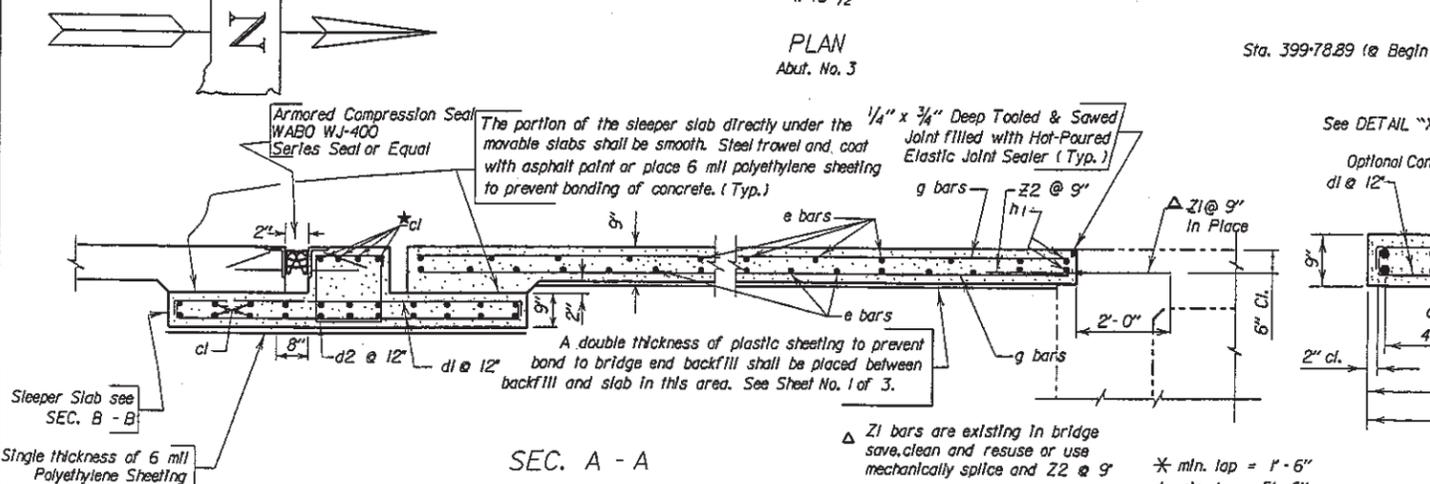
ESTIMATED QUANTITIES

(For Approach Slab and One Sleeper Slab)

ITEM	UNIT	QUANTITY
Conc. Approach Slab Adjacent to Bridge	Sq. Yd.	159.4
Bridge Approach Sleeper Slab	Sq. Yd.	40.2

- 39.9 Cu. Yds. Concrete in Approach Slabs.
- 1116.3 Lbs. Epoxy Coated Re-Steel in Approach Slabs.
- 13.0 Cu. Yds. Concrete in Sleeper Slabs.
- 207.1 Lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
- 200.7 Lbs. Structural Steel in Armor Assembly.

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



ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR SOUTH ABUTMENT (NO. 3) SOUTHBOUND LANES
 276'-8 15/16" CONT. COMP. GRDR. BRIDGE
 48'-0" ROADWAY 27°57' LHF SKEW
 OVER RICE ST. & B.N. RR SEC. 10-TION-R49W
 STA. 400+17.65 TO STA. 402+93.78 IM 229-2(50)2
 STR. NO. 50-218-197 HS25-44 (& ALT.)
 MINNEHAHA COUNTY
 S.D. DEPT. OF TRANSPORTATION
 -X081- OCTOBER 2000

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
JAG	LEW	JCK	

BRIDGE ENGINEER

REINFORCING SCHEDULE

(For Two Approach Slabs & Two Sleeper Slabs)

Mk.	No.	Size	Length	Type	Bending Details
a3	8	4	7'-4"	19A	
e1	20	4	49'-7"	Str.	
e2	2	4	48'-10"	Str.	
e3	16	4	49'-10"	Str.	
e5	30	6	49'-7"	Str.	
e6	2	6	48'-10"	Str.	
e7	24	6	50'-9"	Str.	
g1	4	4	14'-9"	Str.	
g2	4	4	39'-7"	Str.	
g3	31	4	55'-1"	Str.	
g4	4	8	14'-9"	Str.	
g5	4	8	39'-7"	Str.	
g6	96	8	55'-7"	Str.	
g7	4	6	53'-6"	Str.	
d1	48	5	49'-7"	Str.	
d2	200	4	7'-9"	2	
d2	100	4	6'-3"	T2	

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

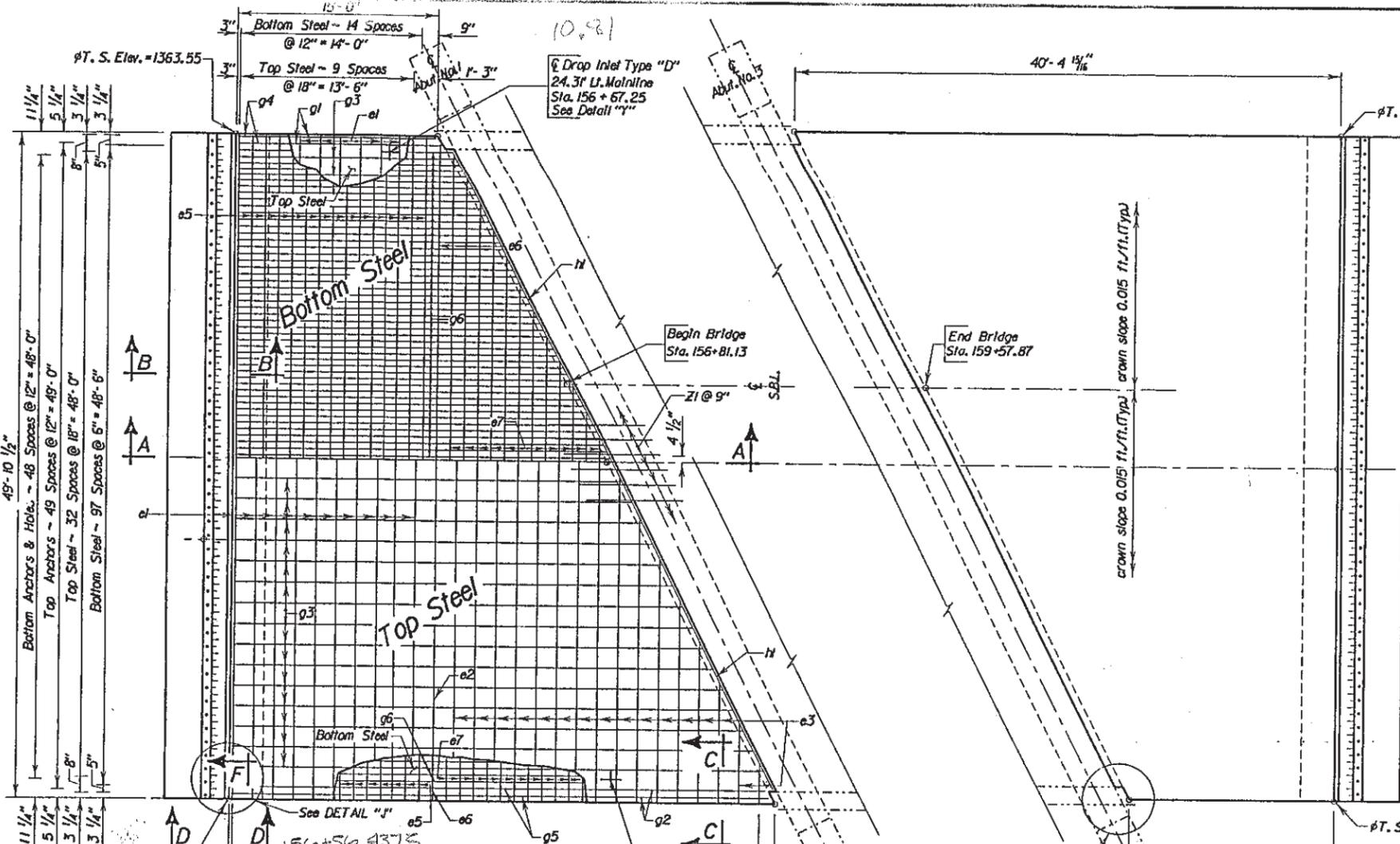
ESTIMATED QUANTITIES

(For Two Approach Slabs)

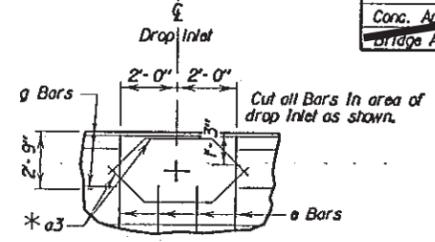
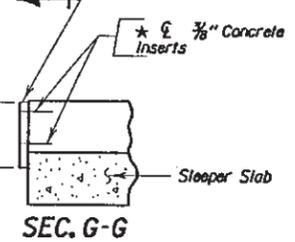
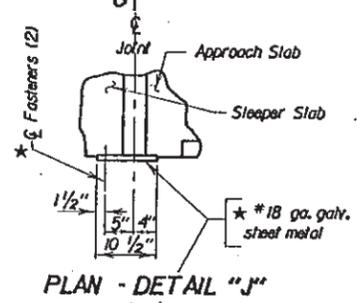
ITEM	UNIT	QUANTITY
Conc. Approach Slab Adjacent to Bridge	Sq. Yd.	313.1
Bridge Approach Sleeper Slab	Sq. Yd.	88.4

- 80.6 Cu. Yds. Concrete In Approach Slabs.
- 21962 Lbs. Epoxy Coated Re-Steel In Approach Slabs.
- 26.0 Cu. Yds. Concrete In Sleeper Slabs.
- 3935 Lbs. Epoxy Coated Re-Steel In Sleeper Slabs.
- 4013 Lbs. Structural Steel In Armor Assembly

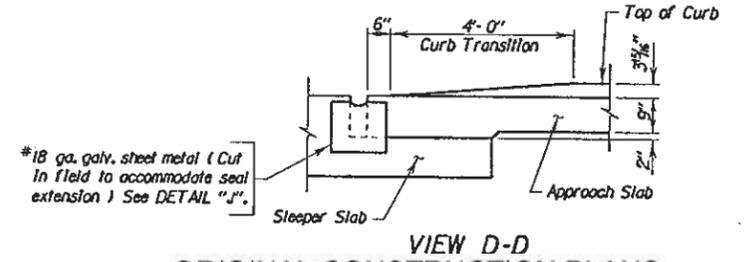
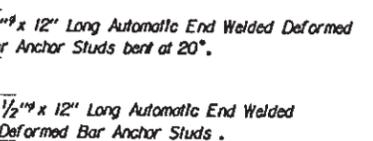
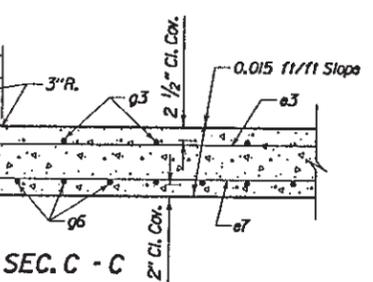
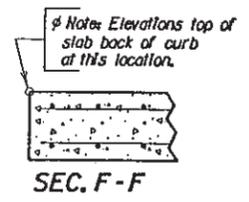
Items 1 thru 5 are approximate quantities contained in the above bid items and are for information only.



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



DETAIL "Y"
(Typical plan for steel revision when drop inlet is used)



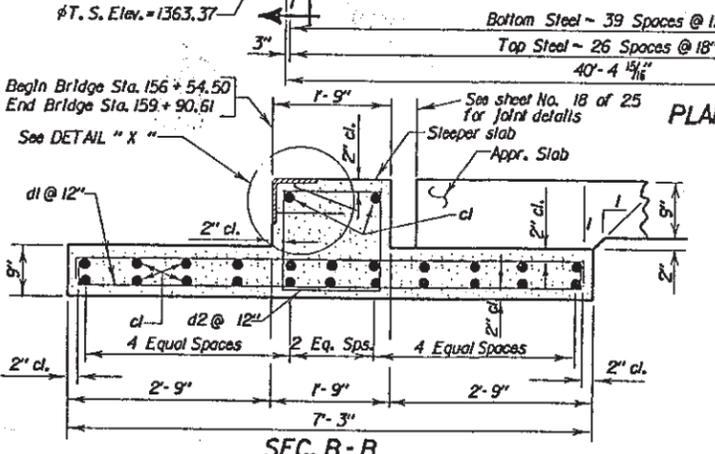
ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR
 SOUTHBOUND LANES
 276'- 8¹⁵/₁₆" CONT. COMP. GRDR. BRIDGE
 48'- 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STA. 156 + 81.13 TO 159 + 57.87
 STR. NO. 50-218-197

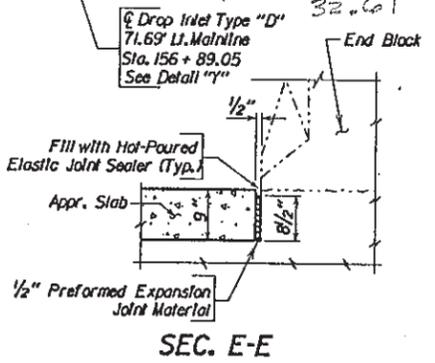
SEC. 10-TION-R49W
 27° R. H. F. SKEW
 IM 229-2(43)7
 HS25-44 (& ALT.)

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 1993

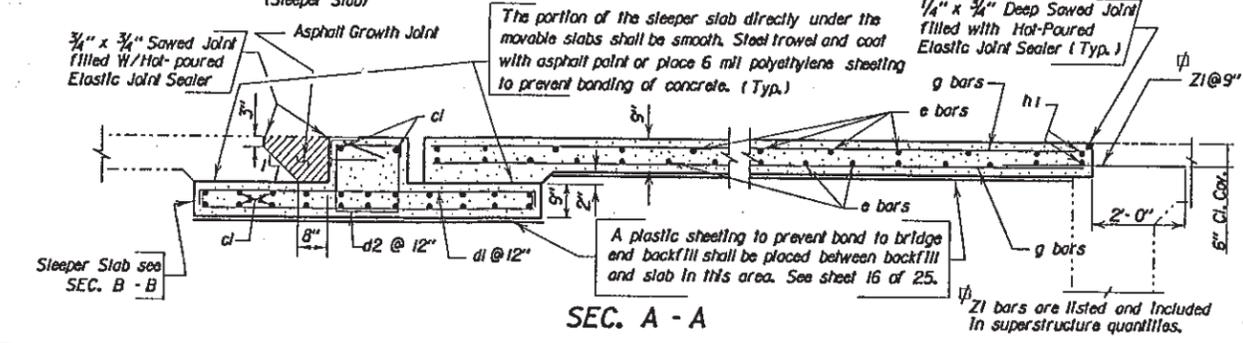
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJ/DL	SR	SJ/DL	<i>[Signature]</i>
MINN0545	0545RBI7		BRIDGE ENGINEER



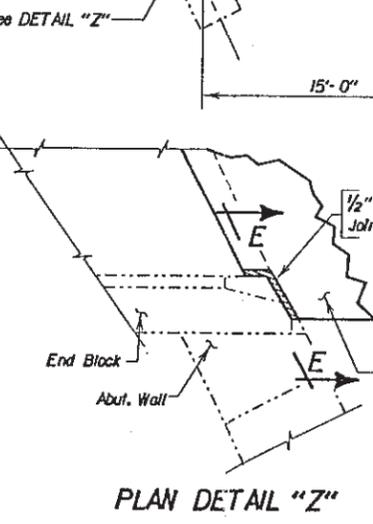
SEC. B-B
(Sleeper Slab)



SEC. E-E



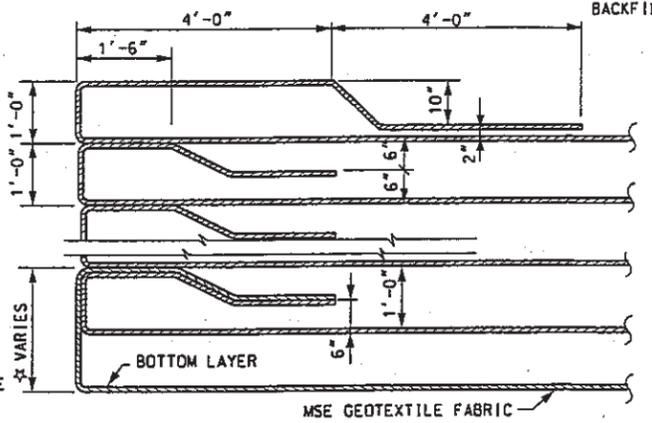
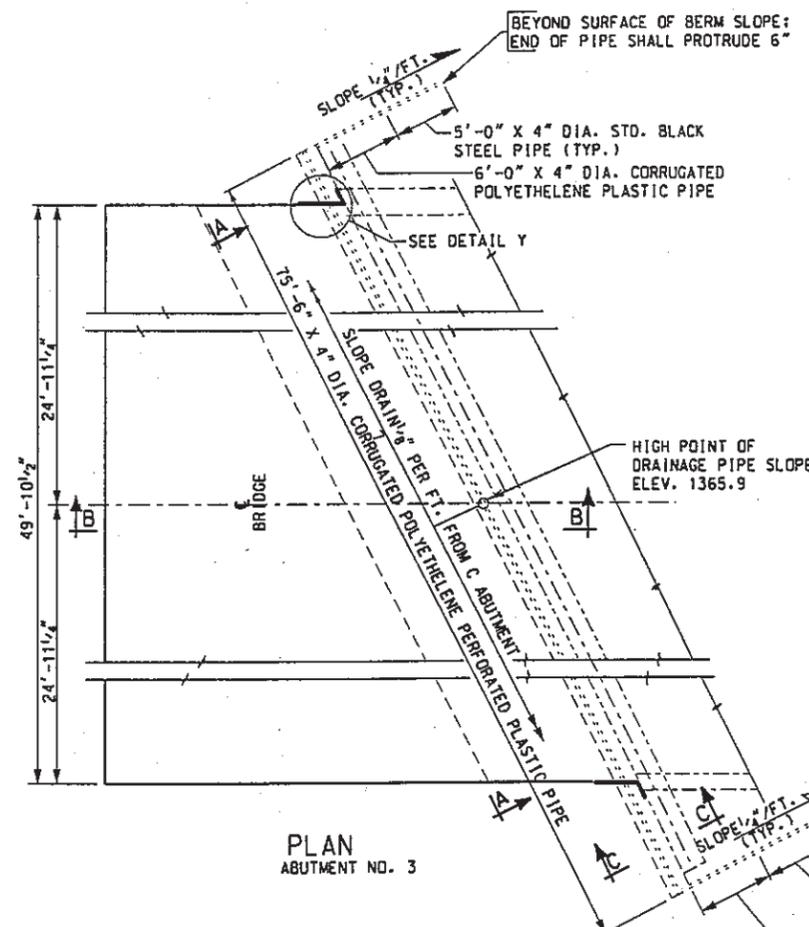
SEC. A-A



PLAN DETAIL "Z"

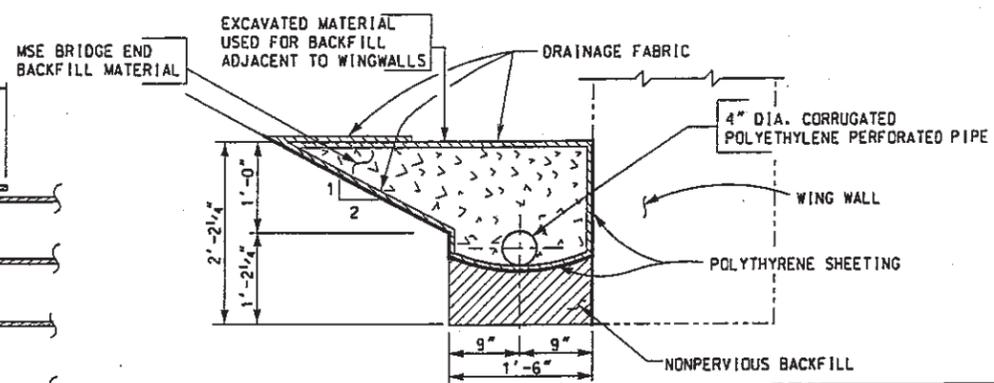
2" x 8" x 8" x 3/4" x 49'-10 1/2"
 (Conforms to Crown Slope and Grade)

DETAIL "X"
 (See Notes Regarding Armor Assembly Sheet 4 of 25.)



★NOTE:
AT SIDES RE-EMBED BOTTOM LAYER WITH SECOND LAYER RE-EMBEDMENT FOLD. WHERE BOTTOM LAYER EXTENDS PAST SECOND LAYER, RE-EMBED WITH THIRD LAYER RE-EMBEDMENT FOLD.

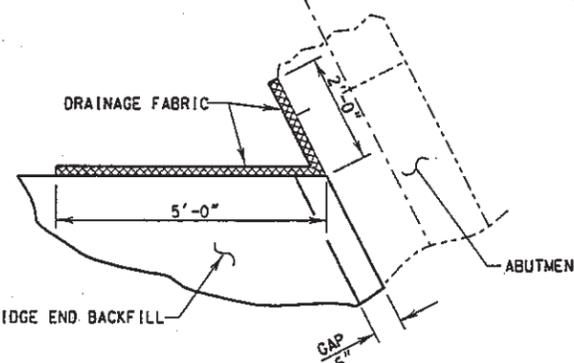
DETAIL E
(FABRIC WRAP AT SIDES)



SECTION C-C

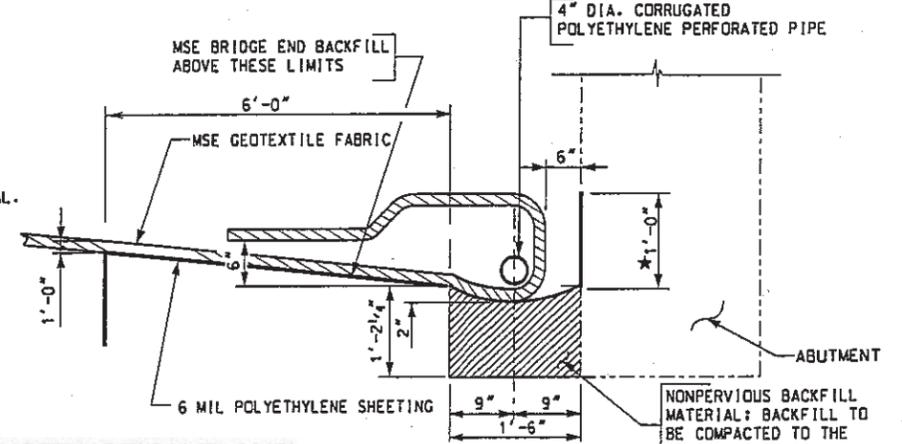
ESTIMATED QUANTITIES (FOR 1 ABUTMENT)		
ITEM	UNIT	QUANTITY
BRIDGE END BACKFILL UNDERDRAIN PIPE	L. F.	98
EXCAVATION, BRIDGE END BACKFILL	CU. YDS.	270
BACKFILL, MSE BRIDGE END	CU. YDS.	270
FABRIC, TYPE B DRAINAGE	SO. YDS.	40
FABRIC, MSE GEOTEXTILE	SO. YDS.	1313

- BRIDGE END BACKFILL EXCAVATION ON EXISTING BRIDGE INCLUDES ALL MATERIAL BELOW THE APPROACH PANEL.
- 76 FT. 4" DIA. CORRUGATED POLYETHYLENE PERFORATED PLASTIC PIPE.
 - 12 FT. 4" DIA. CORRUGATED POLYETHYLENE PLASTIC PIPE.
 - 10 FT. DIA. STANDARD BLACK STEEL PIPE.
 - 3610 SQ. FT. 6 MIL POLYETHYLENE SHEETING, NOT INCLUDING LAPS. ITEMS 1 THRU 4 ARE APPROXIMATE QUANTITIES CONTAINED IN THE ABOVE TABLE AND ARE FOR INFORMATION ONLY.



DETAIL Y
(TYPICAL ALL CORNERS)

NOTE:
THE DRAINAGE FABRIC SHALL BE ATTACHED TO THE BACK SIDE OF THE WINGWALL USING A CONSTRUCTION ADHESIVE. THE OTHER END SHALL BE ATTACHED BETWEEN THE SIDE LIMITS OF EXCAVATION AND THE REINFORCED BACKFILL MATERIAL.



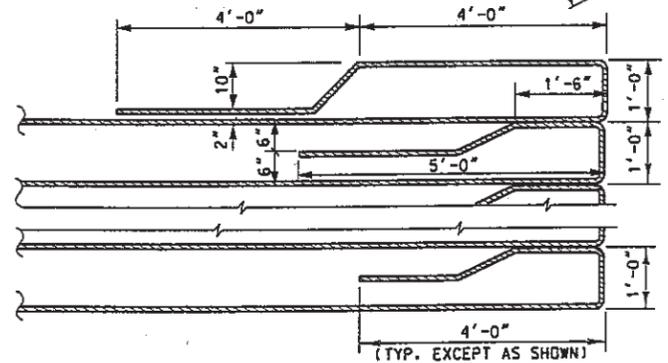
DETAIL X
(NORMAL TO C ABUTMENT)

DETAILS OF MSE BRIDGE END BACKFILL FOR SOUTH ABUTMENT (NO. 3) SOUTHBOUND LANES

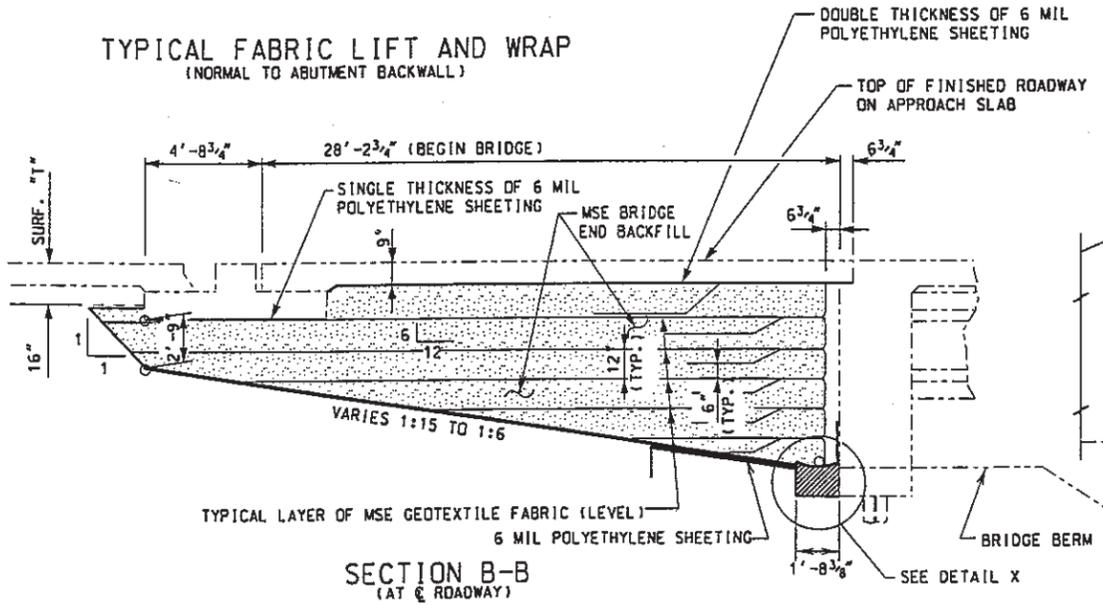
276'-8¹⁵/₁₆' CONT. COMP. GRDR. BRIDGE
48'-0" ROADWAY 27°57' LHF SKEW
OVER RICE ST. & B.N. RR SEC.10-TION-R49W
STA. 400+7.65 TO STA. 402+93.78 IM 229-2(50)2
STR. NO. 50-218-197 HS25-44 (& ALT.)

MINNEHAHA COUNTY
S.D. DEPT. OF TRANSPORTATION
OCTOBER 2000

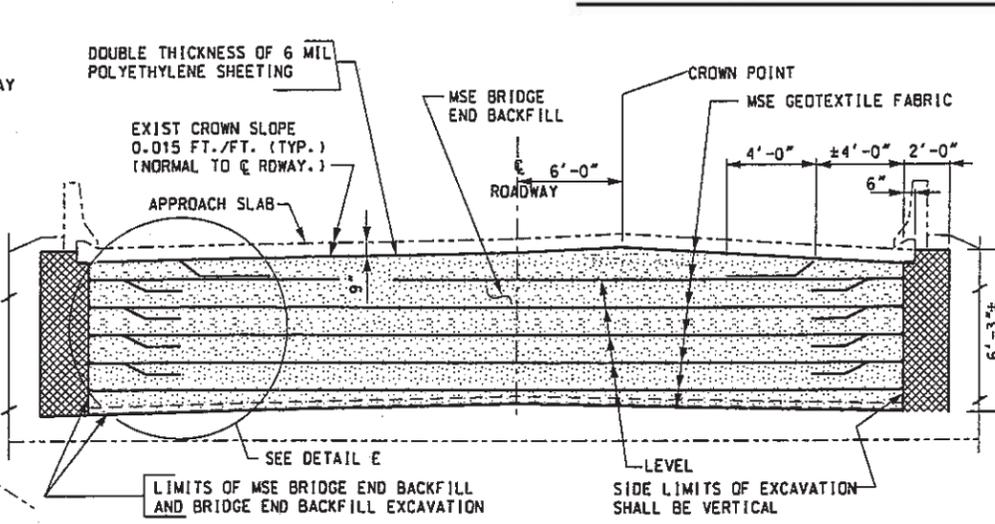
DESIGNED BY JAG	DRAWN BY LEW	CHECKED BY JCK	APPROVED BRIDGE ENGINEER
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TYPICAL FABRIC LIFT AND WRAP
(NORMAL TO ABUTMENT BACKWALL)



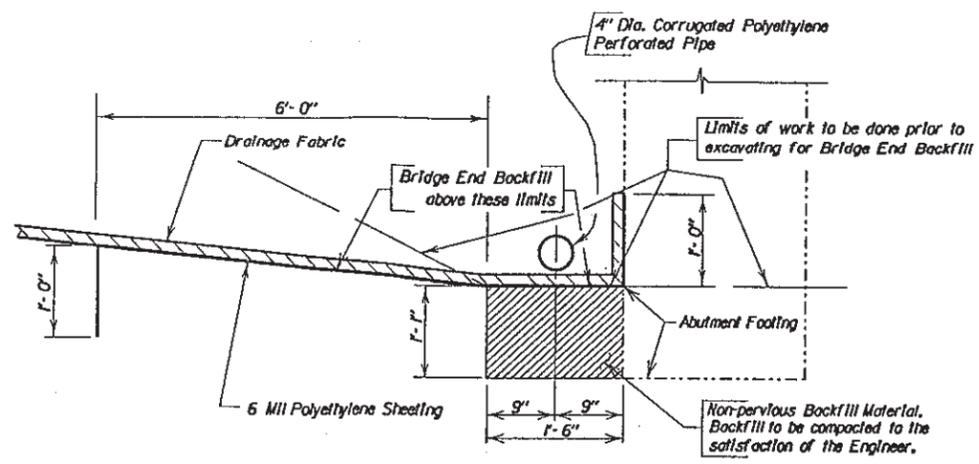
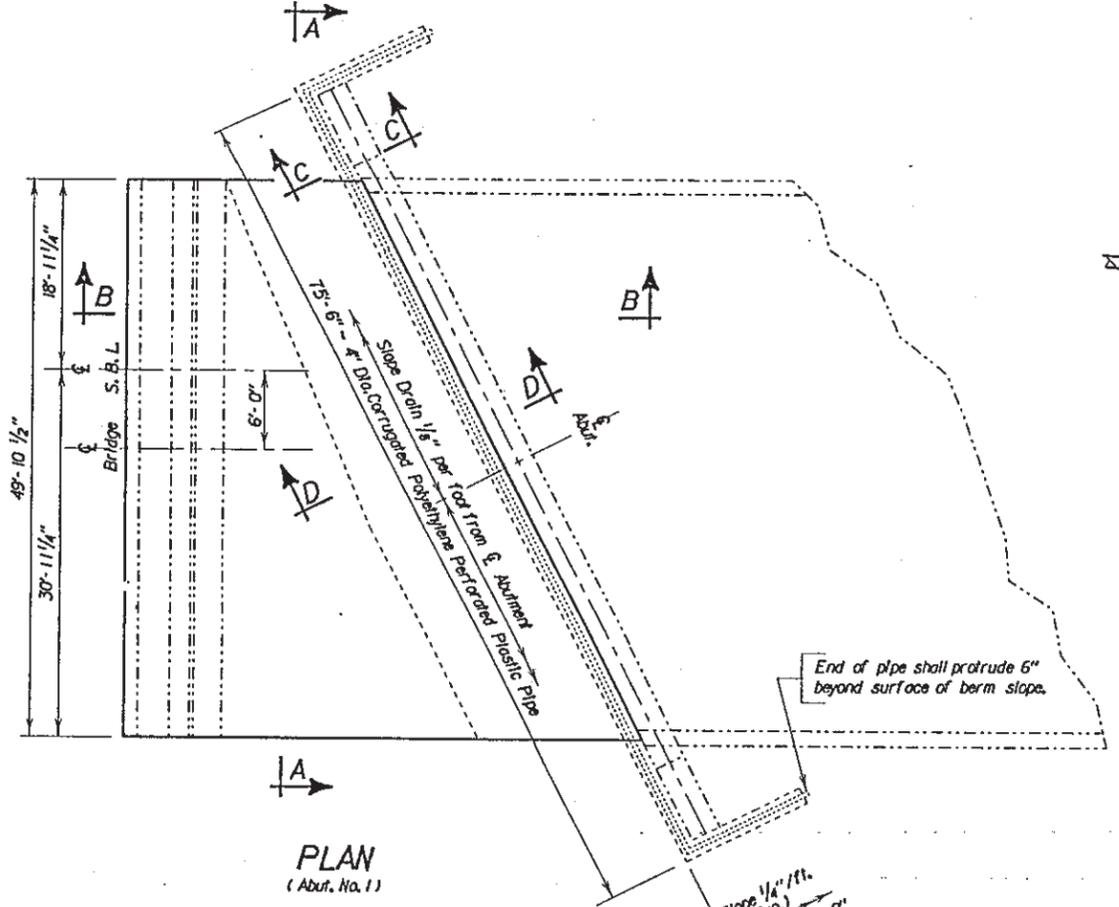
SECTION B-B
(AT ROADWAY)



SECTION A-A

Plans By: PARSONS TRANSPORTATION GROUP

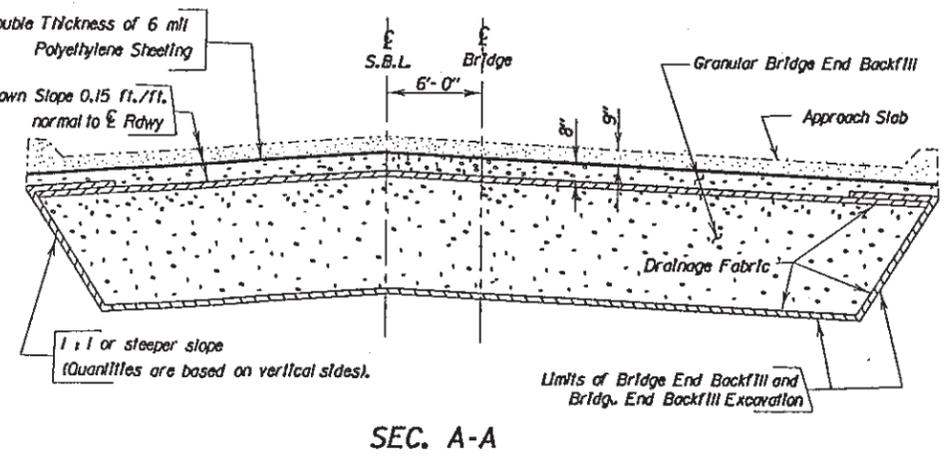
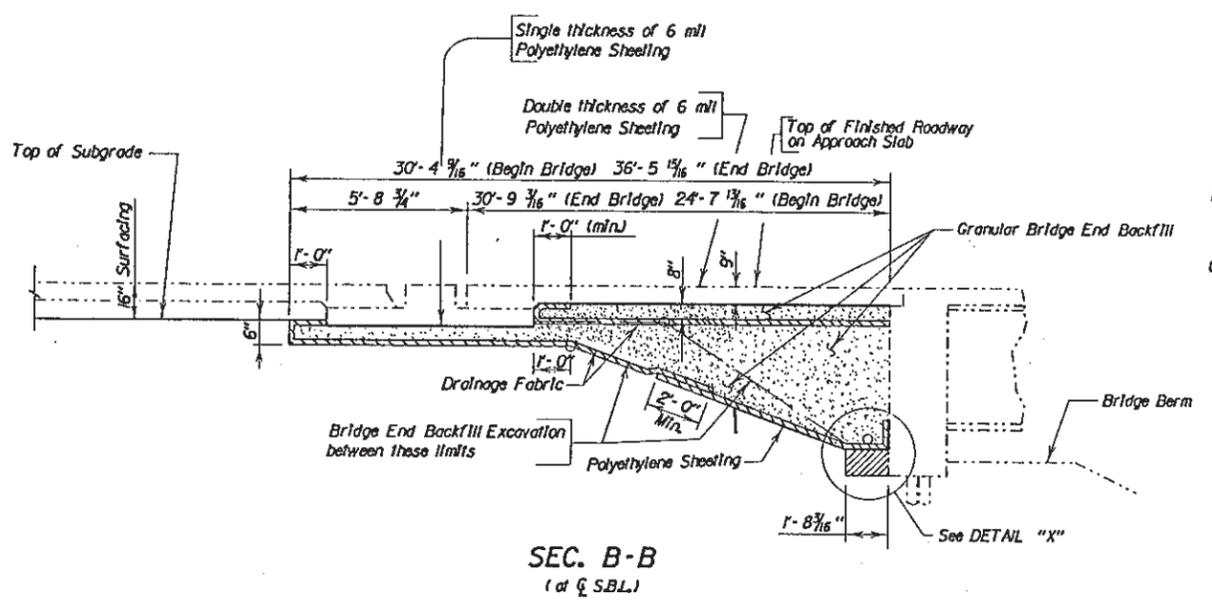
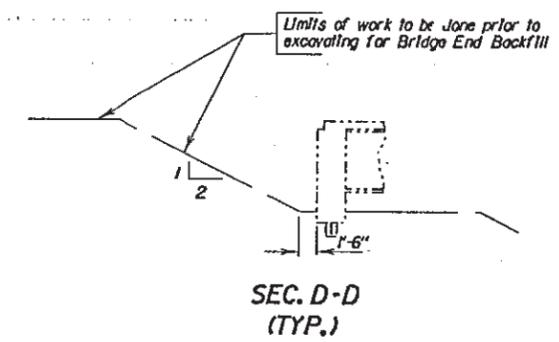
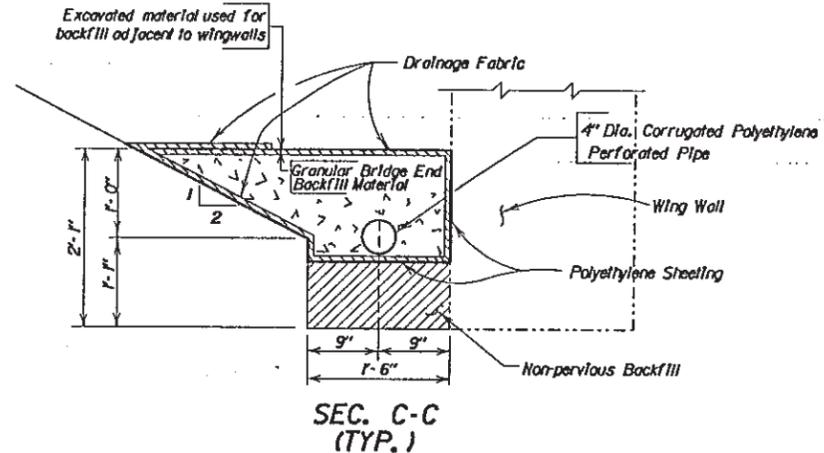
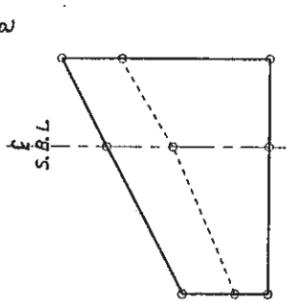
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ESTIMATED QUANTITIES
(for Two Abutments)

ITEM	UNIT	QUANTITY
Bridge End Backfill Under Drain Pipe	L.F.	191
Bridge End Backfill Excavation	Cu. Yd.	165
Granular Bridge End Backfill	Cu. Yd.	485
Drainage Fabric	Sq. Ft.	763

- 151 ft. 4" dia. Corrugated Polyethylene Perforated Plastic Pipe for 2 Abut.
 - 20 ft. 4" dia. Corrugated Polyethylene Plastic Pipe for 2 Abut.
 - 20 ft. 4" dia. Std. Black Steel Pipe for 2 Abut.
 - 7023 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
- Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.
- Bridge End Backfill Excavation will not be measured. Plans quantity payment will be full compensation for this item.
- Quantity has been adjusted by a "Strikeoff" factor of 1.3 to convert final compacted volume to loose volume.



ORIGINAL CONSTRUCTION PLANS

DETAILS OF BRIDGE END BACKFILL FOR SOUTHBOUND LANES

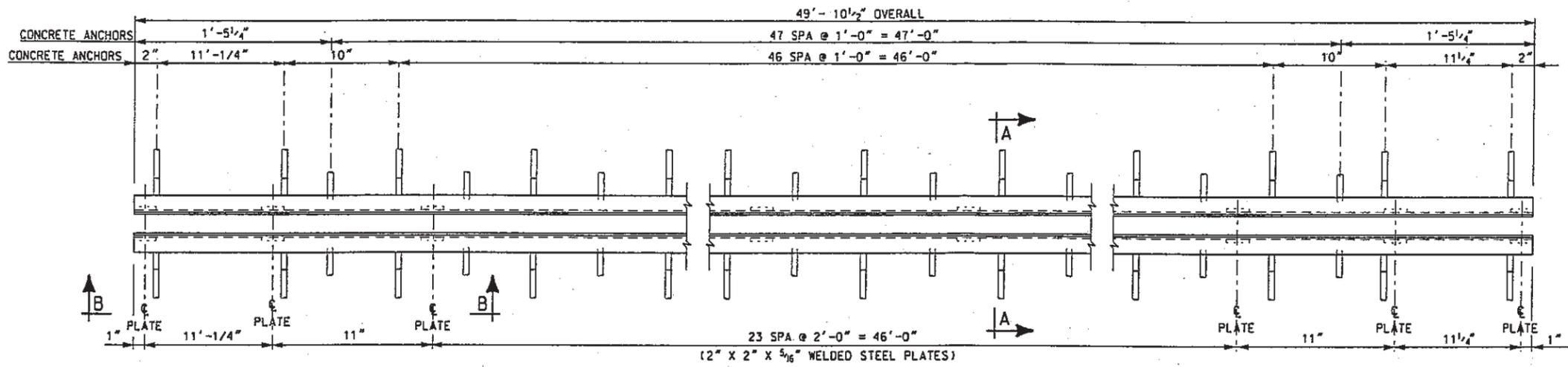
276'- 8 15/16" CONT. COMP. GRDR. BRIDGE

48'- 0" ROADWAY
OVER RICE ST. & B.N. RR
STA. 156 + 81.13 TO 159 + 57.87
STR. NO. 50-218-197

SEC. 10-T10IN-R49W
27° R. H. F. SKEW
IM 229-2(43)7
HS25-44 (& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1993

DESIGNED BY SJ/DL MINN0545	DRAWN BY SR 0545RB16	CHECKED BY SJ/DL	APPROVED <i>Clyde H. Jundt</i> BRIDGE ENGINEER
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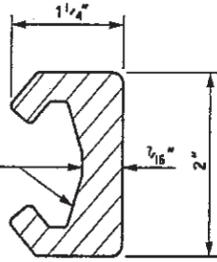
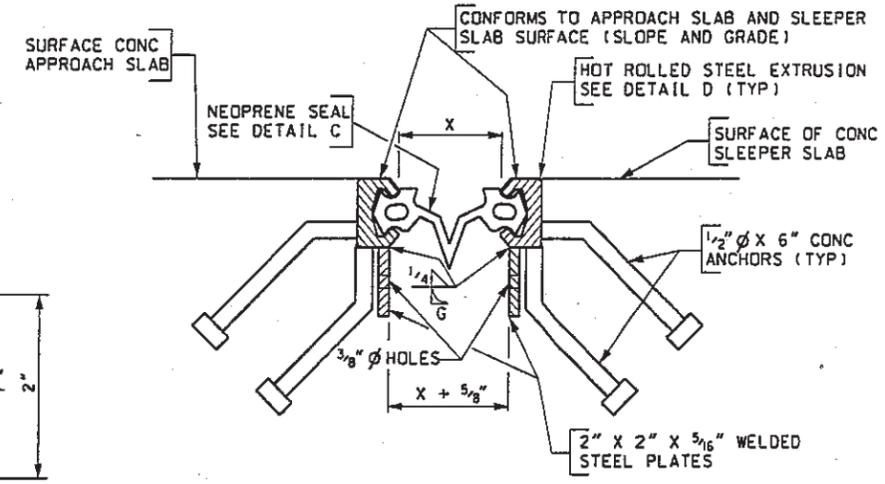


TEMP.	DIMENSION X
30°	2 5/8"
40°	2 1/4"
50°	2 3/8"
60°	2 1/8"
70°	2"
80°	1 5/8"
90°	1 1/2"



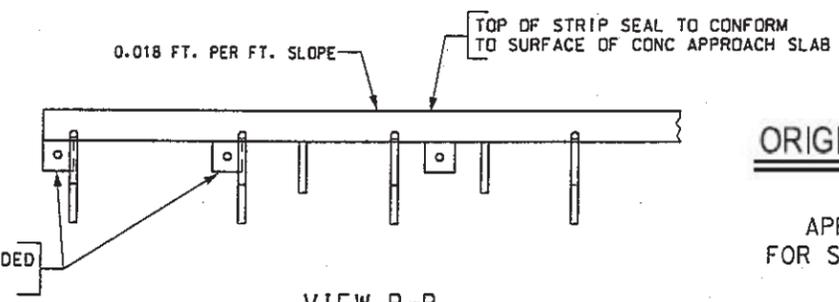
DETAIL C
NEOPRENE SEAL SHALL HAVE A 3" MOVEMENT CAPABILITY

PLAN OF STRIP SEAL
(NEOPRENE SEAL NOT SHOWN)



DETAIL D

SECTION A-A



VIEW B-B

ORIGINAL CONSTRUCTION PLANS

APPROACH SLAB JOINT DETAIL FOR SOUTHBOUND ABUTMENT (NO.3) SOUTHBOUND LANES

276'-8 5/16" CONT. COMP. GRDR. BRIDGE

48'-0" ROADWAY OVER RICE ST. & B. N. RR
27°57' LHF SKEW
SEC.10-TIOIN-R49W
STA. 400+17.65 TO STA. 402+93.78 IM 229-2(50)2
STR. NO. 50-218-197 HS25-44 (& ALT.)

MINNEHAHA COUNTY
S.D. DEPT. OF TRANSPORTATION
OCTOBER 2000

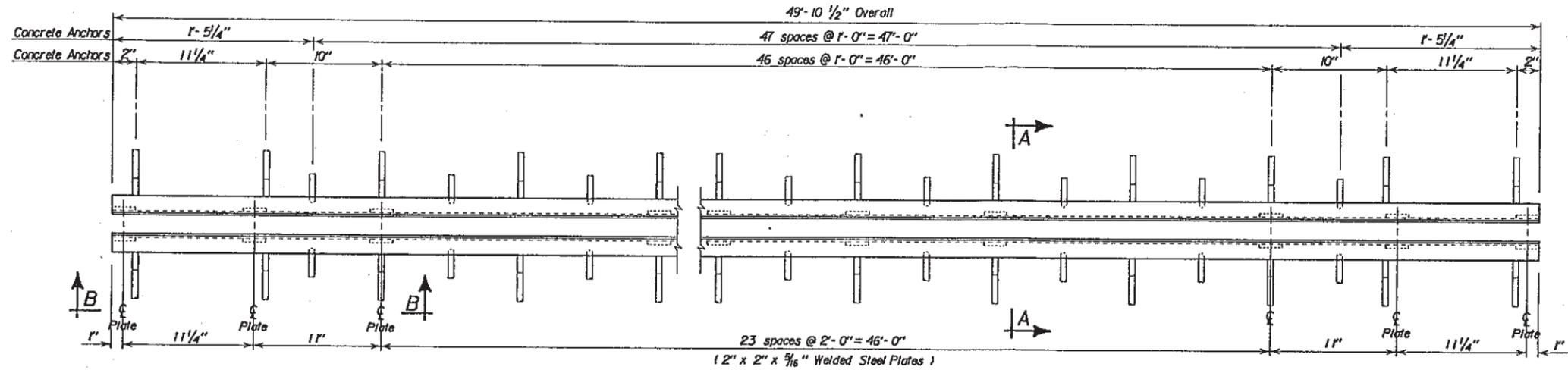
GENERAL NOTES:

- 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.
- MATERIAL FOR THE NEOPRENE SEAL SHALL CONFORM TO ASTM D2628 MODIFIED TO OMIT THE RECOVERY TEST. NO SPLICES WILL BE PERMITTED IN THE NEOPRENE SEAL.
- 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.
- 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.
- 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 ACCORDANCE WITH ASTM A780.
- 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.
- 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.
- THE STRIP SEAL EXPANSION JOINT SUPPLIER SHALL SUBMIT A DETAILED GLAND INSTALLATION PROCEDURE WITH THE SHOP PLANS.
- THE COST OF WELDING SHALL BE INCLUDED IN THE UNIT COST FOR STRIP SEAL EXPANSION JOINT.
- THE NEOPRENE SEAL SHALL BE OF SUFFICIENT LENGTH SUCH THAT A MINIMUM LENGTH OF 6: SHALL EXTEND BEYOND EACH END OF THE STEEL EXTRUSIONS.
- 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		
FOR ONE APPROACH SLAB		
ITEM	UNIT	QUANTITY
STRIP SEAL EXPANSION JOINT	L.F.	49.9

DESIGNED BY JAG	DRAWN BY LEW	CHECKED BY JCK	APPROVED BRIDGE ENGINEER
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07/12/01 04:36:41 PM O:\643881.1-229*SB_AS-BUILTS*ICE-APPROACH*ice-sbapps\bdtd.dgn



TEMP.	DIMENSION "X"
30°	2 3/4"
40°	2 5/8"
50°	2 1/2"
60°	2 3/8"
70°	2 1/4"
80°	2 1/8"
90°	2"

GENERAL NOTES :

- 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 Steel Welding Code.
- Material for Neoprene Extrusion shall conform to ASTM D2628 modified to omit the recovery test. No Splices will be permitted in the Neoprene Strip.
- The Installation of the Strip Seal shall be as recommended by its Manufacturer and approved by the Engineer, but in general shall be as follows: The Neoprene Extrusion 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 Strip may be installed either prior to or after the time the Steel Extrusions are concreted in the approach slabs. Galvanize the Steel Extrusions and anything welded to them after all welding is completed. They shall be galvanized in accordance with AASHTO M111 (ASTM A 123). If welded splices are used subsequent to galvanizing, the weld details and the procedures for preparing the surface for welding and repainting the galvanizing after welding shall be included with the shop plans. The Steel Extrusion shall be dry, clean, free from dirt, grease and contaminants at the time the Neoprene Strip is installed.
- Due to the length of the Steel Extrusions, Splices are permitted. No welds shall be permitted in internal section of extrusion where Neoprene Strip is located. Weld details shall be shown on the Shop Plans for approval by the Engineer.
- The thickness and shape of the Neoprene Extrusion 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, shop plans of the proposed strip seal showing, in addition to fixed dimensions, thickness of Neoprene Extrusion and dimensions pertinent to the fit of the Neoprene Extrusion in the Steel Extrusion shall be submitted to and approved by the Engineer.
- Strip Seal will be measured in linear feet, to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. Strip Seal 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.

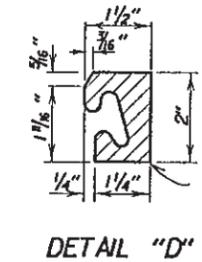
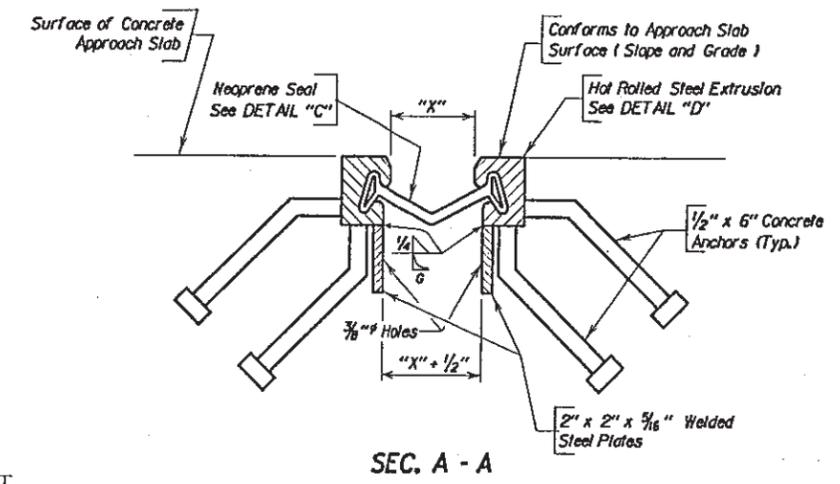
PLAN OF STRIP SEAL
(Neoprene Seal Not Shown)

- 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.
- 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.
- The strip seal supplier shall submit detailed gland installation procedure with shop plans.
- The cost of welding shall be included in the unit cost for strip seal expansion joint.
- The neoprene seal shall be of sufficient length such that a minimum length of 6" shall extend beyond each end of the steel extrusions.

ESTIMATED QUANTITIES		
For Two Approach Slabs		
ITEM	UNIT	QUANTITY
Strip Seal Expansion Joint	Lin. Ft.	99.8



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



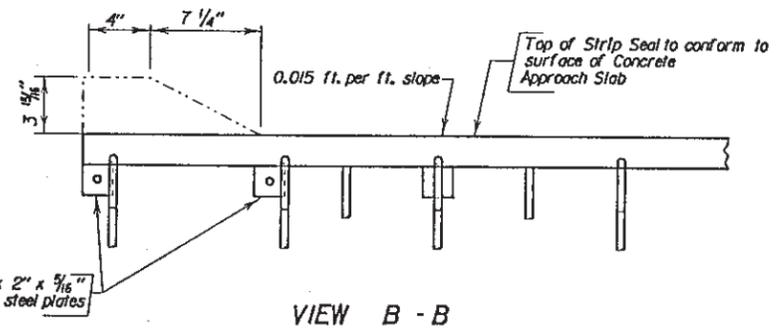
DETAIL "D"

ORIGINAL CONSTRUCTION PLANS

APPROACH SLAB JOINT DETAILS
FOR
SOUTHBOUND LANES
276'- 8 15/16" CONT. COMP. GRDR. BRIDGE
48'- 0" ROADWAY
OVER RICE ST. & B.N. RR
STA. 156 + 81.13 TO 159 + 57.87
STR. NO. 50-218-197

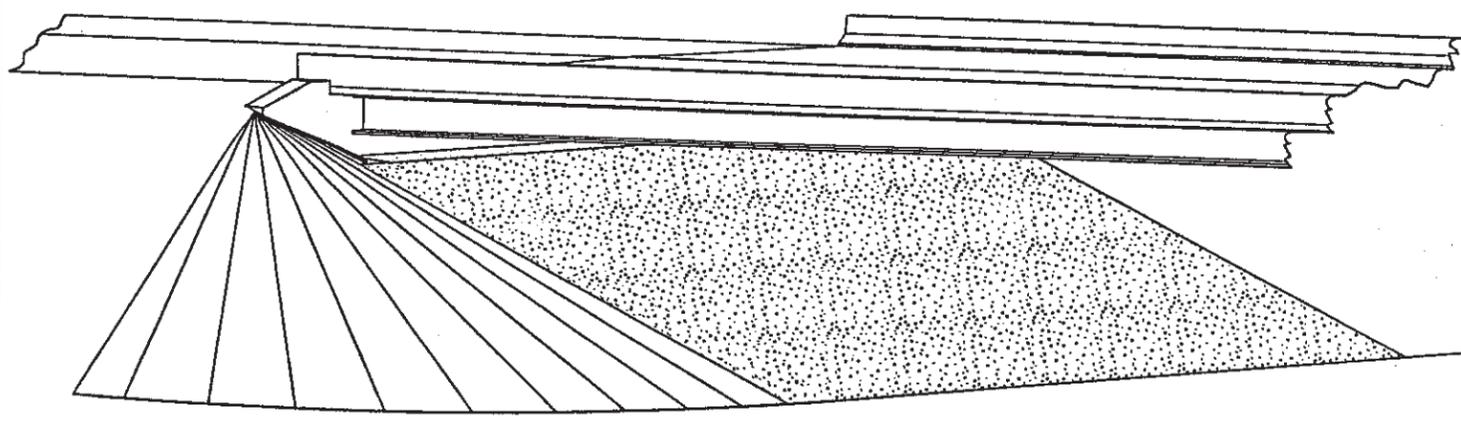
SEC. 10-TION-R49W
27° R. H. F. SKEW
IM 229-2(43)7
HS25-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1993

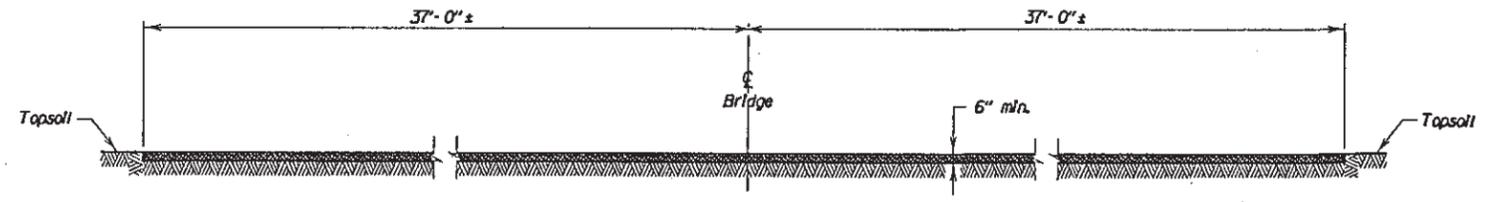


VIEW B - B

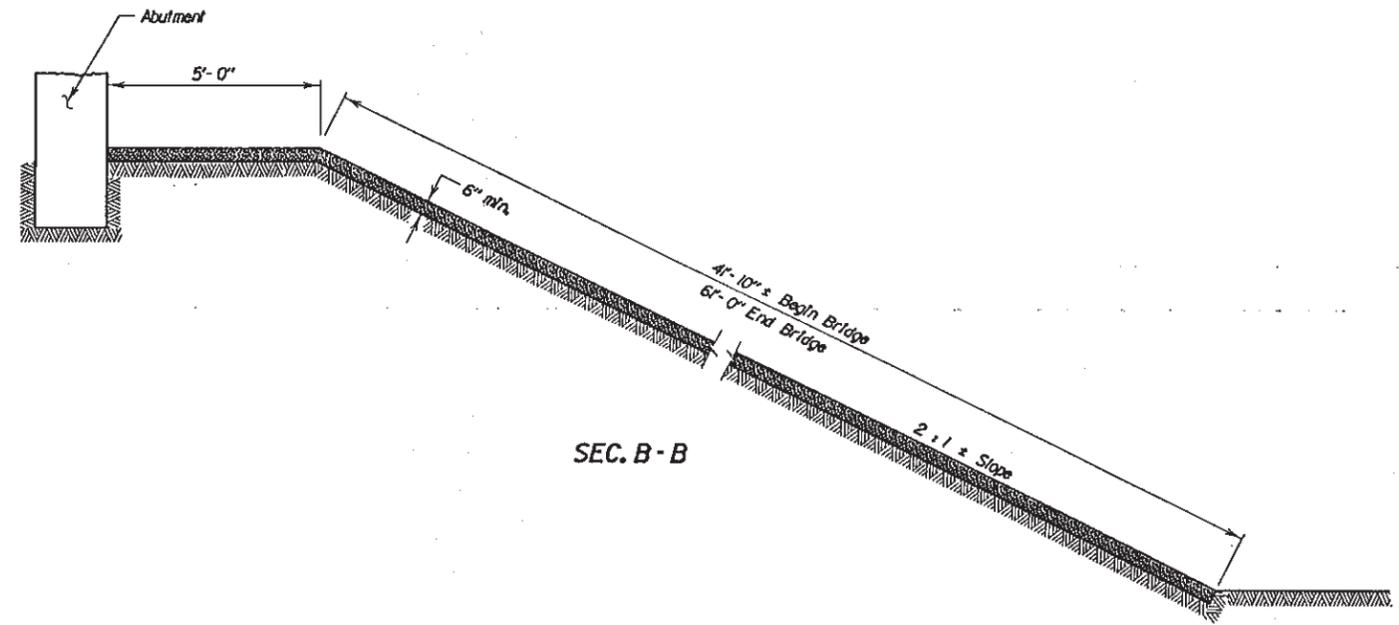
DESIGNED BY SJ/DL MINNO545	DRAWN BY SR 0545RB/B	CHECKED BY SJ/DL	APPROVED <i>Clyde E. J. Smith</i> BRIDGE ENGINEER
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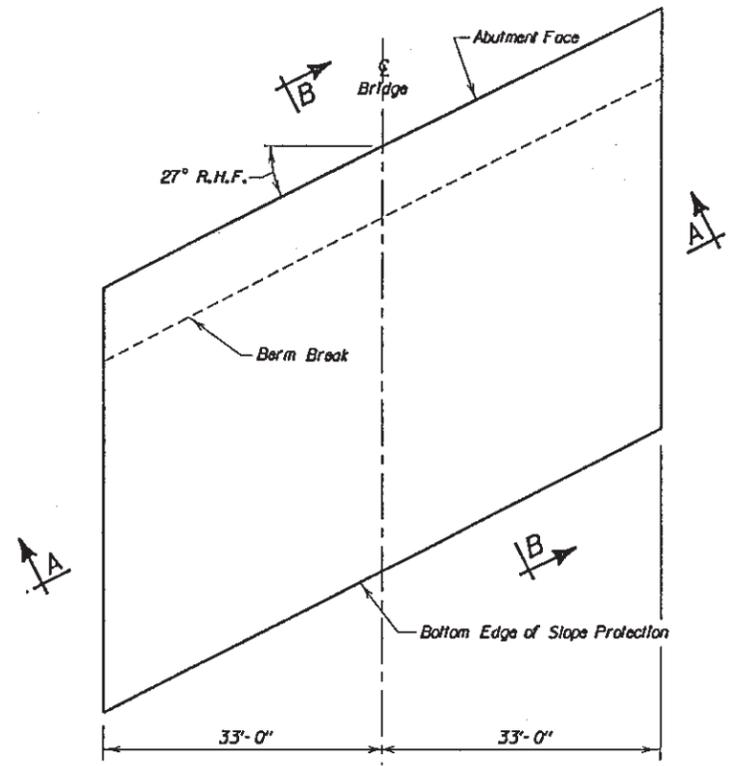
SLOPE PROTECTION UNDER STRUCTURE
(Bent not shown)



SEC. A-A



SEC. B-B



PLAN VIEW

ESTIMATED QUANTITIES (for 2 Abutments)		
ITEM	UNIT	QUANTITY
Crushed Aggregate Slope Protection	Sq. Yd.	929

ORIGINAL CONSTRUCTION PLANS

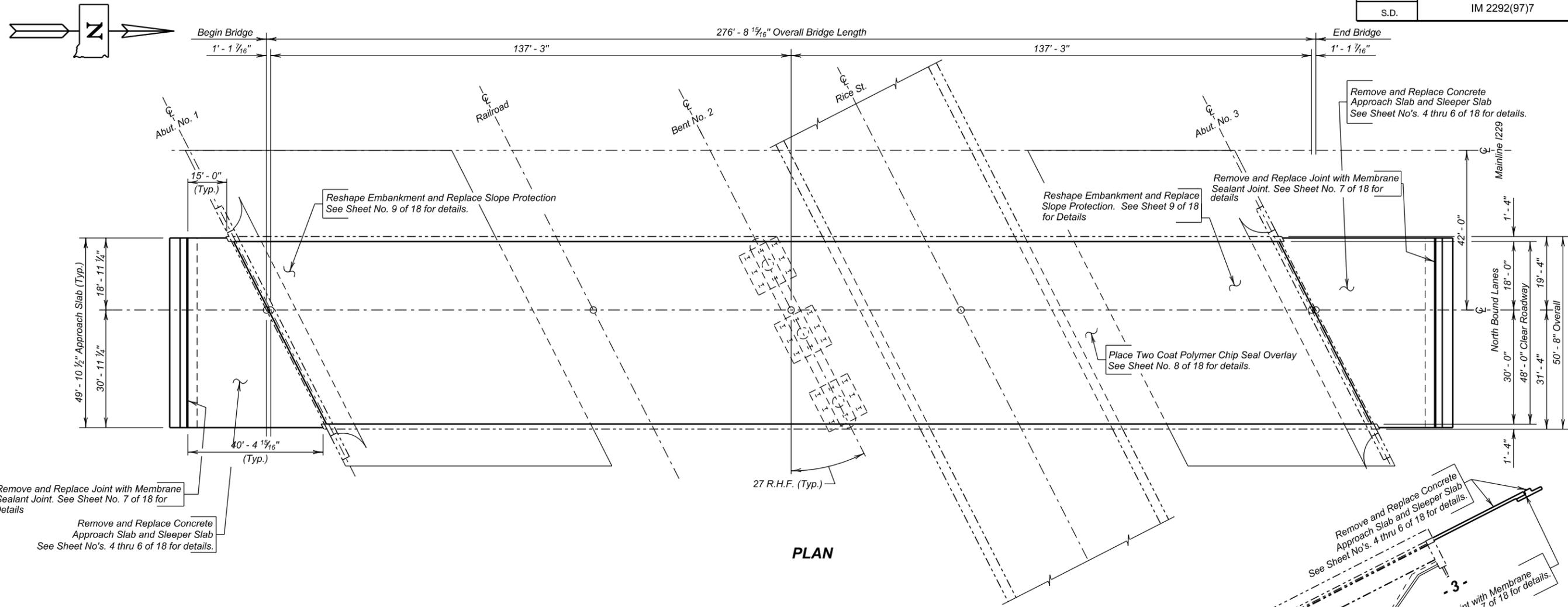
SLOPE PROTECTION DETAILS
FOR
SOUTHBOUND LANES
276'- 8¹⁵/₁₆' CONT. COMP. GRDR. BRIDGE
48'- 0" ROADWAY
OVER RICE ST. & B.N. RR
STA. 156 + 81.13 TO 159 + 57.87
STR. NO. 50-218-197

SEC. 10-TION-R49W
27° R. H. F. SKEW
IM 229-2(43)7
HS25-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1993

DESIGNED BY SJ/DL MINN0545	DRAWN BY SR 0545RB19	CHECKED BY SJ/DL	APPROVED <i>Clyde St. Jundt</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	36	76

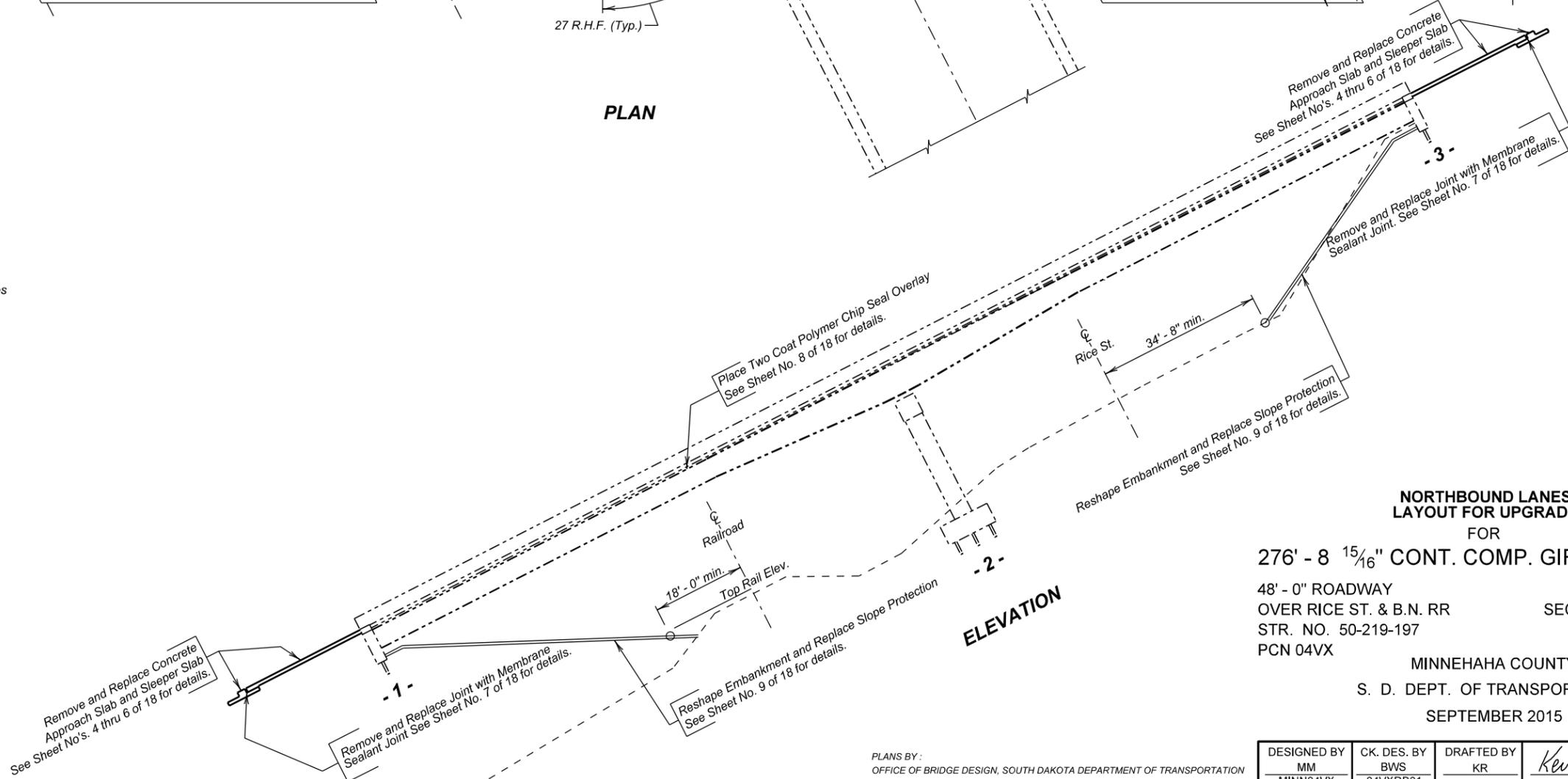


Remove and Replace Joint with Membrane Sealant Joint. See Sheet No. 7 of 18 for Details

Remove and Replace Concrete Approach Slab and Sleeper Slab See Sheet No's. 4 thru 6 of 18 for details.

INDEX OF BRIDGE SHEETS -

- Sheet No. 1 - Layout for Upgrading
- Sheet No. 2 - Estimate of Structure Quantities and Notes
- Sheet No. 2 - Notes (Continued)
- Sheet No. 4 - Approach Slab Layout
- Sheet No. 5 - Approach Slab Details
- Sheet No. 6 - Approach Slab Details (Continued)
- Sheet No. 7 - Approach Slab Joint Details
- Sheet No. 8 - Polymer Chip Seal Layout
- Sheet No. 9 - Slope Protection Details
- Sheet No. 10 thru 18 - Original Construction Plans



NORTHBOUND LANES LAYOUT FOR UPGRADE FOR

276' - 8 15/16" CONT. COMP. GIRDER BRIDGE

48' - 0" ROADWAY OVER RICE ST. & B.N. RR STR. NO. 50-219-197 PCN 04VX

27° R.H.F. SKEW SEC. 10-T101N-R49W IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2015 (1) OF (18)

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

DESIGNED BY MM MINN04VX	CK. DES. BY BWS 04VXR01	DRAFTED BY KR	Kevin N. Coeden BRIDGE ENGINEER
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ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
110E0010	Remove Concrete Bridge Approach Slab	365.7	SqYd
410E2600	Membrane Sealant Expansion Joint	199.6	Ft
460E0150	Concrete Approach Slab for Bridge	313.0	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	80.4	SqYd
460E0172	Concrete Patching Material, Bridge Deck	24.8	CuFt
480E0504	No 4 Rebar Splice	38	Each
480E0505	No 5 Rebar Splice	48	Each
480E0506	No 6 Rebar Splice	60	Each
491E0005	Two Coat Bridge Deck Polymer Chip Seal	1470.0	SqYd
491E0110	Abrasive Blasting of Bridge Deck	1470.0	SqYd
491E0120	Bridge Deck Grinding	1470.0	SqYd
491E0130	Concrete Removal, Class A	4.0	SqYd
491E0140	Concrete Removal, Class B	4.0	SqYd
734E2020	Bridge Berm Slope protection, Crushed Aggregate	1161.0	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 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.
- Replace approach slabs and sleeper slabs to the correct grade for the first phase of construction.
- Replace sleeper slab joints with approved membrane 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 Polymer Bridge Deck 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 7 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.
- 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.
- The type of vibratory screed shall be approved by the Engineer.
- All mild reinforcing steel shall conform to ASTM A615, Grade 60.

DESIGN MIX OF CONCRETE

- Class A45 Concrete shall be used for the bid items Concrete Approach Slab for Bridge, Concrete Approach Sleeper Slab for Bridge and Concrete Patching Material, Bridge Deck.
- The Type of cement, concrete strength requirements, aggregate requirements, slump and air requirements for the contract items Concrete Approach Sleeper Slab for Bridge, Concrete Approach Slab for Bridge and Concrete Patching Material, Bridge Deck 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, shall be disposed of by the Contractor at an approved site 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 276' - 8¹⁵/₁₆" CONT. COMP GIRDER BRIDGE

STR. NO. 50-219-197
SEPTEMBER 2015

2 OF 18

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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APPROACH SLABS

- Excavation for placement of new approach slabs and sleeper slabs shall be done with minimal disturbance to the underlying material.
- Those areas with predominately 3/8" diameter or larger in-place aggregate shall be covered with Type B Drainage fabric prior to placement of the compacted base course as determined by the engineer. The area for approach slab placement shall then be 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.

BRIDGE BERM REPAIR

- Reconstruct the berms to at least one foot above the bottom of the abutment backwall seat and fill in erosion channels on the berm slope. The berm slope will be benched into stable embankment during reshaping and reconstruction. The soil shall be placed in horizontal lifts perpendicular to the centerline of the structure. Shape the fill in front of the wing walls to divert runoff from the inslopes away from the face of the berm slope. Compaction of the reconstructed embankment will be governed by the Ordinary Compaction Method.
- At the upper part of the berm slope clearance between the structure and berm will prohibit the use of compaction equipment. The soil in this area will be placed by a method approved by and compacted to the satisfaction of the Engineer.

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. Details for crushed aggregate slope protection are shown on Sheet No. 9 of 18
- 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 the Specifications and AASHTO M81, AASHTO M140 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 dimension and slopes shown on Sheet 9 of 18.
- 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.

TWO COAT BRIDGE DECK POLYMER CHIP SEAL

The Two Coat Bridge Deck Polymer Chip Seal shall be applied in accordance with the Construction Specifications

NOTES (CONTINUED)

FOR
276' - 8¹⁵/₁₆" CONT. COMP. GIRDER BRIDGE

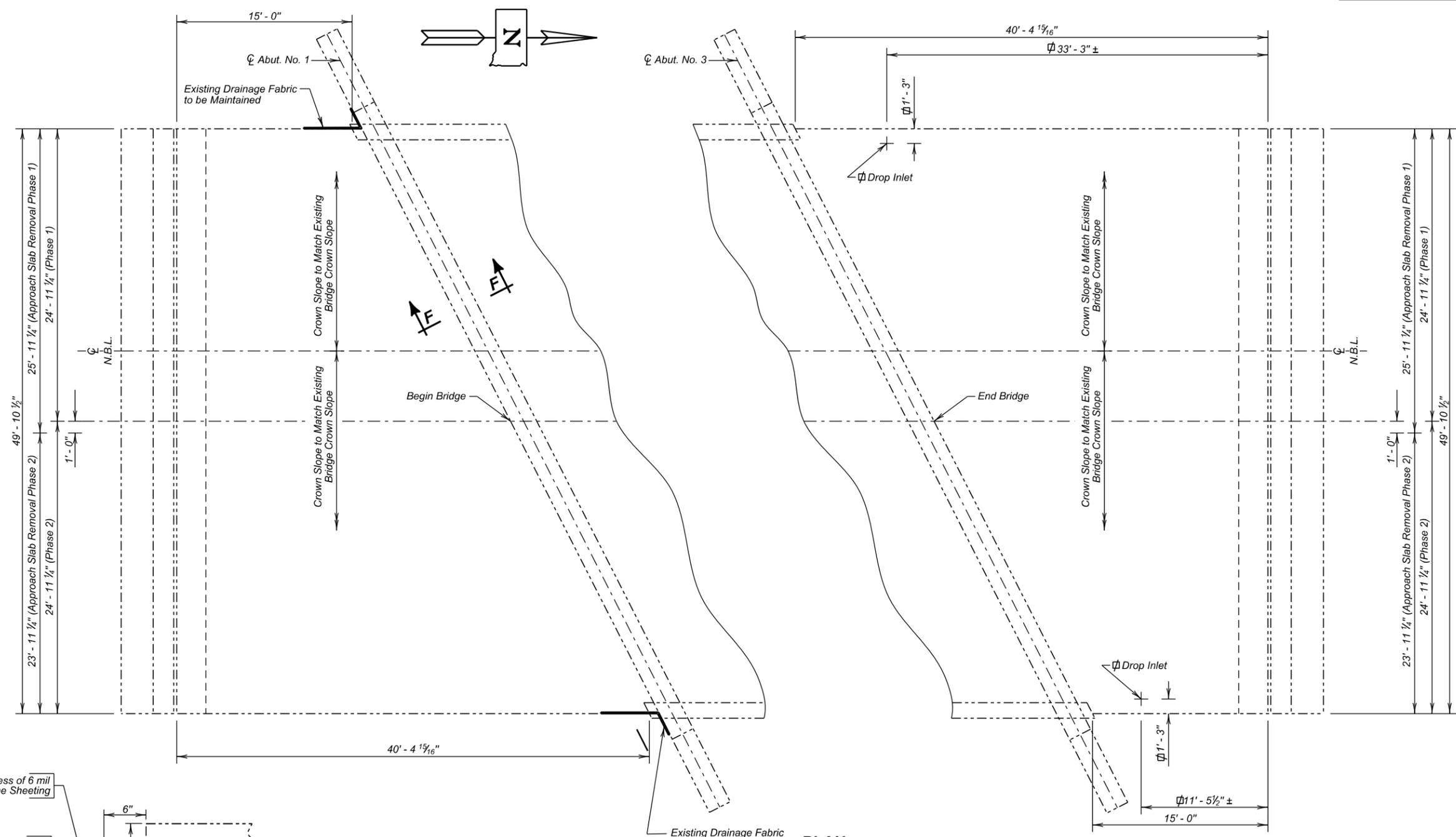
STR. NO. 50-219-197

SEPTEMBER 2015

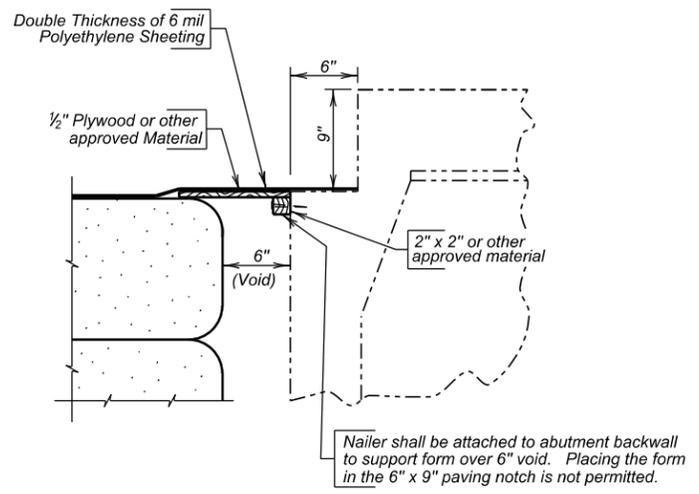
3 OF 18

DESIGNED BY MM MINN04VX	CK. DES. BY BWS 04VXR03	DRAFTED BY KR	<i>Kevin N. Boeden</i> BRIDGE ENGINEER
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	39	76



PLAN



SECTION F - F
(South Abutment Only)

∅ The Drop Inlet will be placed as shown in North Approach Slab only. See Detail "W" on sheet 6 of 18.

**NORTHBOUND LANES
APPROACH SLAB LAYOUT
FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE**
48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-219-197

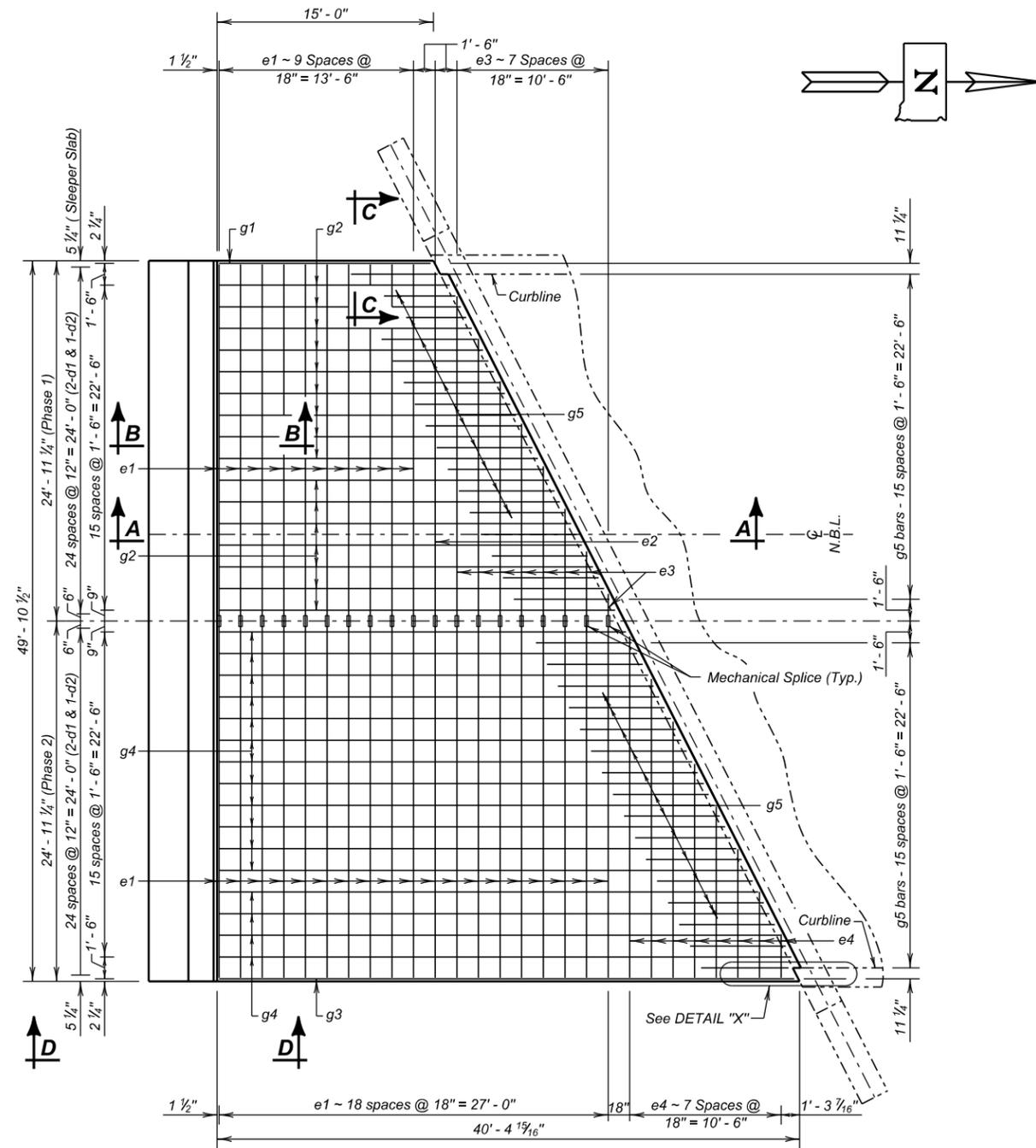
27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2015

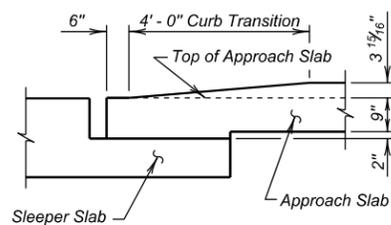
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
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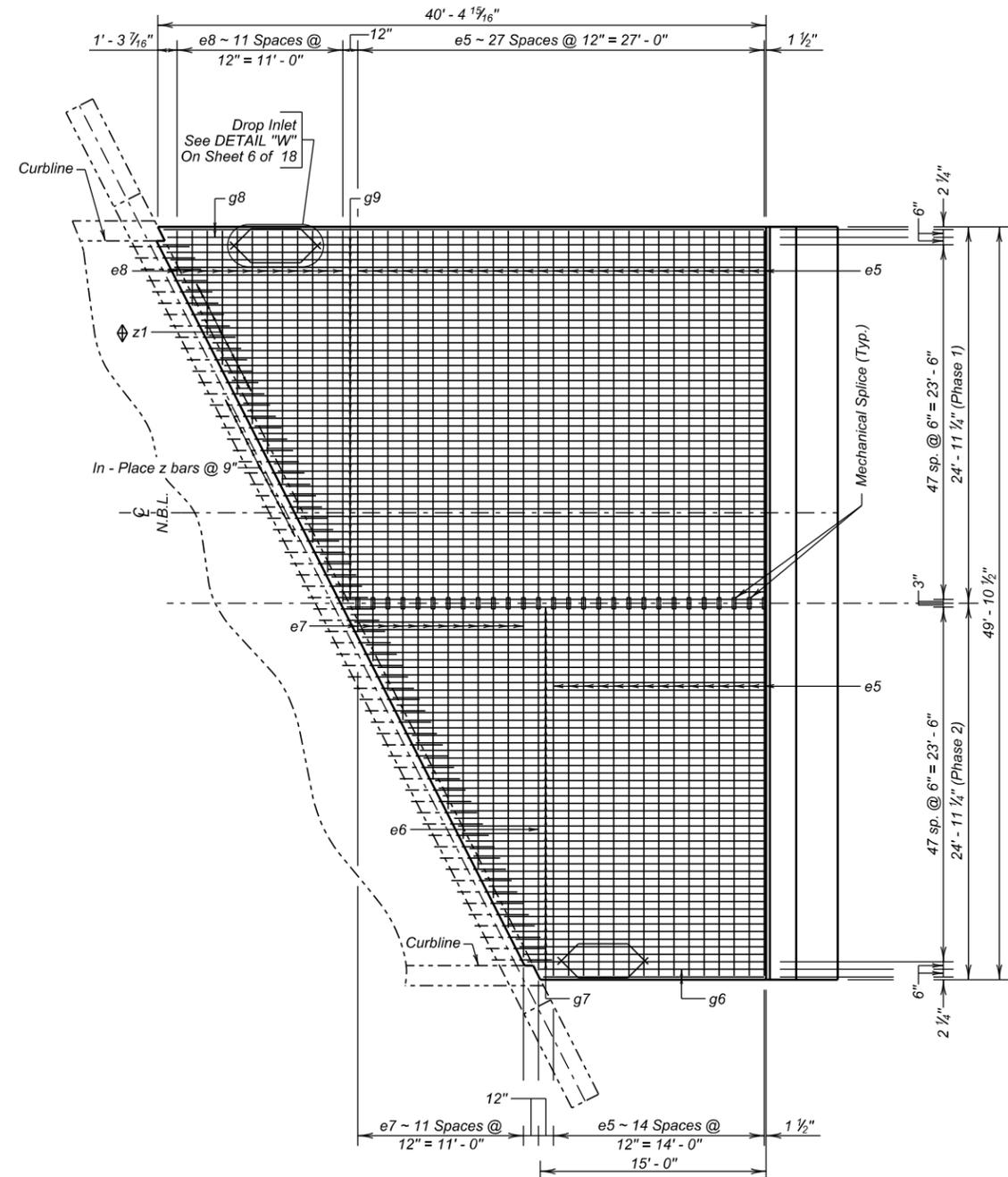
z1 bars to be mechanically spliced to the existing z bars in abutment using existing rebar splice



PLAN
(Top Steel Shown)
(Abutment No. 3 similar by rotation)



VIEW D - D



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

**NORTHBOUND LANES
APPROACH SLAB DETAILS
FOR**

276' - 8 15/16" CONT. COMP. GIRDER BRIDGE

48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-219-197

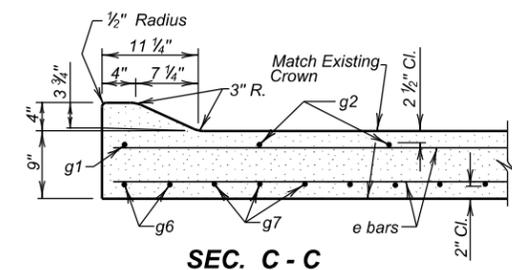
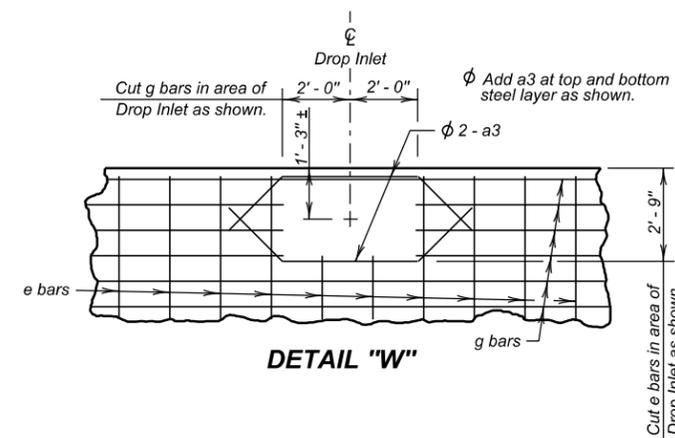
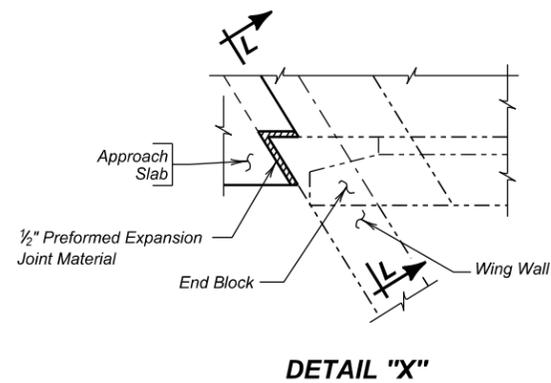
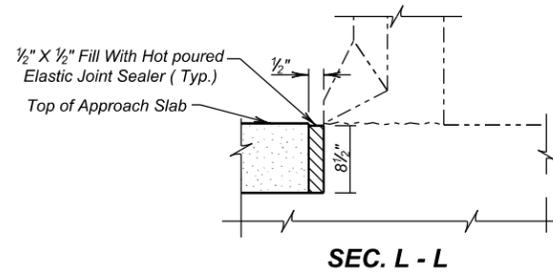
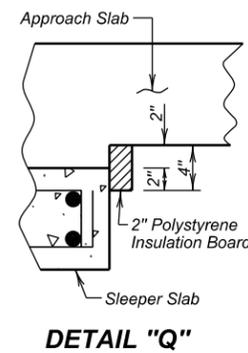
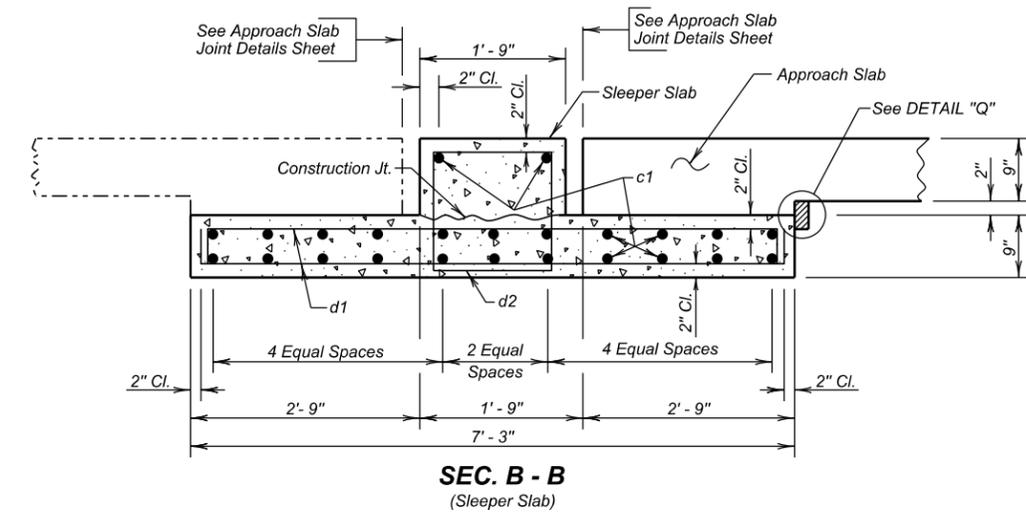
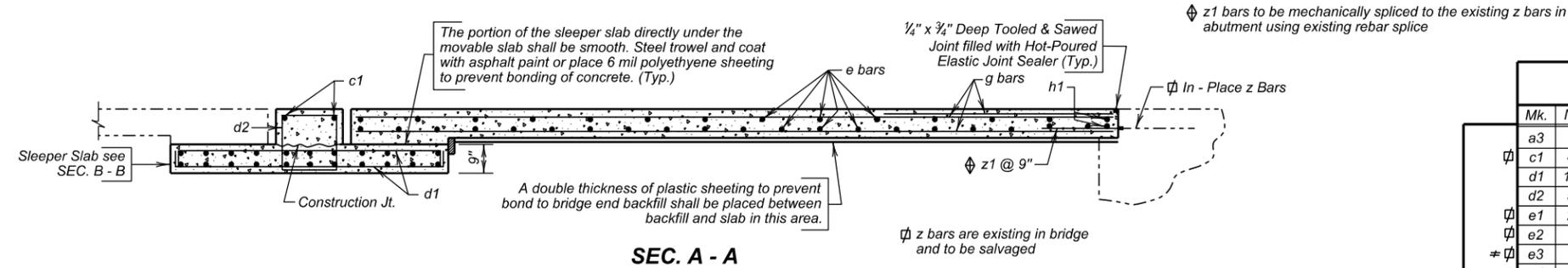
27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION

SEPTEMBER 2015

5 OF 18

DESIGNED BY MM MINN04VX	CK. DES. BY BWS 04VXR05	DRAFTED BY KR	<i>Kevin N. Coeden</i> BRIDGE ENGINEER
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REINFORCING SCHEDULE

(For Two Approach and Sleeper Slabs)

Mk.	No.	Size	Length	Type	Bending Details	
					Phase 1	Phase 2
a3	4	4	7'-4"	19A		
c1	48	5	24'-8"	Str.		
d1	100	4	7'-9"	2		
d2	50	4	6'-3"	T2		
e1	29	4	24'-8"	Str.		
e2	1	4	24'-2"	Str.		
e3	4	4	24'-4"	Str.		
e4	4	4	26'-7"	Str.		
e5	43	6	24'-8"	Str.		
e6	1	6	24'-4"	Str.		
e7	6	6	25'-4"	Str.		
e8	6	6	27'-7"	Str.		
g1	1	4	14'-8"	Str.		
g2	8	4	43'-6"	Str.		
g3	1	4	39'-11"	Str.		
g4	8	4	67'-11"	Str.		
g5	32	4	6'-0"	Str.		
g6	2	8	14'-8"	Str.		
g7	24	8	43'-6"	Str.		
g8	2	8	39'-5"	Str.		
g9	24	8	67'-11"	Str.		
h1	4	6	26'-9"	Str.		
z1	64	7	2'-0"	Str.		
a3	4	4	7'-4"	19A		
c1	48	5	24'-8"	Str.		
d1	100	4	7'-9"	2		
d2	50	4	6'-3"	T2		
e1	29	4	24'-8"	Str.		
e2	1	4	24'-2"	Str.		
e3	4	4	24'-4"	Str.		
e4	4	4	26'-7"	Str.		
e5	43	6	24'-8"	Str.		
e6	1	6	24'-4"	Str.		
e7	6	6	25'-4"	Str.		
e8	6	6	27'-7"	Str.		
g1	1	4	14'-8"	Str.		
g2	8	4	43'-6"	Str.		
g3	1	4	39'-11"	Str.		
g4	8	4	67'-11"	Str.		
g5	32	4	6'-0"	Str.		
g6	2	8	14'-8"	Str.		
g7	24	8	43'-6"	Str.		
g8	2	8	39'-5"	Str.		
g9	24	8	67'-11"	Str.		
h1	4	6	26'-9"	Str.		
z1	64	7	2'-0"	Str.		

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

ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Concrete Approach Slab for Bridge	Sq. Yd.	156.5	156.5
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	40.2	40.2
Remove Concrete Approach	Sq. Yd.	190.2	175.5
No. 4 Rebar Splice	Each	38	-
No. 5 Rebar Splice	Each	48	-
No. 6 Rebar Splice	Each	60	-

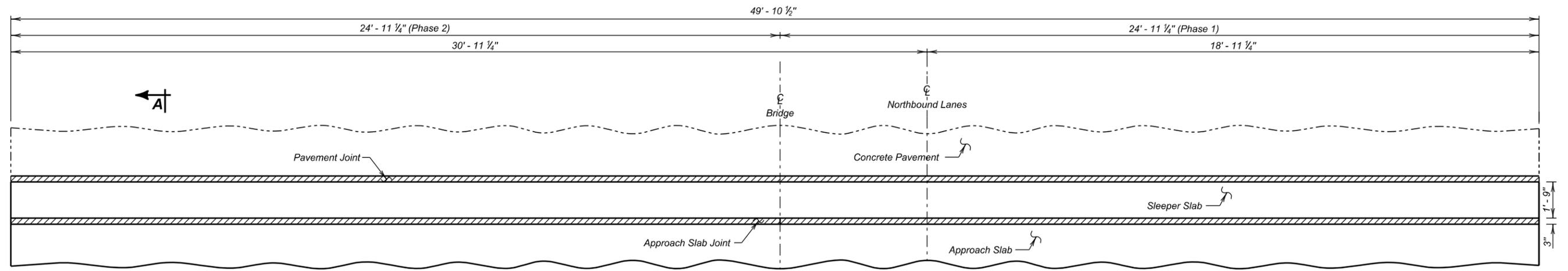
	Phase 1	Phase 2
1. Concrete in Approach Slabs	39.1 Cu. Yd.	39.1 Cu. Yd.
2. Epoxy Rebar in Approach Slabs	11368 Lb.	11368 Lb.
3. Concrete in Sleeper Slabs	13.0 Cu. Yd.	13.0 Cu. Yd.
4. Epoxy Rebar in Sleeper Slabs	1961 Lb.	1961 Lb.
5. 2" Polystyrene Insulation Board	17 Sq. Ft.	17 Sq. Ft.

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

**NORTHBOUND LANES
 APPROACH SLAB DETAILS (CONTINUED)**
 FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE
 48' - 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STR. NO. 50-219-197

27° R.H.F. SKEW
 SEC. 10-T101N-R49W
 IM 2292(97)7

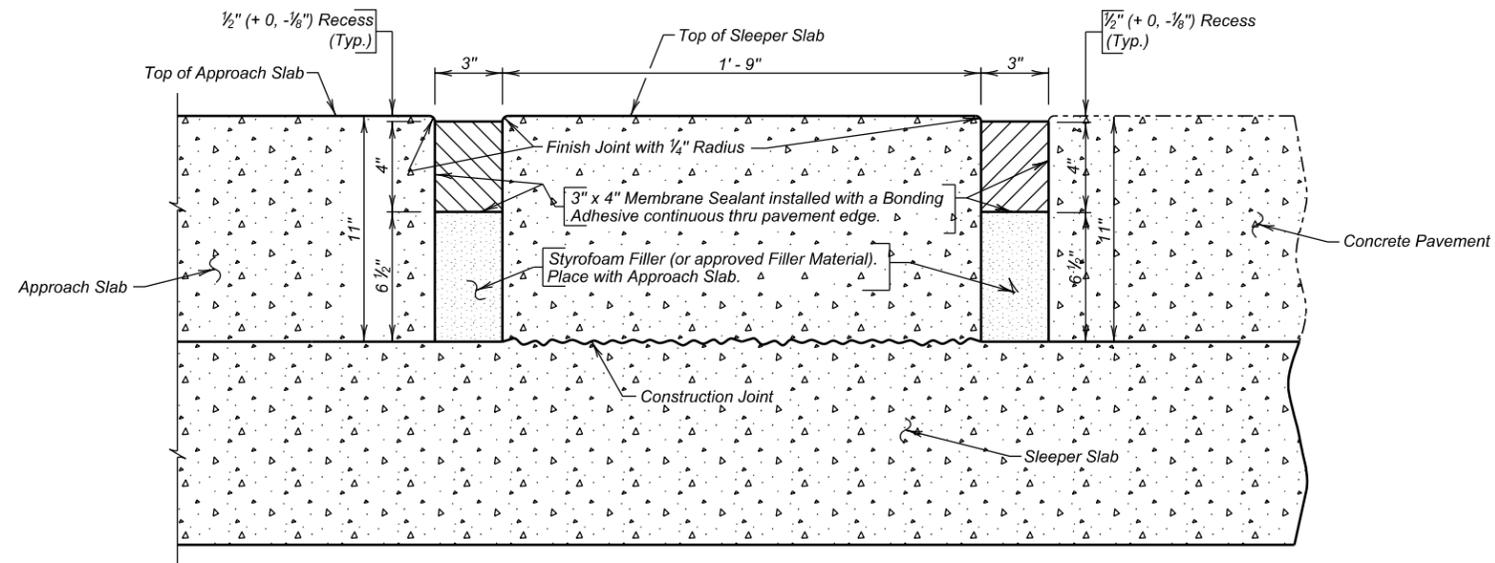
MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2015



PLAN
(Abut. No. 1 Shown, Abut. No. 3 similar by opposite hand)

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.

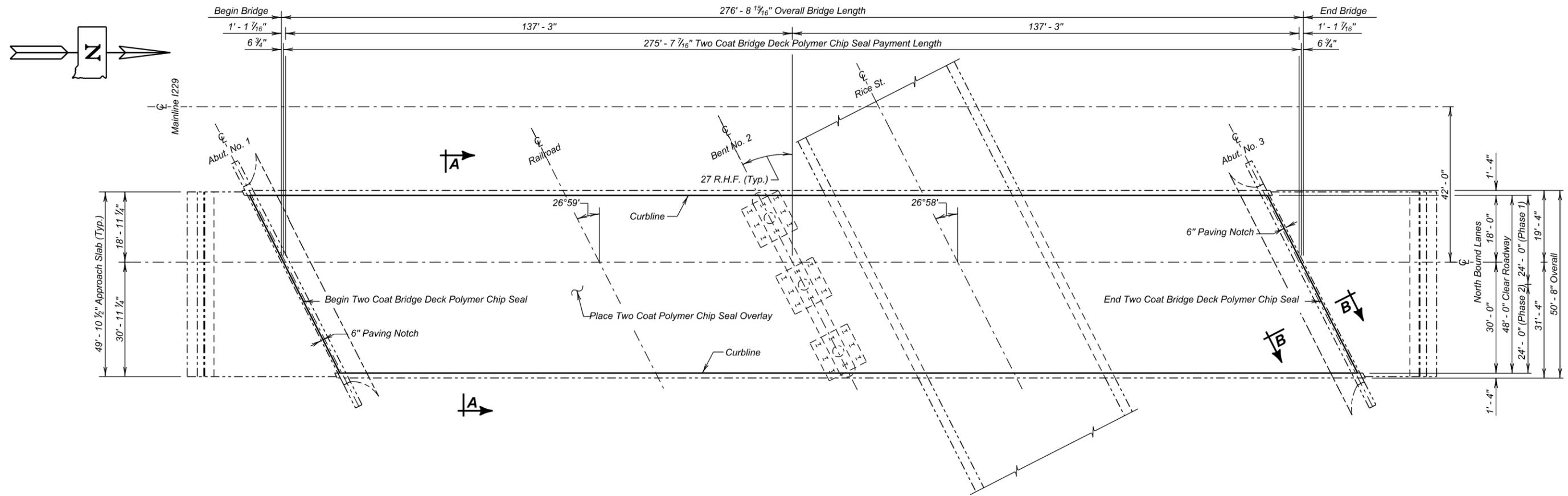


SEC. A - A

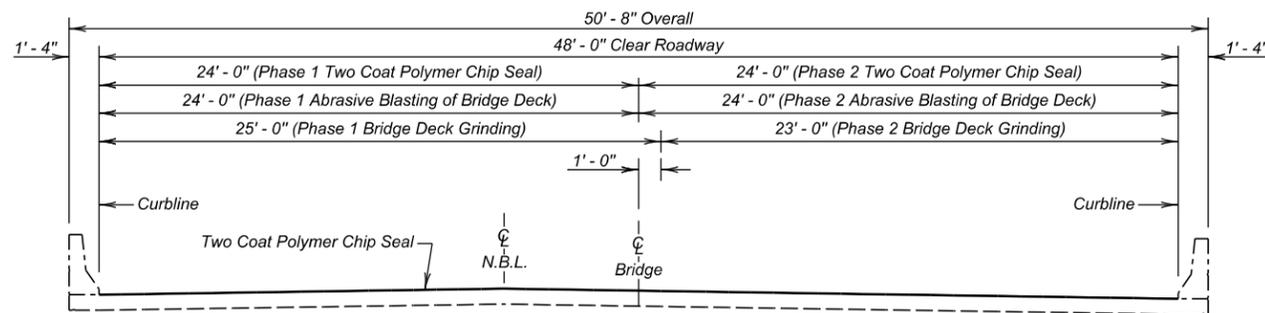
ESTIMATED QUANTITIES			
(For Two Approach Slabs)			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Membrane Sealant Expansion Joint	Ft.	99.8	99.8

**NORTHBOUND LANES
APPROACH SLAB JOINT DETAILS**
FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE
48' - 0" ROADWAY 27° R.H.F. SKEW
OVER RICE ST. & B.N. RR SEC. 10-T101N-R49W
STR. NO. 50-219-197 IM 2292(97)7

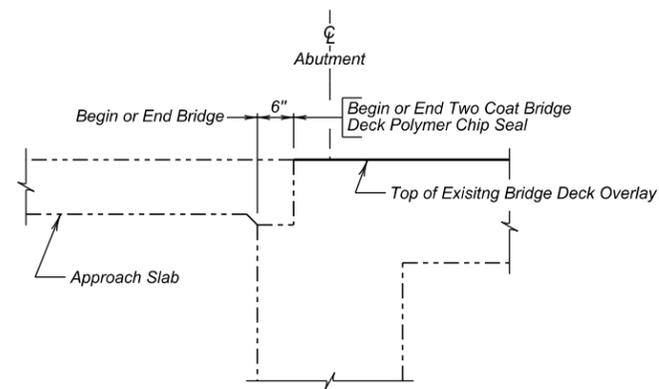
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2015



PLAN



SECTION A - A



SECTION B - B

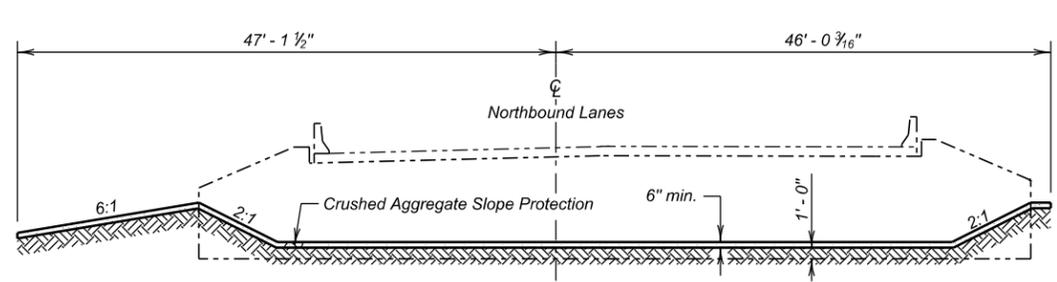
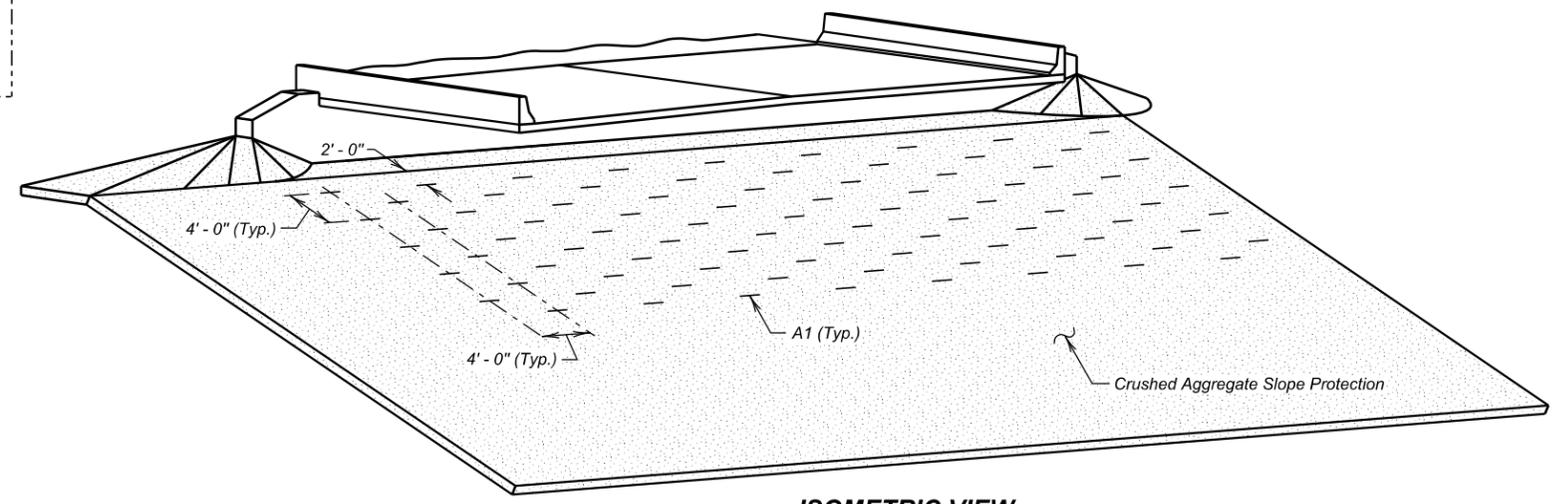
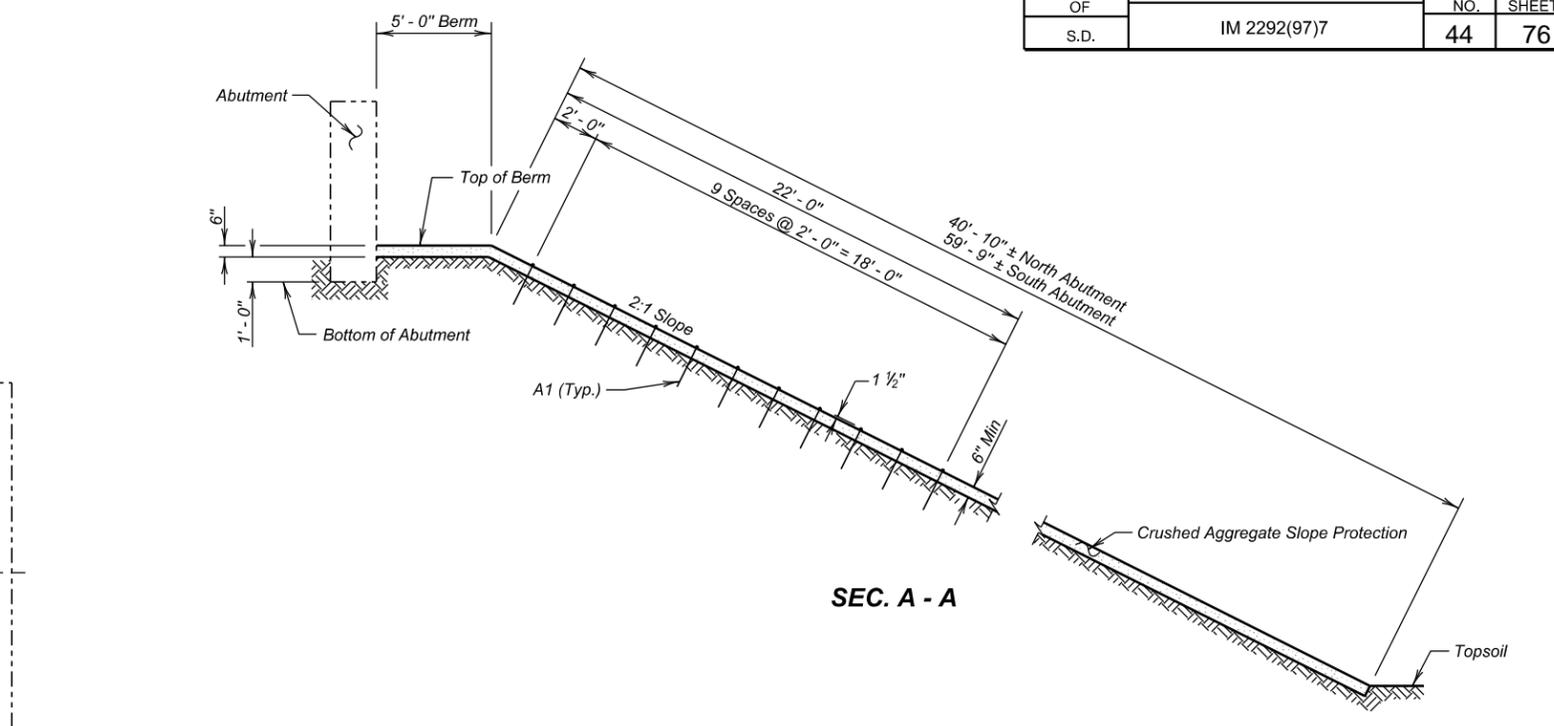
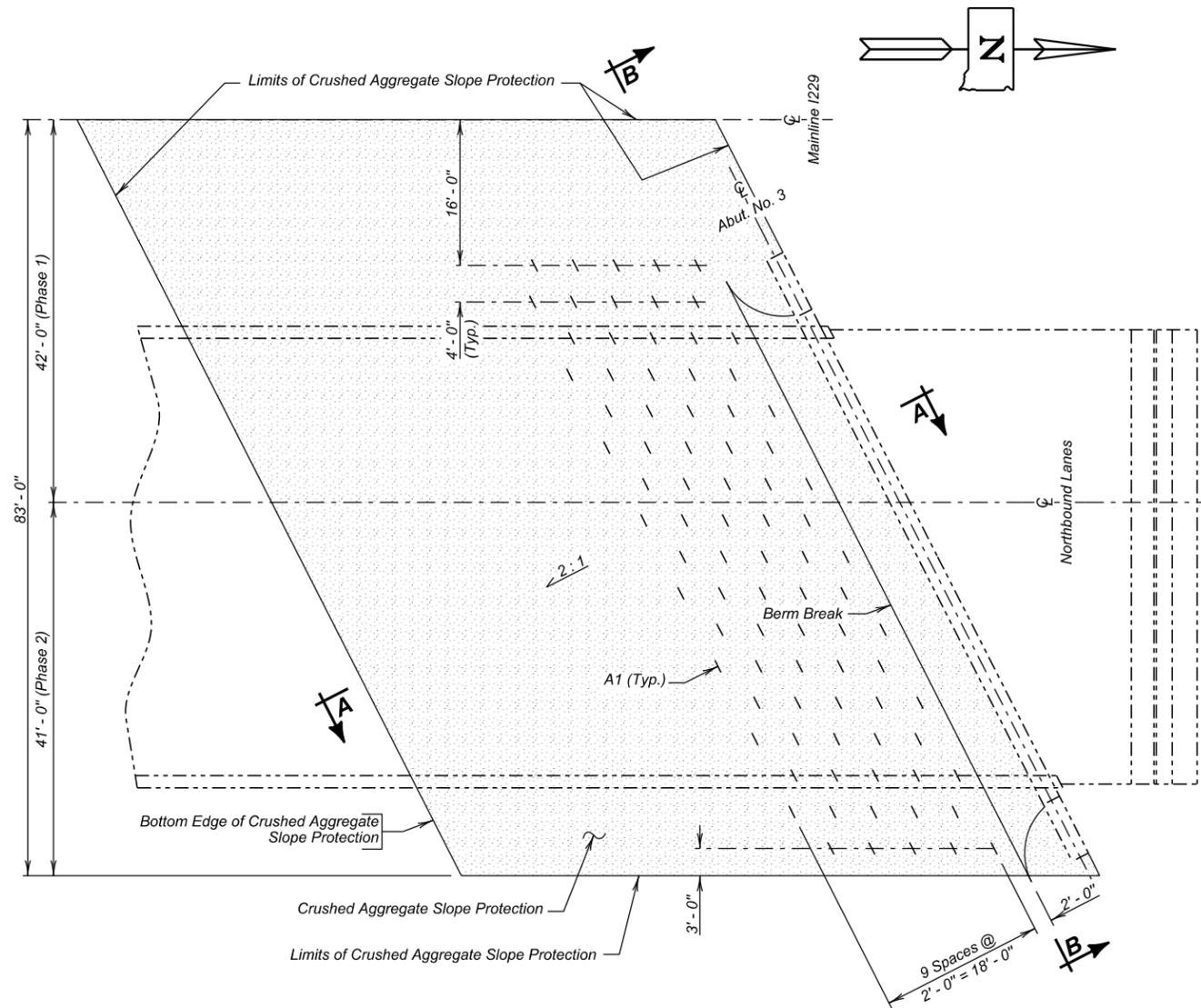
ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
* Concrete Patching Material, Bridge Deck	Cu. Ft.	12.4	12.4
Two Coat Bridge Deck Polymer Chip Seal	Sq. Yd.	735.0	735.0
Abrasive Blasting of Bridge Deck	Sq. Yd.	735.0	735.0
Bridge Deck Grinding	Sq. Yd.	765.6	704.4
* Concrete Removal, Class 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.

**NORTHBOUND LANES
POLYMER CHIP SEAL LAYOUT
FOR
276' - 8 15/16" CONTINUOUS COMP. GIRDER BRIDGE
48' - 0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-219-197**

27° R.H.F. SKEW
SEC. 10-T101N-R49W
IM 2292(97)7

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
SEPTEMBER 2015



REINFORCING SCHEDULE				
(For Two Abutments)				
Mk.	No.	Size	Length	Type
A1	170	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			
ITEM	UNIT	QUANTITY	
		Phase 1	Phase 2
Bridge Berm Slope Protection, Crushed Aggregate	Sq. Yd.	603	558

**NORTHBOUND LANES
 SLOPE PROTECTION DETAILS**
 FOR
276' - 8 15/16" CONT. COMP. GIRDER BRIDGE
 48' - 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STR. NO. 50-219-197

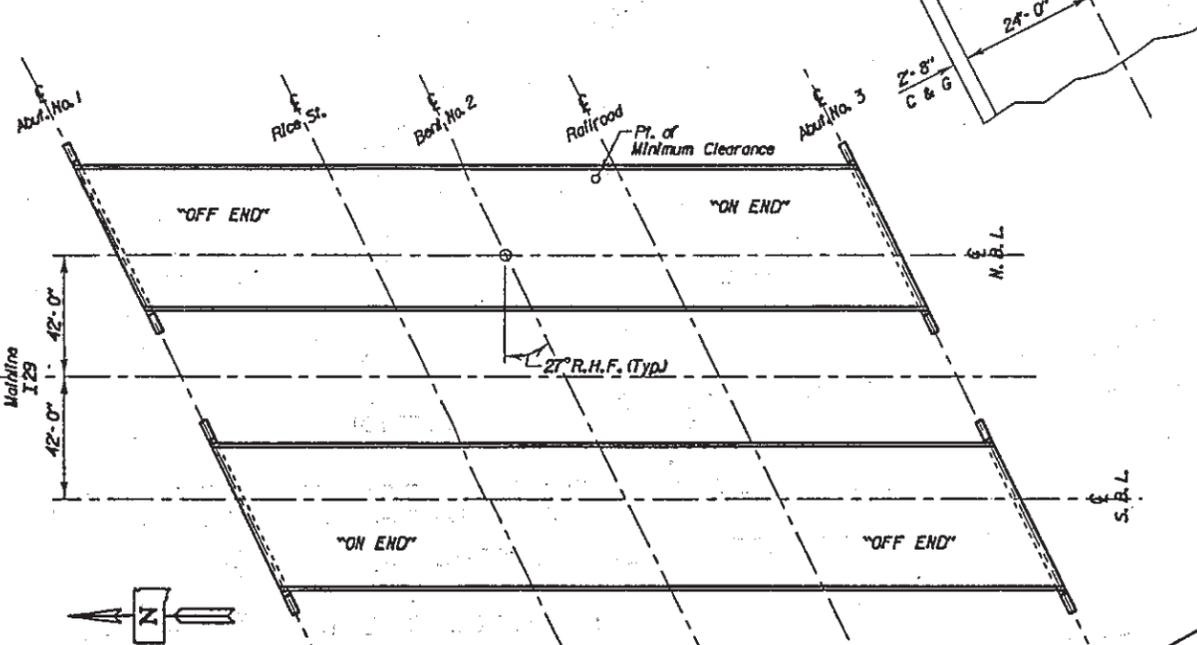
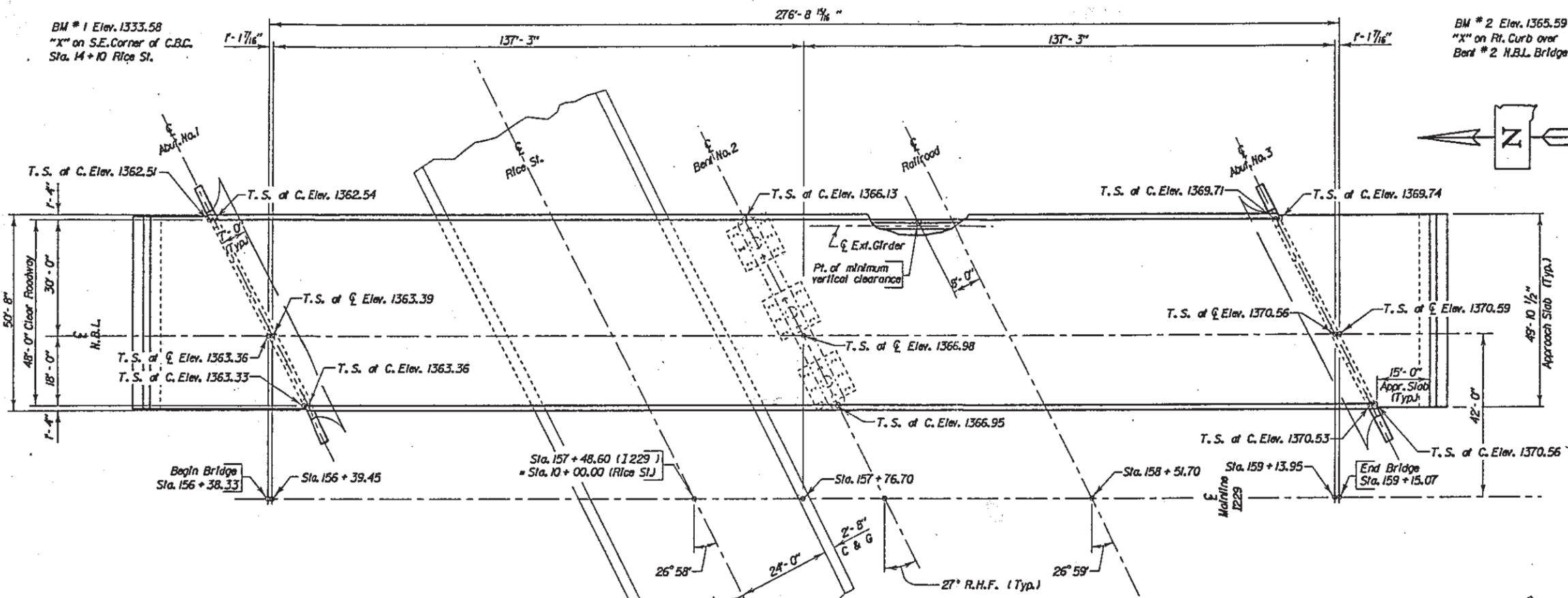
27° R.H.F. SKEW
 SEC. 10-T101N-R49W
 IM 2292(97)7

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 SEPTEMBER 2015

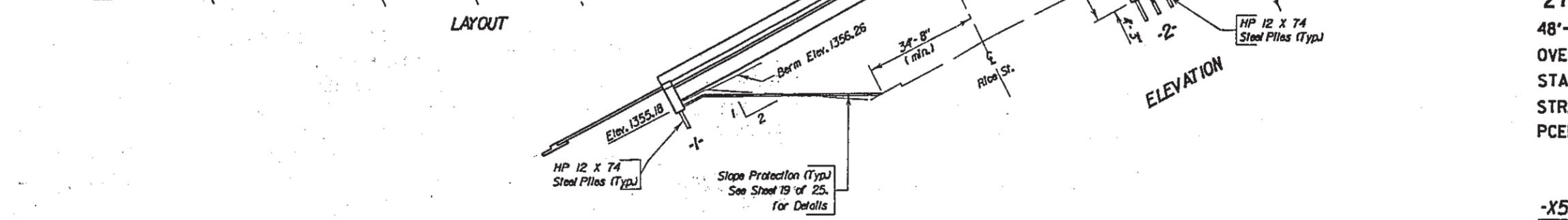
DESIGNED BY: MM
 CK. DES. BY: BWS
 DRAFTED BY: KR

Kevin N. Coeden
 BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	45	76



GRADELINE DATA
 PI Sta. 156 + 00.00
 Elev. = 1362.36 (Finished)
 V.C. = 0'



INDEX OF BRIDGE SHEETS-

- Sheet No. 1 - Layout & General Drawing
- Sheet No. 2 - Estimate of Structure Quantities & Notes
- Sheet No. 3 - Notes (Continued)
- Sheet No. 4 - Notes (Continued)
- Sheet No. 5 - Subsurface Investigation & Piling Layout
- Sheet No. 6 - Abutment No. 1 Details
- Sheet No. 7 - Abutment No. 3 Details
- Sheet No. 8 - Bent Details
- Sheet No. 9 - Superstructure Details
- Sheet No. 10 - End Block and Barrier Curb Details
- Sheet No. 11 - Diaphragm Details
- Sheet No. 12 - Girder Layout & Details
- Sheet No. 13 - Framing Diagram Data
- Sheet No. 14 - Slab Form Elevation & Erection Data
- Sheet No. 15 - Details of Bolted Field Splices & Bearings
- Sheet No. 16 - Details of Bridge End Backfill
- Sheet No. 17 - Details of Approach Slab Adjacent to Bridge
- Sheet No. 18 - Approach Slab Joint Details
- Sheet No. 19 - Slope Protection Details
- Sheet No. 20 - Details of Standard Plates No. 302 and No. 308
- Sheet No. 21 - Details of 3 - Cable Guard Rail Connection & 5 - Bolt Insert Assembly
- Sheet No. 22-25 - Original Construction Plans

ORIGINAL CONSTRUCTION PLANS

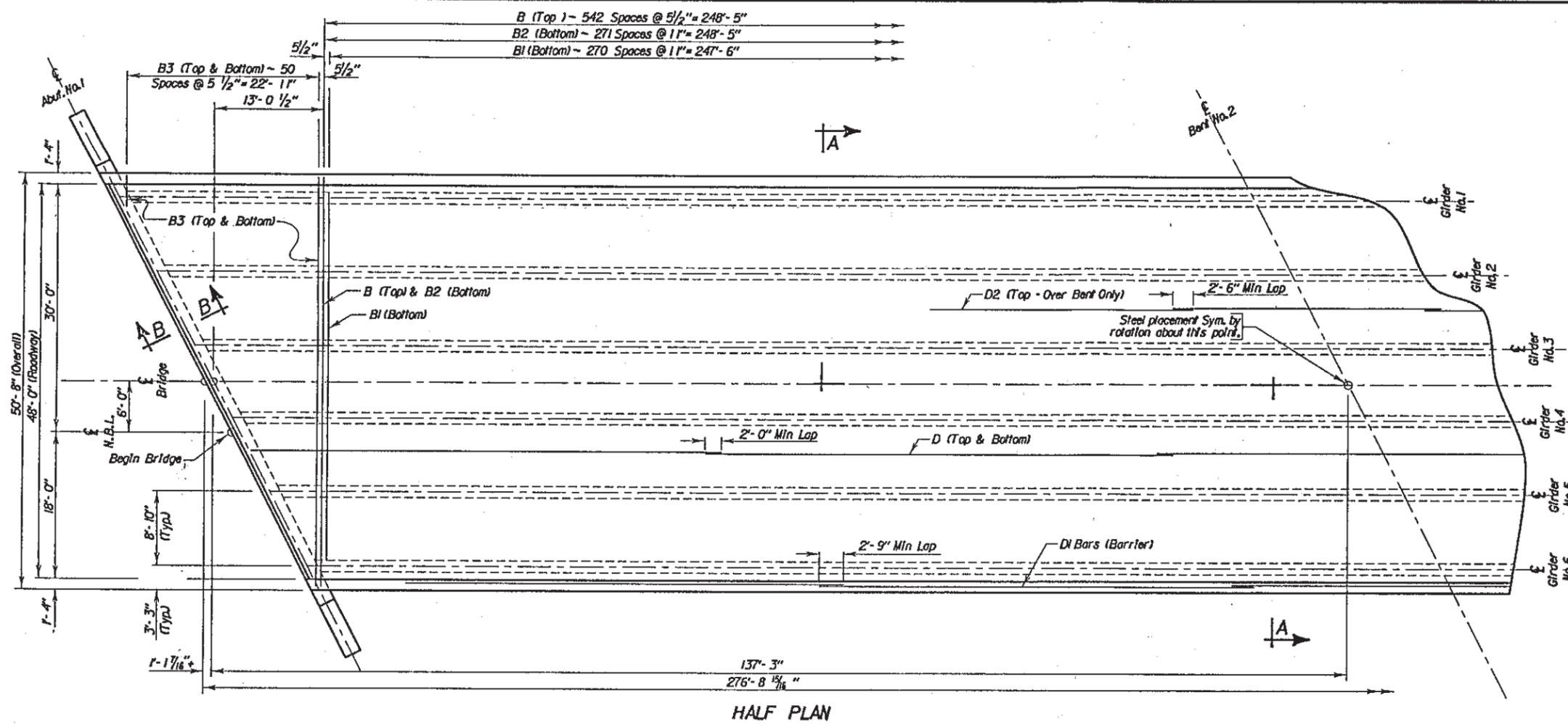
LAYOUT & GENERAL DRAWING
 FOR
NORTHBOUND LANES
276'- 8⁵/₁₆" CONT. COMP. GRDR. BRIDGE
 48'- 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STA. 156 + 38.33 TO 159 + 15.07
 STR. NO. 50-219-197
 PCMS NO. 0545

SEC. 10-TIOIN-R49W
27° R. H. F. SKEW
IM 229-2(43)7
HS25-44
(& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1993

-X571-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SI/DL	SR	SI/DL	<i>[Signature]</i>
MINN0545	0545RA01		BRIDGE ENGINEER

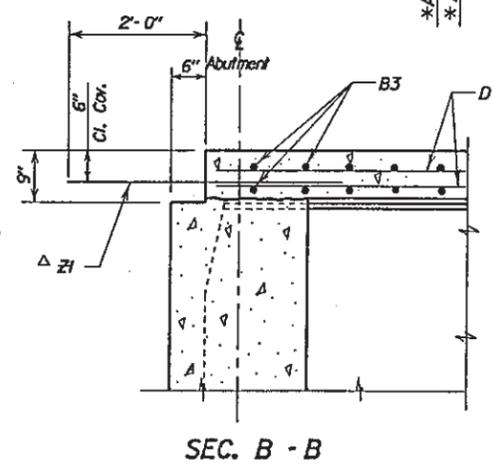
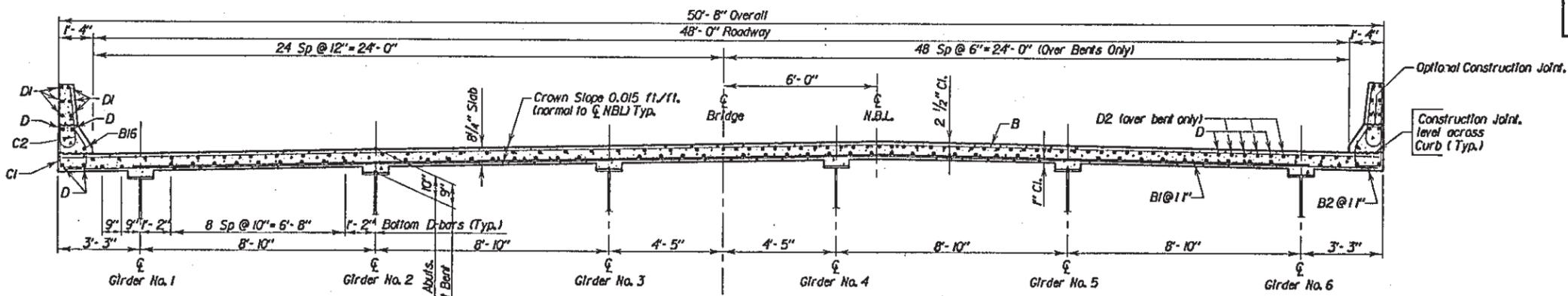


REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
B	543	5	50'-4"	Sir.
BI	271	5	45'-2"	Sir.
B2	272	4	50'-4"	Sir.
B3	102	5	54'-9"	Sir.
BI5	12	5	14'-6"	Sir.
BI6	10	4	55'-7"	Sir.
BI7	8	4	8'-6"	19B
BI8	12	8	4'-3"	19B
BI9	12	5	2'-4"	Sir.
B20	12	6	3'-2"	17A
C1	536	5	5'-10"	T2A
C2	508	5	5'-1"	S11
C3	4	5	6'-4"	T1
C4	4	5	6'-5"	T1
C5	4	5	6'-7"	T1
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	6'-0"	T1A
C11	16	5	7'-1"	T1
C12	4	6	4'-9"	17
C13	4	5	5'-3"	17
D	530	5	56'-9"	Sir.
DI	60	4	52'-9"	Sir.
D2	144	6	32'-0"	Sir.
Z1	106	7	4'-0"	Sir.

Bending Details

NOTES:
 All reinforcing steel shall be epoxy coated.
 See sheet 17 of 25 for placement of Z1 bars.
 All dimensions are out to out of bars.
 See cutting diagram.



* Dimensions are at \bar{c} bearing; at other points along the girders this dimension shall be computed as shown on the Slab Form Elevation Sheet.

NOTE: All Barrier Curb Details Shown on sheet 10 of 25.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu.Yd.	410.6
Epoxy Coated Reinforcing Steel	Lb.	104798
Structural Steel	Lump Sum	Lump Sum
Bridge Painting	Lump Sum	Lump Sum
Special Surface Finish	Sq.Ft.	3764

For Informational purposes only, the estimated weight of the structural steel is 503789 pounds.

For Informational purposes only, the estimated area to be painted is 24,000 Sq. Ft. for girders only.

ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS
 FOR
 NORTHBOUND LANES
276'- 8 15/16" CONT. COMP. GRDR. BRIDGE
 48'- 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STA. 156 + 38.33 TO 159 + 15.07
 STR. NO. 50-219-197

SEC. 10-T10IN-R49W
 27° R.H.F. SKEW
 IM 229-2(43)7
 HS25-44
 (& ALT.)

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 1993

08/09/01
D:\643681\1-229*NB*AS-BUILTS*ICE-APPROACH*nb_rice_sbapps1b.dgn

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 229(19)17	47	76

229 I-229 Corridor

REINFORCING SCHEDULE

(For Approach Slab and One Sleeper Slab)

Mk. No.	Size	Length	Type	Bending Details
Approach Slab				
e1	10	4	49'-6"	STR.
e2	1	4	48'-10"	STR.
e3	8	4	49'-10"	STR.
e5	15	6	49'-6"	STR.
e6	1	6	48'-10"	STR.
e8	12	6	50'-9"	STR.
g1	2	4	14'-9"	STR.
g2	2	4	39'-7"	STR.
g3	1	4	39'-4"	STR.
g4	15	4	55'-0"	STR.
g5	2	8	14'-9"	STR.
g6	2	8	39'-7"	STR.
g7	48	8	55'-8"	STR.
h1	2	6	53'-6"	STR.
c1	26	5	49'-7"	STR.
d1	100	4	7'-9"	2
d2	50	4	6'-3"	T2

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

ESTIMATED QUANTITIES

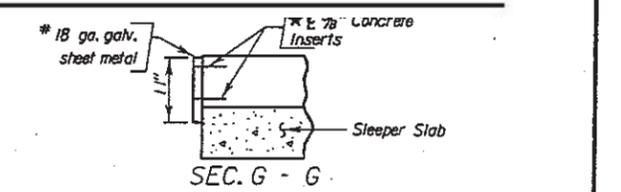
(For Approach Slab and One Sleeper Slab)

ITEM	UNIT	QUANTITY
Conc. Approach Slab Adjacent to Bridge	Sq.Yd.	156.6
Bridge Approach Sleeper Slab	Sq.Yd.	40.2

- 40.3 Cu. Yds. Concrete In Approach Slabs.
- 10981 Lbs. Epoxy Coated Re-Steel In Approach Slabs.
- 13.0 Cu. Yds. Concrete In Sleeper Slabs.
- 2071 Lbs. Epoxy Coated Re-Steel In Sleeper Slabs.
- 2007 Lbs. Structural Steel In Armor Assembly.

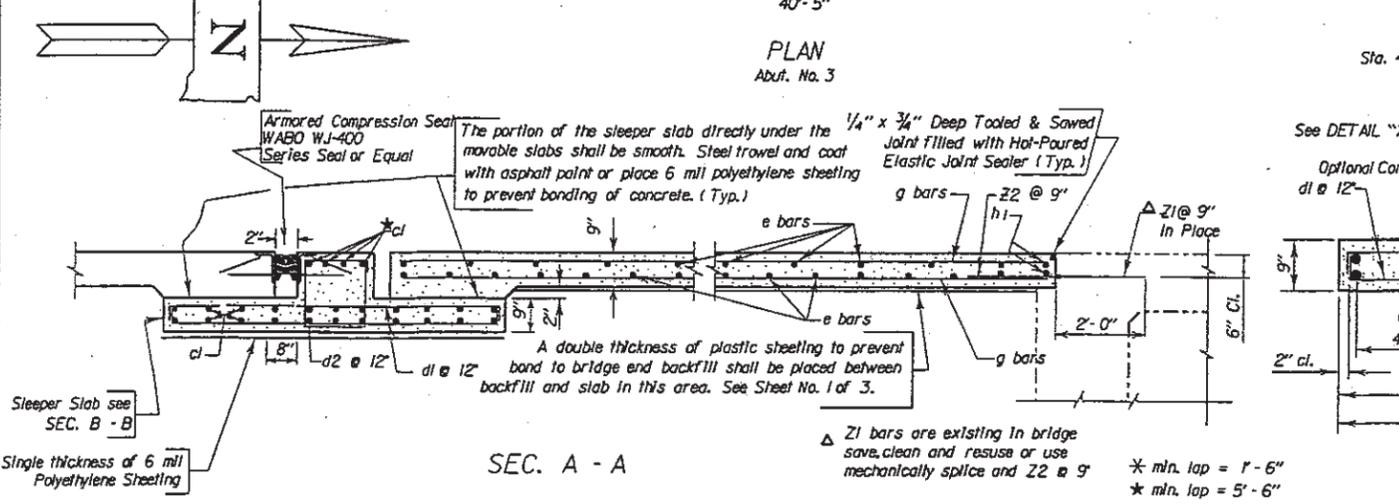
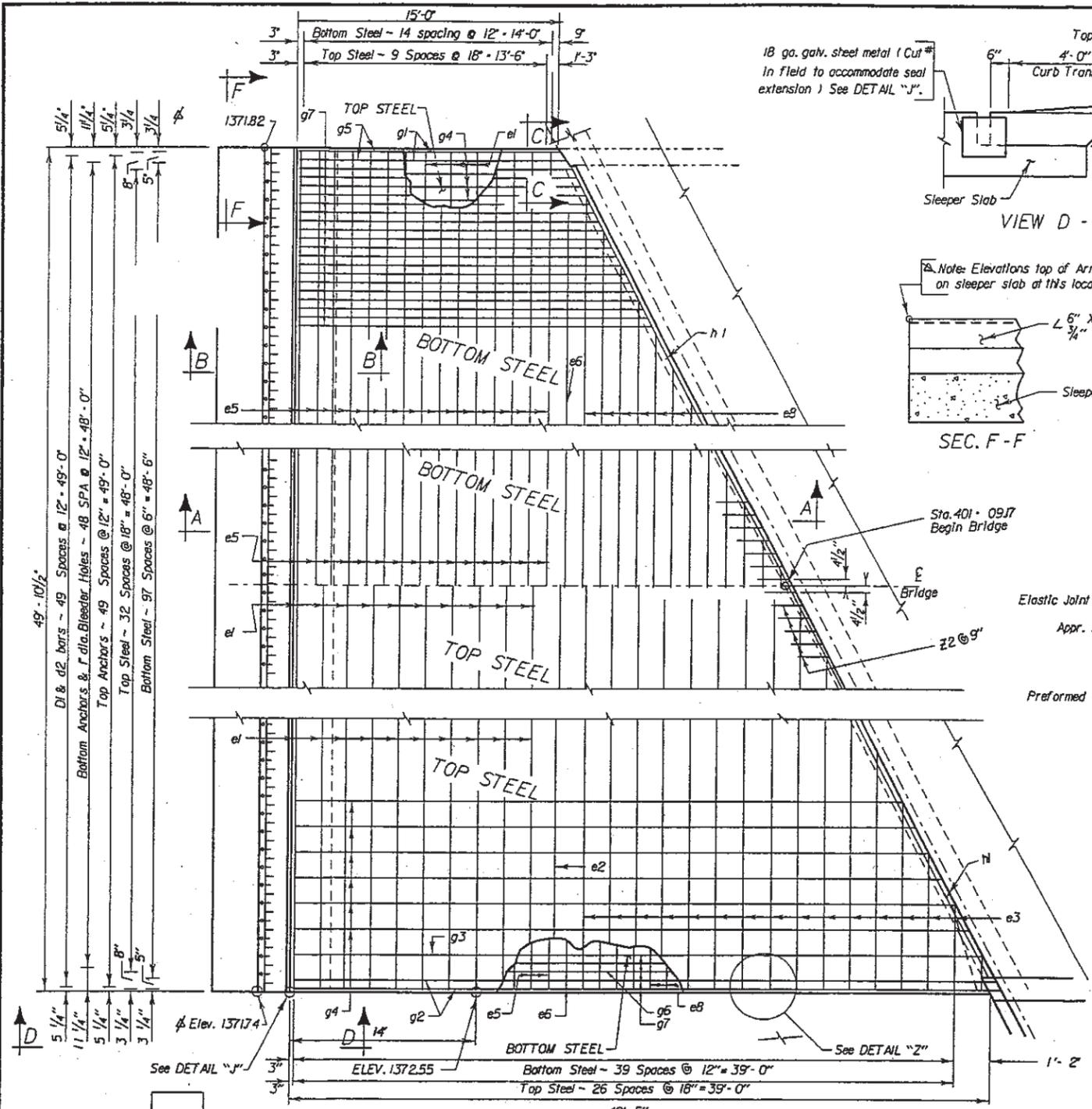
Items 1 thru 5 are approximate quantities contained in the above bid items and are for information only.

ORIGINAL CONSTRUCTION PLANS

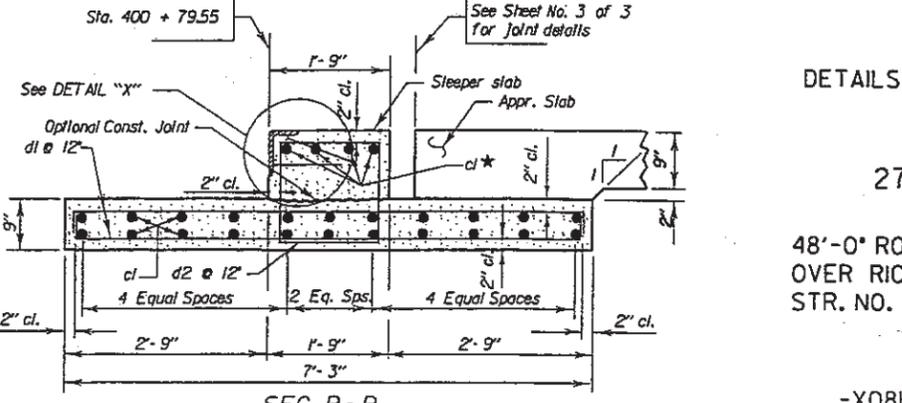
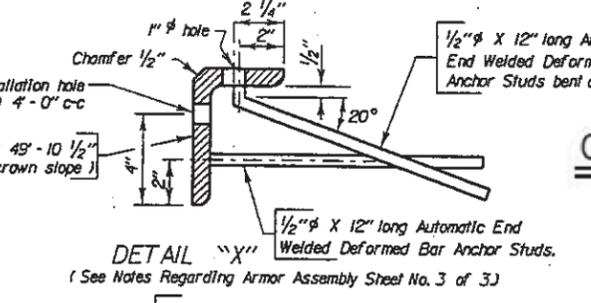
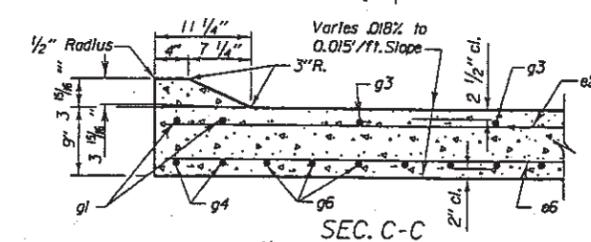
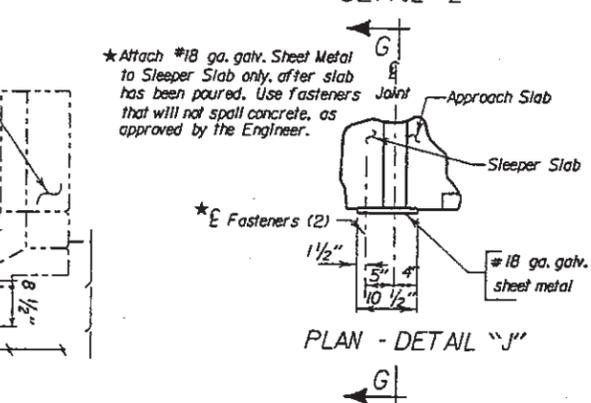
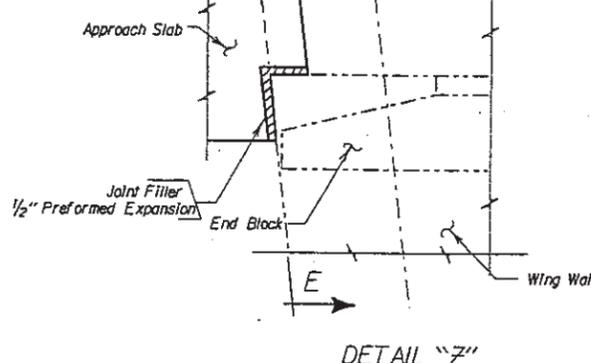
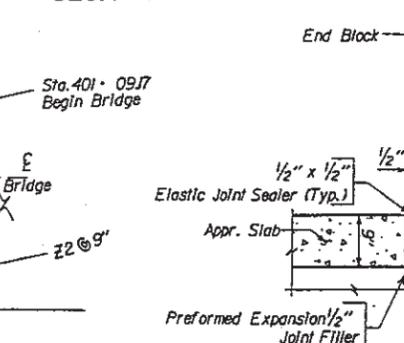
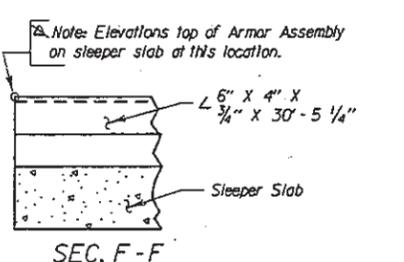
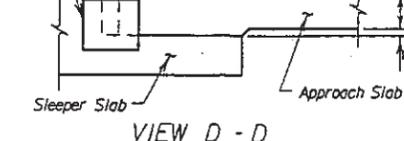


DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR SOUTH ABUTMENT (NO. 3) I-229 NORTHBOUND LANES
276'-8⁵/₁₆" CONT. COMP. GRDR. BRIDGE
48'-0" ROADWAY
OVER RICE ST. & B.N. RR
STR. NO. 50-218-197
219 MINNEHAHA COUNTY
S.D. DEPT. OF TRANSPORTATION
OCTOBER 2000

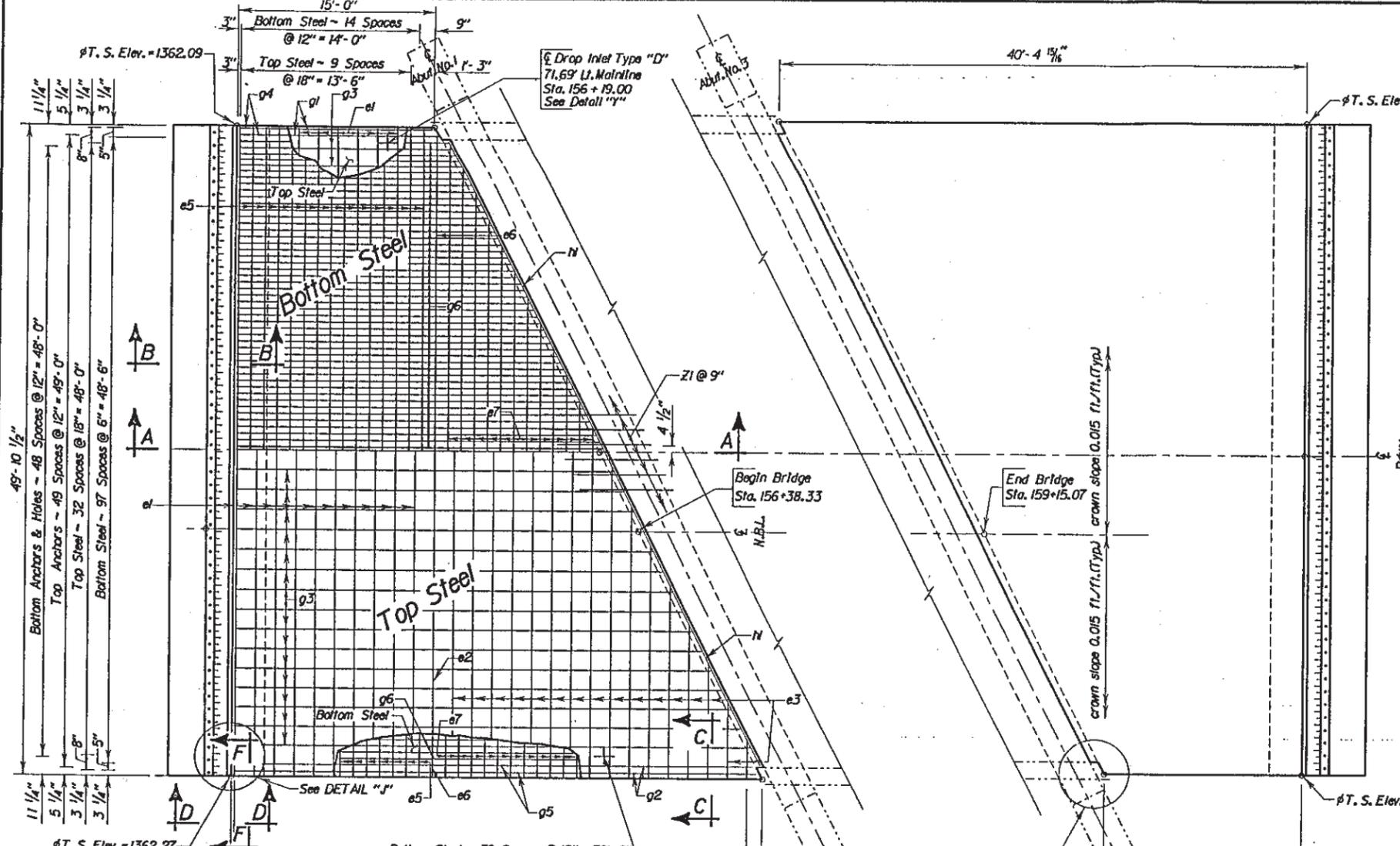
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
JAG	LEW	JCK	



NOTE - Use this sheet in conjunction with Sheet No. 3 of 3.



Plans By: PARSONS TRANSPORTATION GROUP



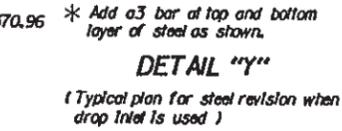
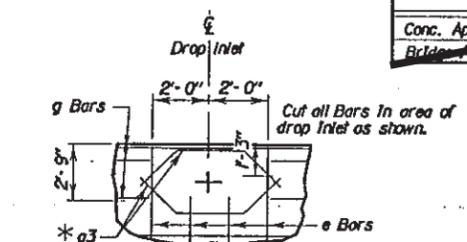
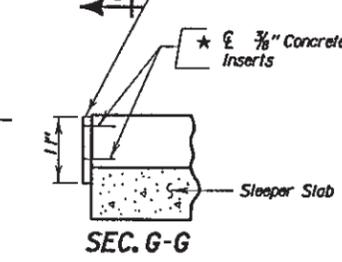
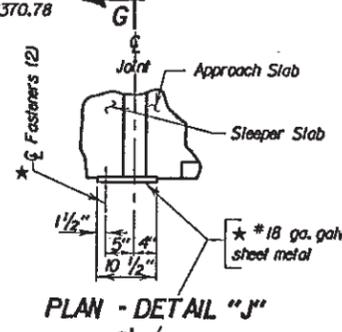
* Attach #18 ga. galv. Sheet Metal to Sleeper Slab only, after slab has been poured. Use fasteners that will not spoil concrete, as approved by the Engineer.

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

Mk.	No.	Size	Length	Type
a3	8	4	7'-4"	19A
e1	20	4	49'-7"	Sir.
e2	2	4	48'-10"	Sir.
e3	16	4	49'-10"	Sir.
e5	30	6	49'-7"	Sir.
e6	2	6	48'-10"	Sir.
e7	24	6	50'-9"	Sir.
g1	4	4	14'-9"	Sir.
g2	4	4	39'-7"	Sir.
g3	31	4	55'-11"	Sir.
g4	4	8	14'-9"	Sir.
g5	4	8	39'-7"	Sir.
g6	96	8	55'-7"	Sir.
N	4	6	53'-6"	Sir.
d1	48	5	49'-7"	Sir.
d2	100	4	6'-3"	T2

Bending Details

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



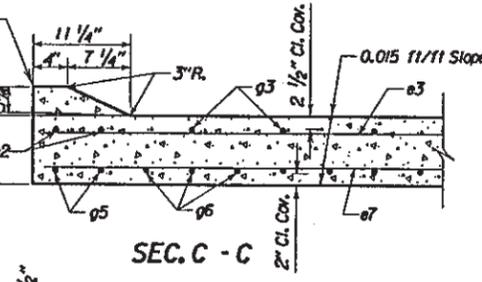
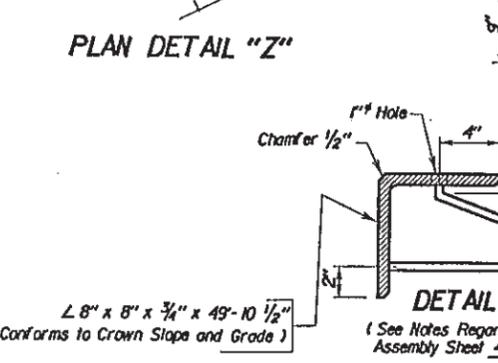
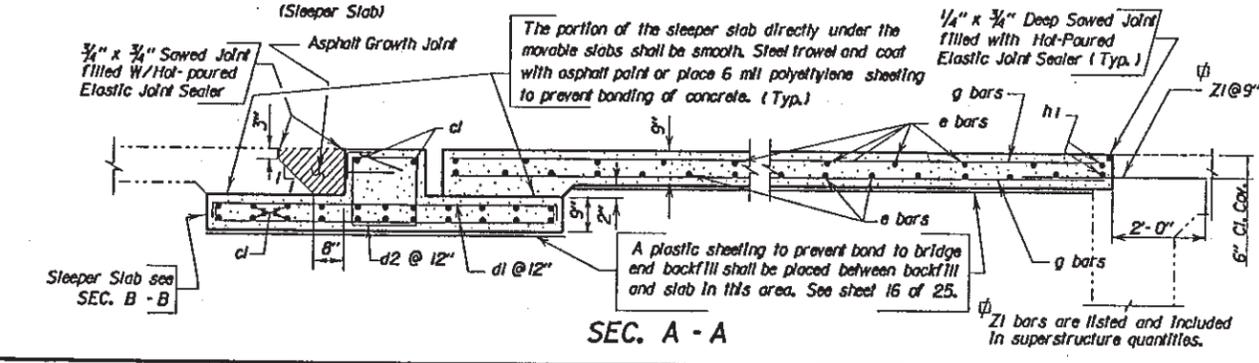
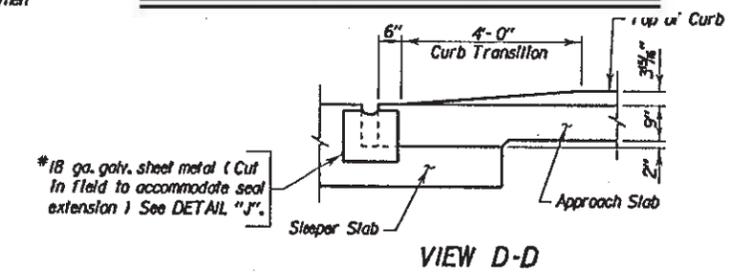
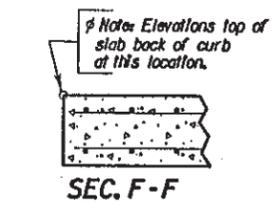
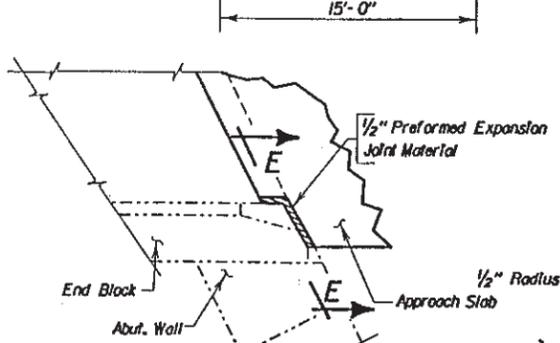
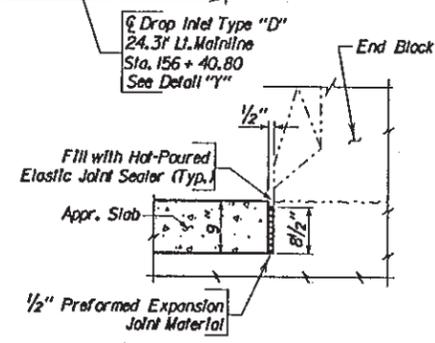
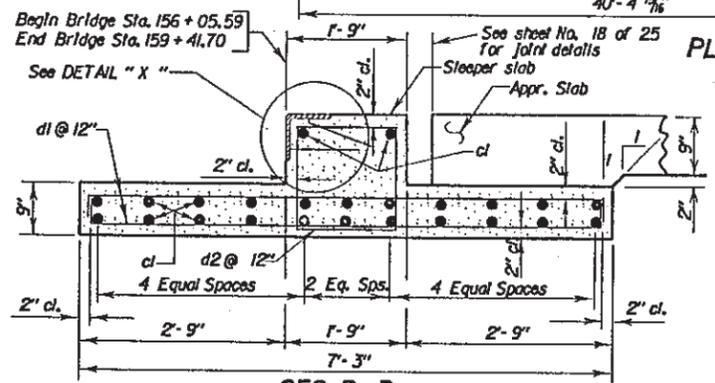
ESTIMATED QUANTITIES
(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Conc. Approach Slab Adjacent to Bridge	Sq. Yd.	313.1
Bridge Approach Sleeper Slab	Sq. Yd.	66.4

- 80.6 Cu. Yds. Concrete In Approach Slabs.
- 21962 Lbs. Epoxy Coated Re-Steel In Approach Slabs.
- 26.0 Cu. Yds. Concrete In Sleeper Slabs.
- 3935 Lbs. Epoxy Coated Re-Steel In Sleeper Slabs.
- 4013 Lbs. Structural Steel In Armor Assembly.

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

ORIGINAL CONSTRUCTION PLANS



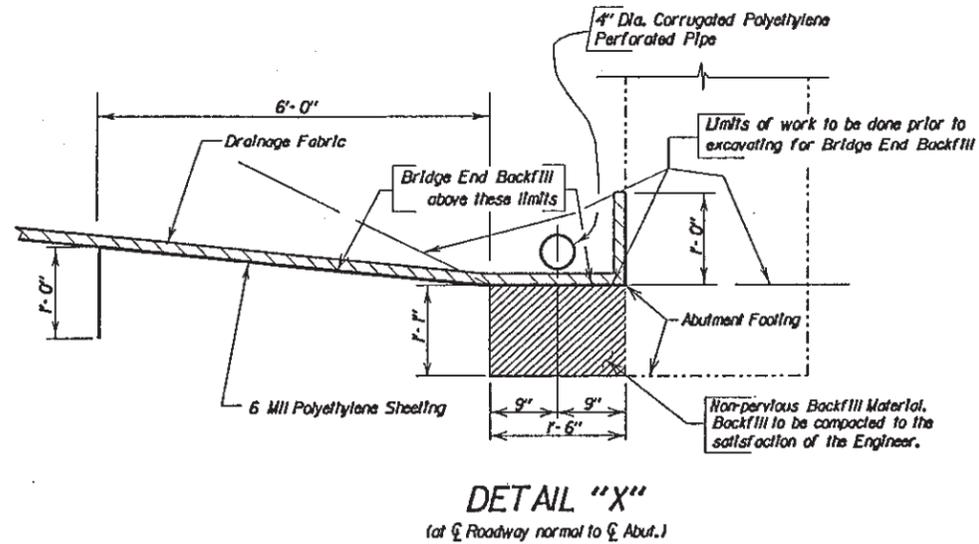
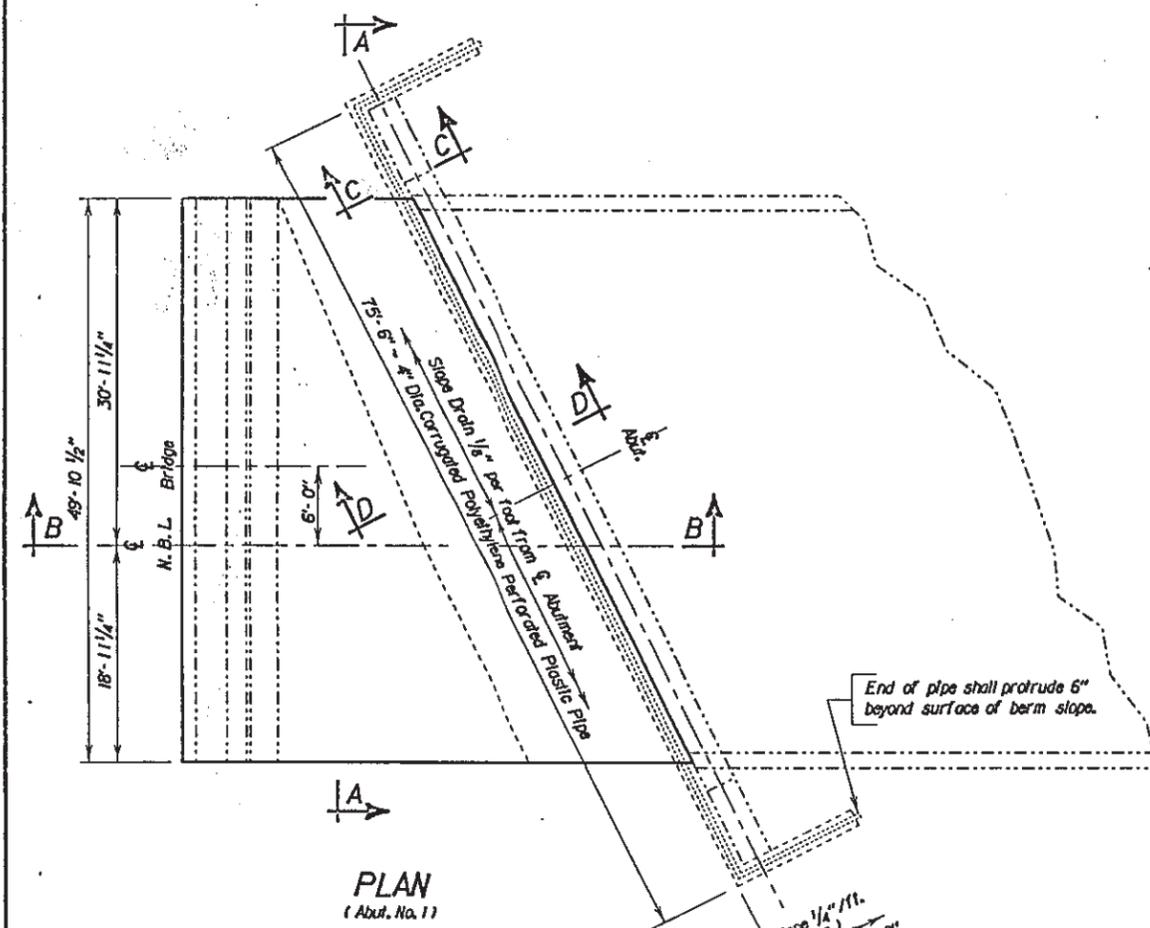
DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR NORTHBOUND LANES
276'- 8 1/8" CONT. COMP. GRDR. BRIDGE
 48'- 0" ROADWAY
 OVER RICE ST. & B.N. RR
 STA. 156 + 38.33 TO 159 + 15.07
 STR. NO. 50-219-197

SEC. 10-TIOIN-R49W
 27° R. H. F. SKEW
 IM 229-2(43)7
 HS25-44 (& ALT.)

MINNEHAHA COUNTY
 S. D. DEPT. OF TRANSPORTATION
 JUNE 1993

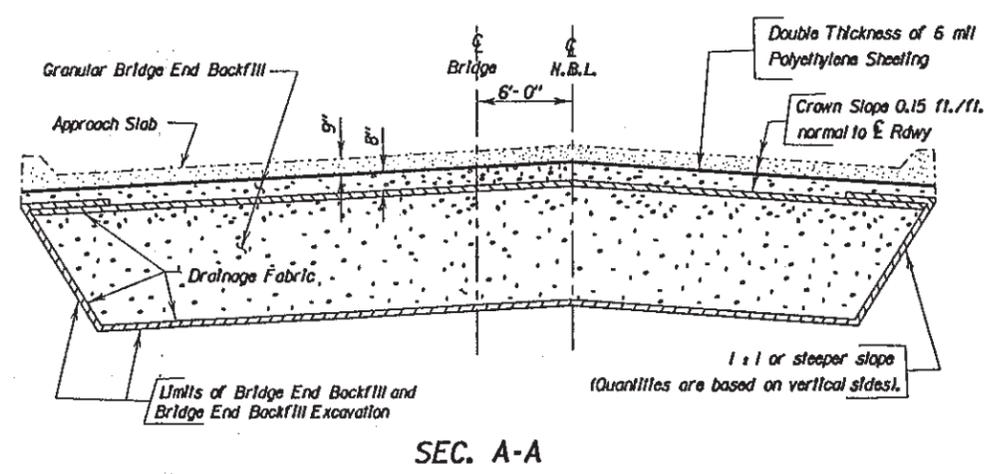
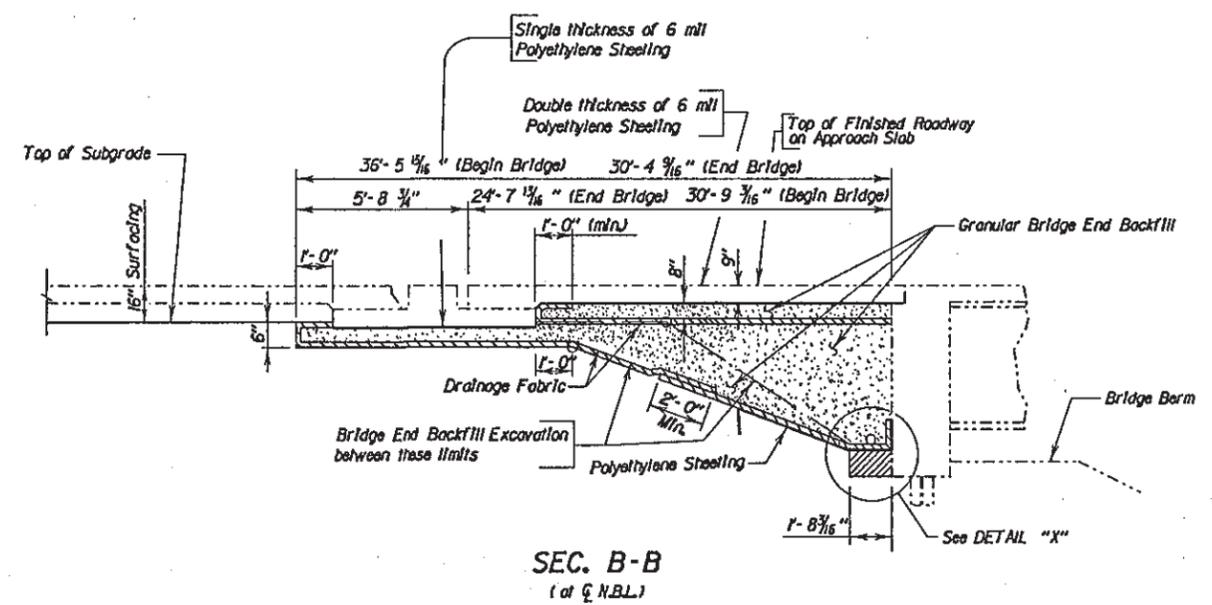
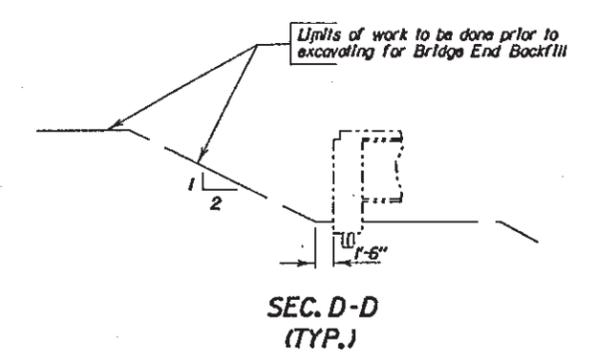
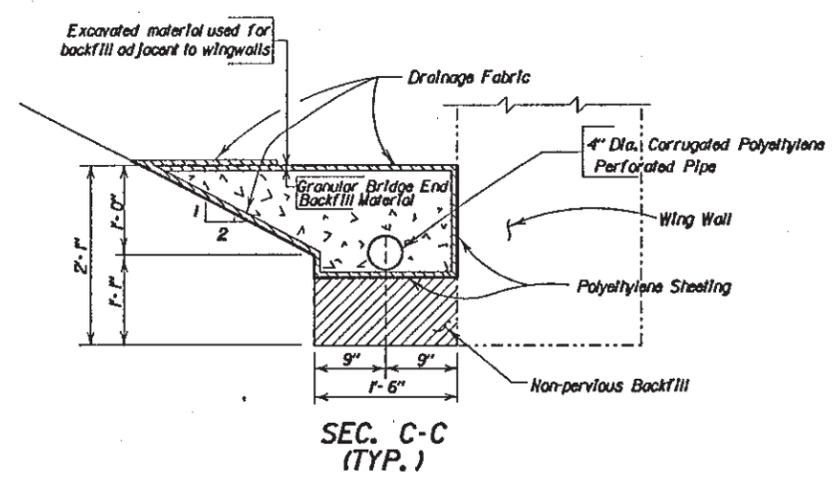
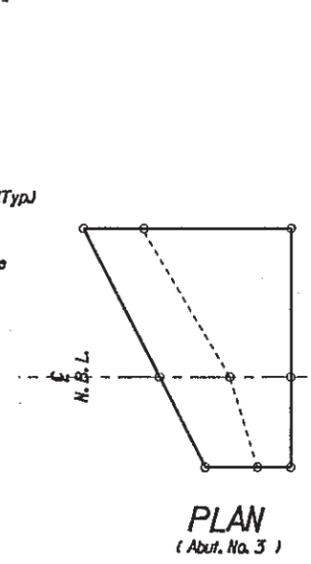
DESIGNED BY SJ/DL MINNO545
 DRAWN BY SR 0545RAI 7
 CHECKED BY SJ/DL
 APPROVED [Signature] BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	IM 2292(97)7	50	76



ESTIMATED QUANTITIES (for Two Abutments)		
ITEM	UNIT	QUANTITY
Bridge End Backfill Underdrain Pipe	L.F.	191
Bridge End Backfill Excavation	Cu. Yd.	166
Granular Bridge End Backfill	Cu. Yd.	497
Drainage Fabric	Sq. Yd.	764

- 151 ft. 4" dia. Corrugated Polyethylene Perforated Plastic Pipe for 2 Abut.
 - 20 ft. 4" dia. Corrugated Polyethylene Plastic Pipe for 2 Abut.
 - 20 ft. 4" dia. Std. Black Steel Pipe for 2 Abut.
 - 7023 sq. ft. 6 mil Polyethylene Sheeting, not including laps.
- Items 1 thru 4 are approximate quantities contained in the above bid items and are for information only.
- (\perp) Bridge End Backfill Excavation will not be measured, Plans quantity payment will be full compensation for this item.
- * Quantity has been adjusted by a "Shrinkage" factor of 1.3 to convert final compacted volume to loose volume.



ORIGINAL CONSTRUCTION PLANS

DETAILS OF BRIDGE END BACKFILL FOR NORTHBOUND LANES

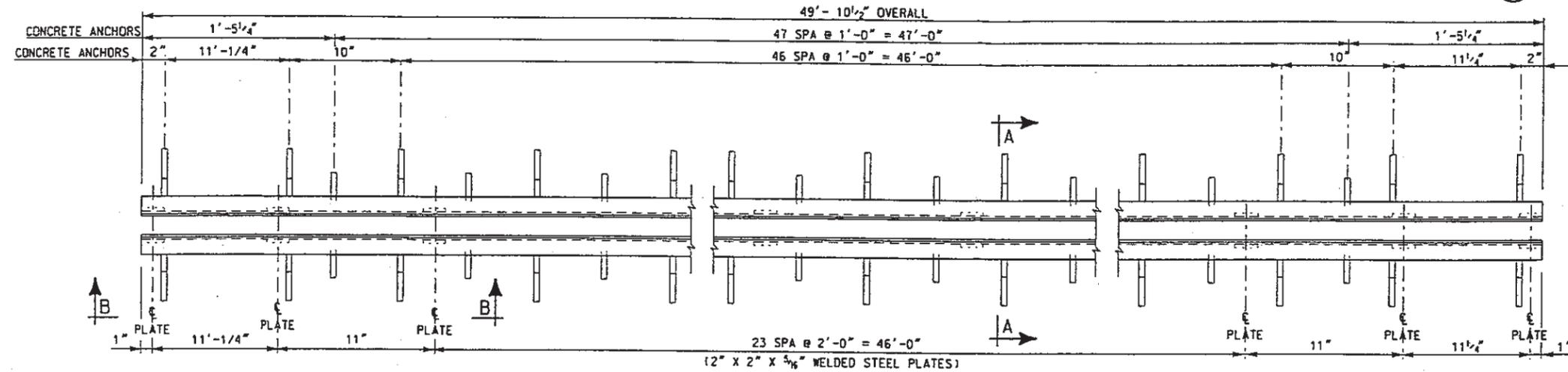
276'- 8 15/16" CONT. COMP. GRDR. BRIDGE

48'- 0" ROADWAY OVER RICE ST. & B.N. RR

SEC. 10-T10IN-R49W
27° R. H. F. SKEW
STA. 156 + 38.33 TO 159 + 15.07
IM 229-2(43)7
STR. NO. 50-219-197
HS25-44 (& ALT.)

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
JUNE 1993

D. SIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SI/DL	SR	SI/DL	<i>[Signature]</i>
MINN0545	0545RA16		BRIDGE ENGINEER

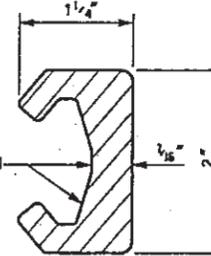
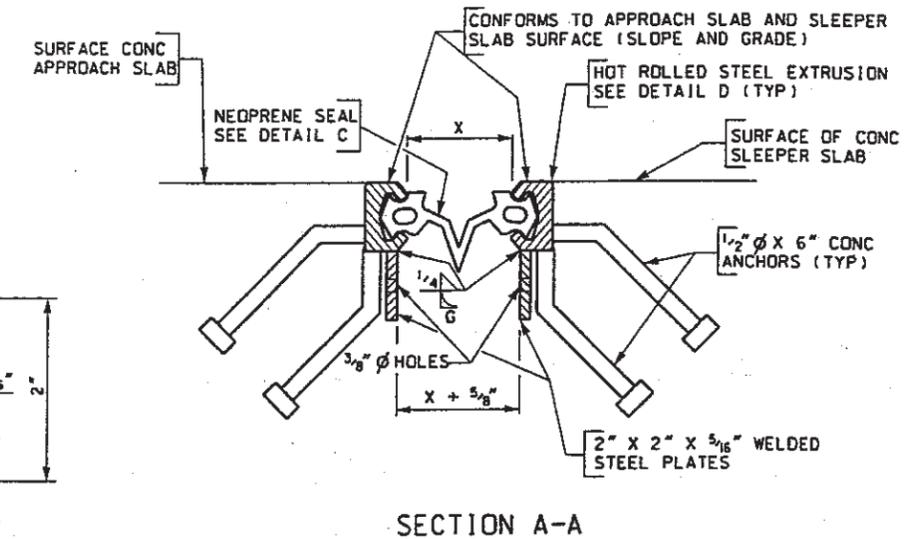


TEMP.	DIMENSION X
30°	2 3/16"
40°	2 1/4"
50°	2 3/16"
60°	2 1/16"
70°	2"
80°	1 5/8"
90°	1 1/2"



DETAIL C
 NEOPRENE SEAL SHALL HAVE A 3" MOVEMENT CAPABILITY

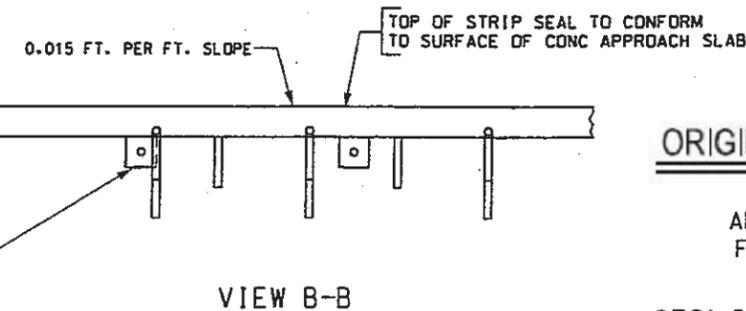
PLAN OF STRIP SEAL
 (NEOPRENE SEAL NOT SHOWN)



DETAIL D

GENERAL NOTES:

- 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.
- MATERIAL FOR THE NEOPRENE SEAL SHALL CONFORM TO ASTM D2628 MODIFIED TO OMIT THE RECOVERY TEST. NO SPLICES WILL BE PERMITTED IN THE NEOPRENE SEAL.
- 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.
- 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.
- 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 ACCORDANCE WITH ASTM A780.
- 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.
- 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.
- THE STRIP SEAL EXPANSION JOINT SUPPLIER SHALL SUBMIT A DETAILED GLAND INSTALLATION PROCEDURE WITH THE SHOP PLANS.
- THE COST OF WELDING SHALL BE INCLUDED IN THE UNIT COST FOR STRIP SEAL EXPANSION JOINT.
- THE NEOPRENE SEAL SHALL BE OF SUFFICIENT LENGTH SUCH THAT A MINIMUM LENGTH OF 6" SHALL EXTEND BEYOND EACH END OF THE STEEL EXTRUSIONS.
- THE STRIP SEAL EXPANSION JOINT WILL BE MEASURED IN LINEAR FEET TO THE NEAREST ONE-TENTH FOOT, COMPLETE IN PLACE. MEASUREMENT WILL BE MADE OF THE OVERALL HORIZONTAL LENGTH. THE STRIP SEAL EXPANSION JOINT WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER LINEAR FOOT COMPLETE IN PLACE. PAYMENT FOR THIS ITEM SHALL BE FULL COMPENSATION FOR FURNISHING ALL THE REQUIRED MATERIALS IN PLACE, INCLUSIVE OF LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH PLANS AND THE FOREGOING SPECIFICATIONS.



VIEW B-B

ORIGINAL CONSTRUCTION PLANS

APPROACH SLAB JOINT DETAIL FOR SOUTH ABUTMENT (NO.3) I-229 NORTHBOUND LANES
 276'-8 5/16" CONT. COMP. GRDR. BRIDGE

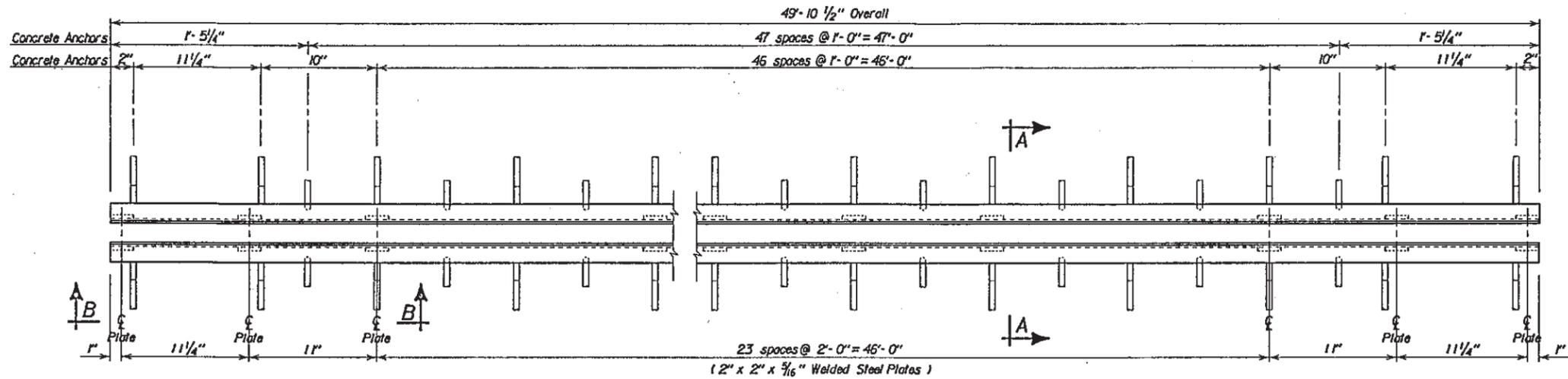
48'-0" ROADWAY OVER RICE ST. & B. N. RR STR. NO. 50-218-197

27° RHF SKEW SEC.10-TI0IN-R49W IM 229-2(50)2

ESTIMATED QUANTITIES		
(FOR ONE APPROACH SLAB)		
ITEM	UNIT	QUANTITY
STRIP SEAL EXPANSION JOINT	L.F.	49.9

MINNEHABA COUNTY S.D. DEPT. OF TRANSPORTATION OCTOBER 2000

-X081-			
DESIGNED BY JAG	DRAWN BY LEW	CHECKED BY JCK	APPROVED BRIDGE ENGINEER



TEMP.	DIMENSION "X"
30°	2 3/4"
40°	2 5/8"
50°	2 1/2"
60°	2 3/8"
70°	2 1/4"
80°	2 1/8"
90°	2"

GENERAL NOTES :

- 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 Steel Welding Code.
- Material for Neoprene Extrusion shall conform to ASTM D262B modified to omit the recovery test. No Splices will be permitted in the Neoprene Strip.
- The installation of the Strip Seal shall be as recommended by its Manufacturer and approved by the Engineer, but in general shall be as follows: The Neoprene Extrusion 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 Strip may be installed either prior to or after the time the Steel Extrusions are concreted in the approach slabs. Galvanize the Steel Extrusions and anything welded to them after all welding is completed. They shall be galvanized in accordance with AASHTO Mill (ASTM A 123). 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. The Steel Extrusion shall be dry, clean, free from dirt, grease and contaminants at the time the Neoprene Strip is installed.
- Due to the length of the Steel Extrusions, Splices are permitted. No welds shall be permitted in internal section of extrusion where Neoprene Strip is located. Weld details shall be shown on the Shop Plans for approval by the Engineer.
- The thickness and shape of the Neoprene Extrusion 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, shop plans of the proposed strip seal showing, in addition to fixed dimensions, thickness of Neoprene Extrusion and dimensions pertinent to the fit of the Neoprene Extrusion in the Steel Extrusion shall be submitted to and approved by the Engineer.
- Strip Seal will be measured in linear feet, to the nearest one-tenth foot, complete in place; measurement will be made of the overall horizontal length. Strip Seal 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.

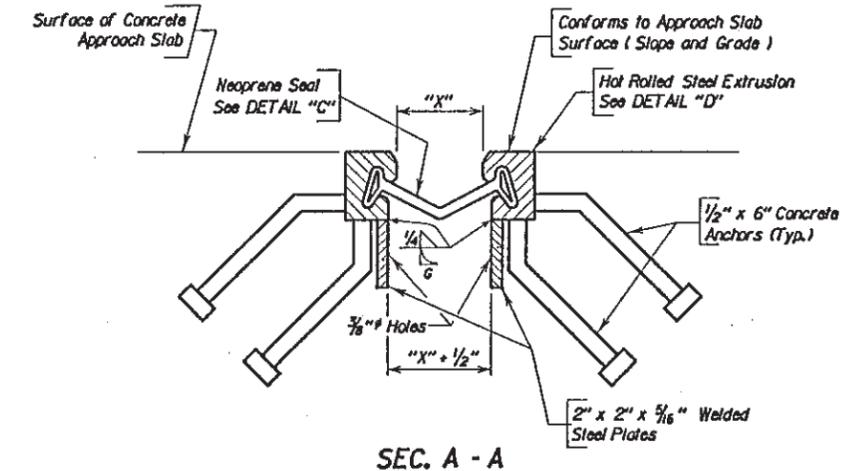
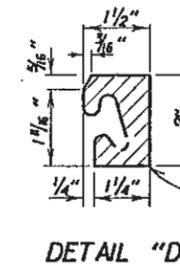
PLAN OF STRIP SEAL
(Neoprene Seal Not Shown)

- 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.
- 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.
- The strip seal supplier shall submit detailed gland installation procedure with shop plans.
- The cost of welding shall be included in the unit cost for strip seal expansion joint.
- The neoprene seal shall be of sufficient length such that a minimum length of 6" shall extend beyond each end of the steel extrusions.

ESTIMATED QUANTITIES		
For Two Approach Slabs		
ITEM	UNIT	QUANTITY
Strip Seal Expansion Joint	LINEAL FT.	99.8



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



ORIGINAL CONSTRUCTION PLANS

APPROACH SLAB JOINT DETAILS FOR NORTHBOUND LANES

276'- 8 15/16" CONT. COMP. GRDR. BRIDGE

48'- 0" ROADWAY SEC. 10-T10IN-R49W

OVER RICE ST. & B.N. RR 27° R. H. F. SKEW

STA. 156 + 38.33 TO 159 + 15.07 IM 229-2(43)7

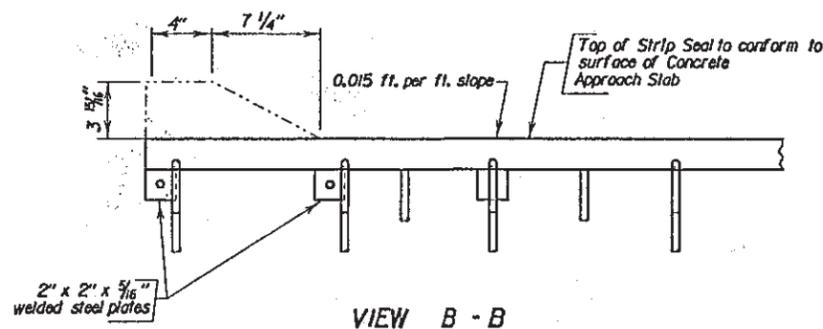
STR. NO. 50-219-197 HS25-44 (& ALT.)

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

JUNE 1993

17 of 18



PCC PAVEMENT REMOVAL

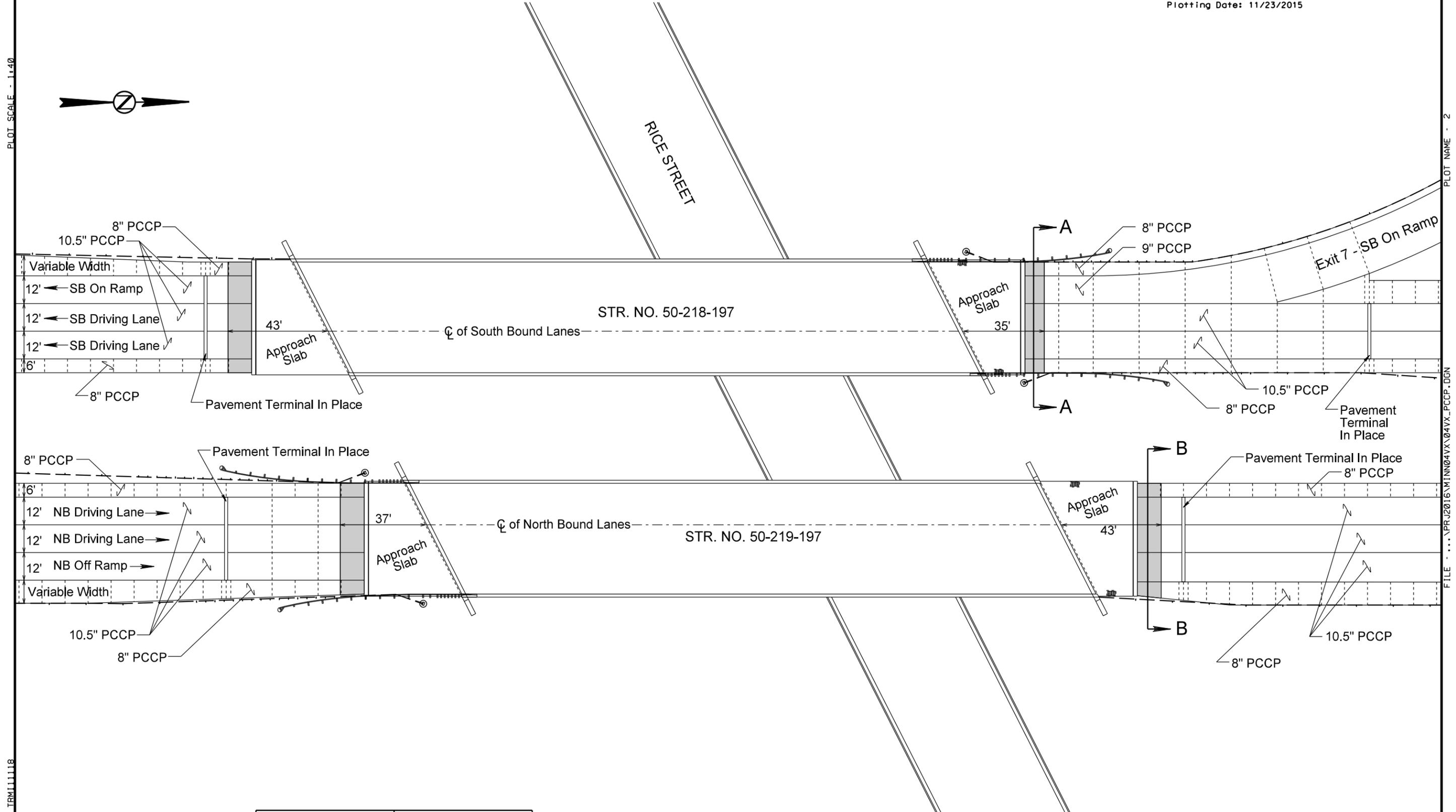
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)2	54	76

Plotting Date: 11/23/2015

PLOT SCALE - 1:40

PLOT NAME - 2

FILE - ... \PRJ2016\11\NOV4\X\04\X_PCCP.DGN



PLOTTED FROM - TRW11118

Item	STR. NO. 50-218-197		STR. NO. 50-219-197		Total	Unit
	South End of Bridge	North End of Bridge	South End of Bridge	North End of Bridge		
Unclassified Excavation	1	1	1	1	4	CuYd
Remove Concrete Pavement	55	45	56	56	212	SqYd

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)2	55	76

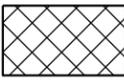
Plotting Date: 11/23/2015

PCC PAVEMENT REMOVAL

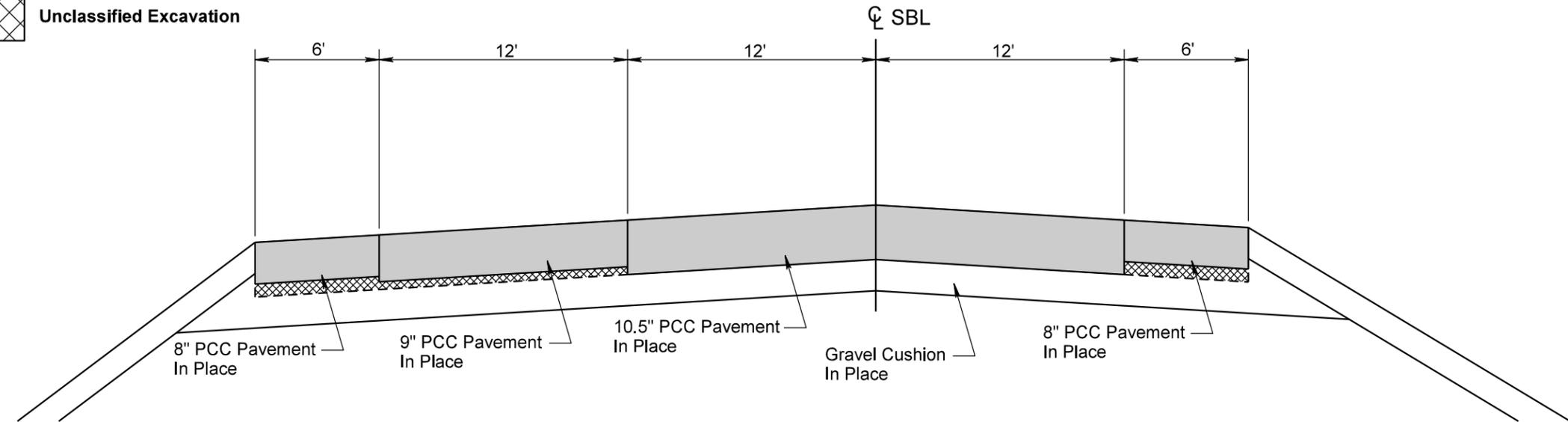
PLOT SCALE - 1:6.6

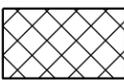
PLOT NAME - 3

FILE - ... \PRJ2016\MINNO4VX\04VX_PCCP.DGN

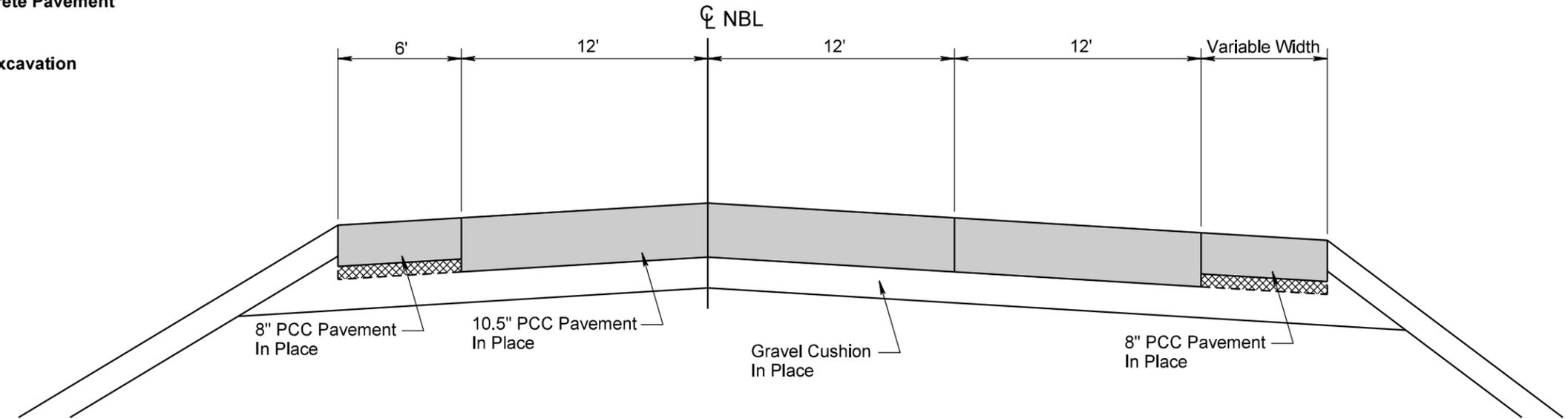
-  Remove Concrete Pavement
-  Unclassified Excavation

SECTION A-A



-  Remove Concrete Pavement
-  Unclassified Excavation

SECTION B-B



PLOTTED FROM - TRW11118

PCC PAVEMENT JOINTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)2	56	76

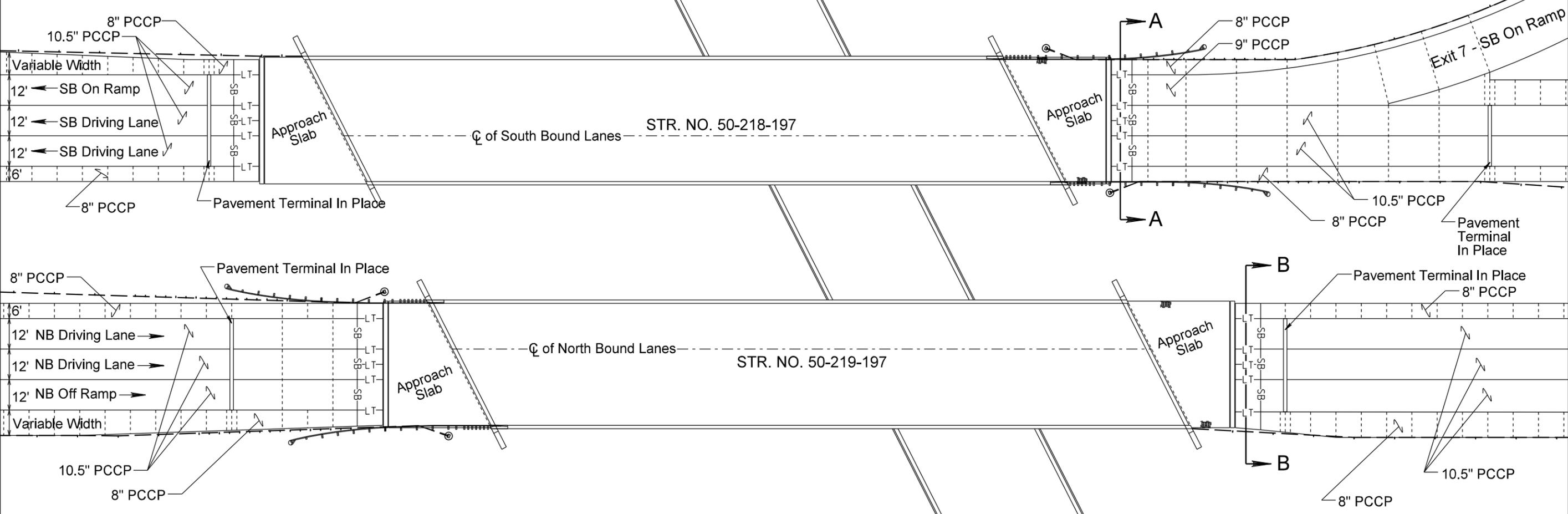
Plotting Date: 11/23/2015

- LEGEND:
- Sawed Longitudinal Joint with Tie Bars or Longitudinal Construction Joint With Tie Bars ——— LT ——— LT ——— LT ———
 - Transverse Contraction Joint - - - - -
 - Longitudinal Construction Joint without Tie Bars ——— L ——— L ——— L ——— L ———
 - Steel Bar Insertion in Longitudinal or Transverse Joints ——— SB ——— SB ———



PLOT SCALE - 1:40

PLOT NAME - 4



FILE - ... \PRJ2016\11N04VX\04VX_PCCP.DGN

PLOTTED FROM - TRW11118

Item	STR. NO. 50-218-197		STR. NO. 50-219-197		Total	Unit
	South End of Bridge	North End of Bridge	South End of Bridge	North End of Bridge		
10.5" Nonreinforced PCC Pavement	54	43	54	55	206	SqYd
Insert Steel Bar In PCC Pavement	24	24	24	24	96*	Each

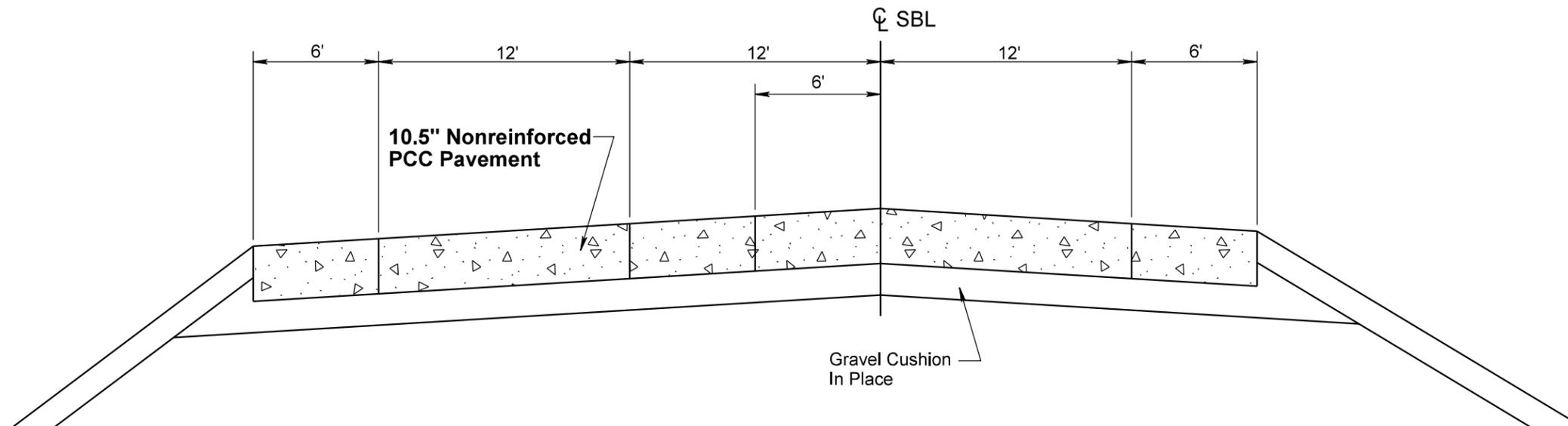
*Quantity includes 96 1 1/2"x18" Plain Round Dowel Bars.

PCC PAVEMENT JOINTS

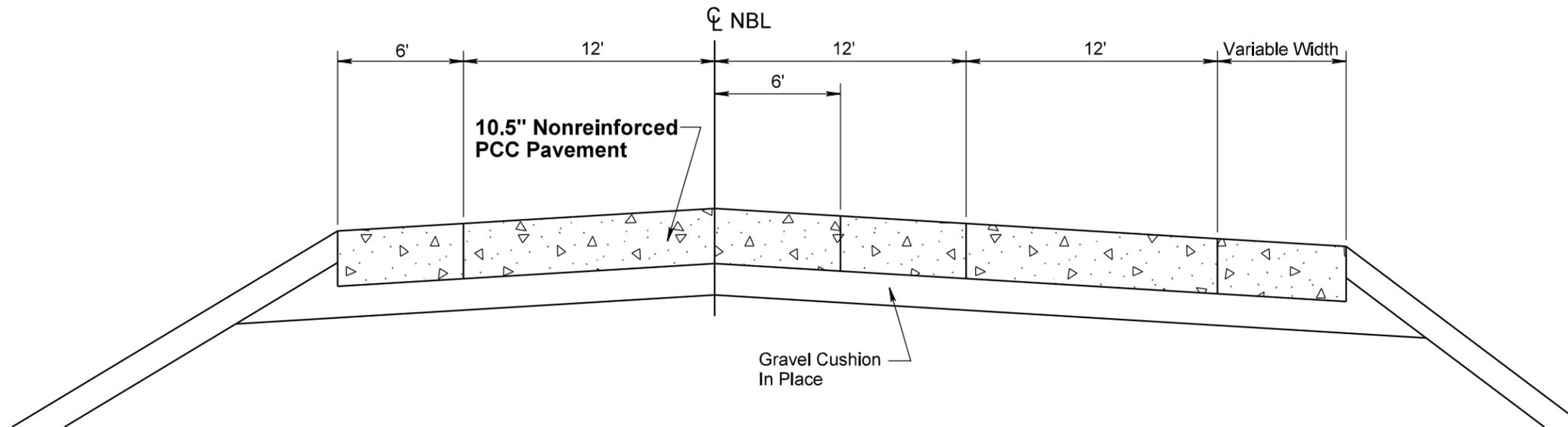
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)2	57	76

Plotting Date: 11/23/2015

SECTION A-A



SECTION B-B



PLOT SCALE - 1:6.6

PLOTTED FROM - TRM11118

PLOT NAME - 5

FILE - ... \PRJ2016\MINN04VX\04VX_PCCP.DGN

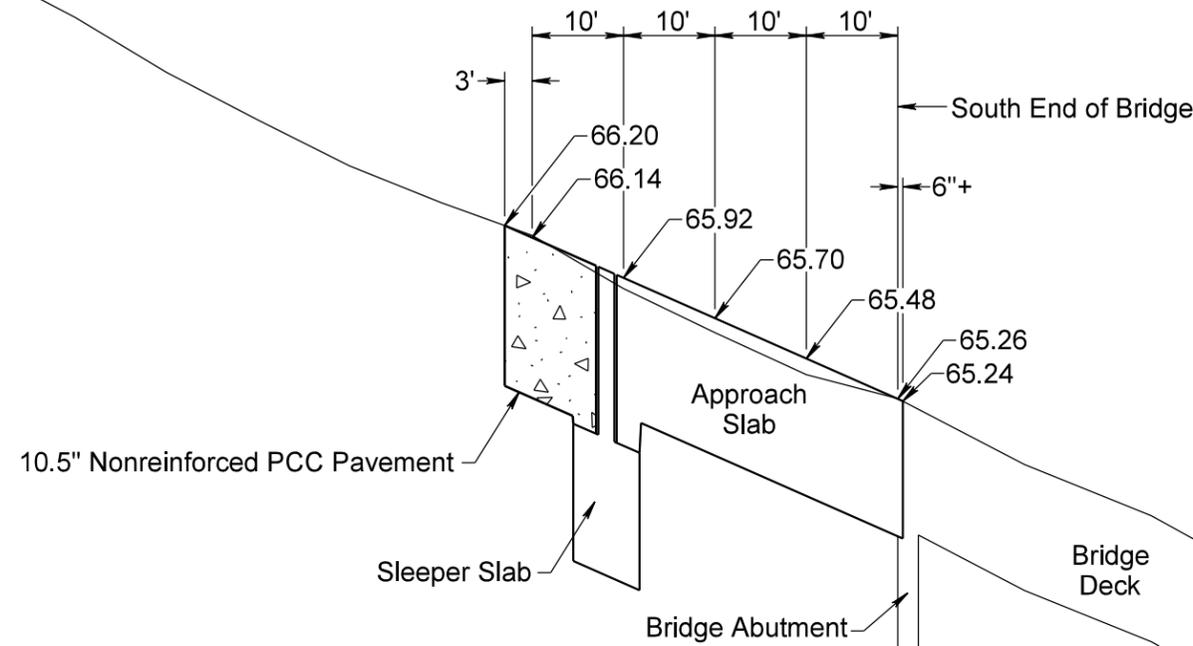
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	58	76

Plotting Date: 11/16/2015

PAVEMENT PROFILE FOR BRIDGE AT SOUTH END OF STR. NO. 50-218-197

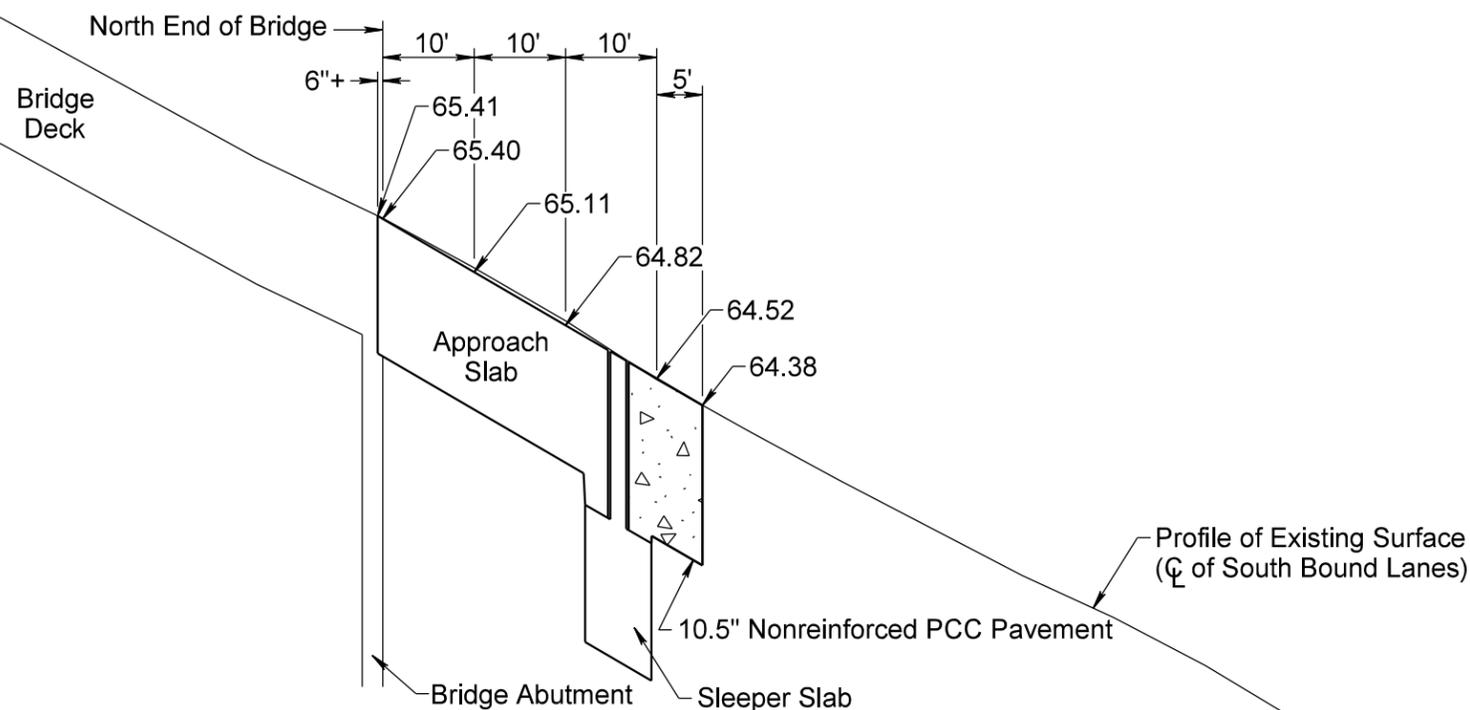
NOTE: Add 1300.00 to all elevations shown on profile.

Profile of Existing Surface
(\bar{C} of South Bound Lanes)



PAVEMENT PROFILE FOR BRIDGE AT NORTH END OF STR. NO. 50-218-197

NOTE: Add 1300.00 to all elevations shown on profile.



PLOT SCALE - 1:1

PLOTTED FROM - TRM11118

PLOT NAME - 6

FILE - ... \PRJ2016\MINN04VX\04VX_PCCP.DGN

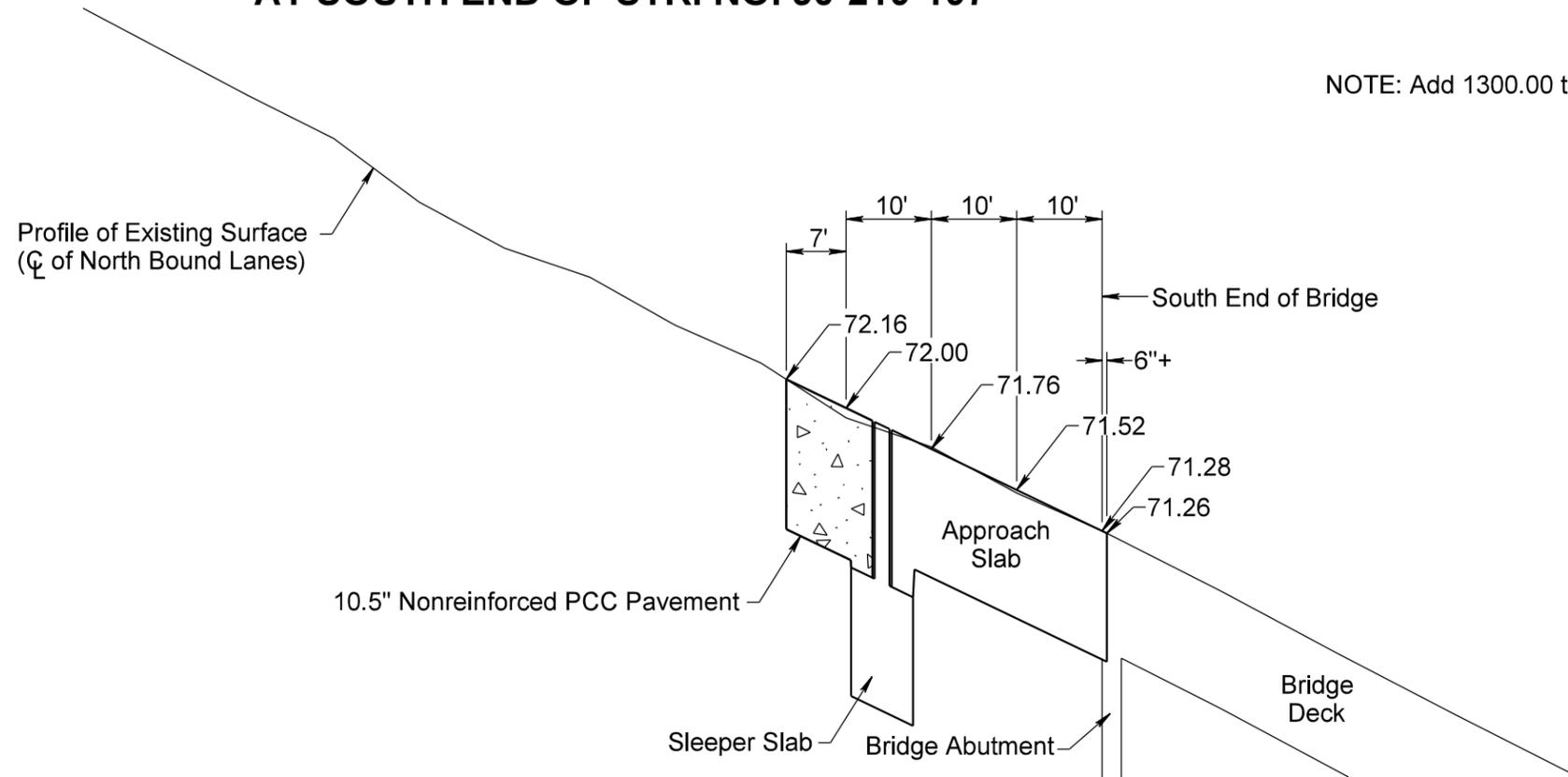


PAVEMENT PROFILE FOR BRIDGE AT SOUTH END OF STR. NO. 50-219-197

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	59	76

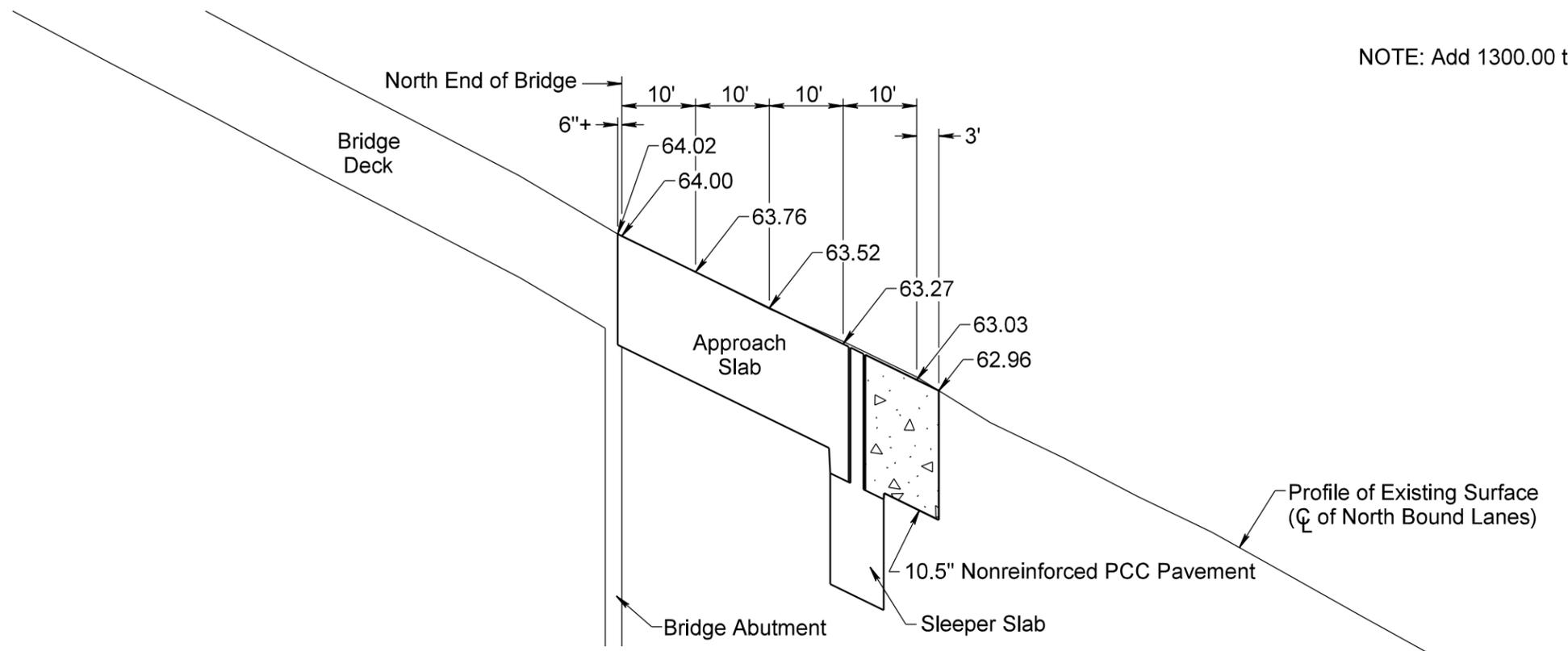
Plotting Date: 11/16/2015

NOTE: Add 1300.00 to all elevations shown on profile.



PAVEMENT PROFILE FOR BRIDGE AT NORTH END OF STR. NO. 50-219-197

NOTE: Add 1300.00 to all elevations shown on profile.



PLOT SCALE - 1:1

PLOTTED FROM - TRW11118

PLOT NAME - 7

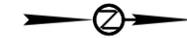
FILE - ... \PRJ2016\MIN04VX\04VX_PCCP.DGN

DROP INLET FRAME & GRATE RESET

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	60	76

Plotting Date: 11/16/2015

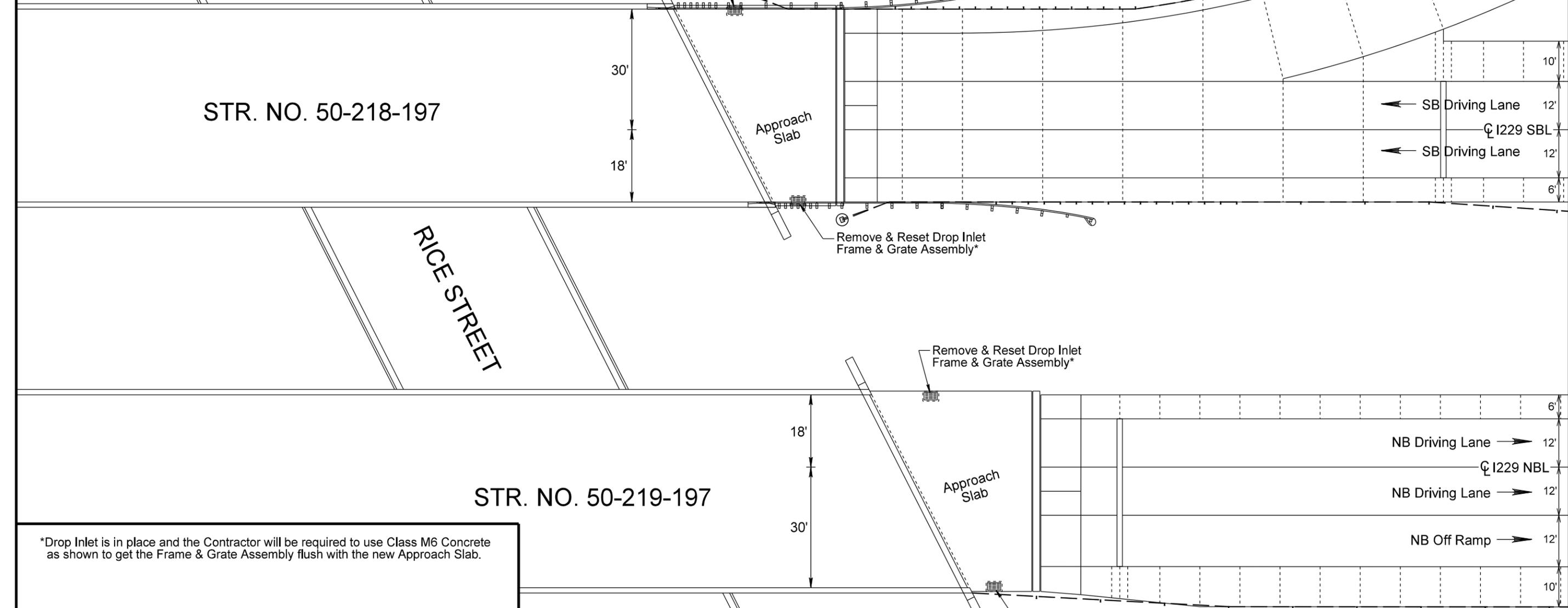
STR. NO. 50-218-197 I229 MRM 7.84 SBL (NORTH END ONLY)
 STR. NO. 50-219-197 I229 MRM 7.84 NBL (NORTH END ONLY)



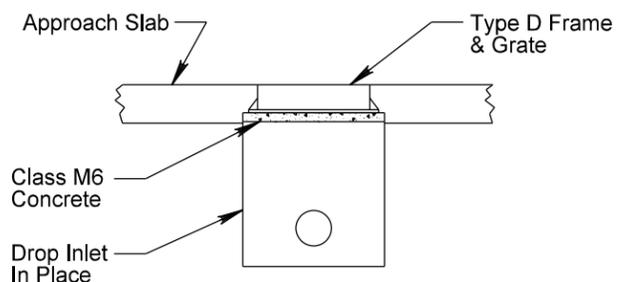
PLOT SCALE - 1:25

PLOT NAME - 8

FILE - ... \PRJ2016\M1N04VX\DROP04VX.DGN



*Drop Inlet is in place and the Contractor will be required to use Class M6 Concrete as shown to get the Frame & Grate Assembly flush with the new Approach Slab.



PLOTTED FROM - TRM11118



REPROFILING OF MEDIAN AT SOUTH END OF STRUCTURES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	61	76

Plotting Date: 11/16/2015

- ① Begin 30:1 cut.
- ② End 30:1 cut. Begin 100:1 cut.
- ③ End 100:1 cut. Begin 100:1 fill.
- ④ End 100:1 fill. Begin fill to level median with the outside edge of the median shoulder for the Northbound lanes.

* Follow profile of the outside edge of the median shoulder for the Northbound lanes.

PLOT SCALE - 1:20

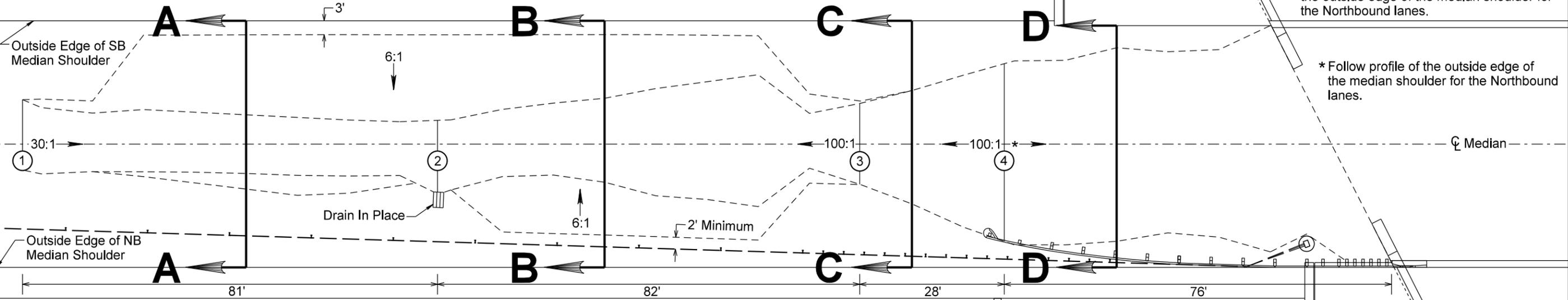
PLOT NAME - 9

FILE - ... \MINN04\X\04\X\MEDIAN.DGN

← SB Driving Lane

☉ SBL

← SB Driving Lane



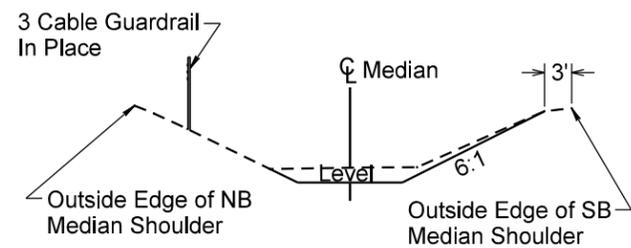
→ NB Driving Lane

☉ NBL

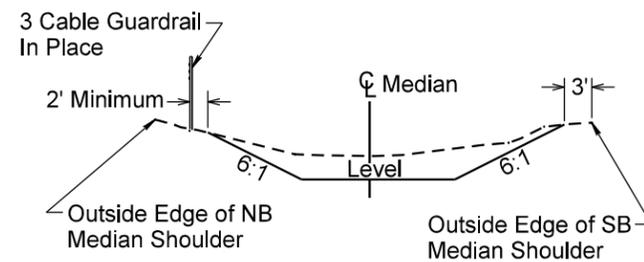
→ NB Driving Lane

→ NB Off Ramp

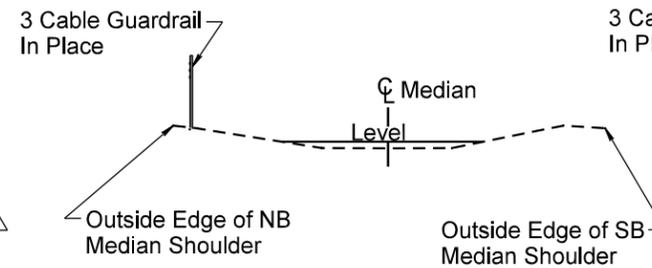
Section A-A



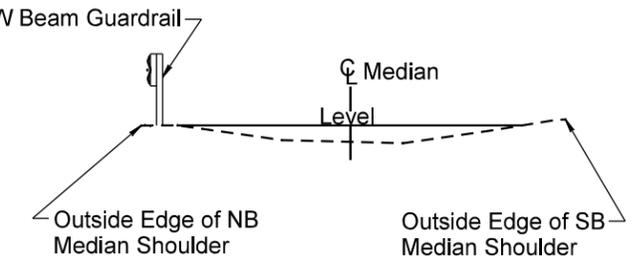
Section B-B



Section C-C



Section D-D



Item	Total	Unit
Unclassified Excavation	84*	CuYd

*17 CuYds of waste.

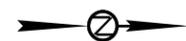
PLOTTED FROM - TRW11118

INSTALLATION OF GUARDRAIL

STR. NO. 50-218-197 I229 MRM 7.84 SBL (SOUTH END ONLY)
 STR. NO. 50-219-197 I229 MRM 7.84 NBL (SOUTH END ONLY)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	62	76

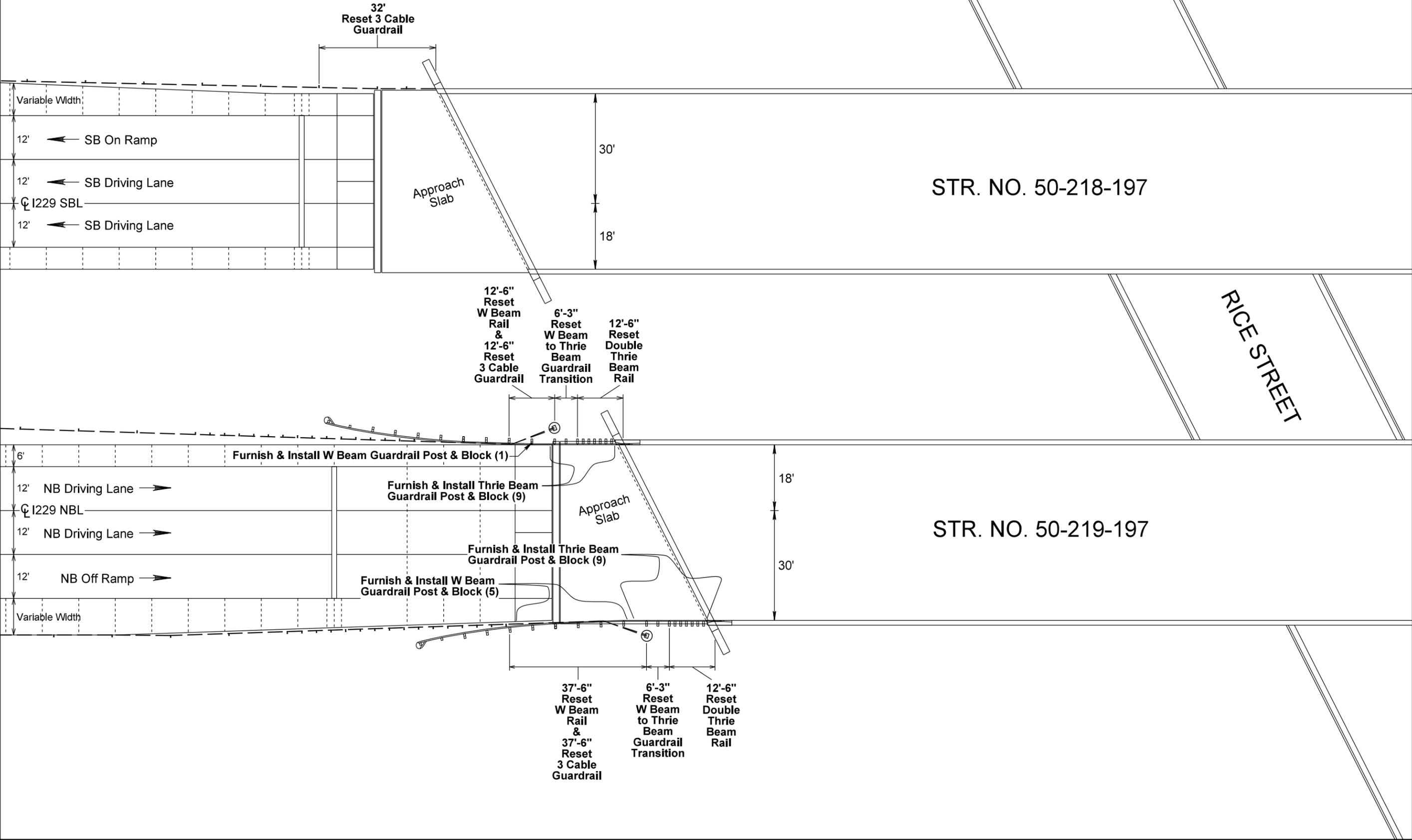
Plotting Date: 11/23/2015



PLOT SCALE - 1:25

PLOT NAME -

FILE - ... \PRJ2016\M1N04VX\T10R04VX.DGN



PLOTTED FROM - TRW11118

INSTALLATION OF GUARDRAIL

STR. NO. 50-218-197 I229 MRM 7.84 SBL (NORTH END ONLY)
 STR. NO. 50-219-197 I229 MRM 7.84 NBL (NORTH END ONLY)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 2292(97)7	63	76

Plotting Date: 11/23/2015

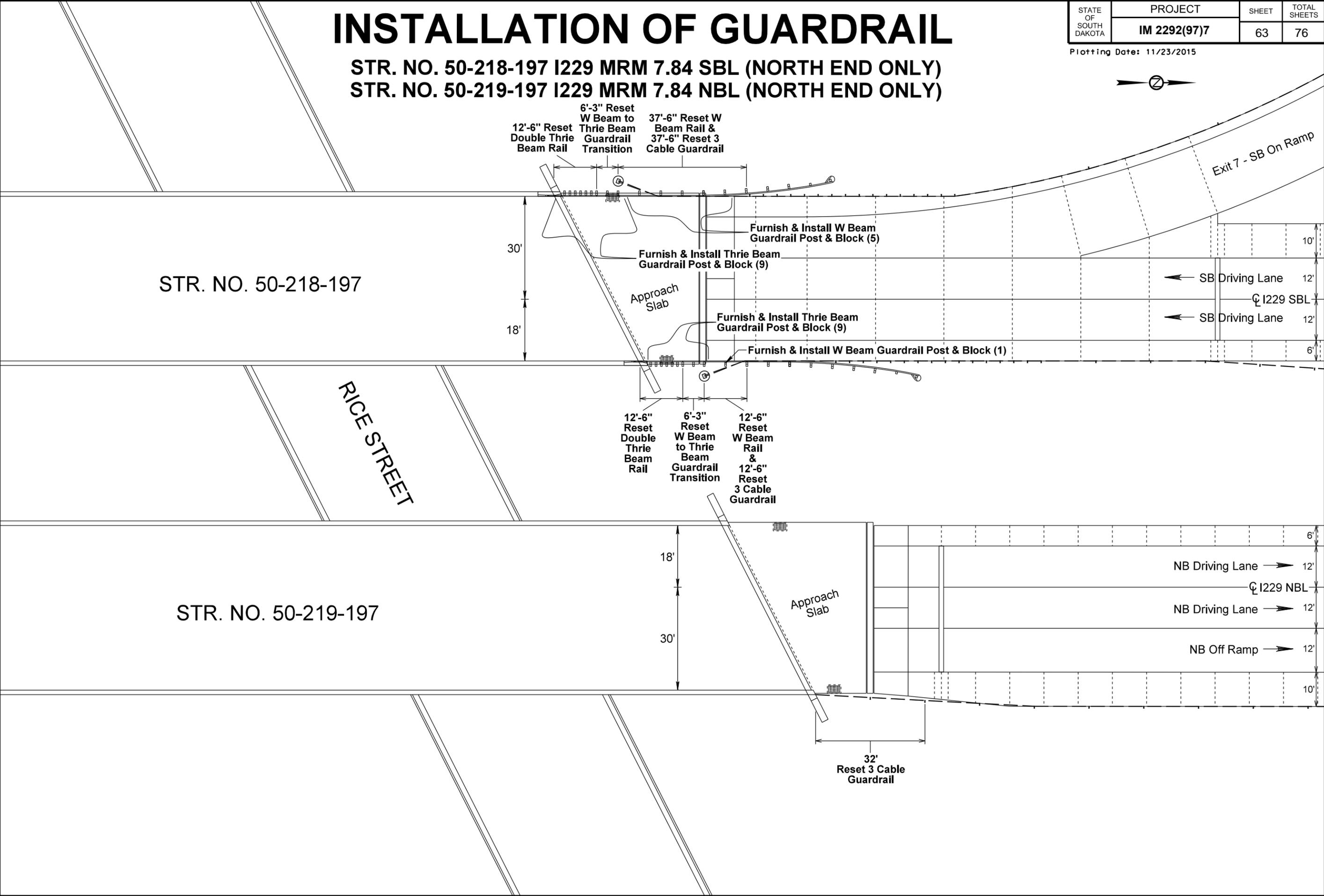


PLOT SCALE - 1:25

PLOT NAME - 11

FILE - ... \PRJ2016\MINNO4VX\T10R04VX.DGN

PLOTTED FROM - TRM11118

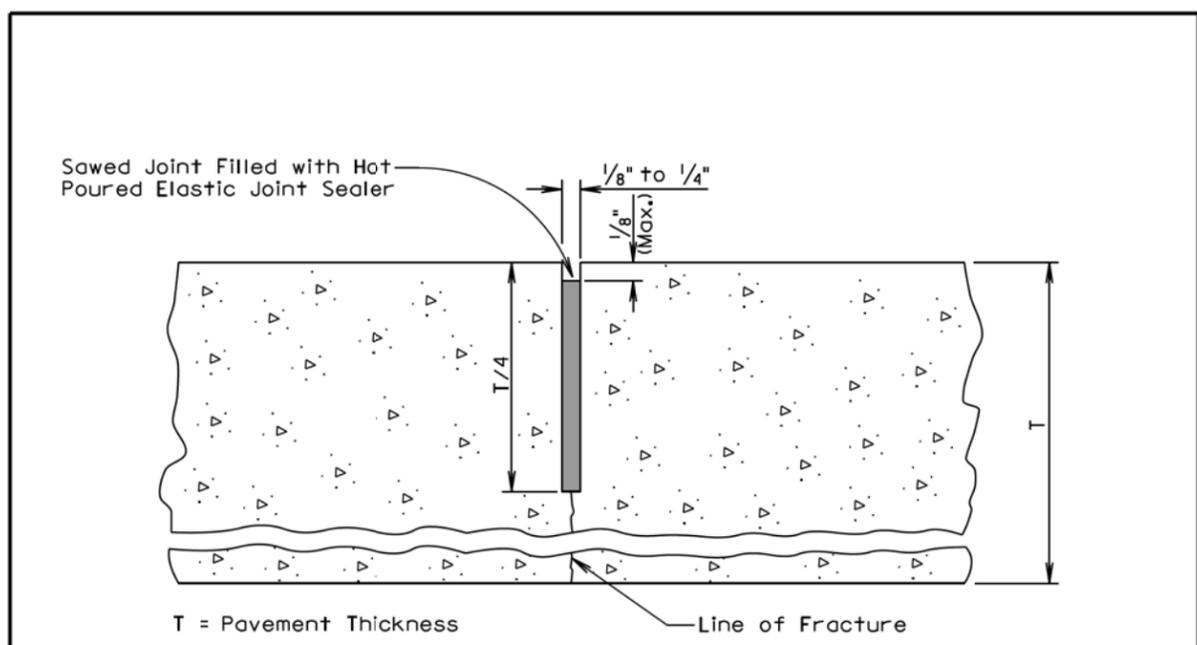


Plotting Date: 11/16/2015

PLOT SCALE - 1:200

PLOT NAME - 12

FILE - ... \STANDARDPLATES_04VX.DGN



GENERAL NOTES:

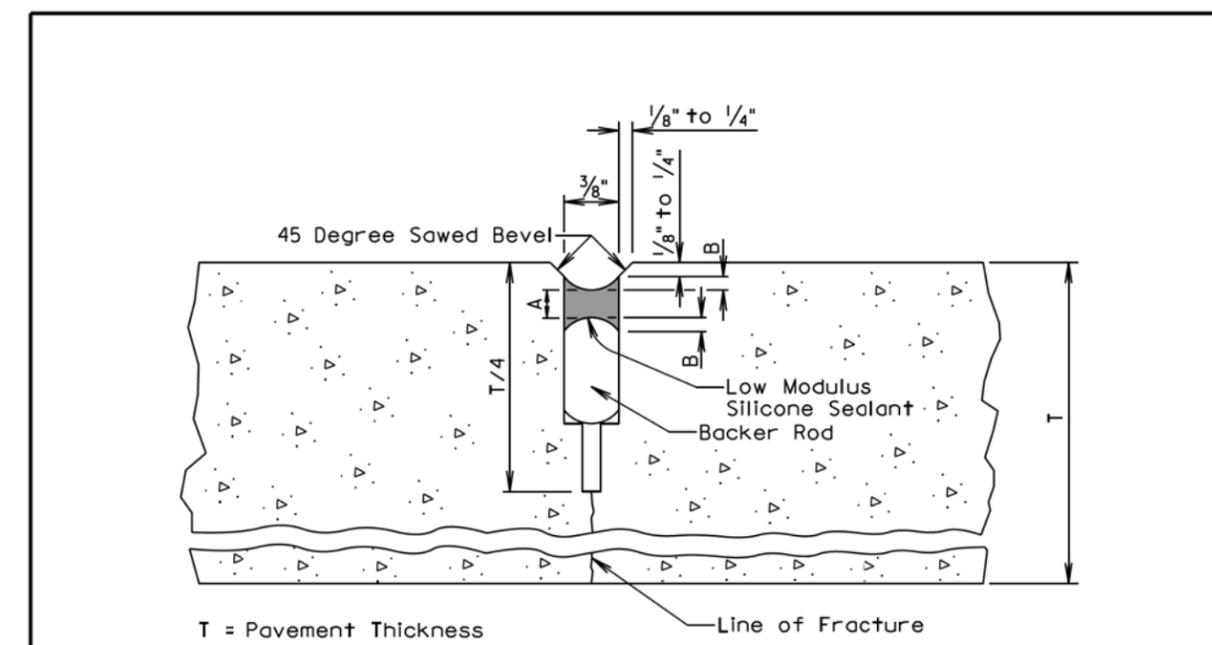
If an early entrance sawcut does not develop the full transverse crack, then the saw cut to control cracking shall be a minimum of $\frac{1}{4}$ the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement shall be removed as soon as the material has cooled. The extent of removal of material shall be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material shall be borne by the Contractor.

June 26, 2015

S D D O T	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.05
		Sheet 1 of 1

Published Date: 4th Qtr. 2015



LOW MODULUS SILICONE SEALANT ALLOWABLE CONSTRUCTION TOLERANCES			
A (Min.) (In.)	A (Max.) (In.)	B (Min.) (In.)	B (Max.) (In.)
$\frac{3}{16}$	$\frac{5}{16}$	$\frac{1}{8}$	$\frac{1}{4}$

GENERAL NOTES:

The first saw cut to control cracking shall be a minimum of $\frac{1}{4}$ the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the low modulus silicone joint sealant will be necessary.

The backer rod shall be a nonmoisture absorbing resilient material approximately 25% larger in diameter than the width of the joint to be sealed.

June 26, 2013

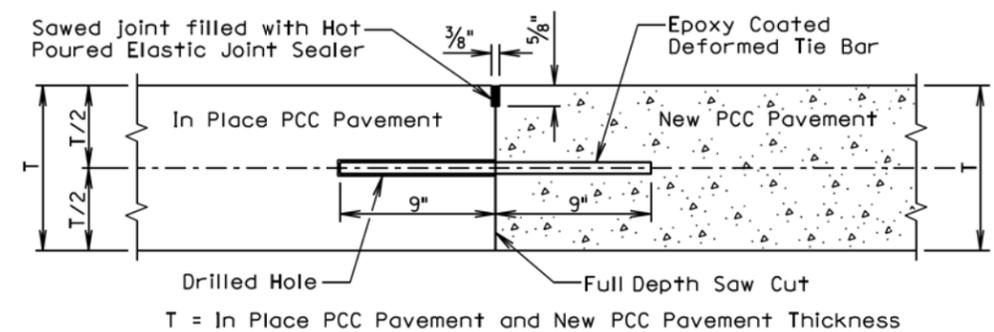
S D D O T	PCC PAVEMENT BEVELED TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.06
		Sheet 1 of 1

Published Date: 4th Qtr. 2015

PLOTTED FROM - TRM111118

Plotting Date: 11/16/2015

**DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS**



GENERAL NOTES:

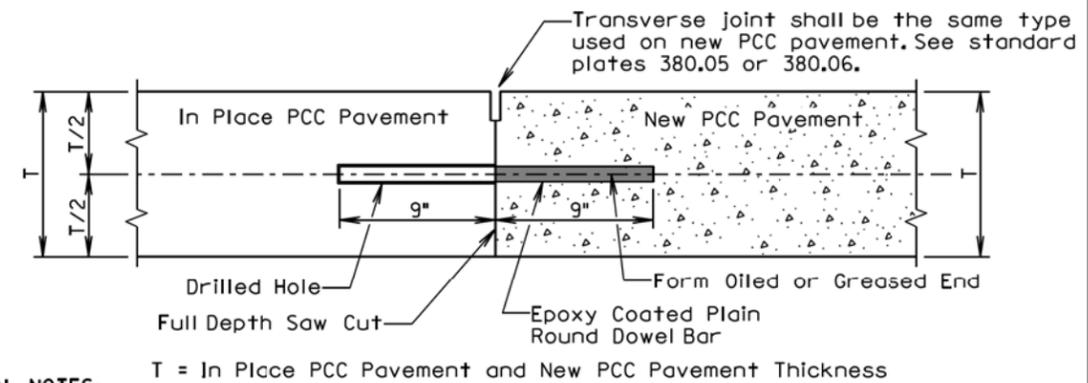
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

See sheet 2 of 2 of this standard plate to determine if Detail A shall be used.

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars shall be used in 10 inch thickness and less PCC Pavement and No. 11 epoxy coated deformed tie bars shall be used in 10.5 inch thickness and greater PCC Pavement. The tie bar spacing shall be 18 inches center to center and shall be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

**DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS**



GENERAL NOTES:

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

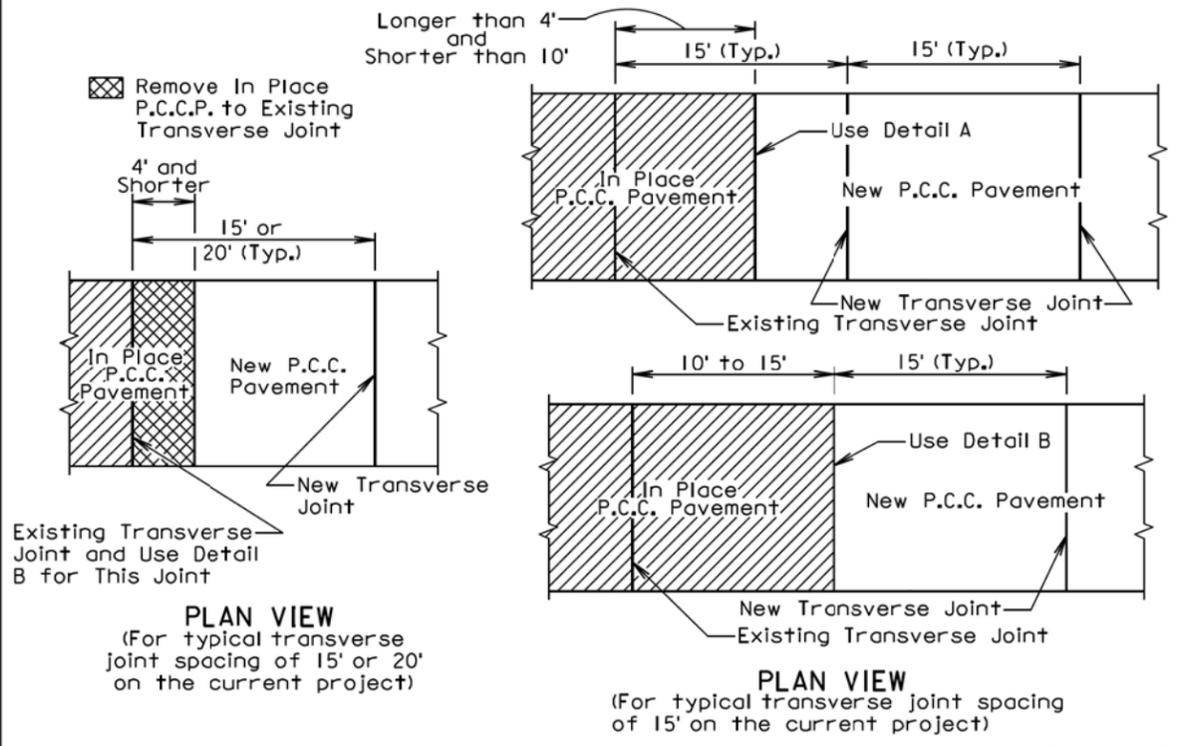
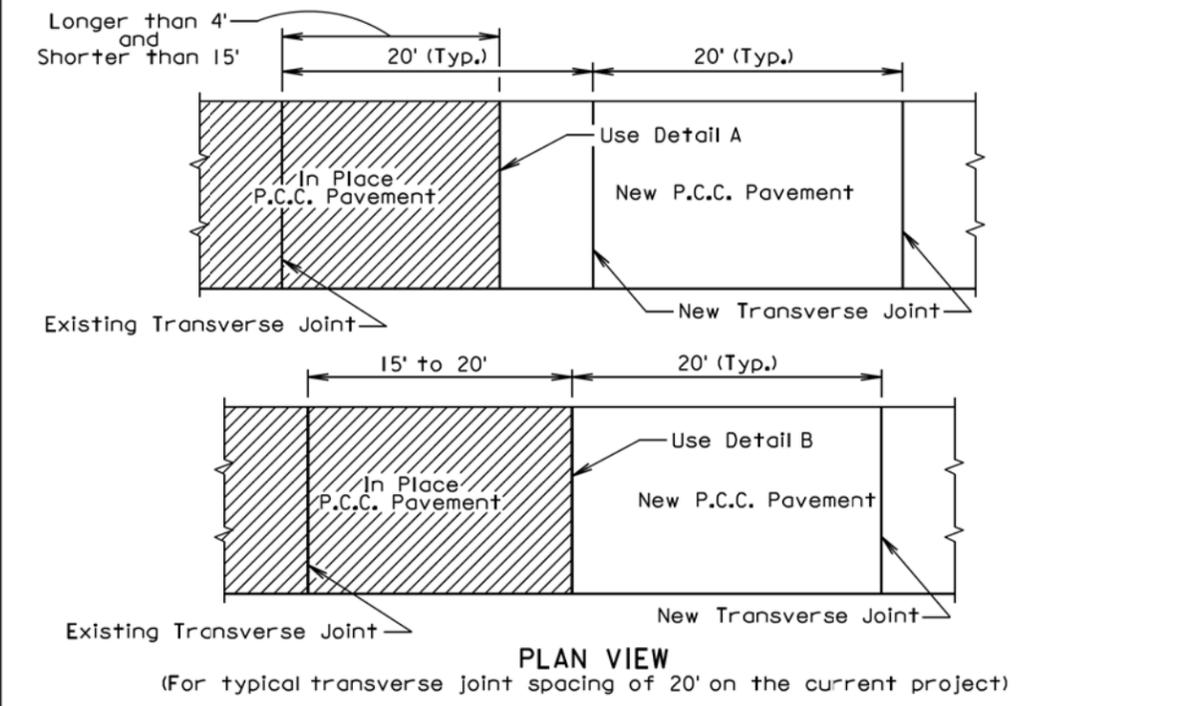
See sheet 2 of 2 of this standard plate to determine if Detail B shall be used.

The plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

The epoxy coated plain round dowel bar size, number, and spacing shall be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

September 6, 2013

S D D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
		Sheet 1 of 2
Published Date: 4th Qtr. 2015		



September 6, 2013

S D D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
		Sheet 2 of 2
Published Date: 4th Qtr. 2015		

PLOT SCALE - 1:200

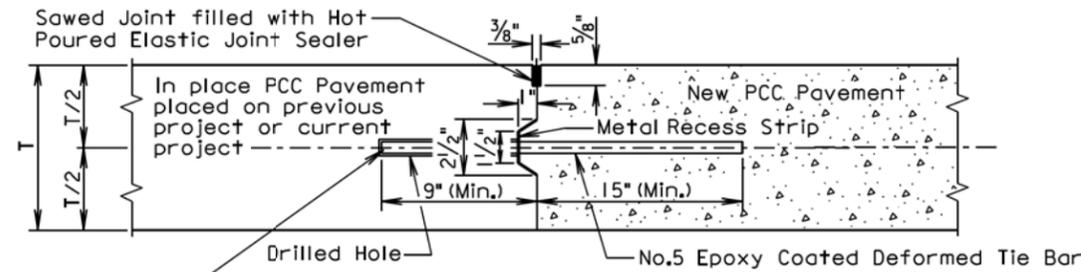
PLOTTED FROM - TRM111118

PLOT NAME - 13

FILE - ... \STANDARDPLATES_04VX.DGN

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

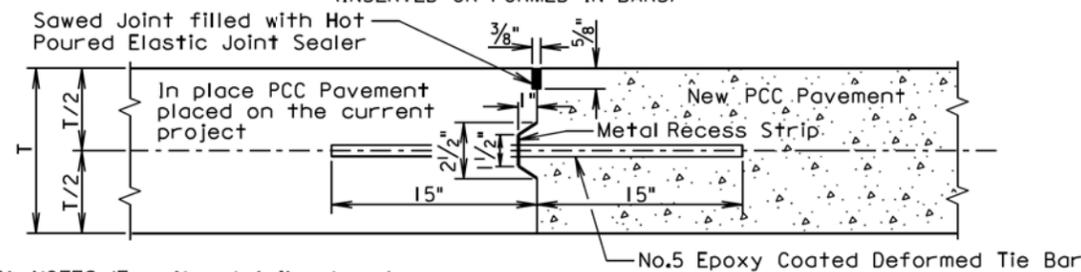
(DRILLED IN BARS)



T = Pavement Thickness
The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(INSERTED OR FORMED IN BARS)



GENERAL NOTES (For the details above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following tables:

Tie Bar Spacing 48" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

Tie Bar Spacing 30" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
5' to 7'	2
7.5' to 9.5'	3
10' to 12'	4
12.5' to 14.5'	5
15' to 17'	6
17.5' to 19.5'	7
20' to 22'	8

The tie bars shall be placed a minimum of 15 inches from transverse contraction joints.

The required number of tie bars as shown in the table shall be uniformly spaced within each panel. The uniformly spaced tie bars shall be spaced a maximum of 48 inches center to center for a female keyway and shall be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing shall apply to tie bars within each panel.

The keyway illustrated in the above details depict a female keyway.

The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

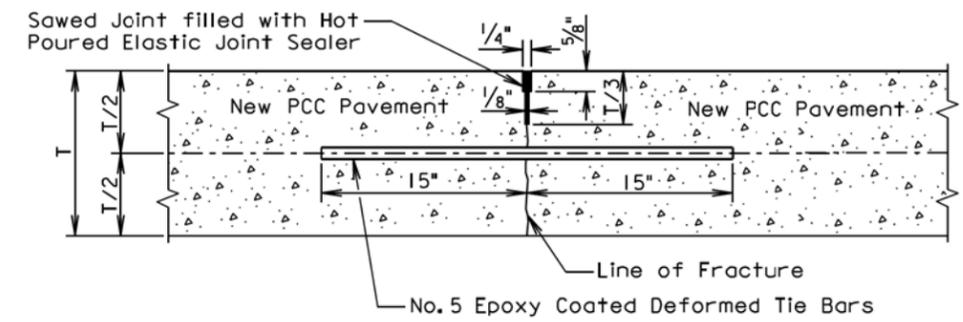
August 31, 2013

S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
		Sheet 1 of 2

Published Date: 4th Qtr. 2015

SAWED LONGITUDINAL JOINT WITH TIE BARS

(POURED MONOLITHICALLY)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following table:

Tie Bar Spacing 48" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

The tie bars shall be placed a minimum of 15 inches from the transverse contraction joints.

The required number of tie bars as shown in the table shall be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing shall apply to tie bars within each panel.

The first saw cut to control cracking shall be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer is necessary.

August 31, 2013

S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
		Sheet 2 of 2

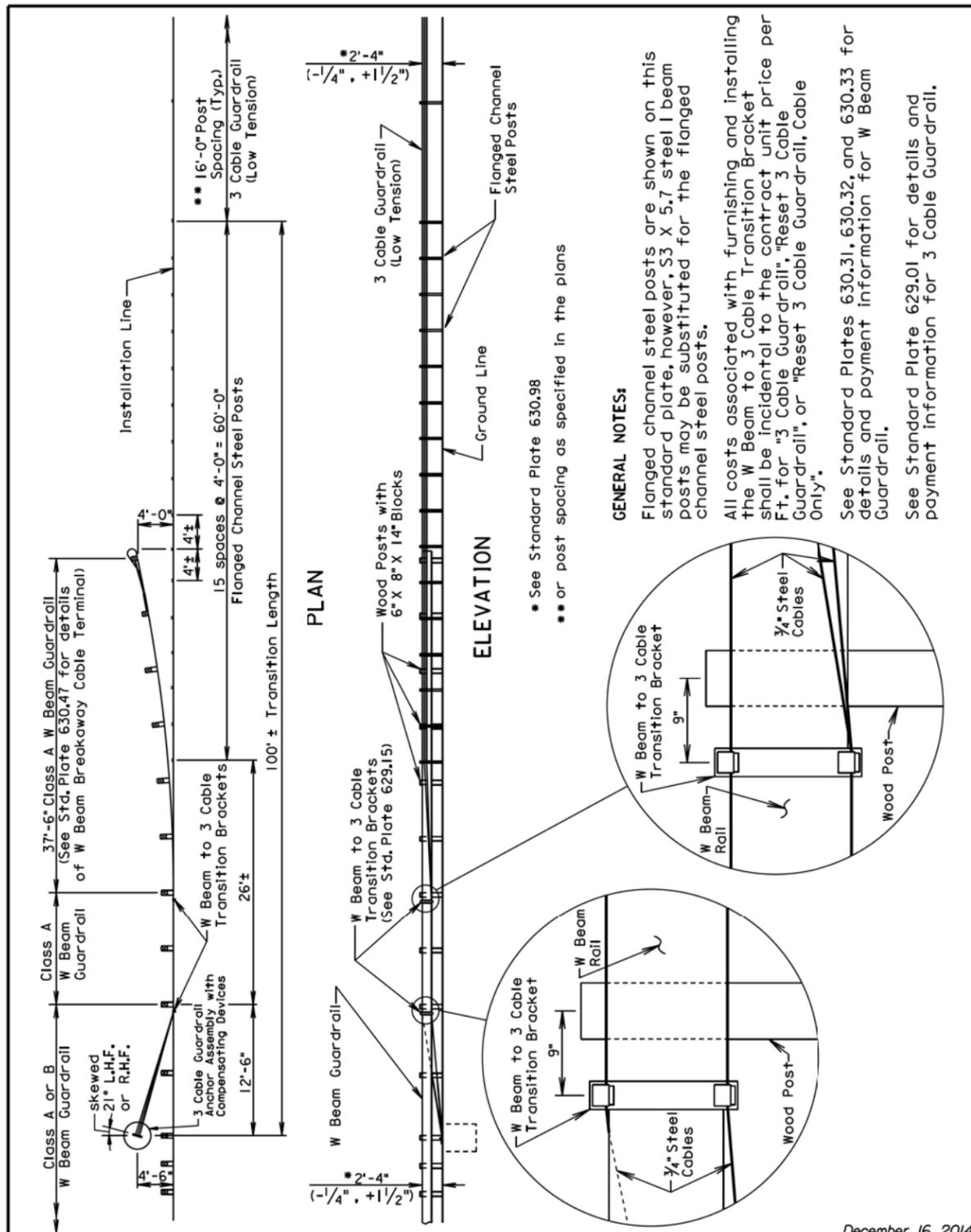
Published Date: 4th Qtr. 2015

PLOT SCALE - 1:200

PLOT NAME - 14

FILE - ... \STANDARDPLATES_04VX.DGN

PLOTTED FROM - TRM111118

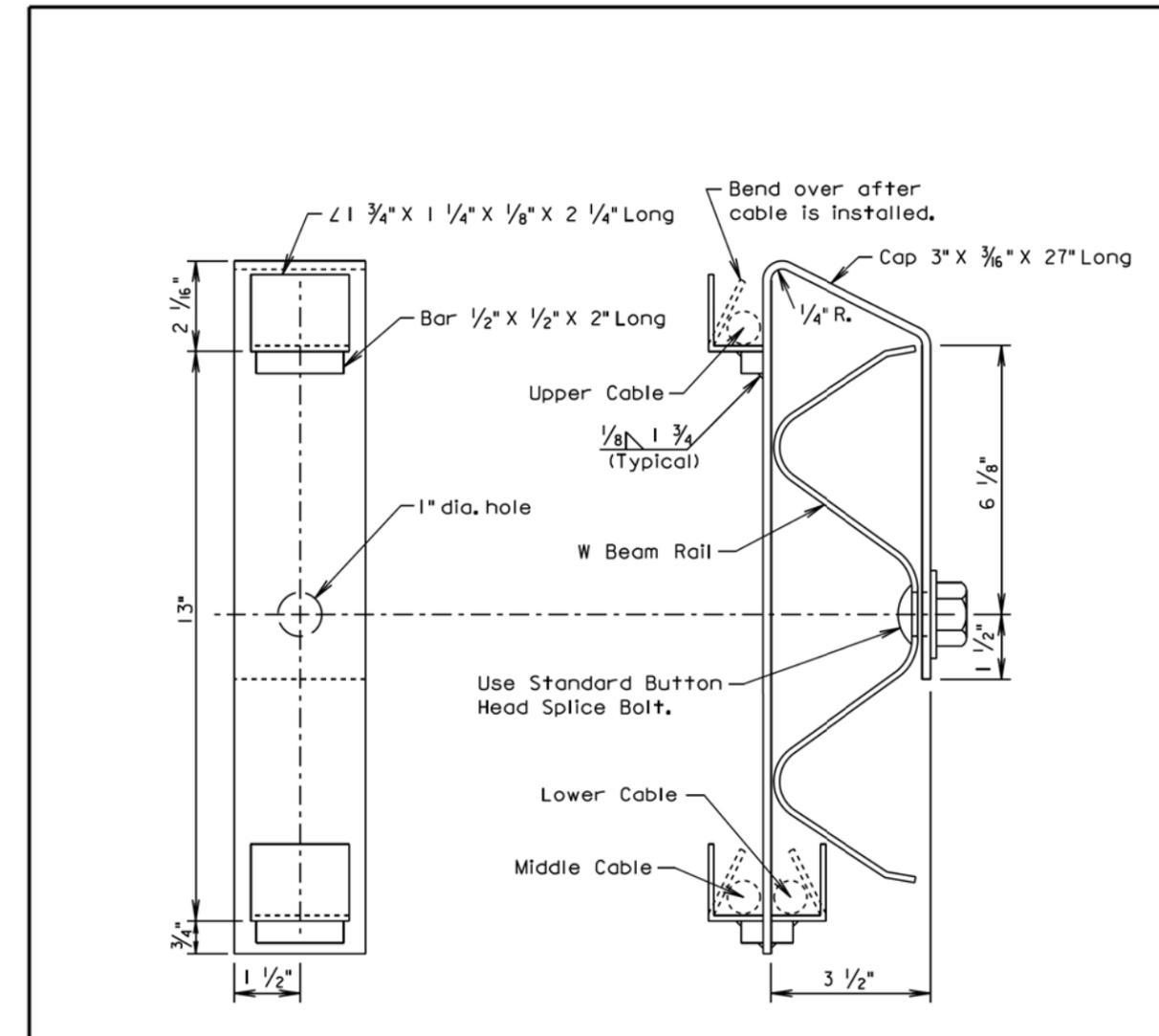


December 16, 2014

S D D O T	W BEAM TO 3 CABLE TRANSITION	PLATE NUMBER 629.05
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

GENERAL NOTES:
 Flanged channel steel posts are shown on this standard plate, however, S3 X 5.7 steel I beam posts may be substituted for the flanged channel steel posts.
 All costs associated with furnishing and installing the W Beam to 3 Cable Transition Bracket shall be incidental to the contract unit price per Ft. for "3 Cable Guardrail", "Reset 3 Cable Guardrail", or "Reset 3 Cable Guardrail, Cable Only".
 See Standard Plates 630.31, 630.32, and 630.33 for details and payment information for W Beam Guardrail.
 See Standard Plate 629.01 for details and payment information for 3 Cable Guardrail.

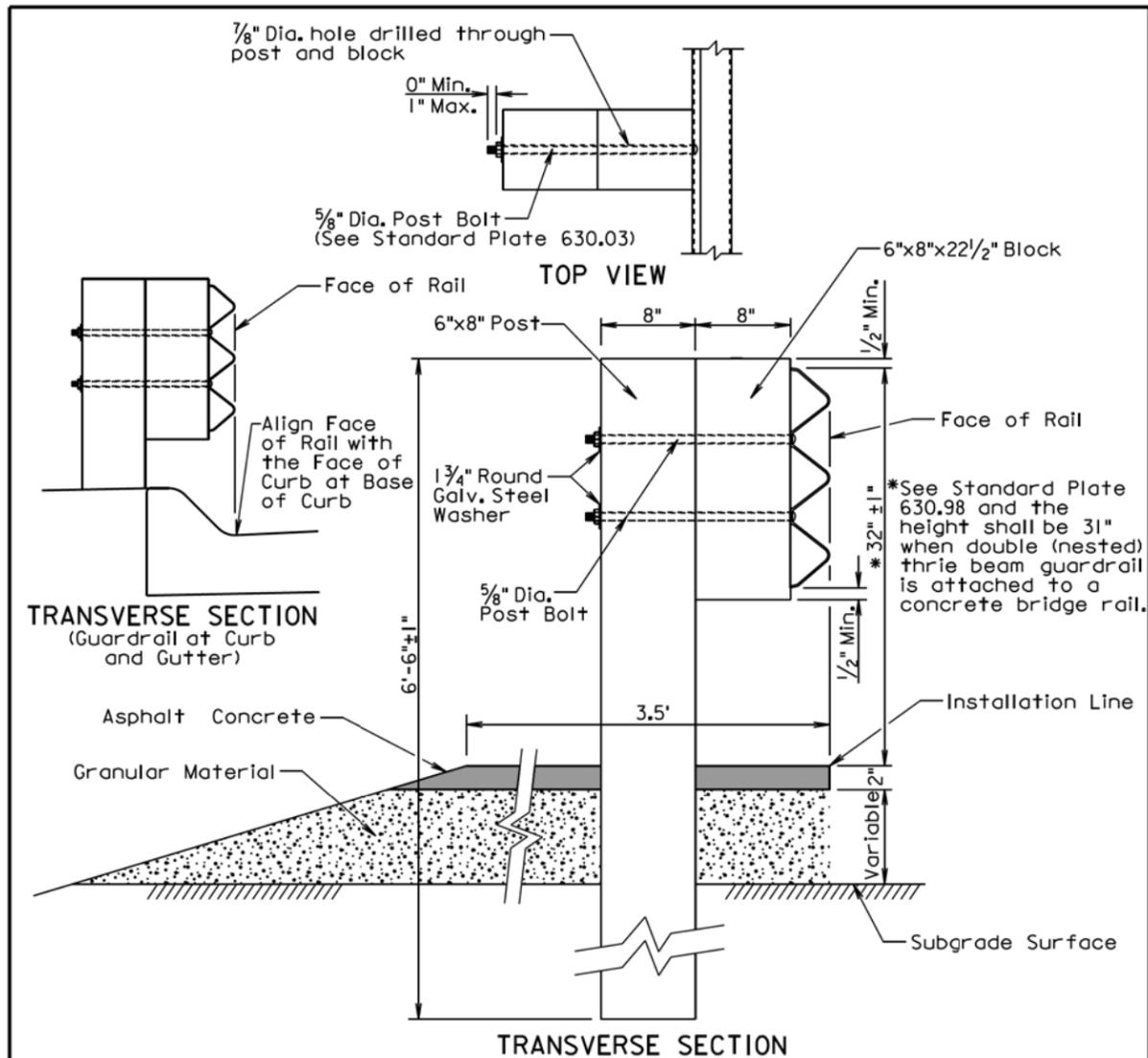
* See Standard Plate 630.98
 ** or post spacing as specified in the plans



GENERAL NOTES:
 Steel used in the fabrication of the bracket shall conform to ASTM A36 and the bracket shall be galvanized after fabrication in accordance with ASTM A123.

S D D O T	W BEAM TO 3 CABLE TRANSITION BRACKET	PLATE NUMBER 629.15
	Published Date: 4th Qtr. 2015	Sheet 1 of 1

March 31, 2000



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

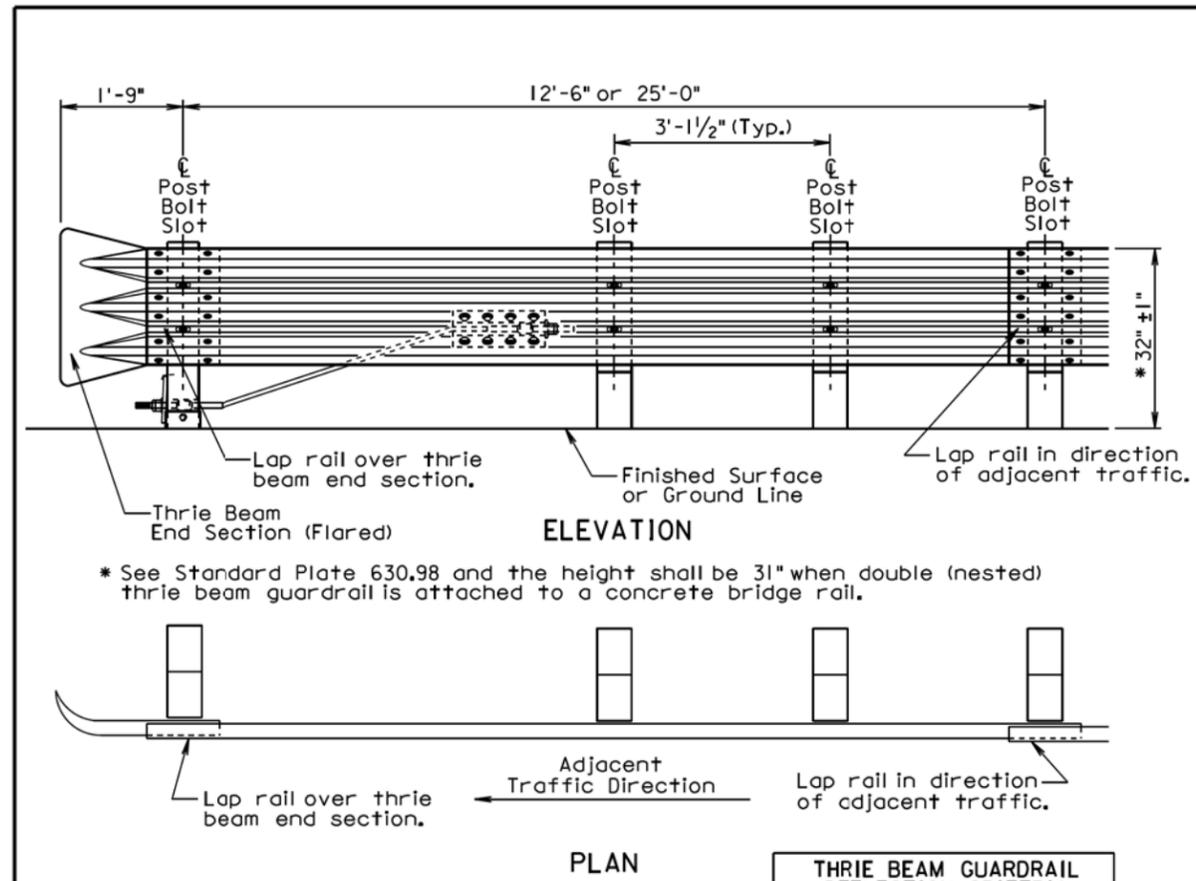
The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of post and top of block shall have a true square cut. The top of block shall be ±1 inch from the top of the post.

June 26, 2015

S D D O T	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
		Sheet 1 of 1

Published Date: 4th Qtr. 2015



THRIE BEAM GUARDRAIL DEFLECTION CRITERIA

POST SPACING	MAXIMUM DEFLECTION
6'-3"	2'-6"
3'-1/2"	1'-9"

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type I.

There will be no separate payment for furnishing and installing Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors. All costs for the Thrie Beam End Sections (Flared) and Thrie Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

Thrie beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.

Thrie Beam End Sections (Flared) shall only be used in a one-way traffic situation. See Standard Plate 630.80 for Thrie Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

All costs for constructing thrie beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

June 26, 2015

S D D O T	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
		Sheet 1 of 1

Published Date: 4th Qtr. 2015

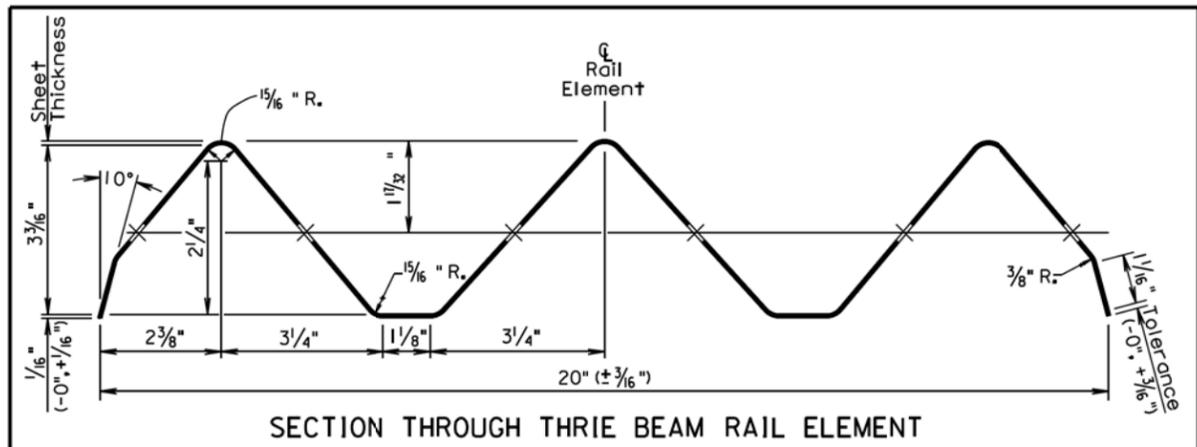
PLOT SCALE - 1:200

PLOTTED FROM - TRM111118

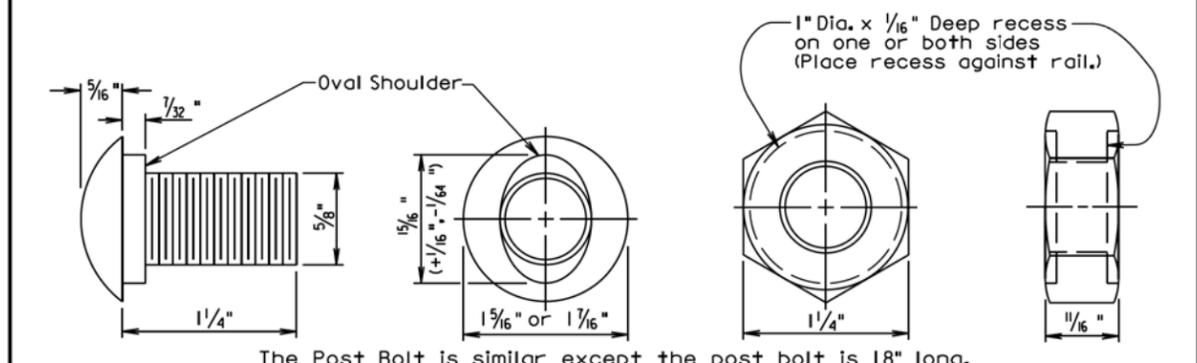
PLOT NAME - 19

FILE - ... \STANDARDPLATES_04VX.DGN

Plotting Date: 11/16/2015

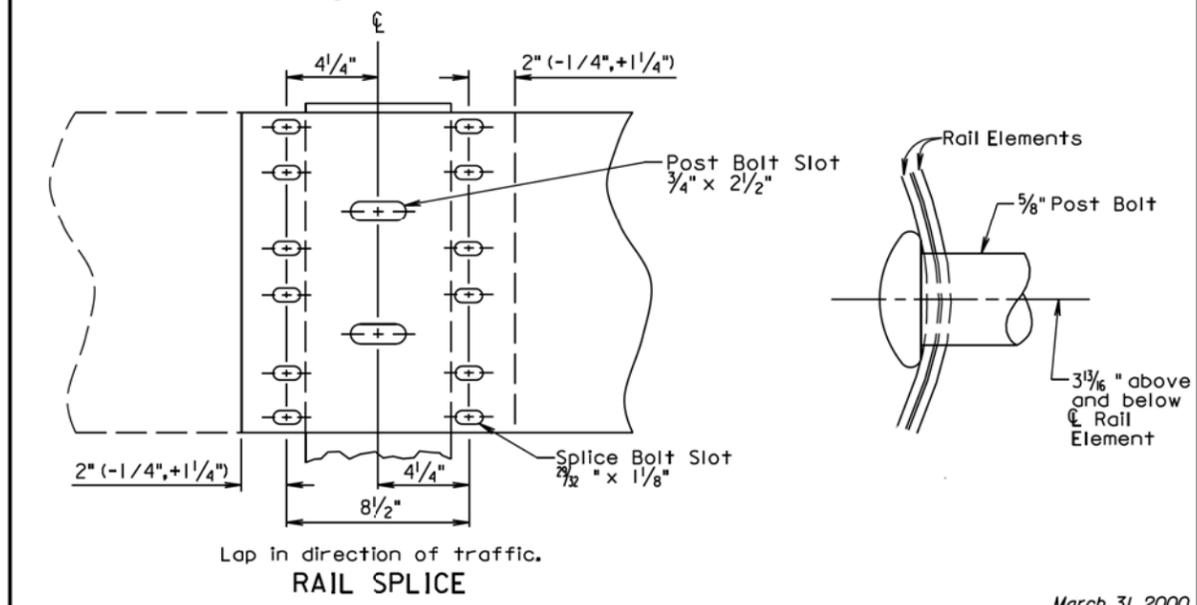


SECTION THROUGH THRIE BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)

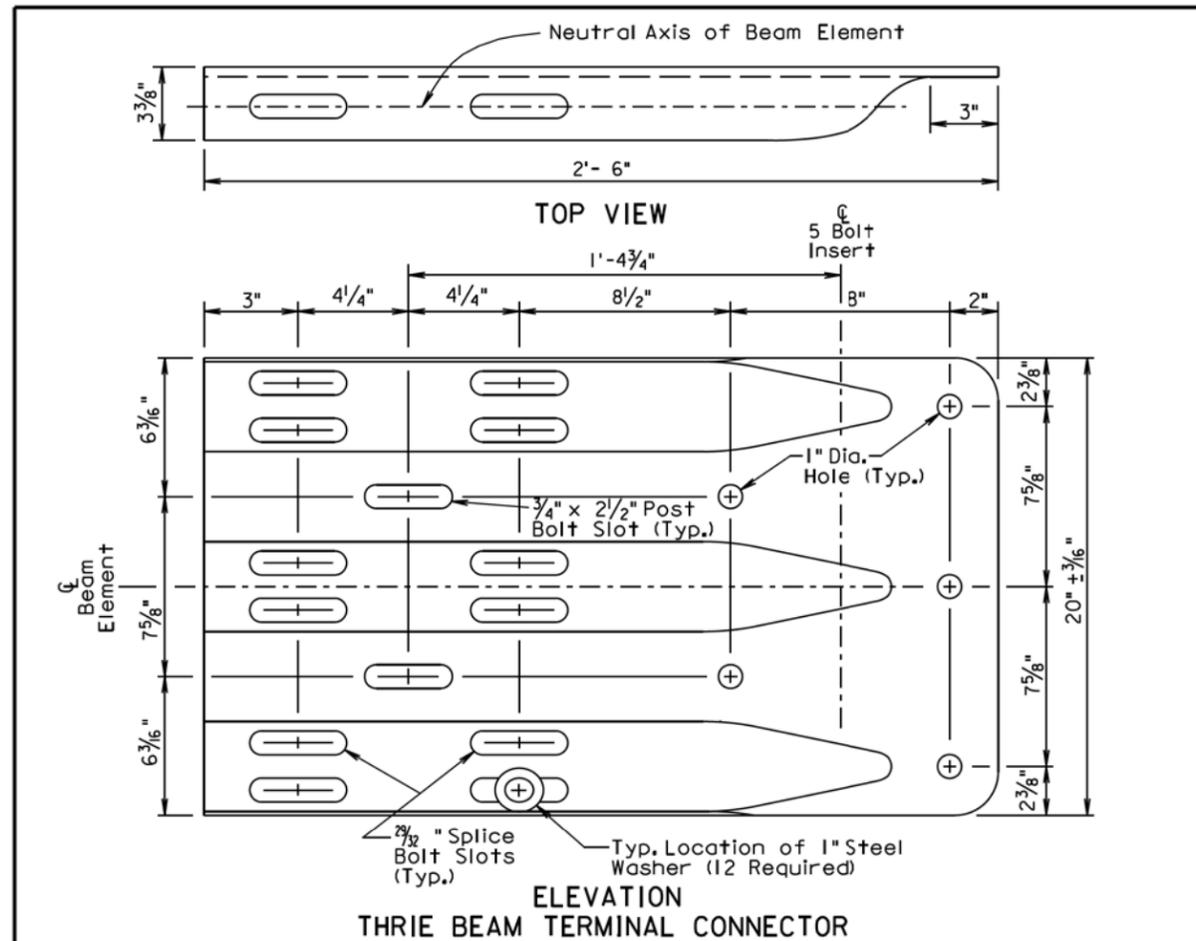


Lap in direction of traffic.

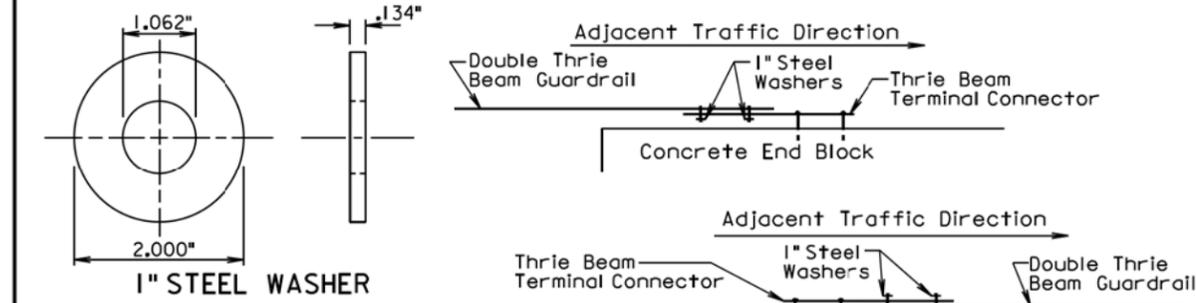
RAIL SPLICE

March 31, 2000

S D D O T	THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.03
		Sheet 1 of 1
		Published Date: 4th Qtr. 2015



THRIE BEAM TERMINAL CONNECTOR



GENERAL NOTES:

- Thrie Beam Terminal Connectors shall be 10 gauge.
- When the thrie beam terminal connector is used to connect the rail to the bridge, 1" steel washers shall be used at the lap splice and the washers shall be in direct contact with the 3" slots of the thrie beam terminal connector. See the drawings above for the typical locations of the 1" steel washers.
- There will be no separate payment for furnishing and installing the Thrie Beam Terminal Connector. All costs for the Thrie Beam Terminal Connector shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

September 14, 2001

S D D O T	THRIE BEAM TERMINAL CONNECTOR AND 1" STEEL WASHER	PLATE NUMBER 630.05
		Sheet 1 of 1
		Published Date: 4th Qtr. 2015

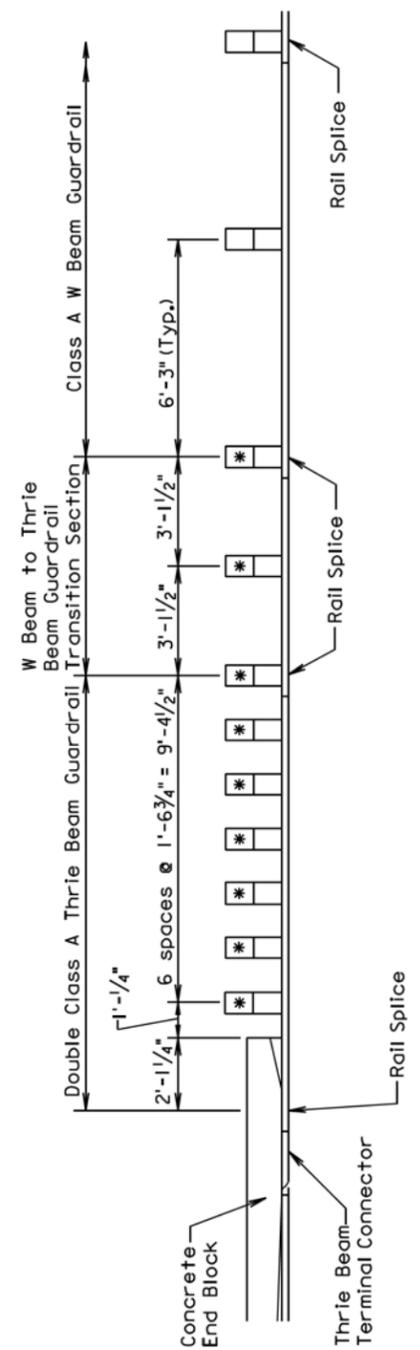
PLOT SCALE - 1:200

PLOTTED FROM - TRM111118

PLOT NAME - 20

FILE - ... \STANDARDPLATES_04VX.DGN

PLOT SCALE - 1:200



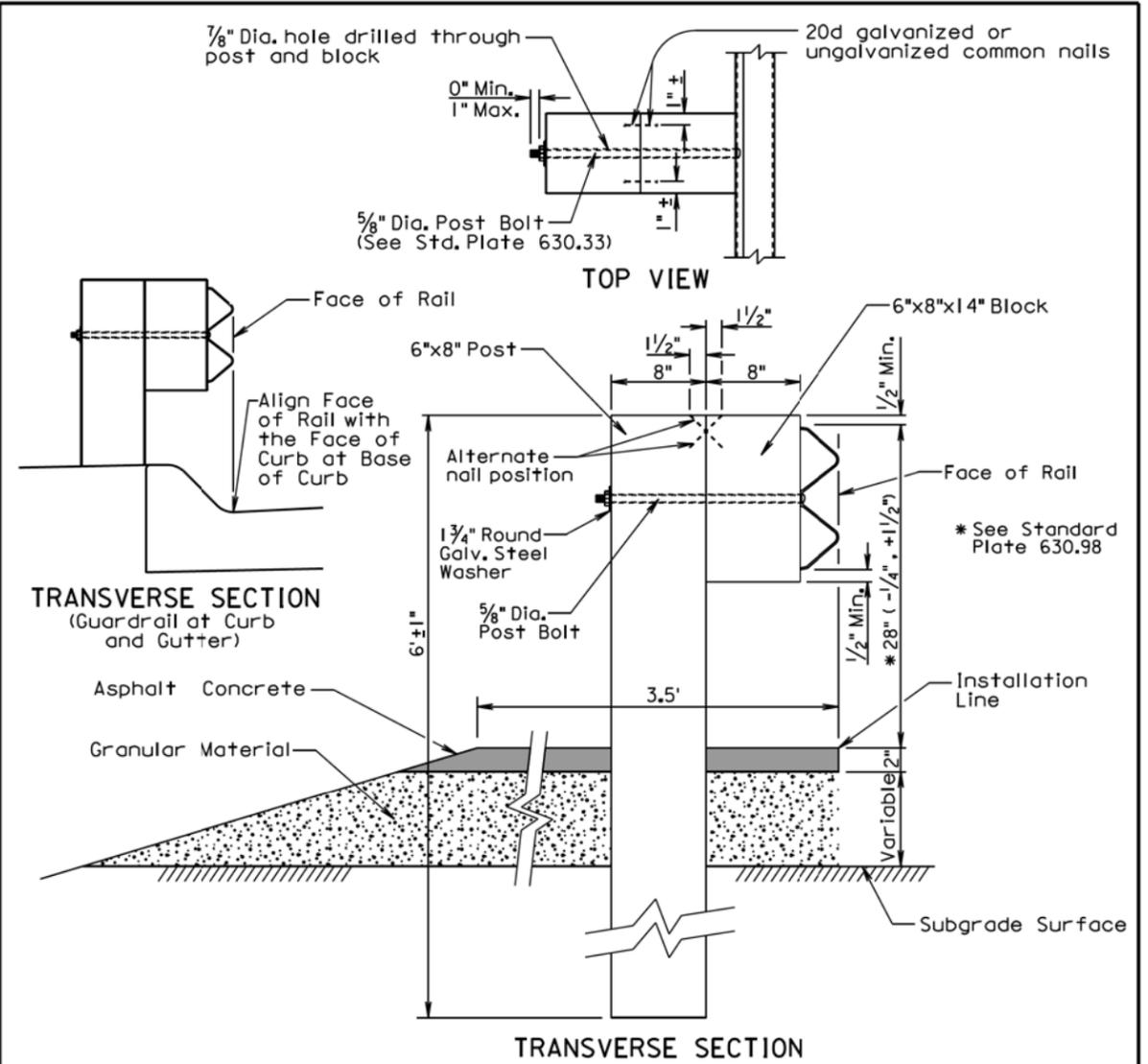
* 6" x 8" x 7' posts shall be used at these locations.

POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

December 23, 2002
PLATE NUMBER 630.15
 Sheet 1 of 1

SD DOT
 Published Date: 4th Qtr. 2015

PLOTTED FROM - TRM111118



GENERAL NOTES:

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the Specifications for "Asphalt Concrete Composite." For informational purposes, the Rate of Materials for the 3.5' wide section of asphalt concrete as shown above shall be 4.80 Tons per Station.

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

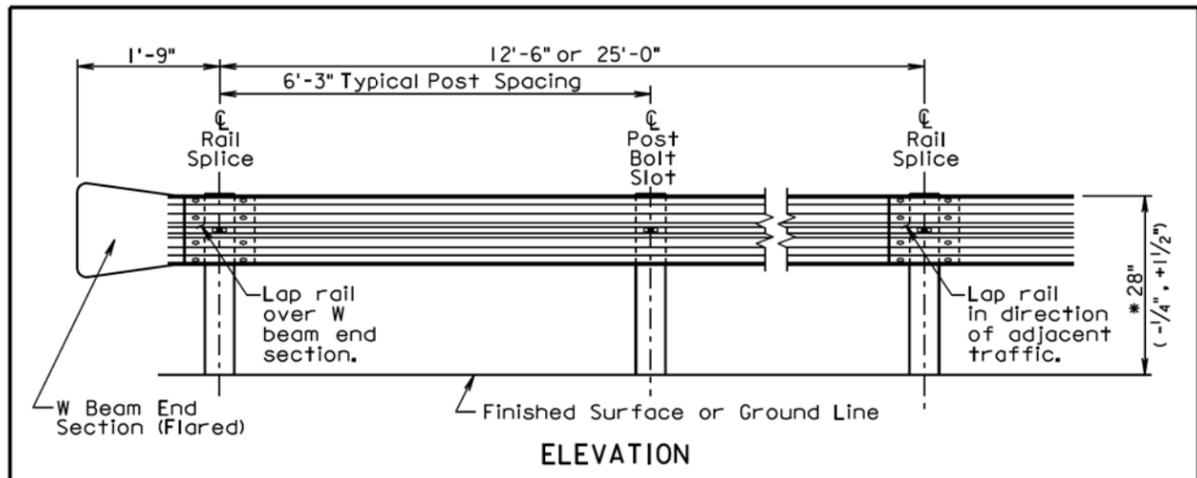
The top of post and top of block shall have a true square cut. The top of block shall be ±1 inch from the top of the post.

June 26, 2015
PLATE NUMBER 630.31
 Sheet 1 of 1

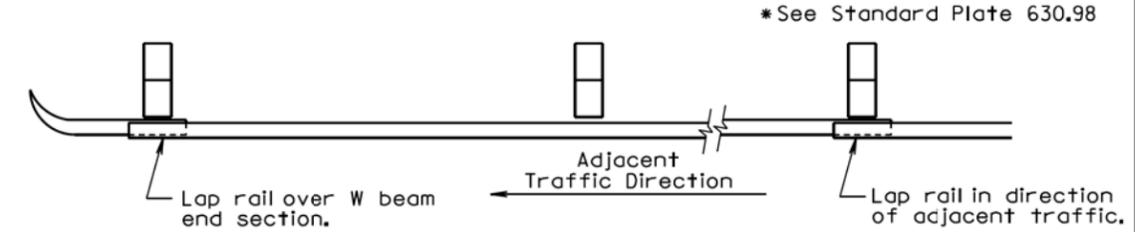
SD DOT
 Published Date: 4th Qtr. 2015

W BEAM GUARDRAIL POST INSTALLATION

FILE - ... \STANDARDPLATES_04VX.DGN PLOT NAME - 21



ELEVATION



PLAN

*See Standard Plate 630.98

W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	5'-0"
3'-1 1/2"	3'-9"

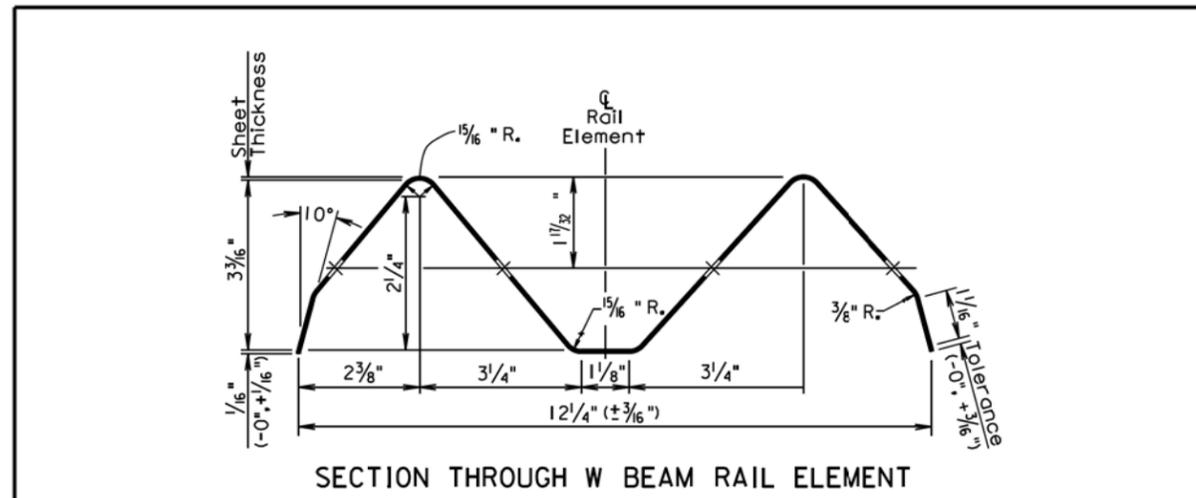
For Informational Purposes Only

GENERAL NOTES:

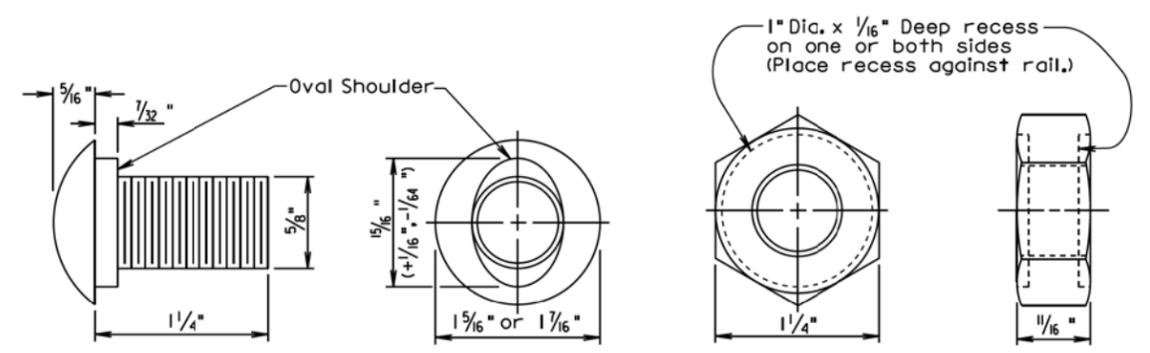
- All W beam rail shall be Type I.
- There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.
- W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.
- W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.
- All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

June 26, 2015

S D D O T	W BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.32
		Sheet 1 of 1
		Published Date: 4th Qtr. 2015

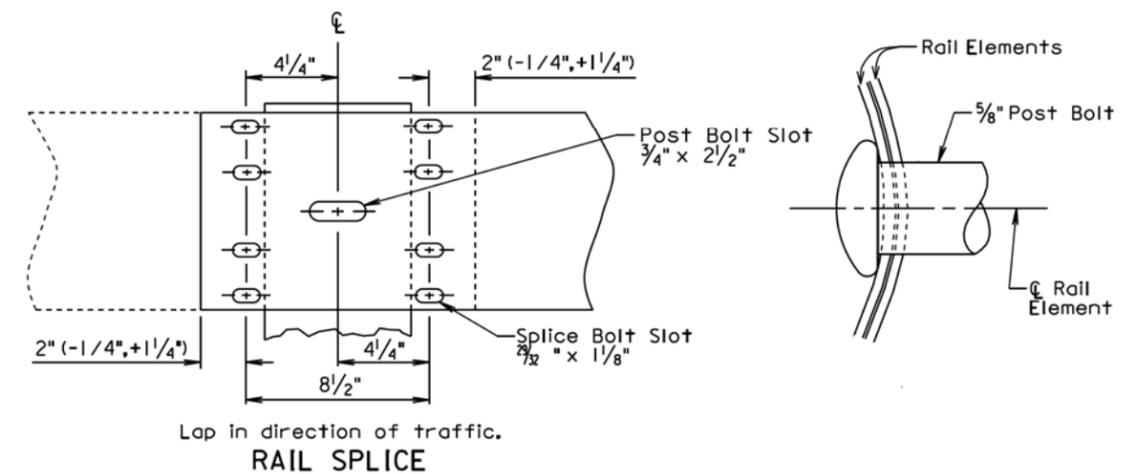


SECTION THROUGH W BEAM RAIL ELEMENT



The Post Bolt is similar except the post bolt is 18" long.

**SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)**



RAIL SPLICE

December 23, 2004

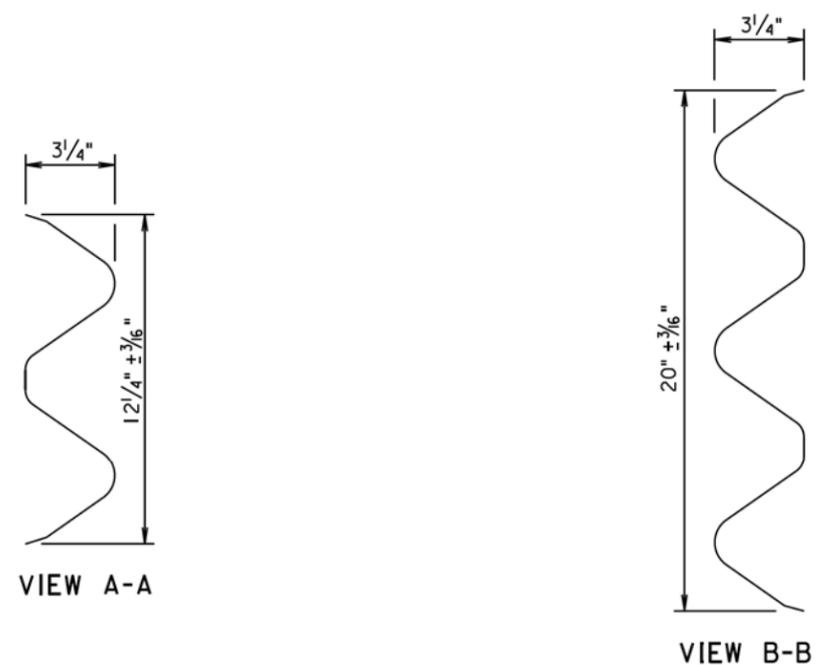
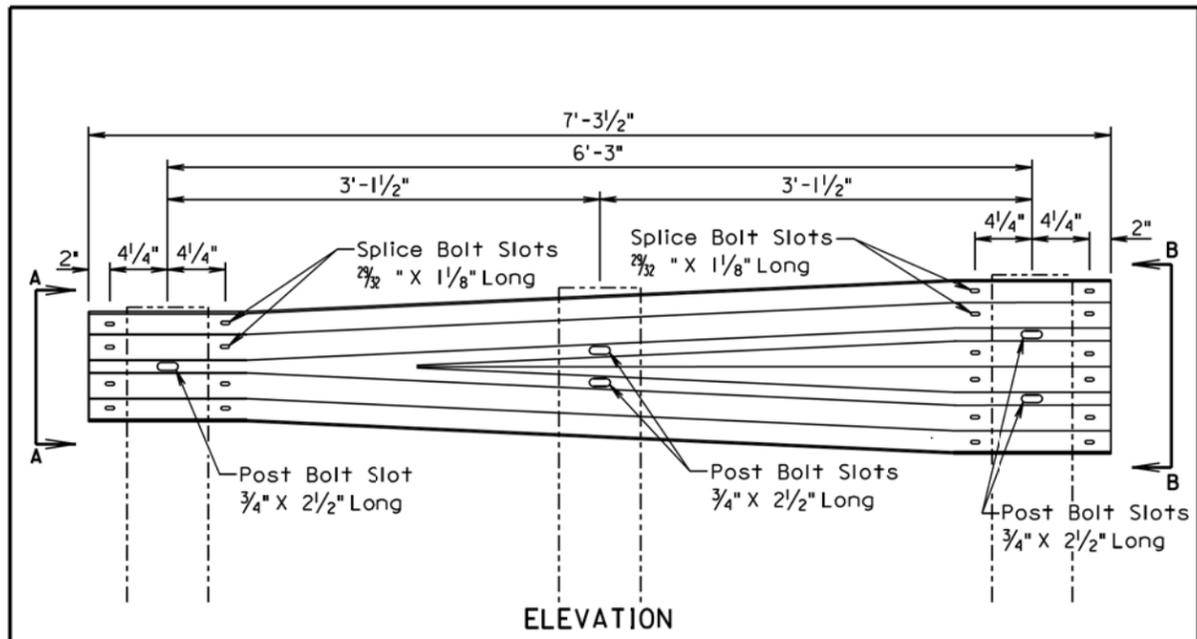
S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
		Sheet 1 of 1
		Published Date: 4th Qtr. 2015

PLOT SCALE - 1:200

PLOT NAME -

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PLOTTED FROM - TRM111118

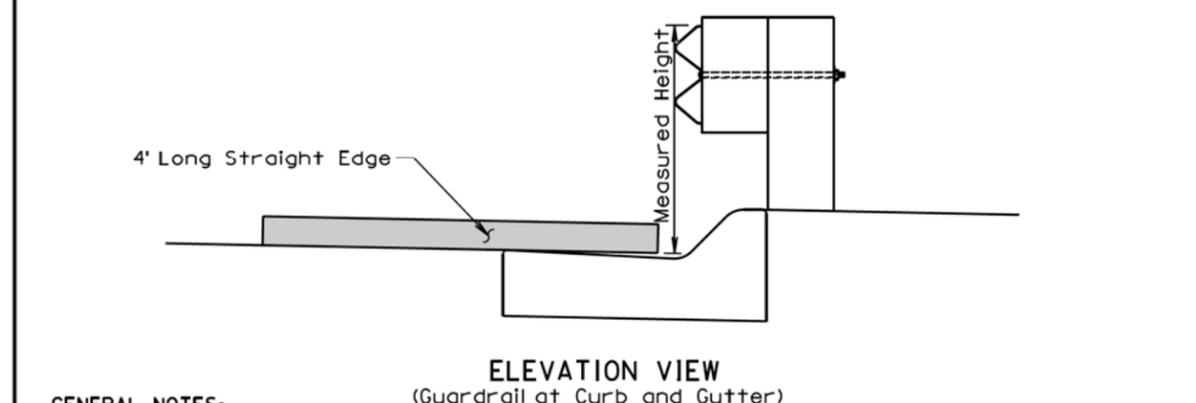
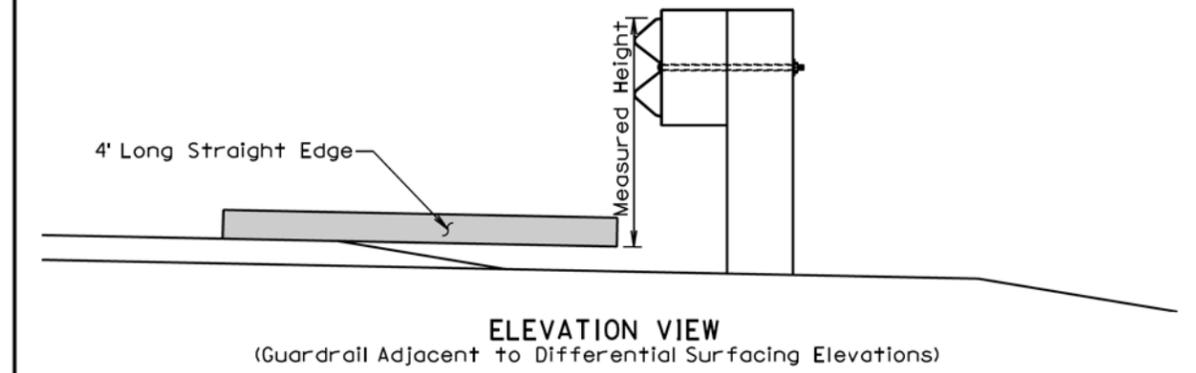
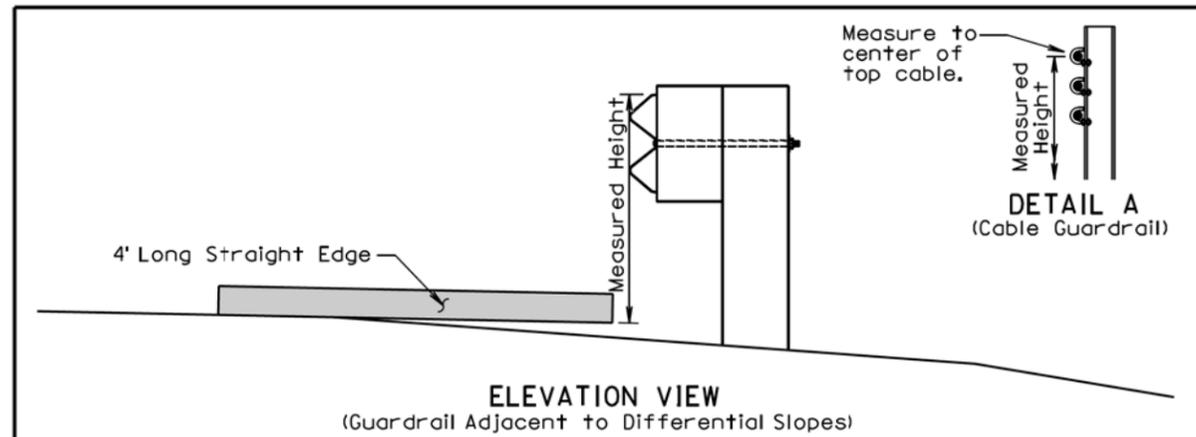


GENERAL NOTE:
All costs for constructing the W Beam to Thrie Beam Guardrail Transition including labor, equipment, and materials including two posts, two blocks, W beam to thrie beam transition section, and hardware shall be incidental to the contract unit price per each for "W Beam to Thrie Beam Guardrail Transition".

March 31, 2000

S D D O T	W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.82
		Sheet 1 of 1

Published Date: 4th Qtr. 2015



GENERAL NOTES:
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.
When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

June 26, 2010

S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
		Sheet 1 of 1

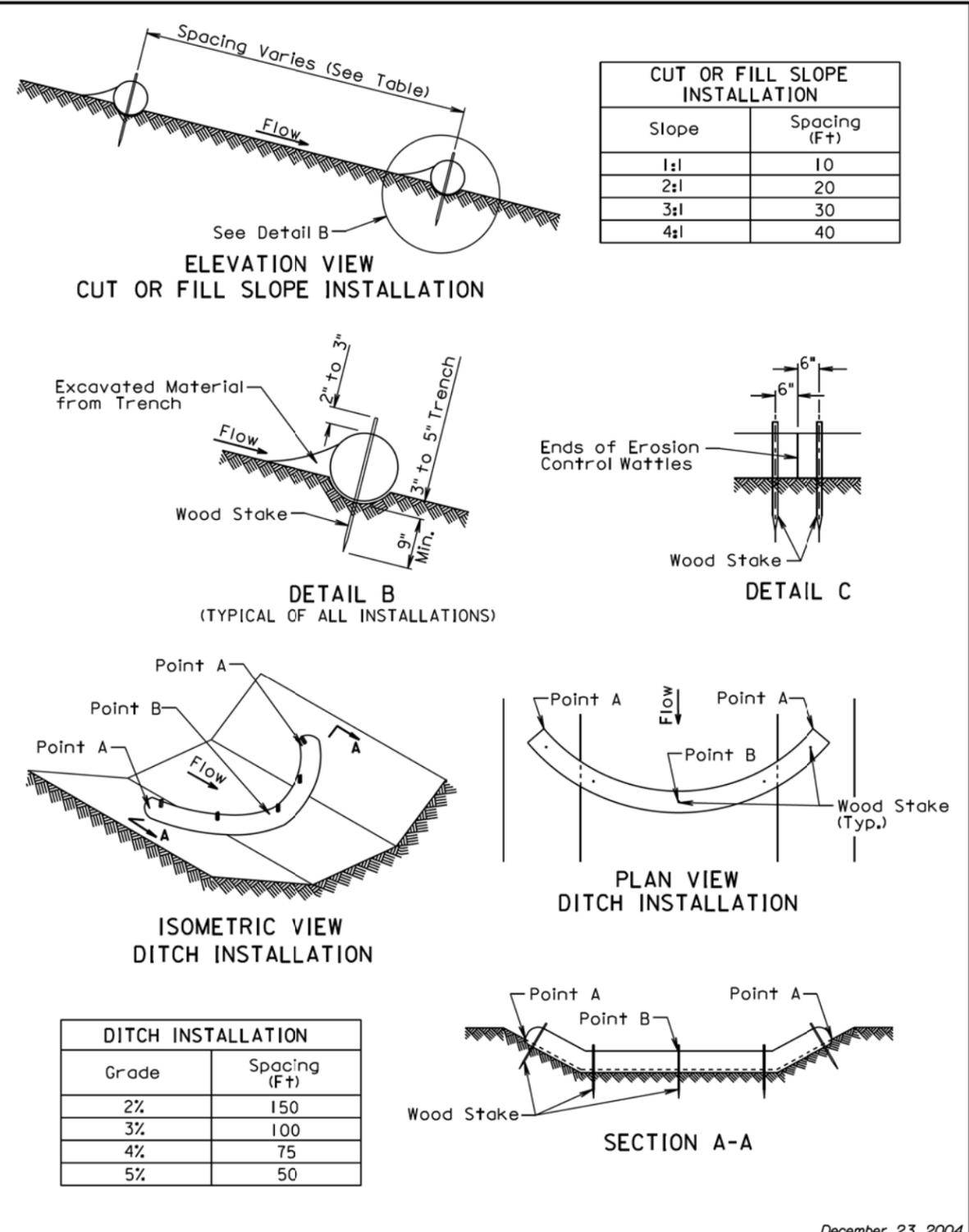
Published Date: 4th Qtr. 2015

PLOT SCALE - 1:200

PLOTTED FROM - IRMI11118

PLOT NAME - 23

FILE - ... \STANDARDPLATES_04VX.DGN



December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 1 of 2

Published Date: 4th Qtr. 2015

GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

Where installing running lengths of wattles, the Contractor shall butt the second wattle tightly against the first and shall not overlap the ends. See Detail C.

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 2 of 2

Published Date: 4th Qtr. 2015

PLOT SCALE - 1:200

PLOTTED FROM - TRM111118

PLOT NAME - 24

FILE - ... \STANDARDPLATES_04VX.DGN