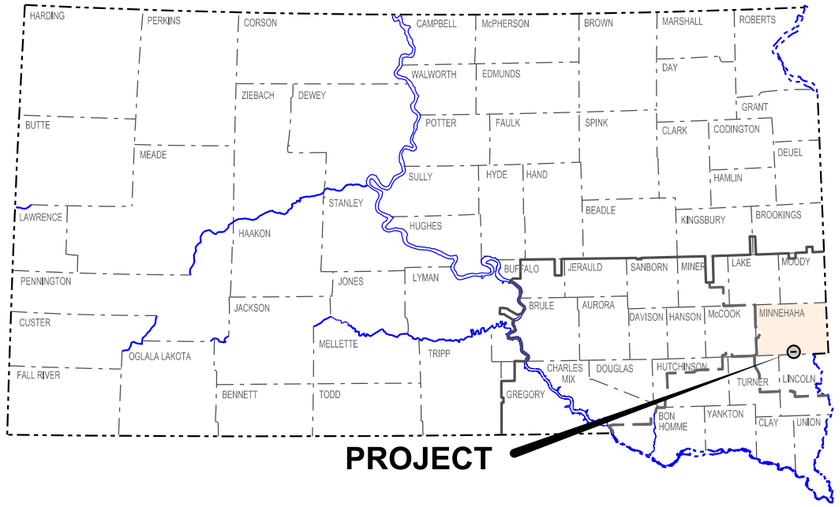


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

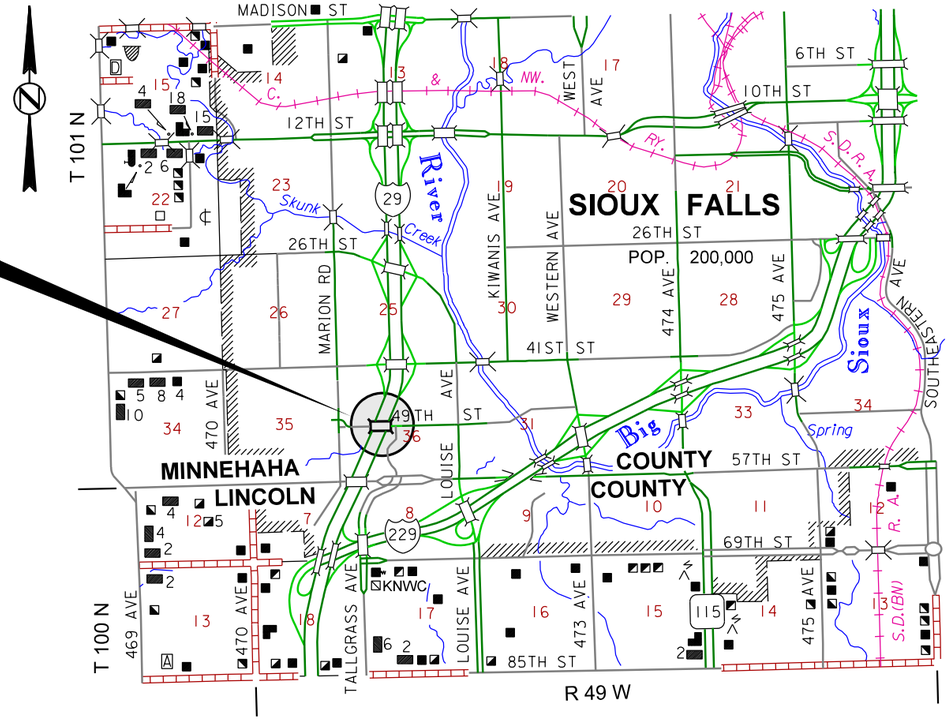
PROJECT IM 0292(93)76
49TH STREET OVER INTERSTATE 29
MINNEHAHA COUNTY

BRIDGE DECK OVERLAY, BRIDGE CONCRETE BARRIER, SLOPED ENDS, PEDESTRIAN RAILING, APPROACH SLABS, MEMBRANE SEALANT EXPANSION JOINTS, APPROACH PAVEMENT, C&G, CONCRETE SIDEWALK & PAVEMENT MARKING
PCN 092A

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	1	71

Plotting Date: 12/11/2025

INDEX OF SHEETS



STR. NO. 50-173-235
49th St. 5+19.7 to 8+47.9
Prestressed Conc. Girder Bridge
328'-2½"=0.062 Mile
MRM 76.72
Two Approach/Sleeper Slabs
2@48'=96' = 0.018 Mile

DESIGN DESIGNATION
(49th Street over I29)

ADT(2023)	22,800
ADT(2043)	37,210
DHV	3,980
D	50%
T DHV	1.8%
T ADT	4.0%
V	30 MPH

STORM WATER PERMIT
(None required)

3

February 18, 2026

PLOT SCALE - 1:70000
PLOTTED FROM - TRM111118
PLOT NAME - 1
FILE - ...\PRJ2026\MIN092A\TTL092A.DGN

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	2	71

Rev. 01/13/26 GAW

Str. No. 50-173-235

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3200	Construction Staking	Lump Sum	LS
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4100	Construction Schedule, Category I	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	349	Ft
110E1100	Remove Concrete Pavement	254.0	SqYd
110E1140	Remove Concrete Sidewalk	111.0	SqYd
120E0010	Unclassified Excavation	66	CuYd
320E1200	Asphalt Concrete Composite	84.0	Ton
332E0010	Cold Milling Asphalt Concrete	245	SqYd
380E0070	9" Nonreinforced PCC Pavement	492.0	SqYd
380E6000	Dowel Bar	204	Each
380E6110	Insert Steel Bar in PCC Pavement	56	Each
410E2600	Membrane Sealant Expansion Joint	99.0	Ft
633E0210	Preformed Thermoplastic Pavement Marking, 4"	2,511	Ft
634E0110	Traffic Control Signs	547.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	12	Each
634E0700	Traffic Control Movable Concrete Barrier	39	Each
634E1215	Contractor Furnished Portable Changeable Message Sign	2	Each
634E2000	Longitudinal Pedestrian Barricade	100	Ft
650E0090	Type B69 Concrete Curb and Gutter	303	Ft
651E0040	4" Concrete Sidewalk	1,117	SqFt
734E0010	Erosion Control	Lump Sum	LS

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
110E0010	Remove Concrete Bridge Approach Slab	601.9	SqYd
110E0020	Remove Bridge Railing	1,304	Ft
110E1140	Remove Concrete Sidewalk	62.5	SqYd
260E1010	Base Course	48.0	Ton
380E2450	Concrete Barrier and 10' Continuously Reinforced Concrete Shoulder	60	Ft
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	125.0	Ft
460E0010	Class A45 Concrete, Bridge Barrier	35.2	CuYd
460E0070	Class A45 Concrete, Bridge Repair	0.7	CuYd
460E0150	Concrete Approach Slab for Bridge	309.8	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	73.0	SqYd
460E0200	Special Surface Finish	4,004	SqFt
460E0300	Breakout Structural Concrete	0.7	CuYd
460E0380	Install Dowel in Concrete	976	Each
470E0120	Steel Pedestrian Railing on Sidewalk	656.0	Ft
470E0220	Steel Pedestrian Railing on Concrete Barrier	652.6	Ft
480E0200	Epoxy Coated Reinforcing Steel	5,601	Lb
480E5000	Galvanic Anode	4	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	116	CuYd
550E0100	Concrete Removal Type 1A	1,890.5	SqYd
550E0105	Concrete Removal Type 2A	472.6	SqYd
550E0110	Concrete Removal Type 1B	189.1	SqYd
550E0120	Concrete Removal Type 1C	94.5	SqYd
550E0130	Concrete Removal Type 1D	94.5	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	17.1	CuYd
550E0500	Finishing and Curing	1,890.5	SqYd
621E0300	Chain Link Fence for Bridge Sidewalk	656	Ft
651E0160	6" Reinforced Concrete Sidewalk	851	SqFt
900E8900	Anchor Bolt Coring	15.0	Ft

ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	3	71

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified 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. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

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 will 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 Public ROW.

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

The waste disposal site(s) will 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 Environmental Office and the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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 not to exceed the duration of the project. Prior to project completion, the waste will 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) will be incidental to the various contract items.

COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic Preservation Office (SHPO or THPO) for all work included within the project limits and all department designated sources and designated option material sources, stockpile sites, storage areas, and waste sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will
immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery 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 Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

UTILITIES

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

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 will contact the Project Engineer to determine if project changes are necessary to avoid utility impacts.

Gathered Utility Contacts:

Andrew Wixon
Lumen (Formerly CenturyLink)
125 S Dakota Ave
Sioux Falls, SD 57104
C: (605) 681-2049
E: Andrew.Wixon@Lumen.com

Shannon Ausen
City of Sioux Falls
231 North Dakota Ave
Sioux Falls SD, 57104
O: 605-367-8607
E: Shannon.ausen@siouxfalls.gov

Nicolle Rasmusson
MidAmerican Energy Company
1200 South Blauvelt Ave.
Sioux Falls, SD 57105
O:(605) 373-6081
E: Nicolle.Rasmusson@midamerican.com

Al Mullinix
Midcontinent Communications
1305 N Terry Ave
Sioux Falls, SD 57107
O: #605-274-8546
E: Al.Mullinix@Midco.com

Lawerance Escobin
SDN Communications, INC.
2900 W 10th St.
Sioux Falls, SD 57104-2543
O: 605-978-1084
C: 605-310-7238
E: lawrence.escobin@sdncommunications.com

Aaron Bickett (Distribution)
X-CEL Energy
500 W Russel St
Sioux Falls, SD 57104
O: 605-339-8315
C: 605-261-1354
E: Aaron.M.Bickett@xcelenergy.com

Jordan Huber
Bluepeak
5100 S Broadband Rd
Sioux Falls, SD 57108
O: (605) 498-4922
C: (605) 366-1360
E: Jordan.Huber@MyBluepeak.com

EXISTING NRC PAVEMENT

The existing pavement is 9” x 24’ NRC Pavement.

Existing contraction joints are spaced at approximately 15’. Longitudinal joints are reinforced with No. 4 x 30” deformed tie bars spaced 48” center to center. Transverse joints are reinforced with 1¼” x 18” plain round dowel bars spaced 12” center to center.

The aggregate in the existing NRC Pavement is quartzite.

RESTORATION OF GRAVEL CUSHION

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

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

Cost for this work will be incidental to the contract unit price per square yard for 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.

9" NONREINFORCED PCC PAVEMENT

The aggregate may require screening as determined by the Engineer.

The concrete mix used in the PCC Pavement will conform to Section 380.

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.

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

The transverse construction joints will be handled in accordance with Standard Plate 380.15.

The location of joints, as shown and designated on the PCC Pavement Joint Layout(s) are only approximate locations to be used as a guide and to afford bidders a basis for estimating the construction cost of the joints. The final locations of the joints are to be designated by the Engineer during construction.

The entire surface of the mainline paving will be a heavy carpet drag. The surface of the mainline paving will receive a heavy carpet drag to within 2 or 3 feet of the face of the curb. All other areas will be textured as directed by the Engineer.

The mainline pavement will be tested using the 10’ straight edge as per Specifications 380.3.O.1.

ALKALI SILICA REACTIVITY

Fine aggregate will conform to Section 800.2 D Alkali Silica Reactivity (ASR) Requirements.

Below is a list of known fine aggregate sources and the average corresponding 14-day expansion values (as of 10-2-2025):

Source	Location	Expansion Value
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.146
Concrete Materials - Vellek Pit	Yankton, SD	0.442**
Croell	Hot Springs, SD	0.089
Croell	Wasta, SD	0.212
Emme Sand & Gravel	Oneil, NE	0.217
Fisher S&G – Blair Pit	W of Vale, SD	0.171
Fisher S&G - Mickelson Pit	E of Nisland, SD	0.129
Fisher S&G - Vallery Pit	Nisland, SD	0.110
Fisher S&G	Rapid City, SD	0.092
Fisher S&G	Spearfish, SD	0.053
Fisher S&G	Wasta, SD	0.159
Fuchs	Pickstown, SD	0.275*
Henning – Tilstra Pit	Ash Creek, MN	0.199
Higman	Hudson, SD	0.187
Jensen	Herried, SD	0.276*
L.G. Everist	Akron, IA	0.257*
L.G. Everist	Brookings, SD	0.297*
L.G. Everist – Ode Pit	E Sioux Falls, SD	0.222
L.G. Everist – Nelson Pit	NE Sioux Falls, SD	0.156
L.G. Everist	Hawarden, IA	0.211
L.G. Everist	Summit, SD	0.184
Mark’s S&G – Moerke Pit	Underwood, MN	0.165
Morris – Birdsall	Blunt, SD	0.229
Morris - Leesman	Blunt, SD	0.231
Morris - Richards Pit	Onida, SD	0.188
Morris - Shawn’s Pit	E of Sturgis, SD	0.186
Northern Concrete Agg.	Rauville, SD	0.113
Northern Concrete Agg.	Luverne, MN	0.154
Opperman - Gunvordahl Pit	Burke, SD	0.363*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.250
Pete Lien & Sons	Creston, SD	0.158
Pete Lien & Sons	Oral, SD	0.157
Pete Lien & Sons	Wasta, SD	0.255*
Simon Materials - Beltline Pit	Scottsbluff, NE	0.277*
Thorpe Pit	Britton, SD	0.098
Valley S&G – Van Beek Pit	Rock Valley, IA	0.228
Wagner Building Supplies	Pickstown (Wagner), SD	0.251*
Winter Brothers- Whitehead Pit	Brookings, SD	0.197

* These sources will require Type II cement with a fly ash content of 25% in the concrete mix.
** These sources will not be used.

The Department will use the running average of the last three or fewer known expansion test results for determining acceptability of the source. These expansion results are reported in the preceding table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with a test value less than 0.250 is discovered after letting to be 0.250 or greater, then the Department will accept financial responsibility if higher costs are incurred due to higher percent of fly ash requirement.

SAW AND SEAL JOINTS

Longitudinal and transverse joints will be sawed and sealed.

Joint sealing will conform to Section 380.3 P.

CONCRETE CURB & GUTTER AND SIDEWALK

Refer to the details for locations of removal and replacement. These locations will be designated by the Engineer on construction.

If the end of any section to be removed does not fall on an existing joint, a sawed joint (3" to 4" deep) must be made to provide a vertical face for the new joint.

Existing foundation material will be shaped and compacted to a firm, uniform bearing surface, conforming to the existing section or established grades as set by the Engineer. Unsuitable foundation material will be removed and replaced as directed.

Cost for labor, equipment, material and incidentals required for excavation and providing cushion material will be incidental to the contract unit prices for the various items.

Curb and Gutter will be tied to in place Curb and Gutter with two drilled in No. 5 x 24” epoxy coated deformed tie bars. Cost for this work will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

The Contractor will satisfactorily restore disturbed areas adjacent to the new concrete placement to the satisfaction of the Engineer. Cost for this restoration work will be incidental to the contract unit prices for the various items.

EROSION CONTROL

Type D Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 SqFt)
Kentucky Bluegrass	Avalanche, Appalachian, Wildhorse, Blue Bonnet, Action	1.4
Perennial Ryegrass	Turf Type Varieties	1.4
Creeping Red Fescue	Epic, Boreal, Chantilly	1.4
Chewings Fescue	Ambrose, K2, Zodiac, Shadow III	1.4
Alkali Grass	Fults, Fults II, Quill, Salty	1.4
	Total:	7

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

The areas to be seeded and mulched are estimated at 0.1 acre.

All costs for the erosion control work for furnishing, placing and maintaining erosion control including equipment, labor, seeding and mulching will be incidental to the contract lump sum price for Erosion Control.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

SEQUENCE OF OPERATIONS

The Contractor will submit a sequence of operations for approval two weeks prior to the preconstruction meeting. If changes to the sequence of operations are proposed during the project, these must be submitted for review a minimum of one week prior to potential implementation. Approval for changes to the sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work.

GENERAL TRAFFIC CONTROL

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

Portable sign supports will not be located on sidewalks, bicycle facilities, or other areas designated for pedestrian or bicycle traffic.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

TRAFFIC CONTROL MOVABLE CONCRETE BARRIER

Traffic Control Movable Concrete Barrier will be removed on the bridge deck located on the south side of the bridge. All barrier will be removed once the south sidewalk is permanently closed, and the pedestrian traffic is diverted to the north side of the bridge.

Concrete barrier will be hauled to the SDDOT Sioux Falls Maintenance Yard located at 5316 West 60th St North, Sioux Falls, SD 57107.

Removal will be paid for at the contract unit per each for Traffic Control Movable Concrete Barrier.

Cost for picking the barrier up from the project and transporting them to the SDDOT Maintenance Yard will be incidental to the contract unit price per each for Traffic Control Movable Concrete Barrier.

LONGITUDINAL PEDESTRIAN BARRICADE

Pedestrian traffic on bridge will be maintained for the duration of the project. The sidewalk on the south side will be closed until bridge work and barrier work is done on that side. Once all the work on the southside is done then the north side will be closed for work on the railing. At that point, pedestrian traffic will be moved to the sidewalk on the south end of the bridge.

Longitudinal pedestrian barricades will be used on each end of the bridge as extensions to the concrete barriers in order to keep pedestrians from the work being done to the approach slabs.

LONGITUDINAL PEDESTRIAN BARRICADE (Continued)

Longitudinal pedestrian barricades should not be used to provide positive protection for pedestrians.

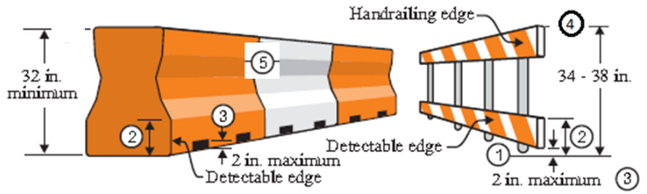
To prevent any tripping hazard to pedestrians, ballast will be located behind or internal to the device.

When longitudinal pedestrian barricades are combined in a series, the maximum gap between devices that do not interlock will be one inch. Joints between devices that do interlock will be closed and flush to prevent canes or small wheels from being trapped and to facilitate safe hand trailing.. Longitudinal pedestrian barricade should provide a color contrasting pattern. Black should not be used to color any base on a device. The devices should comply with the general color and stripe pattern requirements of Section 6F.68 of the MUTCD.

Longitudinal pedestrian barricade will have continuous bottom and top surfaces. The top surface will be smooth to allow safe hand trailing. Both upper and lower surfaces will share a common vertical plane.

All costs will be incidental to the contract unit price per foot for "Longitudinal Pedestrian Barricade".

PEDESTRIAN CHANNELIZING DEVICE DETAILS



Longitudinal Pedestrian Barrier **Longitudinal Pedestrian Barricade**

1. Barricade rail supports may not extend into the pedestrian walkway more than 4 inches from the face of the barricade.
2. The top edge of the bottom portion will be a minimum of 8 inches above the walkway.
3. Devices will not block water drainage from the walkway. A gap height or opening from the walkway surface up to a maximum of 2 inches in height is allowed for drainage purposes.
4. The top edge of the longitudinal pedestrian barricade is to be used as a guiderail to provide visual and tactile guidance to pedestrians along a designated route. The top surface should have a minimum width of 0.5 inches to allow the hand to feel the surface. The surface should be smooth and free of any sharp or abrasive elements to allow safe hand trailing.
5. Longitudinal pedestrian barrier used to provide positive protection from traffic to pedestrians should be crashworthy.

CONTRACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed at locations detailed on the Road Closure Signing layout sheet, to notify drivers of the upcoming construction. The Contractor will program the portable changeable message signs with the following message:

ROAD WORK
STARTS (Date)

When work begins that will affect traffic patterns, the Contractor will re-program the PCMS with the messages as directed by the Project Engineer.

PREFORMED THERMOPLASTIC PAVEMENT MARKING

General

- Made of prefabricated retroreflective, resilient thermoplastic material;
- Contains glass beads uniformly distributed through the entire cross-sectional area;
- Capable of being affixed to bituminous or concrete pavement by heating;
- Resistant to deterioration due to exposure to sunlight, water, salt, and adverse weather conditions;
- Under traffic wear, shows no appreciable fading in accordance with the color requirements, lifting, or shrinkage throughout the life of the marking;
- Capable of conforming to pavement contours, breaks, and faults through the action of traffic at normal pavement temperatures;
- Possesses resealing characteristics, such that it is capable of fusing with itself and previous thermoplastic markings when heated; and
- Protected during shipment and in storage.

Apply the preformed thermoplastic pavement marking as recommended by the manufacturer to provide a neat, durable marking that will not flow, distort, or crack due to temperature if the pavement surface remains stable. Use equipment and application methods specified by the manufacturer. Primer as required by the manufacturer will be provided with the material.

Application of the markings will include the use of any manufacturer recommended sealers. Sealers may be required on concrete pavements, inside grooves, or on older asphalt pavements. Prior to placing any markings on new concrete, the Contractor will remove any curing compounds. Removal will be by sandblasting or other standard industry methods.

Any required primers or sealers will be included in the contract unit price for the various preformed thermoplastic pavement marking items.

Provide precut messages and symbols meeting the requirements of the MUTCD and the Standard Signs Manual in custom kits. Use separate pieces or segments to form individual letters or symbols only to the extent supplied by the manufacturer. Provide shapes, sizes, and colors as required by the contract.

Color

- Will meet the color specification limits and luminance factors for Cold Applied Plastic Pavement Marking and Legends (Section 983.2 D of the Specifications, Tables 1 and 2).

Glass Beads

- Ensure the preformed thermoplastic pavement marking contains a minimum 30% intermixed glass beads by weight and a minimum 80% true spheres.
- Ensure preformed thermoplastic pavement markings contain only clear beads.

Skid Resistance

- Ensure the surface of the preformed thermoplastic pavement marking provides a skid resistance value of at least 45 British Pendulum Number (BPN) when tested in accordance with ASTM E303.

PREFORMED THERMOPLASTIC PAVEMENT MARKING (Continued)

Retroreflectivity

- Provide preformed thermoplastic pavement marking meeting the minimum initial pavement marking retroreflectivity values using 30 m geometry and meeting the testing procedures of ASTM E1710:

Minimum Initial Pavement Marking Retroreflectivity		
	White	Yellow
Thermoplastic	400 mcd/sq. ft./ft.	250 mcd/sq. ft./ft.
Thermoplastic, enhanced skid resistance (ESR)	250 d/sq. ft./ft.	150 d/sq. ft./ft.

Thickness

- A longitudinal marking is a minimum 90 mils thick at the edges, and a maximum 125 mils thick at the center of the stripe.
- Transverse markings and symbols are a minimum 125 mils thick at the edges, and a maximum 160 mils thick at the center.

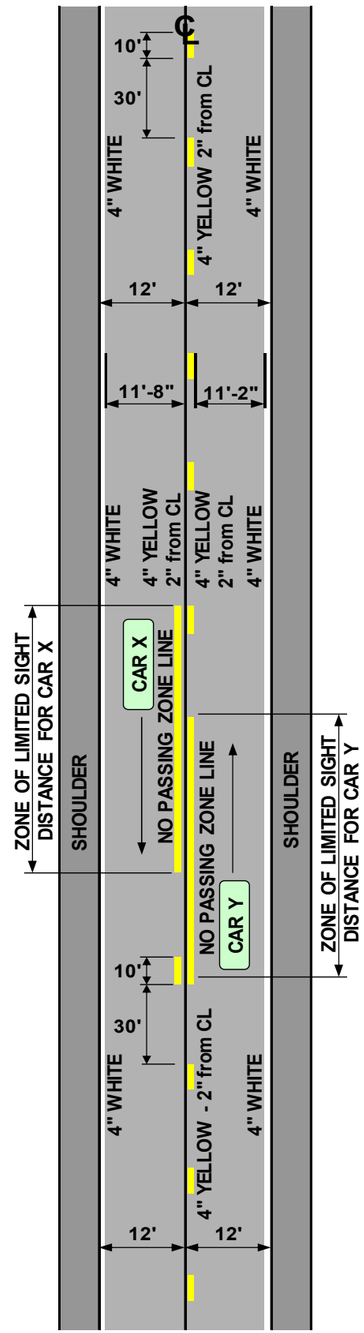
Sample

- Prior to application, the Contractor will provide a sample of the preformed thermoplastic pavement marking to be used on the project to the Region Traffic Engineer for inspection and approval.
- Do not begin application of the preformed thermoplastic pavement marking prior to obtaining the Region Traffic Engineer's approval of the preformed thermoplastic pavement marking material. The Region Traffic Engineer's approval of the preformed thermoplastic pavement marking does not void other preformed thermoplastic pavement marking requirements specified.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R3-2	LEFT TURN PROHIBITION (symbol)	2	24" x 24"	4.0	8.0
R9-9	SIDEWALK CLOSED	2	24" x 12"	2.0	4.0
R9-11a	SIDEWALK CLOSED (ARROW L) CROSS HERE	1	24" x 12"	2.0	2.0
R9-11a	SIDEWALK CLOSED (ARROW R) CROSS HERE	1	24" x 12"	2.0	2.0
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
W1-6	LARGE ARROW (one direction)	2	48" x 24"	8.0	16.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
SPECIAL	49TH ST TERRY	12	42" x 66"	19.3	231.6
SPECIAL	49TH ST SOLBERG	12	42" x 66"	19.3	231.6
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			547.2

TWO LANE ROADWAY



Typical pavement marking as shown on this sheet will be applied throughout the entire length of two lane roadway.

Traffic Control will be incidental to the cost of application. The striper and advance or trailing warning vehicle will be equipped with flashing amber lights and advance warning arrow board.

ESTIMATED QUANTITIES				
THERMO	IM 0292(93)76	Project No. 2	Project No. 3	TOTALS
4" White	1156'	-	-	1156'
8" White	-	-	-	-
12" White	-	-	-	-
24" White	-	-	-	-
Solid White	-	-	-	-
4" Yellow	1355'	-	-	1355'
8" Yellow	-	-	-	-
12" Yellow	-	-	-	-
24" Yellow	-	-	-	-
Solid Yellow	-	-	-	-

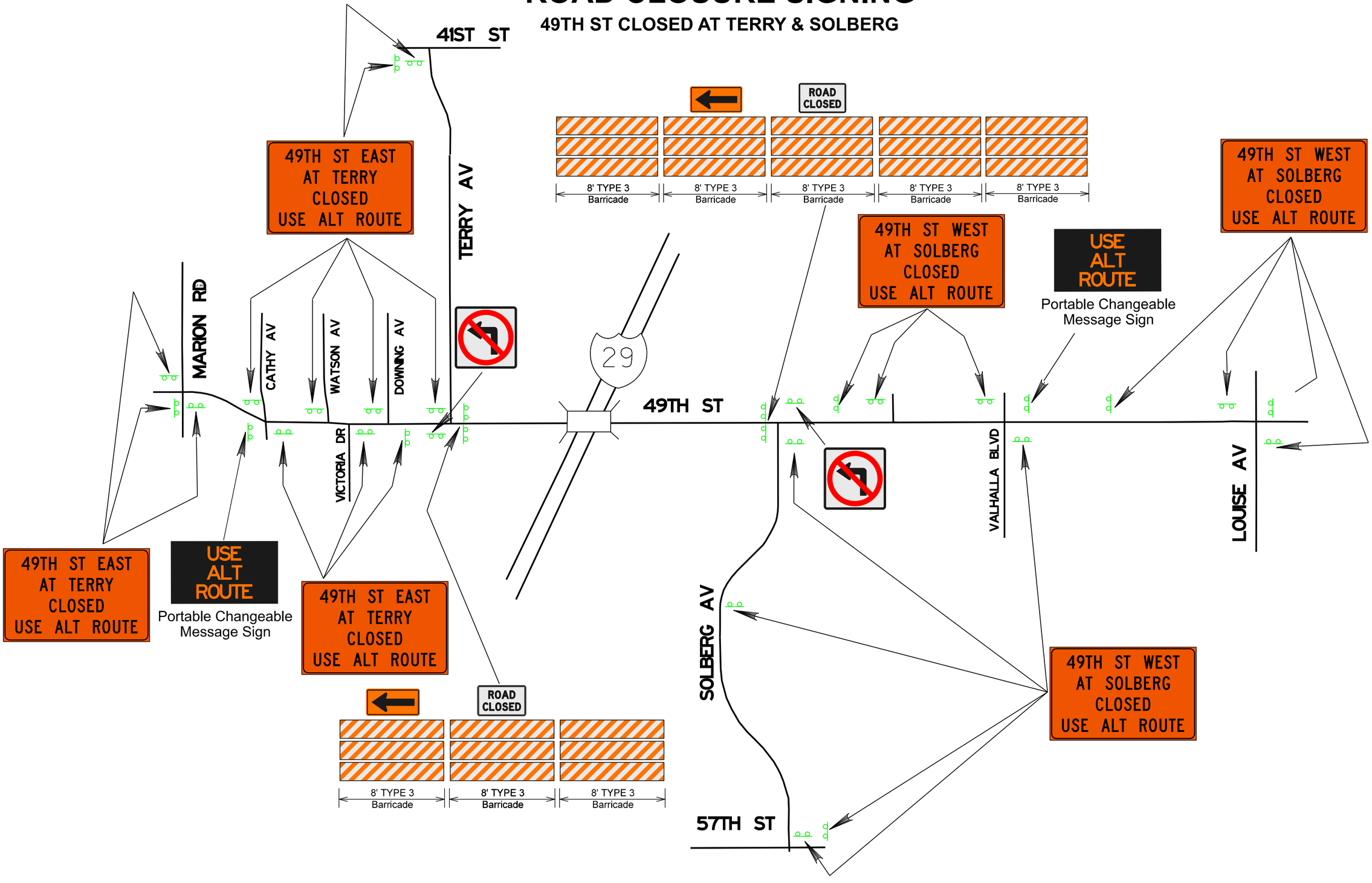
ESTIMATED QUANTITIES					
THERMO	4"	8"	12"	24"	SOLID AREAS
WHITE	1156'	-	-	-	-
YELLOW	1355'	-	-	-	-

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	8	71

Plotting Date: 12/11/2025

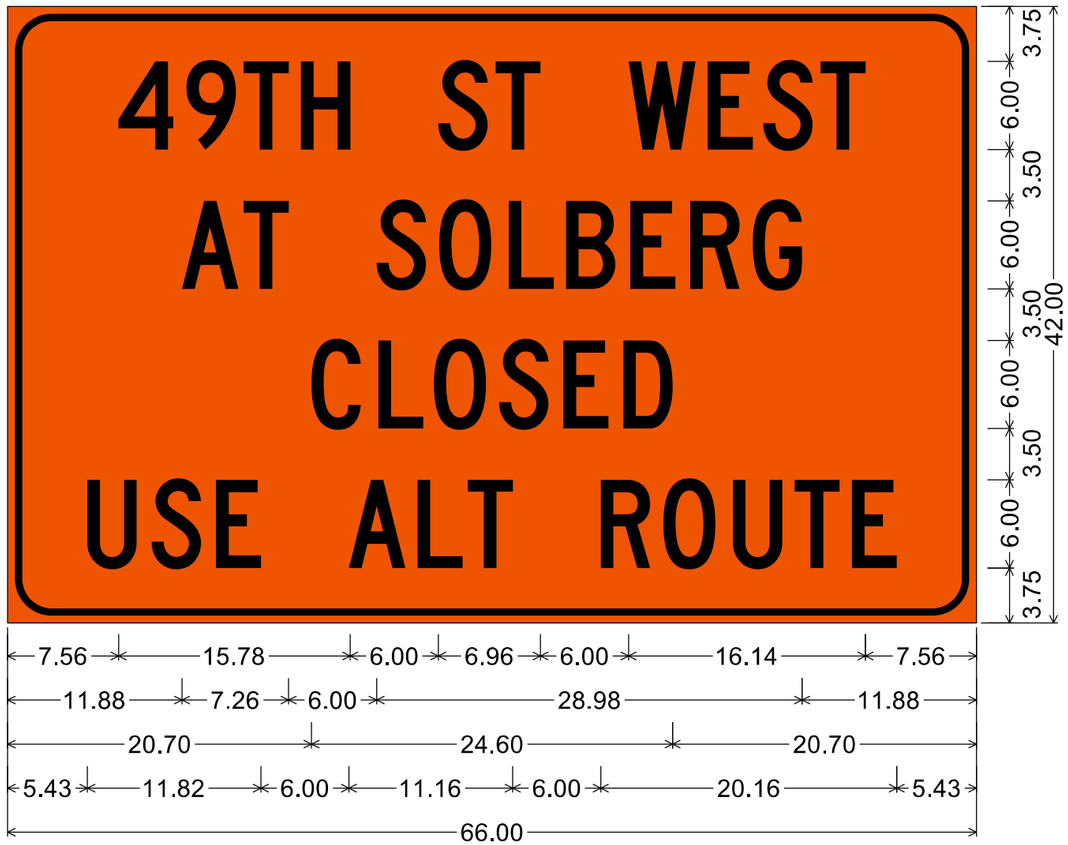
ROAD CLOSURE SIGNING

49TH ST CLOSED AT TERRY & SOLBERG

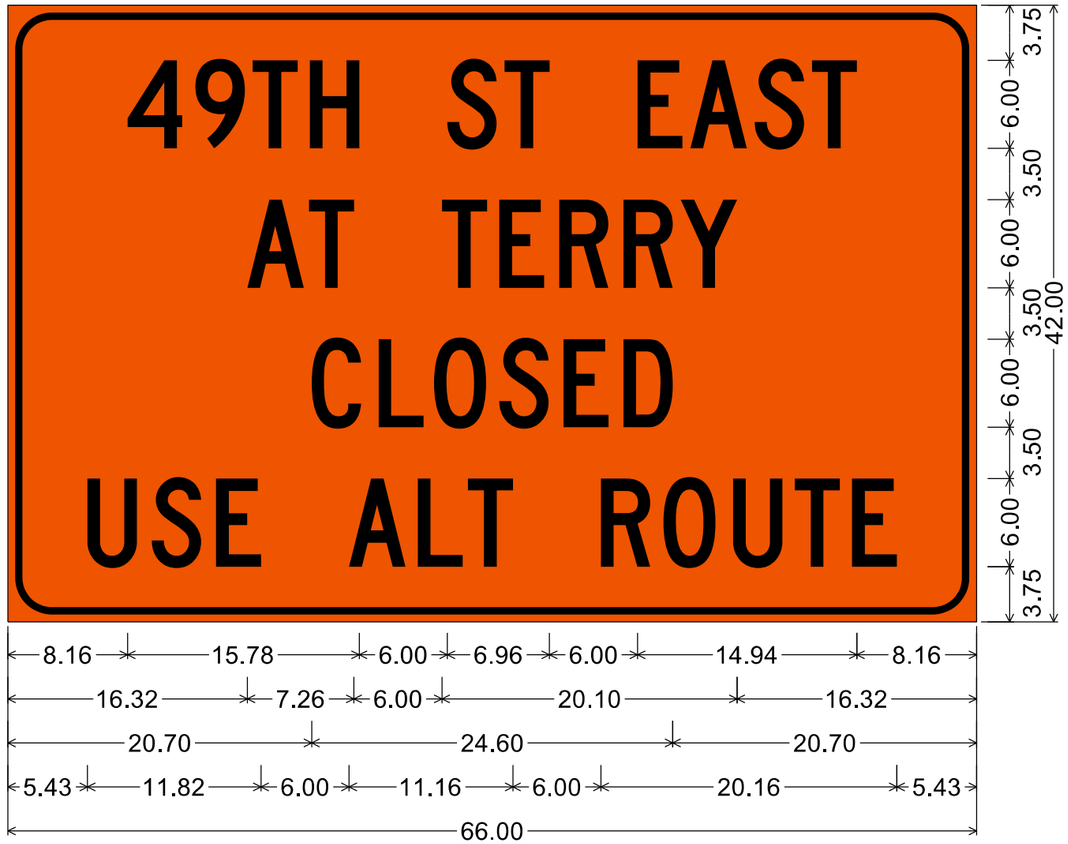


SPECIAL SIGN DETAILS

TRAFFIC CONTROL SIGNS



3.00" Radius, 0.50" Border, 0.50" Indent, Black on Orange;
"49TH ST WEST", C 2K; "AT SOLBERG", C 2K; "CLOSED", C 2K;
"USE ALT ROUTE", C 2K;



3.00" Radius, 0.50" Border, 0.50" Indent, Black on Orange;
" 49TH ST EAST ", C 2K; "AT TERRY", C 2K; "CLOSED", C 2K;
"USE ALT ROUTE", C 2K;

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs, as needed.

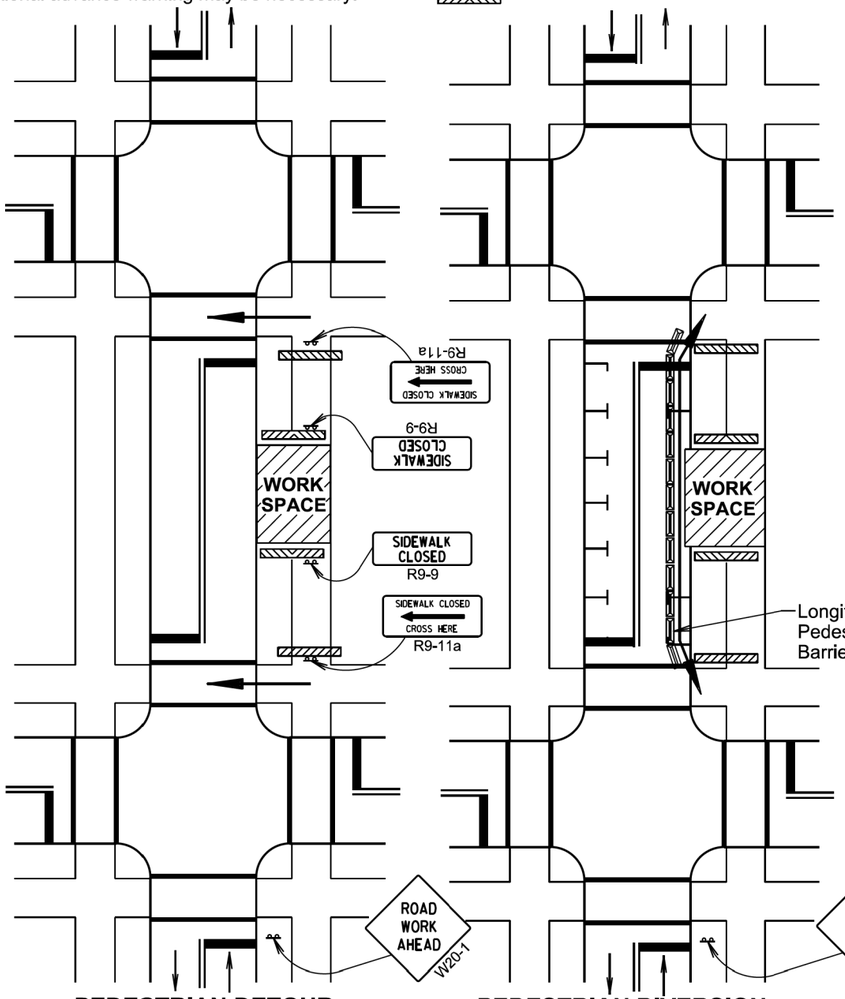
Signs may be placed along a temporary diversion to guide or direct pedestrians. Examples include KEEP RIGHT and KEEP LEFT signs.

Additional advance warning may be necessary.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks. Type C steady-burn lights may be used on channelizing devices separating the temporary pedestrian diversion from vehicular traffic.

Street lighting should be considered.

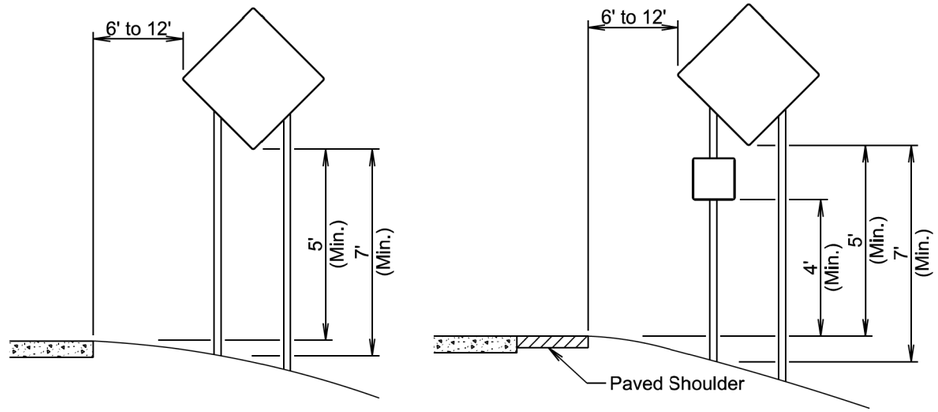
Longitudinal Pedestrian Barricade and



PEDESTRIAN DETOUR **PEDESTRIAN DIVERSION**

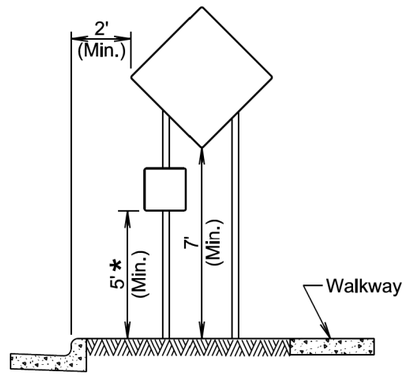
January 22, 2021

Published Date: 2026	SDDOT	PEDESTRIAN DETOUR AND PEDESTRIAN DIVERSION	PLATE NUMBER 634.34
			Sheet 1 of 1

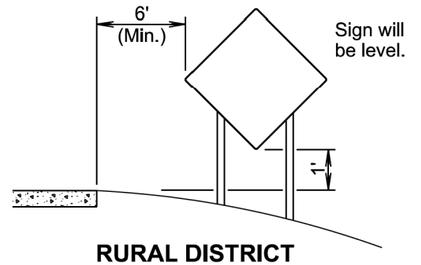


RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

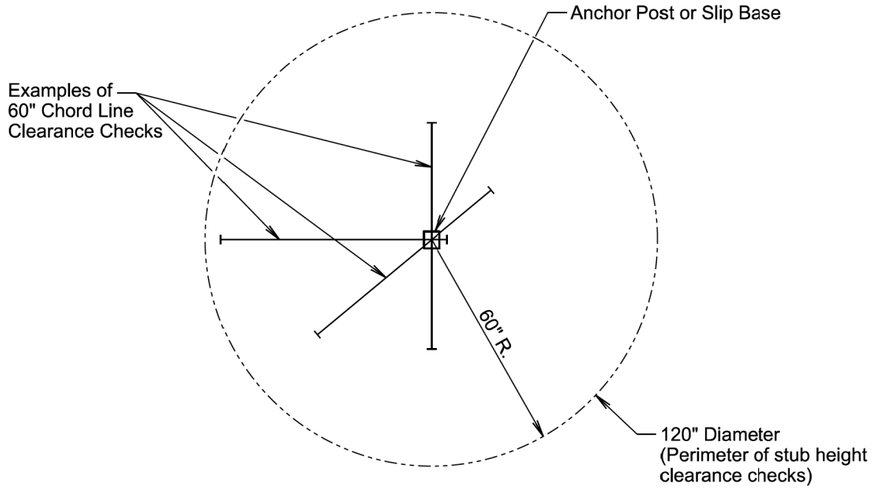


RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

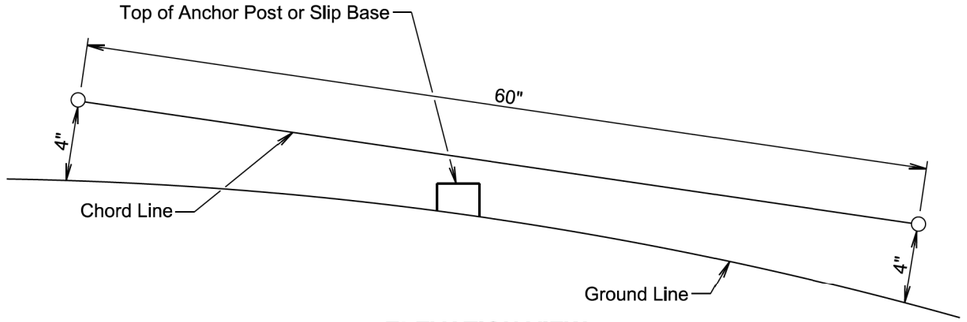
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2026	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL 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 will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

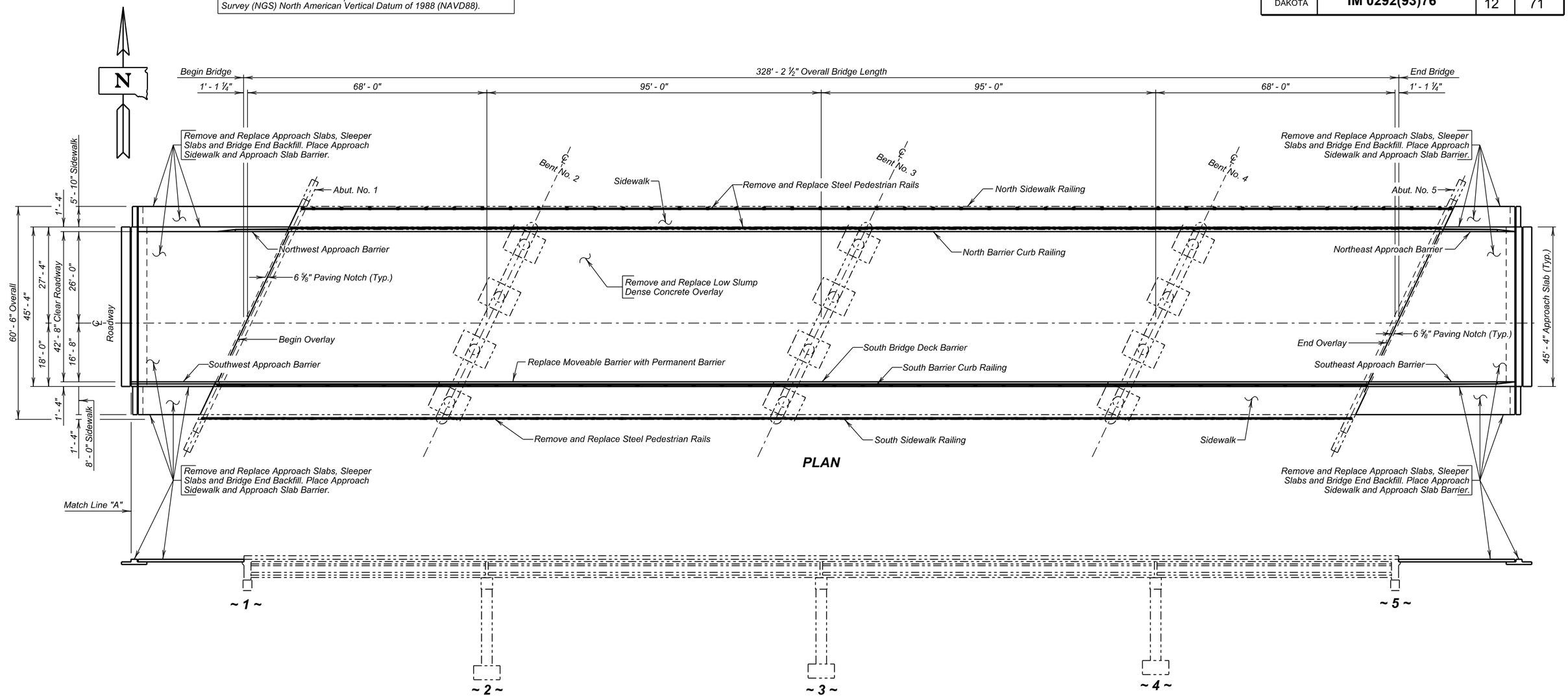
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

January 22, 2021

Published Date: 2026	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	PLATE NUMBER 634.99
			Sheet 1 of 1

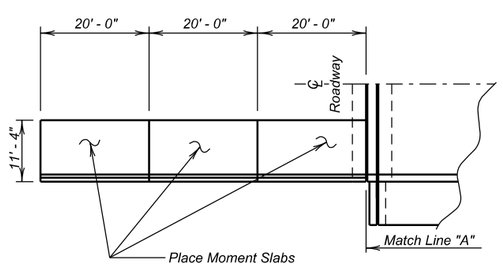
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	12	71

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



PLAN

ELEVATION
(Barrier and Railing not shown for clarity)



PLAN

-X281-
INDEX OF BRIDGE SHEETS -

INDEX OF BRIDGE SHEETS CONTINUED -

INDEX OF BRIDGE SHEETS CONTINUED -

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

LAYOUT FOR UPGRADE
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235
PCN 092A

25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

1 OF 47

-X281-

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A. Johnson BRIDGE ENGINEER
MINN092A	092ARA01		

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
110E0010	Remove Concrete Bridge Approach Slab	601.9	SqYd
110E0020	Remove Bridge Railing	1,304	Ft
110E1140	Remove Concrete Sidewalk	62.5	SqYd
260E1010	Base Course	48.0	Ton
380E2450	Concrete Barrier and 10' Continuously Reinforced Concrete Shoulder	60	Ft
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	125.0	Ft
460E0010	Class A45 Concrete, Bridge Barrier	35.2	CuYd
460E0070	Class A45 Concrete, Bridge Repair	0.7	CuYd
460E0150	Concrete Approach Slab for Bridge	309.8	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	73.0	SqYd
460E0200	Special Surface Finish	4,004	SqFt
460E0300	Breakout Structural Concrete	0.7	CuYd
460E0380	Install Dowel in Concrete	976	Each
470E0120	Steel Pedestrian Railing on Sidewalk	656.0	Ft
470E0220	Steel Pedestrian Railing on Concrete Barrier	652.6	Ft
480E0200	Epoxy Coated Reinforcing Steel	5,601	Lb
480E5000	Galvanic Anode	4	Each
550E0010	Low Slump Dense Concrete Bridge Deck Overlay	116	CuYd
550E0100	Concrete Removal Type 1A	1,890.5	SqYd
550E0105	Concrete Removal Type 2A	472.6	SqYd
550E0110	Concrete Removal Type 1B	189.1	SqYd
550E0120	Concrete Removal Type 1C	94.5	SqYd
550E0130	Concrete Removal Type 1D	94.5	SqYd
550E0140	Concrete Removal Type B	20.0	Ft
550E0200	Class A45 Concrete Fill	17.1	CuYd
550E0500	Finishing and Curing	1,890.5	SqYd
621E0300	Chain Link Fence for Bridge Sidewalk	656	Ft
651E0160	6" Reinforced Concrete Sidewalk	851	SqFt
900E8900	Anchor Bolt Coring	15.0	Ft

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 17th Edition using Load Factor Design.

2. Design Specifications: AASHTO LRFD Bridge Design Specifications, 10th Edition.

3. Construction Specifications: Standard Specifications for Roads and Bridges, 10-1-25 Version; Required Provisions; and Special Provisions as included in the Proposal. The Standard Specifications for Roads and Bridges is available for download and viewing at https://dot.sd.gov/doing-business/contractors/standard-specifications.

4. All Welding and Welding Inspection will be in conformance with the latest edition of the AASHTO/AWS D1.5M/D1.5 Bridge Welding unless otherwise noted in this plan set.

5. All Welding and Welding Inspection for the hollow structural section will be in conformance with the latest edition of the AWS D1.1M/D1.1 Structural Steel Welding Code.

DETAILS AND DIMENSIONS OF EXISTING BRIDGE

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

2. The elevations shown in the original construction plans are not based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

NOTICE - LEAD BASED PAINT

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

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

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

1. Close the south sidewalk and remove the bridge railings, posts, pedestrian railing, and temporary barriers on the south side of the bridge. Pedestrian traffic will be maintained on the north sidewalk on the bridge.

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

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

4. Remove the existing approach slabs, sleeper slabs, and tapered barrier according to the limits shown on plans.

5. Place base course to reestablish approach and sidewalk slab grade for construction.

6. Replace approach slabs and sleeper slabs to the correct grade.

7. Install moment slabs on the south side of the west approach slabs.

8. Place the new sidewalk slab adjacent to approach slabs on the south side of the bridge. The south ones will be constructed first while pedestrian traffic is still maintained on the north side of the bridge.

9. Replace sleeper slab joints with approved Membrane Sealant Expansion Joint.

10. Close the north sidewalk to pedestrian traffic. Remove and replace bridge railings, posts, pedestrian railing, and chain-link fencing for the north side of the bridge. Remove and replace the north approach sidewalk slabs. Pedestrian traffic will be maintained on the south sidewalk.

GENERAL CONSTRUCTION - BRIDGE

1. All reinforcing steel will conform to ASTM A615, Grade 60.

2. All exposed concrete corners and edges will be chamfered ¾-inch unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.

3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise.

4. The Contractor will only imprint one year-plate on the structure. The year plate will contain the date the existing bridge was built and will be located as specified and detailed on Standard Plate No. 460.02.

5. Barrier curbs and barriers will be built perpendicular to the grade.

6. Requests for construction joints or reinforcing steel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of reinforcing steel.

7. Snap ties, if used in the barrier curb formwork, will be corrosion resistant. The corrosion resistant ties will be inert in concrete and compatible with the reinforcing steel.

8. All lap splices are contact lap splices unless noted otherwise.

BOLT TESTING

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

LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY

1. The preparation for resurfacing consists of Concrete Removal Type 1A on the entire bridge deck, and 2A as specified by the Engineer, and Type 1B, Type 1C, Type 1D, and Type B over the deck surface as detailed on the plan sheets. Such removal will be in conformance with these plans and Section 550 of the Construction Specifications.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

STR. NO. 50-173-235

DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA02		

LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY (CONTINUED)

2. Type 1A Removal will consist of removing the existing concrete overlay to a depth of 1.5 inches. There are some specific areas, identified on the Deck Profile plan sheets that require Type 1A Removal in excess of 1.5 inches.

3. Extreme care will be taken during the Type 1B Removal, Type 1C Removal, Type 1D Removal and Type B Removal to ensure that the existing reinforcing steel is not damaged. In the event that reinforcing steel damage inadvertently occurs, the Bridge Construction Engineer will be immediately notified. Any damaged reinforcing steel will be repaired by the Contractor, as approved by the Engineer, at no additional cost to the Department.

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

5. Concrete Removal Type 1C, Concrete Removal Type 1D and Class A45 Concrete Fill is not anticipated to exceed the plan shown quantities. If the Engineer determines that Concrete Removal Type 1C, Concrete Removal Type 1D and/or Class A45 Concrete Fill in excess of the plan shown quantity is necessary, payment for the additional quantity will be conformance with Section 550.5 of the Construction Specifications.

6. Concrete used in the Low Slump Dense Concrete Bridge Deck Overlay will meet the requirements of Section 550 of the Construction Specifications. Class A45 Concrete Fill will be an approved A45 Concrete Mix Design mixed and proportioned in accordance with Section 460 of the Construction Specifications with the following modifications: the coarse aggregate gradation will be in accordance with Section 820 of the Construction Specifications and the size #3 will be substituted in lieu of sizes #1 and #15.

7. A minimum thickness of 1.5” of Low Slump Dense Concrete Bridge Deck Overlay will be maintained on the bridge deck.

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

9. It will be necessary for the Contractor to shape the surface of the Low Slump Dense Concrete Bridge Deck Overlay within one foot of the curb to ensure that water drains to the deck drains or off the ends of the bridge.

DESIGN MIX OF CONCRETE

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

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

INSTALL DOWEL IN CONCRETE

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

2. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3). Grade 1, 2 or 3 may be used for vertical dowels, and Grade 3 epoxy will be used for all horizontal dowels.

3. The diameter of the drilled holes will not be less than 1/8-inch greater, nor more than 3/8-inch greater than the diameter of the dowels or as per the Manufacturer’s recommendations. The drilled holes will be blown out with compressed air using a device that will reach the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

4. Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes 1/3 to 1/2 full of epoxy, or as recommended by the Manufacturer, prior to insertion of the steel bar. Care will be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during installation to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping or painting method will not be allowed.

5. No loads will be applied to the epoxy grouted dowel bars until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.

6. Dowel bars will be deformed bars conforming to ASTM A615, Grade 60.

7. The cost of epoxy resin, dowels, installation, and other incidental items will be incidental to the contract unit price per each for Install Dowel in Concrete.

REMOVAL OF CONCRETE BRIDGE APPROACH SLAB

1. The existing concrete approach, sidewalk approach and sleeper slabs adjacent to the structure will be completely removed by the Contractor.

2. The concrete and reinforcing steel from the removal will be disposed of by the Contractor at an approved site. An appropriate site will be as described in the Environmental Commitment Notes in this set of plans.

3. The quantity provided for Remove Concrete Bridge Approach Slab is computed using the plan areas for the sleeper slabs and approach slabs.

4. All labor, tools, equipment, and any incidentals necessary for removal and disposal of the existing approach slabs, approach sidewalks, membrane expansion joints, and sleeper slabs will be incidental to the contract unit price per square yard for Remove Concrete Bridge Approach Slab.

APPROACH SLABS

1. Excavation for placement of new approach slabs and sleeper slabs will be done with minimal disturbance to the underlying material.

2. Prior to the placement of the approach and sleeper slabs, the existing Select Granular Backfill material will be compacted using at least four complete passes of a smooth face vibratory roller or vibratory plate compactor. A layer of type B drainage fabric will be placed and Base Course will be used as required to fill any low spots and to achieve the elevation needed for installation of the new approach and sleeper slabs. The existing and fill material will be thoroughly watered prior to and during compaction. Base Course will be in accordance with Section 882 of the Construction Specifications.

3. The top of approach slab elevations will be subject to the approval of the Engineer. Care will be taken to provide a smooth transition from the bridge deck elevations to the new pavement elevations established in the field 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 will be 1/8 inch per 10 feet.

NOTES (CONTINUED)
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

STR. NO. 50-173-235
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA03		

APPROACH SLABS (CONTINUED)

4. Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the joint.

5. The portion of the sleeper slab below the construction joint may be precast. If the bottom portion of the sleeper slab is precast, the Contractor will submit proposed lifting and setting plans to the Bridge Construction Engineer for approval. In addition, if reinforcing or other details differ from those shown in the plans, the Contractor will submit proposed alternate details for approval.

6. The use of an Engineer approved vibratory screed will be required during placement of Class A45 Concrete for the approach slabs. Concrete placement in front of the screed will be kept parallel to the screed.

7. The concrete in the approach slab will be tined perpendicular to the centerline of the roadway.

8. The new approach slabs and sleeper slabs will have a surface finish as specified in Section 460.3 L.4 of the Construction Specifications.

9. The quantity of Base Course required to fill any low spots or voids is based on a 2-inch layer under the area of the approach, sidewalk and sleeper slabs. The actual quantity may vary.

10. The concrete approach slabs will be cured in accordance with Section 460.3 M of the Construction Specifications. The minimum 7-day cure time requirement will be waived. The approach slabs will be cured until a minimum compressive strength of 4,000 psi is reached.

11. Concrete Approach Sleeper Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for excavation; furnishing, hauling, and placing all materials including: concrete, concrete anchors, and reinforcing steel; for disposal of all excavated material and surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.

12. Concrete Approach Slab for Bridge will be paid for at the contract unit price per square yard. This payment will be full compensation for excavation; furnishing, hauling, and placing all materials including: concrete, asphalt paint or 6 mil polyethylene sheeting, elastic joint sealer, and reinforcing steel; for disposal of all excavated material and surplus materials; labor; tools; equipment; and any incidentals necessary to complete this item of work.

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

CORE DRILL HOLES

1. In locations where the existing rail anchors cannot be reused, the Contractor will have the option of Type I or Type II replacement. If Type II is used, a minimum 1 ¾" diameter core hole will be drilled through the bottom of the sidewalk to allow for a nut to be attached. The hole size may need to be larger to accommodate grouting operations. The Contractor can expect to drill through reinforcing steel and or anchor bolts.

2. Sides of core holes will be roughened by an approved method to improve grout bond. Clean out holes to the satisfaction of the Engineer.

3. Grout new anchor bolts into the cored holes with an approved grout and method. Grout will be a commercially available non-shrink non-metallic grout with a 5000-psi minimum final strength. Grout will be injected into the bottom of the hole with the use of a grout pump.

4. The plans quantity is for Type II replacement occurring at 30 of the anchor locations. This will be reflected in the contract unit price per foot for Anchor Bolt Coring

5. All costs for coring, roughening holes, cleaning out holes, and grouting new anchors bolts into the sidewalk including materials, labor, tools, and any incidentals will be incidental to the contract unit price per foot for Anchor Bolt Coring.

CONCRETE BREAKOUT

1. The existing portion of the south sidewalk railing will be broken out to the limits shown in the plans. Breakout limits will be defined with a 3/4" deep sawcut (unless specified otherwise in the plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction will be cleaned and straightened to the satisfaction of the Engineer. Care will be taken not to damage the existing reinforcing steel that is to be reused in the new construction during concrete breakout. Any reinforcing steel that is damaged during concrete breakout will be replaced or repaired, as approved by the Engineer, by the Contractor at no cost to the Department.

2. All broken out concrete and discarded reinforcing steel will become the property of the Contractor and will be disposed of at a site obtained by the Contractor and approved by the Engineer. An appropriate site will be as described in the Environmental Commitment Notes in the plans.

3. During concrete removal operations, no concrete will be allowed to fall onto the interstate below.

4. The contract unit price per cubic yard for Breakout Structural Concrete will include breaking out concrete, cleaning, straightening reinforcing steel, and disposal of all broken out material.

REMOVAL OF EXISTING BRIDGE RAIL

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

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

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

STEEL RAILING

1. All rail and fence posts will be built vertical.

2. All structural steel parts for railing will conform to ASTM A500, Grade B or C. Material less than ¼" thick may be ASTM A1011, Grade 36 and rail post base plates may be ASTM A709, Grade 36.

3. All anchor bolts, washer, and nuts for railing will conform to ASTM F1554, Grade 36 and will be galvanized.

4. All anchor rods will be tightened to a torque of 120 ft.-lbs. (approximated without the use of a calibrated torque wrench).

5. Non-shrink grout used to fill the recess beneath the rail post base plates will be a commercially available non-shrink grout containing no metallic particles and capable of attaining a 28-day compressive strength of 3000 psi. The non-shrink grout will be mixed according to the manufacturer's recommendations. The cost of furnishing and placing the non-shrink grout will be incidental to the contract unit price per foot for Steel Pedestrian Railing on Sidewalk.

6. All steel railing will be galvanized in accordance with ASTM A123.

7. The costs of structural steel, bolts, washers, nuts, welding, weld inspection, galvanizing, and painting will be incidental to the contract unit price per foot for Steel Pedestrian Railing or Steel Pedestrian Railing on Barrier.

NOTES (CONTINUED)

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

STR. NO. 50-173-235

DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA04		

CHAIN LINK FENCE

1. The chain link fence fabric and supports will conform to Section 930 of the Construction Specifications as modified by the following notes.

2. The chain link fence fabric, wire ties, and miscellaneous hardware will be galvanized and conform to AASHTO M181. The fence fabric will be Type IV 9 gauge wire woven in a 2 inch diamond mesh. Knuckled selvage will be used on the top and bottom of the fence fabric.

3. The item Bridge Sidewalk Chain Link Fence will be paid for by the linear foot. This payment will be full compensation for furnishing all material, labor, tools, and equipment necessary or incidental to the construction of the chain link fence including chain link fence fabric, posts, rails, wire ties, miscellaneous hardware, and welding, all to satisfactorily complete this work.

SURFACE FINISH AND SPECIAL SURFACE FINISH

1. All of the surfaces visible to the traveling public on the new and existing concrete barriers will be given a Class B Commercial Texture Finish in accordance with Section 460.3 L.1.c. of the Construction Specifications.

2. Surface Finish and Special Surface Finish areas include all faces of the barriers, barrier tapers on approach slabs and moment slabs. The Special Surface Finish areas include all faces of the existing barriers.

3. For informational purposes the total amount of surface area for the Surface Finish areas requiring the Class B Commercial Texture Finish is 2,936 square feet.

4. Any damage to the commercial texture finish during the construction including abrasion from traffic due to the traffic control will be repaired by the Contractor, as approved by the Engineer, at no expense to the Department.

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

6. The cost of the commercial texture finish on the existing concrete will be included in the contract unit price per square foot for Special Surface Finish. This payment will be full compensation for furnishing all materials, removal of existing finish, labor, tools, and equipment necessary or incidental to the application of this finish.

CLASS B COMMERCIAL TEXTURE FINISH

1. Class B commercial texture finish will be applied to the following areas:
   b. Barrier: all exposed surfaces (Back*, top** and Front**).
   c. Moment Slabs: all exposed surfaces (Back*, top** and Front**).
   d. Approach Barriers: all exposed surfaces (Back*, top** and Front**).

* Color will be AMS – STD - 595 33690 Tan
** Color will be AMS – STD - 595 36622 Pearl Gray

2. The Class B commercial texture finish will be applied in accordance with Section 460.3 L.1.c and Section 460.3 M.1 of the Construction Specifications

GALVANIC ANODE

1. The Contractor will furnish and place galvanic anodes in the concrete repair areas and new barrier placed on the deck as specified in this plan set.

2. The galvanic anodes will be supplied as one of the following:

   a. Galvashield XP2
   Vector Corrosion Technologies
   65114 140th Ave.
   Wabasha, MN 55981
   Phone: (507) 259-2481

   b. Sentinel Silver
   Euclid Chemical Company
   19218 Redwood Road
   Cleveland, OH 44110
   Phone: (800) 321-7628

   c. Sika FerroGard 670
   Sika Corporation US
   201 Polito Avenue
   Lyndhurst, NJ 07071
   Phone: (800) 933-7452

3. The anodes will be placed in accordance with manufacturer's recommendations and as approved by the Engineer. The anodes have not been shown on the drawings. The Contractor will provide shop drawings of the galvanic anode installation including locations of the individual anodes to the Office of Bridge Design.

4. The anodes will be placed with a minimum ¾" cover and will be set in embedding mortar per the manufacturer's recommendations. The anodes will be fully encased in the concrete repair material. Where adequate cover does not exist, a concrete pocket will be chipped out behind the anode to provide sufficient cover. The Contractor may need to chip around the reinforcing bar locally at the anode installation to make the electrical connection. The reinforcing steel at the connection location will be cleaned per the manufacturer's recommendations to provide sufficient electrical connection and mechanical bond.

5. The electrical continuity of the connections and reinforcing steel will be confirmed per the manufacturer's recommendations.

6. In area of concrete repair where anodes are placed, the epoxy coating on the reinforcing steel will not require touch up.

7. The Contractor will provide manufacturer's product literature and installation instructions to the Engineer 10 days prior to installation.

8. All costs associated with placing anodes including labor, equipment, materials, and incidentals will be included in the contract unit price per each for Galvanic Anode.

AS-BUILT ELEVATION SURVEY

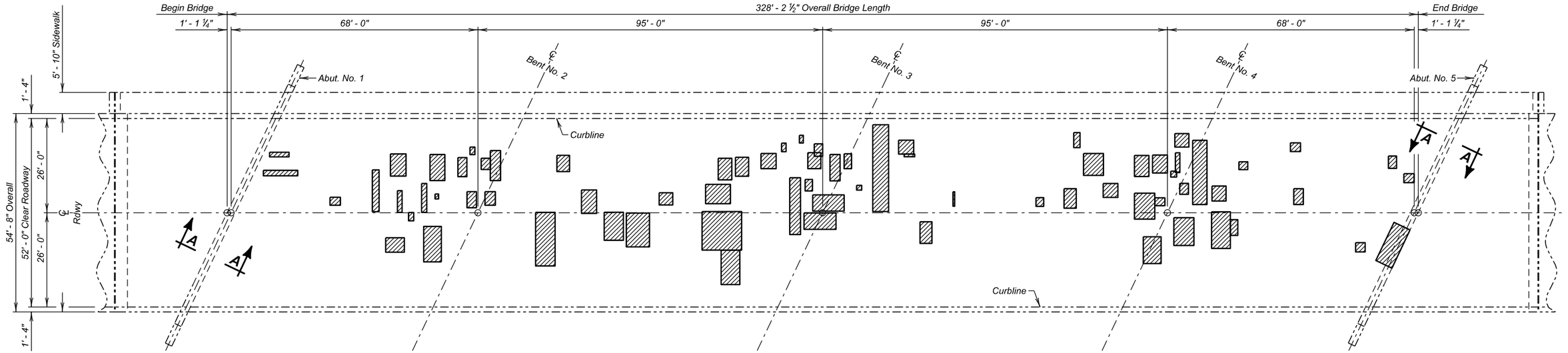
The Contractor will be responsible for producing an as-built elevation survey soon after construction is complete and before the bridge is completely opened to traffic. The Contractor will be responsible for recording the as-built deck elevations at the locations shown by the table of as-built elevations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

NOTES (CONTINUED)
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

STR. NO. 50-173-235
DECEMBER 2025

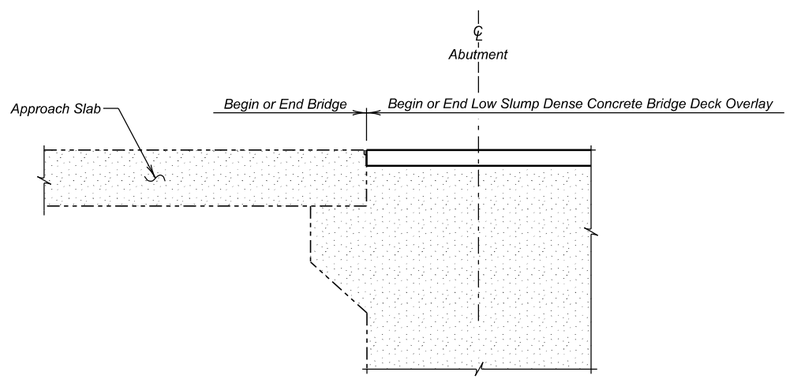
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA05		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	17	71



PLAN

(Configuration and dimensions shown before new approach slabs, barriers and moment slabs are constructed)



SECTION A - A

LEGEND:

Hatched area indicate approximate location of unsound concrete requiring concrete repair.

DECK DELAMINATION DETAILS

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW

OVER I-29 — SEC. 36-T101N-R50W

STR. NO. 50-173-235 — IM 0292(93)76

MINNEHAHA COUNTY

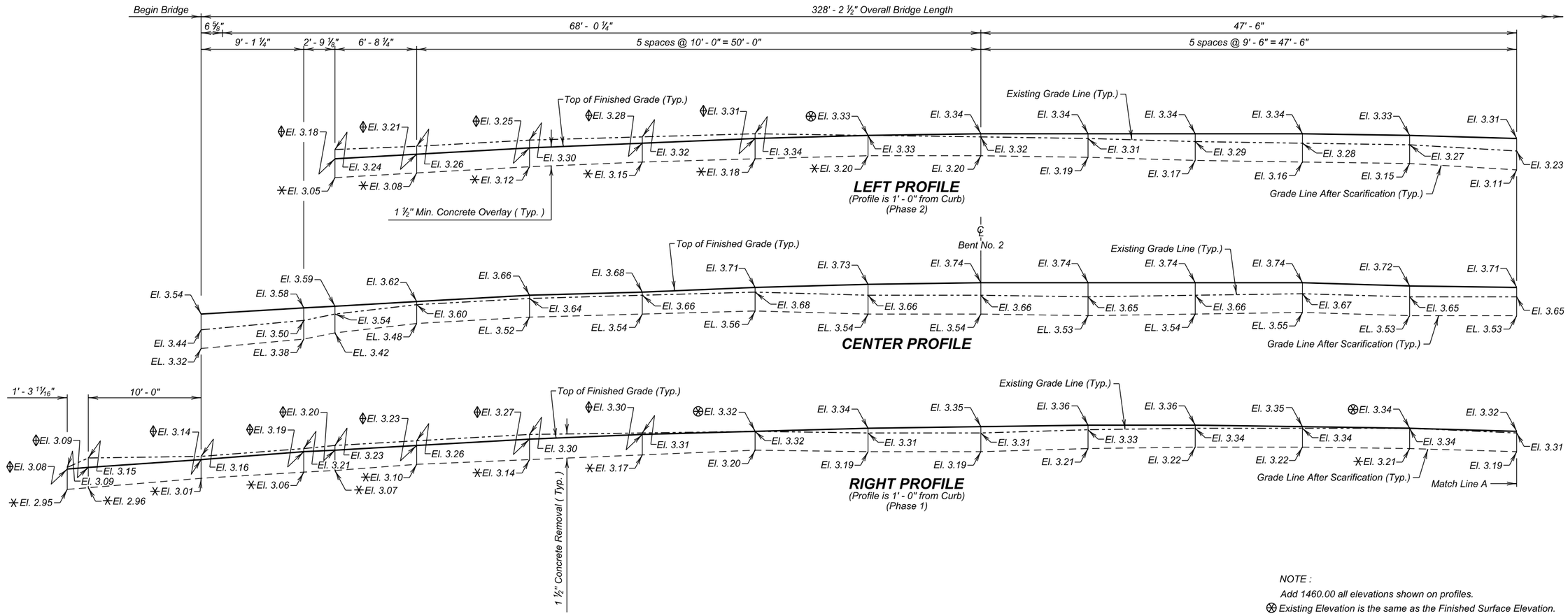
S. D. DEPT. OF TRANSPORTATION

DECEMBER 2025

6 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA06		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	18	71



NOTE :

Add 1460.00 all elevations shown on profiles.

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

⧫ Existing Elevation is higher than the Finished Surface Elevation.

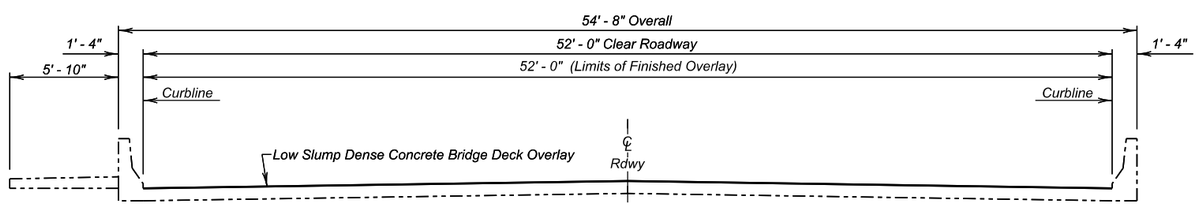
⚹ Scarify in excess of 1 ½" in these areas.

Survey Reference:

B.M. # 1
NW Corner on Curb
Elevation 1463.00

0' 0.25' 0.5' 1.00'

VERTICAL SCALE



TYPICAL SECTION
(Prior to the permanent barrier placed on the south side of the bridge.)

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

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

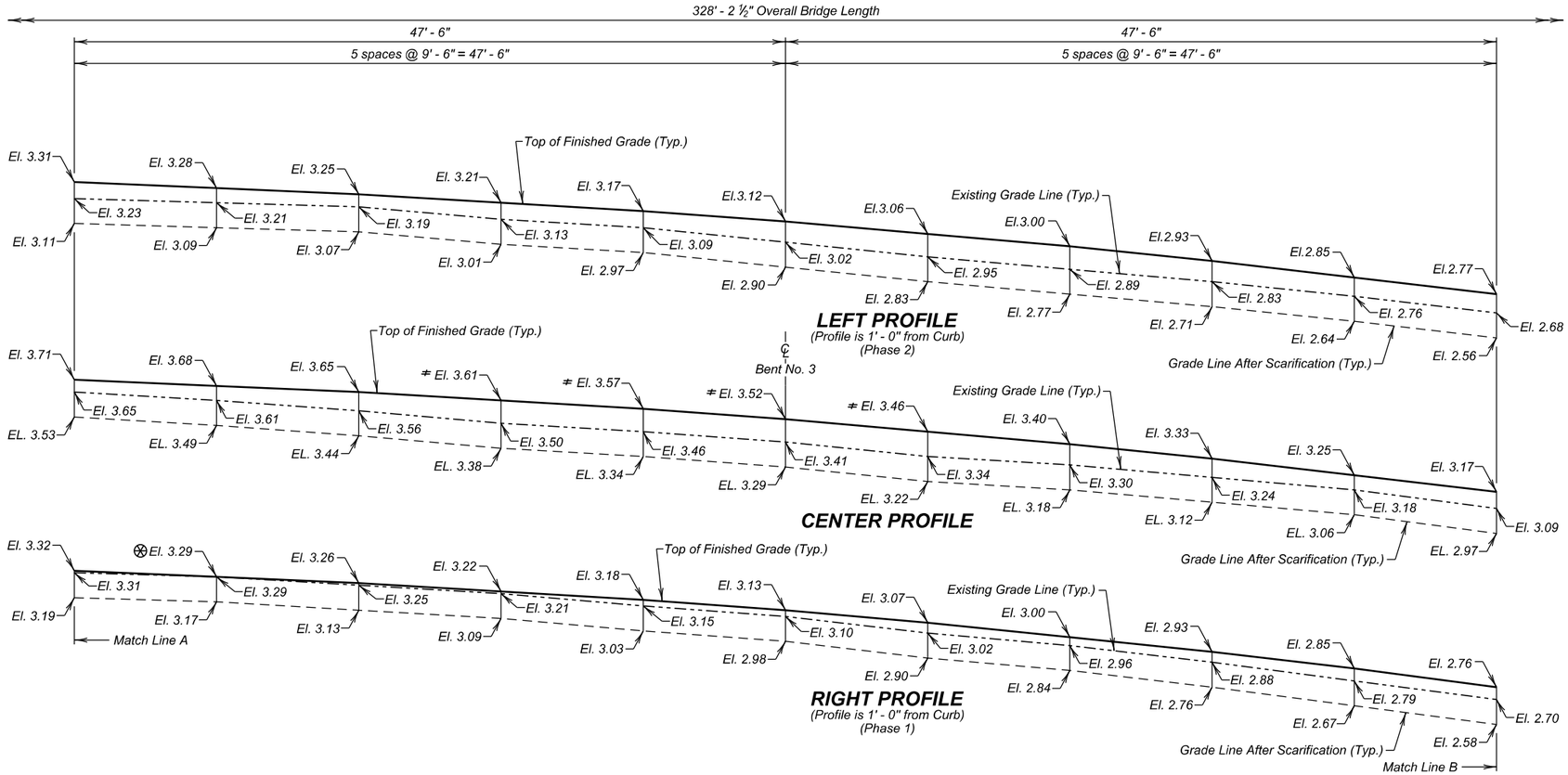
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

7 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA07		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	19	71



0' 0.25' 0.5' 1.00'

VERTICAL SCALE

NOTE :

Add 1460.00 all elevations shown on profiles.

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

⧫ Existing Elevation is higher than the Finished Surface Elevation.

≠ Vibrations required for areas of 3 inch or more overlay thickness.

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

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

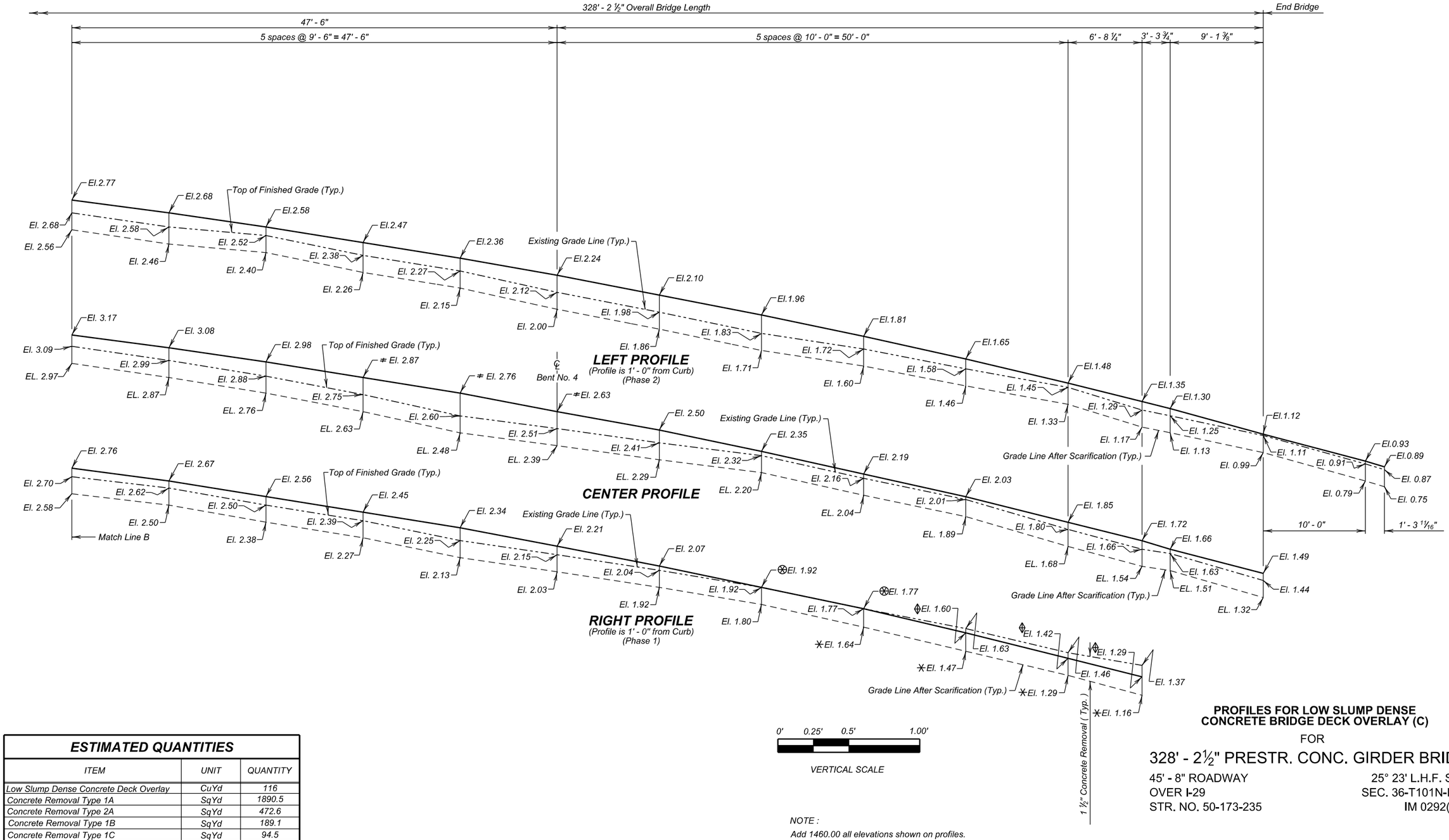
45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A. Johnson BRIDGE ENGINEER
MINN092A	092ARA08		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	20	71



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

℄ Bent No. 4

CENTER PROFILE

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

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Low Slump Dense Concrete Deck Overlay	CuYd	116
Concrete Removal Type 1A	SqYd	1890.5
Concrete Removal Type 2A	SqYd	472.6
Concrete Removal Type 1B	SqYd	189.1
Concrete Removal Type 1C	SqYd	94.5
Concrete Removal Type 1D	SqYd	94.5
Concrete Removal Type B	Ft	20.0
Class A45 Concrete Fill	CuYd	17.1
Finishing and Curing	SqYd	1890.5

NOTE :

Add 1460.00 all elevations shown on profiles.

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

⧫ Existing Elevation is higher than the Finished Surface Elevation.

⚹ Scarify in excess of 1 ½" in these areas.

≠ Vibrations required for areas of 3 inch or more overlay thickness.

PROFILES FOR LOW SLUMP DENSE CONCRETE BRIDGE DECK OVERLAY (C)

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

9 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
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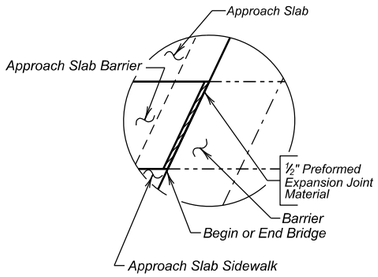
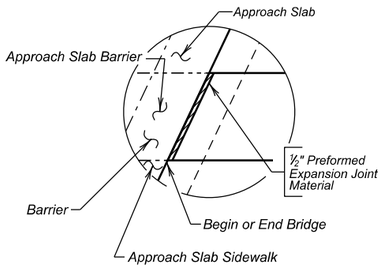
MINN092A	092ARA09		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	21	71



DETAIL "D"



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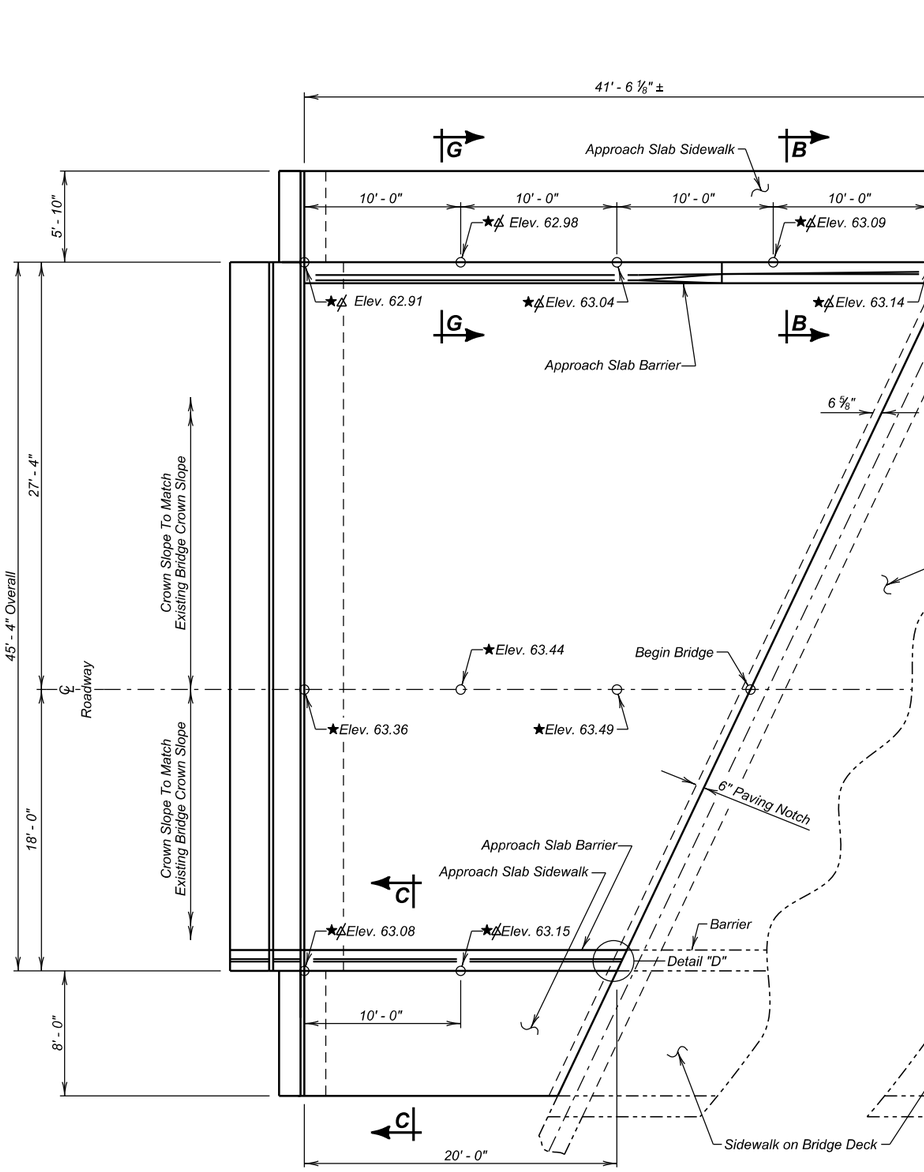
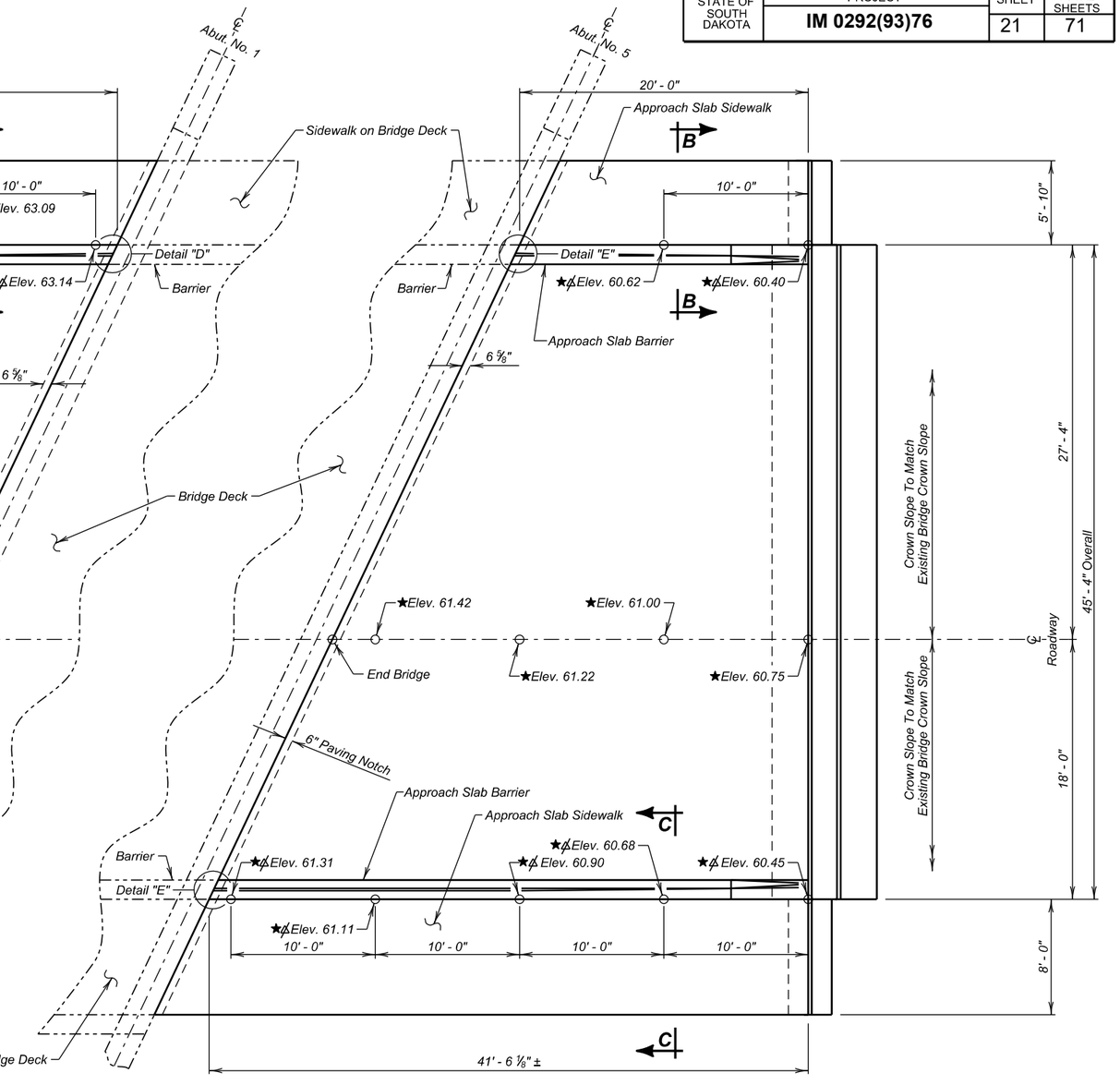
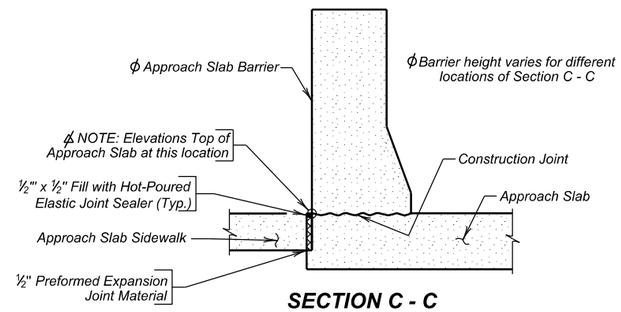


PLAN
(Adjacent to Abut. No. 1)

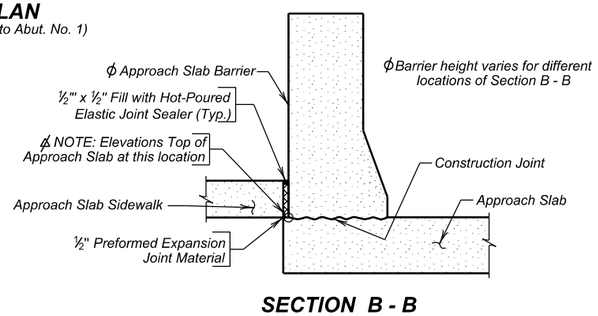


PLAN
(Adjacent to Abut. No. 5)

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



SECTION C - C



SECTION B - B
(Varies Along Barrier Taper)

Benchmark Description:

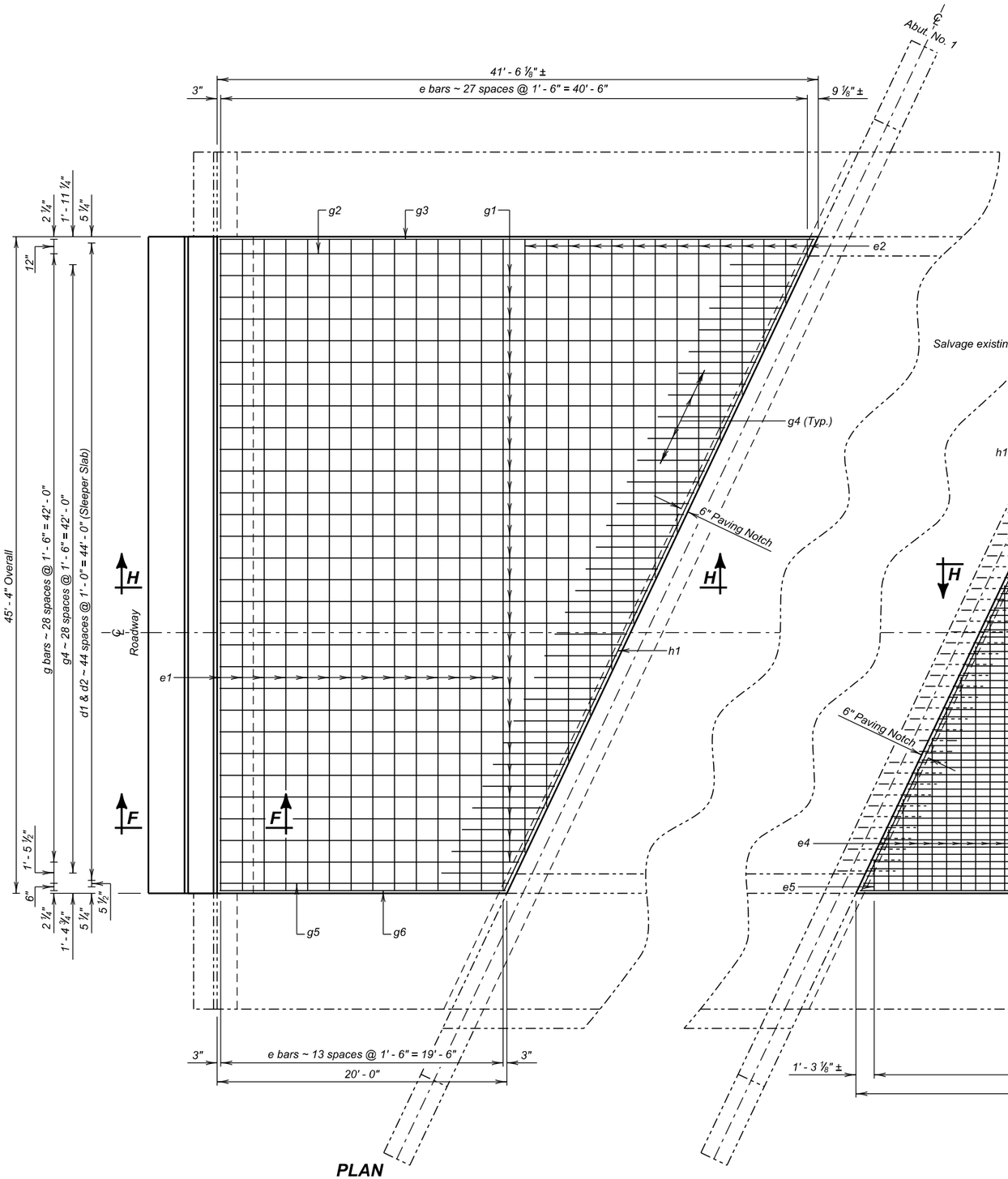
B.M. # 1
Location Description: NW Corner on Curb
Elevation: 1463.00

APPROACH SLAB LAYOUT
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025 — 10 OF 47

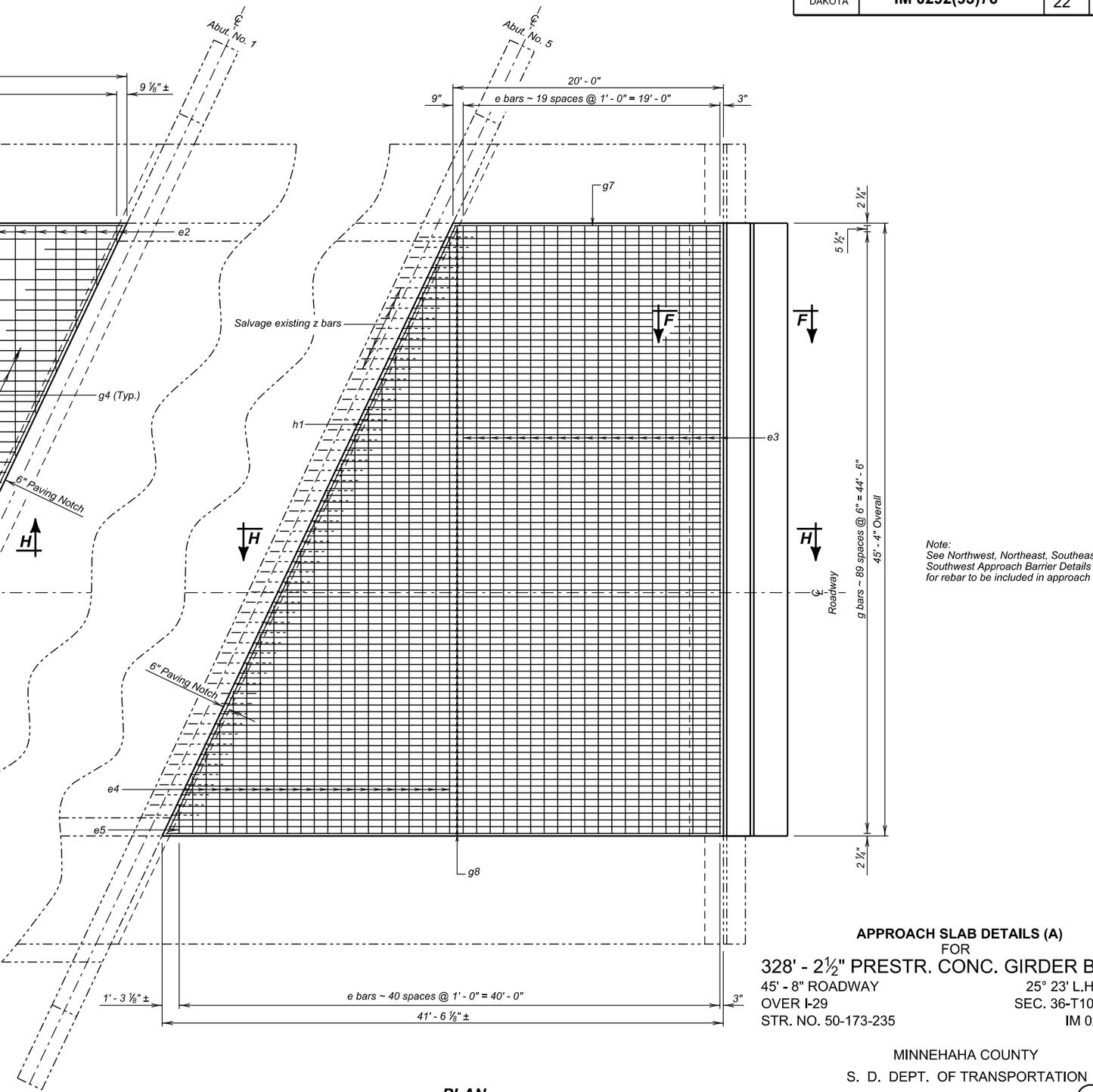
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A. Johnson BRIDGE ENGINEER
MINN092A	092ARA10		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	22	71



PLAN

(Top Steel Shown)
(Adjacent to Abutment No. 1 Shown, Abutment No. 5 similar by opposite hand)



PLAN

(Bottom Steel Shown)
(Adjacent to Abutment No. 5 Shown, Abutment No. 1 similar by opposite hand)

Note:
See Northwest, Northeast, Southeast and Southwest Approach Barrier Details for rebar to be included in approach slabs.

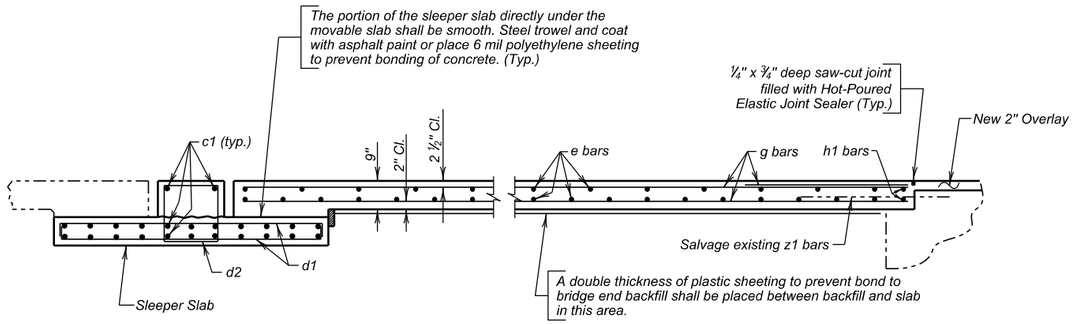
APPROACH SLAB DETAILS (A)
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

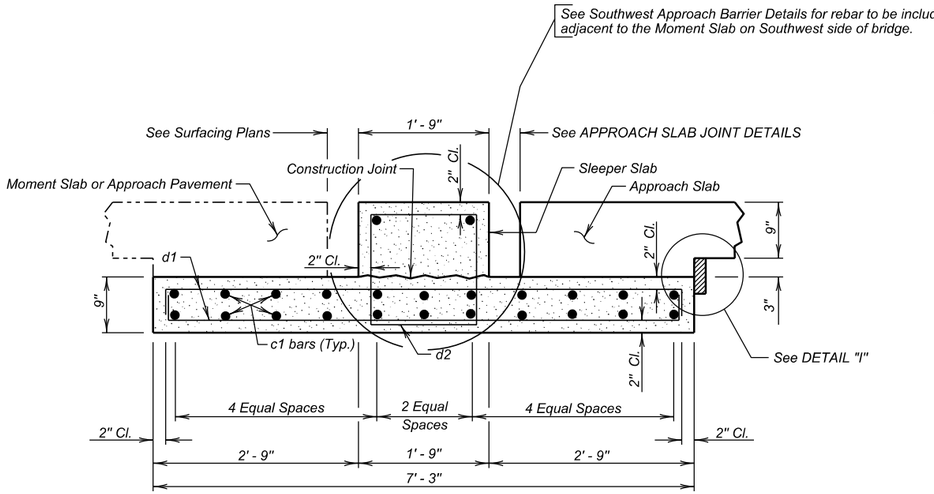
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025 — 11 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA11		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	23	71

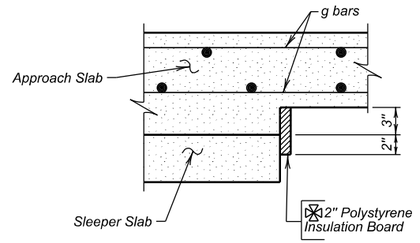


SECTION H - H



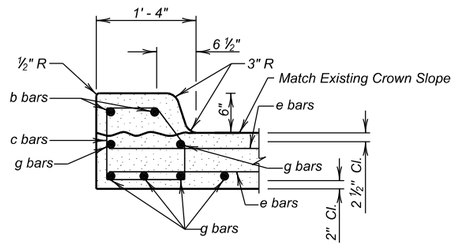
SECTION F - F
(Sleeper Slab)

Note:
See Northwest, Northeast, Southeast and Southwest Approach Barrier Details for rebar to be included in approach slabs.



DETAIL "I"

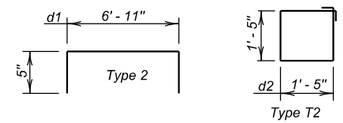
The Polystyrene Insulation Board will be firmly attached to the sleeper slab by a method to be approved by the Engineer.

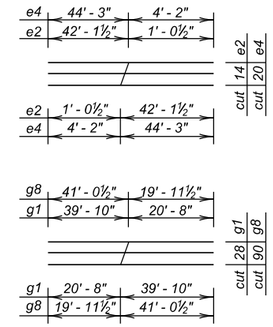


SECTION G - G

REINFORCING SCHEDULE
(For Two Approach and Sleeper Slabs)

	Mk.	No.	Size	Length	Type
	Sleeper Slabs				
	c1	48	5	45' - 0"	Str.
	d1	184	4	7' - 9"	2
	d2	92	4	6' - 5"	T2
	Approach Slabs				
	e1	28	4	45' - 0"	Str.
≠	e2	14	4	43' - 2"	Str.
	e3	40	6	45' - 0"	Str.
≠	e4	20	6	48' - 5"	Str.
	e5	2	6	2' - 1"	Str.
≠	g1	28	4	60' - 6"	Str.
	g2	2	4	40' - 7"	Str.
	g3	2	4	41' - 1"	Str.
	g4	58	4	6' - 0"	Str.
	g5	2	4	20' - 0"	Str.
	g6	2	4	19' - 9"	Str.
	g7	2	8	19' - 9"	Str.
≠	g8	90	8	61' - 0"	Str.
	h1	4	6	49' - 10"	Str.





NOTES:
All Dimensions are out to out of bars.
All Bars to be epoxy coated.
≠ Cut Bars

ESTIMATED QUANTITIES
(For Two Approach and Sleeper Slabs)

	ITEM	UNIT	QUANTITY
	Remove Concrete Bridge Approach Slab	SqYd	601.9
	Concrete Approach Slab for Bridge	SqYd	309.8
	Concrete Approach Sleeper Slab for Bridge	SqYd	73.0
⚹	Base Course	Ton	37.6

⚹ For estimating purposes only, a factor of 1.89 Tons/CuYd was used to convert CuYd to Tons. Base Course for Approach Slabs only.

1. 79.5 CuYd Concrete in Approach Slabs
2. 22,000 Lb Epoxy Coated Reinforcing Steel in Approach Slabs
3. 24.4 CuYd Concrete in Sleeper Slabs
4. 3,600 Lb Epoxy Coated Reinforcing Steel in Sleeper Slabs
5. 37 SqFt 2" Polystyrene Insulation Board

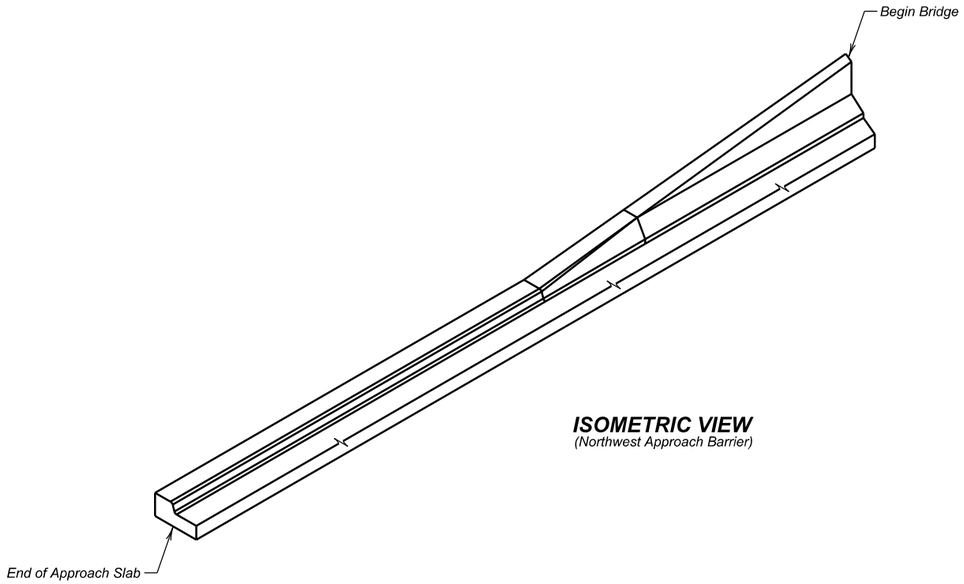
Items 1 thru 5 are approximate quantities contained in the above contract items and are for information only.

APPROACH SLAB DETAILS (B)
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

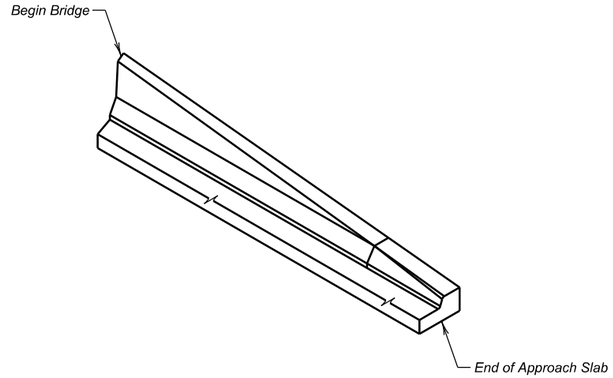
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA12		

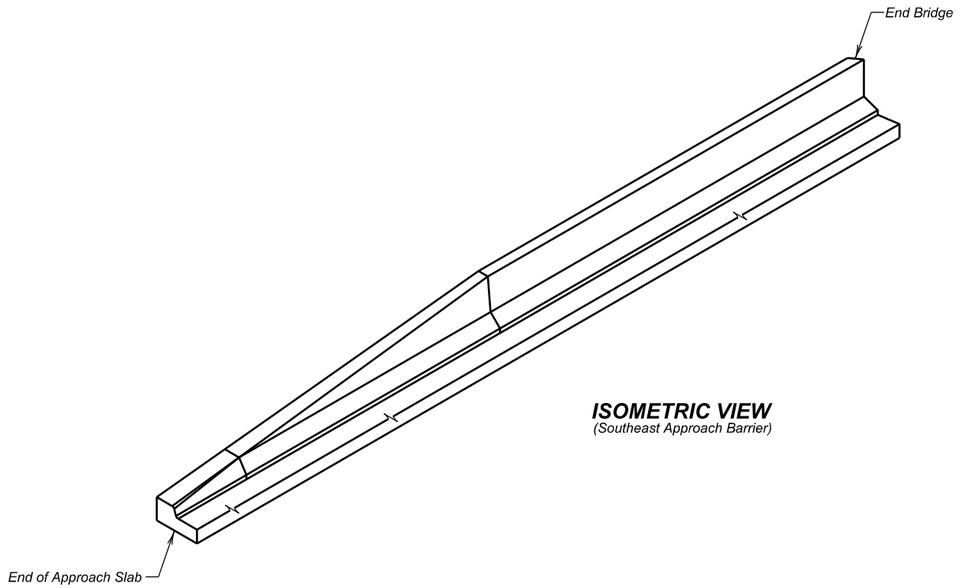
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	24	71



ISOMETRIC VIEW
(Northwest Approach Barrier)



ISOMETRIC VIEW
(Northeast Approach Barrier)



ISOMETRIC VIEW
(Southeast Approach Barrier)

APPROACH BARRIER ISOMETRIC VIEWS

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

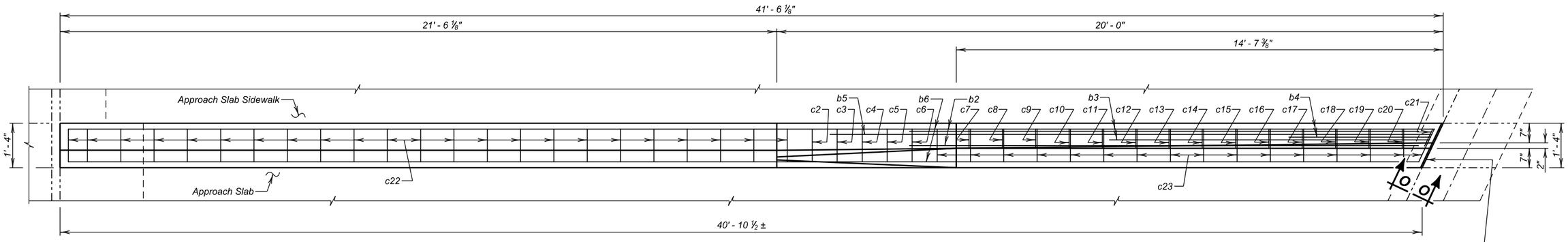
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

13 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A. Johnson BRIDGE ENGINEER
MINN092A	092ARA13		

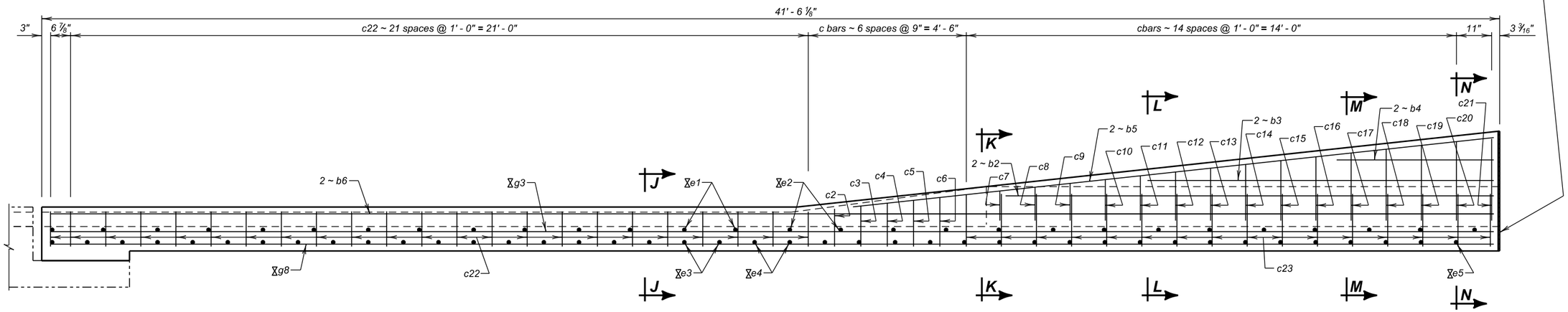
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	25	71



PLAN

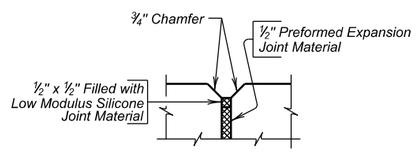
(Approach Slab Reinforcing Steel not shown for clarity)
(Northwest Approach Barrier Adjacent to Sidewalk Shown)

1/2" Preformed Expansion Joint Material with 1/2" x 1/2" Low-Modulus Silicone Joint Sealer (Gray in Color)

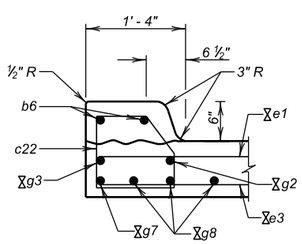


ELEVATION

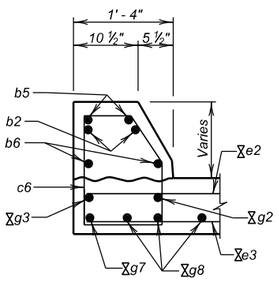
(Northwest Approach Barrier Adjacent to Sidewalk Shown)



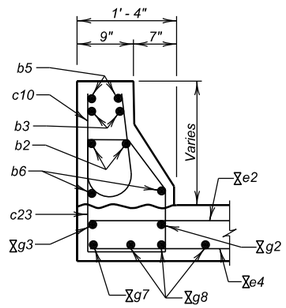
VIEW O - O



SECTION J - J

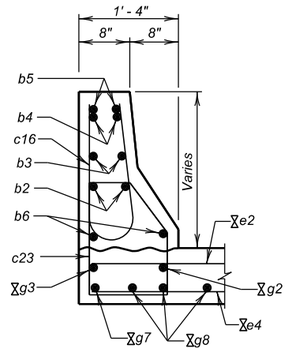


SECTION K - K

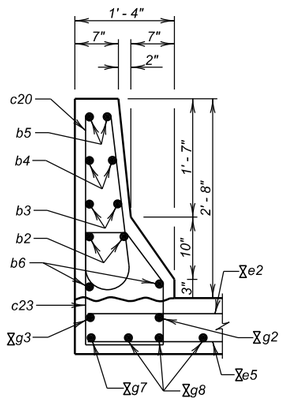


SECTION L - L

Shown and listed with Approach Slab Details



SECTION M - M



SECTION N - N

NORTHWEST APPROACH BARRIER DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

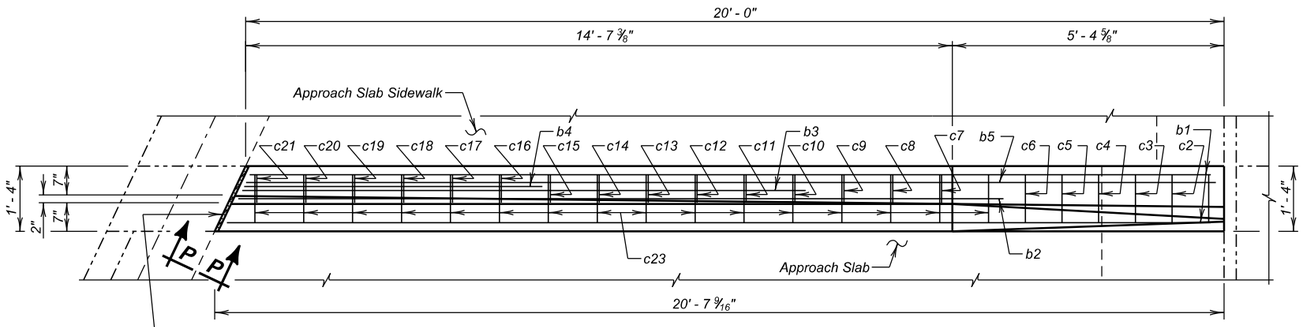
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

14 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA14		

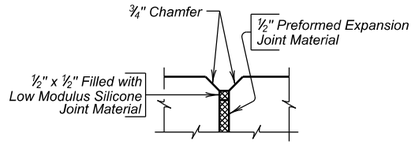
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	26	71



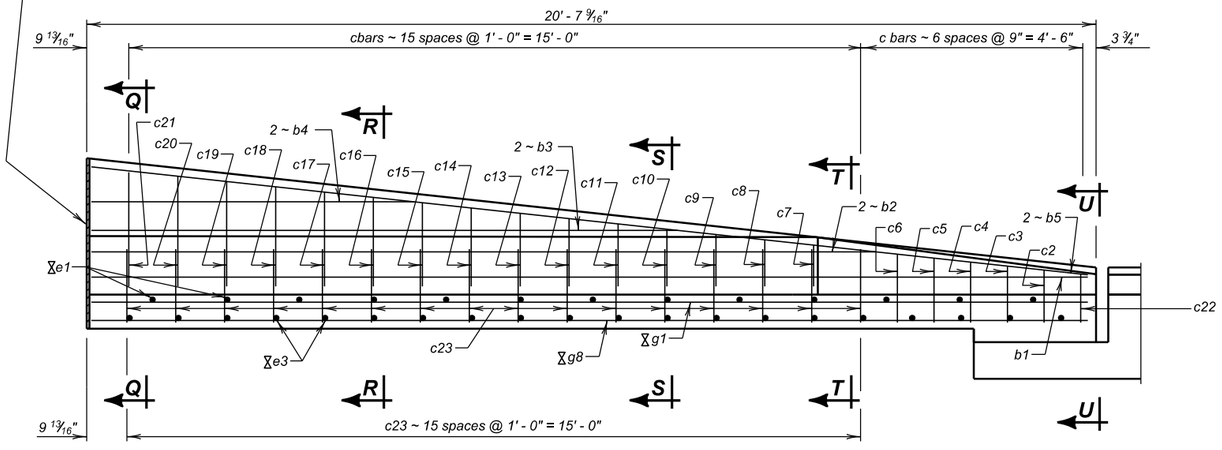
PLAN

(Approach Slab Reinforcing Steel not shown for clarity)
(Northeast Approach Barrier Adjacent to Sidewalk Shown)

½" Preformed Expansion Joint Material with ½" x ½" Low-Modulus Silicone Joint Sealer (Gray in Color)



VIEW P - P



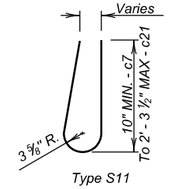
ELEVATION

(Northeast Approach Barrier Adjacent to Sidewalk Shown)

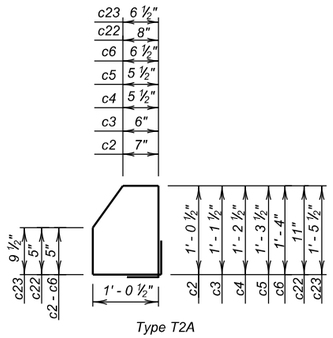
REINFORCING SCHEDULE

(For Both Northeast and Northwest Approach Barriers)

Mk.	No.	Size	Length	Type	Bending Details
b1	2	4	19' - 9"	Str.	
b2	4	4	15' - 5"	Str.	
b3	4	4	11' - 3"	Str.	
b4	4	4	5' - 7"	Str.	
b5	4	4	19'- 11"	Str.	
b6	2	4	40' - 7"	Str.	
c2	2	5	4' - 9"	T2A	
c3	2	5	4' - 11"	T2A	
c4	2	5	5' - 0"	T2A	
c5	2	5	5' - 2"	T2A	
c6	2	5	5' - 3"	T2A	
c7	2	5	2' - 0"	S11	
c8	2	5	2' - 3"	S11	
c9	2	5	2' - 6"	S11	
c10	2	5	2' - 8"	S11	
c11	2	5	2' - 11"	S11	
c12	2	5	3' - 2"	S11	
c13	2	5	3' - 3"	S11	
c14	2	5	3' - 6"	S11	
c15	2	5	3' - 9"	S11	
c16	2	5	4' - 0"	S11	
c17	2	5	4' - 1"	S11	
c18	2	5	4' - 3"	S11	
c19	2	5	4' - 5"	S11	
c20	2	5	4' - 8"	S11	
c21	2	5	4' - 11"	S11	
c22	23	5	4' -7"	T2A	
c23	32	5	5' -7"	T2A	



Type S11

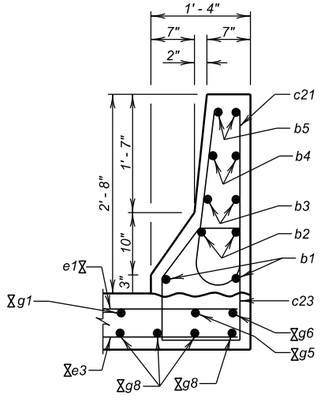


Type T2A

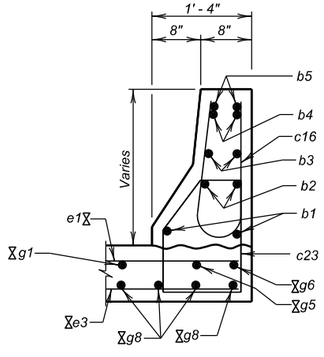
NOTE -
All dimensions are out to out of bars.
All bars to be Epoxy Coated.

ESTIMATED QUANTITIES

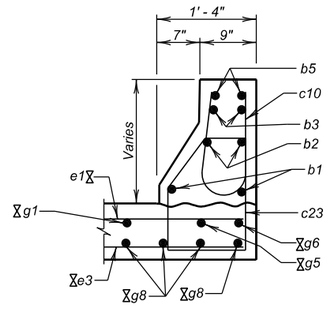
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Barrier	CuYd	2.9
Epoxy Coated Reinforcing Steel	Lb	678



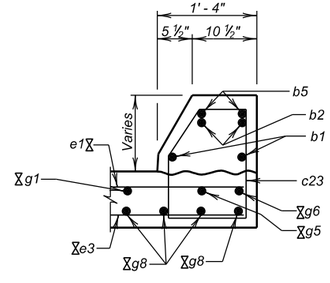
SECTION Q - Q



SECTION R - R



SECTION S - S



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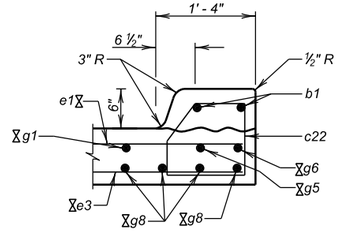


SECTION U - U

Shown and listed with Approach Slab Details

NORTHEAST APPROACH BARRIER DETAILS

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

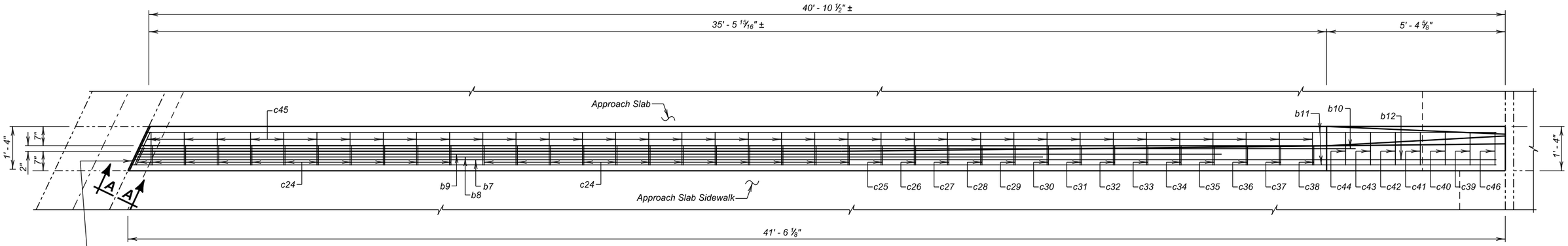
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

15 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA15		

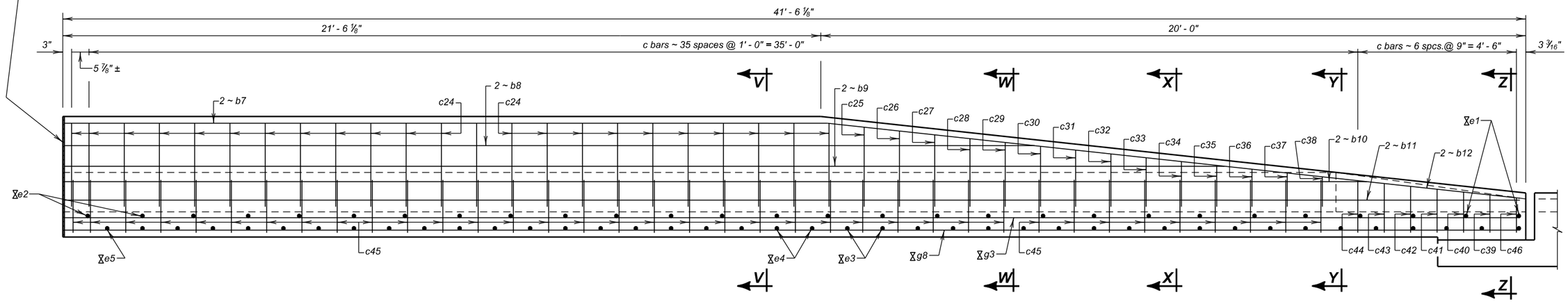
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	27	71



PLAN

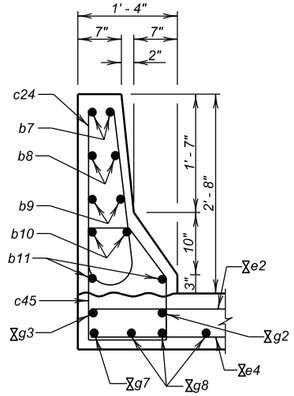
(Approach Slab Reinforcing Steel not shown for clarity)
(Southeast Approach Barrier Adjacent to Sidewalk Shown)

½" Preformed Expansion Joint Material with ½" x ½" Low-Modulus Silicone Joint Sealer (Gray in Color)

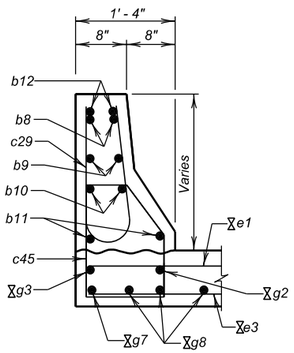


ELEVATION

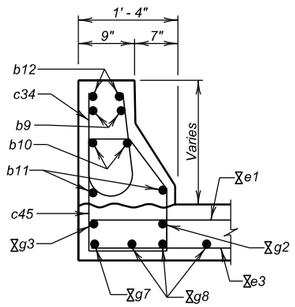
(Southeast Approach Barrier Adjacent to Sidewalk Shown)



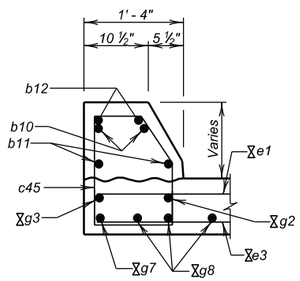
SECTION V - V



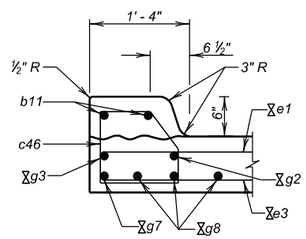
SECTION W - W



SECTION X - X

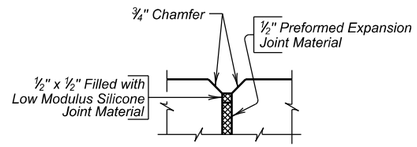


SECTION Y - Y



SECTION Z - Z

⧖ *Shown and listed with Approach Slab Details*



VIEW A - A

SOUTHEAST APPROACH BARRIER DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

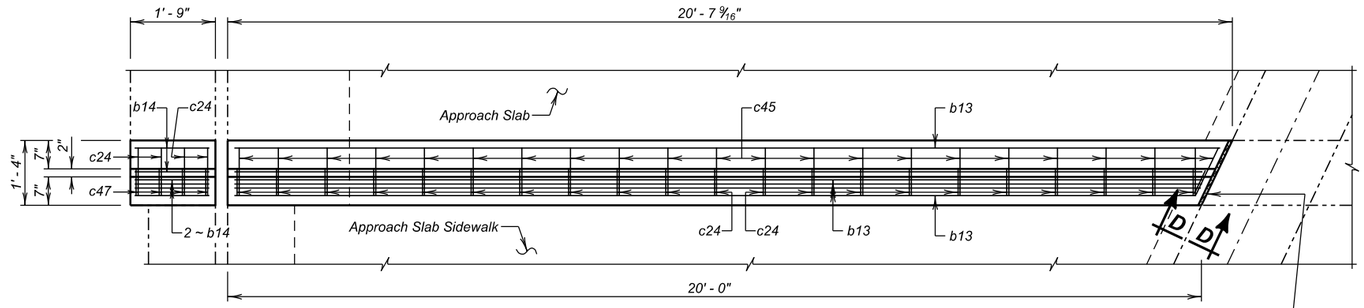
45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA16		

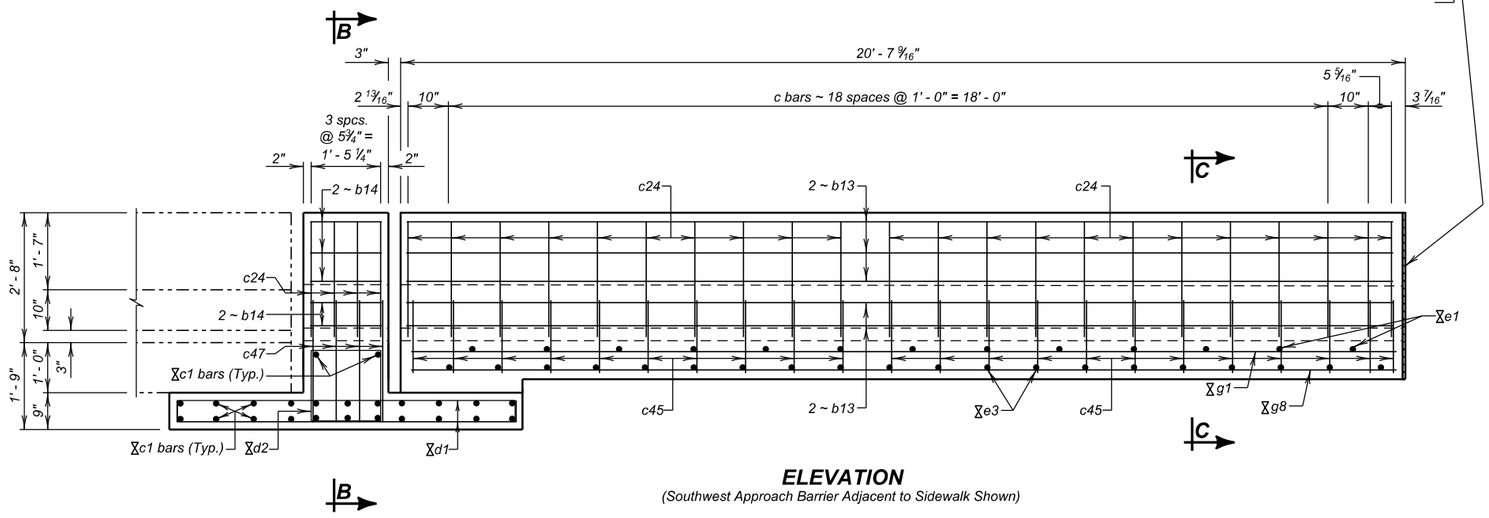
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	28	71



PLAN

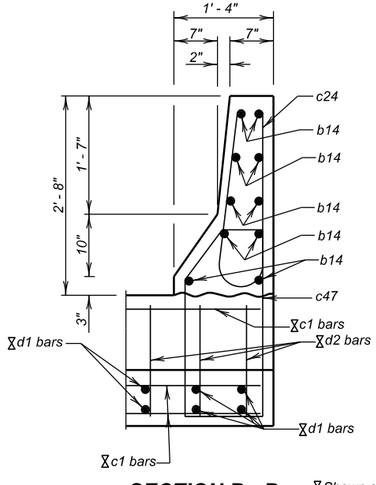
(Approach Slab Reinforcing Steel not shown for clarity)
(Southwest Approach Barrier Adjacent to Sidewalk Shown)

½" Preformed Expansion Joint Material with ½" x ½" Low-Modulus Silicone Joint Sealer (Gray in Color)



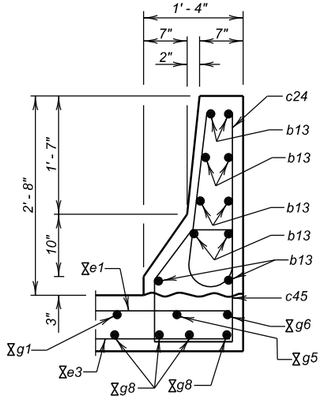
ELEVATION

(Southwest Approach Barrier Adjacent to Sidewalk Shown)

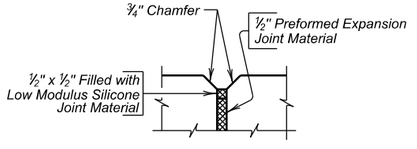


SECTION B - B

Shown and listed with Approach Slab Details



SECTION C - C



VIEW D - D

ESTIMATED QUANTITIES

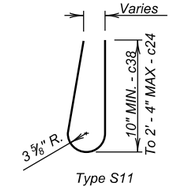
(For Both Southeast and Southwest Approach Barriers)

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Barrier	CuYd	4.9
Epoxy Coated Reinforcing Steel	Lb	1,110

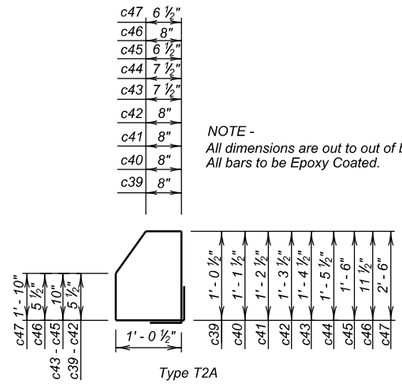
REINFORCING SCHEDULE

(For Both Southeast and Southwest Approach Barriers)

Mk.	No.	Size	Length	Type	Bending Details
b7	2	4	21' - 4"	Str.	
b8	2	4	27' - 2"	Str.	
b9	2	4	32' - 6"	Str.	
b10	2	4	36' - 6"	Str.	
b11	2	4	41' - 1"	Str.	
b12	2	4	19' - 9"	Str.	
b13	10	4	19' - 8"	Str.	
b14	10	4	1' - 5"	Str.	
c24	49	5	5' - 1"	S11	
c25	1	5	4' - 10"	S11	
c26	1	5	4' - 8"	S11	
c27	1	5	4' - 5"	S11	
c28	1	5	4' - 3"	S11	
c29	1	5	4' - 0"	S11	
c30	1	5	3' - 9"	S11	
c31	1	5	3' - 6"	S11	
c32	1	5	3' - 3"	S11	
c33	1	5	3' - 2"	S11	
c34	1	5	2' - 11"	S11	
c35	1	5	2' - 8"	S11	
c36	1	5	2' - 6"	S11	
c37	1	5	2' - 3"	S11	
c38	1	5	2' - 0"	S11	
c39	1	5	4' - 10"	T2A	
c40	1	5	5' - 0"	T2A	
c41	1	5	5' - 2"	T2A	
c42	1	5	5' - 3"	T2A	
c43	1	5	5' - 6"	T2A	
c44	1	5	5' - 7"	T2A	
c45	59	5	5' - 8"	T2A	
c46	1	5	4' - 8"	T2A	
c47	4	5	7' - 8"	T2A	



Type S11



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

Type T2A

SOUTHWEST APPROACH BARRIER DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

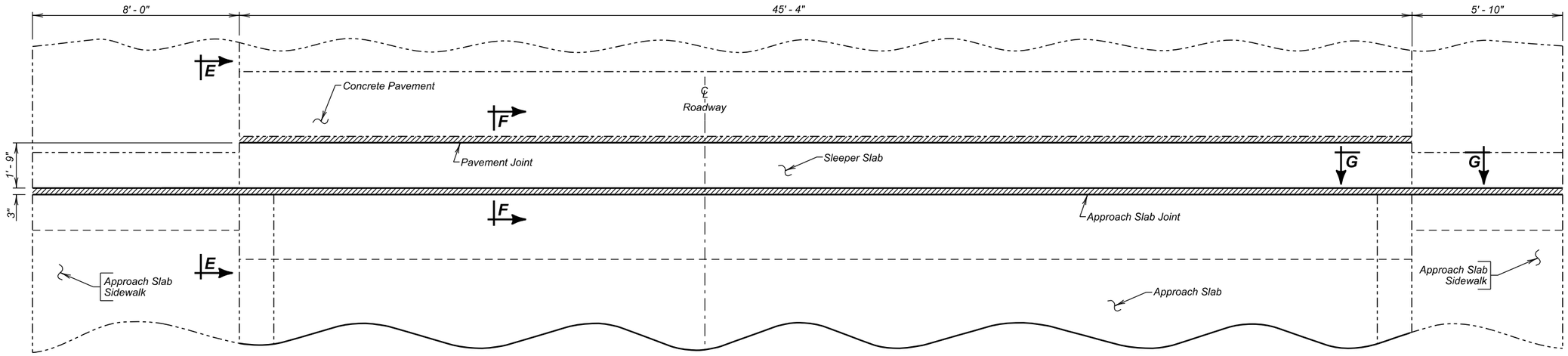
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

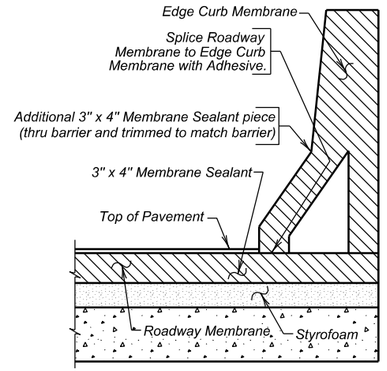
17 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA17		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	29	71



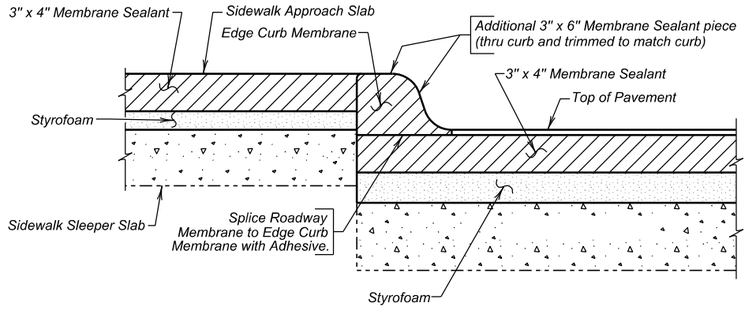
PLAN



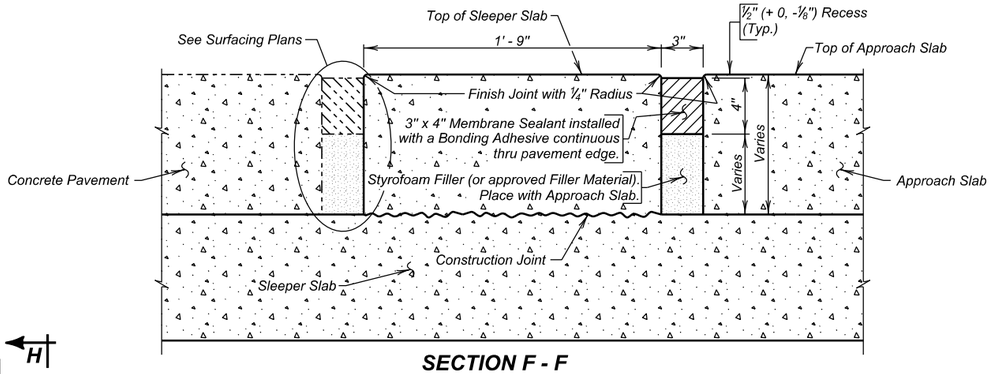
SECTION H - H

GENERAL NOTES

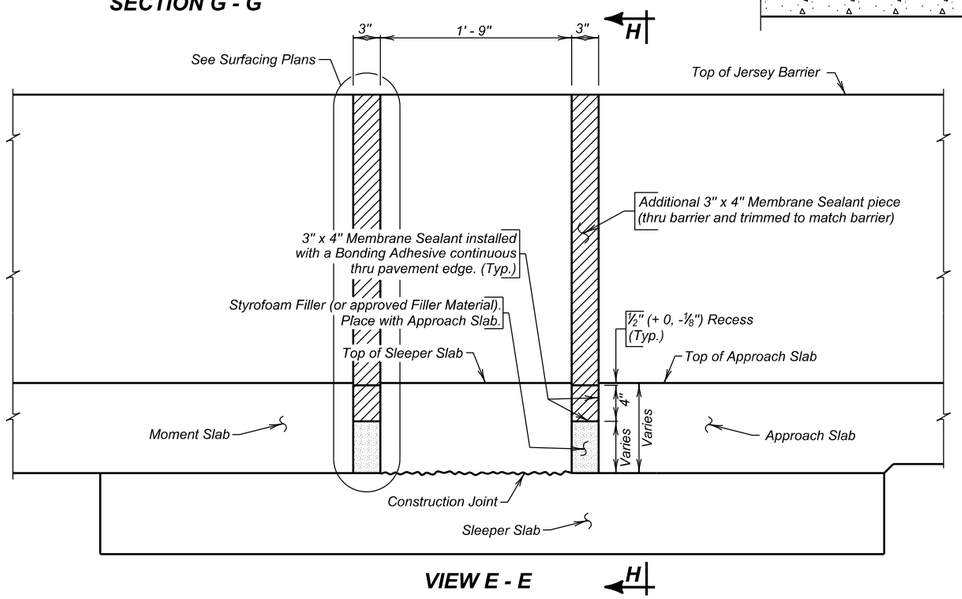
1. The membrane sealant will be on the approved product list for membrane sealant expansion joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer to provide a water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



SECTION G - G



SECTION F - F



VIEW E - E

Note: View E - E refers to Moment Barrier on the Southwest side of bridge only.

Note:
View F - F and Section E - E are only for the Moment Slab section on the Southwest side of the bridge.

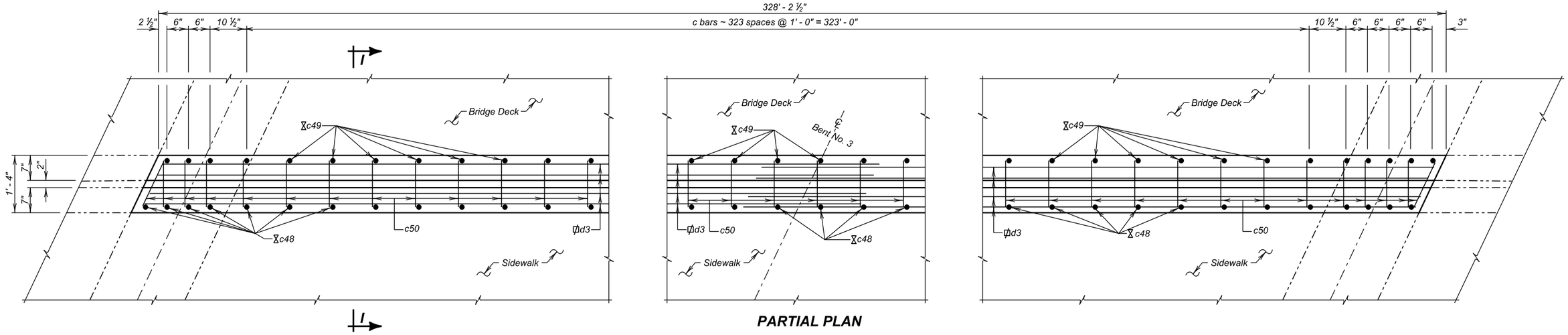
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft	125.0

APPROACH SLAB JOINT DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

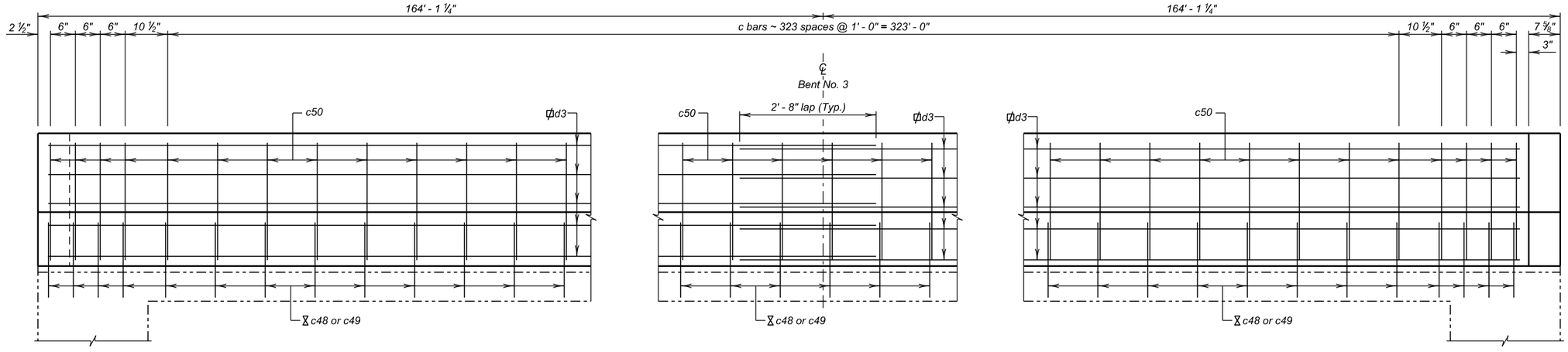
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA18		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	30	71



PARTIAL PLAN



ELEVATION

℔ *Reinforcing Steel drilled and grouted with epoxy. (Typ.)*

℄ *Min. Lap = 2' - 8"*

SOUTH BRIDGE DECK BARRIER DETAILS (A)

FOR

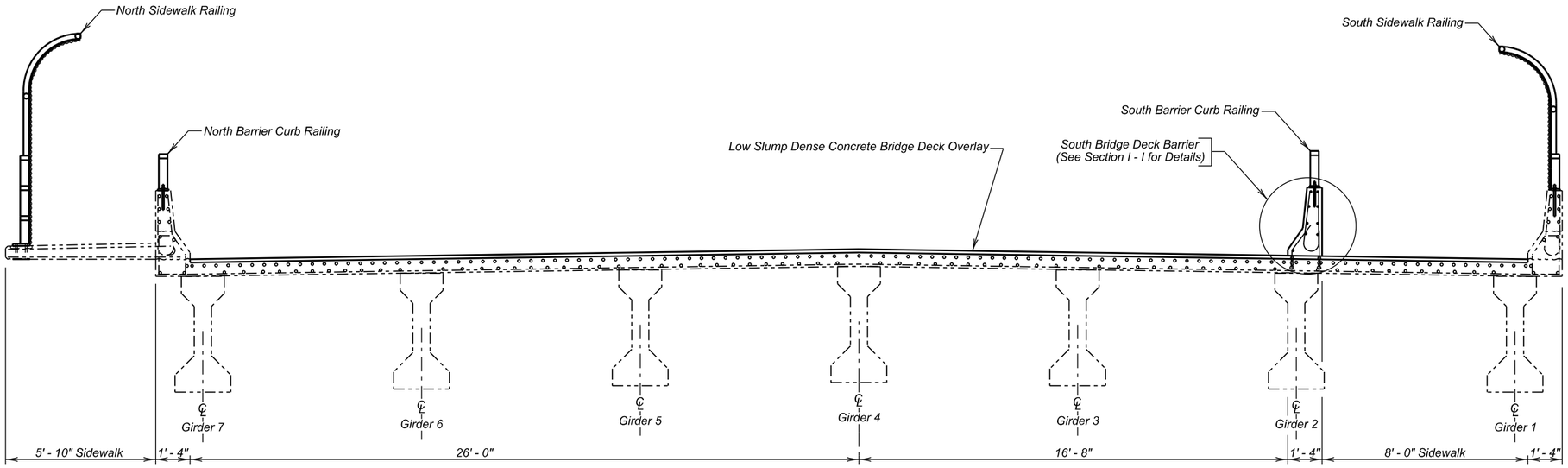
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA19		

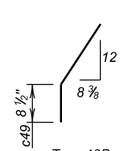
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	31	71



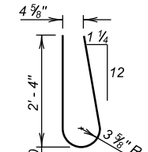
TYPICAL SECTION

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
⧖ c48	332	5	1' - 6"	Str.	
⧖ c49	332	5	1' - 11"	19B	
c50	332	5	5' - 1"	S11	
d3	54	4	56' - 11"	Str.	



Type 19B



Type S11

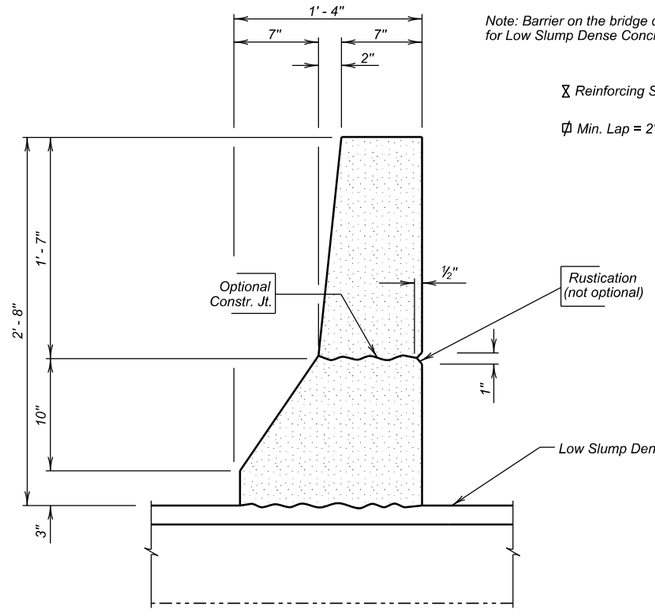
NOTES-
⧖ Dowels
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Barrier	CuYd	27.4
Install Dowel in Concrete	Each	664
Epoxy Coated Reinforcing Steel	Lb	3,813

Item below is an approximate quantity contained in "Installed Dowel in Concrete" and is for information only.

Reinforcing steel for dowels 1,182 Lb

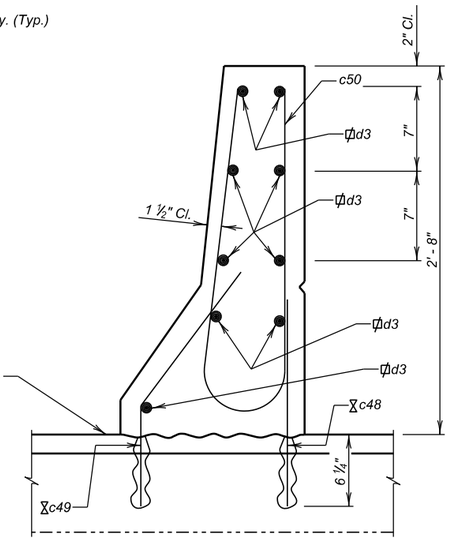


BARRIER DETAILS

Note: Barrier on the bridge deck will be placed after the overlay is complete. See Profiles for Low Slump Dense Concrete Bridge Deck Overlay for details.

⧖ Reinforcing Steel drilled and grouted with epoxy. (Typ.)

℄ Min. Lap = 2' - 8"



SECTION I - I

SOUTH BRIDGE DECK BARRIER DETAILS (B)

FOR

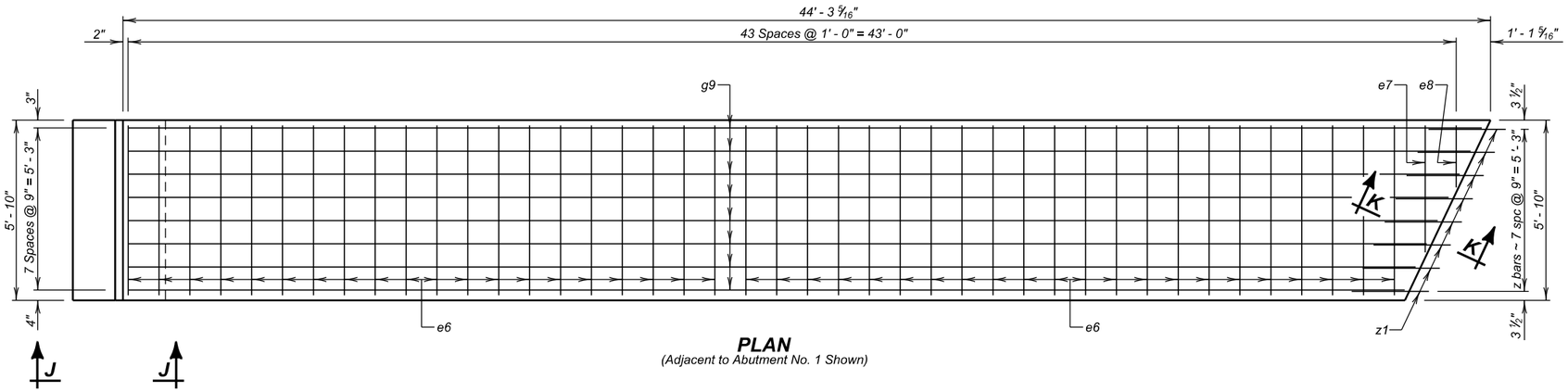
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steven A. Johnson BRIDGE ENGINEER
MINN092A	092ARA20		

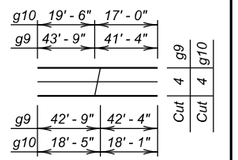
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	32	71



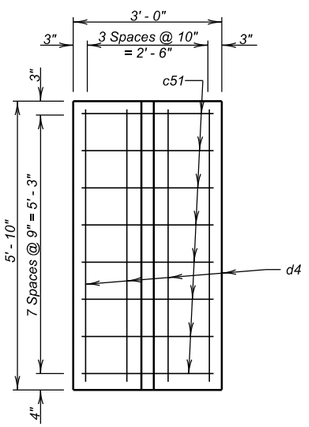
PLAN
(Adjacent to Abutment No. 1 Shown)

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

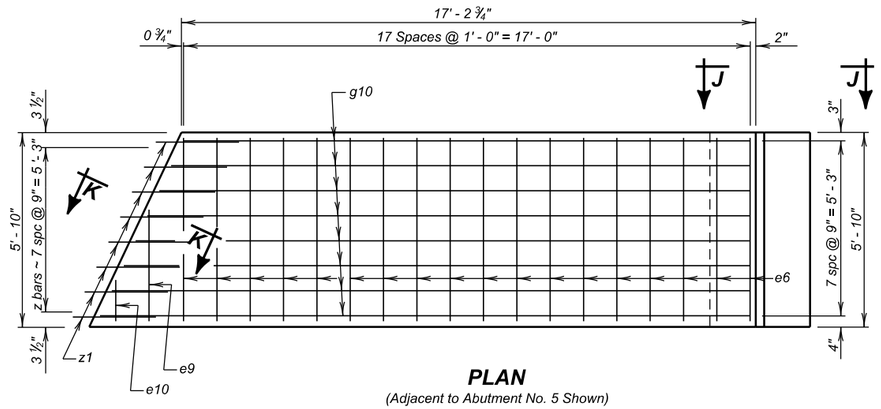
	Mk.	No.	Size	Length	Type	Cutting Diagram
	c51	16	4	2' - 8"	Str.	
	d4	8	4	5' - 6"	Str.	
	e6	60	4	5' - 6"	Str.	
	e7	1	4	3' - 10"	Str.	
	e8	1	4	1' - 9"	Str.	
	e9	1	4	3' - 2"	Str.	
	e10	1	4	1' - 2"	Str.	
≠	g9	4	4	85' - 1"	Str.	
≠	g10	4	4	36' - 6"	Str.	
⧖	z1	16	4	2' - 6"	Str.	



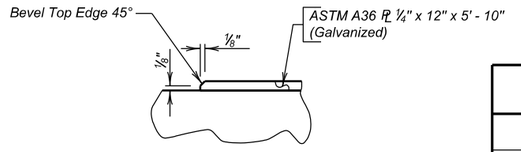
NOTE:
All bars to be Epoxy Coated.
All dimensions are out to out of bars.
≠ See cutting diagram.
⧖ Dowel Bars



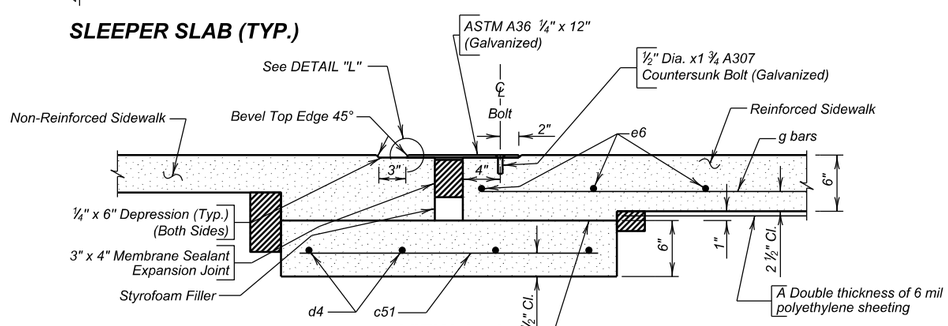
SLEEPER SLAB (TYP.)



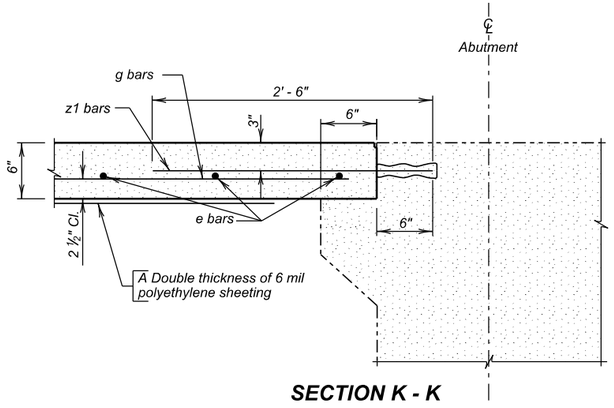
PLAN
(Adjacent to Abutment No. 5 Shown)



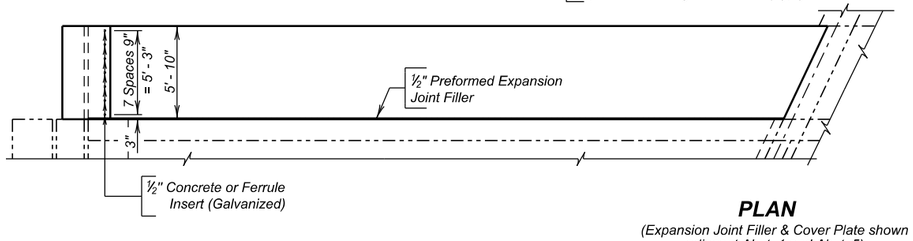
DETAIL "L"

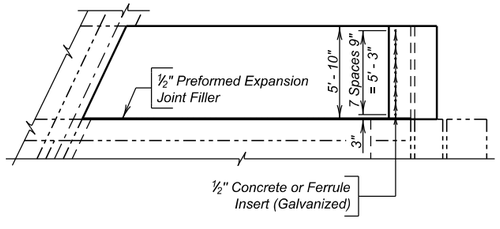


VIEW J - J



SECTION K - K





PLAN
(Expansion Joint Filler & Cover Plate shown adjacent Abut. 1 and Abut. 5)

ESTIMATED QUANTITIES
(For Two Sidewalk Approach Slabs)

	ITEM	UNIT	QUANTITY
	Structural Steel, Miscellaneous	LS	Lump Sum
	Install Dowels in Concrete	Each	16
	6" Reinforced Concrete Sidewalk	SqFt	359
	Remove Concrete Sidewalk	SqYd	62.5
✳	Base Course	Ton	4.4

✳ For estimating purposes only, a factor of 1.89 Tons/CuYd was used to convert CuYd to Tons. Base Course for North Approach Sidewalk Slabs only.

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

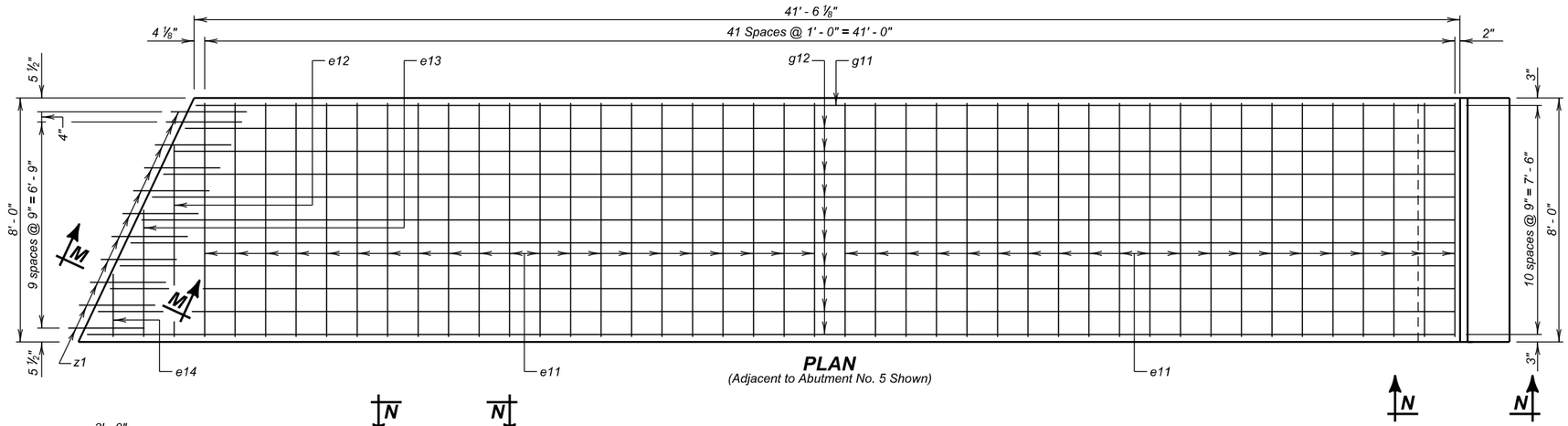
1.	Concrete in Sidewalk Approach Slabs.	6.6 CuYd
2.	Epoxy Coated Reinforcing Steel in Sidewalk Approach Slabs.	553 Lb
3.	Concrete in Sidewalk Sleeper Slabs	0.6 CuYd
4.	Epoxy Coated Reinforcing Steel in Sidewalk Sleeper Slabs.	58 Lb
5.	Epoxy Coated Reinforcing Steel for dowels.	27 Lb
6.	2" Polystyrene Insulation Board	7 SqFt
7.	Structural Steel for cover plates including plates, bolts, and inserts.	122 Lb

NORTH APPROACH SIDEWALK DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

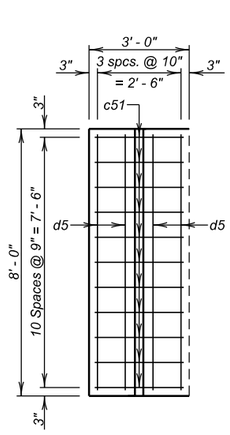
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA21		

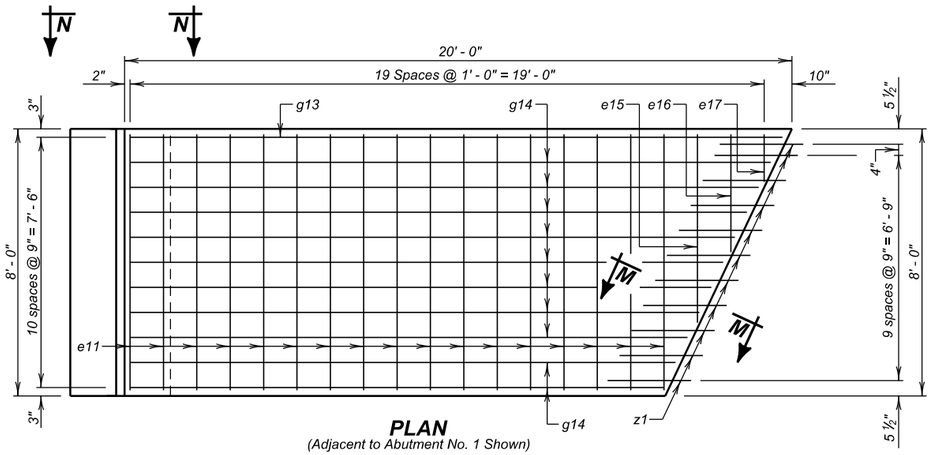
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	33	71



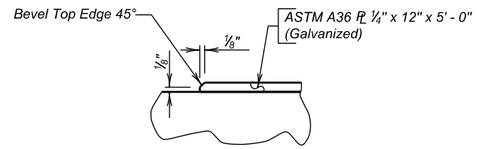
PLAN
(Adjacent to Abutment No. 5 Shown)



SLEEPER SLAB (TYP.)



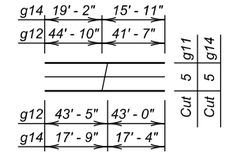
PLAN
(Adjacent to Abutment No. 1 Shown)



DETAIL "O"

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

	Mk.	No.	Size	Length	Type
	c51	22	4	2' - 8"	Str.
	d5	8	4	7' - 8"	Str.
	e11	59	4	7' - 8"	Str.
	e12	1	4	6' - 0"	Str.
	e13	1	4	3' - 11"	Str.
	e14	1	4	1' - 10"	Str.
	e15	1	4	4' - 8"	Str.
	e16	1	4	3' - 3"	Str.
	e17	1	4	1' - 2"	Str.
	g11	1	4	41' - 3"	Str.
≠	g12	5	4	86' - 5"	Str.
	g13	1	4	19' - 6"	Str.
≠	g14	5	4	35' - 1"	Str.
⧖	z1	22	4	2' - 6"	Str.



NOTE:
All bars to be epoxy coated.
All dimensions are out to out of bars.
⧖ Dowel Bars
≠ See cutting diagram.

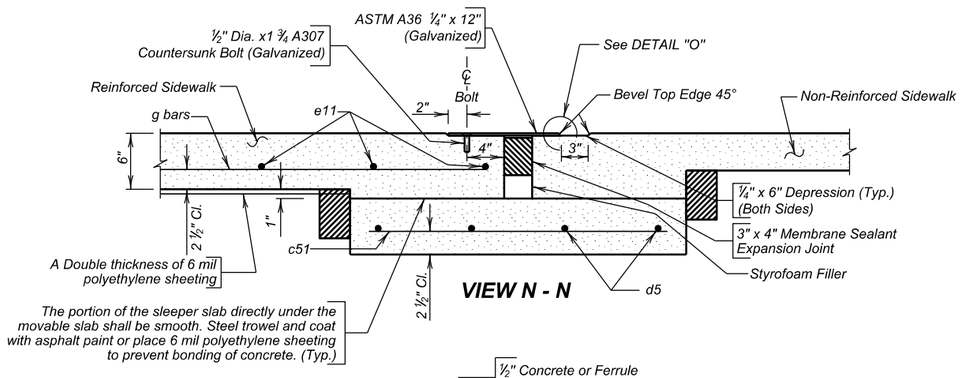
ESTIMATED QUANTITIES
(For Two Sidewalk Approach Slabs)

	ITEM	UNIT	QUANTITY
	Structural Steel, Miscellaneous	LS	Lump Sum
	Install Dowels in Concrete	Each	22
	6" Reinforced Concrete Sidewalk	SqFt	492
⚹	Base Course	Ton	6.0

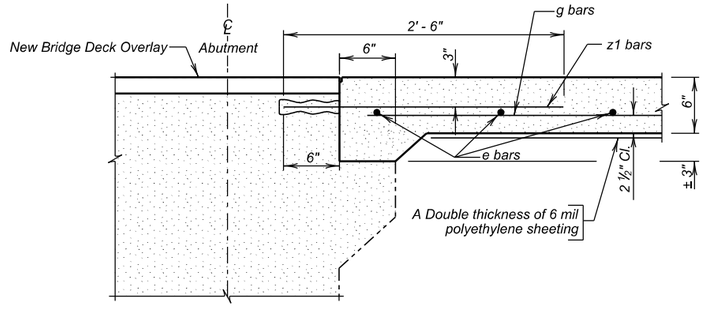
⚹ For estimating purposes only, a factor of 1.89 Tons/CuYd was used to convert CuYd to Tons. Base Course for North Approach Sidewalk Slabs only.

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

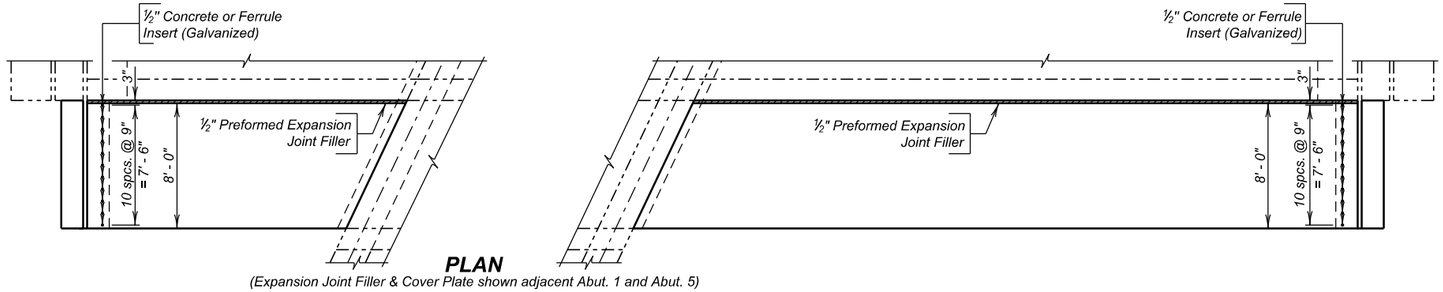
1.	Concrete in Sidewalk Approach Slabs	9.1 CuYd
2.	Epoxy Coated Reinforcing Steel in Sidewalk Approach Slabs	764 Lb
3.	Concrete in Sidewalk Sleeper Slabs	0.9 CuYd
4.	Epoxy Coated Reinforcing Steel in Sidewalk Sleeper Slabs	80 Lb
5.	Epoxy Coated Reinforcing Steel for dowels	37 Lb
6.	2" Polystyrene Insulation Board	9 SqFt
7.	Structural Steel for cover plates including plates, bolts, and inserts.	167 Lb



VIEW N - N



SECTION M - M



PLAN
(Expansion Joint Filler & Cover Plate shown adjacent Abut. 1 and Abut. 5)

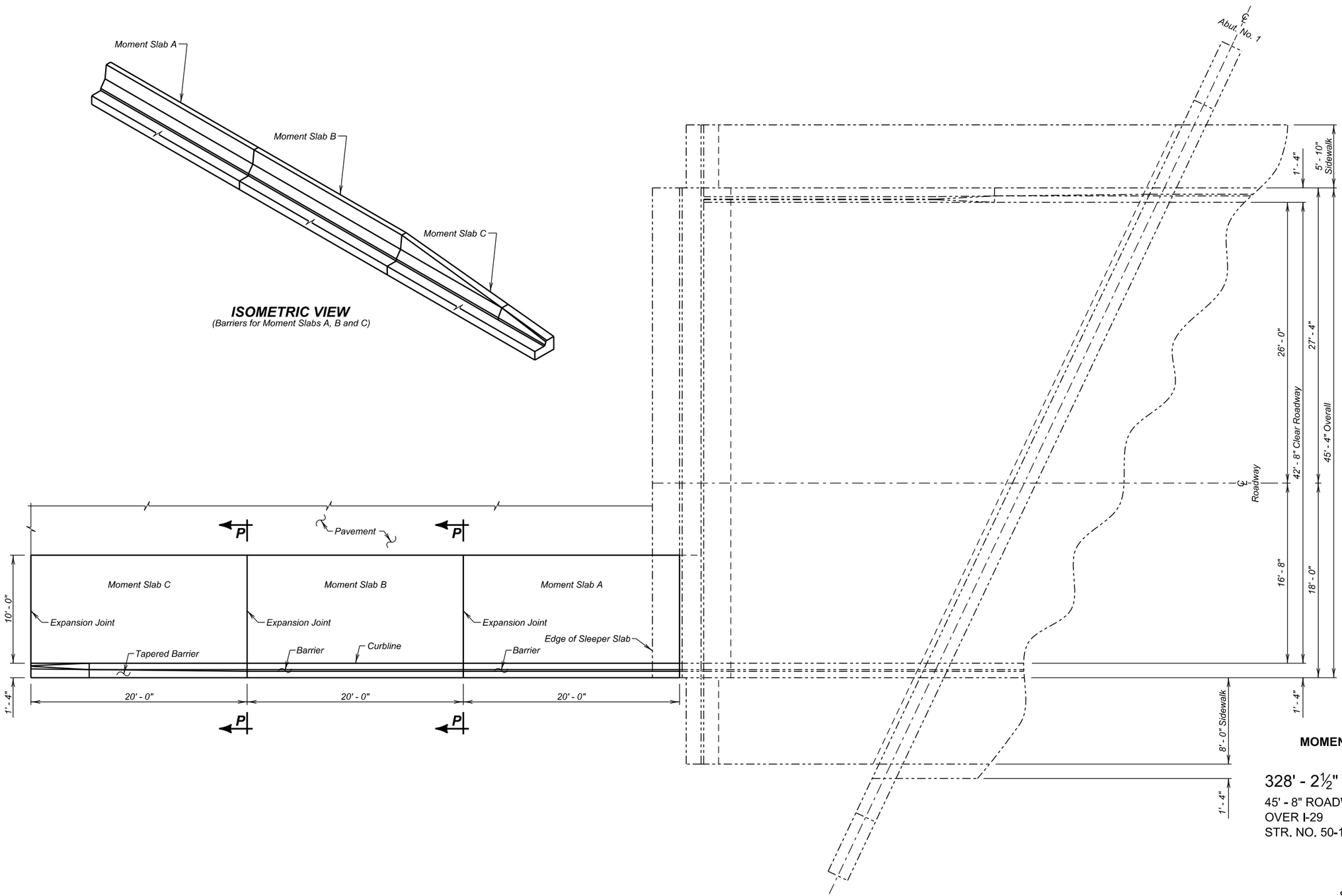
SOUTH APPROACH SIDEWALK DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA22		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	34	71

ISOMETRIC VIEW
(Barriers for Moment Slabs A, B and C)



PLAN
(Moment Slabs A, B & C and Barriers Adjacent to Abut. No. 1 Approach Slab)

MOMENT SLABS A, B AND C LAYOUT DETAILS

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

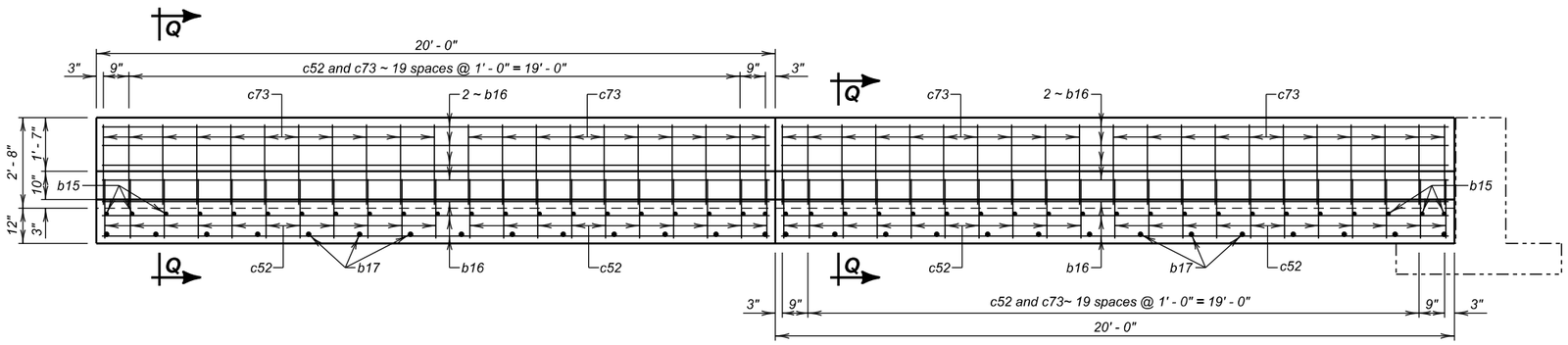
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

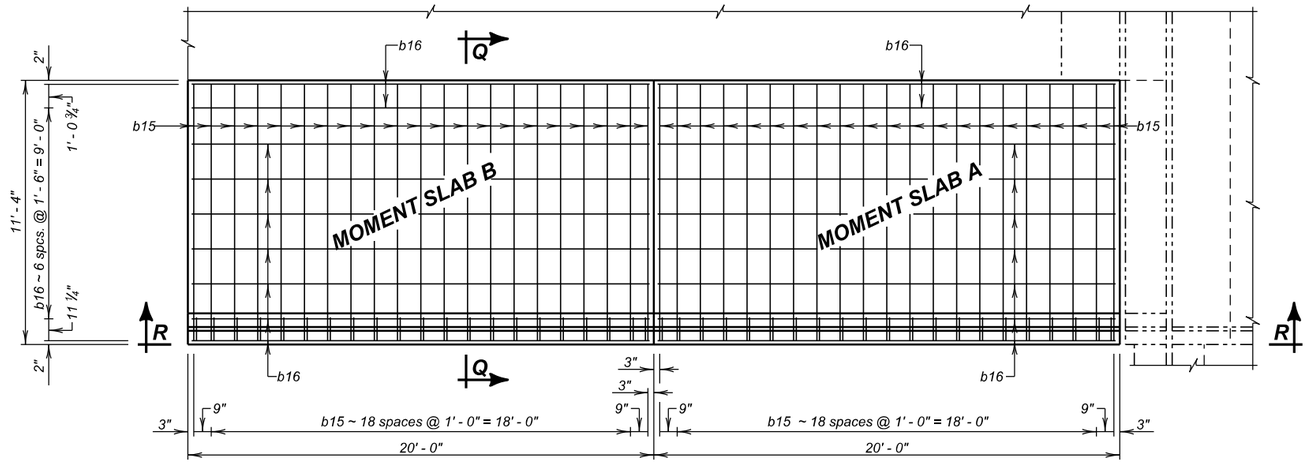
23 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson
MINN092A	092ARA23		BRIDGE ENGINEER

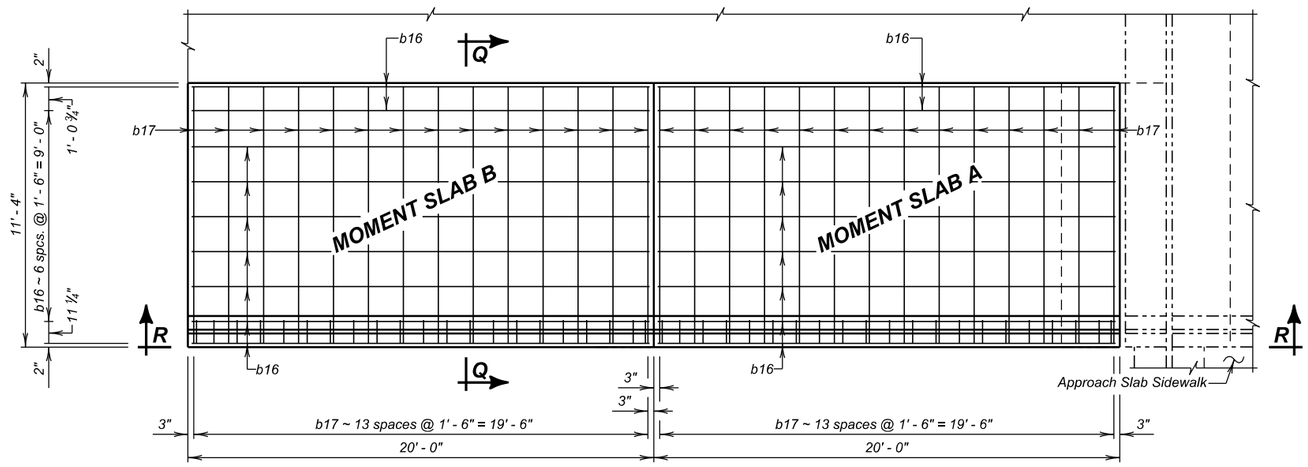
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	35	71



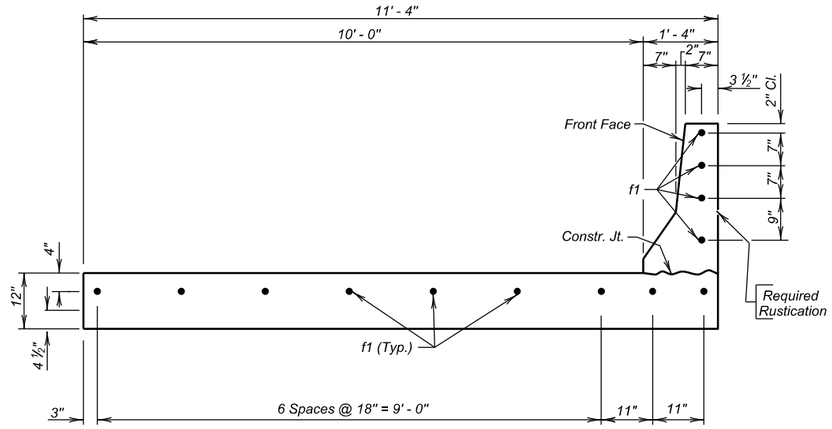
SECTION R - R
(Reinforced Concrete Barrier and Footing)



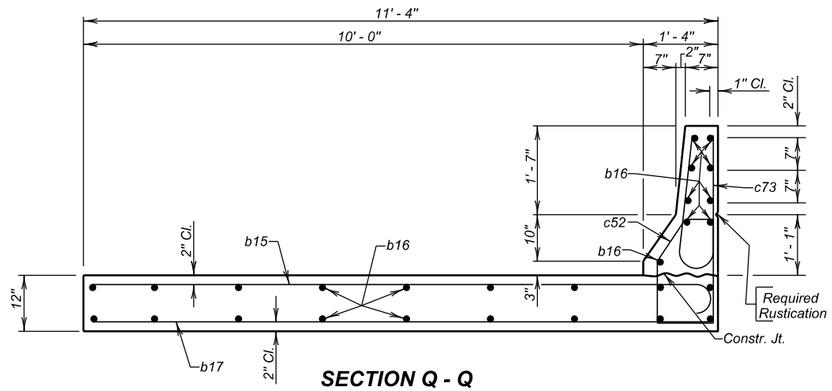
PLAN
(Top Steel ~ Moment Slabs A & B and Barriers Shown)



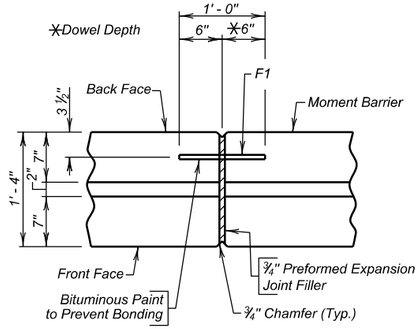
PLAN
(Bottom Steel ~ Moment Slabs A & B and Barriers Shown)



SECTION P - P



SECTION Q - Q



PLAN VIEW
EXPANSION JOINT FOR BARRIER
(Barrier reinforcing steel not shown for clarity.)

MOMENT SLABS A AND B DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

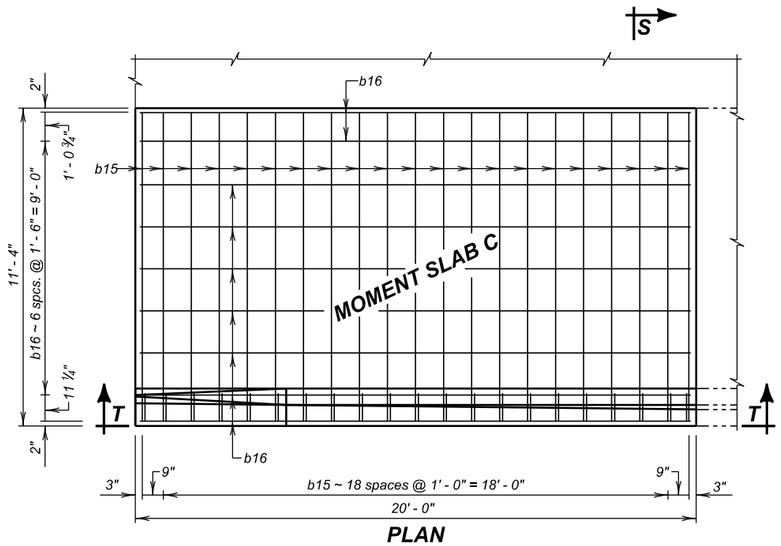
45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

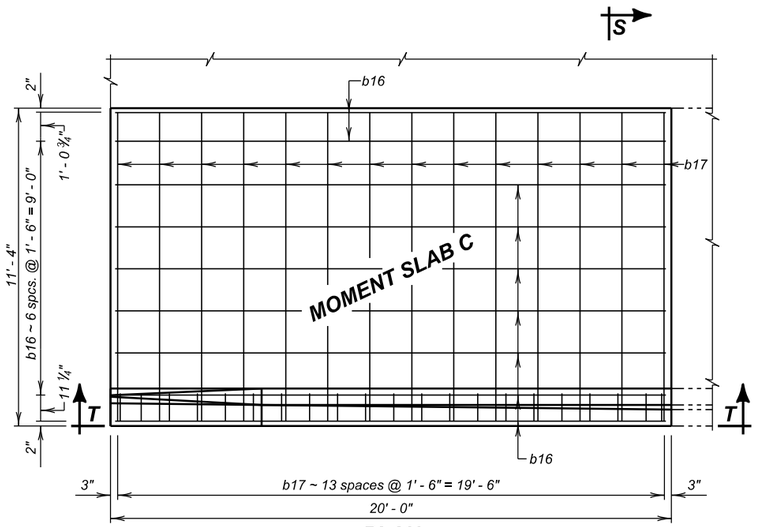
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA24		

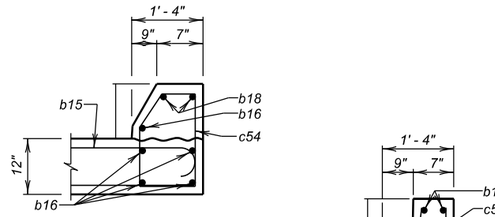
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	36	71



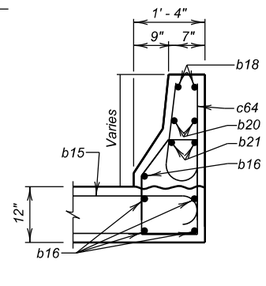
PLAN
(Top Steel ~ Moment Slabs C and Barriers Shown)



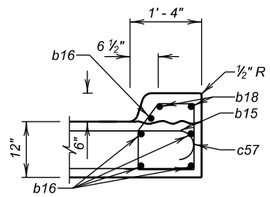
PLAN
(Bottom Steel ~ Moment Slabs C and Barriers Shown)



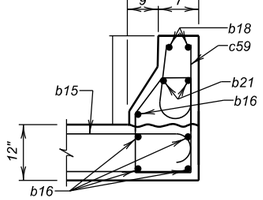
SECTION X - X



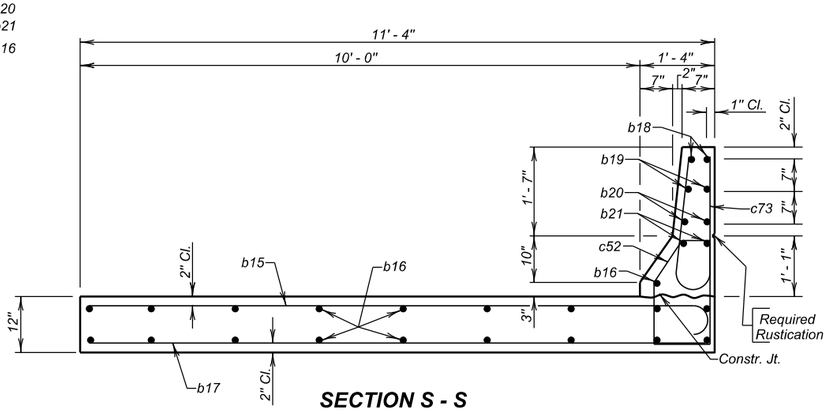
SECTION Z - Z



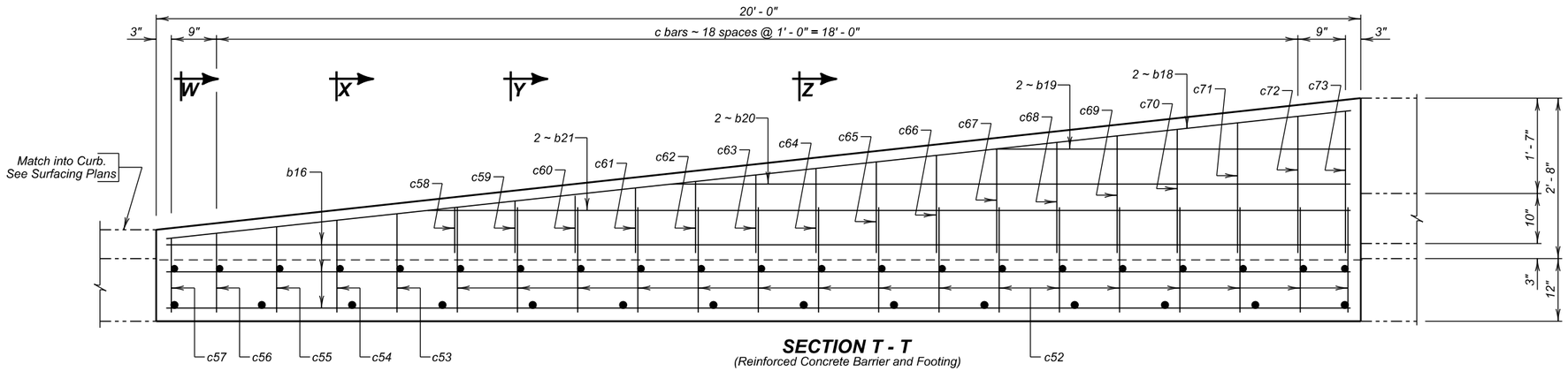
SECTION W - W



SECTION Y - Y



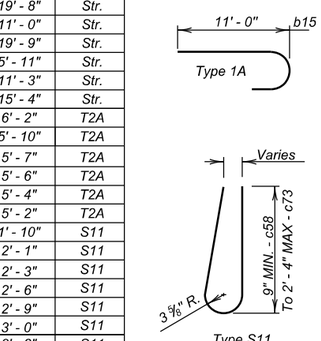
SECTION S - S



SECTION T - T
(Reinforced Concrete Barrier and Footing)

REINFORCING SCHEDULE
(For 2 Reinforced Concrete Barriers and footings)

Mk.	No.	Size	Length	Type
b15	63	6	11' - 8"	1A
b16	73	4	19' - 8"	Str.
b17	42	4	11' - 0"	Str.
b18	2	4	19' - 9"	Str.
b19	2	4	5' - 11"	Str.
b20	2	4	11' - 3"	Str.
b21	2	4	15' - 4"	Str.
c52	58	5	6' - 2"	T2A
c53	1	5	5' - 10"	T2A
c54	1	5	5' - 7"	T2A
c55	1	5	5' - 6"	T2A
c56	1	5	5' - 4"	T2A
c57	1	5	5' - 2"	T2A
c58	1	5	1' - 10"	S11
c59	1	5	2' - 1"	S11
c60	1	5	2' - 3"	S11
c61	1	5	2' - 6"	S11
c62	1	5	2' - 9"	S11
c63	1	5	3' - 0"	S11
c64	1	5	3' - 2"	S11
c65	1	5	3' - 4"	S11
c66	1	5	3' - 7"	S11
c67	1	5	3' - 10"	S11
c68	1	5	4' - 0"	S11
c69	1	5	4' - 3"	S11
c70	1	5	4' - 5"	S11
c71	1	5	4' - 8"	S11
c72	1	5	4' - 11"	S11
c73	43	5	5' - 0"	S11
⧖ f1	26	5	1' - 0"	Smooth



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

ESTIMATED QUANTITIES
(For 3 Reinforced Concrete Barriers and Footings)

ITEM	UNIT	QUANTITY
Concrete Barrier and 10' Continuously Reinforced Concrete Shoulder	Ft	60
Install Dowel in Concrete	Each	26

Items 1 thru 3 are approximate quantities contained in the above bid items and are for information only.

1. Concrete in Reinforced Barrier and Footing — 29.6 CuYd
2. Epoxy Coated Re-Steel in Reinforced Barrier and Footing. — 3,120 Lbs
3. Epoxy Coated Re-Steel in Dowels. — 28 Lbs

MOMENT SLAB C DETAILS
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

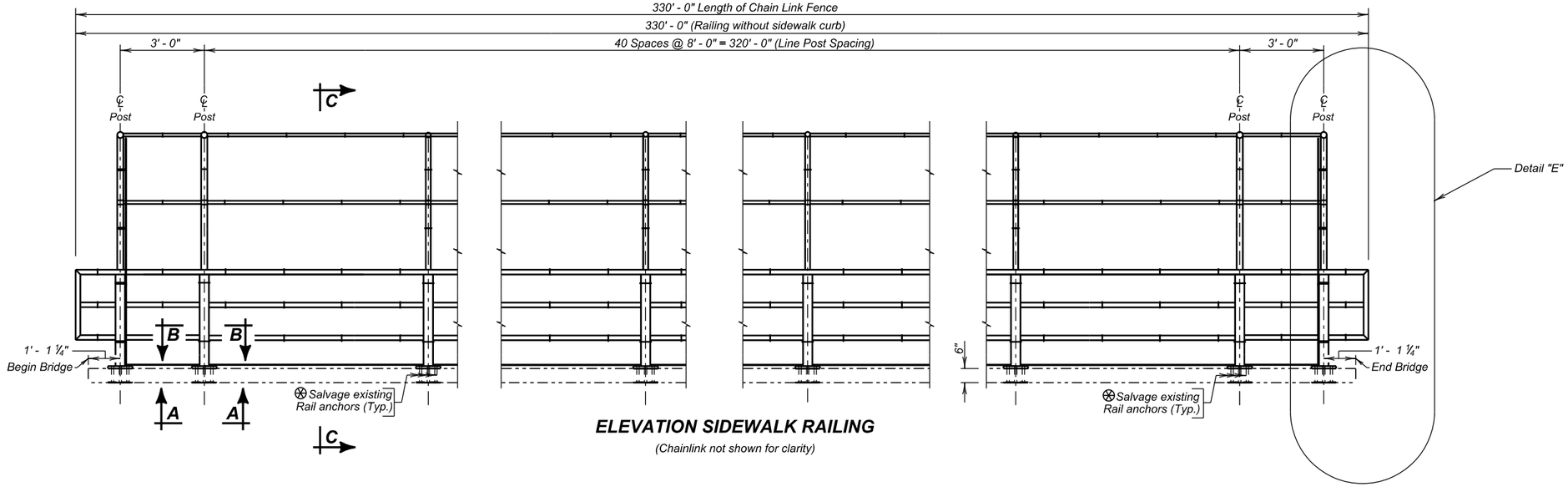
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

25 OF 47

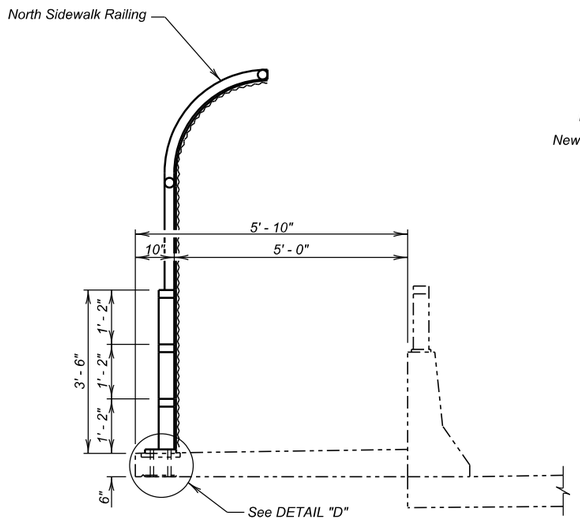
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA25		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	37	71



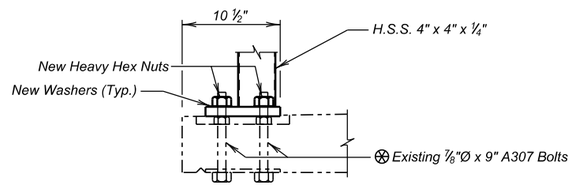
ELEVATION SIDEWALK RAILING

(Chainlink not shown for clarity)



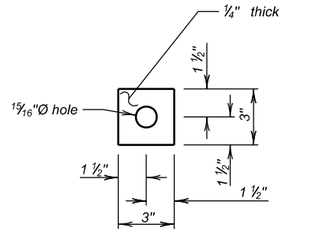
TYPICAL SECTION

(Without sidewalk curb)



DETAIL "D"

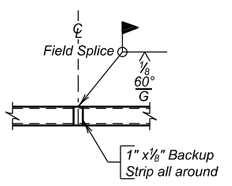
Existing Bolts shown. If not salvageable see bolt replacement details.



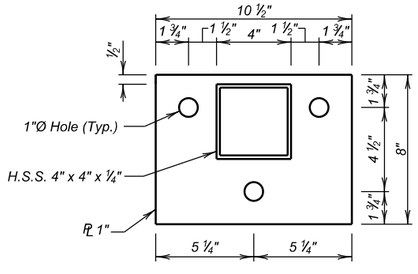
Cut Washer

⧖ (30 required)

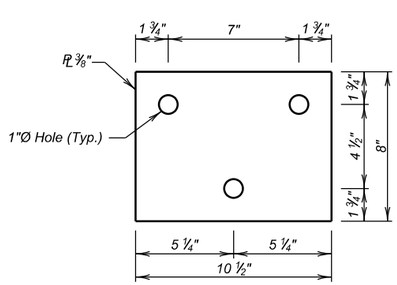
⧖ Quantity based on 30 bolt locations where Bolt Replacement Type II will be used, actual quantity may vary.



RAIL FIELD SPLICE



VIEW B - B



VIEW A - A

⚹ (15 required)

⚹ Quantity based on 15 post locations where Bolt Replacement Type I will be used, actual quantity may vary.

NORTH SIDEWALK RAILING DETAILS (A)

FOR

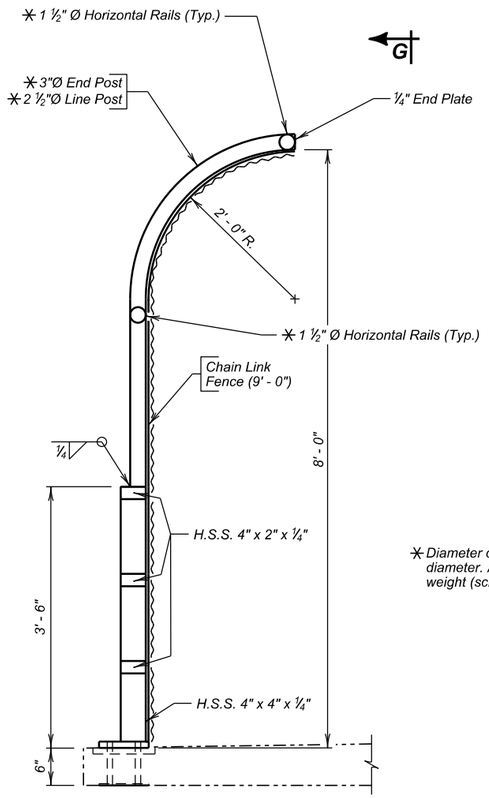
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

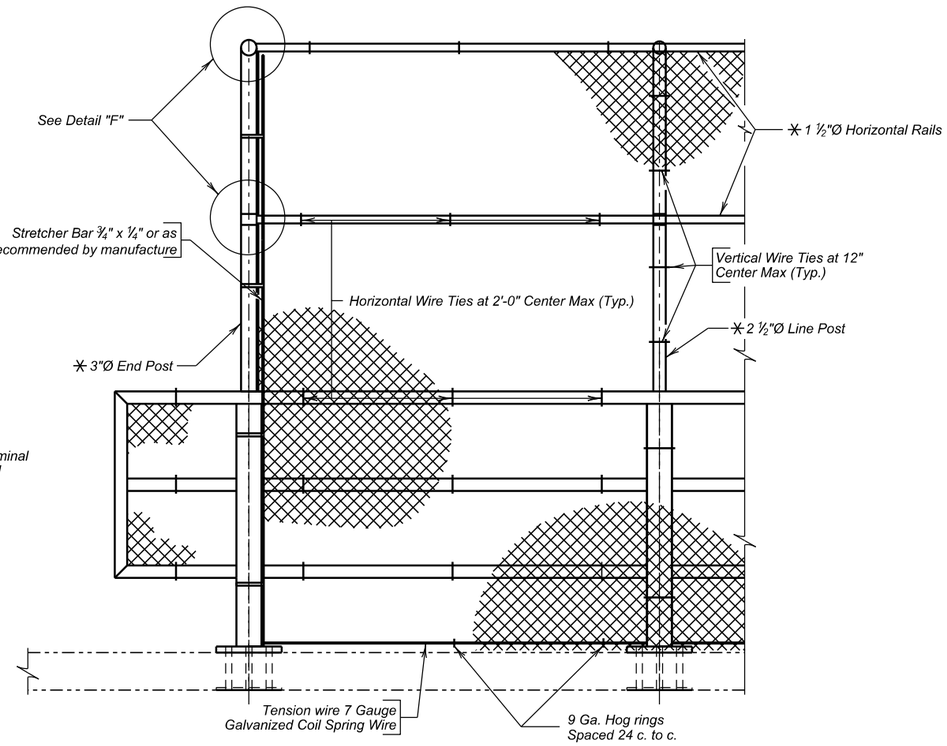
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA26		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	38	71

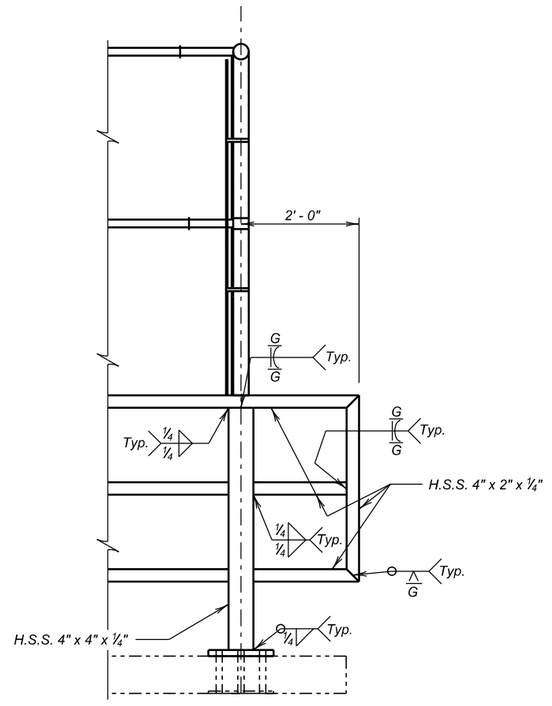


SECTION C - C

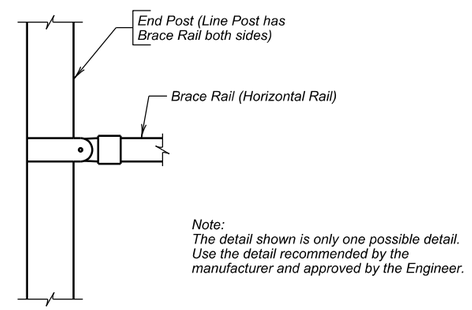
Diameter of pipe shown is the nominal diameter. All pipe will be standard weight (schedule 40) pipe.



VIEW G - G



DETAIL "E"



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

DETAIL "F"

NORTH SIDEWALK RAILING DETAILS (B)

FOR

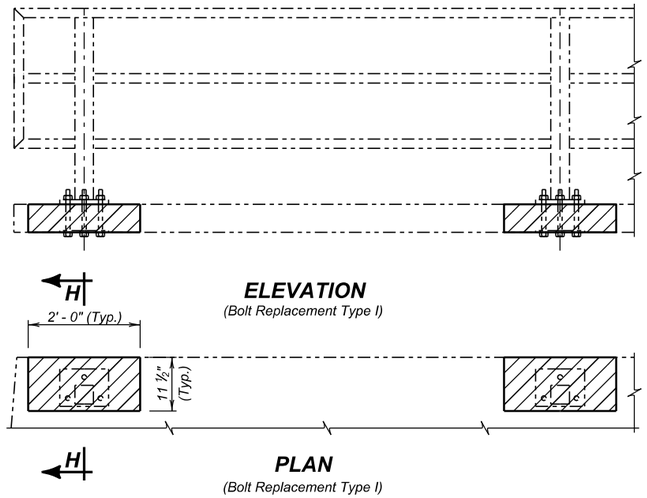
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

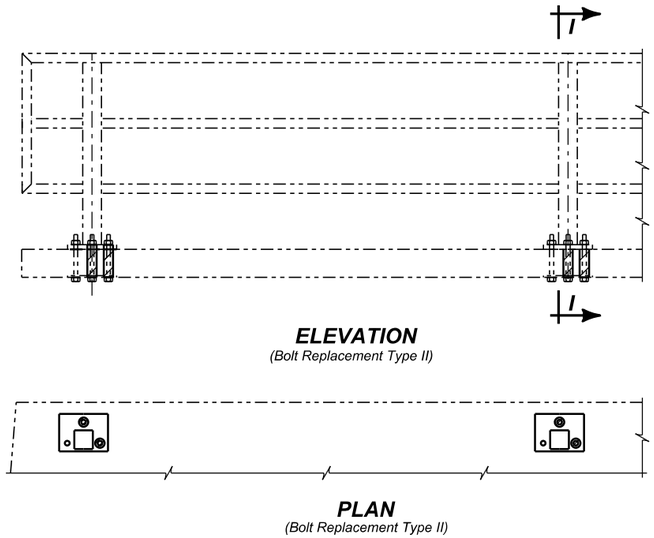
27 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA27		



ELEVATION
(Bolt Replacement Type I)

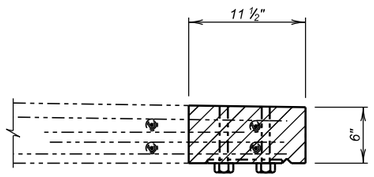
PLAN
(Bolt Replacement Type I)



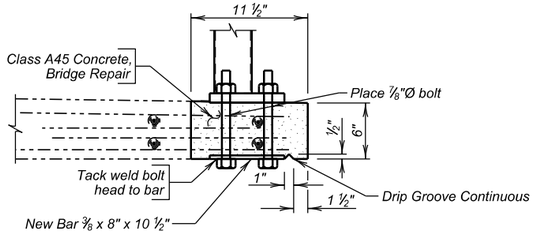
ELEVATION
(Bolt Replacement Type II)

PLAN
(Bolt Replacement Type II)

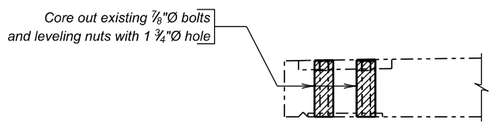
★ *If the existing plate remains in-place during core drilling a new cut washer will be required.*



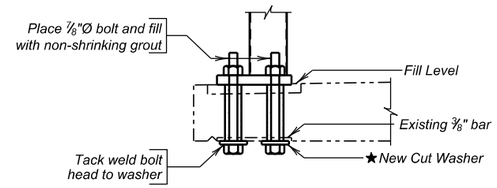
SECTION H - H
(Salvage Existing Reinforcing Steel)



SECTION H - H
(Bolt Replacement Type I)



SECTION I - I
(Coring & Removal - Actual configuration might vary)



SECTION I - I
(New Bolts & Plates)

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
	Remove Bridge Railing	Ft	326
⊛	Breakout Structural Concrete	CuYd	0.5
⊛	Class A45 Concrete, Bridge Repair	CuYd	0.5
	Steel Pedestrian Railing on Sidewalk	Ft	330.0
	Chain Link Fence for Bridge Sidewalk	Ft	330
⟠	Anchor Bolt Coring	Ft	15.0

⊛ *Quantity is based on the assumption that in 15 post locations, all the existing nuts can not be removed and Type I Bolt Replacement will occur.*

⟠ *Quantity is based on the assumption that in 30 bolt locations the existing nuts can not be removed and Type II Bolt Replacment will occur.*

LEGEND:

Shaded areas indicate limits of Concrete Breakout.

NORTH SIDEWALK RAILING DETAILS (C)

FOR

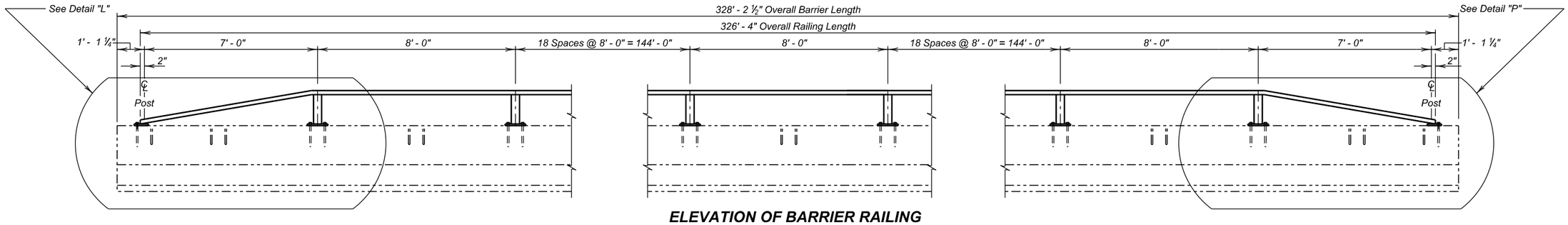
328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

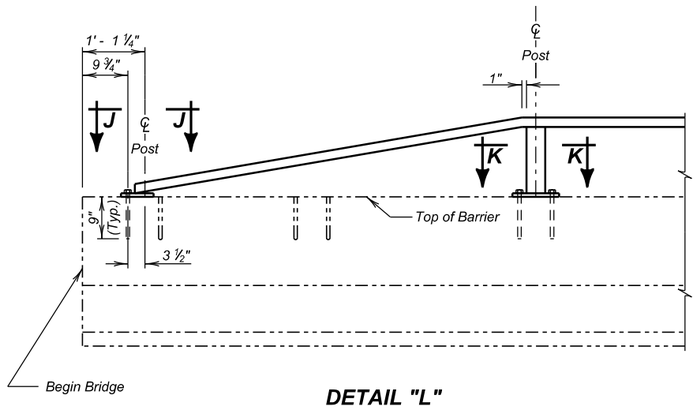
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA28		

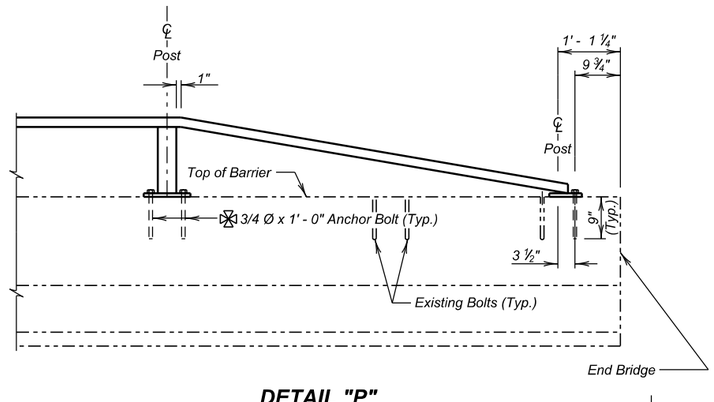
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	40	71



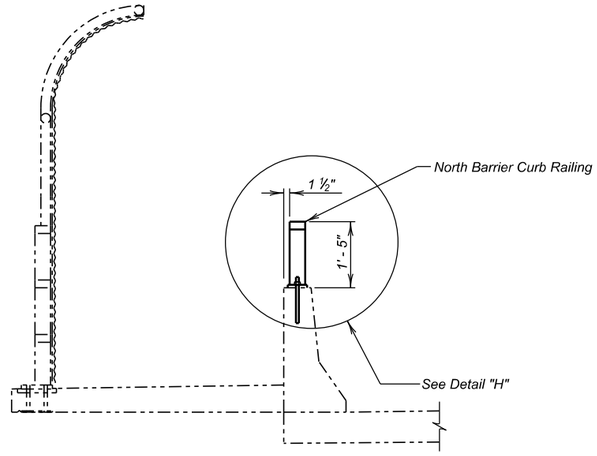
ELEVATION OF BARRIER RAILING



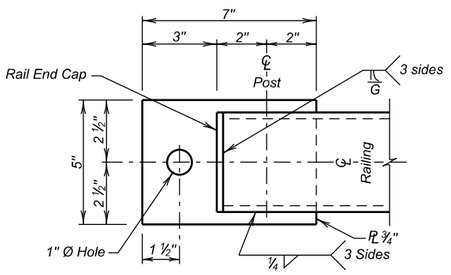
DETAIL "L"



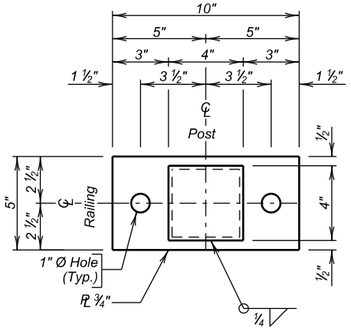
DETAIL "P"



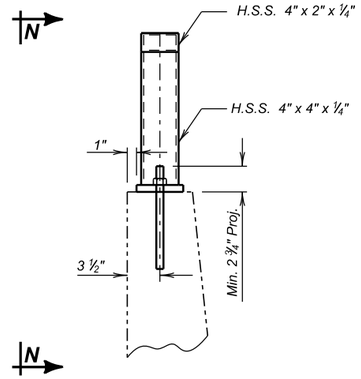
TYPICAL SECTION



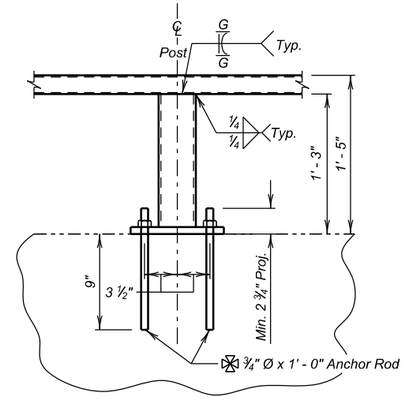
VIEW J - J



VIEW K - K

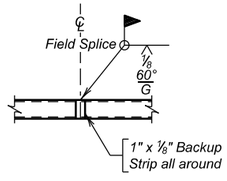


DETAIL "O"

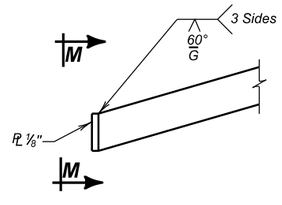


VIEW N - N

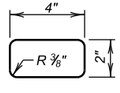
ASTM F1554 Grade 36



RAIL FIELD SPLICE



RAIL END CAP DETAIL



VIEW M - M

Notes:

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

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Install Dowel in Concrete	Each	82
Steel Pedestrian Railing on Concrete Barrier	Ft	326.3
Remove Bridge Railing	Ft	326

NORTH BARRIER CURB RAILING DETAILS

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

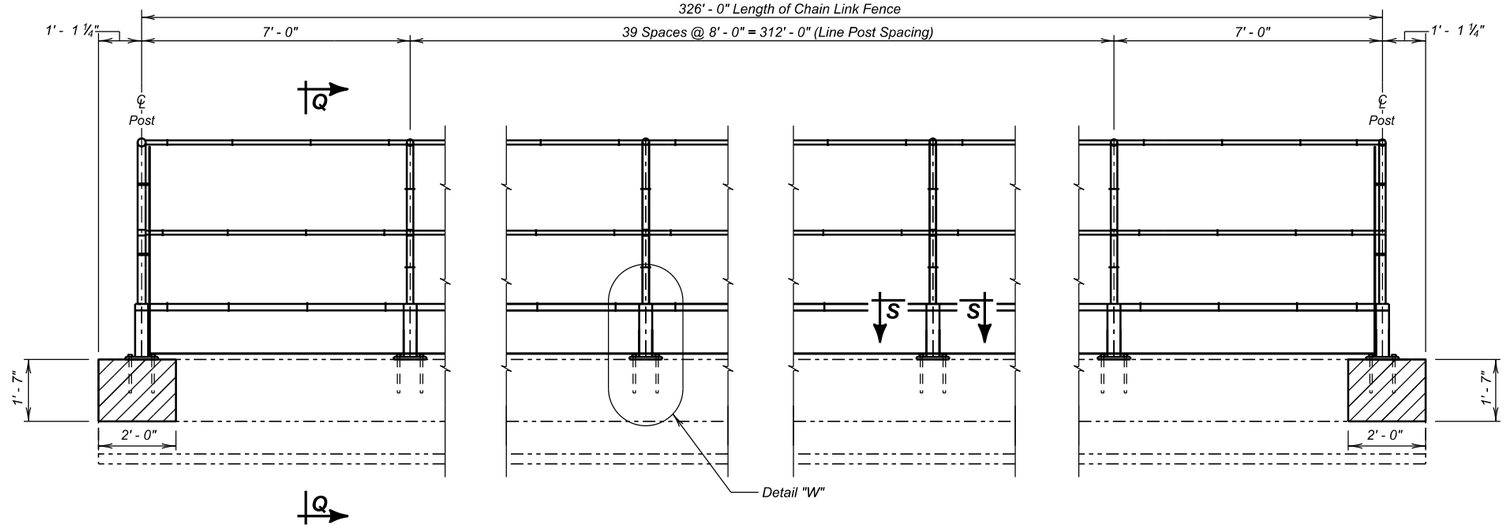
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

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

29 OF 47

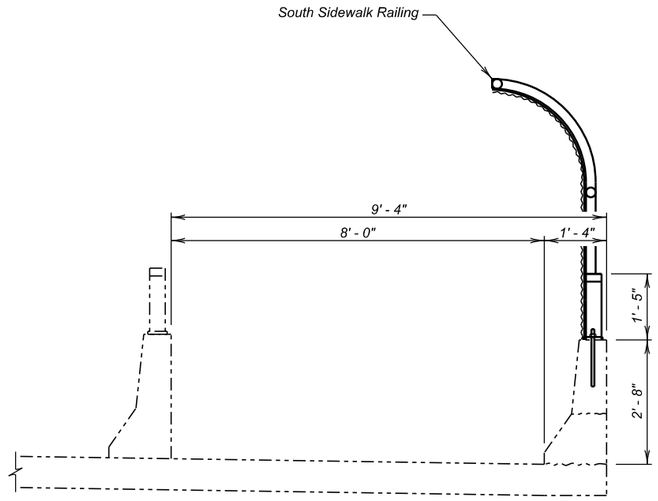
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA29		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	41	71

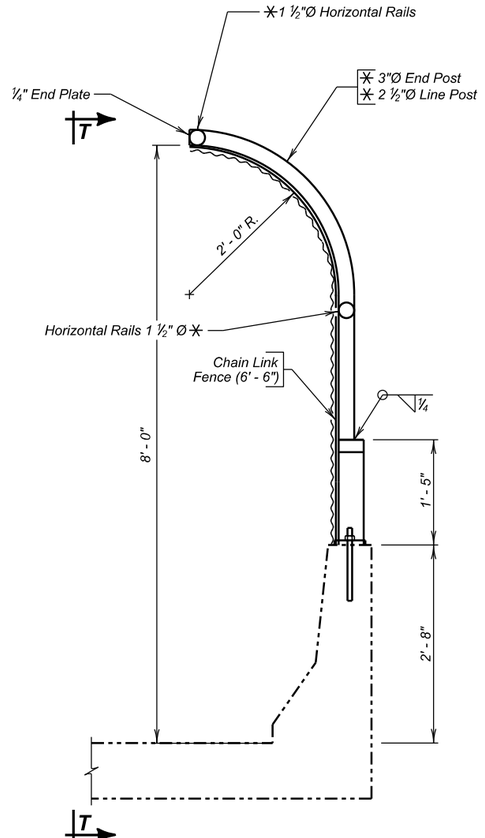


ELEVATION SIDEWALK RAILING

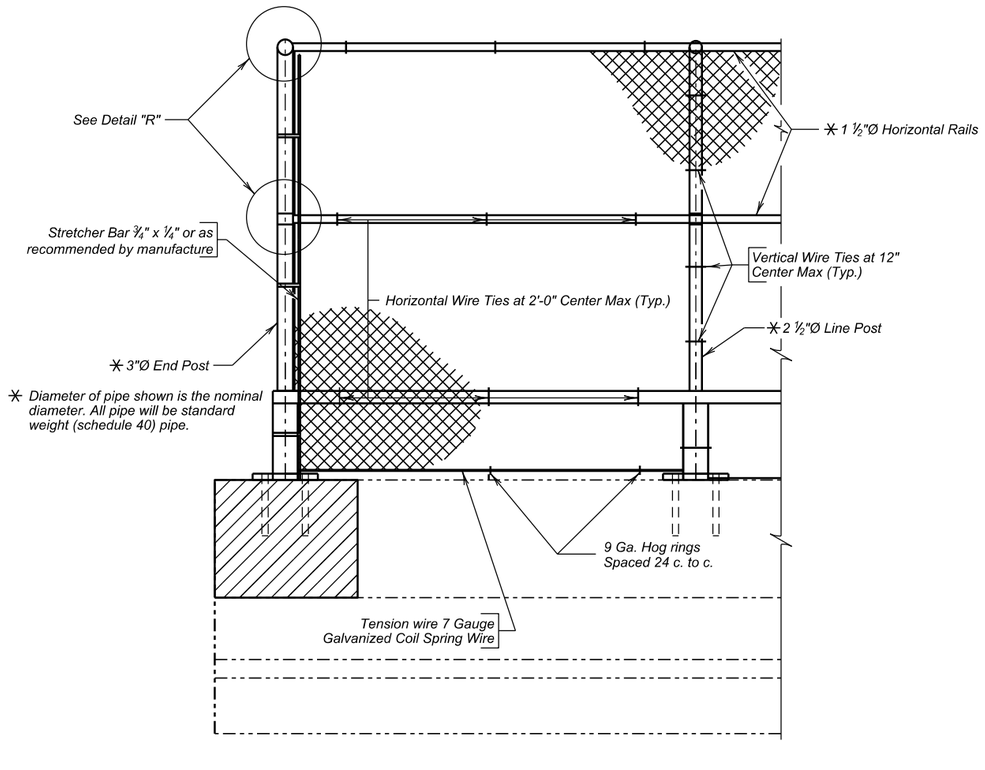
(Chainlink not shown for clarity)



TYPICAL SECTION



SECTION Q - Q



VIEW T - T

LEGEND:

Shaded areas indicate limits of Concrete Breakout.

SOUTH SIDEWALK RAILING DETAILS (A)

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

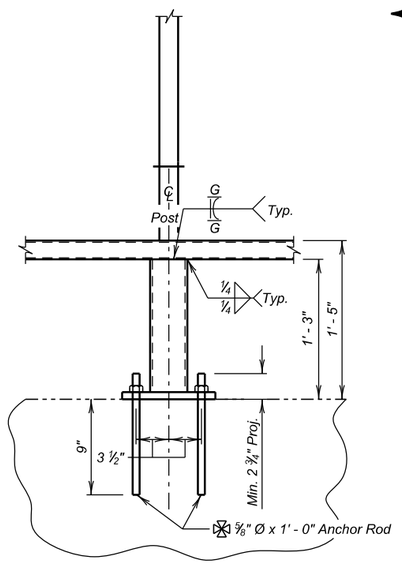
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

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

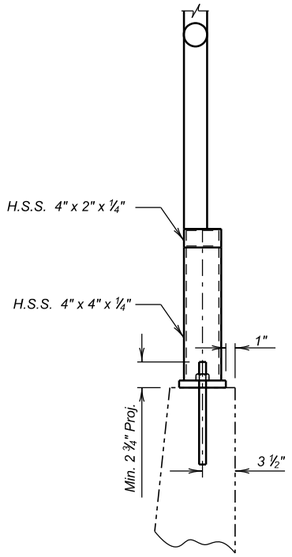
30 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A. Johnson BRIDGE ENGINEER
MINN092A	092AMA30		

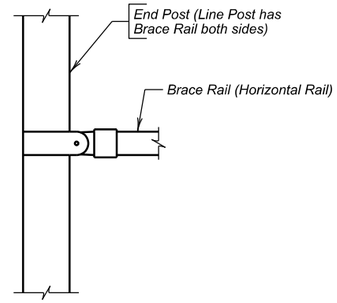
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	42	71



DETAIL "W"

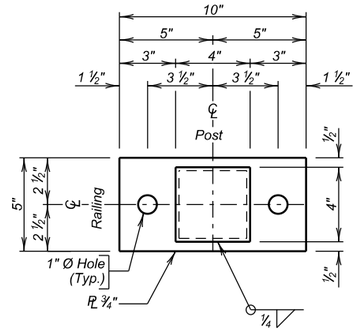


VIEW "X - X"

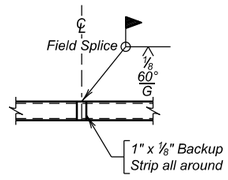


DETAIL "R"

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



VIEW S - S



RAIL FIELD SPLICE

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Install Dowel in Concrete	Each	84
Breakout Structural Concrete	CuYd	0.2
Remove Bridge Railing	Ft	326
Class A45 Concrete, Bridge Repair	CuYd	0.2
Steel Pedestrian Railing on Sidewalk	Ft	326.0
Chain Link Fence for Bridge Sidewalk	Ft	326
Galvanic Anode	Each	4

SOUTH SIDEWALK RAILING DETAILS (B)

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

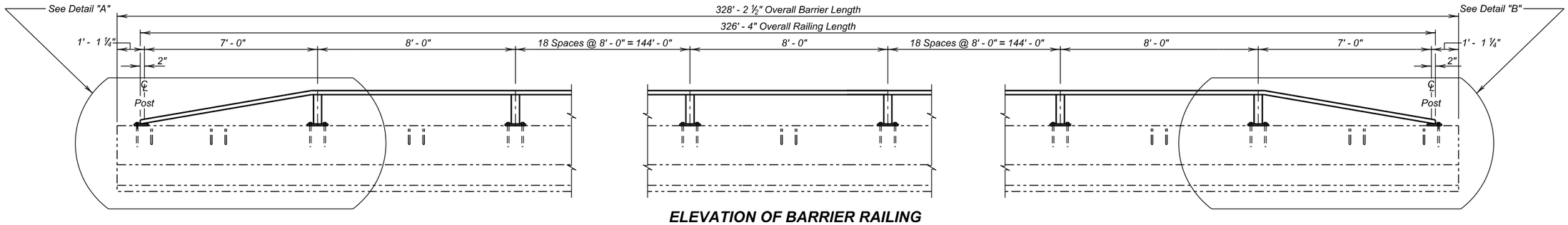
45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

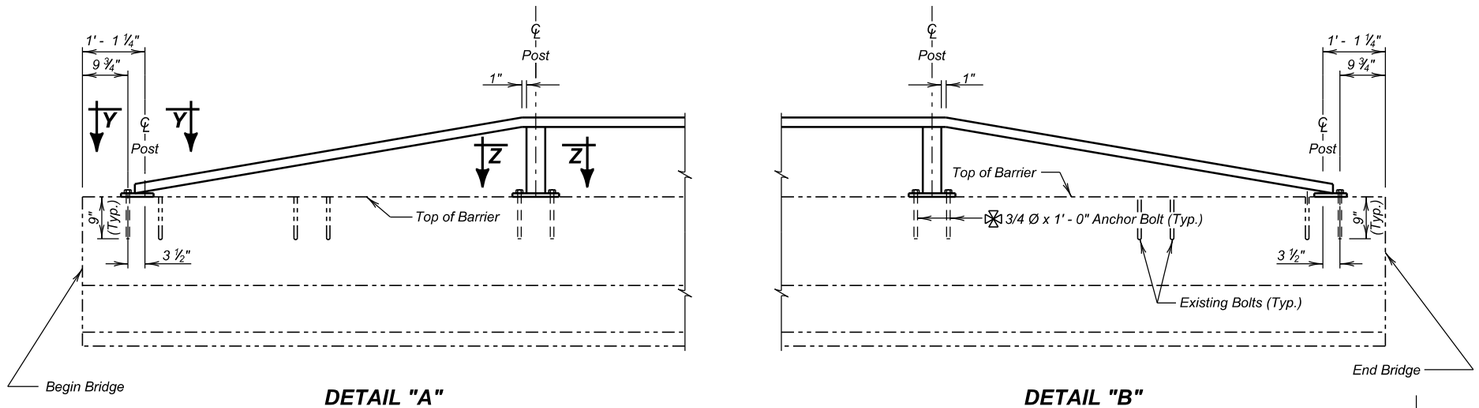
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA31		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	43	71

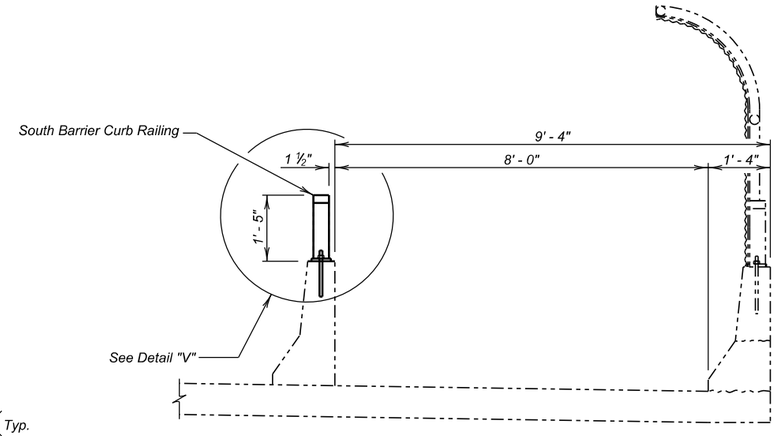


ELEVATION OF BARRIER RAILING

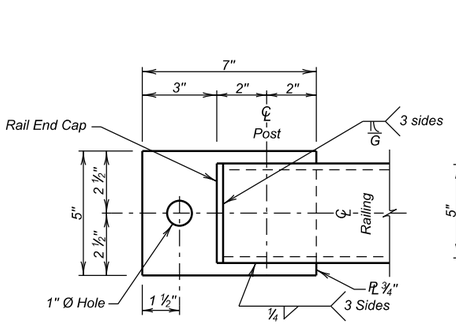


DETAIL "A"

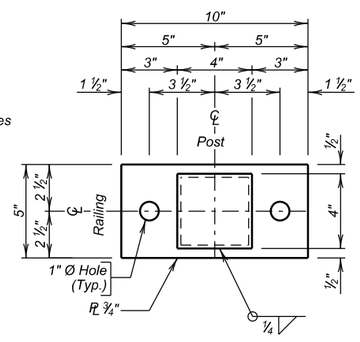
DETAIL "B"



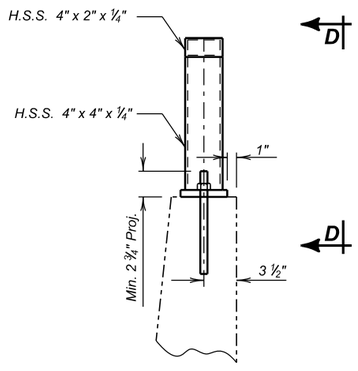
TYPICAL SECTION



VIEW Y - Y



VIEW Z - Z



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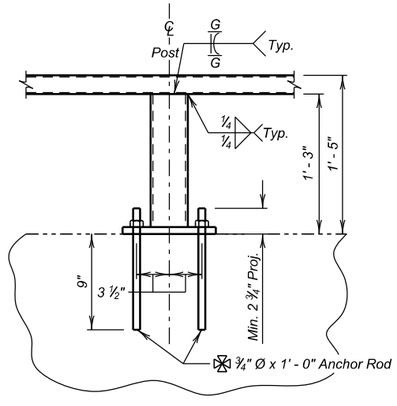
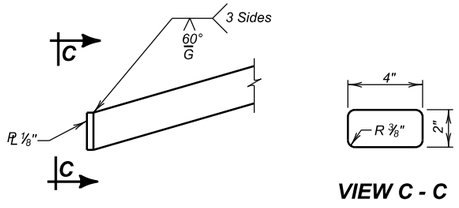


VIEW D - D

ASTM F1554 Grade 36

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Install Dowel in Concrete	Each	82
Steel Pedestrian Railing on Concrete Barrier	Ft	326.3
Remove Bridge Railing	Ft	326

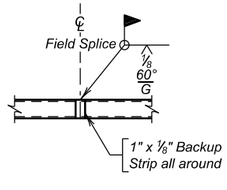


RAIL END CAP DETAIL

VIEW C - C

Notes:

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



RAIL FIELD SPLICE

SOUTH BARRIER CURB RAILING DETAILS

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY
OVER I-29
STR. NO. 50-173-235

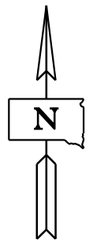
25° 23' L.H.F. SKEW
SEC. 36-T101N-R50W
IM 0292(93)76

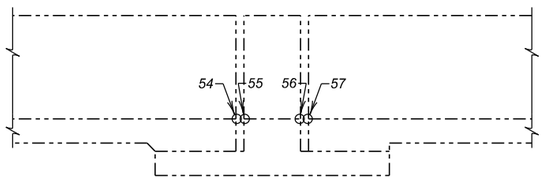
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

32 OF 47

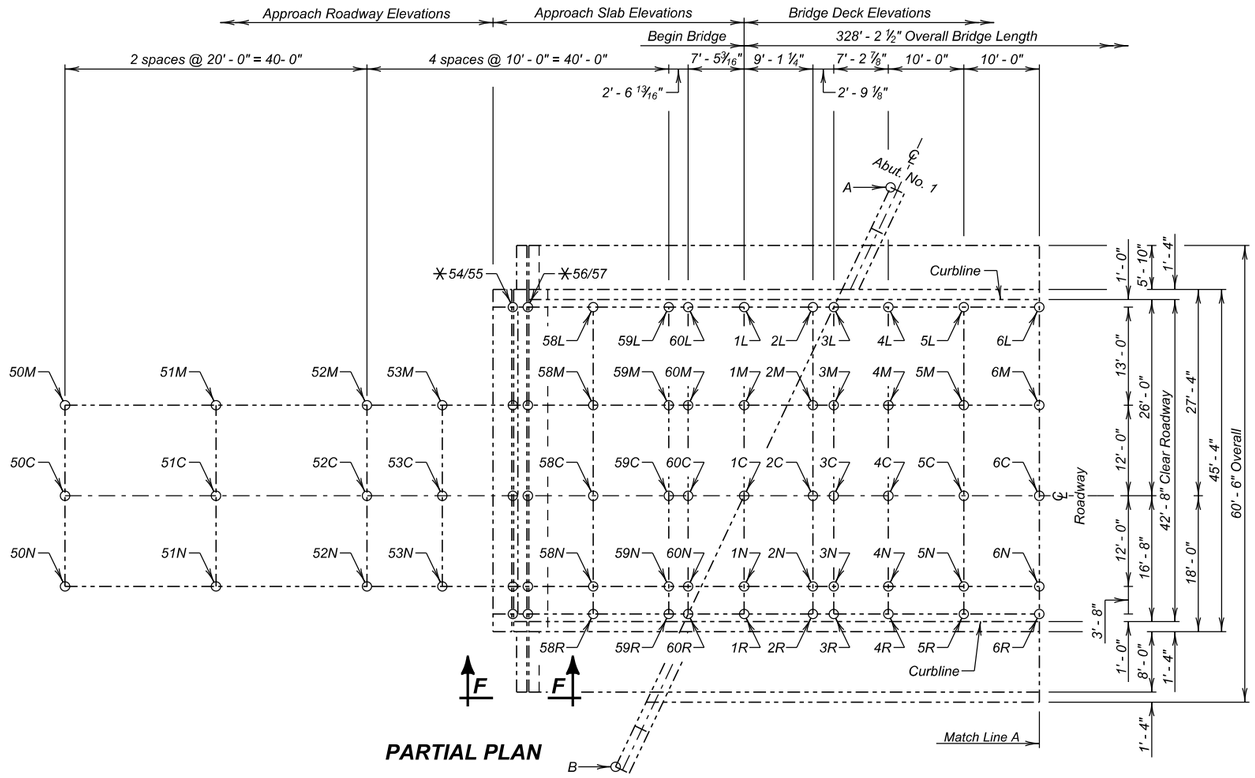
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	CM	Steve A Johnson BRIDGE ENGINEER
MINN092A	092AMA32		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	44	71





VIEW F - F



PARTIAL PLAN

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

Table of Elevations - Approach Roadway Elevations

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
		50M		50C		50N			
		51M		51C		51N			
		52M		52C		52N			
		53M		53C		53N			
54L		54M		54C		54N		54R	

Table of Elevations - Approach Slab Joints (See VIEW F - F) and Approach Slab

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
55L		55M		55C		55N		55R	
56L		56M		56C		56N		56R	
57L		57M		57C		57N		57R	
58L		58M		58C		58N		58R	
59L		59M		59C		59N		59R	
60L		60M		60C		60N			
1L		1M							
2L									

Table of Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
								60R	
				1C		1N		1R	
		2M		2C		2N		2R	
3L		3M		3C		3N		3R	
4L		4M		4C		4N		4R	
5L		5M		5C		5N		5R	
6L		6M		6C		6N		6R	

Bridge Ends	
Location	Elevation
A	
B	

Benchmark Description:

B.M. # 1
Location Description: NW Corner on Curb
Elevation: 1463.00

NOTE:

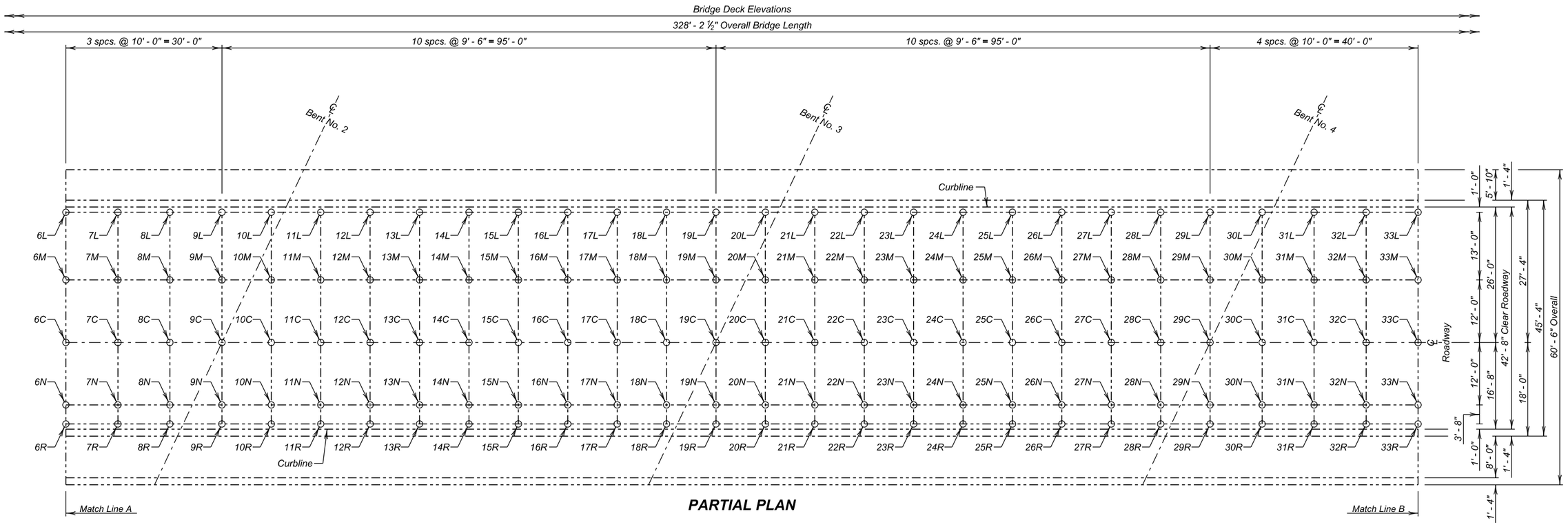
The As-Built Elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Region Bridge Engineer.

AS-BUILT ELEVATION SURVEY REQUEST (A)
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025 — 33 OF 47

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steven A. Johnson BRIDGE ENGINEER
MINN092A	092ARA33		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	45	71



PARTIAL PLAN

Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
6L		6M		6C		6N		6R	
7L		7M		7C		7N		7R	
8L		8M		8C		8N		8R	
9L		9M		9C		9N		9R	
10L		10M		10C		10N		10R	
11L		11M		11C		11N		11R	
12L		12M		12C		12N		12R	
13L		13M		13C		13N		13R	
14L		14M		14C		14N		14R	
15L		15M		15C		15N		15R	
16L		16M		16C		16N		16R	
17L		17M		17C		17N		17R	
18L		18M		18C		18N		18R	
19L		19M		19C		19N		19R	
20L		20M		20C		20N		20R	
21L		21M		21C		21N		21R	
22L		22M		22C		22N		22R	
23L		23M		23C		23N		23R	
24L		24M		24C		24N		24R	
25L		25M		25C		25N		25R	

Table of Elevations - Bridge Deck (Continued)									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
26L		26M		26C		26N		26R	
27L		27M		27C		27N		27R	
28L		28M		28C		28N		28R	
29L		29M		29C		29N		29R	
30L		30M		30C		30N		30R	
31L		31M		31C		31N		31R	
32L		32M		32C		32N		32R	
33L		33M		33C		33N		33R	

NOTE:

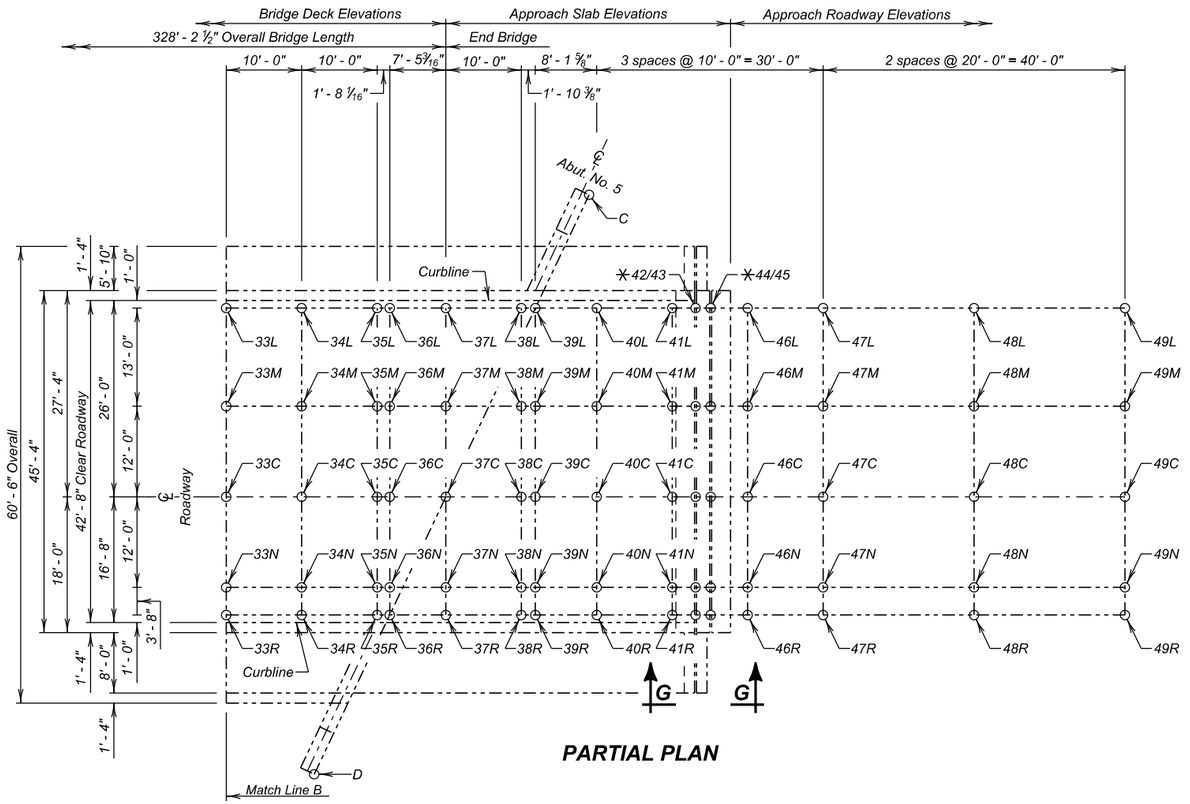
The As-Built Elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Region Bridge Engineer.

AS-BUILT ELEVATION SURVEY REQUEST (B)
FOR
328' - 2½" PRESTR. CONC. GIRDER BRIDGE
45' - 8" ROADWAY — 25° 23' L.H.F. SKEW
OVER I-29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(93)76

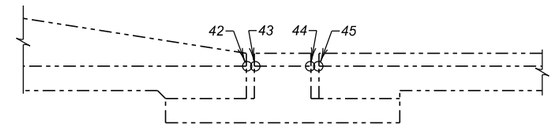
MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA34		

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	46	71



PARTIAL PLAN



VIEW G - G

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

Table of Elevations - Bridge Deck									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
33L		33M		33C		33N		33R	
34L		34M		34C		34N		34R	
35L		35M		35C		35N		35R	
36L		36M		36C		36N		36R	
37L		37M		37C					
38L									
39L									

Table of Elevations - Approach Slab Joints (See VIEW G - G) and Approach Slab									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
						37N		37R	
		38M		38C		38N		38R	
		39M		39C		39N		39R	
40L		40M		40C		40N		40R	
41L		41M		41C		41N		41R	
42L		42M		42C		42N		42R	
43L		43M		43C		43N		43R	
44L		44M		44C		44N		44R	

Table of Elevations - Approach Roadway Elevations									
Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation	Location	Elevation
45L		45M		45C		45N		45R	
46L		46M		46C		46N		46R	
47L		47M		47C		47N		47R	
48L		48M		48C		48N		48R	
49L		49M		49C		49N		49R	

Bridge Ends	
Location	Elevation
C	
D	

NOTE:

The As-Built Elevations will be based on the National Geodetic Survey North American Vertical Datum of 1988 and will be recorded at the locations shown by the table on this sheet. The completed table will be given to the Engineer who will forward a copy to the Bridge Maintenance Engineer in the Office of Bridge Design and the Region Bridge Engineer.

AS-BUILT ELEVATION SURVEY REQUEST (C)

FOR

328' - 2½" PRESTR. CONC. GIRDER BRIDGE

45' - 8" ROADWAY — 25° 23' L.H.F. SKEW

OVER I-29 — SEC. 36-T101N-R50W

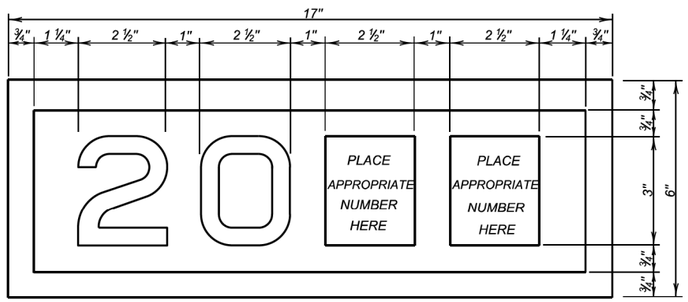
STR. NO. 50-173-235 — IM 0292(93)76

MINNEHAHA COUNTY

S. D. DEPT. OF TRANSPORTATION

DECEMBER 2025

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CM	CMM	KR	Steve A Johnson BRIDGE ENGINEER
MINN092A	092ARA35		



YEAR PLATE DETAILS

GENERAL NOTES:

1. *Year plates of the general dimensions shown will be constructed on all box culverts and bridges. The year plates will be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.*

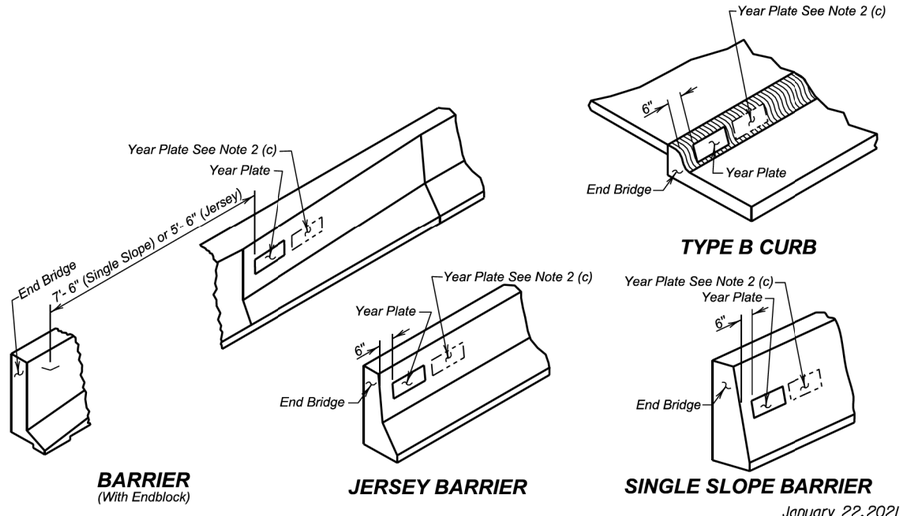
2. *Year plates will be located on structure(s) as follows:*

   a. *On cast-in-place box culverts the year plates will be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate will be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate will be centered in an adjacent barrel.*

   b. *On bridges with six (6) inch curbs, "Jersey" shaped barriers with no endblocks, or "Single Slope" shaped barriers with no endblocks, the year plate will be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with barrier endblocks, the year plate will be centered on the upper sloped portion of the barrier approximately 5'- 6" for "Jersey" shaped barriers from the end of the bridge and 7'-6" for "Single Slope" shaped barriers from the end of bridge, or as designated by the Engineer. There will be one year plate at each end of the bridge on opposite sides.*

   c. *When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.*

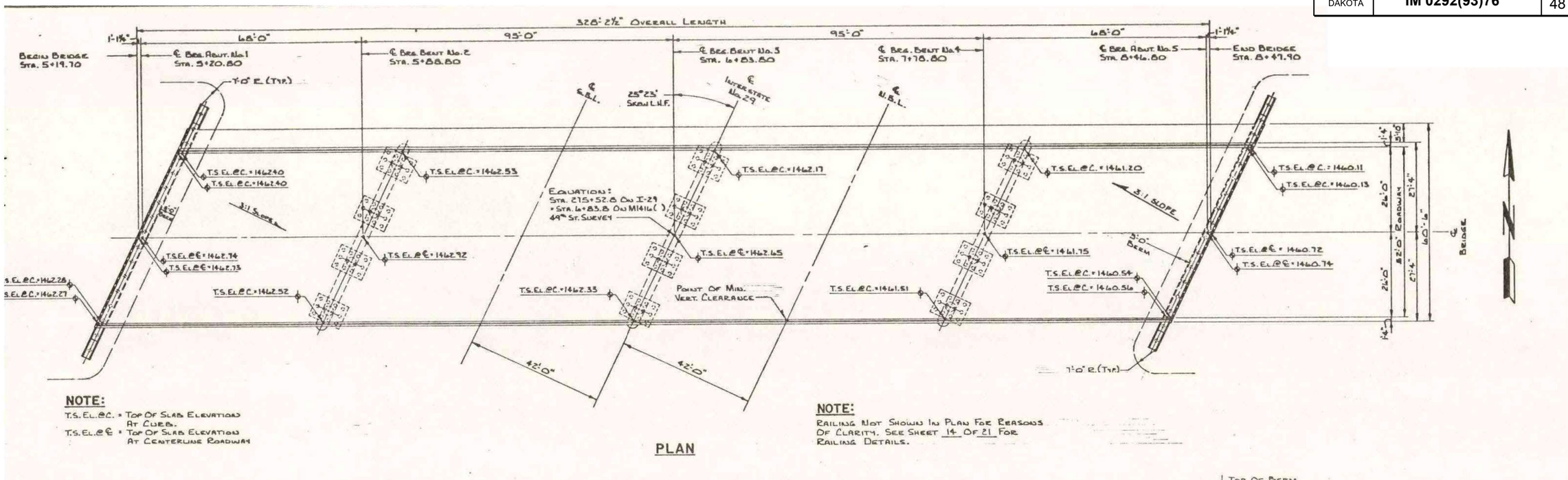
3. *There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.*



January 22, 2021

Published Date: 2026	SDDOT	***YEAR PLATE DETAILS***	***PLATE NUMBER*** *460.02*
			Sheet 1 Of 1

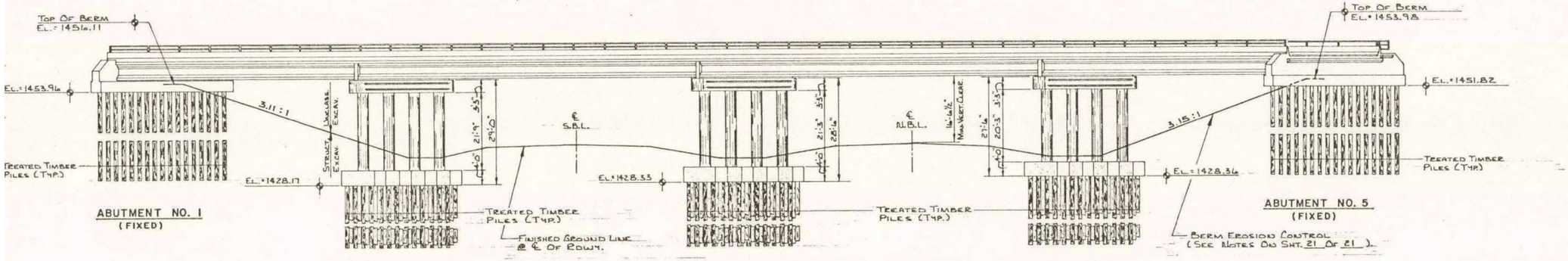
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	48	71



NOTE:
T.S. El.℄C. = Top Of Slab Elevation At Curb.
T.S. El.℄℄ = Top Of Slab Elevation At Centerline Roadway

NOTE:
Railing Not Shown In Plan For Reasons Of Clarity. See Sheet 14 Of 21 For Railing Details.

PLAN



ELEVATION

ORIGINAL CONSTRUCTION PLANS

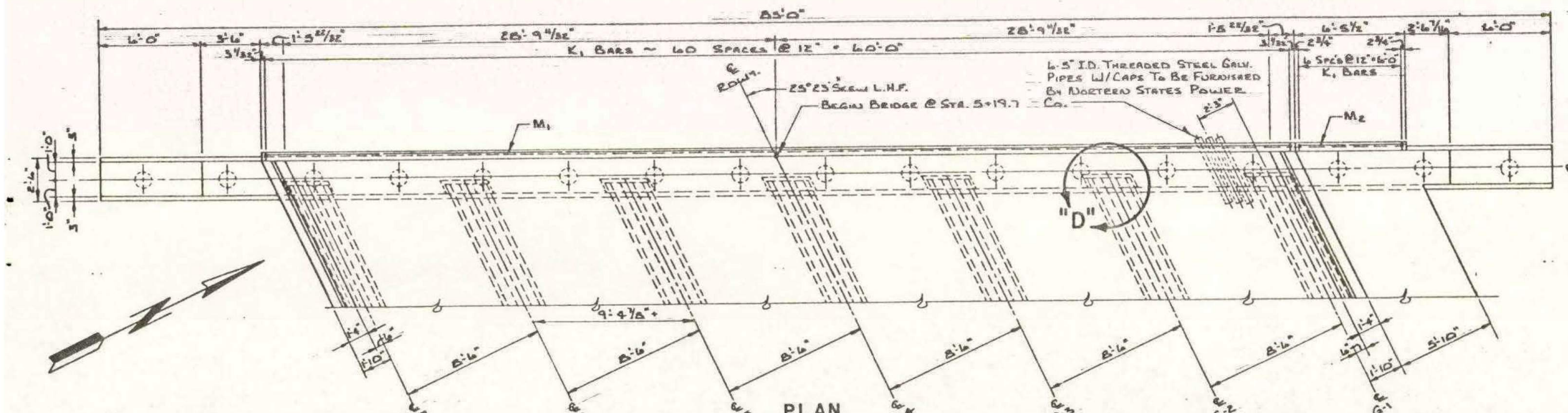
GENERAL DRAWING
FOR
328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION — SEC. 36-T101N-R50W
52'-0" ROADWAY — 25°23' SKEW L.H.F.
OVER I-29 STA. 275+52.8 — M 1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

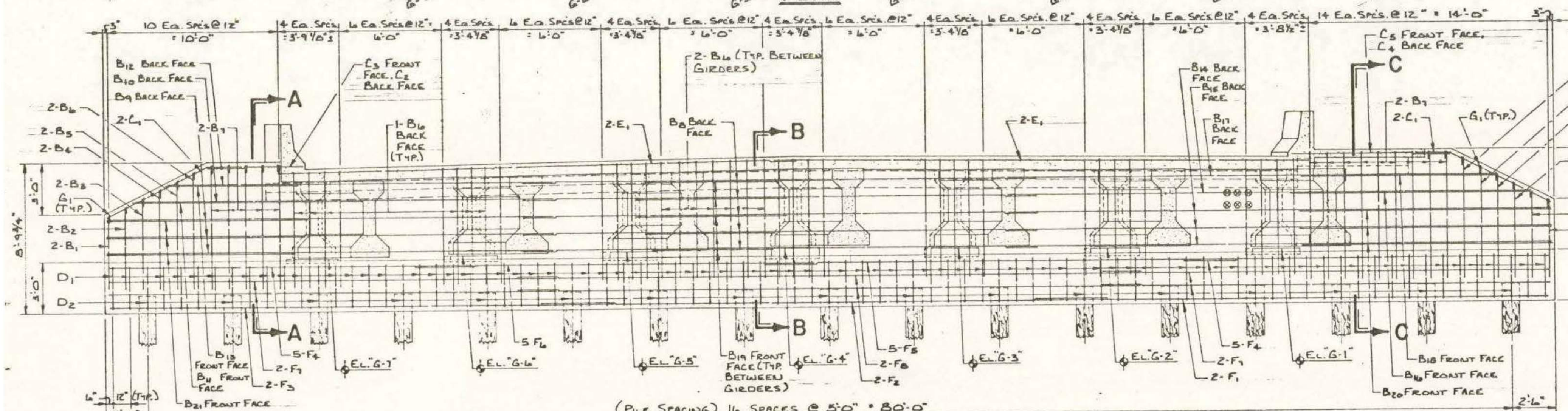
MINNEHAHA COUNTY
SOUTH DAKOTA

PREPARED BY — HS 20-44
BANNER ASSOCIATES, INC. — & ALTERNATE
CONSULTING ENGINEERS — STR. NO. 50-173-235
BROOKINGS, SOUTH DAKOTA — (37) OF (47)
MAY, 1979 — -X281-

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
D.B.M.	R.A.R.	F.J.R.	BRIDGE ENGINEER

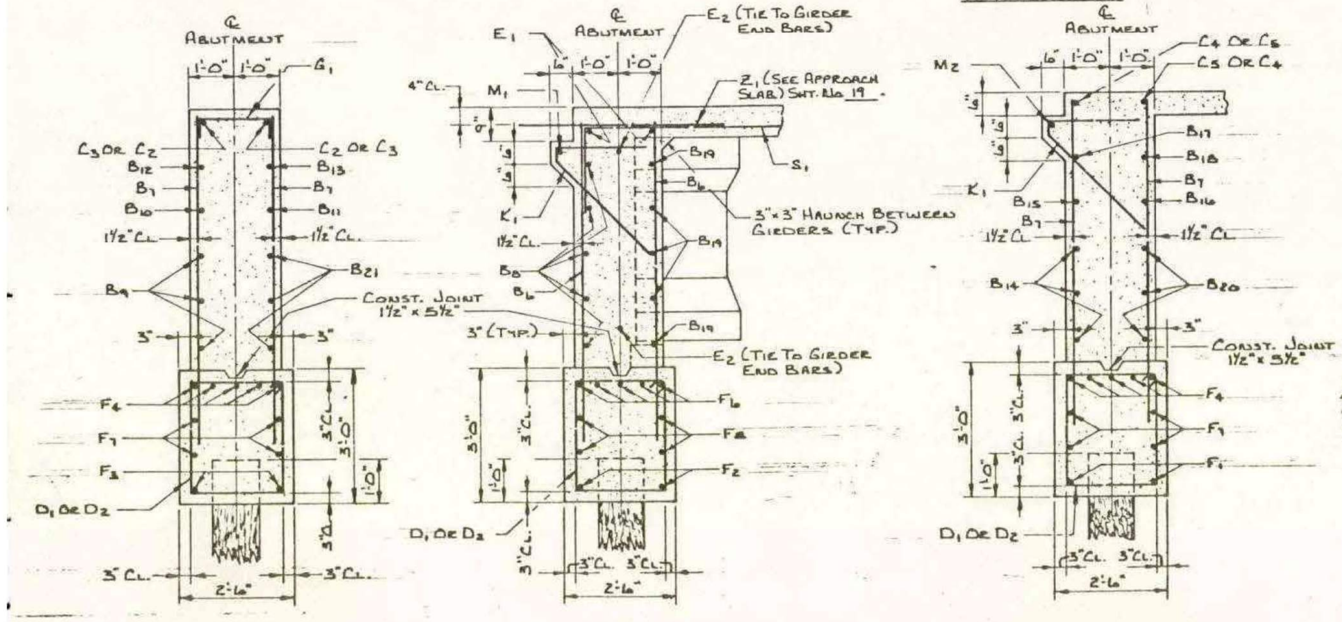


PLAN



ELEVATION

ORIGINAL CONSTRUCTION PLANS

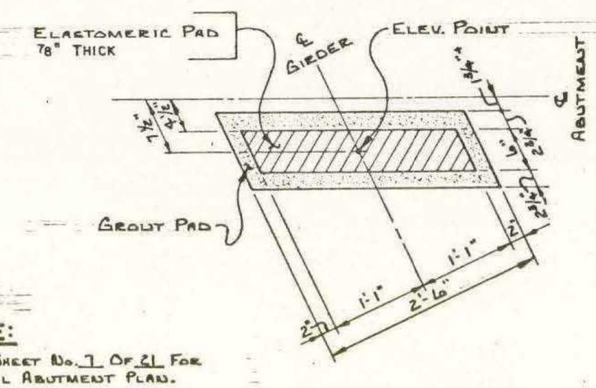


SECTION A-A

SECTION B-B

SECTION C-C

NOTE:
See Sheet No. 7 Of 21 For Partial Abutment Plan.



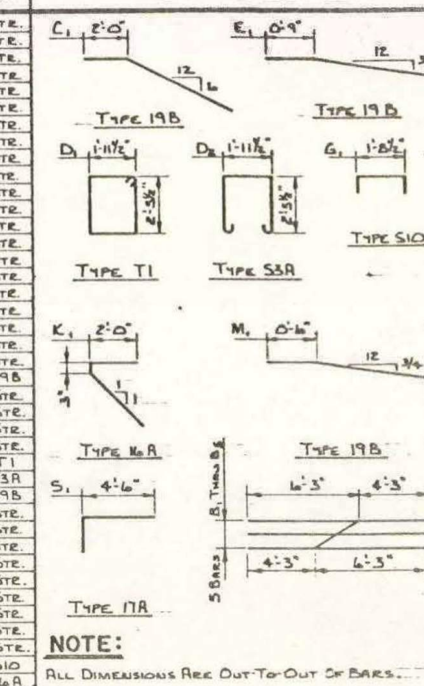
DETAIL "D"

TABLE OF GROUT PAD ELEVATIONS						
EL."G-1"	EL."G-2"	EL."G-3"	EL."G-4"	EL."G-5"	EL."G-6"	EL."G-7"
1457.166	1457.276	1457.384	1457.493	1457.344	1457.195	1457.045

REINFORCING SCHEDULE
(ABUTMENT NO. 1)

Mk.	No.	Size	Length	Type
B1	4	5	4'-3"	Str.
B2	4	5	4'-9"	Str.
B3	4	5	5'-3"	Str.
B4	4	5	5'-9"	Str.
B5	4	5	6'-3"	Str.
B6	109	5	6'-10"	Str.
B7	28	5	7'-3"	Str.
B8	5	5	30'-0"	Str.
B9	3	5	26'-3"	Str.
B10	1	5	25'-9"	Str.
B11	1	5	10'-0"	Str.
B12	1	5	23'-9"	Str.
B13	1	5	7'-6"	Str.
B14	3	5	31'-9"	Str.
B15	1	5	30'-8"	Str.
B16	1	5	14'-3"	Str.
B17	1	5	28'-8"	Str.
B18	1	5	11'-6"	Str.
B19	30	5	6'-9"	Str.
B20	3	5	14'-9"	Str.
B21	3	5	10'-6"	Str.
C1	4	5	8'-6"	19B
C2	1	5	4'-9"	Str.
C3	1	5	5'-5"	Str.
C4	1	5	9'-10"	Str.
C5	1	5	9'-2"	Str.
D1	68	4	9'-9"	T1
D2	17	5	8'-0"	S3A
E1	4	5	31'-0"	19B
E2	4	5	31'-6"	Str.
F1	2	9	30'-0"	Str.
F2	2	9	33'-3"	Str.
F3	2	9	29'-3"	Str.
F4	10	6	21'-3"	Str.
F5	5	6	28'-0"	Str.
F6	5	6	23'-0"	Str.
F7	8	6	26'-3"	Str.
F8	4	6	36'-6"	Str.
G1	19	4	2'-6"	S10
K1	68	4	5'-3"	16A
M1	2	4	30'-9"	19B
M2	1	4	6'-0"	Str.
S1	63	5	6'-8"	17A

Bending Details



NOTE:
All Dimensions Are Out-To-Out Of Bars.

ESTIMATED QUANTITIES
(ABUTMENT NO. 1)

Item	Unit	Quantity
ΔClass "A" Concrete, Bridge	Cu. Yds.	54.3
Reinforcement, Concrete Masonry	Lbs.	5,415
Furnish Timber Test Piles	Lin. Ft.	@ 60' = 60'
Drive Timber Test Piles	Lin. Ft.	@ 60' = 60'
Furnish Timber Piles	Lin. Ft.	16 @ 55' = 880'
Drive Timber Piles	Lin. Ft.	16 @ 55' = 880'
Preboring Piling	Lin. Ft.	@ 15' = 255'
Structure Excavation, Bridge	Cu. Yds.	40

Δ Includes 0.2 Cu. Yds. For Grout Pads. Does Not Include Slab And Barrier Curb Directly Above Abutment Backwall.

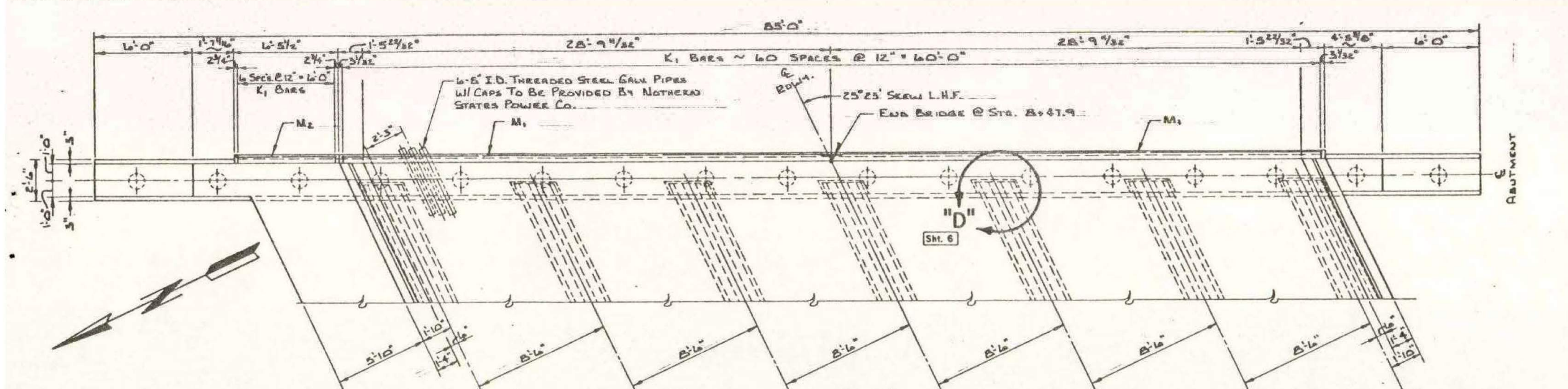
ABUTMENT NO. 1 DETAILS
FOR
328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION — SEC. 36-T101N-R50W
52'-0" ROADWAY — 25° 23' SKEW L.H.F.
OVER I-29 STA. 275+52.8 — M1416(4)URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

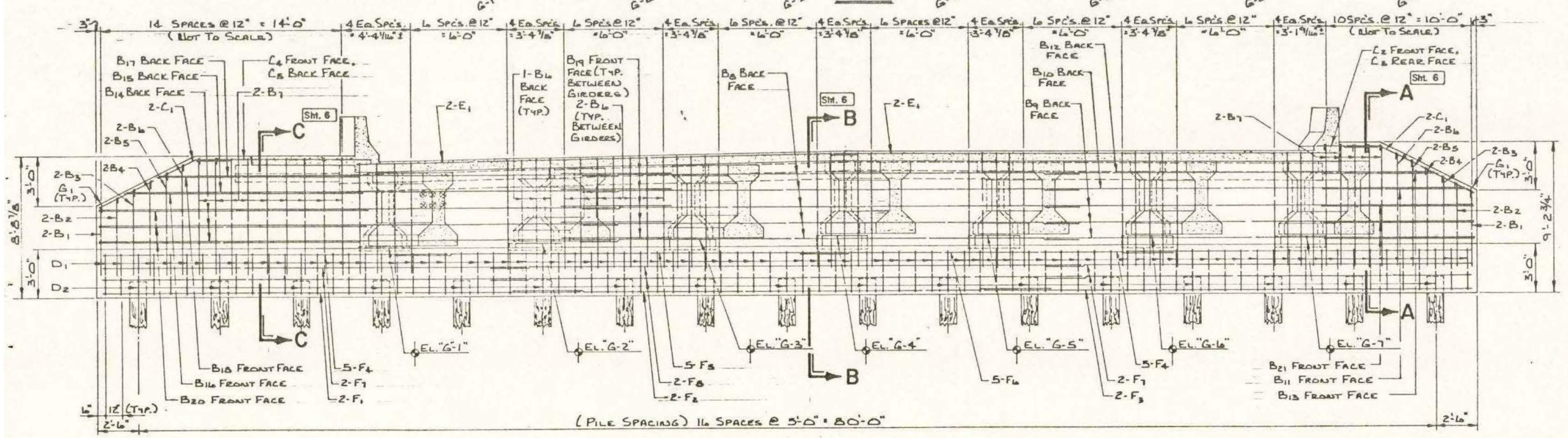
MINNEHAHA COUNTY
SOUTH DAKOTA

PREPARED BY — HS 20-44
BANNER ASSOCIATES, INC. — & ALTERNATE
CONSULTING ENGINEERS — STR. NO. 50-173-235
BROOKINGS, SOUTH DAKOTA
MAY, 1979 — X281

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED
D.B.M.	R.A.R.	F.J.R.	BRIDGE ENGINEER

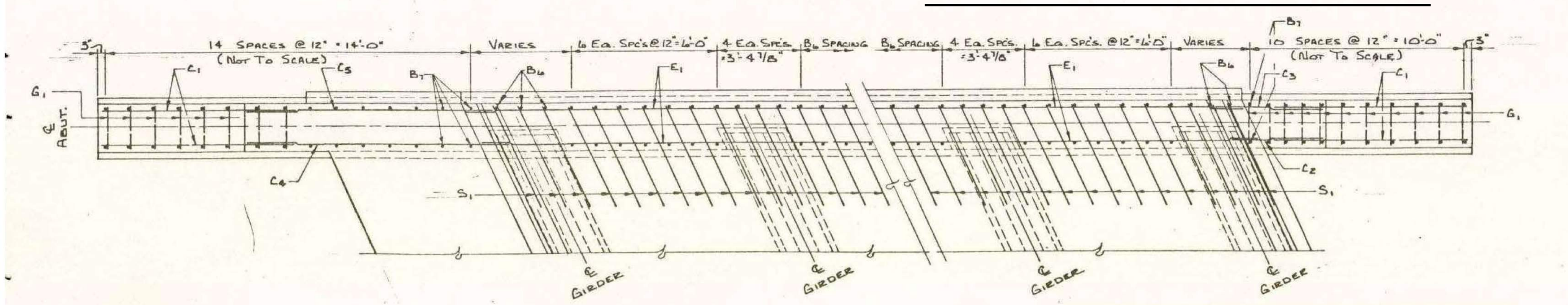


PLAN



ELEVATION

ORIGINAL CONSTRUCTION PLANS

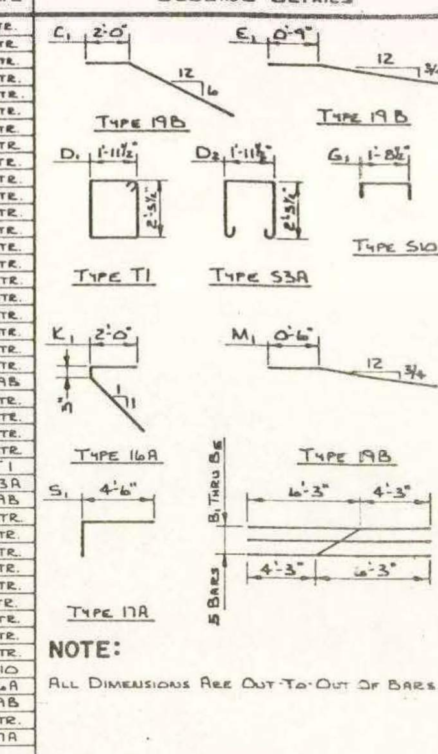


PARTIAL ABUTMENT PLAN

REINFORCING SCHEDULE
(ABUTMENT NO. 5)

Mk.	No.	Size	Length	Type
B_1	4	5	4'-3"	STR.
B_2	4	5	4'-9"	STR.
B_3	4	5	5'-3"	STR.
B_4	4	5	5'-9"	STR.
B_5	4	5	6'-3"	STR.
B_6	109	5	6'-10"	STR.
B_7	28	5	7'-3"	STR.
B_8	5	5	30'-0"	STR.
B_9	3	5	26'-3"	STR.
B_{10}	1	5	25'-9"	STR.
B_{11}	1	5	10'-0"	STR.
B_{12}	1	5	23'-9"	STR.
B_{13}	1	5	7'-6"	STR.
B_{14}	3	5	31'-9"	STR.
B_{15}	1	5	30'-8"	STR.
B_{16}	1	5	14'-3"	STR.
B_{17}	1	5	28'-8"	STR.
B_{18}	1	5	11'-6"	STR.
B_{19}	30	5	6'-9"	STR.
B_{20}	3	5	14'-9"	STR.
B_{21}	3	5	10'-6"	STR.
C_1	4	5	8'-6"	19B
C_2	1	5	4'-9"	STR.
C_3	1	5	5'-5"	STR.
C_4	1	5	9'-10"	STR.
C_5	1	5	9'-2"	STR.
D_1	68	4	9'-9"	T1
D_2	17	5	8'-0"	S3A
E_1	4	5	31'-0"	19B
E_2	4	5	31'-6"	STR.
F_1	2	9	30'-0"	STR.
F_2	2	9	33'-3"	STR.
F_3	2	9	29'-3"	STR.
F_4	10	6	21'-3"	STR.
F_5	5	6	28'-0"	STR.
F_6	5	6	23'-0"	STR.
F_7	8	6	26'-3"	STR.
F_8	4	6	36'-6"	STR.
G_1	19	4	2'-6"	S10
K_1	68	4	5'-3"	16A
M_1	2	4	30'-9"	19B
M_2	1	4	6'-0"	STR.
S_1	63	5	6'-8"	17A

BENDING DETAILS



NOTE:

ALL DIMENSIONS ARE OUT-TO-OUT OF BARS.

ESTIMATED QUANTITIES
(ABUTMENT NO. 5)

Item	Unit	Quantity
△ Class "A" Concrete, Bridge	Cu. Yds.	55.0
Reinforcement, Concrete Masonry	Lbs.	3415
Furnish Timber Test Piles	Lin. Ft.	1@65' = 65'
Drive Timber Test Piles	Lin. Ft.	1@65' = 65'
Furnish Timber Piles	Lin. Ft.	16@60' = 960'
Drive Timber Piles	Lin. Ft.	16@60' = 960'
Preboring Piling	Lin. Ft.	17@16' = 272'
Structure Excavation, Bridge	Cu. Yds.	40

△ Includes 0.3 Cu. Yds. for grout pads. Does not included slab and barrier curb directly above abutment backwall.

TABLE OF GROUT PAD ELEVATIONS

EL. "G-1"	EL. "G-2"	EL. "G-3"	EL. "G-4"	EL. "G-5"	EL. "G-6"	EL. "G-7"
1454.907	1455.106	1455.304	1455.502	1455.443	1455.384	1455.324

ABUTMENT NO. 5 DETAILS
FOR
328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION — SEC. 36-T101N-R50W
52'-0" ROADWAY — 25° 23' SKEW L.H.F.
OVER I-29 STA. 275+52.8 — M 1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

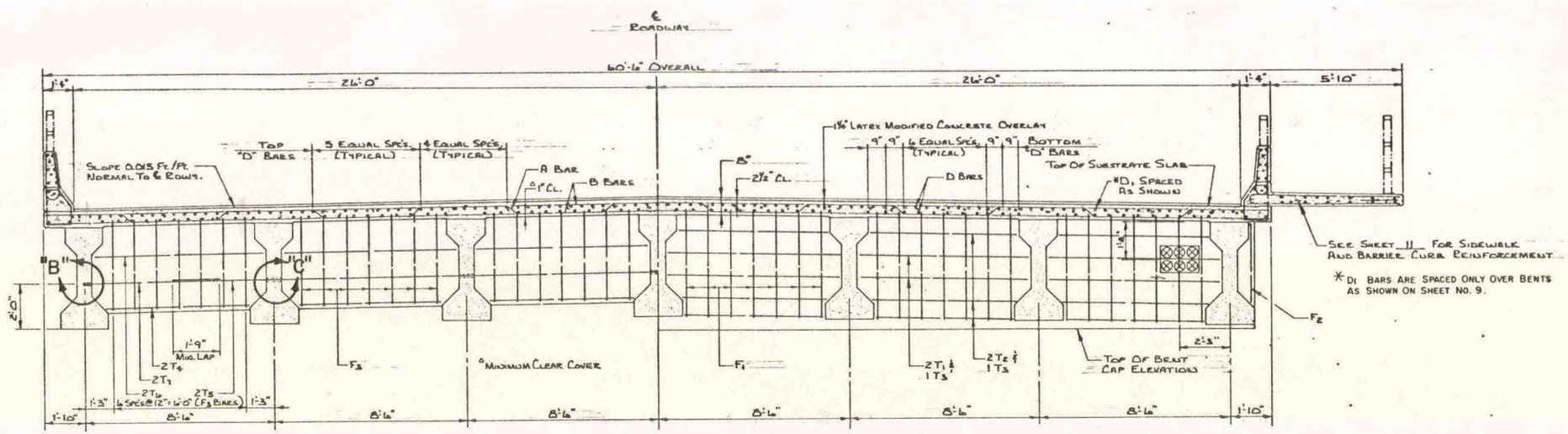
MINNEHAHA COUNTY
SOUTH DAKOTA

PREPARED BY
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
MAY, 1979 — -X281-

HS 20-44
& ALTERNATE
STR. NO. 50-173-235

39 OF 47

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED
D.B.M.	R.A.R.	F.J.R.	BRIDGE ENGINEER

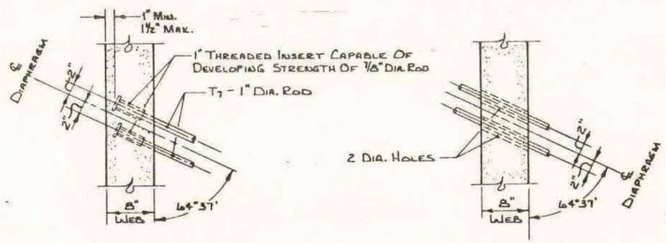


SECTION A-A SHT. 9

NOTE:

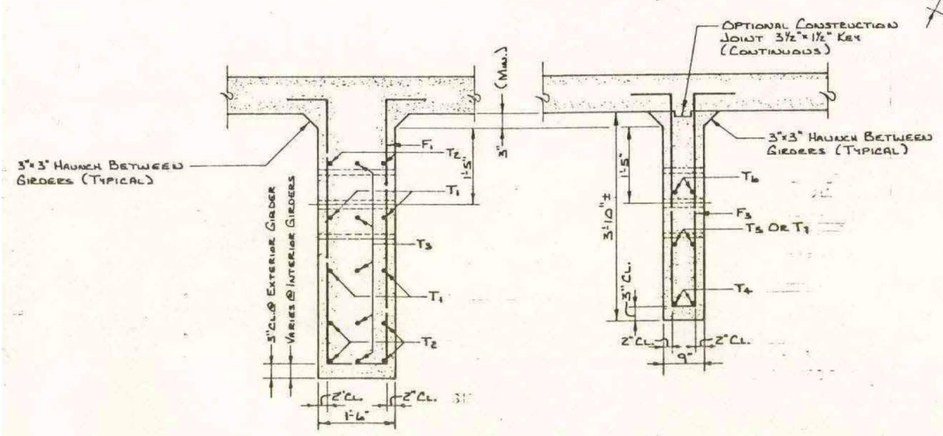
In Lieu Of Trussed Epoxy Coated "A" Bars, The Contractor May At His Own Option Substitute For Each "A" Bar One Straight Epoxy Coated Top Bar And One Straight Bottom Bar Of The Same Size And Length As The "B" Bars.

If The Contractor Elects To Substitute Straight Bars In Lieu Of Trussed "A" Bars, He Shall Do So At No Additional Cost. For Payment, Weight Will Be Based On That Of "A" Bars Without Regard To The Weight Of The Bars That May Be Substituted For Them.



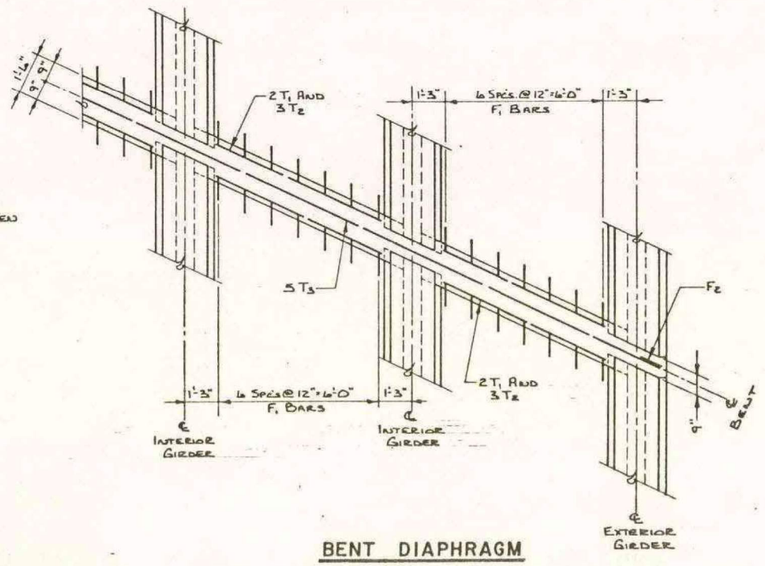
DETAIL "B"
(EXTERIOR SPAN GIRDERS)

DETAIL "C"
(INTERIOR SPAN GIRDERS)

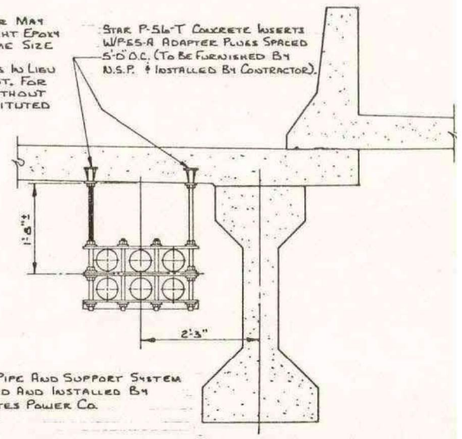


SECTION D-D SHT. 9

SECTION E-E SHT. 9



BENT DIAPHRAGM



NOTE:

ALL 5" I.D. GALV. PIPE AND SUPPORT SYSTEM TO BE FURNISHED AND INSTALLED BY NORTHERN STATES POWER CO.

ORIGINAL CONSTRUCTION PLANS

SUPERSTRUCTURE DETAILS FOR 328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION
52'-0" ROADWAY
OVER I-29 STA. 275+52.8

SEC. 36-T10N-R50W
25°23' SKEW L.H.F.
M 1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

MINNEHAHA COUNTY
SOUTH DAKOTA

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MAY, 1979 -X281-

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40 OF 47

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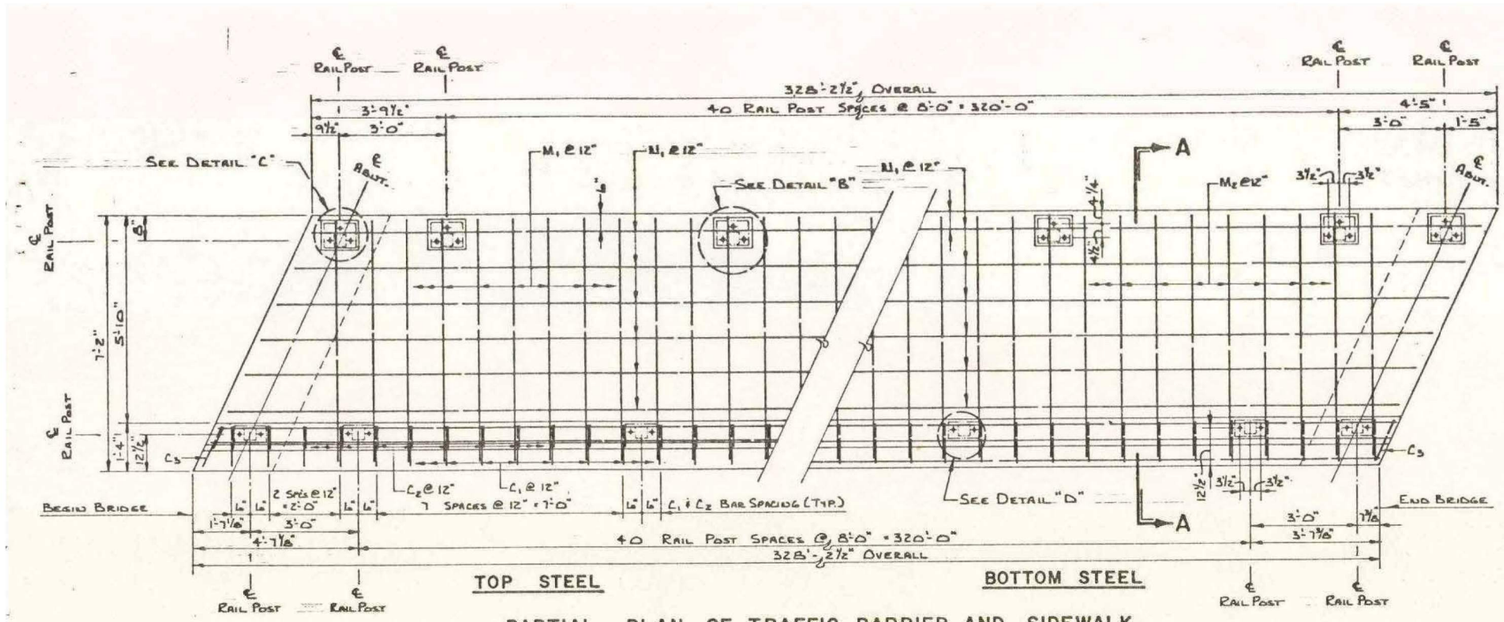
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	52	71

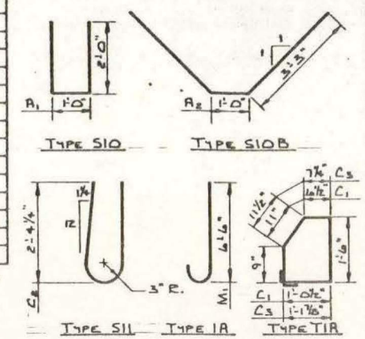


PARTIAL PLAN OF TRAFFIC BARRIER AND SIDEWALK

REINFORCING SCHEDULE
(FOR ONE SIDEWALK AND TWO TRAFFIC BARRIERS)

Mk.	No.	Size	Length	Type
A1	41	5	5'-0"	S10
A2	41	5	7'-6"	S10B
*C1	1656	4	5'-3"	T1A
*C2	1640	4	5'-1"	S11
C3	4	4	5'-6"	T1A
D2	180	5	38'-3"	STR.
M1	325	5	7'-1"	1A
M2	325	4	6'-9"	STR.
N1	108	4	38'-3"	STR.

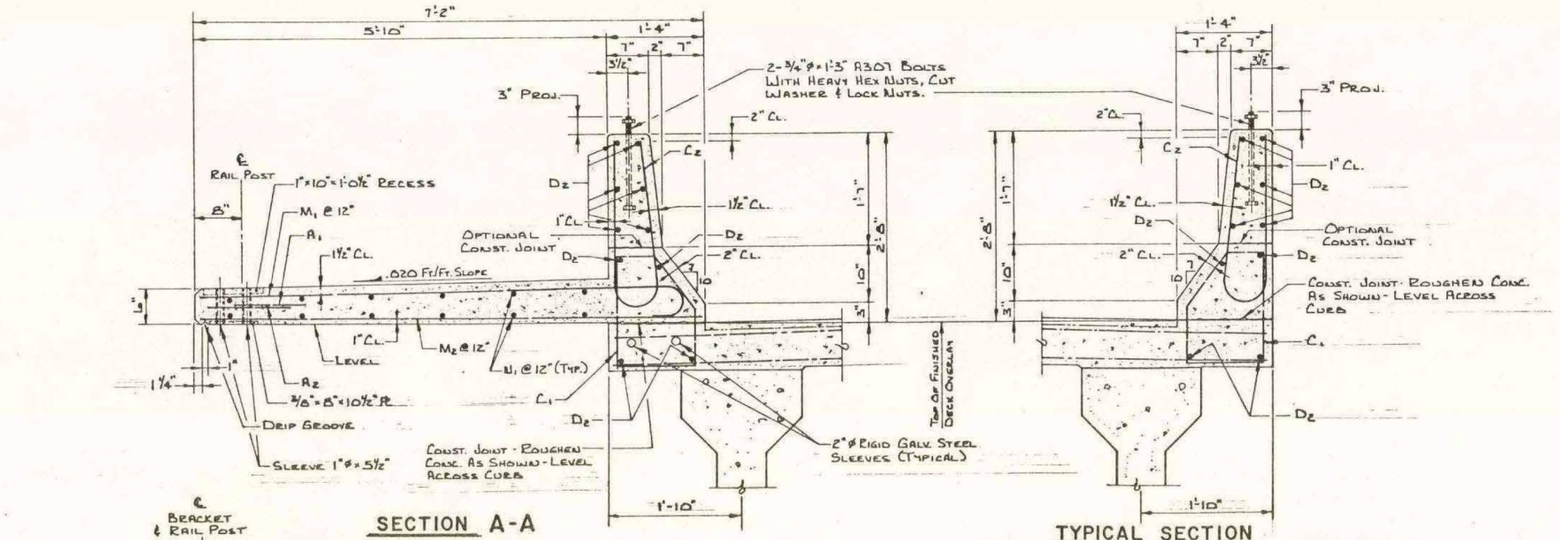
*ALL C1 AND C2 BARS SHALL BE EPOXY COATED.



NOTE:
ALL DIMENSIONS ARE OUT-TO-OUT OF BARS.

ESTIMATED QUANTITIES
(FOR ONE SIDEWALK AND TWO TRAFFIC BARRIERS)

ITEM	UNIT	QUANTITY
CLASS "A" CONCRETE, BRIDGE DECK	CU. YDS.	94.2
REINFORCEMENT, CONCRETE MASONRY	LBS.	14,460
EPOXY COATED REINF. FOR CONC. MASONRY	LBS.	4,540



ORIGINAL CONSTRUCTION PLANS

BARRIER CURB AND SIDEWALK DETAILS FOR 328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION
52'-0" ROADWAY
OVER I-29 STA. 275+52.8

SEC. 36-T10IN-R50W
25°23'SKEW L.H.F.
M1416(4)URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

MINNEHAHA COUNTY
SOUTH DAKOTA

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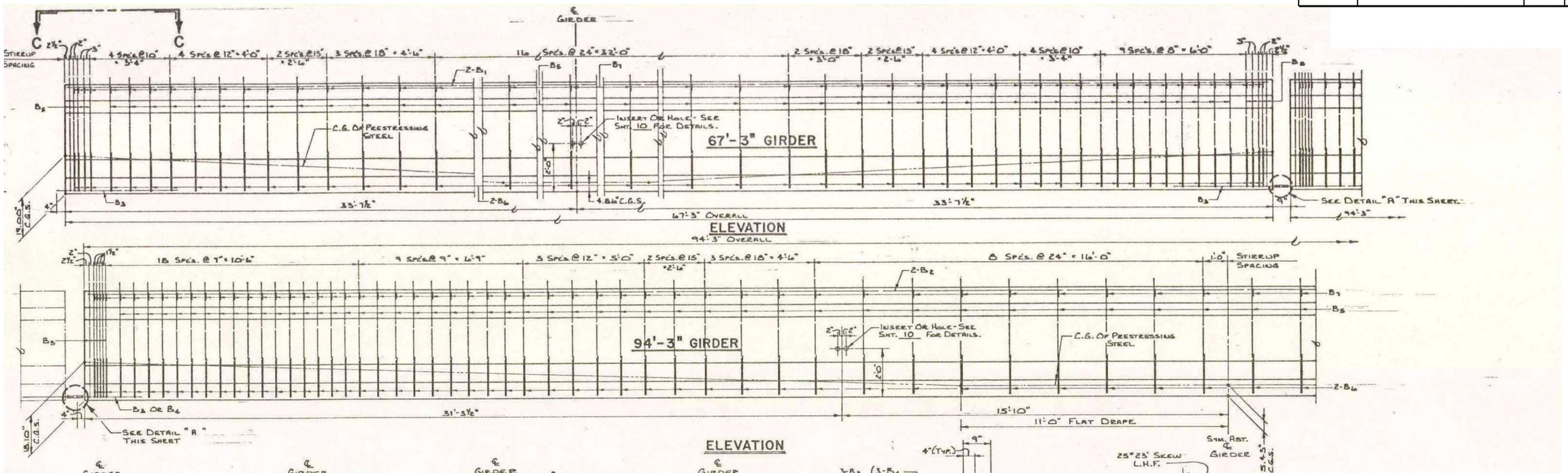
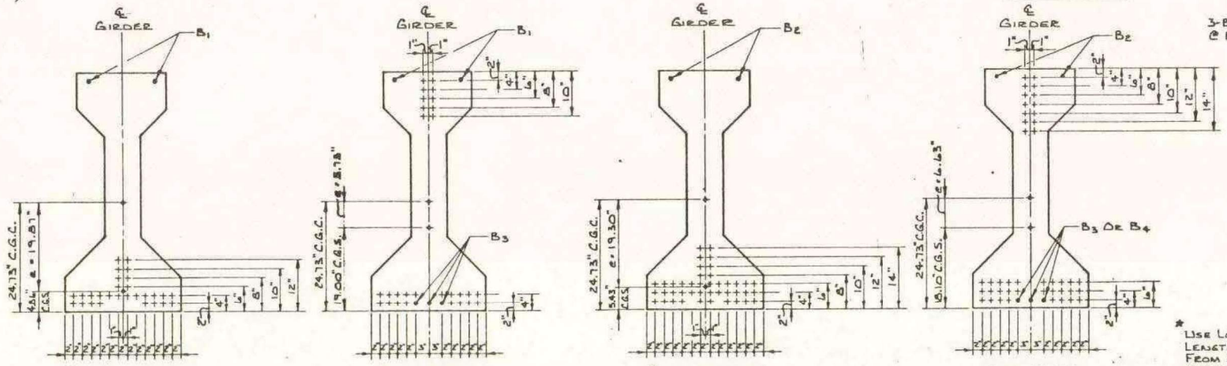
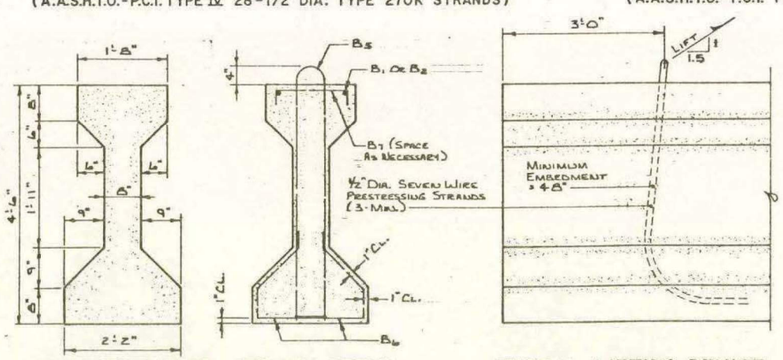
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	53	71



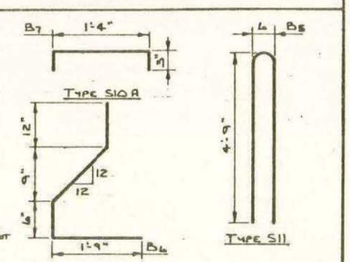




REINFORCING SCHEDULE (PER GIRDER)

67'-3" GIRDER					94'-3" GIRDER				
Mk.	No.	Size	Length	Type	Mk.	No.	Size	Length	Type
B1	4	10	35'-3"	STR.	B2	4	10	48'-9"	STR.
B3	16	11	5'-0"	STR.	B3	3	11	5'-0"	STR.
B5	59	4	10'-6"	S11	B4	3	10	5'-0"	STR.
B6	114	3	4'-0"	S11a	B5	102	4	10'-6"	S11
B7	51	3	1'-10"	S10A	B6	200	3	4'-0"	S11a
					B7	100	3	1'-10"	S10A

BENDING DETAILS



NOTE:
ALL DIMENSIONS ARE OUT-TO-OUT OF BARS.
B3 AND B4 BARS SHALL HAVE A CARBON EQUIVALENT (LADLE ANALYSIS) NOT EXCEEDING 0.40% AND MANGANESE CONTENT NOT EXCEEDING 0.90%.
MINIMUM LAP SHALL BE 36 BAR DIAMETERS FOR B1 & B2 BARS.

ORIGINAL CONSTRUCTION PLANS

GIRDER DETAILS FOR 328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION — SEC. 36-T10N-R50W
52'-0" ROADWAY — 25°23' SKEW L.H.F.
OVER I-29 STA. 275+52.8 — M1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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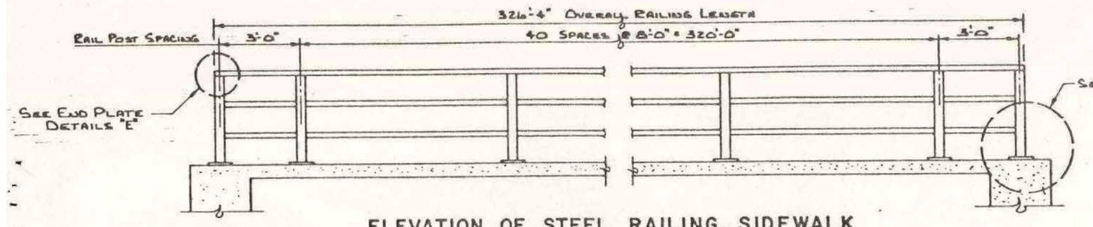
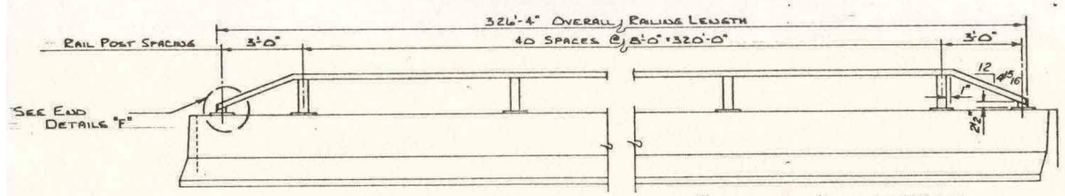
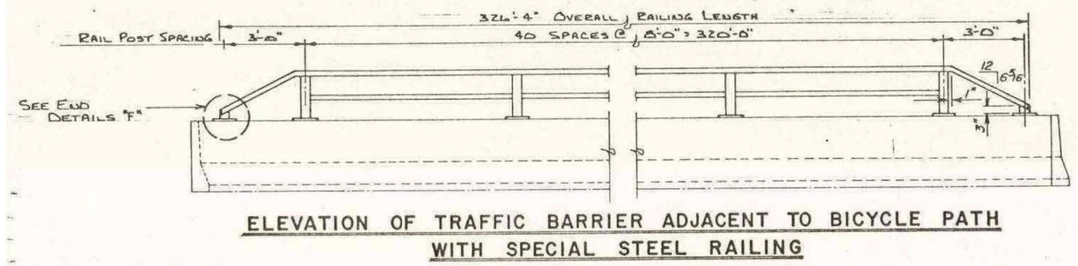


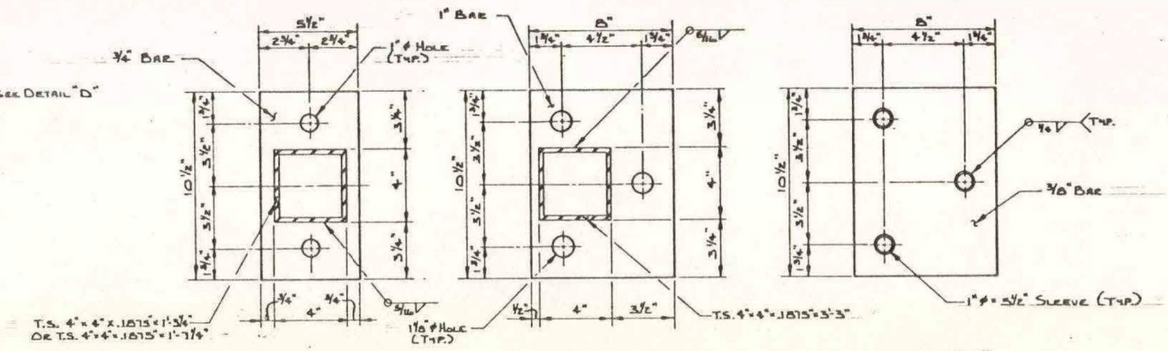
ELEVATION OF STEEL RAILING, SIDEWALK



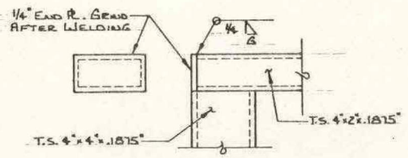
ELEVATION OF TRAFFIC BARRIER ADJACENT TO SIDEWALK WITH SPECIAL STEEL RAILING



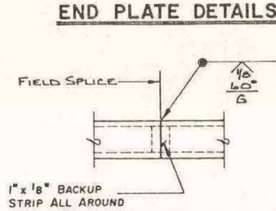
ELEVATION OF TRAFFIC BARRIER ADJACENT TO BICYCLE PATH WITH SPECIAL STEEL RAILING



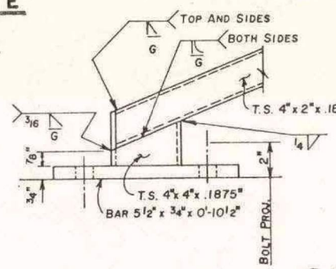
SECTION A-A SECTION B-B DETAIL "C"



END PLATE DETAILS "E"



RAIL FIELD SPLICE



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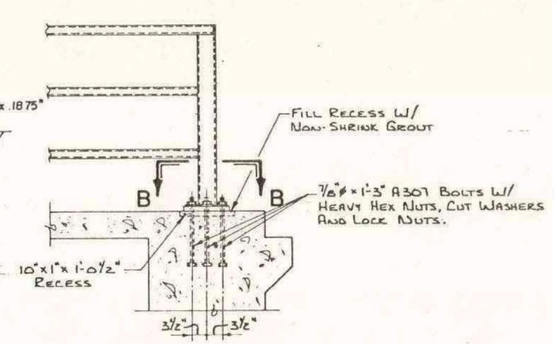
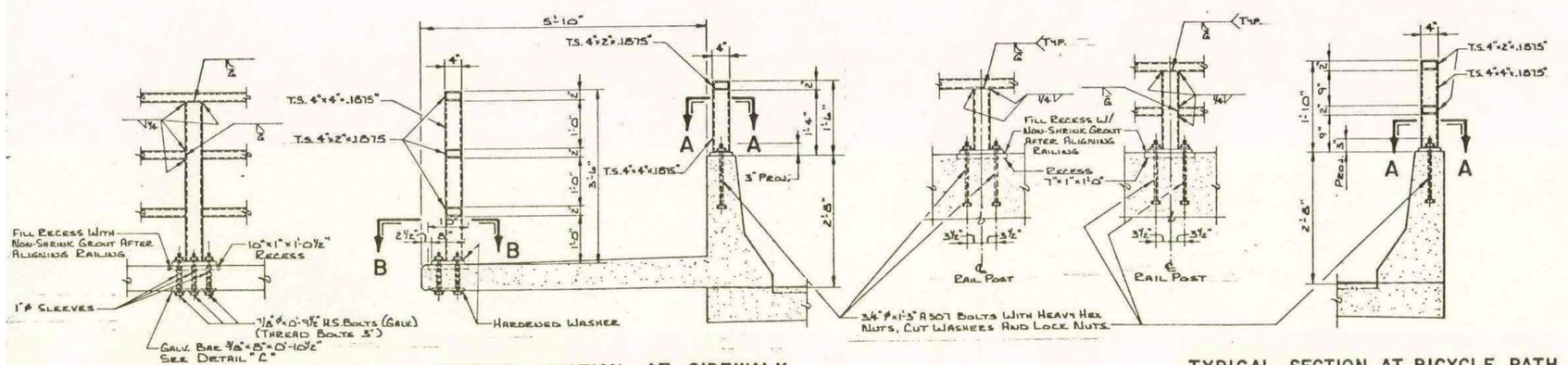


DETAIL "D"

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Steel Railing (Sidewalk)	Lin. Ft.	326.33
Special Steel Railing (Adjacent to Sidewalk)	Lin. Ft.	326.33
Special Steel Railing (Adjacent to Bicycle Path)	Lin. Ft.	326.33



TYPICAL SECTION AT SIDEWALK TYPICAL SECTION AT BICYCLE PATH

ORIGINAL CONSTRUCTION PLANS

VEHICULAR AND PEDESTRIAN RAILING DETAILS FOR 328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION
52'-0" ROADWAY
OVER I-29 STA. 275+52.8

SEC. 36-T101N-R50W
25° 23' SKEW L.H.F.
M1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

MINNEHAHA COUNTY
SOUTH DAKOTA

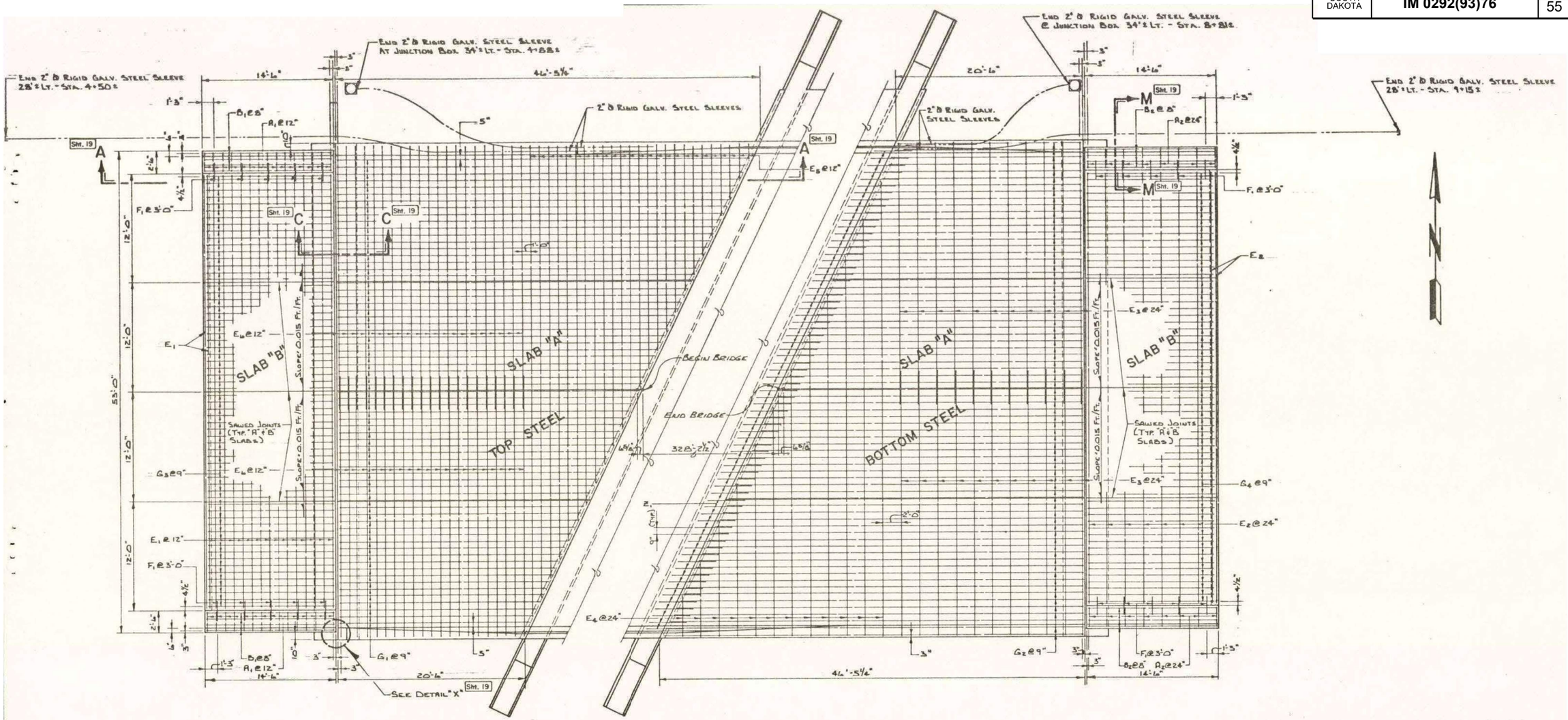
PREPARED BY
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
MAY, 1979 - X 281 -

HS 20-44
& ALTERNATE
STR. NO. 50-173-235

(43) OF (47)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
D.B.M.	R.A.R.	F.J.R.	BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	55	71



PLAN

ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR 328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION
52'-0" ROADWAY
OVER I-29 STA. 275+52.8

SEC. 36-T101N-R50W
25°23' SKEW L.H.F.
M1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

MINNEHAHA COUNTY
SOUTH DAKOTA

PREPARED BY
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
MAY, 1979

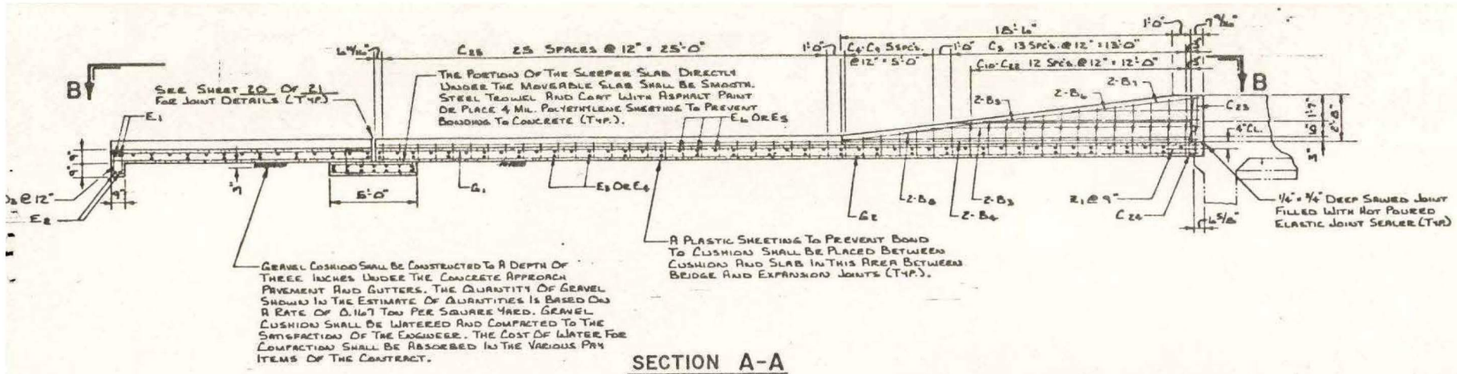
HS 20-44
& ALTERNATE
STR. NO. 50-173-235

-X281-

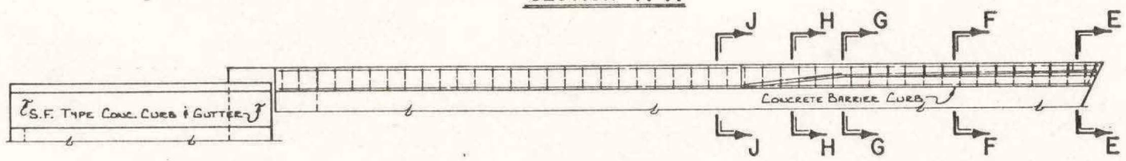
(44) OF (47)

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED
D.B.M.	R.A.R.	F.J.R.	BRIDGE ENGINEER

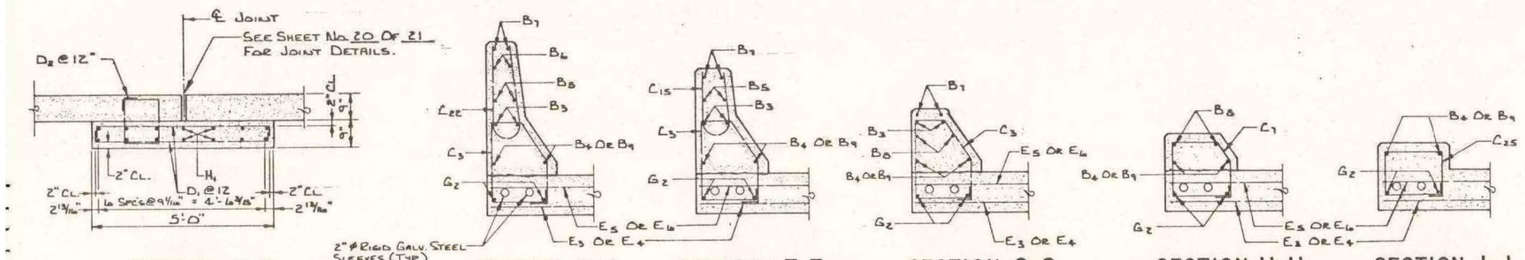
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	56	71



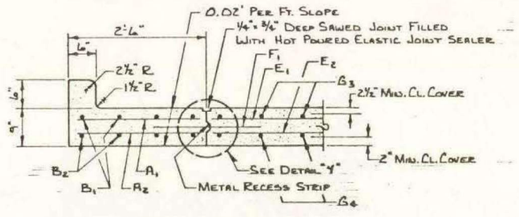
SECTION A-A



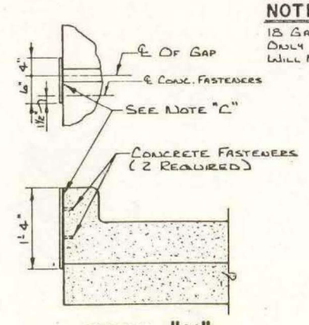
VIEW B-B



SECTION C-C | SECTION E-E | SECTION F-F | SECTION G-G | SECTION H-H | SECTION J-J



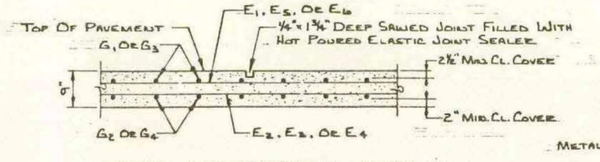
SECTION M-M
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS



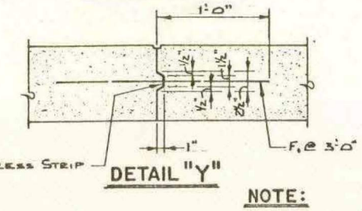
DETAIL "X"

NOTE "C"

18 Gauge Galvanized Sheet Metal. Attach To One Side Of Joint Only After Slabs "A" & "B" Are Poured. Use Fasteners That Will Not Spall The Concrete As Approved By The Engineer.



SAWED LONGITUDINAL JOINT



DETAIL "Y"

NOTE:

If Proposed, Approval Of Alternate Designs Of Metal Steips Will Be Considered By The Engineer.

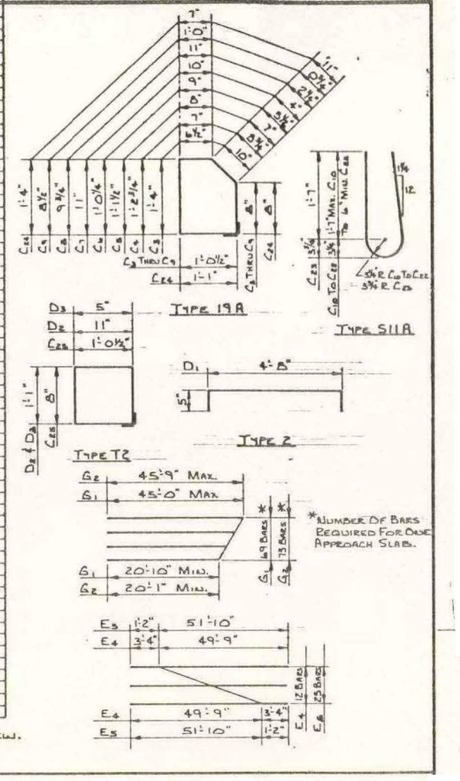
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
A1	40	3	2'-0"	Str.
A2	32	5	2'-0"	Str.
B1	16	3	14'-0"	Str.
B2	16	7	14'-0"	Str.
#B3	8	6	17'-8"	Str.
#B4	4	6	44'-0"	Str.
#B5	8	4	12'-8"	Str.
#B6	8	4	8'-8"	Str.
#B7	8	4	15'-6"	Str.
ΔB8	8	4	7'-0"	Str.
#B9	4	6	20'-3"	Str.
C3	60	4	5'-0"	T1A
C4	4	4	4'-10"	T1A
C5	4	4	4'-8"	T1A
C6	4	4	4'-7"	T1A
C7	4	4	4'-5"	T1A
C8	4	4	4'-1"	T1A
C9	4	4	4'-0"	T1A
C10	4	4	4'-0"	S11A
C11	4	4	3'-10"	S11A
C12	4	4	3'-7"	S11A
C13	4	4	3'-4"	S11A
C14	4	4	3'-2"	S11A
C15	4	4	3'-0"	S11A
C16	4	4	2'-10"	S11A
C17	4	4	2'-8"	S11A
C18	4	4	2'-6"	S11A
C19	4	4	2'-4"	S11A
C20	4	4	2'-2"	S11A
C21	4	4	2'-0"	S11A
C22	4	4	1'-10"	S11A
C23	4	4	1'-8"	S11A
C24	4	4	5'-2"	T1A
C25	104	4	4'-0"	T2
D1	220	4	5'-6"	2
D2	110	4	4'-8"	T2
D3	110	4	3'-9"	T2
E1	32	3	43'-14"	Str.
E2	18	5	47'-6"	Str.
E3	44	5	28'-0"	Str.
E4	12	5	53'-1"	Str.
E5	25	3	53'-0"	Str.
E6	84	3	28'-0"	Str.
F1	20	4	2'-0"	Str.
G1	138	3	20'-10" To 45'-0"	Str.
G2	146	5	20'-1" To 45'-9"	Str.
G3	128	3	14'-3"	Str.
G4	128	5	14'-3"	Str.
H1	516	5	28'-0"	Str.

\# Cut In Field As Necessary For Skew.

Δ Bend In Field As Necessary To Fit.

Bending Details



NOTE:

The Above Reinforcing Steel Schedule Contains The Combined Totals Required For Slabs "A" & "B" At Both Ends Of The Bridge.

2, Bars Are Listed And Included In The Superstructure Quantities.

All Dimensions Are Out To Out Of Bars.

ESTIMATED QUANTITIES

Item	Unit	Quantity Sill No. 1	Quantity Sill No. 5
Gravel Cushion (Approach Slab)	Cu. Yds.	252.1	252.1
*Concrete Approach Slab Adjacent To Bridge	Cu. Yds.	280.4	280.4
Bridge Approach Sleeper Slab	Cu. Yds.	30.4	30.4
Concrete Gutter, S.F. Type - Straight	L.F.	29.0	29.0

*Includes Barrier Curb

For Information Only, The Above Contain The Following Approximate Quantities:

Sill No. 1	Sill No. 5	
74.3	74.3	*Cu. Yds. Concrete In Approach Slabs.
7,961	7,961	*Lbs. Re-Steel In Approach Slabs (Includes Dowels).
7.6	7.6	Cu. Yds. Concrete In Sleeper Slabs.
1,393	1,393	Lbs. Re-Steel In Sleeper Slabs.
2.3	2.3	Cu. Yds. Concrete In Gutter.
327	327	Lbs. Re-Steel In Gutter.
42	42	Tons Gravel Cushion.

ORIGINAL CONSTRUCTION PLANS

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE FOR 328'-2 1/2" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION
52'-0" ROADWAY
OVER I-29 STA. 275+52.8

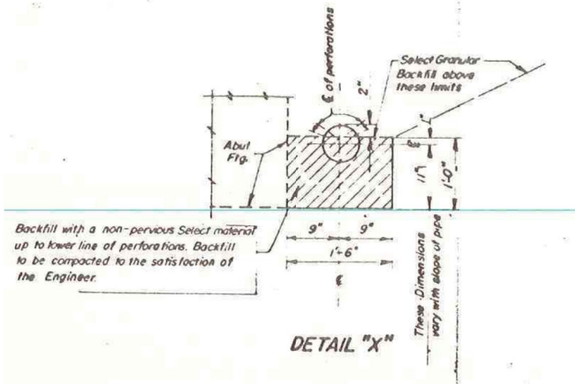
SEC. 36-T10IN-R50W
25°23' SKEW L.H.F.
M1416(4) URBAN SYSTEM
STA. 5+19.7 TO STA. 8+47.9

MINNEHAHA COUNTY
SOUTH DAKOTA

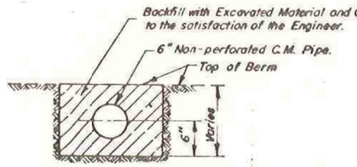
PREPARED BY:
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
MAY, 1979

HS 20-44
& ALTERNATE
STR. NO. 50-173-235
(45) OF (47)
-X281-

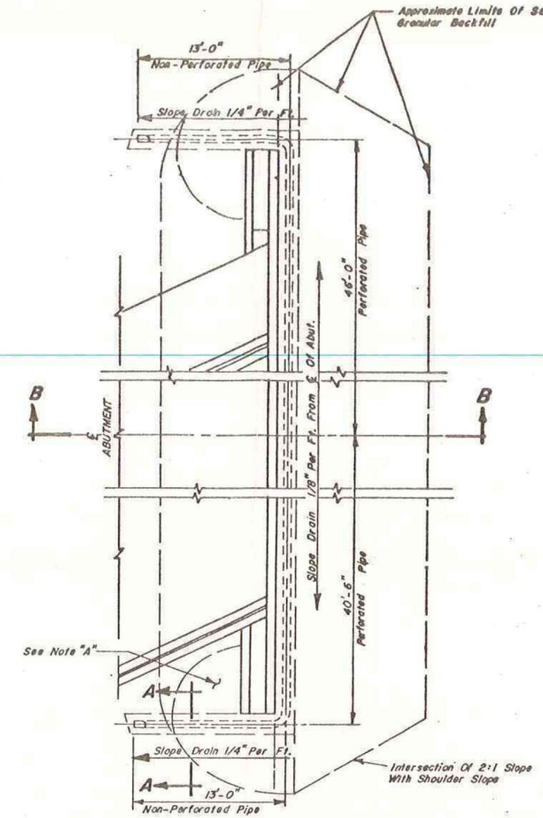
DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED
D.B.M.	R.A.R.	F.J.R.	BRIDGE ENGINEER



DETAIL "X"



SEC. A-A



PLAN

NOTE "A"—

Excavated material not used for backfill of Abutments, supplemented with Select Granular Backfill, if required, shall be used to build these spill cones as directed by the ENGINEER.

NOTES REGARDING BRIDGE END BACKFILL—

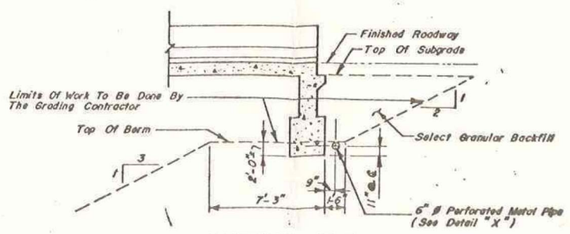
1. Bridge End Backfill shall conform to the following requirements.

Passing a 1½ inch sieve	100 %
Passing a 1 inch sieve	95 – 100%
Passing a ½ inch sieve	25 – 60%
Passing a No 4 sieve	0 – 10%

The above gradation conforms to that of Coarse Aggregate for Class "A" Concrete

2. Material to be crushed rock having at least two (2) fractured faces on material retained on a number 4 sieve. Abrasion loss (AASHTO-T96) shall not exceed forty (40).
3. Backfill to be vibratory compacted in lifts not to exceed one (1) foot. Density requirements for backfill are waived.
4. Granular Bridge End Backfill shall not be placed until at least 24 hours after the completion of the deck pour.
5. Underdrain Pipe shall conform to Section 4.000 of the South Dakota Standard Specifications.
6. Where perforated pipe is called for, it shall be placed with perforations up.
7. Suitable screen or grating shall be provided at pipe outlets as approved by the ENGINEER.
8. The total estimated theoretical embankment volume of Granular Bridge End Backfill is 570 cubic yards for two abutments.
9. The total estimated length of the 6" ø corrugated underdrain pipe for two abutments is 228 feet. The cost of screen or grating in place is to be absorbed in the unit price bid for Bridge End Backfill Underdrain Pipe.

ORIGINAL CONSTRUCTION PLANS



SECTION B-B

DETAILS OF BRIDGE END BACKFILL

FOR

328'-2½" PRESTR. CONC. GIRDER BRIDGE

GRADE SEPARATION
52'-0" ROADWAY
OVER I-29 STA. 275+52.8

SEC. 36-T101N-R50W
25° 23' SKEW L.H.F.
M 1416 (4) URBAN SYSTEM

STA. 5+19.7 TO STA. 8+47.9

MINNEHAHA COUNTY
SOUTH DAKOTA

STR. NO. 50-173-235

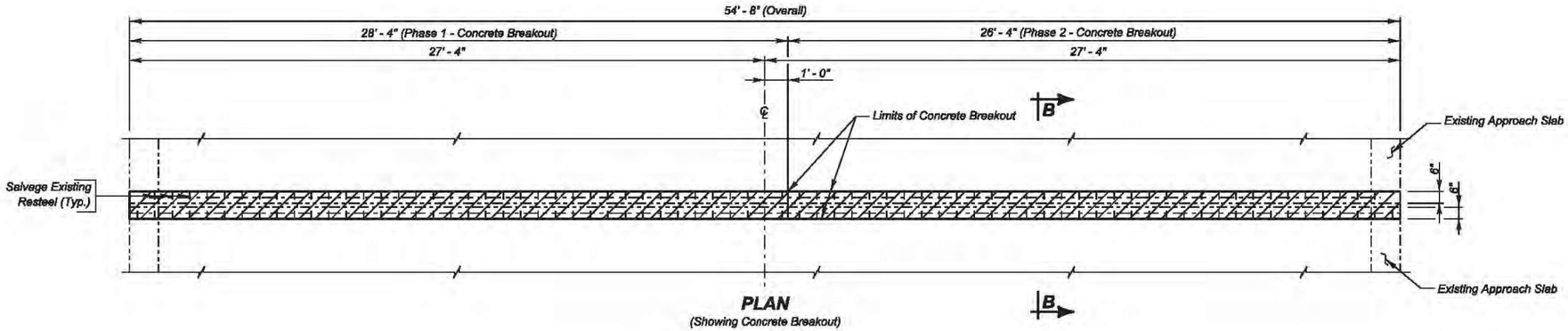
HS20-44 & ALTERNATE

S. D. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

MAY 1979 -X281-

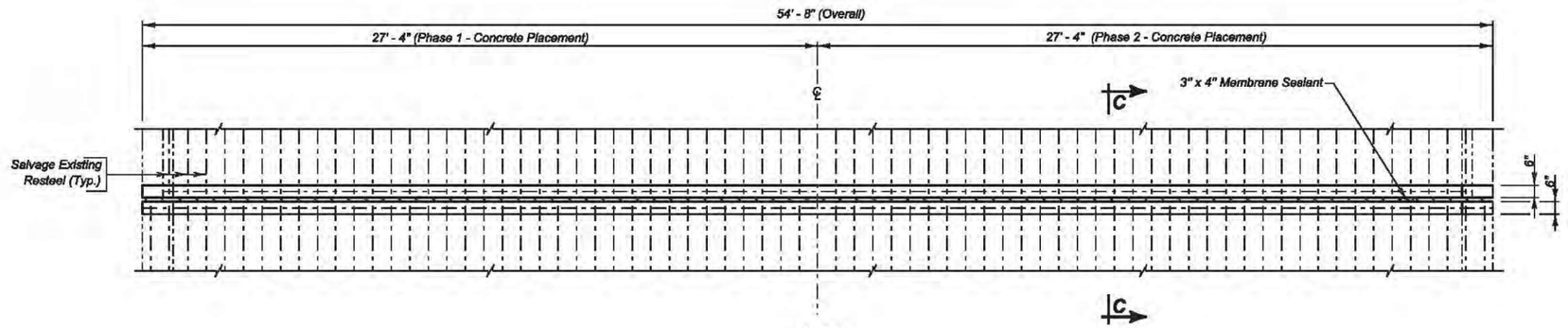
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	L.P.J.	J.a.K.	

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	58	71

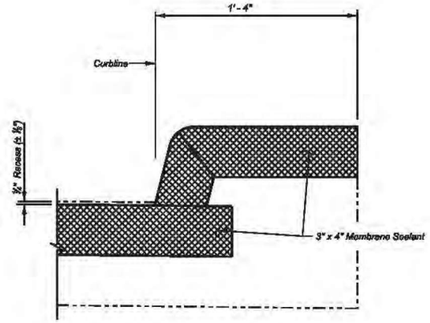


PLAN
(Showing Concrete Breakout)

TEMP.	DIMENSION "X"
40°	3"
50°	2 7/8"
60°	2 11/16"
70°	2 9/16"
80°	2 7/16"
90°	2 5/16"
100°	2 1/8"

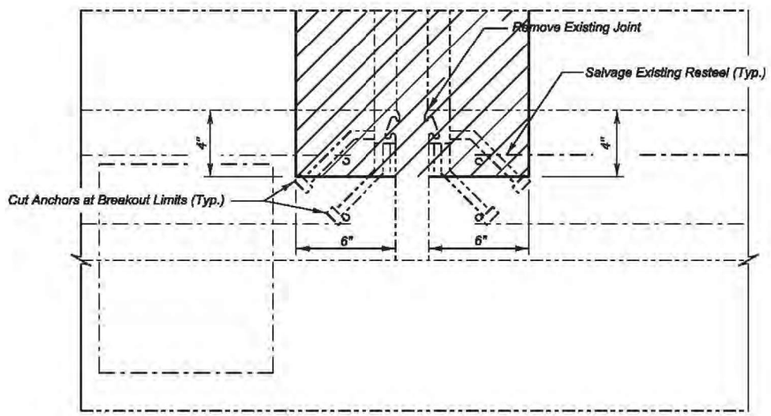


PLAN
(Showing New Joint)

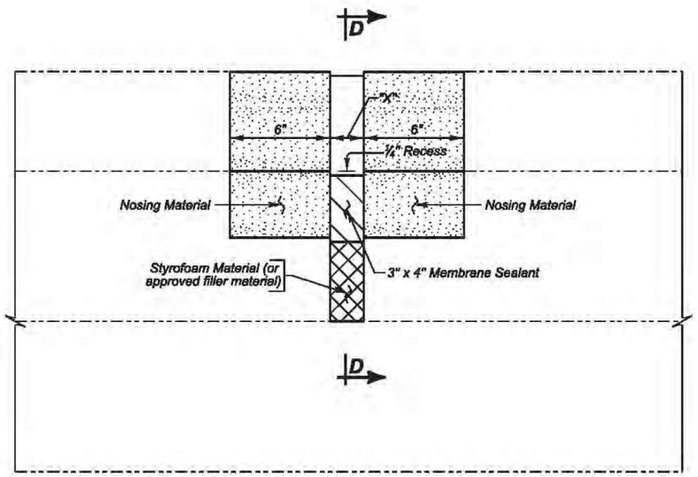


SECTION D- D

ORIGINAL CONSTRUCTION PLANS



SEC. B - B



SEC. C - C

ESTIMATED QUANTITIES			
ITEM	UNIT	PHASE 1 QUANTITY	PHASE 2 QUANTITY
Membrane Sealant Expansion Joint	Ft.	55.7	55.7
Joint Nosing Material	Sq. Ft.	54.7	54.7
Breakout Structural Concrete	Cu. Yd.	0.7	0.7

JOINT REPLACEMENT DETAILS
FOR
328' - 2 ½" PRESTR. CONC. GIRDER BRIDGE

52' - 0" ROADWAY — 25°23' SKEW
OVER I - 29 — SEC. 36-T101N-R50W
STR. NO. 50-173-235 — IM 0292(72)76

MINNEHAHA COUNTY
S. D. DEPT. OF TRANSPORTATION
MARCH 2012 (47) OF (47)

DESIGNED BY	DRAWN BY	CHECKED BY	
TK	JRK	XX	Kevin N. Goeden
MINN02P3	02P3KA04		BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	59	71

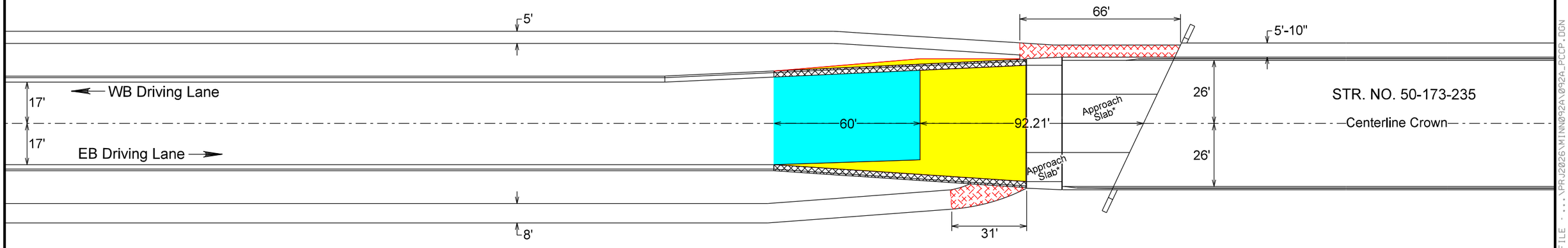
Plotting Date: 12/05/2025

SURFACING DETAILS (West End Removal)

STR. NO. 50-173-235 I29 MRM 76.72 OVER I29

- Remove Concrete Pavement
- Remove Concrete Curb & Gutter
- Unclassified Excavation
- Remove Concrete Sidewalk
- Cold Mill at 6" Depth

*Refer to Bridge Sheets for details for the Approach Slabs



Item	Quantity	Unit
Remove Curb & Gutter	254	Ft
Remove Concrete Sidewalk	60	SqYd
Unclassified Excavation	66	CuYd
Cold Milling Asphalt Concrete	245	SqYd

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	60	71

Plotting Date: 12/05/2025

SURFACING DETAILS (East End Removal)

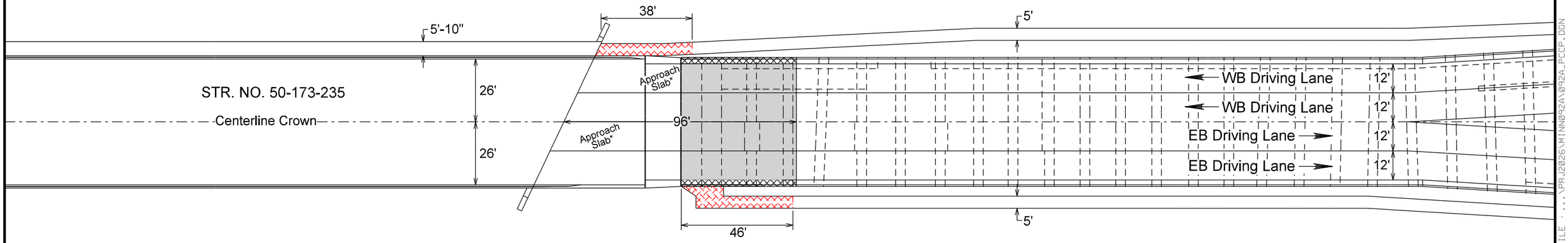
STR. NO. 50-173-235 I29 MRM 76.72 OVER I29

Remove Concrete Pavement

Remove Concrete Curb & Gutter

Remove Concrete Sidewalk

*Refer to Bridge Sheets for details for the Approach Slabs



Item	Quantity	Unit
Remove Curb & Gutter	95	Ft
Remove Concrete Pavement	254	SqYd
Remove Concrete Sidewalk	51	SqYd

PLOT SCALE - 1:40

PLOT NAME - 3

FILE - ...\PRJ2026\MINN0292A\0292A_PCCP.DGN

PLOTTED FROM - TRM111118

SURFACING DETAILS (West End Placement)

STR. NO. 50-173-235 I29 MRM 76.72 OVER I29

LEGEND:

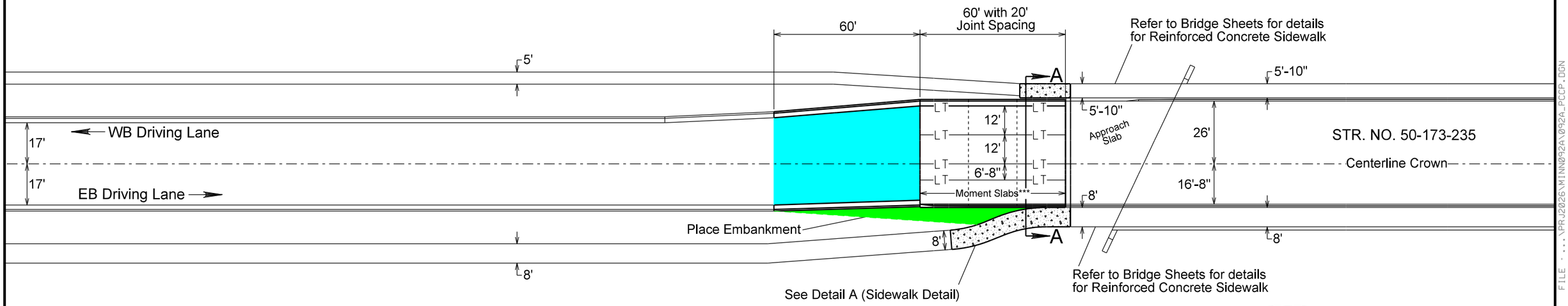
Sawed Longitudinal Joint with Tie Bars or Longitudinal Construction Joint With Tie Bars ——— LT ———LT ———LT ———

Transverse Contraction Joint ----------

Longitudinal Construction Joint without Tie Bars ——— L ———L ———L ———L ———

Steel Bar Insertion in Longitudinal or Transverse Joints —— SB ——— SB ———

Transverse contraction joints within these areas will not have dowel bar assemblies. All other transverse contraction joints will have dowel bar assemblies.



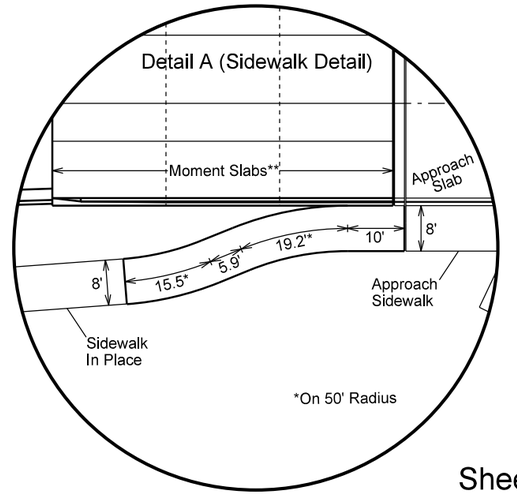
4" Concrete Sidewalk

6" Asphalt Concrete Composite (Place in Two 3" Depth Lifts)

Item	Quantity	Unit
9" Nonreinforced PCC Pavement	205	SqYd
Dowel Bar	80	Each
Insert Steel Bar In PCC Pavement	4**	Each
Membrane Sealant Expansion Joint	52	Ft
Type B69 Concrete Curb & Gutter	180	Ft
4" Concrete Sidewalk	526	SqFt
Asphalt Concrete Composite	84	Ton

**Quantity includes 4 No.5 x 24" Epoxy Coated Deformed Tie Bars.

***Refer to Bridge Sheets for details for Moment Slabs



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	62	71

Plotting Date: 12/10/2025

SURFACING DETAILS (East End Placement)

STR. NO. 50-173-235 I29 MRM 76.72 OVER I29

LEGEND:

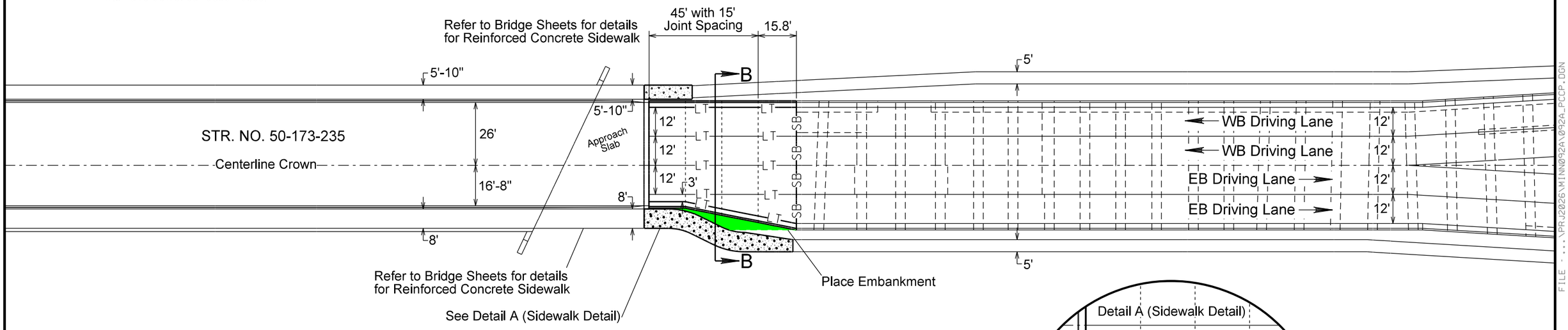
Sawed Longitudinal Joint with Tie Bars or Longitudinal Construction Joint With Tie Bars ——— LT ———LT ———LT ———

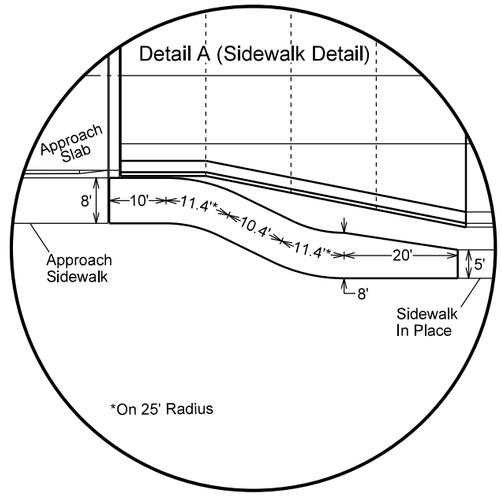
Transverse Contraction Joint ----------

Longitudinal Construction Joint without Tie Bars ——— L ———L ———L ———L ———

Steel Bar Insertion in Longitudinal or Transverse Joints —— SB ——— SB ———

Transverse contraction joints within these areas will not have dowel bar assemblies. All other transverse contraction joints will have dowel bar assemblies.





4" Concrete Sidewalk

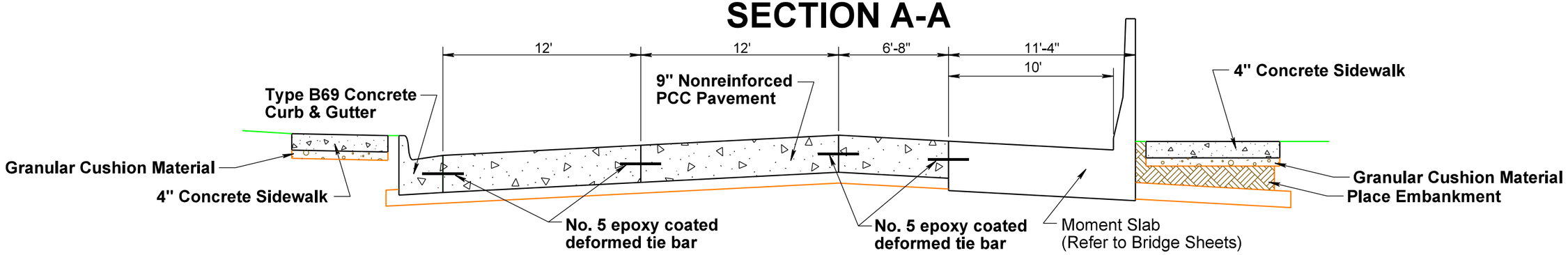
Item	Quantity	Unit
9" Nonreinforced PCC Pavement	287	SqYd
Dowel Bar	124	Each
Insert Steel Bar In PCC Pavement	52**	Each
Membrane Sealant Expansion Joint	47	Ft
Type B69 Concrete Curb & Gutter	123	Ft
4" Concrete Sidewalk	591	SqFt

**Quantity includes 48 1¼" x 18" Plain Round Dowel Bars and 4 No.5 x 24" Epoxy Coated Deformed Tie Bars.

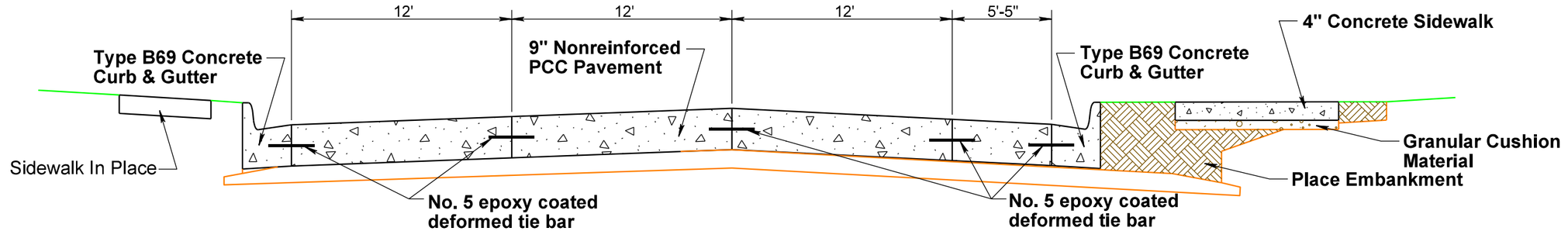
SURFACING DETAILS (Placement)

STR. NO. 50-173-235 I29 MRM 76.72 OVER I29

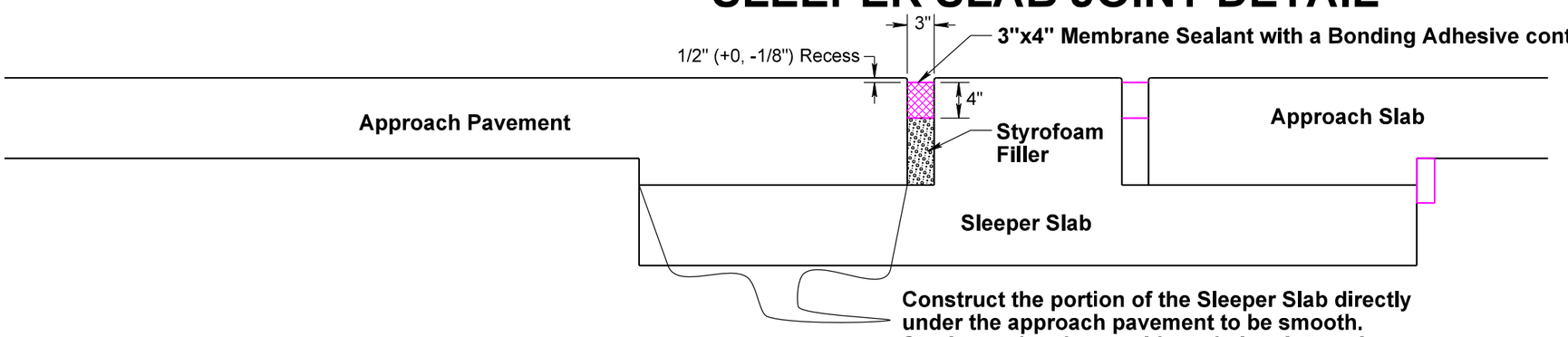
SECTION A-A



SECTION B-B



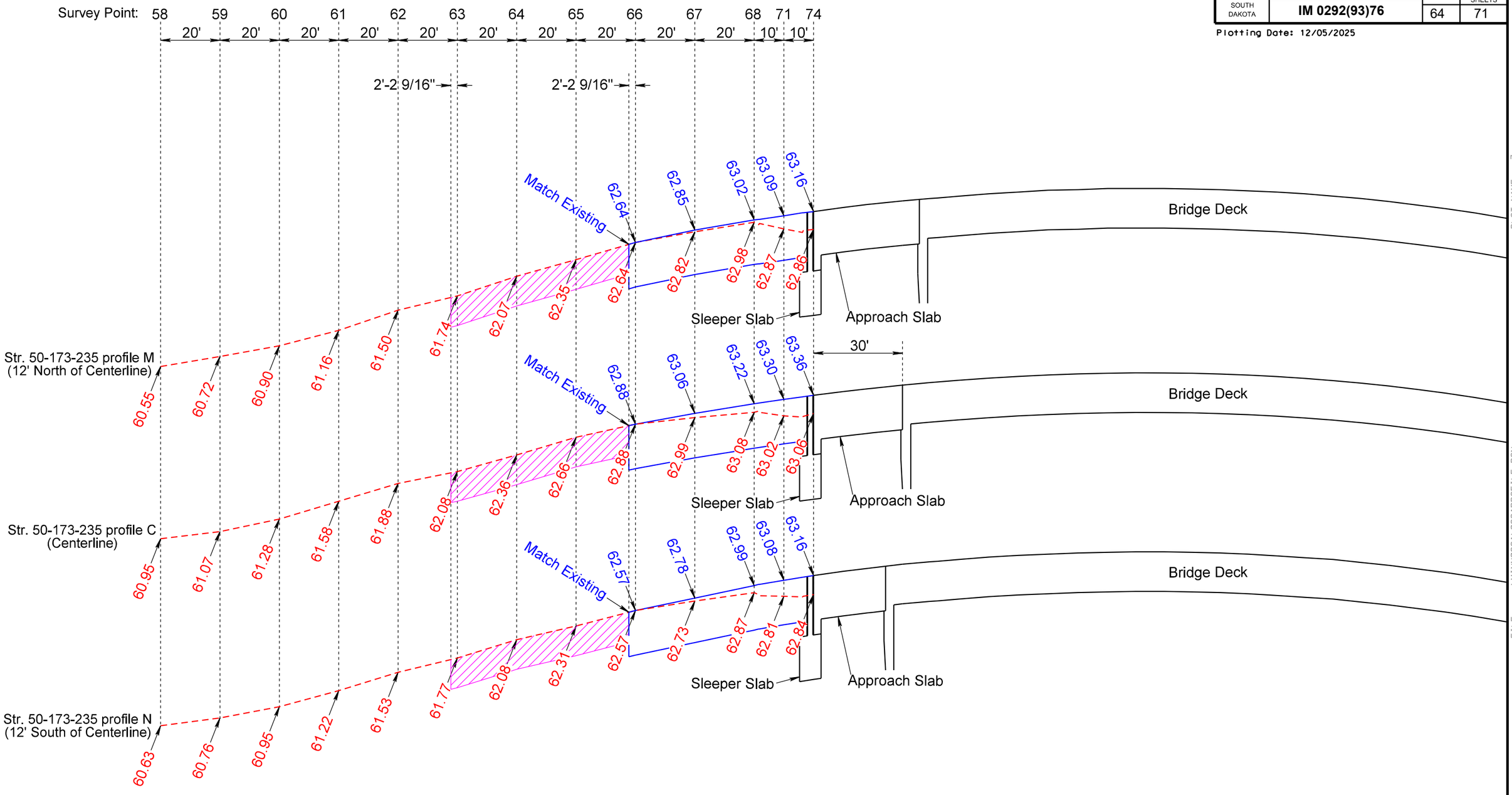
SLEEPER SLAB JOINT DETAIL



*The Membrane Sealant will be installed and meet the same standards for the Membrane Sealant used for the Approach Slab side of the Sleeper Slab. Refer to the Approach Slab Joint Details for installation of the Membrane Sealant in the Curb & Gutter and the Jersey Barrier.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	64	71

Plotting Date: 12/05/2025



Cold Mill at 6" Depth
6" Asphalt Concrete Composite
(Place in Two 3" Depth Lifts)

Existing Surfacing

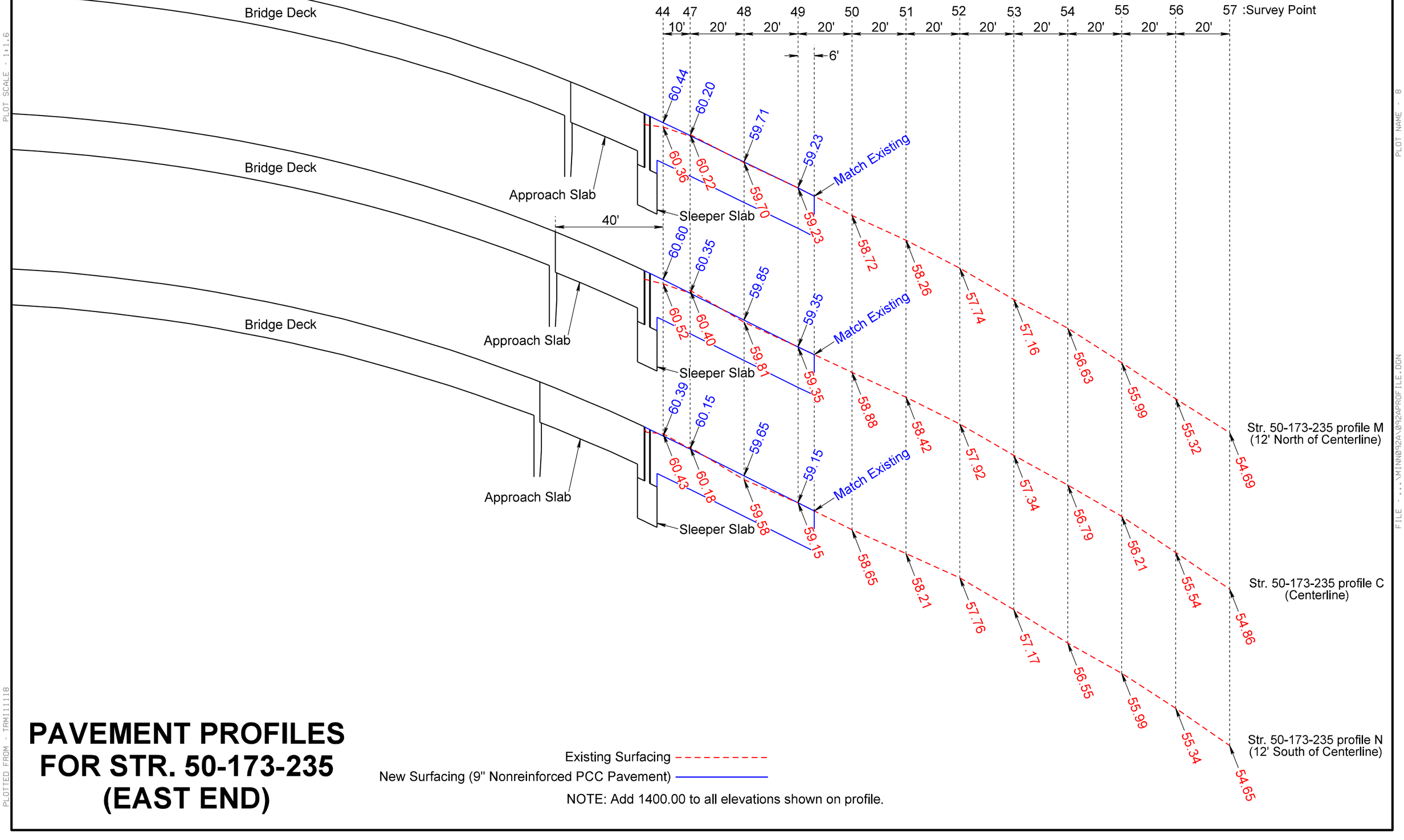
New Surfacing (9" Nonreinforced PCC Pavement)

NOTE: Add 1400.00 to all elevations shown on profile.

PAVEMENT PROFILES FOR STR. 50-173-235 (WEST END)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(93)76	65	71

Plotting Date: 12/05/2025

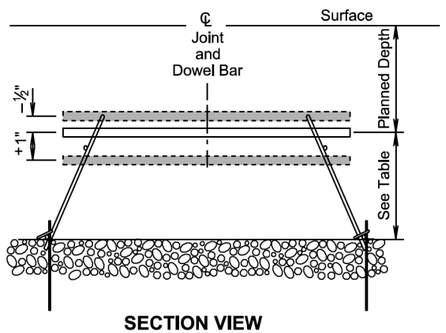


PAVEMENT PROFILES FOR STR. 50-173-235 (EAST END)

Existing Surfacing

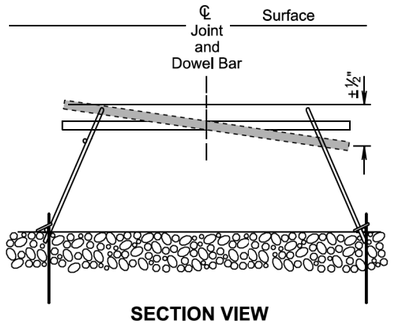
New Surfacing (9" Nonreinforced PCC Pavement)

NOTE: Add 1400.00 to all elevations shown on profile.



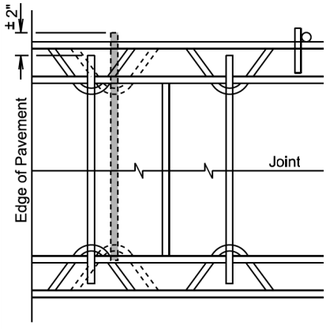
SECTION VIEW
VERTICAL TRANSLATION

Depth: mid-depth + 1 inch or − ½ inch



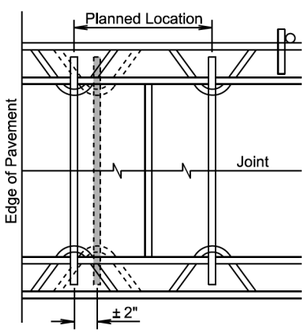
SECTION VIEW
VERTICAL TILT

Vertical rotational alignment: ½ inch over 18 inch



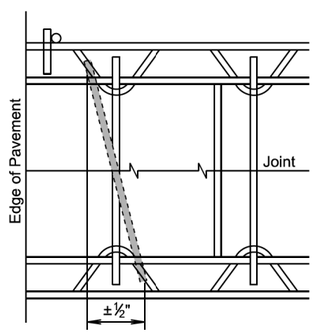
PLAN VIEW
LONGITUDINAL TRANSLATION

Longitudinal side shift: ± 2 inch for 18 inch bars



PLAN VIEW
HORIZONTAL TRANSLATION

Side shift ± 2 inch



PLAN VIEW
HORIZONTAL SKEW

Horizontal rotational alignment: ½ inch over 18 inch

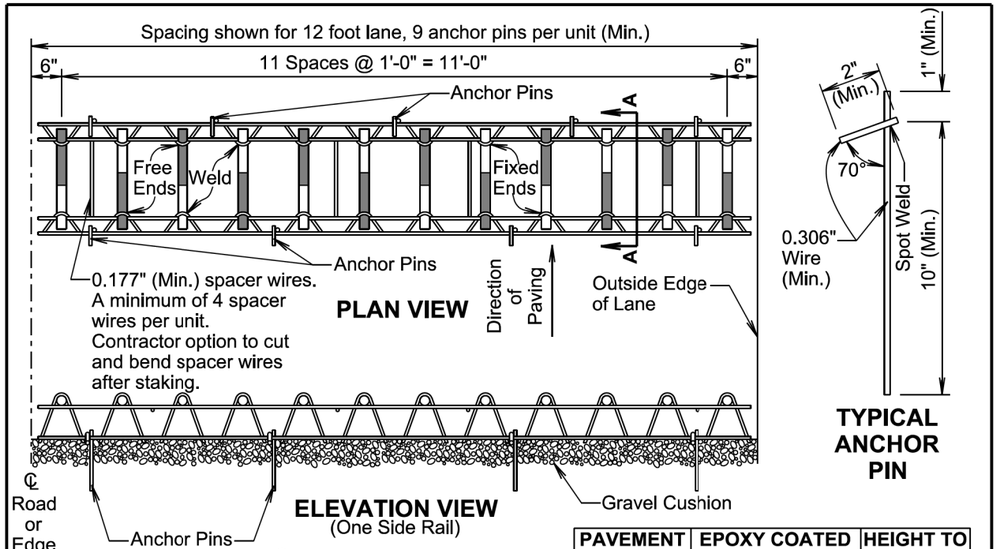
PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"

GENERAL NOTE:

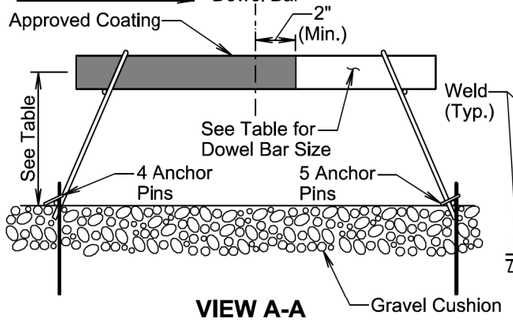
The tolerances shown above represent the maximum deviation for acceptance of dowel bar placement.

November 19, 2022

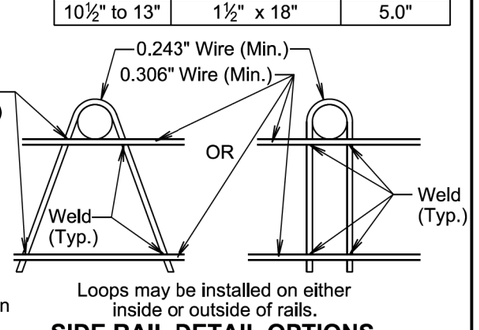
Published Date: 2026	SDDOT	**PCC PAVEMENT DOWEL BAR ALIGNMENT TOLERANCES**	PLATE NUMBER 380.01 Sheet 1 of 1



PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"



VIEW A-A



Loops may be installed on either inside or outside of rails.

SIDE RAIL DETAIL OPTIONS

GENERAL NOTES:

Longitudinal joint tie bars will be placed a minimum of 15 inches from the transverse contraction joint.

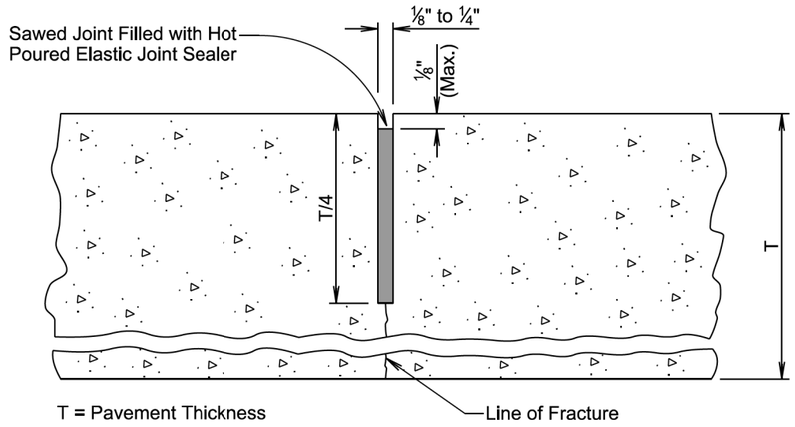
The transverse contraction joints will be sawed perpendicular to the centerline of the roadway. The transverse sawed joint will be centered over the dowel bars.

Supporting devices as shown on this sheet, or equivalent as approved by the Engineer, will be used to maintain proper horizontal and vertical alignment of the dowel bars.

All dowel bar alignment tolerances will be as shown in the PCC Pavement Dowel Bar Alignment Tolerances standard plate.

November 19, 2022

Published Date: 2026	SDDOT	**PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material**	PLATE NUMBER 380.04 Sheet 1 of 1



GENERAL NOTES:

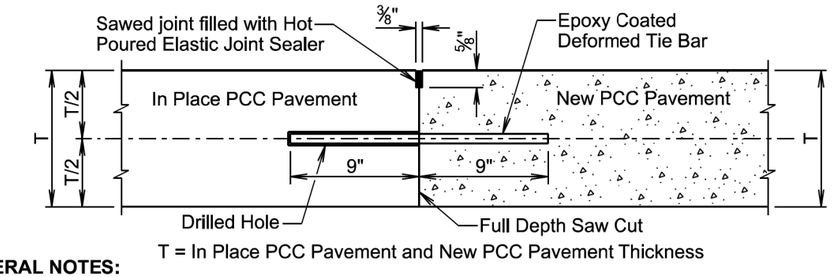
If an early entrance saw cut does not develop the full transverse crack, then the saw cut to control cracking will be a minimum ¼ of the thickness of the pavement.

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

November 19, 2022

Published Date: 2026	SDDOT	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.12
			Sheet 1 of 1

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

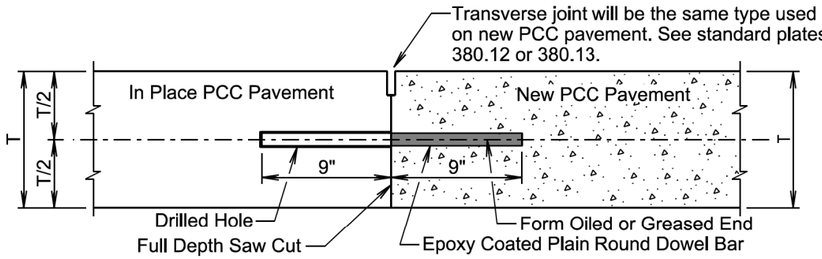
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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

The tie bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive or a non-shrink grout.

No. 9 epoxy coated deformed tie bars will be used in 10 inch thickness and less PCC Pavement and No. 11 epoxy coated deformed tie bars will be used in 10.5 inch thickness and greater PCC Pavement. The tie bar spacing will be 18 inches center to center and will 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: T = In Place PCC Pavement and New PCC Pavement Thickness

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.

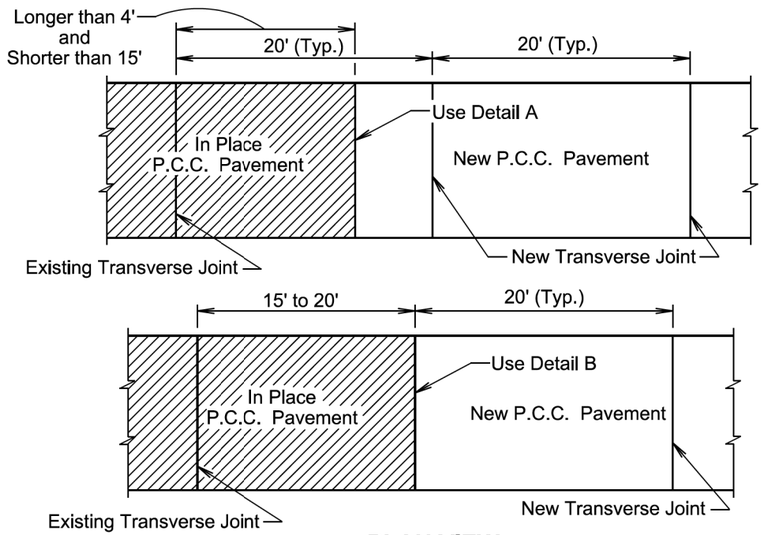
See sheet 2 of 2 of this standard plate to determine if Detail B will be used.

The plain round dowel bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive or a non-shrink grout.

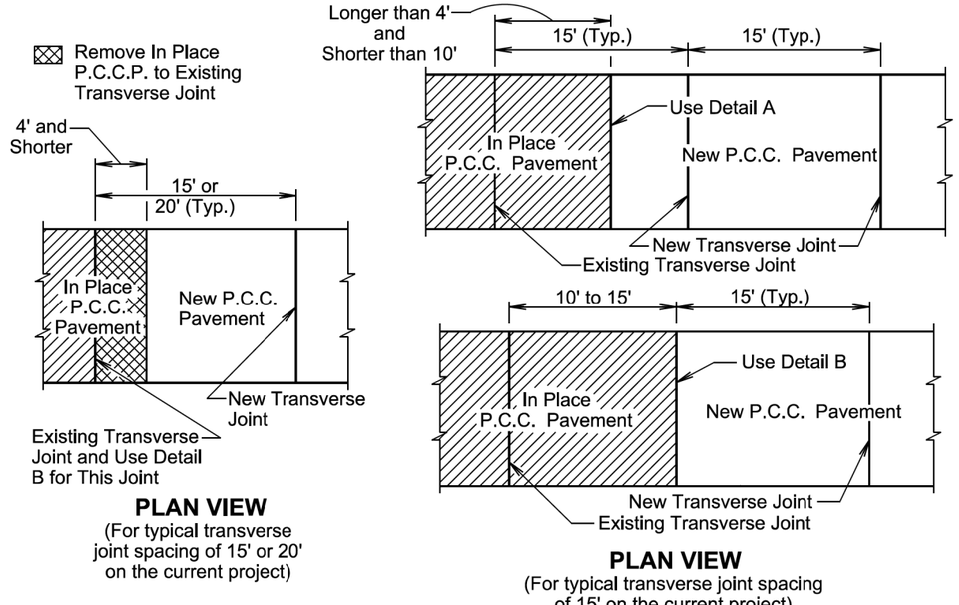
The epoxy coated plain round dowel bar size, number, and spacing will be the same as detailed on the corresponding dowel bar assembly standard plate (380.04, 380.05, 380.06, or 380.07). The epoxy coated plain round dowel bars will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

January 22, 2023

Published Date: 2026	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.15
			Sheet 1 of 2



PLAN VIEW
(For typical transverse joint spacing of 20' on the current project)



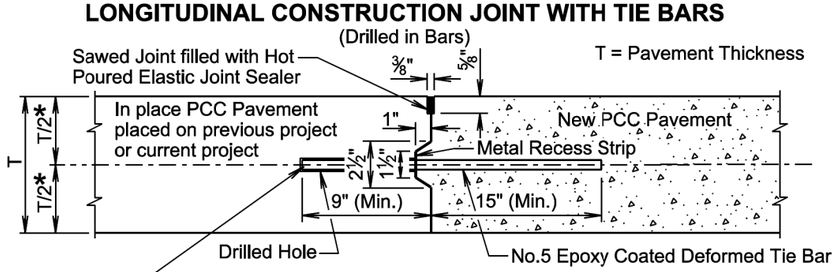
PLAN VIEW
(For typical transverse joint spacing of 15' or 20' on the current project)

PLAN VIEW
(For typical transverse joint spacing of 15' on the current project)

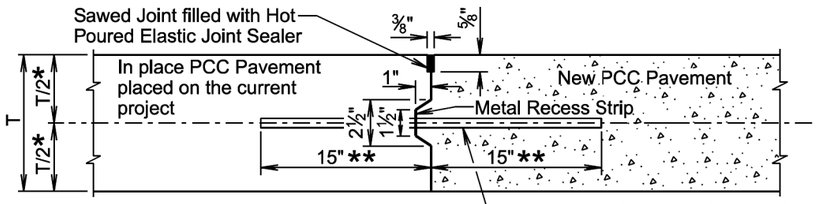
January 22, 2023

Published Date: 2026	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.15
			Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Drilled in Bars)



LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Inserted or Formed in Bars)



GENERAL NOTES (For the details above):

The epoxy coated deformed tie bars will 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 will be placed a minimum of 15 inches from transverse contraction joints.

The required number of tie bars as shown in the table will be uniformly spaced within each panel. The uniformly spaced tie bars will be spaced a maximum of 48 inches center to center for a female keyway and will be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing will 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 will be used. When concrete pavement is slip formed, a metal recess strip is not required.

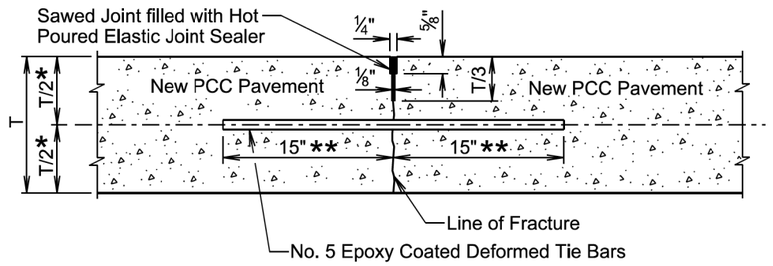
* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

Published Date: 2026	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.20
			Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS

(Poured Monolithically)



T = Pavement Thickness

GENERAL NOTES (For the detail above)**:**

The epoxy coated deformed tie bars will 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 will be placed a minimum of 15 inches from the transverse contraction joints.

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

The first saw cut to control cracking will 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.

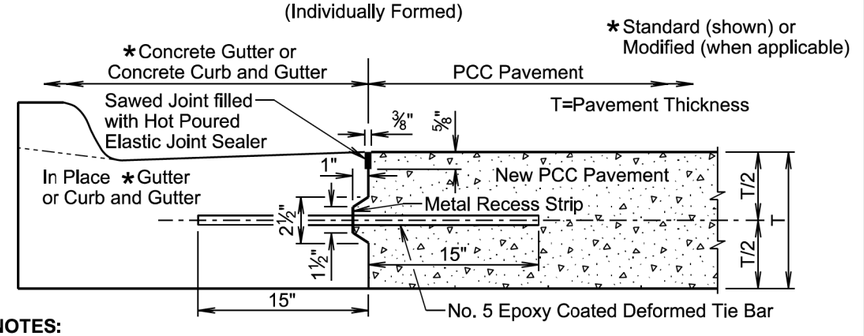
* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

Published Date: 2026	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.20 Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(Individually Formed)



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars will be spaced 48 inches center to center. The tie bars will be placed a minimum of 15 inches from existing transverse contraction joints. The keyway shown above is a female keyway.

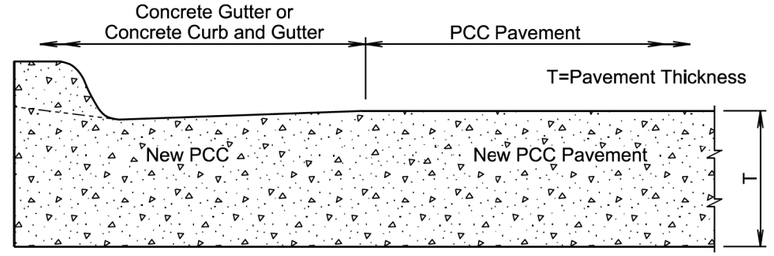
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

The transverse contraction joints in the concrete gutter or concrete curb and gutter will be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter will be 1½ inches deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete gutter or concrete curb and gutter.

Standard curb and gutter may not be placed monolithically with PCC pavement if the mainline lane width is greater than 12 feet.

The term "In Place *Gutter or Curb and Gutter" in the above drawing indicates that the in place *concrete gutter and concrete curb and gutter was placed on the current project.

POURED MONOLITHICALLY (Standard Concrete Curb and Gutter)



GENERAL NOTES:

The mainline curb and gutter may be placed monolithically with the PCC pavement if the mainline lane width is less than or equal to 12 feet. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement will be eliminated.

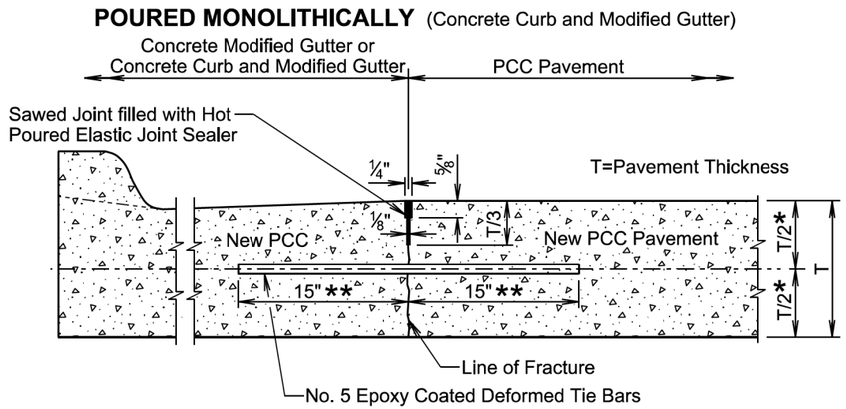
The gutter or curb and gutter will be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter will be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter will be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter will be constructed at the same slope as the mainline concrete pavement.

March 31, 2024

Published Date: 2026	SDDOT	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.21 Sheet 1 of 2

POURED MONOLITHICALLY (Concrete Curb and Modified Gutter)



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars will be spaced 48 inches center to center.

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

The mainline curb and modified gutter may be placed monolithically with the PCC pavement if the mainline lane width is less than or equal to 14 feet.

The first saw cut to control cracking will 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.

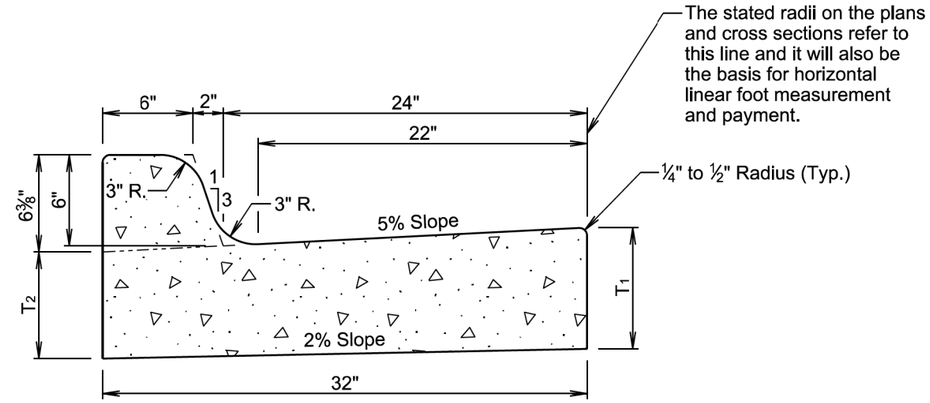
The gutter or curb and gutter will be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter will be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter will be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter will be constructed at the same slope as the mainline concrete pavement.

* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

March 31, 2024

Published Date: 2026	SDDOT	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.21
			Sheet 2 of 2



TYPE B CONCRETE CURB AND GUTTER				
Type	T_1 (Inches)	T_2 (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	0.057	17.7
B67	7	6 1/16	0.065	15.4
B68	8	7 1/16	0.073	13.7
B68.5	8.5	7 9/16	0.077	13.0
B69	9	8 1/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9 1/16	0.090	11.2
B610.5	10.5	9 9/16	0.094	10.7
B611	11	10 1/16	0.098	10.2
B611.5	11.5	10 9/16	0.102	9.8
B612	12	11 1/16	0.106	9.4

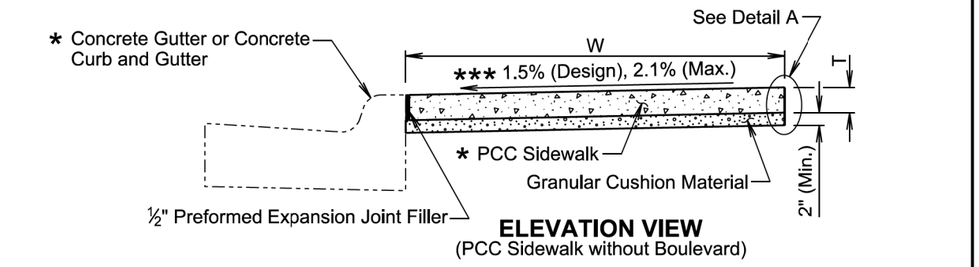
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on standard plate 380.21.

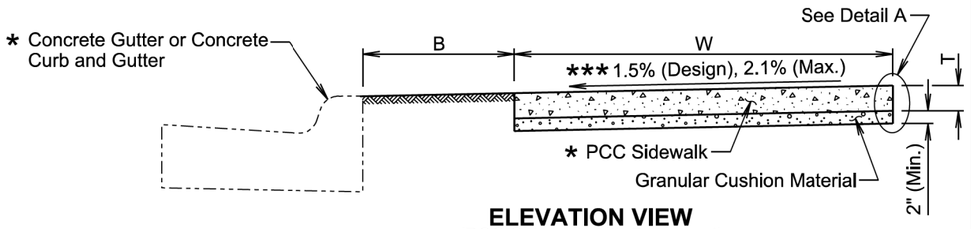
See standard plate 650.90 for expansion and contraction joints in the curb and gutter.

January 22, 2023

Published Date: 2026	SDDOT	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
			Sheet 1 of 1



ELEVATION VIEW
(PCC Sidewalk without Boulevard)



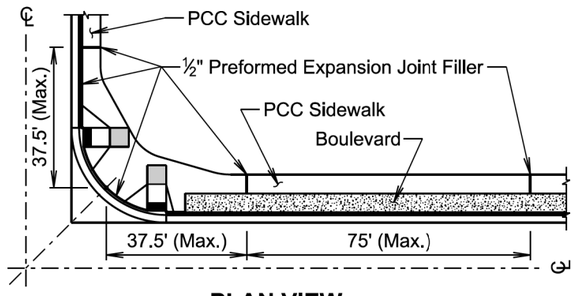
ELEVATION VIEW
(PCC Sidewalk with Boulevard)

B Width of boulevard as specified in the plans.

T Thickness of PCC sidewalk as specified in the plans.

W Width of PCC sidewalk as specified in the plans.

* Type as specified in the plans.



PLAN VIEW

GENERAL NOTES:

The PCC sidewalk will be constructed in accordance with Section 651 of the Specifications.

*** The cross slope of the sidewalk is designed at 1.5% and the maximum slope allowed is 2.1% unless specified otherwise in the plans.

The maximum length between expansion joints in the PCC sidewalk is 75 feet.

PCC sidewalk placed adjacent to intersection of roadways will have an expansion joint placed transversely a maximum of 37.5 feet from the intersection. See Plan View.

An expansion joint in the PCC sidewalk will consist of a ½ -inch thick preformed expansion joint filler material placed full depth and width of the PCC sidewalk.

** Large areas of PCC pavement adjacent to the PCC sidewalk may require a different joint treatment than shown in the detail. If a different joint detail is necessary, plans will contain the joint detail and the Contractor will construct the joint treatment in accordance with the plans.

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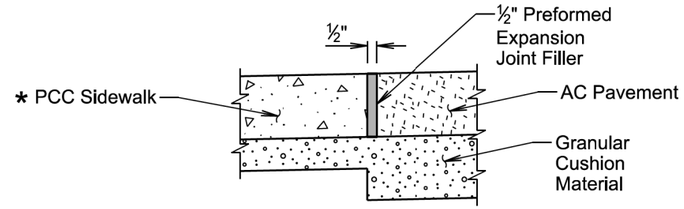
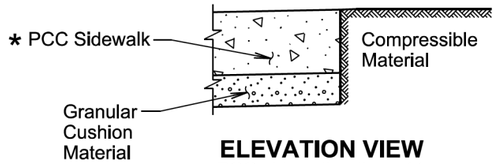
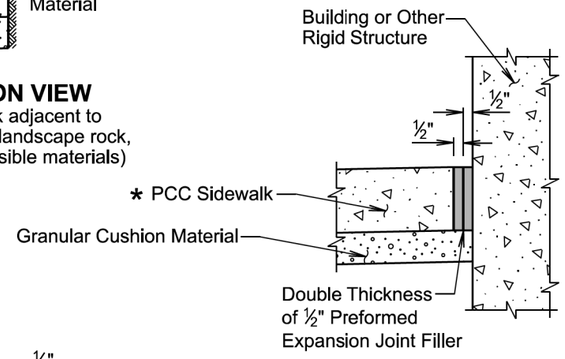


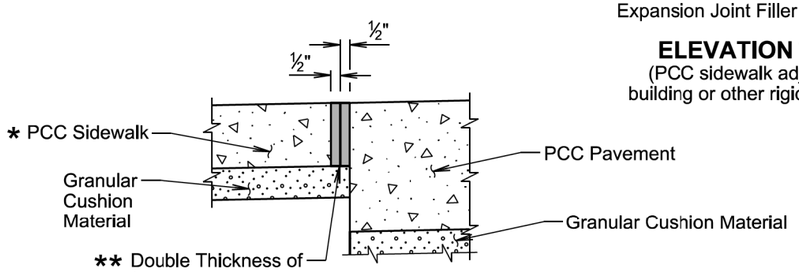
ELEVATION VIEW
(PCC sidewalk adjacent to asphalt concrete pavement)



ELEVATION VIEW
(PCC sidewalk adjacent to earthen material, landscape rock, or other compressible materials)



ELEVATION VIEW
(PCC sidewalk adjacent to building or other rigid structure)



ELEVATION VIEW
(PCC sidewalk adjacent to PCC pavement)

DETAIL A
(Use Appropriate Detail(s))

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