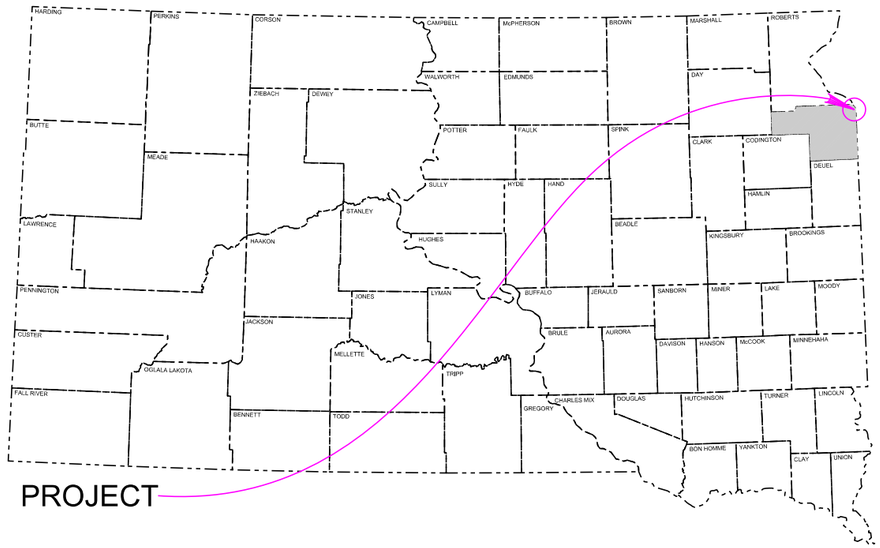


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT BRO-B 8026(34)
2nd AVENUE
GRANT COUNTY

APPROACH GRADING AND STRUCTURE REPLACEMENT OVER BNSF RAILROAD

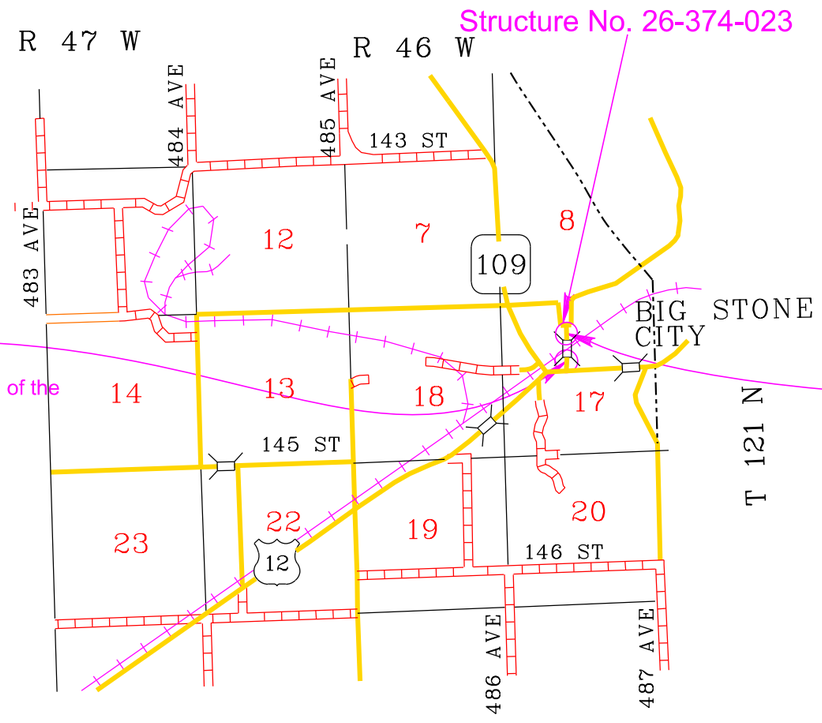
PCN 084D

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	1	76

Plotting Date: 7/24/2023

HRGreen

INDEX OF SHEETS



BEGIN BRO-B 8026(34)
Station 1+25
on BRO-B 8026(34). 2,484 feet East and 1,591 South of the Northwest corner of Section 17 - Township 121 North - Range 46 West

END BRO-B 8026(34)
Station 4+75
on BRO-B 8026(34). 2,473 feet East and 1,241 South of the Northwest corner of Section 17 - Township 121 North - Range 46 West

AADT (2019)	478
AADT (2039)	653
DHV	98
D	50%
DHV T%	3.5%
AADT T%	7.7%
V	35 MPH

STORM WATER PERMIT

Major Receiving
Body of Water: Big Stone Lake
Area Disturbed: 0.62 Acres
Total Project Area: 0.62 Acres
Approx. Begin Lat,Long: 45.2933, -96.4641

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 14659
BLAKE R. AHLERS
NORTH DAKOTA
07/26/2023

3

June 26, 2024

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	2	76

Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.066	Mile
009E3250	Miscellaneous Staking	0.066	Mile
009E3280	Slope Staking	0.066	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	10.0	Hour
100E0100	Clearing	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	35	Ft
110E0600	Remove Fence	80	Ft
110E1010	Remove Asphalt Concrete Pavement	460.0	SqYd
110E1140	Remove Concrete Sidewalk	112.0	SqYd
110E1693	Remove Erosion Control Wattle	50	Ft
110E1700	Remove Silt Fence	63	Ft
110E7150	Remove Sign for Reset	9	Each
120E0010	Unclassified Excavation	2,227	CuYd
230E0010	Placing Topsoil	50	CuYd
* 260E1010	Base Course	137.2	Ton
* 320E1200	Asphalt Concrete Composite	56.9	Ton
632E3500	Reset Sign	9	Each
633E0225	Preformed Thermoplastic Pavement Marking, 24"	80	Ft
633E5015	Grooving for Cold Applied Plastic Pavement Marking, 24"	80	Ft
634E0110	Traffic Control Signs	64.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	10	Each
634E1002	Detour and Restriction Signing	187.5	SqFt
650E0060	Type B66 Concrete Curb and Gutter	28	Ft
650E4660	Type P6 Concrete Gutter	71	Ft
651E0060	6" Concrete Sidewalk	969	SqFt
651E7000	Type 1 Detectable Warnings	40	SqFt
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	200	Ft
734E0165	Remove and Reset Erosion Control Wattle	50	Ft
734E0602	Low Flow Silt Fence	250	Ft
734E0610	Mucking Silt Fence	17	CuYd
734E0620	Repair Silt Fence	63	Ft
998E0100	Railroad Protective Insurance	Lump Sum	LS

*** - Denotes Non-Participating**

Structure No. 26-374-023

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
009E5000	Concrete Penetrating Sealer	654.1	SqYd
120E7000	Select Granular Backfill	19.2	Ton
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0020	Structural Steel	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	76.0	Ft
420E0100	Structure Excavation, Bridge	25	CuYd
430E0200	Bridge End Embankment	1,750	CuYd
430E0300	Granular Bridge End Backfill	134.3	CuYd
430E0510	Approach Slab Underdrain Excavation	4.3	CuYd
460E0030	Class A45 Concrete, Bridge Deck	290.4	CuYd
460E0050	Class A45 Concrete, Bridge	171.2	CuYd
460E0150	Concrete Approach Slab for Bridge	218.4	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	35.8	SqYd
460E0380	Install Dowel in Concrete	724	Each
470E0120	Steel Pedestrian Railing on Sidewalk	527.0	Ft
470E0220	Steel Pedestrian Railing on Concrete Barrier	448.0	Ft
480E0100	Reinforcing Steel	17,790	Lb
480E0200	Epoxy Coated Reinforcing Steel	71,855	Lb
510E0300	Preboring Pile	490	Ft
510E3551	HP 14x117 Steel Test Pile, Furnish and Drive	140	Ft
510E3555	HP14x117 Steel Bearing Pile, Furnish and Drive	780	Ft
621E0380	8' Curved Top Chain Link Fence	527	Ft
651E0160	6" Reinforced Concrete Sidewalk	314	SqFt
680E0040	4" Underdrain Pipe	130	Ft
680E2500	Porous Backfill	8.1	Ton
734E2022	Bridge Berm Slope Protection, Quarried Aggregate	1,078.0	SqYd
831E1030	Perforated Geocell	550	SqFt

SPECIFICATIONS

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

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.

REGISTERED PROFESSIONAL ENGINEER
14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.02 acres of wetlands (includes temporary and permanent) becoming impacted. Refer plans for location and boundaries of the impacted wetlands.

Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1	2+45 to 3+30	0.00	0.00	0.01	0.01	0.02

Action Taken/Required:

Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established as designated in the grading plans. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B5: NORTHERN LONG-EARED BAT

This project is within the range of suitable habitat for the Northern Long-Eared Bat (NLEB) and project work will avoid conflicts with NLEB roosting habitat.

Action Taken/Required:

Project activities that include tree removal, structure work, and/or work within one-quarter mile of a known hibernacula or 150 feet of a known maternity roost tree, or suitable habitat should not occur within the location(s) listed below during the NLEB seasonal work restriction timeframe without approval from the SDDOT Environmental Office.

Station	NLEB Seasonal Work Restriction
2+00 to 4+00	April 1 to October 31

Tree removal will occur between November 1st and March 31st.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water (≥140 °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

Action Taken/Required:

The Contractor will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:
< http://sdleastwanted.sd.gov/maps/default.aspx >

<South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species:
https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04>

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance and/or work in a waterway.

Action Taken/Required:

The DANR General Permit for Stormwater Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR letter of approval is received.

The Contractor must adhere to the "Special Provision Regarding Storm Water Discharges to Waters of the State."

The Contractor will complete the DANR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DANR.

The form can be found at:
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppendixCCA2018Fillable.pdf>

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The DOT 298 Form will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly, and sediment is not tracked off the site.

Information on storm water permits and SWPPPs are available on the following websites:

SDDOT: <https://dot.sd.gov/doing-business/environmental/stormwater>

DANR:<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.aspx>

EPA: <https://www.epa.gov/npdes>

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, SDC L 34A-6-1.13, and ARSD 74:2 7:10:06.

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) 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 150 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 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.

COMMITMENT M: SECTION 4(f)/6(f) RESOURCES

COMMITMENT M1: SECTION 4(f) PROPERTY

A Section 4(f) Evaluation concluded there are no feasible and prudent alternatives to avoiding the Section 4(f) property located within the project.

Station	Section 4(f) Property
2+00 to 4+00	Historic Structure 26-374-023

Action Taken/Required:

The following measures are required to minimize harm to the above Section 4(f) property:

The removal and replacement of structure 26-374-023 has resulted in an Adverse Effect to historic properties. A Memorandum of Agreement was signed, and MOA stipulations must be fulfilled prior to construction. The SDDOT Environmental Office will ensure MOA Stipulations I-III are completed prior to construction.

A programmatic Section 4(f) Evaluation for Use of Historic Bridge 26-374-023 was approved by FHWA. A Section 4(f) exception (b), Exception for Archeological Sites That Are On or Eligible for the National Register, has been applied for the BNSF Railroad, identifed in the plans as ESS-1.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

COMMITMENT Q: ARCHAEOLOGICAL COORDINATION

As a result of a Cultural Resources Survey, historic properties have been identified within and/or adjacent to the project rights-of-way.

The following historic properties have been identified that require avoidance of construction activities:

Table of Historic Properties

Station	L/R	Environmental Sensitive Site	Action
1+00 to 5+00	L & R	ESS-1	No impact beyond grading of the railroad cut/slope

The location and boundary of the site is shown in the grading plans.

Action Taken/Required:

Project construction will be done in accordance with design plans. If construction plans change to include additional impacts to ESS-1 beyond the grading of the railroad cut/slope the Contractor shall contact the SDDOT Environmental Office.

If evidence for cultural resources is uncovered during project construction activities, then such activities within 150 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 consult with the Archaeological Research Center (ARC), the SHPO, and FHWA, to determine the appropriate course of action.

All artifacts, features, or other items of interest uncovered by project construction activities will not be displaced unless the landowner and the SHPO consent to it.

CITY RESPONSIBILITIES

Big Stone City will be responsible for the following at no cost to the Contractor.

1. Right of way and temporary and permanent easement acquisition.
2. Coordination of any utility adjustments.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 1 MGal. No separate payment will be made for the Water for Embankment and all costs associated will be incidental to the contract unit price per cubic yard of “Unclassified Excavation”. Six percent plus or minus moisture will be required at the time of compaction unless otherwise directed by the Engineer.

The estimated excavation required for placing the Granular Bridge End Backfill and/or Bridge End Embankment, and for constructing the Bridge Berm(s) between bridge abutments are listed in the Table of Unclassified Excavation. The excavated material from the construction of the Bridge Berm(s) should be disposed of at a site provided by the Contractor and approved by the Engineer. This waste material is not included in the Waste shown in the Table of Excavation Quantities by Balances.

Special ditch grades and other sections of the roadway different than the typical section(s) will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 5-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite will include MC-70 Asphalt for Prime placed at the rate of 0.30 gallons per square yard. The Asphalt for Prime will be applied to the Base Course for the full width of the bottom layer of Asphalt Concrete Composite plus one foot additional on the outside shoulder.

Asphalt for tack SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for tack will be applied at a rate of 0.09 gallons per square yard on existing pavement or milled asphalt concrete surfaces and at a rate of 0.06 gallons per square yard on primed base course or new asphalt concrete pavement. The Asphalt for tack will be applied for the full width of the bottom layer of Asphalt Concrete Composite plus one-half foot additional on the outside shoulder.

SURFACING THICKNESS DIMENSIONS

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

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.

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided below.

City of Big Stone City
400 Washington St Suite 102
Big Stone City, SD 57216
Phone: (605) 862-8121

Northwestern Energy
113 Centennial St S.
Aberdeen, SD 57401
Phone: (800) 245-6977

Grant-Roberts Rural Water System
1209 S Dakota St.
Milbank, SD 57252
Phone: (605) 432-6793

Midcontinent Communication
222 9th Ave SE
Watertown, SD 57201
Phone: (800) 888-1300

Prior to excavation in or adjacent to BNSF (Burlington Northern Santa Fe) Railway ROW and in conjunction with contacting the SD One-Call, the Contractor will call the BNSF Utility Locate number 1-800-533-2891.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

SHRINKAGE FACTOR: Embankment +30%

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Station to	Station	Total Excavation (CuYd)
1+25	1+75	21
1+75	1+88	6
1+88	3+00	0
3+00	4+15	0
4+15	4+50	17
4+50	4+75	12
	Totals:	56

TABLE OF UNCLASSIFIED EXCAVATION

	(CuYd)
Excavation	56
Topsoil	50
Exc. for Granular Bridge End Backfill	1460
Exc. for Bridge Berms between bridge abutments	661
Total	2227

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

Plans quantity will be the basis of payment. The Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed and/or salvaged.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SY)
1+25.00		1+87.73	L/R	249
4+00.46		4+75.00	L/R	211
			Total:	460

TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

Station	to	Station	L/R	Quantity (Ft)
1+52.90		1+70.22	L	17
1+78.32		1+88.44	R	18
			Total:	35

TABLE OF SIDEWALK REMOVAL

Station	to	Station	L/R	Quantity (SY)
1+25.00		1+69.77	L	25
1+81.17		1+91.71	R	18
3+97.19		4+64.78	L	39
4+18.34		4+75.00	R	30
			Total:	112

TABLE OF FENCE REMOVAL

Station	to	Station	L/R	Quantity (SY)
1+51.73		1+67.17	L	20
1+92.43		1+96.86	R	19
3+94.17		3+95.52	L	23
4+21.32		4+37.10	R	18
			Total:	80

TABLE OF TYPE B CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
1+49.78		1+55.95	L	6
1+75.75		1+77.83	R	10
4+46.56		4+53.10	L	6
4+46.56		4+52.56	R	6
			Total:	28

TABLE OF TYPE P CONCRETE GUTTER

Station	to	Station	L/R	Quantity (Ft)
1+25.00		1+49.78	L	25
1+75.75		1+77.26	R	16
4+53.10		4+75.00	L	30
			Total:	71

TYPE I DETECTABLE WARNINGS

Detectable warnings will be in compliance with the Americans with Disabilities Act regulations.

The detectable warnings will be installed according to the manufacturer's installation instructions.

A concrete thickness equal to the adjacent concrete sidewalk thickness and 2 inches of granular cushion material will be placed below the Type 1 Detectable Warnings. When concrete is placed below the detectable warnings then the concrete thickness will be transitioned at the rate of 1" per foot to match the adjacent concrete sidewalk thickness.

The detectable warnings will be a brick red color for application in concrete curb ramps. Cast iron plates may be a natural patina (weathered steel).

Type 1 Detectable Warning Panels will be one of the following products:

Type 1 Detectable Warnings

Product	Manufacturer
Detectable Warning Plate Cast Iron Plate	Neenah Foundry Company Neenah, WI 800-558-5075 http://www.neenahfoundry.com/
Detectable Warning Plate Cast Iron Plate	Deeter Foundry Lincoln, NE 800-234-7466 http://www.deeter.com/
Detectable Warning Plate Cast Iron Plate(No Coating)	East Jordan Iron Works, Inc. 301 Spring Street East Jordan, MI 49727 800-626-4653 http://www.ejiw.com
Iron Dome Cast Iron Detectable Warning Tile	ADA Solutions, Inc. 323 Andover Street Suite 3 Wilmington, MA 01887 800-372-0519 https://adatile.com
TufTile (wet-set) Cast Iron Replaceable Tile	TufTile 1200 Flex Court Lake Zurich, IL 60047 888-960-8897 http://www.tuftile.com/
Advantage Tactile Detectable Warning Cast Iron Plate	Advantage Tactile Systems, Inc. 241 Main Street, Suite 100 Buffalo, NY 14203 800-679-4022 https://advantagetactile.com/

TABLE OF TYPE 1 DETECTABLE WARNINGS

Station	L/R	Quantity (SqFt)
1+32.78	11.62' L	10
1+32.78	14.75' R	10
1+50.95	33.35' R	10
1+78.26	31.49' R	10
	Total:	40

TABLE OF 6" CONCRETE SIDEWALK

Station	to	Station	L/R	Quantity (SqFt)
1+25.00		1+57.95	L	219
1+30.28		1+52.59	R	159
1+80.60		1+86.09	R	181
4+16.41		4+64.49	L	216
4+44.56		4+75.00	R	194
			Total:	969

TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Grade Staking: Length (Mile)	Grade Staking: Lane Factor	Grade Staking: *Sets of Stakes	Grade Staking: **Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
2nd Avenue	1+25.00	4+75.00	2	350	0.066	1	1	0.066	0.066	0.066	
Structure No. 26-374-023	1+87.88	4+15.50									1
							Totals:	0.066	0.066	0.066	1

* 1 = Blue Top Stakes Only (Asphalt Surfacing)

** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

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 County/City.

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

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 final surfacing.

DETOUR SIGNING

The Contractor will furnish and install the detour signs as shown in these plans. Prior to installing the signs, the Contractor will mark the sign locations and review them with the Engineer. Detour signs will be installed on fixed location, ground mounted, breakaway supports. It will be the responsibility of the Contractor to maintain and reinstall these signs during the project as required by the construction progress. Upon completion of the project, the Contractor will remove the detour signs.

All costs for furnishing the signs, posts, and mounting hardware, and for installing, maintaining, covering, and removing the detour signs will be incidental to the contract unit price per square foot for "Detour and Restriction Signing".

PLACING TOPSOIL

The thickness will be approximately 6 inches within the right-of-way and on temporary easements.

The estimated amount of topsoil to be placed is as follows:

Station	to	Station	Topsoil (CuYd)
1+25		4+75	50
		Total:	50

EROSION CONTROL

The estimated area requiring erosion control is 27000 square feet. 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".

The limits of erosion control work will be determined by the Engineer during construction.

Permanent Seeding

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

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

Fiber Mulching

Fiber mulch will be applied in a separate operation following permanent seeding.

The Contractor will allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

The fiber mulch provided will be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

Mycorrhizal Inoculum

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

25% *Glomus intraradices*
25% *Glomus aggregatum or deserticol*
25% *Glomus mosseae*
25% *Glomus etunicatum*

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

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

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com
LALRISE Prime and Max WP	Lallemand Specialties Inc. Milwaukee, WI Phone: 1-844-590-7781 www.lallemandplantcare.com

EROSION CONTROL WATTLE

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

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

Erosion control wattles will remain on the project to decompose.

A quantity of 12” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

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

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

TABLE OF EROSION CONTROL WATTLE

Station	Location	Diameter (Inch)	Quantity (Ft)
TBD by Engineer	Additional Quantity:	12	200
		Total:	200

LOW FLOW SILT FENCE

The low flow silt fence fabric provided will be from the approved product list. The approved product list for low flow silt fence may be viewed at the following internet site:

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

Low flow silt fence will be placed at the locations noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

TABLE OF LOW FLOW SILT FENCE

Station	Location	Quantity (Ft)
1+45 L to 1+53 L	Perimeter control	20
3+87 L to 3+98 L	Perimeter control	20
1+98 R to 2+05 R	Perimeter control	20
4+27 R to 4+42 R	Perimeter control	20
2+34 L to 3+04 R	Slope Protection	85
3+00 L to 3+49 R	Slope Protection	85
	Total:	250

GENERAL PERMANENT SIGNING

New sign installations will be staked in the field by the Contractor and checked by the Engineer. The Contractor will give the Engineer a minimum of one week to check staked locations prior to signpost installation. Lateral offset of signs will be as shown in the plans or as directed by the Engineer.

The Contractor will be responsible for contacting South Dakota One Call to locate the utilities at the staked sign installation locations.

When signs are mounted in an assembly, they will be 1-2 inches apart vertically and horizontally.

The height of the post must not exceed the minimum height needed by more than 0.5 feet. Any portion that extends above the sign will be cut off. No separate payment will be made for cutting the post or for that length cut off.

Aluminum U-Channel stiffeners will be used on all signs 36 inches or greater in width and will conform to ASTM B221 Alloy 6063-T6 or 6061-T6. The U-Channel will be 2 inches in width and free of holes. The U-Channel stiffeners will also be used to connect various signs together so that an entire sign assembly can be erected on a single installation. Stiffeners may be fastened to signs by use of 1/4-inch diameter drive rivets.

The Contractor will use 3/8-inch diameter rust proof machine sign bolts, flat metal washers, neoprene washers (against the sign sheeting), lock washers, and nuts to fasten the sign to the channel aluminum and posts. A minimum of two bolts will extend through each post.

Prior to ordering signs, the Contractor will verify dimensions, background, border, and legend of the signs.

Prior to use, the Contractor will provide documentation for the sign support devices showing they meet the applicable NCHRP 350 or MASH requirements.

REMOVE SIGN FOR RESET AND RESET SIGN

Signs that are scheduled for reset will be dismantled and reassembled to the extent needed by the Contractor to properly reset the sign. Signs will be handled with care so that the existing signs, posts, and bases are not damaged during the relocation process. The Contractor will replace and pay for any reset signs damaged in their care. The Contractor will remove and dispose of any existing posts for all reset signs that require use of new posts as shown in the Table of Permanent Signing.

All costs for removing, dismantling, and disposing of any existing posts will be incidental to the contract unit price per each for “Remove Sign for Reset”. All costs for resetting the existing signs will be incidental to the contract unit price per each for “Reset Sign”. All quantities for Remove Sign for Reset and Reset Sign will be per assembly at the contract unit price per each.

RESET TYPE 3 FLEXIBLE OBJECT MARKERS

Existing Type 3 flexible object markers will be reset on top of concrete barrier using fixed-surface mounted bases. The fixed-surface mounted base will have nominal dimensions of 8”x8” unless otherwise specified and the installation system will consist of a thermosetting epoxy adhesive. As

an alternative, a plastic sleeve with anchor and bolt system may be used. Either of these installation methods should follow the manufacturer’s recommended installation procedures. The Type 3 flexible object markers at bridge ends will be installed on top of the concrete barrier at the mounting height of 3’+/- 1’ from the bottom of the marker to the surface of the nearest traffic lane.

All costs for materials, hardware, labor and equipment necessary to install Type 3 object markers will be incidental to the contract unit price per each for “Reset Sign”.

FOR BIDDING PURPOSES ONLY

STORMWATER POLLUTION PREVENTION PLAN CHECKLIST

*(The numbers left of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES (Stormwater Permit))*

5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION

To promote stormwater management awareness specific for this project, the Contractor's Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor's Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☒ Filling
  - ☐ Other (describe):
- **5.3 (3b): Total Project Area** 0.62 acres
- **5.3 (3b): Total Area to be Disturbed** 0.62 acres
- **5.3 (3c): Maximum Area Disturbed at One Time** 0.62 acres
- **5.3 (3d): Existing Vegetative Cover (%)** 50
- **5.3 (3d): Description of Vegetative Cover** Mix of native grasses
- **5.3 (3e): Soil Properties:** USDA-NRCS: Silty Sand
- **5.3 (3f): Name of Receiving Water Body/Bodies** Big Stone Lake
- **5.3 (3g): Location of Construction Support Activity Areas** Onsite

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install perimeter protection where runoff may exit site.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Final grading.	
Removal of protection devices.	

5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES

All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

Perimeter Controls (See Detail Plan Sheets)

Description	Estimated Start Date
☐ Natural Buffers (within 50 ft of Waters of State)	
☒ Silt Fence	
☒ Erosion Control Wattles	
☐ Temporary Berm / Windrow	
☐ Floating Silt Curtain	
☐ Stabilized Construction Entrances	
☐ Entrance/Exit Equipment Tire Wash	
☐ Other:	

Structural Erosion and Sediment Controls

Description	Estimated Start Date
☒ Silt Fence	
☐ Temporary Berm/Windrow	
☒ Erosion Control Wattles	
☐ Temporary Sediment Barriers	
☐ Erosion Bales	
☐ Temporary Slope Drain	
☐ Turf Reinforcement Mat	
☐ Riprap	
☐ Gabions	
☐ Rock Check Dams	
☐ Sediment Traps/Basins	
☐ Culvert Inlet Protection	
☐ Transition Mats	
☐ Median/Area Drain Inlet Protection	
☐ Curb Inlet Protection	
☐ Interceptor Ditch	
☐ Concrete Washout Facility	
☐ Work Platform	
☐ Temporary Water Barrier	
☐ Temporary Water Crossing	
☐ Permanent Stormwater Ponds	
☐ Permanent Open Vegetated Swales	
☐ Natural Depressions to allow for Infiltration	
☐ Sequential Systems that combine several practices	
☐ Other:	

Dust Controls

Description	Estimated Start Date
☐ Tarps & Wind impervious fabrics	
☐ Watering	
☐ Stockpile location/orientation	
☐ Dust Control Chlorides	
☐ Other	

Dewatering BMPs

Description	Estimated Start Date
☐ Sediment Basins	
☐ Dewatering bags	
☐ Weir tanks	
☐ Temporary Diversion Channel	
☐ Other:	

Stabilization Practices (See Detail Plan Sheets)

(Stabilization measures will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities (**3.18**))

Description	Estimated Start Date
☐ Vegetation Buffer Strips	
☐ Temporary Seeding (Cover Crop Seeding)	
☒ Permanent Seeding	
☐ Sodding	
☐ Planting (Woody Vegetation for Soil Stabilization)	
☐ Mulching (Grass Hay or Straw)	
☒ Fiber Mulching (Wood Fiber Mulch)	
☐ Soil Stabilizer	
☐ Bonded Fiber Matrix	
☐ Fiber Reinforced Matrix	
☐ Erosion Control Blankets	
☐ Surface Roughening (e.g. tracking)	
☐ Other:	

Wetland Avoidance

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☐ No ☒ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

5.3 (6): PROCEDURES FOR INSPECTIONS

- Inspections will be conducted at least once every 7 days.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and Contractor's Erosion Control Supervisor are responsible for inspections. Maintenance and repair activities are the responsibility of the Contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

Stormwater management will be handled by temporary controls outlined in "DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES" above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

5.3 (8): POLLUTION PREVENTION PROCEDURES

5.3 (8a): Spill Prevention and Response Procedures

➢ **Material Management**

- Housekeeping
  - Only needed products will be stored on-site by the Contractor.
  - Except for bulk materials the contractor will store all materials under cover and/or in appropriate containers.
  - Products must be stored in original containers and labeled.
  - Material mixing will be conducted in accordance with the manufacturer's recommendations.
  - When possible, all products will be completely used before properly disposing of the container off-site.
  - The manufacturer's directions for disposal of materials and containers will be followed.
  - The Contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
  - Dust generated will be controlled in an environmentally safe manner.

- Hazardous Materials
  - Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
  - Original labels and material safety data sheets will be retained in a safe place to relay important product information.
  - If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
  - Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
  - Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any stormwater system or stormwater treatment system.
  - Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of stormwater runoff.

➢ **Spill Control Practices**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill cleanup will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for cleanup purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator.

➢ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SDDANR.
- Personnel with primary responsibility for spill response and cleanup will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

5.3 (8b): WASTE MANAGEMENT PROCEDURES

➢ **Waste Disposal**

- All liquid waste materials will be collected and stored in approved sealed containers. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal and notices stating proper practices will be posted. The Contractor is responsible for ensuring waste disposal procedures are followed.

➢ **Hazardous Waste**

- All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the Contractor will be responsible for seeing that these practices are followed.

➢ **Sanitary Waste**

- Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

5.3 (9): CONSTRUCTION SITE POLLUTANTS

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the heading "POLLUTION PREVENTION PROCEDURES" (check all that apply).

- ☒ Concrete and Portland Cement
- ☐ Detergents
- ☐ Paints
- ☒ Metals
- ☒ Bituminous Materials
- ☐ Petroleum Based Products
- ☐ Diesel Exhaust Fluid
- ☐ Cleaning Solvents
- ☒ Wood
- ☒ Cure
- ☐ Texture
- ☐ Chemical Fertilizers
- ☐ Other:

Product Specific Practices

- **Petroleum Products**
  All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

- **Fertilizers**
  Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to stormwater. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

- **Paints**
  All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

- **Concrete Trucks**
  Contractors will provide designated truck washout facilities on the site. These areas must be self-contained and not connected to any stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

5.3 (10): NON-STORMWATER DISCHARGES

The following non-stormwater discharges are anticipated during the course of this project (check all that apply).

- ☐ Discharges from water line flushing.
- ☐ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☐ Uncontaminated ground water associated with dewatering activities.

5.3 (11): INFEASIBILITY DOCUMENTATION

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

7.0: SPILL NOTIFICATION

In the event of a spill, the Contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to SDDANR immediately **if any one of the following** conditions exists:
  - The release or spill threatens or is able to threaten waters of the state (surface water or ground water)
  - The release or spill causes an immediate danger to human health or safety
  - The release or spill exceeds 25 gallons
  - The release or spill causes a sheen on surface water
  - The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01
  - The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01
  - The release or spill of any substance that harms or threatens to harm wildlife or aquatic life
  - The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.

- To report a release or spill, call SDDANR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDANR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge will be sent to SDDANR within 14 days of the discharge.

5.4: SWPPP CERTIFICATIONS

- **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

- **South Dakota Department of Transportation**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature (See the General Permit, Section 7.4 (1))

- **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature

CONTACT INFORMATION

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

- **Contractor Information**:
  - Prime Contractor Name: _____
  - Contractor Contact Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **Erosion Control Supervisor**
  - Name: _____
  - Address: _____
  - _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SDDOT Project Engineer**
  - Name: _____
  - Business Address: _____
  - Job Office Location: _____
  - City: _____State: _____Zip: _____
  - Office Phone: _____Field: _____
  - Cell Phone: _____Fax: _____
- **SDDANR Contact Spill Reporting**
  - Business Hours Monday-Friday (605) 773-3296
  - Nights and Weekends (605) 773-3231
- **SDDANR Contact for Hazardous Materials.**
  - (605) 773-3153
- **National Response Center Hotline**
  - (800) 424-8802.
- **SDDANR Stormwater Contact Information**
  - SDDANR Stormwater (800) 737-8676
  - Surface Water Quality Program (605) 773-3351

5.5: REQUIRED SWPPP MODIFICATIONS

- **5.5 (1): Conditions Requiring SWPPP Modification**
  The SWPPP must be modified, including the site map(s), in response to any of the following conditions:
  - When a new operator responsible for implementation of any part the SWPPP begins work on the site.
  - When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
  - To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
  - If inspections by site staff, local officials, SDDANR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
  - To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
  - If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.
- **5.5 (2): Deadlines for SWPPP Modification**
  Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.
- **5.5 (3): Documentation of Modifications to the Plan**
  All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.
- **5.5 (4): Certification Requirements**
  All modifications made to the SWPPP must be signed and certified as required in Section 7.4.
- **5.5 (5): Required Notice to Other Operators**
  If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.

PAVEMENT, CURB AND GUTTER, AND SIDEWALK QUANTITIES

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	15	76

Rev 3/18/2024 BRA

Station to Station		Concrete Curb and Gutter Type B 66 Ft	Concrete Gutter Type P 6 Ft	Concrete Sidewalk 6" Sq Ft	Detectable Warning Type 1	Asphalt Pavement 4" Ton	Base Course 9" Ton
W Side Tioga Street							
1+25, 18.4' L	1+58, 20.6' L	6	25	219	10		
SE Quadrant Tioga Street							
1+30, 12.7' R	1+52, 35.7' R			159	20		
NE Quadrant Tioga Street							
1+81, 22.0' R	1+86, 42.3' R	10	16	181	10		
SW Quadrant Walnut Street							
4+16, 25.6' L	4+65, 38.7' L	6	30	216			
SE Quadrant Walnut Street							
4+44, 21.6' R	4+75, 23.3' R	6		194			
2nd Avenue/Tioga Street							
1+25.00	1+76.95					21.1	86.1
2nd Avenue/Walnut Street							
4+46.56	4+75.00					35.8	51.1
Total:		28	71	969	40	56.9	137.2

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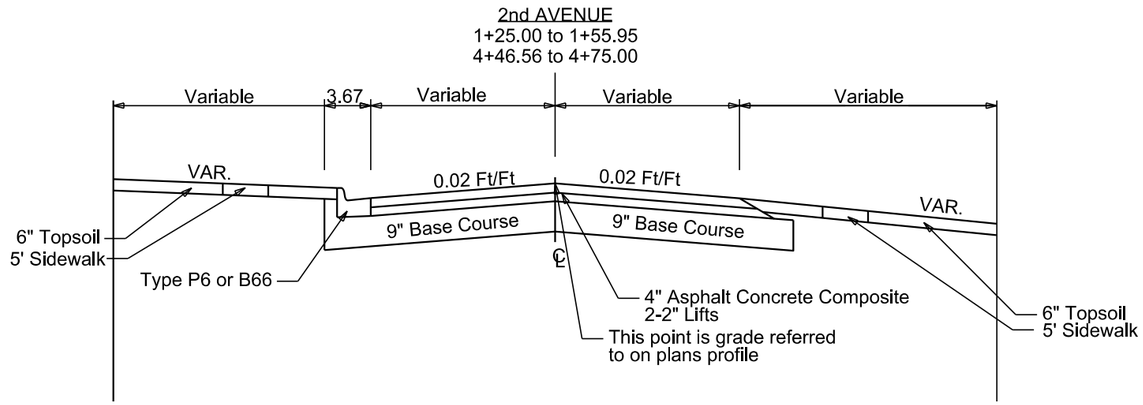
BLAKE R. ALDERS
03/18/2024

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	16	76

Plotting Date: 7/24/2023

FOR BIDDING PURPOSES ONLY

TYPICAL GRADING SECTION



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NORTH DAKOTA
07/26/2023

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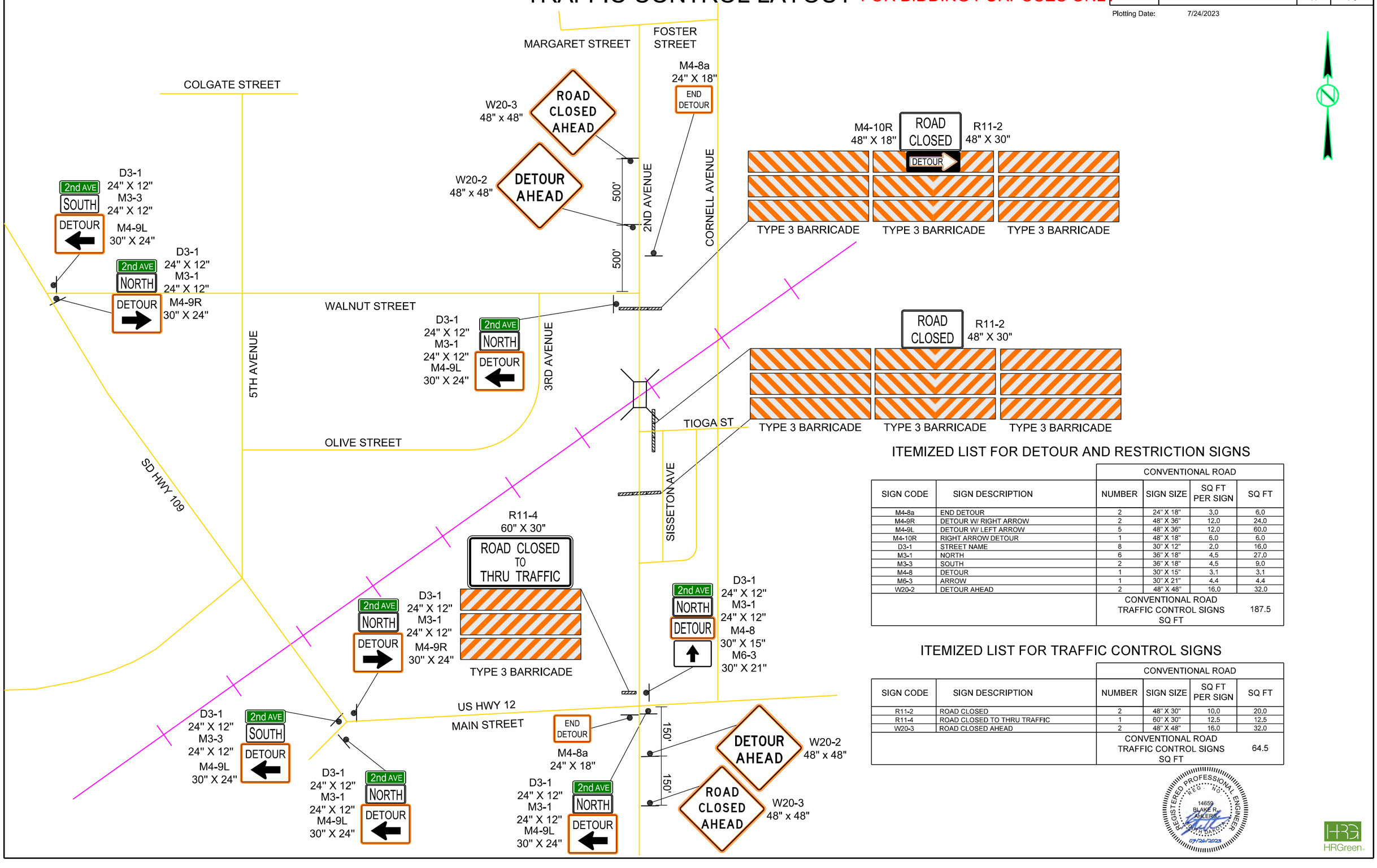
TRAFFIC CONTROL LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	17	76

Plotting Date: 7/24/2023



ITEMIZED LIST FOR DETOUR AND RESTRICTION SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQ FT PER SIGN	SQ FT
M4-8a	END DETOUR	2	24" X 18"	3.0	6.0
M4-9R	DETOUR W/ RIGHT ARROW	2	48" X 36"	12.0	24.0
M4-9L	DETOUR W/ LEFT ARROW	5	48" X 36"	12.0	60.0
M4-10R	RIGHT ARROW DETOUR	1	48" X 18"	6.0	6.0
D3-1	STREET NAME	8	30" X 12"	2.0	16.0
M3-1	NORTH	6	36" X 18"	4.5	27.0
M3-3	SOUTH	2	36" X 18"	4.5	9.0
M4-8	DETOUR	1	30" X 15"	3.1	3.1
M6-3	ARROW	1	30" X 21"	4.4	4.4
W20-2	DETOUR AHEAD	2	48" X 48"	16.0	32.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQ FT			187.5

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQ FT PER SIGN	SQ FT
R11-2	ROAD CLOSED	2	48" X 30"	10.0	20.0
R11-4	ROAD CLOSED TO THRU TRAFFIC	1	60" X 30"	12.5	12.5
W20-3	ROAD CLOSED AHEAD	2	48" X 48"	16.0	32.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQ FT			64.5

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SOUTH DAKOTA
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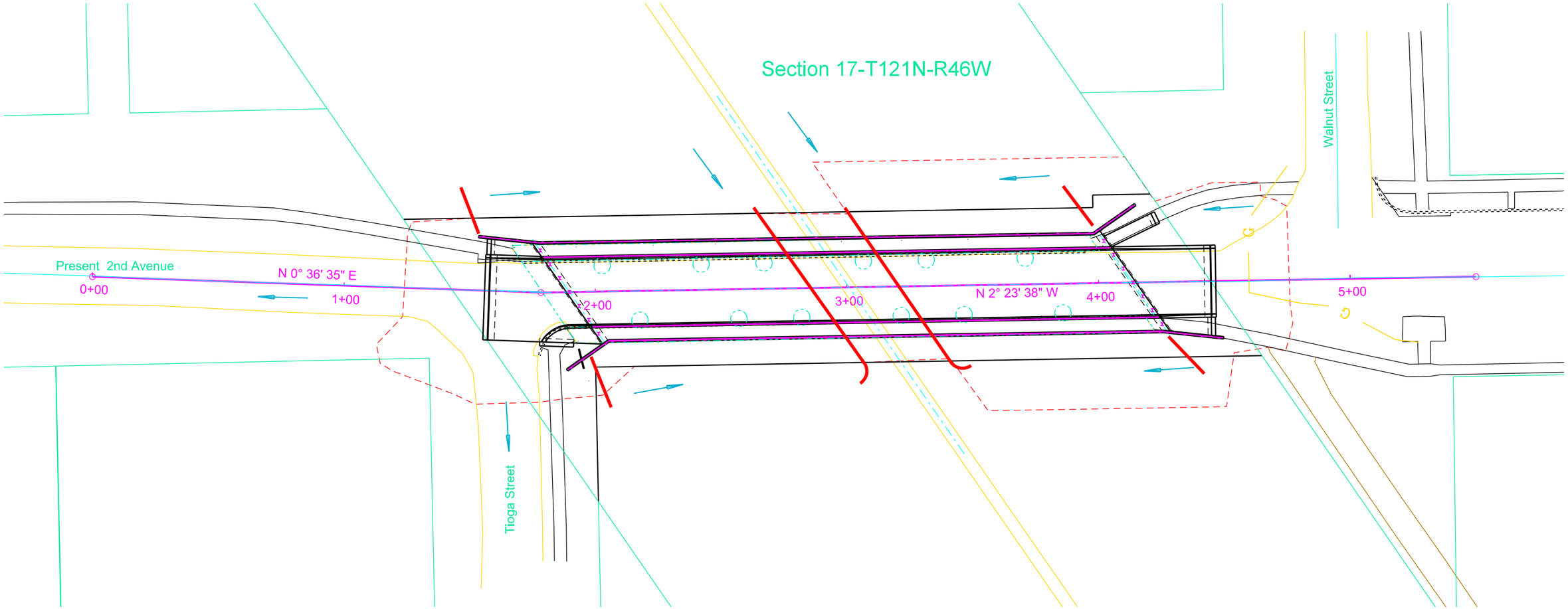
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	18	76

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/24/2023

TEMPORARY STABILIZATION

Install 200 Ft of 12" Diameter Erosion Control Wattles at the Box Culvert at 3+00. Placement will be determined by the engineer during construction.



PERIMETER CONTROL

Install Low Flow Silt Fence at the following locations:
1+45 L to 1+53 L Perimeter control 20 Ft
3+87 L to 3+98 L Perimeter control 20 Ft
1+98 R to 2+05 R Perimeter control 20 Ft
4+27 R to 4+42 R Perimeter control 20 Ft
2+34 L to 3+04 R Slope Protection 85 Ft
3+00 L to 3+49 R Slope Protection 85 Ft

LOW FLOW SILT FENCE

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SOUTH DAKOTA
07/26/2023

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HORIZONTAL ALIGNMENT DATA & CONTROL DATA

MAINLINE

Type	Station			Northing	Easting
POB	0+00.00			551963.2062	2878165.9376
		TL= 178.32	N 0° 36' 34.92" W		
PI	1+78.32			552141.5195	2878167.8352
		TL= 371.68	N 2° 23' 38.4" W		
POE	5+50.00			552512.8718	2878152.3100

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
235635	0+90.89	69.99' L	BARCAP	552054.8390	2878096.9150	1058.13
235636	0+12.58	65.56' L	BARCAP	551976.4830	2878100.5170	1054.25
235790	5+40.35	40.36' L	BARCAP,1\2IN RBR LS2499	552501.5490	2878112.3870	1057.30
235792	-	-	REBAR,5\8IN RBR	552601.4310	2878108.2210	1057.39
235793	-	-	REBAR,1\2IN RBR 1IN BELOW ASP,NESEC 18-121-46	553685.0430	2875672.8040	1098.51
235794	-	-	REBAR,1\2IN RBR	553677.4240	2878448.7950	1002.04
235795	-	-	REBAR,5\8IN RBR	553670.6250	2878329.2420	1014.24
235796	-	-	REBAR,5\8IN RBR	553416.5250	2878343.0780	1017.92
235797	-	-	BARCAP,1\2IN RBR LS2499	553880.2720	2878282.5420	1013.44

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone NAD83(2011); epoch 2010 (Opus); Geoid 18. SF = 1.0000000
The elevations shown on this sheet are based on NAVD 88.

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LEGEND

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	20	76

Plotting Date: 7/24/2023

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush/Hedge
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Concrete Symbol
- Control Point
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Deck Edge
- Ditch Block
- Doorway Threshold
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Electric Transformer/Power Junction Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Miscellaneous
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Gutter
- Guy Pole
- Haystack
- Highway ROW Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Miscellaneous
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Miscellaneous Line
- Miscellaneous Property Corner
- Miscellaneous Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pedestrian Push Button Pole
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad ROW Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Subsurface Utility Exploration Test Hole
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Sign Double Face
- Traffic Sign One Post
- Traffic Sign Two Post
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner
- State and National Line
- County Line
- Section Line (APPROX. SEC. LINE)
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- ROW Line
- New ROW Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)
- Drainage Arrow
- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Bridge
- Remove Concrete Curb and/or Gutter
- Detectable Warning

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

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Plot Scale - 1:200
Plotted From - bahlers
File - ...\CAD\19_GRNT0804\Dlegend.dgn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	21	76

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/24/2023

1+87.88 to 4+15.50
Install 227'-7 3/8" Comp. Girder Bridge
(See Structure Sheets)

1+78.13 to 4+08.54
Remove 228' 5-Span Steel Bridge
(Incidental Work, Structure)

Donald Haukos Parcel 25.00.61.08 Lots 7 & 8, Block 61 CONSOLI-DATED PLAT

William J. & Deboraj L. Wiik Parcel 25.00.61.06 Portions of Lots 4, 5 & 6, Block 61 SE of a line CONSOLIDATED PLAT

BNSF Railway

BEGIN BRO-B 8026(34)
Station 1+25.00

Section 17-T121N-R46W

Michael E. Bogenreif Parcel 25.00.62.04 Lots 3 - 12, Block 62 and 1/2 vacated alley CONSOLIDATED PLAT

FUTURE RELOCATED LUMINAIRE POLE
4+20-17.00' L

Glenda G. Loeschke Parcel 25.01.05.10 Lots 9 & 10, Block 5 BETCHER'S ADDITION

Walnut Street

1+08.44-46.40'
1+22.78-27.13'
1+22.78-27.13'
3+98.27-30.00' & 35.00'
4+11.26- 50.00'
4+21.25- 35.00'
4+21.25- 35.00'

Present 2nd Avenue

N 0° 36' 35" E

N 2° 23' 38" W

0+00
1+00
2+00
3+00
4+00
5+00

END BRO-B 8026(34)
Station 4+75.00

4+64.50-30.00'
4+64.50-30.00'
4+77.81-50.00'

0+77.32-30.94'

James & Susan Smith Parcel 25.00.52.05 Lots 3 - 5, Block 52 CONSOLIDATED PLAT

Parcel A1

1+36.79-59.85'

Tioga Street

1+99.82-83.52'
1+99.60-30.00'
1+99.68-50.00'

Charles & Sylvia Musch Parcel 25.01.06.10 Part of Lot 10, Block 6 BETCHER'S ADDITION

Parcel A1
1+10 to 1+36 R
Temporary Easement containing
0.01 ac, more or less

William J. & Deboraj L. Wiik Parcel 25.00.45.05 Lots 1 - 5, Block 51 and 1/2 vacated street CONSOLIDATED PLAT

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SOUTH DAKOTA
07/26/2023

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	22	76

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/24/2023

VPI 1+25
Elev 1,055.21

+2.8000%

K = 38
L 100.00ft
PVI 1+96.61
Elev 1,057.22

+0.2000%

VPI 4+75
Elev 1,057.77

235636
0+12.58-65.56' L
Elev 1054.25

235635
0+90.89-69.99' L
Elev 1058.13

235790
5+40.35-40.36' L
Elev 1057.30

1,060
1,055
1,050
1,045
1,040
1,035
1,030
1,025
1,020
1,015
1,010
1,005

1,055.63
1,056.17
1,056.61
1,056.94
1,057.17
1,057.30
1,057.34
1,057.38
1,057.42
1,057.46
1,057.50
1,057.54
1,057.58
1,057.62
1,057.66
1,057.70
1,057.74

0+00
1+00
2+00
3+00
4+00
5+00

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AHLERS
07/26/2023

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	23	76

Plotting Date: 7/24/2023

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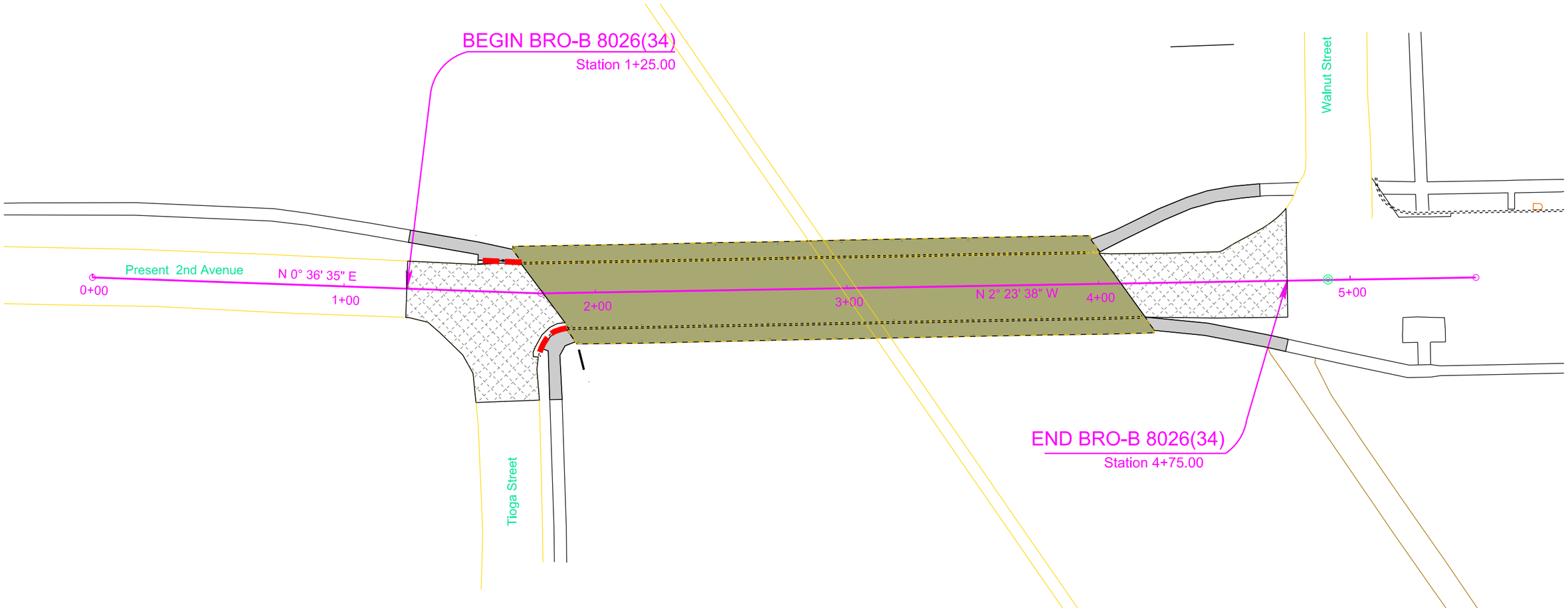
PAVEMENT REMOVAL LAYOUT



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NORTH DAKOTA
07/26/2023

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	24	76

Plotting Date: 7/24/2023

FOR BIDDING PURPOSES ONLY

CURB RAMP LAYOUT
CURB AND GUTTER LAYOUT

* Turning space with 1.5% slope
** Curb Ramp with 7.5% slope and 1.5% cross slope

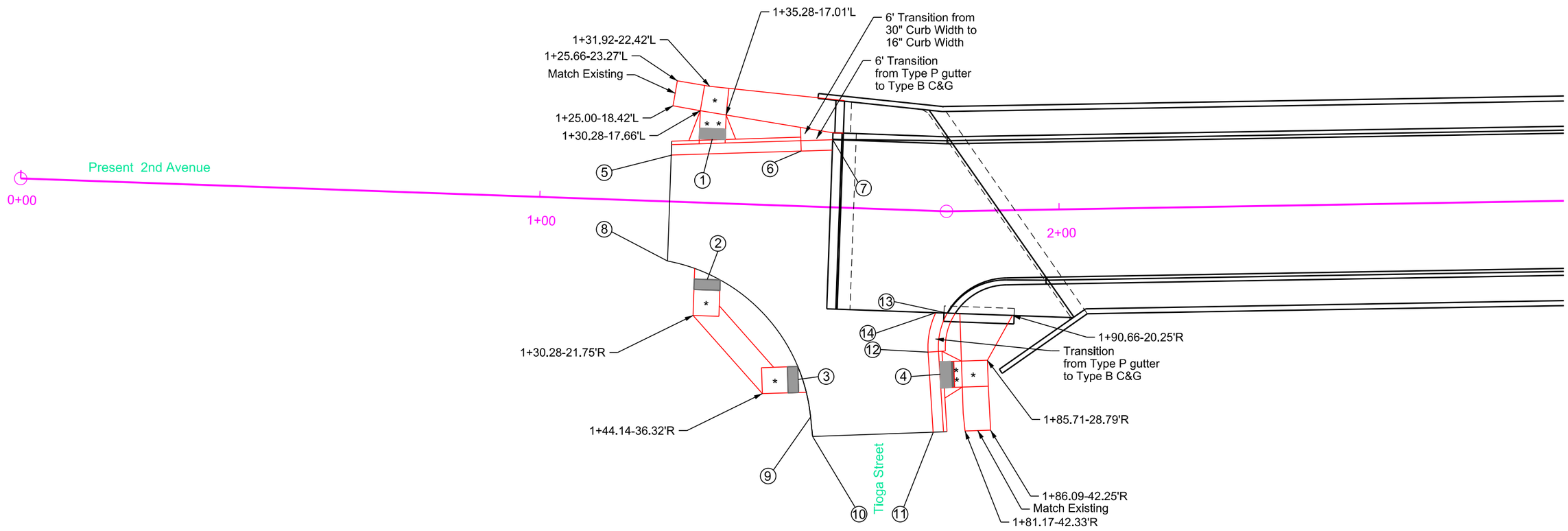
Note: All sidewalk is 5' wide unless noted.
All boulevards are grass unless noted.
All sidewalk is 6" unless noted.
All gutter slopes are 2%.
All C&G is Type B66 unless noted
All gutter is Type P6 unless noted

1 1+32.78-11.62'L
Center Type 2
Curb Ramp
TC Elev 1055.97 (Theor)

5 1+25.00-8.94'L
Edge of Pavement
Begin Type P gutter
EOP Elev (Match Existing)

6 1+49.96-10.60'L
End Type P gutter
Begin Type B C&G
Begin Transitions
Begin 30" Curb Width
TC Elev 1056.24 (Theor)

7 1+55.95-13.00'L
End Type B C&G
End Transitions
Begin Bridge Curb
TC Elev 1056.31



2 1+32.78-14.75'R
Center Type 2
Curb Ramp
EOP Elev 1055.14

4 1+78.26-31.49'R
Center Type 2
Curb Ramp
1055.76 (Theor)

9 1+78.32-44.22'R
Edge of Pavement
End 34' Rad
EOP Elev 1055.24

11 1+78.32-44.22'R
Begin Type P gutter
Edge of Pavement
EOP Elev (Match Existing)

13 1+78.32-19.59' R
Begin Bridge Curb
End Type B C&G
TC Elev 1056.69

3 1+50.95-33.35'R
Center Type 2
Curb Ramp
EOP Elev 1055.40

8 1+25.00-11.35'R
Begin 34' Rad
Edge of Pavement
EOP Elev 1054.93
(Match Existing)

10 1+54.10-44.22'R
Edge of Pavement
EOP Elev 1055.19
(Match Existing)

12 1+75.75-27.21R
Begin 16" TC
Begin 13.33' Rad
Begin Transition to Type B C&G
TC Elev 1056.41 (Theor)

14 1+76.95-13.00' R
Begin Bridge
End Gutter
TC Elev 1056.69

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SOUTH DAKOTA
03/26/2023

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	25	76

Plotting Date: 7/24/2023

FOR BIDDING PURPOSES ONLY

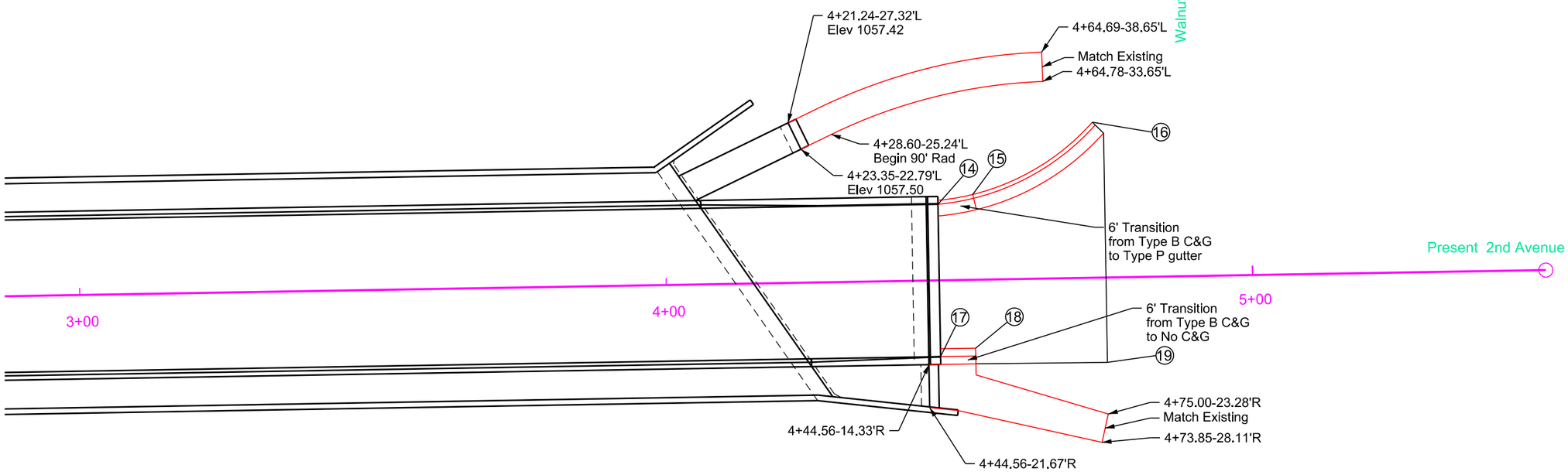
CURB AND GUTTER LAYOUT

Note: All sidewalk is 5' wide unless noted.
All boulevards are grass unless noted.
All sidewalk is 6" unless noted.
All gutter slopes are 2%.
All C&G is Type B66 unless noted
All gutter is Type P6 unless noted

14 4+46.56-13.00'L
End Bridge Curb
Begin Type B C&G
Begin Transition
TC Elev 1057.96

15 4+52.51-14.56'L
End Type B Curb & Gutter
Begin Type P Gutter
End Transition
TC Elev 1058.04 (Theor)

16 4+73.12-26.56'L
Edge of Pavement
End 40' Rad
EOP Elev (Match Existing)



17 4+46.56-13.00'R
End Bridge Curb
Begin Type B C&G
Begin Transition
TC Elev 1057.96

18 4+52.56-11.67'R
End 16" Curb Width
End Type B C&G
TC Elev 1057.97 (Theor)

19 4+75.00-14.48'R
Edge of Pavement
EOP Elev (Match Existing)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
14659
BLAKE R. AHLERS
ABERDEEN, SOUTH DAKOTA
07/26/2023

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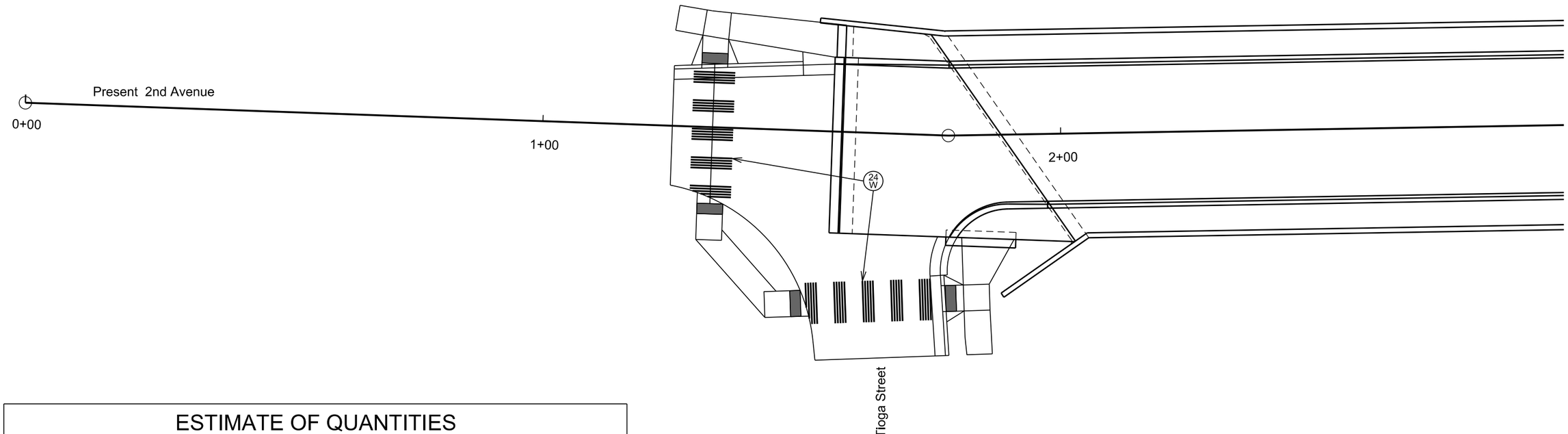
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	26	76

Plotting Date: 7/24/2023

PAVEMENT MARKING LAYOUT



ESTIMATE OF QUANTITIES

KEY	ITEM	EST QUANT	UNIT
(24 W)	PREFORMED THERMOPLASTIC PAVEMENT MARKING, 24" WHITE	80	FT
	GROOVING FOR COLD APPLIED PLASTIC PAVEMENT MARKING, 24"	80	FT

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
07/26/2023

HRGreen.

Sign Installation Table

EXISTING STATION	NEW STATION	SIGN								Post					Description	Remarks
		Width (in)	Height (in)	Number	Facing Traffic	New Sign	Remove Existing	Square Footage	Sheeting Type	New Post	Length (ft)	Size (in)	#	Shear Slip Base		
1+36.53, 27.3'R	1+33.00-26.0'R	36	9	D3-1	NB/SB	No	Yes			No					TIOGA ST	Remove and Reset @ New Location
1+36.53, 27.3'R	1+33.00-26.0'R	48	9	D3-1	WB/EB	No	Yes			No					SECOND AVE	Remove and Reset @ New Location
1+88.11, 22.5' R	1+87.00-29.0'R	30	30	R1-1	WESTBOUND	No	Yes			No					STOP	Remove and Reset @ New Location
1+70.30, 12.5' L	1+79.50-14.0'L	12	36	OM3	NORTHBOUND	No	Yes			No					Type 3 Object Marker	Remove and Reset @ New Location on Concrete Barrier
1+89.00, 13.95' R	1+98.00, 14.0'R	12	36	OM3	NORTHBOUND	No	Yes			No					Type 3 Object Marker	Remove and Reset @ New Location on Concrete Barrier
4+01.46, 12.42'L	4+05.50, 14.0'L	12	36	OM3	SOUTHBOUND	No	Yes			No					Type 3 Object Marker	Remove and Reset @ New Location on Concrete Barrier
4+26.06, 13.87'R	4+24.00, 14.0' R	12	36	OM3	SOUTHBOUND	No	Yes			No					Type 3 Object Marker	Remove and Reset @ New Location on Concrete Barrier
4+59.21-17.4'R	4+64.00-17.0'R	36	36	W11-3	NORTHBOUND	No	Yes			No					PEDESTRIAN X-ING	Remove and Reset @ New Location
4+59.21-17.4'R	4+64.00-17.0'R	24	12	W16-9P	NORTHBOUND	No	Yes			No					AHEAD	Remove and Reset @ New Location

Sign Removal Table

SIGN DATA			
STATION	DESCRIPTION	SIGN SIZE Width X Hgt (FT)	REMOVE AND RESET
2nd Avenue			
1+33 R	Tioga St	0.75 x 3.00	1 {PT}
	Sencond Ave	0.75 x 4.00	1 {PT}
1+87 R	STOP	2.50 X 2.50	1 {PT}
	Type 3 Object Marker	1.00 x 3.00	1 {PT}
	Type 3 Object Marker	1.00 x 3.00	1 {PT}
	Type 3 Object Marker	1.00 x 3.00	1 {PT}
	Type 3 Object Marker	1.00 x 3.00	1 {PT}
4+60 R	PEDESTRIAN X-ING	3.00 X 3.00	1 {PT}
	AHEAD	2.00 X 1.00	1 {PT}
COLUMN TOTAL			9
{PT} Perforated Tube			

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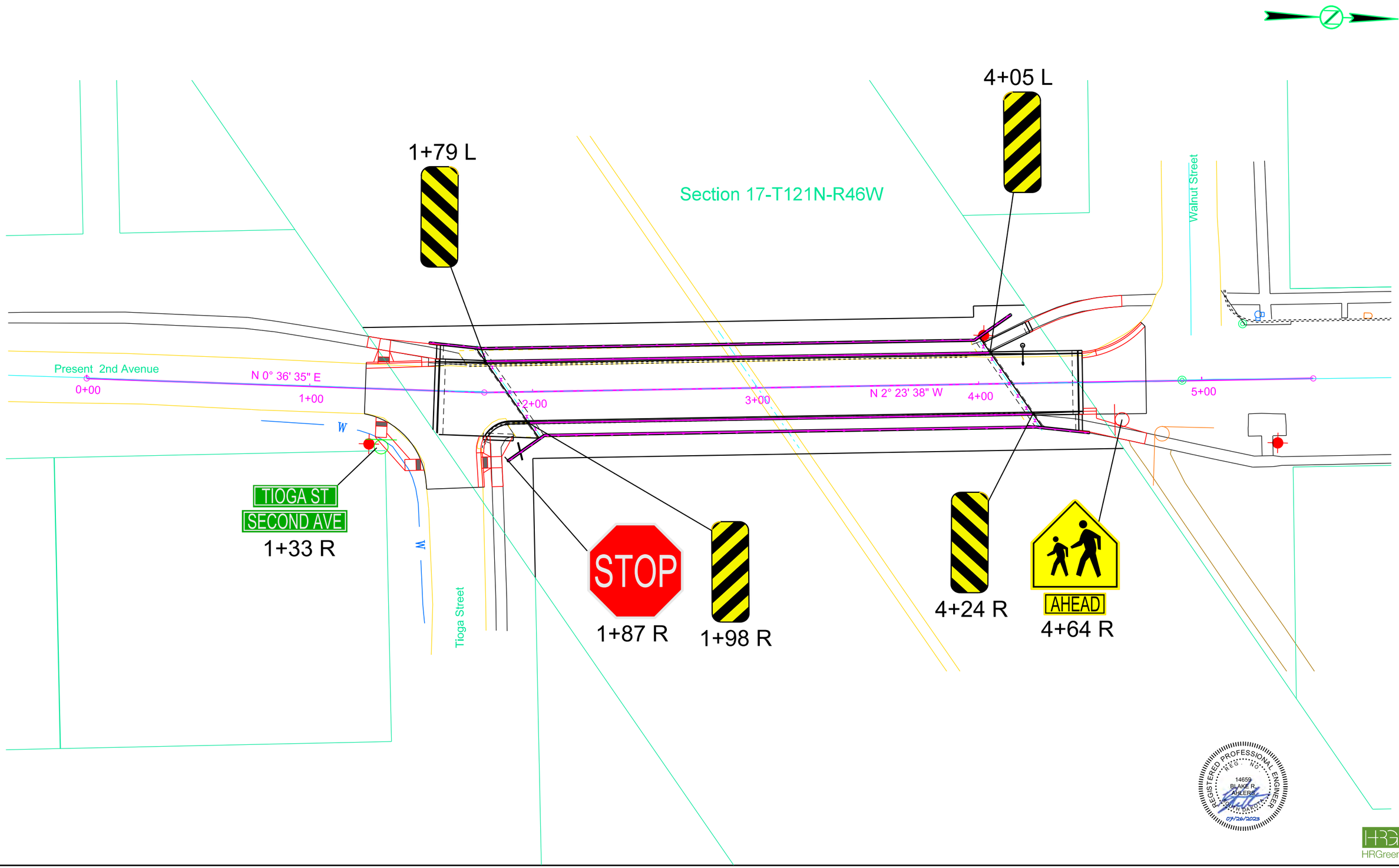
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	28	76

Plotting Date: 7/24/2023



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

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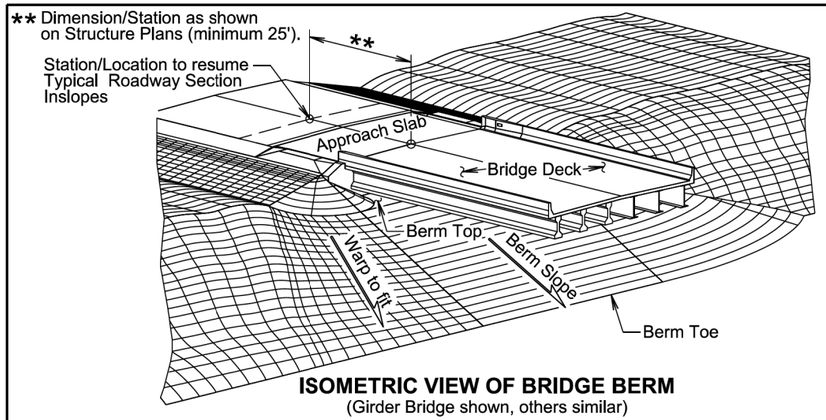
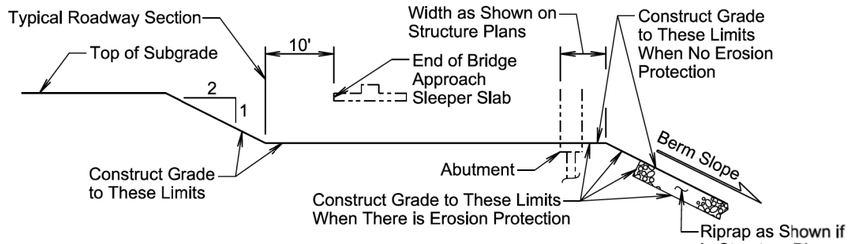
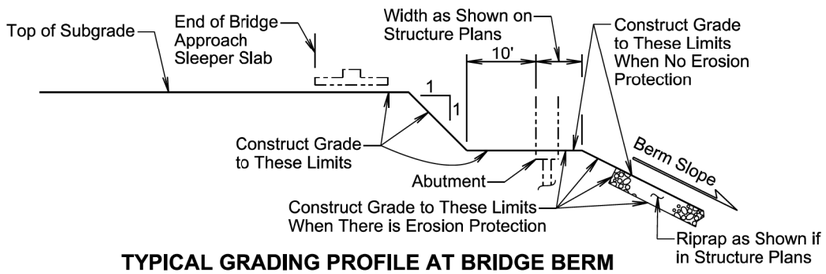
** Dimension/Station as shown on Structure Plans (minimum 25').



ISOMETRIC VIEW OF BRIDGE BERM
(Girder Bridge shown, others similar)



TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to ℄ Abutment at ℄ Roadway)



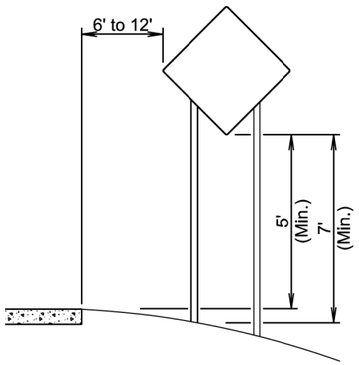
TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to ℄ Abutment at ℄ Roadway)

GENERAL NOTES:

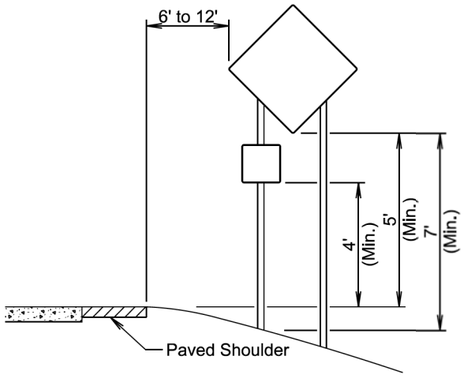
The bridge berm elevation and slope will be as shown in the Structure Plans.
See Structure Plans to determine which grading profile to use.

January 22, 2021

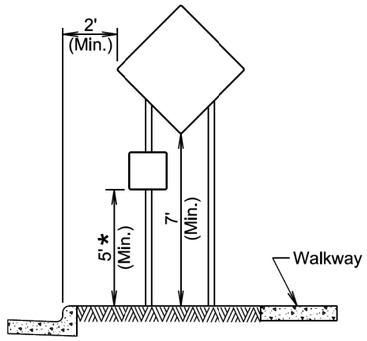
Published Date: 2024	SDDOT	BRIDGE BERM (NONPROJECTING EMBANKMENT)	PLATE NUMBER 120.10
			Sheet 1 of 1



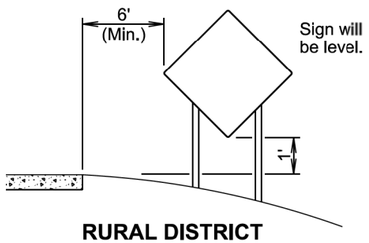
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

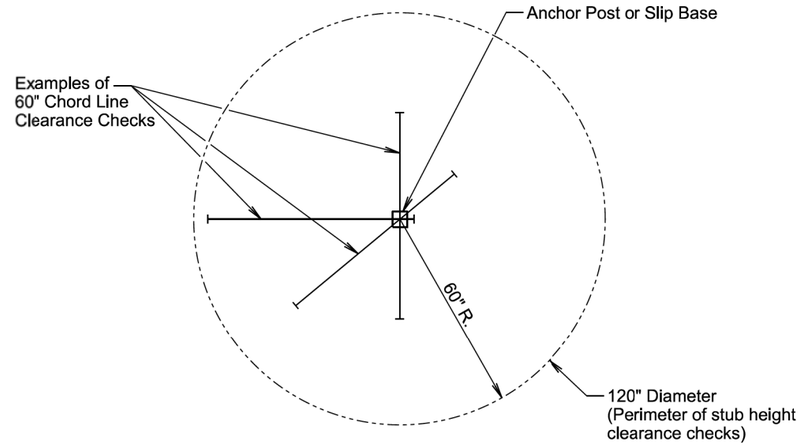


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

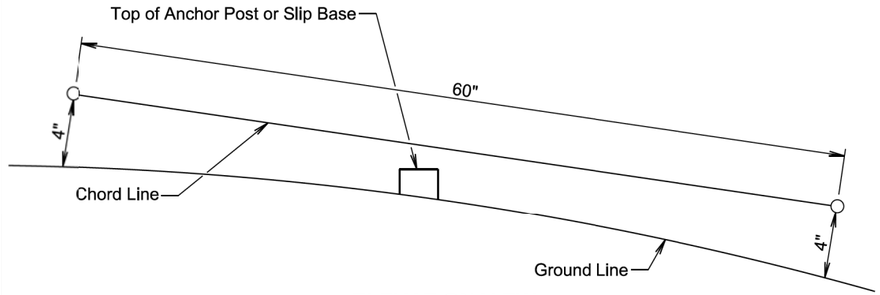
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2024	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: 2024	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

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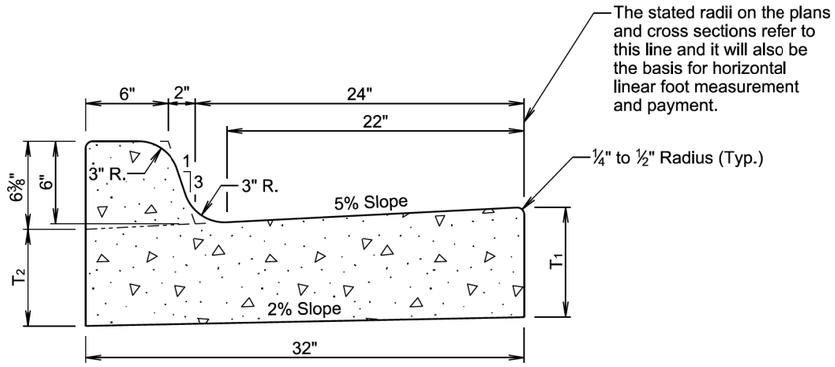


TYPE B CONCRETE CURB AND GUTTER				
Type	T_1 (Inches)	T_2 (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	0.057	17.7
B67	7	6 1/16	0.065	15.4
B68	8	7 1/16	0.073	13.7
B68.5	8.5	7 9/16	0.077	13.0
B69	9	8 1/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9 1/16	0.090	11.2
B610.5	10.5	9 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

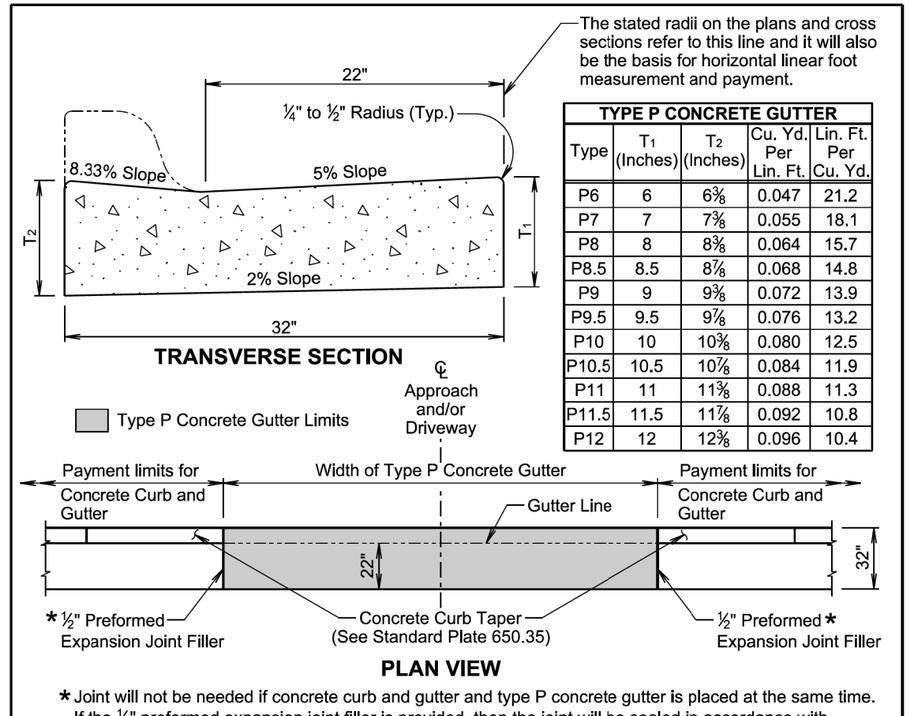
GENERAL NOTES:

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: 2024	SDDOT	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
			Sheet 1 of 1



TYPE P CONCRETE GUTTER				
Type	T_1 (Inches)	T_2 (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
P6	6	6⅜	0.047	21.2
P7	7	7⅜	0.055	18.1
P8	8	8⅜	0.064	15.7
P8.5	8.5	8⅞	0.068	14.8
P9	9	9⅜	0.072	13.9
P9.5	9.5	9⅞	0.076	13.2
P10	10	10⅜	0.080	12.5
P10.5	10.5	10⅞	0.084	11.9
P11	11	11⅜	0.088	11.3
P11.5	11.5	11⅞	0.092	10.8
P12	12	12⅜	0.096	10.4

* Joint will not be needed if concrete curb and gutter and type P concrete gutter is placed at the same time. If the ½" preformed expansion joint filler is provided, then the joint will be sealed in accordance with standard plate 650.90.

GENERAL NOTES:

The concrete for the type P concrete gutter will comply with the requirements of the specifications for class M6 concrete.

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

Transverse contraction joints will be constructed at 10-foot intervals in the concrete gutter except when concrete gutter is constructed adjacent to mainline PCC pavement. When concrete gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete gutter at each mainline PCC pavement transverse contraction joint location.

When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter will be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter will be 1½ inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete.

January 22, 2023

Published Date: 2024	SDDOT	TYPE P CONCRETE GUTTER	PLATE NUMBER 650.30
			Sheet 1 of 1

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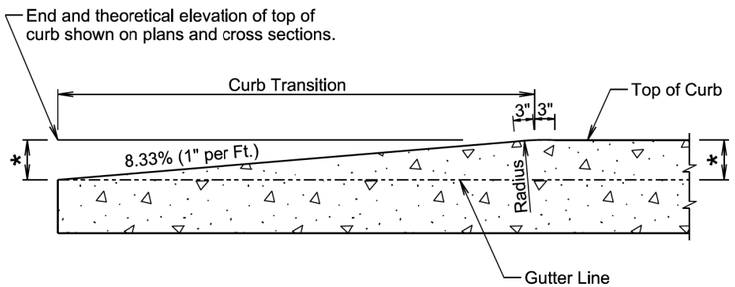
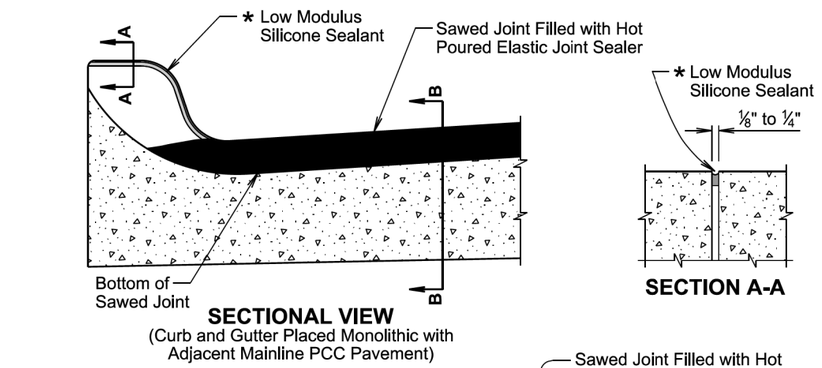


* Height of Curb

LONGITUDINAL SECTION
(Concrete Curb Taper)

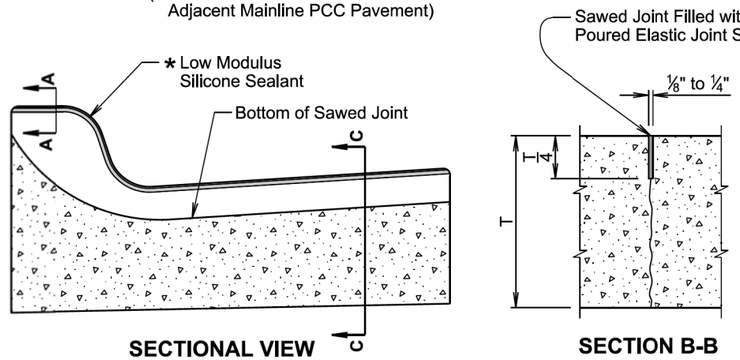
December 23, 2019

Published Date: 2024	SDDOT	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



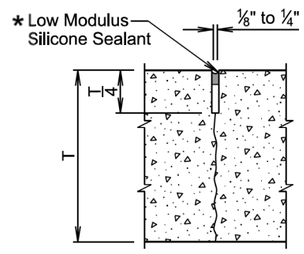
SECTIONAL VIEW
(Curb and Gutter Placed Monolithic with Adjacent Mainline PCC Pavement)

SECTION A-A



SECTIONAL VIEW
(Curb and Gutter not Placed Monolithic with Adjacent Mainline PCC Pavement or Mainline Surfacing is not PCC Pavement)

SECTION B-B



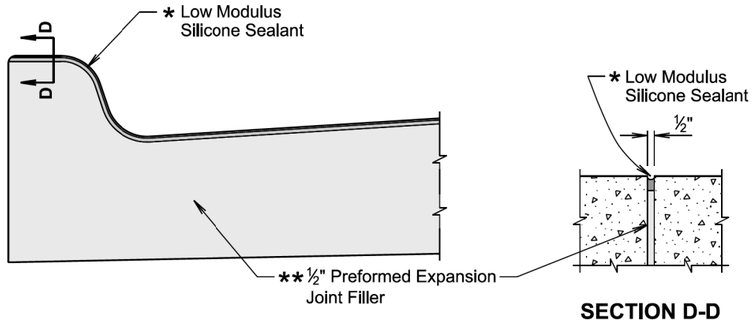
SECTION C-C

* The silicone sealant will be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

December 23, 2019

Published Date: 2024	SDDOT	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 1 of 2

HRGreen



SECTIONAL VIEW
(Curb and Gutter at ½" Preformed Expansion Joint Filler Location)

SECTION D-D

* The silicone sealant will be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

GENERAL NOTES:

For illustrative reason, only the type B curb and gutter is shown.

** A ½-inch preformed expansion joint filler will be placed transversely in the curb and gutter at the following locations:

At each junction between the radius return of curb and gutter, and curb and gutter which is parallel to the project centerline.

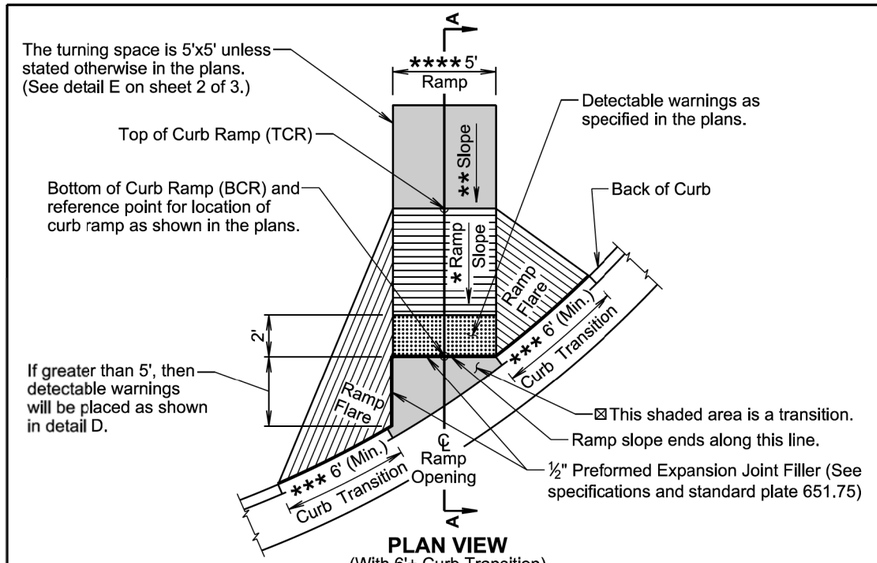
At each junction between new curb and gutter and existing curb and gutter.

Transverse contraction joints will be constructed at 10 foot intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete curb and gutter at each mainline PCC pavement transverse contraction joint location.

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement or when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter will be 1½ inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete and the joint will be sealed in accordance with the details shown above.

December 23, 2019

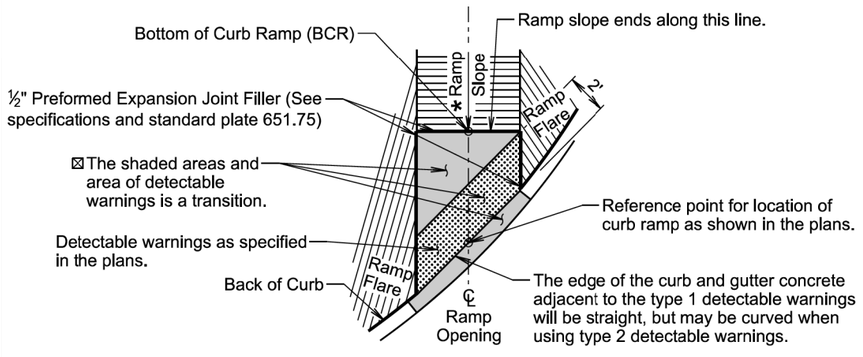
Published Date: 2024	SDDOT	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 2 of 2



PLAN VIEW
(With 6'+ Curb Transition)

⊠The slope within the transition area will not be steeper than 5%. The concrete within the transition will be placed monolithic with the curb and gutter or fillet section concrete. The concrete thickness within the transition will be the same as the curb and gutter or fillet section concrete thickness.

*** The curb transition will be a minimum of 6' long, a maximum of 10' long, and the curb transition slope will not be steeper than 10% unless stated otherwise in the plans. The curb transition length will be adjusted as necessary to meet slope and length requirements based on field geometrics.

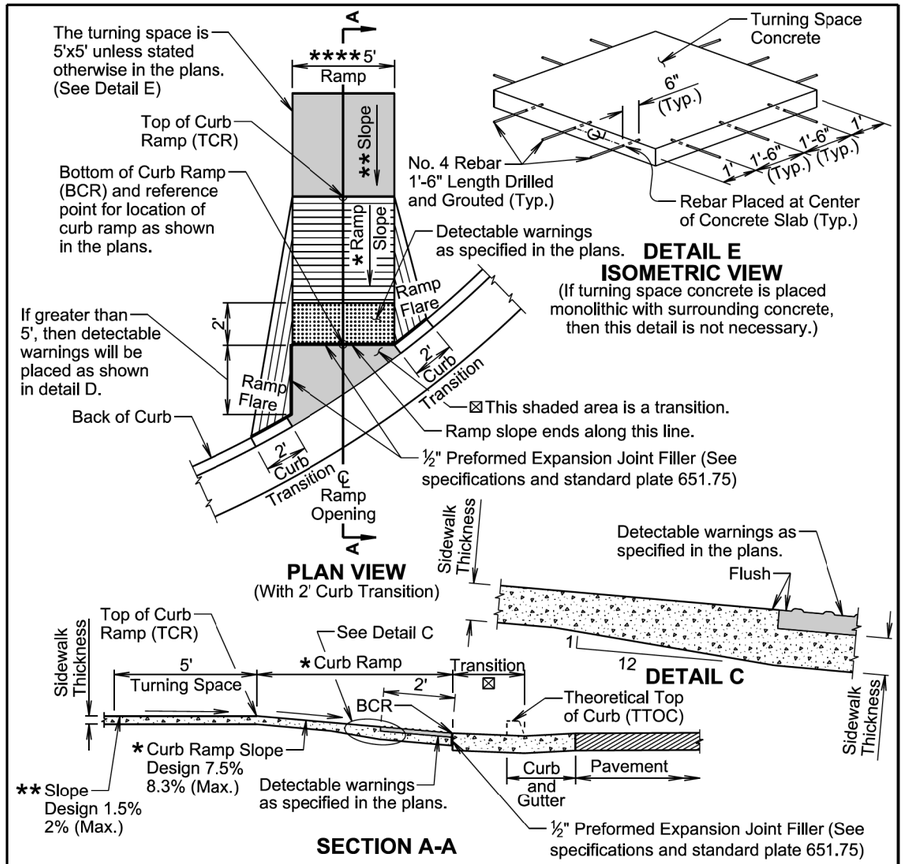


DETAIL D

February 14, 2020

Published Date: 2024	SDDOT	TYPE 2 CURB RAMP (DIRECTIONAL CURB RAMP)	PLATE NUMBER 651.02
			Sheet 1 of 3

HRGreen



Curb ramp slopes are designed at 7.5% unless stated otherwise in the plans. The curb ramp may have a maximum slope of 8.3% and will not exceed 15' in length unless stated otherwise in the plans.

* The elevation of point TCR will always be higher than the elevation of point TTOC unless specified otherwise in the plans. The curb ramp length dimension as shown in the plans will be adjusted as necessary to meet all slope and length requirements based on field geometrics.

The cross slope of the ramp will not be steeper than 2%. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

** The slope in the turning space will not be steeper than 2% in any direction of pedestrian travel. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

**** The ramp width is 5' unless stated otherwise in the plans.

February 14, 2020

Published Date: 2024	SDDOT	TYPE 2 CURB RAMP (DIRECTIONAL CURB RAMP)	PLATE NUMBER 651.02
			Sheet 2 of 3

GENERAL NOTES:

For illustrative purpose only, type 1 detectable warnings are shown in the drawings.

The curb ramp depicted on this standard plate may be used with a PCC fillet section or curb and gutter. The curb ramp will be placed at the location stated in the plans.

Sidewalk will not be placed adjacent to the curb ramp flares when a 2-foot curb transition is used unless shown otherwise in the plans.

* Care will be taken to ensure a uniform grade on the curb ramp, free of sags and short grade changes.

Surface texture of the curb ramp will be obtained by coarse brooming transverse to the slope of the curb ramp.

The normal gutter line profile will be maintained through the area of the ramp opening.

Joints will be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking.

Care will be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

The detectable warnings will be cut as necessary to fit the plan specified limits of the detectable warnings. Cost for cutting the detectable warnings will be incidental to the corresponding detectable warning contract item.

There will be no separate payment for curb ramps. The curb ramp will be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk contract item. The square foot area of the detectable warnings will be included in the measured and paid for quantity of sidewalk.

If rebar is placed in the Turning Space as depicted in DETAIL E, the cost of the materials, labor, and equipment to furnish and install the rebar will be incidental to the contract unit price per square foot for the corresponding concrete sidewalk contract item.

The curb transitions and ramp opening will be measured and paid for at the contract unit price per foot for the corresponding curb and gutter contract item when curb and gutter is used. The curb transitions and ramp opening will be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section contract item when a PCC fillet section is used.

All costs for furnishing and installing the transition area at the base of the curb ramp will be incidental to the contract unit price per foot for the corresponding curb and gutter contract item when curb and gutter is used and will be incidental to the contract unit price per square yard for the corresponding PCC fillet section contract item when a PCC fillet section is used.

The type 1 detectable warnings will be measured to the nearest square foot. All costs for furnishing and installing the type 1 detectable warnings including labor, equipment, materials, and incidentals will be paid for at the contract unit price per square foot for "Type 1 Detectable Warnings".

The type 2 detectable warnings will be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding will be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

February 14, 2020

Published Date: 2024	SDDOT	TYPE 2 CURB RAMP (DIRECTIONAL CURB RAMP)	PLATE NUMBER 651.02
			Sheet 3 of 3

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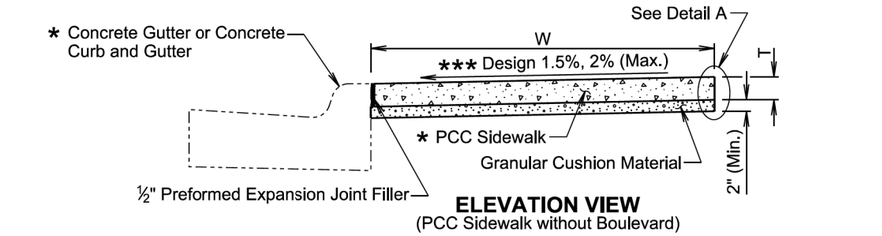
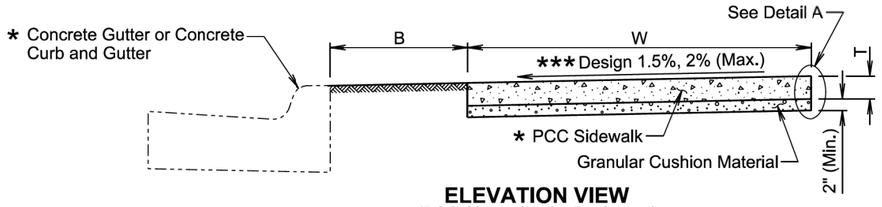


ELEVATION VIEW
(PCC Sidewalk without Boulevard)



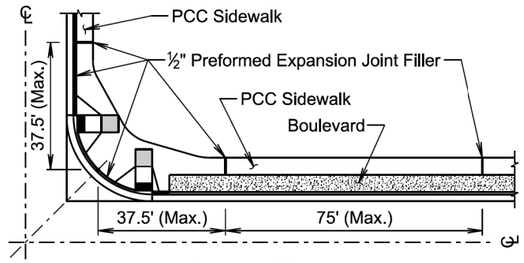
ELEVATION VIEW
(PCC Sidewalk with Boulevard)

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% unless specified otherwise in the plans.

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

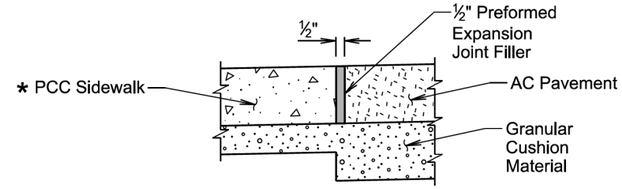
PCC sidewalk placed adjacent to intersection of roadways will have an expansion joint placed transversely a maximum of 37.5 feet from the intersection. See Plan View.

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.

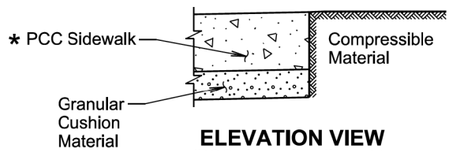
** Large areas of PCC pavement adjacent to the PCC sidewalk may require a different joint treatment than shown in the detail. If a different joint detail is necessary, plans will contain the joint detail and the Contractor will construct the joint treatment in accordance with the plans.

February 14, 2020

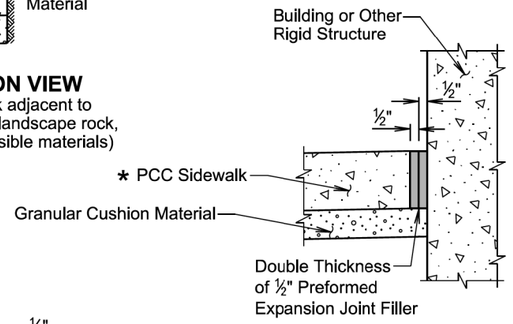
Published Date: 2024	SDDOT	PCC SIDEWALK	PLATE NUMBER 651.75
			Sheet 1 of 2



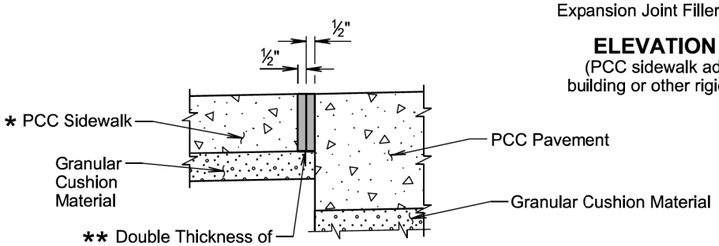
ELEVATION VIEW
(PCC sidewalk adjacent to asphalt concrete pavement)



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)

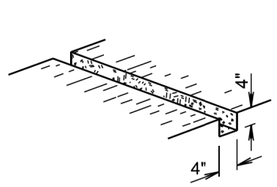
DETAIL A
(Use Appropriate Detail(s))

February 14, 2020

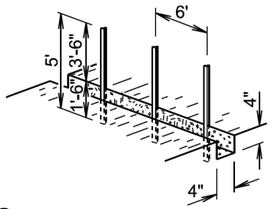
Published Date: 2024	SDDOT	PCC SIDEWALK	PLATE NUMBER 651.75
			Sheet 2 of 2

HRGreen

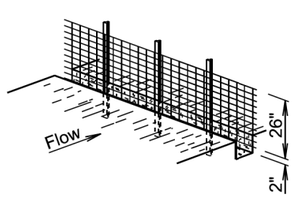
MANUAL LOW FLOW SILT FENCE INSTALLATION



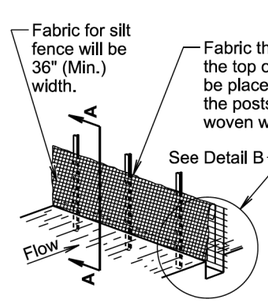
① EXCAVATE TRENCH



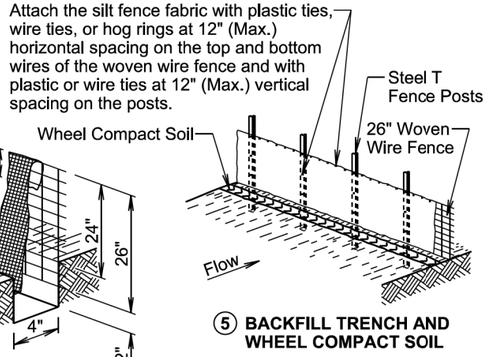
② DRIVE STEEL T FENCE POSTS



③ ATTACH 26" WOVEN WIRE FENCE TO POSTS

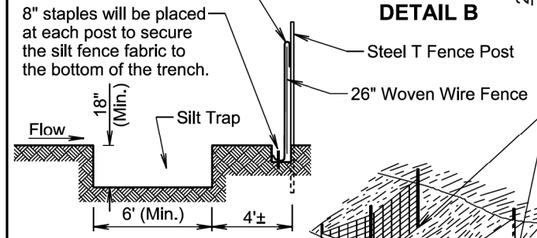


④ ATTACH SILT FENCE FABRIC

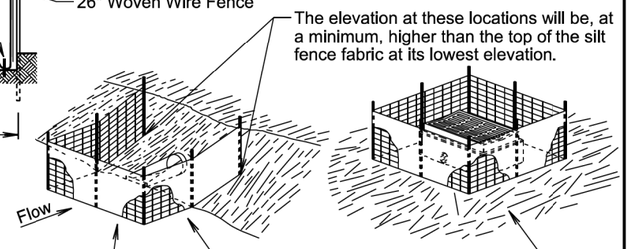


⑤ BACKFILL TRENCH AND WHEEL COMPACT SOIL

DETAIL B



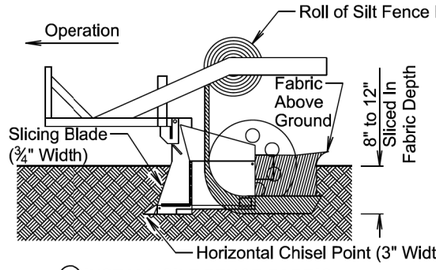
SECTION A-A



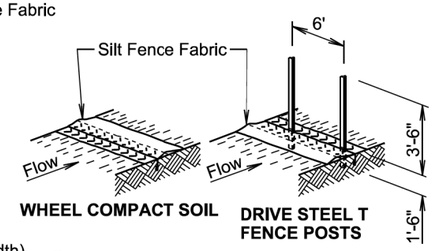
February 14, 2020

Published Date: 2024	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



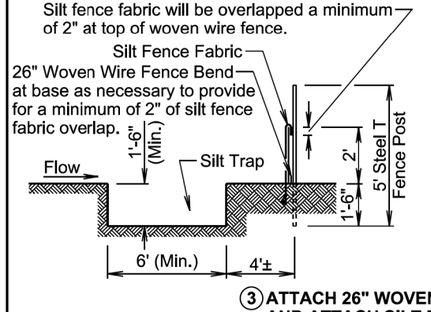
① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

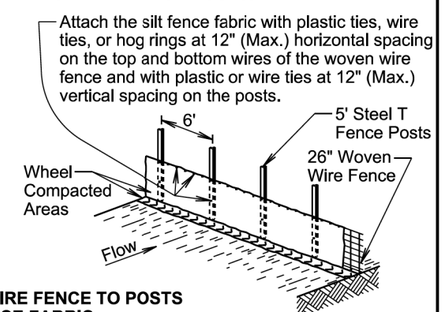


WHEEL COMPACT SOIL

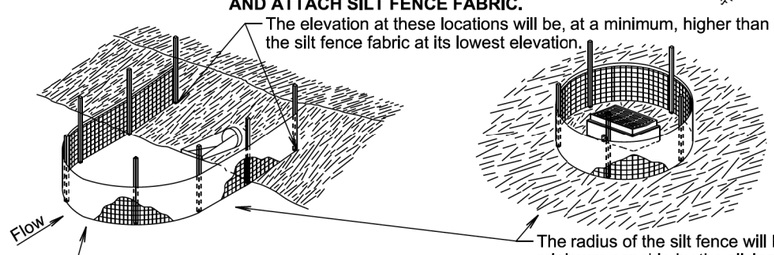
DRIVE STEEL T FENCE POSTS

② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.





③ ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.



GENERAL NOTES:

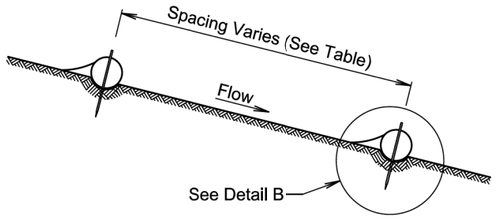
A silt trap will be provided when specified by a plan note. All costs for constructing the silt trap will be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end will be provided on top of the extra length of silt fence fabric to prevent underflow.

February 14, 2020

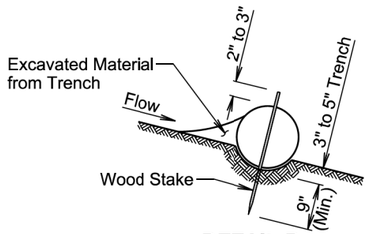
Published Date: 2024	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 2 of 2

HRGreen

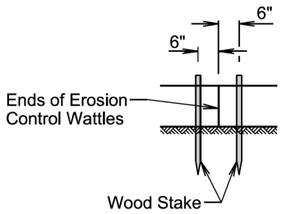


ELEVATION VIEW
(Cut or Fill Slope Installation)

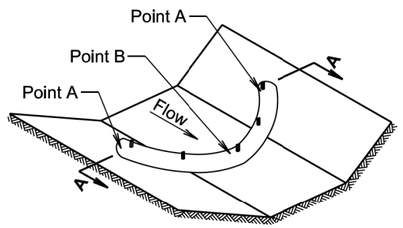
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



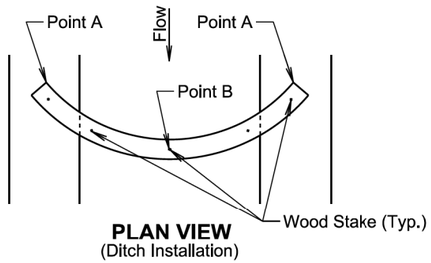
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

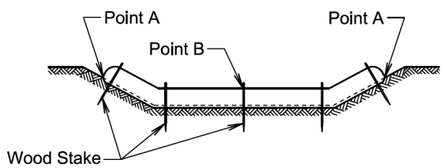


ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)

DITCH INSTALLATION	
Grade	Spacing (Ft.)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

February 14, 2020

Published Date: 2024	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

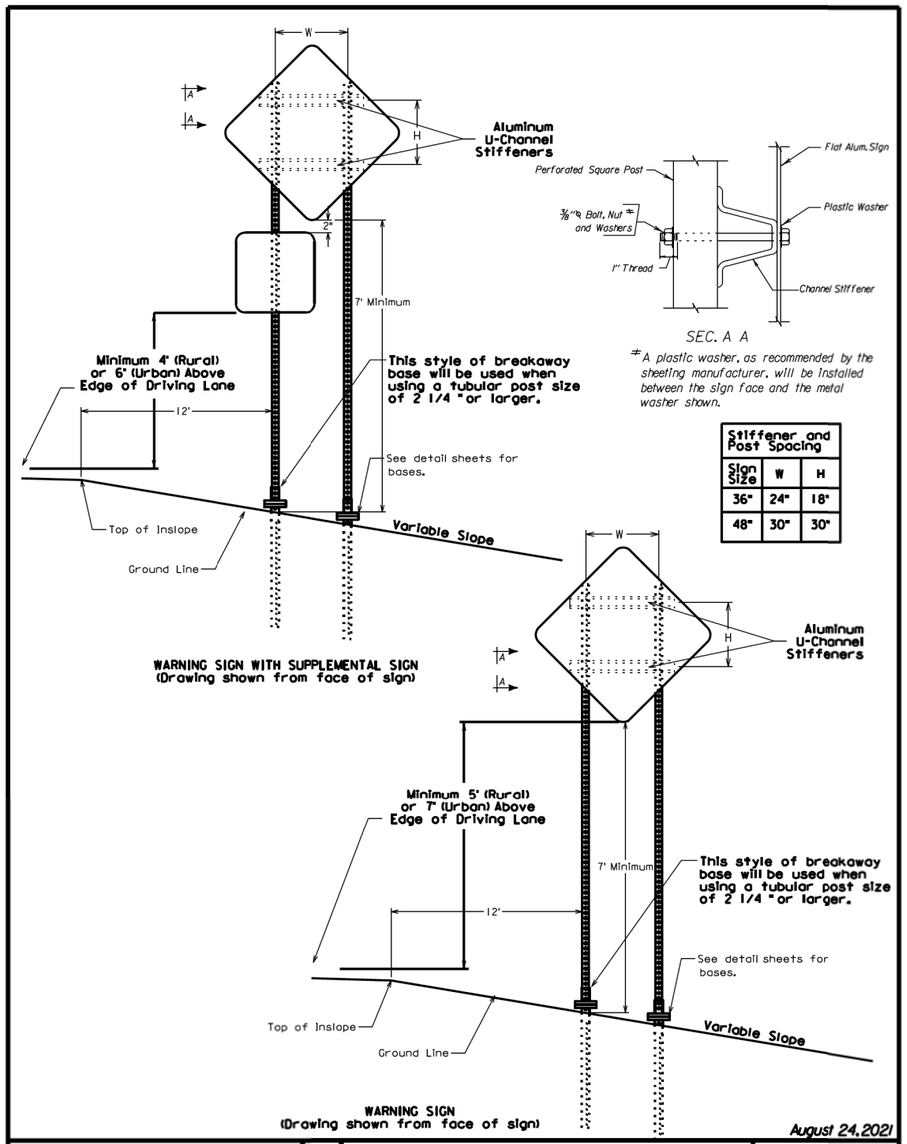
All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

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

February 14, 2020

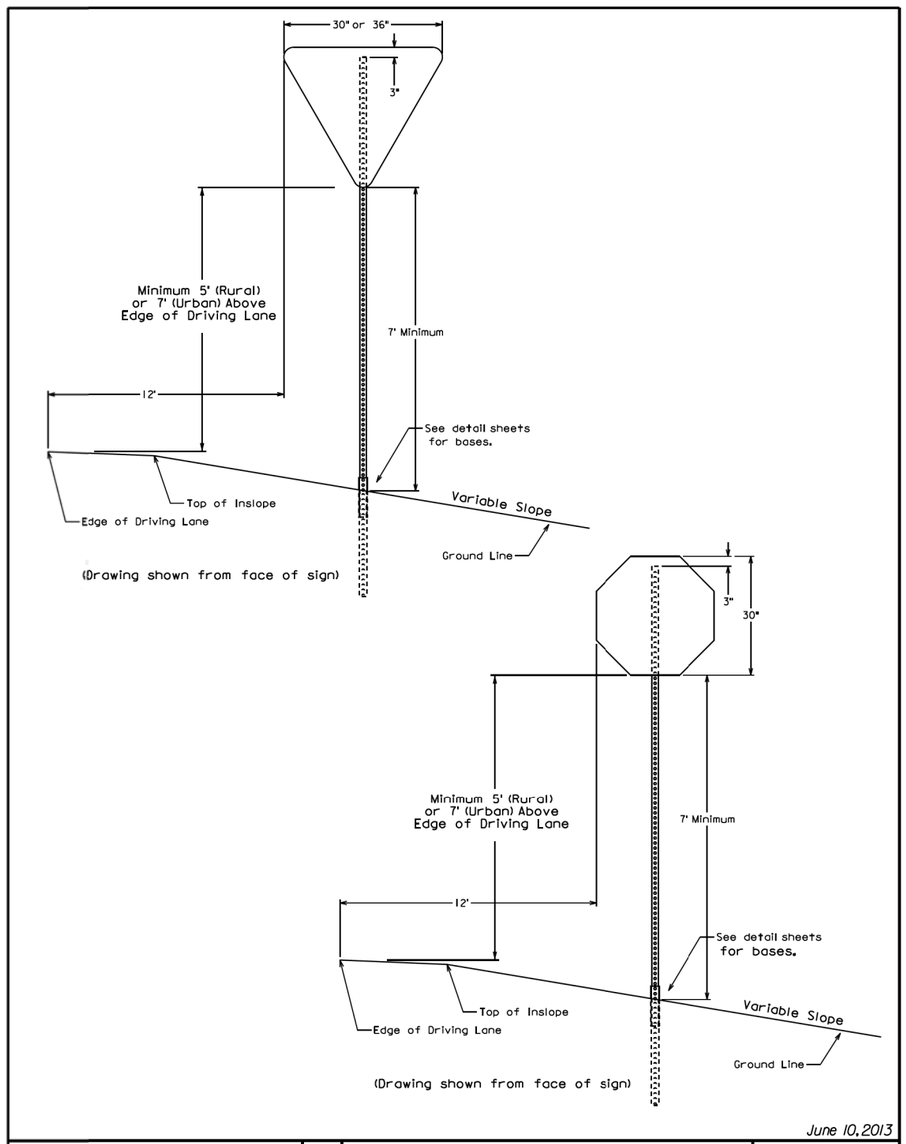
Published Date: 2024	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

HRGreen



August 24, 2021

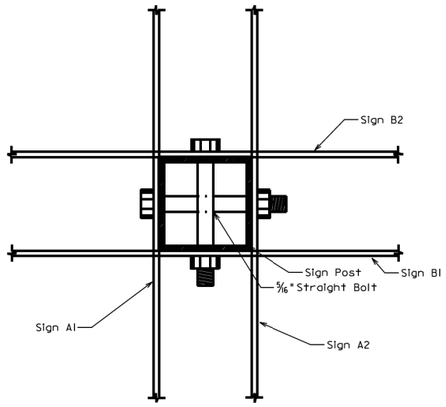
	SDDOT	36" AND 48" WARNING SIGNS (Typical Sign and Stiffener Detail)	SPECIAL DETAIL LO2
			Sheet 1 of 1



June 10, 2013

	SDDOT	30" STOP OR 30"-36" YIELD (Typical Sign Details)	SPECIAL DETAIL LO6
			Sheet 1 of 1

HRGreen

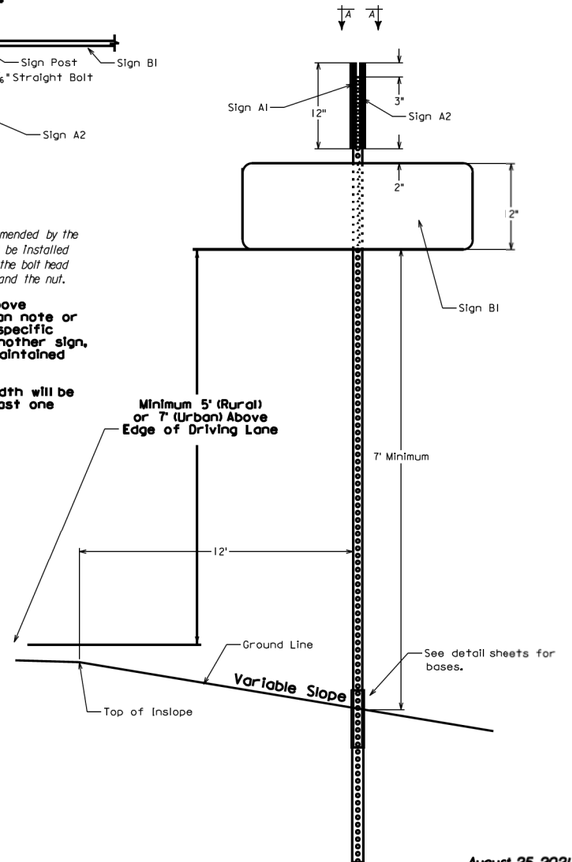


SEC. A-A

#A plastic washer, as recommended by the sheeting manufacturer, will be installed between the sign face and the bolt head and also between the sign and the nut.

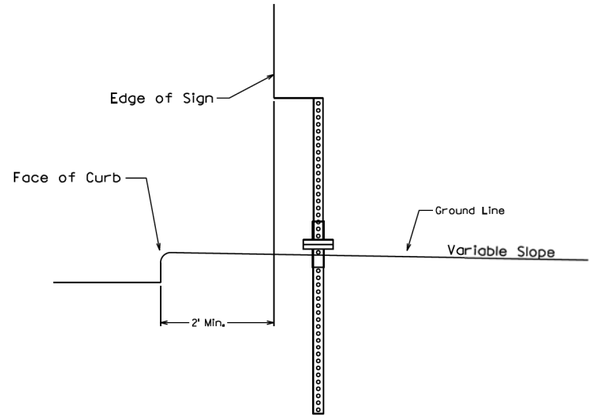
NOTE: Sign assembly may be mounted above Yield or Stop sign - refer to plan note or Table of Permanent Signing for specific locations. When mounting above another sign, 2" of verticle clearance will be maintained between signs.

Back-to-back signs over 24" in width will be bolted to each other with at least one connector on each end of sign.

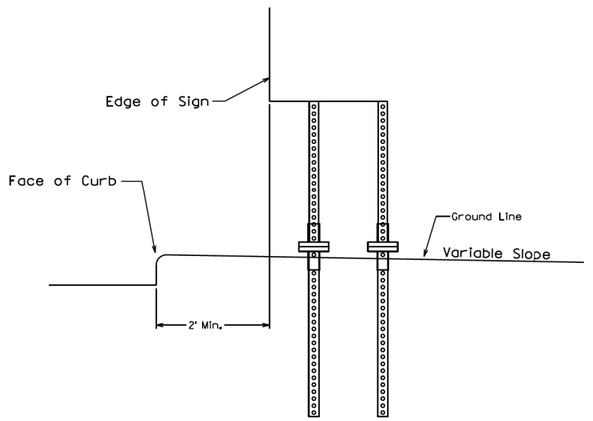


August 25, 2021

	SDDOT	STREET NAME SIGN (Typical Sign and Stiffener Details)	SPECIAL DETAIL L10
			Sheet 1 of 1



URBAN LOCATION WITH 1 POST
(Drawing shown from face of sign)



URBAN LOCATION WITH 2 POSTS
(Drawing shown from face of sign)

July 24, 2012

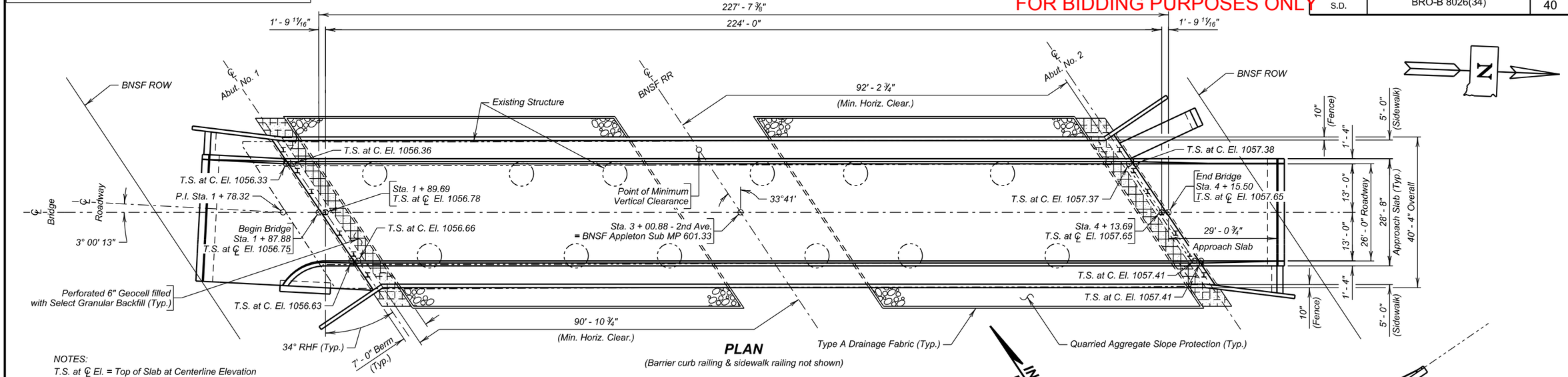
	SDDOT	LATERAL OFFSET (Typical Urban Sign Installations)	SPECIAL DETAIL L24
			Sheet 1 of 1

HRGreen

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

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	40	76

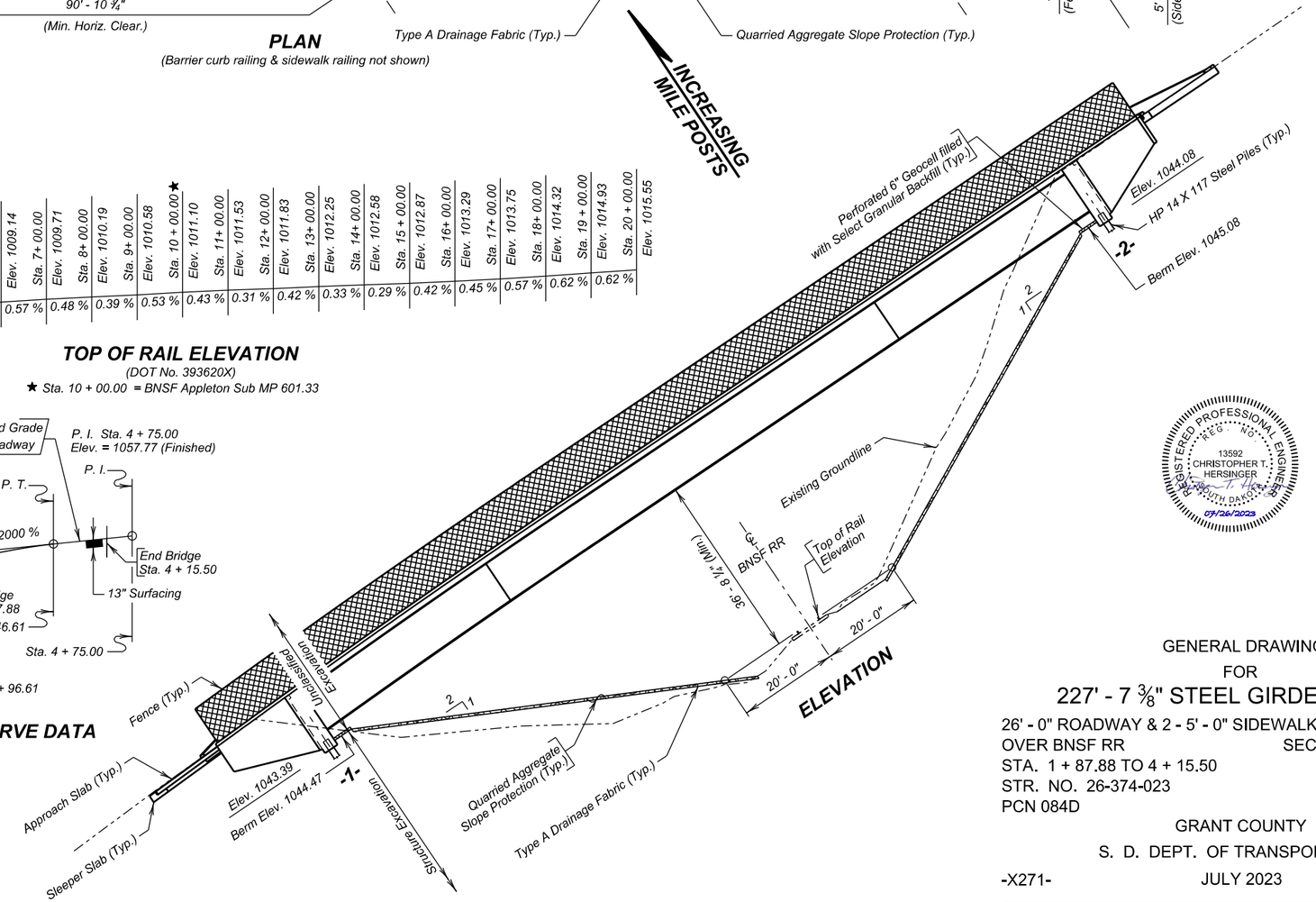


PLAN

(Barrier curb railing & sidewalk railing not shown)

NOTES:
T.S. at ℄ El. = Top of Slab at Centerline Elevation
T.S. at C. El. = Top of Slab at Curb Elevation

INCREASING MILE POSTS



-X271-
INDEX OF BRIDGE SHEETS -

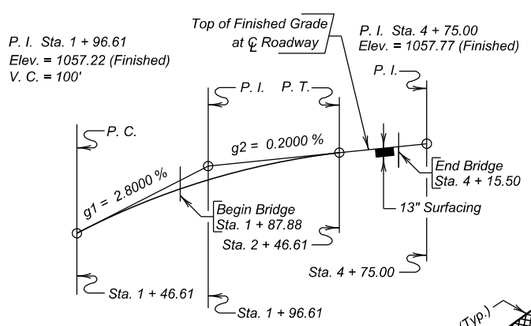
TOP OF RAIL ELEVATION

(DOT No. 393620X)

★ Sta. 10 + 00.00 = BNSF Appleton Sub MP 601.33

Sta. 0 + 00.00	Sta. 1 + 00.00	Sta. 2 + 00.00	Sta. 3 + 00.00	Sta. 4 + 00.00	Sta. 5 + 00.00	Sta. 6+ 00.00	Sta. 7+ 00.00	Sta. 8+ 00.00	Sta. 9+ 00.00	Sta. 10 + 00.00 ★	Sta. 11+ 00.00	Sta. 12+ 00.00	Sta. 13+ 00.00	Sta. 14+ 00.00	Sta. 15 + 00.00	Sta. 16+ 00.00	Sta. 17+ 00.00	Sta. 18+ 00.00	Sta. 19 + 00.00	Sta. 20 + 00.00
Elev. 1005.29	Elev. 1006.11	Elev. 1006.88	Elev. 1007.62	Elev. 1008.17	Elev. 1008.64	Elev. 1009.14	Elev. 1009.71	Elev. 1010.19	Elev. 1010.58	Elev. 1011.10	Elev. 1011.53	Elev. 1011.83	Elev. 1012.25	Elev. 1012.58	Elev. 1012.87	Elev. 1013.29	Elev. 1013.75	Elev. 1014.32	Elev. 1014.93	Elev. 1015.55
0.81 %	0.77 %	0.74 %	0.55 %	0.47 %	0.50 %	0.57 %	0.48 %	0.39 %	0.53 %	0.43 %	0.31 %	0.42 %	0.33 %	0.29 %	0.42 %	0.45 %	0.57 %	0.62 %	0.62 %	

VERTICAL CURVE DATA



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

GENERAL DRAWING
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93
PCN 084D

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION

-X271- JULY 2023 1 OF 32

PLANS BY: HRGreen

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Bridge Elevation Survey	Lump Sum	LS	
Concrete Penetrating Sealer	654.1	Sq Yd	See Special Provision
Select Granular Backfill	19.2	Ton	
Incidental Work, Structure	Lump Sum	LS	
Structural Steel	Lump Sum	LS	
Membrane Sealant Expansion Joint	76.0	Ft	
Structure Excavation, Bridge	25	Cu Yd	
Bridge End Embankment	1,750	Cu Yd	
Granular Bridge End Backfill	134.3	Cu Yd	
Approach Slab Underdrain Excavation	4.3	Cu Yd	
Class A45 Concrete, Bridge Deck	290.4	Cu Yd	
Class A45 Concrete, Bridge	171.2	Cu Yd	
Concrete Approach Slab for Bridge	218.4	Sq Yd	
Concrete Approach Sleeper Slab for Bridge	35.8	Sq Yd	
Install Dowel in Concrete	724	Each	
Steel Pedestrian Railing on Sidewalk	527.0	Ft	
Steel Pedestrian Railing on Concrete Barrier	448.0	Ft	
Reinforcing Steel	17,790	Lb	
Epoxy Coated Reinforcing Steel	71,855	Lb	
Preboring Pile	490	Ft	
HP 14x117 Steel Test Pile, Furnish and Drive	140	Ft	
HP 14x117 Steel Bearing Pile, Furnish and Drive	780	Ft	
8' Curved Top Chain Link Fence	527	Ft	
6" Reinforced Concrete Sidewalk	314	Sq Ft	
4" Underdrain Pipe	130	Ft	
Porous Backfill	8.1	Ton	
Bridge Berm Slope Protection, Quarried Aggregate	1,078	Sq Yd	
Perforated Geocell	550	Sq Ft	

BRIDGE SPECIFICATIONS

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 9th Edition.
2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.
3. All welding and welding inspections will be in conformance with the latest edition of AASHTO/AWS D1.5/D1.5M Bridge Welding Code unless noted otherwise in the plans.

BRIDGE DESIGN LOADING

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

DESIGN MATERIAL STRENGTHS

Class A45 Concrete	f'_c = 4,500 psi
Reinforcing Steel (ASTM A615, Gr. 60)	f_y = 60,000 psi
Piling (ASTM A572 Grade 50)	f_y = 50,000 psi
Structural Steel (ASTM A709 Gr. 50WT3)	f_y = 50,000 psi

GENERAL CONSTRUCTION

1. All lap splices shown are contact lap splices unless noted otherwise.
2. All exposed concrete corners and edges will be chamfered 3/4-inch unless noted otherwise.
3. Use 2-inch clear cover on all reinforcing steel except as shown otherwise on plans.
4. The Contractor will imprint on the structure the date of new construction as specified and detailed on Standard Plate 460.02.
5. Barrier curbs and end blocks will be built perpendicular to the roadway grade line.
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. Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.10. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
8. The elevation of the bridge deck is 13 inches above subgrade elevation.

NOTICE - LEAD BASED PAINT

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

INCIDENTAL WORK, STRUCTURE

1. In place centerline Sta. 1+79 to centerline Sta. 4+09 is a 230-foot, 7 span bridge with a 26'-0" clear roadway and 5-foot sidewalks on each side. The superstructure consists of steel girders with a timber slab. There is a steel pipe railing with wood posts faced with chain link fence across both sides of the bridge. The deck has been overlaid with 2 inches of asphalt. The substructure consists of steel bents and reinforced concrete sill type abutments.
2. Break down and remove the existing bridge, and approach/sleeper slabs if applicable, to 1-foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Construction Specifications. Any existing pile that interferes with pling for the new structure will be extracted. All portions of the existing bridge will be removed and disposed of by the Contractor at an approved site. An appropriate site will be as described in the Environmental Commitments Notes in the plans.
3. The foregoing is a general description of the in-place bridge and should not be construed to be complete in all details. Before preparing the bid, it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved.
4. The Contractor is required to submit a detailed demolition plan for review by BNSF Railroad and approval by the Office of Bridge Design.

DESIGN MIX OF CONCRETE

1. All structural concrete will be Class A45 Concrete unless otherwise indicated.
2. Type II cement conforming to Section 750 is required except, Type III cement is required in the abutments. Type III cement will contain a maximum 8% Tricalcium Aluminate (C_3A) and a maximum 0.6% Alkalis ($Na_2O + O.658K_2O$).
3. Grout design mix will be as specified in Section 460.2 K of the Construction Specifications. A compressive strength of 2000 psi will be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4-inch. The quantity of grout is included in and will be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
STATE OF SOUTH DAKOTA
03/26/2023

ESTIMATE OF STRUCTURE QUANTIES AND NOTES FOR

227' - 7 ⅜" STEEL GIRDER BRIDGE

Str. No. 26-374-023

JULY 2023

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
DM	DM	AMB	BRIDGE ENGINEER

ABUTMENTS

1. The abutments will require special prebore and pile driving techniques to ensure the pile tips penetrate below the berm slope toe and satisfy global stability concerns.

2. During the field investigation, borings remained open to elevation 1010 for approximately an hour without caving. Caving of the silty sand is anticipated if prebore and subsequent pile placement is not accomplished in a timely manner.

3. Drill prebore holes to elevation 1010 for both abutments. Place the piling into the prebore hole immediately after drilling operations prior to drilling another hole. If caving soils are encountered, drilling fluids will be required to maintain an open excavation. Proposed drilling methods to include slurries if required will be submitted to the Engineer for approval.

4. After the pile have been driven, the prebore will be backfilled with coarse sand, as per the Specifications. It may be necessary to use a template to position the pile tops until the prebore is backfilled.

5. The HP 14x117 Piling were designed using a factored bearing resistance of 217 tons per pile. Piling will develop a field verified nominal bearing resistance of 542 tons per pile.

6. One test pile will be driven at each abutment and will become part of the pile group.

7. The Contractor will have sufficient pile splice material on hand before pile driving is started. See Standard Plate 510.40.

8. Piles will not be driven out of position by more than three inches in the direction parallel to the girder centerline. A pile-driving template will be used to ensure this accuracy.

9. Each finished abutment will include a Bridge Survey Marker. See Standard Plate 460.05

10. Abutment backwalls and wings will not be cast until after the deck has been poured.

CONNECTION OF GIRDER TO PILE

1. Cut off piling at the elevations shown in the plans and weld bearing plates to the piling. Adjust as necessary to make bearing plates level, and to permit proper position of the girders. If piles are driven out of position to the extent that bearing plates will not fit, the Contractor will submit the method of correction to the Engineer for approval. Piles will not be pulled into position.

2. All girder erection will be complete with the splices fully bolted and diaphragms in place, before welding girders to bearing plates. (Diaphragms need not be secured with more than temporary bolting, prior to the pile to girder connections.)

3. An alternate connection, capable of transmitting a direct load of 8000 lbs. to the pile and developing 30,000 lbs. horizontal force, may be submitted to the Office of Bridge Design for prior approval.

4. This connection will not be made when the temperature is greater than 70° F or less than 30° F.

5. Steel for the bearing plates will conform to ASTM A709 Gr. 50.

6. Payment for furnishing and installing the bearing plates will be incidental to the contract lump sum price for Structural Steel.

POURING OF ABUTMENT CONCRETE

1. Abutment concrete will be placed, as directed by the Engineer, at a time when a relatively stable temperature can be expected. A relatively stable temperature is defined as an air temperature deviation of not more than 30° F within 12 hours of completing the abutment pour from the air temperature at the time when the abutment concrete is placed.

2. The forms will be secured to the girders in such a manner that they will be free to move longitudinally with the expansion or contraction of the girder.

3. The girders will be braced near the abutments in such a manner that their lateral movement or rotation will be prevented during the placing of concrete. The Contractor will include details for this bracing with the falsework plans.

4. Abutment concrete will not be placed until after bridge deck concrete to allow rotation of girder ends due to weight of bridge deck. Abutment concrete may be placed immediately after bridge deck concrete.

PILE DRIVING

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

   Delmag D46-32

2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity. Requests for evaluation of hammers not listed will be submitted a minimum of 5 business days prior to installation of piles.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
09/26/2023

NOTES (CONTINUED)
FOR
227’ - 7 ⅜” STEEL GIRDER BRIDGE

Str. No. 26-374-023

JULY 2023

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
DM	DM	AMB	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

SUPERSTRUCTURE

1. Structural steel will conform to ASTM A709 Gr. 50WT3. Steel for diaphragms and stiffeners will conform to ASTM A709 Gr. 50W. Shear connectors will conform to Section 7.3 Type B of the Bridge Welding Code.

2. Bolts, nuts and washers will conform to ASTM F3125, Grade A325, Type 3.

3. Shear connectors will be field welded to the girders in accordance with the Shear Connector Field Installation Special Provision.

4. All butt-welded girder splices will be ultrasonically inspected.

5. The cost of welding and weld inspection will be incidental to the contract lump sum price for Structural Steel.

6. Structural steel used in all girder web plates, girder flanges, and girder splice plates will comply with the Charpy-V-Notch toughness requirements set forth in Section 970 of the Construction Specifications. Material greater than 1 1/2 inches in thickness will require frequency (P) testing in lieu of heat lot (H) testing. See Girder Layout for location of tension areas of girder flanges.

7. The use of an approved deck finishing machine will be required during placement of bridge deck concrete. The deck finishing machine will be adjusted and operated in such a manner that the screed or screeds are parallel with the centerline of the bridge. The finish machine and concrete placement will be parallel to the skew of the bridge.

8. The concrete bridge deck will be placed prior to placing abutment concrete.

9. The concrete bridge deck will be placed and finished at a minimum rate of 38 feet of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer will order a header installed and operations stopped. If a header is required sometime during the pour operation, its location will be at or as near as possible to the three-quarter point of the span. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a rate of 38 feet per hour can be maintained and the concrete has attained a minimum compressive strength of 2000 psi.

10. Dead Load camber will be cut into the girder webs. Do not induce or correct camber in plate girders by local heating without prior approval from the Engineer.

11. All flame cut edges will be treated with a 1/16” bevel or radius.

12. All structural steel surfaces of the superstructure will be blast cleaned to a commercial finish, in accordance with SSPC SP6, at the Fabricator. Abrasives used for blast cleaning will be clean dry sand, steel shot, mineral grit or manufactured grit. Fins, tears, slivers, and burred or sharp edges will be removed by grinding and then re-blasted to achieve the specified finish.

13. If the substructure units are not protected from precipitation running off of the girders during construction, the concrete surfaces may become stained. If staining of the substructure units does occur, it will be removed to the satisfaction of the Engineer. The Contractor will absorb all costs associated with removal of any stains.

14. 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.

15. The Contractor is required to submit a detailed plan showing the proposed girder erection and calculations that include the stability analysis and design of temporary bracing members and connections. The girder erection plan will be designed and stamped by a Professional Engineer registered with the State of South Dakota. The plan and calculations must be submitted 60 days prior to the start of work for review by BNSF Railroad and approval by the Office of Bridge Design. The plan will include, but not be limited to, complete sequencing details, splice bolt up procedures, girder pick point locations, temporary shoring details, and temporary bracing details.

16. The Contractor is solely responsible for ensuring stability of girders during all handling, storage, shipping and erection. Girders will be adequately braced to resist wind, weight of forms and other temporary loads, especially those eccentric to the vertical axis of the girders, considering actual girder geometry and support conditions during all stages of erection and deck construction. At a minimum, temporary bracing will be provided at each end of each girder. All single girder segments will be adequately braced or held in position until the adjacent girder segment is placed and all diaphragms between the segments are fully installed and bolts fully tightened. Single girder segments will not be allowed to remain in place beyond the end of a work shift without connection to an adjacent girder segment with all diaphragms between the segments fully connected. At no time will a single girder segment be allowed over railroad tracks.

17. The Contractor will be required to include with the Falsework Plans, design calculations and details for limiting the top flange of exterior girders from deflecting laterally more than 0.25” during the deck placement operations. Acceptable methods of limiting the lateral torsion of exterior girders include needle beam supports for deck cantilevers, and top flange tie-bars combined with bottom flange struts. Other proposed methods may be submitted for consideration with the falsework plans along with corresponding comprehensive calculations and details. Any tie-bars, connections, hardware or other items associated with the torsion limiting devices that are permanently cast into the deck slab will be epoxy coated or made of corrosion resistant material. No welding of any kind will be allowed on steel bridge girders for attachment of torsion limiting devices. All costs associated with furnishing and installing exterior girder torsion limiting devices will be included with the deck falsework and are incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge Deck

18. The required bracing designs will be developed in accordance with the AASHTO LRFD Bridge Design Specifications (LRFD). For information not included in the LRFD, refer to the AASTHO Guide Specifications for Wind Loads on Bridges During Construction, the AASHTO Guide Design Specifications for Bridge Temporary Works and the AASHTO Construction Handbook for Bridge Temporary Works

19. See Special Provision for Concrete Penetrating Sealer.

WELDING AND WELD INSPECTION

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

FIELD BOLTED GIRDER SPLICES

1. Steel for splice and filler plates will conform to ASTM A709 Gr. 50WT3.

2. Bolts in flange splices will be placed with the heads down.

3. Bolts in web splices of exterior girders will be placed with the heads on the exterior face of girders.

4. All bolts will be fully tightened prior to removing temporary supports.

FALL PROTECTION

1. The Contractor will install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system will be installed. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.

2. Modifications to any bridge components used to accommodate the Fall Protection System will be shown on the Falsework Plans and the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System will be incidental to the other contract items.

BOLT TESTING

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

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
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NOTES (CONTINUED)
FOR
227’ - 7 ⅜” STEEL GIRDER BRIDGE

Str. No. 26-374-023

JULY 2023

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
DM	DM	AMB	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

SHOP PLANS

Shop plans will be required as specified by the Construction Specifications.

The fabricator will submit shop plans in accordance with the Construction Specifications. Send shop plan submittals to HR Green, 431 N Phillips Ave. #400, Sioux Falls, SD 57104 (kbrehm@hrgreen.com). After review, corrections (if necessary), and approval by HR Green, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

SHEAR STUD CONNECTOR

1. Prior to the welding of the studs to the girders, the top surface of the girders that are to have studs welded on will be clean of all dirt, rust, and any other foreign matter.

2. The shear connector that will be attached to the girder will be 7/8-inch diameter x 5 inches long and will conform to ASTM 108, Gr. 1015, 1018, or 1020. The connector will meet the following minimum mechanical property requirements for Type B studs,

Tensile	60 ksi
Yield Strength	60 ksi
Elongation	20%
Reduction of Area	50%

3. The shear connector will be installed in accordance with the Special Provision for Shear Connector Field Installation (Incidental).

STEEL RAILING – SIDEWALK

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

2. All structural steel parts for railing will conform to ASTM A500, Grade B. Material less than 1/4-inch thick may be ASTM A1011, Grade 36. Rail post base plates will conform to ASTM A36. All steel railing is to be galvanized in accordance with ASTM A123.

3. Anchor bolts and nuts for railing will conform to ASTM A307. Washers will conform to ASTM F436 and all components will be galvanized in accordance with ASTM F2329. The bolts will be hex head “Structural” type with heavy hex nuts and round washers.

4. Anchor bolts 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. Welding and Weld Inspection will be done in accordance with the current edition of AWS D1.5 Bridge Welding Code.

7. The costs of structural steel, welding, weld inspection, and galvanization will be incidental to the contract unit price per foot for Steel Pedestrian Railing on Sidewalk and Steel Pedestrian Railing on Concrete Barrier.

CHAIN LINK FENCE

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. 8’ Curved Top Chain Link Fence will be paid for at the contract unit price per 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 the work.

APPROACH SLABS

1. Sleeper slab riser will be cast with or later than the approach slab. Care will be taken to ensure the correct grade is maintained across the top of the sleeper slab riser.

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

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

4. Concrete Approach Sleeper Slab for Bridge, whether cast-in-place or precast, will be paid for at the contract unit price per square yard. This payment will be full compensation for all excavation, furnishing, hauling, and placing all materials including concrete and reinforcing steel; for disposal of all surplus materials; and for labor, tools, equipment, and any incidentals necessary to complete this item of work.

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

AS - BUILT ELEVATION SURVEY

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

SIDEWALK APPROACH SLABS

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

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

COORDINATION WITH RAILROAD

1. During construction of the bridge, the Contractor will not interfere with the operations of railroad train movements. Construction activity must not take place within 25 feet of the centerline track when train movements are occurring through the construction site and construction equipment will be removed from this zone prior to arrival of any train. See Special Provision for Working on Railroad Company Right-of-Way.

2. See Special Provision Regarding Railroad Protective Liability Insurance.

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NOTES (CONTINUED)
FOR
227’ - 7 ⅜” STEEL GIRDER BRIDGE

Str. No. 26-374-023

JULY 2023

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
DM	DM	AMB	BRIDGE ENGINEER

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QUARRIED AGGREGATE SLOPE PROTECTION

1. This work will consist of paving the bridge berm slopes with crushed aggregate slope protection for control and prevention of berm erosion.

2. The aggregate used in the crushed aggregate slope protection will be composed of durable fragments of quarried quartzite or an approved alternative. The material will be pink in color and well graded with 90 to 100% passing a 6-inch sieve and 0 to 10% passing a 2-inch sieve.

3. The Type A Drainage Fabric will be non-woven.

4. The surface upon which the slope protection is to be placed will be smooth, uniform, and free from foreign material. The top surface of the slope protection will conform to the dimensions, elevations, and slopes shown in the plans.

5. The crushed aggregate will be shaped and compacted to provide a stable, smooth, and uniform surface.

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

APPROACH SLAB UNDERDRAIN SYSTEM

1. An underdrain system will be placed underneath the sleeper slabs and a vertical composite drain behind the abutments as shown in the plans in accordance with Section 435 of the Construction Specifications.

2. The 4-inch diameter Perforated PVC Drain Pipe will be SDR 35 Solvent Weld PVC Pipe conforming to ASTM D3034 and ASTM F758. The 2-inch and 4-inch diameter PVC Outlet Pipe will be Schedule 40 PVC Pipe conforming to ASTM D1785 designated as PVC 1120, PVC 1220, or PVC 2120. Pipe sections will be connected using a PVC Solvent Cement conforming to ASTM D2564. The Drain Sleeve will conform to ASTM D6707.

3. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.

4. All labor, tools, equipment, and any incidentals necessary for the installation of 4-inch diameter Perforated PVC Drain Pipe, 4-inch diameter PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4” Underdrain Pipe.

PERFORATED GEOCELL

1. Perforated Geocell will be from the following company or equivalent:

   Company: Agtec
   Phone: 1-818-724-7657
   Website: http://www.agtec.com

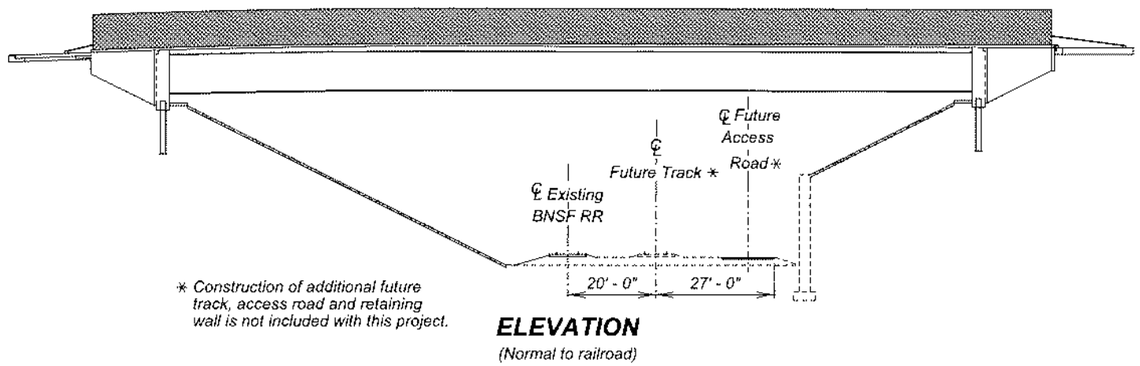
2. Perforated Geocell will be 6 inches tall with Type B Drainage Fabric underlying the perforated Geocell. Installation will adhere to the manufacturer’s recommendation.

3. Perforated Geocell will be filled with the Select Granular Backfill in accordance with Section 850 of the Construction Specifications.

4. Perforated Geocell will be paid for at the contract unit price per square foot. Payment will be full compensation for furnishing and installing the Perforated Geocell.

5. Select Granular Backfill will be paid for at the contract unit price per ton of material furnished. Payment will be full compensation for furnishing, loading, hauling, and placing the Select Granular Backfill.

FUTURE BNSF CONFIGURATION



* Construction of additional future track, access road and retaining wall is not included with this project.

ELEVATION
(Normal to railroad)

REGISTERED PROFESSIONAL ENGINEER
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NOTES (CONTINUED)
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227’ - 7 ⅜” STEEL GIRDER BRIDGE

Str. No. 26-374-023

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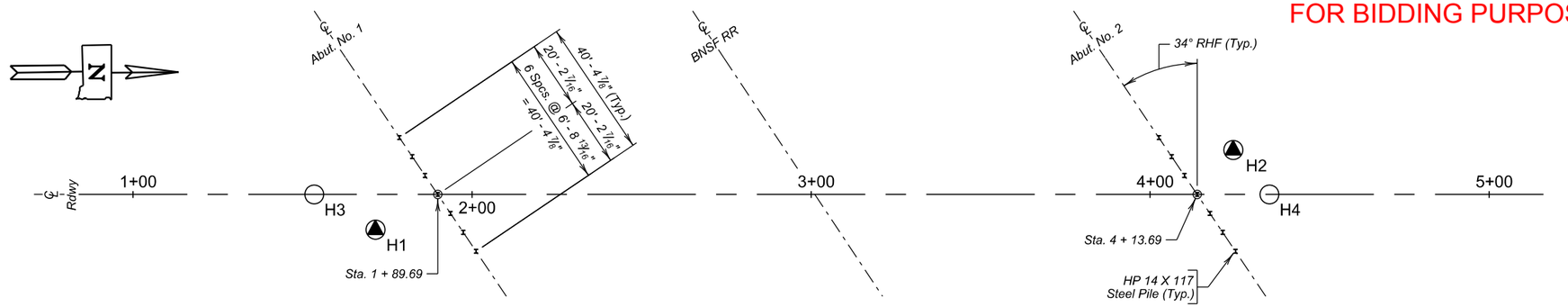

PILING LAYOUT

Hole Number	H3	
Station	1+53	
Depth	35.0	ft
Soil Color	Brown	
Classification	Clay Sand	
Strength (Qu)	3,182	psf
Dry Density	120.1	pcf
Wet Density	134.9	pcf
Moisture	12.3	%
Pass No. 10	98.9	%
Pass No. 40	89.8	%
Pass No. 200	49.2	%
Sand Content	49.7	%
Silt Content	27.5	%
Clay Content	21.8	%

Hole Number	H3	
Station	1+53	
Depth	54.7	ft
Soil Color	Gray	
Classification	Silty Sand	
Strength (Qu)	506	psf
Dry Density	116.1	pcf
Wet Density	133.9	pcf
Moisture	15.4	%
Pass No. 10	99.4	%
Pass No. 40	41.3	%
Pass No. 200	21.6	%
Sand Content	77.9	%
Silt Content	9.6	%
Clay Content	11.9	%

Hole Number	H3	
Station	1+53	
Depth	75.0	ft
Soil Color	Dark Gray	
Classification	Sandy Clay	
Strength (Qu)	9,751	psf
Dry Density	120.6	pcf
Wet Density	137.0	pcf
Moisture	13.6	%
Pass No. 10	98.2	%
Pass No. 40	86.8	%
Pass No. 200	61.5	%
Sand Content	36.7	%
Silt Content	30.1	%
Clay Content	31.4	%

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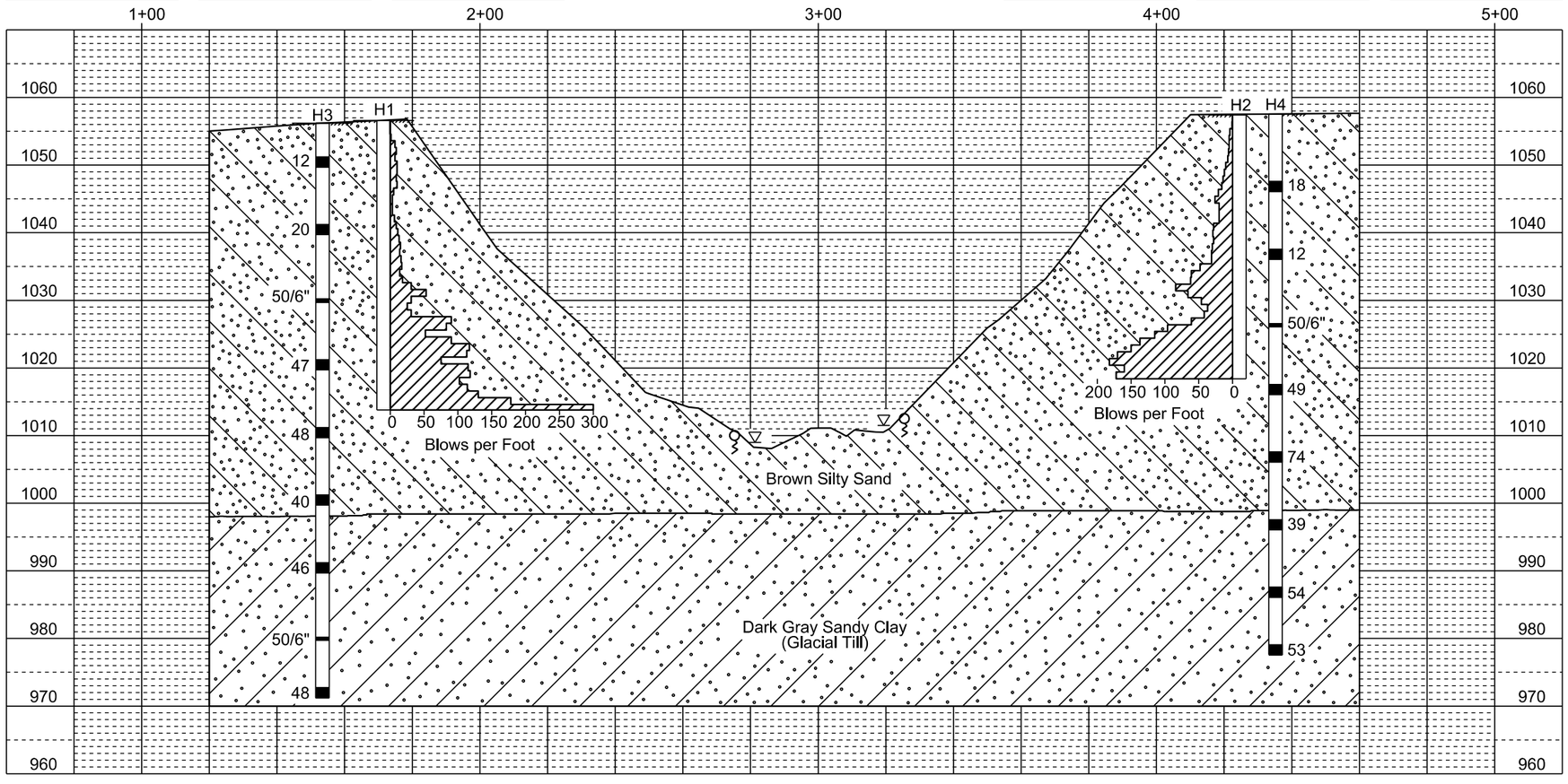
Hole Number	H4	
Station	4+35	
Depth	9.7	ft
Soil Color	Brown	
Classification	Silty Sand	
Strength (Qu)	No Test	psf
Dry Density	93.0	pcf
Wet Density	107.5	pcf
Moisture	15.6	%
Pass No. 10	94.3	%
Pass No. 40	81.4	%
Pass No. 200	54.5	%
Sand Content	39.8	%
Silt Content	36.6	%
Clay Content	17.9	%

Hole Number	H4	
Station	4+35	
Depth	40.0	ft
Soil Color	Brown	
Classification	Clay Sand	
Strength (Qu)	6,052	psf
Dry Density	120.1	pcf
Wet Density	134.1	pcf
Moisture	11.7	%
Pass No. 10	99.1	%
Pass No. 40	86.0	%
Pass No. 200	52.3	%
Sand Content	46.8	%
Silt Content	27.6	%
Clay Content	24.8	%

Hole Number	H4	
Station	4+35	
Depth	70.0	ft
Soil Color	Gray	
Classification	Clay Sand	
Strength (Qu)	9,378	psf
Dry Density	116.8	pcf
Wet Density	132.1	pcf
Moisture	13.1	%
Pass No. 10	94.7	%
Pass No. 40	84.3	%
Pass No. 200	59.4	%
Sand Content	35.3	%
Silt Content	30.1	%
Clay Content	29.4	%



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

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

LEGEND

- Penetration Test
- Drive Test
- Water
- Seep
- Sample Zone

Drive tests are conducted by dropping a 490 pound hammer 30 inches to drive a 2⅞ inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6⅝ inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to collect samples and measure the resistance to penetration of the soil. Samples are collected using a lined Modified California Sampler. Penetration test results are listed as uncorrected "N" values in blows per foot. Blows over inches are listed if refusal is achieved, which is 50 blows within one 6 inch set.

GROUNDWATER ELEVATIONS

APRIL 2022

H1	DRY
H2	DRY

*Note seeps at railroad elevation

SUBSURFACE INVESTIGATION AND PILING LAYOUT
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

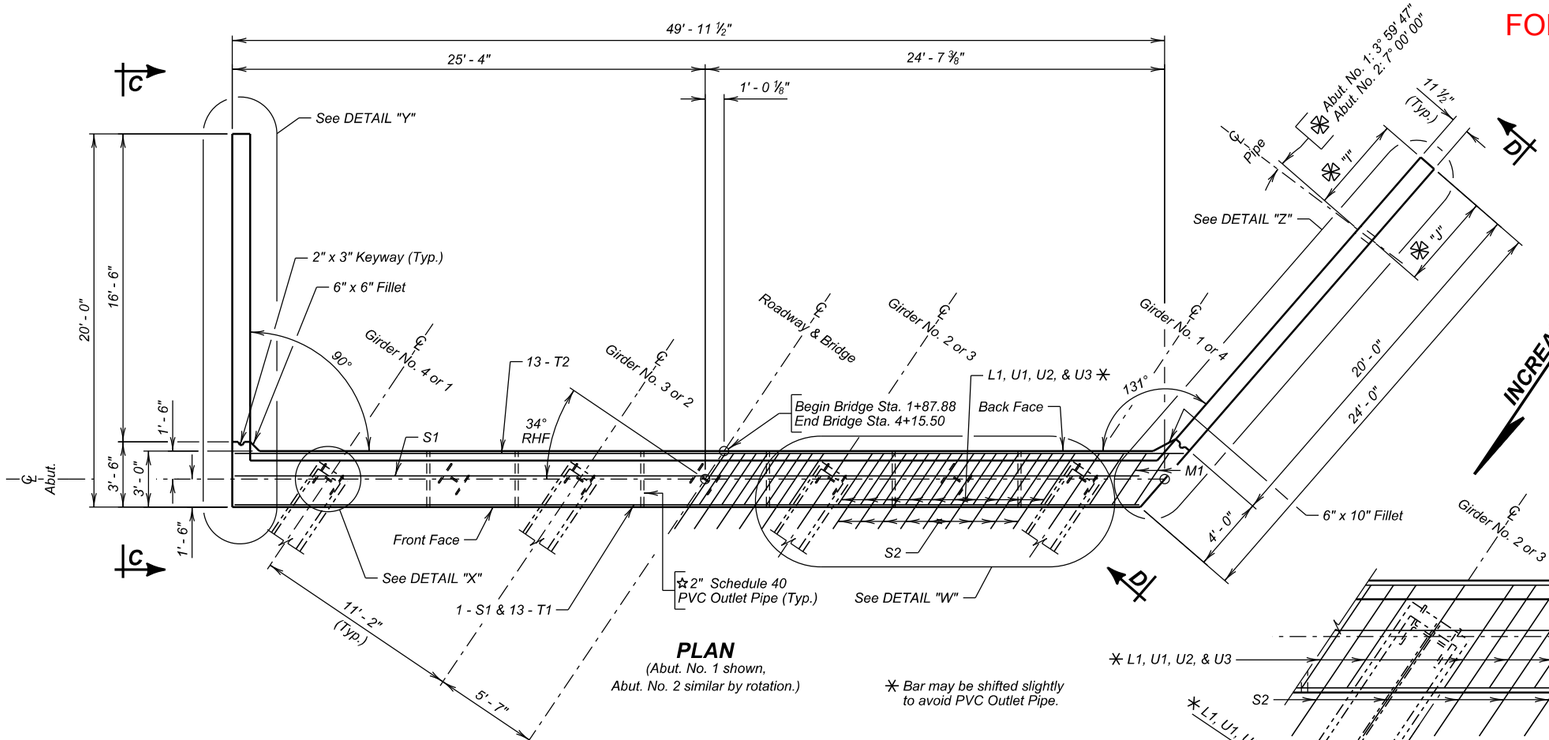
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	KG	HK	BRIDGE ENGINEER

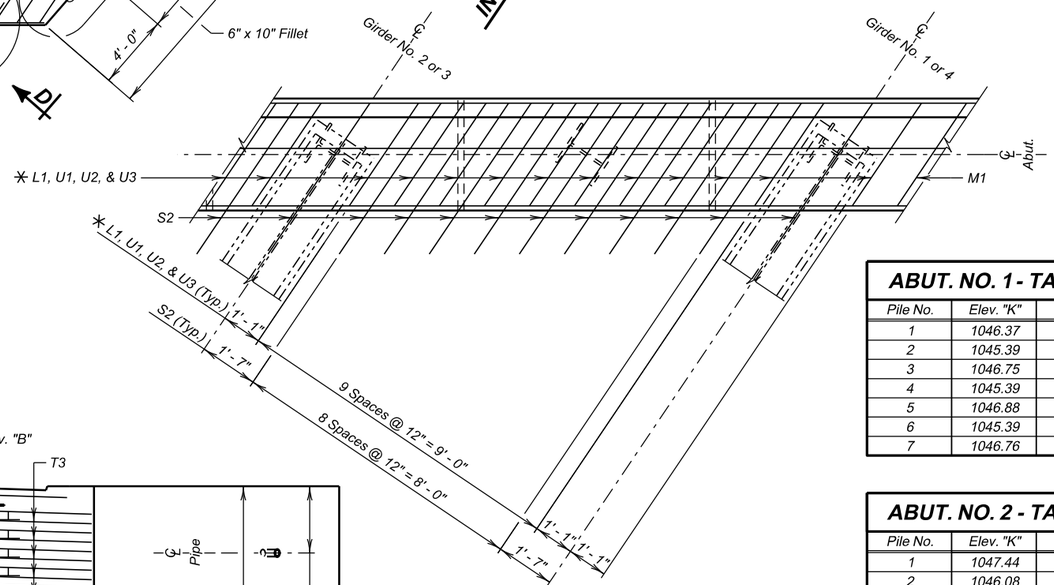
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	47	76



PLAN
(Abut. No. 1 shown, Abut. No. 2 similar by rotation.)

✳ Bar may be shifted slightly to avoid PVC Outlet Pipe.



DETAIL "W"

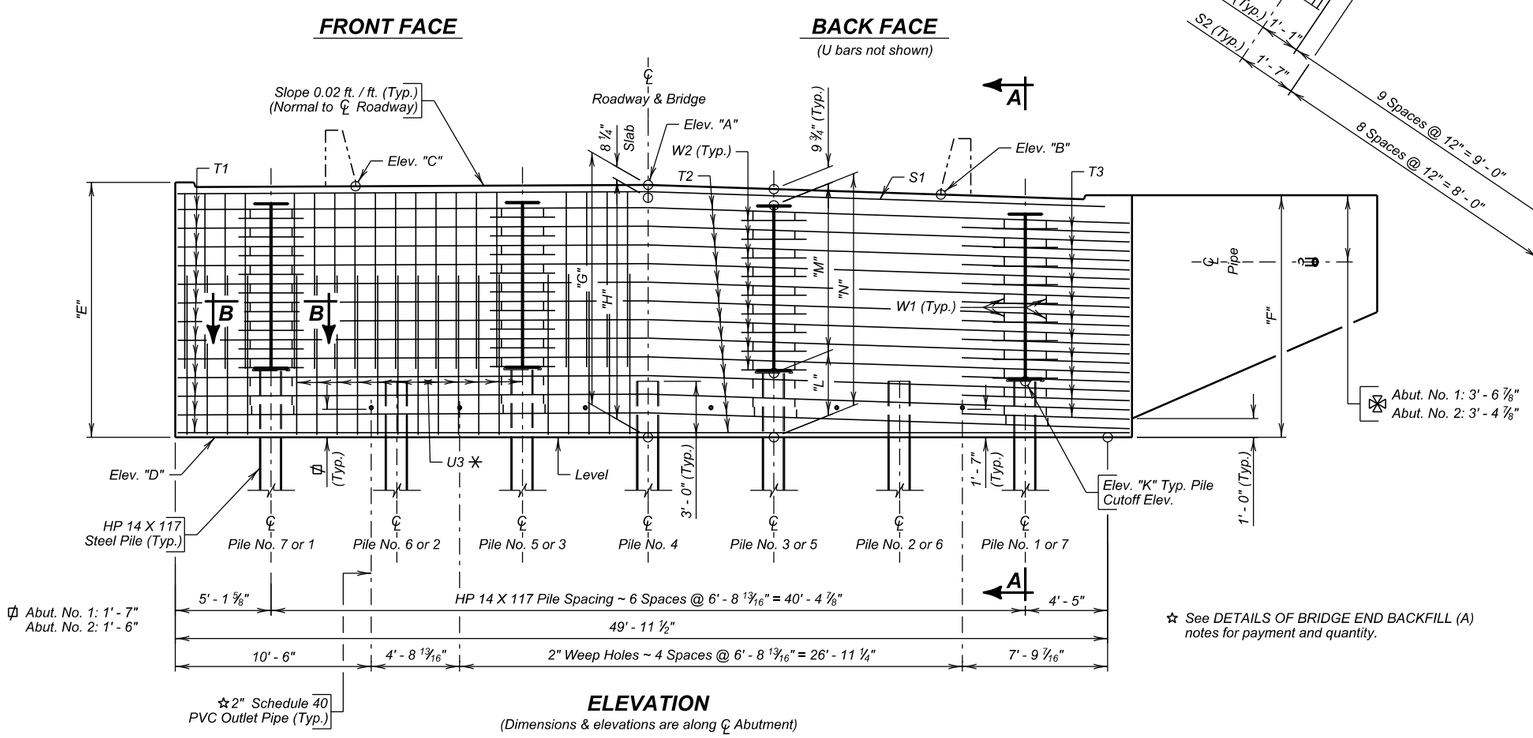
TABLE OF DIMENSIONS

Abut. No.	"E"	"F"	"G"	"H"	"I"	"J"
1	13' - 5 ⅛"	12' - 11 ½"	13' - 4 ⅜"	12' - 8 ⅜"	5' - 1 ⅝"	5' - 0 ¾"
2	13' - 4 ½"	13' - 5 ¼"	13' - 6 ⅞"	12' - 10 ⅝"	4' - 10 ¾"	4' - 9 ¼"

TABLE OF ELEVATIONS

Abut. No.	Elev. "A"	Elev. "B"	Elev. "C"	Elev. "D"
1	1056.78	1056.36	1056.66	1043.39
2	1057.65	1057.41	1057.37	1044.08

✠ *These dimensions are estimates and may be adjusted in field. See DETAILS OF BRIDGE END BACKFILL sheets for additional underdrain pipe details.*



ELEVATION
(Dimensions & elevations are along ℄ Abutment)

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

ABUT. NO. 1 - TABLE OF ELEV. & DIM.

Pile No.	Elev. "K"	"L" (Ft.)	"M" (Ft.)	"N" (Ft.)
1	1046.37	2.98	9.04	12.02
2	1045.39	2.00	-	-
3	1046.75	3.36	9.04	12.40
4	1045.39	2.00	-	-
5	1046.88	3.49	9.04	12.53
6	1045.39	2.00	-	-
7	1046.76	3.37	9.04	12.42

ABUT. NO. 2 - TABLE OF ELEV. & DIM.

Pile No.	Elev. "K"	"L" (Ft.)	"M" (Ft.)	"N" (Ft.)
1	1047.44	3.36	9.04	12.40
2	1046.08	2.00	-	-
3	1047.68	3.60	9.04	12.64
4	1046.08	2.00	-	-
5	1047.69	3.61	9.04	12.65
6	1046.08	2.00	-	-
7	1047.48	3.40	9.04	12.44

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
09/26/2023

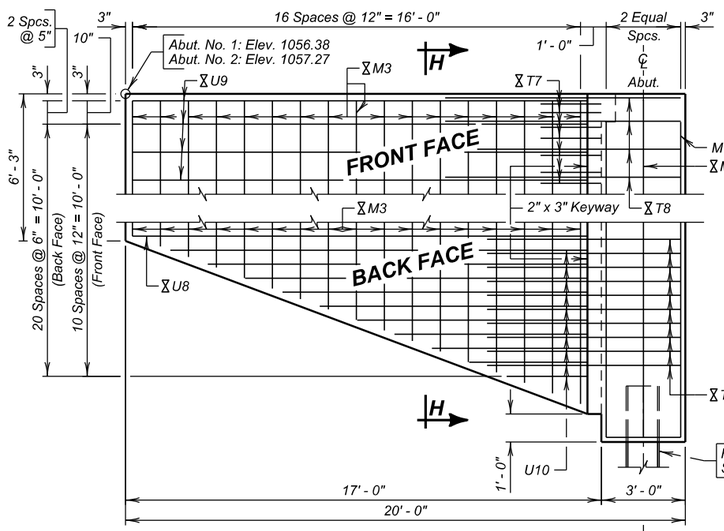
ABUTMENT DETAILS (A)
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

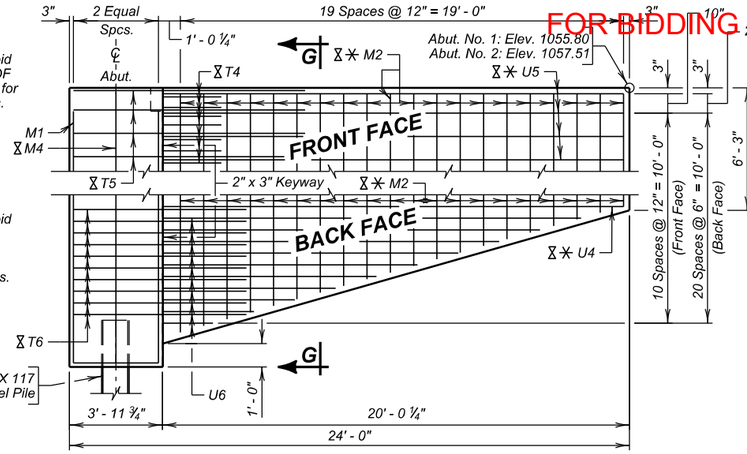
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	48	76



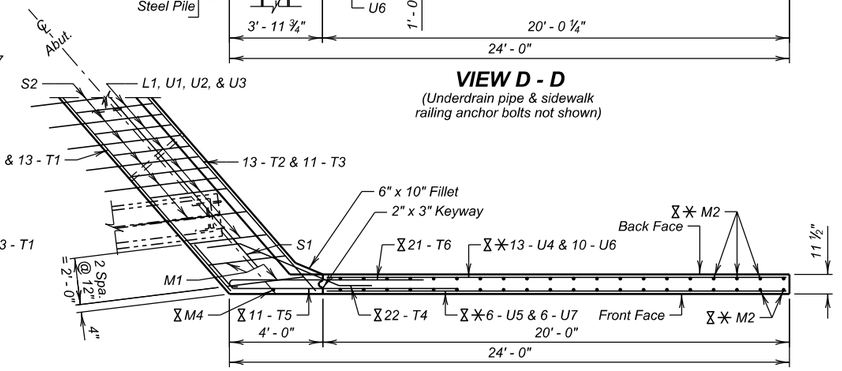
VIEW C - C
(Sidewalk railing anchor bolts not shown)

NOTE:
Bar may be shifted slightly to avoid underdrain pipe. See DETAILS OF BRIDGE END BACKFILL sheets for additional underdrain pipe details.

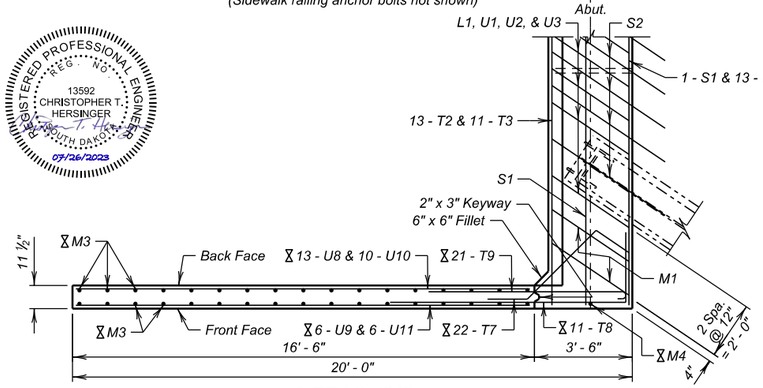
NOTE:
Bar may be shifted slightly to avoid sidewalk railing anchor bolts. See SIDEWALK RAILING WITH CHAIN LINK FENCE DETAILS sheets for additional railing details.



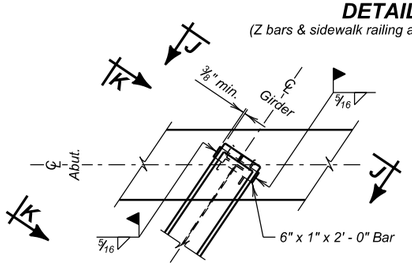
VIEW D - D
(Underdrain pipe & sidewalk railing anchor bolts not shown)



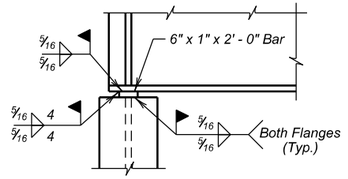
DETAIL "Z"
(Z bars, underdrain pipe & sidewalk railing anchor bolts not shown)



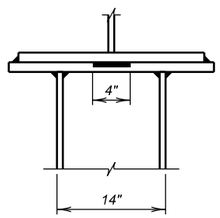
DETAIL "Y"
(Z bars & sidewalk railing anchor bolts not shown)



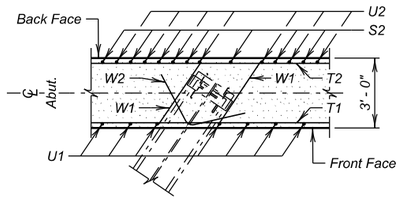
DETAIL "X"



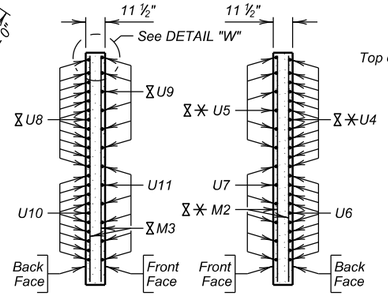
VIEW K - K



VIEW J - J
(showing weld locations)

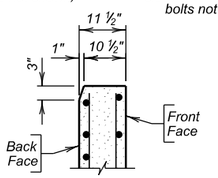


SEC. B - B



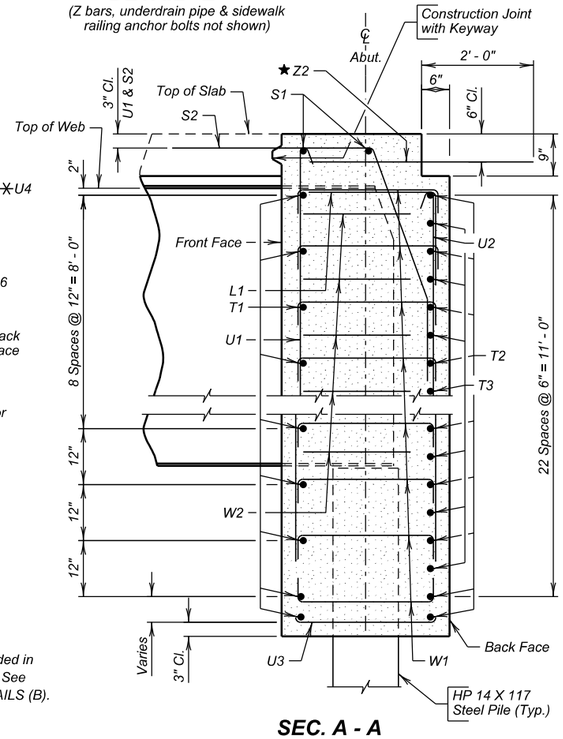
SEC. H - H
(Sidewalk railing anchor bolts not shown)

SEC. G - G
(Underdrain pipe & sidewalk railing anchor bolts not shown)



DETAIL "W"

★ *Z2 bars are listed and included in Superstructures Quantities. See SUPERSTRUCTURE DETAILS (B).*

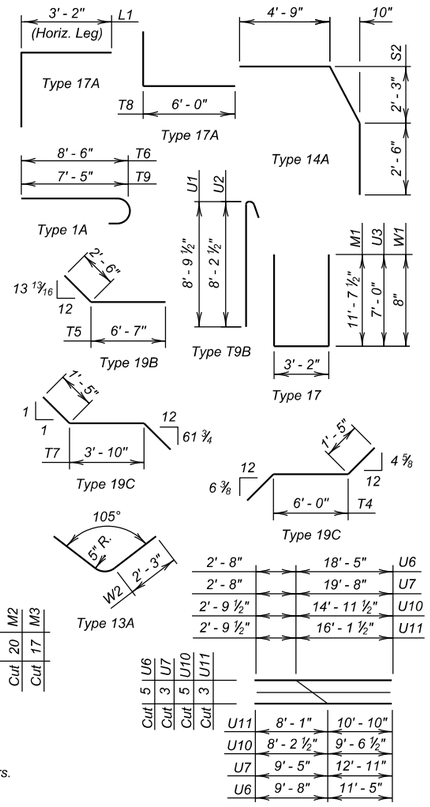


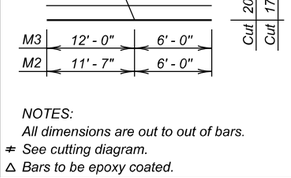
SEC. A - A

REINFORCING SCHEDULE
(For One Abutment)

	Mk.	No.	Size	Length	Type
△	L1	32	4	4' - 10"	17A
#	M1	4	5	26' - 5"	17
#	M2	20	5	17' - 7"	Str.
#	M3	17	5	18' - 0"	Str.
△	M4	2	5	12' - 7"	Str.
△	S1	2	7	48' - 4"	Str.
	S2	31	6	9' - 8"	14A
	T1	13	6	48' - 4"	Str.
	T2	13	6	50' - 8"	Str.
	T3	22	6	9' - 0"	Str.
	T4	22	6	8' - 10"	19C
	T5	11	5	9' - 1"	19B
	T6	21	8	9' - 8"	1A
	T7	22	6	6' - 8"	19C
	T8	11	5	8' - 6"	17A
	T9	21	8	8' - 7"	1A
	U1	30	5	9' - 3"	T9B
	U2	30	5	8' - 8"	T9B
	U3	30	5	17' - 2"	17
	U4	13	8	19' - 8"	Str.
	U5	6	5	19' - 8"	Str.
#	U6	5	8	21' - 1"	Str.
#	U7	3	5	22' - 4"	Str.
	U8	13	8	16' - 2"	Str.
	U9	6	5	16' - 2"	Str.
#	U10	5	8	17' - 9"	Str.
#	U11	3	5	18' - 11"	Str.
	W1	88	5	4' - 6"	17
	W2	36	8	5' - 0"	13A

Bending Details





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

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		Abut. No. 1	Abut. No. 2
Class A45 Concrete, Bridge	Cu. Yd.	85.0	86.2
Reinforcing Steel	Lb.	8,895	8,895
Epoxy Coated Reinforcing Steel	Lb.	751	751
Structure Excavation, Bridge	Cu. Yd.	12.9	11.9
HP 14 x 117 Steel Test Pile, Furnish & Drive	Ft.	1@ 70' = 70'	1@ 70' = 70'
HP 14 x 117 Steel Bearing Pile, Furnish & Drive	Ft.	6 @ 65' = 390'	6 @ 65' = 390'
Preboring Pile	Ft.	7 @ 35' = 245'	7 @ 35' = 245'

ABUTMENT DETAILS (B)
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

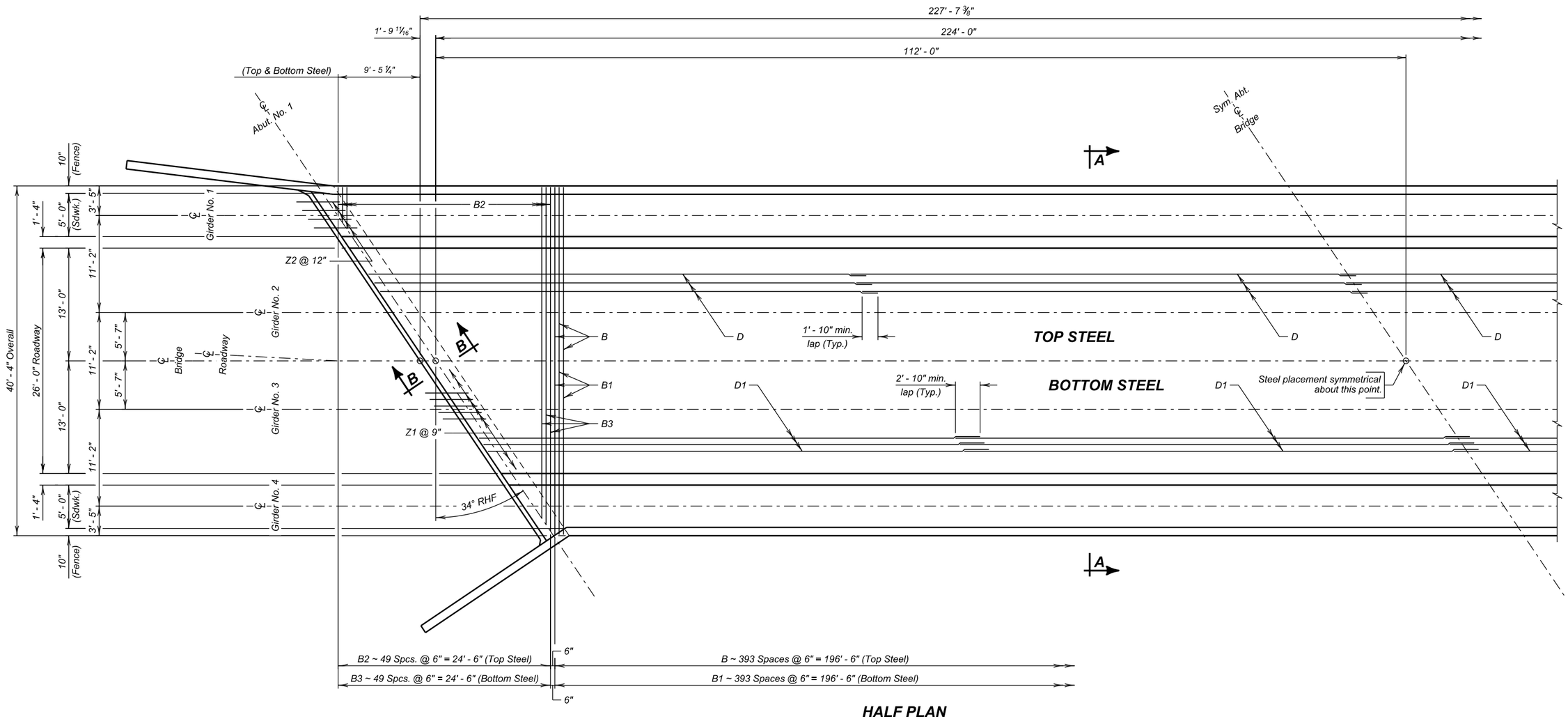
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

9 OF 32

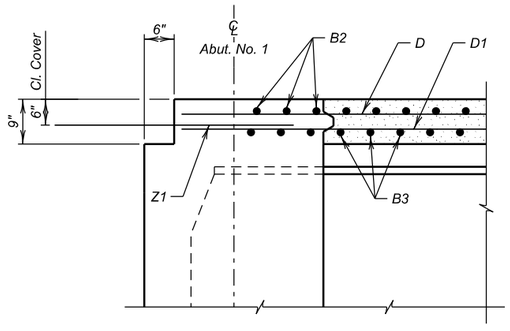
DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	49	76

FOR BIDDING PURPOSES ONLY



HALF PLAN



SEC. B - B

SUPERSTRUCTURE DETAILS (A)

FOR

227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY

S. D. DEPT. OF TRANSPORTATION

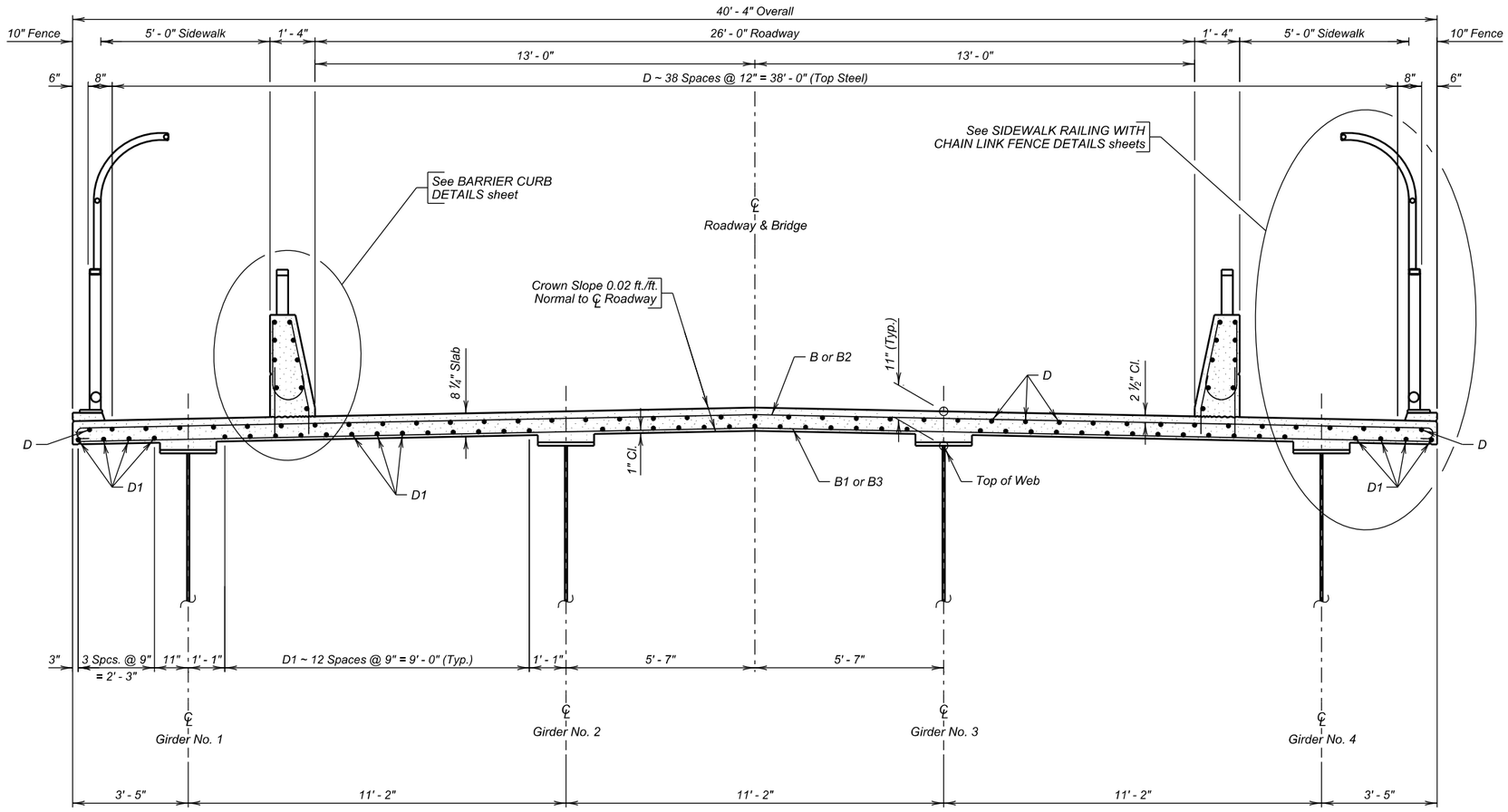
JULY 2023

10 OF 32

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

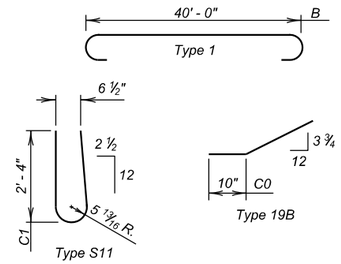


SECTION A - A

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
∢	B	394	6	41' - 4"	1
	B1	394	5	40' - 1"	Str.
∢ ≠	B2	50	6	44' - 4"	1A
≠	B3	50	5	43' - 1"	Str.
	B4	8	4	57' - 7"	Str.
★	C	228	5	1' - 6"	Str.
★	C0	454	5	1' - 6"	19B
	C1	454	5	5' - 3"	S11
	D	164	4	58' - 0"	Str.
	D1	188	5	58' - 9"	Str.
	D2	16	4	58' - 9"	Str.
	D3	48	4	58' - 7"	Str.
	Z1	78	7	4' - 0"	Str.
⊛	Z2	12	4	4' - 0"	Str.

Bending Details



NOTES:

All reinforcing steel will be epoxy coated.

See Approach Slab sheet for location of Z1 bars.

All dimensions are out to out of bars.

≠ *See cutting diagram.*

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

⊛ *See SIDEWALK APPROACH SLAB DETAILS for placement.*

★ *Drill and epoxy in place. Not included in reinforcing steel quantity. Included in the quantity for Install Dowel in Concrete.*

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
☆	Class A45 Concrete, Bridge Deck	Cu. Yd.	290.4
⏢	Structural Steel	Lump Sum	Lump Sum
✳	Epoxy Coated Reinforcing Steel	Lb.	70,353
	Install Dowel in Concrete	Each	682
⊠	Concrete Penetrating Sealer	Sq. Yd.	654.1

⏢ *For informational purposes only, the estimated weight of the structural steel is 485,517 pounds.*

⊠ *Apply to bridge deck between barrier curbs.*

✳ *Includes quantities for Barrier Curbs and Slab.*

☆ *Includes quantities for Barrier Curbs, Slab, Haunch, and Chain Link Fence Curbs.*

Concrete for Barrier Curbs is 0.1190 cu. yd / ft.

Concrete for Chain Link Fence Curbs is 0.0085 cu. yd / ft.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
09/26/2023

SUPERSTRUCTURE DETAILS (B)

FOR

227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW

OVER BNSF RR SEC. 17-T121N-R46W

STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)

STR. NO. 26-374-023 HL-93

GRANT COUNTY

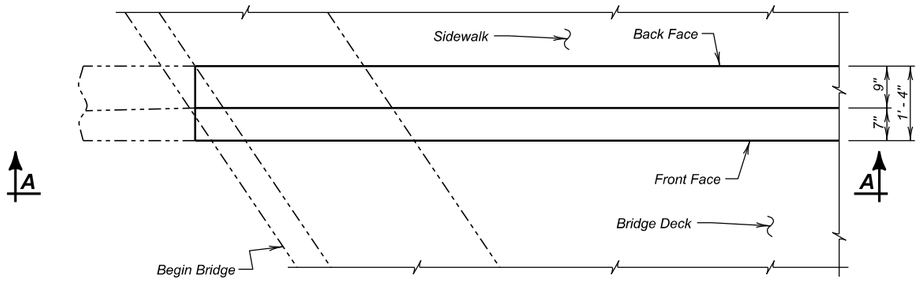
S. D. DEPT. OF TRANSPORTATION

JULY 2023

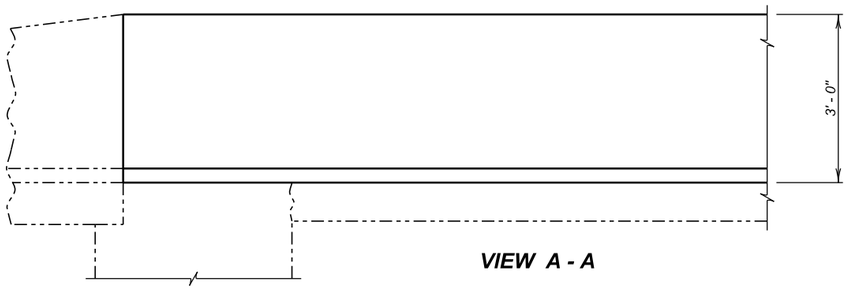
DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

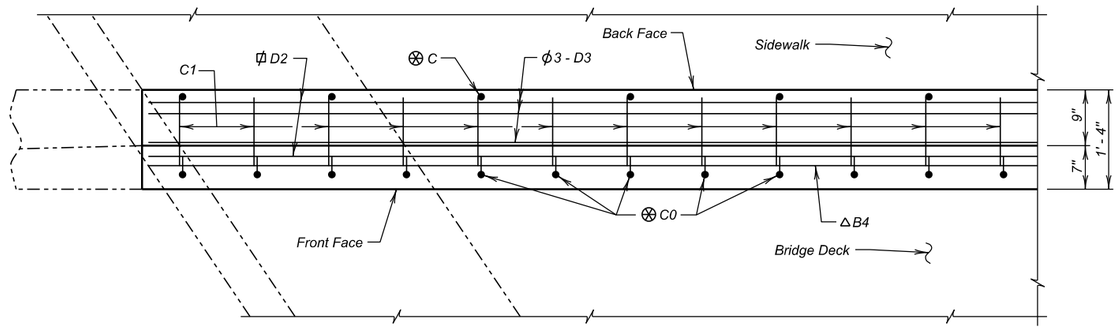
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	51	76



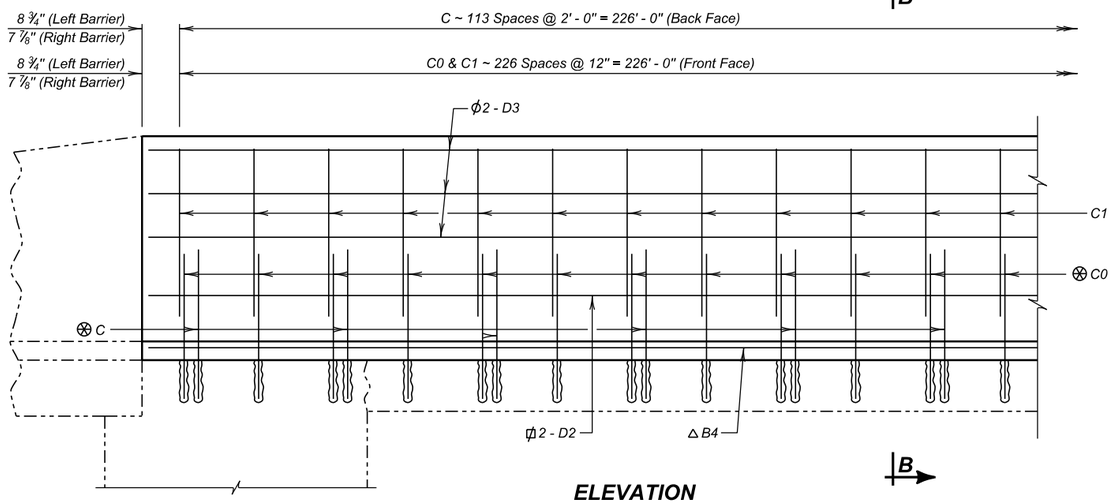
PART PLAN



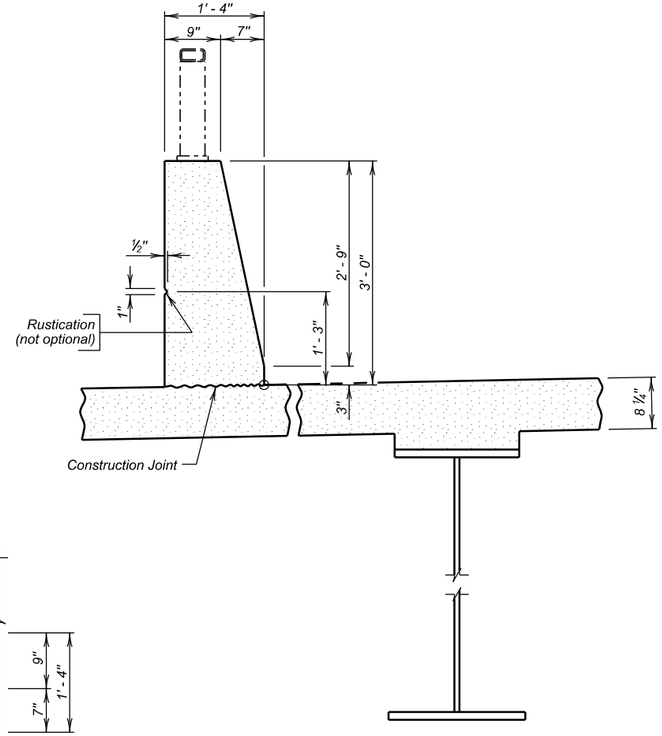
VIEW A - A



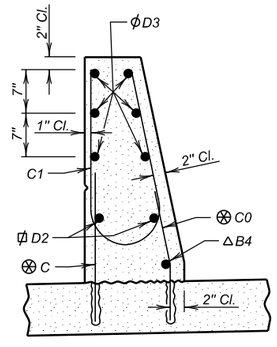
PLAN



ELEVATION



BARRIER DETAILS



SECTION B - B

△ Min. Lap = 1' - 0"
ϕ Min. Lap = 2' - 6"
ϕ Min. Lap = 2' - 4"
⊛ Drill and epoxy in place. Not included in reinforcing steel quantity.

NOTE:
For listing of re-bars see SUPERSTRUCTURE DETAILS (B).

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
09/26/2023

BARRIER CURB DETAILS
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

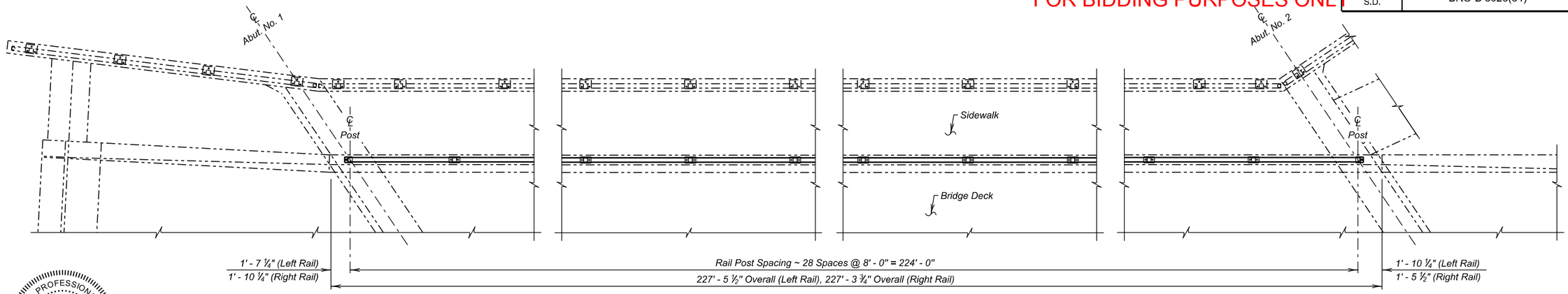
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

12 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	52	76

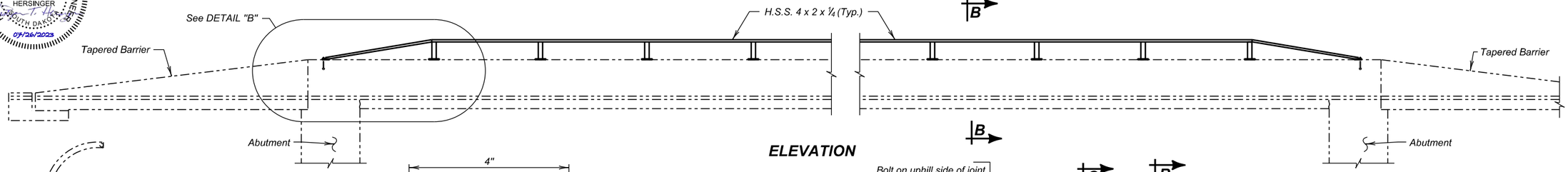
FOR BIDDING PURPOSES ONLY



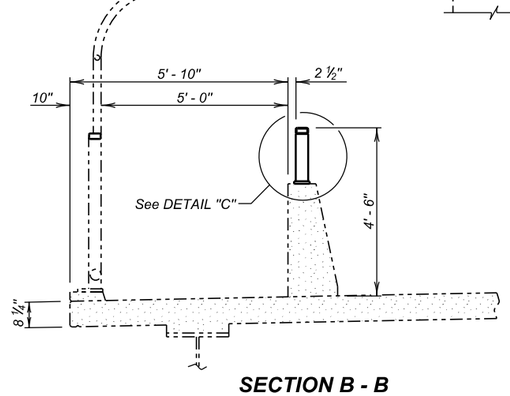
PLAN

(Left Rail shown, Right Rail similar by opposite hand except as noted.)

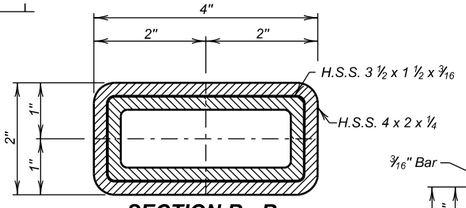
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023



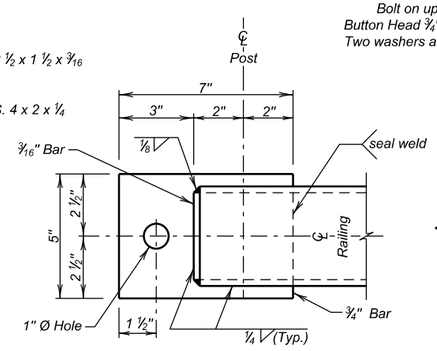
ELEVATION



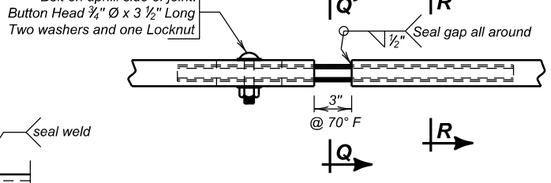
SECTION B - B



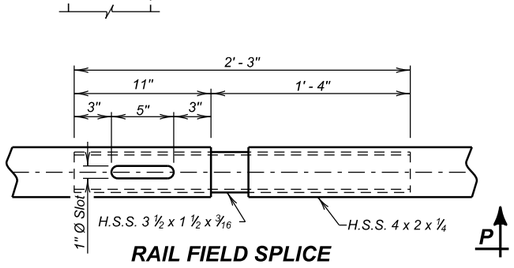
SECTION R - R



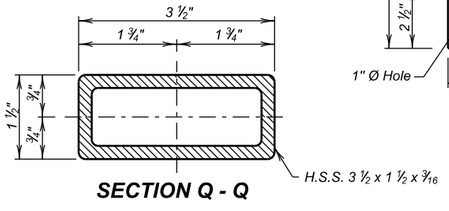
VIEW E - E



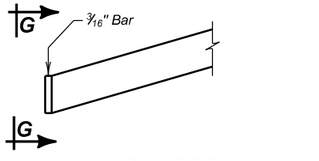
VIEW P - P



RAIL FIELD SPLICE



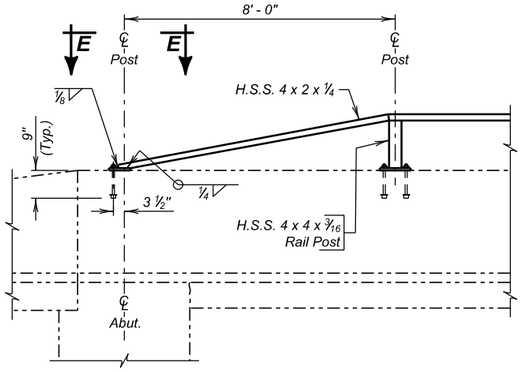
SECTION Q - Q



RAIL END CAP DETAIL

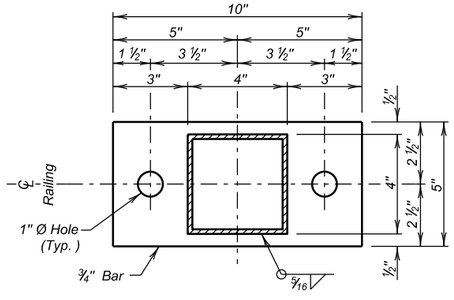
VIEW G - G

ESTIMATED QUANTITIES (For Two Rails)		
ITEM	UNIT	QUANTITY
Steel Pedestrian Railing on Concrete Barrier	Ft.	448.0

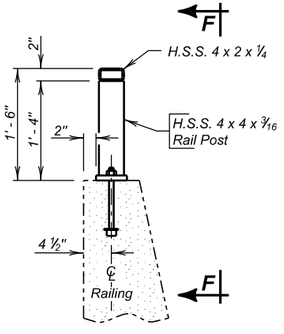


DETAIL "B"

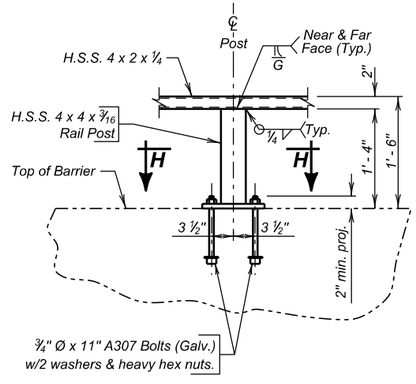
(Begin Bridge shown, End Bridge similar)



VIEW H - H



DETAIL "C"



VIEW F - F

BARRIER CURB RAILING DETAILS
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

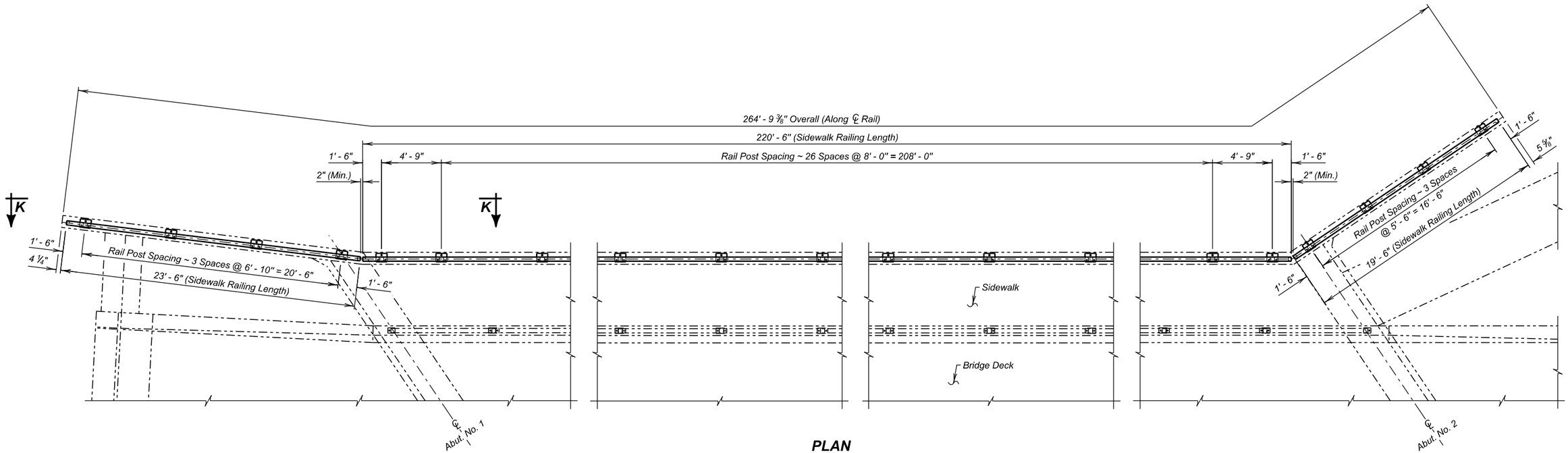
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

13 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

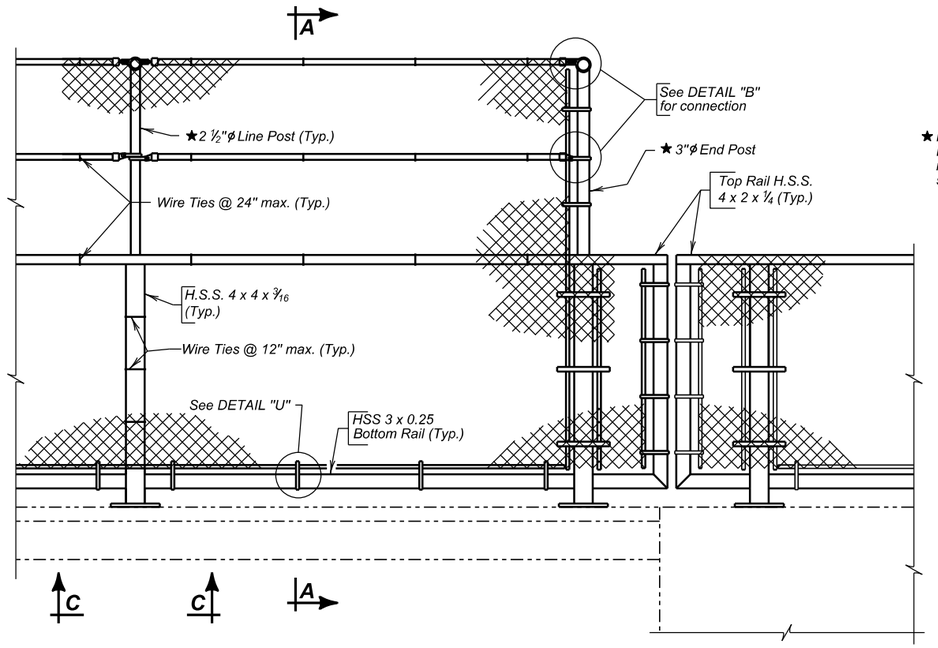
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	53	76

FOR BIDDING PURPOSES ONLY

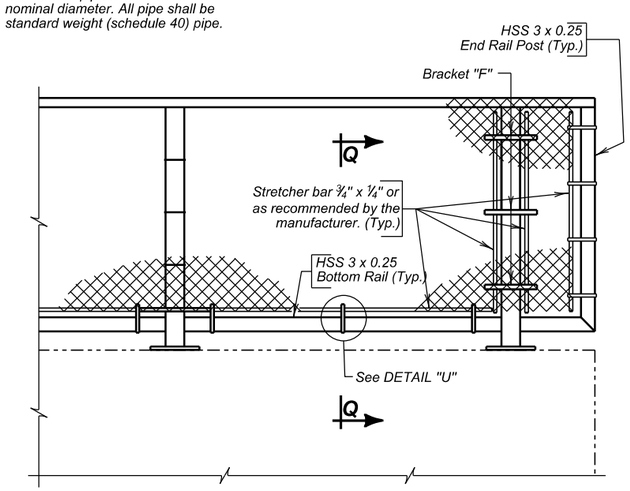


PLAN

(Left Fence shown, Right Fence similar by rotation.)



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



VIEW K - K

(Fence shown adjacent to Abut. No. 1, Fence adjacent to Abut. No. 2 similar.)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

SIDEWALK RAILING WITH CHAINLINK FENCE DETAILS (A)

FOR

227' - 7 3/8" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

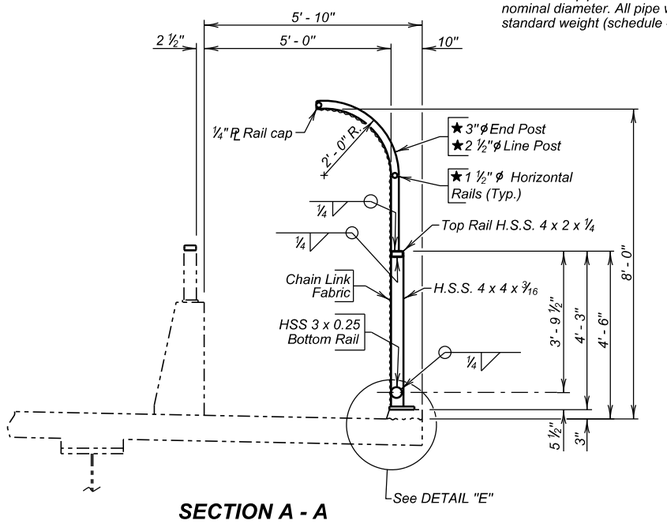
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

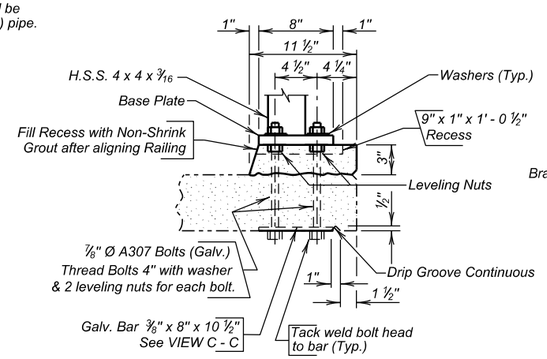
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	54	76

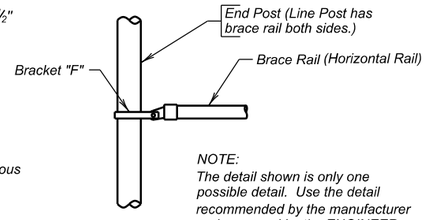
★ NOTE:
Diameter of pipe shown is the nominal diameter. All pipe will be standard weight (schedule 40) pipe.



SECTION A - A

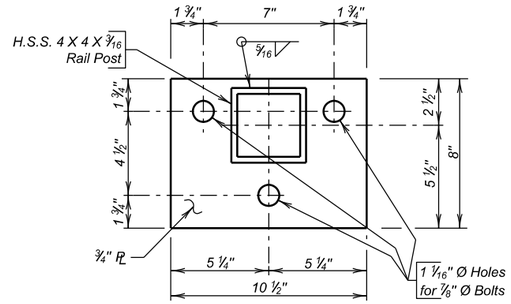


DETAIL "E"

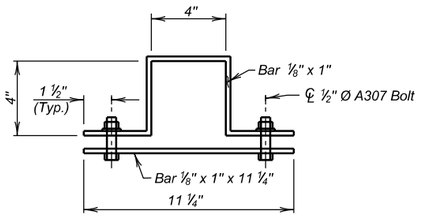


NOTE:
The detail shown is only one possible detail. Use the detail recommended by the manufacturer and approved by the ENGINEER

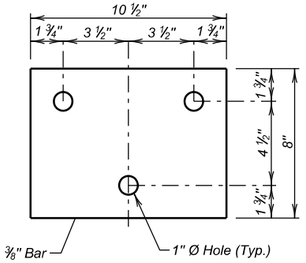
DETAIL "B"



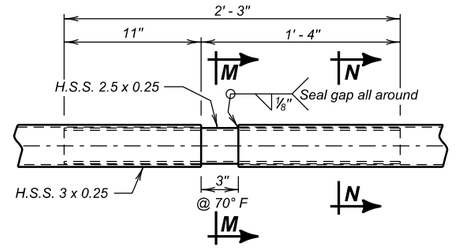
BASE PLATE DETAIL



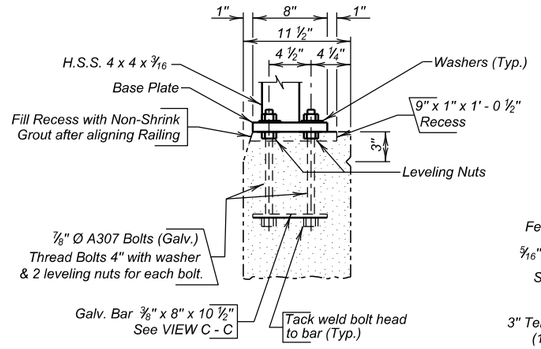
BRACKET "F"



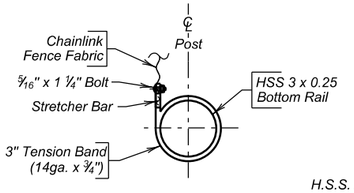
VIEW C - C



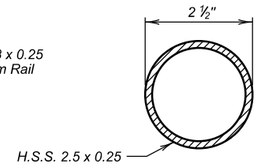
BOTTOM RAIL FIELD SPLICE



SECTION Q - Q

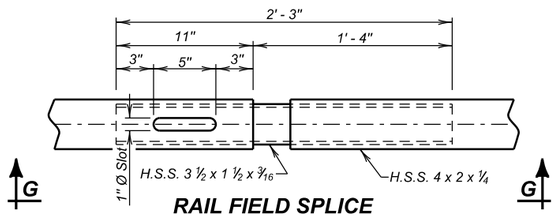


DETAIL "P"

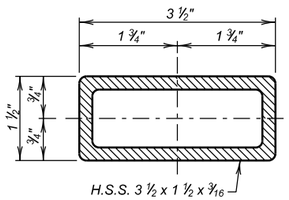


SECTION M - N

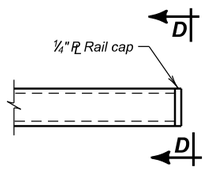
ESTIMATED QUANTITIES (For Two Rails)		
ITEM	UNIT	QUANTITY
Steel Pedestrian Railing on Sidewalk	Ft.	527.0
Chain Link Fence for Bridge Sidewalk	Ft.	527.0



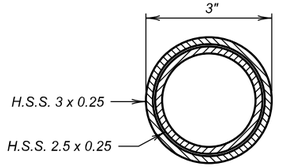
RAIL FIELD SPLICE



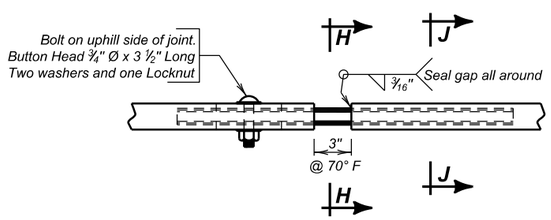
SECTION H - H



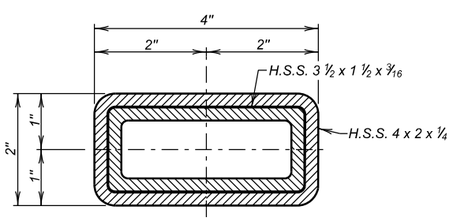
RAIL END CAP DETAIL



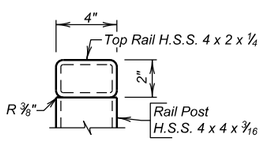
SECTION N - N



VIEW G - G



SECTION J - J



VIEW D - D

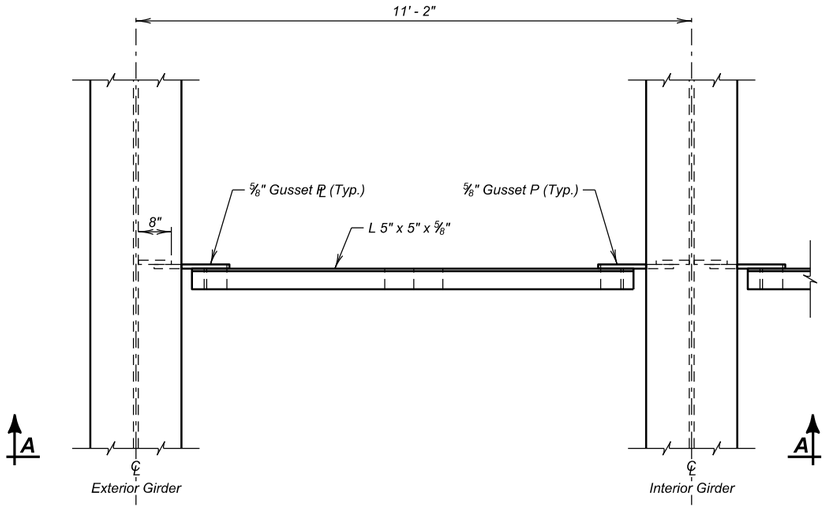
SIDEWALK RAILING WITH CHAINLINK FENCE DETAILS (B)
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

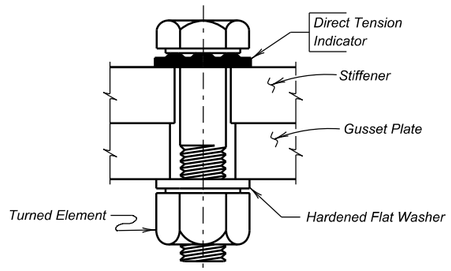
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

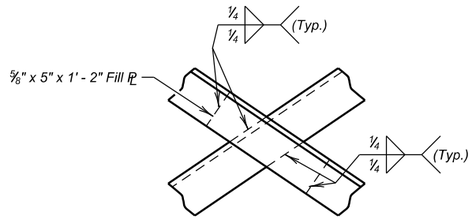
FOR BIDDING PURPOSES ONLY



PLAN



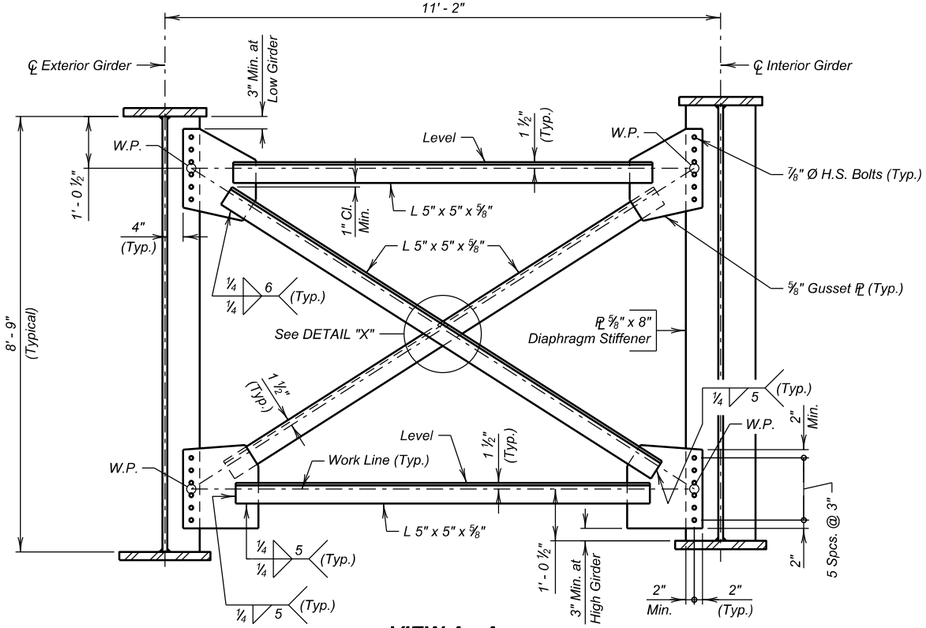
DIRECT TENSION INDICATOR DETAIL



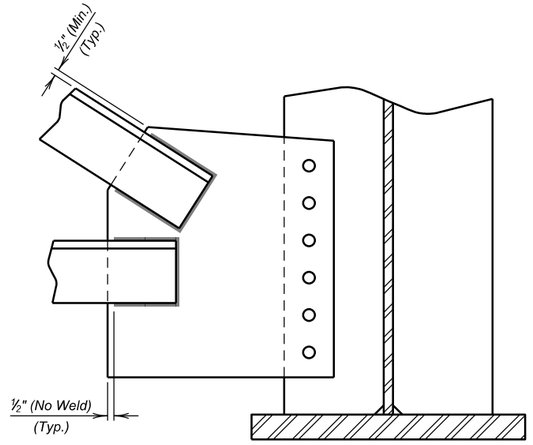
DETAIL "X"

GENERAL NOTE:

1. The Steel Diaphragms are included in the quantity for Structural Steel.
2. Use 1 1/16" Ø bolt holes in the gusset plates. Use 15/16" Ø bolt holes in the stiffener plates.
3. Install bolt heads on the side of the connection with the 15/16" Ø bolt holes. Install direct tension indicators under the bolt heads.
4. All bolts in splices will be 7/8" Ø High Strength Bolts conforming to ASTM Specifications F3125 Grade A325, Type 3. The bolts will be heavy hexagon head structural type with heavy semi-finished hexagon nut, hardened washer, and direct tension indicator.
5. Terminate all welds 1/2" from edges of the gusset plates.



VIEW A - A
INTERMEDIATE DIAPHRAGM DETAIL
(Weight of one Unit = 1,022 lbs)



WELD TERMINATION DETAILS

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

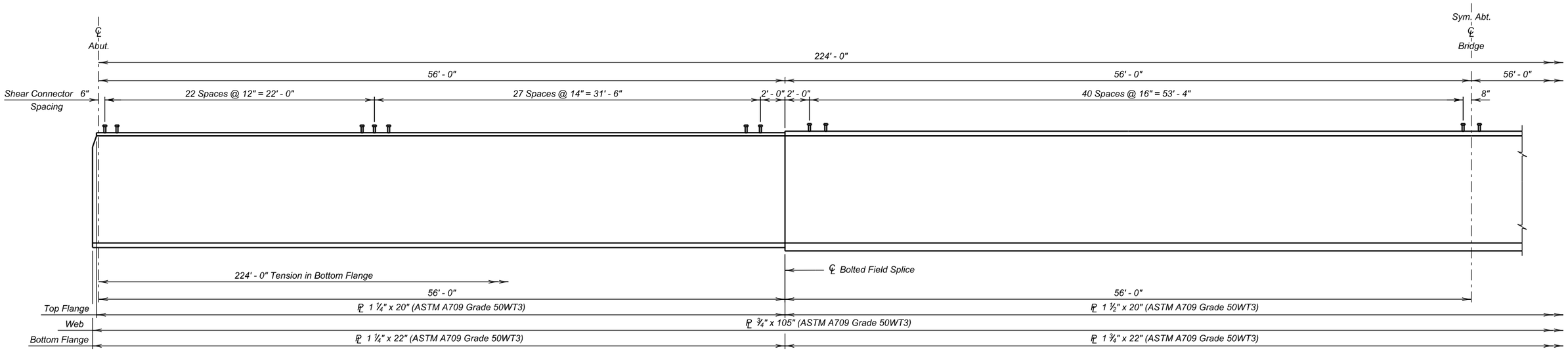
DIAPHRAGM DETAILS
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

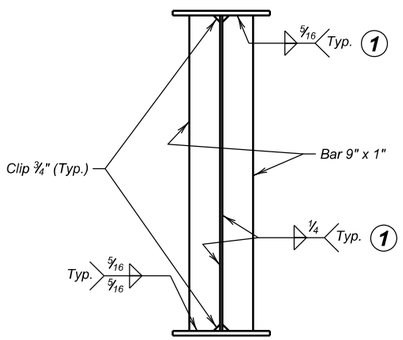
DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

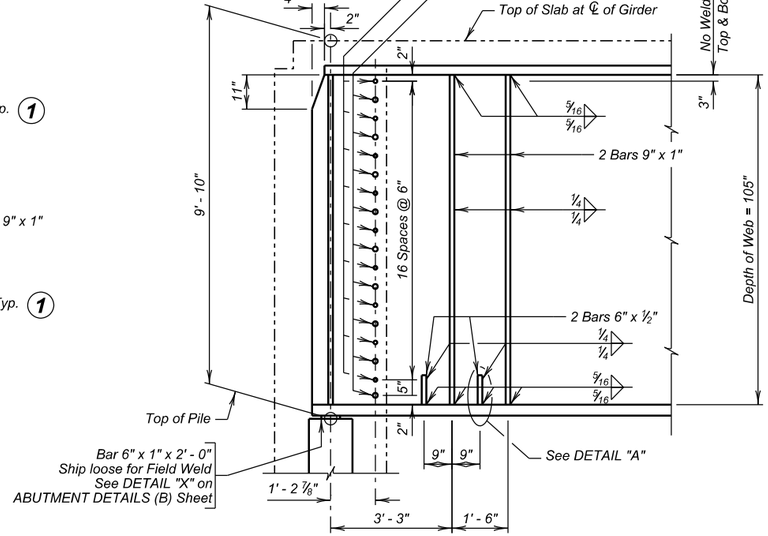


GIRDER LAYOUT

(1) NOTE: All fillet welds will terminate ½" from edge of stiffener, edge of flange, or clip as appropriate, except weld from clip to edge of stiffener at top flange.

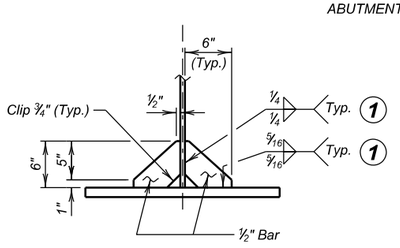


END VIEW

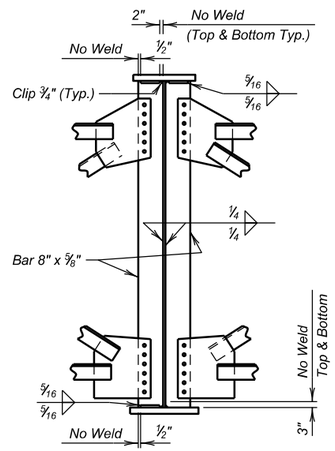


TYPICAL SECTION AT ABUTMENTS

(Parallel to ℄ Girders)

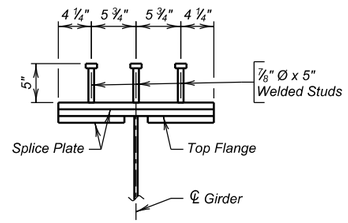


DETAIL "A"

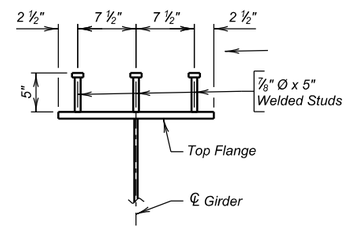


DETAILS OF STIFFENERS AT INTERMEDIATE DIAPHRAGMS

(Interior Girder Shown)



SHEAR CONNECTOR DETAILS AT BOLTED FIELD SPLICE



SHEAR CONNECTOR DETAILS

Welded Stud Shear Connectors are spaced as shown on Girder Layout. Payment for Furnishing and Field Installing Shear Connectors will be incidental to the contract Lump Sum price for Structural Steel. 546 Shear Connectors per Girder.

FLANGE TO WEB WELDS

Flange Thickness	Fillet Welds
1 ¼"	⅜"
1 ½"	⅜"
1 ¾"	⅜"

NOTES:
1. See DIAPHRAGM DETAILS Sheet for Diaphragm Details.
2. See FRAMING DIAGRAM CAMBER AND SLAB FORM ELEVATIONS & CAMBER AND ERECTION DATA Sheets for spacing of Diaphragms, Stiffeners, and Girder Camber.
3. All dimensions shown are horizontal or vertical.
4. All Stiffeners and Girder Ends will be made normal to flanges.
5. Stiffeners to have light fit top and bottom.
6. Dimensions shown are for steel temperature of 45° F.

REGISTERED PROFESSIONAL ENGINEER — REG. NO. 13592 — CHRISTOPHER T. HERSINGER — SOUTH DAKOTA — 07/26/2023

GIRDER LAYOUT DETAILS
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

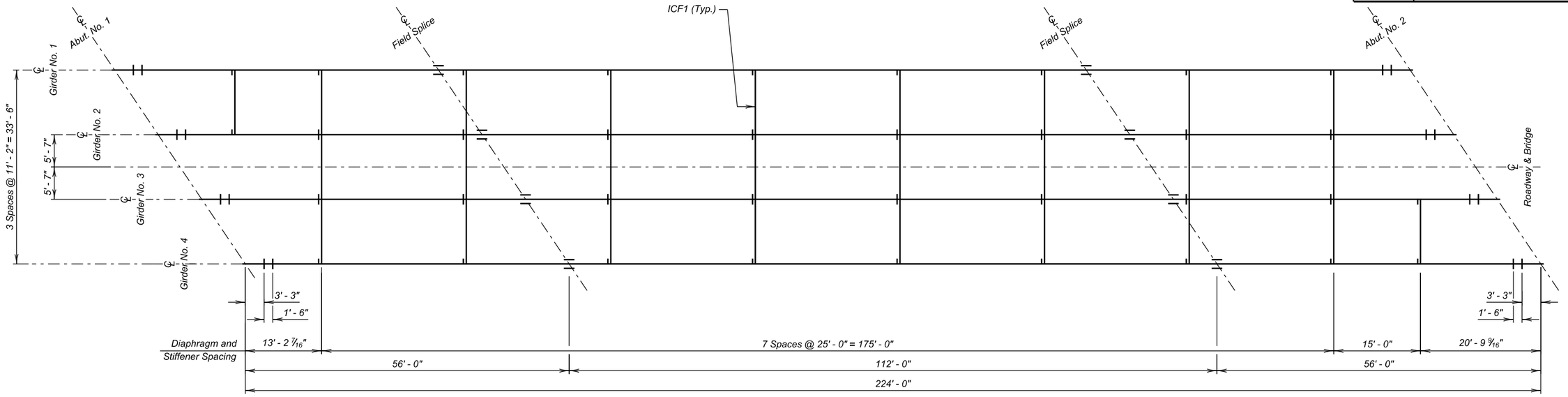
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

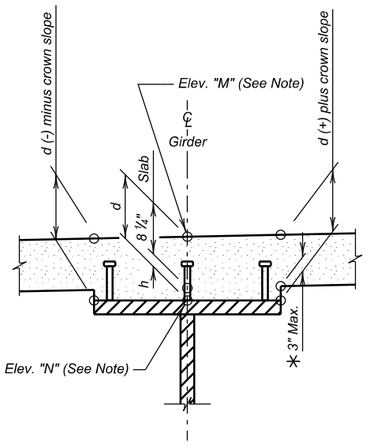
DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	57	76

FOR BIDDING PURPOSES ONLY



FRAMING DIAGRAM



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

NOTES:

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

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

TABLE OF SLAB FORM ELEVATIONS & COMPUTATIONS

		℄ Brg. Abut. 1	1	2	3	4	5 ℄ FS	6	7	8	9	10	11	12	13	14	15 ℄ FS	16	17	18	19	℄ Brg. Abut. 2
Girder No. 1	Elev. "M"	1056.222	1056.564	1056.855	1057.106	1057.314	1057.476	1057.592	1057.674	1057.739	1057.788	1057.820	1057.834	1057.830	1057.810	1057.774	1057.723	1057.657	1057.579	1057.489	1057.393	1057.292
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 2	Elev. "M"	1056.603	1056.907	1057.174	1057.402	1057.587	1057.726	1057.824	1057.904	1057.969	1058.017	1058.048	1058.061	1058.057	1058.036	1058.000	1057.949	1057.884	1057.806	1057.719	1057.625	1057.530
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 3	Elev. "M"	1056.730	1057.011	1057.256	1057.462	1057.625	1057.743	1057.838	1057.918	1057.982	1058.029	1058.059	1058.072	1058.067	1058.047	1058.010	1057.960	1057.895	1057.819	1057.733	1057.641	1057.545
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					
Girder No. 4	Elev. "M"	1056.618	1056.880	1057.106	1057.290	1057.432	1057.541	1057.635	1057.715	1057.778	1057.825	1057.855	1057.867	1057.862	1057.841	1057.804	1057.753	1057.688	1057.611	1057.524	1057.431	1057.337
	(-) Elev. "N"																					
	(=) d																					
	(-) 0.688																					
	(=) h																					

FRAMING DIAGRAM AND SLAB FORM ELEVATIONS
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

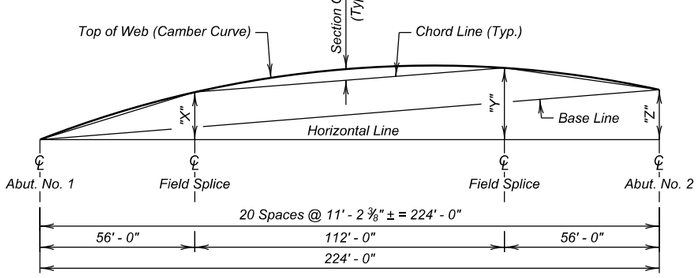
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

GIRDER DEFLECTION AND CAMBER TABLE (inches)

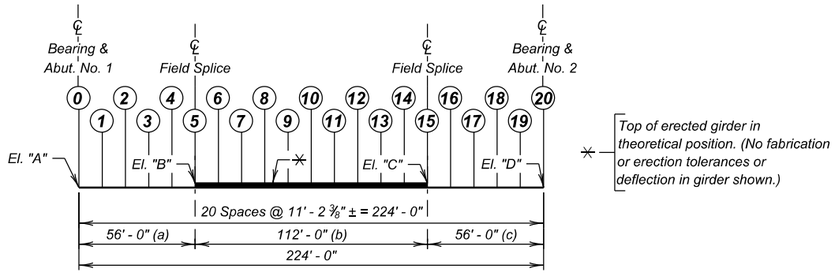
	Camber Data / Points	℄ Brg. Abut. 1	1	2	3	4	5 ℄ FS	6	7	8	9	10	11	12	13	14	15 ℄ FS	16	17	18	19	℄ Brg. Abut. 2
Girder No. 1	Steel Deflection	0.000	-0.647	-1.273	-1.862	-2.394	-2.856	-3.243	-3.552	-3.778	-3.915	-3.961	-3.915	-3.779	-3.553	-3.245	-2.859	-2.398	-1.866	-1.278	-0.650	0.000
	Deck Deflection	0.000	-1.346	-2.648	-3.870	-4.974	-5.931	-6.730	-7.369	-7.835	-8.118	-8.214	-8.119	-7.837	-7.372	-6.734	-5.937	-4.982	-3.879	-2.658	-1.352	0.000
	Barrier Deflection	0.000	-0.103	-0.217	-0.333	-0.444	-0.545	-0.633	-0.705	-0.759	-0.794	-0.808	-0.801	-0.773	-0.725	-0.659	-0.576	-0.478	-0.368	-0.249	-0.125	0.000
	Total Deflection	0.000	-2.096	-4.139	-6.066	-7.813	-9.333	-10.606	-11.626	-12.372	-12.827	-12.983	-12.836	-12.389	-11.651	-10.638	-9.371	-7.857	-6.112	-4.185	-2.128	0.000
	Section Camber	0.000	1.176	1.703	1.722	1.171	0.000	1.477	2.472	3.191	3.619	3.748	3.573	3.099	2.334	1.294	0.000	0.360	0.490	0.437	0.253	0.000
Girder No. 2	Steel Deflection	0.000	-0.642	-1.263	-1.844	-2.370	-2.827	-3.209	-3.516	-3.739	-3.875	-3.921	-3.875	-3.739	-3.515	-3.209	-2.826	-2.368	-1.842	-1.260	-0.640	0.000
	Deck Deflection	0.000	-1.336	-2.625	-3.831	-4.922	-5.867	-6.658	-7.291	-7.753	-8.033	-8.128	-8.033	-7.752	-7.290	-6.657	-5.865	-4.918	-3.826	-2.619	-1.331	0.000
	Barrier Deflection	0.000	-0.114	-0.229	-0.342	-0.448	-0.543	-0.624	-0.689	-0.736	-0.762	-0.768	-0.753	-0.718	-0.663	-0.590	-0.502	-0.402	-0.291	-0.180	-0.078	0.000
	Total Deflection	0.000	-2.092	-4.117	-6.017	-7.740	-9.238	-10.492	-11.496	-12.228	-12.671	-12.817	-12.662	-12.209	-11.468	-10.456	-9.193	-7.688	-5.959	-4.059	-2.049	0.000
	Section Camber	0.000	1.027	1.596	1.648	1.133	0.000	1.290	2.295	3.027	3.472	3.618	3.464	3.013	2.273	1.262	0.000	0.333	0.443	0.382	0.210	0.000
Girder No. 3	Steel Deflection	0.000	-0.640	-1.260	-1.842	-2.368	-2.826	-3.209	-3.515	-3.739	-3.875	-3.921	-3.875	-3.739	-3.516	-3.209	-2.827	-2.370	-1.844	-1.263	-0.642	0.000
	Deck Deflection	0.000	-1.331	-2.619	-3.826	-4.918	-5.865	-6.657	-7.290	-7.752	-8.033	-8.128	-8.033	-7.753	-7.291	-6.658	-5.867	-4.922	-3.831	-2.625	-1.336	0.000
	Barrier Deflection	0.000	-0.110	-0.227	-0.342	-0.448	-0.540	-0.615	-0.672	-0.711	-0.729	-0.727	-0.705	-0.663	-0.605	-0.532	-0.447	-0.355	-0.260	-0.167	-0.081	0.000
	Total Deflection	0.000	-2.081	-4.106	-6.010	-7.734	-9.230	-10.480	-11.478	-12.202	-12.637	-12.775	-12.613	-12.155	-11.412	-10.399	-9.141	-7.647	-5.934	-4.054	-2.059	0.000
	Section Camber	0.000	1.015	1.583	1.638	1.123	0.000	1.259	2.265	2.998	3.443	3.590	3.436	2.987	2.253	1.249	0.000	0.334	0.449	0.398	0.230	0.000
Girder No. 4	Steel Deflection	0.000	-0.650	-1.278	-1.866	-2.398	-2.859	-3.245	-3.553	-3.779	-3.915	-3.961	-3.915	-3.778	-3.552	-3.243	-2.856	-2.394	-1.862	-1.273	-0.647	0.000
	Deck Deflection	0.000	-1.352	-2.658	-3.879	-4.982	-5.937	-6.734	-7.372	-7.837	-8.119	-8.214	-8.118	-7.835	-7.369	-6.730	-5.931	-4.974	-3.870	-2.648	-1.346	0.000
	Barrier Deflection	0.000	-0.124	-0.243	-0.355	-0.454	-0.538	-0.605	-0.654	-0.684	-0.695	-0.686	-0.659	-0.614	-0.555	-0.482	-0.400	-0.311	-0.220	-0.132	-0.055	0.000
	Total Deflection	0.000	-2.126	-4.179	-6.100	-7.833	-9.333	-10.584	-11.579	-12.300	-12.729	-12.861	-12.692	-12.227	-11.476	-10.455	-9.187	-7.680	-5.952	-4.053	-2.047	0.000
	Section Camber	0.000	1.009	1.553	1.573	1.015	0.000	1.265	2.275	3.010	3.454	3.601	3.446	2.996	2.259	1.253	0.000	0.330	0.439	0.378	0.210	0.000



CAMBER CUTTING DIAGRAM

(Cut camber into webs of all girders as shown)

Camber Diagram shown is for beams in unloaded position and provides for all dead load deflections.
Baselines are straight lines from ℄ Bearing to ℄ Bearing at top of web. All deflection values are measured relative to this line.
Chord lines are straight lines between ends of beam segments at top of web. All camber values are measured relative to this line.



GIRDER ERECTION DIAGRAM

NOTES:

1. *Girders will be cambered to compensate for the total dead deflection and vertical curve.*
2. *"Steel Deflection" is deflection due to the steel plate girders, cross frames, and other miscellaneous steel items.*
3. *"Deck Deflection" is deflection due to concrete slab and haunches.*
4. *"Barrier Deflection" is deflection due to superimposed dead load of the barrier curbs, fence, railing, and other miscellaneous concrete items.*
5. *"Total Deflection" includes steel, deck and barrier deflection.*
6. *"Section Camber" accounts for deflection due to total deflection and vertical curve camber.*
7. *Downward deflection is negative. Upward camber is positive.*
8. *For field splice locations, refer to FRAMING DIAGRAM & SLAB FORM ELEVATIONS Sheet.*

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

CAMBER DIMENSIONS

Girder No.	"X"	"Y"	"Z"
1	1.492'	1.739'	1.070'
2	1.358'	1.581'	0.927'
3	1.249'	1.465'	0.815'
4	1.160'	1.372'	0.719'

Ø *These elevations occur at a time after girder erection is completed but prior to any placement of concrete.*

Ø GIRDER ERECTION ELEVATIONS

Girder No.	ELEVATIONS (Top of Girder) "A"	"B"	"C"	"D"
1	1056.555	1058.059	1058.306	1057.625
2	1056.937	1058.309	1058.532	1057.864
3	1057.063	1058.326	1058.543	1057.879
4	1056.952	1058.124	1058.336	1057.670

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

⍁ GIRDER ERECTION SLOPES

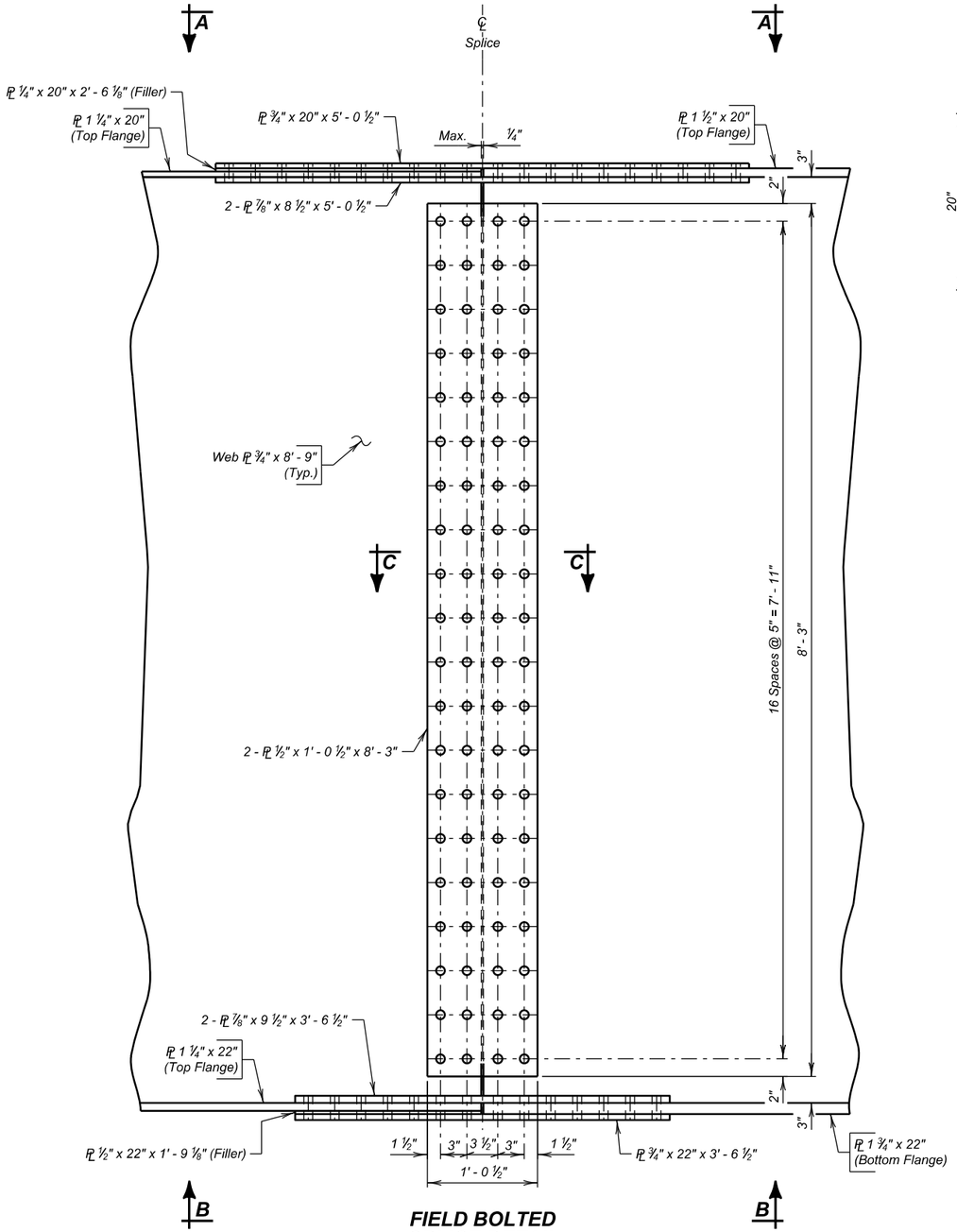
Girder No.	SLOPES (%) a	b	c
1	2.240	0.220	-0.769
2	2.004	0.199	-0.748
3	1.809	0.193	-0.740
4	1.647	0.189	-0.742

CAMBER AND ERECTION DATA
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

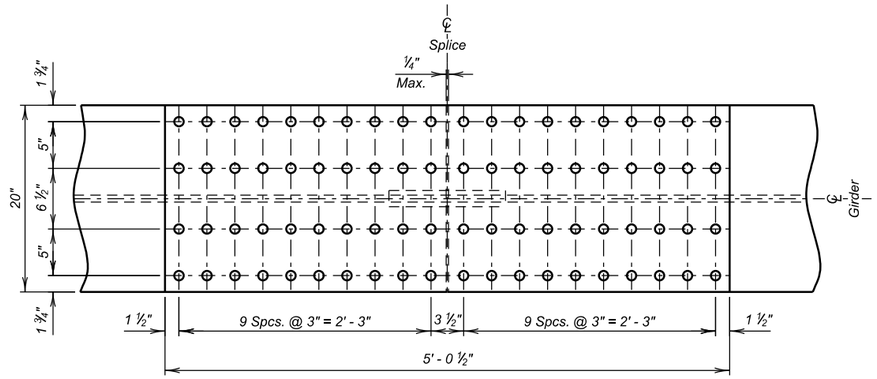
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

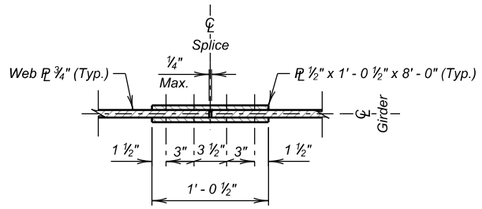
FOR BIDDING PURPOSES ONLY



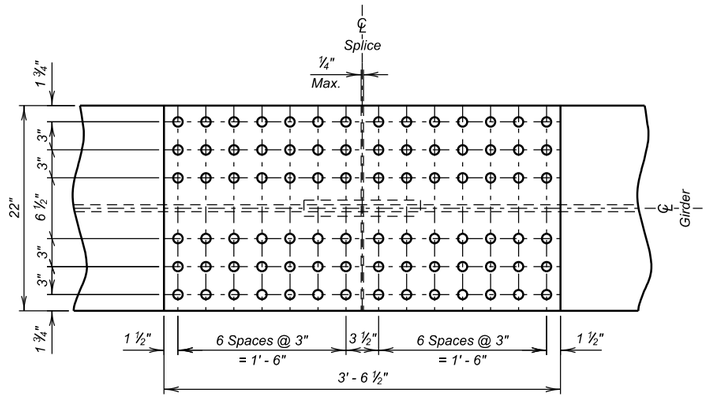
FIELD BOLTED SPLICE DETAIL (Typ.)



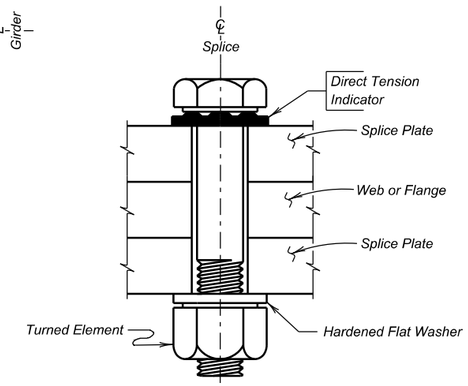
TOP FLANGE (VIEW A - A)



SEC. C - C



BOTTOM FLANGE (VIEW B - B)



DIRECT TENSION INDICATOR DETAIL

(Fillet Plates Not Shown)

NOTE:

All bolts in splices will be ⅞" Ø High Strength Bolts conforming to ASTM Specifications F3125 Grade A325, Type 3. The bolts will be heavy hexagon head structural type with heavy semi-finished hexagon nut, hardened washer, and direct tension indicator.

DETAILS OF BOLTED FIELD SPLICES
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

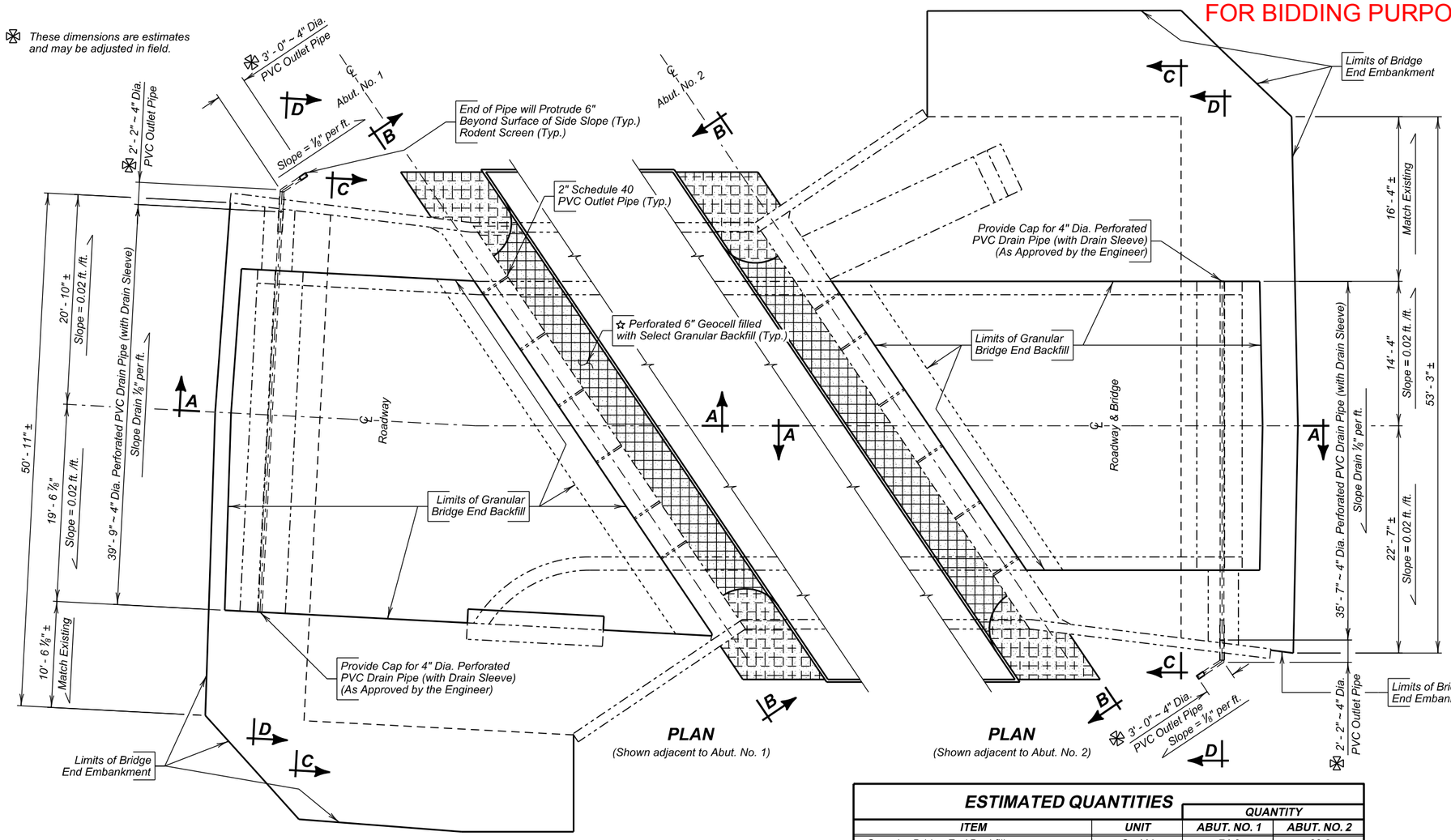
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	XH	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	60	76

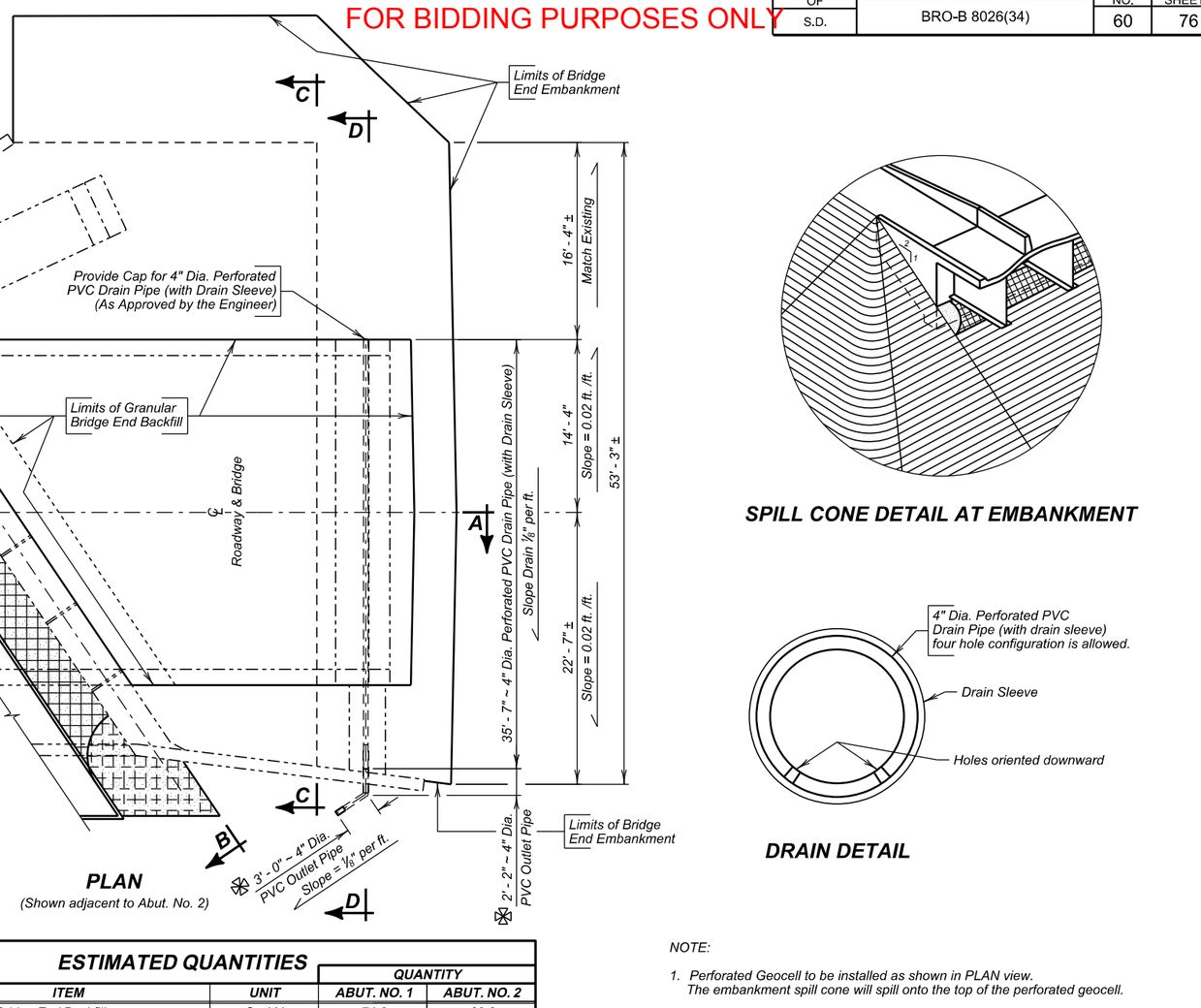
FOR BIDDING PURPOSES ONLY

✠ *These dimensions are estimates and may be adjusted in field.*



PLAN

(Shown adjacent to Abut. No. 1)

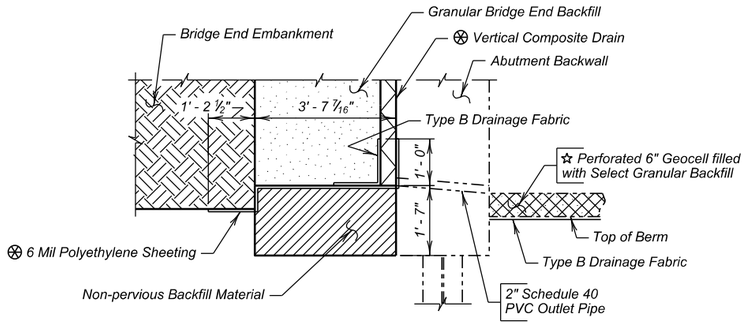


PLAN

(Shown adjacent to Abut. No. 2)

SPILL CONE DETAIL AT EMBANKMENT

DRAIN DETAIL



DETAIL "X"

✠ *Provide hole in vertical composite drain and 6 mil polyethylene sheeting to provide drainage through weep holes.*

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
07/26/2023
SOUTH DAKOTA

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY ABUT. NO. 1	QUANTITY ABUT. NO. 2
	Granular Bridge End Backfill	Cu. Yd.	74.0	60.3
⌀	Bridge End Embankment	Cu. Yd.	830	920
⏍	Select Granular Backfill	Ton	9.6	9.6
⧫⏍	Porous Backfill	Ton	4.4	3.7
	4" Underdrain Pipe	Ft.	67	63
⧫	Approach Slab Underdrain Excavation	Cu. Yd.	2.3	2.0
☆	Perforated Geocell	Sq. Ft.	275.1	275.1

	ABUT. NO. 1	ABUT. NO. 2
1. 4" dia. Perforated PVC Drain Pipe (with Drain Sleeve).	40 Ft.	36 Ft.
2. 4" dia. PVC Outlet Pipe with Rodent Screens.	5 Ft.	5 Ft.
3. 5" dia. Schedule 40 Steel Pipe.	4 Ft.	4 Ft.
4. 2" dia. Schedule 40 PVC Outlet Pipe.	18 Ft.	18 Ft.
5. Vertical Composite Drain.	464 Sq. Ft.	383 Sq. Ft.

Items 1 thru 5 are approximate quantities incidental to the 4" Underdrain Pipe and are for information only.

6. 6 mil Polyethylene Sheeting, not including laps.	2,172 Sq. Ft.	1,765 Sq. Ft.
7. Type B Drainage Fabric.	159 Sq. Yd.	135 Sq. Yd.

Items 6 thru 7 are approximate quantities incidental to the Granular Bridge End Backfill and are for information only.

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

⌀ *Shrinkage Factor of 1.25 Used.*

⧫ *Quantity based on a 12" wide trench.*

☆ *See PERFORATED GEOCELL notes for payment information.*

NOTE:

1. *Perforated Geocell to be installed as shown in PLAN view. The embankment spill cone will spill onto the top of the perforated geocell.*
2. *The Contractor will ensure the underdrain pipes located at the sleeper slab are not damaged during pouring of the barrier curbs and wings. Damaged underdrain pipes will be replaced at the Contractor's expense.*

DETAILS OF BRIDGE END BACKFILL (A)

FOR

227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY

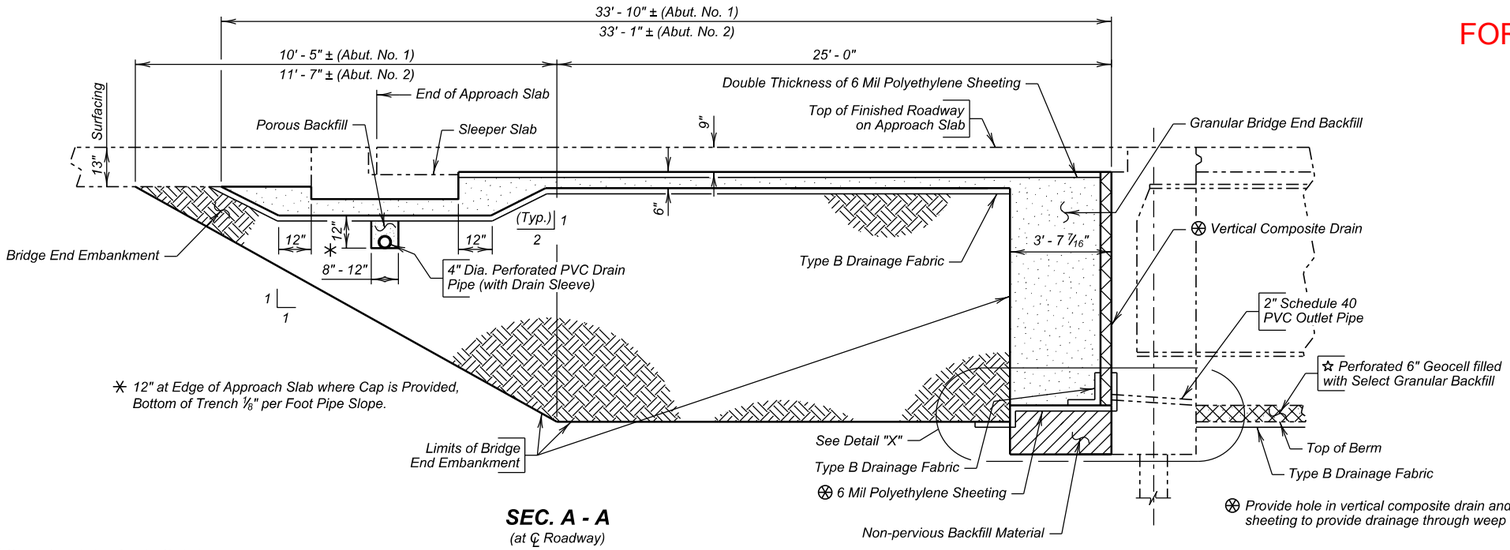
S. D. DEPT. OF TRANSPORTATION

JULY 2023

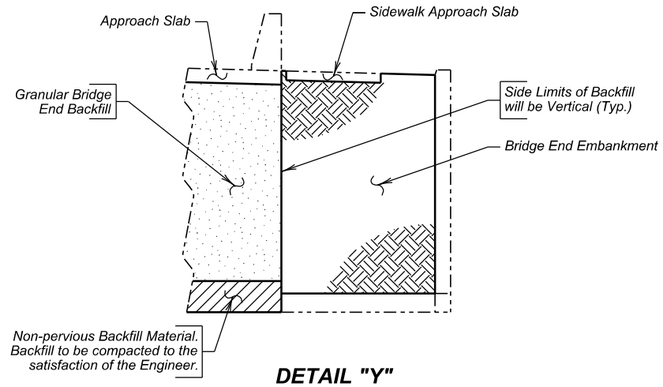
DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	FS	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	61	76

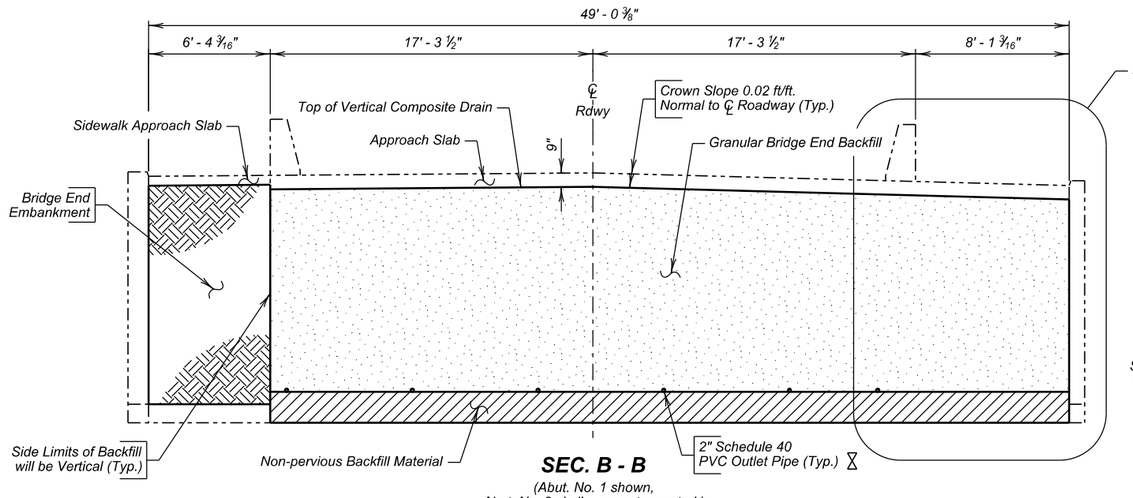


SEC. A - A
(at ℄ Roadway)

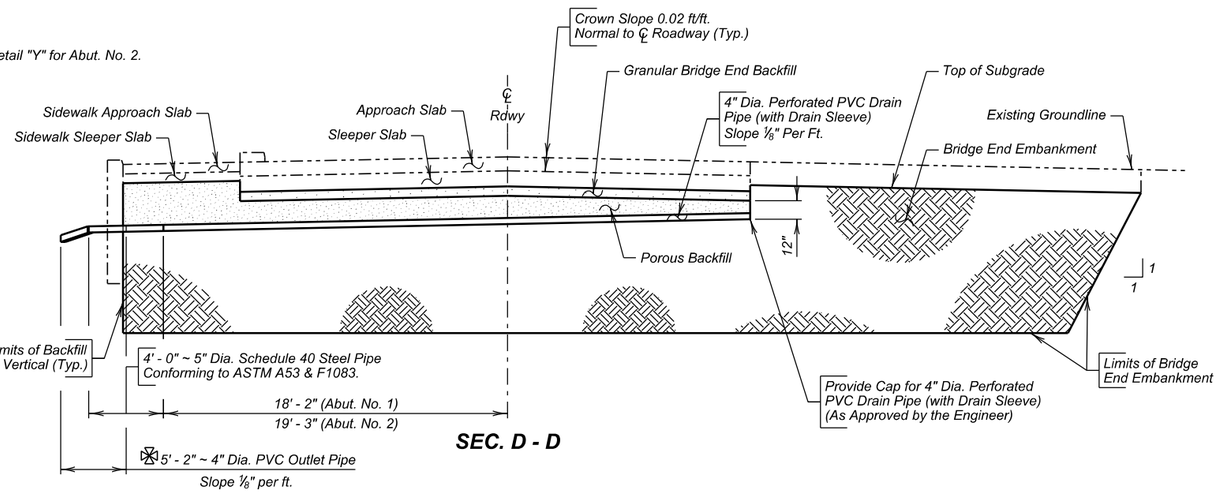


DETAIL "Y"

See ABUTMENT DETAILS (A) for spacing.

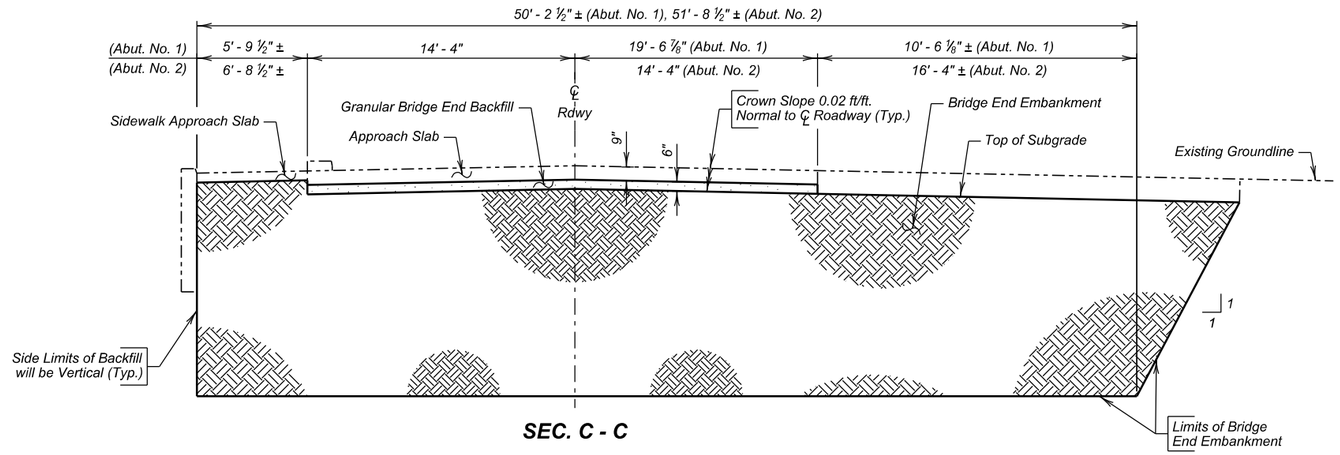


SEC. B - B
(Abut. No. 1 shown,
Abut. No. 2 similar as noted.)



SEC. D - D

These dimensions are estimates and may be adjusted in field.



SEC. C - C

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
09/26/2023

DETAILS OF BRIDGE END BACKFILL (B)
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE

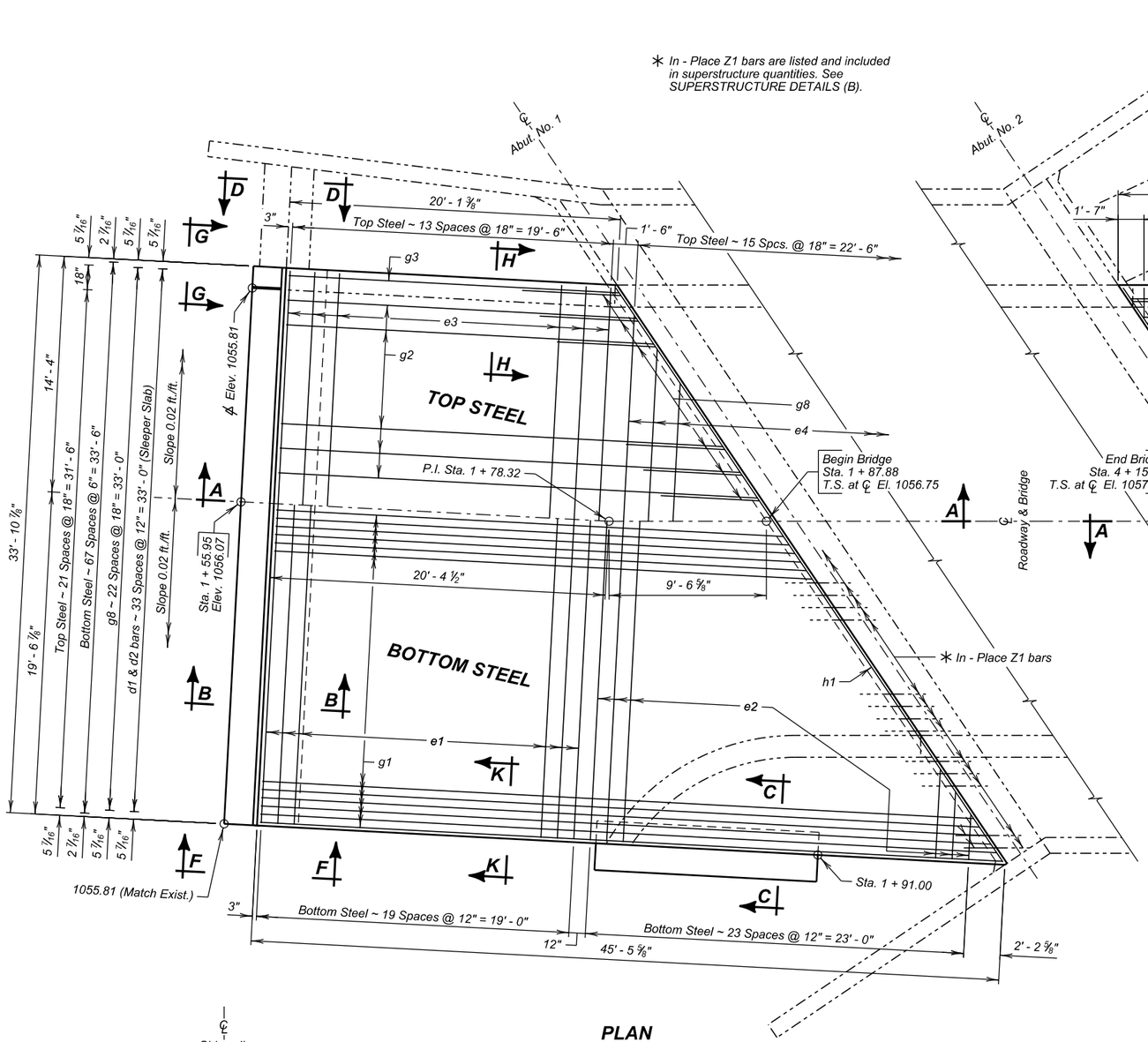
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	FS	BRIDGE ENGINEER

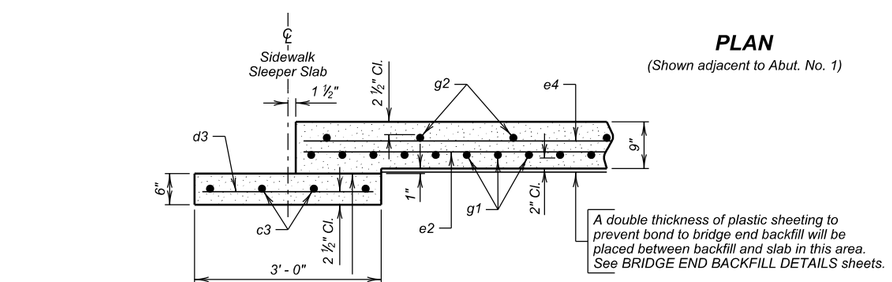
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	62	76

FOR BIDDING PURPOSES ONLY

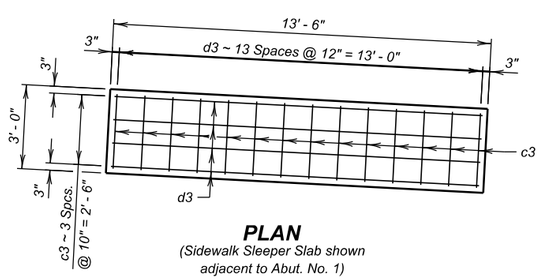


PLAN
(Shown adjacent to Abut. No. 1)

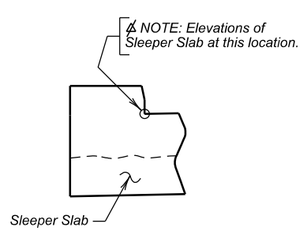
PLAN
(Shown adjacent to Abut. No. 2)



SEC. C - C



PLAN
(Sidewalk Sleeper Slab shown adjacent to Abut. No. 1)



VIEW G - G

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (A)
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

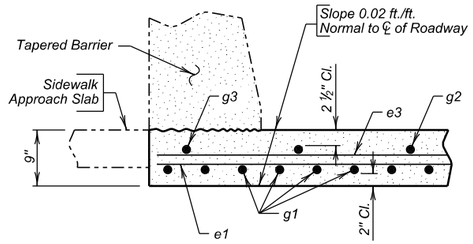
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

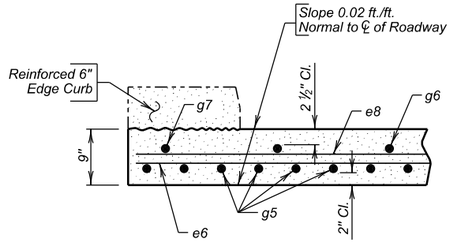
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	63	76

FOR BIDDING PURPOSES ONLY

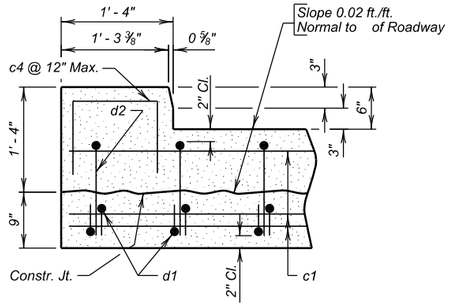


SEC. H - H

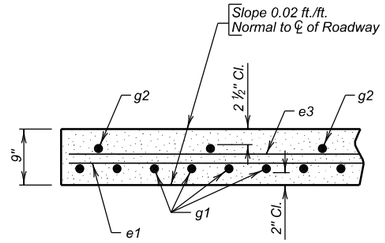
(Left Side of Bridge shown adjacent to Abut. No. 1, Right Side of Bridge adjacent to Abut. No. 2 similar.)



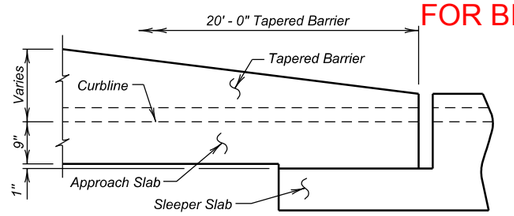
SEC. J - J



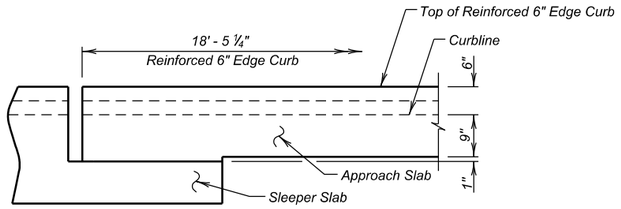
SEC. I - I



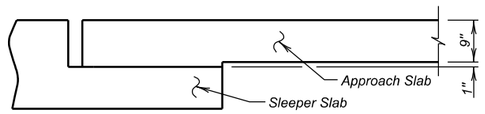
SEC. K - K



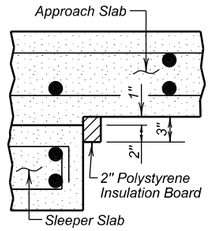
VIEW D - D



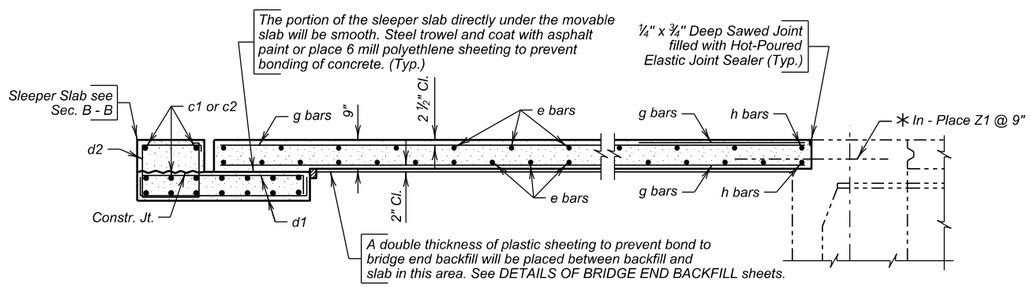
VIEW E - E



VIEW F - F

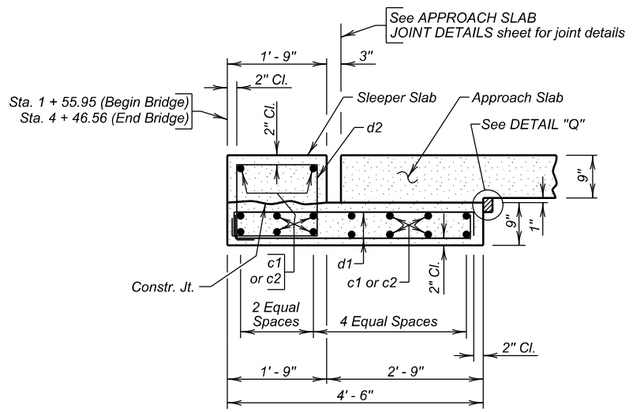


DETAIL "Q"



SEC. A - A

∗ *In - Place Z1 bars are listed and included in superstructure quantities. See SUPERSTRUCTURE DETAILS (B) sheet.*



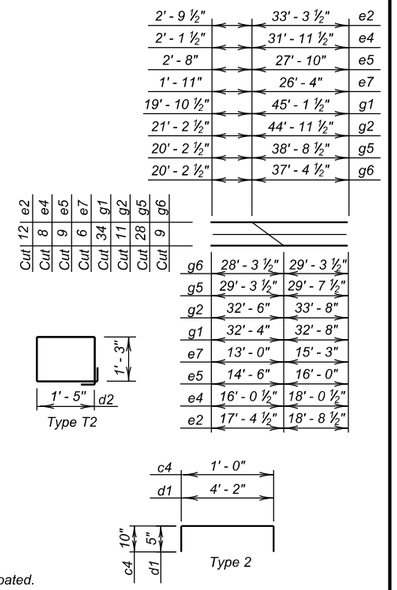
SEC. B - B

(Sleeper Slab)

REINFORCING SCHEDULE

(For Two Approach Slabs and Three Sleeper Slabs)

	Mk.	No.	Size	Length	Type	Bending Details
	Sleeper Slabs					
	c1	16	5	33' - 6"	Str.	
	c2	16	5	28' - 4"	Str.	
	c3	4	4	13' - 2"	Str.	
	c4	6	5	2' - 8"	2	
	d1	126	4	5' - 0"	2	
	d2	63	4	6' - 1"	T2	
	d3	14	4	2' - 8"	Str.	
	Approach Slabs					
	e1	20	6	33' - 6"	Str.	
#	e2	12	6	36' - 1"	Str.	
	e3	14	4	33' - 6"	Str.	
#	e4	8	4	34' - 1"	Str.	
#	e5	9	6	30' - 6"	Str.	
	e6	20	6	28' - 4"	Str.	
#	e7	6	4	28' - 3"	Str.	
	e8	14	4	28' - 4"	Str.	
#	g1	34	8	65' - 0"	Str.	
#	g2	11	4	66' - 2"	Str.	
	g3	1	4	20' - 1"	Str.	
	g4	1	8	19' - 10"	Str.	
#	g5	28	8	58' - 11"	Str.	
#	g6	9	4	57' - 7"	Str.	
	g7	1	4	38' - 5"	Str.	
	g8	42	4	6' - 0"	Str.	
	h1	2	6	42' - 1"	Str.	
	h2	2	6	34' - 2"	Str.	



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

ESTIMATED QUANTITIES

(For Two Approach Slabs and Three Sleeper Slabs)

ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	218.4
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	35.8
Install Dowel in Concrete	Each	42

1. 55.1 Cu. Yds. Concrete in Approach Slabs.
2. 15,419 Lbs. Epoxy Coated Re-Steel in Approach Slabs.
3. 15.6 Sq. Ft. of Polystyrene Insulation Board.
4. 12.1 Cu. Yds. Concrete in Sleeper Slabs.
5. 1,786 Lbs. Epoxy Coated Re-Steel in Sleeper Slabs.
6. 6.3 Cu. Yds. Concrete in Tapered Barriers.
7. 968 Lbs. Epoxy Coated Re-Steel in Tapered Barriers.

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

DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE (B)

FOR

227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY

S. D. DEPT. OF TRANSPORTATION

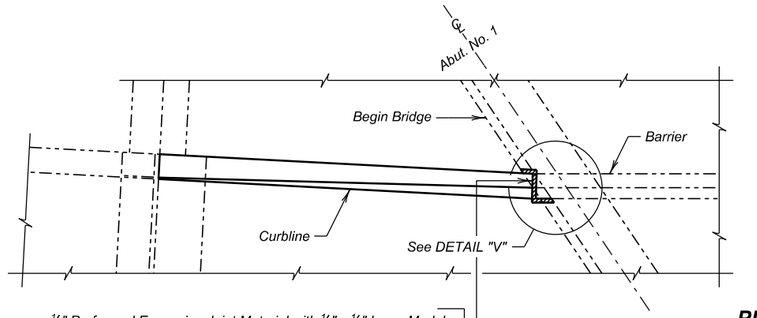
JULY 2023

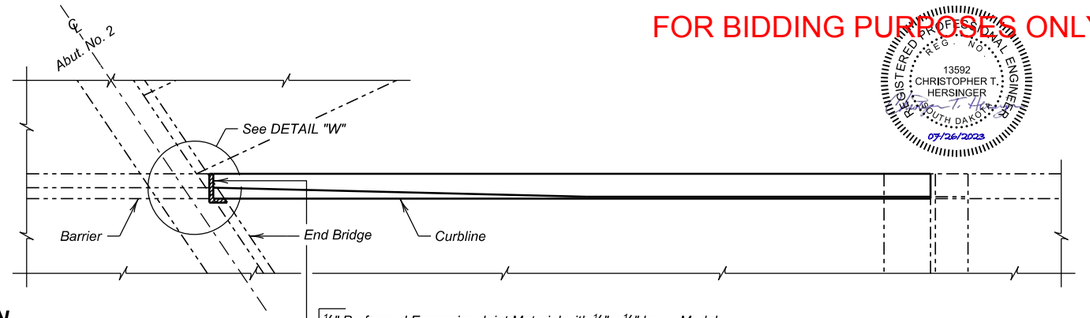
24 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	64	76

FOR BIDDING PURPOSES ONLY

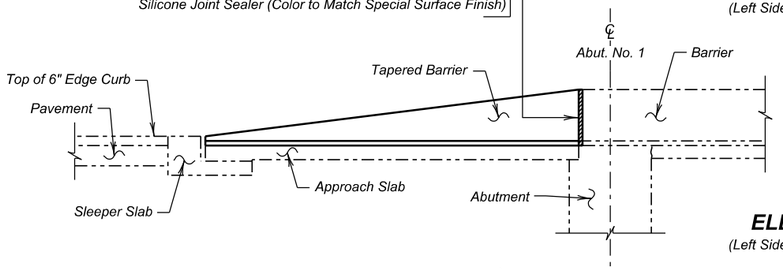


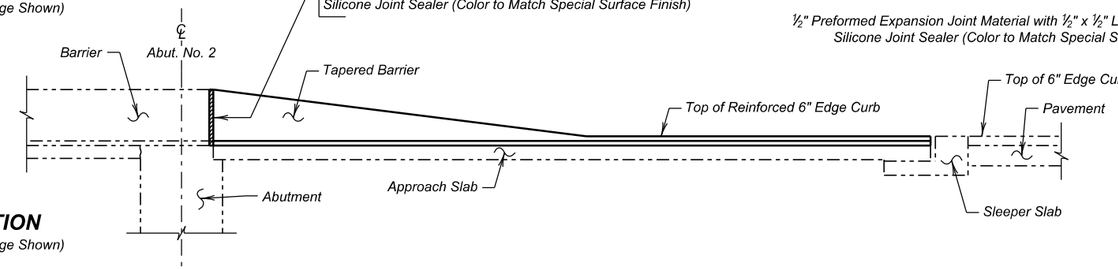


½" Preformed Expansion Joint Material with ½" x ½" Low - Modulus Silicone Joint Sealer (Color to Match Special Surface Finish)

PLAN
(Left Side of Bridge Shown)

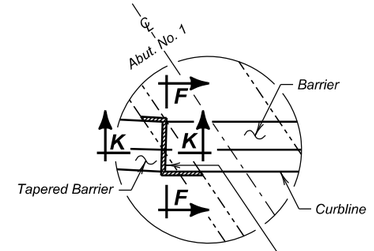
½" Preformed Expansion Joint Material with ½" x ½" Low - Modulus Silicone Joint Sealer (Color to Match Special Surface Finish)



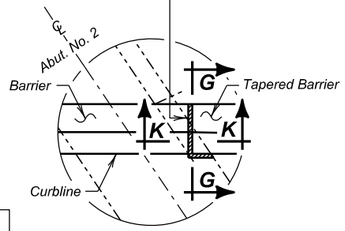


ELEVATION
(Left Side of Bridge Shown)

½" Preformed Expansion Joint Material with ½" x ½" Low - Modulus Silicone Joint Sealer (Color to Match Special Surface Finish)



DETAIL "V"



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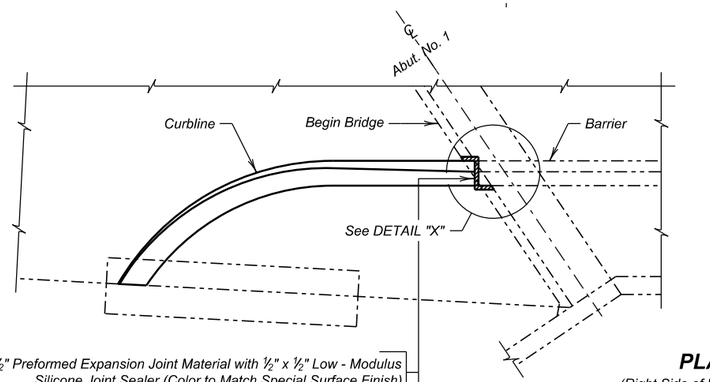
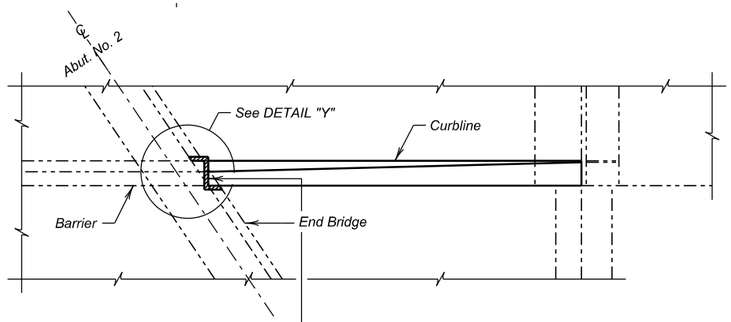
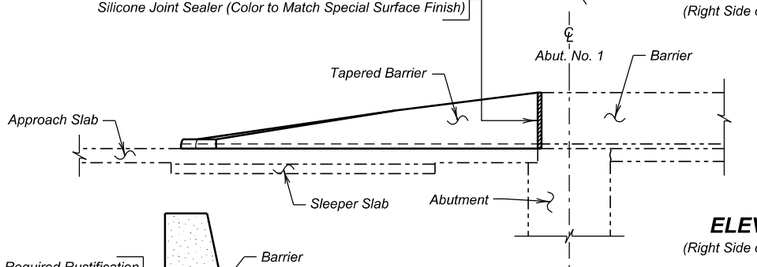


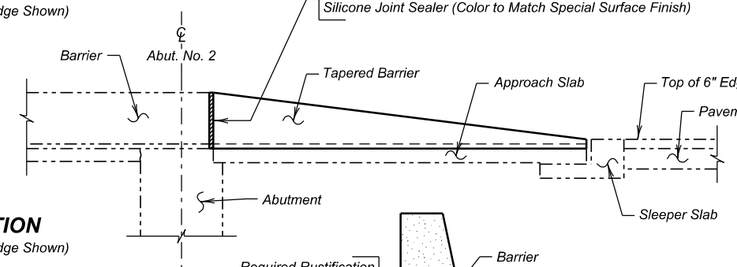


½" Preformed Expansion Joint Material with ½" x ½" Low - Modulus Silicone Joint Sealer (Color to Match Special Surface Finish)

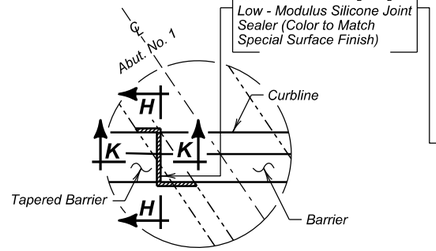
PLAN
(Right Side of Bridge Shown)

½" Preformed Expansion Joint Material with ½" x ½" Low - Modulus Silicone Joint Sealer (Color to Match Special Surface Finish)





ELEVATION
(Right Side of Bridge Shown)



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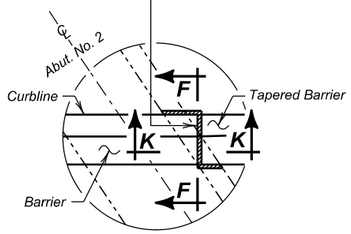
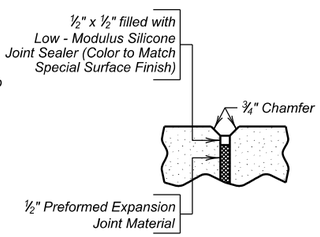
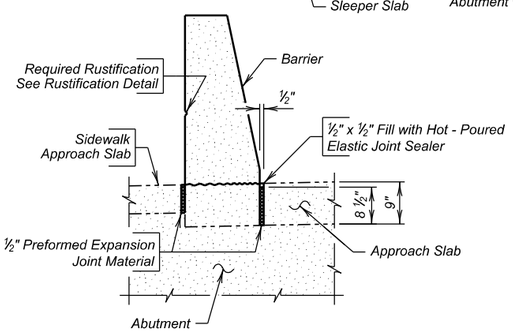


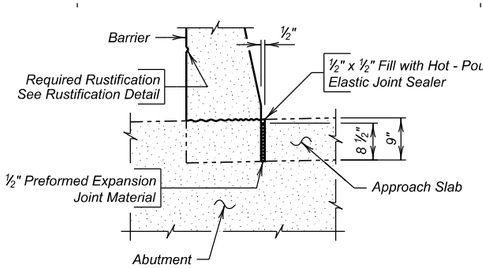
DETAIL "Y"



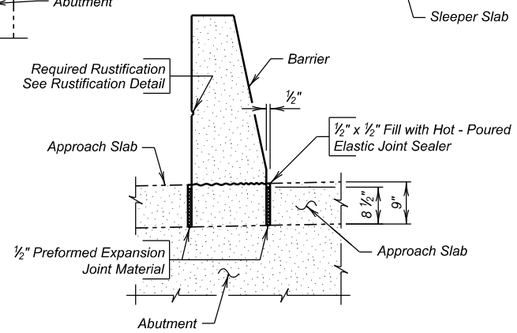
SEC. K - K



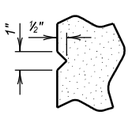
SEC. F - F



SEC. G - G



SEC. H - H



RUSTIFICATION DETAIL

TAPERED BARRIER DETAILS (A)
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

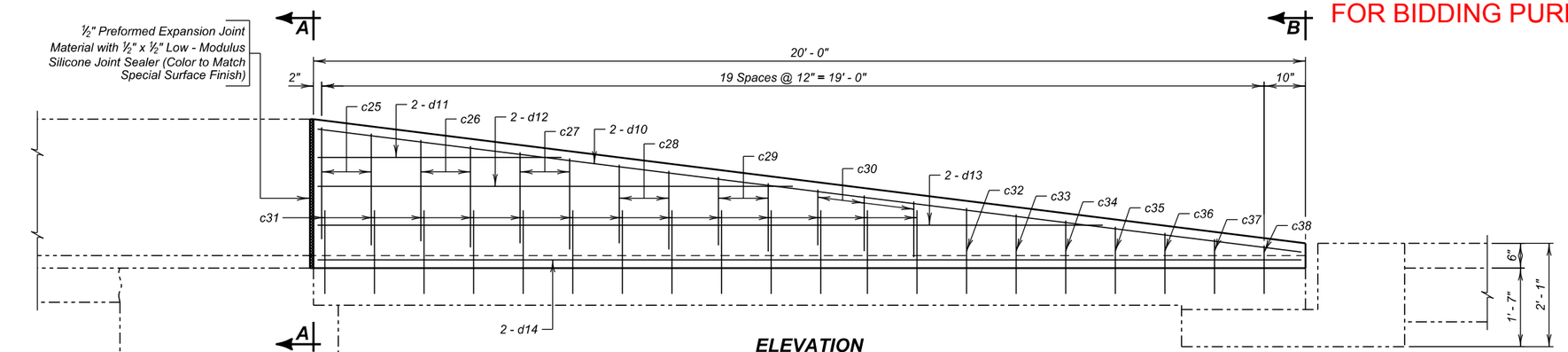
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

25 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

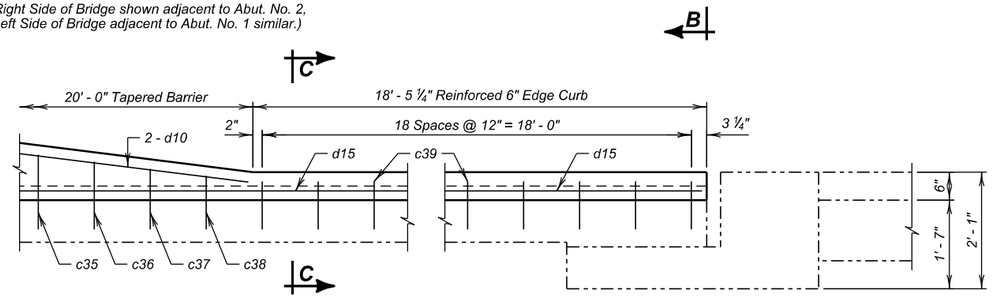
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	65	76

FOR BIDDING PURPOSES ONLY



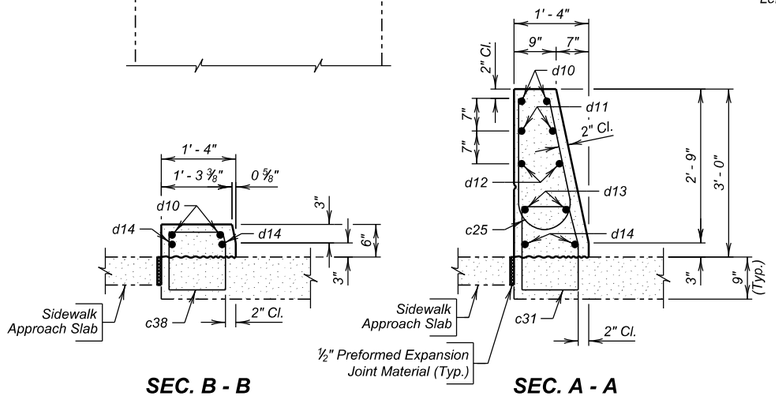
ELEVATION

(Right Side of Bridge shown adjacent to Abut. No. 2, Left Side of Bridge adjacent to Abut. No. 1 similar.)



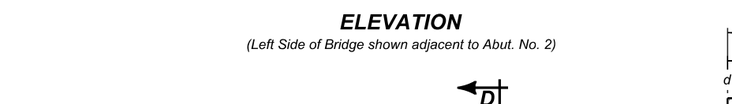
ELEVATION

(Left Side of Bridge shown adjacent to Abut. No. 2)

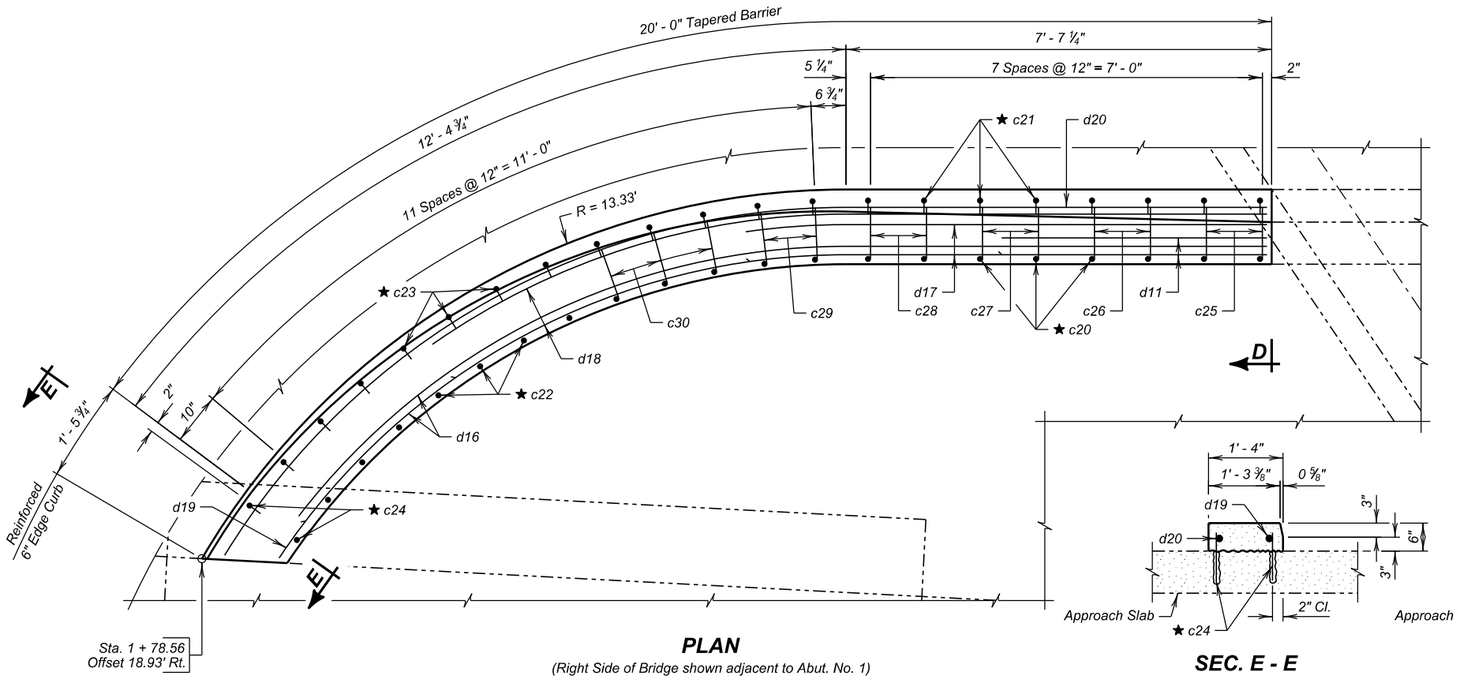


SEC. B - B

SEC. A - A



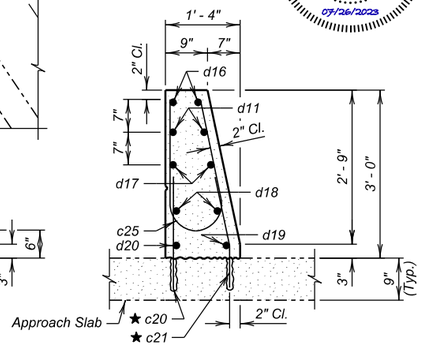
SEC. C - C



PLAN

(Right Side of Bridge shown adjacent to Abut. No. 1)

SEC. E - E

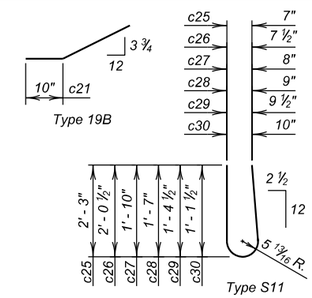


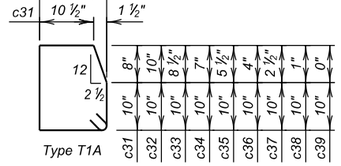
SEC. D - D

REINFORCING SCHEDULE

(For Four Tapered Barrier Curbs and Two Reinforced 6" Edge Curbs)

	Mk.	No.	Size	Length	Type
★	c20	13	5	1' - 6"	Str.
★	c21	13	5	1' - 6"	19B
≠ ★	c22	7	5	2' - 7"	Str.
≠ ★	c23	7	5	2' - 8"	19B
★	c24	2	5	0' - 10"	Str.
	c25	8	5	5' - 1"	S11
	c26	8	5	4' - 8"	S11
	c27	8	5	4' - 3"	S11
	c28	8	5	3' - 9"	S11
	c29	8	5	3' - 4"	S11
	c30	12	5	2' - 10"	S11
	c31	39	5	5' - 10"	T1A
	c32	1	5	6' - 2"	T1A
	c33	1	5	5' - 11"	T1A
	c34	1	5	5' - 8"	T1A
	c35	1	5	5' - 5"	T1A
	c36	1	5	5' - 2"	T1A
	c37	1	5	4' - 11"	T1A
	c38	1	5	4' - 8"	T1A
	c39	19	5	4' - 7"	T1A
	d10	6	4	19' - 9"	Str.
	d11	8	4	4' - 8"	Str.
	d12	6	4	9' - 4"	Str.
	d13	6	4	15' - 7"	Str.
	d14	4	4	19' - 8"	Str.
	d15	2	4	38' - 1"	Str.
✳	d16	2	4	18' - 8"	Str.
✳	d17	2	4	9' - 2"	Str.
✳	d18	2	4	14' - 10"	Str.
✳	d19	1	4	19' - 3"	Str.
✳	d20	1	4	20' - 10"	Str.





NOTES:

All reinforcing steel will be epoxy coated.

All dimensions are out to out of bars.

≠ See cutting diagram.

✳ Bend in field as necessary to fit.

★ Drill and epoxy in place. Not included in reinforcing steel quantity. Included in the quantity for Install Dowel in Concrete.

NOTES:

For listing re-bar and concrete quantities see APPROACH SLAB ADJACENT TO BRIDGE DETAILS (B) sheet for details.

REGISTERED PROFESSIONAL ENGINEER
13592
CHRISTOPHER T. HERSINGER
REG. NO.
SOUTH DAKOTA
07/26/2023

TAPERED BARRIER DETAILS (B)

FOR

227' - 7 ⅜" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY

S. D. DEPT. OF TRANSPORTATION

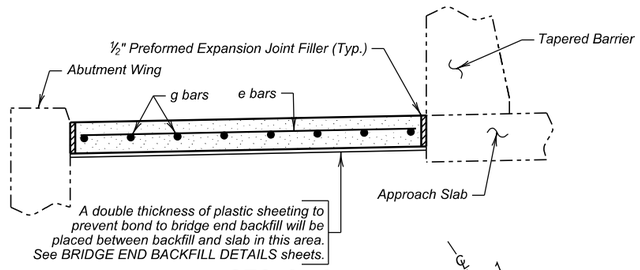
JULY 2023

26 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

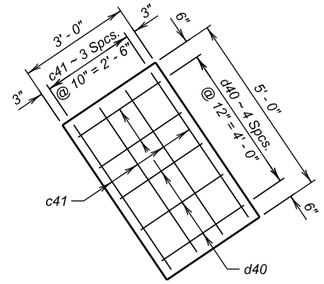
FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	66	76

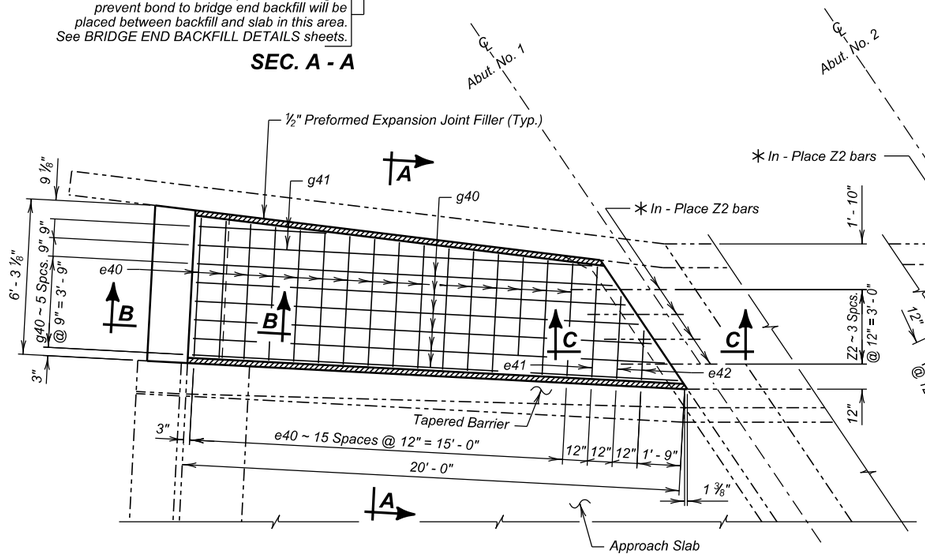


SEC. A - A

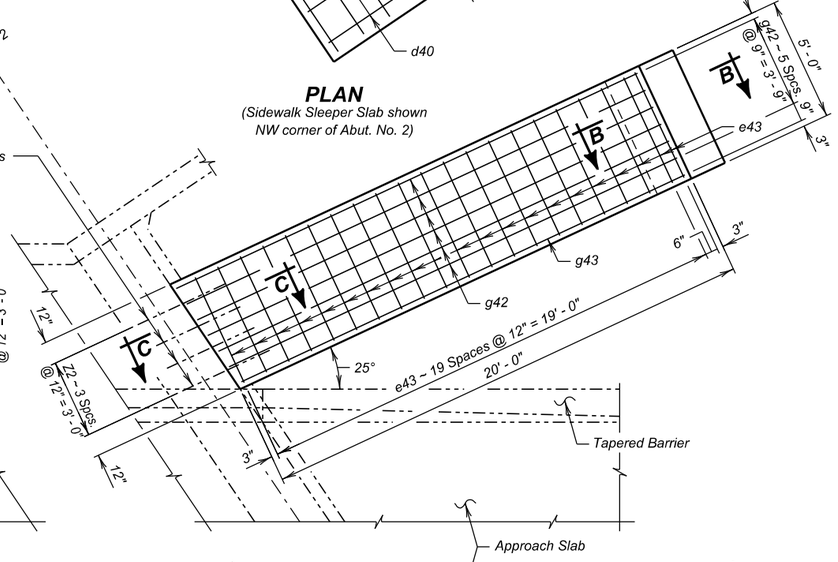
∗ In - Place Z2 bars are listed and included in superstructure quantities. See SUPERSTRUCTURE DETAILS (B).



PLAN
(Sidewalk Sleeper Slab shown NW corner of Abut. No. 2)



PLAN
(Shown adjacent to Abut. No. 1)

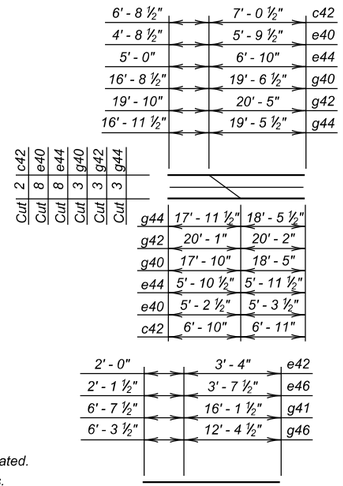


PLAN
(Shown adjacent to Abut. No. 2)

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

	Mk.	No.	Size	Length	Type
	c40	4	4	5' - 8"	Str.
	c41	4	4	4' - 8"	Str.
≠	c42	2	4	13' - 9"	Str.
	d40	20	4	2' - 8"	Str.
≠	e40	8	4	10' - 6"	Str.
	e41	1	4	4' - 8"	Str.
≠	e42	1	4	5' - 4"	Str.
	e43	21	4	4' - 8"	Str.
≠	e44	8	4	11' - 10"	Str.
	e45	1	4	4' - 10"	Str.
≠	e46	1	4	5' - 9"	Str.
≠	g40	3	4	36' - 3"	Str.
≠	g41	1	4	22' - 9"	Str.
≠	g42	3	4	40' - 3"	Str.
	g43	1	4	19' - 8"	Str.
≠	g44	3	4	36' - 5"	Str.
	g45	1	4	16' - 5"	Str.
≠	g46	1	4	18' - 8"	Str.

Bending Details



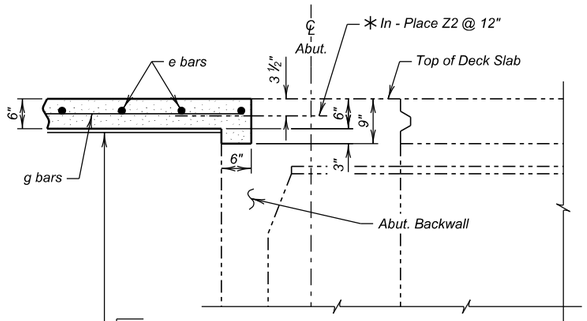
NOTES:
All reinforcing steel will be epoxy coated.
All dimensions are out to out of bars.
≠ See cutting diagram.

ESTIMATED QUANTITIES
(For Three Sidewalk Approach Slabs)

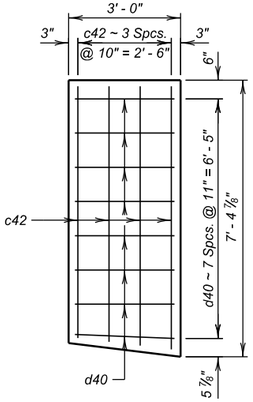
ITEM	UNIT	QUANTITY
6" Reinforced Concrete Sidewalk	Sq. Ft.	314

1. 6.0 Cu. Yds. Concrete in Sidewalk Approach Slabs.
2. 476 Lbs. Epoxy Coated Re-Steel in Sidewalk Approach Slabs.
3. 1.0 Cu. Yds. Concrete in Sidewalk Sleeper Slabs.
4. 81 Lbs. Epoxy Coated Re-Steel in Sidewalk Sleeper Slabs.
5. 279 Sq. Ft. of 6 mil Polyethylene sheeting under reinf. conc. sidewalk.

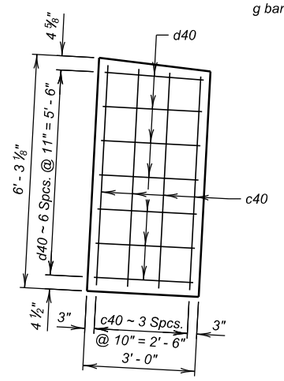
Items 1 thru 5 are approximate quantities incidental to the above bid items and are for information only.



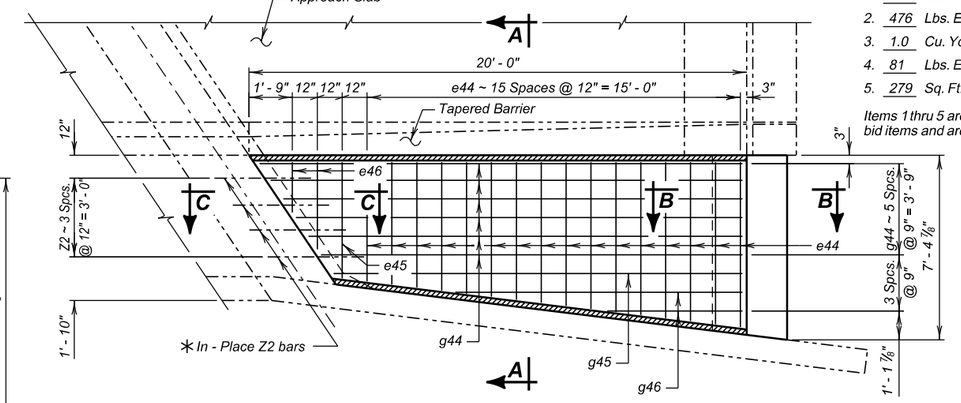
SEC. C - C



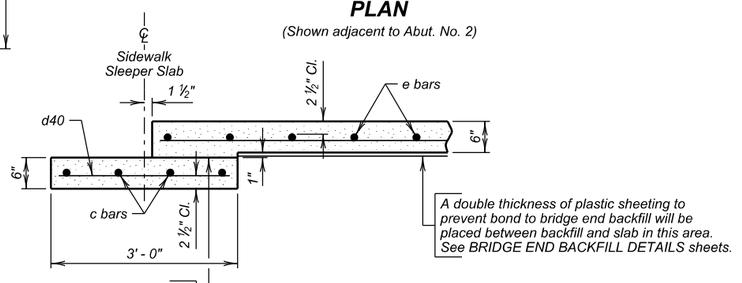
PLAN
(Sidewalk Sleeper Slab shown NE corner of Abut. No. 2)



PLAN
(Sidewalk Sleeper Slab shown adjacent to Abut. No. 1)



PLAN
(Shown adjacent to Abut. No. 2)



The portion of the sleeper slab directly under the movable slab will be smooth. Steel trowel and coat with asphalt paint or place 6 mil polyethylene sheeting to prevent bonding of concrete. (Typ.)

SEC. B - B

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

SIDEWALK APPROACH SLAB DETAILS
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

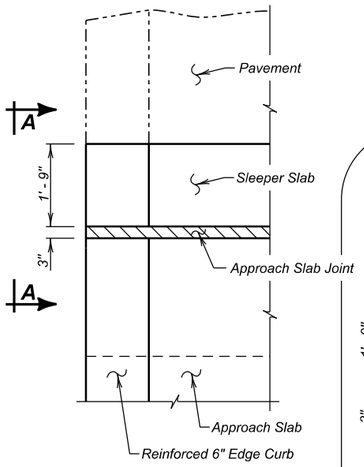
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

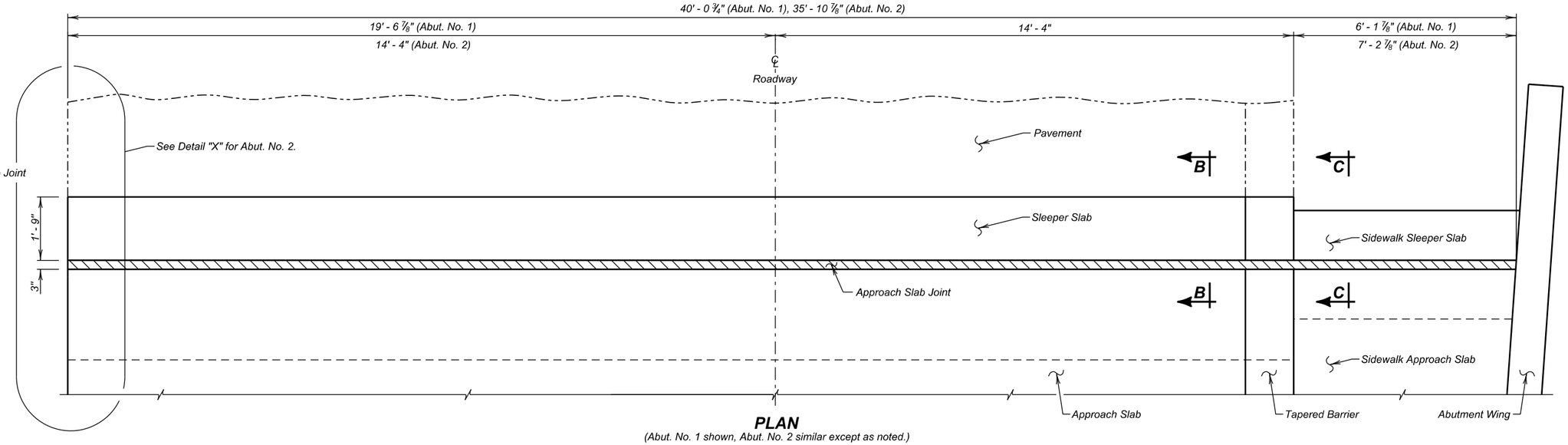
DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	67	76

FOR BIDDING PURPOSES ONLY



DETAIL "X"

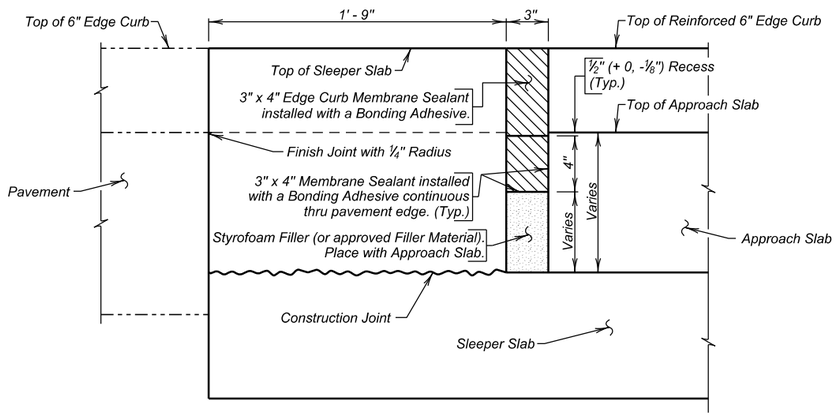


PLAN

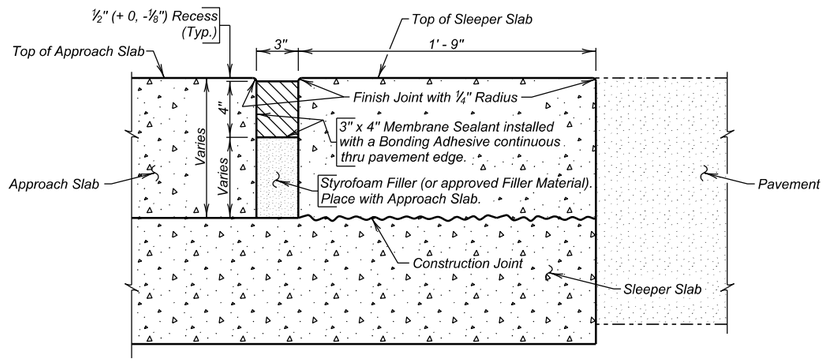
(Abut. No. 1 shown, Abut. No. 2 similar except as noted.)

GENERAL NOTES

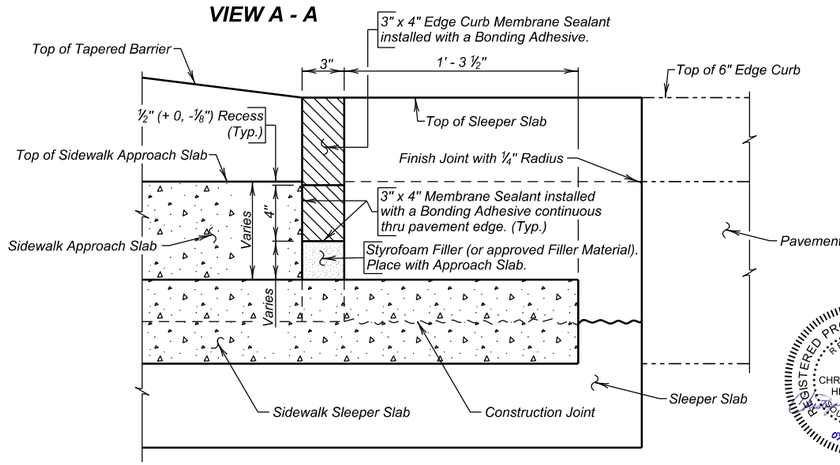
1. The Membrane Sealant will be on the approved product list for Membrane Sealant Expansion Joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer, however, in no 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 provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension.
4. The membrane sealant will be supplied in pieces a minimum of 5 feet in length. The foam sealant will be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
6. Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
7. If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
8. The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40° F.
9. A technical representative of the membrane sealant manufacturer will be present at the jobsite during installation. The technical representative will be knowledgeable in the correct procedures for the preparation and installation of the joint material to ensure the Contractor installs the joint to the manufacturer's recommendations.
10. Surfaces that will be in contact with the membrane sealant will be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the surface. At a minimum, two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding will not be permitted.
11. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface will be air blasted. The air compressor used for joint cleaning will be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent surfaces must be dry and clean. The contact surfaces for the joint will be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
12. Individual spliced sections will be installed as per the manufacturer's 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.
13. Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
14. 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.
15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item 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.



VIEW A - A



SECTION B - B



SECTION C - C

ESTIMATED QUANTITIES

(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	76.0

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
09/26/2023

APPROACH SLAB JOINT DETAILS
FOR
227' - 7 ⅜" STEEL GIRDER BRIDGE

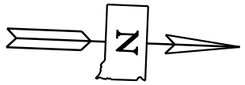
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

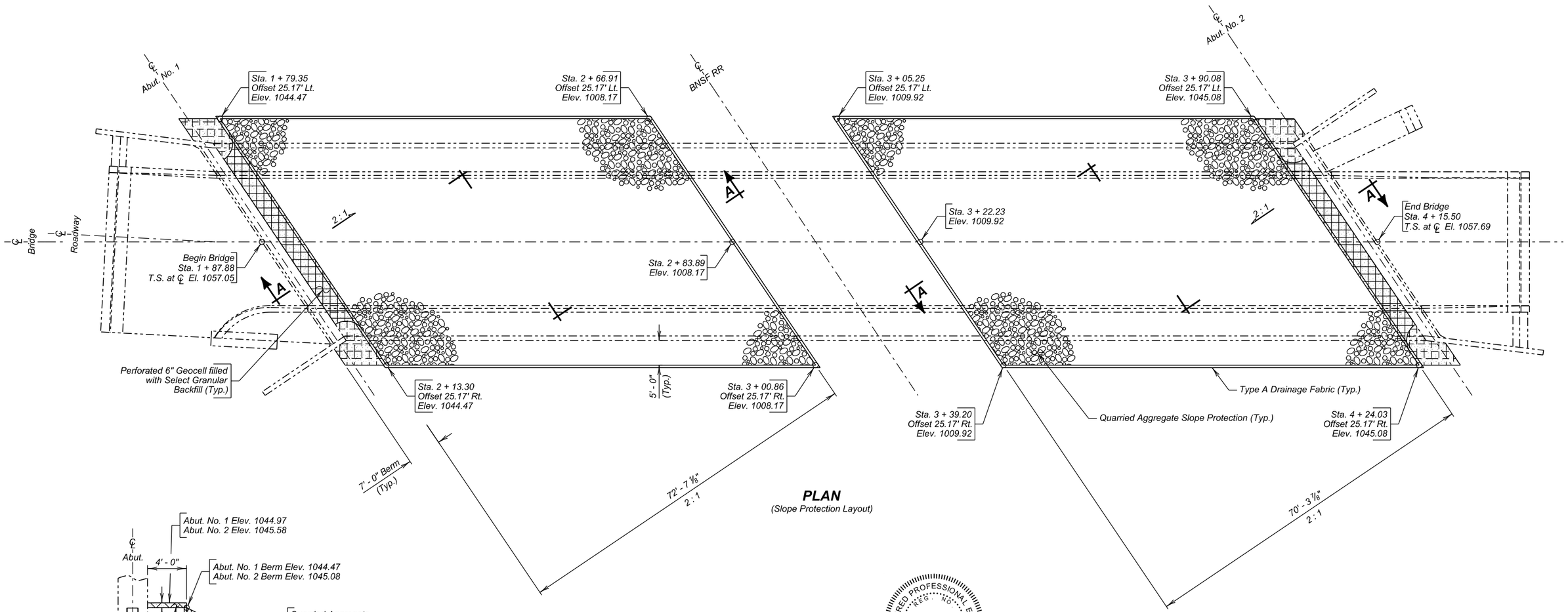
GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

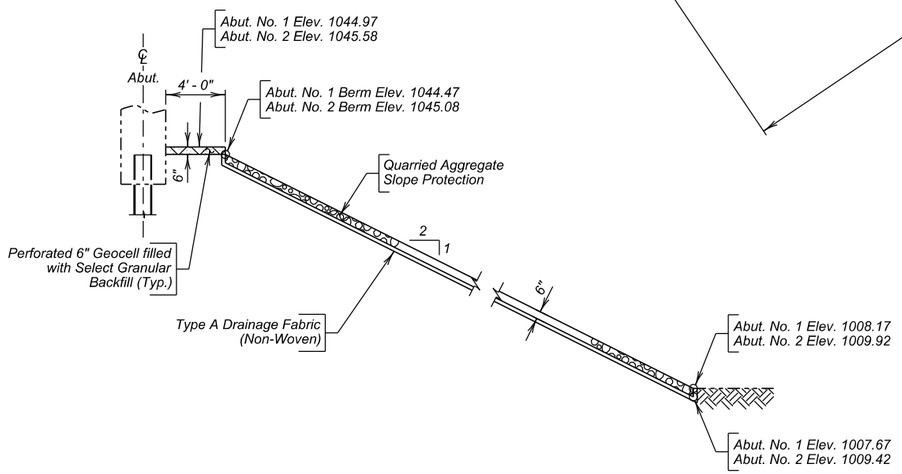
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	68	76

FOR BIDDING PURPOSES ONLY





PLAN
(Slope Protection Layout)



SECTION A - A

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
STATE OF SOUTH DAKOTA
07/26/2023

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Bridge Berm Slope Protection, Quarried Aggregate	Sq. Yd.	1,078

For informational purposes only, the estimated area of Type A Drainage Fabric is 1,111 Sq. Yd.

SLOPE PROTECTION DETAILS
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE

26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

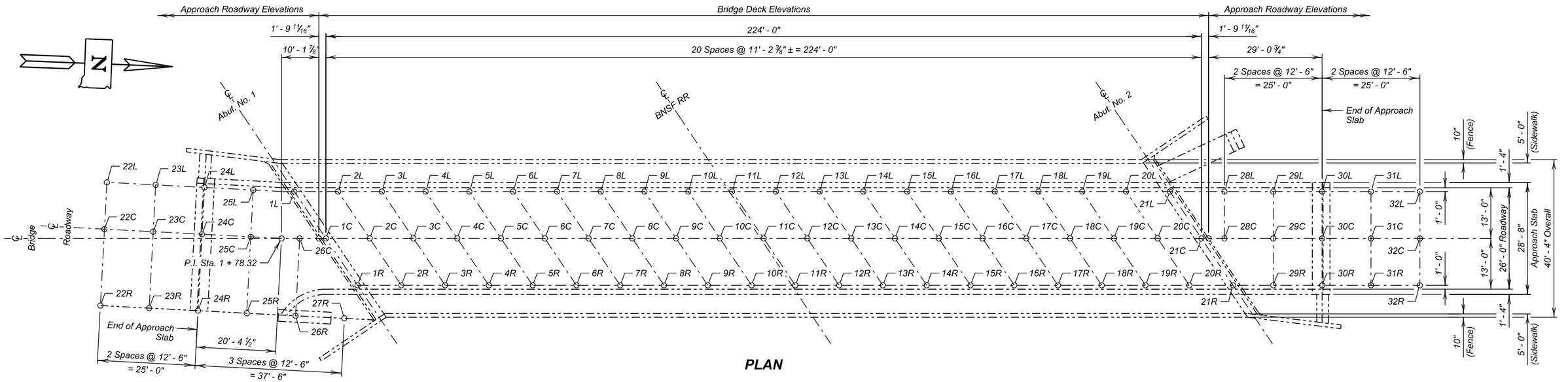
29 OF 32

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	DM	BRIDGE ENGINEER

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

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO-B 8026(34)	69	76



PLAN

Table of As-Built Elevations - Bridge Deck

Location	Elevation	Location	Elevation	Location	Elevation
1L		1C		1R	
2L		2C		2R	
3L		3C		3R	
4L		4C		4R	
5L		5C		5R	
6L		6C		6R	
7L		7C		7R	
8L		8C		8R	
9L		9C		9R	
10L		10C		10R	
11L		11C		11R	
12L		12C		12R	
13L		13C		13R	
14L		14C		14R	
15L		15C		15R	
16L		16C		16R	
17L		17C		17R	
18L		18C		18R	
19L		19C		19R	
20L		20C		20R	
21L		21C		21R	

Table of As-Built Elevations - Approach Roadway

Location	Elevation	Location	Elevation	Location	Elevation
22L		22C		22R	
23L		23C		23R	
24L		24C		24R	
25L		25C		25R	
26L		26C		26R	
27L		27C		27R	
28L		28C		28R	
29L		29C		29R	
30L		30C		30R	
31L		31C		31R	
32L		32C		32R	

Table of Elevations - Bridge Survey Markers

Location	Station - Offset	Elevation
Begin Bridge		
End Bridge		

ESTIMATED QUANTITIES

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

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

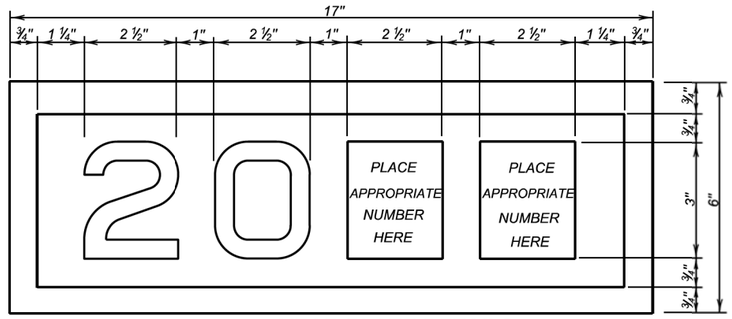
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13592
CHRISTOPHER T. HERSINGER
SOUTH DAKOTA
07/26/2023

AS-BUILT ELEVATION SURVEY
FOR
227' - 7 3/8" STEEL GIRDER BRIDGE
26' - 0" ROADWAY & 2 - 5' - 0" SIDEWALKS 34° RHF SKEW
OVER BNSF RR SEC. 17-T121N-R46W
STA. 1 + 87.88 TO 4 + 15.50 BRO-B 8026(34)
STR. NO. 26-374-023 HL-93

GRANT COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2023

DESIGNED BY	CK. DES. BY	DRAFTED BY	
DM	AMB	FS	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY



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.

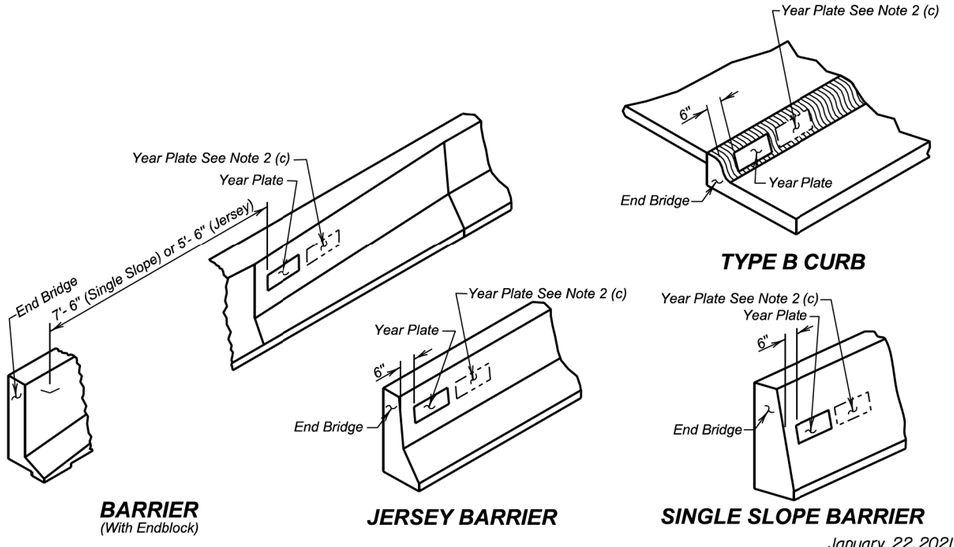
2. Year plates will be located on structure(s) as follows:

   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.

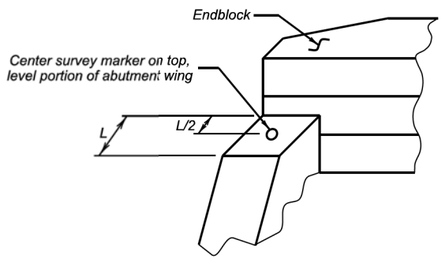
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.

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.

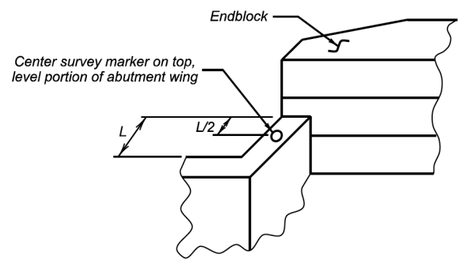


January 22,2021

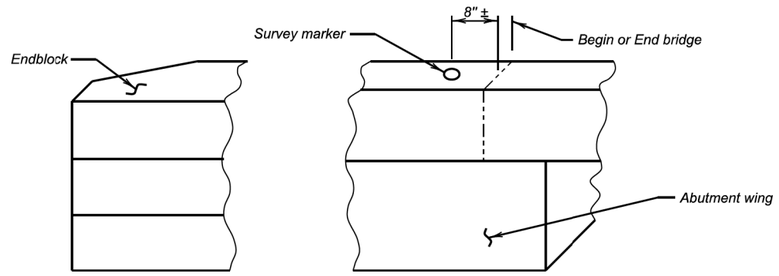
Published Date: 2024	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



ABUTMENT WITH "STRAIGHT" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS

(Endblock on top of wings)

GENERAL NOTES:

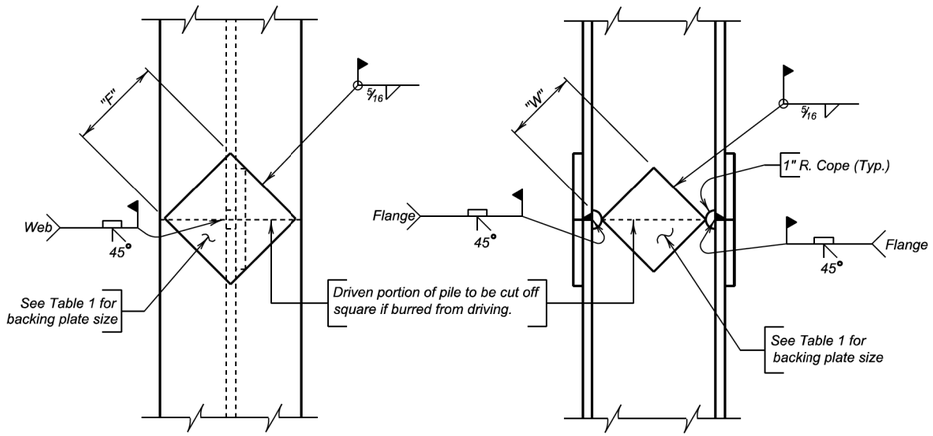
1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.

2. Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a ¾" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 ½" top diameter.

3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26,2012

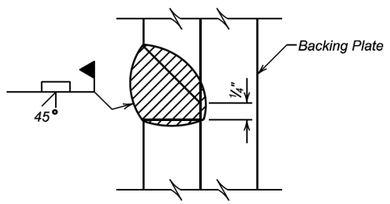
Published Date: 2024	SDDOT	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1



NOTE:

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

COMPLETE JOINT PENETRATION WELD DETAIL



GENERAL NOTES:

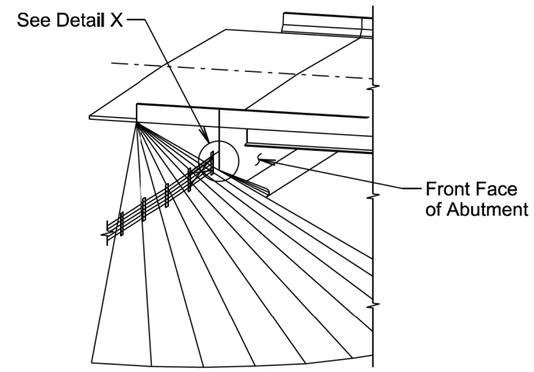
1. *Steel for backing plates shall conform to ASTM A709 Grade 50.*
2. *Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.*
3. *Welder must be certified and registered with the SDDOT.*
4. *Backing plate shall at a minimum be as thick as the web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

TABLE 1
(BACKING PLATES)

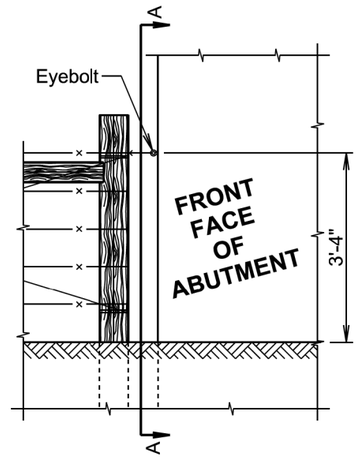
PILE	10"	12"	14"
"F" FLANGE	6 ½"	8"	10"
"W" WEB	4 ¾"	6 ¼"	7 ½"

December 23, 2012

Published Date: 2024	SDDOT	***STEEL PILE SPLICE DETAILS***	***PLATE NUMBER*** *510.40*
			Sheet 1 of 1



DETAILS FOR FENCE ANCHORS



DETAIL X

GENERAL NOTES:

The fence and post details shown are for illustrative purpose only. The fence will be as specified elsewhere in the plans.

Eyebolts will be placed on all of the bridge abutment wings.

Eyebolts will be ⅝ inch diameter with 6 inches minimum length and will conform to ASTM A307.

Eyebolts will be galvanized in accordance with AASHTO M232 (ASTM A153).

Eyebolts will be installed after abutment wings are backfilled and berm construction is complete. Drill-in and epoxy eyebolts into abutment such that the eye of the bolt is flush with the concrete surface.

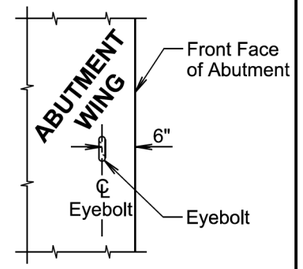
The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, Grade 3 (Equivalent to ASTM C881, Type IV, Grade 3).

The diameter of the drilled holes will not be less than ⅛ inch greater, nor more than ⅜ inch greater than the diameter of the eyebolts or as per 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 be sure that all debris or loose material has been removed prior to epoxy injection.

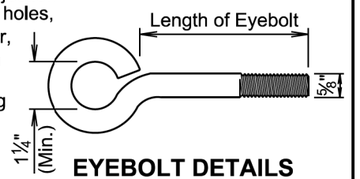
Mix epoxy resin as recommended by the Manufacturer and apply by an injection method as approved by the Engineer. Beginning at the back of the drilled holes, fill the holes ⅓ to ½ full of epoxy, or as recommended by the Manufacturer, prior to insertion of the eyebolts. Care will be taken to prevent epoxy from flowing out of the horizontal holes prior to eyebolt insertion. Rotate the eyebolt during installation to eliminate voids and ensure complete bonding of the bolt. Insertion of the eyebolts by the dipping or painting method will not be allowed.

Loads will not be applied to the epoxy grouted eyebolts until the epoxy resin has had sufficient time to cure as specified by the epoxy resin manufacturer.

The cost for furnishing and installing the eyebolts will be incidental to various contract items.



VIEW A-A



EYEBOLT DETAILS

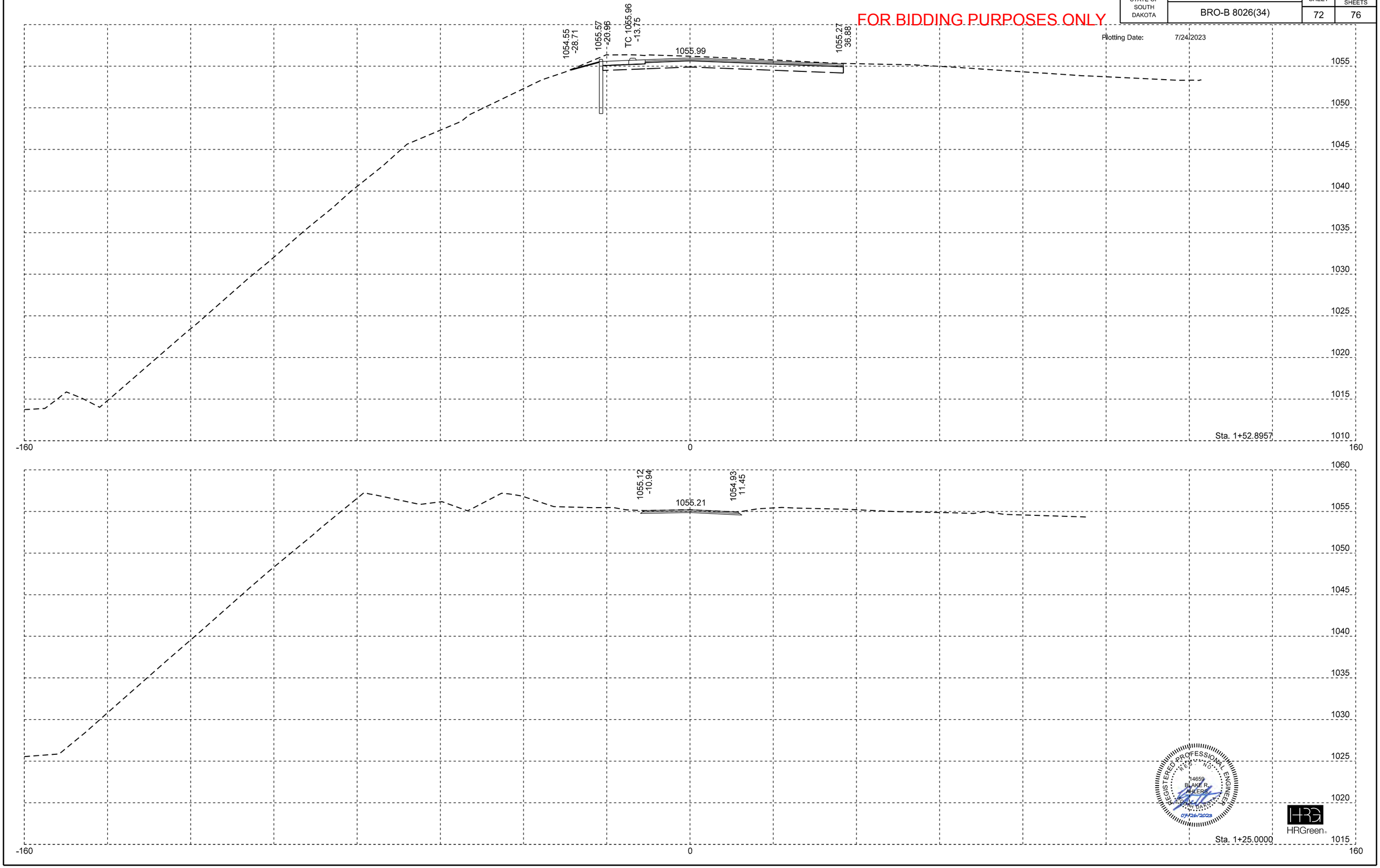
November 19, 2020

Published Date: 2024	SDDOT	***FENCE ANCHORS FOR BRIDGE ABUTMENTS (SWEPT BACK WINGS)***	***PLATE NUMBER*** *620.19*
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	72	76

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/24/2023



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 14659
BLAKE R. AHLERS
SOUTH DAKOTA
07/26/2023

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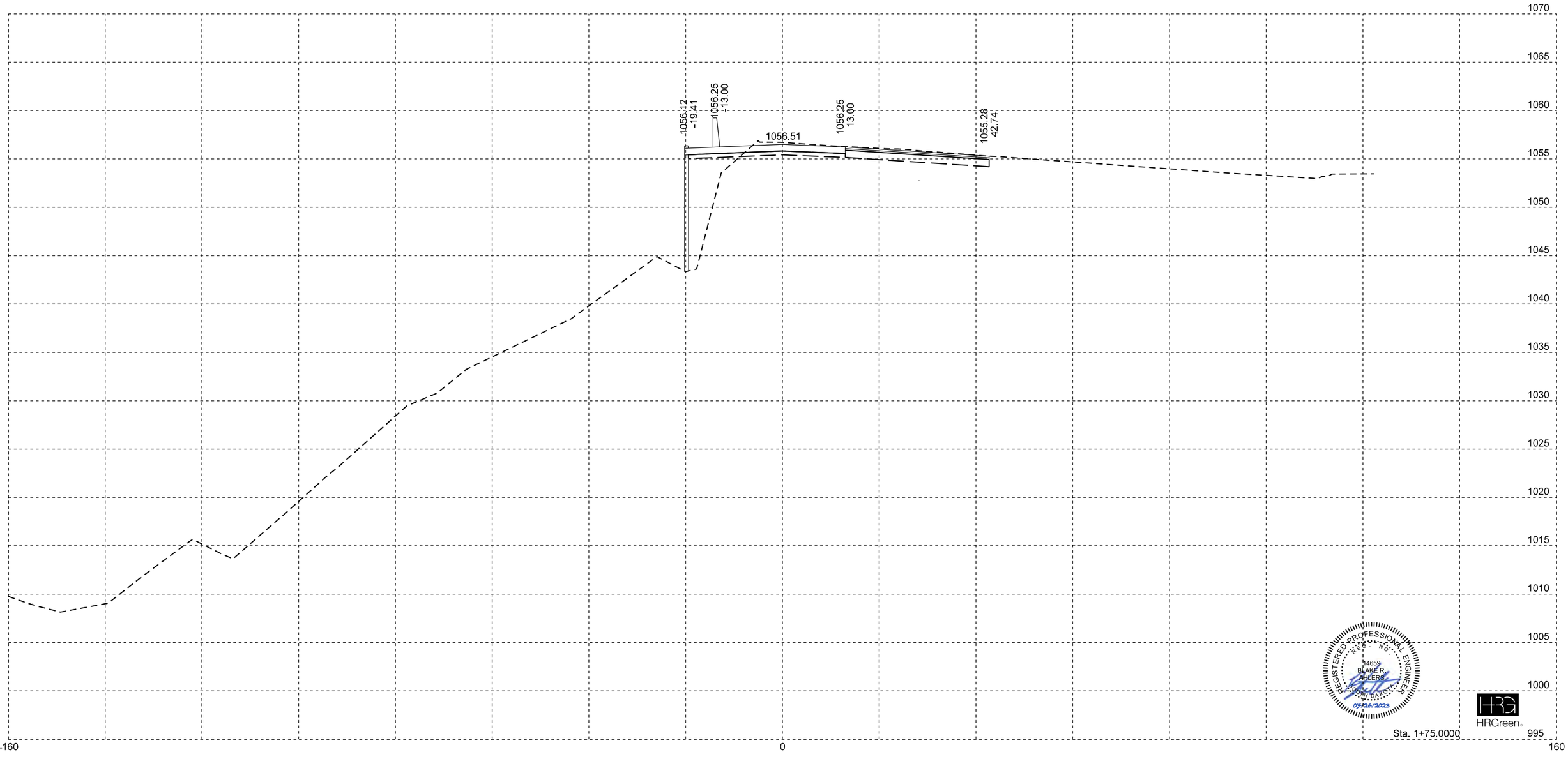
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	73	76

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/24/2023



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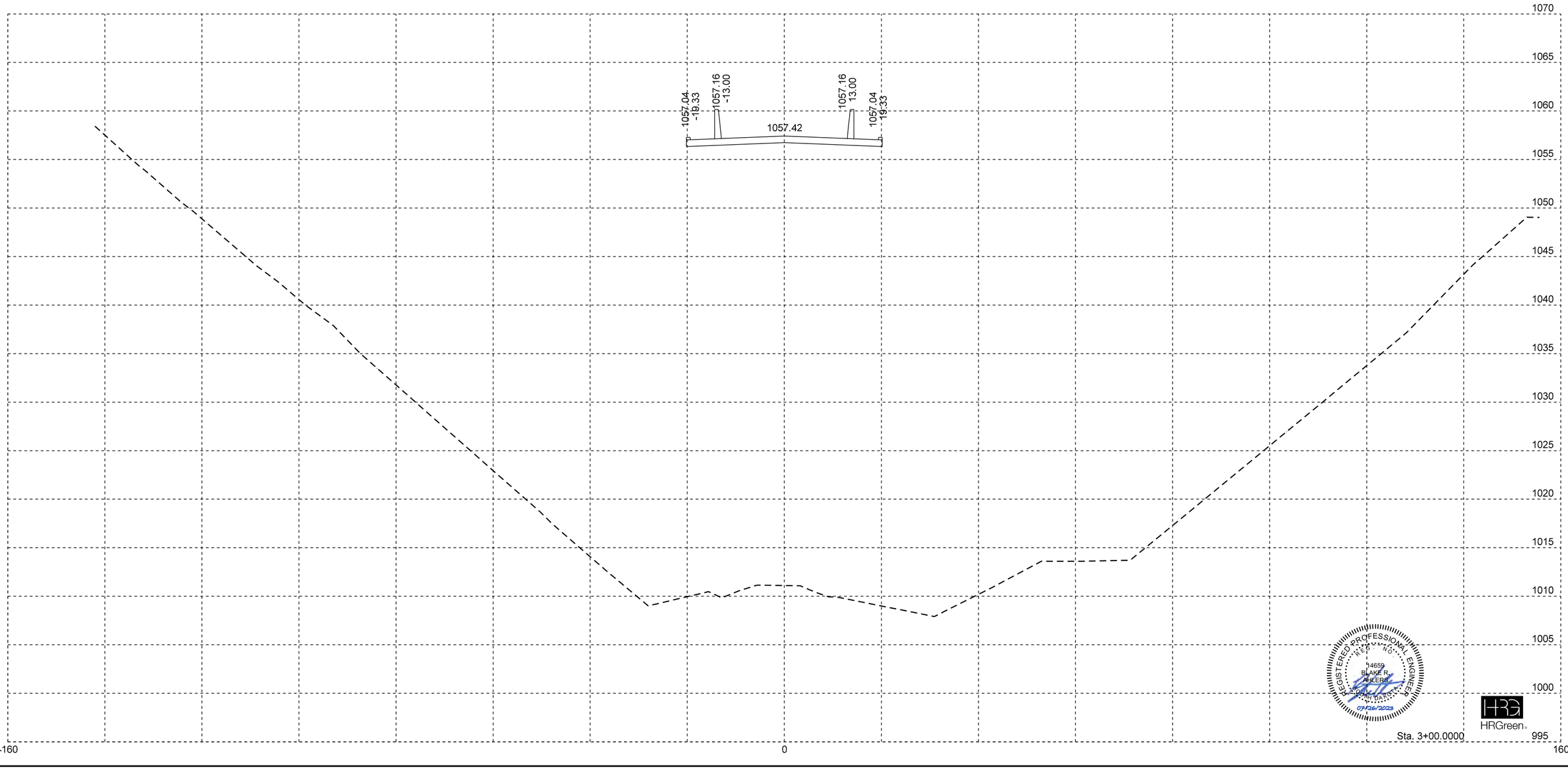
Sta. 1+75.0000

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	74	76

FOR BIDDING PURPOSES ONLY

Plotting Date: 7/24/2023



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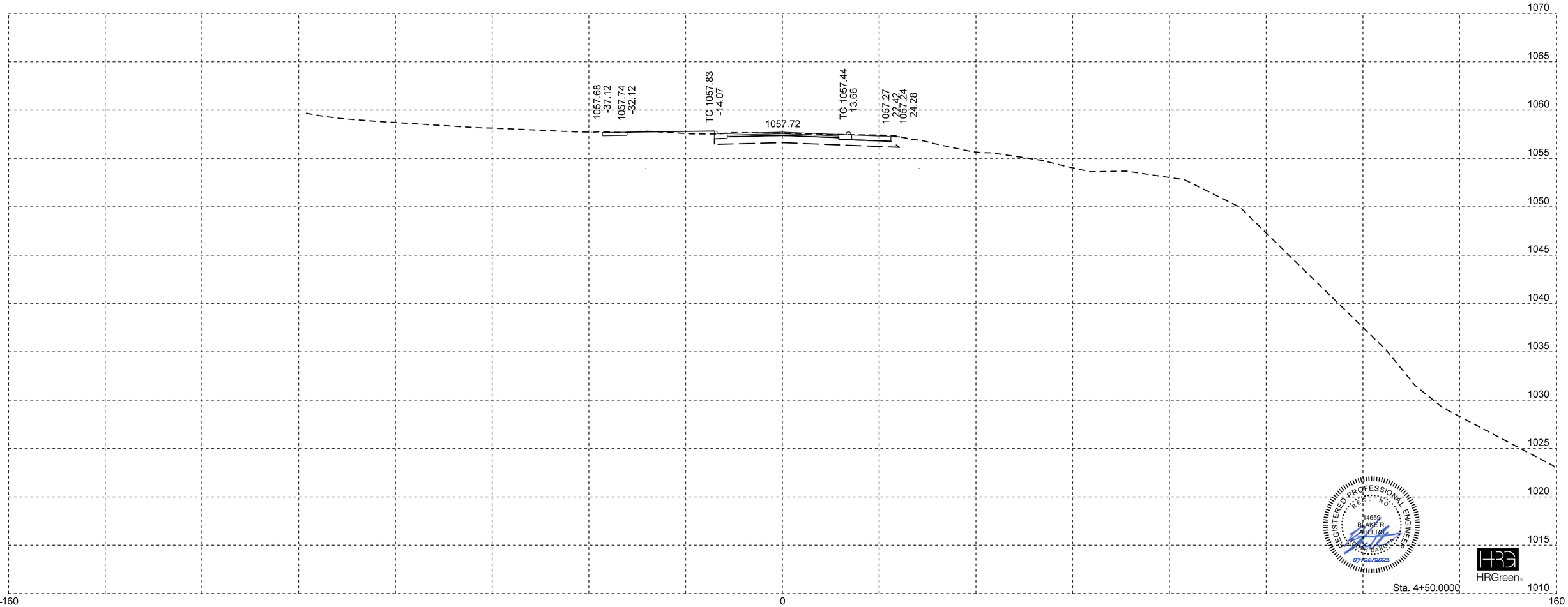
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	75	76

Plotting Date: 7/24/2023



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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8026(34)	76	76

Plotting Date: 7/24/2023