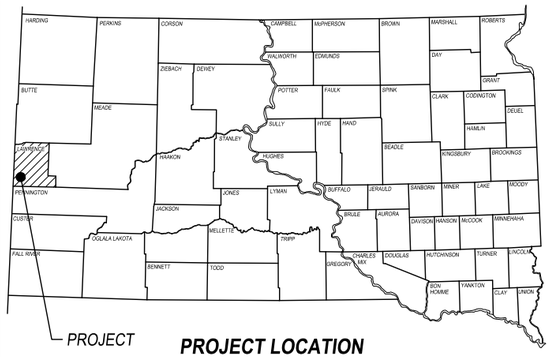
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	1	54

FOR BIDDING PURPOSES ONLY



PROJECT LOCATION

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT BRO-B 8041(184)
LAWRENCE COUNTY

STRUCTURE REPLACEMENT AND APPROACH GRADING
STR. NO. 41-079-199
PCN 0854

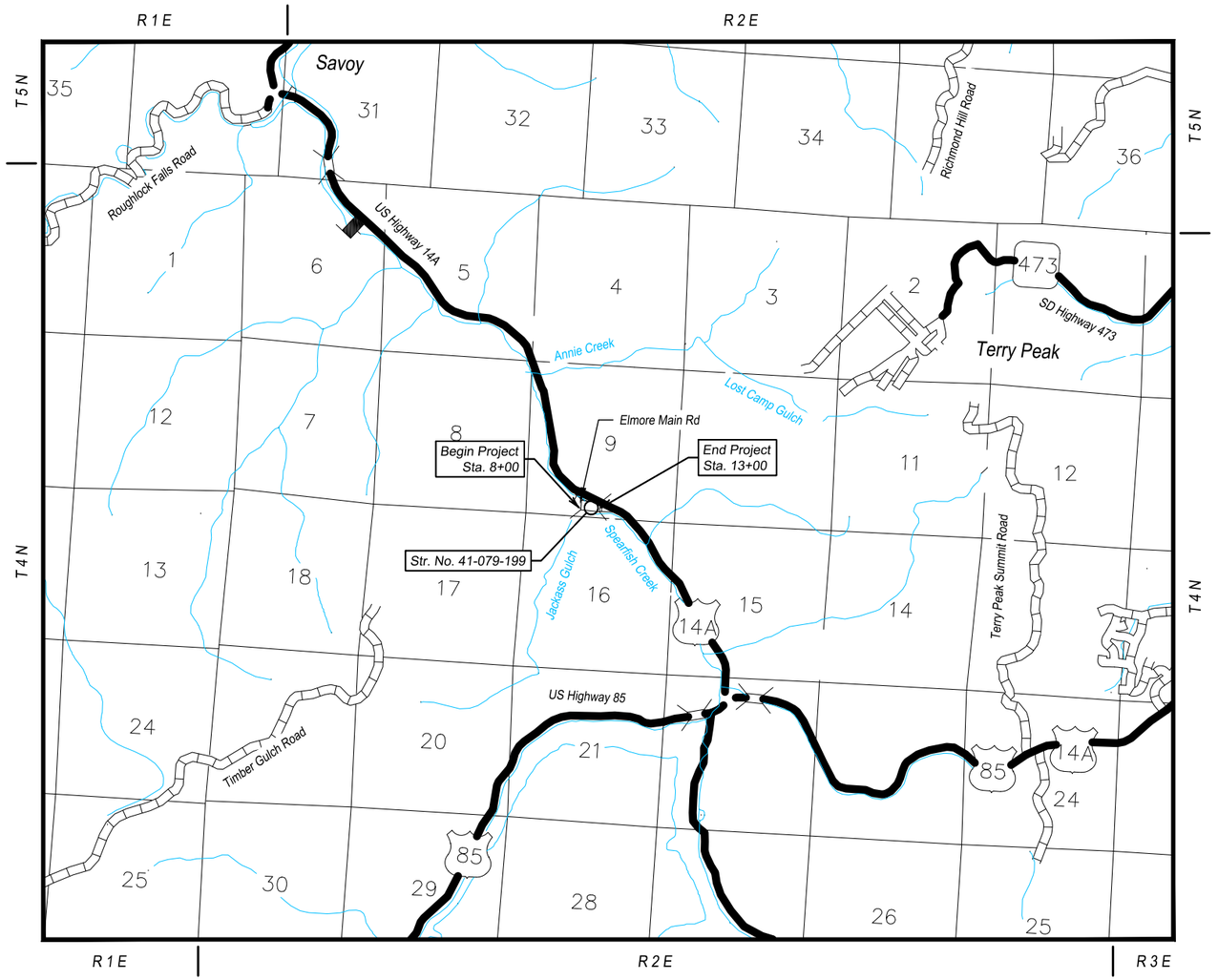
INDEX OF SHEETS

DESIGN DESIGNATION

ADT (2020)	*50*
ADT (2040)	*72*
DHV	*11*
d	*50%*
T DHV	*3.5%*
T ADT	*7.7%*
V	*25 mph*

STORM WATER PERMIT

Major Stream:	*Spearfish Creek*
Area Disturbed:	*1.17 Acres*
Project Area:	*1.64 Acres*
Latitude:	*N 44.3153°*
Longitude:	*W -103.8866°*



LOCATION MAP

COUNTY OFFICIALS

Highway Superintendent	*John Bey* *90 Sherman Street* *P.O. Box 514* *Deadwood, SD 57732* *Phone: (605) 578-2183* *Fax: (605) 578-2167*
Commissioners	*Randy Deibert* *Eric Jennings* *Bob Ewing* *Brandon Flanagan* *Richard Sleep*

IMEG

Plotted on: 8/16/23 8:48:19 AM
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Plotted by: Justin M. Pump

September 3, 2025

Grading

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0030	Maintenance of Traffic Diversion(s)	Lump Sum	LS
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.204	Mile
009E3250	Miscellaneous Staking	0.204	Mile
009E3280	Slope Staking	0.204	Mile
009E3290	Structure Staking	1	Each
100E0020	Clear and Grub Tree	10	Each
100E0100	Clearing	Lump Sum	LS
110E1690	Remove Sediment	2.0	CuYd
110E1693	Remove Erosion Control Wattle	580	Ft
120E0010	Unclassified Excavation	730	CuYd
120E0600	Contractor Furnished Borrow Excavation	579	CuYd
230E0010	Placing Topsoil	199	CuYd
260E3500	Temporary Gravel Surfacing	198.7	Ton
632E2520	Type 2 Object Marker	4	Each
634E0110	Traffic Control Signs	199.2	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	5	Each
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	880	Ft
734E0165	Remove and Reset Erosion Control Wattle	220	Ft
734E0630	Floating Silt Curtain	250	Ft
734E0635	Remove and Reset Floating Silt Curtain	63	Ft
831E0110	Type B Drainage Fabric	142	SqYd

SPECIFICATIONS

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

Str. No. 41-079-199

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0100	Structure Excavation, Bridge	334	CuYd
430E0200	Bridge End Embankment	311	CuYd
430E0300	Granular Bridge End Backfill	44.1	CuYd
460E0030	Class A45 Concrete, Bridge Deck	29.4	CuYd
460E0050	Class A45 Concrete, Bridge	115.3	CuYd
470E0420	Type T101 Bridge Railing	91	Ft
480E0100	Reinforcing Steel	12,297	Lb
480E0200	Epoxy Coated Reinforcing Steel	10,544	Lb
510E3130	HP 12 Pile Tip Reinforcement	28	Each
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	1,170	Ft
700E0310	Class C Riprap	137.4	Ton
831E0110	Type B Drainage Fabric	210	SqYd

ENVIRONMENTAL COMMITMENTS

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

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

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

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

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.14 acre of wetlands (includes temporary and permanent) becoming impacted.

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	10+00	0.03	0.01	0.1	0.00	0.14

Action Taken/Required:

Mitigation is required in accordance with the "*Statewide Finding Regarding Wetlands for South Dakota Federal-Aid Highway Projects (February 2018)*". Replacement of 0.04 acre of permanent wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

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 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 A: AQUATIC RESOURCES (CONTINUED)

COMMITMENT A2: STREAMS

All efforts to avoid and minimize stream impacts from the project have resulted in approximately 0.035 acre of stream (includes temporary and permanent) becoming impacted.

Table of Impacted Streams

Stream Name	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
Spearfish Creek	10+00	0.003	0.002	0.03	0.00	0.035

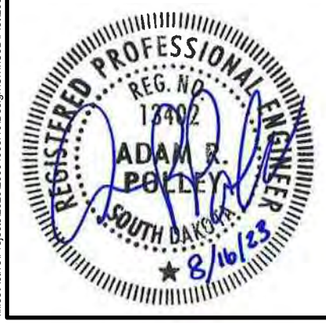
Action Taken/Required:

It has been determined that project impacts do not require mitigation. Temporary impacts identified in the Table of Impacted Streams will not be mitigated as the finished ground under the bridge will be shaped to match the upstream channel and flood plain and the existing low water channel will be maintained as near as practical to the existing location as designated in the Plans.

The Contractor will complete excavation after temporary diversion is in place, if required, with minimal standing water to create the profile of slope protection specified in plans. Once the instream work is completed, the removed material will be placed on top of the riprap to match the natural ground, proposed groundline, or specified shape and elevations shown in plans. When overburden extends into the streambed it will form the channel bottom and profile as specified in plans. The finished ground under the bridge will be shaped to match the upstream and downstream channel and flood plain.

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

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



COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

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:

< https://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 >

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

Spearfish Creek is classified as fish and wildlife propagation, recreation, irrigation, and stock watering waters. Because of these beneficial uses, special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

The DANR General Permit for Temporary Discharge is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as cold water permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as cold water permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the Contractor will need to submit the dewatering information to the SDDANR using the following form:

< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_AddTempInfoFillable.pdf >

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:

< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx >

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 F: SEASONAL WORK RESTRICTION

The State of South Dakota Game, Fish, and Parks has designated warm water fishery associated with this project.

Action Taken/Required:

Construction or demolition activities should not take place during the Seasonal Work Restriction listed in the below table to avoid conflicts with spawning fish. If flows during this time are nonexistent or extremely low, the seasonal use restriction may not be applicable. The Contractor will not conduct in-stream work during the Seasonal Work Restriction without prior approval from the SDDOT Environmental Office.

Stream Name	Stream Classification	Seasonal Work Restriction
Spearfish Creek	Warm Water	April 1 to June 30

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

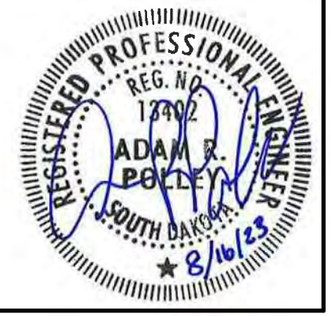
If the waste disposal site(s) is located such that it is within view of any ROW, the following additional requirements will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will be removed from view of the ROW or buried, and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06. Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

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



COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S.

The Contractor is advised that special construction measures must be taken to ensure that the waterways of the U.S. are not impacted.

Action Taken/Required:

Excavation will not occur below the ordinary high-water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting. The natural streambed will not be disturbed unless specified by the plans and under the observation of the Project Engineer. Refer to the Table of U.S. Waterways to Protect for ordinary high-water elevations. Any structure work over or within the waterway will be constructed according to Section 7.21 C of the Specifications.

All dredged or excavated materials will be placed at a site above the ordinary high-water elevation in a confined area (not classified as a wetland) that is a minimum of 50 feet away from concentrated flows of storm water, drainage courses, and inlets to prevent return of such material to the waterway.

The construction of temporary work platforms, crossings, or berms below the ordinary high-water elevation will be allowed if all material placed below the ordinary high-water elevation consists of Class B or larger riprap.

All temporary caissons, cribs, cofferdams, steel piling, sheeting, work platforms, crossings, and berms will be removed with minimal disturbance to the streambed. Proper construction practices will be used to minimize increases in suspended solids and turbidity in the waterway.

Bridge berms, wing dams, traffic diversions, channel reconstruction, stream diversions, grading, etc. will be constructed in close conformity with the plans to ensure that the hydraulic capacity of the waterway is not changed.

Temporary waterway crossings required for the Contractor's construction operations will be constructed with an adequate drainage structure size and minimum fill height to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

All temporary works in waterways of the US are required to be covered in the Corp of Engineers 404 Permit. At the time of the preconstruction meeting, the Contractor will submit documentation for all temporary works for the purpose of complying with the 404 Permit requirements in accordance with Section 423.3 A of the Specifications.

Table of U.S. Waterways to Protect

Station	Waterway	Ordinary High-Water Elevation
10+00	Spearfish Creek	5196.0

Stream channel excavation within "Waters of the US" is subject to USACE regulatory jurisdiction. Stream channel excavation cannot exceed the permitted quantities and/or surface area. The 404 Permit is included in the Special Provisions.

The Contractor will take all precautions necessary to prevent any incidental discharges associated with the excavation and hauling of material from the stream channel. This pertains to any excavation operations such as, foundation, pier, or abutment excavation, channel cleanout, excavation for riprap protection, and removal of any temporary fill associated with construction activities.

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 R: TREE REPLACEMENT

The Contractor will minimize tree removal and disturbance to vegetation to activities only designated within the plans. There are 10 trees that will be impacted by construction activities.

Action Taken/Required:

Trees will be replaced with native trees at a SDDOT designated location within the vicinity of the project at a 2:1-acre ratio. The Contractor will enhance and incorporate impacted landscape areas to optimize the longevity and maintainability of existing trees and vegetation. The Contractor will reseed and temporarily protect disturbance areas with SDDOT approved BMPs. Refer to the plans for location and boundaries of the tree replacement.

COMMITMENT S: FIRE PREVENTION IN THE BLACK HILLS AREA

This project is located within the Black Hills Forest Fire Protection Boundary.

Action Taken/Required:

The Contractor will adhere to the "Special Provision for Fire Plan".

COUNTY RESPONSIBILITIES

Lawrence County will be responsible for the following at no cost to the Contractor:

1. Right-of-Way and temporary and permanent easements.
2. Coordination of any utility adjustments.
3. Furnish and install final surfacing.
4. Furnish and install temporary and/or permanent fencing.
5. Furnish and install new permanent signing.
6. Remove silt fence in permanently seeded areas

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 1.7 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".

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

The estimated excavation required for placing the Granular Bridge End Backfill and for constructing the Bridge Berm(s) between bridge abutments and shaping the bridge waterway channel(s) are listed in the Table of Unclassified Excavation. Overburden Excavation for Riprap and Bridge End Embankment are not included in the Unclassified Excavation quantity. The excavated material from the construction of the Bridge Berm(s) and shaping the bridge waterway channel(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 Earthwork Balance.

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 10-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.

UTILITIES

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 elsewhere in the plans or bidding documents.

Black Hills Power and Light Company
425 Cliff Street
Deadwood, SD 57732
Phone: (605) 722-2420

CenturyLink
1035 1st Street
Sturgis, SD 57785
Phone: (800) 244-1111

EARTHWORK BALANCE

Excavation	258	CuYd		Embankment	0	CuYd
Other Excavation	743	CuYd		35% Shrinkage	0	CuYd
Contractor Furnished Borrow Excavation	0	CuYd		Waste	1,001	CuYd
Total	1,001	CuYd		Total	1,001	CuYd

Excavation is the quantity of Unclassified Excavation less the quantity of topsoil, granular bridge end backfill, and gravel surfacing.

Other Excavation includes the sum of the quantities for the following:
Structure Excavation, Bridge (334 CuYd)
Excavation for Class C Riprap (98 CuYd)
Bridge End Embankment (311 CuYd)

These quantities are for information purposes only, compensation for these are accounted for within various bid items.

The Contractor may, at the discretion of the Engineer, use the material from Other Excavation in the inslopes and as sub-base with the condition that said material meets all requirements as set forth in the Specifications.

It is assumed (for the purposes of earthwork balance) that the Contractor will not be able to use any of the material from Excavation and Other Excavation and will have to waste the material at (a) site(s) provided by the Contractor and approved by the Engineer. All costs for labor, materials, and equipment necessary to waste material as well as restoration of the waste site(s) will be incidental to the contract unit price per cubic yard for "Unclassified Excavation".

SHRINKAGE FACTOR

Embankment +35%.

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	258 CuYd
Topsoil	199 CuYd
Existing Gravel Surfacing	229 CuYd
Granular Bridge End Backfill	44 CuYd
Total	730 CuYd

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil and salvaged surfacing items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for "Contractor Furnished Borrow Excavation" as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site will be the responsibility of the Contractor.

COMPACTION

Compaction of the earth embankment and bridge berm material will be governed by the Specified Density Method.

CLEARING

Before clearing activities begin, the Contractor will contact the Project Engineer to determine the limits of clearing for the project to be removed. If the trees or shrubs that are supposed to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor will replace them with the same size and type at the Contractor's expense.

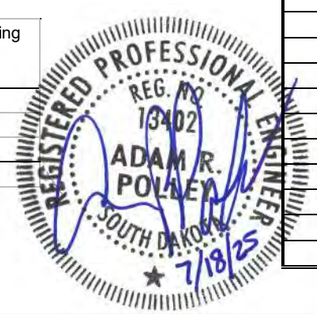
TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

					Grade Staking							
Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Structure Staking Quantity (Each)
Elmore Road	8+00	13+00	2	500	0.095	1	1	0.095	0.095	0.095	-
Temporary Traffic Diversion	19+88.97	25+64.80	1	575.83	0.109	1	1	0.109	0.109	0.109	-
Str. No. 41-079-199	9+85.40	10+16.40									1
							Totals:	0.204	0.204	0.204	1

* 1 = Blue Top Stakes Only (Gravel Surfacing)

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



Sta.	Lt./Rt.	Quantity (Each)
9+80	84 Lt.	1
10+00	57 Lt.	1
10+37	85 Lt.	1
10+52	99 Lt.	1
10+88	93 Lt.	1
11+12	27 Lt.	1
11+99	58 Lt.	1
12+02	90 Lt.	1
12+47	45 Lt.	1
12+54	24 Lt.	1

PLACING TOPSOIL

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements.

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

Sta.	to	Sta.	Topsoil (CuYd)
8+00		12+95	199
		Total:	199

EROSION CONTROL

The estimated area requiring erosion control is 50,801 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, fertilizing, seeding, cover crop, and fiber reinforced matrix 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, temporary easements under cultivation, and areas designated to be sod.

Lawn and turf seed, such as the Type D Permanent Seed Mixture, will be tested within 12 months prior to planting, exclusive of the calendar month in which the test was completed.

Type B Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Canada Wildrye	Mandan	2
	Total:	18

Type D Permanent Seed Mixture will be used as directed by the Engineer and 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

Fertilizing

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the Manufacturer’s recommended method of application.

The all-natural slow release fertilizer will be as shown below or an approved equal:

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com
Perfect Blend	Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 www.perfect-blend.com
Nature Safe	Nature Safe Fertilizers Irving, TX Phone: 1-605-759-5622 www.naturesafe.com

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 a minimum 25% the fungal species *Rhizophagus intraradices*. The remaining 75% may include other endomycorrhizal fungal species.

All Type B Permanent Seed Mixture 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”.

All Type D Permanent Seed Mixture will be inoculated by the seed supplier with a minimum of 20,000 live propagules of mycorrhizal fungi per 1,000 square feet. 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

Cover Crop Seeding

Cover crop seeding may be used on this project as a temporary erosion control measure. Cover crop seeding will consist of Annual Rye at 22 pounds/acre. The actual limits and use of cover crop seeding will be determined by the Engineer during construction.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

EROSION CONTROL (CONTINUED)

Fiber Reinforced Matrix

Fiber reinforced matrix will be applied in a separate operation following permanent seeding at locations noted in the table and at locations determined by the Engineer during construction. The application rate is 3,000 pounds per acre.

An additional quantity of Fiber Reinforced Matrix has been added to the Estimate of Quantities for erosion control on areas determined by the Engineer during construction.

The Contractor will use a Fiber Reinforced Matrix from the approved products list, or an approved equal. The approved product list for Fiber Reinforced Matrix may be viewed at the following internet site.

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

Table of Fiber Reinforced Matrix

Sta.	Location	Area (Acre)	Quantity (Lb)
8+00 to 9+83 Lt.	Inslope	0.06	180
8+00 to 8+95 Rt.	Inslope	0.03	90
9+14 to 10+11 Rt.	Inslope	0.05	150
10+04 to 12+95 Lt.	Inslope	0.12	360
10+17 to 11+47 Rt.	Inslope	0.04	120
11+60 to 12+00 Rt.	Inslope	0.01	30
Additional Quantity:		0.04	120
Total:		0.35	1,050

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.

An estimated quantity of erosion control wattles will remain on the project until vegetation has been established. It is estimated that some of the erosion control wattles will remain on the project to decompose.

An additional 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

Sta.	Lt./ Rt.	Diameter (Inch)	Temporary / Permanent Erosion Control	Location	Quantity (Ft)
8+02	Rt.	12	Permanent	Inslope	20
8+02	Lt.	12	Permanent	Inslope	20
8+13	Lt.	12	Temporary	Project Limits	20
8+40	Lt.	12	Temporary	Project Limits	20
8+60	Lt.	12	Temporary	Project Limits	20
8+79	Lt.	12	Temporary	Project Limits	20
9+00	Lt.	12	Temporary	Project Limits	20
9+03	Lt.	12	Permanent	Inslope	20
9+20	Lt.	12	Temporary	Project Limits	20
9+43	Lt.	12	Temporary	Project Limits	20
9+50	Lt.	12	Temporary	Project Limits	20
9+62	Lt.	12	Temporary	Project Limits	20
9+63	Lt.	12	Temporary	Project Limits	20
9+65	Lt.	12	Temporary	Project Limits	20
9+70	Lt.	12	Temporary	Project Limits	20
9+71	Lt.	12	Permanent	Inslope	20
9+80	Lt.	12	Temporary	Project Limits	20
9+83	Lt.	12	Temporary	Project Limits	20
9+92	Rt.	12	Permanent	Inslope	20
9+95	Lt.	12	Temporary	Project Limits	20
10+05	Rt.	12	Temporary	Project Limits	20
10+08	Lt.	12	Temporary	Project Limits	20
10+16	Lt.	12	Permanent	Inslope	20
10+35	Rt.	12	Permanent	Inslope	20
10+52	Rt.	12	Temporary	Project Limits	20
10+67	Lt.	12	Temporary	Project Limits	20
10+72	Rt.	12	Temporary	Project Limits	20
10+75	Lt.	12	Temporary	Project Limits	20
10+84	Lt.	12	Temporary	Project Limits	20
10+86	Lt.	12	Temporary	Project Limits	20
10+99	Lt.	12	Temporary	Project Limits	20
10+99	Lt.	12	Permanent	Inslope	20
10+99	Rt.	12	Permanent	Inslope	20
11+01	Lt.	12	Temporary	Project Limits	20
12+00	Lt.	12	Permanent	Inslope	20
12+00	Rt.	12	Permanent	Inslope	20
12+39	Rt.	12	Temporary	Project Limits	20
12+91	Rt.	12	Permanent	Inslope	20
12+95	Lt.	12	Permanent	Inslope	20
				Additional Quantity:	100
				Total:	880

FLOATING SILT CURTAIN

Floating silt curtains will be installed at locations noted in the table and at locations determined by the Engineer during construction.

The Contractor will determine the water depth and other waterway characteristics such as stream flow velocity and seek technical advice from the Manufacturer before ordering the floating silt curtain so that the floating silt curtain installed is the correct type for the individual sites.

The Contractor will install the floating silt curtain in accordance with the manufacturer’s installation instructions or as directed by the Engineer.

The Contractor will maintain the floating silt curtains for the duration of the project to ensure continuous protection of the waterway.

A list of known Manufacturers of floating silt curtain is shown below for informational purpose. Contractors may also use Engineer approved floating silt curtain from Manufacturers that are not included in the list.

ABASCO, LLC
Humble, TX
Phone: 1-281-466-1500
www.abasco.net

Aer-Flo, Inc.
Bradenton, FL
Phone: 1-800-823-7356
www.aerflo.com

ACME Environmental
Tulsa, OK
Phone: 1-855-563-2666
www.acmeboom.com

ENVIRO-USA, LLC
Cap Canaveral, FL
Phone: 1-321-222-9551
www.enviro-usa.com

Elastec/American Marine, Inc.
Carmi, IL
Phone: 1-618-382-2525
www.turbiditycurtains.com

Geo-Synthetics, LLC (GSI)
Waukesha, WI
Phone: 1-800-444-5523
www.geosynthetics.com

Parker Systems, Inc.
Chesapeake, VA
Phone: 1-866-472-7537
www.parkersystemsinc.com

TABLE OF FLOATING SILT CURTAIN

Sta. - Side		Sta. - Side	Quantity (Ft)
9+44 Lt.	to	9+57 Lt.	12
9+67 Lt.	to	9+68 Lt.	18
9+73 Lt.	to	10+10 Rt.	86
10+03 Lt.	to	10+42 Rt.	88
		Additional Quantity:	46
		Total:	250

SEQUENCE OF OPERATIONS

Contractor requests to deviate from the sequence of operations will be submitted in writing to the Engineer for review. Approval of an alternate 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. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

1. Install traffic control devices as shown on the plans.
2. Construct Traffic Diversion roadway and structures.
3. Install temporary erosion control measures as shown on the plans.
4. Dismantle, remove, and dispose of the existing structure as detailed in the Incidental Work, Structure note elsewhere in the plans.
5. Construct the new structure.
6. Construct the roadway and final grading.
7. Remove Traffic Diversion roadway and structures.
8. Install permanent erosion control measures as shown on the plans.
9. Complete miscellaneous cleanup under traffic.

GENERAL TRAFFIC CONTROL

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

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

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

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

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

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

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

TRAFFIC DIVERSION

The traffic diversion is located at Sta. 19+89 to 26+02. The traffic diversion will be constructed according to Section 4.5 A of the Specifications. Installation and removal of the traffic diversion will meet all requirements as set forth in the South Dakota Surface Water Quality Standards.

The traffic diversion will be constructed in accordance with the geometric layout shown in the plans with a temporary drainage structure size adequate to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

Costs to provide temporary drainage structures will be incidental to the contract lump sum price for "Maintenance of Traffic Diversion(s)".

Traffic diversions in waterways will be constructed such that any material placed below the ordinary high water elevation will conform to the requirements of Class C Riprap. Type B drainage fabric will be placed under the riprap and under any diversion embankment that is placed in a wetland as shown in the construction plans. In the event flowing water is present, only riprap will be allowed to be placed or removed below the ordinary high water elevation. The quantity of riprap used in the traffic diversion is included in the quantity for "Class C Riprap" in the Structures estimate of quantities. The quantity of riprap used for the traffic diversion will be reused as riprap for the structure and all costs incurred to place and remove the riprap at the traffic diversion and subsequently place the riprap at the structure will be incidental to the contract unit price per ton for "Class C Riprap". The traffic diversions will be built in close conformity to the plan gradeline. Unless otherwise shown in the plans, the traffic diversions will be removed such that the original ground surface contours and elevations are restored and the hydraulic capacity of the waterway is maintained. The removal will be done in such a manner that there is minimal disturbance to the channel bed.

The removed traffic diversion embankment will be used in the mainline embankment unless otherwise approved by the Engineer.

Traffic Diversion Excavation as shown on the plans profile sheets is the excavation required to construct the traffic diversion portion that is located inside the mainline cross section work limits. The Traffic Diversion Excavation quantity is included in the mainline excavation quantity in the Table of Excavation Quantities by Balances and in the Table of Unclassified Excavation.

Traffic Diversion Borrow, as shown on the plans profile sheets, is obtained from the mainline excavation from outside of the traffic diversion cross section work limits. The Traffic Diversion Borrow quantity is included in the mainline excavation quantity in the Table of Excavation Quantities by Balances and in the Table of Unclassified Excavation.

Added Traffic Diversion Excavation as shown on the plans profile sheets is the excavation required to construct the traffic diversion portion that is located outside the mainline cross section work limits. The Added Traffic Diversion Excavation quantity is added to the unclassified excavation quantity in the Table of Unclassified Excavation.

TABLE OF TRAFFIC DIVERSION RIPRAP AND DRAINAGE FABRIC

Sta.	Lt./Rt.	Ordinary High Water Elevation	Traffic Diversion Riprap (Ton)	Class C Riprap (Ton)	Type B Drainage Fabric (SqYd)
10+00	Lt.	5196.0	132.8	137.4	142
		Total:	132.8	137.4	142

TRAFFIC DIVERSION EARTHWORK BALANCE

Added Traffic Diversion Excavation	0	CuYd		Embankment	429	CuYd
Other Excavation	0	CuYd		35% Shrinkage	150	CuYd
Contractor Furnished Borrow Excavation	579	CuYd		Waste	0	CuYd
Total	579	CuYd		Total	579	CuYd

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
7/18/25

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	10	54

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** 1.64 Acres
- **5.3 (3b): Total Area to be Disturbed** 1.17 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time** 1.17 Acres
- **5.3 (3d): Existing Vegetative Cover (%)** 75%
- **5.3 (3d): Description of Vegetative Cover** Tree, Shrub, and Herbaceous Species
- **5.3 (3e): Soil Properties:** AASHTO Soil Classification A-1 and A-2
- **5.3 (3f): Name of Receiving Water Body/Bodies** Spearfish Creek
- **5.3 (3g): Location of Construction Support Activity Areas** N/A

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install traffic diversion roadway and structures.	
Install perimeter protection where runoff may exit site.	
Install perimeter protection around stockpiles.	
Install channel and ditch bottom protection.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Final grading.	
Removal of protection devices.	
Reseed areas disturbed by removal activities.	

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**

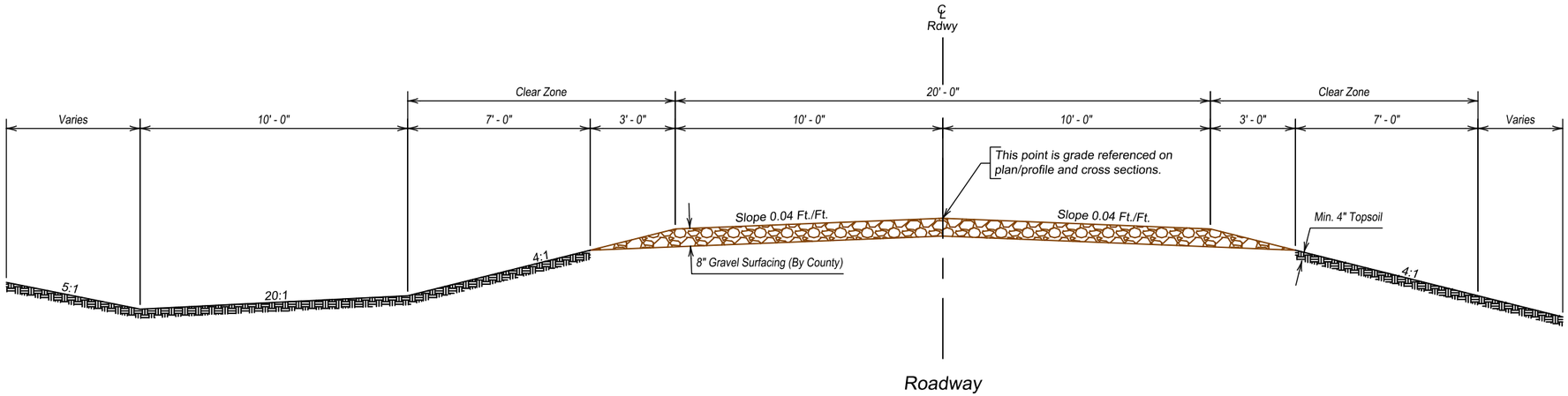
If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

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.

TYPICAL GRADING SECTIONS

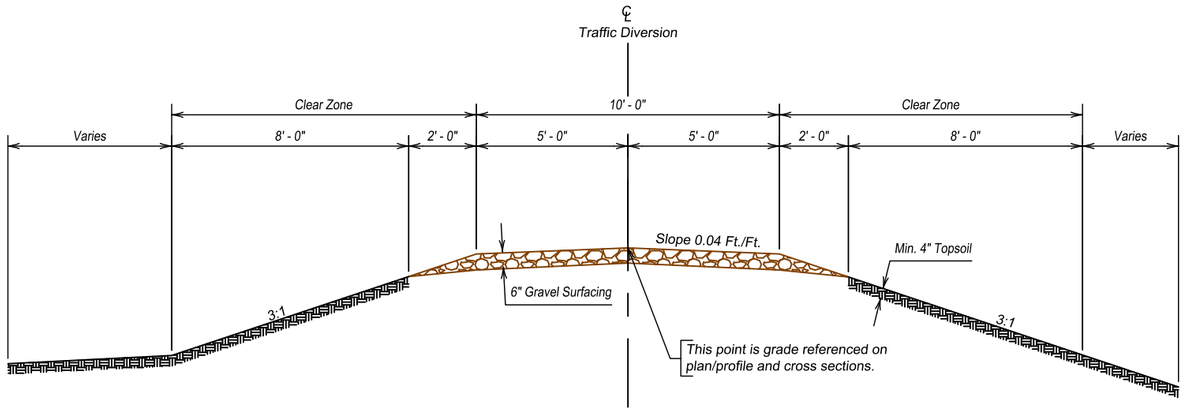
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	14	54



Roadway

NOTES:
Sta. 8+00 to Sta. 8+50 transition existing roadway section (roadway width, shoulder, and ditch) to typical roadway section.
Sta. 9+85 to Sta. 10+15 across bridge.
Sta. 11+50 to Sta. 12+00 transition typical roadway section to existing roadway section (roadway width, shoulder, and ditch).



Traffic Diversion

NOTES:
Sta. 19+89 to Sta. 20+50 transition existing roadway section (roadway width, shoulder, and ditch) to typical traffic diversion section.
Sta. 21+58 to Sta. 21+79 across temporary structure.
Sta. 25+00 to Sta. 25+59 transition typical traffic diversion section to existing roadway section (roadway width, shoulder, and ditch).

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

Plotted on: 8/16/23 8:48:37 AM
Plotted by: Justin M. Pump
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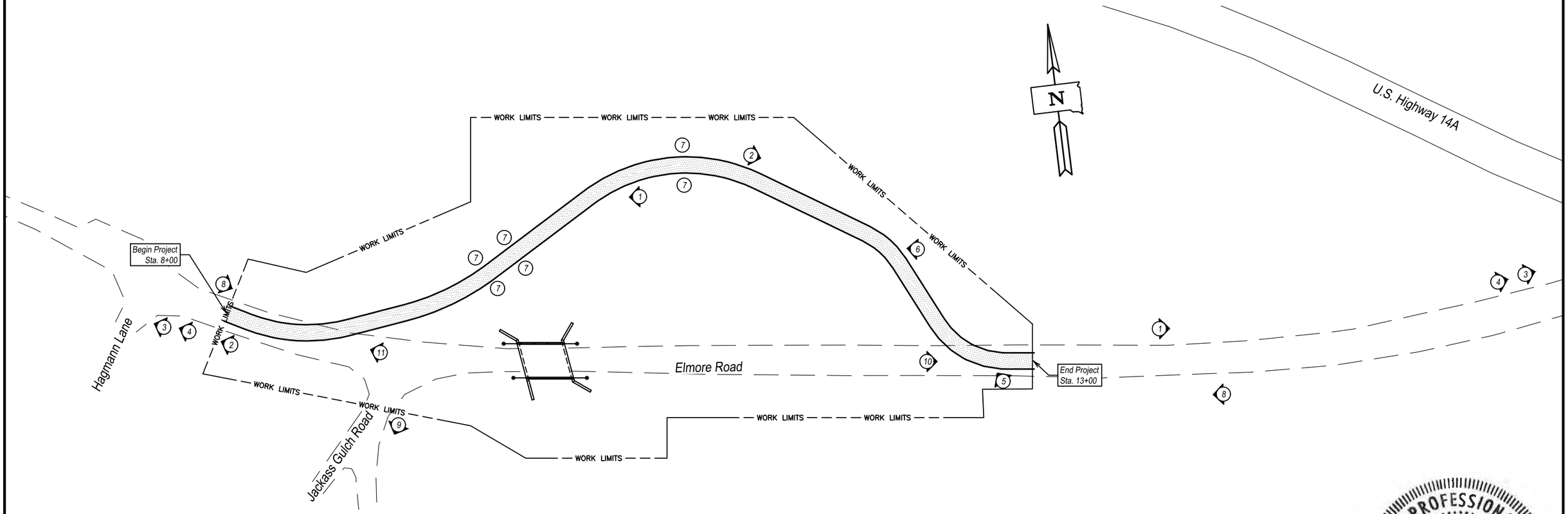
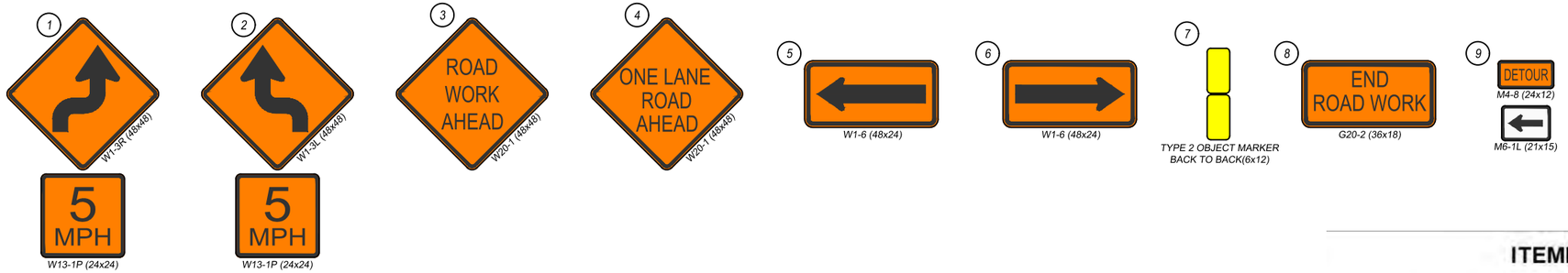
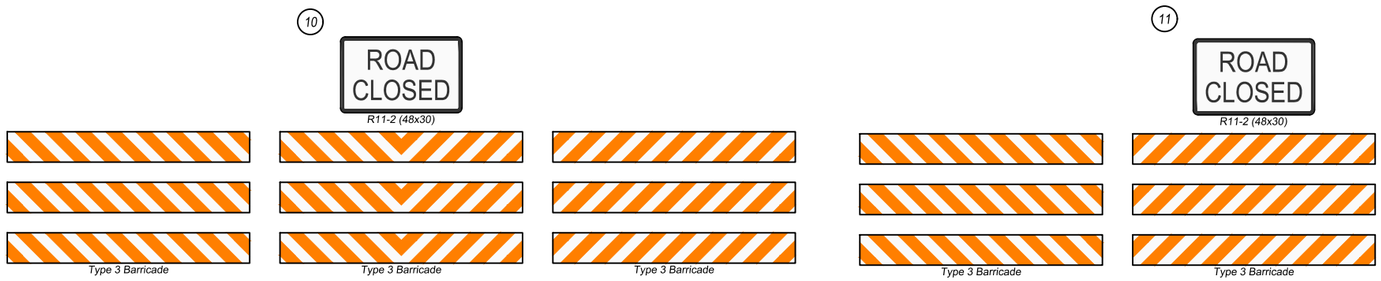
TRAFFIC CONTROL

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	15	54







Barricades will be staggered to match Standard Plate 634.28.

REGISTERED PROFESSIONAL ENGINEER
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ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
W1-3	WINDING ROAD (L or R)	4	48" x 48"	16.0	64.0
W1-6	LARGE ARROW (one direction)	2	48" x 24"	8.0	16.0
W13-1P	ADVISORY SPEED (plaque)	4	24" x 24"	4.0	16.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
M4-8	DETOUR	1	24" x 12"	2.0	2.0
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	1	21" x 15"	2.2	2.2
-	TYPE 2 OBJECT MARKER BACK TO BACK	6	6" x 12"	1.0	6.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			199.2

LEGEND

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	16	54

CONTROL LEGEND

Benchmark	
Control Point	

SANITARY SEWER LEGEND

Sanitary Manhole	
Sewer Cleanout	
Unknown Manhole	
Force Main	FM
Sanitary Sewer	

STORM SEWER LEGEND

Storm Inlet	
Storm Double Inlet	
Storm Manhole	
Flared End Section	
Downspout - Above Ground	AG
Downspout - Underground	UG
Storm Sewer	
Pipe Underdrain	

WATER LEGEND

Curb Stop	
Fire Hydrant	
Post Indicator Valve	PIV
Sprinkler Head	
Sprinkler Box	V
Water Meter	W
Water Valve	
Water Well	W
Underground Water	W

COMMUNICATIONS LEGEND

Fiber Optic Cable	FOC FOC
Telephone Manhole	T
Telephone Pedestal	T
Telephone Pole	
Telephone Line	T T
Cable Television Pedestal	C
Television Line	TV

GAS LEGEND

Gas Meter	G
Gas Valve	
Gas Line	G

GENERIC UTILITY LEGEND

Utility Manhole	U
Utility Marker	
Handhole (Single/Double)	H H H
Utility Line	UT UT

ELECTRIC LEGEND

Air Conditioner/Cooling Unit	A
Guy Pole	
Guy Wire	
Light Pole	
Vapor Light	
Electric Manhole	E
Electric Pedestal/Transformer	E
Electric Meter	E
Power Pole	
Power Pole with Light	
Power Pole with Meter	
Junction Box	J
Traffic Signal	
Traffic Cantilever	
Traffic Signal Controller	
Overhead Electric	OE OE
Underground Electric	E E

FENCING/POST LEGEND

Post/Bollard	P
Wire Fence	
Chain Link Fence	
Woven Wire Fence	
Guardrail	

SIGN/PARK LEGEND

Mail Box	
Single Post Sign	
Double Post Sign	
Flagpole	
ADA Stall	

VEGETATION LEGEND

Bush	
Coniferous Tree	
Deciduous Tree	
Tree Stump	
Edge of Woods	
Tree Removal	

EROSION CONTROL LEGEND

Erosion Control Blanket	
Erosion Control Wattles	
RipRap	
Silt Curtain	SC SC SC
Silt Fence	SF SF SF
Temporary Diversion Channel	

BOUNDARY

Found Corner	
Set Corner	
Section Line	
Quarter Line	
16th Line	
32nd Line	
Easement Line	
Right of Way Line	

REGISTERED PROFESSIONAL ENGINEER
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ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

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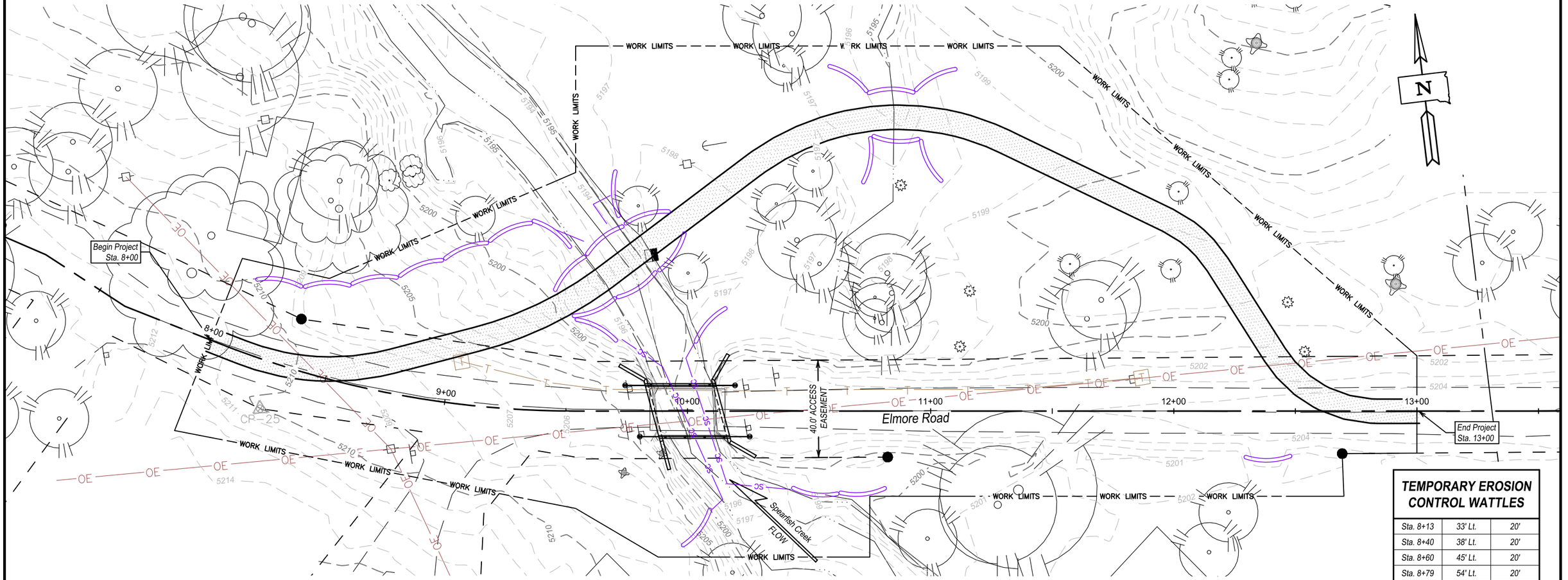
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

TEMPORARY EROSION AND SEDIMENT CONTROL

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	17	54



NOTES:

1. Stockpiles will be 10' from edge of bank.
2. Contractor is responsible for temporary erosion control for stockpiles.
3. Minimize exposed soil.
4. Waters of the United States are regulated by the Corps of Engineers.

EROSION CONTROL LEGEND

Erosion Control Wattle - 20'	
Silt Curtain	SC SC

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FLOATING SILT CURTAIN

Sta. 9+44 - 74' Lt.	to	Sta. 9+57 - 70' Lt.	12'
Sta. 9+67 - 77' Lt.	to	Sta. 9+68 - 89' Lt.	18'
Sta. 9+73 - 29' Lt.	to	Sta. 10+10 - 40' Rt.	86'
Sta. 10+03 - 28' Lt.	to	Sta. 10+42 - 32' Rt.	88'
		Additional Quantity	46'
		Total	250'

TEMPORARY EROSION CONTROL WATTLES

Sta. 8+13	33' Lt.	20'
Sta. 8+40	38' Lt.	20'
Sta. 8+60	45' Lt.	20'
Sta. 8+79	54' Lt.	20'
Sta. 9+00	64' Lt.	20'
Sta. 9+20	74' Lt.	20'
Sta. 9+43	74' Lt.	20'
Sta. 9+50	57' Lt.	20'
Sta. 9+62	41' Lt.	20'
Sta. 9+63	35' Lt.	20'
Sta. 9+65	71' Lt.	20'
Sta. 9+70	89' Lt.	20'
Sta. 9+80	51' Lt.	20'
Sta. 9+83	81' Lt.	20'
Sta. 9+95	65' Lt.	20'
Sta. 10+05	49' Rt.	20'
Sta. 10+08	36' Lt.	20'
Sta. 10+52	34' Rt.	20'
Sta. 10+67	138' Lt.	20'
Sta. 10+72	34' Rt.	20'
Sta. 10+75	103' Lt.	20'
Sta. 10+84	132' Lt.	20'
Sta. 10+86	111' Lt.	20'
Sta. 10+99	102' Lt.	20'
Sta. 11+01	138' Lt.	20'
Sta. 12+39	20' Rt.	20'
	Additional Quantity	60'
	Total	580'

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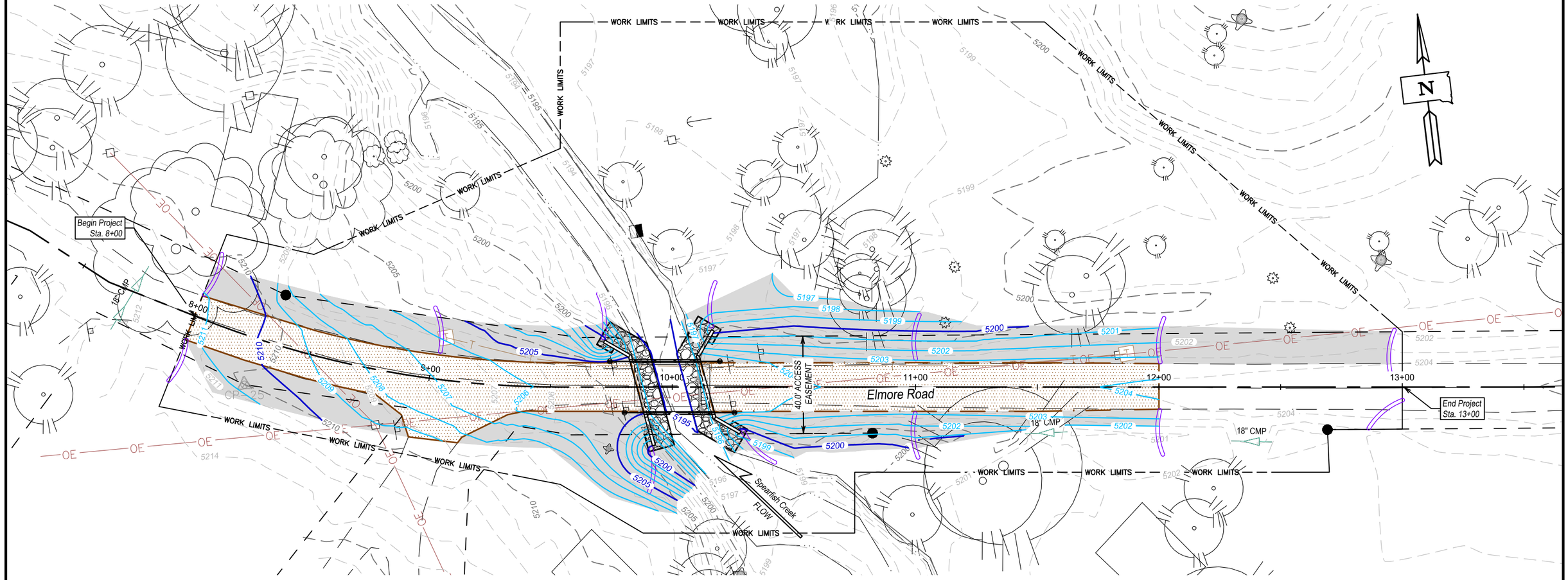
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

PERMANENT EROSION AND SEDIMENT CONTROL

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	18	54



NOTES:

1. Stabilization measures must begin within 24 hours of when earth disturbing activities have ceased.
2. Permanent Erosion and Sediment Control subject to change based on water levels during construction.
3. The application rate for Fiber Reinforced matrix is 3000 pounds per acre.

PERMANENT EROSION CONTROL WATTLES

Sta. 8+02	19' Rt.	20'
Sta. 8+02	19' Lt.	20'
Sta. 9+03	21' Lt.	20'
Sta. 9+71	29' Lt.	20'
Sta. 9+92	34' Rt.	20'
Sta. 10+16	34' Lt.	20'
Sta. 10+35	25' Rt.	20'
Sta. 10+99	20' Lt.	20'
Sta. 10+99	19' Rt.	20'
Sta. 12+00	20' Lt.	20'
Sta. 12+00	17' Rt.	20'
Sta. 12+91	10' Rt.	20'
Sta. 12+95	15' Lt.	20'
	Additional Quantity	40'
	Total	300'

FIBER REINFORCED MATRIX

Sta. 8+00 Lt.	to	Sta. 9+83 Lt.	0.06 Acres	180 Lbs.
Sta. 8+00 Rt.	to	Sta. 8+95 Rt.	0.03 Acres	90 Lbs.
Sta. 9+14 Rt.	to	Sta. 10+11 Rt.	0.05 Acres	150 Lbs.
Sta. 10+04 Lt.	to	Sta. 12+95 Lt.	0.12 Acres	360 Lbs.
Sta. 10+17 Rt.	to	Sta. 11+47 Rt.	0.04 Acres	120 Lbs.
Sta. 11+60 Rt.	to	Sta. 12+00 Rt.	0.01 Acres	30 Lbs.
		Additional Quantity	0.04 Acres	120 Lbs.
		Total	0.35 Acres	1050 Lbs.

EROSION CONTROL LEGEND

Type 2 Erosion Control Blanket	
Class B Riprap	
Erosion Control Wattle - 20'	

REGISTERED PROFESSIONAL ENGINEER
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HORIZONTAL AND VERTICAL CONTROL DATA - ELMORE ROAD

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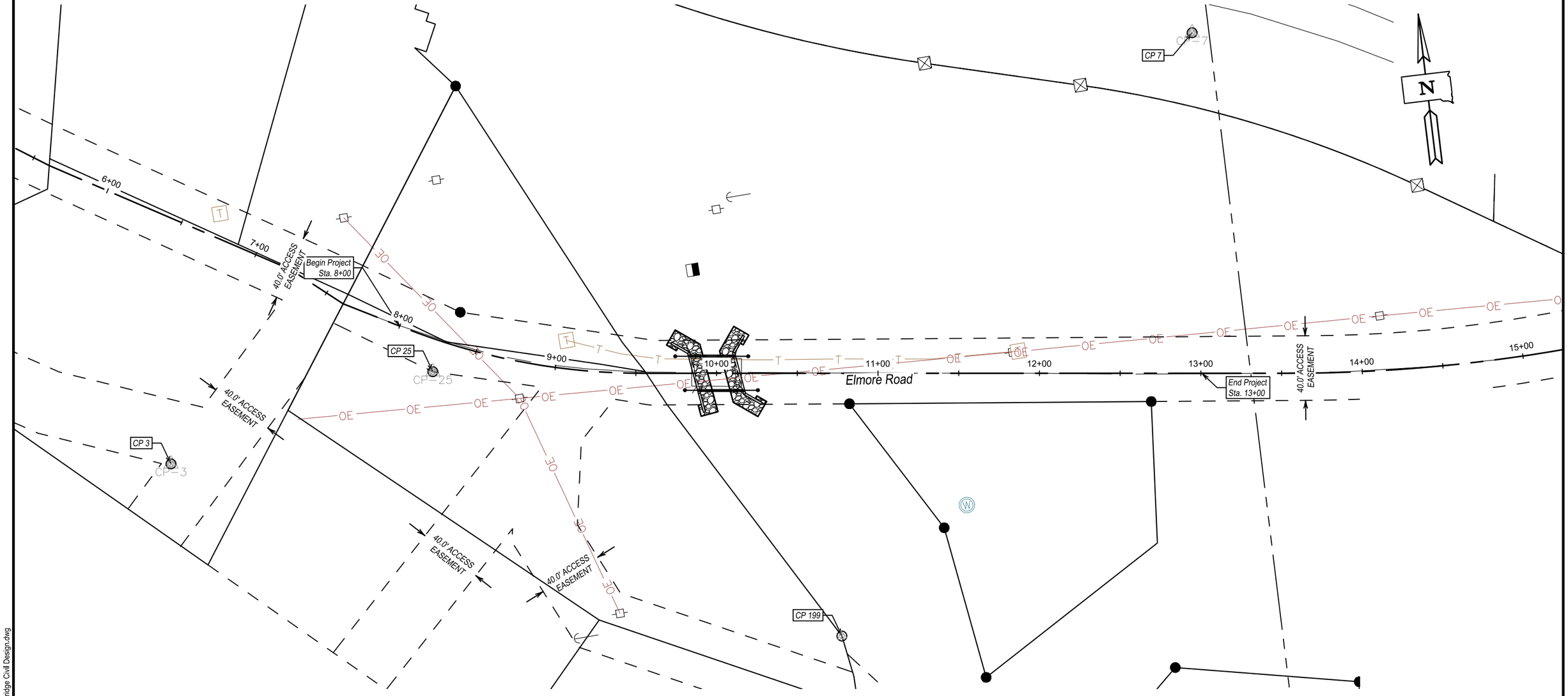
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	19	54



HORIZONTAL ALIGNMENT DATA

Type	Station	Length	Radius	Direction	Delta (∠)	Northing (y)	Easting (x)
PI 1	7+62.27					200230.52	951262.40
		41.45'		S58°52'19.26"E			
PT 2	8+03.72					200209.09	951297.88
		150.16'	400'	S69°37'35.01"E	21°30'31" (Lt.)		
PC 3	9+53.88					200157.12	951437.82
		399.84'		S80°22'50.76"E			
PT 4	13+53.71					200090.31	951832.04
		218.12'	1,000'	N86°37'46.23"E	12°29'51" (Lt.)		
PC 5	15+71.84					200077.51	952049.35
		28.89'		N87°07'18.30"E			
PI 6	16+00.73					200078.96	952078.21

HORIZONTAL/VERTICAL CONTROL POINTS

Point	Station	Offset	Northing (y)	Easting (x)	Elevation (z)	Description
CP 3	7+03.04	139.87' Rt.	200150.54	951140.75	5222.99'	NGS Monument
CP 7	12+94.57	210.95' Lt.	200308.17	951808.98	5223.09'	5/8" Rebar
CP 25	8+28.25	19.57' Rt.	200179.72	951310.19	5209.50'	5/8" Rebar
CP 199	10+77.64	162.80' Rt.	199975.93	951532.65	5206.17'	NGS Monument

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

Plotted on: 8/16/23 8:49:05 AM Plotted by: Justin M. Pump
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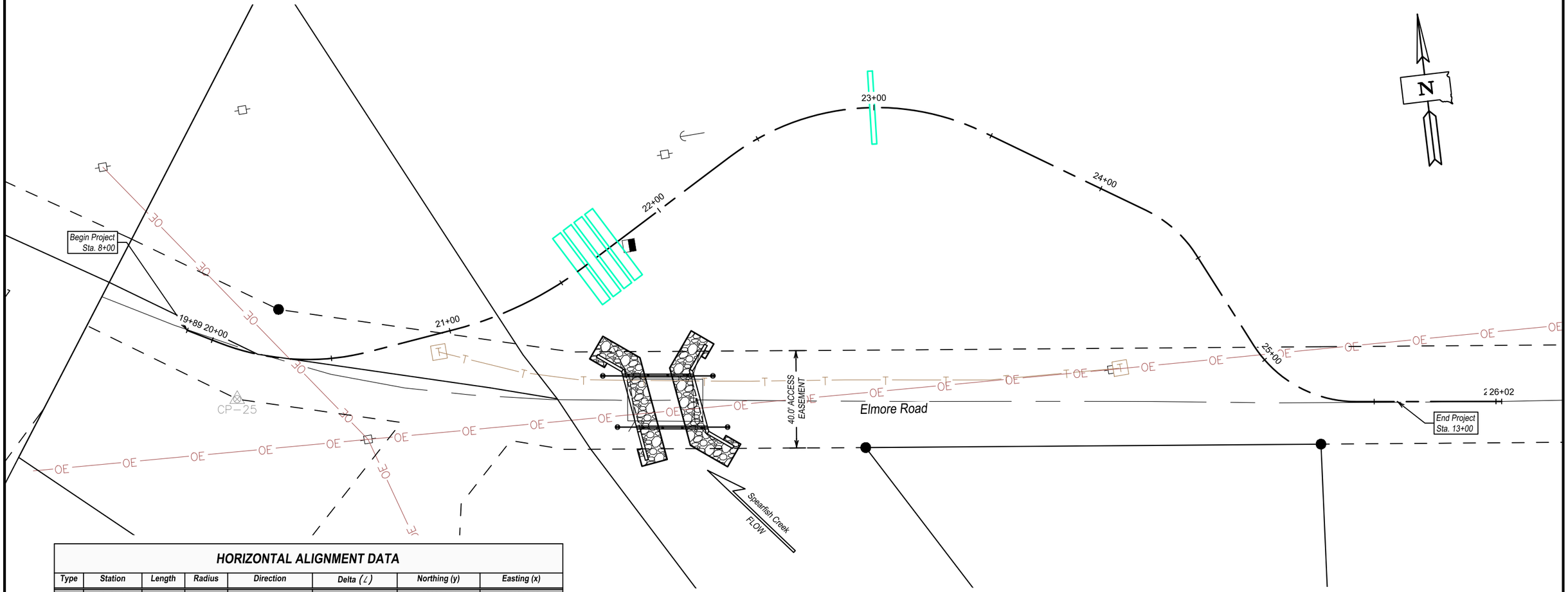
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

HORIZONTAL AND VERTICAL CONTROL DATA - TRAFFIC DIVERSION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	20	54



HORIZONTAL ALIGNMENT DATA

Type	Station	Length	Radius	Direction	Delta (∠)	Northing (y)	Easting (x)
PI 1	19+88.97					200211.01	951294.70
		14.26'		S59°07'17.09"E			
PT 2	20+03.23					200203.69	951306.94
		62.49'	100'	S77°01'23.06"E	35°48'12" (Lt.)		
PC 3	20+65.72					200189.89	951366.84
		36.37'		N85°04'30.97"E			
PT 4	21+02.09					200193.01	951403.08
		58.87'	150'	N73°49'56.66"E	22°29'09" (Lt.)		
PC 5	21+60.96					200209.30	951459.26
		75.61'		N62°35'22.35"E			
PT 6	22+36.57					200244.11	951526.38
		109.49'	100'	S86°02'35.01"E	62°44'05" (Rt.)		
PC 7	23+46.06					200236.92	951630.24
		74.67'		S54°40'32.37"E			
PT 8	24+20.73					200193.75	951691.16
		27.82'	50'	S38°44'01.23"E	31°53'02" (Rt.)		
PC 9	24+48.55					200172.32	951708.35
		43.90'		S22°47'30.09"E			
PT 10	24+92.45					200131.85	951725.35
		50.31'	50'	S51°37'12.18"E	57°39'24" (Lt.)		
PC 11	25+42.77					200101.91	954763.15
		59.56'		S80°26'54.26"E			
PI 12	26+02.33					200092.03	951821.89

Plotted on: 8/16/23 8:49:10 AM
Plotted by: Justin M. Pump
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The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

PLAN AND PROFILE - ELMORE ROAD FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	21	54

Sta. 9+85.40 to 10+14.60 DA=71.0 Sq. Mi.
Install 29' - 2 3/8" Single Span Rigid Frame Bridge

Sta. 9+88 to Sta. 10+12
Remove Existing ±24' Single Span Steel Beam Bridge (Incidental Work, Structure)

Begin Project Sta. 8+00

End Project Sta. 13+00

Clear & Grub Tree (Typ.)

Elmore Road

40.0' ACCESS EASEMENT

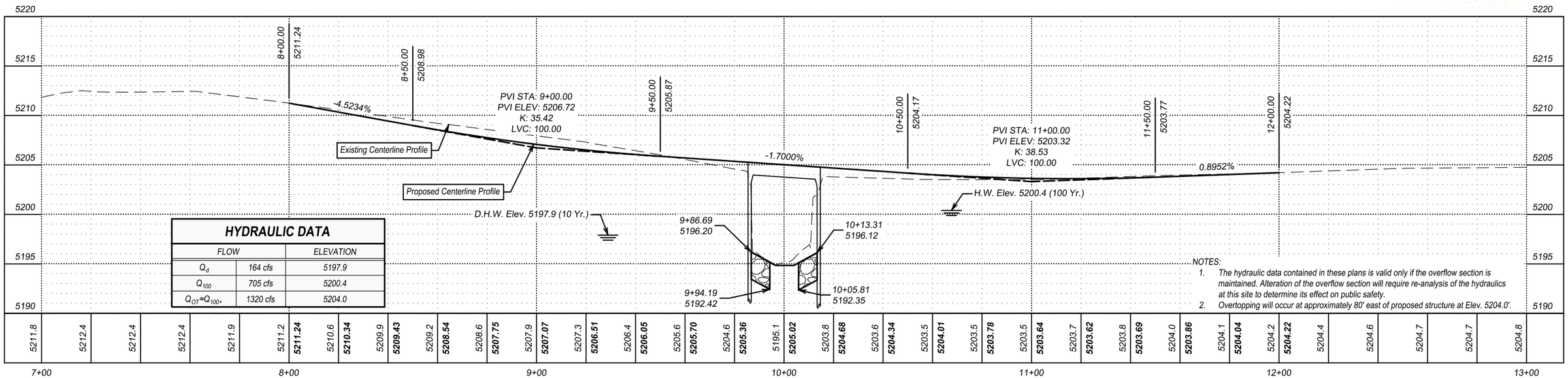
Spearfish Creek FLOW

18" CMP

Excavation	258 Cu. Yd.		Embankment	0 Cu. Yd.
Other Excavation	743 Cu. Yd.		+35% Shrinkage	0 Cu. Yd.
Contractor Furnished Borrow Excavation	0 Cu. Yd.		Waste	1001 Cu. Yd.
Total	1001 Cu. Yd.		Total	1001 Cu. Yd.

Gravel Surfacing (By County)

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23



HYDRAULIC DATA

FLOW		ELEVATION
Q_d	164 cfs	5197.9
Q_{100}	705 cfs	5200.4
Q_{OT}≈Q_{100+}	1320 cfs	5204.0

NOTES:
1. The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re-analysis of the hydraulics at this site to determine its effect on public safety.
2. Overtopping will occur at approximately 80' east of proposed structure at Elev. 5204.0'.

Plotted on: 8/16/23 8:49:18 AM
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Plotted by: Justin M. Pump

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

PLAN AND PROFILE - TRAFFIC DIVERSION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	22	54

Revised: 07/17/2025 (ARP)

Sta. 21+68.36 ℄
Install Temporary Drainage Structure
(Sizing by Contractor)

Sta. 22+99.28 ℄
Install Temporary Drainage Structure
(Sizing by Contractor)

Begin Project
Sta. 8+00

End Project
Sta. 13+00

Clear & Grub Tree (Typ.)

Elmore Road

40.0' ACCESS EASEMENT

Spearfish Creek
FLOW

18" CMP

Gravel Surfacing (By County)

Temporary Gravel Surfacing

Traffic Diversion Excavation	0 Cu. Yd.		Embankment	429 Cu. Yd.
Other Excavation	0 Cu. Yd.		+35% Shrinkage	150 Cu. Yd.
Contractor Furnished Borrow Excavation	579 Cu. Yd.		Waste	0 Cu. Yd.
Total	579 Cu. Yd.		Total	579 Cu. Yd.

REGISTERED PROFESSIONAL ENGINEER
REG. NO 13402
ADAM R. POLLEY
SOUTH DAKOTA
7/18/25

PVI STA: 20+48.91
PVI ELEV: 5210.94
K: 4.95
LVC: 50.00

PVI STA: 21+62.99
PVI ELEV: 5198.84
K: 8.00
LVC: 88.86

PVI STA: 23+00.79
PVI ELEV: 5199.53
K: 100.00
LVC: 50.00

PVI STA: 24+30.03
PVI ELEV: 5200.82
K: 20.00
LVC: 60.00

PVI STA: 25+34.00
PVI ELEV: 5204.98
K: 10.79
LVC: 50.00

-0.5120%
-10.6069%
0.5000%
1.0000%
4.0000%
-0.6330%

5196.03
5191.93
5192.92
25+64.80
5204.78

Vertical Scale: 1" = 10'
Horizontal Scale: 1" = 40'

19+88.97	20+23.91	20+73.91	21+18.56	22+07.42	22+75.79	23+25.79	24+00.03	24+60.03	25+09.00	25+59.00
5211.24	5211.06	5208.29	5203.55	5199.06	5199.40	5199.78	5200.52	5202.02	5203.98	5204.82

5211.2	**5211.24**	5210.9	**5211.19**	5210.2	**5211.08**	5209.5	**5210.72**	5208.5	**5209.57**	5207.0	**5207.64**	5204.8	**5205.52**	5202.5	**5203.40**	5198.5	**5201.56**	5194.8	**5200.23**	5196.4	**5199.39**	5198.7	**5199.06**	5198.2	**5199.12**	5197.8	**5199.22**	5197.5	**5199.32**	5196.7	**5199.42**	5195.9	**5199.55**	5197.9	**5199.72**	5198.5	**5199.92**	5198.6	**5200.12**	5199.6	**5200.32**	5200.2	**5200.52**	5200.8	**5200.82**	5201.1	**5201.32**	5201.5	**5202.02**	5200.6	**5202.82**	5202.3	**5203.62**	5204.2	**5204.36**	5204.7	**5204.77**	5204.8	**5204.81**	5204.8	5204.8

19+89 | 21+00 | 22+00 | 23+00 | 24+00 | 25+00 | 26+00

Plotted by: Joshua R. Prather
Plotted on: 7/17/25 4:06:38 PM
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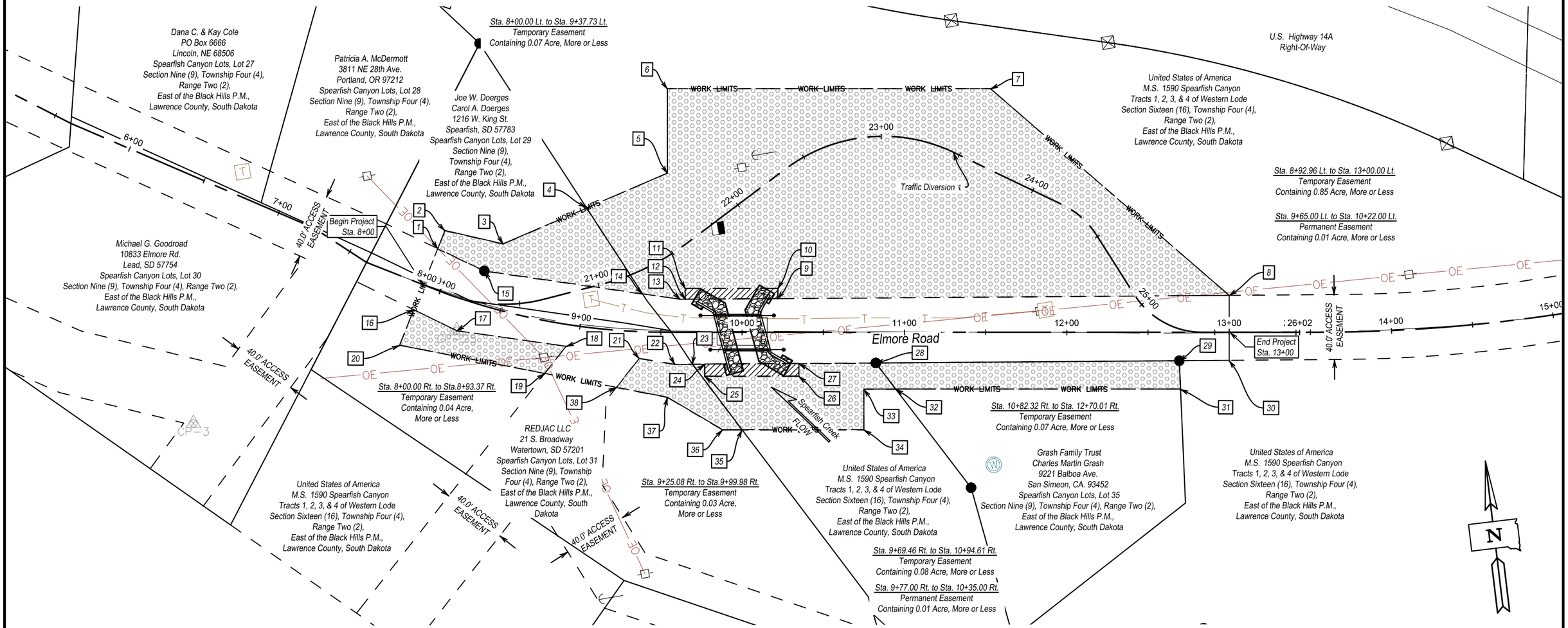
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

ROW LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	23	54



Sta. 8+00 to Sta. 13+00
Work Limits are within ROW and Easements

PERMANENT AND TEMPORARY EASEMENT

	Sta.	Offset	Northing (y)	Easting (x)
1	8+00.00	23.99' Lt.	200231.55	951307.10
2	8+00.00	36.00' Lt.	200241.83	951313.31
3	8+40.00	40.00' Lt.	200227.74	951347.24
4	8+92.96	73.83' Lt.	200240.95	951401.69
5	9+54.00	98.00' Lt.	200253.72	951454.32
6	9+54.00	150.00' Lt.	200304.99	951463.01
7	11+53.00	150.00' Lt.	200271.74	951659.21
8	13+00.00	22.73' Lt.	200121.69	951782.88
9	10+22.00	20.71' Lt.	200166.16	951508.45
10	10+22.00	27.00' Lt.	200172.35	951509.50
11	9+65.00	27.00' Lt.	200181.88	951453.30
12	9+65.00	20.37' Lt.	200175.34	951452.19
13	9+61.73	20.35' Lt.	200175.87	951448.97
14	9+37.73	23.38' Lt.	200183.02	951426.80
15	8+33.27	20.69' Lt.	200213.21	951333.08
16	8+00.00	16.42' Rt.	200196.95	951286.21
17	8+28.25	19.57' Rt.	200179.72	951310.19
18	8+93.37	13.33' Rt.	200159.04	951374.97
19	8+83.67	32.00' Rt.	200144.71	951359.21
20	8+00.00	40.00' Rt.	200176.77	951274.02

PERMANENT AND TEMPORARY EASEMENT

	Sta.	Offset	Northing (y)	Easting (x)
21	9+37.27	16.41' Rt.	200144.18	951418.10
22	9+58.51	19.67' Rt.	200136.95	951439.10
23	9+69.46	19.61' Rt.	200135.19	951449.91
24	9+77.00	19.56' Rt.	200133.97	951475.35
25	9+77.00	27.00' Rt.	200126.63	951456.11
26	10+35.00	27.00' Rt.	200116.94	951513.29
27	10+35.00	19.21' Rt.	200124.62	951514.59
28	10+82.32	18.93' Rt.	200116.99	951561.33
29	12+69.25	17.51' Rt.	200087.16	951745.84
30	13+00.00	17.28' Rt.	200082.25	951776.19
31	12+70.01	35.00' Rt.	200069.79	951743.66
32	10+94.61	35.00' Rt.	200099.10	951570.73
33	10+75.00	35.00' Rt.	200102.37	951551.40
34	10+75.00	60.00' Rt.	200077.72	951547.22
35	9+99.98	60.00' Rt.	200090.26	951473.25
36	9+88.00	60.00' Rt.	200092.26	951461.44
37	9+54.00	40.00' Rt.	200117.66	951431.26
38	9+25.08	35.04' Rt.	200128.92	951401.30

NOTE: Coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System, North Zone (NAD 83/2011)

LEGEND

Permanent Easement	
Temporary Easement	
Overhead Electric	OE OE
Underground Telephone	T T
Well	W

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

Plotted by: Justin M. Pump
Plotted on: 8/16/23 8:49:33 AM
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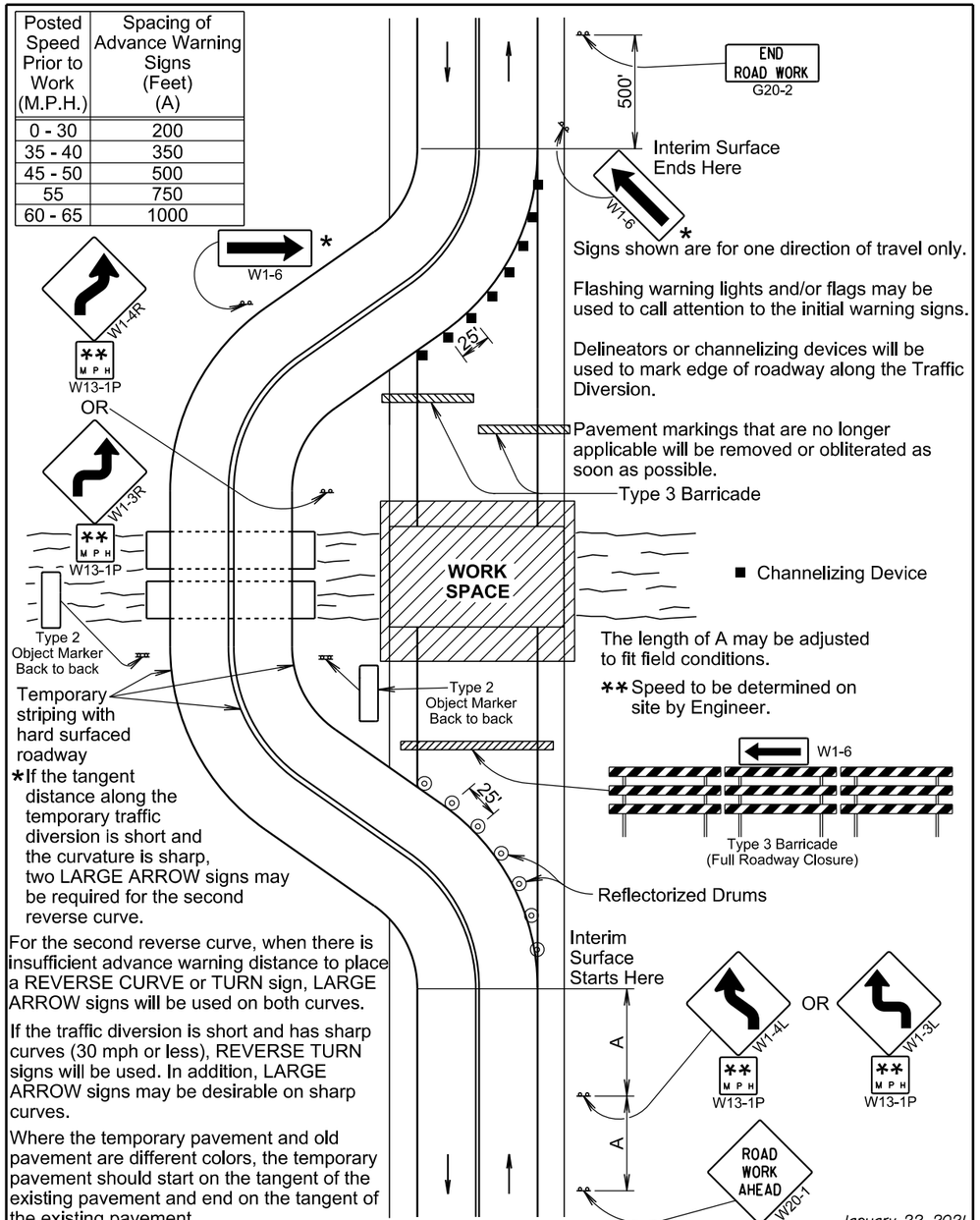
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	24	54

Revised: 07/17/2025 (ARP)

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000



Signs shown are for one direction of travel only.

Flashing warning lights and/or flags may be used to call attention to the initial warning signs.

Delineators or channelizing devices will be used to mark edge of roadway along the Traffic Diversion.

Pavement markings that are no longer applicable will be removed or obliterated as soon as possible.

■ Channelizing Device

The length of A may be adjusted to fit field conditions.

** Speed to be determined on site by Engineer.

* If the tangent distance along the temporary traffic diversion is short and the curvature is sharp, two LARGE ARROW signs may be required for the second reverse curve.

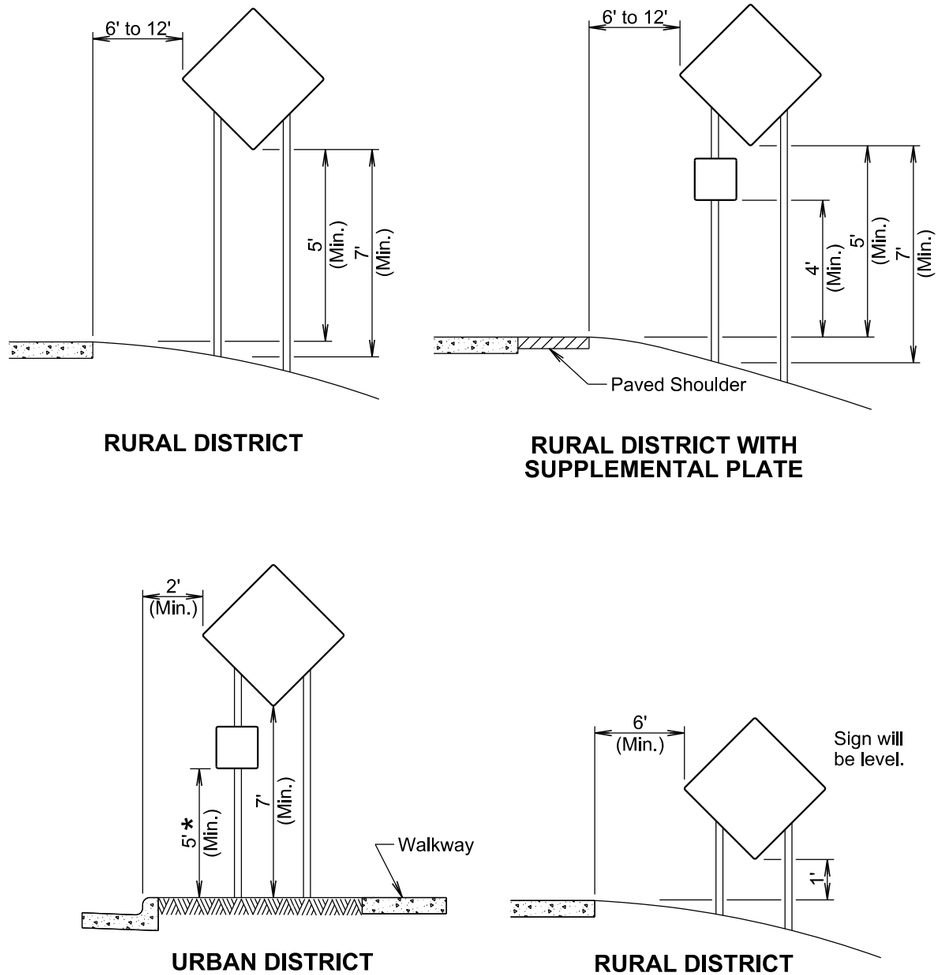
For the second reverse curve, when there is insufficient advance warning distance to place a REVERSE CURVE or TURN sign, LARGE ARROW signs will be used on both curves.

If the traffic diversion is short and has sharp curves (30 mph or less), REVERSE TURN signs will be used. In addition, LARGE ARROW signs may be desirable on sharp curves.

Where the temporary pavement and old pavement are different colors, the temporary pavement should start on the tangent of the existing pavement and end on the tangent of the existing pavement.

January 22, 2021

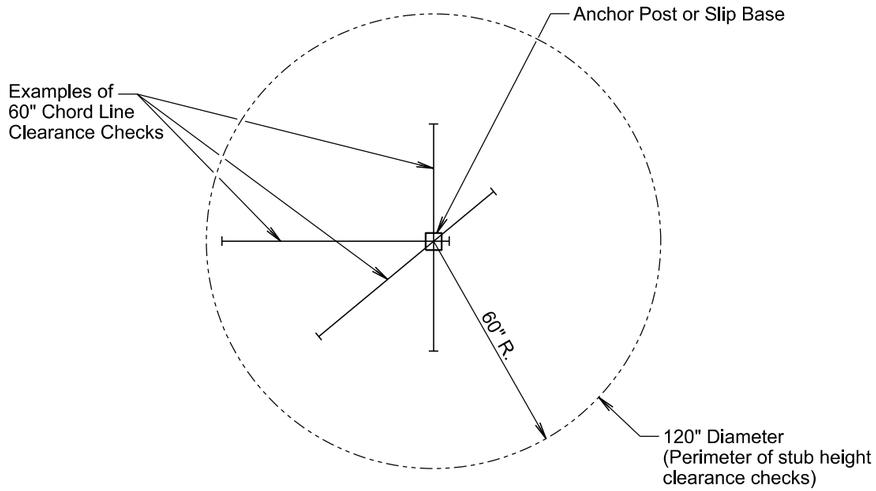
Published Date: 2026	SDDOT	ROAD CLOSED WITH TRAFFIC DIVERTED	PLATE NUMBER 634.28
			Sheet 1 of 1



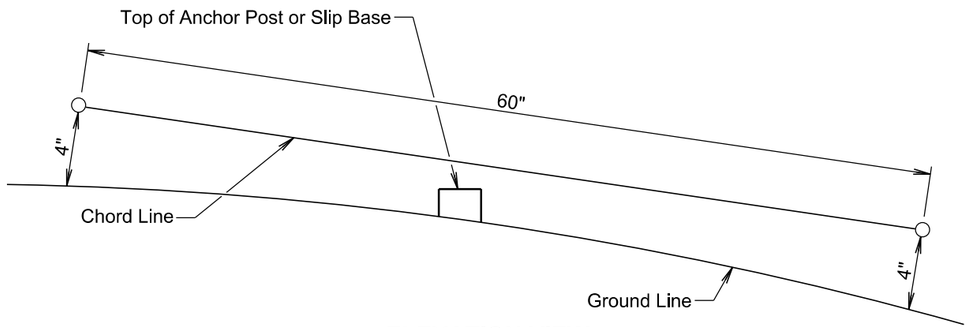
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

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



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

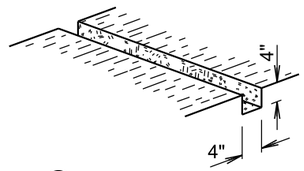
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height will be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

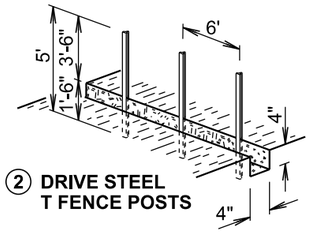
January 22, 2021

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

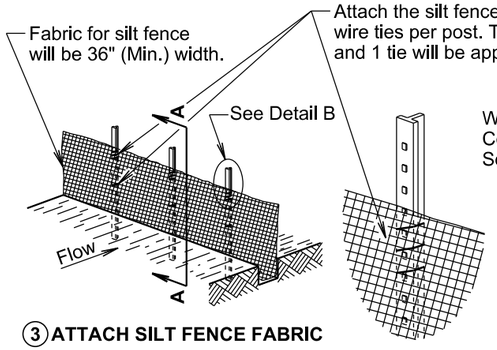
MANUAL HIGH FLOW SILT FENCE INSTALLATION



1 EXCAVATE TRENCH

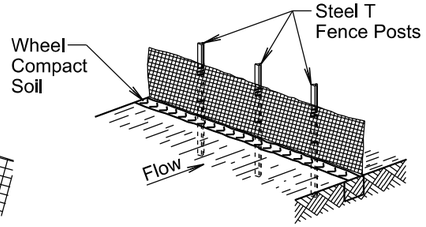


2 DRIVE STEEL T FENCE POSTS

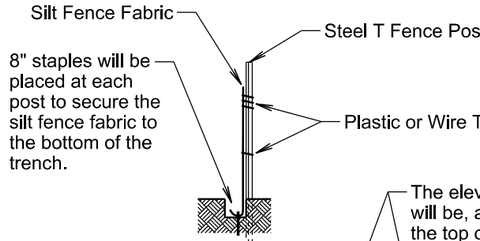


3 ATTACH SILT FENCE FABRIC

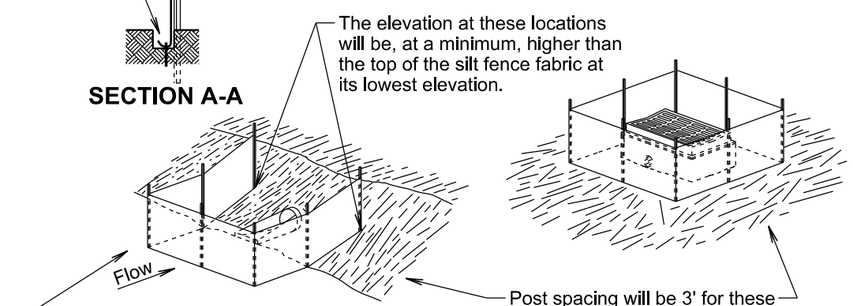
DETAIL B



4 BACKFILL TRENCH AND WHEEL COMPACT SOIL



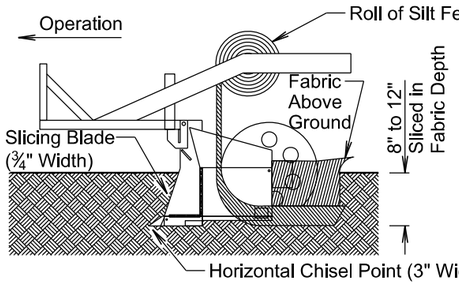
SECTION A-A

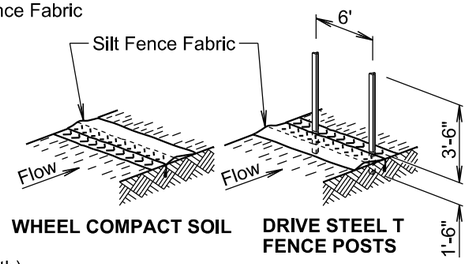


February 14, 2020

Published Date: 2026	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



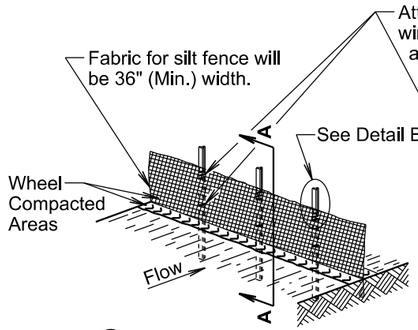


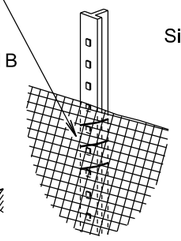
WHEEL COMPACT SOIL

DRIVE STEEL T FENCE POSTS

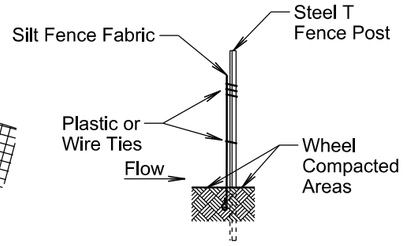
① **INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.**

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



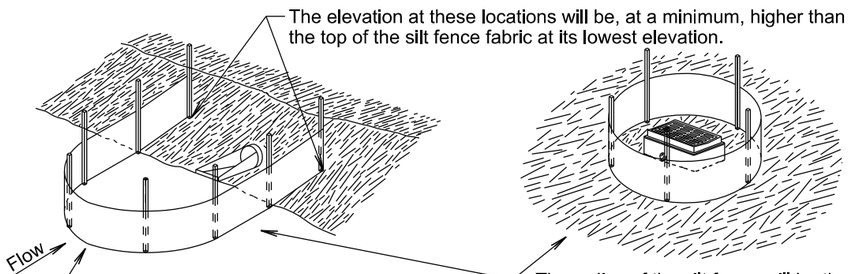


DETAIL B



SECTION A-A

③ **ATTACH SILT FENCE FABRIC**

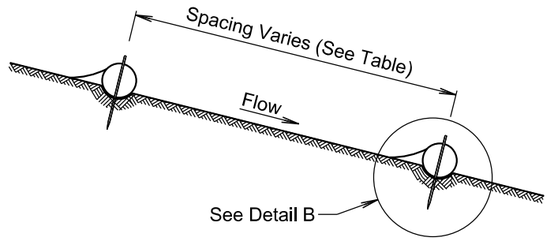


GENERAL NOTE:

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.

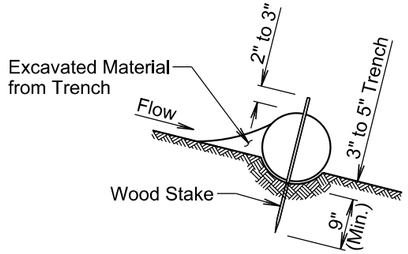
February 14, 2020

Published Date: 2026	SDDOT	*HIGH FLOW SILT FENCE*	*PLATE NUMBER* 734.05
			Sheet 2 of 2

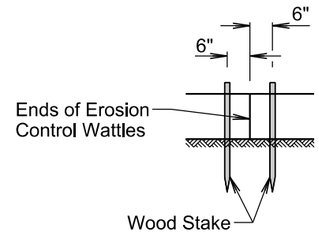


ELEVATION VIEW
(Cut or Fill Slope Installation)

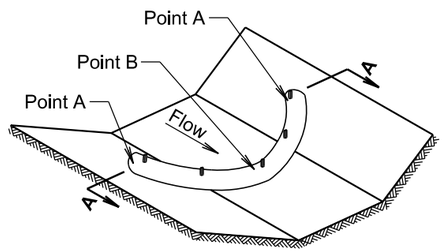
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



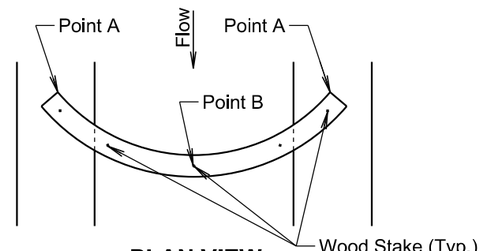
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

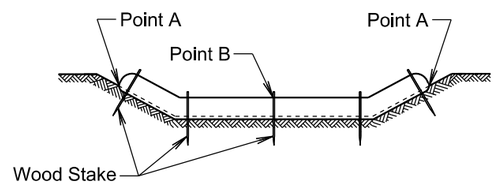


ISOMETRIC VIEW
(Ditch Installation)



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: 2026	SDDOT	*EROSION CONTROL WATTLE*	*PLATE NUMBER* 734.06
			Sheet 1 of 2

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	27	54

Revised: 07/17/2025 (ARP)

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

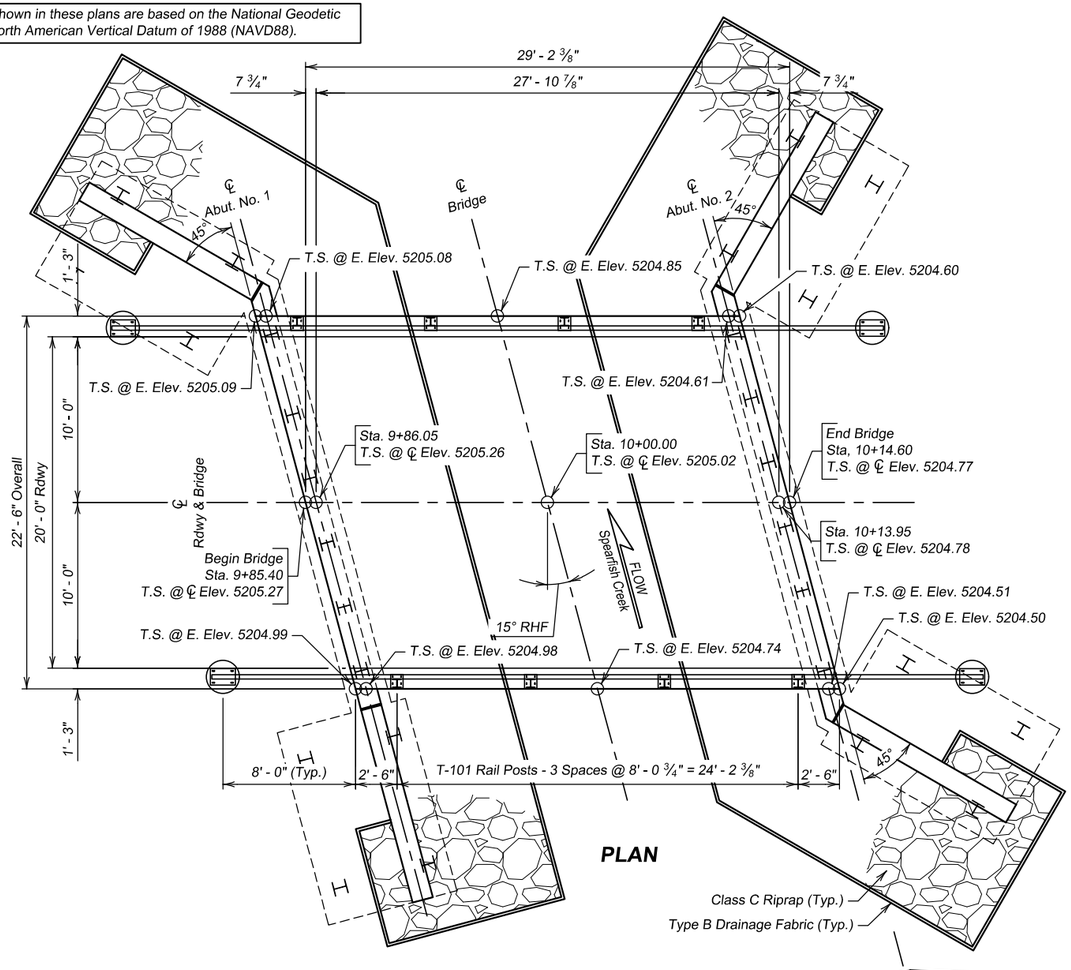
Published Date: 2026	**SDDOT**	***EROSION CONTROL WATTLE***	***PLATE NUMBER 734.06***
			Sheet 2 of 2

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

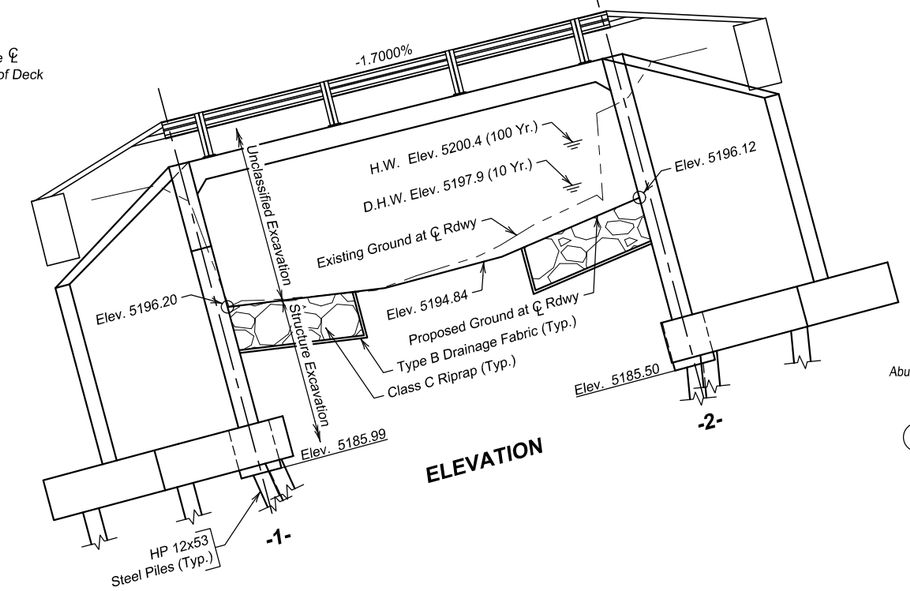
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	28	54

Revised: 07/17/2025 (ARP)

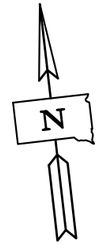


PLAN

NOTE:
T.S. @ ℄ Elev. = Top of Slab Elevation at Bridge ℄
T.S. @ E. Elev. = Top of Slab Elevation at Edge of Deck



ELEVATION



-X023-

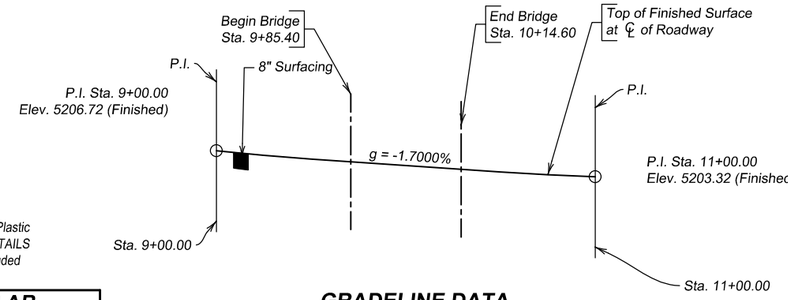
INDEX OF BRIDGE SHEETS

HYDRAULIC DATA

Q_d	164 cfs
A_d	27 sq ft
V_d	6.18 fps
Q_F	164 cfs
Q_{100}	705 cfs
Q_{OT}	1320 cfs
V_{max}	9.94 fps

Q_d = Design discharge for the proposed bridge based on 10 year frequency. Elev. = 5197.9
Q_F = Designated peak discharge for the basin approaching proposed project based on 10 year frequency.
Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. Elev. = 5200.4
Q_{OT} = Overtopping discharge and frequency +100 year recurrence interval. Elev. = 5204.0
Location: approximately 80' east of the proposed structure.
V_{max} = Maximum computed outlet velocity for the proposed bridge based on a 100 year frequency.

The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re-analysis of the hydraulics at this site to determine its effect on public safety.

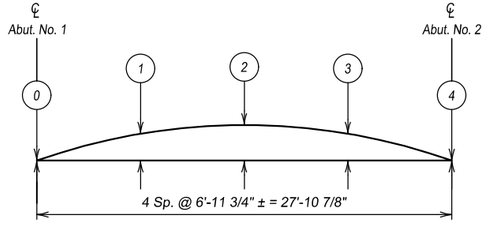


GRADELINE DATA

Δ Camber for Dead Load Deflection plus Plastic Flow, shown on SUPERSTRUCTURE DETAILS sheet of the Bridge Plans, have been included in the elevation shown below.

Δ TABLE OF SLAB ELEVATIONS

Slab Point	Left Edge Of Deck	℄	Right Edge Of Deck
0	5205.08	5205.26	5204.98
1	5204.98	5205.15	5204.88
2	5204.87	5205.04	5204.77
3	5204.74	5204.92	5204.64
4	5204.61	5204.78	5204.51



CENTERLINE AND EDGE OF DECK ELEVATIONS

(See TABLE OF SLAB ELEVATIONS for elevations)

GENERAL DRAWING
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199
PCN 0854

15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

-X023-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

PLANS BY: IMEG

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13597
YANLING LENG
SOUTH DAKOTA
7/18/2025

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	29	54

Revised: 07/17/2025 (ARP)

ESTIMATE OF STRUCTURE QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3310	Bridge Elevation Survey	Lump Sum	LS
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0100	Structure Excavation, Bridge	334	CuYd
430E0200	Bridge End Embankment	311	CuYd
430E0300	Granular Bridge End Backfill	44.1	CuYd
460E0030	Class A45 Concrete, Bridge Deck	29.4	CuYd
460E0050	Class A45 Concrete, Bridge	115.3	CuYd
470E0420	Type T101 Bridge Railing	91	Ft
480E0100	Reinforcing Steel	12,297	Lb
480E0200	Epoxy Coated Reinforcing Steel	10,544	Lb
510E3130	HP 12 Pile Tip Reinforcement	28	Each
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	1,170	Ft
700E0310	Class C Riprap	137.4	Ton
831E0110	Type B Drainage Fabric	210	SqYd

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.

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

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.

4. Contractor will imprint on the structure the date of new construction on the side of the bridge deck at the leading edge of driving lane on both lanes as detailed on Standard Plate 460.02.

5. 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.

6. The elevation of the bridge deck is 8 inches above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

1. In place centerline Sta. 9+88 to centerline Sta. 10+12 is a 24' single span steel beam bridge with a 14'-0" clear roadway. The superstructure consists of a timber plank deck with steel I-beam with steel W-beam railing across the bridge. The deck has been overlaid with 3 inches of gravel. The substructure consists of treated timber column abutments on treated timber footings.

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. All portions of the existing bridge not salvaged for future highway related use 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 existing timber stringers and guardrail will be salvaged for future highway related use. The salvaged beams will be stockpiled at the County Shop located at 11481 Bobtail Gulch Street, Lead, SD 57754. Care will be taken during the dismantling, transporting and stockpiling operations not to damage the structural properties of the salvaged items.

4. 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 will be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved.

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.

DESIGN MIX OF CONCRETE

1. All structural concrete will be Class A45 unless otherwise indicated.

2. Type II cement is required.

ABUTMENTS

1. The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. Piling will develop a field verified nominal bearing resistance of 245 tons per pile.

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

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

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

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

6. Pile tip reinforcement will be required. See Standard Plate 510.30.

PILE DRIVING

1. A drivability analysis was performed using the wave equation analysis program (GRLWEAP). A list of acceptable hammers is provided below. Based on initial analysis, the hammers listed will need to be operated no higher than the third fuel setting in order to prevent overstressing of the pile during driving operations. If during actual driving operations an adequate hammer drop to obtain design bearing is not achieved, contact the Geotechnical Engineering Activity prior to increasing the fuel setting.

APE D30-32	APE D30-42	APE D30-52
Delmag D30-32	ICE I30-V2	SPI D30

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. 13597
YANLING LENG
SOUTH DAKOTA
7/18/2025

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	30	54

FOR BIDDING PURPOSES ONLY

SUPERSTRUCTURE

1. Preplanned construction joints may be used in accordance with Section 460.3 of the Construction Specifications. Contact the Office of Bridge Design for joint configuration and allowable location. Emergency slab construction joints will be as shown with the superstructure details. If an emergency slab joint is used, contact the Office of Bridge Design before proceeding with deck pour.

2. 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.

3. Superstructure falsework will not be removed until bridge deck concrete has attained a strength of 2400 psi.

4. The minimum pour rate will be in accordance with Section 460.3.J.2 of the Construction Specifications.

CLASS B COMMERCIAL TEXTURE FINISH

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

SHOP PLANS

The fabricator will submit shop plans in accordance with the Construction Specifications. Send shop plan submittals to IMEG, 1410 W. Russell Street, Sioux Falls, SD 57104 (Adam.R.Polley@imegcorp.com). After review, corrections (if necessary), and approval by IMEG, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

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".

NOTES (CONTINUED)

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

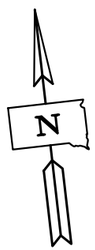
LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

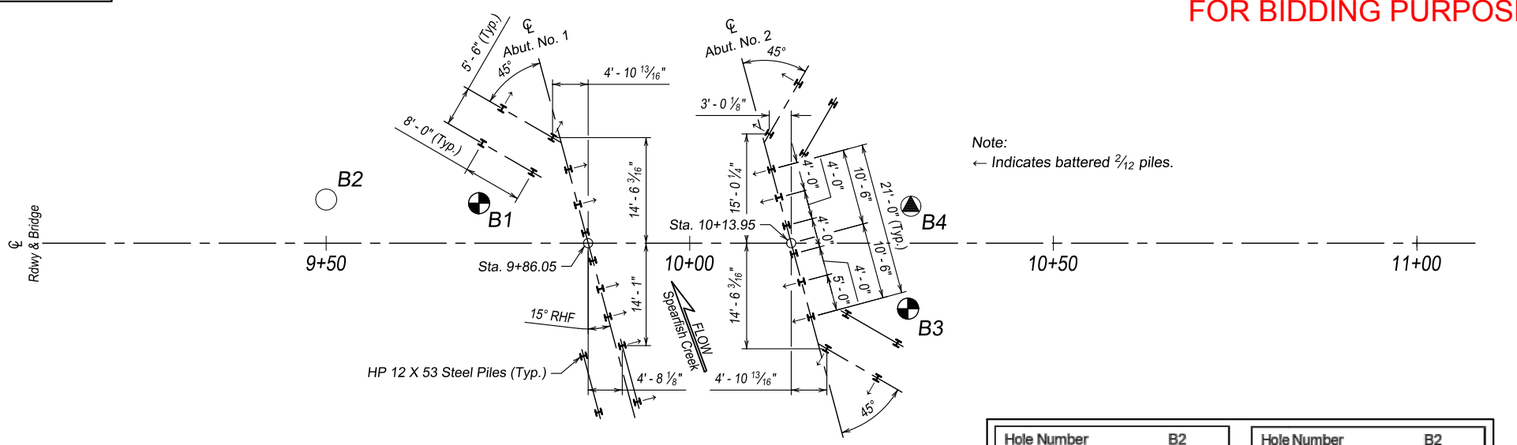
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

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 SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	31	54



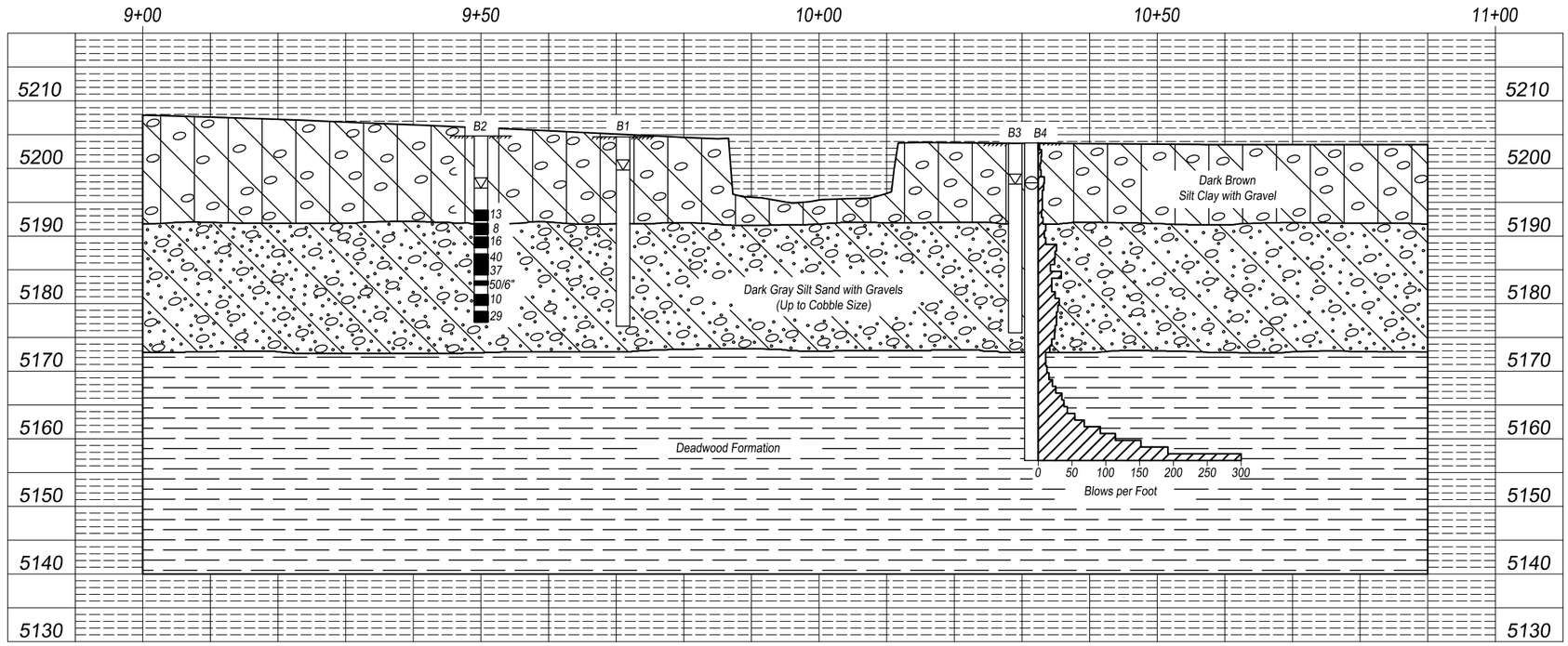


Note:
← Indicates battered 2/12 piles.

PILING LAYOUT

Hole Number	B2	
Station	9+50	
Depth	12.5	ft
Soil Color	Dark Gray	
Classification	Sandy Gravel	
Strength (Qu)	No Test	
Dry Density	127.6	pcf
Wet Density	139.6	pcf
Moisture	9.4	%
Pass No. 10	34.6	%
Pass No. 40	24.9	%
Pass No. 200	17.3	%
Sand Content	17.3	%
Silt Content	10.9	%
Clay Content	6.4	%

Hole Number	B2	
Station	9+50	
Depth	14.5	ft
Soil Color	Dark Gray	
Classification	Sandy Gravel	
Strength (Qu)	No Test	
Dry Density	120.9	pcf
Wet Density	138.3	pcf
Moisture	14.5	%
Pass No. 10	46.8	%
Pass No. 40	33.2	%
Pass No. 200	23.5	%
Sand Content	23.3	%
Silt Content	15.8	%
Clay Content	7.7	%



The Deadwood Formation consists of thick sequences of tan sandstone, conglomerate, shale, and limestone.

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

All auger test holes are drilled with a 4 1/2 inch diameter continuous flight auger.

Drive Tests are conducted by dropping a 490 pound hammer 30 inches to drive a a 2 7/8 inch drill stem to measure the resistance to penetration of the soil.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to 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 of refusal is achieved, which is 50 blows within one 6 inch set.

GROUNDWATER ELEVATIONS

JULY 2022	
B1	*5197.9*
B2	*5195.3*
B3	*5195.9*
AUGUST 2022	
B4	*(DRY) 5197.9*

MEASURED SKIN FRICTION

	ELEV.	*PSF*
B4	*5157.8*	*1019*

SUBSURFACE INVESTIGATION AND PILING LAYOUT

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199

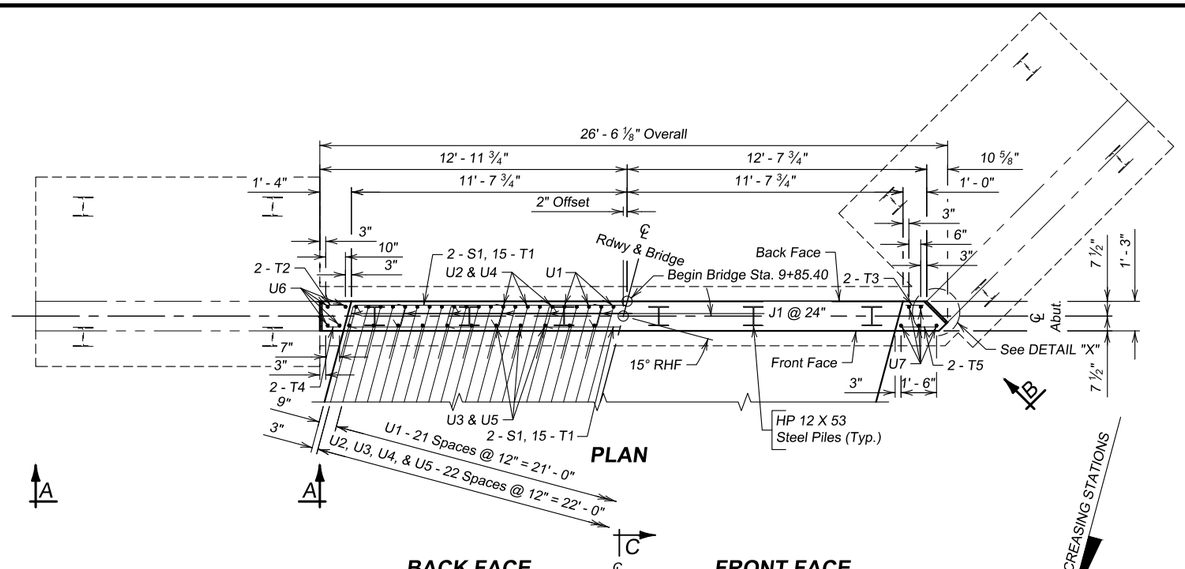
15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93

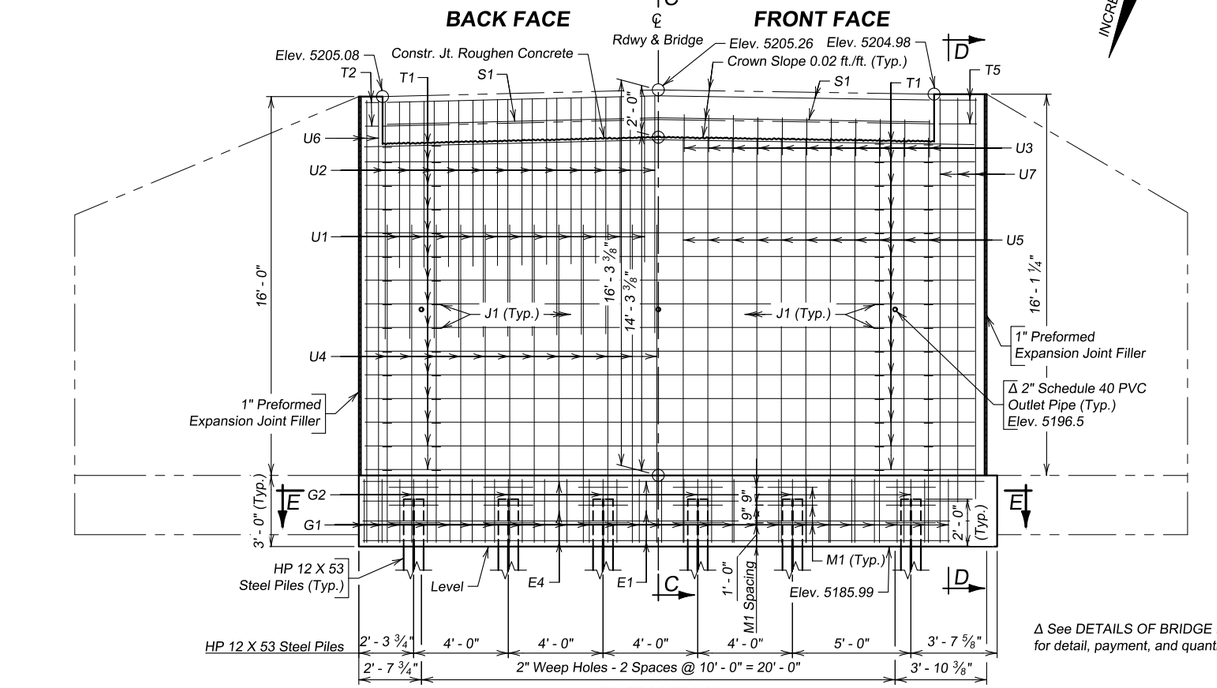
LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

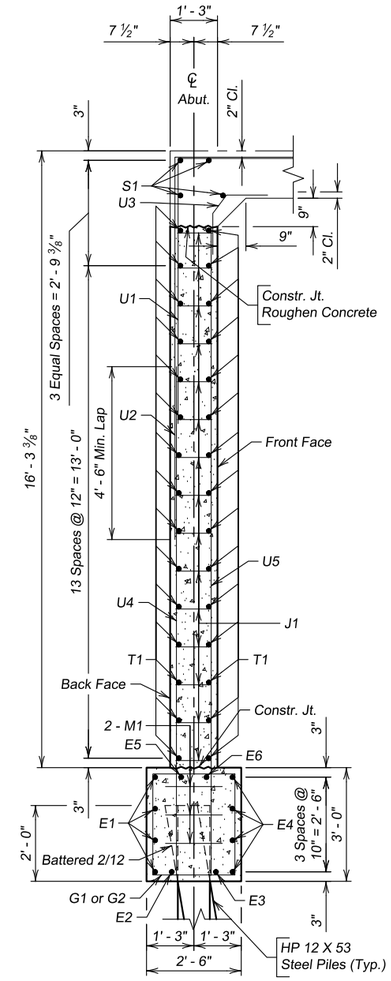
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	32	54

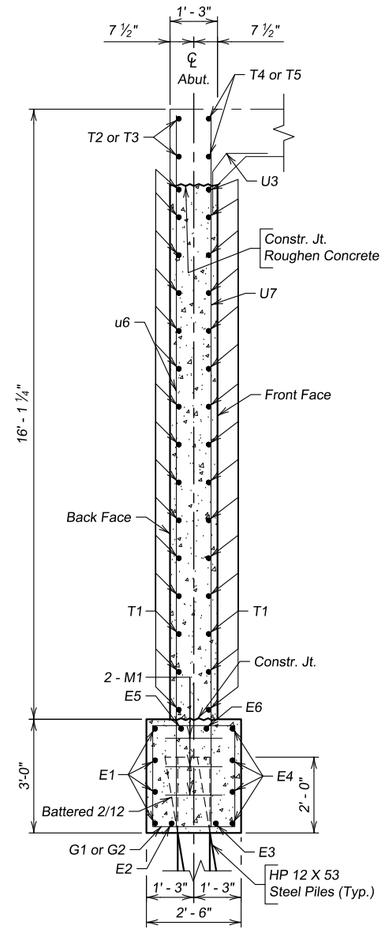




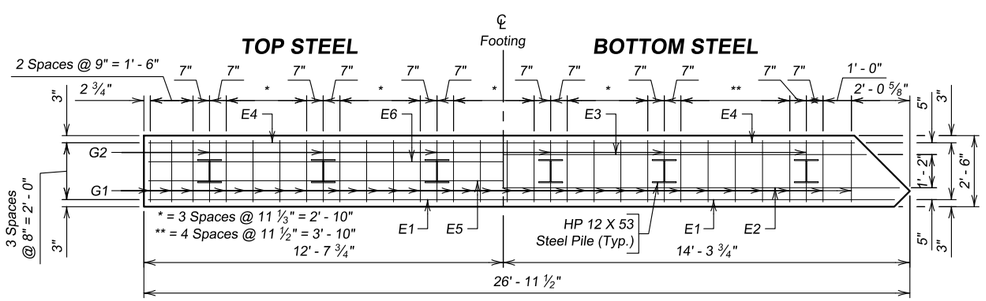
Δ See DETAILS OF BRIDGE END BACKFILL (A) for detail, payment, and quantity



SEC. C - C

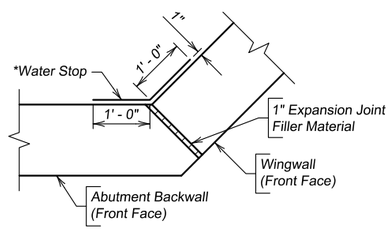


SEC. D - D



SEC. E - E

* Water Stop will be installed to the satisfaction of the Engineer.



DETAIL "X"

ABUTMENT NO. 1 DETAILS (A)

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

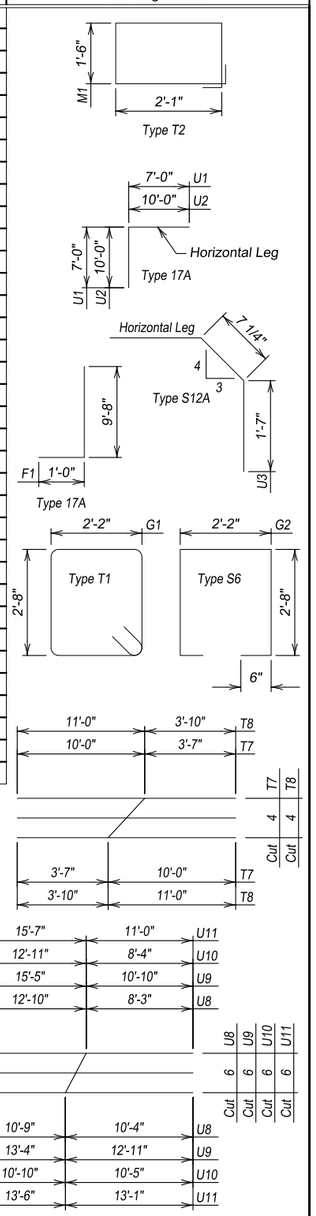
LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

REINFORCING SCHEDULE

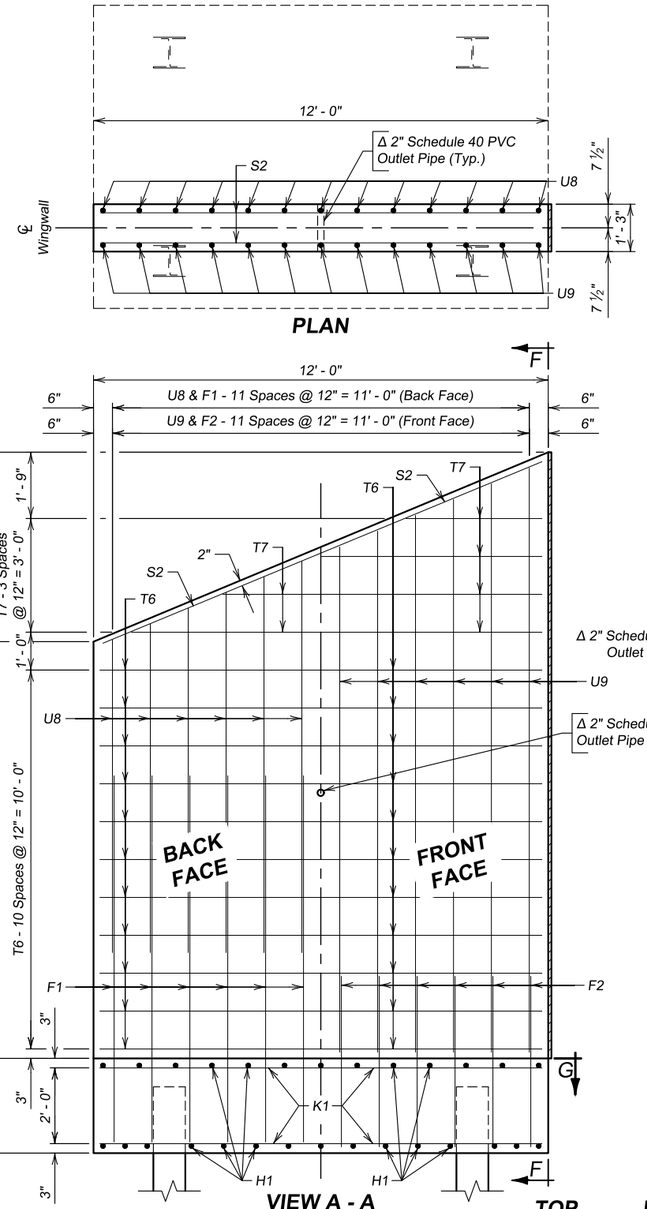
Mk.	No.	Size	Length	Type
E1	4	5	26'-3"	Str.
E2	1	5	26'-5"	Str.
E3	1	5	25'-3"	Str.
E4	4	5	24'-10"	Str.
E5	1	5	26'-2"	Str.
E6	1	5	25'-6"	Str.
F1	26	9	10'-8"	17A
F2	26	4	4'-6"	Str.
G1	26	4	10'-5"	T1
G2	6	4	8'-6"	S6
H1	28	6	7'-8"	Str.
J1	180	4	1-8"	T9
K1	18	4	11'-8"	Str.
M1	18	6	9'-2"	T2
Ω S1	4	9	22'-11"	Str.
S2	4	6	12'-8"	Str.
T1	15	5	25'-9"	Str.
T2	2	5	0'-10"	Str.
T3	2	5	0'-9"	Str.
T4	2	5	0'-7"	Str.
T5	2	5	1'-7"	Str.
T6	45	4	11'-8"	Str.
# T7	4	4	14'-5"	Str.
# T8	4	4	14'-10"	Str.
Ω U1	22	8	14'-0"	17A
Ω U2	23	8	20'-0"	17A
Ω U3	23	4	2'-9"	S12A
U4	23	8	10'-5"	Str.
U5	23	8	17'-1"	Str.
U6	4	8	18'-8"	Str.
U7	5	8	18'-9"	Str.
# U8	6	5	21'-1"	Str.
# U9	6	4	26'-3"	Str.
# U10	6	5	21'-3"	Str.
# U11	6	4	26'-7"	Str.

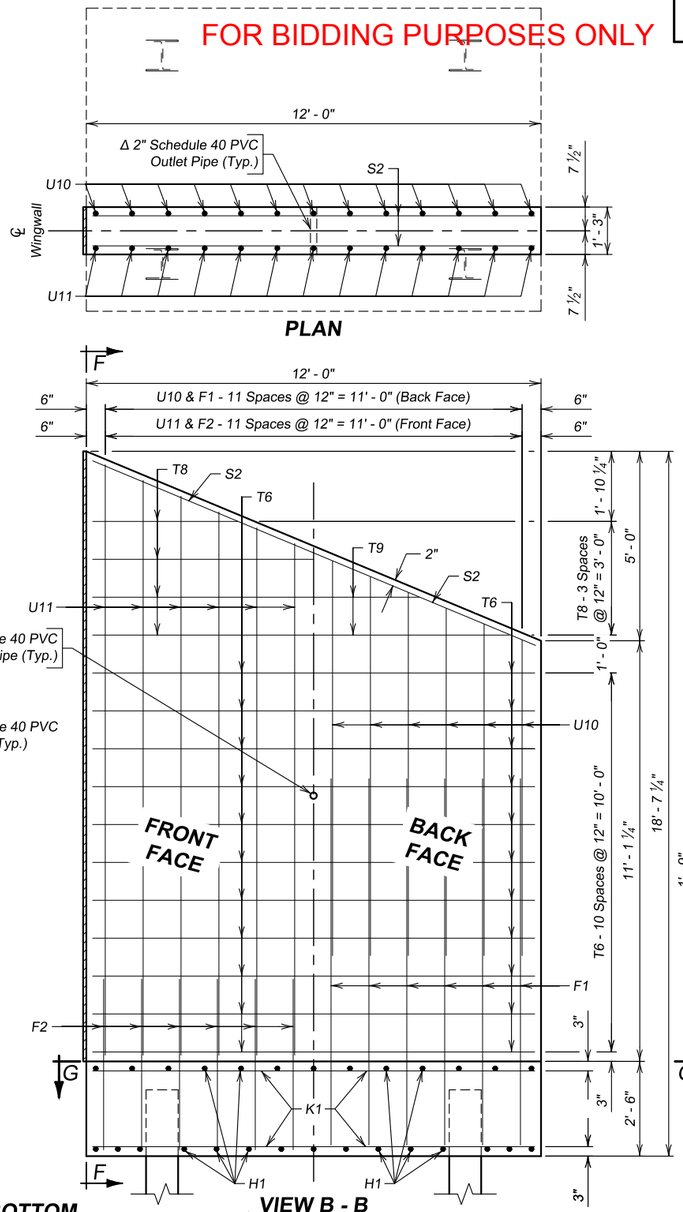
Notes:
See Cutting Diagram.
Ω Bars To Be Epoxy Coated.

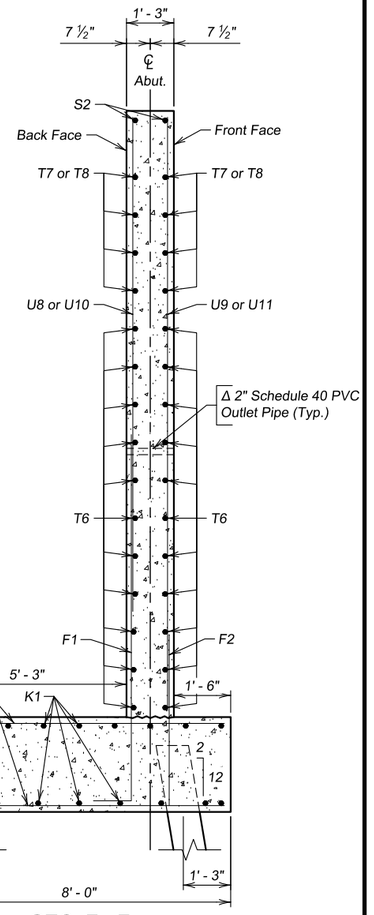


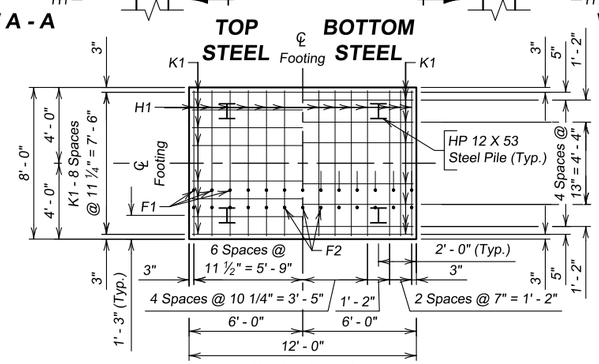
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structure Excavation, Bridge	Cu. Yd.	163
Class A45 Concrete, Bridge	Cu. Yd.	57.4
Reinforcing Steel	Lb.	6000
Epoxy Coated Reinforcing Steel	Lb.	2404
HP 12 Pile Tip Reinforcement	Each	14
HP 12x53 Steel Test Pile, Furnish & Drive	Ft.	1 @ 50' = 50'
HP 12x53 Steel Bearing Pile, Furnish & Drive	Ft.	13 @ 45' = 585'









ABUTMENT NO. 1 DETAILS (B)
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199

15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	33	54

Plotted by: Justin M. Pump
Plotted on: 8/16/23 8:50:00 AM
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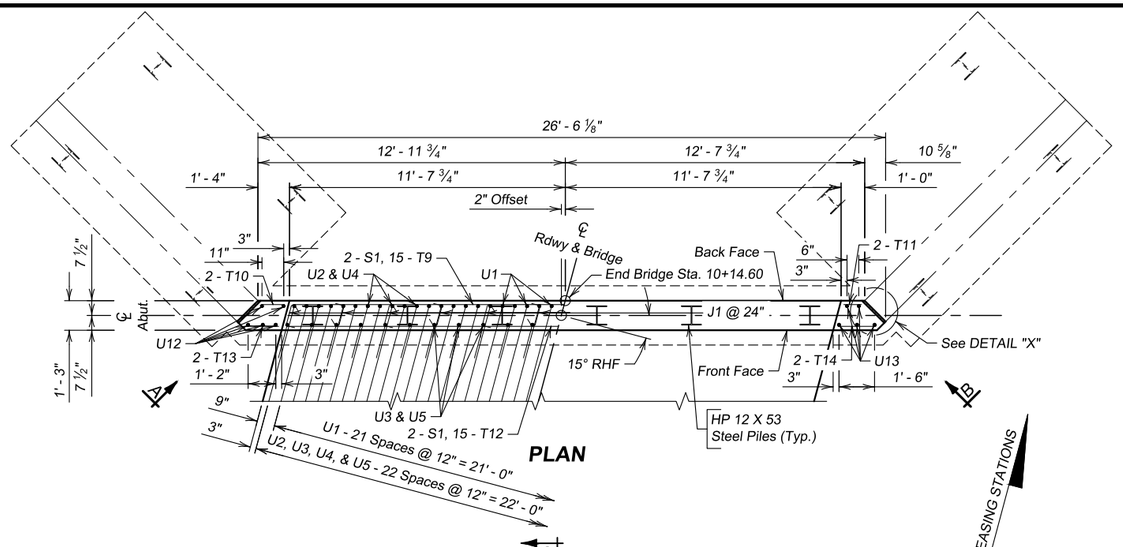
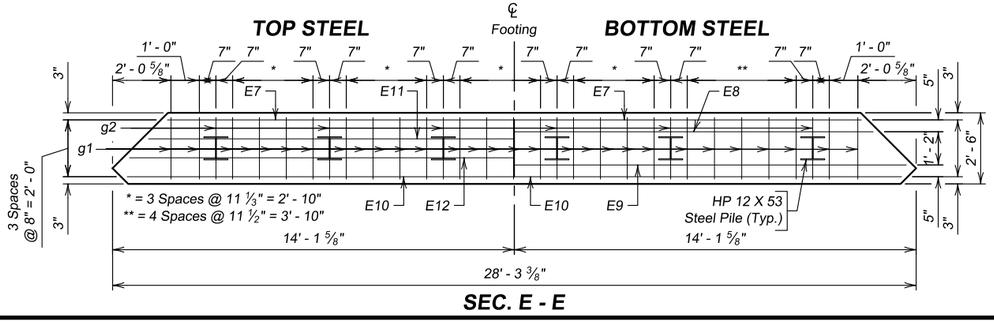
FOR BIDDING PURPOSES ONLY

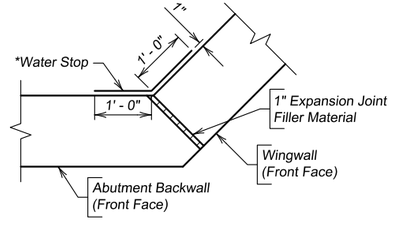
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	34	54



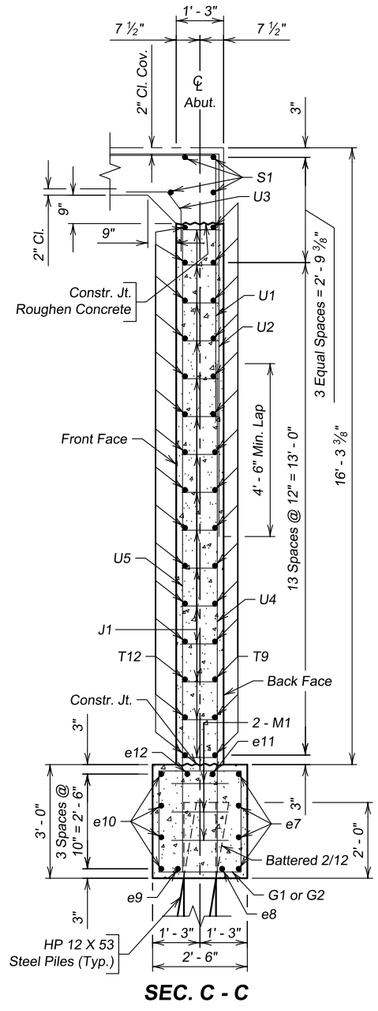
Δ See DETAILS OF BRIDGE END BACKFILL (C) for detail, payment, and quantity



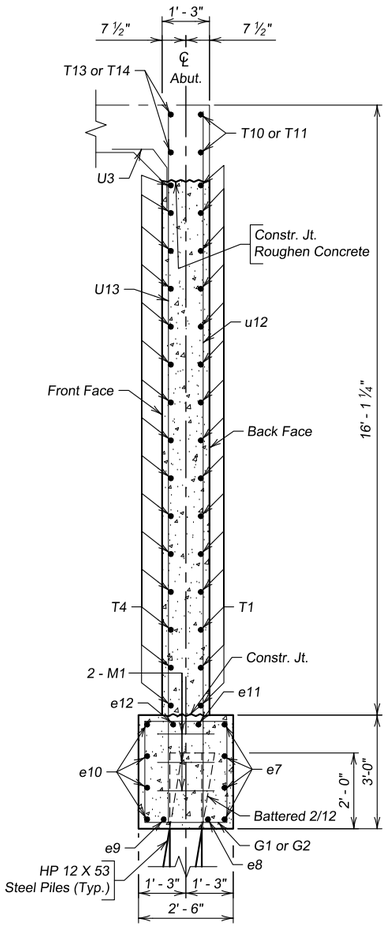
* Water Stop will be installed to the satisfaction of the Engineer.



DETAIL "X"



SEC. C - C



SEC. D - D

ABUTMENT NO. 2 DETAILS (A)

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

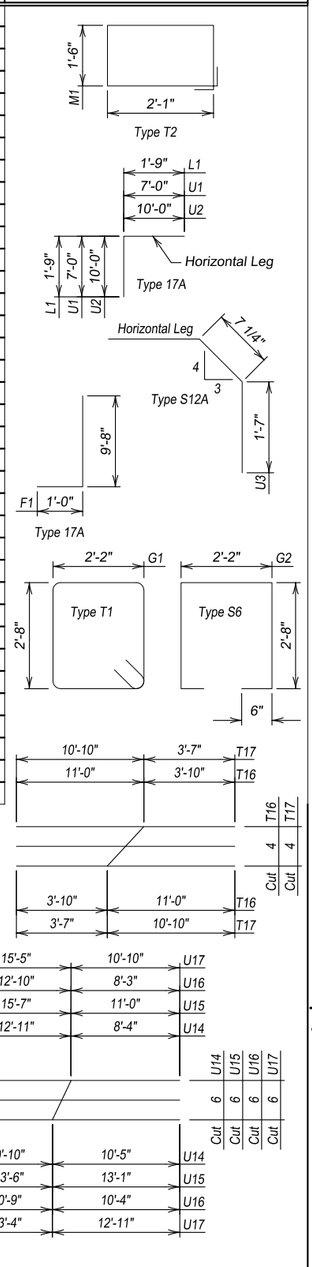
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13597
YANLING LENG
SOUTH DAKOTA
8/16/2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

REINFORCING SCHEDULE

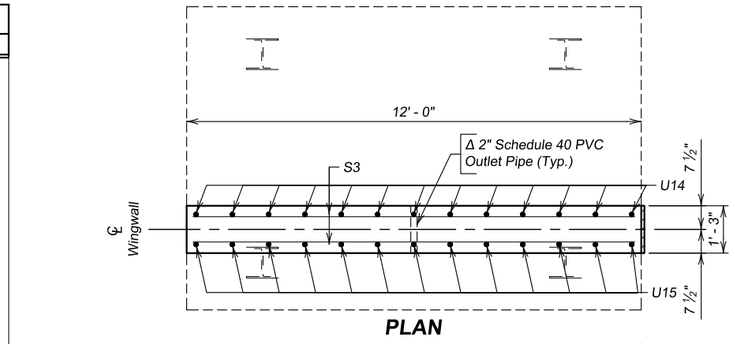
	Mk.	No.	Size	Length	Type
	E7	4	5	24'-5"	Str.
	E8	1	5	25'-3"	Str.
	E9	1	5	27'-7"	Str.
	E10	4	5	27'-3"	Str.
	E11	1	5	25'-9"	Str.
	E12	1	5	27'-1"	Str.
	F1	26	9	10'-8"	17A
	F2	26	4	4'-6"	Str.
	G1	26	4	10'-5"	T1
	G2	6	4	8'-6"	S6
	H1	28	6	7'-8"	Str.
	J1	180	4	1'-8"	T9
	K1	18	4	11'-8"	Str.
	M1	18	6	9'-2"	T2
Ω	S1	4	9	22'-11"	Str.
	S3	4	6	12'-8"	Str.
	T9	15	5	25'-2"	Str.
	T10	2	5	1'-0"	Str.
	T11	2	5	0'-9"	Str.
	T12	15	5	26'-11"	Str.
	T13	2	5	1'-4"	Str.
	T14	2	5	1'-7"	Str.
	T15	44	4	11'-8"	Str.
≠	T16	4	4	14'-10"	Str.
≠	T17	4	4	14'-5"	Str.
Ω	U1	22	8	14'-0"	17A
Ω	U2	23	8	20'-0"	17A
Ω	U3	23	4	2'-9"	S12A
	U4	23	8	10'-5"	Str.
	U5	23	8	17'-1"	Str.
	U12	5	8	18'-9"	Str.
	U13	5	8	18'-8"	Str.
≠	U14	6	5	8'-3"	Str.
≠	U15	6	4	21'-8"	Str.
≠	U16	6	5	10'-10"	Str.
≠	U17	6	4	26'-11"	Str.

Notes:
≠ See Cutting Diagram.
Ω Bars To Be Epoxy Coated

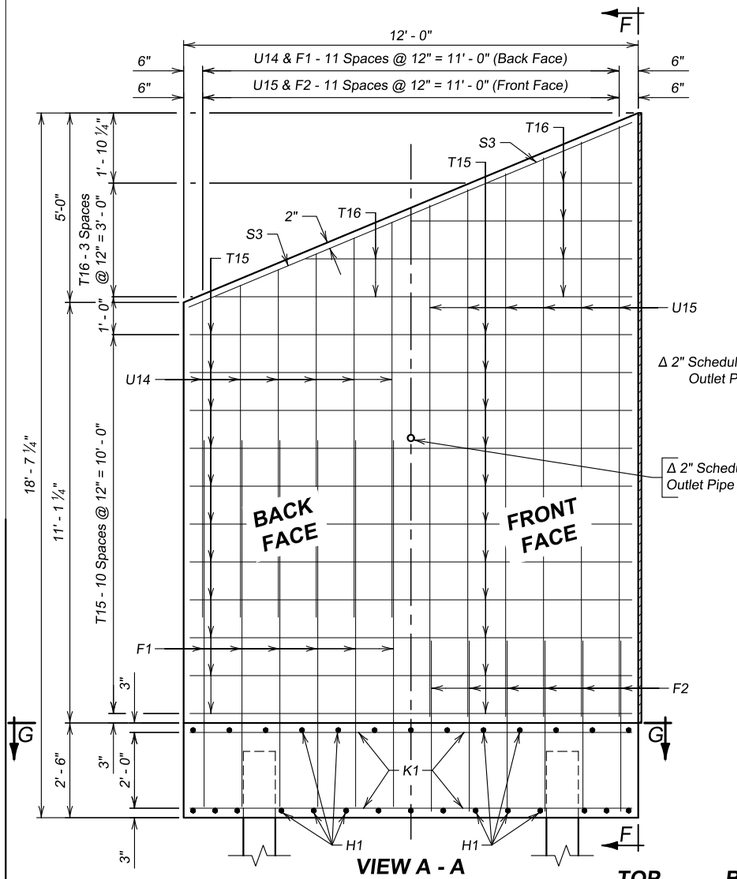


ESTIMATED QUANTITIES

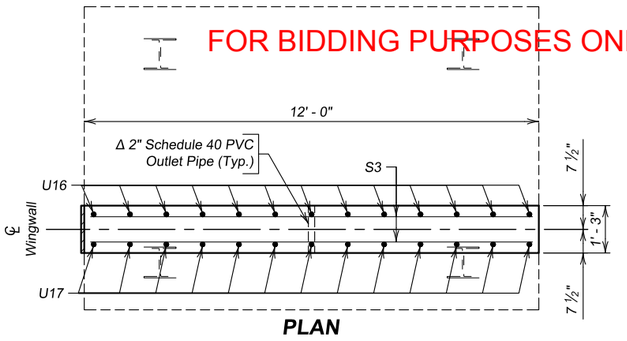
ITEM	UNIT	QUANTITY
Structure Excavation, Bridge	Cu. Yd.	171
Class A45 Concrete, Bridge	Cu. Yd.	57.9
Reinforcing Steel	Lb.	6297
Epoxy Coated Reinforcing Steel	Lb.	2404
HP 12 Pile Tip Reinforcement	Each	14
HP 12x53 Steel Test Pile, Furnish & Drive	Ft.	1 @ 50' = 50'
HP 12x53 Steel Bearing Pile, Furnish & Drive	Ft.	13 @ 45' = 585'



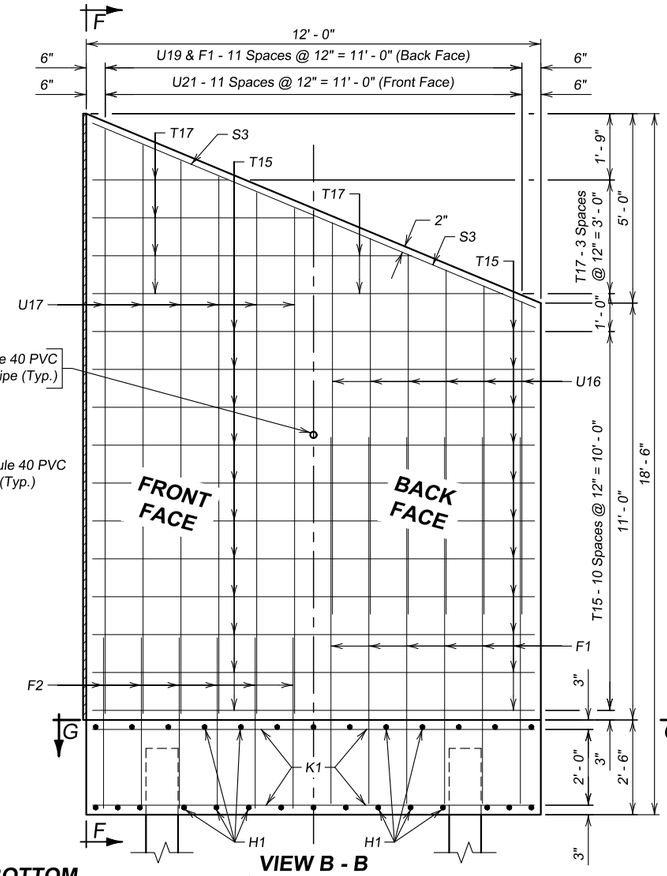
PLAN



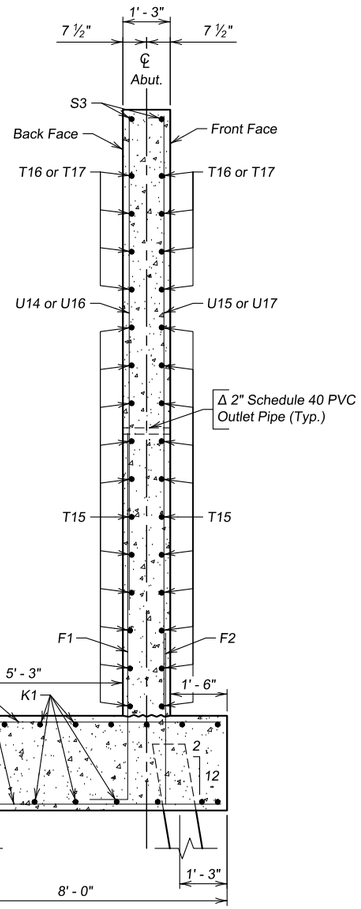
VIEW A - A



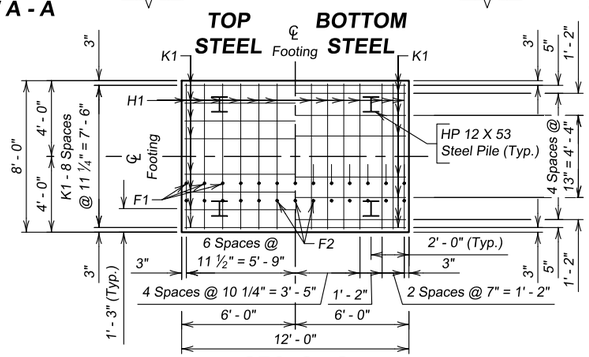
PLAN



VIEW B - B



SEC. F - F



SEC. G - G

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	35	54

ABUTMENT NO. 2 DETAILS (B)
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199

15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13597
YANLING LENG
SOUTH DAKOTA
8/18/2023

8 OF 19

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

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Plotted by: Justin M. Pump

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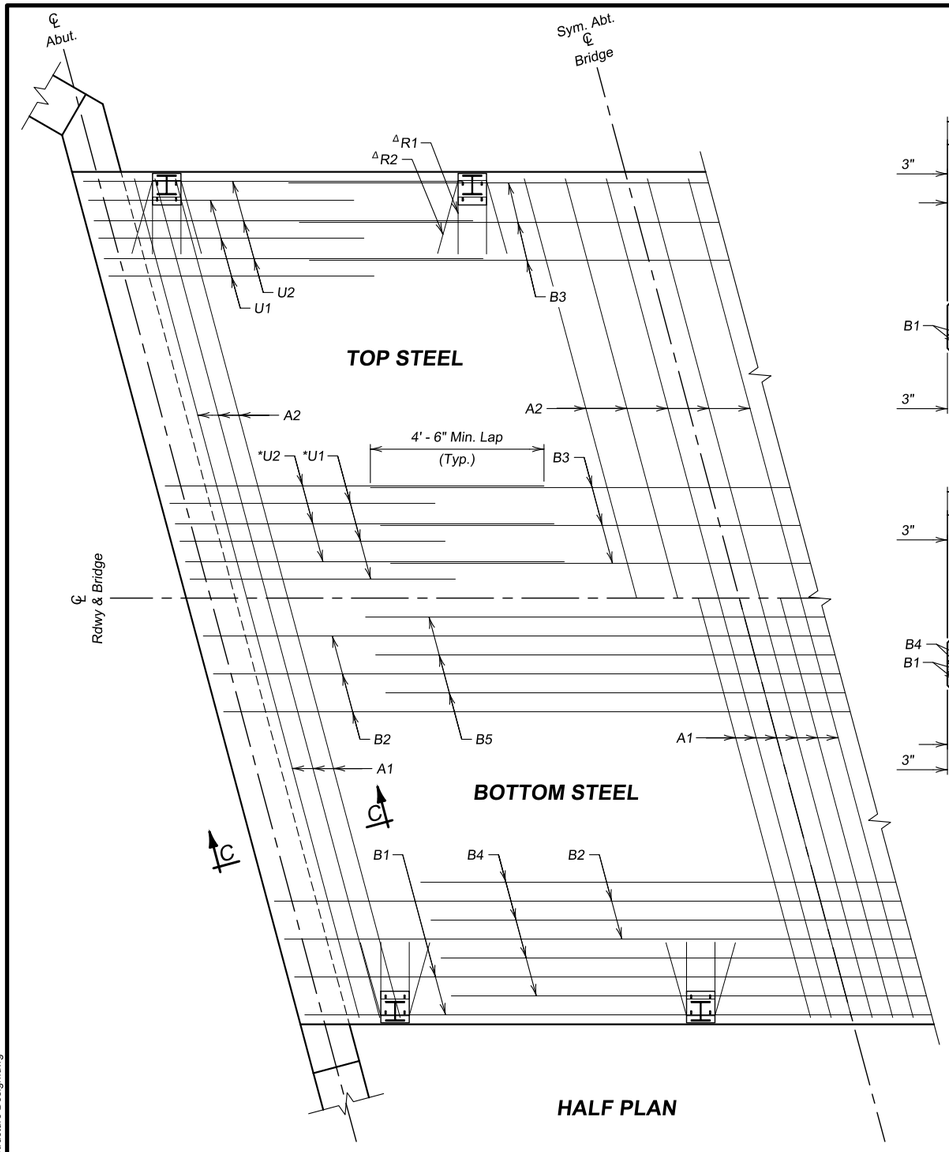
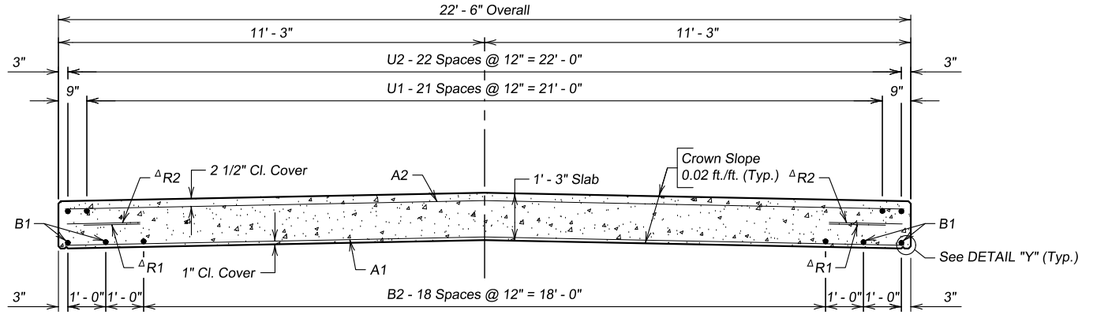
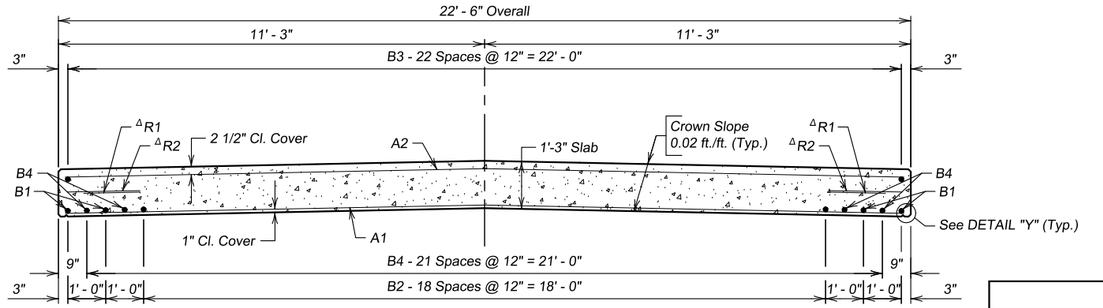
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	36	54





SEC. A - A

Δ Use necessary height chairs to tie R1 and R2 bars.
See T101 RAILING DETAILS for R1 and R2 bar quantities.

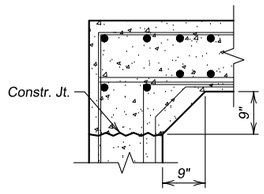


SEC. B - B

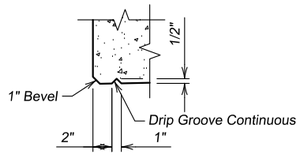
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
A1	49	5	22'-11"	Str.	
A2	34	5	22'-11"	Str.	
B1	4	8	28'-10"	Str.	
B2	19	7	28'-10"	Str.	
B3	23	8	17'-11"	Str.	
B4	22	8	20'-10"	Str.	

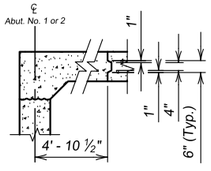
NOTES:
All reinforcing steel will be epoxy coated.
All dimensions are out to out of bars.
For U1 and U2 rebar quantities see Abutment No. 1 Detail (A) and Abutment No. 2 Details (A) sheets for details.



SEC. C - C



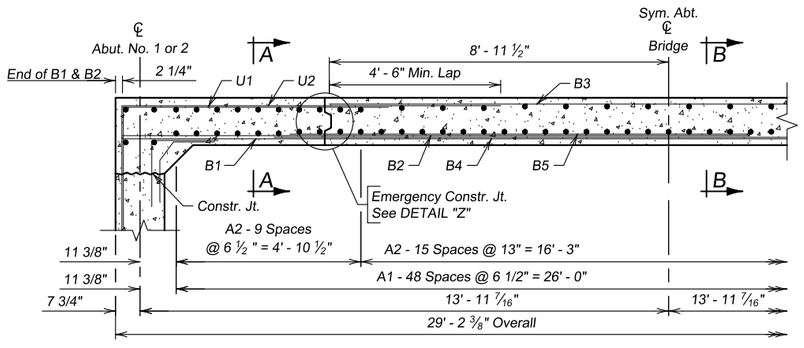
DETAIL "Y"



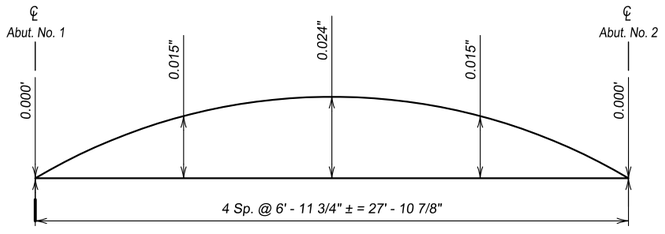
DETAIL "Z"

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu. Yd.	29.4
Epoxy Coated Reinforcing Steel	Lb.	5736



HALF LONGITUDINAL SECTION VIEW



CAMBER DIAGRAM

Camber is calculated for dead load deflection plus plastic flow and has been added to the proposed grade elevations at the respective stations to establish the elevations of the top of the finished roadway slab.

SUPERSTRUCTURE DETAILS
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199

15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

9 OF 19

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

Plotted on: 8/16/23 8:50:17 AM
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Plotted by: Justin M. Pump

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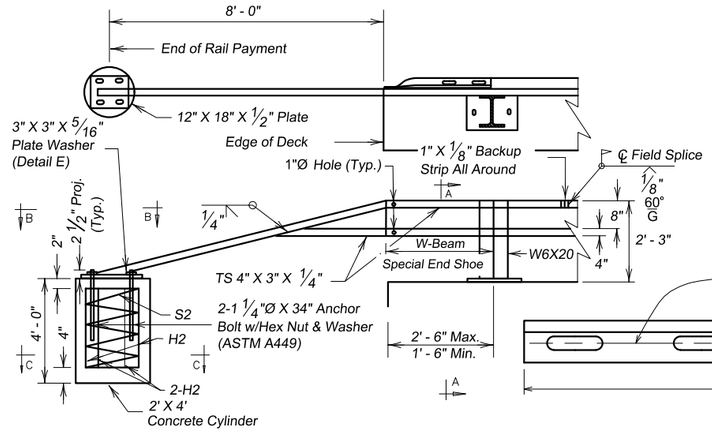
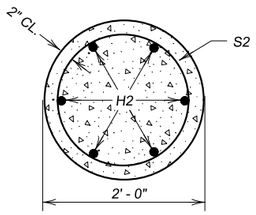
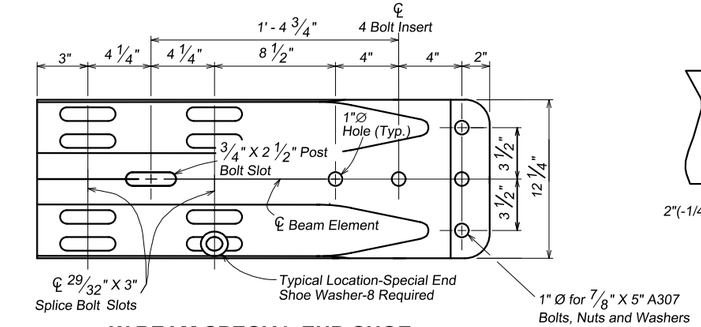
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	37	54

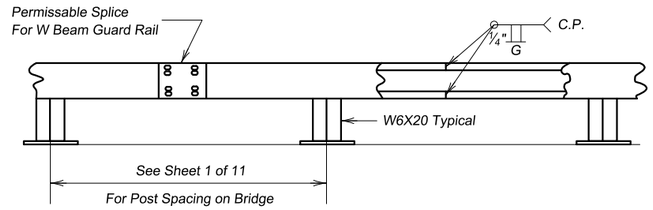


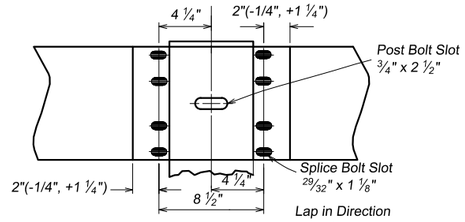


SECTION C-C

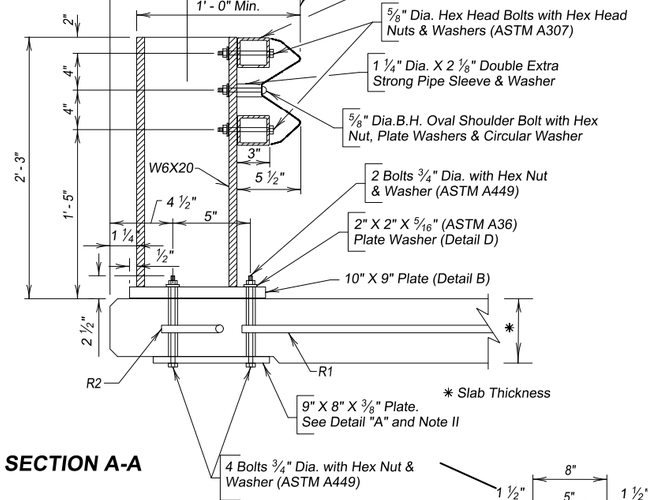


W BEAM SPECIAL END SHOE

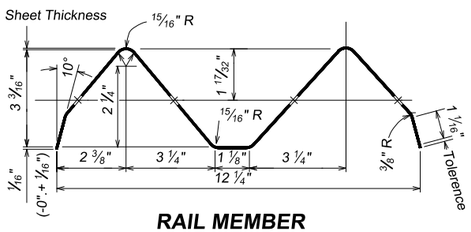




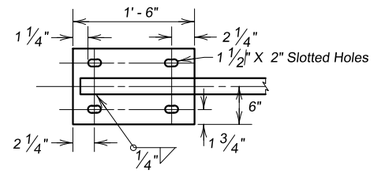
RAIL SPLICE



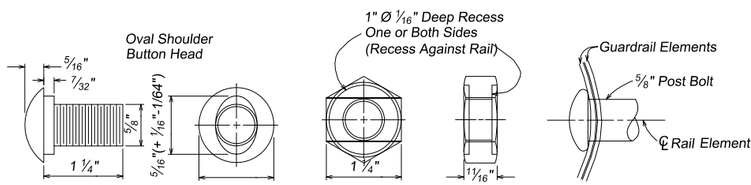
SECTION A-A



RAIL MEMBER

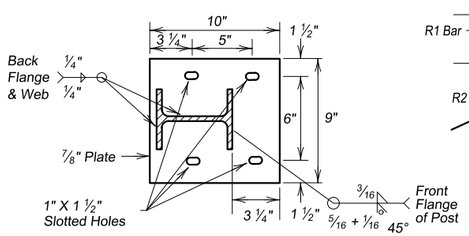


SECTION B-B

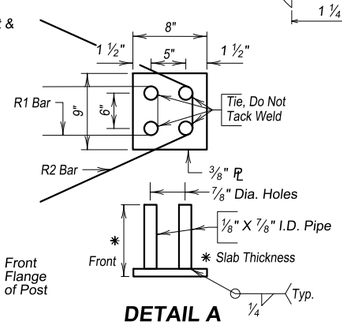


SPLICE BOLT

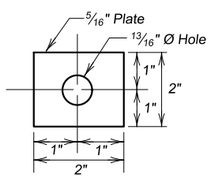
POST BOLT - SIMILAR EXCEPT 18" LONG



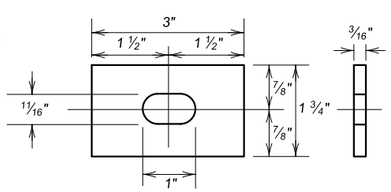
DETAIL B



DETAIL A

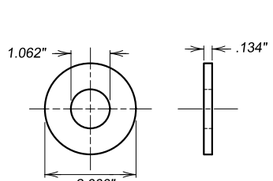


DETAIL D



RECTANGULAR PLATE WASHER (ON BRIDGE RAIL ONLY)

Revised: 5/30/14, 7/20/16, 12/21/16, 2/15/19 - NJC



SPECIAL END SHOE WASHER

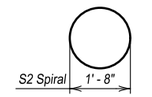
GENERAL NOTES:

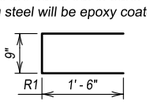
1. *Rail posts will be perpendicular to centerline of roadway.*
2. *W-beam guard rail, pipe sleeves nuts, washers, and plate washers that go with these will be galvanized. Bolts, nuts, and washers will be galvanized according to ASTM F2329. Pipe sleeves will be galvanized according to ASTM A123.*
3. *Post bolts will be 3/4" diameter ASTM A3125 grade A325 or grade A490. Each bolt will have one hardened and one 2" x 2" x 5/16" ASTM A36 plate washer. Nuts will be A563.*
4. *Steel w beam guard rail will be class a, type i. Conforming to AASHTO M180 and will be fabricated from standard 12.5' or 25' nominal w beam sections.*
5. *The rail posts, 4" x 3" tube members, base plates and projecting portions of the anchor bolts, nuts, and washers and be satisfactorily painted in accordance with the special provision for bridge painting. The color of the finished coat will be an approved green, federal standard no. 24108. the nuts, bolts, and washers will be galvanized in accordance with ASTM F2329. The rail posts and tube members may be galvanized in accordance with ASTM A123 in substitution for painting, if galvanizing is selected, no paint will be applied over galvanized surfaces.*
6. *All structural steel parts for the type t101 steel railing will conform to ASTM A709 gr. 36. Tubes will conform to ASTM A500 gr. b.*
7. *Provide 1 1/2" drain holes in the tubes near ends of rail and near splices.*
8. *All concrete shall be class M6 as specified in section 462.*
9. *All reinforcing steel will conform to ASTM A615, gr 60.*
10. *All bolts, nuts, washers, posts, plates, pipe sleeves, steel w beam guard rail, welding, painting, and all costs of installing four rail anchors including concrete, excavation, forming, reinforcing steel, and anchor bolts will be included in the unit price bid per linear foot for t101 steel railing.*
11. *Measurement for payment shall be from center of anchor to center of anchor for each side of the bridge.*

REINFORCING SCHEDULE

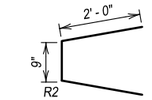
MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAIL
H2	24	5	3'-6"	Str.	
R1	8	5	3' - 9"	17	
R2	8	5	4' - 9"	17A	
S2	4	3	51'-7"	17A	

NOTE:
All dimensions are out to out of bars.
All reinforcing steel will be epoxy coated.





Type 17



Type 17A

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Type T101 Bridge Railing	Ft.	91

T101 RAILING DETAILS
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199

15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93

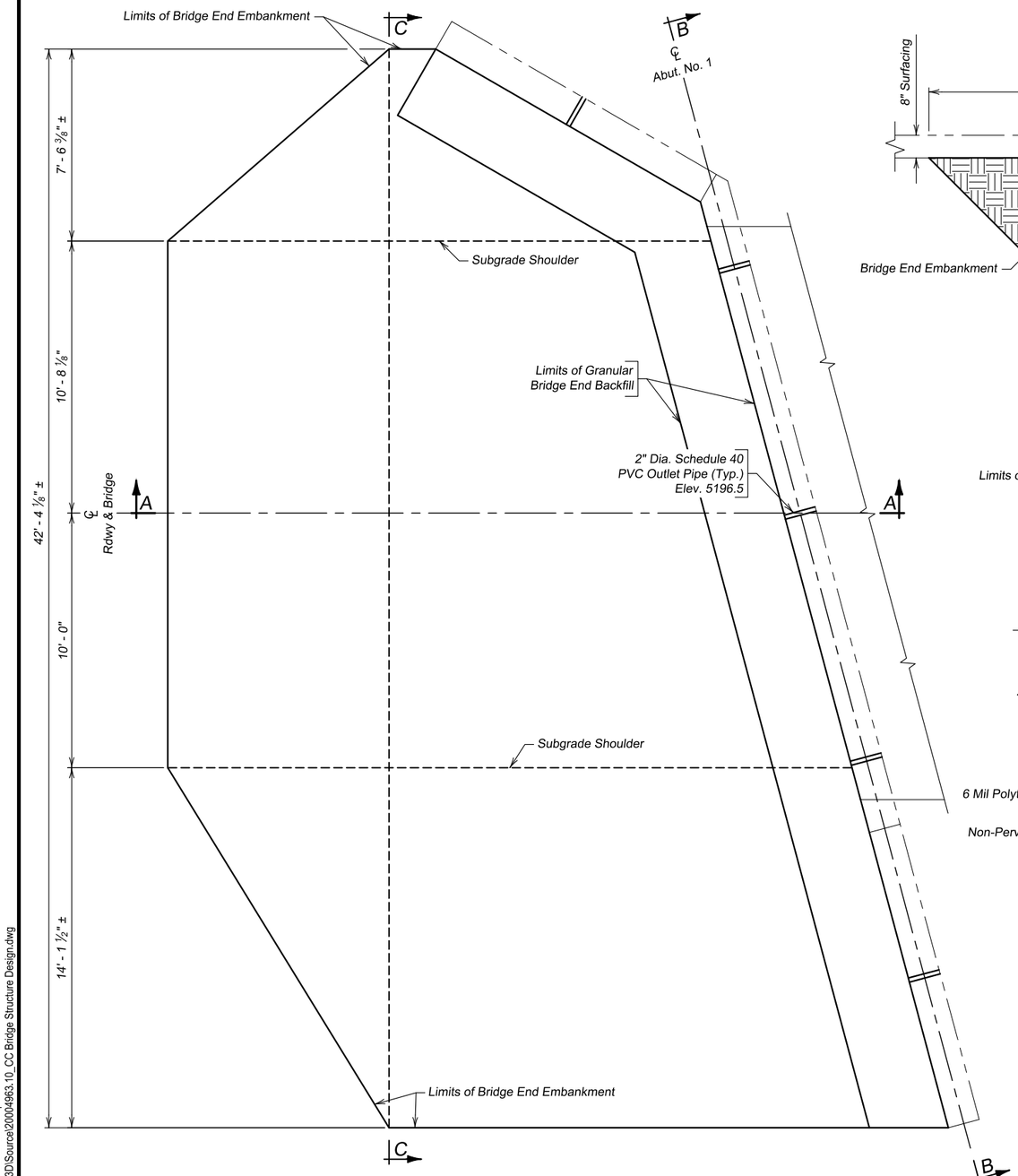
LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

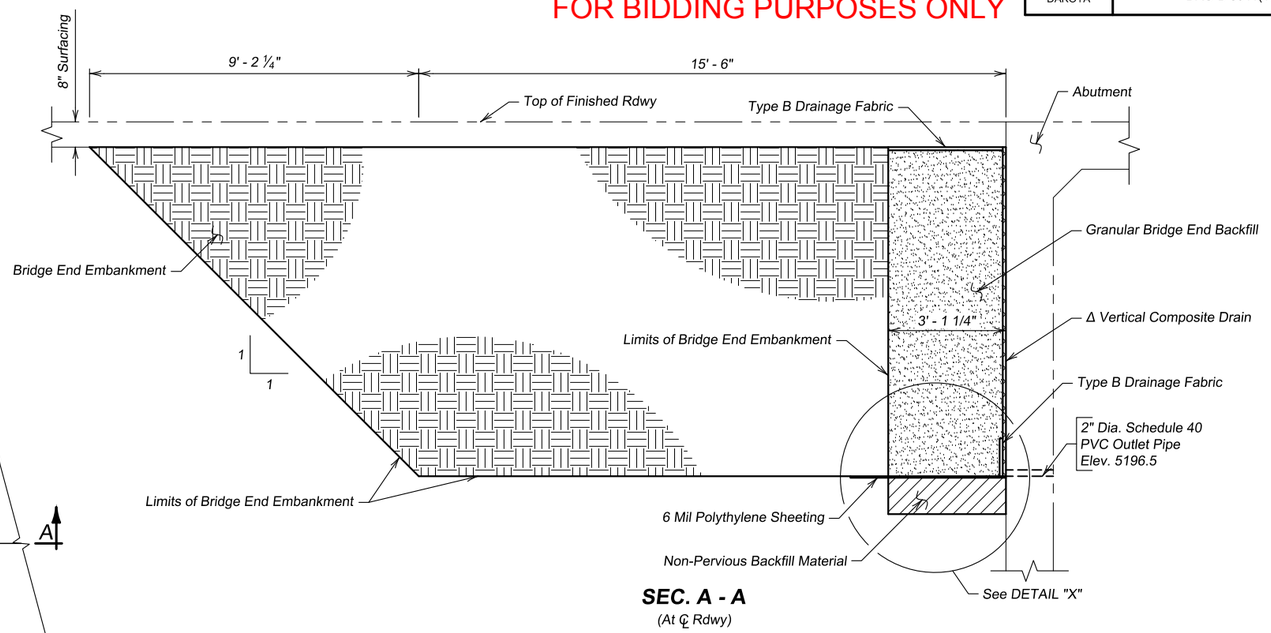
10 OF 19

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

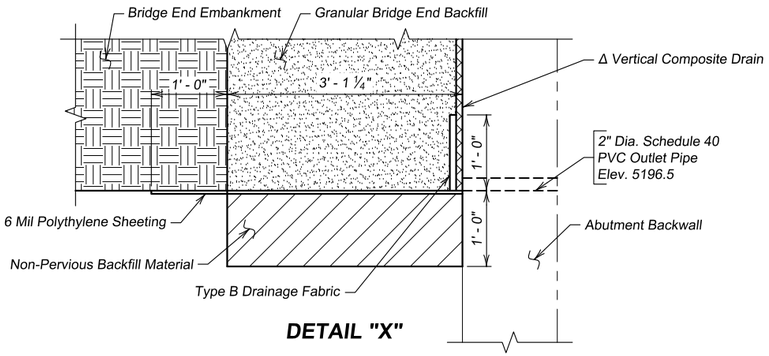
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	38	54

FOR BIDDING PURPOSES ONLY

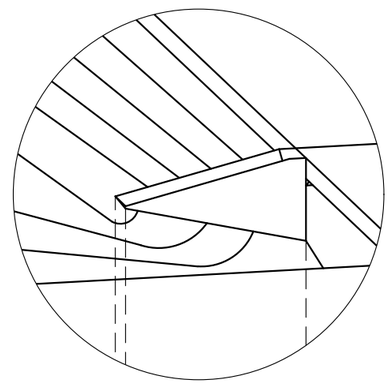




SEC. A - A
(At ℄ Rdwy)



DETAIL "X"



SPILL CONE DETAIL AT EMBANKMENT

Δ Provide hole in vertical composite drain to provide drainage through weep holes.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Granular Bridge End Backfill	Cu. Yd.	22.7
≈ Bridge End Embankment	Cu. Yd.	202

1. 2" Dia. PVC Outlet Pipe	6 Ft.
2. Vertical Composite Drain	198 Sq. Ft.

Items 1 and 2 are approximate quantities contained in the 4" Underdrain Pipe bid item and are for information only.

3. 6 mil Polythylene Sheeting, not including laps	190 Sq. Ft.
4. Type B Drainage Fabric	21 Sq. Yd.

Items 3 and 4 are approximate quantities contained in the Granular Bridge End Backfill bid item and are for information only.

◊ *For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.*
≈ *Shrinkage Factor of 1.25 used.*

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENT NO. 1 (A)
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

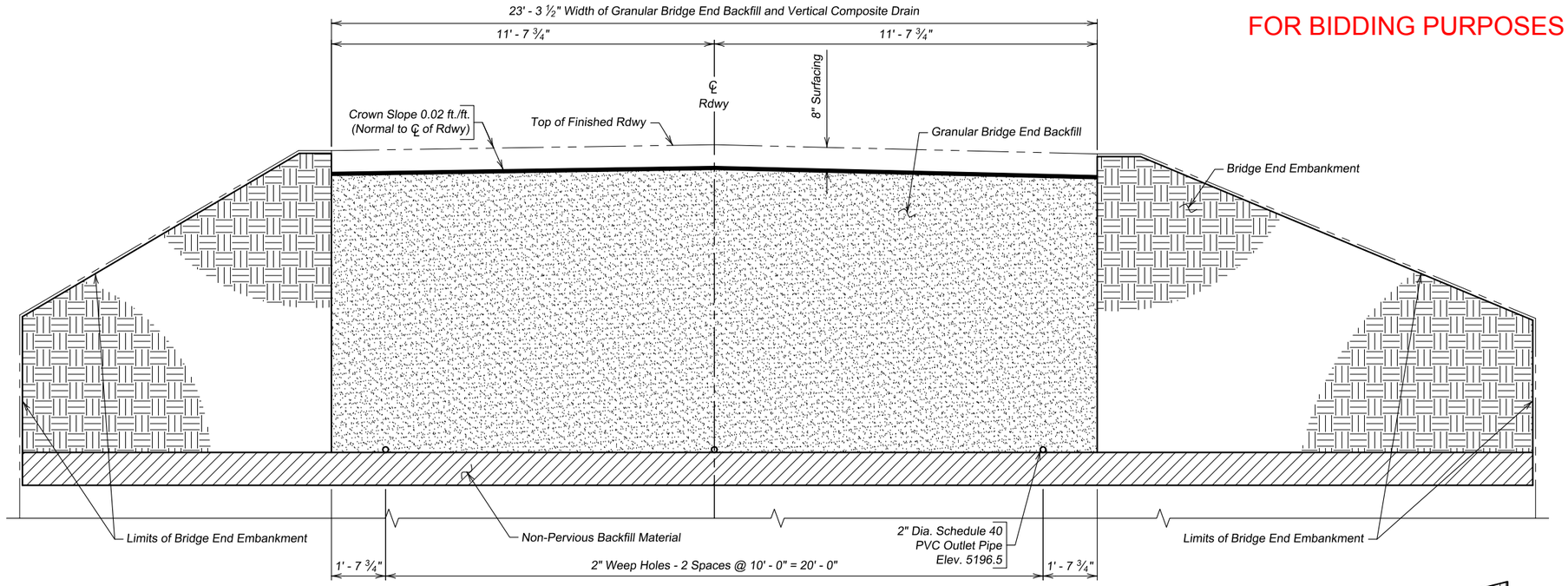
20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	39	54



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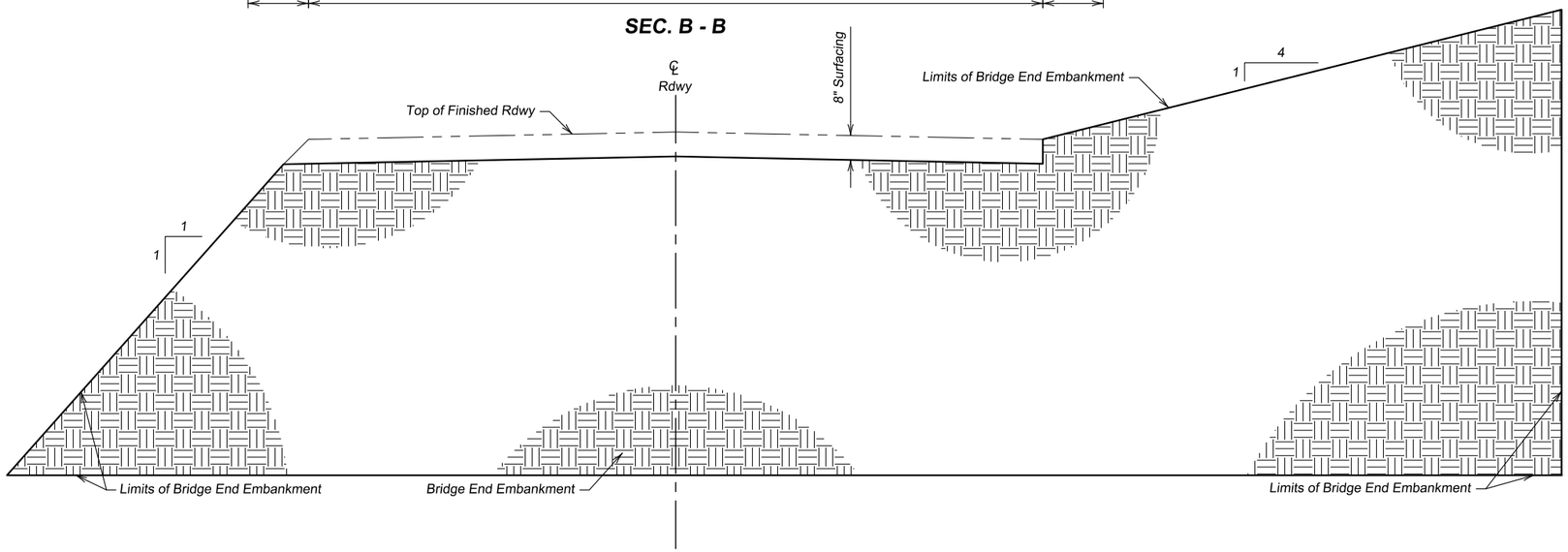

SEC. C - C

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENT NO. 1 (B)

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

12 OF 19

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

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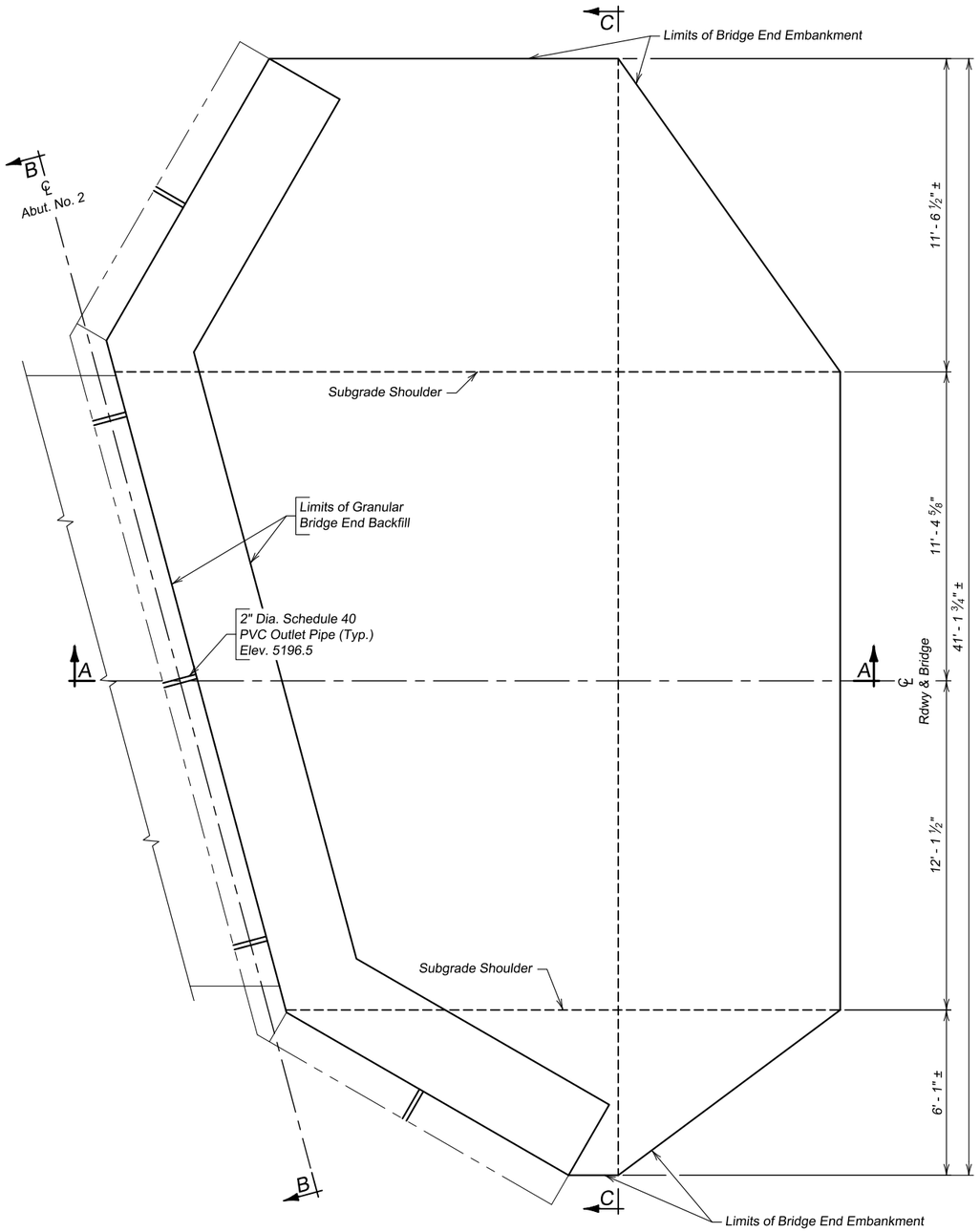
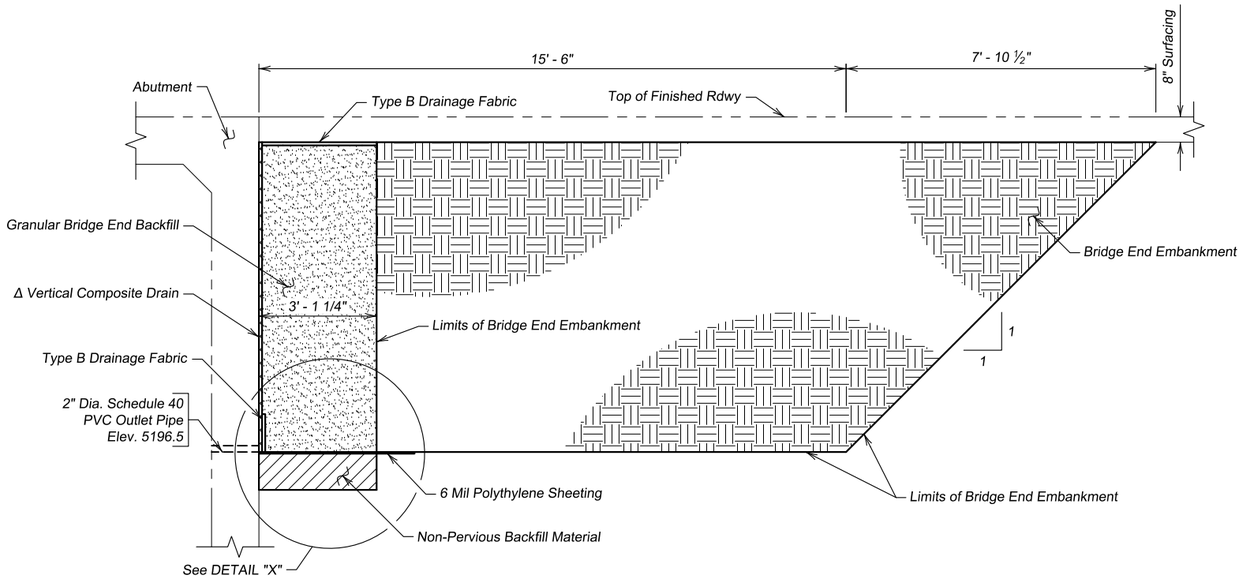
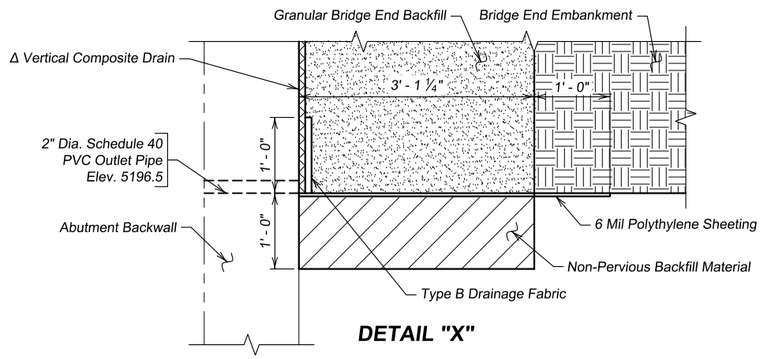
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	40	54





SEC. A - A
(At ℄ Rdwy)



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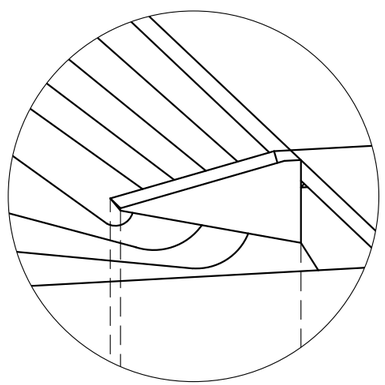


SPILL CONE DETAIL AT EMBANKMENT

Δ Provide hole in vertical composite drain to provide drainage through weep holes.

ESTIMATED QUANTITIES		
ITEM	*UNIT*	*QUANTITY*
Granular Bridge End Backfill	*Cu. Yd.*	*21.4*
≈ *Bridge End Embankment*	*Cu. Yd.*	*109*

1. 2" Dia. PVC Outlet Pipe — *6 Ft.*
2. Vertical Composite Drain — *186 Sq. Ft.*

Items 1 and 2 are approximate quantities contained in the 4" Underdrain Pipe bid item and are for information only.

3. 6 mil Polythylene Sheeting, not including laps — *184 Sq. Ft.*
4. Type B Drainage Fabric — *20 Sq. Yd.*

Items 3 and 4 are approximate quantities contained in the Granular Bridge End Backfill bid item and are for information only.

◊ For estimating purposes only, a factor of 1.89 Tons/Cu. Yd. was used to convert Cu. Yds. to Tons.
≈ Shrinkage Factor of 1.25 used.

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENT NO. 2 (A)
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

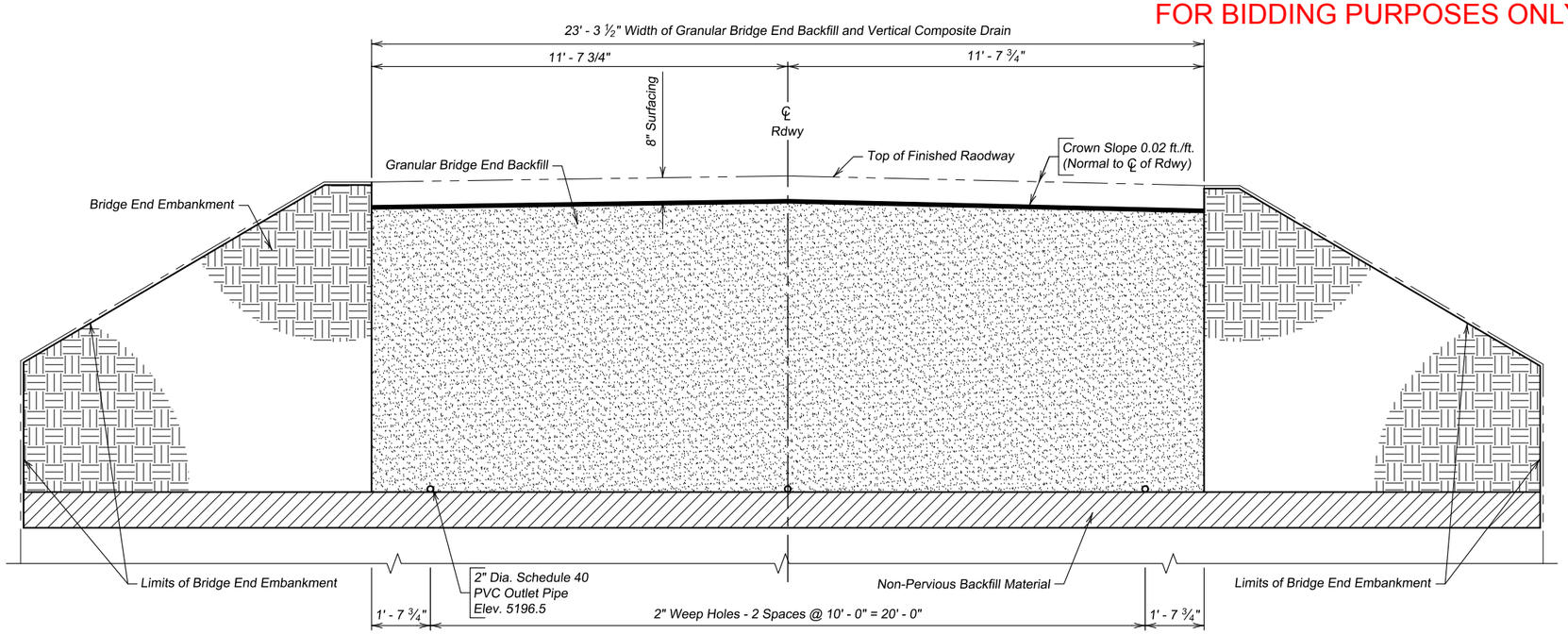
20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	41	54

FOR BIDDING PURPOSES ONLY



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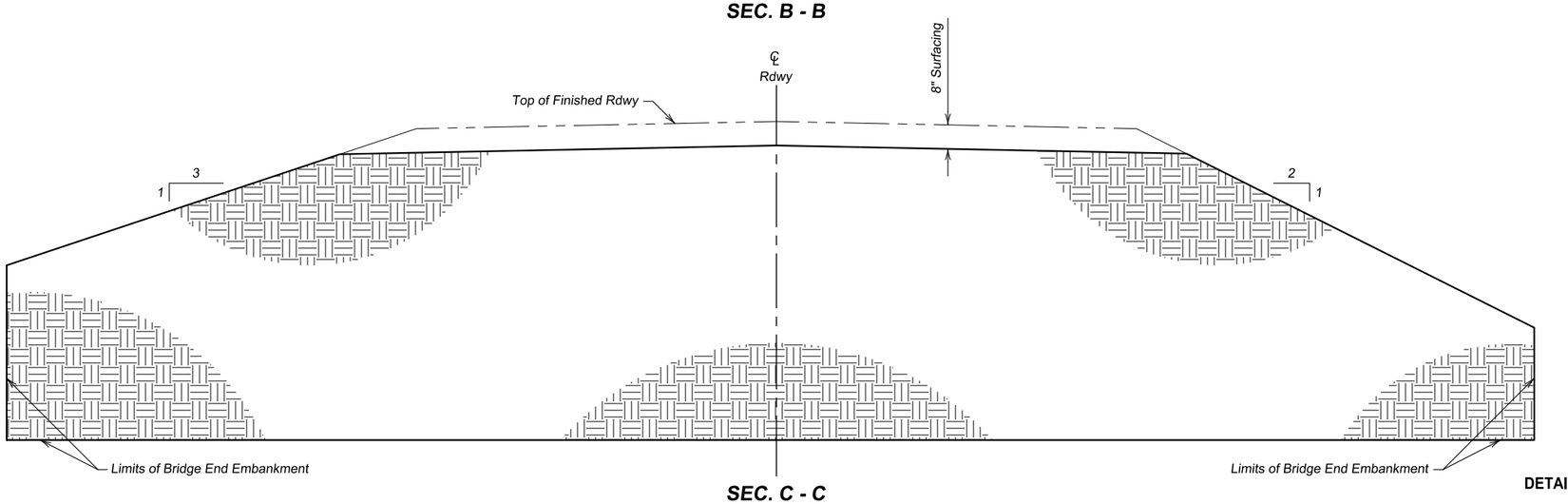

SEC. C - C

DETAILS OF BRIDGE END BACKFILL ADJACENT TO ABUTMENT NO. 2 (B)

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY	15° RHF SKEW
OVER SPEARFISH CREEK	SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40	BRO-B 8041(184)
STR. NO. 41-079-199	HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13597
YANLING LENG
SOUTH DAKOTA
8/16/2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

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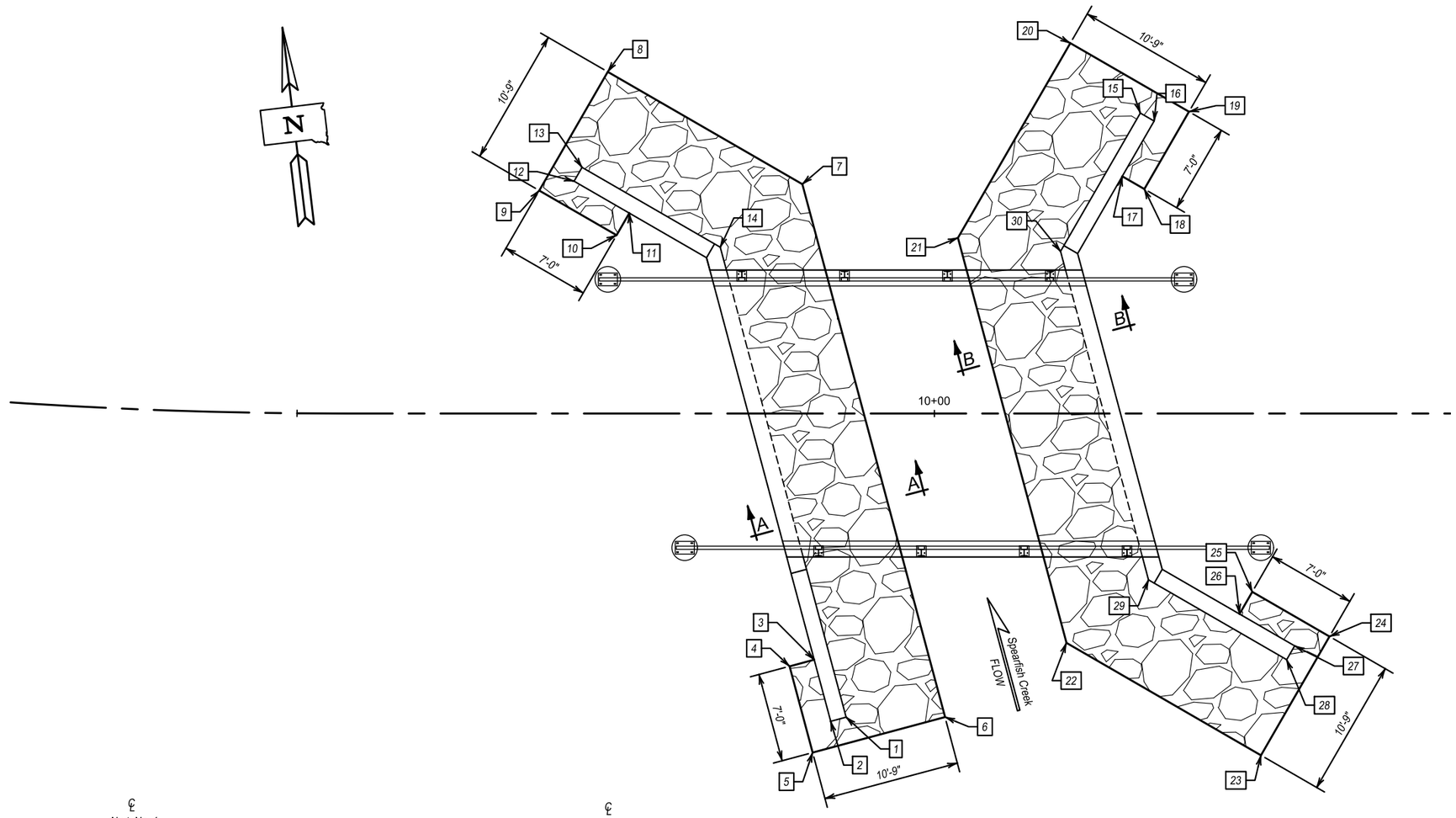
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	42	54



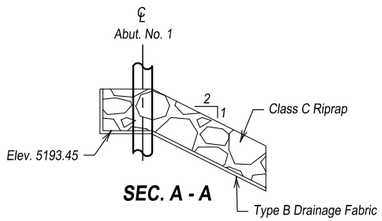
CLASS B RIPRAP POINTS

	Sta.	Offset	Northing (y)	Easting (x)	Elevation (z)
1	9+93.07	23.81' Rt.	200127.10	951472.49	5199.99
2	9+91.87	24.13' Rt.	200126.98	951471.25	5199.99
3	9+90.57	19.30' Rt.	200131.96	951470.78	5202.07
4	9+88.64	19.82' Rt.	200131.77	951468.79	5202.19
5	9+90.45	26.58' Rt.	200124.80	951469.44	5199.98
6	10+00.84	23.80' Rt.	200125.81	951480.15	5196.81
7	9+89.64	17.98' Lt.	200168.87	951476.09	5194.73
8	9+74.38	26.79' Lt.	200180.11	951462.51	5196.97
9	9+69.00	17.48' Lt.	200171.83	951455.66	5200.65
10	9+75.06	13.98' Lt.	200167.37	951461.05	5202.62
11	9+76.06	15.72' Lt.	200168.91	951462.33	5202.18
12	9+71.73	18.22' Lt.	200172.10	951458.47	5200.10
13	9+72.36	19.30' Lt.	200173.06	951459.27	5200.10
14	9+83.20	13.04' Lt.	200165.08	951468.91	5196.20
15	10+16.16	23.56' Lt.	200169.94	951503.17	5199.61
16	10+17.24	22.93' Lt.	200169.14	951504.13	5199.61
17	10+14.74	18.60' Lt.	200165.29	951500.94	5201.69
18	10+16.47	17.60' Lt.	200164.01	951502.48	5202.09
19	10+19.97	23.66' Lt.	200169.41	951506.94	5199.54
20	10+10.66	29.04' Lt.	200176.26	951498.66	5197.78
21	10+01.85	13.78' Lt.	200162.68	951487.42	5194.98
22	10+10.36	17.98' Rt.	200129.95	951490.51	5195.00
23	10+25.621	26.79' Rt.	200118.71	951504.08	5196.91
24	10+31.00	17.48' Rt.	200126.99	951510.94	5200.09
25	10+24.94	13.98' Rt.	200131.46	951505.55	5202.24
26	10+23.94	15.72' Rt.	200129.92	951504.27	5201.58
27	10+28.27	18.22' Rt.	200126.73	951508.12	5199.50
28	10+27.64	19.30' Rt.	200125.77	951507.33	5199.50
29	10+16.80	13.04' Rt.	200133.75	951497.68	5196.12
30	10+09.90	12.72' Lt.	200160.30	951495.18	5196.12

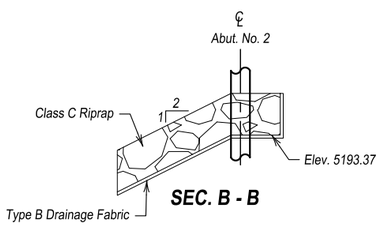
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class C Riprap	Ton	137.4
Type B Drainage Fabric	Sq. Yd.	210

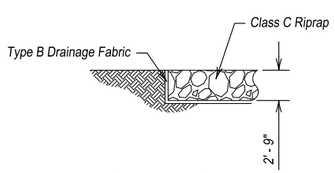
For Estimating Purposes Only, A Factor Of 1.4 Tons/Cu. Yd. Was Used To Convert Cu. Yd. To Tons. The Estimate Is Equivalent To Approximately 98 Cu. Yd.



SEC. A - A



SEC. B - B



DRAINAGE FABRIC DETAIL

RIPRAP DETAILS

FOR

29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY
OVER SPEARFISH CREEK
STA. 9+85.40 TO 10+16.40
STR. NO. 41-079-199

15° RHF SKEW
SEC. 9-T004N-R02W
BRO-B 8041(184)
HL-93
& ALT

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13597
YANLING LENG
SOUTH DAKOTA
8/16/2023

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TLB	ARP	BRIDGE ENGINEER

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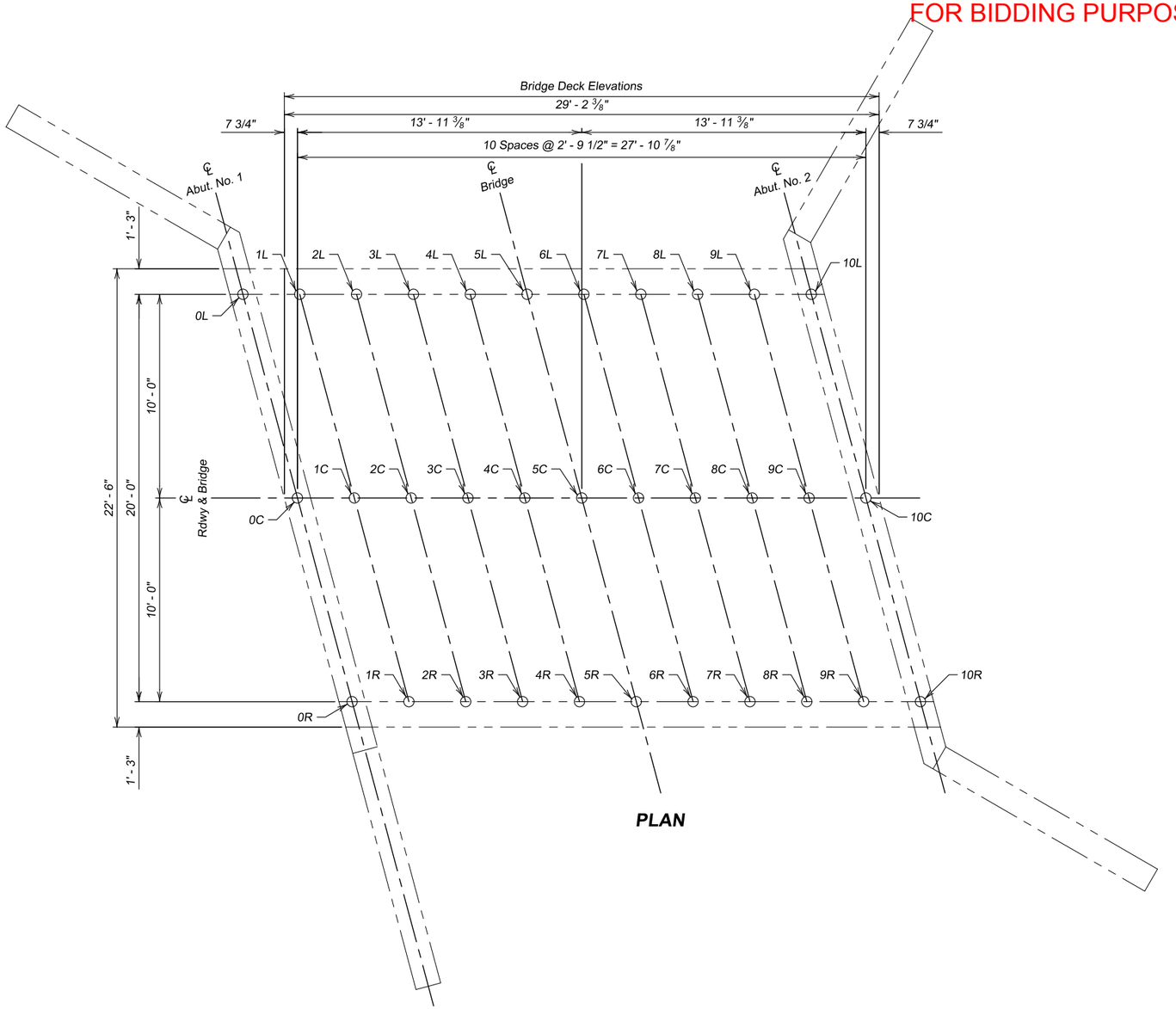
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	43	54

FOR BIDDING PURPOSES ONLY



PLAN

TABLE OF AS-BUILT ELEVATIONS - BRIDGE DECK

LOCATION	ELEVATION	LOCATION	ELEVATION	LOCATION	ELEVATION
0L		0C		0R	
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	

ELEVATIONS - BRIDGE SURVEY MARKERS

LOCATION	STATION - OFFSET	ELEVATION
Begin Bridge		
End Bridge		

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.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Bridge Elevation Survey	LS	Lump Sum

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13597
YANLING LENG
SOUTH DAKOTA
8/16/2023

AS-BUILT ELEVATION SURVEY
FOR
29' - 2 3/8" RIGID FRAME BRIDGE

20'-0" ROADWAY — 15° RHF SKEW
OVER SPEARFISH CREEK — SEC. 9-T004N-R02W
STA. 9+85.40 TO 10+16.40 — BRO-B 8041(184)
STR. NO. 41-079-199 — HL-93

LAWRENCE COUNTY
S.D. DEPT. OF TRANSPORTATION
AUGUST 2023

16 OF 19

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
YL	TAS	ARP	BRIDGE ENGINEER

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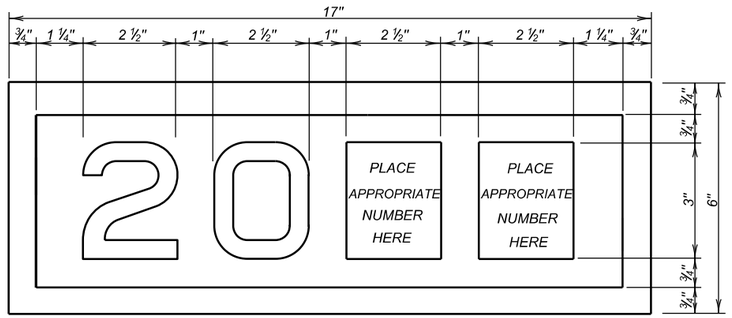


YEAR PLATE DETAILS

GENERAL NOTES:

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

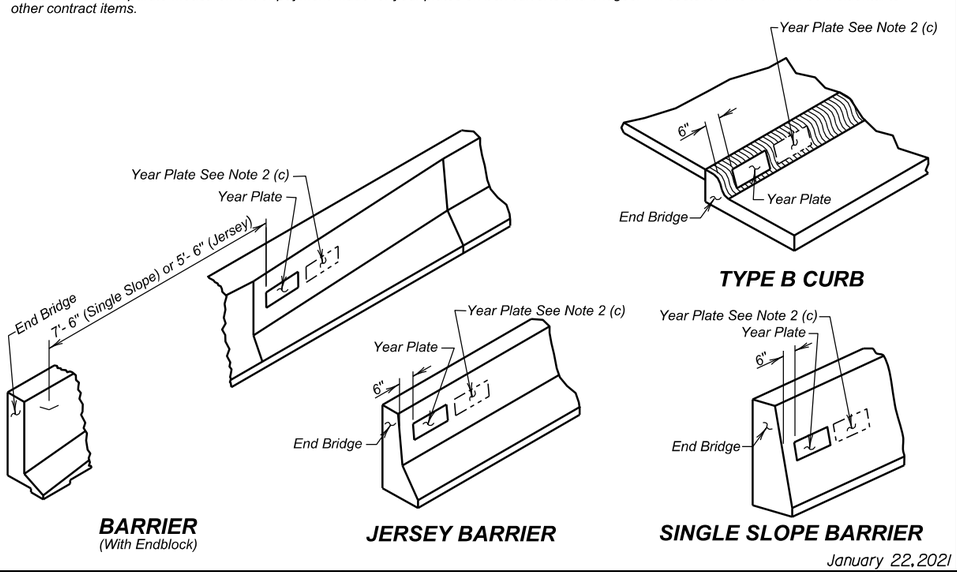
2. Year plates will be located on structure(s) as follows:

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

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

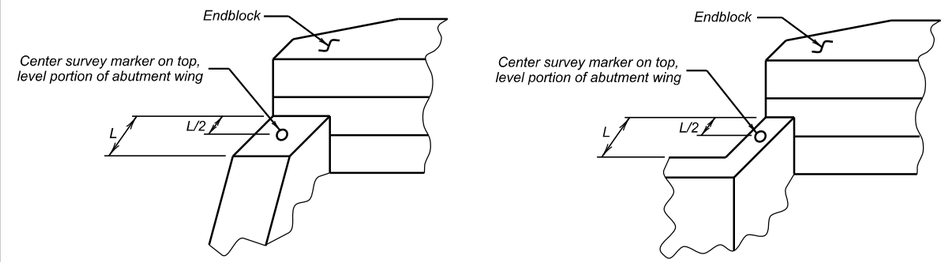
   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date will be placed as listed above and the other located adjacent to it. Both year plates will be shown at each end of the bridge on opposite sides.

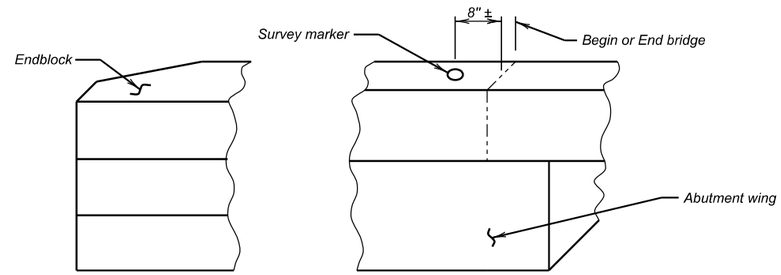
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



January 22,2021

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





GENERAL NOTES:

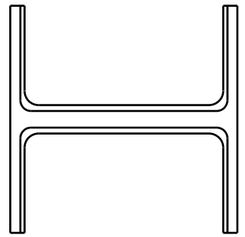
1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.

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 ⅜" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 ½" top diameter.

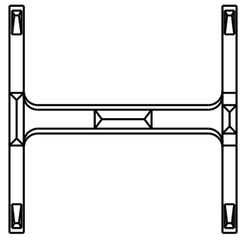
3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26,2012

Published Date: 2026	SDDOT	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1

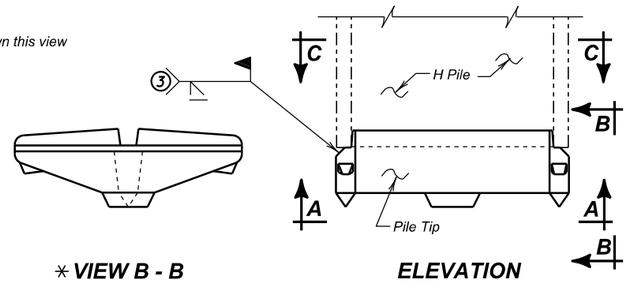


✳ VIEW C - C



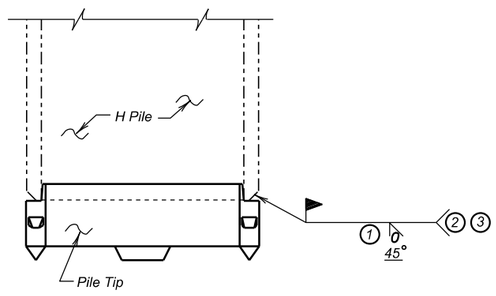
VIEW A - A

✳ H Pile not shown this view



✳ VIEW B - B

ELEVATION



2 See Table 1

3 Typical Both Flanges

ALTERNATE WELD ATTACHMENT

TABLE 1

① DEPTH OF PREPARATION	PILE
3/8	HP 14 X 102 HP 14 X 89 HP 12 X 74
5/16	HP 14 X 73 HP 12 X 63 HP 10 X 57
1/4	HP 12 X 53 HP 10 X 42 HP 8 X 36

GENERAL NOTES:

1. Pile tip reinforcement shall be one-piece cast steel points commercially available and produced by a manufacturer who regularly produces pile points as a production item available to the public.
2. Material for pile points shall conform to ASTM A27, Grade 65-35, Class 2.
3. Pile points shall contain teeth designed to dig into obstructions and bearing materials in order to develop the maximum carrying capacity of the materials encountered.
4. Welding and weld inspection shall be in conformance with AWS D1.5 - (Current Year) Bridge Welding Code - Steel.

December 23,2012

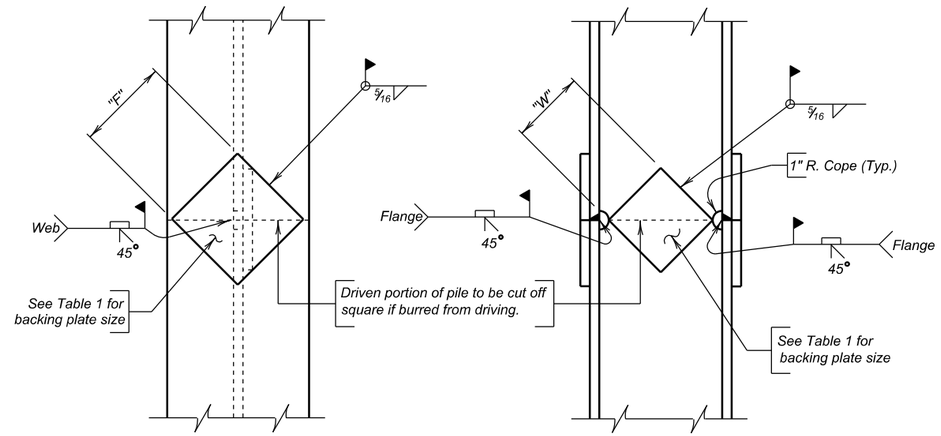
Published Date: 2026

SDDOT

H PILE TIP REINFORCEMENT

PLATE NUMBER 510.30

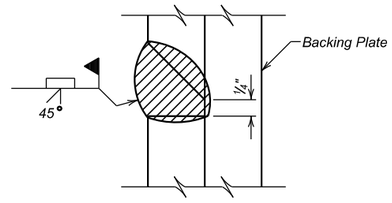
Sheet 1 Of 1



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 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23,2012

Published Date: 2026

SDDOT

STEEL PILE SPLICE DETAILS

PLATE NUMBER 510.40

Sheet 1 of 1

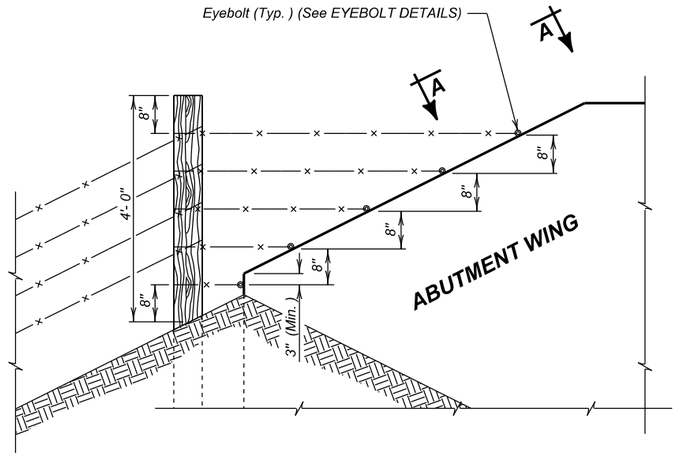
29' - 2 3/8" RIGID FRAME BRIDGE

STR. NO. 41-079-199

AUGUST 2023

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	46	54

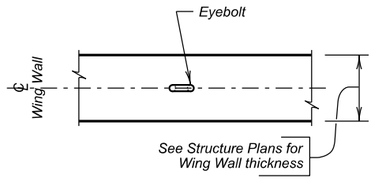
Revised: 07/17/2025 (ARP)



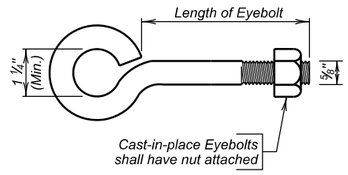
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the bridge abutment wings.
3. Eyebolts shall be ⅝ inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 ½ inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the ⅝ inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



EYEBOLT DETAILS

December 23, 2012

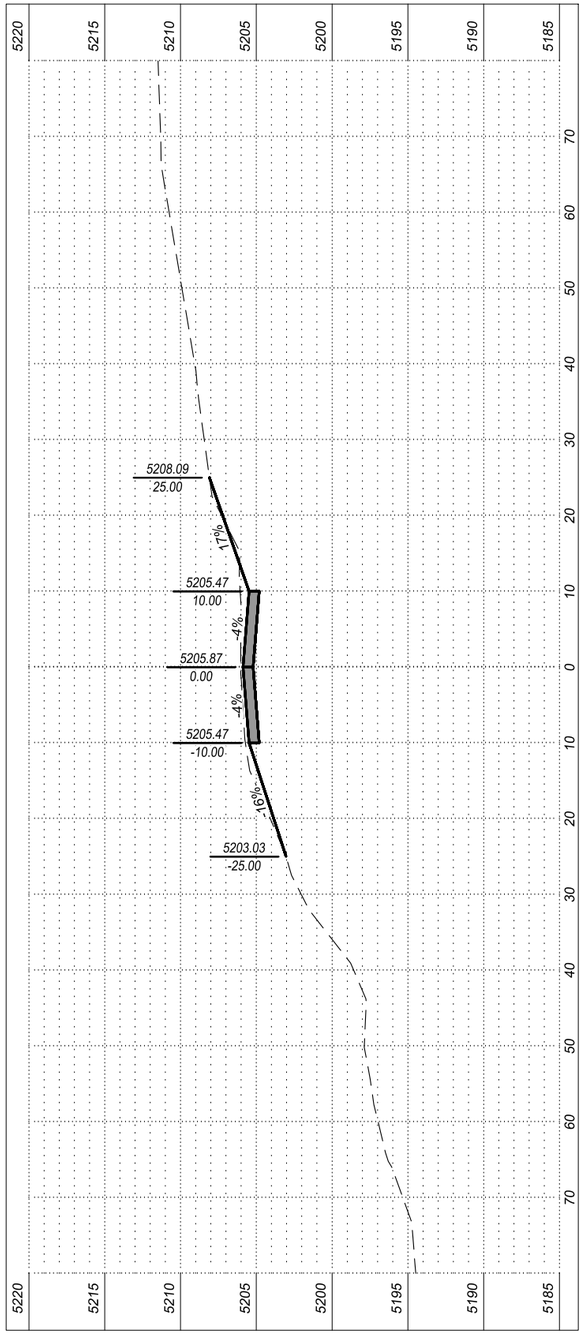
Published Date: 2026	SDDOT	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS LONGER THAN 6')	PLATE NUMBER 620.17 Sheet 1 of 1

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

ELMORE ROAD CROSS SECTION (1 OF 3)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	47	54



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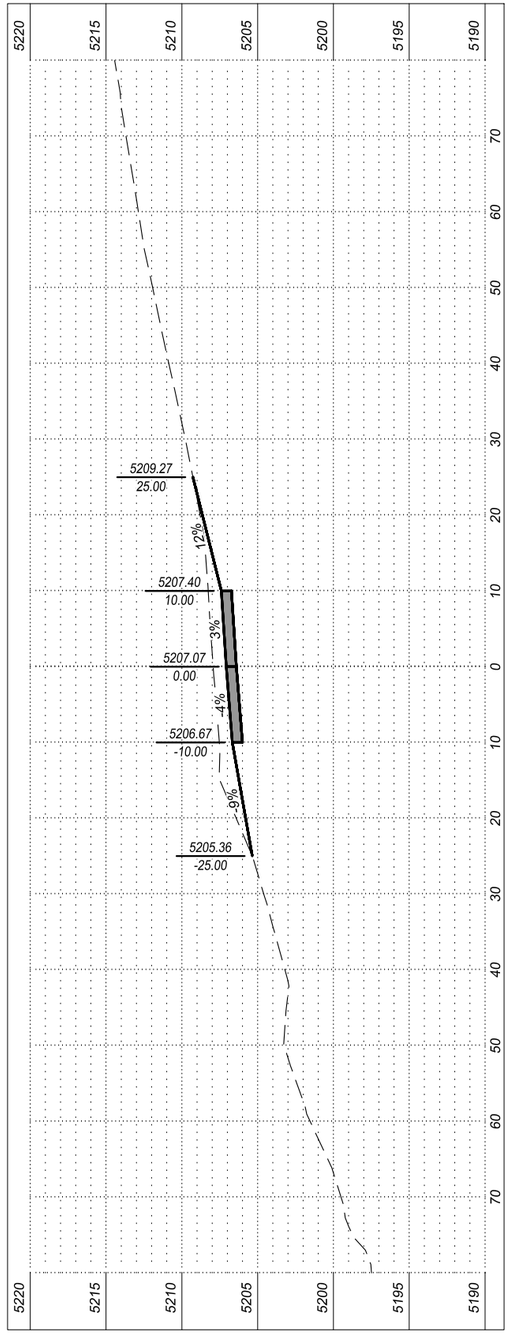

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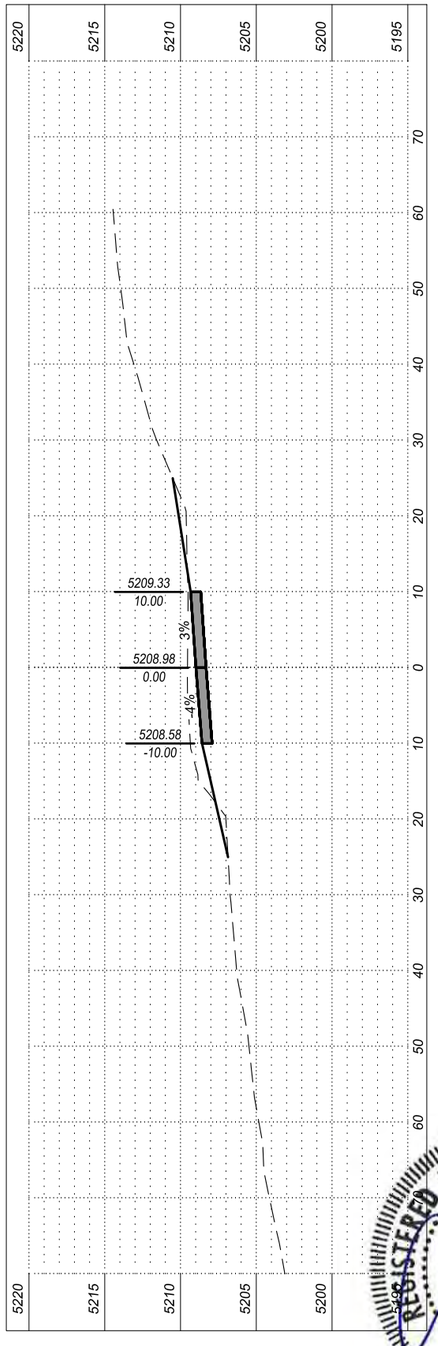

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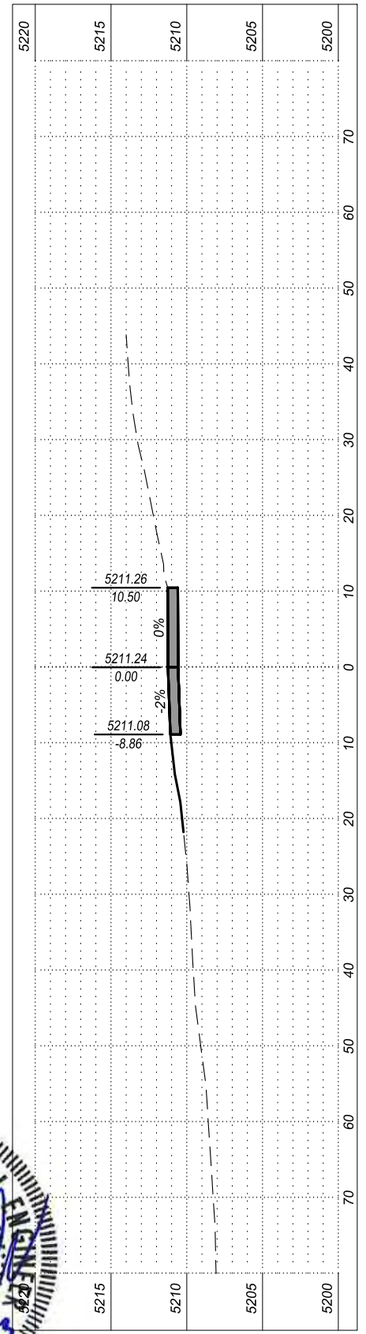

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Vertical Scale: 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

Plotted on: 8/16/23 8:51:08 AM Plotted by: Justin M. Pump
\\files\Active\Projects\2020\20004963.10\Design\Civil\C3D\Source\20004963.10_CC Bridge Civil Design.dwg

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

ELMORE ROAD CROSS SECTION (2 OF 3)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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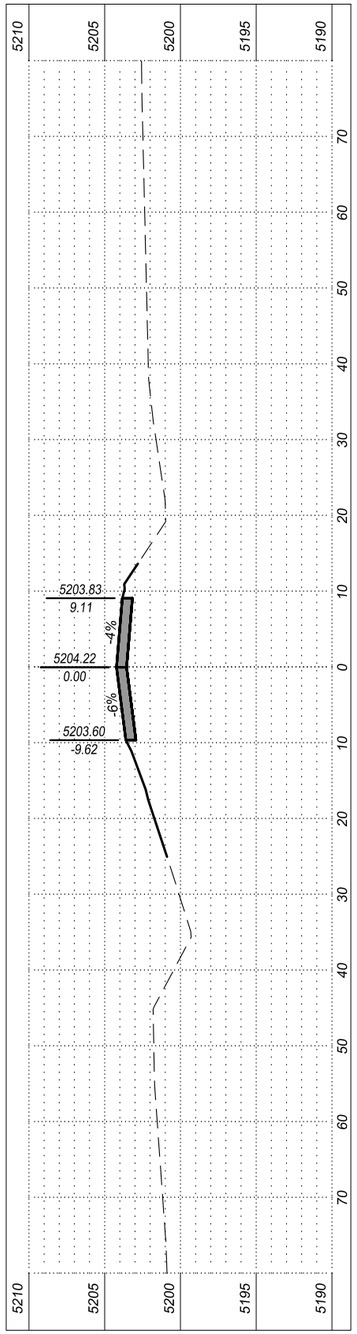

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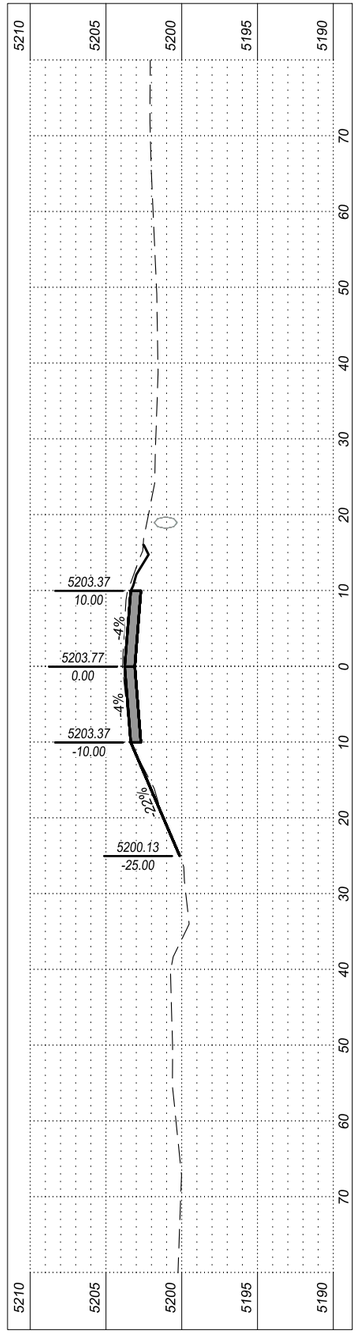

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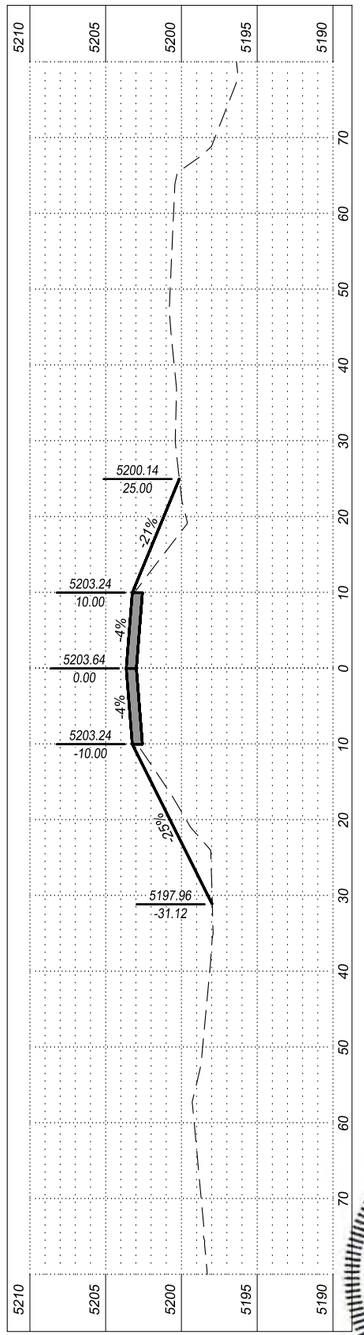

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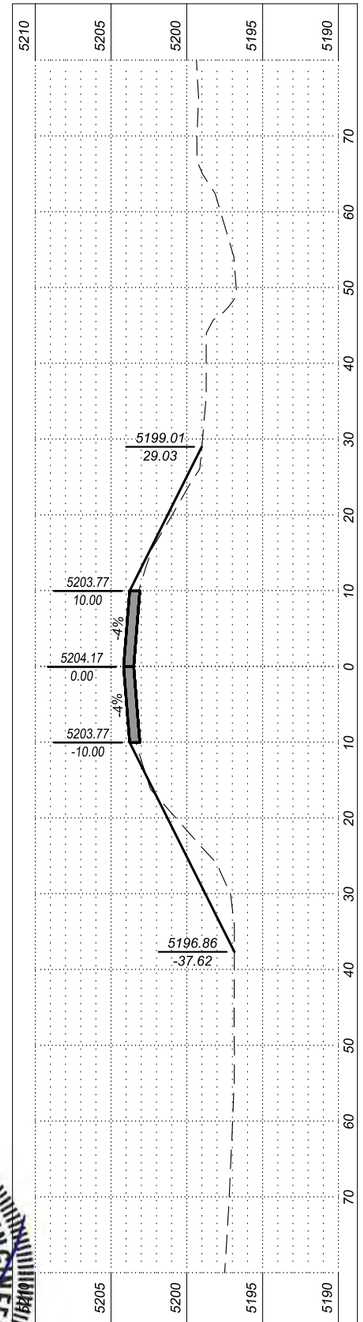

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Vertical Scale: 1" = 10'

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ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

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ELMORE ROAD CROSS SECTION (3 OF 3)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	49	54

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SOUTH DAKOTA
8/16/23

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

TRAFFIC DIVERSION CROSS SECTION (1 OF 5)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO-B 8041(184)	50	54

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Vertical Scale: 1" = 10'

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REG. NO. 13492
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

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TRAFFIC DIVERSION CROSS SECTION (2 OF 5)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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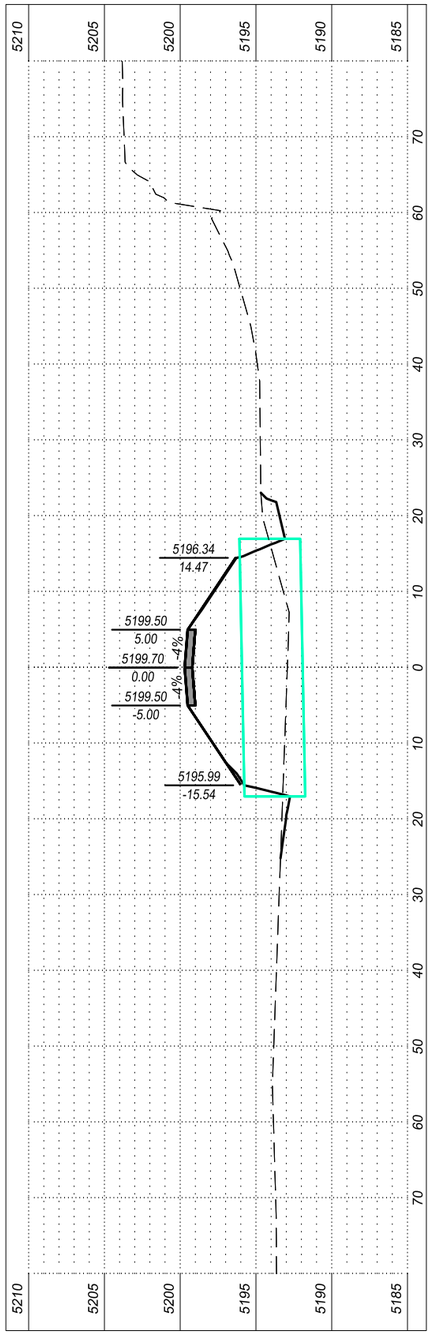

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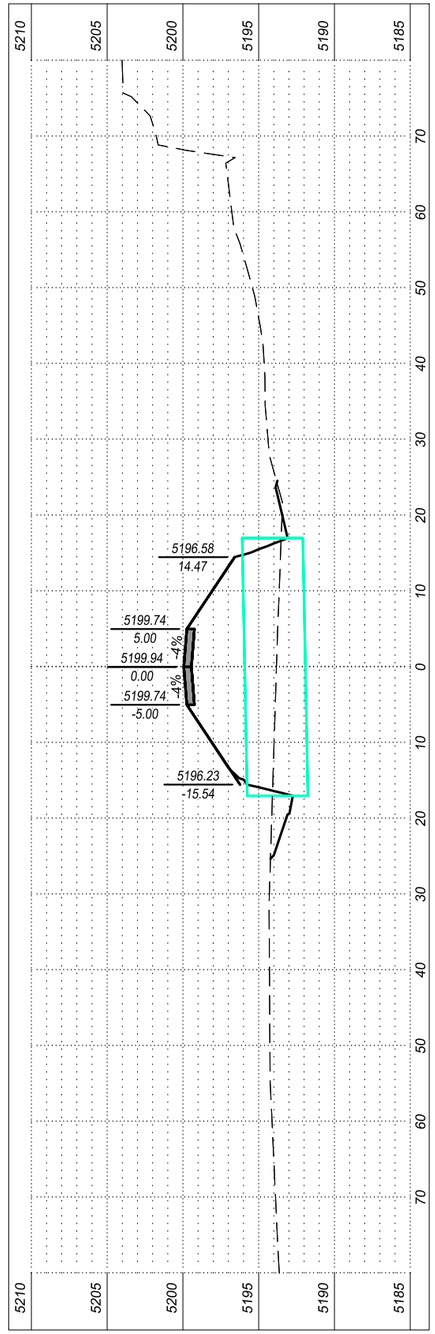

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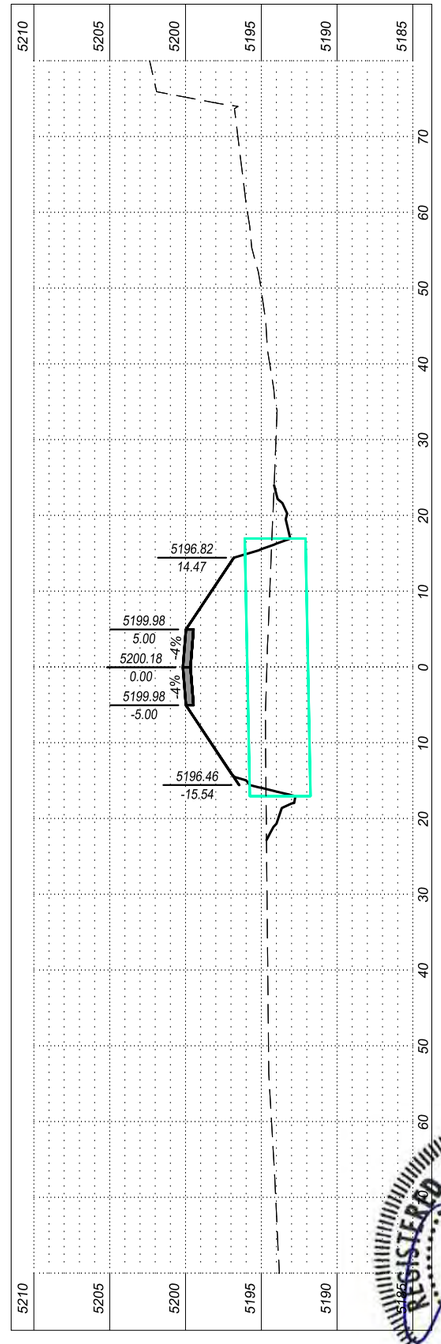

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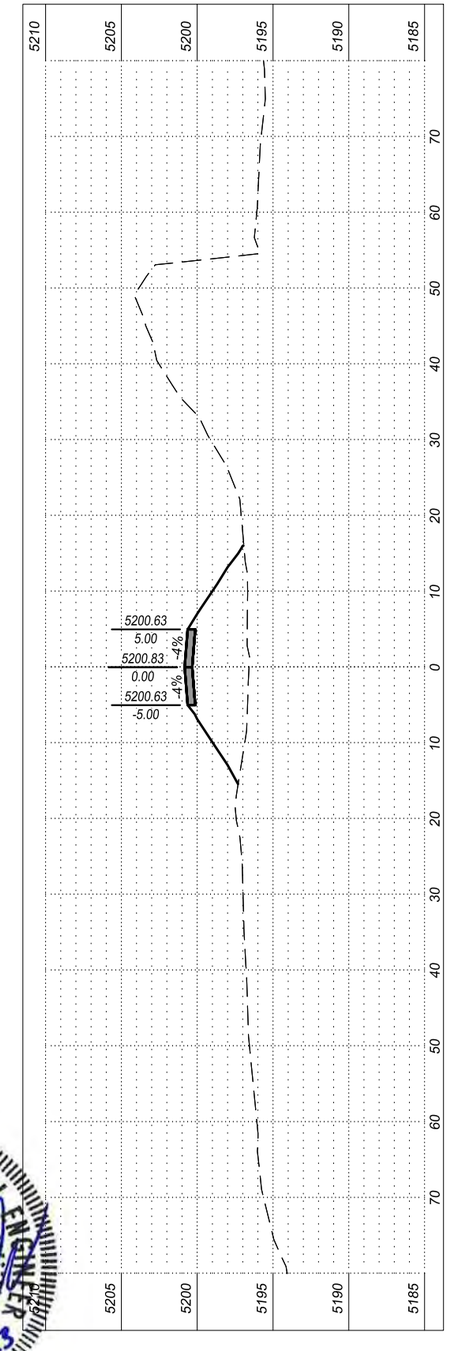

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SOUTH DAKOTA
8/16/23

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TRAFFIC DIVERSION CROSS SECTION (3 OF 5)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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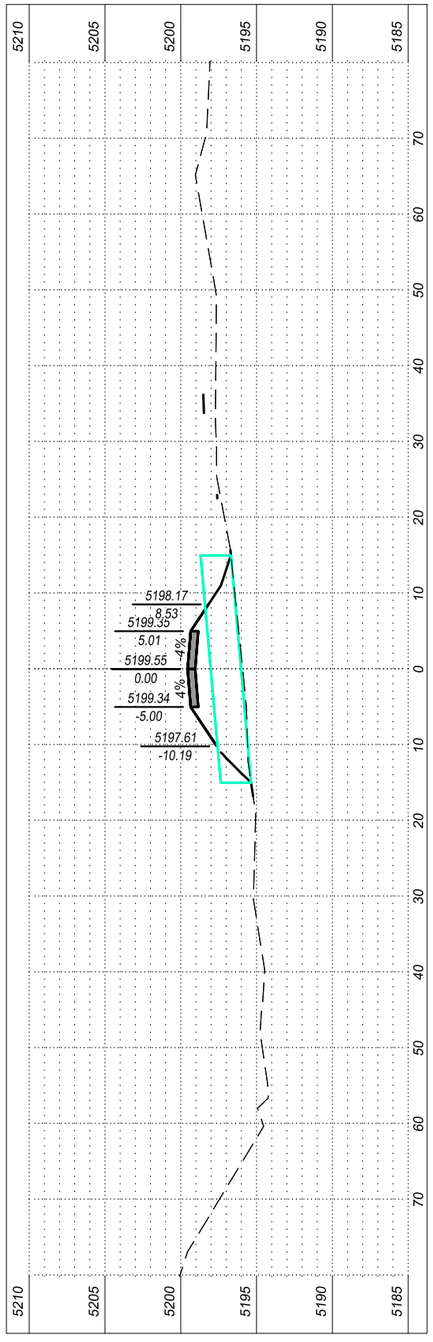

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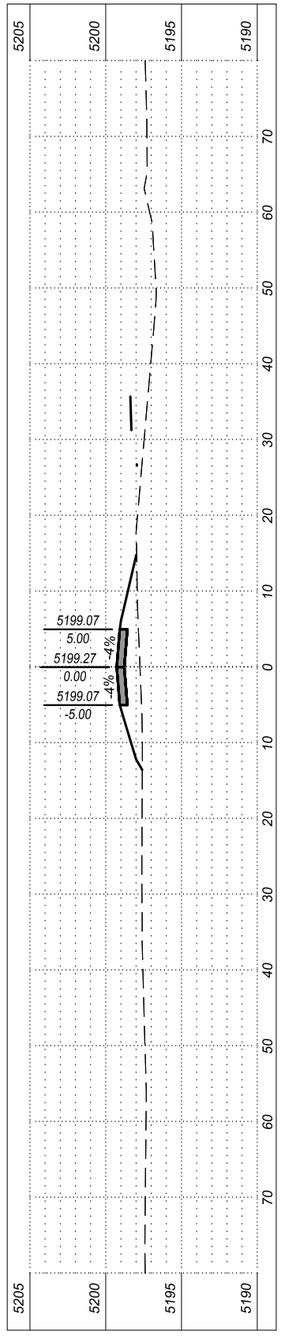

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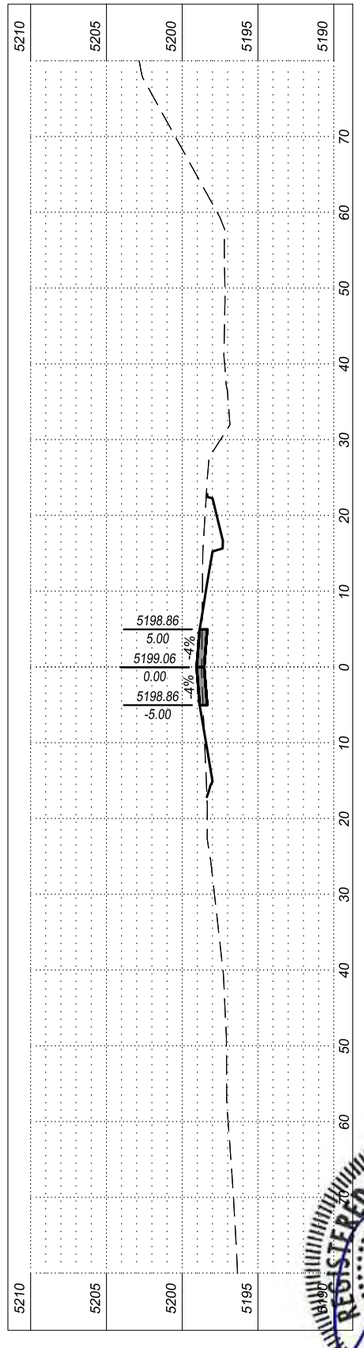

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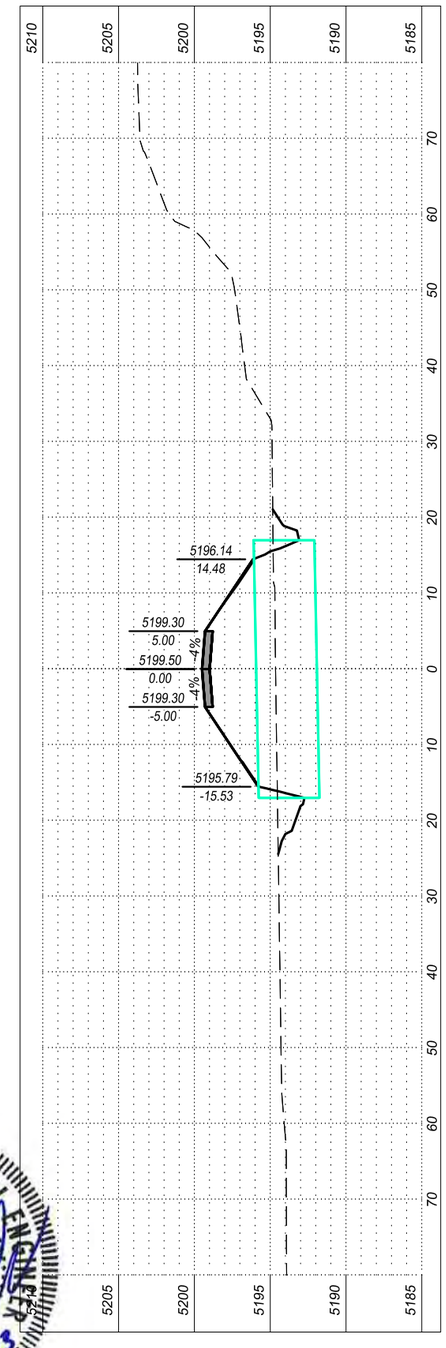

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REGISTERED PROFESSIONAL ENGINEER
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ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

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

TRAFFIC DIVERSION CROSS SECTION (4 OF 5)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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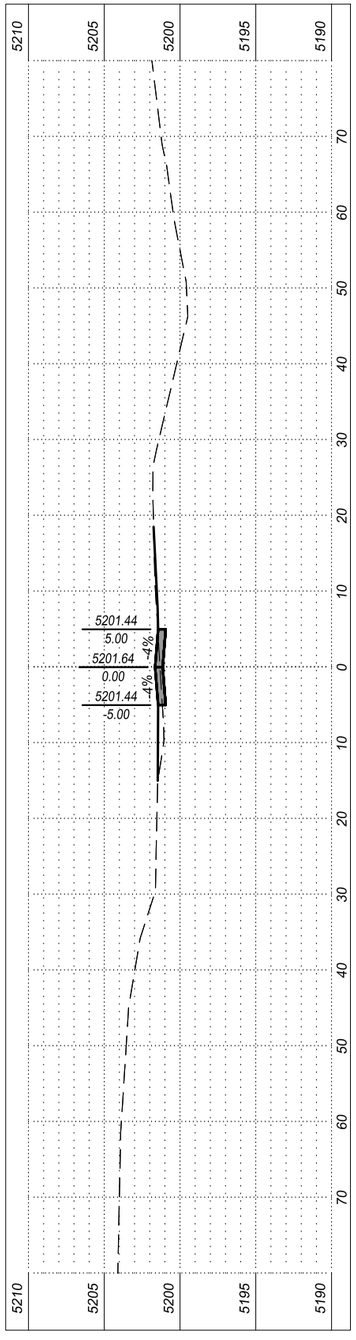

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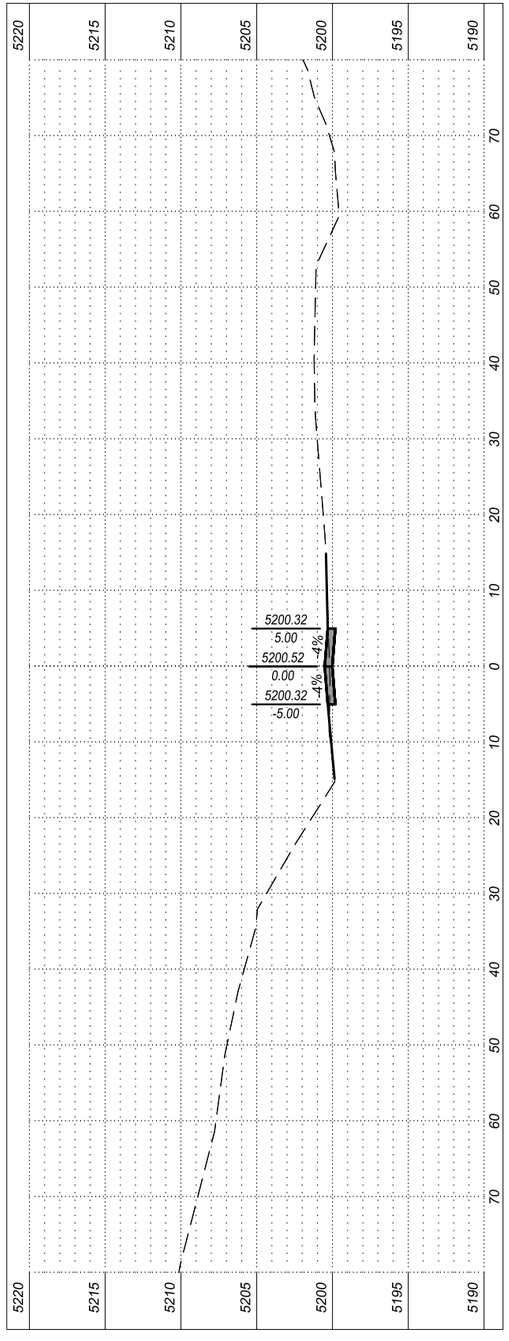

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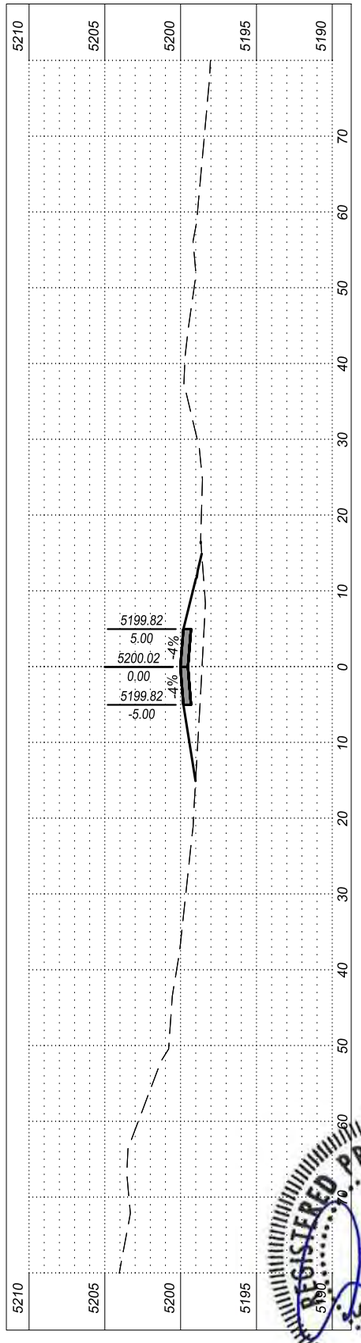

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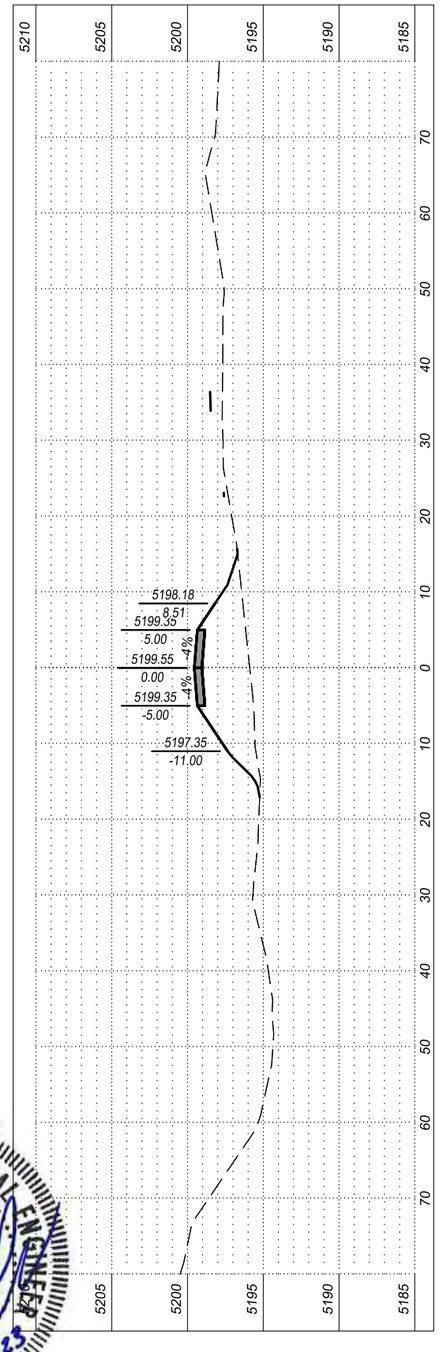

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REGISTERED PROFESSIONAL ENGINEER
REG. NO.
13402
ADAM R.
POLLEY
SOUTH DAKOTA
8/16/23

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

TRAFFIC DIVERSION CROSS SECTION (5 OF 5)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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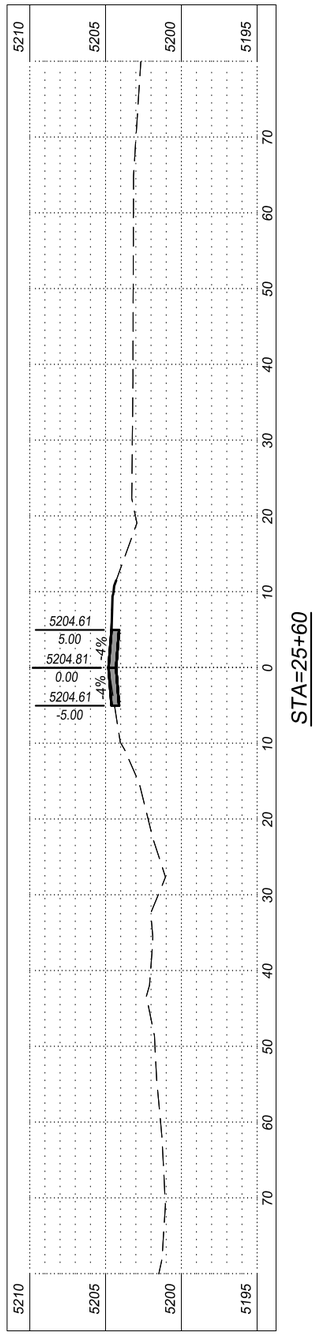

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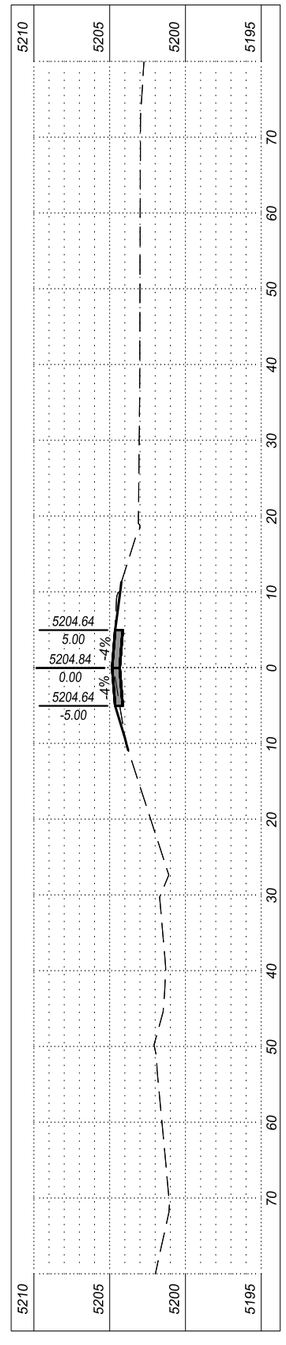

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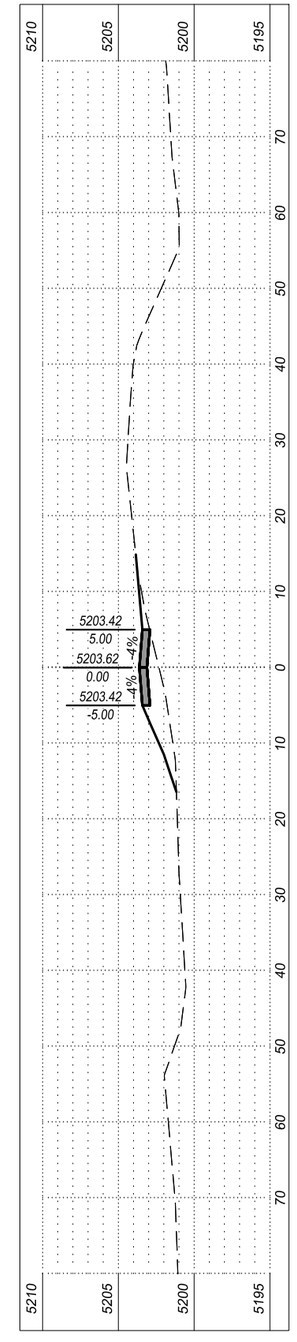

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Vertical Scale: 1" = 10'

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 13402
ADAM R. POLLEY
SOUTH DAKOTA
8/16/23

Plotted on: 8/16/23 8:52:32 AM Plotted by: Justin M. Pump
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