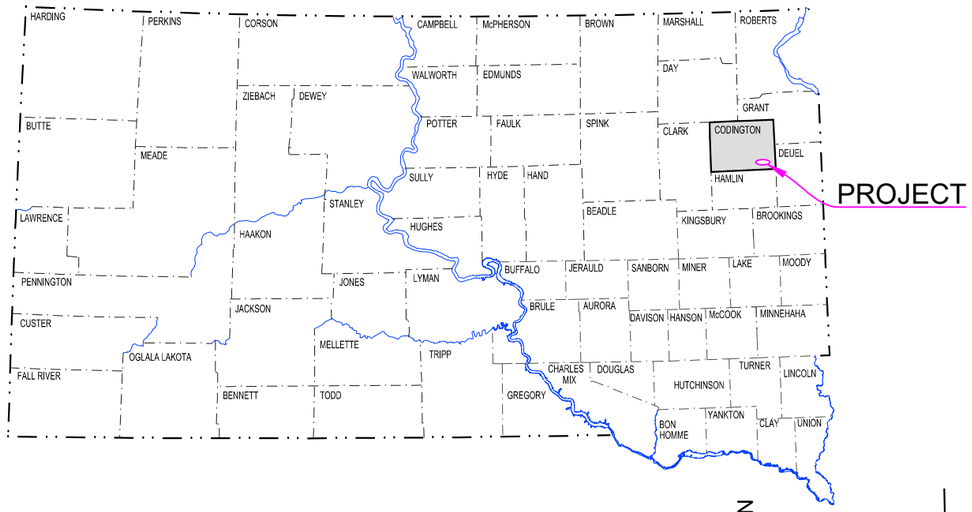
BAI JOB # 23190.62	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		BRF-B 6510(05)	1	58

FOR BIDDING PURPOSES ONLY

Plotting Date: 08/12/2024 Revised: 8/12/2024 LAJ



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT
BRF-B 6510(05)
CODINGTON COUNTY

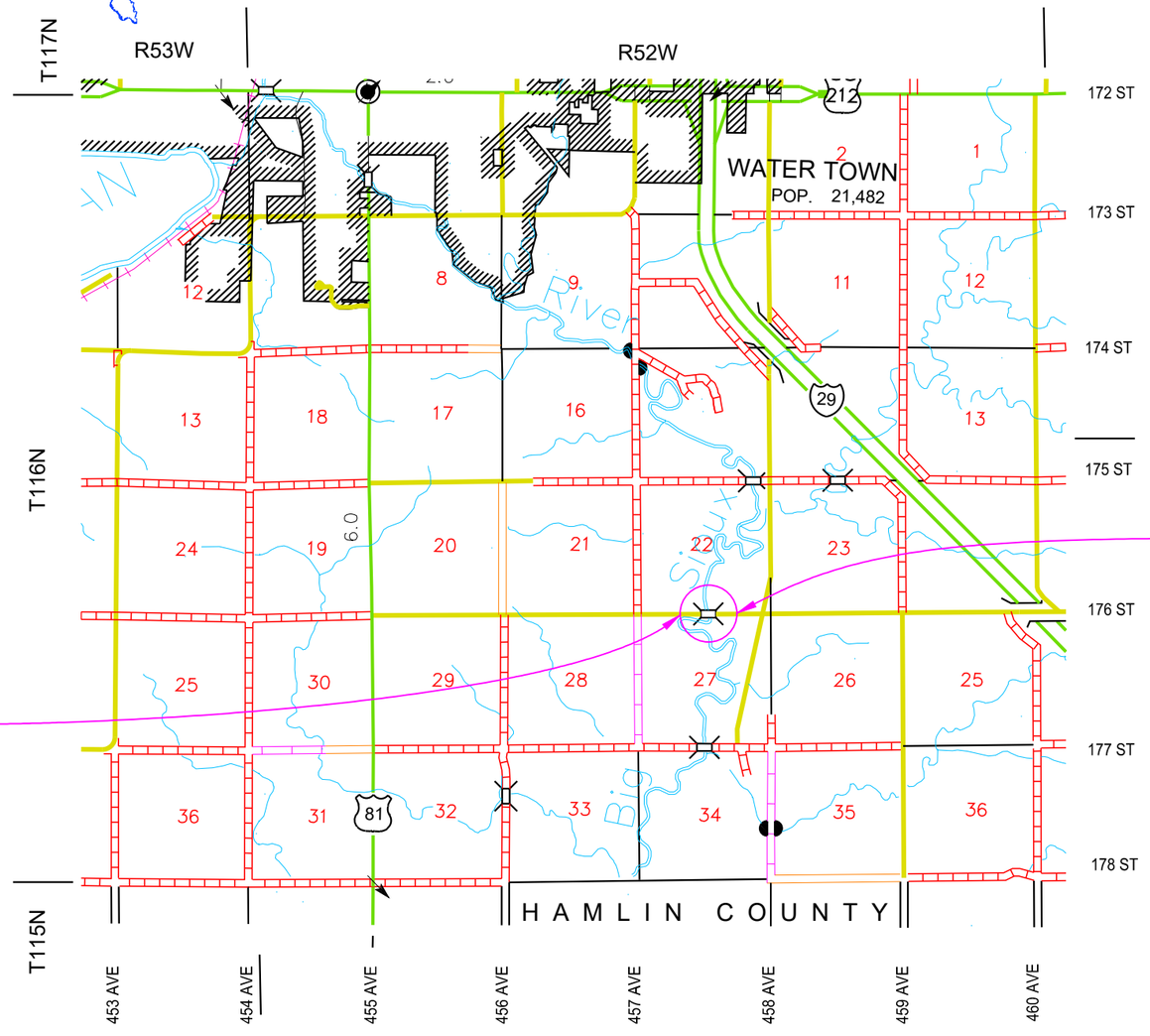
STRUCTURE AND APPROACH GRADING
STRUCTURE NO. 15-216-220
PCN 08MM

INDEX OF SHEETS

STORM WATER PERMIT
Major Receiving Body of Water: Big Sioux River
Total Project Area: 3.8 Acre
Area Disturbed: 1.9 Acre
Approx. Begin Lat/Long: 44.833006° N
-97.057311° W

DESIGN DESIGNATION

AADT (2021)	309
AADT (2041)	331
DHV	43
D	50%
DHV T%	4.9
AADT T%	10.9
V	55 mph



BEGIN BRF-B 6510(05)
Station 3+00.00
103.51 feet North and 2641.55 feet East of the southwest corner of Section 22 - Township 116 North - Range 52 West

END BRF-B 6510(05)
Station 9+00.00
129.13 feet North and 3241.00 feet East of the southwest corner of Section 22 - Township 116 North - Range 52 West

N

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9235
MARK JUNKER
SOUTH DAKOTA
8/12/2024

Prime professional in charge of coordinating the various technical professions involved in this project.

PLANS BY:

BANNER engineering a better community
BANNER ASSOCIATES, INC.
803 S. DAKOTA ST.
MILBANK, SD 57252
855-323-6342

3

November 6, 2024

FOR BIDDING PURPOSES ONLY

ESTIMATE OF QUANTITIES

GRADING

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	1,667.0	SqYd
110E1690	Remove Sediment	10.0	CuYd
120E0010	Unclassified Excavation	2,952	CuYd
120E0900	Contaminated Material Excavation	100	CuYd
230E0010	Placing Topsoil	672	CuYd
260E1010	Base Course	1,600.2	Ton
* 320E1200	Asphalt Concrete Composite	558.7	Ton
630E1010	Straight Class A W Beam Guardrail with Wood Posts	25.0	Ft
630E1140	Straight Double Class A W Beam Guardrail with Wood Posts	43.8	Ft
630E2015	W Beam Guardrail Flared End Terminal	4	Each
632E2220	Guardrail Delineator	16	Each
633E1220	High Build Waterborne Pavement Marking Paint, 4" White	1,200	Ft
633E1222	High Build Waterborne Pavement Marking Paint, 4" Yellow	150	Ft
634E0110	Traffic Control Signs	207.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	8	Each
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	765	SqYd
734E0154	12" Diameter Erosion Control Wattle	780	Ft
734E0165	Remove and Reset Erosion Control Wattle	95	Ft

*** - Denotes Non-Participating**

STRUCTURE NO. 15-216-220

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	479.2	SqYd
120E7000	Select Granular Backfill	16.8	Ton
250E0030	Incidental Work, Structure	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	64.0	Ft
420E0100	Structure Excavation, Bridge	575	CuYd
430E0200	Bridge End Embankment	173	CuYd
430E0300	Granular Bridge End Backfill	68.4	CuYd
430E0510	Approach Slab Underdrain Excavation	14.4	CuYd
430E0700	Precast Concrete Headwall for Drain	4	Each
460E0030	Class A45 Concrete, Bridge Deck	240.2	CuYd
460E0050	Class A45 Concrete, Bridge	189.2	CuYd
460E0150	Concrete Approach Slab for Bridge	151.9	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	32.0	SqYd
470E0420	Type T101 Bridge Railing	252	Ft
480E0100	Reinforcing Steel	23,712	Lb
480E0200	Epoxy Coated Reinforcing Steel	68,402	Lb
510E0100	Extract Pile	2	Each
510E0300	Preboring Pile	180	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	140	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	1,120	Ft
510E3851	16"x0.25" Steel Pipe Test Pile, Furnish and Drive	100	Ft
510E3855	16"x0.25" Steel Pipe Bearing Pile, Furnish and Drive	1,700	Ft
680E0040	4" Underdrain Pipe	150	Ft
680E2500	Porous Backfill	11.6	Ton
700E0210	Class B Riprap	1,692.2	Ton
700E1100	Overburden Excavation for Riprap	628	CuYd
831E0110	Type B Drainage Fabric	1,568	SqYd
831E1030	Perforated Geocell	480	SqFt

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

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

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

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

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.041 acre(s) of wetlands (includes temporary and permanent) becoming impacted. Refer to the plans for location and boundaries of the impacted wetlands.

Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impact (Acres)
1	5+00 - 7+00	0.00	0.00	0.01	0.03	0.04
2	5+00 - 7+00	0.00	0.00	0.00	0.001	0.001

Action Taken/Required:

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

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

COMMITMENT A2: STREAMS

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

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)
Big Sioux River	6+18	0.01	0.01	0.00	0.00	0.02

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. See Overburden Excavation for Riprap note within structure sheets.

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 B5: NORTHERN LONG-EARED BAT

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

Action Taken/Required:

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

Station	NLEB Seasonal Work Restriction
6+18	April 1 to October 31

If project activities cannot be conducted outside of the seasonal restriction the Contractor will notify the Project Engineer and the Environmental Office Biologist (605-773-3309) to schedule a presence/absence survey.

COMMITMENT B6: MIGRATORY BIRDS WORK RESTRICTION

Migratory birds are known to use the project area for nesting, which primarily occurs from April 1st to August 31st.

Action Taken/Required:

All swallows are state and federally protected under the Migratory Bird Treaty Act of 1918. It is illegal for any person to take, possess, transport, sell, or purchase them or their parts, such as feathers, nests, or eggs, without a permit. Active nests with eggs or chicks inside may not be touched or destroyed without a permit from the U.S. Fish and Wildlife Service (USFWS). Inactive (empty) nests do not require a permit to destroy. Nest or bird removal applications must be justified with strong, compelling reasons such as a health or safety hazard towards humans and/or birds or damage to property.

Construction activities should not occur in the locations listed in the table below during the migratory bird work restriction without prior approval from the SDDOT Environmental Office to avoid conflicts with nesting migratory birds.

Station	Migratory Bird Restriction
6+18	April 1 to August 1

If necessary, the Contractor may implement one or more of the measures below, or other approved measures, to prevent birds from nesting:

August 2 to March 31:

- Remove the existing bridge.
- Remove old nests and any traces of mud.
- Install netting or other barriers over potential nesting sites.

April 1 to August 1:

- Remove mud nests frequently, in between nest construction, until the existing bridge is removed. Only remove nests that do not have eggs or chicks within.
- Maintain netting or other barriers over potential nesting sites, until the existing bridge is removed.
- Play sounds of alarm and distress calls of cliff and barn swallows to disrupt nest construction, until the existing bridge is removed.

If project activities cannot be conducted outside of the seasonal restriction the Contractor will notify the Project Engineer and the Environmental Office Biologist (605-773-3309) to coordinate with the 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.

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

Action Taken/Required:

The Contractor 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

The Big Sioux River is classified as a warm water semi-permanent fishery with a total suspended solids standard of less than 90 mg/L 30-day average, less than 158 mg/L daily maximum.

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.

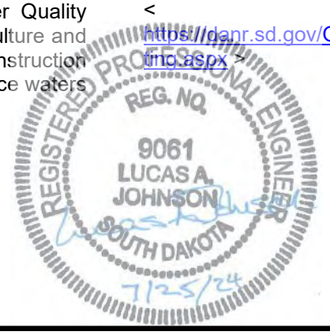
Action Taken/Required:

If construction dewatering is required and this project is not required to be covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the Contractor will obtain the General Permit for Temporary Discharge Activities from the DANR Surface Water Program, 605-773-3351.
< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_TemporaryDischargeNOI2018Fillable.pdf >

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 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 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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

COMMITMENT 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
6+18	Big Sioux River	1701.8

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 L: CONTAMINATED MATERIAL

Contaminated soil and/or known gas stations, undergrounds storage tanks, etc. are located within the project limits. Petroleum contaminated soil may be located at the following sites:

Description	Station	L / R
Petroleum & Oil Spill into Big Sioux River	6+18	N/A

Action Taken/Required:

The Contractor will give written notice, with a copy to the Area Engineer and DANR, 30 days prior to the start of work. In addition, the Contractor will give written notice to the Engineer 7 days prior to the commencement of the work so the Engineer may notify DANR of the day work will start.

The Contractor will be responsible for having the existing underground utilities located in the construction area. Underground utilities damaged by the Contractor due to negligence will be repaired at the Contractor's expense.

Petroleum contaminated soil may be disposed of at the City of Watertown Regional Landfill (phone 605-882-6219). Measurement of "Contaminated Material Excavation" will be in accordance with Section 120.4 of the Specifications. All costs for excavating and transporting the contaminated materials to the disposal site and all fees charged per cubic yard by the disposal site will be incidental to the contract unit price per cubic yard for "Contaminated Material Excavation".

The estimated quantity of "Contaminated Material Excavation" is 100 cubic yards. The quantity of "Contaminated Material Excavation" may vary from the plans. No adjustment will be made to the contract unit price for variations in the quantity of "Contaminated Material Excavation". The estimated quantity of "Contaminated Material Excavation" is provided in the plans.

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.

COUNTY REQUIREMENTS

The County will perform the following items:

1. Obtain temporary & permanent easements as shown in plans.
2. Furnish and install all temporary and permanent fencing.
3. Remove wattles in permanently seeded areas.

EXISTING UTILITIES

Utilities within the limits of the proposed construction are to be adjusted by the utility owner unless otherwise indicated on these plans.

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It is the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities. **It is the responsibility of the Contractor to coordinate all utility adjustments with the utility owners and give the required notice to utility owners.**

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.

UTILITY CONTACT INFORMATION

Codington-Clark Electric Cooperative, Inc.
3-phase 7200-volt underground power line south of road.
PO Box 880
3520 9th Avenue SW
Watertown, SD 57201
Jared Terhark, 605-886-5848 office, jaredt@ccelectric.coop
Office, 605-886-5848 office, info@codingtonclarkelectric.coop

Sioux Rural Water System
6" PVC water main, no tracer wire, GPS location, north of road.
6" PVC water main, no tracer wire, GPS location, south of road.
10" PVC water main, no tracer wire, GPS location, south of road.
45703 176th Street
Watertown, SD 57201
Guy Gronewold, 605-881-0347 cell, ghgronewoldsrw@gmail.com
Travis Steffensen, 605-882-1321 office, manager@siouxruralwater.com

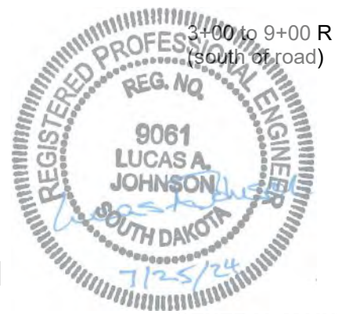
Lumen (formerly Century Link)
11-pair underground copper line north of road.
15 4th Avenue SW
Aberdeen, SD 57401
Cory Moser, 605-290-7886 cell, Cory.Moser@lumen.com
Office, 605-229-7441 office

Watertown Municipal Utilities
No electric lines present as of May 22, 2023. Farthest south is by-pass road.
No water lines present as of May 18, 2023. No water outside city limits.
No gas lines present as of May 18, 2023. Gas is ½ mile to the west.
901 4th Avenue SW
Watertown, SD 57201
Office, 605-882-6233 office
Brian Benson, Electric Superintendent, bbenson@watertownmu.com
Wayne Lovelis, Water Superintendent, wlovelis@watertownmu.com
John Lunde, Gas Superintendent, jlunde@watertownmu.com

Interstate Telecommunications Cooperative, Inc. (Stockholm & Strandberg Telephone)
288-pair underground fiber optic cable north of road.
312 4th St. W.
Clear Lake, SD 57226
Terry Pederson, 605-874-2181 office, terry.pederson@itccoop.com
Jerome Salanoa, 605-874-2181 office, jerome.salanoa@itccoop.com
Office, 800-417-8667

TABLE OF ANTICIPATED UTILITY ADJUSTMENTS

Location	Description
3+00 to 9+00 L (north of road)	**Sioux Rural Water System** 6" PVC water main, no tracer wire, GPS location, north of road. No adjustment anticipated. **Lumen (formerly Century Link)** 11-pair underground copper line north of road. Relocate and/or lower the copper line. Lumen requires at least **90 days notice** before construction begins. Lumen will not relocate the line when the ground is frozen. **Interstate Telecommunications Cooperative** 288-pair underground fiber optic cable north of road. Relocate and/or lower the fiber cable. ITC requires at least **90 days notice** before construction begins. ITC will not relocate the cable when the ground is frozen.
3+00 to 9+00 R (south of road)	**Sioux Rural Water System** 6" PVC water main, no tracer wire, GPS location, south of road. 10" PVC water main, no tracer wire, GPS location, south of road. No adjustments anticipated. **Codington-Clark Electric Cooperative, Inc.** 3-phase 7200-volt underground power line south of road. No adjustment anticipated.



GENERAL MAINTENANCE OF TRAFFIC

This project will be closed to thru-traffic and the roadway barricaded. Local access to entrances must be maintained.

Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. The Contractor will coordinate with the County to determine which signs will be reset and to verify reset locations. Cost of this work will be incidental to the contract unit prices for various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the County.

REMOVAL OF EXISTING ASPHALT CONCRETE PAVEMENT

The Contractor will remove the existing asphalt concrete pavement. The existing mainline asphalt concrete pavement is typically 25 feet wide with an unknown thickness. For earthwork calculations, a thickness of 4" was assumed. Prior to removal of the existing asphalt concrete pavement at Station 3+00 and 9+00 the existing pavement will be sawed full depth to a true line with a vertical face. The asphalt concrete pavement will be disposed of in a manner compliant with the Environmental Conditions and its reuse in grading operations is not permitted. All costs associated with sawing, removal, hauling, and disposal will be incidental to the contract unit price per square yard for "Remove Asphalt Concrete Pavement".

GRADING OPERATIONS

Shrinkage factor: Embankment plus 35%.

Compaction of roadway embankment material will be governed by the Specified Density Method.

Water for Embankment and Backfill is estimated at the rate of 10 gallons of water per cubic yard of Embankment. The estimated quantity of Water is **14.0 MGal**. No separate payment will be made for the Water and all costs associated will be incidental to the contract unit price per cubic yard for "Unclassified Excavation".

TABLE OF EXCAVATION QUANTITIES

Station	Exc (CuYd)	Unstbl Mat. Exc (CuYd)	Exc for Bridge End Bkfl & Bridge End Emb (CuYd)	Total Exc (CuYd)	Exc Waste (CuYd)	Riprap Exc Waste (CuYd)	Str Exc Waste (CuYd)	*Total Waste (CuYd)
3+00 to 9+00	1975	100	205	2280	233	1166	123	1522

* The quantity for this item is for information only.

UNCLASSIFIED EXCAVATION

The plans quantity for "Unclassified Excavation" as shown in the Estimate of Quantities will be the basis for payment for this item unless the Engineer orders a change.

TABLE OF UNCLASSIFIED EXCAVATION

Excavation		1975	
+ Placing Topsoil	+	672	
+ Unstable Material Exc	+	100	
+ Exc for Granular Bridge End Backfill and Bridge End Embankment	+	205	
Total Unclassified Excavation	**=**	**2952**	**CuYd**

The Excavation quantity includes excavation for the roadway and excavation to the finished channel elevation in the riprap areas.

WASTE SOIL TO TOM & MAVIS REICHLING

Tom & Mavis Reichling, landowners south of this bridge project, have the right to any waste soil generated from the bridge project. The Contractor will load, haul, and dump the waste soil on the Reichling property. The Contractor will not be required to spread out or level the waste soil after it is dumped. The waste soil will be dumped at a location mutually agreed upon by the County, the Reichlings, and the Contractor. The waste soil dump location will be in accordance with the following minimum conditions:

1. The location will be within 1 mile of the bridge project.
2. The location will be safe for hauling and dumping.
3. The location will allow for normal truck hauling operations. The Contractor will not be required to haul to wet or dangerous areas.
4. The location will be at least 100' away from any road right-of-way.
5. Any contaminated waste soil will be disposed of in accordance with Environmental Commitment L: Contaminated Material.

The Reichlings have granted access to the mutually agreed upon waste soil dump location.

If an agreement cannot be reached to dump the waste soil on the Reichling property, the waste soil will be removed and disposed of by the Contractor at an off-site location approved by the Engineer.

All costs for removal and disposal of the waste soil will be incidental to the contract unit price per cubic yard for "Unclassified Excavation".

UNSTABLE MATERIAL EXCAVATION

The areas of unstable material excavation are drawn on the cross sections with a normal depth of 3 feet. The estimated quantity of 100 cubic yards of unstable material excavation will be paid for at the contract unit price per cubic yard for "Unclassified Excavation".

All areas designated as Unstable will be excavated. The unstable material excavated on this project will be placed outside the subgrade shoulder in fill sections or stockpiled and used as topsoil.

Field measurement of unstable material excavation will not be made. However, if there are additional areas of unstable material excavation other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

TABLE OF UNSTABLE MATERIAL EXCAVATION

Station	to	Station	L/R	Depth (Ft)	Quantity (CuYd)
5+45		5+66	L & R	3	100
				Total:	100

PLACING TOPSOIL

Existing vegetation will be salvaged, incorporated, and placed with the topsoil as far as practical.

The areas to receive topsoil comprise of all newly graded areas, within the project limits, exclusive of top of roadway and riprap area.

The plans quantity for "Placing Topsoil" as shown in the Estimate of Quantities will be the basis for payment for this item unless the Engineer orders a change.

The amount of topsoil shown in the Estimate of Quantities is based upon a 4" inch depth within the right of way limits and a 6 inch depth on all Temporary Easement areas.

EROSION CONTROL

All areas of soil disturbed by construction will require erosion control. For informational purposes only, the estimated area requiring erosion control is **2.9 acres**. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding and mulching will be incidental to the contract lump sum price for "Erosion Control".

Type G 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
Oats or Spring Wheat: April through May; Winter Wheat: August through November		10
	Total:	26

Seeding will be installed by drilling in accordance with Section 730.

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

An additional 2% by weight of tackifier will be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier will be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier will be synthetic.

Fiber mulch will be applied at the rate of 3,000 pounds per acre.

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

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

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

WATER FOR GRANULAR MATERIAL

Water for Granular Material is estimated at the rate of 12 gallons of water per ton of base course. The estimated quantity of Water is **19.2 MGal**. No separate payment will be made for the Water and all costs associated will be incidental to the contract unit price per ton for "Base Course".

ASPHALT CONCRETE COMPOSITE

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

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

PERMANENT PAVEMENT MARKING

Pavement markings will be installed to match the existing painted lane widths. The Project Engineer will mark the location of the pavement markings prior to installation.

TABLE OF ESTIMATED PERMANENT PAVEMENT MARKING

Location	Quantity (Ft) 4" Yellow, Dashed	4" White, Solid
Sta. 3+00 to Sta. 9+00	150	1200
Total:	150	1200

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9061
LUCAS A. JOHNSON
SOUTH DAKOTA
8/12/24

HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per the manufacturer's recommendations.

All materials will be applied as per manufacturer's recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

No further testing of this material will be required. Reflective media will consist of glass beads.

RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4" line = 22.5 Gals/Mile
Dashed 4" line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal.

All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

EROSION CONTROL BLANKET

Erosion control blanket will be installed at the locations noted in the table and as shown on the *Erosion and Sediment Control Plan*. Refer to Standard Plate 734.01 for details.

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

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

TABLE OF TYPE 2 EROSION CONTROL BLANKET

Station	Location	Quantity (SqYd)
5+20 to 5+70 - 40' to 67' L	Ditch Outlet to Channel Bank	124
5+40 to 6+06 - 78' to 34' R	Ditch Outlet to Channel Bank	258
6+26 to 6+96 - 30' to 80' L	Ditch Outlet to Channel Bank	256
6+75 to 7+24 - 42' to 70' R	Ditch Outlet to Channel Bank	127
	Total Type 2 Erosion Control Blanket:	765

EROSION CONTROL WATTLE

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

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

Erosion control wattles will remain on the project to decompose.

An additional quantity of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control during construction.

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:

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

TABLE OF EROSION CONTROL WATTLE

Station	Location	Diameter (inch)	Quantity (Ft)
3+10 R	Across Ditch Bottom	12	20
4+00 L	Across Ditch Bottom	12	20
5+20 L	Across Ditch Bottom	12	20
5+35 R	Across Ditch Bottom	12	20
7+00 L	Across Ditch Bottom	12	20
7+30R	Across Ditch Bottom	12	20
7+50 L	Across Ditch Bottom	12	20
8+50 L	Across Ditch Bottom	12	20
8+50 R	Across Ditch Bottom	12	20
	Additional Quantity:	12	600
		Total:	780

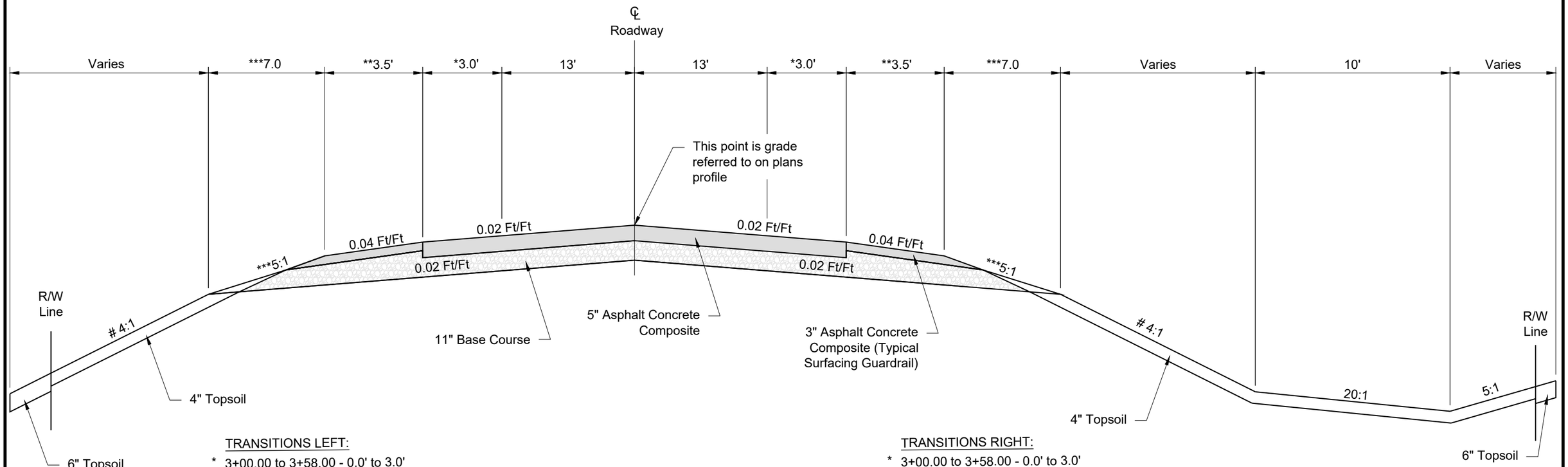
TYPICAL GRADING SECTION

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190.62	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		BRF-B 6510(05)	9	58

Plotting Date: 07/18/2024

3+00 to 9+00



TRANSITIONS LEFT:

* 3+00.00 to 3+58.00 - 0.0' to 3.0'
8+77.98 to 9+00.00 - 3.0' to 0.0'

** 3+00.00 to 3+58.00 - 0.0'
3+58.00 to 4+93.00 - 0.0' to 9.0'
4+93.00 to 5+30.50 - 9.0' to 3.5'
5+30.50 to 5+47.38 - 3.5'

6+72.89 to 6+92.87 - 3.5'
6+92.87 to 7+30.37 - 3.5' to 9.0'
7+30.37 to 8+65.37 - 9.0' to 0.0'
8+65.37 to 9+00.00 - 0.0'

*** 3+00.00 to 3+58.00 - Existing to 7.0' (Existing to 5:1)
5+30.50 to 5+47.38 - 7.0' to 2.6' (5:1 to 2:1)
6+72.89 to 6+92.87 - 2.6' to 7.0' (2:1 to 5:1)
8+77.98 to 9+00.00 - 7.0' to Existing (5:1 to Existing)

\# 3+00.00 to 3+58.00 - Existing to 4:1
5+30.50 to 5+47.38 - 4:1 to 2:1
6+72.89 to 6+92.87 - 2:1 to 4:1
8+77.98 to 9+00.00 - 4:1 to Existing

TRANSITIONS RIGHT:

* 3+00.00 to 3+58.00 - 0.0' to 3.0'
8+77.98 to 9+00.00 - 3.0' to 0.0'

** 3+00.00 to 3+70.58 - 0.0'
3+70.58 to 5+05.58 - 0.0' to 9.0'
5+05.58 to 5+43.08 - 9.0' to 3.5'
5+43.08 to 5+63.11 - 3.5'

6+88.62 to 7+05.48 - 3.5'
7+05.48 to 7+42.98 - 3.5' to 9.0'
7+42.98 to 8+77.98 - 9.0' to 0.0'
8+77.98 to 9+00.00 - 0.0'

*** 3+00.00 to 3+58.00 - Existing to 7.0' (Existing to 5:1)
5+43.08 to 5+63.11 - 7.0' to 2.6' (5:1 to 2:1)
6+88.62 to 7+05.48 - 2.6' to 7.0' (2:1 to 5:1)
8+77.98 to 9+00.00 - 7.0' to Existing (5:1 to Existing)

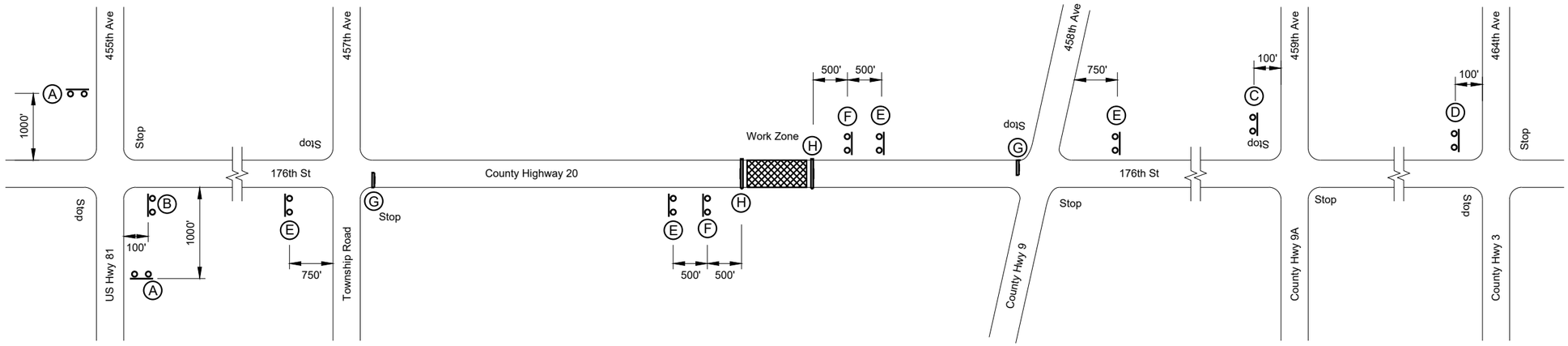
\# 3+00.00 to 3+58.00 - Existing to 4:1
5+43.08 to 5+63.11 - 4:1 to 2:1
6+88.62 to 7+05.48 - 2:1 to 4:1
8+77.98 to 9+00.00 - 4:1 to Exsting

TRAFFIC CONTROL

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190.62	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		BRF-B 6510(05)	10	58

Plotting Date: 07/18/2024



Ⓐ

COUNTY 20 CLOSED
2 1/2 MILES EAST
USE ALT ROUTE

SPECIAL
60" x 30"

NOTE FOR Ⓐ
Background Color = White
Border and Letter Color = Black

FIXED LOCATION SIGNING

Ⓑ

ROAD CLOSED
2 1/2 MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3a
60" x 30"

Ⓒ

ROAD CLOSED
1 1/2 MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3a
60" x 30"

Ⓓ

ROAD CLOSED
6 1/2 MILES AHEAD
LOCAL TRAFFIC ONLY

R11-3a
60" x 30"

NOTE FOR Ⓑ Ⓒ AND Ⓓ
Background Color = Fluorescent Orange
Border and Letter Color = Black

FIXED LOCATION SIGNING

Ⓔ

ROAD
CLOSED
AHEAD

W20-3
48" x 48"

Ⓕ

ROAD
CLOSED
500 FT

W20-3
48" x 48"

FIXED LOCATION SIGNING

Ⓖ

ROAD CLOSED
1/2 MILE AHEAD
LOCAL TRAFFIC ONLY

R11-3a
60" x 30"

Type 3
Barricade

Ⓗ

ROAD
CLOSED

R11-2
48" x 30"

Type 3 Barricade | Type 3 Barricade | Type 3 Barricade

26' - Full Roadway Closure

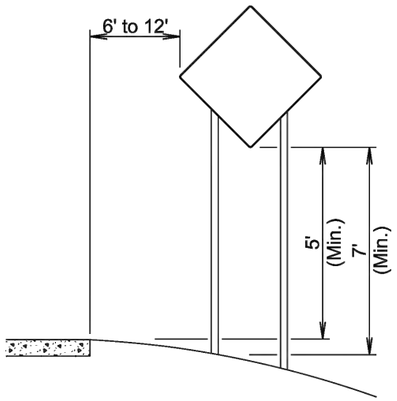
ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	DESCRIPTION	NUMBER REQUIRED	SIGN SIZE	SQ. FT. PER SIGN	SQ. FT.
R3-2	LEFT TURN PROHIBITION	1	24" x 24"	4.0	4.0
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
R11-3a	ROAD CLOSED 1/2 MILE AHEAD LOCAL TRAFFIC ONLY	5	60" x 30"	12.5	62.5
W20-3	ROAD CLOSED AHEAD OR 500 FT	6	48" x 48"	16.0	96.0
SPECIAL	COUNTY 20 CLOSED 2 1/2 MILES EAST USE ALT ROUTE	2	60" x 30"	12.5	25.0
			Conventional Road Traffic Control Signs Sq. Ft.		207.5

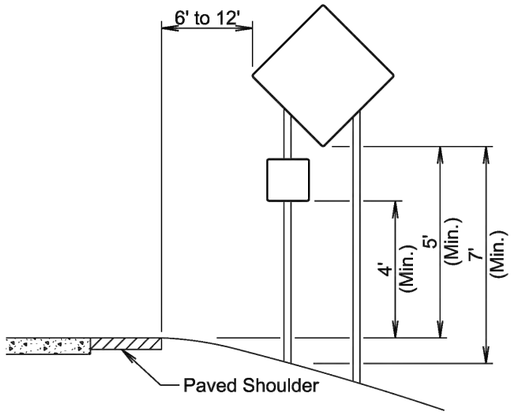
DESCRIPTION	Each
Type 3 Barricade	8

NOTE:
The exact location and spacing of signs shown will be determined in the field by the Engineer.

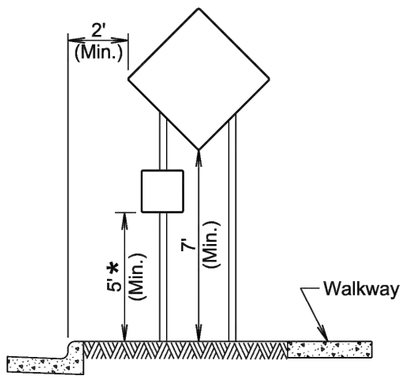
REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9061
LUCAS A. JOHNSON
SOUTH DAKOTA
7/25/24



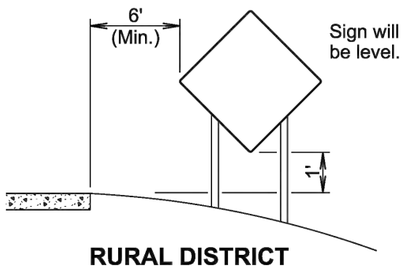
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

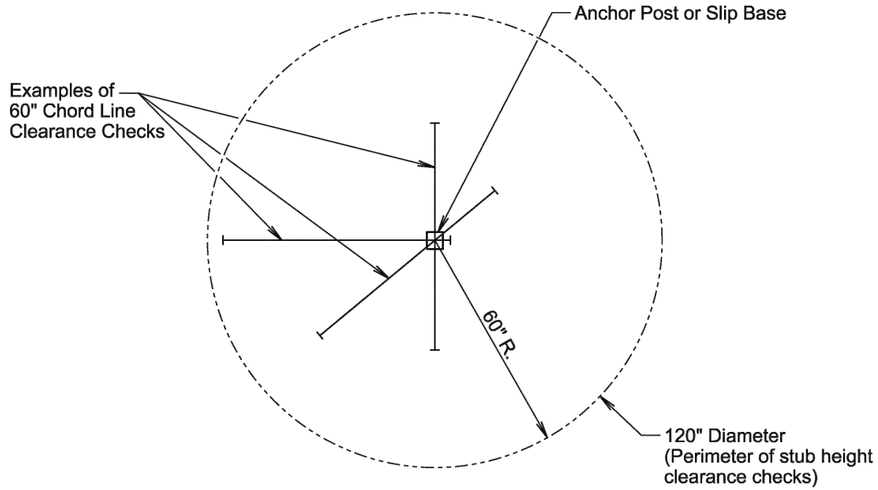


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

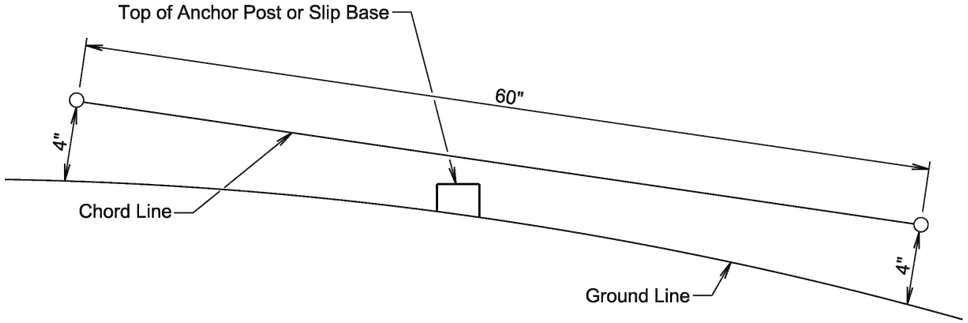
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

Published Date: 2025	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

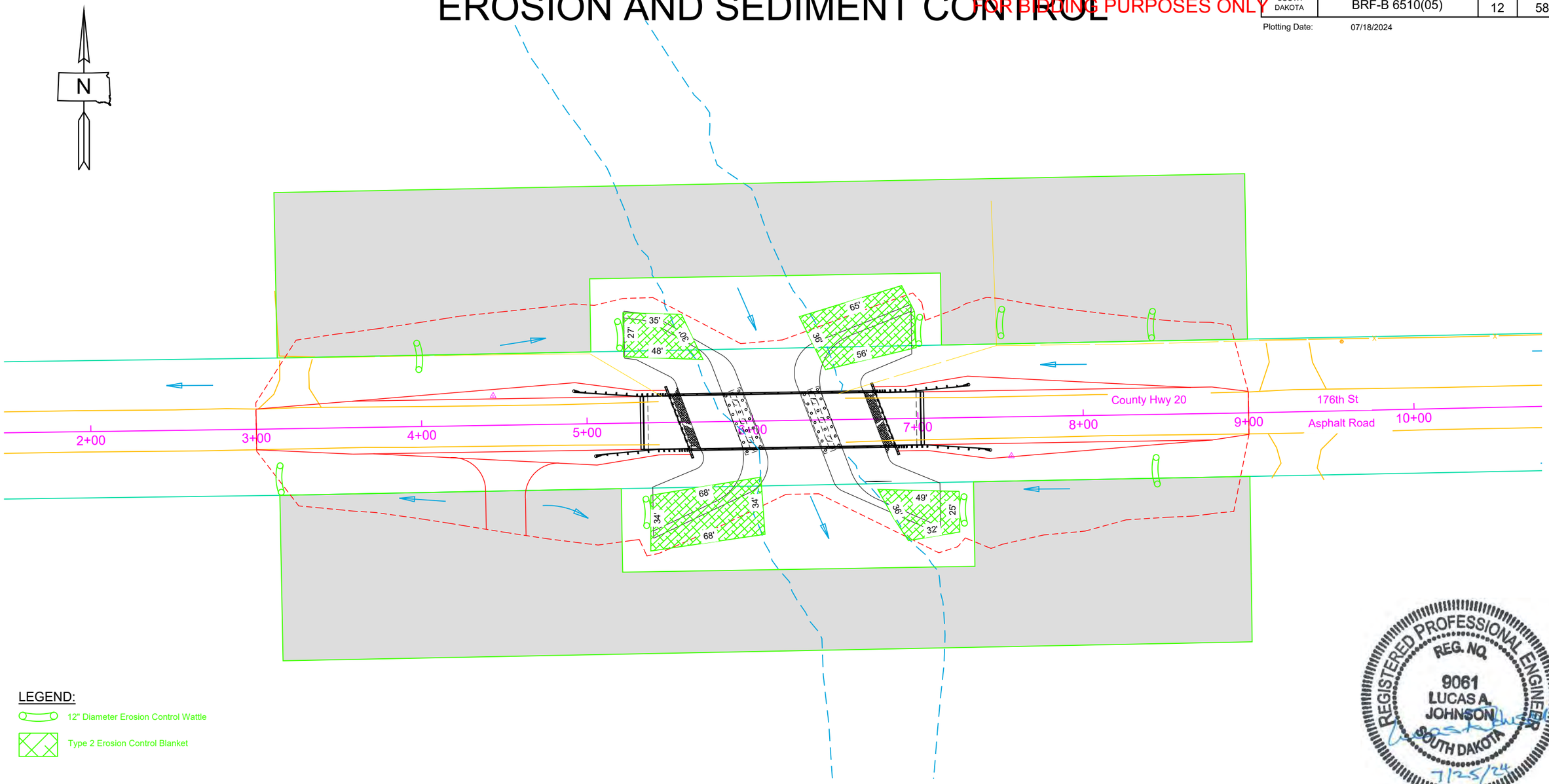
Published Date: 2025	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

EROSION AND SEDIMENT CONTROL

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190.62	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		BRF-B 6510(05)	12	58

Plotting Date: 07/18/2024



LEGEND:

12" Diameter Erosion Control Wattle

Type 2 Erosion Control Blanket

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9061
LUCAS A. JOHNSON
SOUTH DAKOTA
7/25/24

NOTES:

1. Maintain as much existing vegetation as possible during construction.
2. The final proposed Wattle placement is shown. Wattles will be installed during construction as determined by the Engineer. An additional 600 Ft is included in the quantities. Wattles will be installed per Standard Plate No. 734.06.
3. Remove and Reset Wattles as necessary to complete grading work and install Erosion Control Blankets and Riprap. Install additional Wattles as directed by the Engineer.
4. Wattles will remain in place until vegetation has been established in seeded areas and will be left to biodegrade.
5. Install Erosion Control Blanket as shown and as directed by the Engineer. Erosion Control Blanket will be installed as per Standard Plate No. 734.01.

TABLE OF EROSION CONTROL WATTLE

Station	Location	Diameter (inch)	Quantity (Ft)
3+10 R	Across Ditch Bottom	12	20
4+00 L	Across Ditch Bottom	12	20
5+20 L	Across Ditch Bottom	12	20
5+35 R	Across Ditch Bottom	12	20
7+00 L	Across Ditch Bottom	12	20
7+30R	Across Ditch Bottom	12	20
7+50 L	Across Ditch Bottom	12	20
8+50 L	Across Ditch Bottom	12	20
8+50 R	Across Ditch Bottom	12	20
	Additional Quantity:	12	600
		Total:	780

TABLE OF EROSION CONTROL BLANKET

Station	Location	Type	Quantity (SqYd)
5+20 to 5+70 - 40' to 67' L	Ditch Outlet to Channel Bank	2	124
5+40 to 6+06 - 78' to 34' R	Ditch Outlet to Channel Bank	2	258
6+26 to 6+96 - 30' to 80' L	Ditch Outlet to Channel Bank	2	256
6+75 to 7+24 - 42' to 70' R	Ditch Outlet to Channel Bank	2	127
	Total Type 2 Erosion Control Blanket:		765

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	13	58

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** 3.8 Acres
- **5.3 (3b): Total Area to be Disturbed** 1.9 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time** 1.9 Acres
- **5.3 (3d): Existing Vegetative Cover (%)** 85
- **5.3 (3d): Description of Vegetative Cover** Grass

- **5.3 (3e): Soil Properties:** A-6 and A-7-5
- **5.3 (3f): Name of Receiving Water Body/Bodies** Big Sioux River
- **5.3 (3g): Location of Construction Support Activity Areas** Onsite

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

- **Special sequencing requirements:** See grading notes.

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install temporary sediment control as needed.	
Remove existing structure.	
Install new structure.	
Grade roadway and ditches.	
Install seeding, blankets, and wattles.	

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.

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FOR BIDDING PURPOSES ONLY

HORIZONTAL ALIGNMENT DATA

MAINLINE

Type	Station			Northing	Easting
POB	0+00.00			378311.533	2731425.619
		TL= 300.00	N 87°42'02" E		
PI	3+00.00			378323.570	2731725.377
		TL= 600.00	N 87°33'12" E		
PI	9+00.00			378349.184	2732324.830
		TL= 299.85	N 87°13'04" E		
POE	11+99.85			378363.739	2732624.325

CONTROL DATA

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 306	0+00.00	-	18” Rebar w/ Cap	378311.533	2731425.619	-
BM (WEST)	4+43.45	17.80’ L	5’ Rebar w/ Cap	378347.475	2731867.935	1704.64
BM (EAST)	7+56.13	23.66’ R	5’ Rebar w/ Cap	378319.403	2732182.104	1704.54
CP 305	11+99.85	-	18” Rebar w/ Cap	378363.739	2732624.325	-
CP BASE	-	-	18” Rebar w/ Cap	378480.099	2734415.178	-

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone NAD 83(2011); epoch 2010.00; Geoid 18; SF = 0.9998689353

The elevations shown on this sheet are based on NAVD 88.

LEGEND

FOR BIDDING PURPOSES ONLY

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Plotting Date: 07/18/2024

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

- Drainage Arrow

- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement
- Remove Concrete Curb and/or Gutter

- Detectable Warning Pedestrian Push Button Pole and 30" x 48" Clear Space with 1.5% slope

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BAI JOB # 23190.62

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6+43 to 6+56
Remove 113' Long x 30.0' Wide(Clear Roadway)
Three Span Bridge
(Incidental Work, Structure)

5+55.19 to 6+80.81 (538 SqMi)
Install 125'-7 1/2" Cont. Concrete Girder
(See Structure Sheets)

5+03.00 to 7+15.00 - L
Permanent Easement for Highway Use
0.21 ac, more or less

SE1/4 SEC. 22-T116N-R52W
Mark Mack and Mary Margaret Mack Trust
C/O Karen Jones
4904 S. Heatherwood Circle
Sioux Falls, SD 57108

3+13.5-41.5 ' to 141.5' L

5+03-41.5' to 90' L

7+15-41.5' to 90' L

9+00-41.5 ' to 141.5' L

3+13.5 to 9+00.0 - L
Temporary Easement for Grading,
Material Storage, & Erosion Control
1.1 ac, more or less

BEGIN PROJECT
STR. NO. 15-216-220
STA. 3+00.00

END PROJECT
STR. NO. 15-216-220
STA. 9+00.00

Big Sioux River

41.5'

41.5'

N87°42'02"E

N87°33'12"E

N87°13'04"E

3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00

176th St
Asphalt Road

County Hwy 20

20' R.
(Typ.)

PI 3+00.00
N = 378323.570
E = 2731725.377
Δ = 00°08' 49" L

5+20.00 to 7+33.00 - R
Permanent Easement for Highway Use
0.25 ac, more or less

1/4 Line

3+13.5-41.5 ' to 141.5' R

5+20-41.5' to 90' R

7+33-41.5' to 90' R

9+00-41.5 ' to 141.5' R

PI 9+00.00
N = 378349.184
E = 2732324.830
Δ = 00°20' 08" L

W1/2 NE1/4 SEC. 27-T116N-R52W
Tom and Mavis Reichling
Living Trust
17660 458th Ave
Watertown, SD 57201

3+13.5 to 9+00.0 - R
Temporary Easement for Grading,
Material Storage, & Erosion Control
1.1 ac, more or less

Excavation = 1975 CuYd

Embankment = 1290
+ 35% = 452
+ Waste = 233
1975 CuYd

Waste Site will be approved by the Engineer.

3+00
Begin Work

9+00
End Work

3+25 L
24' Ent
Retain

L 116.00
G1 0.1552%
G2 1.1290%
K 119.11

4+50 R
24' Ent

L 132.00
G1 1.1290%
G2 0.0000%
K 116.91

L 212.00
G1 0.0000%
G2 -0.3774%
K 561.80

PVI 3+00.00
Elev 1705.31
(Finish Grade)

PVI 9+00.00
Elev 1706.40
(Finish Grade)

3+25 L
24' Ent

PVI 3+58.00
Elev 1705.40

PVI 4+82.00
Elev 1706.80

PVI 7+94.00
Elev 1706.80

0.1552%

1.1290%

0.0000%

-0.3774%

RDG 0.5000 %

LDG -0.5012 %

RDG -2.0621 %

LDG 0.8700 %

RDG 0.5000 %

RDG 2.8600 %

LDGPI 3+25
Elev 1700.62

RDGPI 3+25
Elev 1700.62

BM (WEST)
4+43.45 - 17.80' L
Rebar W/ Cap
Elev. 1704.64

RDGPI 4+50
Elev 1701.25

LDGPI 5+30.5
Elev 1699.59

RDGPI 5+30.5
Elev 1699.59

LDGPI 7+00
Elev 1700.22

RDGPI 7+00
Elev 1698.46

RDGPI 7+50
Elev 1699.90

BM (EAST)
7+56.13 - 23.66' R
Rebar W/ Cap
Elev. 1704.54

LDGPI 9+00
Elev 1701.96

RDGPI 9+00
Elev 1700.65

FLOW			ELEV.
Q_d =	4120	cfs	1704.0
Q_{100} =	7110	cfs	1705.3
$Q_{O.T.} = Q_{45}$	5300	cfs	1705.1

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 the site to determine its effect on public safety.

Elevations are Centerline Asphalt (Finish Grade)

1705.31 1705.49 1705.88 1706.39 1706.70 1706.80 1706.80 1706.80 1706.80 1706.77 1706.69 1706.57 1706.40

1730 1720 1710 1700 1690

2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00

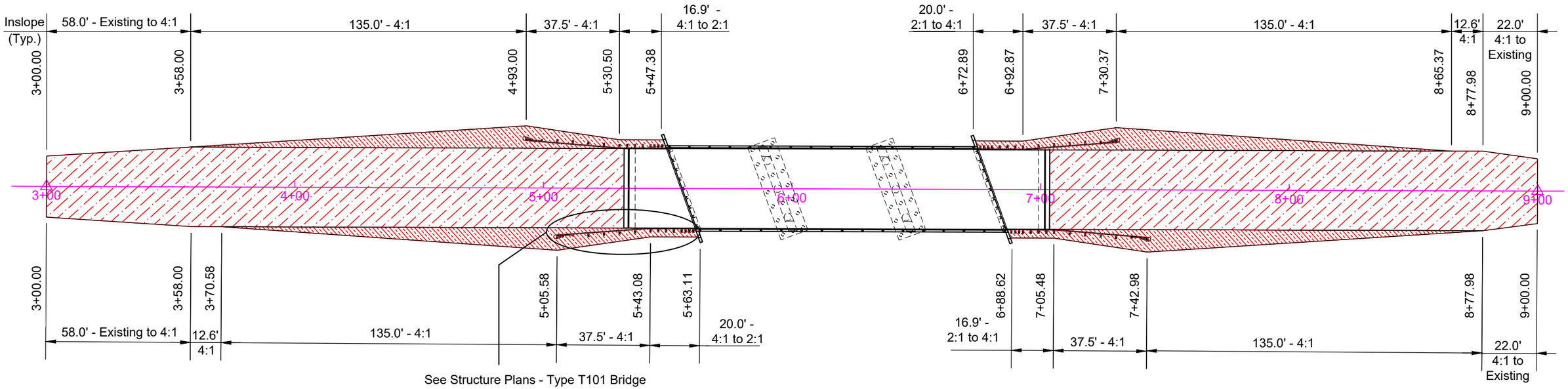
REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9061
LUCAS A. JOHNSON
SOUTH DAKOTA
7/25/24

SURFACING AND GUARDRAIL LAYOUT

FOR BIDDING PURPOSES ONLY

BAI JOB # 23190.62	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		BRF-B 6510(05)	20	58

Plotting Date: 07/24/2024

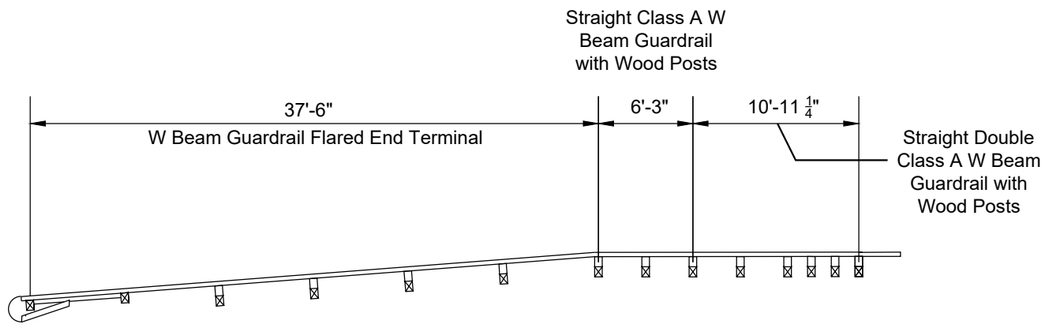


See Structure Plans - Type T101 Bridge Railing Details for Guardrail dimensions.

SURFACING LAYOUT

5" Asphalt Concrete Composite over 11" Base Course

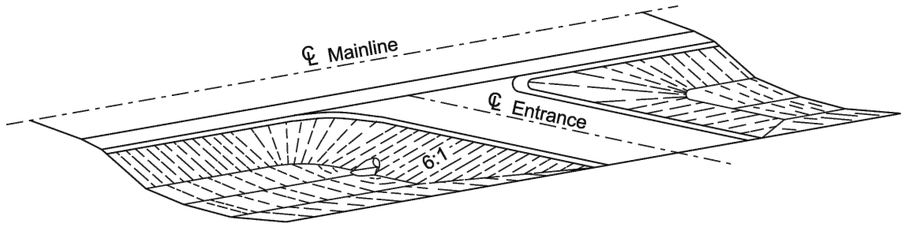
3" Asphalt Concrete Composite over 13" Base Course



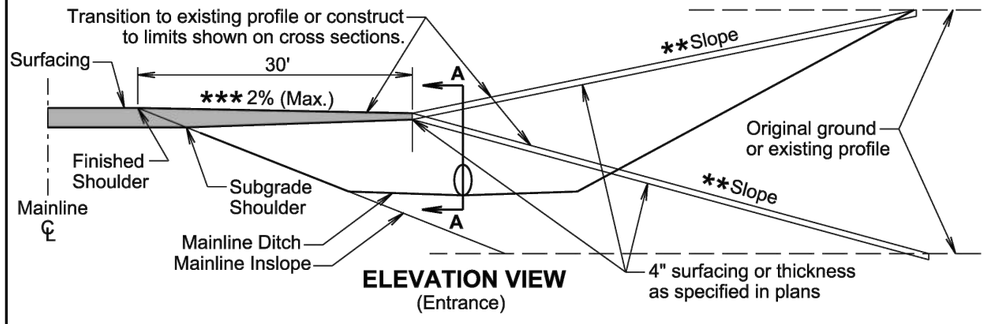
GUARDRAIL LAYOUT
(Typical)

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
9061
LUCAS A. JOHNSON
SOUTH DAKOTA
7/25/24

Plotting Date: 07/24/2024



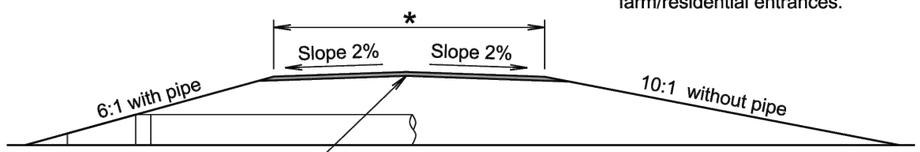
PERSPECTIVE OF ENTRANCE



ELEVATION VIEW
(Entrance)

*** 2% When on the inside of superelevation and 0% or flat when on outside of superelevation.

** Entrance maximum slope is typically 10:1 for field entrances and 15:1 for farm/residential entrances.



SECTION A-A
(Entrance and Intersecting Road)

* The finished surfacing width is stated elsewhere in the plans. The subgrade width is 4' wider than the finished surfacing width unless stated otherwise in the plans.

GENERAL NOTES:

The ditch section shown above in the perspective view is only for illustrative purpose.

The elevation view above is typical for either a ditch cut or fill section. Entrances that vary from above should be specified in the plans.

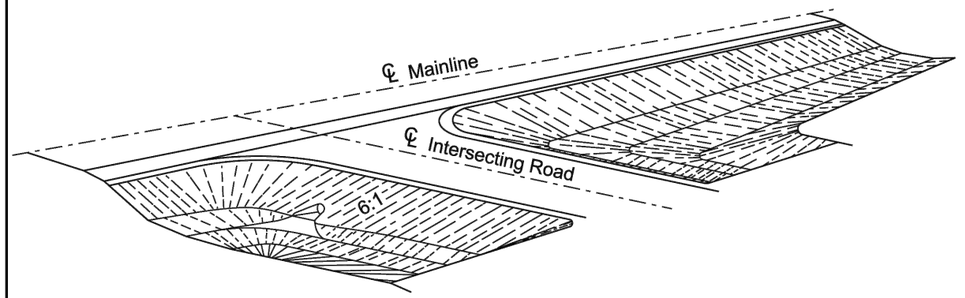
Pipe length will be adjusted if necessary during construction to obtain the 6:1 slope. For grading projects, the pipe length is estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the entrance or intersecting road inslope will be rounded to eliminate an abrupt transition.

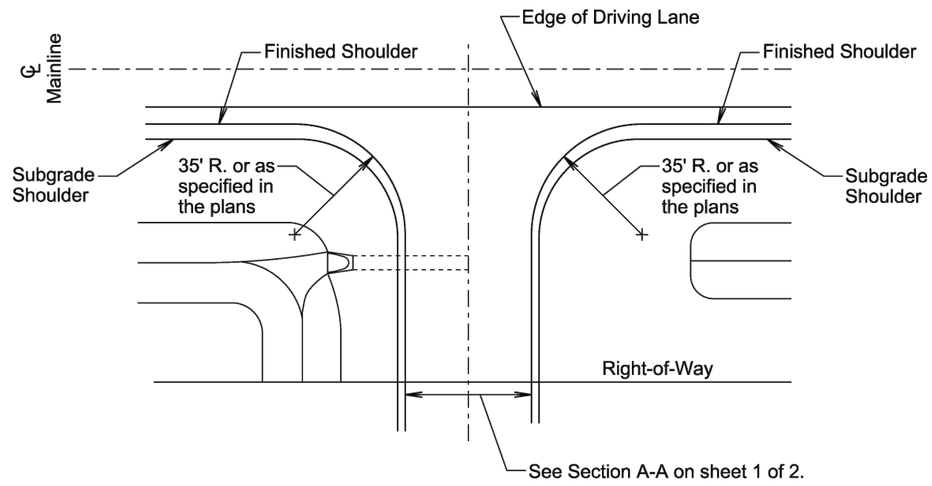
The turning radii will be 35' for intersecting roads and entrances unless stated otherwise in the plans.

November 19, 2021

Published Date: 2025	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



PERSPECTIVE OF INTERSECTING ROAD



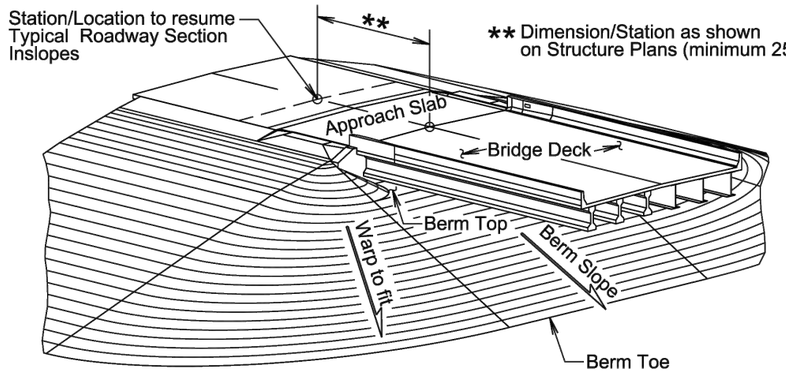
PLAN VIEW

GENERAL NOTES:

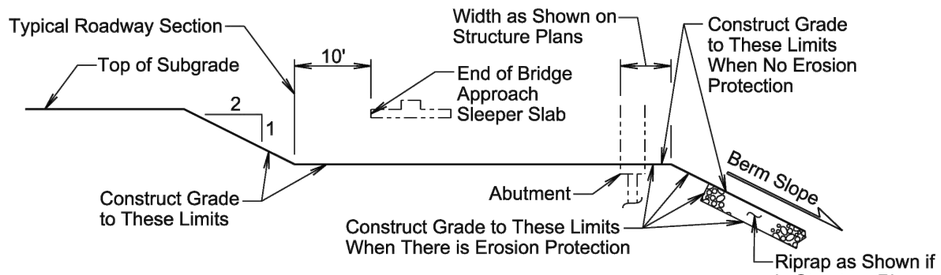
The 6:1 or 10:1 intersecting road inslope will transition to the existing intersecting road inslope near the right-of-way or at a location as determined by the Engineer.

November 19, 2021

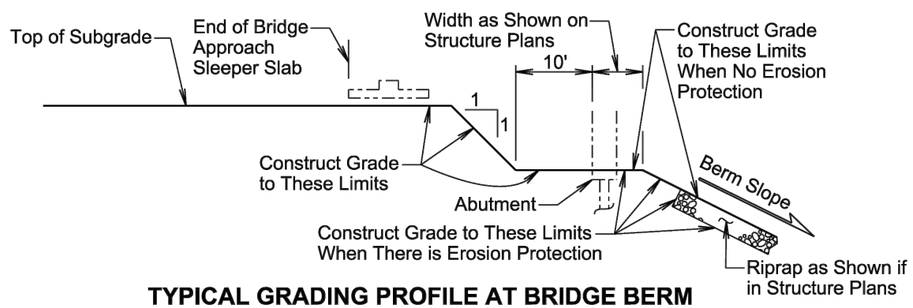
Published Date: 2025	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2



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



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



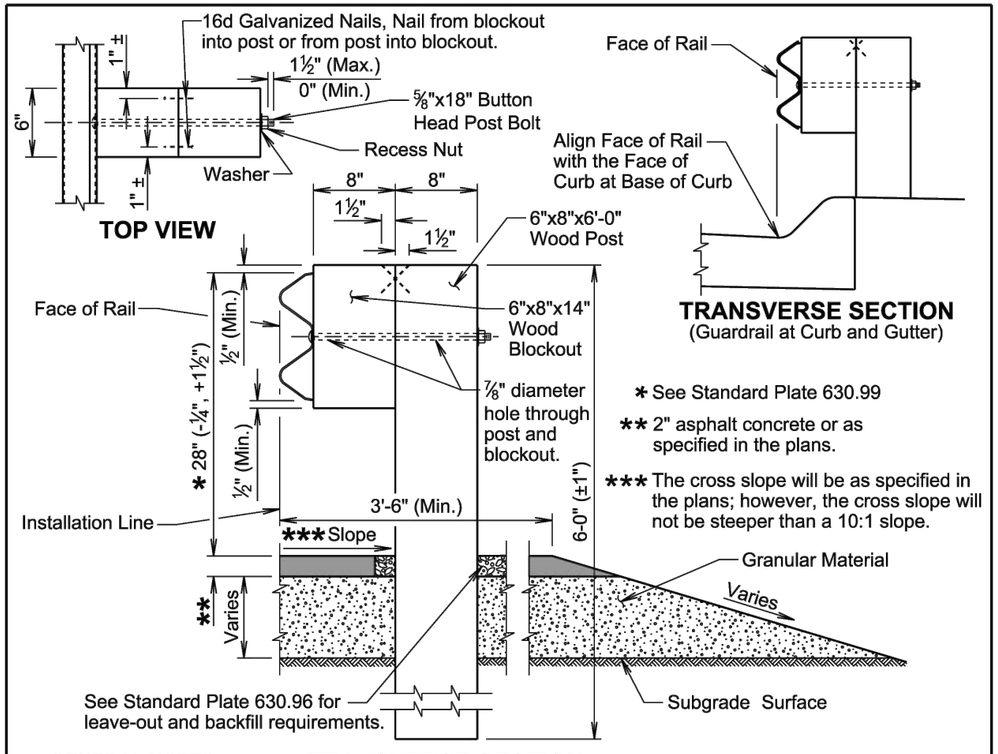
TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to ℄ Abutment at ℄ Roadway)

GENERAL NOTES:

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

January 22, 2021

Published Date: 2025	SDDOT	***BRIDGE BERM (PROJECTING EMBANKMENT)***	*PLATE NUMBER* 120.11
			Sheet 1 of 1



* See Standard Plate 630.99

** 2" asphalt concrete or as specified in the plans.

*** The cross slope will be as specified in the plans; however, the cross slope will not be steeper than a 10:1 slope.

GENERAL NOTES:

Asphalt concrete will be the same type used elsewhere on the project or will be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete will conform to the Specifications for "Asphalt Concrete Composite".

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

Topsoil is not shown in the transverse section drawing.

All W beam rail will be Type 1 and Class A (12 Ga.) unless specified otherwise in the plans.

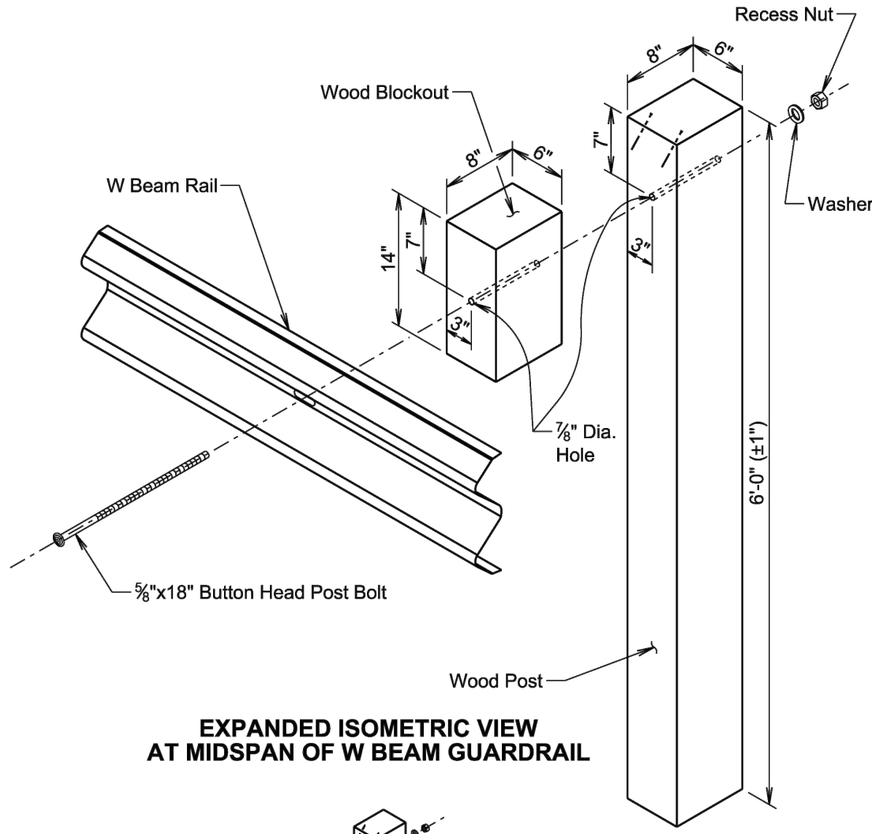
W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used will be compatible with the total length of rail per site as shown in the plans.

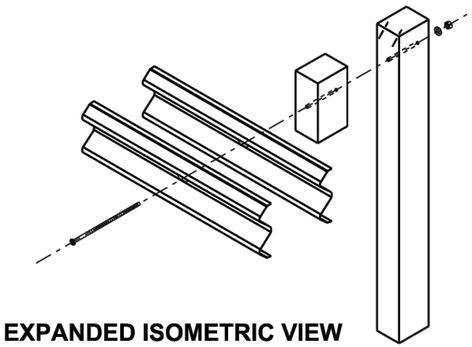
Slots in the rails will be provided as specified in the plans and by the manufacturer. A drilled hole through the rail is not allowed as a replacement for a slot. If the Contractor must create a slot, a cutting torch or plasma cutter is not allowed. The slot edges will be smooth and free of burrs or notches.

The top of post and top of block will have a true square cut. The top of block will be a maximum of ± ½ inch from the top of the post.

September 14, 2019

Published Date: 2025	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10	Sheet 1 of 5

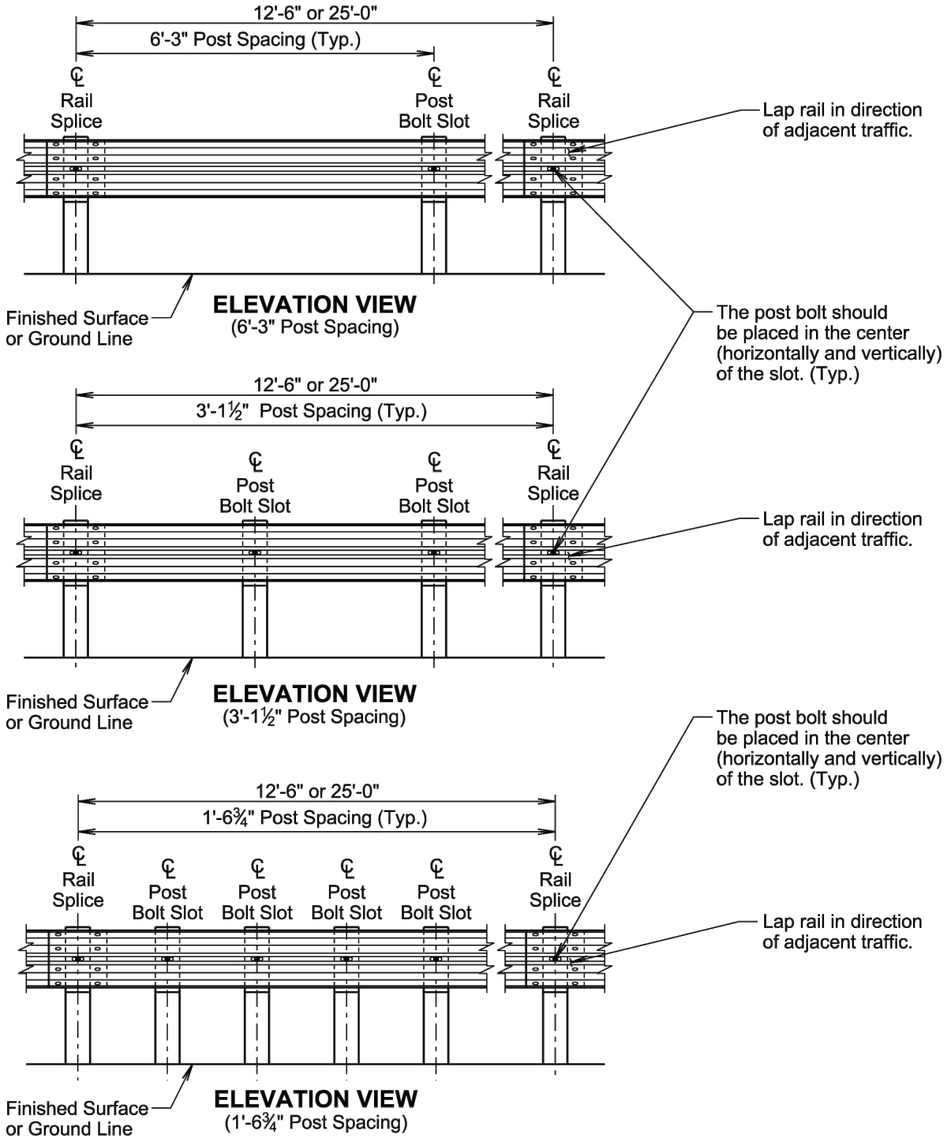




EXPANDED ISOMETRIC VIEW OF DOUBLE (NESTED) W BEAM GUARDRAIL AT MIDSPAN
(For Information Only, Not to Scale)

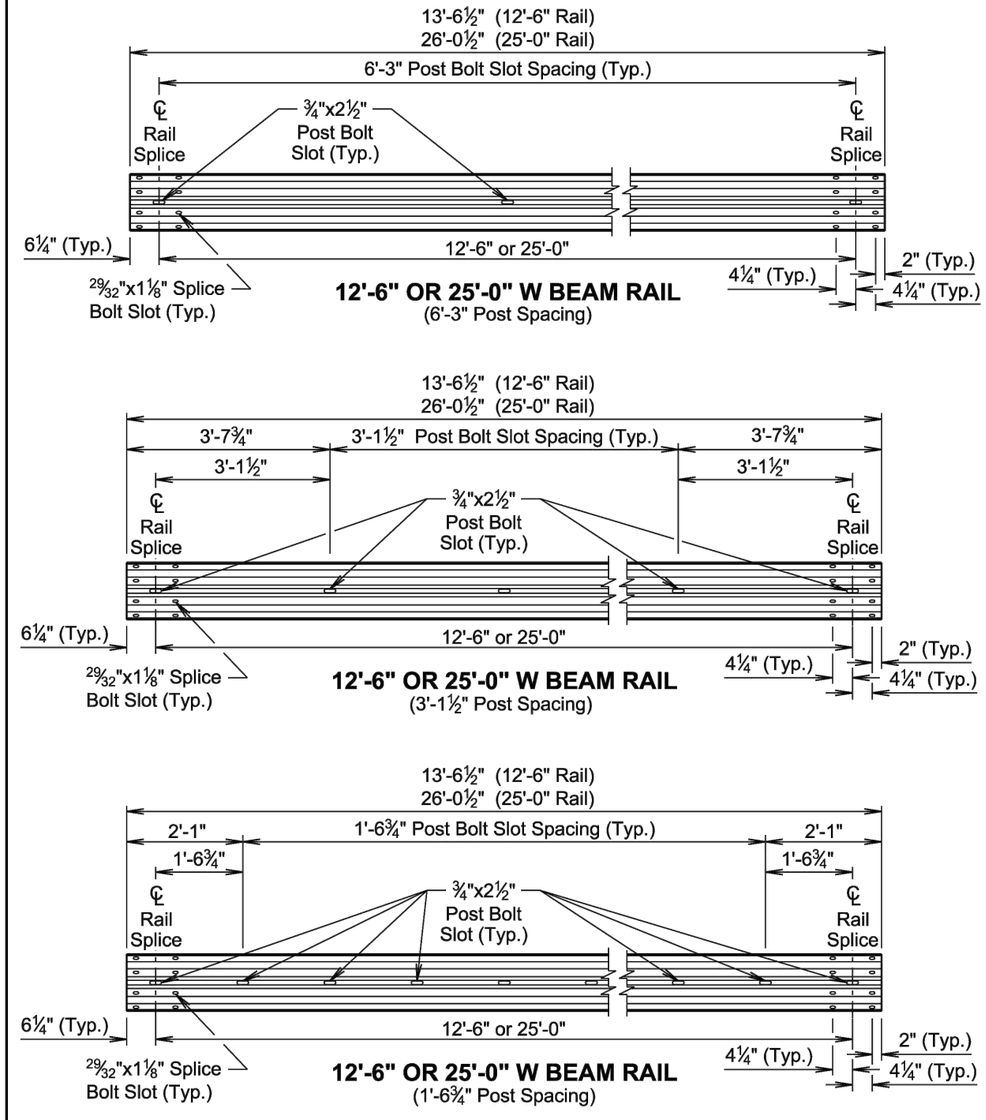
September 14, 2019

Published Date: 2025	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10	Sheet 2 of 5



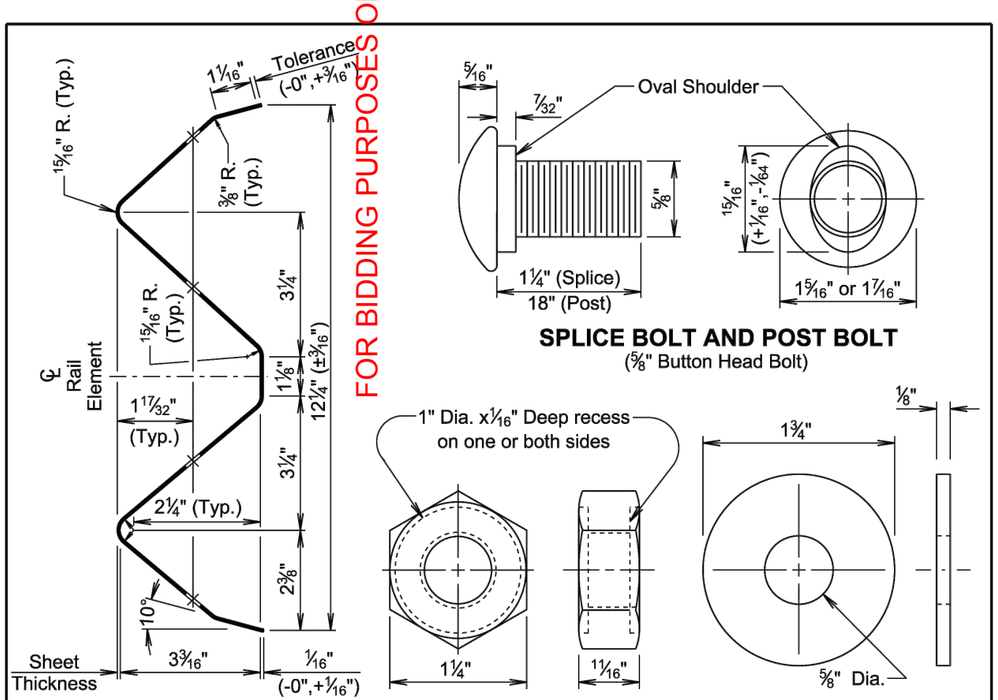
September 14, 2019

Published Date: 2025	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 3 of 5



September 14, 2019

Published Date: 2025	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10
			Sheet 4 of 5



SECTION THROUGH W BEAM RAIL

SPLICE BOLT AND POST BOLT
(5/8" Button Head Bolt)

RECESS NUT
(At lap splices, the recess will be placed against the steel rail.)

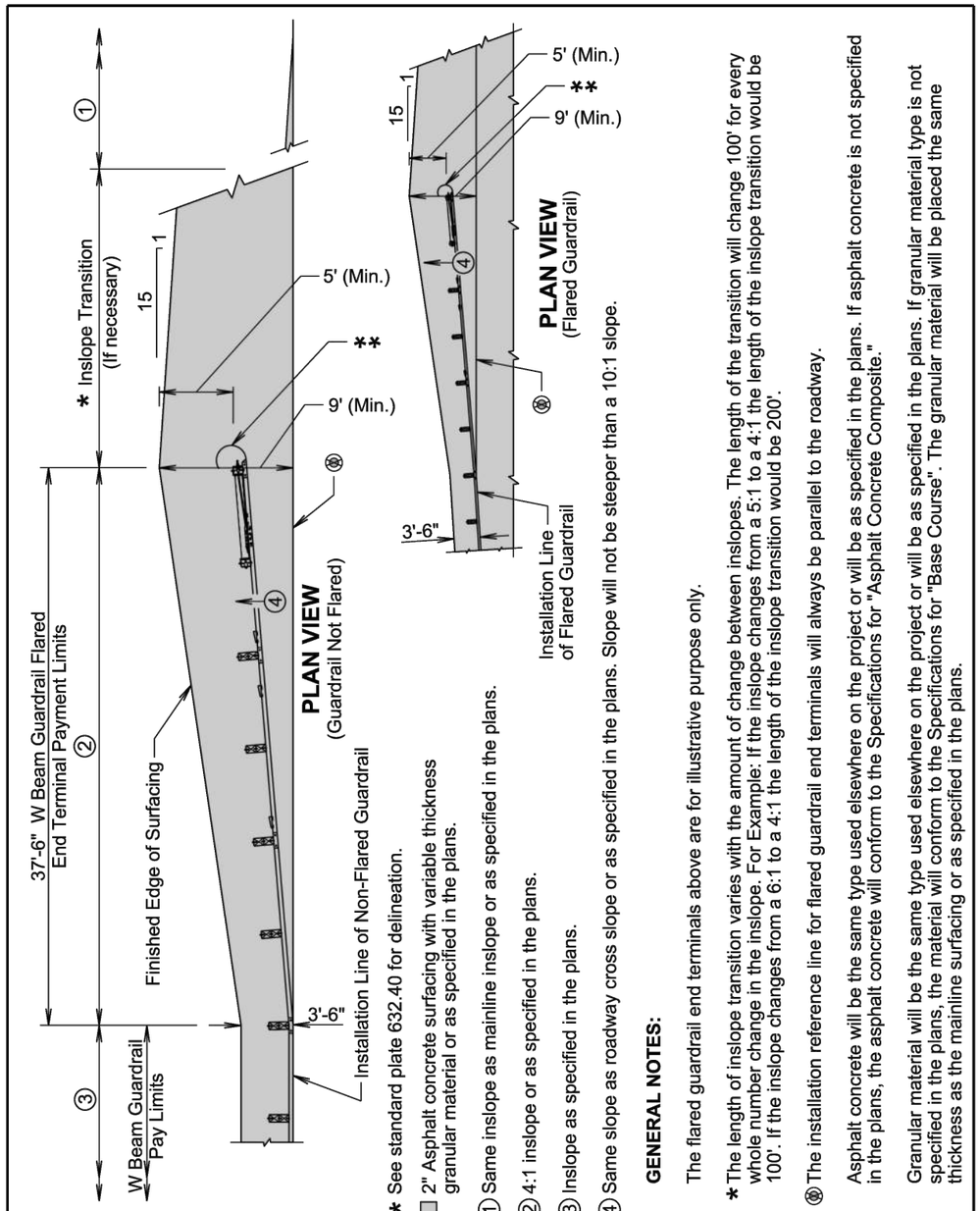
WASHER
(The washer will be placed between the back side of wood post and the recess nut, see sheet 1 and 2.)

PLAN VIEW
(Lap Splice)
(Lap rail in direction of adjacent traffic.)
(8 splice bolts and 8 recess nuts per splice, NO washers)

SECTION VIEW
(At Post Bolt)

September 14, 2019

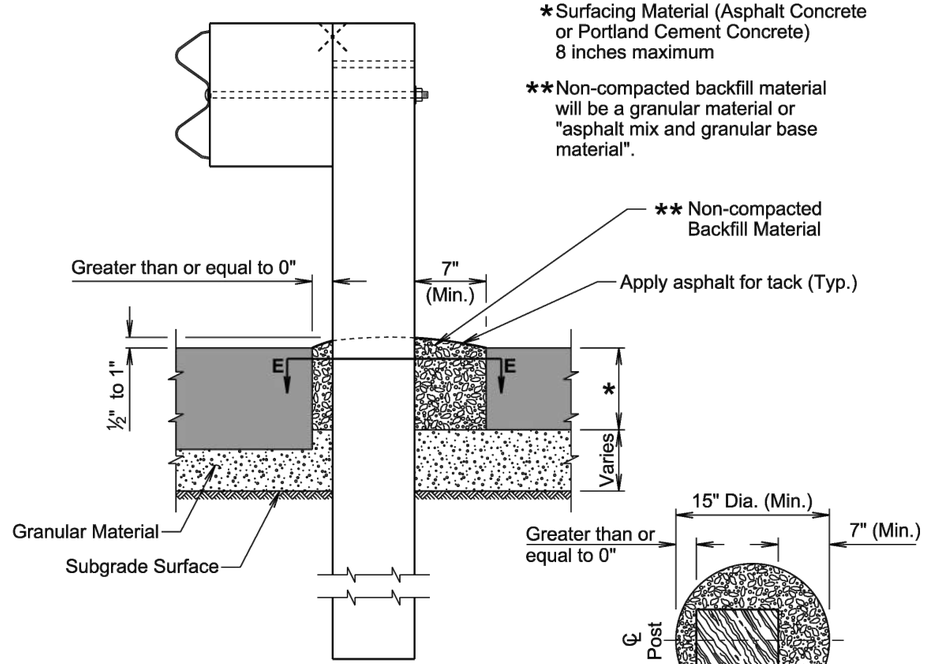
Published Date: 2025	SDDOT	W BEAM GUARDRAIL	PLATE NUMBER 630.10	Sheet 5 of 5



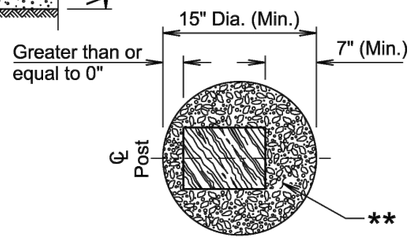
November 14, 2018

Published Date: 2025	SDDOT	EMBANKMENT, SURFACING, AND PAYMENT LIMITS FOR W BEAM GUARDRAIL FLARED END TERMINAL	PLATE NUMBER 630.86	Sheet 1 of 1

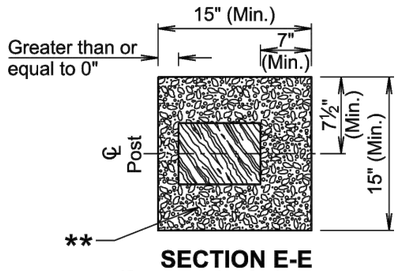
Plotting Date: 07/24/2024



TRANSVERSE SECTION
(Wood post shown for illustrative purpose only)



SECTION E-E
(Round option for leave-out and backfill limits)
(Wood post shown for illustrative purpose only)



SECTION E-E
(Square option for leave-out and backfill limits)
(Wood post shown for illustrative purpose only)

GENERAL NOTES:

The leave-out limits may be increased to accommodate construction equipment and tolerances.

When posts are installed in augured or dug holes, the backfill material will be compacted to the bottom of the pavement surfacing material to the satisfaction of the Engineer. The backfill material for the thickness of the pavement surfacing material will be non-compacted.

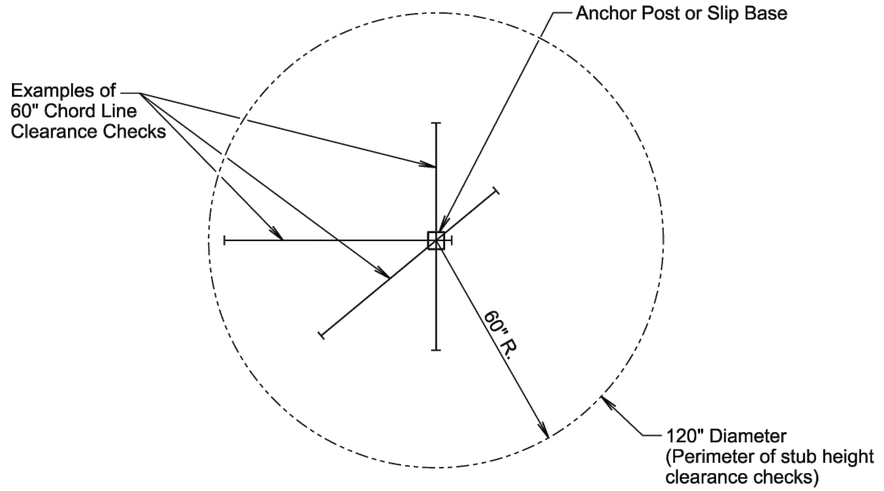
The backfill material will be mounded ½ inch to 1 inch above the top of the adjacent surfacing as illustrated above.

Asphalt for tack will be applied to the surface of the backfill material at the rate of 0.15 to 0.20 gallons per square yard.

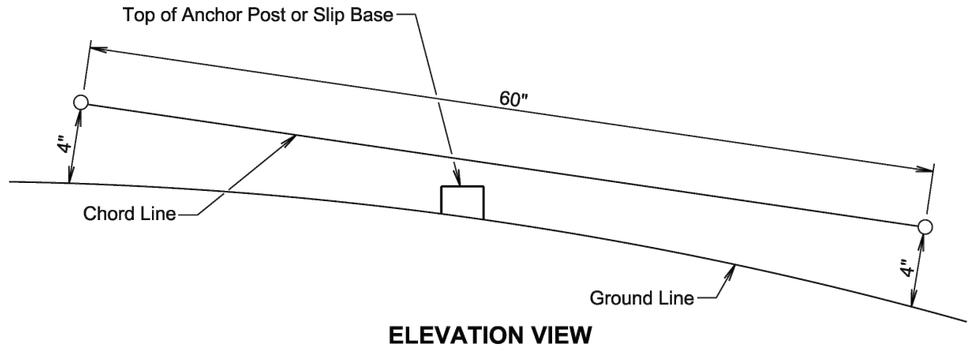
All costs for constructing the leave-out including labor, equipment, and materials which includes the backfill material and tack coat will be incidental to the contract unit price for the respective guardrail contract item.

November 19, 2021

Published Date: 2025	SDDOT	GUARDRAIL POST INSTALLED IN ASPHALT CONCRETE OR PORTLAND CEMENT CONCRETE	PLATE NUMBER 630.96	Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

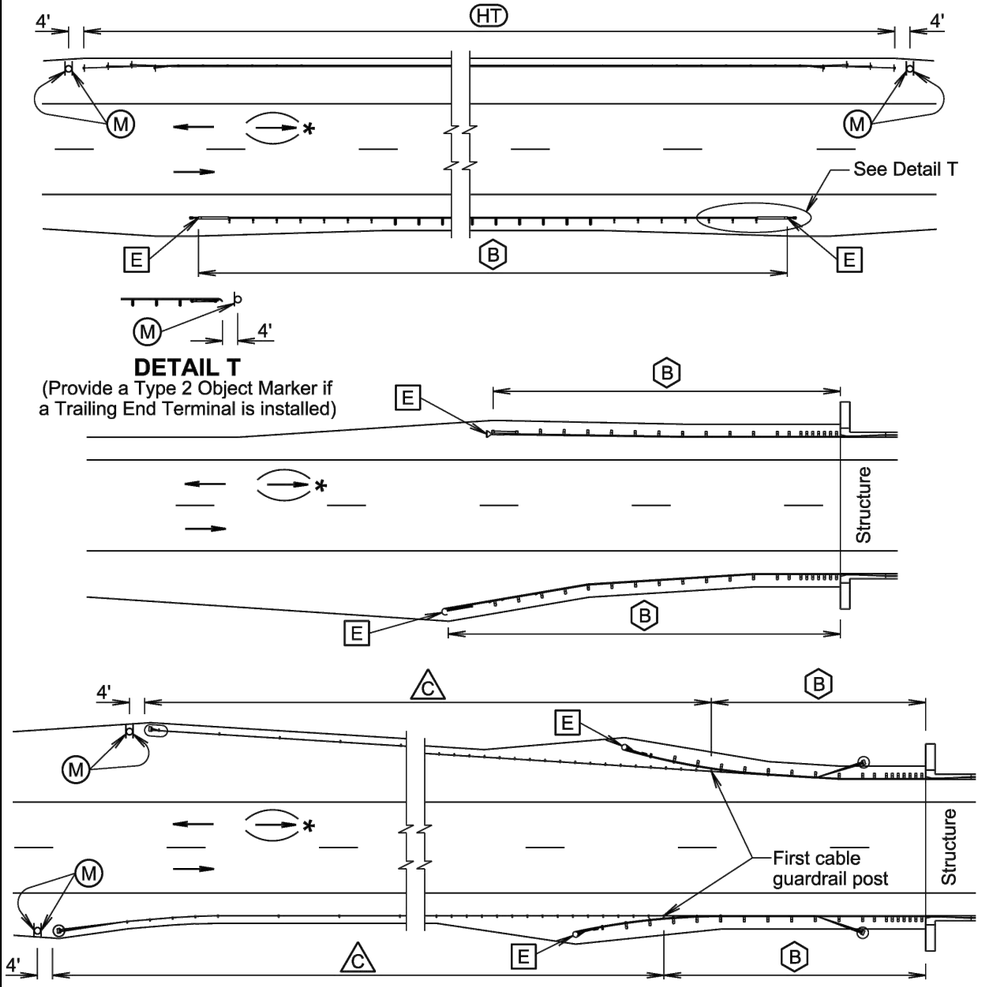
The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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: 2025	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99	Sheet 1 of 1



DETAIL T
(Provide a Type 2 Object Marker if a Trailing End Terminal is installed)

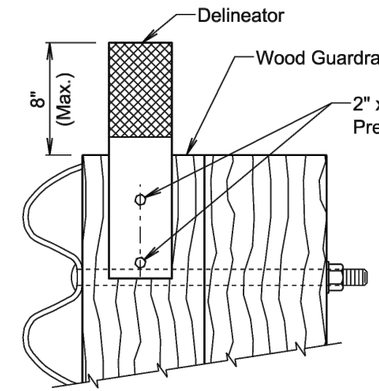
PLAN VIEW
(Typical Guardrail Layouts)

(B) Steel Beam Guardrail Delineation
(E) Guardrail End Terminal Object Marker
(C) 3 Cable Guardrail (Low Tension) Delineation
(HT) High Tension Cable Guardrail Delineation
(M) Type 2 Object Marker

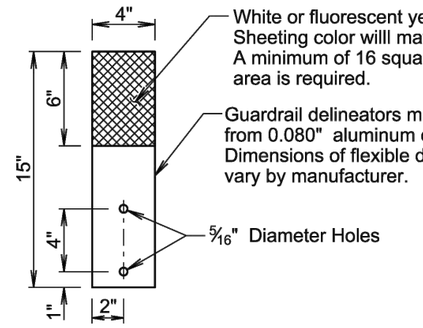
*For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

March 31, 2024

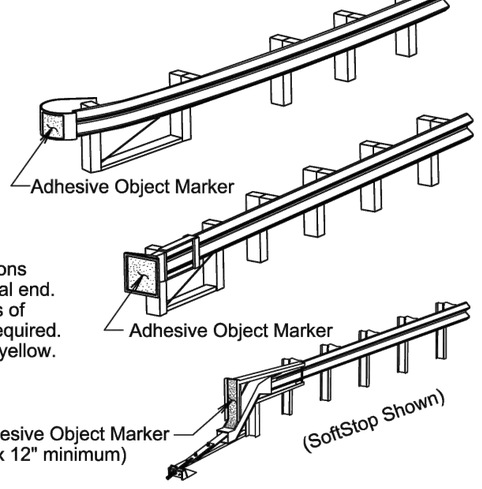
Published Date: 2025	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 1 of 4



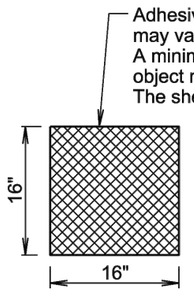
(B) STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



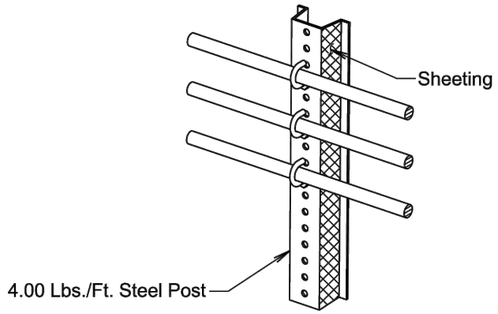
(E) GUARDRAIL END TERMINAL OBJECT MARKER



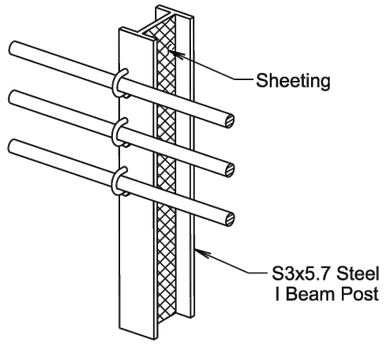
ADHESIVE OBJECT MARKER

March 31, 2024

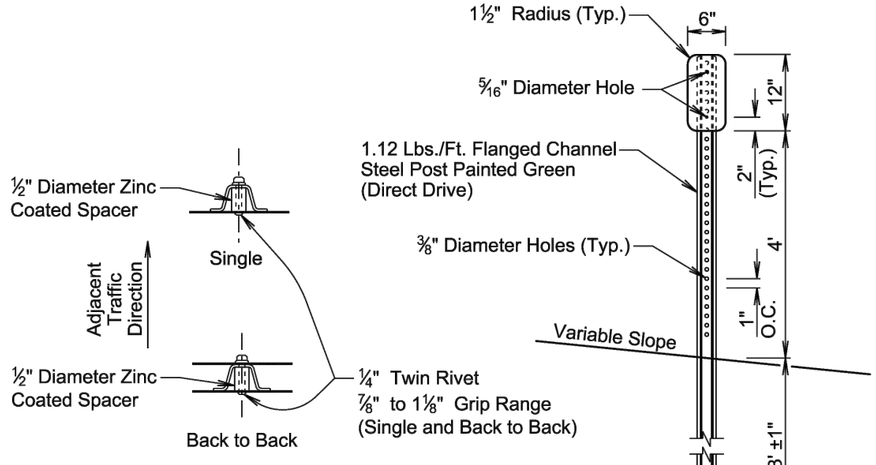
Published Date: 2025	SDDOT	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4



Ⓒ 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION



Ⓒ 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION



PLAN VIEW
(Type 2 Object Marker Details and Post Orientation)

ELEVATION VIEW
Ⓜ (Type 2 Object Marker)
(For Marking 3 Cable Guardrail (Low Tension) Anchor, High Tension Cable Guardrail Anchor, and Trailing End Terminal)

March 31, 2024

Published Date: 2025	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 3 of 4

GENERAL NOTES:

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every third post cap or cable spacer. Maximum spacing of delineation will not exceed 35 feet. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting will be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

When steel beam guardrail is attached to a bridge the first delineator will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail will be included in the contract unit price per each for "Guardrail Delineator".

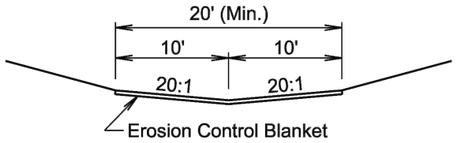
All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required on end terminals with sufficient surface area. Other end terminals (SoftStop) will require an adhesive object marker with a minimum size of 6" x 12". The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

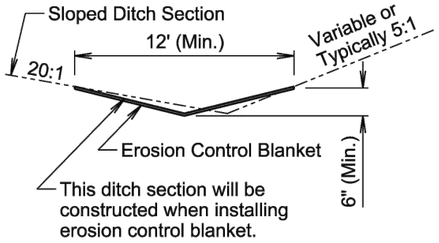
A type 2 object marker will be placed adjacent to the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, and trailing end terminal at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware will be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

March 31, 2024

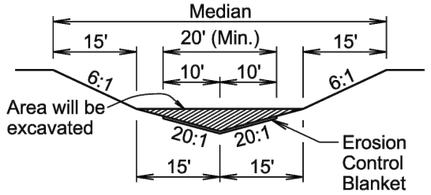
Published Date: 2025	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
			Sheet 4 of 4



STANDARD DITCH SECTION

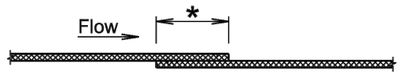


SLOPED DITCH SECTION



The median will be shaped to the limits shown in this detail where the erosion control blanket will be placed.

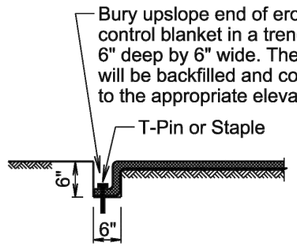
MEDIAN SECTION



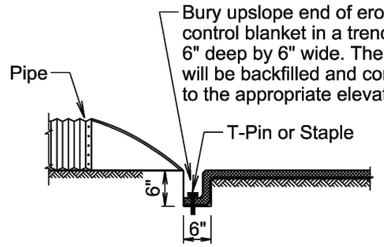
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

Prior to placement of the erosion control blanket, the areas will be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket will be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket will be buried in a trench 6" wide by 6" deep. There will be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

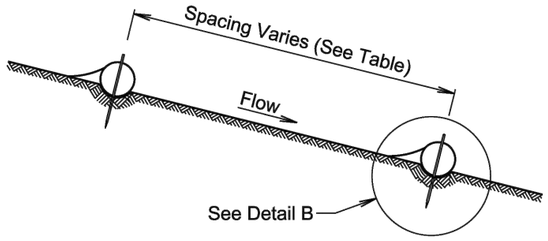
The erosion control blanket will be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor will fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections will be shaped when installing the erosion control blanket. All costs for shaping the ditches will be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

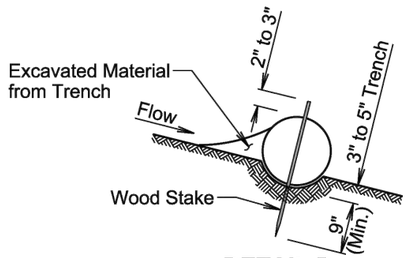
February 14, 2020

Published Date: 2025	SDDOT	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

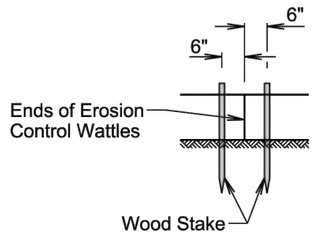


ELEVATION VIEW
(Cut or Fill Slope Installation)

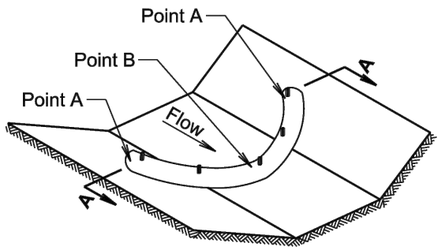
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



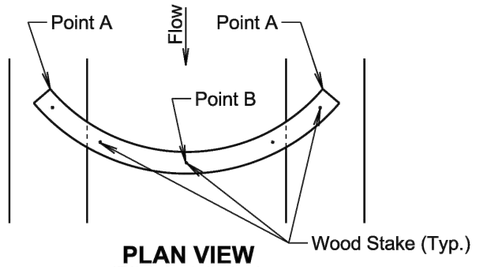
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

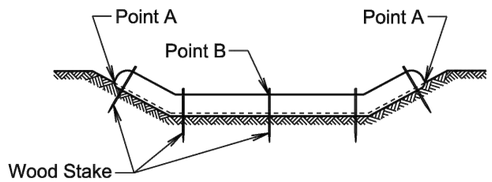


ISOMETRIC VIEW
(Ditch Installation)



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: 2025	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

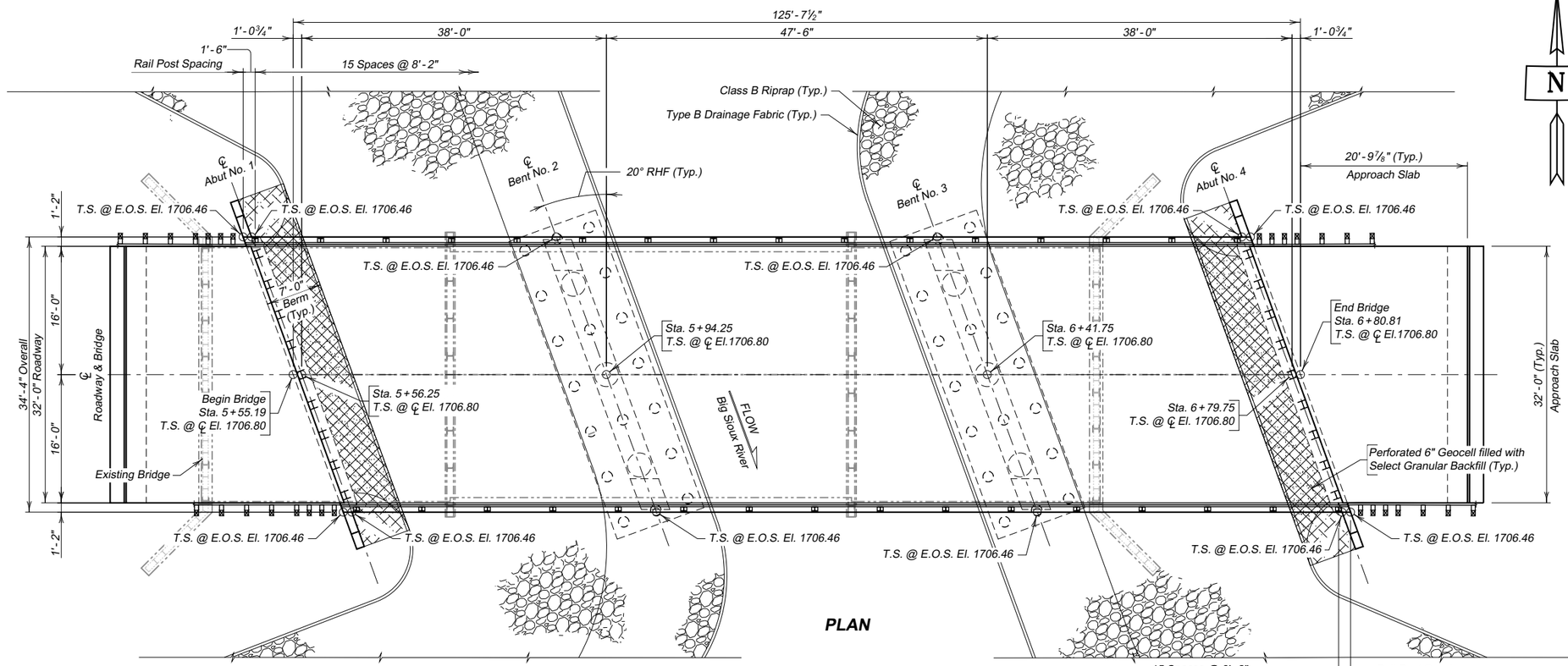
February 14, 2020

Published Date: 2025	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

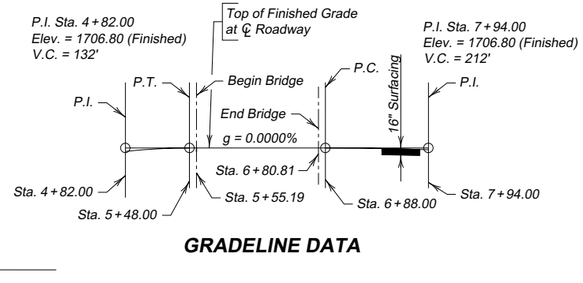
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum 1988 (NAVD88).

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	31	58



PLAN



GRADELINE DATA

-X020-
INDEX OF BRIDGE SHEETS -

HYDRAULIC DATA

Qd	4,120 cfs
Ad	916 sq. ft.
Vd	4.5 fps
Qf	4,120 cfs
Q_{100}	7,110 cfs
$Q_{O.T.fr.}$	5,300 cfs
V_{MAX}	6.7 fps

Qd = Design discharge for the proposed culvert or bridge based on 25 year frequency. Elev. = 1704.0.

$Q_{O.T.fr.}$ = Overtopping discharge and frequency 45 - year recurrence interval, Elev. = 1705.1. Location: 715 feet west of the center of the existing bridge.

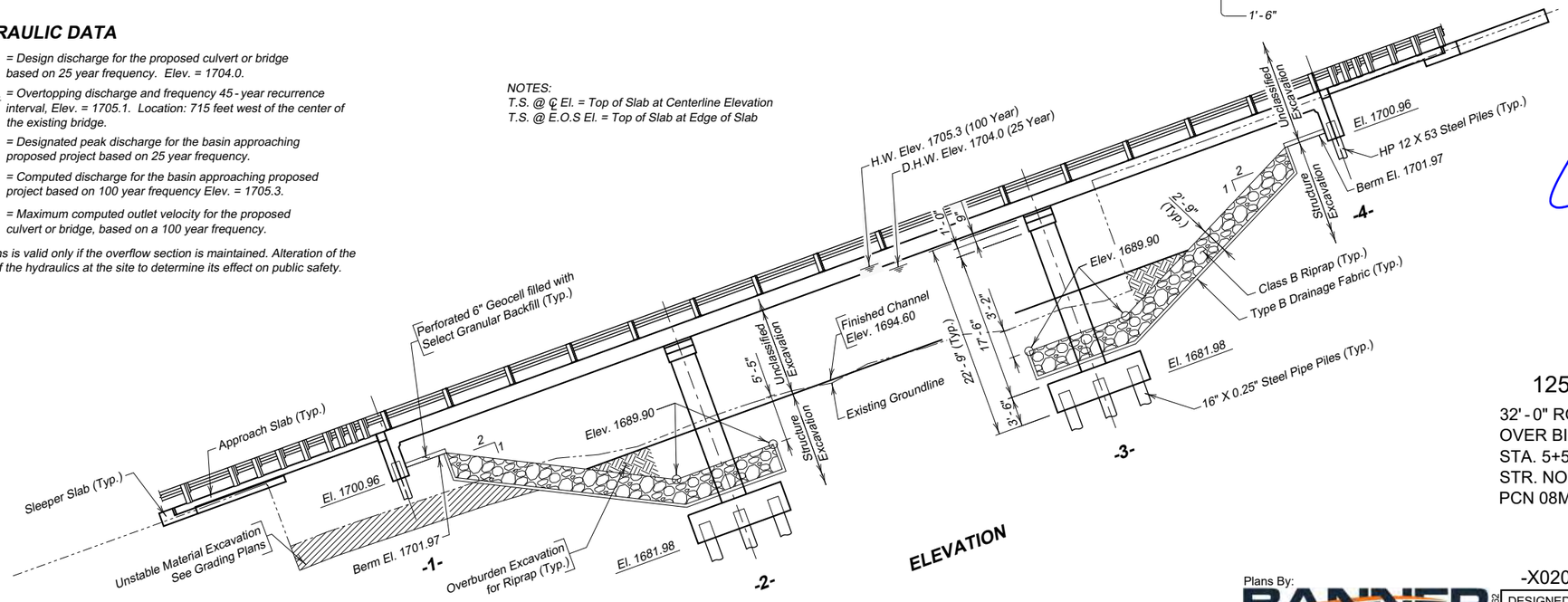
Qf = Designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency Elev. = 1705.3.

V_{MAX} = Maximum computed outlet velocity for the proposed culvert or 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 the site to determine its effect on public safety.

NOTES:
T.S. @ ℄ El. = Top of Slab at Centerline Elevation
T.S. @ E.O.S El. = Top of Slab at Edge of Slab



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
10404
COLIN W.
ZWASCHKA
SOUTH DAKOTA
7/25/2024

GENERAL DRAWING

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220
PCN 08MM

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

CODINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

JULY 2024

1 OF 19

Plans By: BANNER engineering a better community 23190.62

-X020-

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	32	58

FOR BIDDING PURPOSES ONLY

Revised: 8/12/2024 MJB

ESTIMATE OF STRUCTURE QUANTITIES

DESCRIPTION	QUANTITY	UNIT	REMARKS
Concrete Penetrating Sealer	479.2	SqYd	See Special Provision
Select Granular Backfill	16.8	Ton	
Incidental Work, Structure	Lump Sum	LS	
Membrane Sealant Expansion Joint	64.0	Ft	
Structure Excavation, Bridge	575	CuYd	
Bridge End Embankment	173	CuYd	
Granular Bridge End Backfill	68.4	CuYd	
Approach Slab Underdrain Excavation	14.4	CuYd	
Precast Concrete Headwall for Drain	4	Each	
Class A45 Concrete, Bridge Deck	240.2	CuYd	
Class A45 Concrete, Bridge	189.2	CuYd	
Concrete Approach Slab for Bridge	151.9	SqYd	
Concrete Approach Sleeper Slab for Bridge	32.0	SqYd	
Type T101 Bridge Railing	252	Ft	
Reinforcing Steel	23,712	Lb	
Epoxy Coated Reinforcing Steel	68,402	Lb	
Extract Pile	2	Each	
Preboring Pile	180	Ft	
HP 12x53 Steel Test Pile, Furnish and Drive	140	Ft	
HP 12x53 Steel Bearing Pile, Furnish and Drive	1,120	Ft	
16”x0.25” Steel Pipe Test Pile, Furnish and Drive	100	Ft	
16”x0.25” Steel Pipe Pile, Furnish and Drive	1,700	Ft	
4" Underdrain Pipe	150	Ft	
Porous Backfill	11.6	Ton	
Class B Riprap	1,692.2	Ton	
Overburden Excavation for Riprap	628	CuYd	
Type B Drainage Fabric	1,568	SqYd	
Perforated Geocell	480	SqFt	

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
HP Piling (ASTM A572 Grade 50)	f_y = 50,000 psi
Pipe Piling (ASTM A252 Grade 2)	f_y = 35,000 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 as specified and 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. Contractor will remove unstable material at Abutment No. 1 and construct the bridge berms prior to installation of steel piles. See Grading Plans.
7. Bridge berms will be constructed to the plans template prior to any pile driving or construction of abutment footings. See Standard Plate 120.11. Berm slopes will not be disturbed after construction. Any alterations to the berm or slopes after berm construction will be submitted to the Bridge Construction Engineer for approval. Allow 30 days for review of proposals.
8. The elevation of the bridge deck is 16 inches above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

1. In place centerline Sta. 5+43 to centerline Sta. 6+56. is a 113-foot, 3 span concrete bridge with a 30’-0” clear roadway. The superstructure consists of precast concrete channel units in the outer spans and precast concrete double-tee units in the middle span with rectangular steel tube railing continuous across the bridge welded to wide flange posts. The substructure consists of a combination of a H-beam and C-channel welded together supported by 8 steel H-piles at the bents, and a cast-in-place reinforced concrete pile cap supported by 8 steel H-piles with reinforced concrete backwalls at the abutments.
2. Break down and remove the existing bridge as follows: west abutment to elevation 1696, west bent to elevations 1689-1695 (1’ below bottom of riprap) east bent to elevation 1693, east abutment to elevations 1687-1695 (1’ below bottom of riprap), and as required to construct the new structure, in accordance with Section 110 of the Construction Specifications. All portions of the existing bridge will be removed and disposed of by the Contractor at an approved site. The waste disposal site will be as described in the Environmental Commitments Notes in the plans.
3. During demolition of the structure, efforts will be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.
4. Original Construction Plans are not available.
5. Extraction of existing piling is not anticipated to be required, however a quantity of 2 steel piles has been included in the Estimate of Quantities should unknown piling be encountered. Any existing pile determined by the Engineer to interfere with piling for the new structure will be extracted. Payment for extracting piling will be full compensation for extracting piling including materials, labor, and equipment necessary or incidental to the satisfactory completion of this work.
6. 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, except as modified below.
3. Class A45 Concrete, Bridge used for the Abutments and Bents will conform to the Construction Specification, with the following modifications: the type of cement will be either a Type V or Type II with 20 to 25% Class F Modified Fly Ash substituted for cement in accordance with Section 605 of the Construction Specifications.

REGISTERED PROFESSIONAL ENGINEER
REG NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
8/12/2024

ESTIMATE OF STRUCTURE QUANTIES AND NOTES FOR

125’-7 ½” CONT. CONCRETE BRIDGE

Str. No. 15-216-220

JULY 2024 — **2 OF 19**

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
CWZ	MJB	MJB	BRIDGE ENGINEER

ABUTMENTS

1. Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground. If caving of the prebore is an issue below the water table or within the sand and gravel, drill to the final elevation required for the prebore and then reverse the rotation of the auger leaving the loosened material in the boring below the cave in depth.

2. The HP 12x53 Piling were designed using a factored bearing resistance of 49 tons per pile. Piling will develop a field verified nominal bearing resistance of 122 tons per pile.

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

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

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

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

7. Fence anchors will be installed in the abutment wings. See Standard Plate No. 620.18.

BENTS

1. Substructure shoring will remain in place until superstructure shoring is removed.

2. Pipe piles will conform to ASTM A252, Grade 2. Pipe piles will be furnished, driven and spliced in accordance with Section 510 of the Construction Specifications.

3. The Pipe 16” x 0.25” Piling were designed using a factored bearing resistance of 56 tons per pile. Piling will develop a field verified nominal bearing resistance of 140 tons per pile.

4. The Contractor will have sufficient pile splice material on hand before pile driving is started.

5. One test pile will be driven at each bent and will become part of the pile group.

6. The maximum horizontal out of position tolerance at the cutoff elevation is 3 inches.

7. Piles will be driven closed end. The cost of the bottom end plate and welding of the same to the pile will be incidental to the contract unit price per foot for 16” x 0.250” Steel Pipe Bearing Pile, Furnish and Drive and 16” x 0.250” Steel Pipe Test Pile, Furnish and Drive.

8. After the piles are driven, steel pipe piles will be filled with coarse dry sand to the same elevation as the bottom of the footing. The sand will be compacted to preventing bridging. All costs associated with filling the steel pipe piles with sand will be incidental to the contract unit price per foot for 16” x 0.250” Steel Pipe Bearing Pile, Furnish and Drive and 16” x 0.250” Steel Pipe Test Pile, Furnish and Drive.

9. Spiral reinforcement may be fabricated from cold drawn wire conforming to ASTM A1064 or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.

10. It is anticipated that cofferdams will be necessary. Cofferdams will be designed and constructed in accordance with Section 423 of the Specifications.

11. The design of the Cofferdam must be done by Professional Engineers registered in South Dakota. Sealed calculations of both the original design and design check, performed by different engineers, will be submitted with the cofferdam plans. The cofferdam plans, design, and check design will be submitted to the Office of Bridge Design a minimum of 15 days prior to Cofferdam construction.

PILE DRIVING

1. The test piles will be the same length as the production piles for each substructure unit.

2. If design bearing is not obtained during pile driving operations the Contractor will perform a delayed bearing test. If bearing still is not obtained, the Geotechnical Engineering Activity will be contacted prior to driving any piling below plans tip elevations.

3. A driveability analysis was performed using the wave equation analysis program (GRLWEAP). A list of acceptable hammers is provided below. 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.

Delmag D19-42 MVE M-19 ICE 42S APE D19-42

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.

5. See Special Provision for Concrete Penetrating Sealer.

APPROACH SLABS

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

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

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

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

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

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

NOTES (CONTINUED)
FOR
125’-7 ½” CONT. CONCRETE BRIDGE

Str. No. 15-216-220

JULY 2024

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
CWZ	MJB	MJB	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

APPROACH SLAB UNDERDRAIN SYSTEM

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

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

3. Care will be taken to ensure that the 4-inch diameter Perforated PVC Drain Pipe and the 2-inch and the 4-inch diameter PVC Outlet Pipe are not damaged during construction. Sufficient cover material will be placed over the pipes before compaction equipment is allowed over the underdrain system. Any damaged pipes will be replaced by the Contractor at no additional cost to the Department.

4. All labor, tools, equipment, and any incidentals necessary for the Installation of 4-inch diameter Perforated PVC Drain Pipe, 2-inch and 4-inch diameter PVC Outlet Pipe, SDR Solvent Weld PVC Coupling, and PVC Cement will be incidental to the contract unit price per foot for 4" Underdrain Pipe.

FALL PROTECTION

1. The Contractor will install a Fall Protection System conforming to OSHA Regulations. The Contractor will have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS will be compatible with the installed Fall Protection System.

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

SHOP PLANS

The fabricator will submit shop plans in accordance with the Construction Specifications. Send shop plan submittals to Banner Associates, Inc., 409 22nd Avenue South, Brookings, SD 57006 (colinz@bannerassociates.com). After a satisfactory review (and corrections, if necessary), the shop drawings will be released for fabrication and Banner Associates will arrange for fabrication inspection.

CHANNEL WORK

In order to assure the hydraulic capacity of the bridge, the finished ground under the bridge will be shaped to match the upstream channel and flood plain. The existing low water channel will be maintained as near as practical to the existing location. Bridge berms will be built as shown on the General Drawing sheet.

RIPRAP

All Class B Riprap will be ledge rock. Riprap gradation and Drainage Fabric will comply with Section 700.2 of Construction Specifications. Placement of Riprap and Drainage Fabric will be in accordance with Section 700.3 of the Construction Specification and conditions must be free of standing water.

OVERBURDEN EXCAVATION FOR RIPRAP

1. This work will consist of the removal and replacement of material between the limits of the finished groundline and the top of the riprap. See diagram below (overburden is in grey).

2. Excavation is to be completed after temporary diversion method is in place, if required, with minimal standing water to create the profile of slope protection specified in plans.

3. The removed material will be placed on top of the riprap to 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.

4. The overburden material will be placed on top of the riprap and have a maximum lift depth of 1' - 0" and compacted free of flowing water or standing water in excess or four inches above the riprap at the lowest elevation.

5. Compaction effort will produce a surface that does not pump, rut, or otherwise displace when traveled over with construction equipment to the satisfaction of the Engineer. Material may be added to excavated material to facilitate compaction and handling. Importing, stockpiling, blending, and/or wasting of materials will be incidental to the contract unit price for Overburden Excavation for Riprap.

6. Payment for Overburden Excavation for Riprap will be at the contract unit price and will be full compensation for labor, equipment, tools, and incidentals, including furnishing, installing, and removal of any temporary works necessary to complete the work. Payment will be for plans quantity unless measurement is ordered by the Engineer.

7. Before preparing the bid, it is the responsibility of the Contractor to verify existing conditions to determine if a temporary diversion method and/or dewatering will be required. If required, the Contractor must submit the temporary diversion method and/or dewatering for approval to the Engineer 30 days prior to construction.

PERFORATED GEOCELL

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

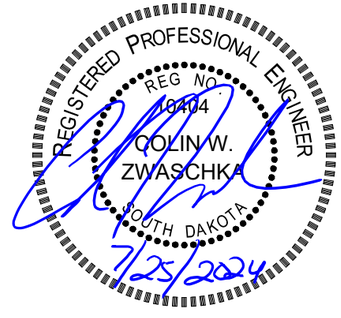
   Company: Agtec
   Phone: 1-818-724-7657
   Website: http://www.agtec.com

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

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

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

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



NOTES (CONTINUED)
FOR
125'-7 ½" CONT. CONCRETE BRIDGE

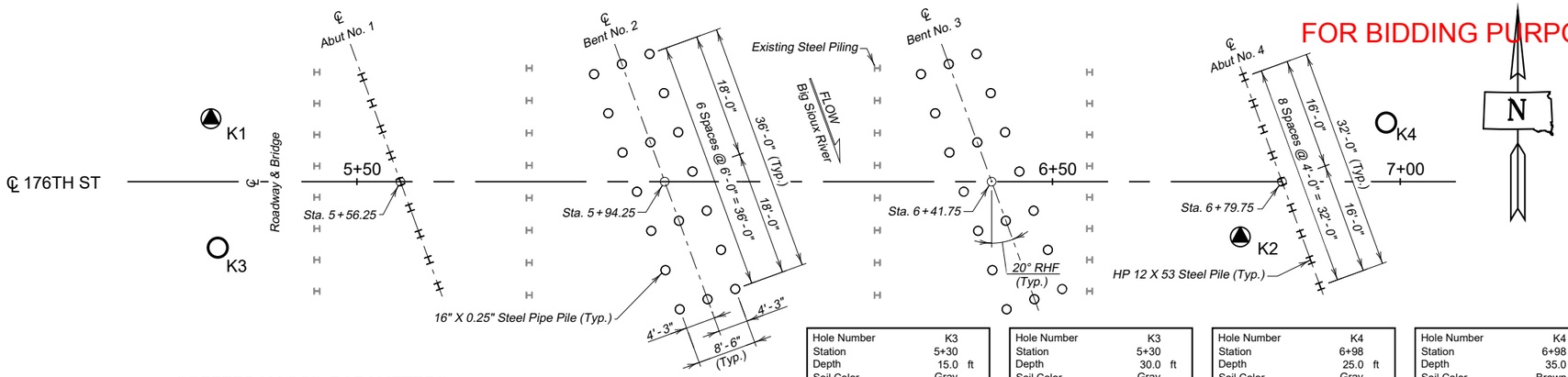
Str. No. 15-216-220

JULY 2024

DESIGNED BY:	DRAWN BY:	CHECKED BY:	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	35	58

FOR BIDDING PURPOSES ONLY



Hole Number	K3	
Station	5+30	
Depth	15.0	ft
Soil Color	Gray	
Classification	Sand	
Strength (Qu)	No Test	psf
Dry Density	110.7	pcf
Wet Density	126.3	pcf
Moisture	14.0	%
Pass No. 10	89.6	%
Pass No. 40	40.8	%
Pass No. 200	8.4	%
Sand Content	81.3	%
Silt Content	4.8	%
Clay Content	3.6	%

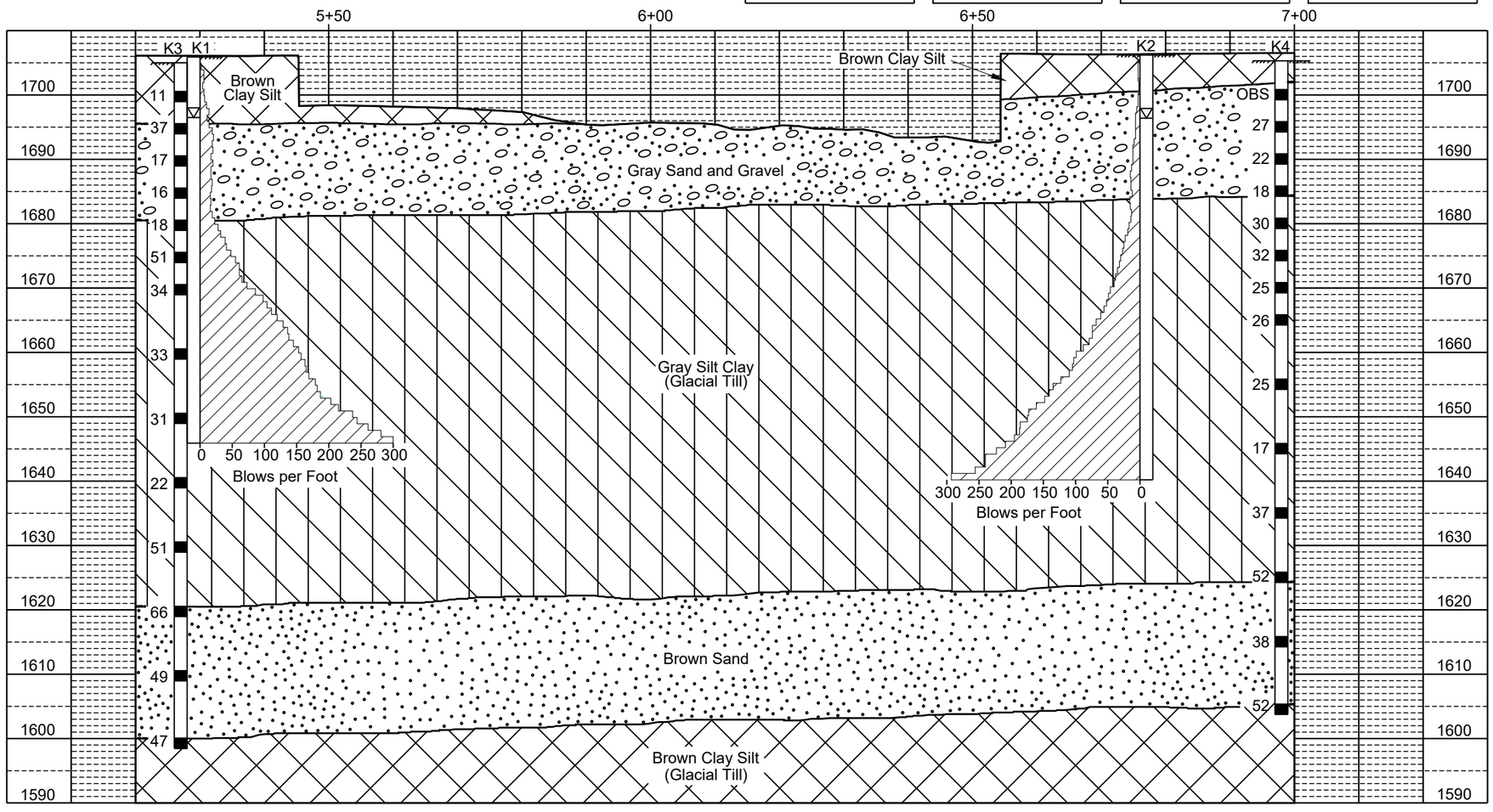
Hole Number	K3	
Station	5+30	
Depth	30.0	ft
Soil Color	Gray	
Classification	Silt Clay	
Strength (Qu)	4,097	psf
Dry Density	105.7	pcf
Wet Density	125.9	pcf
Moisture	19.2	%
Pass No. 10	97.2	%
Pass No. 40	91.9	%
Pass No. 200	77.6	%
Sand Content	19.6	%
Silt Content	44.2	%
Clay Content	33.5	%

Hole Number	K4	
Station	6+98	
Depth	25.0	ft
Soil Color	Gray	
Classification	Clay Silt	
Strength (Qu)	No Test	psf
Dry Density	86.8	pcf
Wet Density	106.8	pcf
Moisture	23.1	%
Pass No. 10	97.5	%
Pass No. 40	86.6	%
Pass No. 200	75.1	%
Sand Content	22.4	%
Silt Content	44.9	%
Clay Content	30.2	%

Hole Number	K4	
Station	6+98	
Depth	35.0	ft
Soil Color	Brown	
Classification	Silt Clay	
Strength (Qu)	2,764	psf
Dry Density	101.7	pcf
Wet Density	122.9	pcf
Moisture	20.9	%
Pass No. 10	98.9	%
Pass No. 40	94.5	%
Pass No. 200	83.4	%
Sand Content	15.5	%
Silt Content	49.4	%
Clay Content	34.0	%

COFFERDAM SOIL PARAMETERS

	Friction Angle (Φ)	Cohesion (c)	Wet Unit Weight (γ_w)
Gray Sand and Gravel	32°	0 psf	120 pcf
Gray Silt Clay (Glacial Till)	19°	950 psf	122 pcf



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

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

LEGEND

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

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

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 if refusal is achieved, which is 50 blows within one 6 inch set.

GROUNDWATER ELEVATIONS

AUGUST 2022

K1	1696.5
K2	1696.4

MEASURED SKIN FRICTION

	ELEV.	PSF
K1	1645.9	537
K2	1640.2	475

SUBSURFACE INVESTIGATION & PILING LAYOUT

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

CODINGTON COUNTY

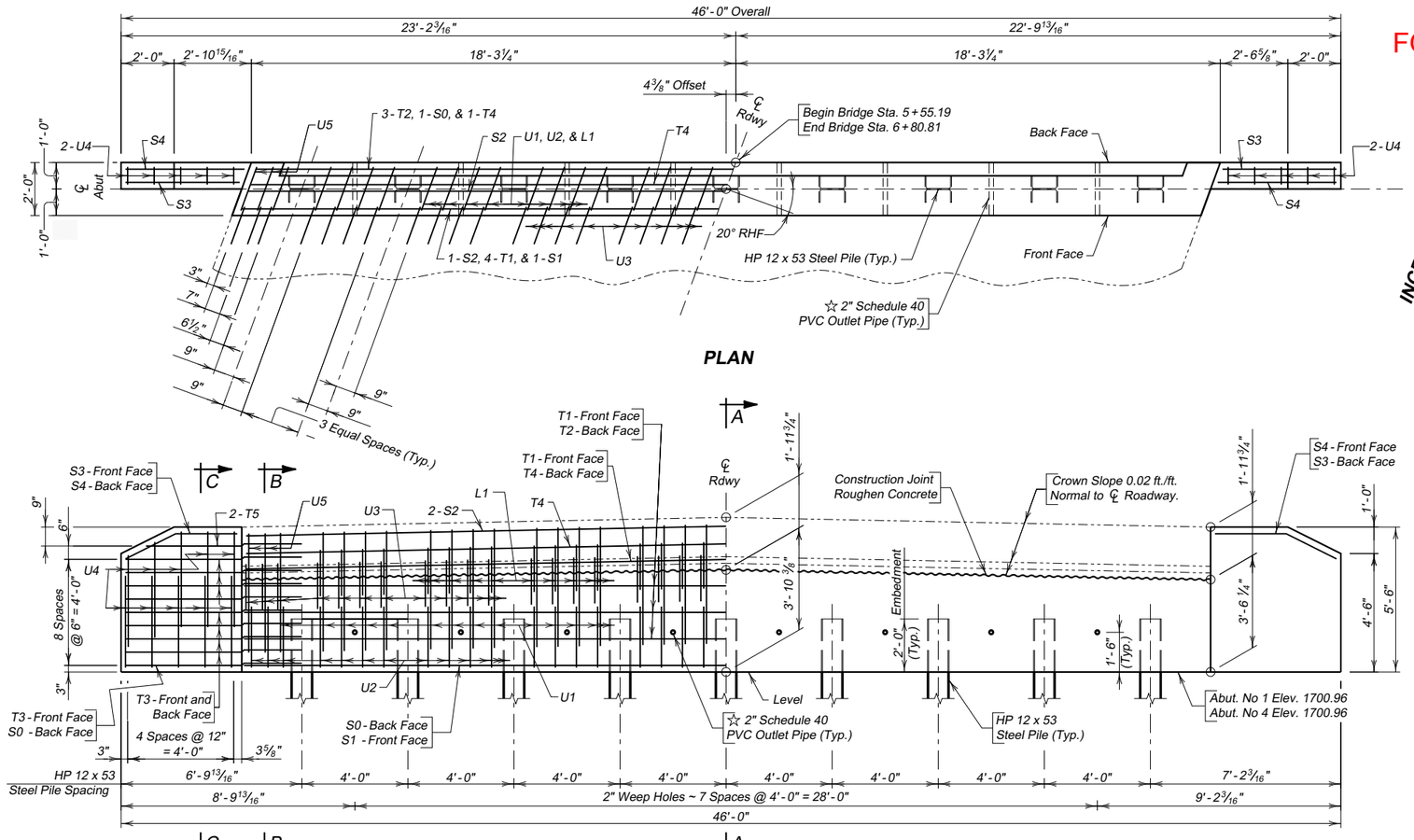
S. D. DEPT. OF TRANSPORTATION

JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
	SH	HK	BRIDGE ENGINEER

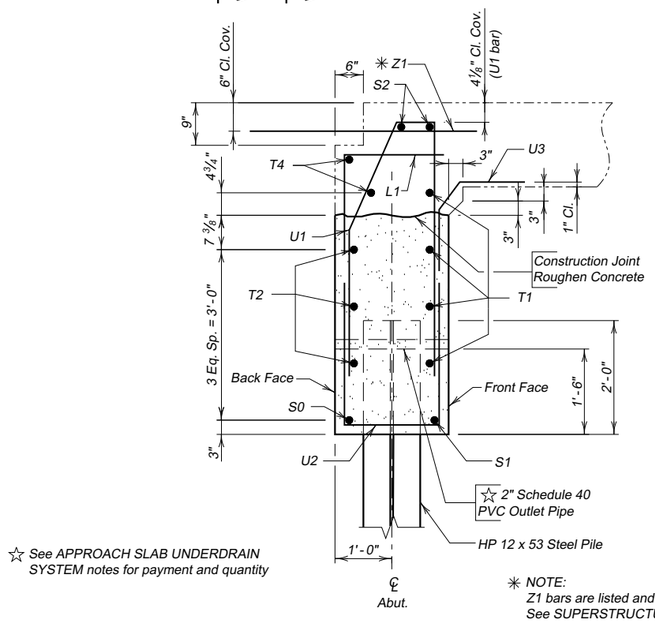
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	36	58

FOR BIDDING PURPOSES ONLY



PLAN

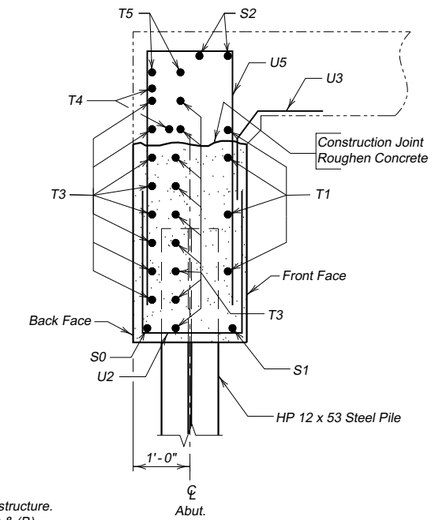
ELEVATION



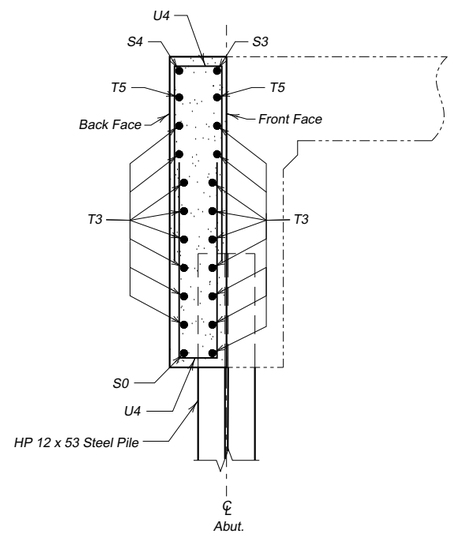
☆ *See APPROACH SLAB UNDERDRAIN SYSTEM notes for payment and quantity*

✳ *NOTE:*
Z1 bars are listed and included in superstructure. See SUPERSTRUCTURE DETAILS (A) & (B).

SEC. A - A



SEC. B - B



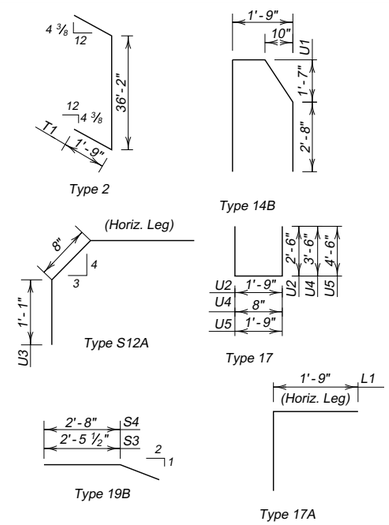
SEC. C - C

REINFORCING SCHEDULE

(For One Abutment)

	Mk.	No.	Size	Length	Type
△	L1	34	4	3'-6"	17A
	S0	1	7	45'-8"	Str.
	S1	1	7	36'-2"	Str.
✳△	S2	2	9	36'-2"	Str.
	S3	2	9	4'-7"	19B
	S4	2	9	4'-9"	19B
✳	T1	4	5	39'-8"	2
	T2	3	5	36'-2"	Str.
	T3	34	6	6'-8"	Str.
✳△	T4	2	5	36'-2"	Str.
△	T5	4	6	6'-3"	Str.
△	U1	34	6	9'-10"	14B
	U2	38	4	6'-9"	17
△	U3	38	4	2'-10"	S12A
	U4	20	4	7'-8"	17
	U5	4	6	10'-9"	17

Bending Details



NOTES -
All dimensions are out to out of bars.
△ *Bars to be epoxy coated.*
✳ *Bend in field as necessary.*

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY ABUT. NO. 1	QUANTITY ABUT. NO. 4
Class A45 Concrete, Bridge	Cu.Yd.	12.8	12.8
Reinforcing Steel	Lb.	1,189	1,189
Epoxy Coated Reinforcing Steel	Lb.	1,013	1,013
Structure Excavation, Bridge	Cu.Yd.	8.7	8.7
HP12X53 Steel Test Pile, Furnish & Drive	Ft.	1 @ 70' = 70'	1 @ 70' = 70'
HP12X53 Steel Bearing Pile, Furnish & Drive	Ft.	8 @ 70' = 560'	8 @ 70' = 560'
Preboring Pile	Ft.	9 @ 10' = 90'	9 @ 10' = 90'

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

ABUTMENT DETAILS

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

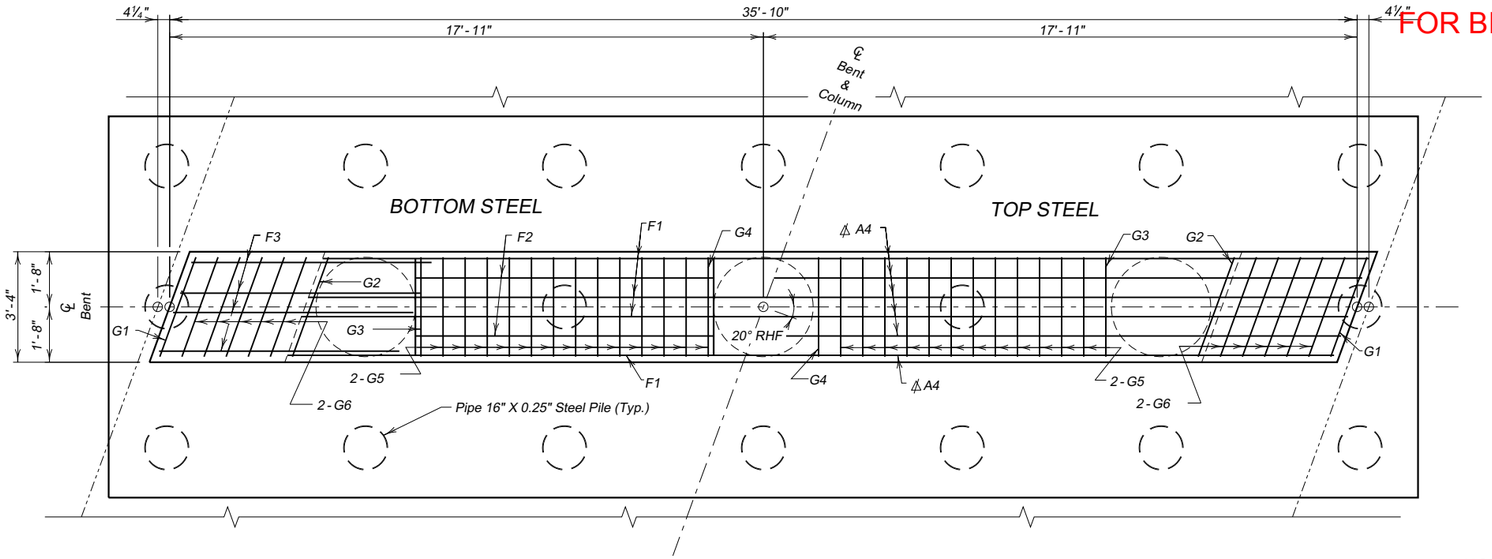
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

6 OF 19

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

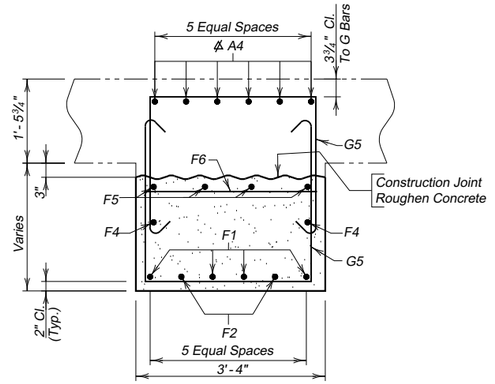
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	37	58

FOR BIDDING PURPOSES ONLY



SEC. A - A

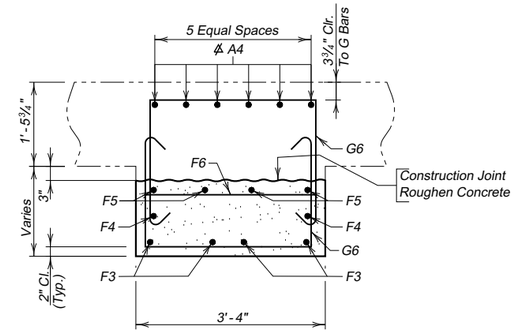
INCREASING STATIONS



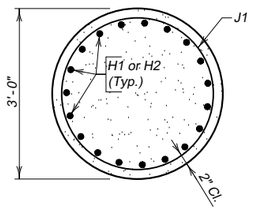
SEC. B - B

NOTE:

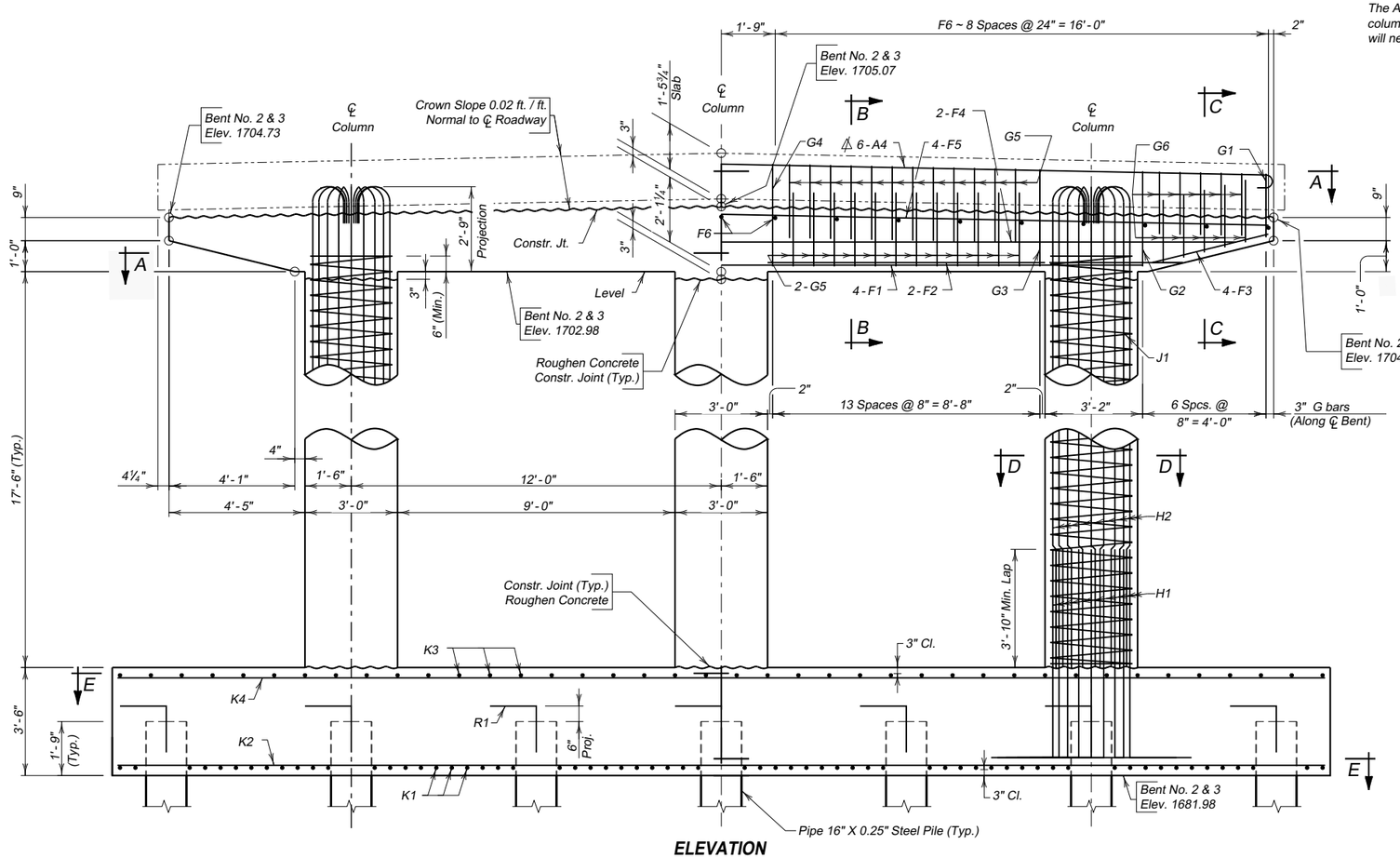
The A4 bars may be difficult to place after the columns and cap have been poured. The bar hooks will need to be tilted to fit in the space provided.



SEC. C - C



SEC. D - D



ELEVATION

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

BENT DETAILS (A)

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

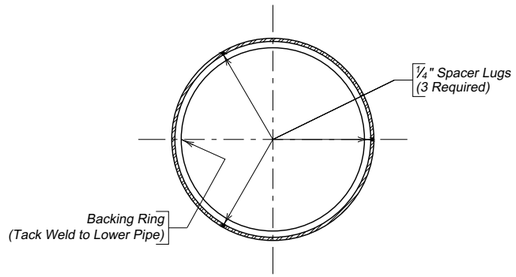
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	38	58

FOR BIDDING PURPOSES ONLY

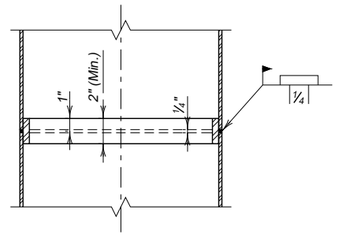
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY Bent No. 2	QUANTITY Bent No. 3
Class A45 Concrete, Bridge	Cu.Yd.	81.8	81.8
△ Reinforcing Steel	Lb.	10,667	10,667
Epoxy Coated Reinforcing Steel	Lb.	1,230	1,230
Structure Excavation, Bridge	Cu.Yd.	304.5	252.7
16" X 0.25" Steel Pipe Test Pile, Furnish & Drive	Ft.	1 @ 50' = 50'	1 @ 50' = 50'
16" X 0.25" Steel Pipe Bearing Pile, Furnish & Drive	Ft.	17 @ 50' = 850'	17 @ 50' = 850'

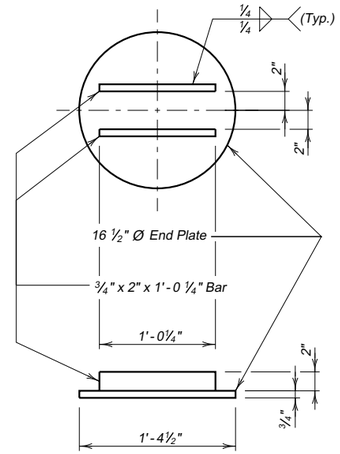
△ Includes 122 Lbs. / Bent. for Spacer Bars. Each bent is computed at ¾ lbs. per linear foot regardless of type furnished.



Backing Ring may be made from cut-offs of other material of a like quantity.



PIPE PILE SPLICE DETAIL

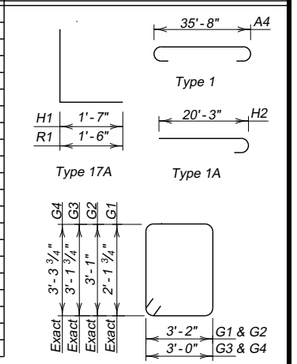


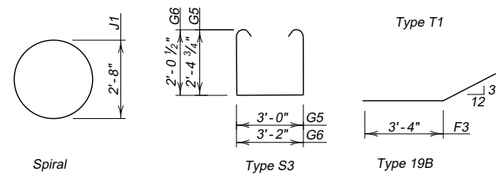
END PLATE DETAILS

REINFORCING SCHEDULE

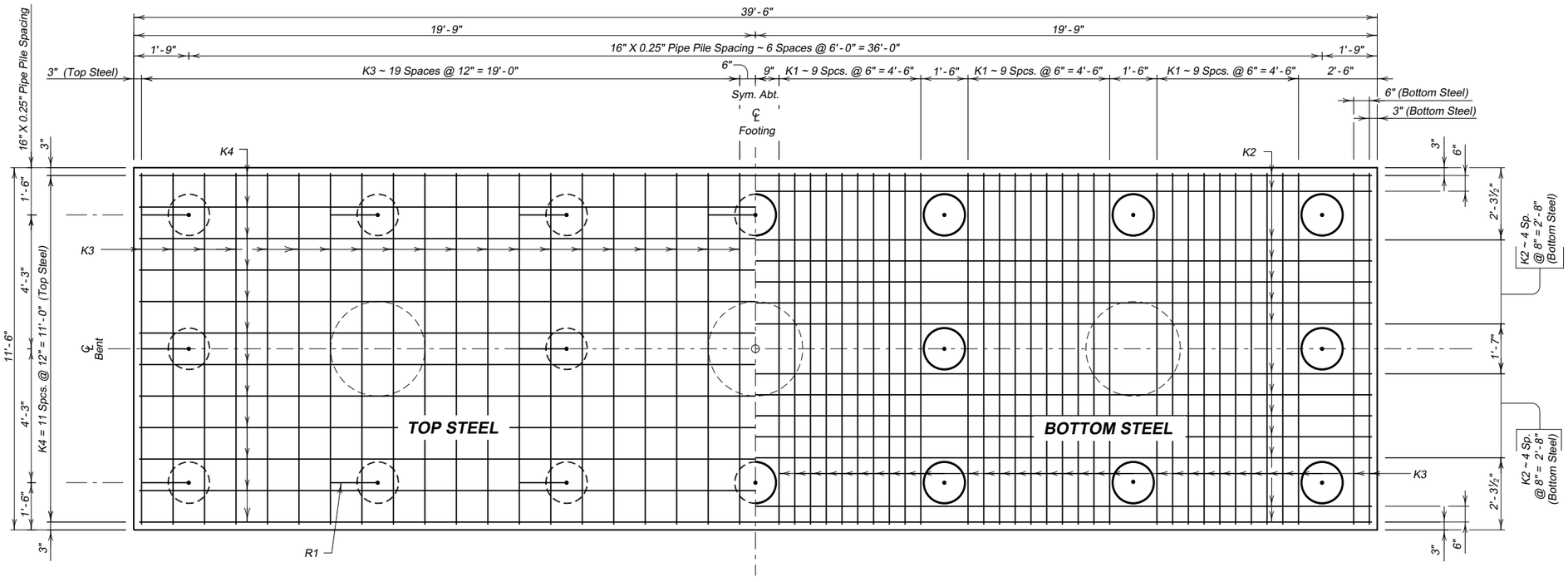
(For One bent)

	Mk.	No.	Size	Length	Type	Bending Details
☒	A4	6	9	38'-2"	1	
	F1	4	7	27'-4"	Str.	
	F2	4	7	9'-0"	Str.	
	F3	8	7	7'-2"	19B.	
	F4	2	4	33'-4"	Str.	
	F5	4	6	35'-6"	Str.	
	F6	19	4	3'-0"	Str.	
☒	G1	2	4	11'-5"	T1	
☒	G2	2	4	13'-3"	T1	
☒	G3	2	4	13'-1"	T1	
☒	G4	2	4	13'-5"	T1	
☒	G5	48	4	8'-7"	S3	
☒	G6	20	4	8'-0"	S3	
	H1	57	9	8'-8"	17A	
	H2	57	9	21'-6"	1A	
	J1	3	4	326'-9"	Spiral	
	K1	64	6	11'-2"	Str.	
	K2	14	8	39'-2"	Str.	
	K3	40	4	11'-2"	Str.	
	K4	12	4	39'-2"	Str.	
	R1	18	9	3'-0"	17A	





NOTES:
All dimensions are out to out of bars.
☒ Bars to be Epoxy Coated.
Spirals - Use 6" pitch and 1 ½ extra turns at each end. Use 1 ½ turns for lap splice as required, or weld as approved by the Project Engineer. Use 3 vertical spacer bars per column. Spirals may be smooth bars.
Bar length shown does not include splices.



SEC. E - E
(Footing Steel)

BENT DETAILS (B)

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

CODINGTON COUNTY

S. D. DEPT. OF TRANSPORTATION

JULY 2024

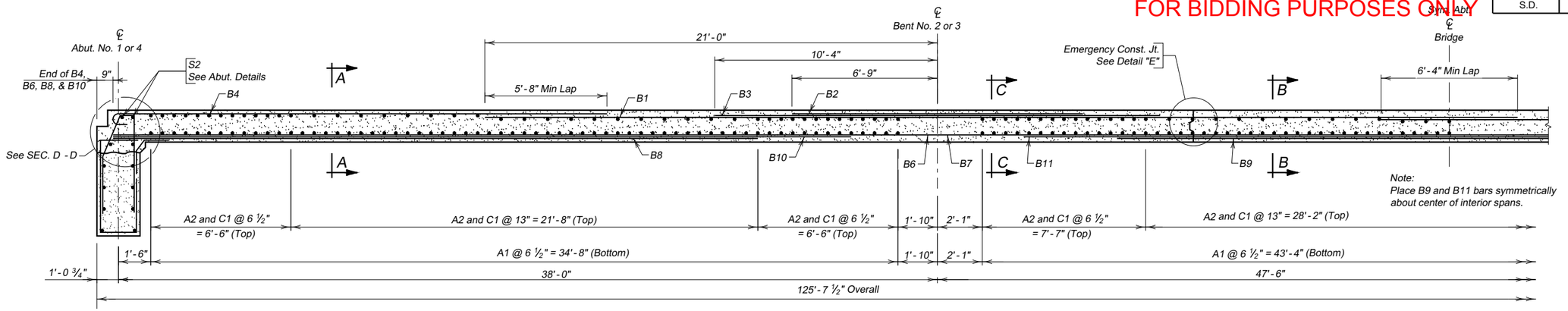
8 OF 19

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

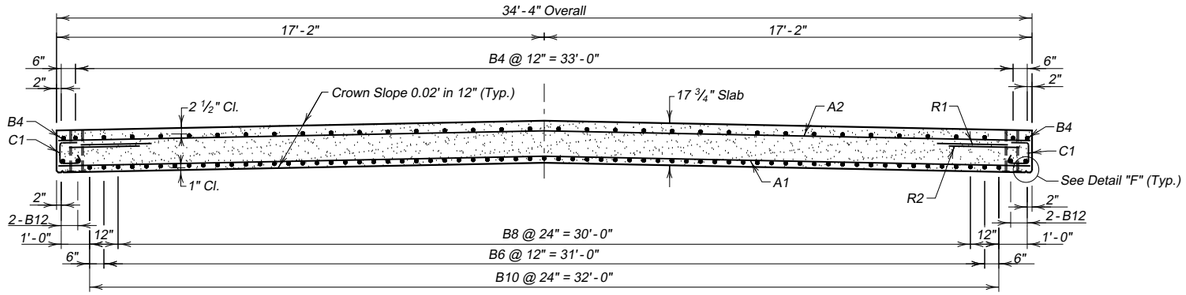
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
12/5/2024

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	39	58

FOR BIDDING PURPOSES ONLY

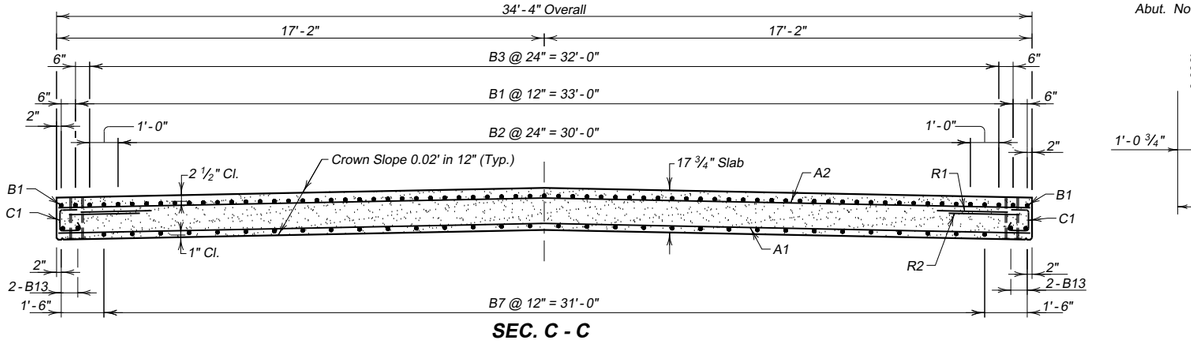


HALF LONGITUDINAL SECTION VIEW



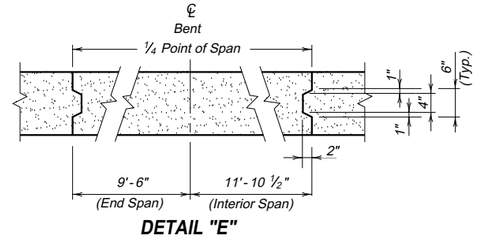
SEC. A - A

SEC. B - B

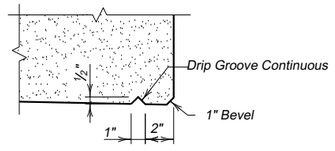


SEC. C - C

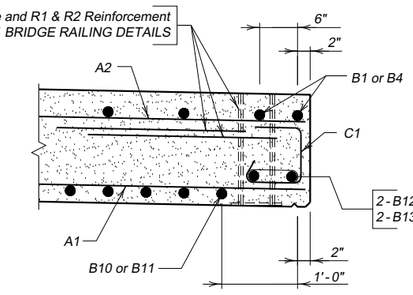
NOTE:
Railing not shown for clarity.



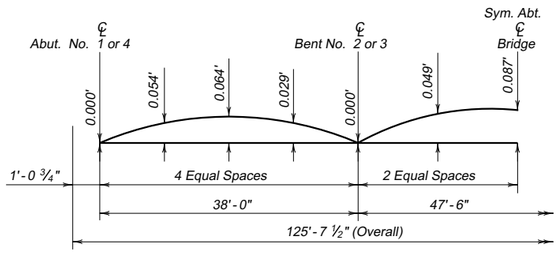
DETAIL "E"



DETAIL "F"



DETAIL "G"



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.

REGISTERED PROFESSIONAL ENGINEER
REG NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

SUPERSTRUCTURE DETAILS (A)

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32' - 0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

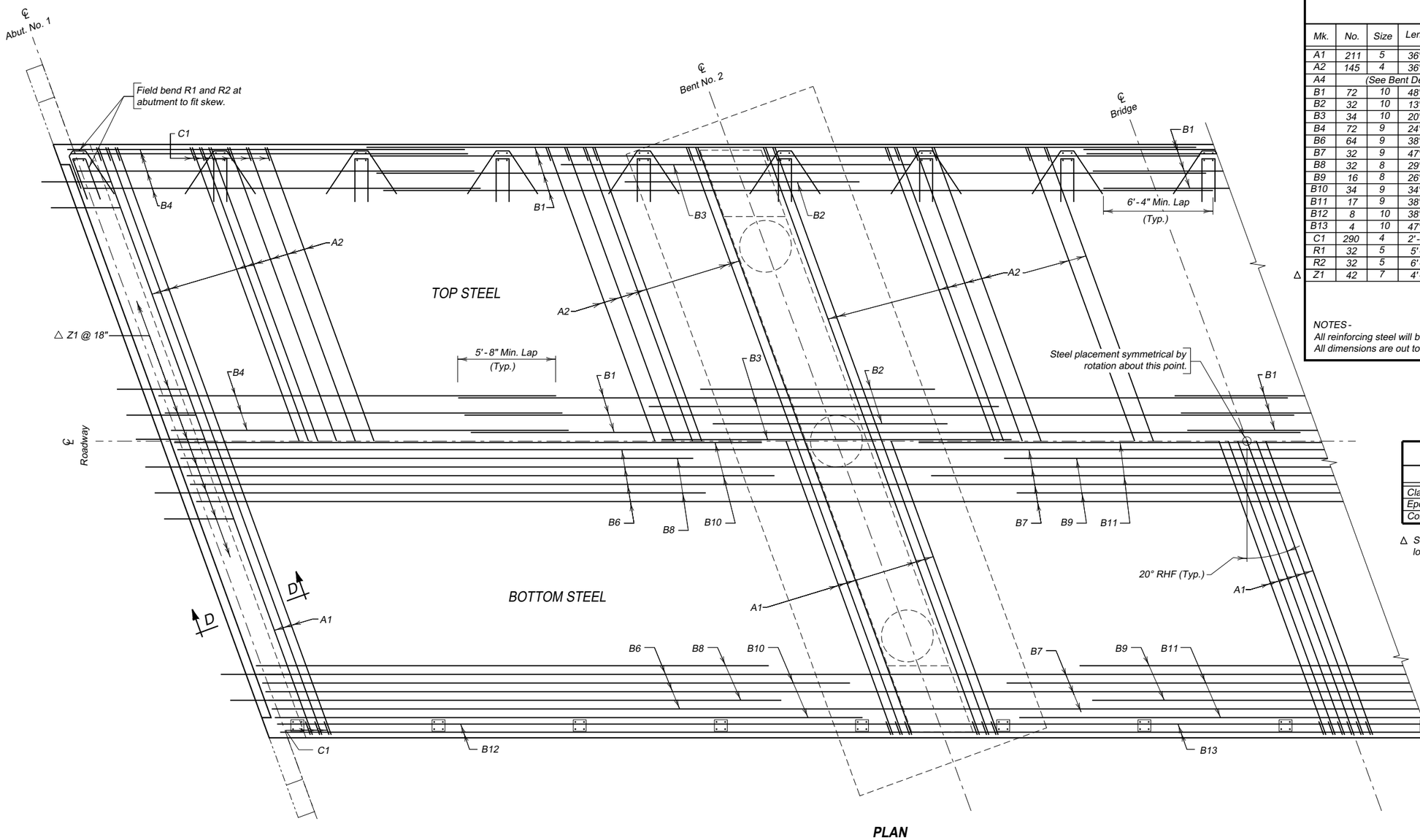
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

9 OF 19

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	40	58

FOR BIDDING PURPOSES ONLY

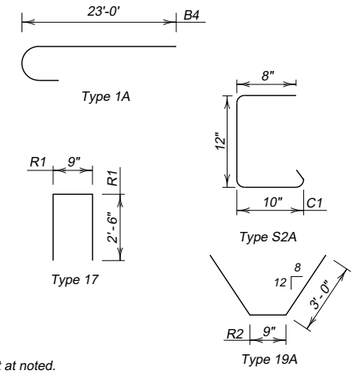


PLAN

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
A1	211	5	36'-2"	Str.
A2	145	4	36'-2"	Str.
A4	(See Bent Details)			
B1	72	10	48'-0"	Str.
B2	32	10	13'-6"	Str.
B3	34	10	20'-8"	Str.
B4	72	9	24'-3"	1A
B6	64	9	38'-3"	Str.
B7	32	9	47'-6"	Str.
B8	32	8	29'-3"	Str.
B9	16	8	26'-7"	Str.
B10	34	9	34'-7"	Str.
B11	17	9	38'-0"	Str.
B12	8	10	38'-3"	Str.
B13	4	10	47'-6"	Str.
C1	290	4	2'-10"	S2A
R1	32	5	5'-9"	17
R2	32	5	6'-9"	19A
△ Z1	42	7	4'-0"	Str.

Bending Details

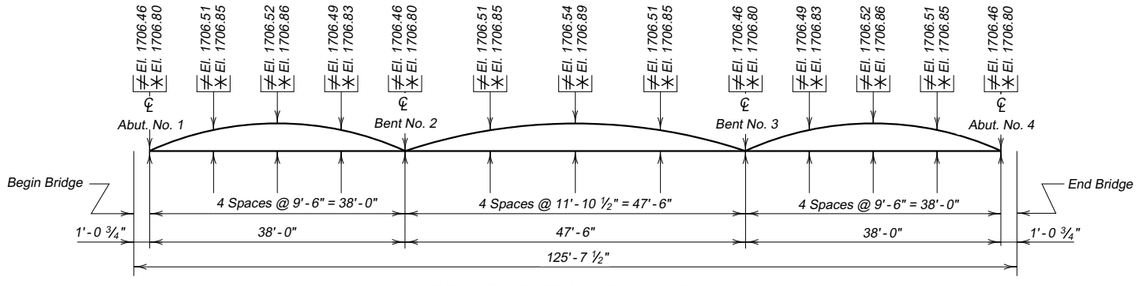


NOTES -
All reinforcing steel will be epoxy coated except at noted.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

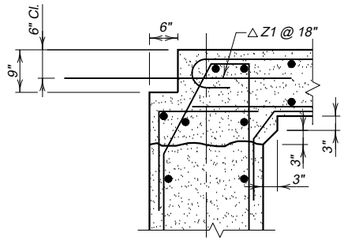
ITEM	UNIT	QUANTITY
Class A45 Concrete, Bridge Deck	Cu.Yd.	240.2
Epoxy Coated Reinforcing Steel	Lb.	63,916
Concrete Penetrating Sealer	Sq. Yd.	479.2

△ See DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE sheet for location of Z1 bars

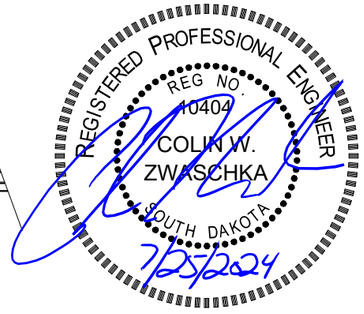


CURB AND CENTERLINE ELEVATIONS

Elevations with a ≠ are Top of Finished Edge of Slab, Elevations with a ✳ are Top of Finished Slab at Centerline of Roadway.
Camber for Dead Load plus Plastic Flow, shown on the SUPERSTRUCTURE DETAILS sheet of the bridge plans, have been included in the Elevations shown above.



SEC. D - D



SUPERSTRUCTURE DETAILS (B)

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

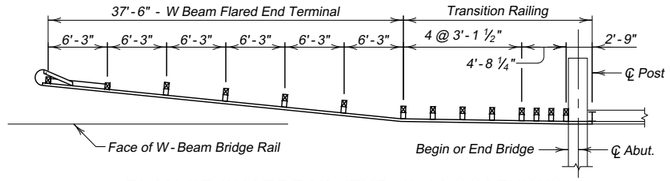
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

10 OF 19

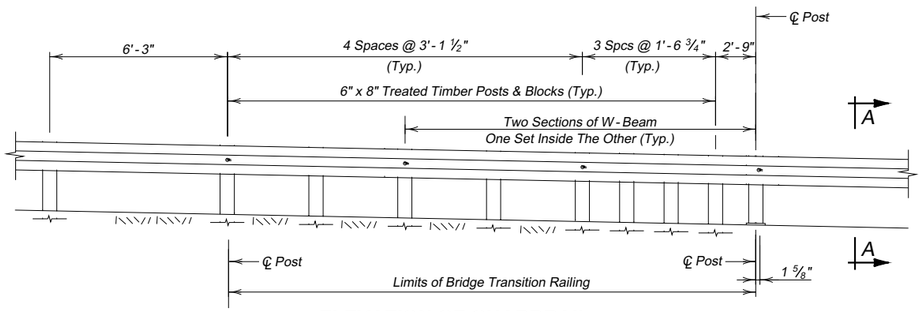
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	41	58

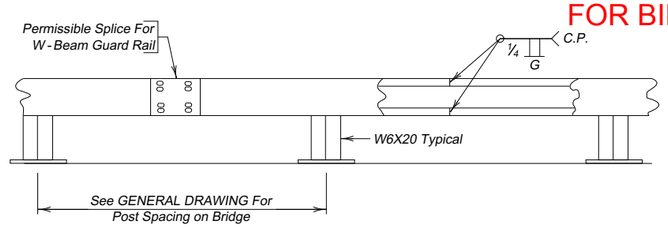
FOR BIDDING PURPOSES ONLY



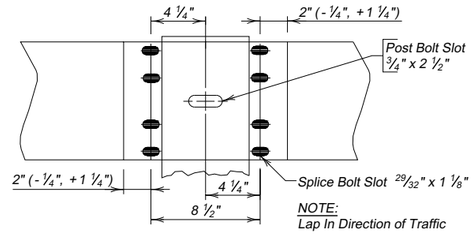
PLAN OF GUARDRAIL (TYP. @ 4 LOCATIONS)



ELEVATION OF GUARDRAIL



BRIDGE RAIL SPLICE ELEVATION



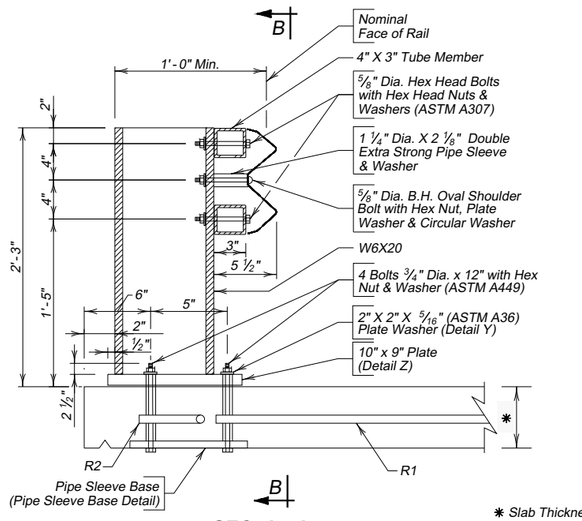
RAIL SPLICE DETAIL

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 ¾" diameter A3125 Grade A325. 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 1, 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, pipe sleeve bases, anchor bolts, nuts, and washers will be galvanized. The nuts, bolts, and washers will be galvanized in accordance with ASTM F2329. The rail posts, tube members and pipe sleeve bases will be galvanized in accordance with ASTM A123.
6. All structural steel parts for the Type T101 Bridge Railing will conform to ASTM A709 Gr. 36. Tubes will conform to ASTM A500 Gr. B.
7. Provide ½" dia. drain holes in the tubes near ends of rail and near splices.
8. All reinforcing steel shall conform to ASTM A615 Gr .60.
9. When posts are located at the abutments, the 9" x 8" x ⅜" plate and bolts may be embedded into slab/abutment at a depth equal to the slab thickness, as shown. The ¾" Dia. Std. Wt. Steel Pipe Sleeves are not required at this location.
10. All bolts, nuts, washers, posts, plates, pipe sleeves, steel W-beam guard rail, welding, and galvanizing, will be included in the contract unit price per foot for Type T101 Steel Railing.

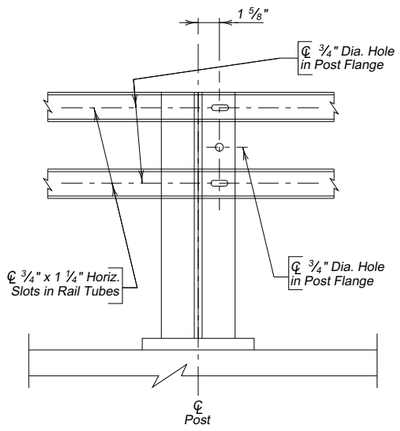
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Type T101 Bridge Railing	Ft.	252



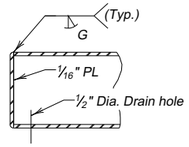
SEC. A - A

∗ Slab Thickness

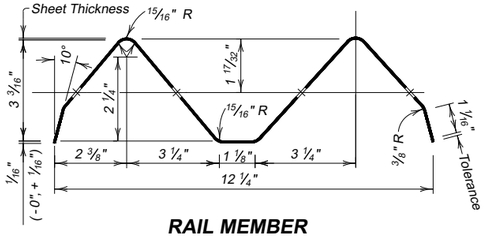


VIEW B - B

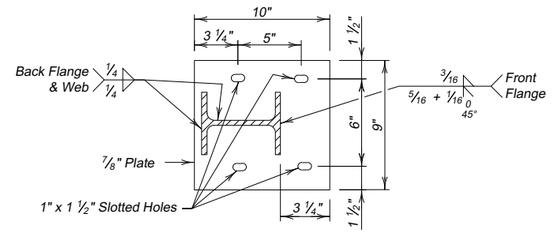
(W-Beam Not Shown)



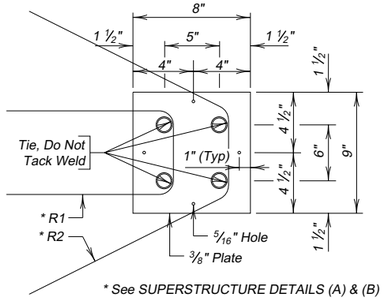
TUBE CAP DETAIL



RAIL MEMBER

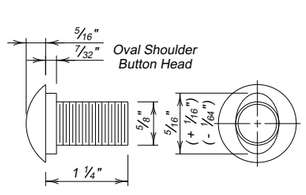


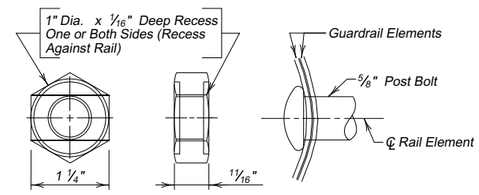
DETAIL "Z"



∗ See SUPERSTRUCTURE DETAILS (A) & (B)

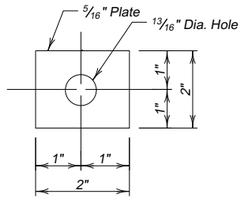
PIPE SLEEVE BASE DETAIL



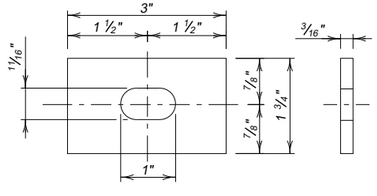


SPLICE BOLT

Post Bolt - Similar Except 18" Long



DETAIL "Y"



RECTANGULAR PLATE WASHER

(On Bridge Rail Only)

TYPE T101 BRIDGE RAILING DETAILS

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY — 20° RHF SKEW
OVER BIG SIOUX RIVER — SEC. 22/27-T116N-R52W
STA. 5+55.19 TO 6+80.81 — BRF-B 6510(05)
STR. NO. 15-216-220 — HL-93

CODINGTON COUNTY

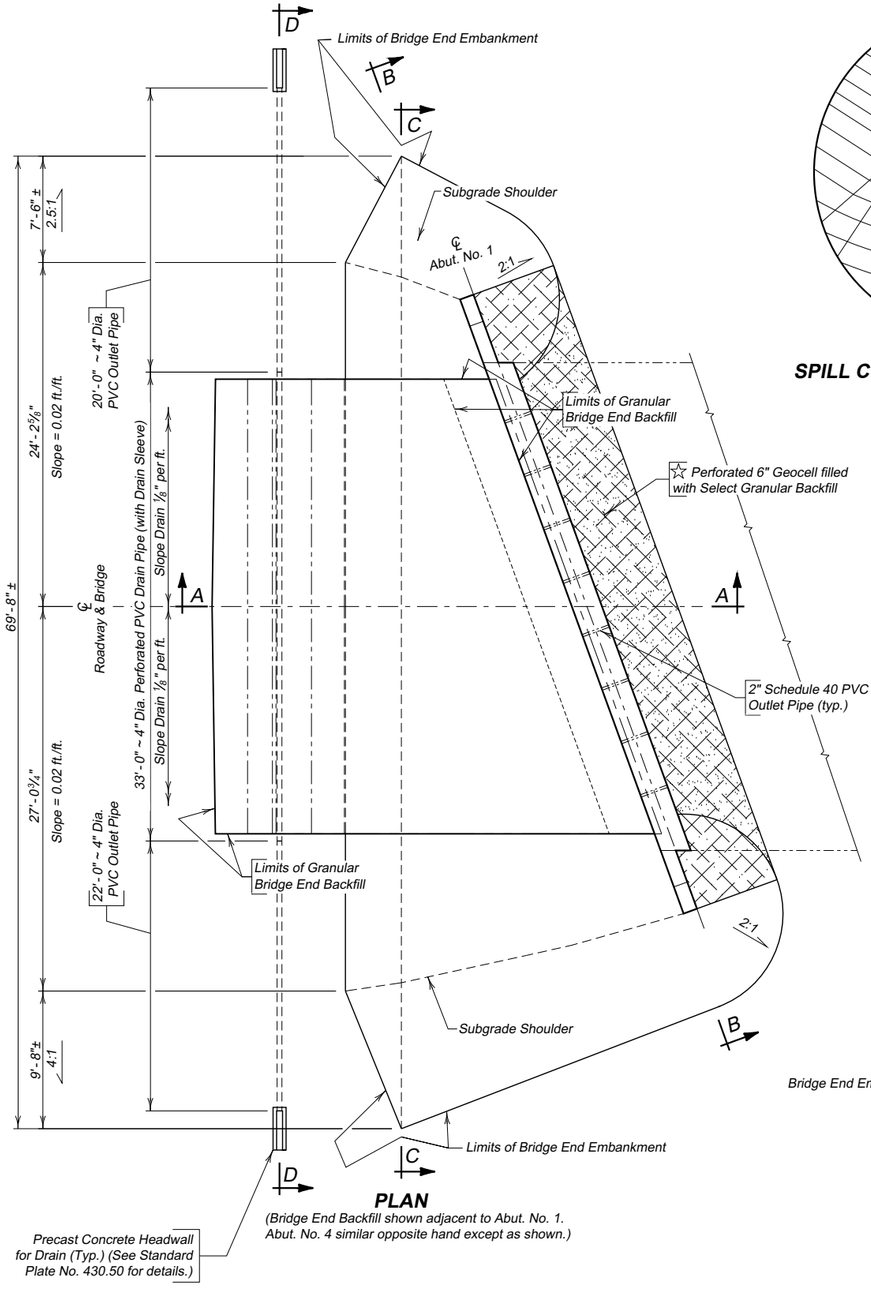
S. D. DEPT. OF TRANSPORTATION

JULY 2024

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	42	58

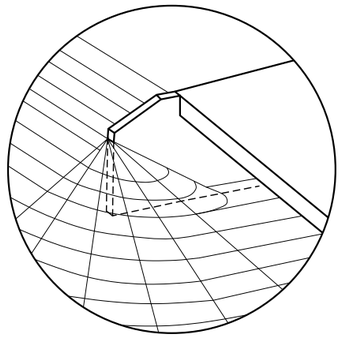
FOR BIDDING PURPOSES ONLY



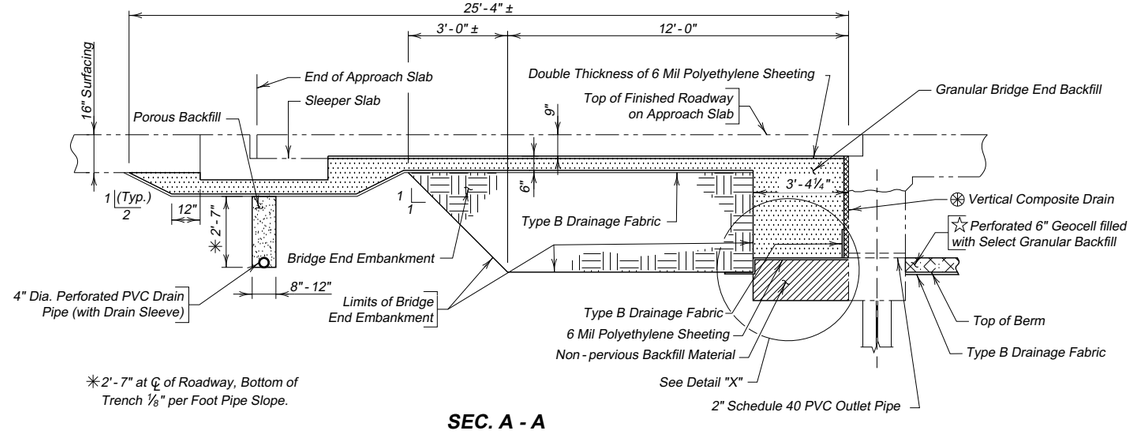
PLAN

(Bridge End Backfill shown adjacent to Abut. No. 1. Abut. No. 4 similar opposite hand except as shown.)

NOTE:
Care to be taken not to damage approach slab underdrain when installing guardrail posts..



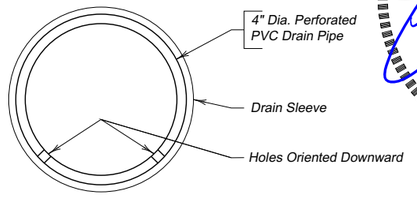
SPILL CONE DETAIL AT EMBANKMENT



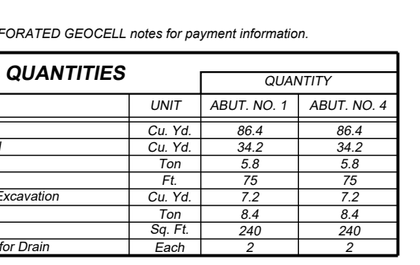
✳ 2'-7" at ℄ of Roadway, Bottom of Trench ⅛" per Foot Pipe Slope.

SEC. A - A

(Cut at ℄ Roadway)



DRAIN DETAIL



☆ See PERFORATED GEOCELL notes for payment information.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY ABUT. NO. 1	QUANTITY ABUT. NO. 4
Bridge End Embankment	Cu. Yd.	86.4	86.4
✳ Granular Bridge End Backfill	Cu. Yd.	34.2	34.2
Porous Backfill	Ton	5.8	5.8
4" Underdrain Pipe	Ft.	75	75
Approach Slab Underdrain Excavation	Cu. Yd.	7.2	7.2
Select Granular Backfill	Ton	8.4	8.4
☆ Perforated Geocell	Sq. Ft.	240	240
Precast Concrete Headwall for Drain	Each	2	2

		Abut. No. 1	Abut No. 4
1.	4" Dia. Perforated PVC Drain Pipe (with Drain Sleeve).	33 Ft.	33 Ft.
2.	4" Dia. PVC Outlet Pipe.	42 Ft.	42 Ft.
3.	5" Dia. Schedule 40 Steel Pipe	8 Ft.	8 Ft.
4.	2" Dia. PVC Outlet Pipe.	16 Ft.	16 Ft.
5.	Vertical Composite Drain.	122 Sq. Ft.	122 Sq. Ft.

Items 1 thru 5 are approximate quantities contained in the 4" Underdrain Pipe for information only.

6.	6 Mil Polyethylene Sheeting, not including laps.	1349 Sq. Ft.	1349 Sq. Ft.
7.	Type B Drainage Fabric.	84 Sq. Yd.	84 Sq. Yd.

Items 6 & 7 are approximate quantities contained in the Granular Bridge End Backfill and are for information only.

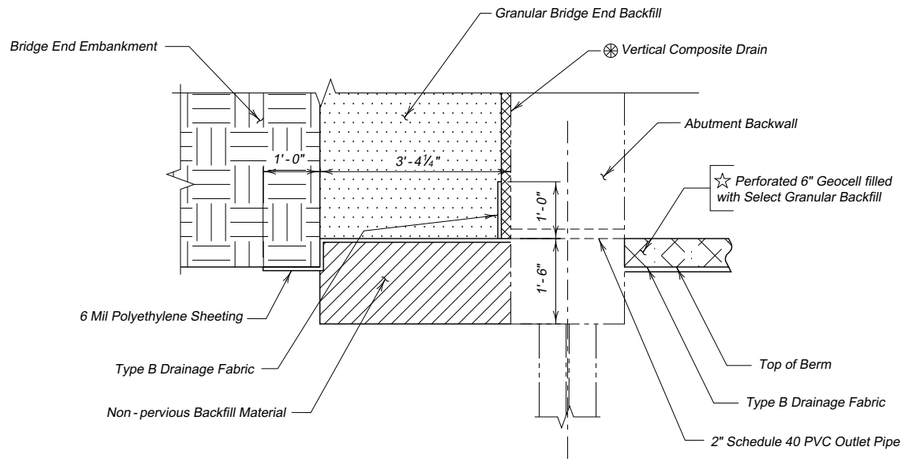
▨ For estimating purposes only, a factor of 1.89 Tons / Cu. Yd. was used to convert Cu. Yds. to Tons.

◬ Shrinkage factor of 1.3 used.

✳ Includes 5.7 Cu.Yd./ Abut of non-pervious backfill incidental to granular bridge end backfill.

⟠ Quantity is based on 12" wide trench.

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



DETAIL X

BRIDGE END BACKFILL DETAILS (A)

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

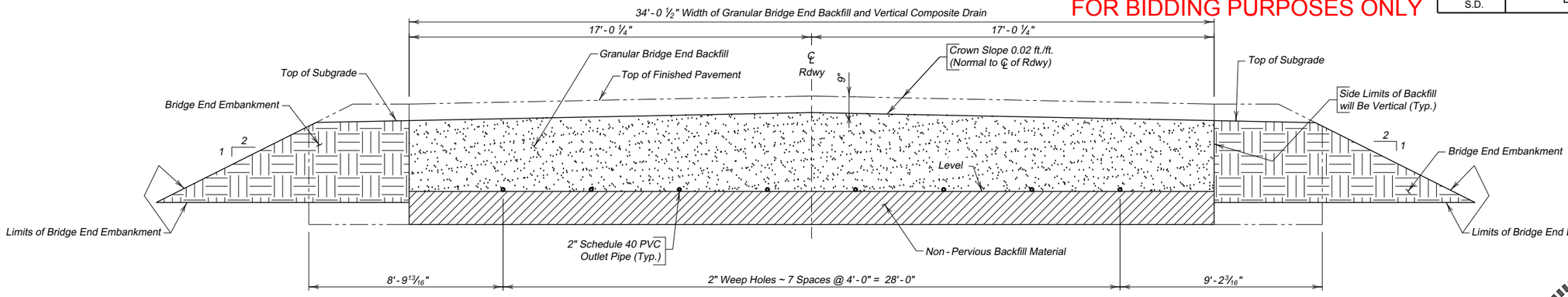
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

12 OF 19

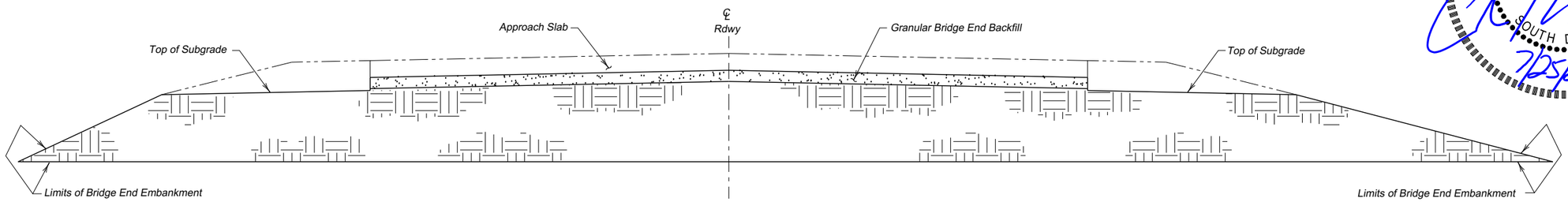
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	43	58

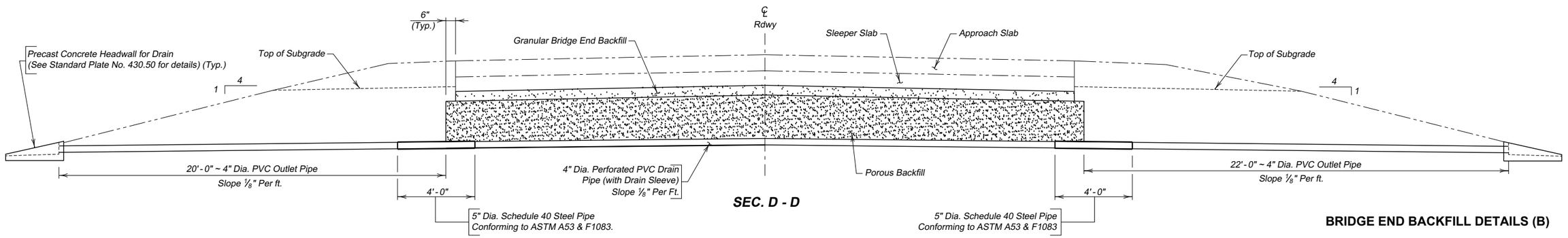
FOR BIDDING PURPOSES ONLY



SEC. B - B



SEC. C - C



SEC. D - D

REGISTERED PROFESSIONAL ENGINEER
REG NO. 19404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

BRIDGE END BACKFILL DETAILS (B)

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

CODINGTON COUNTY

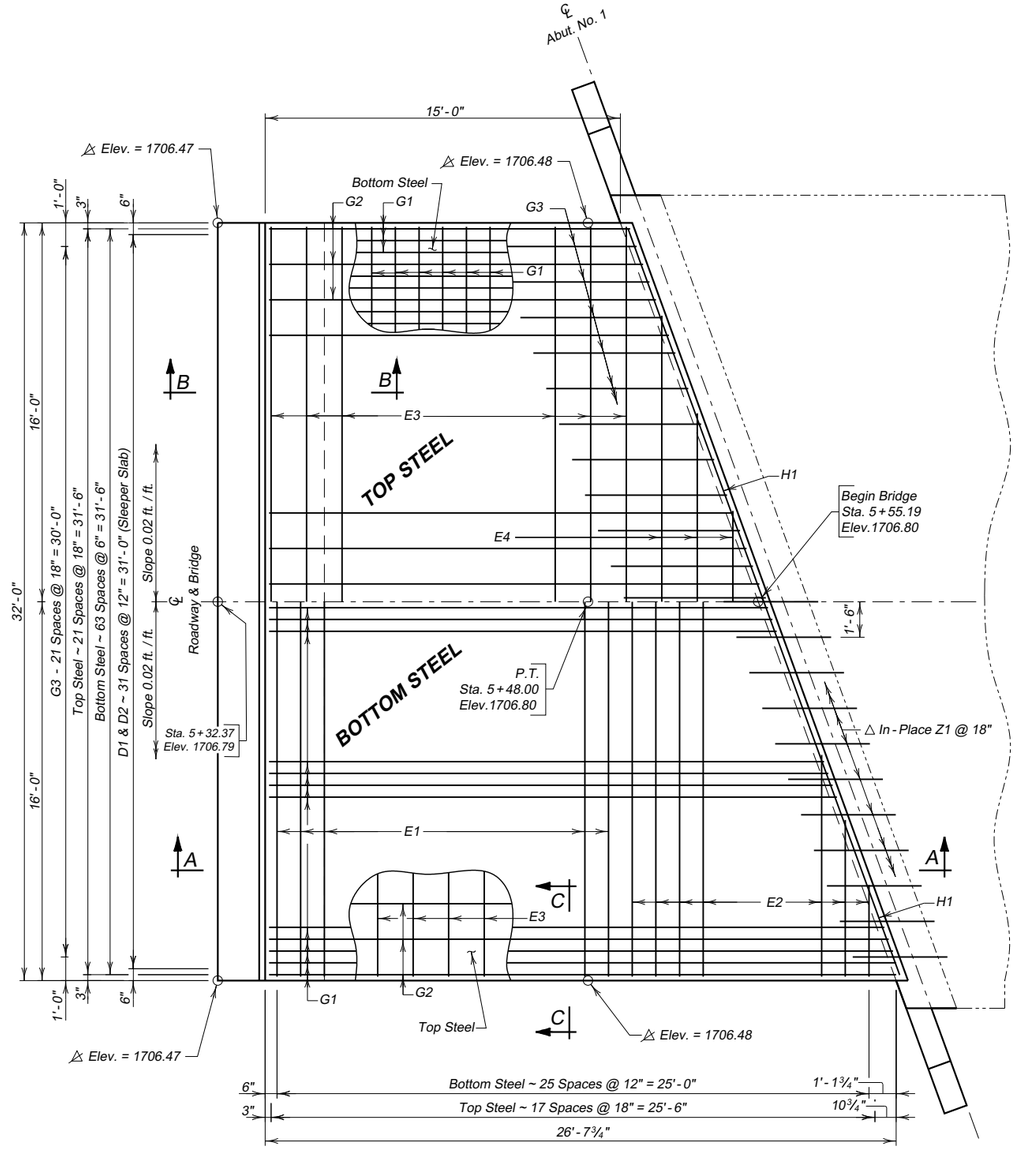
S. D. DEPT. OF TRANSPORTATION

JULY 2024

13 OF 19

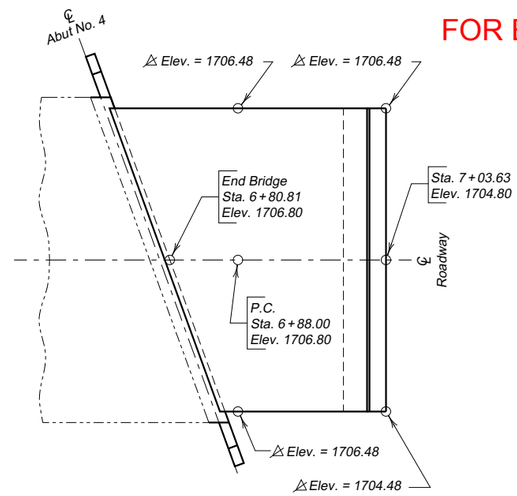
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY



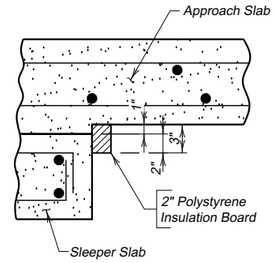
PLAN

(Shown Adj. to Abut No. 1, Abut No. 4 similar by opposite hand except as shown)

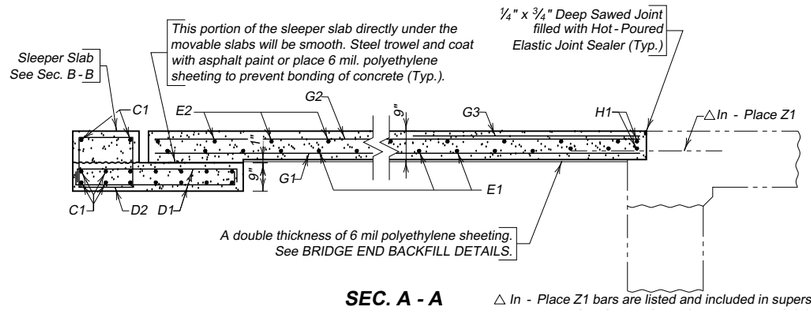


PLAN

(Shown Adj. to Abut No. 4)

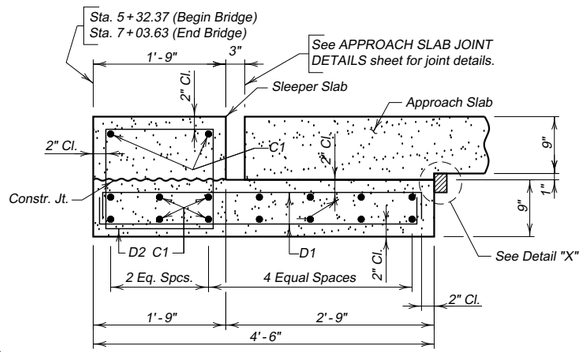


DETAIL "X"



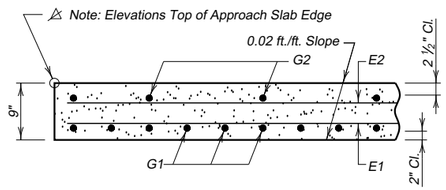
SEC. A - A

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

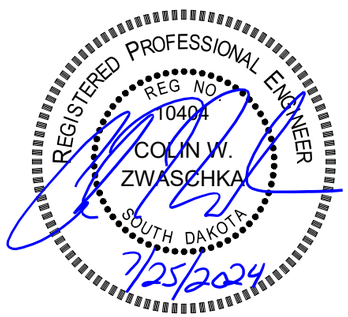


SEC. B - B

(Sleeper Slab)



SEC. C - C



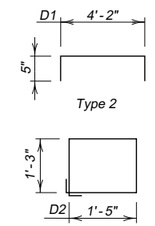
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	44	58

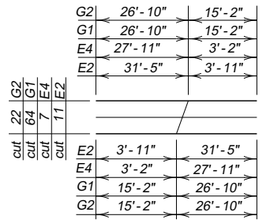
REINFORCING SCHEDULE

(For Two Approach Slabs & Two Sleeper Slabs)

	Mk.	No.	Size	Length	Type
	Sleeper Slabs				
	C1	32	5	31'-8"	Str.
	D1	128	4	5'-0"	2
	D2	64	4	6'-1"	T2
	Approach Slabs				
	E1	30	6	31'-8"	Str.
☑	E2	11	6	35'-4"	Str.
	E3	10	4	31'-8"	Str.
☑	E4	7	4	31'-1"	Str.
☑	G1	64	8	42'-0"	Str.
☑	G2	22	8	42'-0"	Str.
	G3	42	4	6'-0"	Str.
	H1	4	6	33'-8"	Str.

Bending Details





Notes:

☑ *See cutting diagram.*
All bars to be epoxy coated.
All dimensions are out to out of bars.

ESTIMATED QUANTITIES

(For Two Approach Slabs & Two Sleeper Slabs)

ITEM	UNIT	QUANTITY
Concrete Approach Slab for Bridge	Sq. Yd.	151.9
Concrete Approach Sleeper Slab for Bridge	Sq. Yd.	32.0

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

1. 38.5 Cu. Yds. Concrete in Approach Slabs.
2. 12,383 Lbs. Epoxy Coated Re - Steel in Approach Slabs.
3. 11.5 Cu. Yds. Concrete in Sleeper Slabs.
4. 1,745 Lbs. Epoxy Coated Re - Steel in Sleeper Slabs.
5. 16 Sq. Ft. of 2" Polystyrene Insulation Board.

APPROACH SLAB DETAILS

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

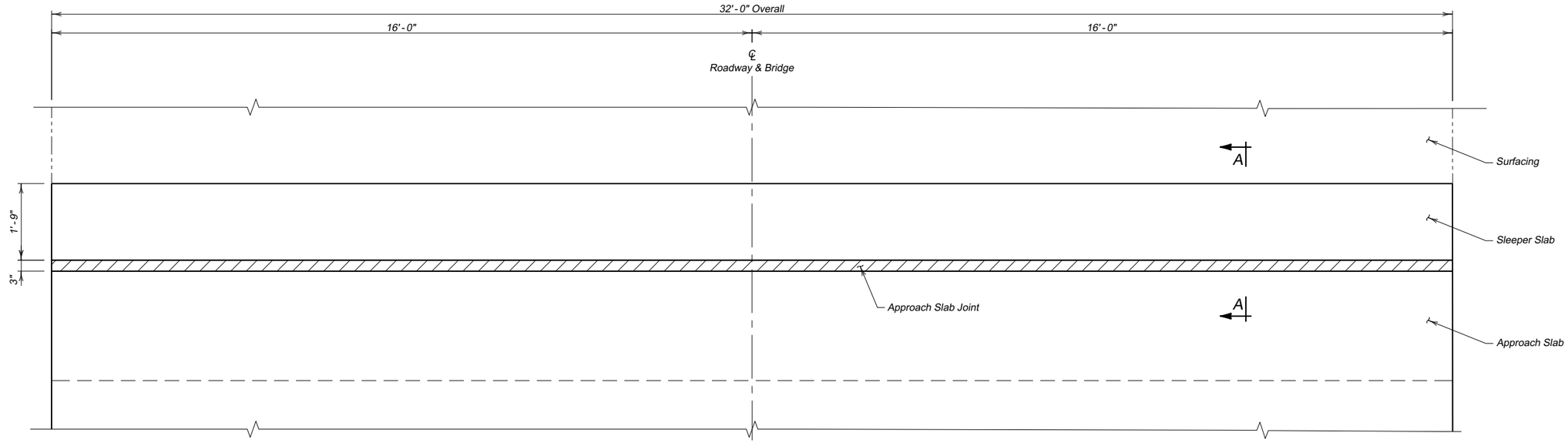
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

14 OF 19

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	45	58

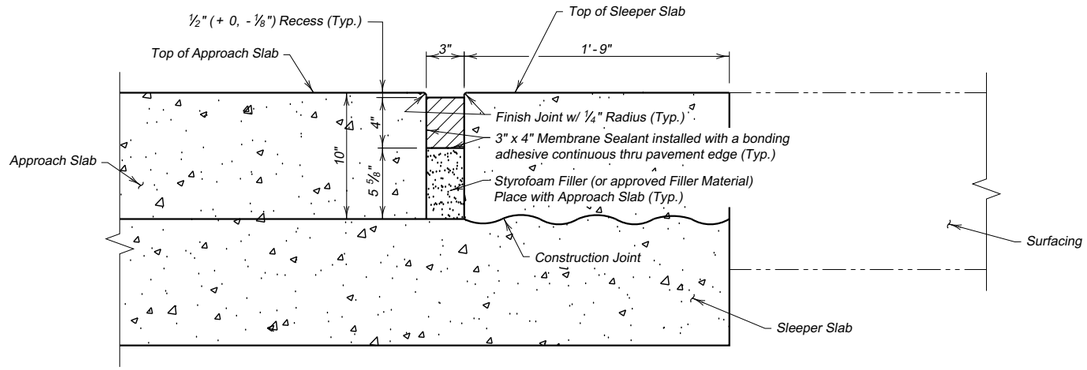
FOR BIDDING PURPOSES ONLY



PLAN

GENERAL NOTES

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



SEC. A - A

ESTIMATED QUANTITIES
(For Two Approach Slabs)

ITEM	UNIT	QUANTITY
Membrane Sealant Expansion Joint	Ft.	64.0

REGISTERED PROFESSIONAL ENGINEER
REG NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

APPROACH SLAB JOINT DETAILS

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

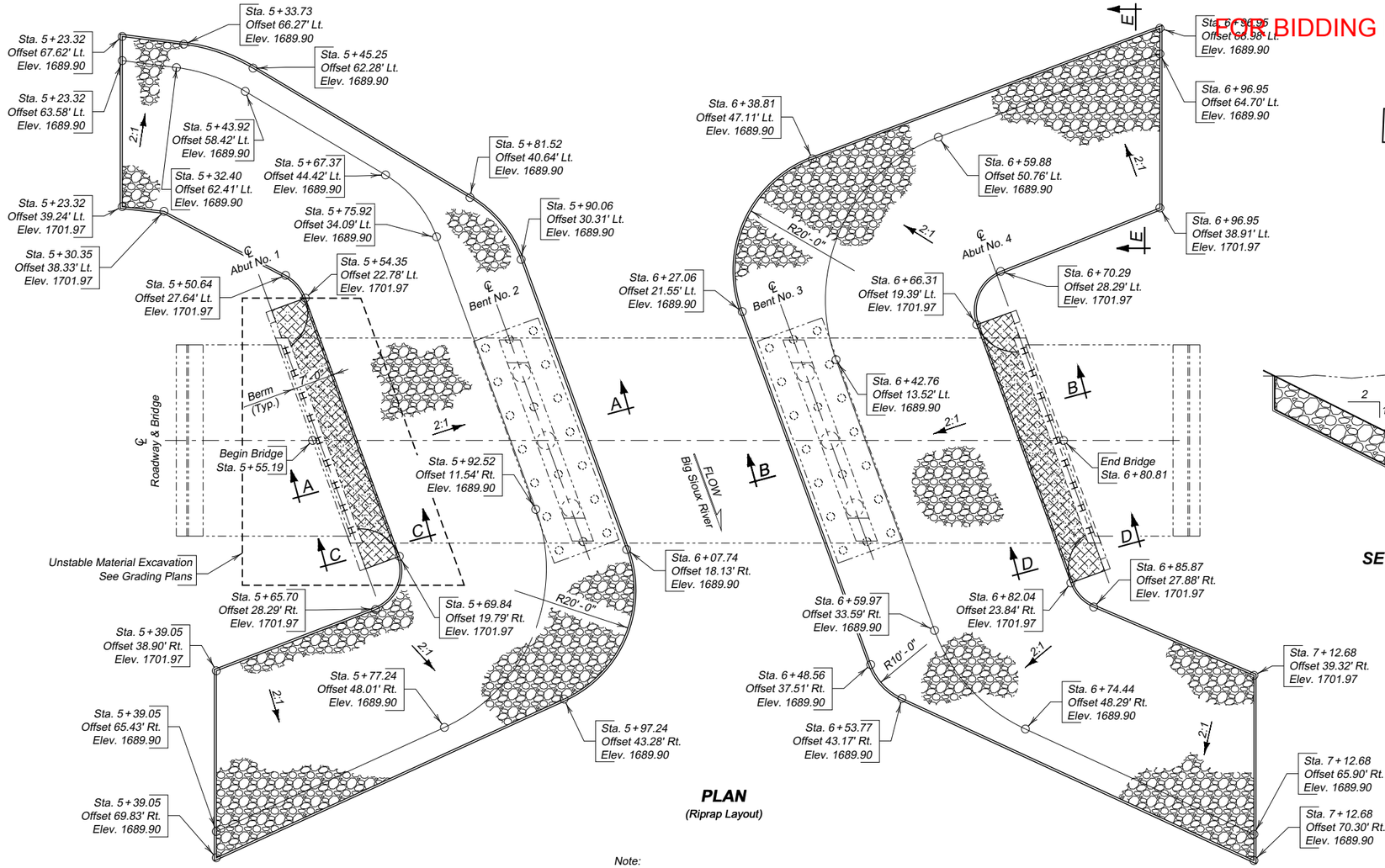
CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

15 OF 19

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF-B 6510(05)	46	58

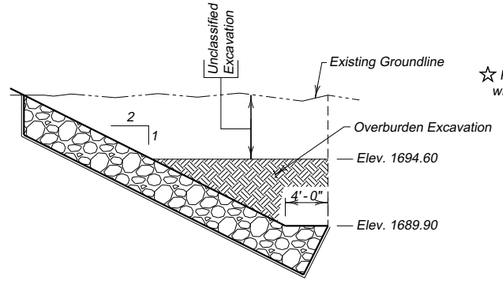
FOR BIDDING PURPOSES ONLY



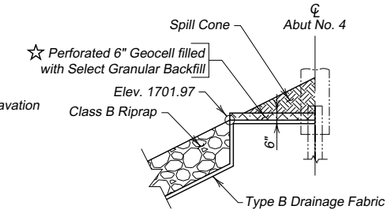
PLAN
(Riprap Layout)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Overburden Excavation for Riprap	Cu. Yd.	628
Ø Class B Riprap	Ton	1692.2
Type B Drainage Fabric	Sq. Yd.	1568

Ø For estimating purposes only, a factor of 1.4 tons per cubic yard was used to convert cubic yards to tons.



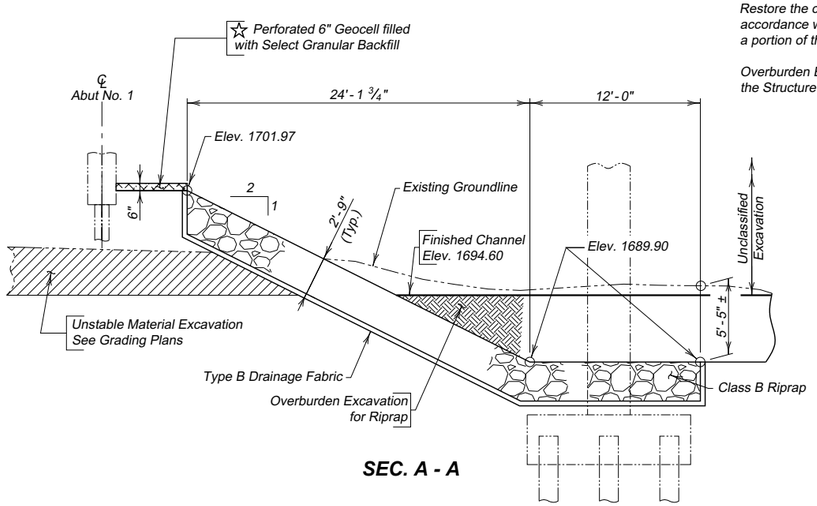
SEC. E - E



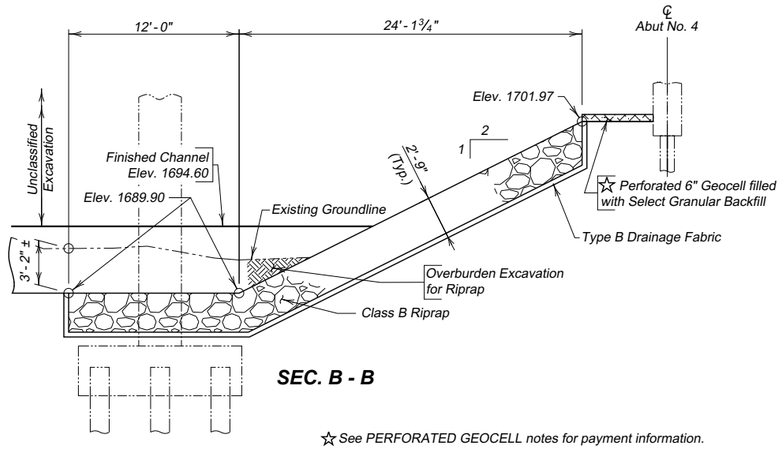
SEC. D - D

Note:
Restore the channel and channel banks between the rirprap intercepts in accordance with the Overburden Excavation for Riprap notes. This will require a portion of the riprap to be buried.

Overburden Excavation quantities within the bent excavation are contained in the Structure Excavation bid item.

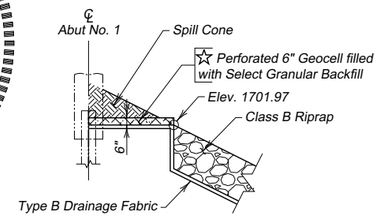


SEC. A - A



SEC. B - B

☆ See PERFORATED GEOCELL notes for payment information.



SEC. C - C

REGISTERED PROFESSIONAL ENGINEER
REG NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
7/25/2024

RIPRAP DETAILS

FOR

125'-7 ½" CONT. CONCRETE BRIDGE

32'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 5+55.19 TO 6+80.81
STR. NO. 15-216-220

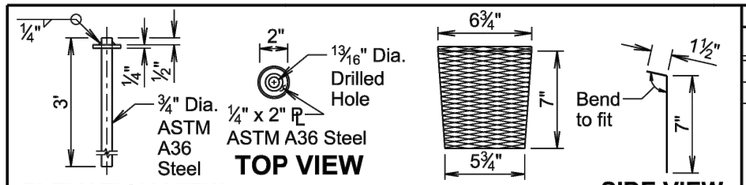
20° RHF SKEW
SEC. 22/27-T116N-R52W
BRF-B 6510(05)
HL-93

CODINGTON COUNTY
S. D. DEPT. OF TRANSPORTATION
JULY 2024

16 OF 19

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	MJB	MJB	BRIDGE ENGINEER

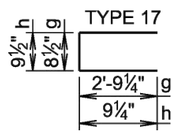
FOR BIDDING PURPOSES ONLY

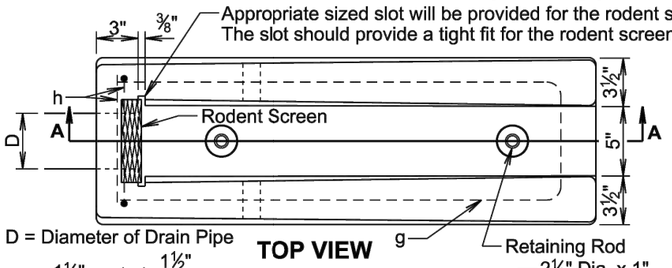


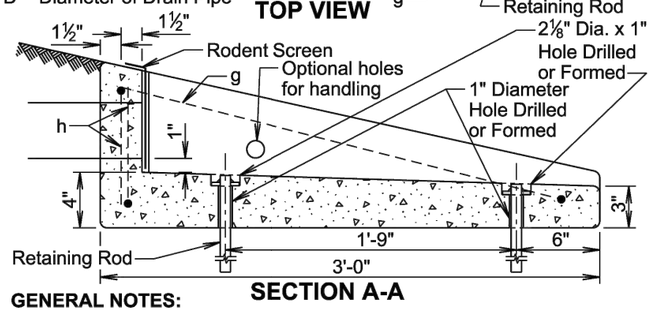
REINFORCING SCHEDULE				
MK.	No.	Size	Length	Type
g	1	4	6'-3"	17
h	2	4	2'-4"	17

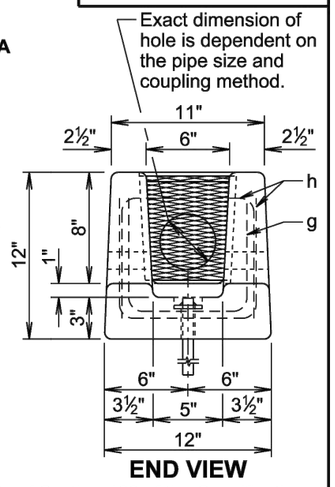
NOTE: All dimensions are out to out of bars.

Bending Details









GENERAL NOTES:

The concrete will be Class M6. The concrete will conform to the requirements of Section 462 of the Specifications. It is estimated that each unit weighs approximately 210 pounds.

All reinforcing steel will conform to ASTM A615, Grade 60 and will be epoxy coated. The reinforcing steel will be securely retained to prevent displacement during placement of concrete. It is estimated that 7.3 pounds of reinforcing steel is required for each unit.

The pipe will be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The rodent screen will be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size will be ½". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires.

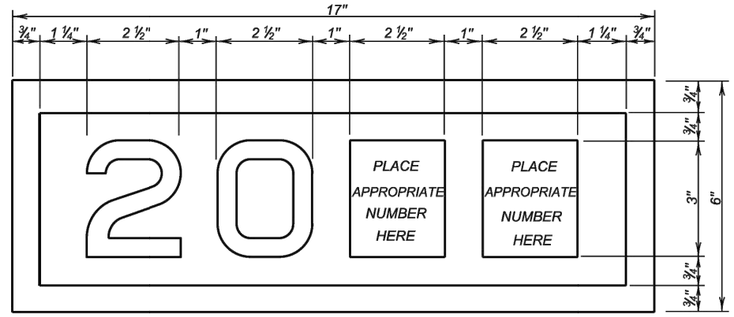
The retaining rod will be galvanized in accordance with ASTM A123 after all shop welding has been completed.

The drawing indicates using ½" fillets; however, ¾" chamfers may be substituted for the ½" fillets.

All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, retaining rods, and rodent screen will be incidental to the contract unit price per each for "Precast Concrete Headwall for Drain".

November 19, 2021

Published Date: 2025	SDDOT	PRECAST CONCRETE HEADWALL FOR DRAIN	PLATE NUMBER 430.50 Sheet 1 of 1



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.

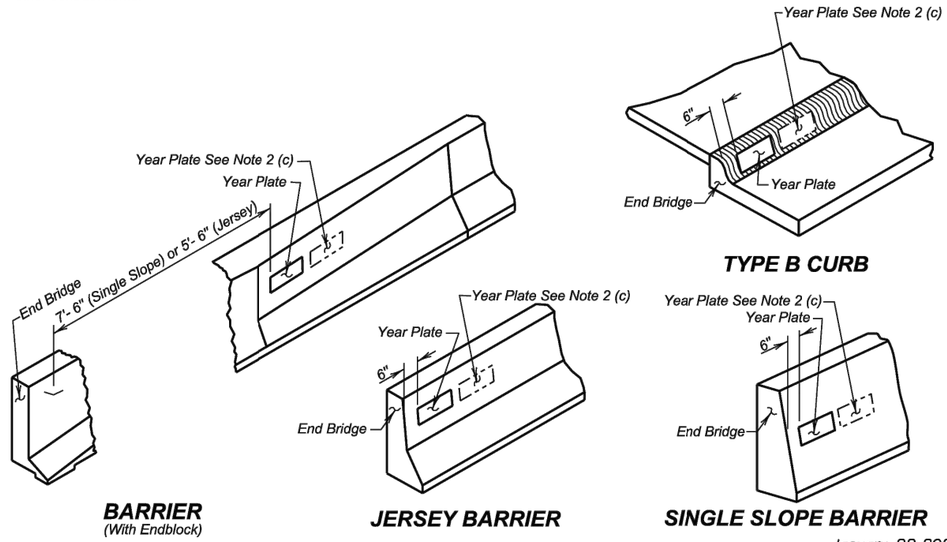
2. Year plates will be located on structure(s) as follows:

   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.

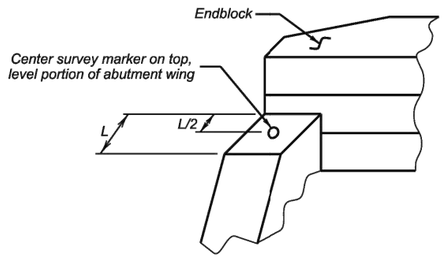
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work will be incidental to other contract items.



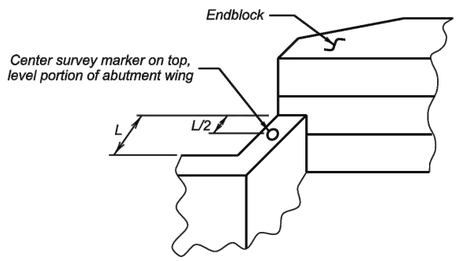
January 22, 2021

Published Date: 2025	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02 Sheet 1 Of 1

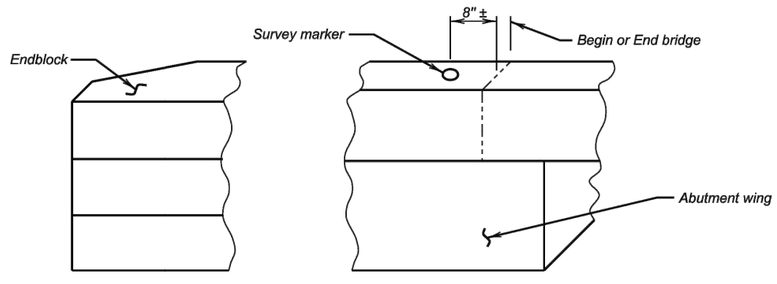
FOR BIDDING PURPOSES ONLY



ABUTMENT WITH "STRAIGHT" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS



ABUTMENT WITH "SWEPT BACK" WINGS

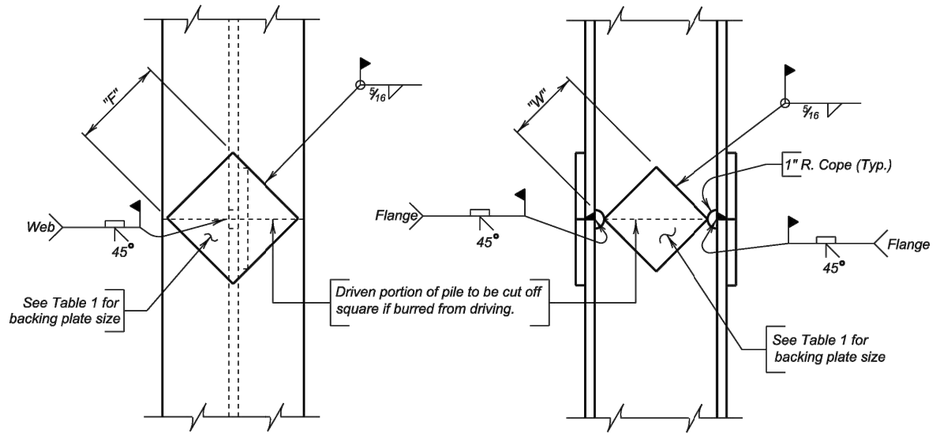
(Endblock on top of wings)

GENERAL NOTES:

1. Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
2. Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a ¾" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 ½" top diameter.
3. There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26,2012

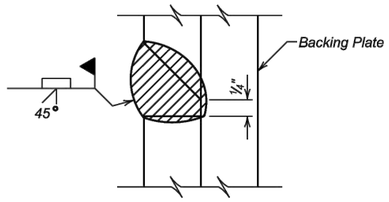
Published Date: 2025	SDDOT	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1



NOTE:

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

COMPLETE JOINT PENETRATION WELD DETAIL



GENERAL NOTES:

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

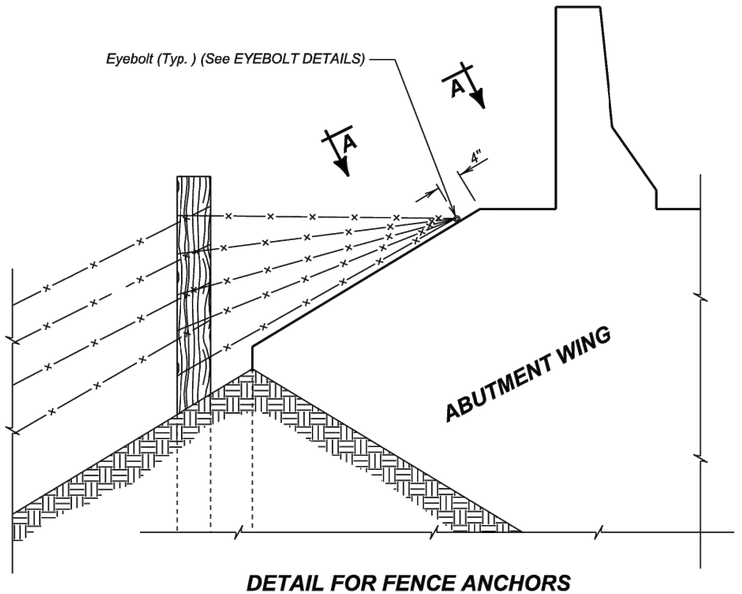
TABLE 1
(BACKING PLATES)

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

December 23,2012

Published Date: 2025	SDDOT	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1

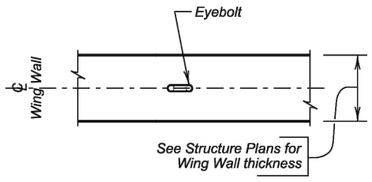
FOR BIDDING PURPOSES ONLY



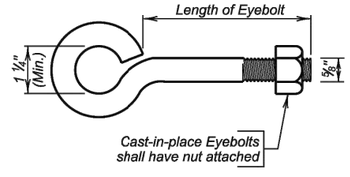
DETAIL FOR FENCE ANCHORS

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: 2025	SDDOT	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS 6' AND SHORTER)	PLATE NUMBER 620.18 Sheet 1 of 1

125'-7 ½" CONT. CONCRETE BRIDGE

STR. NO. 15-216-220

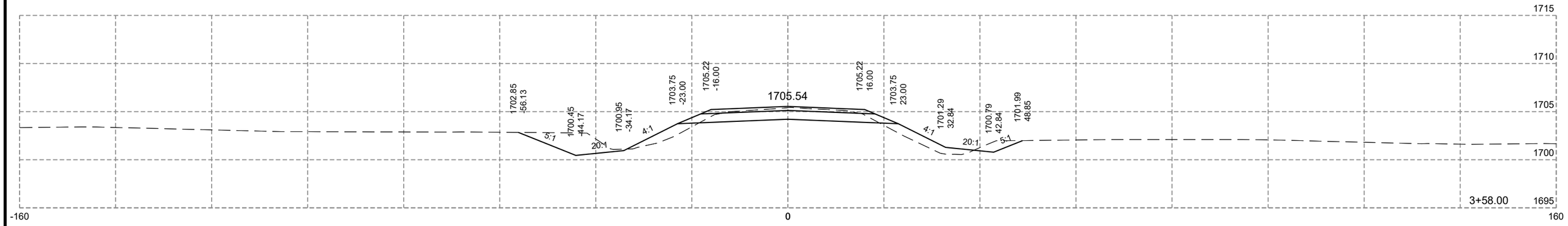
JULY 2024

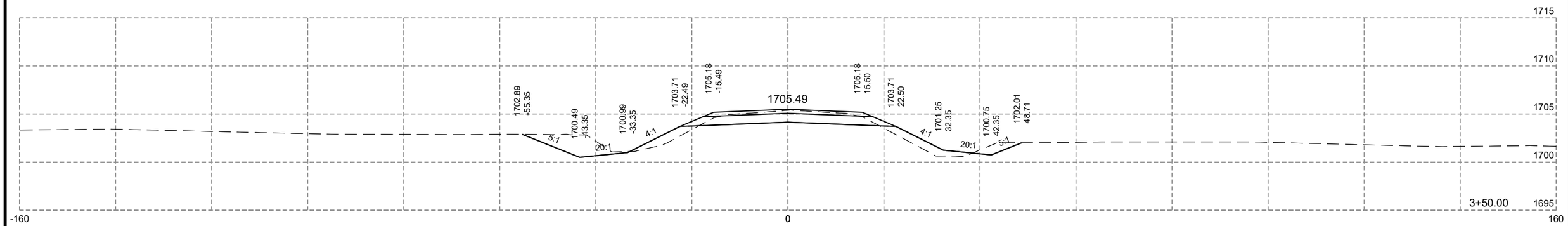
BAI JOB # 23190.62

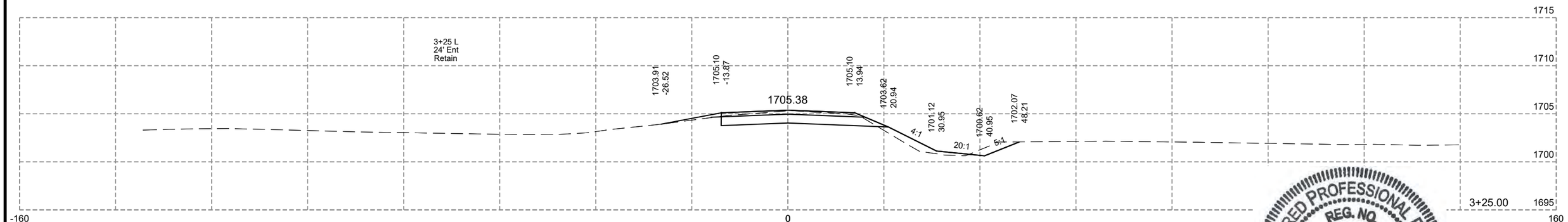
FOR BIDDING PURPOSES ONLY

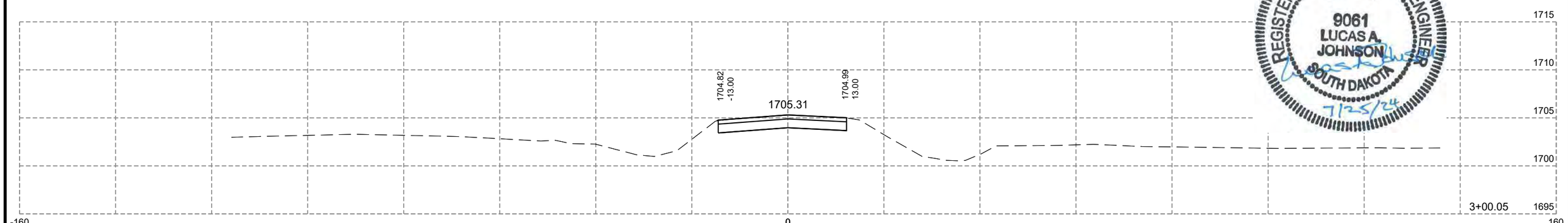
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	50	58

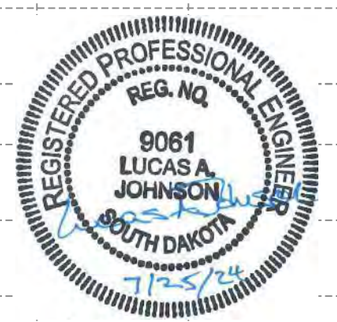
Plotting Date: 07/18/2024









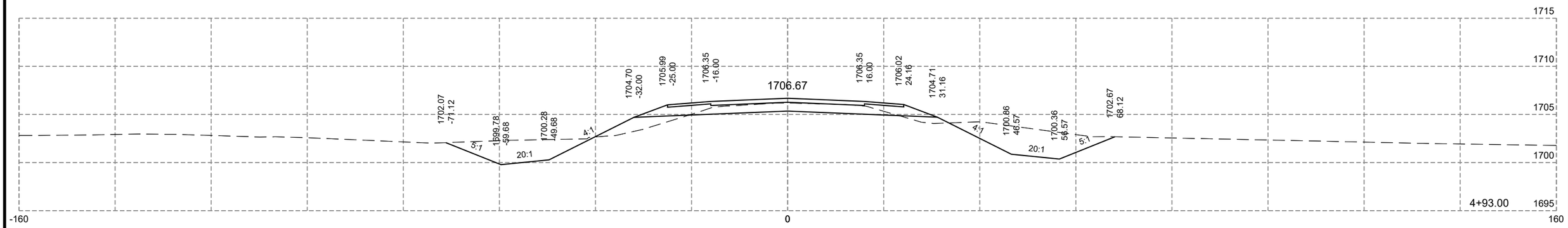


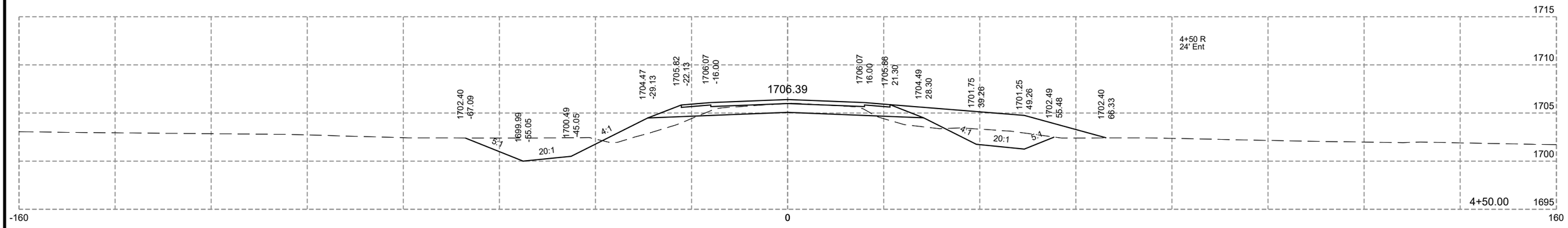
BAI JOB # 23190.62

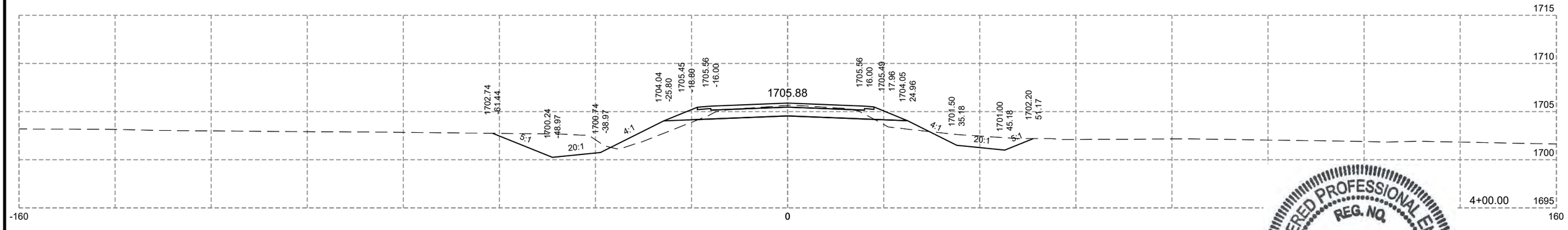
FOR BIDDING PURPOSES ONLY

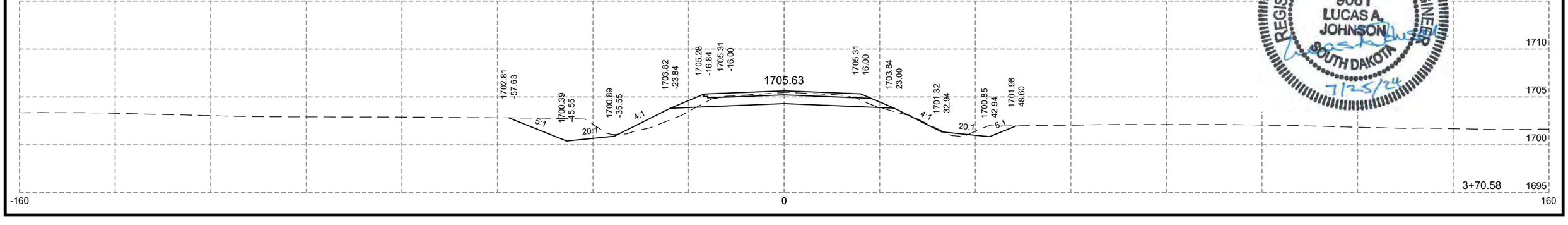
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	51	58

Plotting Date: 07/24/2024









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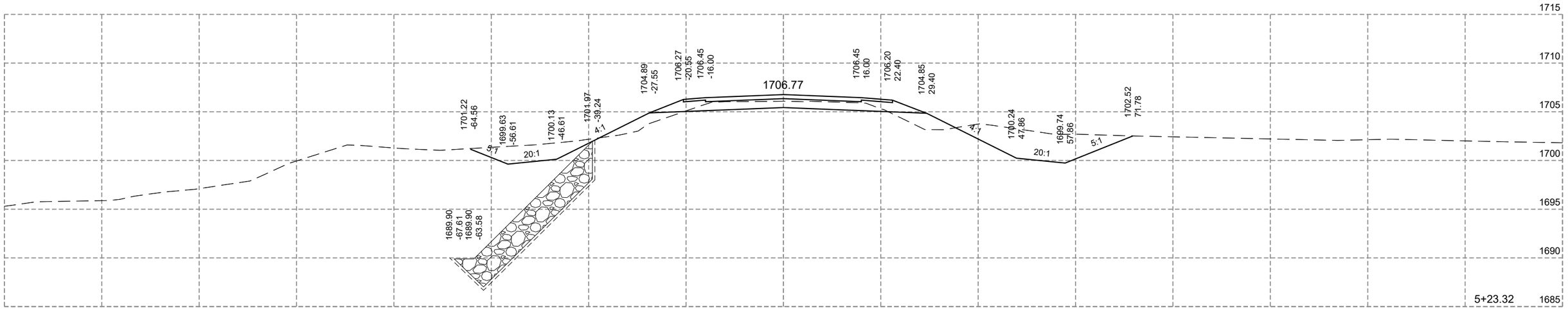
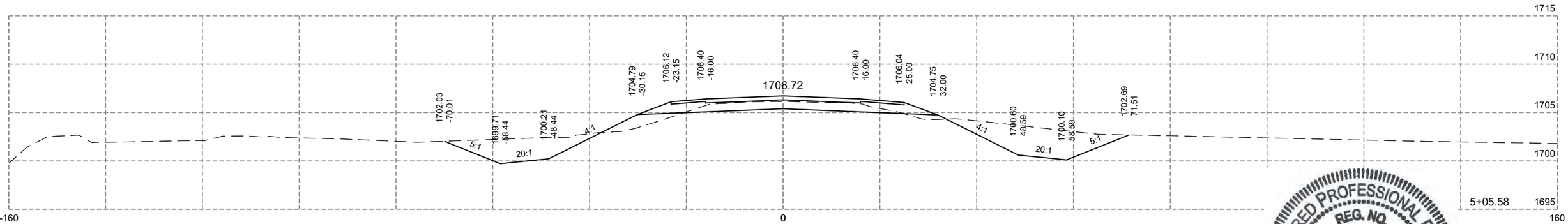
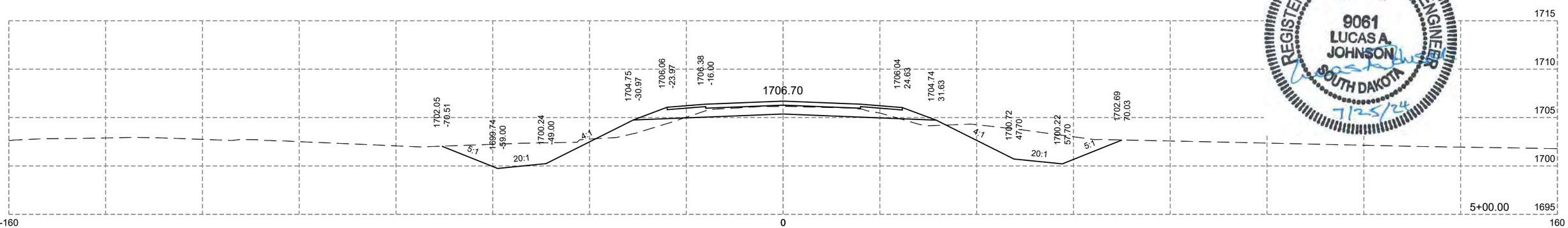
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	52	58

Plotting Date: 07/18/2024







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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	53	58

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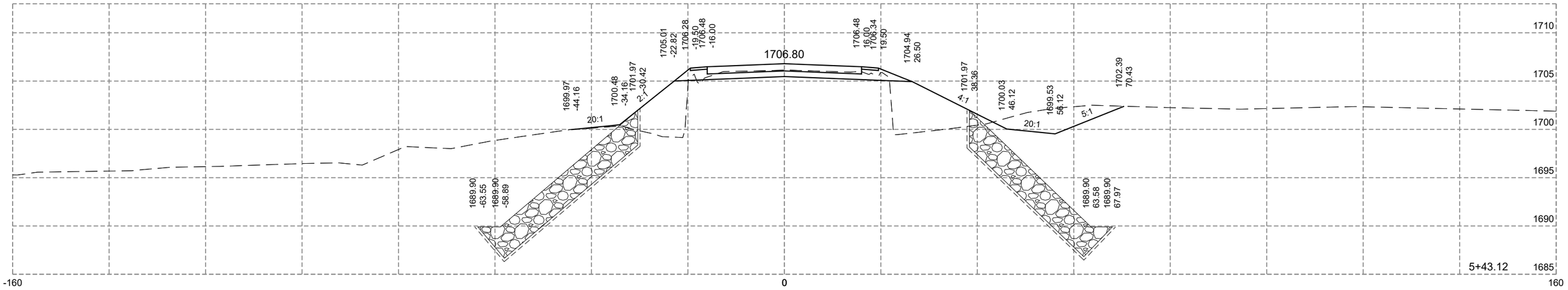

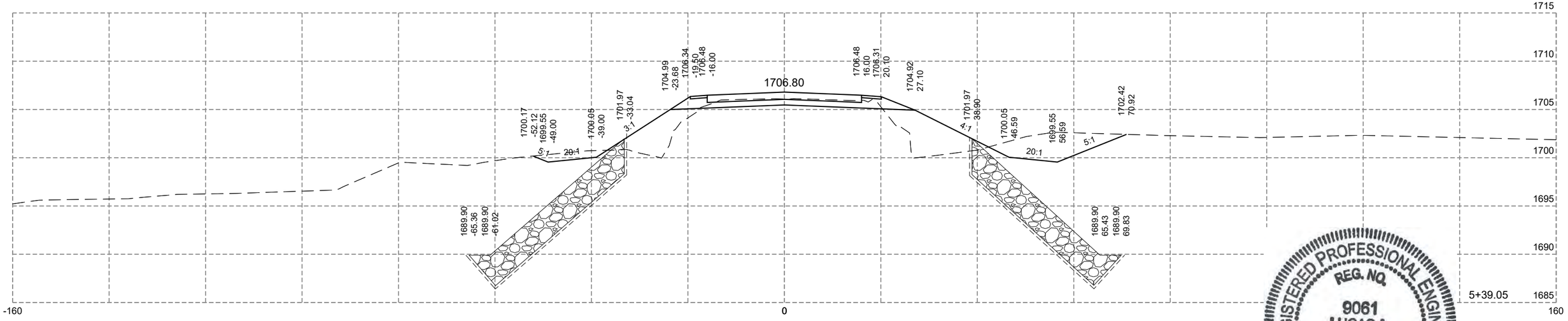

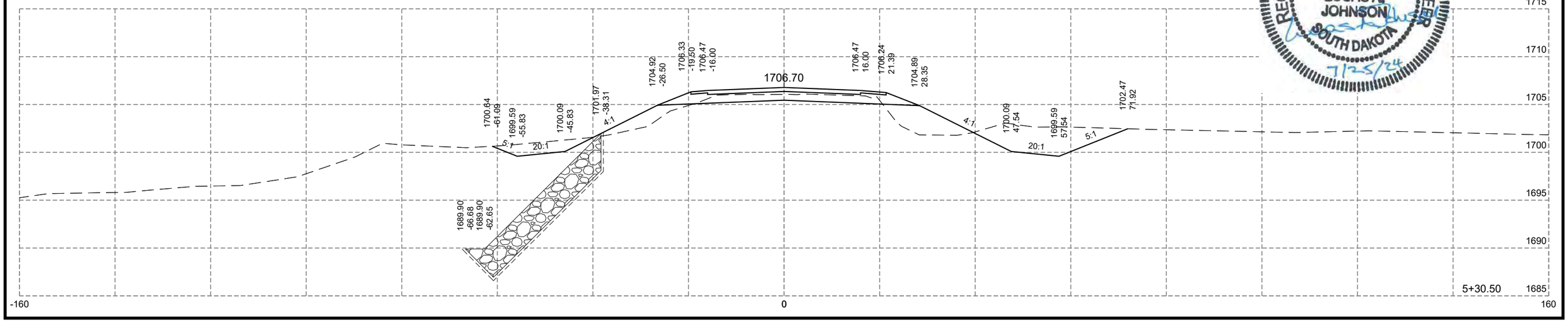

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	54	58

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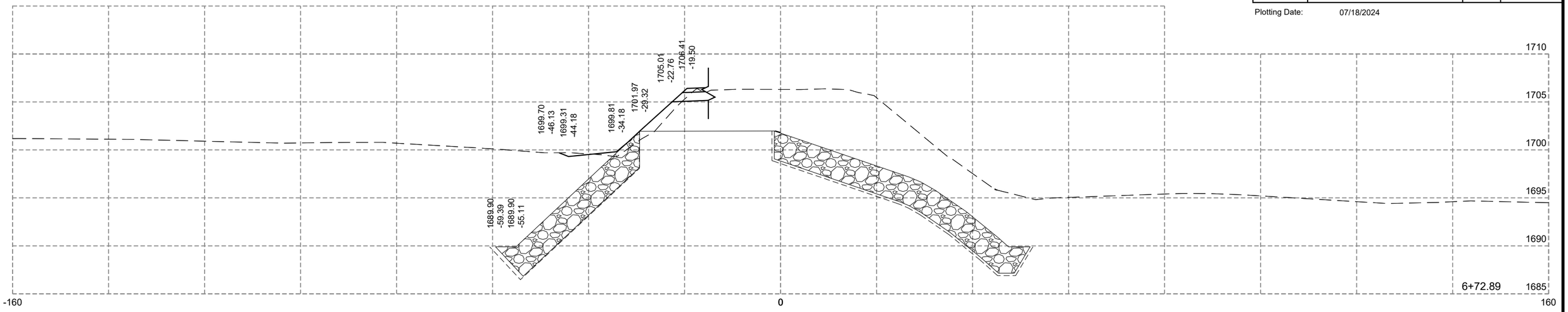

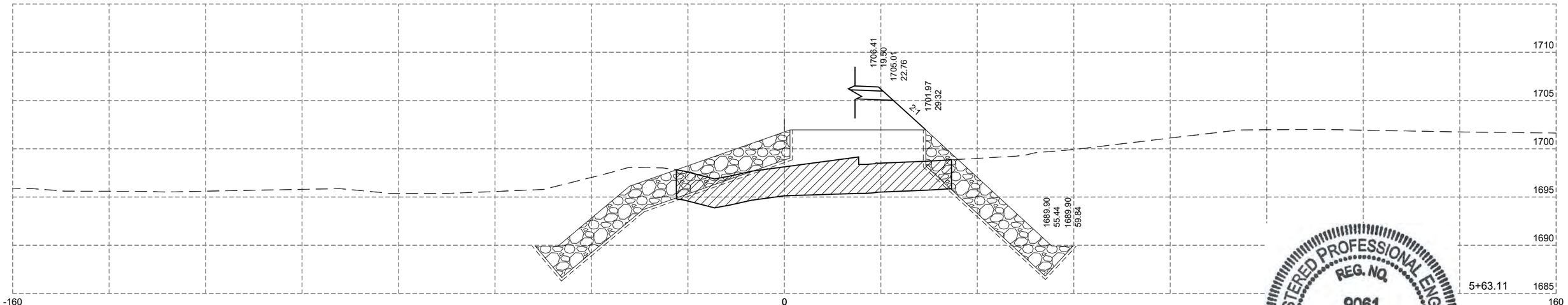

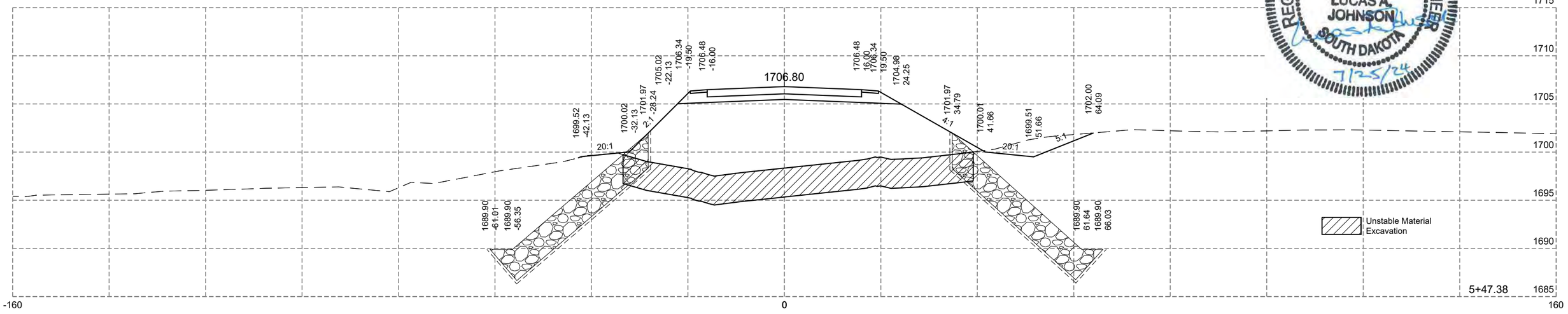

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BAI JOB # 23190.62	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		BRF-B 6510(05)	55	58

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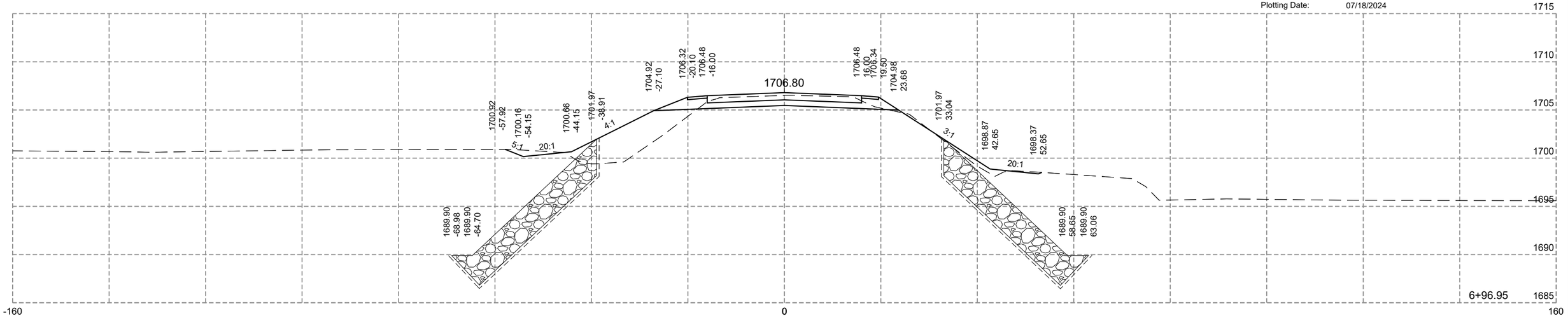

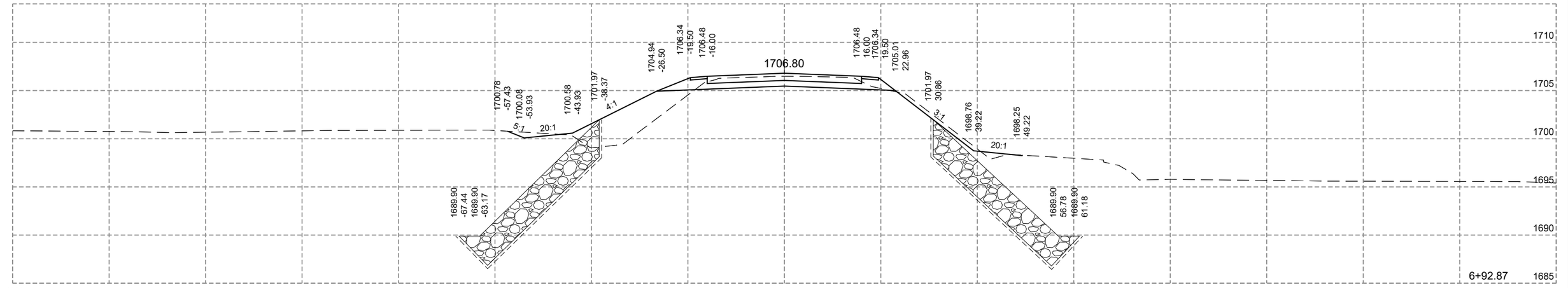

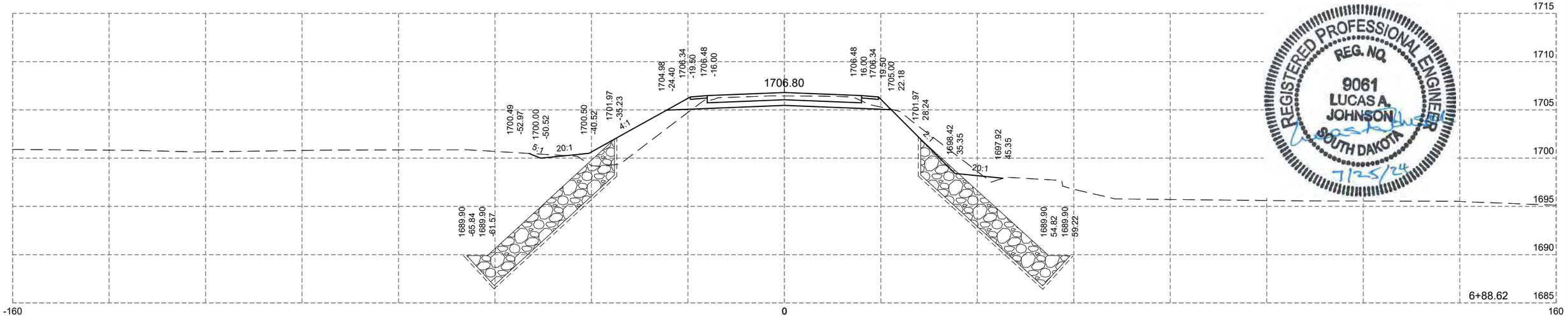

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF-B 6510(05)	56	58

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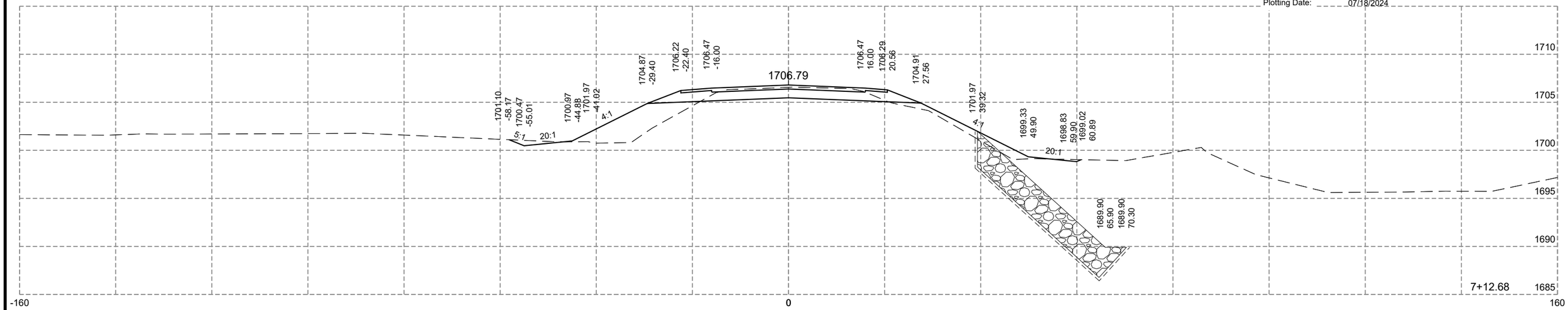

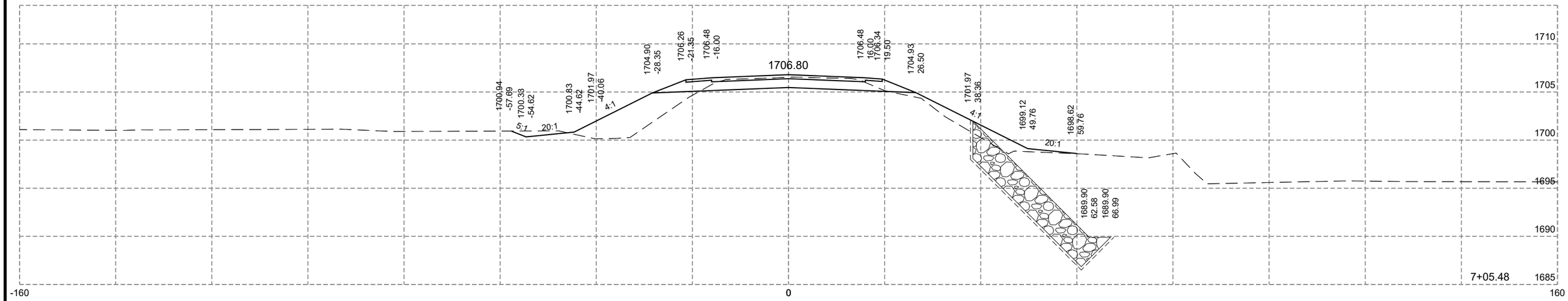

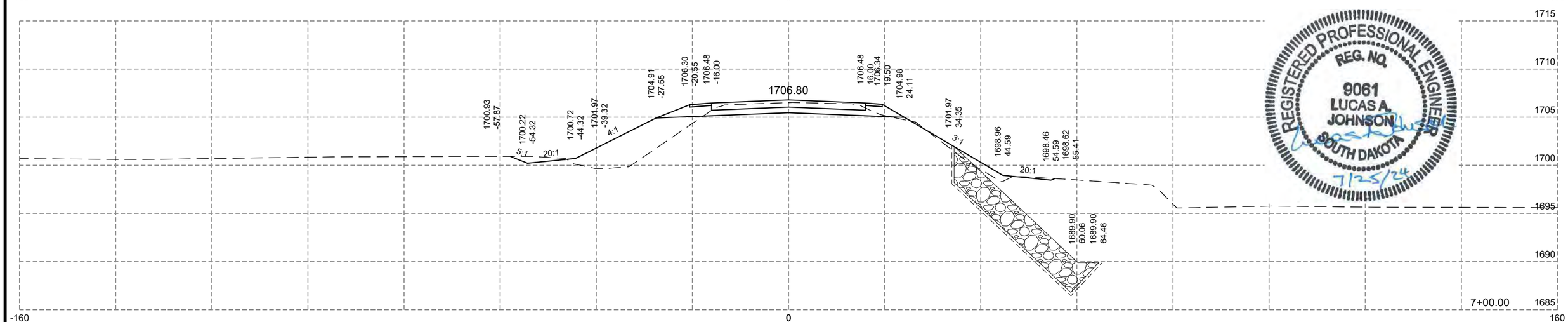

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	BRF-B 6510(05)	57	58

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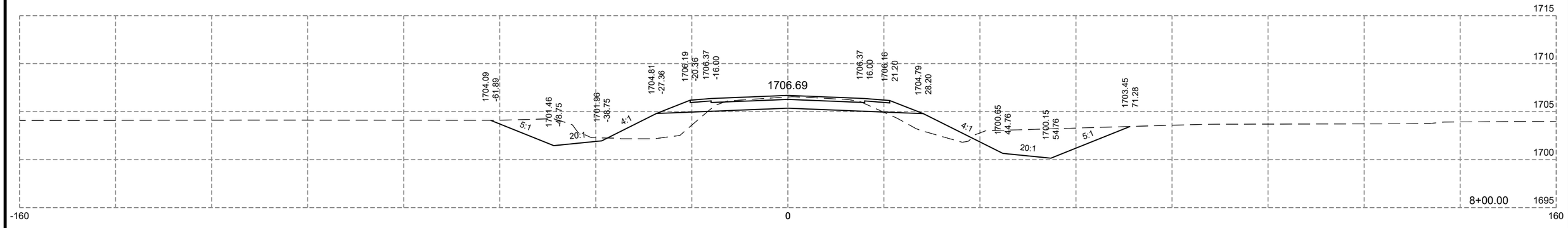

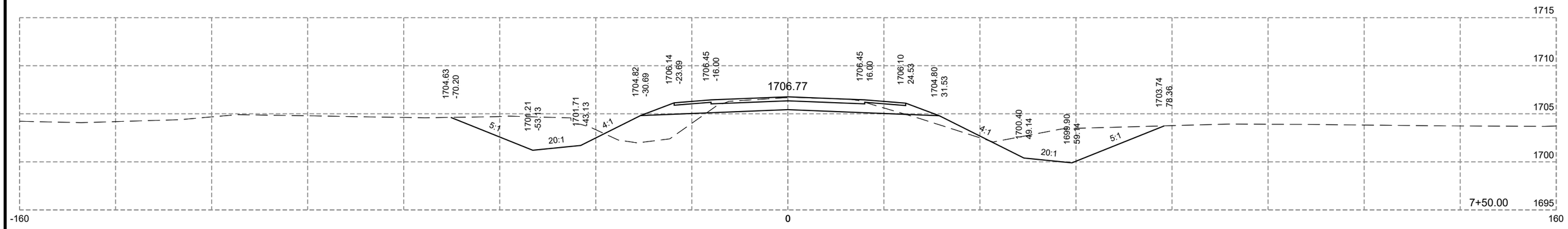

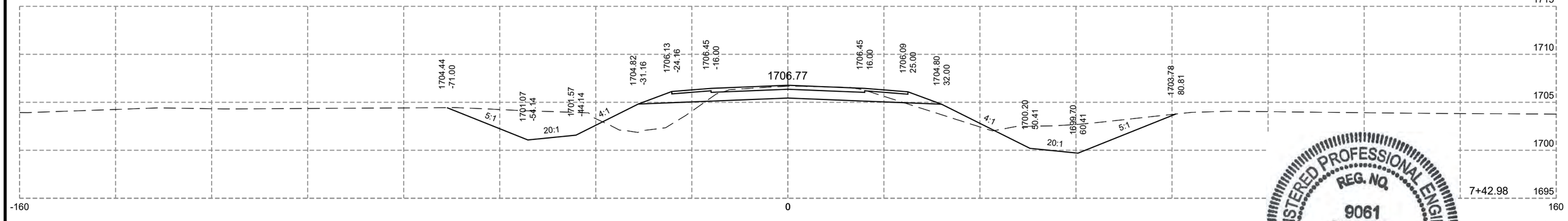

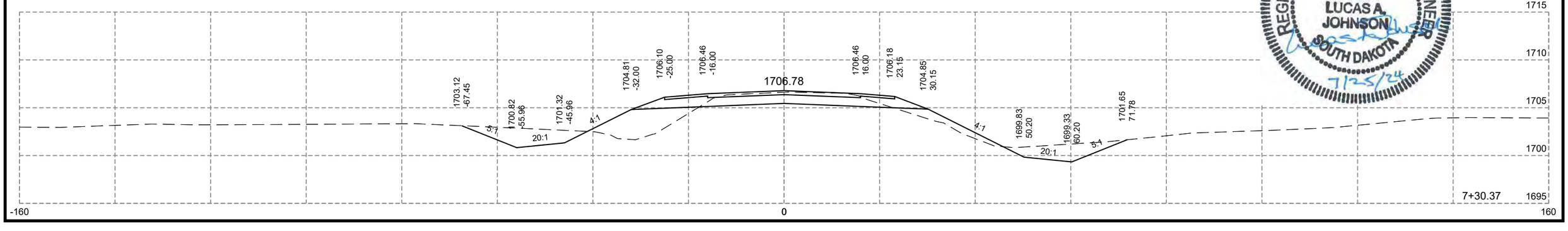

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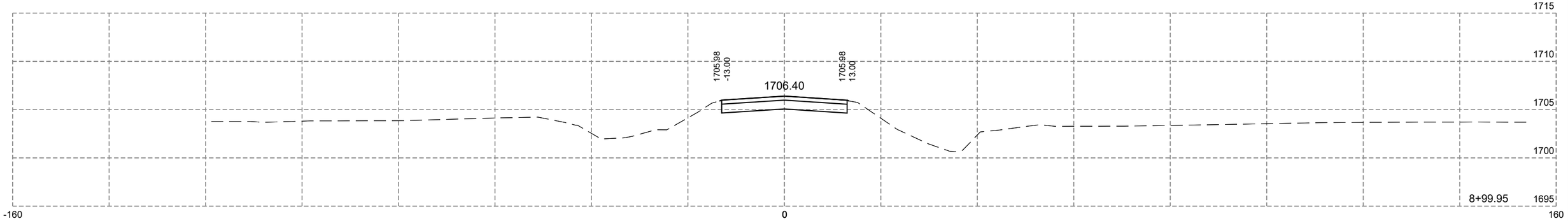

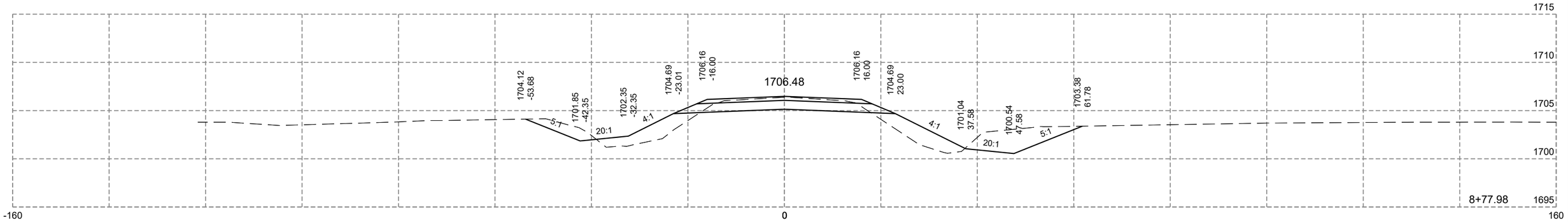

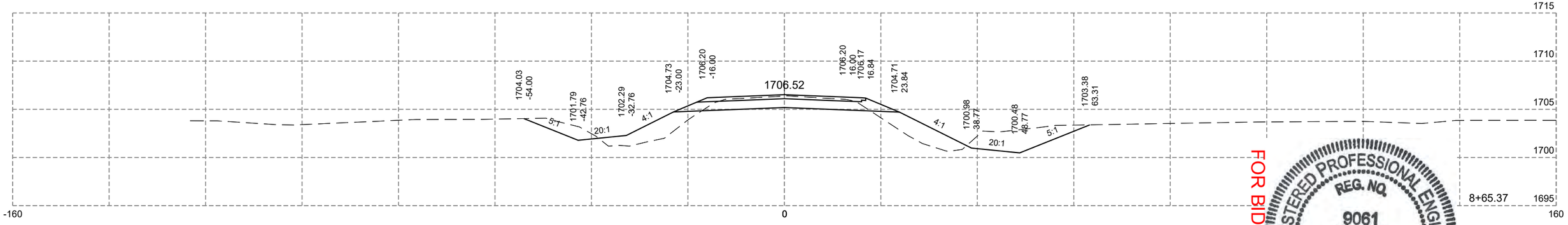

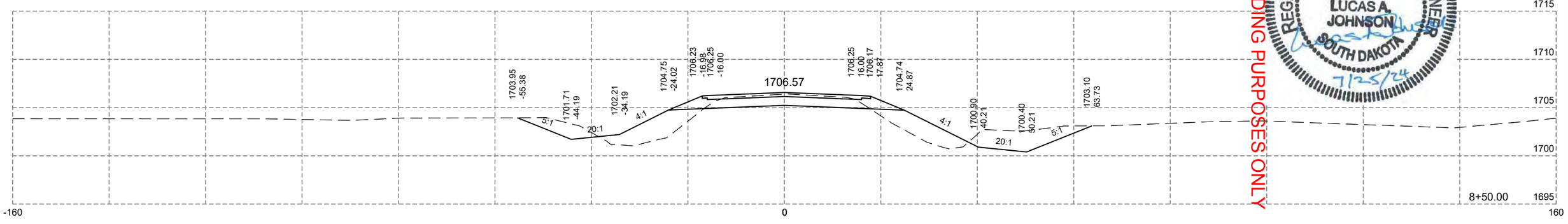

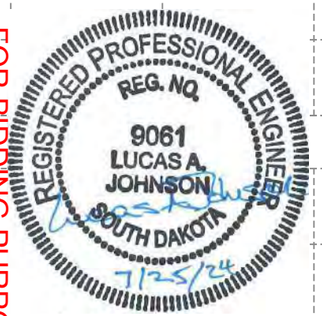

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