STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	1	43

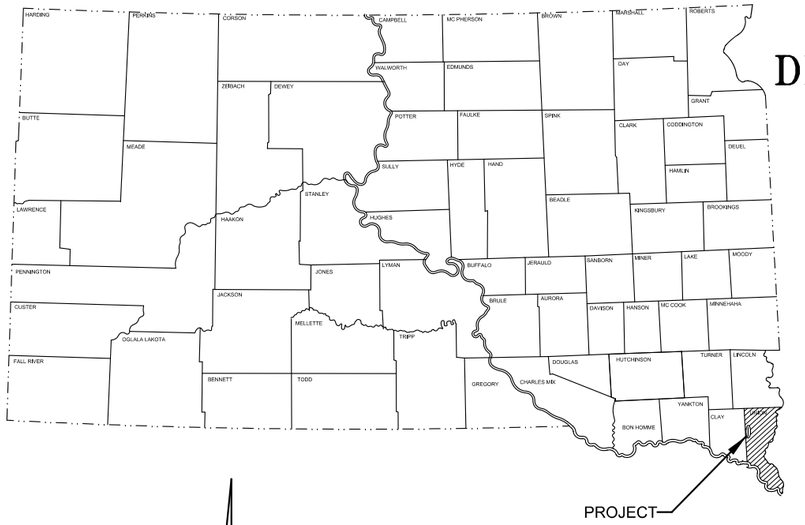
FOR BIDDING PURPOSES ONLY

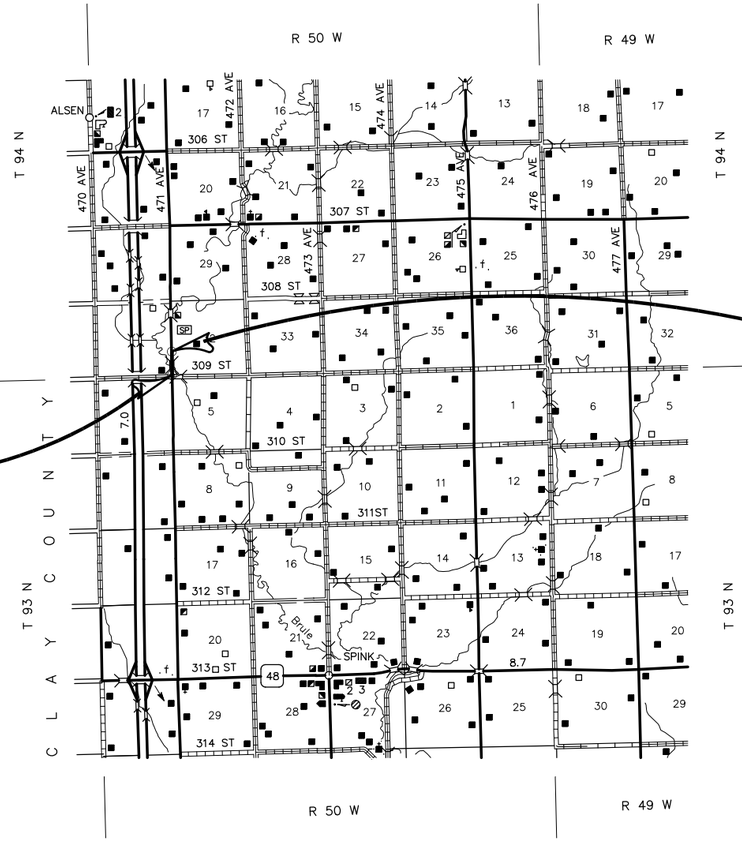
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT BRO 8064(27)
UNION COUNTY

STRUCTURE AND APPROACH GRADING
STR. 64-010-119
PCN 01DZ





INDEX OF SHEETS

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
5152
GREGORY S.
SLOWEY
4/11/16
SOUTH DAKOTA
Gregory S. Slowey

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA
4/11/16

BEGIN PROJECT BRO 8064(27)

471ST AVENUE, UNION COUNTY
STA. 19+40.00 ON BRO 8064(27) =
440.87' NORTH AND 71.59' WEST OF THE
SOUTHWEST CORNER OF SEC. 32-T94N-R50W
N. 20407.19 E. 20334.26

END PROJECT BRO 8064(27)

471ST AVENUE, UNION COUNTY
STA. 25+70.00 ON BRO 8064(27) =
1070.79' NORTH AND 61.56' WEST OF THE
SOUTHWEST CORNER OF SEC. 32-T94N-R50W
N. 21037.11 E. 20344.29

DESIGN DESIGNATION

ADT (1999)	165
ADT (2019)	250
DHV	40
D	50%
T DHV	1.2%
TADT	2.6%
DESIGN SPEED	65 MPH

STORM WATER PERMIT DATA

LATITUDE ———— 42.91207° N
LONGITUDE ———— 96.78566° W
PROJECT AREA ——— 4.17 ACRES
ACRES DISTURBED ——- 2.19 ACRES
MAJOR STREAM OR LAKE —— BRULE CREEK

JOHNSON ENGINEERING COMPANY
CIVIL ENGINEERS | LAND SURVEYORS
Est. 1956

GROSS LENGTH	630.00	FEET	0.119	MILES
LENGTH OF EXCEPTIONS	NONE	FEET	NONE	MILES
NET LENGTH	630.00	FEET	0.119	MILES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO 8064(27)	2	43

FOR BIDDING PURPOSES ONLY

ESTIMATE OF QUANTITIES

- GRADING -

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E1100	Remove Concrete Pavement	1580.5	SqYd
110E1690	Remove Sediment	1	CuYd
110E1693	Remove Erosion Control Wattle	25	Ft
110E1700	Remove Silt Fence	50	Ft
120E0010	Unclassified Excavation	2,843	CuYd
230E0010	Placing Topsoil	559	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	1,353.2	Ton
320E1200	Asphalt Concrete Composite **	325.4	Ton
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	50	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	100	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	4	Each
630E2015	W Beam Guardrail Flared End Terminal	4	Each
634E0110	Traffic Control Signs	97	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	6	Each
634E0285	Type 3 Barricade, 8' Double Sided	5	Each
634E0630	Temporary Pavement Marking	0.1	Mile
634E1002	Detour Signing	274	SqFt
730E0100	Cover Crop Seeding	1	Bu
734E0010	Erosion Control	Lump Sum	LS
734E0103	Type 3 Erosion Control Blanket	1,115	SqYd
734E0154	12" Diameter Erosion Control Wattle	100	Ft
734E0510	Shaping for Erosion Control Blanket	450	Ft
734E0604	High Flow Silt Fence	200	Ft
734E0610	Mucking Silt Fence	14	CuYd
734E0620	Repair Silt Fence	50	Ft
734E0630	Floating Silt Curtain	524	Ft

** - Non Participating (cost for item solely the responsibility of Union County)

- STRUCTURE -

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	446.4	SqYd
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0100	Structure Excavation, Bridge	351	CuYd
460E0030	Class A45 Concrete, Bridge Deck	244.3	CuYd
460E0050	Class A45 Concrete, Bridge	157.0	CuYd
464E0100	Controlled Density Fill	6.9	CuYd
470E0410	Type SL-1 Bridge Railing	250.0	Ft
480E0100	Reinforcing Steel	24,740	Lb
480E0200	Epoxy Coated Reinforcing Steel	73,976	Lb
510E0100	Extract Pile	4	Each
510E0300	Preboring Pile	100	Ft
510E3361	HP 10x42 Steel Test Pile, Furnish and Drive	310	Ft
510E3365	HP 10x42 Steel Bearing Pile, Furnish and Drive	2,000	Ft
700E0210	Class B Riprap	2,163.7	Ton
831E0110	Type B Drainage Fabric	2,399	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B1: CONSTRUCTION PRACTICES FOR STREAMS INHABITED BY THE TOPEKA SHINER

The US Fish and Wildlife Service (USFWS) have designated the following as Topeka Shiner streams associated with this project.

Table of Topeka Shiner Streams

Station	Stream Name	Ordinary High Water Elevation
22+66.1	Brule Creek	1245.9

Action Taken/Required:

The Contractor shall adhere to the "Special Provision for Construction Practices in Streams Inhabited by the Topeka Shiner".

Stream turbidity will be monitored during all stages of the project. Turbidity measurements should be taken in conjunction with normal storm water inspections.

The Contractor shall produce a comprehensive Construction Plan that includes all products, materials, and methods of construction and removal for temporary water barriers, cofferdams, and diversion channels including de-watering, handling, storage, and disposal of excavated material and pumped effluent throughout all phases of construction, including post-construction stabilization. This plan shall be approved by the SDDOT Environmental office prior to any work occurring in the above streams. Upon plan approval the Construction Plan shall be amended to the SWPPP document located in these Plans.

COMMITMENT C: WATER SOURCE

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

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

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COMMITMENT C: WATER SOURCE (CONT'D)

Action Taken/Required:

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

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

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

Action Taken/Required:

If construction dewatering is required, the Contractor shall obtain a Temporary Discharge Permit from the DENR and provide a copy to the Project Engineer. Contact the DENR Surface Water Program at 605-773-3351 to apply for a permit.

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

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

A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance with the SWPPP. The SWPPP is a dynamic document and is to be available on-site at all times.

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

SDDOT:
http://sddot.com/transportation/highways/environmental/stormwater/Default.aspx

DENR: http://www.denr.sd.gov/des/sw/stormwater.aspx

EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

The "Department of Environmental and Natural Resources – Contractor Certification Form" (SD EForm – 2110LDV1-ContractorCertification.pdf) shall be completed by the Contractor or their certified Erosion Control Supervisor after the award of the contract. Work may not begin on the project until this form is signed.

The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the Surface Water Discharge General Permit for Storm Water Discharges Associated with Construction Activities for the Project.

The online form can be found at:
http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

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Action Taken/Required:

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

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

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

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

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

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

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit. The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8010
DANIEL K JOHNSON
SOUTH DAKOTA
5/16/2016

SEQUENCE OF OPERATIONS

The following sequence of operations will be followed unless an alternate sequence is submitted in writing to, and approved by, the Engineer at least two weeks prior to the requested change.

1. Contractor shall give County two weeks notice before starting work.
2. Install construction signing as shown on plans and close roadway.
3. Install initial erosion control measures.
4. Remove structure, salvage beams and other components as directed by the County and dispose of remainder.
5. Install new bridge, riprap, grade roadway and install base course and final asphalt surfacing.
6. Install approach guard rail, place topsoil and final erosion control.
7. Remove construction signing and open roadway.

UTILITIES

All Utilities within the limits of the proposed construction are to be adjusted by the owners unless otherwise indicated in the plans.

Union County will make arrangements with the Utility Companies and be responsible for the relocation or adjustment of utilities without Federal Participation.

The Contractor shall 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 shall contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

UTILITIES OWNERSHIP

Sta. 19+40 to 25+70 – Lt.
“Underground Telephone Cable” Vast, 888-745-2888
Sta. 19+40 to 25+70 – Rt.
“Overhead Electric Lines” Clay Union Electric Coop., 800-696-2832

GENERAL MAINTENANCE OF TRAFFIC

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

UNION COUNTY RESPONSIBILITIES

Union County Public Works Administrator – (605) 356-2351.

Union County will be responsible for the following items without federal participation:

1. Obtain all right-of-way, temporary and permanent easements.
2. Remove existing fence, provide temporary fence as necessary, and replace fence upon completion of the project.
3. Furnish and install permanent signing in accordance with these plans and the Manual on Uniform Traffic Control Devices. Furnish and install permanent pavement marking.
4. Arrange for utility relocation and adjustment, if necessary.
5. Remove silt fence and erosion control wattles in permanently seeded areas when vegetation has been established.
6. Haul salvageable materials and structural steel I-beams from site as called out in these Plans.

CLEARING

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

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment. The estimated quantity of Water for Embankment is 14.4 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of “Unclassified Excavation”. The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance note on the profile sheet.

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

Generally, all shallow inlet and outlet ditches as noted on the plan sheets shall be cut with a 10-foot wide bottom with 4:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

Temporary fence and/or permanent fence shall be placed ahead of the grading operation unless otherwise directed by the Engineer. Installation and removal of temporary and/or permanent fence shall be the responsibility of the County.

The inslopes shall be warped for a distance of 50 ft. adjacent to the Bridge to conform to the structure.

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UNCLASSIFIED EXCAVATION

The total “Unclassified Excavation” quantity is 2,843 cubic yards of which 848 cubic yards are to be wasted. Payment will be made on a plans quantity basis in accordance with Section 120.4 of the Specifications. No separate measurement or payment will be made unless additional excavation is ordered by the Engineer.

The volume of in place asphalt concrete and concrete surfacing removed will not be paid for as Unclassified Excavation.

SHRINKAGE FACTOR: Embankment +35%

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	1,551
Topsoil	559
Channel Cleanout	733
Total Unclassified Excavation:	2,843

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA

PLACING TOPSOIL

The thickness will be approximately 4 inches on all newly graded areas except top of roadway and along riprap.

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

Station	to	Station	Topsoil (CuYd)
19+40		25+70	559
		Total:	559

No separate measurement or payment will be made and plan quantities will be the method of payment.

SALVAGED ITEMS

All salvable materials indicated for salvage in the table below shall be taken out intact and stockpiled within the right-of-way to the satisfaction of the Engineer. The Contractor shall perform salvage operations in a manner that will prevent damage to the salvable materials. Salvable materials will be picked up by the County for future highway maintenance. All signs in the Table of Incidental Work, Grading shall be salvaged. Contractor shall contact Union County for pick up of salvable materials.

INCIDENTAL WORK, GRADING

Station	Remarks
22+02 - 16' Lt. & 16' Rt.	Salvage (2) Object Markers
22+88 to 23+25 – 28' Rt. to 91' Lt.	Remove Riprap (Depth Unknown)
23+30 - 16' Lt. & 16' Rt.	Salvage (2) Object Markers

For informational purposes only a quantity of 260 tons of Remove Riprap (Depth Unknown) is estimated for removal. All costs associated with the foregoing work shall be incidental to the contract lump sum price for "Incidental Work, Grading".

EROSION CONTROL

The contract lump sum price for "Erosion Control" includes all materials, equipment, and labor necessary to seed and mulch areas disturbed by construction of this project within the right-of-way and temporary and permanent easement, except top of subgrade and riprap areas.

The seed mixture shall consist of 10 Pure Live Seed Pounds of Intermediate Wheatgrass (Oahe), 8 Pure Live Seed Pounds of Green Needle Grass, and 10 Pounds of Cover Crop per acre.

Mulch shall consist of grass hay or straw and shall be blown on and punched in at the rate of 2 tons per acre on all newly seeded areas.

Application of fertilizer will not be required on this project.

The area to be seeded and mulched is estimated at 1.04 acres.

Limits of erosion control work shall be determined by the Engineer on construction.

COVER CROP SEEDING

Oats or spring wheat seed shall be used April through July and winter wheat seed shall be used August through November.

Cover crop seeding may be used on this project as a temporary erosion control measure. The quantity of cover crop seeding was estimated at 25% of the disturbed earthen areas. The actual limits and use of cover crop seeding shall be determined by the Engineer during construction.

EROSION CONTROL WATTLE

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

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

Erosion control wattles shall remain on the project until vegetation has been established.

An additional quantity of 100 feet of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

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

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

TABLE OF 12" DIAMETER EROSION CONTROL WATTLE

Location	Quantity (Ft)
Additional Quantity	100
Total:	100

REMOVE EROSION CONTROL WATTLE

Erosion control wattles shall be removed when vegetation is established. Some or all of the erosion control wattles may be left on the project until vegetation is established.

HIGH FLOW SILT FENCE

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

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

High flow silt fence shall be placed at the locations as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

An additional 200 feet of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

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TABLE OF HIGH FLOW SILT FENCE

Location	Quantity (Ft)
Additional Quantity	200
Total:	200

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA

FLOATING SILT CURTAIN

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

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

The Contractor shall install the floating silt curtain according to the manufacturer's installation instructions or as directed by the Engineer.

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

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

ABASCO, LLC
Houston, TX
Phone: 1-800-242-7745
www.abasco.net

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

American Boom and Barrier Corp.
Cape Canaveral, FL
Phone: 1-800-843-2110
www.abbcoboom.com

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

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

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

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

TABLE OF FLOATING SILT CURTAIN

Location		Quantity (Ft)
21+94 – Rt. to 22+62 – Lt.	Along Channel Toe	262
22+50 – Rt. to 23+18 – Lt.	Along Channel Toe	262
	Total:	524

EROSION CONTROL BLANKET

Erosion control blanket shall be installed at a width and location determined by the Engineer during construction and at the locations noted in the table.

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

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

The Contractor shall install erosion control blanket according to the manufacturer's installation instructions.

An additional quantity of 200 square yards of Type 3 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

TABLE OF EROSION CONTROL BLANKET

Location		Type	Quantity (SqYd)
21+52 to 22+07 – 73' to 220' Rt.	End of Riprap Along Bank	3	314
22+28 to 22+62 – 82' to 131' Lt.	End of Riprap Along Bank	3	125
22+16 to 22+86 – 73' to 213' Rt.	End of Riprap Along Bank	3	339
23+05 to 23+41 – 82' to 131' Lt.	End of Riprap Along Bank	3	137
Additional Quantity			200
		Total:	1,115

SHAPING FOR EROSION CONTROL BLANKET

If any Additional Quantity of Erosion Control Blanket is ordered to be used along ditches during construction, the ditches shall be shaped for the Erosion Control Blanket as specified on Standard Plate 734.01.

All costs for shaping the areas indicated for erosion control blanket including labor and equipment shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

REMOVAL OF EXISTING CONCRETE PAVEMENT

Existing asphalt concrete and/or existing asphalt concrete patch work that was placed above the existing concrete pavement is included in the quantity for "Remove Concrete Pavement". The Contractor shall dispose of the concrete pavement and asphalt concrete at a site approved by the Engineer.

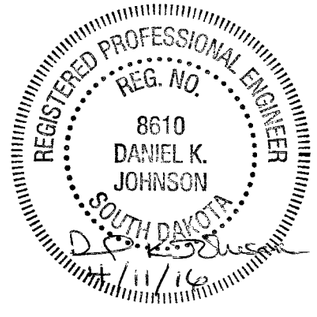
The section for the existing surfacing is unknown. For the purposes of design the existing surfacing was assumed to be 2 inches of asphalt concrete over 7 inches P.C.C. pavement and is typically 28.0 feet wide. Specific information about the reinforcement and the aggregate within the paving is unknown.

TABLE OF CONCRETE PAVEMENT REMOVAL

Station	to	Station	Quantity (SqYd)
19+40.00		22+05.10	824.8
23+27.10		25+70.00	755.7
		Total:	1,580.5

TABLE OF GUARDRAIL QUANTITIES

Location	Straight Double Class A Thrie Beam Guardrail with Wood Posts (Ft)	Straight Class A W Beam Guardrail with Wood Posts (Ft)	W Beam to Thrie Beam Guardrail Transition (Each)	W Beam Guardrail Flared End Terminal (Each)
Sta. 21+07.17 Rt. to Sta. 21+44.67 Rt.				1
Sta. 21+44.67 Rt. to Sta. 21+69.67 Rt.		25		
Sta. 21+69.67 Rt. to Sta. 21+75.92 Rt.			1	
Sta. 21+75.92 Rt. to Sta. 21+88.42 Rt.	12.5			
Sta. 21+15.33 Lt. to Sta. 21+52.83 Lt.				1
Sta. 21+52.83 Lt. to Sta. 21+77.83 Lt.		25		
Sta. 21+77.83 Lt. to Sta. 21+84.08 Lt.			1	
Sta. 21+84.08 Lt. to Sta. 21+96.58 Lt.	12.5			
Sta. 23+13.42 Rt. to Sta. 23+25.92 Rt.	12.5			
Sta. 23+25.92 Rt. to Sta. 23+32.17 Rt.			1	
Sta. 23+32.17 Rt. to Sta. 23+57.17 Rt.		25		
Sta. 23+57.17 Rt. to Sta. 23+94.67 Rt.				1
Sta. 23+21.58 Lt. to Sta. 23+34.08 Lt.	12.5			
Sta. 23+34.08 Lt. to Sta. 23+40.33 Lt.			1	
Sta. 23+40.33 Lt. to Sta. 23+65.33 Lt.		25		
Sta. 23+65.33 Lt. to Sta. 24+02.83 Lt.				1
Totals:	50	100	4	4



RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per station, all of which materials are to be furnished in place by the Contractor.

ASPHALT CONCRETE COMPOSITE - 1 1/2" LEVELING COURSE

Mineral Aggregate (Contractor Furnished Source) _____ 27.98 Tons
Asphalt Binder @ 5.9% of Total Mix _____ 1.75 Tons

Total Mix _____ 29.73 Tons

The exact proportions of these materials will be determined on construction.

ASPHALT CONCRETE COMPOSITE - 1 1/2" WEARING COURSE

Mineral Aggregate (Contractor Furnished Source) _____ 26.77 Tons
Asphalt Binder @ 5.9% of Total Mix _____ 1.68 Tons

Total Mix _____ 28.45 Tons

The exact proportions of these materials will be determined on construction.

SUMMARY OF MAINLINE ASPHALT CONCRETE COMPOSITE AND BASE COURSE

Mainline		2 – 1 ½" Lifts Asphalt Concrete Composite TON	10" Base Course TON
19+90.00 to 21+88.96		115.8	460.2
23+21.04 to 25+20.00		115.8	460.2
	TOTAL	231.6	920.4

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

BASE COURSE

Base Course shall be Contractor furnished.

Specifications: Standard and Supplemental Specifications or in lieu of the gradation requirements specified for Base Course the Contractor may elect to produce the material to meet the gradation requirements for Mineral Aggregate. The Contractor must state at the preconstruction meeting which specification will be followed.

All other requirements for Base Course shall apply and compaction shall be to the Specified Density Method.

WATER FOR COMPACTION

Cost of water for compaction of the granular material shall be incidental to the contract unit price for the various items.

6+ percent moisture will be required at the time of compaction unless otherwise directed by the Engineer.

TEMPORARY PAVEMENT MARKING

Temporary pavement markings shall be as per the Specifications. However, temporary flexible vertical markers (tabs) shall be used on the wearing course lift of asphalt concrete to avoid the potential of temporary markings shadowing through and conflicting with the permanent markings.

The total length of no passing zone on this project is 0.000 miles.

When the road is reopened for traffic the temporary pavement markings shall be in place and visible.

Quantities of Temporary Pavement Markings consist of:
1) One pass on top of the Asphalt Concrete Composite Wearing Course

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SUMMARY OF ADDITIONAL QUANTITIES

Additional Quantities	Asphalt Concrete Composite TON	Base Course TON
19+40.00 to 19+90.00 – Begin Project Taper Section	27.9	111.8
19+94.67 to 21+84.88 Rt. – Guardrail Widened Section	9.5	52.3
20+02.83 to 21+93.04 Lt. – Guardrail Widened Section	9.5	52.3
23+16.96 to 25+07.17 Rt. – Guardrail Widened Section	9.5	52.3
23+25.12 to 25+15.33 Lt. – Guardrail Widened Section	9.5	52.3
25+20.00 to 25+70.00 – End Project Taper Section	27.9	111.8
TOTAL	93.8	432.8

Notes:

1) Begin Project Taper Section and End Project Taper Section are estimated based on a 3" thick Asphalt Concrete Composite and a 10" thick Base Course.

2) Guardrail Widened Sections are estimated based on a 2" thick Asphalt Concrete Composite and a 11" thick Base Course.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8610
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SOUTH DAKOTA
5/6/2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO 8064(27)	9	43

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STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

❖ SITE DESCRIPTION (4.2 1)

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☒ Filling
  - ☐ Cutting and filling
  - ☐ Other (describe):
- **Total Project Area** 4.17 Acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 2.19 Acres **(4.2 1.b.)**
- **Existing Vegetative Cover** 85%
- **Soil Properties:** AASHTO Soil Classification A-4, A-6, A-7 **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Brule Creek **(4.2 1.e.)**

❖ ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)

(Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)

- **Special sequencing requirements**.
- **Install perimeter protection where runoff sheets from the site.**
- **Install channel and ditch bottom protection.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Complete final grading.**
- **Complete surfacing.**
- **Complete traffic control installation and protection devices.**
- **Reseed areas disturbed by removal activities**.

❖ EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))

(Check all that apply)

- **Stabilization Practices (See Detail Plan Sheets)**
  - ☒ Temporary Seeding (Cover Crop Seeding)
  - ☒ Permanent Seeding
  - ☐ Sodding
  - ☐ Planting (Woody Vegetation for Soil Stabilization)
  - ☒ Mulching (Grass Hay or Straw)
  - ☐ Hydraulic Mulch (Wood Fiber Mulch)
  - ☐ Soil Stabilizer
  - ☐ Bonded Fiber Matrix
  - ☒ Erosion Control Blankets or Mats
  - ☒ Vegetation Buffer Strips
  - ☐ Roughened Surface (e.g. tracking)
  - ☐ Dust Control
  - ☐ Other:
- **Structural Temporary Erosion and Sediment Controls**
  - ☒ Silt Fence
  - ☒ Floating Silt Curtain
  - ☐ Straw Bale Check
  - ☐ Temporary Berm
  - ☐ Temporary Slope Drain
  - ☒ Straw Wattles or Rolls
  - ☐ Turf Reinforcement Mat
  - ☒ Rip Rap
  - ☐ Gabions
  - ☐ Rock Check Dams
  - ☐ Sediment Traps/Basins
  - ☐ Inlet Protection
  - ☐ Outlet Protection
  - ☐ Surface Inlet Protection (Area Drain)
  - ☐ Curb Inlet Protection
  - ☐ Stabilized Construction Entrances
  - ☐ Entrance/Exit Equipment Tire Wash
  - ☐ Interceptor Ditch
  - ☐ Concrete Washout Area
  - ☐ Temporary Diversion Channel
  - ☐ Work Platform
  - ☐ Temporary Water Barrier
  - ☐ Temporary Water Crossing
  - ☐ 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.
- **Storm Water Management (4.2 2.b., (1) and (2))**

  Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.
- **Other Storm Water Controls (4.2 2.c., (1) and (2))**
  - **Waste Disposal**

    All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. 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 in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing 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 individual designated as the contractor's on-site representative 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 in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ Maintenance and Inspection (4.2 3. and 4.2 4.)

- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - 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 in order 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 site superintendent are responsible for inspections. Maintenance, 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.

❖ Non-Storm Water Discharges (3.0)

The following non-storm water 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.

❖ Materials Inventory (4.2. 2.c.(2))

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 headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

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

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA

❖ Spill Prevention (4.2 2.c.(2))

➢ 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 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.
  - Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

- Hazardous Materials
  - Products will be kept in original containers unless the container is not resealable.
  - 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 storm water system or storm water 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 storm water runoff.

➢ Product Specific Practices (6.8)

- 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 storm water. 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 areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

➢ Spill Control Practices (4.2 2 c.(2))

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 clean up 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 clean up 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. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➢ Spill Response (4.2 2 c.(2))

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water 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 SD DENR.
- Personnel with primary responsibility for spill response and clean up 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.

❖ Spill Notification

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

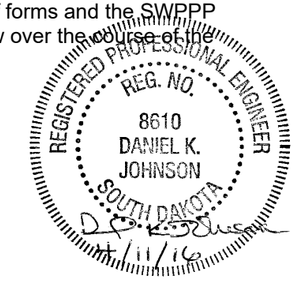
➢ A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:

- The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
- The discharge causes an immediate danger to human health or safety.
- The discharge exceeds 25 gallons.
- The discharge causes a sheen on surface water.
- The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
- The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
- The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
- The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ Construction Changes (4.4)

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.



FOR BIDDING PURPOSES ONLY

❖ 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 6.7.1.C.)

➢ 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

➢ Contractor Information:

- Prime Contractor Name:
- Contractor Contact Name:
- Address:
- Address:
- City: State: Zip:
- Office Phone: Field:
- Cell Phone: Fax:

➢ Erosion Control Supervisor

- Name:
- Address:
- 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:

➢ SD DENR Contact Spill Reporting

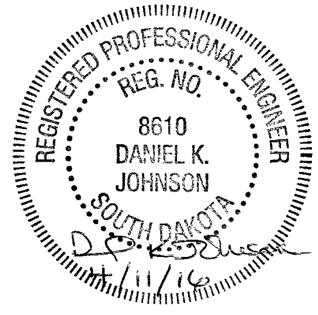
- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➢ SD DENR Contact for Hazardous Materials.

- (605) 773-3153

➢ National Response Center Hotline

- (800) 424-8802.

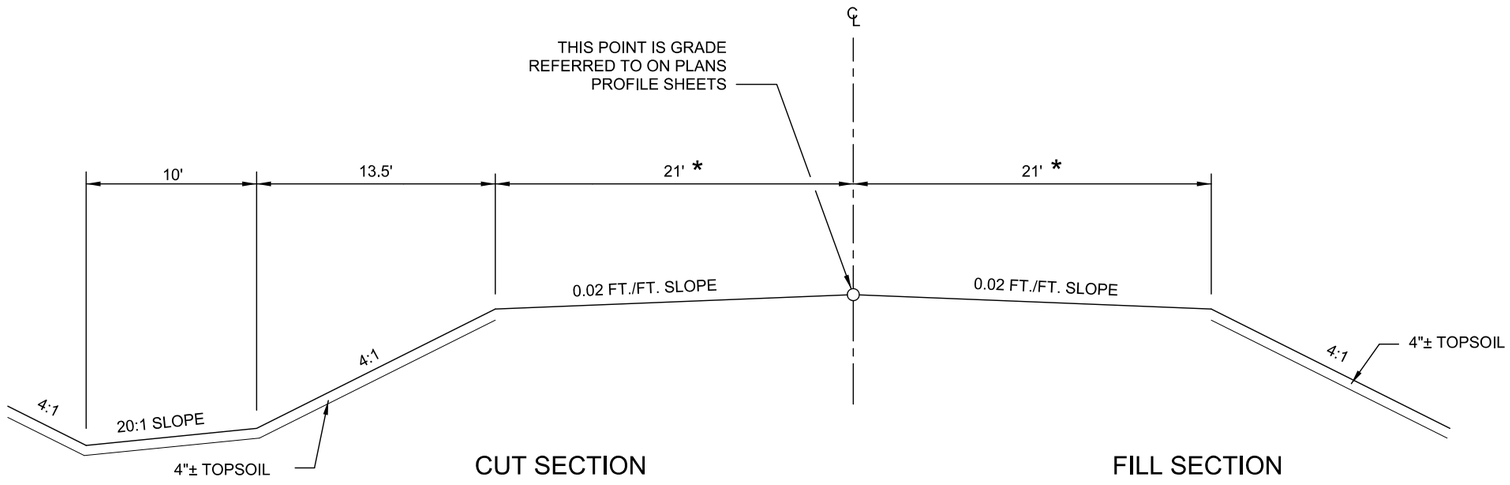


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	12	43

TYPICAL SECTIONS

FOR BIDDING PURPOSES ONLY

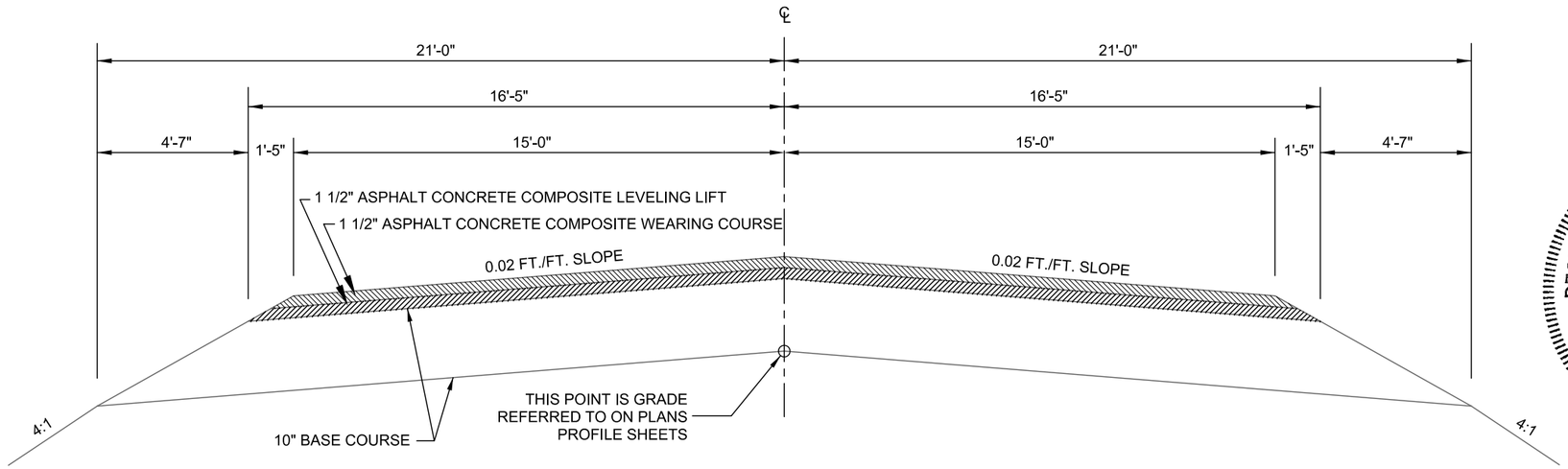
STA. 19+90.00 TO STA. 21+88.96
STA. 23+21.04 TO 25+20.00



NOTES:

* 1) WHERE SUBGRADE TRANSITIONS FOR APPROACH GUARDRAIL REFER TO THE CROSS SECTION SHEETS FOR SECTION TO BE USED.

TYPICAL GRADING SECTION



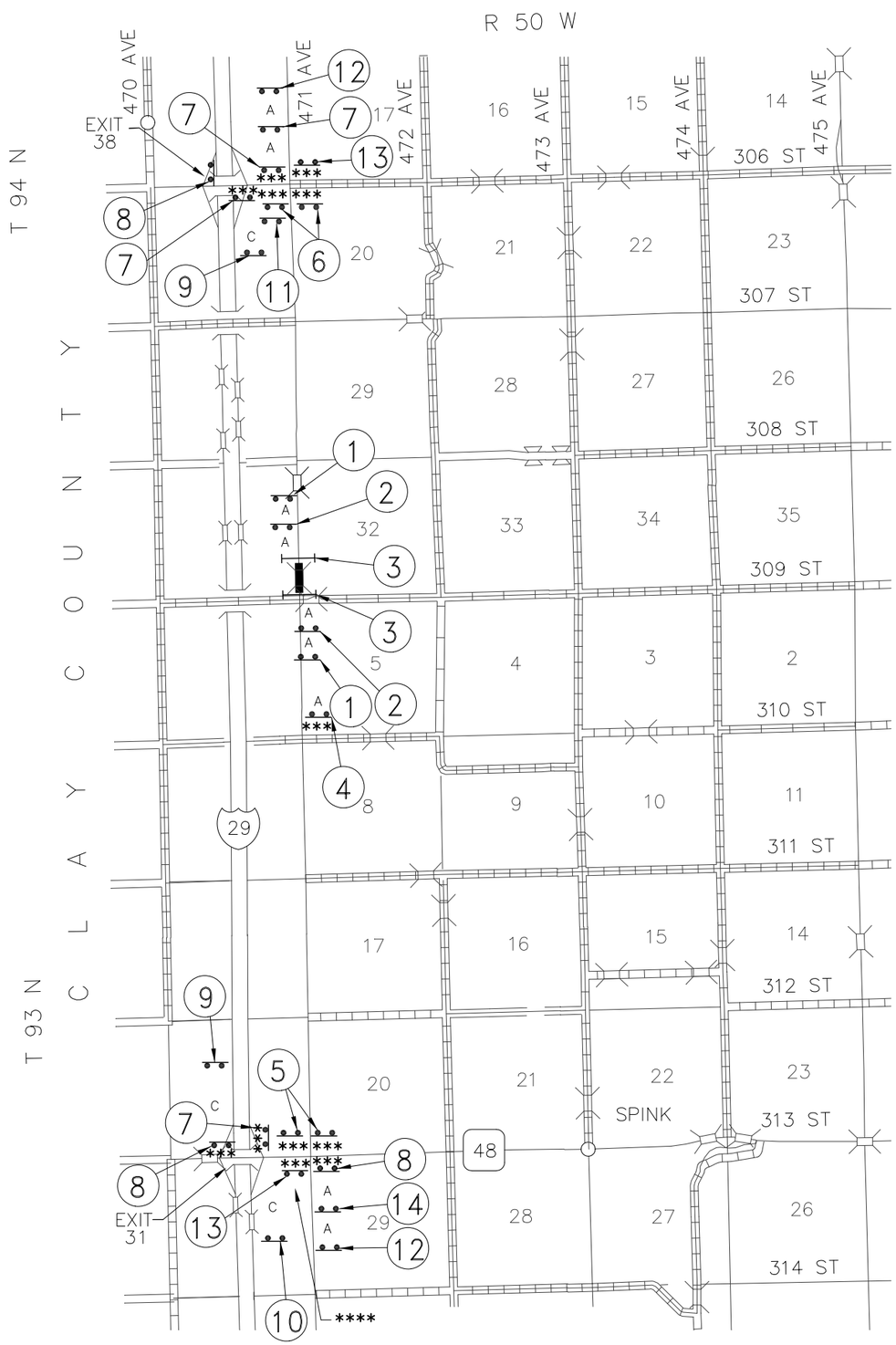
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8610
DANIEL K. JOHNSON
SOUTH DAKOTA
4/11/16

NOTES:

1) ALL ASPHALT CONCRETE COMPOSITE AND BASE COURSE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

TYPICAL SURFACING SECTION

LAYOUT



TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	13	43

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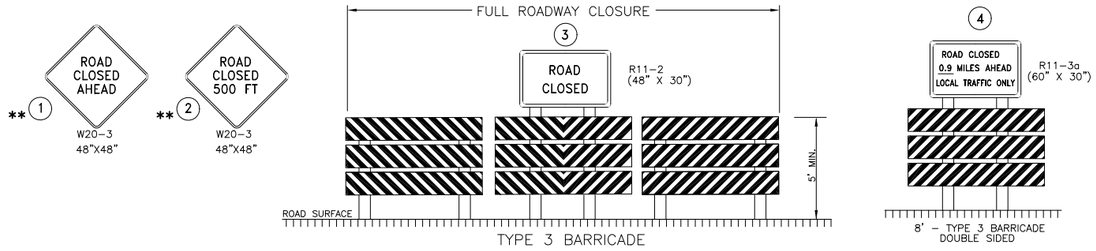
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10	20
R11-3a	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY	1	60" x 30"	13	13
W20-3	ROAD CLOSED AHEAD	4	48" x 48"	16	64
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			97



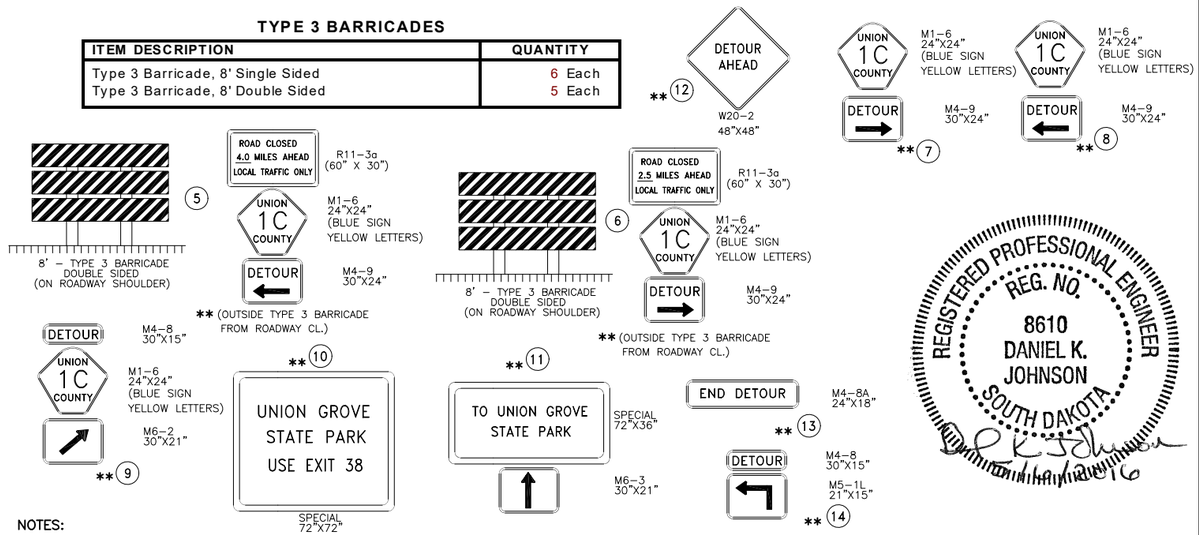
DETOUR SIGNING

ITEMIZED LIST FOR DETOUR SIGNING

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-3a	ROAD CLOSED __ MILES AHEAD LOCAL TRAFFIC ONLY	4	60" x 30"	13	52
W20-2	DETOUR AHEAD	2	48" x 48"	16	32
SPECIAL	UNION GROVE STATE PARK: USE EXIT 38	1	72" x 72"	36	36
SPECIAL	TO UNION GROVE STATE PARK	1	72" x 36"	18	18
M1-6	COUNTY ROUTE MARKER	13	24" x 24"	4	52
M4-8	DETOUR	3	30" x 15"	3	9
M4-8a	END DETOUR	2	24" x 18"	3	6
M4-9	DETOUR with ARROW (L or R)	11	30" x 24"	5	55
M5-1	ADVANCE TURN ARROW 90° (L or R)	1	21" x 15"	2	2
M6-2	DIRECTION ARROW - 45° Single Head (L or R)	2	30" x 21"	4	8
M6-3	DIRECTION ARROW - Vertical Single Head	1	30" x 21"	4	4
		CONVENTIONAL ROAD DETOUR SIGNING SQFT			274

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	6 Each
Type 3 Barricade, 8' Double Sided	5 Each



REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8610
DANIEL K. JOHNSON
SOUTH DAKOTA

NOTES:

ALL FIXED LOCATION SIGNS SHALL REMAIN IN PLACE UNTIL PROJECT IS COMPLETED.

TYPE 3 BARRICADES ARE MEASURED FOR PAYMENT ON ONE SIDE ONLY

** – MOUNT ON FIXED LOCATION (GROUND MOUNTED) SUPPORTS

*** – 25' – 50' FROM ADJACENT R.O.W. LINE

**** – COVER EXISTING UNION GROVE STATE PARK – 5 MILES – DIRECTIONAL SIGN. PAYMENT FOR THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT LUMP SUM PRICE FOR TRAFFIC CONTROL, MISCELLANEOUS.

ALL "SPECIAL" DETOUR SIGNS SHALL BE ORANGE IN COLOR WITH 6" HIGH BLACK LETTERING.

Table 6C-1 in part 6 of the MUTCD PAGE 6C-4, 2009 edition

Road Type	Distance between signs (feet)		
	A	B	C
Urban (low speed)	100	100	100
Urban (high speed)	350	350	350
Rural	500	500	500
Expressway/Freeway	1000	1500	2640

EROSION AND SEDIMENT CONTROL PLAN

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	14	43

SCALE:
1" = 100' HOR

LEGEND

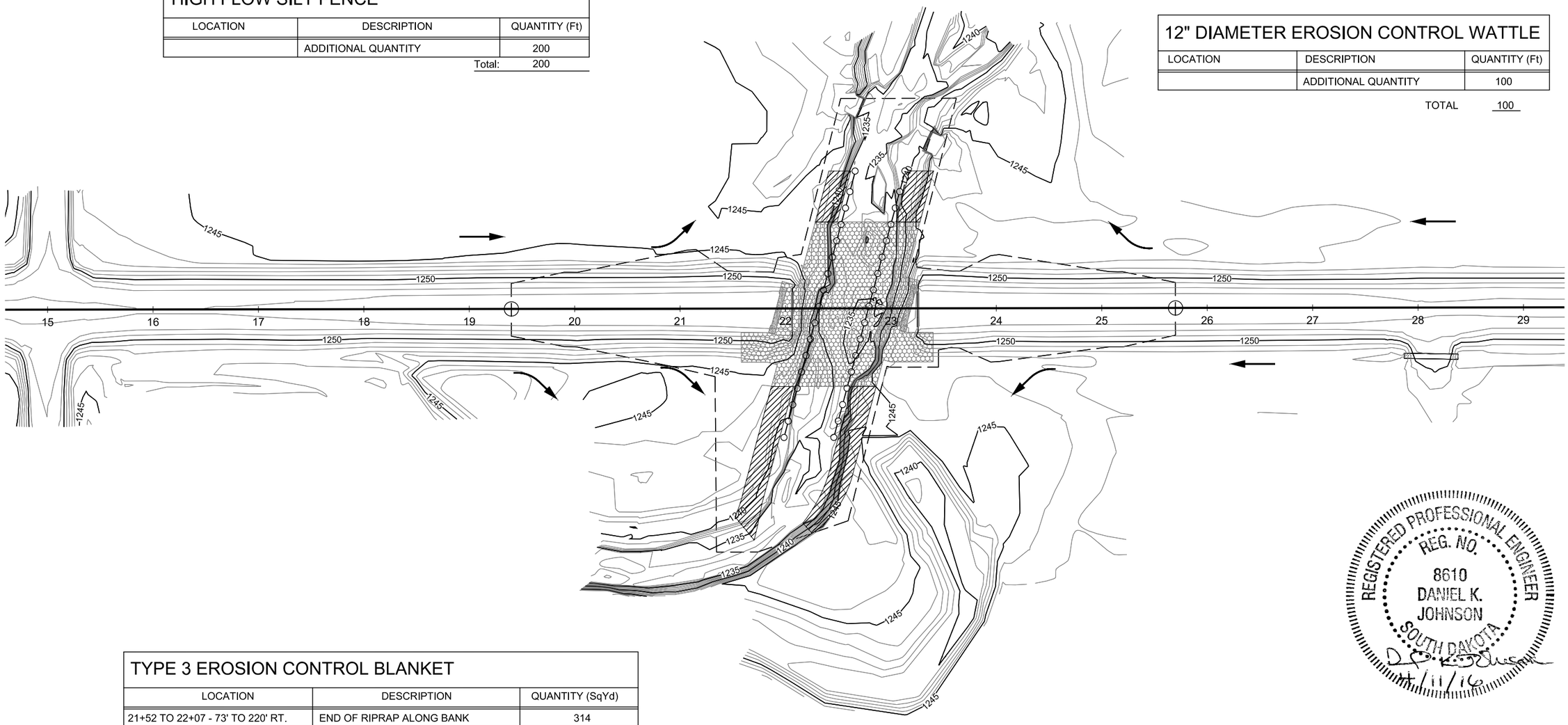
- FLOATING SILT CURTAIN
- TYPE 3 EROSION CONTROL BLANKET
- RIPRAP

HIGH FLOW SILT FENCE

LOCATION	DESCRIPTION	QUANTITY (Ft)
	ADDITIONAL QUANTITY	200
	Total:	200

12" DIAMETER EROSION CONTROL WATTLE

LOCATION	DESCRIPTION	QUANTITY (Ft)
	ADDITIONAL QUANTITY	100
	TOTAL	100



TYPE 3 EROSION CONTROL BLANKET

LOCATION	DESCRIPTION	QUANTITY (SqYd)
21+52 TO 22+07 - 73' TO 220' RT.	END OF RIPRAP ALONG BANK	314
22+28 TO 22+62 - 82' TO 131' LT.	END OF RIPRAP ALONG BANK	125
22+16 TO 22+86 - 73' TO 213' RT.	END OF RIPRAP ALONG BANK	339
23+05 TO 23+41 - 82' TO 131' LT.	END OF RIPRAP ALONG BANK	137
	ADDITIONAL QUANTITY	200
	Total:	1,115

FLOATING SILT CURTAIN

LOCATION	DESCRIPTION	QUANTITY (Ft)
21+94 - RT. TO 22+62 - LT.	ALONG CHANNEL TOE	262
22+50 - RT. TO 23+18 - LT.	ALONG CHANNEL TOE	262
	Total:	524

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA
4/11/16

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	15	43

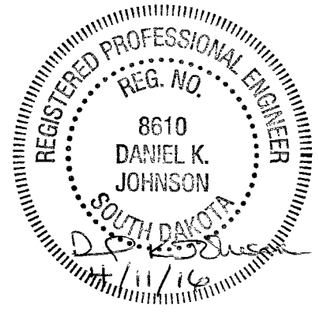
CONTROL DATA

CONTROL POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 1	4+30.49	48.62' Rt.	5/8" Rebar & Guards	18897.10	20358.85	1258.38
CP 2	15+27.54	327.74' Lt.	5/8" Rebar & Guards	20000.00	20000.00	1248.81
CP 2A	15+13.98	603.28' Rt.	Chiseled "X" in NE Backwall	19971.62	20930.68	1250.05
CP 3	22+62.23	249.80' Lt.	5/8" Rebar & Guards	20733.35	20089.62	1248.83
CP 4	22+65.92	120.15' Rt.	5/8" Rebar & Guards	20731.16	20459.58	1245.56
CP 5	27+91.45	52.21' Rt.	5/8" Rebar & Guards	21257.70	20400.01	1248.40
CP 6	41+16.96	65.96' Lt.	5/8" Rebar & Guards	22584.92	20302.96	1251.56

HORIZONTAL ALIGNMENT DATA

(CONSTRUCTION CENTERLINE)

TYPE	STATION			NORTHING	EASTING
POB	19+40.00			20407.19	20334.26
		TL=630.00'	N 00°54'43" E		
EOP	25+70.00			21037.11	20344.29



NOTE:
The coordinate values shown on this sheet are assumed datum.
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	16	43

FOR BIDDING PURPOSES ONLY

SCALE:
1" = 100'

LOT B OF BEELER TRACT 1 IN THE SE 1/4, SEC. 31-T94N-R50W
OWNER: DAVID W. LARSEN AND ESTHER LARSEN
47147 311th STREET
AKRON, IA 51001
(605) 253-2342

LOT B
BEELER TRACT 1

THE SE 1/4, LESS LOTS H-1, H-2 AND H-3
AND LESS LOT A OF BEELER TRACT 1, SEC. 31-T94N-R50W
OWNER: DAVID W. LARSEN AND ESTHER LARSEN
47147 311th STREET
AKRON, IA 51001
(605) 253-2342

21+88.96 TO 23+21.04 (15° SKEW LHF)
DRAINAGE AREA = 155.0 SQ. MI.
INSTALL 132'-0 7/8" CONTINUOUS CONCRETE BRIDGE
WITH 30'-0" ROADWAY
SEE BRIDGE PLANS

20+98 - 49' RT. - IN PLACE POWER POLE
DO NOT DISTURB

21+80 - 49' LT.
IN PLACE TELEPHONE TERMINAL POST

23+50 - 46' LT.
IN PLACE TELEPHONE TERMINAL POST

24+18 - 50' RT. - IN PLACE POWER POLE
DO NOT DISTURB

28+15-RT.
IN PLACE 18" X 52' RCP

21+83 RT., 21+91 LT., 23+19 RT. & 23+27 LT.
UNION COUNTY TO INSTALL (4) OBJECT
MARKERS, TYPE 3 WITHOUT FEDERAL
PARTICIPATION

19+43 TO 25+75 LT. & 19+35 TO 25+67 RT.
UNION COUNTY TO INSTALL (16)
DELINEATORS, TYPE 1 WHITE (BACK TO BACK)
WITHOUT FEDERAL PARTICIPATION

22+05.10 TO 23+27.10
TAKE OUT 122.0' THREE-SPAN STEEL STRINGER BRIDGE WITH
CONCRETE ABUTMENTS, WINGWALLS, BENTS AND DECK
WITH CONCRETE PIGEONHOLE RAIL.
33.0' OVERALL WIDTH AND 30.1' ROADWAY
INCIDENTAL WORK, STRUCTURE
SEE BRIDGE PLANS

BEGIN PROJECT BRO 8064(27)
471st. AVE., UNION COUNTY
STA. 19+40.00 ON BRO 8064(27) =
440.87' NORTH AND 71.59' WEST OF THE
SOUTHWEST CORNER OF SEC. 32-T94N-R50W
N. 20407.19 E. 20334.26

END PROJECT BRO 8064(27)
471st. AVE., UNION COUNTY
STA. 25+70.00 ON BRO 8064(27) =
1070.79' NORTH AND 61.56' WEST OF THE
SOUTHWEST CORNER OF SEC. 32-T94N-R50W
N. 21037.11 E. 20344.29

33' 33' R/W LINE 15+00.00 SECTION LINE R/W LINE
GRAVEL ROAD
C.P. 2
C.P. 3
CREEK
HIGH BANK
RIPRAP
21+24.30 LOT LINE
+09 - 49' LT.
+00 - 210' LT.
+21 - 92' LT.
+00 - 210' LT.
+41 - 92' LT.
+29 - 49' LT.
+40 - 49' LT.
+70 - 49' LT.
R/W LINE
95.2'
CO. RD. 1C
CONSTRUCTION LINE
N 00°54'43" E
ASPHALT ROAD
471st AVENUE
CO. RD. 1C
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29
WORK LIMITS
SECTION LINE
N 00°09'39" E
WORK LIMITS
33'
33'
R/W LINE
C.P. 5
C.P. 4
309th STREET
GRAVEL ROAD
SECTION LINE 15+00.00
R/W LINE
33' 33'
HIGH BANK
BRULE
+10 - 105' RT.
+16 - 103' RT.
+10 - 241' RT.
+71 - 241' RT.
+16 - 121' RT.
28+08.09 1/16 LINE

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
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JOHNSON
SOUTH DAKOTA

STAUM'S TRACT 1A

CHANNEL CHANGE TRACT IN S 1/2 SW 1/4,
RECORDED IN BOOK 47, PAGE 16, SEC. 32-T94N-R50W
OWNER: UNION COUNTY, SOUTH DAKOTA
501 E. PLEASANT STREET
ELK POINT, SD 57025
(605) 356-2351

STAUM'S TRACT 1A IN THE S 1/2 SW 1/4 AND S 1/2 SE 1/4, SEC. 32-T94N-R50W
OWNER: DAVID W. LARSEN AND ESTHER LARSEN
47147 311th STREET
AKRON, IA 51001
(605) 253-2342

22+02 - 16' LT & 16' RT
SALVAGE (2) OBJECT MARKERS
INCIDENTAL WORK, GRADING

22+88 TO 23+25 - 28' RT. TO 91' LT.
REMOVE RIPRAP (DEPTH UNKNOWN)
INCIDENTAL WORK, GRADING

23+30 - 16' LT & 16' RT
SALVAGE (2) OBJECT MARKERS
INCIDENTAL WORK, GRADING

21+10 TO 22+16 RT.
TEMPORARY EASEMENT FOR FILL SLOPES
TO BE OBTAINED BY UNION COUNTY, 0.3 AC.

19+40 TO 25+70 LT.
TEMPORARY EASEMENT FOR CUT SLOPES
AND FILL SLOPES TO BE OBTAINED BY
UNION COUNTY, 1.4 AC.

22+09 TO 23+41 LT.
PERMANENT EASEMENT FOR
MAINTENANCE PURPOSES TO BE
OBTAINED BY UNION COUNTY, 0.12 AC.

22+77.2 - 82.8' LT. TO 23+00.0 - 200' LT.
TAPER RIPRAP SECTION TO EXISTING CHANNEL SECTION
CHANNEL CLEANOUT 146 CuYd

22+35.4 - 73.2' RT. TO 22+00.0 - 220' RT.
TAPER RIPRAP SECTION TO EXISTING CHANNEL SECTION
CHANNEL CLEANOUT 587 CuYd

21+58.0 TO 23+40.1 LT. & RT. ON CHANNEL BANKS
AND CHANNEL BOTTOM
INSTALL 2,163.7 Ton OF CLASS B RIPRAP
RIPRAP SHALL BE A MINIMUM OF 24" THICK AND
INSTALL 2,399 SqYd OF TYPE B DRAINAGE FABRIC
SEE BRIDGE PLANS

LEGEND

STATE AND NATIONAL LINE	
COUNTY LINE	
SECTION LINE	
QUARTER LINE	
FENCE LINE	X X
ROW LINE	
WORK LIMITS	

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	17	43

FOR BIDDING PURPOSES ONLY

EXC	1,551
CHANNEL CLEANOUT	733
	2,284

EMB	1,064
+35%	372
	1,436
WASTE	848
	2,284

19+40.00
BEGIN WORK

25+70.00
END WORK

PVI 19+90.00
Elev 1252.37

PVI 22+55.00
Elev 1253.03
L = 530'
G1 = +0.2491%
G2 = −0.2566%
K = 1048.13
(>80 MPH)

PVI 25+20.00
Elev 1252.35

TOP OF SUBGRADE

EXISTING ℄ PROFILE

+0.2491%

−0.2566%

TOP OF BERM
ELEV. 1248.95

TOP OF BERM
ELEV. 1248.95

DHW (10 Year) = 1245.9

HW (100 Year) = 1251.3

Q_D (10 Year) = 4,056 cfs
Elev. = 1245.9

Q_{100} = 10,204 cfs
Elev. = 1251.3

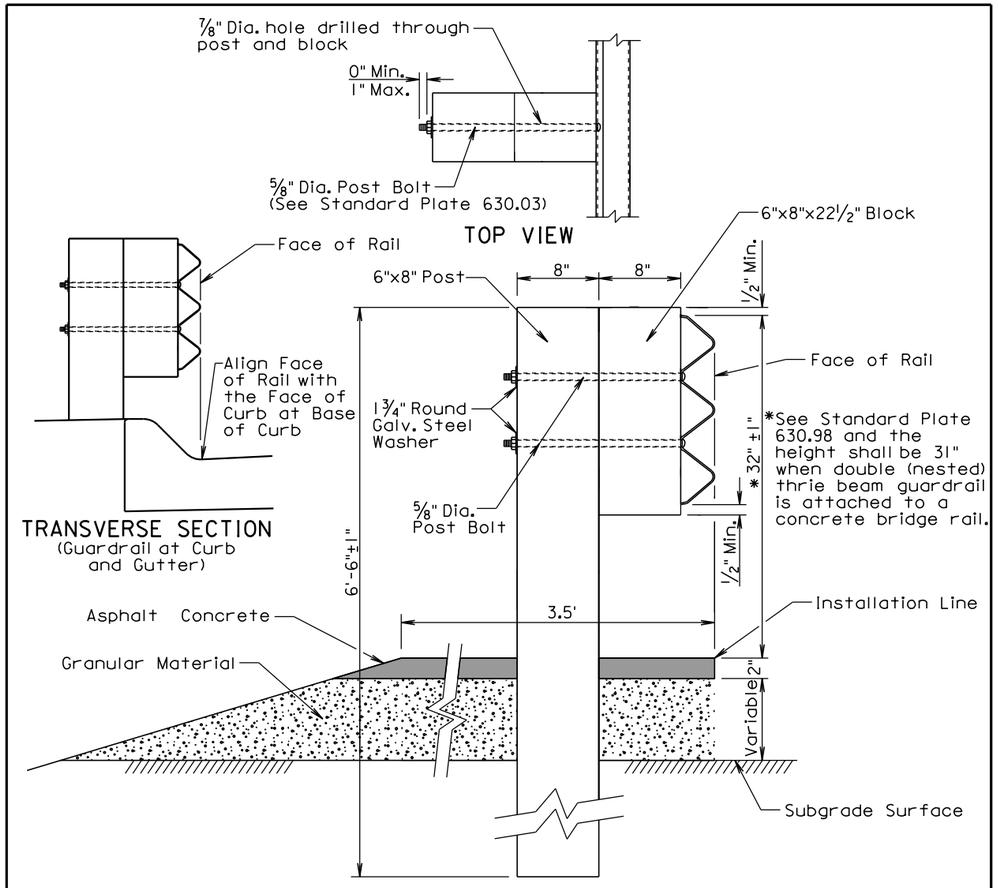
$Q_{OT}=Q_{100}$ = 10,204 cfs
Elev. = 1251.3

FL. ELEV. 1232.3

1252.39 1252.50 1252.58 1252.64 1252.68 1252.69 1252.68 1252.65 1252.59 1252.50 1252.40

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA
4/11/16

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	18	43



GENERAL NOTES:

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

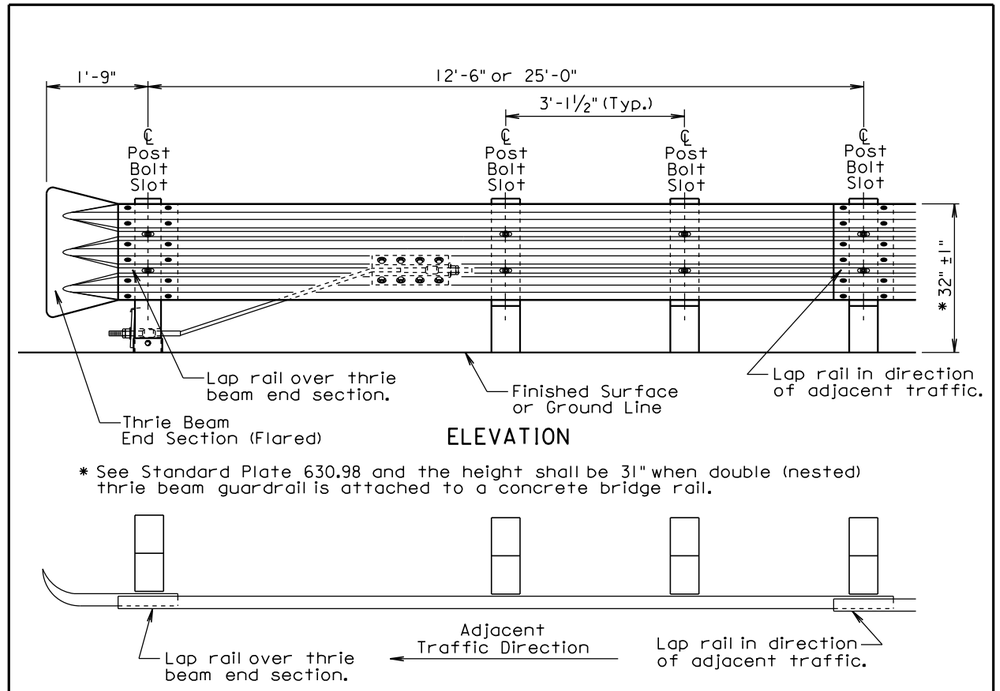
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline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

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

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

June 26, 2015

Published Date: 2nd Qtr. 2016	SDDOT	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
			Sheet 1 of 1



* See Standard Plate 630.98 and the height shall be 31" when double (nested) thrie beam guardrail is attached to a concrete bridge rail.

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

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type 1.

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

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

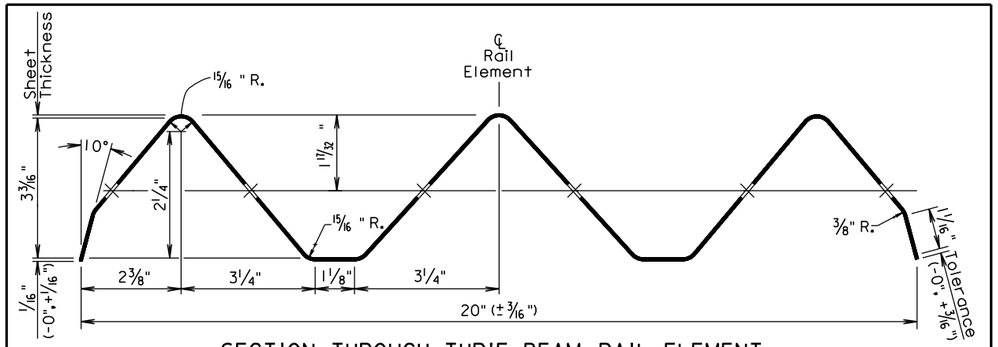
Thrie Beam End Sections (Flared) shall only be used in a one-way traffic situation. See Standard Plate 630.80 for Thrie Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

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

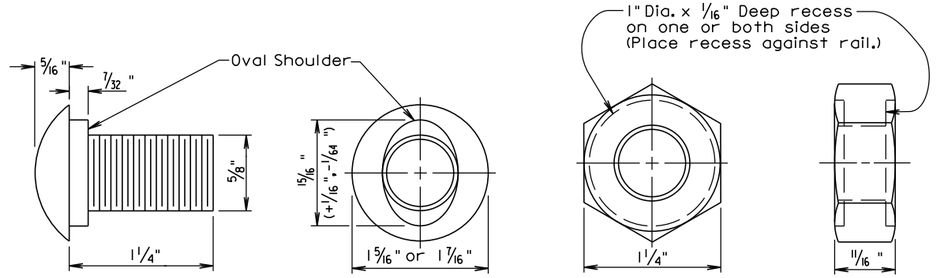
June 26, 2015

Published Date: 2nd Qtr. 2016	SDDOT	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	19	43

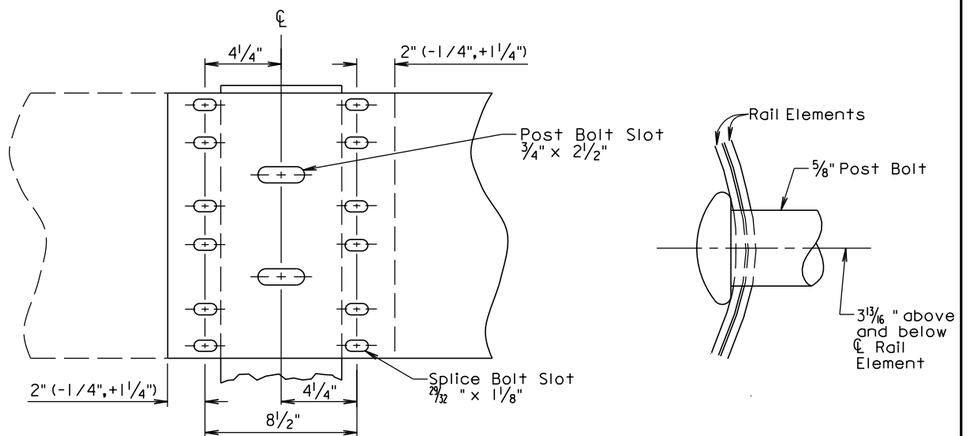


SECTION THROUGH THRIE BEAM RAIL ELEMENT



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

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

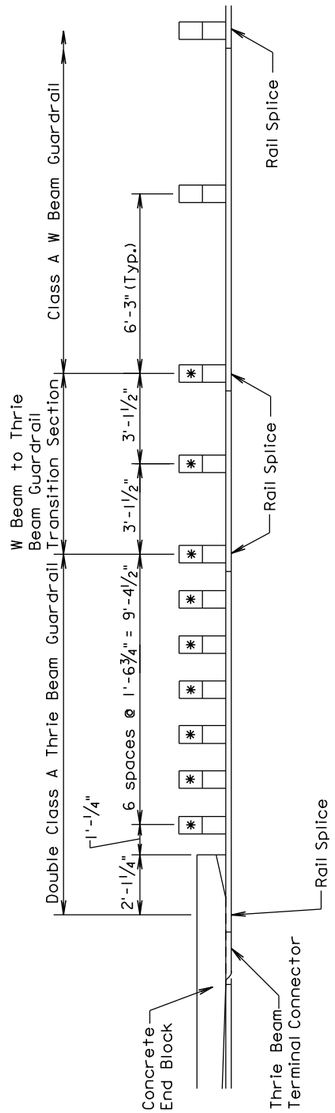


Lap in direction of traffic.

RAIL SPLICE

March 31, 2000

Published Date: 2nd Qtr. 2016	SDDOT	THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.03
			Sheet 1 of 1

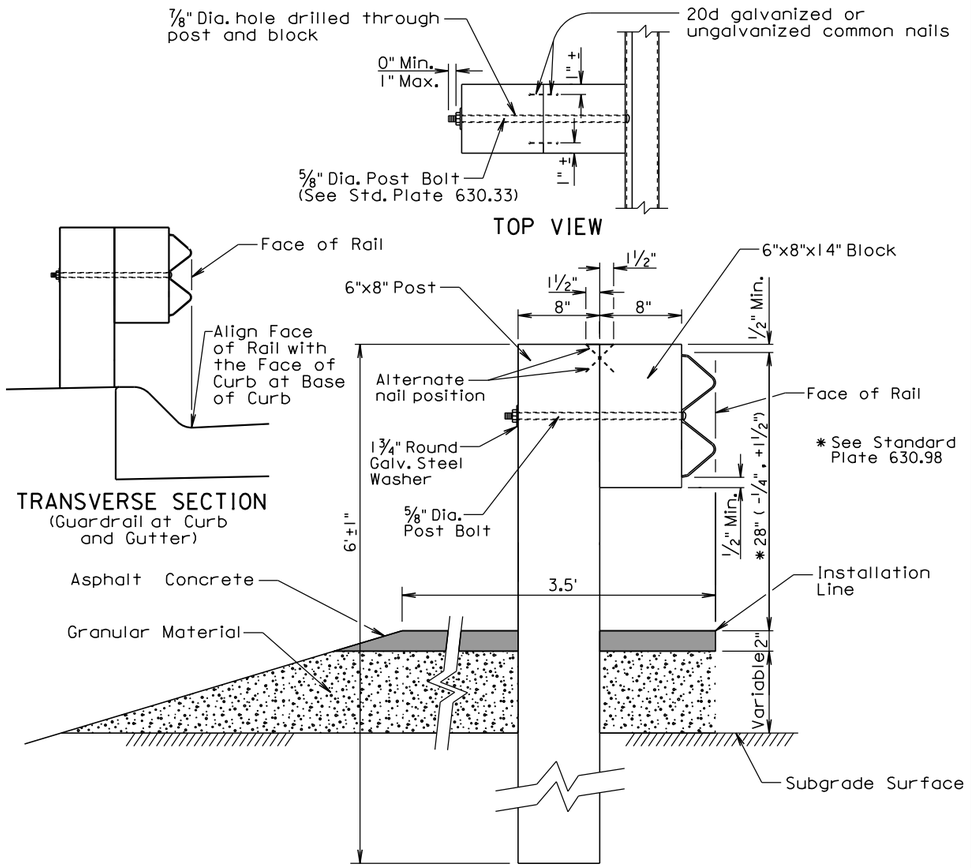


* 6" x 8" x 7' posts shall be used at these locations.

POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

December 23, 2002

Published Date: 2nd Qtr. 2016	SDDOT	POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END	PLATE NUMBER 630.15
			Sheet 1 of 1



GENERAL NOTES:

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

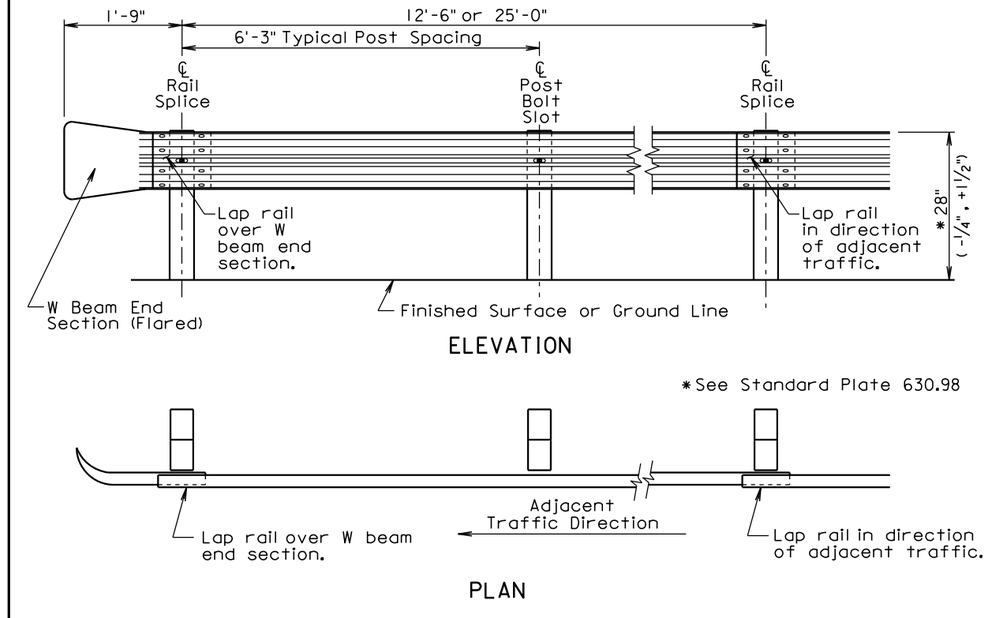
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline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

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

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

June 26, 2015

Published Date: 2nd Qtr. 2016	SDDOT	*W BEAM GUARDRAIL POST INSTALLATION*	*PLATE NUMBER* 630.31
			Sheet 1 of 1



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

For Informational Purposes Only

GENERAL NOTES:

All W beam rail shall be Type 1.

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

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

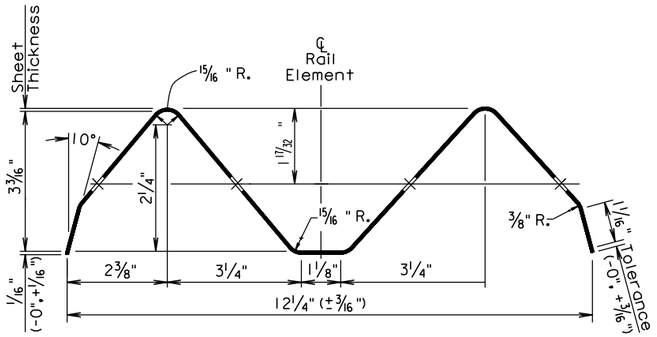
W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

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

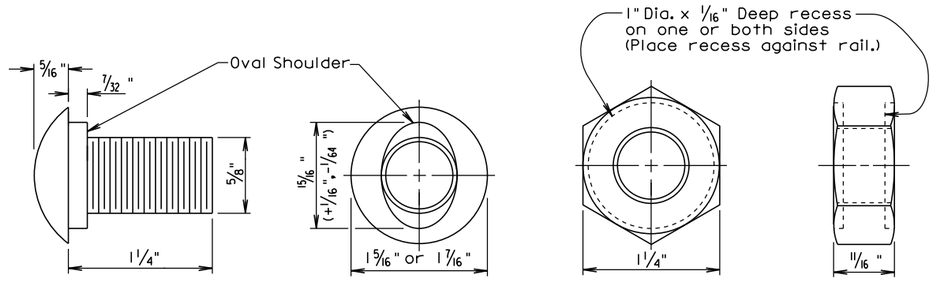
June 26, 2015

Published Date: 2nd Qtr. 2016	SDDOT	*W BEAM GUARDRAIL INSTALLATION*	*PLATE NUMBER* 630.32
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	21	43

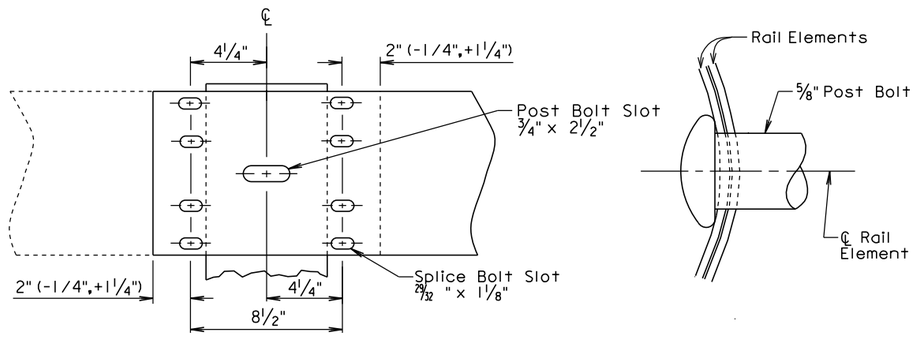


SECTION THROUGH W BEAM RAIL ELEMENT



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

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

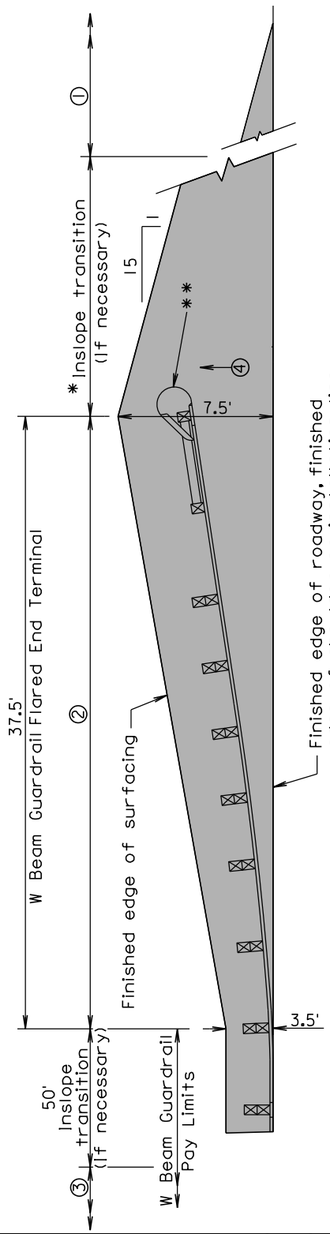


Lap in direction of traffic.

RAIL SPLICE

December 23, 2004

Published Date: 2nd Qtr. 2016	SDDOT	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.33
			Sheet 1 of 1



PLAN

2" Asphalt concrete surfacing with variable thickness granular material

① Same inslope as mainline inslope
② 4:1 inslope
③ 2:1 inslope or flatter, or inslope as specified in plans
④ Same slope as roadway cross slope

* The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

** An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16"x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

GENERAL NOTES:

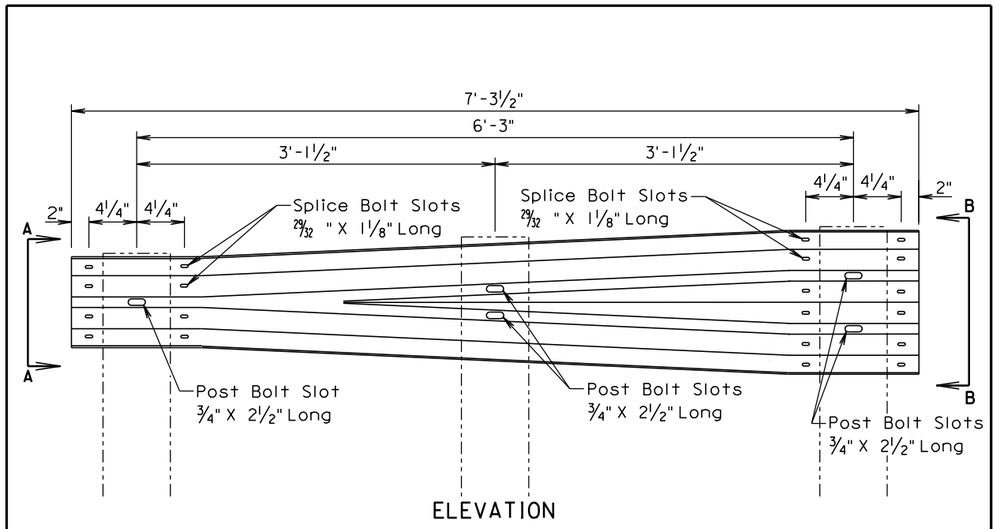
The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions.

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

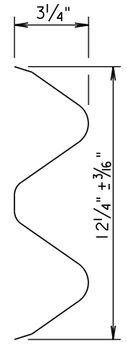
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed to the same thickness as the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

December 16, 2014

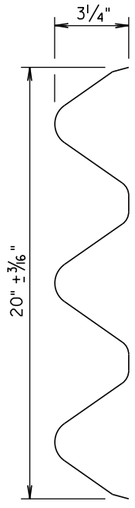
Published Date: 2nd Qtr. 2016	SDDOT	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL	PLATE NUMBER 630.45
			Sheet 1 of 1



ELEVATION



VIEW A-A



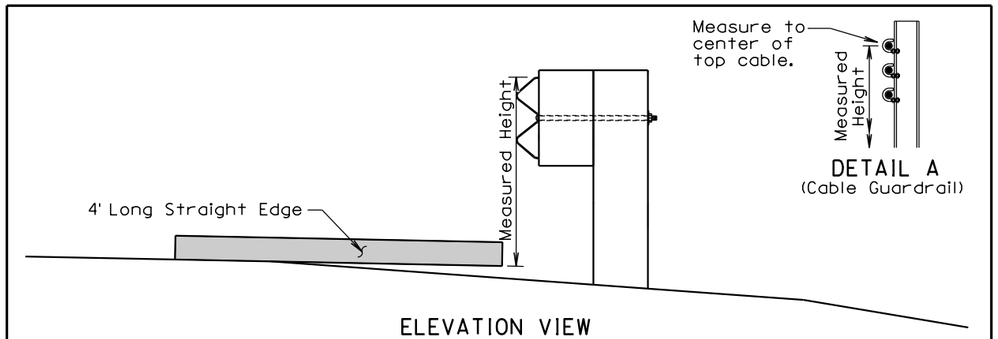
VIEW B-B

GENERAL NOTE:

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

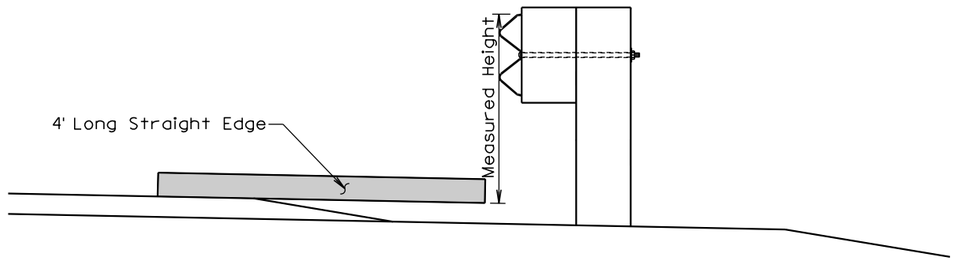
March 31, 2000

Published Date: 2nd Qtr. 2016	SDDOT	**W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION**	PLATE NUMBER 630.82 Sheet 1 of 1

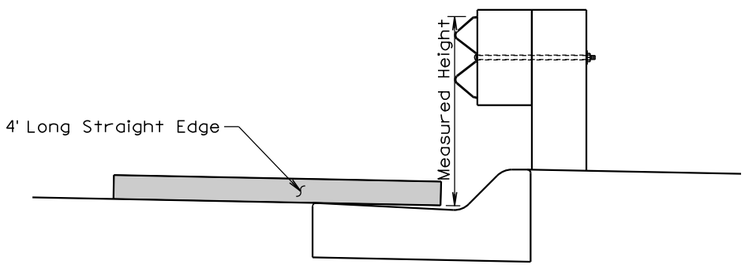


DETAIL A
(Cable Guardrail)

ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)



ELEVATION VIEW
(Guardrail Adjacent to Differential Surfacing Elevations)



ELEVATION VIEW
(Guardrail at Curb and Gutter)

GENERAL NOTES:

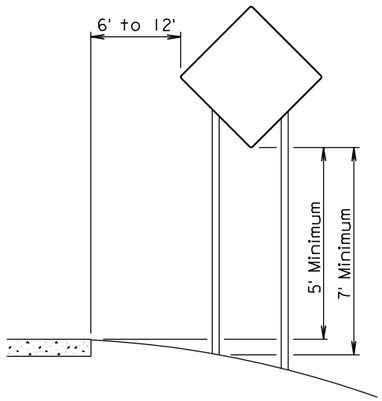
The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.

When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

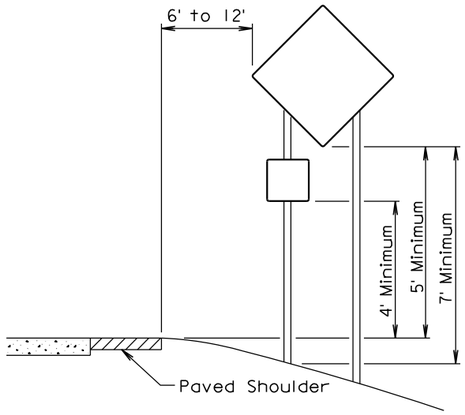
June 26, 2010

Published Date: 2nd Qtr. 2016	SDDOT	**MEASURING GUARDRAIL HEIGHT**	PLATE NUMBER 630.98 Sheet 1 of 1

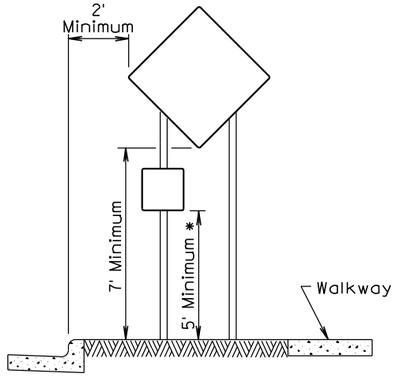
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	23	43



RURAL DISTRICT

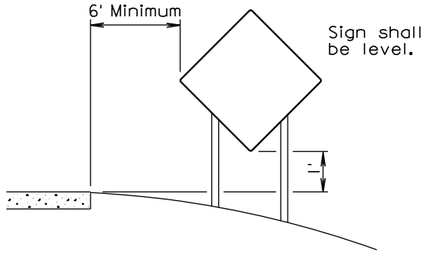


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

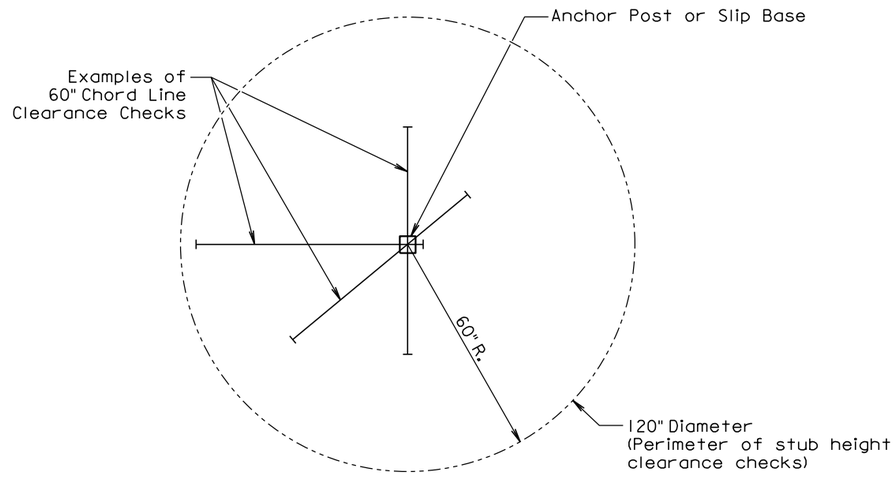
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



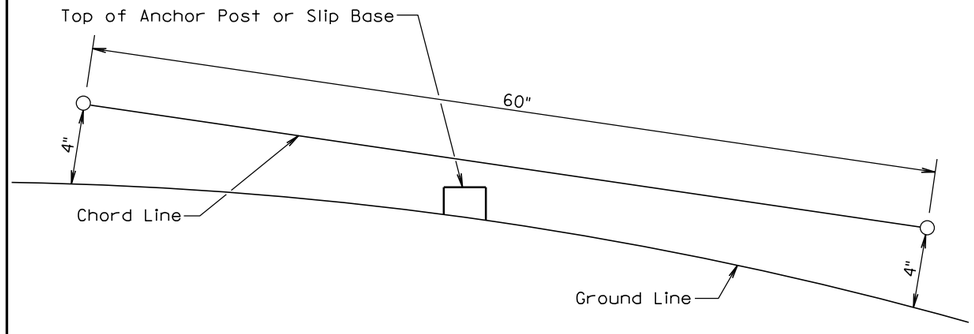
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 2nd Qtr. 2016	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 SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

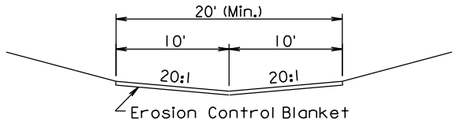
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

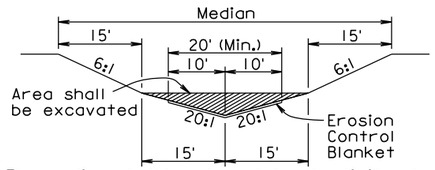
July 1, 2005

Published Date: 2nd Qtr. 2016	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	24	43

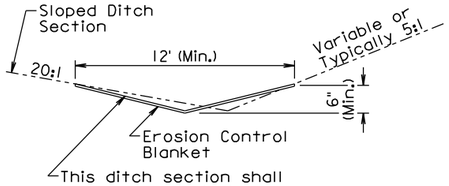


STANDARD DITCH SECTION

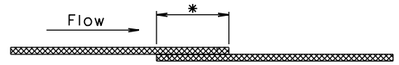


The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



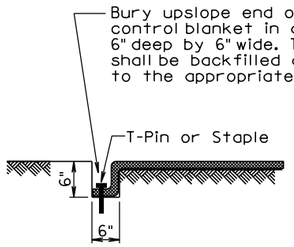
SLOPED DITCH SECTION



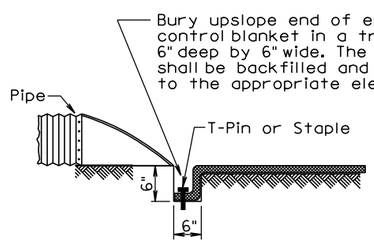
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* 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 shall be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket shall 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 shall be buried in a trench 6" wide by 6" deep. There shall 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 shall be pinned to the ground according to the manufacturer's installation recommendations.

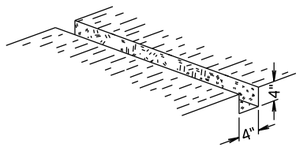
After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

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

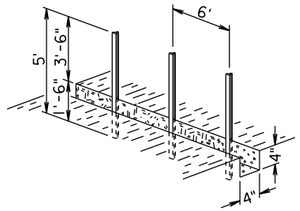
December 23, 2004

Published Date: 2nd Qtr. 2016	SDDOT	***EROSION CONTROL BLANKET***	***PLATE NUMBER*** *734.01*
			Sheet 1 of 1

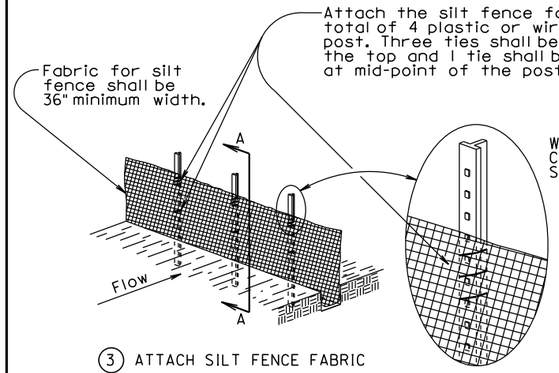
MANUAL HIGH FLOW SILT FENCE INSTALLATION



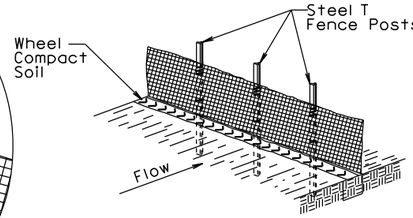
(1) EXCAVATE TRENCH



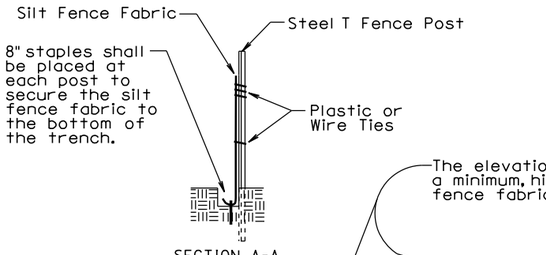
(2) DRIVE STEEL T FENCE POSTS



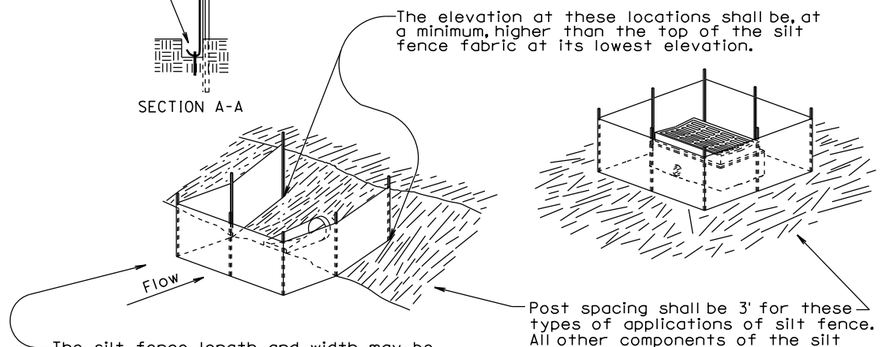
(3) ATTACH SILT FENCE FABRIC



(4) BACKFILL TRENCH AND WHEEL COMPACT SOIL



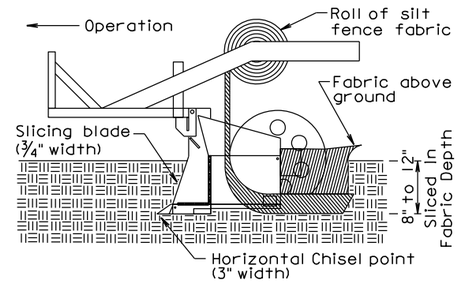
SECTION A-A



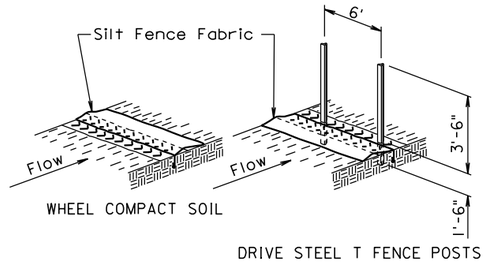
December 23, 2003

Published Date: 2nd Qtr. 2016	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

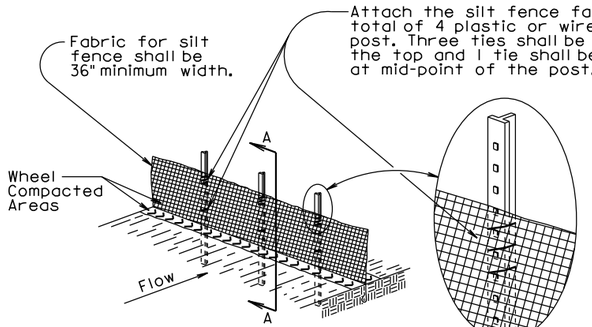
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



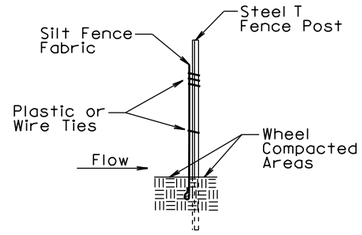
(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



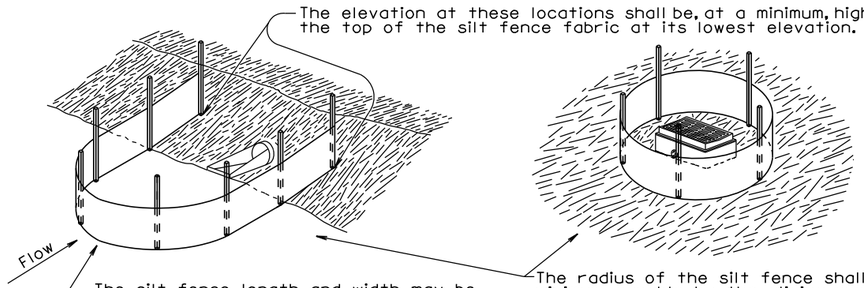
(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



(3) ATTACH SILT FENCE FABRIC



SECTION A-A

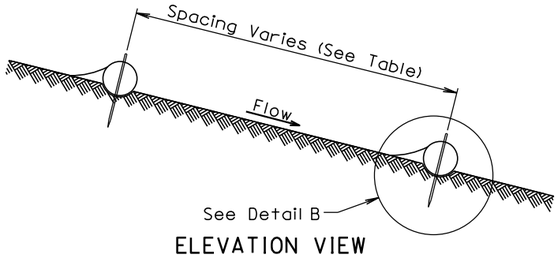


GENERAL NOTE:

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

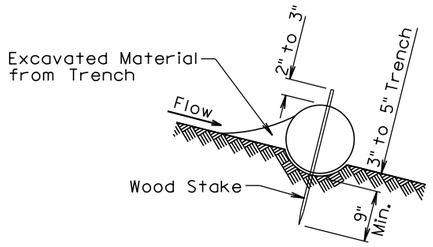
December 23, 2003

Published Date: 2nd Qtr. 2016	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

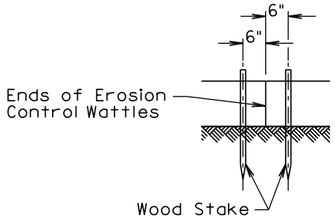


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

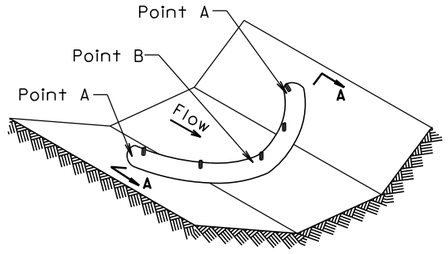
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



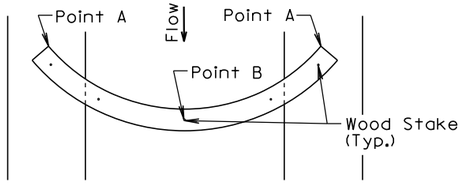
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

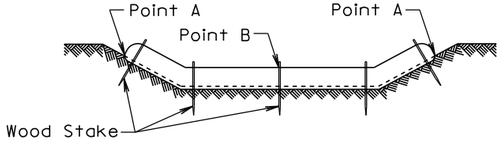


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 2nd Qtr. 2016	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than ½". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

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

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

December 23, 2004

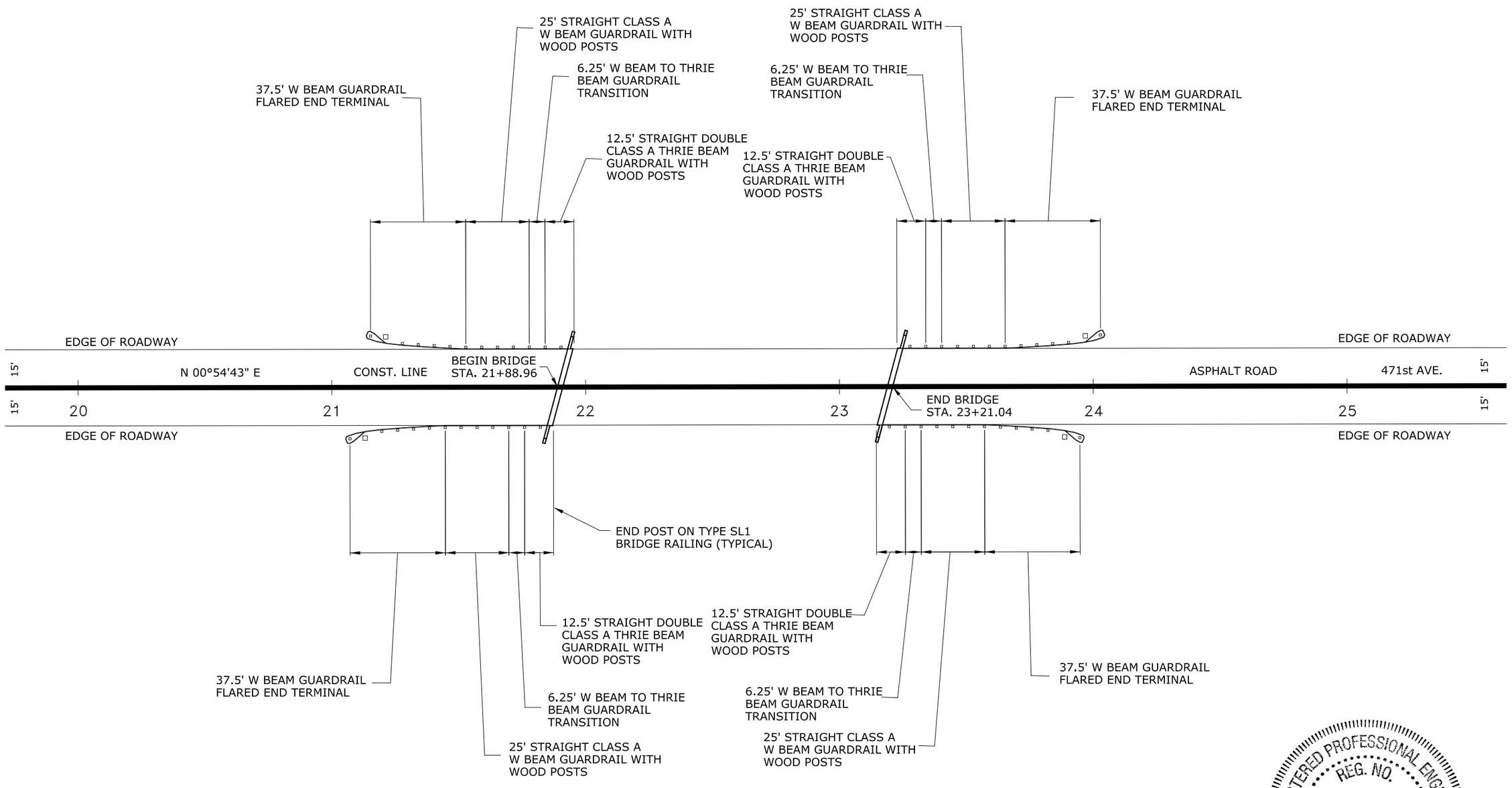
Published Date: 2nd Qtr. 2016	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	27	43

SCALE:
1" = 40' HOR

GUARDRAIL LAYOUT

FOR BIDDING PURPOSES ONLY



REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K.
JOHNSON
SOUTH DAKOTA
4/11/16

C.P. NO. 2 EL. 1248.81
5/8" REBAR & GD.
STA. 15+27.54 – 327.74' LT.

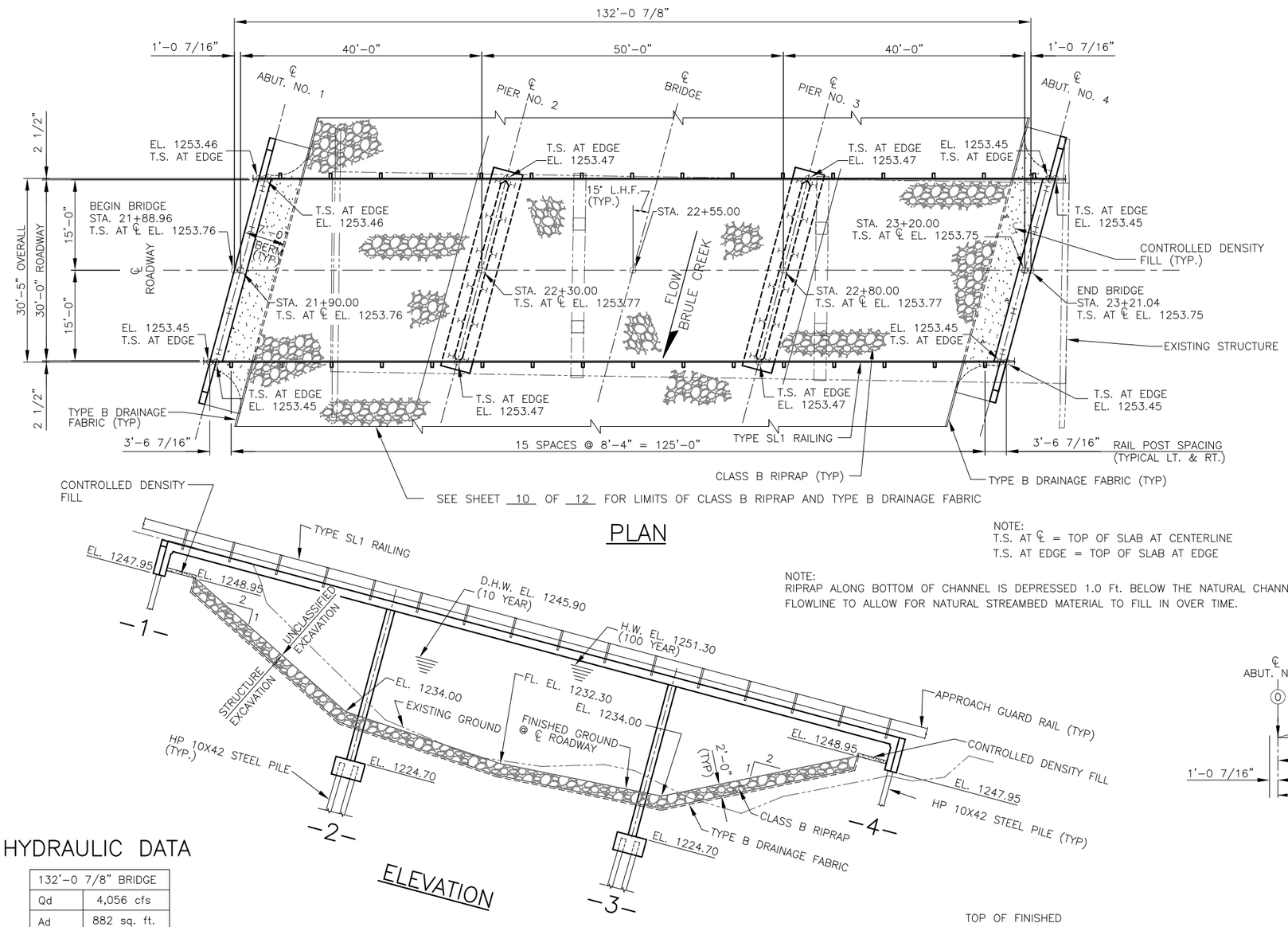
C.P. NO. 3 EL. 1248.83
5/8" REBAR & GD.
STA. 22+62.23 – 249.80' LT.

C.P. NO. 4 EL. 1245.56
5/8" REBAR & GD.
STA. 22+65.92 – 120.15' RT.

C.P. NO. 5 EL. 1248.40
5/8" REBAR & GD.
STA. 27+91.45 – 52.21' RT.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	28	43

THE ELEVATIONS SHOWN IN THESE PLANS ARE BASED ON THE NATIONAL GEODETIC SURVEY (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



PLAN

NOTE:
T.S. AT ℄ = TOP OF SLAB AT CENTERLINE
T.S. AT EDGE = TOP OF SLAB AT EDGE

NOTE:
RIPRAP ALONG BOTTOM OF CHANNEL IS DEPRESSED 1.0 Ft. BELOW THE NATURAL CHANNEL FLOWLINE TO ALLOW FOR NATURAL STREAMBED MATERIAL TO FILL IN OVER TIME.

ELEVATION

HYDRAULIC DATA

132'–0 7/8" BRIDGE	
Qd	4,056 cfs
Ad	882 sq. ft.
Vd	4.6 fps
Q_F	4,056 cfs
Q_{100}	10,204 cfs
$Q_{OT\,fr}$	10,204 cfs
V max	8.0 fps

Qd = design discharge for the proposed bridge based on 10 year frequency. El. 1245.9.

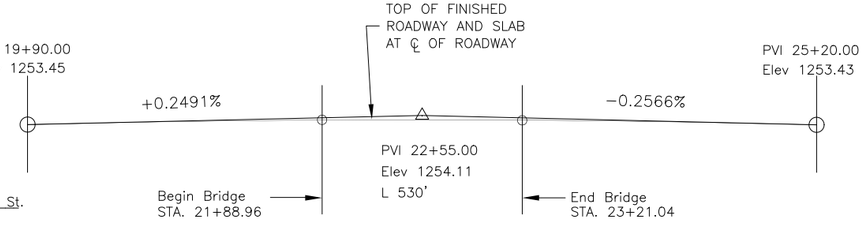
$Q_{OT_{fr}}$ = overtopping discharge and frequency 100 yr. recurrence interval, El. 1251.3. Location STA. 8+65 on 309th St.

Q_F = designated peak discharge for the basin approaching proposed project based on 10 year frequency.

Q_{100} = computed discharge for the basin approaching proposed project based on 100 year frequency, El. 1251.3.

Vmax = maximum computed outlet velocity for the proposed bridge, based on a 100 year frequency.

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



VERTICAL CURVE DATA

–X020– INDEX OF BRIDGE SHEETS

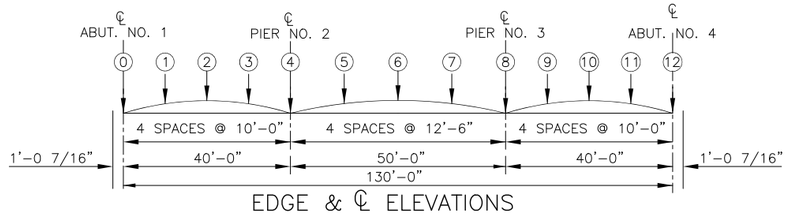
∗ Camber for Dead Load Deflection plus Plastic Flow, Shown on Sheet No. 8 of 12 have been included in the elevations shown.

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
8610
DANIEL K. JOHNSON
SOUTH DAKOTA
4/11/16

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
5152
GREGORY S. SLOWEY
SOUTH DAKOTA
4/11/16

∗TABLE OF SLAB ELEVATIONS

Slab Points	Left Edge	℄	Right Edge
0	1253.455	1253.757	1253.451
1	1253.515	1253.818	1253.511
2	1253.529	1253.832	1253.526
3	1253.498	1253.801	1253.495
4	1253.470	1253.773	1253.468
5	1253.521	1253.825	1253.520
6	1253.559	1253.863	1253.559
7	1253.519	1253.824	1253.520
8	1253.466	1253.771	1253.468
9	1253.492	1253.798	1253.495
10	1253.523	1253.829	1253.526
11	1253.507	1253.814	1253.512
12	1253.445	1253.752	1253.451



EDGE & ℄ ELEVATIONS

(See TABLE OF SLAB ELEVATIONS for elevations)

** TOPEKA SHINER STREAM

GENERAL DRAWING FOR 132'–0 7/8" CONTINUOUS CONCRETE BRIDGE

30'–0" ROADWAY
BRULE CREEK **
STA. 21+88.96 TO 23+21.04
STRUCTURE NO. 64–010–119

15° SKEW LHF
SEC. 31/32–T94N–R50W
BRO 8064(27)
PCN 01DZ

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

HL93

–X020– JULY 2014 SHEET (1) OF (12)

DESIGNED BY	DRAWN BY	CHECKED BY
GSS/DKJ	DKJ	GSS

ESTIMATE OF STRUCTURE QUANTITIES

ITEM	UNIT	QUANTITY	REMARKS
Concrete Penetrating Sealer	SqYd	446.4	See Special Provisions
Incidental Work, Structure	Lump Sum	LS	
Structure Excavation, Bridge	CuYd	351.2	
Class A45 Concrete, Bridge Deck	CuYd	244.3	
Class A45 Concrete, Bridge	CuYd	157.0	
Controlled Density Fill	CuYd	6.9	
Type SL-1 Bridge Railing	Ft	250.0	
Reinforcing Steel	Lb	24,740	
Epoxy Coated Reinforcing Steel	Lb	73,976	
Extract Pile	Each	4	
Preboring Pile	Ft	100	
HP 10x42 Steel Test Pile, Furnish and Drive	Ft	310	
HP 10x42 Steel Bearing Pile, Furnish and Drive	Ft	2,000	
Class B Riprap	Ton	2,163.7	
Type B Drainage Fabric	SqYd	2,399	

SPECIFICATIONS FOR BRIDGE

1. Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition, with 2013 Interim Revisions.

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

Concrete	f'c = 4,500 psi
Reinforcing Steel	fy = 60,000 psi
Piling (ASTM A572 Grade 50)	fy = 50,000 psi

GENERAL CONSTRUCTION

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

2. All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.

3. Use 2" clear cover on all reinforcing steel except as shown.

4. Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02.

5. Rail posts shall be built normal to the grade.

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

7. The elevation of the bridge deck is 13" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

1. In place centerline Sta. 22+05.10 to 23+27.10 is a 122.0 ft. three span steel stringer bridge with a 30.1' clear roadway. The superstructure consists of a reinforced concrete deck with concrete pigeon hole railing supported by steel stringers. The deck has been overlaid with 2 1/2" of asphalt. The substructure consists of 2 column reinforced concrete bents and reinforced concrete vertical abutments, all of which are supported on timber piling.

2. Break down and remove the existing bridge, and approach slabs if applicable, to 1 foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Specifications. All portions of the existing bridge not salvaged for Union County, shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with Environmental Commitment H: Waste Disposal Site.

3. The existing steel I-beams shall be salvaged for future highway related use. The salvaged beams shall be loaded by the Contractor onto Union County trucks. Union County shall be notified 2 weeks prior to loading activity and the Contractor shall coordinate with the County to schedule. Care shall be taken during the dismantling, transporting and loading operation not to damage the structural properties of the salvaged items.

4. During demolition of the structure, efforts shall be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.

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

Rev. DKJ 5-6-2016

NOTICE – LEAD BASED PAINT

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

DESIGN MIX OF CONCRETE

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

2. Coarse aggregate to be used in concrete shall consist of either crushed quartzite or other crushed ledge rock. If crushed ledge rock other than quartzite is to be used, it shall be from a source approved by the Engineer.

ABUTMENTS

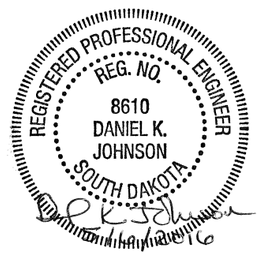
1. Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.

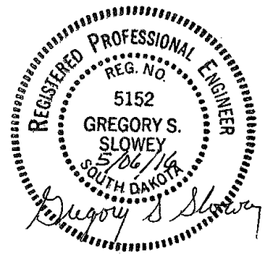
2. The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.

3. The Contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40.

4. Piles shall not be driven out of position by more than two inches in the direction normal to the abutment centerline. A pile-driving template shall be used to insure this accuracy.

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





ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR

132'-0 7/8" Continuous Concrete Bridge

Str. No. 64-010-119

DESIGNED BY	DRAWN BY:	CHECKED BY:	
GSS/DKJ	CAW	GSS/DKJ	

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO 8064(27)	30	43

FOR BIDDING PURPOSES ONLY

PIERS

1. The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.

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

3. The Contractor shall have sufficient pile splice material on hand before pile driving is started. See Plate No. 510.40.

COFFERDAMS

1. It is anticipated that cofferdams will be necessary. Preliminary evaluation by the Engineer indicates that a Foundation Seal for the Cofferdams should not be necessary. Cofferdams shall be designed and constructed in accordance with Section 423 of the Specifications.

2. 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, shall be submitted with the Cofferdam plans. The Cofferdam plans, design and check design shall be submitted to Johnson Engineering Co., 1800 Broadway Ave, Suite 3, Yankton, SD 57078. Adobe PDF documents can be submitted to email address (dkjjec@iw.net). The Cofferdam documents stated above shall be submitted to the above address for a 45 day length review period. The submitted documents will be reviewed by Johnson Engineering Co. and the Office of Bridge Design. After the review period the Contractor shall address all review comments for the Cofferdam and resubmit all documentation to the above address for final approval. Once final approval is received by the Contractor construction on the Cofferdam can begin.

PILE DRIVING

A drivability analysis was performed using the wave equation analysis program (GRLWEAP). The pile hammers listed below were evaluated and found to produce acceptable driving stresses. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity.

Delmag D25-32
Delmag D30-32
SPI D30

PILE EXTRACTION

1. It is possible that existing pile will interfere with the driving of new steel piling at abutments and piers.

2. Extract existing piling prior to driving new steel piling where interference occurs. Adjust the number of pile extracted as necessary, depending on the actual number of locations that existing pile interference is a problem.

3. All costs involved in extracting piling, including equipment and labor, shall be included in the contract unit price per each for Extract Pile. Adjustments to the quantity of pile extracted will be on a per each basis.

SUPERSTRUCTURE

1. Preplanned construction joints may be used in accordance with Section 460.3 of the Specifications. Contact the Office of Bridge Design for joint configuration and allowable location. Emergency slab construction joints shall 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 deck-finishing machine shall be adjusted and operated in such a manner that the roller screed or screeds are parallel with the centerline of the bridge and the finish machine is parallel to the skew of the bridge. Concrete placement in front of the finish machine shall be kept parallel to the machine.

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

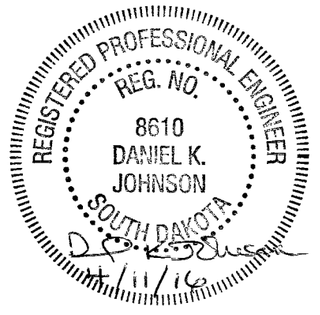
4. The bridge deck must be placed and finished continuously at a minimum rate of 22.0 ft. of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer shall order a header installed and operations stopped. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a minimum rate of 22.0 ft. of deck per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi.

CLASS A45 CONCRETE, BRIDGE DECK

1. Concrete used in the bridge deck slab shall be in accordance with the requirements for bridge deck concrete as specified in Section 460.3A of the Specifications. In addition, the concrete used in the bridge deck shall have Class F Modified Fly Ash substituted for a portion of the cement in accordance with Section 605 of the Specifications. The amount of cement to be replaced shall be 20 percent by weight. The ratio of substitution of fly ash to cement shall be 1:1 by weight.

2. The bridge deck concrete shall be placed and cured in accordance with the Special Provision for Bridge Deck Curing and Finishing.

3. See Special Provision for Concrete Penetrating Sealer.



ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR

132'-0 7/8" Continuous Concrete Bridge

Str. No. 64-010-119

SHEET 3 **OF** 12

DESIGNED BY	DRAWN BY:	CHECKED BY:	
GSS/DKJ	CAW	GSS/DKJ	

CONTROLLED DENSITY FILL

Controlled density fill shall be a flowable mortar material. Materials shall be in accordance with the Specifications, except as modified below. The mix design shall be:

Material	Rate per Cubic Yard
Portland Cement Type I, II, III, or V	200 Lb
Fine Aggregate	2600 Lb
Coarse Aggregate	None
Water	35 Gal
"W.R. Grace – Darafill" or approved equal	1 (3 oz.) capsule or equivalent *

* Shall be one 3 ounce capsule or equivalent CLSM (Controlled Low Strength Material) performance additive (foaming admixture).

The fine aggregate shall be natural sand consisting of mineral aggregate particles conforming to the following gradation requirements:

Passing 3/8 Inch Sieve	100%
Passing No. 200 Sieve	0-10%

The mix design shown above is designed to produce a minimum compressive strength of 100 psi. The Engineer may allow adjustments to the proportion of water at the site to provide the necessary consistency of the mix.

Controlled density fill shall be contained within the required limits with wooden forms, sand bags or other methods approved by the Engineer.

All costs for furnishing and installing the controlled density fill, including sandbags, labor, materials, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for "Controlled Density Fill." Plans quantity will be the basis for payment unless otherwise ordered by the Engineer.

FALSEWORK

The Contractor shall be required to include with his Falsework Plans, details for the construction of an adequate "Walk-Way" including railing. The maximum falsework deflection allowed is ¼ inch.

SHOP DRAWINGS

The fabricator shall submit shop plans in accordance with the Specifications or in Adobe PDF format to Johnson Engineering Company, 1800 Broadway Avenue, Suite 3, Yankton, SD 57078 (dkjjec@iw.net). After review, corrections (if necessary), and approval by Johnson Engineering Company, the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR

132'-0 7/8" Continuous Concrete Bridge

Str. No. 64-010-119

DESIGNED BY	DRAWN BY:	CHECKED BY:
GSS/DKJ	CAW	GSS/DKJ

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRO 8064(27)	32	43

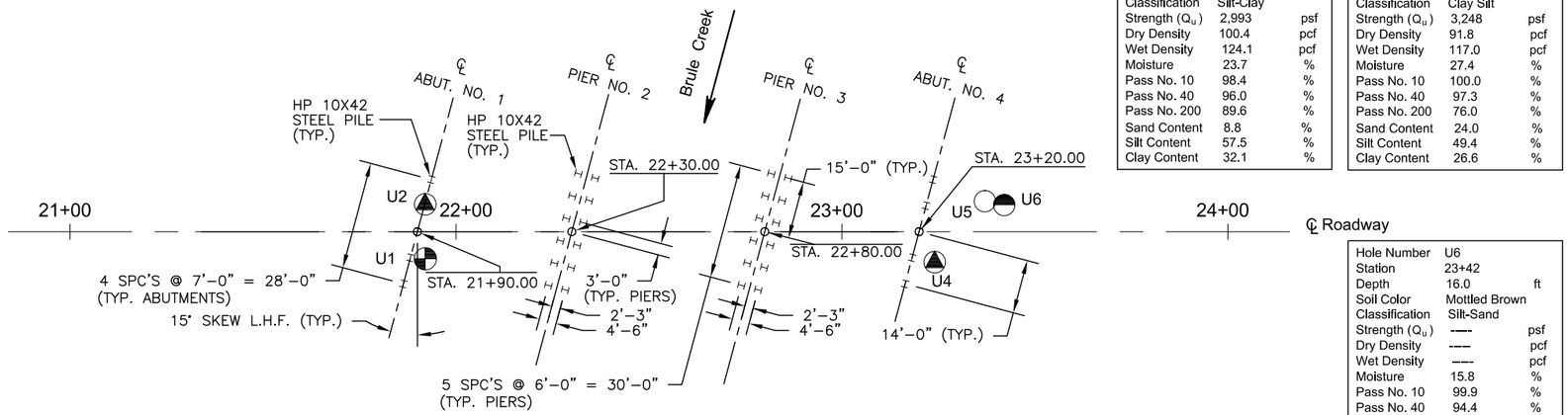
COFFERDAM SOIL PARAMETERS:

SILT-CLAY WITH SAND (ALLUVIUM)

Friction Angle	Φ	=	24 degrees
Cohesion	c	=	100 psf
Wet unit Weight	γ_w	=	120 pcf

SILT CLAY WITH SAND (GLACIAL TILL)

Friction Angle	Φ	=	22 degrees
Cohesion	c	=	450 psf
Wet unit Weight	γ_w	=	124 pcf

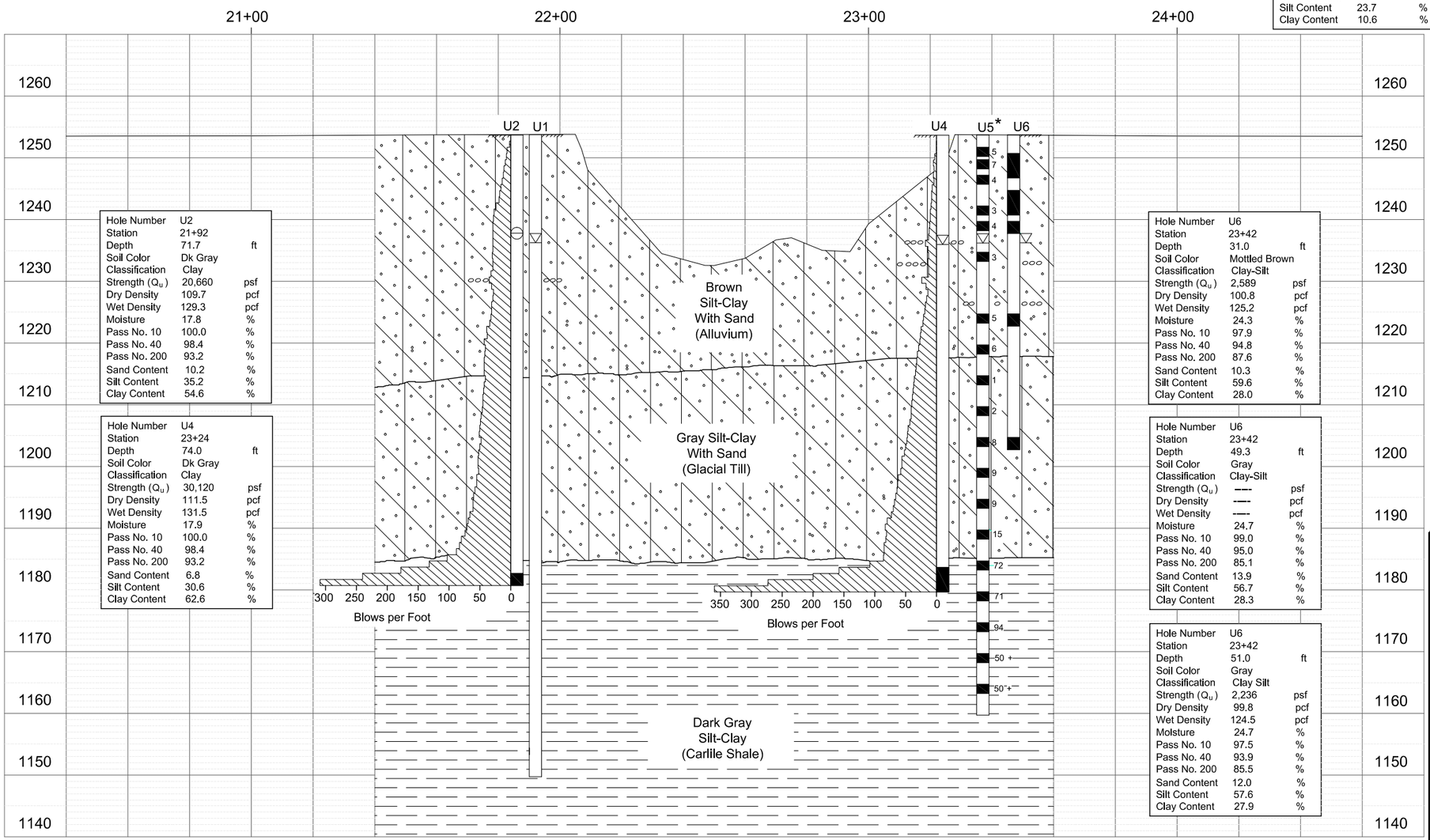


PILING LAYOUT

Hole Number	U6	
Station	23+42	
Depth	4[illegible]	ft
Soil Color	Brown	
Classification	Silt-Clay	
Strength (Q_u)	2,993	psf
Dry Density	100.4	pcf
Wet Density	124.1	pcf
Moisture	23.7	%
Pass No. 10	98.4	%
Pass No. 40	96.0	%
Pass No. 200	89.6	%
Sand Content	8.8	%
Silt Content	57.5	%
Clay Content	32.1	%

Hole Number	U6	
Station	23+42	
Depth	11[illegible]	ft
Soil Color	Dk Brown	
Classification	Clay Silt	
Strength (Q_u)	3,248	psf
Dry Density	91.8	pcf
Wet Density	117.0	pcf
Moisture	27.4	%
Pass No. 10	100.0	%
Pass No. 40	97.3	%
Pass No. 200	76.0	%
Sand Content	24.0	%
Silt Content	49.4	%
Clay Content	26.6	%

Hole Number	U6	
Station	23+42	
Depth	16.0	ft
Soil Color	Mottled Brown	
Classification	Silt-Sand	
Strength (Q_u)	-----	psf
Dry Density	-----	pcf
Wet Density	-----	pcf
Moisture	15.8	%
Pass No. 10	99.9	%
Pass No. 40	94.4	%
Pass No. 200	34.2	%
Sand Content	65.7	%
Silt Content	23.7	%
Clay Content	10.6	%



Hole Number	U2	
Station	21+92	
Depth	71.7	ft
Soil Color	Dk Gray	
Classification	Clay	
Strength (Q_u)	20,660	psf
Dry Density	109.7	pcf
Wet Density	129.3	pcf
Moisture	17.8	%
Pass No. 10	100.0	%
Pass No. 40	98.4	%
Pass No. 200	93.2	%
Sand Content	10.2	%
Silt Content	35.2	%
Clay Content	54.6	%

Hole Number	U4	
Station	23+24	
Depth	74.0	ft
Soil Color	Dk Gray	
Classification	Clay	
Strength (Q_u)	30,120	psf
Dry Density	111.5	pcf
Wet Density	131.5	pcf
Moisture	17.9	%
Pass No. 10	100.0	%
Pass No. 40	98.4	%
Pass No. 200	93.2	%
Sand Content	6.8	%
Silt Content	30.6	%
Clay Content	62.6	%

Hole Number	U6	
Station	23+42	
Depth	31.0	ft
Soil Color	Mottled Brown	
Classification	Clay-Silt	
Strength (Q_u)	2,589	psf
Dry Density	100.8	pcf
Wet Density	125.2	pcf
Moisture	24.3	%
Pass No. 10	97.9	%
Pass No. 40	94.8	%
Pass No. 200	87.6	%
Sand Content	10.3	%
Silt Content	59.6	%
Clay Content	28.0	%

Hole Number	U6	
Station	23+42	
Depth	49.3	ft
Soil Color	Gray	
Classification	Clay-Silt	
Strength (Q_u)	-----	psf
Dry Density	-----	pcf
Wet Density	-----	pcf
Moisture	24.7	%
Pass No. 10	99.0	%
Pass No. 40	95.0	%
Pass No. 200	85.1	%
Sand Content	13.9	%
Silt Content	56.7	%
Clay Content	28.3	%

Hole Number	U6	
Station	23+42	
Depth	51.0	ft
Soil Color	Gray	
Classification	Clay Silt	
Strength (Q_u)	2,236	psf
Dry Density	99.8	pcf
Wet Density	124.5	pcf
Moisture	24.7	%
Pass No. 10	97.5	%
Pass No. 40	93.9	%
Pass No. 200	85.5	%
Sand Content	12.0	%
Silt Content	57.6	%
Clay Content	27.9	%

Carlile Shale is a marine shale with a textural classification that varies from silt-clay to sandyclay. Color varies from dark-gray to black. The formation contains large fossiliferous concretions, interbedded layers of buff colored sandstone and sandy calcareous marl.

The Geotechnical Engineering Activity has on file all of the boring logs for this project. These logs and additional results of laboratory test, if any, are available for review at the Central Office in Pierre.

All auger holes are drilled with a 4 1/2 inch diameter continuous flight auger. Penetration and Push Test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Push core samples are obtained by hydraulically ramming a 2.0 foot long lined split spoon sampler into the soil to obtain 2.0 inch nominal diameter soil samples.

Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.

Drive test are conducted by dropping a 490 pound hammer 30 inches to drive a 2 7/8 inch drill stem with attached retractable plug sampler for taking samples and to measure the resistance to penetration of the soil.

GROUND WATER ELEVATIONS

as of May 2012

U1		1236.2
U2	(Caved)	1237.8
U4		1236.0
U5		1236.2
U6		1236.2

MEASURED SKIN FRICTION

	Elev	psf
U2	1180.7	694
U4	1179.7	574

* Values represent uncorrected "N" values from Penetration Test.

Blows Per Foot 48 Sample Zone

+ Refusal of the penetration test was achieved based on 50 blows within 6 inches or less.

LEGEND

Auger Test
Drive Test
Push Test
Water
Caved
Penetration Test
Sample Zone

SITE PLAN & SUBSURFACE PROFILE FOR 132'-0 7/8" CONTINUOUS CONCRETE BRIDGE

30'–0" ROADWAY
BRULE CREEK
STA. 21+88.96 TO 23+21.04
STRUCTURE NO. 64–010–119

15° SKEW LHF
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UNION COUNTY
SOUTH DAKOTA

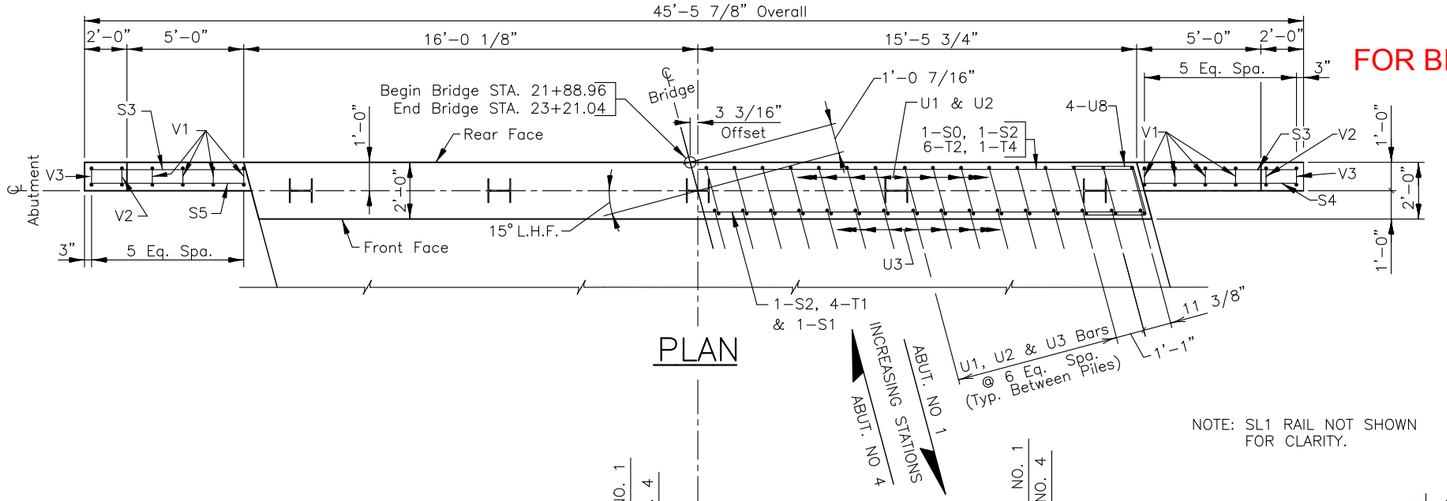
HL93

JULY 2014 SHEET (5) OF (12)

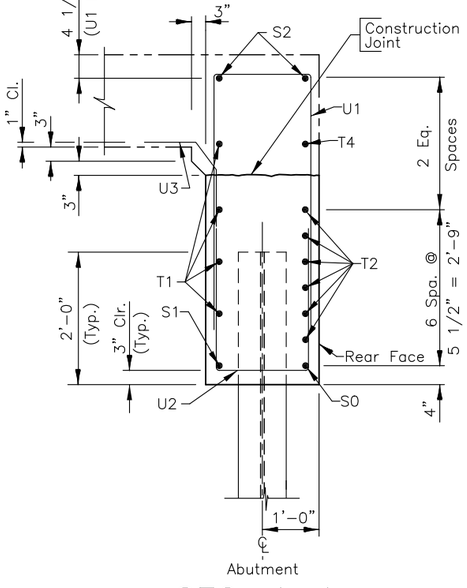
DESIGNED BY	DRAWN BY	CHECKED BY
	NN	DV

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	33	43

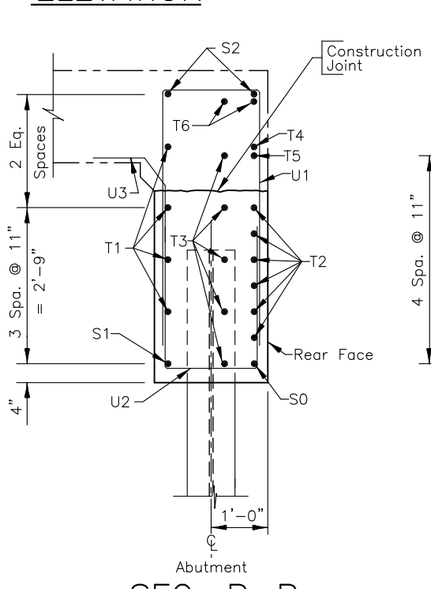
FOR BIDDING PURPOSES ONLY



ELEVATION



SEC. A-A



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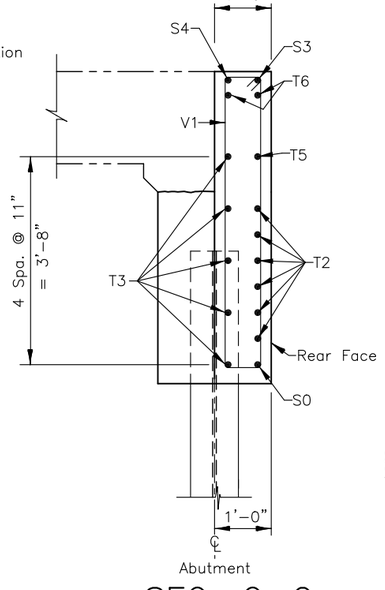
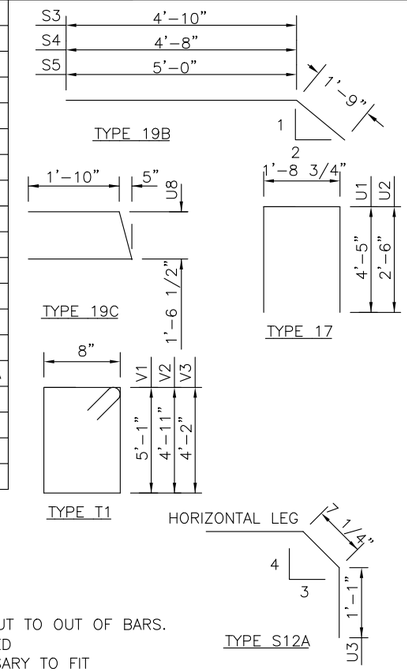


SEC. C-C

REINFORCING SCHEDULE
(FOR ONE ABUTMENT)

MK.	NO.	SIZE	LENGTH	TYPE
S0	1	9	45'-2"	STR.
S1	1	9	31'-1"	STR.
≠△ S2	2	9	31'-1"	STR.
△ S3	2	9	6'-7"	19B
△ S4	1	9	6'-5"	19B
△ S5	1	9	6'-9"	19B
≠ T1	4	5	31'-1"	STR.
T2	6	7	45'-2"	STR.
T3	10	5	8'-10"	STR.
≠△ T4	1	5	31'-1"	STR.
T5	2	7	10'-11"	STR.
△ T6	4	7	10'-0"	STR.
△ U1	32	6	10'-7"	17
U2	32	4	6'-9"	17
△ U3	32	4	2'-10"	S12A
U8	8	5	5'-9"	19C
V1	8	4	12'-3"	T1
V2	2	4	12'-0"	T1
V3	2	4	10'-5"	T1

BENDING DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS.
△ BARS TO BE EPOXY COATED
≠ BEND IN FIELD AS NECESSARY TO FIT

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		ABUT. NO. 1	ABUT. NO. 4
CLASS A45 CONCRETE, BRIDGE	Cu.Yd.	11.0	11.0
REINFORCING STEEL	Lb.	1368	1368
EPOXY COATED REINFORCING STEEL	Lb.	985	985
STRUCTURE EXCAVATION, BRIDGE	Cu.Yd.	8.4	8.4
PREBORING PILE	Ft.	50	50
EXTRACT PILE	Ea.	0	2
HP 10X42 STEEL TEST PILE, FURNISH & DRIVE	Ft.	1 @ 90' = 90'	1 @ 90' = 90'
HP 10X42 STEEL BEARING PILE, FURNISH & DRIVE	Ft.	4 @ 85' = 340'	4 @ 85' = 340'

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5152
GREGORY S. SLOWEY
4/11/16
SOUTH DAKOTA

ABUTMENT DETAILS FOR 132'-0 7/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
BRULE CREEK
STA. 21+88.96 TO 23+21.04
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PREPARED BY:
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YANKTON, SOUTH DAKOTA

HL93

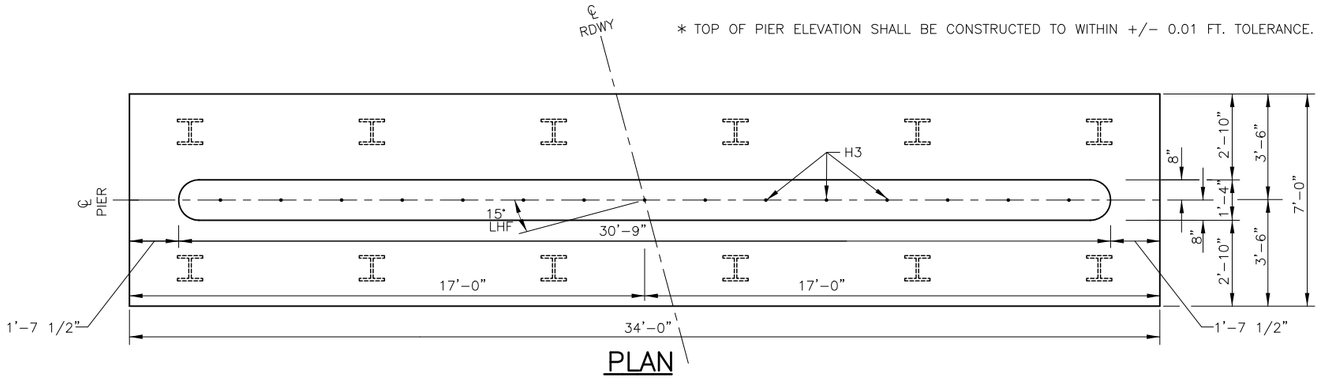
JULY 2014

SHEET (6) OF (12)

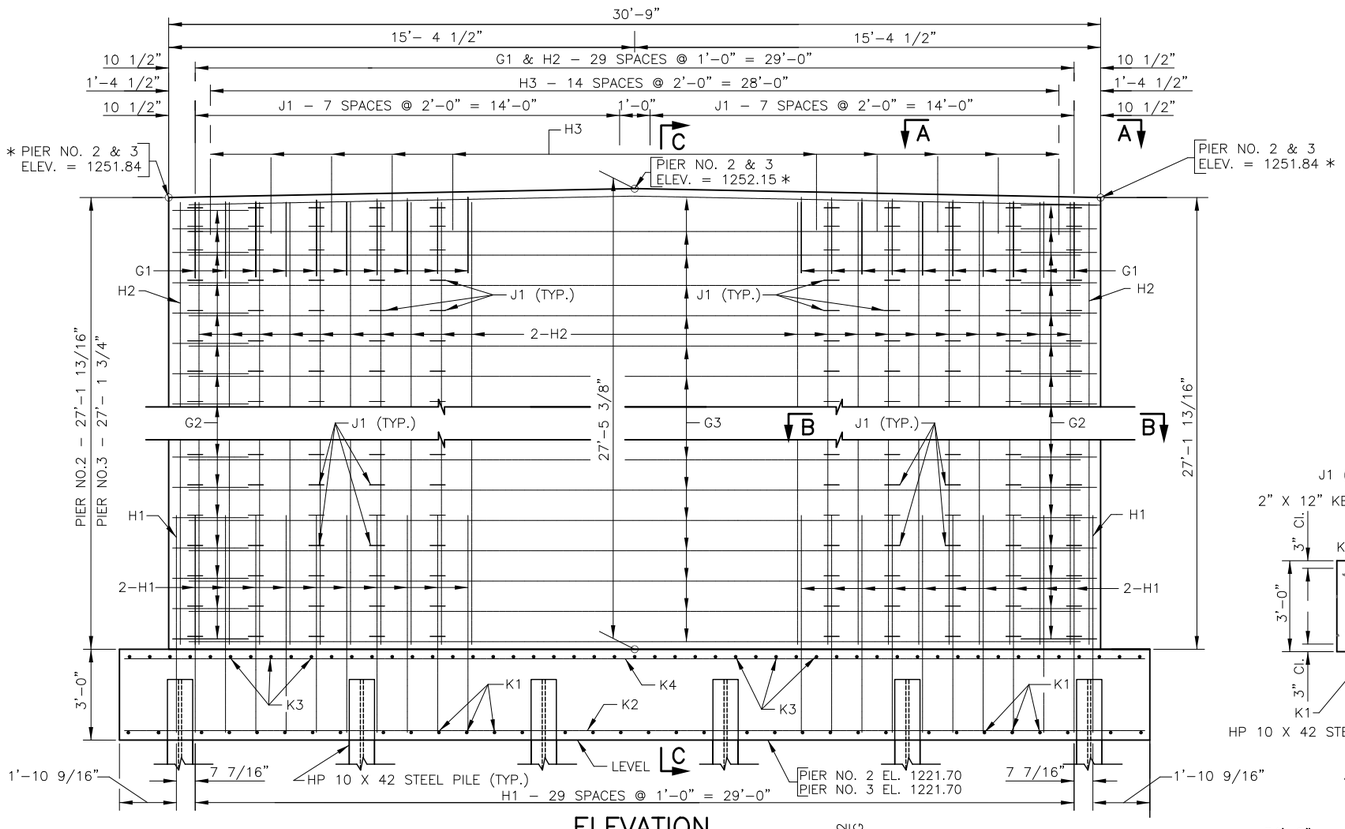
DESIGNED BY	DRAWN BY	CHECKED BY
GSS	MJG	DKJ

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	34	43

* TOP OF PIER ELEVATION SHALL BE CONSTRUCTED TO WITHIN +/− 0.01 FT. TOLERANCE.

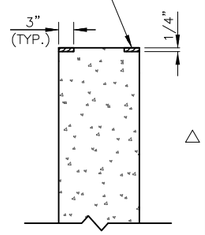


PLAN



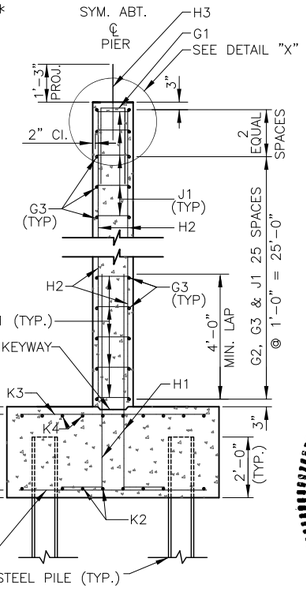
ELEVATION

1/4" X 3" PREFORMED EXPANSION JOINT FILLER (TYP.). THIS WORK IS INCIDENTAL TO THE CLASS A45 CONCRETE, BRIDGE BID ITEM.



DETAIL "X"

INCREASING STATIONING

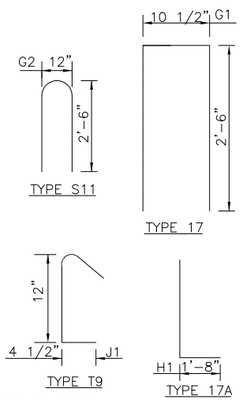


SECTION C−C

REINFORCING SCHEDULE

(For one Pier)

MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
G1	30	7	5'−11"	17	
G2	56	4	5'−8"	S11	
G3	56	4	29'−5"	STR.	
H1	62	9	9'−10"	17A	
H2	62	9	26'−10"	STR.	
H3	15	5	2'−6"	STR.	
J1	448	4	1'−9"	T9	
K1	34	6	6'−8"	STR.	
K2	8	5	33'−8"	STR.	
K3	51	4	6'−8"	STR.	
K4	10	4	33'−8"	STR.	

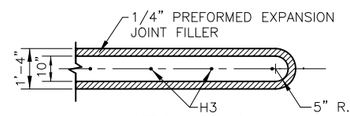


△ BARS TO BE EXPOXY COATED
NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS

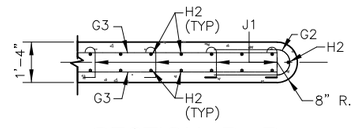
ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY	
		PIER No. 2	PIER No. 3
CLASS A45 CONCRETE, BRIDGE	Cu.Yd.	67.5	67.5
REINFORCING STEEL	Lb.	11,002	11,002
EPOXY COATED REINFORCING STEEL	Lb.	39	39
STRUCTURE EXCAVATION, BRIDGE	Cu.Yd.	167.2	167.2
EXTRACT PILE	Each	0	2
HP 10 X 42 STEEL TEST PILE, FURNISH & DRIVE	Ft.	1 @ 65' = 65'	1 @ 65' = 65'
HP 10 X 42 STEEL BEARING PILE, FURNISH & DRIVE	Ft.	11 @ 60' = 660'	11 @ 60' = 660'

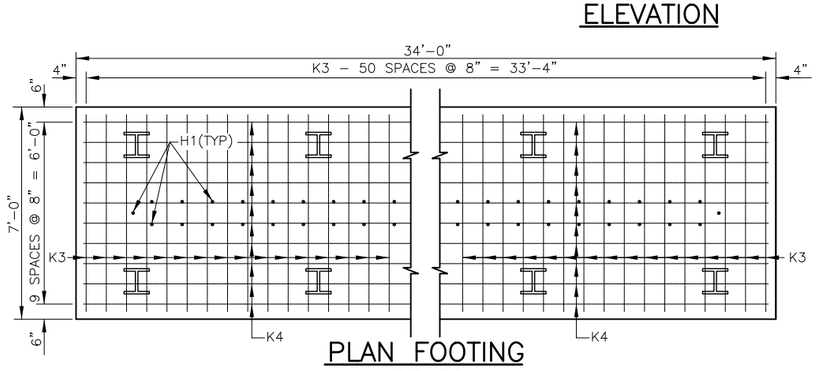
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 5152
GREGORY S. SLOWEY
4/11/16
SOUTH DAKOTA
Gregory S. Slowey



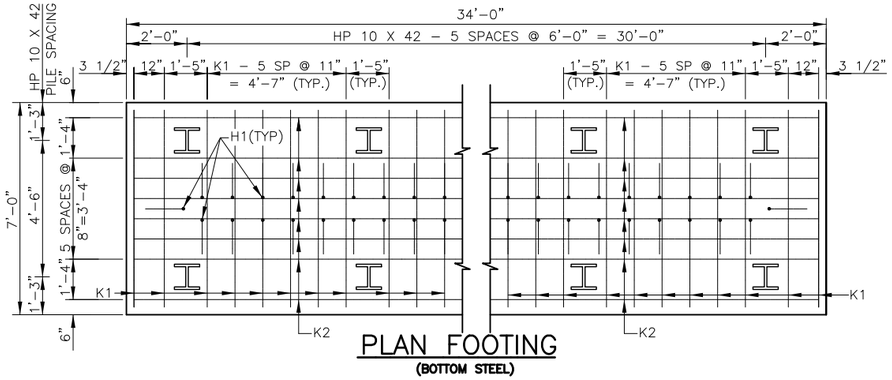
VIEW A−A



SECTION B−B



PLAN FOOTING
(TOP STEEL)



PLAN FOOTING
(BOTTOM STEEL)

PIER DETAILS FOR 132'−0 7/8" CONTINUOUS CONCRETE BRIDGE

30'−0" ROADWAY
BRULE CREEK
STA. 21+88.96 TO 23+21.04
STRUCTURE NO. 64−010−119

15° SKEW LHF
SEC. 31/32−T94N−R50W
BRO 8064(27)
PCN 01DZ

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

HL93

JULY 2014

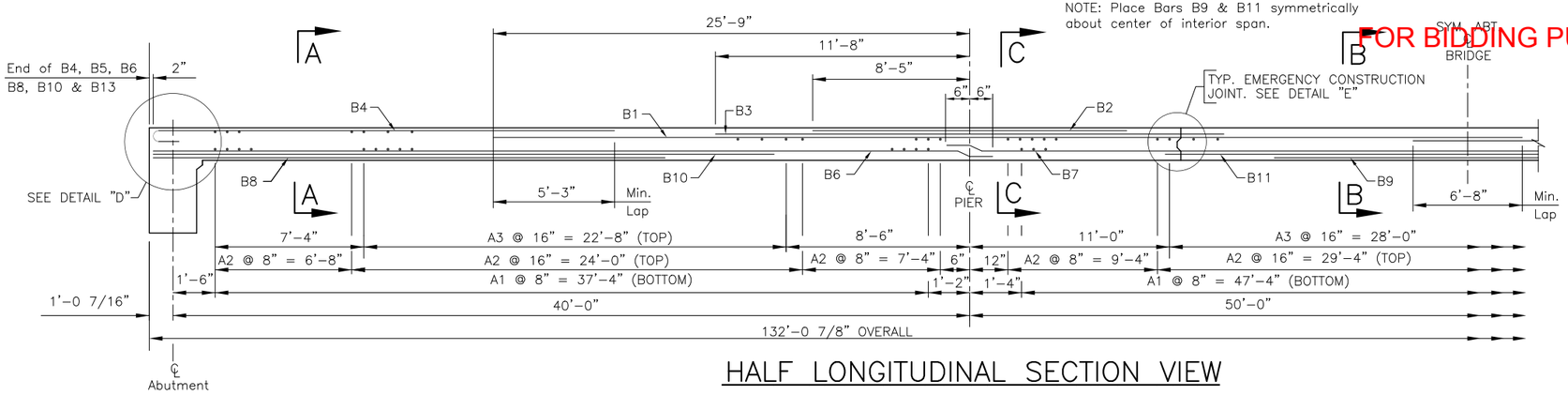
SHEET (7) OF (12)

DESIGNED BY	DRAWN BY	CHECKED BY
GSS	MJG	DKJ

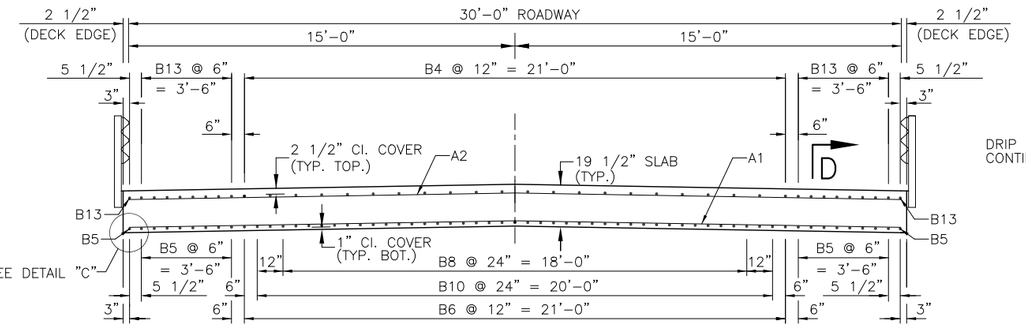
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	35	43

FOR BIDDING PURPOSES ONLY

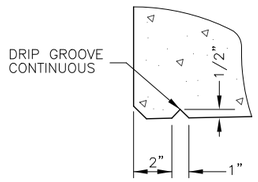
NOTE: Place Bars B9 & B11 symmetrically about center of interior span.



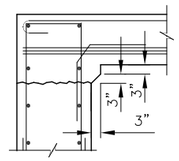
HALF LONGITUDINAL SECTION VIEW



SEC. A-A



DETAIL "C"



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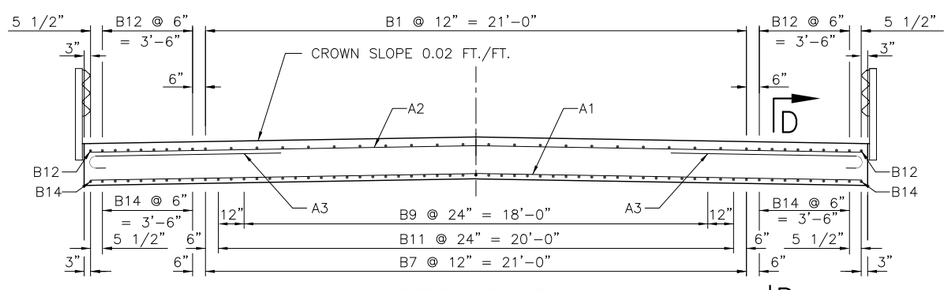
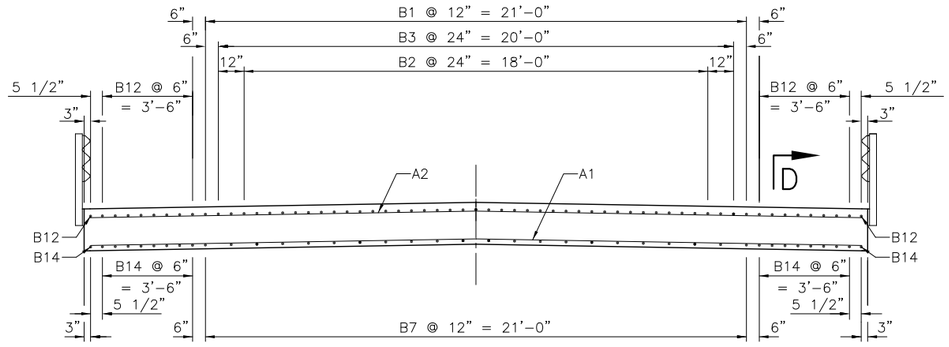
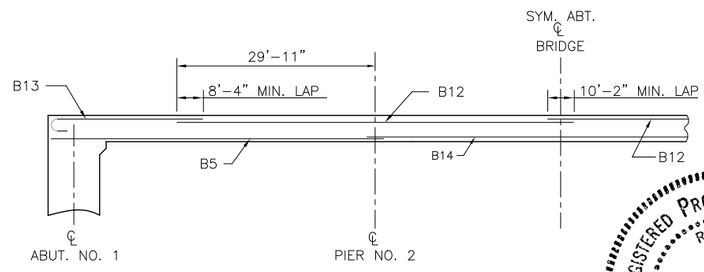


SEC. B-B

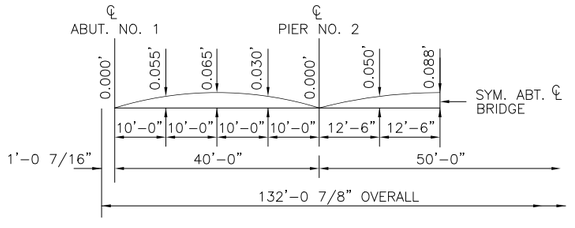


SEC. C-C



SECTION D-D
(EDGE BEAM)

NOTE:
FOR RAIL POST ANCHOR DETAILS, SEE SHEET No. 9 OF 12

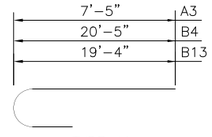


CAMBER DIAGRAM

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.

REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
A1	186	6	31'-2"	STR.	
A2	131	5	31'-2"	STR.	
A3	116	5	8'-0"	1A	
B1	44	10	54'-1"	STR.	
B2	20	10	16'-10"	STR.	
B3	22	10	23'-4"	STR.	
B4	44	9	21'-8"	1A	
B5	36	10	41'-5"	STR.	
B6	44	9	41'-5"	STR.	
B7	22	9	51'-0"	STR.	
B8	20	9	25'-8"	STR.	
B9	10	9	19'-0"	STR.	
B10	22	9	30'-11"	STR.	
B11	11	9	29'-0"	STR.	
B12	36	11	60'-0"	STR.	
B13	36	10	20'-9"	1A	
B14	18	10	51'-0"	STR.	

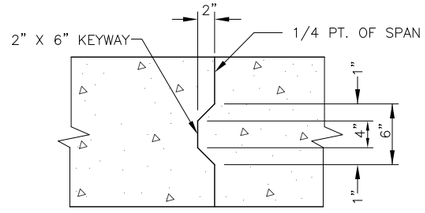


TYPE 1A

NOTES:
ALL DIMENSIONS ARE OUT TO OUT OF BARS.
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE PENETRATING SEALER	Sq.Yd.	446.4
CLASS A45 CONCRETE, BRIDGE DECK	Cu.Yd.	244.3
EPOXY COATED REINFORCING STEEL	Lb.	71,928



DETAIL "E"

REGISTERED PROFESSIONAL ENGINEER
REG. NO 5152
GREGORY S. SLOWEY
SOUTH DAKOTA
9/1/16
Gregory S. Slowey

SUPERSTRUCTURE DETAILS FOR 132'-0 7/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
BRULE CREEK
STA. 21+88.96 TO 23+21.04
STRUCTURE NO. 64-010-119

15° SKEW LHF
SEC. 31/32-T94N-R50W
BRO 8064(27)
PCN 01DZ

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

HL93

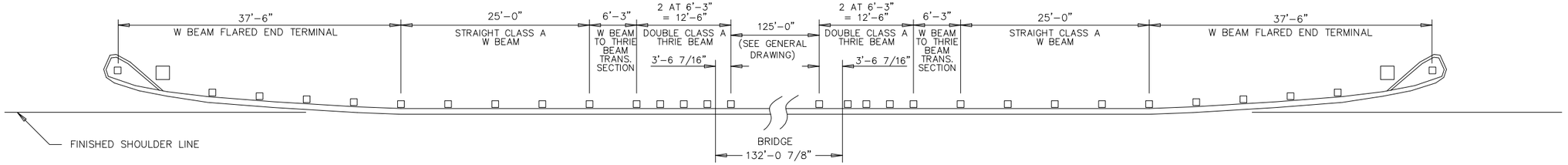
JULY 2014

SHEET (8) OF (12)

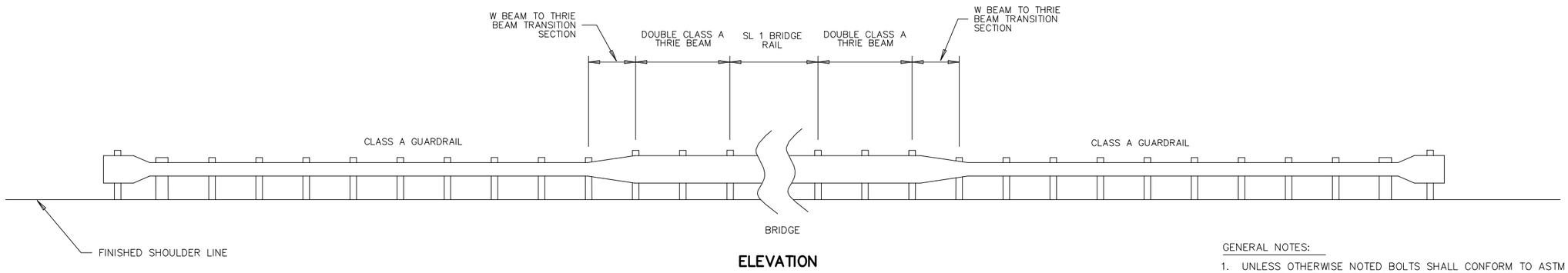
DESIGNED BY	DRAWN BY	CHECKED BY
GSS	MJG	DKJ

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	36	43



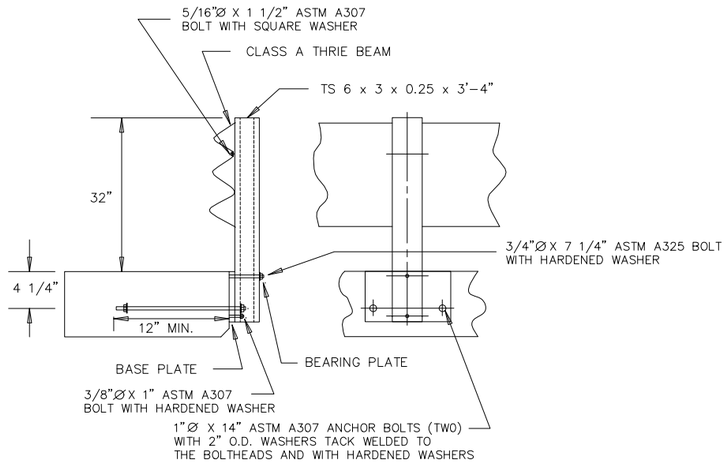
PLAN



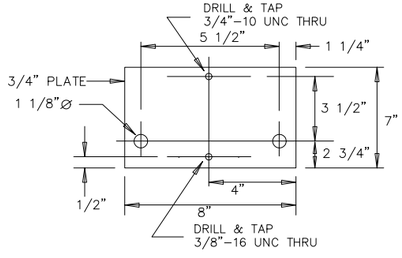
ELEVATION

GENERAL NOTES:

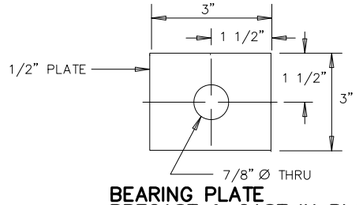
1. UNLESS OTHERWISE NOTED BOLTS SHALL CONFORM TO ASTM A307 AND NUTS TO ASTM A563, GRADE A OR BETTER. OTHER BOLTS SHALL CONFORM TO ASTM A325 AND NUTS TO ASTM A363, GRADE C OR BETTER. ALL NUTS AND BOLTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
2. STEEL SHALL CONFORM TO ASTM A36 OR EQUIVALENT AND BE GALVANIZED ACCORDING TO ASTM A123.
3. POST ELEMENTS SHALL CONFORM TO ASTM A500 GRADE B OR ASTM A501 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
4. PAYMENT FOR STEEL POST SL 1 BRIDGE RAIL SHALL BE FROM THE CENTER OF THE FIRST BRIDGE RAILPOST TO THE CENTER OF THE LAST BRIDGE RAILPOST ON EACH SIDE OF THE BRIDGE.



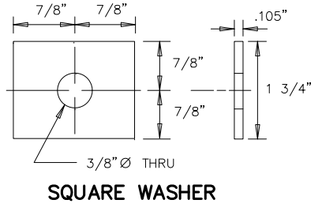
SL 1 BRIDGE RAIL CAST IN PLACE DECK



BASE PLATE CAST IN PLACE DECK



BEARING PLATE PRECAST & CAST IN PLACE DECK



SQUARE WASHER

ESTIMATE OF QUANTITIES

ITEM	UNIT	QUANTITY
Type SL-1 Bridge Railing	Ft	250.0
Straight Double Class A Thrie Beam Guardrail with Wood Posts	Ft	50
Straight Class A W Beam Guardrail with Wood Posts	Ft	100
W Beam to Thrie Beam Guardrail Transition	Each	4
W Beam Guardrail Flared End Terminal	Each	4

SL 1 BRIDGE RAILING DETAILS FOR 132'-0 7/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
BRULE CREEK
STA. 21+88.96 TO 23+21.04
STRUCTURE NO. 64-010-119

15° SKEW LHF
SEC. 31/32-T94N-R50W
BRO 8064(27)
PCN 01DZ

UNION COUNTY
SOUTH DAKOTA

HL93

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

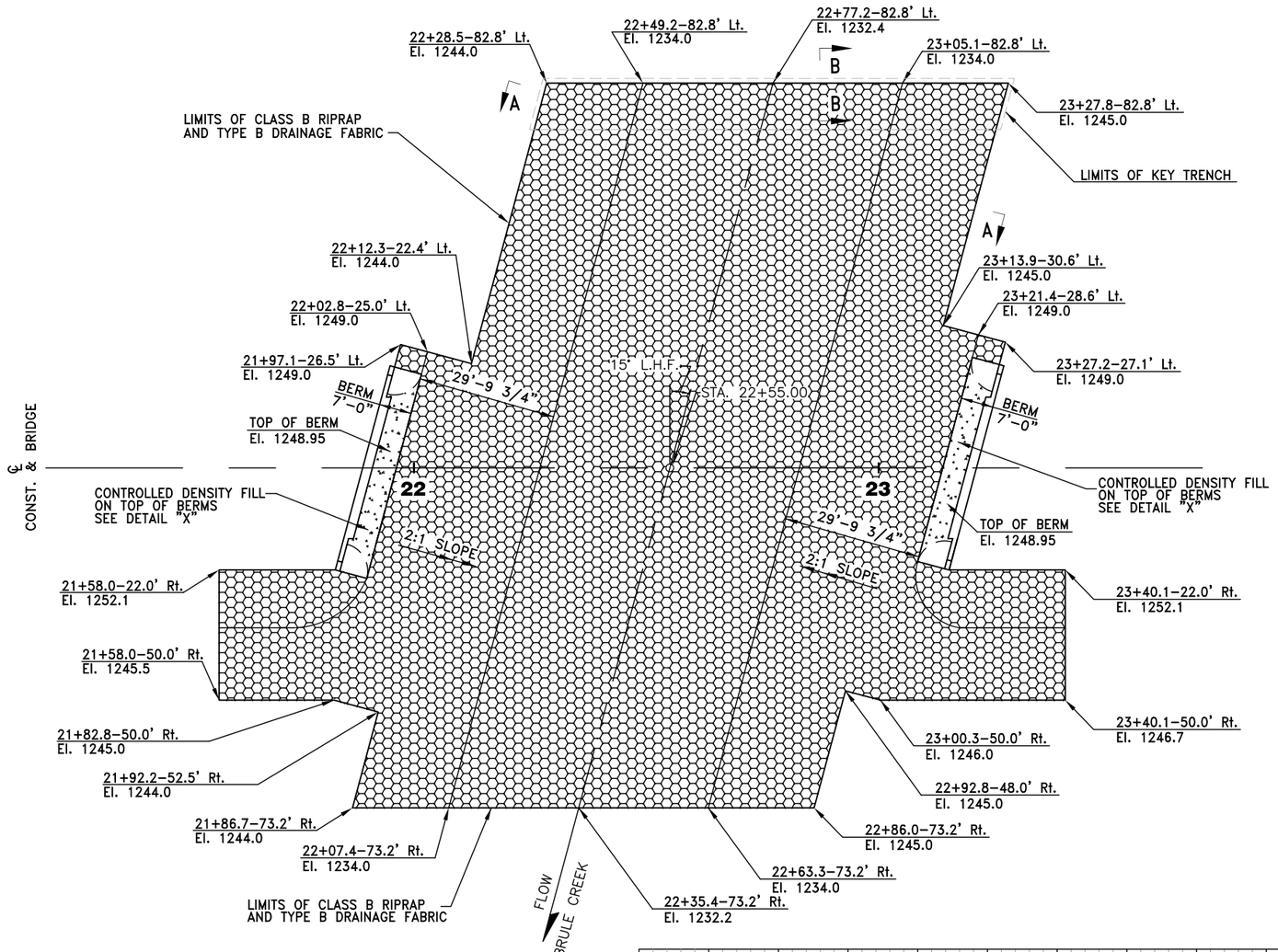
JULY 2014

SHEET (9) OF (12)

DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	DKJ	PSJ

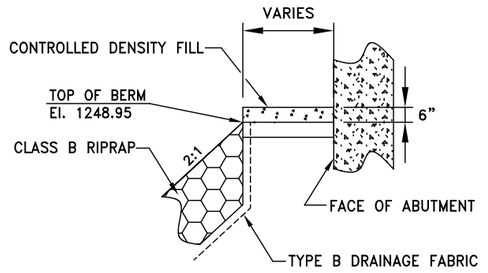
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	37	43

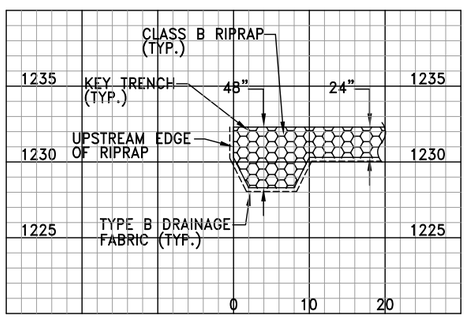


PLAN

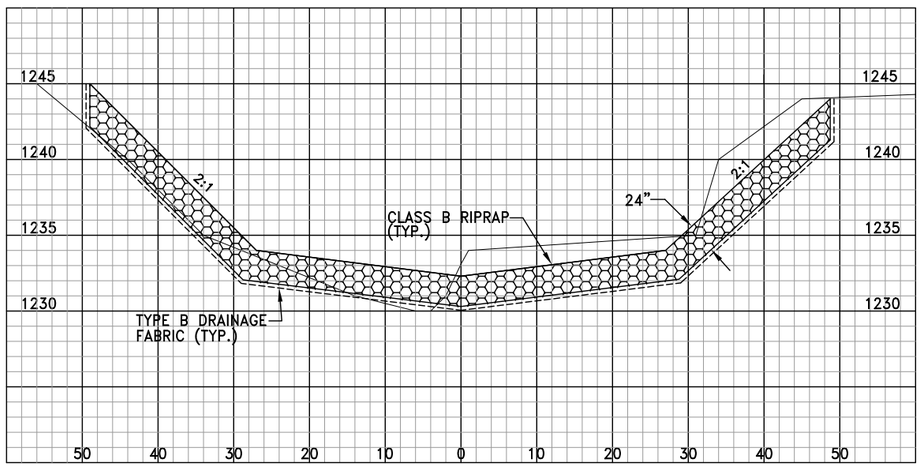
SCALE: 1" = 30'



DETAIL "X"



SECTION B–B



SECTION A–A

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8610
DANIEL K. JOHNSON
SOUTH DAKOTA
11/16

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
△	Class B Riprap	Ton	2,163.7
	Type B Drainage Fabric	SqYd	2,399
	Controlled Density Fill	CuYd	6.9

△ For estimating purposes only a factor of 1.4 Tons/CuYd was used to convert CuYd to Tons.

RIPRAP LAYOUT FOR 132'–0 7/8" CONTINUOUS CONCRETE BRIDGE

30'–0" ROADWAY
OVER BRULE CREEK
STA. 21+88.96 TO 23+21.04
STRUCTURE NO. 64–010–119

15° SKEW L.H.F.
SEC. 31/32–T94N–R50W
BRO 8064(27)
PCN 01DZ

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

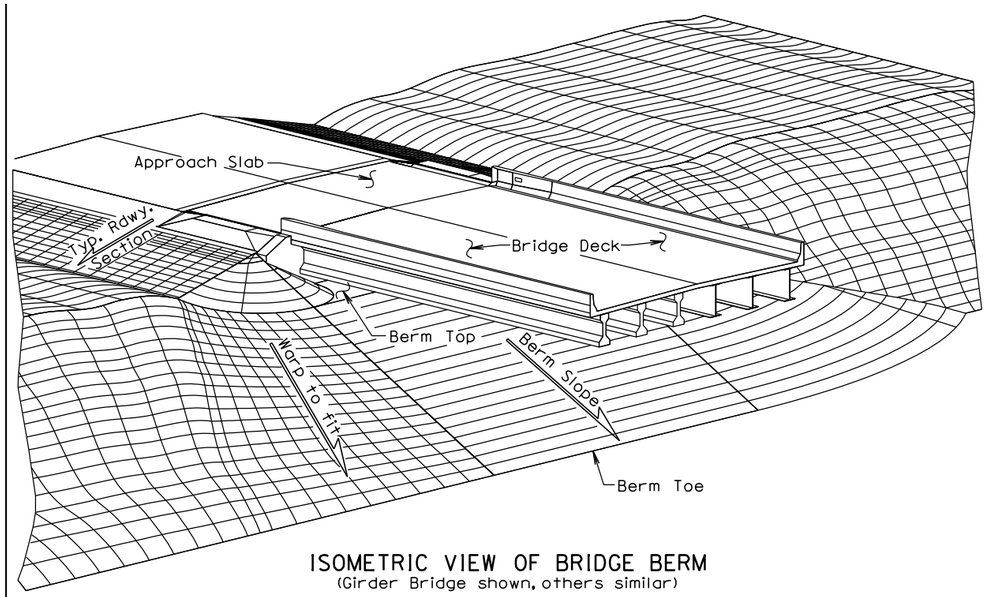
HL93

JULY 2014

SHEET (10) OF (12)

DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	DKJ	PSJ

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	38	43

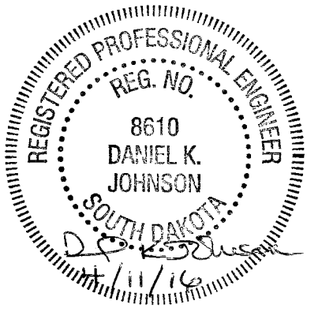


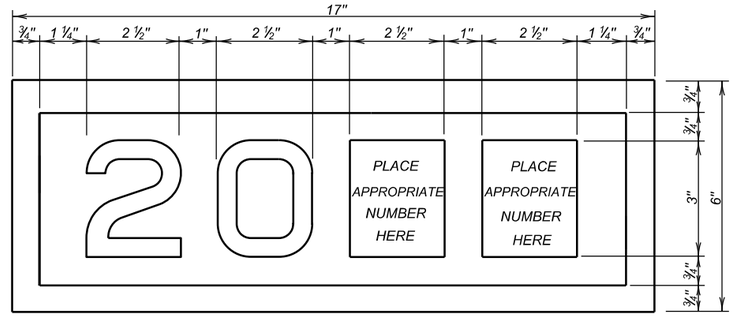
ISOMETRIC VIEW OF BRIDGE BERM
(Girder Bridge shown, others similar)

GENERAL NOTE:

The bridge berm elevation and slope shall be as shown in the structure plans.

BRIDGE BERM
(NONPROJECTING EMBANKMENT)





YEAR PLATE DETAILS

GENERAL NOTES:

1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall 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 (½) inch in depth.

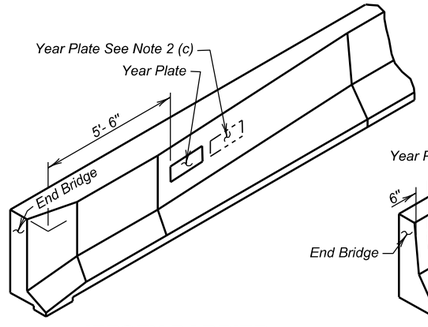
2. Year plates shall be located on structure (s) as follows:

   a. On cast-in-place box culverts the year plates shall 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 shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.

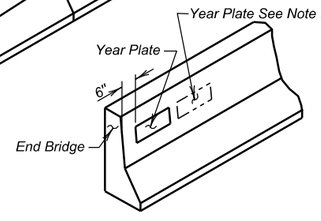
   b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'- 6" from the end of the bridge, or as designated by the Engineer. There shall 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 shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.

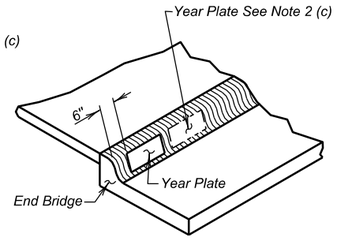
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



JERSEY BARRIER
(With Endblock)



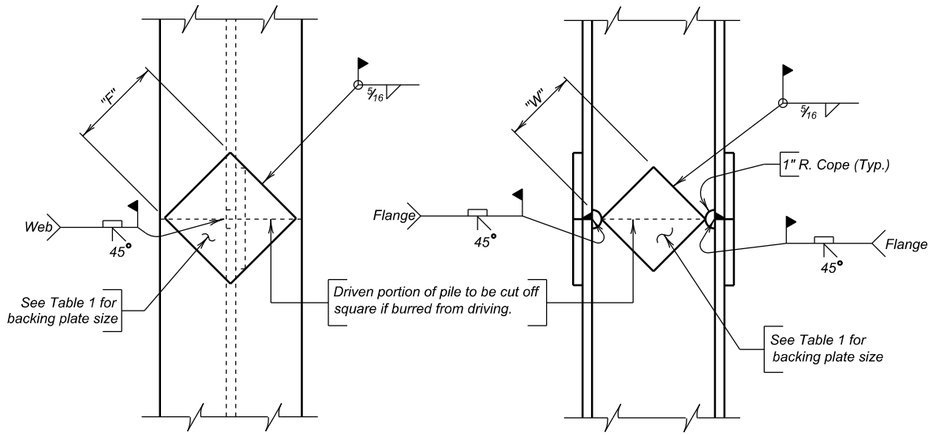
JERSEY BARRIER



TYPE B CURB

June 26, 2012

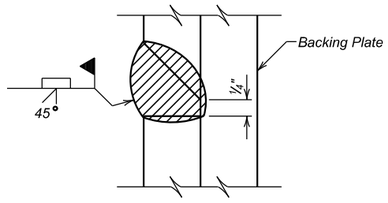
Published Date: 2nd Qtr. 2016	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1



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:

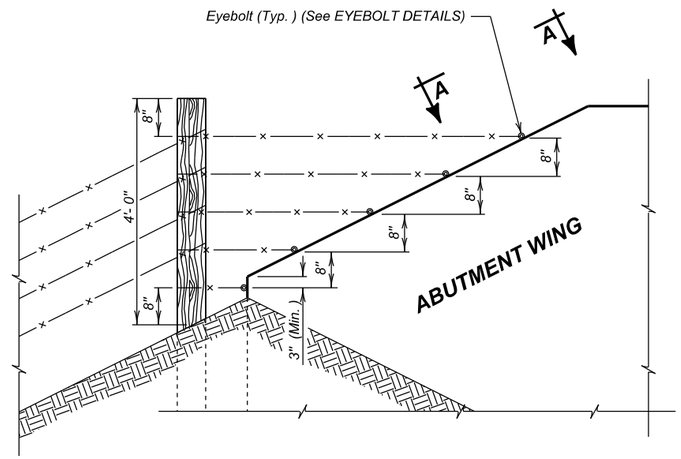
1. Steel for backing plates shall conform to ASTM A709 Grade 50.
2. Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
3. Welder must be certified and registered with the SDDOT.
4. Backing plate shall at a minimum be as thick as the web of the 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

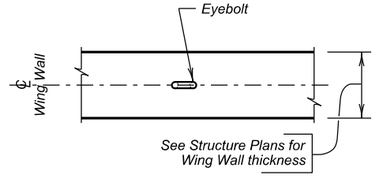
Published Date: 2nd Qtr. 2016	SDDOT	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1



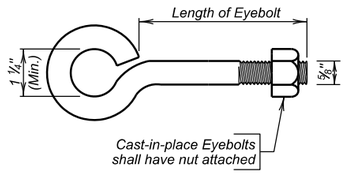
DETAIL FOR FENCE ANCHORS

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

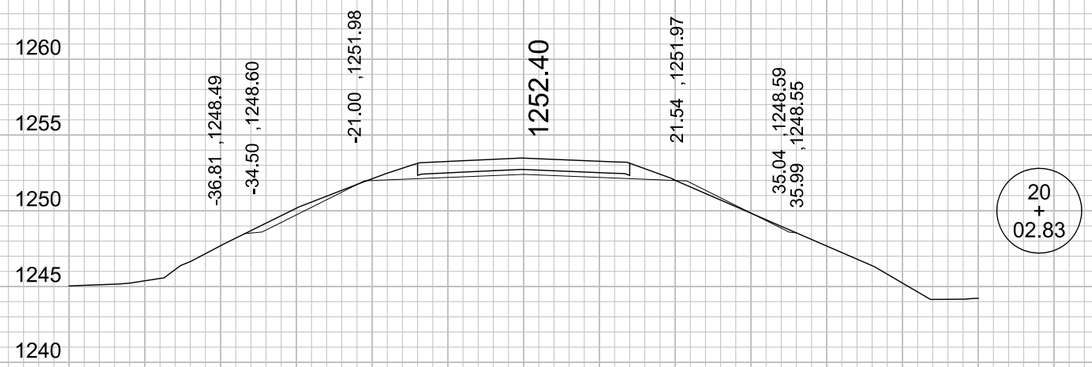
December 23, 2012

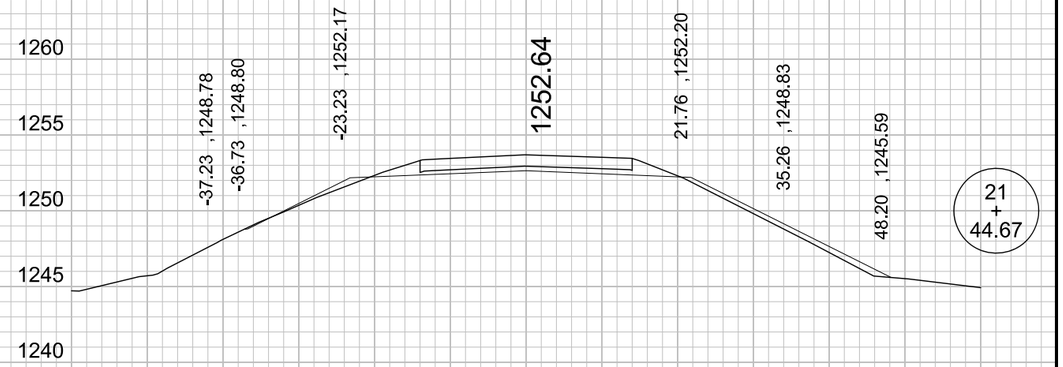
Published Date: 2nd Qtr. 2016	SDDOT	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS LONGER THAN 6')	PLATE NUMBER 620.17
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	40	43

FOR BIDDING PURPOSES ONLY

20+02.83 LT.
BEGIN SUBGRADE TAPER
FOR APPROACH GUARDRAIL





19+94.67 RT.
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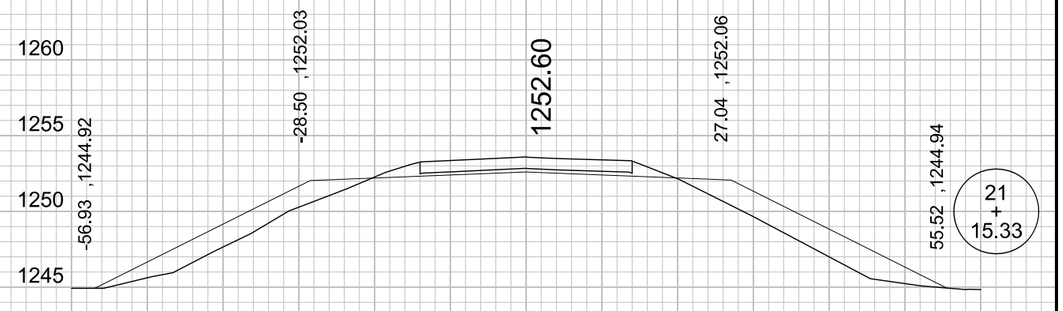
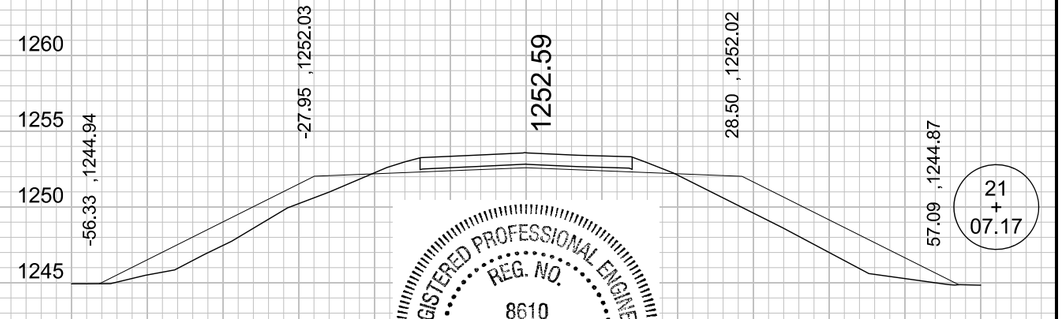
FOR APPROACH GUARDRAIL





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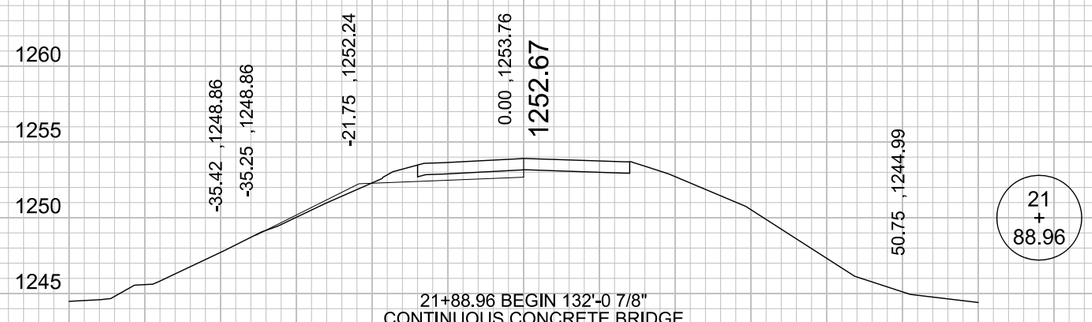
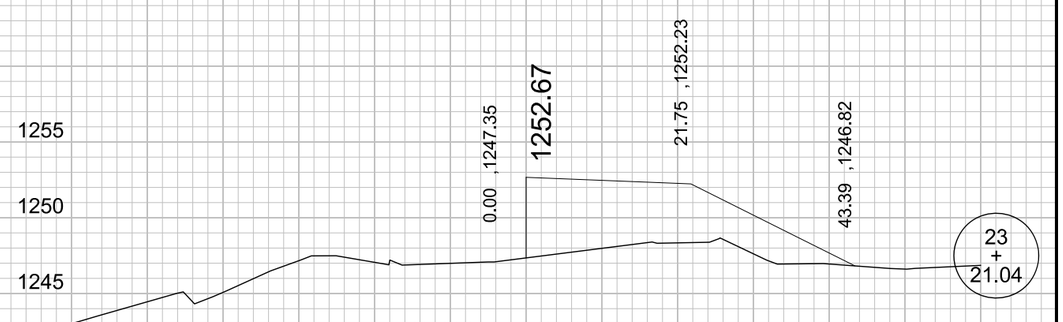
4/11/16

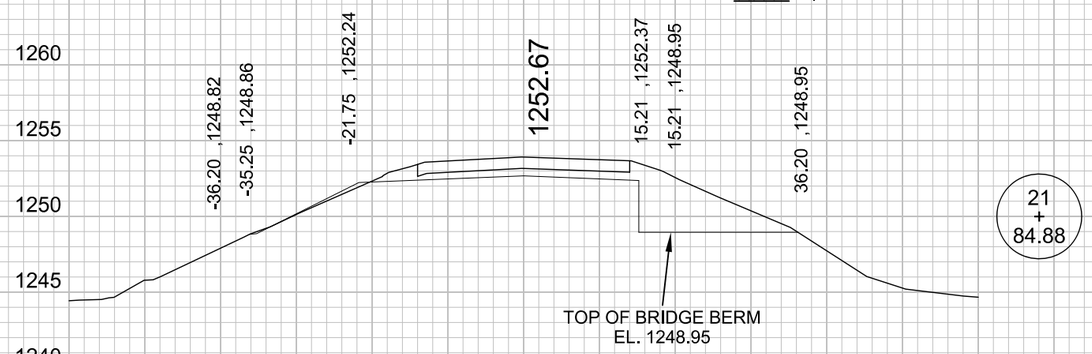
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	41	43

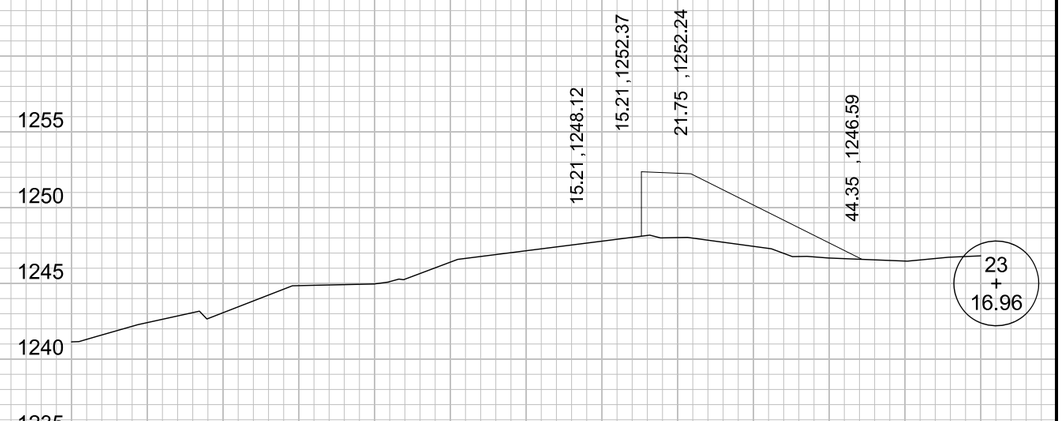
FOR BIDDING PURPOSES ONLY

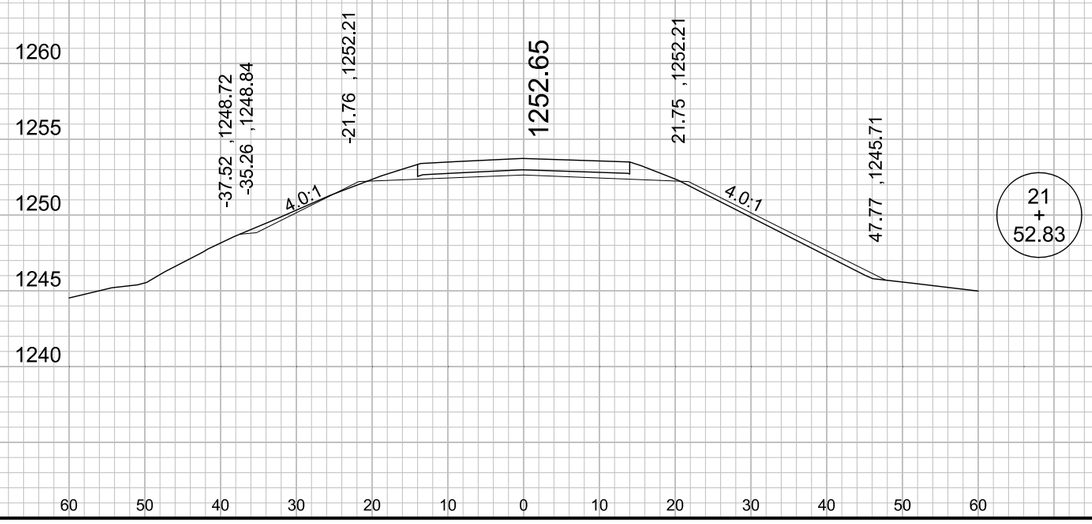


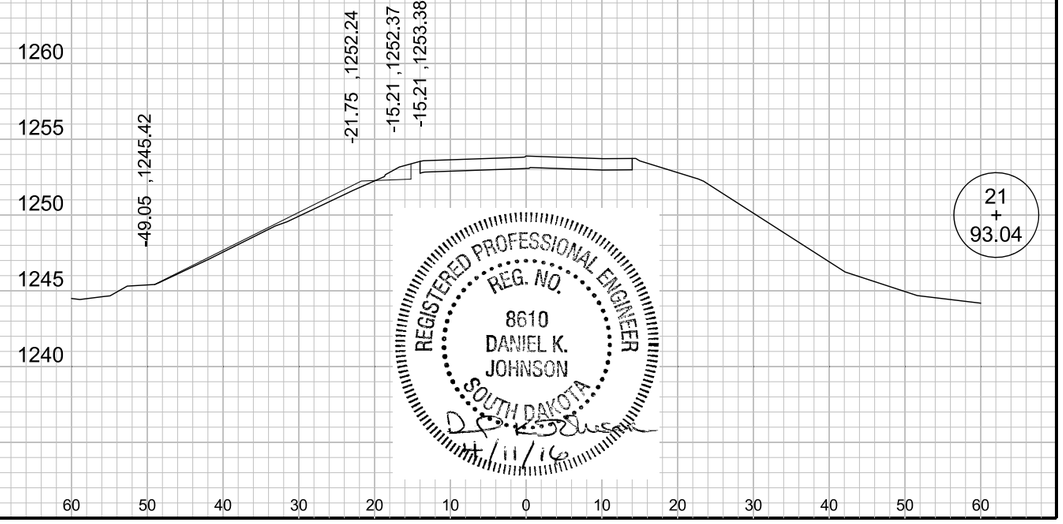


21+58.0 TO 23+40.1 LT. & RT. ON CHANNEL BANKS AND CHANNEL BOTTOM
INSTALL 2,163.7 Ton OF CLASS B RIPRAP
RIPRAP SHALL BE A MINIMUM OF 24" THICK AND
INSTALL 2,399 SqYd OF TYPE B DRAINAGE FABRIC









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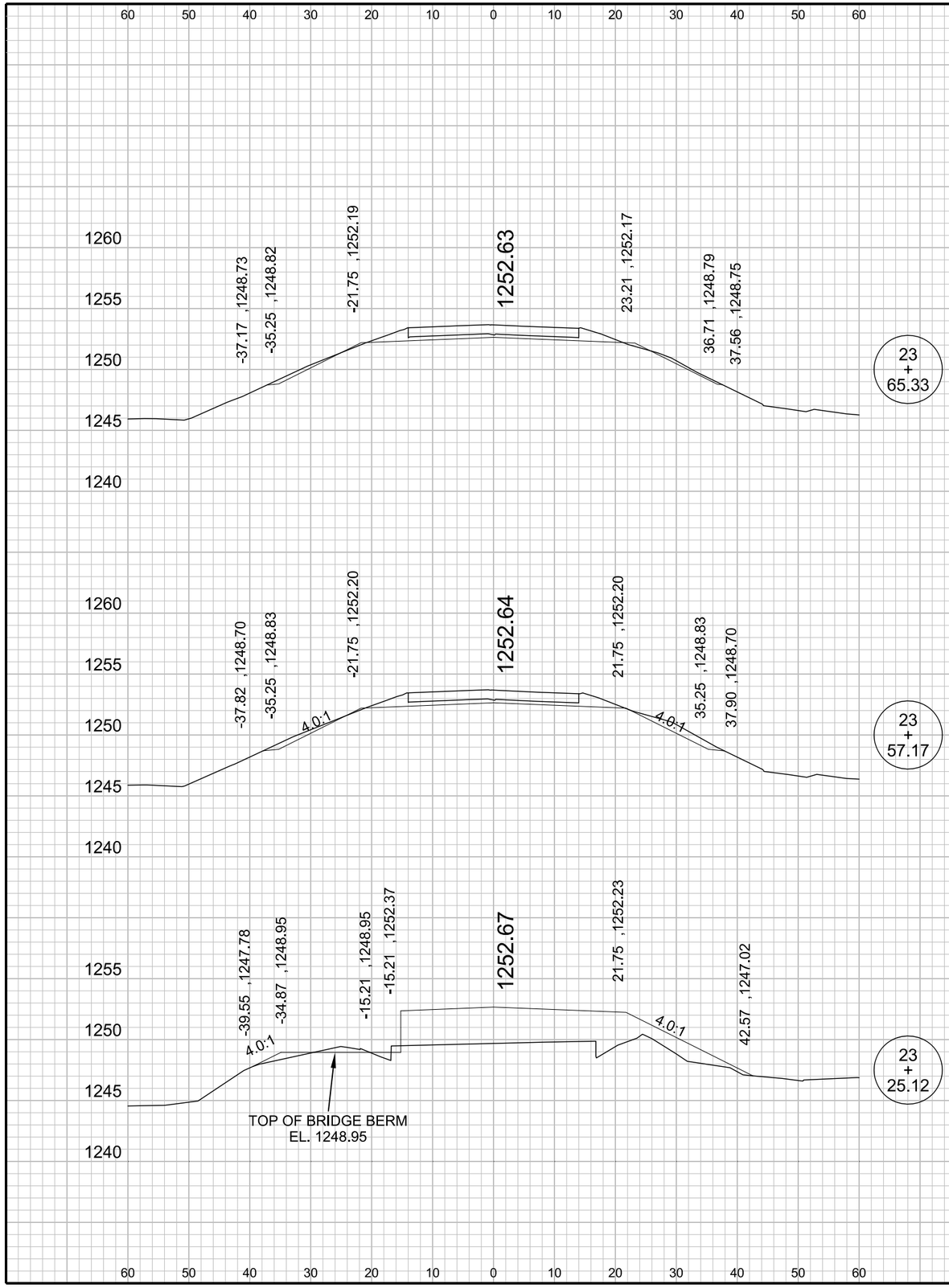
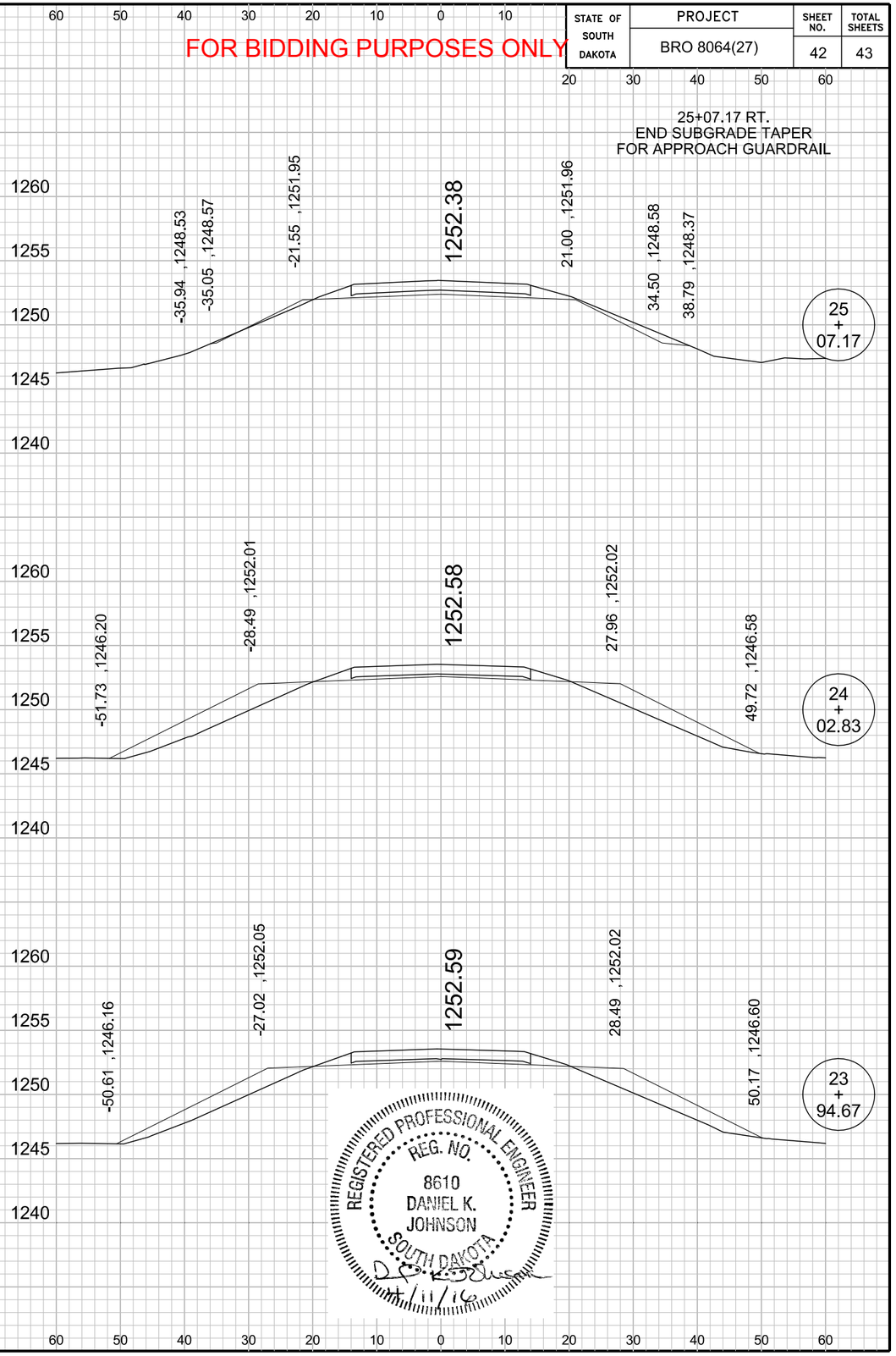
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	42	43





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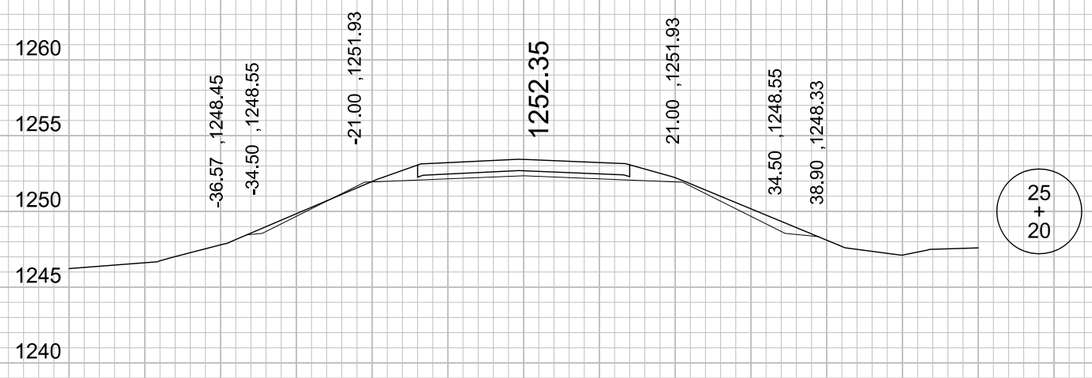
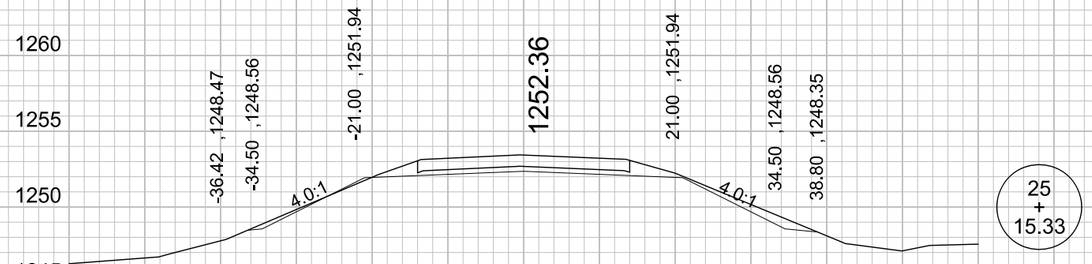
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8064(27)	43	43

25+20 TO 25+70
TAPER TYPICAL SECTION
TO EXISTING SECTION



25+15.33 LT.
END SUBGRADE TAPER
FOR APPROACH GUARDRAIL



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7/11/16