

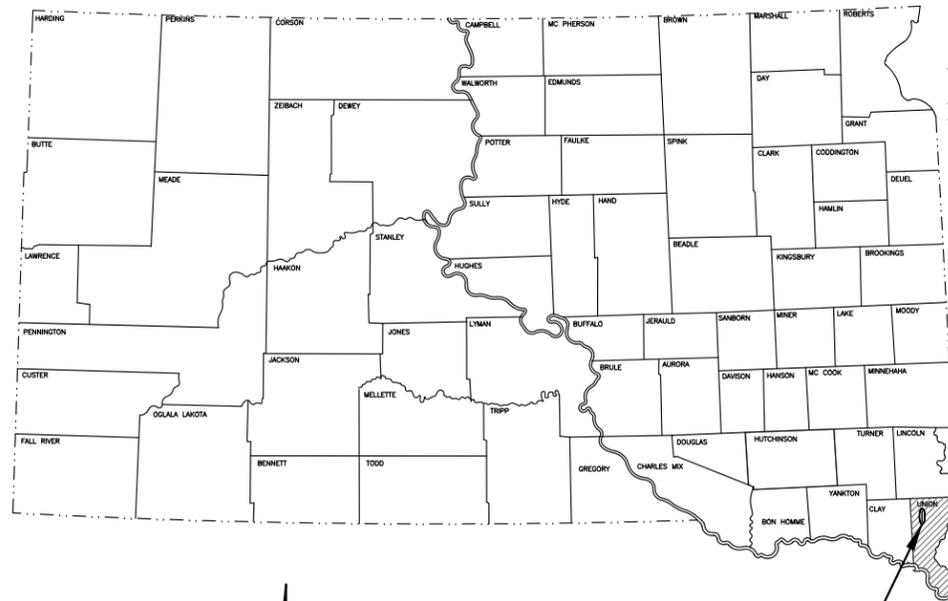
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	1	36

STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

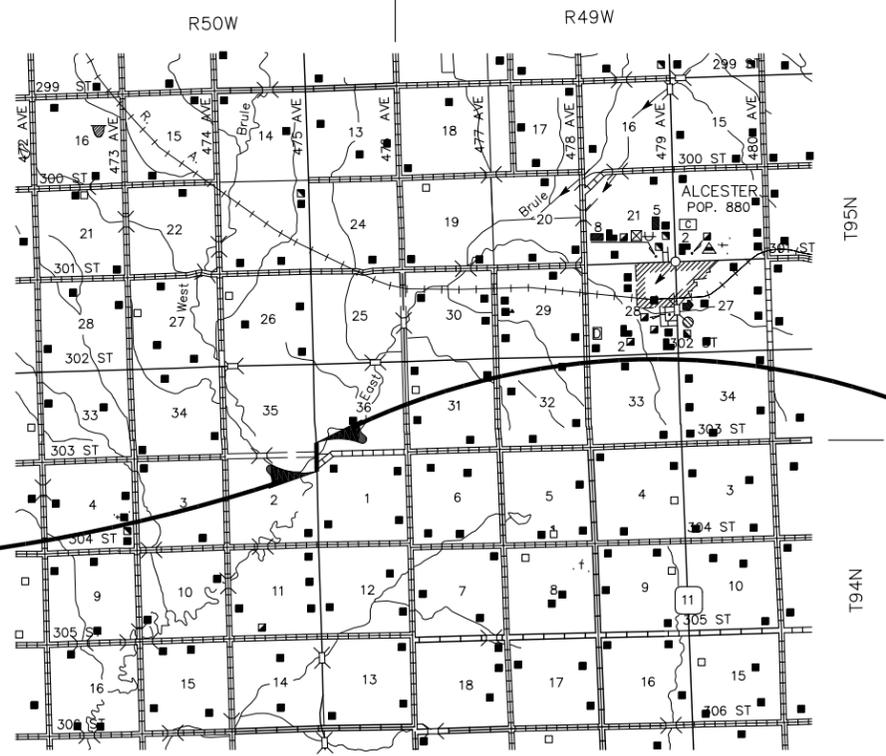
PLANS FOR PROPOSED PROJECT BRF 6397(03) UNION COUNTY STRUCTURE AND APPROACH GRADING STR. 64-050-060 PCN 01DY

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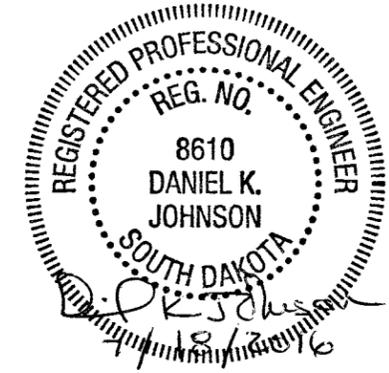


PROJECT



BEGIN PROJECT BRF 6397(03)
475TH AVENUE, UNION COUNTY
STA. 22+50.00 ON BRF 6397(03) =
2249.99' NORTH AND 3.21' EAST OF THE
SE CORNER OF SEC. 2-T94N-R50W
N. 22249.99 E. 20003.21

END PROJECT BRF 6397(03)
475TH AVENUE, UNION COUNTY
STA. 27+50.00 ON BRF 6397(03) =
174.71' NORTH AND 0.93' WEST OF THE
SE CORNER OF SEC. 35-T95N-R50W
N. 22749.99 E. 20002.75



JOHNSON ENGINEERING COMPANY
CIVIL ENGINEERS | LAND SURVEYORS
Est. 1956

DESIGN DESIGNATION

ADT (1999)	140
ADT (2019)	210
DHV	30
D	50%
T DHV	1.2%
T ADT	2.6%
DESIGN SPEED	65 MPH

GROSS LENGTH	500.00	FEET	0.095	MILES
LENGTH OF EXCEPTIONS	NONE	FEET	NONE	MILES
NET LENGTH	500.00	FEET	0.095	MILES

STORM WATER PERMIT DATA
LATITUDE ----- 42°59'47" N
LONGITUDE ----- 96°42'25" W
PROJECT AREA ----- 1.91 ACRES
ACRES DISTURBED ----- 1.26 ACRES
MAJOR STREAM OR LAKE ----- EAST FORK OF BRULE CREEK

ESTIMATE OF QUANTITIES

- GRADING -

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	1,360	SqYd
110E1700	Remove Silt Fence	50	Ft
110E5451	Salvage Riprap	500	Ton
120E0010	Unclassified Excavation	2,623	CuYd
230E0010	Placing Topsoil	426	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
634E0110	Traffic Control Signs	156.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	9	Each
634E0285	Type 3 Barricade, 8' Double Sided	5	Each
730E0100	Cover Crop Seeding	1.0	Bu
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	404	SqYd
734E0154	12" Diameter Erosion Control Wattle	140	Ft
734E0165	Remove and Reset Erosion Control Wattle	35	Ft
734E0510	Shaping for Erosion Control Blanket	200	Ft
734E0604	High Flow Silt Fence	200	Ft
734E0610	Mucking Silt Fence	15	CuYd
734E0620	Repair Silt Fence	50	Ft
734E0630	Floating Silt Curtain	390	Ft

- STRUCTURE NO. 64-050-060 -

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	349.7	SqYd
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0100	Structure Excavation, Bridge	469	CuYd
460E0030	Class A45 Concrete, Bridge Deck	168.4	CuYd
460E0050	Class A45 Concrete, Bridge	173.0	CuYd
464E0100	Controlled Density Fill	8.1	CuYd
470E0430	Type T115 Bridge Railing	237	Ft
480E0100	Reinforcing Steel	25,382	Lb
480E0200	Epoxy Coated Reinforcing Steel	61,467	Lb
510E0100	Extract Pile	24	Each
510E0300	Preboring Pile	100	Ft
510E3361	HP 10x42 Steel Test Pile, Furnish and Drive	440	Ft
510E3365	HP 10x42 Steel Bearing Pile, Furnish and Drive	3,010	Ft
700E0410	Class D Riprap	2,273.0	Ton
700E2010	Place Riprap	500.0	Ton
831E0110	Type B Drainage Fabric	2,008	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
24+78	East Fork of Brule Creek	1298.4

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 dewatering, 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 the 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.

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

The East Fork of 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

The East Fork of 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://www.sddot.com/business/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 F: SEASONAL WORK RESTRICTION

The State of South Dakota has designated warm water fishery associated with this project.

Action Taken/Required:

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

Stream Name	Stream Classification	Seasonal Work Restriction
East Fork of Brule Creek	Warm Water	April 1 to June 30

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 Public ROW.

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



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF 6397(03)	4	36

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.

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.



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF 6397(03)	5	36

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. Install traffic control as shown on the plans and close roadway.
2. Install initial erosion control measures.
3. Take out and dispose of in place structure. Salvage items as called out in the plans.
4. Place riprap, construct bridge and grade roadway.
5. Place topsoil and final erosion control measures.
6. Remove traffic control and open roadway after coordination with the County regarding the final surfacing.

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.

UTILITIES OWNERSHIP

- Sta. 17+00 to 26+30 – Rt.
"Telephone Line" Alliance Communications, 605-594-3411
- Sta. 17+00 to 21+70 – Rt.
"Water Line" South Lincoln Rural Water, 605-372-4211
- Sta. 27+52 to 34+16 – Rt.
"Overhead Electric Lines" Southeastern Electric, 605-648-3619

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 for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any 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. Furnish and install base course and asphalt surfacing.
6. Remove silt fence and erosion control wattles in permanently seeded areas when vegetation has been established.
7. Haul salvageable materials from site.

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 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 5.2 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 contact the Engineer.

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.

Compaction shall be completed by the Ordinary Compaction Method.



UNCLASSIFIED EXCAVATION

The total "Unclassified Excavation" quantity is 2,623 cubic yards, of which 1,786 cubic yards is waste excavation. 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	2,310
Remove Asphalt Concrete Pavement (Assume 3")	-113
Topsoil	426
Total Unclassified Excavation:	2,623

PLACING TOPSOIL

The thickness will be approximately 3 inches on all newly graded areas except top of roadway and along riprap.

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

Location	Topsoil (CuYd)
22+50 27+50	426
Total:	426

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. Contractor shall contact Union County Public Works Administrator at (605) 356-2351 for pick up of salvable materials.

INCIDENTAL WORK, GRADING

Location	Remarks
22+32 to 23+84 – 21' Lt. to 20' Rt.	Salvage (8) Delineators
22+99 – 33' Lt.	Salvage (1) Street Sign
24+31 to 25+23 – 17' Lt. to 15' Rt.	Salvage (4) Object Markers
23+41 – 36' Rt.	Salvage (1) Stop Sign
24+29 – 26' Rt. & 25+30 – 25' Lt.	Salvage (2) Weight Limit Signs
25+54 to 27+26 – 21' Lt. to 21' Rt.	Salvage (8) Delineators
25+61 – 45' Lt.	Salvage (1) Stop Sign
25+73 – 32' Rt.	Salvage (1) Street Sign

All costs associated with the foregoing work shall be incidental to the contract lump sum price for "Incidental Work, Grading".

SALVAGED RIPRAP

An estimated quantity of 500 Tons of Class C Riprap has been placed on the existing bridge berms and behind the south abutment backwall. Contractor shall salvage and use the in place riprap as a substitute for the Class D Riprap in areas other than the sloping abutment berms and channel banks as directed by the Engineer.

TABLE OF SALVAGE RIPRAP

Location	Remarks
Behind South Backwall	Salvage Riprap (Depth Unknown)
24+42 – 26' Lt. to 24+72 – 13' Rt.	Salvage Riprap (Depth Unknown)
24+74 – 26' Lt. to 25+28 – 37' Rt.	Salvage Riprap (Depth Unknown)

TABLE OF REMOVE ASPHALT CONCRETE PAVEMENT

Location	Quantity (SqYd)
22+50 to 24+44.2	645
25+11.8 to 27+50	715
Total:	1,360

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.

Application of fertilizer will not be required on this project.

The area to be seeded and mulched is estimated at 1.06 acres.

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

COVER CROP SEEDING

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 noted in the table and 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)
24+35 Rt.	Across Ditch Bottom	20
25+87 Rt.	Across Ditch Bottom	20
Additional Quantity		100
Total:		140

REMOVE AND RESET EROSION CONTROL WATTLE

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for "Remove and Reset Erosion Control Wattle".



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 noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

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

TABLE OF HIGH FLOW SILT FENCE

Location	Quantity (Ft)
Additional Quantity	200
Total:	200

REMOVE SILT FENCE

Silt fence shall be removed when vegetation is established. Some or all of the silt fence may be left on the project until vegetation is established.

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.

- | | |
|---|--|
| <p>ABASCO, LLC
Houston, TX
Phone: 1-800-242-7745
www.abasco.net</p> | <p>Aer-Flo, Inc.
Bradenton, FL
Phone: 1-800-823-7356
www.aerflo.com</p> |
| <p>American Boom and Barrier Corp.
Cape Canaveral, FL
Phone: 1-800-843-2110
www.abbcoboom.com</p> | <p>ENVIRO-USA, LLC
Cocoa, FL
Phone: 1-321-222-9551
www.enviro-usa.com</p> |
| <p>Elastec/American Marine, Inc.
Carmi, IL
Phone: 1-618-382-2525
www.turbiditycurtains.com</p> | <p>Geo-Synthetics, LLC (GSI)
Waukesha, WI
Phone: 1-800-444-5523
www.geosynthetics.com</p> |
| <p>Parker Systems, Inc.
Chesapeake, VA
Phone: 1-866-472-7537
www.parkersystemsinc.com</p> | |

TABLE OF FLOATING SILT CURTAIN

Location	Quantity (Ft)
24+16-60' Lt. to 25+44-79' Rt. Along Channel Toe	190
24+23-67' Lt. to 25+65-66' Rt. Along Channel Toe	200
Total:	390

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 150 square yards of Type 2 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

TABLE OF TYPE 2 EROSION CONTROL BLANKET

Location	Type	Quantity (SqYd)
24+00 to 24+16 - Lt. End of Riprap Along Bank	2	13
24+07 to 24+31 - Lt. End of Riprap Along Bank	2	29
25+35 to 25+64 - Rt. End of Riprap Along Bank	2	35
25+64 to 26+63 - Rt. End of Riprap Along Bank	2	177
Additional Quantity		150
Total:		404

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".



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** 1.91 Ac. **(4.2 1.b.)**
- **Total Area To Be Disturbed** 1.26 Ac. **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 85
- **Soil Properties:** AASHTO Soil Classification A-7 **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** East Fork of 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 (see Notes).**
- **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.**
- **Install riprap and new structure.**
- **Complete final grading.**
- **Complete final paving.**
- **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
- Riprap
- 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 $\frac{1}{3}$ 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 $\frac{1}{2}$ 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:



❖ **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**

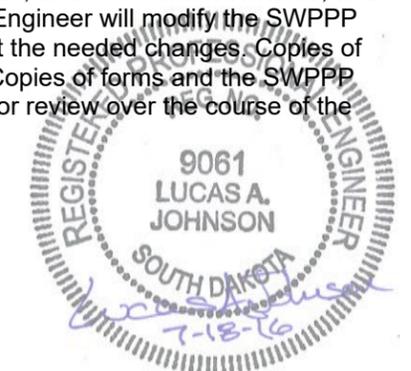
In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

- 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.



❖ **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.

Tom Lehnert

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: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **Erosion Control Supervisor**

- Name: _____
- Address: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **SDDOT Project Engineer**

- Name: _____
- Business Address: _____
- Job Office Location: _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **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**

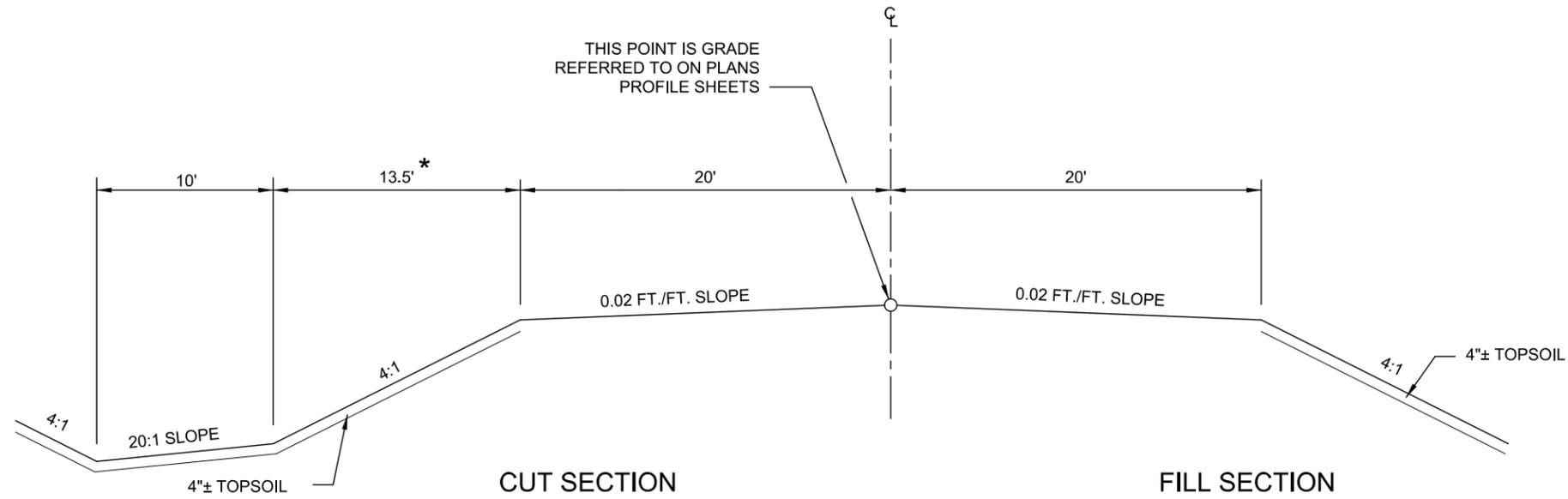
- (800) 424-8802.



TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	11	36

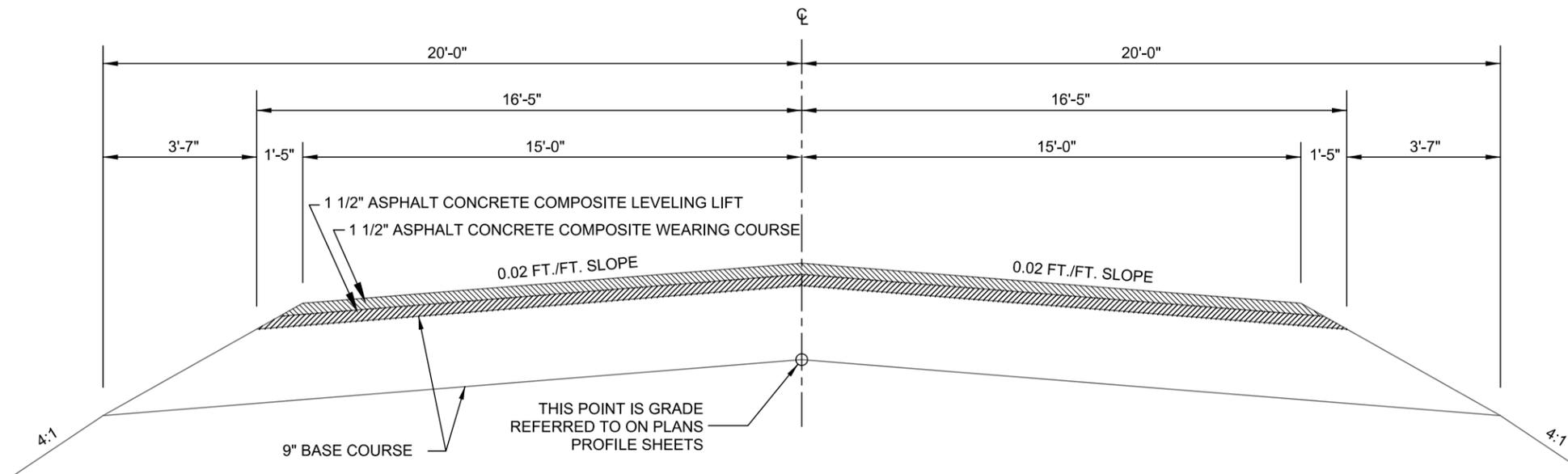
STA. 22+50.00 TO STA. 24+39.69
STA. 25+42.31 TO 27+50.00



NOTES:

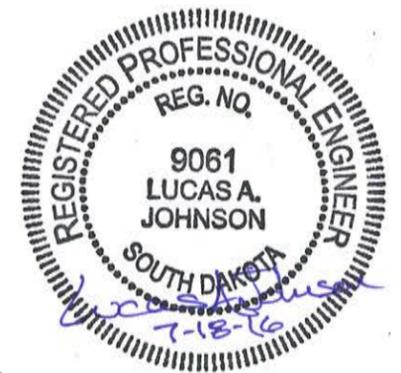
- * 1) WHERE SPECIAL DITCH GRADES ARE USED, VARIABLE DEPTH IS TO BE OBTAINED BY VARYING THE WIDTH OF THE INSLOPE.

TYPICAL GRADING SECTION



TYPICAL SURFACING SECTION

NOTE: ALL SURFACING BY UNION COUNTY - FOR INFORMATION ONLY



TRAFFIC CONTROL ROAD CLOSED

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	12	36

REV: LAJ 8-11-2016

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD		
		NUMBER	SIGN SIZE	SQFT
R11-2	ROAD CLOSED	3	48" x 30"	10.0
R11-3a	ROAD CLOSED .9 MILES AHEAD LOCAL TRAFFIC ONLY	5	60" x 30"	12.5
W20-3	ROAD CLOSED AHEAD	4	48" x 48"	16.0
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS				156.5

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	9 Each
Type 3 Barricade, 8' Double Sided	5 Each

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

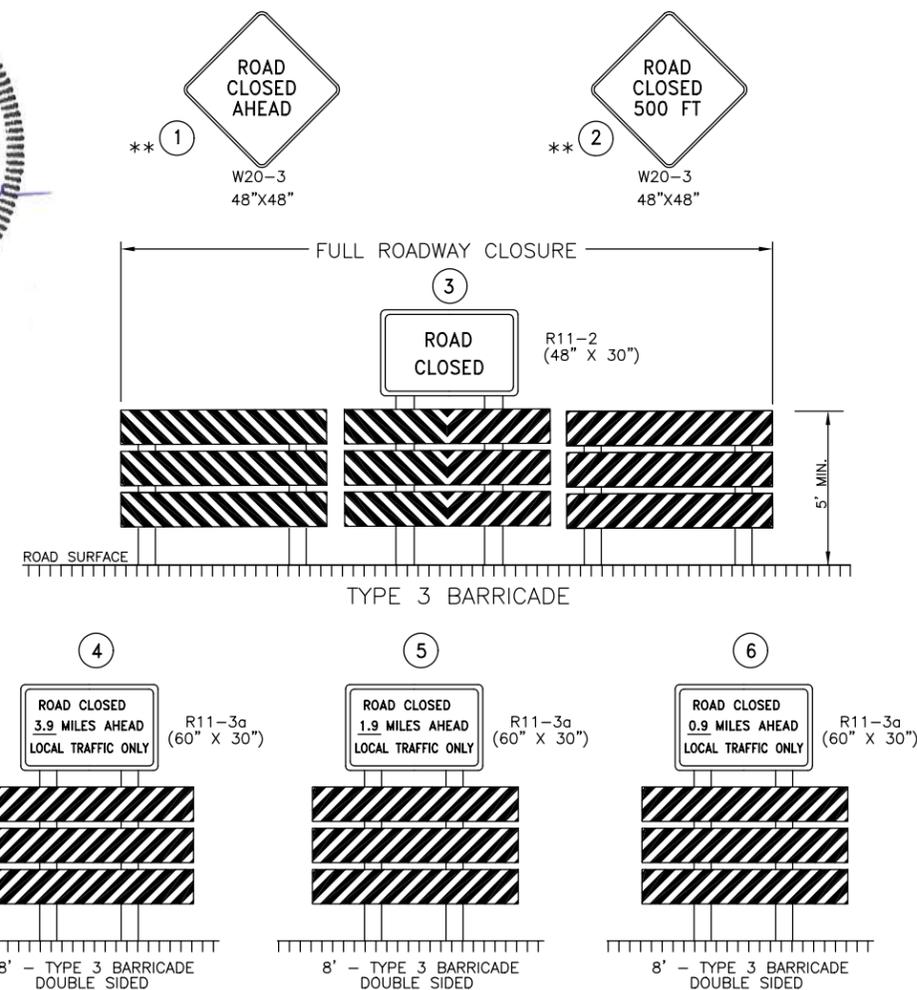
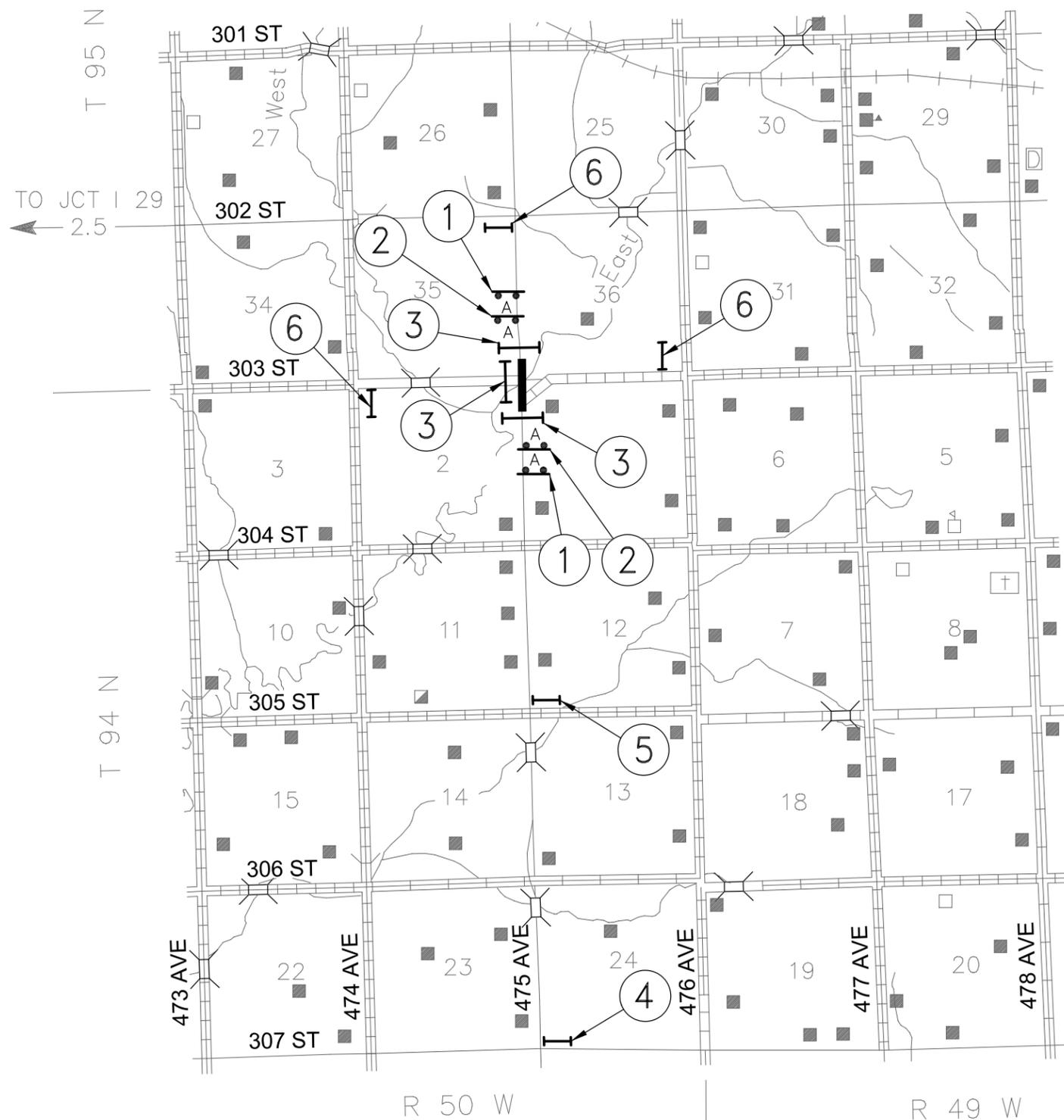


Table 6C-1 in part 6 of the MUTCD PAGE 554, 2009 edition

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

* Speed category to be determined by highway agency.





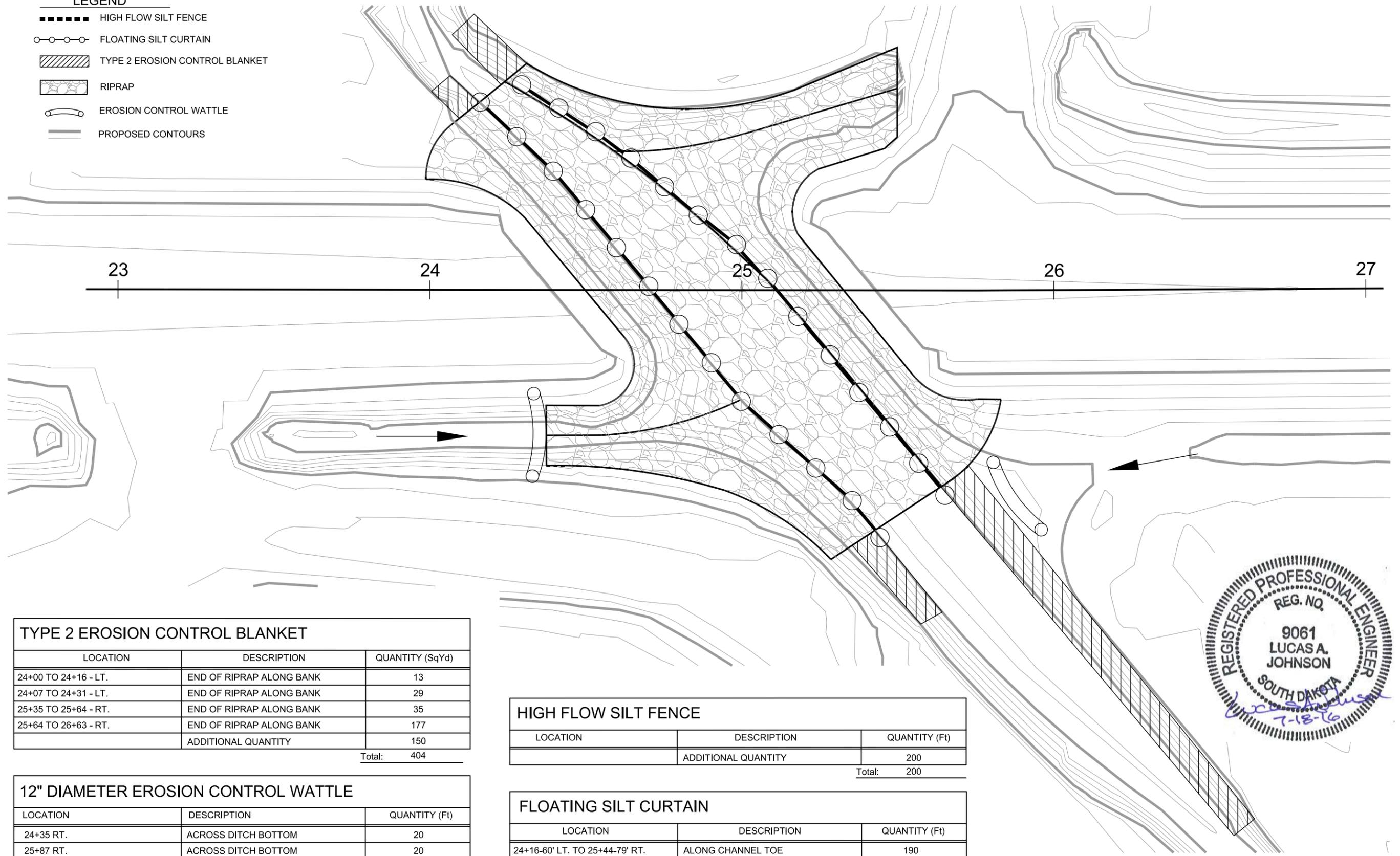
SCALE:
1" = 30'

EROSION AND SEDIMENT CONTROL PLAN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	13	36

LEGEND

- HIGH FLOW SILT FENCE
- FLOATING SILT CURTAIN
- ▨ TYPE 2 EROSION CONTROL BLANKET
- ▨ RIPRAP
- ⌒ EROSION CONTROL WATTLE
- PROPOSED CONTOURS



TYPE 2 EROSION CONTROL BLANKET		
LOCATION	DESCRIPTION	QUANTITY (SqYd)
24+00 TO 24+16 - LT.	END OF RIPRAP ALONG BANK	13
24+07 TO 24+31 - LT.	END OF RIPRAP ALONG BANK	29
25+35 TO 25+64 - RT.	END OF RIPRAP ALONG BANK	35
25+64 TO 26+63 - RT.	END OF RIPRAP ALONG BANK	177
	ADDITIONAL QUANTITY	150
Total:		404

12" DIAMETER EROSION CONTROL WATTLE		
LOCATION	DESCRIPTION	QUANTITY (Ft)
24+35 RT.	ACROSS DITCH BOTTOM	20
25+87 RT.	ACROSS DITCH BOTTOM	20
	ADDITIONAL QUANTITY	100
Total:		140

HIGH FLOW SILT FENCE		
LOCATION	DESCRIPTION	QUANTITY (Ft)
	ADDITIONAL QUANTITY	200
Total:		200

FLOATING SILT CURTAIN		
LOCATION	DESCRIPTION	QUANTITY (Ft)
24+16-60' LT. TO 25+44-79' RT.	ALONG CHANNEL TOE	190
24+23-67' LT. TO 25+65-66' RT.	ALONG CHANNEL TOE	200
Total:		390



CONTROL DATA

CONTROL POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 1	0+00.00	0.00' Lt.	Found RR Spike	20000.00	20000.00	-
CP 2	0+01.42	85.19' Lt.	5/8" Rebar & Guards	19998.70	19914.81	1331.62
CP 3	13+14.90	48.47' Lt.	5/8" Rebar & Guards	21314.96	19953.41	1306.50
CP 4	22+41.02	65.91' Rt.	5/8" Rebar & Guards	22240.91	20069.11	1300.57
CP 5	25+75.29	0.00' Lt.	Found RR Spike	22575.28	20003.68	1303.01
CP 6	27+45.04	70.43' Rt.	5/8" Rebar & Guards	22745.40	20073.20	1296.84
CP 7	45+23.42	89.21' Lt.	5/8" Rebar & Guards	24523.86	20082.50	1298.66
CP 8	52+32.45	0.00' Lt.	Set Nail	25232.40	19989.10	-

HORIZONTAL ALIGNMENT DATA

(CONSTRUCTION CENTERLINE)

TYPE	STATION			NORTHING	EASTING
POB	22+50.00			22249.99	20003.21
		TL=325.29'	N 00°04'54" E		
	25+75.29			22575.28	20003.68
		TL=174.71'	N 00°18'20" W		
EOP	27+50.00			22749.99	20002.75

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).





SCALE:
1" = 100'

24+39.69 TO 25+42.31 (67.7 Sq.Mi.)
INSTALL 102'-7 3/8" 3 SPAN CONTINUOUS CONCRETE BRIDGE
WITH 30'-0" ROADWAY AND 40° RHF SKEW
(SEE STRUCTURE PLANS)

24+44.2 TO 25+11.8
TAKE OUT 67.6' TWO SPAN PRECAST CONCRETE BRIDGE WITH
TIMBER ABUTMENTS, WINGWALLS AND BENT. THE BENT PILES
ARE ENCASED BY 24" CMP FILLED WITH CONCRETE.
SKEWED 30° RHF
INCIDENTAL WORK, STRUCTURE

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	15	36

GOV'T. LOT 2 OF THE NE 1/4 SEC. 2-T94N-R50W
OWNER: PATHFINDER LAND CO. LIMITED PARTNERSHIP
AGENT: DON NELSON
47314 303rd STREET
BERESFORD, SD 57004
(605) 763-5353

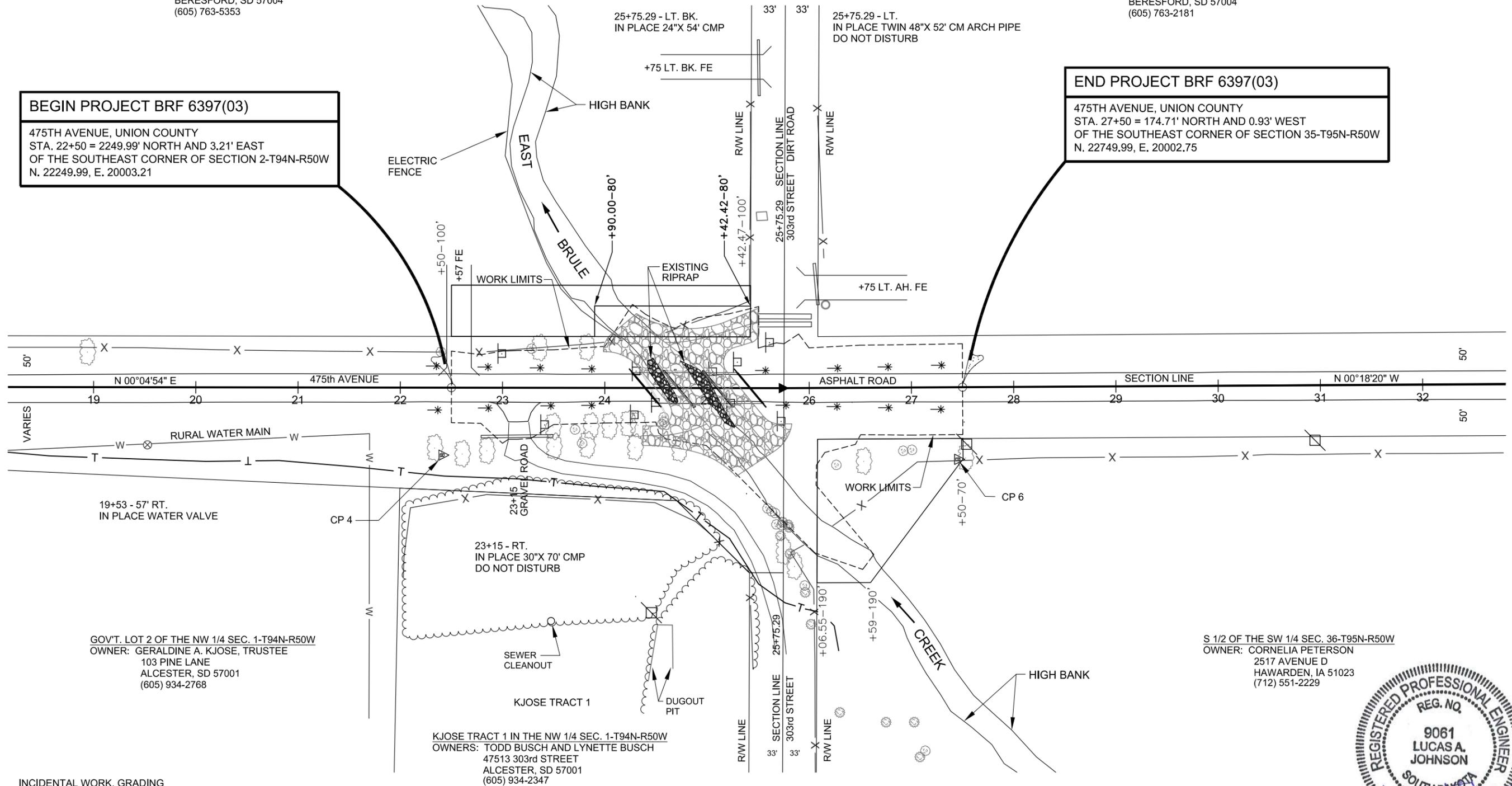
E 1/2 OF THE SE 1/4 SEC. 35-T95N-R50W
OWNER: ROBERT G. SCHUMACHER & MARIE E. SCHUMACHER,
TRUSTEES
401 SOUTH 5th STREET
BERESFORD, SD 57004
(605) 763-2181

BEGIN PROJECT BRF 6397(03)

475TH AVENUE, UNION COUNTY
STA. 22+50 = 2249.99' NORTH AND 3.21' EAST
OF THE SOUTHEAST CORNER OF SECTION 2-T94N-R50W
N. 22249.99, E. 20003.21

END PROJECT BRF 6397(03)

475TH AVENUE, UNION COUNTY
STA. 27+50 = 174.71' NORTH AND 0.93' WEST
OF THE SOUTHEAST CORNER OF SECTION 35-T95N-R50W
N. 22749.99, E. 20002.75



**INCIDENTAL WORK, GRADING
STATION/OFFSET**

22+32 TO 23+84 - 21' LT. TO 20' RT.
22+99 - 33' LT.
24+31 TO 25+23 - 17' LT. TO 15' RT.
23+41 - 36' RT.
24+29 - 26' RT. & 25+30 - 25' LT.
25+54 TO 27+26 - 21' LT. TO 21' RT.
25+61 - 45' LT.
25+73 - 32' RT.

IN PLACE ITEM

SALVAGE (8) DELINEATORS
SALVAGE (1) STREET SIGN
SALVAGE (4) OBJECT MARKERS
SALVAGE (1) STOP SIGN
SALVAGE (2) WEIGHT LIMIT SIGNS
SALVAGE (8) DELINEATORS
SALVAGE (1) STOP SIGN
SALVAGE (1) STREET SIGN

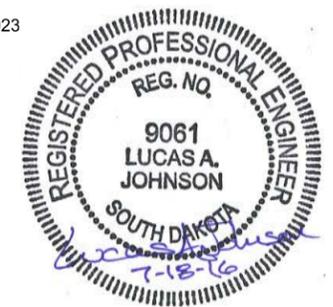
KJOSE TRACT 1 IN THE NW 1/4 SEC. 1-T94N-R50W
OWNERS: TODD BUSCH AND LYNETTE BUSCH
47513 303rd STREET
ALCESTER, SD 57001
(605) 934-2347

22+50 TO 25+42.47 LT.
TEMPORARY EASEMENT FOR CUTSLOPES
AND FILLSLOPES TO BE OBTAINED BY
THE COUNTY, 0.2 AC.

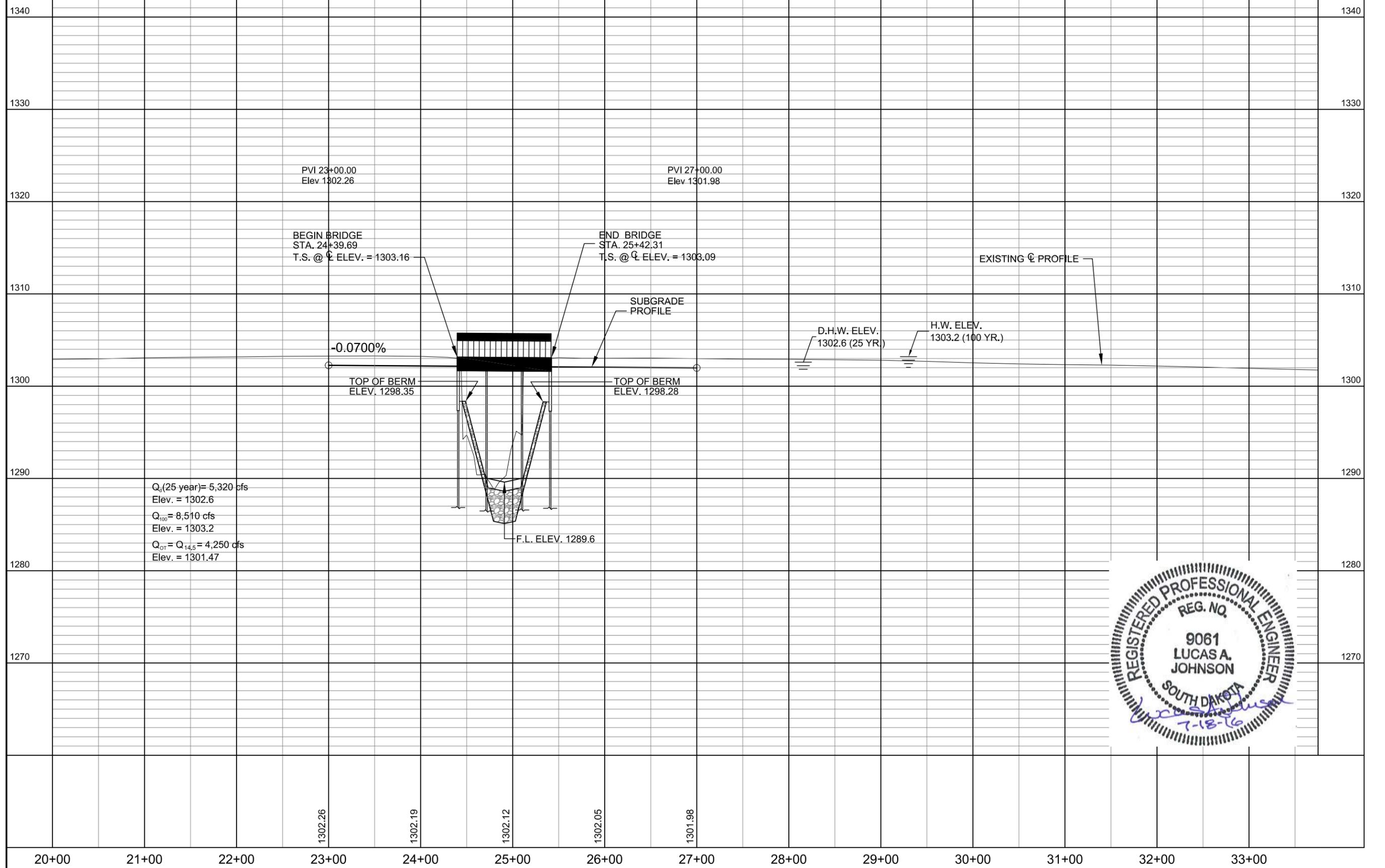
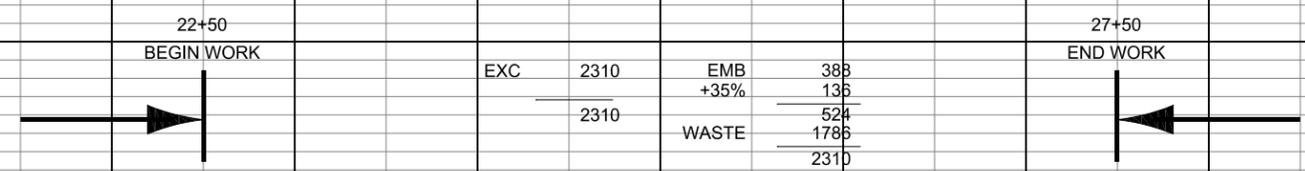
23+90.00 TO 25+42.42 LT.
PERMANENT EASEMENT FOR
MAINTENANCE PURPOSES TO BE
OBTAINED BY THE COUNTY, 0.11 AC.

26+06.55 TO 27+50 RT.
TEMPORARY EASEMENT FOR CUTSLOPES
AND FILLSLOPES TO BE OBTAINED BY
THE COUNTY, 0.3 AC.

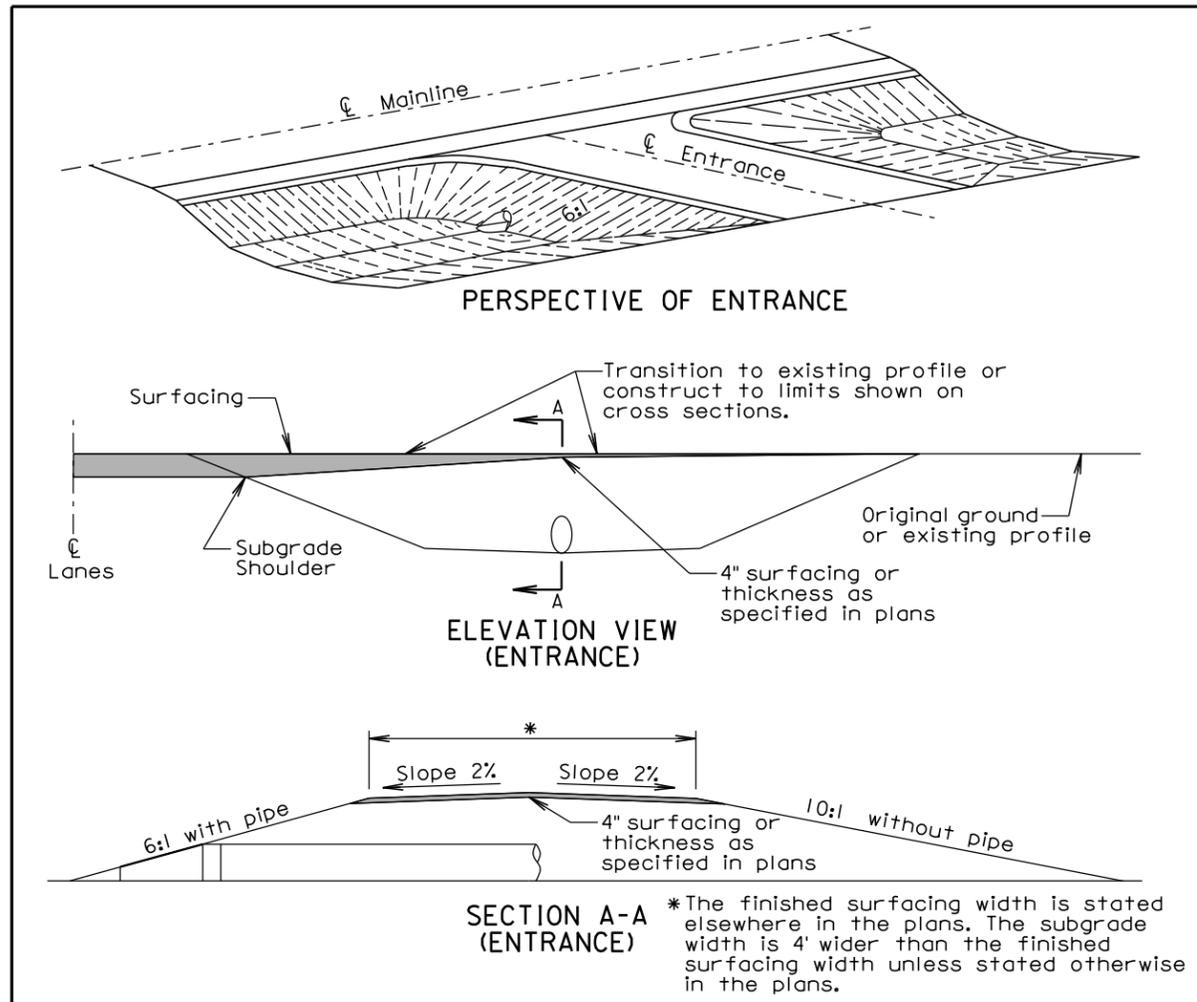
S 1/2 OF THE SW 1/4 SEC. 36-T95N-R50W
OWNER: CORNELIA PETERSON
2517 AVENUE D
HAWARDEN, IA 51023
(712) 551-2229



23+99-35' LT. TO 25+83-35' RT.
INSTALL 2,273.0 TONS OF CLASS D RIPRAP AND
PLACE 500.0 TONS OF SALVAGED RIPRAP
RIPRAP SHALL BE A MINIMUM OF 42" THICK AND
INSTALL 2,008 SqYd OF TYPE B DRAINAGE FABRIC
(SEE STRUCTURE PLANS)



1302.26
 1302.19
 1302.12
 1302.05
 1301.98



GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.

A 6:1 inslope shall be constructed for an entrance when a pipe is required. A 10:1 inslope shall be constructed when a pipe is not required.

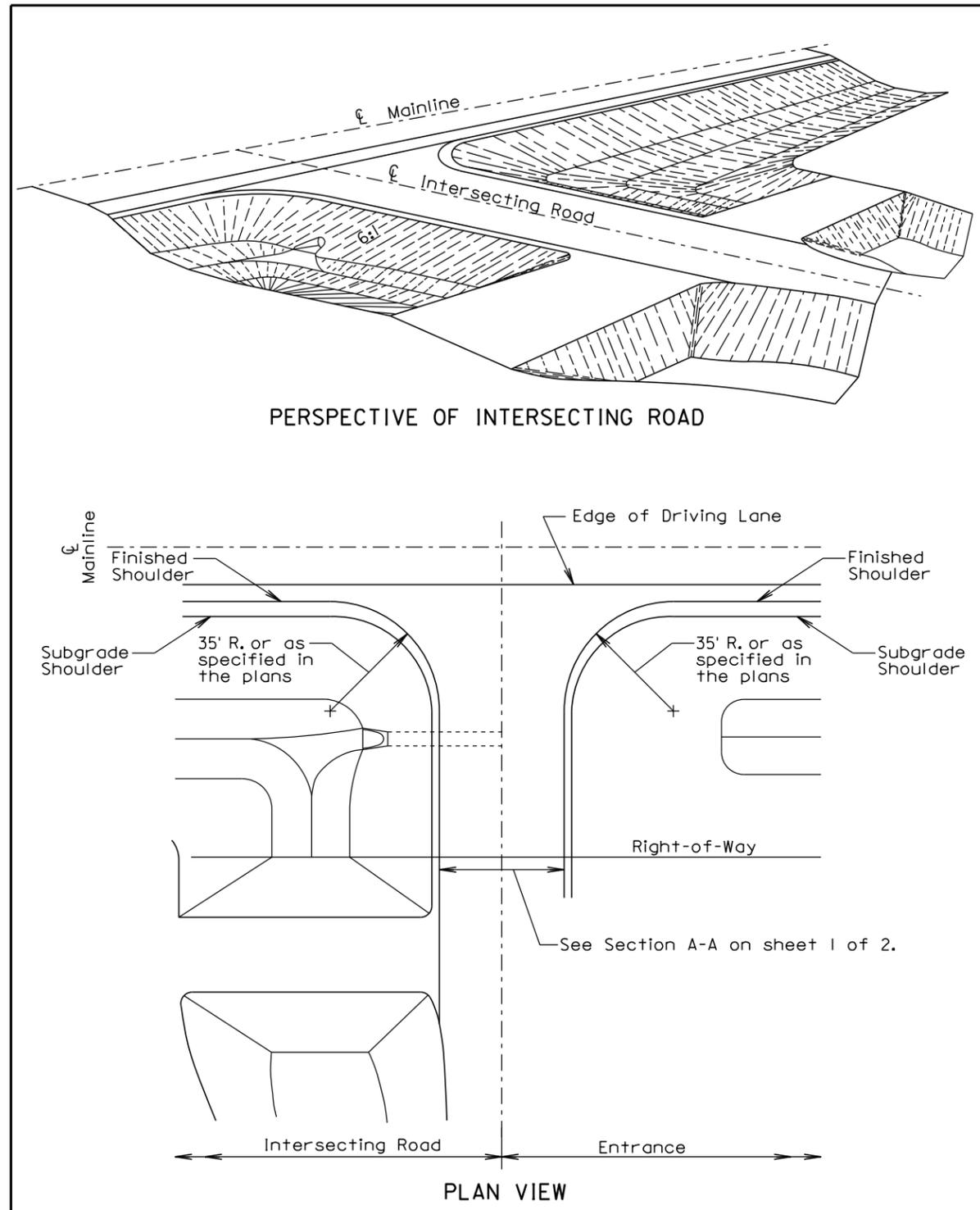
Pipe lengths shall be adjusted if necessary during construction to obtain the 6:1 slopes. For grading projects, the pipe lengths are estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

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

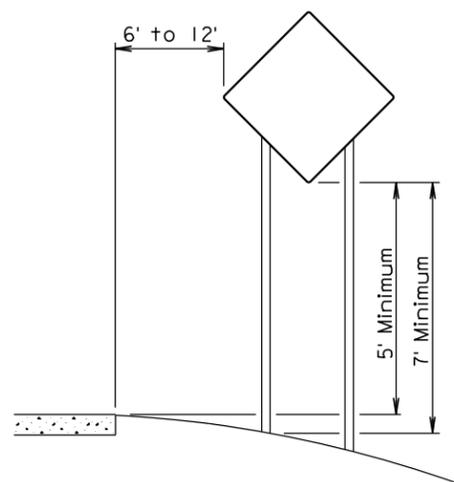
September 6, 2013

Published Date: 2nd Qtr. 2016	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2

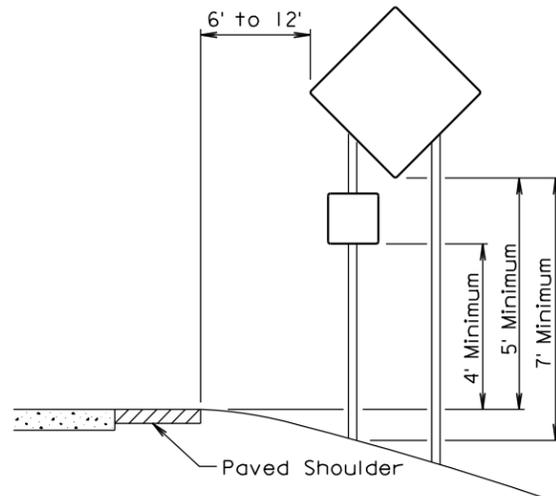


September 6, 2013

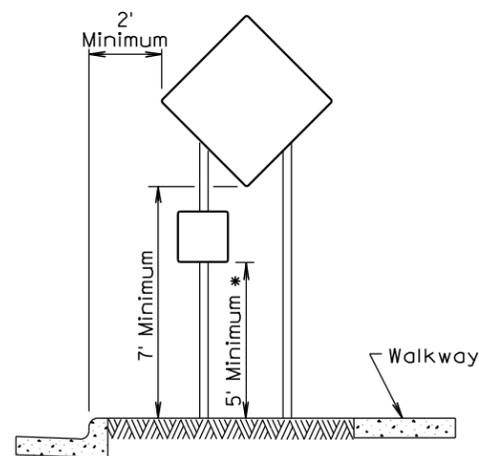
Published Date: 2nd Qtr. 2016	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2



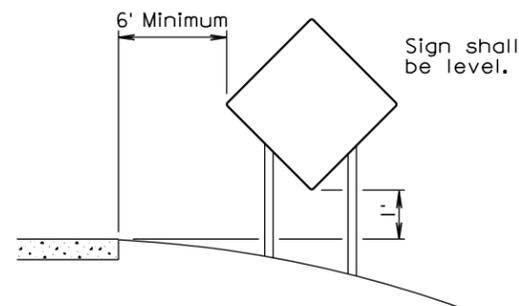
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

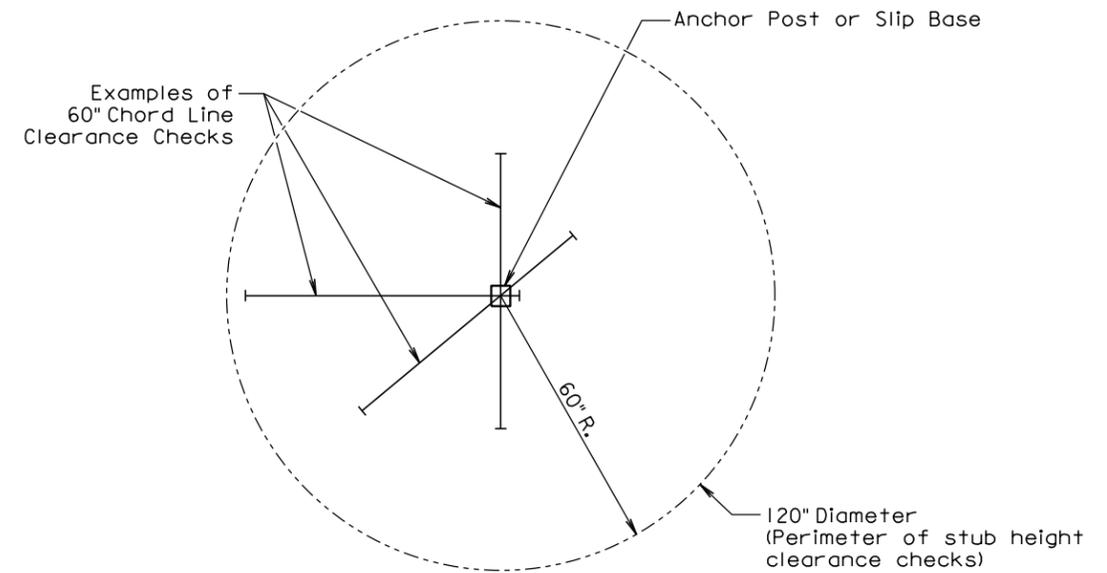


RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

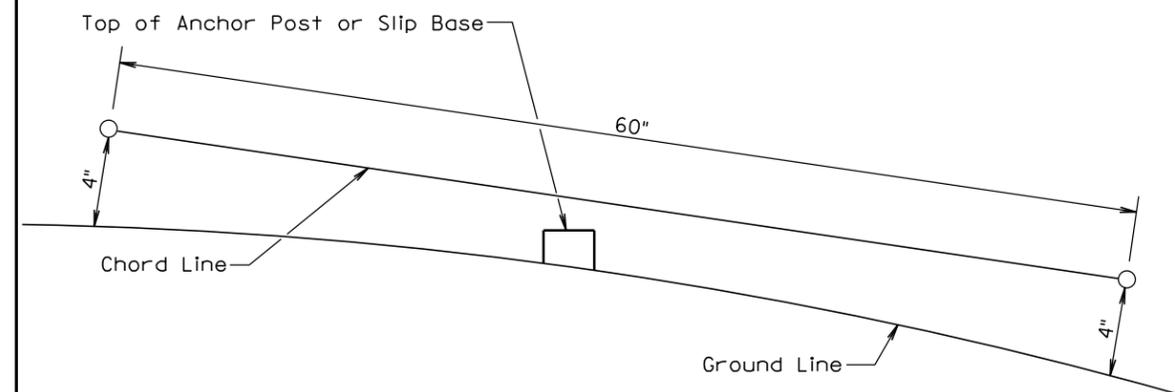
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

Published Date: 2nd Qtr. 2016	S D D O T	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:

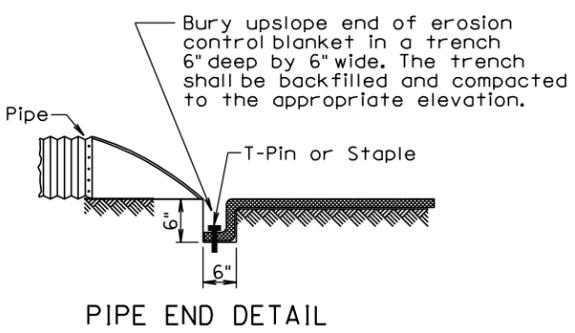
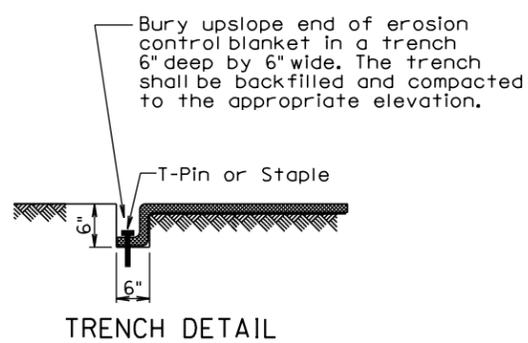
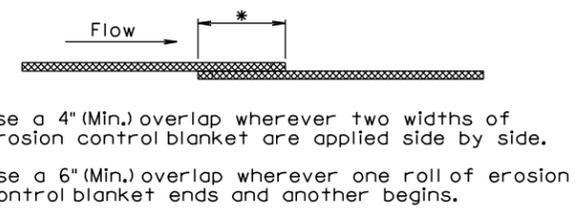
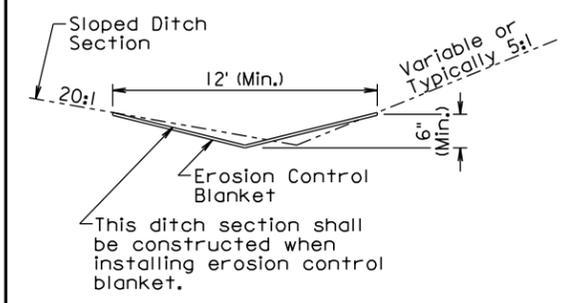
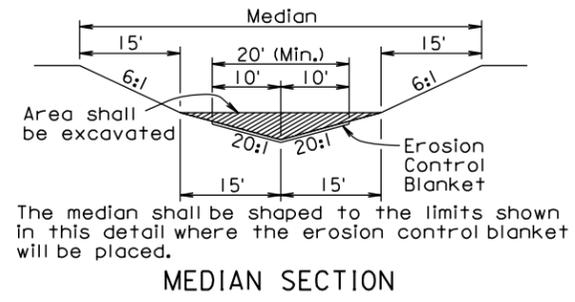
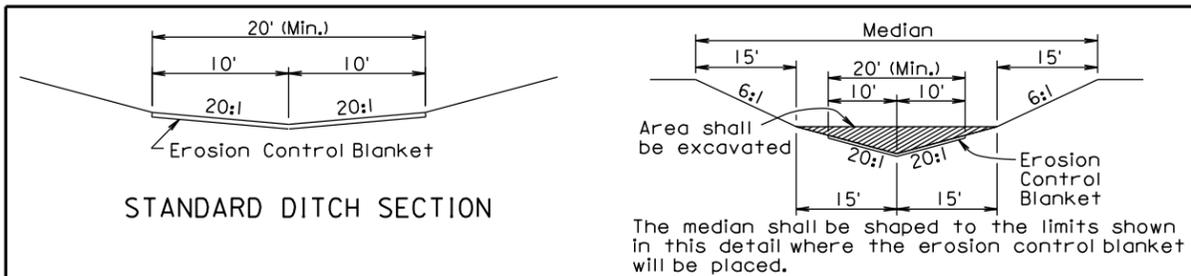
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



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.

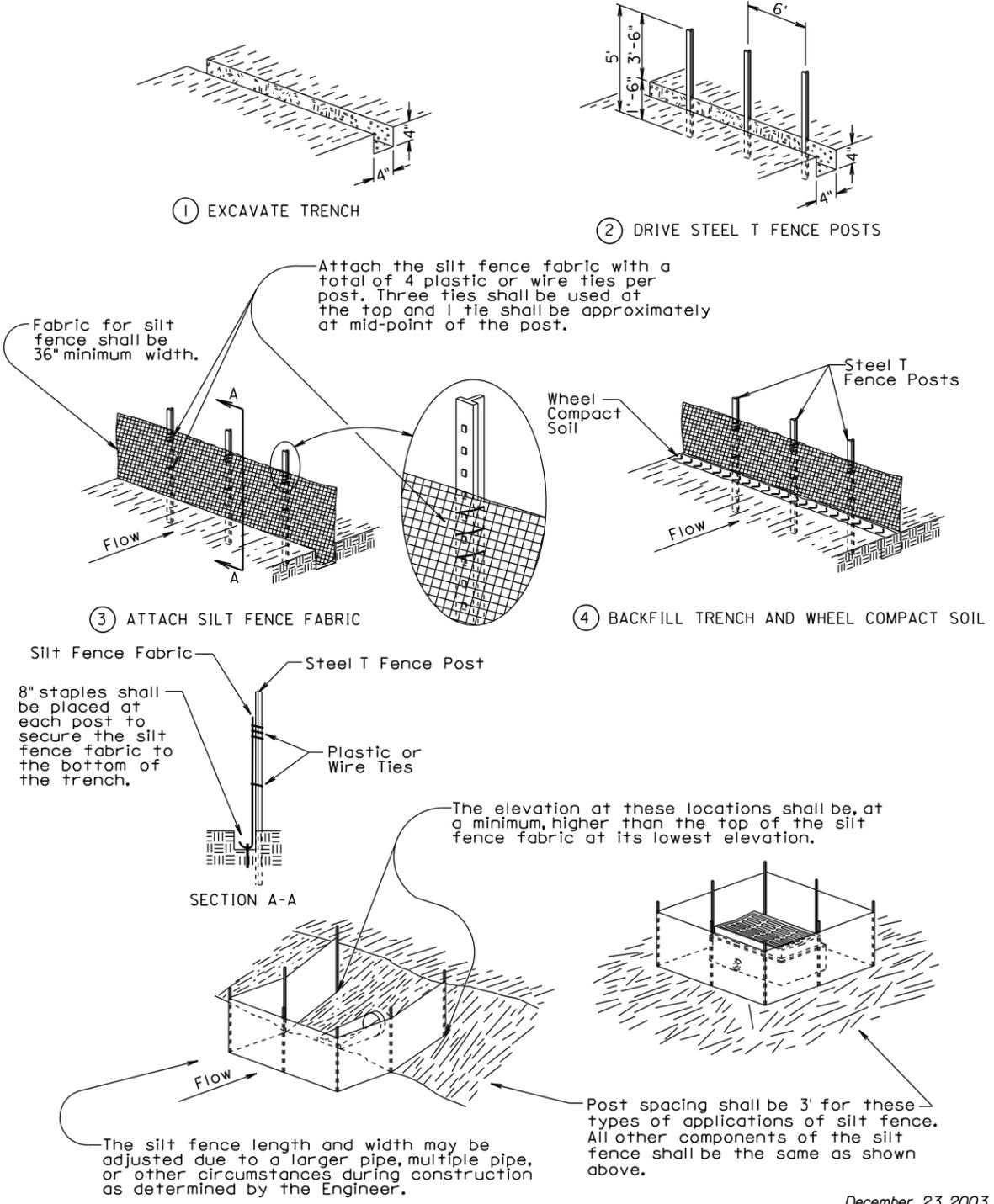
After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

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	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

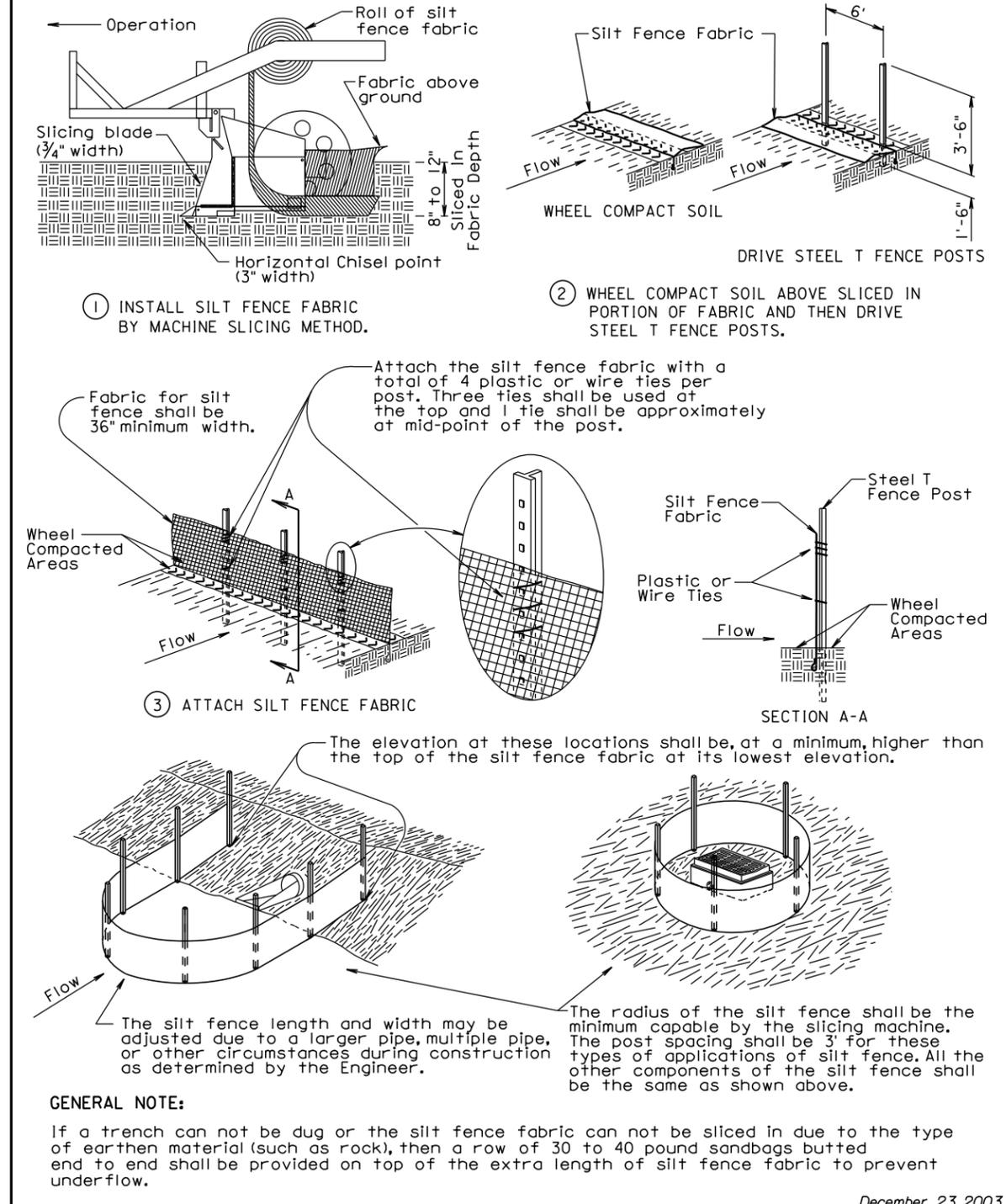
MANUAL HIGH FLOW SILT FENCE INSTALLATION



December 23, 2003

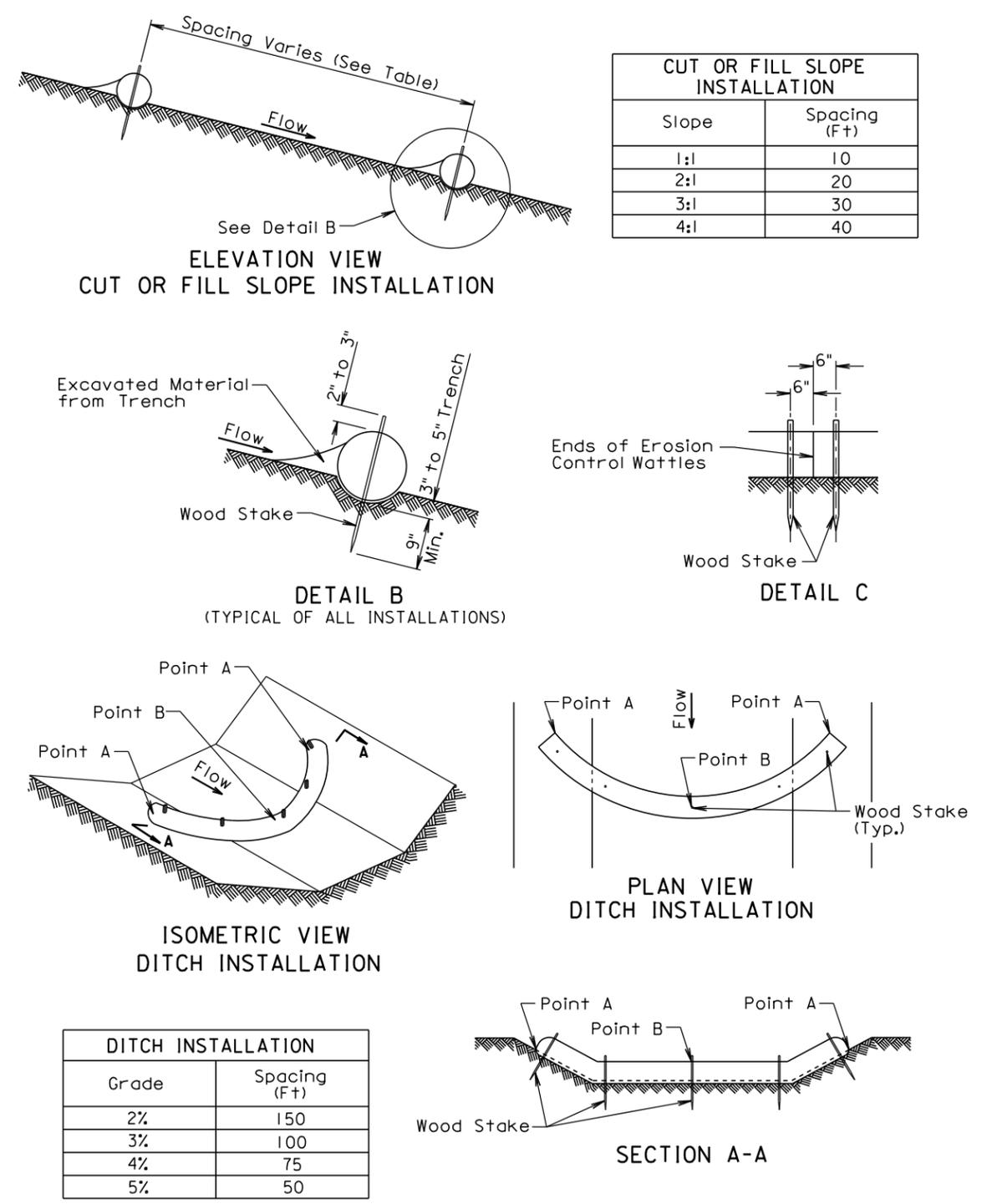
Published Date: 2nd Qtr. 2016	S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



December 23, 2003

Published Date: 2nd Qtr. 2016	S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2



December 23, 2004

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.

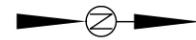
The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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



C.P. NO. 3 EL. 1306.50
5/8" REBAR & GDS.
STA. 13+14.90 - 48.47' LT.

C.P. NO. 4 EL. 1300.57
5/8" REBAR & GDS.
STA. 22+41.02 - 65.91' RT.

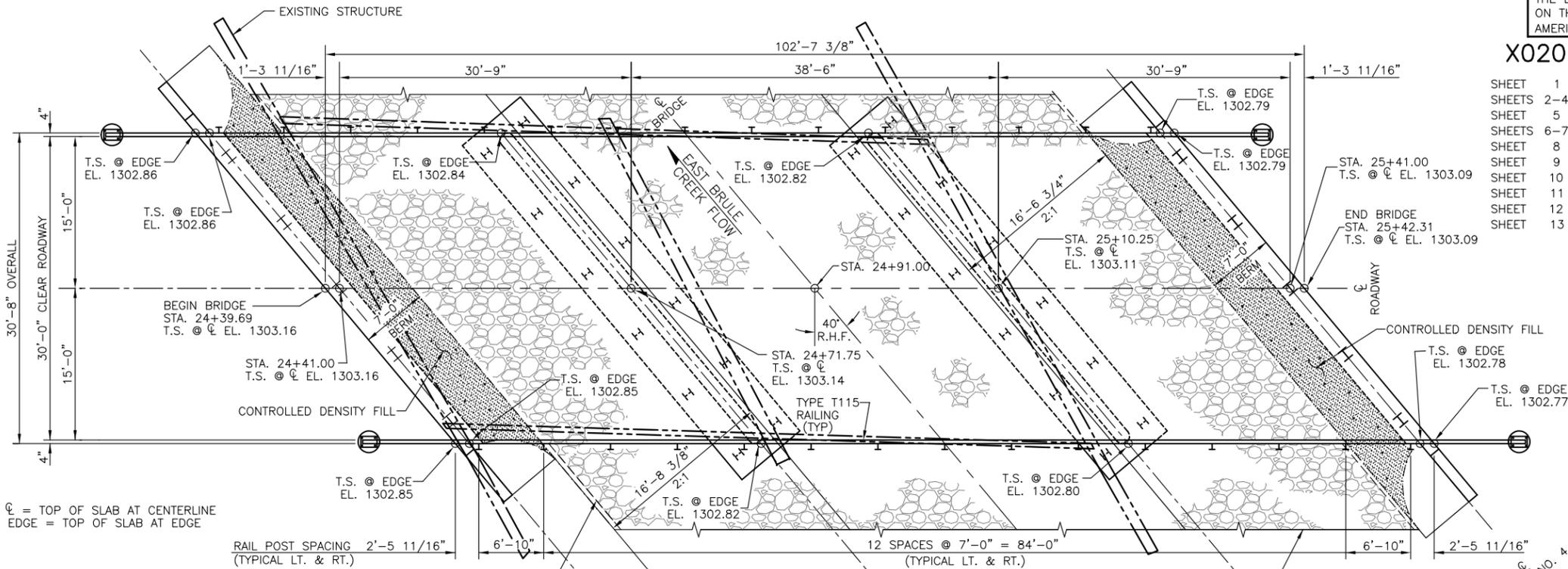
C.P. NO. 6 EL. 1296.84
5/8" REBAR & GDS.
STA. 27+45.04 - 70.43' RT.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	22	36

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

X020 INDEX OF BRIDGE SHEETS

SHEET 1	GENERAL DRAWING
SHEETS 2-4	ESTIMATE OF STRUCTURE QUANTITIES & NOTES
SHEET 5	SUBSURFACE INVESTIGATION & PILING LAYOUT
SHEETS 6-7	ABUTMENT DETAILS
SHEET 8	PIER DETAILS
SHEET 9	SUPERSTRUCTURE DETAILS
SHEET 10	TYPE T115 RAILING DETAILS
SHEET 11	RIPRAP LAYOUT
SHEET 12	DETAILS OF STANDARD PLATE NO. 460.02
SHEET 13	DETAILS OF STANDARD PLATE NO. 510.40 & 620.17



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

RAIL POST SPACING 2'-5 11/16" (TYPICAL LT. & RT.)

PLAN

See Sheet 11 of 13 for Limits of Class D Riprap and Type B Drainage Fabric.

HYDRAULIC DATA

102'-7 3/8" BRIDGE	
Qd	5320 cfs
Ad *	383 sq.ft.
Vd	4.5 fps
Q _F	5320 cfs
Q ₁₀₀	8510 cfs
Q _{OT}	4250 cfs
V _{Max}	11.1 fps

* WATERWAY AREA TAKEN AT THE POINT OF OVERTOPPING.

** Q_d = design discharge for the proposed bridge based on 25 year frequency. El. 1302.6

Q_{OT} = overtopping discharge and frequency 14.5 yr. recurrence interval, El. 1301.47 Location STA. 35+20 TO 35+61

Q_F = designated peak discharge for the basin approaching proposed project based on 25 year frequency.

Q₁₀₀ = computed discharge for the basin approaching proposed project based on 100 year frequency, El. 1303.2

V_{max} = Maximum computed outlet velocity for the proposed bridge, based on a 14.5 year frequency.

**Due to the low grade and high calculated discharges, this site will not meet normal Drainage Manual Criteria for max. allowable headwater or overtopping.

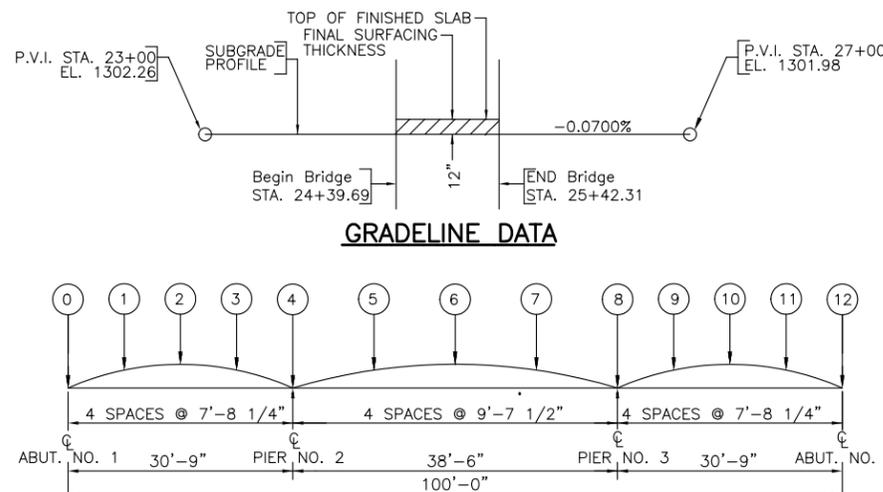
The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re-analysis of the hydraulics at this site to determine its effect on public safety.

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.

⊕ Camber for Dead Load Deflection plus Plastic Flow, shown on sheet No. 9 of 13 have been included in the elevations shown.

TABLE OF SLAB ELEVATIONS

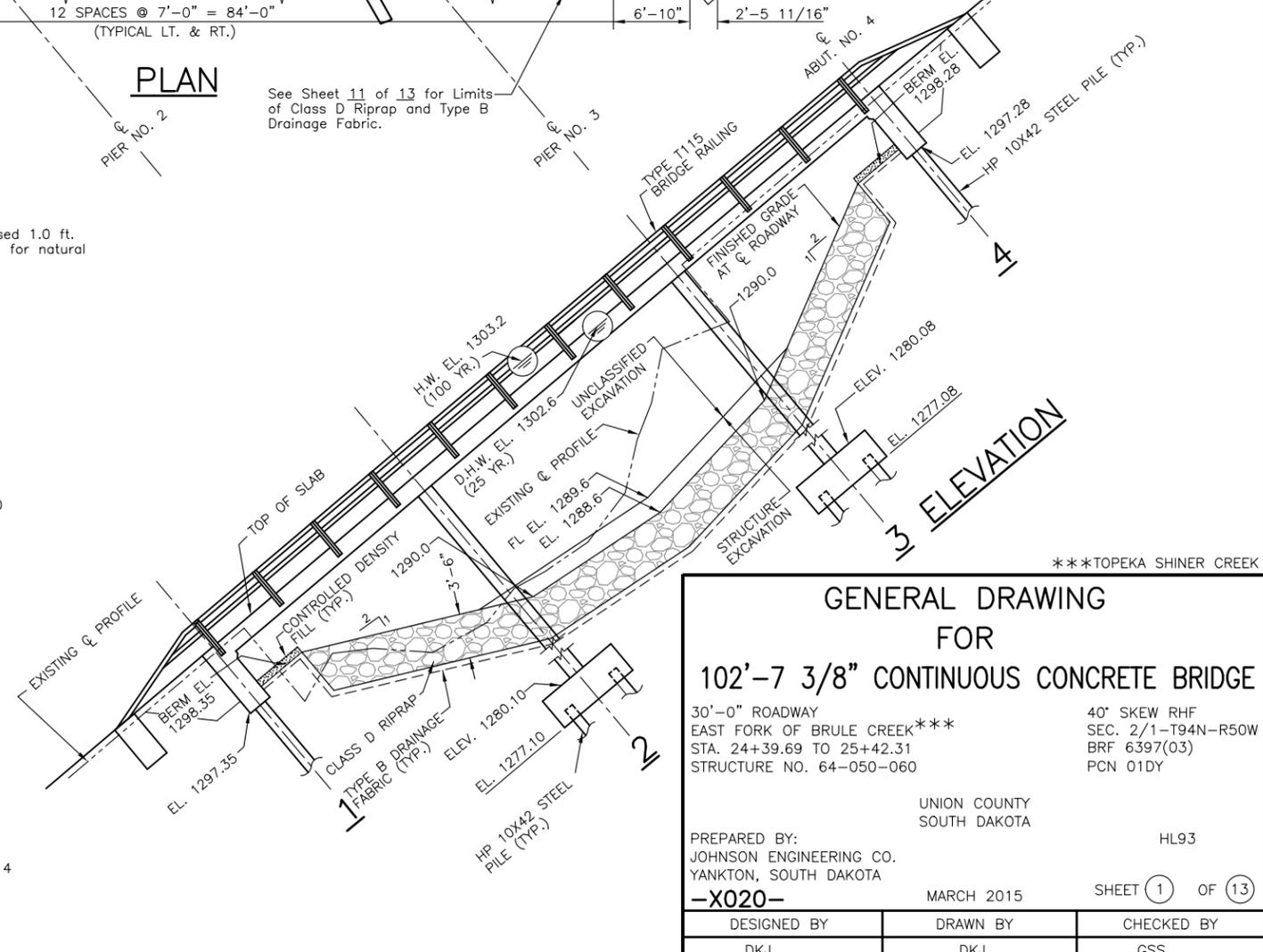
Slab Points	Left Edge	ϕ	Right Edge
0	1302.864	1303.161	1302.846
1	1302.867	1303.164	1302.848
2	1302.863	1303.160	1302.845
3	1302.852	1303.149	1302.834
4	1302.842	1303.140	1302.824
5	1302.843	1303.141	1302.825
6	1302.842	1303.140	1302.824
7	1302.830	1303.127	1302.812
8	1302.815	1303.113	1302.797
9	1302.814	1303.112	1302.796
10	1302.814	1303.112	1302.796
11	1302.807	1303.105	1302.789
12	1302.794	1303.091	1302.776



GRADELINE DATA

EDGE & ϕ ELEVATIONS

(See TABLE OF SLAB ELEVATIONS for elevations)



GENERAL DRAWING FOR 102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
EAST FORK OF BRULE CREEK ***
STA. 24+39.69 TO 25+42.31
STRUCTURE NO. 64-050-060

40' SKEW RHF
SEC. 2/1-T94N-R50W
BRF 6397(03)
PCN 01DY

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

HL93

-X020-		
DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	DKJ	GSS

MARCH 2015 SHEET 1 OF 13

REV: DKJ 8-11-2016

ESTIMATE OF STRUCTURE QUANTITIES

ITEM	UNIT	QUANTITY	REMARKS
Concrete Penetrating Sealer	SqYd	349.7	See Special Provisions
Incidental Work, Structure	Lump Sum	LS	
Structure Excavation, Bridge	CuYd	469	
Class A45 Concrete, Bridge Deck	CuYd	168.4	
Class A45 Concrete, Bridge	CuYd	173.0	
Controlled Density Fill	CuYd	8.1	
Type T115 Bridge Railing	Ft	237	
Reinforcing Steel	Lb	25,382	
Epoxy Coated Reinforcing Steel	Lb	61,467	
Extract Pile	Each	24	
Preboring Pile	Ft	100	
HP 10x42 Steel Test Pile, Furnish and Drive	Ft	440	
HP 10x42 Steel Bearing Pile, Furnish and Drive	Ft	3,010	
Class D Riprap	Ton	2,273	
Place Riprap	Ton	500	
Type B Drainage Fabric	SqYd	2,008	

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition with 2013 interims.
- 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

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

DESIGN MATERIAL STRENGTHS

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

GENERAL CONSTRUCTION

- All mild reinforcing steel shall conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.
- Use 2" clear cover on all reinforcing steel except as shown.
- Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02.
- Rail posts shall be built normal to the grade.
- 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.
- The elevation of the bridge deck is 12" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 24+44.2 to 25+11.8 is a 67.6 ft. two span precast concrete bridge with a 30'-6" clear roadway constructed at a 30° RHF skew. The superstructure consists of precast concrete channels with W-beam bridge railing supported by concrete rail posts bolted to concrete curbs. The deck has been overlaid with asphalt. The substructure components are constructed of timber plank, piles and caps. The bent piles are encased by 24" CMP filled with concrete.
- Break down and remove the existing bridge 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 future highway related use shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the Environmental Commitment H: Waste Disposal Site. Significant interference between existing piling and the construction work is expected during this project. Extract Pile will be necessary where the existing piling interfere with construction work.
- The existing two (2) W-beam bridge rails and metal channel bracing on the bent shall be salvaged for future highway related use. The salvaged W-beam bridge rails and channels 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.
- 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.
- 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.

NOTICE – LEAD BASED PAINT

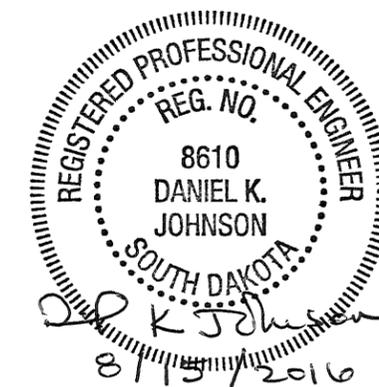
Be advised that the paint on the steel surfaces of the existing structure contains lead. The Contractor should plan his/her operations accordingly, and inform his/her employees of the hazards of lead exposure.

DESIGN MIX OF CONCRETE

All structural concrete shall be Class A45 unless otherwise indicated.

ABUTMENTS

- Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
- 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.
- The Contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40.
- 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.
- One test pile shall be driven at each abutment and will become part of the pile group.



**ESTIMATE OF STRUCTURE QUANTITIES & NOTES
 FOR
 102'-7 3/8" Continuous Concrete Bridge
 Str. No. 64-050-060**

DESIGNED BY: DKJ	DRAWN BY: NCS	CHECKED BY: GSS
---------------------	------------------	--------------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6397(03)	24	36

REV: DKJ 8-11-2016

PIER

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 pile cap 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. 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 the Office of Bridge Design a minimum of 15 days prior to Cofferdam construction.

PILE DRIVING

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

Delmag D25-32
 Delmag D30-32
 SPI D-30

2. Pile hammers not listed will require evaluation and approval prior to use from the Geotechnical Engineering Activity.

SUPERSTRUCTURE

1. Preplanned construction joints may be used in accordance with Section 460.3 of the Specifications. 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 25.0 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 25.0 ft. of deck per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi.



NOTES (CONTINUED)
 FOR
102'-7 3/8" Continuous Concrete Bridge
 Str. No. 64-050-060

DESIGNED BY: DKJ	DRAWN BY: NCS	CHECKED BY: GSS
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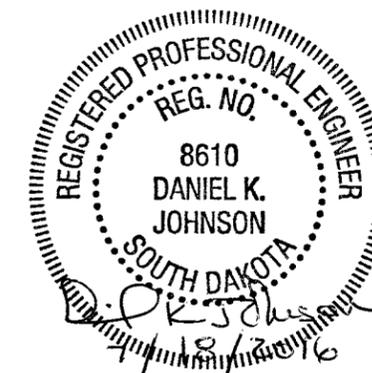
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6397(03)	25	36

CONTROLLED DENSITY FILL

Controlled density fill shall be placed at the top of the bridge berms as shown on the plans. Payment will be for plans quantity regardless of the quantity actually placed

SHOP DRAWINGS

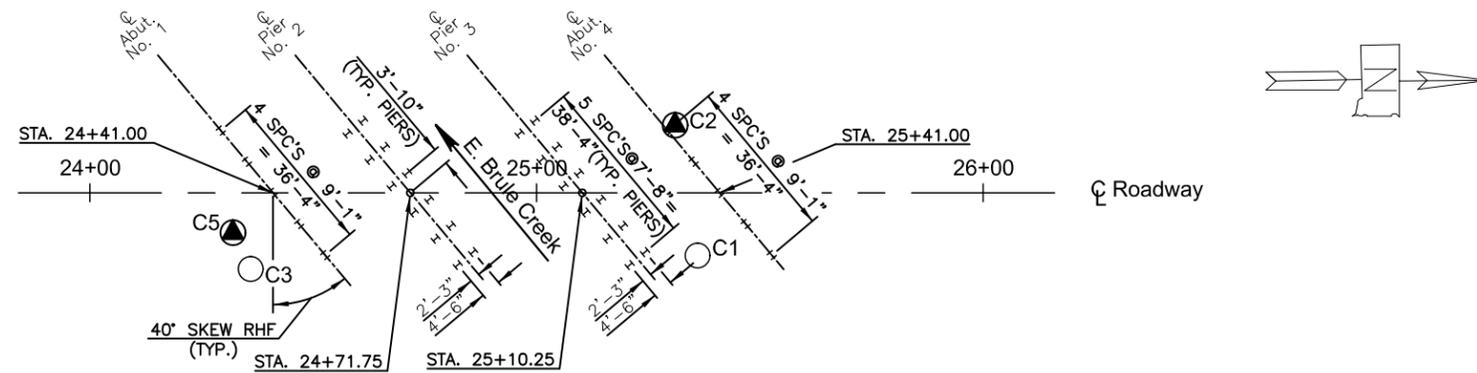
The fabricator shall submit shop plans in accordance with the Specifications or in Adobe PDF format to Johnson Engineering Company, 1800 Broadway Avenue, Suite 3, Yankton, SD 57078 (dkjiec@iw.net). After review, corrections (if necessary), and approval by Johnson Engineering Company, the Office of Bridge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



NOTES (CONTINUED)
FOR
102'-7 3/8" Continuous Concrete Bridge
Str. No. 64-050-060

SHEET **4** OF **13**

DESIGNED BY: DKJ	DRAWN BY: NCS	CHECKED BY: GSS	
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* Values represent uncorrected "N" values from Penetration Test.

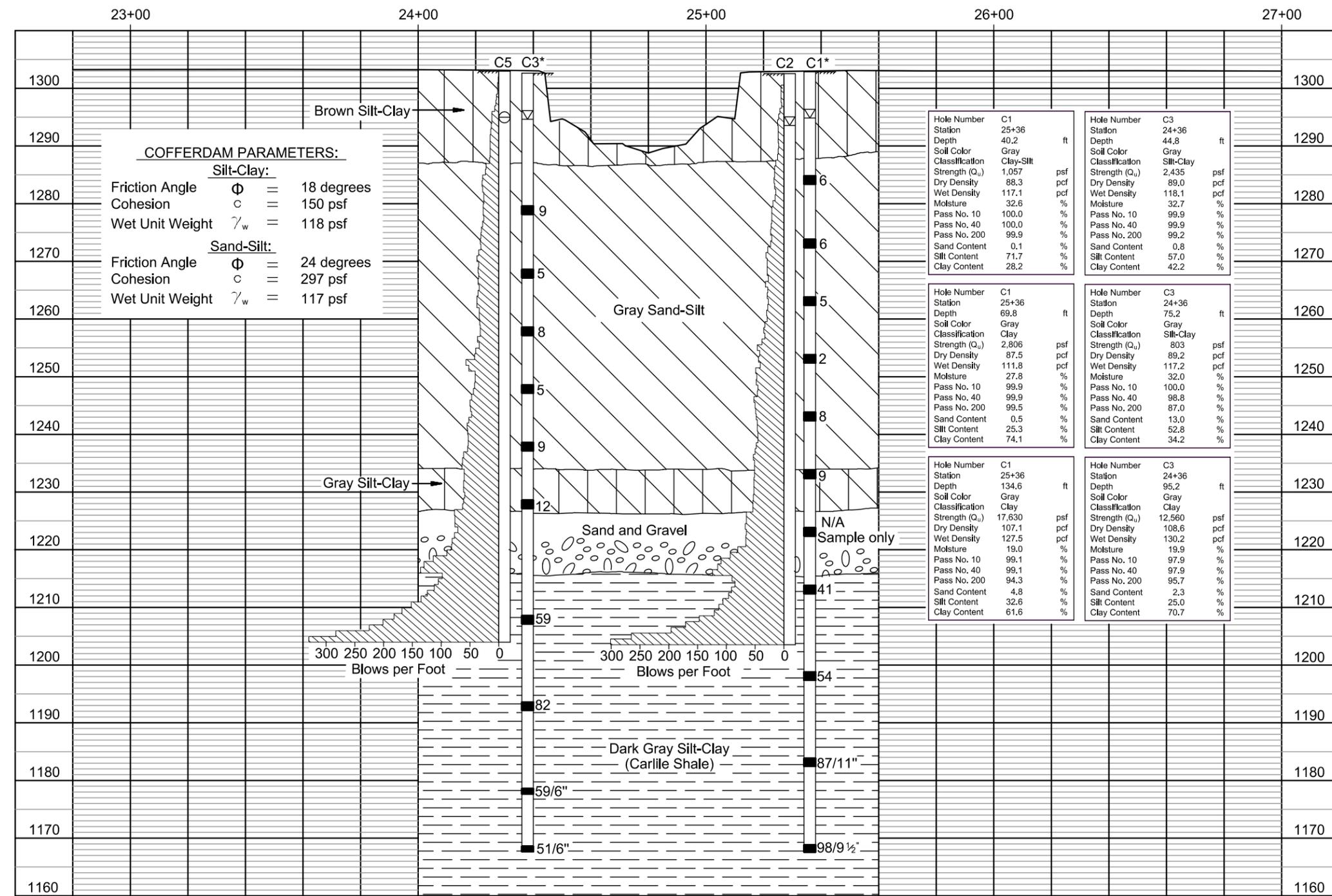
Sample Zone 48 Blows Per Foot

If refusal of the penetration test was achieved based on 50 blows within one of the 6 inch sets. The number of blows over inches is listed.

Carlile Shale is a marine shale with a textural classification that varies from silt-clay to sand-clay. 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.

PILING LAYOUT



LEGEND

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

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.

Penetration test holes are drilled with a 6 5/8 inch diameter hollow stem auger. Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.

SUBSURFACE INVESTIGATION & PILING LAYOUT FOR 102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
EAST FORK OF BRULE CREEK
STA. 24+39.69 TO 25+42.31
STRUCTURE NO. 64-050-060

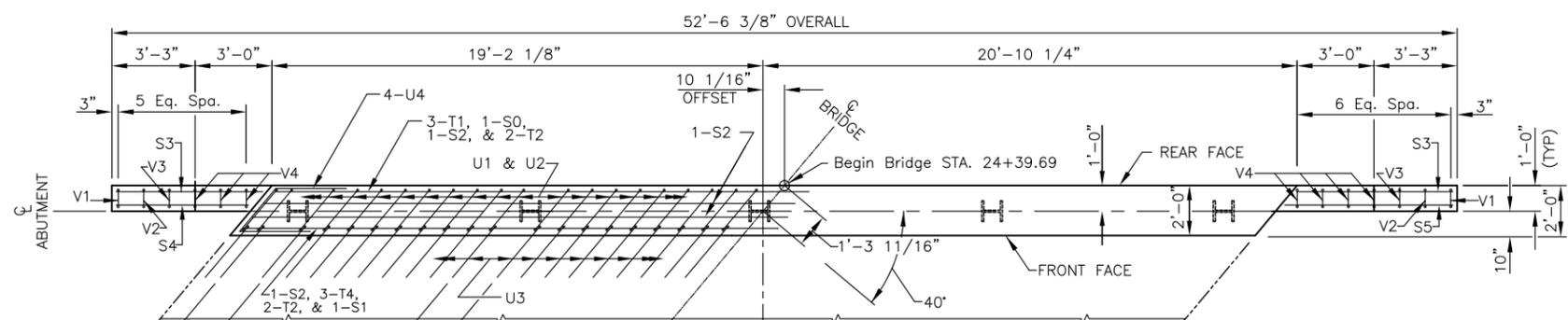
40' SKEW RHF
SEC. 2/1-T94N-R50W
BRF 6397(03)
PCN 01DY

UNION COUNTY
SOUTH DAKOTA

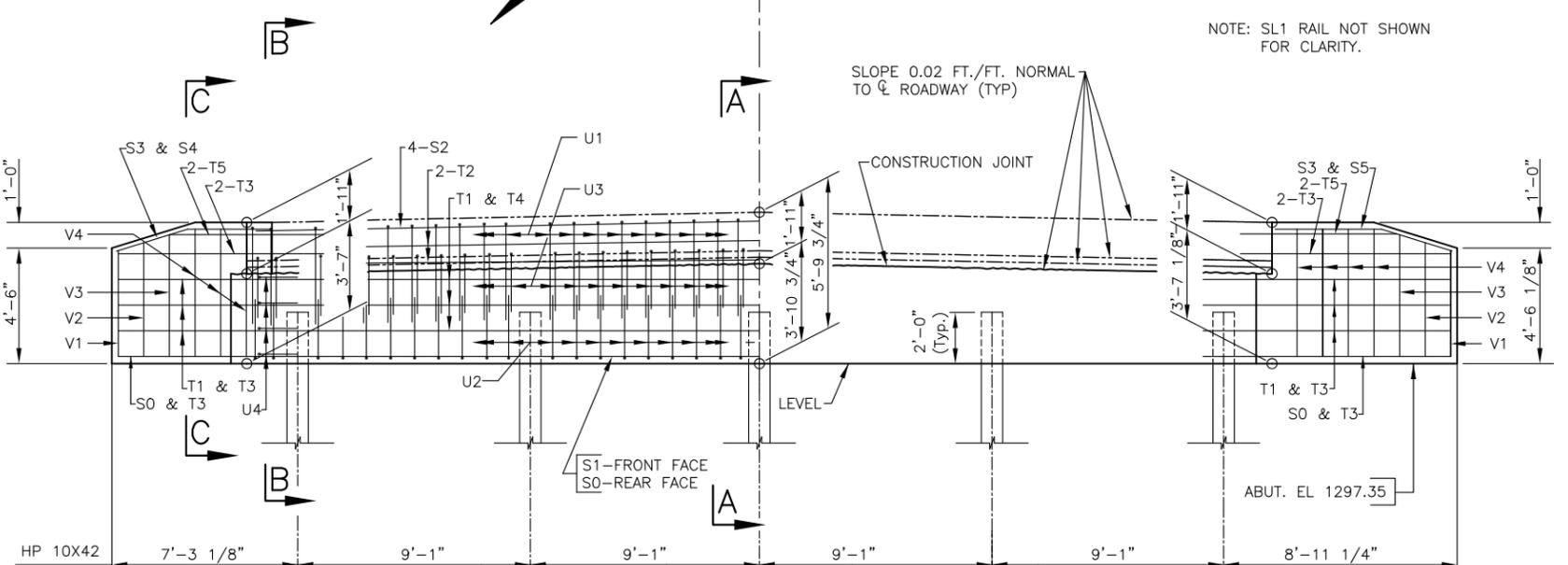
HL93

PREPARED BY: SDDOT
DESIGNED BY: MARCH 2015
DRAWN BY: JL
CHECKED BY: JW

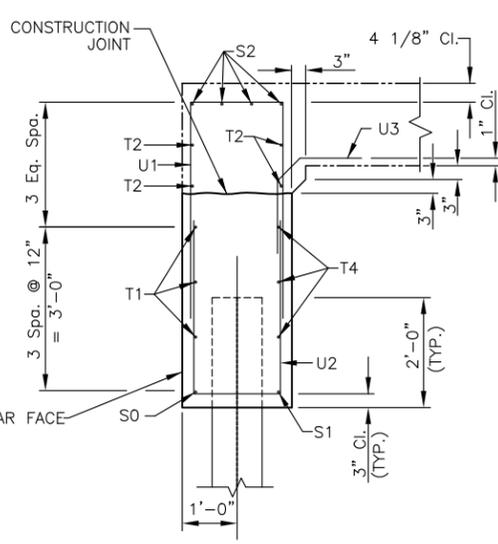
SHEET (5) OF (13)



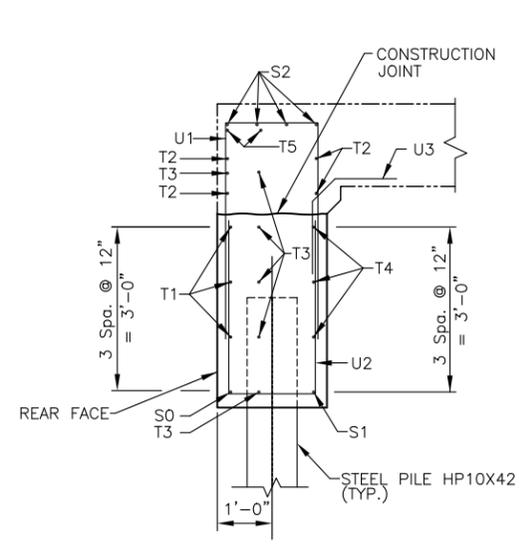
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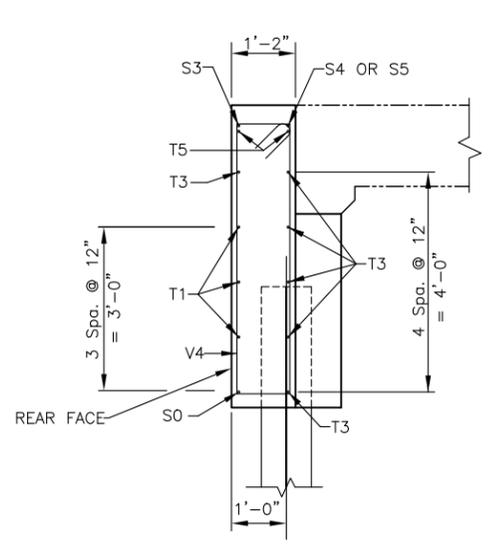
ELEVATION



SEC. A-A



SEC. B-B

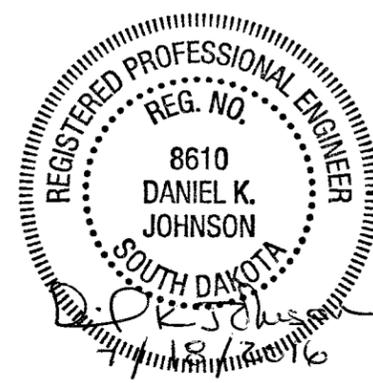


SEC. C-C

REINFORCING SCHEDULE					BENDING DETAILS	
(FOR ONE ABUTMENT)						
MK.	NO.	SIZE	LENGTH	TYPE		
S0	1	9	52'-2"	STR.	S3 2'-10"	
S1	1	9	39'-8"	STR.	S4 2'-0"	
S2	4	9	39'-8"	STR.	S5 3'-8"	
S3	2	9	6'-1"	19B	3'-3"	
S4	1	9	5'-5"	19B	TYPE 19B	
S5	1	9	6'-11"	19B	3.25	
T1	3	5	52'-2"	STR.	1'-6 1/2"	
T2	4	5	39'-8"	STR.	2'-2 1/8"	
T3	12	5	9'-5"	STR.	U1 U2	
T4	3	5	39'-8"	STR.	4'-5"	
T5	4	5	6'-9"	STR.	2'-6"	
U1	40	6	11'-1"	17	U3	
U2	40	4	7'-3"	17	U4	
U3	40	4	2'-10"	S12A	U5	
U4	8	5	5'-9"	19C	U6	
V1	2	4	10'-5"	T1	U7	
V2	2	4	11'-1"	T1	U8	
V3	2	4	11'-7"	T1	U9	
V4	7	4	12'-3"	T1	U10	

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

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
		ABUT. NO. 1
CLASS A45 CONCRETE, BRIDGE	CuYd	13.5
REINFORCING STEEL	Lb	943
EPOXY COATED REINFORCING STEEL	Lb	1,676
STRUCTURE EXCAVATION, BRIDGE	CuYd	9.7
PREBORING PILE	Ft	50
EXTRACT PILE	Ea	3
HP 10X42 STEEL TEST PILE, FURNISH & DRIVE	Ft	1 @ 120' = 120'
HP 10X42 STEEL BEARING PILE, FURNISH & DRIVE	Ft	4 @ 115' = 460'



ABUTMENT NO. 1 DETAIL
FOR
102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
 EAST FORK OF BRULE CREEK
 STA. 24+39.69 TO 25+42.31
 STRUCTURE NO. 64-050-060

40' SKEW RHF
 SEC. 2/1-T94N-R50W
 BRF 6397(03)
 PCN 01DY

UNION COUNTY
 SOUTH DAKOTA

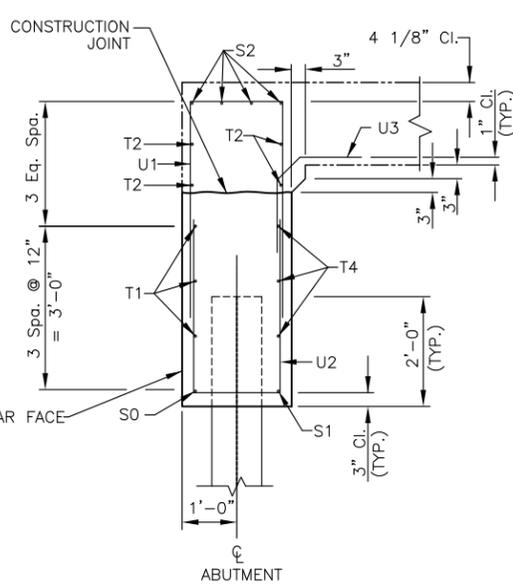
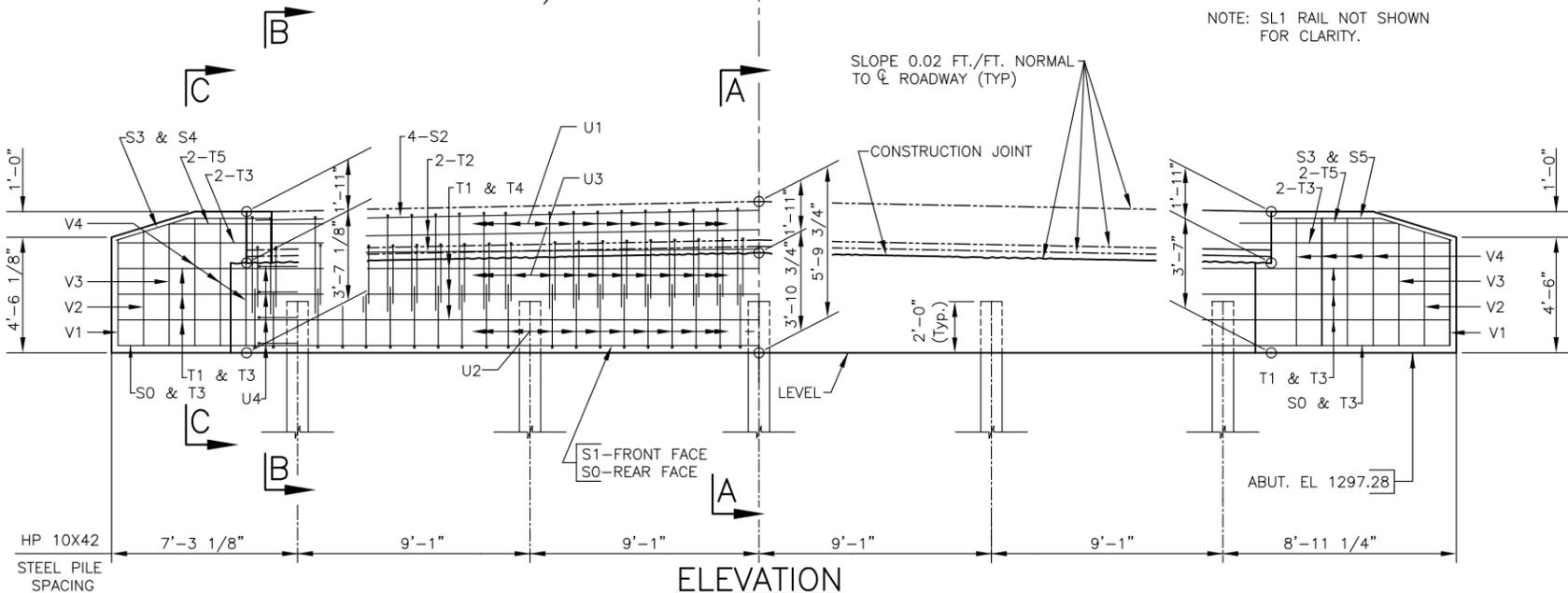
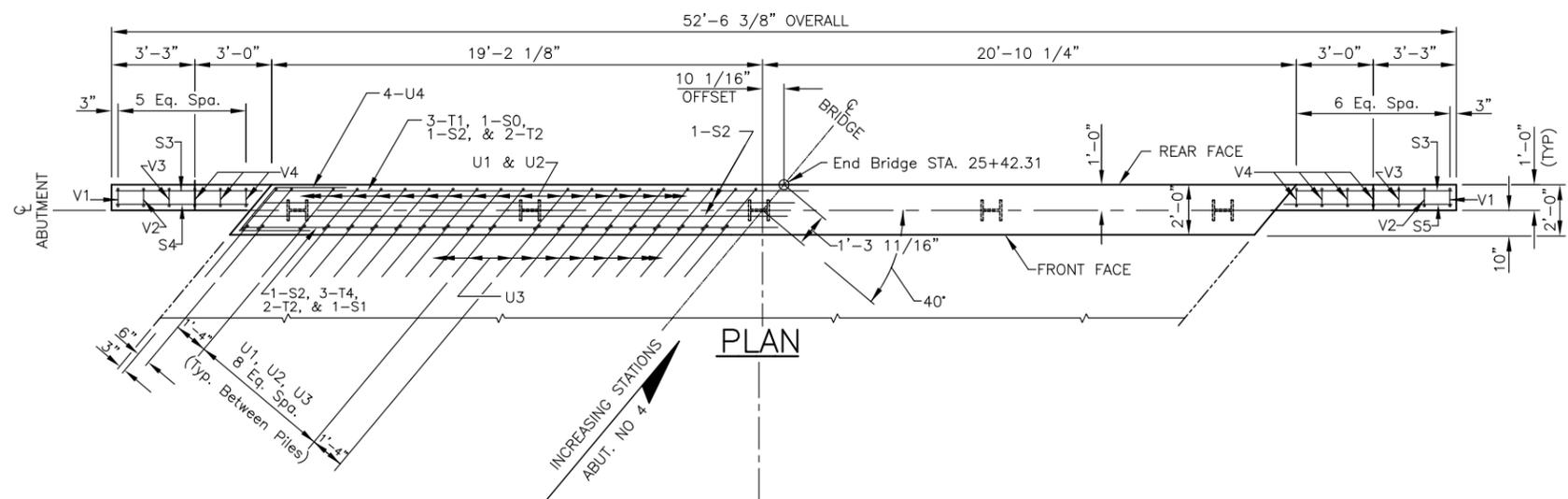
PREPARED BY:
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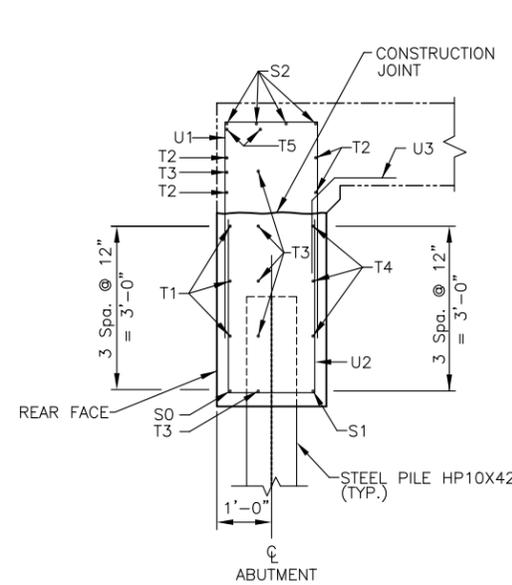
MARCH 2015

SHEET 6 OF 13

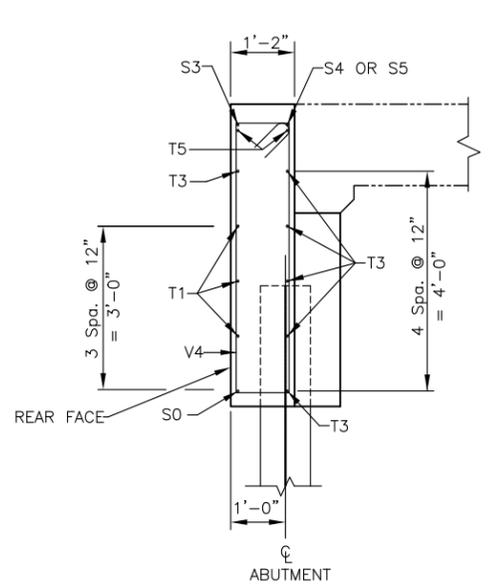
DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	NCS	GSS



SEC. A-A



SEC. B-B



SEC. C-C

REINFORCING SCHEDULE				(FOR ONE ABUTMENT)	
MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
S0	1	9	52'-2"	STR.	
S1	1	9	39'-8"	STR.	
S2	4	9	39'-8"	STR.	
S3	2	9	6'-1"	19B	
S4	1	9	5'-5"	19B	
S5	1	9	6'-11"	19B	
T1	3	5	52'-2"	STR.	
T2	4	5	39'-8"	STR.	
T3	12	5	9'-5"	STR.	
T4	3	5	39'-8"	STR.	
T5	4	5	6'-9"	STR.	
U1	40	6	11'-1"	17	
U2	40	4	7'-3"	17	
U3	40	4	2'-10"	S12A	
U4	8	5	5'-9"	19C	
V1	2	4	10'-5"	T1	
V2	2	4	11'-1"	T1	
V3	2	4	11'-7"	T1	
V4	7	4	12'-3"	T1	

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
		ABUT. NO. 4
CLASS A45 CONCRETE, BRIDGE	CuYd	13.5
REINFORCING STEEL	Lb	943
EPOXY COATED REINFORCING STEEL	Lb	1,676
STRUCTURE EXCAVATION, BRIDGE	CuYd	9.7
PREBORING PILE	Ft	50
EXTRACT PILE	Ea	0
HP 10X42 STEEL TEST PILE, FURNISH & DRIVE	Ft	1 @ 120' = 120'
HP 10X42 STEEL BEARING PILE, FURNISH & DRIVE	Ft	4 @ 115' = 460'

ABUTMENT NO. 4 DETAIL
FOR
102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
EAST FORK OF BRULE CREEK
STA. 24+39.69 TO 25+42.31
STRUCTURE NO. 64-050-060

40' SKEW RHF
SEC. 2/1-T94N-R50W
BRF 6397(03)
PCN 01DY

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
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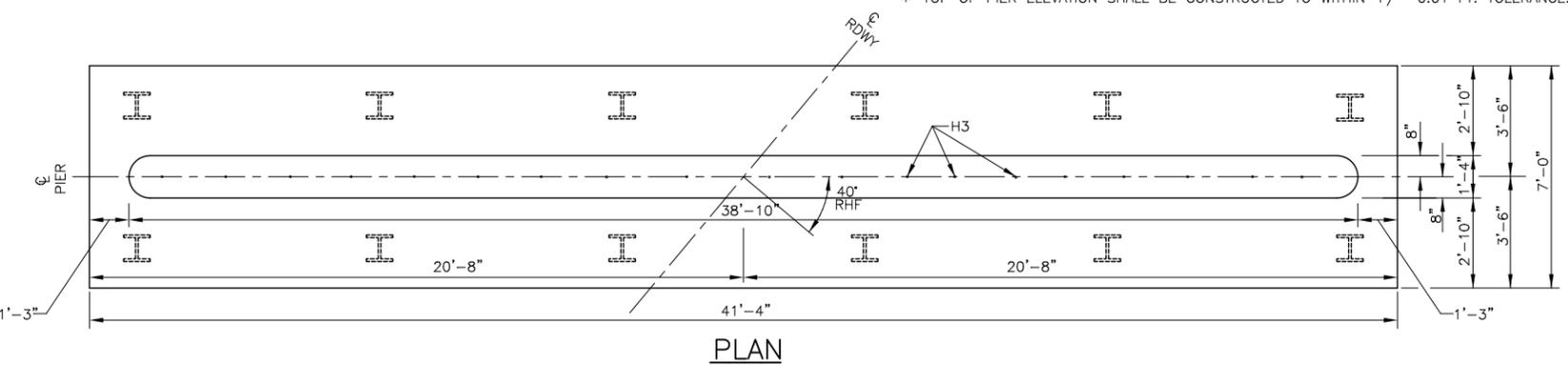
MARCH 2015

SHEET 7 OF 13

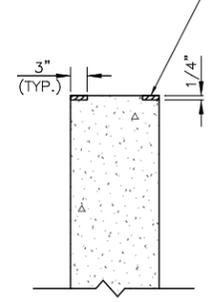
DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	NCS	GSS



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



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



REINFORCING SCHEDULE

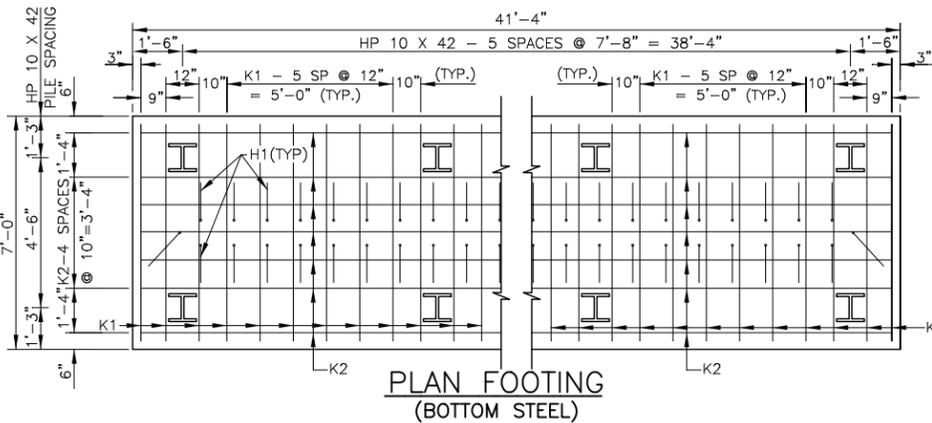
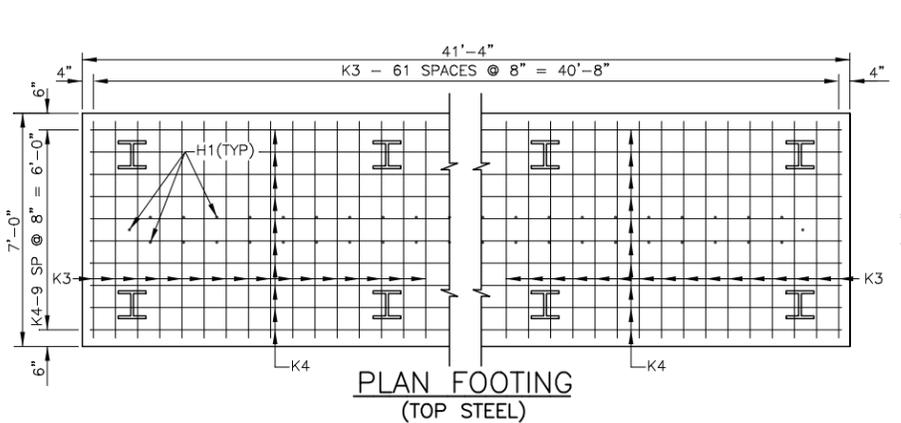
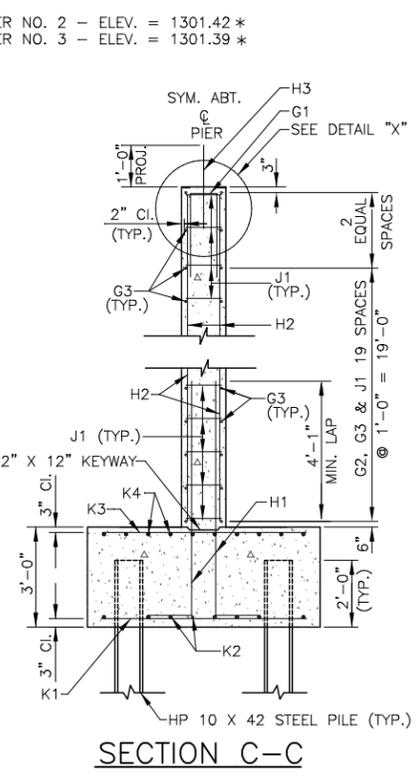
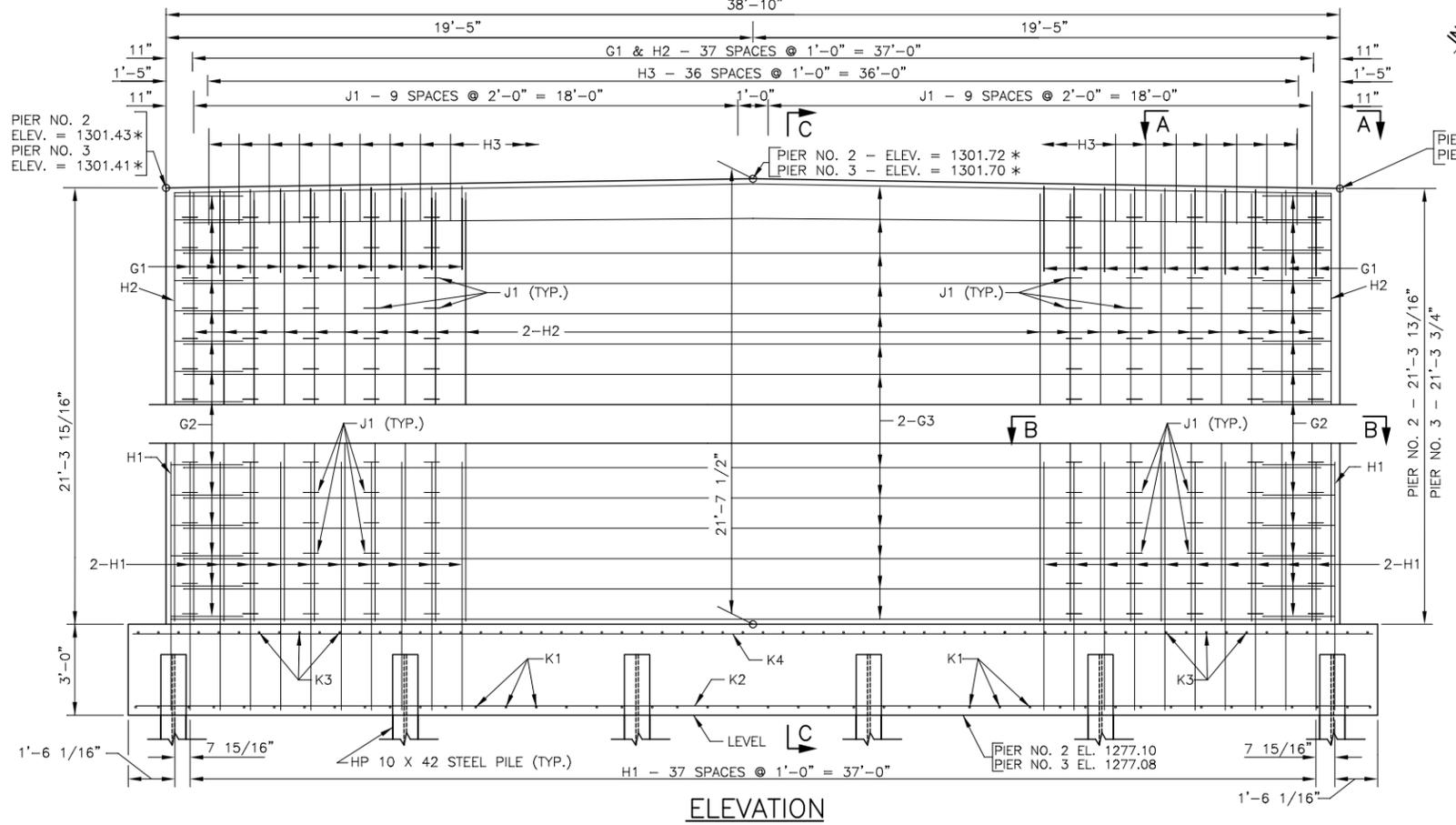
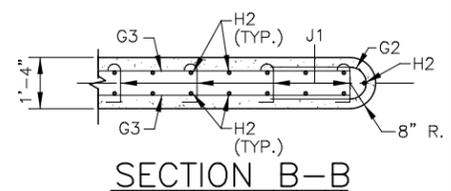
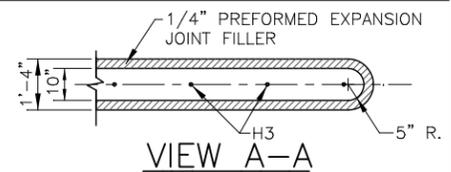
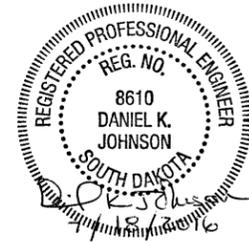
(For One Pier)

MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
G1	38	7	5'-11"	17	
G2	44	4	5'-6"	S11	
G3	44	4	37'-6"	STR.	
H1	78	9	9'-6"	17A	
H2	78	9	21'-0"	STR.	
H3	37	5	2'-6"	STR.	
J1	440	4	1'-9"	T9	
K1	44	6	6'-8"	STR.	
K2	7	6	41'-0"	STR.	
K3	62	4	6'-8"	STR.	
K4	10	4	41'-0"	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	CuYd	73.0	73.0
REINFORCING STEEL	Lb	11,748	11,748
EPOXY COATED REINFORCING STEEL	Lb	97	97
STRUCTURE EXCAVATION, BRIDGE	CuYd	225.0	225.0
EXTRACT PILE	Each	8	13
HP 10 X 42 STEEL TEST PILE, FURNISH & DRIVE	Ft	1 @ 100' = 100'	1 @ 100' = 100'
HP 10 X 42 STEEL BEARING PILE, FURNISH & DRIVE	Ft	11 @ 95' = 1,045'	11 @ 95' = 1,045'



PIER DETAILS FOR 102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

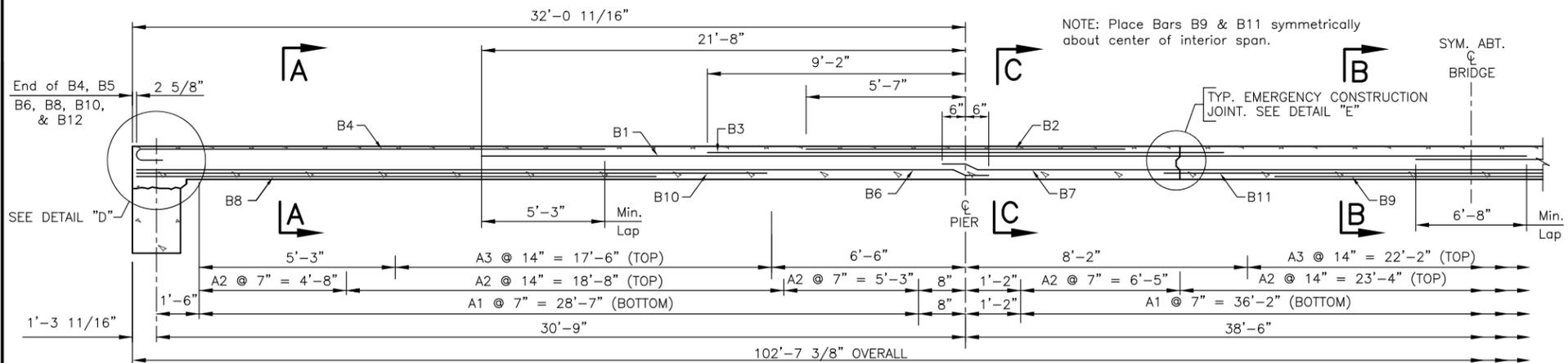
30'-0" ROADWAY
EAST FORK OF BRULE CREEK
STA. 24+39.69 TO 25+42.31
STRUCTURE NO. 64-050-060

40° SKEW RHF
SEC. 2/1-T94N-R50W
BRF 6397(03)
PCN 01DY

UNION COUNTY
SOUTH DAKOTA

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HALF LONGITUDINAL SECTION VIEW

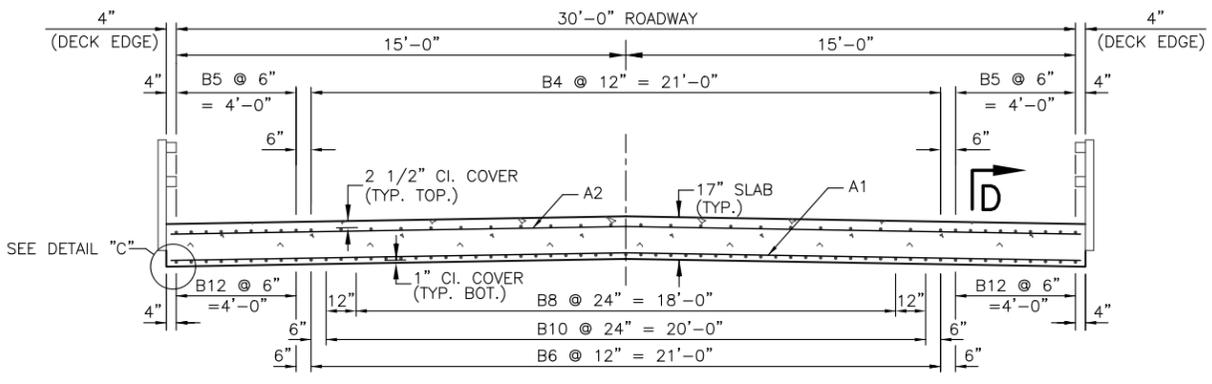
REINFORCING SCHEDULE

NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
A1	163	6	39'-8"	STR.
A2	111	5	39'-8"	STR.
A3	104	5	8'-6"	1A
B1	80	10	44'-3"	STR.
B2	20	10	11'-2"	STR.
B3	22	10	18'-4"	STR.
B4	44	9	16'-9"	1A
B5	36	10	18'-4"	1A
B6	44	9	32'-5"	STR.
B7	22	9	39'-8"	STR.
B8	20	9	21'-8"	STR.
B9	10	9	17'-8"	STR.
B10	22	9	25'-4"	STR.
B11	11	9	25'-4"	STR.
B12	36	9	32'-5"	STR.
B13	18	9	39'-8"	STR.
C	300	3	2'-7"	S10

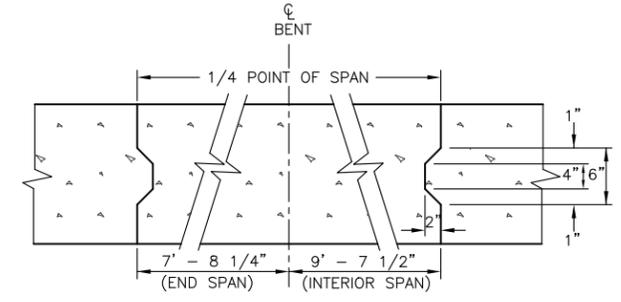
NOTES:
 ALL DIMENSIONS ARE OUT TO OUT OF BARS.
 ALL REINFORCING STEEL SHALL BE EPOXY COATED.
 SEE SHEET 10 OF 13 FOR LOCATION OF C BARS.

ESTIMATED QUANTITIES

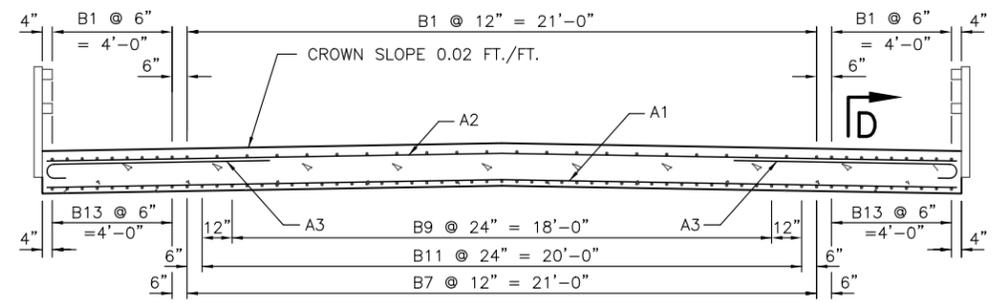
ITEM	UNIT	QUANTITY
CONCRETE PENETRATING SEALER	SqYd	349.7
CLASS A45 CONCRETE, BRIDGE DECK	CuYd	168.4
EPOXY COATED REINFORCING STEEL	Lb	57,921



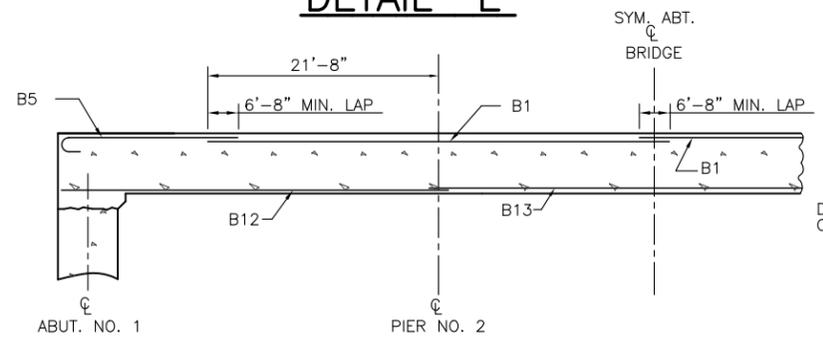
SEC. A-A



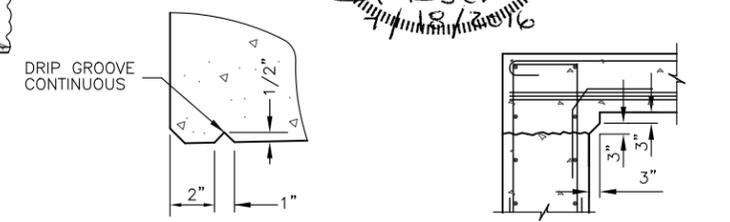
DETAIL "E"



SEC. B-B

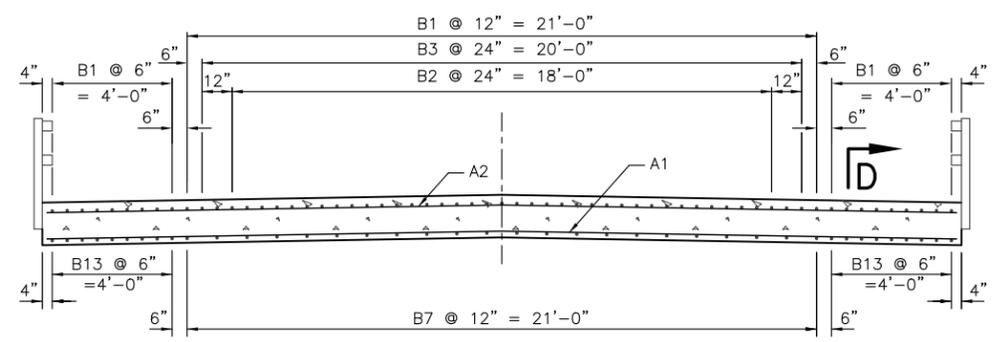


SECTION D-D (EDGE BEAM)

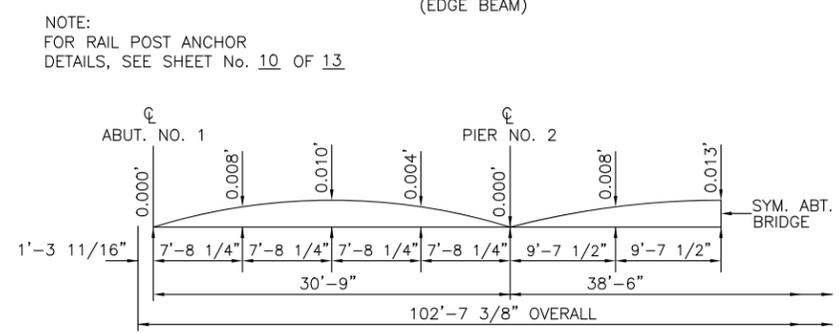


DETAIL "C"

DETAIL "D"



SEC. C-C



CAMBER DIAGRAM

NOTE:
 FOR RAIL POST ANCHOR
 DETAILS, SEE SHEET No. 10 OF 13

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

SUPERSTRUCTURE DETAILS FOR

102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
 EAST FORK OF BRULE CREEK
 STA. 24+39.69 TO 25+42.31
 STRUCTURE NO. 64-050-060

40' SKEW RHF
 SEC. 2/1-T94N-R50W
 BRF 6397(03)
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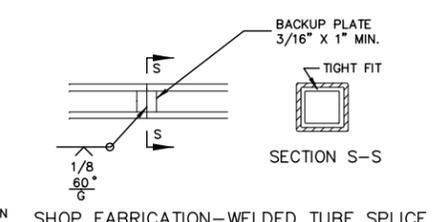
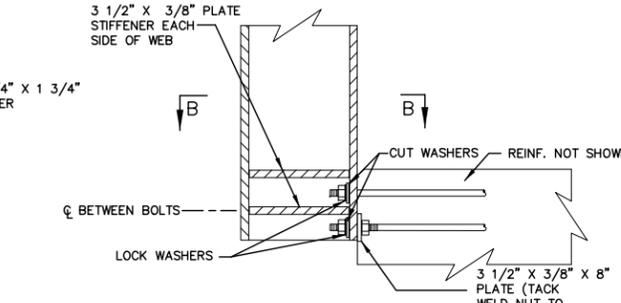
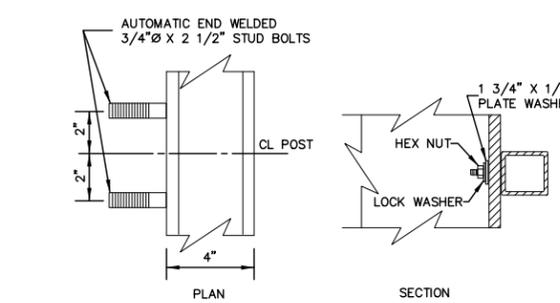
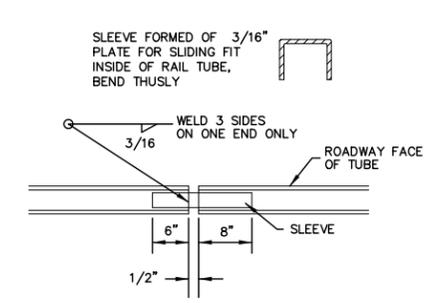
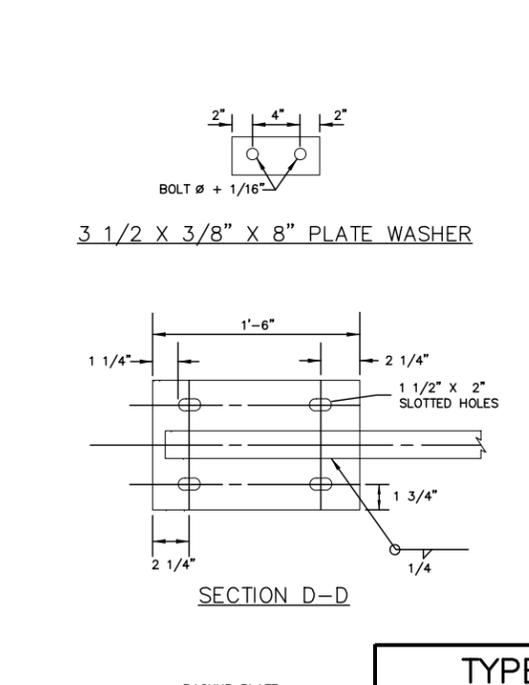
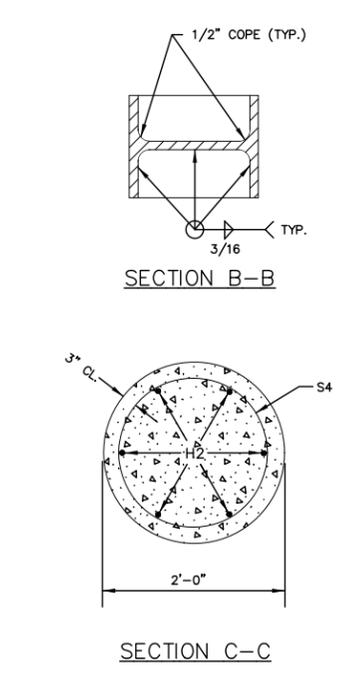
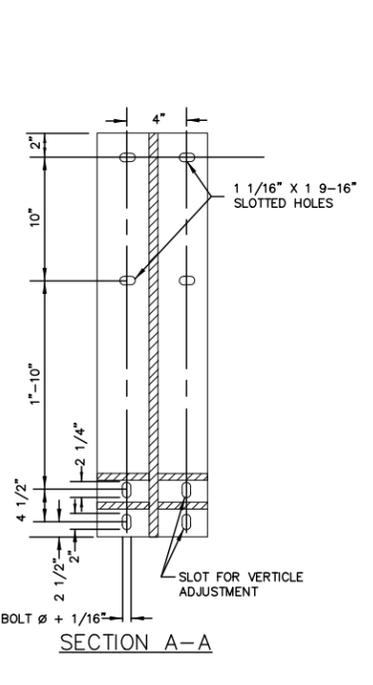
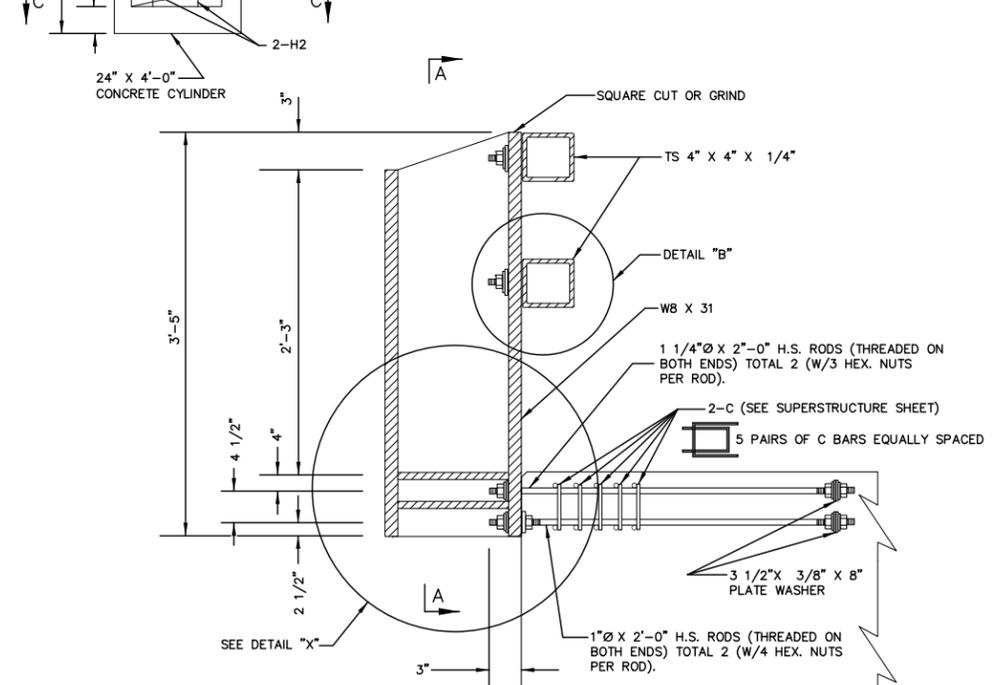
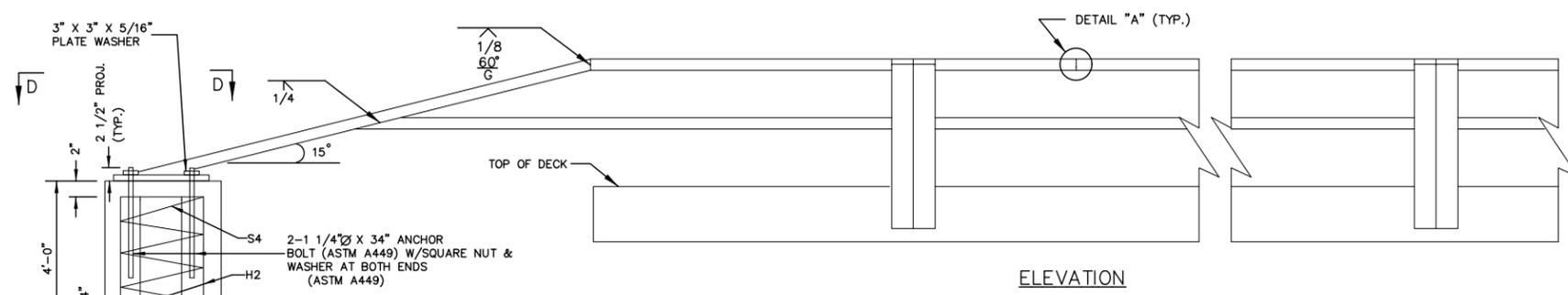
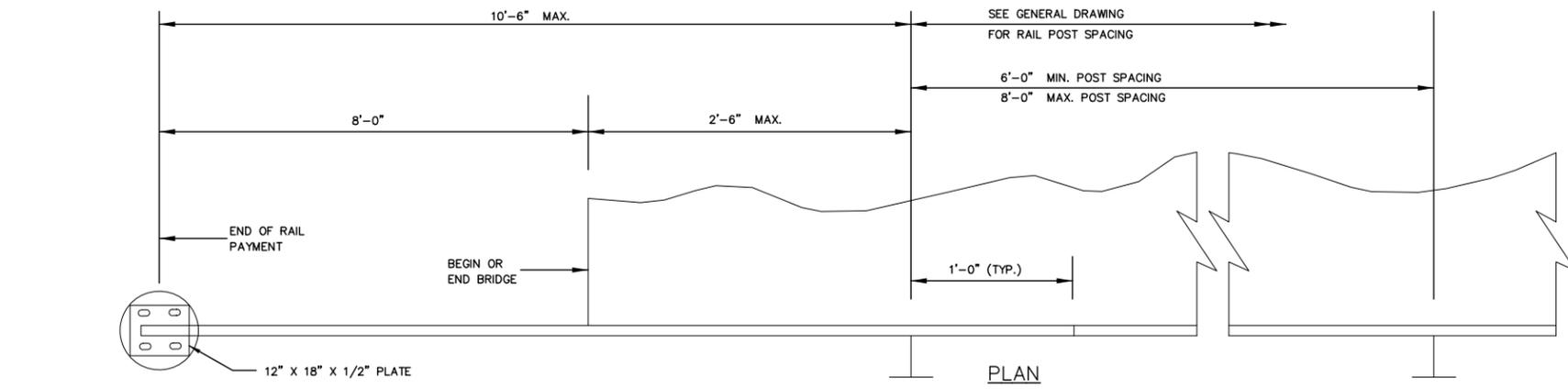
DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	NCS	GSS

GENERAL NOTES

- RAIL DESIGN SHALL BE ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 2012 EDITION WITH 2013 INTERIMS.
- RAIL POSTS SHALL BE PERPENDICULAR TO ADJACENT ROADWAY GRADE.
- GUARD RAIL BOLTS, RAIL ANCHOR BOLTS, AND ALL THE NUTS, WASHERS, AND PLATE WASHERS THAT GO WITH THESE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 153.
- RAIL POST ANCHOR BOLTS MADE OF H.S. RODS SHALL BE ASTM A449. PROVIDE HARDENED STEEL WASHERS AND PLATE WASHERS AS SHOWN. NUTS SHALL CONFORM TO ASTM A563.
- RAIL POSTS AND OTHER STRUCTURAL STEEL PARTS SHALL CONFORM TO ASTM A709 GR. 36. TUBES SHALL CONFORM TO ASTM A500 GRADE B.
- THE RAIL POSTS, TUBE MEMBERS, THE PROJECTED PORTIONS OF THE ANCHOR BOLTS, AND THE NUTS AND WASHERS SHALL BE SATISFACTORILY PAINTED IN ACCORDANCE WITH SECTION 411 OF THE S.D. STANDARD SPECIFICATIONS. THE COLOR OF THE FINISH COAT SHALL BE AN APPROVED GREEN, FEDERAL STANDARD NO. 24108. THE NUTS, BOLTS, AND WASHERS MAY BE GALVANIZED IN ACCORDANCE WITH ASTM A153. THE RAIL POSTS AND TUBE MEMBERS MAY BE GALVANIZED IN ACCORDANCE WITH ASTM A123 IN SUBSTITUTION FOR PAINTING. IF GALVANIZING IS SELECTED, NO PAINT WILL BE APPLIED OVER GALVANIZED SURFACES.
- TUBES SHALL BE CONTINUOUS OVER NOT LESS THAN 3 INTERMEDIATE POSTS, WITH A MINIMUM LENGTH OF 3 PANELS EXCEPT AS NOTED.
- NO MORE THAN ONE TUBE SPLICE PER PANEL IS PERMITTED.
- STUD BOLT NUTS SHALL BE TORQUED TO 175 FT. LBS., ANCHOR BOLTS SHALL BE WRENCH TIGHT.
- PROVIDE 1/2" DIA. DRAIN HOLES IN THE TUBES NEAR THE ENDS OF THE RAIL AND NEAR SPLICES.
- ALL CONCRETE SHALL BE CLASS A45 AS SPECIFIED IN SECTION 460 OF THE SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
- DESIGN HEIGHT OF RAIL IS BASED ON A FUTURE OVERLAY OF 2" MAXIMUM.
- ALL BOLTS, NUTS, WASHERS, POSTS, PLATES, WELDING AND PAINTING OR GALVANIZING ARE CONSIDERED AS PART OF THE RAIL PAYMENT. ALL COSTS OF INSTALLING FOUR (4) RAIL ANCHORS INCLUDING CONCRETE, EXCAVATION, FORMING, REINFORCING STEEL AND ANCHOR BOLTS SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER FOOT FOR TYPE T115 BRIDGE RAILING.
- AUTOMATIC END WELDED THREADED STUDS SHALL CONFORM TO ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE, SECTION 7, TYPE A, FOR MATERIAL, INSTALLATION, AND INSPECTION.

REINFORCING SCHEDULE				
MK.	NO.	SIZE	LENGTH	TYPE
S4	4	3	48'-0"	SPIRAL
H2	24	5	3'-6"	STR.

NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS. SPIRAL-6" PITCH-EXTRA 1 1/2" TURNS EACH END. SPLICE AS REQUIRED USE 2 VERTICAL SPACE BARS.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
TYPE T115 STEEL RAILING	L.F.	237.2

TYPE T115 RAILING DETAILS FOR 102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
EAST FORK OF BRULE CREEK
STA. 24+39.69 TO 25+42.31
STRUCTURE NO. 64-050-060

40° SKEW RHF
SEC. 2/1-T94N-R50W
BRF 6397(03)
PCN 01DY

UNION COUNTY
SOUTH DAKOTA

PREPARED BY:
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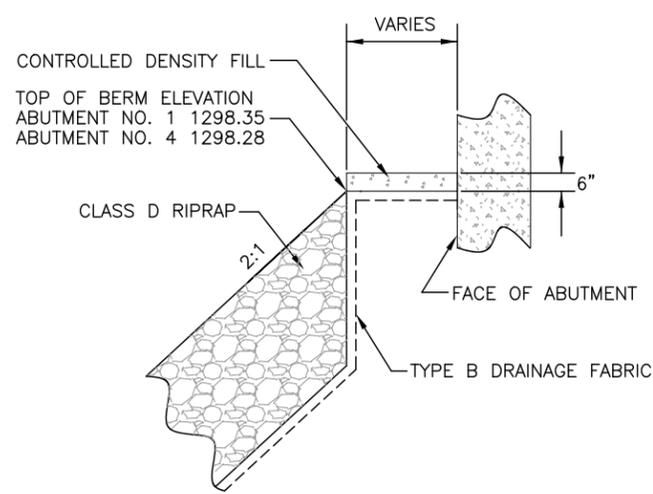
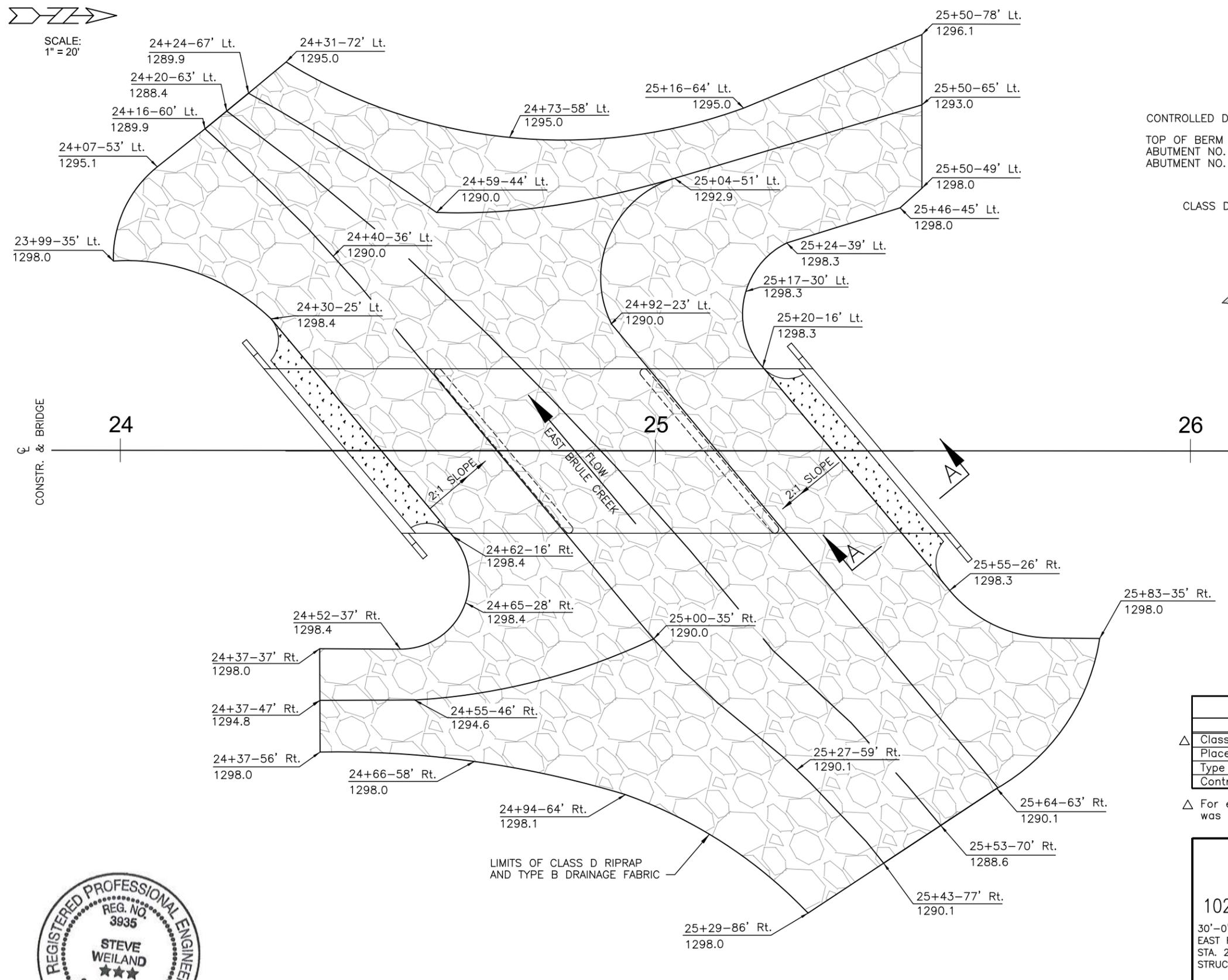
REVISED 10-16-03, NJC
REVISED 3-30-98, BS

MARCH 2015

SHEET 10 OF 13



SCALE:
1" = 20'



SECTION A-A

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
△ Class D Riprap	Ton	2273.0
Place Riprap	Ton	500.0
Type B Drainage Fabric	SqYd	2008
Controlled Density Fill	CuYd	8.1

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

RIPRAP LAYOUT
FOR
102'-7 3/8" CONTINUOUS CONCRETE BRIDGE

30'-0" ROADWAY
EAST FORK OF BRULE CREEK
STA. 24+39.69 TO 25+42.31
STRUCTURE NO. 64-050-060

40' SKEW RHF
SEC. 2/1-T94N-R50W
BRF 6397(03)
PCN 01DY

UNION COUNTY
SOUTH DAKOTA

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MARCH 2015

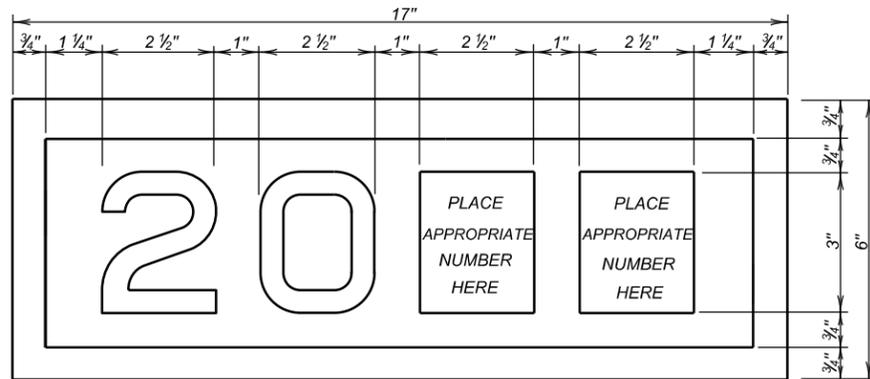
SHEET (11) OF (13)

DESIGNED BY	DRAWN BY	CHECKED BY
SMW	LAJ	NCS



PLAN

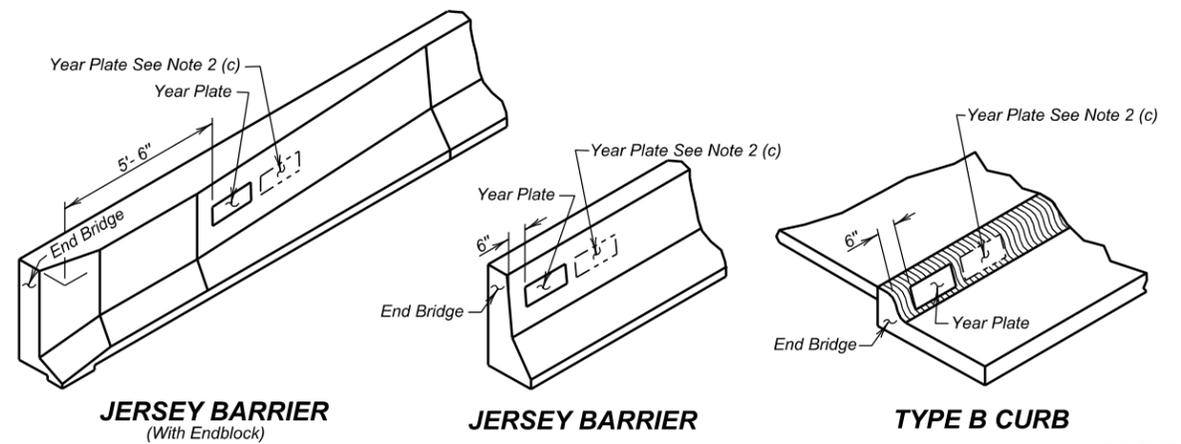
Note: An estimated quantity of 500 Tons of Class C Riprap has been placed on the existing bridge berms and behind the south abutment backwall. Contractor shall salvage and use the in place riprap as a substitute for the Class D Riprap in areas other than the sloping abutment berms and channel banks as directed by the Engineer. (See Salvaged Riprap in Grading Notes)



YEAR PLATE DETAILS

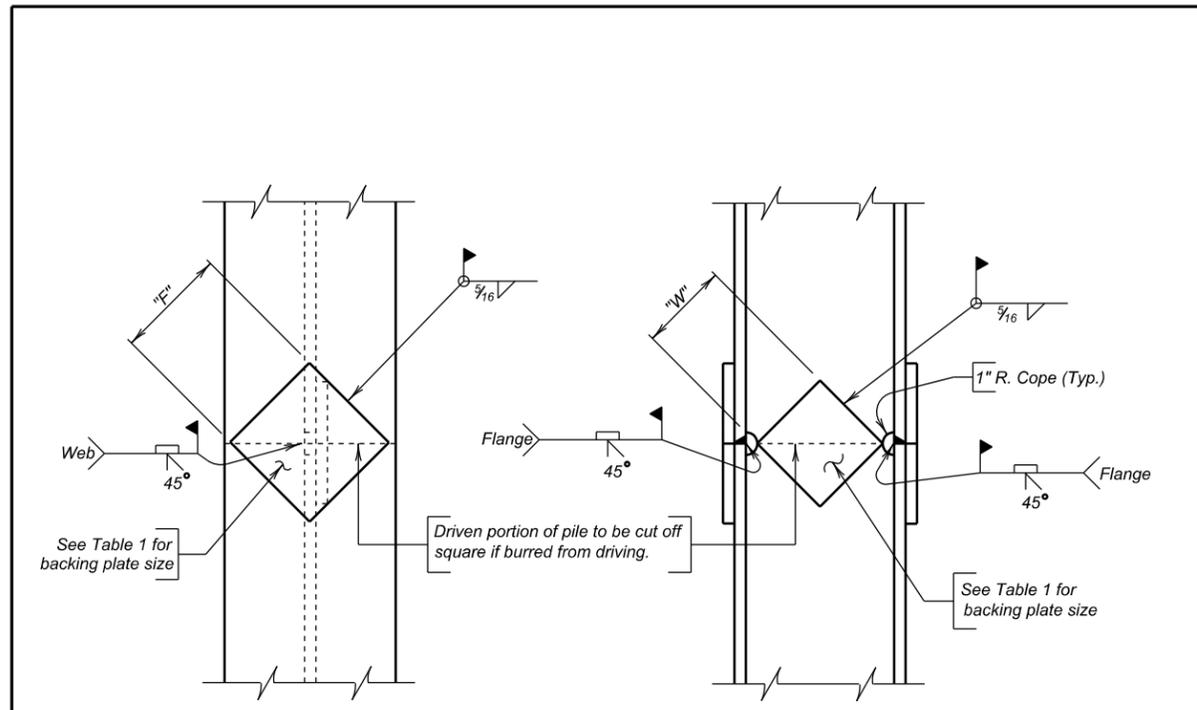
GENERAL NOTES:

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 (1/2) 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 1/2) 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.



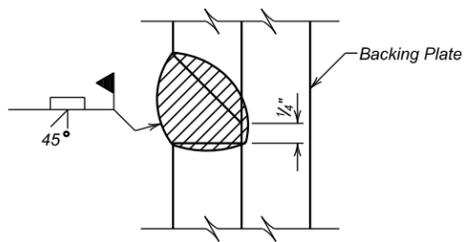
June 26, 2012

Published Date: 2nd Qtr. 2016	S D D O T	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:

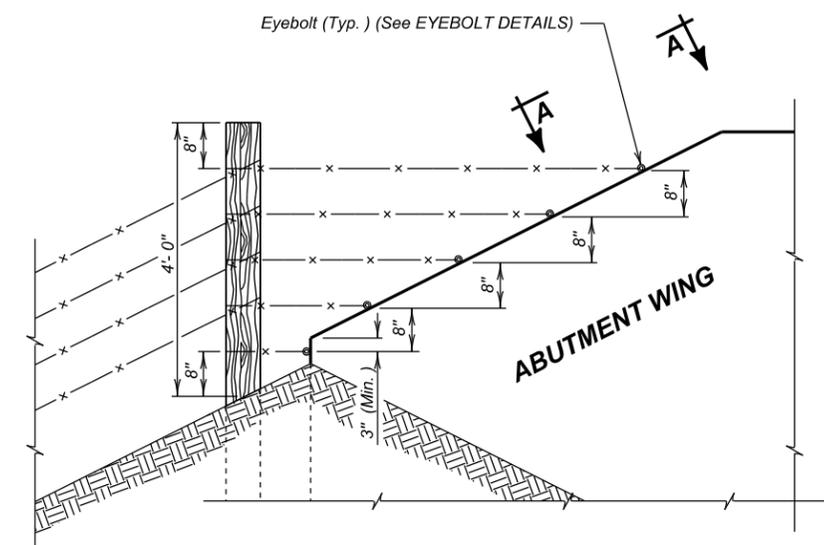
1. Steel for backing plates shall conform to ASTM A709 Grade 50.
2. Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
3. Welder must be certified and registered with the SDDOT.
4. Backing plate shall at a minimum be as thick as the web of the 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 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
		Sheet 1 of 1

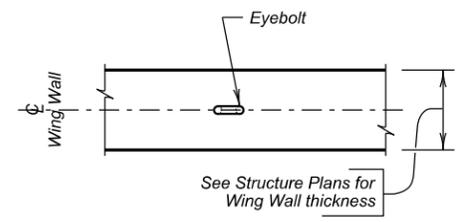
Published Date: 2nd Qtr. 2016



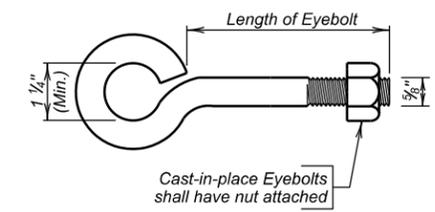
DETAIL FOR FENCE ANCHORS

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 5/8 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 1/2 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 5/8 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

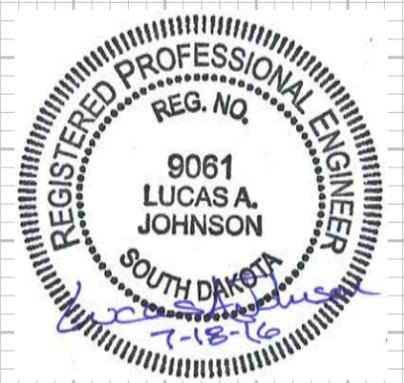
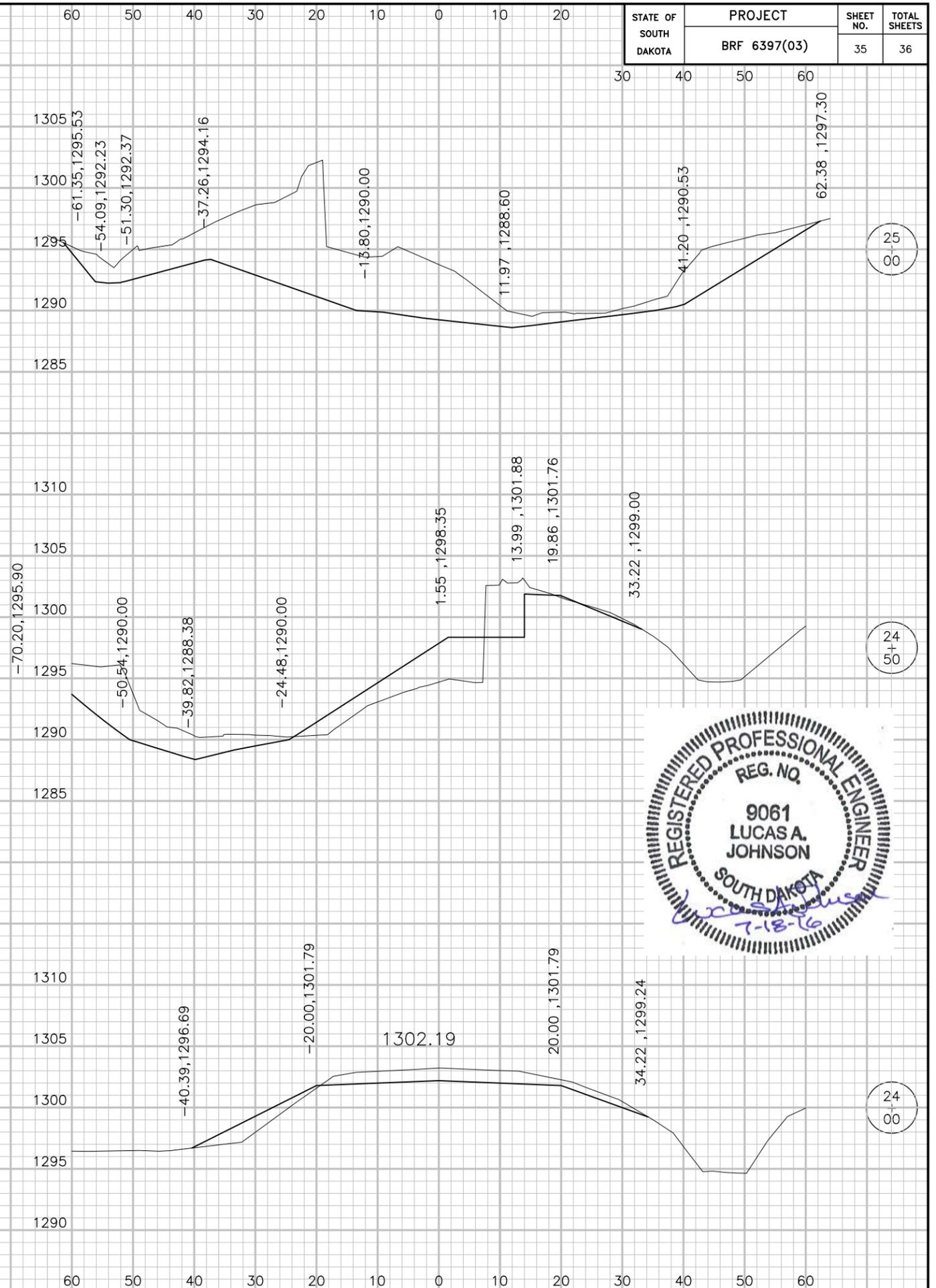
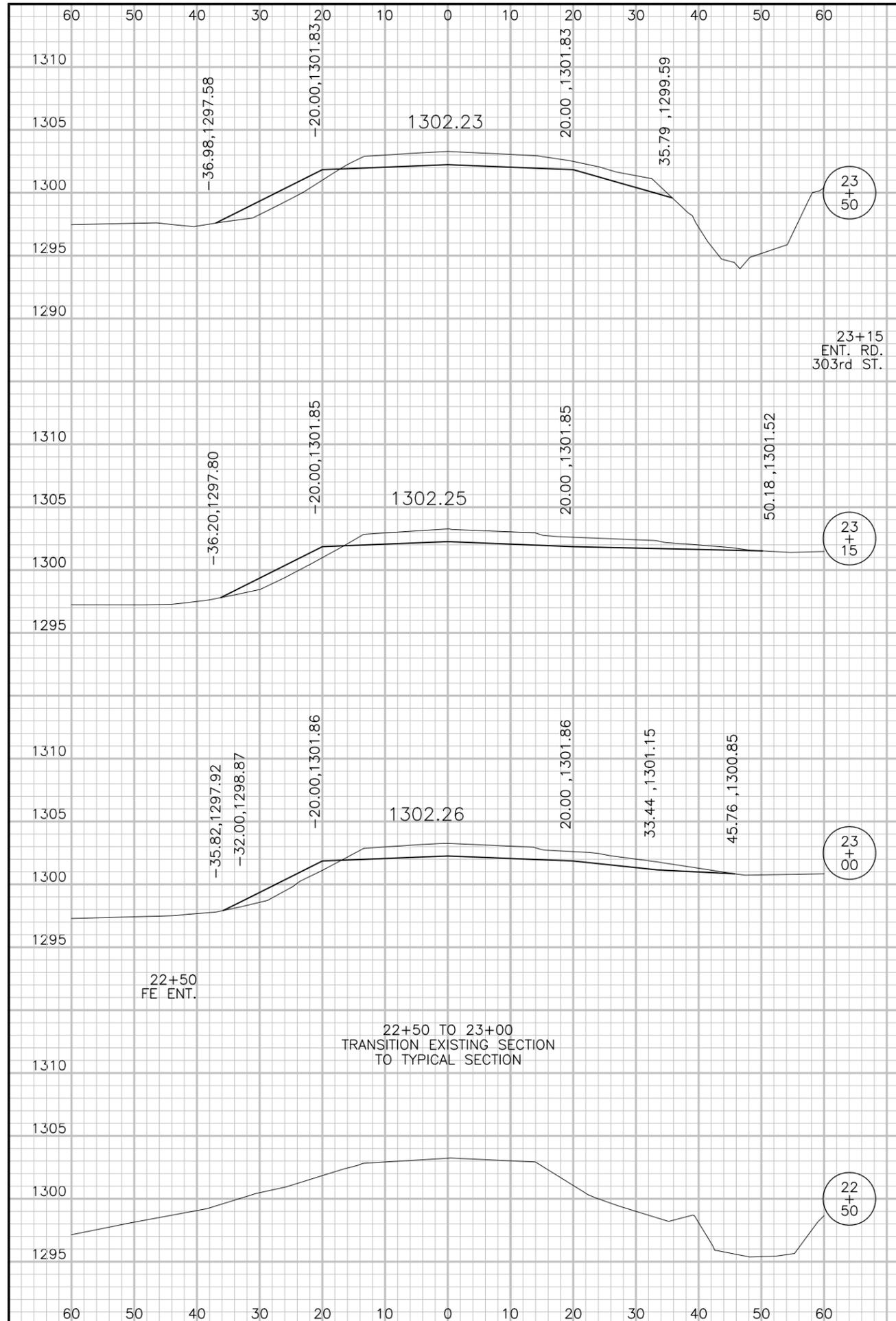


EYEBOLT DETAILS

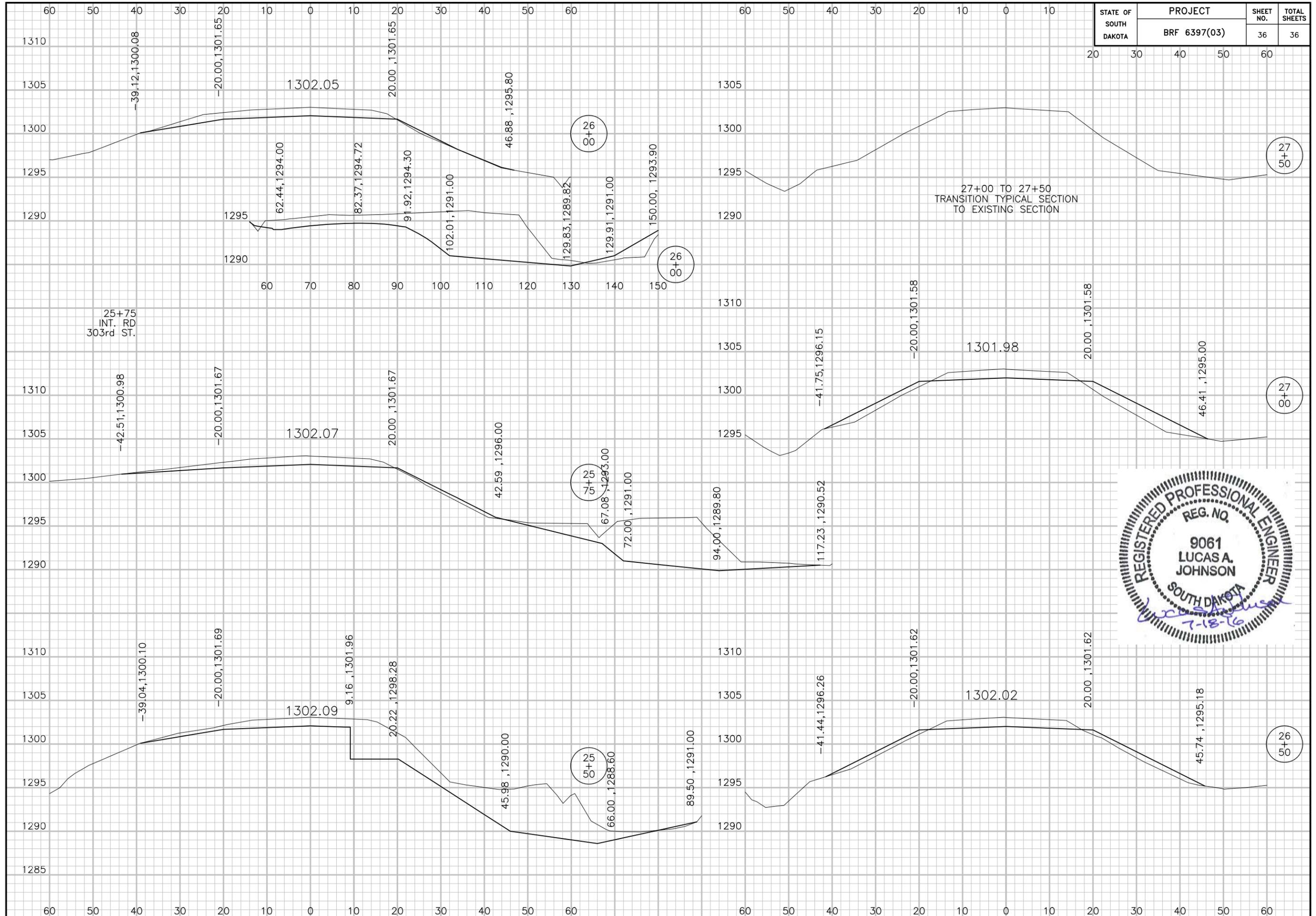
December 23, 2012

S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS LONGER THAN 6')	PLATE NUMBER 620.17
		Sheet 1 of 1

Published Date: 2nd Qtr. 2016



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6397(03)	36	36



27+00 TO 27+50
TRANSITION TYPICAL SECTION
TO EXISTING SECTION

25+75
INT. RD
303rd ST.

