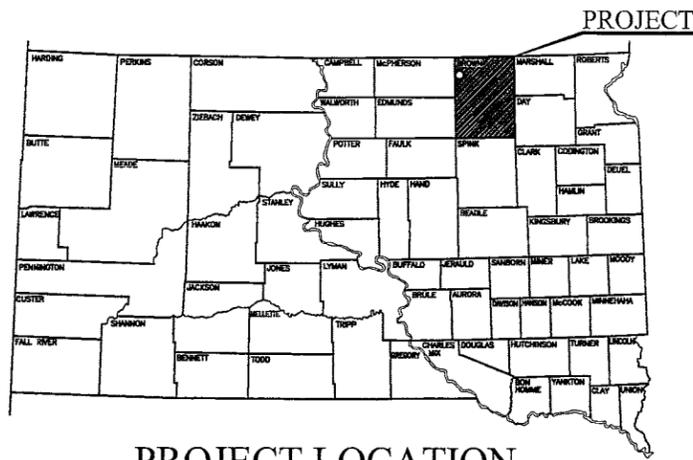


STATE OF SOUTH DAKOTA

DEPARTMENT OF TRANSPORTATION

FOR BIDDING PURPOSES ONLY

PLANS FOR PROPOSED
PROJECT BRF 6170(01)
BROWN COUNTY
 STRUCTURE AND APPROACH GRADING
 STRUCTURE NO. 07-010-070
 PCN 020S



PROJECT LOCATION

DESIGN DESIGNATION

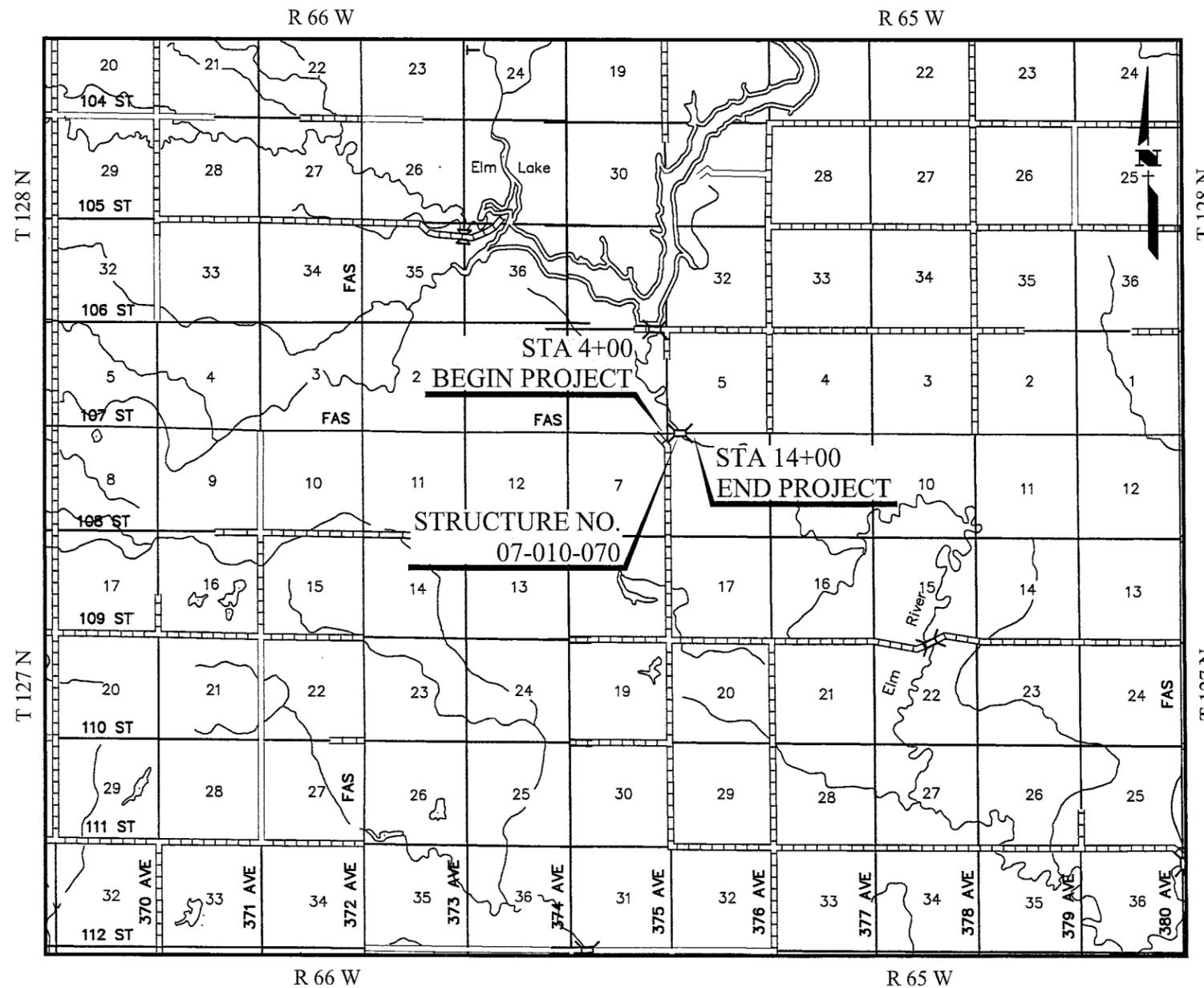
ADT (2009)	77
ADT (2029)	105
DHV	15
d	50%
T DHV	3.9%
T ADT	8.6%

STORM WATER PERMIT

MAJOR STREAM: ELM RIVER
 TOTAL PROJECT AREA: 2.91 ACRES
 AREA DISTURBED: 2.35 ACRES

APPROXIMATE BEGINNING LAT/LONG
 45.83758N -98.70161W

GROSS LENGTH	1,000	FEET	0.189	MILES
LENGTH OF EXCEPTIONS	----	FEET	----	MILES
NET LENGTH	1,000	FEET	0.189	MILES
LENGTH OF GRADING	833.75	FEET	0.158	MILES



LOCATION MAP

INDEX OF SHEETS

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SHEET 2 to 5	ESTIMATE OF QUANTITIES & NOTES
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SHEET 12 to 14	STANDARD PLATES
SHEET 15 to 16	SURVEY DATA & EASEMENTS
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SHEET 19 to 21	STANDARD PLATES
SHEET 22	TRAFFIC CONTROL
SHEET 23	STANDARD PLATES
SHEET 24 to 45	DETAILS FOR 166'-3" PRESTRESSED CONCRETE GIRDER BRIDGE
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SHEET 46 to 48	CROSS SECTIONS

COUNTY OFFICIALS

HIGHWAY SUPERINTENDENT: JANET WEISMANTEL
 3133 8TH AVE. NE
 ABERDEEN, SD 57401

COMMISSIONERS: BURT ELLIOT
 TOM FISCHBACH
 DUANE SUTTON
 MIKE WIESE
 NANCY HANSEN



ESTIMATE OF QUANTITIES

GRADING

BID ITEM NUMBER	ITEM	QTY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E1690	Remove Sediment	100	CuYd
110E1693	Remove Erosion Control Wattle	15	Ft
110E1700	Remove Silt Fence	513	Ft
120E0010	Unclassified Excavation	2,529	CuYd
120E0600	Contractor Furnished Borrow	9,485	CuYd
230E0010	Placing Topsoil	569	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
450E4759	18" CMP 16 Gauge, Furnish	75	Ft
450E4760	18" CMP, Install	75	Ft
450E5406	18" CMP Safety End, Furnish	2	Each
450E5407	18" CMP Safety End, Install	2	Each
600E0100	Type I Field Laboratory	1	Each
632E2530	Type 3 Object Marker	4	Each
634E0100	Traffic Control	992	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	1,550	SqYd
734E0154	12" Diameter Erosion Control Wattle	60	Ft
734E0604	High Flow Silt Fence	2,050	Ft
734E0610	Mucking Silt Fence	142	CuYd
734E0620	Repair Silt Fence	513	Ft
734E0630	Floating Silt Curtain	400	Ft

STRUCTURE (Prestressed Girder)

BID ITEM NUMBER	ITEM	QTY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
420E0100	Structure Excavation, Bridge	38	CuYd
423E3000	Temporary Works	Lump Sum	LS
460E0030	Class A45 Concrete, Bridge Deck	147.5	CuYd
460E0050	Class A45 Concrete, Bridge	92.7	CuYd
465E0100	Class A45 Concrete, Drilled Shaft	59.5	CuYd
465E0200	Drilled Shaft Excavation	55.0	CuYd
465E1038	38" Permanent Casing	39	Ft
470E0410	Type SL-1 Bridge Railing	332.5	Ft
480E0100	Reinforcing Steel	40,484	Lb
480E0200	Epoxy Coated Reinforcing Steel	48,675	Lb
510E0300	Preboring Pile	100	Ft
510E3371	HP 10x57 Steel Test Pile, Furnish and Drive	96	Ft
510E3375	HP 10x57 Steel Bearing Pile, Furnish and Drive	344	Ft
560E8036	36" Minnesota Shape Prestressed Concrete Beam	652	Ft
630E0010	Straight Class A Thrie Beam Guardrail with Wood Posts	50	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	4	Each
630E2015	W Beam Guardrail Flared End Terminal	4	Each
700E0210	Class B Riprap	1,320.7	Ton
831E0110	Type B Drainage Fabric	1,337	SqYd

EARTHWORK BALANCE

Excavation	894	CuYd	Embankment	8270	CuYd
Other Excavation	981	CuYd	35% Shrinkage	2894	CuYd
Contractor Furnished Borrow	9485	CuYd	Waste	196	CuYd
Total	11360	CuYd		11360	CuYd

Excavation is the quantity of Unclassified Excavation less the quantity of topsoil, gravel base course, and asphalt surfacing.

Other Excavation includes the sum of the quantities for the following:
 Structure Excavation, Bridge (38 CuYd.)
 Excavation for Class B Riprap (943 CuYd.)
 These quantities are for information purposes only, compensation for these are accounted for within various bid items.

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

It is assumed (for the purposes of earthwork balance) that the Contractor will be able to use 80% of the material from Other Excavation and will have to waste the remaining material at (a) site(s) provided by the Contractor and approved by the Engineer. All costs for labor, materials, and equipment necessary to waste material as well as restoration of the waste site(s) shall be incidental to the contract unit price per cubic yard for Unclassified Excavation.

UTILITIES

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

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 suppose 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.

BALD EAGLE

Bald eagles are known to occur in this area. If a nest is observed within one mile of the project site, notify the Environmental Project Scientist of the DOT Environmental Office at 605-773-3268.

WHOOPIING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that typically roosts overnight at a single location. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, notify the Environmental Project Scientist of the DOT Environmental Office at 605-773-3268 and cease construction activities in the affected area until the Whooping Crane departs.

SPECIFICATIONS

South Dakota Standard Specifications for Roads and Bridges, 2004 edition, required Provisions, Supplemental Specifications and/or Special Provisions as included in the proposal.

SHRINKAGE FACTOR

Embankment plus 35%.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 1,116.0 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".

Compaction of earth embankment and bridge berm material shall be governed by the Ordinary Compaction Method. Excavation and construction of embankments for grading shall be performed in accordance with Section 120 of the *Standard Specifications*. Compaction of embankments shall be governed by the Ordinary Compaction Method. Scarifying and recompacting exposed subgrade surfaces shall be waived.

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

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

Generally, all shallow inlet and outlet ditches as noted on the plan sheets shall be cut with a 10-foot wide bottom with 5:1 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.

Included in the estimate of quantities for Unclassified Excavation is 749 cubic yards of excavation for the placement of gravel base course.

Included in the estimate of quantities for Unclassified Excavation is 317 cubic yards of asphalt surfacing which will be removed and disposed of as per Waste Disposal notes. It is assumed the Existing Asphalt Surfacing is 3" thick. The Asphalt Surfacing shall be saw cut (or other method acceptable to the Engineer) to facilitate a "Clean" surface to which new asphalt can be placed against.

The basis of payment for Unclassified Excavation shall be plans quantity unless the Engineer orders additional excavation. No separate measurement shall be made.

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WATER SOURCE

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

WORK AFFECTING WATERWAYS

A. WATER QUALITY

Surface Water Quality

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.

The Elm River is classified as a warm water permanent fishery with a total suspended solids standard of 90 milligrams/liter.

Surface Water Discharge

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

The Elm River is classified as a warm water permanent fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended solids.

Storm Water

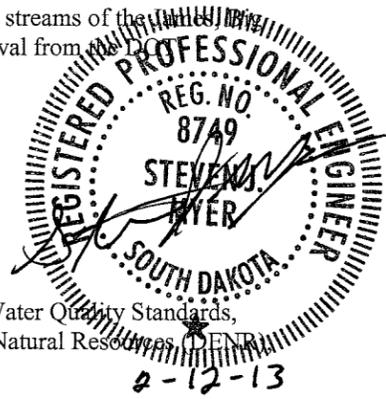
The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the DENR General Permit for Construction Activities. A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. 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 offsite activities, such as borrow and staging areas, which are the responsibility of the Contractor.

A major component of the storm water construction permit is development and implementation of a storm water pollution prevention plan (SWPPP). This plan is a joint effort and responsibility of the DOT and the Contractor. The SWPPP is a dynamic document and is to be available on-site at all times. Information on storm water requirements and SWPPP are available on the following websites:
DOT: http://www.sddot.com/pe/projdev/environment_stormwater.asp
DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

B. CONSTRUCTION PRACTICES FOR STREAMS INHABITED BY TOPEKA SHINER

The US Fish and Wildlife Service (USFWS) has designated Topeka Shiner Streams associated with this project. The Contractor shall adhere to the "Special Provision for Construction Practices in Streams Inhabited by the Topeka Shiner".

The DOT contacts for Topeka Shiner issues are the Project Engineer and the Environmental Project Scientist of the DOT Environmental Office, 605-773-3268.



C. CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN PROTECTED WATERWAYS

No excavation shall be made below the ordinary high water elevation in Protected Waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting; and the natural streambed shall not be disturbed without permission from the Engineer. The ordinary high water elevation is 1426.6.

All dredged or excavated materials shall be placed at a site above the ordinary high water elevation in a confined area (not classified as a wetland) to prevent return of such material to the waterway.

The construction of temporary work platforms, crossing, or berms below the ordinary high water elevations will be allowed provided that all material placed below the ordinary high water elevation consists of Class B or larger riprap.

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

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

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

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC 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 no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

If any earth disturbing activities occur within the current geographical or historic boundaries of any South Dakota reservation, the Contractor shall obtain Tribal Historical Preservation Office (THPO) clearance. If no THPO exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to the DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3268). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project. Construction/demolition debris may not be disposed of within the ROW.

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

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the 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/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/demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State 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.

CONTRACTOR FURNISHED BORROW

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

Restoration of the Contractor furnished borrow site shall be the responsibility of the Contractor.

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CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 2/3 inch x 1/2 inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch x 1-inch or 5-inch x 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

SEQUENCE OF OPERATIONS

The Contractor shall utilize the following sequence unless an alternative sequence is submitted in writing and approved by the Engineer:

1. Install Traffic control devices as shown on the plans.
2. Install Erosion Control measures.
3. Dismantle and remove existing structure.
4. Construct the new structure and grade the roadway.
5. Open the roadway to through traffic.
6. Complete the miscellaneous cleanup under traffic.

COUNTY RESPONSIBILITIES

Brown County shall be responsible for the following at no cost to the Contractor:

1. Right of way and temporary and permanent easements.
2. Coordination of any utility adjustments.
3. Furnish and install final surfacing.
4. Furnish and install new permanent signing.
5. Remove silt fence and erosion control wattles in permanently seeded areas.

PERMANENT SIGNING

The permanent signing shall consist of one Type 3 object marker and four delineators at each of the four corners of the bridge. Brown County shall be responsible to install permanent signing.



EROSION CONTROL

PLACING TOPSOIL

The thickness will be approximately 3" within the right-of-way and 6" on temporary easements.

The estimated amount of topsoil to be removed and replaced is 569 CuYd.

All cost associated with placing the topsoil along areas to be resurfaced shall be incidental to the contract unit price per cubic yard for "Placing Topsoil".

PERMANENT SEEDING

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

All permanent seed shall be planted in the topsoil at a depth of 1/4" to 1/2".

All seed broadcast must be raked or dragged in (incorporated) within the top 1/4" to 1/2" of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods

Type C Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	16
Canada Wildrye	Mandan	2
Total:		18

MULCHING (GRASS HAY OR STRAW)

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project. The cost of mulching will be incidental to the unit price for erosion control.

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.

An additional quantity of 20 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 list shown below:

Product	Manufacturer
AEC Premier Straw Wattles	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 www.amerexcel.com
Excel Straw Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 www.westernexcelsior.com
Earth Saver Rice Straw Wattles	R.H. Dyck Inc. Winters, CA Phone: 1-866-928-8537 www.earth-savers.com
Amber Waves Straw Wattles	GroNatural Winsted, MN Phone: 1-320-485-2800 www.gronatural.com
EarthTec Erosion Control Wattles	EarthTec/the Dukes, Inc. Devils Lake, ND Phone: 1-701-662-6666
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Stenlog	Erosion Control Blanket Riverton, MB Phone: 1-866-280-7327 www.erosioncontrolblanket.com
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexcelsior.com
Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-800-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

TABLE OF EROSION CONTROL WATTLE

Station	L/R	Diameter (Inch)	Quantity (Ft)
10+92	L	12	20
11+36	L	12	20
		Misc.	20
Total:			60

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REMOVE EROSION CONTROL WATTLE

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

HIGH FLOW SILT FENCE

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

<http://apps.sd.gov/Applications/HC54ApprovedProducts/main.asp>

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 66 feet of High Flow Silt Fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE

Station - Side		Station - Side	Quantity (ft)
4+00 - 39' LT	To	9+57 - 13' LT	617
4+00 - 29' RT	To	9+74 - 57' RT	589
10+40 - 71' LT	To	12+83 - 115' LT	285
13+17 - 115' LT	To	14+00 - 42' LT	130
10+44 - 54' RT	To	14+00 - 38' RT	363
		Misc	66
		Total:	2,050

MUCKING SILT FENCE

Mucking silt fence shall consist of removing muck trapped by the silt fence and spreading the material evenly over the adjacent area to conform to the existing grade.

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 use floating silt curtain from manufacturers that are not included in the list as well.

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

TABLE OF FLOATING SILT CURTAIN

Station - Side		Station - Side	Quantity (ft)
9+57 - 13' LT	To	9+24 - 57' RT	74
9+71		Bent 2	81
10+29		Bent 3	81
10+40 - 71' LT	To	10+44 - 54' RT	131
		Misc	33
		Total:	400

EROSION CONTROL BLANKET

Erosion control blanket shall be installed 16 feet wide at the locations noted in the table and at locations determined by the Engineer during construction.

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://apps.sd.gov/Applications/HC54ApprovedProducts/main.asp>

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

An additional quantity of 49 square yards of Type 2 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

TABLE OF EROSION CONTROL BLANKET

Station to	Station	L/R	Type	Quantity (SqYd)
8+16	9+16	LT	2	386
8+16	9+16	RT	2	310
10+83	11+83	LT	2	600
10+83	11+83	RT	2	205
			Misc	49
Total Type 2 Erosion Control Blanket:				1,550

SHAPING FOR EROSION CONTROL BLANKET

The ditches shall be shaped for the erosion control blanket as specified on Standard Plate 734.01.

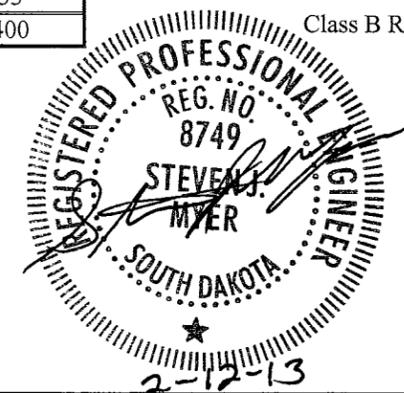
All costs for shaping the ditches for erosion control blanket including labor and equipment shall be incidental to the contract unit price for Erosion Control.

CLASS B RIPRAP

The limits for placing riprap shall be to the depth of 2'-6" and placed to the dimensions as shown on the plans, or as directed by the Engineer.

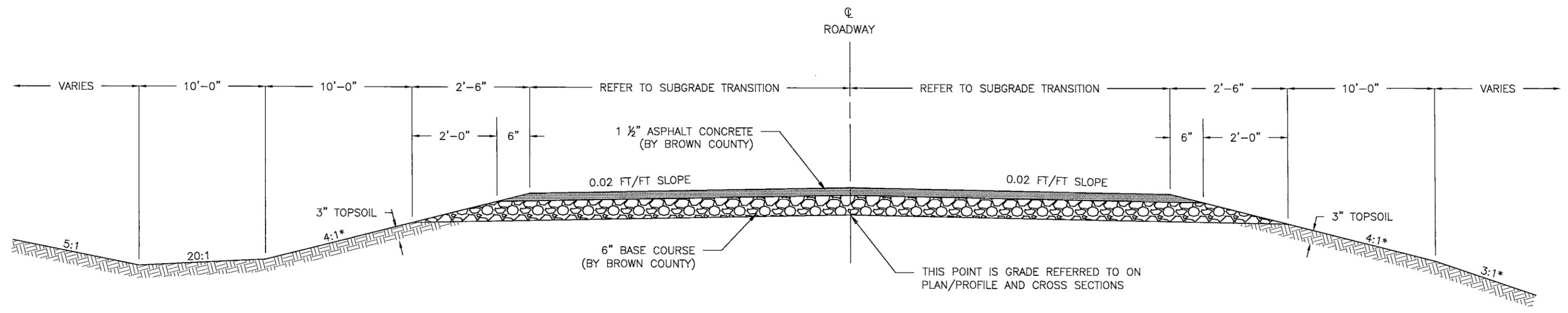
Drainage Fabric, meeting the requirements of Section 831 of the Standard Specifications, shall be provided beneath the Class B Riprap. The drainage fabric shall be paid for at the contract unit price per square yard for Type B Drainage Fabric.

Class B Riprap shall be a quarried ledge rock, field stone shall not be used.



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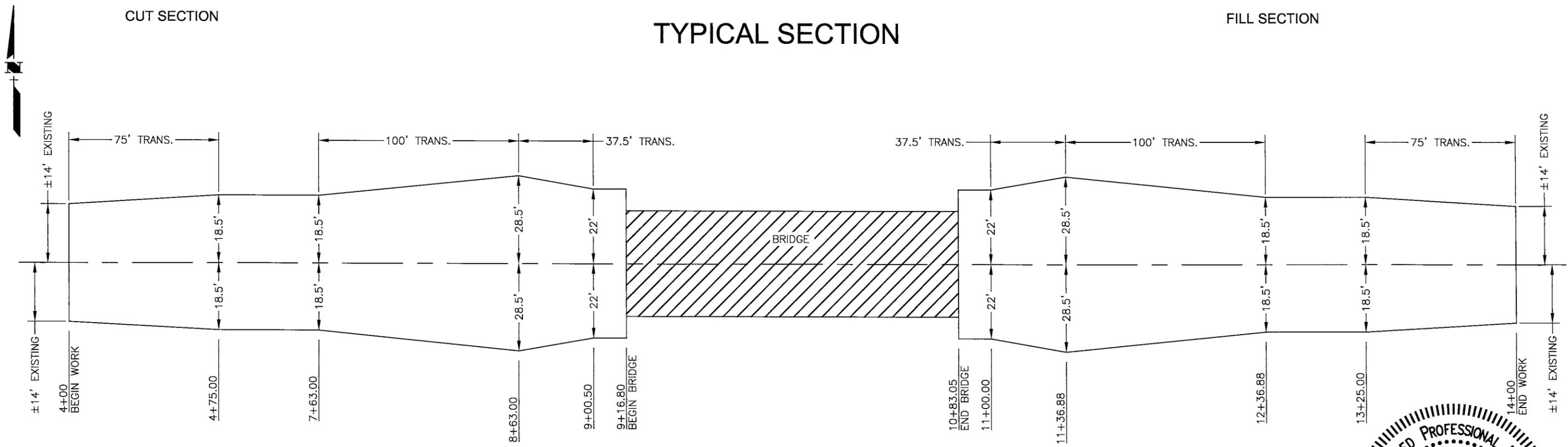
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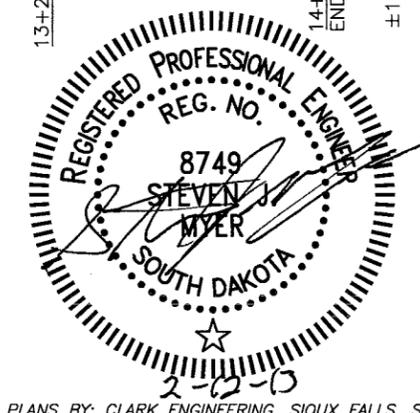
CUT SECTION

TYPICAL SECTION

FILL SECTION



SUBGRADE TRANSITION



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STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

- ❖ **SITE DESCRIPTION (4.2 1)**
 - **Project Limits: See Title Sheet (4.2 1.b)**
 - **Project Description: See Title Sheet (4.2 1.a.)**
 - **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
 - **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
 - **Total Project Area 2.91 Acres (4.2 1.b)**
 - **Total Area To Be Disturbed 2.35 Acres (4.2 1.b.)**
 - **Existing Vegetative Cover (%) 70%**
 - **Soil Properties: AASHTO Soil or USDA-NRCS Soil Series Classification A-4, A-6, A-7 (4.2 1. d.)**
 - **Name of Receiving Water Body/Bodies Elm River (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 sheet).
 - **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.**
 - **Remove existing structure.**
 - **Construct new structure.**
 - **Complete final grading.**
 - **Complete traffic control installation and protection devices.**
 - **Reseed areas disturbed by removal activities.**
- ❖ **EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))**

(Check all that apply)

 - **Stabilization Practices (See Detail Plan Sheets)**
 - Temporary Seeding (Cover Crop Seeding)
 - Permanent Seeding
 - Sodding
 - Planting (Woody Vegetation for Soil Stabilization)
 - Mulching (Grass Hay or Straw)
 - Hydraulic Mulch (Wood Fiber Mulch)
 - Soil Stabilizer
 - Bonded Fiber Matrix
 - Erosion Control Blankets or Mats
 - Vegetation Buffer Strips
 - Roughened Surface (e.g. tracking)
 - Dust Control
 - Other:

- **Structural Temporary Erosion and Sediment Controls**
 - Silt Fence
 - Floating Silt Curtain
 - Straw Bale Check
 - Temporary Berm
 - Temporary Slope Drain
 - Straw Wattles or Rolls
 - Turf Reinforcement Mat
 - Rip Rap
 - Gabions
 - Rock Check Dams
 - Sediment Traps/Basins
 - Inlet Protection
 - Outlet Protection
 - Surface Inlet Protection (Area Drain)
 - Curb Inlet Protection
 - Stabilized Construction Entrances
 - Entrance/Exit Equipment Tire Wash
 - Interceptor Ditch
 - Concrete Washout Area
 - Temporary Diversion Channel
 - Work Platform
 - Temporary Water Barrier
 - Temporary Water Crossing
 - Other:
- **Wetland Avoidance**

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes No If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.
- **Storm Water Management (4.2 2.b., (1) and (2))**

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

All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
 - **Hazardous Waste**

All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
 - **Sanitary Waste**

Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

- ❖ **Maintenance and Inspection (4.2 3. and 4.2 4.)**
 - **Maintenance and Inspection Practices**
 - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
 - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
 - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
 - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
 - Check dams will be inspected for stability. Sediment will be removed when depth reaches 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:

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❖ **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, degreasing 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.

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF 6170(01)	9	48

❖ **CERTIFICATIONS**

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

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

➤ **South Dakota Department of Transportation**

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



Authorized Signature (See the General Permit, Section 6.7.1.C.)

➤ **Prime Contractor**

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

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

Authorized Signature

❖ **CONTACT INFORMATION**

➤ **Contractor Information:**

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

➤ **Erosion Control Supervisor**

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

➤ **SDDOT Project Engineer**

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

➤ **SD DENR Contact Spill Reporting**

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

➤ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

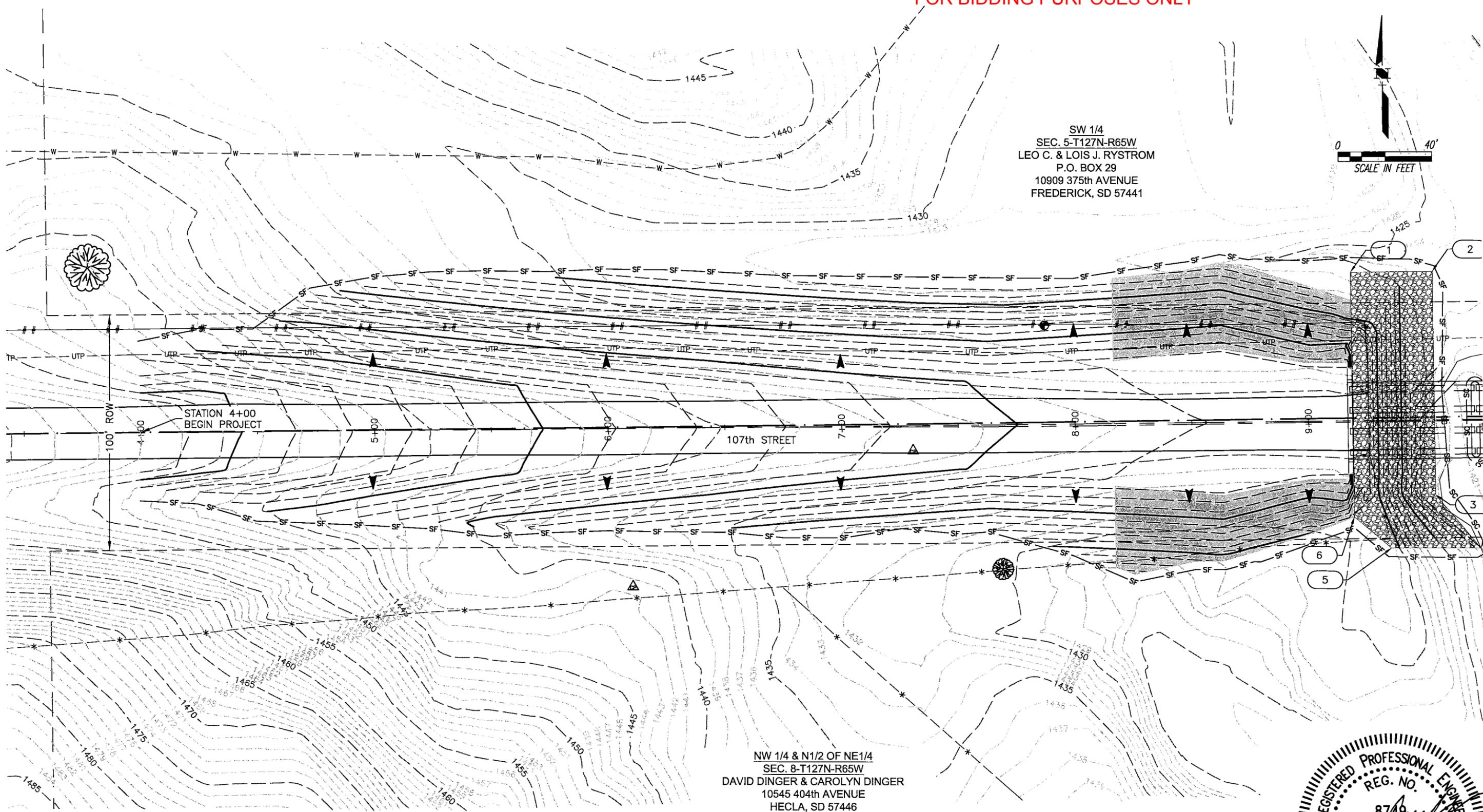
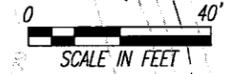
- (800) 424-8802.

EROSION CONTROL

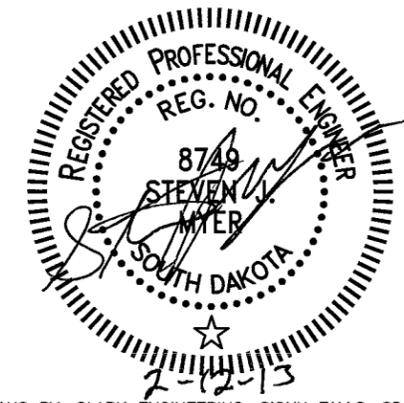
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STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	10	48

SW 1/4
SEC. 5-T127N-R65W
LEO C. & LOIS J. RYSTROM
P.O. BOX 29
10909 375th AVENUE
FREDERICK, SD 57441



NW 1/4 & N1/2 OF NE1/4
SEC. 8-T127N-R65W
DAVID DINGER & CAROLYN DINGER
10545 404th AVENUE
HECLA, SD 57446



EROSION CONTROL LEGEND	
DRAINAGE ARROWS	
EROSION CONTROL BLANKET	
EROSION CONTROL WATTLE - 20'	
RIPRAP	
SILT CURTAIN	SC
SILT FENCE	SF

HIGH FLOW SILT FENCE			
4+00 - 39' LT.	TO	9+57 - 13' LT.	617'
4+00 - 29' RT.	TO	9+74 - 57' RT.	589'
10+40 - 71' LT.	TO	12+83 - 115' LT.	285'
13+17 - 115' LT.	TO	14+00 - 42' LT.	130'
10+44 - 54' RT.	TO	14+00 - 38' RT.	363'
		MISC.	66'
		TOTAL	2,050'

EROSION BLANKET			
STA. 8+16 LT.	TO	STA. 9+16 LT.	386 SqYd
STA. 8+16 RT.	TO	STA. 9+16 RT.	310 SqYd
STA. 10+83 LT.	TO	STA. 11+83 LT.	600 SqYd
STA. 10+83 RT.	TO	STA. 11+83 RT.	205 SqYd
		MISC.	49 SqYd
		TOTAL	1,550 SqYd

FLOATING SILT CURTAIN			
9+57 - 13' LT.	TO	9+24 - 57' RT.	74'
9+71		BENT 2	81'
10+29		BENT 3	81'
10+40 - 71' LT.	TO	10+44 - 54' RT.	131'
		MISC.	33'
		TOTAL	400'

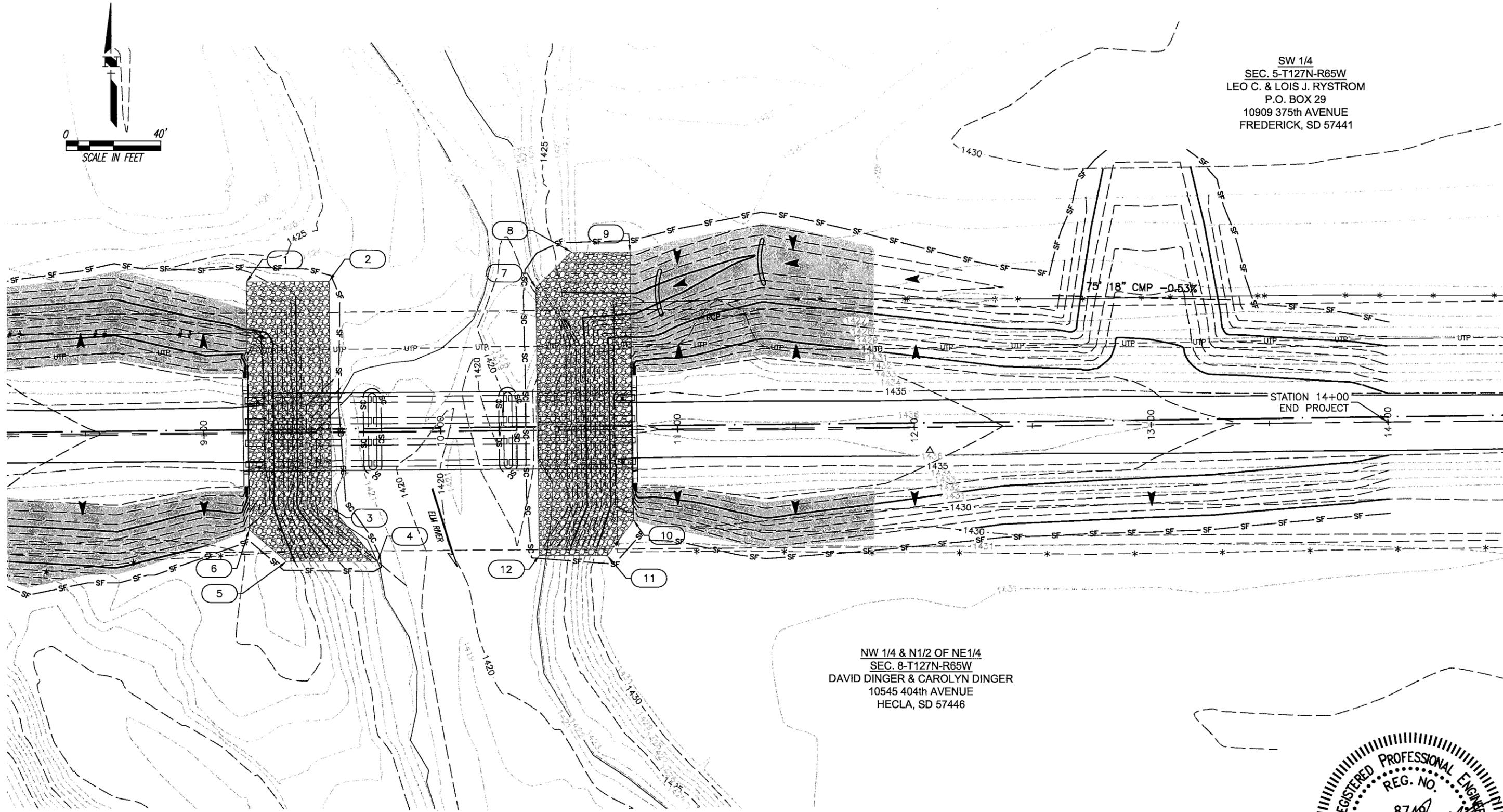
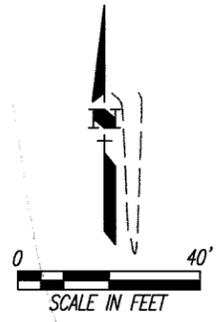
EROSION CONTROL WATTLES		
STA. 10+92	LT.	20'
STA. 11+36	LT.	20'
	MISC.	20'
	TOTAL	60'

EROSION CONTROL

FOR BIDDING PURPOSES ONLY

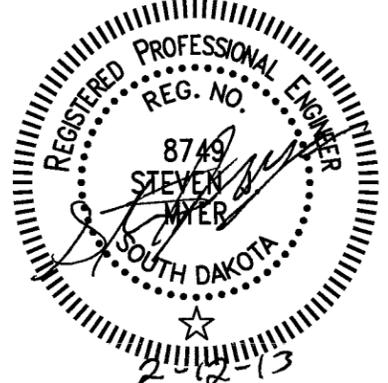
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	11	48

SW 1/4
 SEC. 5-T127N-R65W
 LEO C. & LOIS J. RYSTROM
 P.O. BOX 29
 10909 375th AVENUE
 FREDERICK, SD 57441

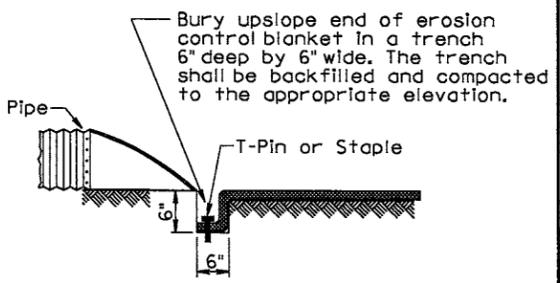
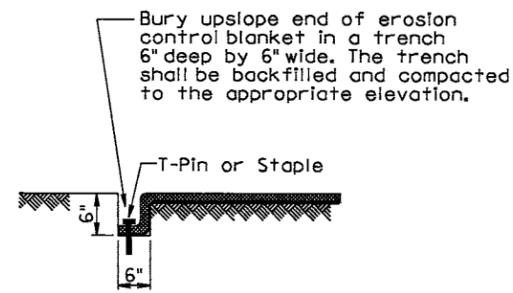
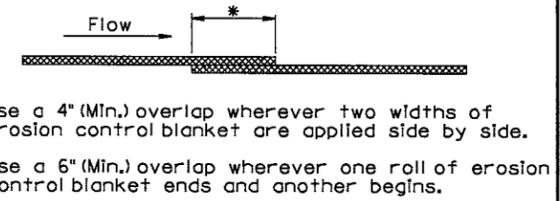
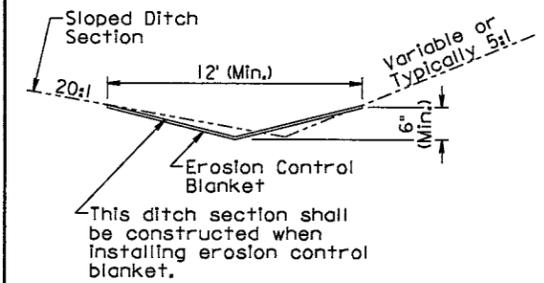
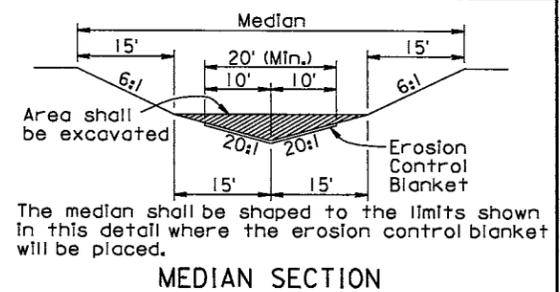
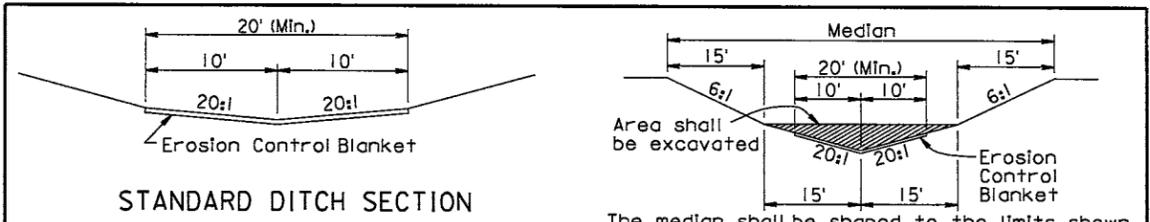


NW 1/4 & N1/2 OF NE1/4
 SEC. 8-T127N-R65W
 DAVID DINGER & CAROLYN DINGER
 10545 404th AVENUE
 HECLA, SD 57446

DRAINAGE ARROWS	
EROSION CONTROL BLANKET	
EROSION CONTROL WATTLE - 20'	
RIPRAP	
SILT CURTAIN	— SC —
SILT FENCE	— SF —



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	12	48



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.

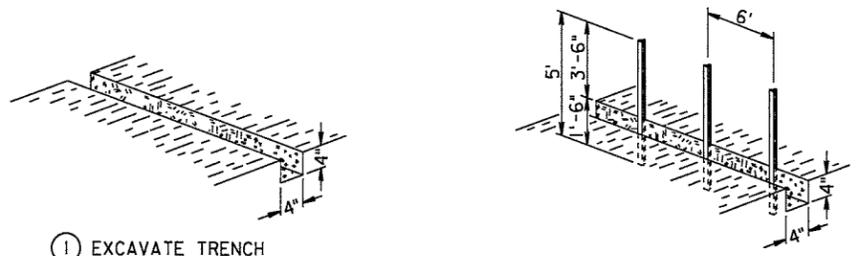
All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

December 23, 2004

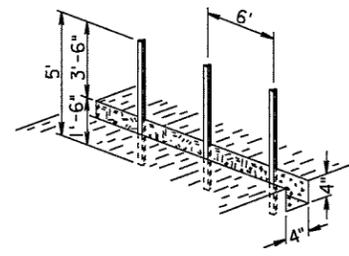
Published Date: 1st Qtr. 2013	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	13	48

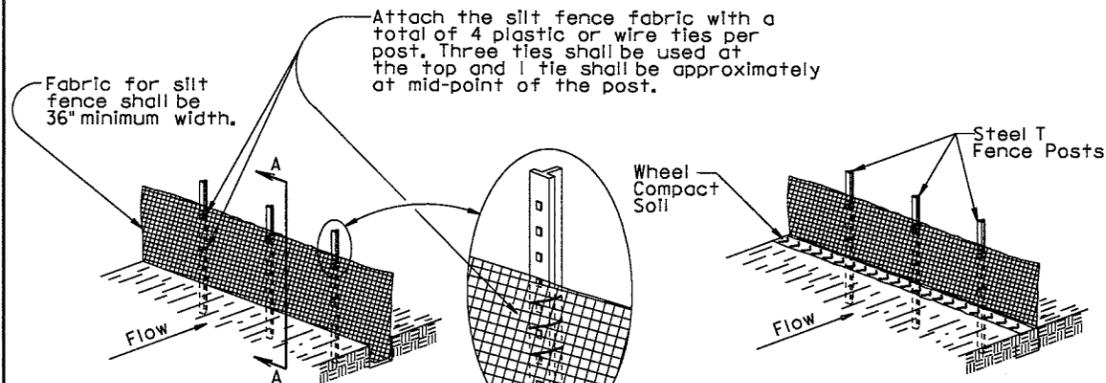
MANUAL HIGH FLOW SILT FENCE INSTALLATION



1 EXCAVATE TRENCH

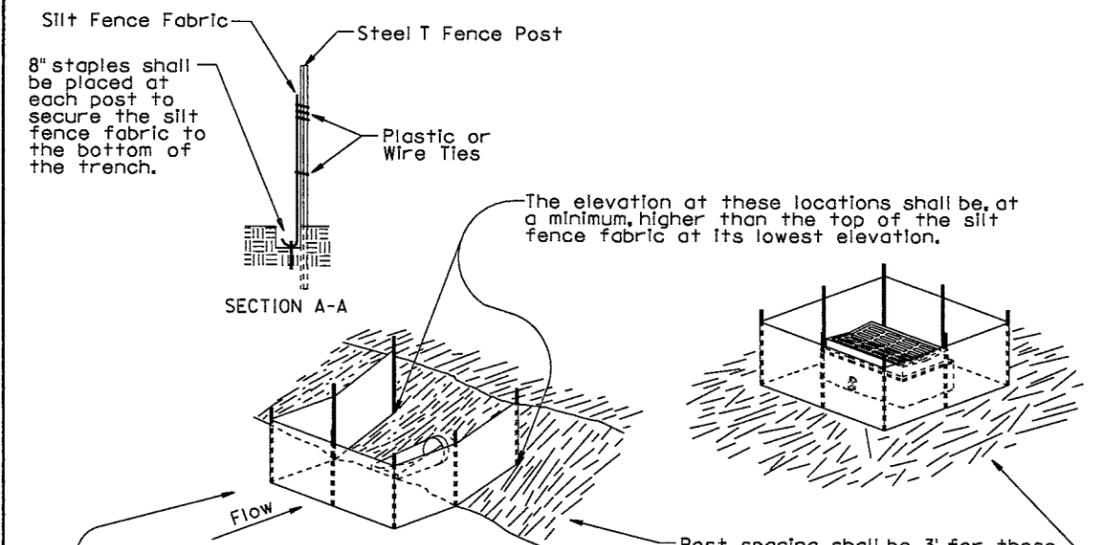


2 DRIVE STEEL T FENCE POSTS



3 ATTACH SILT FENCE FABRIC

4 BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A

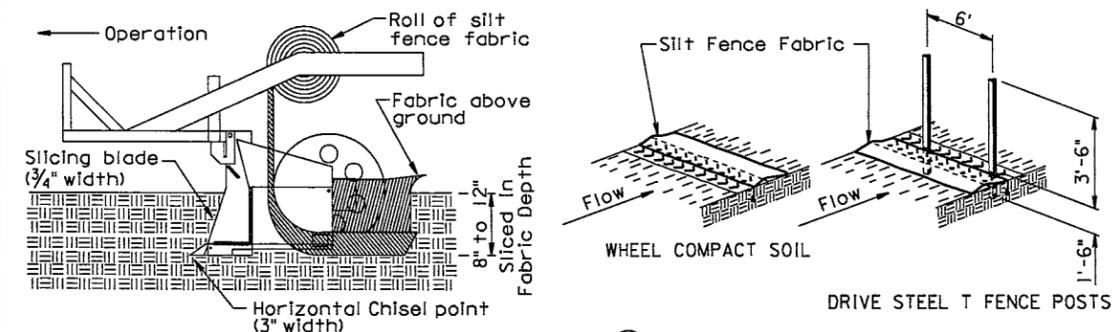
The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

Post spacing shall be 3' for these types of applications of silt fence. All other components of the silt fence shall be the same as shown above.

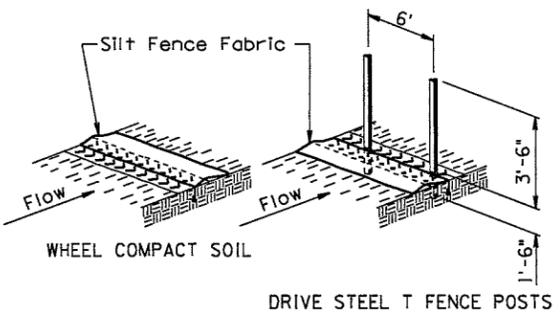
December 23, 2003

S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER
		734.05
Published Date: 1st Qtr. 2013		Sheet 1 of 2

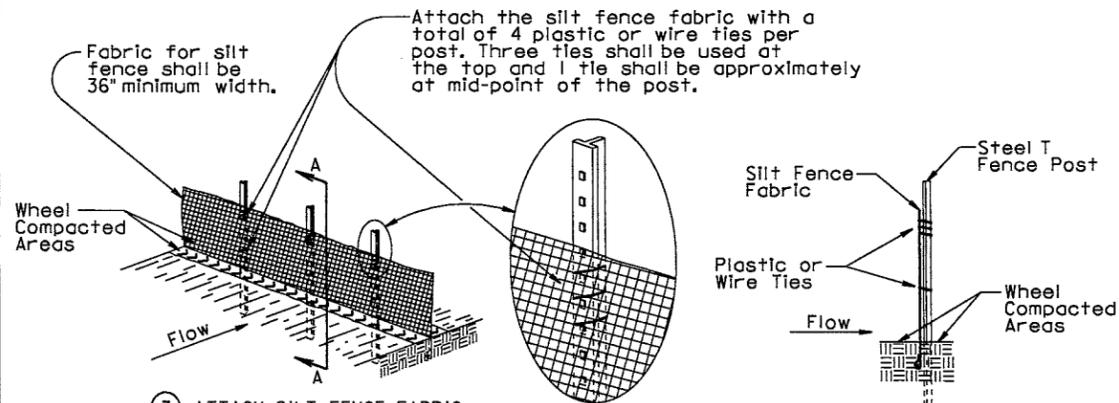
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



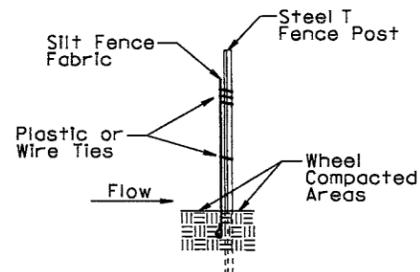
1 INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



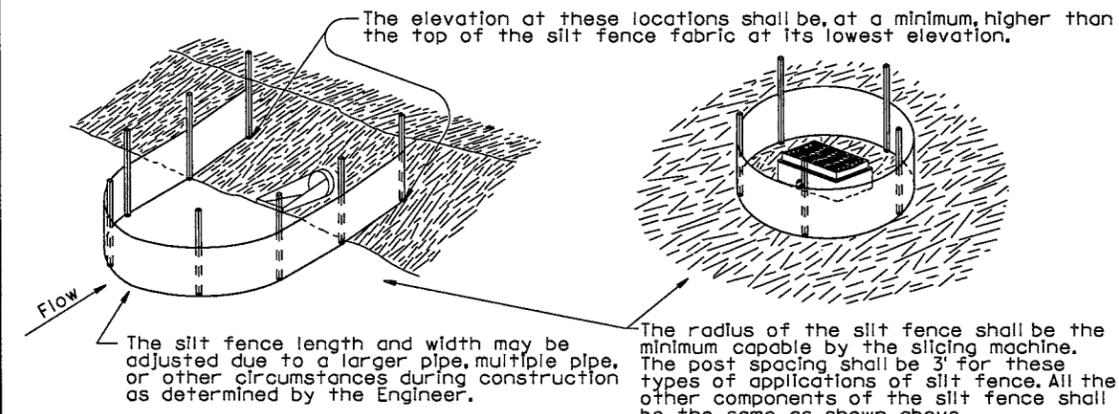
2 WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



3 ATTACH SILT FENCE FABRIC



SECTION A-A



GENERAL NOTE:

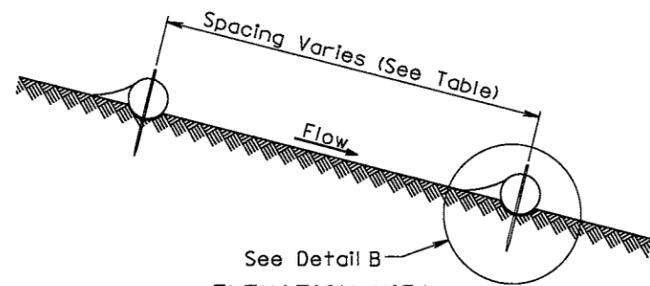
If a trench can not be dug or the silt fence fabric can not be sliced in due to the type of earthen material (such as rock), then a row of 30 to 40 pound sandbags butted end to end shall be provided on top of the extra length of silt fence fabric to prevent underflow.

The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

The radius of the silt fence shall be the minimum capable by the slicing machine. The post spacing shall be 3' for these types of applications of silt fence. All the other components of the silt fence shall be the same as shown above.

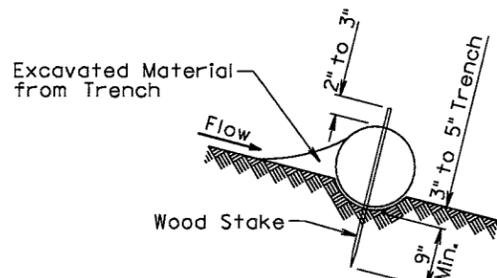
December 23, 2003

S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER
		734.05
Published Date: 1st Qtr. 2013		Sheet 2 of 2

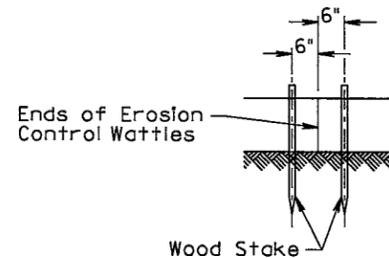


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

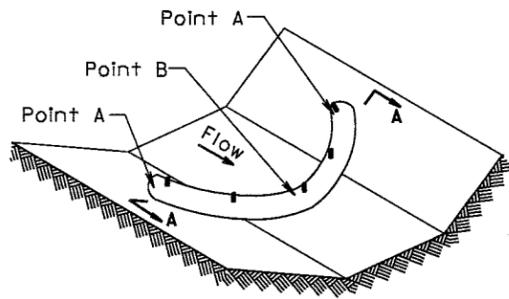
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



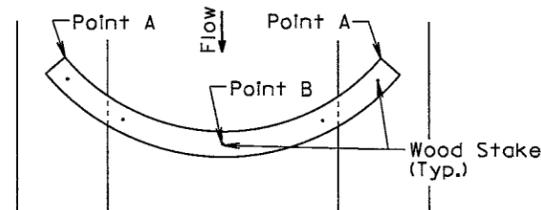
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

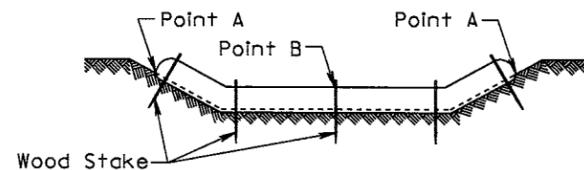


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

December 23, 2004

Published Date: 3rd Qtr. 2012	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 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".

Published Date: 3rd Qtr. 2012	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

THE ELEVATIONS SHOWN ARE BASED UPON NAVD 88 DATUM.

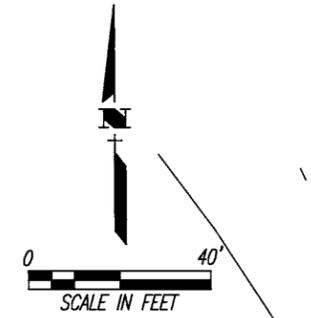
SURVEY DATA & EASEMENTS

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	15	48

CP#	NORTHING (y)	EASTING (x)	ELEVATION (z)
1	733,308.95'	2,298,980.23'	1,442.03'
2	733,366.91'	2,299,100.25'	1,437.57'
3	733,371.96'	2,299,576.19'	1,436.13'
East Section Corner	733,443.35'	2,304,010.00'	1,431.16'
West Section Corner	733,372.89'	2,298,697.08'	1,455.96'

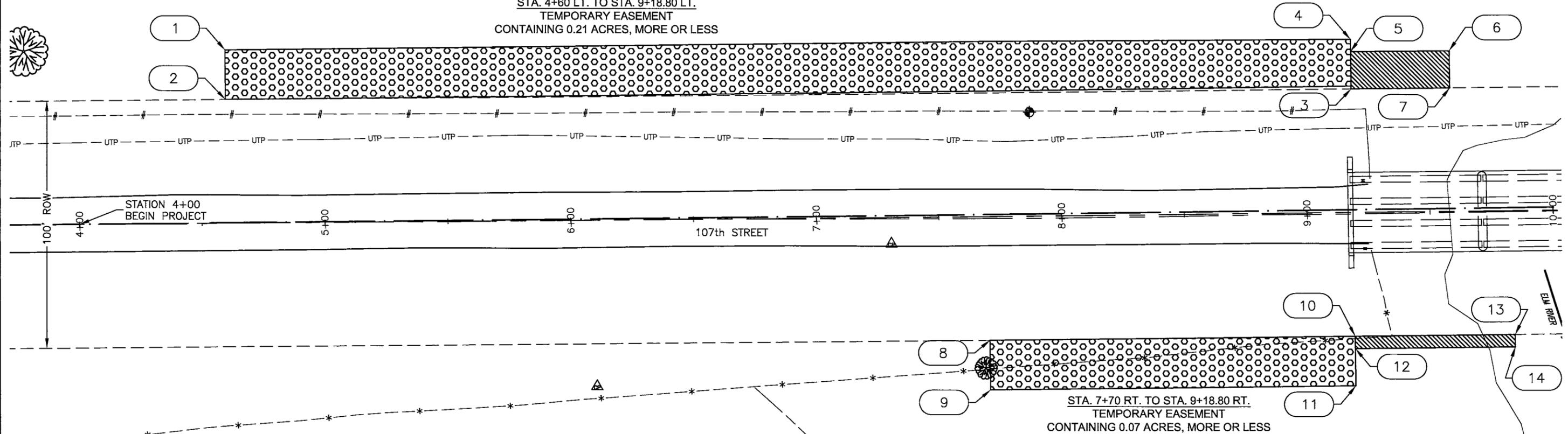
POINT TYPE	TAN. LENGTH	STATION	DIRECTION	NORTHING (y)	EASTING (x)
BOA		3+88.08		733,373.71	2,298,757.70
	12.54'		N89°37'17"E		
		4+00.63		733,373.79	2,298,770.24
	1,000.00'		N89°21'27"E		
EOA		14+00.63		733,385.01	2,299,770.18



SW 1/4
SEC. 5-T127N-R65W
LEO C. & LOIS J. RYSTROM
P.O. BOX 29
10909 375th AVENUE
FREDERICK, SD 57441

STA. 9+18.80 LT. TO STA. 9+58.80 LT.
PERMANENT EASEMENT
CONTAINING 0.01 ACRES, MORE OR LESS

STA. 4+60 LT. TO STA. 9+18.80 LT.
TEMPORARY EASEMENT
CONTAINING 0.21 ACRES, MORE OR LESS



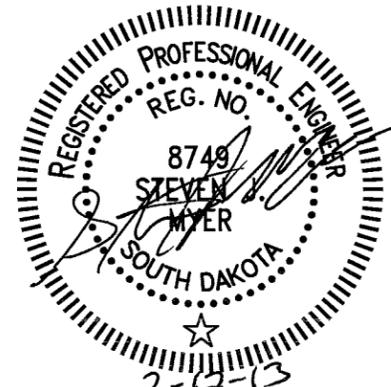
NW 1/4 & N1/2 OF NE1/4
SEC. 8-T127N-R65W
DAVID DINGER & CAROLYN DINGER
10545 404th AVENUE
HECLA, SD 57446

STA. 7+70 RT. TO STA. 9+18.80 RT.
TEMPORARY EASEMENT
CONTAINING 0.07 ACRES, MORE OR LESS

STATION	OFFSET	NORTHING	EASTING	
1	4+60.00	70' LT.	733,444.46'	2,298,828.83'
2	4+60.00	50' LT.	733,424.46'	2,298,829.05'
3	9+18.80	50' LT.	733,429.60'	2,299,287.82'
4	9+18.80	70' LT.	733,449.60'	2,299,287.60'
5	9+18.80	65' LT.	733,444.60'	2,299,287.65'
6	9+58.80	65' LT.	733,445.05'	2,299,327.65'
7	9+58.80	50' LT.	733,430.05'	2,299,327.82'
8	7+70.00	50' RT.	733,327.94'	2,299,140.16'
9	7+70.00	70' RT.	733,307.94'	2,299,140.38'
10	9+18.80	50' RT.	733,329.60'	2,299,288.94'
11	9+18.80	70' RT.	733,309.60'	2,299,289.17'
12	9+18.80	55' RT.	733,324.61'	2,299,289.00'
13	9+83.80	50' RT.	733,330.34'	2,299,353.93'
14	9+83.80	55' RT.	733,325.34'	2,299,354.00'

STATION	OFFSET	NORTHING	EASTING	
15	10+41.00	50' LT.	733,430.97'	2,299,410.02'
16	10+41.00	75' LT.	733,455.97'	2,299,409.73'
17	10+81.05	75' LT.	733,456.42'	2,299,449.78'
18	10+81.05	90' LT.	733,471.41'	2,299,449.62'
19	10+81.05	50' LT.	733,431.42'	2,299,450.07'
20	12+70.00	90' LT.	733,473.54'	2,299,638.56'
21	12+70.00	115' LT.	733,498.54'	2,299,638.27'
22	13+40.00	115' LT.	733,499.31'	2,299,708.27'
23	13+40.00	50' LT.	733,434.32'	2,299,709.00'
24	10+40.00	50' RT.	733,330.97'	2,299,410.14'
25	10+40.00	55' RT.	733,325.97'	2,299,410.19'
26	10+80.00	55' RT.	733,326.41'	2,299,450.19'
27	10+80.00	50' RT.	733,331.41'	2,299,450.13'

PERMANENT EASEMENT	
TEMPORARY EASEMENT	

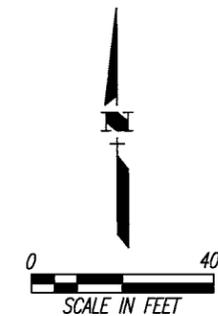


THE ELEVATIONS SHOWN ARE BASED UPON NAVD 88 DATUM.

SURVEY DATA & EASEMENTS

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	16	48



SW 1/4
 SEC. 5-T127N-R65W
 LEO C. & LOIS J. RYSTROM
 P.O. BOX 29
 10909 375th AVENUE
 FREDERICK, SD 57441

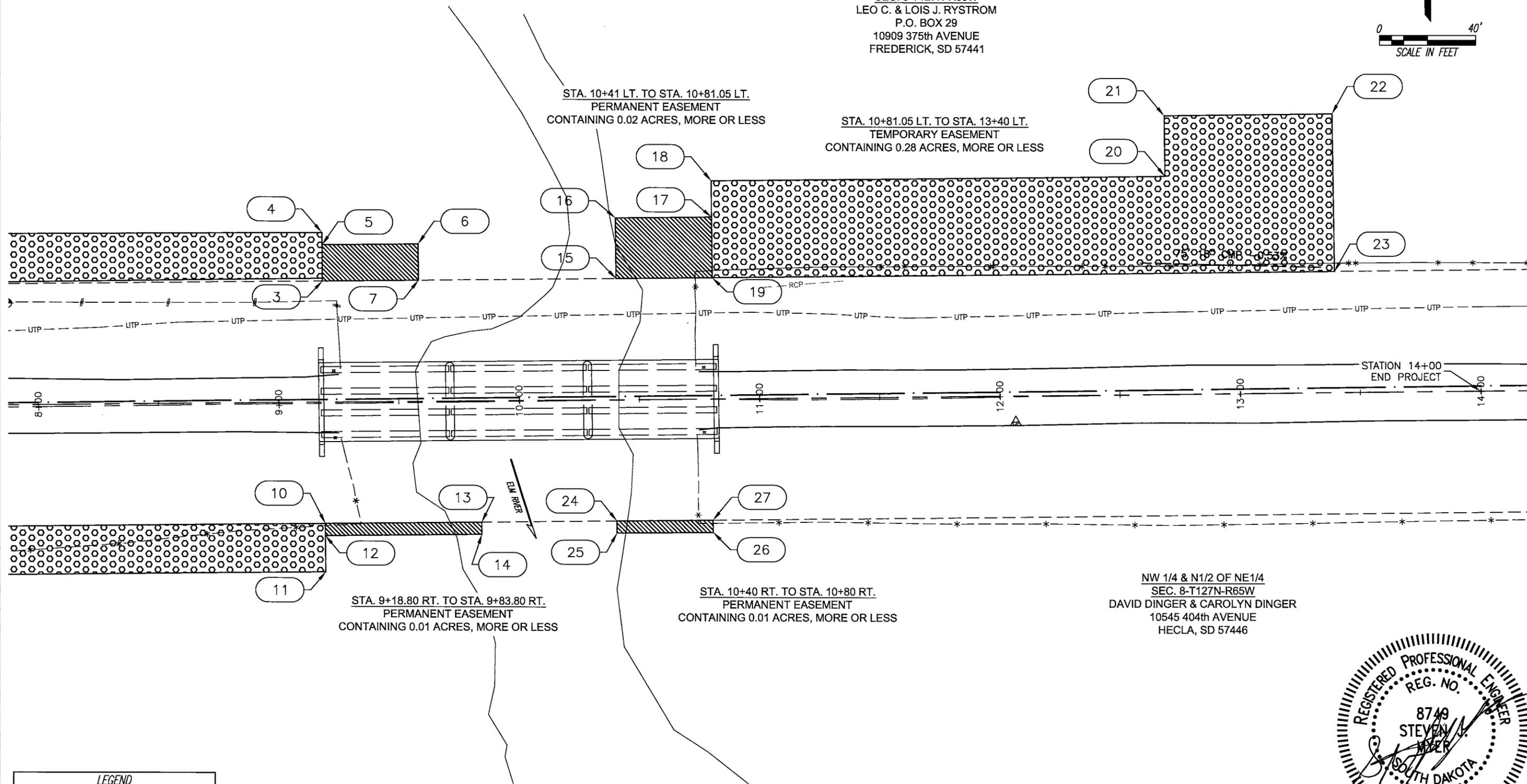
STA. 10+41 LT. TO STA. 10+81.05 LT.
 PERMANENT EASEMENT
 CONTAINING 0.02 ACRES, MORE OR LESS

STA. 10+81.05 LT. TO STA. 13+40 LT.
 TEMPORARY EASEMENT
 CONTAINING 0.28 ACRES, MORE OR LESS

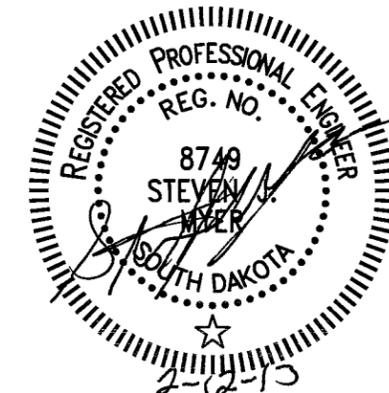
STA. 9+18.80 RT. TO STA. 9+83.80 RT.
 PERMANENT EASEMENT
 CONTAINING 0.01 ACRES, MORE OR LESS

STA. 10+40 RT. TO STA. 10+80 RT.
 PERMANENT EASEMENT
 CONTAINING 0.01 ACRES, MORE OR LESS

NW 1/4 & N1/2 OF NE1/4
 SEC. 8-T127N-R65W
 DAVID DINGER & CAROLYN DINGER
 10545 404th AVENUE
 HECLA, SD 57446



LEGEND	
PERMANENT EASEMENT	
TEMPORARY EASEMENT	

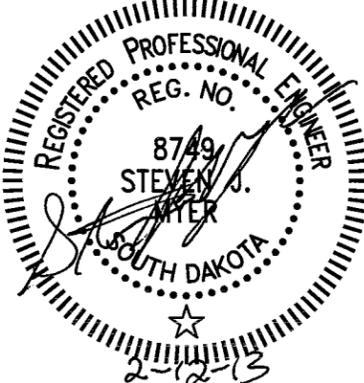
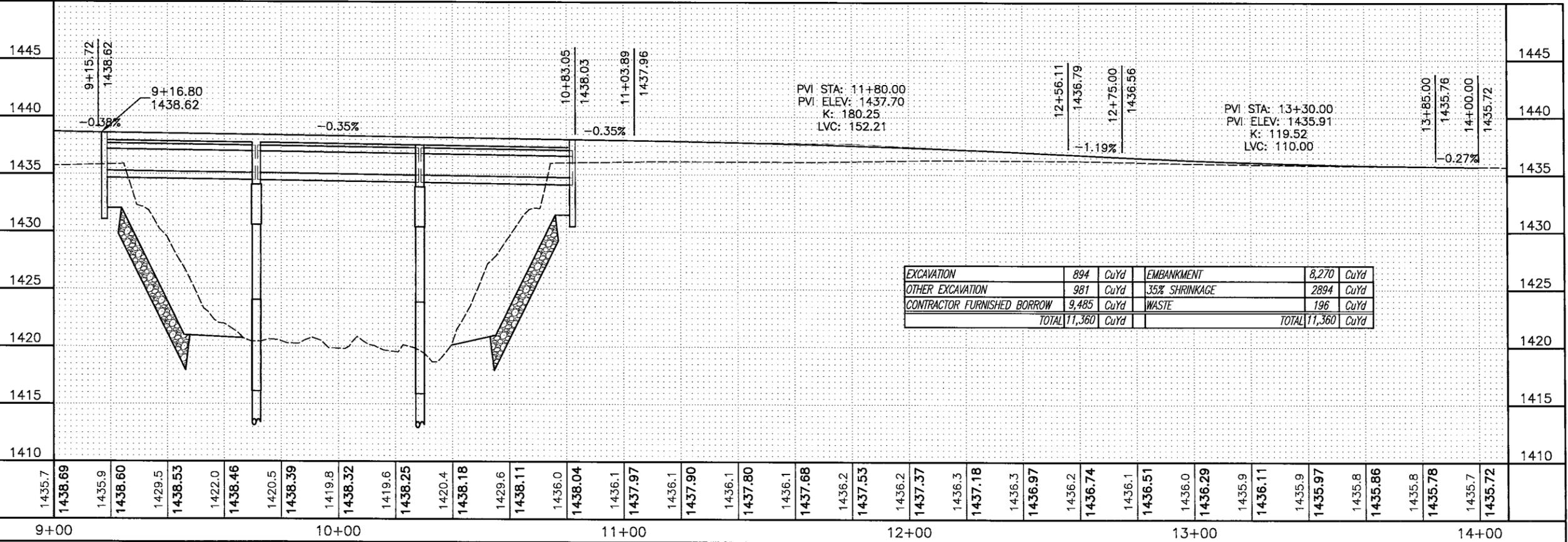
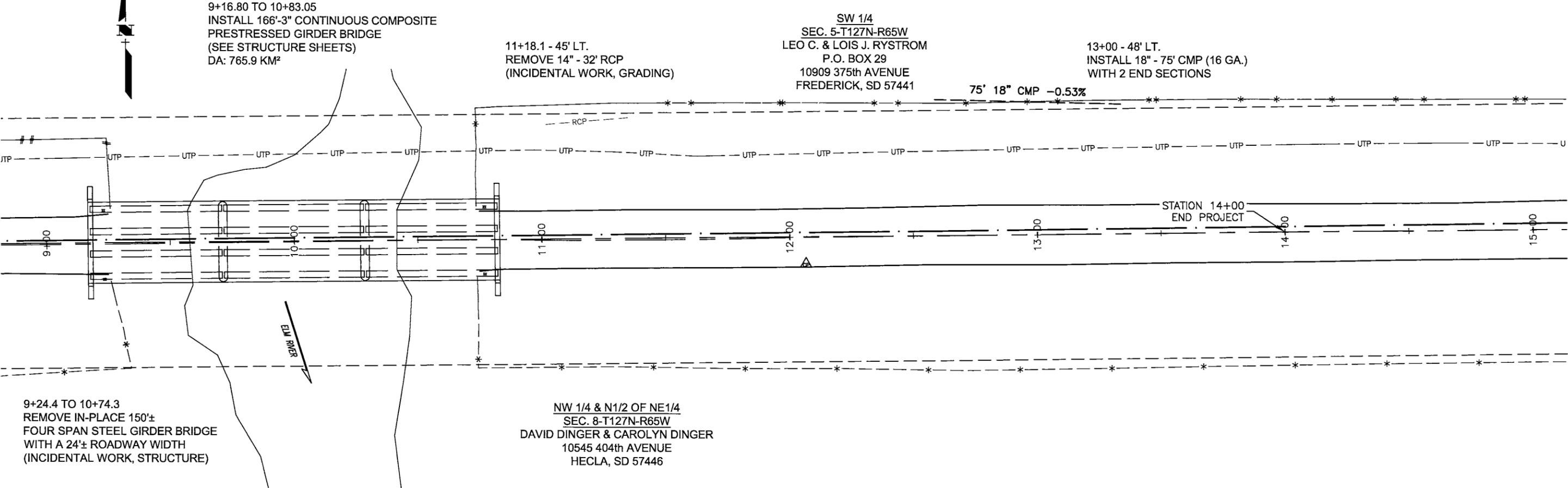


PLANS BY: CLARK ENGINEERING, SIOUX FALLS, SD

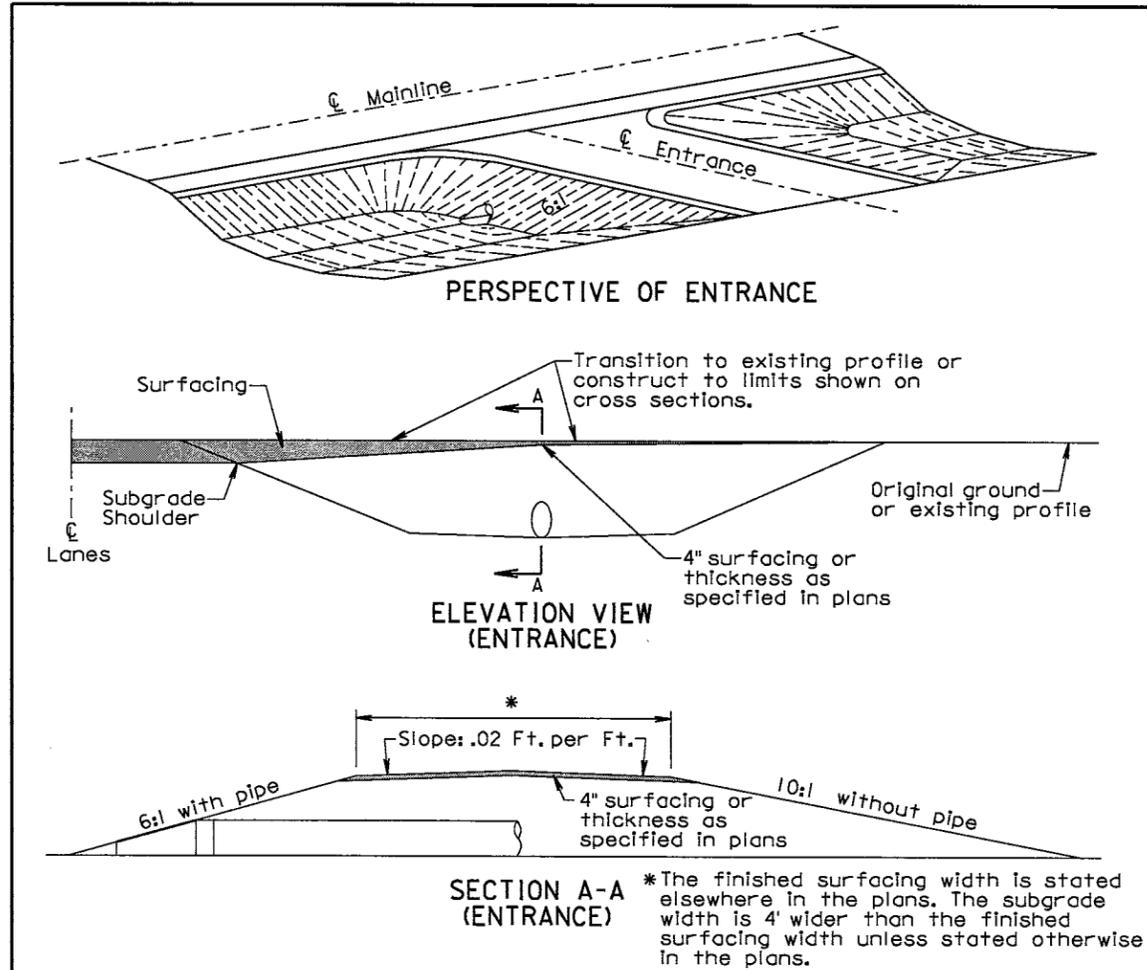
PLAN & PROFILE

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	18	48



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	19	48



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.

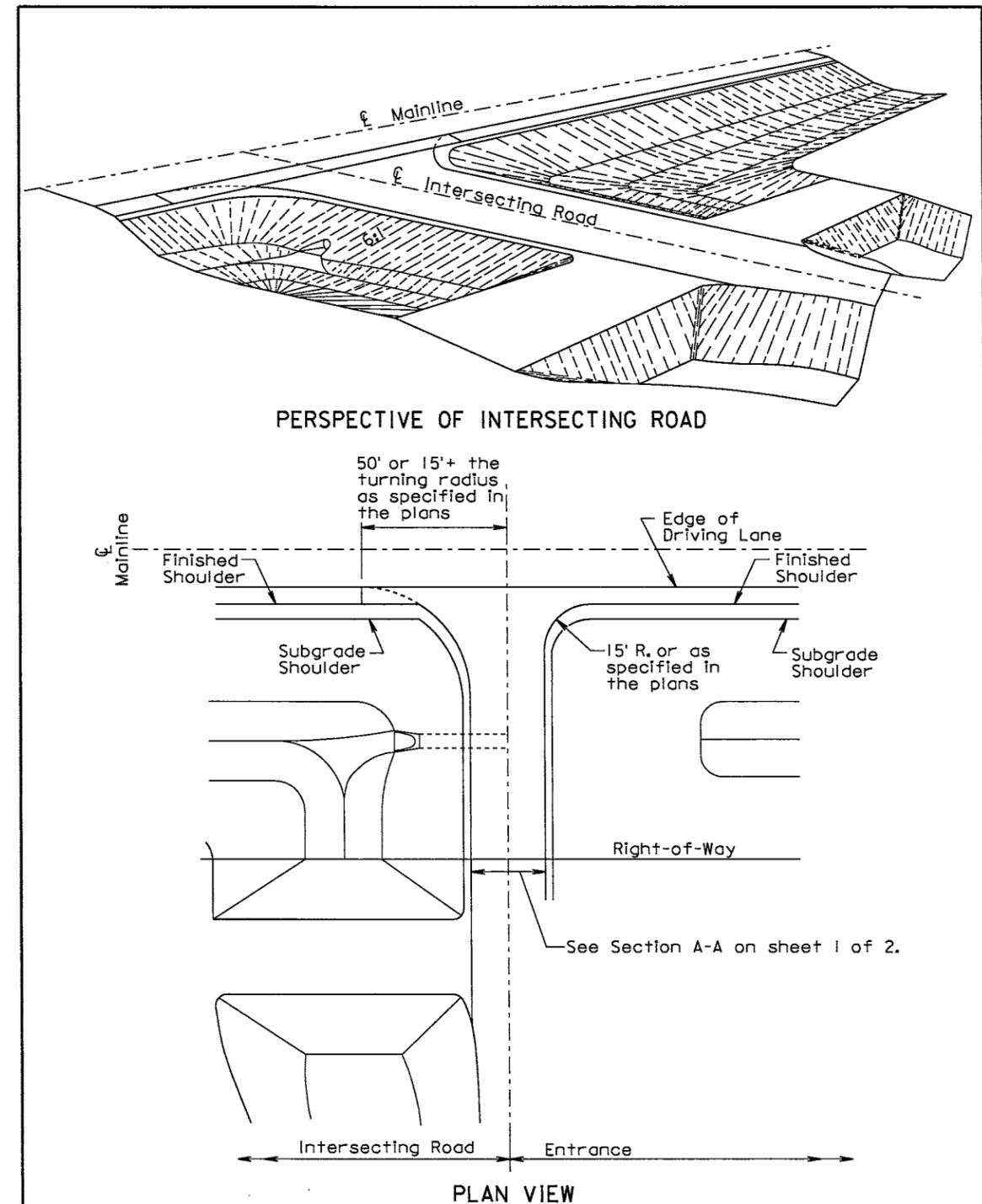
The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

For entrances other than intersecting roads, the radii shall be 15' unless stated otherwise in the plans.

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

December 23, 2010

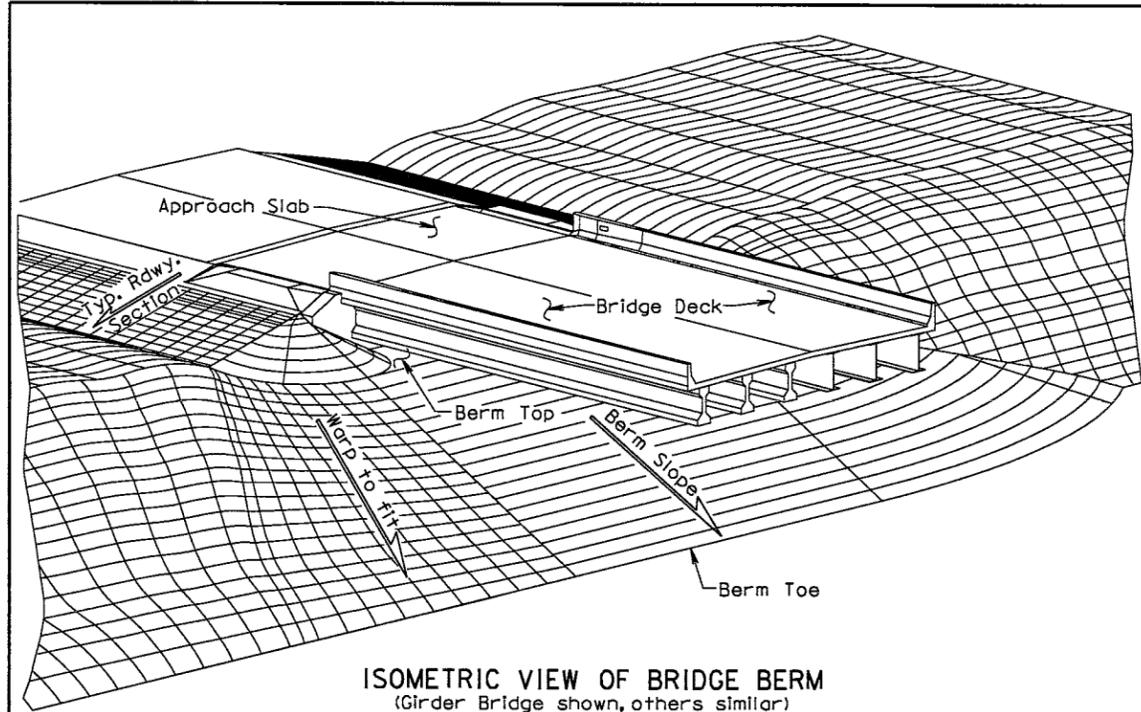
Published Date: 1st Qtr. 2013	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



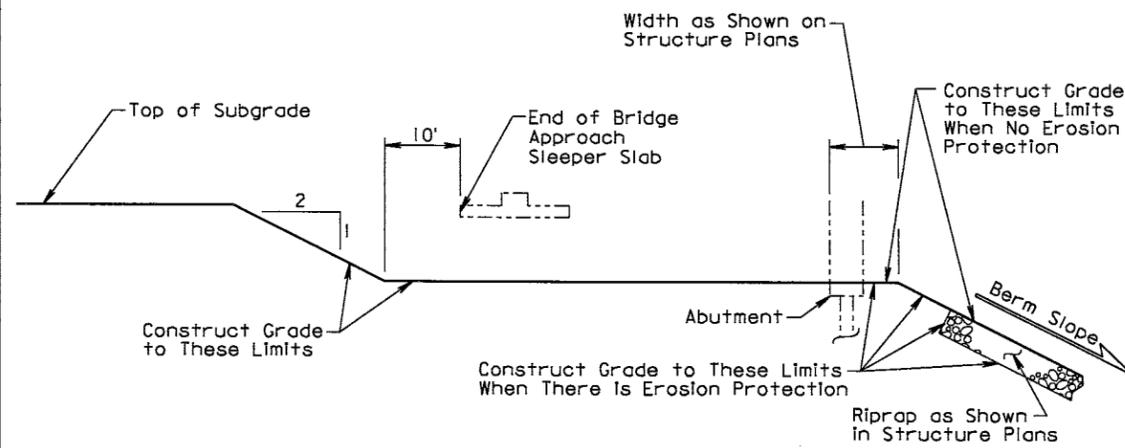
December 23, 2010

Published Date: 1st Qtr. 2013	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	20	48



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



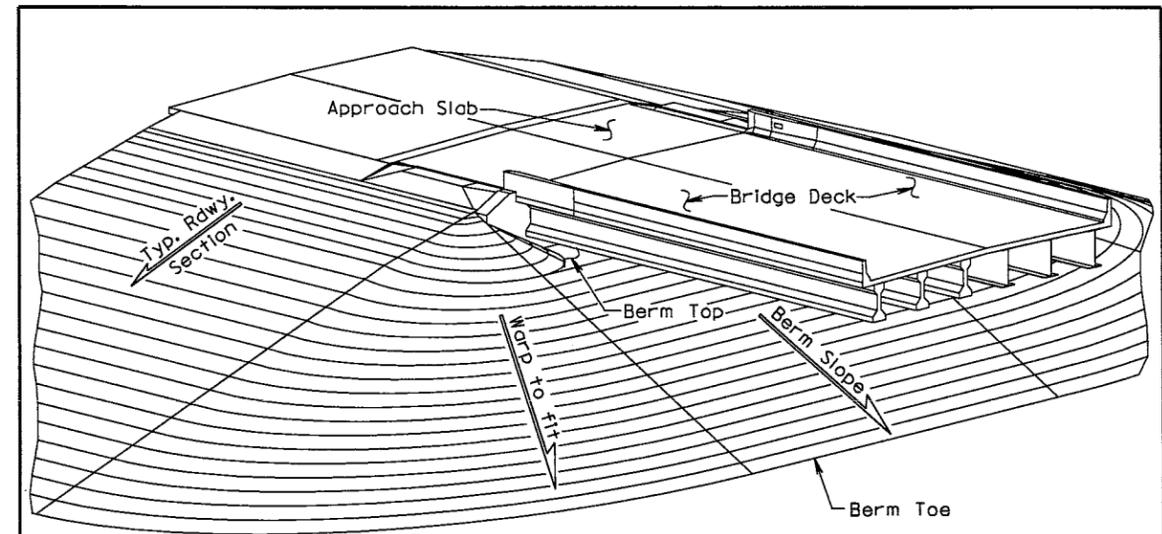
TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to C Abutment at C Roadway)

GENERAL NOTE:

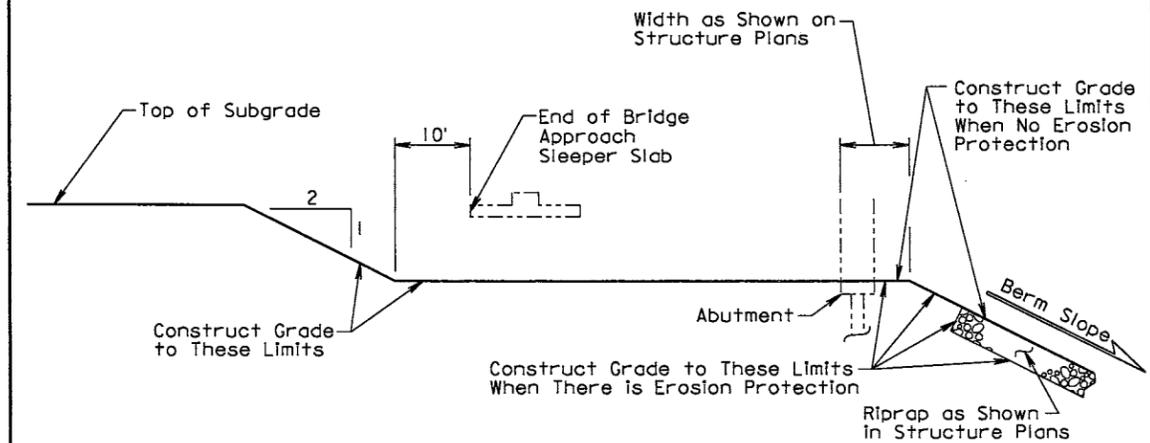
The bridge berm elevation and slope shall be as shown in the structure plans.

September 6, 2006

Published Date: 1st Qtr. 2013	S D D O T	BRIDGE BERM (NONPROJECTING EMBANKMENT)	PLATE NUMBER 120.10
			Sheet 1 of 1



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



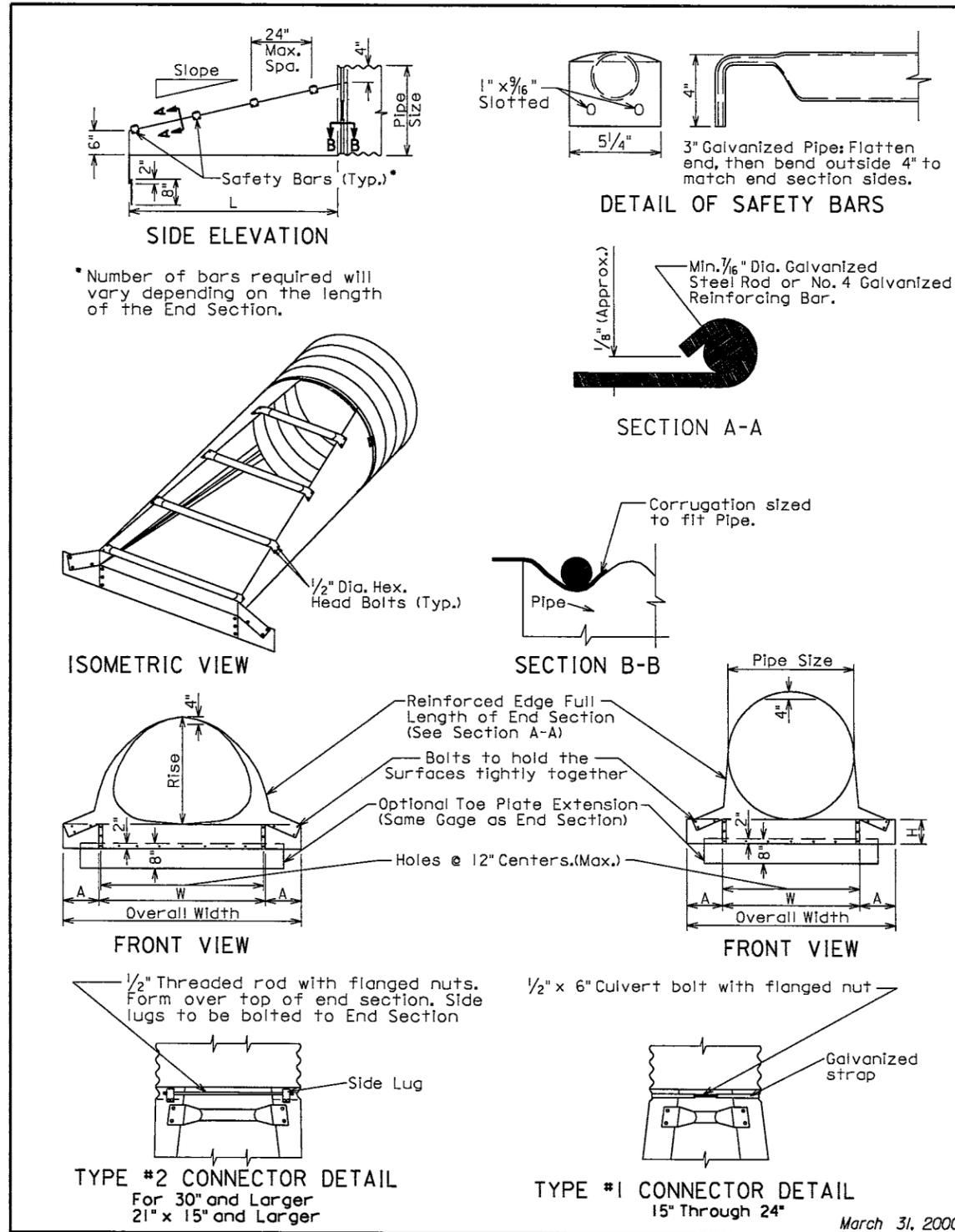
TYPICAL GRADING PROFILE AT BRIDGE BERM
(Normal to C Abutment at C Roadway)

GENERAL NOTE:

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

September 6, 2006

Published Date: 1st Qtr. 2013	S D D O T	BRIDGE BERM (PROJECTING EMBANKMENT)	PLATE NUMBER 120.11
			Sheet 1 of 1



ARCH C.M.P. SAFETY ENDS

Equiv. Dia. (In.)	(Inches)		Min. Thick.		Dimensions (Inches)				L Dimensions	
	Span	Rise	In.	Gage	A	H	W	Overall Width	Slope	Length (In.)
18	21	15	.064	16	8	6	27	43	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	38	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

CIRCULAR C.M.P. SAFETY ENDS

Pipe Dia. (In.)	Min. Thick.		Dimensions (Inches)				L Dimensions	
	In.	Gage	A	H	W	Overall Width	Slope	Length (In.)
15	.064	16	8	6	21	37	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

GENERAL NOTES:
 Safety bars shall be attached to safety ends over 24" in diameter only.
 Safety ends shall be fabricated from galvanized steel conforming to the requirements of the Standard Specifications.
 Safety bars shall be fabricated from steel pipe conforming to the requirements of ASTM A-53 Schedule 40 Specifications.
 Slotted holes for safety bar attachment shall be provided for all end sections.
 Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.
 When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.
 Installation shall be performed in accordance with the Standard Specifications.
 All work and materials required for fabrication and installation of safety ends shall be incidental to the bid items for the various sizes of safety ends.

March 31, 2000

S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
		Sheet 1 of 2

Published Date: 1st Qtr. 2013

March 31, 2000

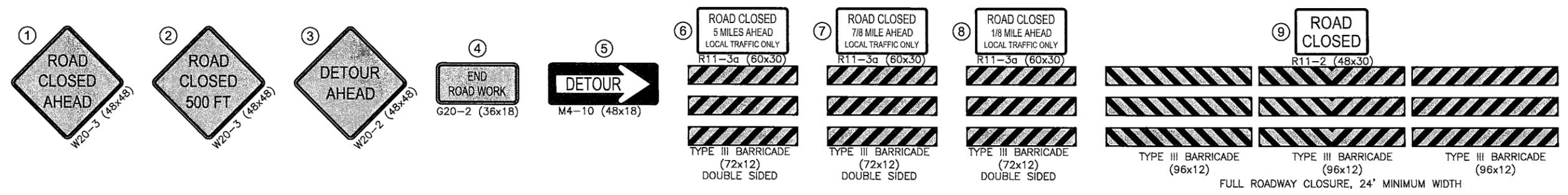
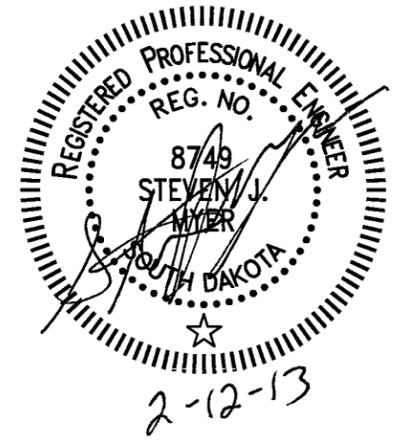
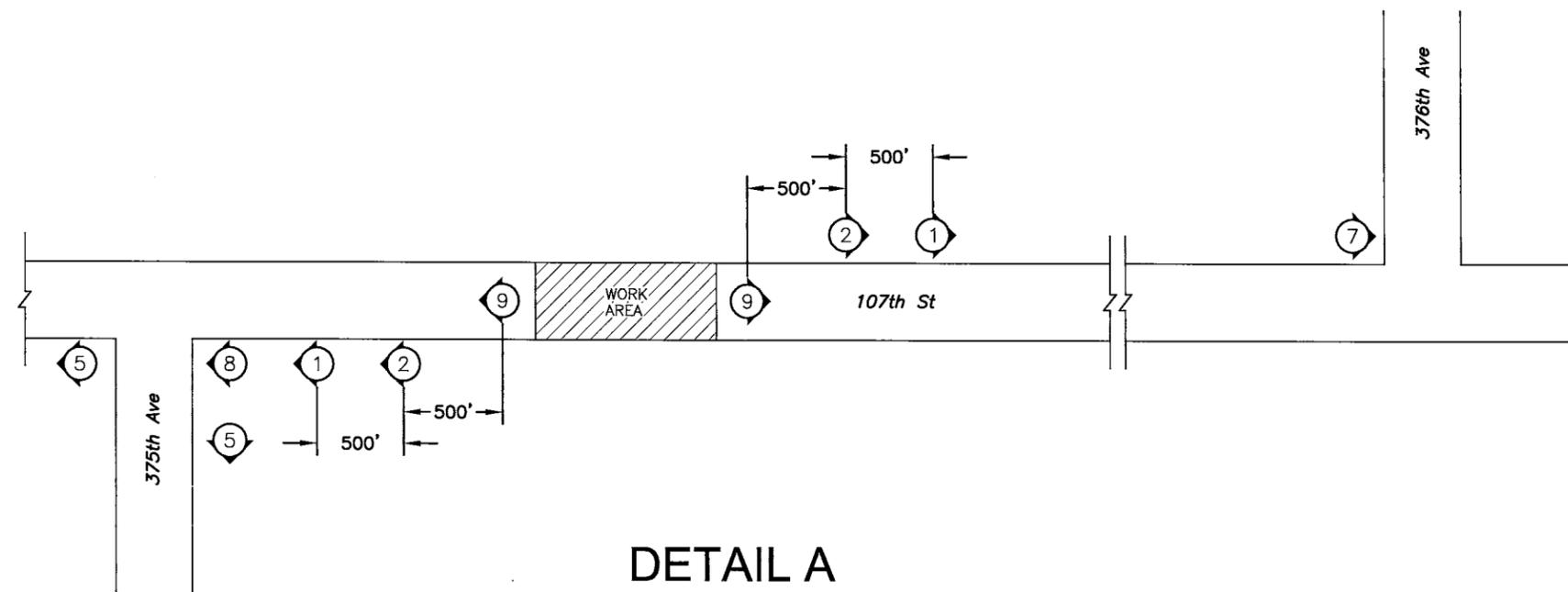
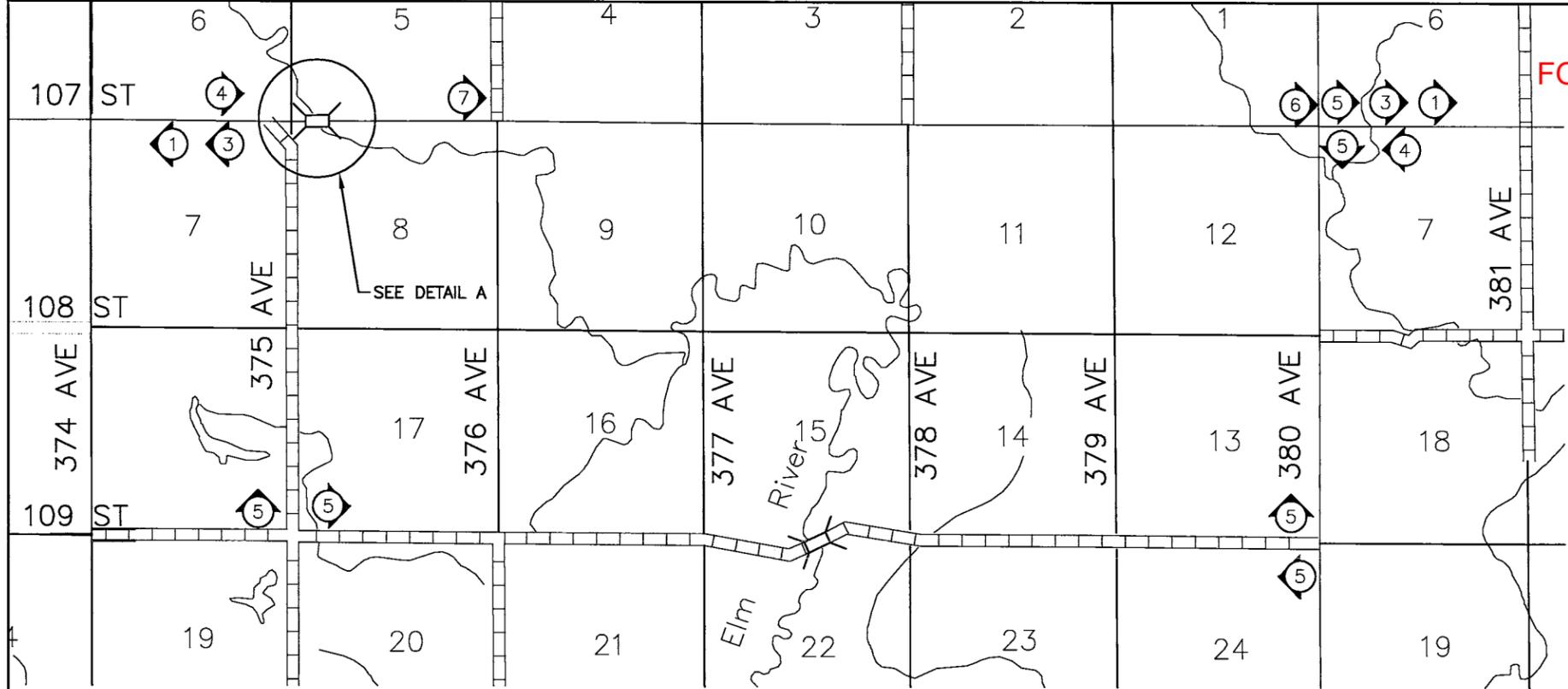
S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
		Sheet 2 of 2

Published Date: 1st Qtr. 2013

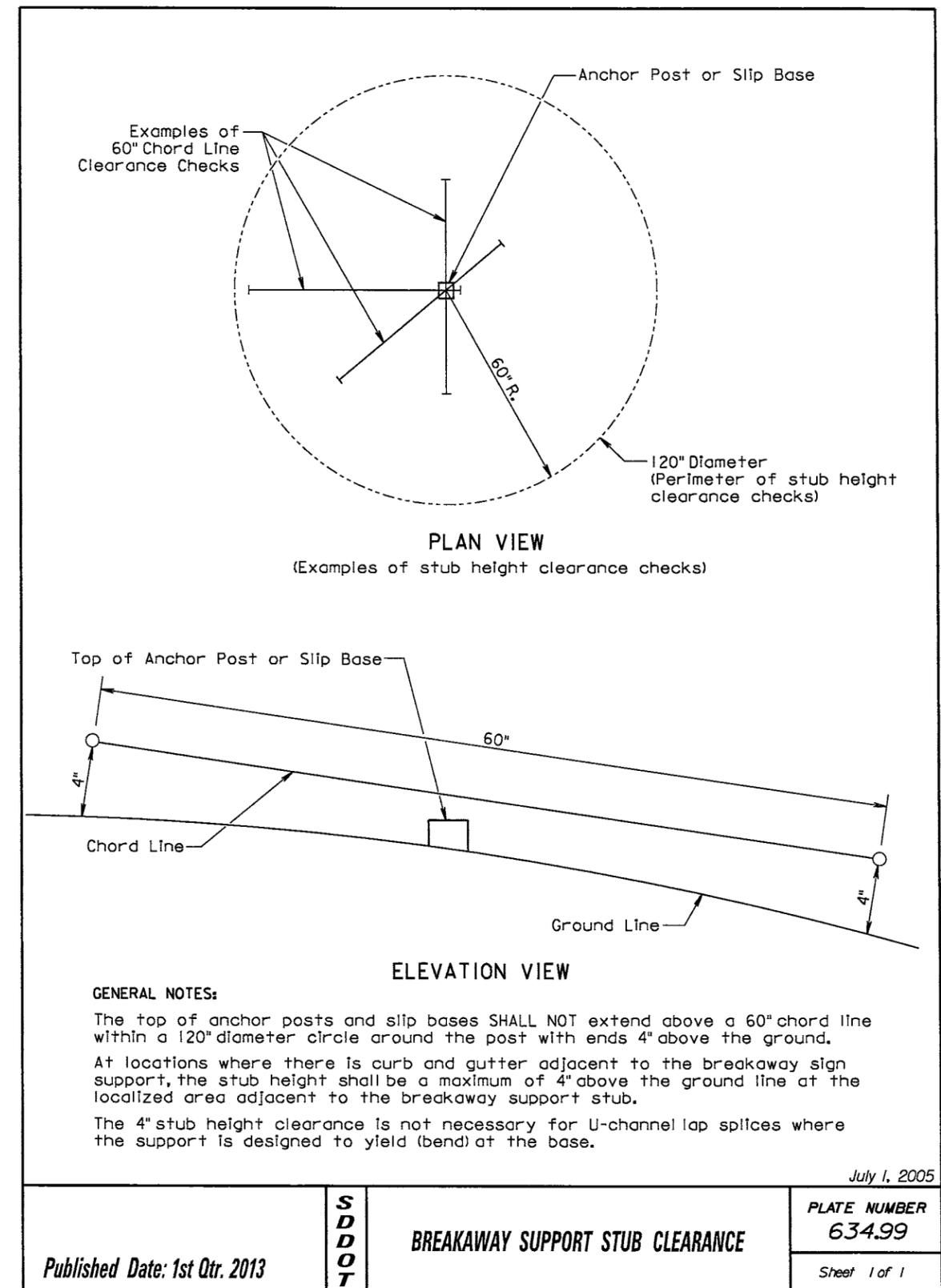
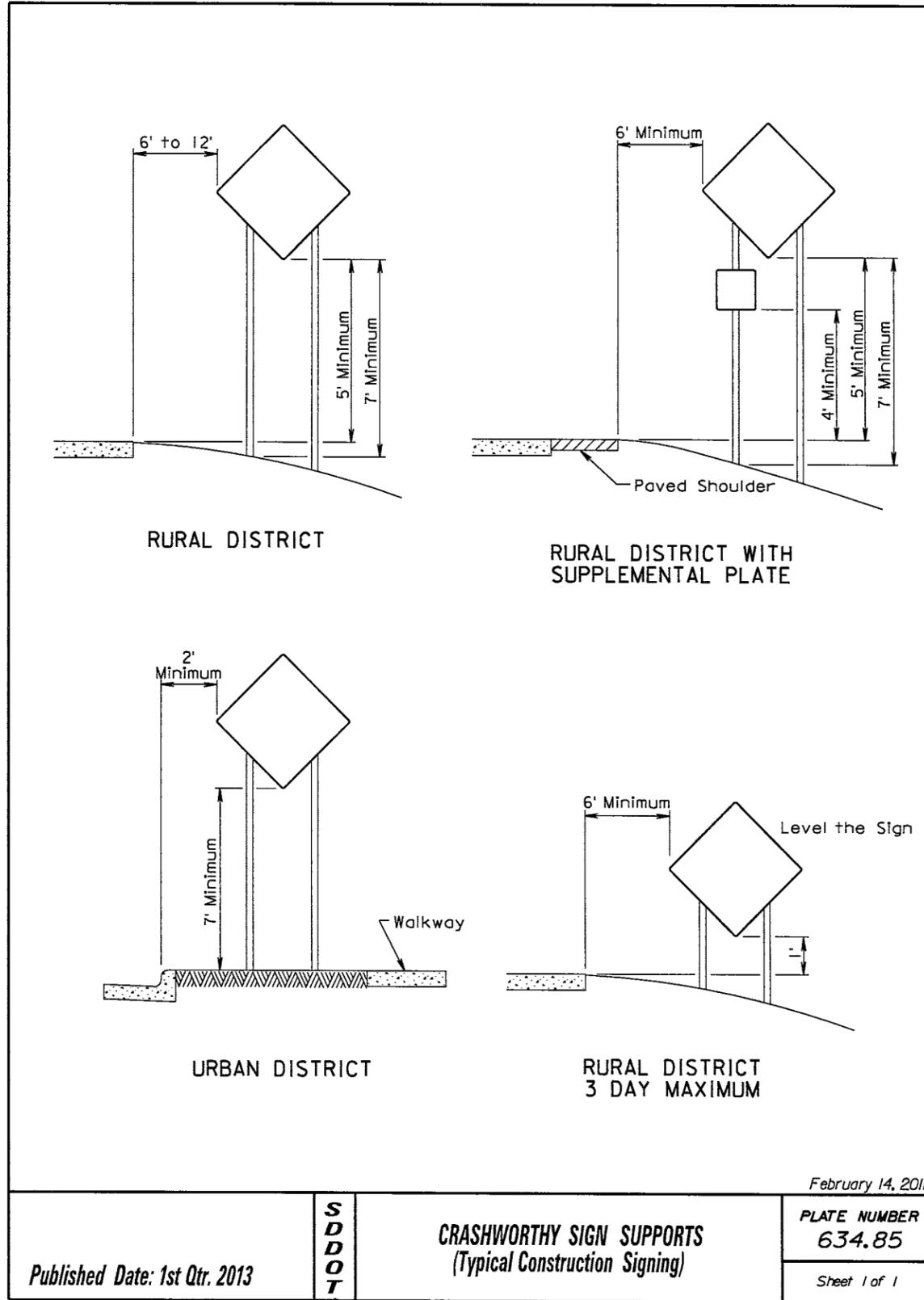
FOR BIDDING PURPOSES ONLY

ESTIMATED QUANTITIES

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" X 18"	END ROAD WORK	2	17	34
M4-10	48" X 18"	DETOUR ARROW (LEFT OR RIGHT)	8	22	176
R11-2	48" X 30"	ROAD CLOSED	2	27	54
R11-3	60" X 30"	ROAD CLOSED ## MILES AHEAD LOCAL TRAFFIC ONLY	3	30	90
W20-2	48" X 48"	DETOUR ### FT. OR AHEAD	2	34	68
W20-3	48" X 48"	ROAD CLOSED ### FT. OR AHEAD	6	34	204
****	****	TYPE III BARRICADE - 8 FT. SINGLE SIDED	6	40	240
****	****	TYPE III BARRICADE - 6 FT. DOUBLE SIDED	3	42	126
TOTAL					992



STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	23	48



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6170(01)	25	48

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications 2010 Edition.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and required provisions, supplemental specifications and/or 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
 *For prestressed beams, see notes regarding Prestressed Girders.

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

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 9+24.4± to centerline Sta 10+74.4± is a 150'± 4 span steel girder bridge. The existing structure consists of a cast-in-place concrete deck with concrete abutments and steel railings. The bridge width is 24'±.
- Break down and remove the existing bridge to 1 foot below finished groundline, or as required to construct new structure in accordance with Section 110 of the South Dakota Standard 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 WASTE DISPOSAL NOTES found elsewhere in these plans.
- The existing steel I-Beams shall be salvaged for future highway related use. The salvaged beams shall be stockpiled on site to be picked up by Brown County forces. Care shall be taken during dismantling and stockpiling operations 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.
- Type II cement is required, except Type III may be used for the prestressed beams.
- Coarse aggregate to be used in concrete shall consist of either crushed quartzite or other crushed ledge rock. If crushed ledge rock other than quartzite is to be used, it shall be from a source approved by the Engineer.
- Grout design mix shall be as specified in the South Dakota Standard Specifications Section 460.3S. A compressive strength of 2000 psi shall be attained by the grout prior to erection of any beams. Chamfer edges of grout pads 3/4". The quantity of grout is included in and shall be paid for at the contract unit price per cubic yard for Class A45 Concrete, Bridge.

ABUTMENTS

- Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
- The HP 10x57 Piling were designed using a factored bearing resistance of 105 tons per pile. Piling shall develop a field verified nominal bearing resistance of 262 tons per pile.
- One test pile shall be driven at each abutment and will become part of the pile group.
- 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.
- Abutment backwalls above the construction joint may be cast separately from the deck slab. The concrete used for the backwalls and wings shall be Class A45 Concrete, Bridge. All abutment and bridge deck concrete shall have attained design strength prior to backfilling.

ABUTMENT BACKWALL COATING

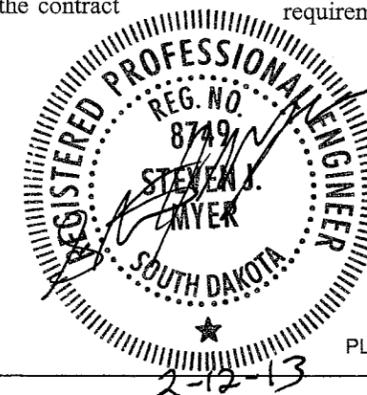
The material for waterproofing the abutment backwall shall be one of the products from the approved products list. The acceptable abutment backwall coating suppliers are listed on the approved products list at the following internet address:

<http://www.sddot.com/pe/materials/certification.asp>

The cost for furnishing and applying the coating shall be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge.

BENTS

- Bent columns are to be 3'-0" dia. reinforced concrete columns on 3'-0" dia. drilled shafts.
- The design of the drilled shafts is based upon encountering competent Pierre Shale Formation at El. 1407 for bent 2 and El. 1396 for bent 3. If competent Pierre Shale Formation is not encountered at or above this elevation, contact the Office of Bridge, through proper channels, before proceeding with drilled shaft construction. Geotechnical Engineering Activity personnel shall be present during the drilling operations to confirm these elevations and to observe placement of the drilled shafts. The Geotechnical Engineering Activity shall be notified a minimum of two weeks prior to the start of excavation for the drilled shafts.
- The drilled shafts shall be constructed using the permanent casing method in conformance with Section 465 of the South Dakota Standard Specifications. A construction joint shall be placed at the top of the permanent casing and the permanent casing shall extend a minimum of 1'-0" above the groundline, waterline, or construction platform elevation, whichever is higher.
- The construction joint locations and quantities provided on the plans are based upon estimated existing groundline and/or waterline elevations. It is the responsibility of the Contractor to verify the existing elevations and have a drilled shaft installation plan submitted and approved prior to ordering the casing. If the Contractor intends to use construction platforms, etc. that would require any of the construction joints to be at a location other than the locations shown in the plans, the Contractor shall include these proposed changes in the drilled shaft installation plan for approval by the Office of Bridge Design.
- The quantities for Drilled Shaft Excavation; 38" Permanent Casing; Class A45 Concrete, Drilled Shaft; and Class A45 Concrete, Bridge are based upon the construction joint location as shown in the plans. Payment for these items shall be at the contract unit price for the plans shown quantities regardless of any approved changes in the location of the construction joints as requested by the Contractor due to the construction of work platforms, etc. Measurement and payment will be made at the contract unit prices for any changes due to variations in the competent foundation soil or in the locations of the existing groundline and/or waterline elevations as ordered by the Engineer.
- The H1 and H2 bars are detailed full length of the Drilled Shaft and Column and are provided in the reinforcing schedule with an additional length sufficient to provide one lap splice. Once the construction joint elevations have been verified and/or established, lap splice details showing location and lap length shall be submitted with the drilled shaft installation plan for approval. Any costs involved in cutting reinforcing steel and any other items incidental to providing the lap splice shall be included in the contract unit price per pound for Reinforcing Steel.
- Spiral reinforcement may be fabricated from cold drawn wire conforming to ASTM A82 or hot rolled plain or deformed bars conforming to the strength requirements of ASTM A615, Grade 60.



2-12-13

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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ACCESS TUBES

1. Access tubes shall be furnished and installed in each of the drilled shafts in accordance with Section 465 of the South Dakota Standard Specifications.
2. These access tubes are to be used for crosshole sonic log testing of the drilled shaft in the event that the Department deems that the quality of the drilled shaft is suspect. In order for the Department to determine if the crosshole sonic log testing is necessary, no subsequent work above the construction will be allowed for 7 days or until authorized by the Engineer, whichever comes first. Upon authorization by the Engineer and prior to any subsequent concrete placement above the construction joint, the Contractor shall remove the water from the access tubes, cut the access tubes off flush with the top of the drilled shaft and completely fill the access tubes with grout.

TEMPORARY WORKS

1. Refer to sheet number 3 for Construction Practices for Temporary Works in Protected Waterways.
2. It is the Contractors responsibility to inspect and verify the actual field conditions and necessary dimensions affecting the satisfactory completion of the bridge work required to complete this project. The Contractor shall then submit a detailed Bridge Removal and Bridge Construction Plan at the Pre-Construction Meeting. The plan shall include all temporary work which may include the following: work platforms, temporary water crossings, caissons, cofferdams, and cribs. The Contractor shall also provide detailed notes on all the materials involved. The plan shall conform to the notes on Water Quality shown on sheet number 3. The plan shall be approved by the SDDOT Office of Bridge Design before construction begins.
3. All costs associated with temporary works for bridge removal and bridge construction, including Bridge Removal and Bridge Construction Plans, labor, materials and all incidentals necessary shall be paid for by the lump sum contract price for "Temporary Works".

SDDOT's LFRD PILE DRIVING EQUATIONS

To determine the field verified nominal pile bearing resistance of driven piles the SDDOT uses the formulas below for timber, concrete, steel H-piling and shell type piles.

For double action steam or air hammers and closed cylinder top diesel hammers:

$$Q \text{ (drive)} = \frac{10.5E}{S + 0.1} \times \frac{W}{W + M}$$

For single action steam or air hammers and open cylinder top diesel hammers:

$$Q \text{ (drive)} = \frac{10.5WH}{S + 0.1} \times \frac{W}{W + M}$$

Where:

Q = the field verified nominal pile bearing resistance in tons.

W = the weight of the ram of an energy hammer in tons.

H = the height of free fall of the hammer or ram in feet.

M = the weight in tons of the driven mass and shall include the weight of the pile, the weight of the driving cap and the weight of the anvil, if used.

E = the energy per blow in foot-tons.

S = the average penetration in inches of the pile per blow for the last 10 blows for energy hammers.

PILE DRIVING EQUIPMENT

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

MVE M-19	Delmag D16-32
Delmag D30-32	Delmag D12-42
ICE 42S	Delmag D19-42
MKT DE 42/35	

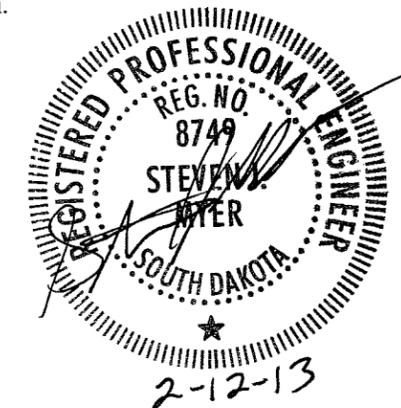
PRESTRESSED GIRDERS

1. Minimum concrete compressive strength $f'c = 6,000$ psi at 28 days for all girders, $fci = 5,000$ psi for all girders.
2. All mild reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.
3. Individual tendons in all pretensioned sections shall consist of seven wire uncoated Type 270K Strands having a nominal diameter of 0.6" and a minimum ultimate strength of 58,600 lbs. per cable. An initial tensile force of 43,500 lbs. shall be applied to all 0.6" cables in all girders. All prestressing steel shall conform to AASHTO M203. (low lax strands).
4. All prestressed girder units within a span shall be cast within an 8 day period. If not, the newest girder shall be at least 6 weeks old before the deck slab is poured. The girder units shall be poured in all steel forms.
5. Prestressed concrete girders shall always be lifted by the devices provided in the top flanges near the ends of the girders. Types of lifting devices other than those shown on the plans may be used provided they are approved by the Office of Bridge Design. The design of the lifting devices shall be the responsibility of the Fabricator.

6. Each beam shall be marked showing structure number, casting date, and beam number. Marking shall be on the face of the beam near the end and so located that they will be exposed after the diaphragms have been cast. Fascia beams shall be marked on an inside face. All markings shall be stenciled and clearly legible. For beam designations and locations, see superstructure layout plan and Erection Data sheet.
7. The physical properties of the elastomeric bearing pads shall conform to the requirements of Section 18.2 of the AASHTO LFRD Bridge Construction Specification and the AASHTO Materials Specification M251. The elastomeric bearing pads shall conform to Grade 70 (durometer). The cost of the pads shall be incidental to the contract unit price per cubic yard for Class A45 Concrete, Bridge. Certification that pads are 70 durometer and meet the requirements of AASHTO LFRD Bridge Construction Specification Section 18.2 and AASHTO Materials Specification M251 shall be furnished to the Engineer with the shop drawings. No laminated bearing pads will be allowed.
8. All exposed corners shall be chamfered 3/4" or rounded to 3/4" radius.
9. Dead Load of girder is taken as effective at transfer. Cut strands, except those extended and bent, flush with the end of prestressed girder and coat end of strands with mortar.
10. The Contractor shall be responsible for ensuring that transportation stresses, handling and erection do not cause damage to the girders.
11. Furnish and Install Inserts for T8 Rebars as shown in the plans. All costs involved shall be incidental to the contract unit price per foot of girder.

SUPERSTRUCTURE

1. Girder lifting hooks shall be cut off before placement of concrete deck slab.
2. The diaphragms at the bents shall be poured integrally with the deck slab. Placement of diaphragms at the bents shall not slow down the rate of deck concrete placement and finishing. The Contractor shall place the concrete for the specified diaphragms ahead of the deck concrete in such a manner that advancement of the deck concrete reaches the diaphragm just as placement of concrete in the diaphragm is complete.
3. 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 machine shall be kept parallel to the machine.
4. The bridge deck must be placed and finished continuously at a minimum rate of 90ft. of the deck per hour measured along Centerline Roadway. This rate is exclusive of concrete placed in the diaphragms. (See note 2 above.) 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 rate of 90ft. per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi.



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CLASS A45 CONCRETE, BRIDGE DECK

1. Concrete used in the bridge deck slab and bent diaphragm shall be in accordance with the requirements for bridge deck concrete as specified in section 460.3(A) of the South Dakota Standard Specifications. In addition, the concrete used in the bridge deck shall have Class F Modified Fly Ash substituted for a portion of the cement in accordance with Section 605 of the South Dakota Standard Specifications.
2. The bridge deck concrete shall be cured in accordance with Section 460.3N of the South Dakota Standard Specifications.

FALSEWORK

The Contractor shall be required to include with his Falsework plans, details for the construction of an adequate "Walk-Way" including railing.

SHOP PLANS

1. Shop plans are required for both the prestressed girders and any fabricated steel items. The fabricator shall initially submit 3 copies of the shop plans to Clark Engineering, 1410 W. Russell Street Sioux Falls, SD 57104.
2. After review by Clark Engineering, one copy with any revisions noted will be sent to both the Office of Bridge Design and the Fabricator. The Fabricator shall then send seven corrected copies back to Clark Engineering.
3. After review by Clark Engineering, six copies will be sent back to the Bridge Construction Engineer, South Dakota Department of Transportation who will review them, arrange for fabrication inspection, authorize fabrication, and distribute the shop drawings.

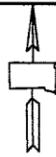
FALL PROTECTION

1. The Contractor shall install a Fall Protection System conforming to OSHA Regulations. When working on the girders prior to decking installation, a Horizontal Lifeline – or other OSHA approved system shall be installed. The Contractor shall have one Personal Fall Arrest System (PFAS) available for use by a Department Inspector. The PFAS shall be compatible with the installed Fall Protection System.
2. Modifications to any bridge components used to accommodate the Fall Protection System shall be shown on the Falsework Plans and/or the appropriate Shop Plans. Field welding to bridge components will not be allowed. Field placed concrete inserts or drilled-in anchor bolts will be allowed if approved by the Engineer. All costs associated with providing the Fall Protection System shall be incidental to the other contract items.

BOLT TESTING

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





Hole Number X2 Station 9+12 Depth 24.6 ft Soil Color Gray Classification Silt-Clay Strength (q _s) 2,752 psf Dry Density 87.2 pcf Wet Density 110.5 pcf Moisture 26.8 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 99.4 % Sand Content 0.6 % Silt Content 58.6 % Clay Content 40.8 %	Hole Number X4 Station 10+84 Depth 27.0 ft Soil Color Gray Classification Sand-Clay Strength (q _s) 2,752 psf Dry Density 91.5 pcf Wet Density 118.4 pcf Moisture 29.4 % Pass No. 10 87.6 % Pass No. 40 80.3 % Pass No. 200 62.8 % Sand Content 24.9 % Silt Content 27.0 % Clay Content 35.8 %	Hole Number X4 Station 10+84 Depth 40.7 ft Soil Color Gray Classification Silt-Clay Strength (q _s) 993 psf Dry Density 71.0 pcf Wet Density 100.2 pcf Moisture 41.2 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 99.4 % Sand Content 0.6 % Silt Content 50.6 % Clay Content 48.8 %	Hole Number X5 Station 10+87 Depth 39.0 ft Soil Color Gray Classification Clay Strength (q _s) 6,662 psf Dry Density 81.8 pcf Wet Density 107.6 pcf Moisture 31.5 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 96.4 % Sand Content 3.6 % Silt Content 41.6 % Clay Content 54.8 %	Hole Number X6 Station 9+65 Depth 24.5 ft Soil Color Gray Classification Clay Strength (q _s) 31,685 psf Dry Density 90.1 pcf Wet Density 115.5 pcf Moisture 28.1 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 99.4 % Sand Content 0.6 % Silt Content 42.6 % Clay Content 56.8 %	Hole Number X7 Station 10+29 Depth 36.8 ft Soil Color Gray Classification Clay Strength (q _s) 34,842 psf Dry Density 90.6 pcf Wet Density 115.5 pcf Moisture 27.5 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 98.8 % Sand Content 1.2 % Silt Content 48.0 % Clay Content 50.8 %	Hole Number X8 Station 9+98 Depth 31.6 ft Soil Color Gray Classification Clay Strength (q _s) 29,040 psf Dry Density 88.5 pcf Wet Density 112.2 pcf Moisture 26.8 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 99.2 % Sand Content 0.8 % Silt Content 40.4 % Clay Content 58.8 %
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FOR BIDDING PURPOSES ONLY

STATE OF S.D.	PROJECT BRF 6170(01)	SHEET NO. 28	TOTAL SHEETS 48
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Pierre Shale is a marine shale with a textural classification that varies from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain concretion zones that are normally thin but occasionally are massive. These zones may be considered hard and dense. Thin zones may be present that are cemented resulting in claystone or siltstone seams. Bentonite zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be "Soft Rock".

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.

LEGEND

- ⊕ Auger 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 undisturbed samples and to measure the resistance to penetration of the soil.

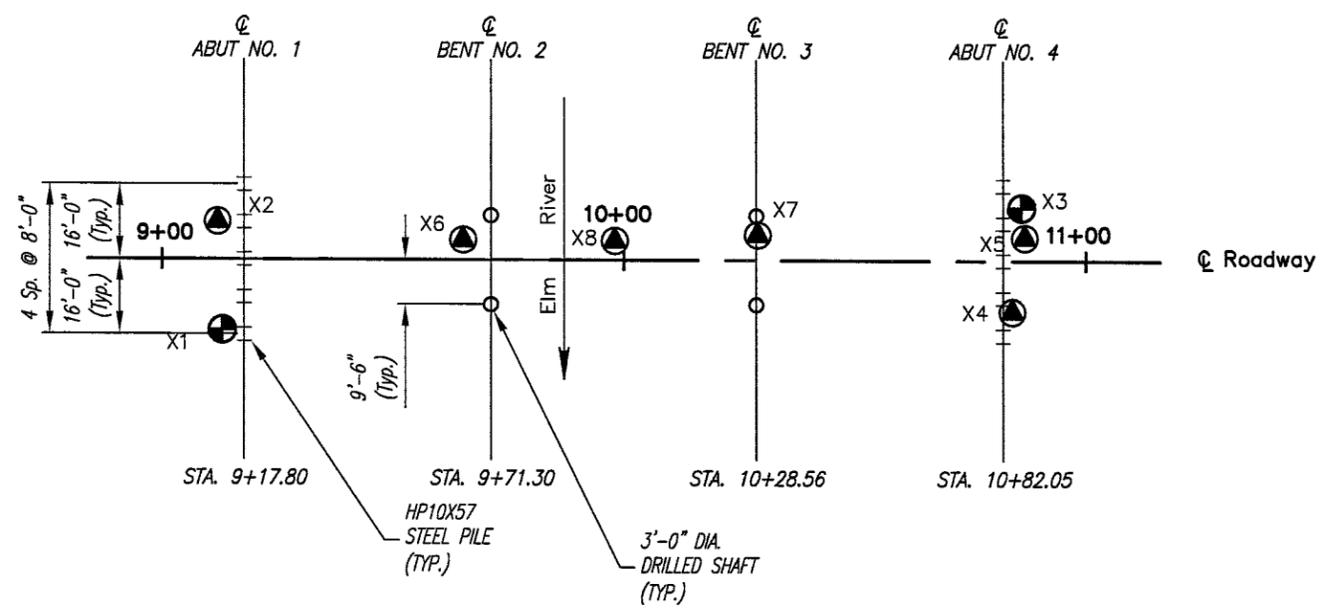
GROUND WATER ELEVATIONS

as of April 1996

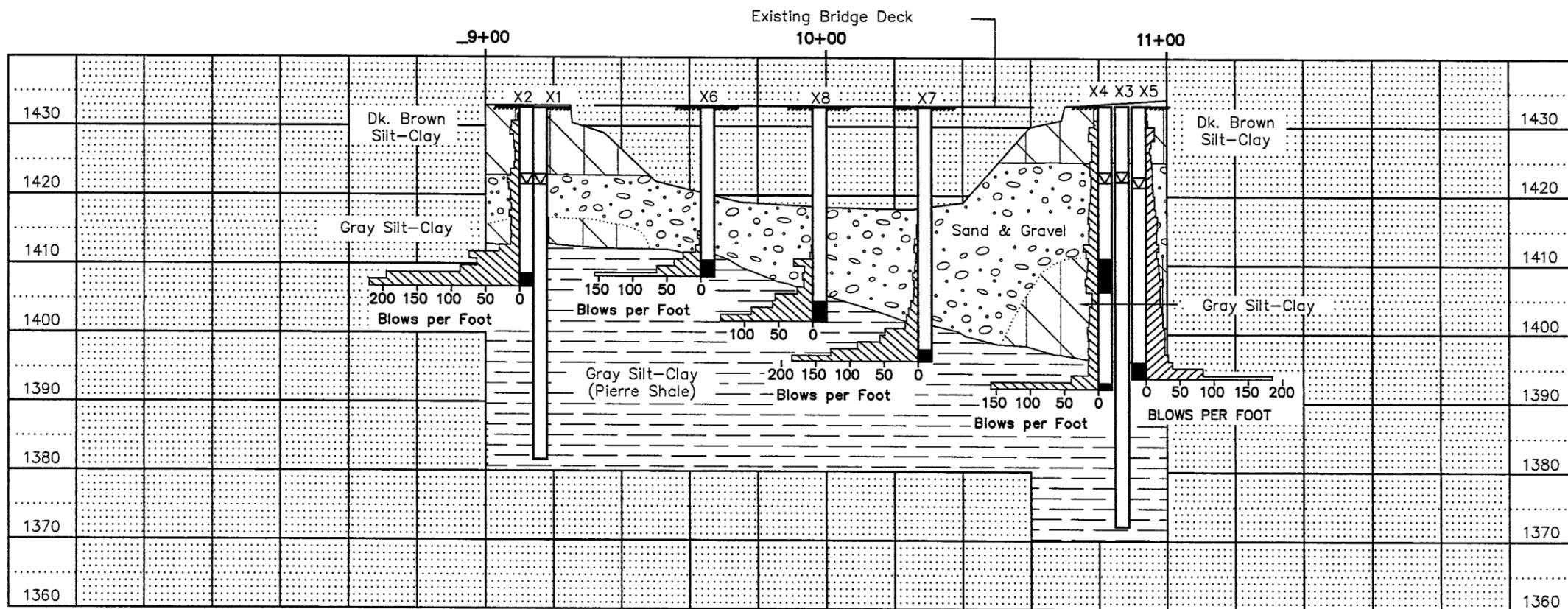
X1	1421.5
X2	1421.6
X3	1422.1
X4	1421.9
X5	1421.3

MEASURED SKIN FRICTION

	Elev	psf
X2	1408.2	1,581
X2	1406.8	23,238
X4	1406.0	405
X4	1392.0	2,590
X5	1393.6	887
X6	1407.5	5,415
X7	1396.0	1,724
X8	1401.8	3,055



PILING & DRILLED SHAFT LAYOUT



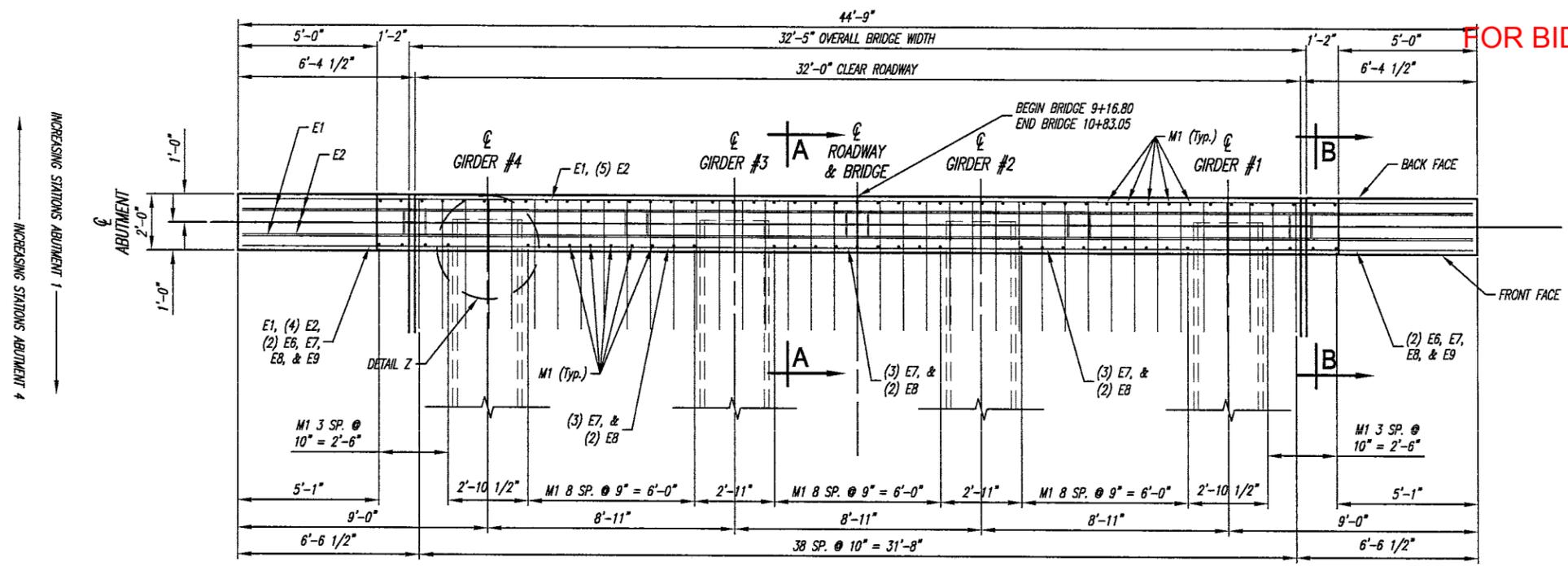
SUBSURFACE INVESTIGATION, PILING, & DRILLED SHAFT LAYOUT FOR
166'-3" PRESTRESSED GIRDER BRIDGE
 OVER ELM RIVER SEC. 5/8-T127N-R65W
 32'-0" ROADWAY BRF 6170(01)
 STA. 9+16.80 TO 10+83.05 0° SKEW
 STR. NO. 07-010-070 HL-93

BROWN COUNTY
 S.D. DEPT. OF TRANSPORTATION
 FEBRUARY 2013

DESIGNED BY	DRAWN BY NN	CHECKED BY DV	APPROVED
			BRIDGE ENGINEER

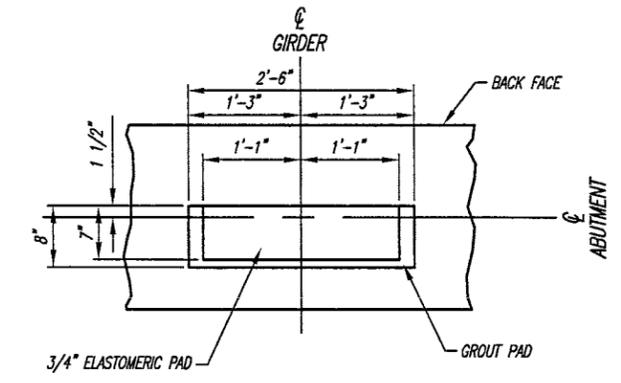
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	29	48

FOR BIDDING PURPOSES ONLY

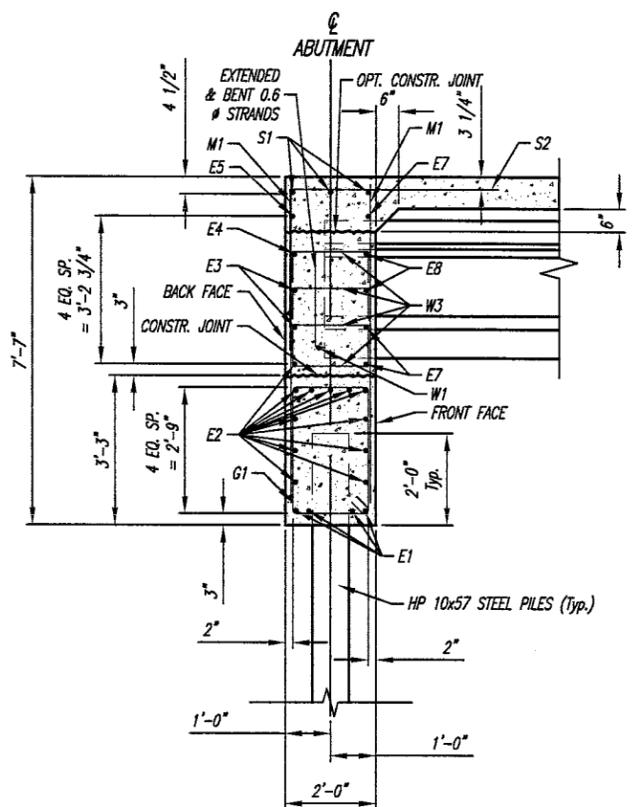


PLAN

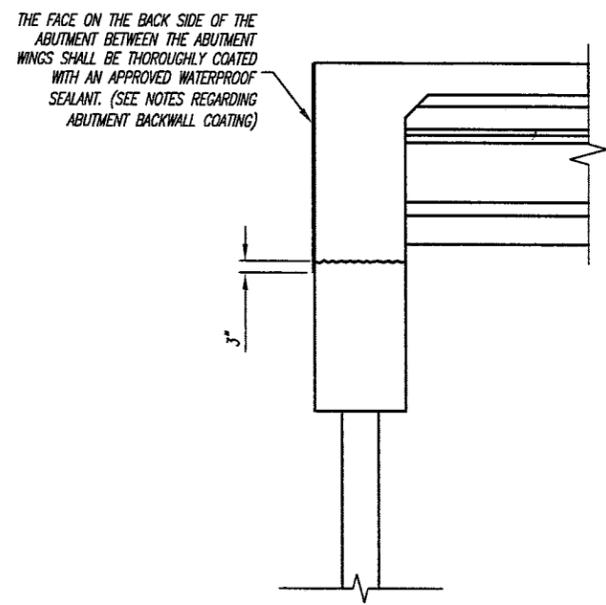
(ABUT. #1 SHOWN, ABUT #4 OPPOSITE HAND)
G BARS NOT SHOWN FOR CLARITY



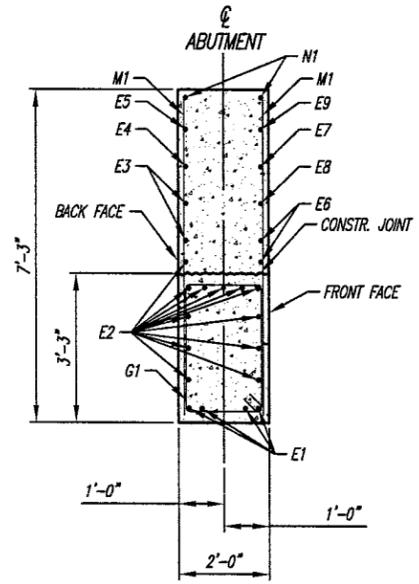
DETAIL Z



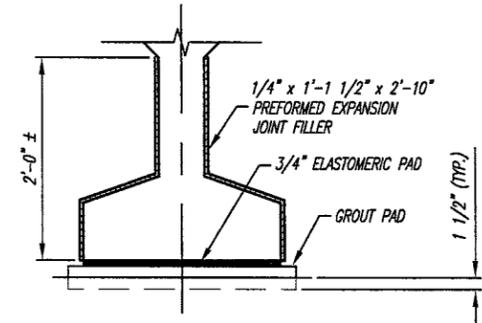
VIEW A-A
SHOWN @ C/C OF ABUT.



ABUT. BACKWALL COATING DETAILS



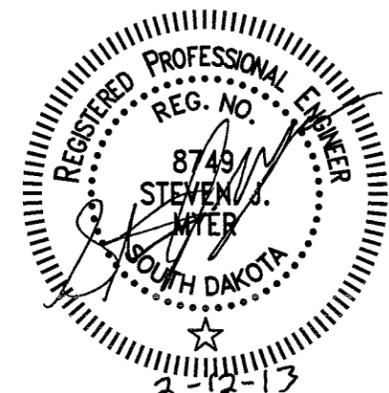
VIEW B-B



DETAIL Y
(TYPICAL AT GIRDER ENDS
AT ABUTMENTS ONLY)

ABUTMENT DETAILS (1 OF 2)

FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER SEC. 5/8-T127N-R65W
32'-0" ROADWAY BRF 6170(01)
STA. 9+16.80 TO 10+83.05 0° SKEW
STR. NO. 07-010-070 HL-93



BROWN COUNTY
S.D. DEPT. OF TRANSPORTATION
FEBRUARY 2013

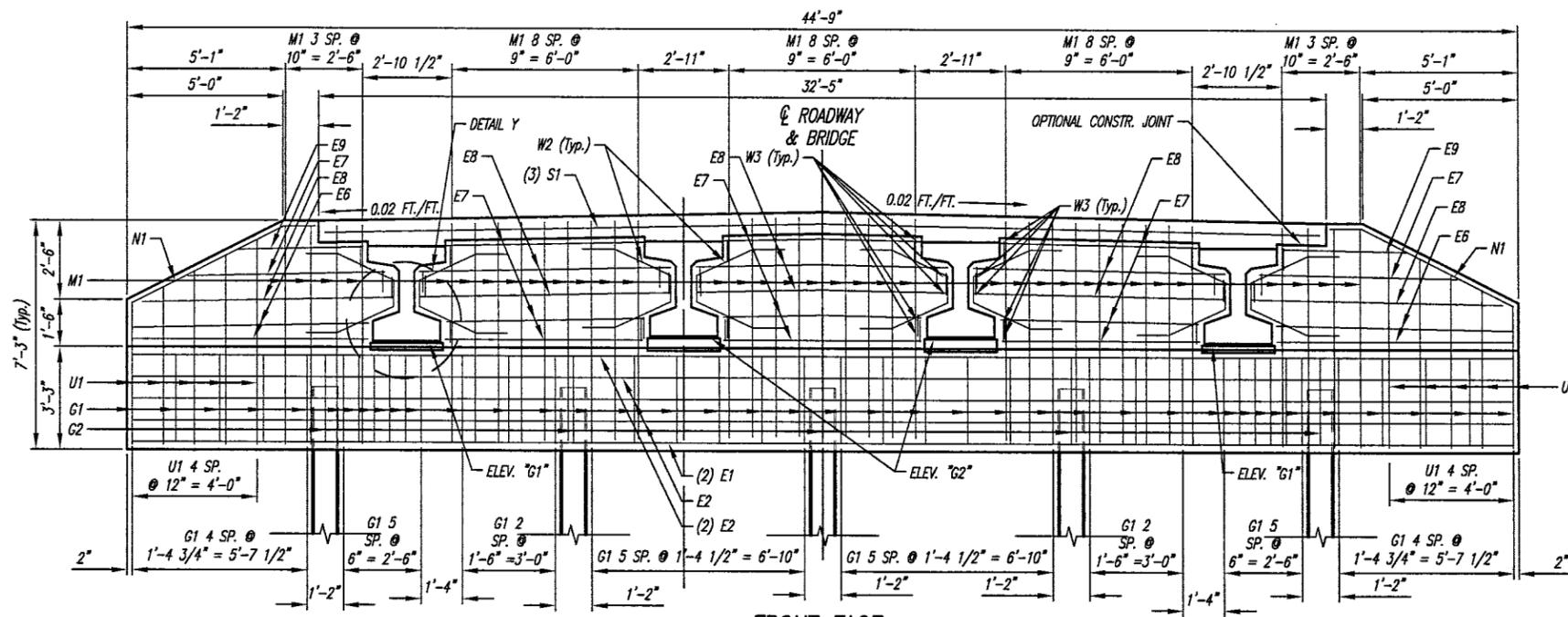
NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 7.

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJM	SJM	KRG	

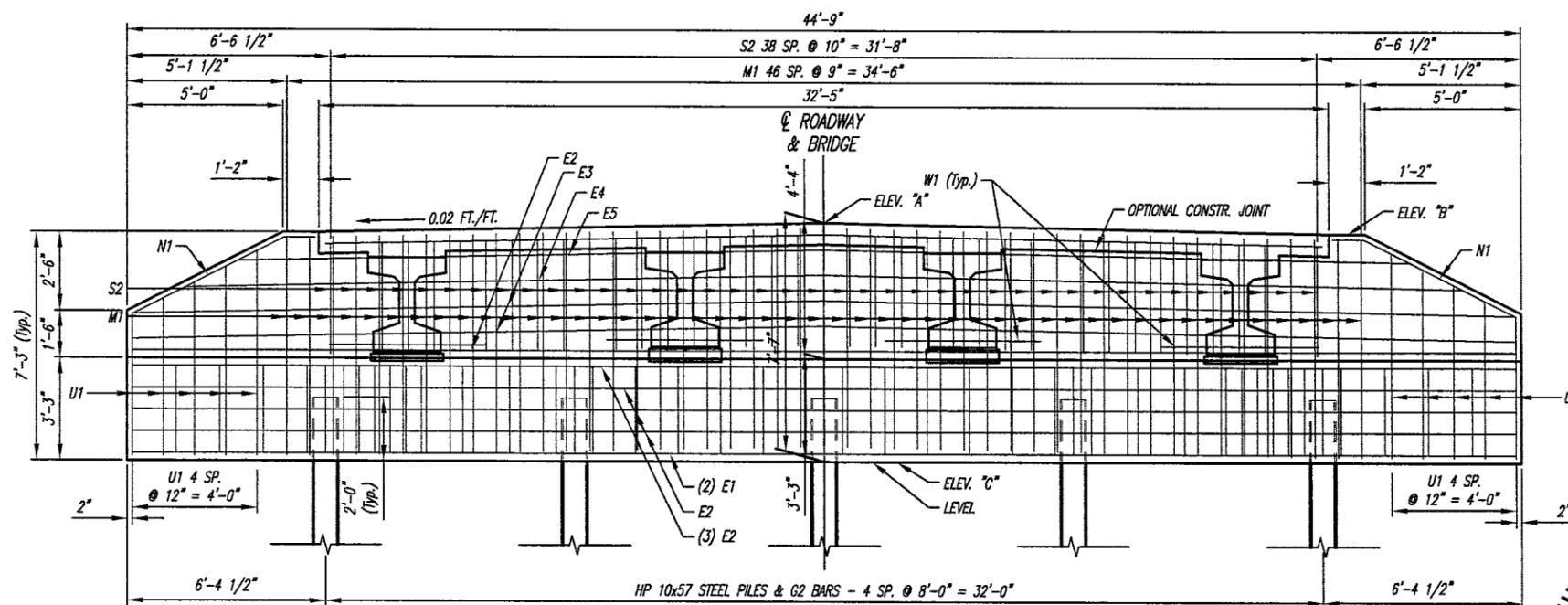
BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF S.D.	PROJECT BRF 6170(01)	SHEET NO. 30	TOTAL SHEETS 48
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Note:
Concrete shall be placed in the space under the beams (within the backwall width) during the pour. Care shall be taken to get the concrete vibrated into this area. If upon form removal the space is not completely filled and consolidated. The Contractor shall grout in the remaining voids.



REINFORCING SCHEDULE (FOR ONE ABUTMENT)					BENDING DETAILS	
MK.	NO.	SIZE	LENGTH	TYPE		
E1	4	9	44'-5"	STR.	TYPE T2	
E2	12	7	44'-5"	STR.	TYPE S6	
E3	2	7	44'-4"	STR.	TYPE 17A	
E4	1	7	41'-0"	STR.		
E5	1	7	37'-8"	STR.		
E6	4	5	7'-7"	STR.		
E7	11	5	6'-4"	STR.		
E8	8	5	8'-1"	STR.		
E9	2	5	4'-0"	STR.		
G1	40	5	9'-7"	T2		
G2	5	5	8'-7"	S6		
M1	82	5	6'-11"	STR.		
N1	4	4	6'-5"	19B		
S1	3	9	32'-0"	STR.		
S2	39	5	8'-1"	17A		
U1	10	6	11'-0"	STR.		
W1	4	5	5'-0"	STR.		
W2	8	4	6'-10"	14		
W3	36	4	3'-0"	17		

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

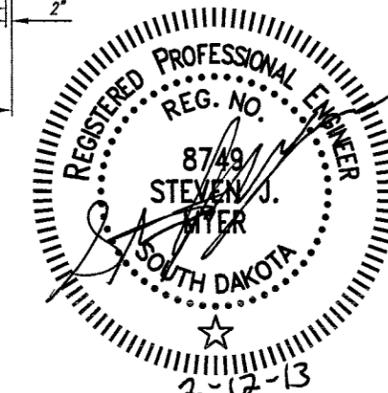
ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
		ABUT. NO. 1	ABUT. NO. 4
STRUCTURE EXCAVATION, BRIDGE	CUYD	12.4	12.4
CLASS A45 CONCRETE, BRIDGE	CUYD	21.0	21.0
REINFORCING STEEL	LB	3,564	3,564
EPOXY COATED REINFORCING STEEL	LB	655	655
PREBORING PILING	FT	5 @ 10' = 50'	5 @ 10' = 50'
HP 10x57 STEEL TEST PILE, FURNISH AND DRIVE	FT	1 @ 41' = 41'	1 @ 55' = 55'
HP 10x57 STEEL BEARING PILE, FURNISH AND DRIVE	FT	4 @ 36' = 144'	4 @ 50' = 200'

TABLE OF ELEVATIONS					
ABUTMENT	ELEV. 'A'	ELEV. 'B'	ELEV. 'C'	ELEV. 'G1'	ELEV. 'G2'
NO. 1	1438.62	1438.30	1431.05	1434.44	1434.61
NO. 4	1438.03	1433.71	1430.46	1433.85	1434.02

ELEVATIONS 'G1' & 'G2' ARE AT THE TOP OF THE GROUT PAD AT CENTERLINE OF ABUTMENT.

ABUTMENT DETAILS (2 OF 2)
FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER SEC. 5/8-T127N-R65W
32'-0" ROADWAY BRF 6170(01)
STA. 9+16.80 TO 10+83.05 0° SKEW
STR. NO. 07-010-070 HL-93

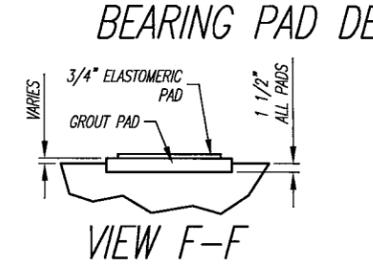
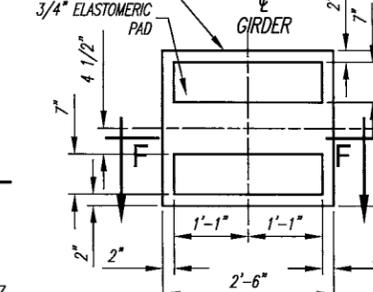
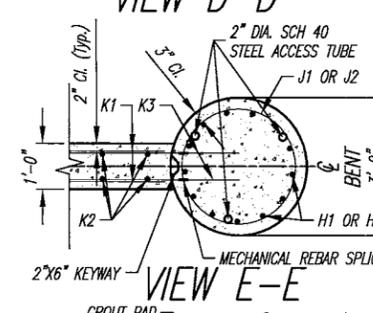
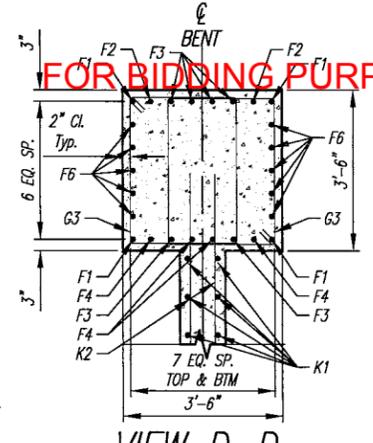
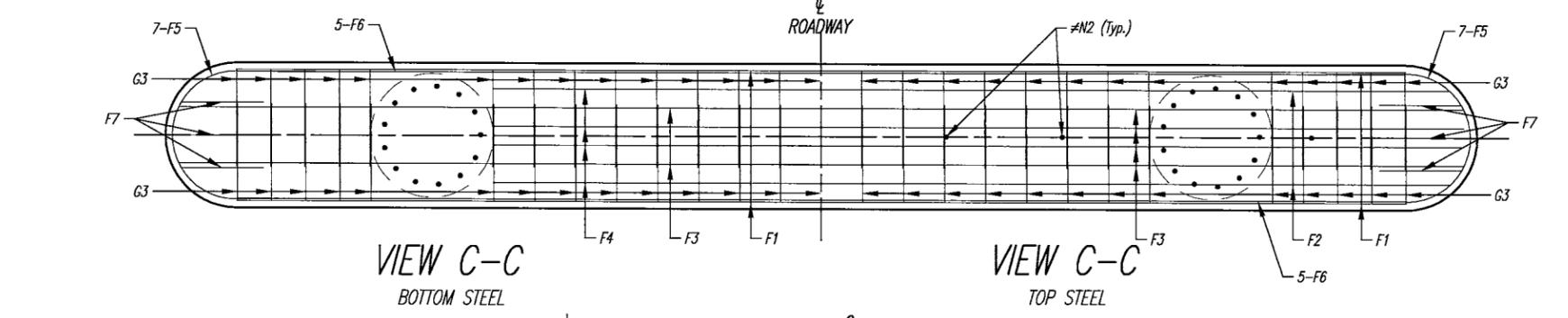
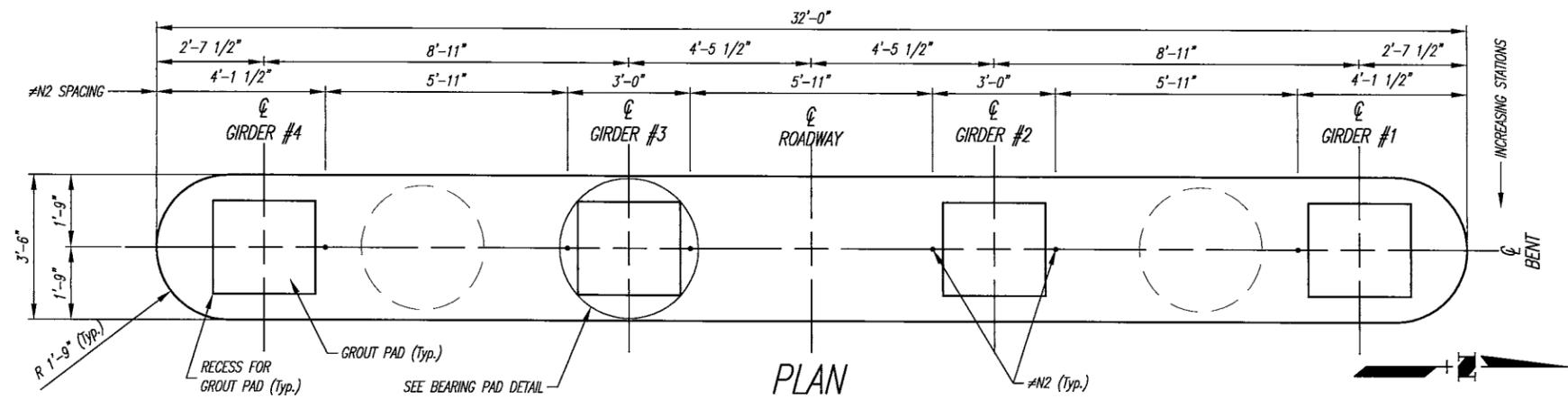
BROWN COUNTY
S.D. DEPT. OF TRANSPORTATION
FEBRUARY 2013



NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 6.

PLANS BY: CLARK ENGINEERING, SIOUX FALLS, SD

DESIGNED BY SJM	DRAWN BY SJM	CHECKED BY KRG	APPROVED BRIDGE ENGINEER
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REINFORCING SCHEDULE
(FOR ONE BENT)

REINFORCING SCHEDULE					BENDING DETAILS	
MK.	NO.	SIZE	LENGTH	TYPE		
F1	4	9	28'-6"	STR.	TYPE S11	
F2	2	9	30'-8"	STR.	TYPE 17	
F3	6	9	31'-4"	STR.		
F4	4	9	16'-0"	STR.		
F5	14	5	8'-9"	S11		
F6	10	4	28'-6"	STR.		
F7	6	5	7'-1"	17		
G3	54	5	11'-9"	T2		
K1	30	5	15'-8"	STR.		
K2	32	5	13'-6"	STR.		
K3	30	5	3'-6"	STR.		
N2	6	8	2'-0"	STR.		

BENT No. 2

H1	52	10	34'-2"	STR.
J1	2	5	1880'-5"	SPIRAL

BENT No. 3

H2	52	10	40'-1"	STR.
J2	2	5	2250'-10"	SPIRAL

NOTE: SPIRALS - USE 3" PITCH AND 1 1/2 EXTRA TURNS AT EACH END. USE 1 1/2 TURNS FOR LAP AT SPLICE AS REQUIRED, OR WELD AS APPROVED BY THE OFFICE OF BRIDGE DESIGN. USE 4 VERTICAL SPACER BARS PER COLUMN. SPIRAL MAY BE SMOOTH BARS. BAR LENGTH DOES NOT INCLUDE SPLICES.

NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS.

ESTIMATED QUANTITIES

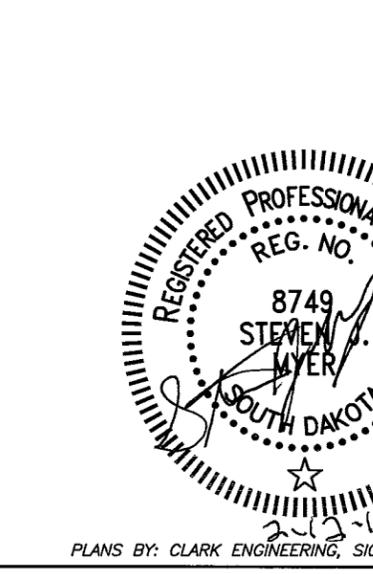
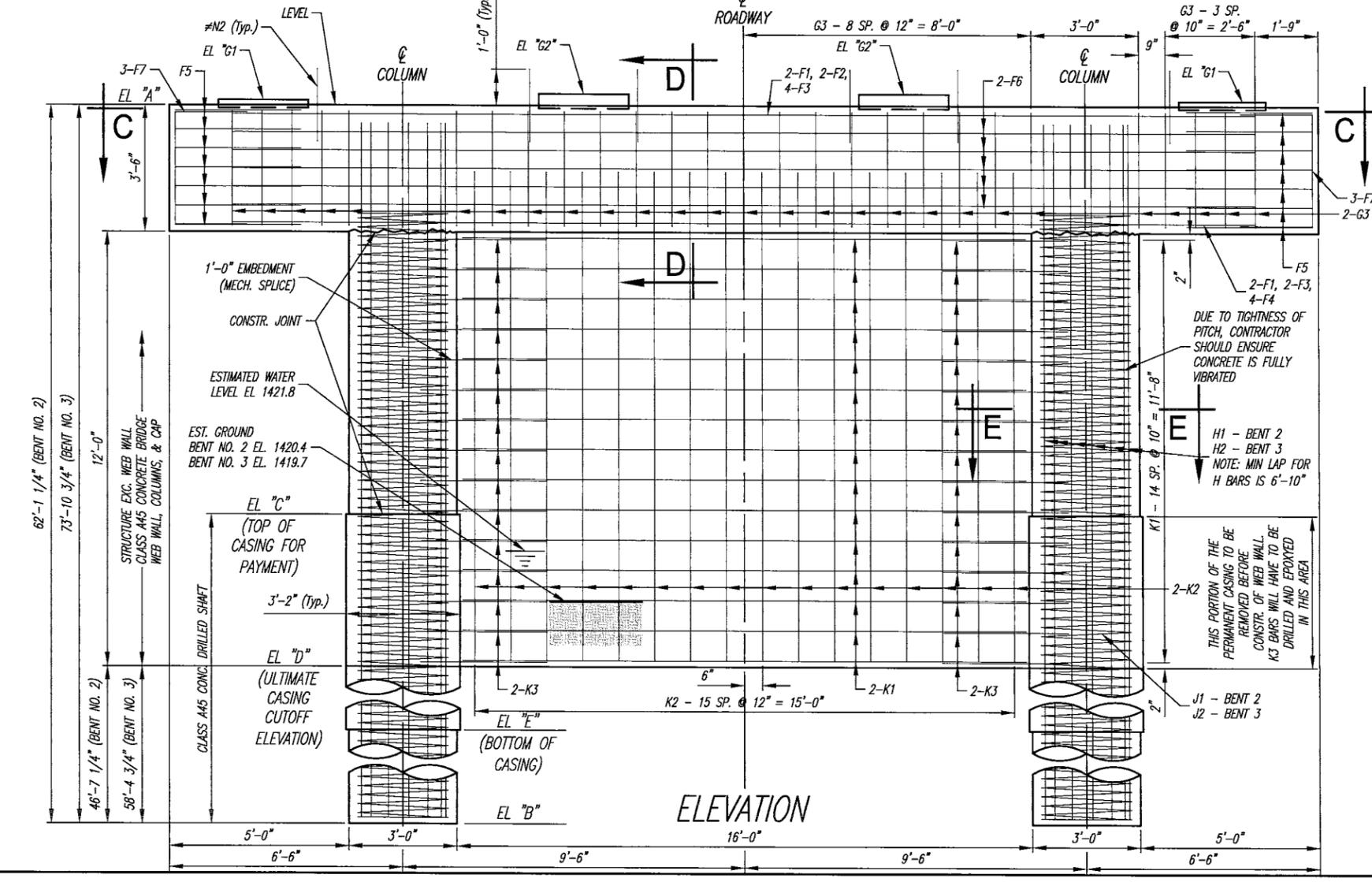
ITEM	UNIT	QUANTITY	
		BENT No. 2	BENT No. 3
STRUCTURE EXCAVATION, BRIDGE	CUYD	7.3	5.3
CLASS A45 CONCRETE, BRIDGE	CUYD	25.4	25.3
CLASS A45 CONCRETE, DRILLED SHAFT	CUYD	26.6	32.9
* DRILLED SHAFT EXCAVATION	CUYD	24.4	30.6
38" PERMANENT CASING	LF	13.8	24.8
REINFORCING STEEL	FT	15,127	17,224
* DRILLED SHAFT EXCAVATION PER FOOT DEPTH PER COLUMN EQUALS 0.26 CUYD.			

TABLE OF ELEVATIONS

BENT	ELEV. 'A'	ELEV. 'B'	ELEV. 'C'	ELEV. 'D'	ELEV. 'E'	ELEV. 'G1'	ELEV. 'G2'
NO. 2	1434.11	1372.00	1422.80	1418.61	1409.00	1429.93	1430.10
NO. 3	1433.91	1360.00	1422.80	1418.41	1398.00	1429.73	1429.90

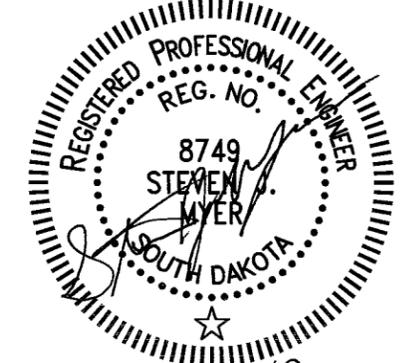
ELEVATIONS 'G1' & 'G2' ARE AT THE TOP OF THE GROUT PAD AT CENTERLINE OF BENT.

NOTE: THE PORTION OF THE N2 BARS ABOVE THE BENT CAP IS TO BE COATED WITH ASPHALT PAINT OR WRAPPED WITH TAR PAPER TO A MINIMUM THICKNESS OF 1/16"



BENT DETAILS
FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER
32'-0" ROADWAY
STA. 9+16.80 TO 10+83.05
STR. NO. 07-010-070

SEC. 5/8-T127N-R65W
BRF 6170(01)
0° SKEW
HL-93



BROWN COUNTY
S.D. DEPT. OF TRANSPORTATION
FEBRUARY 2103

(8) OF (22)

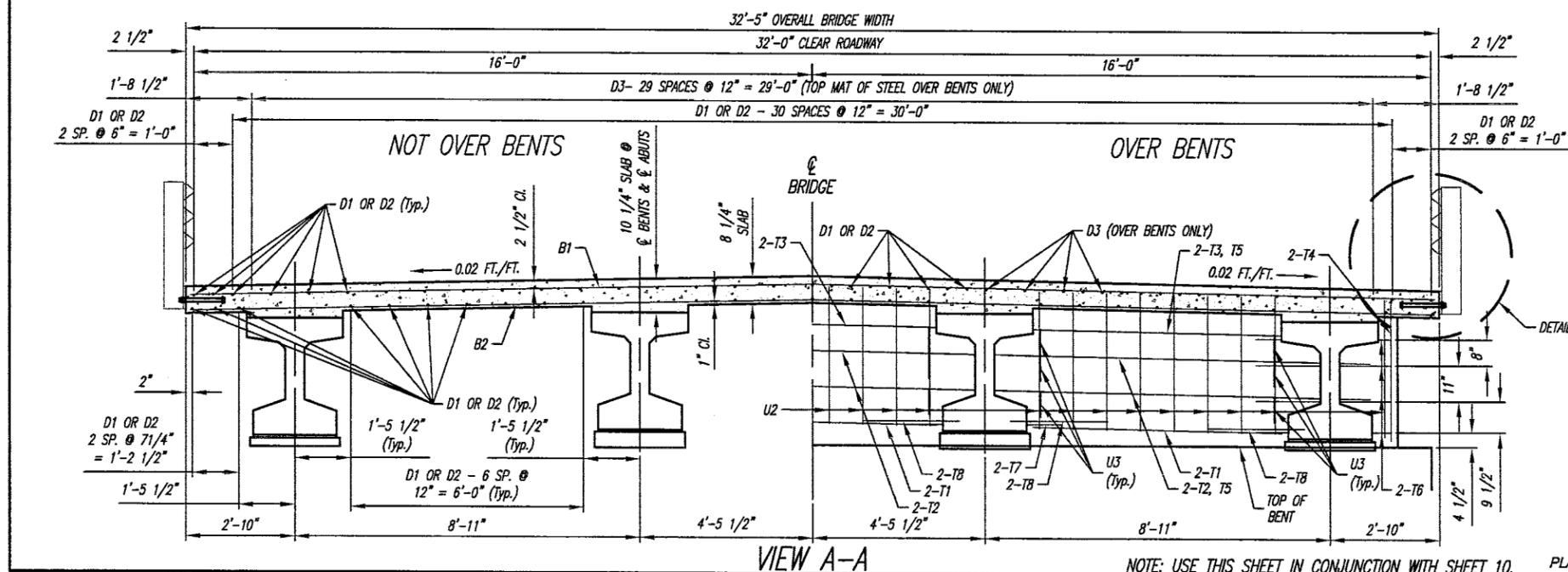
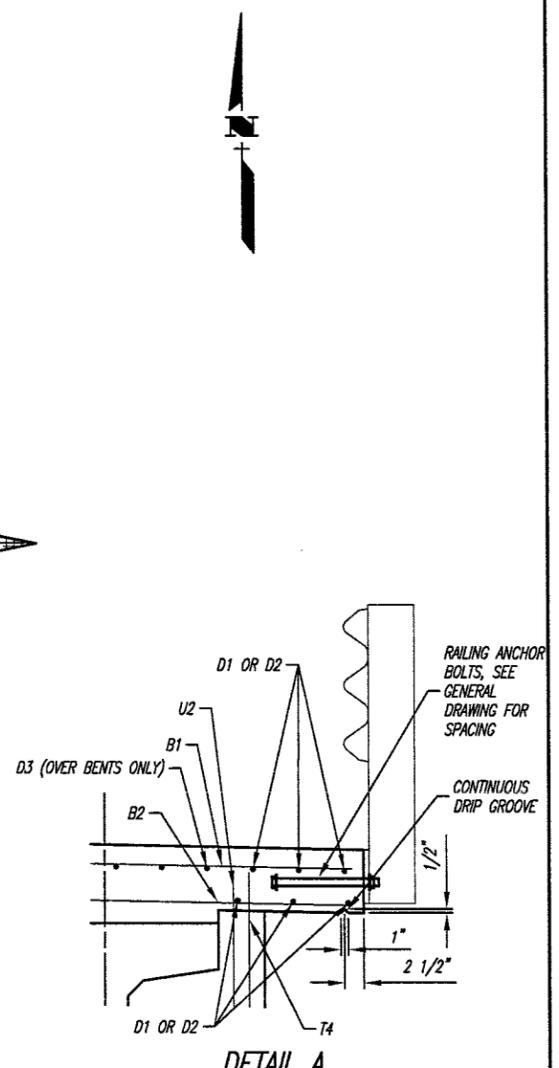
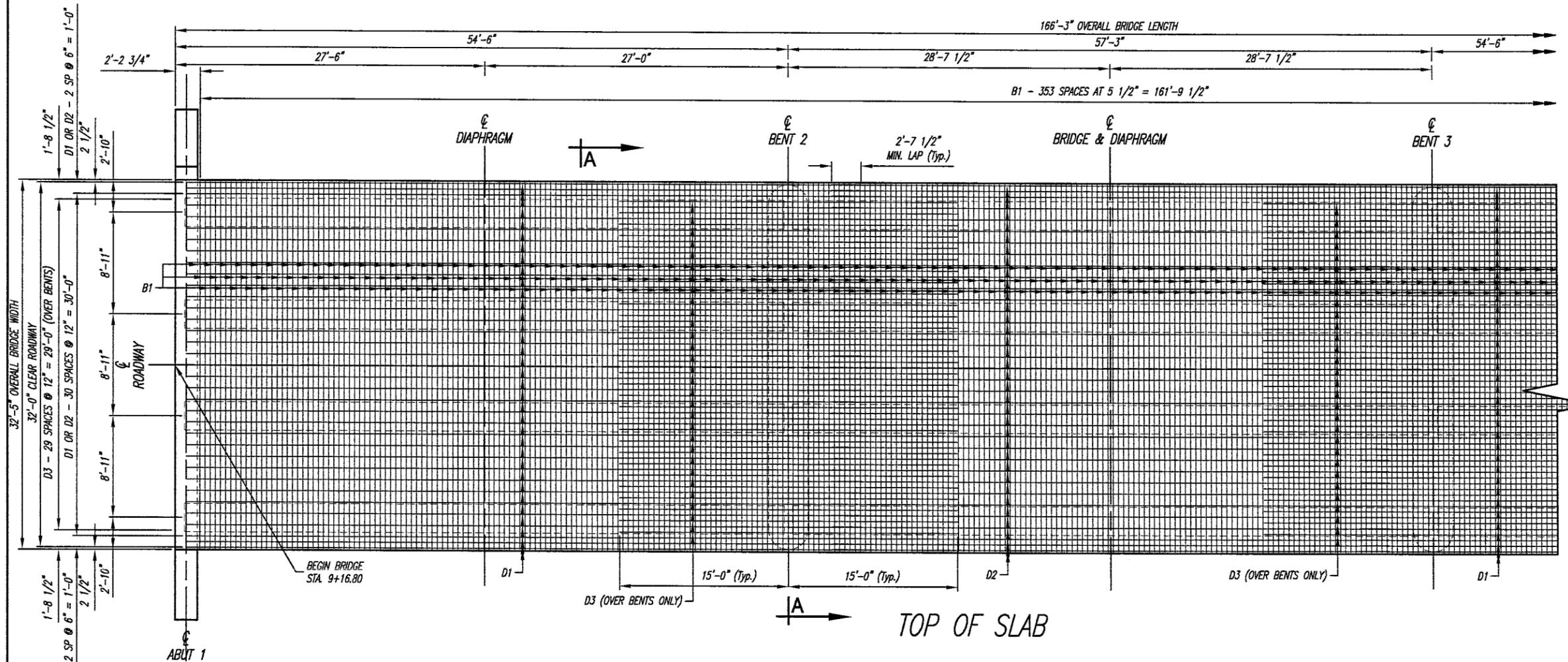
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJM	SJM	KRG	

BRIDGE ENGINEER

PLANS BY: CLARK ENGINEERING, SIOUX FALLS, SD

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	32	48



NOTE: CONCRETE SHALL BE PLACED IN THE SPACE UNDER THE BEAMS (WITHIN THE DIAPHRAGM WIDTH) DURING THE DIAPHRAGM POUR. CARE SHALL BE TAKEN TO GET THE CONCRETE VIBRATED INTO THIS AREA. IF UPON FORM REMOVAL THE SPACE IS NOT COMPLETELY FILLED AND CONSOLIDATED, THE CONTRACTOR SHALL GROUT IN THE REMAINING VOIDS.



SUPERSTRUCTURE DETAILS (1 OF 2)
 FOR
 166'-3" PRESTRESSED GIRDER BRIDGE
 OVER ELM RIVER SEC. 5/8-T127N-R65W
 32'-0" ROADWAY BRF 6170(01)
 STA. 9+16.80 TO 10+83.05 0° SKEW
 STR. NO. 07-010-070 HL-93

BROWN COUNTY
 S.D. DEPT. OF TRANSPORTATION
 FEBRUARY 2103

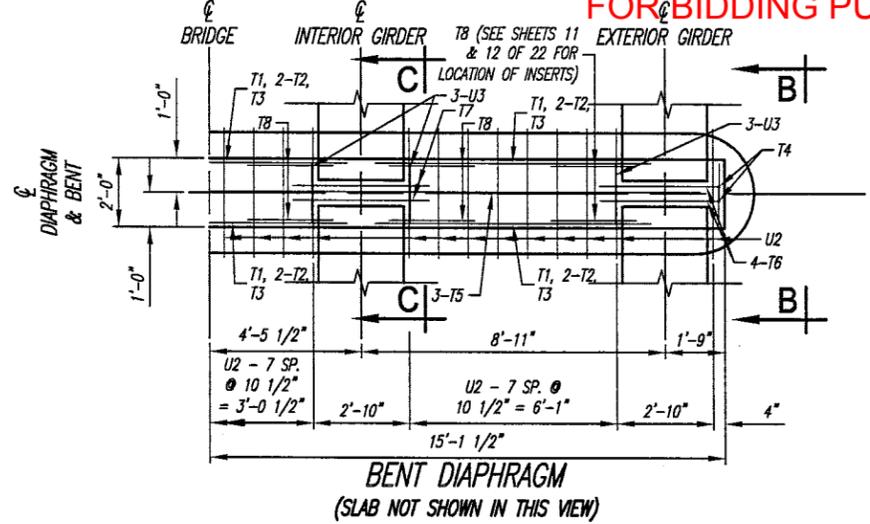
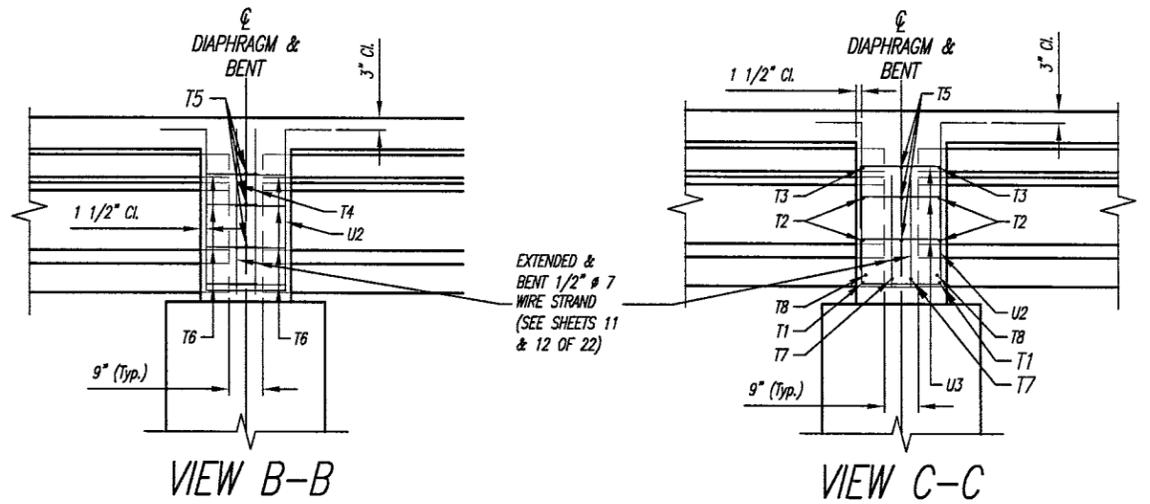
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJM	SJM	KRG	

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 10.

PLANS BY: CLARK ENGINEERING, SIOUX FALLS, SD

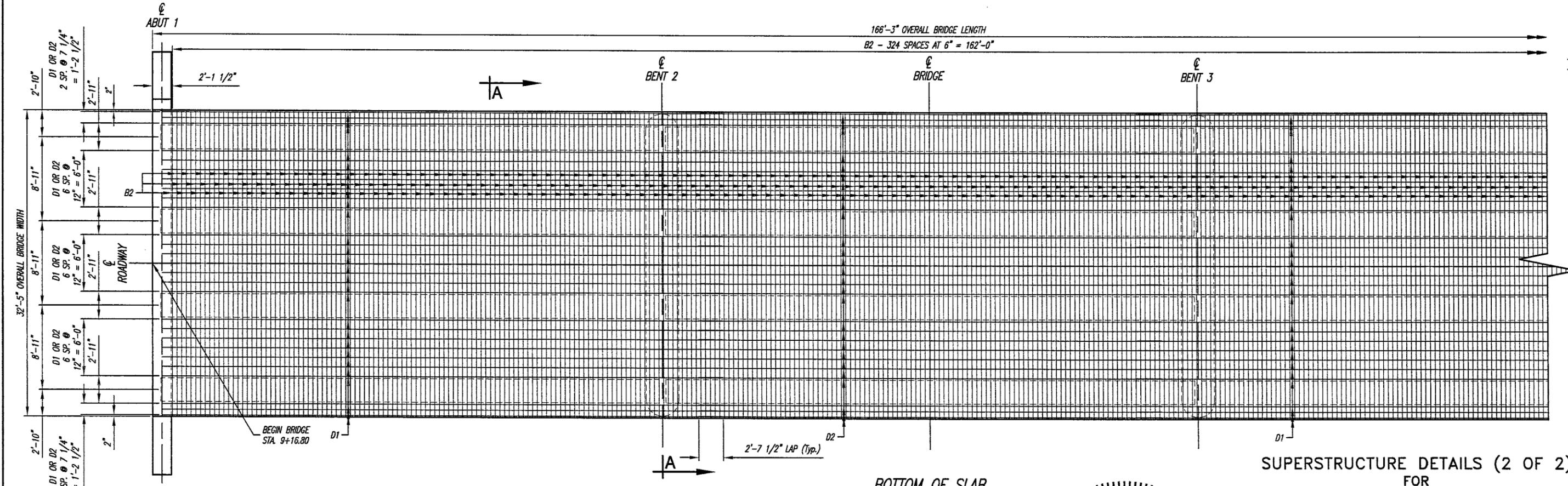
BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY



REINFORCING SCHEDULE					BENDING DETAILS	
MK.	NO.	SIZE	LENGTH	TYPE		
Δ	B1	354	6	32'-2"	19B	
Δ	B2	325	5	32'-2"	19B	
Δ	D1	124	6	60'-0"	STR.	
Δ	D2	62	6	49'-6"	STR.	
Δ	D3	60	6	30'-0"	STR.	
*	T1	12	6	6'-5"	STR.	
*	T2	24	5	8'-1"	STR.	
*	T3	12	5	6'-1"	STR.	
Δ	T4	8	5	3'-7"	STR.	
T5	6	6	28'-10"	19B		
T6	32	5	4'-7"	17A		
T7	8	5	4'-0"	STR.		
T8	24	6	2'-6"	STR.		
Δ	U2	52	6	10'-9"	S4	
Δ	U3	36	4	3'-1"	17	

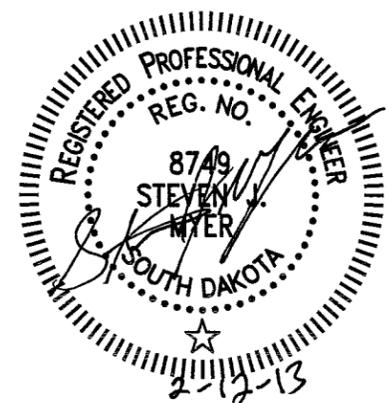
NOTES:
 Δ BARS TO BE EPOXY COATED
 * BEND IN FIELD AS NECESSARY TO FIT.
 ALL DIMENSIONS ARE OUT TO OUT OF BARS.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
CLASS A45 CONCRETE, BRIDGE DECK	CYD	154.3
REINFORCING STEEL	LB	1,005
EPOXY COATED REINFORCING STEEL	LB	47,365
36" MINNESOTA SHAPE PRESTRESSED CONCRETE BEAM	FT	652

Δ INCLUDES QUANTITIES FOR BENT DIAPHRAGMS AND SLAB
 Δ INCLUDES QUANTITY FOR BENT DIAPHRAGM
 * INCLUDES QUANTITY FOR BENT DIAPHRAGM AND SLAB

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 9.



SUPERSTRUCTURE DETAILS (2 OF 2)
 FOR
 166'-3" PRESTRESSED GIRDER BRIDGE
 OVER ELM RIVER SEC. 5/8-T127N-R65W
 32'-0" ROADWAY BRF 6170(01)
 STA. 9+16.80 TO 10+83.05 0° SKEW
 STR. NO. 07-010-070 HL-93

BROWN COUNTY
 S.D. DEPT. OF TRANSPORTATION
 FEBRUARY 2013

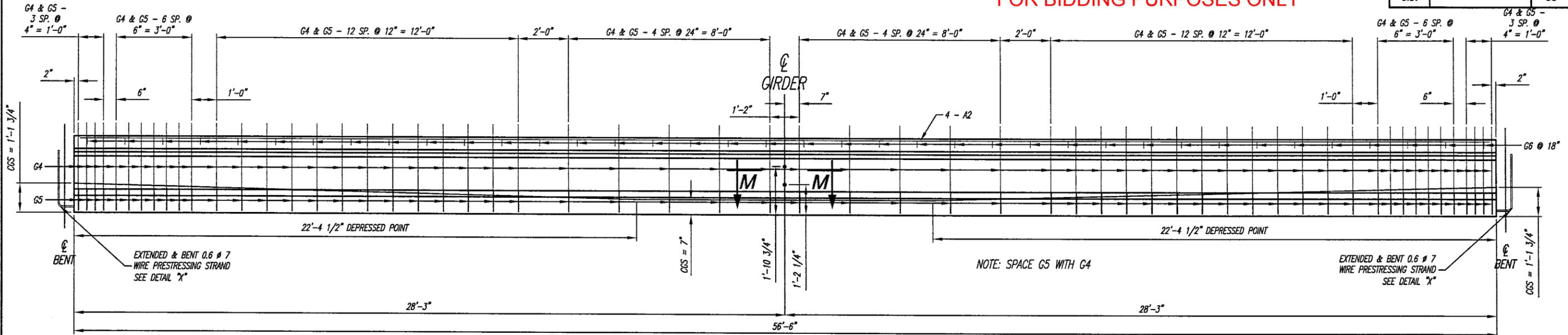
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJM	SJM	KRG	

BRIDGE ENGINEER

PLANS BY: CLARK ENGINEERING, SIOUX FALLS, SD

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	35	48

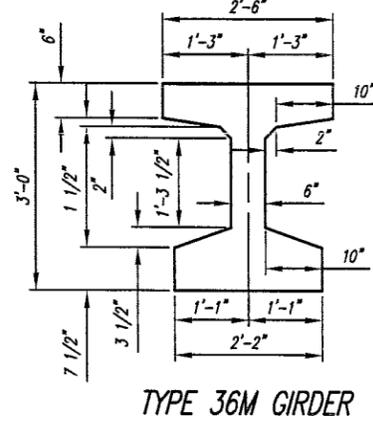
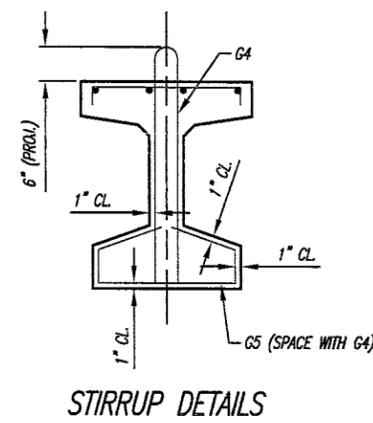
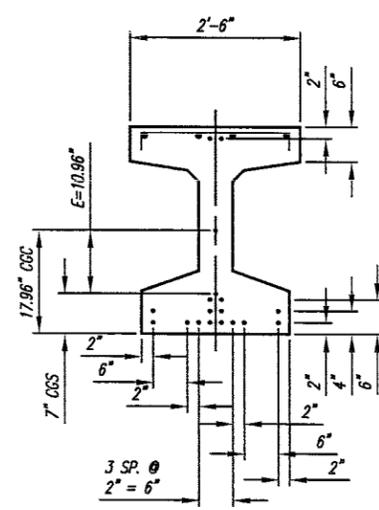
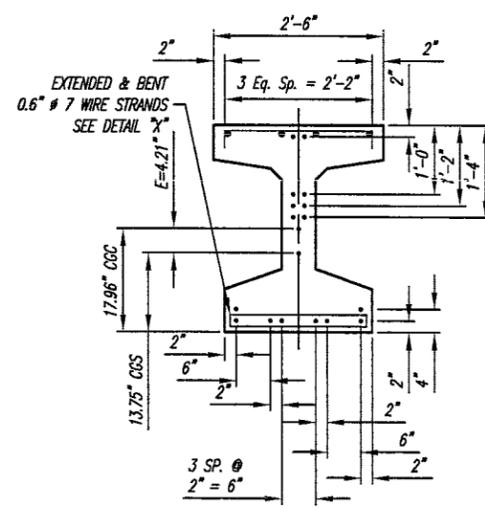
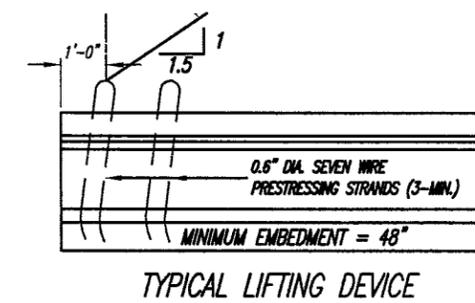
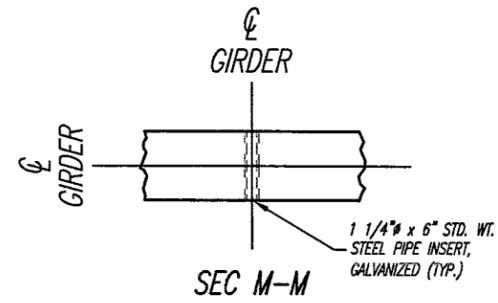
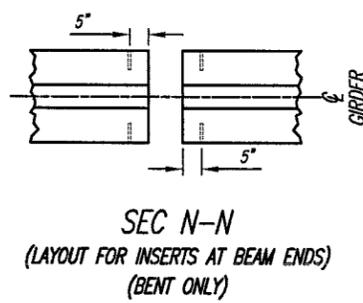
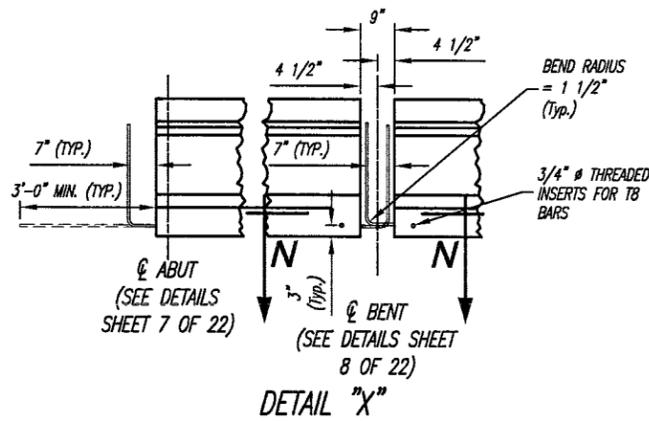


ELEVATION

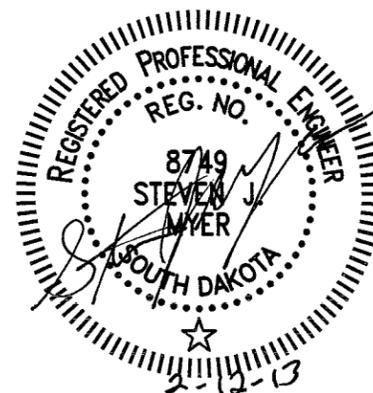
REINFORCING SCHEDULE (FOR ONE GIRDER)				
MK.	NO.	SIZE	LENGTH	TYPE
A2	4	7	56'-0"	Str.
G4	58	5	7'-0"	S11
G5	58	4	4'-11"	S3A
G6	38	4	2'-8"	17

BENDING DETAILS	
	TYPE 17
	TYPE S3A
	TYPE S11

ALL DIMENSIONS ARE OUT TO OUT OF BARS.



56'-6" GIRDER DETAILS
FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER SEC. 5/8-T127N-R65W
32'-0" ROADWAY BRF 6170(01)
STA. 9+16.80 TO 10+83.05 0° SKEW
STR. NO. 07-010-070 HL-93



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COS = CENTER OF GRAVITY OF PRESTRESSING STEEL
COC = CENTER OF GRAVITY OF CONCRETE

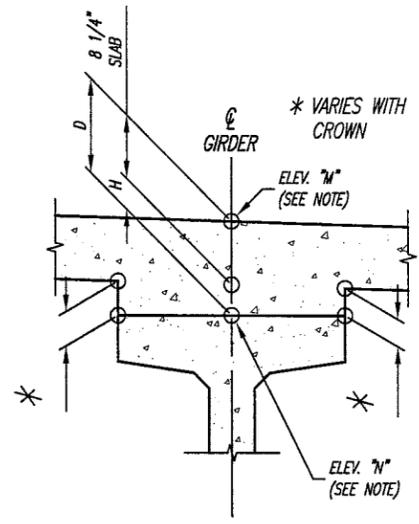
(16 - 0.6" TYPE 270K LOW LAX STRANDS)

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJM	SJM	KRG	

BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

		TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS														
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
GIRDER NO. 1	ELEV "M"	1,438.353	1,438.350	1,438.345	1,438.335	1,438.323	1,438.307	1,438.286	1,438.260	1,438.232	1,438.201	1,438.166	1,438.168	1,438.165	1,438.158	1,438.147
	(-) ELEV "N"															
	(=) D															
	(-) 0.688'															
	(=) H															
GIRDER NO. 2	ELEV "M"	1,438.531	1,438.528	1,438.523	1,438.513	1,438.501	1,438.485	1,438.464	1,438.438	1,438.410	1,438.379	1,438.344	1,438.346	1,438.343	1,438.336	1,438.325
	(-) ELEV "N"															
	(=) D															
	(-) 0.688'															
	(=) H															
GIRDER NO. 3	ELEV "M"	1,438.531	1,438.528	1,438.523	1,438.513	1,438.501	1,438.485	1,438.464	1,438.438	1,438.410	1,438.379	1,438.344	1,438.346	1,438.343	1,438.336	1,438.325
	(-) ELEV "N"															
	(=) D															
	(-) 0.688'															
	(=) H															
GIRDER NO. 4	ELEV "M"	1,438.353	1,438.350	1,438.345	1,438.335	1,438.323	1,438.307	1,438.286	1,438.260	1,438.232	1,438.201	1,438.166	1,438.168	1,438.165	1,438.158	1,438.147
	(-) ELEV "N"															
	(=) D															
	(-) 0.688'															
	(=) H															



NOTE - Based on a "D" of 10 1/4" at the C of each abutment and 10 1/4" at the C of each Bent. It is anticipated that the midspan haunch dimension "H" for each girder at the C of the span will be 1 1/2". If when computing the dimensions in the table, it is found that any dimension "H" is less than zero or greater than 4", the Office of Bridge Design of the South Dakota Department of Transportation shall be notified immediately. After the "Table of Slab Form Elevations and Calculations" has been filled out and approved for deck forming, a copy must be forwarded to the Office of Bridge Design for review and analysis for the purpose of securing information relative to camber growth in the beams. This information is necessary for preparing plans for the future structures of this type.

NOTE - The table contains information necessary to determine the depth of concrete over the girders at points shown. Calculations may be carried out in the spaces provided. Elevation "M" is the design elevation of the top of the slab before any concrete has been poured. This elevation includes correction for camber and dead load deflection. Elevation "N" is a field measured elevation taken on top of the girders at the points shown with the girders in their positions. This elevation must be taken after erection is completed, but prior to placing any of the concrete. Girders shall not be supported between bearings when elevations are taken.

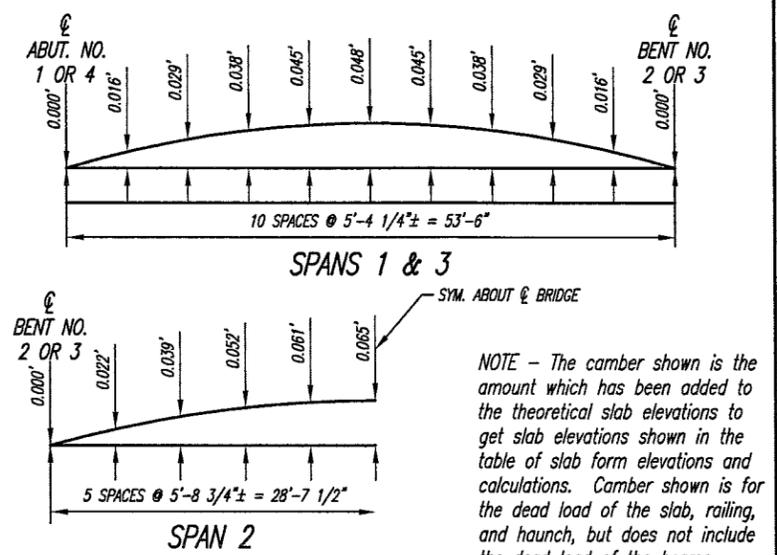
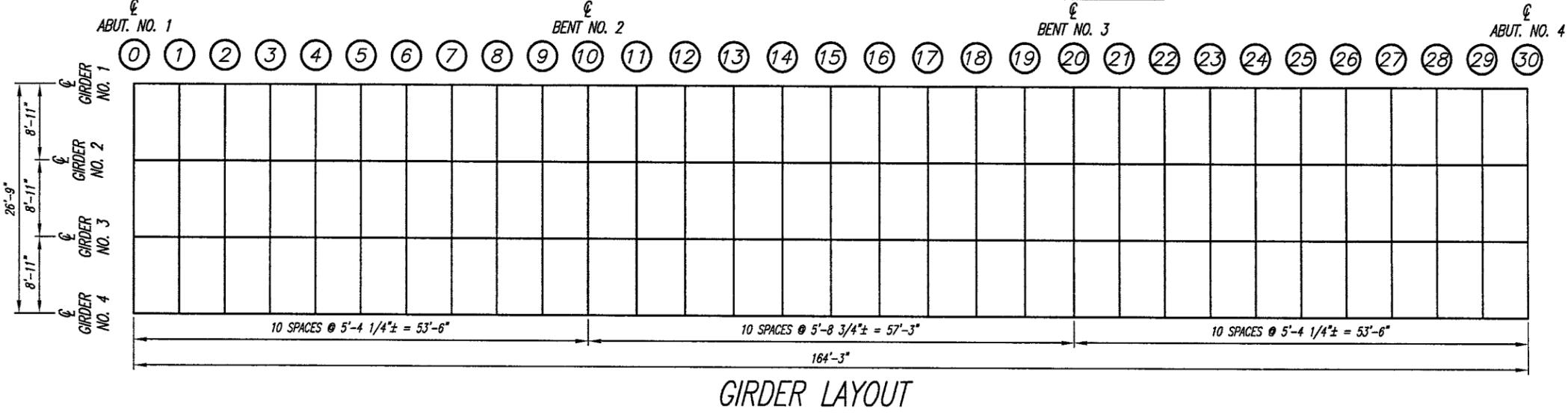


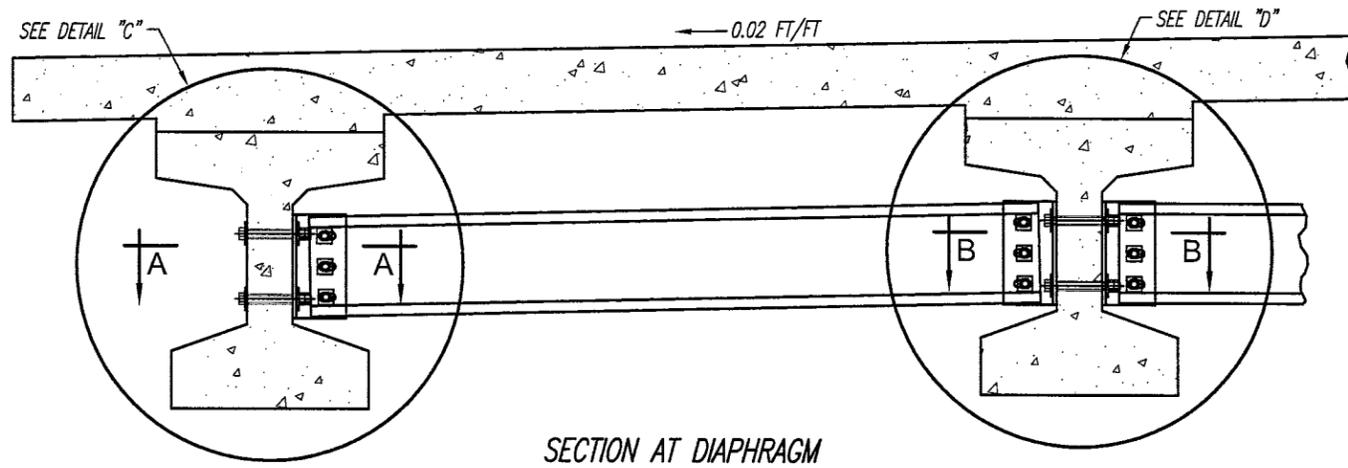
		TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS															
		15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
GIRDER NO. 1	ELEV "M"	1,438.131	1,438.107	1,438.078	1,438.045	1,438.008	1,437.966	1,437.963	1,437.958	1,437.948	1,437.936	1,437.920	1,437.899	1,437.873	1,437.845	1,437.814	1,437.779
	(-) ELEV "N"																
	(=) D																
	(-) 0.688'																
	(=) H																
GIRDER NO. 2	ELEV "M"	1,438.309	1,438.285	1,438.256	1,438.223	1,438.186	1,438.144	1,438.141	1,438.136	1,438.126	1,438.114	1,438.098	1,438.077	1,438.051	1,438.023	1,437.992	1,437.957
	(-) ELEV "N"																
	(=) D																
	(-) 0.688'																
	(=) H																
GIRDER NO. 3	ELEV "M"	1,438.309	1,438.285	1,438.256	1,438.223	1,438.186	1,438.144	1,438.141	1,438.136	1,438.126	1,438.114	1,438.098	1,438.077	1,438.051	1,438.023	1,437.992	1,437.957
	(-) ELEV "N"																
	(=) D																
	(-) 0.688'																
	(=) H																
GIRDER NO. 4	ELEV "M"	1,438.131	1,438.107	1,438.078	1,438.045	1,438.008	1,437.966	1,437.963	1,437.958	1,437.948	1,437.936	1,437.920	1,437.899	1,437.873	1,437.845	1,437.814	1,437.779
	(-) ELEV "N"																
	(=) D																
	(-) 0.688'																
	(=) H																



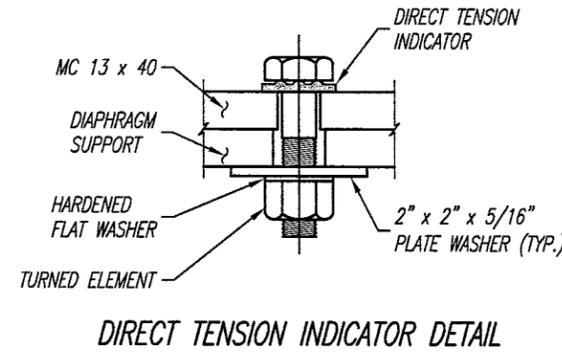
SLAB FORM ELEVATIONS FOR
166'-3" PRESTRESSED GIRDER BRIDGE
 OVER ELM RIVER SEC. 5/8-T127N-R65W
 32'-0" ROADWAY BRF 6170(01)
 STA. 9+16.80 TO 10+83.05 0° SKEW
 STR. NO. 07-010-070 HL-93

BROWN COUNTY
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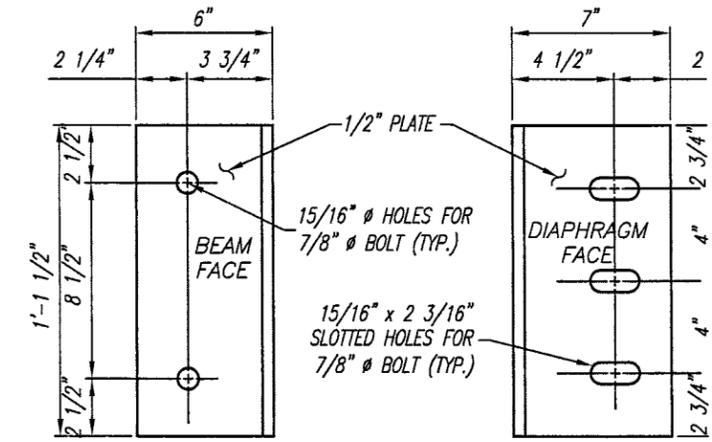
FOR BIDDING PURPOSES ONLY



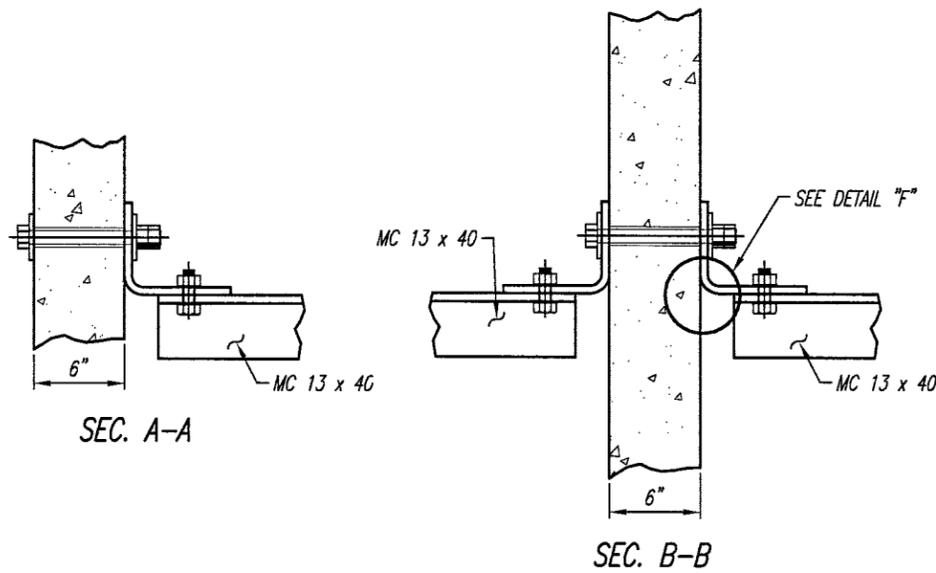
SECTION AT DIAPHRAGM



DIRECT TENSION INDICATOR DETAIL

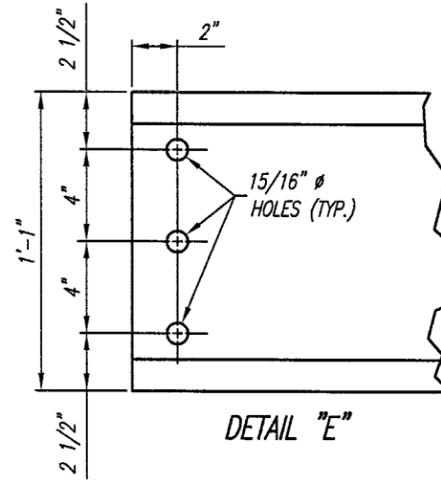


DIAPHRAGM SUPPORT

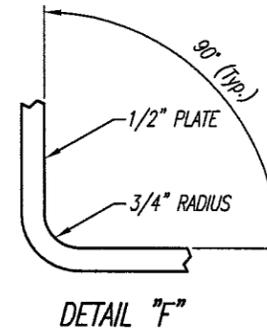


SEC. A-A

SEC. B-B



DETAIL "E"



DETAIL "F"

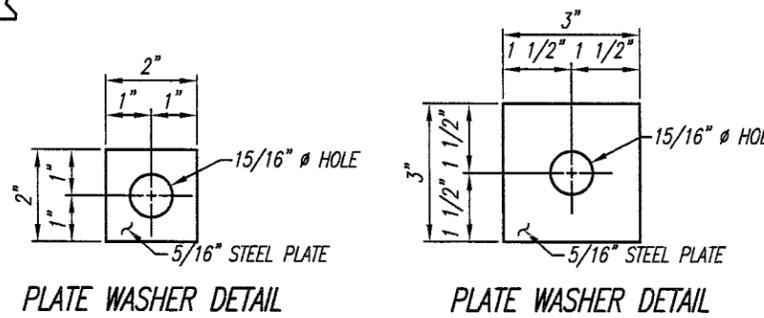


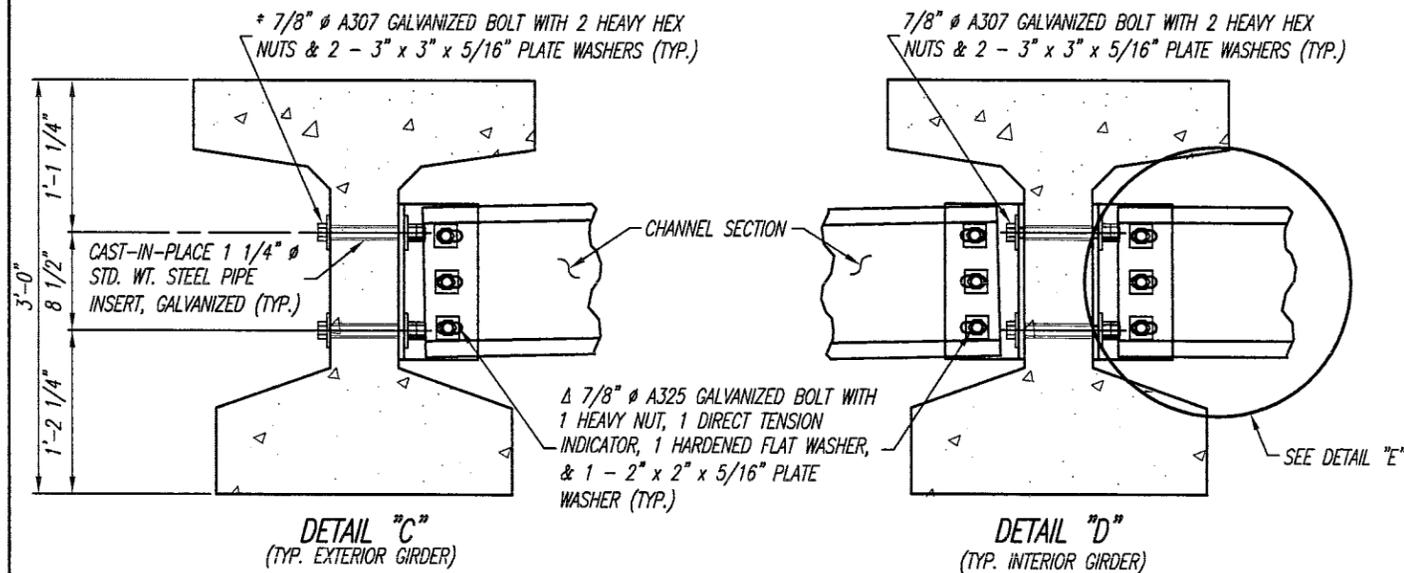
PLATE WASHER DETAIL

PLATE WASHER DETAIL

- NOTES:
1. ALL STEEL FOR THE DIAPHRAGMS INCLUDING PLATE WASHERS SHALL CONFORM TO ASTM A36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123. BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
 2. THE STEEL DIAPHRAGMS BETWEEN ADJACENT GIRDERS SHALL BE INSTALLED AS SOON AS POSSIBLE AND IN CONJUNCTION WITH GIRDER ERECTION.
 3. ALL COSTS ASSOCIATED WITH FURNISHING, FABRICATING, ASSEMBLY, AND INSTALLATION OF DIAPHRAGMS SHALL BE INCIDENTAL TO THE LUMP SUM PRICE FOR STRUCTURAL STEEL, MISCELLANEOUS.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Δ STRUCTURAL STEEL, MISCELLANEOUS	LS	LUMP SUM

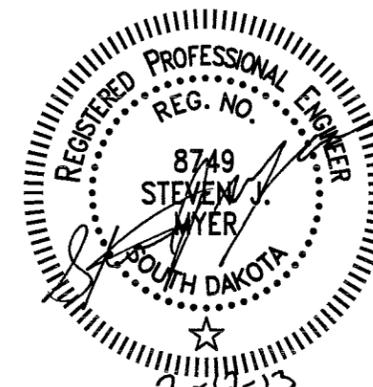
Δ FOR INFORMATIONAL PURPOSES, THE ESTIMATED WEIGHT OF STRUCTURAL STEEL IS 4,000 LBS.



DETAIL "C" (TYP. EXTERIOR GIRDER)

DETAIL "D" (TYP. INTERIOR GIRDER)

- * BOLT HEAD AND 3" x 3" x 5/16" PLATE WASHER SHALL BE ADJACENT TO THE EXTERIOR FACE OF THE EXTERIOR GIRDER.
- Δ BOLT HEAD & DIRECT TENSION INDICATOR SHALL BE ADJACENT TO 15/16" Ø HOLES IN CHANNEL SECTION.

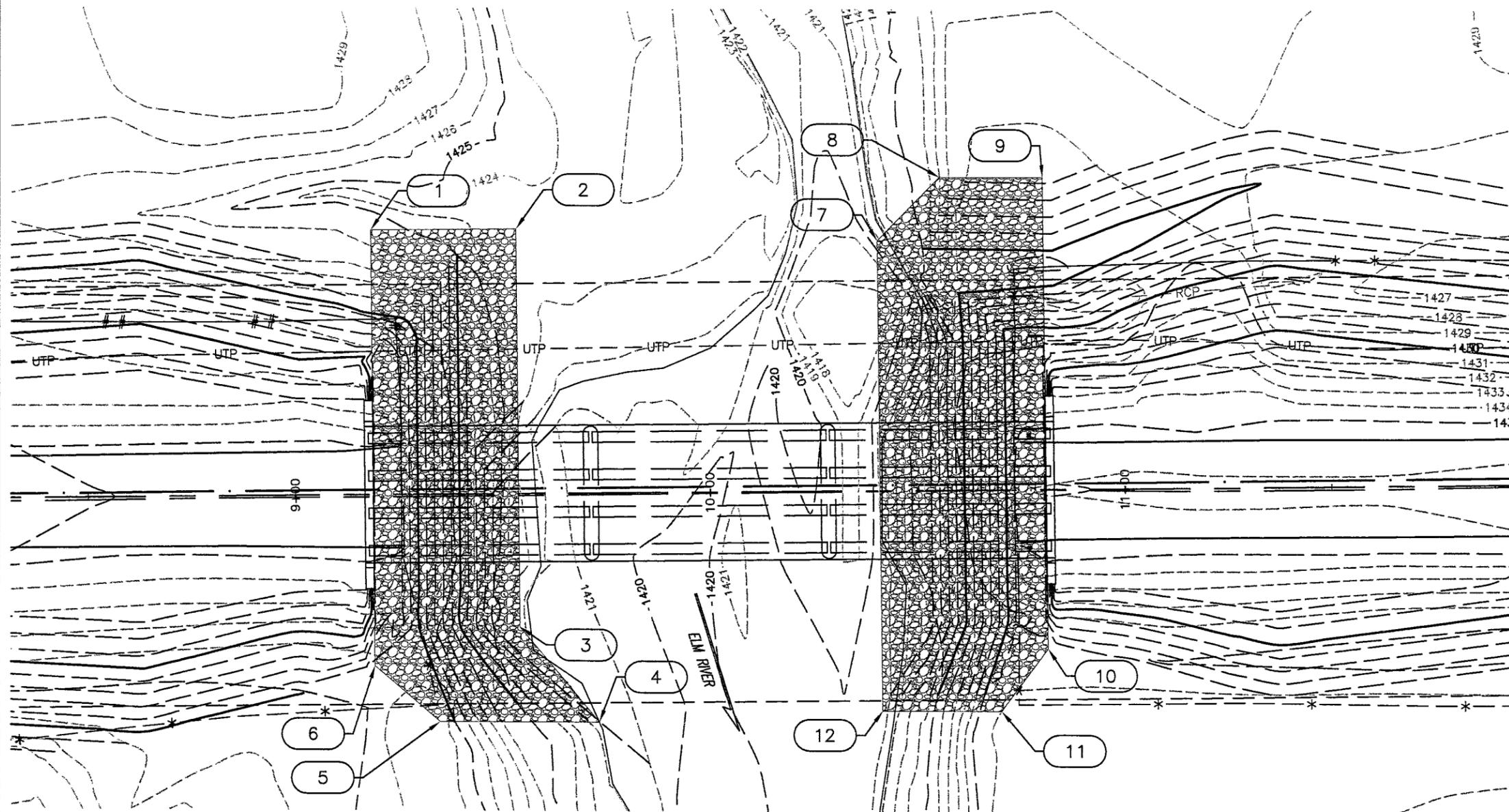


DIAPHRAGM DETAILS
FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER SEC. 5/8-T127N-R65W
32'-0" ROADWAY BRF 6170(01)
STA. 9+16.80 TO 10+83.05 0° SKEW
STR. NO. 07-010-070 HL-93

BROWN COUNTY
S.D. DEPT. OF TRANSPORTATION
FEBRUARY 2013

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	38	48



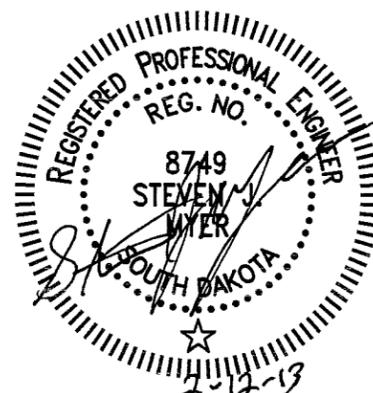
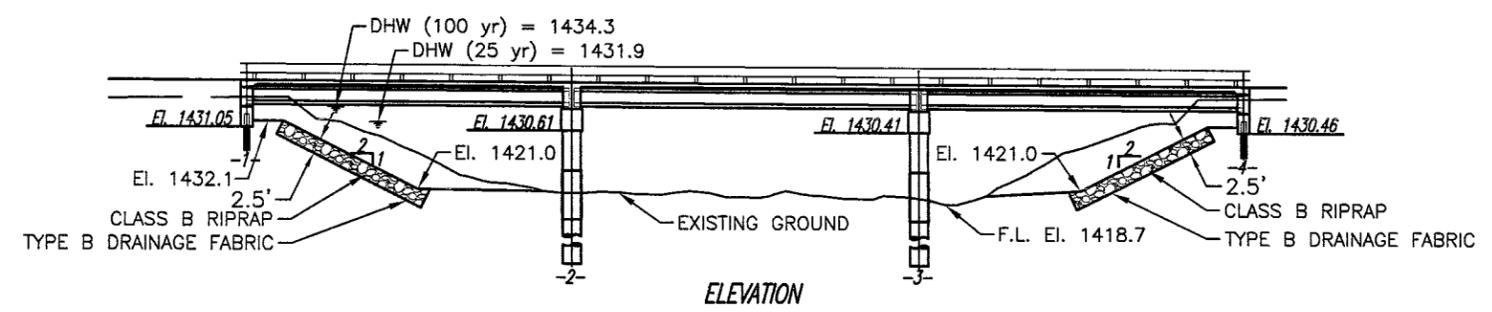
RIPRAP POINTS

	STA	OFFSET		NORTHING	EASTING
1	9+18.80	63.00'	LT	733,442.60'	2,299,287.67'
2	9+53.80	63.00'	LT	733,442.99'	2,299,322.67'
3	9+53.80	31.80'	RT	733,348.20'	2,299,323.74'
4	9+72.67	54.58'	RT	733,325.63'	2,299,342.86'
5	9+34.39	54.15'	RT	733,325.63'	2,299,304.58'
6	9+18.80	40.77'	RT	733,338.84'	2,299,288.84'
7	10+41.05	59.53'	LT	733,440.50'	2,299,409.96'
8	10+56.22	74.52'	LT	733,455.66'	2,299,424.96'
9	10+81.05	74.25'	LT	733,455.66'	2,299,449.79'
10	10+81.05	37.95'	RT	733,343.47'	2,299,451.05'
11	10+69.66	52.77'	RT	733,328.53'	2,299,439.82'
12	10+41.05	52.45'	RT	733,328.53'	2,299,411.21'

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
CLASS B RIPRAP	TON	1,320.7
TYPE B DRAINAGE FABRIC	SQYD	1,337

FOR ESTIMATING PURPOSES ONLY, A FACTOR OF 1.4 TONS/CUYD WAS USED TO CONVERT CUYDS TO TONS. THE ESTIMATE IS EQUIVALENT TO APPROXIMATELY 943 CUYDS.



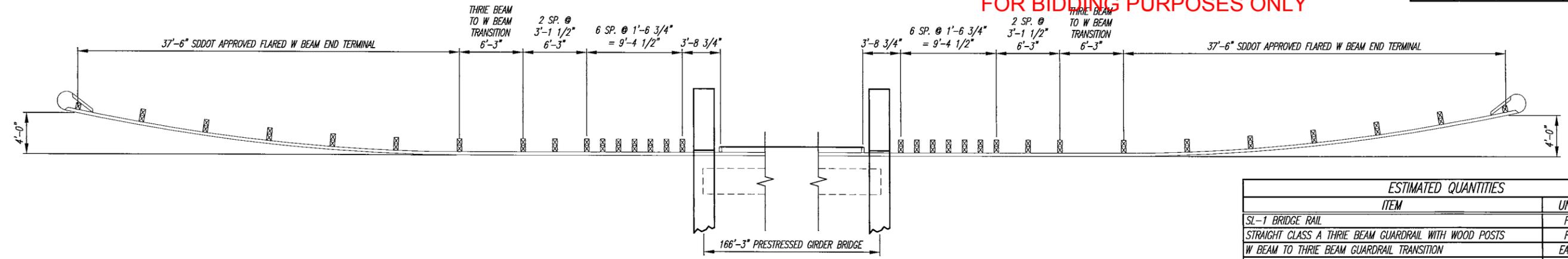
RIP RAP LAYOUT
FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER SEC. 5/8-T127N-R65W
32'-0" ROADWAY BRF 6170(01)
STA. 9+16.80 TO 10+83.05 0° SKEW
STR. NO. 07-010-070 HL-93

BROWN COUNTY
 S.D. DEPT. OF TRANSPORTATION
 FEBRUARY 2013

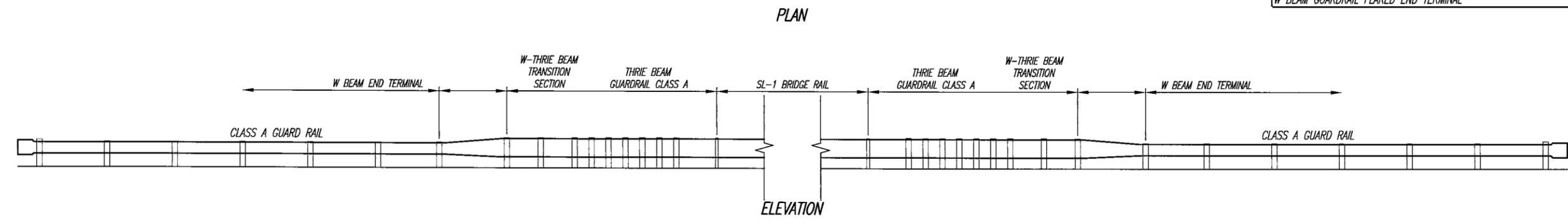
LEGEND	
RIPRAP	

DESIGNED BY SJM	DRAWN BY SJM	CHECKED BY KRG	APPROVED BRIDGE ENGINEER
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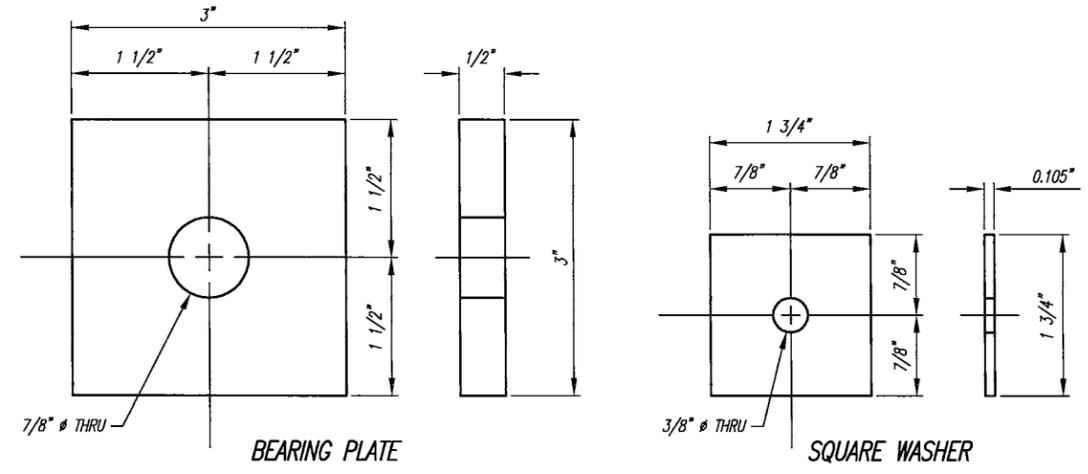
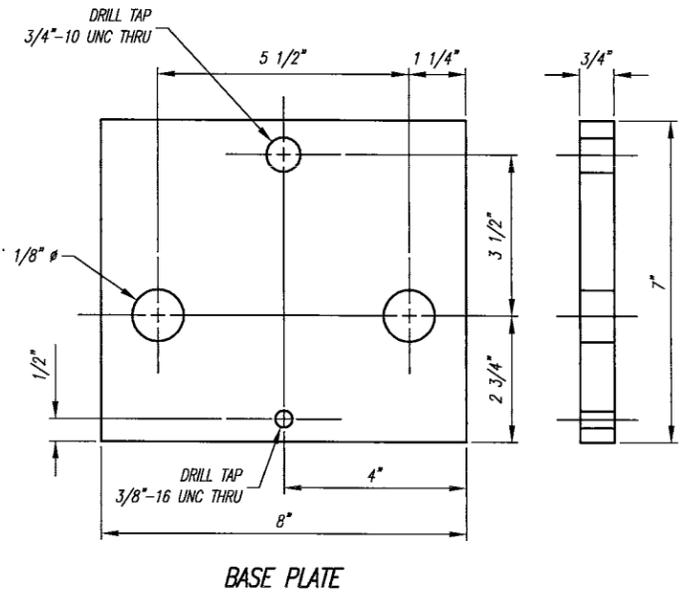
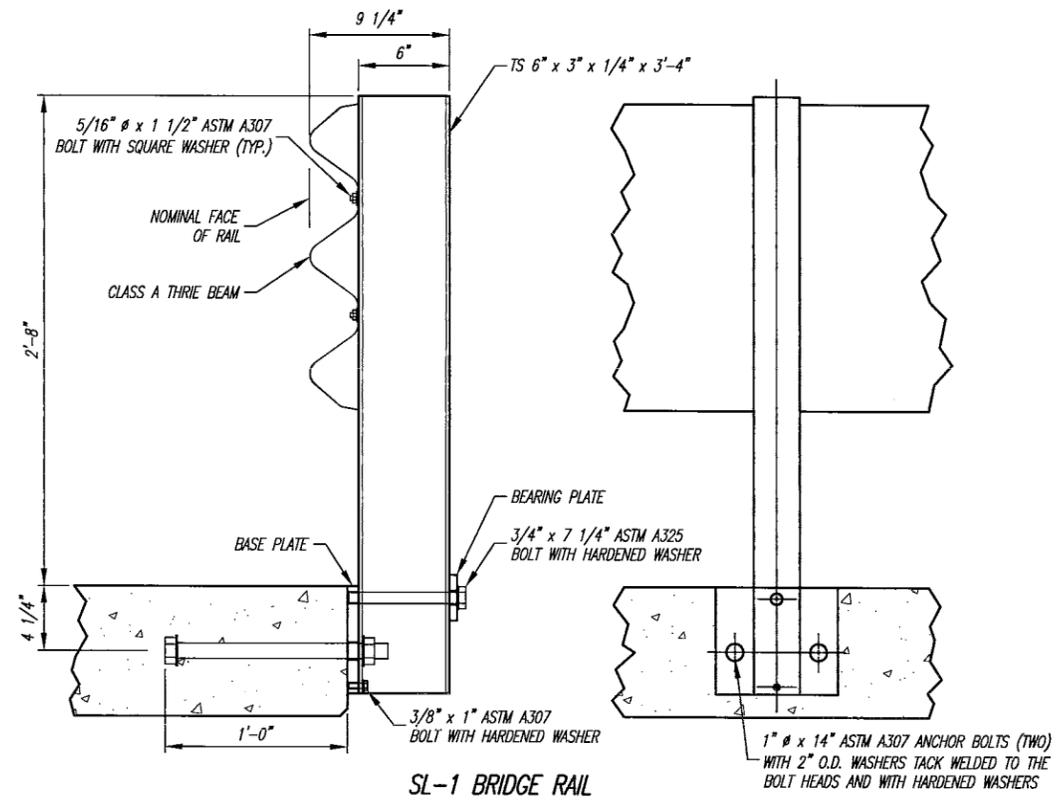
FOR BIDDING PURPOSES ONLY



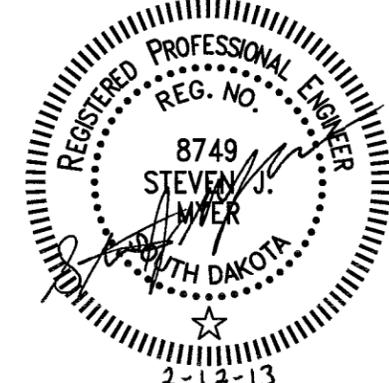
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
SL-1 BRIDGE RAIL	FT	332.5
STRAIGHT CLASS A THRIE BEAM GUARDRAIL WITH WOOD POSTS	FT	50
W BEAM TO THRIE BEAM GUARDRAIL TRANSITION	EACH	4
W BEAM GUARDRAIL FLARED END TERMINAL	EACH	4



- NOTES:
- UNLESS OTHERWISE NOTED BOLTS SHALL CONFORM TO ASTM A307 AND NUTS TO ASTM A563, GRADE A OR BETTER. ALL NUTS AND BOLTS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153.
 - STEEL SHALL CONFORM TO ASTM A36 AND BE GALVANIZED ACCORDING TO ASTM A123.
 - POST ELEMENTS SHALL CONFORM TO ASTM A500 GRADE B OR ASTM A501 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123.
 - PAYMENT FOR STEEL POST SL-1 BRIDGE RAIL SHALL BE FROM THE BEGINNING OF THE BRIDGE TO THE END OF THE BRIDGE.



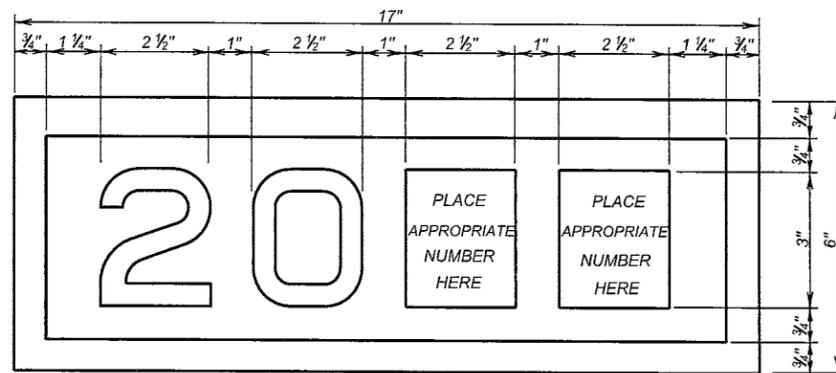
SL-1 BRIDGE RAILING DETAILS
FOR
166'-3" PRESTRESSED GIRDER BRIDGE
OVER ELM RIVER SEC. 5/8-T127N-R65W
32'-0" ROADWAY BRF 6170(01)
STA. 9+16.80 TO 10+83.05 0° SKEW
STR. NO. 07-010-070 HL-93



BROWN COUNTY
S.D. DEPT. OF TRANSPORTATION
FEBRUARY 2013

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
SJM	SJM	KRG	

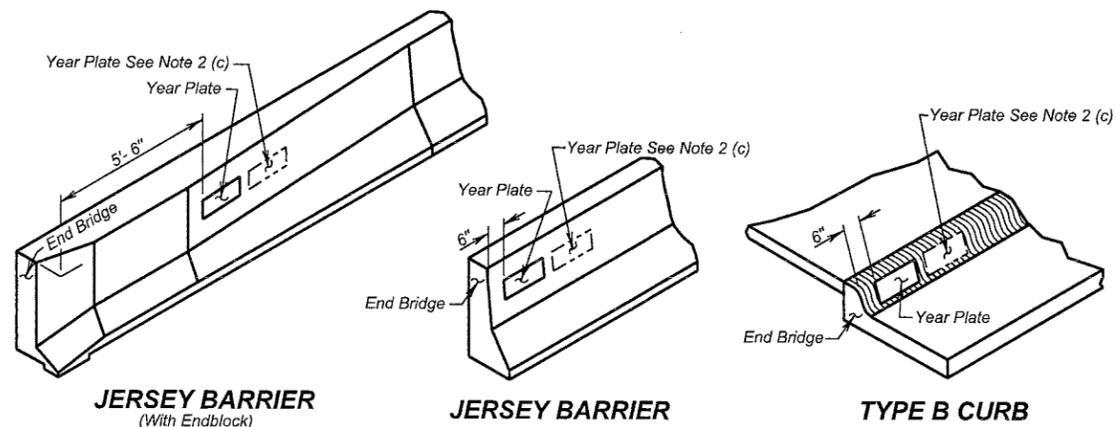
BRIDGE ENGINEER



YEAR PLATE DETAILS

GENERAL NOTES:

- 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.
- Year plates shall be located on structure (s) as follows:
 - 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.
 - 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.
 - 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.
- There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



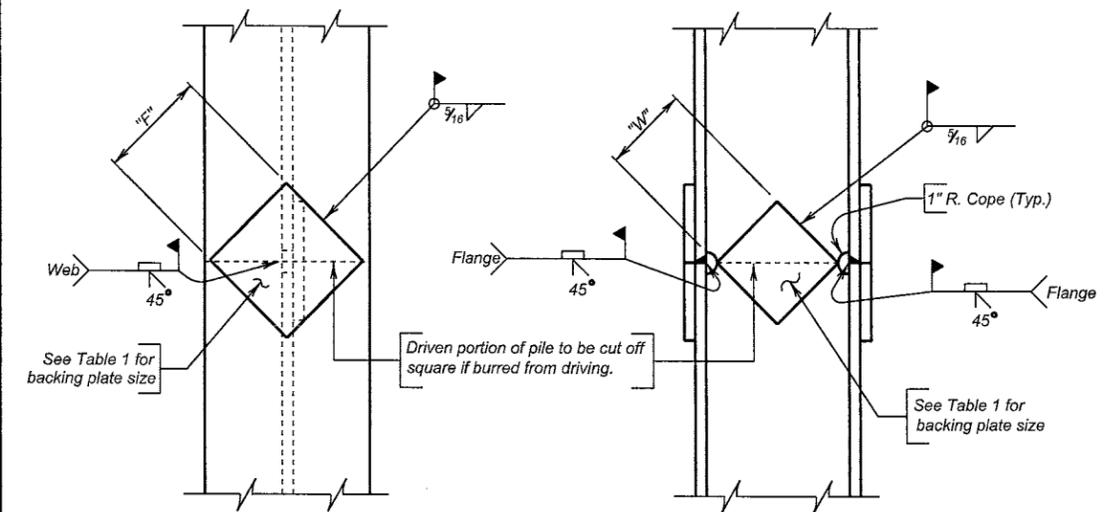
JERSEY BARRIER
(With Endblock)

JERSEY BARRIER

TYPE B CURB

June 26, 2012

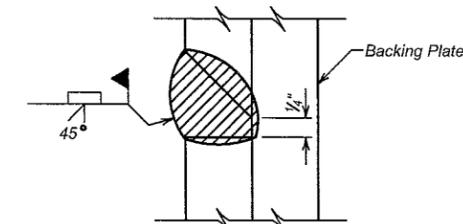
Published Date: 1st Qtr. 2013	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER
			460.02
			Sheet 1 of 1



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:

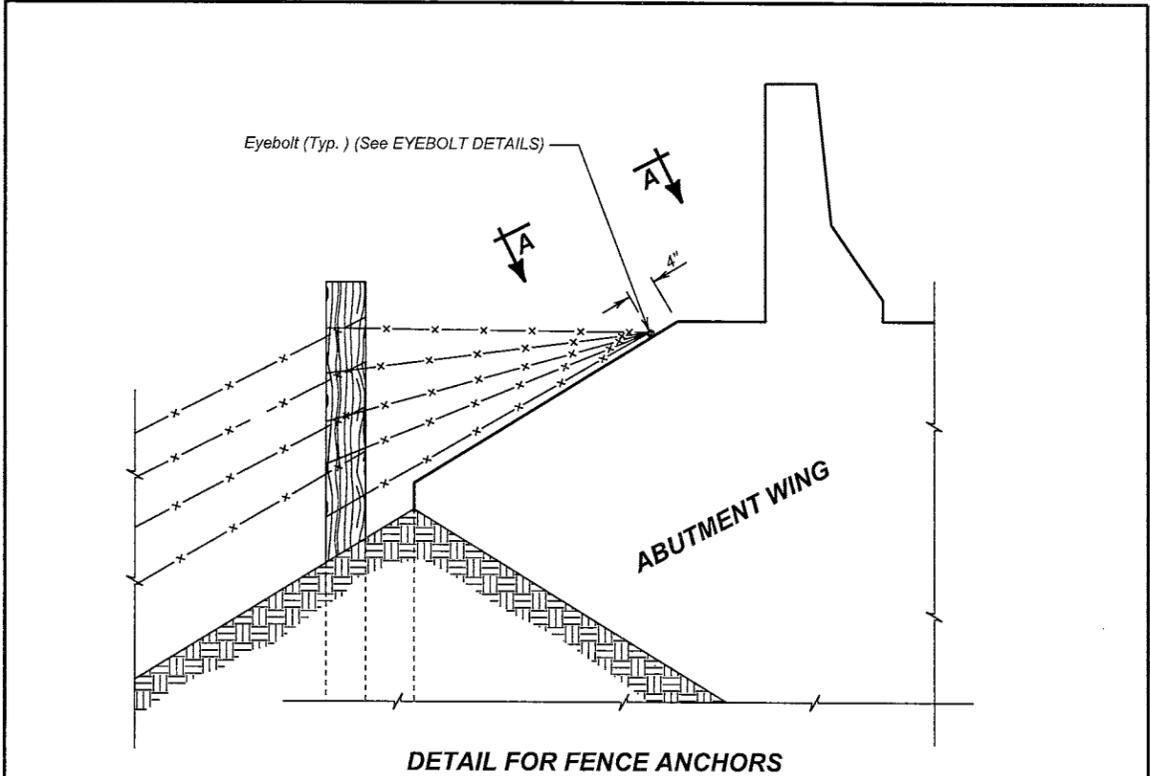
- Steel for backing plates shall conform to ASTM A709 Grade 50.
- Welding and weld inspection shall be in conformance with AWS D1.5 (Current Year) Bridge Welding Code - Steel.
- Welder must be certified and registered with the SDDOT.
- Backing plate shall at a minimum be as thick as the web of the pile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

PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

Published Date: 1st Qtr. 2013	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER
			510.40
			Sheet 1 of 1

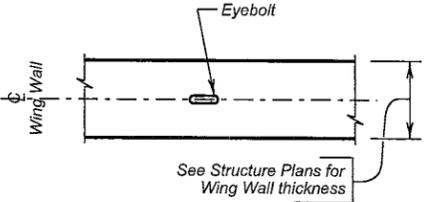
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	41	48



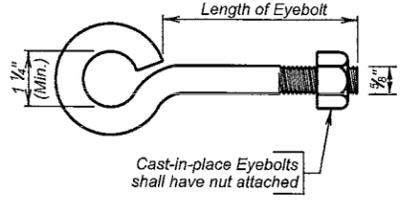
DETAIL FOR FENCE ANCHORS

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

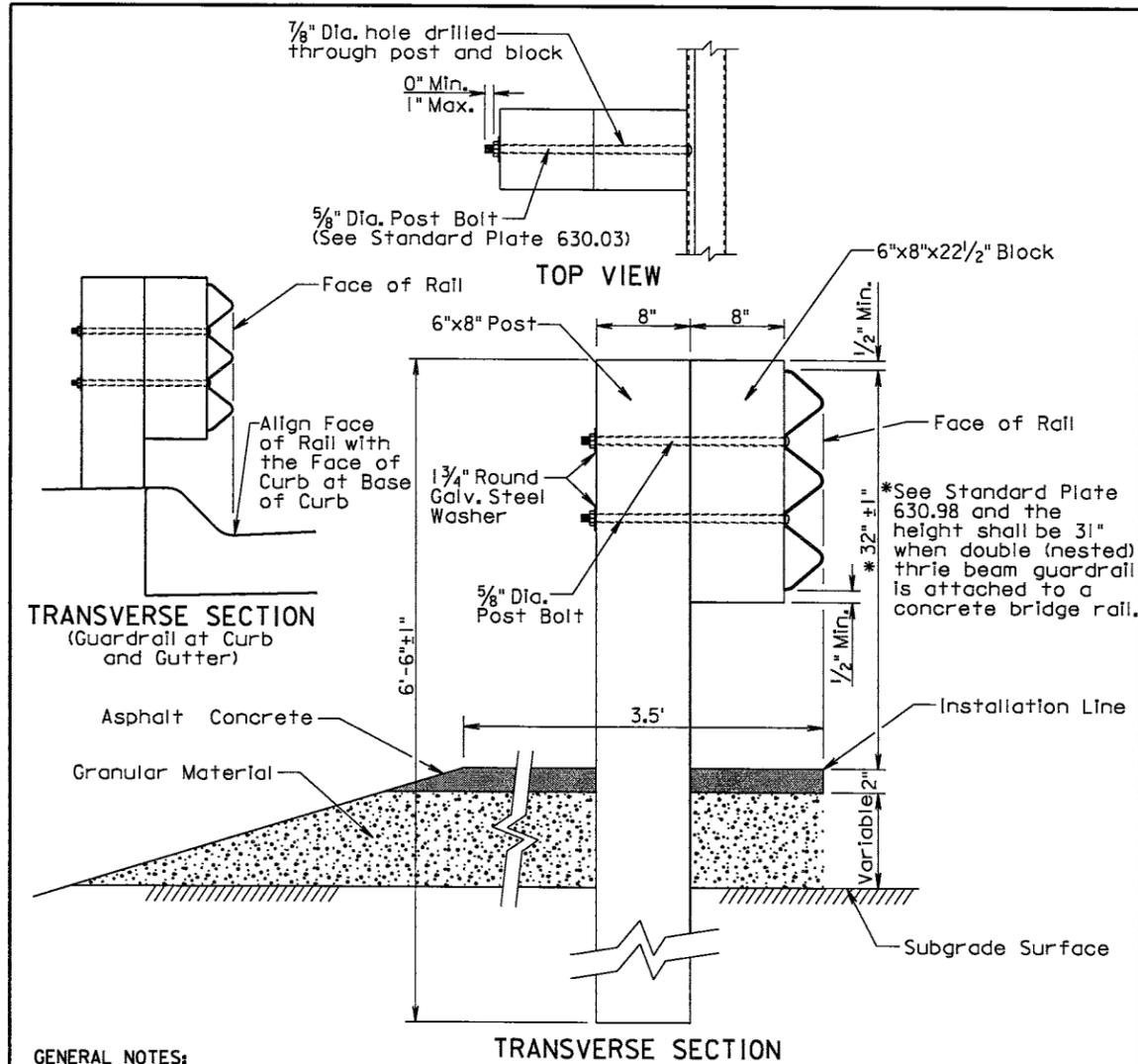


EYEBOLT DETAILS

December 23, 2012

S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS 6' AND SHORTER)	PLATE NUMBER 620.18
		Sheet 1 of 1

Published Date: 1st Qtr. 2013



GENERAL NOTES:

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

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

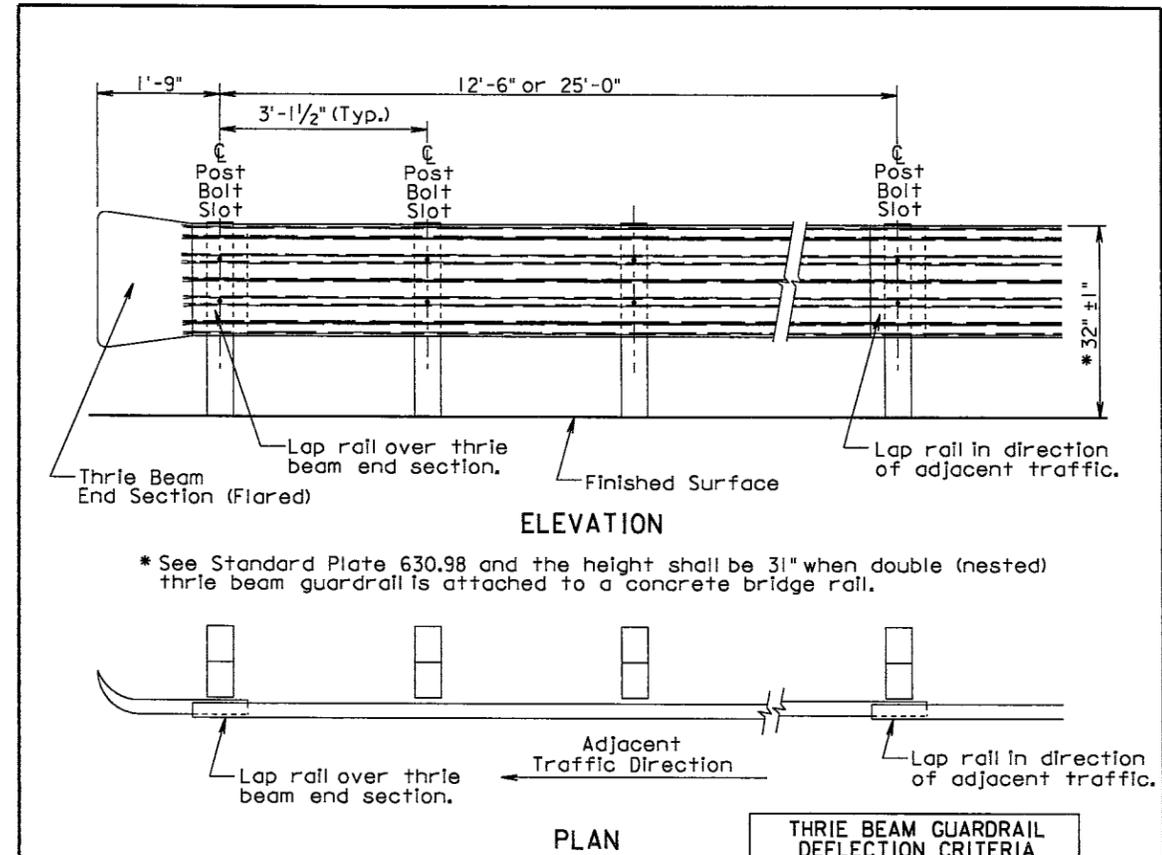
Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "Thrie Beam Guardrail" bid item.

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

The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

December 23, 2010

Published Date: 1st Qtr. 2013	S D D O T	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
			Sheet 1 of 1



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

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

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type 1.

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

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

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

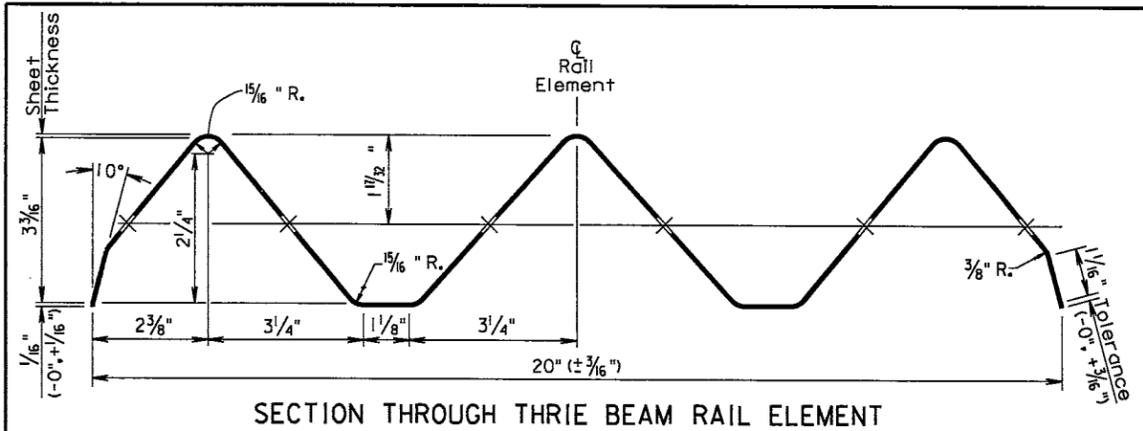
All costs for constructing thrie beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "Thrie Beam Guardrail" bid item.

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "Thrie Beam Guardrail" bid item.

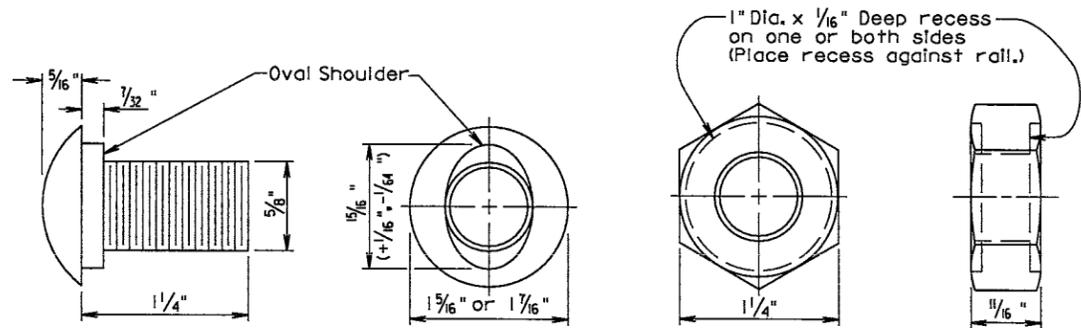
December 23, 2010

Published Date: 1st Qtr. 2013	S D D O T	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
			Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	43	48

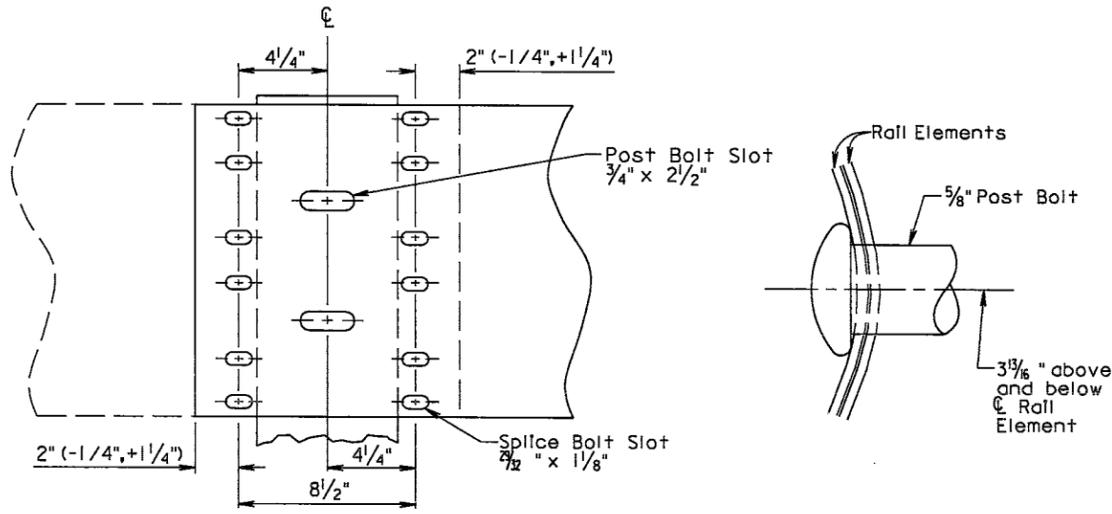


SECTION THROUGH THRIE BEAM RAIL ELEMENT



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

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

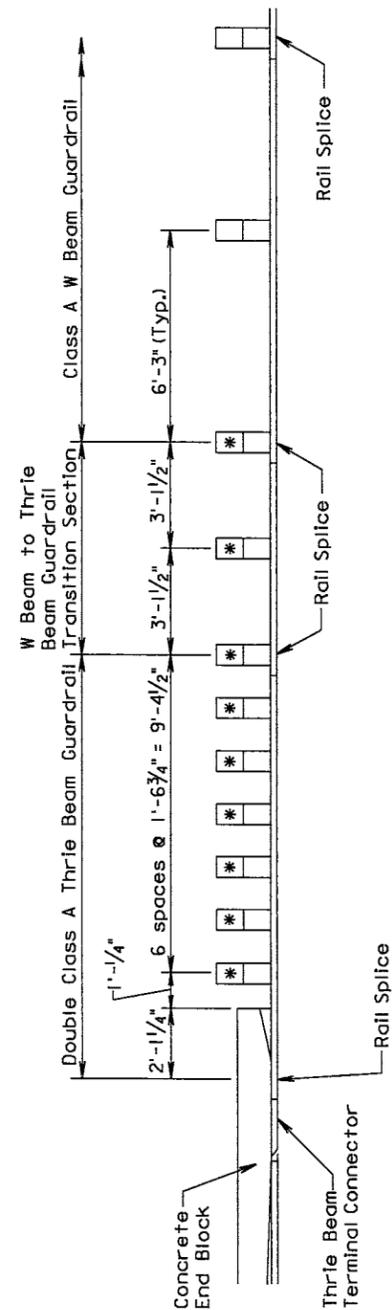


Lap in direction of traffic.

RAIL SPLICE

March 31, 2000

Published Date: 1st Qtr. 2013	S D D O T	THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER
			630.03
			Sheet 1 of 1

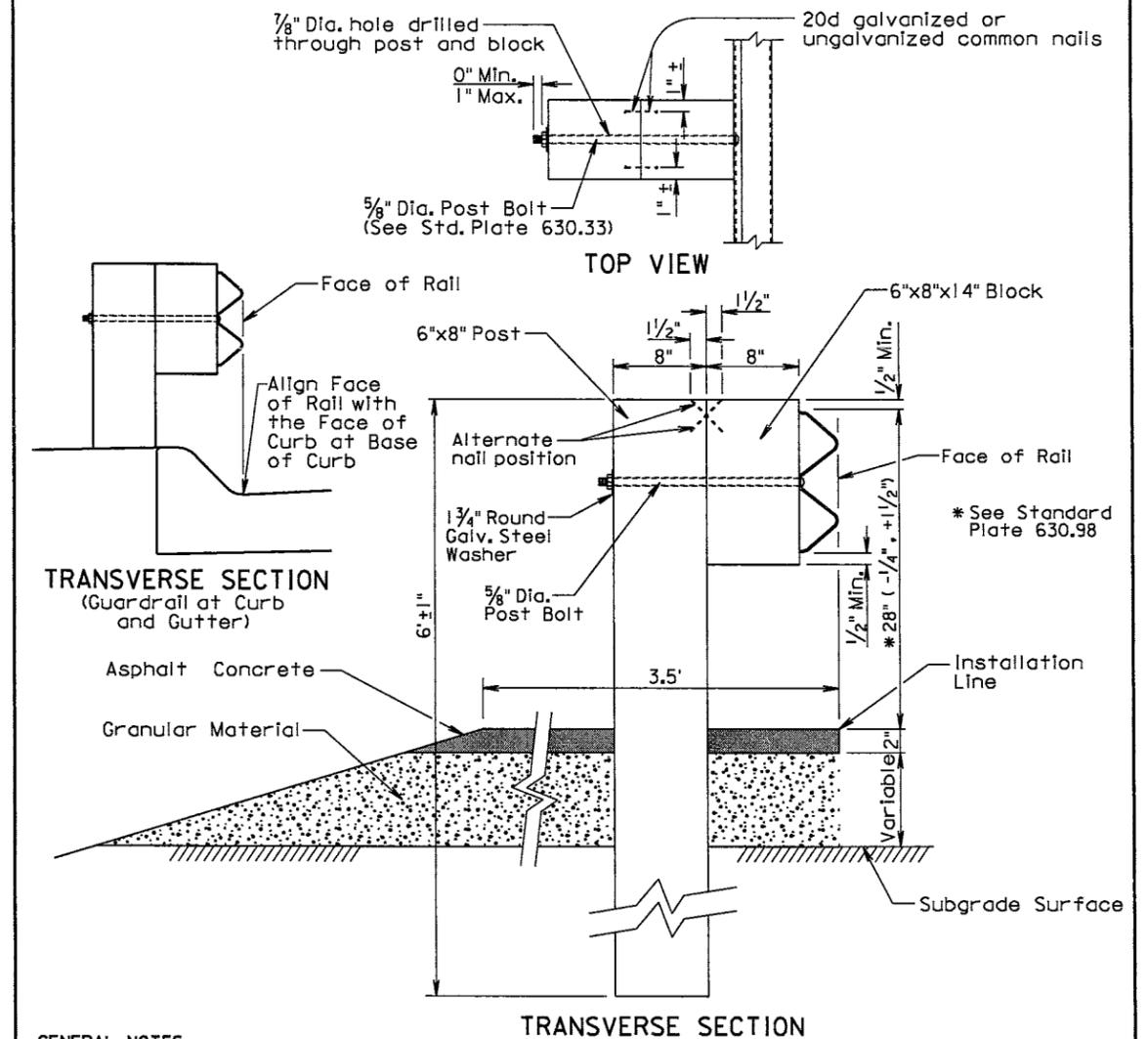


* 6" x 8" x 7' posts shall be used at these locations.

POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END

December 23, 2002

Published Date: 1st Qtr. 2013	S D D O T	POST SPACING ARRANGEMENT FOR THRIE BEAM GUARDRAIL AT BRIDGE END	PLATE NUMBER 630.15
			Sheet 1 of 1



GENERAL NOTES:

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

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

Surfacing and embankment quantities will be paid for separately and will NOT be incidental to the "W Beam Guardrail" bid item.

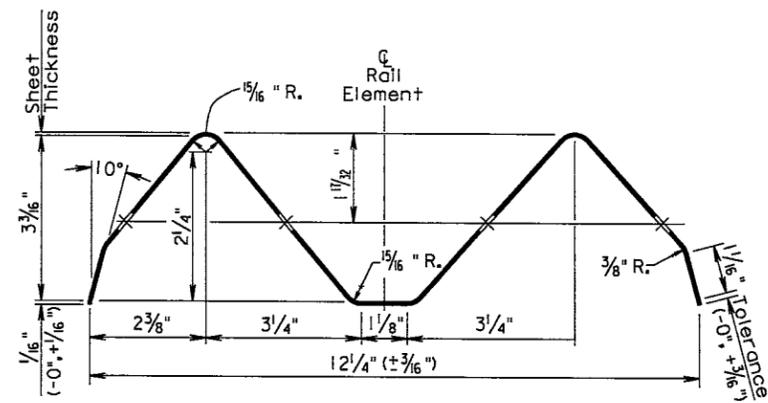
The cross slope for the surfacing and subgrade surface shall be as specified in the plans (See Typical Sections and/or Cross Sections).

The top of posts and top of block shall have a true square cut. The top of post and top of block shall be flush.

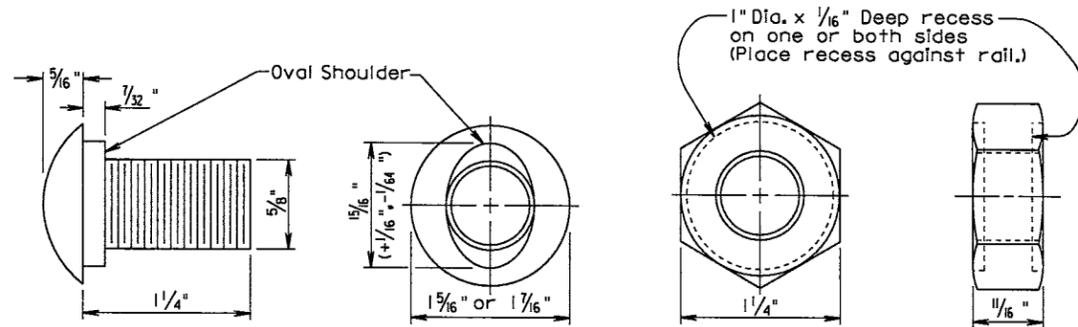
December 23, 2010

Published Date: 1st Qtr. 2013	S D D O T	W BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.31
			Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	45	48

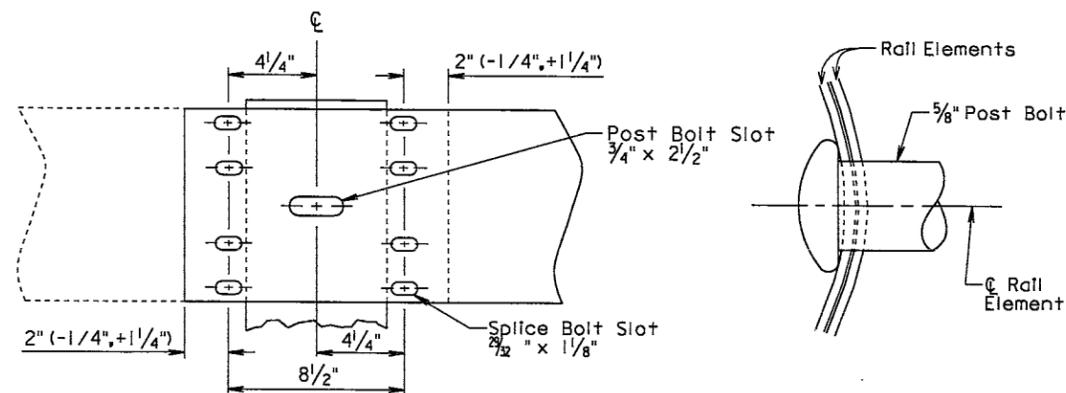


SECTION THROUGH W BEAM RAIL ELEMENT



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

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

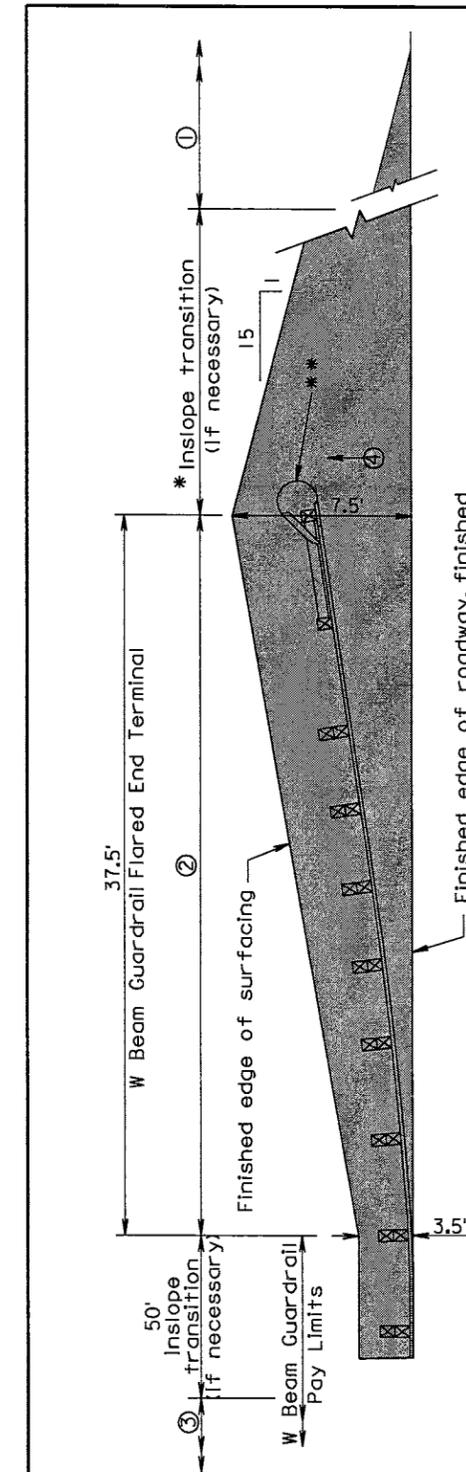


Lap in direction of traffic.

RAIL SPLICE

December 23, 2004

Published Date: 1st Qtr. 2013	S D D O T	W BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER
			630.33
			Sheet 1 of 1



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

PLAN

2" Asphalt concrete surfacing with variable thickness granular material

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

GENERAL NOTES:

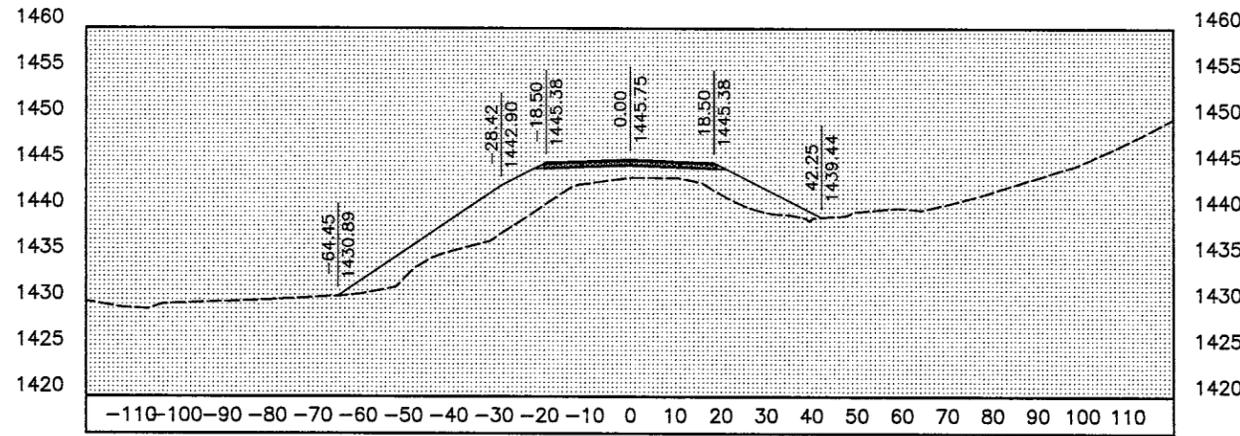
The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions. An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items. Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite." Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.

September 6, 2009

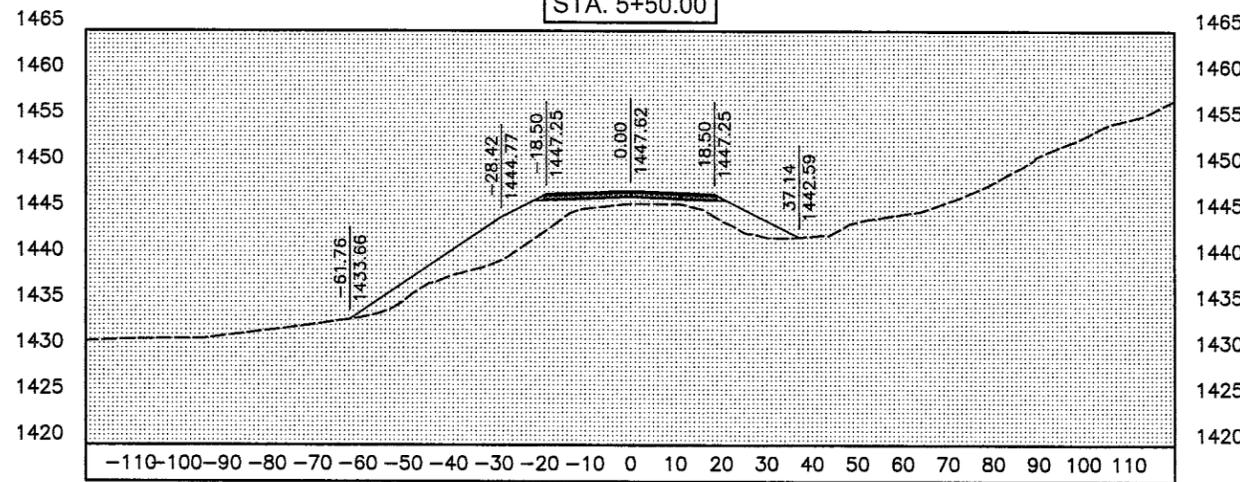
Published Date: 1st Qtr. 2013	S D D O T	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL	PLATE NUMBER
			630.45
			Sheet 1 of 1

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	46	48

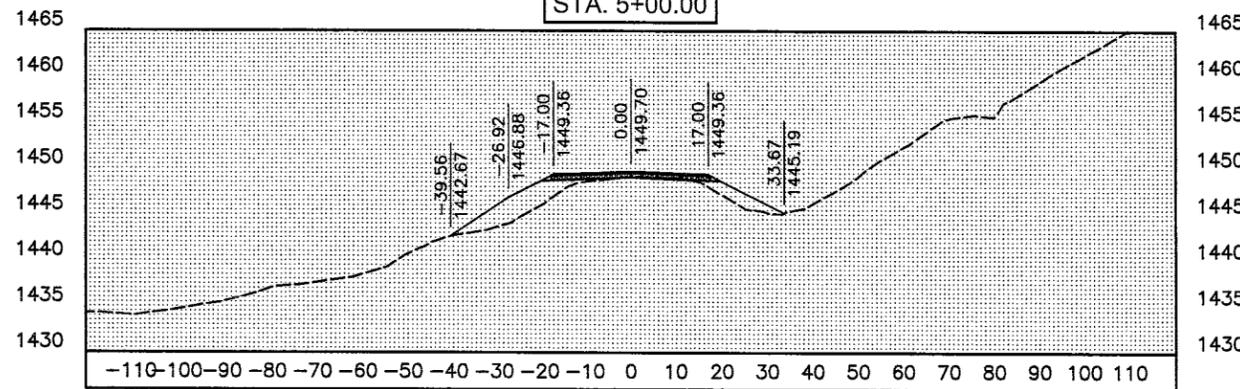
FOR BIDDING PURPOSES ONLY



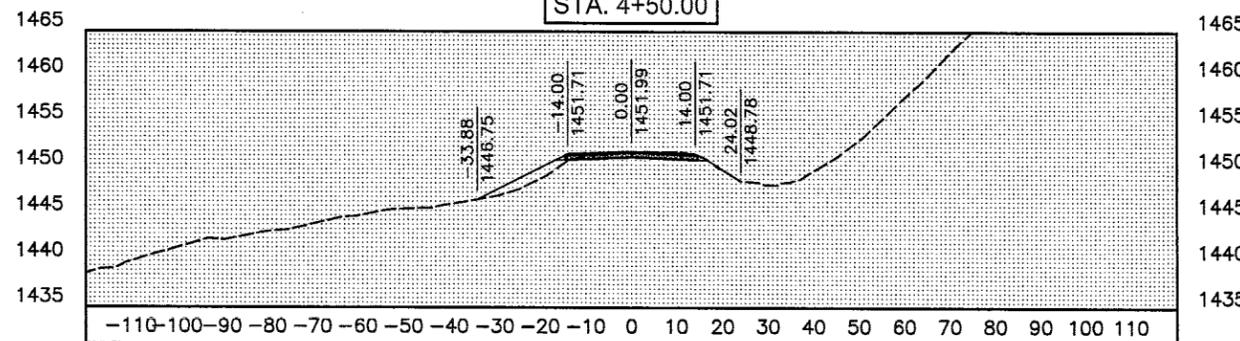
STA. 5+50.00



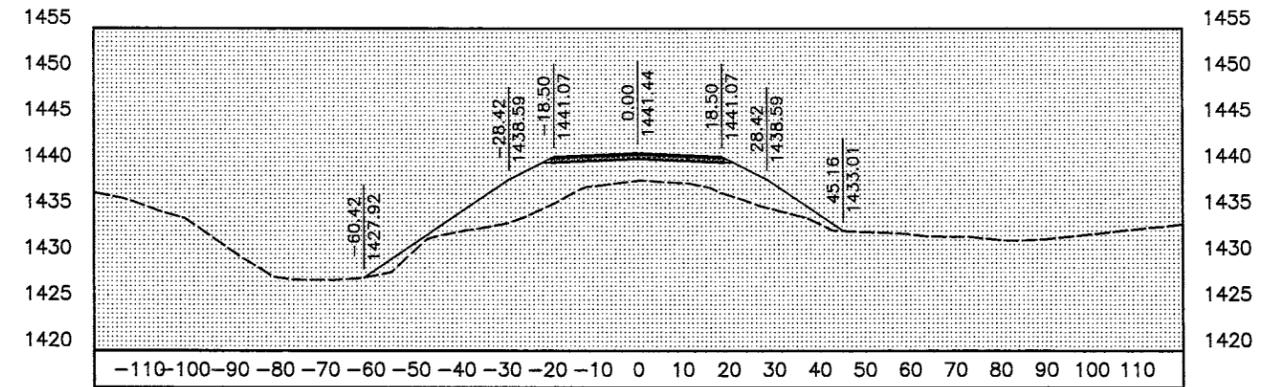
STA. 5+00.00



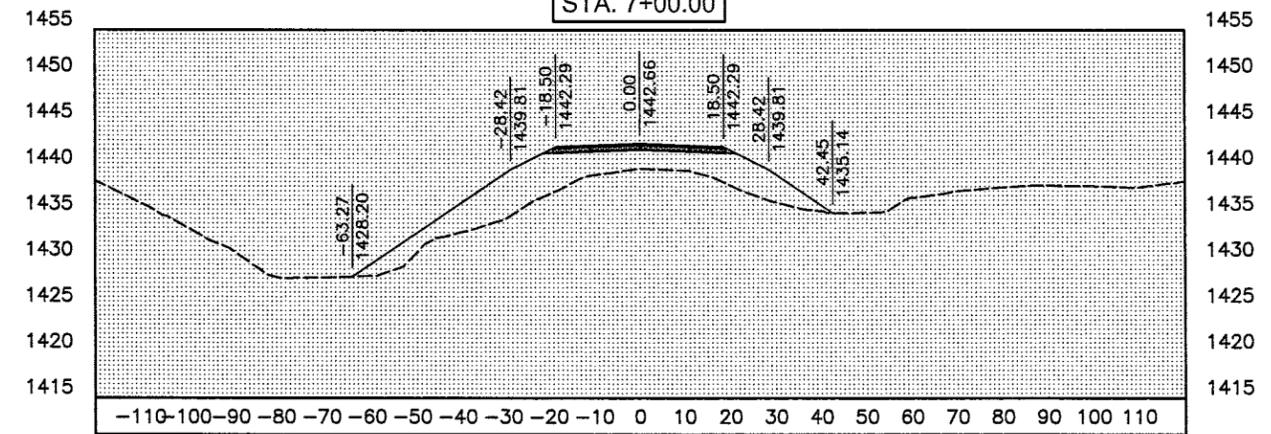
STA. 4+50.00



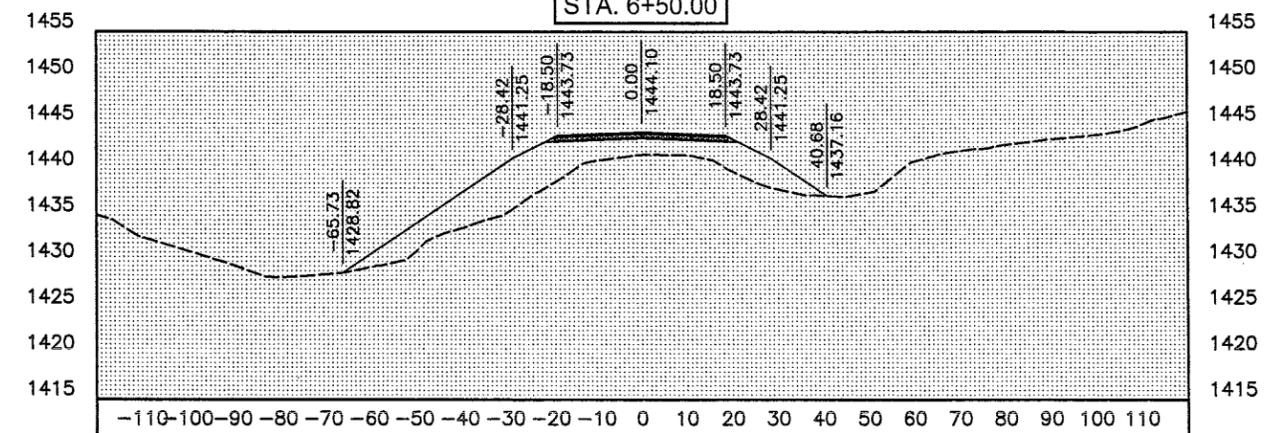
STA. 4+00.00



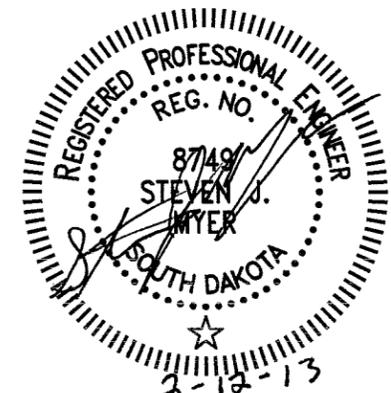
STA. 7+00.00



STA. 6+50.00

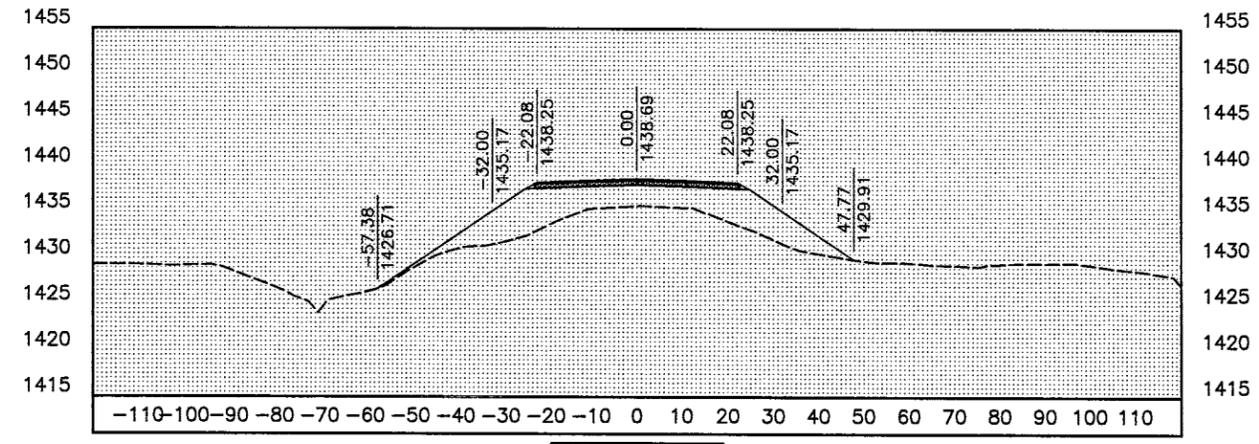


STA. 6+00.00

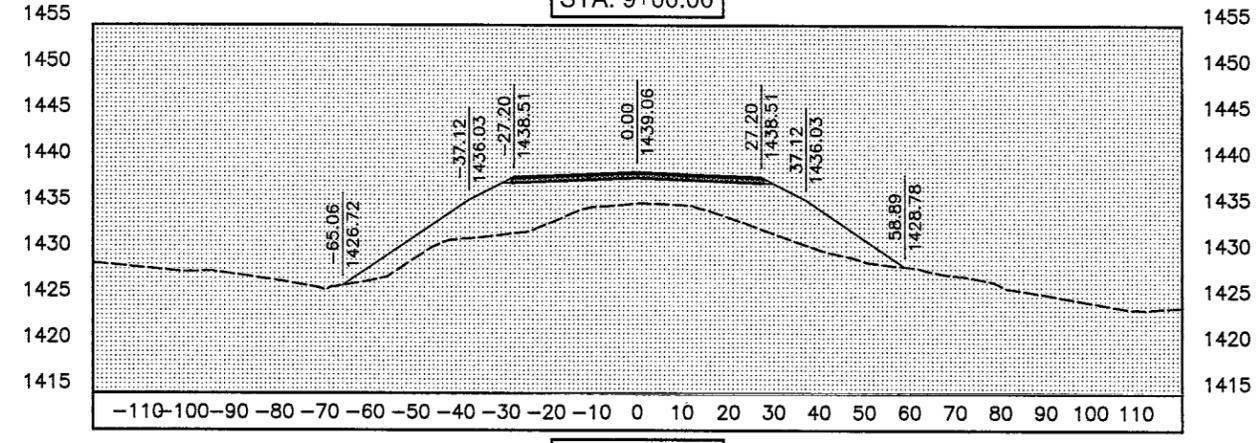


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	47	48

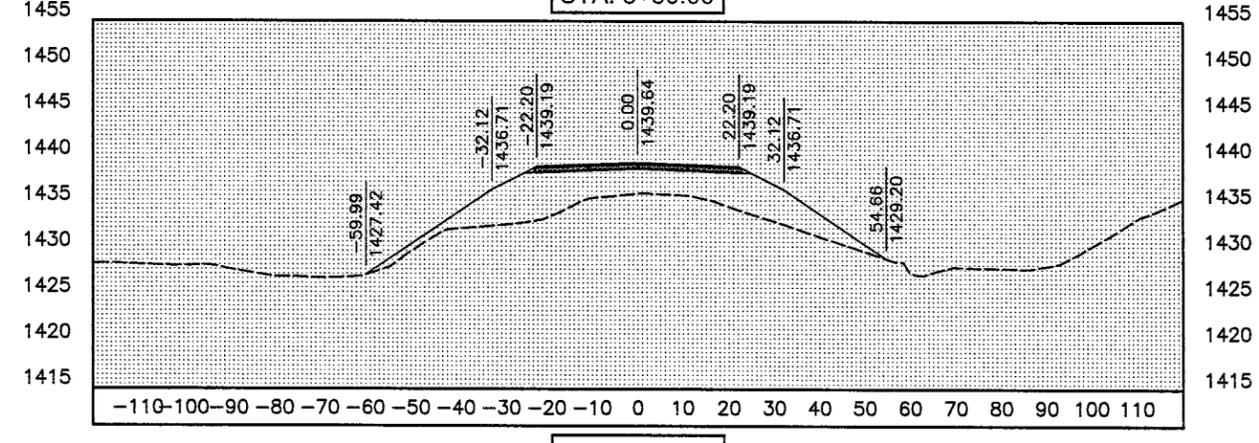
FOR BIDDING PURPOSES ONLY



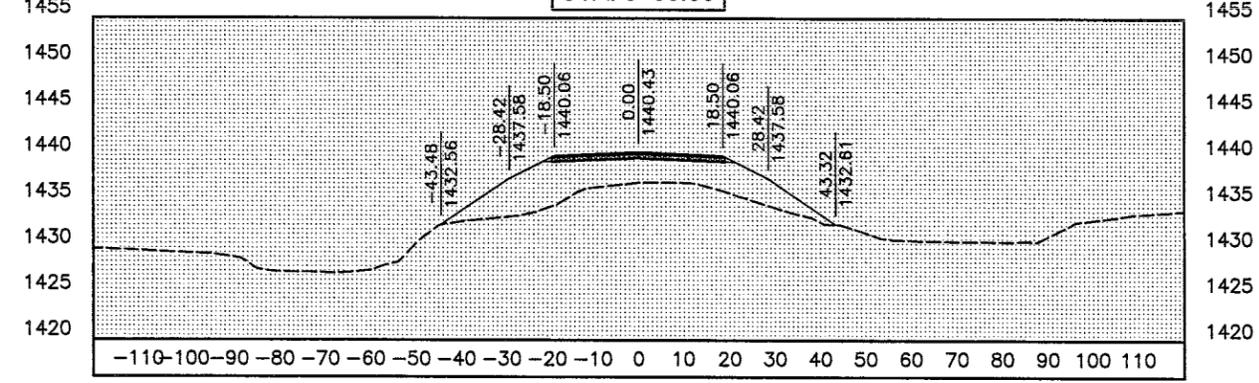
STA. 9+00.00



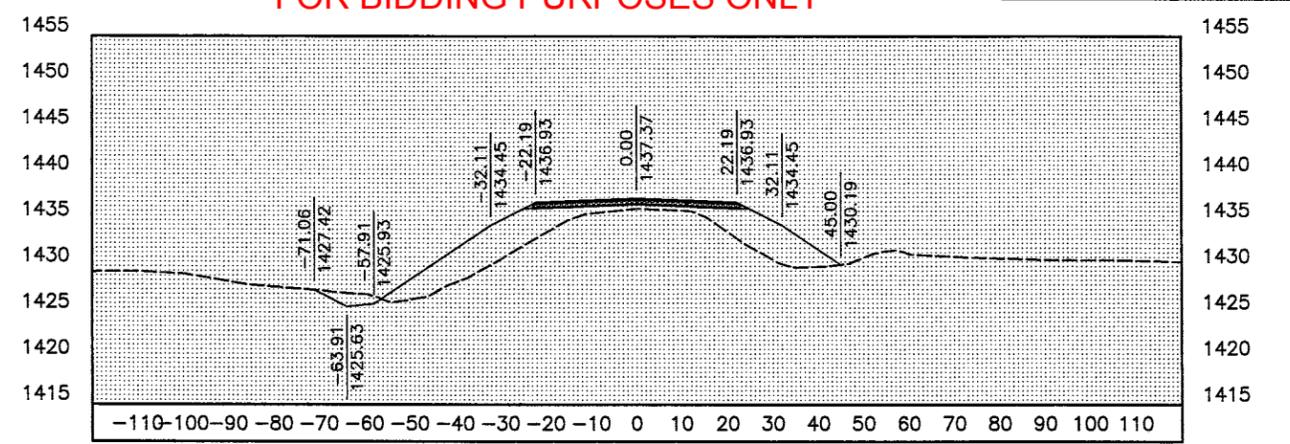
STA. 8+50.00



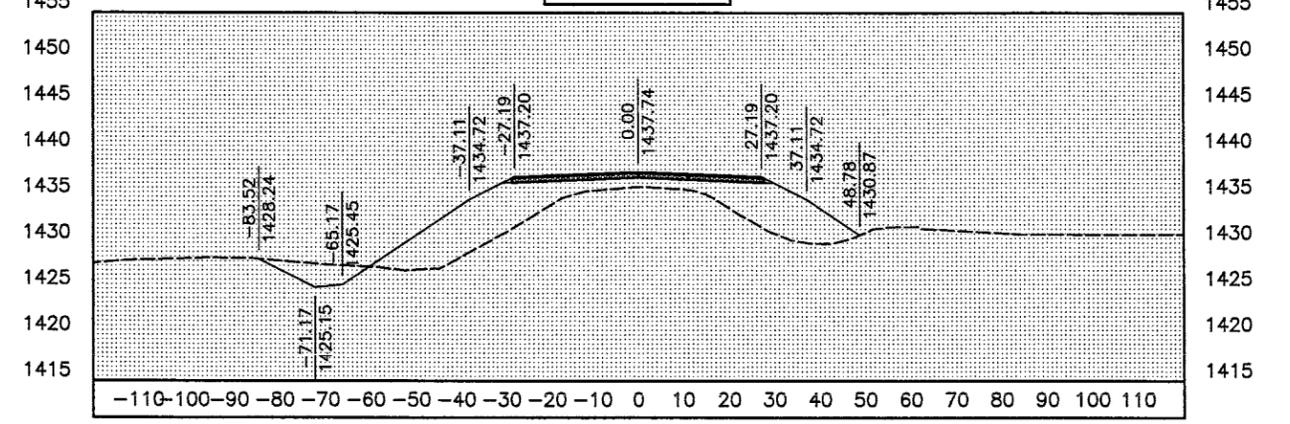
STA. 8+00.00



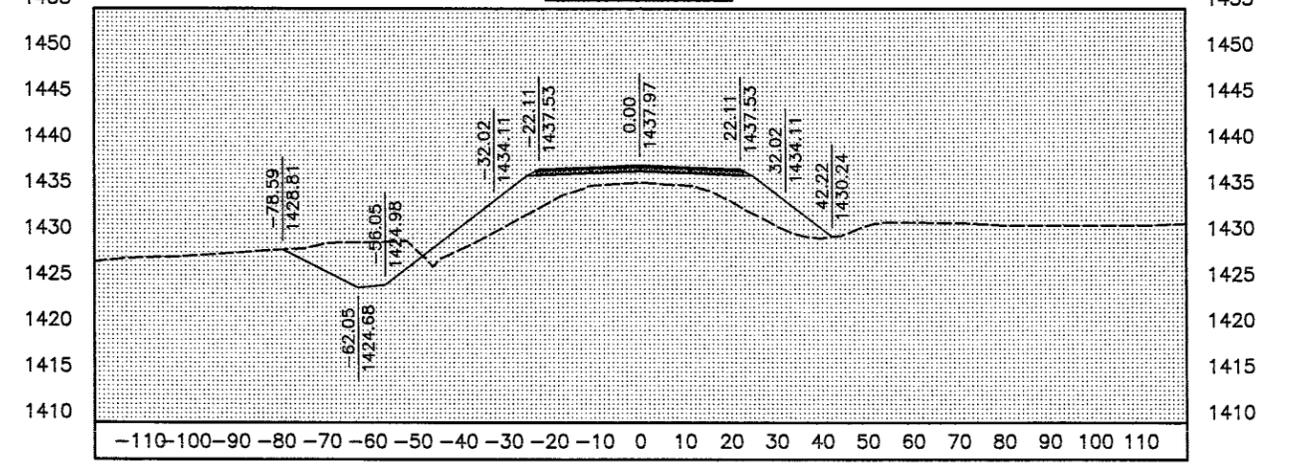
STA. 7+50.00



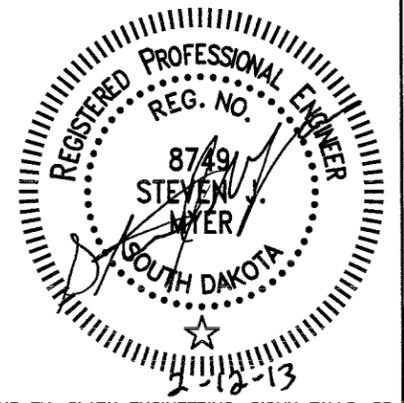
STA. 12+00.00



STA. 11+50.00

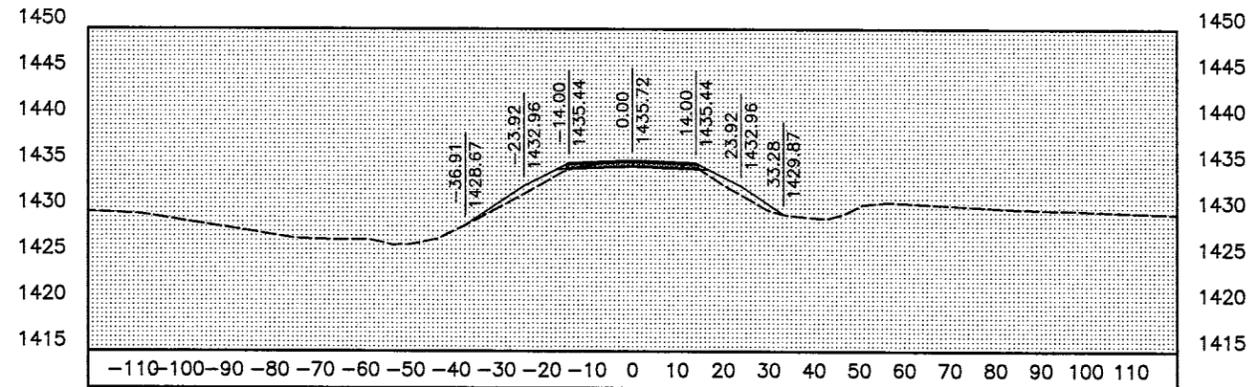


STA. 11+00.00

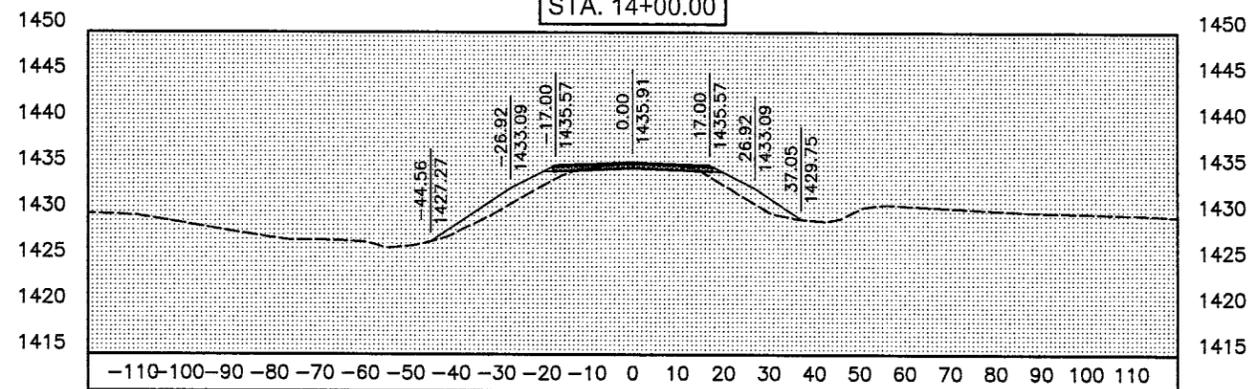


STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6170(01)	48	48

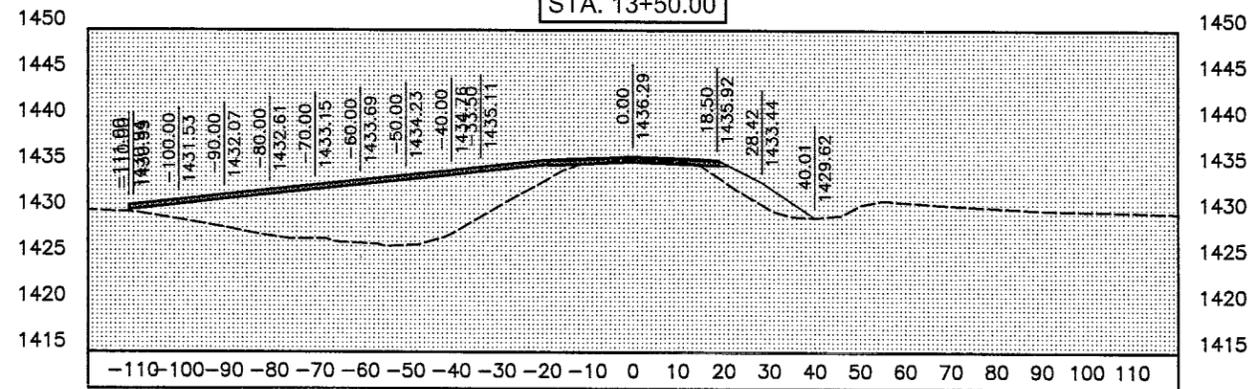
FOR BIDDING PURPOSES ONLY



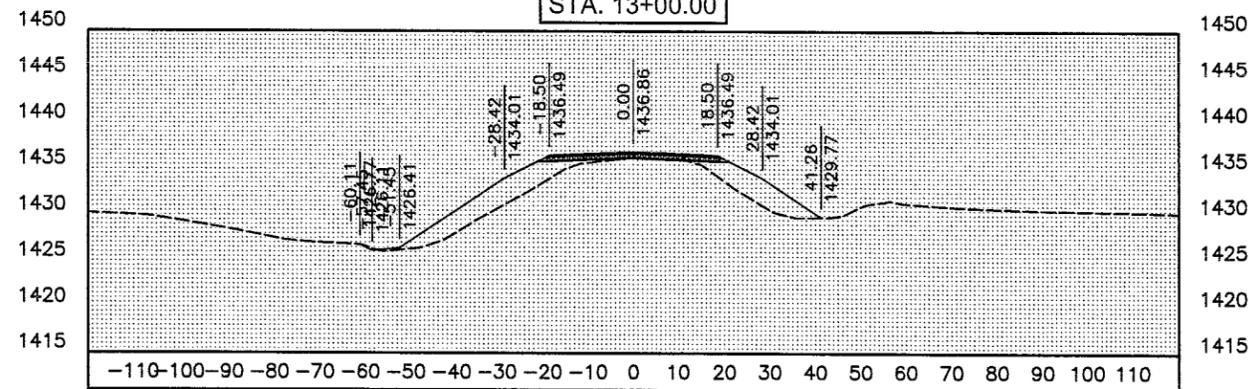
STA. 14+00.00



STA. 13+50.00



STA. 13+00.00



STA. 12+50.00

