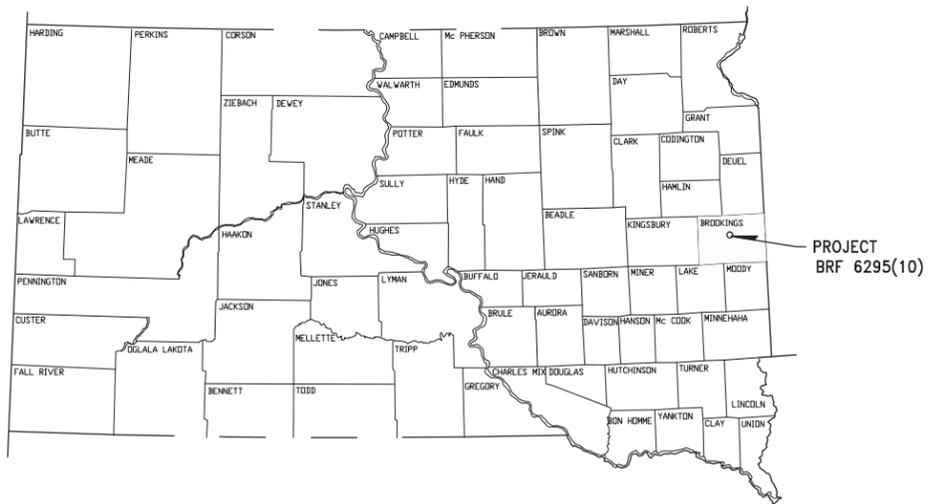


STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 1	TOTAL SHEETS 91
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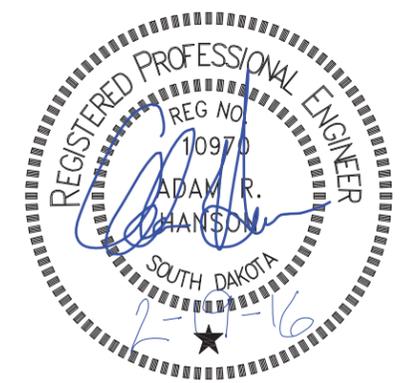
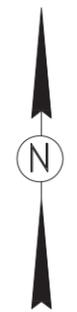
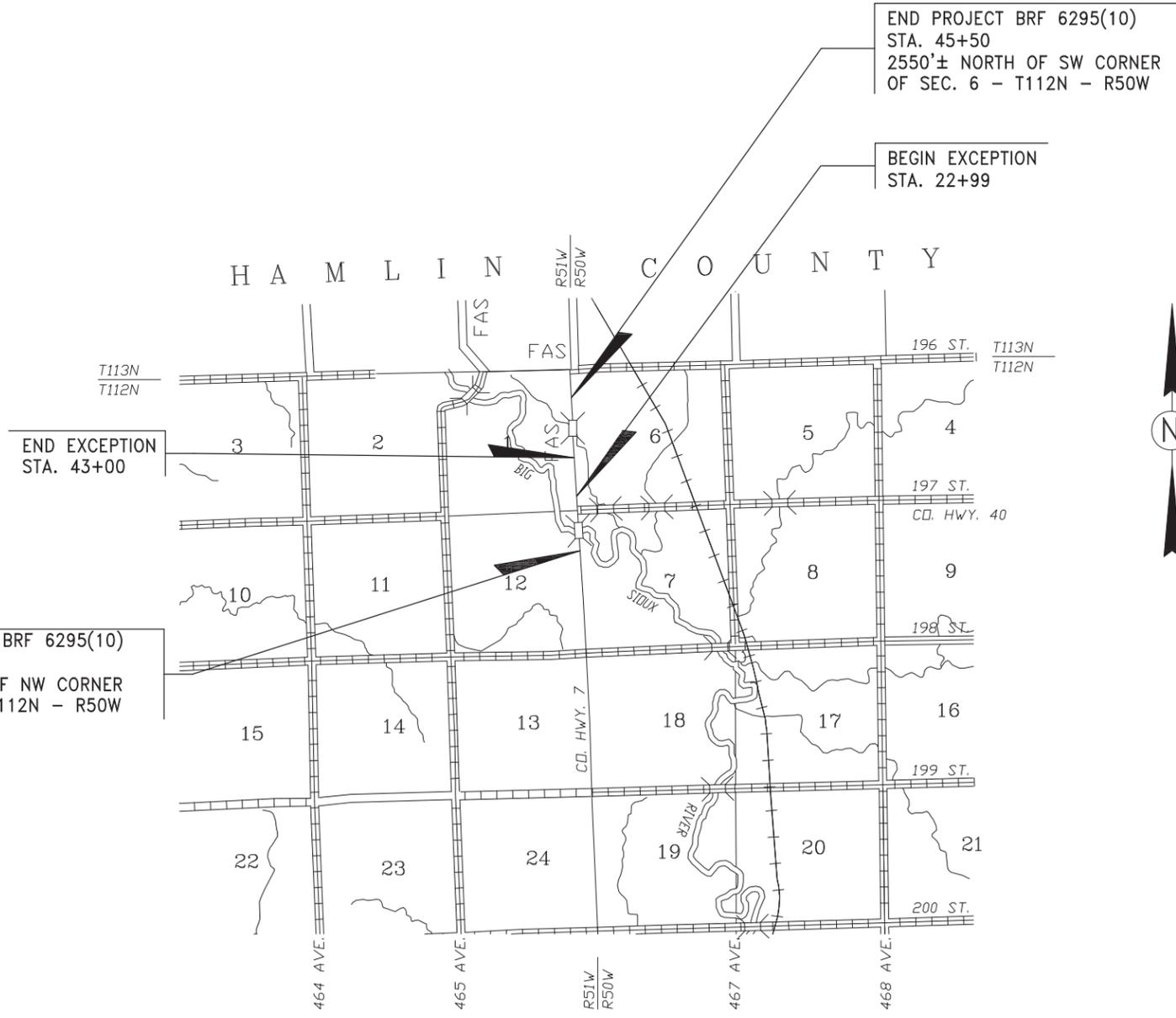
STATE OF SOUTH DAKOTA FOR BIDDING PURPOSES ONLY
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT BRF 6295(10)
BROOKINGS COUNTY
STRUCTURES AND APPROACH GRADING
STRUCTURE NO. 06-120-012 & 06-120-005
PCN 01W9



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2.	ESTIMATE OF QUANTITIES
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91.	CROSS SECTIONS



2

SCALES

PLAN	1 INCH = 80 FEET
PROFILE	{ HORIZONTAL 1 INCH = 80 FT. VERTICAL 1 INCH = 10 FT.
ROADWAY CROSS SECTIONS	{ HORIZONTAL 1 INCH = 20 FT. VERTICAL 1 INCH = 10 FT.

STORM WATER PERMIT DATA
 STR. NO. 06-120-012
 TOTAL PROJECT AREA : 3.84 ACRES
 AREA DISTURBED : 3.50 ACRES
 MAJOR RECEIVING BODY OF WATER :
 BIG SIOUX RIVER
 APPROXIMATE BEGIN LAT/LONG:
 44.528402/-96.888897

STORM WATER PERMIT DATA
 STR. NO. 06-120-005
 TOTAL PROJECT AREA : 0.88 ACRES
 AREA DISTURBED : 0.86 ACRES
 MAJOR RECEIVING BODY OF WATER :
 BIG SIOUX RIVER
 APPROXIMATE BEGIN LAT/LONG:
 44.535791/-96.888358

DESIGN DESIGNATION

ADT (2014)	390
ADT (2034)	515
DHV	80
T. DHV	3.5%
T. ADT	7.6%
D	50%
DESIGN SPEED	55 MPH

DESIGN DESIGNATION

ADT (2014)	390
ADT (2034)	515
DHV	80
T. DHV	3.5%
T. ADT	7.6%
D	50%
DESIGN SPEED	55 MPH

GROSS LENGTH	3226.00 FEET	0.611 MILES
LENGTH OF EXCEPTIONS	2001.00 FEET	0.379 MILES
NET LENGTH	1225.00 FEET	0.232 MILES

Plans Prepared By:
BANNER
 Engineering | Architecture | Surveying
 BAI# 21620.13.00

ESTIMATE OF QUANTITIES:

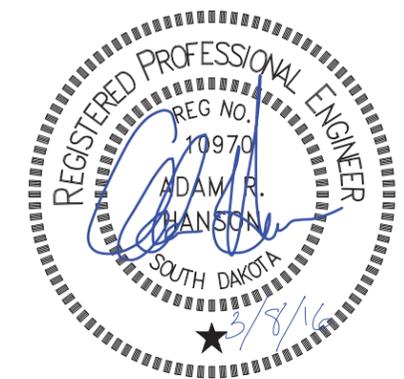
GRADING:

Bid Item Number	Item	Bridge	Box Culvert	Total	
		Str No. 06-120-012 Quantity	Str No. 06-120-005 Quantity	Quantity	Unit
004E0010	Blading	24		24	Hr
009E0010	Mobilization	Lump Sum	Lump Sum	Lump Sum	LS
100E0100	Clearing	Lump Sum	Lump Sum	Lump Sum	LS
110E0500	Remove Pipe Culvert	80		80	Ft
110E0510	Remove Pipe End Section	2		2	Each
110E1010	Remove Asphalt Concrete Pavement	2,421	642	3,063	SqYd
110E1700	Remove Silt Fence	307	17	324	Ft
110E4310	Salvage Thrie Beam Guardrail	500	56	556	Ft
110E4330	Salvage W Beam Guardrail	396	293	689	Ft
110E4340	Salvage W Beam to Thrie Beam Guardrail Transition	4	4	8	Each
110E4370	Salvage W Beam Guardrail Flared End Terminal	4	4	8	Each
120E0010	Unclassified Excavation	150	1,929	2,079	CuYd
120E0600	Contractor Furnished Borrow Excavation	4,000		4,000	CuYd
120E6200	Water for Granular Material	52.2	2.8	55.0	Mgal
205E0010	Dust Control Chloride	26,133		26,133	Lb
230E0010	Placing Topsoil	575	110	685	CuYd
260E1010	Base Course	2,380.0	567.0	2,947.0	Ton
260E3010	Gravel Surfacing	63.0		63.0	Ton
320E1200	Asphalt Concrete Composite *	650.0	151.0	801.0	Ton
450E4789	36" CMP 16 Gauge, Furnish	76		76	Ft
450E4790	36" CMP, Install	76		76	Ft
450E5223	36" CMP Flared End, Furnish	2		2	Each
450E5224	36" CMP Flared End, Install	2		2	Each
630E1010	Straight Class A W Beam Guardrail with Wood Posts	162.5		162.5	Ft
630E1015	Straight Class A W Beam Guardrail with CRT Posts	12.5		12.5	Ft
630E1025	Curved Class A W Beam Guardrail with CRT Posts	75		75	Ft
630E2015	W Beam Guardrail Flared End Terminal	3		3	Each
630E2035	W Beam Guardrail Special Anchor Assembly	1		1	Each
632E2220	Guardrail Delineator	20		20	Each
634E0110	Traffic Control Signs	459	84	543	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	Lump Sum	Lump Sum	LS
634E0265	Type 3 Barricade, 6' Double Sided	5	4	9	Each
634E0280	Type 3 Barricade, 8' Single Sided	9	6	15	Each
730E0204	Type C Permanent Seed Mixture	80	20	100	Lb
731E0200	Fertilizing	1.75	0.43	2.18	Ton
732E0100	Mulching	7.0	1.8	8.8	Ton
734E0102	Type 2 Erosion Control Blanket	754	296	1,050	SqYd
734E0602	Low Flow Silt Fence	1,534	473	2,007	Ft
734E0610	Mucking Silt Fence	110	35	145	CuYd
734E0620	Repair Silt Fence	385	120	505	Ft
734E0630	Floating Silt Curtain	597		597	Ft
734E0900	Temporary Diversion Channel and or Pipe		1	1	Each

* Non participating bid item

STRUCTURE

Bid Item Number	Item	Bridge	Box Culvert	Total	
		Str No. 06-120-012 Quantity	Str No. 06-120-005 Quantity	Quantity	Unit
250E0030	Incidental Work, Structure	Lump Sum	Lump Sum	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum		Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	63.5		63.5	Ft
420E0100	Structure Excavation, Bridge	417		417	CuYd
420E0200	Structure Excavation, Box Culvert		142	142	CuYd
421E0200	Box Culvert Undercut		333	333	CuYd
430E0200	Bridge End Embankment	845		845	CuYd
430E0300	Granular Bridge End Backfill	69		69	CuYd
460E0030	Class A45 Concrete, Bridge Deck	253.1		253.1	CuYd
460E0050	Class A45 Concrete, Bridge	173.6		173.6	CuYd
460E0120	Class A45 Concrete, Box Culvert		275.1	275.1	CuYd
460E0150	Concrete Approach Slab for Bridge	144.6		144.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	31.8		31.8	SqYd
464E0100	Controlled Density Fill	8.3		8.3	CuYd
470E0420	Type T101 Bridge Railing	500.0		500	Ft
480E0100	Reinforcing Steel	30,719	38,806	69,525	Lb
480E0200	Epoxy Coated Reinforcing Steel	71,966		71,966	Lb
480E0507	No. 7 Rebar Splice	84		84	Each
510E0300	Preboring Pile	100		100	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	170		170	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	640		640	Ft
510E3521	HP 14x73 Steel Test Pile, Furnish and Drive	240		240	Ft
510E3525	HP 14x73 Steel Bearing Pile, Furnish and Drive	2,025		2,025	Ft
560E8036	36" Minnesota Shape Prestressed Concrete Beam	984		984	Ft
680E0040	4" Underdrain Pipe	233		233	Ft
680E2000	Concrete Headwall for Underdrain	4		4	Each
680E2500	Porous Backfill	33		33	Ton
700E0210	Class B Riprap	819.3	146.7	966.0	Ton
831E0110	Type B Drainage Fabric	1,017	203	1220	SqYd



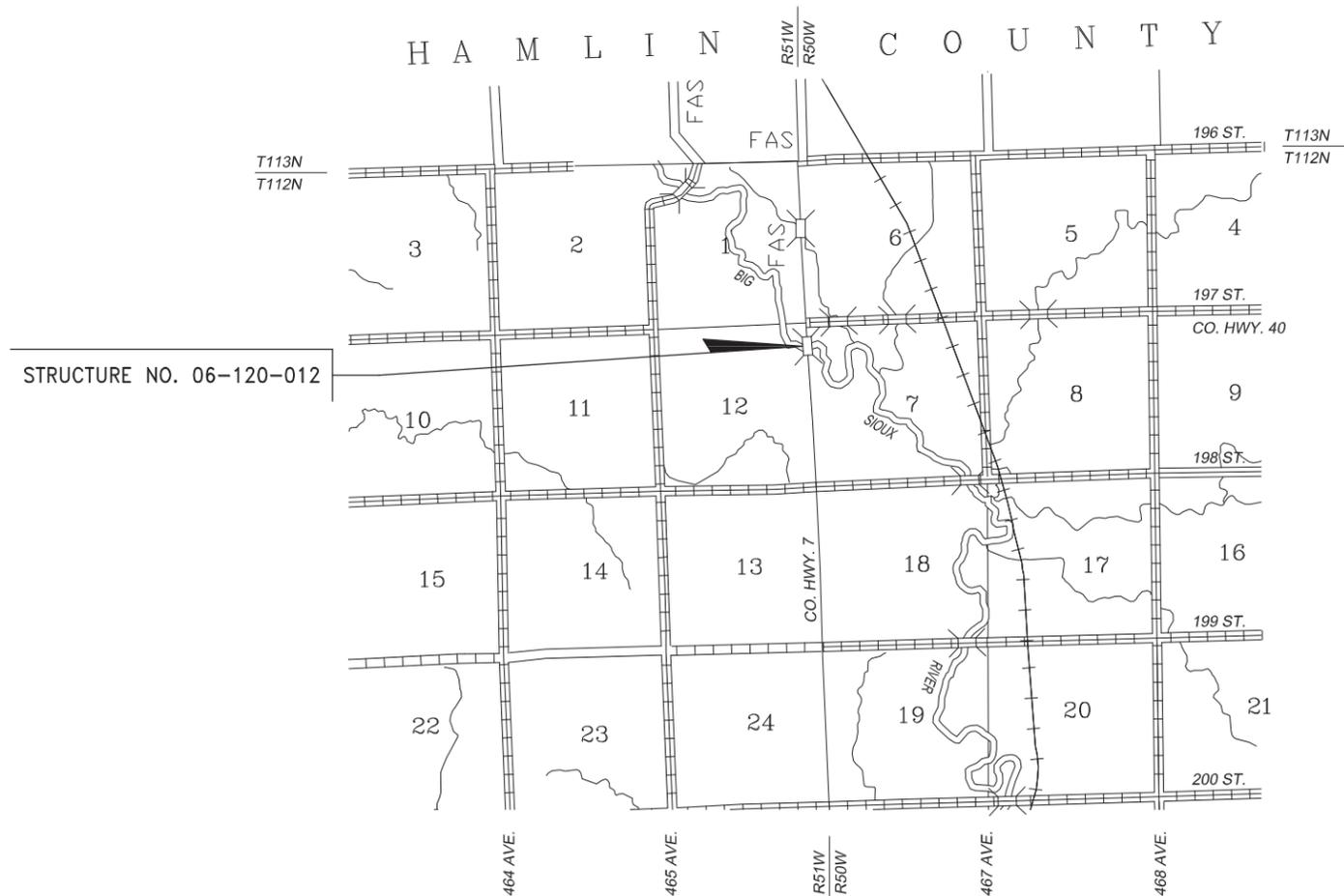
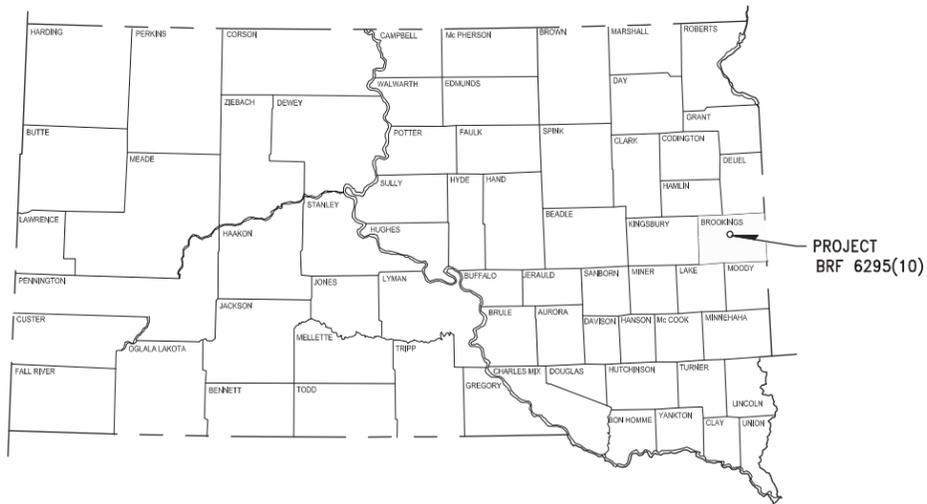
STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	3	91

STATE OF SOUTH DAKOTA FOR BIDDING PURPOSES ONLY
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT BRF 6295(10)
BROOKINGS COUNTY
STRUCTURE AND APPROACH GRADING
STRUCTURE NO. 06-120-012
PCN 01W9

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13.-15.	STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
16.-19.	EROSION CONTROL
20.-29.	SITE GRADING AND GUARDRAIL
30.	ROADWAY PLAN AND PROFILE
31.-52.	250'-0" PRESTRESSED GIRDER BRIDGE
53.-56.	CROSS SECTIONS



SCALES

PLAN	1 INCH = 80 FEET
PROFILE	{ HORIZONTAL 1 INCH = 80 FT. { VERTICAL 1 INCH = 10 FT.
ROADWAY CROSS SECTIONS	{ HORIZONTAL 1 INCH = 20 FT. { VERTICAL 1 INCH = 10 FT.

STORM WATER PERMIT DATA

STR. NO. 06-120-012
 TOTAL PROJECT AREA : 3.84 ACRES
 AREA DISTURBED : 3.50 ACRES
 MAJOR RECEIVING BODY OF WATER :
 BIG SIOUX RIVER
 APPROXIMATE BEGIN LAT/LONG:
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DESIGN DESIGNATION

ADT (2014)	390
ADT (2034)	515
DHV	80
T. DHV	3.5%
T. ADT	7.6%
D	50%
DESIGN SPEED	55 MPH



Plans Prepared By:
BANNER
 Engineering | Architecture | Surveying
 BAI# 21620.13.00

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET NO. 4	TOTAL SHEETS 91
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ESTIMATE OF QUANTITIES:

GRADING:

Bid Item Number	Item	Quantity	Unit
004E0010	Blading	24	Hour
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0500	Remove Pipe Culvert	80	Ft
110E0510	Remove Pipe End Section	2	Each
110E1010	Remove Asphalt Concrete Pavement	2,421	SqYd
110E1700	Remove Silt Fence	307	Ft
110E4310	Salvage Thrie Beam Guardrail	500	Ft
110E4330	Salvage W Beam Guardrail	396	Ft
110E4340	Salvage W Beam to Thrie Beam Guardrail Transition	4	Each
110E4370	Salvage W Beam Guardrail Flared End Terminal	4	Each
120E0010	Unclassified Excavation	150	CuYd
120E0600	Contractor Furnished Borrow Excavation	4,000	CuYd
120E6200	Water for Granular Material	52.2	Mgal
205E0010	Dust Control Chloride	26,133	Lb
230E0010	Placing Topsoil	575	CuYd
260E1010	Base Course	2,380.0	Ton
260E3010	Gravel Surfacing	63.0	Ton
320E1200	Asphalt Concrete Composite	650.0	Ton
450E4789	36" CMP 16 Gauge, Furnish	76	Ft
450E4790	36" CMP, Install	76	Ft
450E5223	36" CMP Flared End, Furnish	2	Each
450E5224	36" CMP Flared End, Install	2	Each
630E1010	Straight Class A W Beam Guardrail with Wood Posts	162.5	Ft
630E1015	Straight Class A W Beam Guardrail with CRT Posts	12.5	Ft
630E1025	Curved Class A W Beam Guardrail with CRT Posts	75	Ft
630E2015	W Beam Guardrail Flared End Terminal	3	Each
630E2035	W Beam Guardrail Special Anchor Assembly	1	Each
632E2220	Guardrail Delineator	20	Each
634E0110	Traffic Control Signs	459	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0265	Type 3 Barricade, 6' Double Sided	5	Each
634E0280	Type 3 Barricade, 8' Single Sided	9	Each
730E0204	Type C Permanent Seed Mixture	80	Lb
731E0200	Fertilizing	1.75	Ton
732E0100	Mulching	7.0	Ton
734E0102	Type 2 Erosion Control Blanket	754	SqYd
734E0602	Low Flow Silt Fence	1,534	Ft
734E0610	Mucking Silt Fence	110	CuYd
734E0620	Repair Silt Fence	385	Ft
734E0630	Floating Silt Curtain	597	Ft

STRUCTURE:

Bid Item Number	Item	Quantity	Unit
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
410E2600	Membrane Sealant Expansion Joint	63.5	Ft
420E0100	Structure Excavation, Bridge	417	CuYd
430E0200	Bridge End Embankment	845	CuYd
430E0300	Granular Bridge End Backfill	69	CuYd
460E0030	Class A45 Concrete, Bridge Deck	253.1	CuYd
460E0050	Class A45 Concrete, Bridge	173.6	CuYd
460E0150	Concrete Approach Slab for Bridge	144.6	SqYd
460E0160	Concrete Approach Sleeper Slab for Bridge	31.8	SqYd
464E0100	Controlled Density Fill	8.3	CuYd
470E0420	Type T101 Bridge Railing	500.0	Ft
480E0100	Reinforcing Steel	30,719	Lb
480E0200	Epoxy Coated Reinforcing Steel	71,966	Lb
480E0507	No. 7 Rebar Splice	84	Each
510E0300	Preboring Pile	100	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	170	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	640	Ft
510E3521	HP 14x73 Steel Test Pile, Furnish and Drive	240	Ft
510E3525	HP 14x73 Steel Bearing Pile, Furnish and Drive	2,025	Ft
560E8036	36" Minnesota Shape Prestressed Concrete Beam	984	Ft
680E0040	4" Underdrain Pipe	233	Ft
680E2000	Concrete Headwall for Underdrain	4	Each
680E2500	Porous Backfill	33	Ton
700E0210	Class B Riprap	819.3	Ton
831E0110	Type B Drainage Fabric	1,017	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

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

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

Table of Topeka Shiner Streams

Station	Stream Name	Ordinary High Water Elevation
17+74.00	Big Sioux River	1635.60

Action Taken/Required:

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

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

The Contractor shall produce a comprehensive Construction Plan that includes all products, materials, and methods of construction and removal for temporary water barriers, cofferdams, and diversion channels including de-watering, handling, storage, and disposal of excavated material and pumped effluent throughout all phases of construction, including post-construction stabilization. This plan shall be approved by the SDDOT Environmental office prior to any work occurring in the above streams. Upon plan approval the Construction Plan shall be amended to the SWPPP document located on sheets 13 - 15 of 91.



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6295(10)	5	91

COMMITMENT C: WATER SOURCE

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

Action Taken/Required:

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

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

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

Action Taken/Required:

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



COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

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

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

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

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

SDDOT: <http://sddot.com/business/environmental/stormwater/Default.aspx>

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

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

Contractor Certification Form:

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

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

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State 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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6295(10)	6	91

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

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

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

COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

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

COUNTY RESPONSIBILITIES

The County will provide, install, and/or coordinate as necessary the following items without federal participation:

1. Obtain right-of-way and temporary and permanent easements.
2. Coordination of any utility adjustments.
3. Furnish and install permanent striping of the roadway.
4. Furnish and install temporary and/or permanent fencing.
5. Furnish and install new permanent signing.
6. Remove silt fence when vegetation has been established in permanently seeded areas.

SEQUENCE OF OPERATIONS

1. Install temporary traffic control signing
2. Install sediment control at structure and in ditches.
3. Remove existing bridge structure.
4. Remove and store topsoil.
5. Grade roadway and ditches.
6. Construct new structure.
7. Install surfacing.
8. Adjust sediment control at structure and in ditches.
9. Place topsoil.
10. Reseed areas disturbed by construction activities.
11. Complete remaining project items.
12. Remove temporary traffic control signing.

Any changes to the Sequence of Operations require approval from the Engineer.

GENERAL NOTES

Prior to construction of the project, existing traffic signs within project limits will be removed, relocated, covered, and/or salvaged as necessary, by the Brookings County Maintenance Forces. The Contractor shall notify the County a minimum of 48 hours prior to commencing construction.

All rock and broken concrete encountered during construction are to be disposed of according to the notes regarding the Waste Disposal Site.

Compaction of earth embankments shall be governed by the Specified Density Method.

The plan quantity of Unclassified Excavation will be the basis for payment for this item. Quantity includes approximately 150 cubic yards at the roadway transitions to match the existing grade.

TABLE OF EXCAVATION QUANTITIES

Roadway Excavation	=	150	CuYd
Unclassified Excavation	=	150	CuYd

SHRINKAGE FACTOR

Embankment plus 30 percent.

CONTRACTOR FURNISHED BORROW EXCAVATION

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. Quantity includes excavation and/or embankment to grade approaches and backfilling around the ends of the structure.

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

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.

UTILITIES:

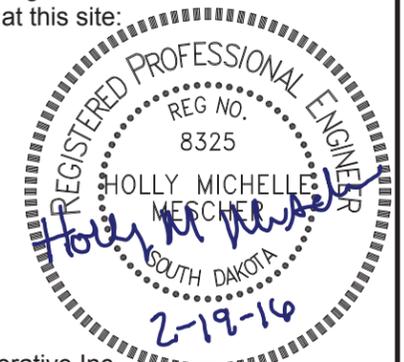
The Contractor shall notify the various utility owners in advance of beginning construction so they can locate their lines and determine if relocation will be required. SD One Call shall be notified at 1-800-781-7474 a minimum of 48 hours prior to commencing construction. The Contractor shall likewise contact Brookings County prior to commencing construction. Utilities from the following utility owners are known to exist at this site:

Sioux Valley Energy
P.O. Box 216
Colman, SD 57017
Phone: (800) 234-1960

Mediacom
948 22nd Ave S
Brookings, SD 57006
Phone: (800) 332-0245

Interstate Telecommunications Cooperative Inc.
1022 Main Ave S
Brookings, SD 57006
Phone: (605) 693-3211

CenturyLink
526 Main Ave Ste B
Brookings, SD 57006
Phone: (605) 690-7094



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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PLACING TOPSOIL

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

The thickness will be approximately 4 inches within the right-of-way and 6 inches in easement areas.

The estimated amount of salvaged topsoil required to cover the designated areas on the roadway embankments and channel side slopes to the specified depth is 575 cubic yards. Basis of payment shall be plan specified quantity. Quantity will not be measured unless ordered by the Engineer.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
13+23		16+49	L/R	1069.0
18+99		22+99	L/R	1352.0
Total:				2421.0

TABLE OF AGGREGATE BASE COURSE

Route	Station	to	Station	L/R	Quantity (Ton)
466 th Ave	13+23		16+49	L/R	942.0
466 th Ave	18+99		22+99	L/R	1302.0
197 th St	0+25		1+81	L/R	129.0
Total:					2380.0

TABLE OF GRAVEL SURFACING

Route	Station	to	Station	L/R	Quantity (Ton)
197 th St	0+92		1+81	L/R	63.0
Total:					63.0

RATES OF MATERIALS, SURFACING

The estimate of quantities is based on the following quantities of materials per station.

ASPHALT CONCRETE COMPOSITE 2" (BOTTOM LIFT)

Asphalt Concrete Composite at the rate of 30.0 tons.

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

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.06 tons applied 24 feet wide (Rate = 0.05 gallon per square yard). SS-1h or CSS-1h Asphalt for Tack shall be incidental to the contract unit price for "Asphalt Concrete Composite."

ASPHALT CONCRETE COMPOSITE 2" (WEARING COURSE)

Asphalt Concrete Composite at the rate of 30.0 tons.

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

SURFACING THICKNESS DIMENSIONS

Material will be placed evenly, at the rates shown in the plans, even though the thickness may vary from that shown on the typical section.

At those locations where material must be placed to achieve required elevations, quantities may be varied to achieve the required elevations, as approved by the Engineer.

TRAFFIC CONTROL

The Contractor shall follow the plans provided, unless an alternate plan is submitted by the Contractor and approved by the Engineer prior to any work. The submitted plan shall comply with MUTCD requirements.

GENERAL MAINTENANCE OF TRAFFIC

All costs, labor, and materials for all work associated with the items discussed below shall be included in the lump sum cost for "Traffic Control, Miscellaneous."

- Traffic shall be maintained in accordance with Section 4.4 of the Specifications. Traffic control shall be installed in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and standard plates located herein.
- Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the County, and to the satisfaction of the Engineer.
- The Contractor shall coordinate with Brookings County to have all permanent signs placed prior to opening the roadway to traffic.

CONSTRUCTION AND MAINTENANCE OF DETOUR

The Contractor shall maintain the gravel road segment of the detour throughout the entire duration of the road closure. The gravel road segment includes 2 miles in Hamlin County (464th Avenue from 194th to 196th Street) and 5 miles in Brookings County (464th Avenue from 196th to 201st Street). The Contractor shall coordinate with the highway superintendents to maintain a traversable detour. Blading and miscellaneous shaping will be required to maintain the detour. All costs for maintaining the detour route shall be paid for hourly at the unit price for "Blading."

Contact information for county highway superintendents:

Brookings County – Dick Birk 696-8270
Hamlin County – Bryan Pedersen 783-3626

DUST CONTROL CHLORIDE

The contractor shall install dust control chloride as detailed in the Specifications. For estimating purposes, 1000' of surfacing length was used for the seven residences along the gravel surfaced segment of the detour route.

All costs for furnishing and installing the dust control chloride shall be incidental to the contract unit price per pound for "Dust Control Chloride".

PERMANENT SEEDING

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

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

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum shall be from the list below or an approved equal:

Product

MycoApply

Manufacturer

Mycorrhizal Applications, Inc.
Grants Pass, OR
Phone: 1-866-476-7800
<http://www.mycorrhizae.com/>



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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FERTILIZING

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer shall have a minimum guaranteed analysis of 4-6-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 3.2%, a minimum of 6% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer shall be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer shall have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer shall also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer shall be applied at a rate of 1,000 pounds per acre in accordance with the manufacturer's recommended method of application.

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

<u>Product</u>	<u>Manufacturer</u>
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 http://www.sustane.com/

LOW FLOW SILT FENCE

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

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

Low flow silt fence shall be placed as shown on sheets 16 and 17 of 91 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 734.04 for details.

EROSION CONTROL BLANKET

Erosion control blanket shall be installed at the locations shown on sheet 17 of 91 and at locations determined by the Engineer during construction. Refer to Standard Plate 734.01 for details.

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

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

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

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. The gauge of the corrugated metal ends shall match the thickest gauge of corrugated metal pipe it is connected to.

FLOATING SILT CURTAIN

Floating silt curtains shall be installed as shown on sheet 16 of 91 and at locations determined by the Engineer during construction.

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

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

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

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

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

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

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

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

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

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

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

SALVAGED GUARDRAIL

All guardrail shall be salvaged and stockpiled in a location accessible to county forces. The contractor shall notify the highway superintendent when salvaged material can be picked up and removed off site.

GUARDRAIL DELINEATORS

An additional four guardrail delineators are included in the quantity to be installed on the curved guardrail. Delineators shall be spaced evenly through the radius.

REFLECTORIZED SHEETING, REQUIREMENTS FOR TEMPORARY TRAFFIC CONTROL DEVICES

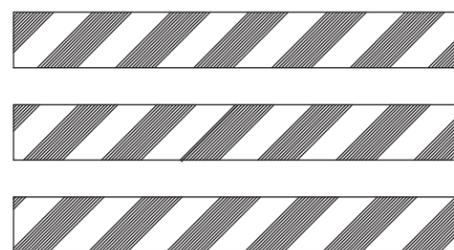
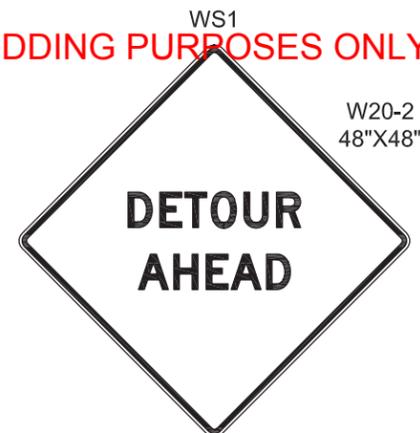
Delete the first paragraph of Section 984.1 and replace with the following:

Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectORIZED with sheeting applied to a satisfactory backing. For all temporary traffic control warning signs, the reflective sheeting shall meet or exceed the standards of Type VII, Type VIII, Type IX or Type XI as defined by AASHTO M 268 (ASTM D4956). For all other temporary traffic control signs, the reflective sheeting shall meet or exceed the standards of Type IV, Type V, Type VII, Type VIII, Type IX, or Type XI as defined by AASHTO M 268 (ASTM D4956). For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type III as defined by AASHTO M 268 (ASTM D4956). Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectORIZED with reflectORIZED sheeting meeting or exceeding the standards of Type IV as defined by AASHTO M 268 (ASTM D4956). All orange colored material shall be fluorescent.

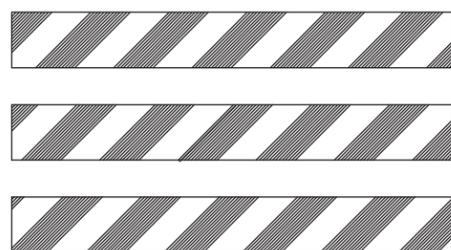


TRAFFIC CONTROL

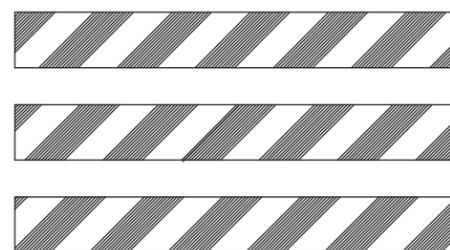
FOR BIDDING PURPOSES ONLY



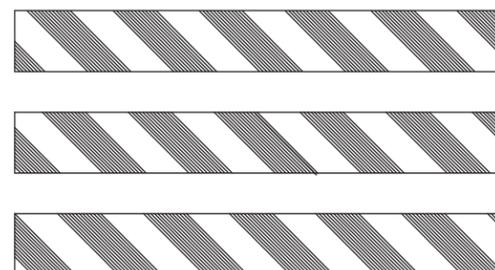
TYPE 3 BARRICADE
6' DOUBLE SIDED



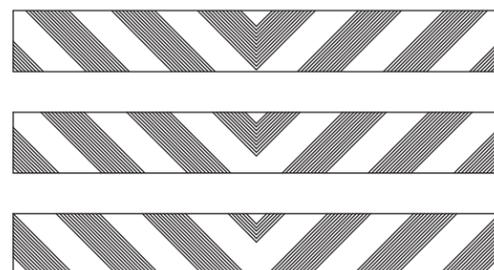
TYPE 3 BARRICADE
6' DOUBLE SIDED



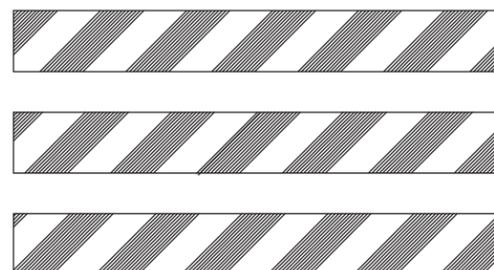
TYPE 3 BARRICADE
6' DOUBLE SIDED



TYPE 3 BARRICADE
8' DOUBLE SIDED



TYPE 3 BARRICADE
8' DOUBLE SIDED



TYPE 3 BARRICADE
8' DOUBLE SIDED

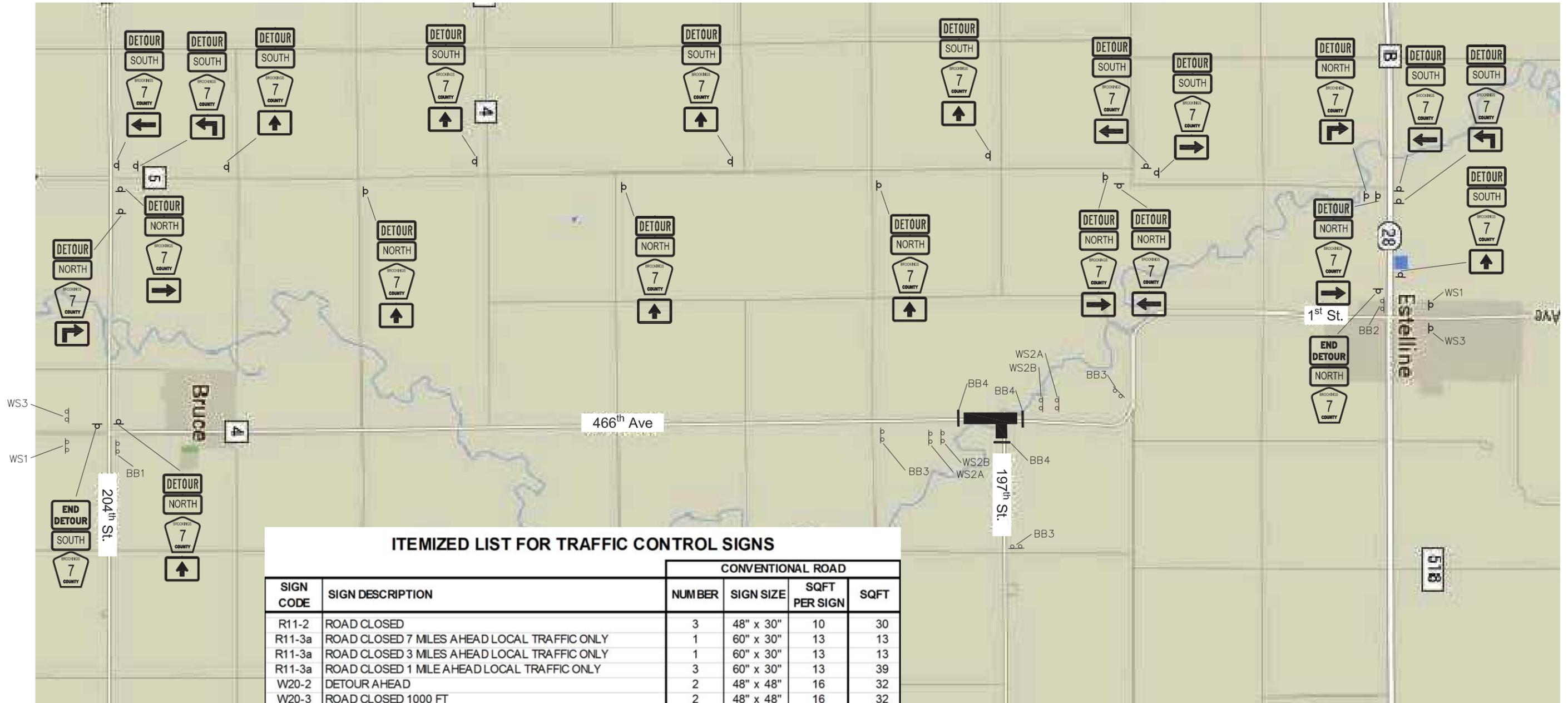
FULL ROADWAY CLOSURE



DETOUR SIGNING



PROJECT DETOUR LAYOUT FOR BIDDING PURPOSES ONLY



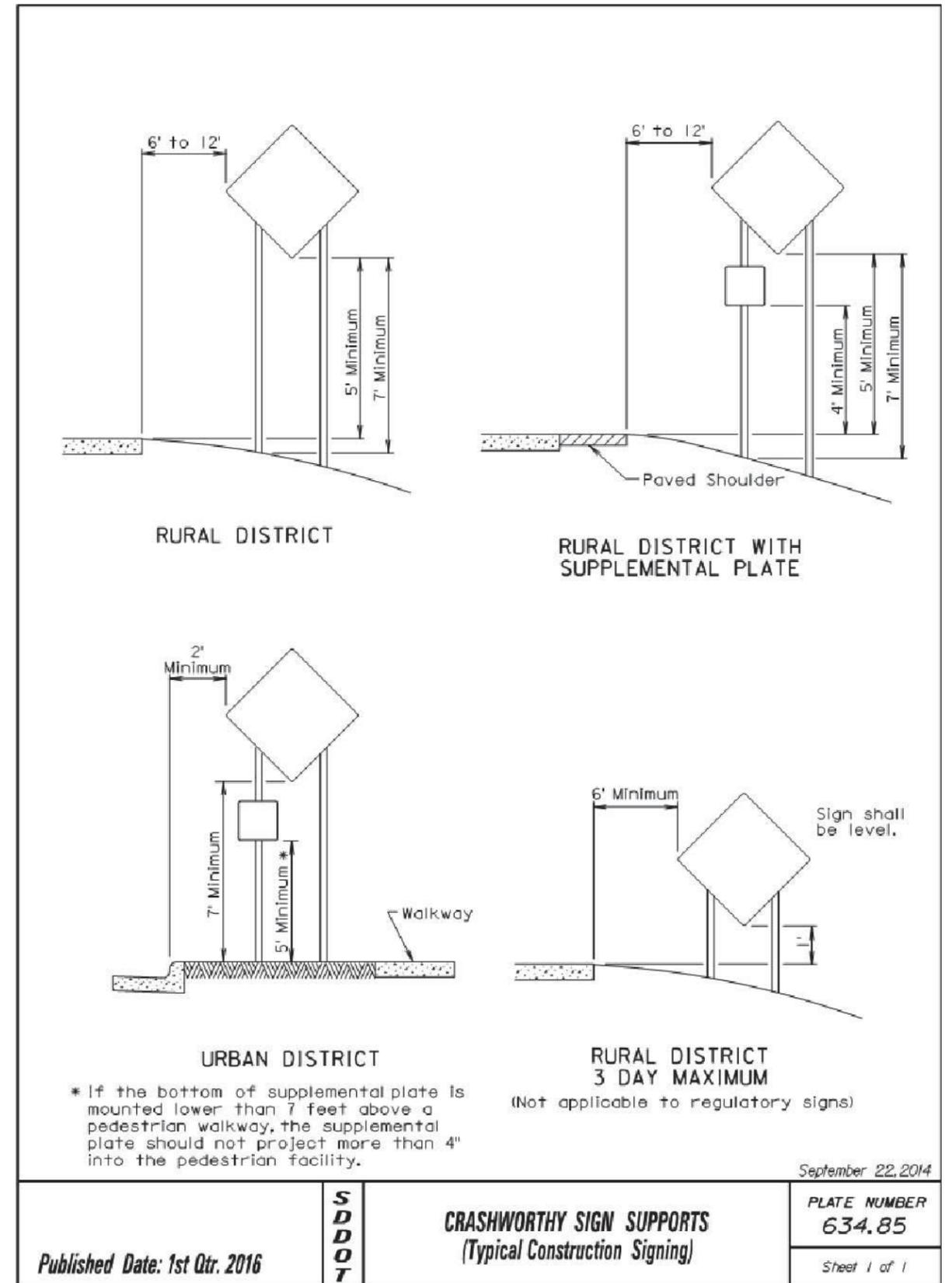
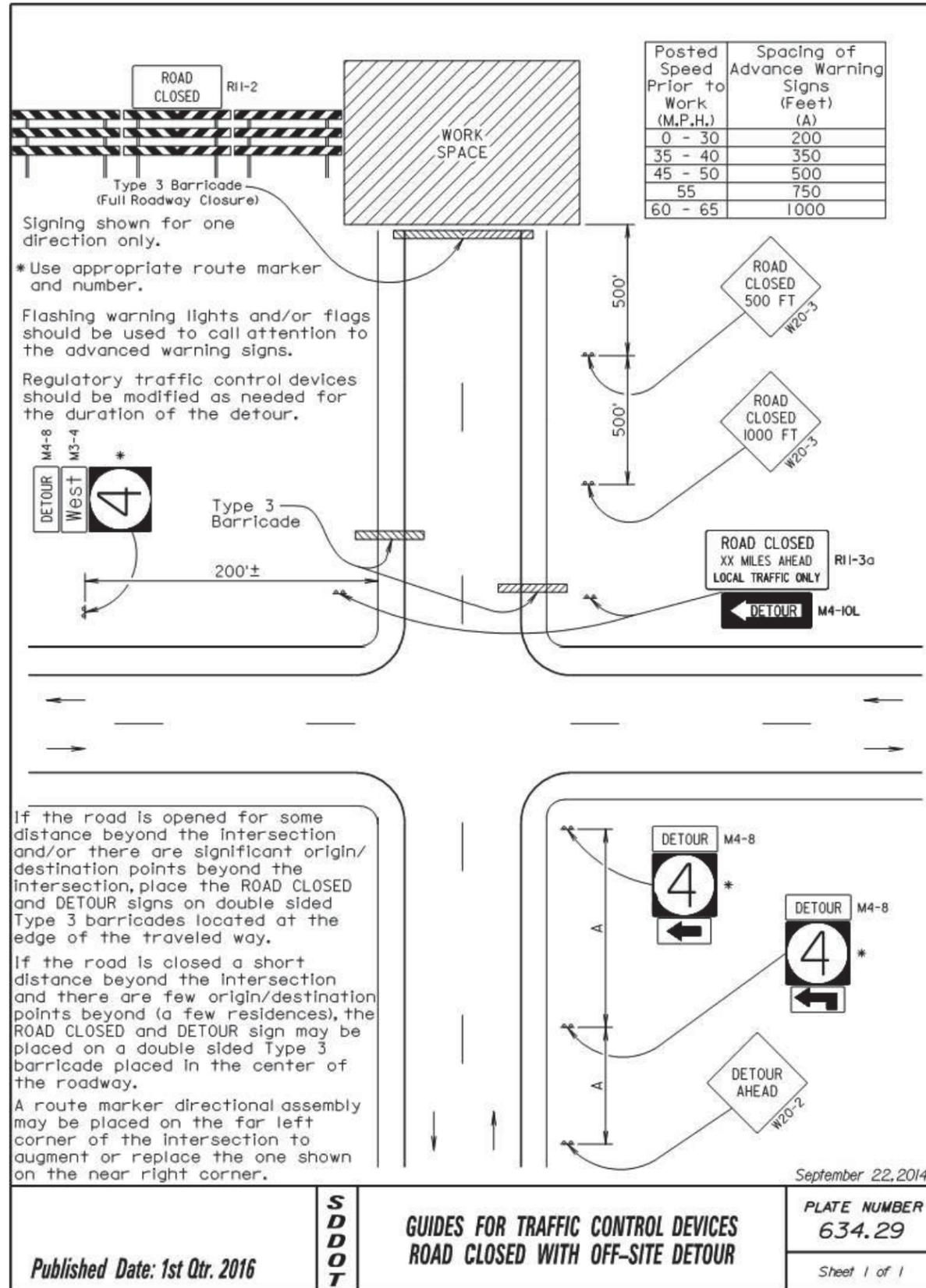
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

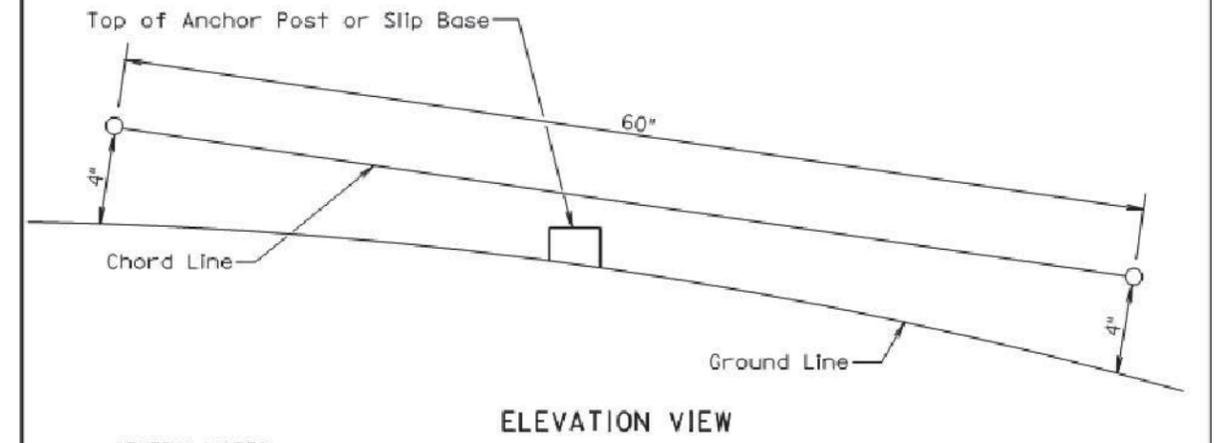
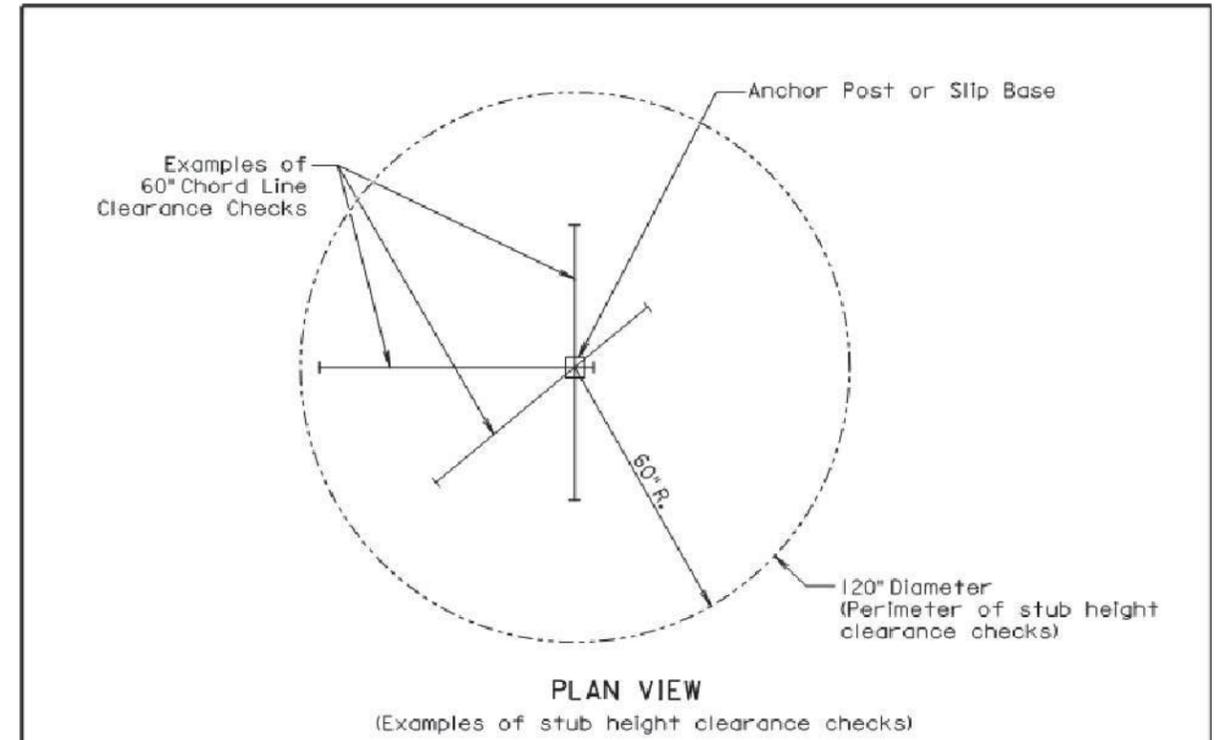
SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	3	48" x 30"	10	30
R11-3a	ROAD CLOSED 7 MILES AHEAD LOCAL TRAFFIC ONLY	1	60" x 30"	13	13
R11-3a	ROAD CLOSED 3 MILES AHEAD LOCAL TRAFFIC ONLY	1	60" x 30"	13	13
R11-3a	ROAD CLOSED 1 MILE AHEAD LOCAL TRAFFIC ONLY	3	60" x 30"	13	39
W20-2	DETOUR AHEAD	2	48" x 48"	16	32
W20-3	ROAD CLOSED 1000 FT	2	48" x 48"	16	32
W20-3	ROAD CLOSED 500 FT	2	48" x 48"	16	32
G20-2	END ROAD WORK	2	36" x 18"	5	10
M1-6	COUNTY ROUTE MARKER (1 or 2 digits)	23	24" x 24"	4	92
M3-1	DIRECTION MARKER - NORTH	11	24" x 12"	2	22
M3-3	DIRECTION MARKER - SOUTH	12	24" x 12"	2	24
M4-8	DETOUR	21	24" x 12"	2	42
M4-8a	END DETOUR	2	24" x 18"	3	6
M4-10	DETOUR ARROW (L or R)	2	48" x 18"	6	12
M5-1	ADVANCE TURN ARROW 90° (L or R)	4	21" x 15"	2	8
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	8	21" x 15"	2	16
M6-3	DIRECTION ARROW - Vertical Single Head	18	21" x 15"	2	36
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			459

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	9 Each
Type 3 Barricade, 6' Double Sided	5 Each







GENERAL NOTES:

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

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

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

July 1, 2005

S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
	<i>Published Date: 1st Qtr. 2016</i>	Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

STORM WATER POLLUTION PREVENTION PLAN

(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 - 3.84 Acres (4.2 1.b)**
 - **Total Area To Be Disturbed - 3.50 Acres (4.2 1.b.)**
 - **Existing Vegetative Cover (%) - 90%**
 - **Soil Properties:** AASHTO Soil Classification - Brown or Gray-Black Silt-Clay on Gray-Black Silt-Sand over Gray Silt-Clay (Glacial Till) **(4.2 1. d.)**
 - **Name of Receiving Water Body/Bodies - Big Sioux 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.)

 - **Install sediment control at structure and in ditches.**
 - **Remove existing structure.**
 - **Construct new structure.**
 - **Adjust sediment control at structure and in ditches.**
 - **Remove and store topsoil.**
 - **Grade roadway and ditches.**
 - **Place topsoil.**
 - **Reseed areas disturbed by construction 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 Section 3 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

Spill Prevention (4.2 2.c.(2))➤ **Material Management**▪ Housekeeping

- Only needed products will be stored on-site by the contractor.
- Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
- Products must be stored in original containers and labeled.
- Material mixing will be conducted in accordance with the manufacturer's recommendations.
- When possible, all products will be completely used before properly disposing of the container off site.
- The manufacturer's directions for disposal of materials and containers will be followed.
- The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
- Dust generated will be controlled in an environmentally safe manner.
- Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

▪ Hazardous Materials

- Products will be kept in original containers unless the container is not resealable.
- Original labels and material safety data sheets will be retained in a safe place to relay important product information.
- If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
- Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, 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.

➤ **Product Specific Practices (6.8) (Continued)**▪ 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 Response (4.2 2 c.(2)) (Continued)**

- 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 reportable spill is a quantity of 25 gallons or more or any spill of oil which: 1) violates water quality standards, 2) produces a "sheen" on a surface water, or 3) causes a sludge or emulsion must be reported immediately to the National Response Center .
- Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the SD DENR.

❖ **Construction Changes (4.4)**

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

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6295(10)	15	91

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:

➤ **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

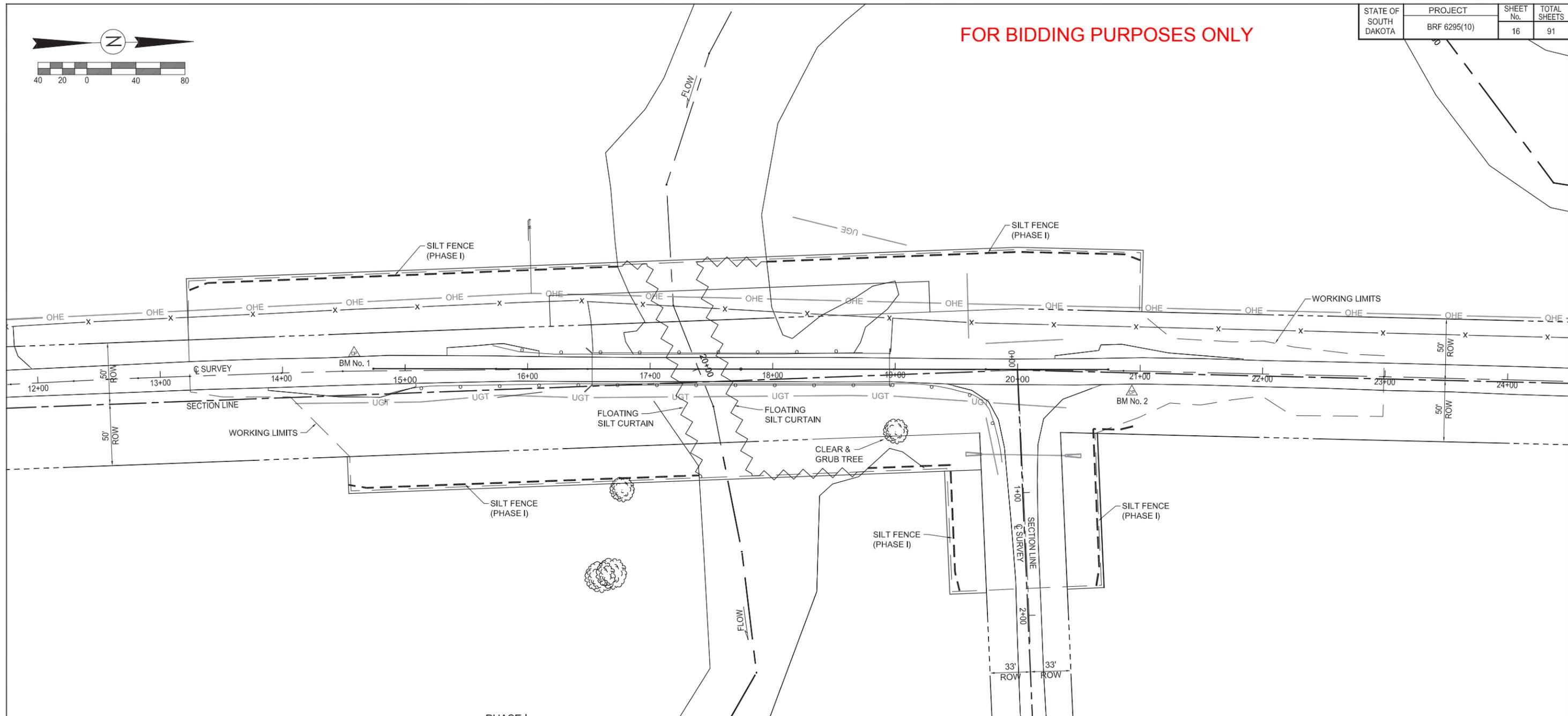
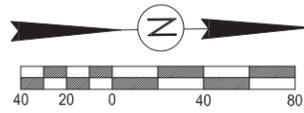
➤ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

FOR BIDDING PURPOSES ONLY



PHASE I:

1. INSTALL SILT FENCE AS SHOWN IN PHASE I PLAN. SILT FENCE SHALL BE INSTALLED AS PER STANDARD PLATE No. 734.04.
2. INSTALL FLOATING SILT CURTAIN AS SHOWN IN PHASE I PLAN AND AS DIRECTED BY THE ENGINEER. FLOATING SILT CURTAIN SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND AS DIRECTED BY THE ENGINEER.

LEGEND:

- — — SILT FENCE (PHASE 1)
- ~~~~~ FLOATING SILT CURTAIN
- — — — — PROPERTY LINE

INSTALL SILT FENCE LOCATIONS (PHASE I):

STATION	QUANTITY (FT.)
13+24 - 74' LT. TO 16+73 - 86' LT.	349
14+50 - 95' RT. TO 17+40 - 87' RT.	290
17+94 - 91' LT. TO 21+00 - 93' LT.	306
18+72 - 85' RT. TO 19+37 - 82' RT.	65
0+80 - 63' RT. TO 1+80 - 58' RT.	100
0+50 - 63' LT. TO 1+80 - 58' LT.	130
20+63 - 51' RT. TO 21+00 - 46' RT.	37
TOTAL (PHASE I):	1277 FT.

INSTALL FLOATING SILT CURTAIN LOCATIONS (PHASE I):

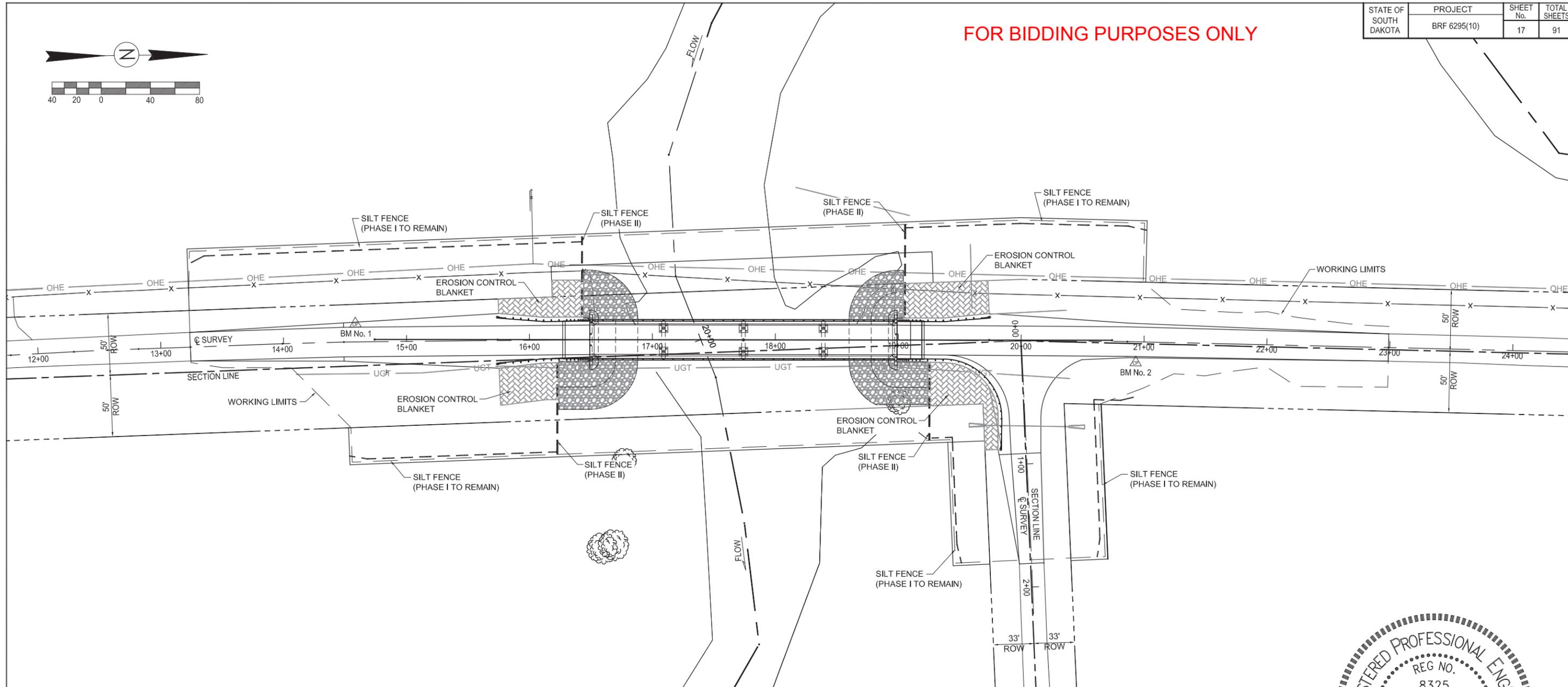
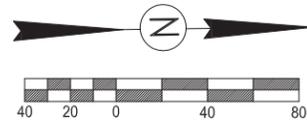
STATION	QUANTITY (FT.)
16+73 - 86' LT. TO 17+40 - 87' RT.	235
17+94 - 91' LT. TO 18+72 - 85' RT.	362
TOTAL (PHASE I):	597 FT.

NOTE:
OFFSETS ARE FROM CENTERLINE OF SURVEY.

EROSION CONTROL (PHASE I)



FOR BIDDING PURPOSES ONLY



PHASE II:

1. REMOVE SILT FENCE AT LOCATIONS SHOWN IN TABLE BELOW.
2. INSTALL SILT FENCE AS SHOWN IN PHASE II PLAN AND AS DIRECTED BY THE ENGINEER. SILT FENCE SHALL BE INSTALLED AS PER STANDARD PLATE No. 734.04.
3. SILT FENCE SHALL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED IN SEEDED AREAS.
4. INSTALL EROSION CONTROL BLANKET AS SHOWN IN PHASE II PLAN AND AS DIRECTED BY THE ENGINEER. EROSION CONTROL BLANKET SHALL BE INSTALLED AS PER STANDARD PLATE No. 734.01.

REMOVE SILT FENCE LOCATIONS (PHASE II):

STATION	QUANTITY (FT.)
16+24 - 95' RT. TO 17+40 - 87' RT.	116
16+44 - 85' LT. TO 16+73 - 86' LT.	29
17+94 - 91' LT. TO 19+04 - 95' LT.	110
18+72 - 85' RT. TO 19+24 - 83' RT.	52
TOTAL (PHASE II):	307 FT.

INSTALL SILT FENCE LOCATIONS (PHASE II):

STATION	QUANTITY (FT.)
16+24 - 25' RT. TO 95' RT.	70
16+44 - 25' LT. TO 85' LT.	60
19+04 - 25' LT. TO 95' LT.	70
19+24 - 25' RT. TO 82' RT.	57
TOTAL (PHASE II):	257 FT.

INSTALL TYPE II EROSION CONTROL BLANKET LOCATIONS (PHASE II):

STATION	QUANTITY (SQ.YD.)
15+75 - LT. TO 16+44 - LT.	156
15+75 - RT. TO 16+24 - RT.	162
19+04 - LT. TO 19+74 - LT.	218
19+24 - RT. TO 19+81 - RT.	218
TOTAL (PHASE II):	754 SQ.YD.

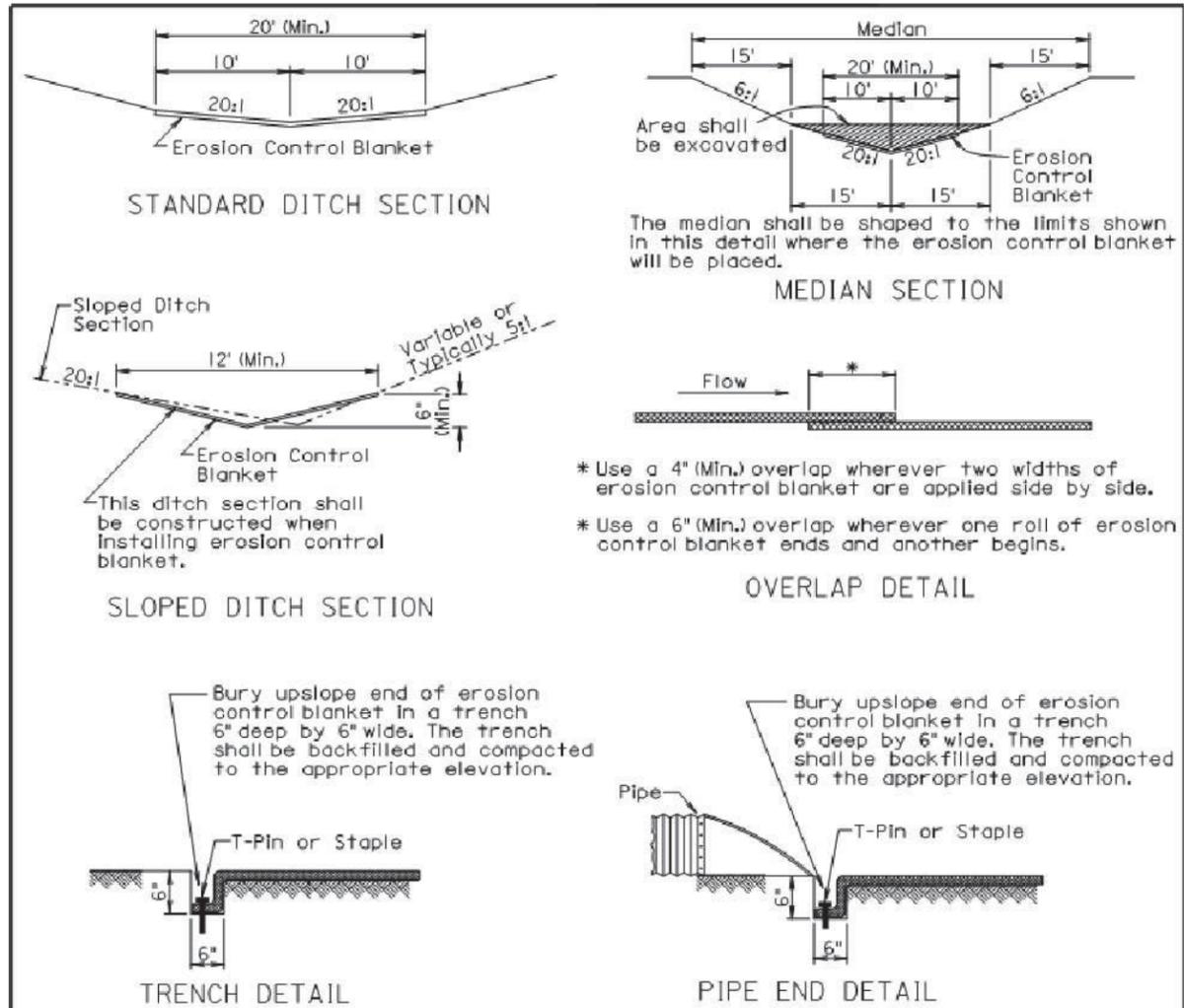


LEGEND:

- SILT FENCE (PHASE I TO REMAIN)
- SILT FENCE (PHASE II)
- - - - - PROPERTY LINE
- TYPE II EROSION CONTROL BLANKET (PHASE II)

NOTE:
OFFSETS ARE FROM CENTERLINE OF SURVEY.

EROSION CONTROL (PHASE II)

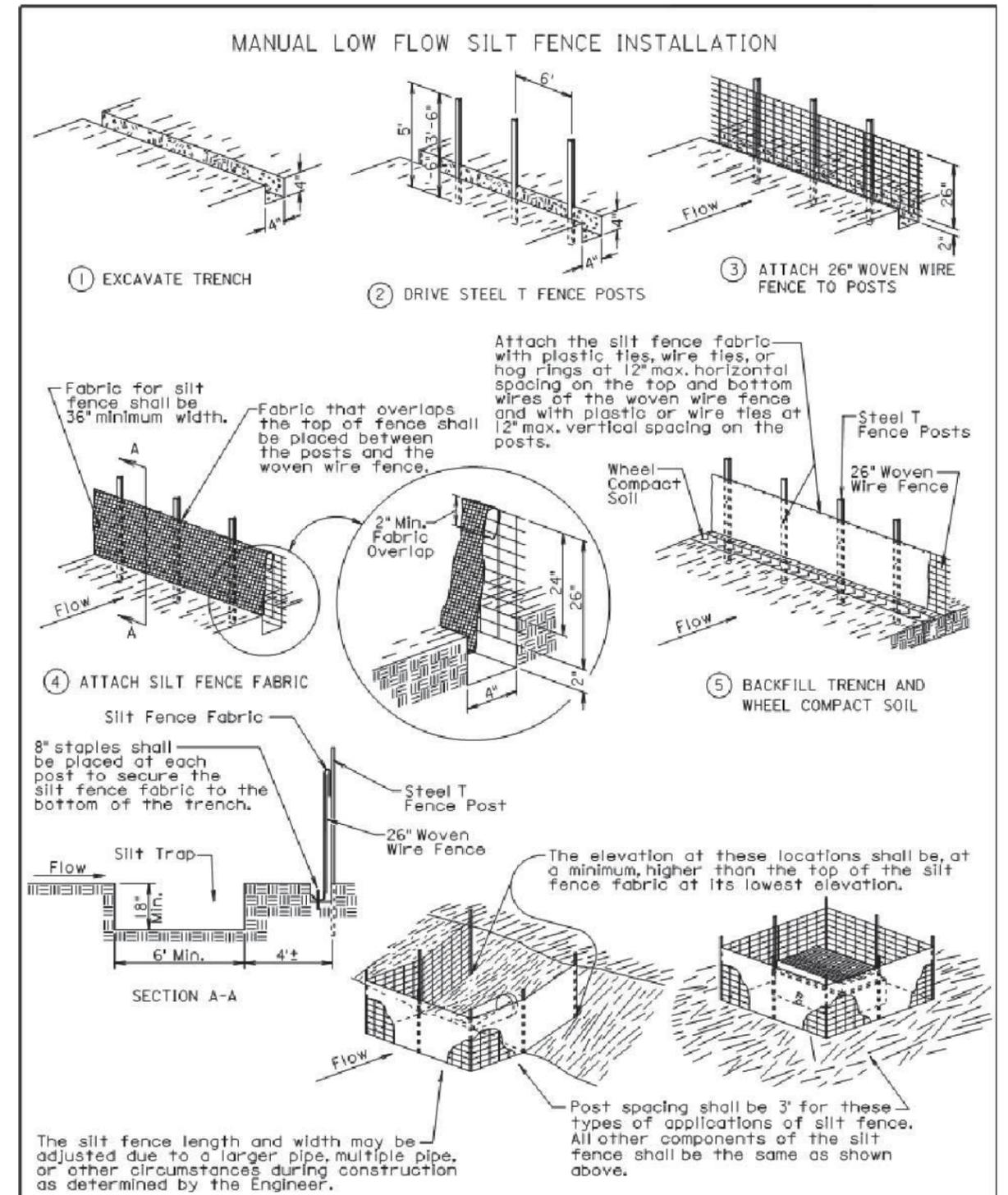


GENERAL NOTES:

- 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

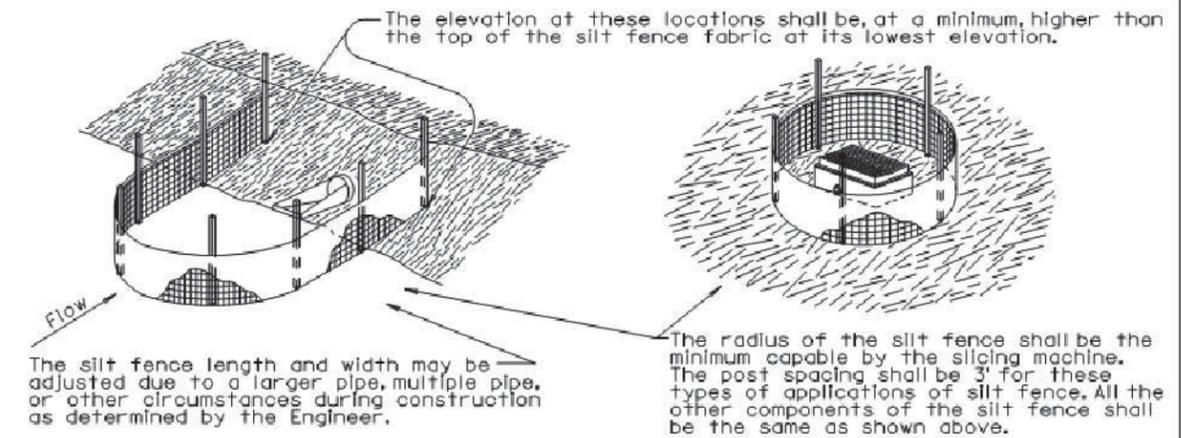
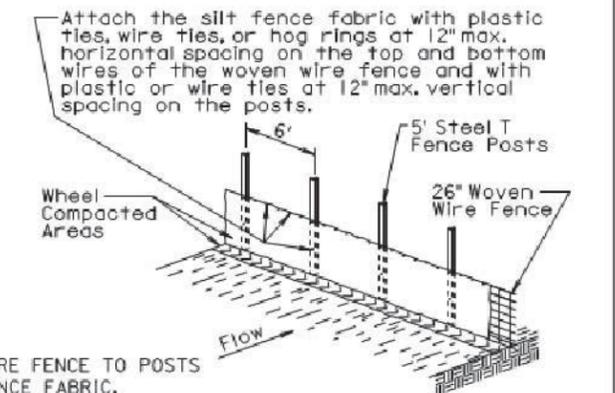
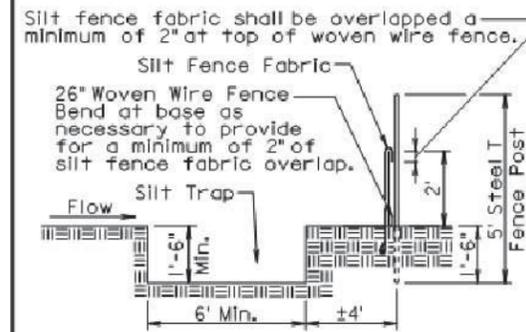
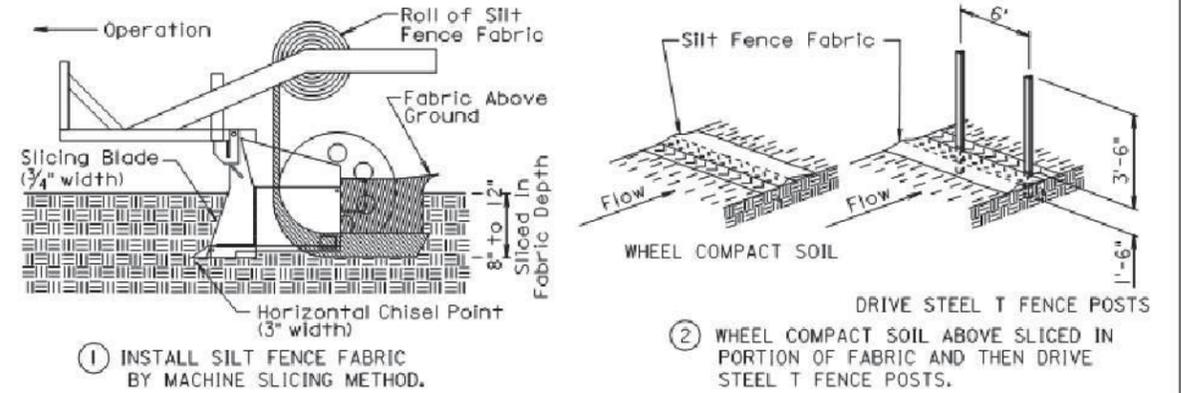
Published Date: 1st Qtr. 2016	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER
			734.01
			Sheet 1 of 1



December 23, 2003

Published Date: 1st Qtr. 2016	S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER
			734.04
			Sheet 1 of 2

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION

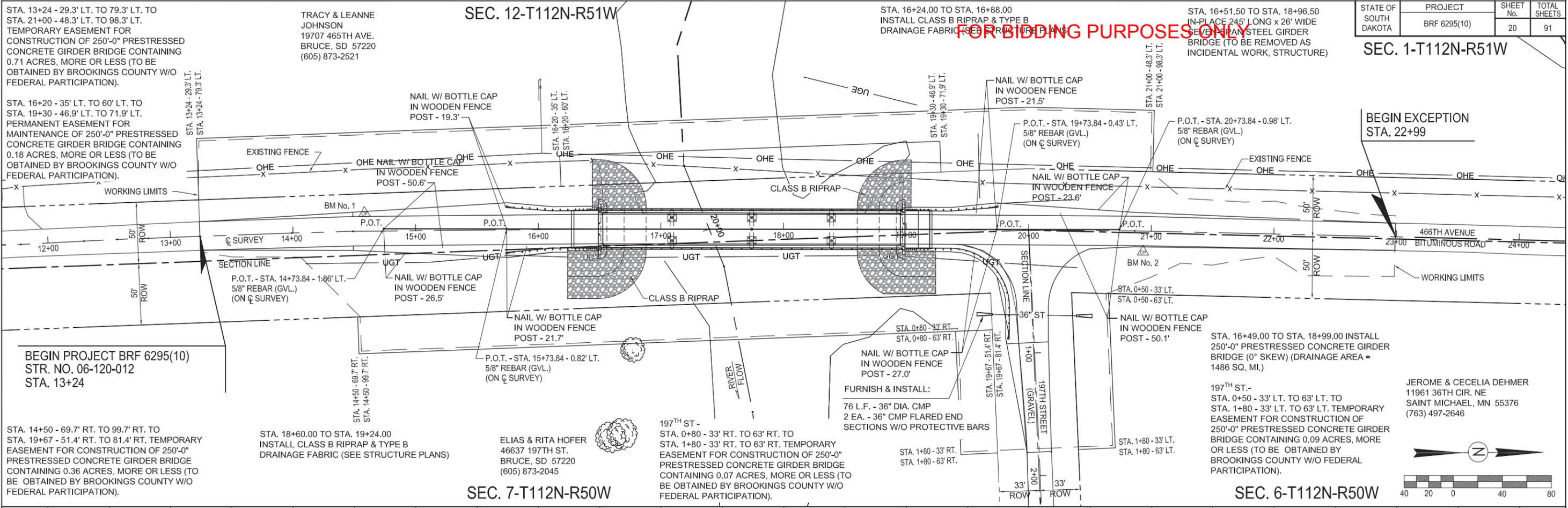


GENERAL NOTES:

A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

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

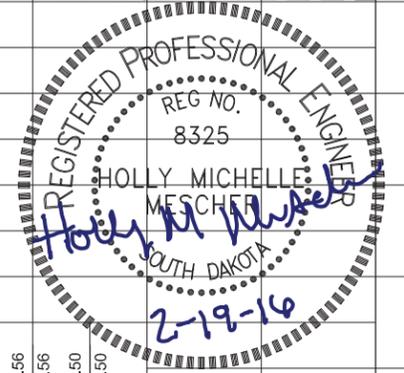
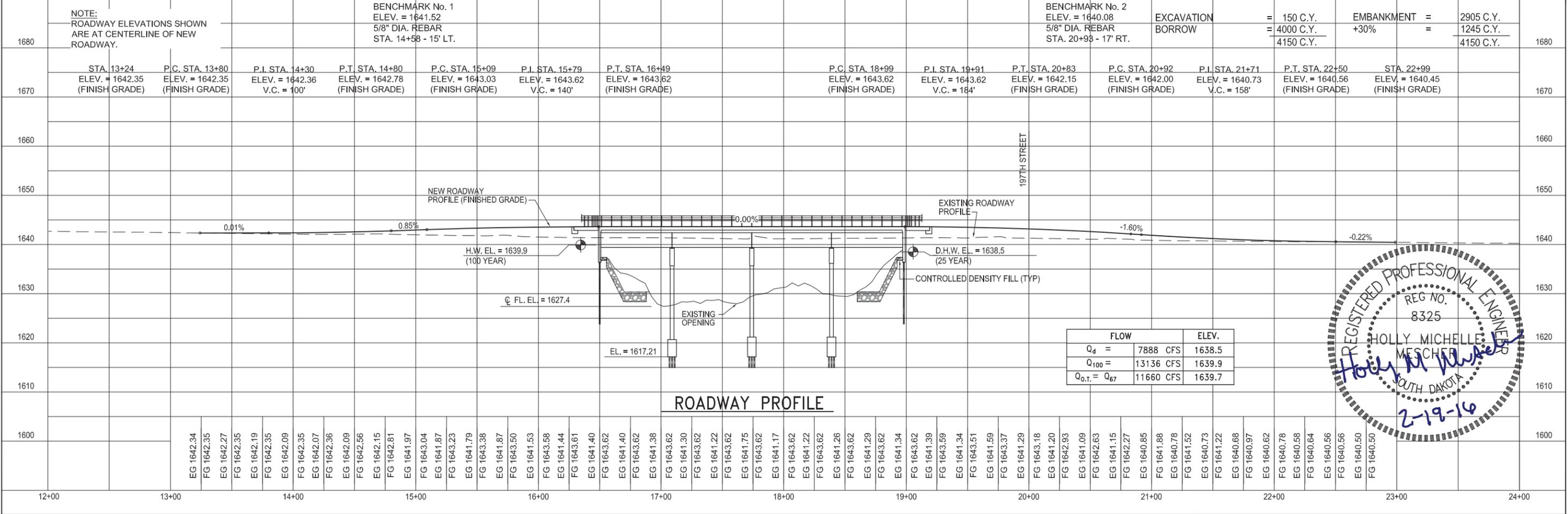
December 23, 2003



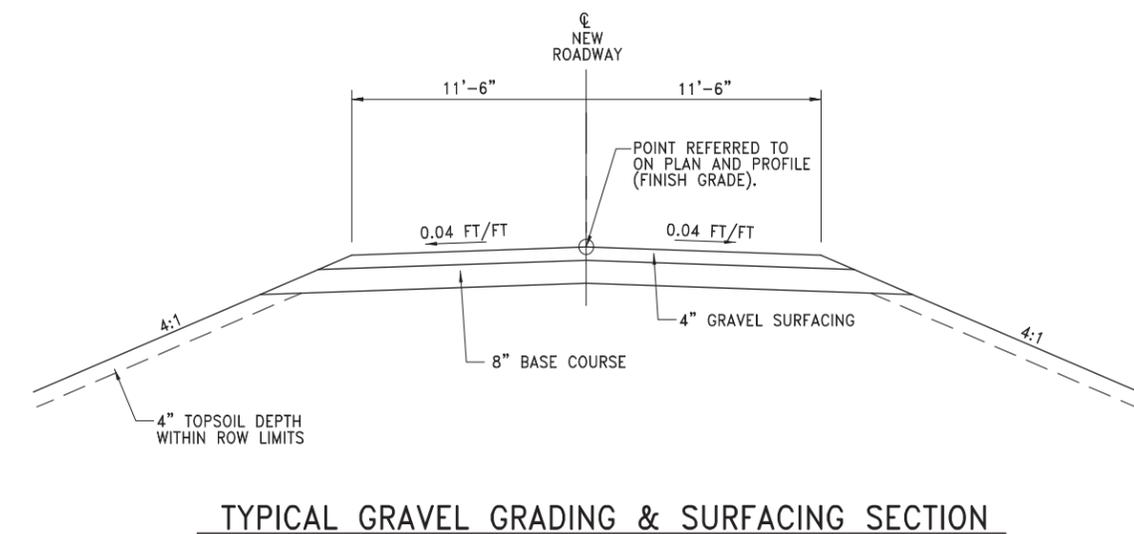
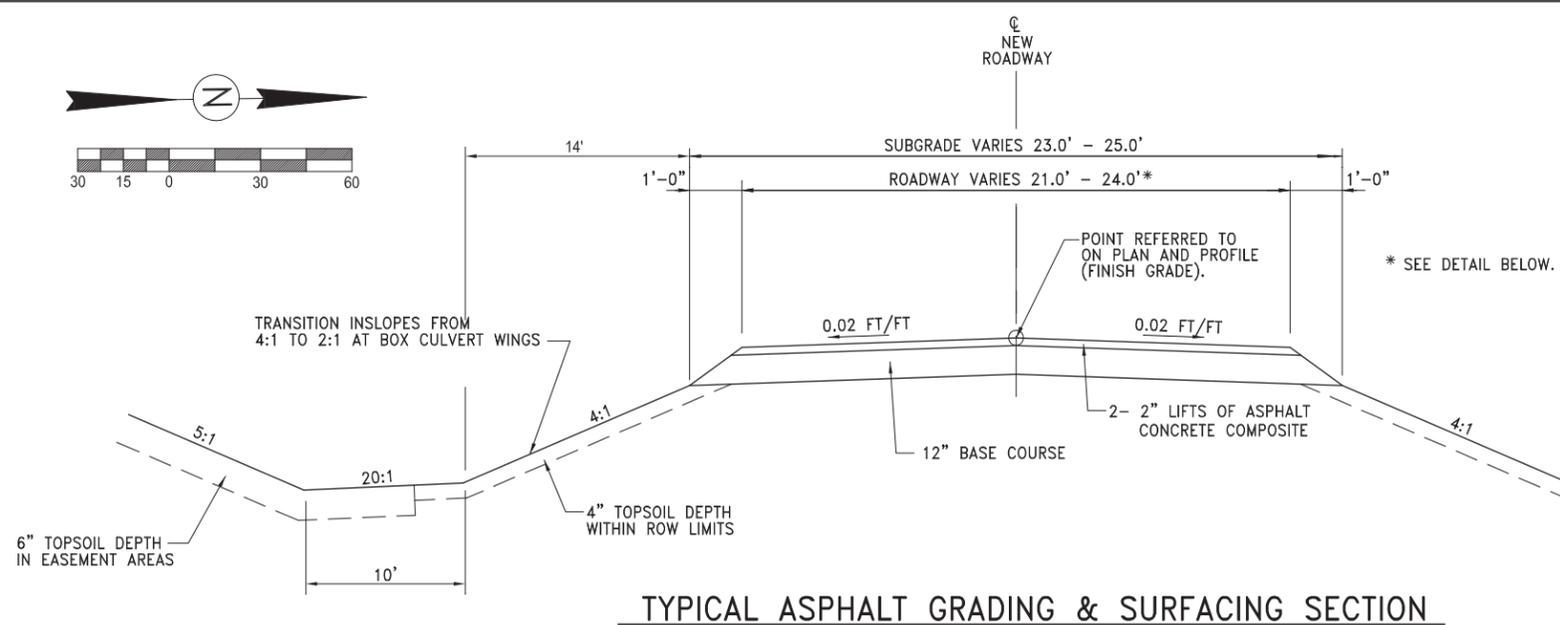
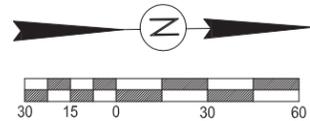
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	20	91

SEC. 1-T112N-R51W



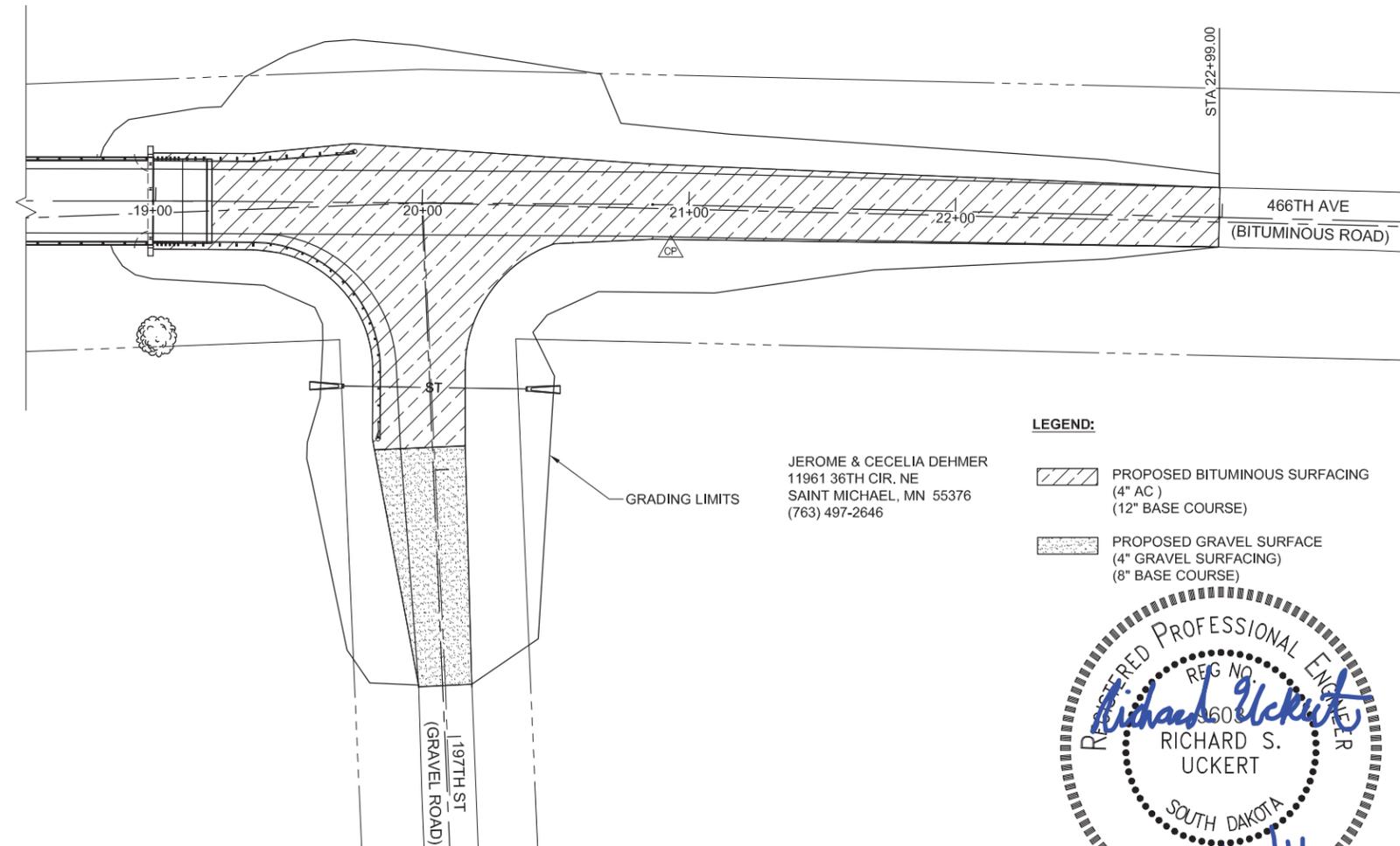
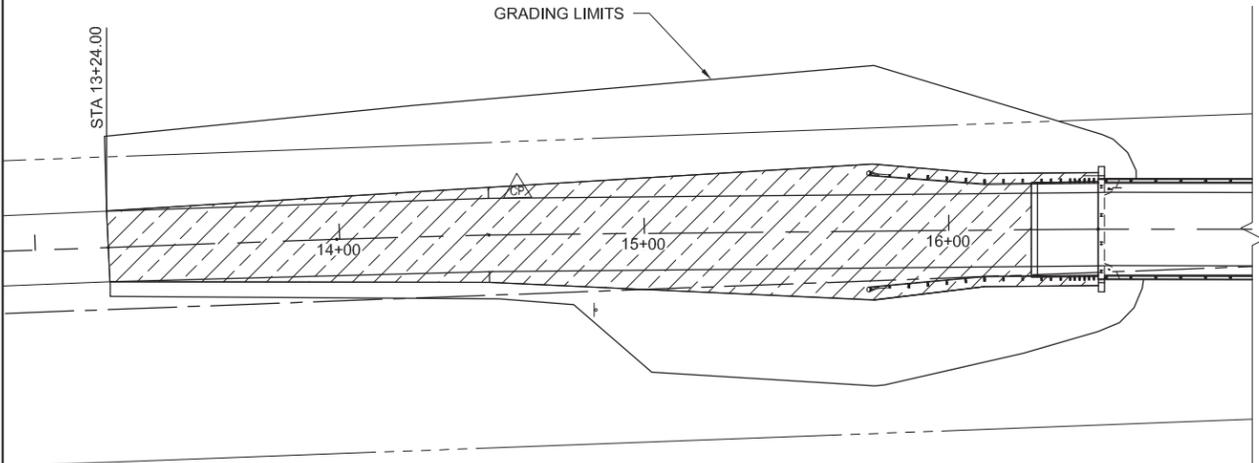
FOR BIDDING PURPOSES ONLY



TYPICAL ASPHALT GRADING & SURFACING SECTION

TYPICAL GRAVEL GRADING & SURFACING SECTION

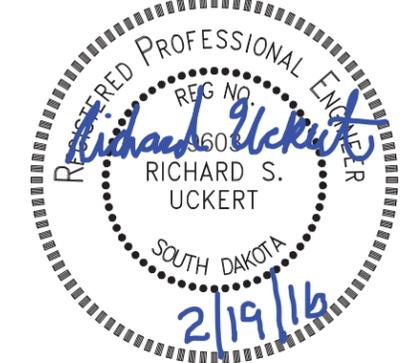
TRACY & LEANNE
JOHNSON
19707 465TH AVE.
BRUCE, SD 57220
(605) 873-2521



ELIAS & RITA HOFER
46637 197TH ST.
BRUCE, SD 57220
(605) 873-2045

JEROME & CECELIA DEHMER
11961 36TH CIR, NE
SAINT MICHAEL, MN 55376
(763) 497-2646

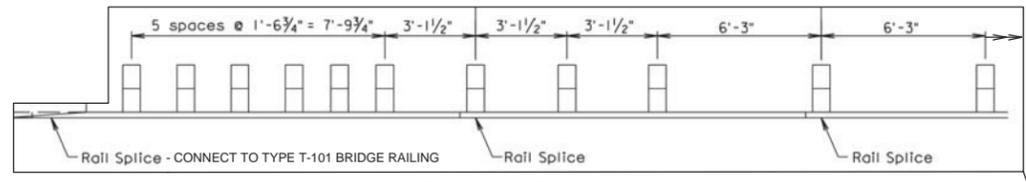
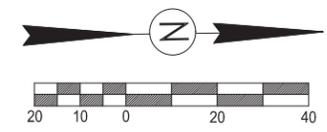
- LEGEND:**
- PROPOSED BITUMINOUS SURFACING
(4" AC)
(12" BASE COURSE)
 - PROPOSED GRAVEL SURFACE
(4" GRAVEL SURFACING)
(8" BASE COURSE)



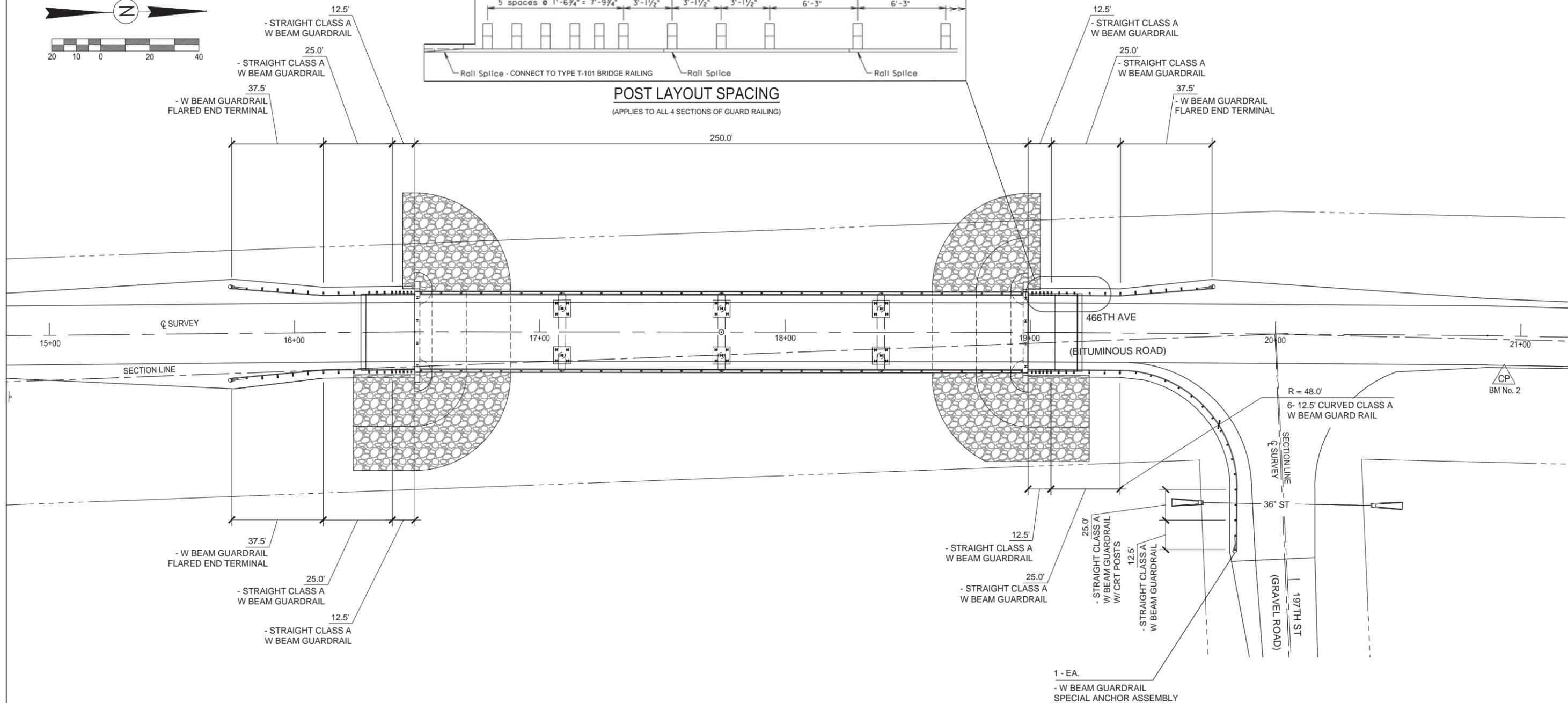
SURFACING PLAN

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 22	TOTAL SHEETS 91
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FOR BIDDING PURPOSES ONLY

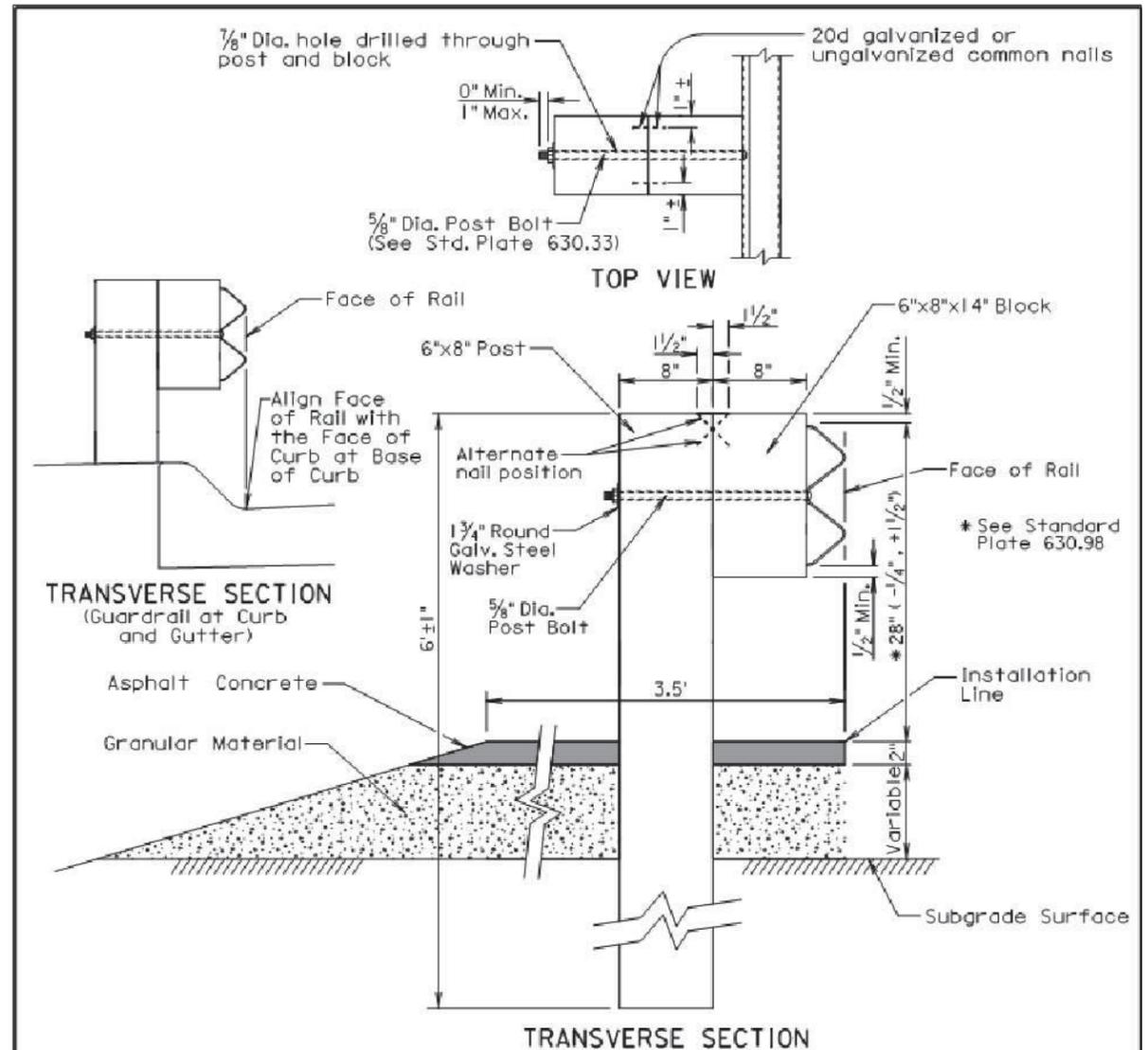
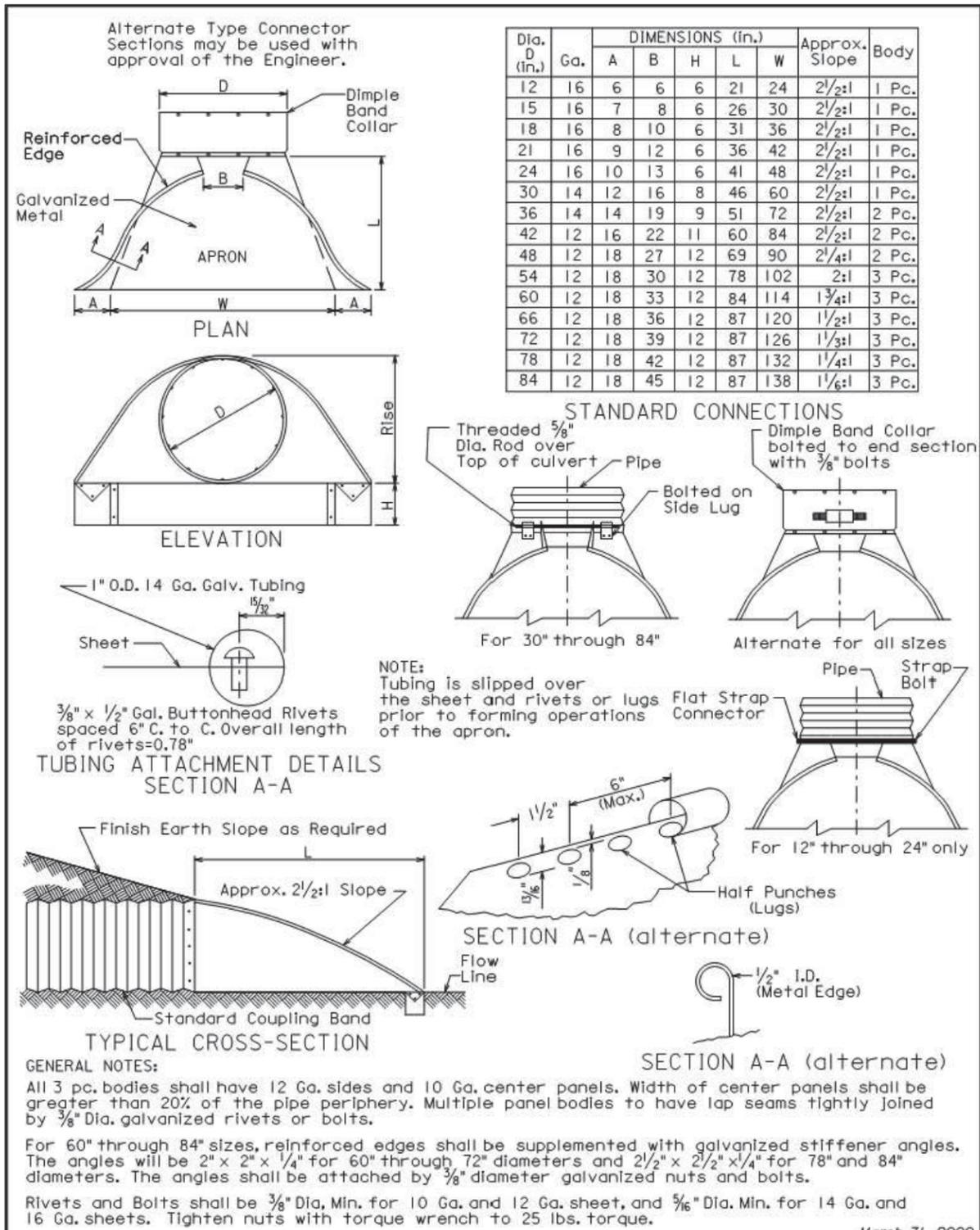


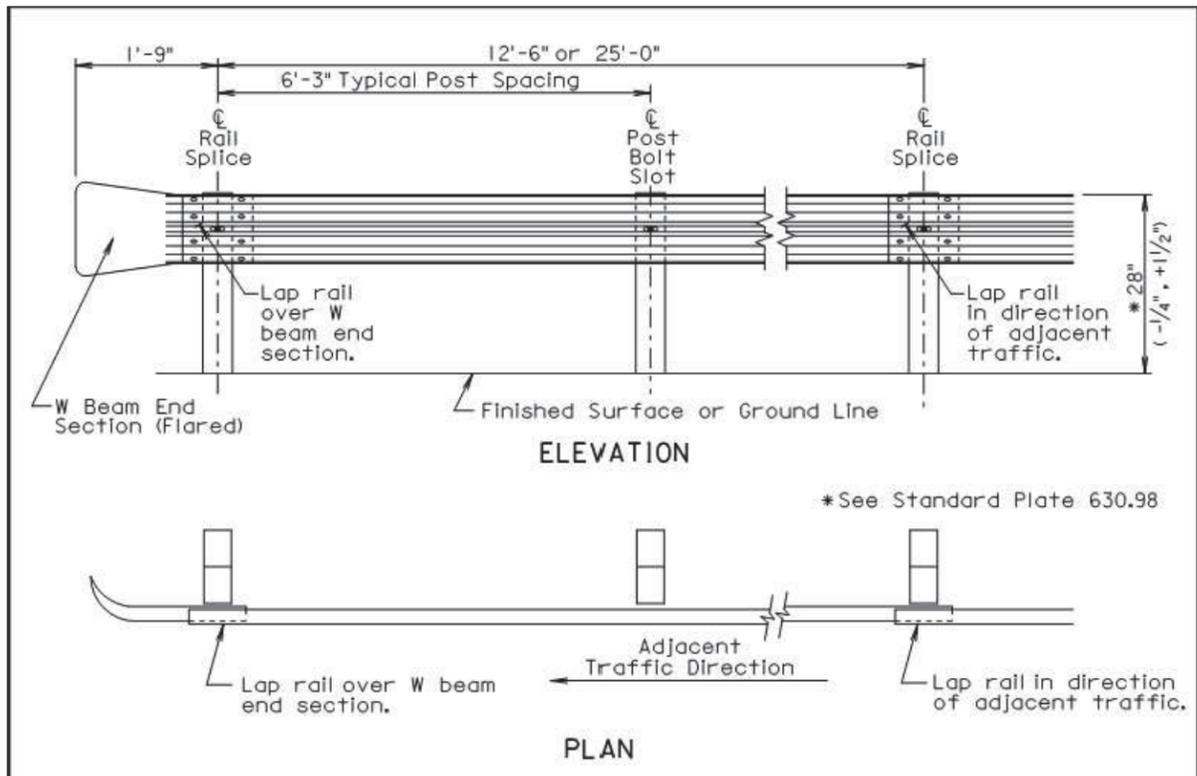
POST LAYOUT SPACING
(APPLIES TO ALL 4 SECTIONS OF GUARD RAILING)



GUARDRAIL PLAN







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

For Informational Purposes Only

GENERAL NOTES:

All W beam rail shall be Type 1.

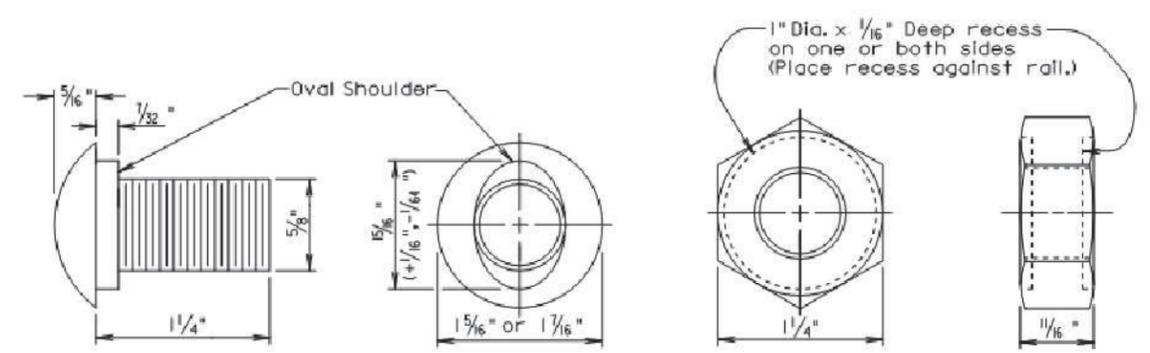
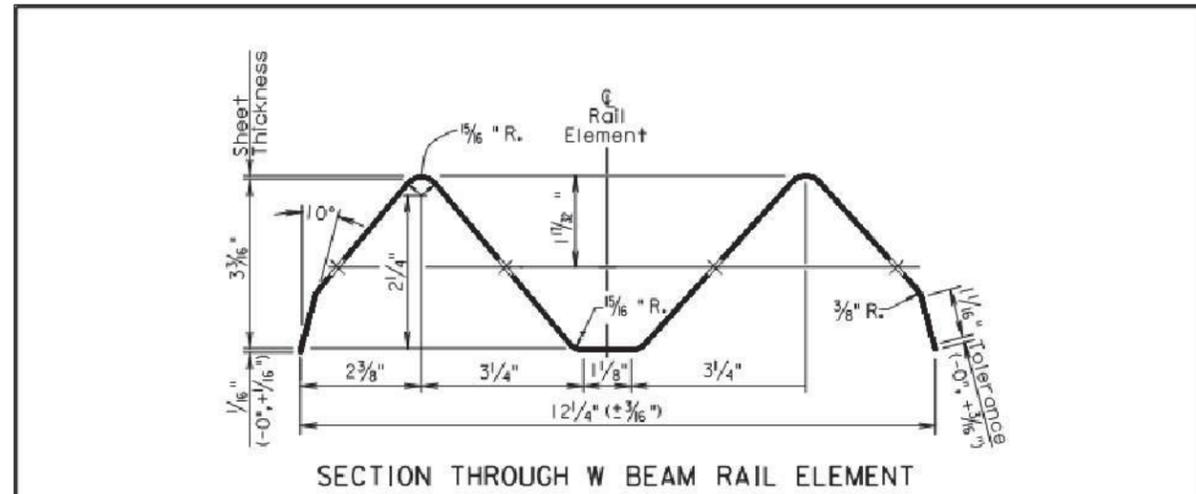
There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid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

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

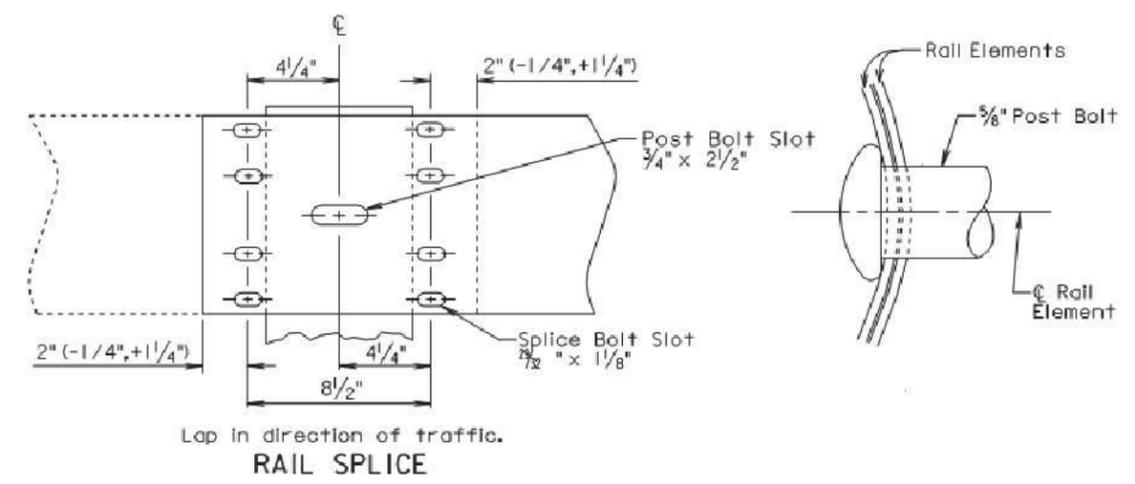
W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

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

June 26, 2015

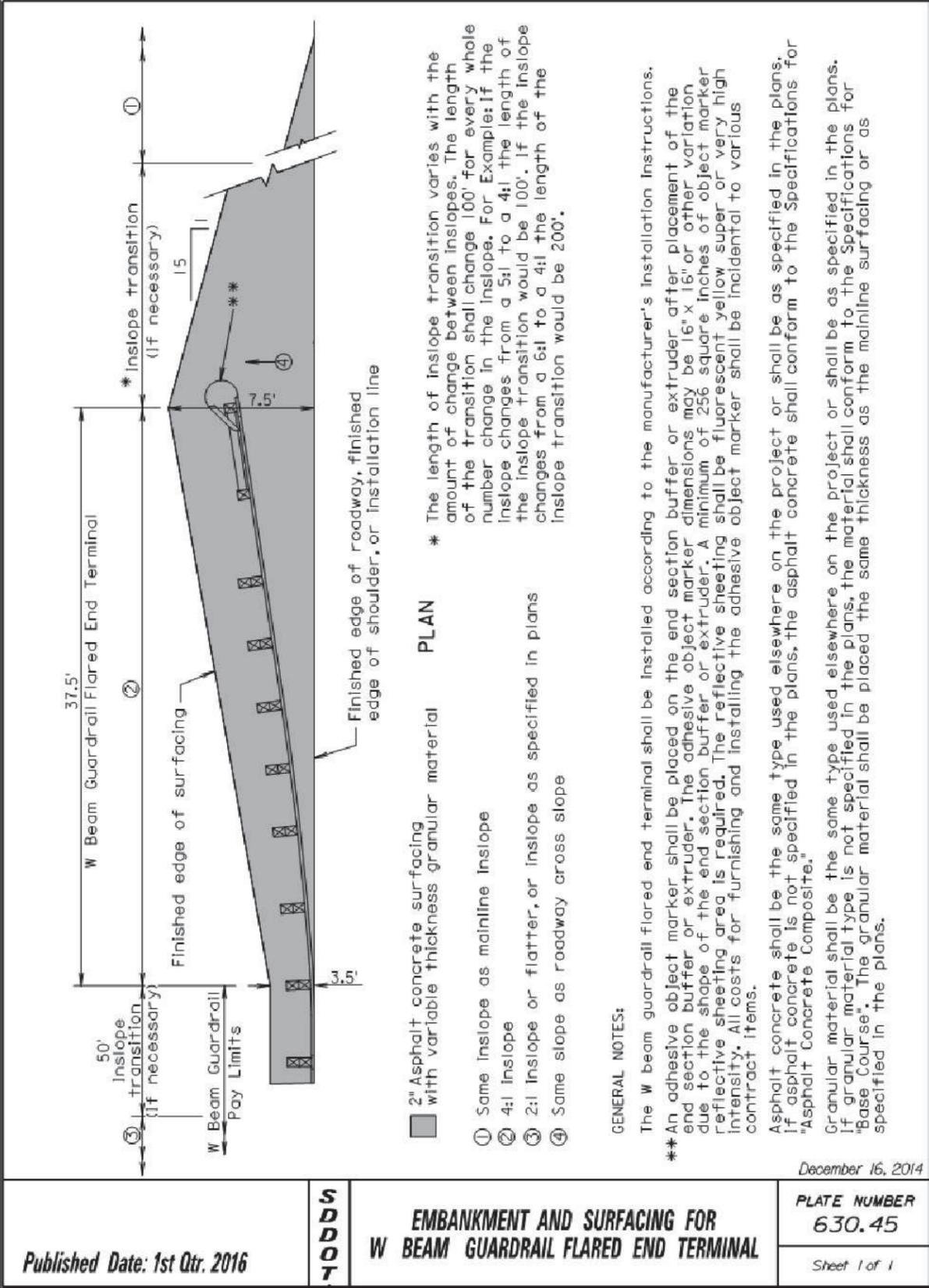


The Post Bolt is similar except the post bolt is 18" long.



December 23, 2004

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	25	91



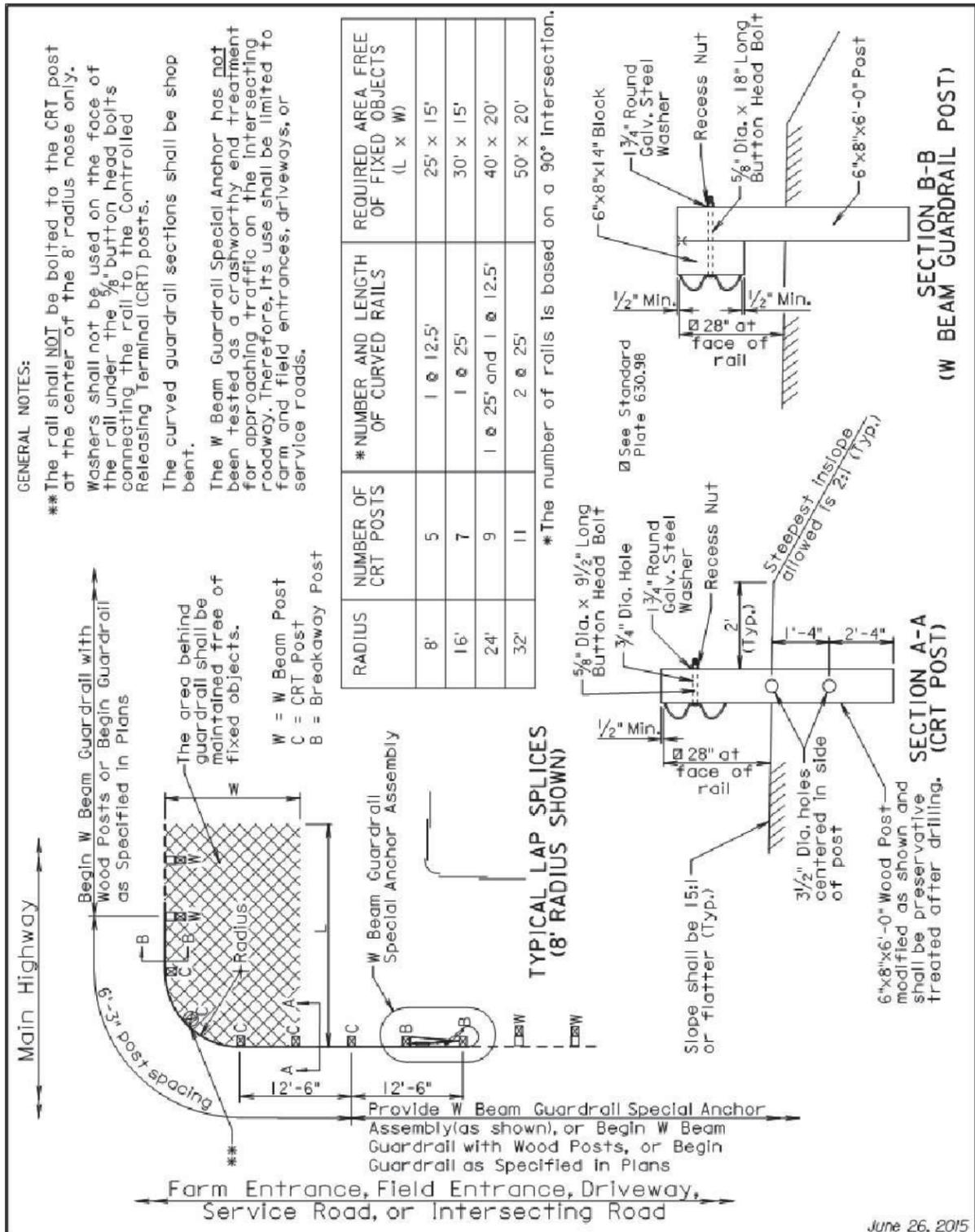
Published Date: 1st Qtr. 2016

SDOT

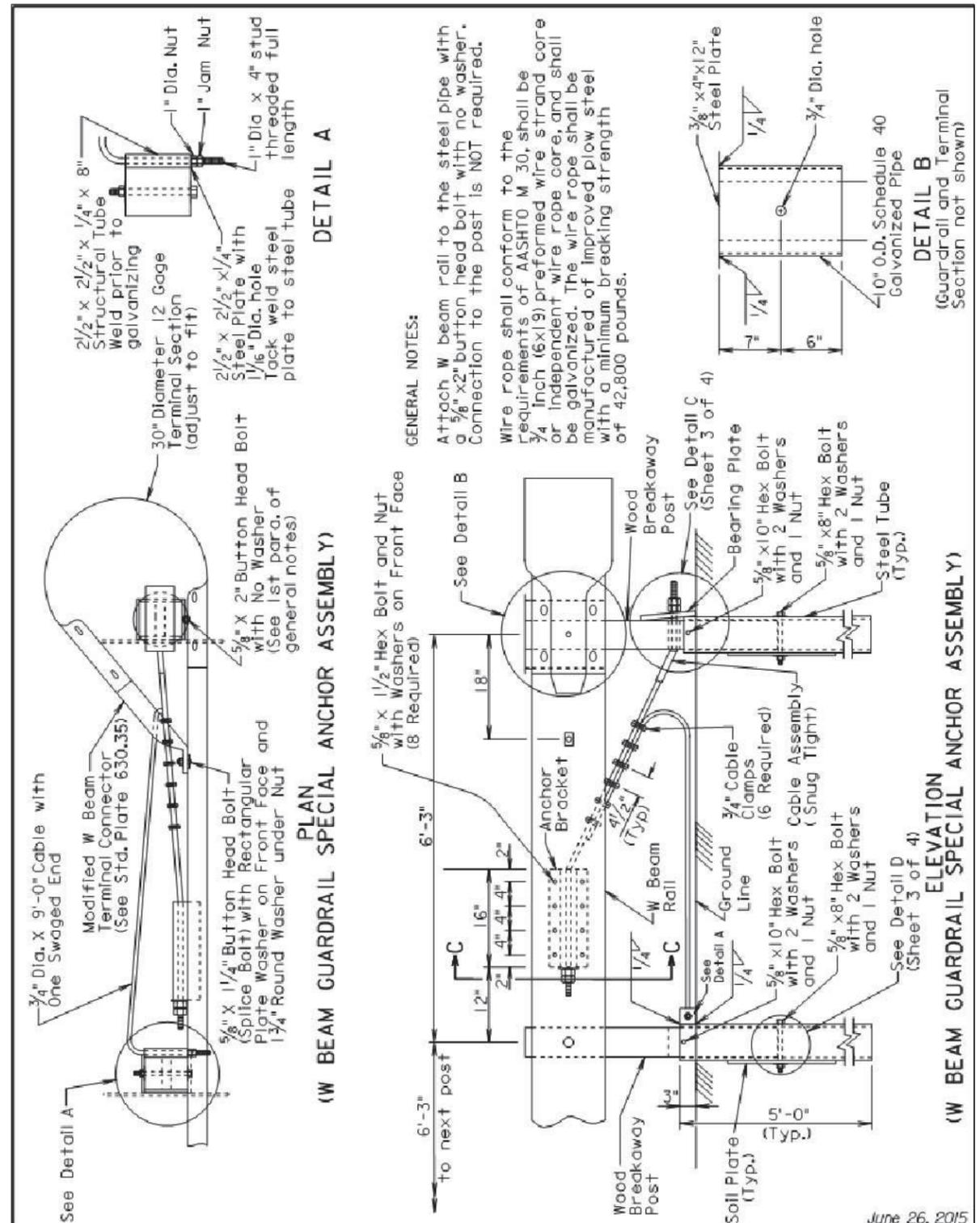
EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL

PLATE NUMBER
630.45

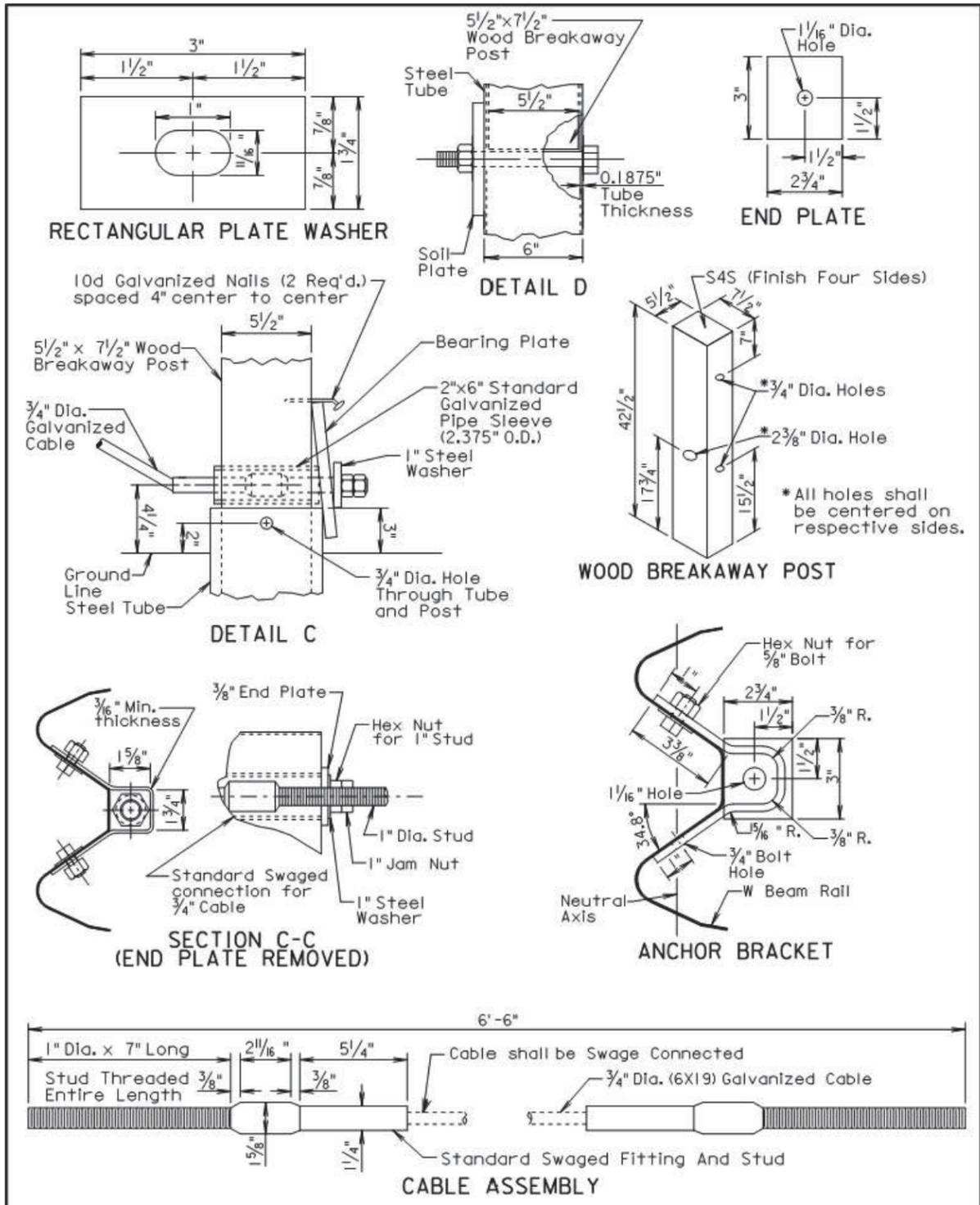
Sheet 1 of 1



S D D O T	CURVED W BEAM GUARDRAIL TERMINAL	PLATE NUMBER 630.70
	Published Date: 1st Qtr. 2016	Sheet 1 of 4

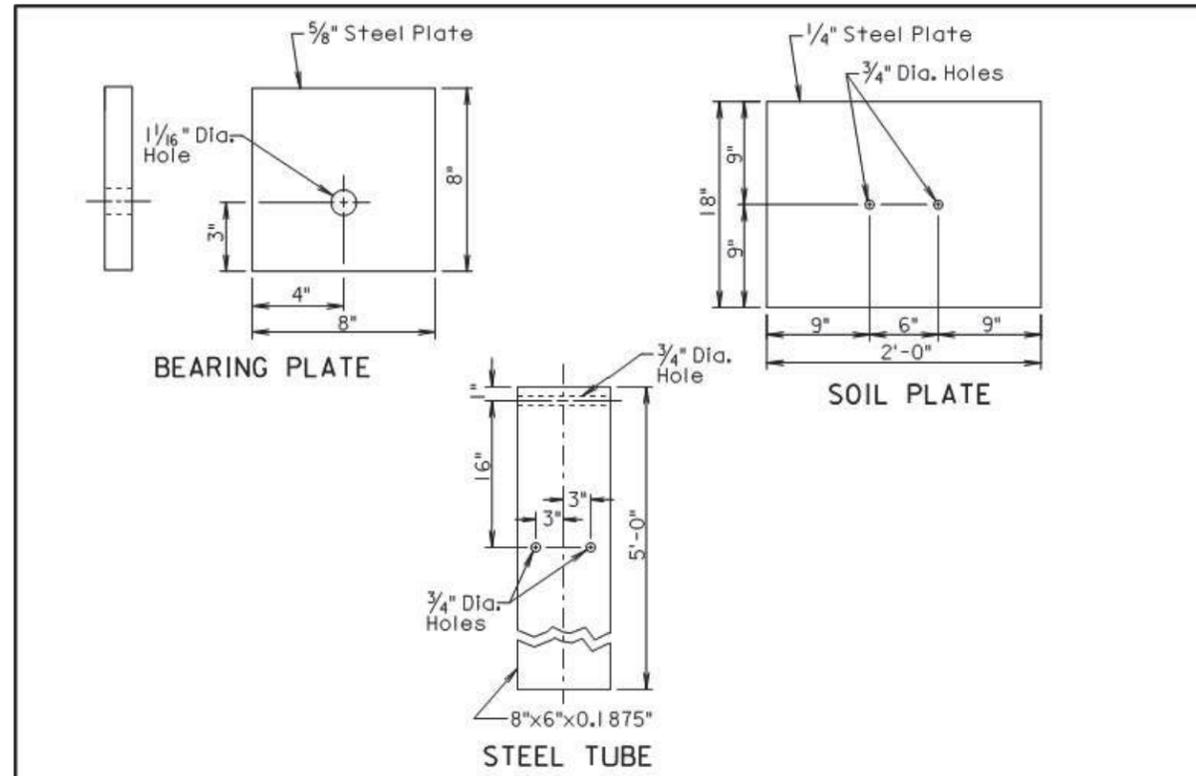


S D D O T	CURVED W BEAM GUARDRAIL TERMINAL	PLATE NUMBER 630.70
	Published Date: 1st Qtr. 2016	Sheet 2 of 4



June 26, 2015

Published Date: 1st Qtr. 2016	S D D O T	CURVED W BEAM GUARDRAIL TERMINAL	PLATE NUMBER 630.70
			Sheet 3 of 4



GENERAL NOTES:

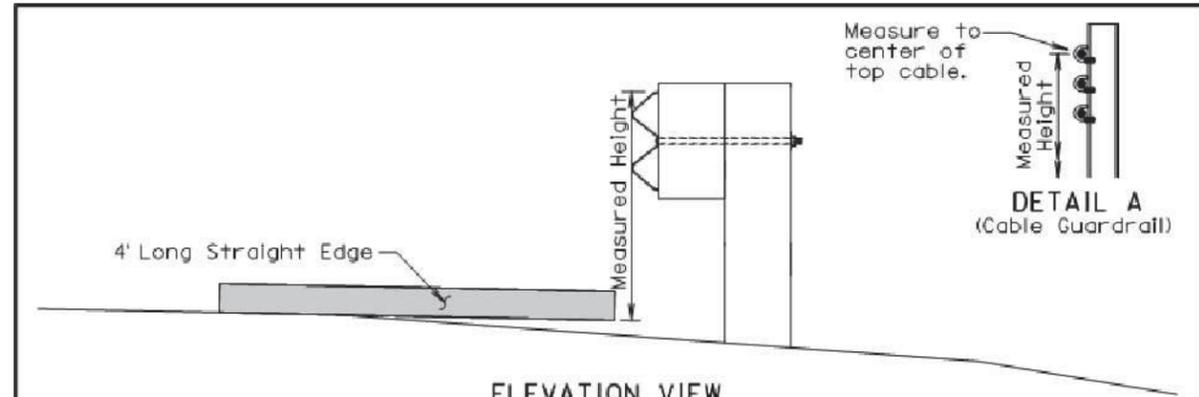
- The wood breakaway post shall be in conformance with Section 630.2 A. of the Specifications.
- The bolts shall be in conformance with ASTM A307 and the nuts shall be in conformance with ASTM A563, Grade A or better. The bolts and nuts shall be galvanized in accordance with ASTM A153.
- All angles, channels, and plates shall conform to the requirements of ASTM A36 and the structural tubing shall conform to ASTM A500. Welding shall meet the current requirements of the Structural Welding Code AWS D1.1. All structural steel shall be galvanized in accordance with ASTM A123. Punching, drilling, cutting, or welding will NOT be permitted after galvanizing.
- All costs for constructing the straight W beam guardrail portion of the curved W beam guardrail terminal 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 "Straight Class A W Beam Guardrail with CRT Posts".
- All costs for constructing the curved W beam guardrail portion of the curved W beam guardrail terminal including labor, equipment, and materials including all CRT posts, steel beam rail, and hardware shall be incidental to the contract unit price per foot for "Curved Class A W Beam Guardrail with CRT Posts".
- All costs for constructing the W beam guardrail special anchor assembly including labor, equipment, hardware, and all components of the W beam guardrail special anchor assembly except the W beam rail shall be incidental to the contract unit price per each for "W Beam Guardrail Special Anchor Assembly". The 12'-6" length of W beam rail located within the W beam guardrail special anchor assembly shall be paid for per foot with the bid item "Straight Class A W Beam Guardrail with Wood Posts".

June 26, 2015

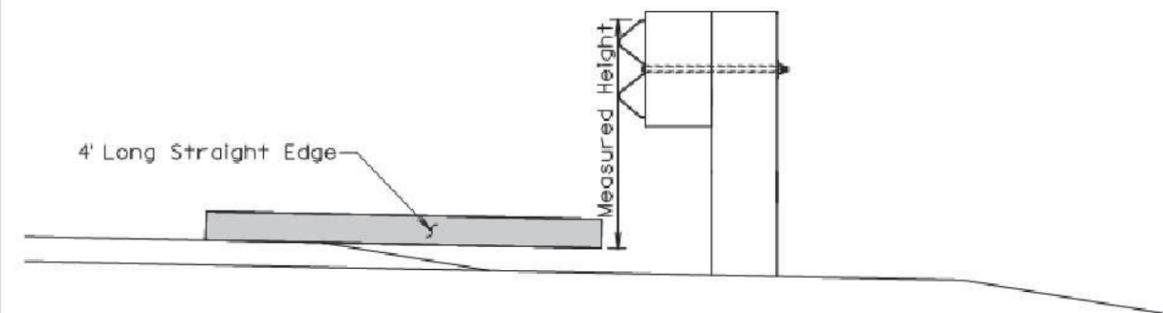
Published Date: 1st Qtr. 2016	S D D O T	CURVED W BEAM GUARDRAIL TERMINAL	PLATE NUMBER 630.70
			Sheet 4 of 4

FOR BIDDING PURPOSES ONLY

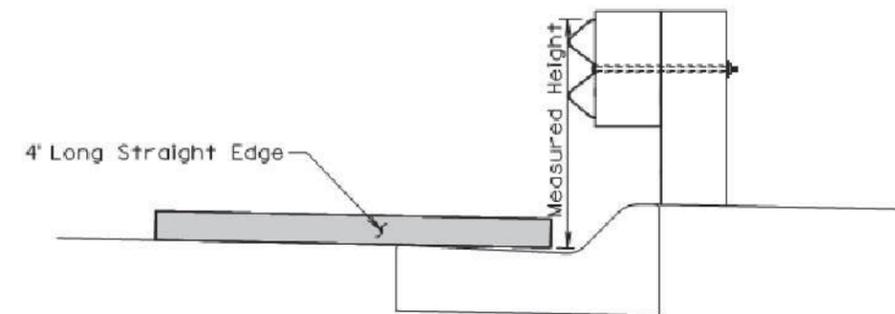
STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	28	91



ELEVATION VIEW
(Guardrail Adjacent to Differential Slopes)



ELEVATION VIEW
(Guardrail Adjacent to Differential Surfacing Elevations)



ELEVATION VIEW
(Guardrail at Curb and Gutter)

GENERAL NOTES:

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

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

June 26, 2010

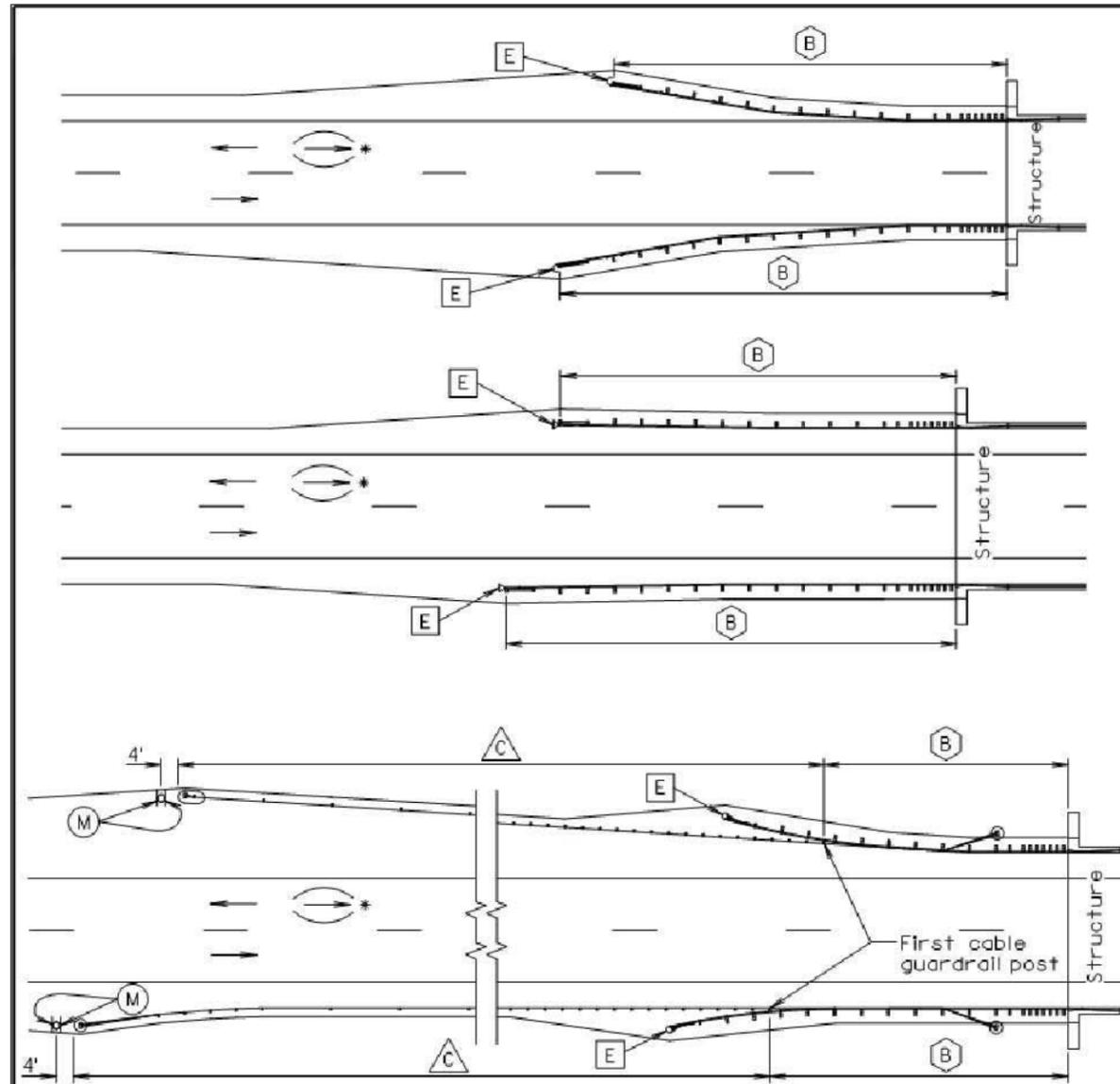
Published Date: 1st Qtr. 2016

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MEASURING GUARDRAIL HEIGHT

PLATE NUMBER
630.98

Sheet 1 of 1



TYPICAL GUARDRAIL LAYOUTS

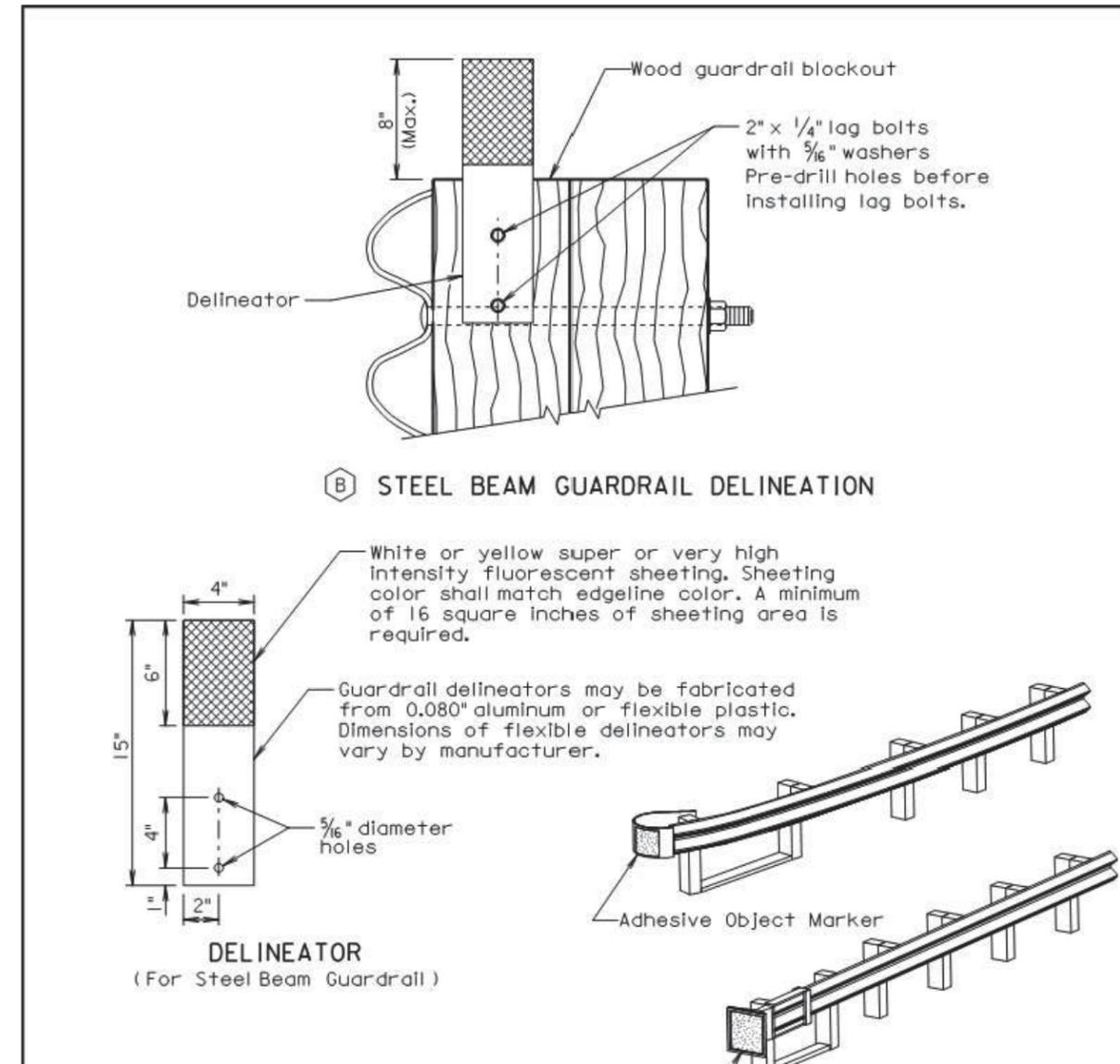
- (B) Steel Beam Guardrail Delineation
- (E) Guardrail Terminal End Object Marker
- (C) 3 Cable Guardrail Delineation
- (M) Type 2 Object Marker

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

June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 1 of 4

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(B) STEEL BEAM GUARDRAIL DELINEATION

- White or yellow super or very high intensity fluorescent sheeting. Sheeting color shall match edgeline color. A minimum of 16 square inches of sheeting area is required.
- Guardrail delineators may be fabricated from 0.080" aluminum or flexible plastic. Dimensions of flexible delineators may vary by manufacturer.
- 5/16" diameter holes

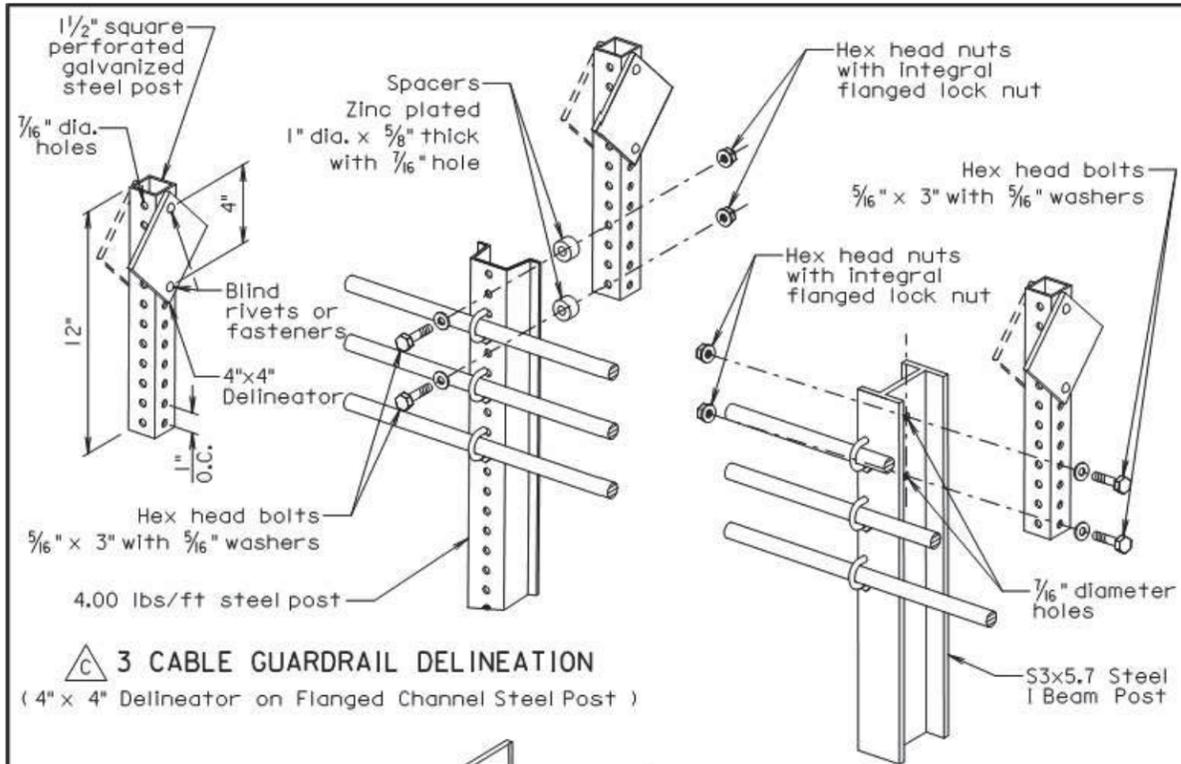
- (E) GUARDRAIL TERMINAL END OBJECT MARKER
- ADHESIVE OBJECT MARKER

Adhesive object marker dimensions may vary due to shape of terminal end. A minimum of 256 square inches of object marker sheeting area is required. The sheeting shall be fluorescent yellow super or very high intensity.

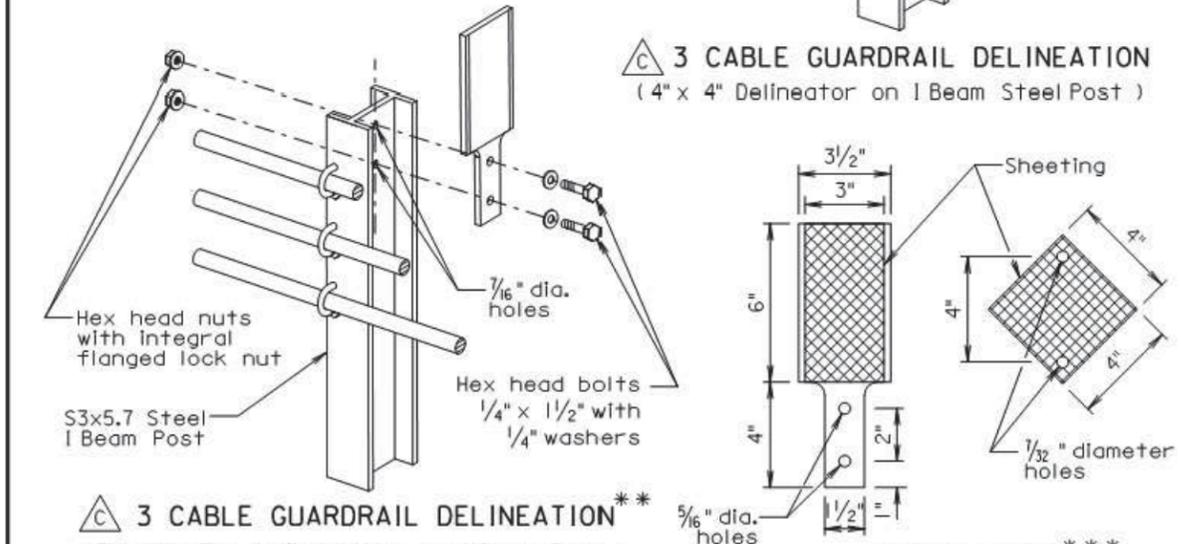
June 26, 2011

S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 2 of 4

Published Date: 1st Qtr. 2016



△ 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on Flanged Channel Steel Post)



△ 3 CABLE GUARDRAIL DELINEATION
(4" x 4" Delineator on I Beam Steel Post)

△ 3 CABLE GUARDRAIL DELINEATION**
(Flexible 3" x 6" Delineator on I Beam Post)

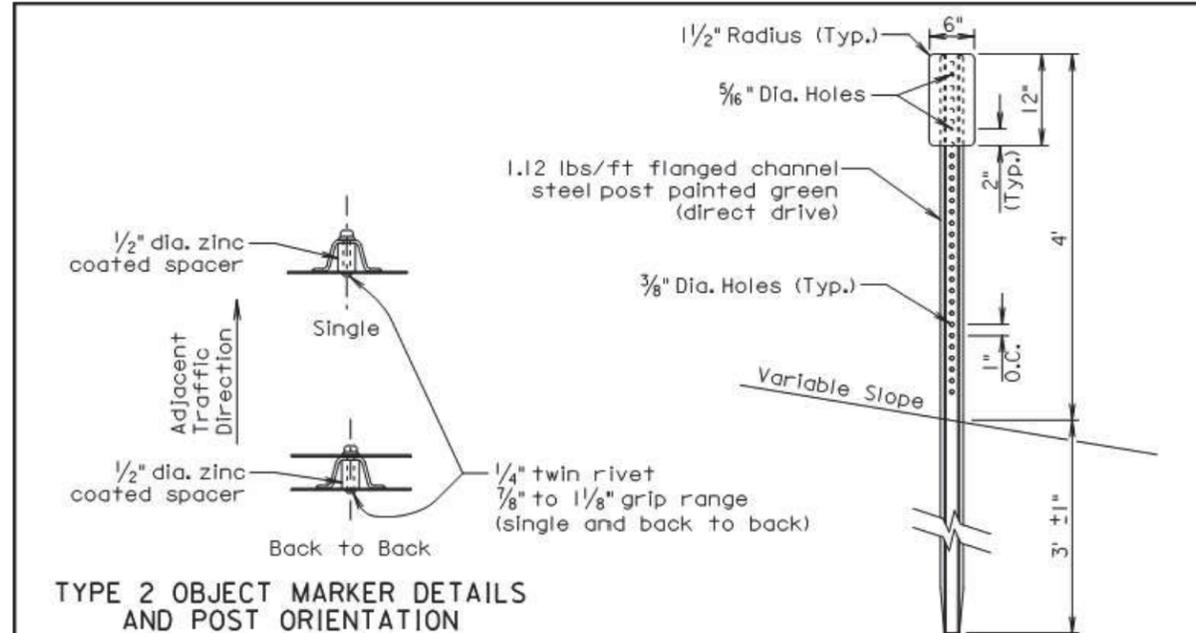
DELINEATORS***
(For 3 Cable Guardrail)

** Flexible delineators may be attached to post with manufacturer approved adhesive instead of bolts.
*** Dimensions of flexible delineators may vary by manufacturer. A minimum of 16 square inches of sheeting area is required. The sheeting shall be white or yellow super or very high intensity fluorescent sheeting. The sheeting color shall match the edgeline color.

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S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 3 of 4

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TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION

Ⓜ TYPE 2 OBJECT MARKER
(For Marking 3 Cable Guardrail Anchor)

GENERAL NOTES:

The delineators shall be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting shall be of either very high intensity or super high intensity material. For bridges along two-way roadways the sheeting shall be on both sides of the delineator and shall be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

The first delineator shall be attached to the post nearest the bridge with additional delineators spaced in advance of the bridge at approximately 50 foot intervals. At bridges with short lengths of guardrail, less than 200 feet, a minimum of 4 delineators shall be placed in addition to the yellow object marker. The spacing between the delineators shall be approximately one third of the length of the guardrail. This will provide for a shorter spacing. At bridges with longer lengths of guardrail, greater than 200 feet, including bridges that have cable guardrail transitioning into the steel beam guardrail, the delineators will be placed at a spacing of approximately 50 feet. Delineation shall extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation shall be included in the contract unit price per each for "Guardrail Delineator".

An adhesive object marker shall be placed on the end of the W beam guardrail end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required. 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.

A type 2 object marker shall be placed adjacent to the 3 cable guardrail anchor at the location noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") shall have a fluorescent yellow very high or super high intensity reflective sheeting. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware shall be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

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S D D O T	DELINEATION OF GUARDRAIL AT BRIDGES	PLATE NUMBER 632.40
		Sheet 4 of 4

Published Date: 1st Qtr. 2016

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	32	91

ESTIMATE OF QUANTITIES:

STRUCTURE:	ITEM	QUANTITY	UNIT
INCIDENTAL WORK, STRUCTURE		Lump Sum	LS
STRUCTURAL STEEL, MISCELLANEOUS		Lump Sum	LS
MEMBRANE SEALANT EXPANSION JOINT		63.5	Ft
STRUCTURE EXCAVATION, BRIDGE		417	CuYd
BRIDGE END EMBANKMENT		845	CuYd
GRANULAR BRIDGE END BACKFILL		69	CuYd
CLASS A45 CONCRETE, BRIDGE DECK		253.1	CuYd
CLASS A45 CONCRETE, BRIDGE		173.6	CuYd
CONCRETE APPROACH SLAB FOR BRIDGE		144.6	SqYd
CONCRETE APPROACH SLEEPER SLAB FOR BRIDGE		31.8	SqYd
CONTROLLED DENSITY FILL		8.3	CuYd
TYPE T101 BRIDGE RAILING		500.0	Ft
REINFORCING STEEL		30,719	Lb
EPOXY COATED REINFORCING STEEL		71,966	Lb
No. 7 REBAR SPLICE		84	Each
PREBORING PILE		100	Ft
HP12x53 STEEL TEST PILE, FURNISH AND DRIVE		170	Ft
HP12x53 STEEL BEARING PILE, FURNISH AND DRIVE		640	Ft
HP14x73 STEEL TEST PILE, FURNISH AND DRIVE		240	Ft
HP14x73 STEEL BEARING PILE, FURNISH AND DRIVE		2,025	Ft
36" MINNESOTA SHAPE PRESTRESSED CONCRETE BEAM		984	Ft
4" UNDERDRAIN PIPE		233	Ft
CONCRETE HEADWALL FOR UNDERDRAIN		4	Each
POROUS BACKFILL		33	Ton
CLASS B RIPRAP		819.3	Ton
TYPE B DRAINAGE FABRIC		1017	SqYd

SPECIFICATIONS FOR BRIDGE

- DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, WITH 2015 INTERIM REVISIONS.
- CONSTRUCTION SPECIFICATIONS: SOUTH DAKOTA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2015 EDITION AND REQUIRED PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS AS INCLUDED IN THE PROPOSAL.

BRIDGE DESIGN LOADING

- AASHTO HL-93.
- DEAD LOAD INCLUDES 22 P.S.F. FOR FUTURE WEARING SURFACE ON THE ROADWAY.

DESIGN MATERIAL STRENGTHS

CONCRETE	$f_c = 4,500$ P.S.I
REINFORCING STEEL	$f_y = 60,000$ P.S.I
PILING (ASTM A572 GRADE 50)	$f_y = 50,000$ P.S.I

*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 ON SHEET No. 21 OF 22. THE YEAR PLATE SHALL BE CENTERED VERTICALLY ON THE VERTICAL FACE OF THE DECK APPROXIMATELY SIX (6) INCHES FROM THE END OF THE BRIDGE.
- 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. 16+51.50± TO CENTERLINE STA 18+96.50± IS A 245' ± 7 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 26' ±.
- 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 SPECIFICATIONS. ALL PORTIONS OF THE EXISTING BRIDGE NOT SALVAGED FOR FUTURE HIGHWAY RELATED USE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR ON A SITE OBTAINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER IN ACCORDANCE WITH THE ENVIRONMENTAL COMMITMENT 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 BROOKINGS 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 RIVER. UNDER NO CIRCUMSTANCES IS ASPHALT ALLOWED TO FALL INTO THE RIVER.
- 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 MAY CONTAIN 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 SECTION 460.3K. 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 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.
- ESTIMATED PILE LENGTHS ARE SHOWN IN THE TABLE OF ESTIMATED QUANTITIES ON SHEET No. 6 OF 22.
- THE HP12x53 PILING WERE DESIGNED USING A FACTORED BEARING RESISTANCE OF 98 TONS PER PILE. PILING SHALL DEVELOP A FIELD VERIFIED NOMINAL BEARING RESISTANCE OF 245 TONS PER PILE.
- THE CONTRACTOR SHALL HAVE SUFFICIENT PILE SPLICE MATERIAL ON HAND BEFORE PILE DRIVING IS STARTED. SEE STANDARD PLATE No. 510.40 ON SHEET No. 22 OF 22.
- PILES SHALL NOT BE DRIVEN OUT OF POSITION BY MORE THAN TWO INCHES IN THE DIRECTION NORMAL TO THE ABUTMENT CENTERLINE. A PILE-DRIVING TEMPLATE SHALL BE USED TO INSURE THIS ACCURACY. ONE TEST PILE SHALL BE DRIVEN AT EACH ABUTMENT AND WILL BECOME PART OF THE PILE GROUP.
- 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.
- EACH FINISHED ABUTMENT SHALL INCLUDE A BRIDGE SURVEY MARKER. SEE STANDARD PLATE No. 460.05 ON SHEET No. 21 OF 22.
- SEE PILE DRIVING NOTES ELSEWHERE ON THIS SHEET.

ABUTMENT BACKWALL COATING

- MATERIAL FOR WATERPROOFING THE ABUTMENT 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://apps.sd.gov/applications/HC60ApprovedProducts/ProductList.aspx>

- THE COST OF FURNISHING AND APPLYING THE COATING SHALL BE INCIDENTAL TO THE CONTRACT UNIT PRICE PER CUBIC YARD FOR CLASS A45 CONCRETE, BRIDGE.

BENTS

- ESTIMATED PILE LENGTHS ARE SHOWN IN THE TABLE OF ESTIMATED QUANTITIES ON SHEET 7 OF 22.
- THE HP14x73 PILING WERE DESIGNED USING A FACTORED BEARING RESISTANCE OF 134 TONS PER PILE. PILING SHALL DEVELOP A FIELD VERIFIED NOMINAL BEARING RESISTANCE OF 335 TONS PER PILE.
- ONE TEST PILE SHALL BE DRIVEN AT EACH BENT AND WILL BECOME PART OF THE PILE GROUP.
- THE CONTRACTOR SHALL HAVE SUFFICIENT PILE SPLICE MATERIAL ON HAND BEFORE PILE DRIVING IS STARTED. SEE PLATE No. 510.40 ON SHEET No. 22 of 22.
- 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.
- SEE PILE DRIVING NOTES ELSEWHERE ON THIS SHEET.
- IT IS ANTICIPATED THAT COFFERDAMS WILL BE NECESSARY. COFFERDAMS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTION 423 OF THE SPECIFICATIONS.
- THE DESIGN OF THE COFFERDAM MUST BE DONE BY PROFESSIONAL ENGINEERS REGISTERED IN SOUTH DAKOTA. SEALED CALCULATIONS OF BOTH THE ORIGINAL DESIGN AND DESIGN CHECK, PERFORMED BY DIFFERENT ENGINEERS, SHALL BE SUBMITTED WITH THE COFFERDAM PLANS. THE COFFERDAM PLANS, DESIGN, AND CHECK DESIGN SHALL BE SUBMITTED TO THE OFFICE OF BRIDGE DESIGN A MINIMUM OF 15 DAYS PRIOR TO COFFERDAM CONSTRUCTION.

FOR BIDDING PURPOSES ONLY

PILE DRIVING

- A DRIVEABILITY ANALYSIS WAS PERFORMED USING THE WAVE EQUATION ANALYSIS PROGRAM (GRLWEAP). THE PILE HAMMERS LISTED BELOW WERE EVALUATED AND FOUND TO PRODUCE ACCEPTABLE DRIVING STRESSES. PILE HAMMERS NOT LISTED WILL REQUIRE EVALUATION AND APPROVAL PRIOR TO USE FROM THE GEOTECHNICAL ENGINEERING ACTIVITY.

DELMAG	D25-32
DELMAG	D30-32
SPI	D-30
MVE	M-30

PRESTRESSED GIRDERS

- MINIMUM CONCRETE COMPRESSIVE STRENGTH $f_c = 6,000$ PSI AT 28 DAYS FOR ALL GIRDERS, $f_{ci} = 5,000$ PSI FOR ALL GIRDERS.
- ALL MILD REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
- 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 STRNGTH 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).
- ALL PRESTRESSED GIRDERS 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 GIRDERS SHALL BE POURED IN ALL STEEL FORMS.
- 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.
- 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.
- 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 SHOP DRAWINGS. NO LAMINATED BEARING PADS WILL BE ALLOWED.
- ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4" OR ROUNDED TO 3/4" RADIUS.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT TRANSPORTATION STRESSES, HANDLING AND ERECTION DO NOT CAUSE DAMAGE TO THE GIRDERS.
- 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 36" MINNESOTA SHAPE PRESTRESSED CONCRETE BEAM.

ESTIMATE OF STRUCTURE QUANTITIES & NOTES

FOR

250'-0" PRESTRESSED GIRDER BRIDGE

0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

**BROOKINGS COUNTY
SOUTH DAKOTA**

PREPARED BY : HL-93
BANNER ASSOCIATES, INC. STR. No. 06-120-012
CONSULTING ENGINEERS PCN 01W9
BROOKINGS, SOUTH DAKOTA

DECEMBER 2015

2 OF 22



DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 33	TOTAL SHEETS 91
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SUPERSTRUCTURE

- GIRDER LIFTING HOOKS SHALL BE CUT OFF BEFORE PLACEMENT OF CONCRETE DECK SLAB.
- 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.
- THE DECK-FINISHING MACHINE SHALL BE ADJUSTED AND OPERATED IN SUCH A MANNER THAT THE ROLLER SCREED OR SCREEDS ARE PARALLEL WITH THE CENTERLINE OF THE BRIDGE AND THE FINISH MACHINE IS PARALLEL TO THE SKEW OF THE BRIDGE. CONCRETE PLACEMENT IN FRONT OF THE FINISH MACHINE SHALL BE KEPT PARALLEL TO THE MACHINE.
- THE BRIDGE DECK MUST BE PLACED AND FINISHED CONTINUOUSLY AT A MINIMUM RATE OF 90 FT. OF 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 MINIMUM RATE OF 90 FT. OF DECK PER HOUR CAN BE ACHIEVED AND THE CONCRETE IN THE PREVIOUS POUR HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 2000 P.S.I.

CLASS A45 CONCRETE, BRIDGE DECK

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 460.3A OF THE SPECIFICATIONS. IN ADDITION, THE CONCRETE USED IN THE BRIDGE DECK SHALL HAVE CLASS F MODIFIED FLY ASH SUBSTITUTED FOR A PORTION OF THE CEMENT IN ACCORDANCE WITH SECTION 605 OF THE SOUTH DAKOTA STANDARD SPECIFICATIONS. THE AMOUNT OF CEMENT TO BE REPLACED SHALL BE 20 PERCENT BY WEIGHT. THE RATIO OF SUBSTITUTION OF FLY ASH TO CEMENT SHALL BE 1:1 BY WEIGHT.

BOLT TESTING

THE CERTIFIED MILL TEST REPORTS FOR ALL BOLTS USED ON THIS PROJECT SHALL INCLUDE THE TEST RESULTS FOR ALL OF THE TESTING SPECIFIED IN SECTION 972.2 D OF THE 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.

SHOP PLANS

THE FABRICATOR SHALL SUBMIT SHOP PLANS IN ACCORDANCE WITH THE SPECIFICATIONS. SEND SHOP PLAN SUBMITTALS TO BANNER ASSOCIATES, INC., 409 22ND AVE. S., P.O. BOX 298, BROOKINGS, SD 57006-0298 (hollym@bannerassociates.com). AFTER REVIEW, CORRECTIONS (IF NECESSARY), AND APPROVAL BY BANNER ASSOCIATES, INC., THE OFFICE OF BRIDGE DESIGN WILL REVIEW THE SUBMITTALS, AUTHORIZE FABRICATION, ARRANGE FOR FABRICATION INSPECTION, AND DISTRIBUTE THE SHOP DRAWINGS.

FALSEWORK

THE CONTRACTOR SHALL BE REQUIRED TO INCLUDE WITH HIS FALSEWORK PLANS, DETAILS FOR THE CONSTRUCTION OF AN ADEQUATE "WALK-WAY" INCLUDING RAILING.

FALL PROTECTION

- 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.
- 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.

APPROACH SLABS

- SLEEPER SLAB RISER SHALL BE CAST WITH THE APPROACH SLAB OR CAST AFTER THE APPROACH SLAB IS PLACED. CARE SHALL BE TAKEN TO ENSURE THE CORRECT GRADE IS MAINTAINED ACROSS THE JOINT.
- THE USE OF AN APPROVED FINISHING MACHINE WILL BE REQUIRED DURING PLACEMENT OF CLASS A45 CONCRETE FOR THE APPROACH SLABS. CONCRETE PLACEMENT IN FRONT OF THE MACHINE SHALL BE KEPT PARALLEL TO THE SCREED.
- THE CONCRETE IN THE APPROACH SLAB SHALL BE TINED NORMAL TO CENTERLINE ROADWAY.
- CONCRETE APPROACH SLEEPER SLAB FOR BRIDGE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD. THIS PAYMENT SHALL BE FULL COMPENSATION FOR ALL EXCAVATION, FURNISHING, HAULING, AND PLACING ALL MATERIALS INCLUDING CONCRETE, AND REINFORCING STEEL; FOR DISPOSAL OF ALL EXCAVATED MATERIAL AND SURPLUS MATERIALS; AND FOR LABOR, TOOLS, EQUIPMENT AND ANY INCIDENTALS NECESSARY TO COMPLETE THIS ITEM OF WORK.
- CONCRETE APPROACH SLAB FOR BRIDGE WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER SQUARE YARD. THIS PAYMENT SHALL BE FULL COMPENSATION FOR ALL EXCAVATION, FURNISHING, HAULING AND PLACING ALL MATERIALS INCLUDING CONCRETE, ASPHALT PAINT OR 4 MIL POLYETHYLENE SHEETING, ELASTIC JOINT SEALER AND REINFORCING STEEL; FOR DISPOSAL OF ALL EXCAVATED MATERIAL AND SURPLUS MATERIALS AND FOR LABOR, TOOLS, EQUIPMENT AND ANY INCIDENTALS NECESSARY TO COMPLETE THIS ITEM OF WORK.



ESTIMATE OF STRUCTURE QUANTITIES & NOTES

FOR

250'-0" PRESTRESSED GIRDER BRIDGE

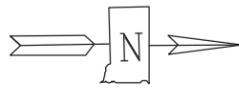
0° SKEW

30'-0" ROADWAY OVER BIG SIOUX RIVER STA. 16+49.00 TO 18+99.00
 SEC. 7/12-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY : BANNER ASSOCIATES, INC. CONSULTING ENGINEERS BROOKINGS, SOUTH DAKOTA DECEMBER 2015
 HL-93 STR. No. 06-120-012 PCN 01W9
 3 OF 22

DESIGNED BY : H.M.M.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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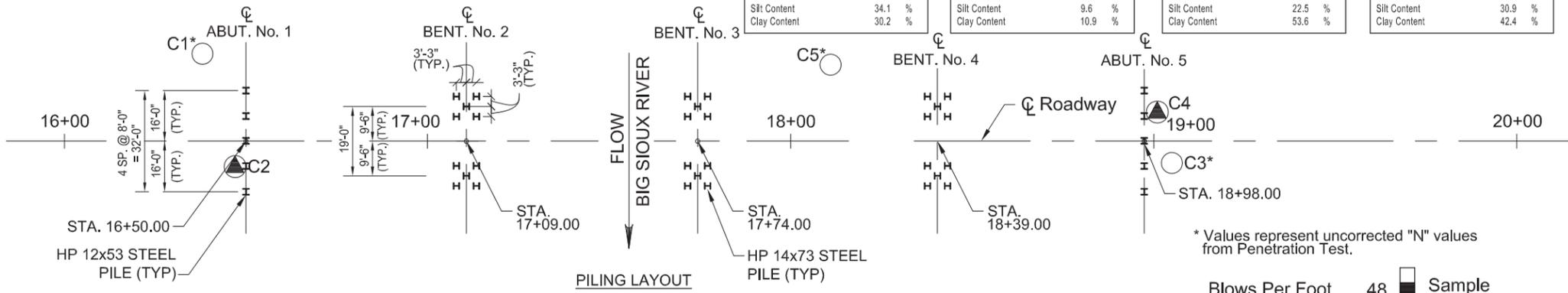
Hole Number	C1	C3	C3	C5
Station	16+38	19+05	19+05	18+11
Depth	40.2 ft	25.5 ft	65.5 ft	65.5 ft
Soil Color	Olive Gray	Gray / Black	Brown / Gray	Gray
Classification	Clay Silt	Silty Sand	Clay	Silt Clay
Strength (c _u)	2,515 psf	343 psf	12,140 psf	7,864 psf
Dry Density	119.0 pcf	81.1 pcf	101.8 pcf	104.7 pcf
Wet Density	137.0 pcf	111.7 pcf	126.5 pcf	128.4 pcf
Moisture	15.1 %	37.7 %	24.3 %	22.7 %
Pass No. 10	95.7 %	94.1 %	90.0 %	93.1 %
Pass No. 40	88.5 %	67.8 %	85.3 %	87.6 %
Pass No. 200	64.4 %	20.5 %	76.1 %	73.3 %
Sand Content	31.3 %	73.5 %	13.9 %	19.8 %
Silt Content	34.1 %	9.6 %	22.5 %	30.9 %
Clay Content	30.2 %	10.9 %	53.6 %	42.4 %

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 34	TOTAL SHEETS 91
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Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The subsurface conditions shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

The Geotechnical Engineering Activity has 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.



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

Blows Per Foot 48 Sample Zone

LEGEND

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

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

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

COFFERDAM PARAMETERS:

Silt-Sand:

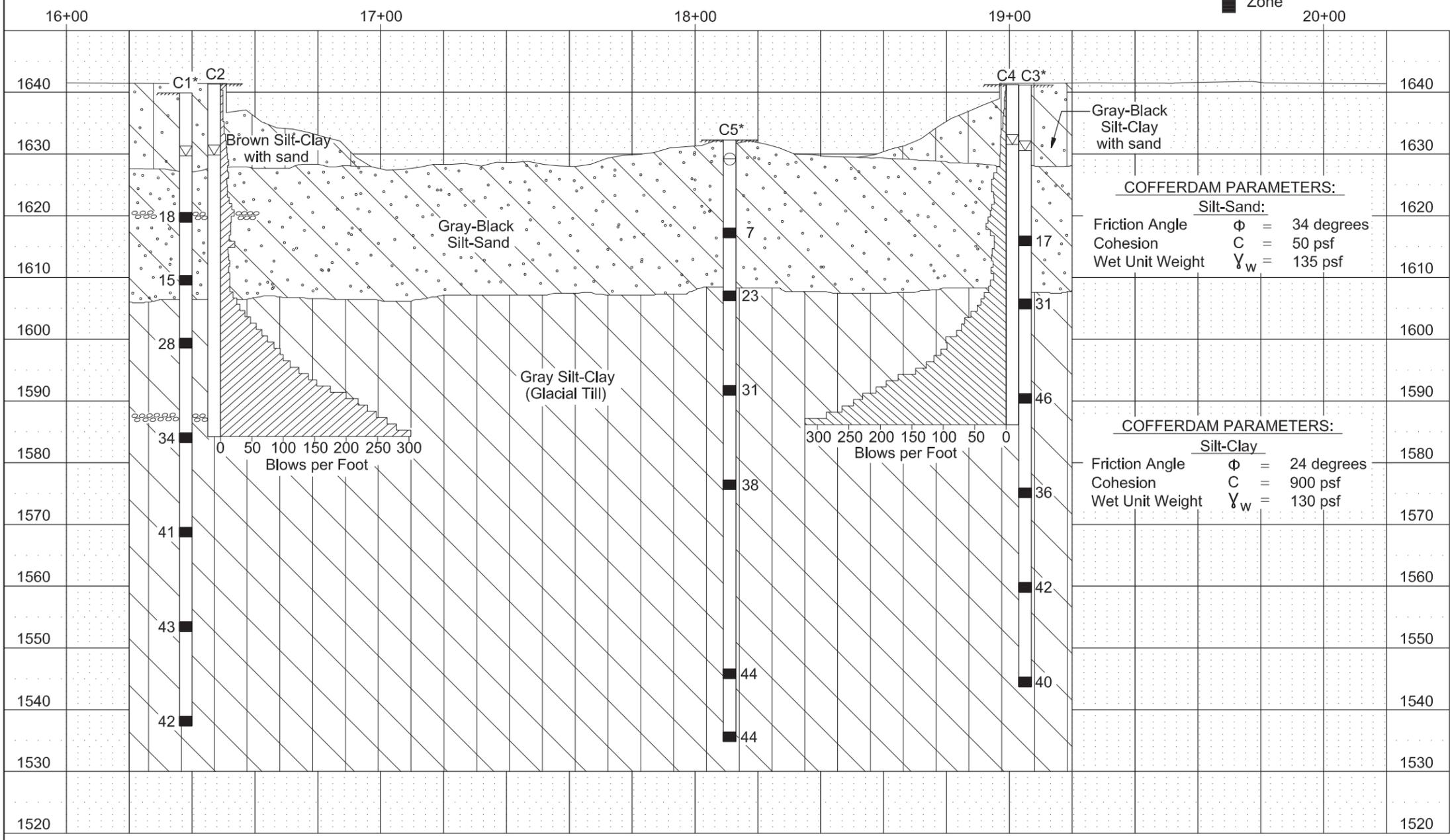
Friction Angle	φ = 34 degrees
Cohesion	C = 50 psf
Wet Unit Weight	γ _w = 135 psf

COFFERDAM PARAMETERS:

Silt-Clay

Friction Angle	φ = 24 degrees
Cohesion	C = 900 psf
Wet Unit Weight	γ _w = 130 psf

GROUND WATER ELEVATIONS		MEASURED SKIN FRICTION	
as of NOVEMBER 2014			
		ELEV.	PSF
C1	1629.7	C2	1585.3 630
C2	1630.0	C4	1587.2 616
C3	1630.7		
C4	1631.7		
C5	(DRY) 1629.2		



SUBSURFACE INVESTIGATION & PILING LAYOUT FOR 250'-0" PRESTRESSED GIRDER BRIDGE

30'-0" ROADWAY OVER BIG SIOUX RIVER STA. 16+49.00 TO 18+99.00
 SEC. 7/12-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS BROOKINGS, SOUTH DAKOTA
 HL-93 STR. No. 06-120-012 PCN 01W9

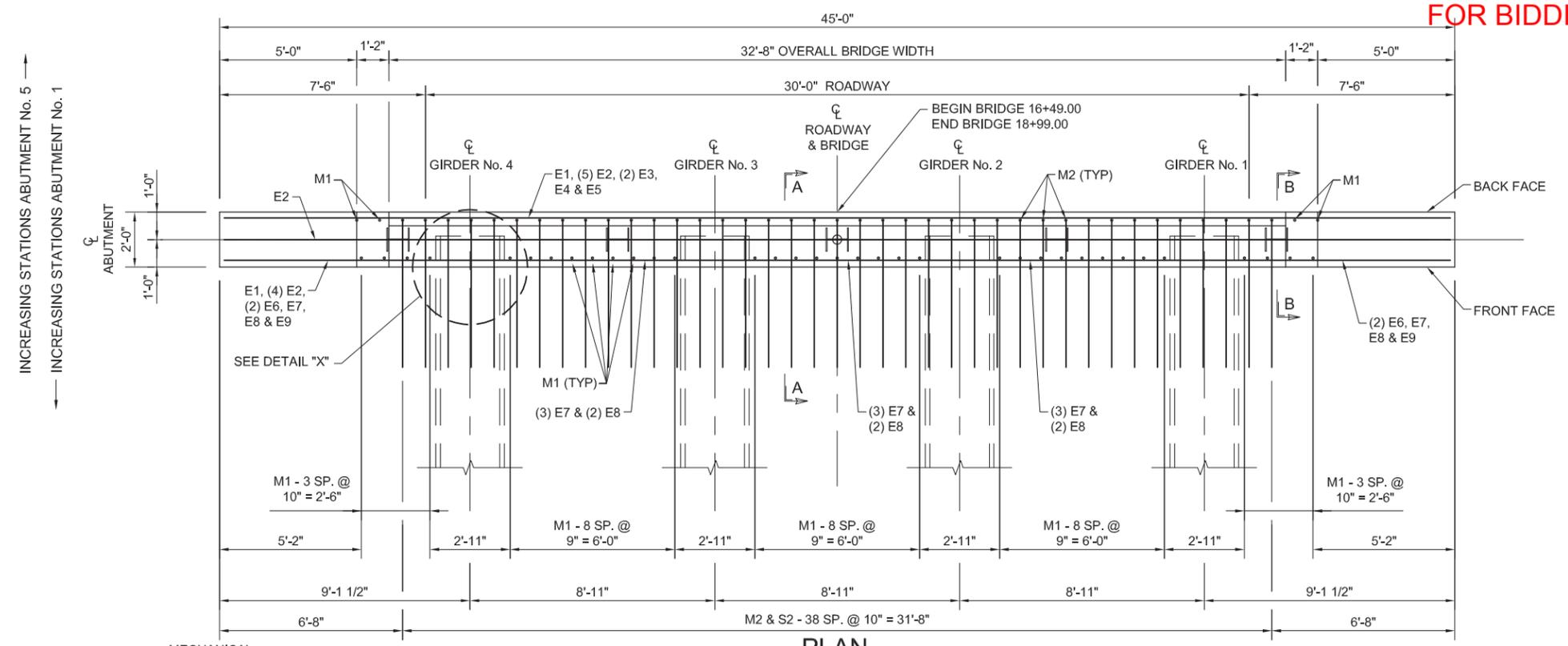
DECEMBER 2015

4 OF 22

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

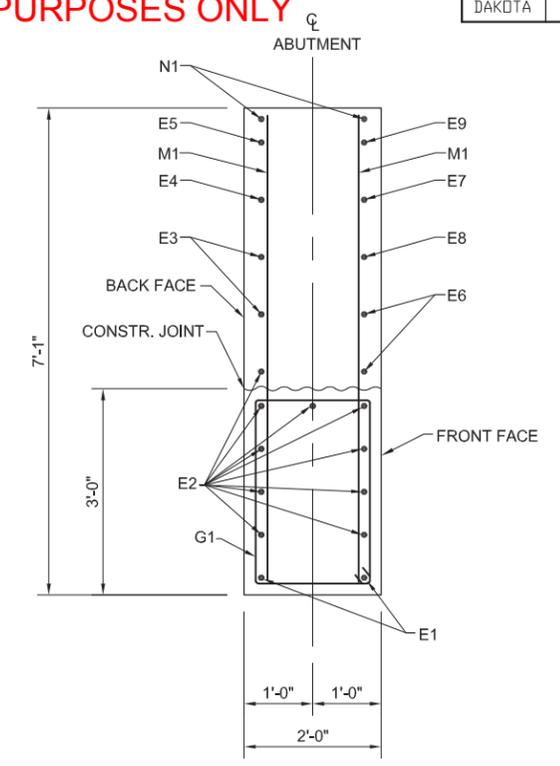
STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 35	TOTAL SHEETS 91
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FOR BIDDING PURPOSES ONLY

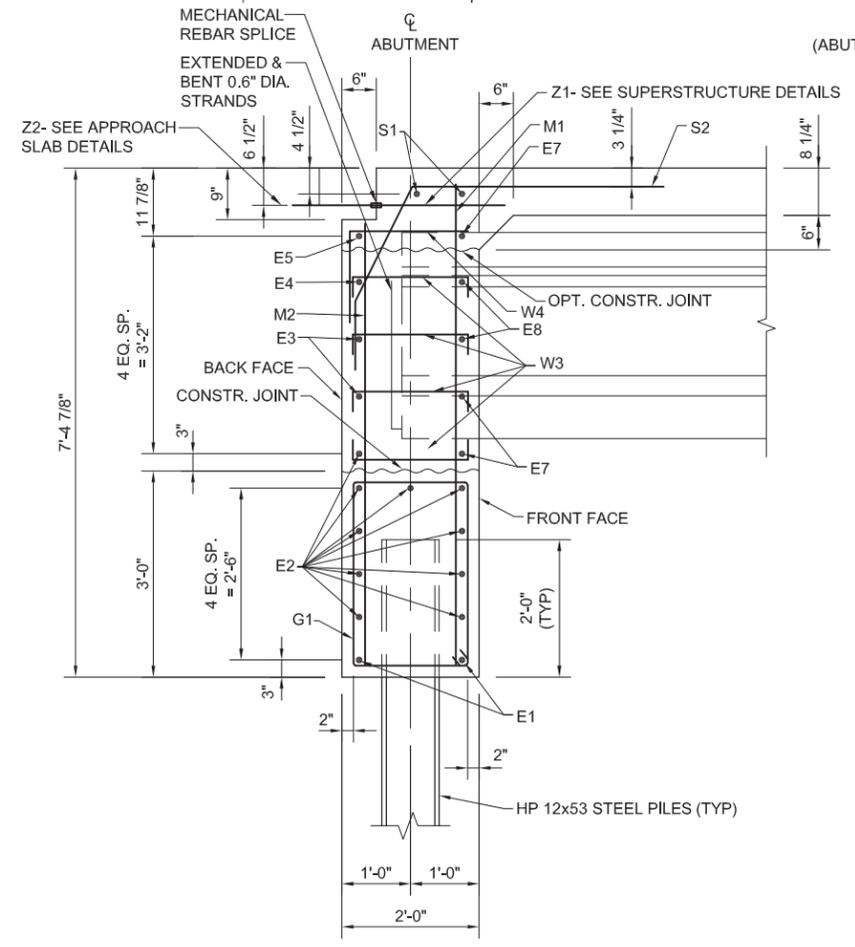


PLAN

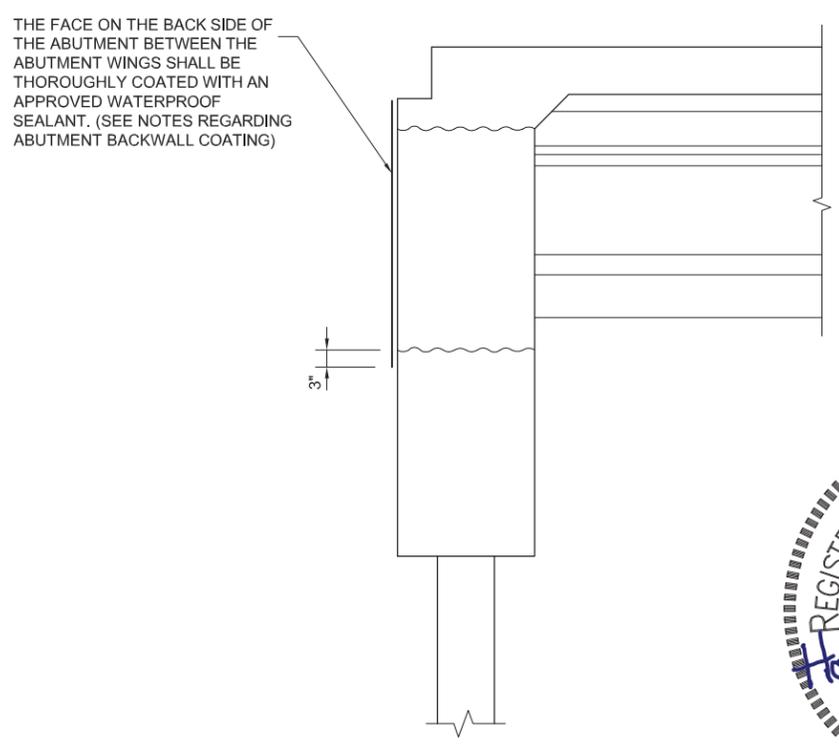
(ABUT. No. 1 SHOWN, ABUT. No. 5 OPPOSITE HAND)
G BARS NOT SHOWN FOR CLARITY



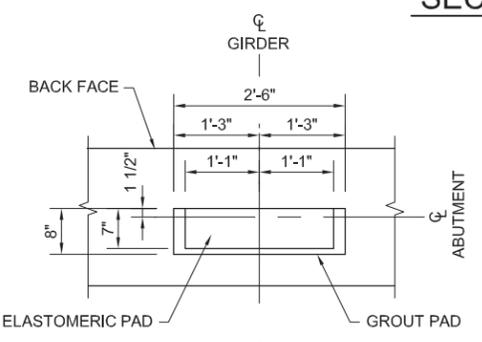
SECTION B-B



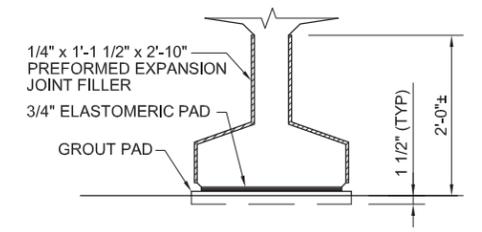
SECTION A-A
SHOWN @ ϕ OF ABUT.



ABUT. BACKWALL COATING DETAIL



DETAIL "X"



DETAIL "Y"

(TYPICAL AT GIRDER ENDS AT ABUTMENTS ONLY)

**ABUTMENT DETAILS (1 OF 2)
FOR
250'-0" PRESTRESSED GIRDER BRIDGE**

0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY:
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

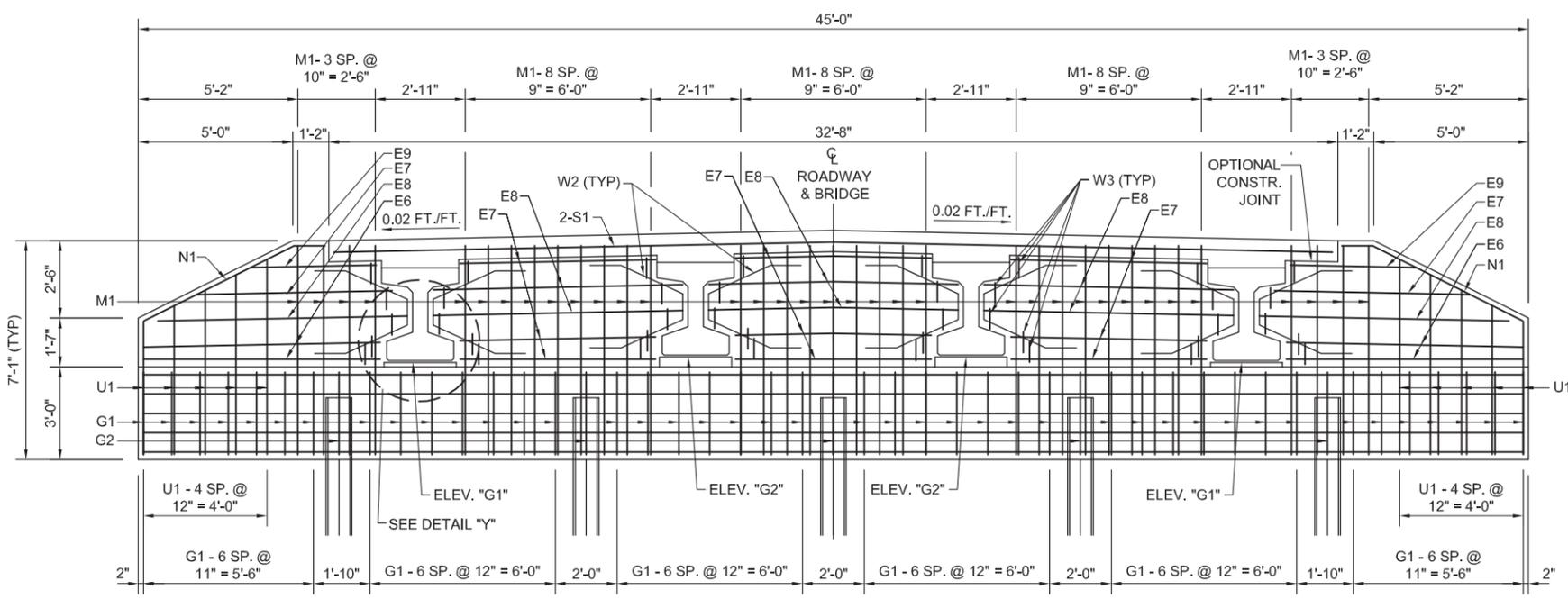
HL-93
STR. No. 06-120-012
PCN 01W9



NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 6.

DESIGNED BY : H.M.M.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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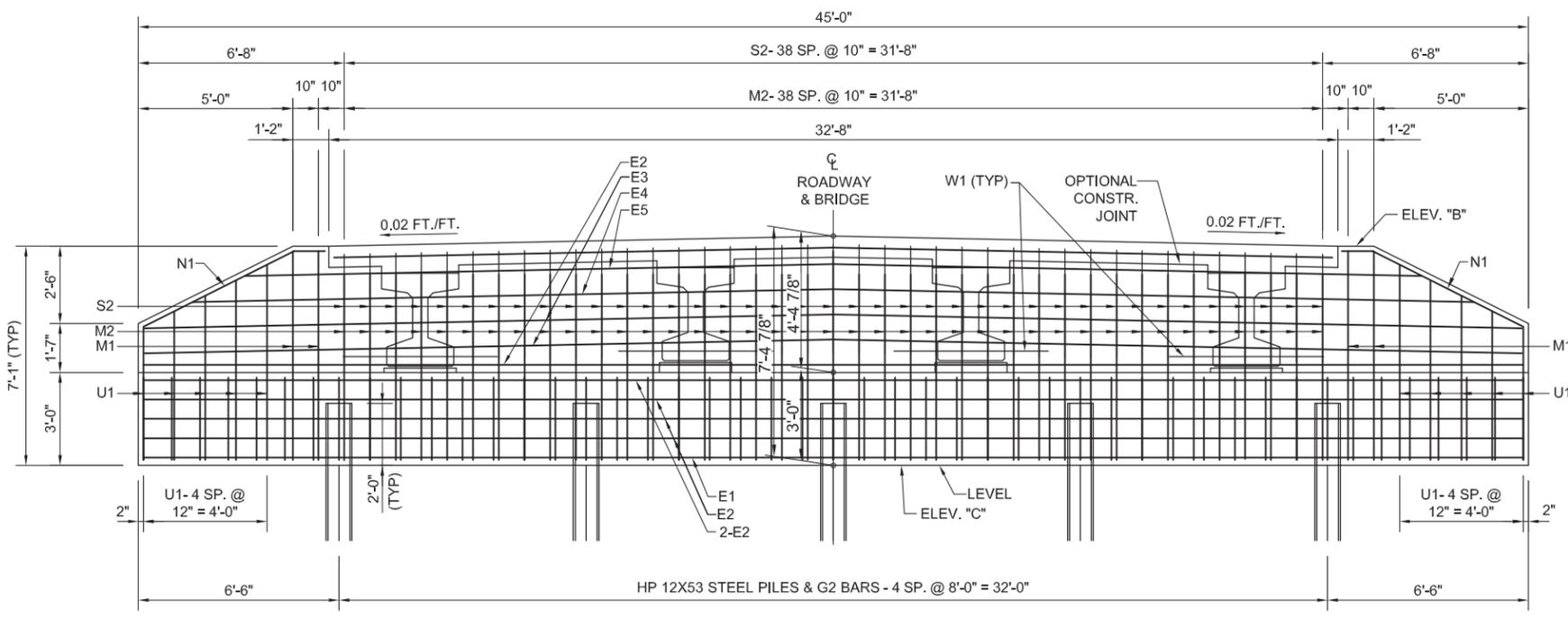
FOR BIDDING PURPOSES ONLY



FRONT FACE

(ABUT. No.1 SHOWN, ABUT. No.5 OPPOSITE HAND)

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.



BACK FACE

(ABUT. No. 1 SHOWN, ABUT. No. 5 OPPOSITE HAND)

REINFORCING SCHEDULE
(FOR ONE ABUTMENT)

MK.	No.	SIZE	LENGTH	TYPE	BENDING DETAILS
E1	2	9	44'-8"	STR.	
E2	10	7	44'-8"	STR.	
E3	2	7	44'-7"	STR.	
E4	1	7	41'-5"	STR.	
E5	1	7	38'-1"	STR.	
E6	4	5	7'-8"	STR.	
E7	11	5	6'-4"	STR.	
E8	8	5	8'-1"	STR.	
E9	2	5	4'-1"	STR.	
G1	42	4	9'-1"	T2	
G2	5	5	8'-1"	S6	
M1	39	5	6'-9"	STR.	
M2	39	5	6'-0"	STR.	
N1	4	4	6'-5"	19B	
S1	2	9	32'-4"	STR.	
S2	39	5	8'-0"	14A	
U1	10	6	10'-6"	STR.	
W1	4	5	5'-0"	STR.	
W2	8	4	6'-10"	14	
W3	32	4	3'-0"	17	
W4	8	4	3'-6"	17A	

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

ESTIMATED QUANTITIES
(FOR ONE ABUTMENT)

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION, BRIDGE	CU.YD.	9
CLASS A45 CONCRETE, BRIDGE	CU.YD.	21.4
REINFORCING STEEL	LB.	2,879
EPOXY COATED REINFORCING STEEL	LB.	546
PREBORING PILING	FT.	5 @ 10' = 50'
HP12x53 STEEL TEST PILE, FURNISH AND DRIVE	FT.	1 @ 85' = 85'
HP12x53 STEEL BEARING PILE, FURNISH AND DRIVE	FT.	4 @ 80' = 320'

TABLE OF ELEVATIONS

ABUTMENT	ELEV. "A"	ELEV. "B"	ELEV. "C"	ELEV. "G1"	ELEV. "G2"
No. 1 & 5	1643.62	1643.29	1636.21	1639.35	1639.53

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

ABUTMENT DETAILS (2 OF 2)
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)



BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY: HL-93
BANNER ASSOCIATES, INC. STR. No. 06-120-012
CONSULTING ENGINEERS PCN 01W9
BROOKINGS, SOUTH DAKOTA

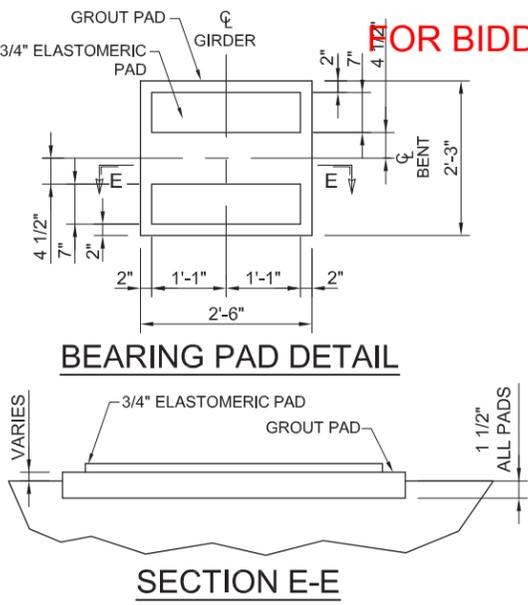
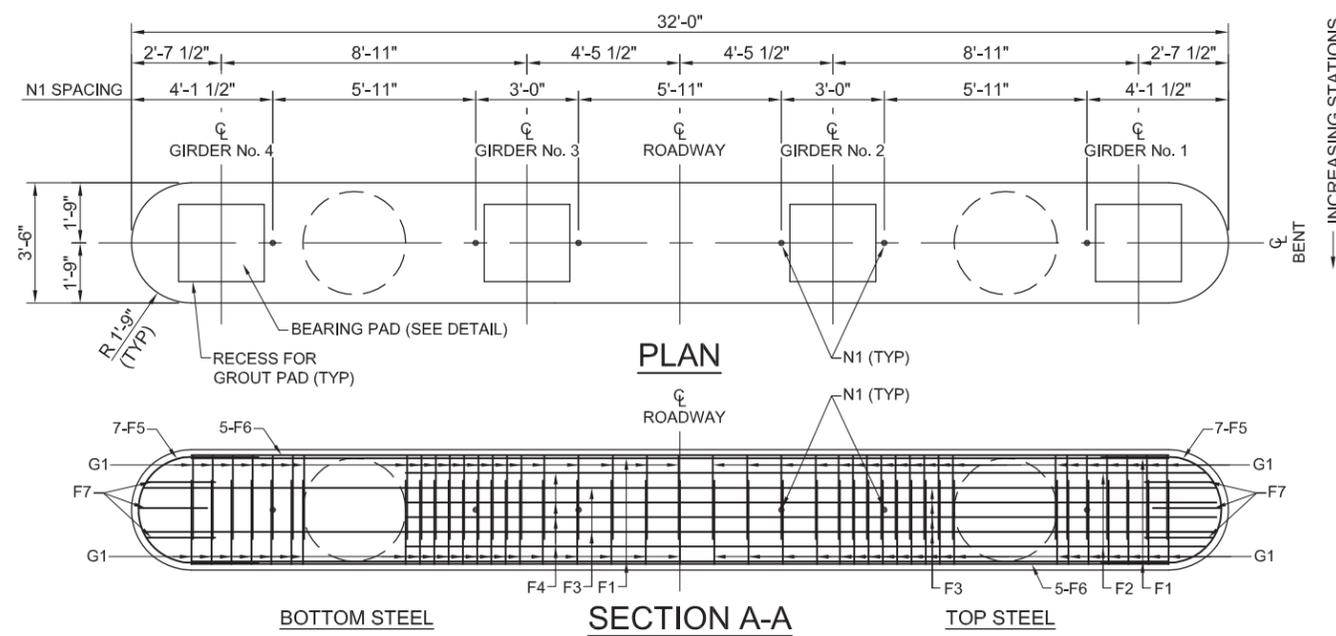
DECEMBER 2015

6 OF 22

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 5.

DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

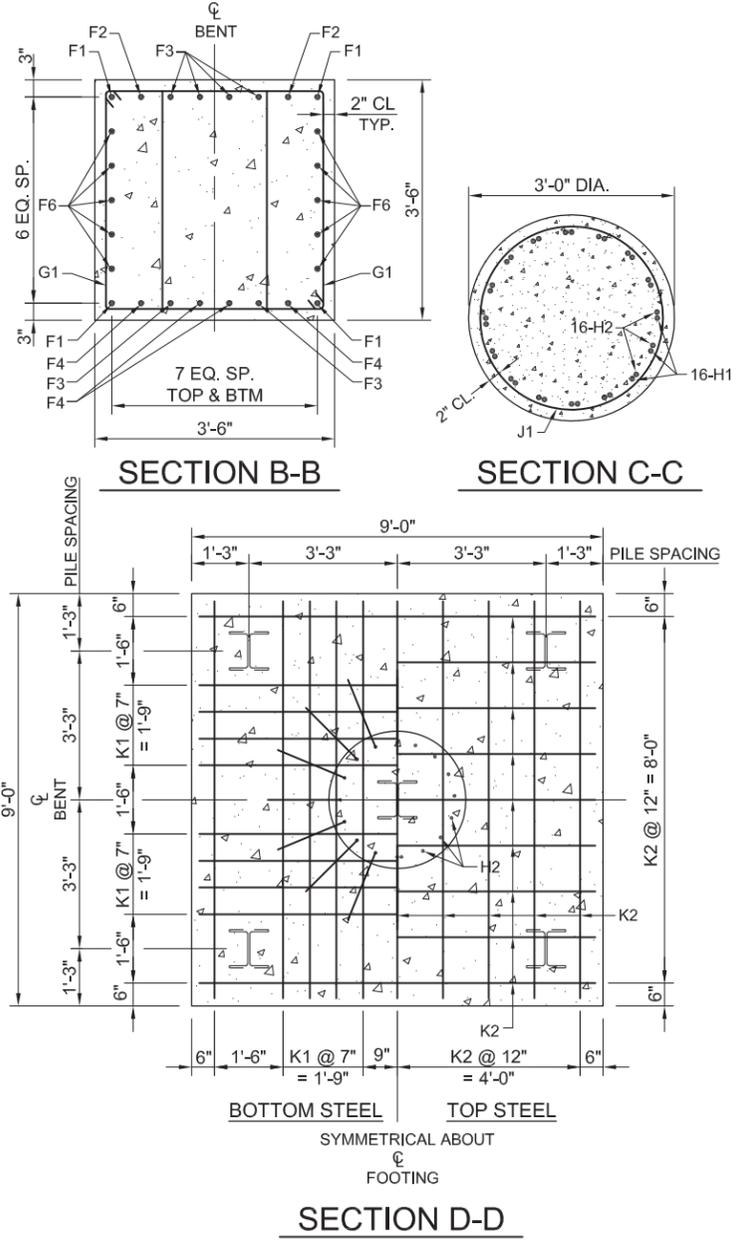
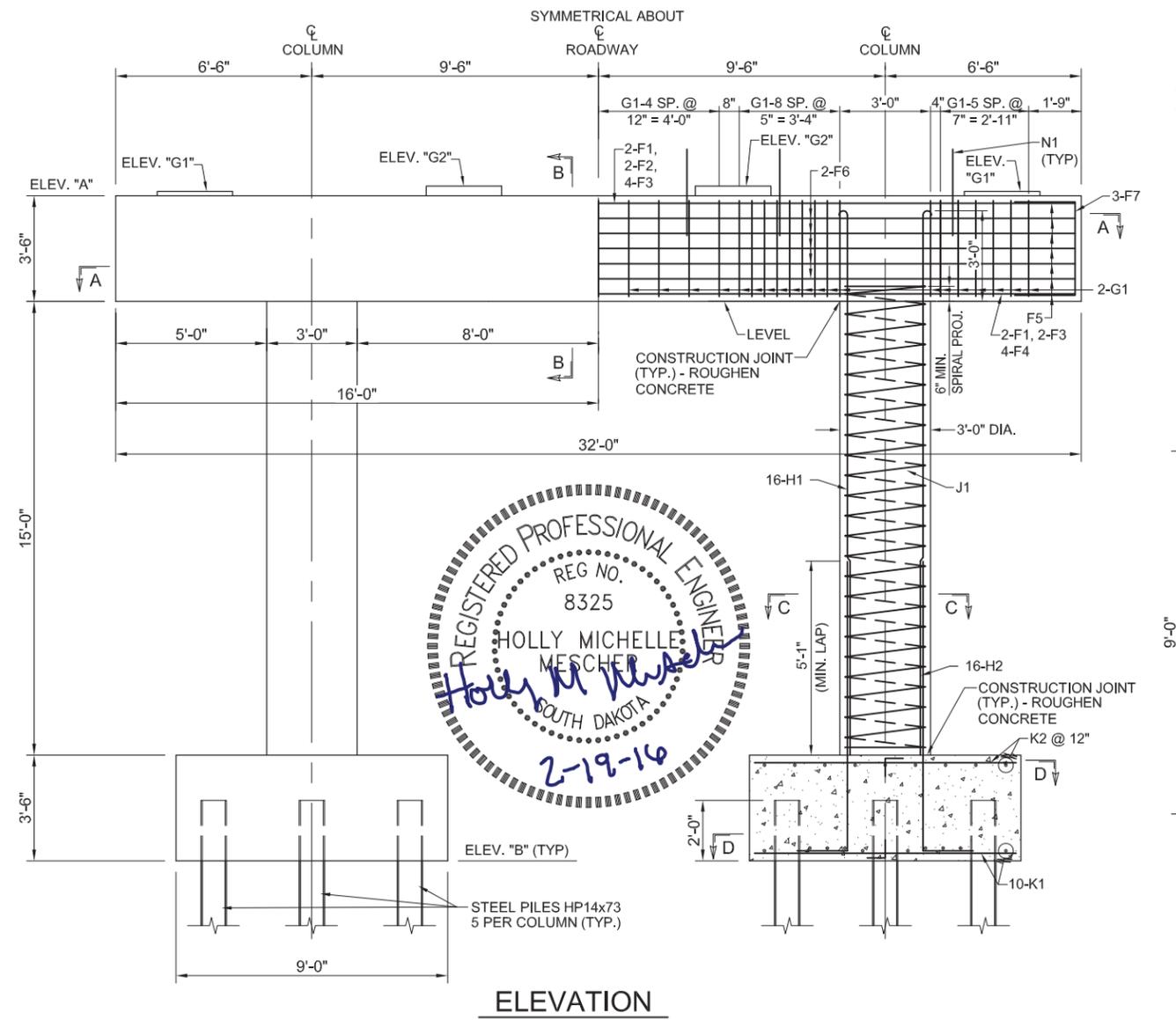


REINFORCING SCHEDULE (FOR ONE BENT)

MK.	No.	SIZE	LENGTH	TYPE	BENDING DETAILS	
F1	4	9	28'-6"	STR.		
F2	2	9	30'-8"	STR.		
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		
G1	82	5	11'-9"	T2		
H1	32	9	19'-3"	1A		
H2	32	9	10'-6"	2A		
J1	2	4	301'-7"	SPIRAL		
K1	40	8	8'-8"	STR.		
K2	36	5	8'-8"	STR.		
N1	6	8	2'-0"	STR.		

ALL DIMENSIONS ARE OUT TO OUT OF BARS.

SPIRALS, USE 6" 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 3 VERTICAL SPACER BARS PER COLUMN. SPIRALS MAY BE SMOOTH BARS. BAR LENGTH SHOWN DOES NOT INCLUDE SPLICES.



ESTIMATED QUANTITIES (FOR ONE BENT)

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION, BRIDGE	CU.YD.	133
CLASS A45 CONCRETE, BRIDGE	CU.YD.	43.6
REINFORCING STEEL	LB.	7,819
HP14x73 STEEL TEST PILE, FURNISH AND DRIVE	FT.	1 @ 80' = 80'
HP14x73 STEEL BEARING PILE, FURNISH AND DRIVE	FT.	9 @ 75' = 675'

* INCLUDES 70 LBS. FOR SPACER BARS AT BENT. EACH SPACER BAR IS COMPUTED AT 0.75 LBS. PER LINEAL FOOT REGARDLESS OF TYPE FURNISHED.
* INCLUDES 0.4 CU. YDS FOR GROUT PADS AT EACH BENT

TABLE OF ELEVATIONS

BENT	ELEV. "A"	ELEV. "B"	ELEV. "G1"	ELEV. "G2"
No. 2, 3 & 4	1639.21	1617.21	1639.35	1639.53

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

NOTE: THE PORTION OF THE N1 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 250'-0" PRESTRESSED GIRDER BRIDGE

0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

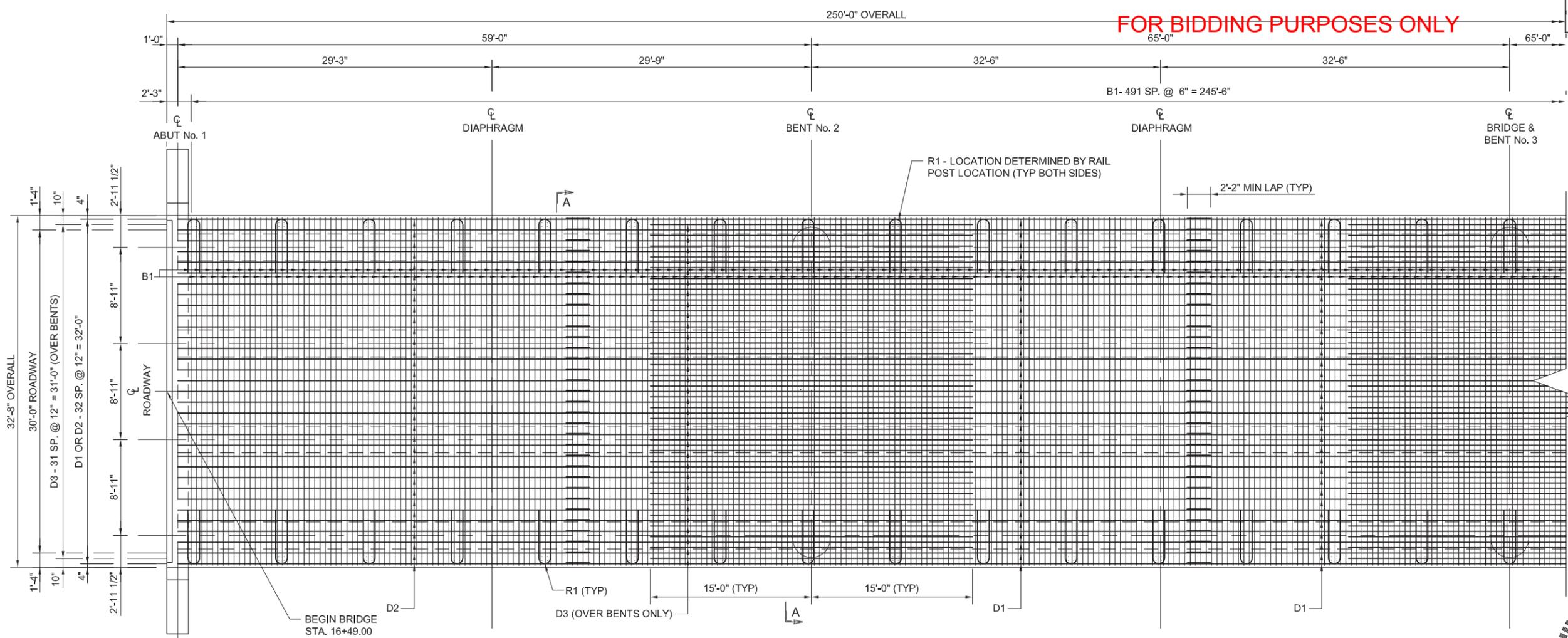
PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. No. 06-120-012
PCN 01W9

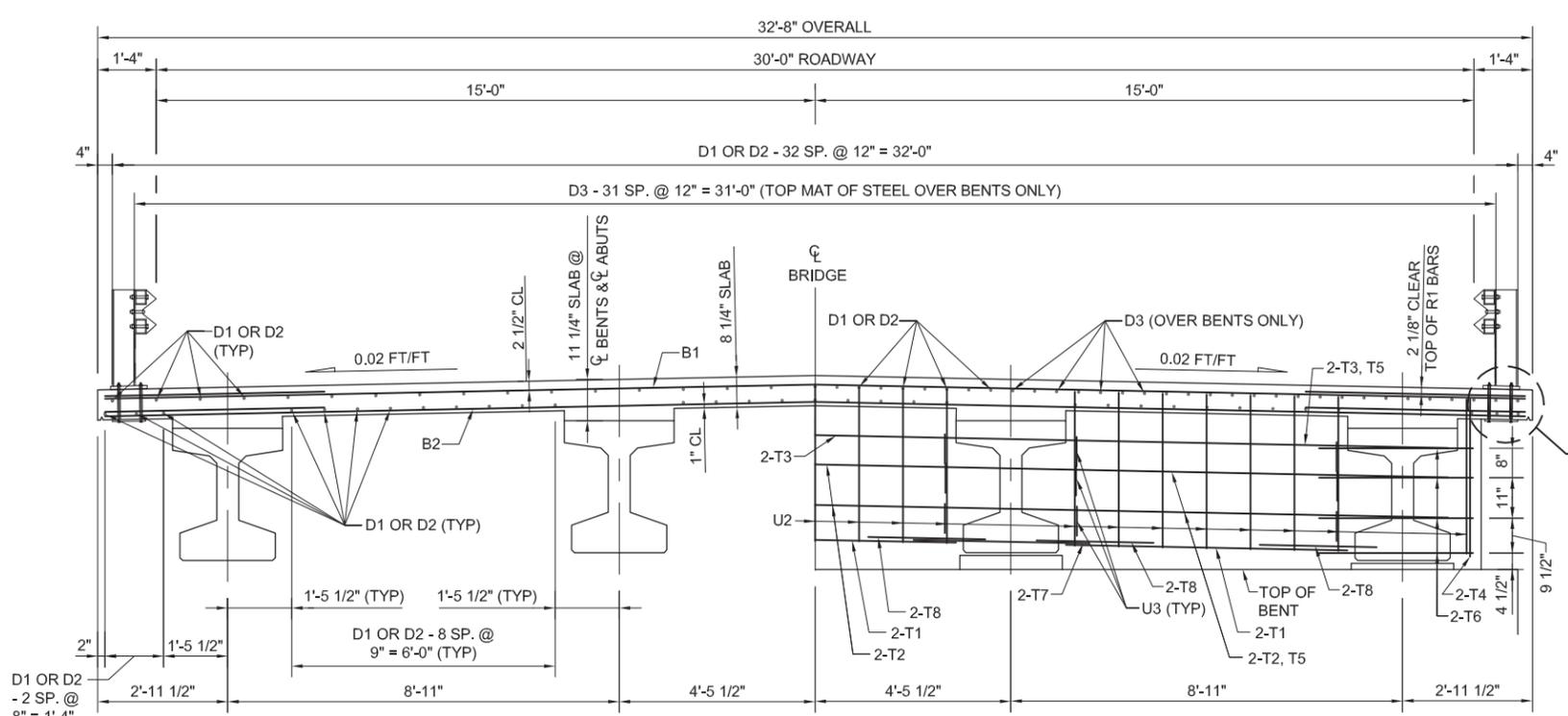
DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER



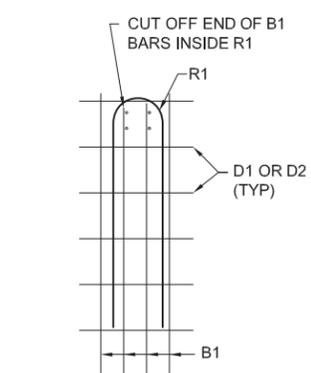
FOR BIDDING PURPOSES ONLY



HALF PLAN - TOP OF SLAB



SECTION A-A



TOP R1 DETAIL



**SUPERSTRUCTURE DETAILS (1 OF 2)
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW**

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

PREPARED BY:
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. No. 06-120-012
PCN 01W9

BROOKINGS COUNTY
SOUTH DAKOTA

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.

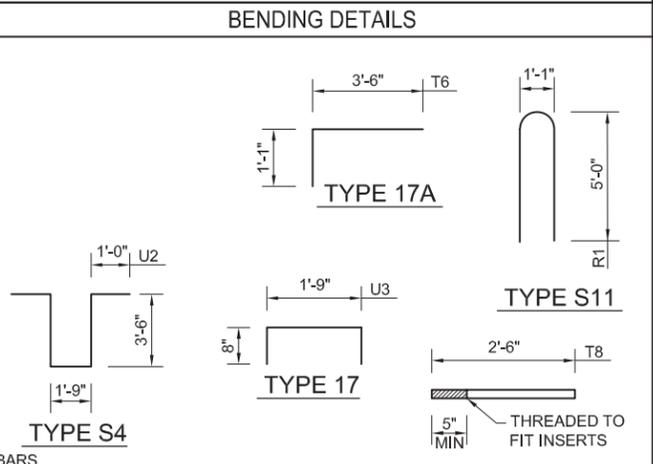
NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 9.

DESIGNED BY: H.M.M.	DRAWN BY: T.C.S.	CHECKED BY: D.J.W.	APPROVED: BRIDGE ENGINEER
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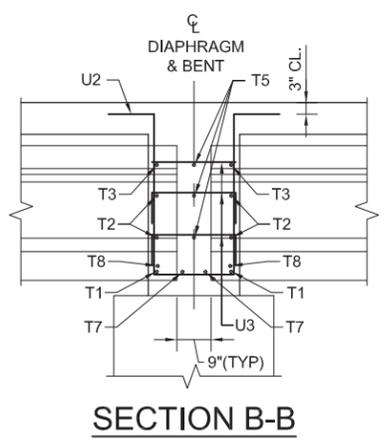
FOR BIDDING PURPOSES ONLY

REINFORCING SCHEDULE

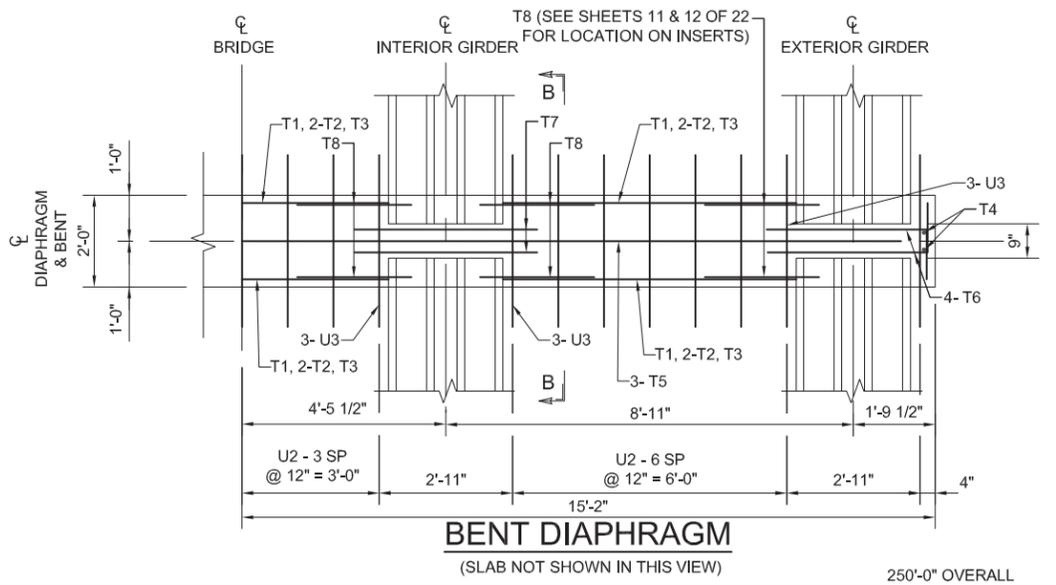
MK.	No.	SIZE	LENGTH	TYPE	
*Δ	B1	492	5	32'-4"	STR.
*Δ	B2	492	5	32'-4"	STR.
Δ	D1	198	5	60'-0"	STR.
Δ	D2	132	5	38'-4"	STR.
Δ	D3	96	6	30'-0"	STR.
Δ	R1	62	8	10'-7"	S11
*	T1	18	6	6'-5"	STR.
*	T2	36	5	8'-1"	STR.
*	T3	18	5	6'-1"	STR.
Δ	T4	12	5	3'-7"	STR.
*	T5	9	6	28'-10"	STR.
*	T6	48	5	4'-7"	17A
*	T7	12	5	4'-0"	STR.
*	T8	36	6	2'-6"	STR.
Δ	U2	63	6	10'-9"	S4
Δ	U3	54	4	3'-1"	17
Δ	Z1	84	7	2'-0"	STR.



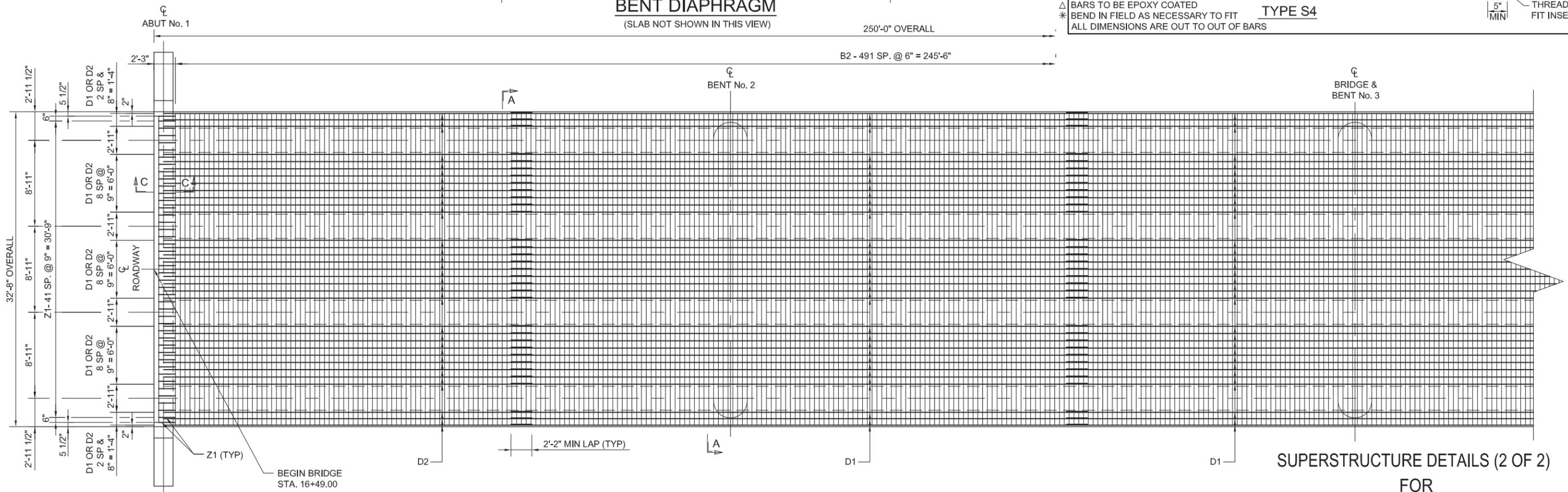
NOTES:
 Δ BARS TO BE EPOXY COATED
 * BEND IN FIELD AS NECESSARY TO FIT
 ALL DIMENSIONS ARE OUT TO OUT OF BARS



SECTION B-B



BENT DIAPHRAGM
(SLAB NOT SHOWN IN THIS VIEW)



HALF PLAN - BOTTOM OF SLAB

SUPERSTRUCTURE DETAILS (2 OF 2)

FOR 250'-0" PRESTRESSED GIRDER BRIDGE

0° SKEW

30'-0" ROADWAY
 OVER BIG SIOUX RIVER
 STA. 16+49.00 TO 18+99.00

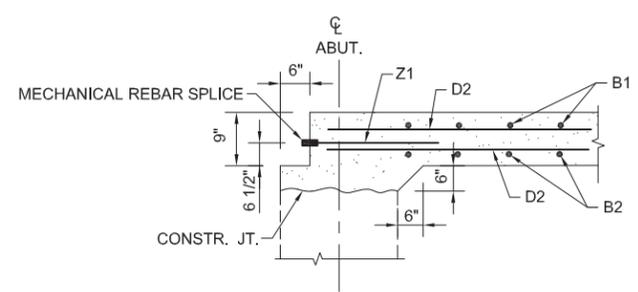
SEC. 7/12-T112N-R50W/R51W
 BRF 6295(10)

**BROOKINGS COUNTY
 SOUTH DAKOTA**

PREPARED BY:
 BANNER ASSOCIATES, INC.
 CONSULTING ENGINEERS
 BROOKINGS, SOUTH DAKOTA
 DECEMBER 2015

HL-93
 STR. No. 06-120-012
 PCN 01W9

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SECTION C-C



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
* CLASS A45 CONCRETE, BRIDGE DECK	CU.YD.	253.1
* REINFORCING STEEL	LB.	1,507
* EPOXY COATED REINFORCING STEEL	LB.	58,332
* No. 7 REBAR SPLICE	EACH	84
* 36" MINNESOTA SHAPE PRESTRESSED CONCRETE BEAM	FT.	984

* INCLUDES QUANTITIES FOR ABUTMENT BACKWALL ABOVE CONSTRUCTION JOINT, SLAB, BENT DIAPHRAGMS AND HAUNCH (AVERAGE DEPTH OF 2 1/2" USED FOR HAUNCH QUANTITY).
 Δ INCLUDES QUANTITY FOR BENT DIAPHRAGMS.
 * INCLUDES QUANTITY FOR BENT DIAPHRAGMS AND SLAB.

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 8.

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	40	91

GENERAL NOTES:

- Rail design shall be according to AASHTO LRFD Bridge Design Specifications, 7th Edition, with 2015 Interim Revisions.
- Rail posts shall be perpendicular to bridge deck surface.
- W-beam guard rail, pipe sleeves nuts, washers, and plate washers that go with these shall be galvanized. Bolts, nuts, and washers shall be galvanized according to ASTM A153. Pipe sleeves shall be galvanized according to ASTM A123.
- Post bolts shall be 3/4" diameter A325 or A449. Each bolt shall have one hardened and one 2" x 2" x 5/16" ASTM A36 plate washer. Nuts shall be A563.
- Steel W beam guard rail shall be class A, type 1, conforming to AASHTO M180 and shall be fabricated from standard 12.5' or 25' nominal W-beam sections.
- The rail posts, 4" x 3" tubes and base plates shall be galvanized in accordance with ASTM A123. The nuts, bolts and washers shall be galvanized in accordance with ASTM A153.
- All structural steel parts for the type T101 bridge railing shall conform to ASTM A709 Gr. 36. Tubes shall conform to ASTM A500 Gr. B.
- Provide (1) - 1/2" drain hole in the tubes near ends of rail and near splices.
- All bolts, nuts, washers, posts, plates, pipe sleeves, steel W beam guard rail, welding, galvanizing, and installation shall be included in the bid for type T101 bridge railing.
- Measurement for payment shall be from beginning of structure to end of structure for each side of the bridge.
- The bridge railing shall conform to Section 470 of the Specifications.
- Shop and field welding inspection of steel railing shall conform to Section 410 of the Specifications.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Type T101 Bridge Railing	Ft.	500

TYPE T101 BRIDGE RAILING DETAILS FOR 250'-0" PRESTRESSED GIRDER BRIDGE 0° SKEW

30'-0" ROADWAY OVER BIG SIOUX RIVER STA. 16+49.00 TO 18+99.00

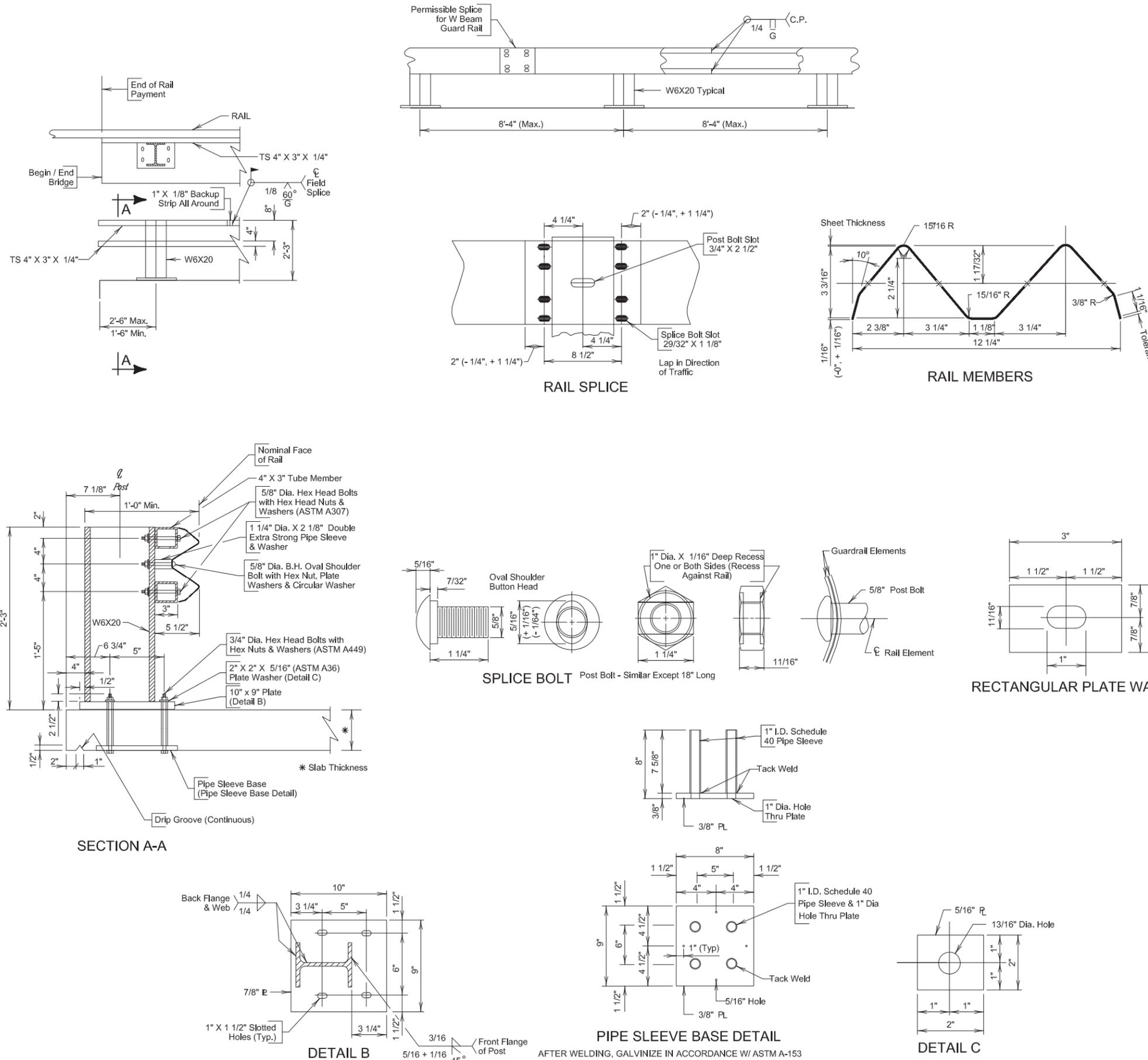
SEC. 7/12-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93 STR. No. 06-120-012 PCN 01W9

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER



PIPE SLEEVE BASE DETAIL
AFTER WELDING, GALVINIZE IN ACCORDANCE W/ ASTM A-153

SECTION A-A

DETAIL B

DETAIL C

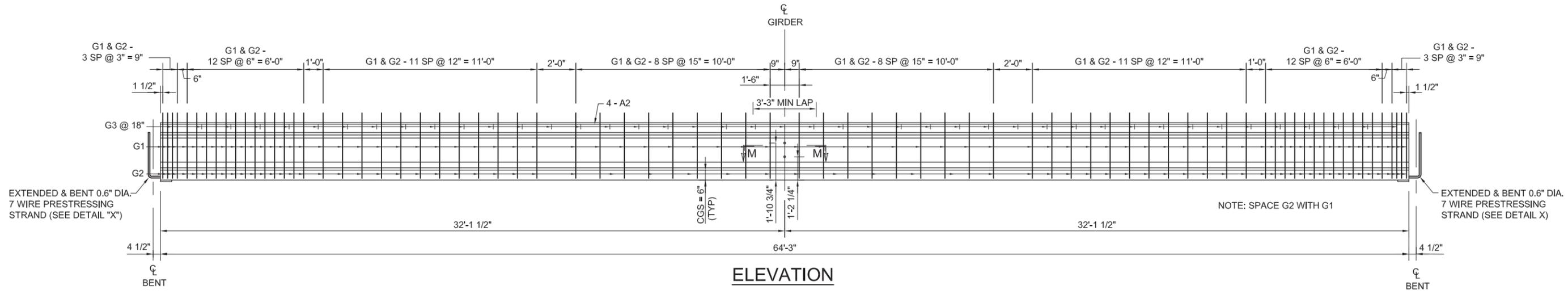
RECTANGULAR PLATE WASHER

SPLICE BOLT Post Bolt - Similar Except 18" Long

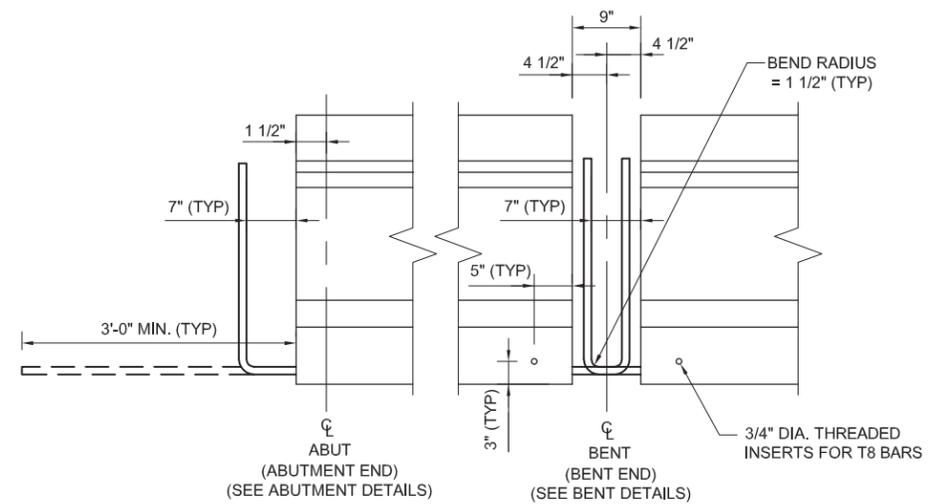
RAIL SPLICE

FOR BIDDING PURPOSES ONLY

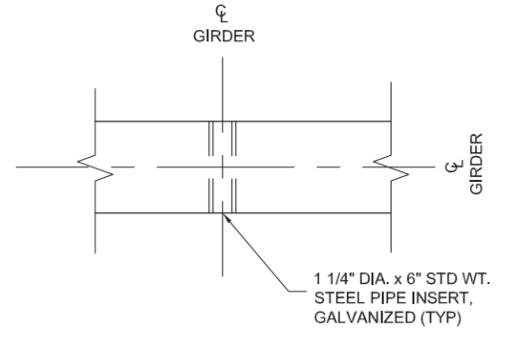
STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 42	TOTAL SHEETS 91
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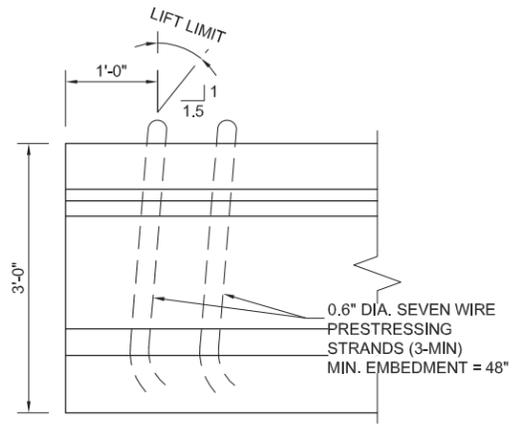
ELEVATION



DETAIL "X"



SECTION M-M

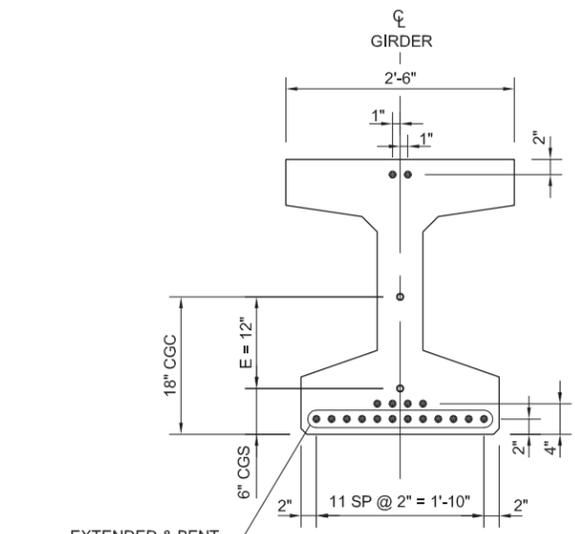


TYPICAL LIFTING DEVICE

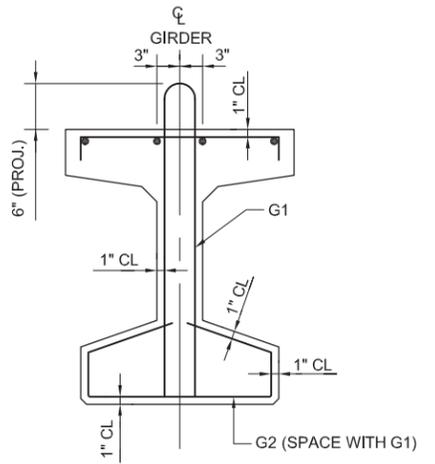
REINFORCING SCHEDULE (FOR ONE GIRDER)				
MK.	No.	SIZE	LENGTH	TYPE
A2	4	7	63'-11"	STR.
G1	76	5	7'-0"	S11
G2	76	4	4'-11"	S3A
G3	44	4	2'-8"	17

BENDING DETAILS	
<p>TYPE 17</p>	<p>TYPE S3A</p>
<p>TYPE S11</p>	

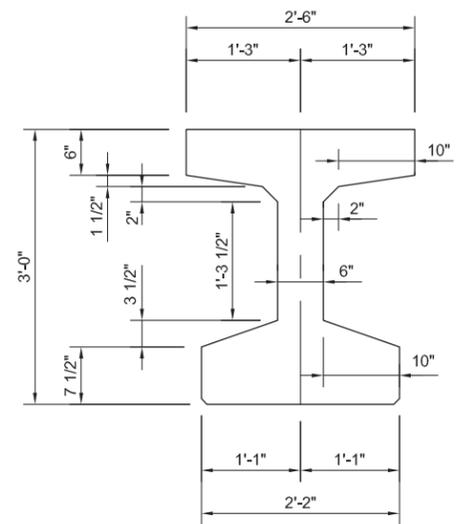
ALL DIMENSIONS ARE OUT TO OUT OF BARS.



SECTION



STIRRUP DETAILS



TYPE 36M GIRDER



64'-3" GIRDER DETAILS FOR 250'-0" PRESTRESSED GIRDER BRIDGE 0° SKEW

30'-0" ROADWAY OVER BIG SIOUX RIVER STA. 16+49.00 TO 18+99.00
 SEC. 7/12-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS BROOKINGS, SOUTH DAKOTA DECEMBER 2015
 HL-93 STR. No. 06-120-012 PCN 01W9

DESIGNED BY: H.M.M.	DRAWN BY: T.C.S.	CHECKED BY: D.J.W.	APPROVED: BRIDGE ENGINEER
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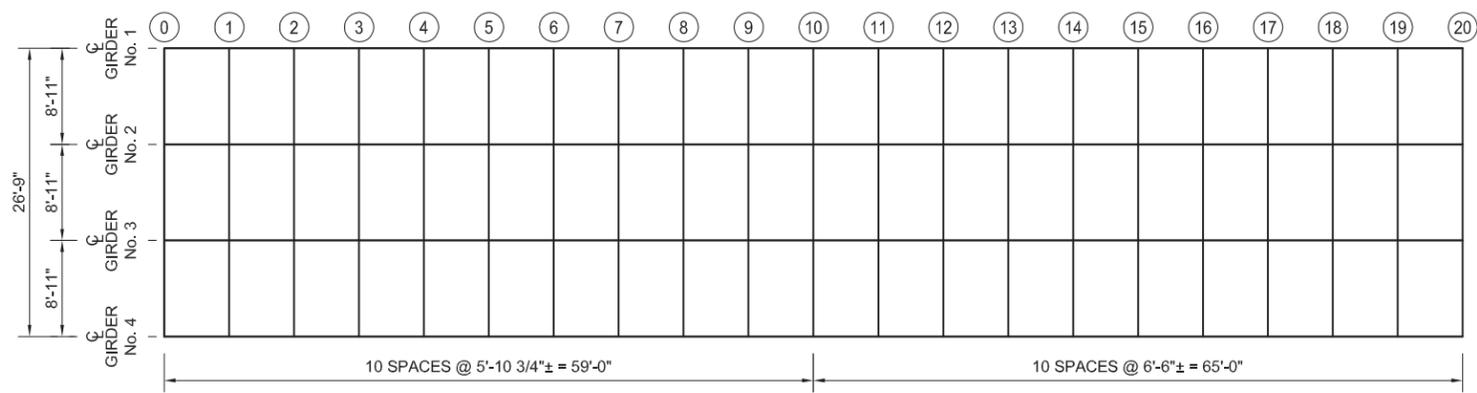
CGS = CENTER OF GRAVITY OF PRESTRESSING STEEL
 CGC = CENTER OF GRAVITY OF CONCRETE

STRAND PATTERN (18 - 0.6" DIA. TYPE 270K LOW LAX STRANDS)

FOR BIDDING PURPOSES ONLY

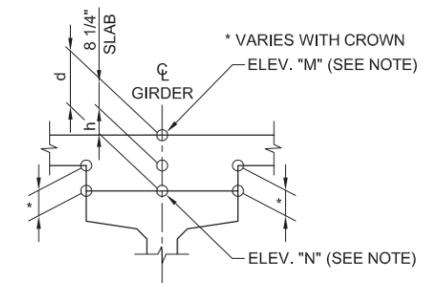
TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
GIRDER No. 1	ELEV. "M"	1643.352	1643.370	1643.386	1643.398	1643.406	1643.408	1643.406	1643.398	1643.386	1643.370	1643.352	1643.378	1643.401	1643.419	1643.431	1643.435	1643.431	1643.419	1643.401	1643.378	1643.352
	(-) ELEV. "N"																					
	(=) d																					
	(-) 0.688'																					
GIRDER No. 2	ELEV. "M"	1643.531	1643.548	1643.564	1643.576	1643.584	1643.587	1643.584	1643.576	1643.564	1643.548	1643.531	1643.557	1643.580	1643.598	1643.609	1643.613	1643.609	1643.598	1643.580	1643.557	1643.531
	(-) ELEV. "N"																					
	(=) d																					
	(-) 0.688'																					
GIRDER No. 3	ELEV. "M"	1643.531	1643.548	1643.564	1643.576	1643.584	1643.587	1643.584	1643.576	1643.564	1643.548	1643.531	1643.557	1643.580	1643.598	1643.609	1643.613	1643.609	1643.598	1643.580	1643.557	1643.531
	(-) ELEV. "N"																					
	(=) d																					
	(-) 0.688'																					
GIRDER No. 4	ELEV. "M"	1643.352	1643.370	1643.386	1643.398	1643.406	1643.408	1643.406	1643.398	1643.386	1643.370	1643.352	1643.378	1643.401	1643.419	1643.431	1643.435	1643.431	1643.419	1643.401	1643.378	1643.352
	(-) ELEV. "N"																					
	(=) d																					
	(-) 0.688'																					



GIRDER LAYOUT

NOTE:
 BASED ON A "d" OF 11 1/4" AT THE CENTERLINE OF EACH ABUTMENT AND BENT. IT IS ANTICIPATED THAT THE MIDSPAN HAUNCH DIMENSION "h" FOR EACH GIRDER AT THE CENTERLINE OF THE SPAN WILL BE 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 FUTURE STRUCTURES OF THIS TYPE.



NOTE:
 THE TABLE CONTAINS THE INFORMATION NECESSARY TO DETERMINE THE DEPTH OF CONCRETE OVER THE GIRDERS AT THE POINTS SHOWN. CALCULATIONS MAY BE CARRIED IN THE SPACES PROVIDED. ELEV. "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. ELEV. "N" IS A FIELD MEASURED ELEVATION TAKEN AT THE TOP OF GIRDERS AT THE POINTS SHOWN WITH THE GIRDERS IN THEIR POSITIONS. THIS ELEVATION MUST BE TAKEN AFTER ERECTION IS COMPLETED, BUT PRIOR TO PLACING OF ANY OF THE DECK CONCRETE. GIRDERS SHALL NOT BE SUPPORTED BETWEEN BEARINGS WHEN ELEVATIONS ARE TAKEN.

ERECTION DATA AND SLAB FORM ELEVATIONS (1 OF 2) FOR 250'-0" PRESTRESSED GIRDER BRIDGE 0° SKEW

30'-0" ROADWAY OVER BIG SIOUX RIVER
 STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
 BRF 6295(10)

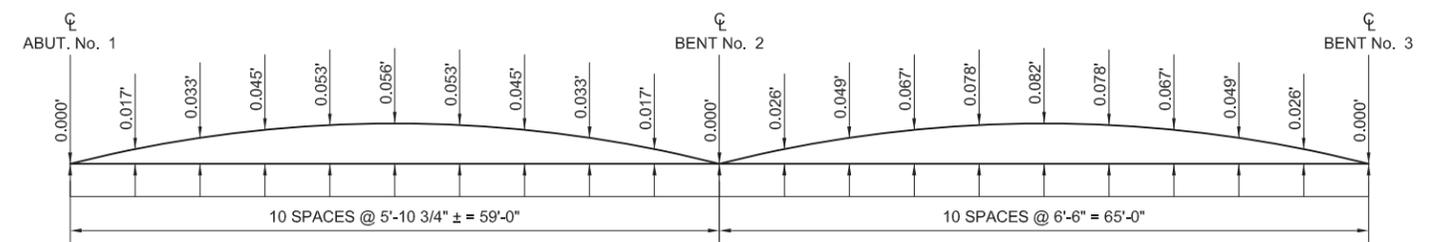
BROOKINGS COUNTY
 SOUTH DAKOTA

PREPARED BY : BANNER ASSOCIATES, INC. CONSULTING ENGINEERS
 BROOKINGS, SOUTH DAKOTA

HL-93
 STR. No. 06-120-012
 PCN 01W9

DECEMBER 2015

(13) OF (22)



CAMBER DIAGRAM

NOTE:
 THE CAMBER SHOWN IS THE AMOUNT WHICH HAS BEEN ADDED TO THE THEORETICAL SLAB ELEVATIONS TO GET TO SLAB ELEVATION SHOWN IN THE "TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS". CAMBER SHOWN IS FOR D.L. OF SLAB, RAILING, AND HAUNCH BUT DOES NOT INCLUDE THE D.L. OF THE BEAMS.

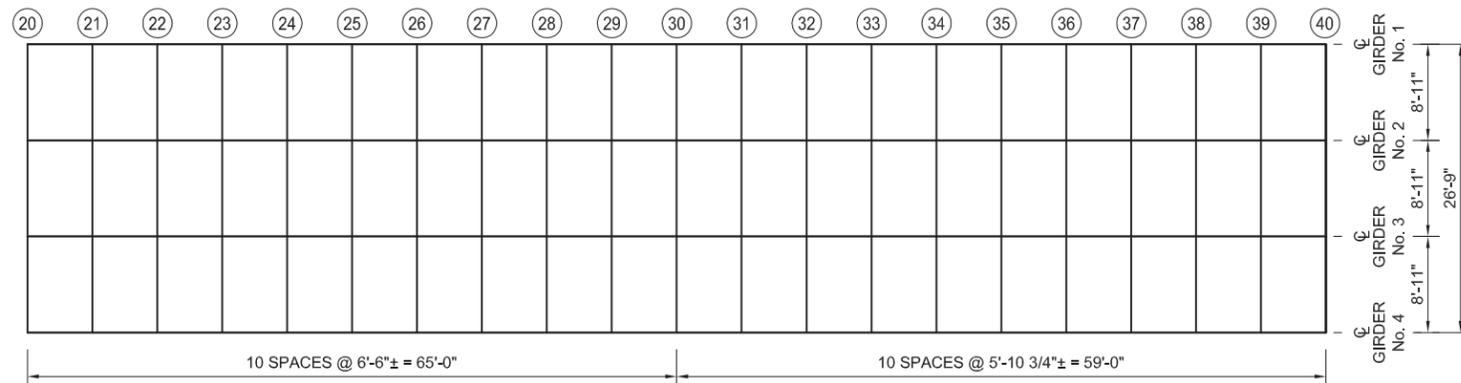
NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 14.

DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

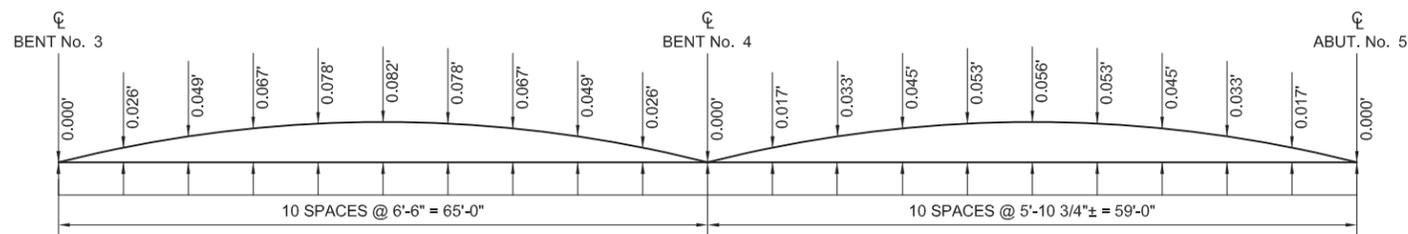
FOR BIDDING PURPOSES ONLY

TABLE OF SLAB FORM ELEVATIONS AND CALCULATIONS

21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
1643.378	1643.401	1643.419	1643.431	1643.435	1643.431	1643.419	1643.401	1643.378	1643.352	1643.370	1643.386	1643.398	1643.406	1643.408	1643.406	1643.398	1643.386	1643.370	1643.352	ELEV. "M"	GIRDER No. 1
																				(-) ELEV. "N"	
																				(=) d	
																				(-) 0.688'	
																				(=) h	GIRDER No. 2
1643.557	1643.580	1643.598	1643.609	1643.613	1643.609	1643.598	1643.580	1643.557	1643.531	1643.548	1643.564	1643.576	1643.584	1643.587	1643.584	1643.576	1643.564	1643.548	1643.531	ELEV. "M"	
																				(-) ELEV. "N"	
																				(=) d	
																				(-) 0.688'	
																				(=) h	GIRDER No. 3
1643.557	1643.580	1643.598	1643.609	1643.613	1643.609	1643.598	1643.580	1643.557	1643.531	1643.548	1643.564	1643.576	1643.584	1643.587	1643.584	1643.576	1643.564	1643.548	1643.531	ELEV. "M"	
																				(-) ELEV. "N"	
																				(=) d	
																				(-) 0.688'	
																				(=) h	GIRDER No. 4
1643.378	1643.401	1643.419	1643.431	1643.435	1643.431	1643.419	1643.401	1643.378	1643.352	1643.370	1643.386	1643.398	1643.406	1643.408	1643.406	1643.398	1643.386	1643.370	1643.352	ELEV. "M"	
																				(-) ELEV. "N"	
																				(=) d	
																				(-) 0.688'	
																				(=) h	



GIRDER LAYOUT



CAMBER DIAGRAM



ERECTION DATA AND
SLAB FORM ELEVATIONS (2 OF 2)
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY:
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

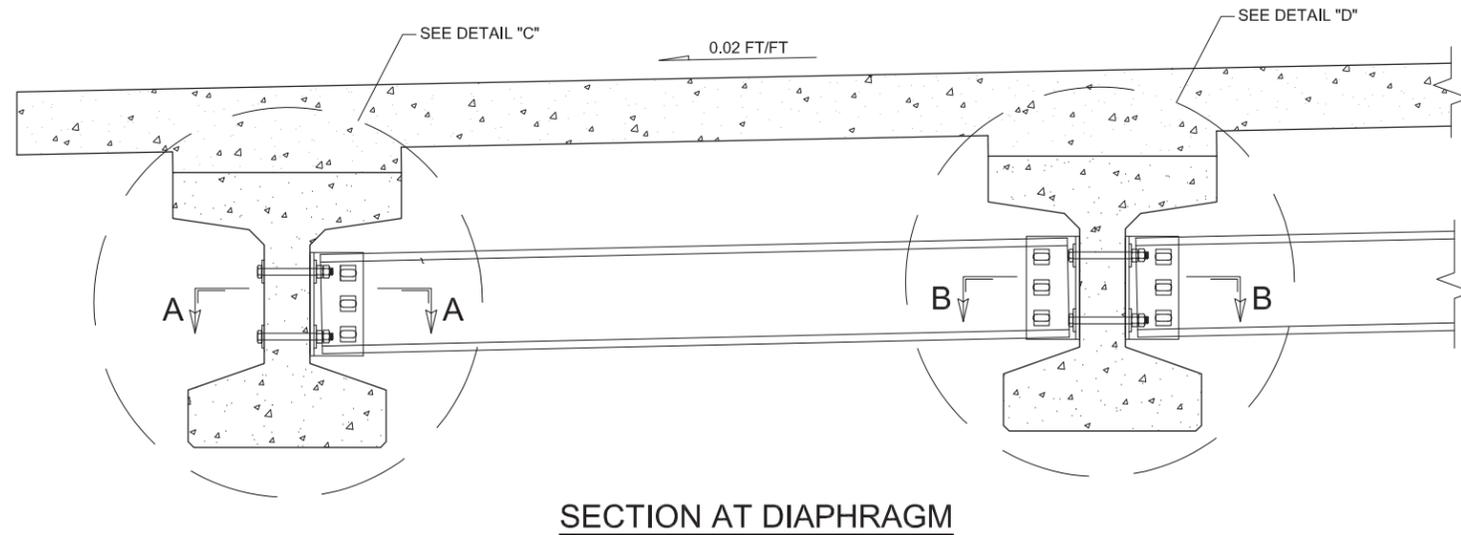
HL-93
STR. No. 06-120-012
PCN 01W9

14 OF 22

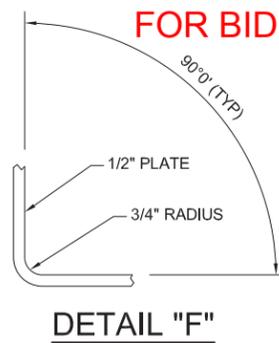
NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 13.

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

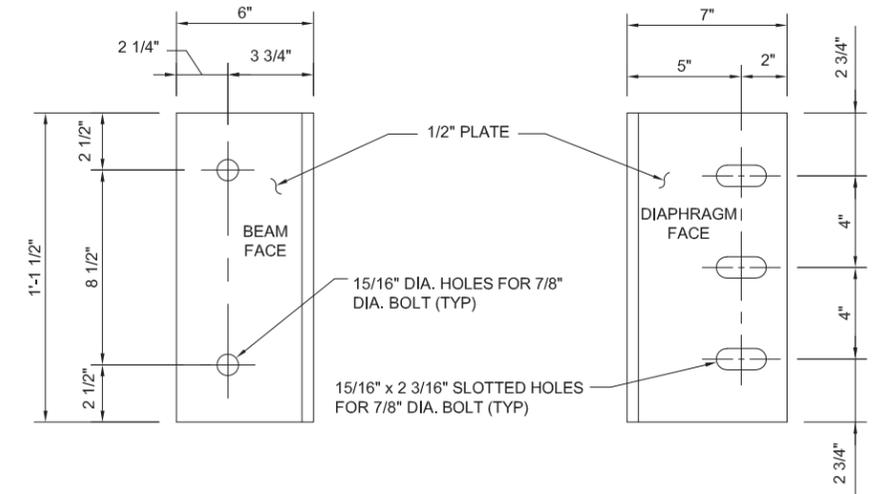
FOR BIDDING PURPOSES ONLY



SECTION AT DIAPHRAGM



DETAIL "F"



DIAPHRAGM SUPPORT

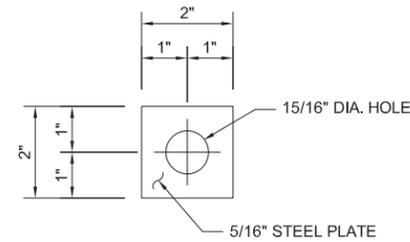
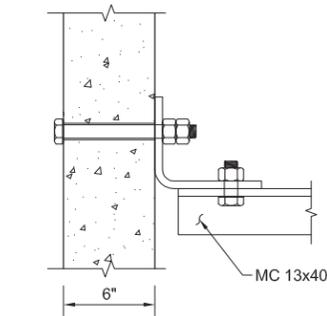
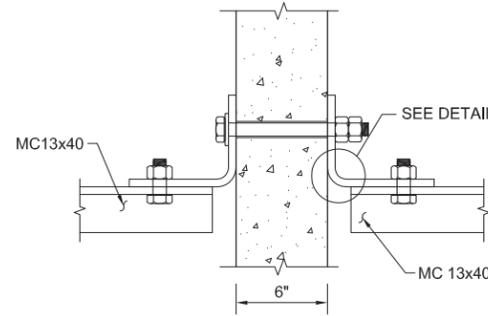


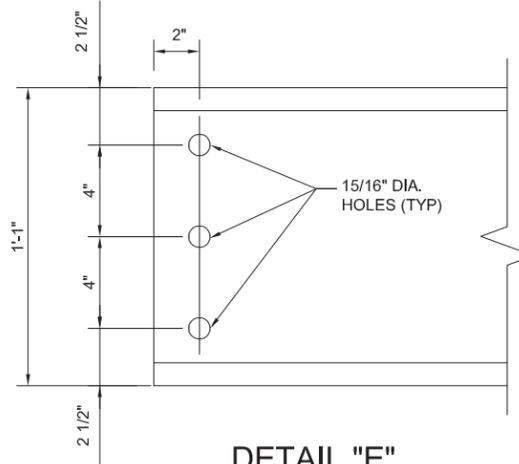
PLATE WASHER DETAIL



SECTION A-A



SECTION B-B



DETAIL "E"

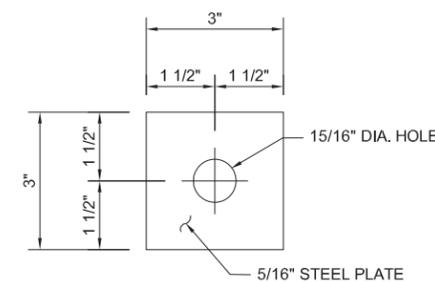
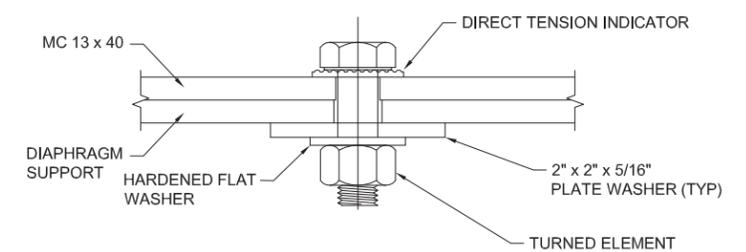


PLATE WASHER DETAIL



DIRECT TENSION INDICATOR DETAIL

* BOLT HEAD AND 3"x3"x5/16" PLATE WASHER SHALL BE ADJACENT TO THE EXTERIOR FACE OF THE EXTERIOR GIRDER.



DIAPHRAGM DETAILS FOR 250'-0" PRESTRESSED GIRDER BRIDGE 0° SKEW

- 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
STRUCTURAL STEEL, MISCELLANEOUS	LS	LUMP SUM

Δ FOR INFORMATIONAL PURPOSES, THE ESTIMATED WEIGHT OF STRUCTURAL STEEL FOR 12 DIAPHRAGMS IS 5,000 LBS

30'-0" ROADWAY OVER BIG SIOUX RIVER STA. 16+49.00 TO 18+99.00

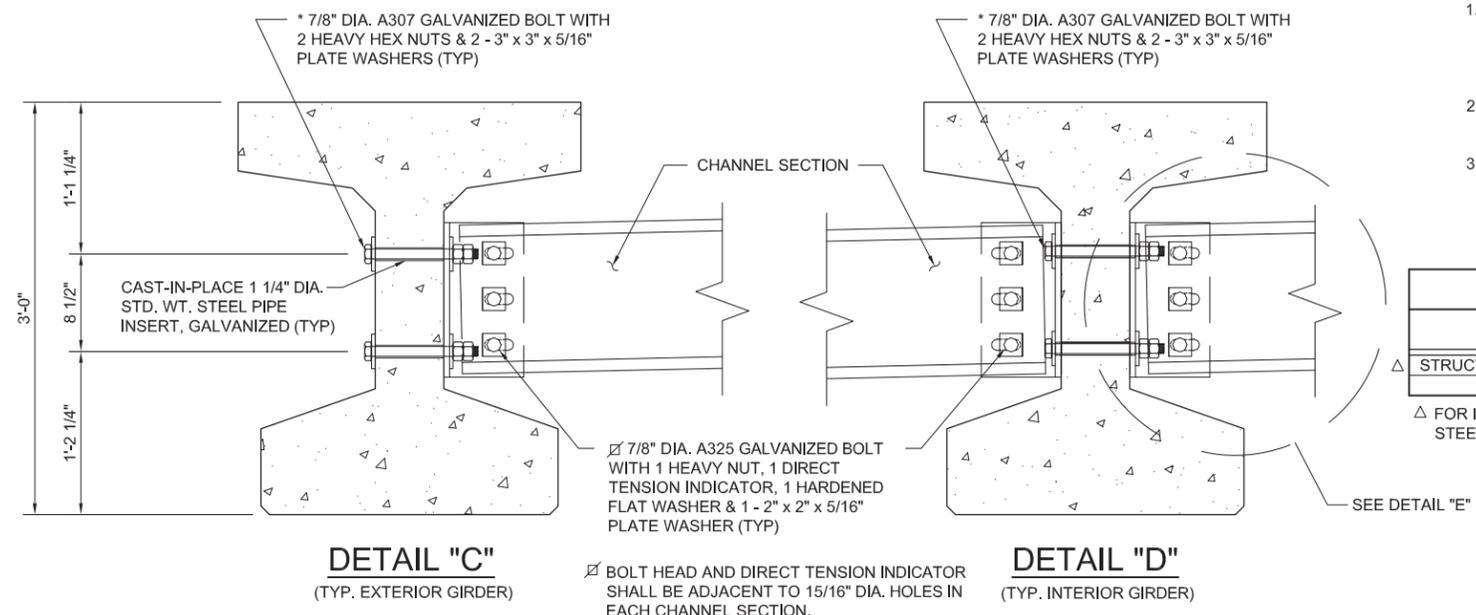
SEC. 7/12-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS BROOKINGS, SOUTH DAKOTA DECEMBER 2015

HL-93 STR. No. 06-120-012 PCN 01W9

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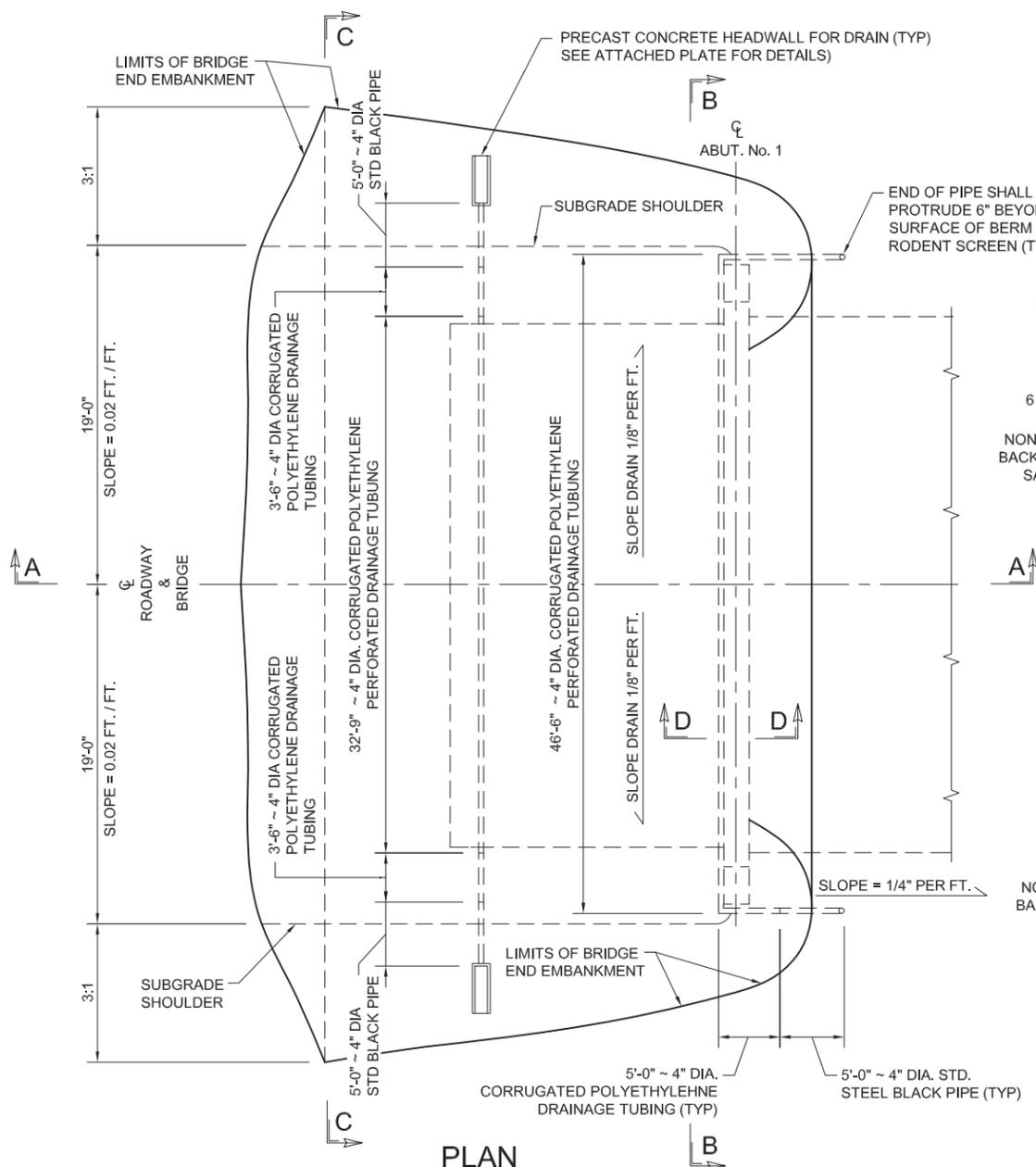
DETAIL "C"
(TYP. EXTERIOR GIRDER)

DETAIL "D"
(TYP. INTERIOR GIRDER)

Δ BOLT HEAD AND DIRECT TENSION INDICATOR SHALL BE ADJACENT TO 15/16" DIA. HOLES IN EACH CHANNEL SECTION.

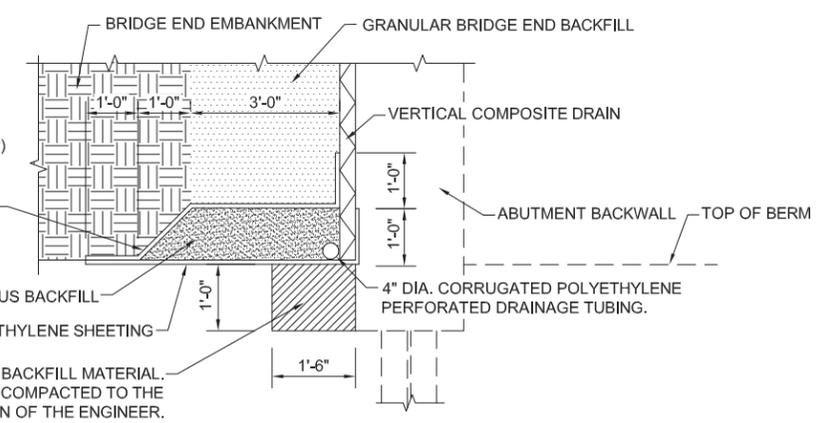
DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

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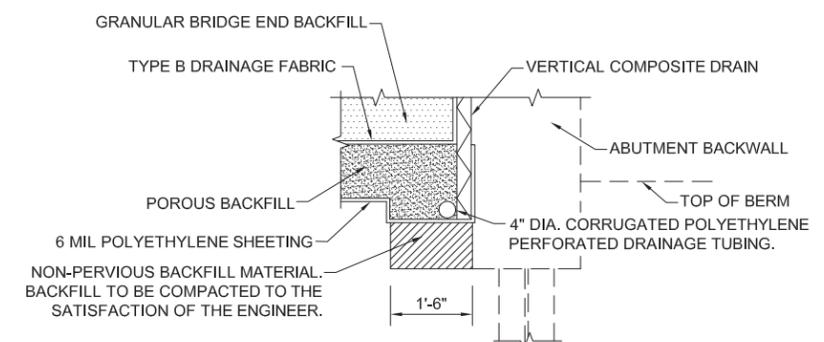


PLAN

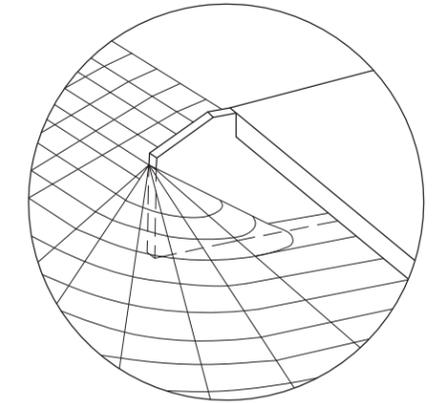
(BRIDGE END BACKFILL SHOWN ADJACENT TO ABUT. No. 1
ABUT No. 5 SIMILAR OPPOSITE HAND EXCEPT AS SHOWN)



DETAIL "X"



SECTION D-D



SPILL CONE DETAIL AT EMBANKMENT

**ESTIMATED QUANTITIES
(FOR TWO ABUTMENTS)**

ITEM	UNIT	QUANTITY
BRIDGE END EMBANKMENT	CU. YD.	845
GRANULAR BRIDGE END EMBANKMENT	CU. YD.	69
POROUS BACKFILL	TON	33
4" UNDERDRAIN PIPE	FT.	233
PRECAST CONCRETE HEADWALL FOR DRAIN	EACH	4

ITEMS 1 THRU 3 ARE APPROXIMATE QUANTITIES CONTAINED IN THE 4" UNDERDRAIN PIPE AND ARE FOR INFORMATION ONLY.

- 159 FT. 4" DIA. CORRUGATED POLYETHYLENE PERFORATED DRAINAGE TUBING.
- 34 FT. 4" DIA. CORRUGATED POLYETHYLENE DRAINAGE TUBING.
- 40 FT. 4" DIA. STD. BLACK STEEL PIPE WITH RODENT SCREENS

ITEMS 4 THRU 6 ARE APPROXIMATE QUANTITIES CONTAINED IN THE GRANULAR BRIDGE END BACKFILL AND ARE FOR INFORMATION ONLY.

- 360 SQ. FT. VERTICAL COMPOSITE DRAIN
- 2785 SQ. FT. 6 MIL POLYETHYLENE SHEETING, NOT INCLUDING LAPS.
- 218 SQ. YD. TYPE B DRAINAGE FABRIC.

FOR ESTIMATING PURPOSES ONLY, A FACTOR OF 1.89 TONS / CU. YD. WAS USED TO CONVERT CU. YDS. TO TONS.

SHRINKAGE FACTOR OF 1.3 USED.

INCLUDES 5± CU. YDS. OF NON-PERVIOUS BACKFILL INCIDENTAL TO GRANULAR BRIDGE END BACKFILL.

QUANTITY IS BASED ON 12" WIDE TRENCH



**DETAILS OF BRIDGE END BACKFILL (1 OF 2)
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW**

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

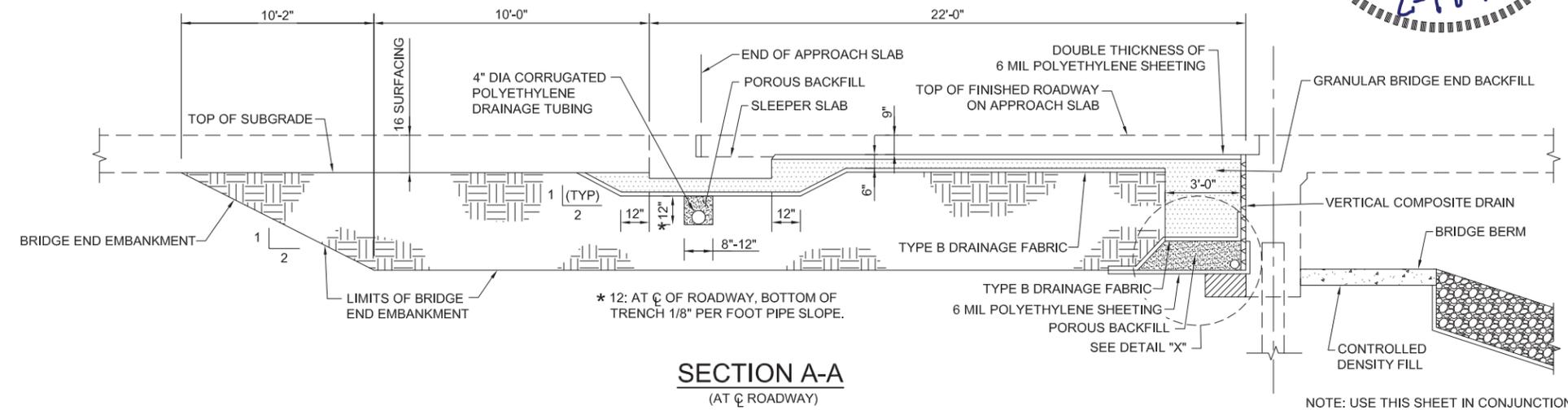
SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

**BROOKINGS COUNTY
SOUTH DAKOTA**

PREPARED BY:
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA

HL-93
STR. No. 06-120-012
PCN 01W9

DECEMBER 2015



SECTION A-A

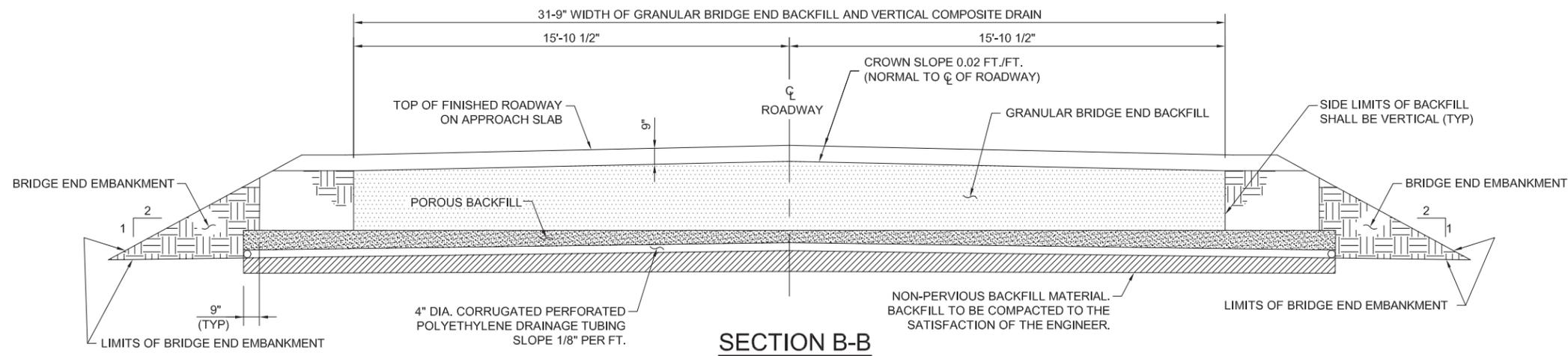
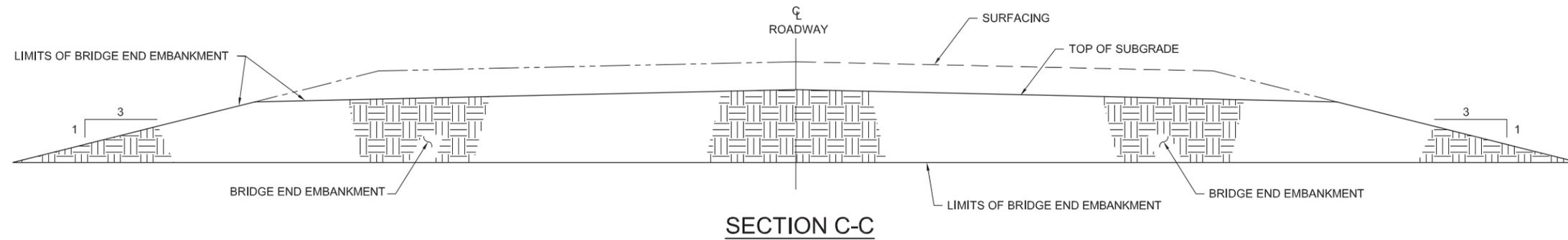
(AT ROADWAY)

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 17.

DESIGNED BY: H.M.M.	DRAWN BY: T.C.S.	CHECKED BY: D.J.W.	APPROVED: BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	47	91



DETAILS OF BRIDGE END BACKFILL (2 OF 2)
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY :
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

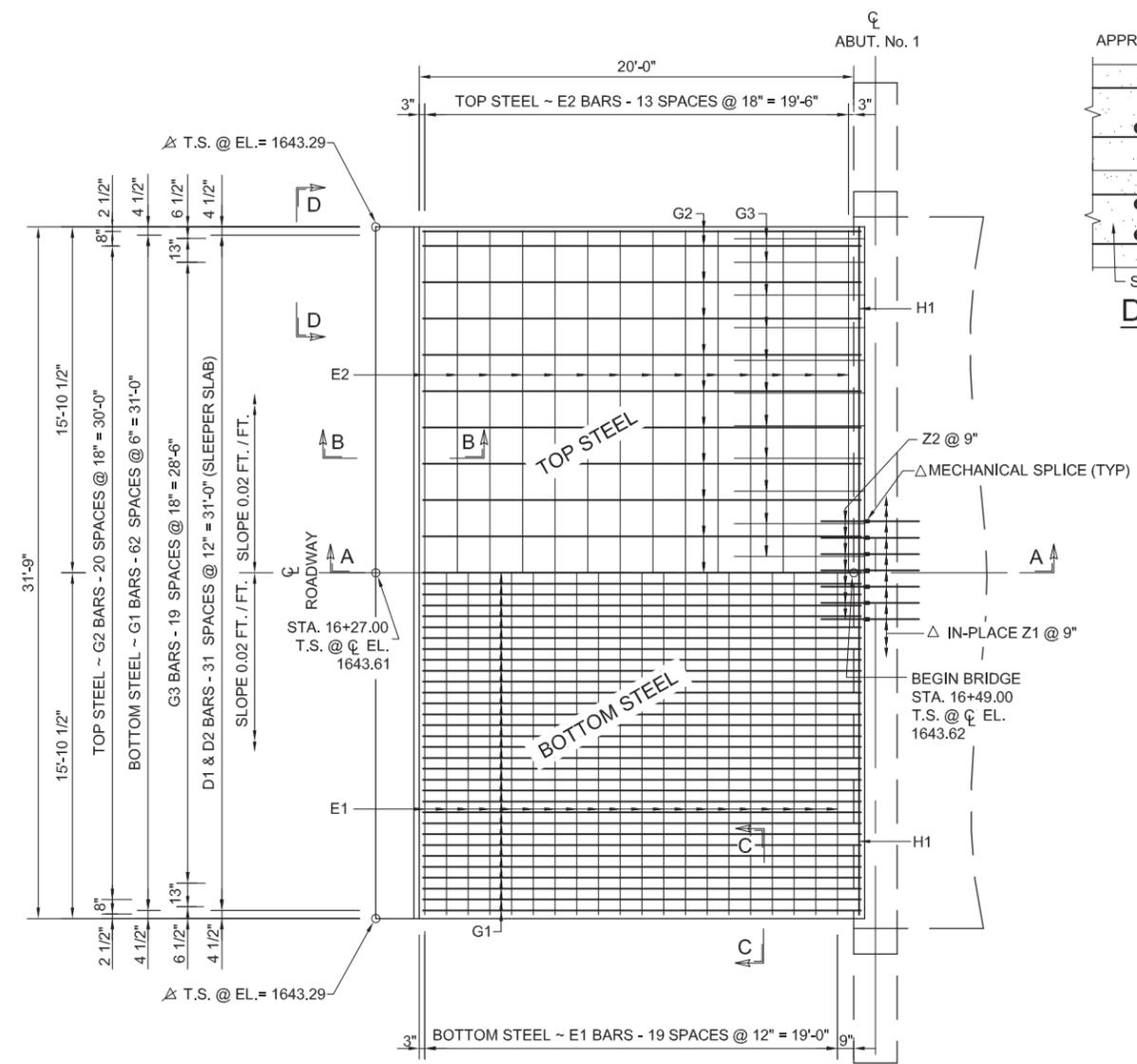
HL-93
STR. No. 06-120-012
PCN 01W9

17 OF 22

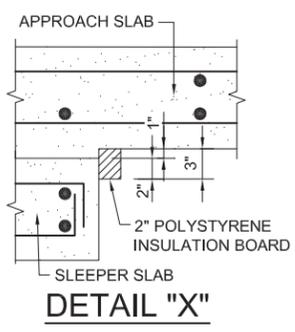
NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 16.

DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

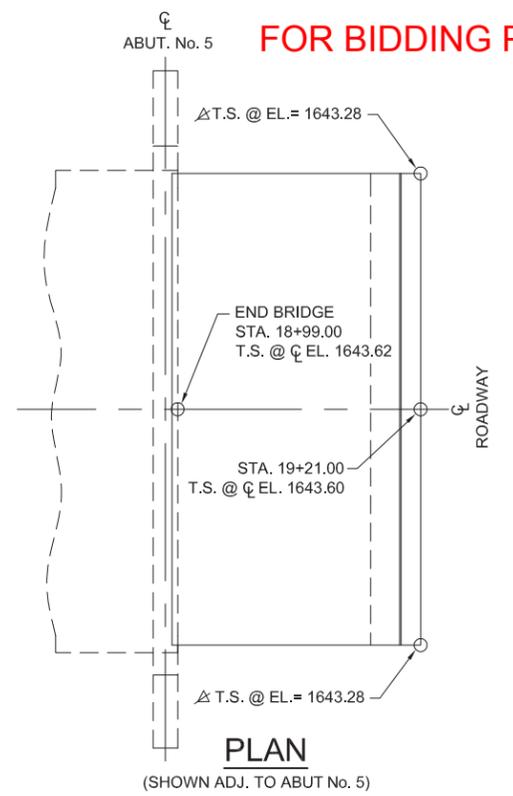
FOR BIDDING PURPOSES ONLY



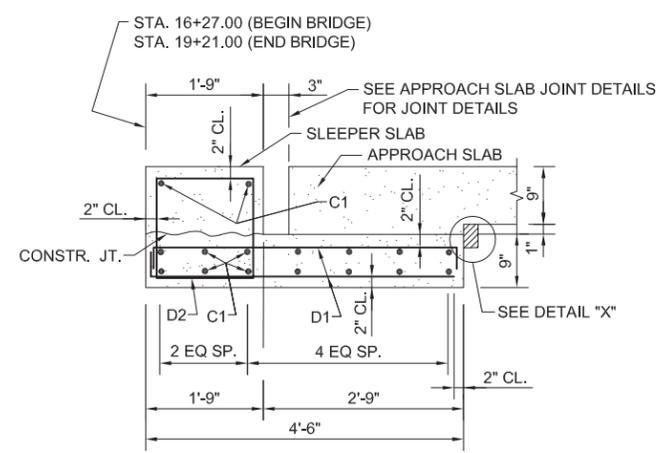
PLAN
(SHOWN ADJ. TO ABUT. No. 1, ABUT. No. 5
SIMILAR BY OPPOSITE HAND AS SHOWN.)



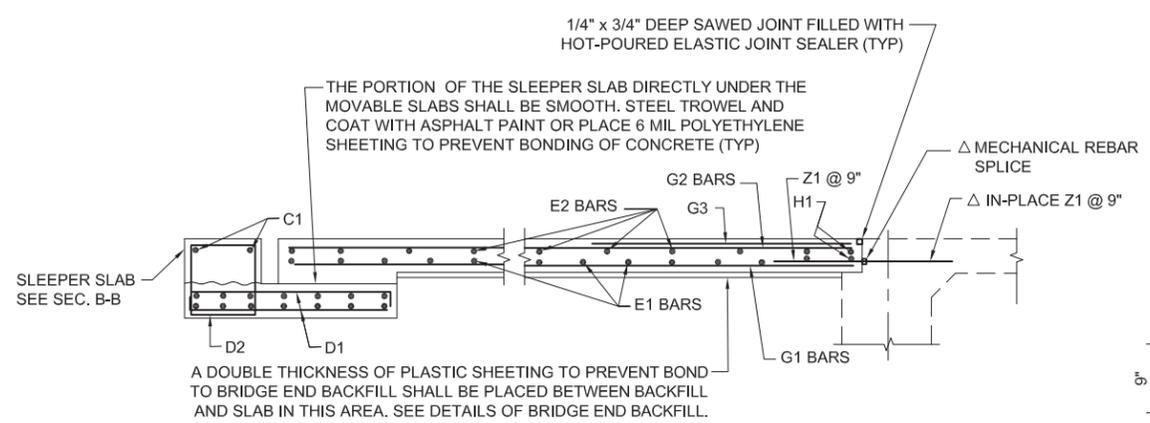
DETAIL "X"



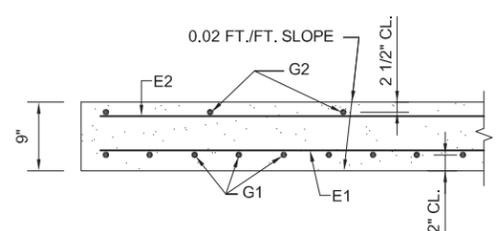
PLAN
(SHOWN ADJ. TO ABUT No. 5)



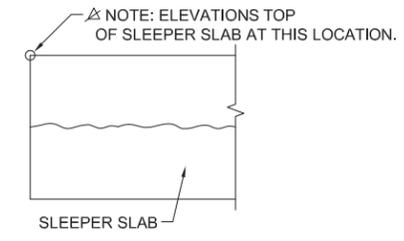
SECTION B-B
(SLEEPER SLAB)



SECTION A-A



SECTION C-C



VIEW D-D

REINFORCING SCHEDULE					(FOR TWO APPROACH SLABS & TWO SLEEPER SLABS)	
MK.	No.	SIZE	LENGTH	TYPE	BENDING DETAILS	
SLEEPER SLABS						
C1	32	5	31'-5"	STR.		
D1	128	4	5'-0"	2		
D2	64	4	6'-1"	T2		
APPROACH SLABS						
E1	40	6	31'-5"	STR.		
E2	28	4	31'-5"	STR.		
G1	130	8	20'-2"	STR.		
G2	46	4	20'-2"	STR.		
G3	44	4	6'-0"	STR.		
H1	4	6	31'-5"	STR.		
Z2	84	7	2'-0"	STR.		

NOTES:
ALL BARS TO BE EPOXY COATED
ALL DIMENSIONS ARE OUT TO OUT OF BARS

ESTIMATED QUANTITIES			(FOR TWO APPROACH SLABS & TWO SLEEPER SLABS)	
ITEM	UNIT	QUANTITY		
CONCRETE APPROACH SLAB FOR BRIDGE	SQ. YD.	144.6		
CONCRETE APPROACH SLEEPER SLAB FOR BRIDGE	SQ. YD.	31.8		

- ITEMS 1 THRU 5 ARE APPROXIMATE QUANTITIES CONTAINED IN THE ABOVE BID ITEMS AND ARE FOR INFORMATION ONLY.
- 36.6 CU. YDS. CONCRETE IN APPROACH SLABS.
 - 10,805 LBS. EPOXY COATED RE-STEEL IN APPROACH SLABS.
 - 11.4 CU. YDS. CONCRETE IN SLEEPER SLABS.
 - 1,737 LBS. EPOXY COATED RE-STEEL IN SLEEPER SLABS.
 - 16 SQ. FT. OF 2" POLYSTYRENE INSULATION BOARD.



DETAILS OF APPROACH SLAB ADJACENT TO BRIDGE
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

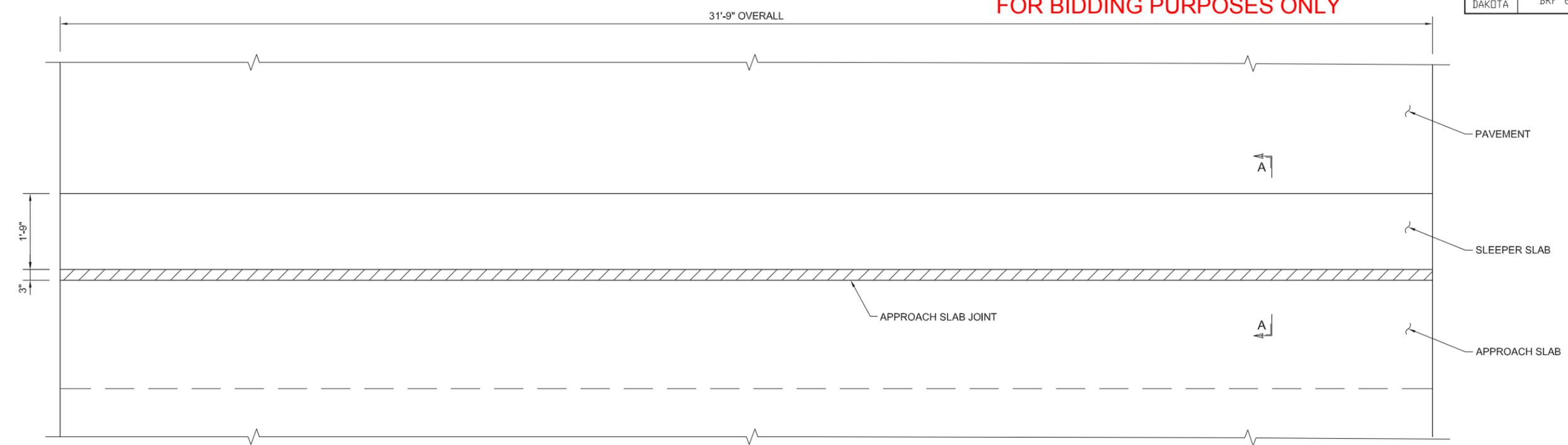
BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY:
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

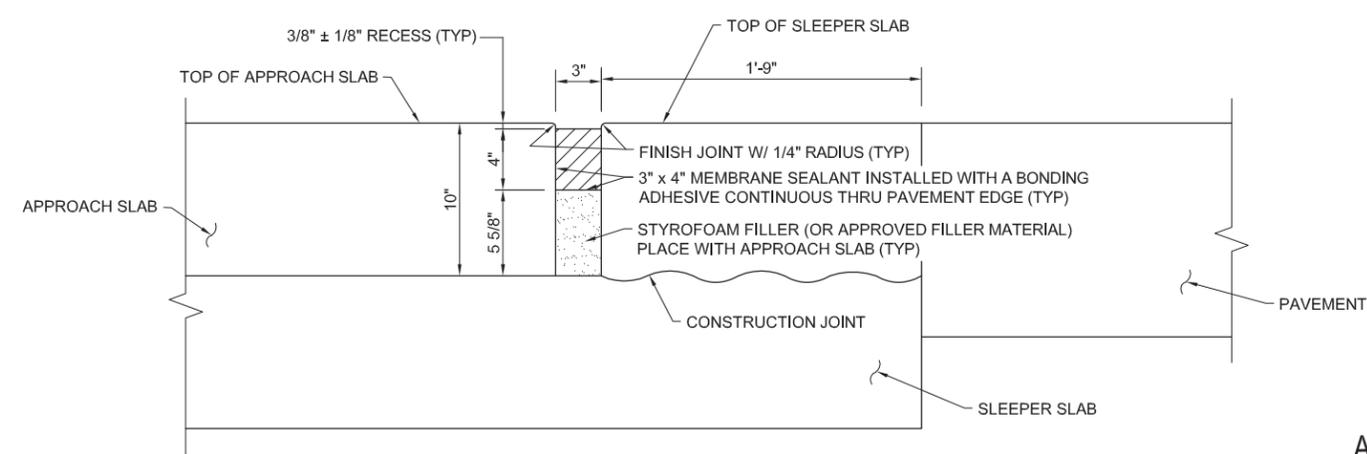
HL-93
STR. No. 06-120-012
PCN 01W9

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED:
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY



PLAN OF APPROACH SLAB JOINT



SECTION A-A

GENERAL NOTES:

1. THE MEMBRANE SEALANT SHALL BE ON THE APPROVED PRODUCT LIST FOR MEMBRANE SEALANT EXPANSION JOINTS.
2. THE MANUFACTURER SHALL SUPPLY THE MEMBRANE SEALANT IN PACKAGING THAT PRECOMPRESSES THE MEMBRANE SEALANT. THE PRECOMPRESSED DIMENSION SHALL BE AS RECOMMENDED BY THE SEALANT MANUFACTURER TO PROVIDE A WATER TIGHT SEAL THROUGHOUT A JOINT MOVEMENT RANGE OF +25% (MINIMUM) FROM THE SPECIFIED JOINT OPENING DIMENSION. IN NO CASE SHALL THE PRECOMPRESSED DIMENSION EXCEED 75% OF THE JOINT OPENING WIDTH. THE FOAM SEALANT SHALL BE SLOWLY SELF EXPANDING TO PERMIT WORKERS AMPLE TIME TO INSTALL THE MEMBRANE SEALANT BEFORE THE MEMBRANE SEALANT EXCEEDS THE JOINT OPENING WIDTH.
3. THE MEMBRANE SEALANT SHALL BE SUPPLIED IN PIECES 5 FEET IN LENGTH OR LONGER. THE FOAM SEALANT SHALL BE ULTRA-VIOLET AND OZONE RESISTANT.
4. THE BONDING ADHESIVE USED TO ATTACH THE MEMBRANE SEALANT TO THE ADJACENT CONCRETE SHALL BE APPROVED BY THE MEMBRANE SEALANT MANUFACTURER.
5. ADHESIVE USED TO JOIN ADJACENT PIECES OF THE MEMBRANE SEALANT SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
6. IF STYROFOAM FILLER MATERIAL IS USED IN THE CONSTRUCTION, IT SHALL BE CLOSED CELL AND WATER-TIGHT AS APPROVED BY THE ENGINEER.
7. THE MINIMUM AMBIENT AIR TEMPERATURE AT THE TIME OF JOINT INSTALLATION AND ADHESIVE CURING SHALL BE 40° F.
8. A TECHNICAL REPRESENTATIVE OF THE MEMBRANE SEALANT MANUFACTURER SHALL BE PRESENT AT THE JOBSITE DURING INSTALLATION. THE TECHNICAL REPRESENTATIVE SHALL BE KNOWLEDGEABLE IN THE CORRECT PROCEDURES FOR THE PREPARATION AND INSTALLATION OF THE JOINT MATERIAL TO INSURE THE CONTRACTOR INSTALLS THE JOINT TO THE MANUFACTURERS RECOMMENDATIONS.
9. CONCRETE SURFACES THAT WILL BE IN CONTACT WITH THE MEMBRANE SEALANT SHALL BE THOROUGHLY CLEANED BY ABRASIVE BLASTING TO REMOVE ALL LAITANCE AND CONTAMINANTS (SUCH AS OIL, CURING COMPOUNDS, ETC.) FROM THE CONCRETE SURFACE. AT A MINIMUM TWO PASSES OF ABRASIVE BLASTING WITH THE NOZZLE HELD AT AN ANGLE TO WITHIN 1 TO 2 INCHES OF THE CONCRETE SURFACE WILL BE REQUIRED. CLEANING OF THE CONCRETE SURFACES WITH SOLVENTS, WIRE BRUSHING, OR GRINDING SHALL NOT BE PERMITTED.
10. AFTER ABRASIVE BLASTING, BUT IMMEDIATELY PRIOR TO MEMBRANE JOINT INSTALLATION, THE ENTIRE JOINT CONTACT SURFACE SHALL BE AIR BLASTED. THE AIR COMPRESSOR USED TO JOINT CLEANING SHALL BE EQUIPPED WITH TRAP DEVICES CAPABLE OF PROVIDING MOISTURE-FREE AND OIL-FREE AIR AT A RECOMMENDED PRESSURE OF 90 PSI. TO OBTAIN COMPLETE BONDING WITH THE ADHESIVE, THE ADJACENT CONCRETE SURFACES MUST BE DRY AND CLEAN. THE CONTACT SURFACES FOR THE JOINT SHALL BE VISUALLY INSPECTED BY THE ENGINEER IMMEDIATELY PRIOR TO JOINT INSTALLATION TO VERIFY THE SURFACE IS DRY AND CLEAN.
11. INDIVIDUAL SPLICED SECTIONS SHALL BE INSTALLED AS PER THE MANUFACTURERS RECOMMENDATIONS. THE MEMBRANE JOINT SEALANT MANUFACTURER SHALL SUBMIT A DETAILED INSTALLATION PROCEDURE TO THE ENGINEER AT LEAST 5 DAYS PRIOR TO JOINT INSTALLATION FOR HIS REVIEW.
12. USE PLYWOOD OR OTHER MATERIAL TO PROTECT CONCRETE ADJACENT TO THE JOINT FROM SPALLING BEFORE ANY EQUIPMENT IS MOVED ACROSS THE JOINT. ANY SPALL AREAS WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE BY BREAKING OUT AND REPLACING ADJACENT CONCRETE, AS APPROVED BY THE ENGINEER.
13. THE MEMBRANE SEALANT EXPANSION JOINT WILL BE MEASURED IN FEET TO THE NEAREST ONE-TENTH FOOT, COMPLETE IN PLACE. MEASUREMENT WILL BE MADE OF THE OVERALL HORIZONTAL LENGTH. THE MEMBRANE SEALANT EXPANSION JOINT WILL BE PAID FOR AT THE CONTRACT UNIT PRICE PER FOOT COMPLETE IN PLACE. PAYMENT FOR THIS ITEM SHALL BE FULL COMPENSATION FOR FURNISHING ALL THE REQUIRED MATERIALS IN PLACE, INCLUDING LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THE PLANS AND THE FOREGOING SPECIFICATIONS.



**APPROACH SLAB JOINT DETAILS
FOR
250'-0" PRESTRESSED GIRDER BRIDGE
0° SKEW**

30'-0" ROADWAY
OVER BIG SIOUX RIVER
STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W
BRF 6295(10)

**BROOKINGS COUNTY
SOUTH DAKOTA**

PREPARED BY :
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

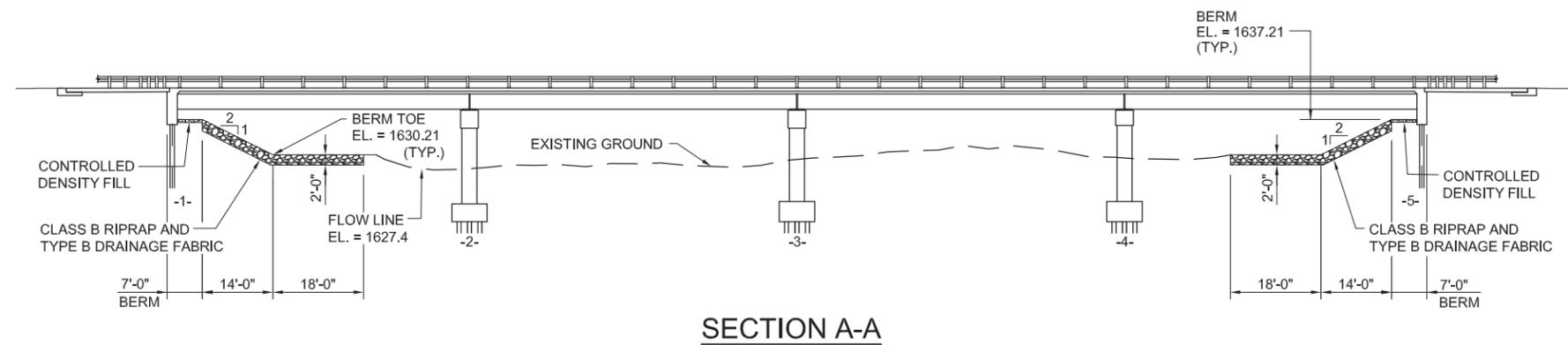
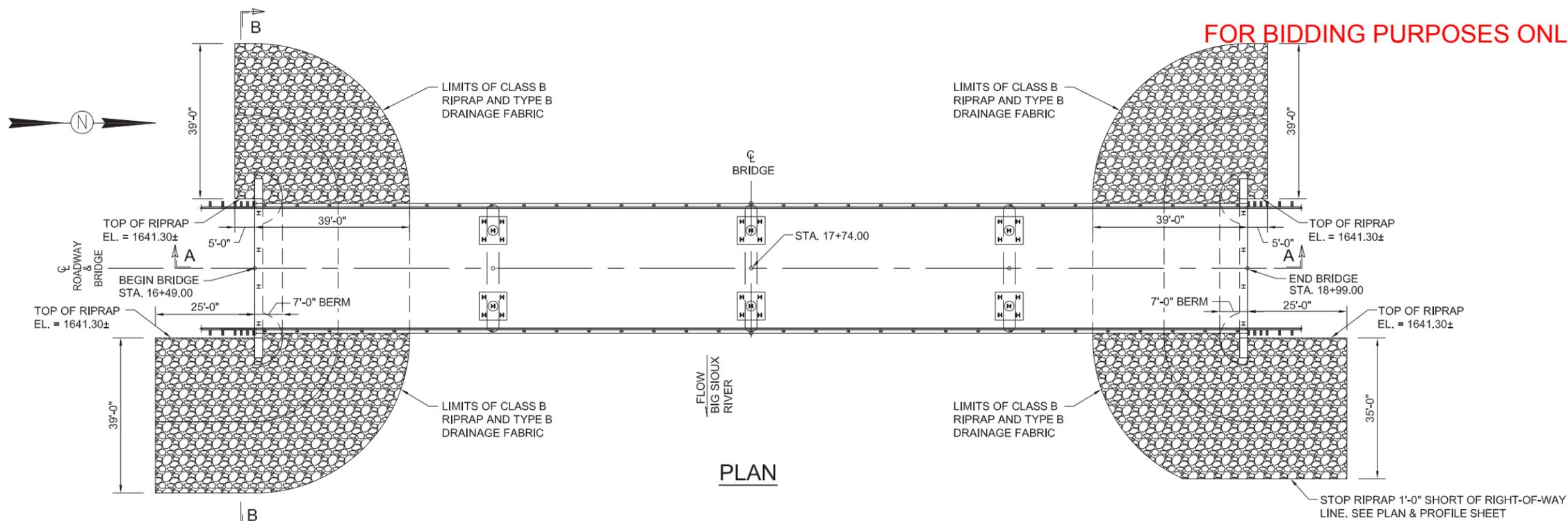
HL-93
STR. No. 06-120-012
PCN 01W9

19 OF 22

ESTIMATED QUANTITIES (FOR TWO APPROACH SLABS)		
ITEM	UNIT	QUANTITY
MEMBRANE SEALANT EXPANSION JOINT	FT.	63.5

DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
H.M.M.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
CLASS B RIPRAP	TON	819.3
TYPE B DRAINAGE FABRIC	SQ. YD.	1,017
CONTROLLED DENSITY FILL	CU. YD.	8.3

FOR ESTIMATING PURPOSES ONLY, A FACTOR OF 1.4 TONS PER CUBIC YARD WAS USED TO CONVERT CUBIC YARDS TO TONS.

RIPRAP DETAILS FOR 250'-0" PRESTRESSED GIRDER BRIDGE 0° SKEW

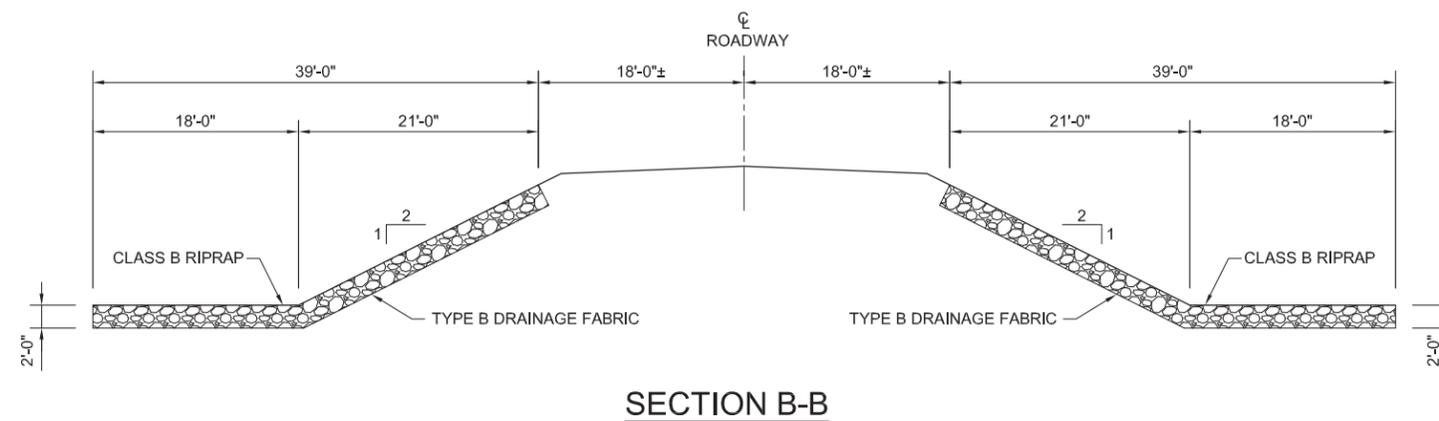
30'-0" ROADWAY OVER BIG SIOUX RIVER STA. 16+49.00 TO 18+99.00

SEC. 7/12-T112N-R50W/R51W BRF 6295(10)

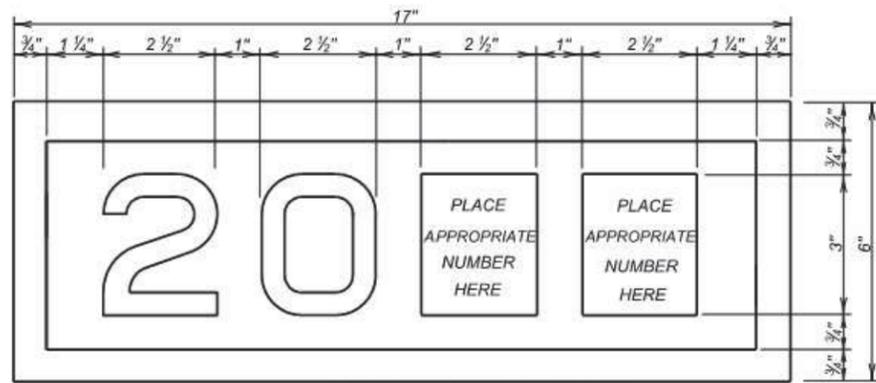
BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS BROOKINGS, SOUTH DAKOTA DECEMBER 2015

HL-93 STR. No. 06-120-012 PCN 01W9



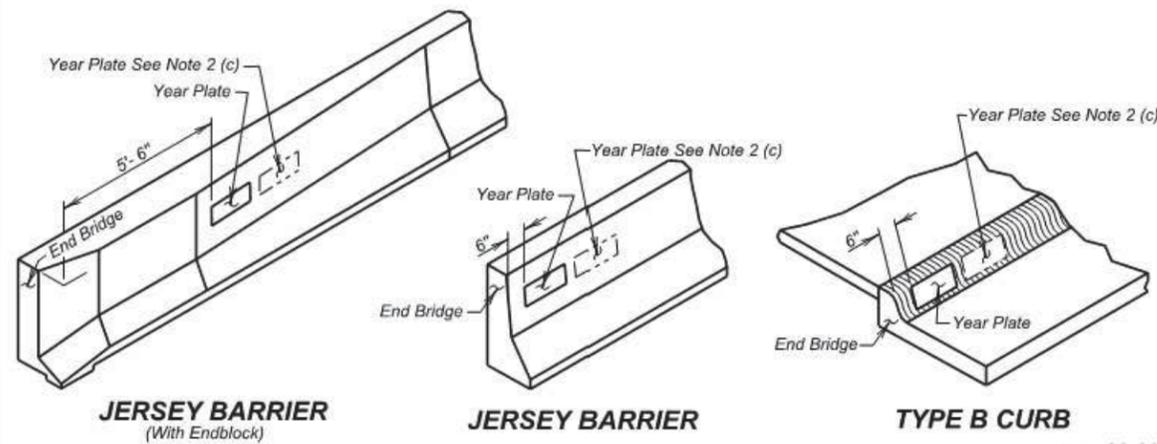
DESIGNED BY: H.M.M.	DRAWN BY: T.C.S.	CHECKED BY: D.J.W.	APPROVED: BRIDGE ENGINEER
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YEAR PLATE DETAILS

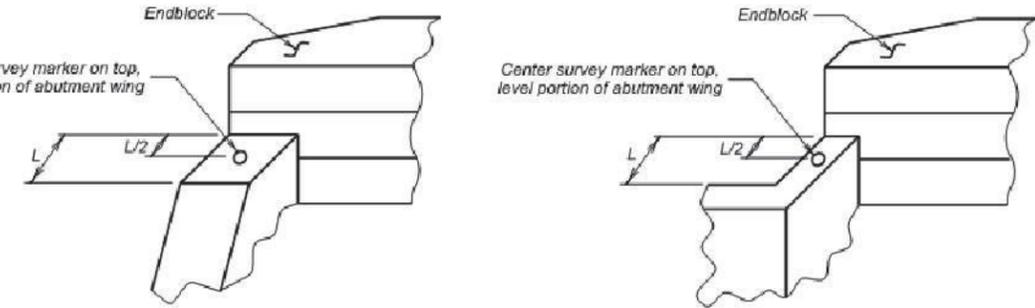
GENERAL NOTES:

- 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.



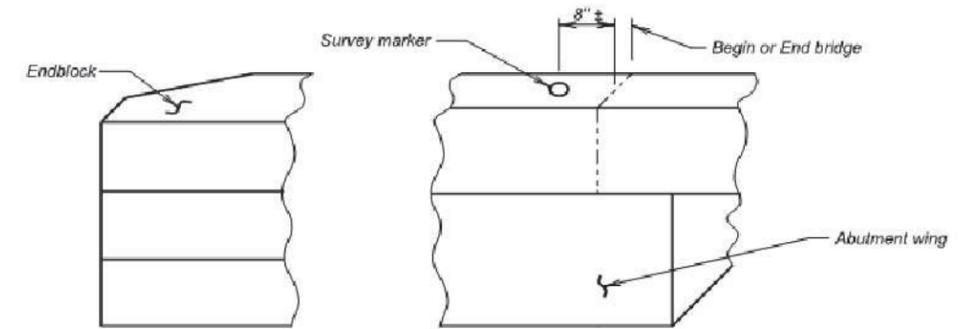
June 26, 2012

Published Date: 1st Qtr. 2016	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



ABUTMENT WITH "STRAIGHT" WINGS

ABUTMENT WITH "SWEEPED BACK" WINGS



ABUTMENT WITH "SWEEPED BACK" WINGS

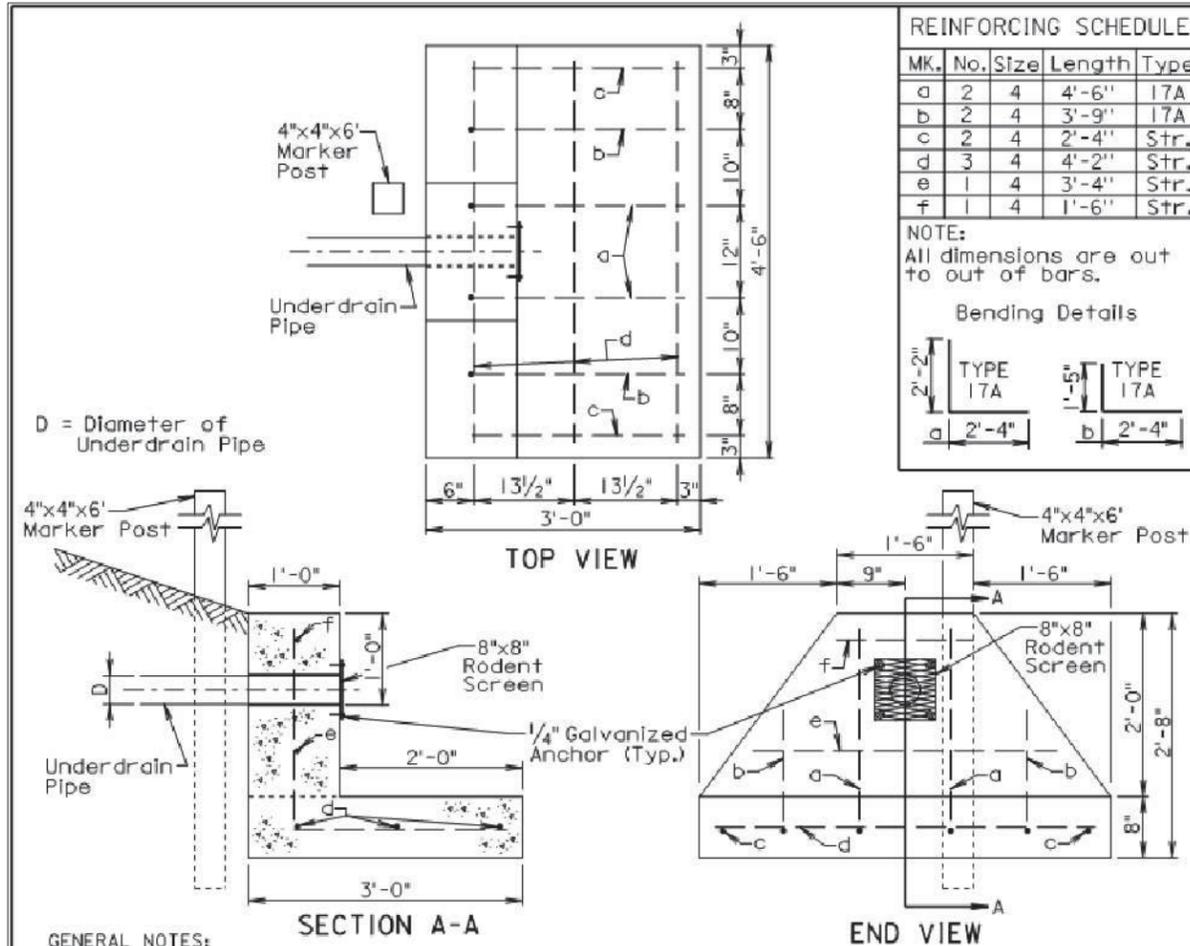
(Endblock on top of wings)

GENERAL NOTES:

- Survey markers shall be located at each abutment on the same side of the bridge as the year plate. Place survey markers on abutment wings as shown. Two survey markers will be required at each bridge.
- Survey markers shall be of a type intended for installation in concrete, be made of solid brass or bronze, have a domed top and be either a 3" top diameter (with a 3/4" X 2" long ribbed shank), or a US Army Corps of Engineers Type C Disc with a 3 1/2" top diameter.
- There will be no separate measurement or payment made for survey markers. All costs for this work shall be incidental to the other contract items.

June 26, 2012

Published Date: 1st Qtr. 2016	S D D O T	BRIDGE SURVEY MARKER	PLATE NUMBER 460.05
			Sheet 1 of 1

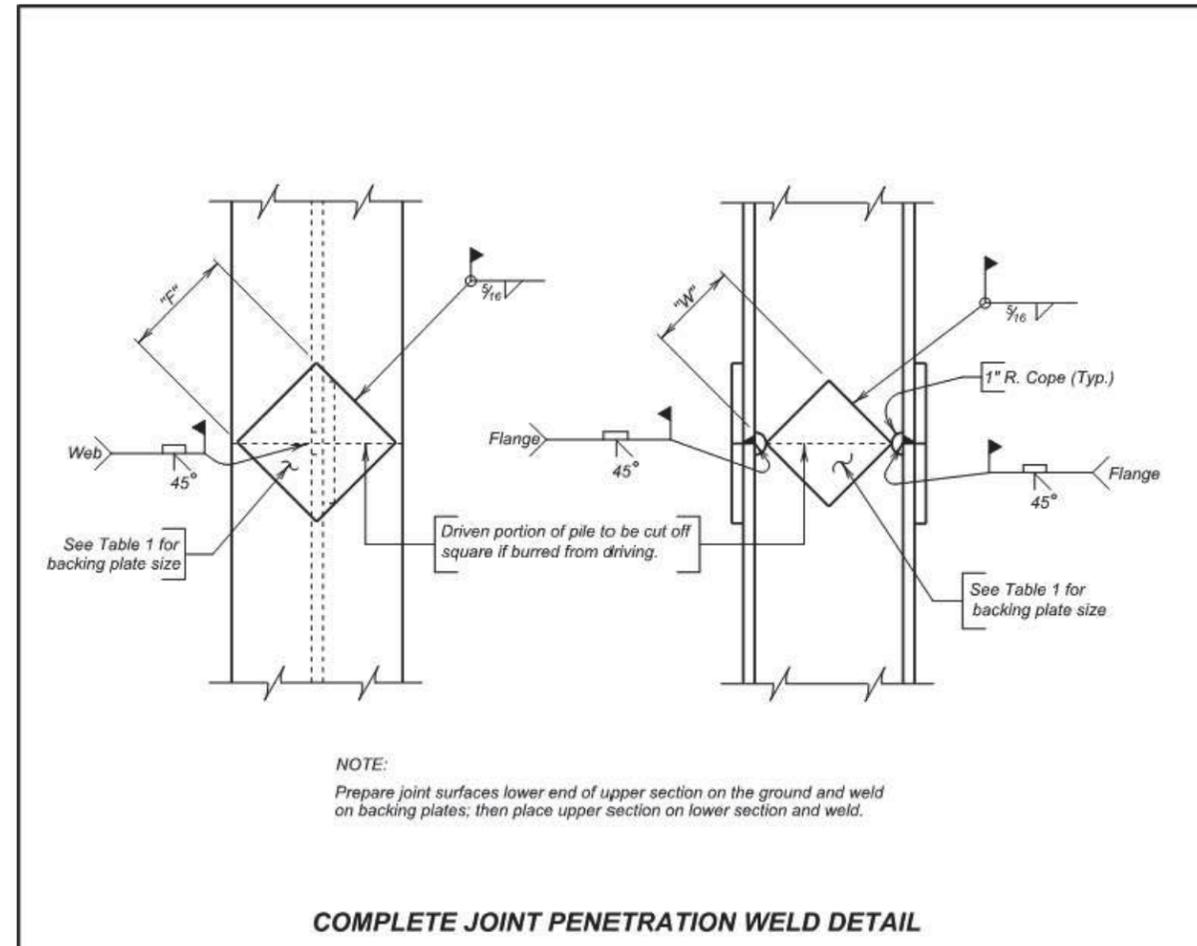


GENERAL NOTES:

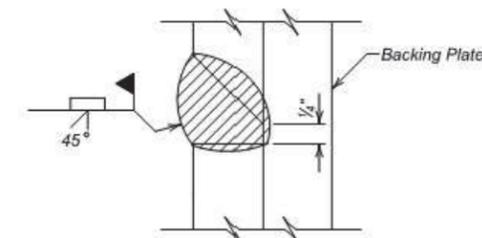
- The concrete shall be Class M6. The concrete shall conform to the requirements of Section 462 of the Specifications except the minimum curing time shall be 72 hours. It is estimated that 0.55 cubic yards of concrete is required for each unit.
- Four cast-in-place or drilled-in 1/4" galvanized anchors shall be placed in the headwall. Each galvanized anchor shall be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.
- All reinforcing steel shall conform to ASTM A615 Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.
- The underdrain pipe shall be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.
- The 8"x8" rodent screen shall be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size shall be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen shall be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.
- A 4"x4"x6' marker post shall be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post shall project 3'+ above the ground line. The marker post shall be cedar or treated with a wood preservative and shall be painted with two coats of white paint.
- All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, rodent screen, anchors, and marker post shall be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

June 26, 2015

S D D O T	CONCRETE HEADWALL FOR UNDERDRAIN	PLATE NUMBER 680.01
	Published Date: 1st Qtr. 2016	Sheet 1 of 1



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.

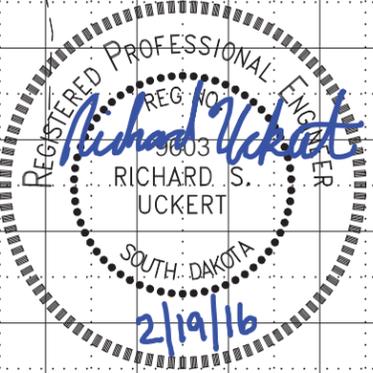
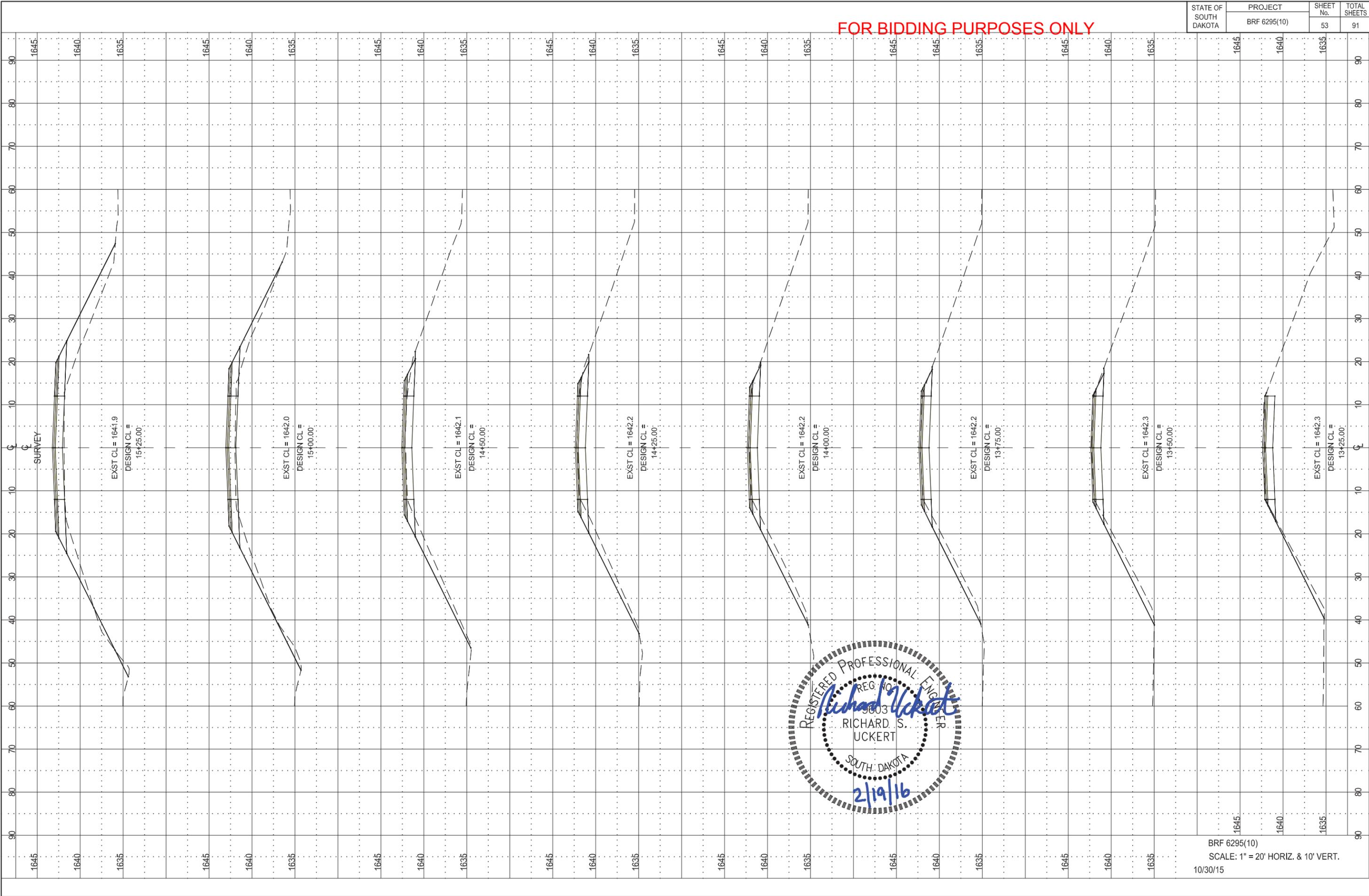
PILE	10"	12"	14"
"F" FLANGE	6 1/2"	8"	10"
"W" WEB	4 3/4"	6 1/4"	7 1/2"

December 23, 2012

S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
	Published Date: 1st Qtr. 2016	Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

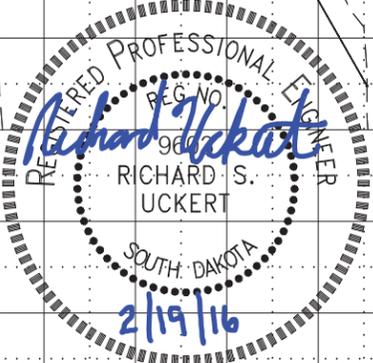
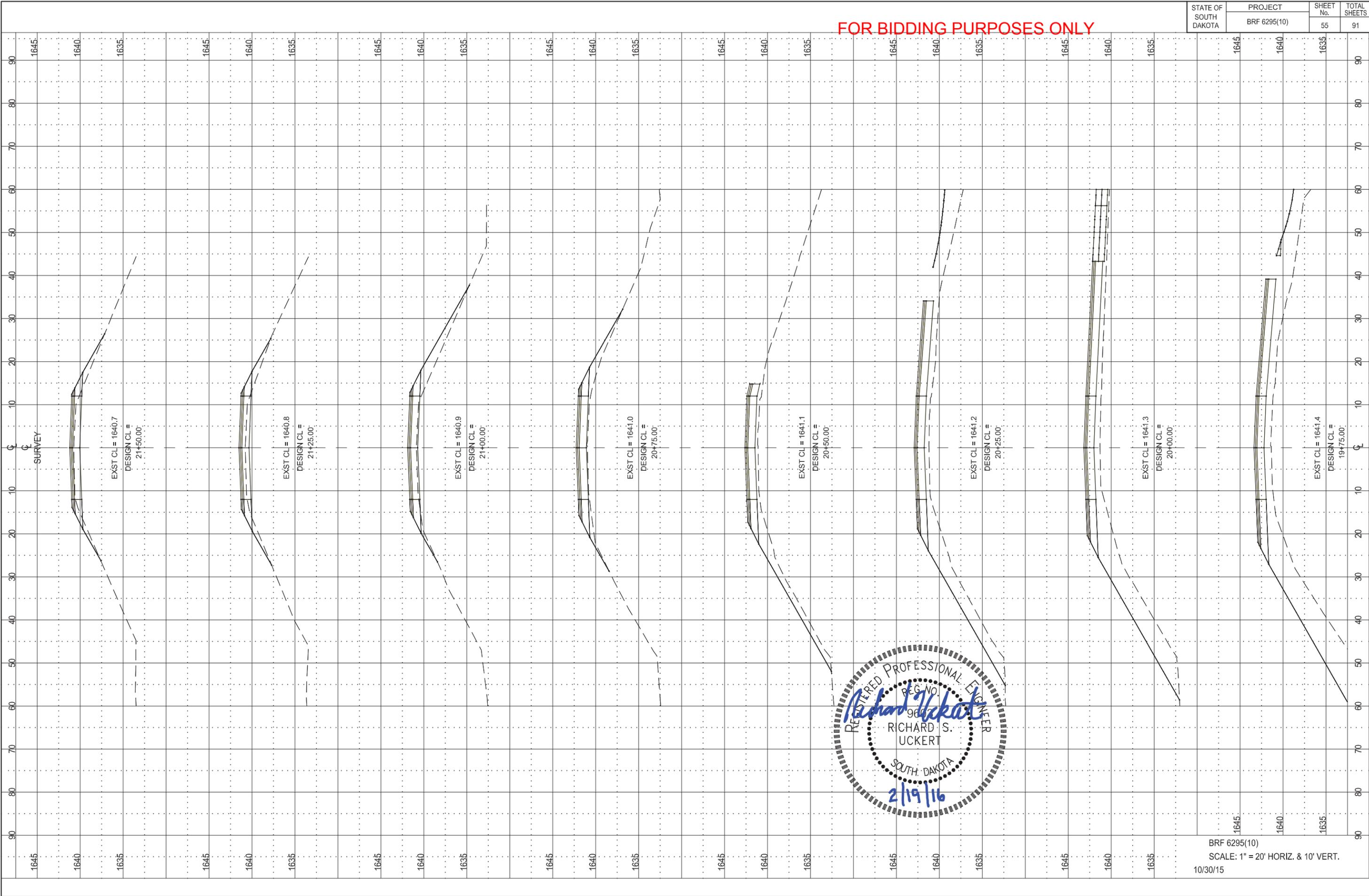
STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	53	91



BRF 6295(10)
 SCALE: 1" = 20' HORIZ. & 10' VERT.
 10/30/15

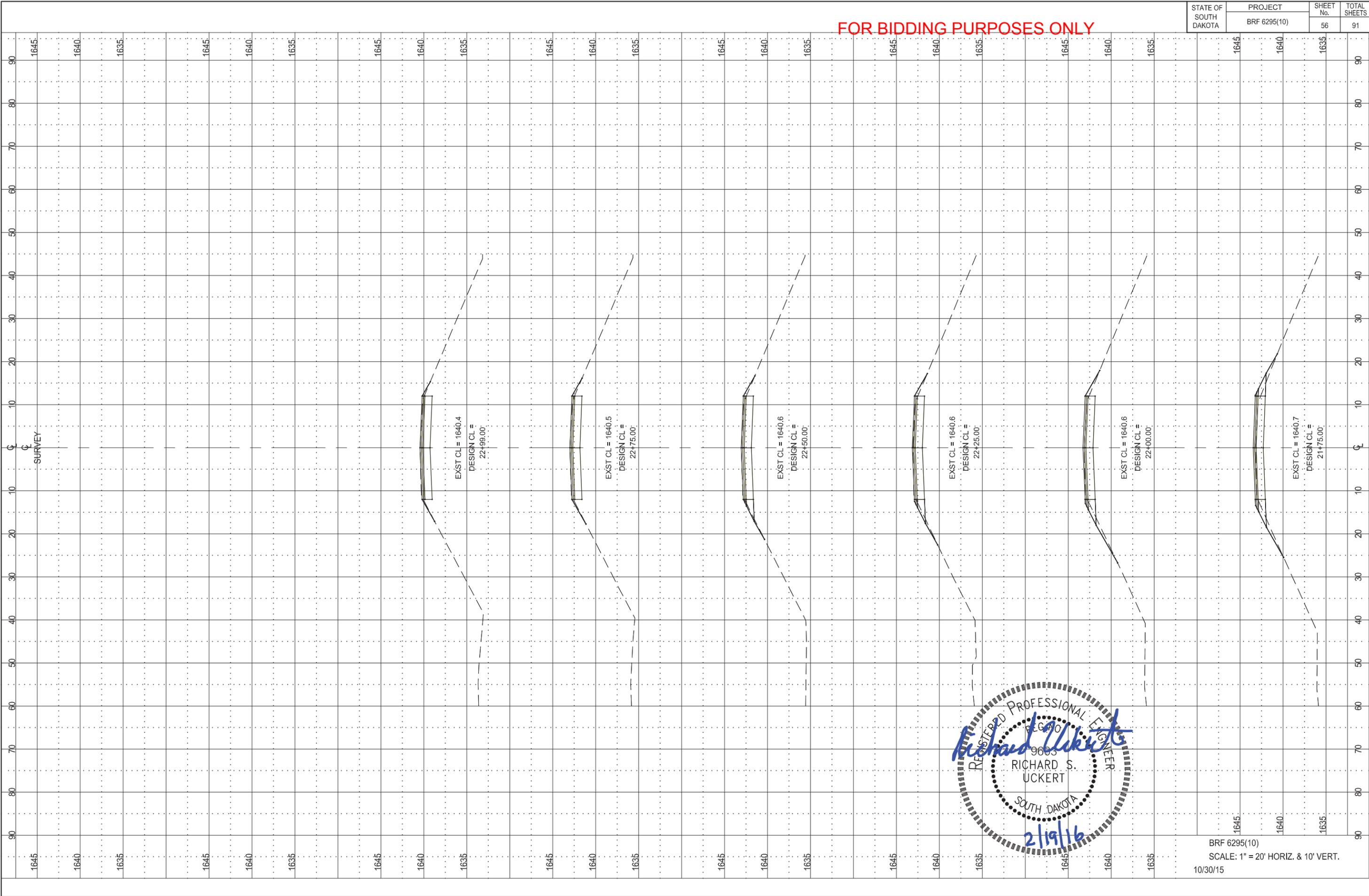
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	55	91



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	56	91

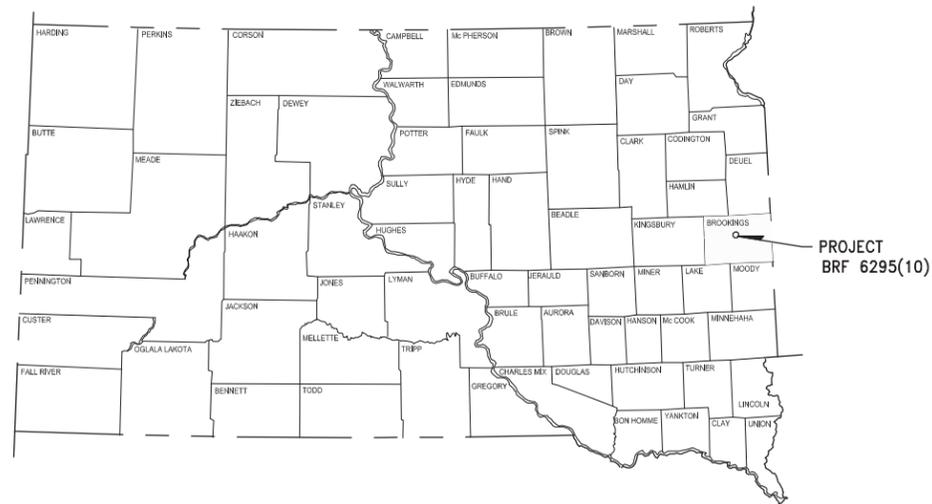


BRF 6295(10)
SCALE: 1" = 20' HORIZ. & 10' VERT.
10/30/15

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET No. 57	TOTAL SHEETS 91
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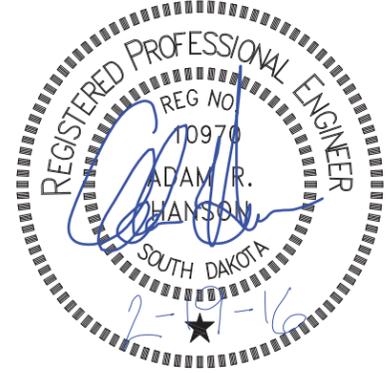
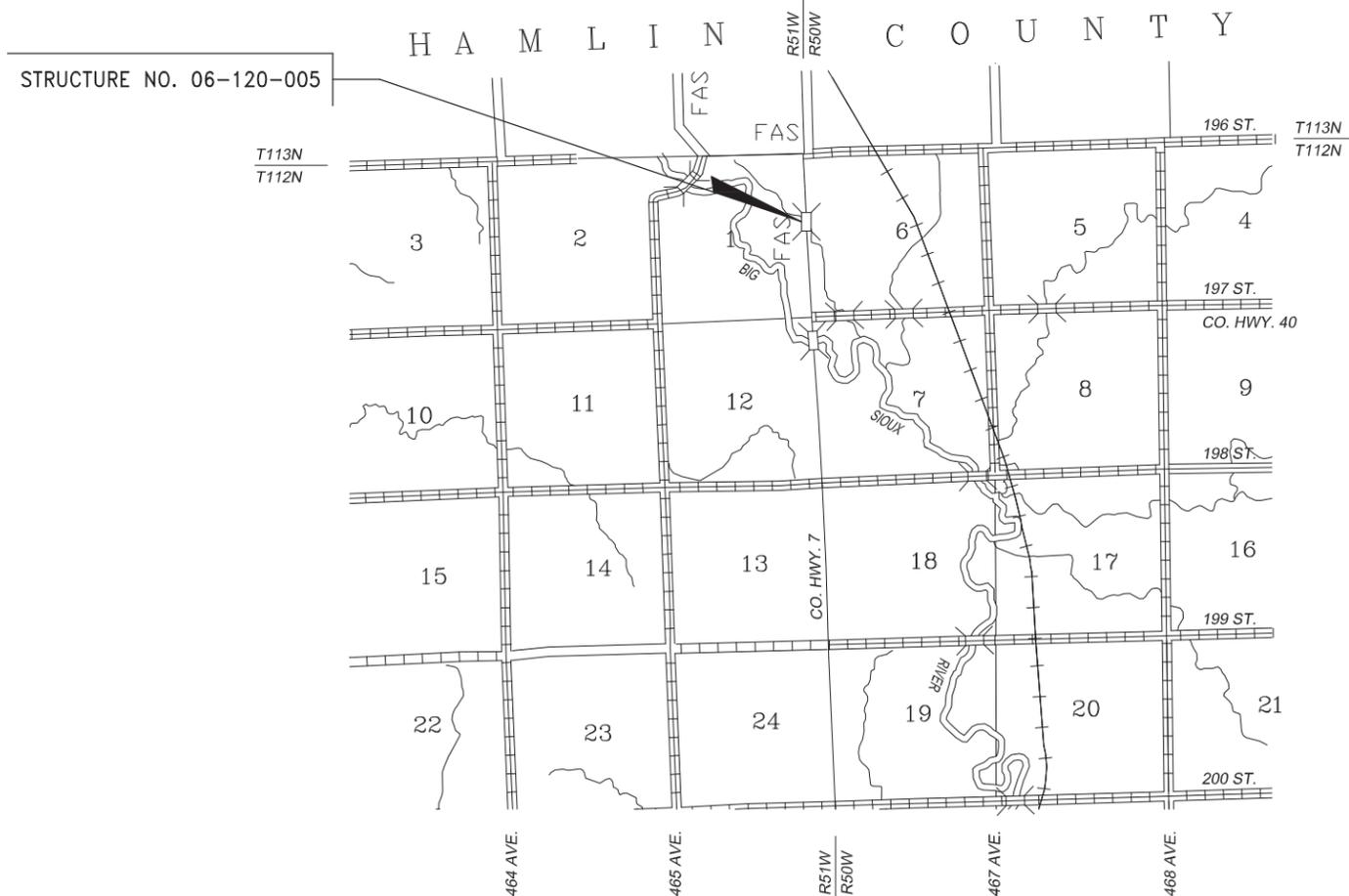
STATE OF SOUTH DAKOTA **FOR BIDDING PURPOSES ONLY**
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT BRF 6295(10)
BROOKINGS COUNTY
STRUCTURE AND APPROACH GRADING
STRUCTURE NO. 06-120-005
PCN 01W9



INDEX OF SHEETS

57.	TITLE SHEET AND LAYOUT MAP
58.-62.	GENERAL NOTES AND ESTIMATE OF QUANTITIES
63.	TYPICAL ROADWAY DETAILS
64.-67.	TRAFFIC CONTROL AND TABULATION
68.-70.	STORM WATER POLLUTION PREVENTION PLAN (SWPPP)
71.-74.	EROSION CONTROL
75.	SITE GRADING PLAN
76.	ROADWAY PLAN AND PROFILE
77.-90.	3-12'x6' REINFORCED CONCRETE BOX CULVERT
91.	CROSS SECTIONS



SCALES

PLAN	1 INCH = 80 FEET
PROFILE	{ HORIZONTAL 1 INCH = 80 FT. VERTICAL 1 INCH = 10 FT.
ROADWAY CROSS SECTIONS	{ HORIZONTAL 1 INCH = 20 FT. VERTICAL 1 INCH = 10 FT.

STORM WATER PERMIT DATA
STR. NO. 06-120-005
TOTAL PROJECT AREA : 0.88 ACRES
AREA DISTURBED : 0.86 ACRES
MAJOR RECEIVING BODY OF WATER :
BIG SIOUX RIVER
APPROXIMATE BEGIN LAT/LONG:
44.535791/-96.888358

DESIGN DESIGNATION

ADT (2014)	390
ADT (2034)	515
DHV	80
T. DHV	3.5%
T. ADT	7.6%
D	50%
DESIGN SPEED	55 MPH

Plans Prepared By:
BANNER
Engineering | Architecture | Surveying
BAI# 21620.13.00

ESTIMATE OF QUANTITIES:

GRADING:

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	642	SqYd
110E1700	Remove Silt Fence	17	Ft
110E4310	Salvage Thrie Beam Guardrail	56	Ft
110E4330	Salvage W Beam Guardrail	293	Ft
110E4340	Salvage W Beam to Thrie Beam Guardrail Transition	4	Each
110E4370	Salvage W Beam Guardrail Flared End Terminal	4	Each
120E0010	Unclassified Excavation	1,929	CuYd
120E6200	Water for Granular Material	2.8	MGal
230E0010	Placing Topsoil	110	CuYd
260E1010	Base Course	567.0	Ton
320E1200	Asphalt Concrete Composite	151.0	Ton
634E0110	Traffic Control Signs	84	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0265	Type 3 Barricade, 6' Double Sided	4	Each
634E0280	Type 3 Barricade, 8' Single Sided	6	Each
730E0204	Type C Permanent Seed Mixture	20	Lb
731E0200	Fertilizing	0.43	Ton
732E0100	Mulching	1.8	Ton
734E0102	Type 2 Erosion Control Blanket	296	SqYd
734E0602	Low Flow Silt Fence	473	Ft
734E0610	Mucking Silt Fence	35	CuYd
734E0620	Repair Silt Fence	120	Ft
734E0900	Temporary Diversion Channel and/or Pipe	1	Each

STRUCTURE:

Bid Item Number	Item	Quantity	Unit
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	142	CuYd
421E0200	Box Culvert Undercut	333	CuYd
460E0120	Class A45 Concrete, Box Culvert	275.1	CuYd
480E0100	Reinforcing Steel	38,806	Lb
700E0210	Class B Riprap	146.7	Ton
831E0110	Type B Drainage Fabric	203	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

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

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

Table of Topeka Shiner Streams

Station	Stream Name	Ordinary High Water Elevation
44+18.00	Big Sioux River	1635.60

Action Taken/Required:

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

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

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

COMMITMENT C: WATER SOURCE

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

ACTION TAKEN/REQUIRED

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and

Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

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

Action Taken/Required:

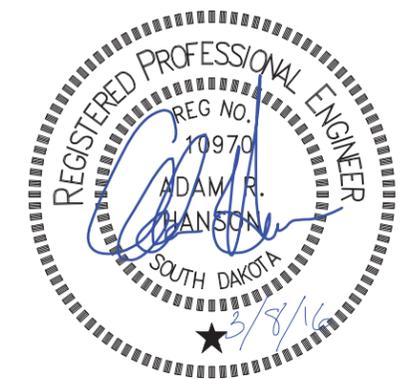
The Contractor is advised the South Dakota Surface Water Quality Standards, administered by the Department of Environment and Natural Resources (DENR), apply to this project. Special construction measures shall be taken to ensure the above standard(s) of the surface waters are maintained and protected.

COMMITMENT D2: SURFACE WATER DISCHARGE

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

Action Taken/Required:

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



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COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

The DENR and the US Environmental Protection Agency (EPA) have issued separate general permits for the discharge of storm water runoff. The DENR permit applies to discharges on state land and the EPA permit applies to discharges on federal or reservation land. The Contractor is advised this project is regulated under the Phase II Storm Water Regulations and must receive coverage under the General Permit for Construction Activities.

A Notice of Intent (NOI) will be submitted to DENR a minimum of 15 days prior to project start by the DOT Environmental Office. A letter must be received from DENR that acknowledges project coverage under this general permit before project start. The Contractor is advised that permit coverage may also be required by off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

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

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

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

SDDOT:

<http://sddot.com/business/environmental/stormwater/Default.aspx>

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

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

Contractor Certification Form:

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

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

The online form can be found at:

<http://denr.sd.gov/des/sw/eforms/E2110LDV1-ContractorCertification.pdf>

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State 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.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

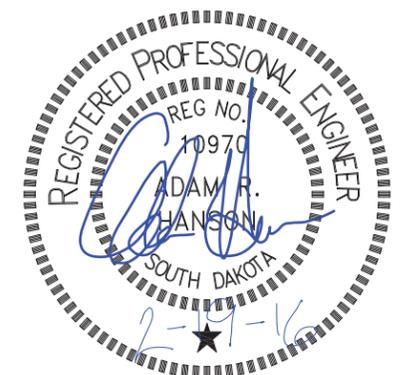
The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record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

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

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

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

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



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COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

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

COUNTY RESPONSIBILITIES

The County will provide, install, and/or coordinate as necessary the following items without federal participation:

1. Obtain right-of-way and temporary and permanent easements.
2. Coordination of any utility adjustments.
3. Furnish and install permanent striping of the roadway.
4. Furnish and install temporary and/or permanent fencing.
5. Furnish and install new permanent signing.
6. Remove silt fence when vegetation has been established in permanently seeded areas.

SEQUENCE OF OPERATIONS

1. Install temporary traffic control signing
2. Install sediment control at structure and in ditches.
3. Remove existing bridge structure.
4. Remove and store topsoil.
5. Grade roadway and ditches.
6. Construct new structure.
7. Install surfacing.
8. Adjust sediment control at structure and in ditches.
9. Place topsoil.
10. Reseed areas disturbed by construction activities.
11. Complete remaining project items.
12. Remove temporary traffic control signing.

Any changes to the Sequence of Operations require approval from the Engineer.

GENERAL NOTES

Prior to construction of the project, existing traffic signs within project limits will be removed, relocated, covered, and/or salvaged as necessary, by the Brookings County Maintenance Forces. The Contractor shall notify the County a minimum of 48 hours prior to commencing construction.

All rock and broken concrete encountered during construction are to be disposed of according to the notes regarding the Waste Disposal Site.

Subsurface soils at the proposed site consist of gray sand to silt-sand from 0' – 11' below flow line. Water levels were encountered at flow line with caving occurring at 1.5' below flow line.

Compaction of earth embankment and box culvert backfill material shall be governed by the Specified Density Method.

It is anticipated that dewatering will be required to construct the box culvert. The Contractor will be responsible to verify groundwater location prior to construction and provide necessary means of dewatering the construction site and prevention of the inflow of additional water.

The plan quantity of Unclassified Excavation will be the basis for payment for this item.

TABLE OF EXCAVATION QUANTITIES

Roadway Excavation	=	227	CuYd
Box Culvert Excavation	=	1,597	CuYd
Rip Rap	=	105	CuYd
TOTAL =		1,929	CuYd

SHRINKAGE FACTOR

Embankment plus 30 percent.

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.

UTILITIES:

The Contractor shall notify the various utility owners in advance of beginning construction so they can locate their lines and determine if relocation will be required. SD One Call shall be notified at 1-800-781-7474 a minimum of 48 hours prior to commencing construction. The Contractor shall likewise contact Brookings County prior to commencing construction. Utilities from the following utility owners are known to exist at this site:

Sioux Valley Energy
P.O. Box 216
Colman, SD 57017
Phone: (800) 234-1960

Mediacom
948 22nd Ave S
Brookings, SD 57006
Phone: (800) 332-0245

Interstate Telecommunications Cooperative Inc.
1022 Main Ave S
Brookings, SD 57006
Phone: (605) 693-3211

CenturyLink
526 Main Ave Ste B
Brookings, SD 57006
Phone: (605) 690-7094

PLACING TOPSOIL

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

The thickness will be approximately 4 inches within the right-of-way and 6 inches in easement areas.

The estimated amount of salvaged topsoil required to cover the designated areas on the roadway embankments and channel side slopes to the specified depth is 235 cubic yards. Basis of payment shall be plan specified quantity. Quantity will not be measured unless ordered by the Engineer.

SAWING EXISTING SURFACING

Where new asphalt concrete pavement is placed adjacent to existing asphalt concrete, the existing asphalt concrete shall be sawed full depth to a true line with a vertical face. No separate measurement shall be made for sawing.

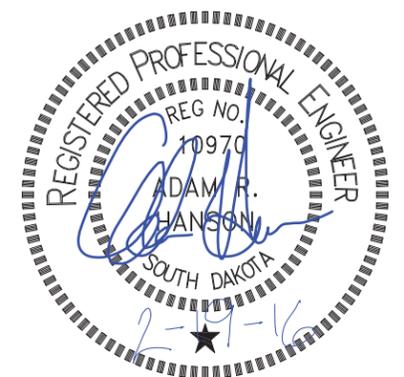
SURFACING THICKNESS DIMENSIONS

Material will be placed evenly, at the rates shown in the plans, even though the thickness may vary from that shown on the typical section.

At those locations where material must be placed to achieve required elevations, quantities may be varied to achieve the required elevations, as approved by the Engineer.

TRAFFIC CONTROL

The Contractor shall follow the plans provided, unless an alternate plan is submitted by the Contractor and approved by the Engineer prior to any work. The submitted plan shall comply with MUTCD requirements.



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GENERAL MAINTENANCE OF TRAFFIC

All costs, labor, and materials for all work associated with the items discussed below shall be included in lump sum cost for "Traffic Control, Miscellaneous."

- Traffic shall be maintained in accordance with Section 4.4 of the Standard Specifications. Traffic control shall be installed in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and standard plates located herein.
- The Contractor shall coordinate with Brookings County to have all permanent signs placed prior to opening the roadway to traffic.

CONSTRUCTION AND MAINTENANCE OF DETOUR

Refer to plan notes for the prestressed girder bridge for notes regarding maintenance of the detour.

DUST CONTROL CHLORIDE

The contractor shall install dust control chloride as detailed in the Standard Specifications. For estimating purposes, 1000' of surfacing length was used for the seven residences along the gravel segment of the detour route.

All costs for cleaning the installing the dust control chloride shall be incidental to the contract unit price per pound for "Dust Control Chloride".

The quantity of dust control chloride has been included in the estimate for the prestressed girder bridge.

PERMANENT SEEDING

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

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

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract unit price per pound for the corresponding permanent seed mixture.

The mycorrhizal inoculum shall be from the list below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 http://www.mycorrhizae.com/

FERTILIZING

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer shall have a minimum guaranteed analysis of 4-6-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 3.2%, a minimum of 6% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer shall be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer shall have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer shall also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer shall be applied at a rate of 1,000 pounds per acre in accordance with the manufacturer's recommended method of application.

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

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 http://www.sustane.com/

LOW FLOW SILT FENCE

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

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

Low flow silt fence shall be placed as shown on the plan sheets 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 734.04 for details.

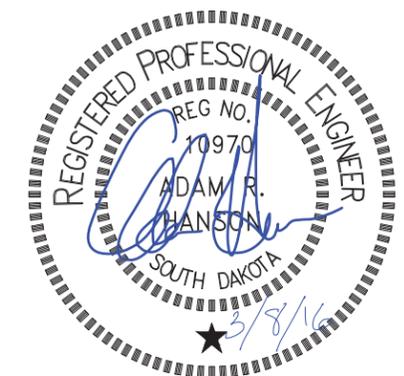
EROSION CONTROL BLANKET

Erosion control blanket shall be installed at the locations shown on the plan sheets and at locations determined by the Engineer during construction. Refer to Standard Plate 734.01 for details.

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

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

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



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TEMPORARY DIVERSION CHANNEL

The Contractor shall construct a temporary diversion channel in accordance with Standard Plate 734.30 at the location listed in the following table:

Station	Quantity (Each)
44+91	1

NOTICE – LEAD BASED PAINT

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

INCIDENTAL WORK, STRUCTURE

In place from Sta. 44+35 to 44+62 of the mainline is a single span 27' long x 26.5' wide bridge. The superstructure consists of steel I-beams with a steel deck widened with precast deck units. The abutments are constructed of timber.

The Contractor shall remove the bridge superstructure in its entirety and the bridge abutments to the bottom of the undercut, or as directed by the Engineer. All portions of the existing bridge not salvaged for future highway related use shall be disposed of by the Contractor at a site provided 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 Brookings 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 river. Under no circumstances is asphalt allowed to fall into the river.

The foregoing is a general description of the in place structures and Incidental Work, Structure involved 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 structures to verify the extent of the work and materials involved.

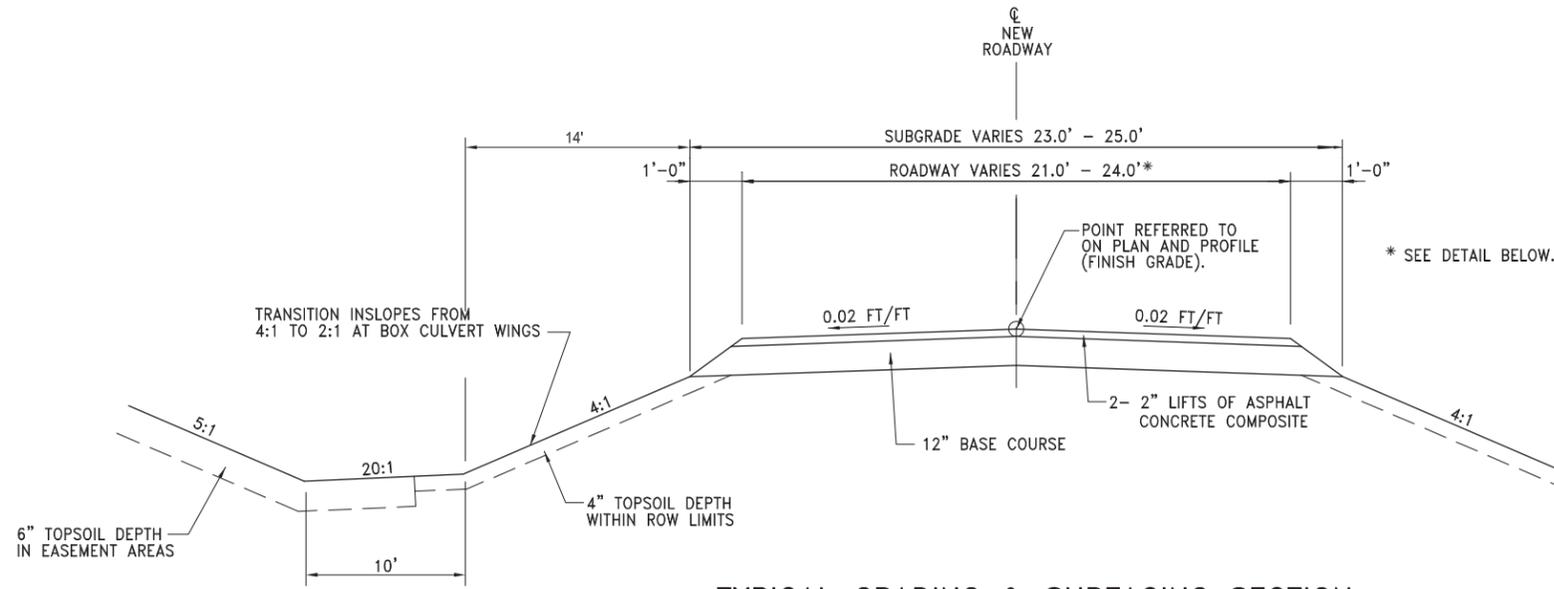
REFLECTORIZED SHEETING, REQUIREMENTS FOR TEMPORARY TRAFFIC CONTROL DEVICES

Delete the first paragraph of Section 984.1 and replace with the following:

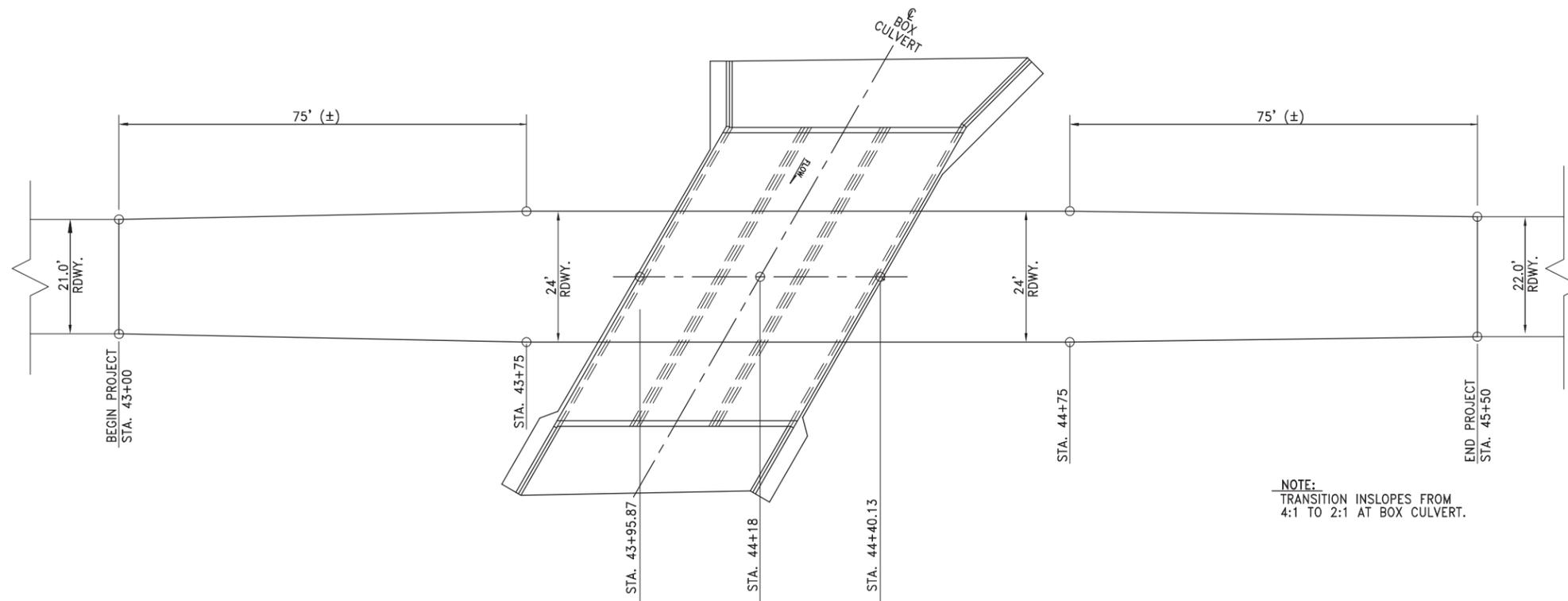
Temporary traffic control devices, including signs, drums, cones, tubular markers, barricades, vertical panels, and direction indicator barricades shall be reflectORIZED with sheeting applied to a satisfactory backing. For all temporary traffic control warning signs, the reflective sheeting shall meet or exceed the standards of Type VII, Type VIII, Type IX or Type XI as defined by AASHTO M 268 (ASTM D4956). For all other temporary traffic control signs, the reflective sheeting shall meet or exceed the standards of Type IV, Type V, Type VII, Type VIII, Type IX, or Type XI as defined by AASHTO M 268 (ASTM D4956). For barricades, vertical panels, and direction indicator barricades; the reflective sheeting shall meet or exceed the standards of Type III as defined by AASHTO M 268 (ASTM D4956). Round surfaced temporary traffic control devices including, but not limited to; drums, cones, and tubular markers shall be reflectORIZED with reflectORIZED sheeting meeting or exceeding the standards of Type IV as defined by AASHTO M 268 (ASTM D4956). All orange colored material shall be fluorescent.



FOR BIDDING PURPOSES ONLY



TYPICAL GRADING & SURFACING SECTION



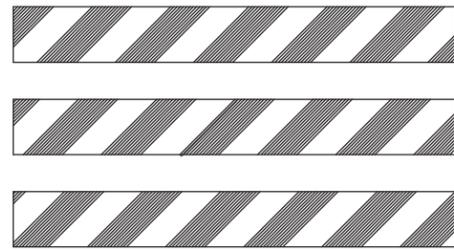
TYPICAL ROADWAY TRANSITION DETAIL

NOTE:
TRANSITION INSLOPES FROM
4:1 TO 2:1 AT BOX CULVERT.

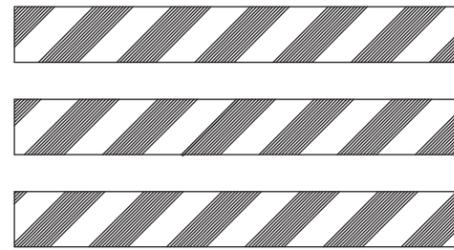


TRAFFIC CONTROL

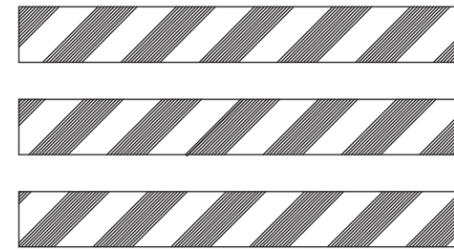
FOR BIDDING PURPOSES ONLY



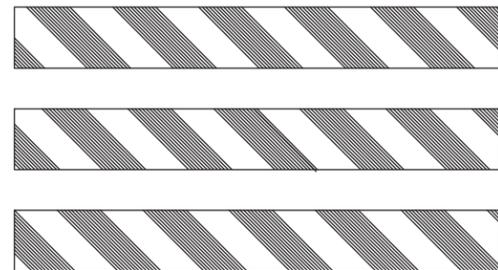
TYPE 3 BARRICADE
6' DOUBLE SIDED



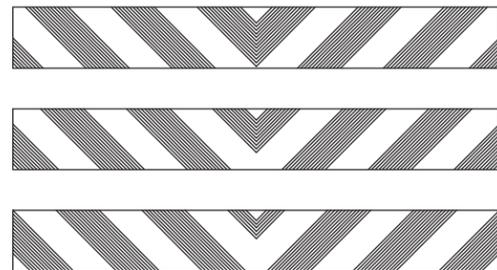
TYPE 3 BARRICADE
6' DOUBLE SIDED



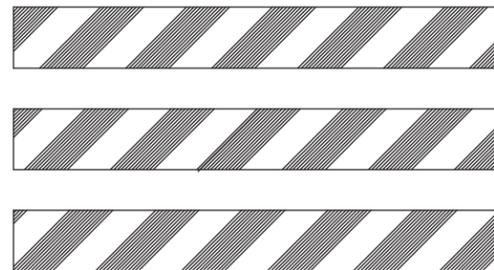
TYPE 3 BARRICADE
6' DOUBLE SIDED



TYPE 3 BARRICADE
8' SINGLE SIDED

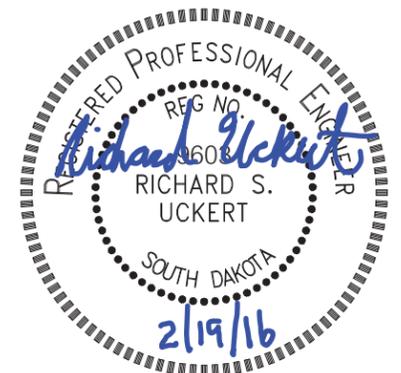


TYPE 3 BARRICADE
8' SINGLE SIDED



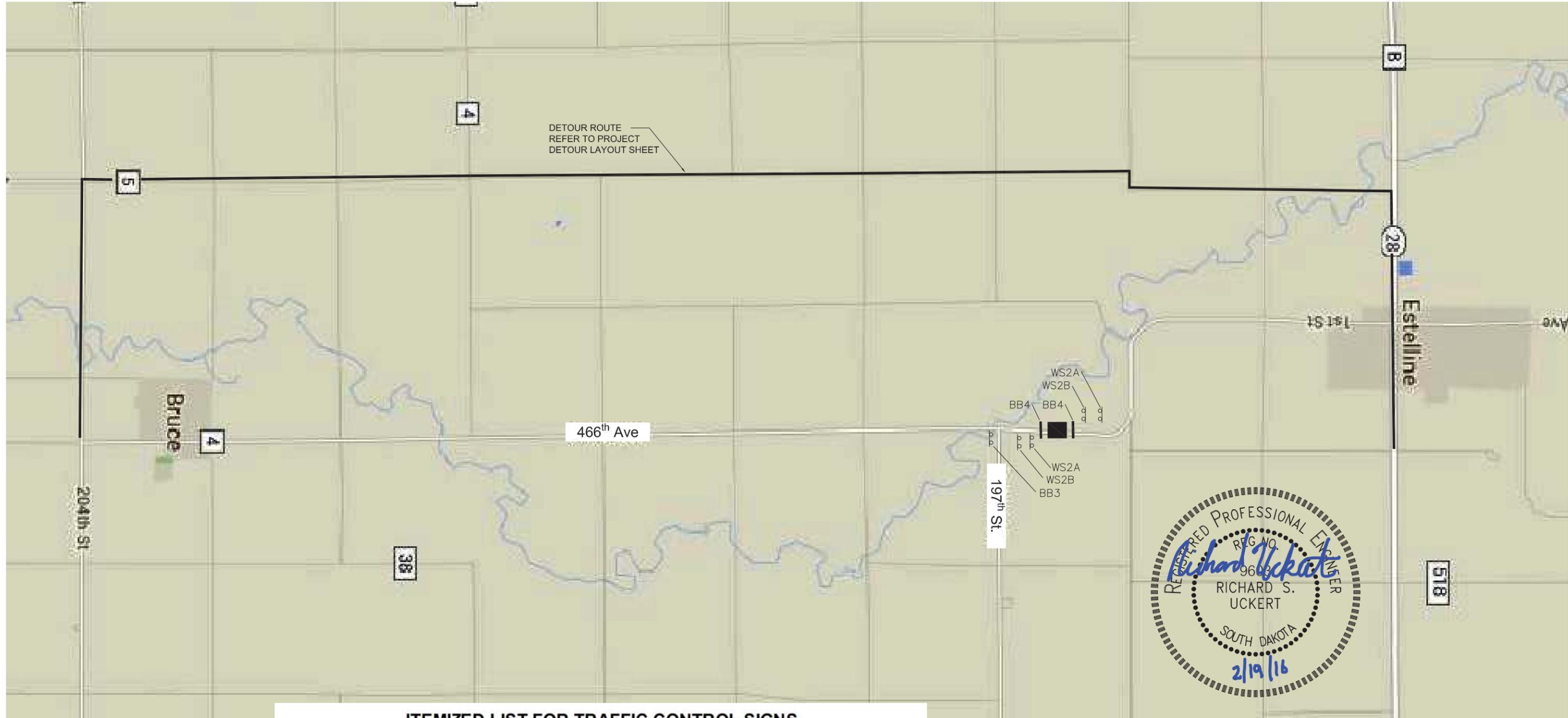
TYPE 3 BARRICADE
8' SINGLE SIDED

FULL ROADWAY CLOSURE



TRAFFIC CONTROL – REINFORCED CONCRETE BOX CULVERT FOR BIDDING PURPOSES ONLY

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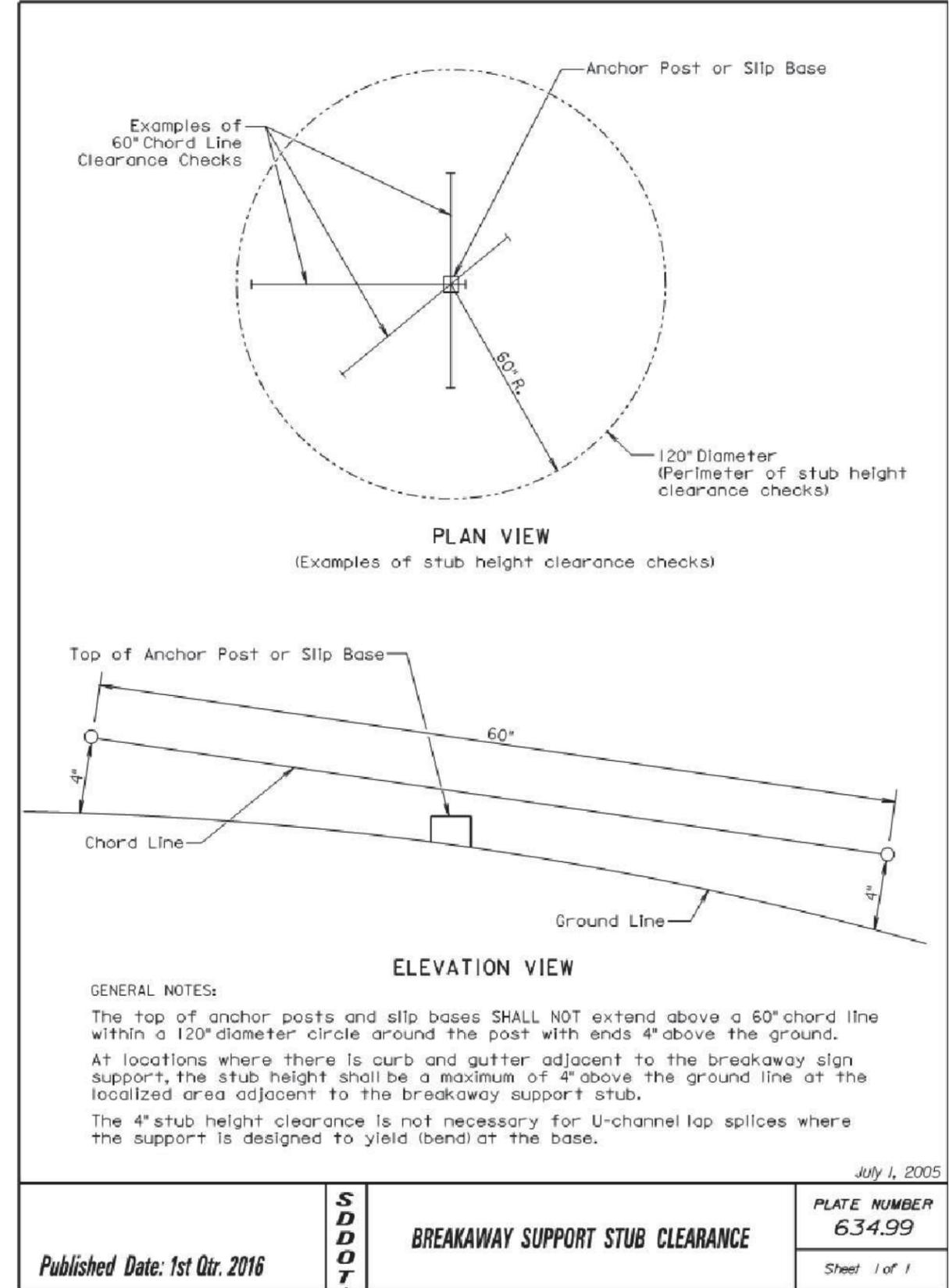
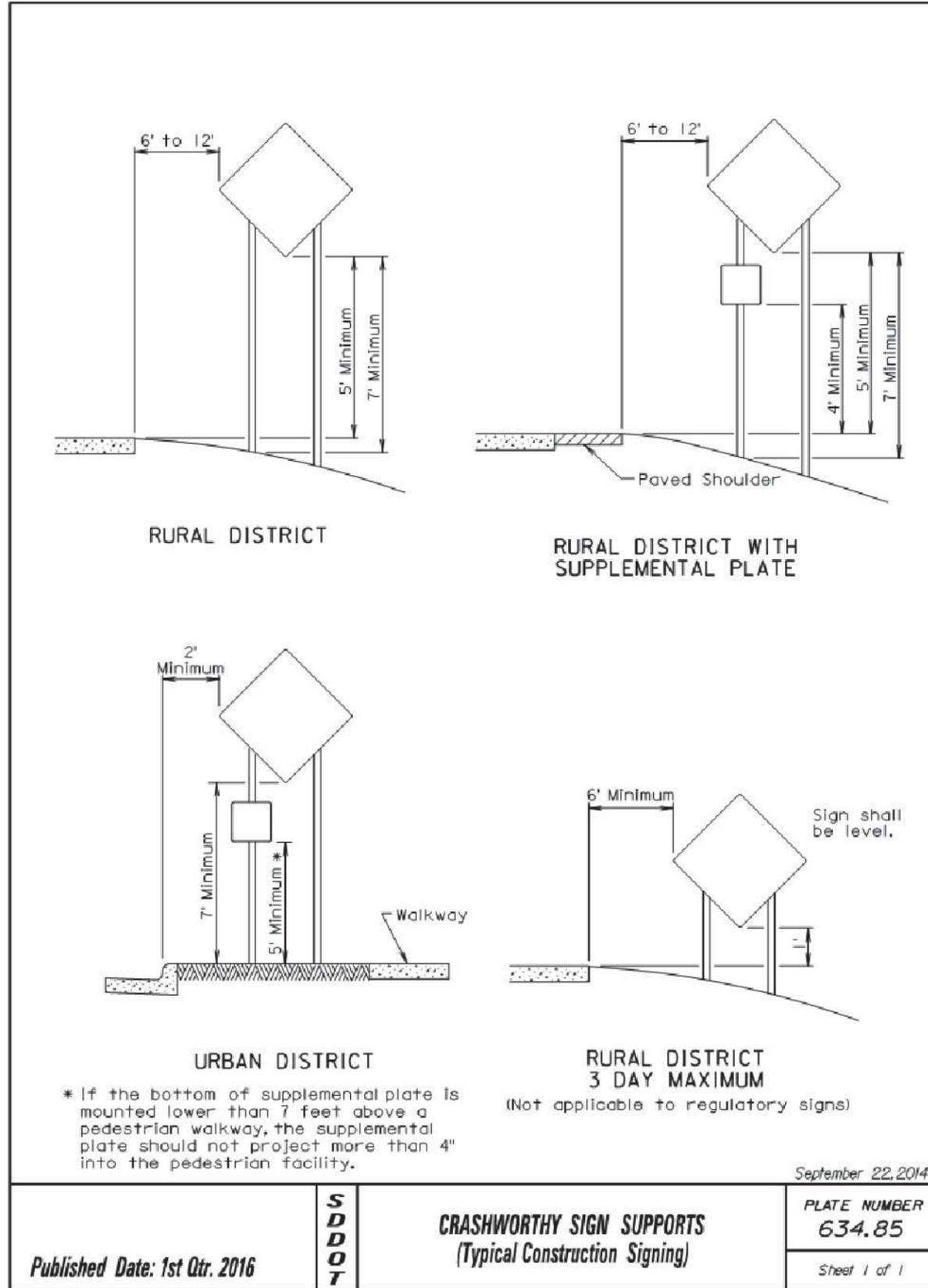
ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

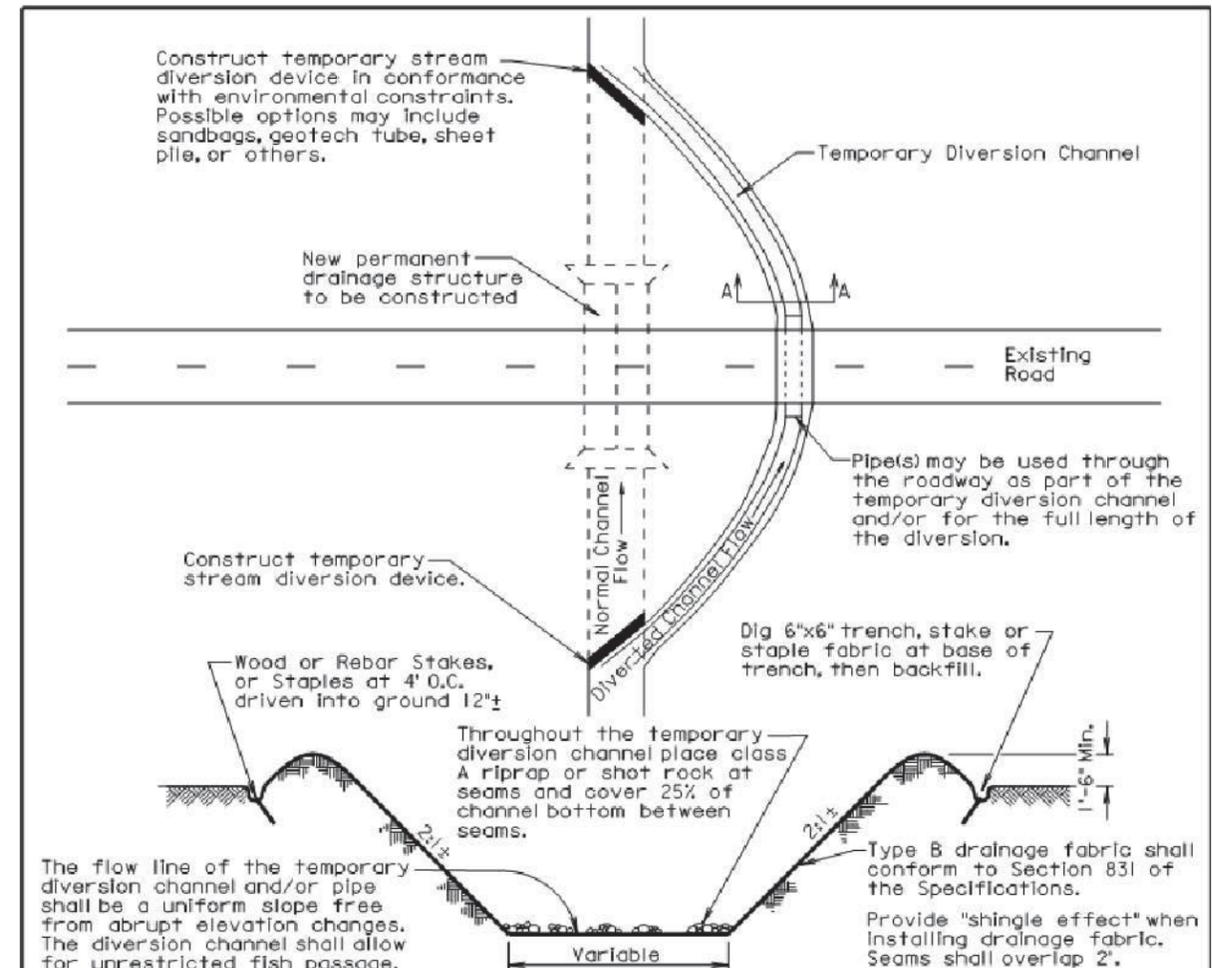
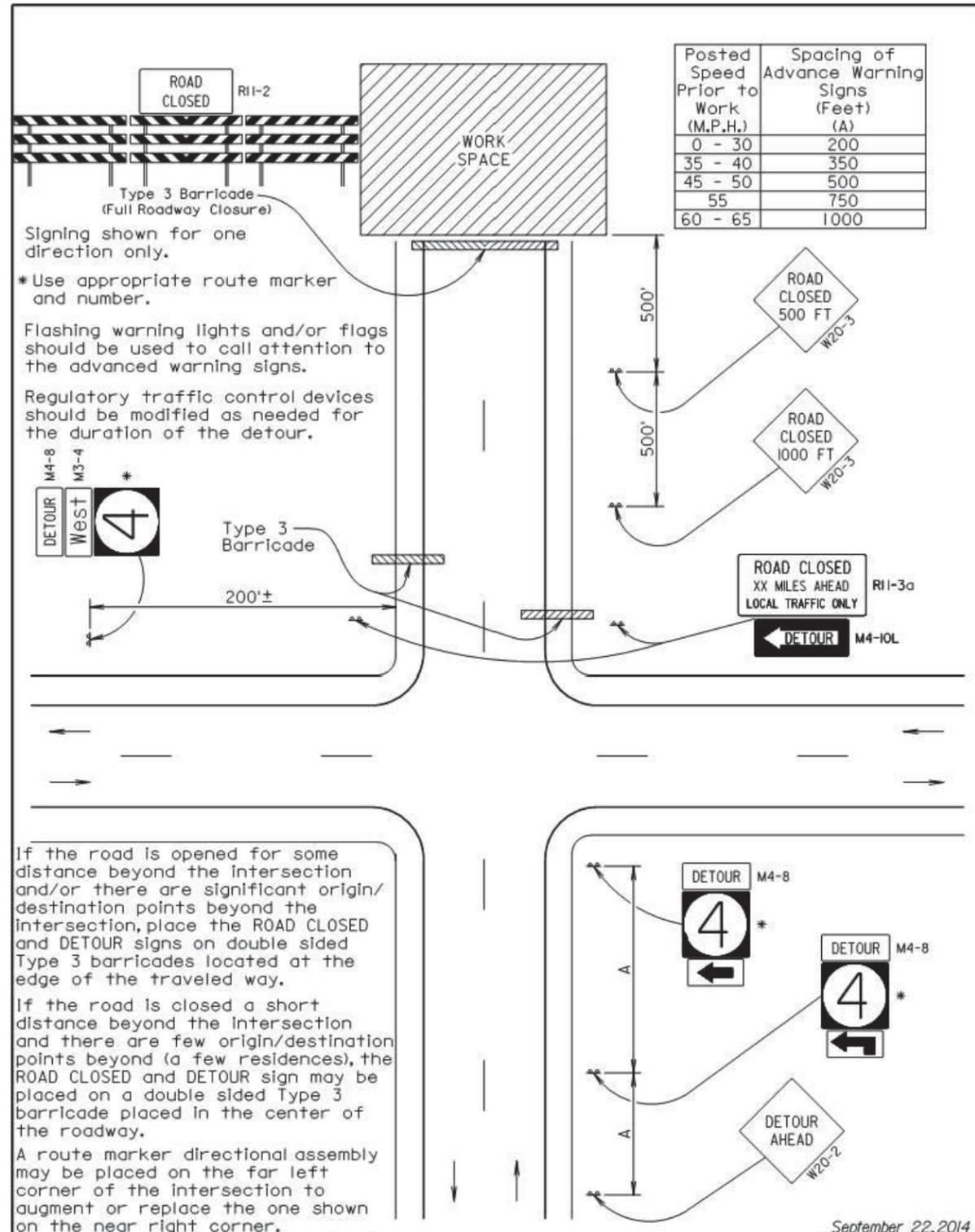
SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10	20
W20-3	ROAD CLOSED 1000 FT	2	48" x 48"	16	32
W20-3	ROAD CLOSED 500 FT	2	48" x 48"	16	32
CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT					84

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Single Sided	6 Each
Type 3 Barricade, 6' Double Sided	4 Each

NOTE: QUANTITIES OF TRAFFIC CONTROL SIGNS FOR DETOUR ARE SHOWN ON PROJECT DETOUR LAYOUT SHEET.





SECTION A-A

TEMPORARY DIVERSION CHANNEL

GENERAL NOTES:

A temporary diversion channel and/or pipe(s) shall be used to divert stream or drainage away from a construction area to provide a dry work area for construction. The diversion of streams and waterways is intended to protect the streams and waterways from various construction contaminants and sediment. Disturbing the existing stream channel and riparian zone should be minimized. Equipment shall not cross through the stream outside of the work area.

Sizing of the temporary diversion channel and/or pipe(s) shall be the Contractor's responsibility.

The method and materials used to construct the stream diversion device shall be the Contractor's responsibility, however, earthen berms are not acceptable since their removal causes siltation problems.

The Contractor shall restore the original channel bottom to its original condition prior to returning any flows. Upon completion of the new permanent drainage structure, the temporary stream diversion block or device shall be removed in a manner that will not cause violation of water quality standards. The temporary diversion channel shall then be backfilled and any pipe(s) (if used) shall be removed. The entire work area shall be cleaned and restored to smooth/even contours.

All costs for labor, equipment, materials and Incidentals as indicated on this sheet to complete a satisfactory Temporary Diversion Channel and/or Pipe(s) shall be incidental to the contract unit price per each for "Temporary Diversion Channel and/or Pipe(s)". "Temporary Diversion Channel and/or Pipe(s)" will be paid for once per structure site regardless of the number of times water is diverted at the individual site.

FOR BIDDING PURPOSES ONLY

STORM WATER POLLUTION PREVENTION PLAN

(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 - 0.88 Acres (4.2 1.b)**
- **Total Area To Be Disturbed - 0.86 Acres (4.2 1.b)**
- **Existing Vegetative Cover (%) - 90%**
- **Name of Receiving Water Body/Bodies - Big Sioux 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.)

- **Install temporary diversion channel and sediment control at structure and in ditches.**
- **Remove existing structure.**
- **Construct new structure.**
- **Adjust sediment control at structure and in ditches.**
- **Remove and store topsoil.**
- **Grade roadway and ditches.**
- **Place topsoil.**
- **Reseed areas disturbed by construction 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 Section 3 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

Spill Prevention (4.2 2.c.(2))➤ **Material Management**▪ Housekeeping

- Only needed products will be stored on-site by the contractor.
- Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
- Products must be stored in original containers and labeled.
- Material mixing will be conducted in accordance with the manufacturer's recommendations.
- When possible, all products will be completely used before properly disposing of the container off site.
- The manufacturer's directions for disposal of materials and containers will be followed.
- The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
- Dust generated will be controlled in an environmentally safe manner.
- Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

▪ Hazardous Materials

- Products will be kept in original containers unless the container is not resealable.
- Original labels and material safety data sheets will be retained in a safe place to relay important product information.
- If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
- Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
- Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
- Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, 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.

➤ **Product Specific Practices (6.8) (Continued)**▪ 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 Response (4.2 2 c.(2)) (Continued)**

- 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 reportable spill is a quantity of 25 gallons or more or any spill of oil which: 1) violates water quality standards, 2) produces a "sheen" on a surface water, or 3) causes a sludge or emulsion must be reported immediately to the National Response Center .
- Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the SD DENR.

❖ **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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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:

➤ **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

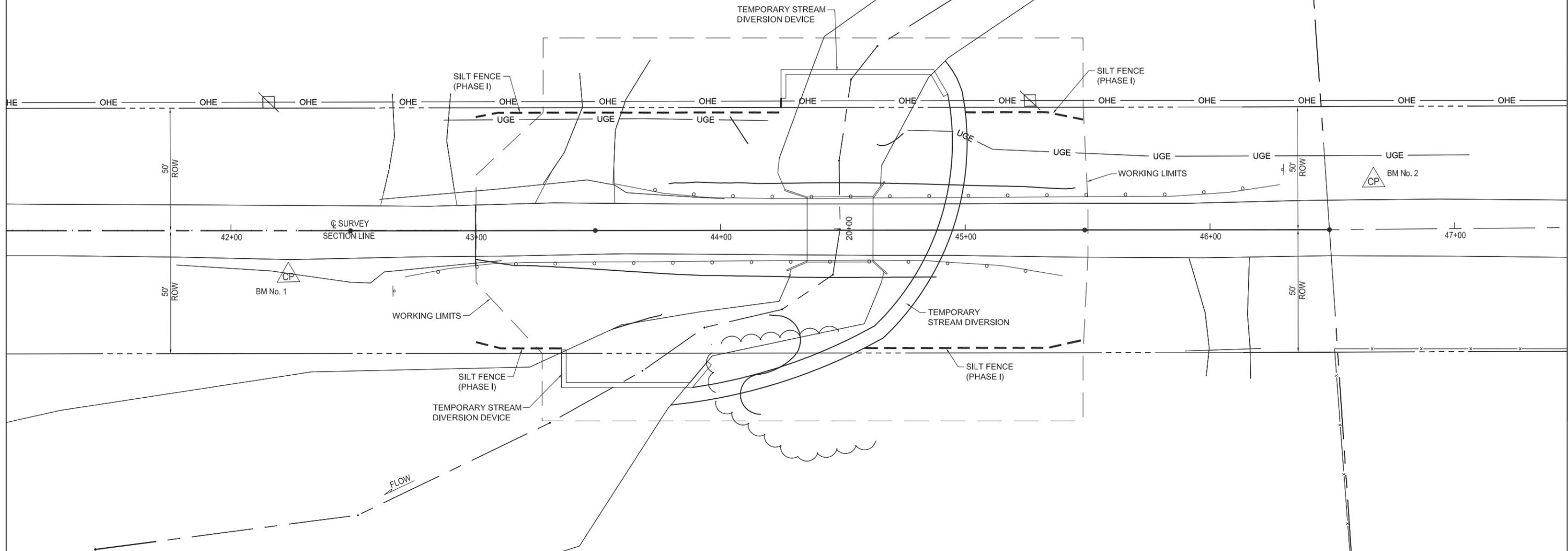
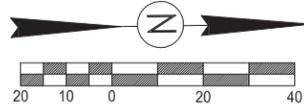
➤ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

FOR BIDDING PURPOSES ONLY



PHASE I:

1. PROVIDE TEMPORARY STREAM DIVERSION AS SHOWN ABOVE PER STANDARD PLATE No. 734.30, WATER BARRIERS OR DIVERSION DEVICES SHALL BE CONSTRUCTED OF AN APPROVED MATERIAL. EARTH BERMS ARE NOT ACCEPTABLE SINCE THEIR REMOVAL CAUSES SILTATION PROBLEMS.
2. INSTALL SILT FENCE AND TEMPORARY STREAM DIVERSION AS SHOWN IN PHASE I PLANS AND AS DIRECTED BY THE ENGINEER. SILT FENCE SHALL BE INSTALLED AS PER STANDARD PLAT No. 734.04.
3. REMOVE EXISTING STRUCTURES AND INSTALL 3 - 12'x6' REINFORCED CONCRETE BOX CULVERT.

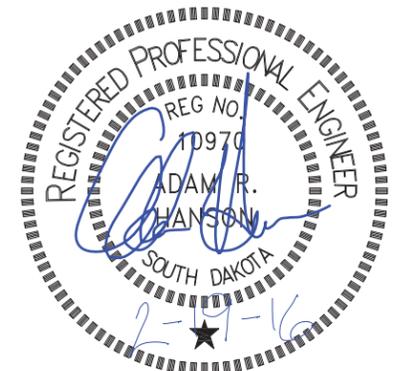
LEGEND:

--- SILT FENCE (PHASE 1)

INSTALL SILT FENCE LOCATIONS (PHASE I):

STATION	QUANTITY (FT.)
43+00 - 45' LT. TO 44+25 - 50' LT.	125
43+00 - 45' RT. TO 43+35 - 50' RT.	35
44+58 - 50' RT. TO 45+50 - 45' RT.	92
45+00 - 50' LT. TO 45+50 - 45' LT.	50
TOTAL (PHASE I):	302 FT.

NOTE:
OFFSETS ARE FROM CENTERLINE OF SURVEY.

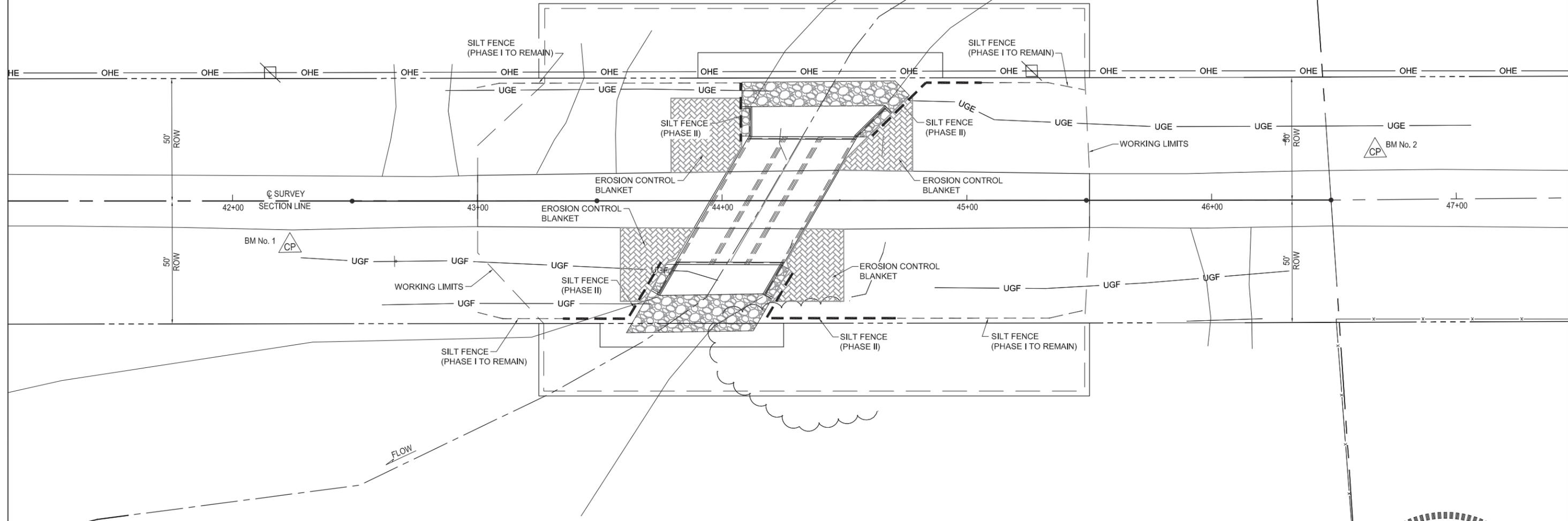


TEMPORARY STREAM DIVERSION / EROSION CONTROL (PHASE I)



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	72	91



PHASE II:

1. REMOVE SILT FENCE AT LOCATIONS SHOWN IN TABLE BELOW.
2. INSTALL SILT FENCE AS SHOWN IN PHASE II PLAN AND AS DIRECTED BY THE ENGINEER. SILT FENCE SHALL BE INSTALLED AS PER STANDARD PLATE No. 734.04.
3. SILT FENCE SHALL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED IN SEEDDED AREAS.
4. INSTALL EROSION CONTROL BLANKET AS SHOWN IN PHASE II PLAN AND AS DIRECTED BY THE ENGINEER. EROSION CONTROL BLANKET SHALL BE INSTALLED AS PER STANDARD PLATE No. 734.01.

REMOVE SILT FENCE LOCATIONS (PHASE II):

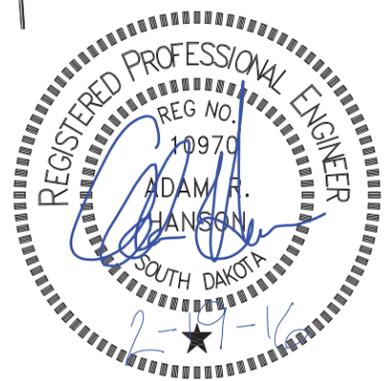
STATION	QUANTITY (FT.)
44+08 - 50' LT. TO 44+25 - 50' LT.	17
TOTAL (PHASE II):	17 FT.

INSTALL SILT FENCE LOCATIONS (PHASE II):

STATION	QUANTITY (FT.)
43+35 - 50' RT. TO 43+75 - 28' RT.	48
44+08 - 50' LT. TO 28' LT.	22
44+29 - 28' RT. TO 44+58 - 50' RT.	62
44+62 - 28' LT. TO 45+00 - 50' LT.	39
TOTAL (PHASE II):	171 FT.

INSTALL TYPE 2 EROSION CONTROL BLANKET LOCATIONS (PHASE II):

STATION	QUANTITY (SQYD)
43+58 - RT. TO 43+88 - RT.	66
43+79 - LT. TO 44+09 - LT.	96
44+20 - RT. TO 44+50 - RT.	75
44+49 - LT. TO 44+79 - LT.	59
TOTAL (PHASE II):	296 SQYD

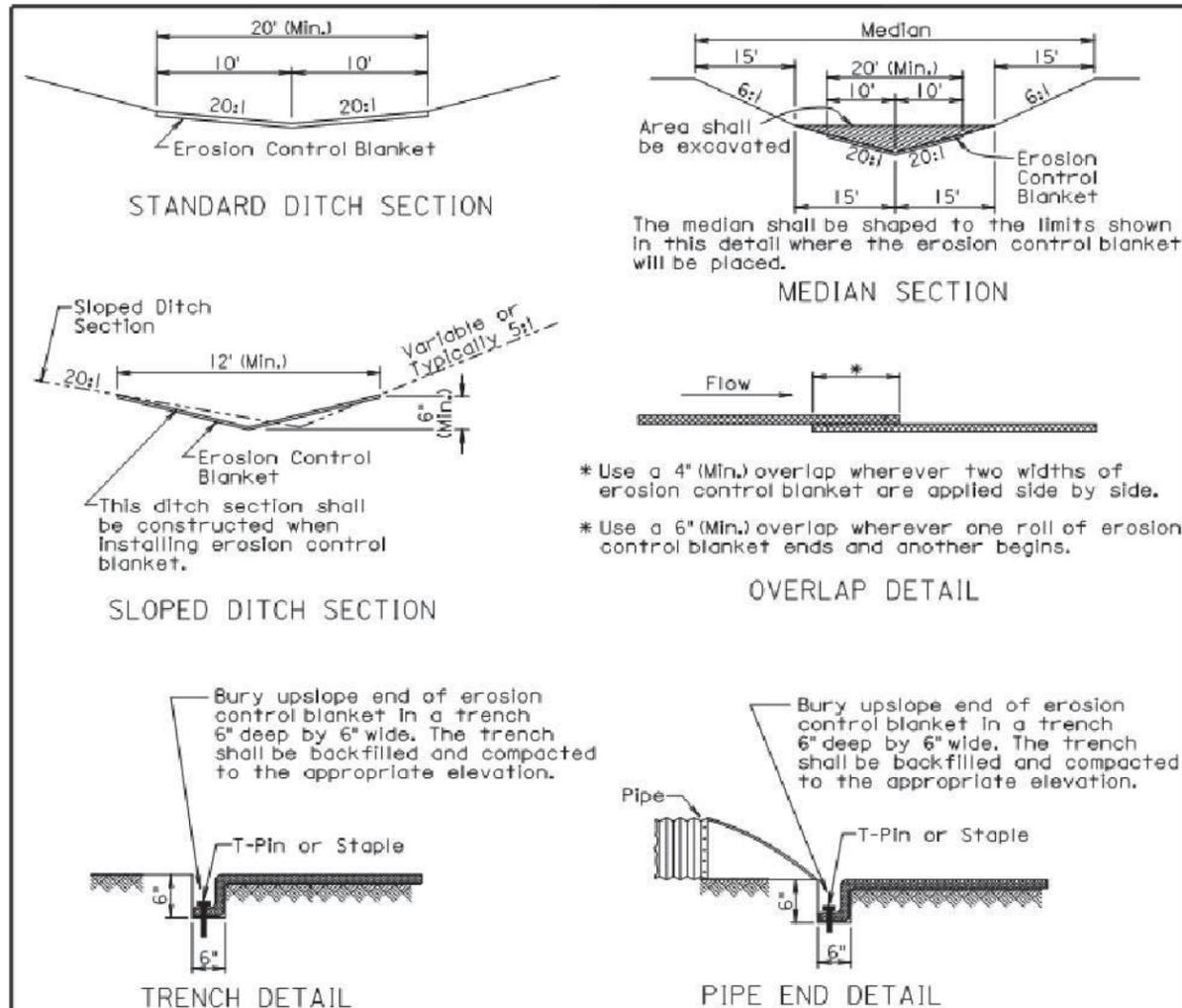


LEGEND:

- SILT FENCE (PHASE I TO REMAIN)
- SILT FENCE (PHASE II)
- TYPE 2 EROSION CONTROL BLANKET (PHASE II)

NOTE:
OFFSETS ARE FROM CENTERLINE OF SURVEY.

EROSION CONTROL (PHASE II)

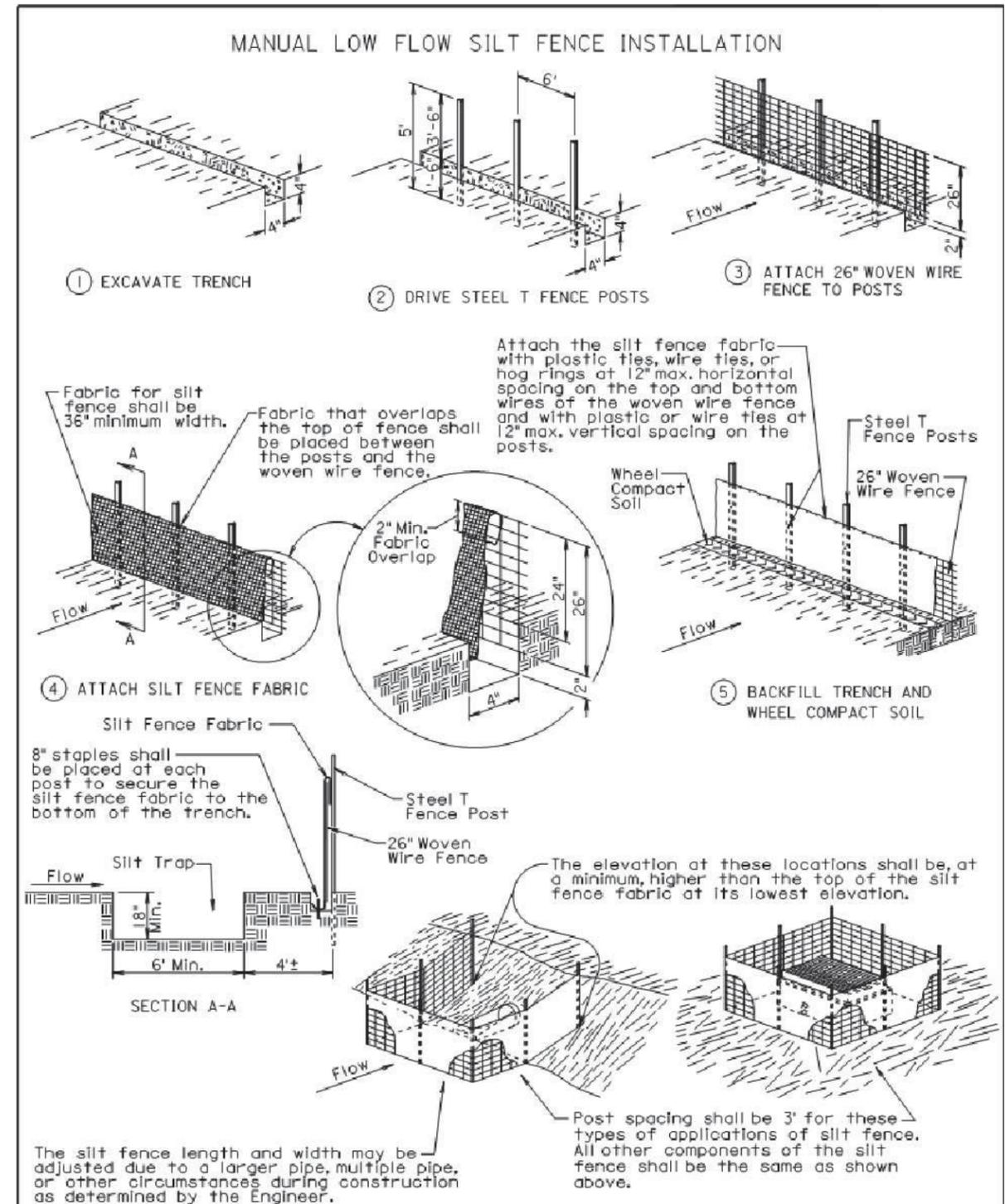


GENERAL NOTES:

- 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".

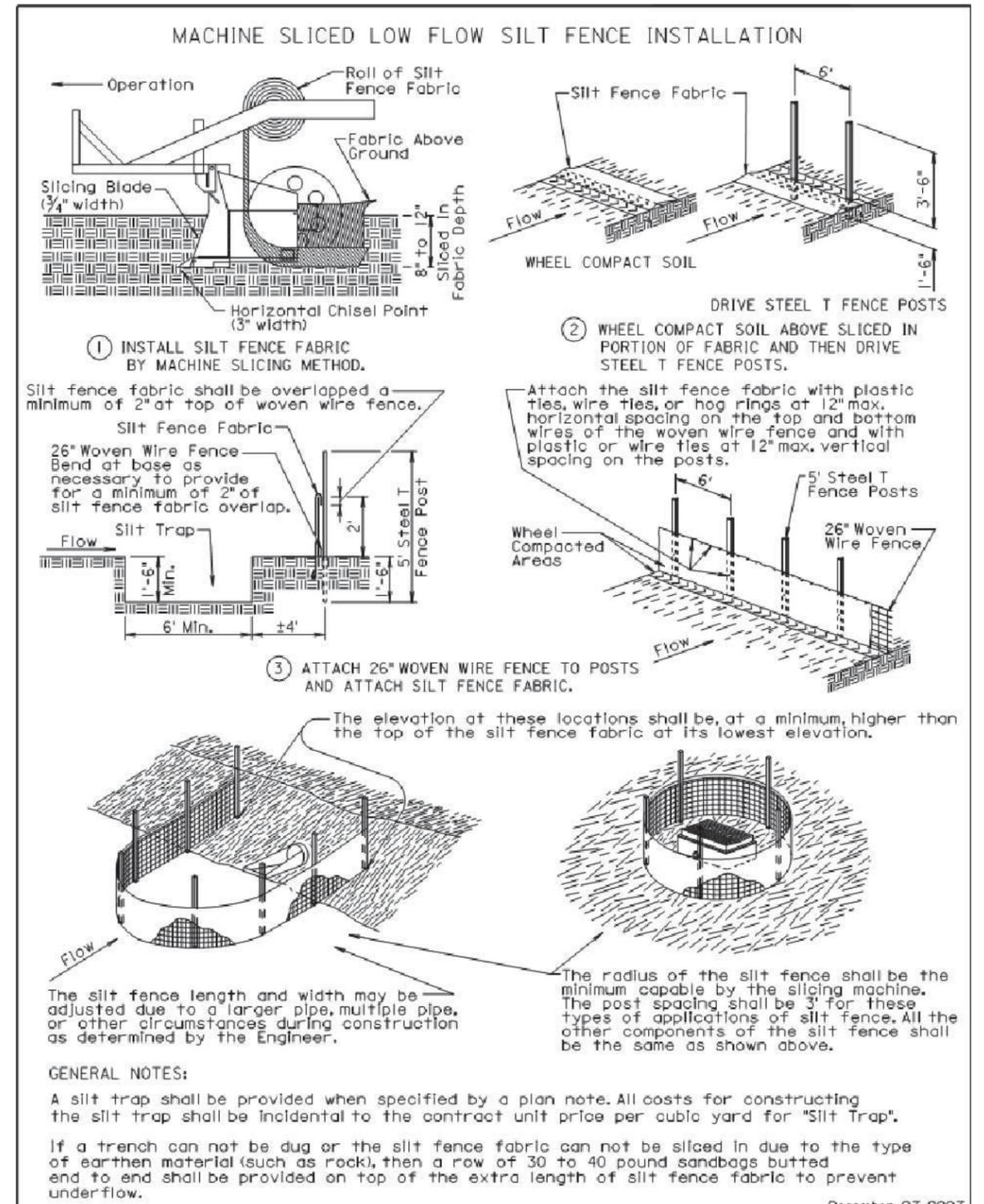
December 23, 2004

S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
	Published Date: 1st Qtr. 2016	Sheet 1 of 1



December 23, 2003

S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
	Published Date: 1st Qtr. 2016	Sheet 1 of 2



STA. 43+25 - 50' LT. TO 80' LT. TO
STA. 45+50 - 50' LT. TO 80' LT.
TEMPORARY EASEMENT FOR CONSTRUCTION
OF (3) - 12'x6' REINFORCED CONCRETE BOX
CULVERT CONTAINING 0.14 ACRES, MORE OR
LESS (TO BE OBTAINED BY BROOKINGS
COUNTY W/O FEDERAL PARTICIPATION).

TRACY & LEANNE JOHNSON
19707 465TH AVE.
BRUCE, SD 57220
(605) 873-2521

SEC. 1-T112N-R51W

STA. 44+8.00 TO STA. 44+76.50 INSTALL
CLASS B RIPRAP & TYPE B DRAINAGE
FABRIC (SEE STRUCTURE SHEETS)

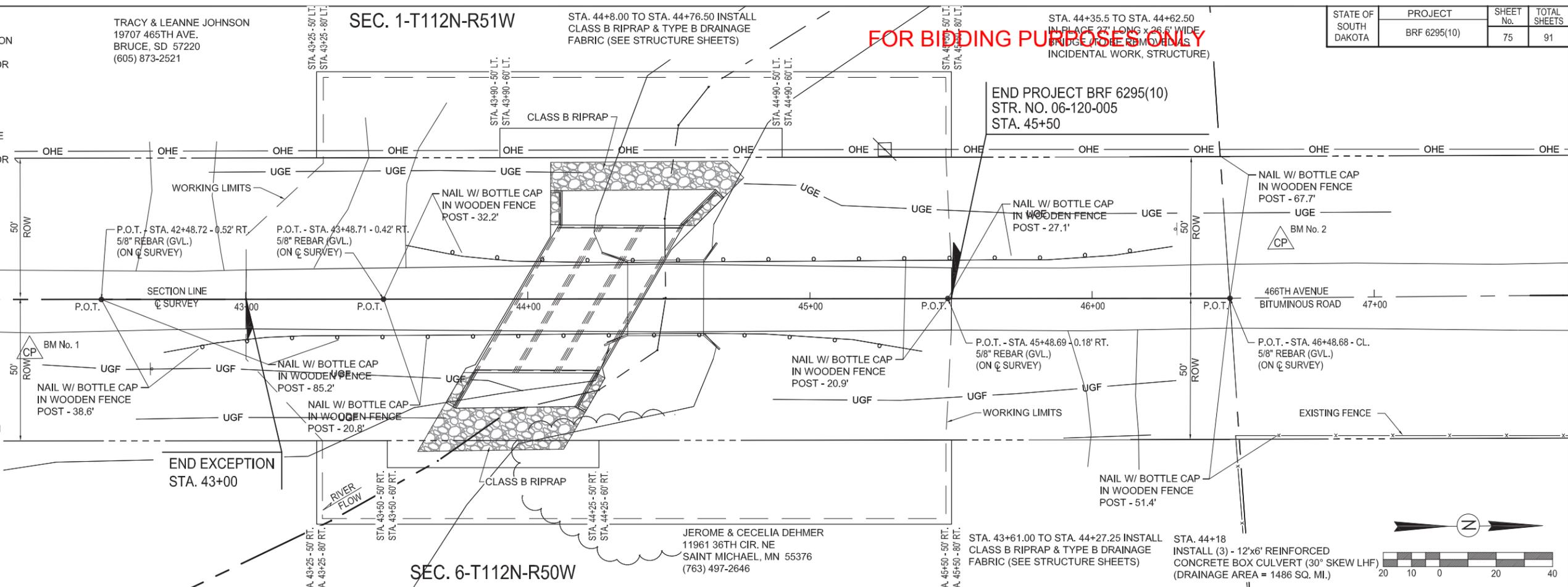
FOR BIDDING PURPOSES ONLY

STA. 44+35.5 TO STA. 44+62.50
IN PLACE 27' LONG x 26.6' WIDE
BRIDGE OVER RMB DRAIN
INCIDENTAL WORK, STRUCTURE

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STA. 43+90 - 50' LT. TO 60' LT. TO
STA. 44+90 - 50' LT. TO 60' LT.
PERMANENT EASEMENT FOR MAINTENANCE
OF (3) - 12'x6' REINFORCED CONCRETE BOX
CULVERT CONTAINING 0.02 ACRES, MORE OR
LESS (TO BE OBTAINED BY BROOKINGS
COUNTY W/O FEDERAL PARTICIPATION).

END PROJECT BRF 6295(10)
STR. NO. 06-120-005
STA. 45+50



STA. 43+25 - 50' RT. TO 80' RT. TO
STA. 45+50 - 50' RT. TO 80' RT.
TEMPORARY EASEMENT FOR CONSTRUCTION
OF (3) - 12'x6' REINFORCED CONCRETE BOX
CULVERT CONTAINING 0.14 ACRES, MORE OR
LESS (TO BE OBTAINED BY BROOKINGS
COUNTY W/O FEDERAL PARTICIPATION).

STA. 43+50 - 50' RT. TO 60' RT. TO
STA. 44+25 - 50' RT. TO 60' RT.
PERMANENT EASEMENT FOR MAINTENANCE
OF (3) - 12'x6' REINFORCED CONCRETE BOX
CULVERT CONTAINING 0.02 ACRES, MORE OR
LESS (TO BE OBTAINED BY BROOKINGS
COUNTY W/O FEDERAL PARTICIPATION).

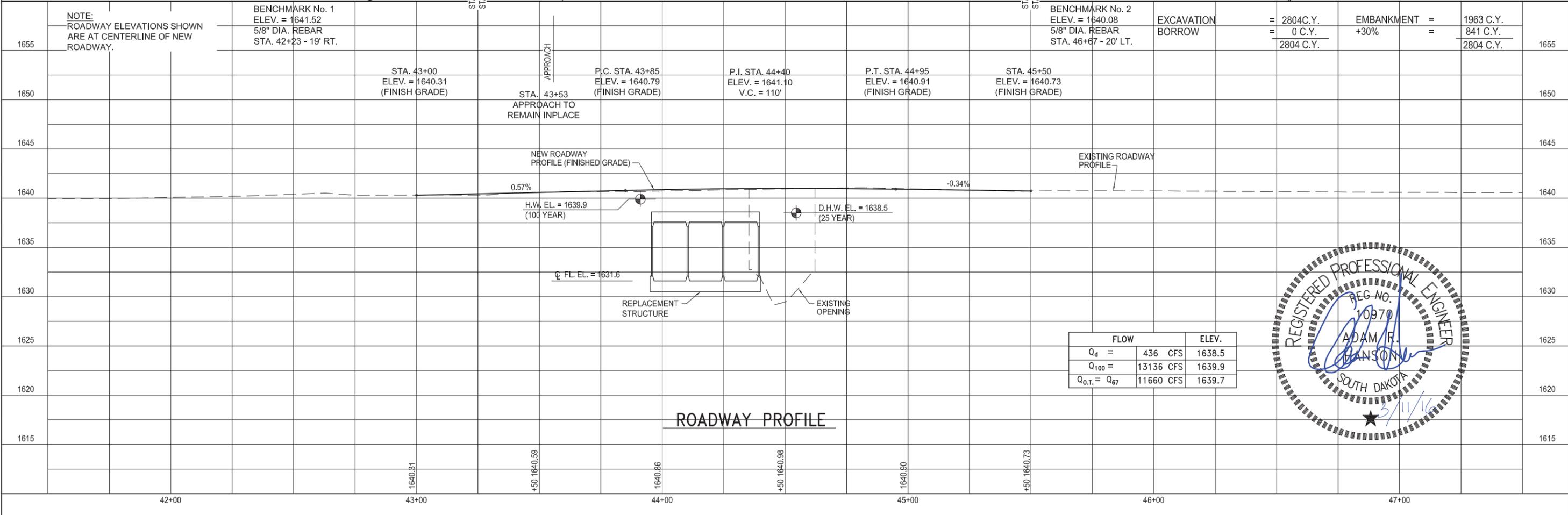
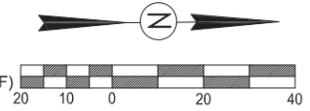
END EXCEPTION
STA. 43+00

SEC. 6-T112N-R50W

JEROME & CECELIA DEHMER
11961 36TH CIR. NE
SAINT MICHAEL, MN 55376
(763) 497-2646

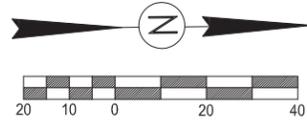
STA. 43+61.00 TO STA. 44+27.25 INSTALL
CLASS B RIPRAP & TYPE B DRAINAGE
FABRIC (SEE STRUCTURE SHEETS)

STA. 44+18
INSTALL (3) - 12'x6' REINFORCED
CONCRETE BOX CULVERT (30' SKEW LHF)
(DRAINAGE AREA = 1486 SQ. MI.)



FOR BIDDING PURPOSES ONLY

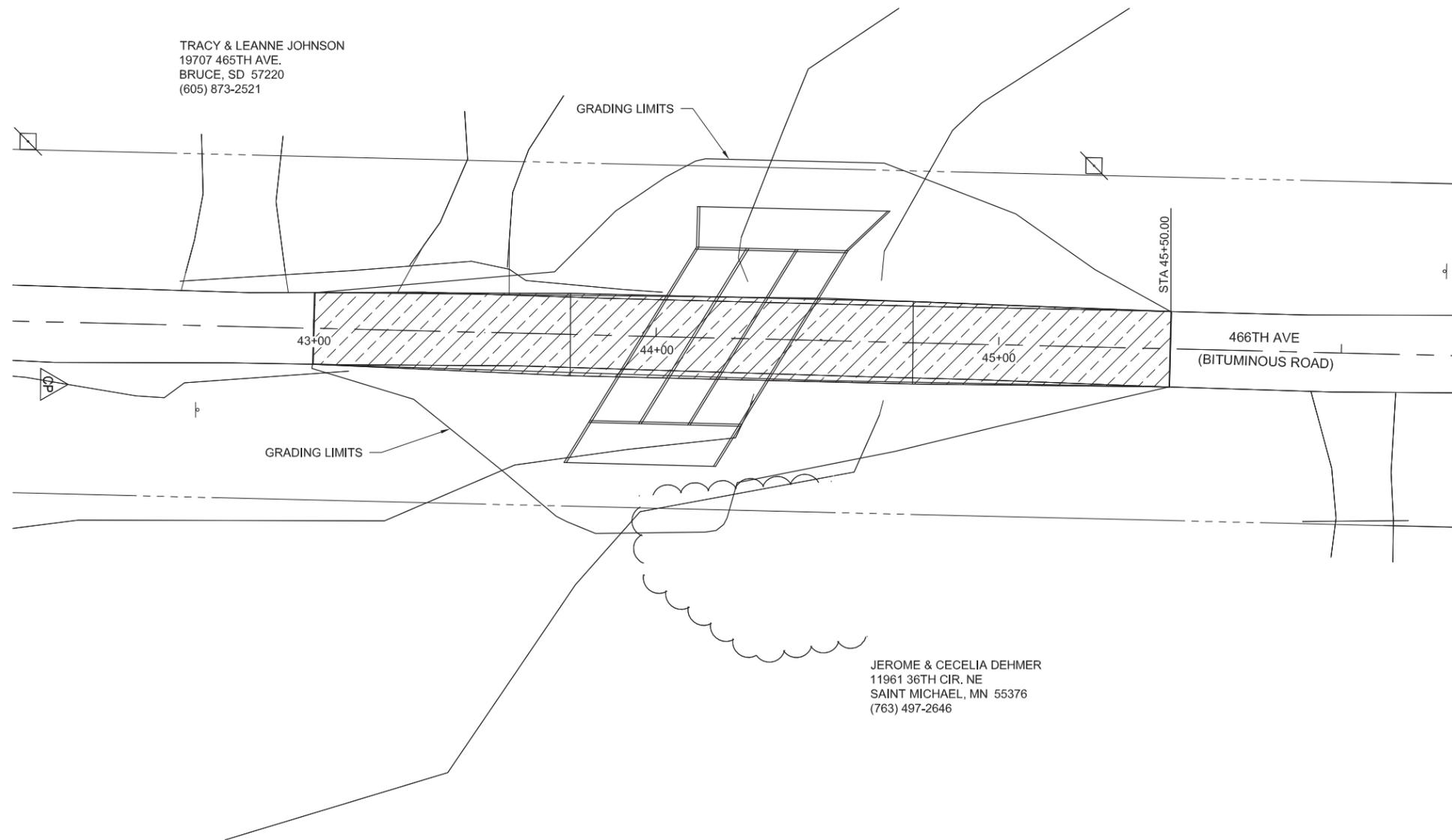
STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
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LEGEND:

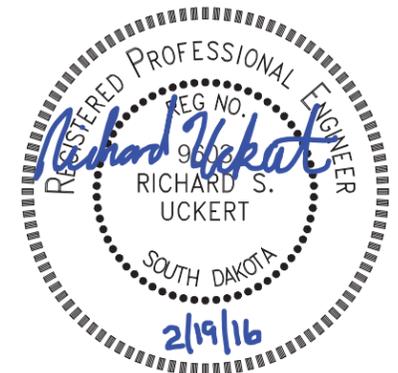
 PROPOSED BITUMINOUS SURFACING
(4" AC)
(12" BASE COURSE)

TRACY & LEANNE JOHNSON
19707 465TH AVE.
BRUCE, SD 57220
(605) 873-2521



JEROME & CECELIA DEHMER
11961 36TH CIR. NE
SAINT MICHAEL, MN 55376
(763) 497-2646

SURFACING PLAN



FOR BIDDING PURPOSES ONLY

**-X028-
INDEX OF CULVERT SHEETS:**

1. GENERAL DRAWING AND QUANTITIES
2. NOTES AND UNDERCUT DETAILS
3. INLET AND OUTLET APRON DETAILS
4. SHORT INLET WINGWALL DETAILS
5. LONG INLET WINGWALL DETAILS
6. OUTLET WINGWALL DETAILS
7. OUTLET WINGWALL DETAILS
8. S1 BARREL SECTION DETAILS
9. S1 BARREL SECTION DETAILS
10. S1 BARREL SECTION DETAILS
11. S1 BARREL SECTION DETAILS
12. S1 BARREL SECTION DETAILS
13. RIPRAP DETAILS
14. STANDARD PLATE No. 460.02

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION, BOX CULVERT	CUYD	142
BOX CULVERT UNDERCUT	CUYD	333
CLASS A45 CONCRETE, BOX CULVERT	CUYD	275.1
REINFORCING STEEL	LB	38,806
CLASS B RIPRAP	TON	146.7
TYPE B DRAINAGE FABRIC	SQYD	203

☑ FOR PAYMENT, QUANTITY IS BASED ON PLAN SHOWN UNDERCUT DIMENSIONS AND WILL NOT BE MEASURED UNLESS THE ENGINEER ORDERS A CHANGE.
 ≠ FOR ESTIMATING PURPOSES ONLY, A FACTOR OF 1.4 TONS PER CUBIC YARD WAS USED TO CONVERT CUBIC YARDS TO TONS.

W.P.	STATION	OFFSET
A	44+12.12	38.27' LT.
B	44+66.46	38.90' LT.
C	44+11.07	26.27' LT.
D	44+55.21	26.11' LT.
E	43+80.79	26.11' RT.
F	44+24.86	26.41' RT.
G	43+74.73	38.78' RT.
H	44+16.95	37.99' RT.

**GENERAL DRAWING AND QUANTITIES
FOR
3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.**

OVER UNNAMED TRIBUTARY SEC. 1/6-T112N-R50W/R51W
 * TO BIG SIOUX RIVER BRF 6295(10)
 STA. 44+18.00

**BROOKINGS COUNTY
SOUTH DAKOTA**

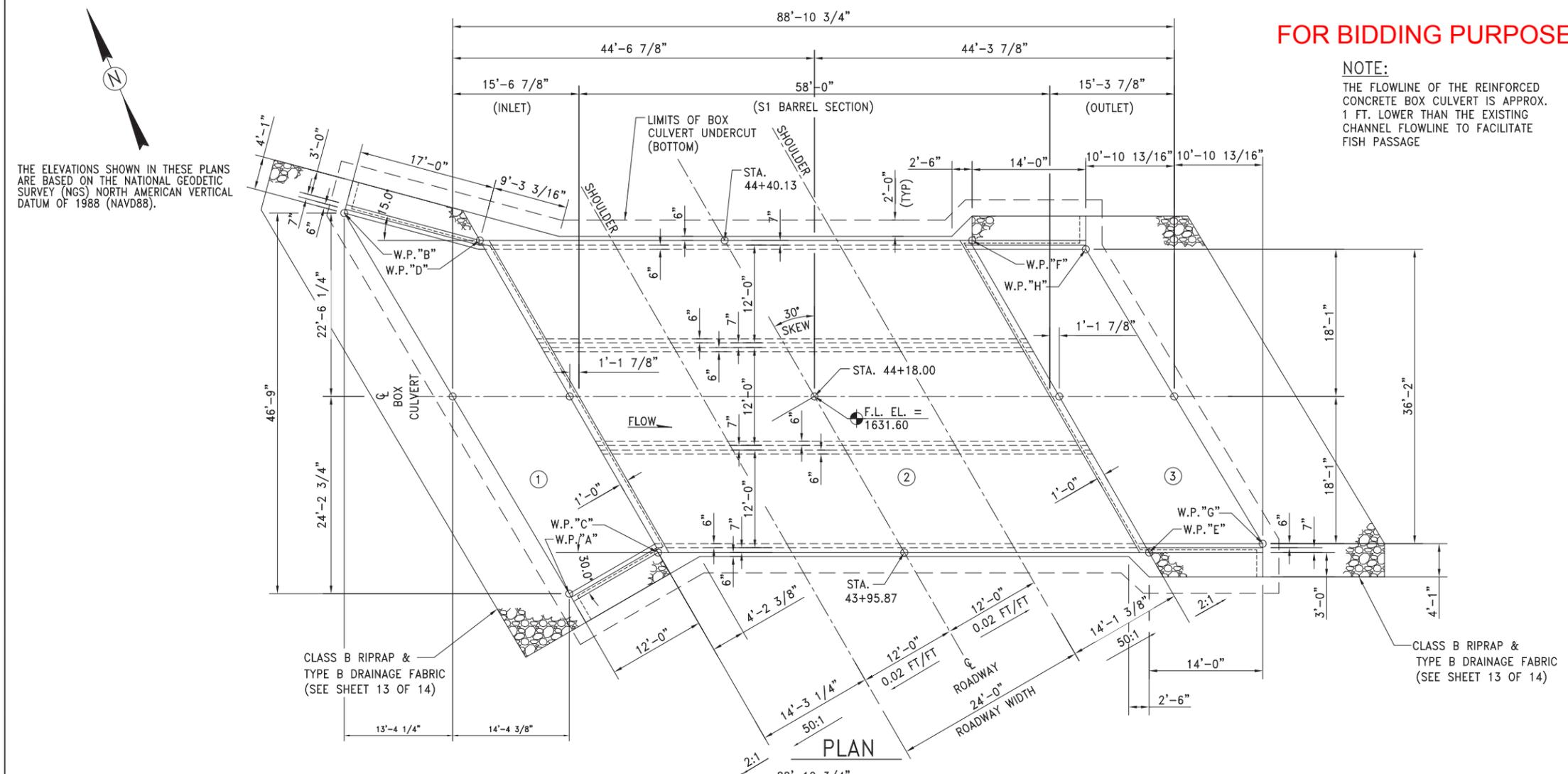
PREPARED BY :
 BANNER ASSOCIATES, INC.
 CONSULTING ENGINEERS
 BROOKINGS, SOUTH DAKOTA
 DECEMBER 2015

HL-93
 STR. NO. 06-120-005
 PCN 01W9

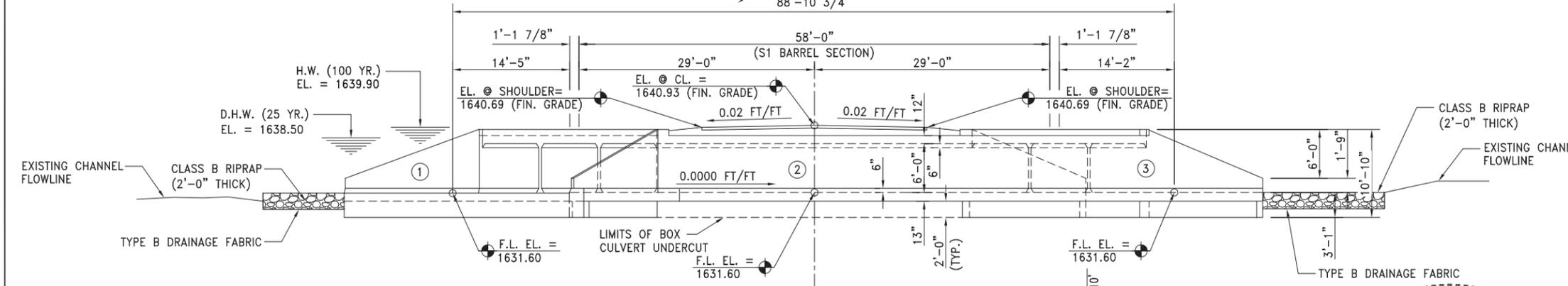
① OF ⑭

DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
A.R.H.	T.C.S.	D.J.W.	BRIDGE ENGINEER

NOTE:
 THE FLOWLINE OF THE REINFORCED CONCRETE BOX CULVERT IS APPROX. 1 FT. LOWER THAN THE EXISTING CHANNEL FLOWLINE TO FACILITATE FISH PASSAGE



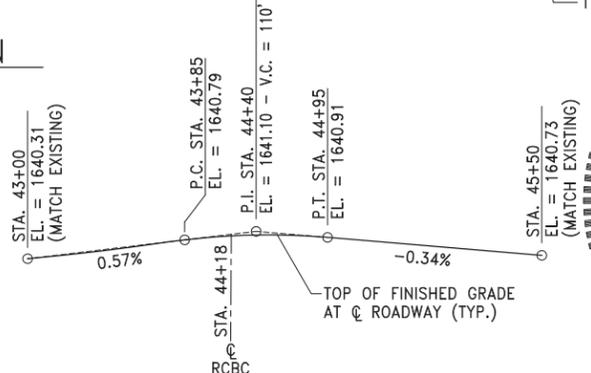
THE ELEVATIONS SHOWN IN THESE PLANS ARE BASED ON THE NATIONAL GEODETIC SURVEY (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).



HYDRAULIC SUMMARY

Q _d	436 CFS
A _d	182 SQ. FT.
V _d	2.4 fps
Q _f	8,324 CFS
Q ₁₀₀	13,136 CFS
Q _{0.t.fr.}	11,660 CFS
V _{max}	4.8 fps

Q_d = DESIGN DISCHARGE FOR THE PROPOSED CULVERT BASED ON 10 YEAR FREQUENCY, EL. = 1638.50.
 Q_{0.t.fr.} = OVERTOPPING DISCHARGE AND FREQUENCY 67 YEAR RECURRENCE INTERVAL, EL. = 1639.70. LOCATION STA. 27+60±.
 Q_f = DESIGNATED PEAK DISCHARGE FOR THE BASIN APPROACHING PROPOSED PROJECT BASED ON 25 YEAR FREQUENCY.
 Q₁₀₀ = COMPUTED DISCHARGE FOR THE BASIN APPROACHING PROPOSED PROJECT BASED ON 100 YEAR FREQUENCY EL. = 1639.90.
 V_{max} = MAXIMUM COMPUTED OUTLET VELOCITY FOR THE PROPOSED CULVERT, BASED ON A 100 YEAR FREQUENCY.



THE HYDRAULIC DATA CONTAINED IN THESE PLANS IS VALID ONLY IF THE OVERFLOW SECTION IS MAINTAINED. ALTERATION OF THE OVERFLOW SECTION WILL REQUIRE RE-ANALYSIS OF THE HYDRAULICS AT THE SITE TO DETERMINE ITS EFFECT ON PUBLIC SAFETY.

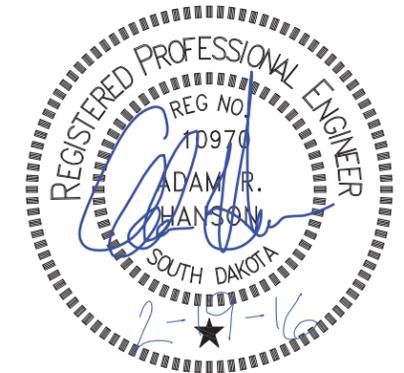
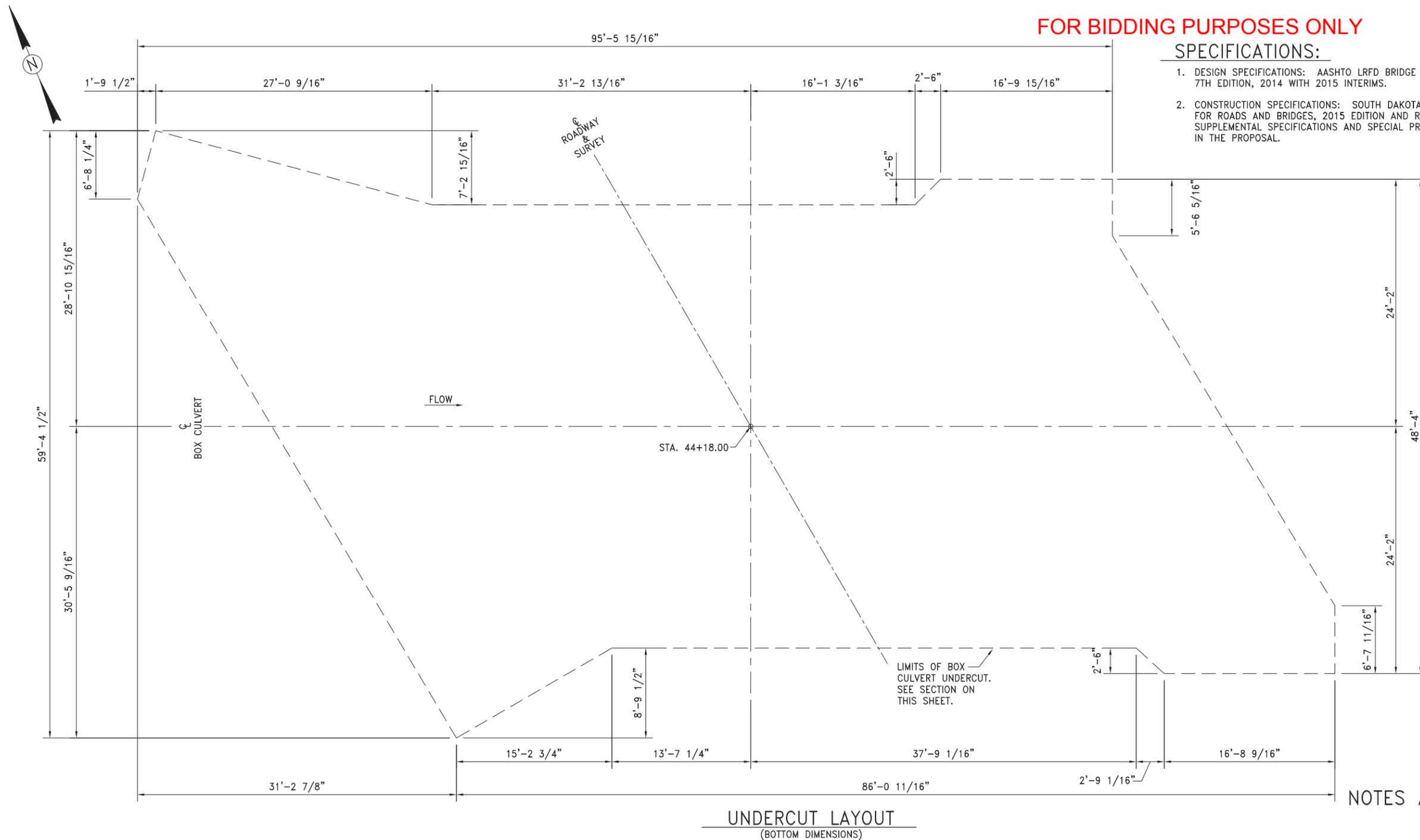
FINISHED GRADE DATA

* TOPEKA SHINER STREAM

FOR BIDDING PURPOSES ONLY

SPECIFICATIONS:

- DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, 2014 WITH 2015 INTERIMS.
- CONSTRUCTION SPECIFICATIONS: SOUTH DAKOTA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, 2015 EDITION AND REQUIRED PROVISIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS AS INCLUDED IN THE PROPOSAL.



NOTES AND UNDERCUT DETAILS FOR

3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.

OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER
STA. 44+18.00

SEC. 1/6-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY :
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. NO. 06-120-005
PCN 01W9

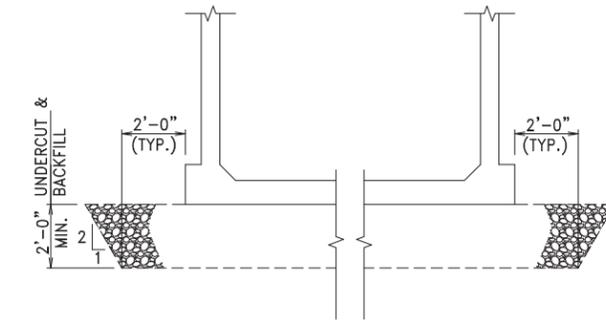
2 OF 14

GENERAL NOTES:

- DESIGN LIVE LOAD: HL-93. NO CONSTRUCTION LOADING IN EXCESS OF LEGAL LOAD WAS CONSIDERED.
- THE DESIGN OF THE BARREL SECTION IS BASED ON A MINIMUM FILL HEIGHT OF ONE (1) FOOT AND INCLUDES ALL SUBSEQUENT FILL HEIGHTS UP TO AND INCLUDING THE MAXIMUM FILL HEIGHT OF FIVE (5) FEET (S1).
- DESIGN MATERIAL STRENGTHS: CONCRETE: $f'_c = 4,500$ P.S.I.
REINFORCING STEEL: $f_y = 60,000$ P.S.I.
- ALL CONCRETE SHALL BE CLASS A45 CONFORMING TO SECTION 460.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60.
- ALL EXPOSED EDGES SHALL BE CHAMFERED 3/4" INCH.
- USE 1 INCH CLEAR COVER ON ALL REINFORCING STEEL EXCEPT AS SHOWN.
- THE CONTRACTOR SHALL IMPRINT ON THE STRUCTURE THE DATE OF CONSTRUCTION AS SPECIFIED AND DETAILED ON STANDARD PLATE No. 460.02.
- CARE SHALL BE TAKEN TO ESTABLISH WORKING POINTS (W.P.) AS SHOWN ON THE WINGS.
- CIRCLED NUMBERS IN PLAN AND ELEVATION VIEWS ON SHEET 1 OF 14 ARE SECTION I.D. NUMBERS (SEE SDDOT MATERIALS MANUAL).
- COST OF PREFORMED EXPANSION JOINT FILLER USED IN APRON CONSTRUCTION SHALL BE INCIDENTAL TO THE OTHER CONTRACT ITEMS.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
BOX CULVERT UNDERCUT	CUYD	333

FOR PAYMENT, QUANTITY IS BASED ON PLAN SHOWN UNDERCUT DIMENSIONS AND WILL NOT BE MEASURED UNLESS THE ENGINEER ORDERS A CHANGE.



TYPICAL UNDERCUT SECTION

DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
A.R.H.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET NO. 79	TOTAL SHEETS 91
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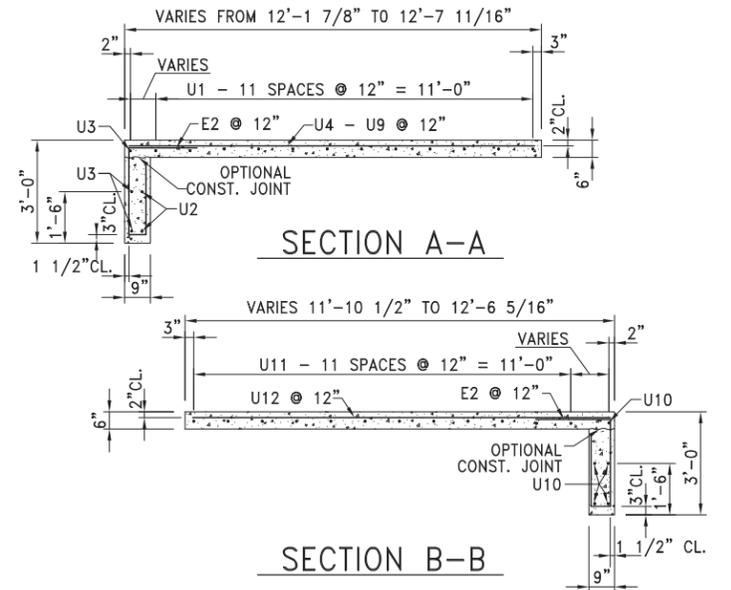
INLET & OUTLET APRON - REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS													
E2	82	4	7'-6"	S12		<table border="1"> <tr> <td>U12</td> <td>13'-1"</td> <td>14'-1"</td> </tr> <tr> <td>U9</td> <td>3'-3"</td> <td>10'-3"</td> </tr> <tr> <td>U7</td> <td>13'-6"</td> <td>14'-2"</td> </tr> <tr> <td>U1</td> <td>41'-2"</td> <td>52'-2"</td> </tr> </table>	U12	13'-1"	14'-1"	U9	3'-3"	10'-3"	U7	13'-6"	14'-2"	U1	41'-2"	52'-2"
U12	13'-1"	14'-1"																
U9	3'-3"	10'-3"																
U7	13'-6"	14'-2"																
U1	41'-2"	52'-2"																
U1	6	4	93'-4"	STR.		<table border="1"> <tr> <td>U1</td> <td>42'-2"</td> <td>47'-2"</td> </tr> <tr> <td>U7</td> <td>13'-10"</td> <td>13'-10"</td> </tr> <tr> <td>U9</td> <td>5'-7"</td> <td>7'-11"</td> </tr> <tr> <td>U12</td> <td>13'-7"</td> <td>13'-7"</td> </tr> </table>	U1	42'-2"	47'-2"	U7	13'-10"	13'-10"	U9	5'-7"	7'-11"	U12	13'-7"	13'-7"
U1	42'-2"	47'-2"																
U7	13'-10"	13'-10"																
U9	5'-7"	7'-11"																
U12	13'-7"	13'-7"																
U2	2	4	53'-2"	STR.														
U3	3	4	53'-6"	STR.														
U4	1	4	5'-0"	STR.														
U5	1	4	8'-2"	STR.														
U6	1	4	11'-3"	STR.														
U7	18	4	27'-8"	STR.														
U8	1	4	12'-7"	STR.														
U9	2	4	13'-6"	STR.														
U10	5	4	41'-8"	STR.														
U11	12	4	41'-3"	STR.														
U12	18	4	27'-2"	STR.														

SEE CUTTING DIAGRAM.
ALL DIMENSIONS ARE OUT TO OUT OF BARS.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION, BOX CULVERT	CUYD	27.3
CLASS A45 CONCRETE, BOX CULVERT	CUYD	27.3
REINFORCING STEEL	LB	2135



INLET AND OUTLET APRON DETAILS FOR

3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT

30° SKEW L.H.F.

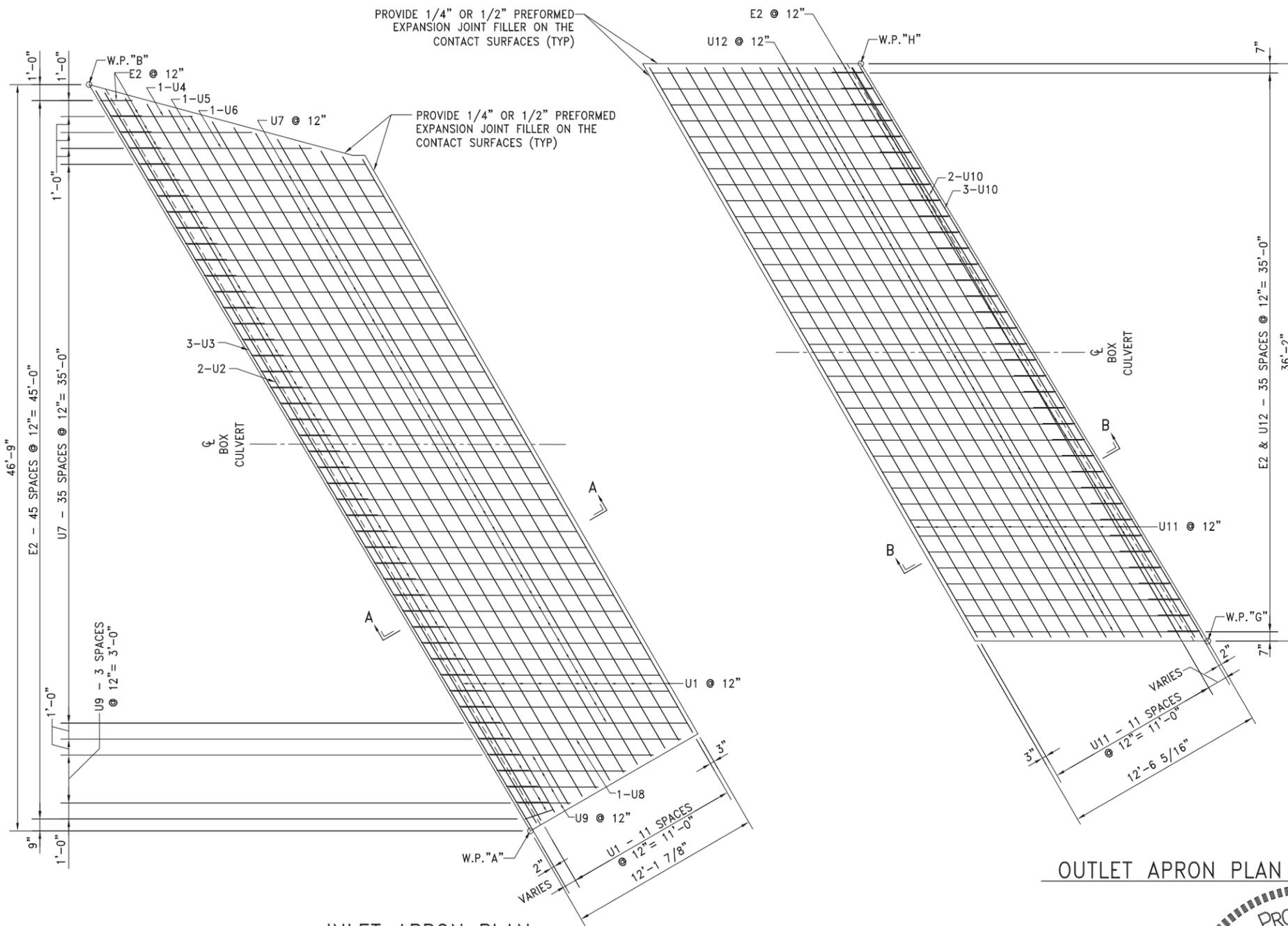
OVER UNNAMED TRIBUTARY
TO BIG SIOUX RIVER
STA. 44+18.00

SEC. 1/6-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

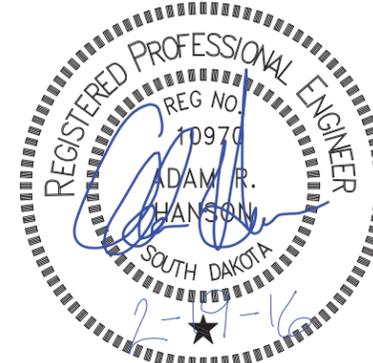
PREPARED BY :
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. NO. 06-120-005
PCN 01W9



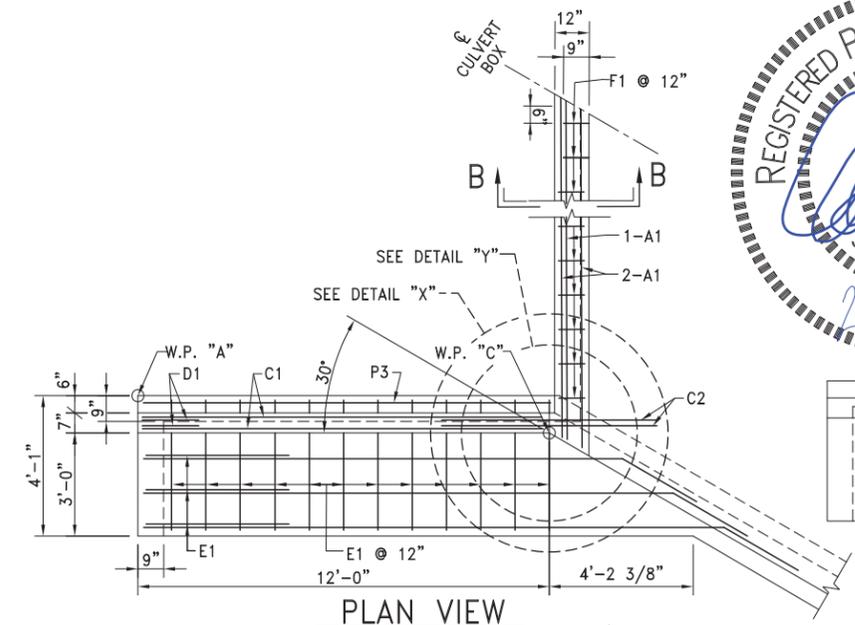
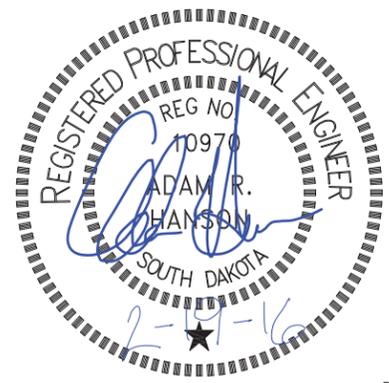
INLET APRON PLAN

OUTLET APRON PLAN

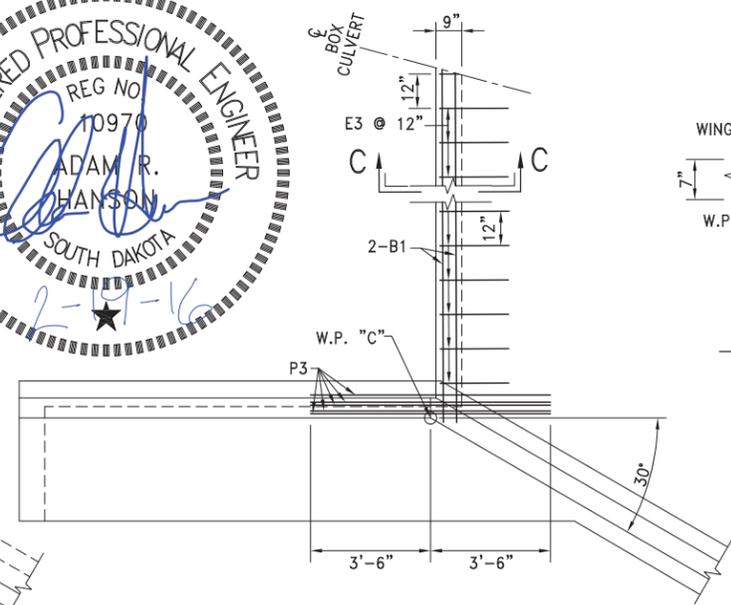


DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
A.R.H.	T.C.S.	D.J.W.	BRIDGE ENGINEER

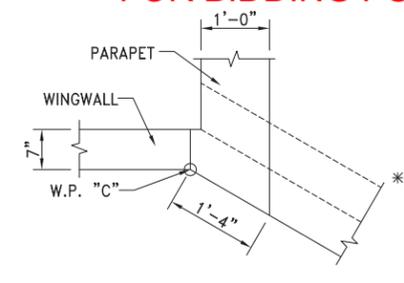
FOR BIDDING PURPOSES ONLY



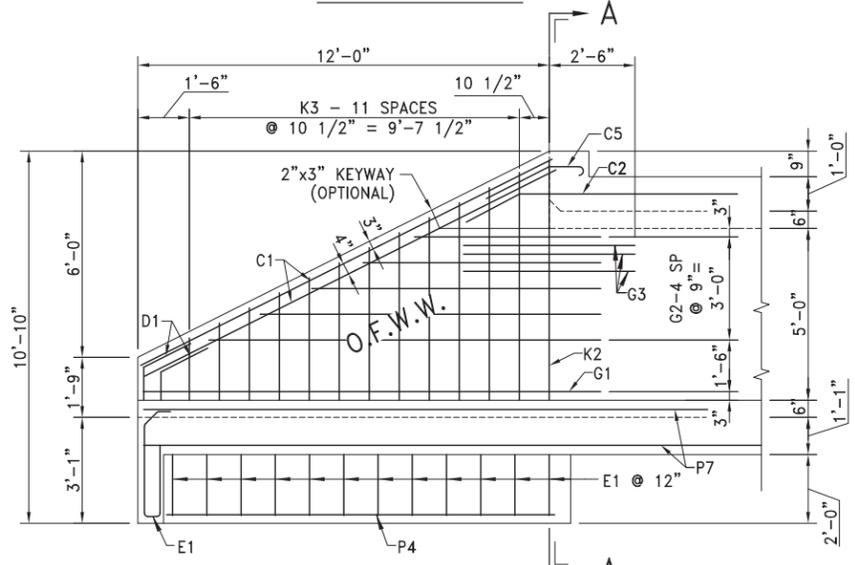
PLAN VIEW



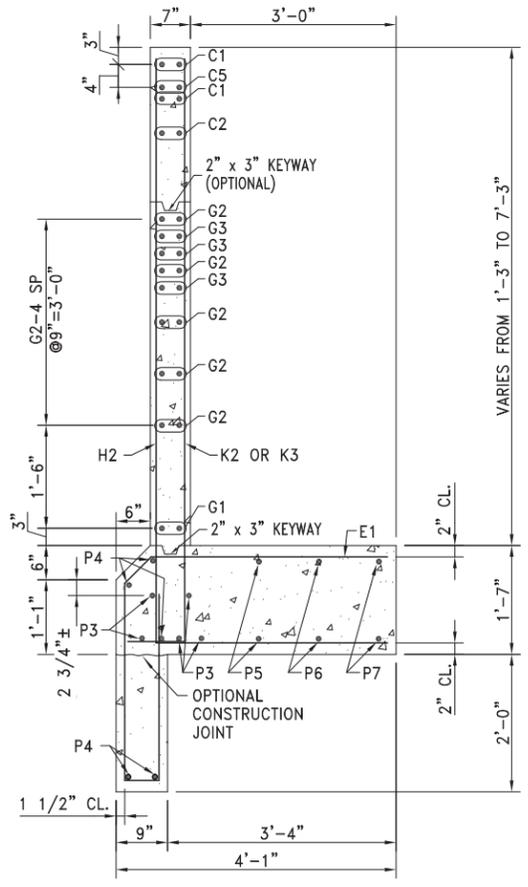
DETAIL "X"
(AT BOTTOM SLAB)



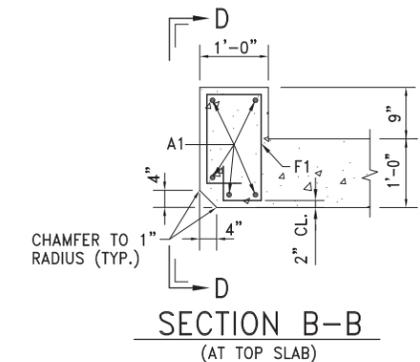
DETAIL "Y"
(AT TOP SLAB)



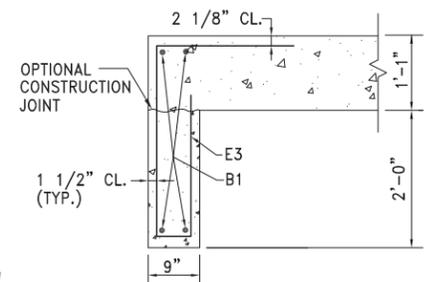
ELEVATION



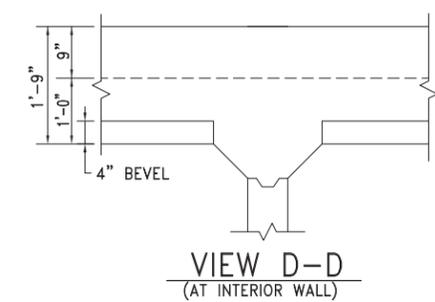
SECTION A-A



SECTION B-B
(AT TOP SLAB)



SECTION C-C



VIEW D-D
(AT INTERIOR WALL)

INLET - REINFORCING SCHEDULE				BENDING DETAILS	
MK.	NO.	SIZE	LENGTH	TYPE	
A1	5	6	44'-0"	STR.	
B1	4	6	42'-0"	STR.	
C1	4	5	13'-0"	STR.	
C2	2	5	7'-0"	19B	
C5	2	5	4'-6"	1A	
D1	4	5	5'-6"	19B	
E1	15	4	10'-0"	S12A	
E3	43	4	7'-3"	S12	
F1	44	4	5'-9"	S6A	
G1	2	4	14'-0"	19B	
G2	5	4	17'-6"	19B	
G3	6	5	5'-0"	19B	
H2	4	4	18'-6"	17A	
K2	1	4	9'-3"	17A	
K3	6	4	13'-0"	17A	
P3	5	6	7'-0"	STR.	
P4	5	4	14'-6"	STR.	
P5	2	4	15'-9"	STR.	
P6	2	4	17'-3"	STR.	
P7	2	4	18'-9"	STR.	

BENDING DETAILS	
TYPE 19B	TYPE 1A
TYPE 19B	TYPE S12A
TYPE 19B	TYPE S12
TYPE 19B	TYPE S6A
TYPE 19B	TYPE 17A
TYPE 19B	TYPE 17A

ESTIMATED QUANTITIES	
ITEM	UNIT QUANTITY
STRUCTURE EXCAVATION, BOX CULVERT	CUYD 11.9
CLASS A45 CONCRETE, BOX CULVERT	CUYD 20.2
REINFORCING STEEL	LB 2,320

ABBREVIATIONS LEGEND	
O.F.W.W.	OUTSIDE FACE OF WING WALL
I.F.W.W.	INSIDE FACE OF WING WALL
W.P.	WORKING POINT

SHORT INLET WINGWALL DETAILS FOR 3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT 30° SKEW L.H.F.

OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER STA. 44+18.00
 SEC. 1/6-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS, BROOKINGS, SOUTH DAKOTA
 HL-93 STR. NO. 06-120-005 PCN 01W9

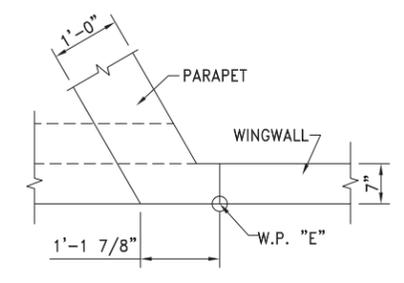
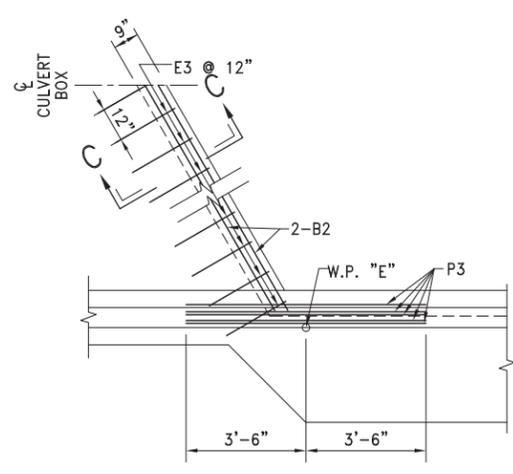
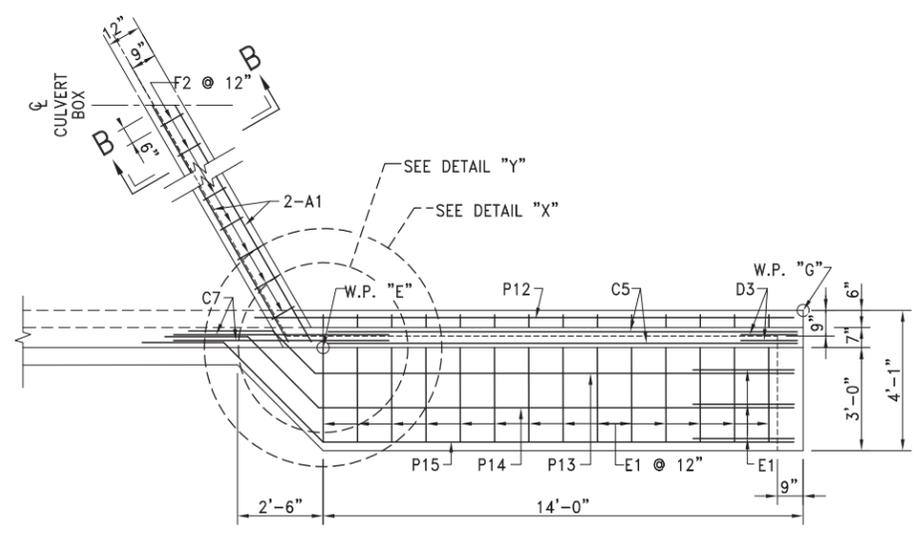
DESIGNED BY : A.R.H.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 5 OF 14.

FOR BIDDING PURPOSES ONLY

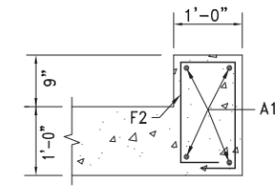
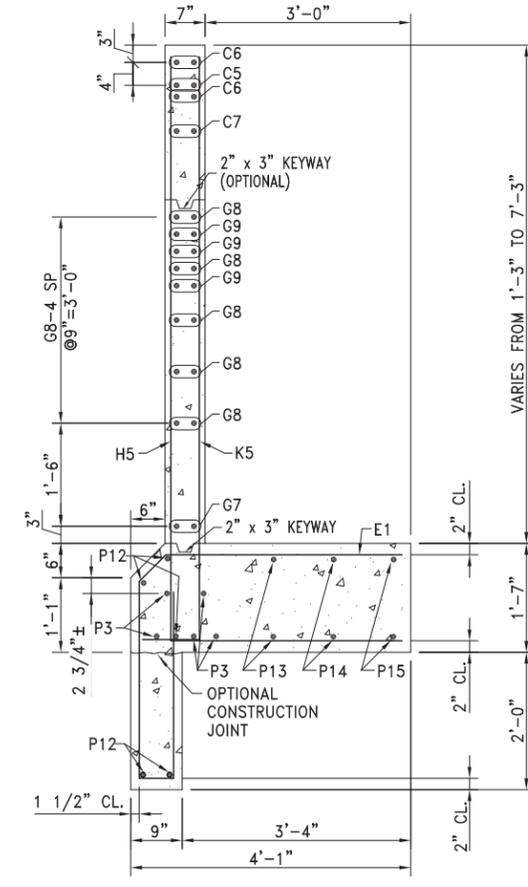
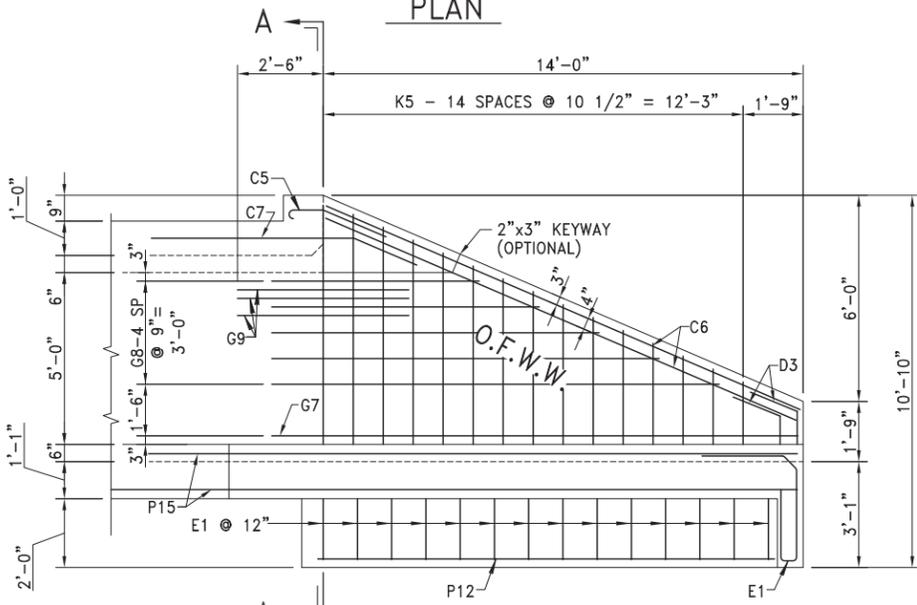
OUTLET - REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS	
A1	4	6	44'-0"	STR.		
B2	4	6	43'-3"	STR.		
C5	4	5	4'-6"	1A		
C6	8	5	15'-3"	STR.		
C7	4	5	7'-0"	19B		
D3	4	5	5'-6"	19B		
E1	34	4	10'-0"	S12A		
E3	43	4	7'-3"	S12		
F2	44	4	5'-0"	S6A		
G7	4	4	16'-0"	STR.		
G8	10	4	20'-0"	STR.		
G9	12	5	5'-0"	STR.		
H5	9	4	18'-6"	17A		
K5	15	4	13'-3"	17A		
P3	10	6	7'-0"	STR.		
P12	10	4	16'-6"	STR.		
P13	4	4	17'-6"	STR.		
P14	4	4	18'-9"	STR.		
P15	4	4	20'-3"	STR.		

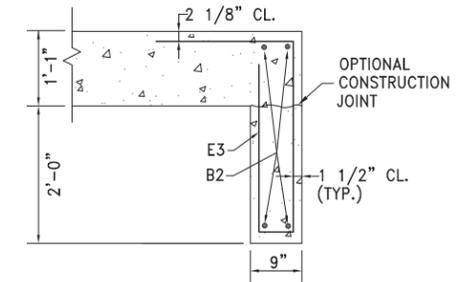


DETAIL "X"
(AT BOTTOM SLAB)

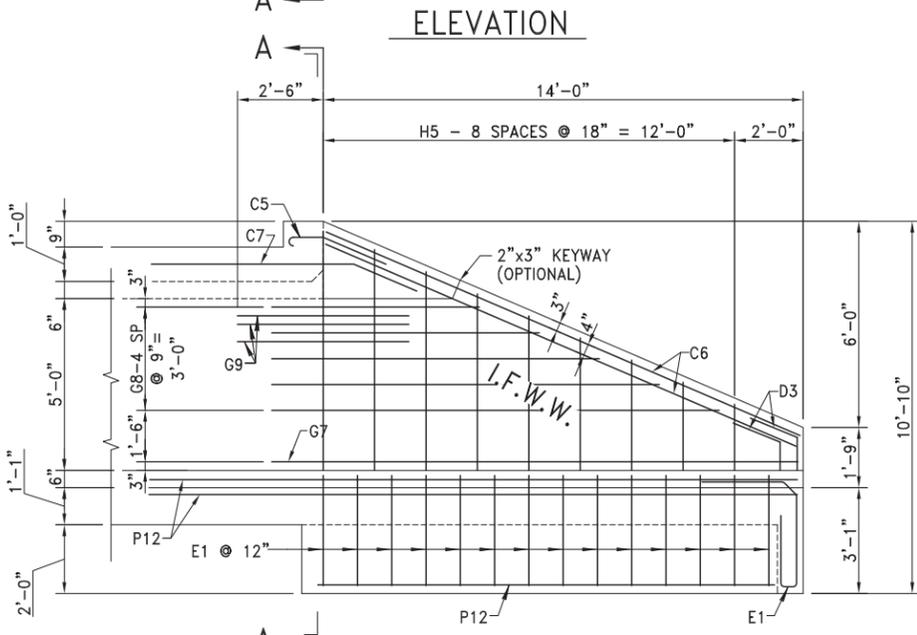
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SECTION B-B
(AT TOP SLAB)

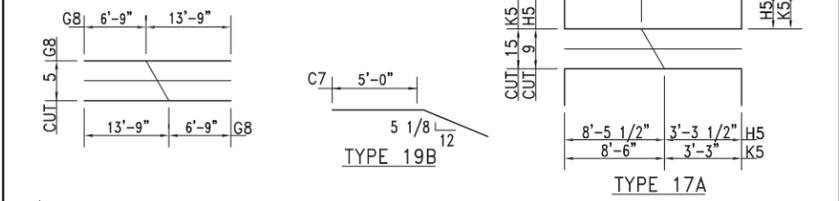


SECTION C-C



ELEVATION

SECTION A-A



SEE CUTTING DIAGRAM.
* BEND IN FIELD AS NECESSARY.
ALL DIMENSIONS ARE OUT TO OUT OF BARS.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION, BOX CULVERT	CUYD	10.9
CLASS A45 CONCRETE, BOX CULVERT	CUYD	19.3
REINFORCING STEEL	LB	2,187

ABBREVIATIONS LEGEND	
O.F.W.W.	OUTSIDE FACE OF WING WALL
I.F.W.W.	INSIDE FACE OF WING WALL
W.P.	WORKING POINT

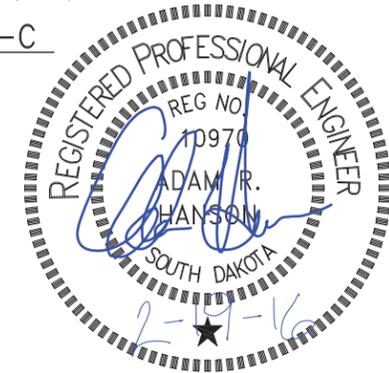
OUTLET WINGWALL DETAILS FOR

3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.

OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER STA. 44+18.00
SEC. 1/6-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY SOUTH DAKOTA

PREPARED BY: BANNER ASSOCIATES, INC. CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

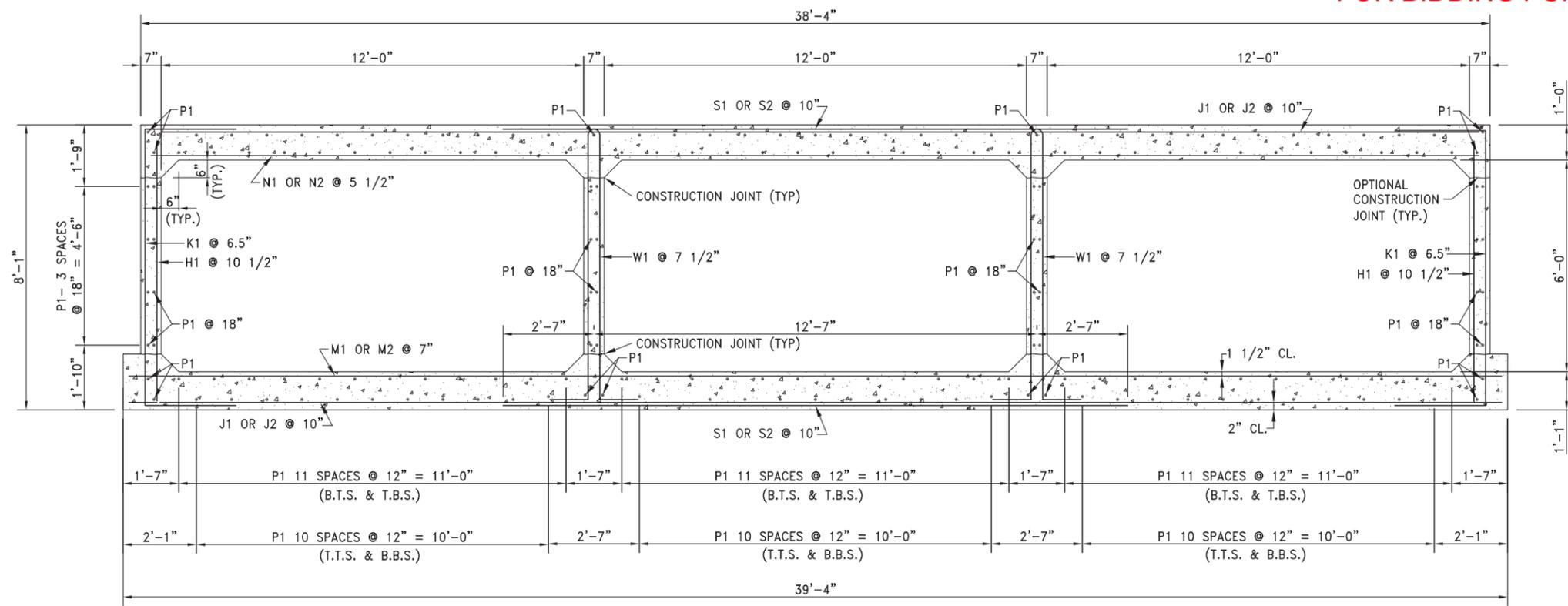


DESIGNED BY : A.R.H.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 7 OF 14.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET NO. 84	TOTAL SHEETS 91
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S1 BARREL SECTION
(5'-0" MAXIMUM FILL)

SI BARREL - REINFORCING SCHEDULE

MK.	NO.	SIZE	LENGTH	TYPE
H1	138	4	8'-3"	17A
J1	92	5	37'-3"	STR.
J2	48	5	38'-9"	STR.
K1	222	5	15'-0"	17
M1	63	5	39'-0"	STR.
M2	36	5	41'-6"	STR.
N1	81	5	38'-0"	STR.
N2	45	5	40'-6"	STR.
P1	184	4	59'-9"	STR.
S1	110	5	23'-9"	STR.
S2	30	5	24'-9"	STR.
W1	192	4	18'-0"	S11A

BENDING DETAILS

CONTRACTOR MAY USE OPTIONAL REINFORCING STEEL SPLICES, AS SHOWN. THE COST OF THE ADDITIONAL REINFORCING STEEL SHALL BE BORNE BY THE CONTRACTOR.

CUT. 15. S2	S2	2'-3"	22'-6"
CUT. 15. IN2	N2	2'-9"	37'-9"
CUT. 36. M2	M2	3'-1"	38'-5"
CUT. 24. J2	J2	2'-9"	36'-0"

	36'-0"	2'-9"	J2
	38'-5"	3'-1"	M2
	37'-9"	2'-9"	N2
	22'-6"	2'-3"	S2

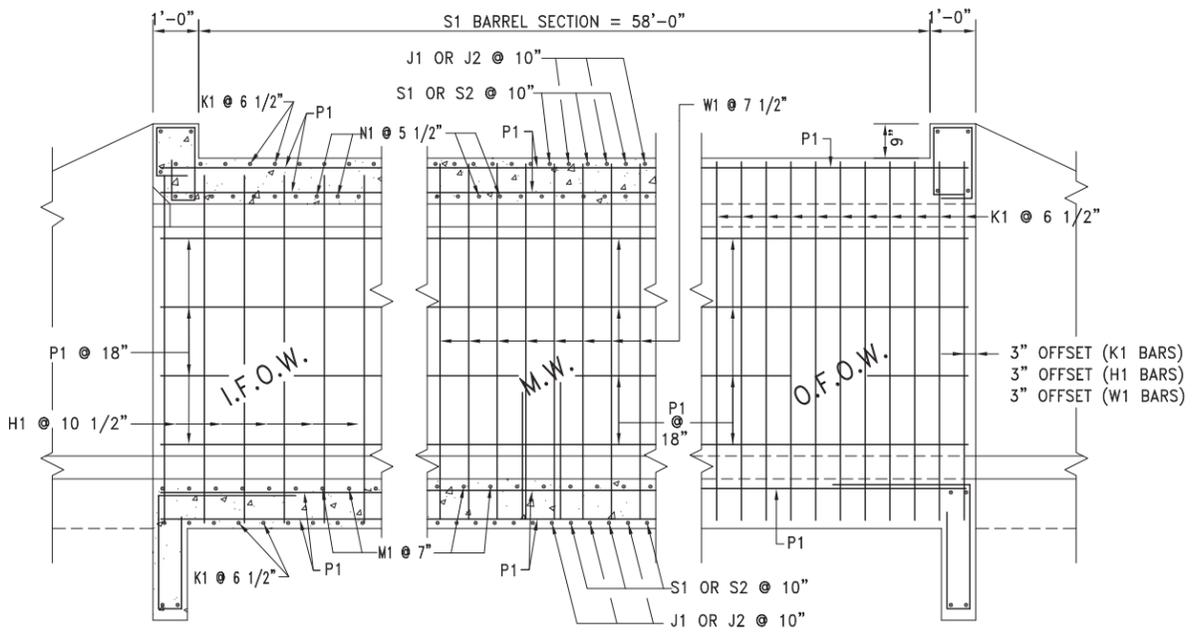
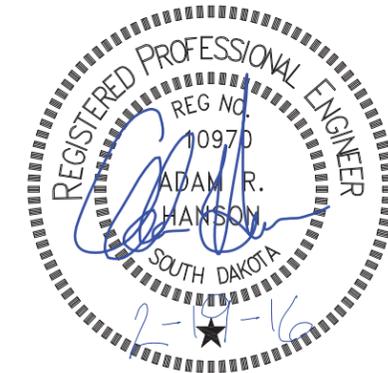
SEE CUTTING DIAGRAM.
ALL DIMENSIONS ARE OUT TO OUT OF BARS.
REQUEST FOR ADDITIONAL REINFORCING STEEL SPLICES AT POINTS OTHER THAN THOSE SHOWN, MUST BE SUBMITTED TO THE ENGINEER FOR PRIOR APPROVAL. IF ADDITIONAL SPLICES ARE APPROVED, NO PAYMENT WILL BE ALLOWED FOR THE ADDED QUANTITY OF REINFORCING STEEL.

ABBREVIATIONS LEGEND

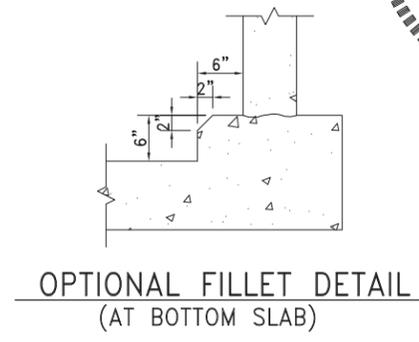
T.B.S.	TOP OF BOTTOM SLAB
B.B.S.	BOTTOM OF BOTTOM SLAB
B.T.S.	BOTTOM OF TOP SLAB
T.T.S.	TOP OF TOP SLAB
O.F.O.W.	OUTSIDE FACE OF OUTSIDE WALL
I.F.O.W.	INSIDE FACE OF OUTSIDE WALL
M.W.	MIDDLE WALL

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
STRUCTURE EXCAVATION, BOX CULVERT	CUYD	91.5
CLASS A45 CONCRETE, BOX CULVERT	CUYD	208.3
REINFORCING STEEL	LB	32,163



ELEVATION



NOTE:
CONTRACTOR MAY FORM THE OPTIONAL FULL FILLET WITH 2" CHAMFER, AS DETAILED. THE COST OF THE ADDITIONAL CONCRETE SHALL BE BORNE BY THE CONTRACTOR.

S1 BARREL SECTION DETAILS FOR

3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.

OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER
STA. 44+18.00

SEC. 1/6-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY : BANNER ASSOCIATES, INC. CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. NO. 06-120-005
PCN 01W9

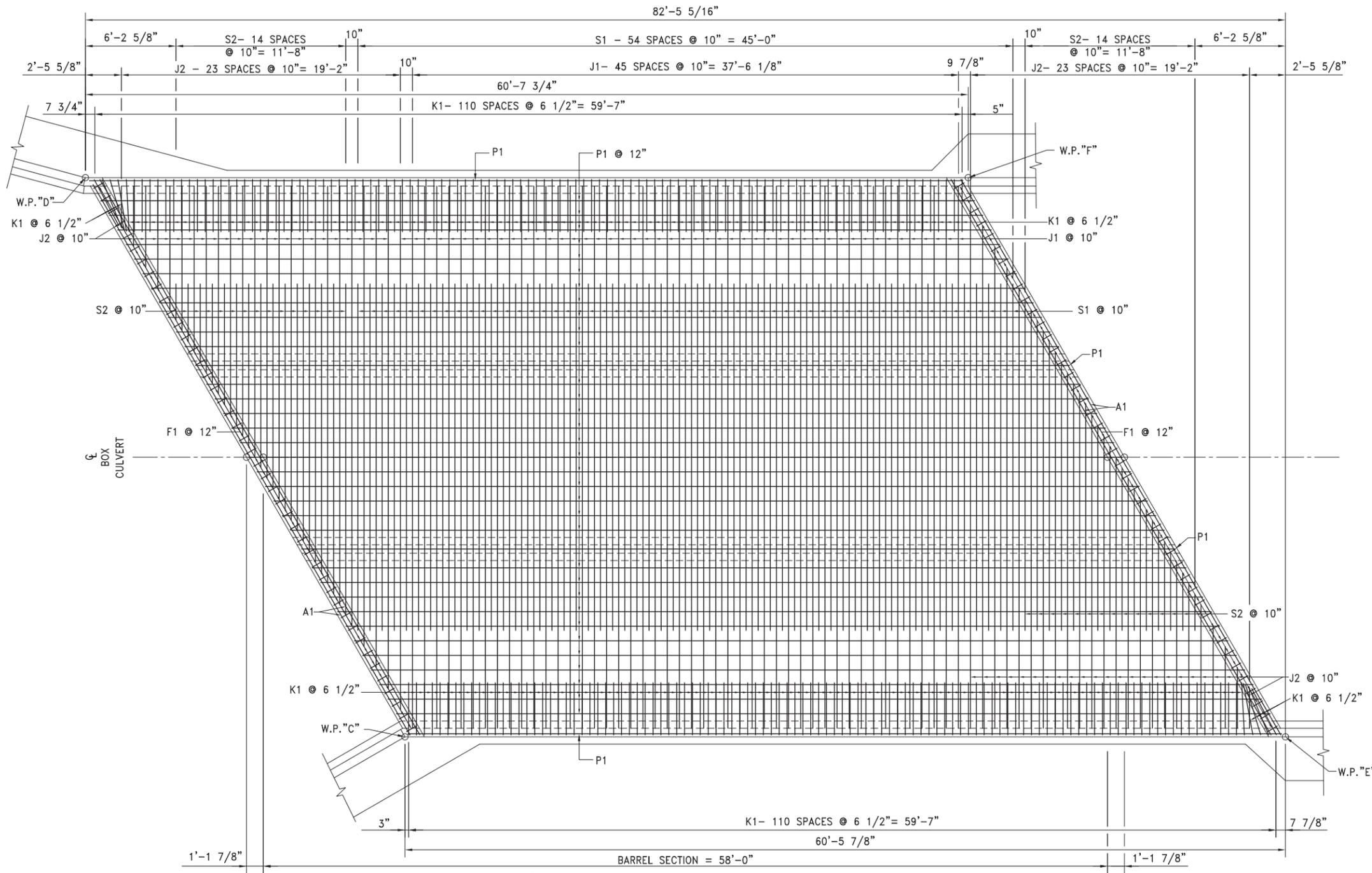
8 OF 14

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 9, 10, 11 & 12 OF 14.

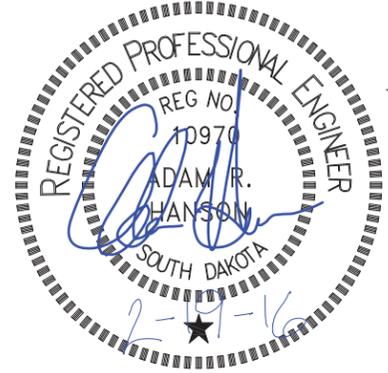
DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
A.R.H.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET NO. 85	TOTAL SHEETS 91
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S1 BARREL SECTION DETAILS
FOR
3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.
OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER
STA. 44+18.00
SEC. 1/6-T112N-R50W/R51W
BRF 6295(10)



TOP OF TOP SLAB PLAN

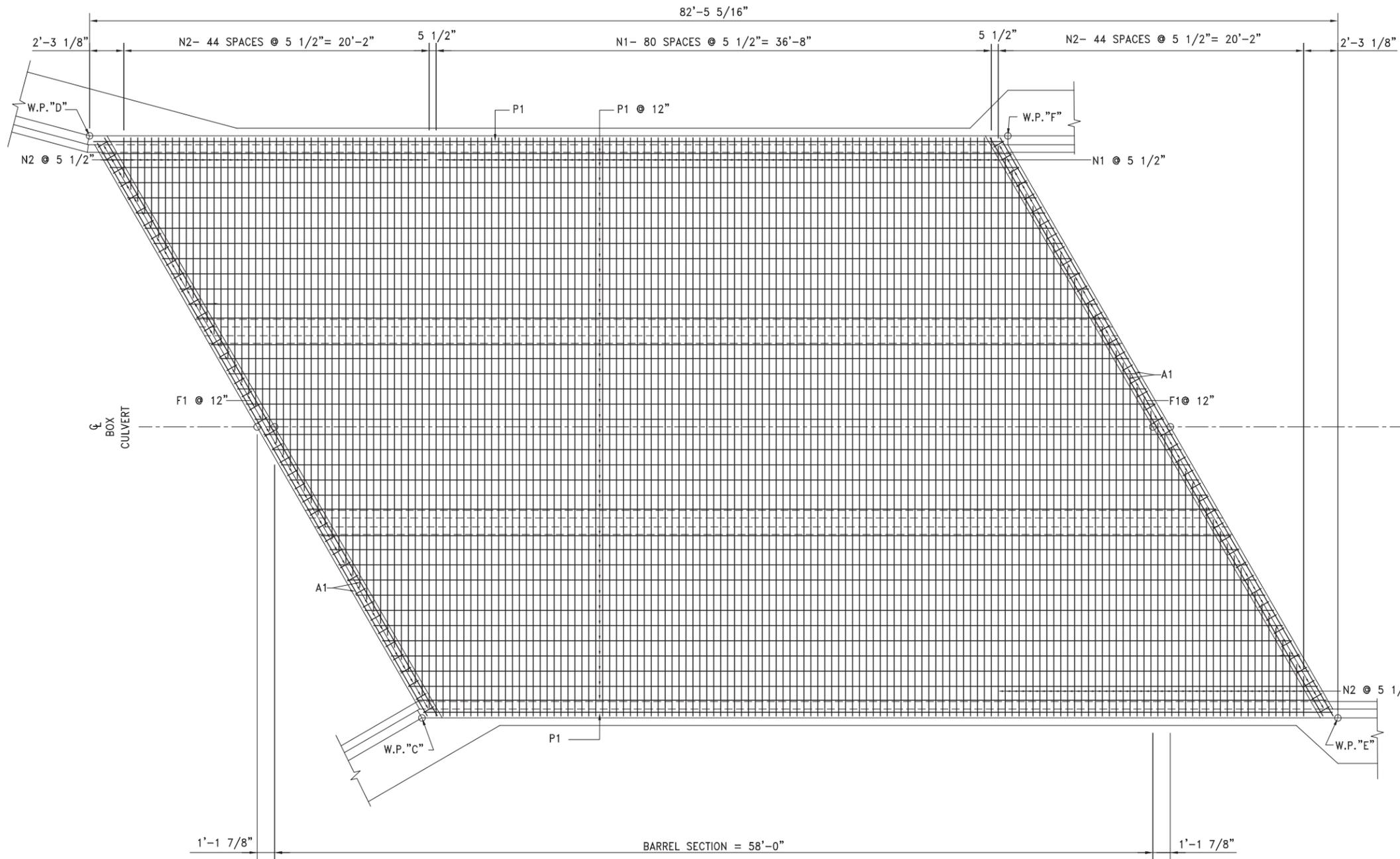
BROOKINGS COUNTY
SOUTH DAKOTA
PREPARED BY :
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015
HL-93
STR. NO. 06-120-005
PCN 01W9
9 OF 14

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 8, 10, 11 & 12 OF 14.

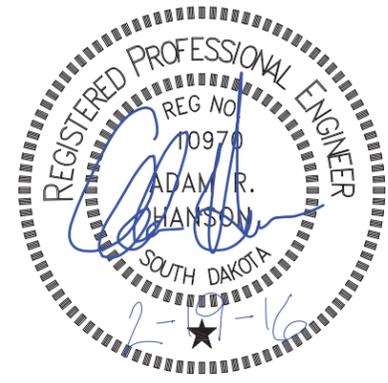
DESIGNED BY : A.R.H.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6295(10)	86	91



BOTTOM OF TOP SLAB PLAN



S1 BARREL SECTION DETAILS
FOR
3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.

OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER STA. 44+18.00
SEC. 1/6-T112N-R50W/R51W BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

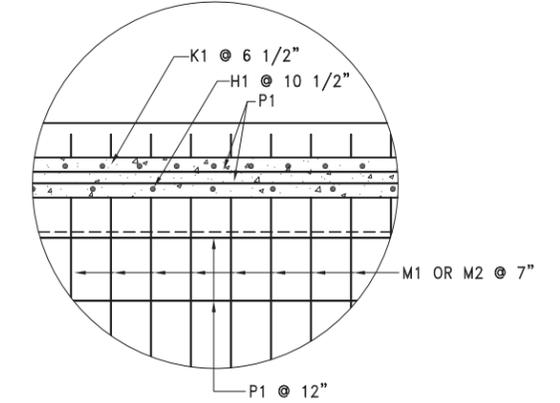
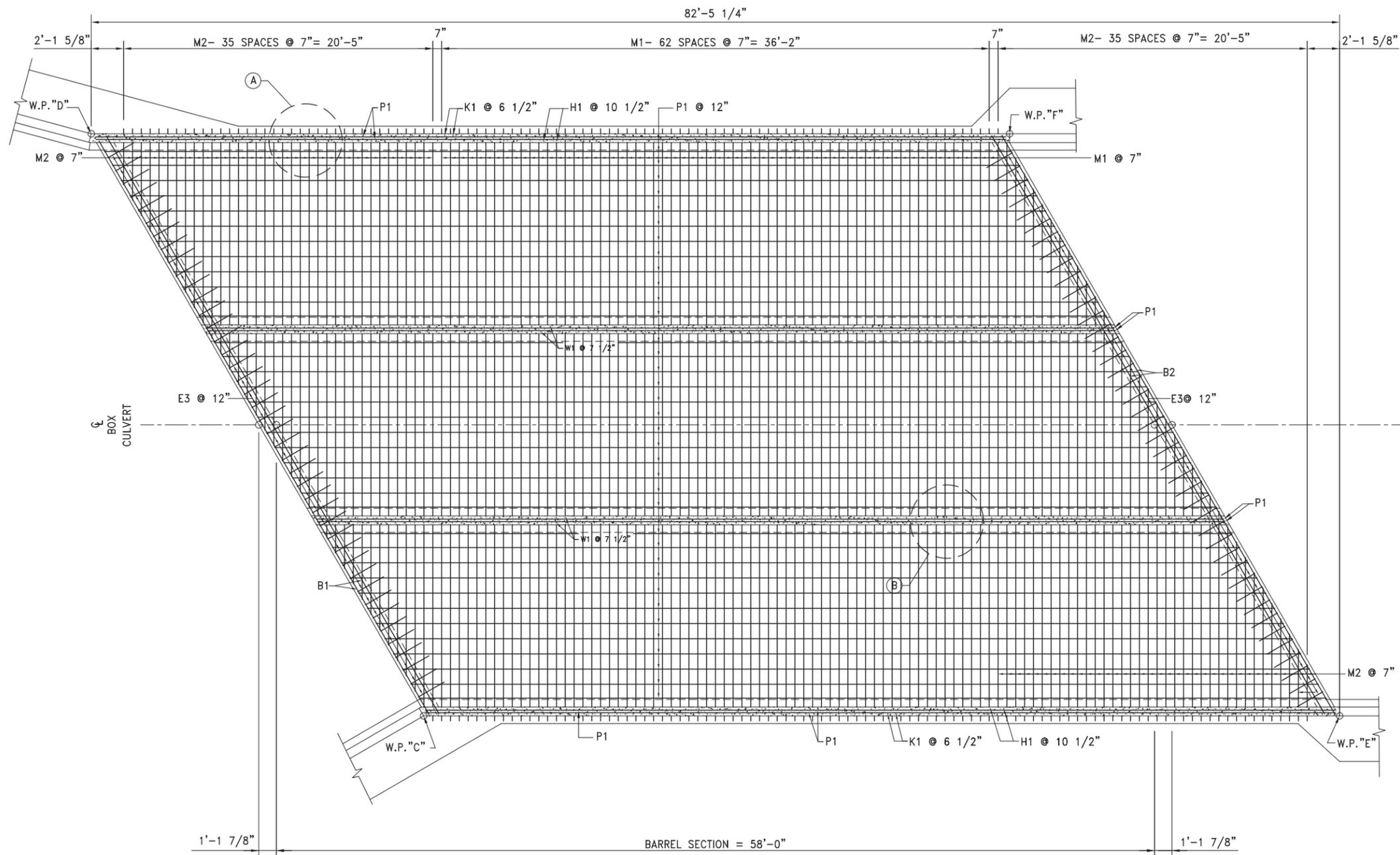
PREPARED BY : BANNER ASSOCIATES, INC. CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015
HL-93
STR. NO. 06-120-005
PCN 01W9
10 OF 14

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 8, 9, 11 & 12 OF 14.

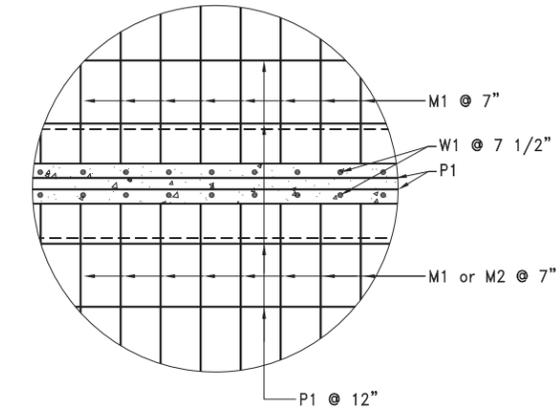
DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
A.R.H.	T.C.S.	D.J.W.	BRIDGE ENGINEER

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET NO. 87	TOTAL SHEETS 91
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ENLARGED VIEW A



ENLARGED VIEW B

S1 BARREL SECTION DETAILS
FOR
3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.

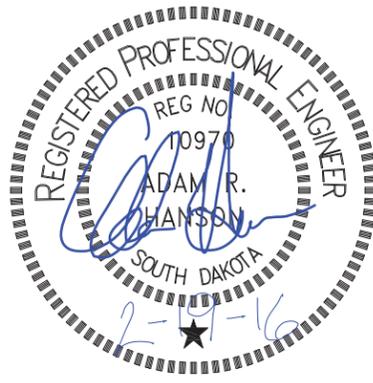
OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER
STA. 44+18.00

SEC. 1/6-T112N-R50W/R51W
BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

PREPARED BY :
BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. NO. 06-120-005
PCN 01W9



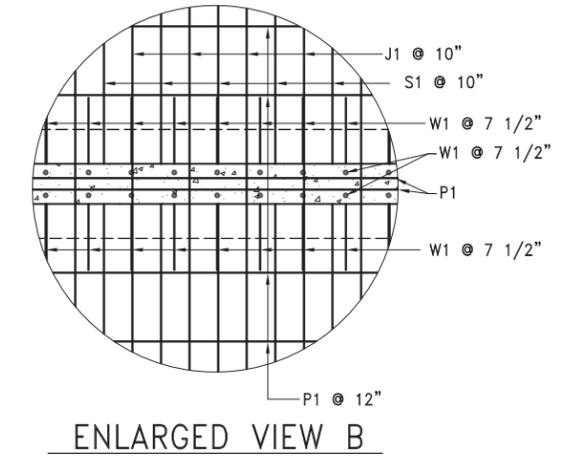
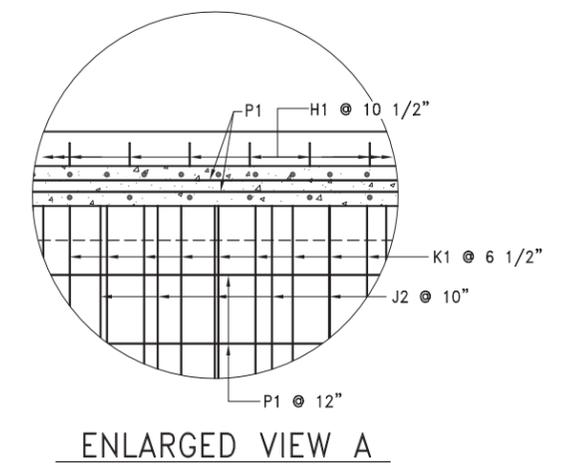
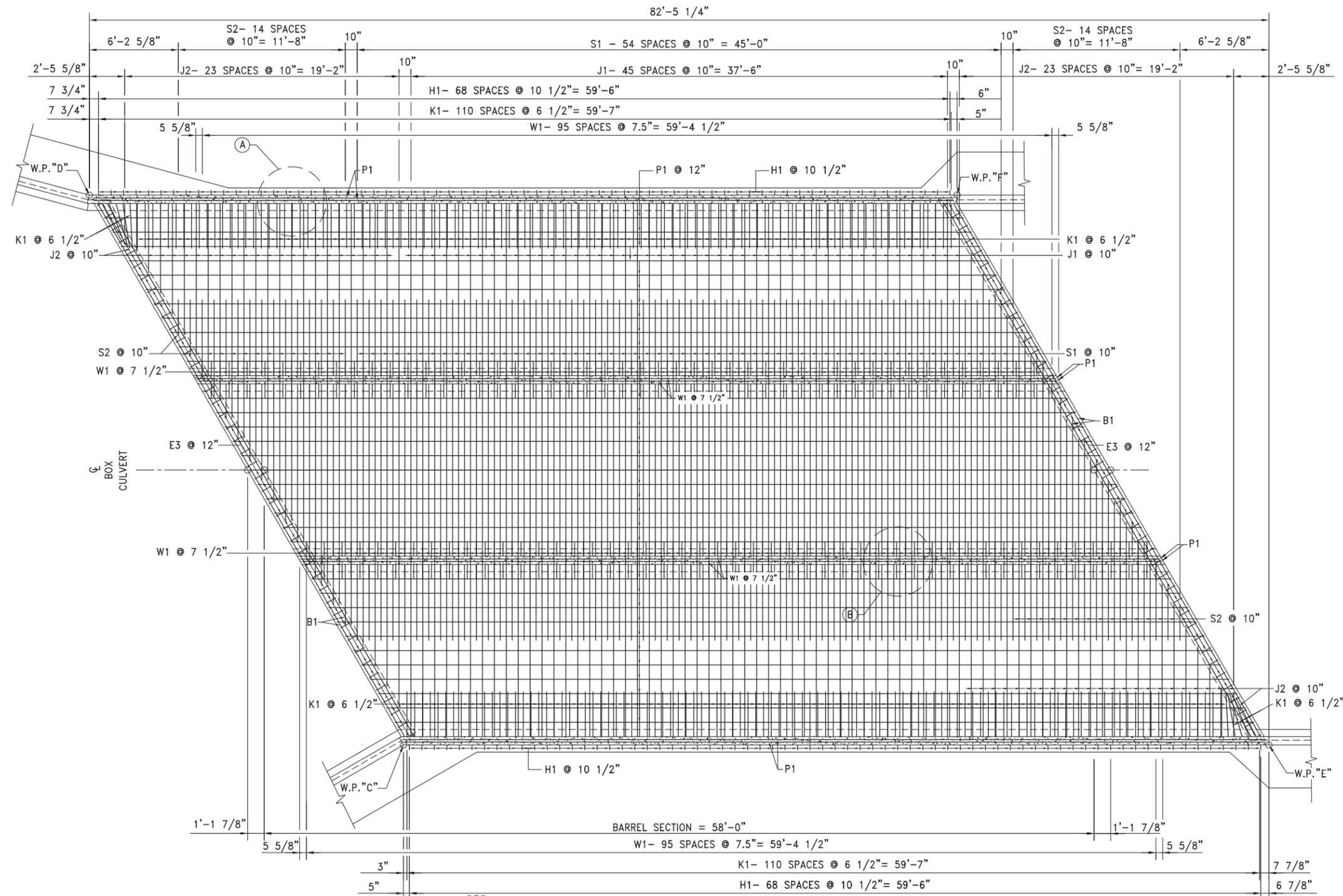
TOP OF BOTTOM SLAB PLAN

NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 8, 9, 10 & 12 OF 14.

DESIGNED BY : A.R.H.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRF 6295(10)	SHEET NO. 88	TOTAL SHEETS 91
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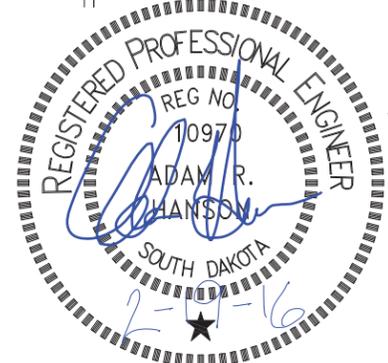
S1 BARREL SECTION DETAILS
FOR
3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.
OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER
STA. 44+18.00

BROOKINGS COUNTY
SOUTH DAKOTA

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BANNER ASSOCIATES, INC.
CONSULTING ENGINEERS
BROOKINGS, SOUTH DAKOTA
DECEMBER 2015

HL-93
STR. NO. 06-120-005
PCN 01W9

12 OF 14

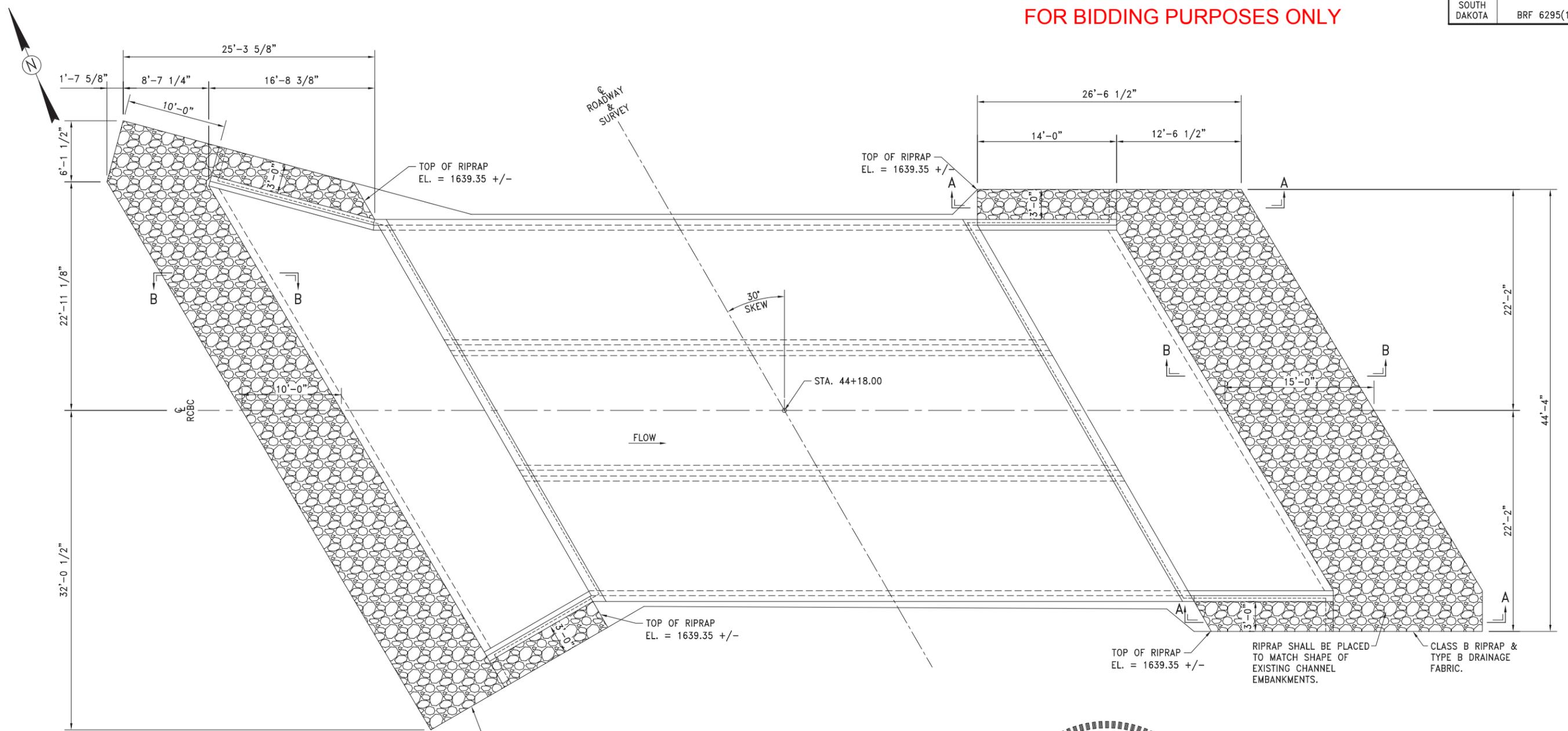


BOTTOM OF BOTTOM SLAB PLAN

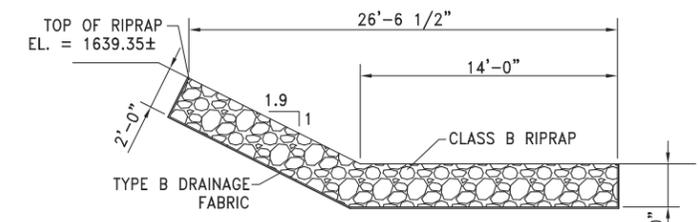
NOTE: USE THIS SHEET IN CONJUNCTION WITH SHEET 8, 9, 10 & 11 OF 14.

DESIGNED BY : A.R.H.	DRAWN BY : T.C.S.	CHECKED BY : D.J.W.	APPROVED : BRIDGE ENGINEER
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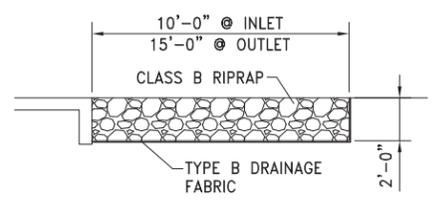
FOR BIDDING PURPOSES ONLY



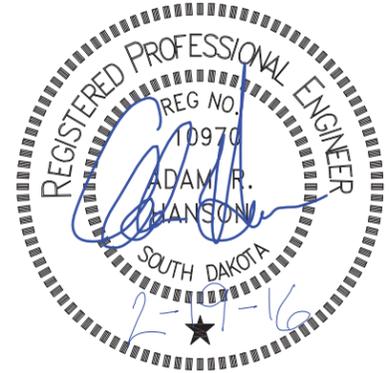
PLAN VIEW



SECTION A-A



SECTION B-B



RIPRAP DETAILS FOR
3 - 12' x 6' REINFORCED CONCRETE BOX CULVERT
30° SKEW L.H.F.
 OVER UNNAMED TRIBUTARY TO BIG SIOUX RIVER
 STA. 44+18.00
 SEC. 1/6-T112N-R50W/R51W
 BRF 6295(10)

BROOKINGS COUNTY
SOUTH DAKOTA

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
CLASS B RIPRAP	TON	146.7
TYPE B DRAINAGE FABRIC	SQYD	203

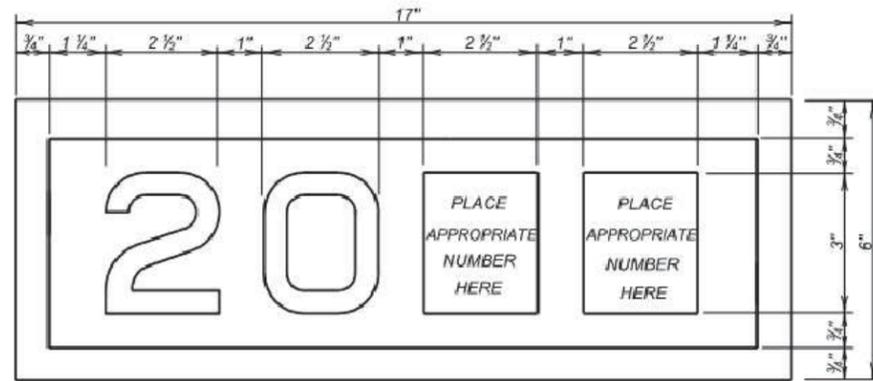
FOR ESTIMATING PURPOSES ONLY, A FACTOR OF 1.4 TONS PER CUBIC YARD WAS USED TO CONVERT CUBIC YARDS TO TONS.

PREPARED BY :
 BANNER ASSOCIATES, INC.
 CONSULTING ENGINEERS
 BROOKINGS, SOUTH DAKOTA
 DECEMBER 2015

HL-93
 STR. NO. 06-120-005
 PCN 01W9

13 OF 14

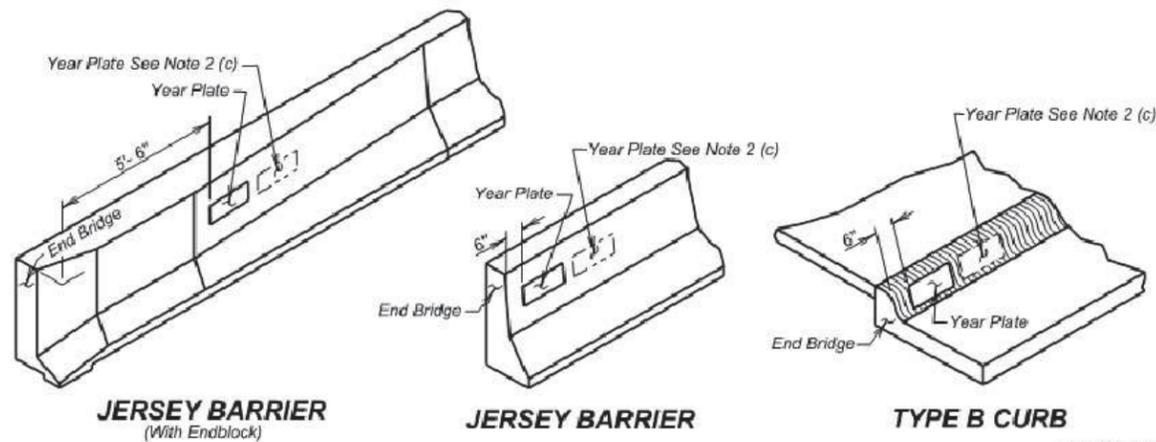
DESIGNED BY :	DRAWN BY :	CHECKED BY :	APPROVED :
A.R.H.	T.C.S.	D.J.W.	BRIDGE ENGINEER



YEAR PLATE DETAILS

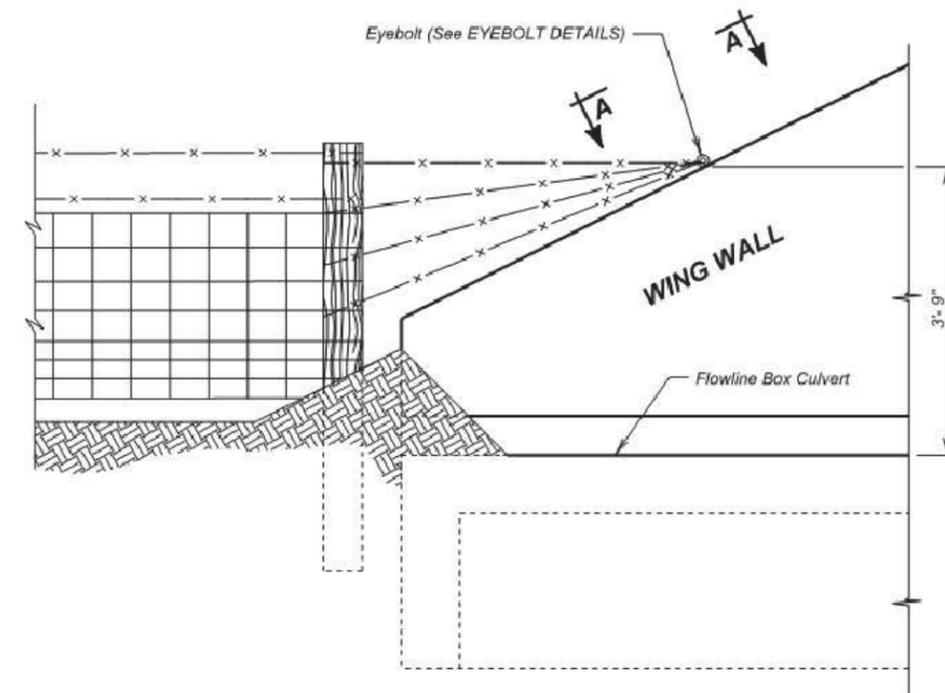
GENERAL NOTES:

- 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.



June 26, 2012

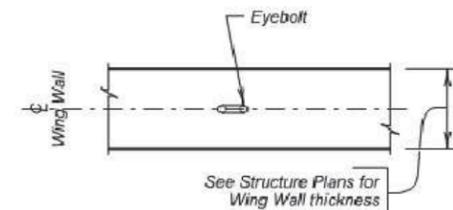
Published Date: 1st Qtr. 2016	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER
			460.02
			Sheet 1 of 1



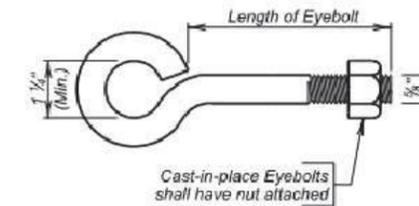
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

- The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
- Eyebolts shall be placed on all of the box culvert wing walls.
- Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
- 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.
- 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.
- The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



VIEW A - A



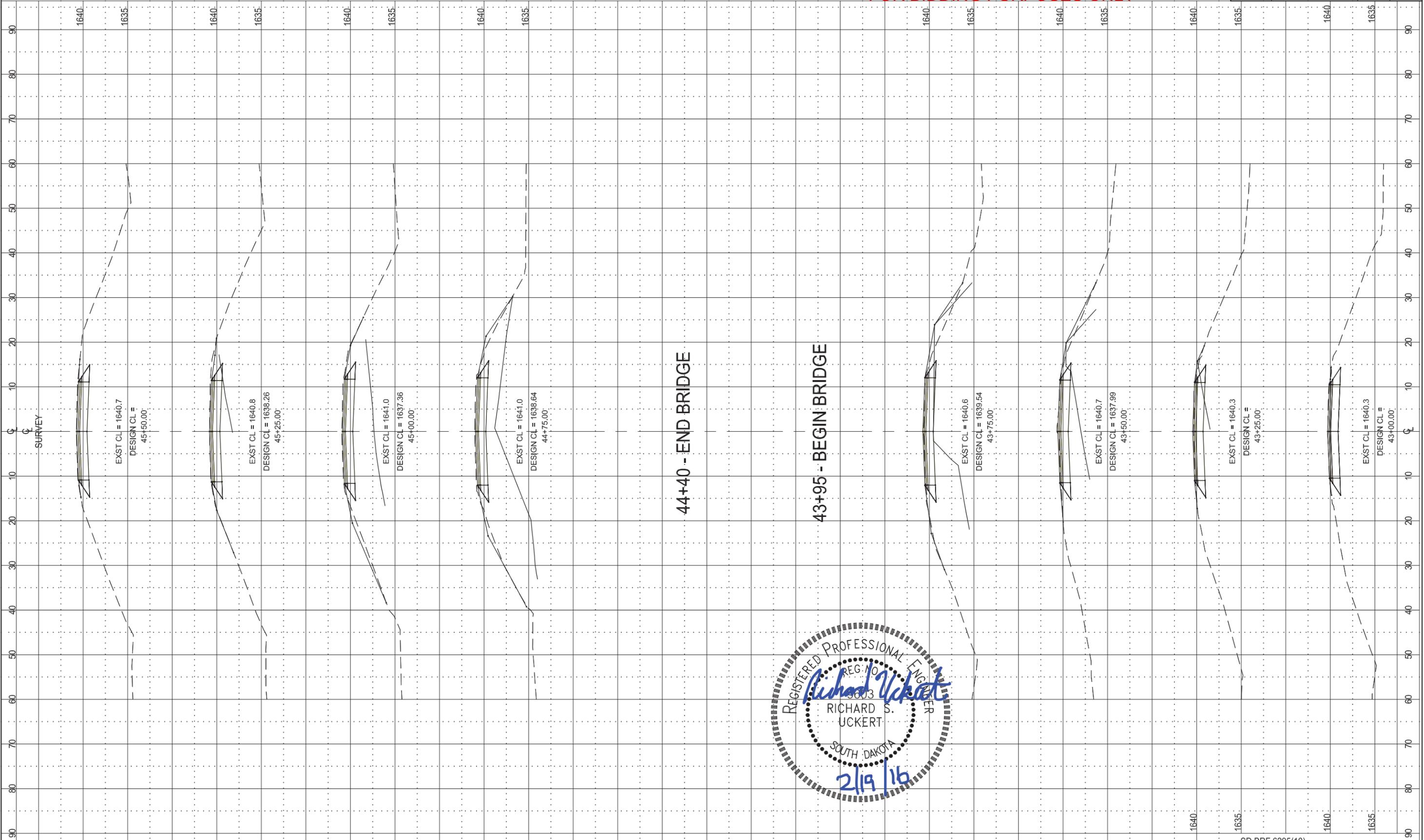
EYEBOLT DETAILS

December 23, 2012

Published Date: 1st Qtr. 2016	S D D O T	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER
			620.16
			Sheet 1 of 1

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET No.	TOTAL SHEETS
	BRF 6295(10)	91	91



44+40 - END BRIDGE

43+95 - BEGIN BRIDGE

