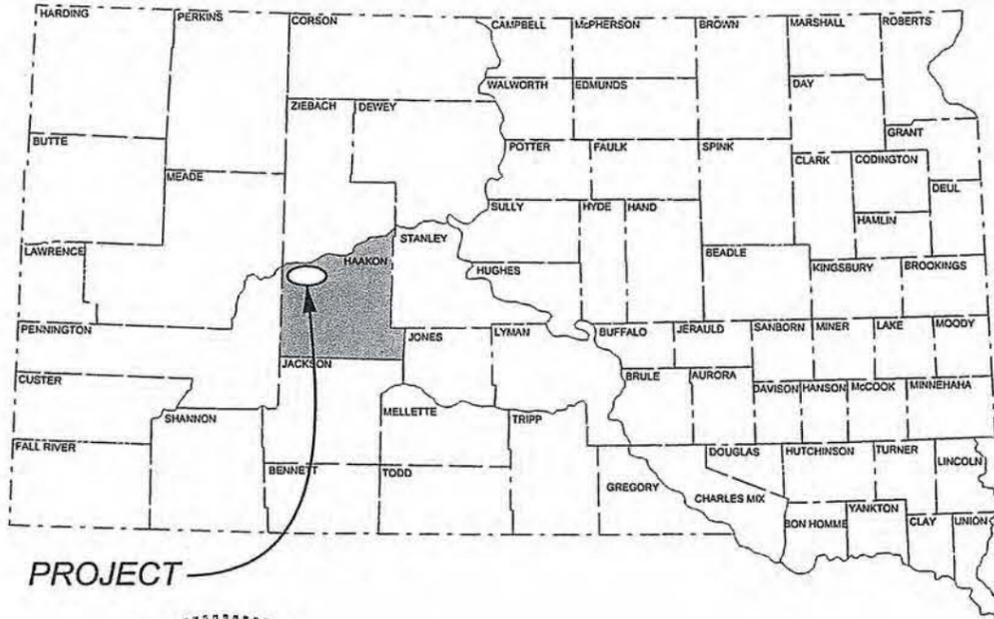


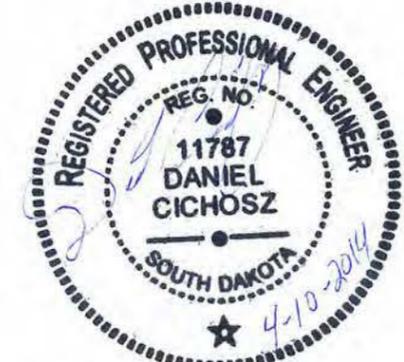
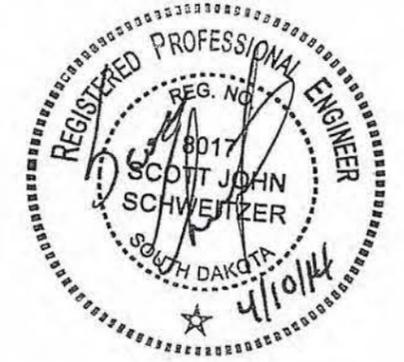
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	1	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED
PROJECT P 6253(02)
FOUR CORNERS RD.
HAAKON COUNTY
STRUCTURES AND APPROACH GRADING
STR. NO. 28-053-230
STR. NO. 28-053-231
PCN 6092



INDEX OF SHEETS

SHEET NO. 1	TITLE AND LAYOUT MAP
SHEET NO. 2-5	ESTIMATE OF QUANTITIES AND GENERAL NOTES
SHEET NO. 6	TYPICAL SECTIONS
SHEET NO. 7-8	TRAFFIC CONTROL
SHEET NO. 9-11	PERMANENT SIGNING
SHEET NO. 12-14	SWPPP PLAN NOTES
SHEET NO. 15-17	EROSION CONTROL
SHEET NO. 18	TEMPORARY EASEMENT PLAN
SHEET NO. 19-22	FENCING
SHEET NO. 23	PLAN & PROFILE
SHEET NO. 24	GRADING DETAIL
SHEET NO. 25-39	75'-0" BULB TEE BRIDGE
SHEET NO. 40-53	40'-0" DOUBLE TEE BRIDGE

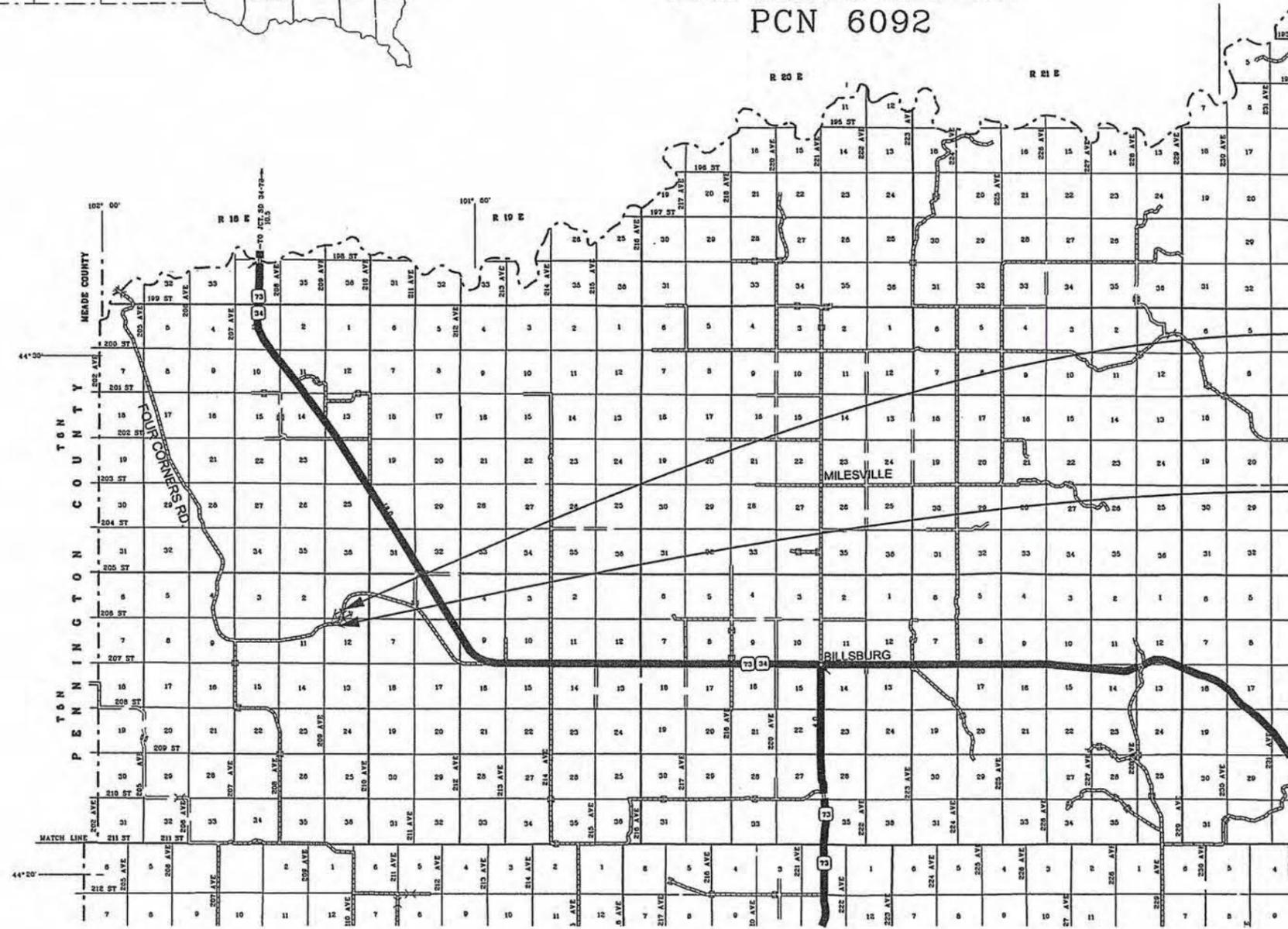


DESIGN DESIGNATION

ADT (2003)	37
ADT (2023)	50
DHV	7
D	60%
T DHV	4.1%
T ADT	9.1%
V	35 mph

STORM WATER PERMIT

Major Receiving
Body of Water: Bridger Creek/Tributary
Area Disturbed: 2.32 Acre
Total Project Area: 3.5 Acre
Latitude: 44°50'57.40" N
Longitude: 102°09'08.47" W



END PROJECT P 6253(02)
At Sta. 17+40 = A Point Approx. 1160' North and 2240' East of the NW Corner of Section 12, T5N, R18E.

BEGIN PROJECT P 6253(02)
At Sta. 9+00 = A Point Approx. 660' South and 1330' East of the NW Corner of Section 12, T5N, R18E.

PLANS :S12-P599 & S12-P600	
Survey by:	Brosz Engineering, Inc. Pierre, SD
Plans by:	Brosz Engineering, Inc. Pierre, SD

**ESTIMATE OF QUANTITIES
GRADING**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0130	Remove Traffic Sign	42	Each
110E0600	Remove Fence	558	Ft
110E1700	Remove Silt Fence	271	Ft
120E0010	Unclassified Excavation	747	CuYd
120E0600	Contractor Furnished Borrow	935	CuYd
230E0010	Placing Topsoil	747	CuYd
620E0020	Type 2 Right-of-Way Fence	558	Ft
620E0510	Type 1 Temporary Fence	640	Ft
620E1020	2 Post Panel	12	Each
632E2022	4"x4" White Delineator Back to Back with 1.12 Lb/Ft Post	32	Each
632E2520	Type 2 Object Marker Single Sided	8	Each
634E0100	Traffic Control	824	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	200	Ft
734E0604	High Flow Silt Fence	1083	Ft
734E0610	Mucking Silt Fence	76	CuYd
734E0620	Repair Silt Fence	271	Ft
734E0630	Floating Silt Curtain	330	Ft

STRUCTURE – NO. 28-053-231

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
412E0190	Field Painting	Lump Sum	LS
420E0100	Structure Excavation, Bridge	252	CuYd
470E0420	Type T101 Bridge Railing	182	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	1260	Ft
510E8005	Sheet Piling, Furnish and Drive	1451	SqFt
560E8565	6'-6" Wide Deck Prestressed Concrete Bulb Tee	373	Ft
560E8805	Precast Concrete Plank, Furnish	200	SqFt
560E8806	Precast Concrete Plank, Install	200	SqFt
700E0310	Class C Riprap	59	Ton
831E0110	Type B Drainage Fabric	117	SqYd
900E5147	Articulated Concrete Mattress	576	SqYd

STRUCTURE – NO. 28-053-230

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
410E0030	Structural Steel, Miscellaneous	Lump Sum	LS
412E0190	Field Painting	Lump Sum	LS
420E0100	Structure Excavation, Bridge	237	CuYd
470E0420	Type T101 Bridge Railing	112	Ft
510E3401	HP 12x53 Steel Test Pile, Furnish and Drive	80	Ft
510E3405	HP 12x53 Steel Bearing Pile, Furnish and Drive	980	Ft
510E8005	Sheet Piling, Furnish and Drive	1505	SqFt
560E8623	3'-10" Wide Deck x 23" Prestressed Concrete Double Tee	316	Ft
560E8805	Precast Concrete Plank, Furnish	102	SqFt
560E8806	Precast Concrete Plank, Install	102	SqFt
700E0310	Class C Riprap	59	Ton
831E0110	Type B Drainage Fabric	125	SqYd
900E5147	Articulated Concrete Mattress	288	SqYd

SPECIFICATIONS

Use South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or 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 B2: WHOOPING CRANE

The Whooping Crane is a spring and fall migratory bird in South Dakota that is about 5 feet tall and typically stops on wetlands, rivers, and agricultural lands along their migration route. An adult Whooping Crane is white with a red crown and a long, dark, pointed bill. Immature Whooping Cranes are cinnamon brown. While in flight, their long necks are kept straight and their long dark legs trail behind. Adult Whooping Cranes' black wing tips are visible during flight.

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow pit, or staging site associated with the project, cease construction activities in the affected area until the Whooping Crane departs and contact the Project Engineer. The Project Engineer will contact the Environmental Office so that the sighting can be reported to USFWS.

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

Bridger Creek and Bridger Creek Tributary are classified as fish and wildlife propagation, recreation, irrigation, and stock watering waters.

FOR BIDDING PURPOSES ONLY

Revised 12/8/2014

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6253(02)	2	53

Because of these beneficial uses, special construction measures may have to be taken to ensure that this water body is not impacted.

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

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

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

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

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

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

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 designated option borrow 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 J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S.

The Contractor is advised that special construction measures have to be taken to ensure that the waterways of the U.S. are not impacted.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6253(02)	3	53

Action Taken/Required:

No excavation shall be made below the ordinary high water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting; and the natural streambed shall not be disturbed unless specified by the plans and under the observation of the Project Engineer. Refer to the Table of U.S. Waterways to Protect for ordinary high water elevations.

All dredged or excavated materials shall be placed at a site above the ordinary high water elevation in a confined area (not classified as a wetland) that is a minimum of 50 feet away from concentrated flows of storm water, drainage courses, and inlets to prevent return of such material to the waterway.

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

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

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

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

Table of U.S. Waterways to Protect

Station	Waterway	Ordinary High Water Elevation
10+15	Bridger Creek	2176.6
16+54	Bridger Creek Trib.	2181.8

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.

CLEARING

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

HAAKON COUNTY RESPONSIBILITIES

1. Obtain right of way and temporary and permanent easements.
2. Coordination of any Utility adjustments.
3. Furnish and install final surfacing.
4. Remove silt fence when vegetation has been established in areas where permanent seeding is required.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 11 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

Generally, all shallow inlet and outlet ditches as noted on the plan sheets shall be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

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

TEMPORARY WORKS

Refer to sheet 3 for Construction Practices for Temporary Works in Protected Waterways.

Contractors Site Plan

It is the Contractors responsibility to inspect and verify the actual field conditions and necessary dimensions affecting the satisfactory completion of the bridge work required to complete this project. The Contractor shall then submit a detailed Bridge Removal and Bridge Construction Plan at the Pre-Construction Meeting. The plan shall include all temporary work which may include the following: work platforms, temporary water crossings, caissons, cofferdams, and cribs. The Contractor shall also provide detailed notes on all the materials involved. The plan shall conform to the notes on Water Quality shown on sheet 2. The plan shall be approved by the SDDOT Office of Bridge Design before construction begins.

Payment Details

All costs associated with temporary works for bridge removal and bridge construction, including Bridge Construction Plans, labor, materials and all incidentals necessary shall be incidental to the item of work for which it is required.

UTILITIES

The utilities as shown on the plans are for information only. It shall be the contractor's responsibility to contact and to coordinate their work schedule with the county and utility companies. This schedule shall provide adequate time for the utilities to be relocated and adjusted, prior to work that may disrupt the utilities as per Section 5.6 of the Specifications.

Golden West Telcom
415 Crown Street
Wall, SD 57790
(605) 279-2161

WR/LJ Rural Water
307 Main Street
Murdo, SD 57559
(605) 669-2931

West Central Electric Coop Inc.
204 Main St
Murdo, SD 57559
(605) 669-2472

The Contractor shall be responsible for all damages to utilities in the construction limits at no cost to the owner. The County Highway Superintendent is Kenny Neville (605) 859-2472.

The contractor shall contact South Dakota One-call at 1-800-781-7474 for utility lines and cable locations a minimum of 48 hours prior to the beginning of any earthwork.

CONTRACTOR FURNISHED BORROW

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

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

FURNISH AND INSTALL DELINEATOR

Delineator reflectors shall have Type XI sheeting. They shall be attached with two rivets each.

The contractor shall lay out delineator locations and shall obtain Engineer approval of locations prior to installation. Delineators shall be placed with the top of the reflector unit approximately 4 feet above the near roadway edge. They shall be located 6 feet outside the outer edge of the shoulder.

Bridge approach delineation shall be provided at all structures and shall consist of a minimum of four (back-to-back) delineators on each side of the roadway spaced 50 feet apart. Except where guardrail is in place, the delineators shall be located in a straight line beginning a minimum of 200 feet from the corner of the bridge and at the normal offset distance outside the shoulder edge and tapering to the inside edge of the obstruction.

TYPE 2 OBJECT MARKERS

Type 2 object makers shall conform to Standard Specification Section 982. Payment for the type 2 object markers shall be in conformance with Standard Specification 632.5C.

The inner edge of the Type 2 object marker shall be installed at the opening of the bridge. Refer to Standard Plate 632.10 for the placement of Type 2 object markers and post lengths. If the overall width perpendicular to the centerline of the roadway is 40' or less between two object markers, the height of the markers shall be adjusted such the top of the marker does not exceed 3' above the edge of the driving surface.

Revised 12/8/2014

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6253(02)	4	53

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to their respective bid items. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work.

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 State, and to the satisfaction of the Engineer.

The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP Report 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

ORDINARY COMPACTION METHOD

The Contractor shall use Ordinary Compaction Method as stated in Section 120.3 B.3.b of the South Dakota Standard Specifications for Roads and Bridges, 2004 Edition.

HIGH FLOW SILT FENCE

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

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

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

An additional 25 feet of High Flow Silt Fence has been added to the Estimate of Quantities for temporary sediment control.

REMOVE SILT FENCE

Silt fence shall be removed when vegetation is established. Some or the entire silt fence may be left on the project until vegetation is established. It is the responsibility of the County for removal of this silt fence after vegetation is established.

MUCKING SILT FENCE

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

EROSION CONTROL WATTLE

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

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

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

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

FLOATING SILT CURTAIN

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

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

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

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

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

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

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

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

PLACING TOPSOIL

The thickness will be approximately 4 inches within the right-of-way and 6 inches on temporary easements. Payment for labor, equipment & materials required to place topsoil will be Plans Quantity and no other measurement will be made.

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

Station	to	Station	Topsoil (CuYd)
9+00		11+25	401
15+60		17+40	346
total:			747

TABLE OF UNCLASSIFIED EXCAVATION

The estimated amount of unclassified excavation is as follows:

Station	to	Station	Topsoil (CuYd)
9+00		11+25	401
15+60		17+40	346
total:			747

EROSION CONTROL

The contract lump sum price for "Erosion Control" includes all materials, equipment, and labor necessary to seed and mulch the disturbed area resulting from work required by this contract, except for the top of roadway, areas protected by articulated mattress and those areas under water. All permanent seed shall be planted in the topsoil at a depth of 1/4" to 1/2".

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

Application of fertilizer will not be required on this project.

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

The area to be seeded and mulched is estimated at 1.09 acres. Limits of erosion control work shall be determined on construction by the Engineer.

South Dakota native grown seed is an acceptable alternative to any of the seed varieties listed below. South Dakota native grown seeds used as an alternative shall conform to the same specifications and requirements for that individual seed type.

Type C Permanent Seed Mixture shall consist of the following:

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

BRACE PANELS FOR ROW FENCE

The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer.

The E-Z Brace shall be attached to each wood post utilizing two 5/16" x 3" lag screws. Holes of appropriate diameter, based on wood post condition, shall be drilled before placement of lag screws. The following are contacts regarding the E-Z Brace:

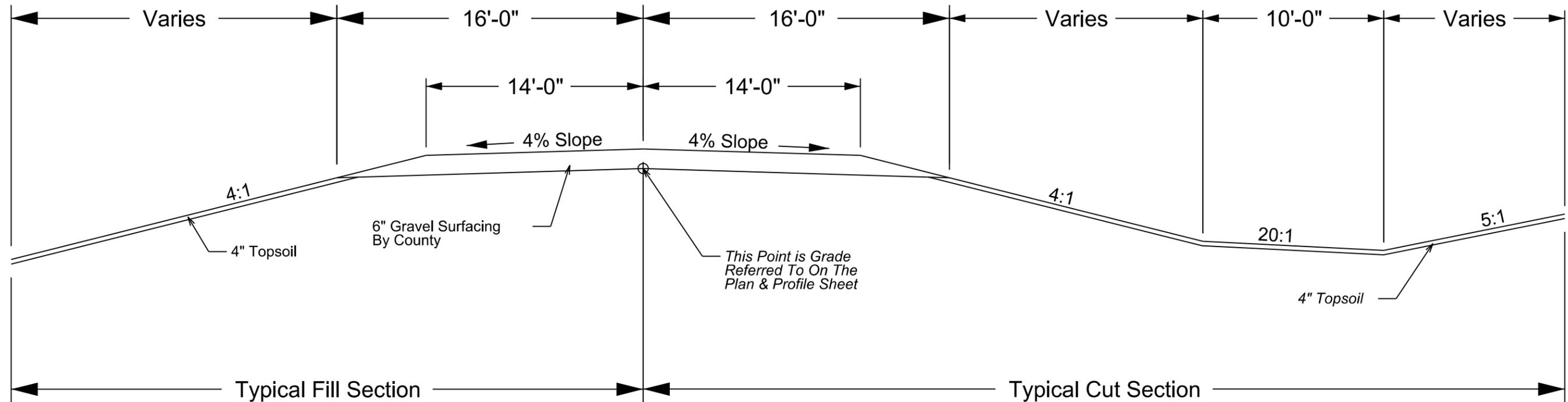
Roger Papka
E-Z Brace
1160 Karen St.
Watertown, SD 57201
605-881-6142

Dennis Mack
E-Z Brace
108 18th St. NE
Watertown, SD 57201
605-881-4990

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	6	53
Plotting Date: 04/09/14			
Revised Date: mm/dd/yy			
Initials: CVS			

TYPICAL SECTION

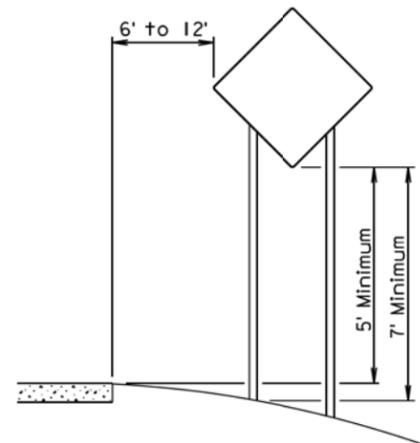


CONTROL DATA

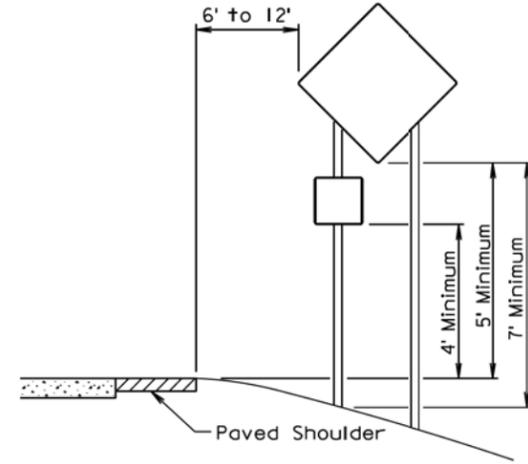
HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP2	19+16	42' Lt	5/8 Rebar	1561086.3529	763464.1501	2192.83
CP3	14+93	36' Rt	5/8 Rebar	1561082.6731	763030.9201	2191.52
CP4	13+44	29' Lt	5/8 Rebar	1560969.6030	762913.9198	2189.64
CP5	8+36	17' Rt	5/8 Rebar	1560765.9433	762453.1496	2193.34

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System
South Zone (NAD 83/88) SF = 0.999889

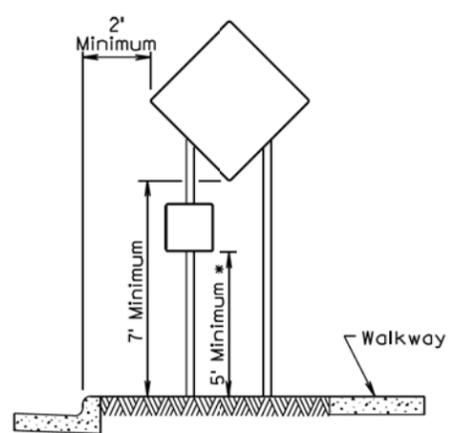
STATE OF SOUTH DAKOTA	PROJECT P 6253(02)	SHEET NO. 8	TOTAL SHEETS 53
Plotting Date: 04/09/14 Revised Date: 12/8/2014 Initials: CVS			



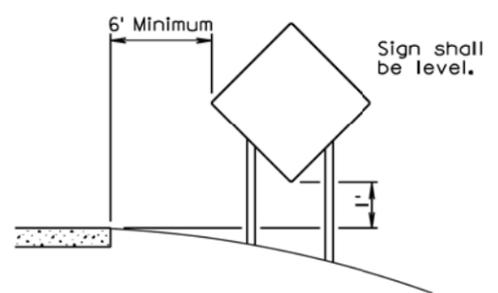
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

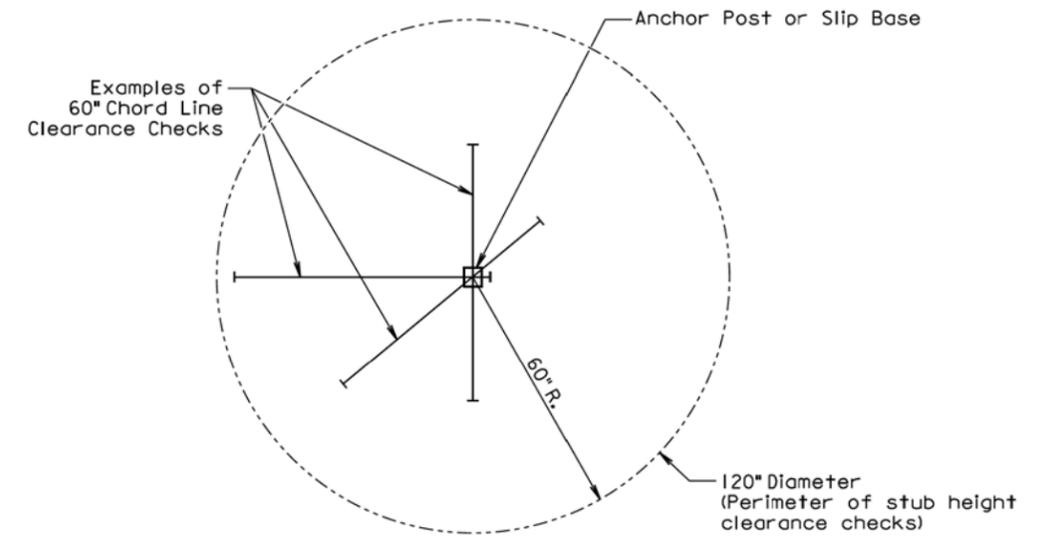


RURAL DISTRICT 3 DAY MAXIMUM

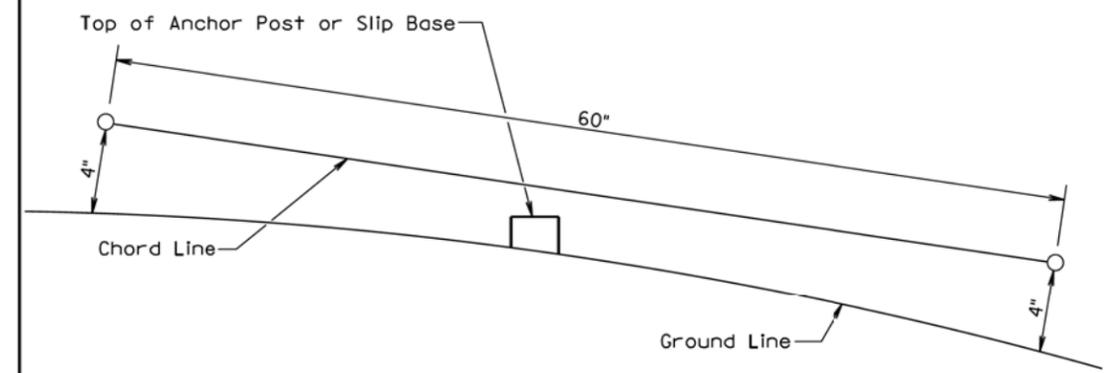
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

Published Date: 4th Qtr. 2014	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 4th Qtr. 2014	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

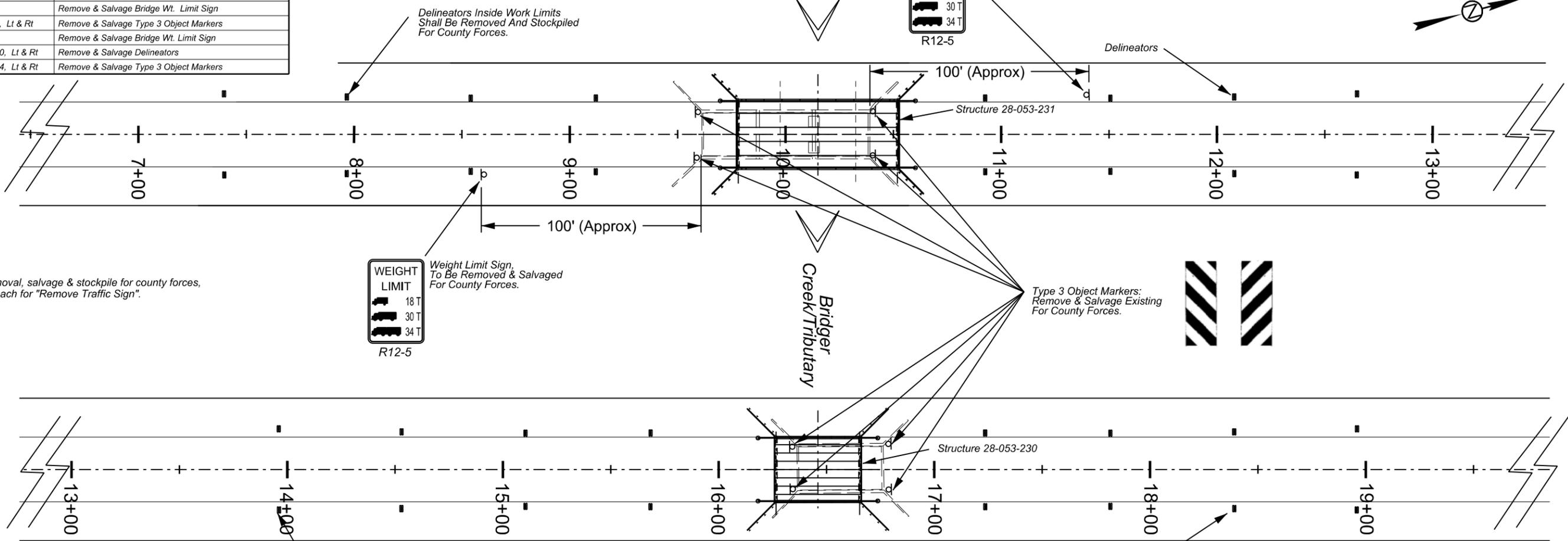
PERMANENT DELINEATOR & SIGNING LOCATIONS

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL
	P 6253(02)	NO. 9	SHEETS 53
Plotting Date: 04/09/14		Revised Date: mm/dd/yy	
Initials: CVS			

*SIGN LOCATION (Informational Purposes Only)
(See Sheet 10 of 53 for Bridge End Object Markers)*

Station / Offset	Remark
7+40 To 12+65, Lt & Rt	Remove & Salvage Delineators
8+52, Rt	Remove & Salvage Bridge Wt. Limit Sign
9+77 To 10+52, Lt & Rt	Remove & Salvage Type 3 Object Markers
10+40, Lt	Remove & Salvage Bridge Wt. Limit Sign
14+00 To 19+00, Lt & Rt	Remove & Salvage Delineators
16+34 To 16+74, Lt & Rt	Remove & Salvage Type 3 Object Markers



Removal Note:
All signage for removal, salvage & stockpile for county forces, shall be paid per each for "Remove Traffic Sign".



Installation Notes:
A minimum of sixteen (16) Delineators are required per structure. From end of delineators to type 2 object marker, use straight line taper. Installation shall be paid per each for "4"x4" White Delineator Back-to-Back with 1.12 Lb/Ft Post".

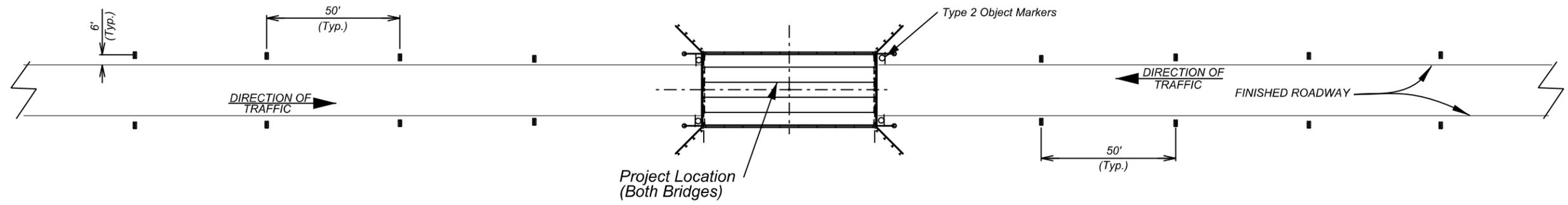
Delineators Inside Work Limits Shall Be Removed And Stockpiled For County Forces.

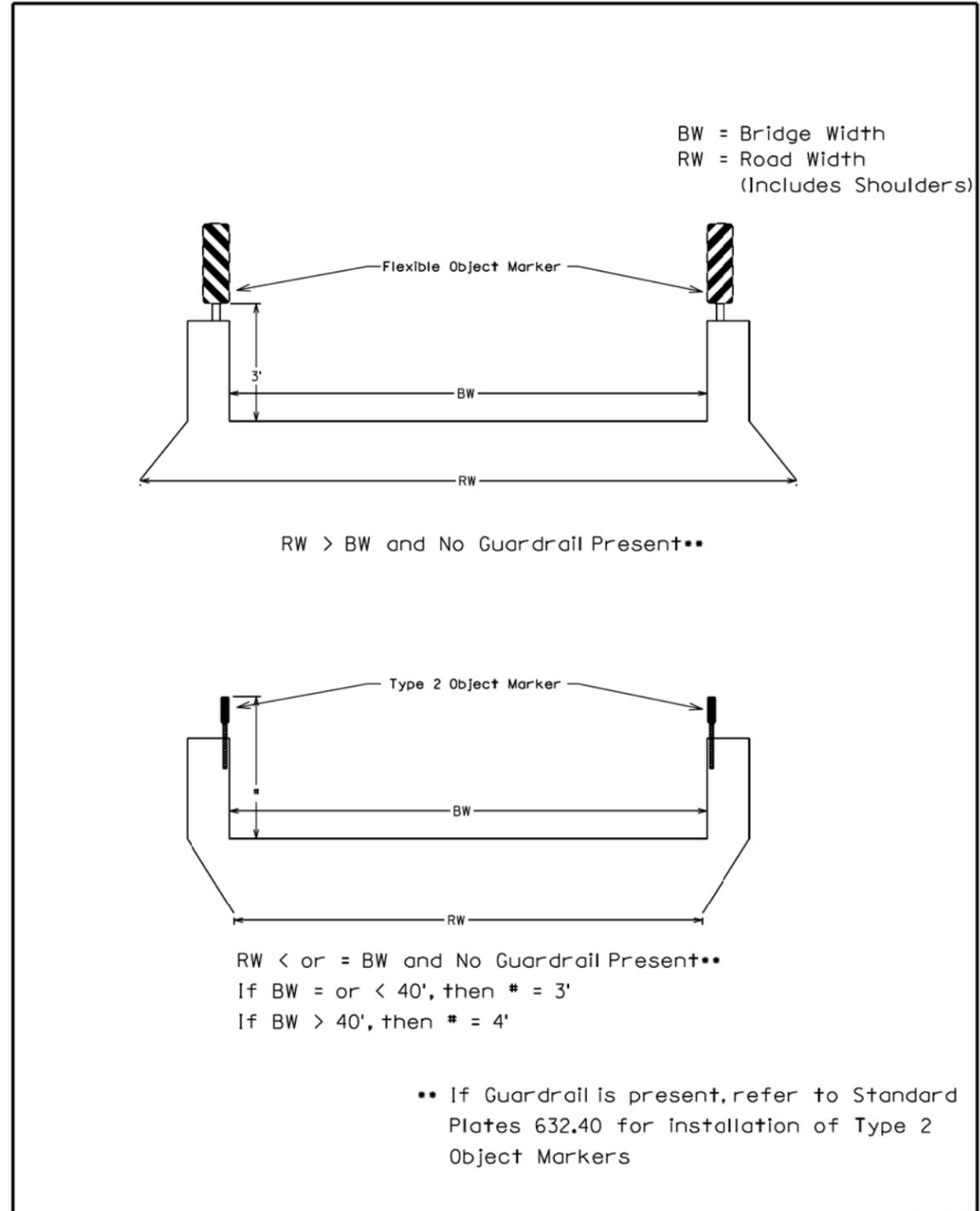
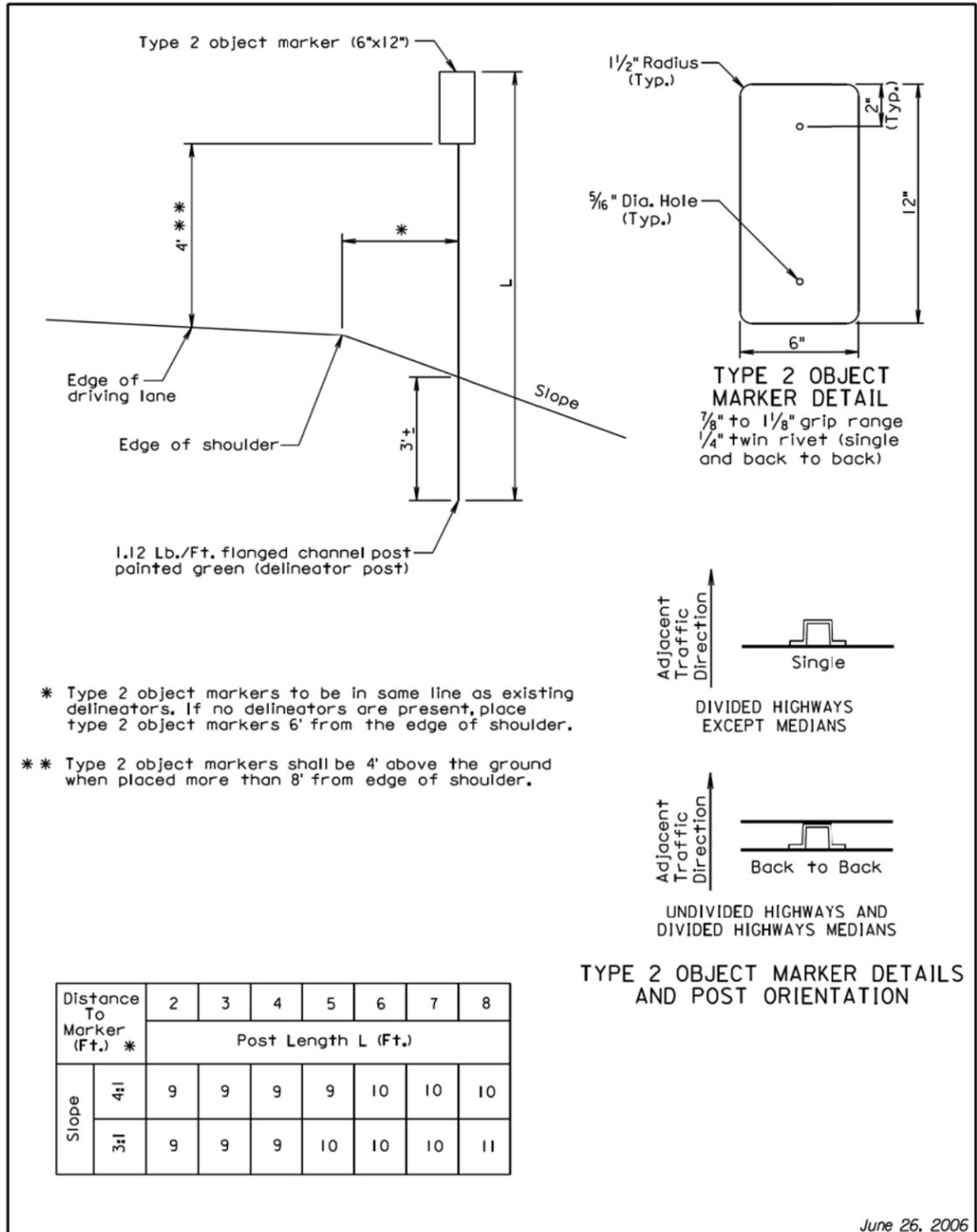
Existing Type III Object Markers shall be replaced with Type 2 Object Markers. Installation shall be paid per each for "Type 2 Object Marker Single Sided".

All hardware and post shall be incidental to their respective sign bid item.

Sign spacing and distance from shoulder shall be placed in accordance with the Manual of Uniform Traffic Control Devices (M.U.T.C.D).

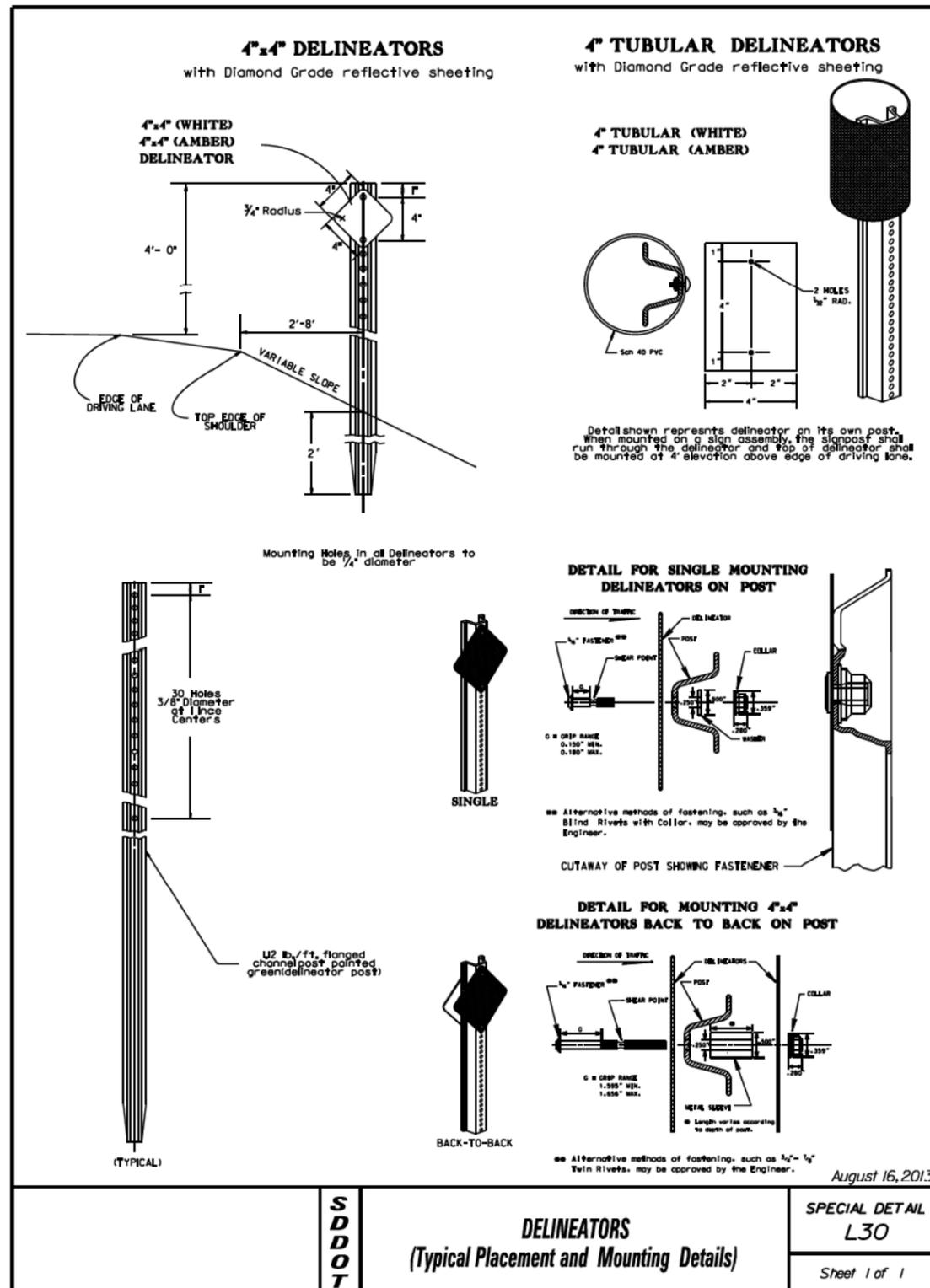
Typical Sign Installation





STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	11	53

Plotting Date: 04/09/14
 Revised Date: mm/dd/yy
 Initials: CVS



S
D
D
O
T

DELINEATORS
(Typical Placement and Mounting Details)

SPECIAL DETAIL
L30

Sheet 1 of 1

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
- **Total Project Area 3.5 Acres (4.2 1.b.)**
- **Total Area To Be Disturbed 2.32 Acres (4.2 1.b.)**
- **Existing Vegetative Cover (%) 75**
- **Soil Properties: AASHTO Soil Classification Pierre Shale (4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Bridger Creek and Tributary (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 perimeter protection where runoff sheets from the site.**
- **Install channel and ditch bottom protection.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install inlet and culvert protection after completing storm drainage and other utility installations.**
- **Complete final grading.**
- **Complete traffic control installation and protection devices.**
- **Reseed areas disturbed by removal activities.**

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

(Check all that apply)

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

➤ **Structural Temporary Erosion and Sediment Controls**

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

➤ **Wetland Avoidance**

Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes No If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.

➤ **Storm Water Management (4.2 2.b., (1) and (2))**

Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.

➤ **Other Storm Water Controls (4.2 2.c., (1) and (2))**

▪ **Waste Disposal**

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

▪ **Hazardous Waste**

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

▪ **Sanitary Waste**

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

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

➤ **Maintenance and Inspection Practices**

- Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
- All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
- Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches 1/3 of the height of the silt fence.
- Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
- Check dams will be inspected for stability. Sediment will be removed when depth reaches 1/2 the height of the dam.
- All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
- Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
- The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ **Non-Storm Water Discharges (3.0)**

The following non-storm water discharges are anticipated during the course of this project (check all that apply).

- Discharges from water line flushing.
- Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- Uncontaminated ground water associated with dewatering activities.

❖ **Materials Inventory (4.2. 2.c.(2))**

The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).

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

❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ **Housekeeping**

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

▪ **Hazardous Materials**

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

➤ **Product Specific Practices (6.8)**

▪ **Petroleum Products**

All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

▪ **Fertilizers**

Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

▪ **Paints**

All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the

manufacturer's instructions and any applicable state and local regulations.

▪ **Concrete Trucks**

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

➤ **Spill Control Practices (4.2 2 c.(2))**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill cleanup will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for cleanup purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➤ **Spill Response (4.2 2 c.(2))**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.

- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
- Personnel with primary responsibility for spill response and cleanup will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

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

- A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:
 - The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
 - The discharge causes an immediate danger to human health or safety.
 - The discharge exceeds 25 gallons.
 - The discharge causes a sheen on surface water.
 - The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
 - The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
 - The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
 - The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

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

❖ **Construction Changes (4.4)**

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

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6253(02)	14	53

❖ **CERTIFICATIONS**

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

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

➤ **South Dakota Department of Transportation**

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



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

➤ **Prime Contractor**

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

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

Authorized Signature

❖ **CONTACT INFORMATION**

➤ **Contractor Information:**

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

➤ **Erosion Control Supervisor**

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

➤ **SDDOT Project Engineer**

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

➤ **SD DENR Contact Spill Reporting**

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

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

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253 (02)	15	53
Plotting Date: 04/09/14			
Revised Date: mm/dd/yy			
Initials: CVS			

EROSION CONTROL

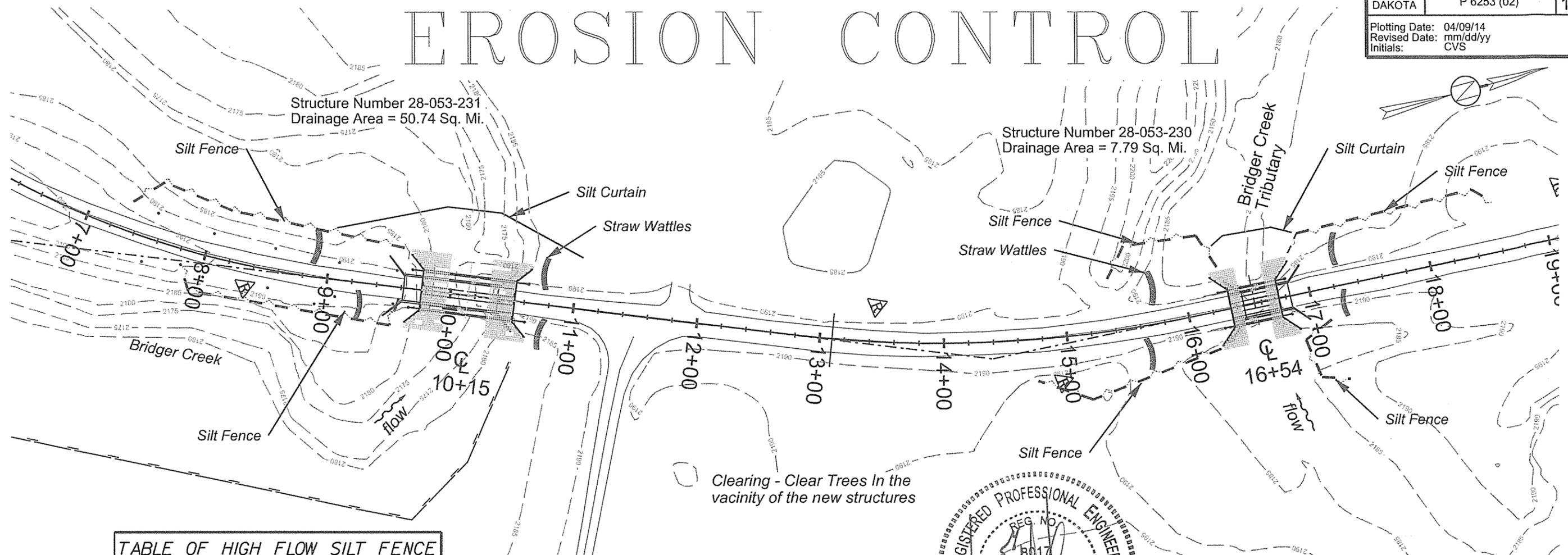


TABLE OF HIGH FLOW SILT FENCE

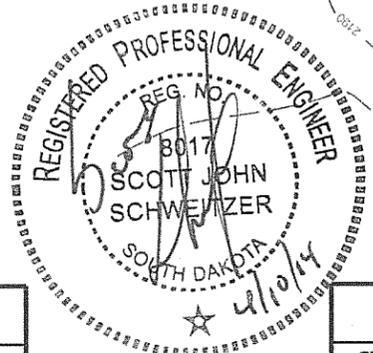
STATION	OFFSET	DESCRIPTION / QUANTITY
7+31	24' Lt	Approx. Length = 230 FT
7+48	47' Lt	
9+57	32' Lt	
7+83	11' Rt	Approx. Length = 210 FT
7+95	31' Rt	
9+55	31' Rt	
9+60	10' Rt	Approx. Length = 158 FT
14+74	31' Rt	
15+10	52' Rt	
16+18	30' Rt	Approx. Length = 119 FT
15+40	42' Lt	
15+57	69' Lt	
16+17	63' Lt	Approx. Length = 184 FT
16+34	35' Lt	
16+86	34' Lt	
16+98	49' Lt	Approx. Length = 82 FT
18+50	53' Lt	
18+63	40' Lt	
17+10	25' Rt	Additional Length = 100 FT
16+88	37' Rt	
16+88	69' Rt	
17+11	77' Rt	Total Length = 1083 FT
Engineer's Discretion		

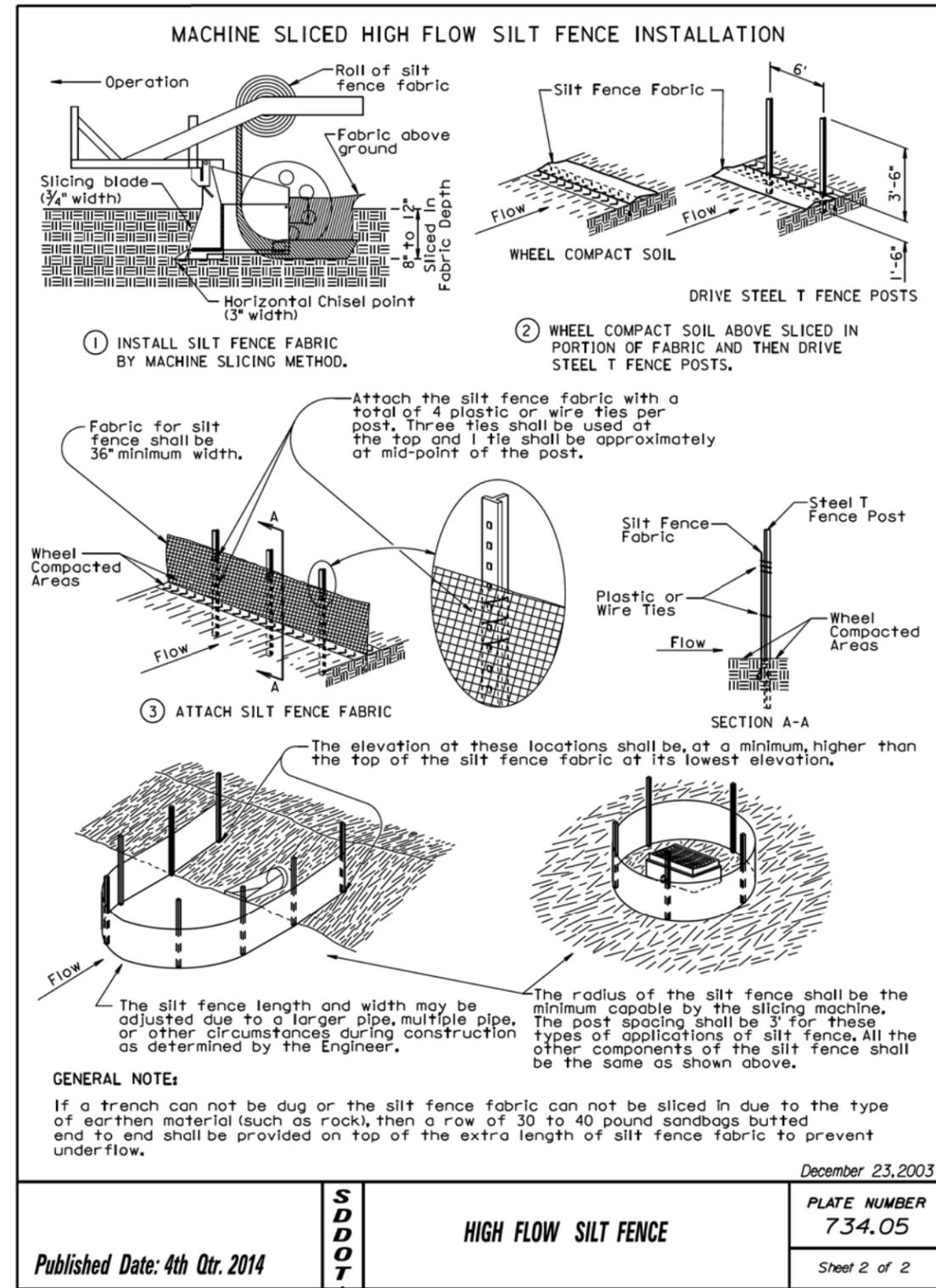
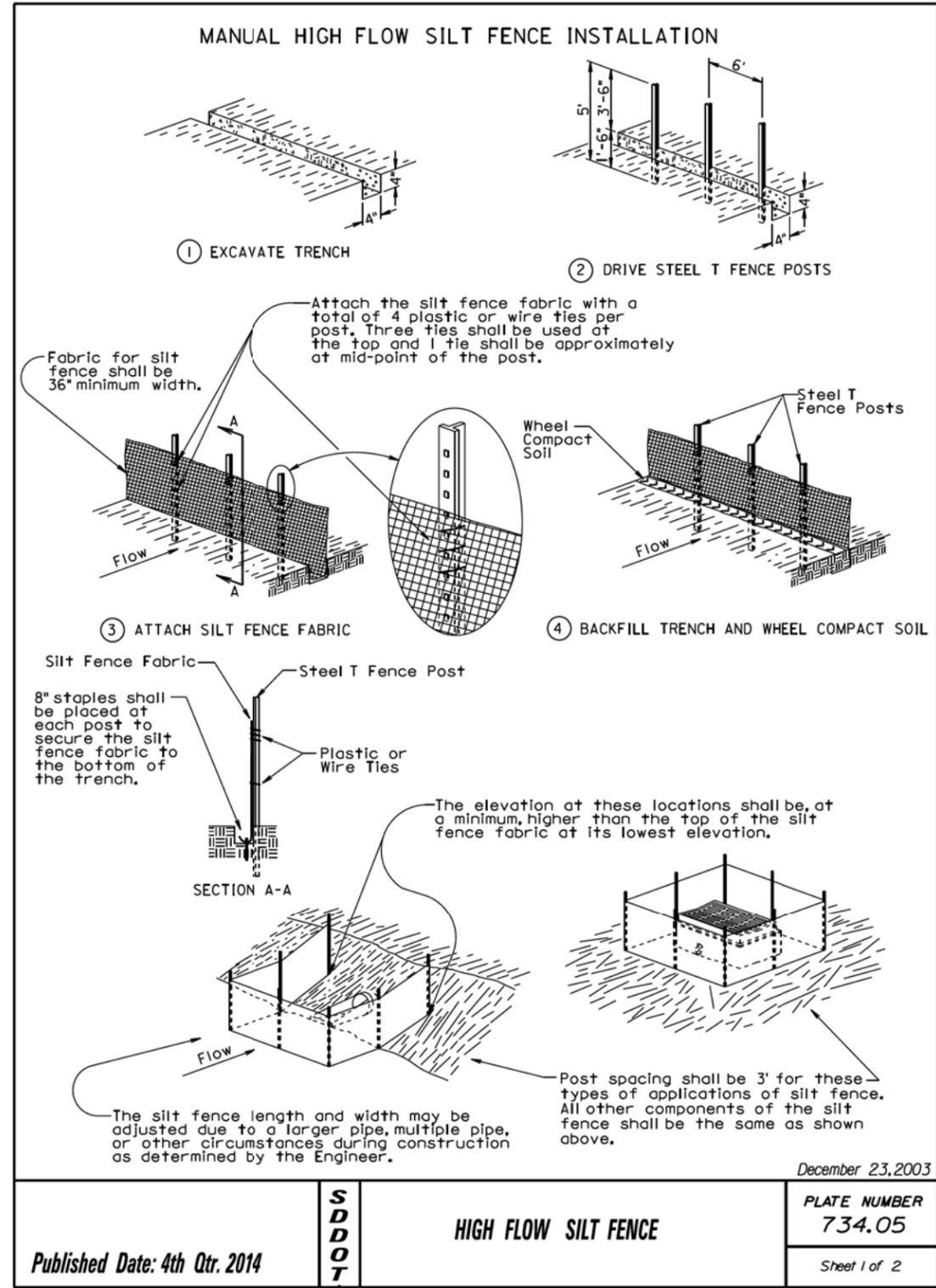
TABLE OF SILT CURTAIN

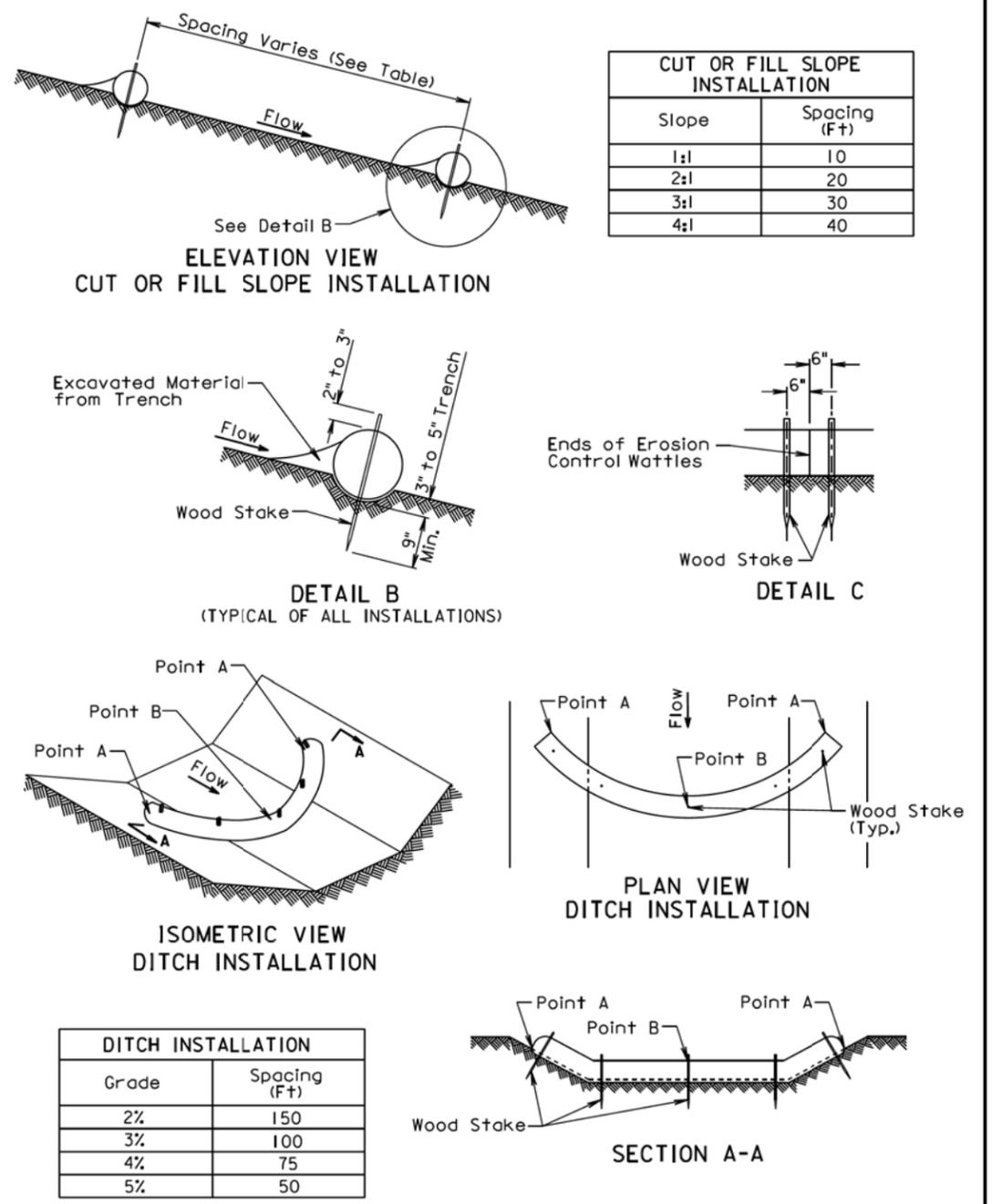
STATION	OFFSET	DESCRIPTION / QUANTITY
9+00	41' Lt	Approx. Length = 210 FT
9+87	69' Lt	
10+33	69' Lt	
11+03	42' Lt	Approx. Length = 70 FT
16+28	53' Lt	
16+40	59' Lt	
16+78	57' Lt	Additional Length = 50 FT
16+95	50' Lt	
Engineer's Discretion		Total Length = 330 FT

TABLE OF STRAW WATTLES

STATION	OFFSET	DESCRIPTION / QUANTITY
8+90	19' Lt	Approx. Length = 160 FT
9+30	19' Rt	
10+80	24' Rt	
10+80	27' Lt	Approx. Length = 160 FT
15+60	23' Rt	
15+70	31' Lt	
17+30	15' Rt	Additional Length = 40 FT
17+30	31' Lt	
Engineer's Discretion		Total Length = 200 FT







GENERAL NOTES:

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

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

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

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

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

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

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

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

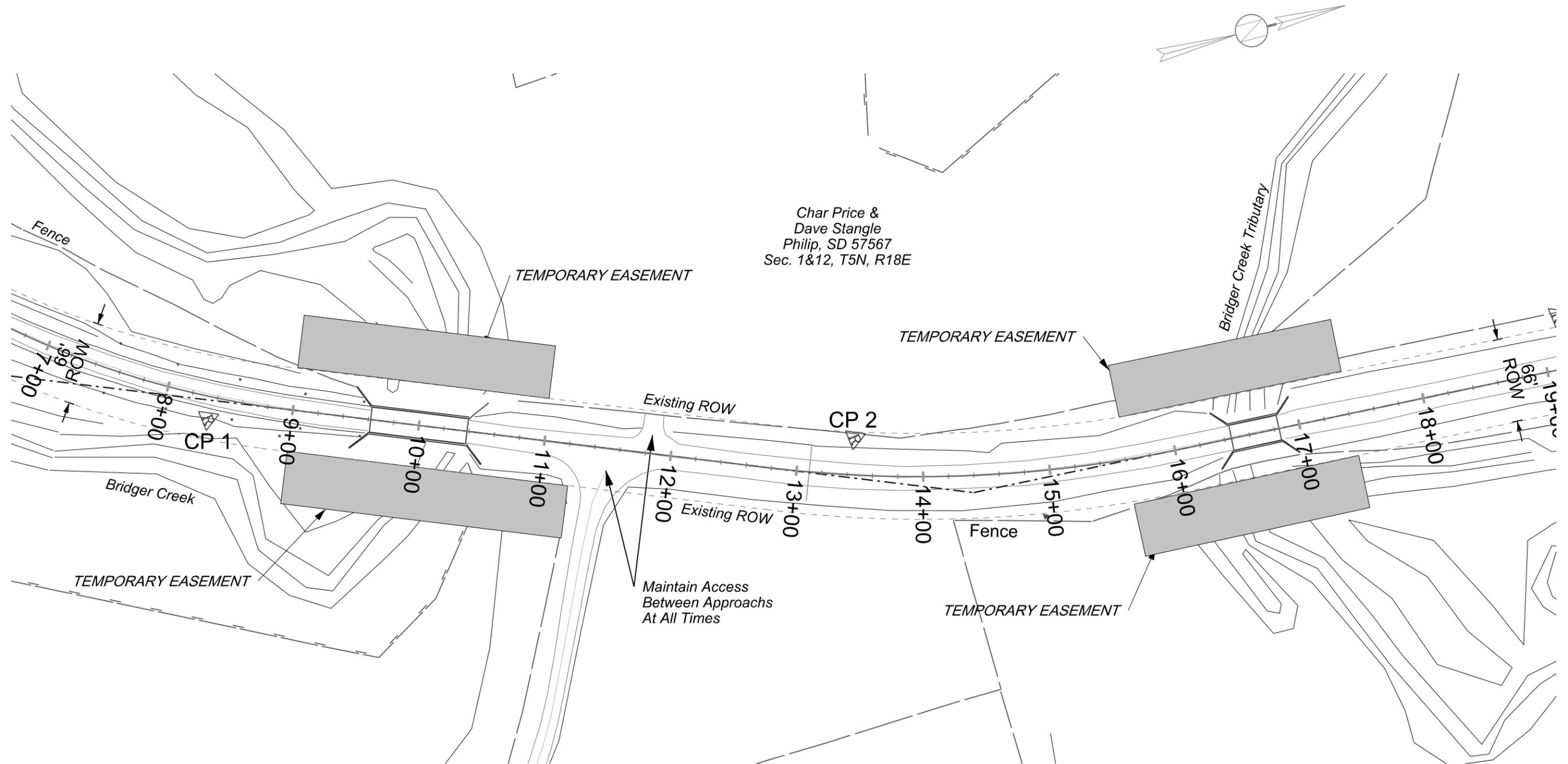
All costs for removing the erosion control wattle from the project including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Remove Erosion Control Wattle".

FOR BIDDING PURPOSES ONLY

TEMPORARY EASEMENT PLAN

(Temporary Easement Shown for Information Only)

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253 (02)	18	53
Plotting Date: 04/09/14		Revised Date: mm/dd/yy	
Initials: CVS			



STR. NO. 28-053-231

TEMPORARY EASEMENT
Sta. 9+00, 33' to 75' Lt to
Sta. 11+00, 33' to 75' Lt
Purpose for Cut & Fill
0.19 Acres More or Less

TEMPORARY EASEMENT
Sta. 9+00, 33' to 75' Rt to
Sta. 11+20, 33' to 75' Rt
Purpose for Cut & Fill
0.21 Acres More or Less

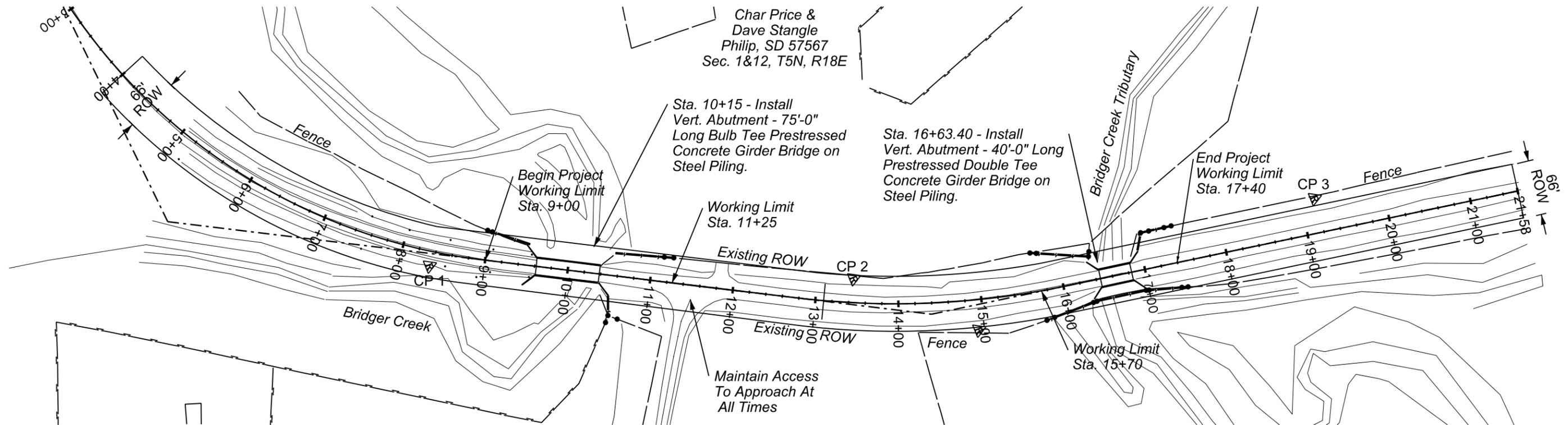
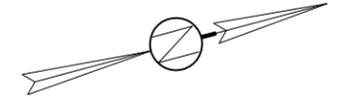
STR. NO. 28-053-230

TEMPORARY EASEMENT
Sta. 15+60, 33' to 75' Lt to
Sta. 17+40, 33' to 75' Lt
Purpose for Cut & Fill
0.17 Acres More or Less

TEMPORARY EASEMENT
Sta. 15+60, 33' to 75' Rt to
Sta. 17+40, 33' to 75' Rt
Purpose for Cut & Fill
0.17 Acres More or Less

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253 (02)	19	53
Plotting Date: 04/09/14			
Revised Date: mm/dd/yy			
Initials: CVS			

Permanent Fencing Layout



Sta. 9+00 34' Lt to
Sta. 9+50 20' Lt
Install (1) - 2 Post Panels
and 52 L.F. of Type 2
Right-of-Way Fence
Attach to Wing Wall

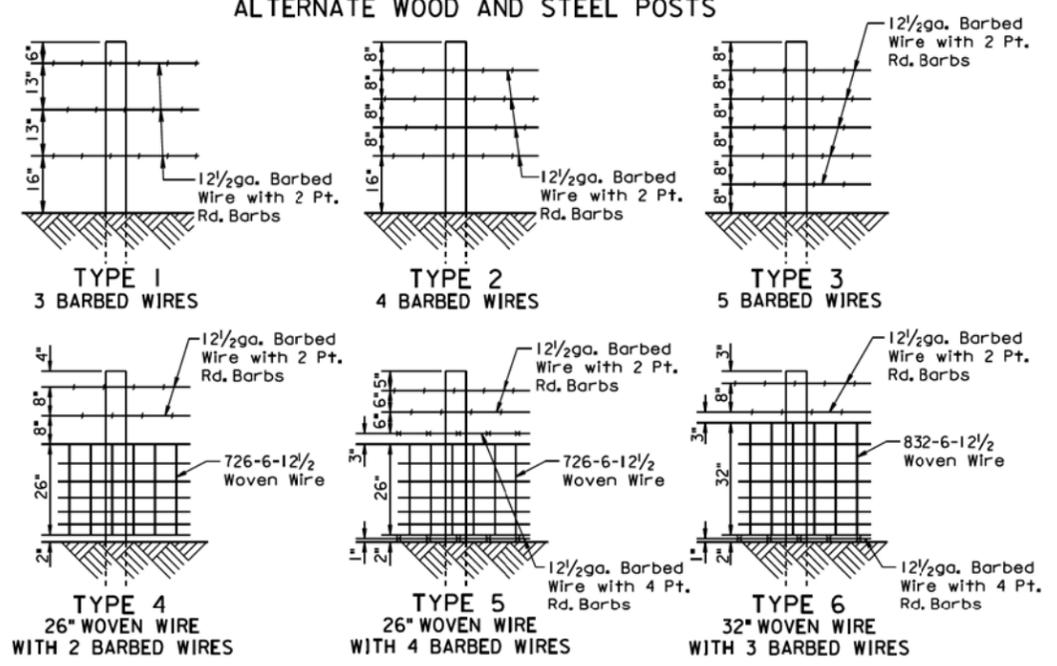
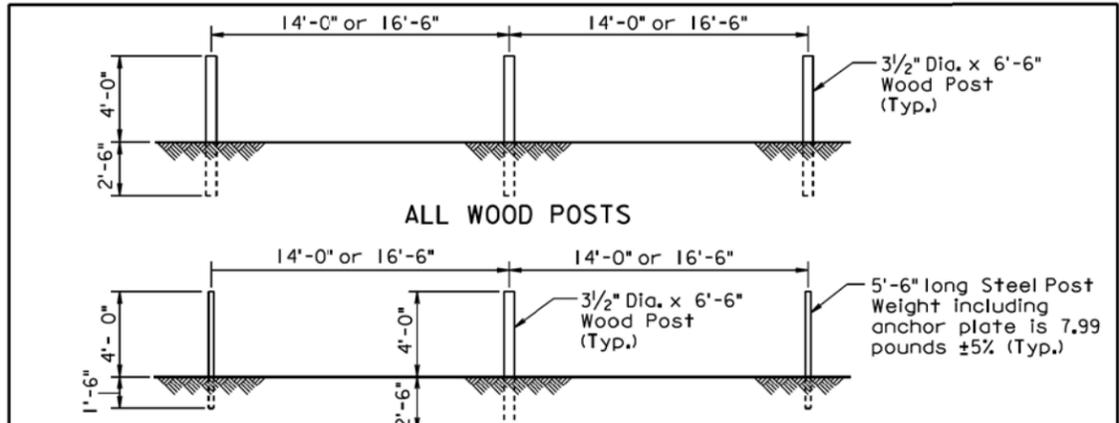
Sta. 10+50 20' Lt to
Sta. 11+25 32' Lt
Install (1) - 2 Post Panels
and 80 L.F. of Type 2
Right-of-Way Fence
Attach to Wing Wall

Sta. 10+50 20' Rt to
Sta. 11+25 32' Rt
Install (2) - 2 Post Panels
and 80 L.F. of Type 2
Right-of-Way Fence
Attach to Wing Wall

Sta. 15+70 47' Rt to
Sta. 17+40 47' Rt
Install (4) - 2 Post Panels
and 180 L.F. of Type 2
Right-of-Way Fence

Sta. 15+70 45' Lt to
Sta. 16+30 45' Lt
Install (2) - 2 Post Panels
and 100 L.F. of Type 2
Right-of-Way Fence
Attach To Wing Wall

Sta. 16+90 18' Lt to
Sta. 17+40 47' Lt
Install (2) - 2 Post Panels
and 66 L.F. of Type 2
Right-of-Way Fence
Attach To Wing Wall



TYPE	DESCRIPTION	LINE POST SPACING	WIRE GAGE	BARBED WIRE		WOVEN WIRE	
				NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
1	3 Barbed Wires	16'-6"	12/2	2 Point Round	---	---	---
2	4 Barbed Wires	16'-6"	12/2	2 Point Round	---	---	---
3	5 Barbed Wires	16'-6"	12/2	2 Point Round	---	---	---
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12/2	2 Point Round	---	726-6-12/2	---
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12/2	2 wires with 2 Pt. Rd., 2 wires with 4 Pt. Rd.	---	726-6-12/2	---
6	32" Woven Wire with 3 Barbed Wires	14'-0"	12/2	2 wires with 2 Pt. Rd., 1 wire with 4 Pt. Rd.	---	832-6-12/2	---

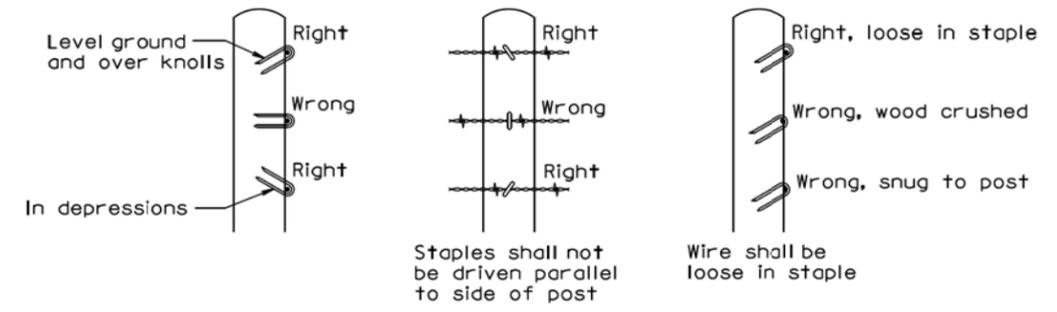
GENERAL NOTES:
 Fence types designated on the plans that are followed by the letter S shall have smooth (barbless) wires.
 When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.
 All degrees of curvature stated for fence are at centerline of roadway.
 September 14, 2009

Published Date: 4th Qtr. 2014

**S
D
D
O
T**

RIGHT-OF-WAY FENCE

PLATE NUMBER
620.01
Sheet 1 of 1



STAPLE INSTALLATION

GENERAL NOTES:

The Right-of-Way fence shall consist of barbed wire or a combination of woven wire and barbed wire. The barbed wire and/or woven wire shall be fastened to all wood posts or fastened to alternating wood and steel posts. Only wood posts shall be used for brace panels. Gates shall be of the type designated in the plans or as otherwise directed by the Engineer. Fence shall be constructed conforming to the details on the standard plates and in the plans unless otherwise directed by the Engineer.

Right-of-Way fence on Interstate Projects shall be constructed one foot within the Interstate Right-of-Way lines except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Right-of-Way fence other than on Interstate Projects shall be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

Barbs shall be fabricated from zinc coated 14 ga. wire. Two point barbs shall be wrapped twice around one main strand at 4" spacings and the four point barbs shall be interlocked and wrapped around both main strands at 5" spacings.

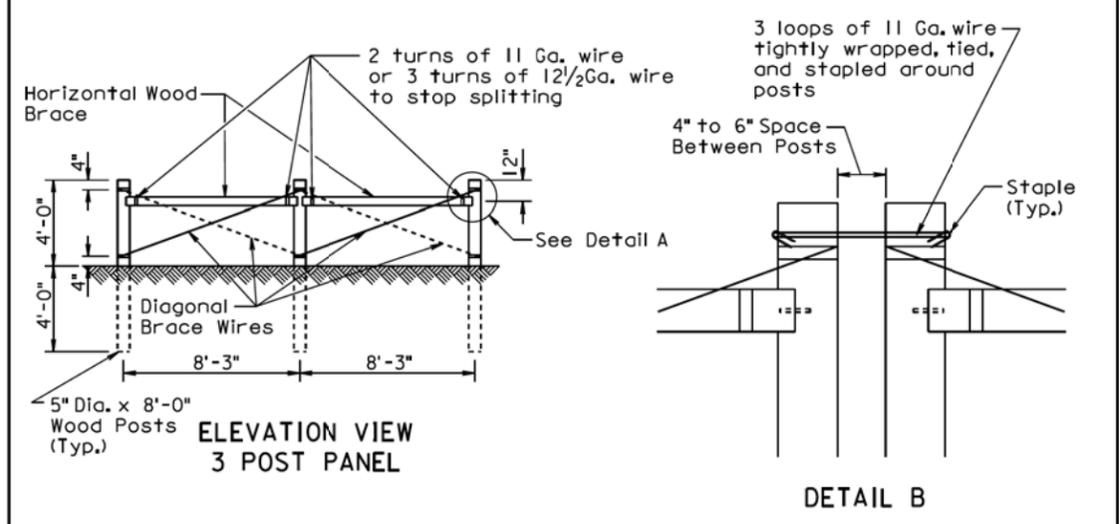
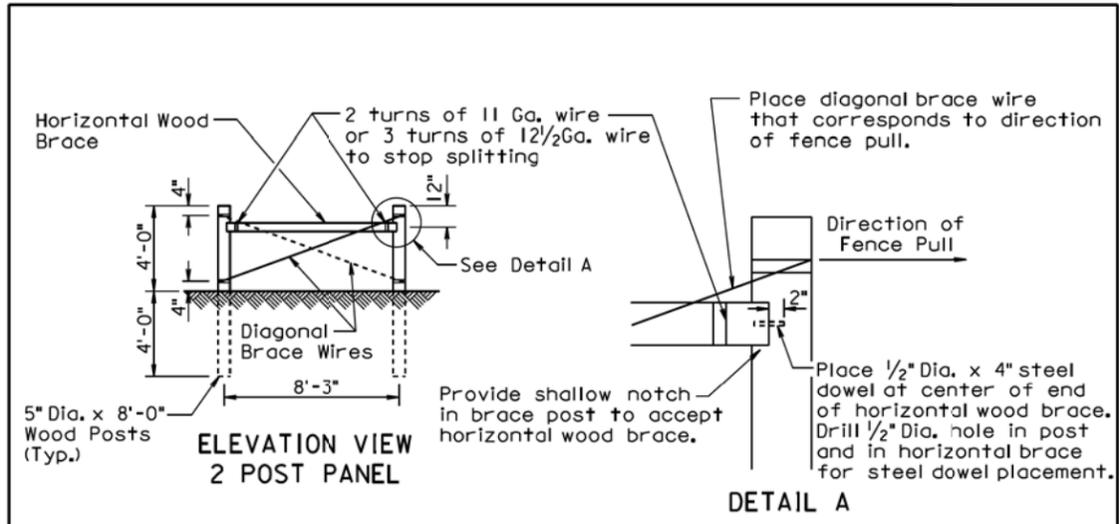
The gages of wire and wood post lengths and sizes are the minimum acceptable unless otherwise specified in the plans. The tolerances for steel posts shall be as stated in AASHTO M281. Woven wire shall conform to design and specifications of ASTM A116 and barbed wire shall conform to ASTM A121.

Published Date: 4th Qtr. 2014

**S
D
D
O
T**

STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES

December 23, 2004
PLATE NUMBER
620.02
Sheet 1 of 1



GENERAL NOTES:

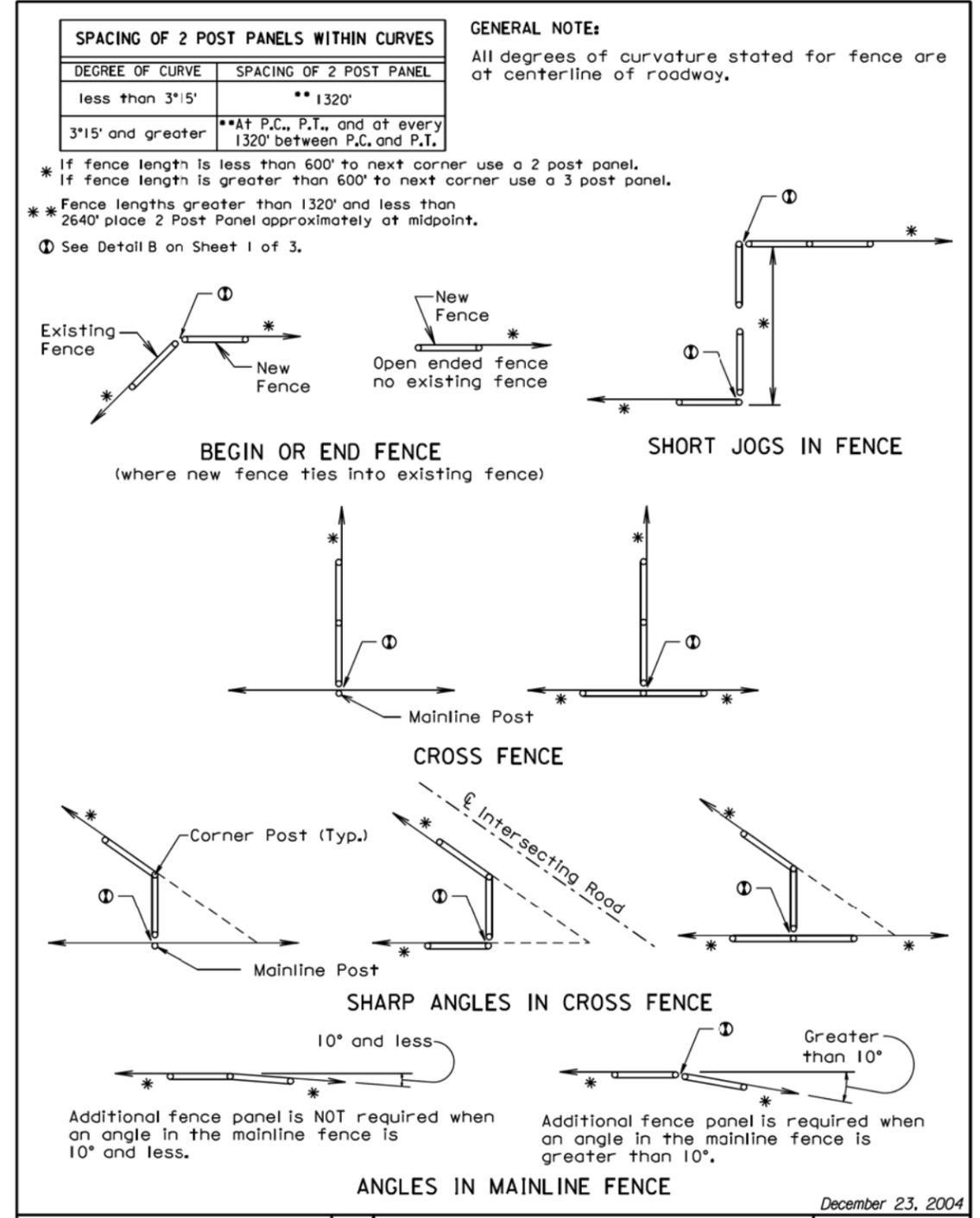
Two Post Panels shall be installed at least every 1320' between corners.

Two Post Panels shall be installed at any sharp vertical angle crest points and as directed by the Engineer.

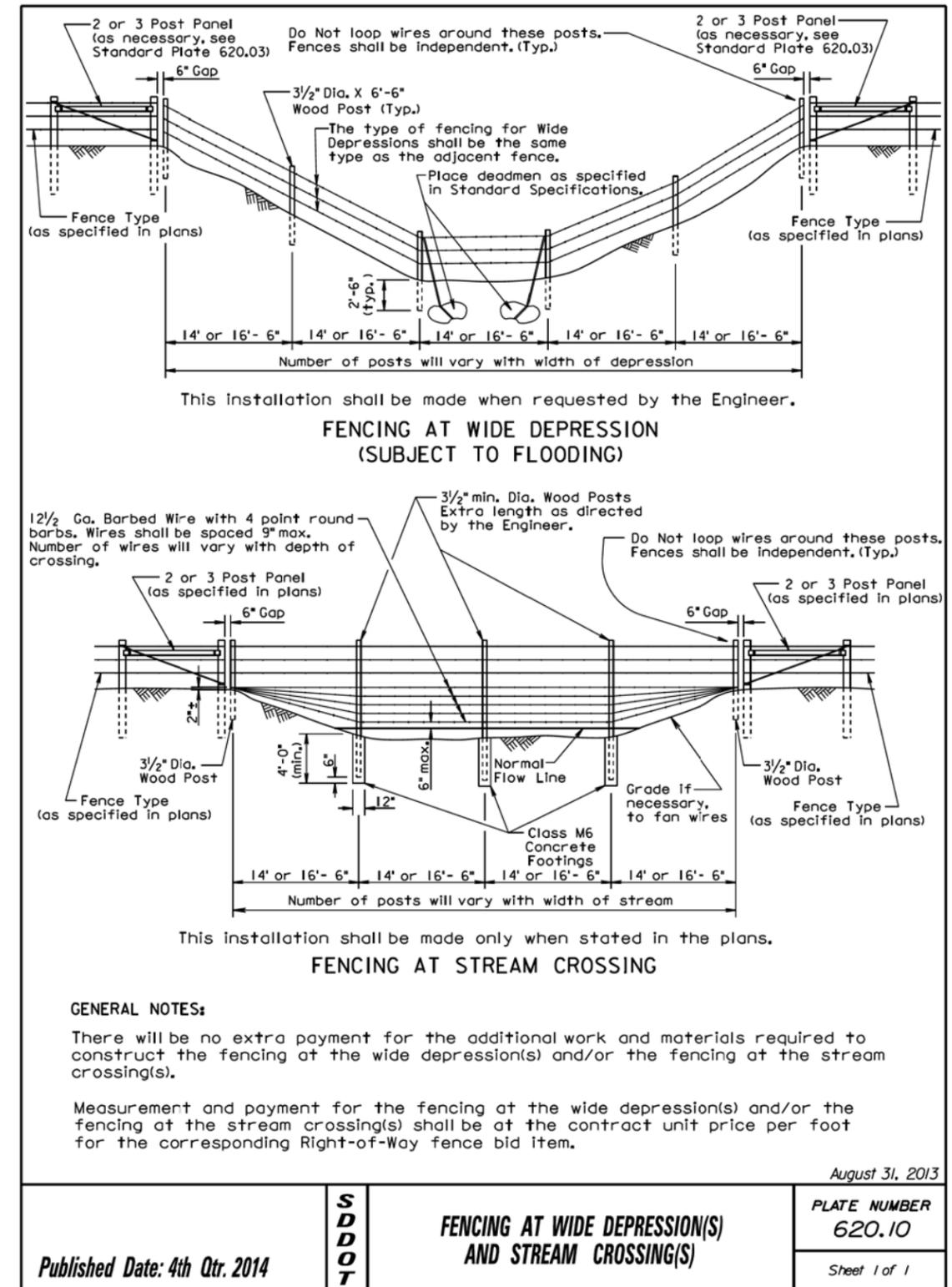
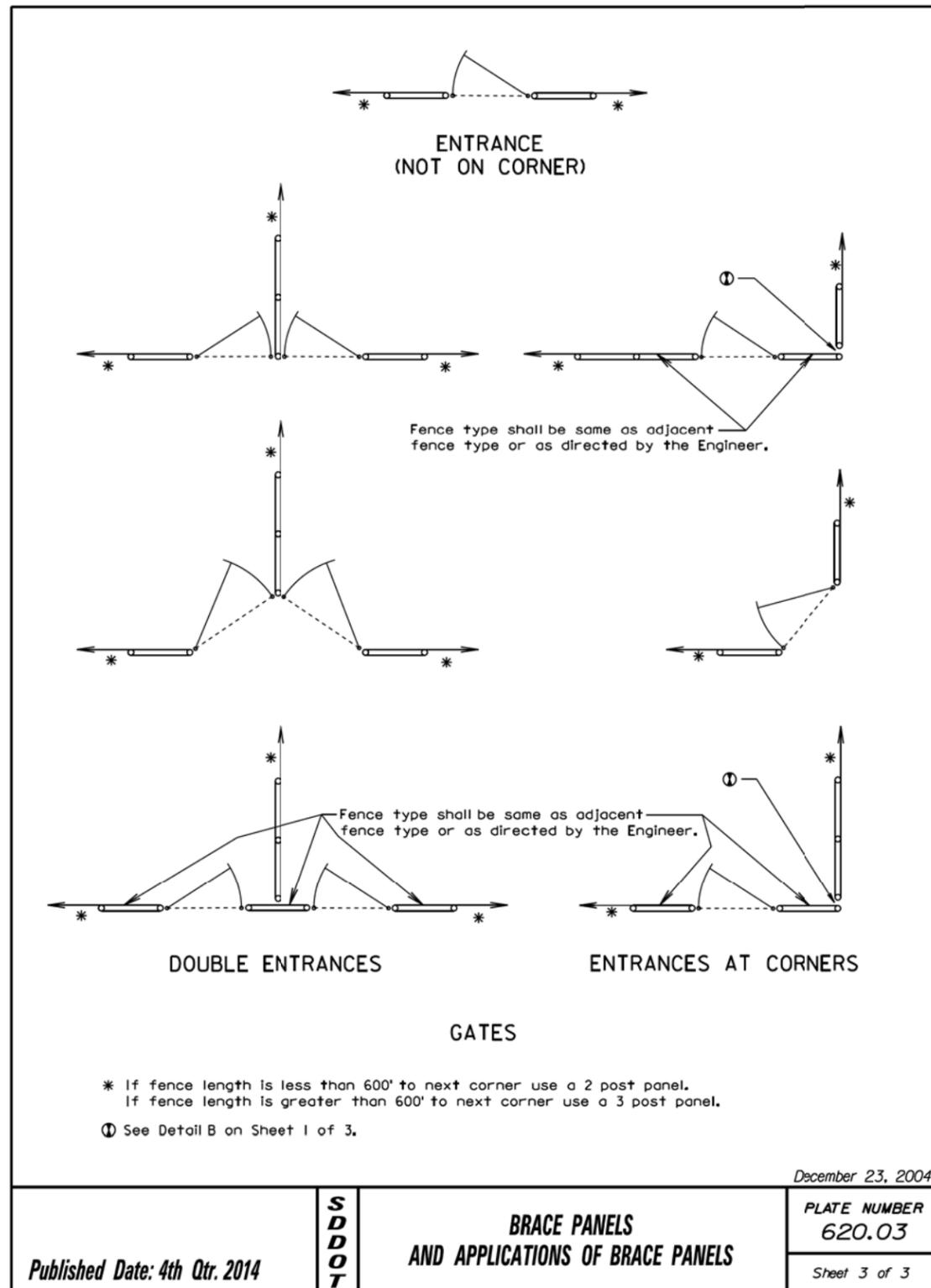
Horizontal wood braces shall consist of 4" dia. x 8' wood posts or rough 4" x 4" x 8' timbers.

Diagonal brace wires shall be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires shall be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

December 23, 2004



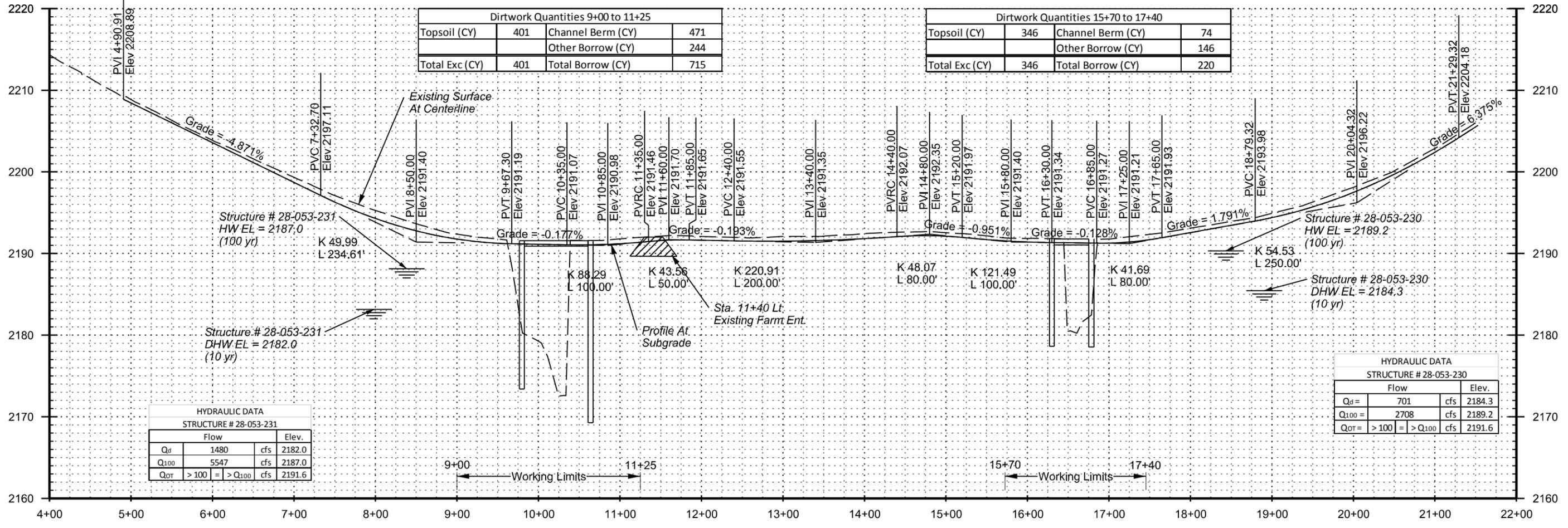
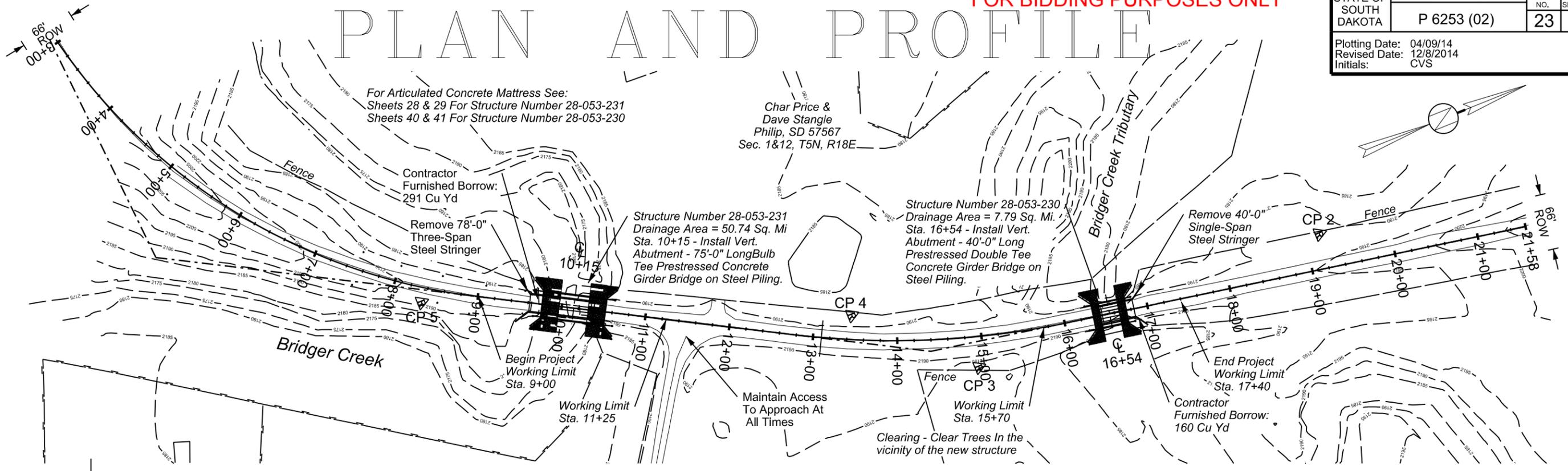
December 23, 2004



FOR BIDDING PURPOSES ONLY

PLAN AND PROFILE

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL
	P 6253 (02)	NO. 23	SHEETS 53
Plotting Date: 04/09/14		Revised Date: 12/8/2014	
Initials: CVS			



Dirtwork Quantities 9+00 to 11+25

Topsoil (CY)	401	Channel Berm (CY)	471
		Other Borrow (CY)	244
Total Exc (CY)	401	Total Borrow (CY)	715

Dirtwork Quantities 15+70 to 17+40

Topsoil (CY)	346	Channel Berm (CY)	74
		Other Borrow (CY)	146
Total Exc (CY)	346	Total Borrow (CY)	220

HYDRAULIC DATA
STRUCTURE # 28-053-231

Flow	Elev.
Qd = 1480 cfs	2182.0
Q100 = 5547 cfs	2187.0
QOT = > 100 = > Q100 cfs	2191.6

HYDRAULIC DATA
STRUCTURE # 28-053-230

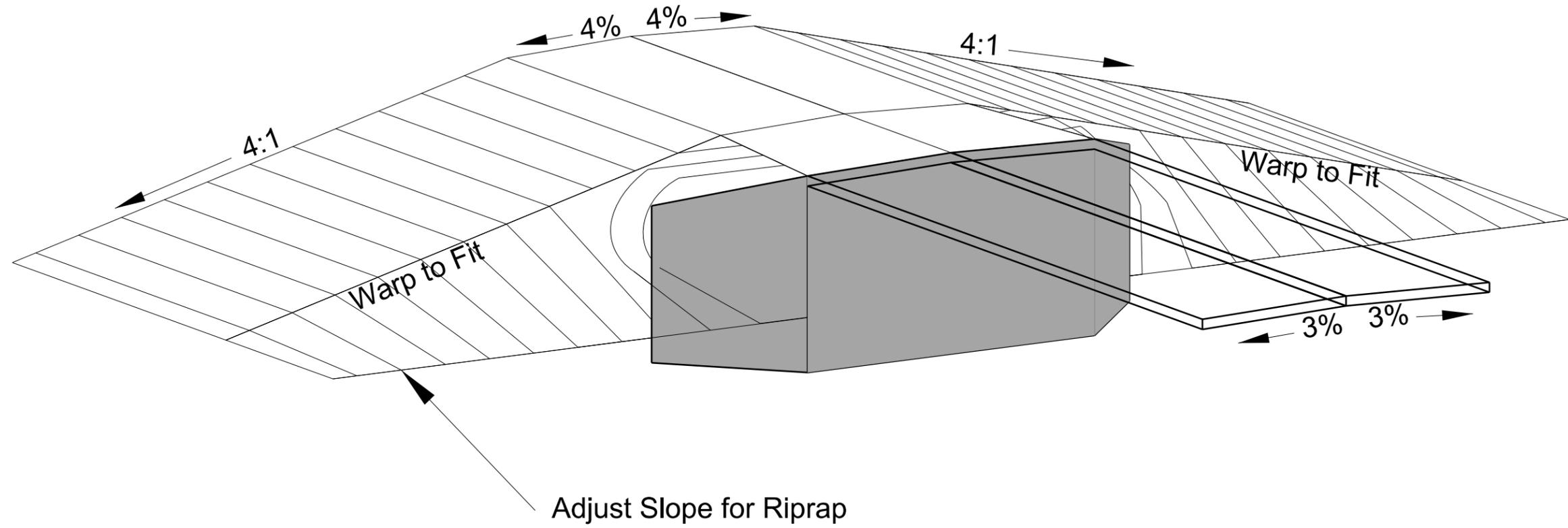
Flow	Elev.
Qd = 701 cfs	2184.3
Q100 = 2708 cfs	2189.2
QOT = > 100 = > Q100 cfs	2191.6

FOR BIDDING PURPOSES ONLY

ROADWAY SHAPING

(FOR INFORMATION ONLY)

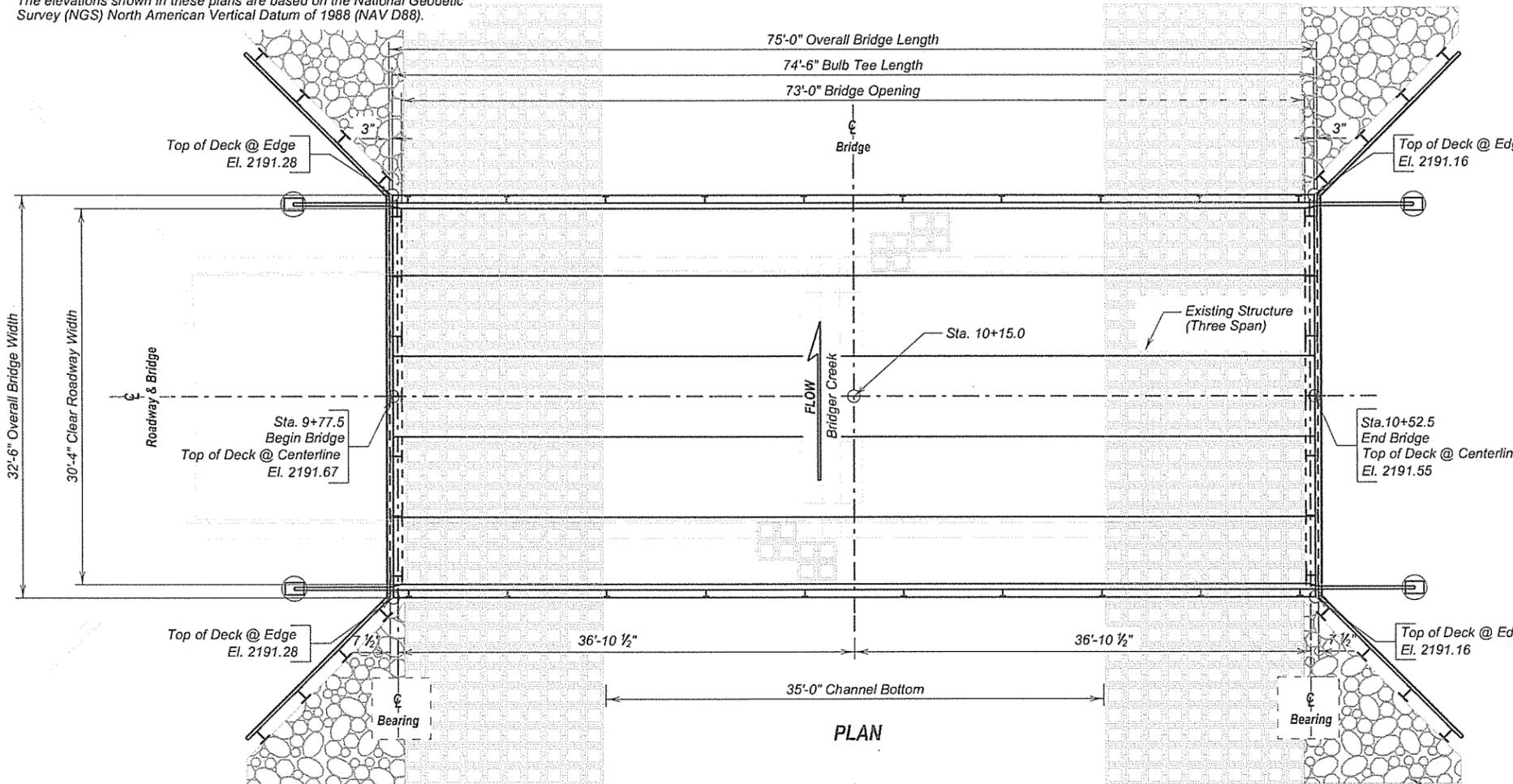
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	24	53
Plotting Date: 04/09/14		Revised Date: mm/dd/yy	
Initials: CVS			



FOR BIDDING PURPOSES ONLY

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	25	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			



PLAN

- X081 -

INDEX OF BRIDGE SHEETS-

Sht. No. 1	- General Drawing
Sht. No. 2 & 3	- Estimate of Structure Quantities & Notes
Sht. No. 4	- Subsurface Investigation And Piling Layout
Sht. No. 5	- Articulated Concrete Mattress Layout
Sht. No. 6	- Articulated Concrete Mattress Details
Sht. No. 7	- Abutment No. 1 & No. 2 Layout
Sht. No. 8 & 9	- Abutment Details
Sht. No. 10	- Superstructure Details
Sht. No. 11	- Deck Unit Details
Sht. No. 12	- Steel Diaphragm Details
Sht. No. 13 & 14	- T101 Railing
Sht. No. 15	- Standard Plates

HYDRAULIC DATA

Q_d	1480 cfs
A_d	370 sq.ft
V_d	4.0 fps
Q_F	1480 cfs
Q_{100}	5547 cfs
Q_{OTFr}	>100 yr.
V_{max}	7.94 fps

Q_d = Design discharge for the proposed bridge based on 10 year frequency. El. 2182.0

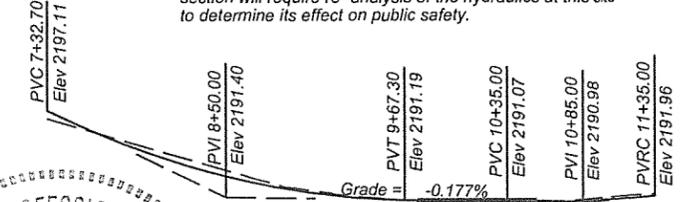
Q_{OTFr} = Overtopping discharge and frequency 100 year recurrence interval. El. 2191.6 Location 10+50

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

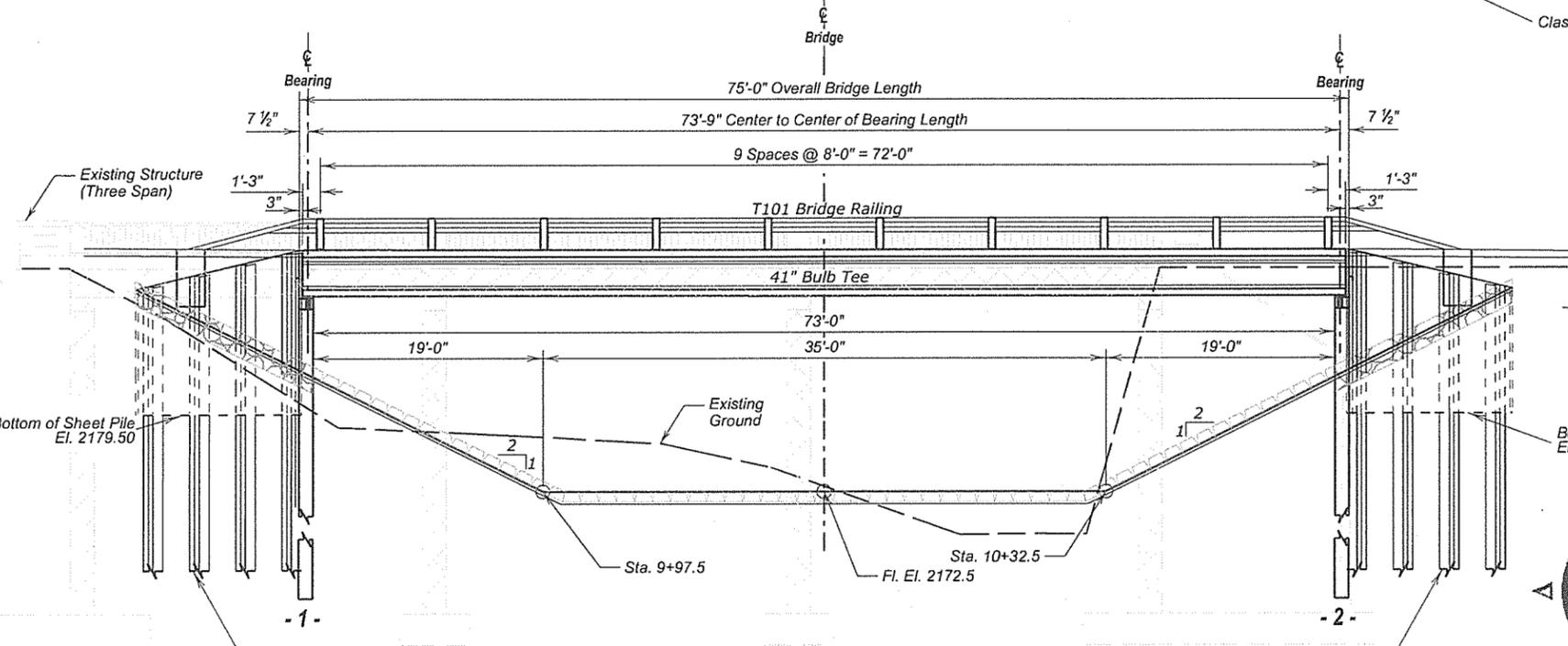
Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 2186.9

V_{max} = Maximum computed outlet velocity for the proposed bridge, based on 100 year frequency.

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



VERTICAL CURVE DATA



ELEVATION

GENERAL DRAWING
FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE
STA. 9+77.5 TO 10+52.5
OVER BRIDGER CREEK
STR. NO. 28-053-231
PCN NO. 6092

0° SKEW
SEC. 23 / 26 - T2N - R20E
P 6253(02)
HL-93



HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

DESIGNED BY SS / DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P600			

STATE OF S.D.	PROJECT P 6253(02)	SHEET NO. 26	TOTAL SHEETS 53
---------------	-----------------------	-----------------	--------------------

STRUCTURE QUANTITIES:

ITEM	Quantity	Unit
Incidental Work, Structure	Lump Sum	LS
Structural Steel, Miscellaneous	Lump Sum	LS
Field Painting	Lump Sum	LS
Structure Excavation, Bridge	252	CuYd
Type T101 Bridge Railing	182	Ft
HP 12x53 Steel Test Pile, Furnish and Drive	100	Ft
HP 12x53 Steel Pile, Furnish and Drive	1260	Ft
Steel Sheet Piling, Furnish and Drive	1451	SqFt
6'-6" Wide Deck Prestressed Concrete Bulb Tee	372.5	Ft
Precast Concrete Plank, Furnish	200	SqFt
Precast Concrete Plank, Install	200	SqFt
Class C Riprap	59	Ton
Type B Drainage Fabric	117	SqYd
Articulated Concrete Mattress	576	SqYd

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition with 2013 interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and required provisions, supplemental specifications and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

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

INCIDENTAL WORK, STRUCTURE:

The in place structure is a (3) three-span 78' steel stringer bridge with steel pilings, concrete abutments, bents, deck and concrete pigeonhole rail. The Contractor shall contact Kenny Neville, (2) weeks prior to removal of the structure, at 605-859-2472 for items to be salvaged and stockpiled as described on sheet 2 of the plan notes. The concrete and steel girders are to be salvaged and stockpiled in the county ROW. Items not salvaged shall be dismantled, removed and disposed of according to the Waste Disposal plan note. The steel piling shall be removed or cut off at a minimum 1' below bottom of undercut. All costs associated with structure removal, salvage and disposal shall be included in the contract lump sum price for "Incidental Work, Structure".

NOTICE - LEAD BASED PAINT

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

ABUTMENTS:

- Design data: Lateral earth pressure at 52.8 lbs./cu.ft.
- The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. All piling shall develop a field verified nominal bearing resistance of 245 tons per pile.
- One test pile shall be driven at each abutment and will become part of the pile group.
- The contractor shall have sufficient pile splice material on hand before pile driving is started. See Plate No. 510.40
- Steel pile and abutment caps shall be painted prior to the placement of the deck units at locations where the deck units, when placed, would prohibit painting. The remaining piling and abutment caps, with the exception of piling underground, may be painted after erection of the deck units. Painting shall comply with Section 412 of the SD Standard Specifications. The topcoat shall be an approved green color. The cost of painting shall be incidental to the contract lump sum price for "Field Painting." For informational purposes only, the estimated quantity of Field Painting is 2,640 SqFt.
- Welding and weld inspection shall be done in accordance with ANSI/AASHTO/AWS D 1.5-2002 Bridge Welding Code. Plan shown field welding shall be in accordance with the current edition of the ANSI/AWS D1.1 Structural Welding Code – Steel.
- The abutment backwalls will be 5 gauge galvanized steel sheet piling, with a minimum section modulus of 2.75 in³ per foot. The 5 gauge sheet pile shall conform to the requirements of ASTM designation A 857, Grade 36 and hot-dipped galvanized per ASTM A123. The sheet pile shall have a bottom elevation of **2179.5**.
- The precast concrete plank shall be attached to the ends of each deck beam. They shall have a minimum compressive strength of 4000 psi at 28 days. Reinforcing steel shall be Grade 60. Two ½" Ø X 4" galvanized ferrule loop inserts with a minimum capacity of 500 pounds tension each, galvanized according to ASTM A123, shall be installed in each plank for lifting purposes. One ¾" Ø X 3" galvanized sleeve shall be installed in the center of each plank. A ½" Ø concrete fastener shall be used to bolt the plank to the prestressed concrete deck unit.
- Fence anchor eyebolts shall be installed in each wing wall as shown on sheet 9 of 15 in these plans.

SDDOT's LRFD PILE DRIVING EQUATIONS

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

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

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

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

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

Where:

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

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

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

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

E = the energy per blow in foot-tons.

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

A drivability analysis was performed using the wave equation analysis program (GRLWEAP). A list of acceptable hammers is provided below. Based on initial analysis, the hammers listed will need to be operated no higher than the second fuel setting in order to prevent overstressing of the pile during driving operations. If during actual driving operations an adequate hammer drop to obtain design bearing is not achieved, contact the Geotechnical Engineering Activity prior to increasing the fuel setting.

Delmag D19-32 Delmag D19-42 MVE M-19
MKT DE 42/35 Delmag D16-32

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

STRUCTURAL STEEL, MISCELLANEOUS:

For informational purposes only, the estimated quantity of Structural Steel, Miscellaneous is **12,367** Lbs. Structural Steel Misc. consists of 22" x 1/8" Bent Plate for wing walls, HP12x53 Pile Cap, HP10x42 Whalers, Stiffener Plates, 7" x 4" x 3/8" Angle Iron and steel diaphragms.

Structural steel shall conform to AASHTO M 183 (ASTM A36).

**ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
FOR
75' – 0" SINGLE SPAN PRESTRESSED
CONCRETE BULB TEE BRIDGE
Str. No. 28-053-231**

APRIL 2014

2 OF 15

DESIGNED BY DC S12-P600	DRAWN BY CVS	CHECKED BY DH	APPROVED: BRIDGE ENGINEER
-------------------------------	-----------------	------------------	----------------------------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 6253(02)	27	53

PRESTRESSED CONCRETE BULB TEE DECK UNITS:

- The prestressed concrete bulb tee deck units shall conform to Section 580 of the South Dakota Standard Specifications.
- Dimensional tolerances of the completed deck units shall not exceed tolerances specified in the current edition of Prestressed Concrete Institute Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products. However the maximum allowable vertical elevation difference between adjacent bulb tee deck units shall be 1/4" at any location along the deck. Maximum gap between the bulb tee deck units shall not exceed 1/2" at any location along the deck.
- Structural steel shall conform to the specifications for structural steel, AASHTO M 183 (ASTM A36).
- All costs of furnishing and installing the prestressed concrete bulb tee deck units, including welding, hardware, bearing pads, grout, and other items necessary to complete installation of the deck units, as shown on the plans and required in the Standard Specifications, shall be incidental to the contract unit price per foot for "6'-6" Wide Deck Prestressed Concrete Bulb Tee".
- At the Contractor's option, a one-inch diameter metal rod may be used in place of the metal weld plate to make the weld tie connection (see the detail sheet for superstructure details).
- Minimum Concrete Compressive Strength $f'c = 7500$ p.s.i. at 28 days for all girders, $Fci = 6000$ p.s.i. for 74'-6" All Girders.
- All mild reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.
- Individual tendons in all pre-tensioned sections shall consist of (7) wire, uncoated, Type 270K Strands having a nominal diameter of 0.60 inches and a minimum ultimate strength of 58,600 lbs. per cable. An initial tensile force of 43,943 lbs. shall be applied to all 0.60 inch cables in all girders. All prestressing steel shall conform to AASHTO M203, (Low Relaxation 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 assembled. The girders shall be poured in all steel forms.
- Prestressed concrete deck units shall always be lifted by the devices provided in the top flanges near the ends of the deck unit. 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 deck unit shall be marked showing structure number, casting date and unit numbers. Marking shall be on the face of the unit near the end and located so that they will be exposed after the diaphragms have been cast. Fascia units shall be marked on an inside face.

- All markings shall be stenciled and clearly legible. Deck unit designations and locations; see Superstructure Details.
- Galvanize Shoes according to Standard Specifications. Use Structural Steel meeting the requirements of AASHTO M270 Grade 36 for shoes. Use headed shear studs meeting the requirements of AASHTO M169 Grades 1010 thru 1020.
 - 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 60 (durometer). The cost of the pads shall be incidental to the contract unit price per foot for "6'-6" Wide Deck Prestressed Concrete Bulb Tee". Certification that pads are 60 durometer and meet the requirements of AASHTO LFRD Bridge Construction Specification Section 18.2 and AASHTO Materials Specification M251 shall be furnished to the Engineer with the shop drawings. No laminated bearing pads will be allowed & thickness shall be as shown on the plans.
 - All exposed corners shall be chamfered 3/4" or rounded 3/4" radius.
 - Dead Load of girder taken as effective at transfer. Cut strands, flush with end of 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.
 - Embedded Anchor Plates for Rail Post attachment as detailed on Standard Sheet for "Type T101 Bridge Railing" shall be added to each Bulb Tee deck unit. The cost of embedded plates shall be included in the contract unit price per foot for "6'-6" Wide Deck Prestressed Concrete Bulb Tee."
 - The shear key formed between the deck units will require about 0.05 cubic foot of grout, per lineal foot. The cost of furnishing and installing the grout, shall be incidental to the contract unit price per foot for "6'-6" Wide Deck Prestressed Concrete Bulb Tee."
 - Non-shrink grout for the shear key shall be commercially available non-metallic non-shrink grout capable of obtaining a compressive strength of 3500 psi and capable of from 0.06% to 0.1% expansion. The grout shall be mixed with just enough clean water to make a stiff but workable mix.
 - Non-shrink grout shall attain a compressive strength of 3500 psi before the structure is opened to traffic.
 - For informational purposes only, approximate weight of each deck unit is 1097 lbs. per ft. = 81,727 lbs. ±.

PRECAST END PLANKS:

All cost of furnishing and installing the Precast Concrete End Planks including galvanized hardware, EZ Wrap Sealant, and other items necessary to complete installation of end planks, as shown on the Abutment details, Shall be incidental to the contract unit price per square foot for "Precast Concrete Plank, Furnish" and "Precast Concrete Plank, Install".

BOLT TESTING

The certified mill test reports for all bolts used on the project shall include the test results for all of the testing specified in Section 972.2.D of the 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.

TYPE T101 BRIDGE RAILING

Type T101 Bridge Railing shall be constructed as shown on the General Drawing Sheet and T101 Bridge Railing Details Sheet. The Bridge Railing shall conform to Section 470 of the South Dakota Standard Specifications.

ARTICULATED CONCRETE MATTRESS

Articulated Concrete Mattress shall be constructed as shown on the Articulated Concrete Mattress Layout Sheet and Details Sheet. The notes and quantities are shown on the "Articulated Concrete Mattress Details" Sheet.

SHOP DRAWINGS:

Shop plans are required for the deck units, steel diaphragms, and steel bridge railing. The fabricator shall submit shop plans in accordance with the Standard Specifications or in Adobe PDF format to: Brosz Engineering, Inc., 3561 Whitewood Service Road P.O. Box 636, Sturgis, South Dakota 57785; for review. After review, corrections (if necessary), and approval by Brosz Engineering Inc., the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

NOTES (CONTINUED)
FOR
**75'- 0" SINGLE SPAN PRESTRESSED
CONCRETE BULB TEE BRIDGE**
Str. No. 28-053-231

APRIL 2014

3 OF 15

DESIGNED BY: DC S12-P 600	DRAWN BY: CVS	CHECKED BY: DH	APPROVED: BRIDGE ENGINEER
---------------------------------	------------------	-------------------	------------------------------

PLOT SCALE - 1:20

PLOTTED FROM - TRPR18174



Hole Number A3		Hole Number A3		Hole Number A4		Hole Number A6	
Station	9+41	Station	9+41	Station	10+51	Station	10+56
Depth	8.0 ft	Depth	35.7 ft	Depth	28.3 ft	Depth	14.0 ft
Soil Color	Brown	Soil Color	Gray	Soil Color	Gray	Soil Color	Brown
Classification	Clay	Classification	Clay	Classification	Clay	Classification	Silt-Clay
Strength (Q _u)	3.461 psf	Strength (Q _u)	12.500 psf	Strength (Q _u)	26.270 psf	Strength (Q _u)	2.251 psf
Dry Density	90.1 pcf	Dry Density	111.2 pcf	Dry Density	112.9 pcf	Dry Density	89.1 pcf
Wet Density	112.8 pcf	Wet Density	130.8 pcf	Wet Density	133.9 pcf	Wet Density	115.7 pcf
Moisture	25.2 %	Moisture	17.7 %	Moisture	18.6 %	Moisture	29.8 %
Pass No. 10	99.9 %	Pass No. 10	97.4 %	Pass No. 10	98.5 %	Pass No. 10	99.4 %
Pass No. 40	99.7 %	Pass No. 40	97.4 %	Pass No. 40	98.4 %	Pass No. 40	99.4 %
Pass No. 200	89.1 %	Pass No. 200	96.8 %	Pass No. 200	93.1 %	Pass No. 200	87.0 %
Sand Content	10.8 %	Sand Content	0.6 %	Sand Content	5.4 %	Sand Content	12.4 %
Silt Content	36.9 %	Silt Content	44.0 %	Silt Content	33.8 %	Silt Content	39.1 %
Clay Content	49.1 %	Clay Content	52.8 %	Clay Content	59.3 %	Clay Content	47.9 %

FOR BIDDING PURPOSES ONLY

Pierre Shale is a fine grained silty shale with textural classification that varies from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain concretion zones that are normally thin but occasionally are massive. These zones may be considered hard and dense. Thin zones may be present that are cemented resulting in claystone or siltstone seams. Bentonite zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be "Soft Rock".

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 6253 (02)	28	53

Plotting Date: 11/29/2012

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

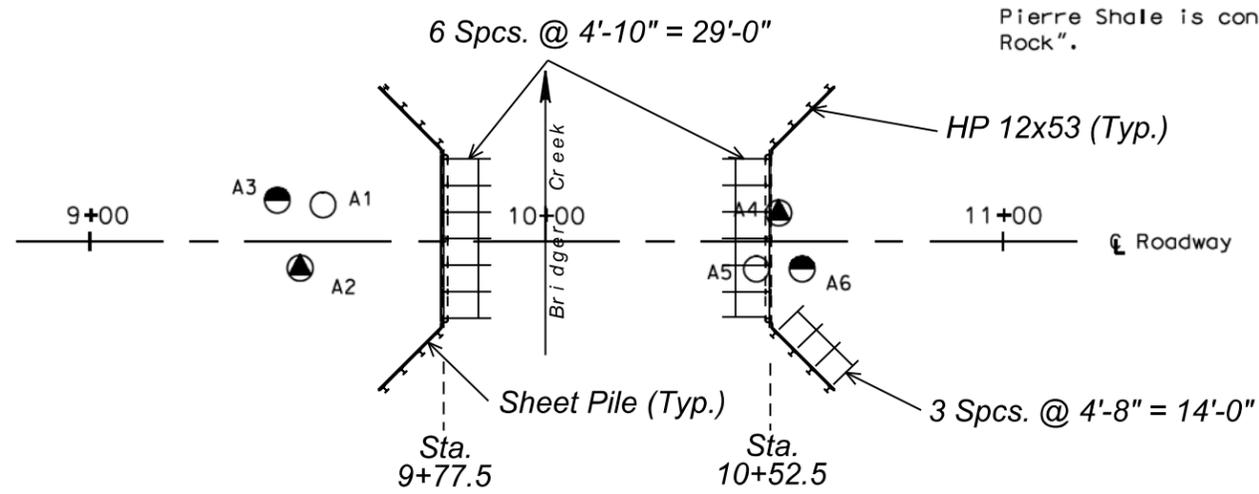
LEGEND

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

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

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

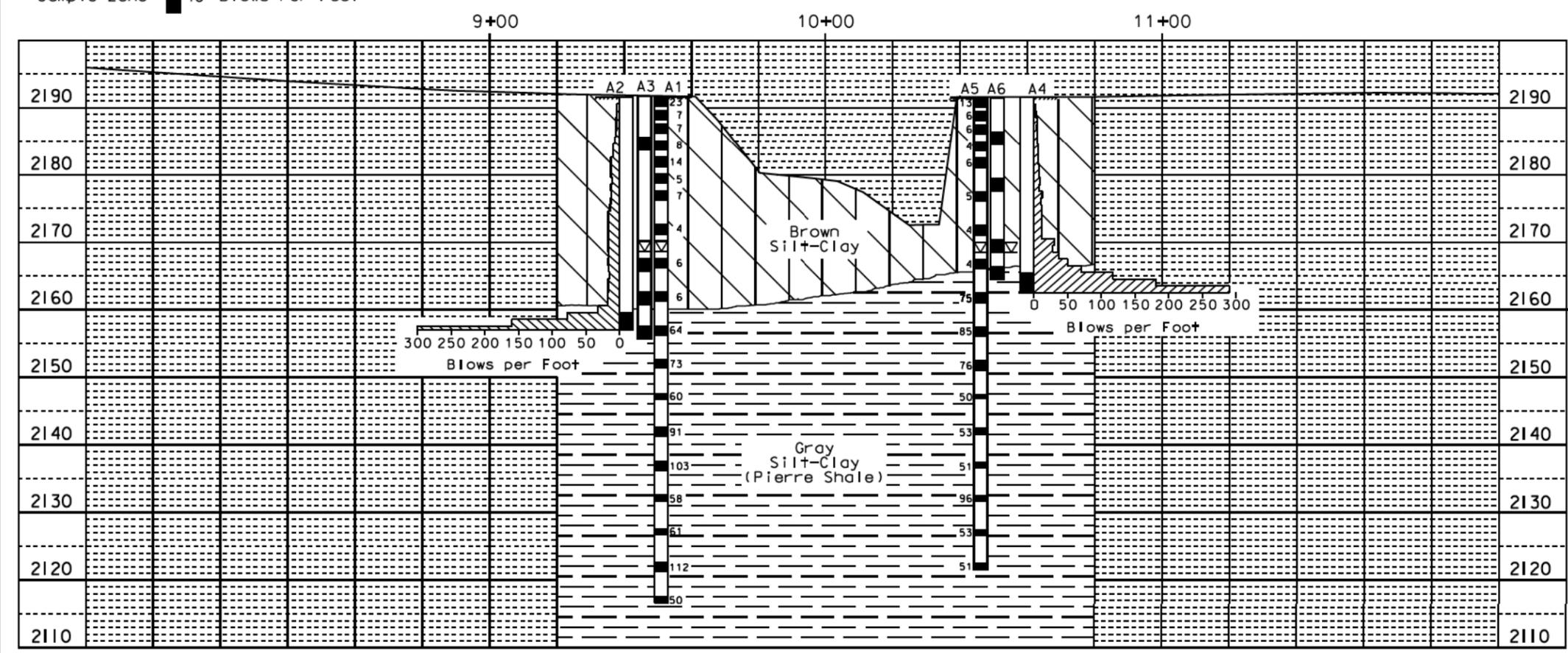
Penetration tests are conducted by dropping a 140 pound hammer 30 inches to obtain 2 inch nominal diameter samples and to measure the resistance to penetration of the soil.



Piling Layout

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

Sample Zone ■ 48 Blows Per Foot



GROUND WATER ELEVATIONS

as of July 2012

A1	2168.6
A2	Dry
A3	2168.6
A4	Dry
A5	2168.5

MEASURED SKIN FRICTION

	Elev	psf
A2	2156.6	1,177
A4	2162.5	1,429

SUBSURFACE INVESTIGATION AND PILING LAYOUT FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE
 30'-0" ROADWAY OVER BRIDGER CREEK
 STA. 9+77.5 TO 10+52.5
 STR. NO. 28-053-231

SEC. 23/26 - T2N-R20E
 0 SKEW
 BR# 6253(02)
 HL-93

HAAKON COUNTY
 S.D. DEPT OF TRANSPORTATION
 APRIL 2014

DESIGNED BY: BEI#S12-P600
 DRAWN BY: NN
 CHECKED BY: JW
 APPROVED: [Signature]

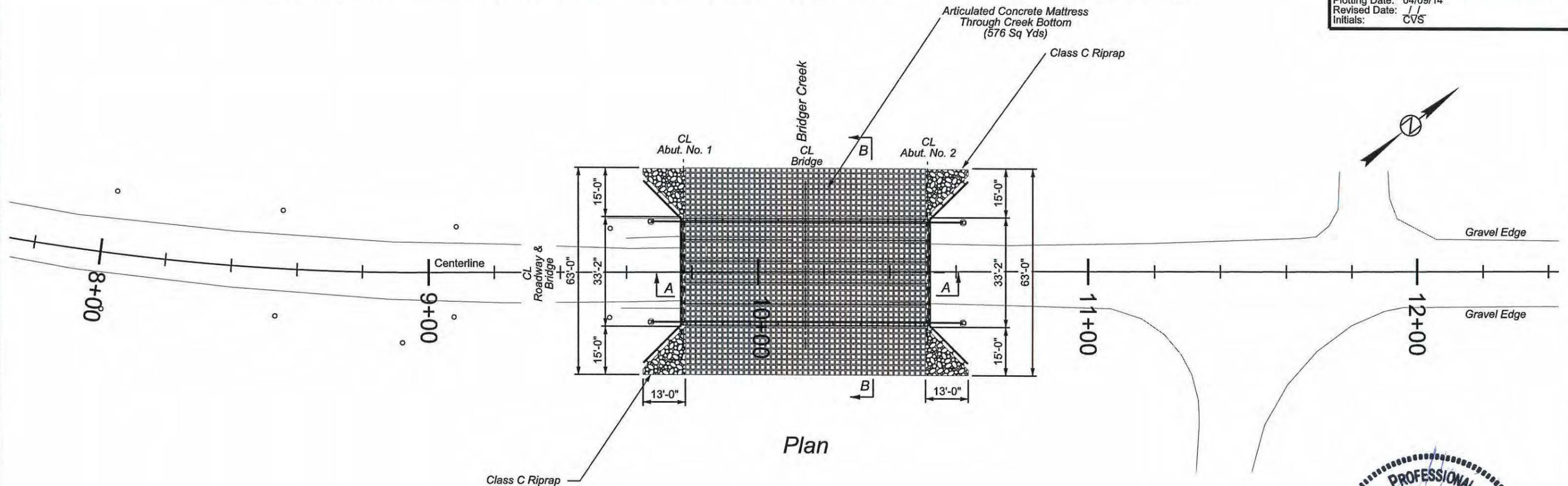
4 of 15

FILE \... \SUBSURFACE PROFILE\6092.DGN

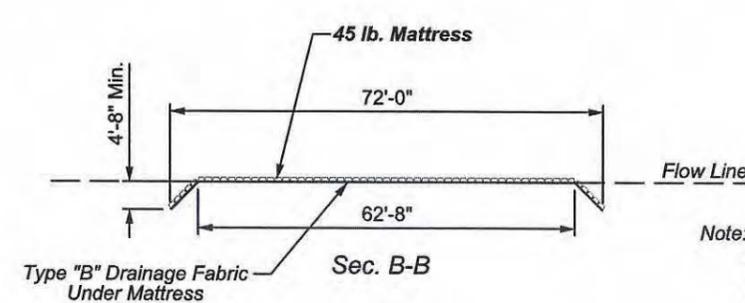
ARTICULATED CONCRETE MATTRESS

FOR BIDDING PURPOSES ONLY

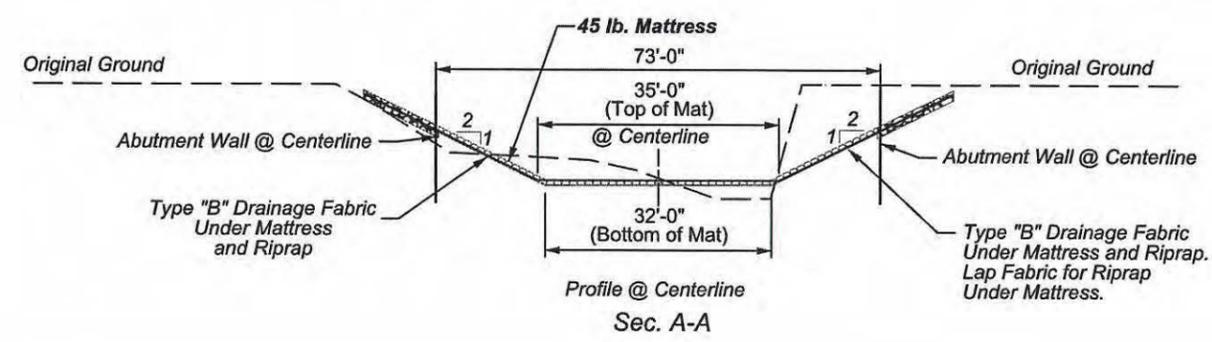
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	29	53
Plotting Date: 04/09/14			
Revised Date: / /			
Initials: CVS			



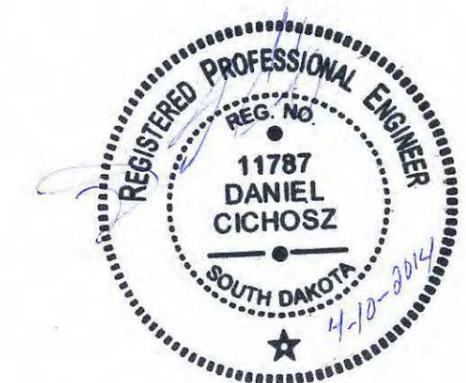
Plan



Note: Anchor the Articulated Concrete Mattress to the abutments, see "Articulated Concrete Mattress Details Sheet"



Profile @ Centerline
Sec. A-A



ARTICULATED CONCRETE MATTRESS LAYOUT
FOR
75'-0" SINGLE SPAN PRESTRESSED
CONCRETE BULB TEE BRIDGE
30'-0" ROADWAY SEC. 23/26 - T2N-R20E
OVER BRIDGER CREEK 0 SKEW
STA. 9+77.5 TO 10+52.5 BRF 6253(02)
STR. NO. 28-053-231 HL-93

HAAKON COUNTY
S.D. DEPT OF TRANSPORTATION
APRIL 2014

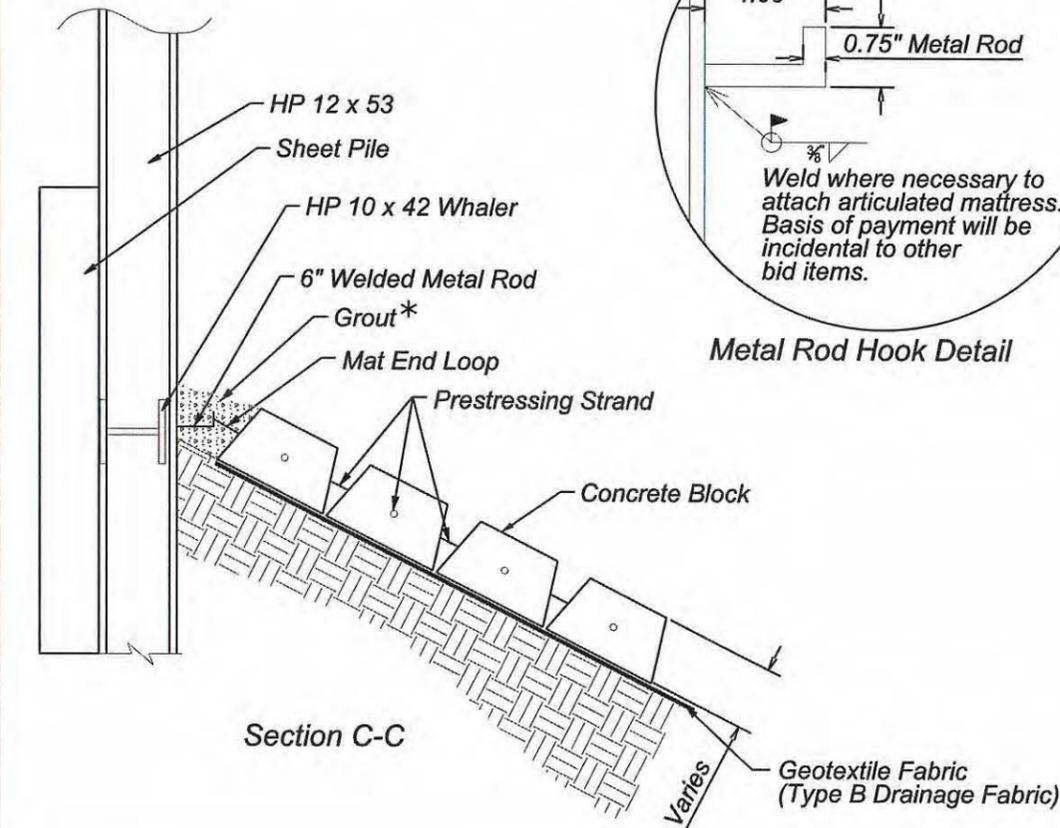
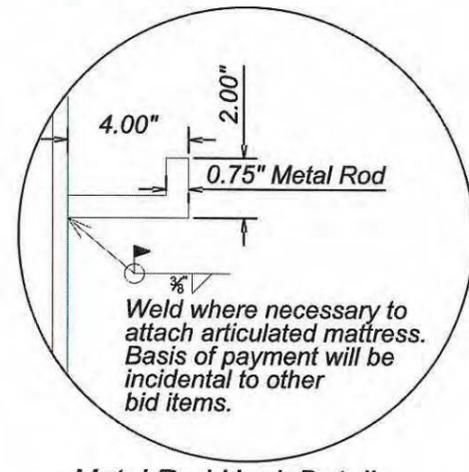
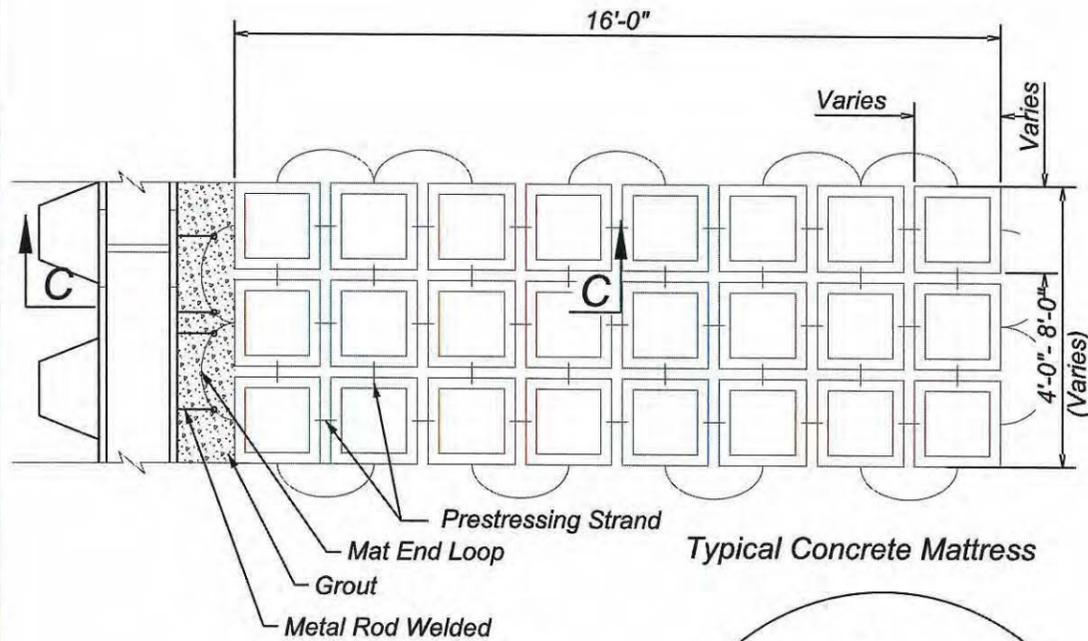
5 of 15

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED
BEI#: S12-P600			

ARTICULATED CONCRETE MATTRESS

NOTES AND DETAILS

STATE OF SOUTH DAKOTA	PROJECT P 6253(02)	SHEET NO. 30	TOTAL SHEETS 53
Plotting Date: 04/09/14		Revised Date: / /	
Initials: CVS			



DESCRIPTION

This work will consist of installing all materials and performing all work necessary to provide & place Articulated Concrete Mattresses as shown on this sheet and the "Articulated Concrete Mattress Layout Sheet". Articulated Concrete Mattress consists of mats fabricated from concrete and prestressing strand, connected together, backed with filter fabric and anchored to the slope.

ARTICULATED CONCRETE MATTRESS

1. A cable concrete panel made up of a series of concrete cables connected to each other by interwoven stainless steel cables with a minimum 1 / 4" diameter for 45 lb. mattress.
2. The concrete used to fabricate the concrete panels shall weigh a minimum of 45 pounds per square foot and have a minimum 28-day compressive strength of 4,000 pounds per square inch and conform to the requirements of section 462.3 of the South Dakota Standard Specifications for class M6 concrete.
3. Geotextile material shall be attached to the base of each concrete panel. The standard geotextile material used shall be Drainage Fabric, Type B. An overlap of 2ft. to 3ft. shall be incorporated on a minimum of three sides of each panel.
4. The U-Type cable clamps of sufficient cast galvanized steel shall be used to secure loops of adjoining cable concrete panels. If the clamps are to be used below existing water, manufacturer's specifications must be followed.
5. The product supplier shall have a technician experienced in the installation of the cable concrete system available at the start of the installation to advise the Contractor and the Engineer in any special techniques needed to assure proper installation.
6. Installation shall be made utilizing an anchoring system that meets all specifications of the product supplier.
7. Installation shall be made on a "blade smooth surface." In laying cable concrete, there should be no clumps in the bed area. There should be no large voids directly beneath the cable concrete mats. Minor variations in the surface are acceptable, given that no bridging or voiding is present in the finished product. Some hand adjustments of the bed may be required for removal of clumps or filling in areas that were excavated in clumps.
8. The 3/4" dia. metal rod shall be A-36 steel. Welded rebar will not be allowed.

MATERIALS

Standard Tensile Strength of Cable is 250 ksi. ASTM 416

Ties and Cable shall be stainless steel cables approved by the Engineer.

CONSTRUCTION REQUIREMENTS

Mattresses will be tied together along adjoining edges at a maximum of 4 ft. spacing. A minimum of (4) ties will be required for joining (2) - 16' lengths together and (3) ties for joining (2) 6'-8" lengths.

If a mattress is cut, the cut edge shall be tied to the adjacent mattress with the same diameter of cable as the mattress cable, and with a minimum of (2) cable clamps per cable.

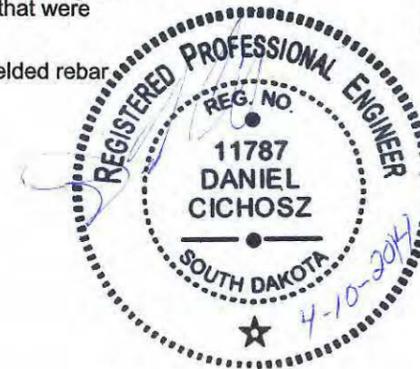
The Contractor shall maintain the mats & fabric until all work on the contract has been completed and accepted. Maintenance shall consist of the repair of areas where damaged by any cause.

BASIS OF PAYMENT

Quantities shall be paid for at the contract unit price per square yard which shall include full compensation for tools and labor, providing concrete mattresses, including fabric backing, grout / class M6 concrete, and metal rod welded to whalers, the preparation of the subgrade, the placing of the concrete mattress, and all other work incidental to finished construction in accordance with these plans.

ESTIMATED QUANTITIES		
Item	Unit	Quantity
Articulated Concrete Mattress	Sq Yd	576
Class C Riprap	Ton	59

*Grout / Class M6 Concrete Shall Be Incidental To the Articulated Concrete Mattress

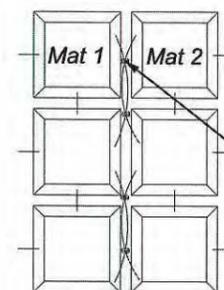


ARTICULATED CONCRETE MATTRESS DETAILS FOR

75'- 0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE

30'-0" ROADWAY OVER BRIDGER CREEK STA. 9+77.5 to 10+52.5 STR. NO. 28-053-231
 SEC. 23/26 - T2N-R20E 0 SKEW BRF 6253(02) HL-93

HAAKON COUNTY S.D. DEPT OF TRANSPORTATION APRIL 2014



Note how cable of opposite mat is pulled to and clamped as close to the nearest mat to eliminate slack between two mats.

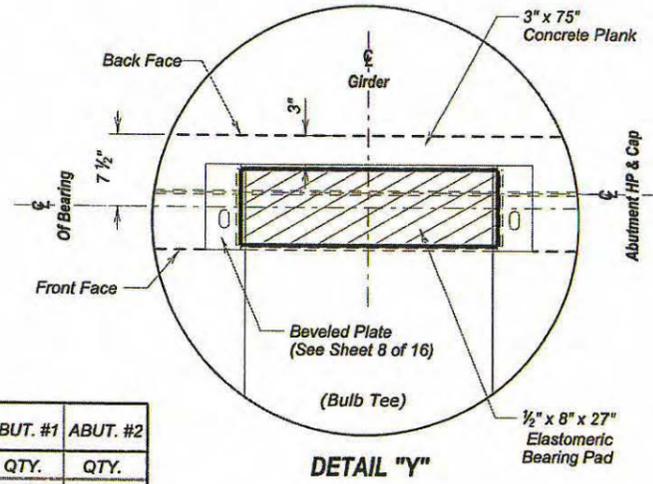
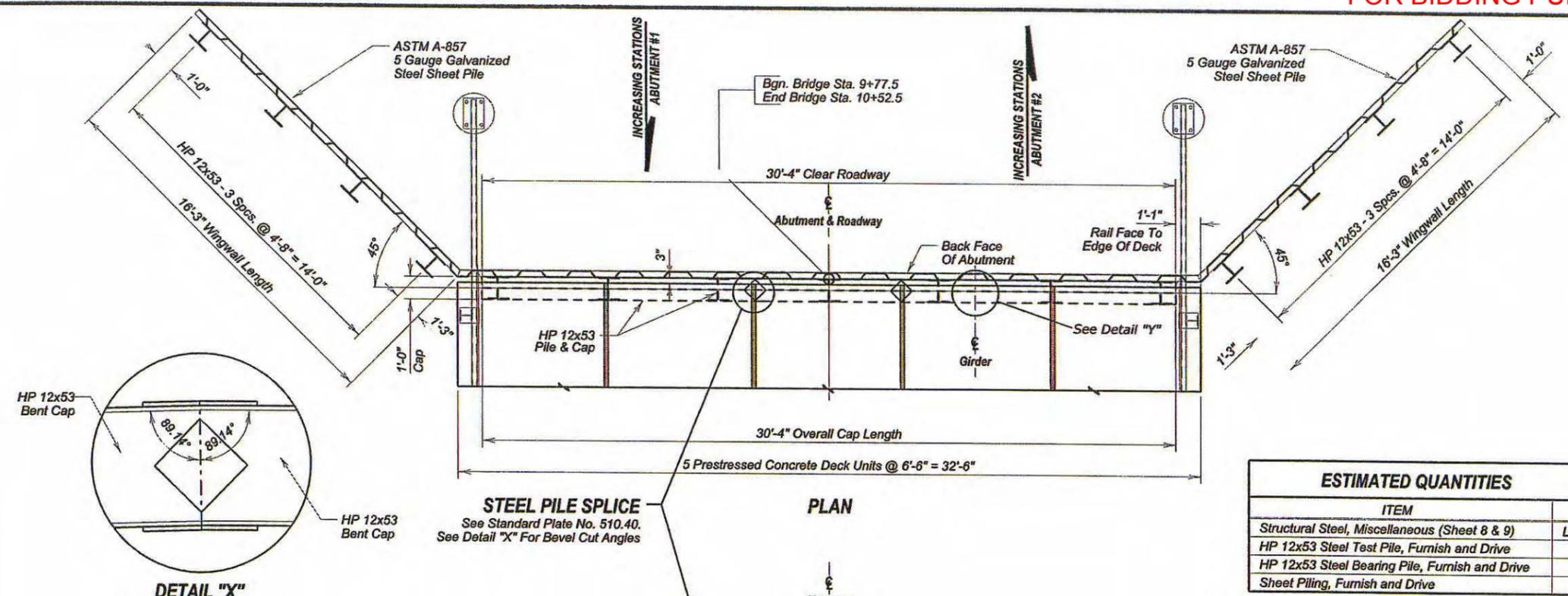
Clamping Detail

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED
BE#:S12-P600			

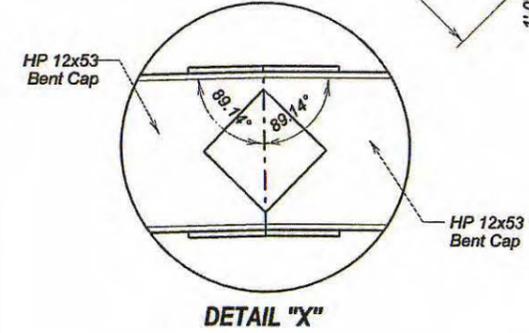
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT P 6253(02)	SHEET NO. 31	TOTAL SHEETS 53
-----------------------	--------------------	--------------	-----------------

Plotting Date: 04/09/14
 Revised Date: mm/dd/yy
 Initials: CVS



ESTIMATED QUANTITIES		ABUT. #1	ABUT. #2
ITEM	UNIT	QTY.	QTY.
Structural Steel, Miscellaneous (Sheet 8 & 9)	Lump Sum	L.S.	L.S.
HP 12x53 Steel Test Pile, Furnish and Drive	FL	50	50
HP 12x53 Steel Bearing Pile, Furnish and Drive	FL	630	630
Sheet Piling, Furnish and Drive	Sq.Ft.	725.5	725.5



STEEL PILE SPLICE
 See Standard Plate No. 510.40.
 See Detail "X" For Bevel Cut Angles

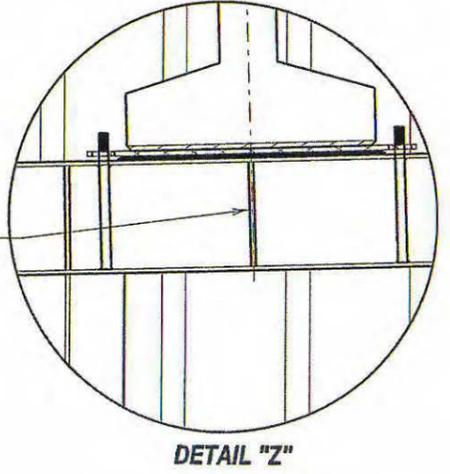
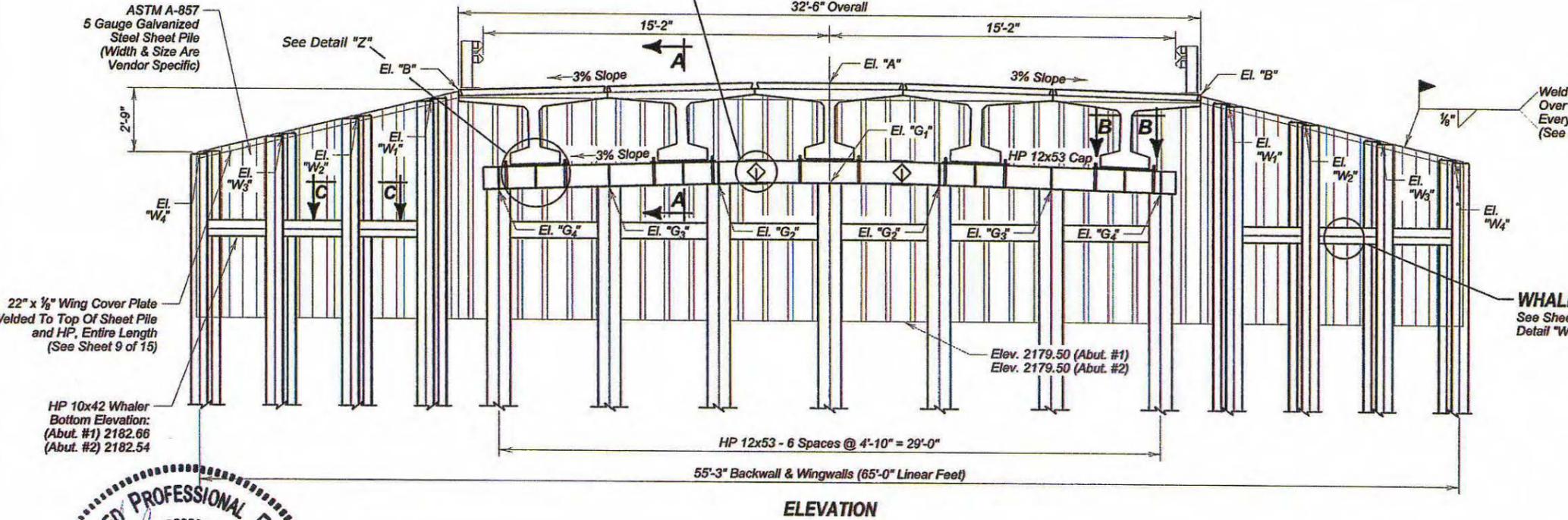


TABLE OF ELEVATIONS										
ABUTMENT	EL. "A"	EL. "B"	EL. "G ₁ "	EL. "G ₂ "	EL. "G ₃ "	EL. "G ₄ "	EL. "W ₁ "	EL. "W ₂ "	EL. "W ₃ "	EL. "W ₄ "
NO. 1	2191.67	2191.28	2187.19	2187.14	2187.00	2186.85	2190.54	2189.73	2188.92	2188.11
NO. 2	2191.55	2191.16	2187.07	2187.02	2186.88	2186.73	2190.42	2189.61	2188.80	2187.99

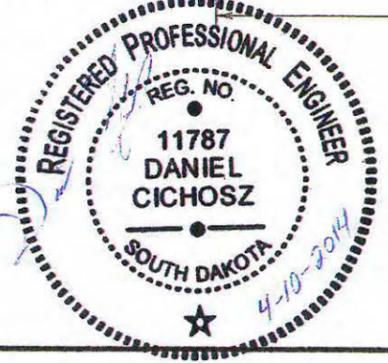
NOTE:
 Elevations "A" AND "B" are top of slab at centerline of abutment.
 Elevations "G₁", "G₂", "G₃", AND "G₄" are top of HP 12x53 at center of pile of abutment.
 Elevations "W₁", "W₂", "W₃", AND "W₄" are top of HP 12x53 at center of pile of abutment wingwall.

Note:
 This sheet is to be used in conjunction with Sheet No's. 8 and 9 of 15.

ABUTMENTS NO. 1 & NO. 2 LAYOUT FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE
 STA. 9+77.5 TO 10+52.5
 OVER BRIDGER CREEK
 STR. NO. 28-053-231
 0° SKEW
 SEC. 23 / 26 - T2N - R20E
 P 6253(02)
 HL-93

HAakon COUNTY
 S.D. DEPT. OF TRANSPORTATION
 APRIL 2014

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY PK	APPROVED BY
-------------------	-----------------	------------------	-------------



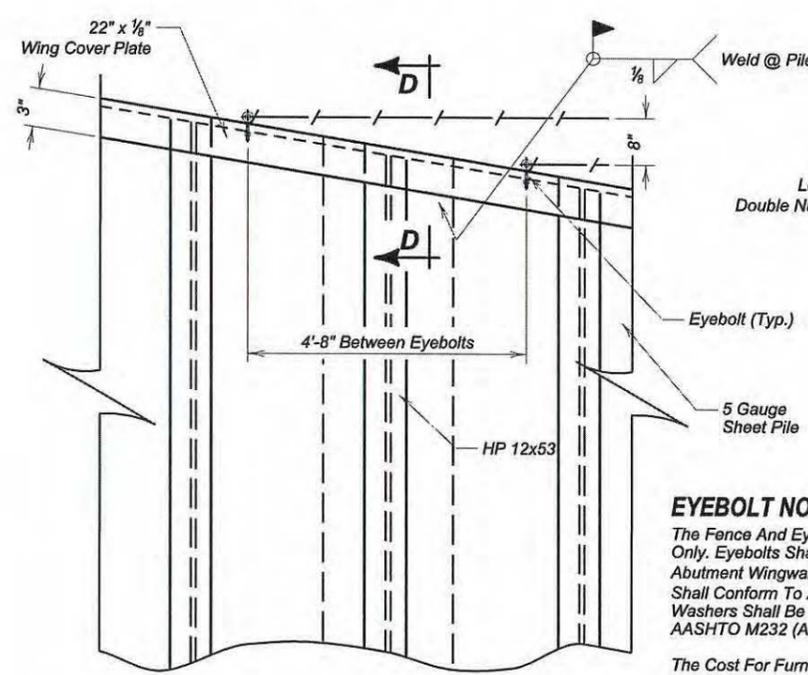
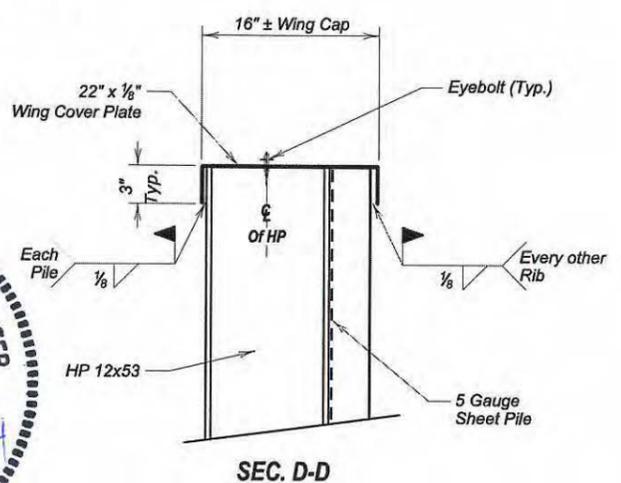
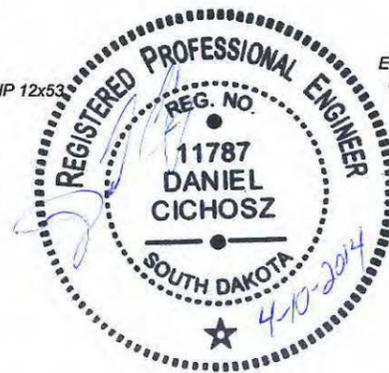
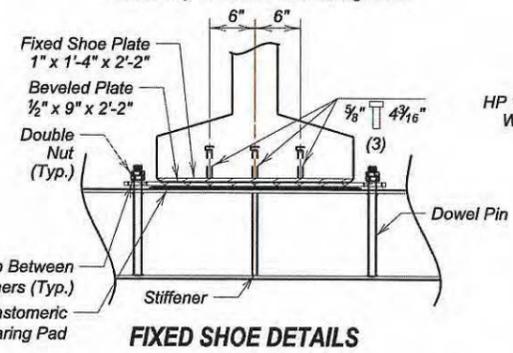
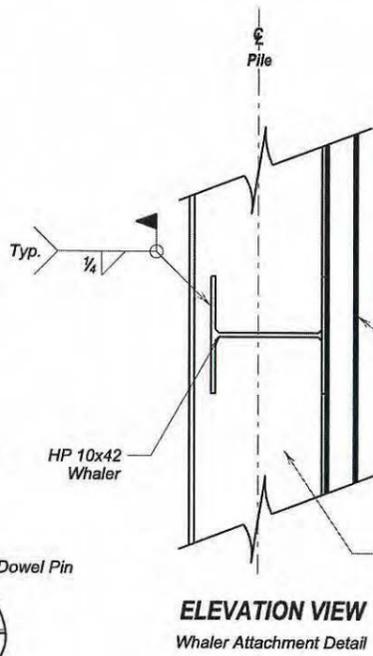
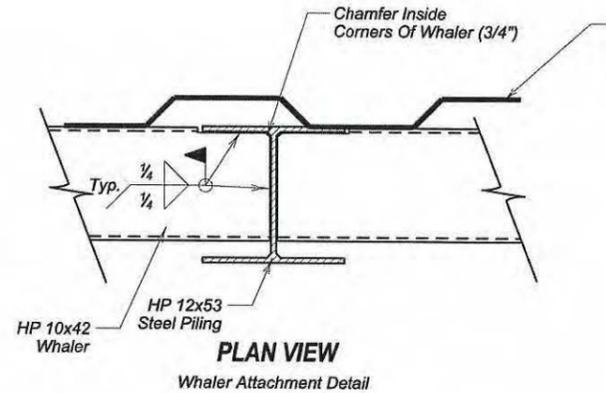
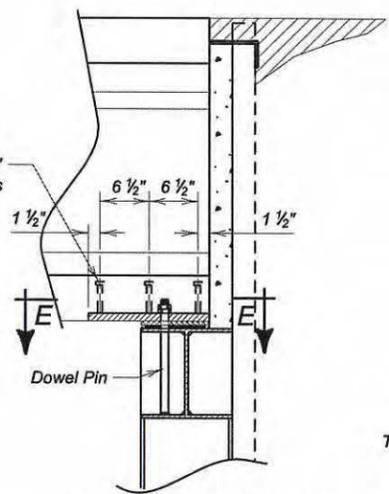
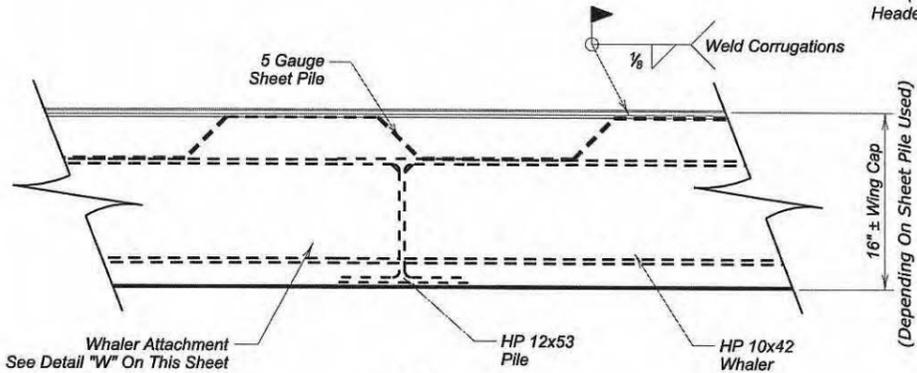
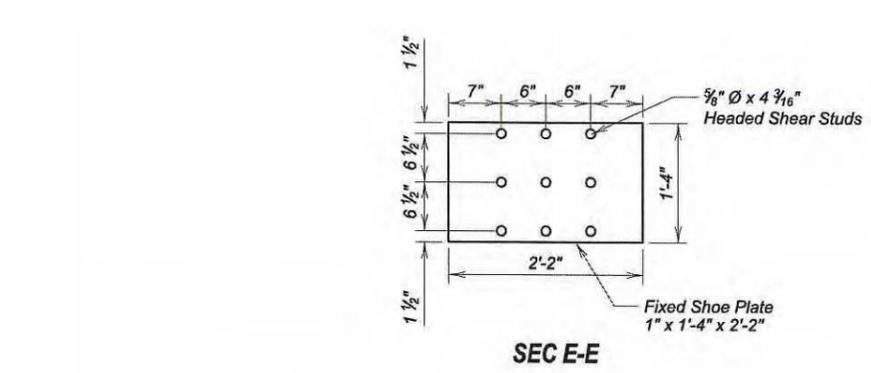
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	33	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			

STRUCTURAL STEEL, MISCELLANEOUS (For Informational Purposes Only)				
ITEM	UNIT	QTY.	ABUT. #1	ABUT. #2
(2) 12'-6" & (1) 6'-6" HP 12x53 Pile Cap	Ft.	31.5	31.5	
10 7/8" x 5 13/16" x 3/8" Stiffener Plate	Each	22	22	
Wing Cap Plate 22" x 1/8"	Ft.	32.5	32.5	
7" x 4" x 3/8" Angle	Ft.	32	32	
10x42 HP Whaler	Ft.	57	57	
Structural Steel	LB.	4951	4951	
Eye Bolts	Each	8	8	

NOTE:
Structural Steel Misc. consists of 22" x 1/8" Bent Plate for wing walls, HP 12x53 Pile Cap, HP 10x42 Whalers, Stiffener Plates and 7" x 4" x 3/8" Angle Iron.

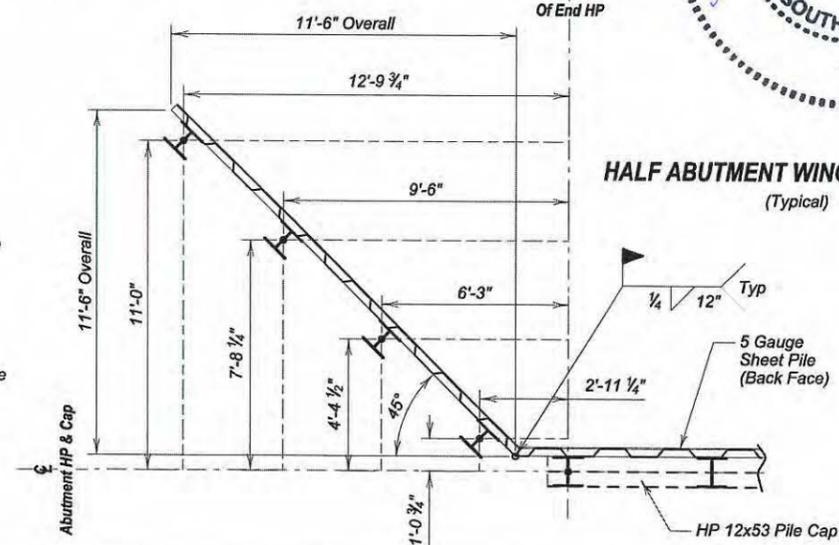
The 1" x 1'-4" x 2'-2" Fixed shoe plate shall be incidental to the unit bid price of "6'-6" Wide Deck Prestressed Concrete Bulb Tee".

Note:
This sheet is to be used in conjunction with Sheet No's. 7 and 8 of 15.



EYEBOLT NOTE:
The Fence And Eyebolts Shown For Illustrative Purpose Only. Eyebolts Shall Be Placed On All Of The Bridge Abutment Wingwalls. Eyebolts Shall Be 3/8" Dia. And Shall Conform To ASTM A307. Eyebolts, Nuts And Washers Shall Be Galvanized In Accordance With AASHTO M232 (ASTM A153).

The Cost For Furnishing And Installing Eyebolts Shall Be Incidental To The Contract Unit Price, Lump Sum For "Structural Steel, Miscellaneous".



ABUTMENT DETAILS: CONTINUED FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE
STA. 9+77.5 TO 10+52.5
OVER BRIDGER CREEK
STR. NO. 28-053-231
0° SKEW
SEC. 23 / 26 - T2N - R20E
P 6253(02)
HL-93

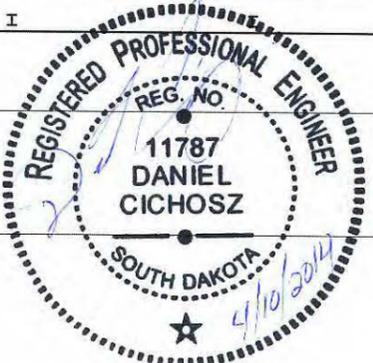
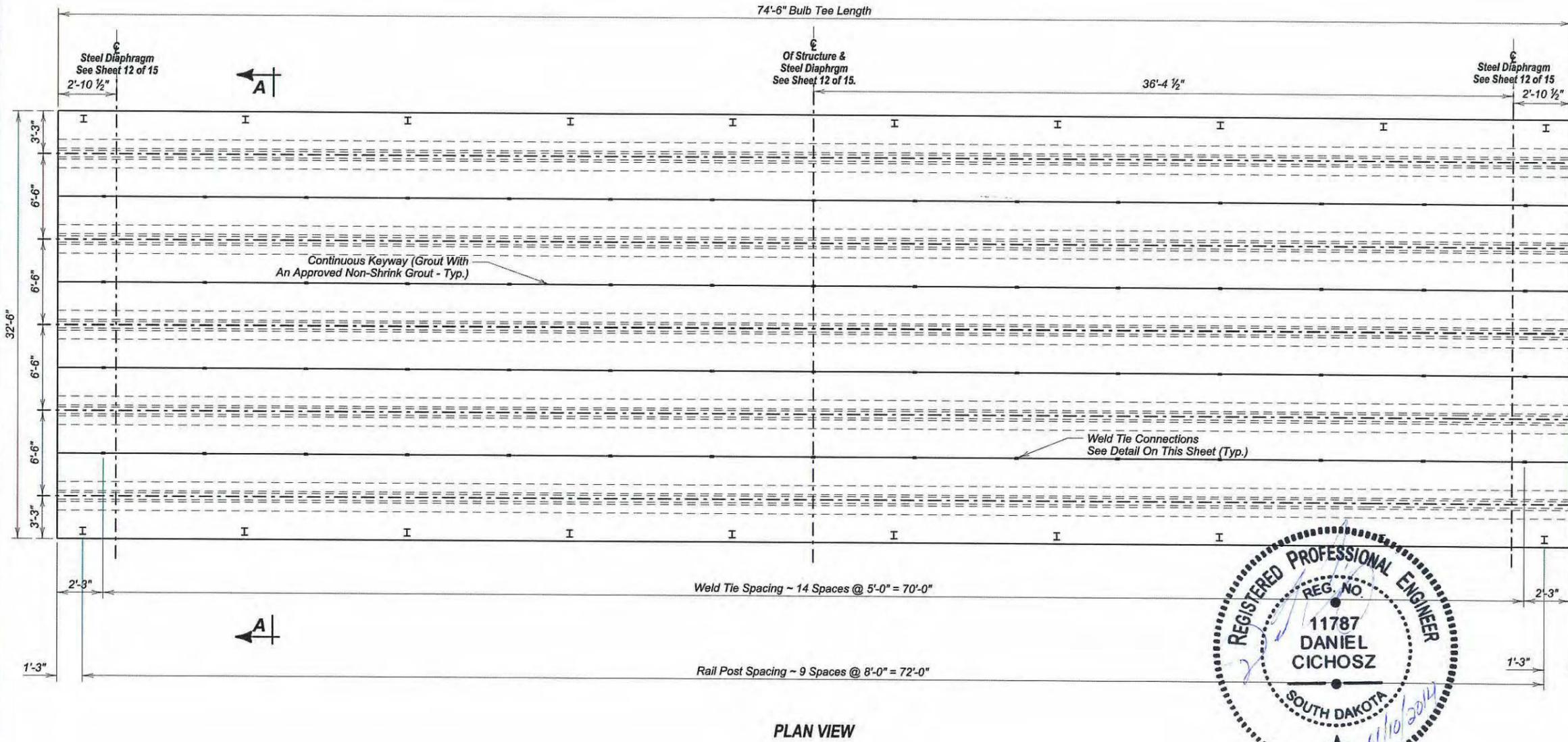
HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY PK	APPROVED BY
BEI#:S12-P600			

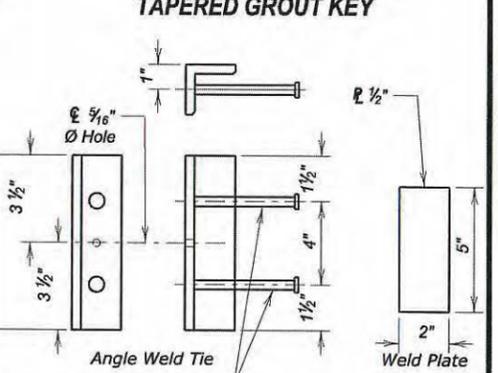
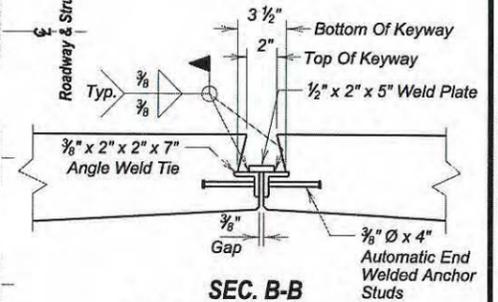
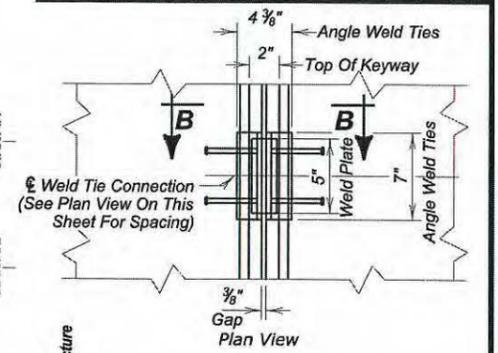
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	34	53

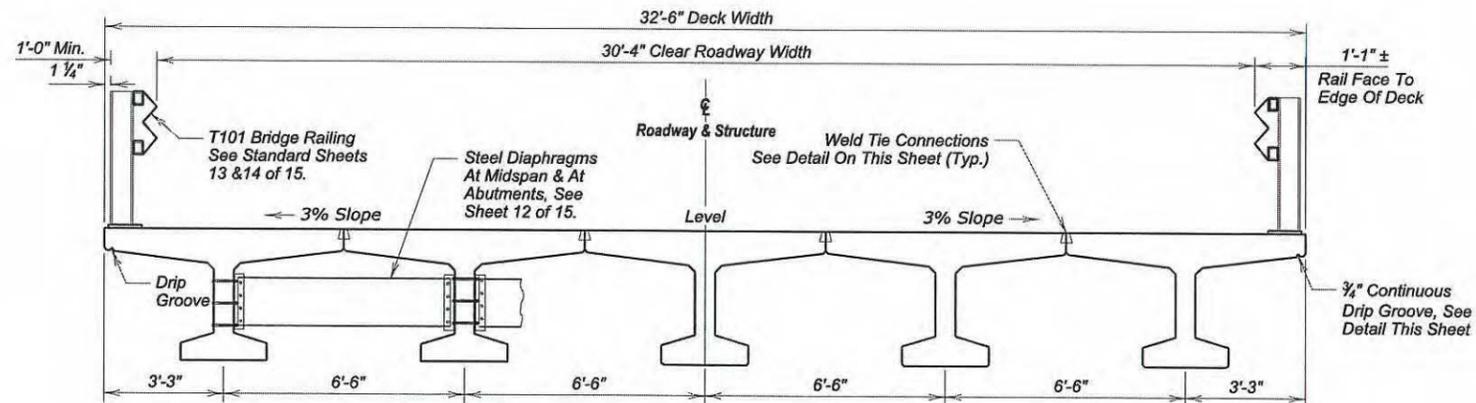
Plotting Date: 04/09/14
 Revised Date: mm/dd/yy
 Initials: CVS



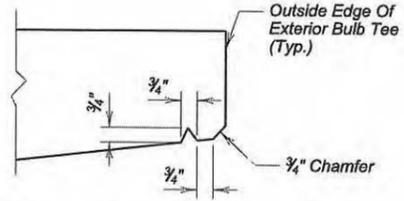
Note: The Weld Tie Connections are to be coated with an approved Galvanizing Compound such as "Galvastick" after welding.



WELD TIE CONNECTION DETAILS



SEC. A-A



DRIP GROOVE DETAIL

SUPERSTRUCTURE DETAILS FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE

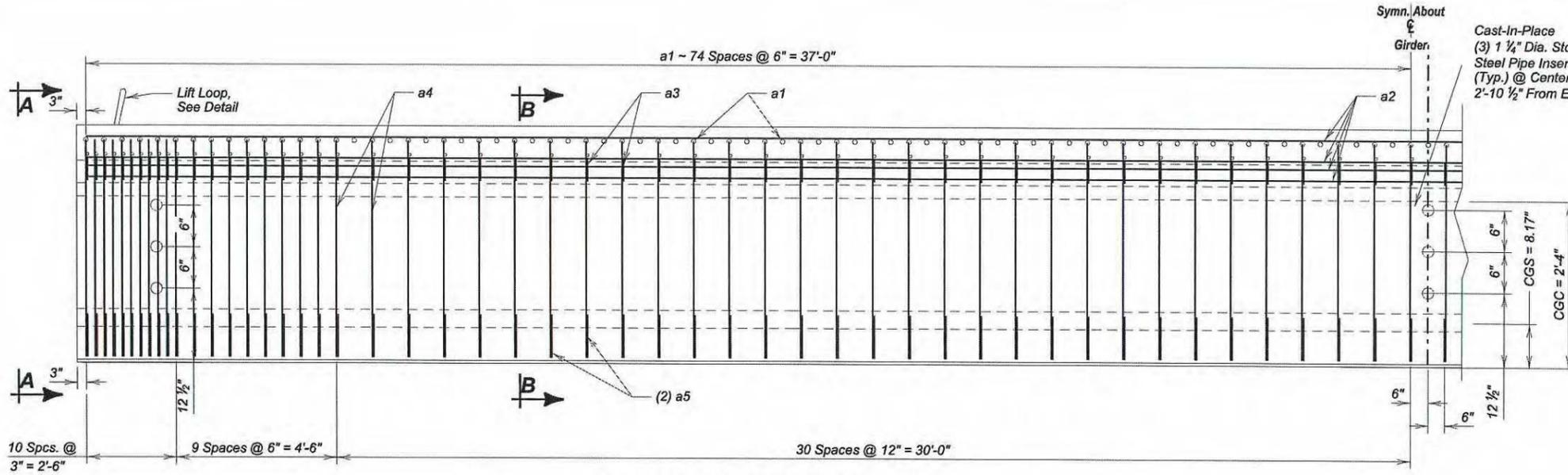
STA. 9+77.5 TO 10+52.5
 OVER BRIDGER CREEK
 STR. NO. 28-053-231

0° SKEW
 SEC. 23 / 26 - T2N - R20E
 P 6253(02)
 HL-93

HAAKON COUNTY
 S.D. DEPT. OF TRANSPORTATION
 APRIL 2014

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P600			

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	35	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			



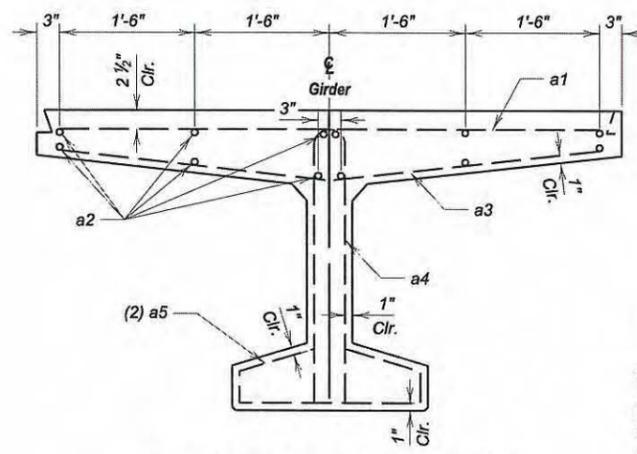
REINFORCING SCHEDULE (For One Girder)				
Mk.	No.	Size	Length	Type
a1	151	5	6'-0"	Str.
a2	24	5	38'-6"	Str.
a3	100	4	6'-0"	E3
a4	100	4	6'-6"	S11
a5	200	4	3'-3"	S3

Bending Details

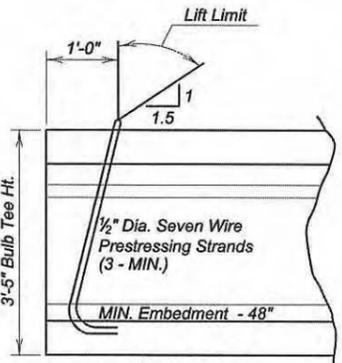
NOTE: Place reinforcement at each Rail Post location as indicated on sheet 13 of 15.

Type S3 Type S11

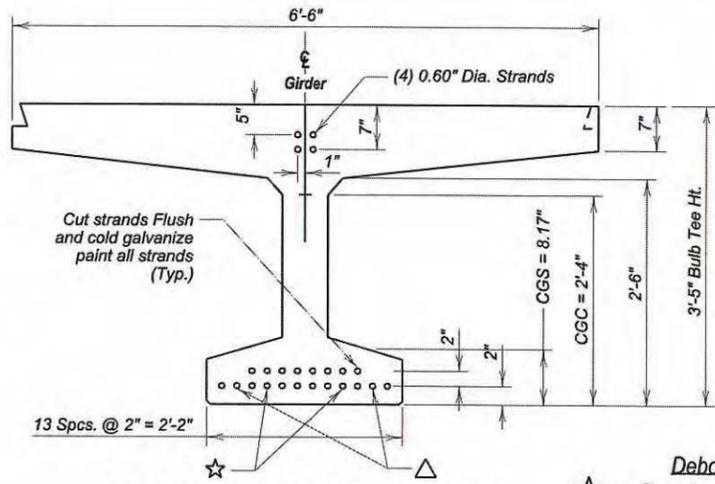
REINFORCEMENT ELEVATION
(Vertical Exaggeration X2)



REINFORCEMENT DETAIL (VIEW A-A)



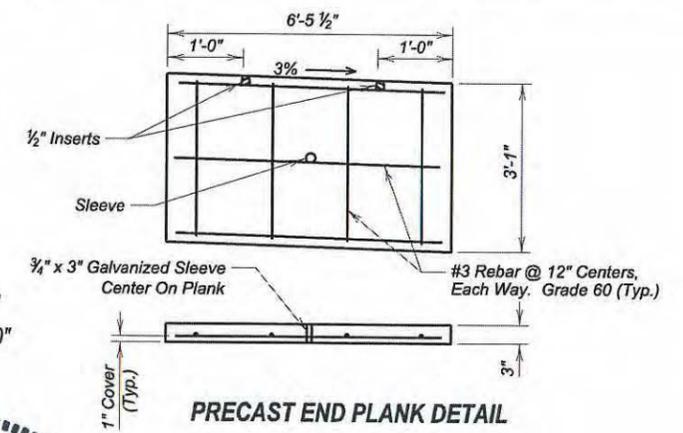
LIFT LOOP DETAIL



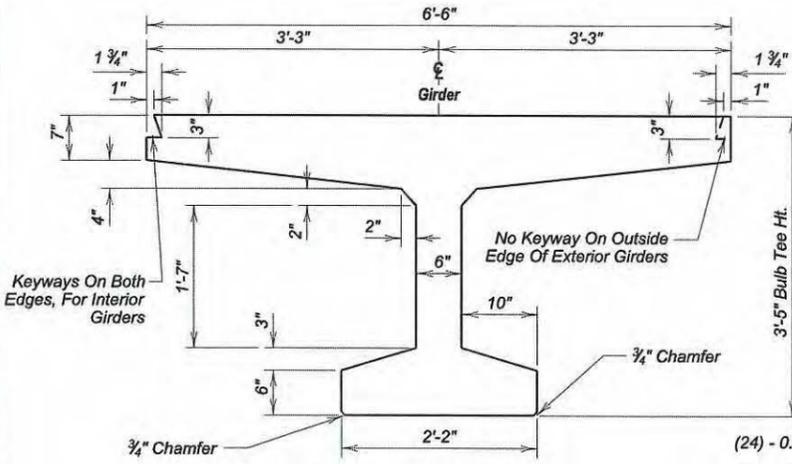
STRAND PATTERN AT END (VIEW A-A)
(24) 0.60" Low Relaxation Strands: C.G. = 8.17"

☆ = Denotes strand to be debond 5'-0"
△ = Denotes strand to be debond 10'-0"

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
6'-6" Wide Deck Prestressed Conc. Bulb Tee	Ft.	372.5
Precast Concrete Plank, Furnish	Sq.Ft.	200
Precast Concrete Plank, Install	Sq.Ft.	200



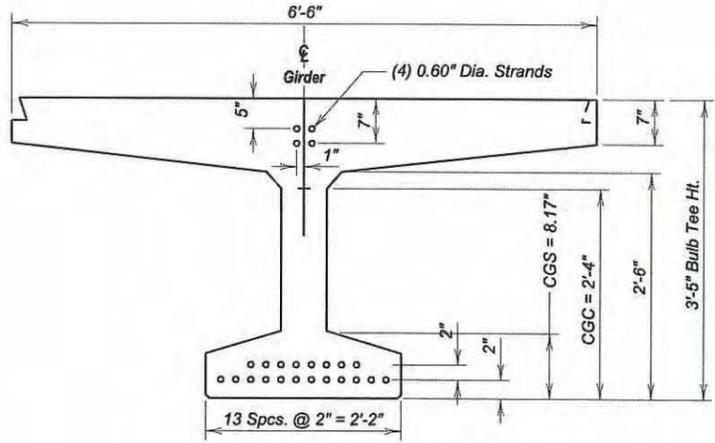
PRECAST END PLANK DETAIL



SECTION DIMENSIONS

74'-6" GIRDER
(24) - 0.60" Dia. Type 270k Low Lax Strands

CGS = Center of Gravity of Prestressing Steel
CGC = Center of Gravity of Concrete



STRAND PATTERN AT C (SECTION B-B)
(24) 0.60" Low Relaxation Strands: C.G. = 8.17"

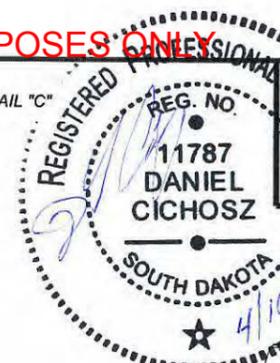


DECK UNIT DETAILS FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE
STA. 9+77.5 TO 10+52.5
OVER BRIDGER CREEK
STR. NO. 28-053-231
0° SKEW
SEC. 23 / 26 - T2N - R20E
P 6253(02)
HL-93

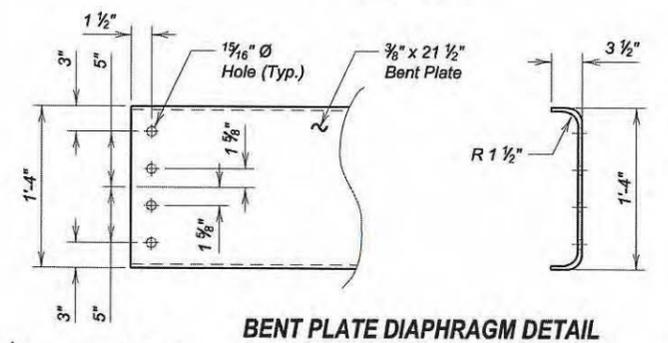
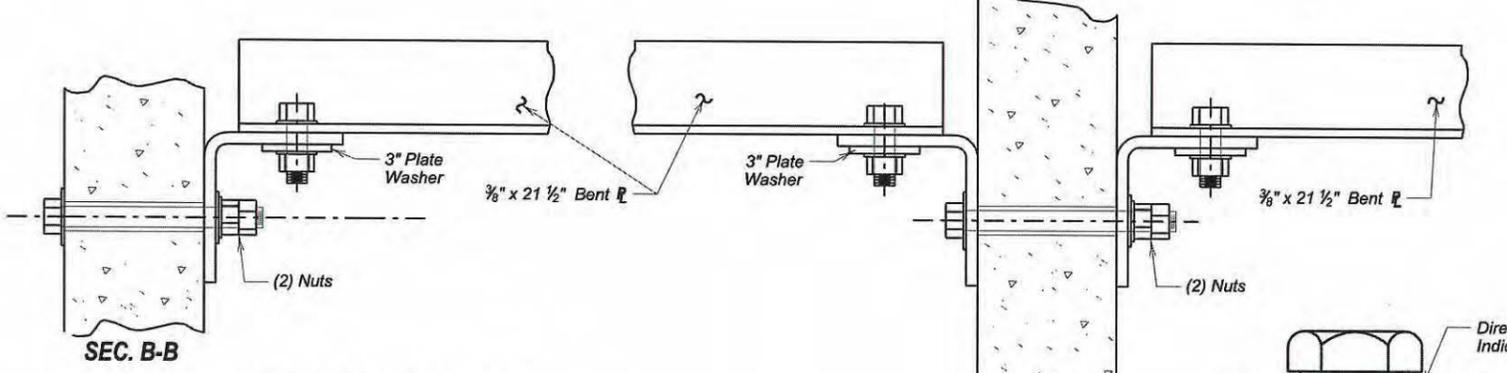
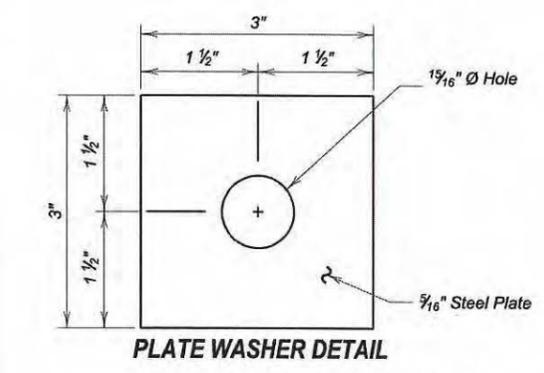
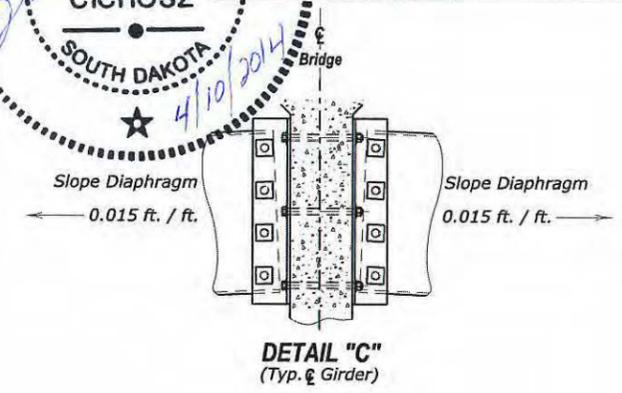
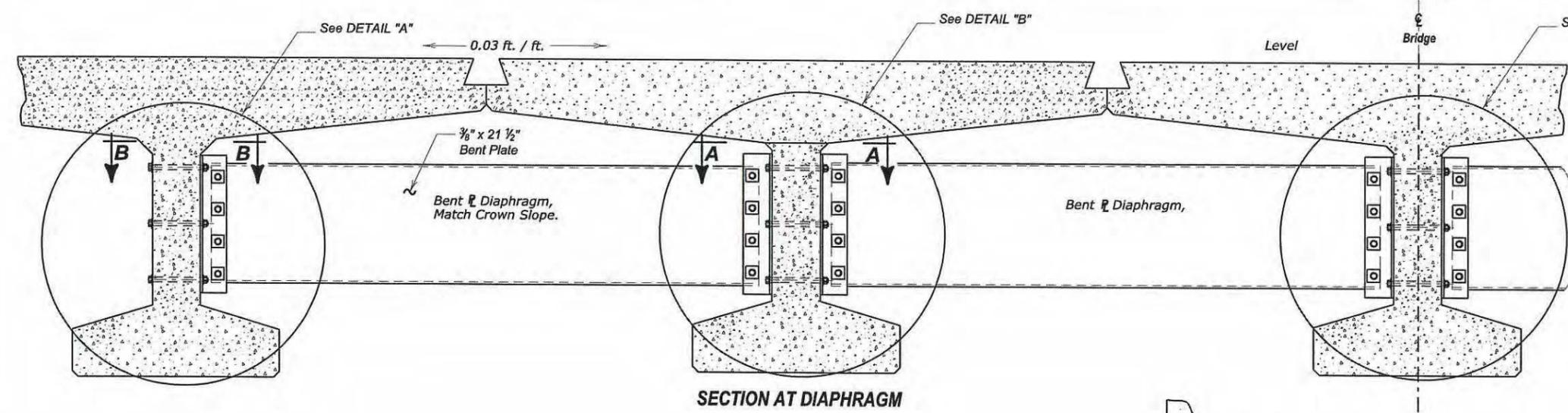
HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P600			

FOR BIDDING PURPOSES ONLY



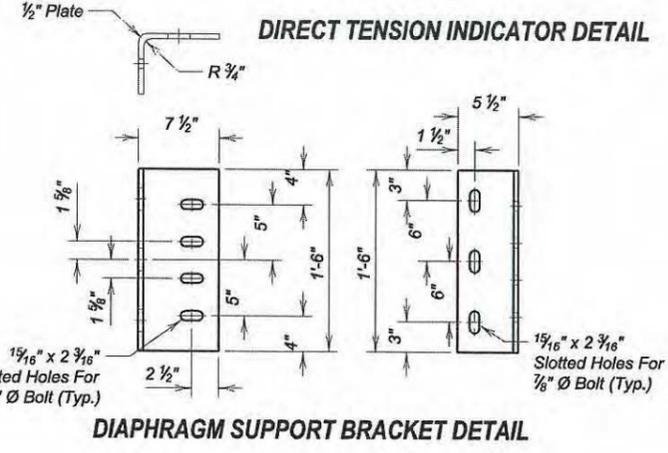
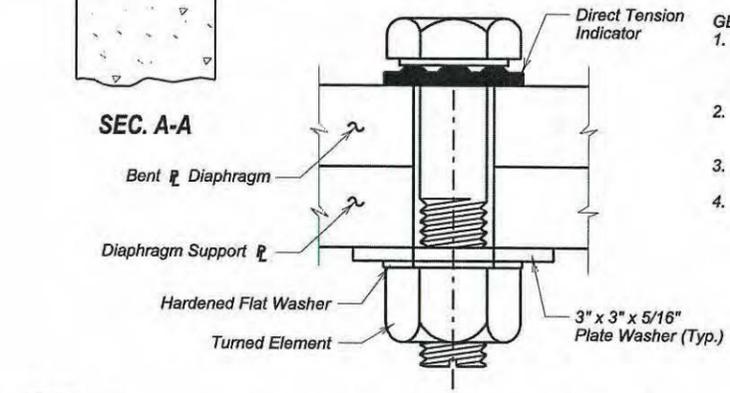
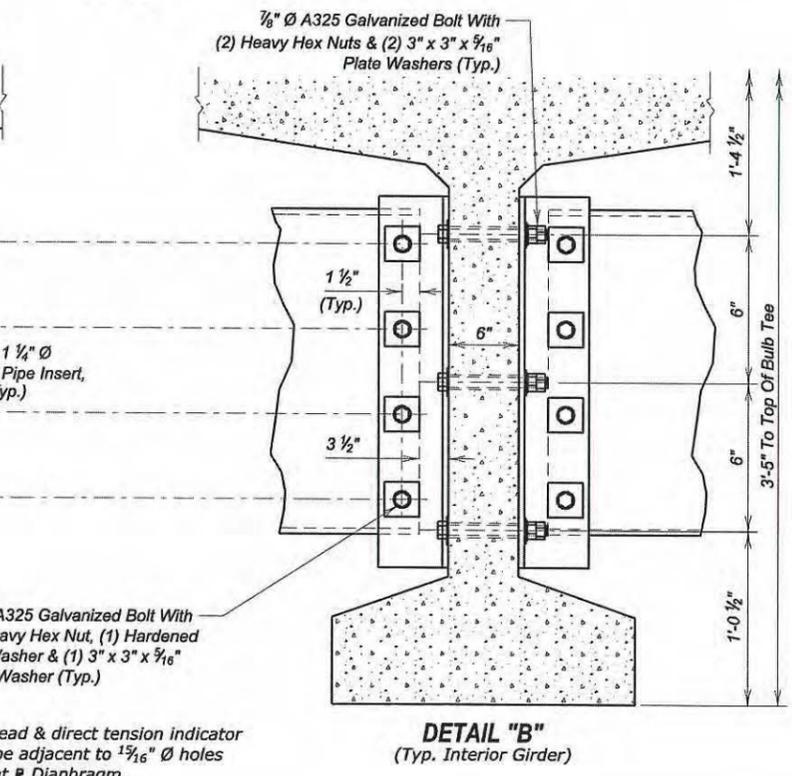
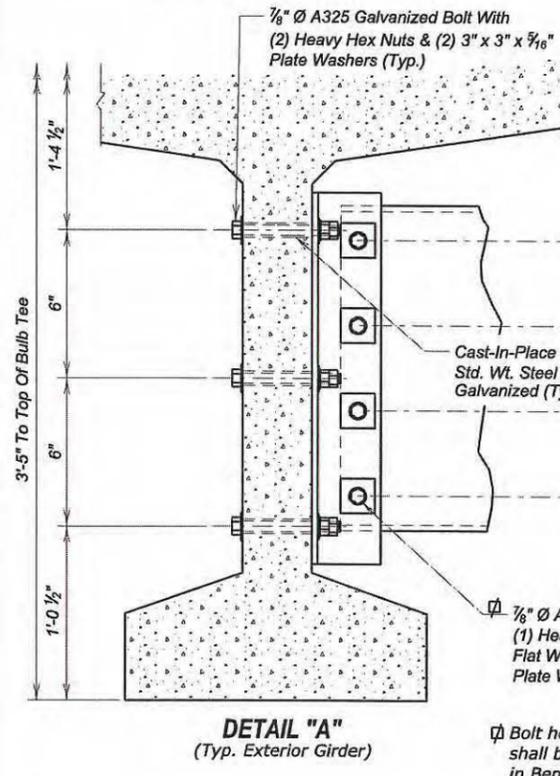
STATE OF SOUTH DAKOTA	PROJECT P 6253(02)	SHEET NO. 36	TOTAL SHEETS 53
REG. NO. 11787 DANIEL CICHOSZ		Plotting Date: 04/09/14	0° SKEW
SOUTH DAKOTA		Revised Date: mm/dd/yy	OVER BRIDGER CREEK
		Initials: CVS	STR. NO. 28-053-231
			P 6253(02)
			HL-93



- GENERAL NOTE -**
- 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.
 - The steel diaphragms between adjacent girders shall be installed as soon as possible and in conjunction with girder erection.
 - All nuts shall be tightened per the standard specifications.
 - All costs associated with furnishing, fabricating, assembly and installation of diaphragms shall be included in the contract lump sum price for "Structural Steel, Misc."

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Steel, Miscellaneous	L.S.	Lump Sum

For Informational Purposes Only, the estimated weight of Structural Steel is: 2465 lbs.



STEEL DIAPHRAGM DETAILS FOR 75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE

STA. 9+77.5 TO 10+52.5
OVER BRIDGER CREEK
STR. NO. 28-053-231

SEC. 23 / 26 - T2N - R20E
P 6253(02)
HL-93

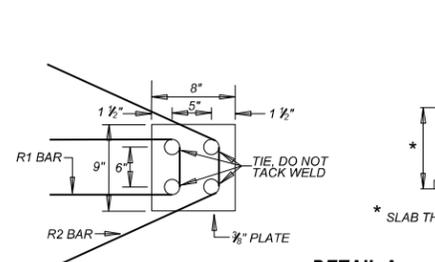
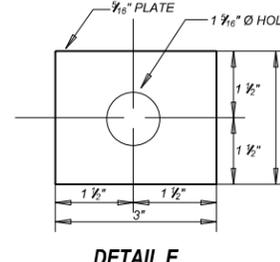
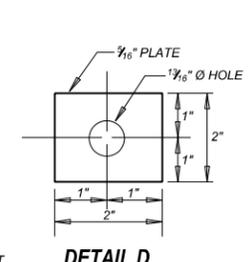
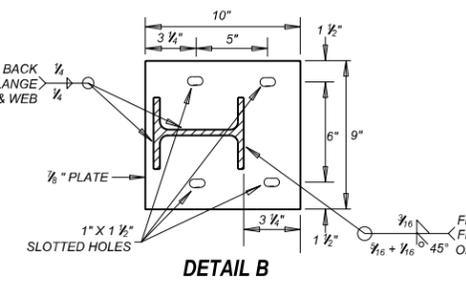
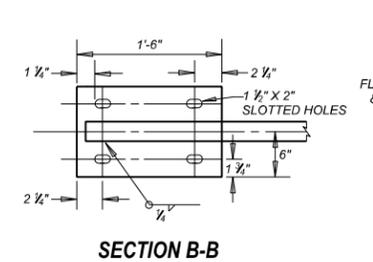
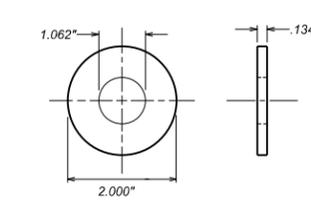
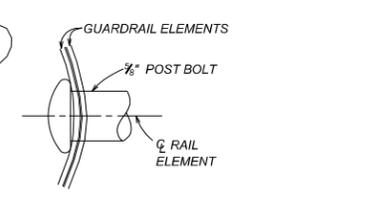
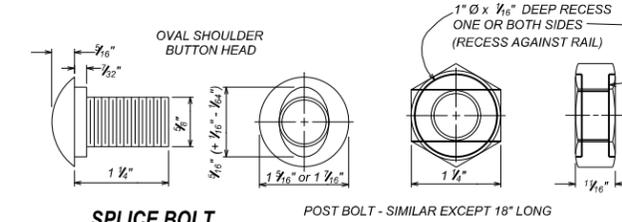
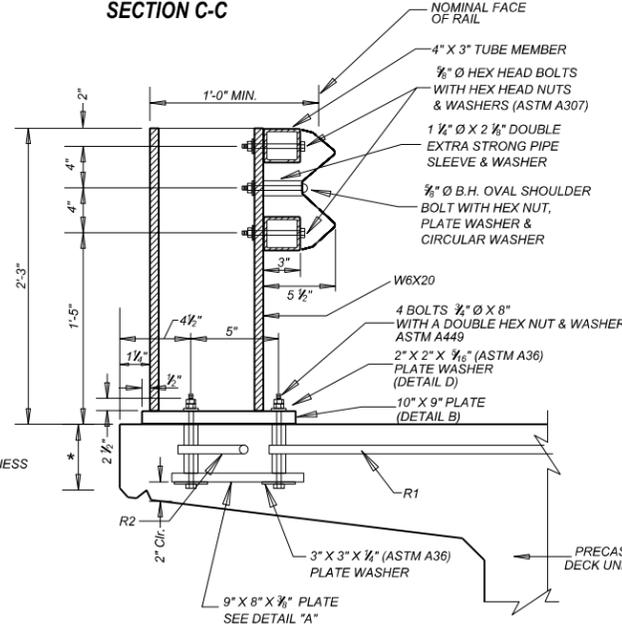
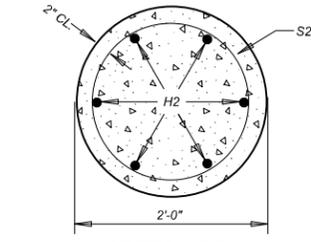
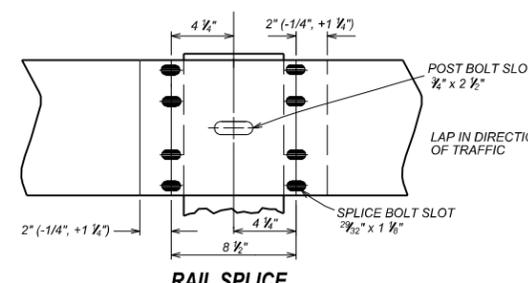
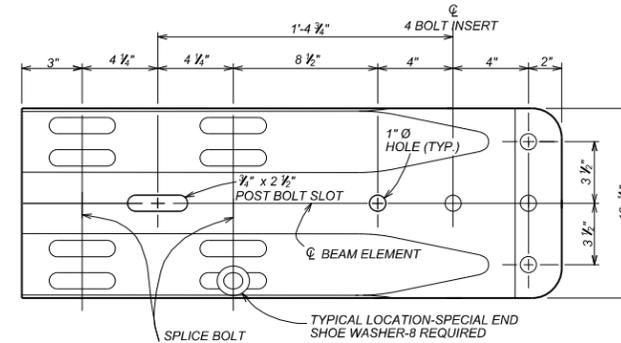
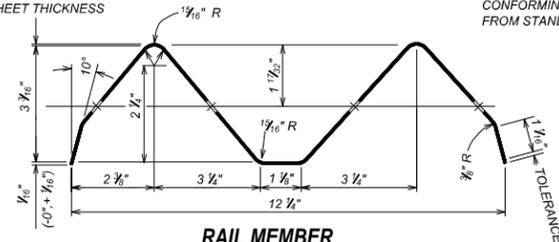
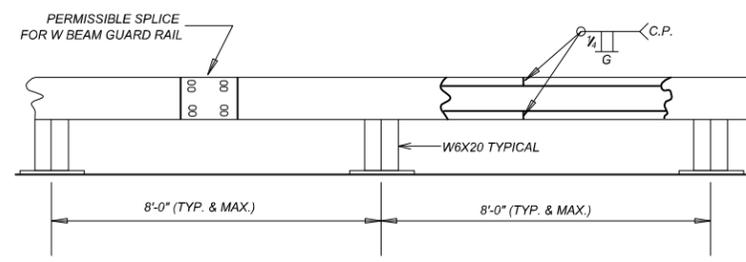
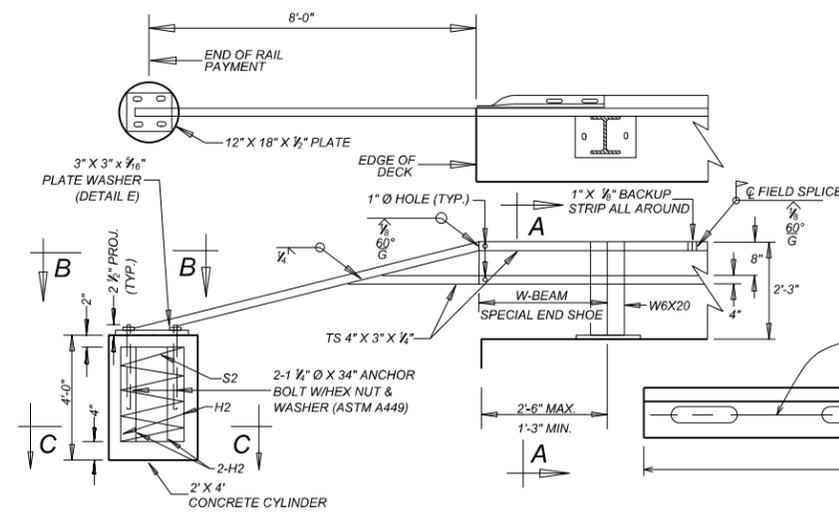
HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

DESIGNED BY DC BEI#:S12-P600	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
------------------------------------	-----------------	------------------	-------------

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	37	53
Plotting Date: 04/09/14 Revised Date: 02/18/15 Initials: CVS			

GENERAL NOTES:

- RAIL DESIGN SHALL BE ACCORDING TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (CURRENT) EDITION AND INTERIM SPECIFICATIONS.
- RAIL POSTS SHALL BE PERPENDICULAR TO CENTERLINE OF ROADWAY.
- 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 3/8" DIAMETER A325 OR A449. EACH BOLT SHALL HAVE ONE HARDENED AND ONE 2" X 2" X 3/16" 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" TUBE MEMBERS, BASE PLATES AND PROJECTING PORTIONS OF THE ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE SATISFACTORILY PAINTED IN ACCORDANCE WITH SECTION 411 OF THE SD STANDARD SPECIFICATIONS. THE COLOR OF THE FINISHED COAT SHALL BE AN APPROVED GREEN, FEDERAL STANDARD NO. 24108. THE NUTS, BOLTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. THE RAIL POSTS AND TUBE MEMBERS MAY BE GALVANIZED IN ACCORDANCE WITH ASTM A123 IN SUBSTITUTION FOR PAINTING. IF GALVANIZING IS SELECTED, NO PAINT WILL BE APPLIED OVER GALVANIZED SURFACES.
- 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 1/2" DRAIN HOLES IN THE TUBES NEAR ENDS OF RAIL AND NEAR SPLICES.
- ALL CONCRETE SHALL BE CLASS M6 AS SPECIFIED IN SECTION 462 OF THE SOUTH DAKOTA STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR 60.
- ALL BOLTS, NUTS, WASHERS, POSTS, PLATES, PIPE SLEEVES, STEEL W BEAM GUARD RAIL, WELDING, PAINTING, AND ALL COSTS OF INSTALLING FOUR RAIL ANCHORS INCLUDING CONCRETE, EXCAVATION, FORMING, REINFORCING STEEL, AND ANCHOR BOLTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER FOOT FOR TYPE T101 BRIDGE RAILING.
- MEASUREMENT FOR PAYMENT SHALL BE FROM CENTER OF ANCHOR TO CENTER OF ANCHOR FOR EACH SIDE OF THE BRIDGE.



REINFORCING SCHEDULE				
MK.	NO.	SIZE	LENGTH	TYPE
S2	4	3	51'-7"	SPIRAL
H2	24	5	3'-6"	STR.
R1	20	4	3'-9"	17
R2	20	4	4'-9"	17A

NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS. SPIRAL - 6" PITCH AND 1 1/2 TURNS AT EACH END. USE 1 1/2 TURNS FOR LAP SPLICES AS REQUIRED.

USE 2 VERTICAL SPACE BARS.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
TYPE T101 BRIDGE RAILING: 75'-0" BULB TEE	FL.	182

TYPE T101 BRIDGE RAILING DETAILS FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE
STA. 9+77.5 TO 10+52.5 & 16+34.0 TO 16+74.0 0° SKEW
OVER BRIDGER CREEK/TRIBUTARY SEC. 23 / 26 - T2N - R20E
STR. NO. 28-053-231 P 6253(02)
HL-93

HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014 13 of 15

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P600			

FOR BIDDING PURPOSES ONLY

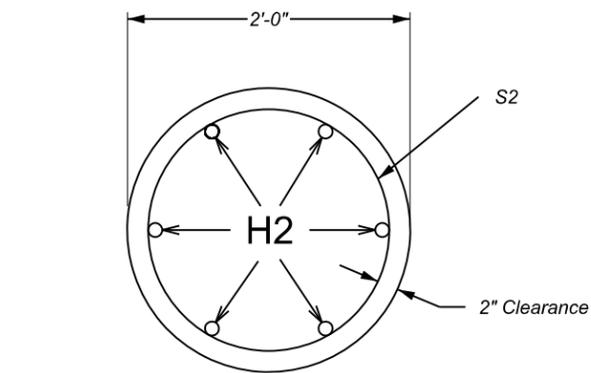
Optional Precast Concrete Cylinder Footing For T101 Railing

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	38	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			

REINFORCING SCHEDULE					
MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAIL
S2	4	3	51'-7"	SPIRAL	
H2	24	5	3'-6"	STR.	

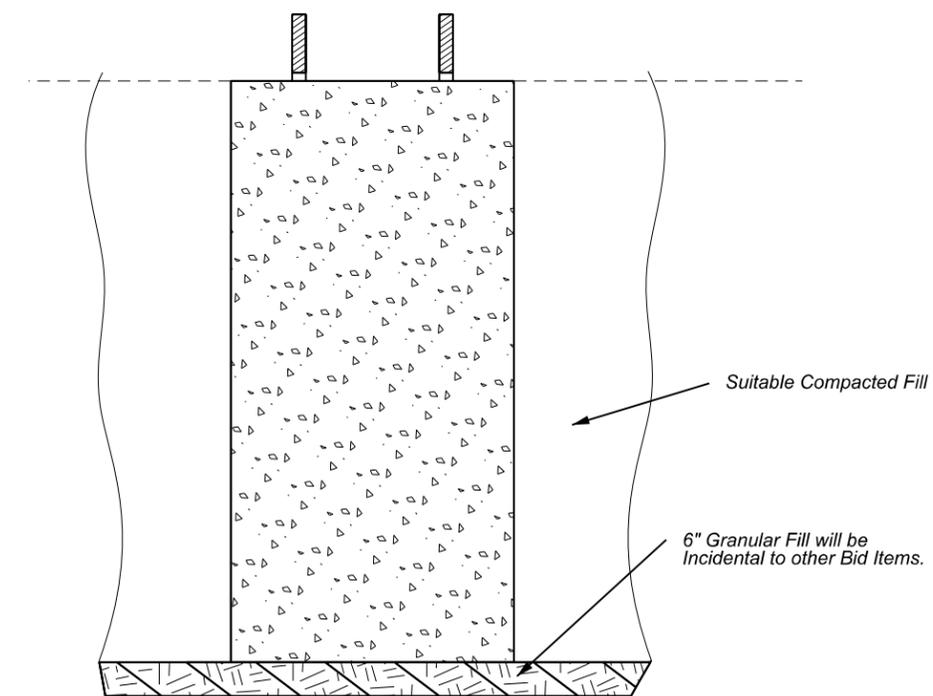
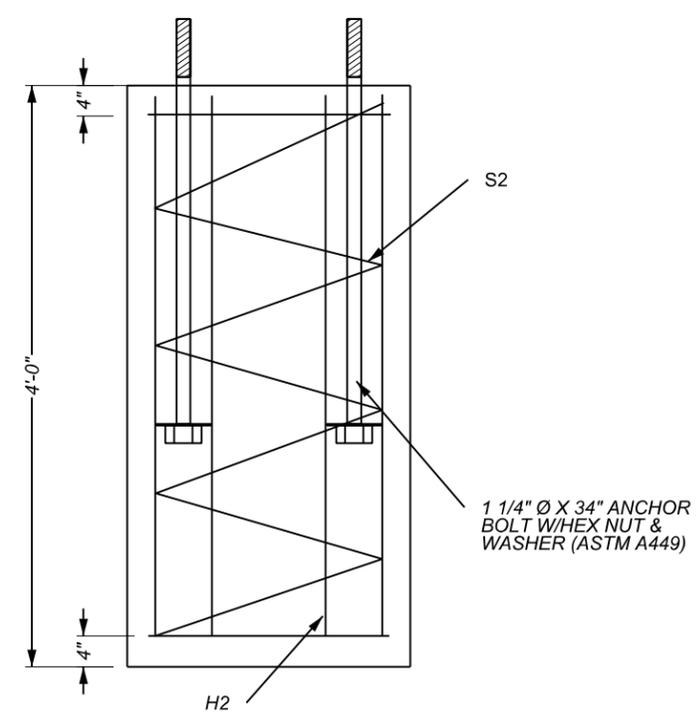
NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS. SPIRAL - 6" PITCH AND 1 1/2 TURNS AT EACH END. USE 1 1/2 TURNS FOR LAP SPLICES AS REQUIRED.

USE 2 VERTICAL SPACER BARS.



ALL CONCRETE SHALL BE CLASS M6 AS SPECIFIED IN SECTION 462 OF THE SOUTH DAKOTA STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR 60.



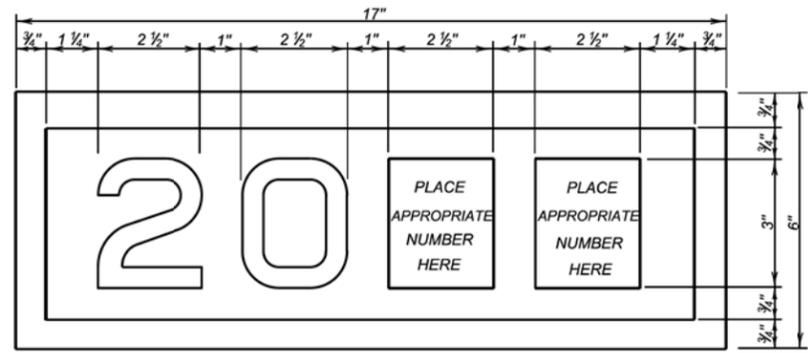
Type 101 Bridge Railing Details
FOR
75'-0" SINGLE SPAN PRESTRESSED CONCRETE BULB TEE BRIDGE

STA. 9+77.5 TO 10+52.5
OVER BRIDGER CREEK
STR. NO. 28-053-231

0° SKEW
SEC. 23 / 26 - T2N - R20E
P 6253(02)
HL-93

HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

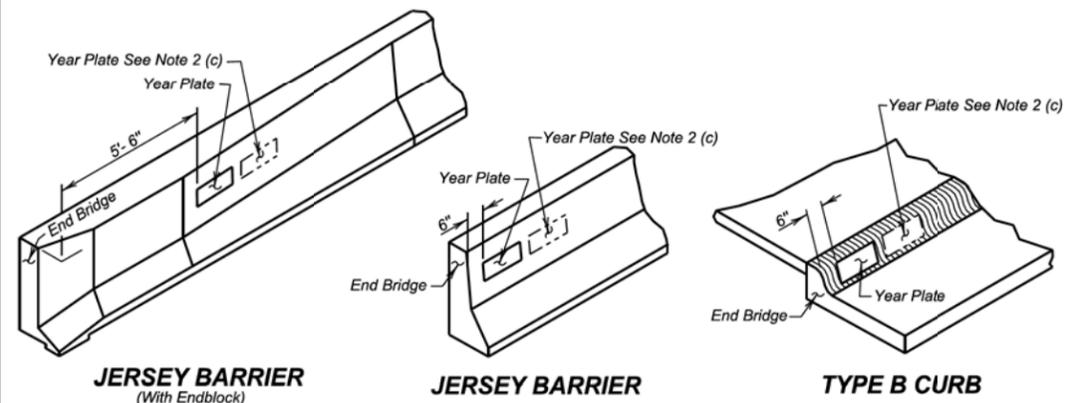
DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P600			



YEAR PLATE DETAILS

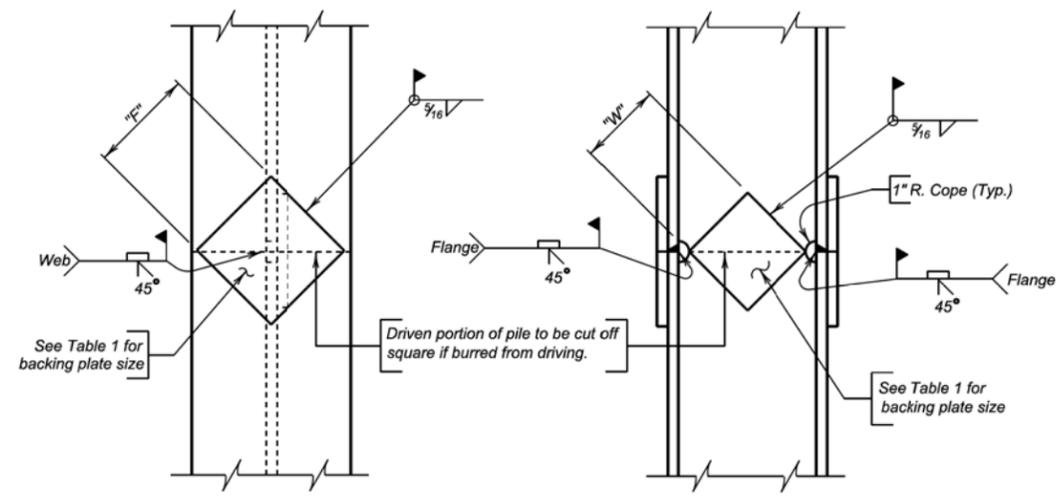
GENERAL NOTES:

- 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.



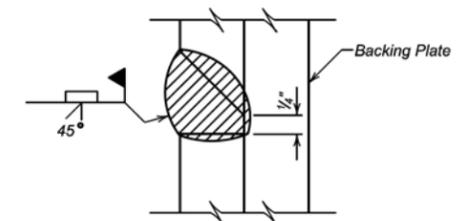
Published Date: 4th Qtr. 2014	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1

June 26, 2012



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

COMPLETE JOINT PENETRATION WELD DETAIL



GENERAL NOTES:

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

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

Published Date: 4th Qtr. 2014	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1

December 23, 2012

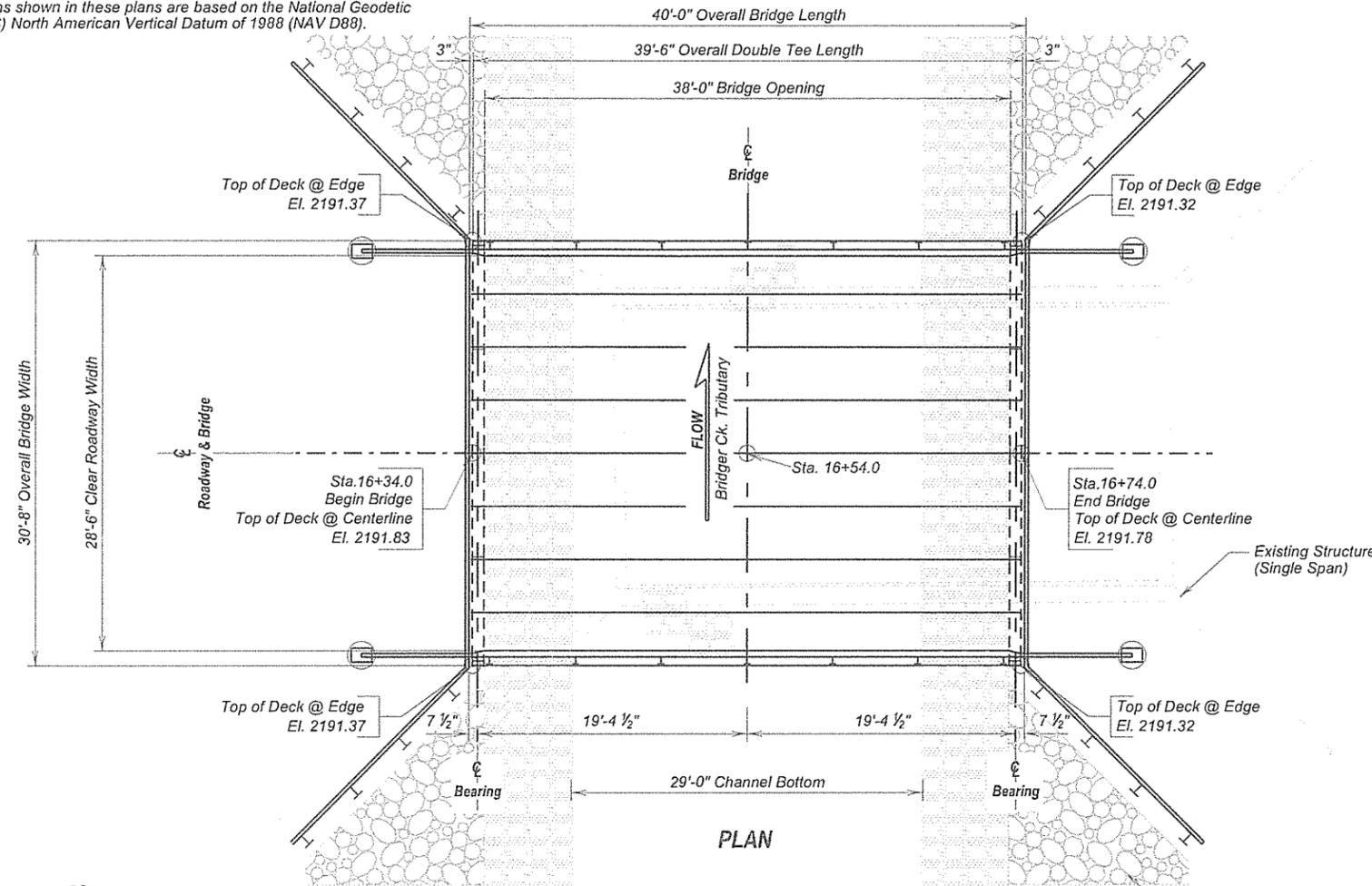
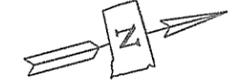
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88).

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	40	53
Plotting Date: 04/09/14 Revised Date: 02/18/15 Initials: CVS			

- X081 -

INDEX OF BRIDGE SHEETS-

Sht. No. 1	- General Drawing
Sht. No. 2 & 3	- Estimate of Structure Quantities & Notes
Sht. No. 4	- Subsurface Investigation And Piling Layout
Sht. No. 5	- Articulated Concrete Mattress Layout
Sht. No. 6	- Articulated Concrete Mattress Details
Sht. No. 7	- Abutments No. 1 & No. 2 Layout
Sht. No. 8 & 9	- Abutment Details
Sht. No. 10	- Superstructure Details
Sht. No. 11	- Deck Unit Details
Sht. No. 12 & 13	- T101 Railing
Sht. No. 14	- Standard Plates



HYDRAULIC DATA

Q_d	701 cfs
A_d	89.9 sq.ft.
V_d	7.8 fps
Q_F	701 cfs
Q_{100}	2708 cfs
Q_{OTR}	>100 yr. cfs
V_{max}	9.03 fps

Q_d = Design discharge for the proposed bridge based on 100 year frequency. El. 2184.3

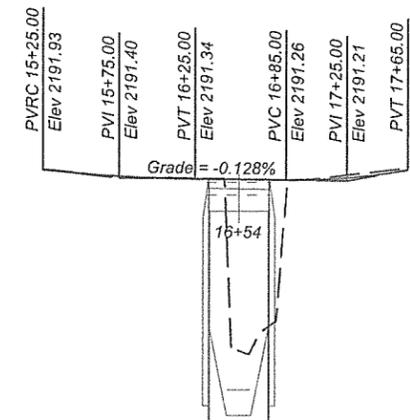
Q_{OTR} = Overtopping discharge and frequency ≥ 100 year recurrence interval. El. 2191.6, location 10+50.

Q_F = Designated peak discharge for the basin approaching proposed project based on 100 year frequency.

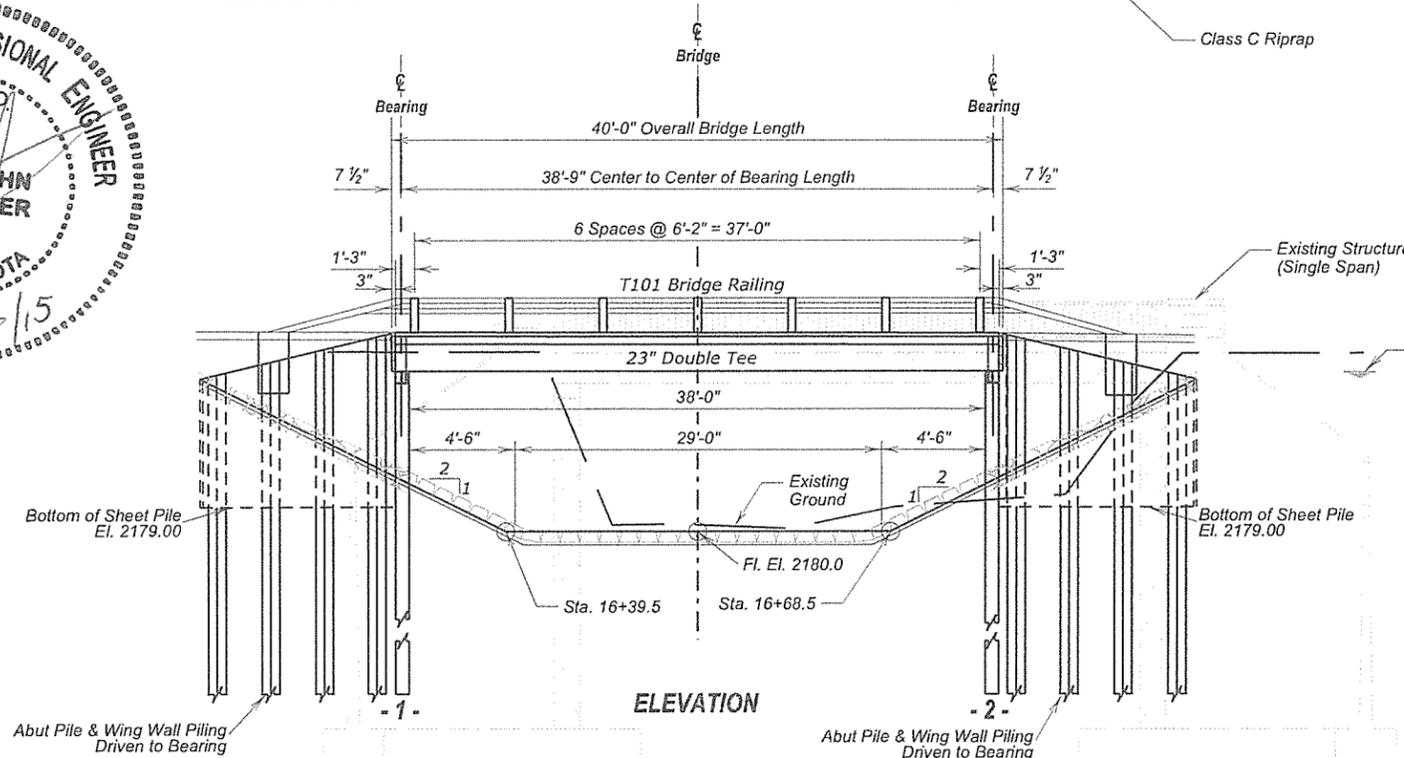
Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency. El. 2189.2

V_{max} = Maximum computed outlet velocity for the proposed bridge, based on 100 year frequency.

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



VERTICAL CURVE DATA



ELEVATION



GENERAL DRAWING
FOR
**40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE BRIDGE**
STA. 16+34.0 TO 16+74.0 0° SKEW
OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
STR. NO. 28-053-230 P 6253(02)
PCN NO. 6092 HL-93

HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
SS/DC	CVS	DH	
BEI#S12-P599			

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 6253(02)	41	53

STRUCTURE QUANTITIES:

ITEM	Quantity	Unit
Incidental Work, Structure	Lump Sum	LS
Structural Steel, Miscellaneous	Lump Sum	LS
Field Painting	Lump Sum	LS
Structure Excavation, Bridge	237	CuYd
Type T101 Bridge Railing	112	Ft
HP 12x53 Steel Test Pile, Furnish and Drive	80	Ft
HP 12x53 Steel Pile, Furnish and Drive	980	Ft
Steel Sheet Piling, Furnish and Drive	1505	SqFt
3'-10" Wide Deck x 23" Prstr Conc. Double Tee	316	Ft
Precast Concrete Plank, Furnish	102	SqFt
Precast Concrete Plank, Install	102	SqFt
Class C Riprap	59	Ton
Type B Drainage Fabric	125	SqYd
Articulated Concrete Mattress	288	SqYd

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition with 2013 Interim Revisions.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and required provisions, supplemental specifications and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

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

INCIDENTAL WORK, STRUCTURE:

The in place structure is a single-span 40' steel stringer bridge with steel pilings, concrete abutments, deck and concrete pigeonhole rail. The Contractor shall contact Kenny Neville, (2) weeks prior to removal of the structure, at 605-859-2472 for items to be salvaged. Items to be salvaged are the steel girders. Items not salvaged shall be dismantled, removed and disposed of. The steel piling shall be removed or cut off at a minimum 1' below bottom of excavation for riprap or concrete mattress. All costs associated with structure removal, salvage and disposal shall be included in the contract lump sum price for Incidental Work, Structure.

NOTICE - LEAD BASED PAINT

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

ABUTMENTS:

- Lateral earth pressure at 52.8 lbs./cu.ft.

- The HP 12x53 Piling were designed using a factored bearing resistance of 98 tons per pile. All piling shall develop a field verified nominal bearing resistance of 245 tons per pile.
- One test pile shall be driven at each abutment and will become part of the pile group.
- The Contractor shall have sufficient splice material on hand before pile driving is started. See Standard Plate No. 510.40.
- Steel pile and abutment caps shall be painted prior to the placement of the deck units at locations where the deck units, when placed, would prohibit painting. The remaining piling and abutment caps, with the exception of piling underground, may be painted after erection of the deck units. Painting shall comply with Section 412 of the SD Standard Specifications. The topcoat shall be an approved green color. The cost of painting shall be incidental to the contract lump sum price for "Field Painting." For informational purposes only, the estimated quantity of Field Painting is 2,901 SqFt.
- Welding and weld inspection shall be done in accordance with ANSI/AASHTO/AWS D 1.5-2002 Bridge Welding Code. Plan shown field welding shall be in accordance with the current edition of the ANSI/AWS D1.1 Structural Welding Code – Steel.
- The abutment backwalls will be 5 gauge galvanized steel sheet piling, with a minimum section modulus of 2.75 in³ per foot. The 5 gauge sheet pile shall conform to the requirements of ASTM designation A 857, Grade 36 and hot-dipped galvanized per ASTM A123. The sheet pile shall have a bottom elevation of **2179.00**.
- The precast concrete plank shall be attached to the ends of each deck beam. They shall have a minimum compressive strength of 4000 psi at 28 days. Reinforcing steel shall be Grade 60. Two ½" Ø X 4" galvanized ferrule loop inserts with a minimum capacity of 500 pounds tension each, galvanized according to ASTM A123, shall be installed in each plank for lifting purposes. One ¾" Ø X 3" galvanized sleeve shall be installed in the center of each plank. A ½" Ø concrete fastener shall be used to bolt the plank to the prestressed concrete deck unit.
- Fence anchor eyebolts shall be installed in each wingwall as shown on sheet 8 of 14 in these plans.

SDDOT's LRFD PILE DRIVING EQUATIONS

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

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

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

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

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

Where:

- Q = the field verified nominal pile bearing resistance in tons.
- W = the weight of the ram of an energy hammer in tons.
- H = the height of free fall of the hammer or ram in feet.
- M = the weight in tons of the driven mass and shall include the weight of the pile, the weight of the driving cap and the weight of the anvil, if used.
- E = the energy per blow in foot-tons.
- S = the average penetration in inches of the pile per blow for the last 10 blows for energy hammers.

A drivability analysis was performed using the wave equation analysis program (GRLWEAP). A list of acceptable hammers is provided below. Based on initial analysis, the hammers listed will need to be operated no higher than the second fuel setting in order to prevent overstressing of the pile during driving operations. If during actual driving operations an adequate hammer drop to obtain design bearing is not achieved, contact the Geotechnical Engineering Activity prior to increasing the fuel setting.

- Delmag D19-32 Delmag D19-42 MVE M-19
- MKT DE 42/35 Delmag D16-32

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

STRUCTURAL STEEL, MISCELLANEOUS:

For informational purposes only, the estimated quantity of Structural Steel, Miscellaneous is **9,812** Lbs. Structural Steel Misc. consists of 22" x 1/8" Bent Plate for wing walls, HP12x53 Pile Cap, HP10x42 Whalers, Stiffener Plates and 7" x 4" x 3/8" Angle Iron.

Structural steel shall conform to AASHTO M 183 (ASTM A36).

PRESTRESSED CONCRETE DOULBE TEE DECK UNITS:

- The prestressed concrete double tee deck units shall conform to Section 580 of the South Dakota Standard Specifications.
- The connection from each double tee to the pile cap and each double tee shall be designed to withstand 20 kips axial soil load.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 40' – 0" SINGLE SPAN PRESTRESSED CONCRETE DOUBLE TEE Str. No. 28-053-230

APRIL 2014

2 OF 14

DESIGNED BY DC S12-P599	DRAWN BY: CVS	CHECKED BY: DH	APPROVED: BRIDGE ENGINEER
-------------------------------	------------------	-------------------	----------------------------------

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 6253(02)	42	53

PRESTRESSED CONCRETE DOULBE TEE DECK UNITS CONT.:

3. Dimensional tolerances of the completed deck units shall not exceed tolerances specified in the current edition of Prestressed Concrete Institute Manual for Quality Control for Plants and Production of Precast Prestressed Concrete Products. However the maximum allowable vertical elevation difference between adjacent double tee deck units shall be 1/4" at any location along the deck. Maximum gap between the double tee deck units shall not exceed 1/2" at any location along the deck.
4. Structural steel shall conform to the specifications for structural steel, AASHTO M 183 (ASTM A36).
5. The prestressed concrete deck units shall be supplied by the Contractor. This shall include 2 exterior units and 6 interior units, 39'-6" in length, delivered to the project site. The cost of furnishing the prestressed concrete deck units shall be incidental to the contract unit price per foot for "3'-10" Wide Deck x 23" Prestressed Concrete Double Tee."
6. All costs of furnishing and installing the prestressed concrete double tee deck units, including welding, hardware, bearing pads, grout, and other items necessary to complete installation of the deck units, as shown on the plans and required in the Standard Specifications, shall be incidental to the contract unit price per foot for "3'-10" Wide Deck x 23" Prestressed Concrete Double Tee".
7. At the Contractor's option, a 1-1/2" diameter metal rod may be used in place of the metal weld plate to make the weld tie connection (see the detail sheet for superstructure details).
8. All mild reinforcing steel shall be deformed bars conforming to ASTM A615, Grade 60.
9. All prestressed deck units within a span shall be cast within an (8) day period. If not, the newest deck unit shall be at least 6 weeks old before the deck slab is assembled. The deck units shall be poured in all steel forms.
10. Prestressed concrete deck units shall always be lifted by the devices provided in the top flanges near the ends of the deck unit. 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.
11. Each deck unit shall be marked showing structure number, casting date and unit numbers. Marking shall be on the face of the deck unit near the end and located so that they will be exposed after the diaphragms have been cast. Fascia units shall be marked on an inside face. All markings shall be stenciled and clearly legible. Deck unit designations and locations; see Superstructure Details.

12. 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 60 (durometer). The cost of the pads shall be incidental to the contract unit price per "3'-10" Wide Deck x 30" Prestressed Concrete Double Tee". Certification that pads are 60 durometer and meet the requirements of AASHTO LFRD Bridge Construction Specification Section 18.2 and AASHTO Materials Specification M251 shall be furnished to the Engineer with the shop drawings. No laminated bearing pads will be allowed & thickness shall be as shown on the plans.
13. Dimensions and elevations for this structure are based on 23" depth and 3'-10" width units. No changes in these dimensions will be permitted. All exposed corners shall be chamfered 3/4" or rounded 3/4" radius.
14. Dead Load of girder taken as effective at transfer. Cut strands, flush with end of girder and coat end of strands with mortar, or cold galvanize paint.
15. The Contractor shall be responsible for ensuring that transportation stresses, handling and erection Do Not cause damage to the deck units.
16. Embedded Anchor Bolts for Rail Post attachment as detailed on Standard Sheet for "Type T101 Bridge Railing" shall be added to each Double Tee deck unit. The cost of embedded bolts shall be included in the contract unit price per foot for "3'-10" Wide Deck x 23" Prestressed Concrete Double Tee."
17. The shear key formed between the deck units will require about 0.05 cubic foot of grout, per lineal foot. The cost of furnishing and installing the grout, shall be incidental to the contract unit price per foot for "3'-10" Wide Deck x 23" Prestressed Concrete Double Tee."
18. Non-shrink grout for the shear key, dowel pin sleeves, and handling loop depressions shall be a commercially available, non-metallic, non-shrink grout capable of attaining a compressive strength of 4,500 PSI and capable of from 0.06% to 0.10% expansion. The grout shall be mixed with just enough clean water to make a stiff but workable mix. Non-shrink grout shall attain a compressive strength of 4,500 PSI before the structure is open to traffic.
19. The cost of furnishing and installing the grout, estimated at 30 Cu. Ft., shall be incidental to the contract unit price per Foot for "3'-10" Wide Deck x 23" Prestressed Concrete Double Tee". Grout shall be cured in accordance with Manufacturer's recommendations.
20. For informational purposes only, the approximate weight of each deck unit is 464.4 lbs. per ft. = **18,344 lbs. ±.**

PRECAST END PLANKS:

All cost of furnishing and installing the Precast Concrete End Planks including galvanized hardware, EZ Wrap Sealant, and other items necessary to complete installation of end planks, as shown on the Abutment. Details shall be incidental to the contract unit price per square foot for "Precast Concrete Plank, Furnish" and "Precast Concrete Plank, Install.

BOLT TESTING

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

TYPE T101 BRIDGE RAILING

Type T101 Bridge Railing shall be constructed as shown on the General Drawing Sheet and T101 Bridge Railing Details Sheet. The Bridge Railing shall conform to Section 470 of the South Dakota Standard Specifications.

SHOP DRAWINGS:

Shop plans are required for the steel bridge railing, deck units, along with calculations for the deck units. The fabricator shall submit shop plans in accordance with the Standard Specifications or in Adobe PDF format to: Brosz Engineering, Inc., 3561 Whitewood Service Road P.O. Box 636, Sturgis, South Dakota 57785; for review. After review, corrections (if necessary), and approval by Brosz Engineering Inc., the Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

The superstructure shall be load rated in accordance with the AASHTO Manual for Bridge Evaluation, 2010 Edition with latest Interim Revisions using the LRFR method. The rating shall include evaluation at the Design Load rating for HL-93 truck at both Inventory and Operating levels and at the Legal Load rating for the three SD legal trucks (Type 3, 3S2, and 3-2) as well as the notional rating load and four specialized hauling vehicles noted in the *AASHTO Manual for Bridge Evaluation*. The superstructure shall rate at HL-93 or better (Inventory Level). The three SD Legal Loads, the notional rating load and the four specialized hauling vehicles shall rate greater than 1.0 at legal load rating level. Submit Load Rating calculations with the Design and Check Design calculation or shop plans, as appropriate.

**NOTES (CONTINUED)
FOR
40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE
Str. No. 28-053-230**

APRIL 2014

3 OF 14

DESIGNED BY: DC S12-P599	DRAWN BY: CVS	CHECKED BY: DH	APPROVED: BRIDGE ENGINEER
--------------------------------	------------------	-------------------	------------------------------

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 6253 (02)	43	53

Plotting Date: mm-dd-yy

Hole Number Z2 Station 16+29 Depth 26.0 ft Soil Color Gray Classification Clay Strength (Q _u) 22.970 psf Dry Density 114.8 pcf Wet Density 133.6 pcf Moisture 16.4 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 99.5 % Sand Content 0.5 % Silt Content 35.3 % Clay Content 64.2 %	Hole Number Z2 Station 16+29 Depth 25.7 ft Soil Color Gray Classification Clay Strength (Q _u) 26.990 psf Dry Density 116.6 pcf Wet Density 135.8 pcf Moisture 16.5 % Pass No. 10 100.0 % Pass No. 40 100.0 % Pass No. 200 99.5 % Sand Content 0.5 % Silt Content 39.3 % Clay Content 60.2 %	Hole Number Z3 Station 16+24 Depth 6.0 ft Soil Color Mottled Brown Classification Clay Strength (Q _u) 2.749 psf Dry Density 92.9 pcf Wet Density 116.6 pcf Moisture 25.5 % Pass No. 10 96.5 % Pass No. 40 95.2 % Pass No. 200 87.1 % Sand Content 9.4 % Silt Content 36.7 % Clay Content 50.4 %	Hole Number Z6 Station 17+03 Depth 8.0 ft Soil Color Brown Classification Clay Strength (Q _u) 3.226 psf Dry Density 90.2 pcf Wet Density 115.8 pcf Moisture 28.5 % Pass No. 10 100.0 % Pass No. 40 99.7 % Pass No. 200 97.2 % Sand Content 2.8 % Silt Content 41.0 % Clay Content 56.2 %
---	---	---	--

Pierre Shale is a marine shale with a textural classification that varies from silt-clay to clay-silt. Color varies from buff gray to black. The formation may contain concretion zones that are normally thin but occasionally are massive. These zones may be considered hard and dense. Thin zones may be present that are cemented resulting in claystone or siltstone seams. Bentonite zones may be encountered but are normally less than one half inch thick. Nonweathered Pierre Shale is considered to be "Soft Rock".

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

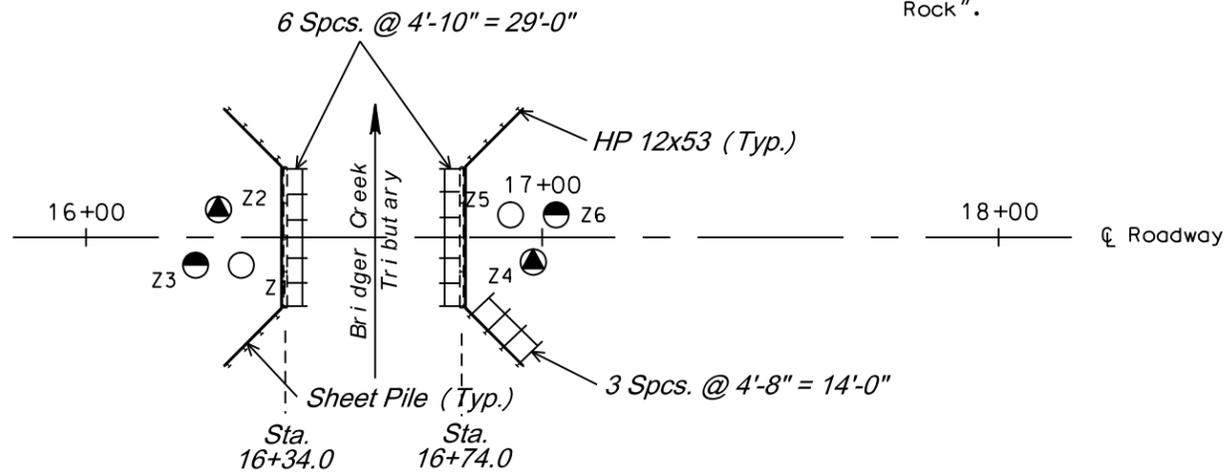
LEGEND

- Push Test
- ⊙ Drive Test
- ∇ Water
- ⊖ Caved
- Penetration Test
- Sample Zone

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

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

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



Piling Layout

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

Sample Zone ■ 48 Blows Per Foot

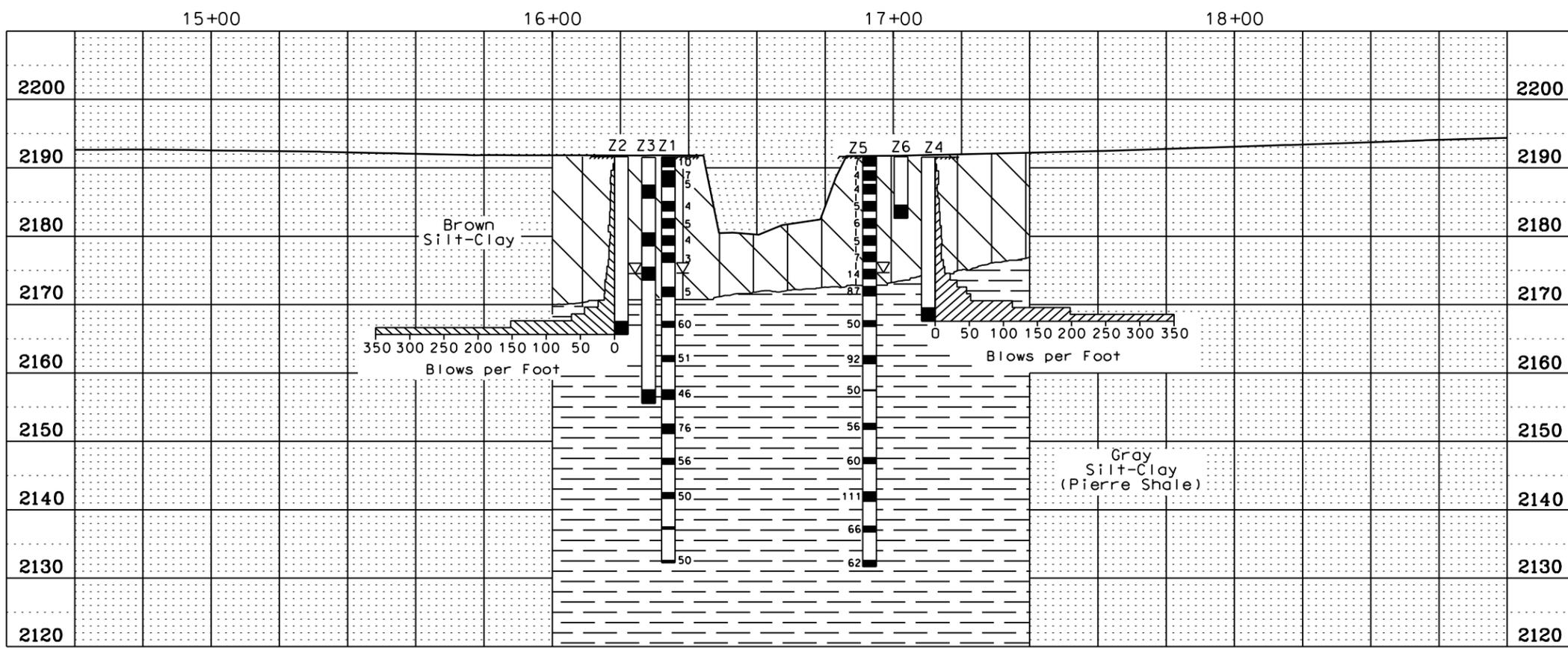
+ Refusal of the penetration test was achieved based on 50 blows within 6 inches or less.

GROUND WATER ELEVATIONS
as of July 2012

Z1	2174.6
Z2	Dry
Z3	2174.6
Z4	Dry
Z5	Dry
Z6	Dry

MEASURED SKIN FRICTION

	Elev	psf
Z2	2165.6	1,745
Z4	2167.9	2,206



SUBSURFACE INVESTIGATION AND PILING LAYOUT FOR

40'-0" SINGLE SPAN PRESTRESSED CONCRETE DOUBLE TEE BRIDGE

STA. 9+77.5 TO 10+52.5 0° SKEW
 OVER BRIDGER CREEK SEC. 23 / 26 - T2N - R20E
 STR. NO. 28-053-230 P 6253(02)
 HL-93

HAAKON COUNTY
 S.D. DEPT. OF TRANSPORTATION
 APRIL 2014

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
BEI#S12-P599	NN	JW	

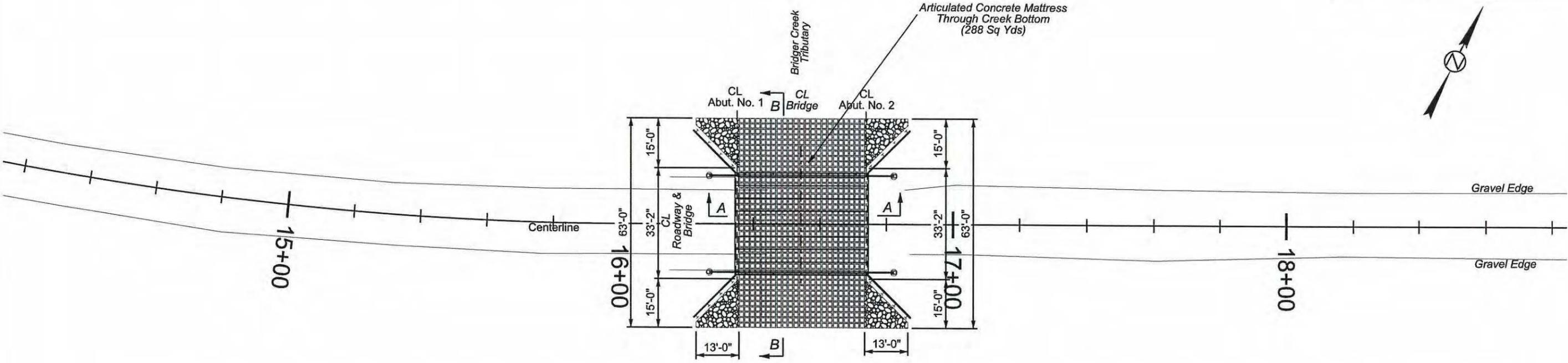
PLOT SCALE - \$\$\$CALE\$\$\$

PLOTTED FROM - \$\$\$USERNAME\$\$\$

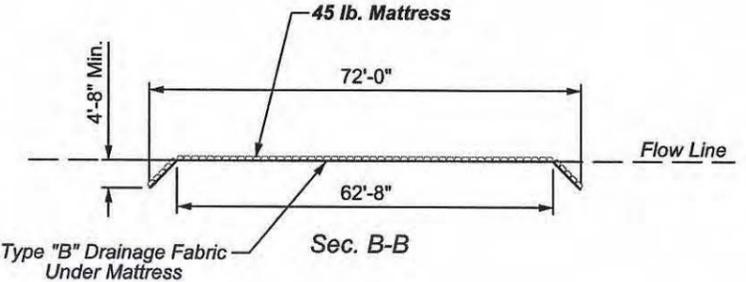
FOR BIDDING PURPOSES ONLY

ARTICULATED CONCRETE MATTRESS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL
	P 6253(02)	NO. 44	SHEETS 53
Plotting Date: 04/09/14			
Revised Date: / /			
Initials: CVS			

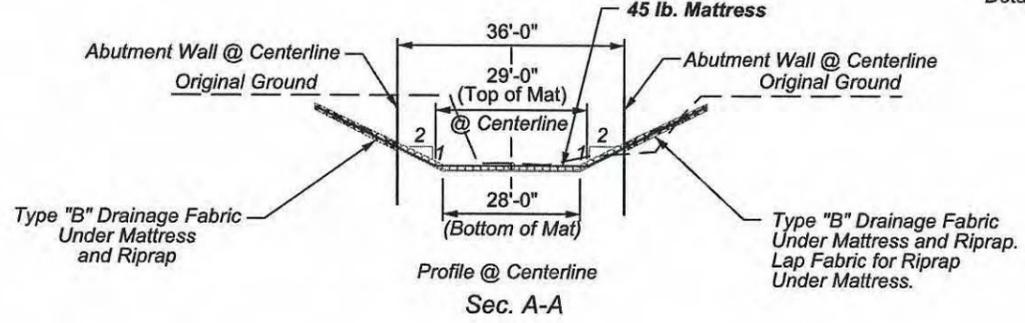


Plan

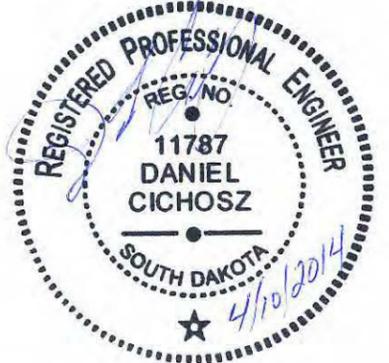


Sec. B-B

Note: Anchor the Articulated Concrete Mattress to the abutments, see "Articulated Concrete Mattress Details Sheet"



Profile @ Centerline
Sec. A-A



ARTICULATED CONCRETE MATTRESS LAYOUT
FOR
40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE BRIDGE
30'-0" ROADWAY SEC. 23/26 - T2N-R20E
OVER BRIDGER CREEK TRIBUTARY 0 SKEW
STA. 9+77.5 TO 10+52.5 BR# 6253(02)
STR. NO. 28-053-231 HL-93

HAAKON COUNTY
S.D. DEPT OF TRANSPORTATION
APRIL 2014

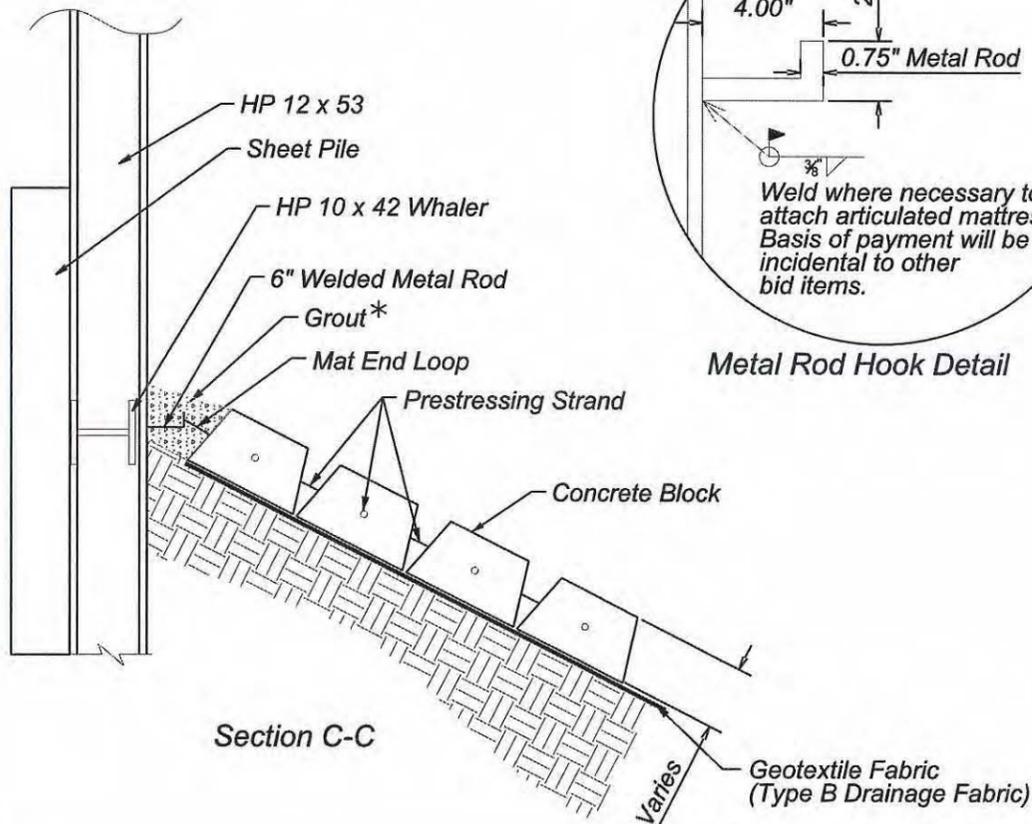
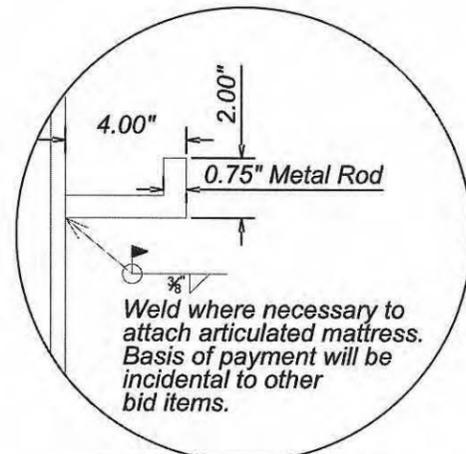
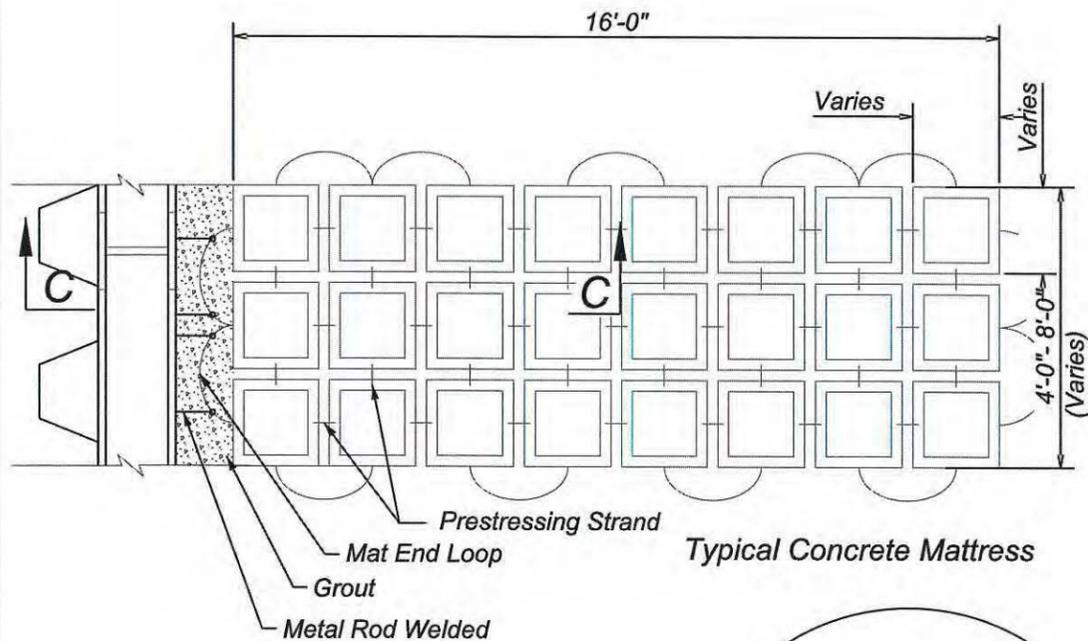
5 of 14

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED
BEI#: S12-P599			

ARTICULATED CONCRETE MATTRESS

NOTES AND DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	45	53
Plotting Date: 04/09/14		Revised Date: / /	
Initials: CVS			



DESCRIPTION

This work will consist of installing all materials and performing all work necessary to provide & place Articulated Concrete Mattresses as shown on this sheet and the "Articulated Concrete Mattress Layout Sheet". Articulated Concrete Mattress consists of mats fabricated from concrete and prestressing strand, connected together, backed with filter fabric and anchored to the slope.

ARTICULATED CONCRETE MATTRESS

1. A cable concrete panel made up of a series of concrete blocks connected to each other by interwoven stainless steel cables with a minimum 1 / 4" diameter for 45 lb. mattress.
2. The concrete used to fabricate the concrete panels shall weigh a minimum of 45 pounds per square foot and have a minimum 28-day compressive strength of 4,000 pounds per square inch and conform to the requirements of section 462.3 of the South Dakota Standard Specifications for class M6 concrete.
3. Geotextile material shall be attached to the base of each concrete panel. The standard geotextile material used shall be Drainage Fabric, Type B. An overlap of 2ft. to 3ft. shall be incorporated on a minimum of three sides of each panel.
4. The U-Type cable clamps of sufficient cast galvanized steel shall be used to secure loops of adjoining cable concrete panels. If the clamps are to be used below existing water, manufacturer's specifications must be followed.
5. The product supplier shall have a technician experienced in the installation of the cable concrete system available at the start of the installation to advise the Contractor and the Engineer in any special techniques needed to assure proper installation.
6. Installation shall be made utilizing an anchoring system that meets all specifications of the product supplier.
7. Installation shall be made on a "blade smooth surface." In laying cable concrete, there should be no clumps in the bed area. There should be no large voids directly beneath the cable concrete mats. Minor variations in the surface are acceptable, given that no bridging or voiding is present in the finished product. Some hand adjustments of the bed may be required for removal of clumps or filling in areas that were excavated in clumps.
8. The 3/4" dia. metal rod shall be A-36 steel. Welded rebar will not be allowed.

MATERIALS

Standard Tensile Strength of Cable is 250 ksi. ASTM 416

Ties and Cable shall be stainless steel cables approved by the Engineer.

CONSTRUCTION REQUIREMENTS

Mattresses will be tied together along adjoining edges at a maximum of 4 ft. spacing. A minimum of (4) ties will be required for joining (2) - 16' lengths together and (3) ties for joining (2) 6'-8" lengths.

If a mattress is cut, the cut edge shall be tied to the adjacent mattress with the same diameter of cable as the mattress cable, and with a minimum of (2) cable clamps per cable.

The Contractor shall maintain the mats & fabric until all work on the contract has been completed and accepted. Maintenance shall consist of the repair of areas where damaged by any cause.

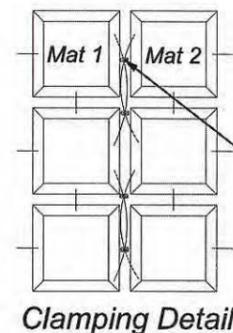
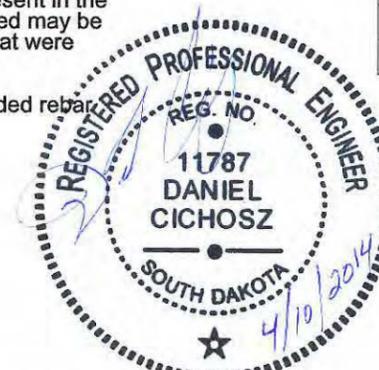
BASIS OF PAYMENT

Quantities shall be paid for at the contract unit price per square yard which shall include full compensation for tools and labor, providing concrete mattresses, including fabric backing, grout / class M6 concrete, and metal rod welded to whalers, the preparation of the subgrade, the placing of the concrete mattress, and all other work incidental to finished construction in accordance with these plans.

ESTIMATED QUANTITIES

Item	Unit	Quantity
Articulated Concrete Mattress	Sq Yd	288
Class C Riprap	Ton	59

* Grout / Class M6 Concrete Shall Be Incidental To The Articulated Mattress



Note how cable of opposite mat is pulled to and clamped as close to the nearest mat to eliminate slack between two mats.

ARTICULATED CONCRETE MATTRESS DETAILS FOR

40'-0" SINGLE SPAN PRESTRESSED CONCRETE DOUBLE TEE BRIDGE
 30'-0" ROADWAY SEC. 23/26 - T2N-R20E
 OVER BRIDGER CREEK TRIBUTARY 0 SKEW
 STA. 16+34 to 16+74 BR# 6253(02)
 STR. NO. 28-053-230 HL-93

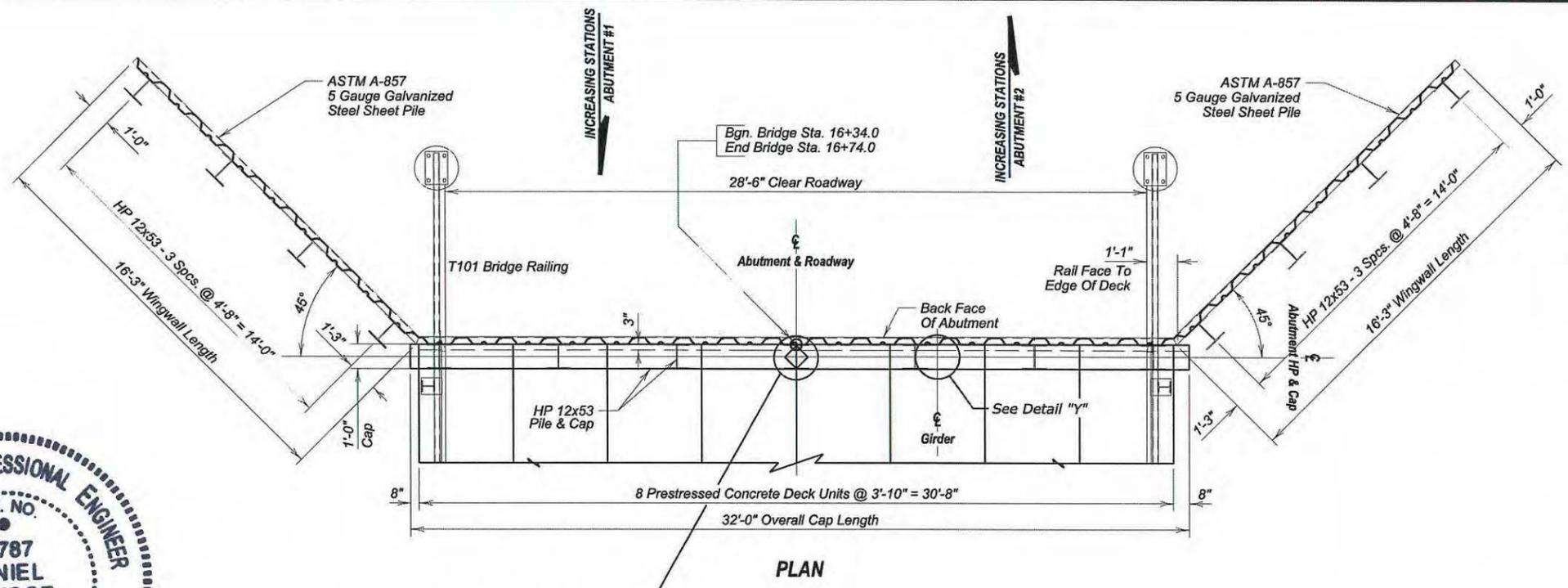
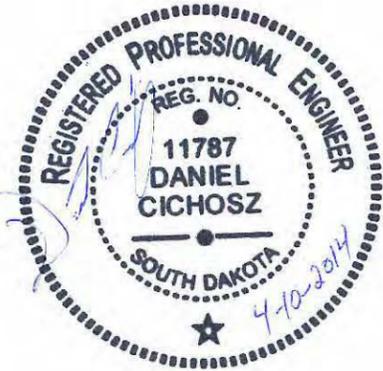
HAAKON COUNTY
 S.D. DEPT OF TRANSPORTATION
 APRIL 2014

DESIGNED BY DC BEI#:S12-P599	DRAWN BY CVS	CHECKED BY DH	APPROVED
------------------------------------	-----------------	------------------	----------

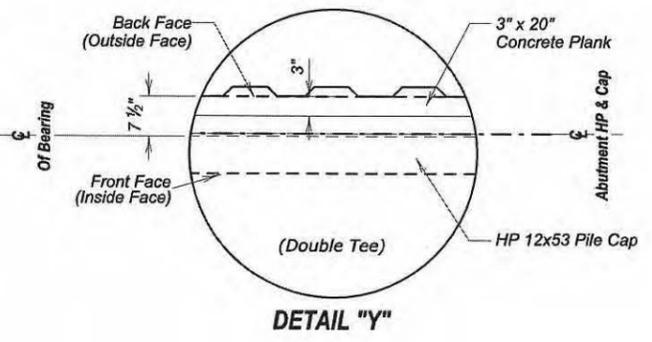
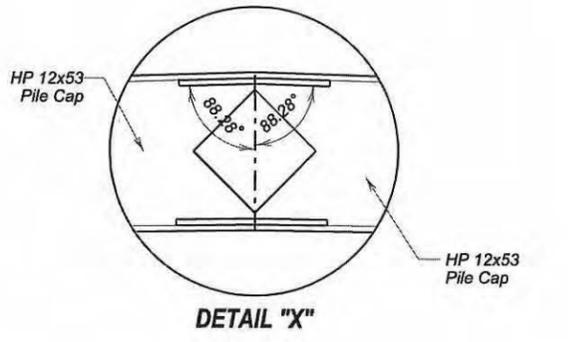
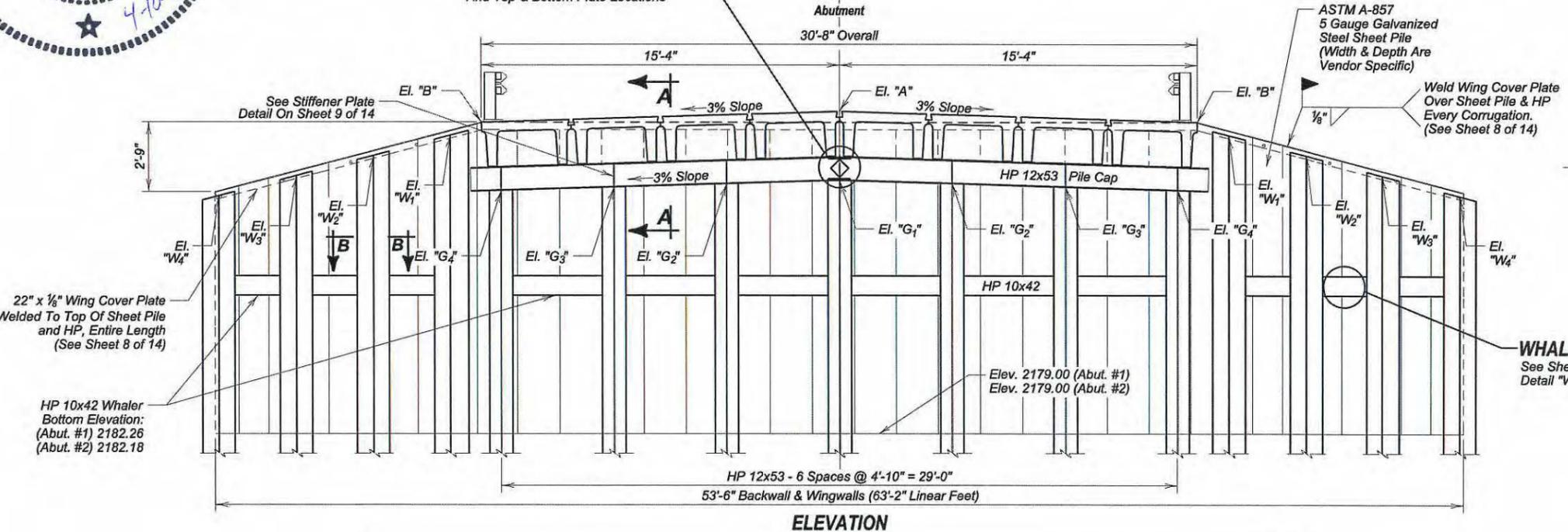
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	46	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			

ESTIMATED QUANTITIES			
ITEM	UNIT	ABUT. #1	ABUT. #2
Structural Steel, Miscellaneous (Sheet 9 & 10)	Lump Sum	L.S.	L.S.
HP 12x53 Steel Test Pile, Furnish and Drive	Fl.	40	40
HP 12x53 Steel Bearing Pile, Furnish and Drive	Fl.	490	490
Sheet Piling, Furnish and Drive	Sq.Ft.	752	752



STEEL PILE SPlice
See Standard Plate No. 510.40.
See Detail "X" For Bevel Cut Angles
And Top & Bottom Plate Locations



ABUTMENTS NO. 1 & NO. 2 LAYOUT
FOR
**40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE BRIDGE**
STA. 16+34.0 TO 16+74.0 0° SKEW
OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
STR. NO. 28-053-230 P 6253(03)
HL-93

ABUTMENT	EL. "A"	EL. "B"	EL. "G ₁ "	EL. "G ₂ "	EL. "G ₃ "	EL. "G ₄ "	EL. "W ₁ "	EL. "W ₂ "	EL. "W ₃ "	EL. "W ₄ "
NO. 1	2191.83	2191.37	2188.89	2188.75	2188.60	2188.46	2190.64	2189.83	2189.02	2188.21
NO. 2	2191.78	2191.32	2188.84	2188.70	2188.55	2188.41	2190.57	2189.76	2188.95	2188.14

NOTE-
Elevations "A" AND "B" are top of slab at centerline of abutment.
Elevations "G₁", "G₂", "G₃", AND "G₄" are top of HP 12x53 at center of pile of abutment.
Elevations "W₁", "W₂", "W₃", AND "W₄" are top of HP 12x53 at center of pile of abutment wingwall.

Note:
This sheet is to be used in
conjunction with Sheet No's. 8 and 9 of 14

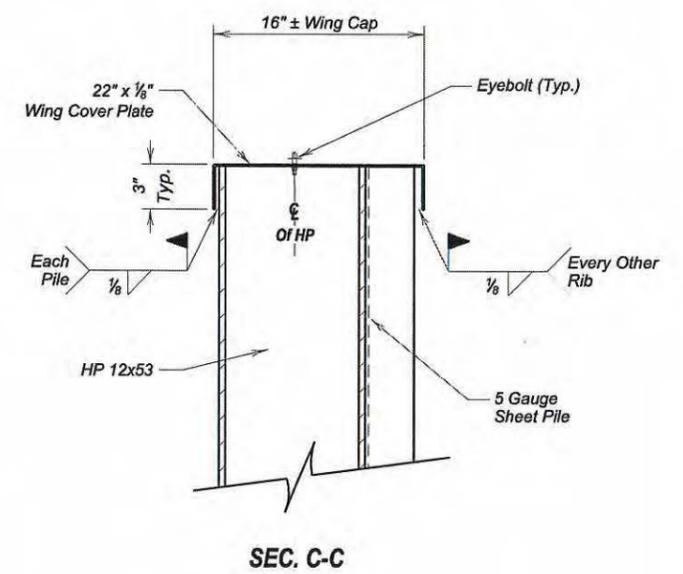
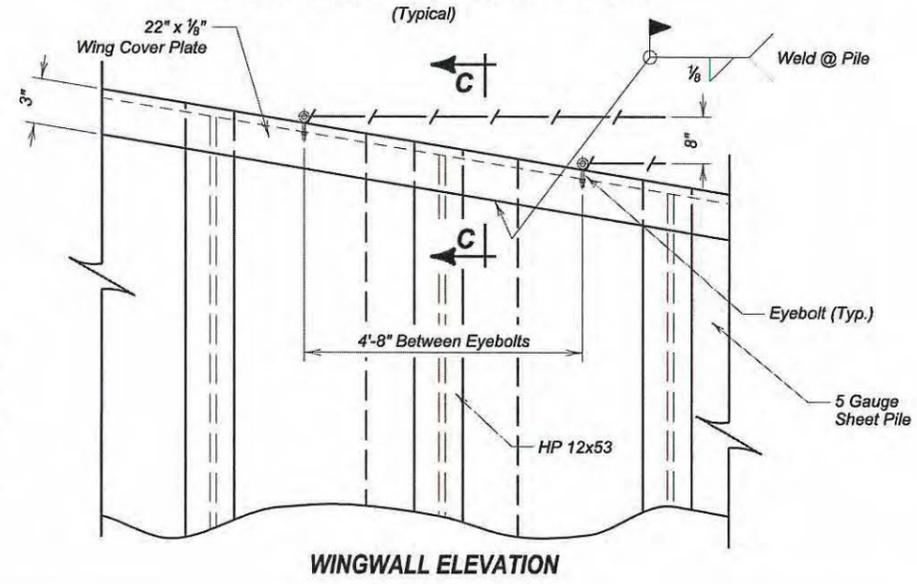
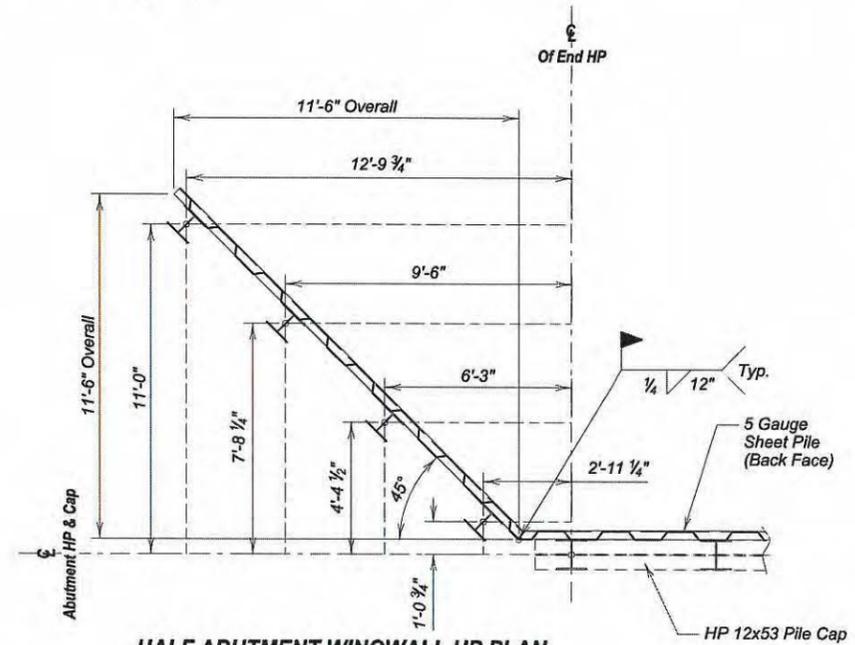
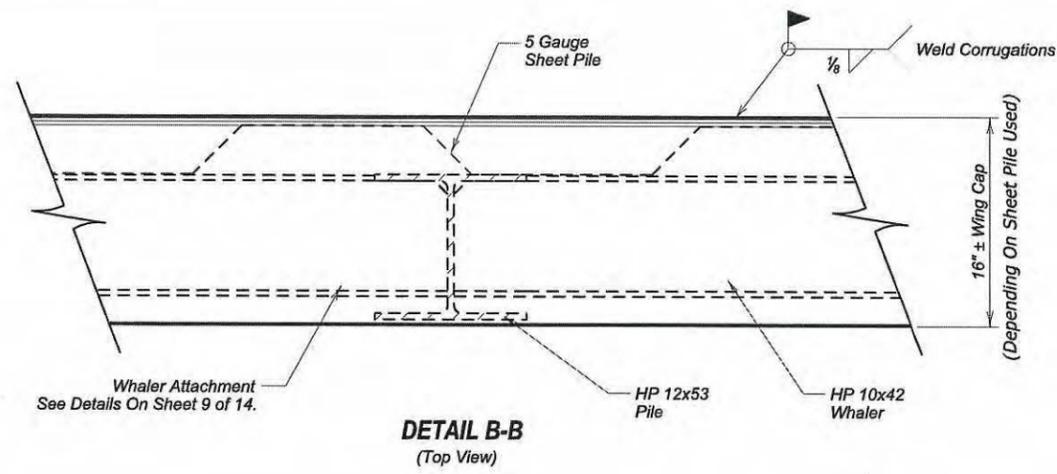
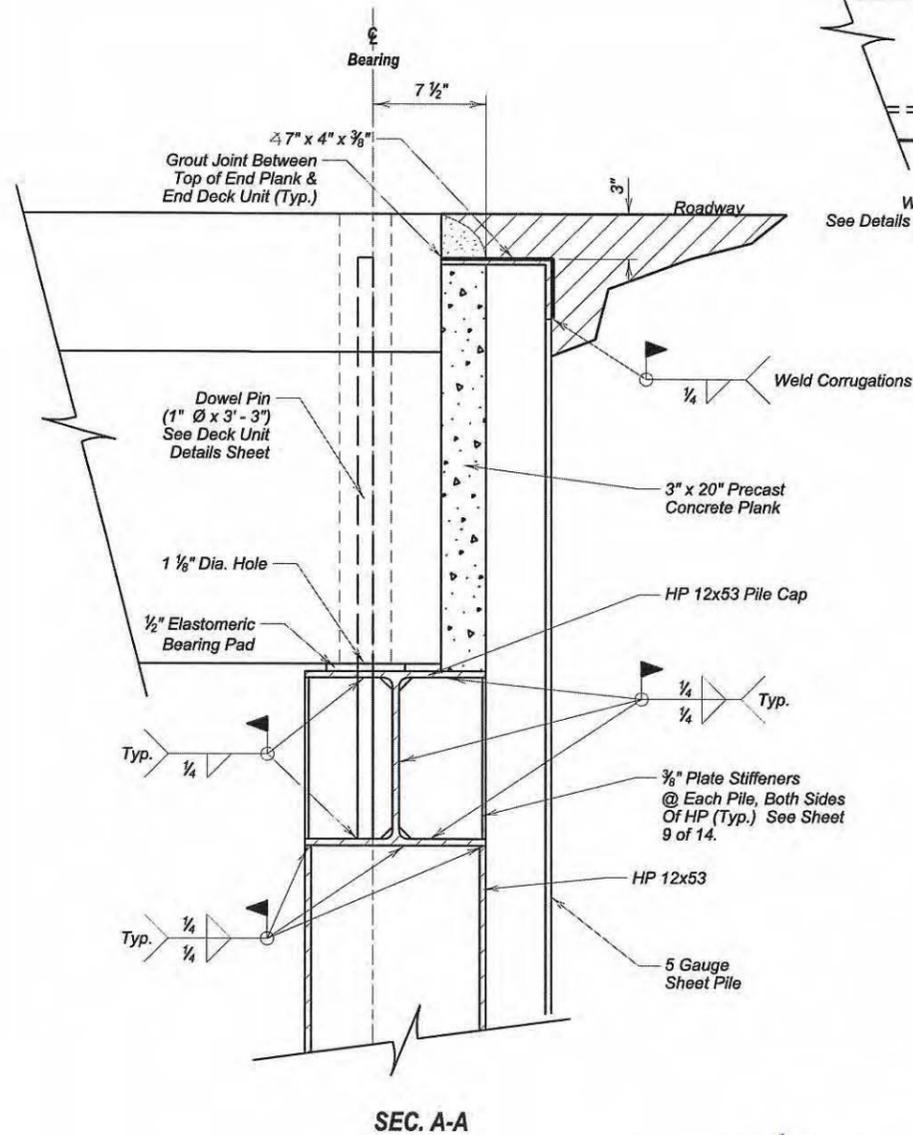
DESIGNED BY DC	DRAWN BY CVS	CHECKED BY PK	APPROVED BY
BEI#:S12-P599			

HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	47	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			

Note:
This sheet is to be used in
conjunction with Sheet No's. 7 and 8 of 14



EYEBOLT NOTE:
The Fence And Eyebolts Shown For Illustrative Purpose Only. Eyebolts Shall Be Placed On All Of The Bridge Abutment Wingwalls. Eyebolts Shall Be 1/2" Dia. And Shall Conform To ASTM A307. Eyebolts, Nuts And Washers Shall Be Galvanized In Accordance With AASHTO M232 (ASTM A153).
The Cost For Furnishing And Installing Eyebolts Shall Be Incidental To The Contract Lump Sum Price For "Structural Steel, Miscellaneous."

ABUTMENT DETAILS
FOR
**40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE BRIDGE**
STA. 16+34.0 TO 16+74.0 0° SKEW
OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
STR. NO. 28-053-230 P 6253(03)
HL-93
HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014



DESIGNED BY DC	DRAWN BY CVS	CHECKED BY PK	APPROVED BY
BEI#S12-P599			

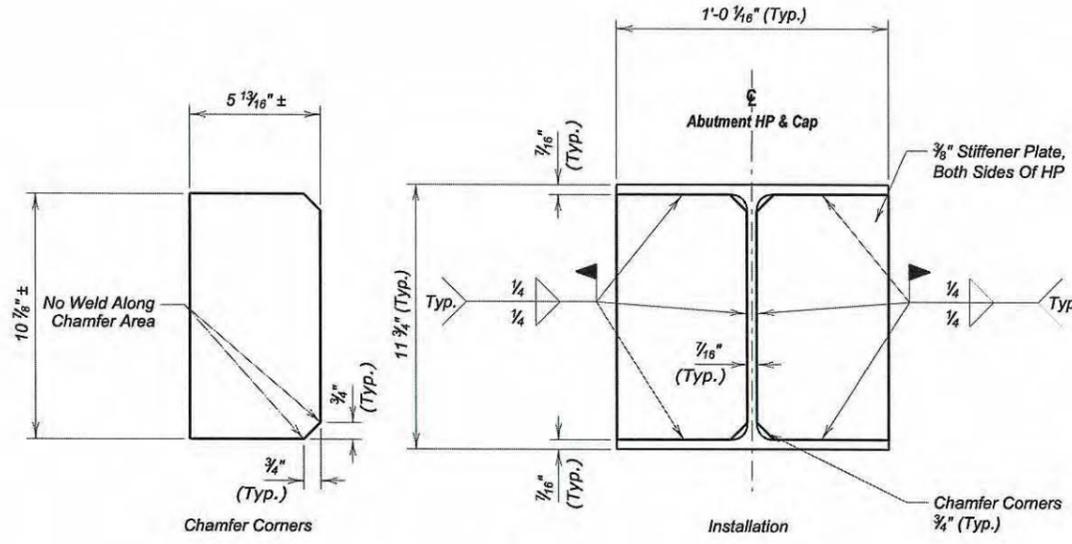
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	48	53

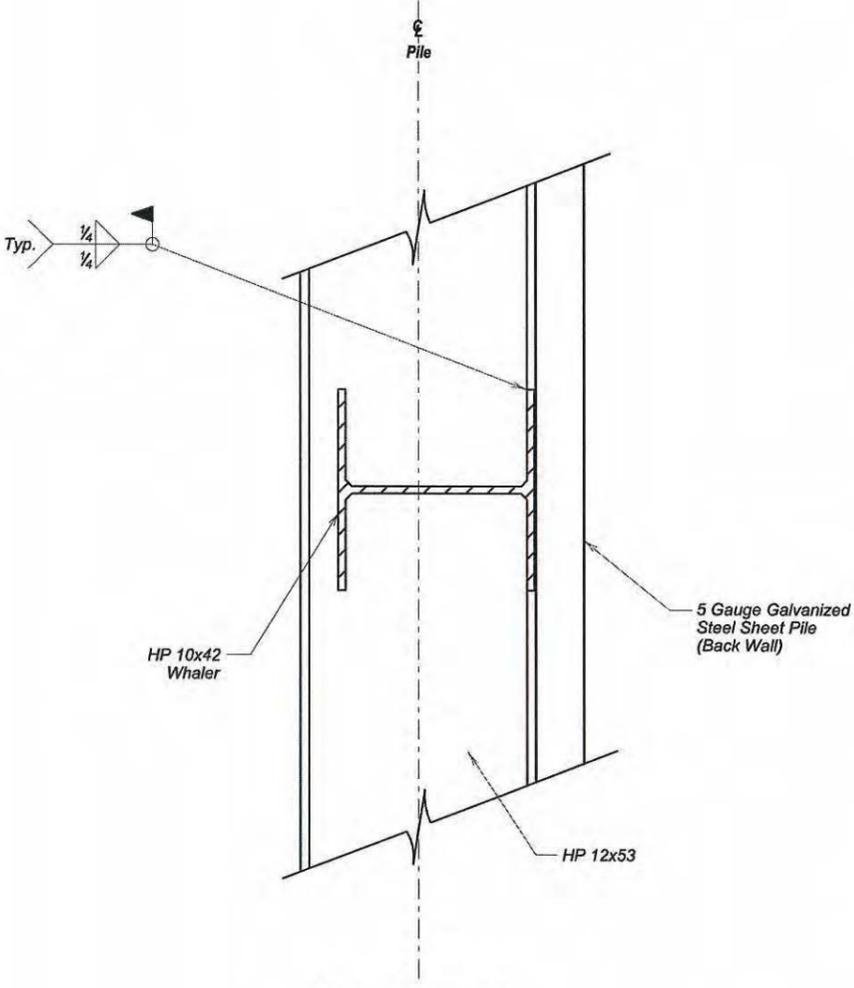
Plotting Date: 04/09/14
 Revised Date: mm/dd/yy
 Initials: CVS

STRUCTURAL STEEL, MISCELLANEOUS (For Informational Purposes Only)			
ITEM	UNIT	QTY.	ABUT. #2
(2) 15'-4" HP 12x53 Pile Cap	Ft.	32	32
10 1/8" x 5 1/16" x 3/8" Stiffener Plate	Each	14	14
Wing Cap Plate 22" x 1/8"	Ft.	32.5	32.5
7" x 4" x 3/8" Angle	Ft.	31	31
10x42 HP Whaler	Ft.	57	57
Structural Steel	LB.	4906	4906
Eye Bolts	Each	8	8

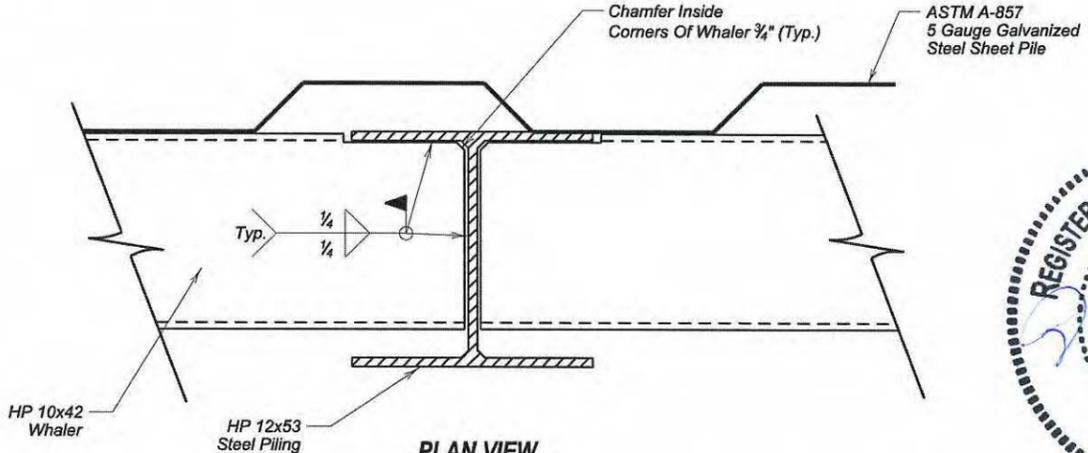
NOTE:
 Structural Steel Misc. consists of 22" x 1/8" Bent Plate for wing walls, HP 12x53 Pile Cap, HP 10x42 Whalers, Stiffener Plates and 7" x 4" x 3/8" Angle Iron.



STIFFENER DETAIL
 For HP 12x53 Pile & Cap



ELEVATION VIEW
 Whaler Attachment Detail



PLAN VIEW
 Whaler Attachment Detail

DETAIL "W"
 WHALER DETAIL

Note:
 This sheet is to be used in conjunction with Sheet No's. 7 and 8 of 14.

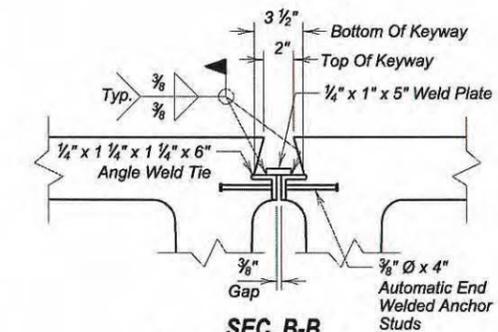
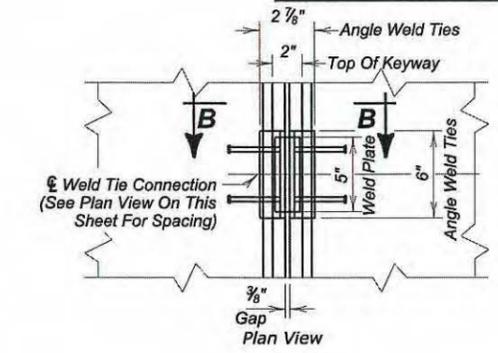
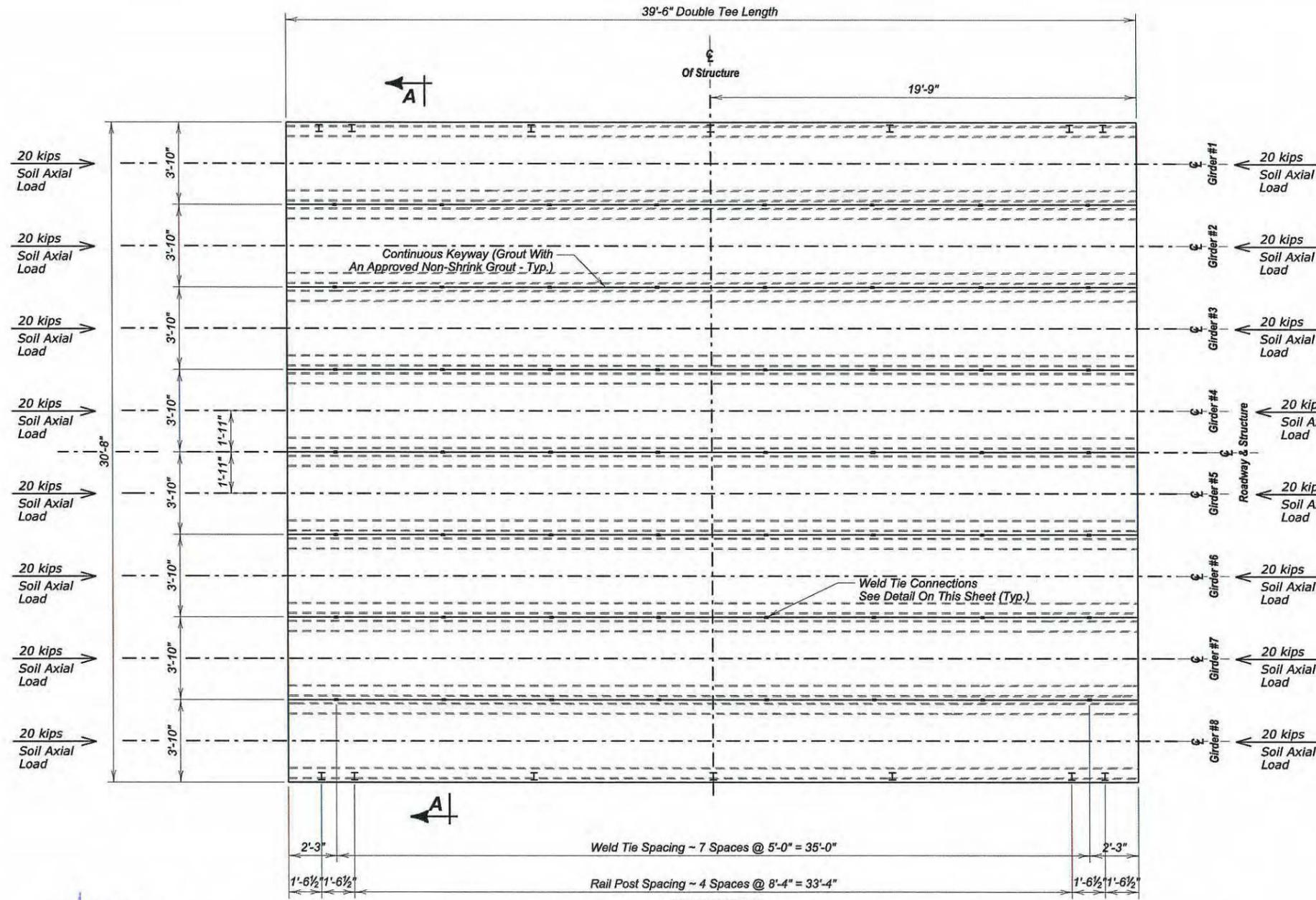


ABUTMENT DETAILS: CONTINUED
 FOR
**40'-0" SINGLE SPAN PRESTRESSED
 CONCRETE DOUBLE TEE BRIDGE**
 STA. 16+34.0 TO 16+74.0 0° SKEW
 OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
 STR. NO. 28-053-230 P 6253(03)
 HL-93

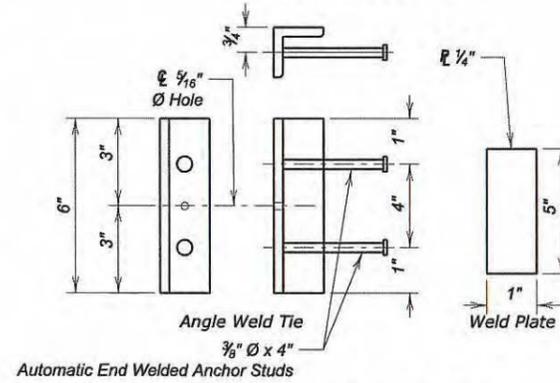
HAAKON COUNTY
 S.D. DEPT. OF TRANSPORTATION
 APRIL 2014

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY PK	APPROVED BY
BE#S12-P599			

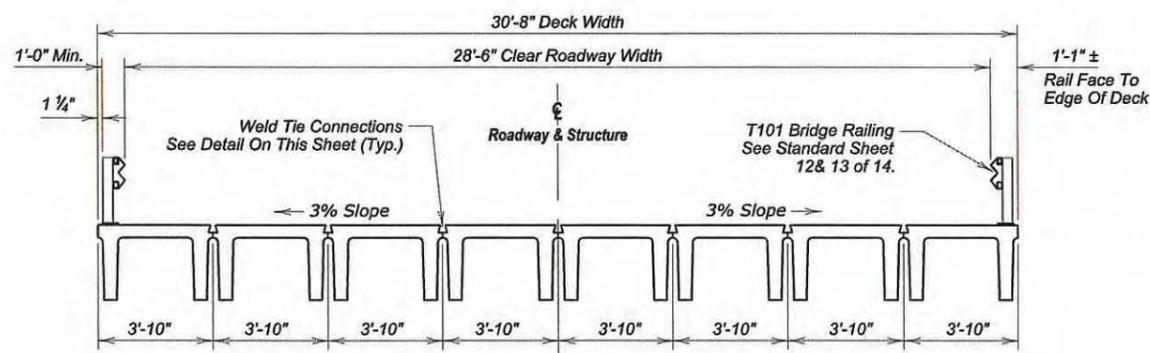
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	49	53
Plotting Date: 04/09/14		Revised Date: mm/dd/yy	
Initials: CVS			



SEC. B-B
TAPERED GROUT KEY



WELD TIE CONNECTION DETAILS



SEC. A-A

Note:
The Weld Tie Connections are to be coated with an approved Galvanizing Compound such as "Galvastick" after welding.

Each double tee shall be designed to resist a strength factored axial soil load of 20 kips from each end of the girder, at the same time.

The connection from the double tee to the cap shall be capable of resisting 20 kips lateral load into the double tee.

SUPERSTRUCTURE DETAILS FOR

40'-0" SINGLE SPAN PRESTRESSED CONCRETE DOUBLE TEE BRIDGE

STA. 16+34.0 TO 16+74.0 0° SKEW
 OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
 STR. NO. 28-053-230 P 6253(03)
 HL-93

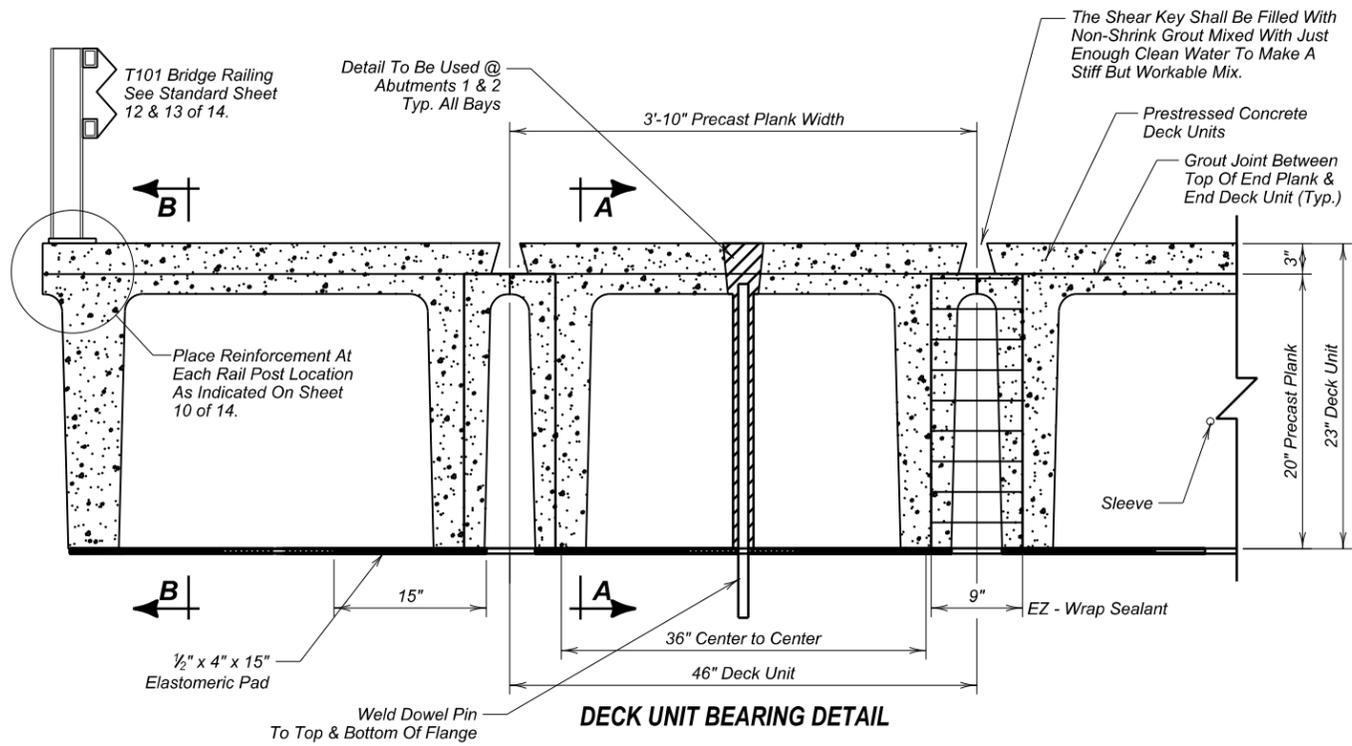
HAAKON COUNTY
 S.D. DEPT. OF TRANSPORTATION
 APRIL 2014



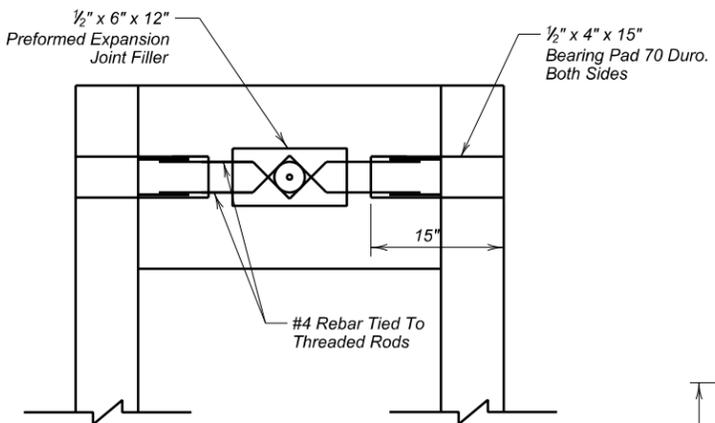
DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P599			

FOR BIDDING PURPOSES ONLY

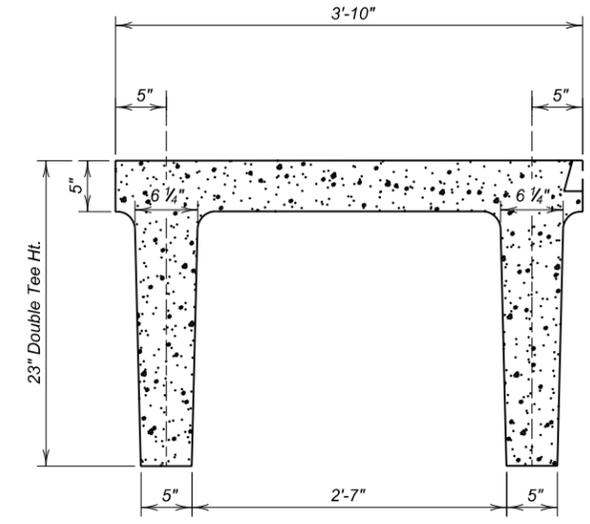
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	50	53
Plotting Date: 04/09/14			
Revised Date: mm/dd/yy			
Initials: CVS			



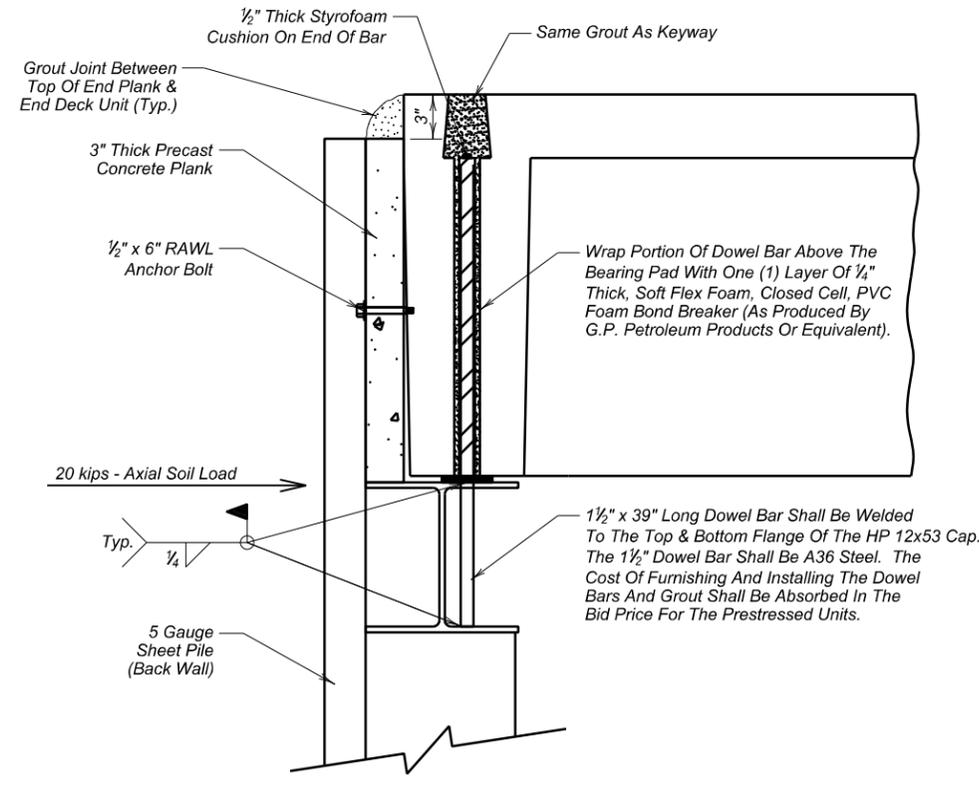
DECK UNIT BEARING DETAIL



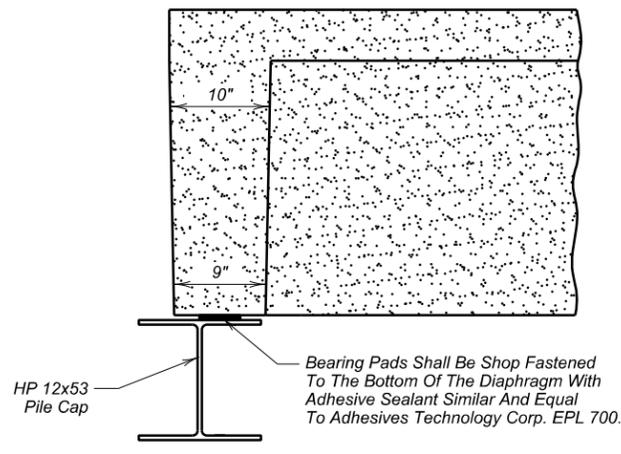
PLAN VIEW OF END OF DECK UNIT



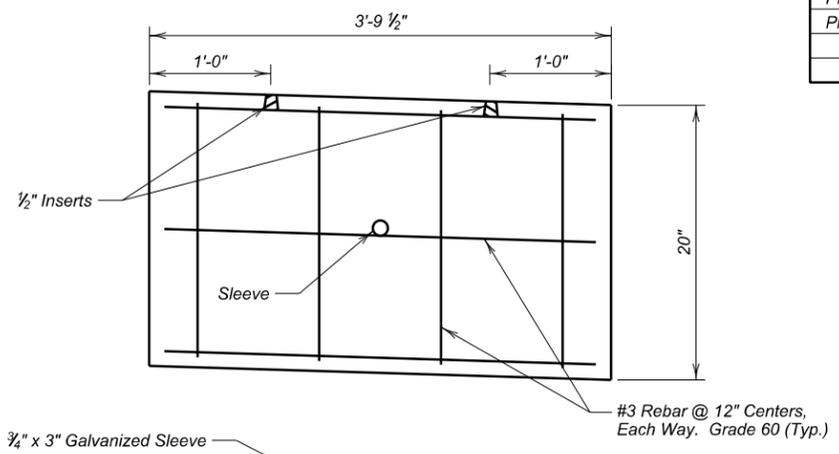
SECTION DIMENSIONS



**SEC. A-A
At Abutment**



SEC. B-B



PRECAST END PLANK DETAIL

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
3'-10" Wide Deck x 23" Prestressed Conc. Dbl. Tee	Ft.	316
Precast Concrete Plank, Furnish	Sq.Ft.	102
Precast Concrete Plank, Install	Sq.Ft.	102

**DECK UNIT DETAILS
FOR
40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE BRIDGE**

STA. 16+34.0 TO 16+74.0 0° SKEW
OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
STR. NO. 28-053-230 P 6253(03)
HL-93

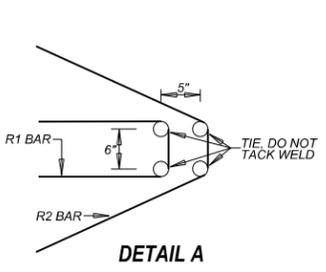
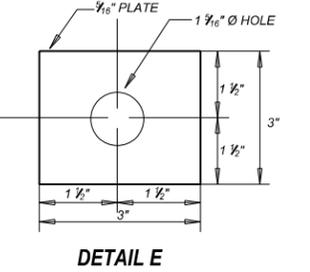
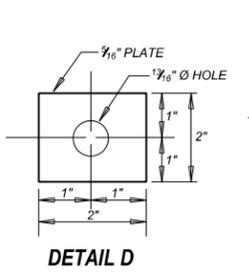
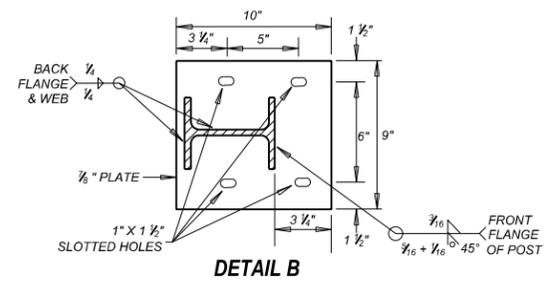
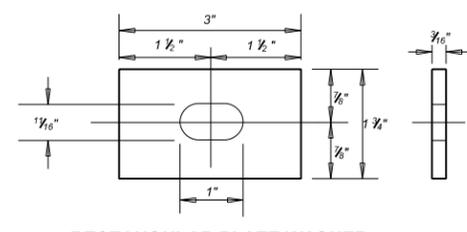
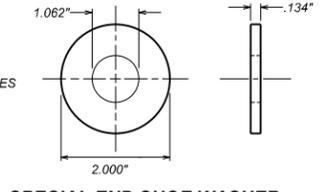
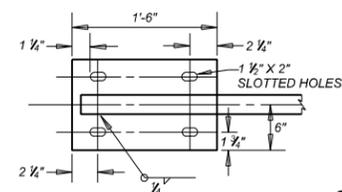
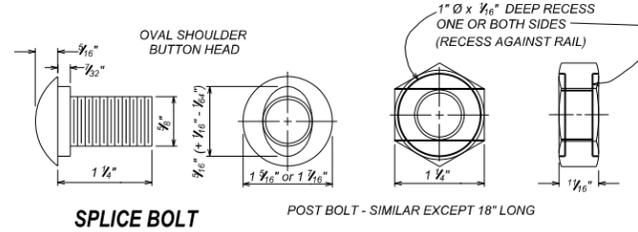
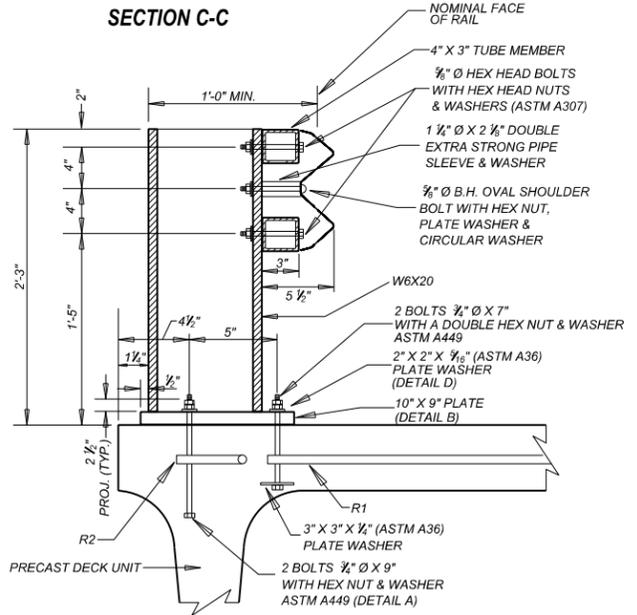
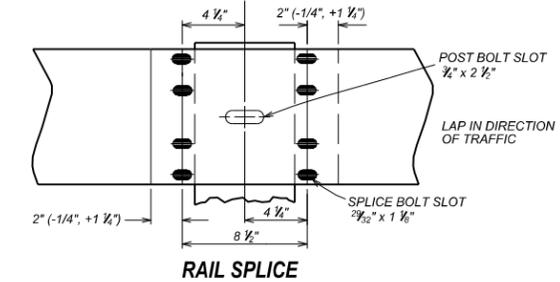
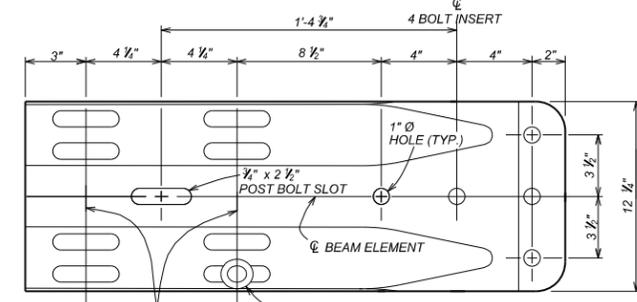
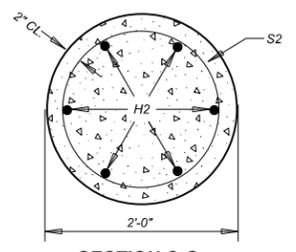
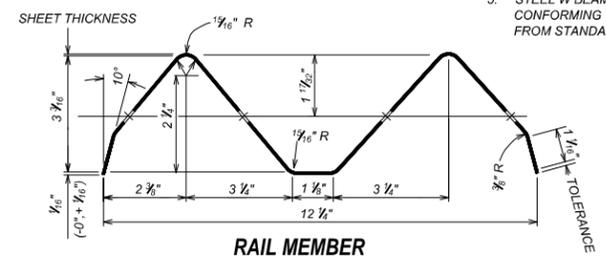
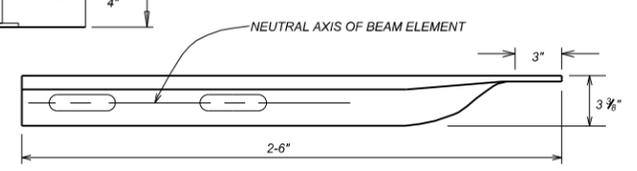
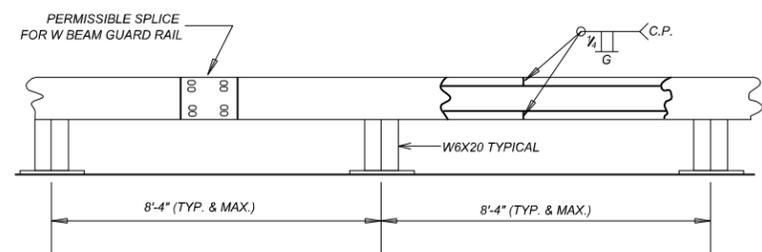
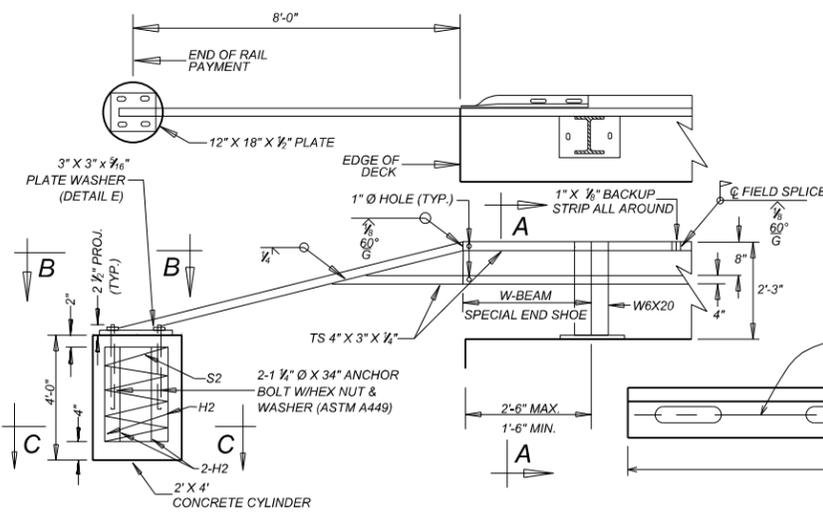
HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P599			

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	51	53
Plotting Date: 04/09/14			
Revised Date: mm/dd/yy			
Initials: CVS			

GENERAL NOTES:

- RAIL DESIGN SHALL BE ACCORDING TO AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES (CURRENT) EDITION AND INTERIM SPECIFICATIONS.
- RAIL POSTS SHALL BE PERPENDICULAR TO CENTERLINE OF ROADWAY.
- 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 3/8" 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" TUBE MEMBERS, BASE PLATES AND PROJECTING PORTIONS OF THE ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE SATISFACTORILY PAINTED IN ACCORDANCE WITH SECTION 411 OF THE SD STANDARD SPECIFICATIONS. THE COLOR OF THE FINISHED COAT SHALL BE AN APPROVED GREEN, FEDERAL STANDARD NO. 24108. THE NUTS, BOLTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153. THE RAIL POSTS AND TUBE MEMBERS MAY BE GALVANIZED IN ACCORDANCE WITH ASTM A123 IN SUBSTITUTION FOR PAINTING. IF GALVANIZING IS SELECTED, NO PAINT WILL BE APPLIED OVER GALVANIZED SURFACES.
- 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 1/2" DRAIN HOLES IN THE TUBES NEAR ENDS OF RAIL AND NEAR SPLICES.
- ALL CONCRETE SHALL BE CLASS M6 AS SPECIFIED IN SECTION 462 OF THE SOUTH DAKOTA STANDARD SPECIFICATIONS.
- ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR 60.
- ALL BOLTS, NUTS, WASHERS, POSTS, PLATES, PIPE SLEEVES, STEEL W BEAM GUARD RAIL, WELDING, PAINTING, AND ALL COSTS OF INSTALLING FOUR RAIL ANCHORS INCLUDING CONCRETE, EXCAVATION, FORMING, REINFORCING STEEL, AND ANCHOR BOLTS SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER FOOT FOR TYPE T101 BRIDGE RAILING.
- MEASUREMENT FOR PAYMENT SHALL BE FROM CENTER OF ANCHOR TO CENTER OF ANCHOR FOR EACH SIDE OF THE BRIDGE.



REINFORCING SCHEDULE					BENDING DETAIL	
MK.	NO.	SIZE	LENGTH	TYPE		
S2	4	3	51'-7"	SPIRAL		
H2	24	5	3'-6"	STR.		
R1	14	4	3'-9"	17		
R2	14	4	4'-9"	17A		

NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS. SPIRAL - 6" PITCH AND 1 1/2 TURNS AT EACH END. USE 1 1/2 TURNS FOR LAP SPLICES AS REQUIRED.

USE 2 VERTICLE SPACE BARS.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
TYPE T101 BRIDGE RAILING: 40'-0" DOUBLE TEE	FL.	112

TYPE T101 BRIDGE RAILING DETAILS FOR 40'-0" SINGLE SPAN PRESTRESSED CONCRETE DOUBLE TEE BRIDGE

STA. 16+34.0 TO 16+74.0 0° SKEW
 OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
 STR. NO. 28-053-230 P 6253(02)
 HL-93

HAAKON COUNTY
 S.D. DEPT. OF TRANSPORTATION
 APRIL 2014 12 of 14

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P599			

FOR BIDDING PURPOSES ONLY

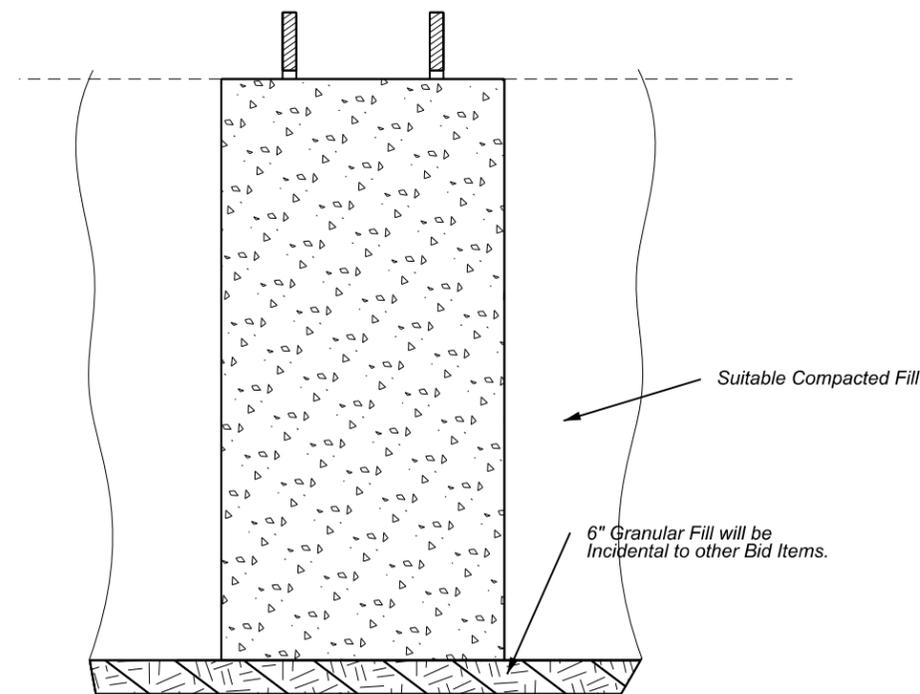
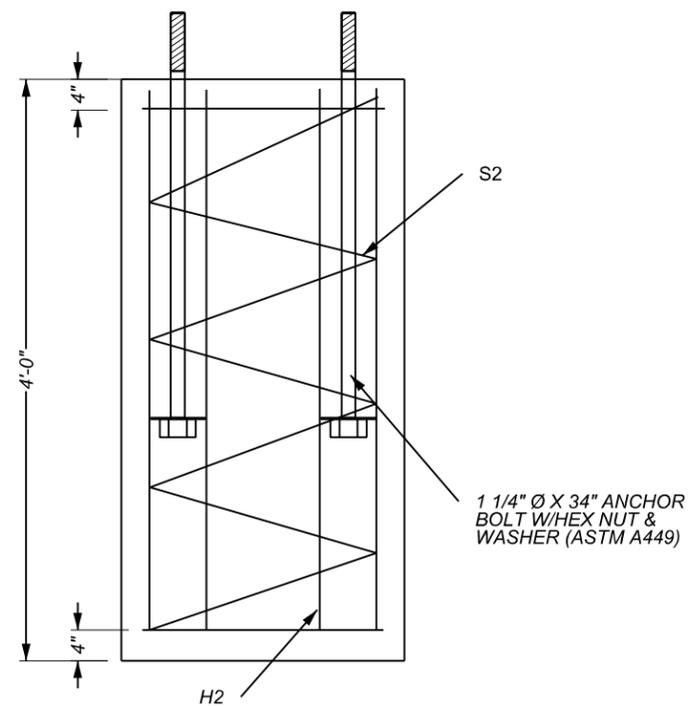
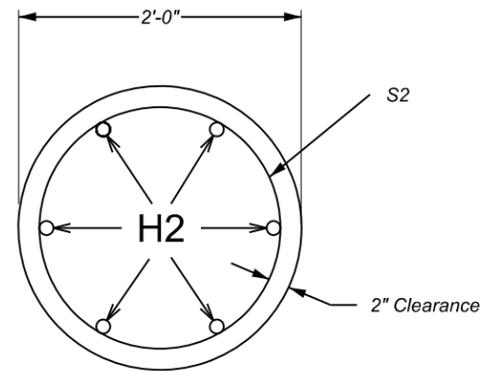
Optional Precast Concrete Cylinder Footing For T101 Railing

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	52	53
Plotting Date: 04/09/14 Revised Date: mm/dd/yy Initials: CVS			

REINFORCING SCHEDULE					
MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAIL
S2	4	3	51'-7"	SPIRAL	
H2	24	5	3'-6"	STR.	

NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS.
SPIRAL - 6" PITCH AND 1 1/2 TURNS AT EACH END. USE 1 1/2 TURNS FOR LAP SPLICES AS REQUIRED.

USE 2 VERTICAL SPACER BARS.



ALL CONCRETE SHALL BE CLASS M6 AS SPECIFIED IN SECTION 462 OF THE SOUTH DAKOTA STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GR 60.

Type 101 Bridge Railing Details
FOR
**40'-0" SINGLE SPAN PRESTRESSED
CONCRETE DOUBLE TEE BRIDGE**

STA. 16+34.0 TO 16+74.0 0° SKEW
OVER BRIDGER CREEK TRIBUTARY SEC. 23 / 26 - T2N - R20E
STR. NO. 28-053-230 P 6253(02)
HL-93

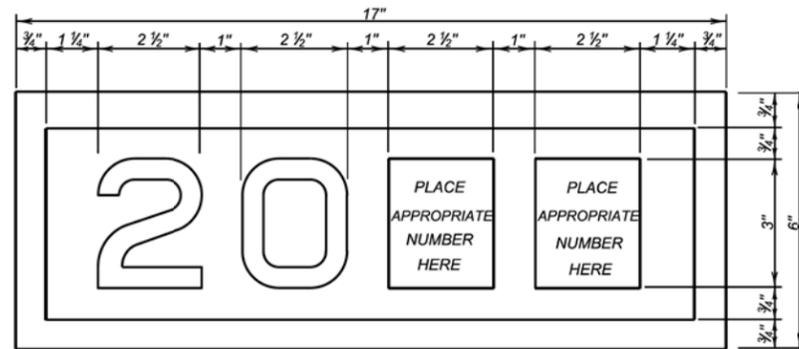
HAAKON COUNTY
S.D. DEPT. OF TRANSPORTATION
APRIL 2014

13 of 14

DESIGNED BY DC	DRAWN BY CVS	CHECKED BY DH	APPROVED BY
BEI#:S12-P599			

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6253(02)	53	53
Plotting Date: 04/09/14 Revised Date: 12/8/2014 Initials: CVS			

d. On prestressed double tee's, the year plate shall be centered vertical on the outside of the exterior flange of the double tee. Year plate shall be 2 ft in from the end of the girder.

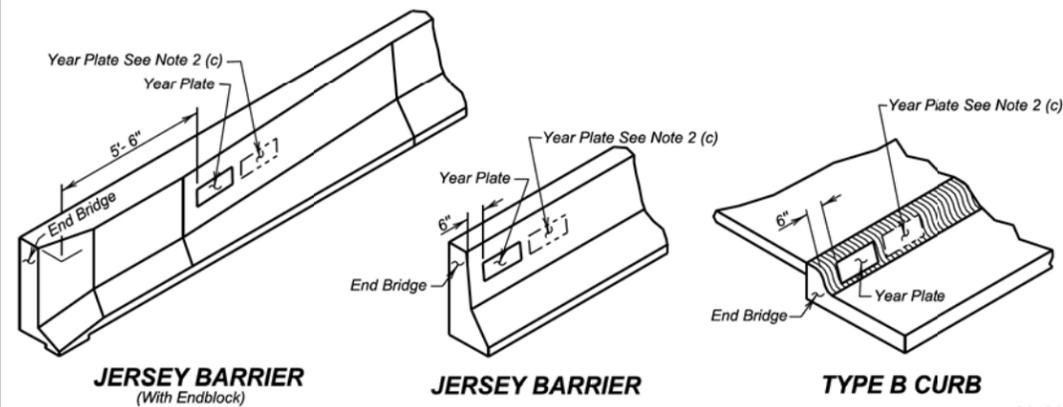


YEAR PLATE DETAILS

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.

d.



JERSEY BARRIER (With Endblock)

JERSEY BARRIER

TYPE B CURB

June 26, 2012

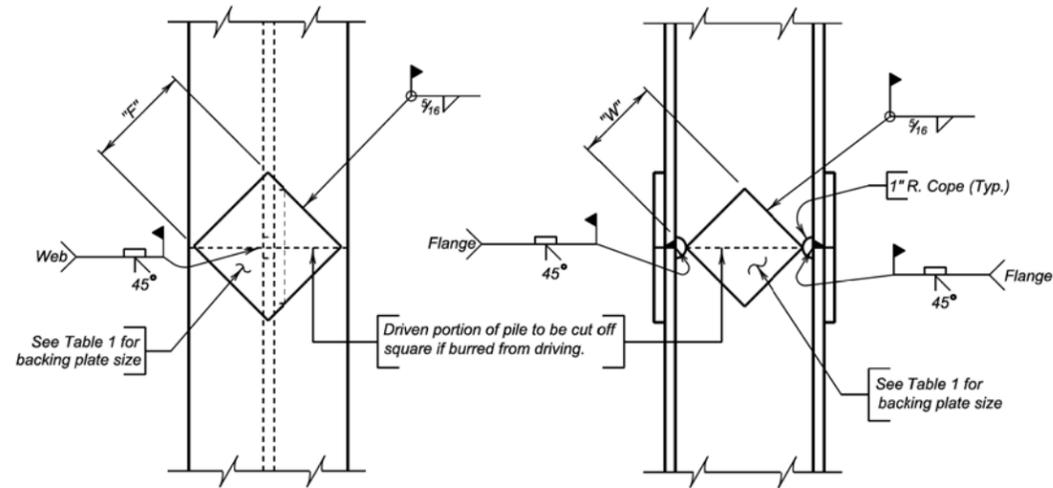
Published Date: 4th Qtr. 2014

S
D
D
O
T

YEAR PLATE DETAILS

PLATE NUMBER
460.02

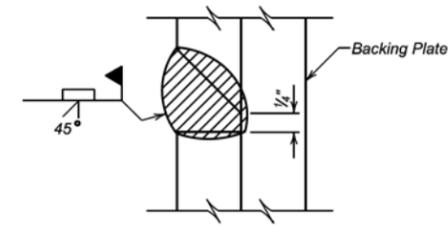
Sheet 1 Of 1



NOTE:

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

COMPLETE JOINT PENETRATION WELD DETAIL



GENERAL NOTES:

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

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

December 23, 2012

Published Date: 4th Qtr. 2014

S
D
D
O
T

STEEL PILE SPLICE DETAILS

PLATE NUMBER
510.40

Sheet 1 of 1