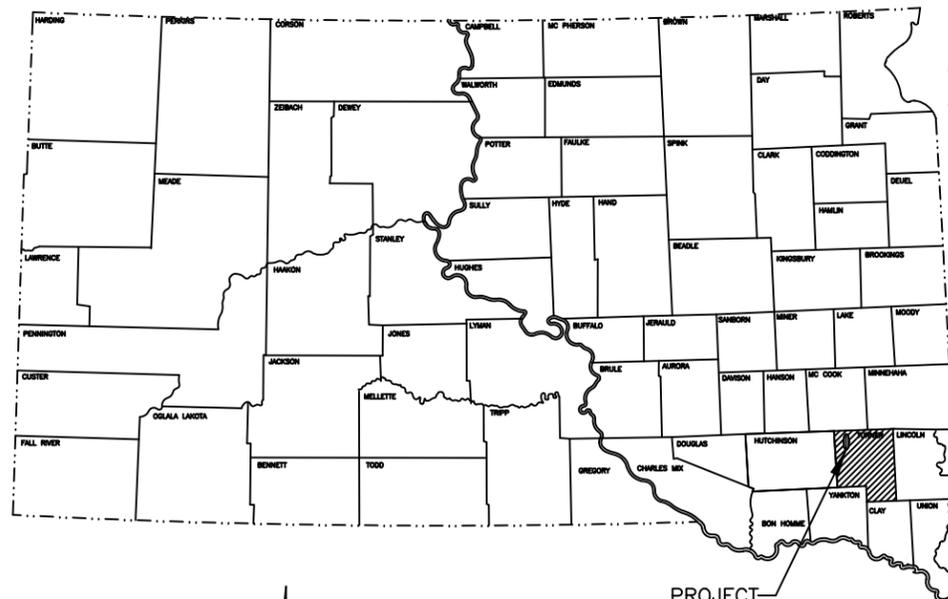


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	1	50

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

FOR BIDDING PURPOSES ONLY

PLANS FOR PROPOSED
PROJECT BRF 6355(09)
TURNER COUNTY
STRUCTURE AND APPROACH GRADING
STR. 63-070-041
PCN 01W8

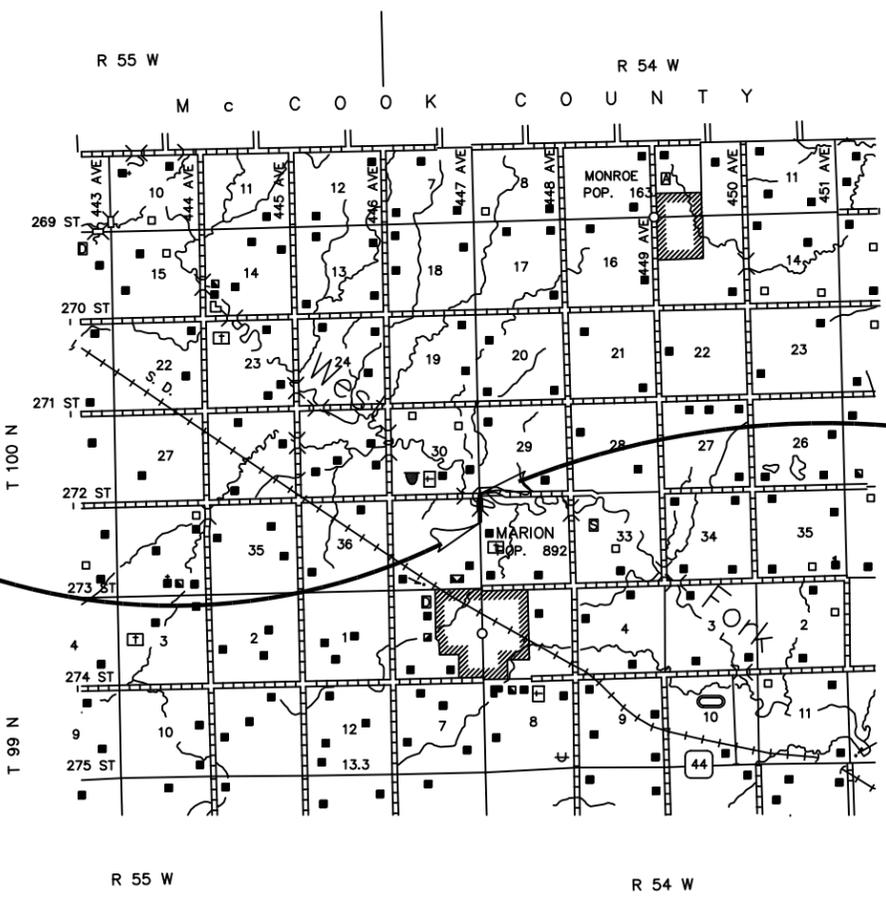


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JOHNSON ENGINEERING COMPANY
CIVIL ENGINEERS | LAND SURVEYORS
Est. 1956



BEGIN PROJECT BRF 6355(09)
447TH AVENUE, TURNER COUNTY
STA. 10+00.00 ON BRF 6355(09) =
1623.29' SOUTH AND 15.39' EAST OF THE
NE CORNER OF SEC. 31-T100N-R54W
N. 20745.78 E. 20057.87

END PROJECT BRF 6355(09)
447TH AVENUE, TURNER COUNTY
STA. 27+00.00 ON BRF 6355(09) =
76.64' NORTH AND 0.36' WEST OF THE
NE CORNER OF SEC. 31-T100N-R54W
N. 22445.70 E. 20042.12

DESIGN DESIGNATION

ADT (2007)	400
ADT (2027)	426
DHV	60
D	50%
T DHV	1.8%
T ADT	3.9%
DESIGN SPEED	55 MPH

STORM WATER PERMIT DATA
LATITUDE ----- 43.44274° N
LONGITUDE ----- 97.26103° W
PROJECT AREA ----- 6.4 ACRES
ACRES DISTURBED ----- 3.4 ACRES
MAJOR STREAM OR LAKE --- W. FORK VERMILLION RIVER



GROSS LENGTH	1700.00	FEET	0.322	MILES
LENGTH OF EXCEPTIONS	NONE	FEET	NONE	MILES
NET LENGTH	1700.00	FEET	0.322	MILES

ESTIMATE OF QUANTITIES

- GRADING -

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	3,462.3	SqYd
110E1690	Remove Sediment	2.5	CuYd
110E1693	Remove Erosion Control Wattle	275	Ft
110E1700	Remove Silt Fence	342	Ft
120E0010	Unclassified Excavation	5,988	CuYd
120E2000	Undercutting	1,545	CuYd
230E0010	Placing Topsoil	1,796	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
* 260E1010	Base Course	2,649.9	Ton
* 320E1200	Asphalt Concrete Composite	904.6	Ton
450E4767	24" CMP 12 Gauge, Furnish	66	Ft
450E4770	24" CMP, Install	66	Ft
450E5410	24" CMP Safety End, Furnish	2	Each
450E5411	24" CMP Safety End, Install	2	Each
600E0200	Type II Field Laboratory	1	Each
630E0110	Straight Double Class A Thrie Beam Guardrail with Wood Posts	50	Ft
630E1010	Straight Class A W Beam Guardrail with Wood Posts	100	Ft
630E2000	W Beam to Thrie Beam Guardrail Transition	4	Each
630E2015	W Beam Guardrail Flared End Terminal	4	Each
634E0110	Traffic Control Signs	165	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0280	Type 3 Barricade, 8' Single Sided	9	Each
634E0285	Type 3 Barricade, 8' Double Sided	7	Each
634E0630	Temporary Pavement Marking	0.3	Mile
634E1002	Detour Signing	404	SqFt
680E0240	4" Corrugated Polyethylene Drainage Tubing	230	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	1,540	Ft
680E2000	Concrete Headwall for Underdrain	2	Each
680E2500	Porous Backfill	431	Ton
730E0100	Cover Crop Seeding	1.1	Bu
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	1,663	SqYd
734E0154	12" Diameter Erosion Control Wattle	1,100	Ft
734E0165	Remove and Reset Erosion Control Wattle	275	Ft
734E0510	Shaping for Erosion Control Blanket	600	Ft
734E0604	High Flow Silt Fence	1,368	Ft
734E0610	Mucking Silt Fence	95	CuYd
734E0620	Repair Silt Fence	342	Ft
734E0630	Floating Silt Curtain	471	Ft

* - denotes non-participating

- STRUCTURE 63-070-041-

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E5000	Concrete Penetrating Sealer	413	SqYd
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0100	Structure Excavation, Bridge	323	CuYd
460E0030	Class A45 Concrete, Bridge Deck	184.6	CuYd
460E0050	Class A45 Concrete, Bridge	146.2	CuYd
464E0100	Controlled Density Fill	9.1	CuYd
470E0410	Type SL-1 Bridge Railing	217	Ft
480E0100	Reinforcing Steel	23,304	Lb
480E0200	Epoxy Coated Reinforcing Steel	66,463	Lb
510E0300	Preboring Pile	100	Ft
510E3361	HP 10x42 Steel Test Pile, Furnish and Drive	440	Ft
510E3365	HP 10x42 Steel Bearing Pile, Furnish and Drive	3,010	Ft
700E0210	Class B Riprap	1,633.9	Ton
831E0110	Type B Drainage Fabric	1,882	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

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

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

Table of Topeka Shiner Streams

Station	Stream Name	Ordinary High Water Elevation
19+71	West Fork of the Vermillion River	1363.0

Action Taken/Required:

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

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

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

COMMITMENT 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

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF 6355(09)	2	50

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.

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

Action Taken/Required:

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

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

Action Taken/Required:

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



COMMITMENT D2: SURFACE WATER DISCHARGE

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

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance.

Action Taken/Required:

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

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

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

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

- SDDOT: <http://sddot.com/transportation/highways/environmental/stormwater/Default.aspx>
- DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>
- EPA: http://cfpub.epa.gov/npdes/home.cfm?program_id=6

Contractor Certification Form:

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

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

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

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

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



COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

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

SEQUENCE OF OPERATIONS

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

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

UTILITIES

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

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

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

UTILITIES OWNERSHIP

- Sta. 14+00 to 27+00 – Lt. "Underground Telephone Cable," Century Link, (800) 871-9244
- Sta. 14+00 to 27+00 – Rt. "Underground Gas Line," Northern Natural Gas, (866) 810-5268
- Sta. 14+00 to 27+00 – Rt. "Overhead Electric Lines," Xcel Energy, (800) 895-4999

TYPE II FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items shall be incidental to the contract unit price per each for "Type II Field Laboratory".

GENERAL MAINTENANCE OF TRAFFIC

The Contractor shall coordinate with the County to determine which signs will be reset and to verify reset locations. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State or County.

The Contractor shall maintain access to any field entrances within the project limits throughout the duration of construction. All costs associated with the foregoing work shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

TURNER COUNTY RESPONSIBILITIES

Turner County Highway Superintendent – Kent Austin – (605) 297-3404. Turner County will be responsible for the following items without federal participation:

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

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment. The estimated quantity of Water for Embankment is 35.0 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

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

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF 6355(09)	4	50

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

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

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

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

The dirt shall be compacted to the specification of the Specified Density Method.

UNCLASSIFIED EXCAVATION

The total "Unclassified Excavation" quantity is 5,988 cubic yards, of which 710 cubic yards is waste excavation. Payment will be made on a plans quantity basis in accordance with Section 120.4 of the Specifications. No separate measurement or payment will be made unless additional excavation is ordered by the Engineer.

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

SHRINKAGE FACTOR: Embankment +35%

TABLE OF UNCLASSIFIED EXCAVATION

Excavation	2,312
Topsoil	1,796
Undercut	1,545
Channel Cleanout	335
Total Unclassified Excavation:	5,988



FOR BIDDING PURPOSES ONLY

UNDERCUTTING

In all cut sections the earthen subgrade shall be undercut 1.0 feet below the earthen subgrade surface. The undercut material or other suitable material, as directed by the Engineer, shall then be replaced and compacted to the density specified for the section being constructed.

Shallow embankment sections, fills less than 1.0 feet in height measured at the finished subgrade shoulders, shall be undercut to ensure a minimum 1.0 foot height of earth embankment for the entire width of roadbed. The upper 3 inches of undercut material that consists of topsoil with a high humus content shall be used as topsoil, placed in the fill slopes outside the shoulders of the earthen subgrade, or placed in the lower portion (below 4 foot depth) in fills which are greater than 4 feet in height. The remaining undercut soil and soil obtained from adjacent excavation (excluding the upper 3 inches) shall then be replaced and compacted to the density specified for the section being constructed.

The plan shown quantity will be the basis of payment. However, if there are additional areas of undercut other than what is shown in the plans, the Engineer shall direct removal of these areas and the additional areas will be measured according to the Engineer.

TABLE OF UNDERCUTTING

Station	to	Station	Quantity (CuYd)
14+00.00		19+14.00	511
20+28.50		27+00.00	1,034
Total:			1,545

PLACING TOPSOIL

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

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

Station	to	Station	Topsoil (CuYd)
10+00		27+00	1,796
Total:			1,796

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

SALVAGED ITEMS

All salvable materials indicated for salvage in the table below shall be taken out intact and stockpiled within the right-of-way to the satisfaction of the Engineer. The Contractor shall perform salvage operations in a manner that will prevent damage to the salvable materials. Salvable materials will be picked up by the County for future highway maintenance. Contractor shall contact Turner County Highway Superintendent, Lionel Avilla, (605) 297-3404 for pick up of salvable materials.

INCIDENTAL WORK, GRADING

Station	Remarks
17+00 – 18' Rt. to 18+54 – 21' Rt.	Salvage (3) Delineators
17+49 – 19' Lt. to 17+99 – 20' Lt.	Salvage (2) Delineators
18+24 – 48' Rt.	Remove 24" x 50' CMP
18+99 – 20' Rt. to 20+14 – 62' Rt.	Remove Riprap (Depth Unknown)
19+04 – 18' Lt. to 20+14 – 61' Lt.	Remove Riprap (Depth Unknown)
19+04 – 14' Rt. and 15' Lt.	Salvage (2) Object Marker
19+08 – 25' Rt. and 25' Lt.	Remove (2) Conc. Underdrain Headwalls
19+67 – 26' Lt. to 19+84 – 20' Rt.	Remove Concrete Rubble (Depth Unknown)
20+14 – 15' Rt. and 15' Lt.	Salvage (2) Object Marker
20+68 – 15' Lt. to 22+18 – 23' Lt.	Salvage (4) Delineators
21+18 – 18' Rt. to 22+17 – 21' Rt.	Salvage (3) Delineators
26+29 – 28' Rt.	Salvage Double Arrow Sign

All Remove Riprap (Depth Unknown) and Remove Concrete Rubble (Depth Unknown) items in the table above shall be removed to at least Elevation 1352.0 and to a deeper elevation if necessary for construction of Pier 2 or 3.

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

CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 3/8-inch X 1/2-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch X 1-inch or 5-inch X 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

PIPE FOR APPROACHES

Class II reinforced concrete pipe and high density polyethylene pipe may be substituted for corrugated metal pipe at approaches at no additional cost to the County or State.

EROSION CONTROL

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

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

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

Application of fertilizer will not be required on this project.

The area to be seeded and mulched is estimated at 4.45 acres.

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

COVER CROP SEEDING

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

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



EROSION CONTROL WATTLE

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

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

An estimated quantity of erosion control wattles shall remain on the project until vegetation has been established. It is estimated that some of the erosion control wattles will remain on the project to decompose.

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

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

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

TABLE OF 12" DIAMETER EROSION CONTROL WATTLE

Location	Quantity (Ft)	
10+25 – Lt.	Along Underdrain Excavation	40
10+75 – Lt. & Rt.	Along Underdrain Excavation	80
11+25 – Lt. & Rt.	Along Underdrain Excavation	80
11+75 – Lt. & Rt.	Along Underdrain Excavation	80
12+25 – Lt. & Rt.	Along Underdrain Excavation	80
12+75 – Lt. & Rt.	Along Underdrain Excavation	80
13+25 – Lt. & Rt.	Along Underdrain Excavation	80
13+75 – Lt. & Rt.	Along Underdrain Excavation	80
14+25 – Lt. & Rt.	Along Underdrain Excavation	80
15+00 – Lt. & Rt.	Along Underdrain Excavation	80
16+00 – Lt. & Rt.	Along Underdrain Excavation	80
17+00 – Lt. & Rt.	Along Underdrain Excavation	80
17+70 – Rt.	Along Underdrain Excavation	40
18+00 – Lt.	Along Underdrain Excavation	40
	Additional Quantity	100
Total:		1,100

REMOVE AND RESET EROSION CONTROL WATTLE

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

REMOVE SEDIMENT

Remove sediment shall consist of removing sediment trapped by the erosion control wattles and spreading the material evenly over the adjacent area to conform to the existing grade.

HIGH FLOW SILT FENCE

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

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

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

An additional 100 feet of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF HIGH FLOW SILT FENCE

Location	Quantity (Ft)	
18+00 Rt.	Around Inlet of Culvert	20
20+21 to 25+90 - Lt.	Along Extent of Work Limits	569
20+21 to 27+00 - Rt.	Along Extent of Work Limits	679
Additional Quantity		100
Total:		1,368

REMOVE SILT FENCE

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

FLOATING SILT CURTAIN

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

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

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

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

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

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

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

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

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

TABLE OF FLOATING SILT CURTAIN

Location	Quantity (Ft)	
19+57 - Lt. to 19+31 - Rt.	Along Channel Toe	234
19+98 - Lt. to 19+85 - Rt.	Along Channel Toe	237
Total:		471

EROSION CONTROL BLANKET

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

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

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

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

An additional quantity of 200 square yards of Type 2 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.



TABLE OF EROSION CONTROL BLANKET

Location	Type	Quantity (SqYd)
10+00 to 19+15 - Lt.	Along Underdrain Excavation	2 612
10+60 to 19+15 - Rt.	Along Underdrain Excavation	2 538
19+21 to 19+43 - Rt.	End of Riprap Along Bank	2 71
19+29 to 19+54 - Lt.	End of Riprap Along Bank	2 80
19+87 to 20+15 - Rt.	End of Riprap Along Bank	2 76
19+93 to 20+15 - Lt.	End of Riprap Along Bank	2 86
	Additional Quantity	2 200
Total:		1,663

SHAPING FOR EROSION CONTROL BLANKET

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

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

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station to Station	Quantity (SqYd)
14+00.00 to 19+07.60	1,466.4
20+09.10 to 27+00.00	1,995.9
Total: 3,462.3	

UNDERDRAIN

An underdrain system shall be installed from Sta. 10+00 to 19+15 – Lt. and Sta. 10+60 to 19+15 – Rt. and outlet at Sta. 19+15 – 25' Lt. and Rt.

Underdrains shall be installed near the ditch bottom from Sta. 10+00 – 45' Lt. to Sta. 18+00 – 45' Lt. and from Sta. 10+60 – 45' Rt. to Sta. 18+00 – 45' Rt. consisting of of 4" Slotted Corrugated Polyethylene Drainage Tubing placed in the bottom of a 2 foot wide by 3 foot deep trench. The trench will then be backfilled with 2 feet of Porous Backfill and the top 1 foot shall be backfilled with typical embankment material. The last 115 feet of underdrain attached to the headwall Lt. and Rt. of centerline shall be 4" Corrugated Polyethylene Drainage Tubing installed from Sta. 18+00 – 45' Lt. and 45' Rt. to Sta. 18+50 – 45' Lt. and Rt. to Sta. 19+15 – 25' Lt. and 25' Rt. The outlet tubing shall be placed in a 2 foot wide trench of variable depth backfilled with typical embankment material. Each side's underdrain outlet tubing shall daylight at a Concrete Headwall for Underdrain placed near the bridge abutment backwall at approximately station 19+15 – 25' Lt and Rt. as directed by the Engineer.

It is anticipated that the new underdrain outlet tubing may intersect the existing lateral drains installed with a previous system. The existing underdrain outlet tubing shall be located and teed into the proposed underdrains to drain at common outlet headwalls. Existing lateral drains shall also be teed into the new underdrain system as they are encountered.

The 394 cubic yards of Excavation for installation of the new underdrain drainage tubing and the 4" Polyethylene Tee Connector shall be incidental

to the contract unit price per foot for the corresponding "Polyethylene Drainage Tubing" bid items.

Each underdrain trench shall be graded to maintain a minimum of 0.01 ft/ft or -1% drop from beginning to outlet. Each Concrete Headwall for Underdrain shall be placed to blend in with the surrounding topography with the outlet tubing placed above the bottom of the drainage through the headwall so as to permit proper flow from the outlet.

Care must be taken to insure that the underdrain and outlet tubing is not damaged during construction. Sufficient cover material is to be placed over the underdrains before heavy equipment is allowed to work over the underdrains.

The underdrain locations and elevations given are based on the best information available to the Geotechnical Engineering Activity.

Actual field conditions may require that adjustments be made by the Engineer during construction to provide for sufficient drainage.

The estimated quantities for the underdrain system are as follows:

4" Corrugated Polyethylene Drainage Tubing	230	Ft
4" Slotted Corrugated Polyethylene Drainage Tubing	1,540	Ft
4" Polyethylene Tee Connector	6	Each
Porous Backfill	431	Ton
Concrete Headwall for Underdrain (See Standard Plate 680.01)	2	Each
Excavation	394	CuYd

TABLE OF GUARDRAIL QUANTITIES

Location	Straight Double Class A Thrie Beam Guardrail with Wood Posts (Ft)	Straight Class A W Beam Guardrail with Wood Posts (Ft)	W Beam to Thrie Beam Guardrail Transition (Each)	W Beam Guardrail Flared End Terminal (Each)
Sta. 18+35.83 Rt. to Sta. 18+73.33 Rt.				1
Sta. 18+73.33 Rt. to Sta. 18+98.33 Rt.		25		
Sta. 18+98.33 Rt. to Sta. 19+04.58 Rt.			1	
Sta. 19+04.58 Rt. to Sta. 19+17.08 Rt.	12.5			
Sta. 18+35.83 Lt. to Sta. 18+73.33 Lt.				1
Sta. 18+73.33 Lt. to Sta. 18+98.33 Lt.		25		
Sta. 18+98.33 Lt. to Sta. 19+04.58 Lt.			1	
Sta. 19+04.58 Lt. to Sta. 19+17.08 Lt.	12.5			
Sta. 20+25.42 Rt. to Sta. 20+37.92 Rt.	12.5			
Sta. 20+37.92 Rt. to Sta. 20+44.17 Rt.			1	
Sta. 20+44.17 Rt. to Sta. 20+69.17 Rt.		25		
Sta. 20+69.17 Rt. to Sta. 21+06.67 Rt.				1
Sta. 20+25.42 Lt. to Sta. 20+37.92 Lt.	12.5			
Sta. 20+37.92 Lt. to Sta. 20+44.17 Lt.			1	
Sta. 20+44.17 Lt. to Sta. 20+69.17 Lt.		25		
Sta. 20+69.17 Lt. to Sta. 21+06.67 Lt.				1
Totals:	50	100	4	4



SUMMARY OF MAINLINE ASPHALT CONCRETE COMPOSITE AND BASE COURSE

Mainline	2 – 2" Lifts Asphalt Concrete Composite (TON)	9" Base Course (TON)
14+50.00 to 19+14.00	336.7	879.8
20+28.50 to 26+50.00	448.9	1202.6
Total:	785.6	2082.4

SURFACING THICKNESS DIMENSIONS

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

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

BASE COURSE

In lieu of the gradation requirements specified for Base Course the Contractor may elect to produce the material to meet the gradation requirements for Mineral Aggregate. The Contractor must state at the preconstruction meeting which specification will be followed.

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

ASPHALT CONCRETE COMPOSITE

All Asphalt Concrete Composite shall be 4" thick with 9" thick Base Course except as noted in the table shown in the Summary of Additional Quantities. Asphalt Concrete Composite with 4" depth shall be placed in two - 2" lifts.

WATER FOR COMPACTION

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

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

TEMPORARY PAVEMENT MARKING

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

The total length of no passing zone on this project is 0.181 miles.

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

Quantities of Temporary Pavement Markings consist of one pass on top of the Asphalt Concrete Composite Wearing Course.

SUMMARY OF ADDITIONAL QUANTITIES

Additional Quantities	Asphalt Concrete Composite (TON)	Base Course (TON)
14+00.00 to 14+50.00 – Begin Project Taper Section	35.6	102.5
17+23.33 to 19+14.00 – Guardrail Widening Section Lt & Rt of Mainline	21.2	170.0
20+28.50 to 22+19.17 – Guardrail Widening Section Lt & Rt of Mainline	21.2	170.0
26+50.00 to 27+00.00 – End Project Taper Section	35.6	102.5
18+19.00 – Field Entrance	0.0	19.3
26+23.36 – Intersecting Gravel Road with 35' radii	5.4	3.2
Total:	119.0	567.5

Notes:

- 1) Begin Project Taper Section and End Project Taper Section are estimated based on a 4" thick Asphalt Concrete Composite and a 9" thick Base Course.
- 2) Guardrail Widened Sections are estimated based on a 2" thick Asphalt Concrete Composite and an 11" thick Base Course.
- 3) All gravel intersecting roads with 35 feet radii shall be surfaced with a five foot wide asphalt concrete pad adjacent to the main line surfacing the full width of the intersecting road and 3.2 tons of base course in a five foot wide pad adjacent to the said five foot wide asphalt pad.
- 4) All field entrances shall be surfaced with 19.1 tons of base course from the edge of the guardrail widened section asphalt concrete pad to the right-of-way line.

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

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
- **Total Project Area 6.4 Acres (4.2 1.b.)**
- **Total Area To Be Disturbed 3.4 Acres (4.2 1.b.)**
- **Existing Vegetative Cover (%) 85%**
- **Soil Properties: AASHTO Soil Classification A4, A6, A7 (4.2 1. d.)**
- **Name of Receiving Water Body/Bodies West Fork of the Vermillion River (4.2 1.e.)**

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

- (Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)
- **Special sequencing requirements** (see sheet 4)
 - **Install stabilized construction entrance(s).**
 - **Install perimeter protection where runoff sheets from the site.**
 - **Install channel and ditch bottom protection.**
 - **Clearing and grubbing.**
 - **Remove and store topsoil.**
 - **Stabilize disturbed areas.**
 - **Complete final grading.**
 - **Complete final surfacing and sealing of bridge slab.**
 - **Complete traffic control installation and protection devices.**
 - **Reseed areas disturbed by removal activities.**

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

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

➤ **Structural Temporary Erosion and Sediment Controls**

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

➤ **Wetland Avoidance**

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

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

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

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

▪ **Waste Disposal**

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

▪ **Hazardous Waste**

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

▪ **Sanitary Waste**

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

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

➤ **Maintenance and Inspection Practices**

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

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

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

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

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

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

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



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❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ **Housekeeping**

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

▪ **Hazardous Materials**

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

➤ **Product Specific Practices (6.8)**

▪ **Petroleum Products**

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

▪ **Fertilizers**

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

▪ **Paints**

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

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

▪ **Concrete Trucks**

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

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

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

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

➤ **Spill Response (4.2 2 c.(2))**

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

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

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

❖ **Spill Notification**

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

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

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



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❖ **Construction Changes (4.4)**

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

❖ **CERTIFICATIONS**

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

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

➤ **South Dakota Department of Transportation**

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



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

➤ **Prime Contractor**

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

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

Authorized Signature

❖ **CONTACT INFORMATION**

➤ **Contractor Information:**

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

➤ **Erosion Control Supervisor**

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

➤ **SDDOT Project Engineer**

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

➤ **SD DENR Contact Spill Reporting**

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

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

- (605) 773-3153

➤ **National Response Center Hotline**

- (800) 424-8802.

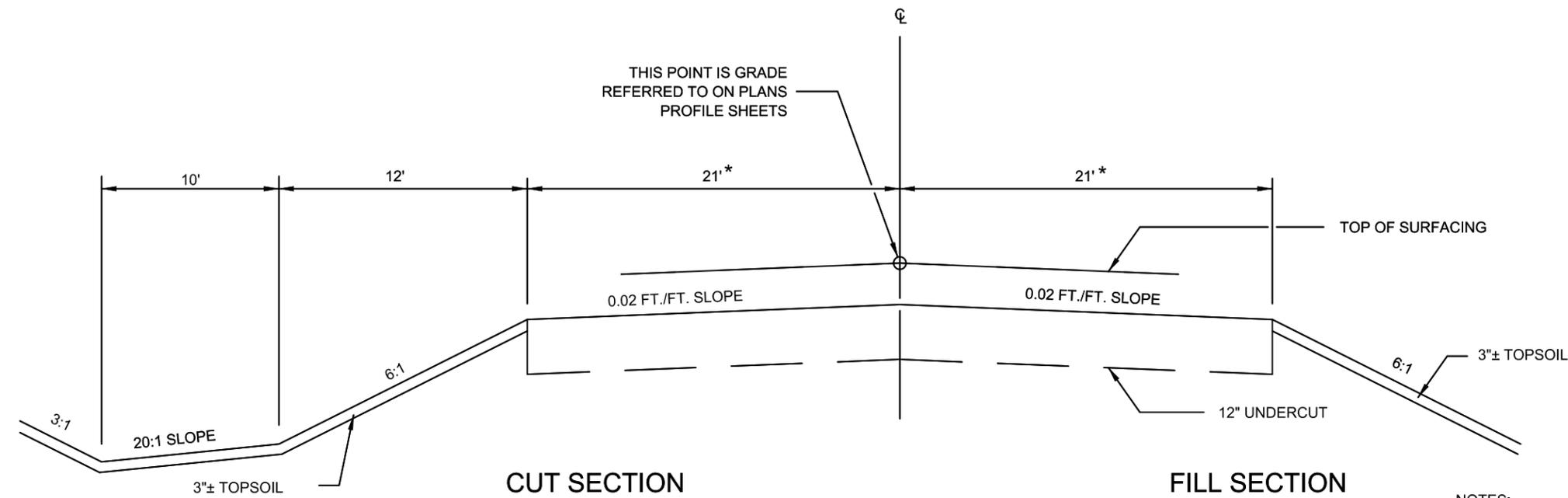


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	12	50

TYPICAL SECTIONS

FOR BIDDING PURPOSES ONLY

STA. 14+50.00 TO STA. 19+14.00
STA. 20+28.50 TO 26+50.00

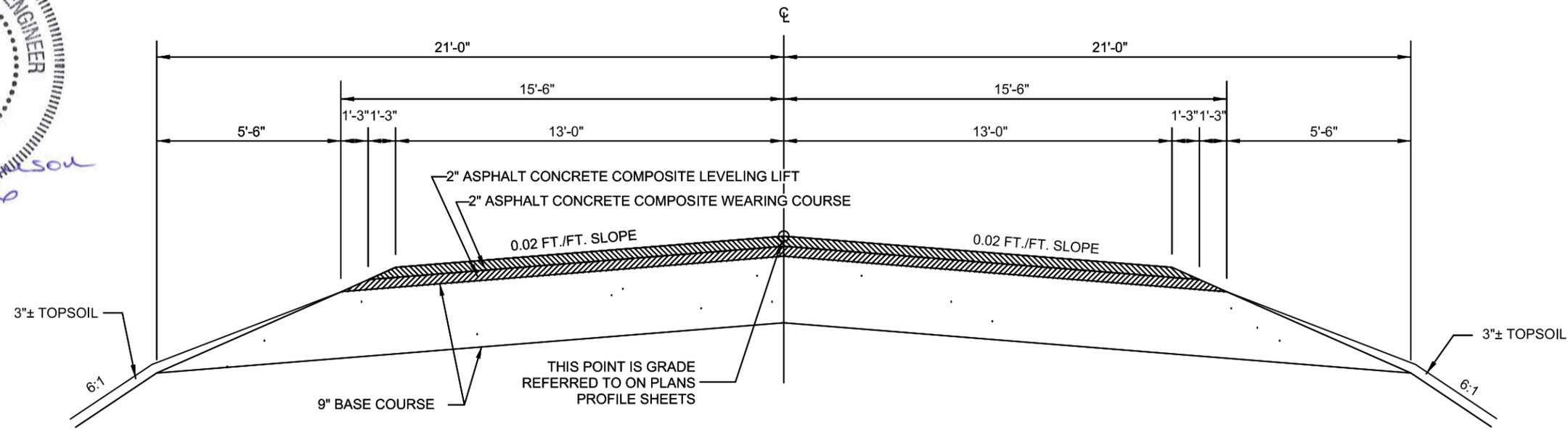


CUT SECTION

FILL SECTION

NOTES:
* 1) WHERE SUBGRADE TRANSITIONS OCCUR FOR MAINLINE WIDENING AND APPROACH GUARDRAIL, REFER TO THE CROSS SECTION SHEETS FOR SECTION TO BE USED.

TYPICAL GRADING SECTION



TYPICAL SURFACING SECTION

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

TRAFFIC CONTROL ROAD CLOSED

FOR BIDDING PURPOSES ONLY

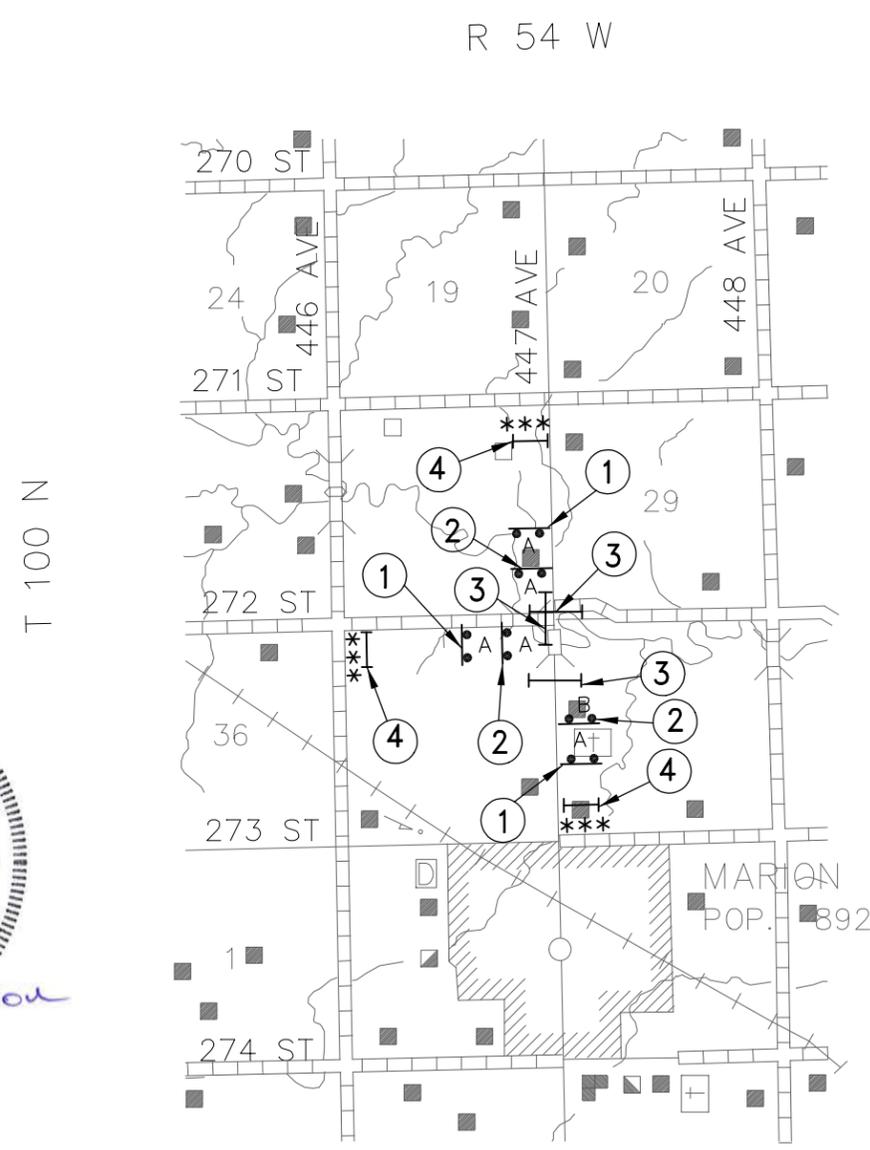
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	13	50

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

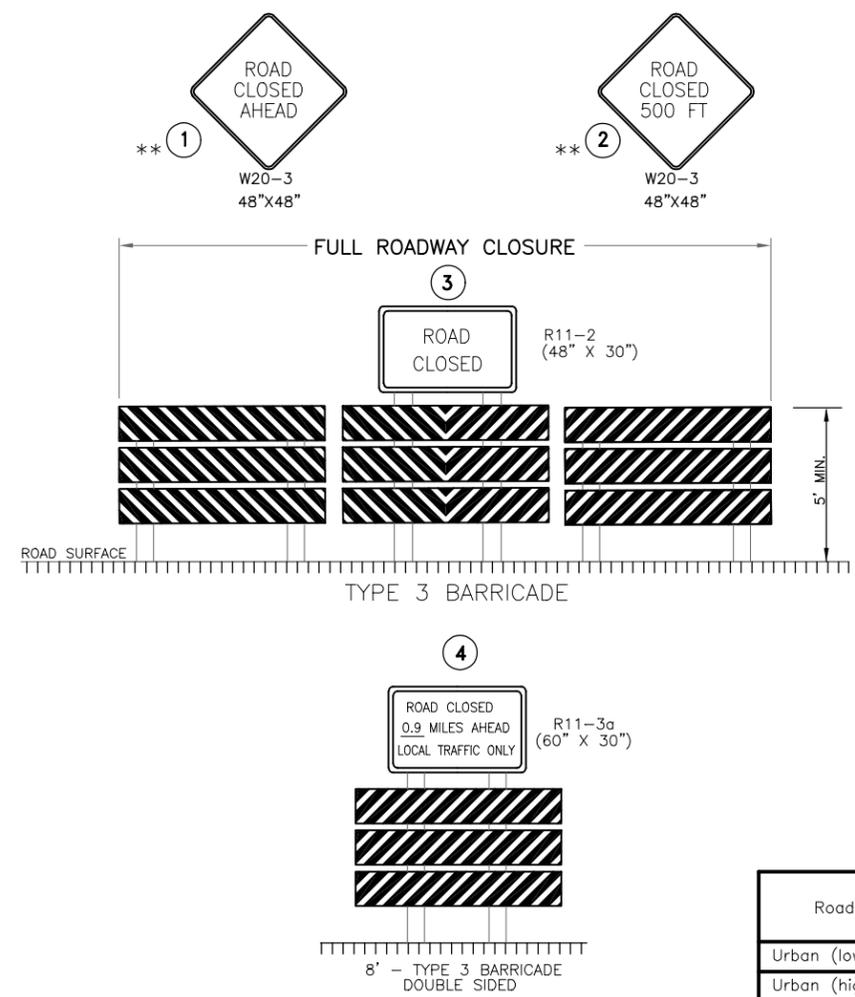
SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	3	48" x 30"	10	30
R11-3a	ROAD CLOSED <u>0.9</u> MILES AHEAD LOCAL TRAFFIC ONLY	3	60" x 30"	13	39
W20-3	ROAD CLOSED AHEAD	6	48" x 48"	16	96
CONVENTIONAL ROAD					165
TRAFFIC CONTROL SIGNS SQFT					

TYPE 3 BARRICADES

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



NOTES:
 ALL FIXED LOCATION SIGNS SHALL REMAIN IN PLACE UNTIL PROJECT IS COMPLETED.
 ** - MOUNT ON FIXED LOCATION (GROUND MOUNTED) SUPPORTS.
 ROAD CLOSURE FOR STRUCTURE NUMBER 63-070-041 WORK.



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

* Speed category to be used shall be Rural.
 *** 25' to 50' from adjacent R.O.W. line.

TRAFFIC CONTROL DETOUR ROUTE

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	14	50

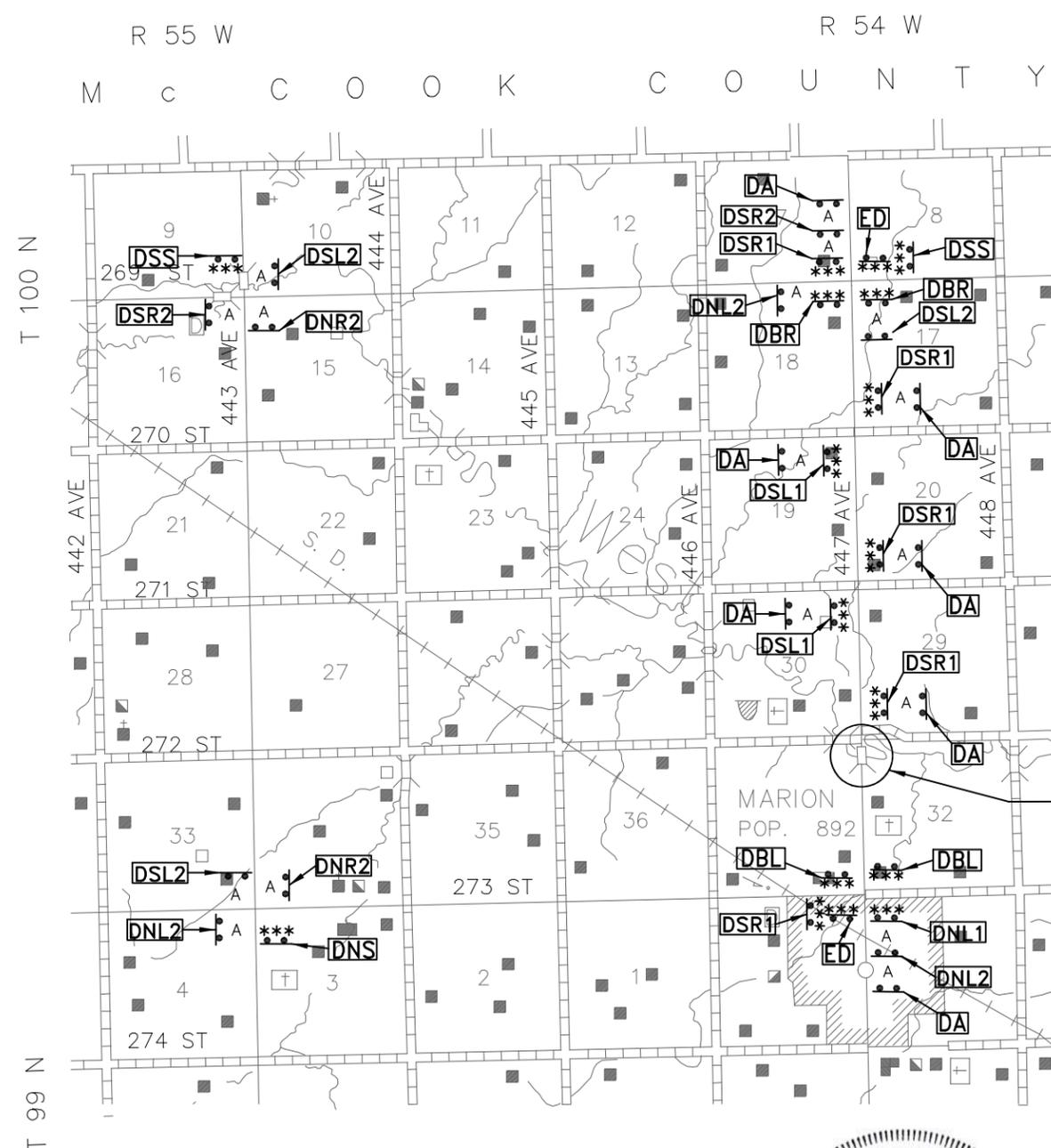
ITEMIZED LIST FOR DETOUR SIGNING

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-3a	ROAD CLOSED -- MILES AHEAD LOCAL TRAFFIC ONLY	4	60" x 30"	13	52
W20-2	DETOUR AHEAD	7	48" x 48"	16	112
SPECIAL NORTH		7	24" x 12"	2	14
SPECIAL SOUTH		14	24" x 12"	2	28
M1-6	COUNTY ROUTE MARKER (1 or 2 digits)	21	24" x 24"	4	84
M4-8	DETOUR	21	24" x 12"	2	42
M4-8a	END DETOUR	2	24" x 18"	3	6
M4-10	DETOUR ARROW (L or R)	4	48" x 18"	6	24
M5-1	ADVANCE TURN ARROW 90° (L or R)	10	21" x 15"	2	20
M6-1	DIRECTION ARROW - Horizontal Single Head (L or R)	8	21" x 15"	2	16
M6-3	DIRECTION ARROW - Vertical Single Head	3	21" x 15"	2	6
CONVENTIONAL ROAD DETOUR SIGNING SQFT					404

TYPE 3 BARRICADES (FOR DETOUR SIGNING)

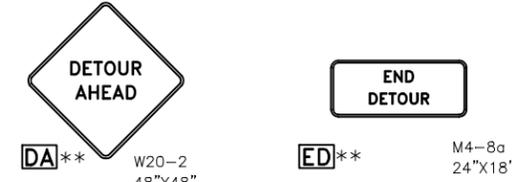
ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	4 Each

Diagram showing various traffic signs and barricades for detour signing, including detour signs, directional arrows, and barricades with their respective codes and dimensions.



NOTES:

ALL FIXED LOCATION SIGNS SHALL REMAIN IN PLACE UNTIL PROJECT IS COMPLETED.
 ** - MOUNT ON FIXED LOCATION (GROUND MOUNTED) SUPPORTS.
 DETOUR FOR STRUCTURE NUMBER 63-070-041 WORK.
 ALL "SPECIAL" DETOUR SIGNS SHALL BE ORANGE IN COLOR WITH 6" HIGH BLACK LETTERING AND BLACK BORDER.



Road Type	Distance Between Signs (Feet)		
	A	B	C
Urban (low speed)	100	100	100
Urban (high speed)	350	350	350
Rural*	500	500	500
Expressway/Freeway	1000	1500	2640

* Speed category to be used shall be Rural except within the City of Marion where the speed category shall be Urban (low speed).
 *** 25' to 50' from adjacent R.O.W. line.



EROSION AND SEDIMENT CONTROL PLAN

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	15	50

SCALE:
1" = 100'

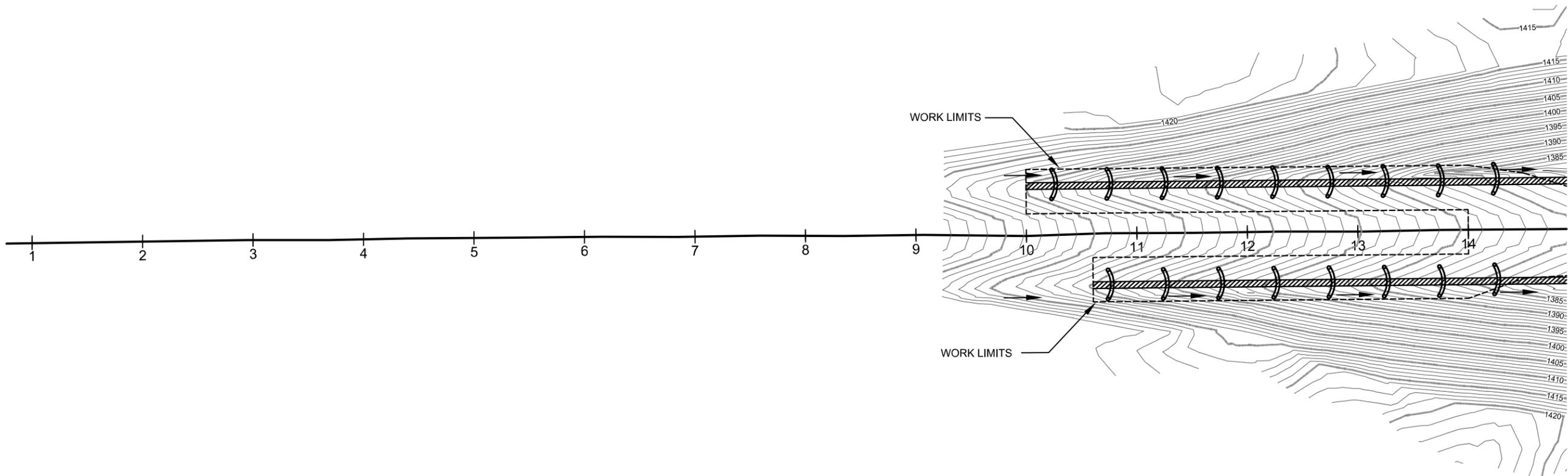
LEGEND

-  HIGH FLOW SILT FENCE
-  FLOATING SILT CURTAIN
-  TYPE 2 EROSION CONTROL BLANKET
-  CLASS B RIPRAP
-  12" DIAMETER EROSION CONTROL WATTLE

12" DIAMETER EROSION CONTROL WATTLE

LOCATION	DESCRIPTION	QUANTITY (Ft)
10+25 - LT.	ALONG UNDERDRAIN EXCAVATION	40
10+75 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
11+25 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
11+75 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
12+25 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
12+75 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
13+25 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
13+75 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80

Total: 600



TYPE 2 EROSION CONTROL BLANKET

LOCATION	DESCRIPTION	QUANTITY (SqYd)
10+00 TO 14+00 - 45' LT.	ALONG UNDERDRAIN EXCAVATION	267
10+60 TO 14+00 - 45' RT.	ALONG UNDERDRAIN EXCAVATION	227

Total: 494





EROSION AND SEDIMENT CONTROL PLAN

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	16	50

SCALE:
1" = 100'

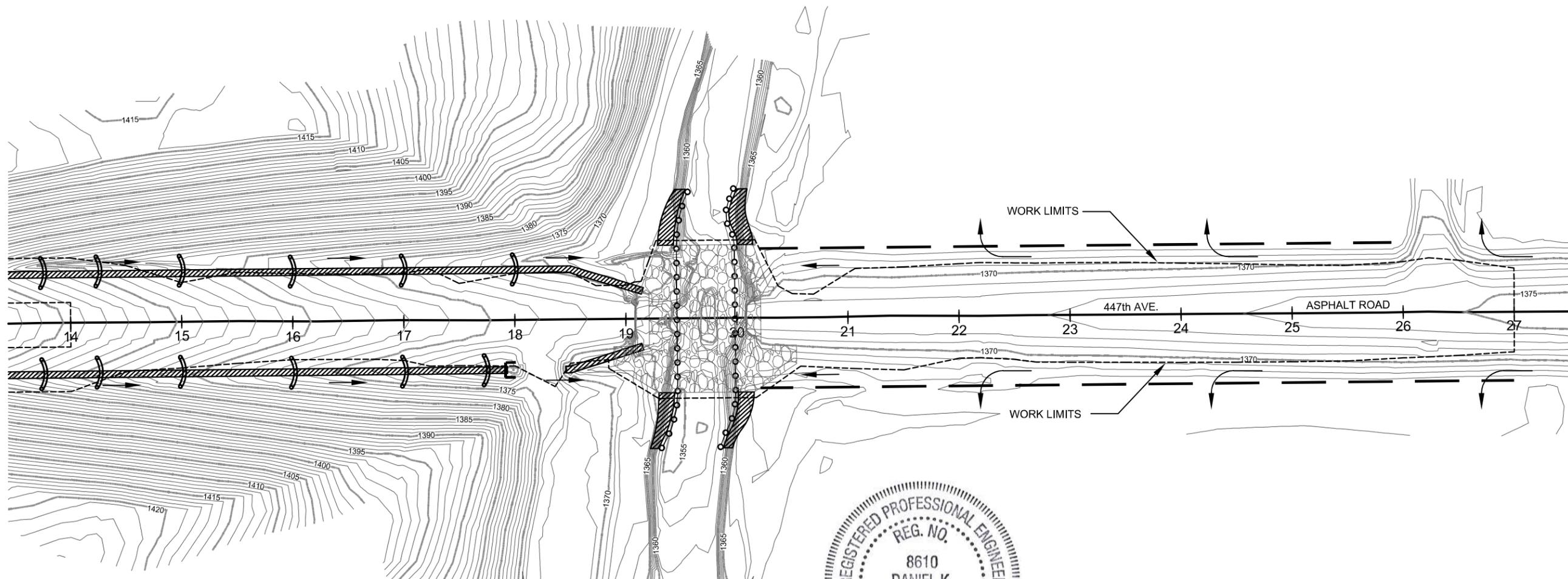
LEGEND

- HIGH FLOW SILT FENCE
- FLOATING SILT CURTAIN
- TYPE 2 EROSION CONTROL BLANKET
- CLASS B RIPRAP
- 12" DIAMETER EROSION CONTROL WATTLE

12" DIAMETER EROSION CONTROL WATTLE

LOCATION	DESCRIPTION	QUANTITY (Ft)
14+25 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
15+00 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
16+00 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
17+00 - LT. & RT.	ALONG UNDERDRAIN EXCAVATION	80
17+70 - RT.	ALONG UNDERDRAIN EXCAVATION	40
18+00 - LT.	ALONG UNDERDRAIN EXCAVATION	40
	ADDITIONAL QUANTITY	100

Total: 500



HIGH FLOW SILT FENCE

LOCATION	DESCRIPTION	QUANTITY (Ft)
18+00 - RT.	AROUND INLET OF CULVERT	20
20+21 TO 25+90 - LT.	ALONG EXTENT OF WORK LIMITS	569
20+21 TO 27+00 - RT.	ALONG EXTENT OF WORK LIMITS	679
	ADDITIONAL QUANTITY	100

Total: 1,368

FLOATING SILT CURTAIN

LOCATION	DESCRIPTION	QUANTITY (Ft)
19+57 - LT. TO 19+31 - RT.	ALONG CHANNEL TOE	234
19+98 - LT. TO 19+85 - RT.	ALONG CHANNEL TOE	237

Total: 471

TYPE 2 EROSION CONTROL BLANKET

LOCATION	DESCRIPTION	QUANTITY (SqYd)
14+00 TO 17+95 - 45' RT.	ALONG UNDERDRAIN EXCAVATION	263
14+00 TO 19+15 - 45' TO 25' LT.	ALONG UNDERDRAIN EXCAVATION	345
18+45 TO 19+15 - 45' TO 25' RT.	ALONG UNDERDRAIN EXCAVATION	48
19+21 TO 19+43 - 67' TO 117' RT.	END OF RIPRAP ALONG BANK	71
19+29 TO 19+54 - 66' TO 116' LT.	END OF RIPRAP ALONG BANK	80
19+87 TO 20+15 - 67' TO 117' RT.	END OF RIPRAP ALONG BANK	76
19+93 TO 20+15 - 66' TO 116' LT.	END OF RIPRAP ALONG BANK	86
	ADDITIONAL QUANTITY	200

Total: 1,169

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	17	50

CONTROL DATA

CONTROL POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 2	2+54.81	64.94' Lt.	5/8" Rebar & Guards	20000.00	20000.00	1434.60
CP 3	10+36.88	105.08' Rt.	5/8" Rebar & Guards	20783.65	20162.60	1415.33
CP 4	17+60.02	64.59' Rt.	5/8" Rebar & Guards	21506.38	20115.26	1376.42
CP 5	20+42.73	104.18' Lt.	5/8" Rebar & Guards	21787.47	19943.81	1368.60
CP 7	29+28.17	65.78' Lt.	5/8" Rebar & Guards	22673.56	19975.26	1367.41

HORIZONTAL ALIGNMENT DATA

(CONSTRUCTION CENTERLINE)

TYPE	STATION			NORTHING	EASTING
POB	14+00.00			21145.76	20054.08
		TL=1223.36'	N 00°32'36" W		
	26+23.36			22369.06	20042.48
		TL=76.64'	N 00°16'18" W		
EOP	27+00.00			22445.70	20042.12



NOTE:

The coordinate values shown on this sheet are assumed datum.

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

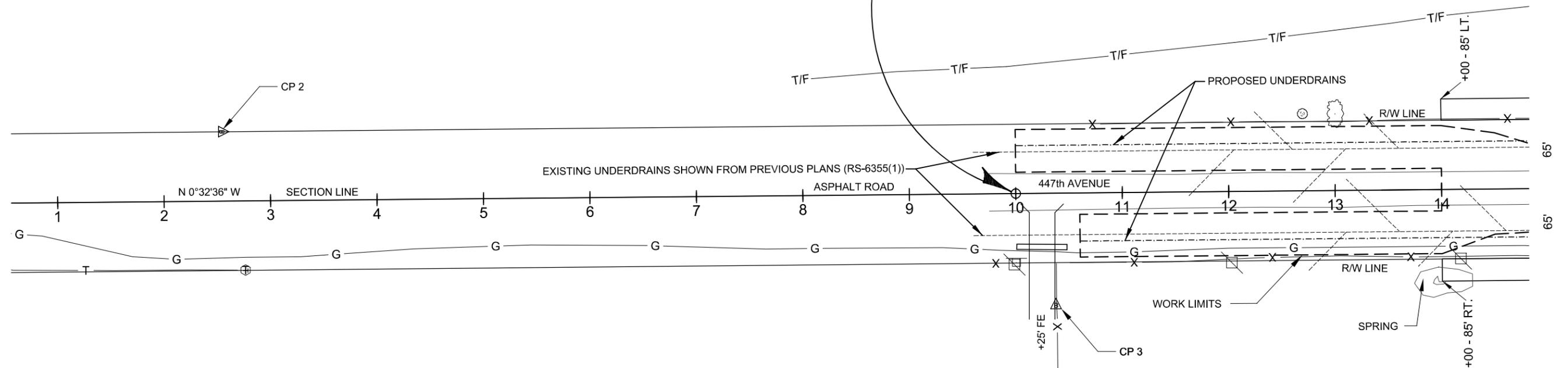


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	18	50

BEGIN PROJECT BRF 6355(09)
 447TH AVENUE, TURNER COUNTY
 STA. 10+00.00 ON BRF 6355(09) =
 1623.29' SOUTH AND 15.39' EAST OF THE
 NE CORNER OF SECTION 31-T100N-R54W
 N. 20745.78 E. 20057.87

E 1/2 NE 1/4 SEC. 31-T100N-R54W
 OWNER: ALLEN AND JEANETTE SCHOENWALD LIVING TRUST
 ALLEN R. SCHOENWALD AND JEANETTE SCHOENWALD, TRUSTEES
 44529 270th STREET
 MARION, SD 57043
 (605) 648-2801



NW 1/4, SEC. 32-T100N-R54W
 OWNER: WILLIAM PANKRATZ AND LINDA M. PANKRATZ
 27244 447th AVE.
 MARION, SD 57043
 (605) 648-3695

2+76 - 65' RT.
 IN PLACE TEL. TERM. POST

9+98 - 66' RT. IN PLACE POWER POLE
 DO NOT DISTURB

10+00 - 65' RT.
 IN PLACE UND. GAS WARNING SIGN

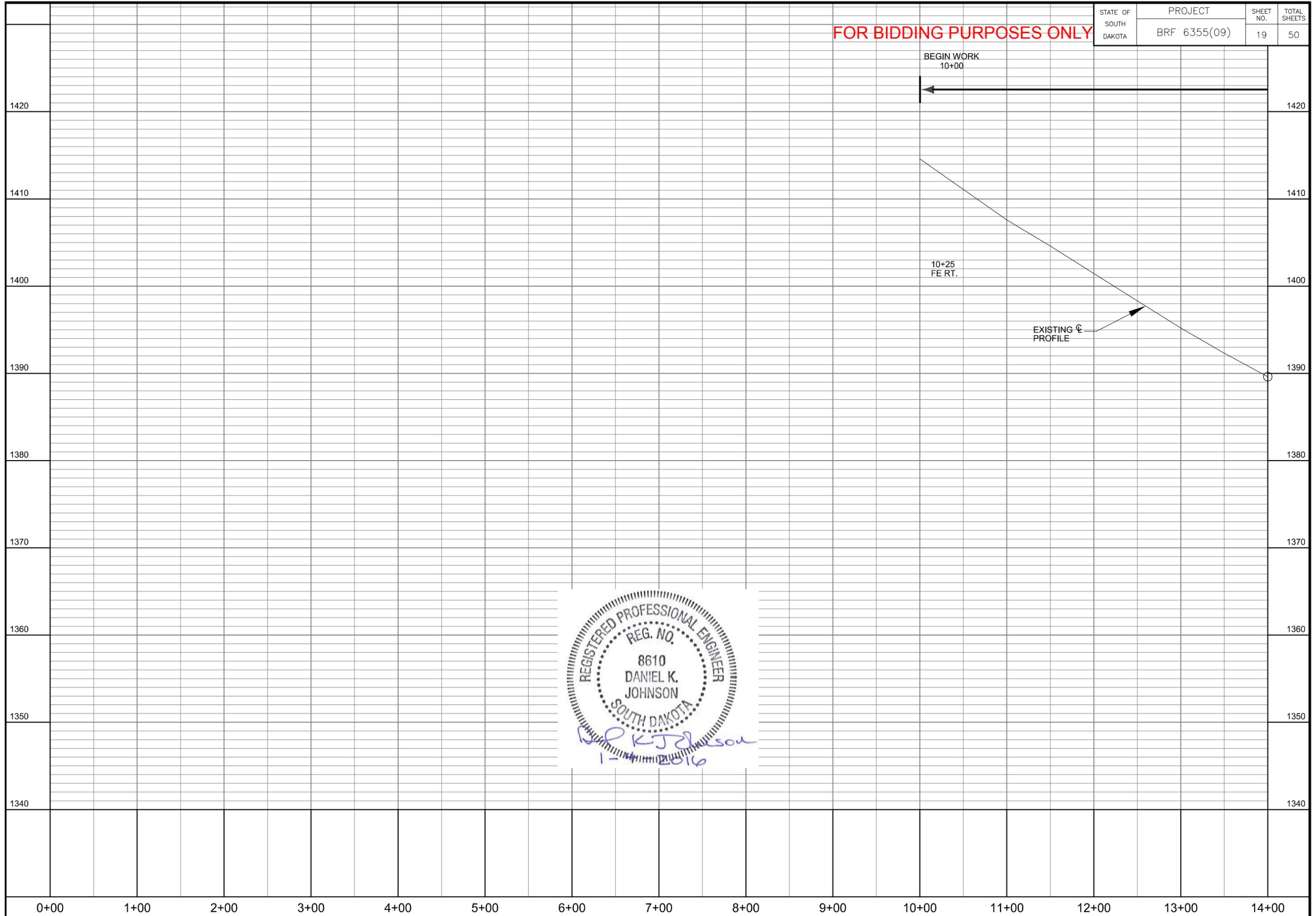
10+25 - 48' RT.
 IN PLACE 18" X 60' CMP

12+03 - 67' RT. IN PLACE POWER POLE
 DO NOT DISTURB

STA. 10+00 - 45' LT. TO 14+00 - 45' LT.
 & STA. 10+60 - 45' RT. TO 14+00 - 45' RT.
 INSTALL 740' OF 4" SLOTTED CORRUGATED
 POLYETHYLENE DRAINAGE TUBING

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	19	50



0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00



SCALE: 1" = 100'

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	20	50

E 1/2 NE 1/4 SEC. 31-T100N-R54W

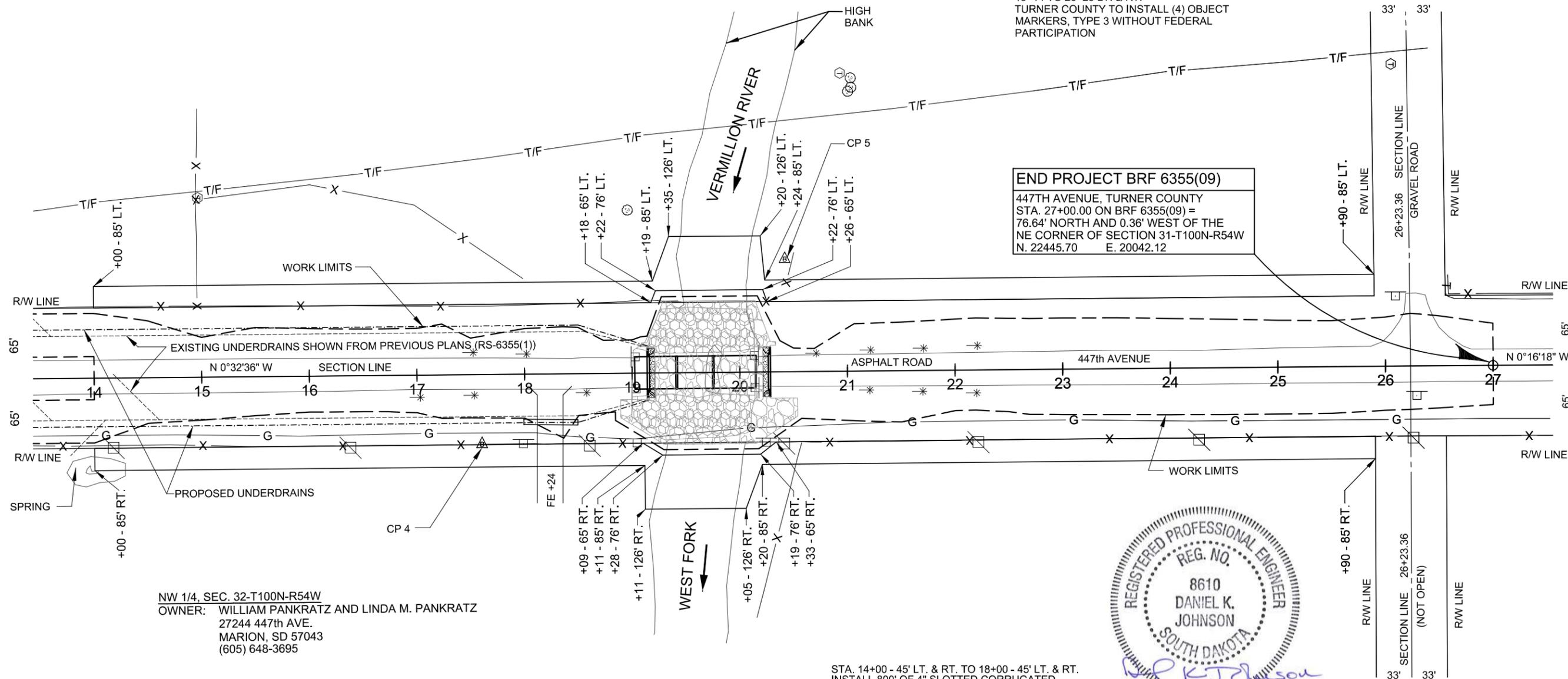
OWNER: ALLEN AND JEANETTE SCHOENWALD LIVING TRUST
ALLEN R. SCHOENWALD AND JEANETTE SCHOENWALD, TRUSTEES
44529 270th STREET
MARION, SD 57043
(605) 648-2801

19+07.6 TO 20+09.1
TAKE OUT 101.5' THREE SPAN STEEL STRINGER BRIDGE WITH CONCRETE
ABUTMENTS, WINGWALLS, BENTS AND DECK. BENTS AND DECK HAVE BEEN
WIDENED 3.67' ON EACH SIDE WITH 112.5' LONG STEEL STRINGERS AND CONCRETE DECK.
28.5' ROADWAY WIDTH. 30.1' OVERALL WIDTH.
INCIDENTAL WORK, STRUCTURE

19+14.00 TO 20+28.50 0° SKEW
DRAINAGE AREA = 362.9 Sq. Mi.
INSTALL 114'-6" 3 SPAN CONTINUOUS CONCRETE BRIDGE
WITH 32'-0" ROADWAY
(SEE STRUCTURE PLANS)

17+14 TO 22+29 - LT. & RT.
TURNER COUNTY TO INSTALL (16)
DELINEATORS, TYPE 1 WHITE (BACK TO BACK)
WITHOUT FEDERAL PARTICIPATION

19+14 TO 20+29 LT. & RT.
TURNER COUNTY TO INSTALL (4) OBJECT
MARKERS, TYPE 3 WITHOUT FEDERAL
PARTICIPATION



NW 1/4, SEC. 32-T100N-R54W

OWNER: WILLIAM PANKRATZ AND LINDA M. PANKRATZ
27244 447th AVE.
MARION, SD 57043
(605) 648-3695



14+96 - 166' LT.
IN PLACE TEL. TERM. POST

17+98 - 64' RT.
IN PLACE UND. GAS WARNING SIGN

19+04 - 65' RT.
IN PLACE UND. GAS WARNING SIGN

20+24 - 65' RT.
IN PLACE UND. GAS WARNING SIGN

20+95 - 276' LT.
IN PLACE TEL. TERM. POST

26+07 - 280' LT.
IN PLACE TEL. TERM. POST

26+10 - 65' LT. IN PLACE STOP SIGN
DO NOT DISTURB

DO NOT DISTURB POWER POLES
AT THE FOLLOWING LOCATIONS:

- 14+17 - 65' RT.
- 16+38 - 67' RT.
- 18+60 - 67' RT.
- 20+41 - 67' RT.
- 22+21 - 67' RT.
- 24+26 - 67' RT.
- 26+26 - 67' RT.

INCIDENTAL WORK, GRADING
STATION/OFFSET

- 17+00 TO 18+54 - 18' RT. TO 21' RT.
- 17+49 TO 17+99 - 19' LT. TO 20' LT.
- 18+24 - 48' RT.
- 18+99 TO 20+14 - 20' RT. TO 62' RT.
- 19+04 - 14' RT. & 15' LT.
- 19+04 TO 20+14 - 18' LT. TO 61' LT.
- 19+08 - 25' RT.
- 19+08 - 25' LT.
- 19+67 TO 19+84 - 26' LT. TO 20' RT.
- 20+14 - 15' RT. & 15' LT.
- 20+68 TO 22+18 - 15' LT. TO 23' LT.
- 21+18 TO 22+17 - 18' TO 21' RT.
- 26+29 - 28' RT.

IN PLACE ITEM

- SALVAGE (3) DELINEATORS
- SALVAGE (2) DELINEATORS
- REMOVE 24" X 50' CMP
- REMOVE RIPRAP (DEPTH UNKNOWN)
- SALVAGE (2) OBJECT MARKERS
- REMOVE RIPRAP (DEPTH UNKNOWN)
- REMOVE CONC. UNDERDRAIN HEADWALL
- REMOVE CONC. UNDERDRAIN HEADWALL
- REMOVE CONC. RUBBLE (DEPTH UNKNOWN)
- SALVAGE (2) OBJECT MARKERS
- SALVAGE (2) OBJECT MARKERS
- SALVAGE (4) DELINEATORS
- SALVAGE (3) DELINEATORS
- SALVAGE DOUBLE ARROW SIGN

STA. 14+00 - 45' LT. & RT. TO 18+00 - 45' LT. & RT.
INSTALL 800' OF 4" SLOTTED CORRUGATED
POLYETHYLENE DRAINAGE TUBING

STA. 18+00 - 45' LT. & RT. TO 18+50 - 45' LT. & RT.
INSTALL 100' OF 4" CORRUGATED
POLYETHYLENE DRAINAGE TUBING

18+19 - 45' RT.
INSTALL 24" DIAM. X 66' CMP
& (2) 24" CMP SAFETY ENDS

STA. 18+50 - 45' LT. & RT. TO 19+15 - 25' LT. & RT.
INSTALL 130' OF 4" CORRUGATED
POLYETHYLENE DRAINAGE TUBING

19+25 - 25' LT.
INSTALL CONCRETE HEADWALL
FOR UNDERDRAIN

19+25 - 25' RT.
INSTALL CONCRETE HEADWALL
FOR UNDERDRAIN

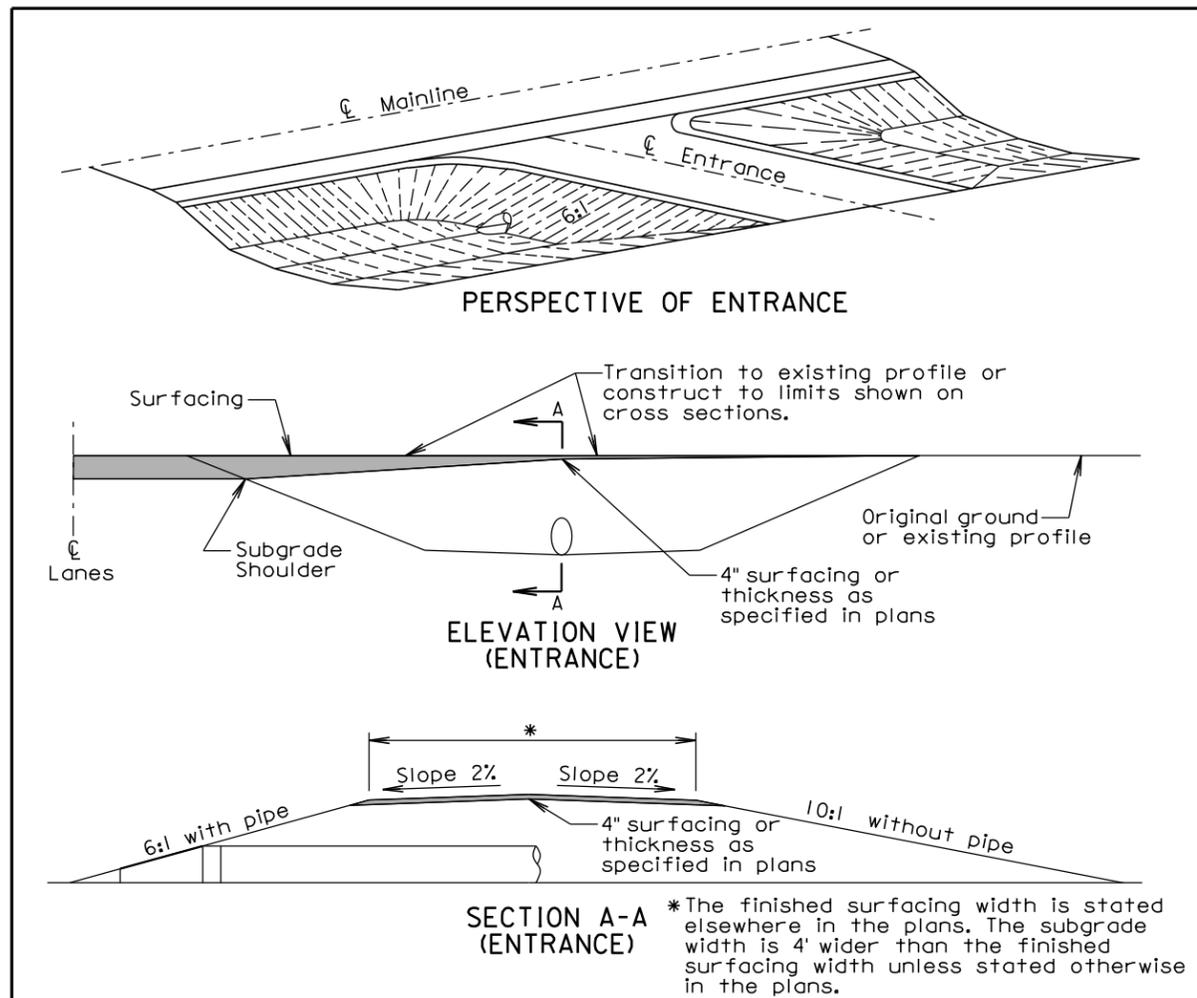
14+00 TO 25+90 RT.
TEMPORARY EASEMENT FOR CUT SLOPES
AND FILL SLOPES TO BE OBTAINED BY
TURNER COUNTY, 0.6 AC.

14+00 TO 25+90 LT.
TEMPORARY EASEMENT FOR CUT SLOPES
AND FILL SLOPES TO BE OBTAINED BY
TURNER COUNTY, 0.6 AC.

19+18 TO 20+26 LT.
PERMANENT EASEMENT FOR
MAINTENANCE PURPOSES TO BE
OBTAINED BY TURNER COUNTY, 0.03 AC.

19+09 TO 20+33 RT.
PERMANENT EASEMENT FOR
MAINTENANCE PURPOSES TO BE
OBTAINED BY TURNER COUNTY, 0.03 AC.

18+89 TO 20+53.5 RT. & LT. ON CHANNEL BANK
INSTALL 1,633.9 TONS OF CLASS B RIPRAP
RIPRAP SHALL BE A MINIMUM OF 24" THICK AND
INSTALL 1,882 SqYd OF TYPE B DRAINAGE FABRIC
(SEE STRUCTURE PLANS)



GENERAL NOTES:

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

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

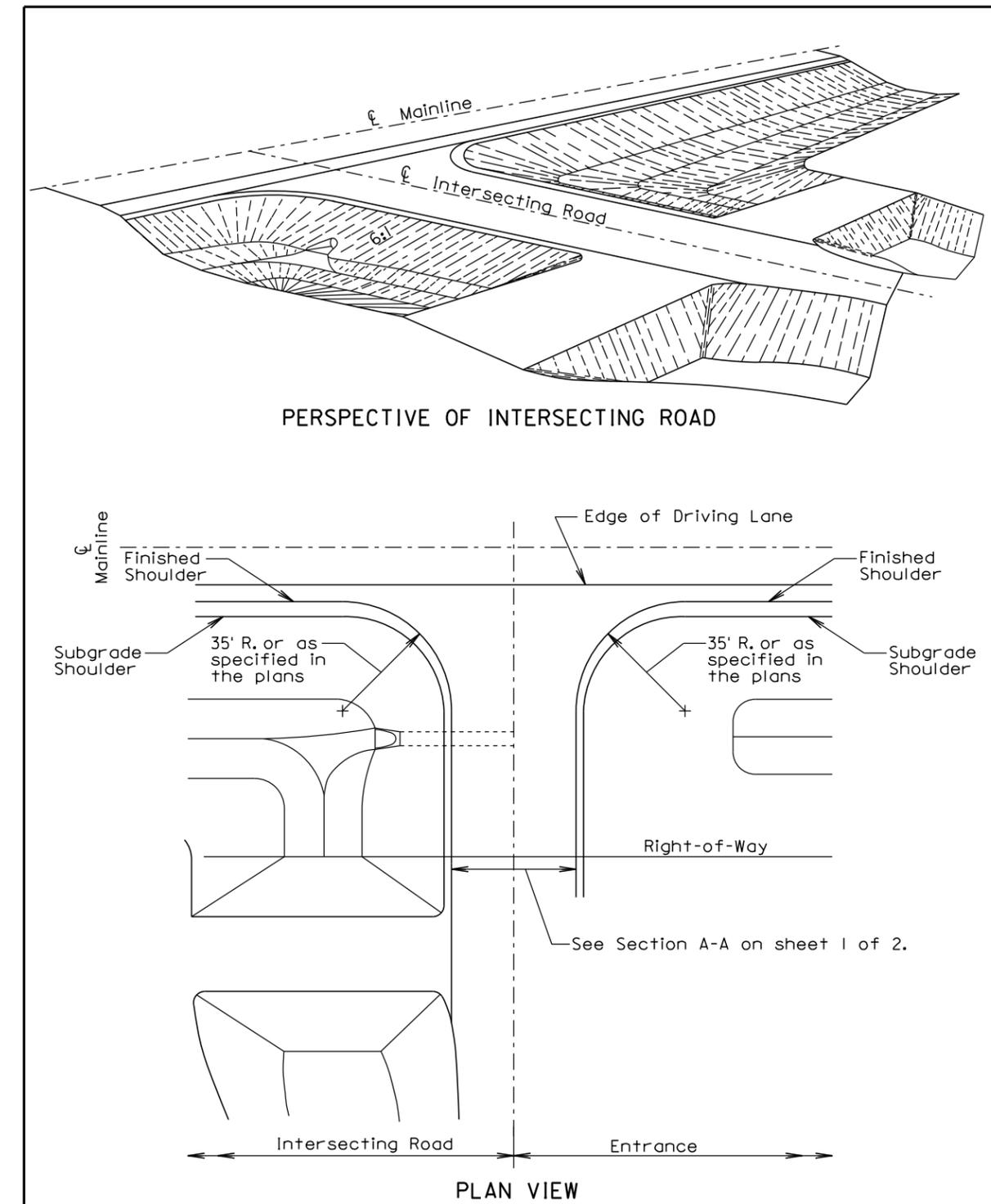
Pipe lengths shall be adjusted if necessary during construction to obtain the 6:1 slopes. For grading projects, the pipe lengths are estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

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

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

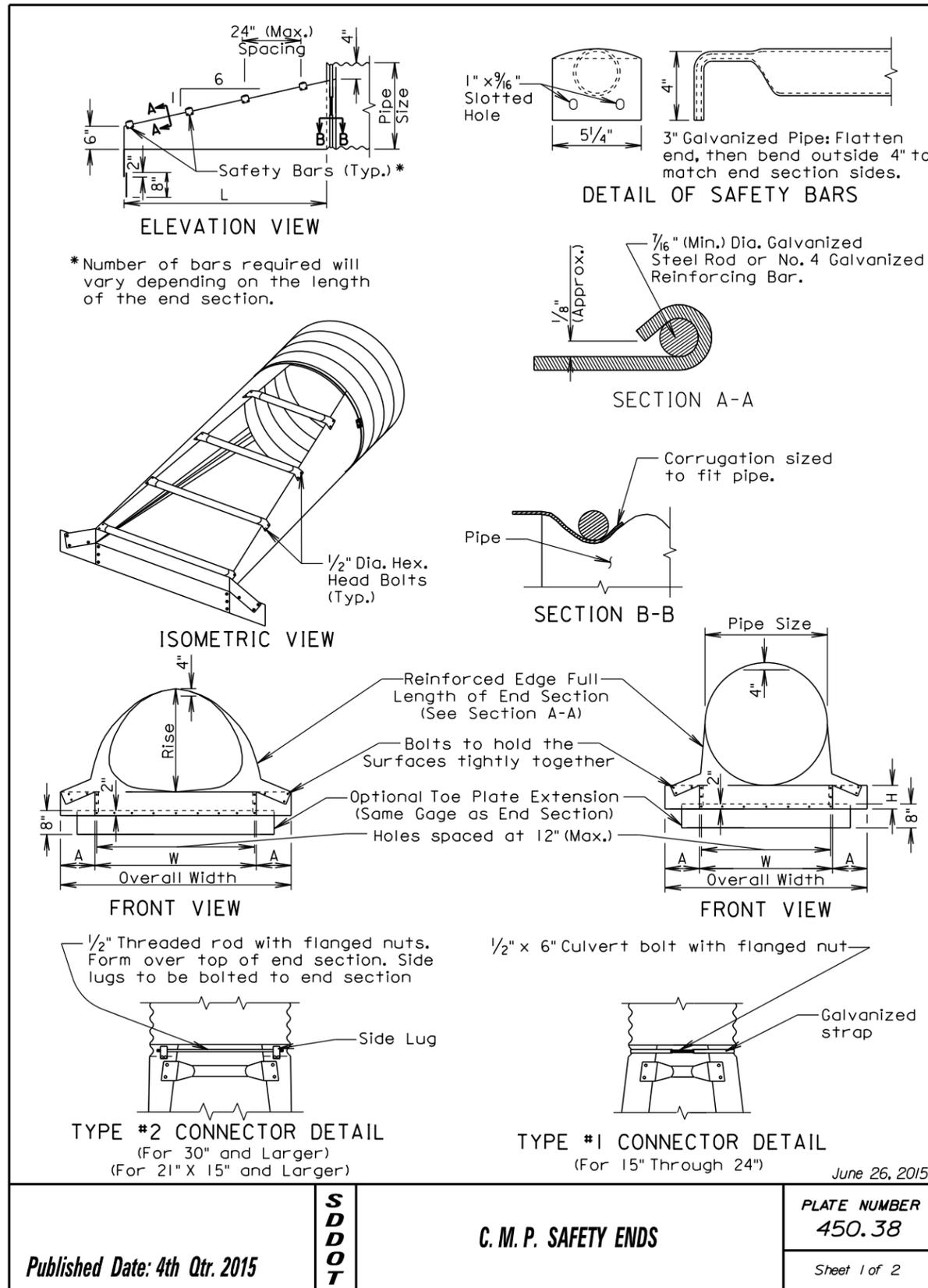
September 6, 2013

Published Date: 4th Qtr. 2015	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER
			120.01
			Sheet 1 of 2



September 6, 2013

Published Date: 4th Qtr. 2015	S D D O T	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER
			120.01
			Sheet 2 of 2



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

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

GENERAL NOTES:

Safety ends shall be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars shall be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5X.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment shall be provided for all end sections.

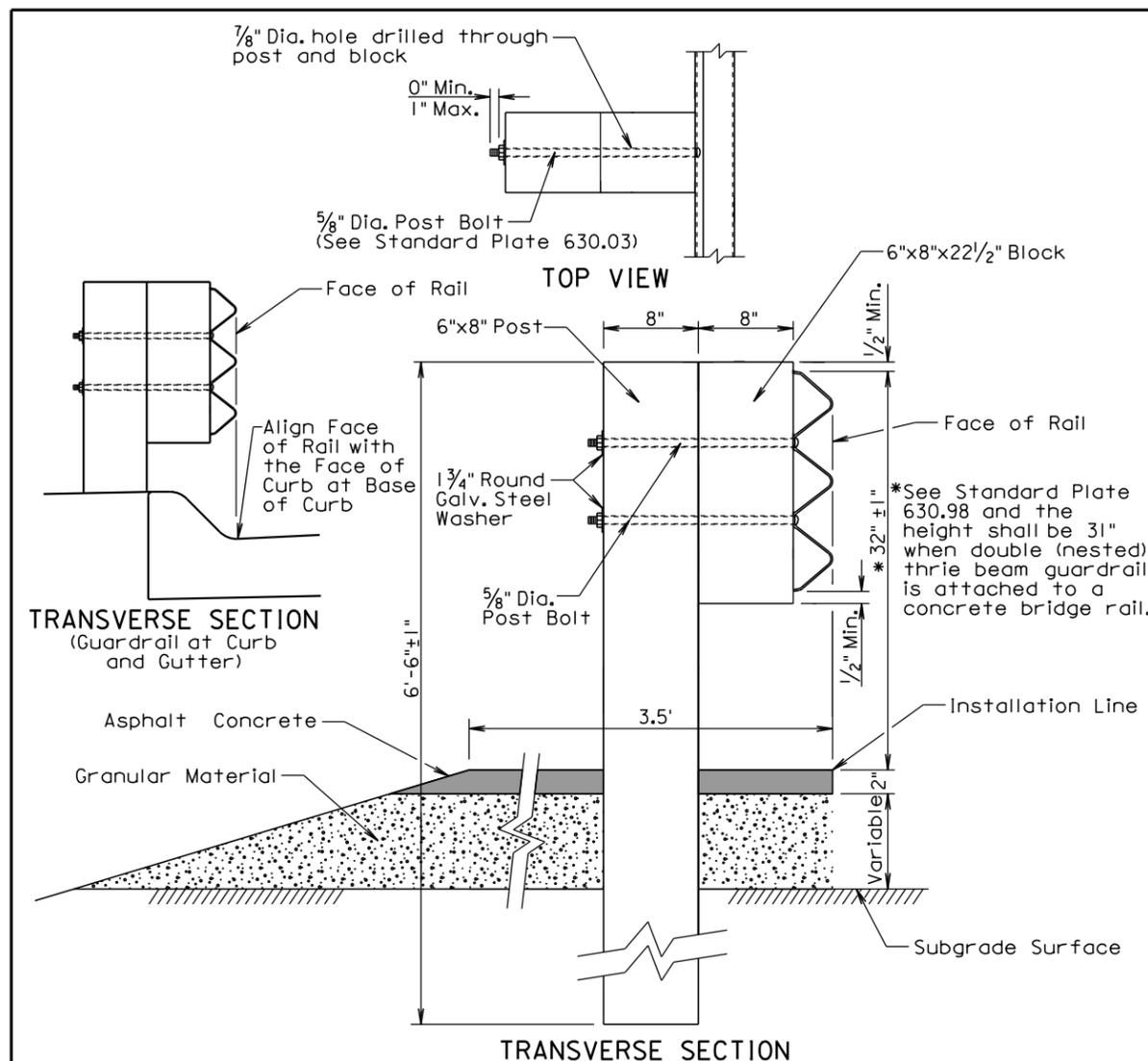
Attachment to circular pipes 15" through 24" diameter shall be made with Type #1 straps. All other sizes shall be attached with Type #2 rods and lugs.

When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Specifications.

Cost of all work and materials required for fabrication and installation of safety ends shall be incidental to the bid items for the various sizes of safety ends.

June 26, 2015



GENERAL NOTES:

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

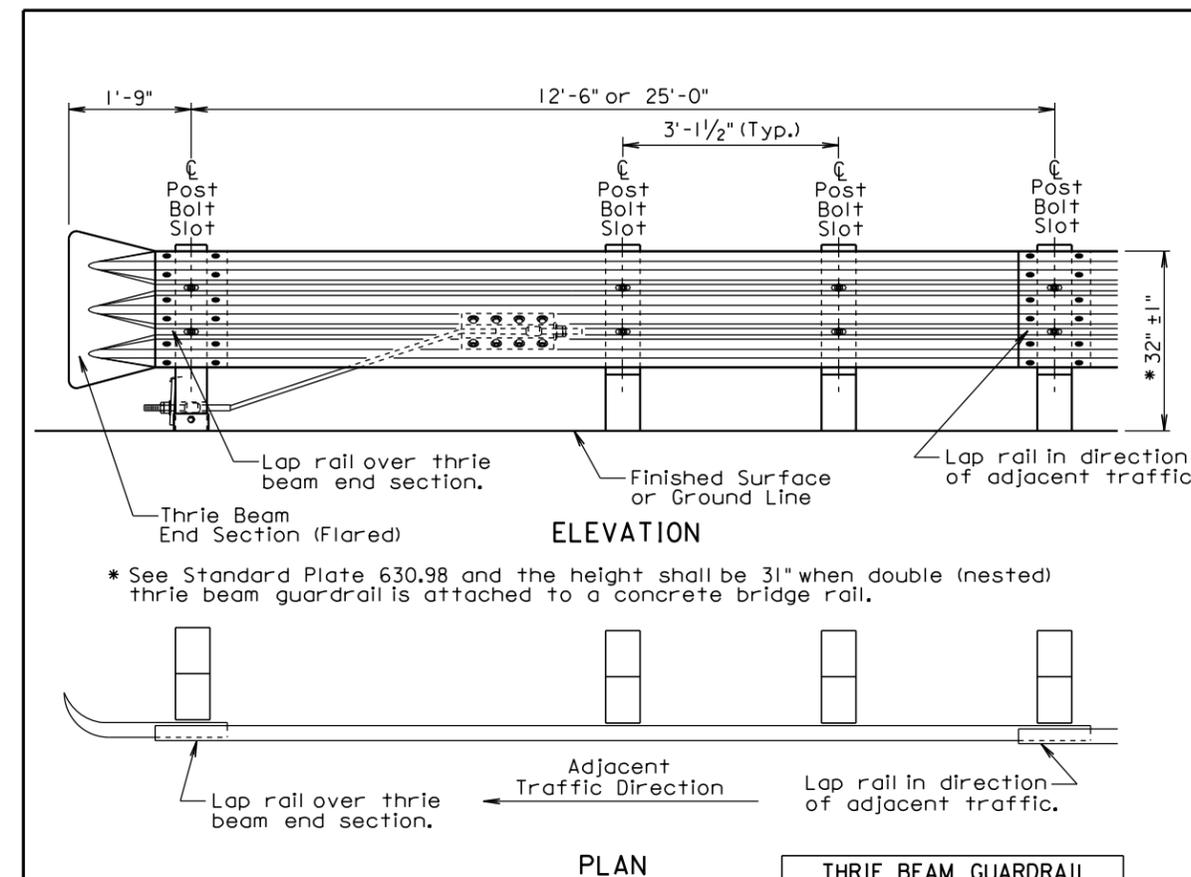
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline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

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

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

June 26, 2015

Published Date: 4th Qtr. 2015	S D D O T	THRIE BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.01
			Sheet 1 of 1



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

For Informational Purposes Only

GENERAL NOTES:

All thrie beam rail shall be Type I.

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

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

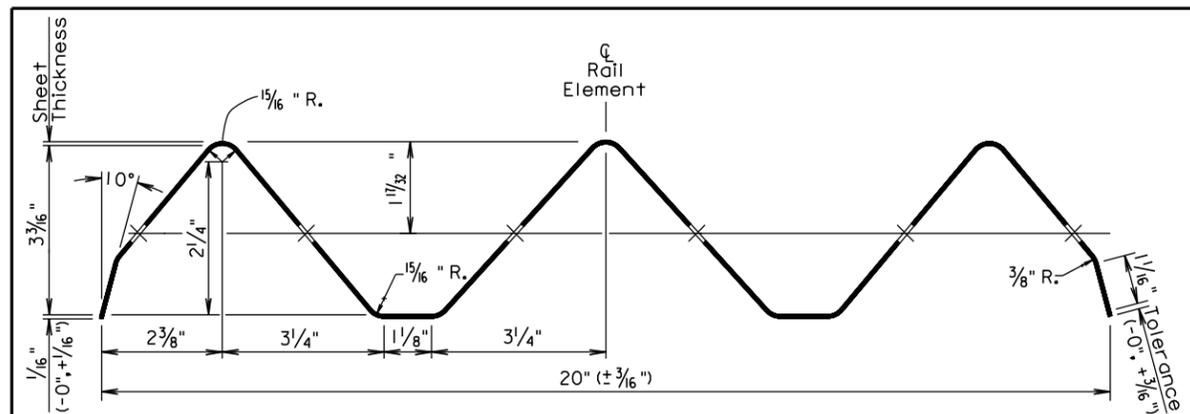
Thrie Beam End Sections (Flared) shall only be used in a one-way traffic situation. See Standard Plate 630.80 for Thrie Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.

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

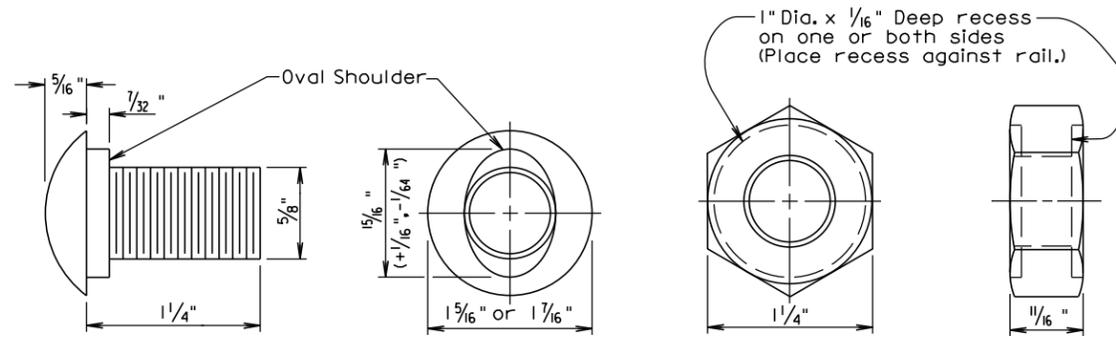
June 26, 2015

Published Date: 4th Qtr. 2015	S D D O T	THRIE BEAM GUARDRAIL INSTALLATION	PLATE NUMBER 630.02
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	25	50

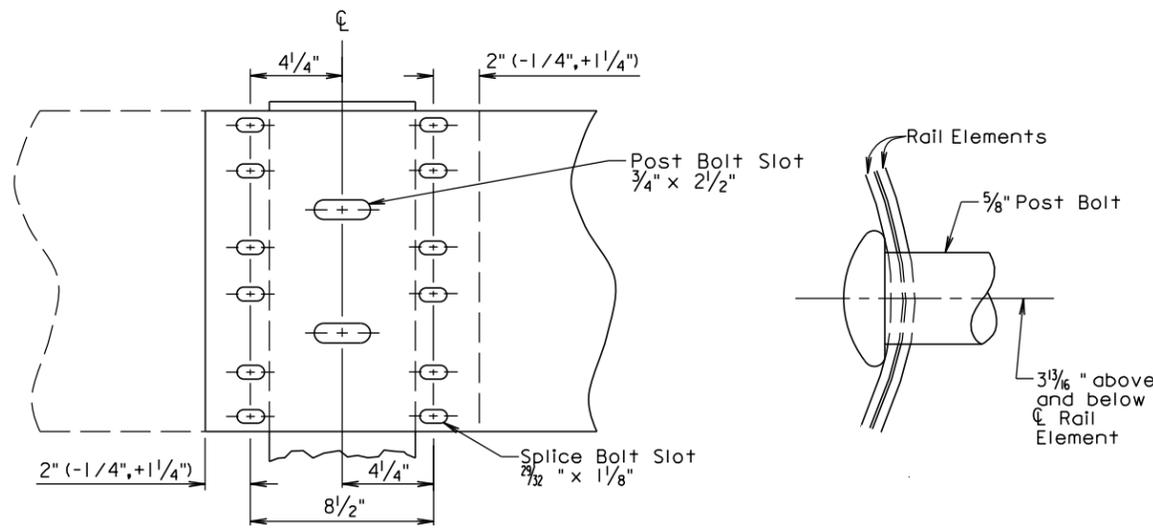


SECTION THROUGH THRIE BEAM RAIL ELEMENT



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

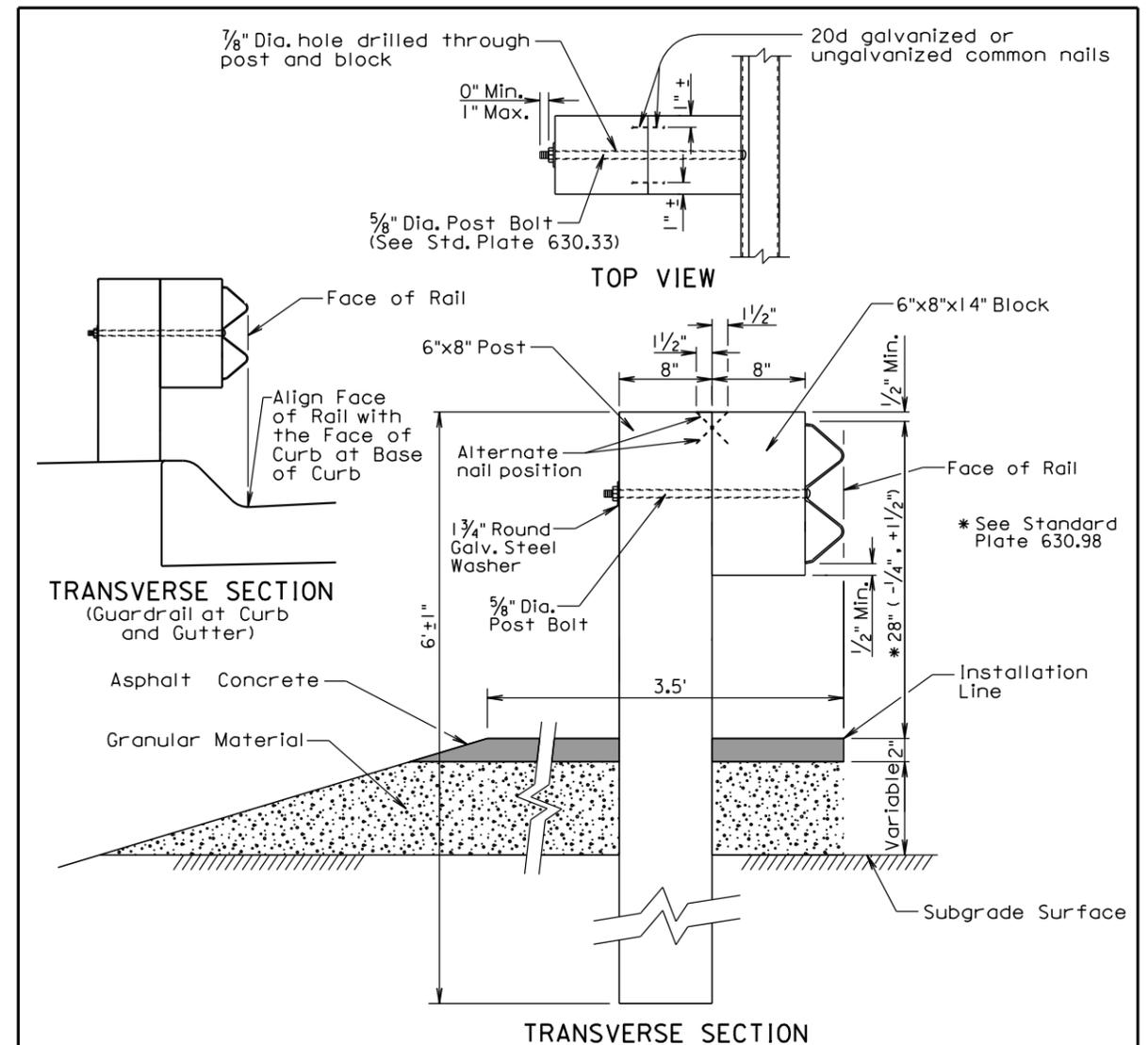
SPLICE BOLT
(5/8" BUTTON HEAD BOLT AND RECESS NUT)



Lap in direction of traffic.
RAIL SPLICE

March 31, 2000

Published Date: 4th Qtr. 2015	S D D O T	THRIE BEAM RAIL, RAIL SPLICE, AND HARDWARE	PLATE NUMBER 630.03
			Sheet 1 of 1



GENERAL NOTES:

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

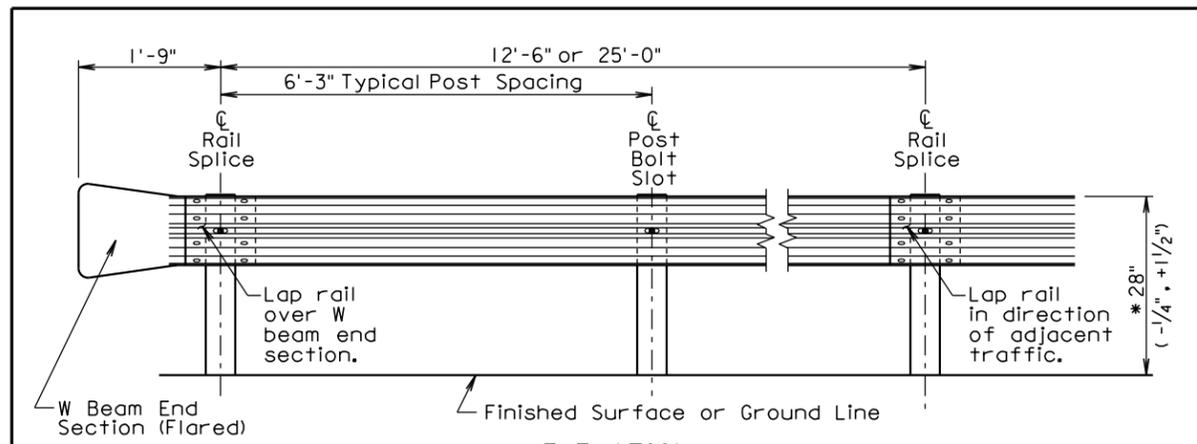
Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline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

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

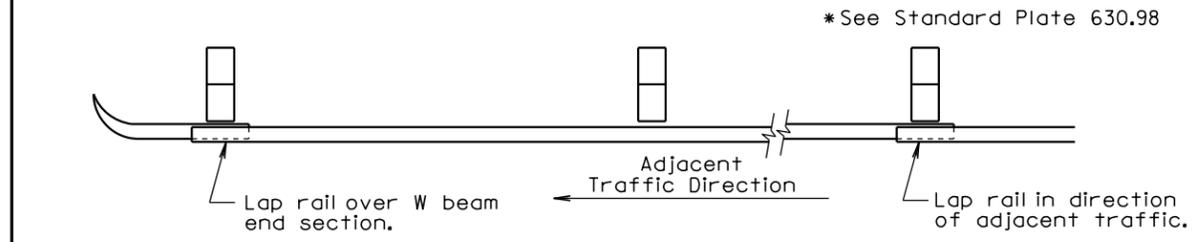
The top of post and top of block shall have a true square cut. The top of block shall be ± 1 inch from the top of the post.

June 26, 2015

Published Date: 4th Qtr. 2015	S D D O T	W BEAM GUARDRAIL POST INSTALLATION	PLATE NUMBER 630.31
			Sheet 1 of 1



ELEVATION



PLAN

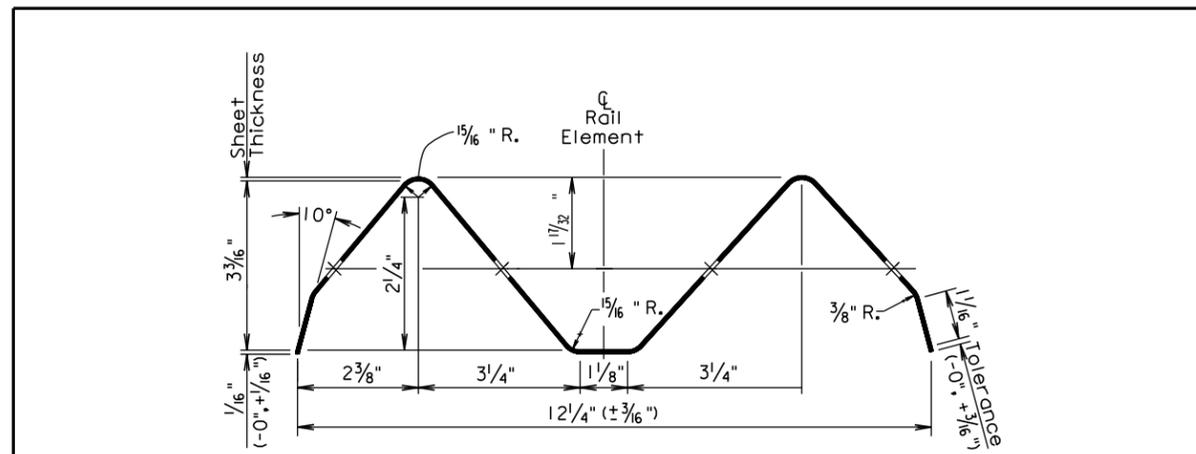
W BEAM GUARDRAIL DEFLECTION CRITERIA	
POST SPACING	MAXIMUM DEFLECTION
6'-3"	5'-0"
3'-1 1/2"	3'-9"

For Informational Purposes Only

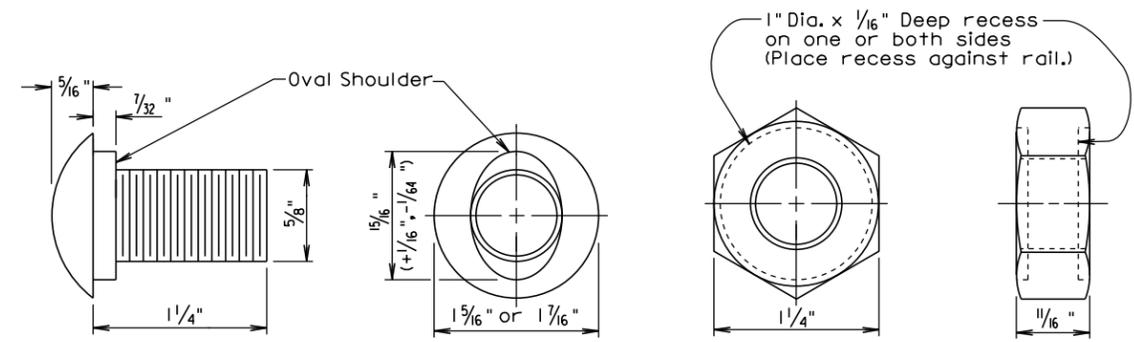
GENERAL NOTES:

- All W beam rail shall be Type I.
- There will be no separate payment for furnishing and installing W Beam End Sections (Flared) and W Beam Terminal Connectors. All costs for the W Beam End Sections (Flared) and W Beam Terminal Connectors shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.
- W beam rail section lengths may be 12'-6" and/or 25'-0". The combination of section lengths used shall be compatible with the total length of rail per site as shown in the plans.
- W Beam End Sections (Flared) shall only be used in a one way traffic situation. See Standard Plate 630.80 for W Beam End Section (Flared) in the Beam Guardrail Trailing End Terminal.
- All costs for constructing W beam guardrail including labor, equipment, and materials including all posts, blocks, steel beam rail, and hardware shall be incidental to the contract unit price per foot for the respective "W Beam Guardrail" bid item.

June 26, 2015

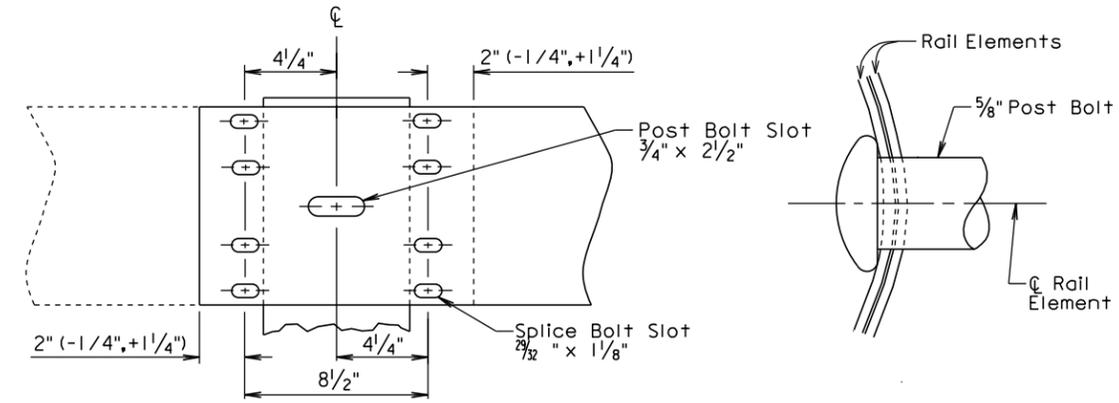


SECTION THROUGH W BEAM RAIL ELEMENT



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

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

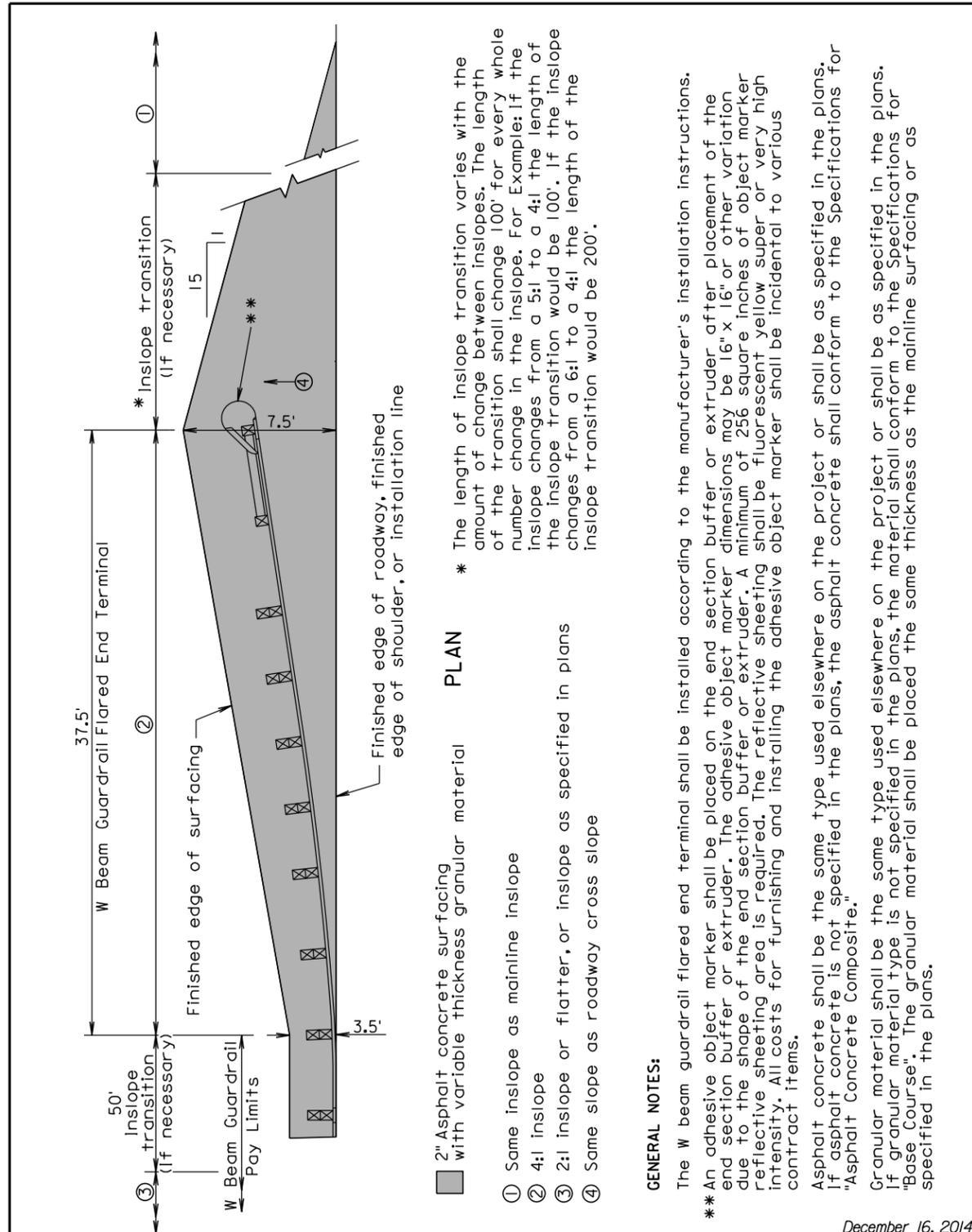


Lap in direction of traffic.

RAIL SPLICE

December 23, 2004

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	27	50



PLAN

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

- ① 2" Asphalt concrete surfacing with variable thickness granular material
- ② Same inslope as mainline inslope
- ③ 4:1 inslope
- ④ 2:1 inslope or flatter, or inslope as specified in plans
- ⑤ Same slope as roadway cross slope

GENERAL NOTES:

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

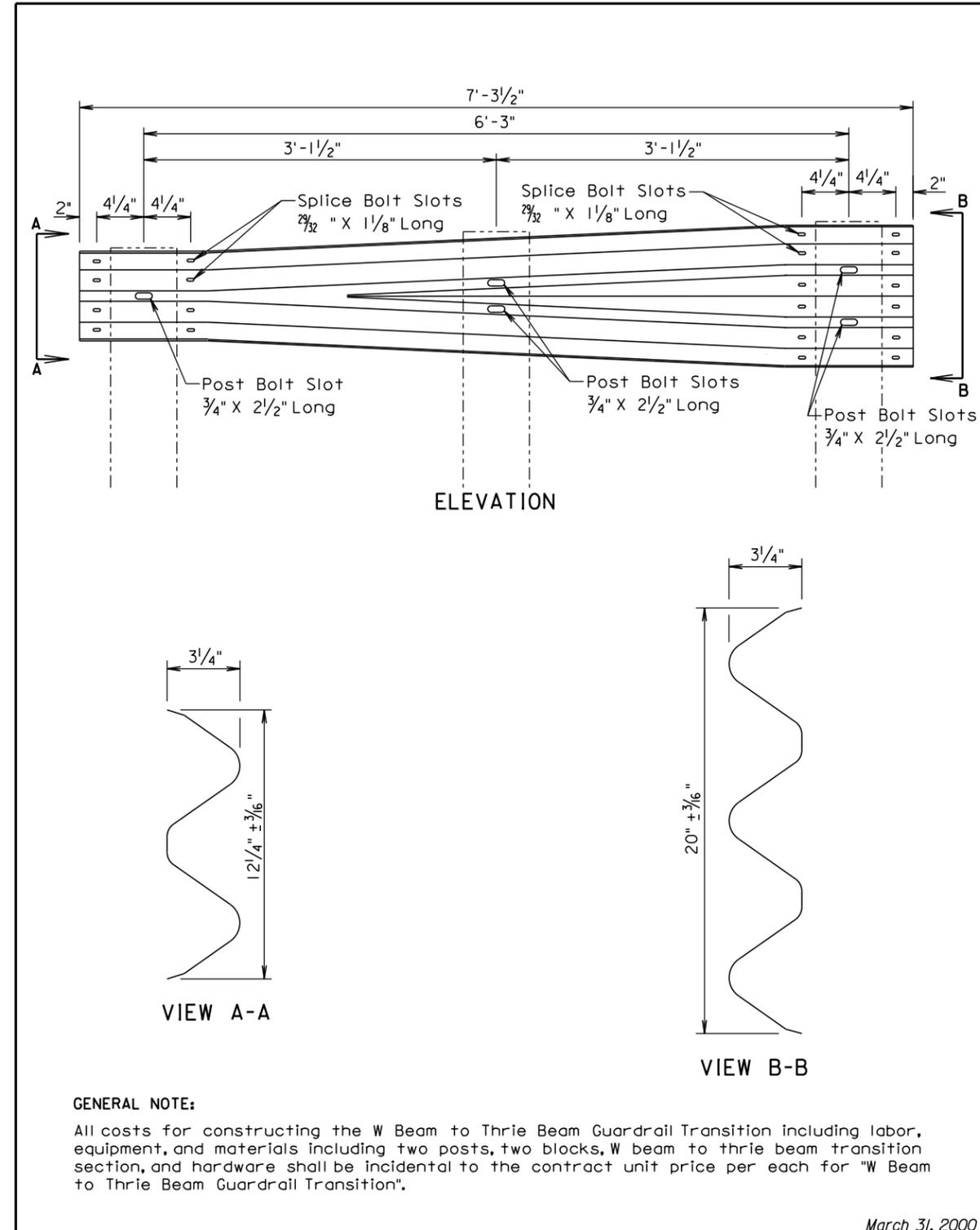
** An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of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

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

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

December 16, 2014

Published Date: 4th Qtr. 2015	S D D O T	EMBANKMENT AND SURFACING FOR W BEAM GUARDRAIL FLARED END TERMINAL	PLATE NUMBER 630.45
			Sheet 1 of 1

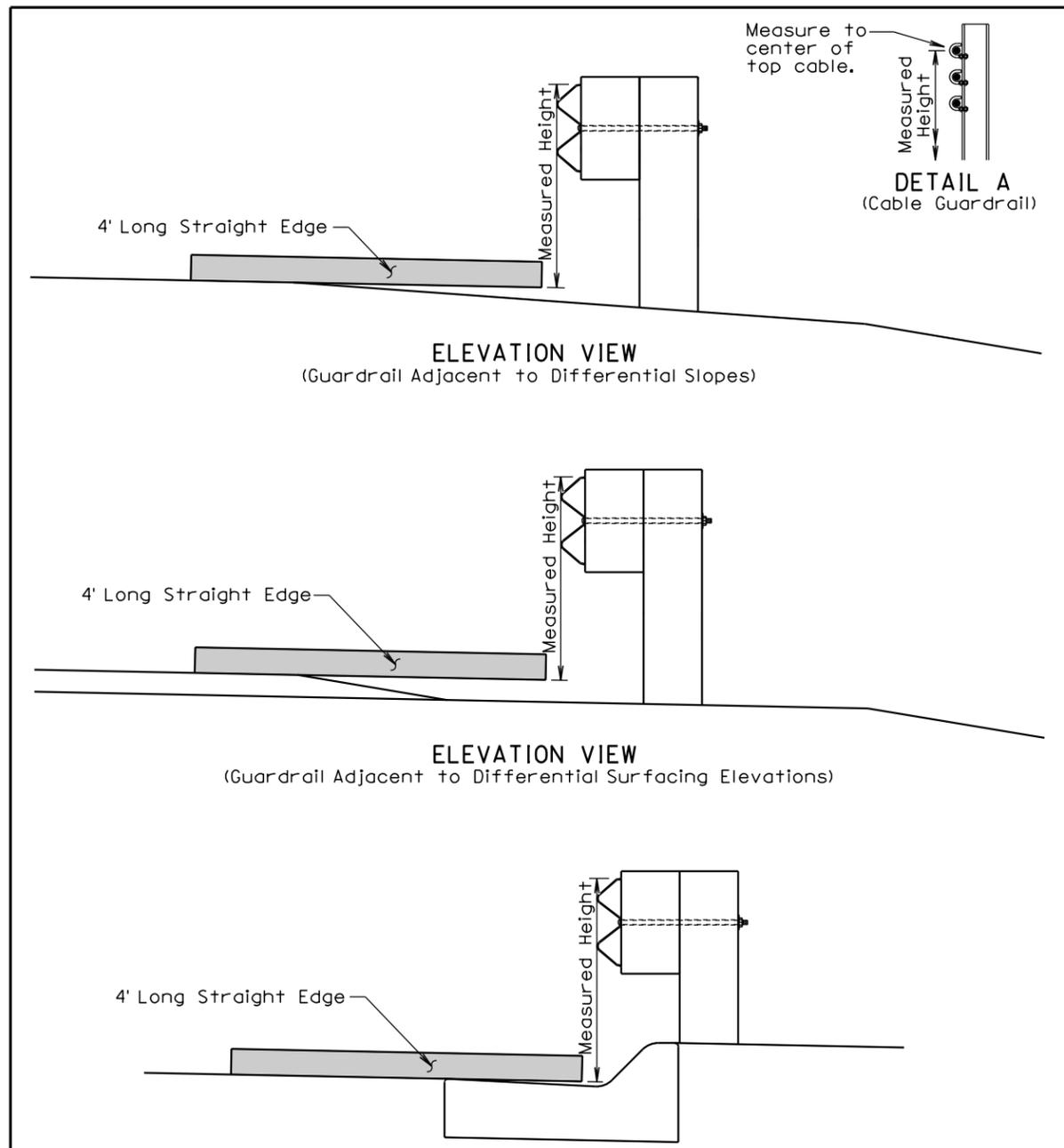


GENERAL NOTE:

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

March 31, 2000

Published Date: 4th Qtr. 2015	S D D O T	W BEAM TO THRIE BEAM GUARDRAIL TRANSITION SECTION	PLATE NUMBER 630.82
			Sheet 1 of 1

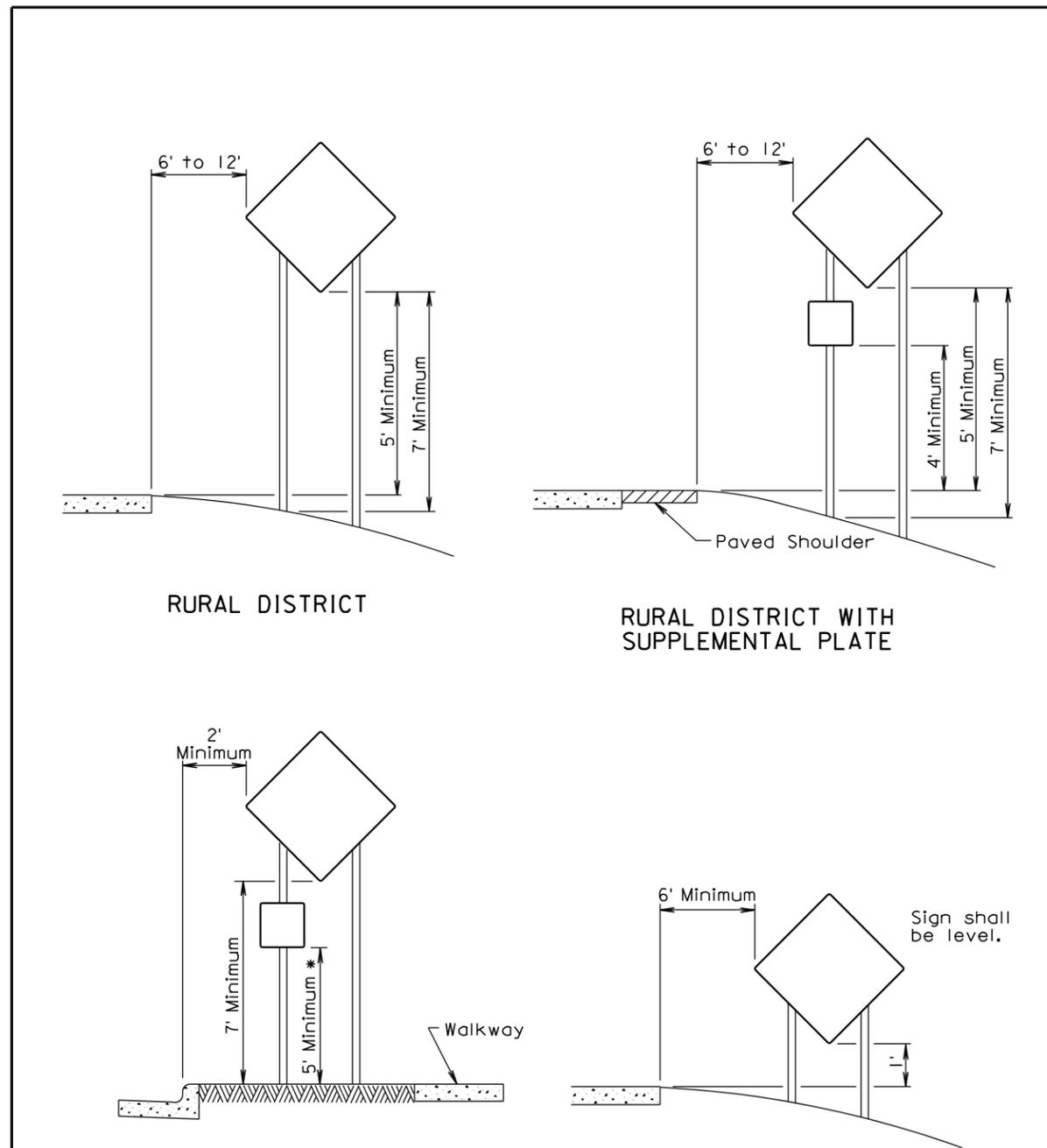


GENERAL NOTES:

The W Beam guardrail shown is for illustrative purpose. The guardrail height for all types of guardrail systems shall be measured in accordance with this standard plate.
 When measuring height of cable guardrail or cable barrier the height shall be measured to the center of the top cable. See Detail A.

June 26, 2010

Published Date: 4th Qtr. 2015	S D D O T	MEASURING GUARDRAIL HEIGHT	PLATE NUMBER 630.98
			Sheet 1 of 1

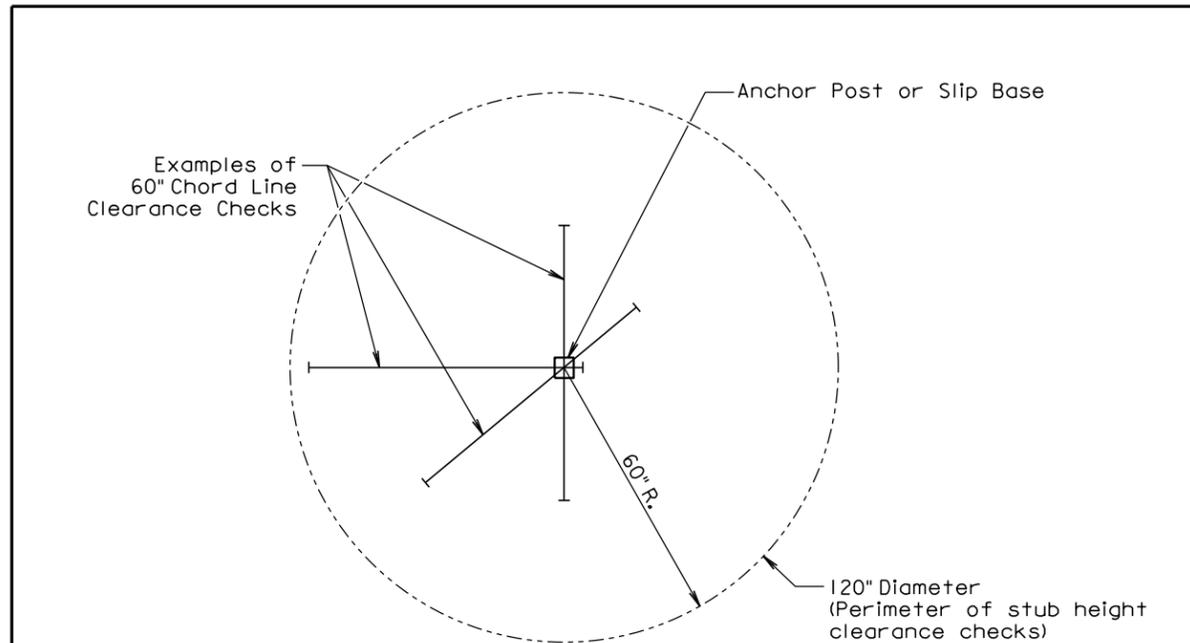


* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

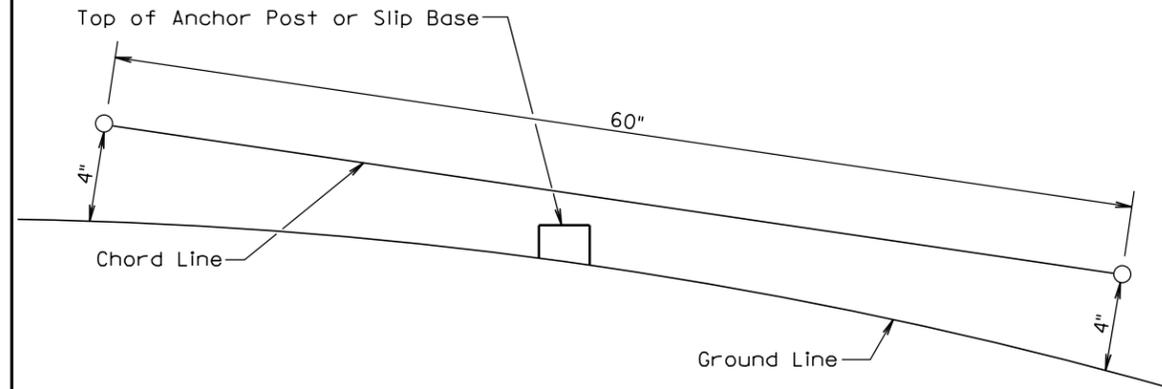
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 4th Qtr. 2015	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

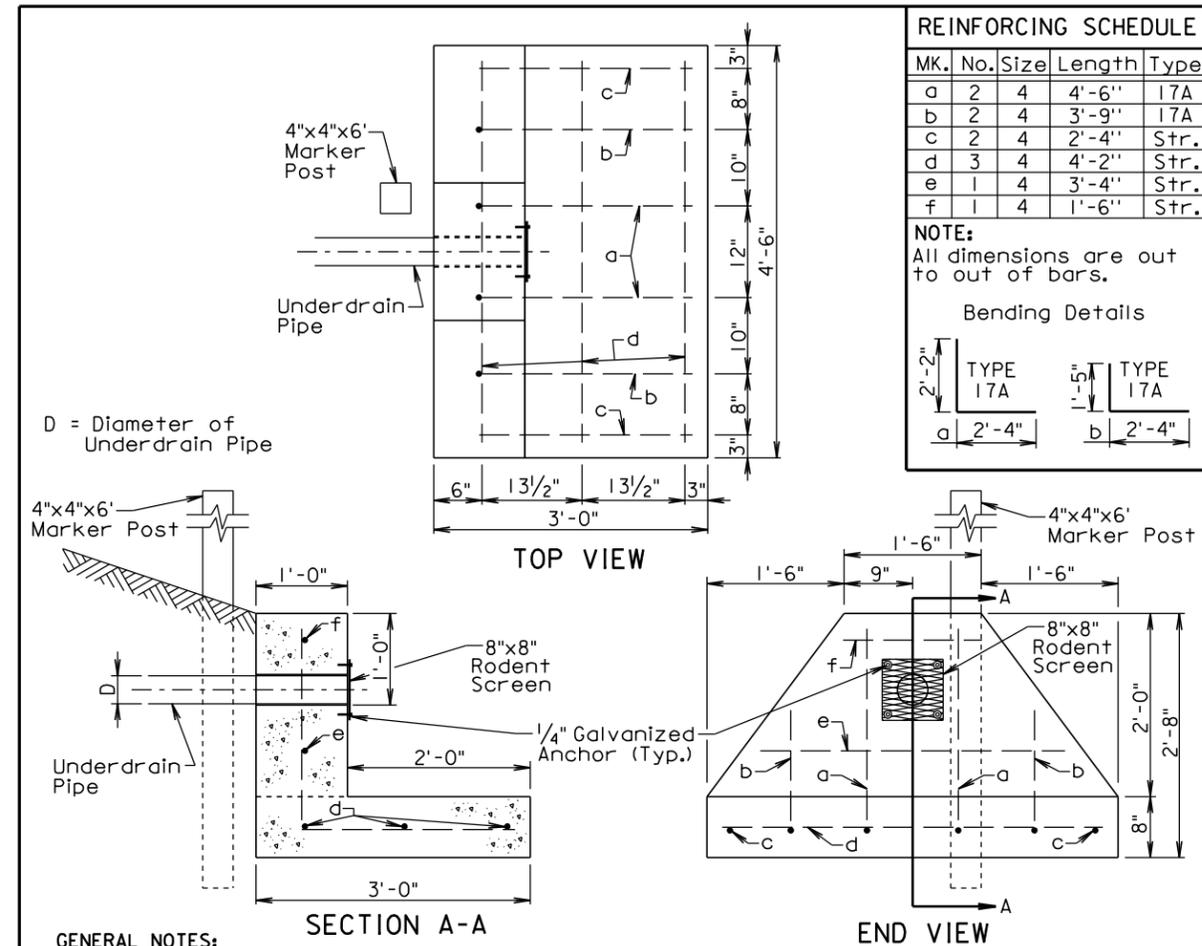
At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

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

July 1, 2005

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

Published Date: 4th Qtr. 2015



GENERAL NOTES:

The concrete shall be Class M6. The concrete shall conform to the requirements of Section 462 of the Specifications except the minimum curing time shall be 72 hours. It is estimated that 0.55 cubic yards of concrete is required for each unit.

Four cast-in-place or drilled-in 1/4" galvanized anchors shall be placed in the headwall. Each galvanized anchor shall be placed approximately 1" from the outside corner of the rodent screen. It is preferred that the anchor location be centered at an opening in the rodent screen.

All reinforcing steel shall conform to ASTM A615 Grade 60. It is estimated that 25.7 pounds of reinforcing steel is required for each unit.

The underdrain pipe shall be placed in the concrete headwall with the pipe end flush with the concrete surface adjacent to the rodent screen.

The 8"x8" rodent screen shall be galvanized 13 Ga. steel with a diamond shaped flattened mesh pattern. The size shall be 1/2". The size refers to the measurement across the smallest diamond shaped opening measured from the centers of the wires. The rodent screen shall be centered about the hole in the headwall and fastened to the headwall with the appropriate bolts or nuts with washers.

A 4"x4"x6' marker post shall be placed at the approximate location as depicted in the above drawings for each concrete headwall. The marker post shall project 3'± above the ground line. The marker post shall be cedar or treated with a wood preservative and shall be painted with two coats of white paint.

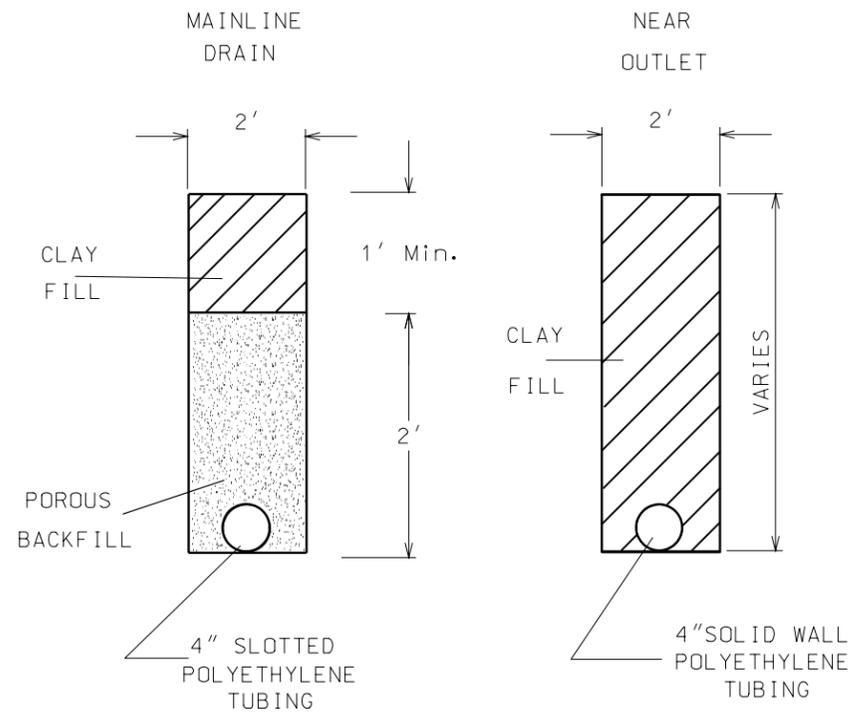
All costs for furnishing and installing the concrete headwall including equipment, labor, and materials including concrete, reinforcing steel, rodent screen, anchors, and marker post shall be incidental to the contract unit price per each for "Concrete Headwall for Underdrain".

June 26, 2015

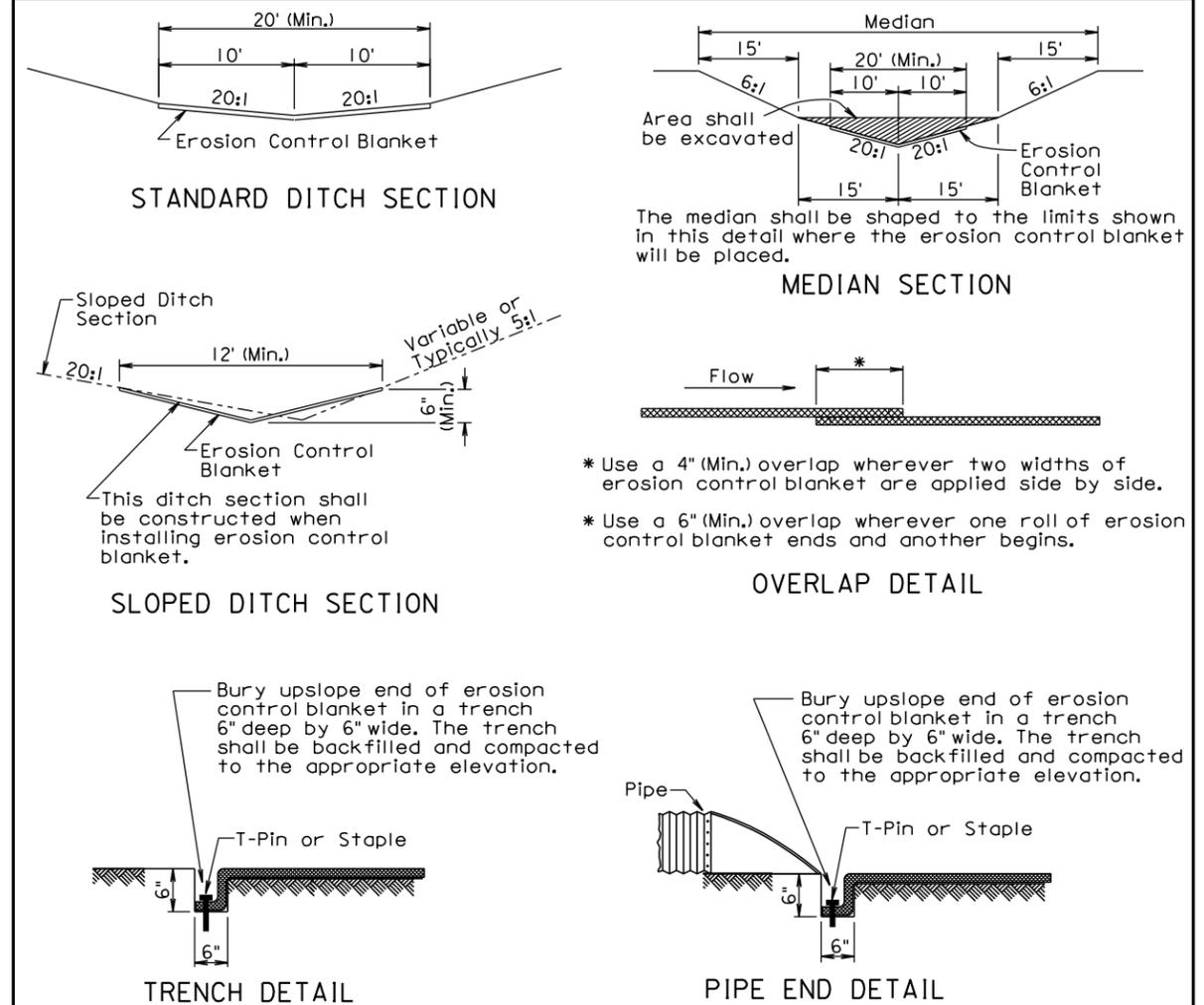
S D D O T	CONCRETE HEADWALL FOR UNDERDRAIN	PLATE NUMBER 680.01
		Sheet 1 of 1

Published Date: 4th Qtr. 2015

TYPICAL UNDERDRAIN INSTALLATION



UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTION 680, STANDARD SPECIFICATONS FOR ROADS AND BRIDGES 2015 EDITION



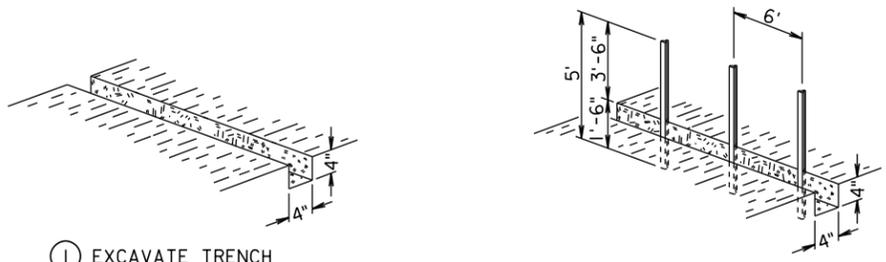
GENERAL NOTES:

- Prior to placement of the erosion control blanket, the areas shall be properly prepared, shaped, seeded, and fertilized.
- Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" wide by 6" deep. There shall be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.
- The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.
- After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.
- All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

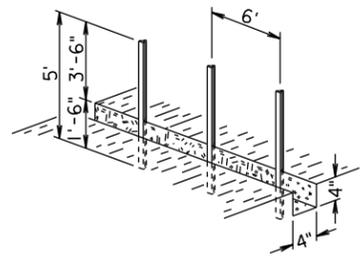
December 23, 2004

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	31	50

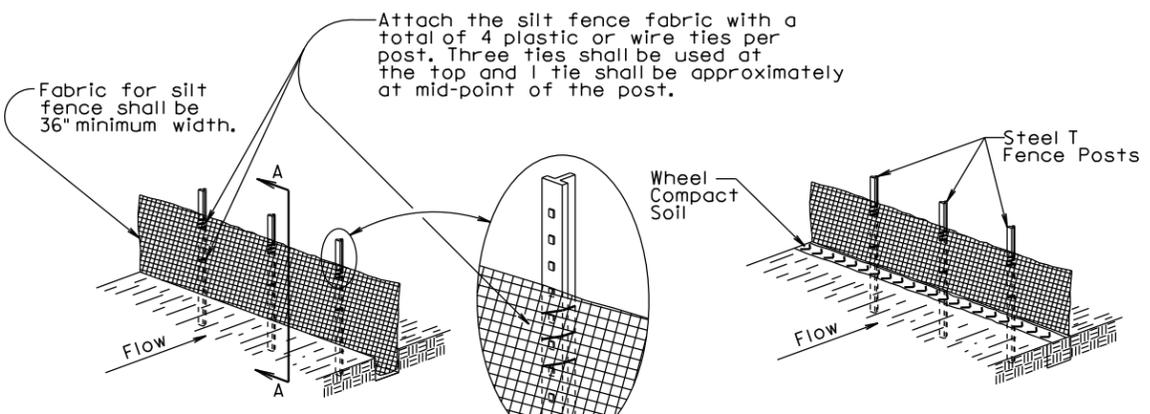
MANUAL HIGH FLOW SILT FENCE INSTALLATION



① EXCAVATE TRENCH

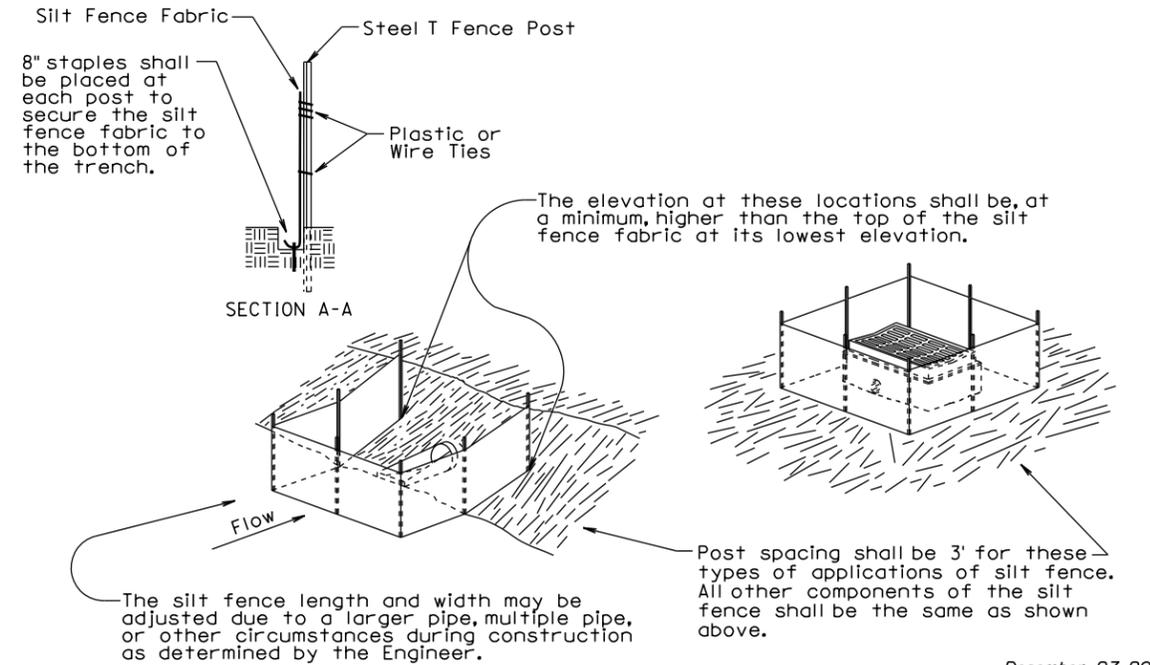


② DRIVE STEEL T FENCE POSTS



③ ATTACH SILT FENCE FABRIC

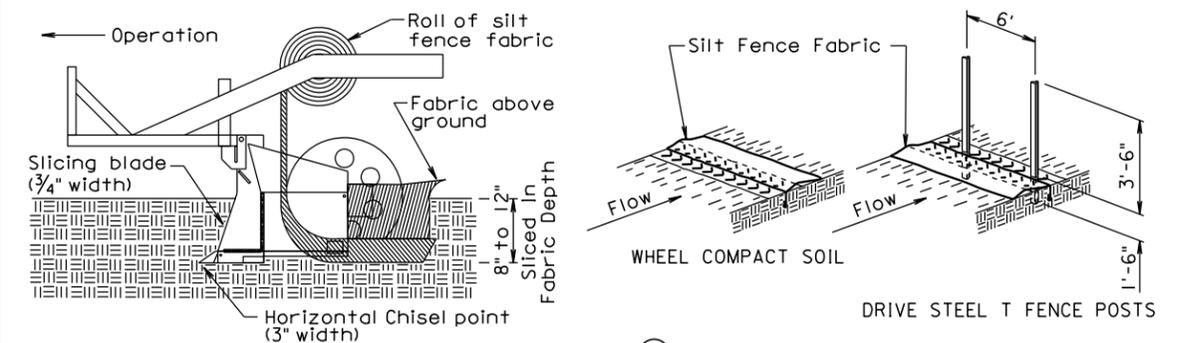
④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



December 23, 2003

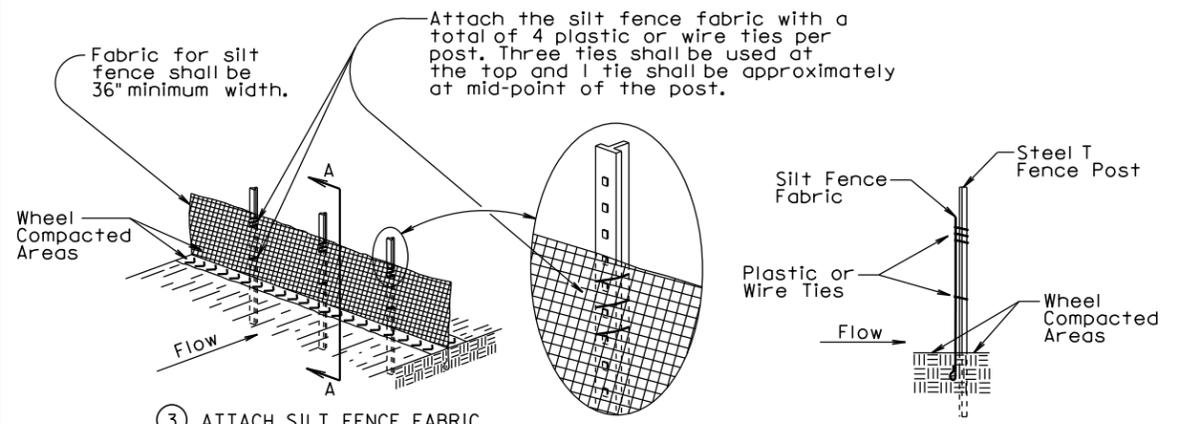
Published Date: 4th Qtr. 2015	S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION

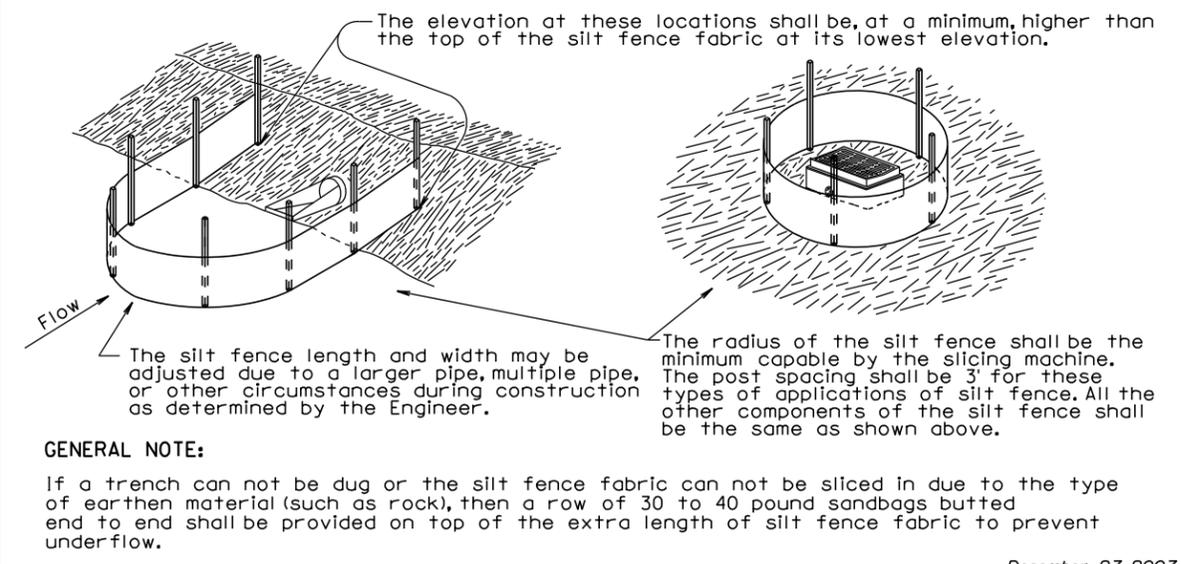


① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

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



③ ATTACH SILT FENCE FABRIC

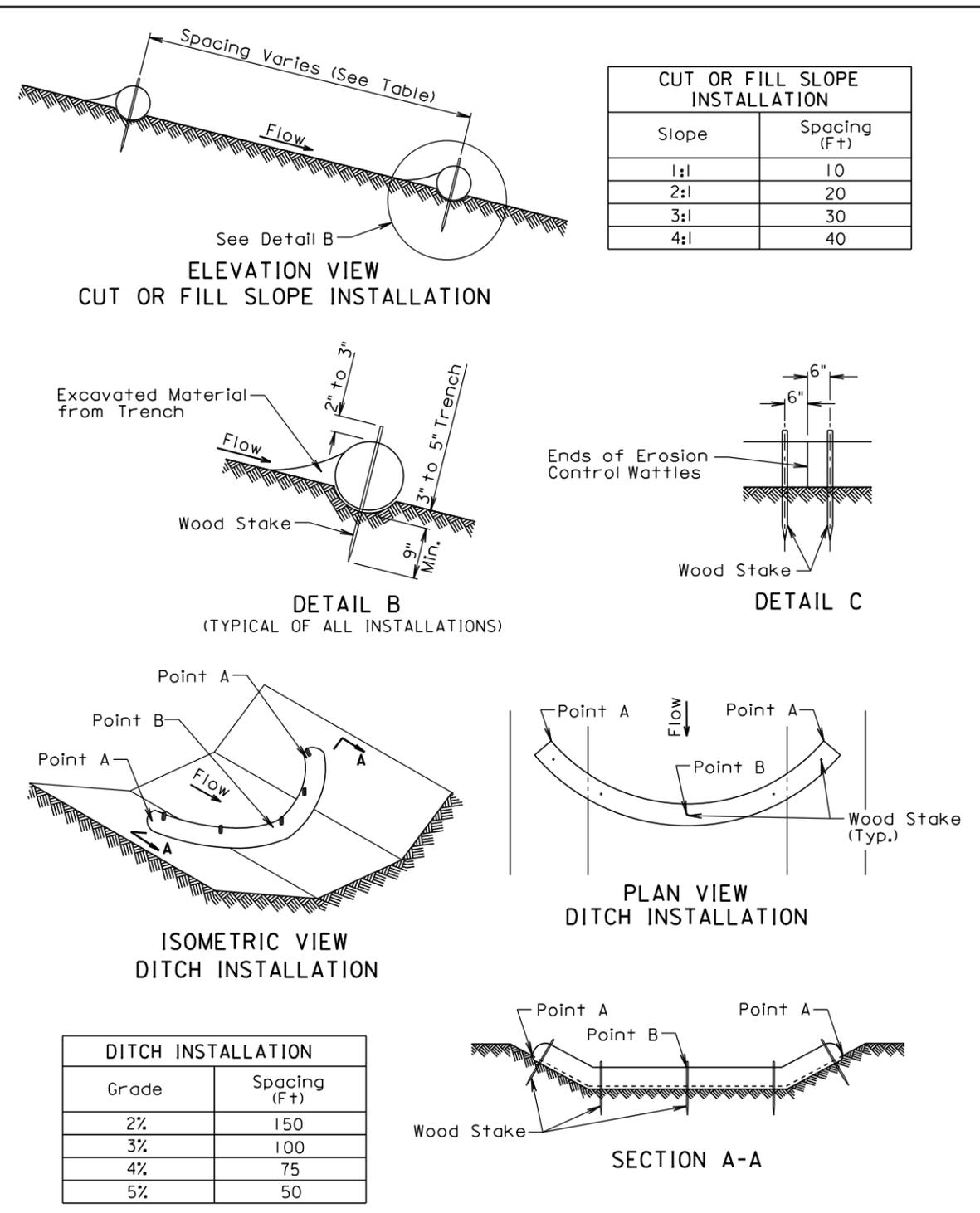


GENERAL NOTE:

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

December 23, 2003

Published Date: 4th Qtr. 2015	S D D O T	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2



December 23, 2004

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

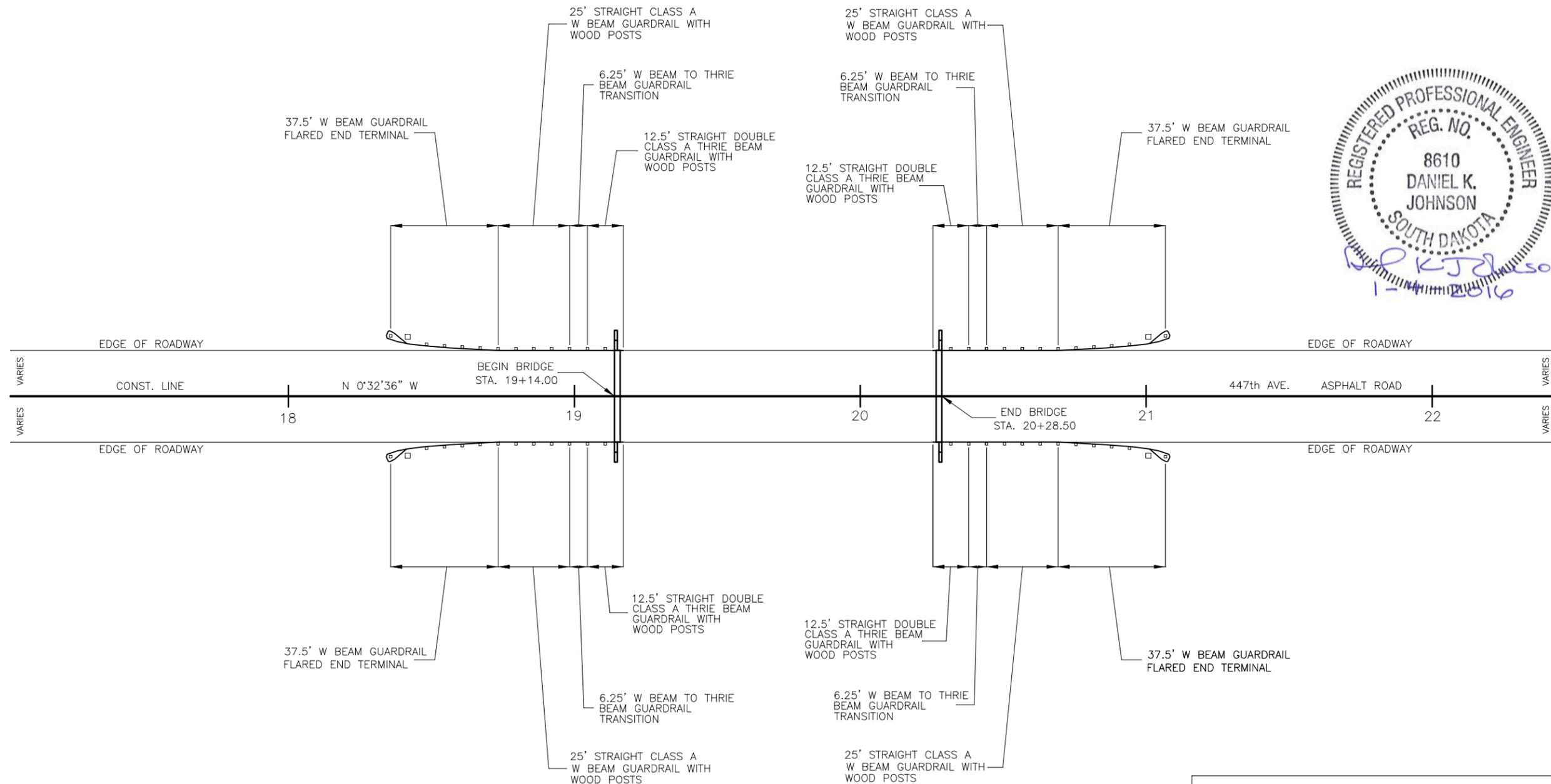
December 23, 2004

FOR BIDDING PURPOSES ONLY

GUARDRAIL LAYOUT



SCALE:
1" = 40'



ESTIMATE OF QUANTITIES		
ITEM	UNIT	QUANTITY
Straight Double Class A Thrie Beam Guardrail with Wood Posts	Ft	50
Straight Class A W Beam Guardrail with Wood Posts	Ft	100
W Beam to Thrie Beam Guardrail Transition	Each	4
W Beam Guardrail Flared End Terminal	Each	4

CP NO. 4 EL. 1376.42
5/8" REBAR & GD.
STA. 17+60.02 - 64.59' RT.

NOTE:
T.S. AT \bar{c} = TOP OF SLAB AT CENTERLINE
T.S. AT EDGE = TOP OF SLAB AT EDGE

CP NO. 5 EL. 1368.60
5/8" REBAR & GD.
STA. 20+28.50 LT.

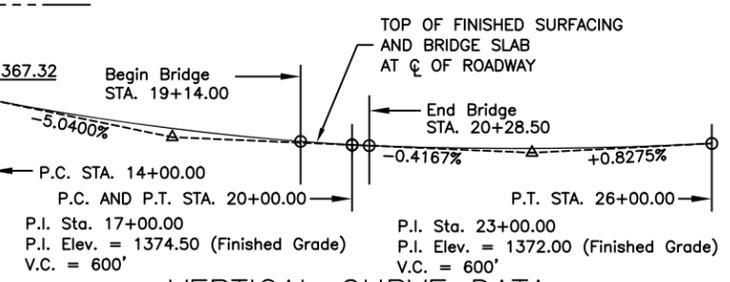
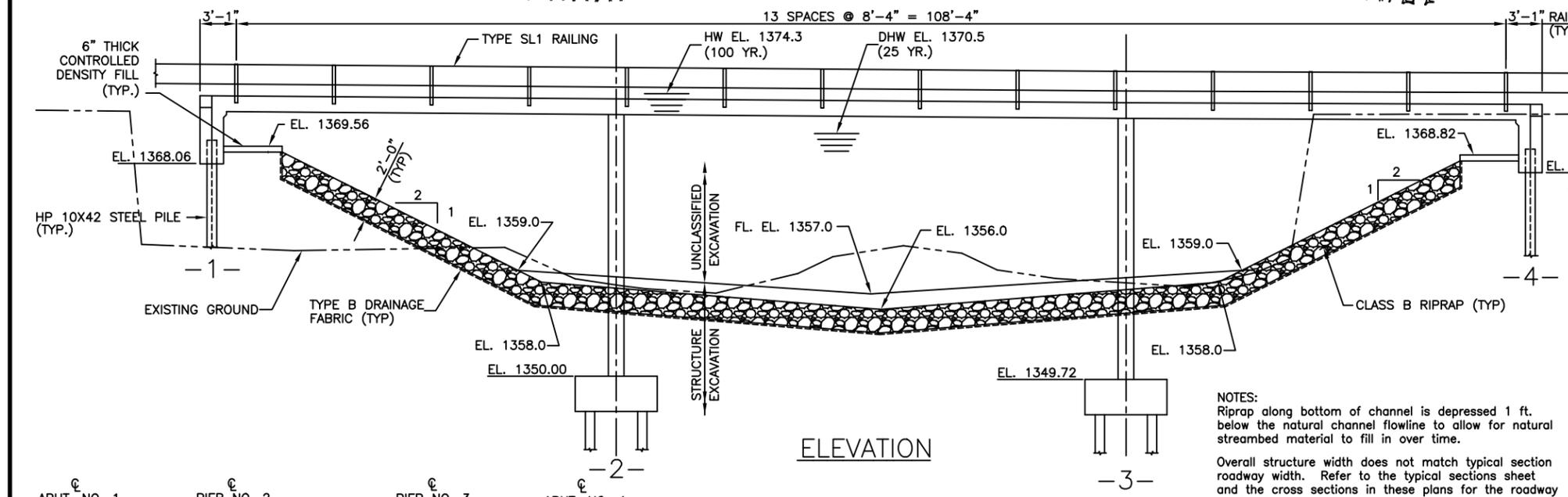
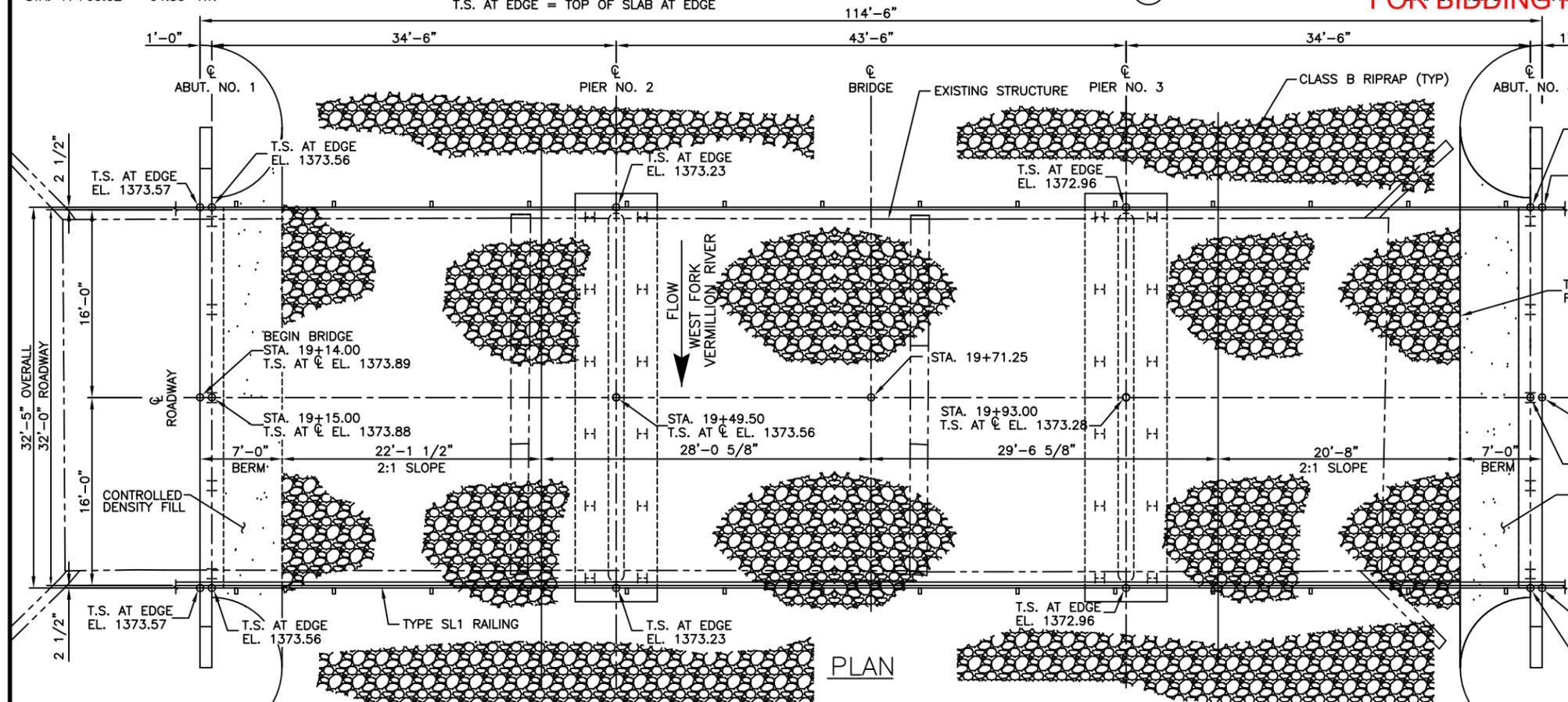
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	34	50

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)

-X020- INDEX OF BRIDGE SHEETS

SHEET NO. 1	GENERAL DRAWING
SHEET NO. 2	ESTIMATE OF STRUCTURE QUANTITIES & NOTES
SHEET NO. 3	NOTES (CONTINUED)
SHEET NO. 4	SUBSURFACE INVESTIGATION & PILING LAYOUT
SHEET NO. 5	ABUTMENT DETAILS
SHEET NO. 6	PIER DETAILS
SHEET NO. 7	SUPERSTRUCTURE DETAILS
SHEET NO. 8	SL 1 BRIDGE RAILING DETAILS
SHEET NO. 9	RIPRAP LAYOUT
SHEET NO. 10	DETAILS OF STANDARD PLATE NO. 460.02
SHEET NO. 11	DETAILS OF STANDARD PLATE NO. 510.40 & 620.17



EDGE & \bar{c} ELEVATIONS

Station	Edge Elevation	Centerline Elevation
ABUT. NO. 1	1373.558	1373.862
17+60.02	1373.511	1373.835
17+63.70	1373.435	1373.760
17+67.40	1373.329	1373.654
17+71.10	1373.234	1373.559
17+74.80	1373.193	1373.517
17+78.50	1373.150	1373.475
17+82.20	1373.054	1373.378
17+85.90	1372.957	1373.281
17+89.60	1372.942	1373.266
17+93.30	1372.935	1373.259
17+97.00	1372.894	1373.216
18+00.70	1372.819	1373.143
ABUT. NO. 4	1372.819	1373.143

HYDRAULIC DATA

114'-6" BRIDGE	
Q_d	5841 cfs
A_d	899 sq. ft.
V_d	6.5 fps
Q_F	5841 cfs
Q_{100}	10745 cfs
Q_{OT}	8400 cfs
V_{max}	7.9 fps

Q_d = design discharge for the proposed bridge based on 25 year frequency. El. 1370.5.
 Q_{OT} = overtopping discharge and frequency 53 yr. recurrence interval, El. 1372.8. Location STA. 22+00.
 Q_F = designated peak discharge for the basin approaching proposed project based on 25 year frequency.
 Q_{100} = computed discharge for the basin approaching proposed project based on 100 year frequency, El. 1374.3.
 V_{max} = maximum computed outlet velocity for the proposed bridge, based on a 53 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.

NOTES:
Riprap along bottom of channel is depressed 1 ft. below the natural channel flowline to allow for natural streambed material to fill in over time.
Overall structure width does not match typical section roadway width. Refer to the typical sections sheet and the cross sections in these plans for the roadway section to be constructed.

GENERAL DRAWING FOR 114'-6" CONTINUOUS CONCRETE BRIDGE

32'-0" ROADWAY
W. FORK VERMILLION RIVER*
STA. 19+14.00 TO 20+28.50
STRUCTURE NO. 63-070-041

0° SKEW
SEC. 31/32-T100N-R54W
BRF 6355(09)
PCN 01W8

TURNER COUNTY SOUTH DAKOTA

PREPARED BY: JOHNSON ENGINEERING CO. YANKTON, SOUTH DAKOTA

HL93

-X020- FEBRUARY 2015 SHEET 1 OF 11

DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	SMW	SMW

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6355(09)	35	50

ESTIMATE OF STRUCTURE QUANTITIES

ITEM	UNIT	QUANTITY	REMARKS
Concrete Penetrating Sealer	SqYd	413	See Special Provisions
Incidental Work, Structure	Lump Sum	LS	
Structure Excavation, Bridge	CuYd	323	
Class A45 Concrete, Bridge Deck	CuYd	184.6	
Class A45 Concrete, Bridge	CuYd	146.2	
Controlled Density Fill	CuYd	9.1	
Type SL-1 Bridge Railing	Ft	217	
Reinforcing Steel	Lb	23,304	
Epoxy Coated Reinforcing Steel	Lb	66,463	
Preboring Pile	Ft	100	
HP 10x42 Steel Test Pile, Furnish and Drive	Ft	440	
HP 10x42 Steel Bearing Pile, Furnish and Drive	Ft	3,010	
Class B Riprap	Ton	1,633.9	
Type B Drainage Fabric	SqYd	1,882	

SPECIFICATIONS FOR BRIDGE

- Design Specifications: AASHTO LRFD Bridge Design Specifications, 2012 Edition with 2013 interims.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications and special provisions as included in the proposal.

BRIDGE DESIGN LOADING

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

DESIGN MATERIAL STRENGTHS

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



GENERAL CONSTRUCTION

- All mild reinforcing steel shall conform to ASTM A615, Grade 60.
- All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise.
- Use 2" clear cover on all reinforcing steel except as shown.
- Contractor shall imprint on the structure the date of new construction as specified and detailed on Standard Plate No. 460.02. The year plate shall be centered vertically on the front face of the abutment backwall approximately twelve (12) inches from the edge of the concrete slab, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
- Rail posts shall be built normal to the grade.
- Request for construction joints or resteel splices at points other than those shown, must be submitted to the Engineer for prior approval. If additional splices are approved, no payment will be allowed for the added quantity of resteel.
- The elevation of the bridge deck is 13" above subgrade elevation.

INCIDENTAL WORK, STRUCTURE

- In place centerline Sta. 19+07.6 to 20+09.1 is a 101.5 ft. three span steel stringer bridge with a 28'-5" clear roadway. The superstructure consists of a reinforced concrete deck with W-beam bridge railing supported by steel I-beams continuous across the bridge. The deck has been overlaid with 4" of asphalt. The substructure consists of 2 column reinforced concrete bents and reinforced concrete vertical abutments.
- Break down and remove the existing bridge to 1 foot below finished groundline, or as required to construct the new structure in accordance with Section 110 of the Specifications. All portions of the existing bridge not salvaged for future highway related use shall be removed and disposed of by the Contractor on a site obtained by the Contractor and approved by the Engineer in accordance with the Environmental Commitment H: Waste Disposal Site.
- The existing two (2) W-beam bridge rails, each 101.5 ft. in length shall be salvaged for future highway related use. The salvaged W-beam bridge rails shall be loaded by the Contractor onto Turner County trucks. Turner County shall be notified 2 weeks prior to loading activity and the Contractor shall coordinate with the County to schedule. Care shall be taken during the dismantling, transporting and loading operation not to damage the structural properties of the salvaged items. The phone number for Turner County Highway Superintendent, Kent Austin is (605) 297-3404.
- During demolition of the structure, efforts shall be taken to prevent material from falling into the creek. Under no circumstances is asphalt allowed to fall into the creek.

- The foregoing is a general description of the in place bridge and should not be construed to be complete in all details. Before preparing the bid it shall be the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work and materials involved.

NOTICE – LEAD BASED PAINT

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

DESIGN MIX OF CONCRETE

- All structural concrete shall be Class A45 unless otherwise indicated.
- Type II cement is required.
- Coarse aggregate to be used in concrete shall consist of either crushed quartzite or other crushed ledge rock. If crushed ledge rock other than quartzite is to be used, it shall be from a source approved by the Engineer.

ABUTMENTS

- Preboring piling at each abutment is required to whichever is greater, ten feet or to natural ground.
- The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.
- The Contractor shall have sufficient pile splice material on hand before pile driving is started. See Standard Plate No. 510.40.
- Piles shall not be driven out of position by more than two inches in the direction normal to the abutment centerline. A pile-driving template shall be used to insure this accuracy.
- One test pile shall be driven at each abutment and will become part of the pile group.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES FOR 114'-6" Continuous Concrete Bridge Str. No. 63-070-041

DESIGNED BY	DRAWN BY:	CHECKED BY:	
DKJ	NCS	NCS	

FOR BIDDING PURPOSES ONLY

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6355(09)	36	50

PIER

1. The HP 10x42 Piling were designed using a factored bearing resistance of 77 tons per pile. Piling shall develop a field verified nominal bearing resistance of 192 tons per pile.
2. One test pile shall be driven at each bent pile cap and will become part of the pile group.
3. The Contractor shall have sufficient pile splice material on hand before pile driving is started. See Plate No. 510.40.

COFFERDAMS

1. It is anticipated that cofferdams will be necessary. Cofferdams shall be designed and constructed in accordance with Section 423 of the Specifications.
2. The design of the Cofferdam must be done by Professional Engineers registered in South Dakota. Sealed calculations of both the original design and design check, performed by different engineers, shall be submitted with the Cofferdam plans. The Cofferdam plans, design, and check design shall be submitted to the Office of Bridge Design a minimum of 15 days prior to Cofferdam construction.

PILE DRIVING

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

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

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

SUPERSTRUCTURE

1. Preplanned construction joints may be used in accordance with Section 460.3 of the Specifications. Contact the Office of Bridge Design for joint configuration and allowable location. Emergency slab construction joints shall be as shown with the superstructure details. If an emergency slab joint is used, contact the Office of Bridge Design before proceeding with deck pour.
2. The deck-finishing machine shall be adjusted and operated in such a manner that the roller screed or screeds are parallel with the centerline of the bridge and the finish machine is parallel to the skew of the bridge. Concrete placement in front of the finish machine shall be kept parallel to the machine.
3. Superstructure falsework shall not be removed until bridge deck concrete has attained a strength of 2400 psi.
4. The bridge deck must be placed and finished continuously at a minimum rate of 25.0 ft. of deck per hour measured along centerline roadway. If concrete cannot be placed and finished at this rate, the Engineer shall

order a header installed and operations stopped. Notify the Bridge Construction Engineer if deck pour operations are stopped. Operations may resume only when the Engineer is satisfied that a minimum rate of 25.0 ft. of deck per hour can be achieved and the concrete in the previous pour has attained a minimum compressive strength of 2000 psi.

CLASS A45 CONCRETE, BRIDGE DECK

1. Concrete used in the bridge deck slab shall be in accordance with the requirements for bridge deck concrete as specified in Section 460.3A of the Specifications. In addition, the concrete used in the bridge deck shall have Class F Modified Fly Ash substituted for a portion of the cement in accordance with Section 605 of the Specifications. The amount of cement to be replaced shall be 20 percent by weight. The ratio of substitution of fly ash to cement shall be 1:1 by weight.
2. The bridge deck concrete shall be placed and cured in accordance with the Special Provision for Bridge Deck Curing and Finishing.
3. See Special Provision for Concrete Penetrating Sealer.

CONTROLLED DENSITY FILL

Controlled density fill shall be placed at the top of the bridge berms as shown on the plans. Controlled density fill shall be a flowable mortar material. Material and mixing shall be in accordance with Section 464 of the Specifications.

FALSEWORK

The Contractor shall be required to include with his Falsework Plans, details for the construction of an adequate "Walk-Way" including railing. The maximum falsework deflection allowed is 1/4 inch.

SHOP DRAWINGS

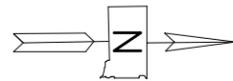
The fabricator shall submit shop plans in accordance with the Specifications or in Adobe PDF format to Johnson Engineering Company, 1800 Broadway Avenue, Suite 3, Yankton, SD 57078 (dkj@iw.net). After review, corrections (if necessary), and approval by Johnson Engineering Company, the Office of Bridge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



ESTIMATE OF STRUCTURE QUANTITIES AND NOTES
 FOR
114'-6" Continuous Concrete Bridge
 Str. No. 63-070-041

SHEET 3 OF 11

DESIGNED BY	DRAWN BY:	CHECKED BY:	
DKJ	NCS	NCS	



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	37	50

COFFERDAM SOIL PARAMETERS:

CLAY-SILT

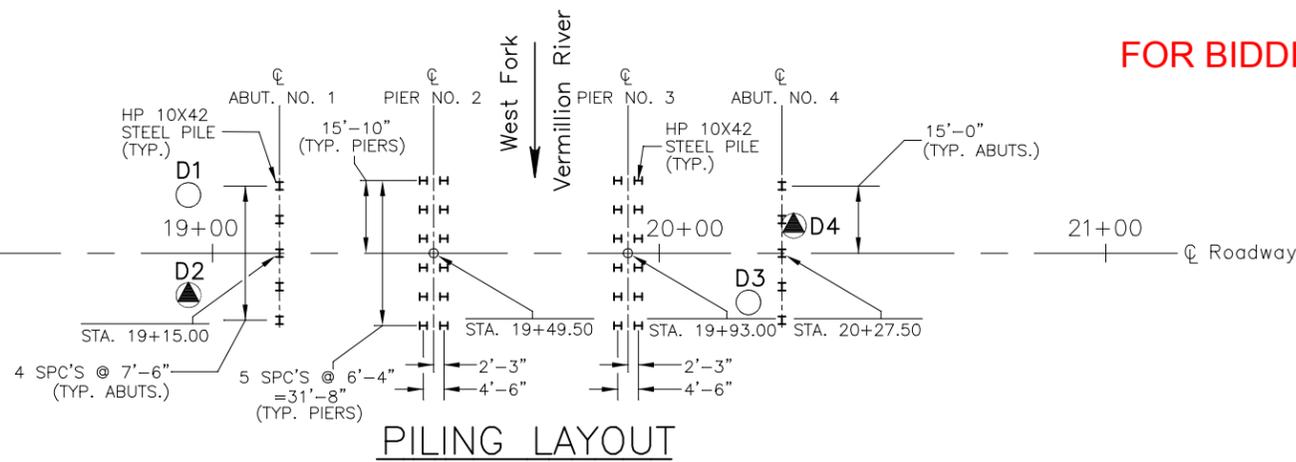
Friction Angle $\phi = 24$ degrees
 Cohesion $C = 100$ psf
 Wet Unit Weight $\gamma_w = 122$ pcf

SAND-SILT WITH GRAVEL

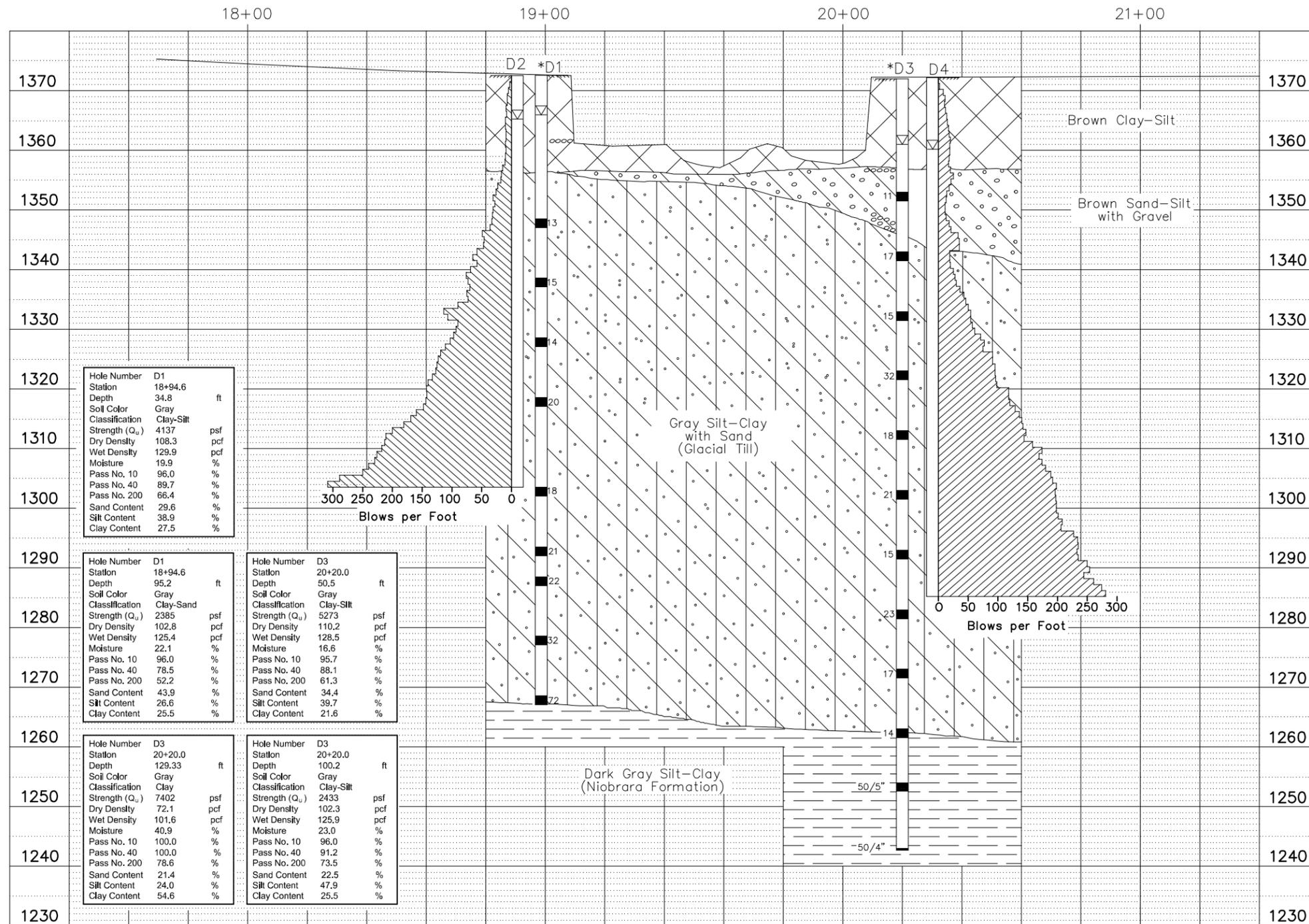
Friction Angle $\phi = 26$ degrees
 Cohesion $C = 50$ psf
 Wet Unit Weight $\gamma_w = 118$ pcf

SILT-CLAY WITH SAND (GLACIAL TILL)

Friction Angle $\phi = 24$ degrees
 Cohesion $C = 930$ psf
 Wet Unit Weight $\gamma_w = 124$ pcf



PILING LAYOUT



Glaciated Terrain contains all sizes of natural mineral sediment ranging from clay to boulders. Streams originating in or flowing through glaciated topography contain sediment loads derived from glaciated sources. Stream and river crossings contain sediment naturally sorted and randomly concentrated. Alluvial sediment located at this project location may have concentrated coarser gravel such as pebbles, cobbles and boulders. The borings shown only represent material that was found at the exact location of the small diameter drill hole. Coarse granular material may be present in areas not penetrated by the depicted borings.

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

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

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

GROUND WATER ELEVATIONS

as of April 2013

D1	1366.0
D2	1365.2
D3	1361.0
D4	1360.2

MEASURED SKIN FRICTION

	Elev	psf
D2	1303.5	608
D4	1285.2	465

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

Sample Zone 48 Blows Per Foot

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

LEGEND

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

SUBSURFACE INVESTIGATION & PILING LAYOUT FOR 114'-6" CONTINUOUS CONCRETE BRIDGE

32'-0" ROADWAY
 W. FORK VERMILLION RIVER
 STA. 19+14.00 TO 20+28.50
 STRUCTURE NO. 63-070-041

0° SKEW
 SEC. 31/32-T100N-R54W
 BRF 6355(09)
 PCN 01W8

TURNER COUNTY
 SOUTH DAKOTA

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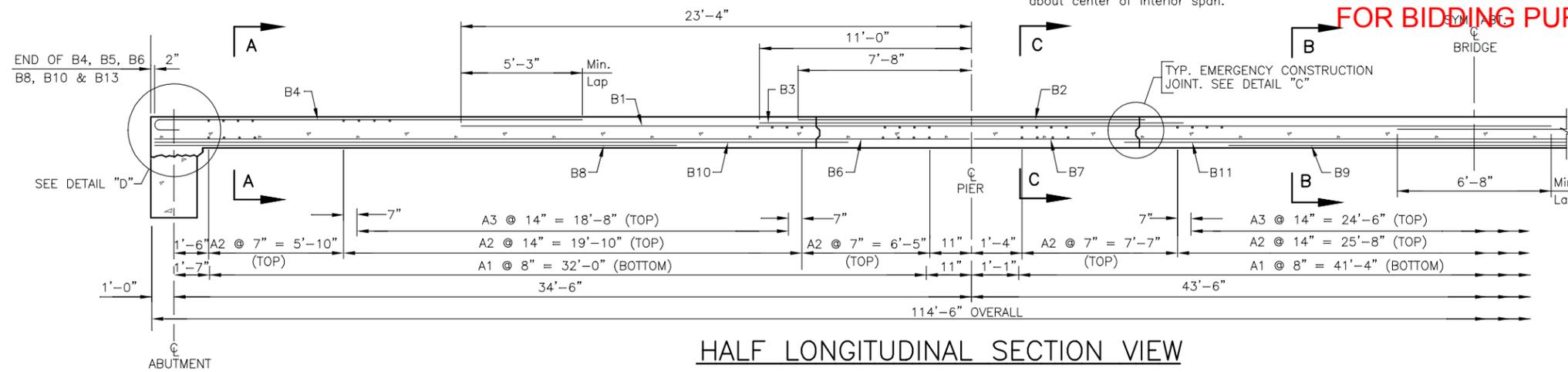
FEBRUARY 2015 SHEET 4 OF 11

DESIGNED BY	DRAWN BY	CHECKED BY
	NN	JW

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

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	40	50

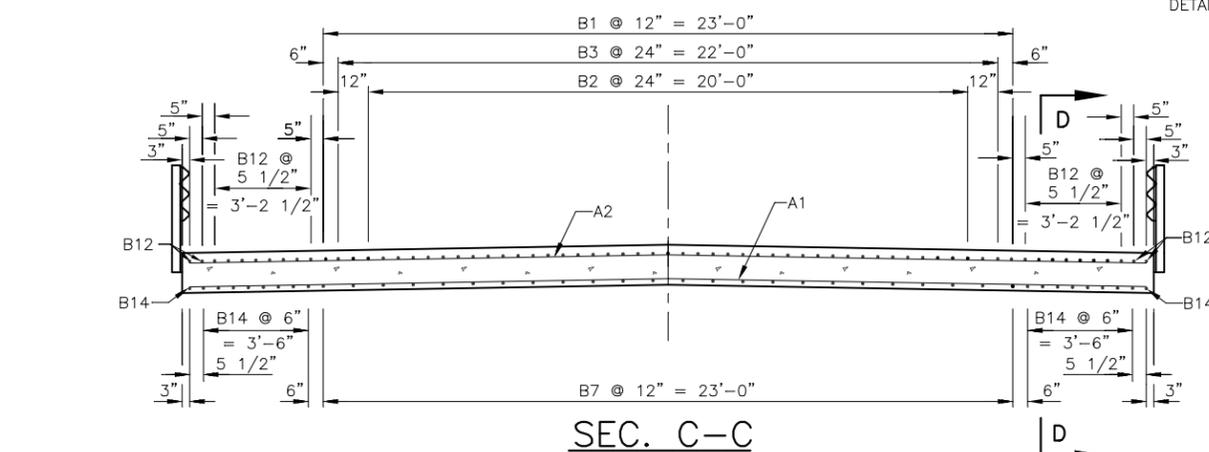
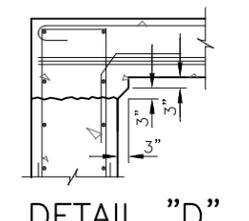
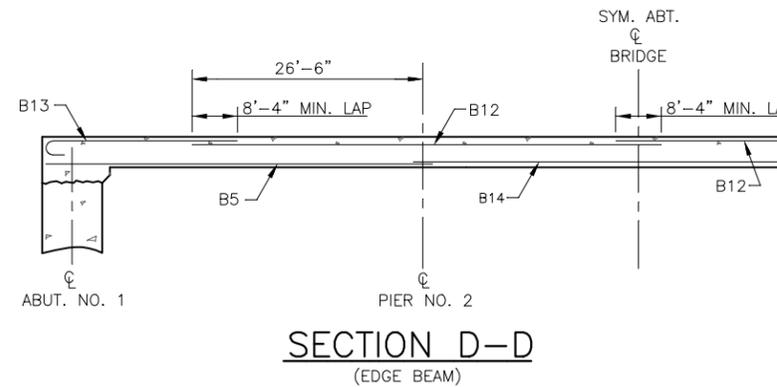
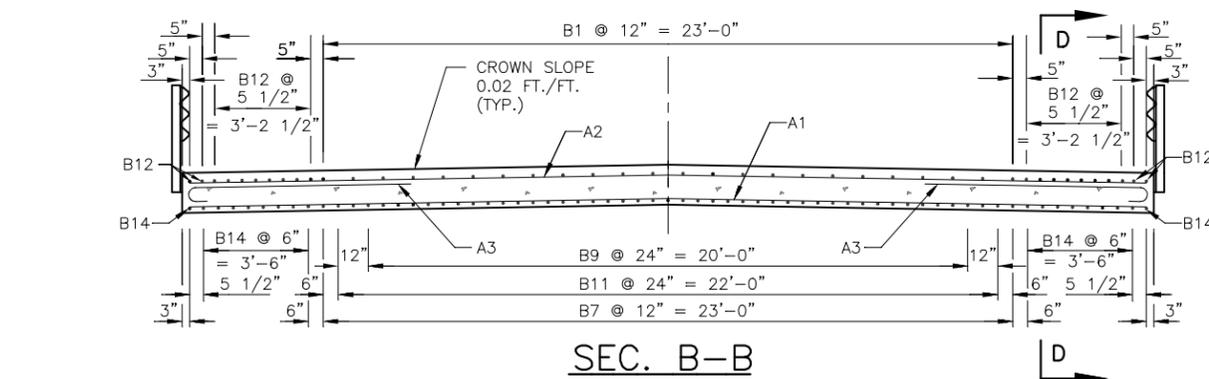
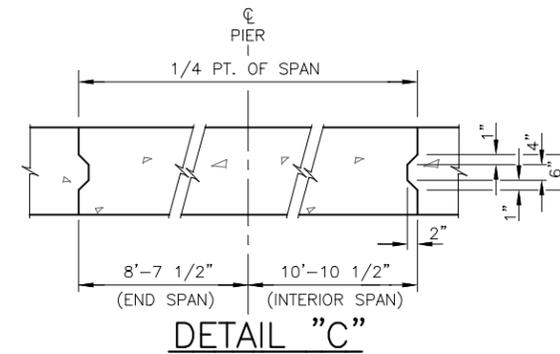
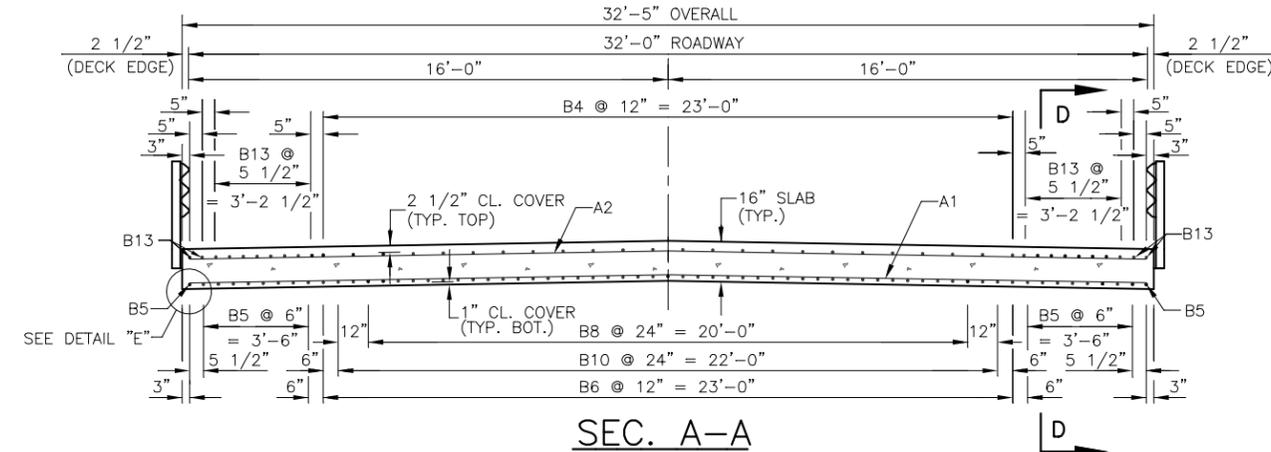


REINFORCING SCHEDULE

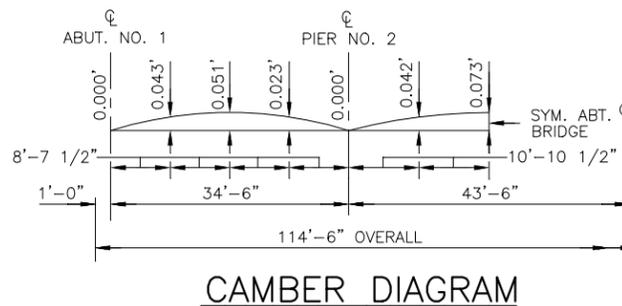
MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
A1	161	6	32'-1"	STR.	
A2	127	5	32'-1"	STR.	
A3	112	5	6'-11"	1A	
B1	48	10	48'-5"	STR.	
B2	22	10	15'-4"	STR.	
B3	24	10	22'-0"	STR.	
B4	48	9	18'-6"	1A	
B5	36	9	35'-10"	STR.	
B6	48	9	35'-4"	STR.	
B7	24	9	43'-6"	STR.	
B8	22	9	22'-3"	STR.	
B9	11	9	16'-8"	STR.	
B10	24	9	26'-9"	STR.	
B11	12	9	26'-2"	STR.	
B12	40	10	52'-5"	STR.	NOTES: ALL DIMENSIONS ARE OUT TO OUT OF BARS. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
B13	40	10	18'-8"	1A	
B14	18	10	44'-6"	STR.	

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE PENETRATING SEALER	SqYd	413
CLASS A45 CONCRETE, BRIDGE DECK	CuYd	184.6
EPOXY COATED REINFORCING STEEL	Lb	64,481



NOTE:
FOR RAIL POST ANCHOR
DETAILS, SEE SHEET NO. 8 OF 11.



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

SUPERSTRUCTURE DETAILS FOR 114'-6" CONTINUOUS CONCRETE BRIDGE

32'-0" ROADWAY
W. FORK VERMILLION RIVER
STA. 19+14.00 TO 20+28.50
STRUCTURE NO. 63-070-041

0° SKEW
SEC. 31/32-T100N-R54W
BRF 6355(09)
PCN 01W8

TURNER COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

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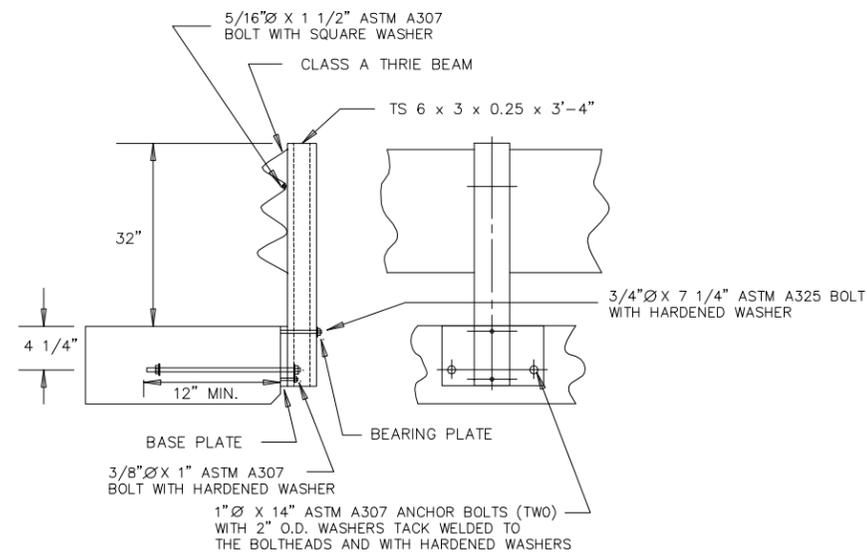
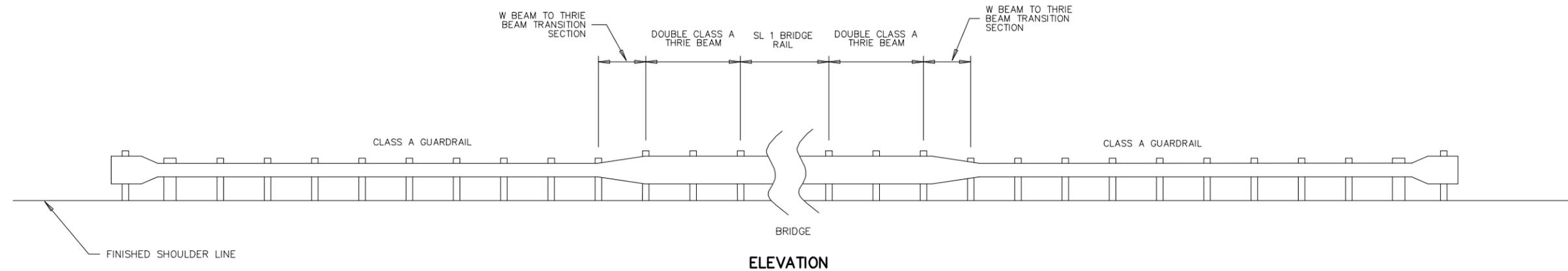
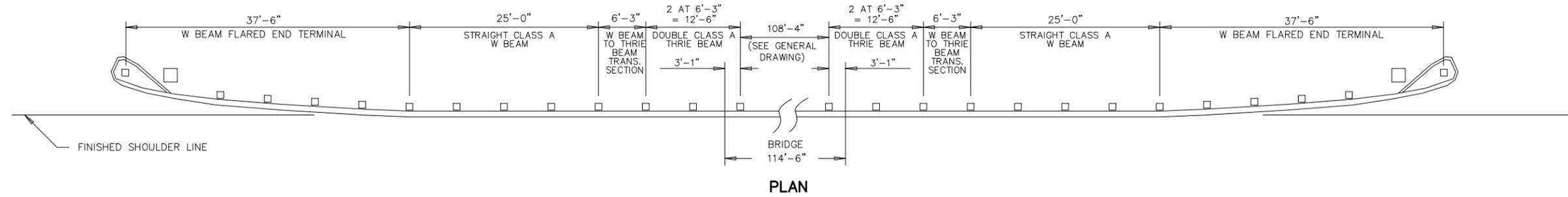
FEBRUARY 2015

SHEET (7) OF (11)

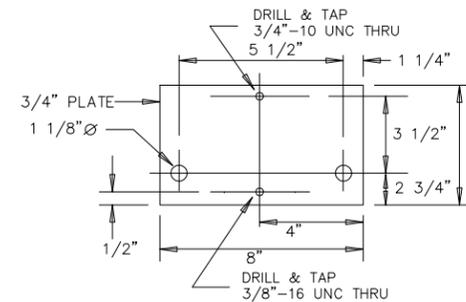
DESIGNED BY	DRAWN BY	CHECKED BY
DKJ	NCS	NCS

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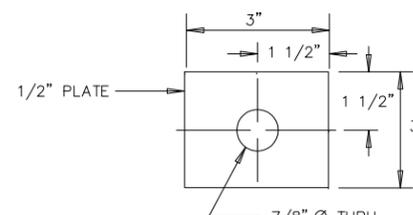
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	41	50



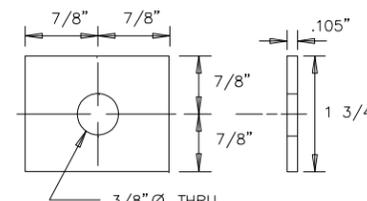
SL 1 BRIDGE RAIL



BASE PLATE



BEARING PLATE



SQUARE WASHER

GENERAL NOTES:

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

ESTIMATE OF QUANTITIES

ITEM	UNIT	QUANTITY
Type SL-1 Bridge Railing	Ft	217

SL 1 BRIDGE RAILING DETAILS FOR 114'-6" CONTINUOUS CONCRETE BRIDGE

32'-0" ROADWAY
W. FORK VERMILLION RIVER
STA. 19+14.00 TO 20+28.50
STRUCTURE NO. 60-070-041

0° SKEW
SEC. 31/32-T100N-R54W
BRF 6355(09)
PCN 01W8

TURNER COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

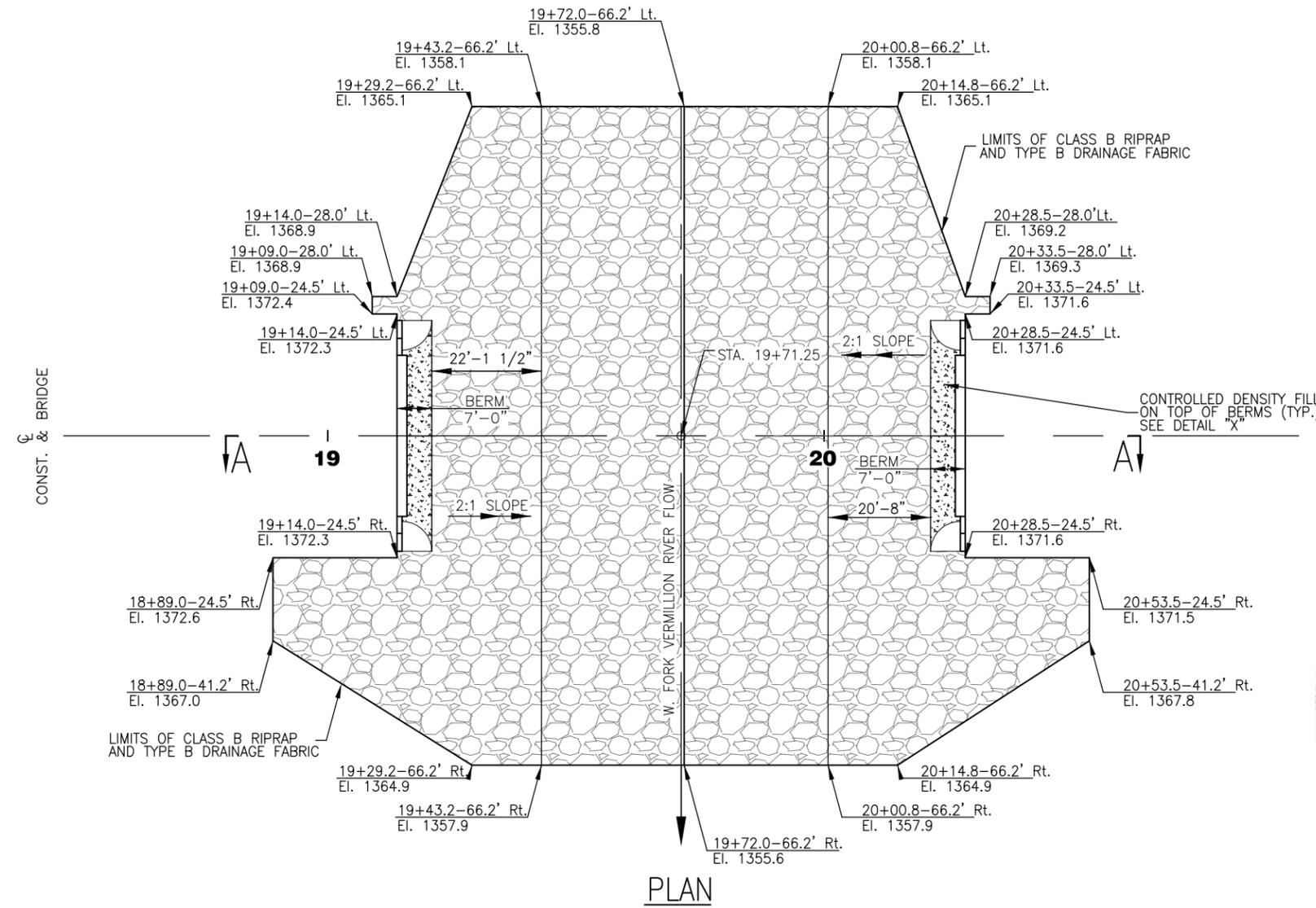
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FEBRUARY 2015 SHEET (8) OF (11)

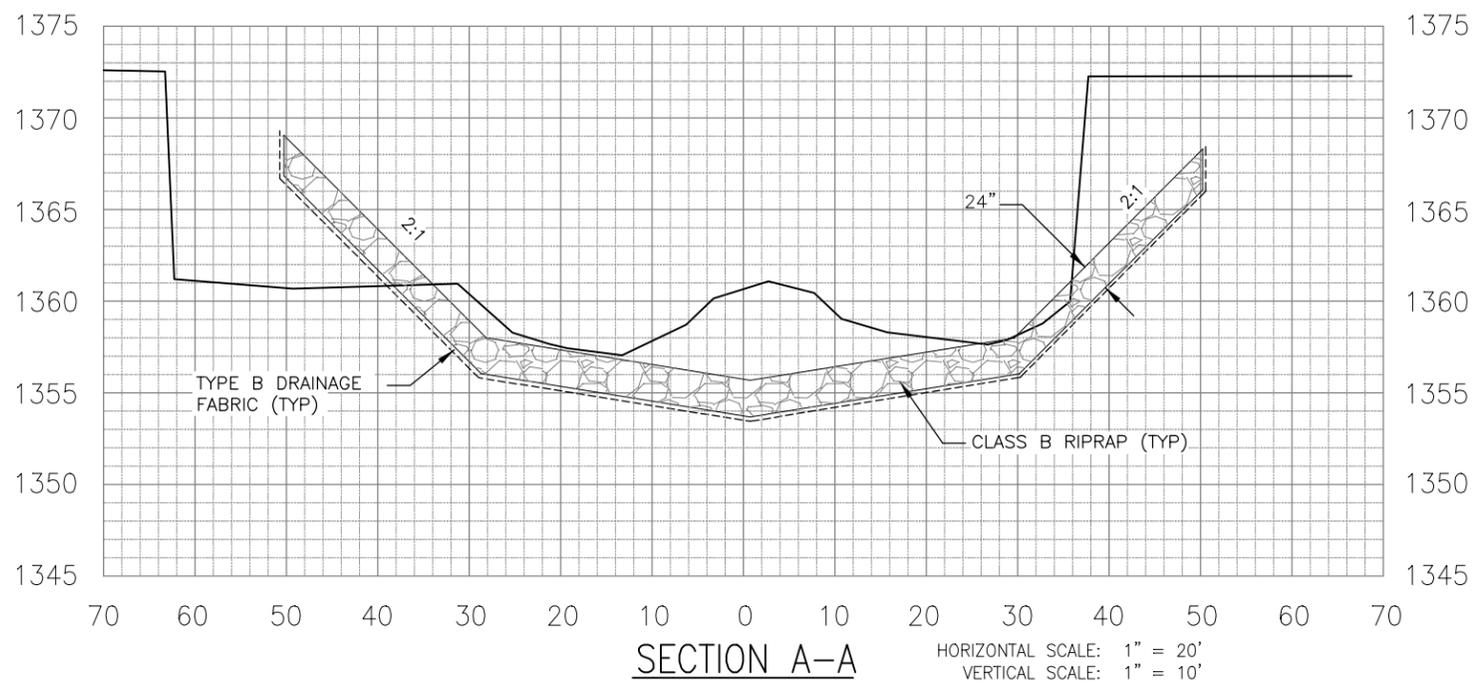
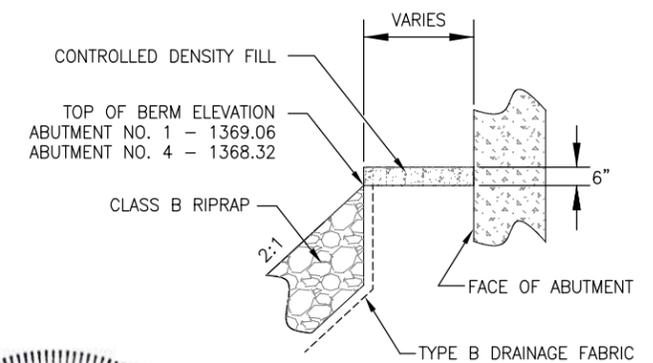
DESIGNED BY	DRAWN BY	CHECKED BY
--	NCS	DKJ

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	42	50



SCALE: 1" = 30'



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
△ Class B Riprap	Ton	1,633.9
Type B Drainage Fabric	SqYd	1,882
Controlled Density Fill	CuYd	9.1

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

RIPRAP LAYOUT FOR 114'-6" CONTINUOUS CONCRETE BRIDGE

32'-0" ROADWAY
W. FORK VERMILLION RIVER
STA. 19+14.00 TO 20+28.50
STRUCTURE NO. 63-070-041

0° SKEW
SEC. 31/32-T100N-R54W
BRF 6355(09)
PCN 01W8

TURNER COUNTY
SOUTH DAKOTA

HL93

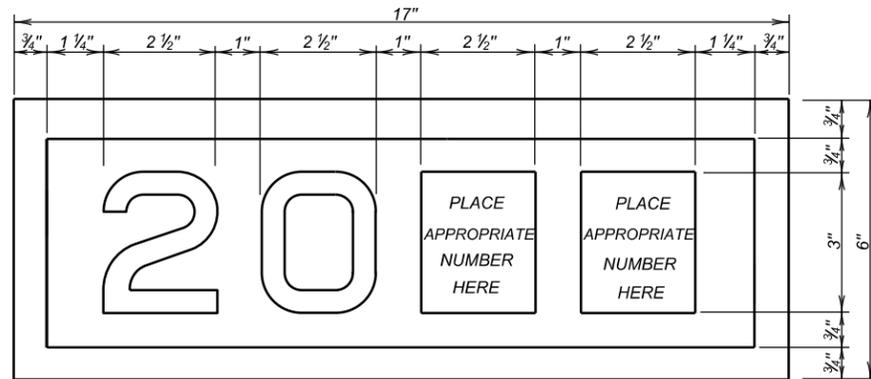
PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

FEBRUARY 2015

SHEET 9 OF 11

DESIGNED BY DKJ	DRAWN BY NCS	CHECKED BY NCS
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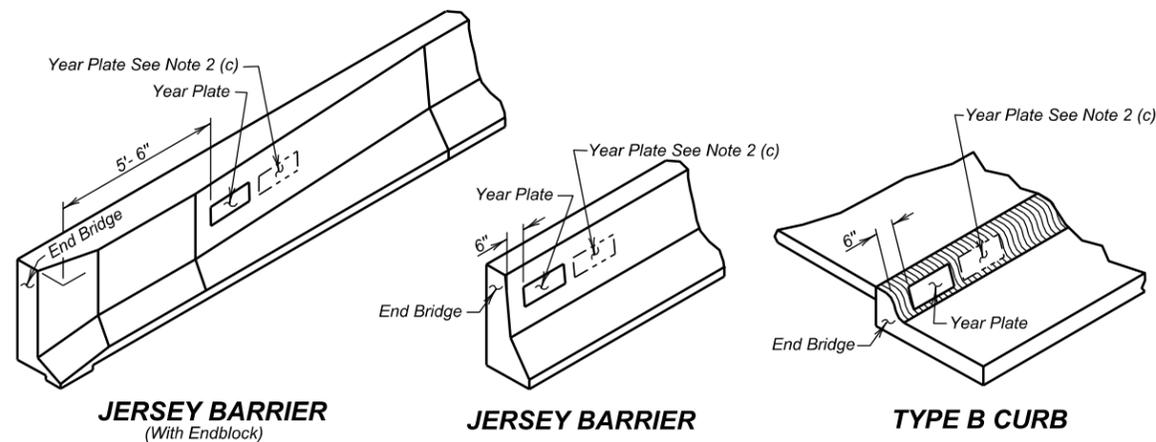
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	43	50



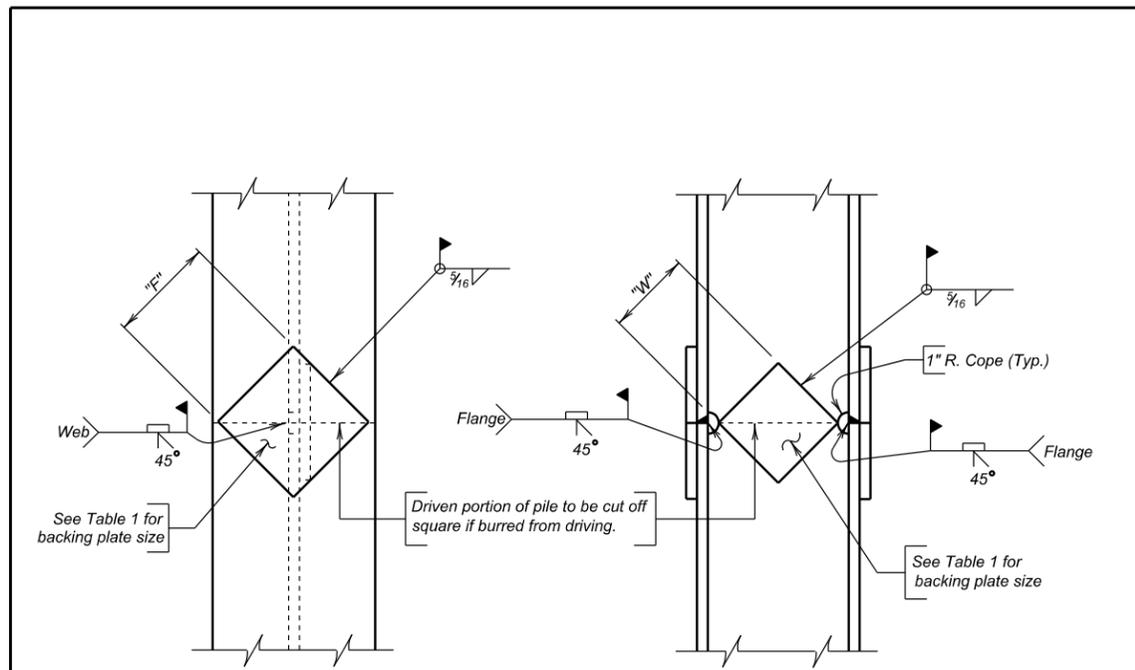
YEAR PLATE DETAILS

GENERAL NOTES:

1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (1/2) inch in depth.
2. Year plates shall be located on structure (s) as follows:
 - a. On cast-in-place box culverts the year plates shall be four and one-half (4 1/2) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.
 - b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'-6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.
 - c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.

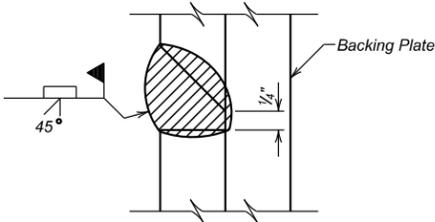


Published Date: 4th Qtr. 2015 S D D O T	YEAR PLATE DETAILS	June 26, 2012 PLATE NUMBER 460.02
		Sheet 1 Of 1



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

COMPLETE JOINT PENETRATION WELD DETAIL



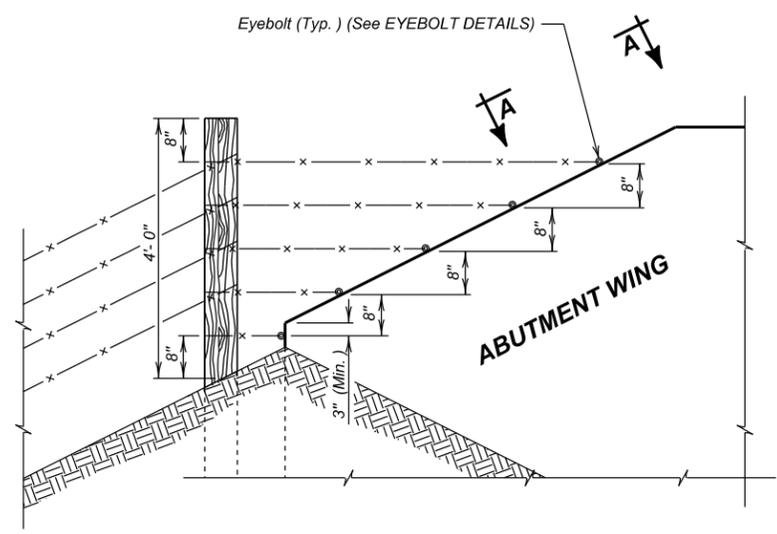
GENERAL NOTES:

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

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

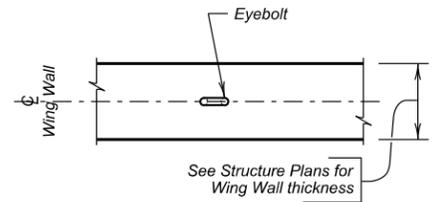
Published Date: 4th Qtr. 2015	S D D O T	STEEL PILE SPLICE DETAILS	PLATE NUMBER 510.40
			Sheet 1 of 1



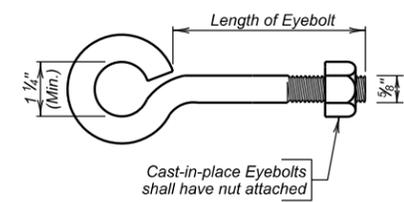
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

1. The fence and post details shown are for illustrative purpose only. The fence shall be as specified elsewhere in the plans.
2. Eyebolts shall be placed on all of the bridge abutment wings.
3. Eyebolts shall be 5/8 inch diameter and shall conform to ASTM A307.
4. Eyebolts, nuts, and concrete inserts shall be galvanized in accordance with AASHTO M232 (ASTM A153). Concrete inserts of corrosion resistant material need not be galvanized.
5. Cast-in-place eyebolts shall have a nut attached, be 4 1/2 inches (Min.) in length and shall be embedded such that the eye of the bolt is flush with the concrete surface. (See Eyebolt Details) As an alternate, cast-in-place concrete inserts, capable of developing the full strength of the 5/8 inch diameter threaded eyebolt, may be used and shall be set in the concrete in accordance with the manufacturer's recommendations. The eyebolt shall be of sufficient length to develop its full strength. The eye of the eyebolt shall be flush with the concrete surface.
6. The cost for furnishing and installing eyebolts and/or concrete inserts shall be incidental to various contract items.



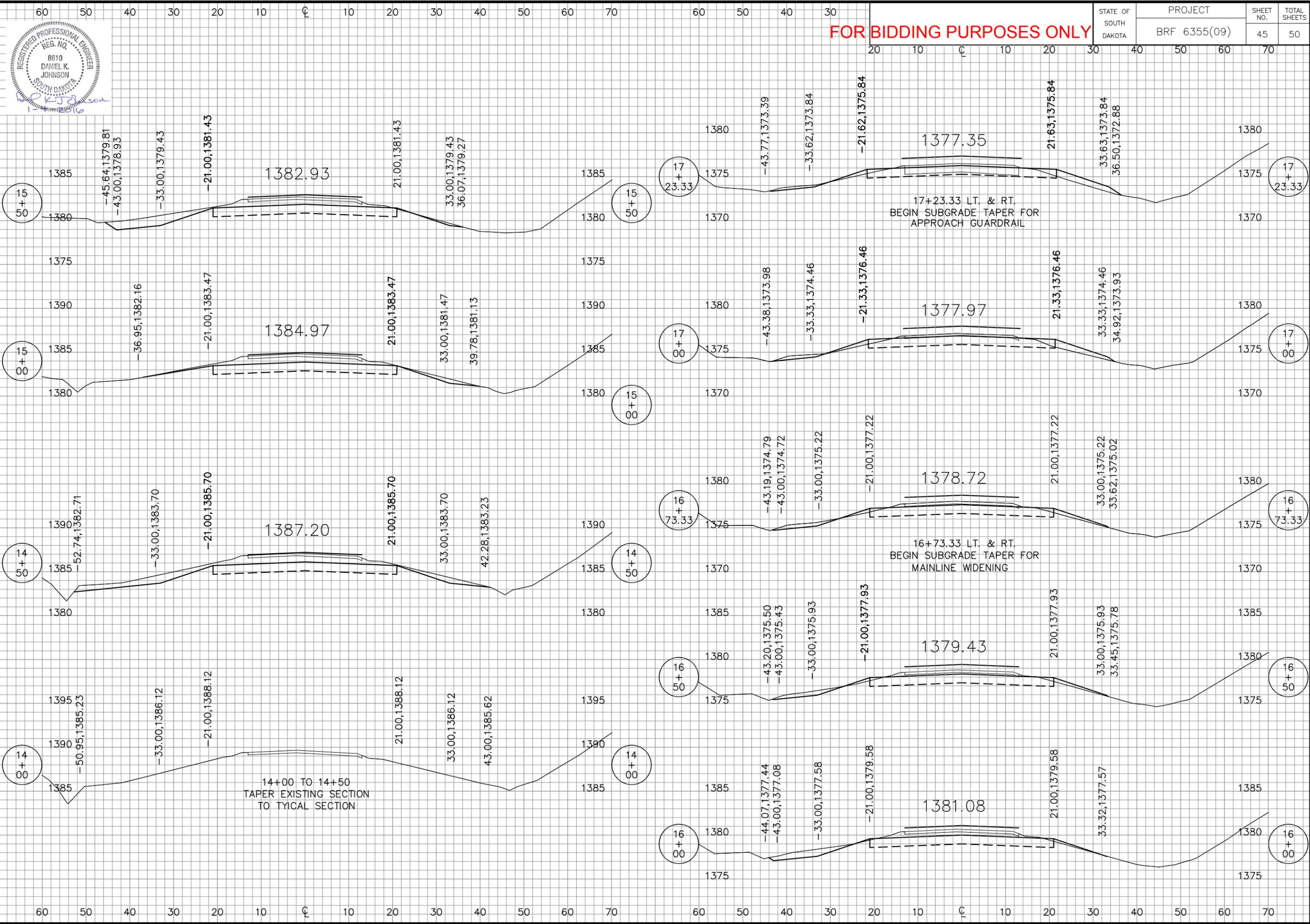
VIEW A - A



EYEBOLT DETAILS

December 23, 2012

Published Date: 4th Qtr. 2015	S D D O T	FENCE ANCHORS FOR BRIDGE ABUTMENT WINGS (WINGS LONGER THAN 6')	PLATE NUMBER 620.17
			Sheet 1 of 1

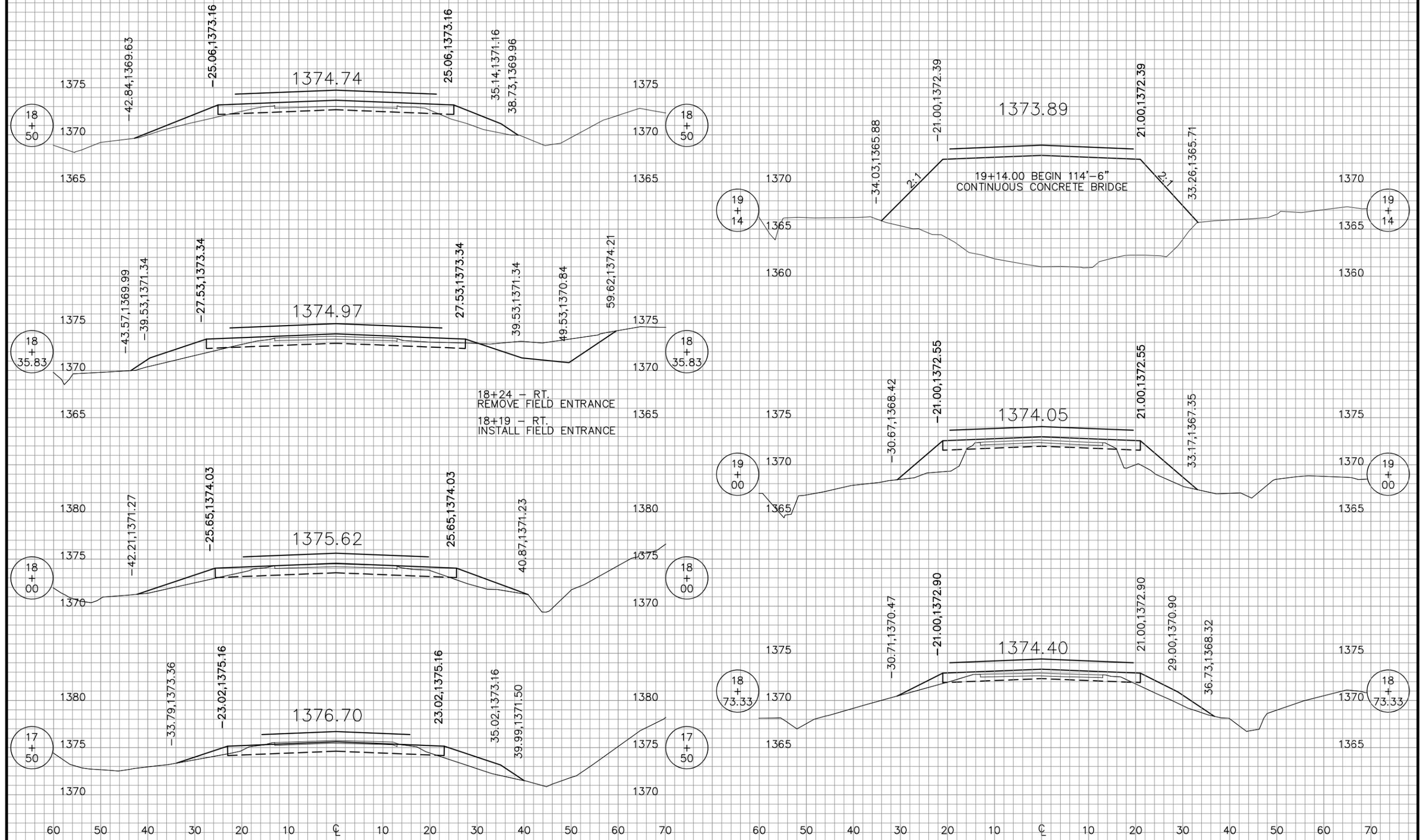


FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	45	50

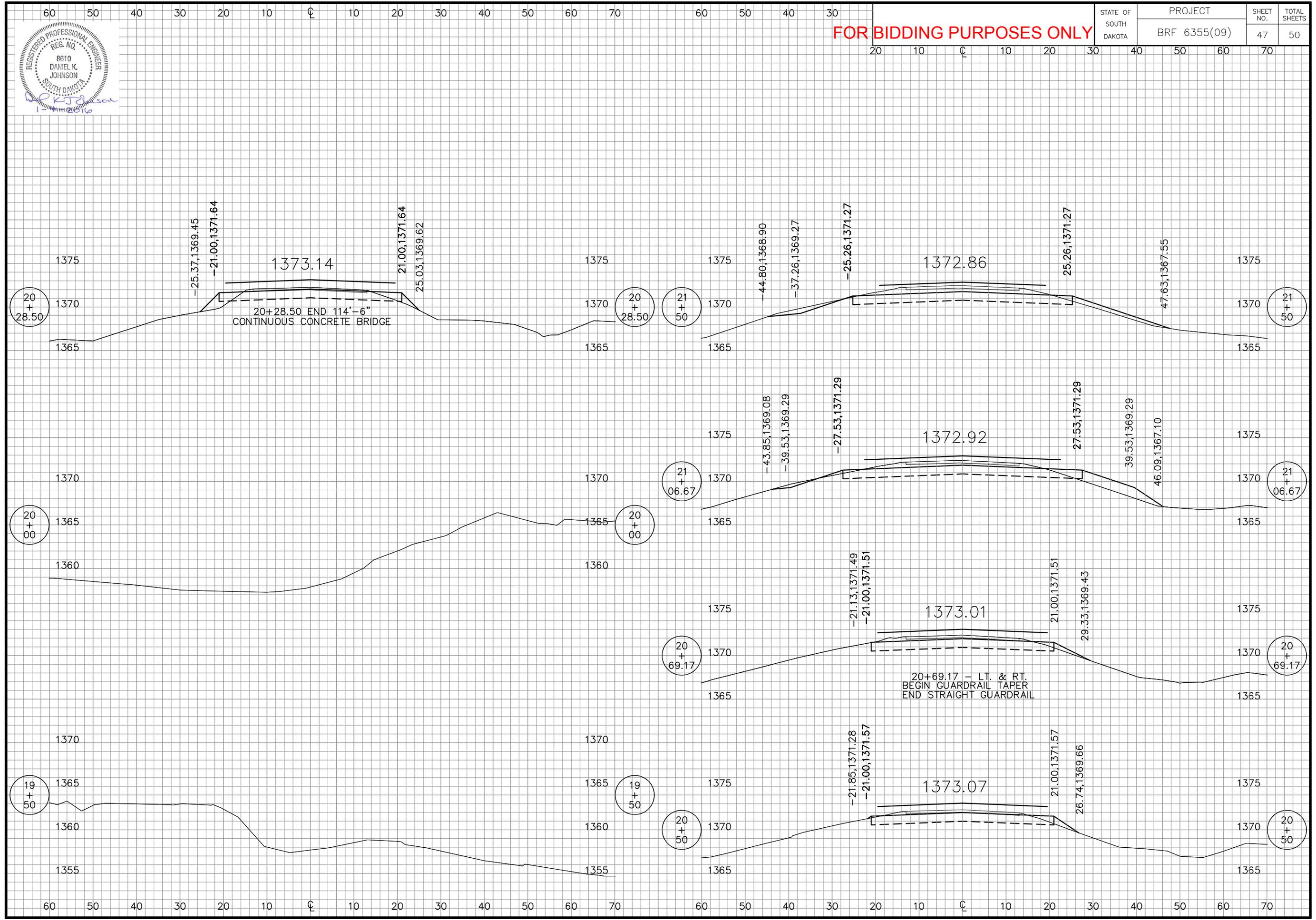
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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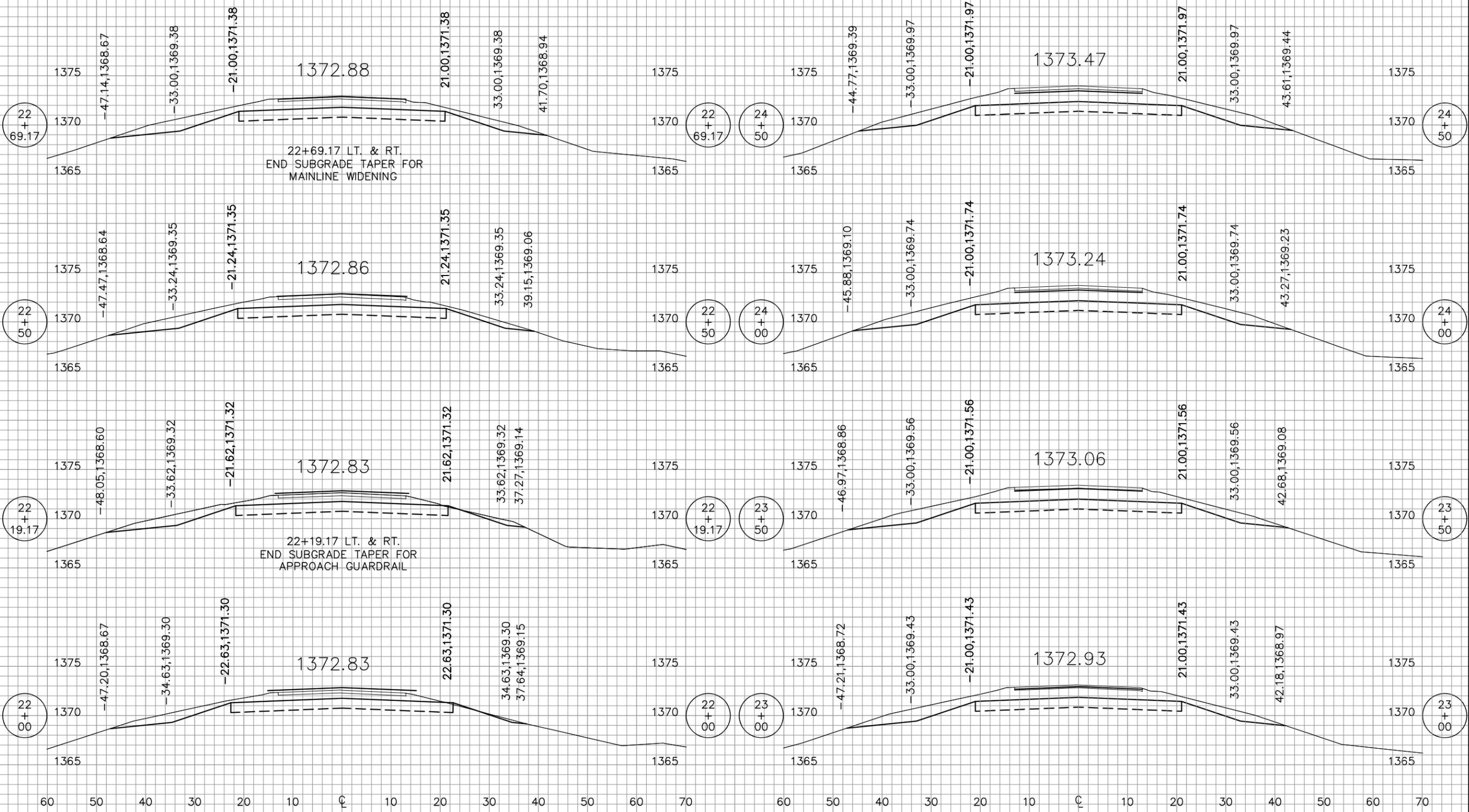
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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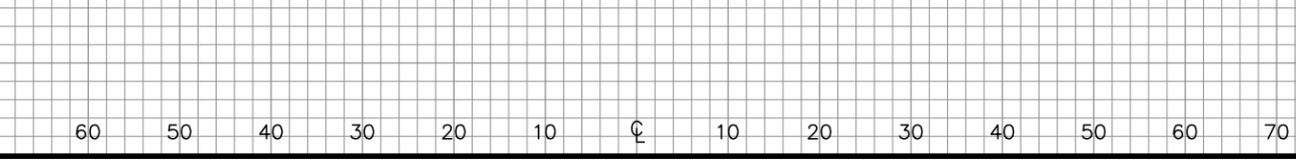
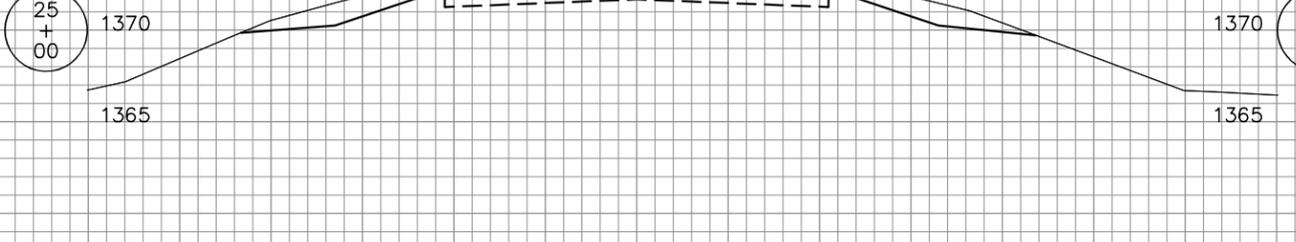
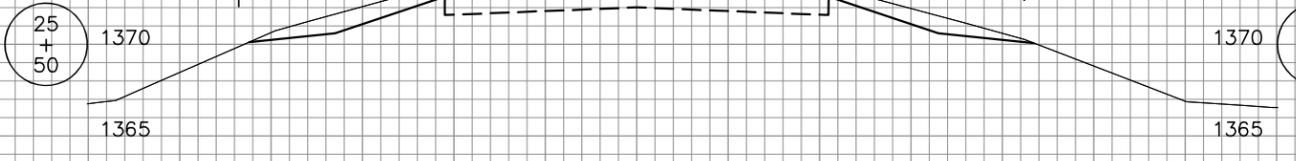
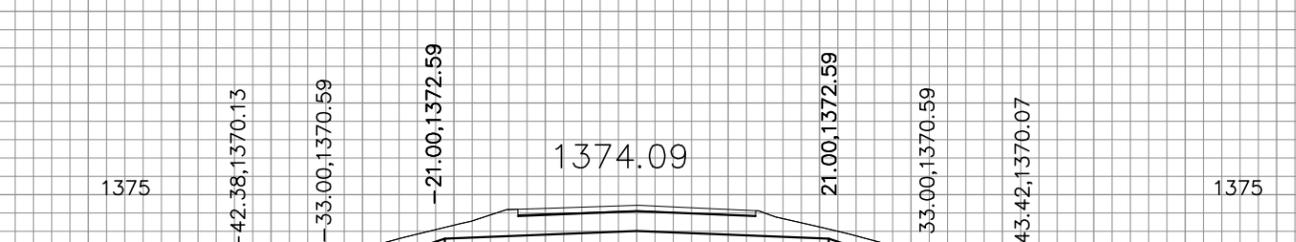
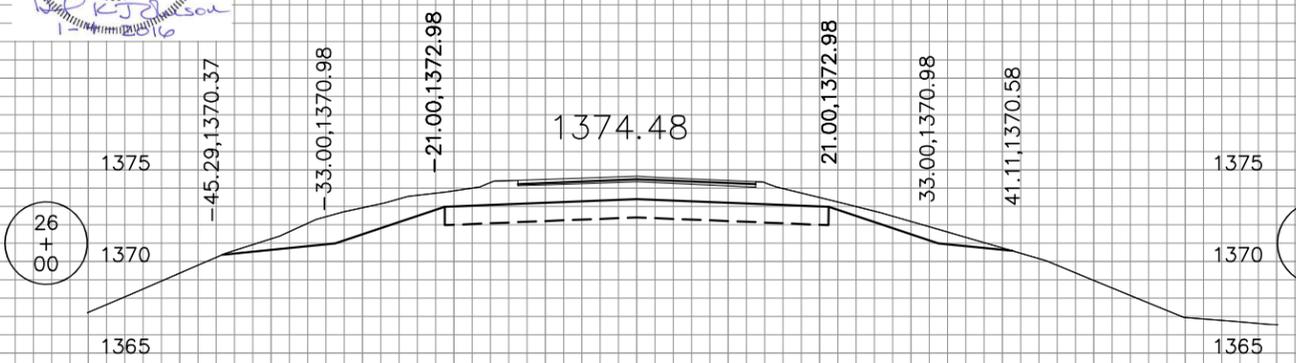




FOR BIDDING PURPOSES ONLY



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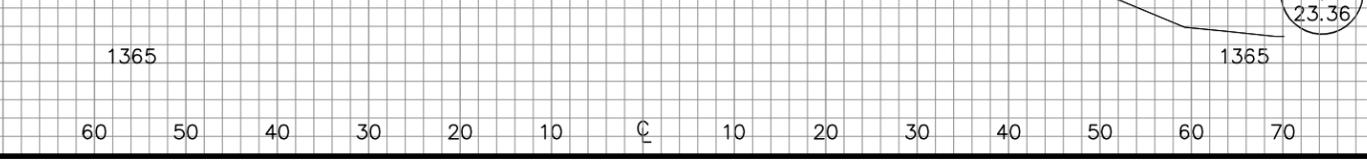
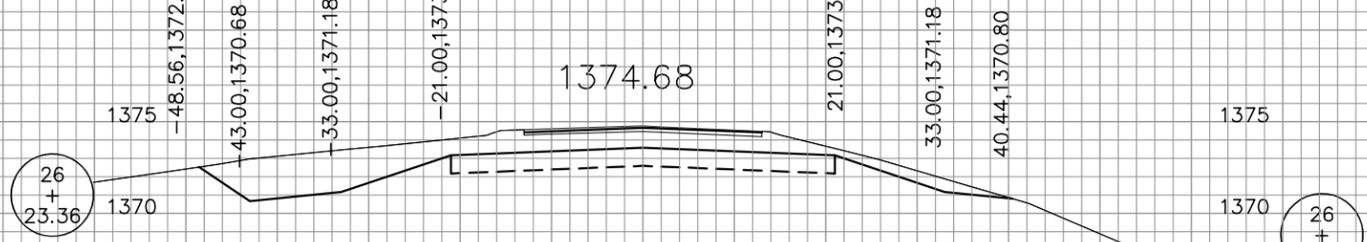
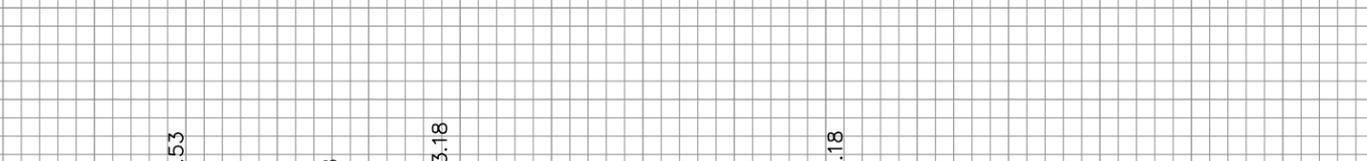
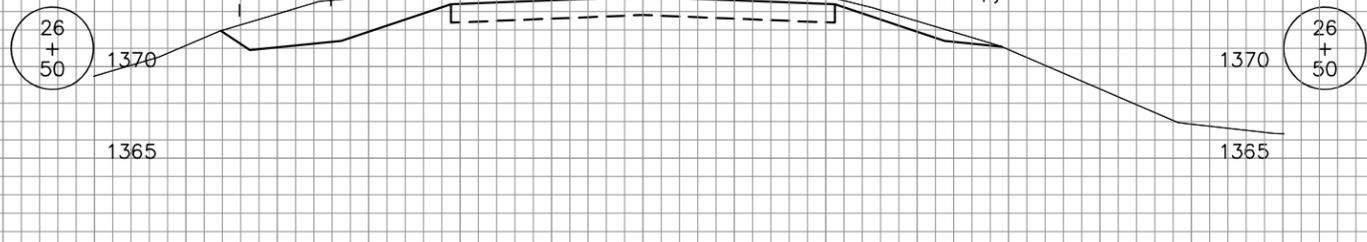
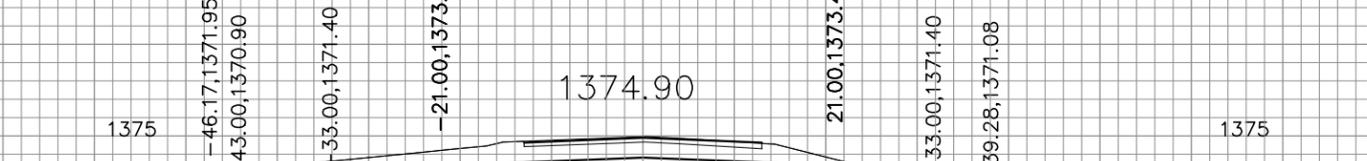
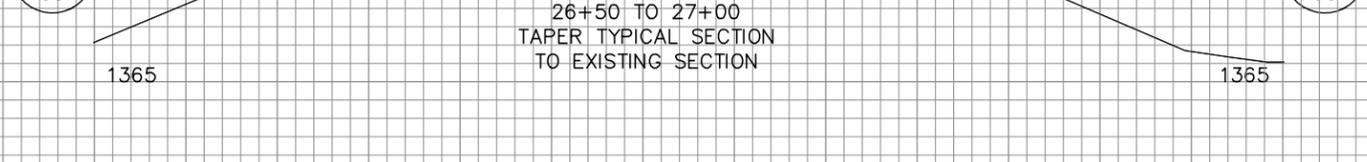
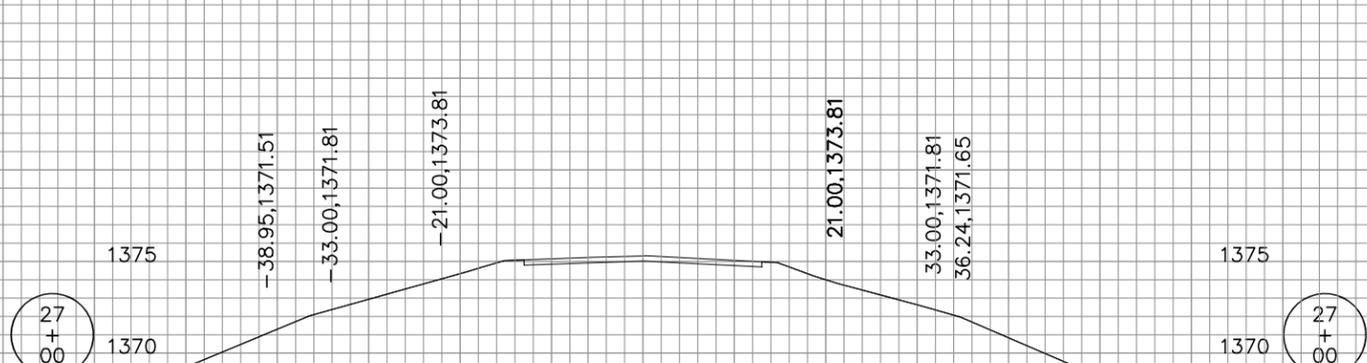


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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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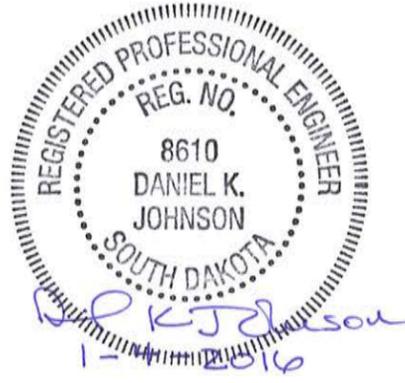
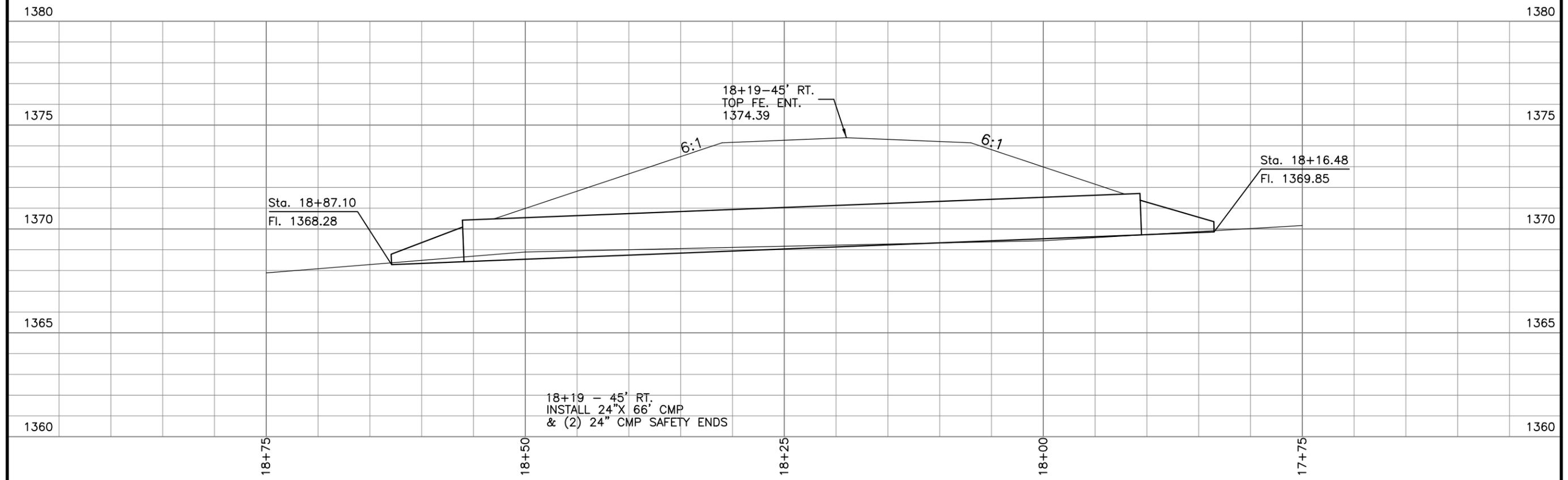


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26+50 TO 27+00
TAPER TYPICAL SECTION
TO EXISTING SECTION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRF 6355(09)	50	50



SCALES
1"=10' HORIZ.
1"=5' VERT.