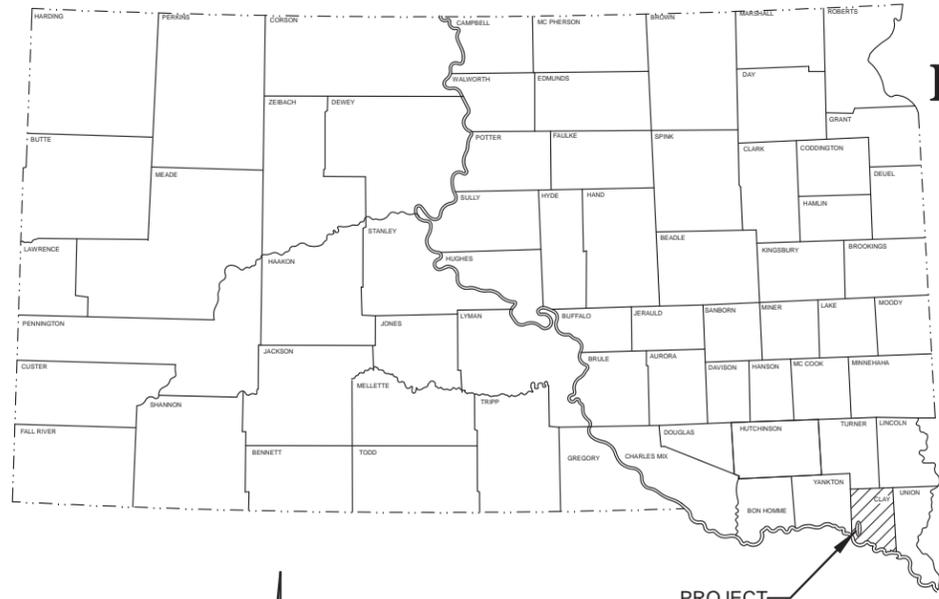


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRO 8014(31)	SHEET NO. 1	TOTAL SHEETS 33
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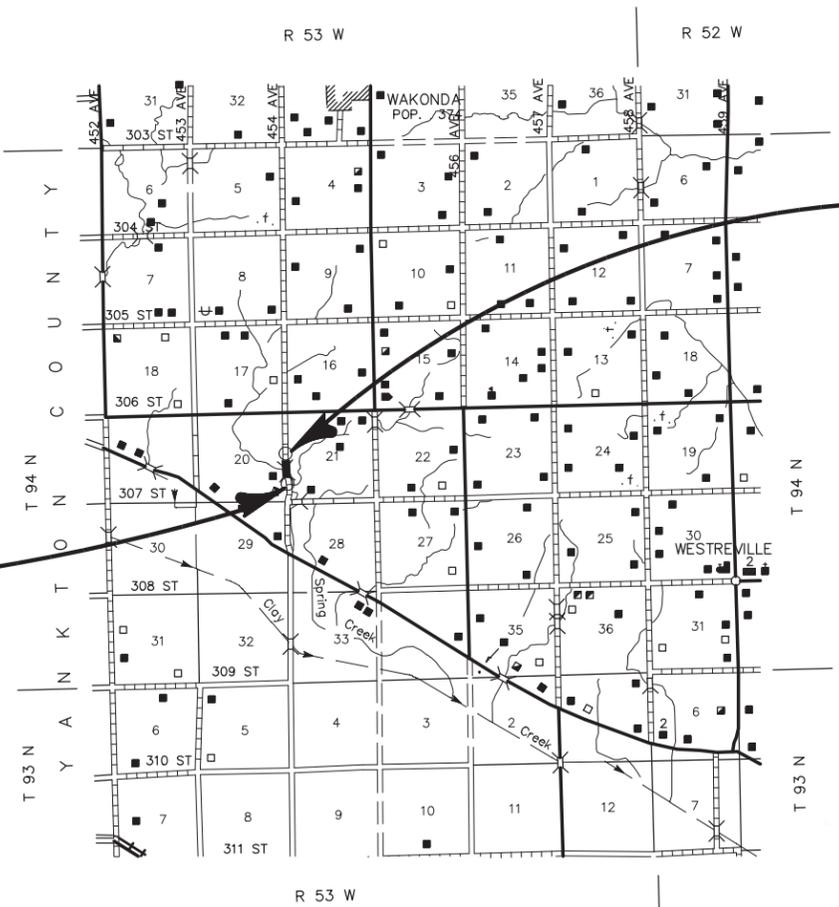
PLANS FOR PROPOSED
PROJECT BRO 8014(31)
CLAY COUNTY
STRUCTURE AND APPROACH GRADING
STR. 14-020-096
PCN 00K4

INDEX OF SHEETS

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PROJECT



END PROJECT BRO 8014(31)
454th AVENUE, CLAY COUNTY
STA. 17+00.00 ON BRO 8014(31) =
1919.24' NORTH AND 5.46' EAST OF THE
SOUTHEAST CORNER OF SEC. 20-T94N-R53W
N. 21919.24 E. 20005.46

BEGIN PROJECT BRO 8014(31)
454th AVENUE, CLAY COUNTY
STA. 12+00.00 ON BRO 8014(31) =
1421.20' NORTH AND 27.23' EAST OF THE
SOUTHEAST CORNER OF SEC. 20-T94N-R53W
N. 21421.20 E. 20027.23

DESIGN DESIGNATION

ADT (2006)	16
ADT (2026)	20
DHV	3
D	50%
T DHV	3.8%
T*ADT	8.3%
DESIGN SPEED	25 MPH

STORM WATER PERMIT DATA
LATITUDE: 42°56'36" N
LONGITUDE: 97°07'17" W
PROJECT AREA ----- 2.29 ACRES
ACRES DISTURBED ----- 0.89 ACRES
MAJOR STREAM OR LAKE ---- TRIBUTARY TO SPRING CREEK

LEGEND

STATE AND NATIONAL LINE	-----
COUNTY LINE	-----
SECTION LINE	-----
QUARTER LINE	-----
FENCE LINE	---X---
ROW LINE	-----
WORK LIMITS	-----

SCALES

LAYOUT	1 INCH = 2 MILES
PLAN	1 INCH = 100 FEET
PROFILE HORIZONTAL	1 INCH = 100 FEET
VERTICAL	1 INCH = 10 FEET
CROSS SECTIONS HORIZONTAL	1 INCH = 20 FEET
VERTICAL	1 INCH = 10 FEET

SURVEY BY: JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA
PLANS BY: JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA



ESTIMATE OF QUANTITIES**-GRADING-**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E1700	Remove Silt Fence	71	Ft
120E0010	Unclassified Excavation	3,065	CuYd
120E0600	Contractor Furnished Borrow	1,523	CuYd
230E0010	Placing Topsoil	217	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
634E0100	Traffic Control	602	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0102	Type 2 Erosion Control Blanket	390	SqYd
734E0154	12" Diameter Erosion Control Wattle	320	Ft
734E0510	Shaping for Erosion Control Blanket	100	Ft
734E0602	Low Flow Silt Fence	285	Ft
734E0610	Mucking Silt Fence	20	CuYd
734E0620	Repair Silt Fence	285	Ft
734E0900	Temporary Diversion Channel and/or Pipe	1	Each

-STRUCTURE-

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	58	CuYd
421E0200	Box Culvert Undercut	173	CuYd
460E0120	Class A45 Concrete, Box Culvert	143.0	CuYd
480E0100	Reinforcing Steel	20,868	Lb
700E0210	Class B Riprap	207.0	Ton
831E0110	Type B Drainage Fabric	289	SqYd

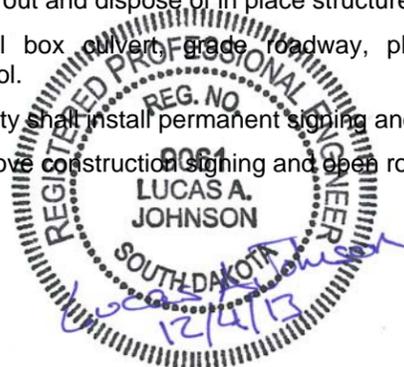
SPECIFICATIONS

Standard Specifications for Roads and Bridges 2004 Edition and Required Provisions, Supplemental Specifications, and/or Special Provisions as included in the Proposal.

SEQUENCE OF OPERATIONS

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

1. Install construction signing as shown on plans and close roadway.
2. Install initial erosion control measures.
3. Take out and dispose of in place structure.
4. Install box culvert, grade roadway, place topsoil and erosion control.
5. County shall install permanent signing and final surfacing.
6. Remove construction signing and open roadway.

**UTILITIES**

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

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

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 22 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

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

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

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

Temporary fence and/or permanent fence shall be placed ahead of the grading operation unless otherwise directed by the Engineer. 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 Box Culvert to conform to the wing walls of the structure.

WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the DOT Environmental Office.

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

The DOT Environmental Office contact is the Environmental Project Scientist, 605-773-3268. The WATER SOURCE plan note does not relieve the Contractor of his/her responsibility to obtain the necessary permits from other agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE).

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO 8014(31)	2	33

CLEARING

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

GENERAL MAINTENANCE OF TRAFFIC

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. The Contractor shall coordinate with the County to determine which signs will be reset and to verify reset locations. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State or County.

Storage of vehicles and equipment shall be outside the clear zone and as near as possible to the right-of-way line. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State or County, and to the satisfaction of the Engineer.

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

CLAY COUNTY RESPONSIBILITIES

Clay County Highway Superintendent—Rod Polley (605-677-7149)

Clay County will be responsible for the following items without Federal Participation.

1. Obtain all Right-of-Way, temporary and permanent easements.
2. Arrange for utility relocation and adjustments.
3. Remove existing fence, provide temporary fence as necessary, and replace fence upon completion of the project.
4. Furnish and install final surfacing.
5. Furnish and install permanent signing in accordance with the Manual on Uniform Traffic Control Devices after completion of the project.
6. Remove silt fence when vegetation has been established in areas where permanent seeding is required.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO 8014(31)	3	33

WORK AFFECTING WATERWAYS

A. WATER QUALITY

Surface Water Quality

The Contractor is advised the South Dakota Surface Water Quality Standards, administered by the Department of Environment and Natural Resources (DENR), apply to this project.

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

Surface Water Discharge

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

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

Storm Water

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

A major component of the storm water construction permit is development and implementation of a storm water pollution prevention plan (SWPPP). This plan is a joint effort and responsibility of the DOT and the Contractor. The SWPPP is a dynamic document and is to be available on-site at all times. Information on storm water requirements and SWPPP are available on the following websites:

DOT: http://www.sddot.com/pe/projdev/environment_stormwater.asp
 DENR: <http://www.denr.sd.gov/des/sw/stormwater.aspx>

B. CONSTRUCTION PRACTICES FOR STREAMS INHABITED BY TOPEKA SHINER

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

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

TABLE OF TOPEKA SHINER STREAMS

Station	Stream Name
14+62	Tributary to Spring Creek

C. CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN PROTECTED WATERWAYS

No excavation shall be made below the ordinary high water elevation in Protected Waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting; and the natural streambed shall not be disturbed without permission from the Engineer. The ordinary high water elevation is 1200.4.

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

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

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

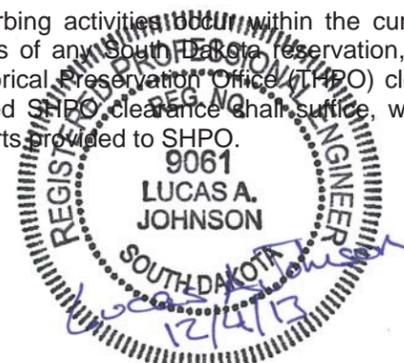
Bridge berms, wing dams, traffic diversions, channel reconstruction, grading, etc. shall be constructed in close conformity with the plans to ensure that the hydraulic capacity of the waterway is not changed.

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

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain State Historical Preservation Office (SHPO) clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. In lieu of a cultural resources survey, the Contractor could request a records search from Jim Donohue, State Archaeological Research Center (SARC). Provide SARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. The Contractor shall arrange and pay for the cultural resource survey and/or records search.

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



HISTORICAL PRESERVATION OFFICE CLEARANCES (CONTINUED)

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

WASTE DISPOSAL SITE

The Contractor will be required to furnish a site(s) for the disposal of construction/demolition debris generated by this project.

Construction/demolition debris may not be disposed of within the 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 Engineer.

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

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

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

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

WASTE DISPOSAL SITE (CONTINUED)

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.

HAZARDOUS WASTES

Should any hazardous waste be generated during the implementation of this project, the generator must abide by all applicable hazardous waste regulations found in ARSD 74:28 and 40 CFR Part 262.

If any contamination is encountered during construction activities, the contractor, owner, or party responsible for the release must report the contamination to the Department of Environment and Natural Resources at (605) 773-3153. Any contaminated soil encountered must be temporarily stockpiled and sampled to determine disposal requirements.

TABLE OF TEMPORARY DIVERSION CHANNEL

The Contractor shall construct a temporary diversion channel in accordance with Standard Plate 734.30 at Station 15+25 +/-.

SHRINKAGE FACTOR: Embankment +35%

TABLE OF EXCAVATION QUANTITIES

	CuYd
Total Excavation	651
Excavation for Installation of RC Box Culvert	1,623
Channel Cleanout	574
Topsoil	217
Total Unclassified Excavation	3,065

UNCLASSIFIED EXCAVATION

The total "Unclassified Excavation" quantity is 3,065 cubic yards. Payment will be made on a plans quantity basis in accordance with Section 120.4 of the Standard Specifications. No separate measurement or payment will be made unless additional excavation is ordered by the Engineer.

CONTRACTOR FURNISHED BORROW

The Contractor shall provide a suitable site for Contractor furnished borrow material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material shall be approved by the Engineer.

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

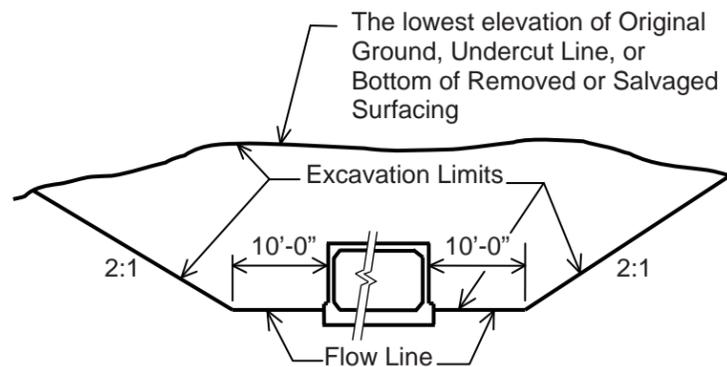
Material excavated from the channel as Channel Cleanout may be suitable for use in the road embankment. The Channel Cleanout material shall be used for embankment instead of Contractor Furnished Borrow at the discretion of the Engineer. Material excavated from the channel that is deemed unsuitable for road embankment shall be wasted.

EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION FOR BIDDING PURPOSES ONLY

Included in the quantity of "Unclassified Excavation" are 1,623 cubic yards of excavation for installation of reinforced concrete box culverts of which 1,443 cubic yards shall be replaced into the excavation and 180 cubic yards shall be used in the project embankment instead of Contractor Furnished Borrow at the discretion of the Engineer.

All work necessary to excavate a trench for installation of reinforced concrete box culverts including labor, equipment, and incidentals shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for excavation of reinforced concrete box culverts shall be based only on plans quantity and measurement of these excavation quantities during construction shall not be performed.

The excavation quantities for installation of reinforced concrete box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the reinforced concrete box culverts are based on the limits shown in the drawing below.



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. All signs in the Table of Incidental Work, Grading shall be salvaged. Contractor shall contact Clay County for pick up of salvable materials.

INCIDENTAL WORK, GRADING

Station	Remarks
14+32 - 12' Rt.	Take Out and Salvage Weight Limit Sign
14+46 - 11' Lt.	Take Out and Salvage Object Marker
14+46 - 10' Rt.	Take Out and Salvage Object Marker
14+77 - 11' Lt.	Take Out and Salvage Object Marker
14+77 - 10' Rt.	Take Out and Salvage Object Marker
14+88 - 11' Lt.	Take Out and Salvage Weight Limit Sign

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO 8014(31)	4	33

INCIDENTAL WORK, STRUCTURE

14+46.6 to 14+76.9 – Take out 30.3' 2-span timber stringer bridge with timber abutments, bents, wingwalls, and timber deck. 21.8' roadway width.

The foregoing is a general description of the in place structure and should not be construed to be complete in all details. Before preparing this 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 material involved.

The timber stringers shall be removed and salvaged for the County. The Contractor shall give the County 2 weeks notice before removing the structure. The County shall haul away the salvageable timber items. Remaining materials shall be disposed of by the Contractor.

Timber abutments, bent and wingwalls shall be removed to the bottom of the undercut.

All of the above work shall be incidental to the contract lump sum price for "Incidental Work, Structure".

PLACING TOPSOIL

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

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

Station	to	Station	Topsoil (CuYd)
12+00		17+00	217
Total:			217

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



FOR BIDDING PURPOSES ONLY

EROSION CONTROL

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

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 Oats or Wheat 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 0.54 acres.

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

LOW FLOW SILT FENCE

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

<http://www.state.sd.us/Applications/HC54ApprovedProducts/main.asp>

Low 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 734.04 for details.

An additional 100 feet of Low Flow Silt Fence has been added to the Estimate of Quantities for temporary sediment control.

TABLE OF LOW FLOW SILT FENCE

Location		Quantity (Ft)
15+50 to 16+00 Lt.	At R.O.W. Line	50
14+65 to 16+00 Rt.	At R.O.W. Line	135
	Additional Quantity	100
	Total:	285

MUCKING SILT FENCE

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

REMOVE SILT FENCE

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

EROSION CONTROL WATTLE

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

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

An additional quantity of 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 silt fence at wetland areas adjacent to the highway.

The erosion control wattle provided shall be from the list shown below:

Product	Manufacturer
Curlex Sediment Log AEC Premier Straw Wattles	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 www.amerexcel.com
Aspen Excelsior Logs and Excel Straw Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 www.westernexcelsior.com
Earth Saver Rice Straw Wattles	R.H. Dyck Inc. Winters, CA Phone: 1-866-928-8537 www.earth-savers.com
Amber Waves Straw Wattles	Limpert Environmental Litchfield, MN Phone: 1-320-693-2565 www.limpertenvironmental.com
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Stenlog	ECB Bioproducts St. Andrews, MB Phone: 1-866-317-3346 www.erosioncontrolblanket.com
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexcelsior.com

TABLE OF EROSION CONTROL WATTLE

Location		Quantity (Ft)
13+15 - Lt. & Rt.	Across Ditch Bottom	40
14+00 - Lt. & Rt.	Across Ditch Bottom	40
14+25 - Rt.	Across Ditch Bottom	20
14+50 - Lt.	Across Ditch Bottom	20
14+80 - Rt.	Across Ditch Bottom	20
15+10 - Lt.	Across Ditch Bottom	20
15+35 - Lt.	Across Ditch Bottom	20
16+50 - Lt. & Rt.	Across Ditch Bottom	40
	Additional Quantity	100
	Total:	320

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://www.state.sd.us/Applications/HC54ApprovedProducts/main.asp>

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)
14+33 - Rt.	Along Outlet Channel Bank	2 39
14+60 - Rt.	Along Outlet Channel Bank	2 47
14+87 - Lt.	Along Inlet Channel Bank	2 55
15+22 - Lt.	Along Inlet Channel Bank	2 49
	Additional Quantity	2 200
Total Type 2 Erosion Control Blanket:		390

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



STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
- **Total Project Area 2.29 Ac. (4.2 1.b.)**
- **Total Area To Be Disturbed 0.89 Ac. (4.2 1.b.)**
- **Existing Vegetative Cover (%) 80**
- **Soil Properties: Classification A-4, A-6, A-7 (4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Tributary to Spring Creek to 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 2).**
- **Install perimeter protection where runoff sheets from the site.**
- **Install channel and ditch bottom protection.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install Reinforced Concrete Box Culvert.**
- **Install riprap.**
- **Complete final grading.**
- **Complete traffic control installation and protection devices.**
- **Reseed areas disturbed by removal activities.**

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

(Check all that apply)

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

➤ **Structural Temporary Erosion and Sediment Controls**

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

➤ **Wetland Avoidance**

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

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

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

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

- **Waste Disposal**
All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
- **Hazardous Waste**
All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
- **Sanitary Waste**
Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

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

➤ **Maintenance and Inspection Practices**

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

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

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

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

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

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

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



FOR BIDDING PURPOSES ONLY

❖ **Spill Prevention (4.2 2.c.(2))**

➤ **Material Management**

▪ **Housekeeping**

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

▪ **Hazardous Materials**

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

➤ **Product Specific Practices (6.8)**

▪ **Petroleum Products**

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

▪ **Fertilizers**

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

▪ **Paints**

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

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

▪ **Concrete Trucks**

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

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

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

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

➤ **Spill Response (4.2 2 c.(2))**

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

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

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

❖ **Spill Notification**

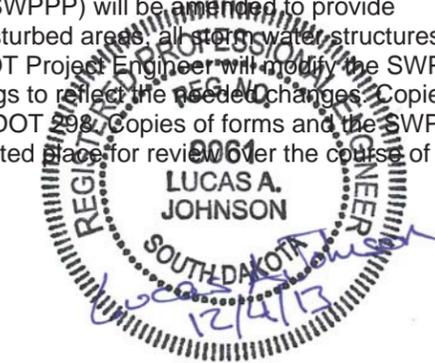
In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

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

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

❖ **Construction Changes (4.4)**

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



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRO 8014(31)	8	33

❖ **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.



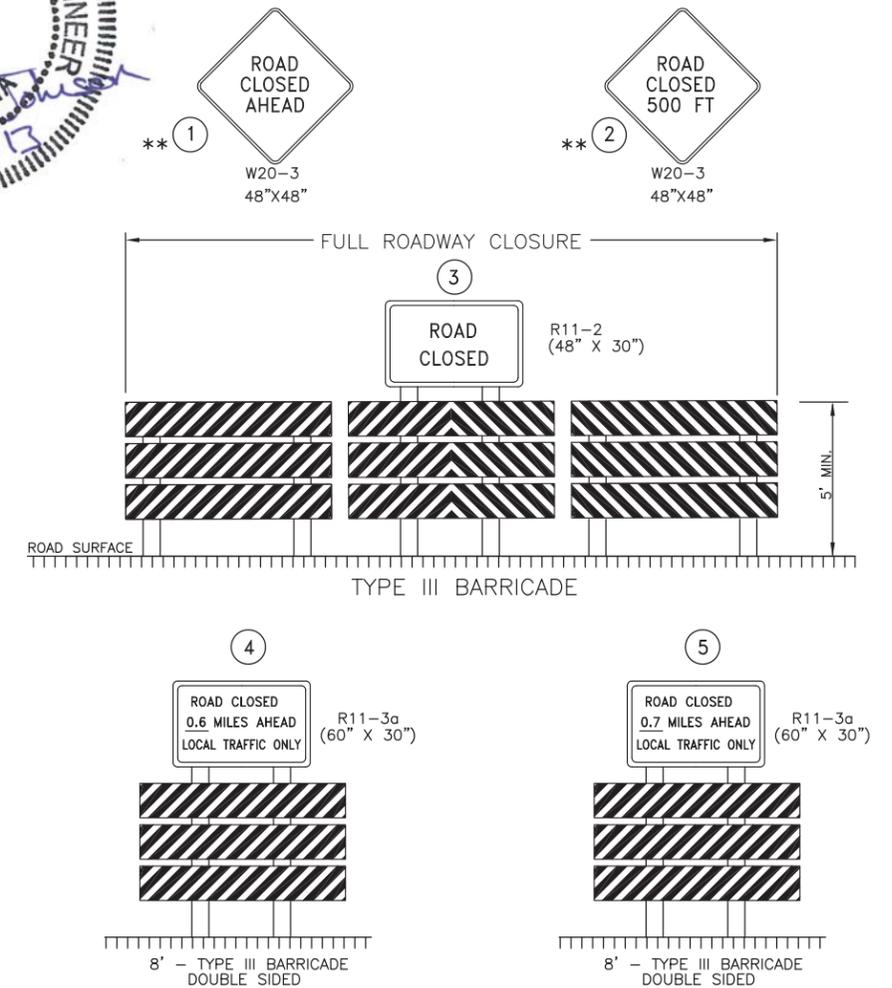
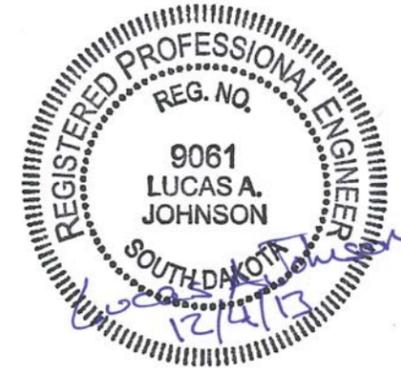
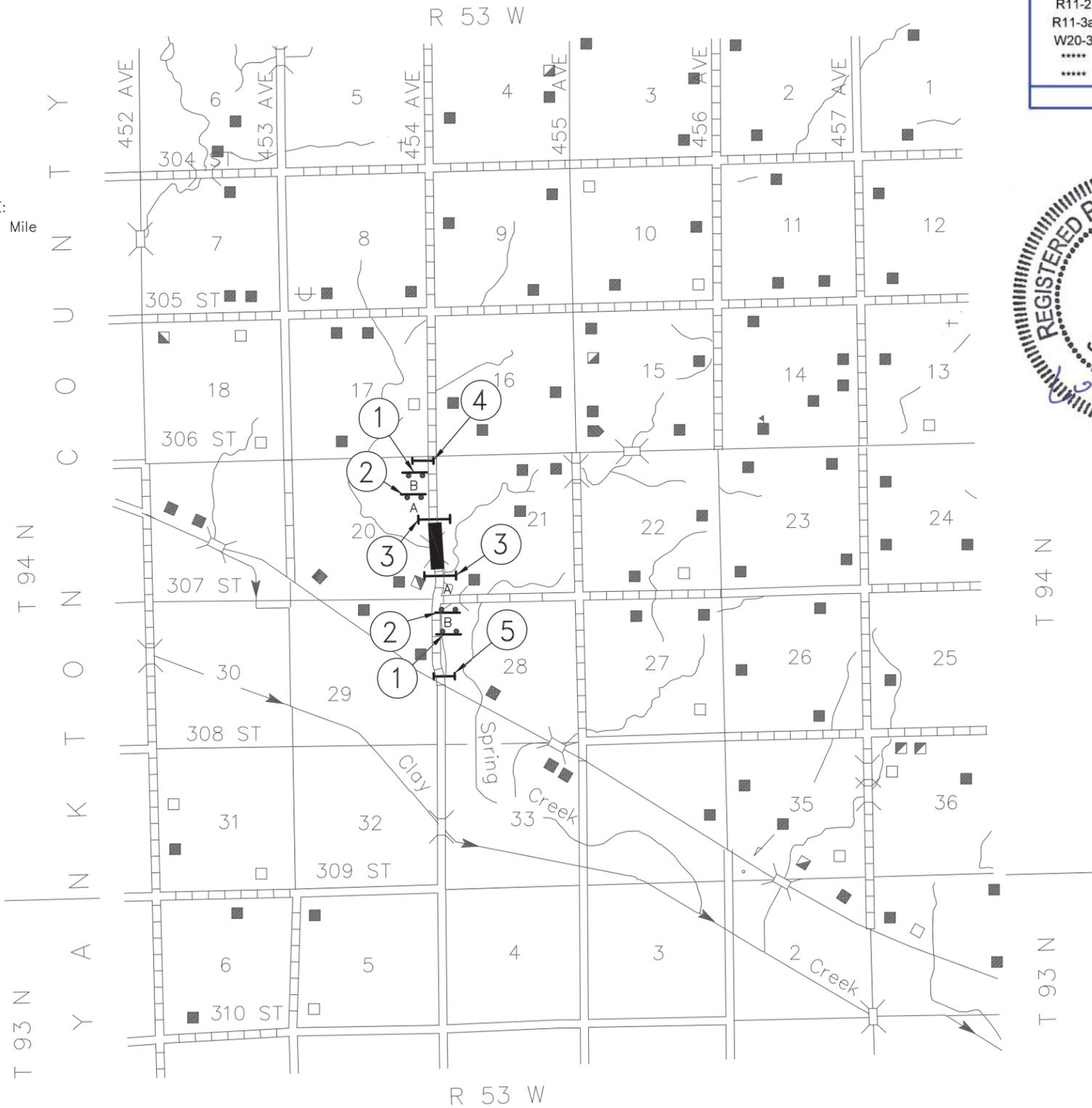
TRAFFIC CONTROL ROAD CLOSED

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRO 8014(31)	SHEET NO. 10	TOTAL SHEETS 33
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SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
R11-2	48" x 30"	ROAD CLOSED	2	27	54
R11-3a	60" x 30"	ROAD CLOSED ## MILES AHEAD LOCAL TRAFFIC ONLY	2	30	60
W20-3	48" x 48"	ROAD CLOSED #### FT. OR AHEAD	4	34	136
*****	*****	TYPE III BARRICADE - 8 FT. SINGLE SIDED	6	40	240
*****	*****	TYPE III BARRICADE - 8 FT. DOUBLE SIDED	2	56	112
TOTAL UNITS					602

SCALE:
1" = 1 Mile



NOTES:
ALL FIXED LOCATION SIGNS SHALL REMAIN IN PLACE UNTIL PROJECT IS COMPLETED.
TYPE III BARRICADES ARE MEASURED FOR PAYMENT ON ONE SIDE ONLY
** - MOUNT ON FIXED LOCATION (GROUND MOUNTED) SUPPORTS

Table 6C-1 in part 6 of the MUTCD PAGE 6C-4, 2003 edition

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

*** 25'-50'
* Speed category to be determined by State highway agency in cooperation with local jurisdictions.



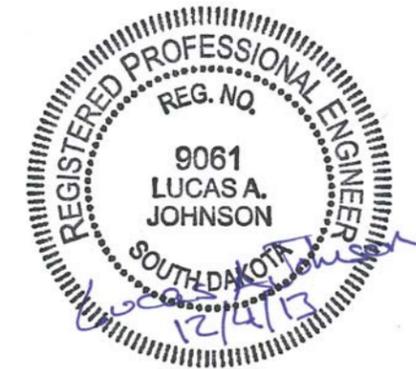
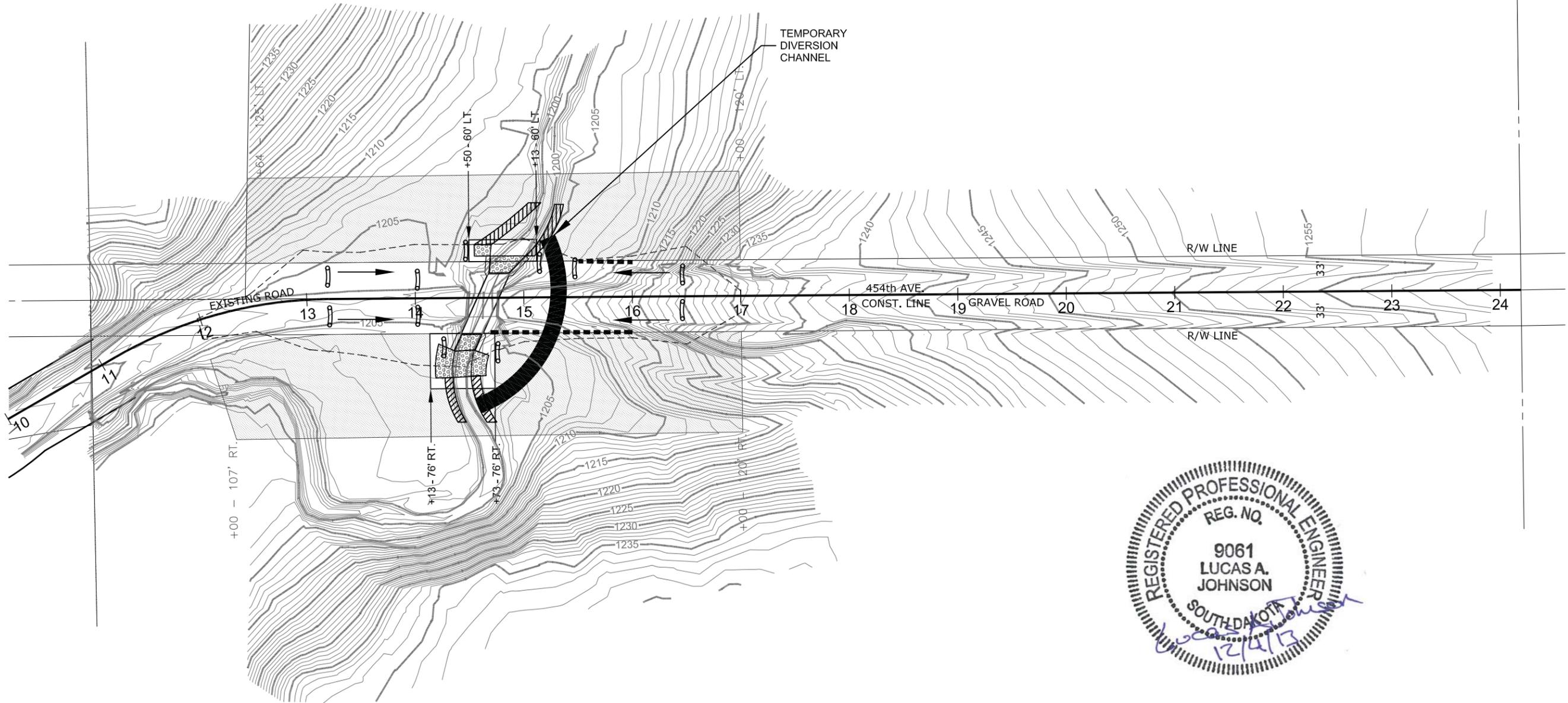
SCALE:
1" = 100'

EROSION AND SEDIMENT CONTROL PLAN FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)	11	33

LEGEND

- LOW FLOW SILT FENCE
- EROSION CONTROL WATTLE
- TYPE 2 EROSION CONTROL BLANKET
- CLASS B RIPRAP



INSTALL LOW FLOW SILT FENCE
AT THE FOLLOWING LOCATIONS:

15+50 TO 16+00 LT.	AT R.O.W. LINE	50
14+65 TO 16+00 RT.	AT R.O.W. LINE	135
ADDITIONAL QUANTITY		100

INSTALL 12" DIAMETER EROSION CONTROL WATTLES
AT THE FOLLOWING LOCATIONS:

13+15 - LT. & RT.	ACROSS DITCH BOTTOM	40
14+00 - LT. & RT.	ACROSS DITCH BOTTOM	40
14+25 - RT.	ACROSS DITCH BOTTOM	20
14+50 - LT.	ACROSS DITCH BOTTOM	20
14+80 - RT.	ACROSS DITCH BOTTOM	20
15+10 - LT.	ACROSS DITCH BOTTOM	20
15+35 - LT.	ACROSS DITCH BOTTOM	20
16+50 - LT. & RT.	ACROSS DITCH BOTTOM	40
ADDITIONAL QUANTITY		100

INSTALL TYPE 2 EROSION CONTROL BLANKET
AT THE FOLLOWING LOCATIONS:

14+33 - RT.	ALONG OUTLET CHANNEL BANK	39
14+60 - RT.	ALONG OUTLET CHANNEL BANK	47
14+87 - LT.	ALONG INLET CHANNEL BANK	55
15+22 - LT.	ALONG INLET CHANNEL BANK	49
ADDITIONAL QUANTITY		200

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)	12	33

CONTROL DATA

CONTROL POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP 1	-	-	3/8" x 16" Rebar above 3/4" Pipe	20000.00	20000.00	1195.30
CP 2	-	-	Found 5/8" Rebar	19844.29	20445.00	1224.76
CP 3	10+01.13	19.25' Rt.	5/8" Rebar & Guards	21254.48	20134.92	1212.49
CP 4	12+57.18	70.23' Lt.	5/8" Rebar & Guards	21465.15	19944.54	1211.21
CP 5	15+20.51	149.12' Rt.	5/8" Rebar & Guards	21740.89	20155.94	1212.62
CP 6	24+18.96	⊘	3/8" x 16" Rebar	22638.18	20000.00	1260.04
CP 7	24+22.12	74.91' Rt.	5/8" Rebar & Guards	22641.91	20074.89	1259.19

HORIZONTAL ALIGNMENT DATA

TYPE	STATION	DIRECTION	DISTANCE	NORTHING	EASTING
POB	10+00.00			20000.00	20000.00
		N 29°55'42" W	114.50'		
PI	12+19.79			21434.37	20009.15
		N 0°26'07" W	1203.84'		
EOP	24+18.96			22638.18	20000.00

NOTE:
 The coordinate values shown on this sheet are assumed datum.
 The elevations show in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988.



STATE OF SOUTH DAKOTA	PROJECT BRO 8014(31)	SHEET NO. 13	TOTAL SHEETS 33
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FOR BIDDING PURPOSES ONLY

SOUTHEAST 1/4, SECTION 20 - T 94 N - R 53 W
 OWNERS: ROBERT E. JOHNSON & ANNA M. JOHNSON
 30752 BLUFF ROAD, VOLIN, SD 57072 (605) 267-2473
 & DAVID E. JOHNSON
 45542 307th ST. VOLIN, SD 57072 (605) 267-2068



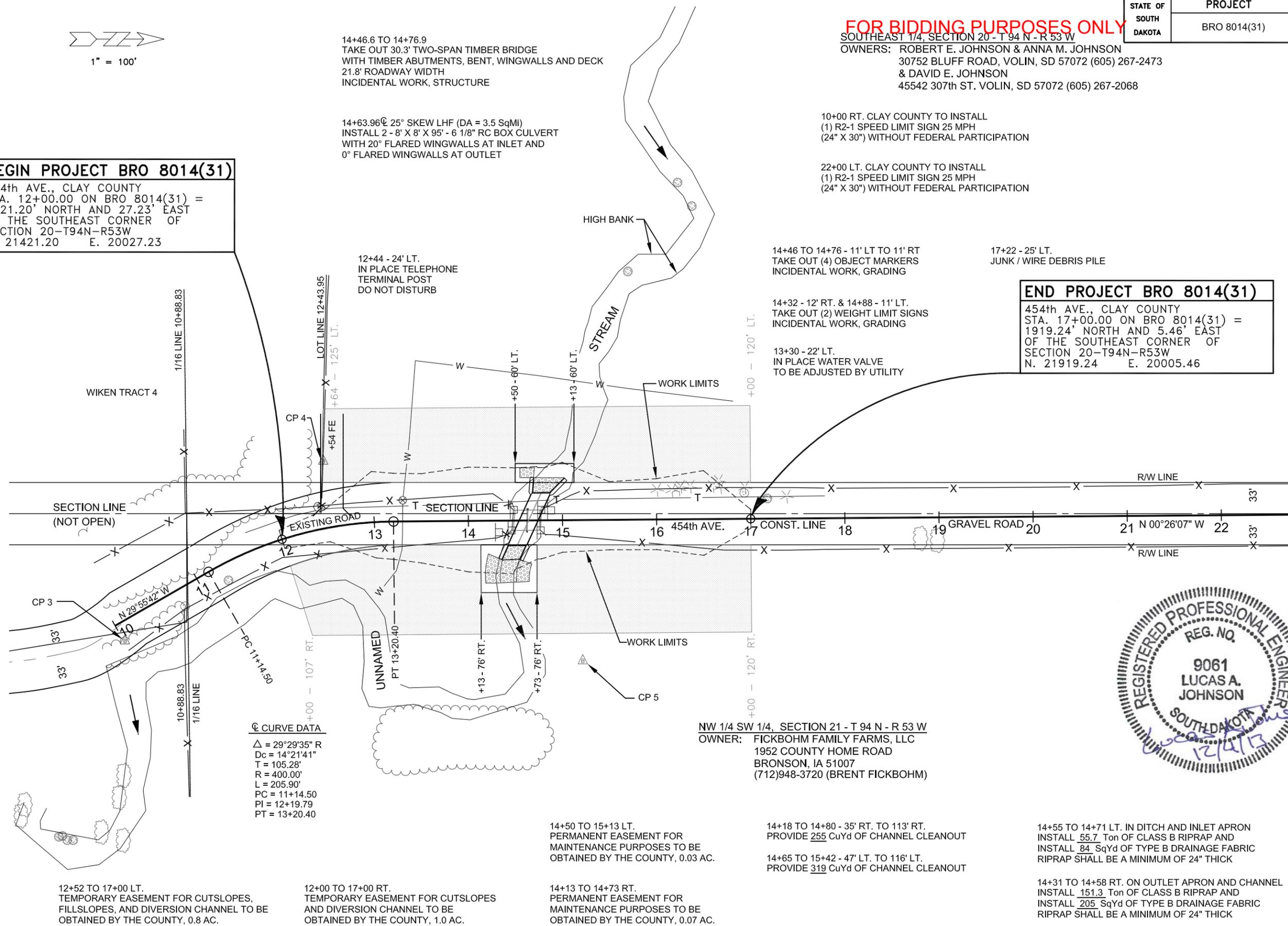
1" = 100'

BEGIN PROJECT BRO 8014(31)

454th AVE., CLAY COUNTY
 STA. 12+00.00 ON BRO 8014(31) =
 1421.20' NORTH AND 27.23' EAST
 OF THE SOUTHEAST CORNER OF
 SECTION 20-T94N-R53W
 N. 21421.20 E. 20027.23

END PROJECT BRO 8014(31)

454th AVE., CLAY COUNTY
 STA. 17+00.00 ON BRO 8014(31) =
 1919.24' NORTH AND 5.46' EAST
 OF THE SOUTHEAST CORNER OF
 SECTION 20-T94N-R53W
 N. 21919.24 E. 20005.46



☉ CURVE DATA
 $\Delta = 29^\circ 29' 35''$ R
 $D_c = 14^\circ 21' 41''$
 $T = 105.28'$
 $R = 400.00'$
 $L = 205.90'$
 $PC = 11+14.50$
 $PI = 12+19.79$
 $PT = 13+20.40$



12+52 TO 17+00 LT.
 TEMPORARY EASEMENT FOR CUTSLOPES,
 FILLSLOPES, AND DIVERSION CHANNEL TO BE
 OBTAINED BY THE COUNTY, 0.8 AC.

12+00 TO 17+00 RT.
 TEMPORARY EASEMENT FOR CUTSLOPES
 AND DIVERSION CHANNEL TO BE
 OBTAINED BY THE COUNTY, 1.0 AC.

14+13 TO 14+73 RT.
 PERMANENT EASEMENT FOR
 MAINTENANCE PURPOSES TO BE
 OBTAINED BY THE COUNTY, 0.07 AC.

14+50 TO 15+13 LT.
 PERMANENT EASEMENT FOR
 MAINTENANCE PURPOSES TO BE
 OBTAINED BY THE COUNTY, 0.03 AC.

14+18 TO 14+80 - 35' RT. TO 113' RT.
 PROVIDE 255 CuYd OF CHANNEL CLEANOUT

14+65 TO 15+42 - 47' LT. TO 116' LT.
 PROVIDE 319 CuYd OF CHANNEL CLEANOUT

14+55 TO 14+71 LT. IN DITCH AND INLET APRON
 INSTALL 55.7 Ton OF CLASS B RIPRAP AND
 INSTALL 84 SqYd OF TYPE B DRAINAGE FABRIC
 RIPRAP SHALL BE A MINIMUM OF 24" THICK

14+31 TO 14+58 RT. ON OUTLET APRON AND CHANNEL
 INSTALL 151.3 Ton OF CLASS B RIPRAP AND
 INSTALL 205 SqYd OF TYPE B DRAINAGE FABRIC
 RIPRAP SHALL BE A MINIMUM OF 24" THICK

10+00 RT. CLAY COUNTY TO INSTALL
 (1) R2-1 SPEED LIMIT SIGN 25 MPH
 (24" X 30") WITHOUT FEDERAL PARTICIPATION

22+00 LT. CLAY COUNTY TO INSTALL
 (1) R2-1 SPEED LIMIT SIGN 25 MPH
 (24" X 30") WITHOUT FEDERAL PARTICIPATION

14+46 TO 14+76 - 11' LT TO 11' RT
 TAKE OUT (4) OBJECT MARKERS
 INCIDENTAL WORK, GRADING

17+22 - 25' LT.
 JUNK / WIRE DEBRIS PILE

14+32 - 12' RT. & 14+88 - 11' LT.
 TAKE OUT (2) WEIGHT LIMIT SIGNS
 INCIDENTAL WORK, GRADING

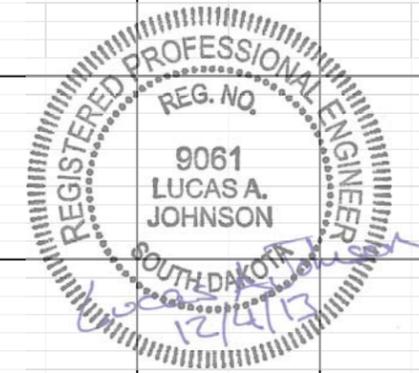
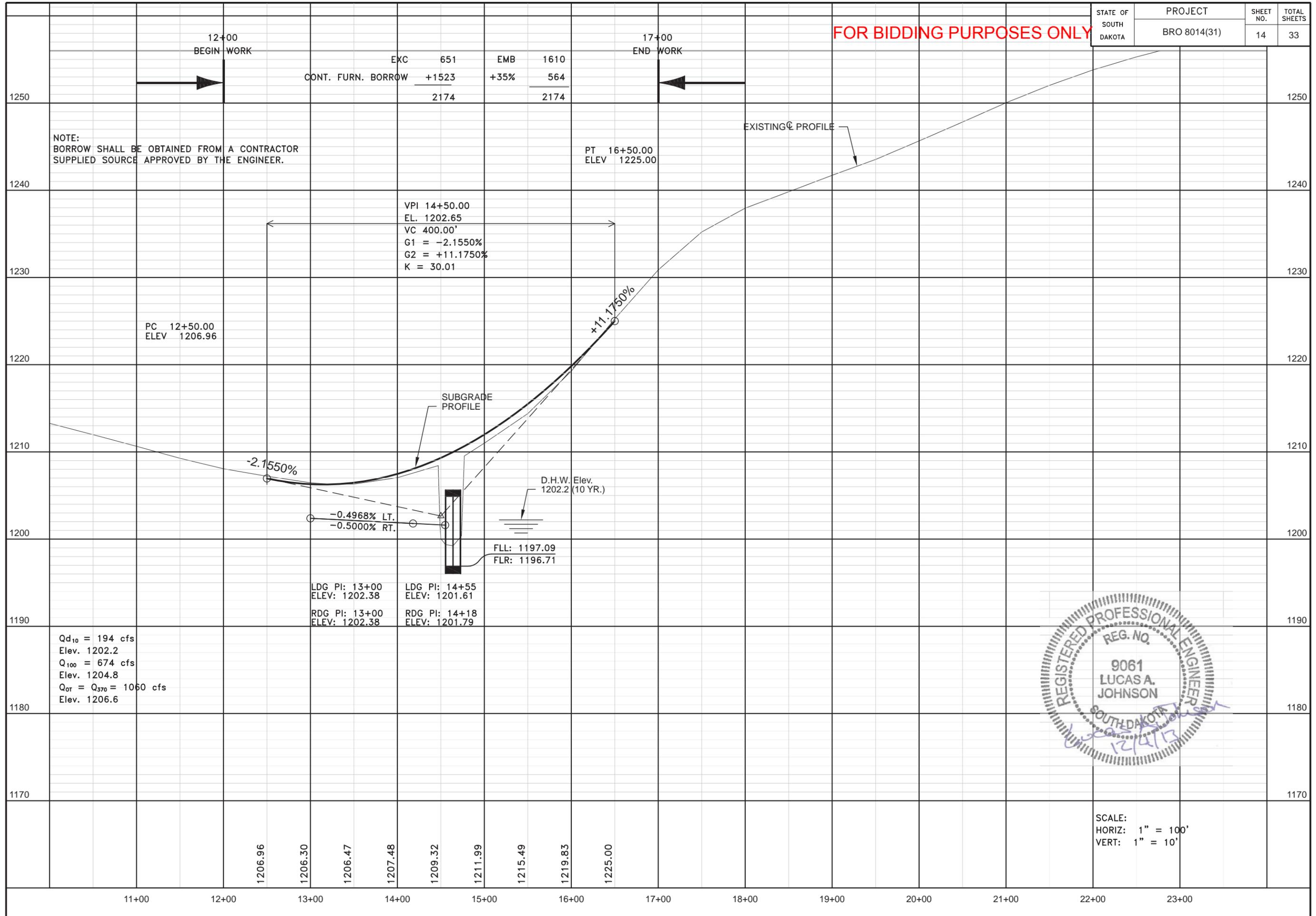
13+30 - 22' LT.
 IN PLACE WATER VALVE
 TO BE ADJUSTED BY UTILITY

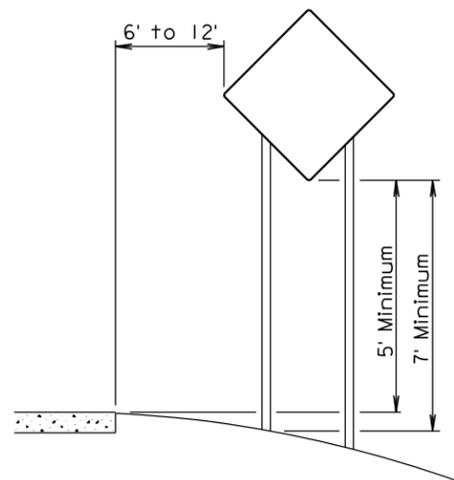
14+46.6 TO 14+76.9
 TAKE OUT 30.3' TWO-SPAN TIMBER BRIDGE
 WITH TIMBER ABUTMENTS, BENT, WINGWALLS AND DECK
 21.8' ROADWAY WIDTH
 INCIDENTAL WORK, STRUCTURE

14+63.96 ☉ 25° SKEW LHF (DA = 3.5 SqMi)
 INSTALL 2 - 8' X 8' X 95' - 6 1/8" RC BOX CULVERT
 WITH 20° FLARED WINGWALLS AT INLET AND
 0° FLARED WINGWALLS AT OUTLET

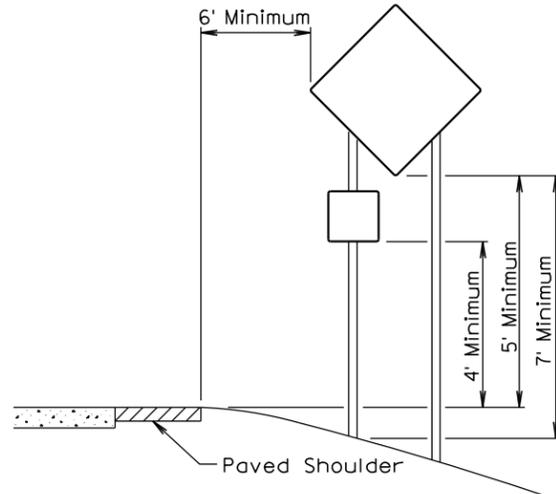
12+44 - 24' LT.
 IN PLACE TELEPHONE
 TERMINAL POST
 DO NOT DISTURB

FOR BIDDING PURPOSES ONLY

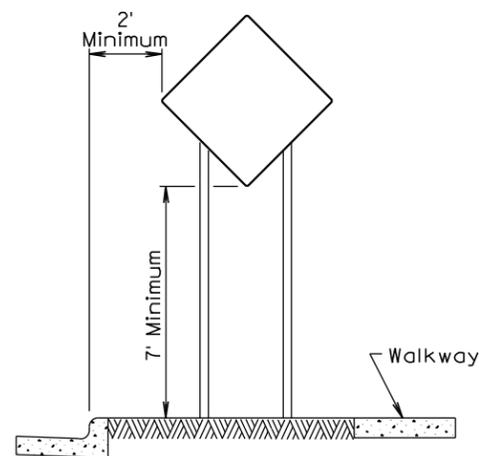




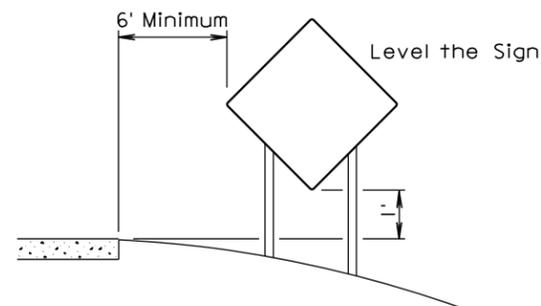
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



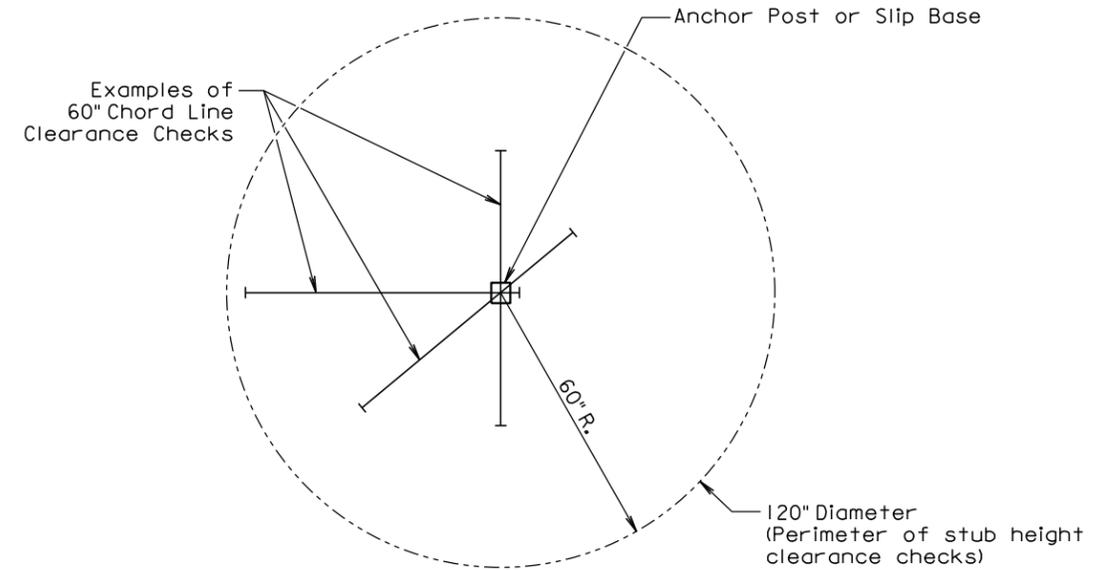
URBAN DISTRICT



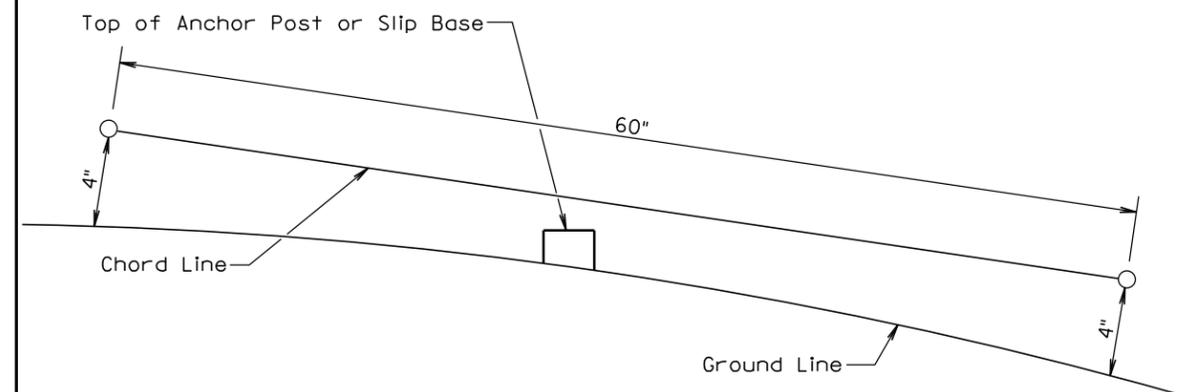
RURAL DISTRICT
3 DAY MAXIMUM

February 14, 2011

Published Date: 4th Qtr. 2013	S D D O T	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

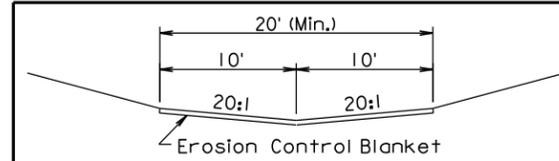
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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

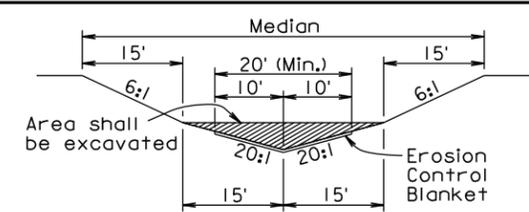
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 4th Qtr. 2013	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

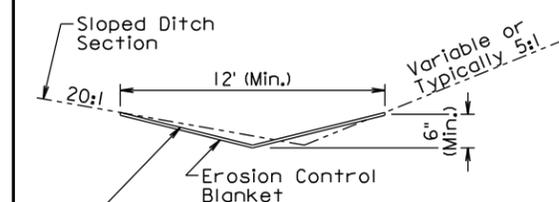


STANDARD DITCH SECTION



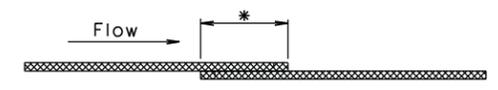
The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



This ditch section shall be constructed when installing erosion control blanket.

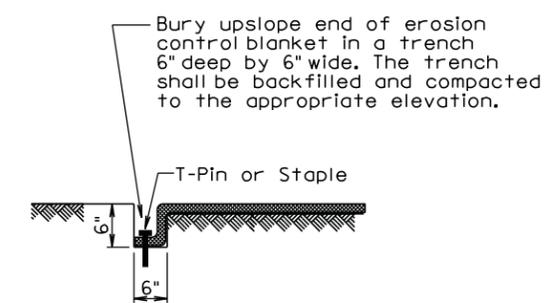
SLOPED DITCH SECTION



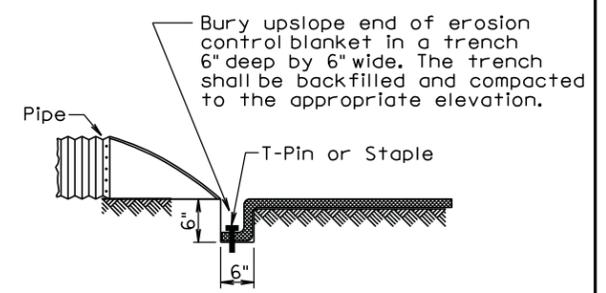
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

Prior to placement of the erosion control blanket, the areas shall be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" wide by 6" deep. There shall be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.

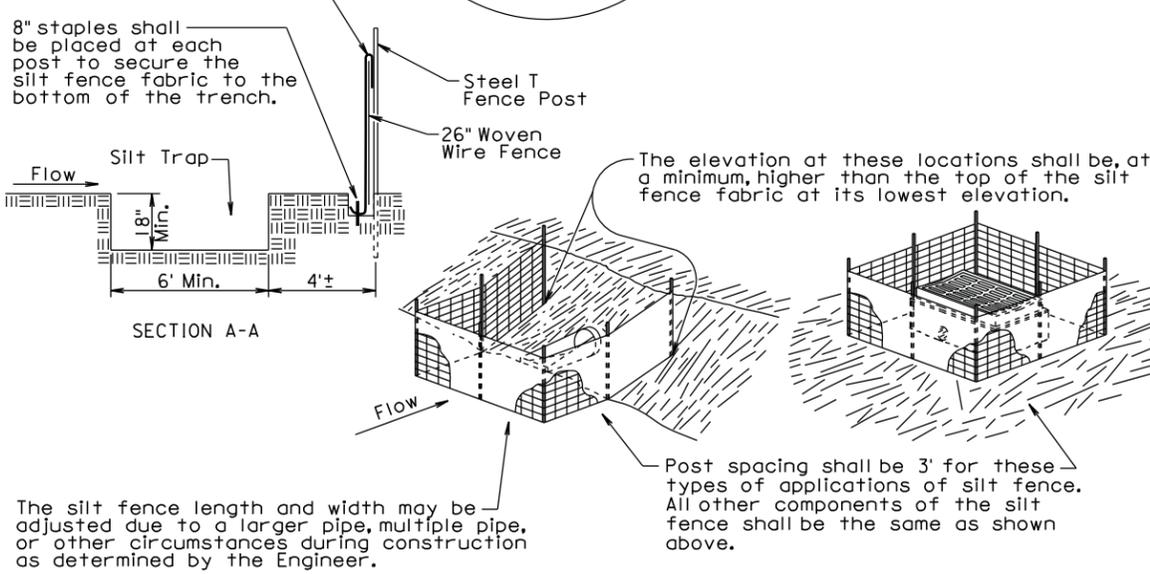
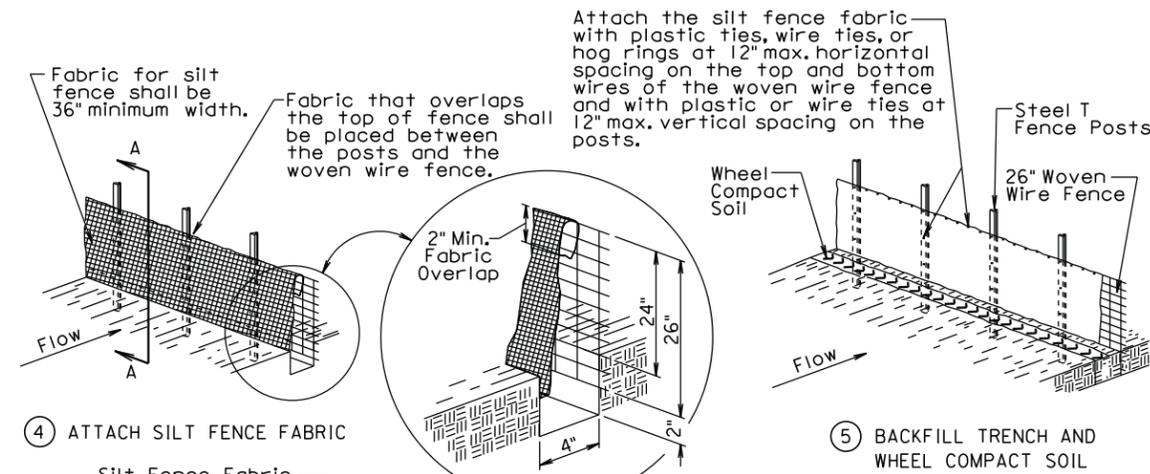
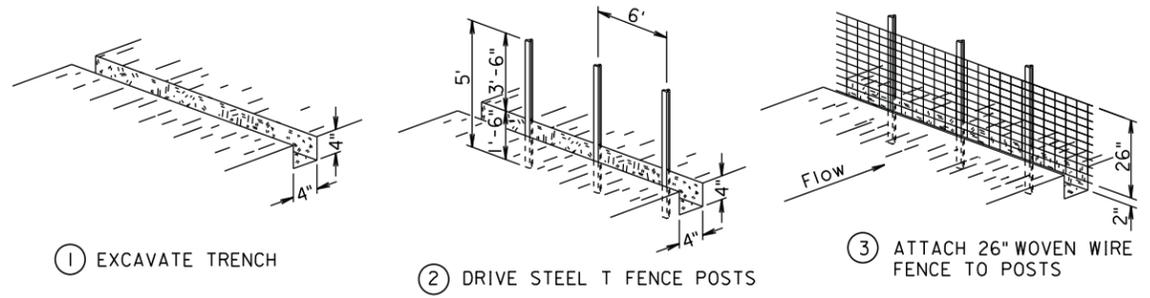
After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

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

December 23, 2004

Published Date: 4th Qtr. 2013	S D D O T	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

MANUAL LOW FLOW SILT FENCE INSTALLATION

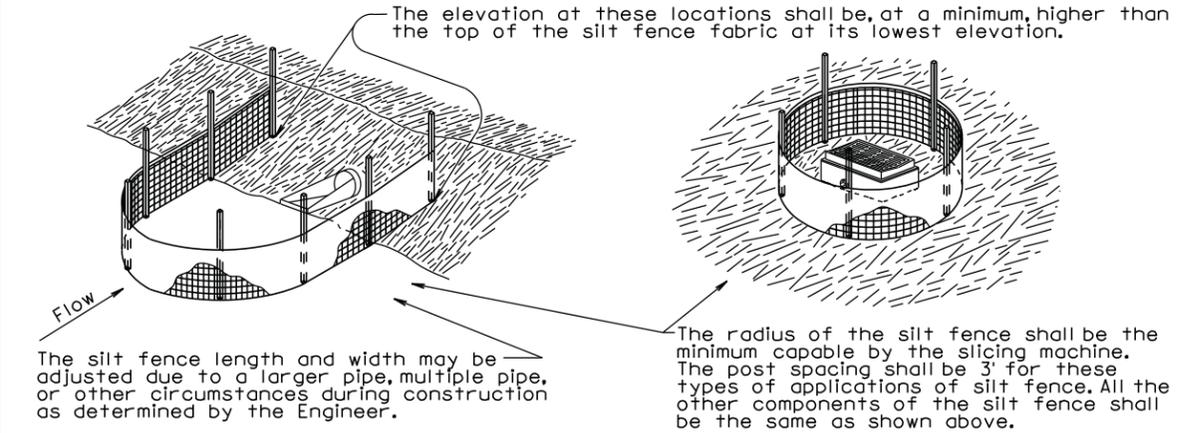
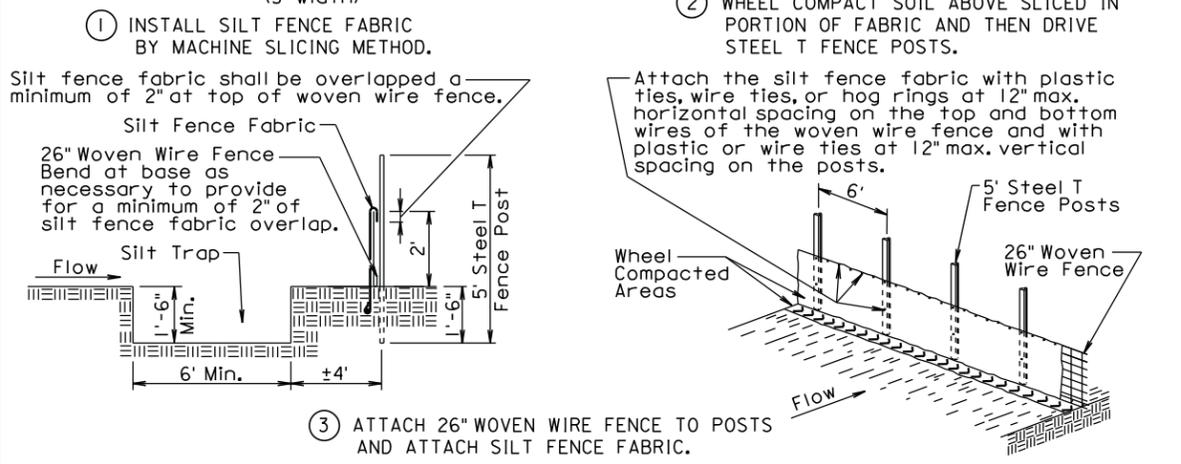
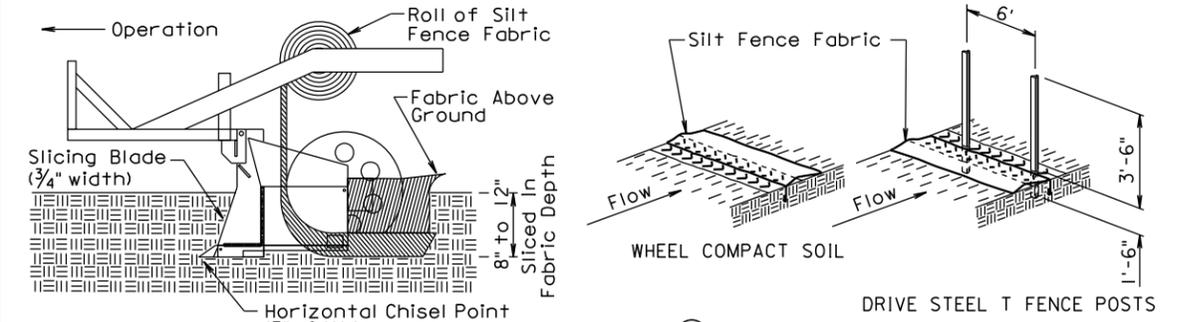


December 23, 2003

S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
		Sheet 1 of 2

Published Date: 4th Qtr. 2013

MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



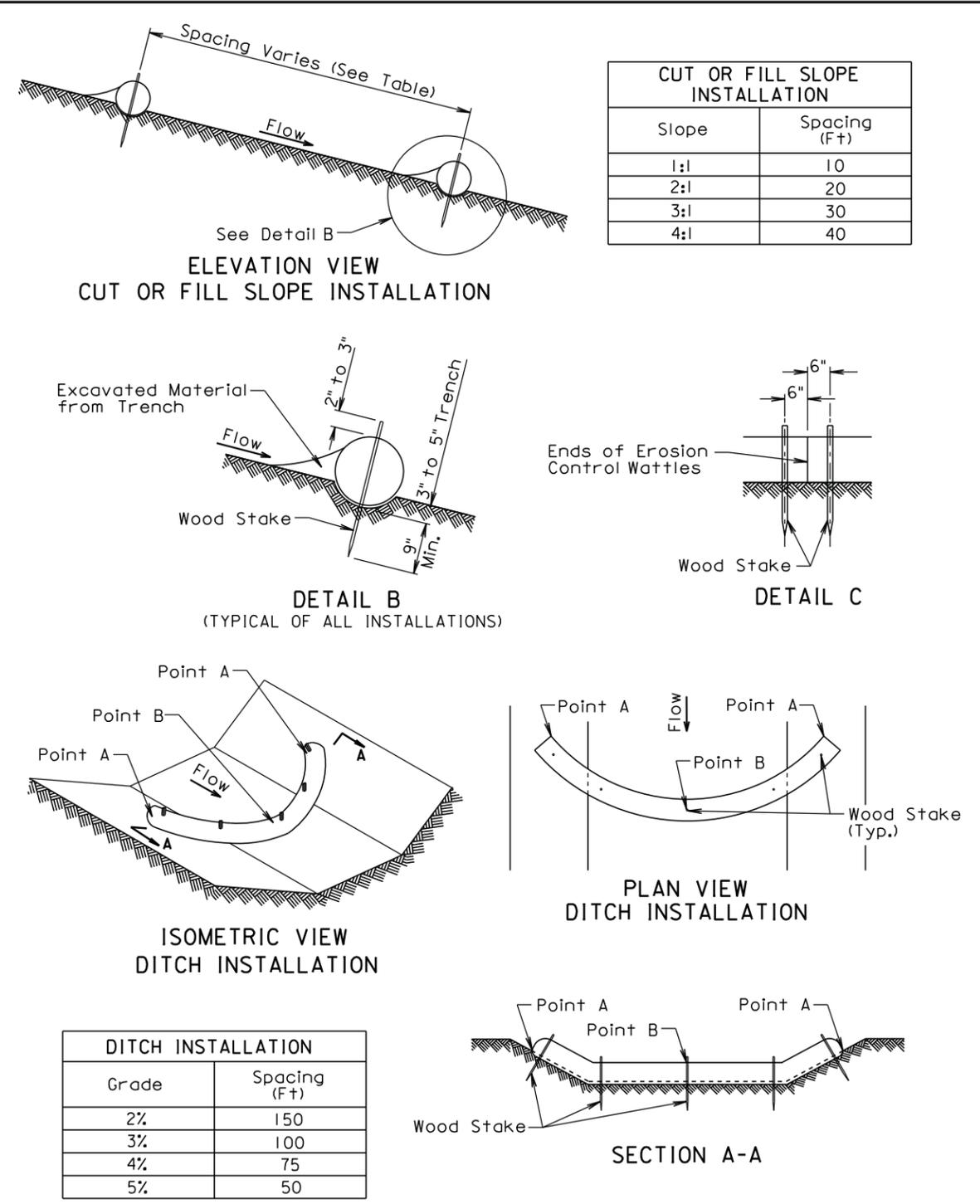
GENERAL NOTES:

A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".
If a trench can not be dug or the silt fence fabric can not be sliced 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

S D D O T	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
		Sheet 2 of 2

Published Date: 4th Qtr. 2013



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.

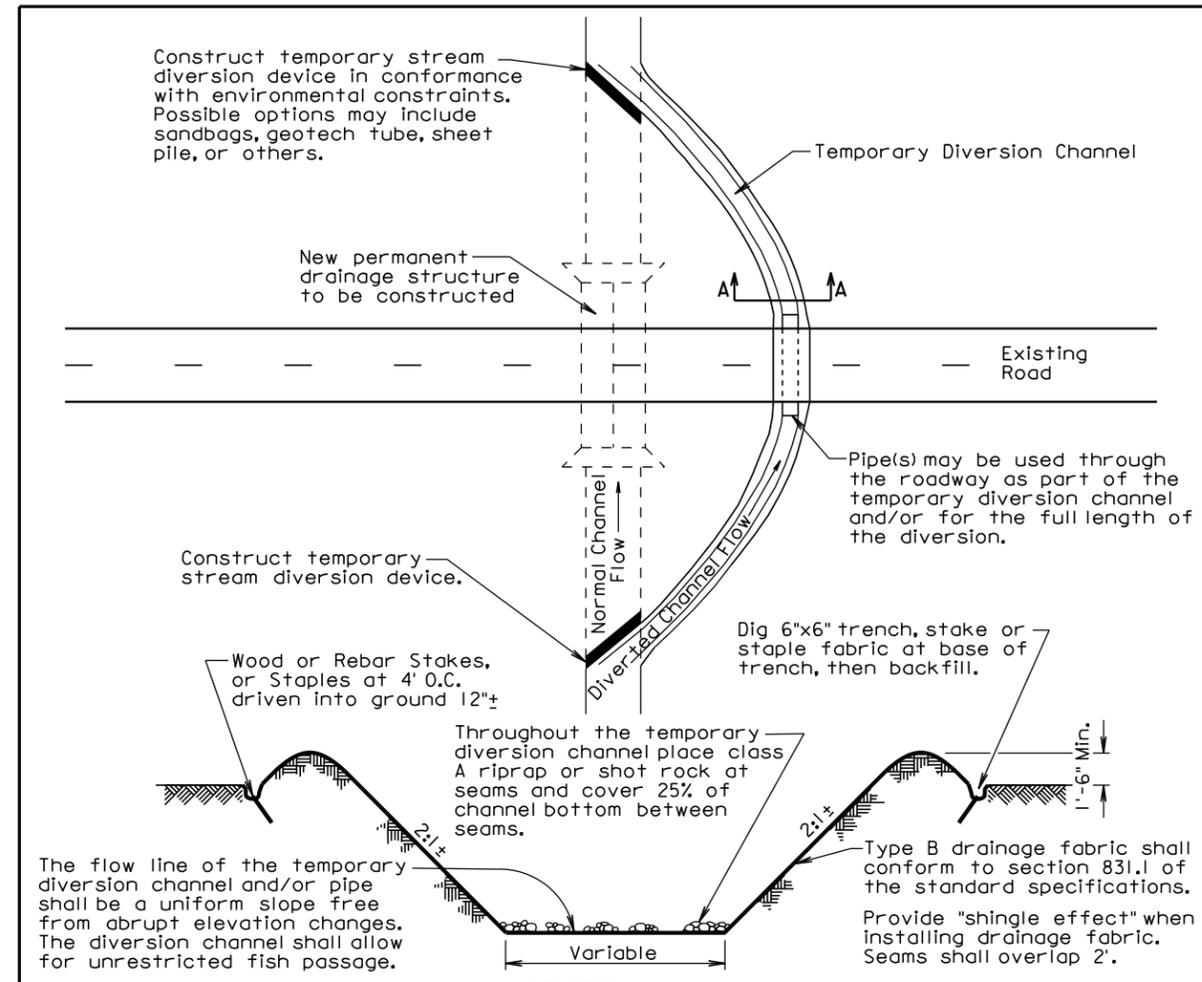
The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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



**SECTION A-A
TEMPORARY DIVERSION CHANNEL**

GENERAL NOTES:

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

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

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

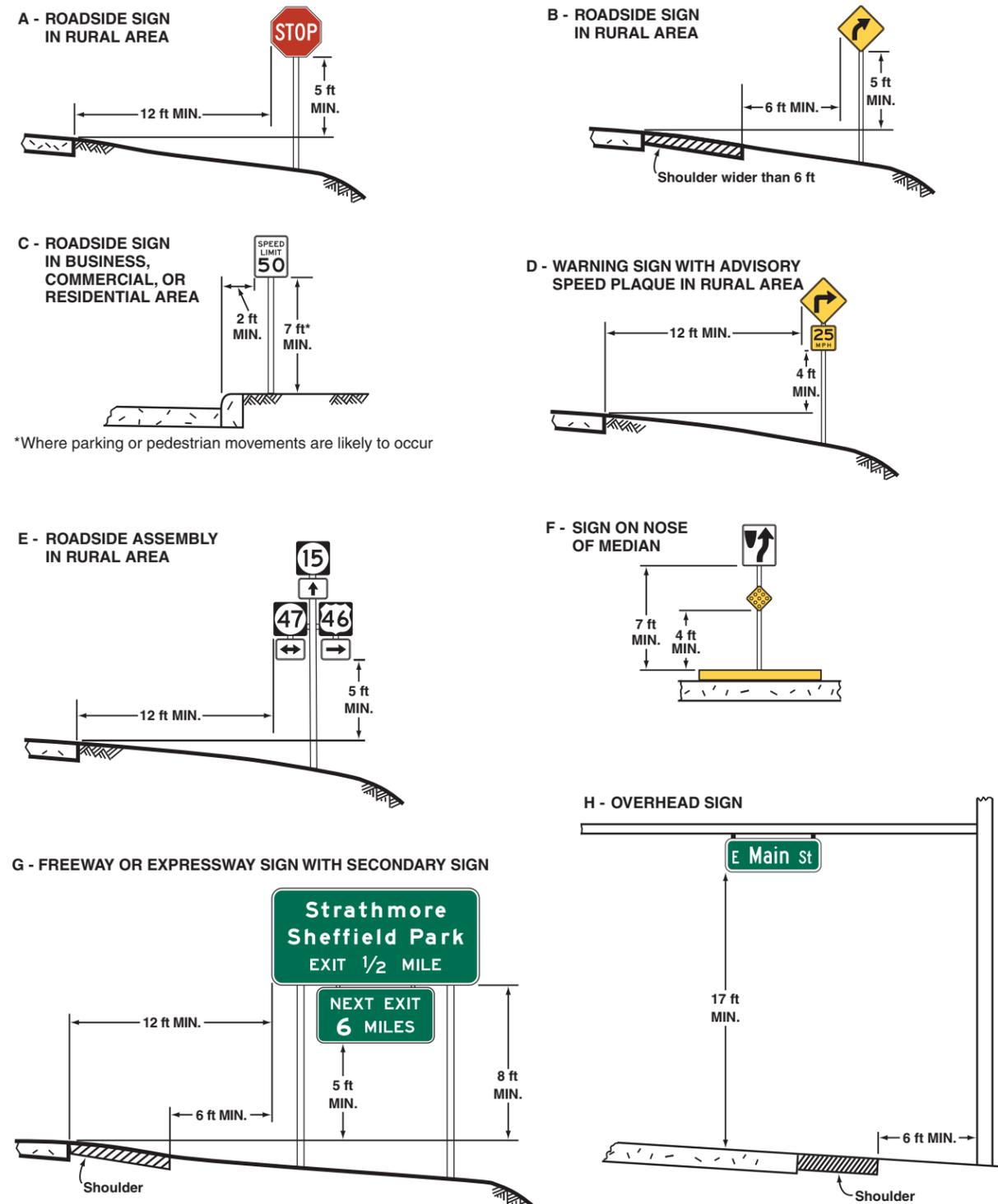
The Contractor shall restore the original channel bottom to its original condition prior to returning any flows. Upon completion of the new permanent drainage structure, the temporary stream diversion block or device shall be removed in a manner that will not cause violation of water quality standards.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

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

December 23, 2004

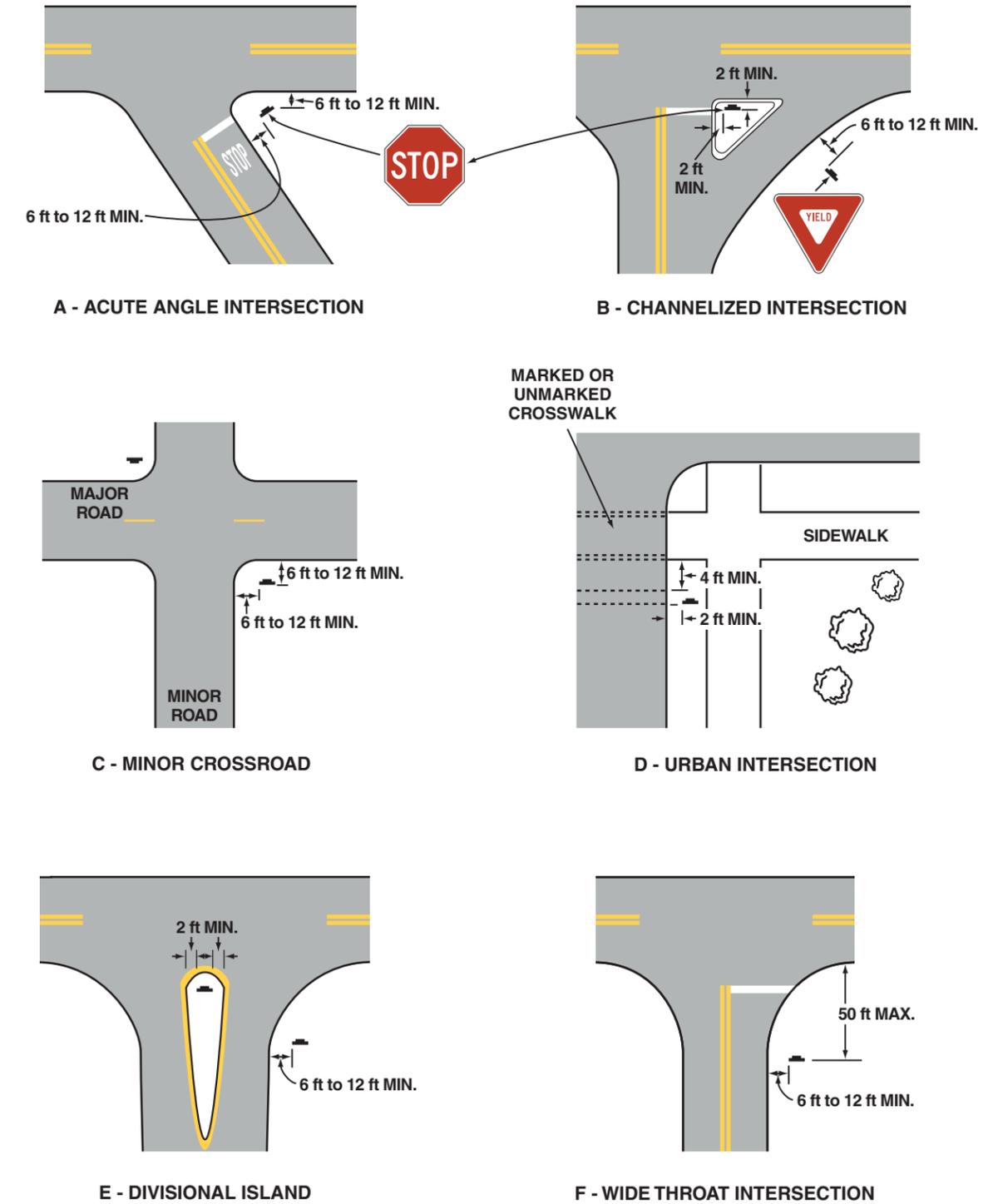
Published Date: 4th Qtr. 2013	S D D O T	TEMPORARY DIVERSION CHANNEL	PLATE NUMBER 734.30
			Sheet 1 of 1

Figure 2A-2. Examples of Heights and Lateral Locations of Sign Installations



*Where parking or pedestrian movements are likely to occur

Figure 2A-3. Examples of Locations for Some Typical Signs at Intersections



SIGN STIFFENERS

Sign stiffeners consisting of 2" channel aluminum placed horizontally across the back of the sign shall be provided on signs of a width of 48" or greater. Two horizontal stiffeners shall be installed. The first to be installed horizontally a distance equivalent to 1/5 the sign height from the top of the sign. The second stiffener shall be installed horizontally 1/5 of the sign height from the bottom of the sign.

For sign supports see Standard Plate 634.85 in these plans.

THE ELEVATION SHOWN ON THIS DRAWING IS BASED ON THE NATIONAL GEODETIC SURVEY (NGS) NORTH AMERICAN VERTICAL DATUM OF 1988.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)	21	33

INDEX OF CULVERT SHEETS

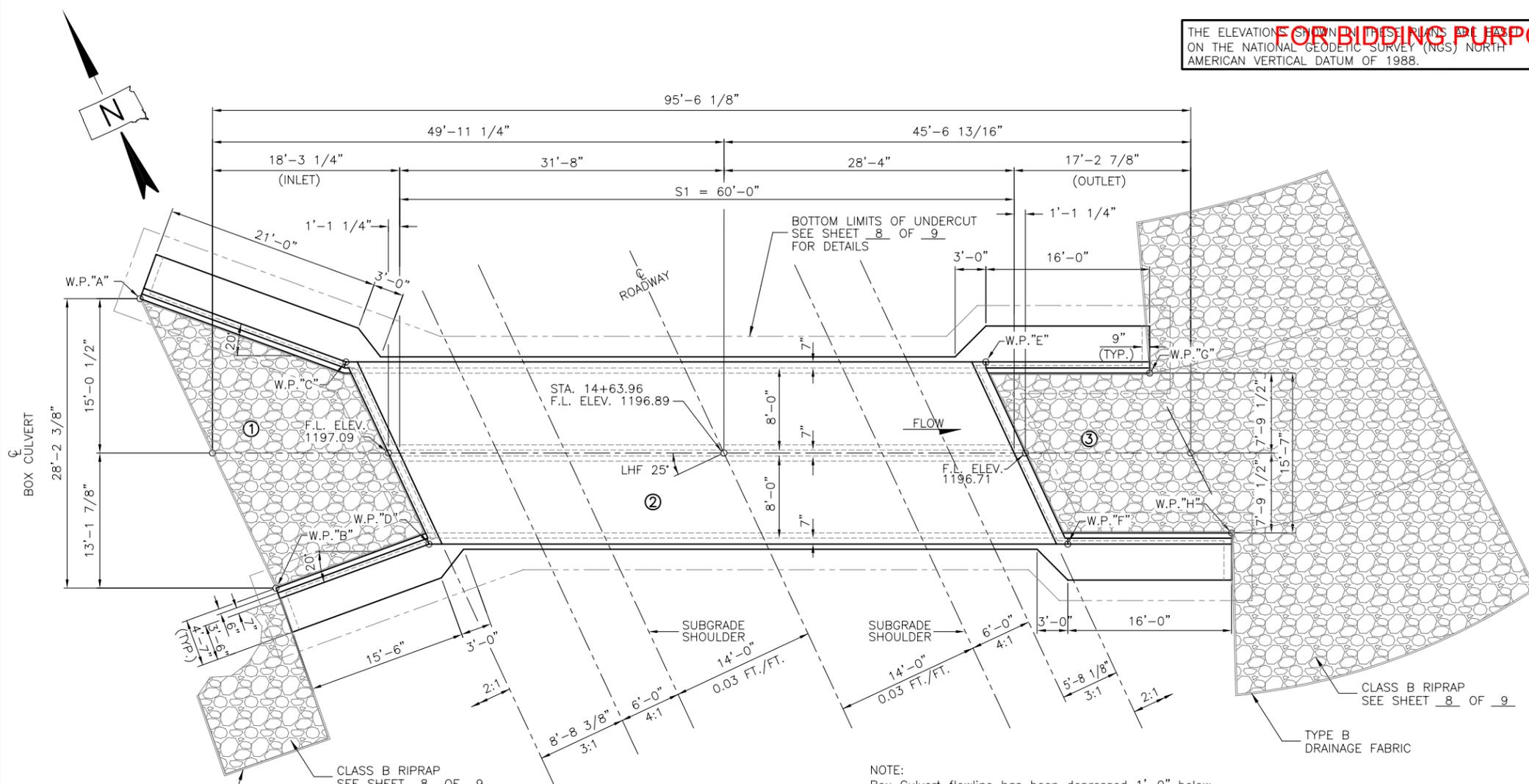
SHEET NO. 1	GENERAL DRAWING AND QUANTITIES
SHEET NO. 2 & 3	INLET DETAILS
SHEET NO. 4 & 5	OUTLET DETAILS
SHEET NO. 6 & 7	S1-BARREL SECTION DETAILS
SHEET NO. 8	RIPRAP AND UNDERCUT LAYOUT
SHEET NO. 9	STANDARD PLATES NO. 460.02 & 620.16

SPECIFICATIONS

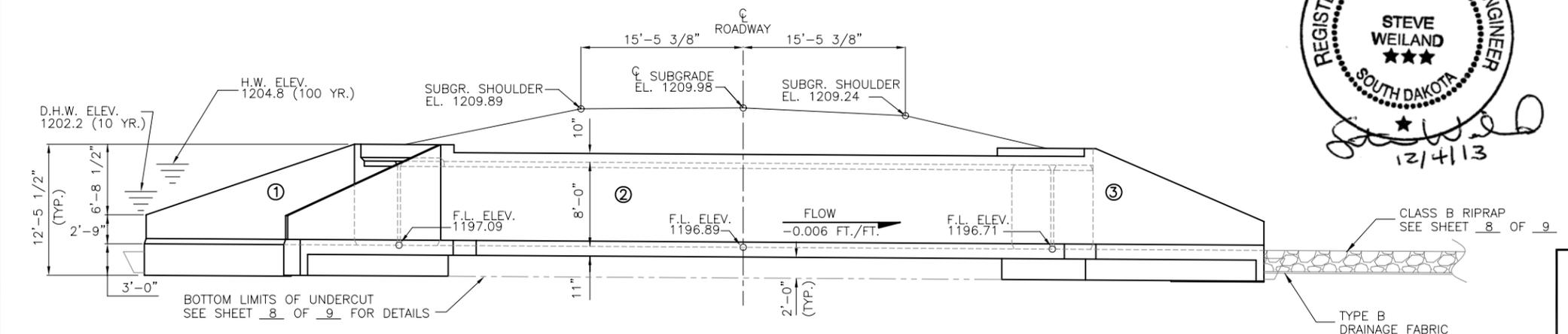
- Design Specifications: AASHTO LRFD Bridge Design Specifications, 6th Edition 2012 with 2013 Interim Revisions.
- Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

GENERAL NOTES

- All exposed edges shall be chamfered 3/4"
- Design Live Loading: HL93. No construction loading in excess of legal load was considered.
- All reinforcing steel shall conform to A.S.T.M. - A615 Grade 60.
- Design Material Strengths: Concrete f'c = 4500 p.s.i. Reinforcing Steel fy = 60000 p.s.i.
- The design of the barrel section is based on a minimum fill height of 1 ft. and includes all subsequent fill heights up to and including the maximum fill height of 5 ft. (S1).
- The Contractor shall imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.
- Care shall be taken to establish Working Points (W.P.) as shown on the Wings.
- Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.
- Circled numbers in PLAN and ELEVATION view are section I.D. numbers (see SDDOT Materials Manual).
- Compaction of earth embankment and box culvert material shall be governed by the ordinary compaction method.
- All concrete shall be Class A45.
- *12. This tributary to Spring Creek is a Topeka Shiner stream.



NOTE: Box Culvert flowline has been depressed 1'-0" below channel flowline to accommodate aquatic organisms. The 1'-0" depression will be allowed to fill in naturally over time.



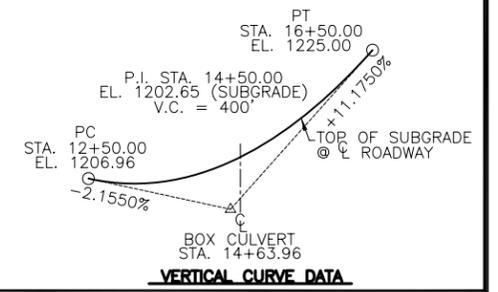
HYDRAULIC DATA

Qd	194 cfs
Ad	68.8 SqFt
Vd	2.8 fps
QF	194 cfs
Q100	674 cfs
QOTfr	1060 cfs
VMax	7.0 fps

Qd = design discharge for the proposed culvert based on 10 year frequency. El. 1202.2.
 QOTfr = overtopping discharge and frequency 370 yr. recurrence interval. El. 1206.6 Location Sta. 13+15.
 QF = designated peak discharge for the basin approaching proposed project based on 10 year frequency.
 Q100 = computed discharge for the basin approaching proposed project based on 100 year frequency, El. 1204.8
 VMax = maximum computed outlet velocity for the proposed culvert, based on a 100 year frequency.
 The hydraulic data contained in these plans is valid only if the overflow section is maintained. Alteration of the overflow section will require re-analysis of the hydraulics at this site to determine its effect on public safety.

TABLE OF WORKING POINTS

WORKING POINT	STATION	OFFSET	WORKING POINT	STATION	OFFSET
"A"	15+01.69	45.31' Lt.	"E"	14+61.20	26.93' Rt.
"B"	14+70.52	45.21' Lt.	"F"	14+41.73	26.68' Rt.
"C"	14+87.60	29.70' Lt.	"G"	14+53.45	40.97' Rt.
"D"	14+68.09	29.85' Lt.	"H"	14+35.95	41.64' Rt.



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	CuYd	143.0
Reinforcing Steel	Lb	20,868
Structure Excavation, Box Culvert	CuYd	58
Box Culvert Undercut	CuYd	173
Type B Drainage Fabric	SqYd	289
Class B Riprap	Ton	207.0

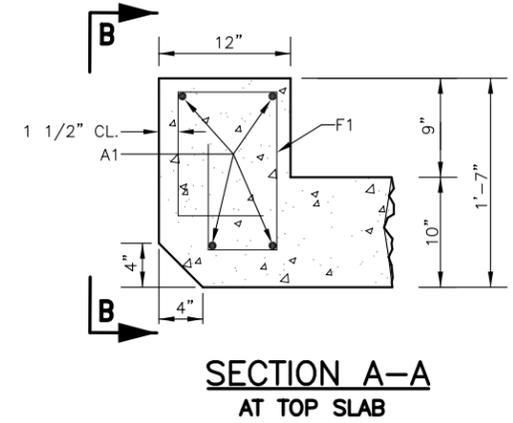
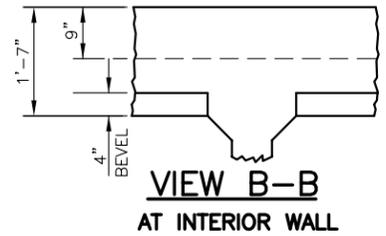
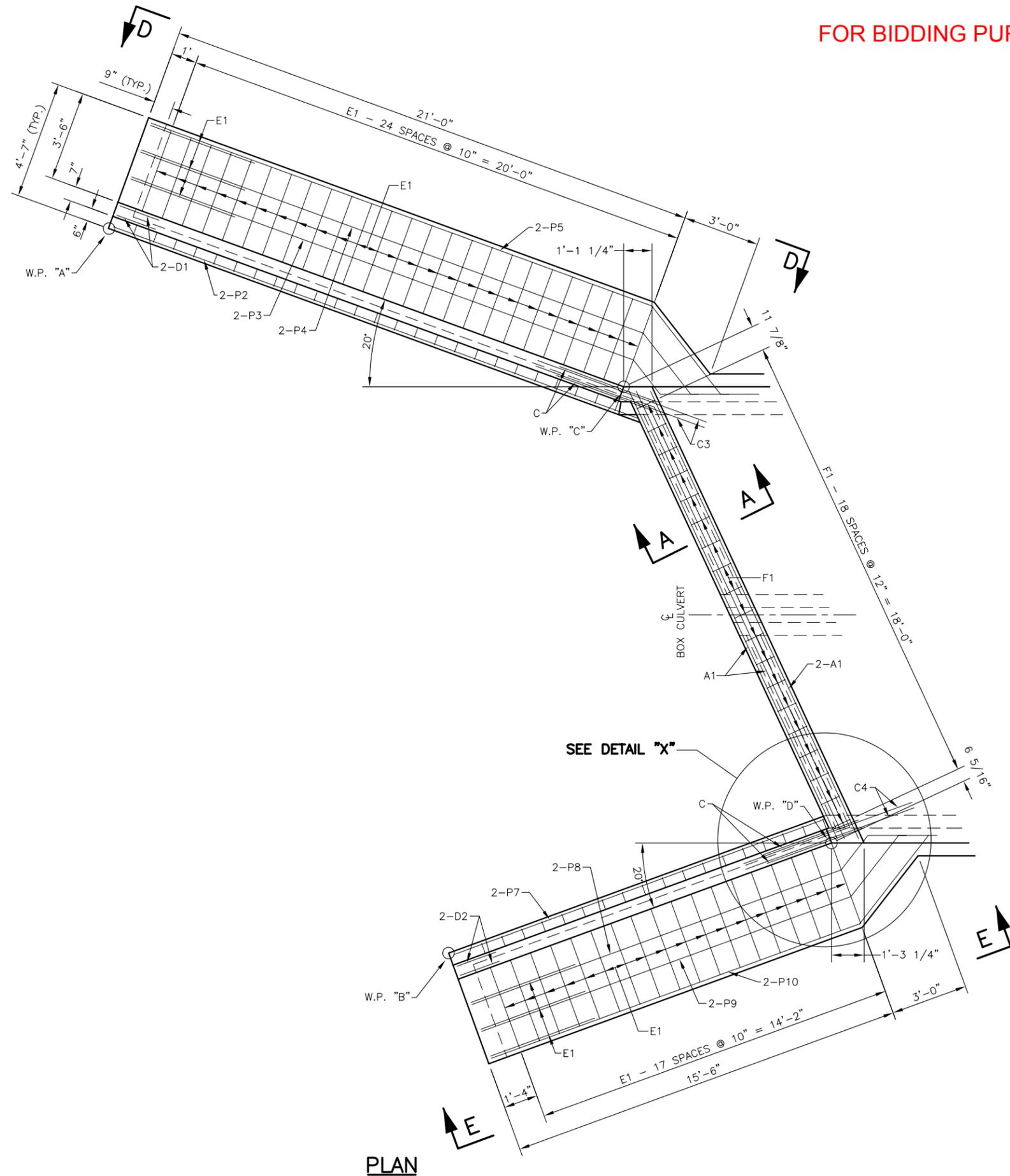
GENERAL DRAWING AND QUANTITIES FOR 2 - 8' X 8' BOX CULVERT

TRIBUTARY TO SPRING CREEK* 25° SKEW LHF
 STA. 14+63.96 SEC. 20/21 T94N R53W
 PCN 00K4 BRO 8014(31)
 STRUCTURE 14-020-096
 CLAY COUNTY SOUTH DAKOTA
 PREPARED BY: JOHNSON ENGINEERING CO. YANKTON, SOUTH DAKOTA HL93
 DESIGNED BY GSS/SMW DRAWN BY DKJ CHECKED BY PSJ
 DECEMBER 2013 1 OF 9



FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)	22	33



NOTE:
THIS SHEET TO BE USED IN CONJUNCTION WITH
SHEET 3 OF 9

**INLET DETAILS
FOR
2 - 8' X 8' RC BOX CULVERT**

TRIBUTARY TO SPRING CREEK STA. 14+63.96 PCN 00K4 STRUCTURE 14-020-096	25° SKEW LHF SEC. 20/21 T94N R53W BRO 8014(31)
PREPARED BY: JOHNSON ENGINEERING CO. YANKTON, SOUTH DAKOTA	CLAY COUNTY SOUTH DAKOTA HL93

DECEMBER 2013 ② OF ⑨

DESIGNED BY GSS/SMW	DRAWN BY SMW	CHECKED BY GSS
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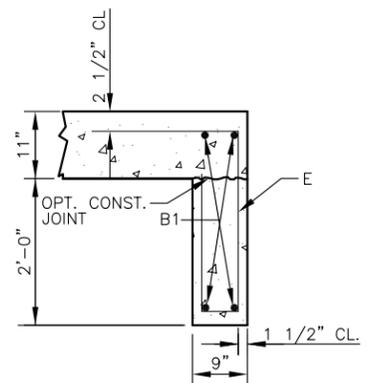
PLAN

FOR BIDDING PURPOSES ONLY

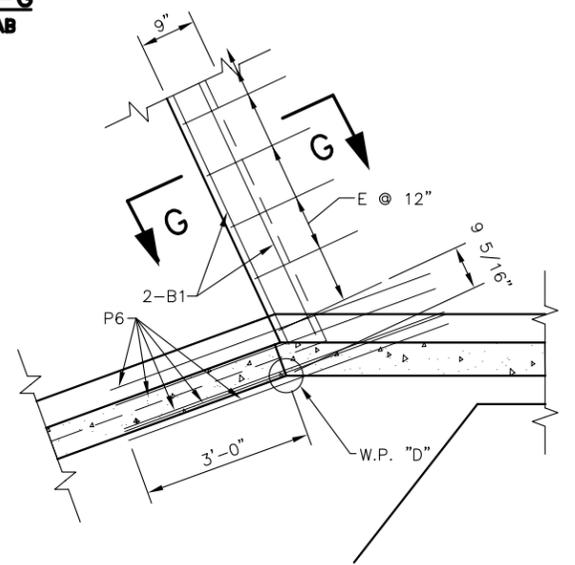
ESTIMATED QUANTITIES			
ITEM	CLASS A45 CONCRETE BOX CULVERT	REINFORCING STEEL	STRUCTURE EXCAVATION, BOX CULVERT
UNIT	CuYd	Lb.	CuYd
1 - INLET	19.7	2416	10.3

LEGEND FOR PLACING RE-STEEL	
I.F.W.W.	- INSIDE FACE OF WING WALL
O.F.W.W.	- OUTSIDE FACE OF WING WALL

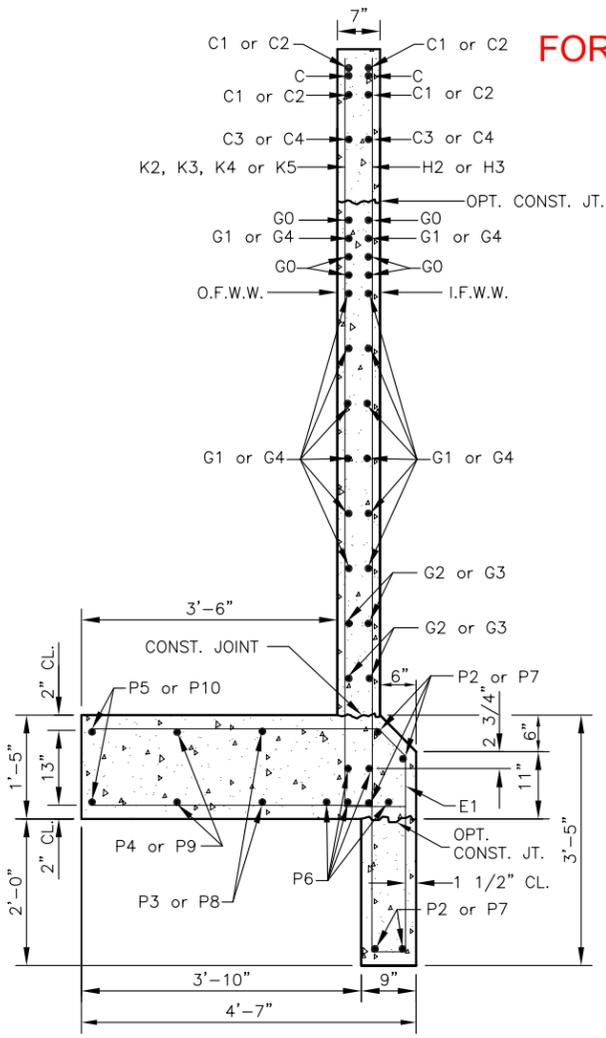
NOTE:
THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET 2 OF 9



**SECTION G-G
AT BOTTOM SLAB**

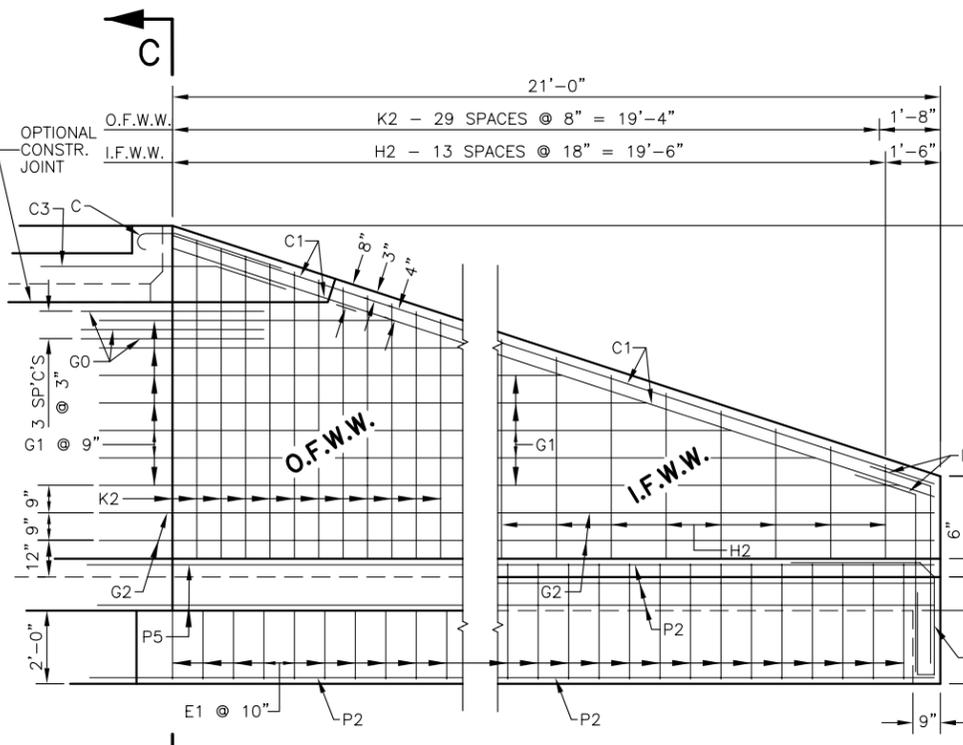


**DETAIL "X"
(AT BOTTOM SLAB)**

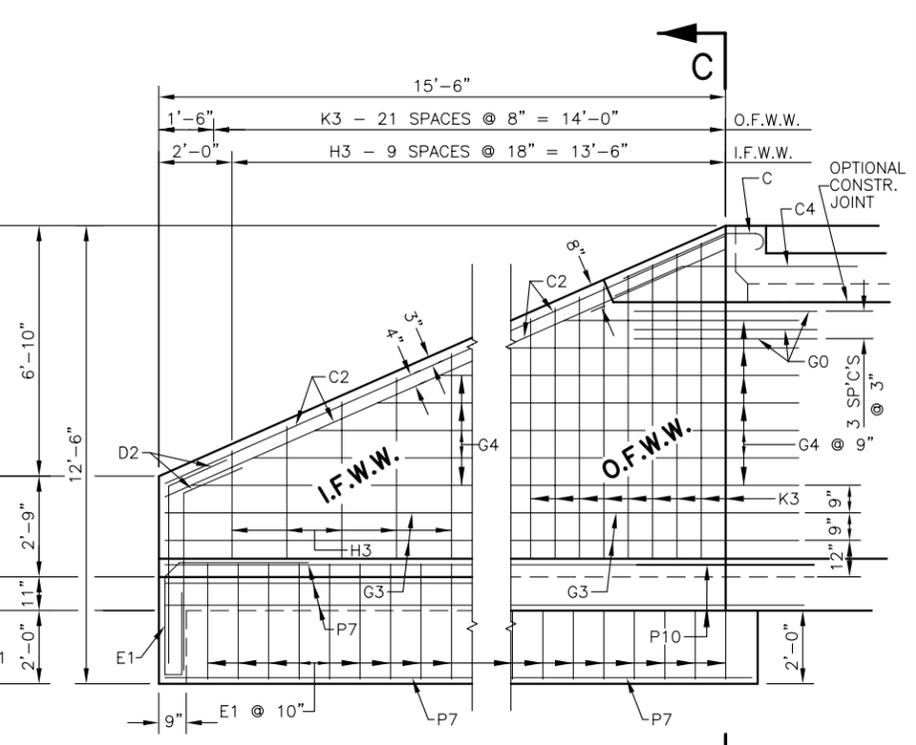


SECTION C-C

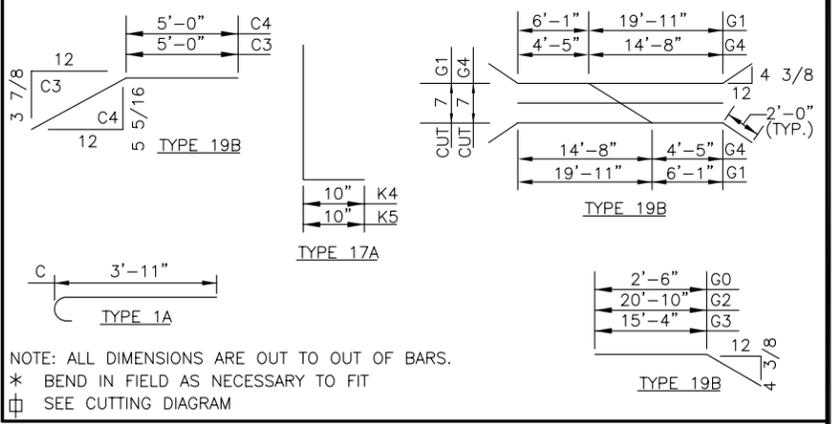
REINFORCING SCHEDULE					BENDING DETAILS	
MK.	NO.	SIZE	LENGTH	TYPE		
A1	4	6	19'-2"	STR.	TYPE S12	
B1	4	6	17'-10"	STR.	TYPE S12A	
C	4	5	4'-6"	1A	TYPE S6A	
C1	4	5	21'-10"	STR.	TYPE 17A	
C2	4	5	16'-8"	STR.	TYPE 19B	
C3	2	5	7'-0"	19B	TYPE 17A	
C4	2	5	7'-0"	19B	TYPE 19B	
D1	4	5	6'-7"	19B	TYPE 17A	
D2	4	5	6'-7"	19B	TYPE 19B	
E	18	4	7'-5"	S12	TYPE 17A	
E1	49	4	10'-2"	S12A	TYPE 19B	
F1	19	4	5'-2"	S6A	TYPE 17A	
G0	12	5	5'-0"	19B	TYPE 19B	
G1	7	4	30'-0"	19B	TYPE 17A	
G2	4	4	22'-10"	19B	TYPE 19B	
G3	4	4	17'-4"	19B	TYPE 17A	
G4	7	4	23'-1"	19B	TYPE 19B	
H2	7	4	21'-8"	17A	TYPE 17A	
H3	5	4	22'-0"	17A	TYPE 19B	
K2	15	5	15'-8"	17A	TYPE 17A	
K3	11	5	15'-10"	17A	TYPE 19B	
P2	5	4	23'-5"	STR.	TYPE 17A	
P3	2	4	24'-0"	STR.	TYPE 19B	
P4	2	4	25'-4"	STR.	TYPE 17A	
P5	2	4	26'-8"	STR.	TYPE 19B	
P6	10	6	7'-0"	STR.	TYPE 17A	
P7	5	4	17'-5"	STR.	TYPE 19B	
P8	2	4	18'-6"	STR.	TYPE 17A	
P9	2	4	19'-10"	STR.	TYPE 19B	
P10	2	4	21'-2"	STR.	TYPE 17A	



ELEVATION VIEW D-D



ELEVATION VIEW E-E



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

**INLET DETAILS
FOR
2 - 8' X 8' RC BOX CULVERT**

TRIBUTARY TO SPRING CREEK
STA. 14+63.96
PCN 00K4
STRUCTURE 14-020-096

25' SKEW LHF
SEC. 20/21 T94N R53W
BRO 8014(31)

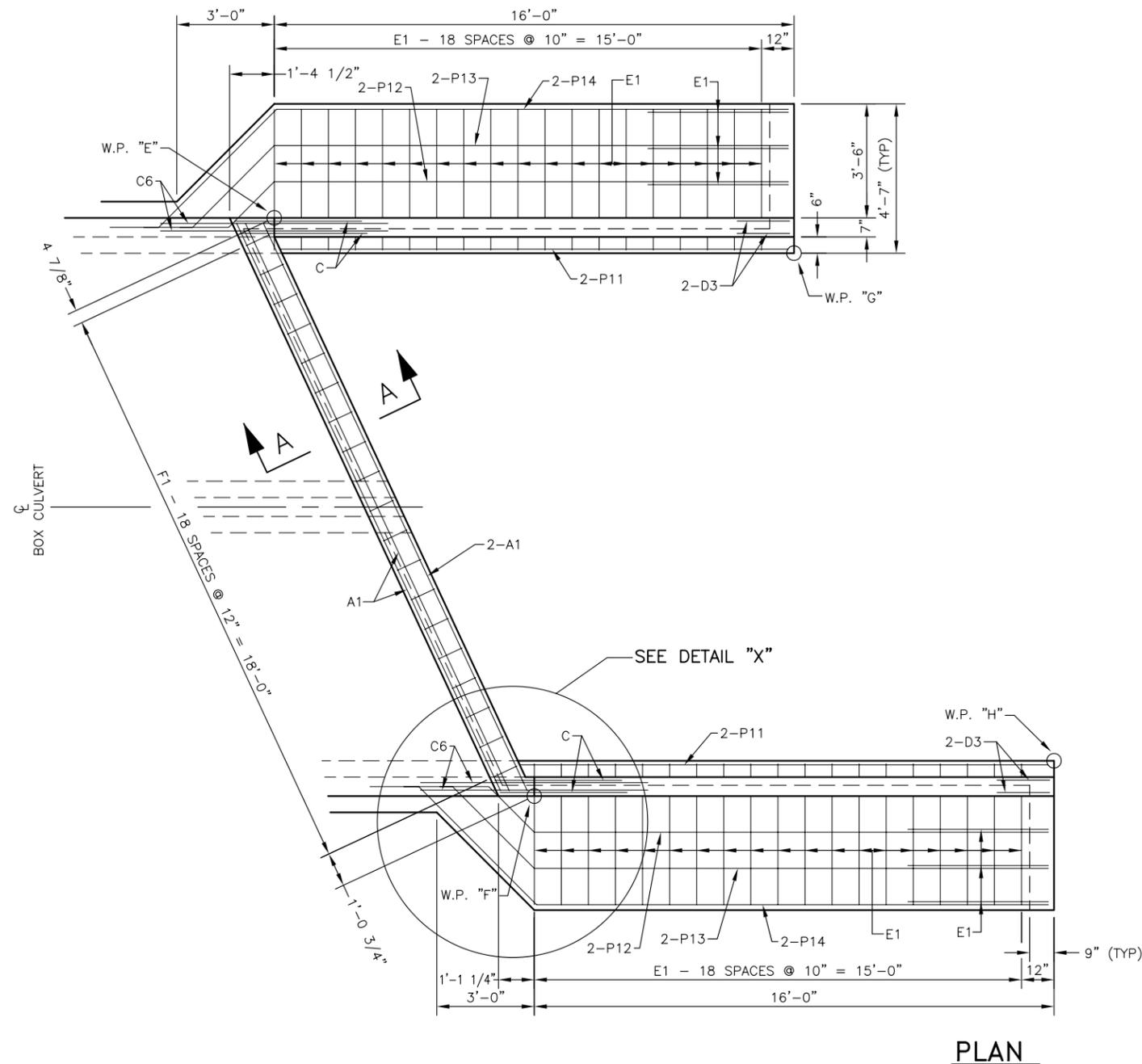
CLAY COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

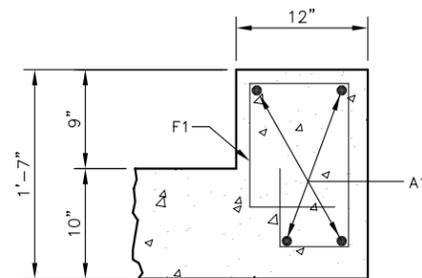
HL93

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)	24	33



PLAN



SECTION A-A
AT TOP SLAB

NOTE:
THIS SHEET TO BE USED IN CONJUNCTION WITH
SHEET 5 OF 9



OUTLET DETAILS
FOR
2 - 8' X 8' RC BOX CULVERT

TRIBUTARY TO SPRING CREEK
STA. 14+63.96
PCN 00K4
STRUCTURE 14-020-096

25' SKEW LHF
SEC. 20/21 T94N R53W
BRO 8014(31)

CLAY COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

HL93

DECEMBER 2013

4 OF 9

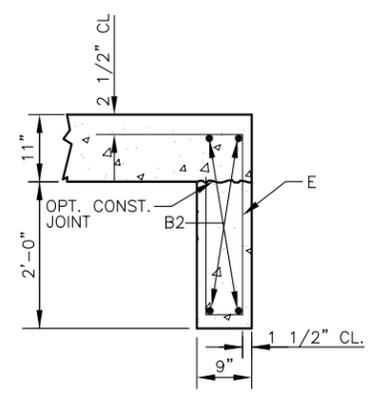
DESIGNED BY GSS/SMW	DRAWN BY SMW	CHECKED BY GSS
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FOR BIDDING PURPOSES ONLY

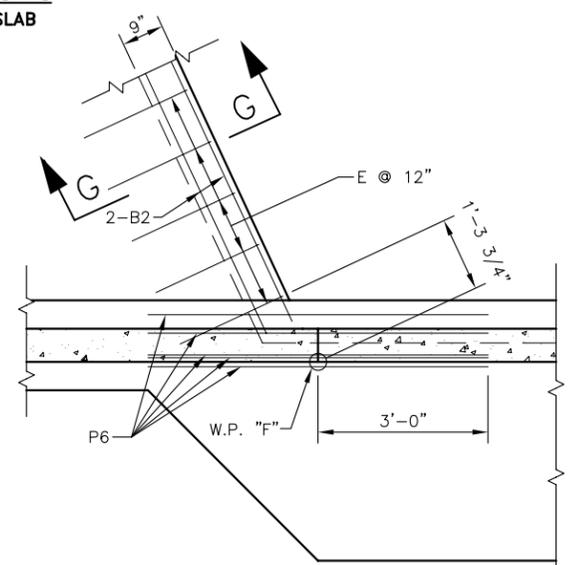
ESTIMATED QUANTITIES			
ITEM	CLASS A45 CONCRETE BOX CULVERT	REINFORCING STEEL	STRUCTURE EXCAVATION, BOX CULVERT
UNIT	CuYd	Lb.	CuYd
1 - OUTLET	17.8	2246	9.3

LEGEND FOR PLACING RE-STEEL	
I.F.W.W.	- INSIDE FACE OF WING WALL
O.F.W.W.	- OUTSIDE FACE OF WING WALL

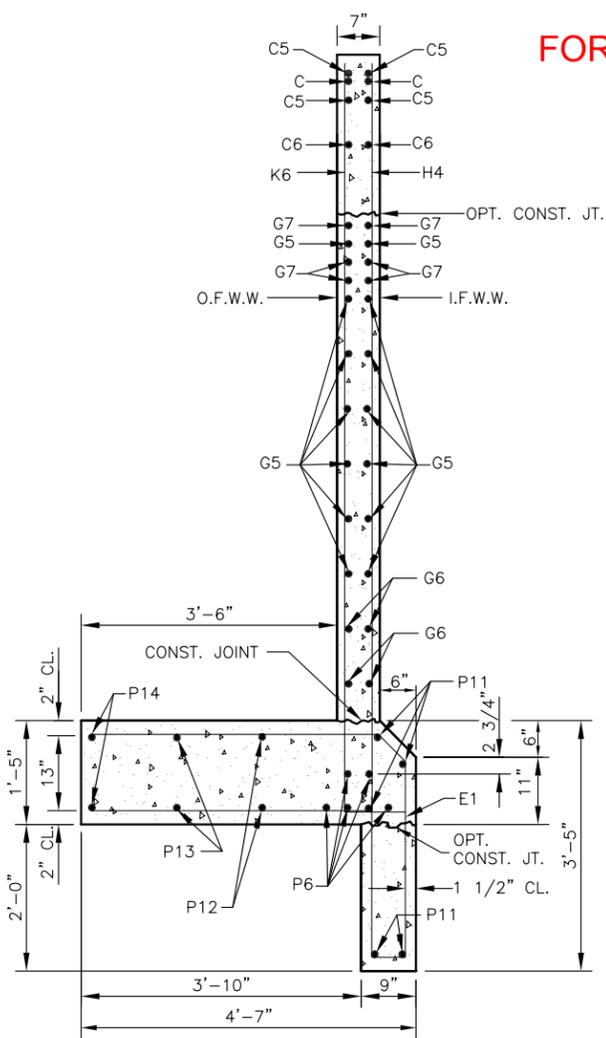
NOTE:
THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET 4 OF 9



**SECTION G-G
AT BOTTOM SLAB**

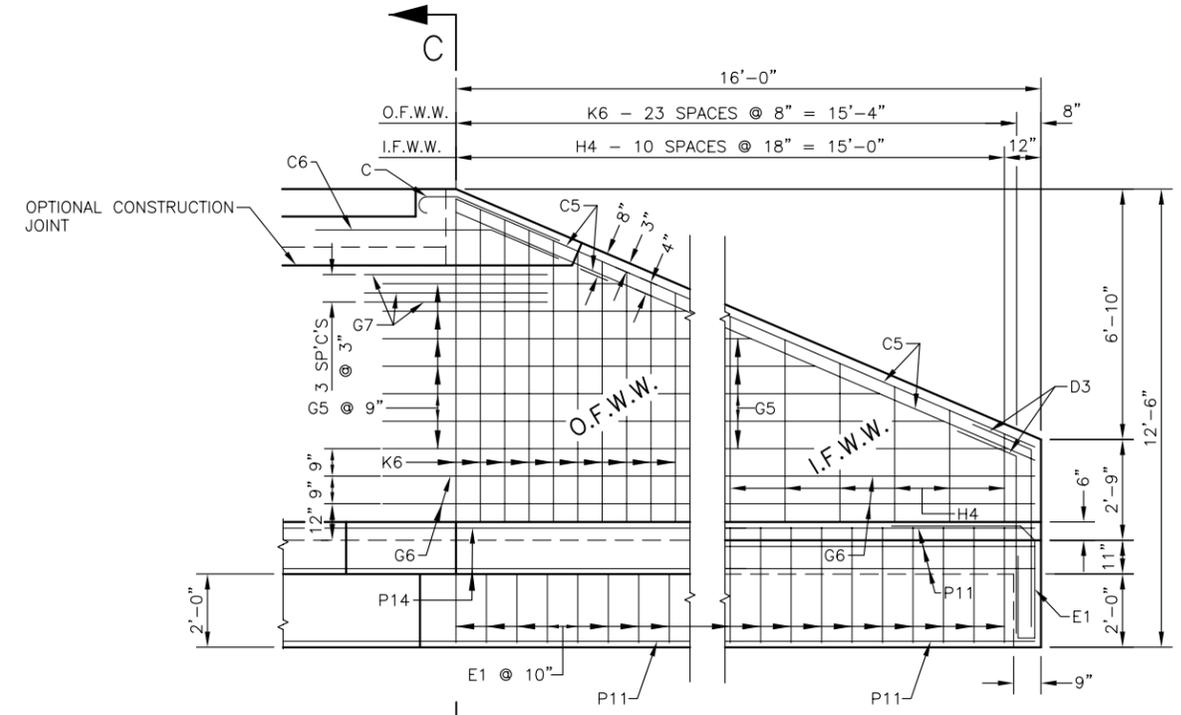


**DETAIL "X"
(AT BOTTOM SLAB)**

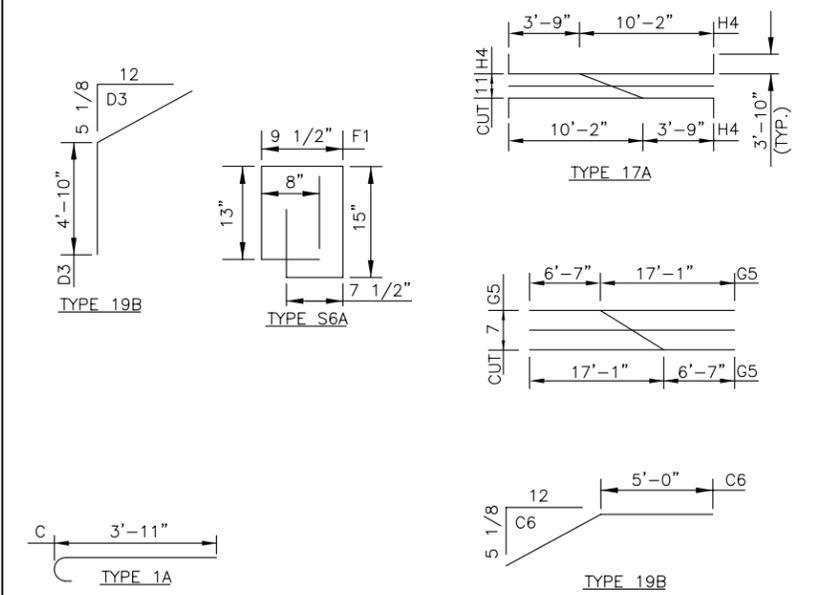


SECTION C-C

REINFORCING SCHEDULE					BENDING DETAILS	
MK.	NO.	SIZE	LENGTH	TYPE		
A1	4	6	19'-2"	STR.	[Diagram]	
B2	4	6	18'-6"	STR.	[Diagram]	
C	4	5	4'-6"	1A	[Diagram]	
C5	8	5	17'-2"	STR.	[Diagram]	
C6	4	5	7'-0"	19B	[Diagram]	
D3	8	5	6'-7"	19B	[Diagram]	
E	18	4	7'-5"	S12	[Diagram]	
E1	44	4	10'-2"	S12A	[Diagram]	
F1	19	4	5'-2"	S6A	[Diagram]	
G5	14	4	23'-8"	STR.	[Diagram]	
G6	8	4	17'-10"	STR.	[Diagram]	
G7	12	5	5'-0"	STR.	[Diagram]	
H4	11	4	21'-7"	17A	[Diagram]	
K6	24	5	15'-5"	17A	[Diagram]	
P6	10	6	7'-0"	STR.	[Diagram]	
* P11	10	4	18'-6"	STR.	[Diagram]	
* P12	4	4	19'-4"	STR.	[Diagram]	
* P13	4	4	20'-11"	STR.	[Diagram]	
* P14	4	4	22'-4"	STR.	[Diagram]	



ELEVATION



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



**OUTLET DETAILS
FOR
2 - 8' X 8' RC BOX CULVERT**

TRIBUTARY TO SPRING CREEK
STA. 14+63.96
PCN 00K4
STRUCTURE 14-020-096

25' SKEW LHF
SEC. 20/21 T94N R53W
BRO 8014(31)

CLAY COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

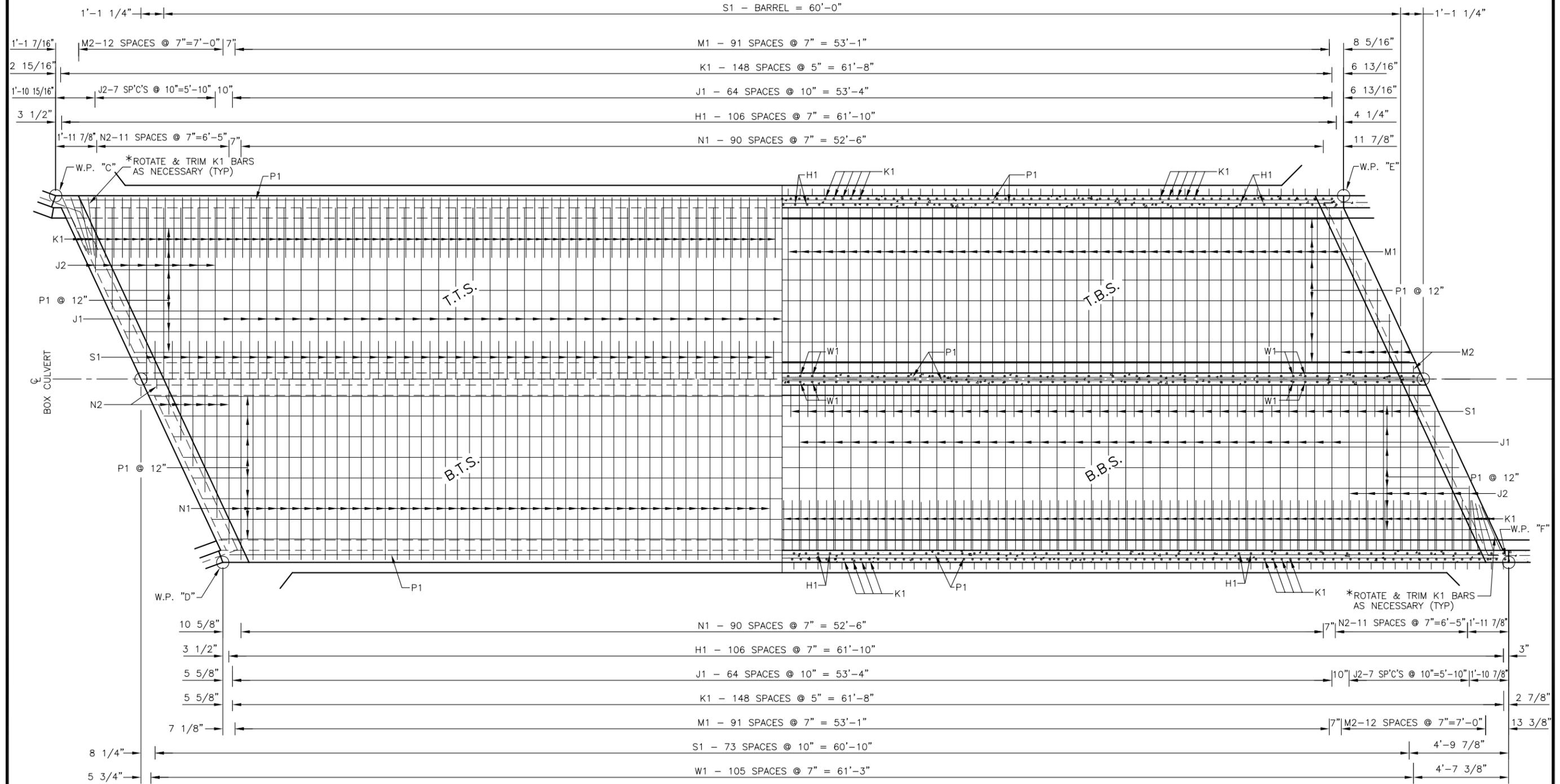
HL93

DESIGNED BY GSS/SMW
DRAWN BY SMW
CHECKED BY GSS

DECEMBER 2013 (5) OF (9)

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)	26	33



PLAN



*TRIM K1 AS NECESSARY TO PROVIDE A MINIMUM CLEAR DISTANCE OF 2 1/4" BETWEEN BARS.

NOTE:
THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET 7 OF 9

LEGEND FOR PLACING RE-STEEL	
T.T.S.	= TOP OF TOP SLAB
B.T.S.	= BOTTOM OF TOP SLAB
T.B.S.	= TOP OF BOTTOM SLAB
B.B.S.	= BOTTOM OF BOTTOM SLAB
O.F.O.W.	= OUTSIDE FACE OF OUTSIDE WALL
I.F.O.W.	= INSIDE FACE OF OUTSIDE WALL
M.W.	= MIDDLE WALL

S1 BARREL SECTION DETAILS FOR 2 - 8' X 8' RC BOX CULVERT

TRIBUTARY TO SPRING CREEK
STA. 14+63.96
PCN 00K4
STRUCTURE 14-020-096

25' SKEW LHF
SEC. 20/21 T94N R53W
BRO 8014(31)

CLAY COUNTY
SOUTH DAKOTA

PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

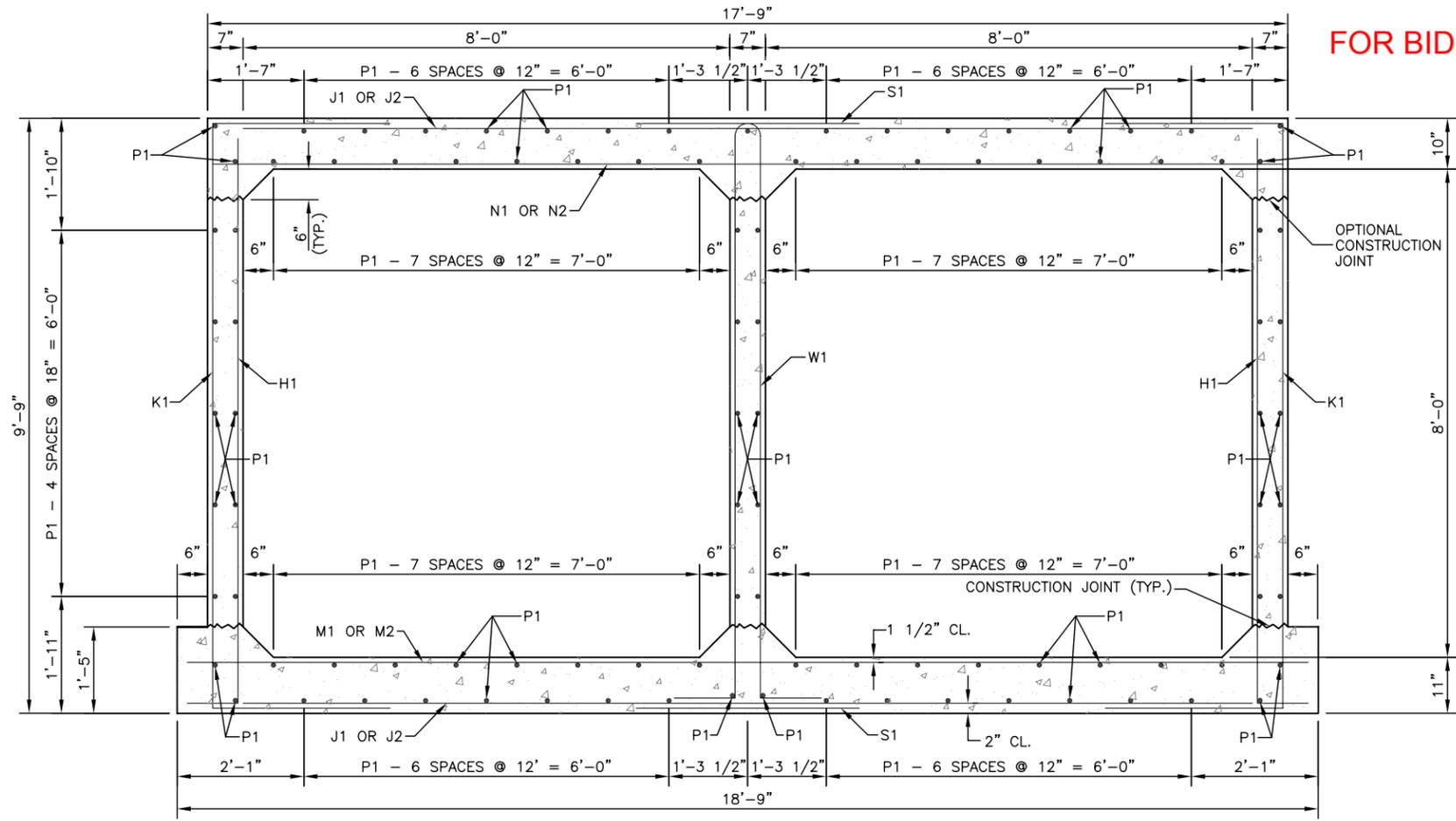
HL93

DESIGNED BY: GSS/SMW
DRAWN BY: SMW
CHECKED BY: GSS

DECEMBER 2013

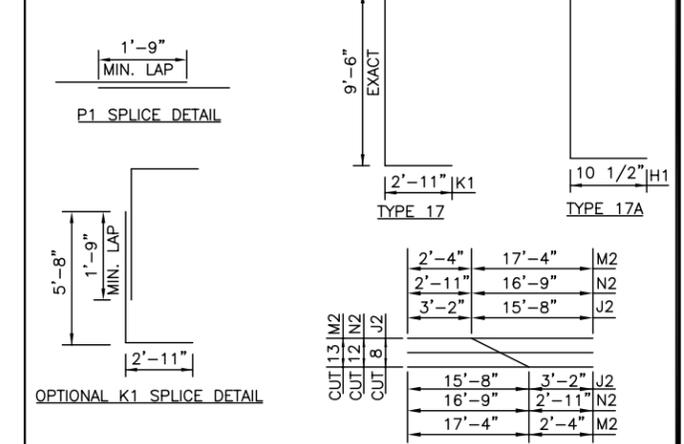
6 OF 9

FOR BIDDING PURPOSES ONLY



S1 BARREL SECTION (60'-0")
(5'-0" MAXIMUM FILL)

REINFORCING SCHEDULE					
MK.	NO.	SIZE	LENGTH	TYPE	BENDING DETAILS
H1	214	4	10'-0"	17A	
J1	130	4	16'-7"	STR.	
J2	16	4	18'-10"	STR.	
K1	298	4	15'-4"	17	
M1	92	5	18'-6"	STR.	
M2	13	5	19'-8"	STR.	
N1	91	5	17'-6"	STR.	
N2	12	5	19'-8"	STR.	
P1	202	4	31'-8"	STR.	
S1	148	4	3'-8"	STR.	
W1	106	4	21'-2"	S11A	



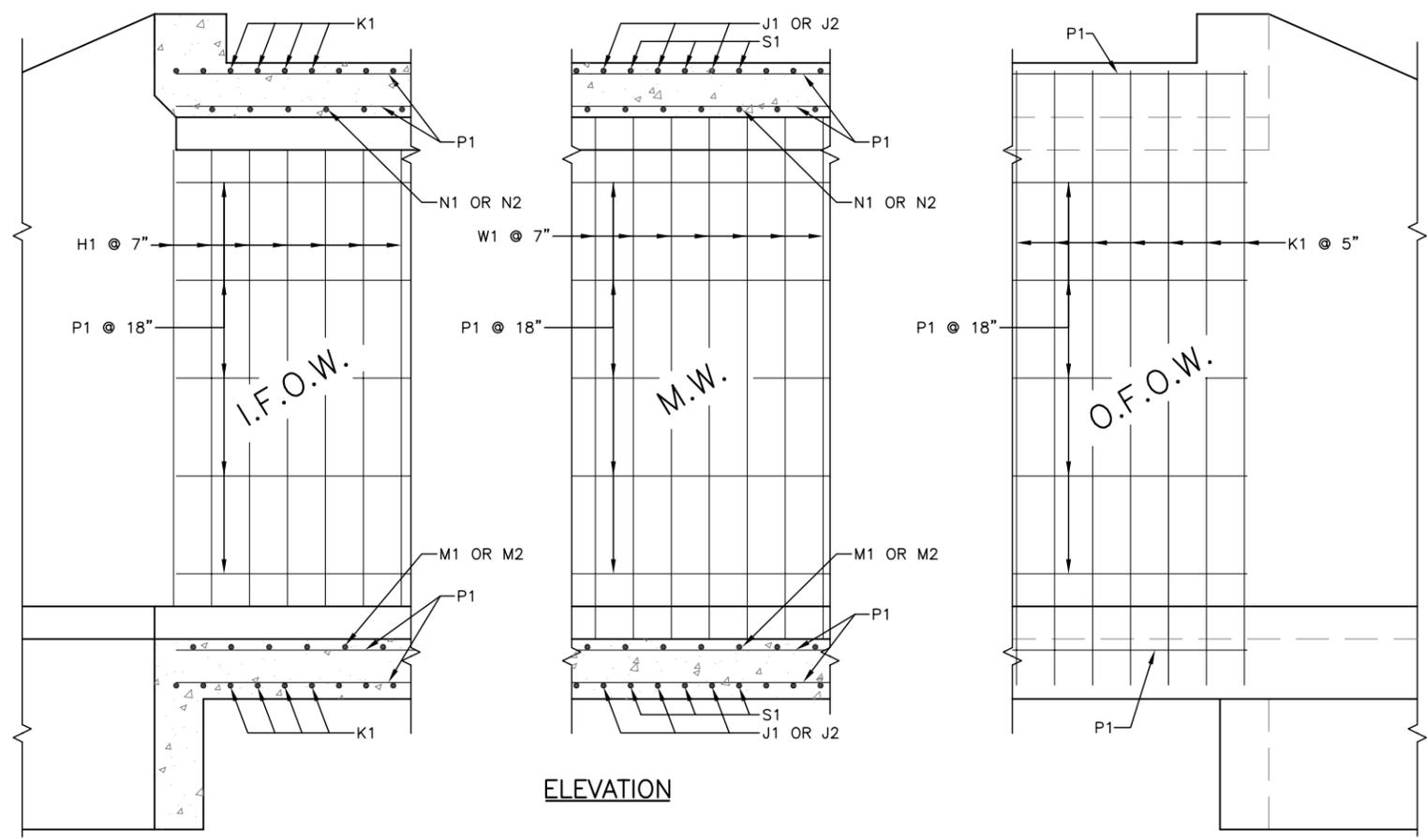
CONTRACTOR MAY USE OPTIONAL REINFORCING STEEL SPLICE, AS SHOWN. THE COST OF THE ADDITIONAL REINFORCING STEEL SHALL BE BORNE BY THE CONTRACTOR.

REQUESTS FOR ADDITIONAL REINFORCING STEEL SPLICES AT POINTS OTHER THAN THOSE SHOWN, MUST BE SUBMITTED TO THE ENGINEER FOR PRIOR APPROVAL. IF ADDITIONAL SPLICES ARE APPROVED, NO PAYMENT WILL BE ALLOWED FOR THE ADDED QUANTITY OF REINFORCING STEEL.

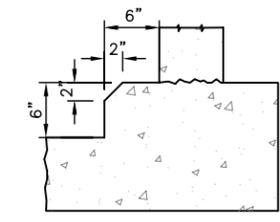
NOTE: ALL DIMENSIONS ARE OUT TO OUT OF BARS
 ☐ SEE CUTTING DIAGRAM

ESTIMATED QUANTITIES			
ITEM	CLASS A45 CONCRETE BOX CULVERT	REINFORCING STEEL	STRUCTURE EXCAVATION, BOX CULVERT
UNIT	CuYd	Lb	CuYd
1-S1 BARREL SECTION @ 60'-0"	105.5	16,206	38.2

LEGEND FOR PLACING RE-STEEL	
T.T.S.	= TOP OF TOP SLAB
B.T.S.	= BOTTOM OF TOP SLAB
T.B.S.	= TOP OF BOTTOM SLAB
B.B.S.	= BOTTOM OF BOTTOM SLAB
O.F.O.W.	= OUTSIDE FACE OF OUTSIDE WALL
I.F.O.W.	= INSIDE FACE OF OUTSIDE WALL
M.W.	= MIDDLE WALL



ELEVATION



OPTIONAL FILLET DETAIL
(AT BOTTOM SLAB)

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



NOTE: THIS SHEET TO BE USED IN CONJUNCTION WITH SHEET 6 OF 9

S1 BARREL SECTION DETAILS FOR 2 - 8' X 8' RC BOX CULVERT

TRIBUTARY TO SPRING CREEK STA. 14+63.96 PCN 00K4 STRUCTURE 14-020-096

25° SKEW LHF SEC. 20/21 T94N R53W BRO 8014(31)

CLAY COUNTY SOUTH DAKOTA

PREPARED BY: JOHNSON ENGINEERING CO. YANKTON, SOUTH DAKOTA

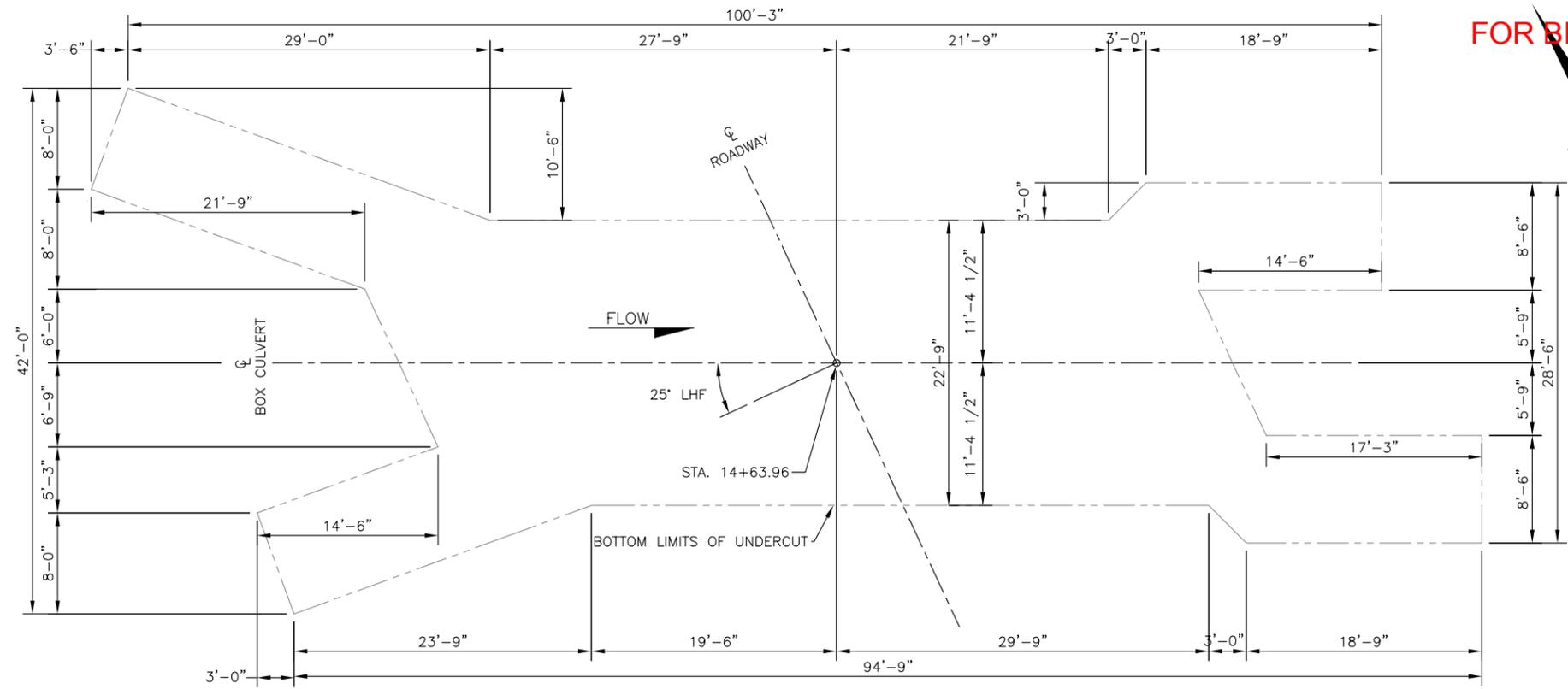
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DECEMBER 2013

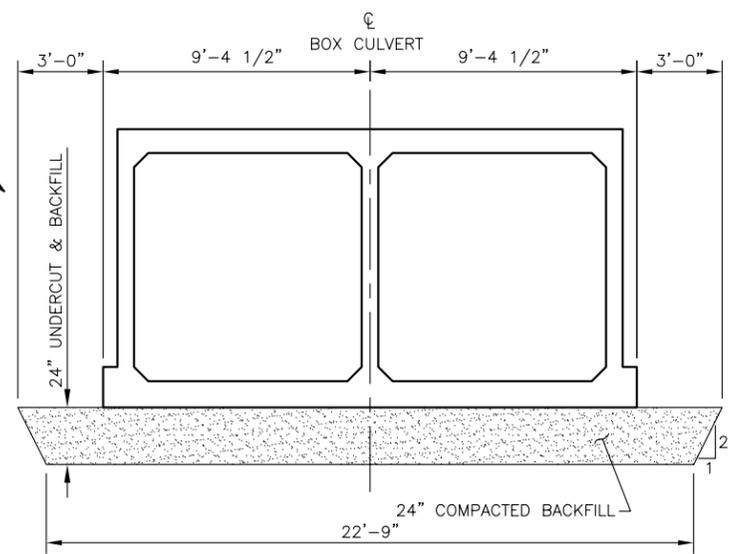
DESIGNED BY: GSS/SMW
 DRAWN BY: SMW
 CHECKED BY: GSS

7 OF 9

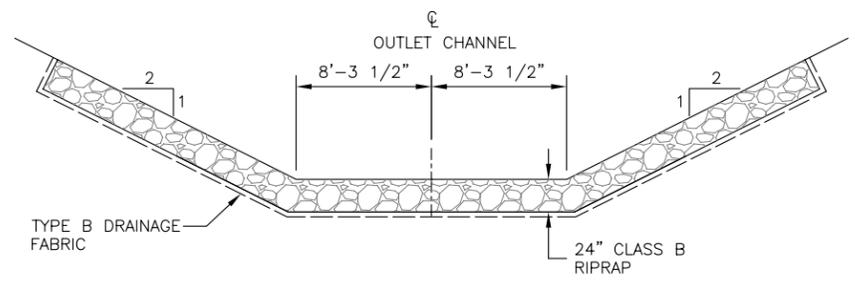
FOR BIDDING PURPOSES ONLY



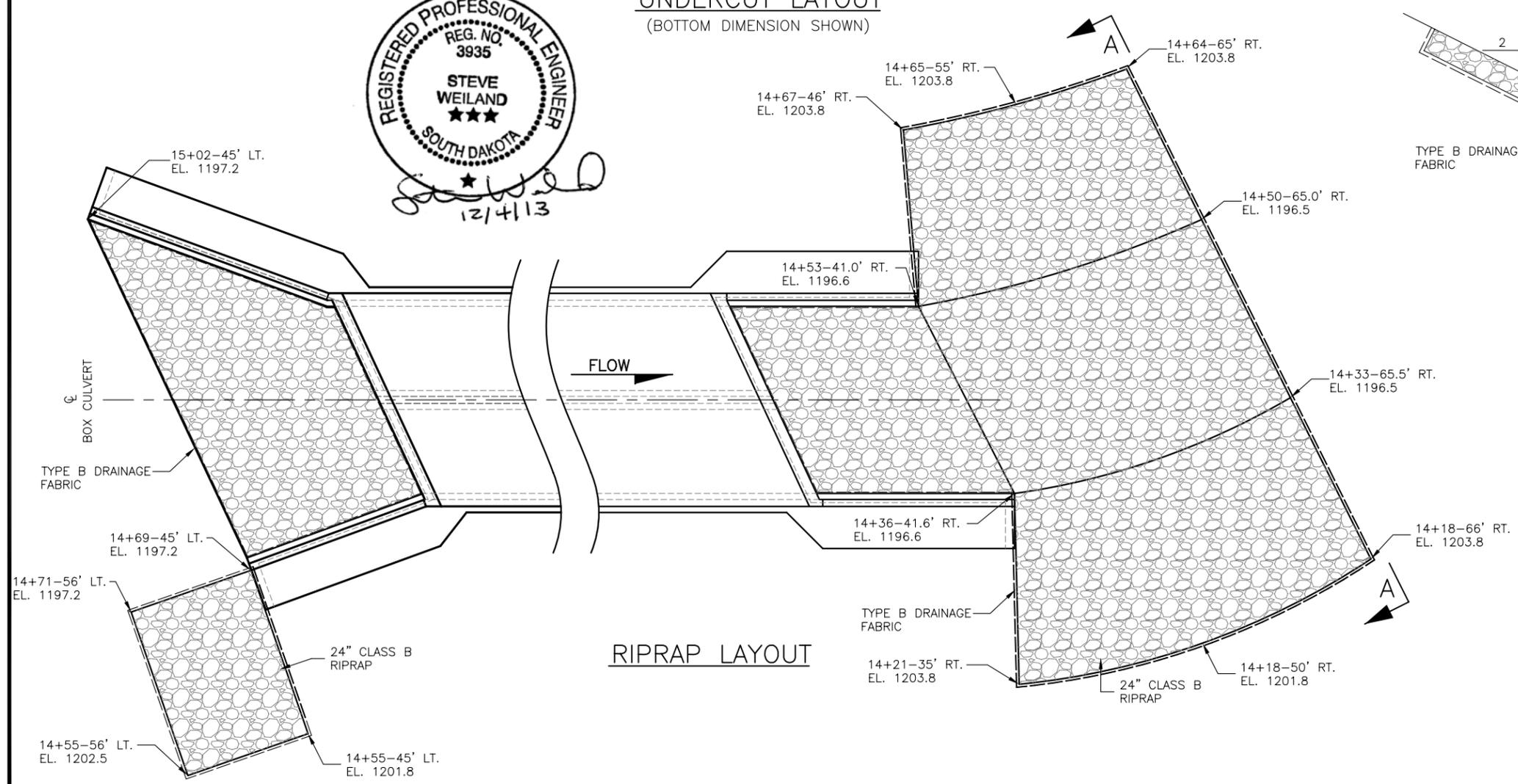
UNDERCUT LAYOUT
(BOTTOM DIMENSION SHOWN)



TYPICAL SECTION
(FOR LIMITS OF UNDERCUT)



SECTION A-A
(FOR LIMITS OF RIPRAP)



RIPRAP LAYOUT

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Box Culvert Undercut	CuYd	173
Type B Drainage Fabric	SqYd	289
* Class B Riprap	Ton	207.0

* FOR ESTIMATING PURPOSES ONLY, A FACTOR OF 1.4 TONS/CuYd WAS USED TO CONVERT CuYd TO TONS.

RIPRAP AND UNDERCUT LAYOUT FOR 2 - 8' X 8' RC BOX CULVERT

TRIBUTARY TO SPRING CREEK
STA. 14+63.96
PCN 00K4
STRUCTURE 14-020-096

25° SKEW LHF
SEC. 20/21 T94N R53W
BRO 8014(31)

CLAY COUNTY
SOUTH DAKOTA

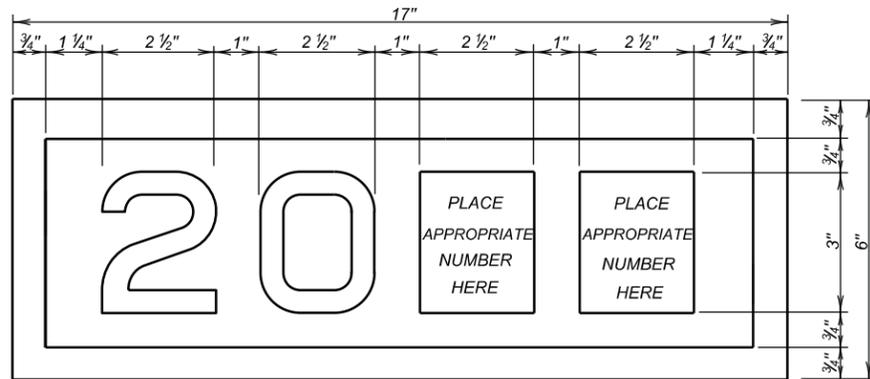
PREPARED BY:
JOHNSON ENGINEERING CO.
YANKTON, SOUTH DAKOTA

HL93

DECEMBER 2013

DESIGNED BY: GSS/SMW
DRAWN BY: SMW
CHECKED BY: GSS

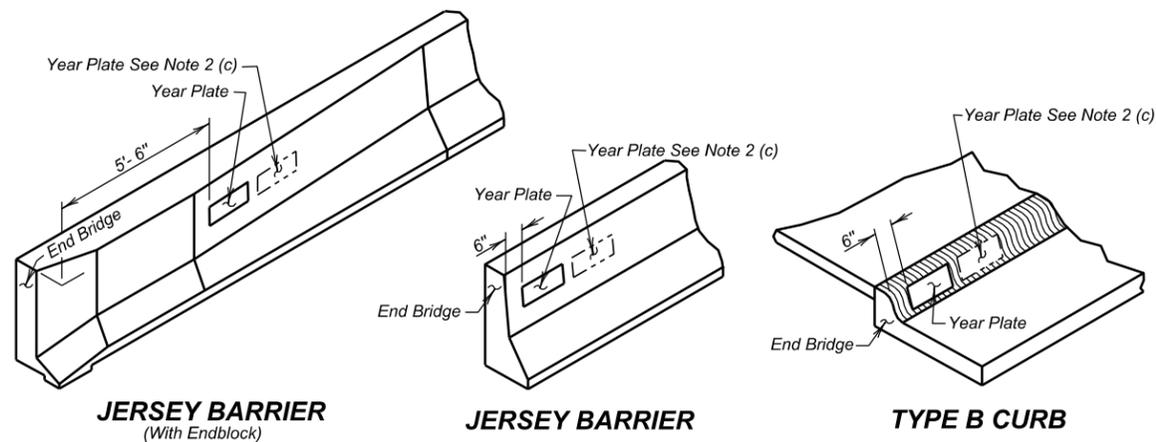
(8) OF (9)



YEAR PLATE DETAILS

GENERAL NOTES:

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



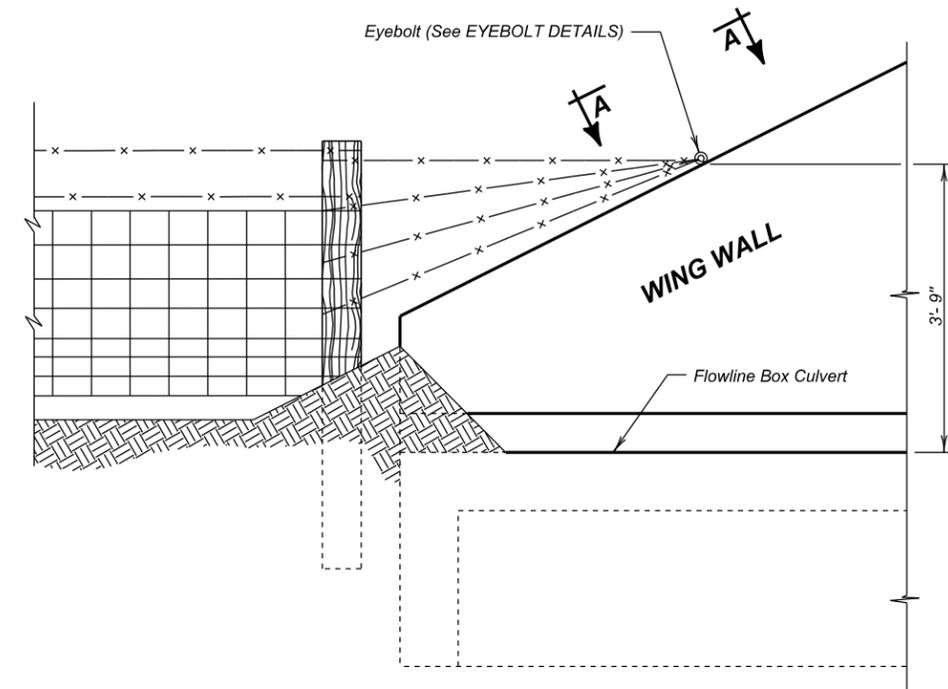
JERSEY BARRIER
(With Endblock)

JERSEY BARRIER

TYPE B CURB

June 26, 2012

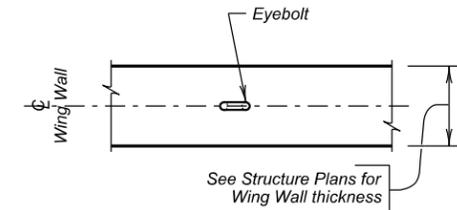
Published Date: 4th Qtr. 2013	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



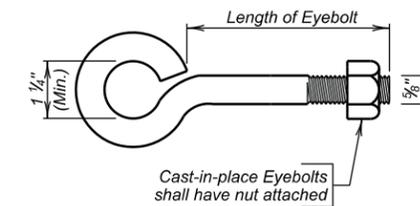
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

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



VIEW A - A



EYEBOLT DETAILS

December 23, 2012

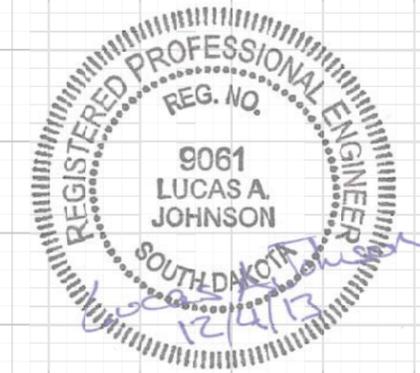
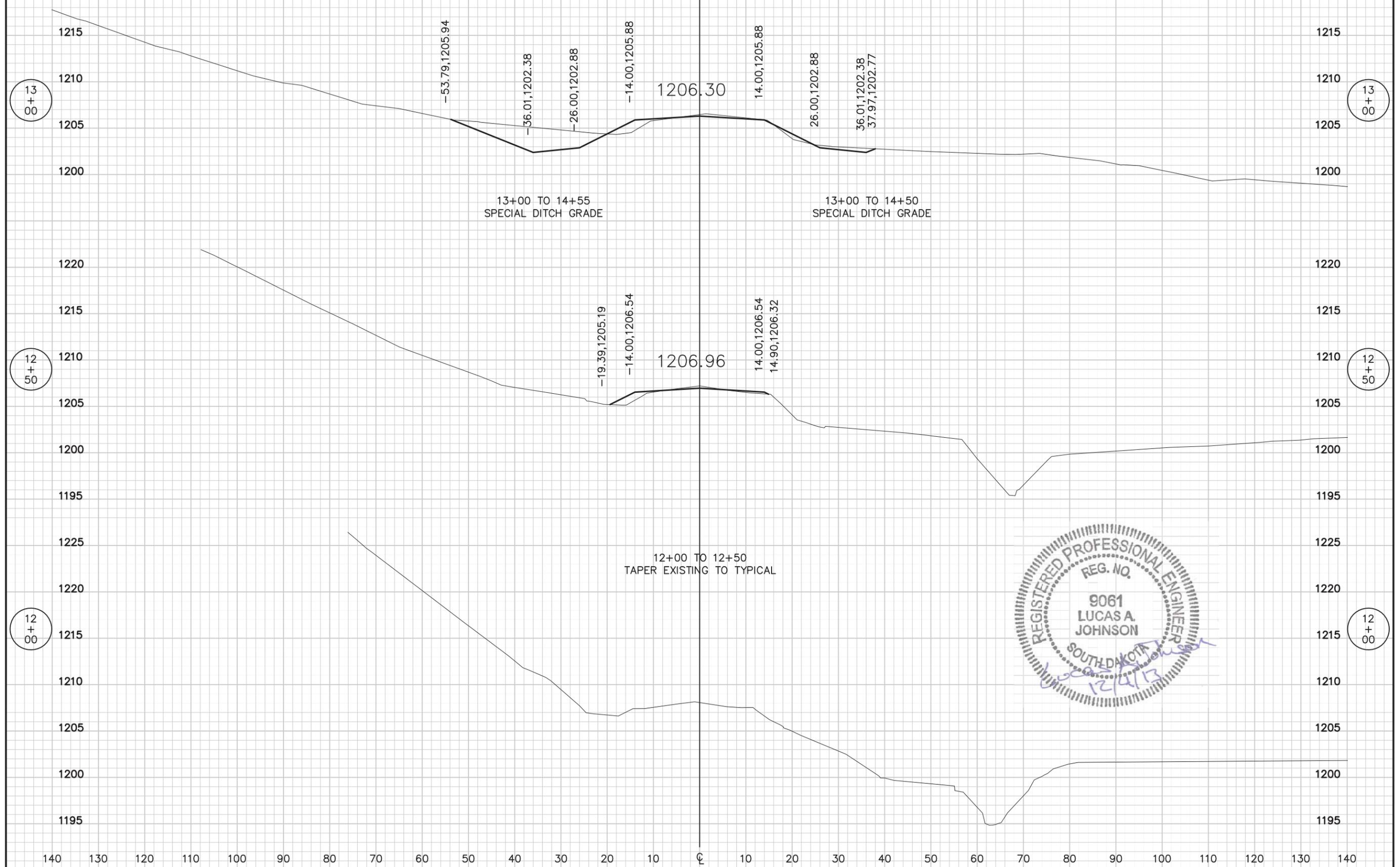
Published Date: 4th Qtr. 2013	S D D O T	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1

140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)		
		30	33

50 60 70 80 90 100 110 120 130 140

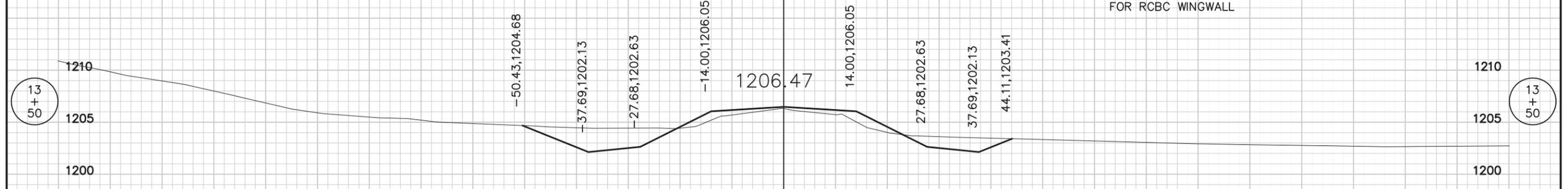
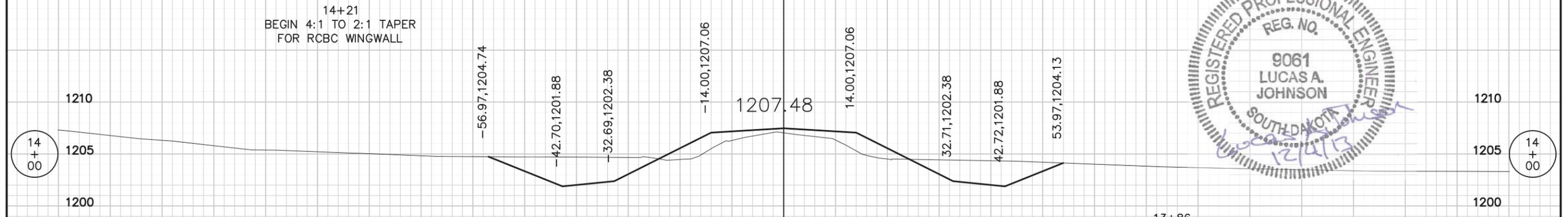


140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40

FOR BIDDING PURPOSES ONLY

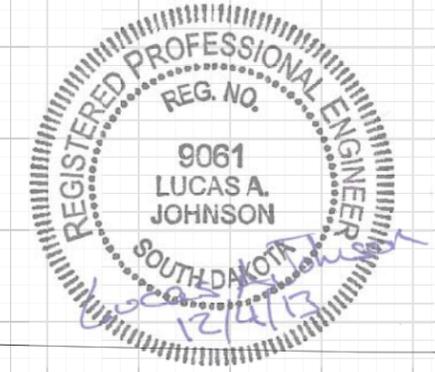
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	BRO 8014(31)		

50 60 70 80 90 100 110 120 130 140



14+21
BEGIN 4:1 TO 2:1 TAPER
FOR RCBC WINGWALL

13+86
BEGIN 4:1 TO 2:1 TAPER
FOR RCBC WINGWALL



140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140

FOR BIDDING PURPOSES ONLY

15+52
END 2:1 TO 4:1 TAPER
FOR RCBC WINGWALL



15+04
END 2:1 TO 4:1 TAPER
FOR RCBC WINGWALL

