

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	1	27

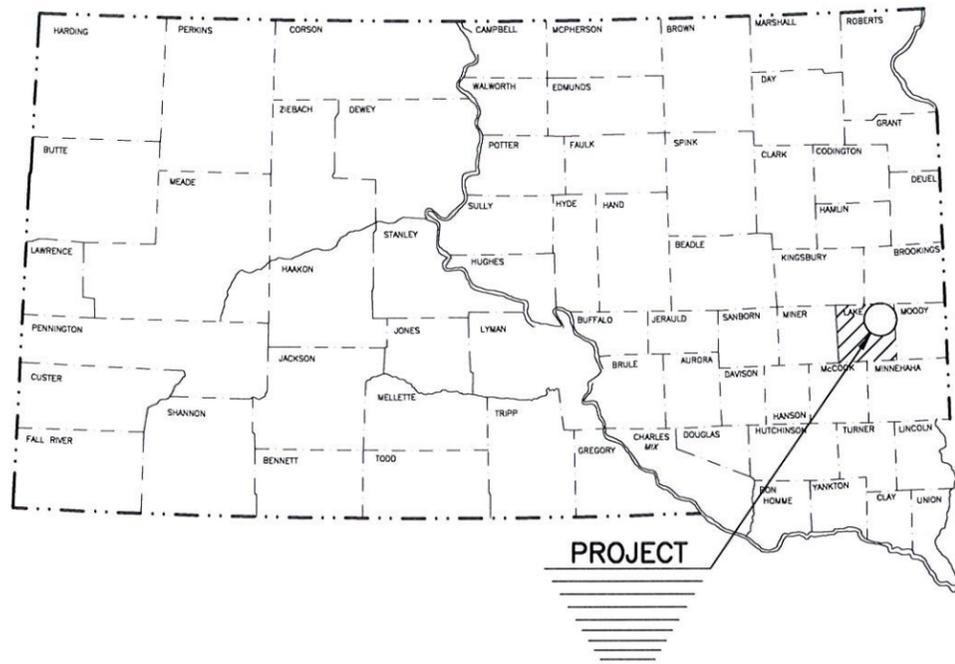
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR
PROJECT BRO 8040(15)
LAKE COUNTY

STRUCTURE AND APPROACH GRADING
STRUCTURE NO. 40-219-060
PCN 00ZB

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET & LAYOUT MAP
2 - 4	ESTIMATE OF QUANTITIES & NOTES
5	TYPICAL SECTION
6 - 7	TRAFFIC CONTROL
8 - 10	SWPPP SHEETS
11	EROSION & SEDIMENT CONTROL
12	PLAN & PROFILE SHEET
13 - 14	STANDARD PLATES
15 - 26	3-10'X7' RCBC
27	CROSS SECTIONS



STORM WATER PERMIT

Major Receiving Body of Water: Battle Creek
Area Disturbed: 0.5 Acre
Total Project Area: 1.1 Acre
Approx. Begin Lat/Long: 44.109450N -96.930567W

DESIGN DESIGNATION

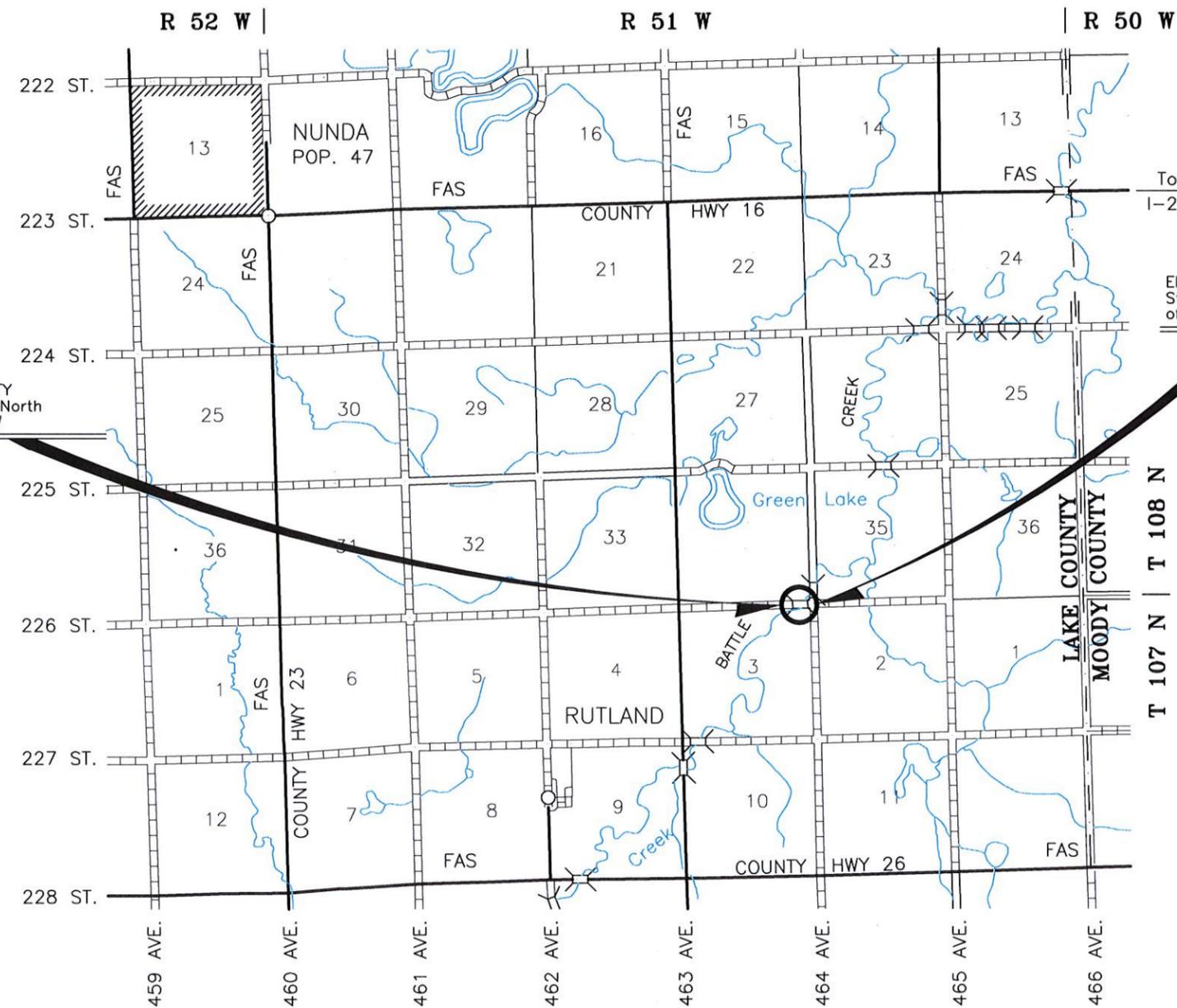
ADT (2009) 15
ADT (2029) 20
DHV 3
d 50%
T(DHV) 3.9%
T*ADT 8.6%
V 35 MPH

SCALES

LAYOUT 1 INCH = 6000 FEET
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

LEGEND

STATE AND NATIONAL LINE ————
COUNTY LINE ————
SECTION LINE ————
PROPERTY LINE ————
SURVEY LINE ————
RIGHT-OF-WAY LINE ————
WORK LIMIT ————



END PROJECT BRO 8040(15) LAKE COUNTY
Sta. 6+00 = A Point 240.2' West & 1.1' North
of the SE Corner of Sec. 34-T108N-R51W



Prepared By
AASON ENGINEERING COMPANY, INC.

1022 SIXTH STREET S.E.
WATERTOWN, SD
Telephone 605-882-2371

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Estimate of Quantities

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GRADING

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E1700	Remove Silt Fence	70	Ft
120E0010	Unclassified Excavation	570	CuYd
120E0600	Contractor Furnished Borrow	570	CuYd
230E0010	Placing Topsoil	110	CuYd
634E0110	Traffic Control Signs	110	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0265	Type 3 Barricade, 6' Double Sided	8	Each
734E0010	Erosion Control	Lump Sum	LS
734E0604	High Flow Silt Fence	280	Ft
734E0610	Mucking Silt Fence	20	CuYd
734E0620	Repair Silt Fence	70	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	81	CuYd
421E0200	Box Culvert Undercut	241	CuYd
460E0120	Class A45 Concrete, Box Culvert	164.5	CuYd
480E0100	Reinforcing Steel	26,243	Lb
700E0310	Class C Riprap	160.0	Ton
831E0110	Type B Drainage Fabric	180	SqYd

Notes

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

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

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

Table of Topeka Shiner Streams

Station	Stream Name	Ordinary High Water Elevation
4+76	Battle Creek	1617.2

Action Taken/Required:

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

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

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

COMMITMENT C: WATER SOURCE

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

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

Action Taken/Required:

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

COMMITMENT D1: SURFACE WATER QUALITY

This segment of Battle Creek is classified as warm water, marginal fishery with a total suspended solids standard of 150 milligrams/liter.

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

This segment of Battle Creek is classified as warm water, marginal fishery with a total suspended solids standard of 150 milligrams/liter.

Action Taken/Required:

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

COMMITMENT E: STORM WATER

This project consists of replacing a box culvert in Battle Creek.

Action Taken/Required:

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

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

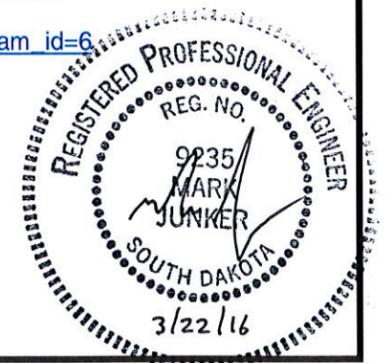
A major component of the storm water construction permits is development and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is a joint effort and responsibility of the SDDOT and the Contractor. Erosion control measures and best management practices will be implemented in accordance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

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

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

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

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



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COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public 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 Public ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

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

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

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

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

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

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

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

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

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

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

COMMITMENT N: SECTION 404 PERMIT

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

Action Taken/Required:

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

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

COUNTY REQUIREMENTS

The County will perform the following items without Federal Participation:

1. Arrange for right of way and temporary & permanent easements.
2. Arrange for utility adjustments.
3. Furnish & install gravel surfacing.
4. Arrange for all temporary and permanent fencing requirements.
5. Furnish & install permanent signing in accordance with the MUTCD.
6. Remove silt fence when seeded areas have been revegetated.

EXISTING UTILITIES

Utilities within the limits of the proposed construction are to be adjusted by the owner unless otherwise indicated on these plans.

The Contractor shall contact SD One-Call at 1-800-781-7474 for utility lines and cable locations a minimum of 48 hours prior to beginning of any earthwork or underground excavations. The Contractor shall be specific in defining the work areas so that cable locations cover the area of anticipated work limits.

Utilities from the following utility owners are known to exist at this site:

1. Interstate Telecommunications
1022 Main Avenue S
Brookings, SD 57006
Phone No.: (605) 693-3211

GENERAL MAINTENANCE OF TRAFFIC

This project will be closed to thru-traffic and the roadway barricaded. Local access to entrances shall be maintained.

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.

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.



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INCIDENTAL WORK, STRUCTURE

In place at station 5+00 is a triple 10'x7'x40' reinforced concrete box culvert.

The Contractor shall remove and dispose of the entire existing box culvert.

Before preparing a bid, it is the responsibility of the Contractor to make a visual inspection of the structure to verify the extent of the work involved.

All cost for labor, equipment, and materials in performing the foregoing work shall be incidental to the contract lump sum price for "Incidental Work, Structure".

GRADING OPERATIONS

Shrinkage factor: Embankment plus 35%.

The compaction of roadway embankments and box culvert backfill material shall be in accordance with Section 120 of the Standard Specifications, Ordinary Compaction Method.

Water for compaction of earth embankments is estimated at the rate of 6 gallons of water per cubic yard of excavation plus borrow. The estimated quantity of water is **6.2 MGal**. All costs for furnishing and placing water for compaction shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation" and/or "Contractor Furnished Borrow".

UNCLASSIFIED EXCAVATION

The plans quantity for "Unclassified Excavation" as shown in the Estimate of Quantities will be the basis for payment for this item.

TABLE OF EXCAVATION QUANTITIES

STA.	TO	STA.	EXC. (CuYd)	BORROW (CuYd)	TOTAL EXC. (CuYd)
3+50		6+50	460	570	1030

Total Excavation	1030
- Contractor Furnished Borrow	- 570
+ Placing Topsoil	+ 110
Total Unclassified Excavation	570 CuYd

TOPSOIL

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

The areas to receive topsoil comprise all newly graded areas, within the project limits, exclusive of top of roadway and riprap area. The plan shown quantities for placing topsoil will be the basis of payment without further field measurements. If changes are necessary on construction, the altered quantities will be measured for payment.

The amount of topsoil shown in the Estimate of Quantities is based upon a 4 inch depth within the Right of Way limits and a 6 inch depth on all Temporary Easement areas.

CONTRACTOR FURNISHED BORROW

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

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

HIGH FLOW SILT FENCE

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

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

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

TABLE OF HIGH FLOW SILT FENCE

Station	to	Station	L/R	Quantity (Ft)
3+85		4+35	R	70
4+60		4+75	L	70
4+90		5+40	R	70
5+05		5+55	L	70
Total:				280

REMOVE SILT FENCE

This bid item is included for the removal of silt fence by the Contractor.

Silt fence shall not be removed until vegetation is established. Some or all of the silt fence may be left on the project until vegetation is established.

Quantities for the silt fence left in place will be deducted from the quantity for the bid item "Remove Silt Fence".

It is the responsibility of the County for removal of silt fence after vegetation has been established.

EROSION CONTROL

The bid item "Erosion Control" includes all materials, equipment, and labor necessary to seed, fertilize, and mulch the disturbed area resulting from work required by this contract, except for the top of roadway, areas protected by Riprap and those areas under water.

The seed mixture shall consist of 10 pure live seed pounds of Intermediate Wheatgrass (Oahe) and 8 pure live seed pounds of Green Needle Grass, per acre.

A commercial fertilizer with a minimum guaranteed analysis of 18-46-0, 11-52-0, or an approved alternate fertilizer, shall be applied to all areas designated for permanent seeding. The application rate of fertilizer shall be 100 pounds 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.

The area to be seeded, fertilized and mulched is estimated at **0.5 acre**. Limits of erosion control work shall be determined on construction by the Engineer.

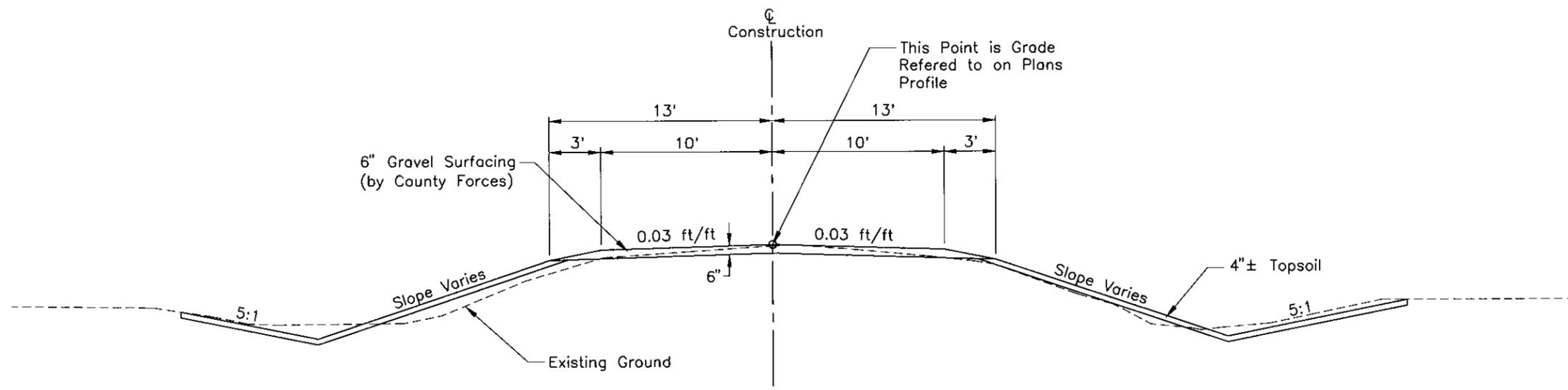
TEMPORARY DIVERSION OF THE STREAM OR DRAINAGE AREA

Any temporary diversion of the stream or drainage area during the construction of this project shall be handled as directed by the standard plate for a Temporary Diversion Channel as shown in this set of plans. The temporary diversion shall be constructed in a manner to provide a positive flow through the channel. The inlet and outlet shall match the flow lines of the existing stream. All costs for labor, equipment, materials, and incidentals associated with this work shall be paid for as described in Standard Plate 734.30.



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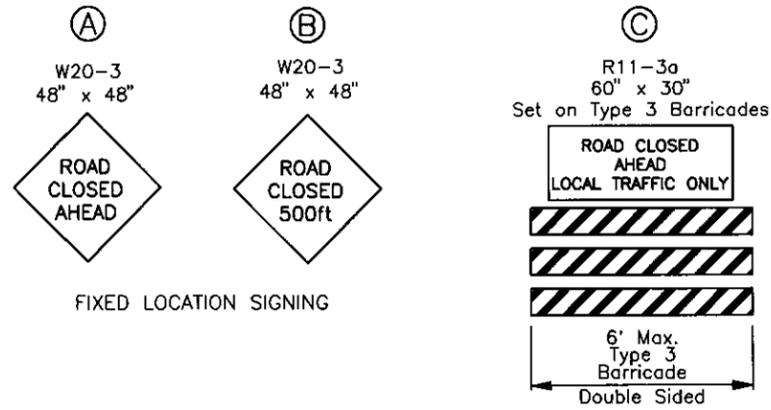
TYPICAL GRADING AND SURFACING SECTION



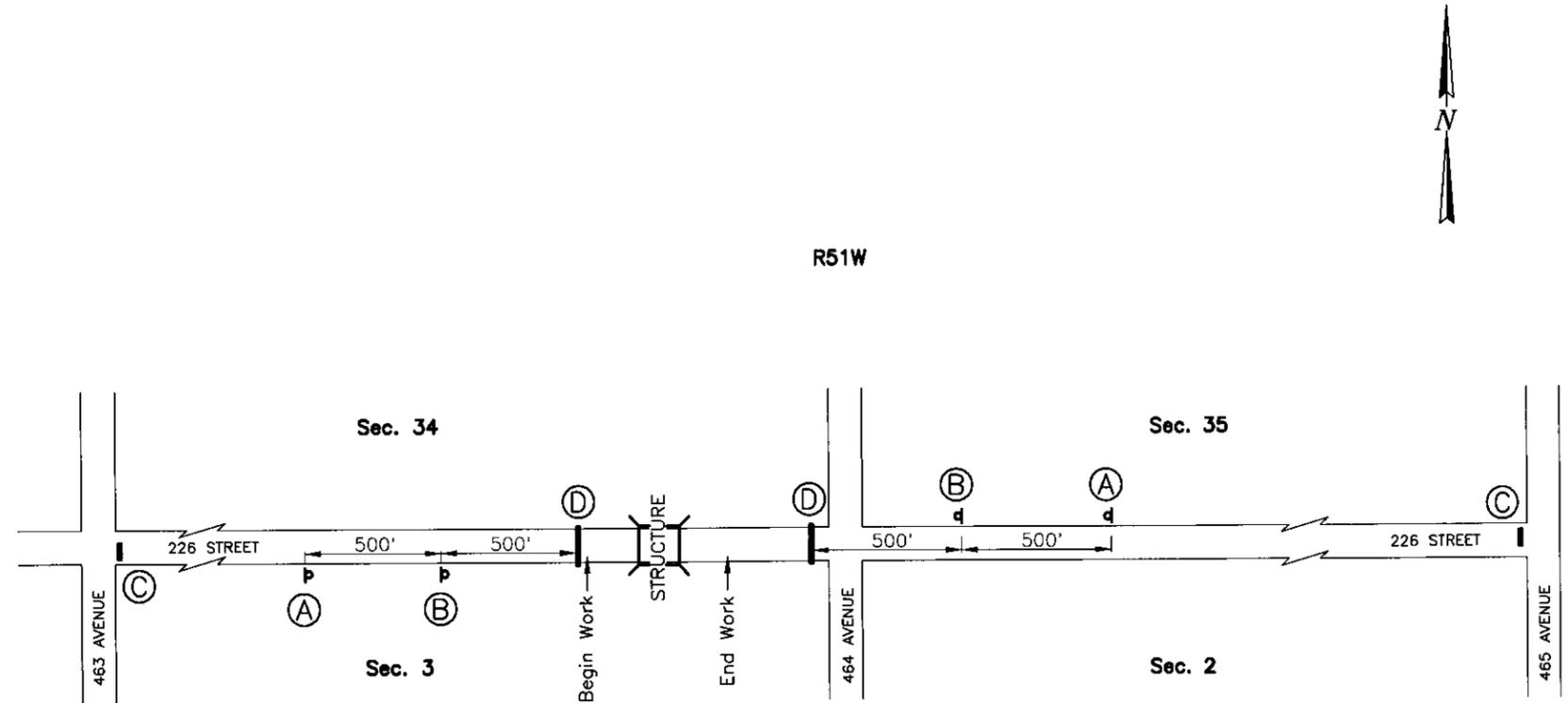
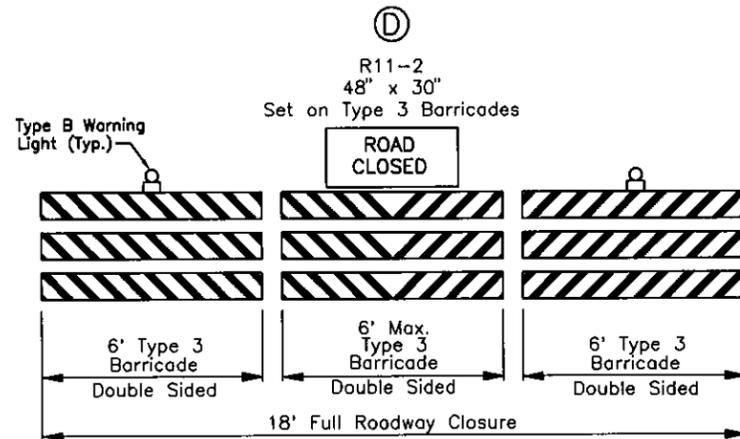
TRAFFIC CONTROL

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FIXED LOCATION SIGNING



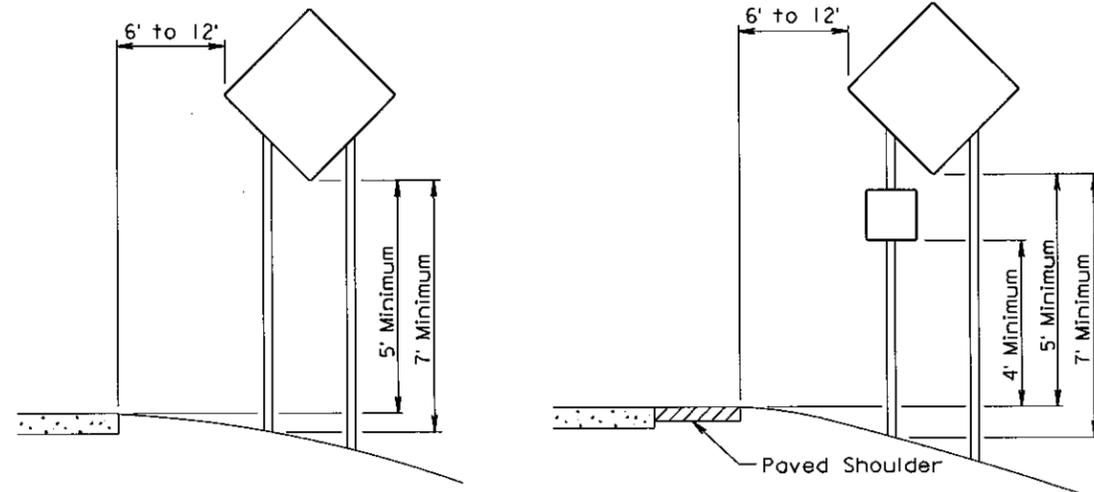
T108N
T107N

NOTE: The exact location and spacing of signs shown to be determined in the field by the Engineer.

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R11-2	ROAD CLOSED	2	48" x 30"	10	20
R11-3a	ROAD CLOSED ___ MILES AHEAD LOCAL TRAFFIC ONLY	2	60" x 30"	13	26
W20-3	ROAD CLOSED AHEAD	4	48" x 48"	16	64
Total:					110

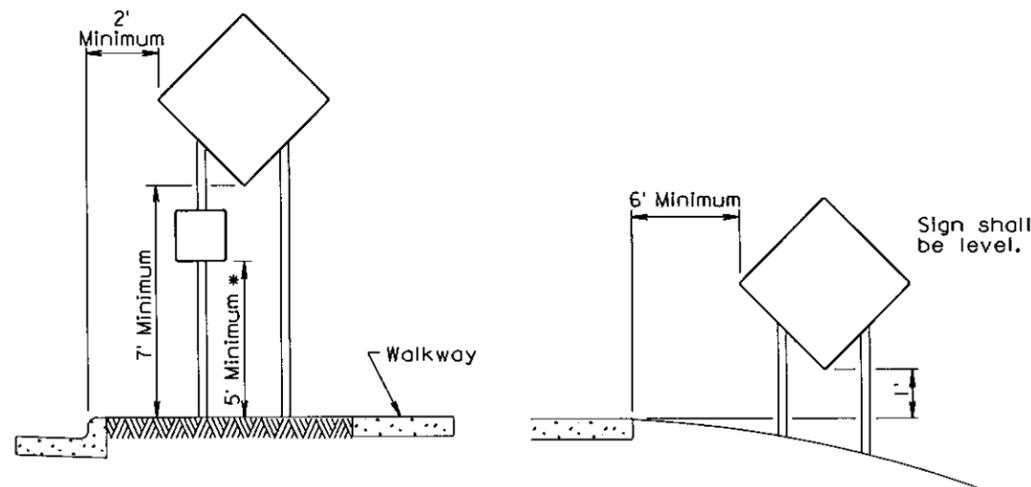
ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 6' Double Sided	8 Each





RURAL DISTRICT

RURAL DISTRICT WITH SUPPLEMENTAL PLATE



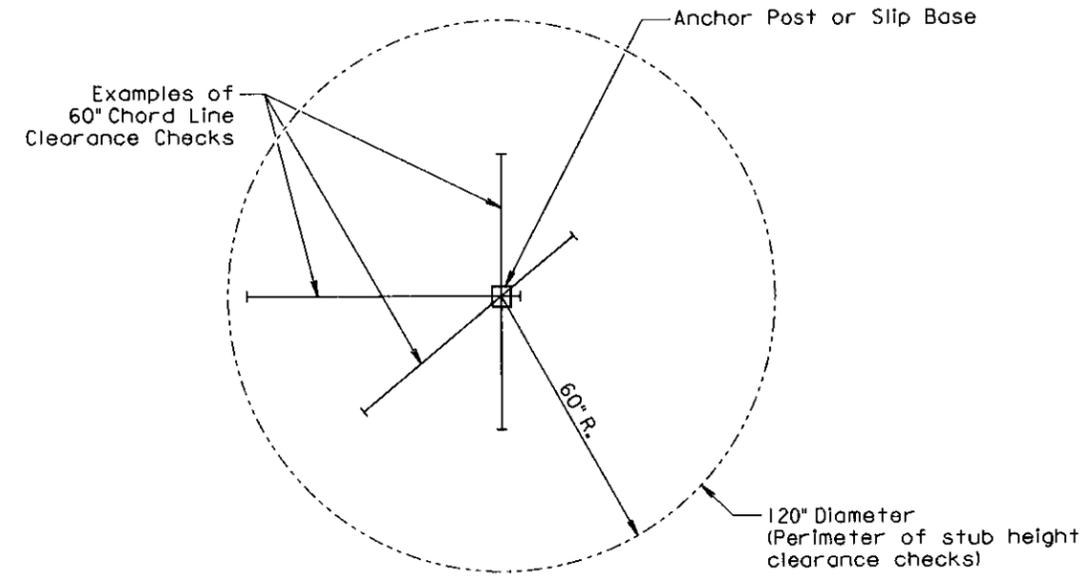
URBAN DISTRICT

RURAL DISTRICT 3 DAY MAXIMUM
(Not applicable to regulatory signs)

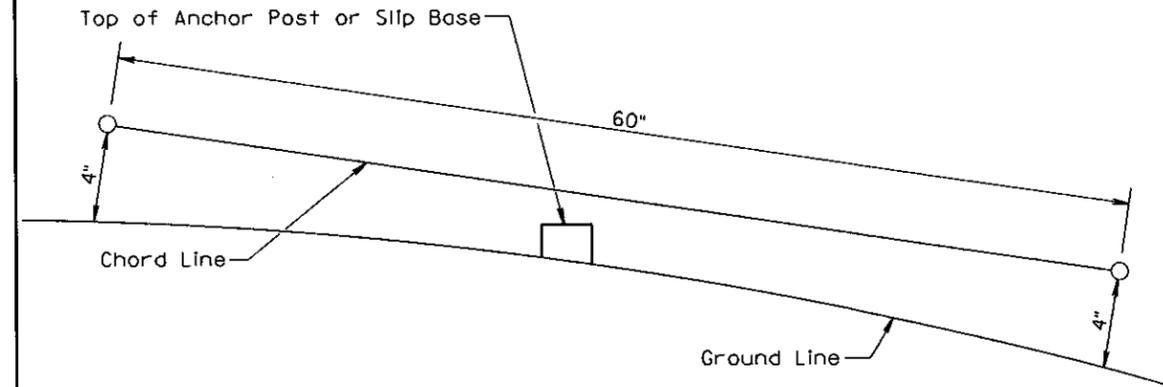
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

September 22, 2014

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



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 4th Qtr. 2015	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER
			634.99
			Sheet 1 of 1

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STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

- ❖ **SITE DESCRIPTION (4.2 1)**
 - **Project Limits: See Title Sheet (4.2 1.b)**
 - **Project Description: See Title Sheet (4.2 1.a)**
 - **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
 - **Major Soil Disturbing Activities (check all that apply)**
 - Clearing and grubbing
 - Excavation/borrow
 - Grading and shaping
 - Filling
 - Cutting and filling
 - Other (describe):
 - **Total Project Area 1.1 acres (4.2 1.b.)**
 - **Total Area To Be Disturbed 0.5 acres (4.2 1.b.)**
 - **Existing Vegetative Cover (%) 70%**
 - **Soil Properties: Classification A-2, A-4, A-6, and A-7 (4.2 1. d.)**
 - **Name of Receiving Water Body/Bodies Battle Creek (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.)

 - **Maintain existing vegetation buffer strips throughout construction**
 - **Install temporary erosion control as needed**
 - **Remove existing structure**
 - **Install new structure**
 - **Grade roadway and ditches**
 - **Install seeding and mulch**
- ❖ **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:

❖ **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

❖ **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: _____
- _____
- City: _____ State: _____ Zip: _____
- Office Phone: _____ Field: _____
- Cell Phone: _____ Fax: _____

➤ **Erosion Control Supervisor**

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

➤ **SDDOT Project Engineer**

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

➤ **SD DENR Contact Spill Reporting**

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

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

- (605) 773-3153

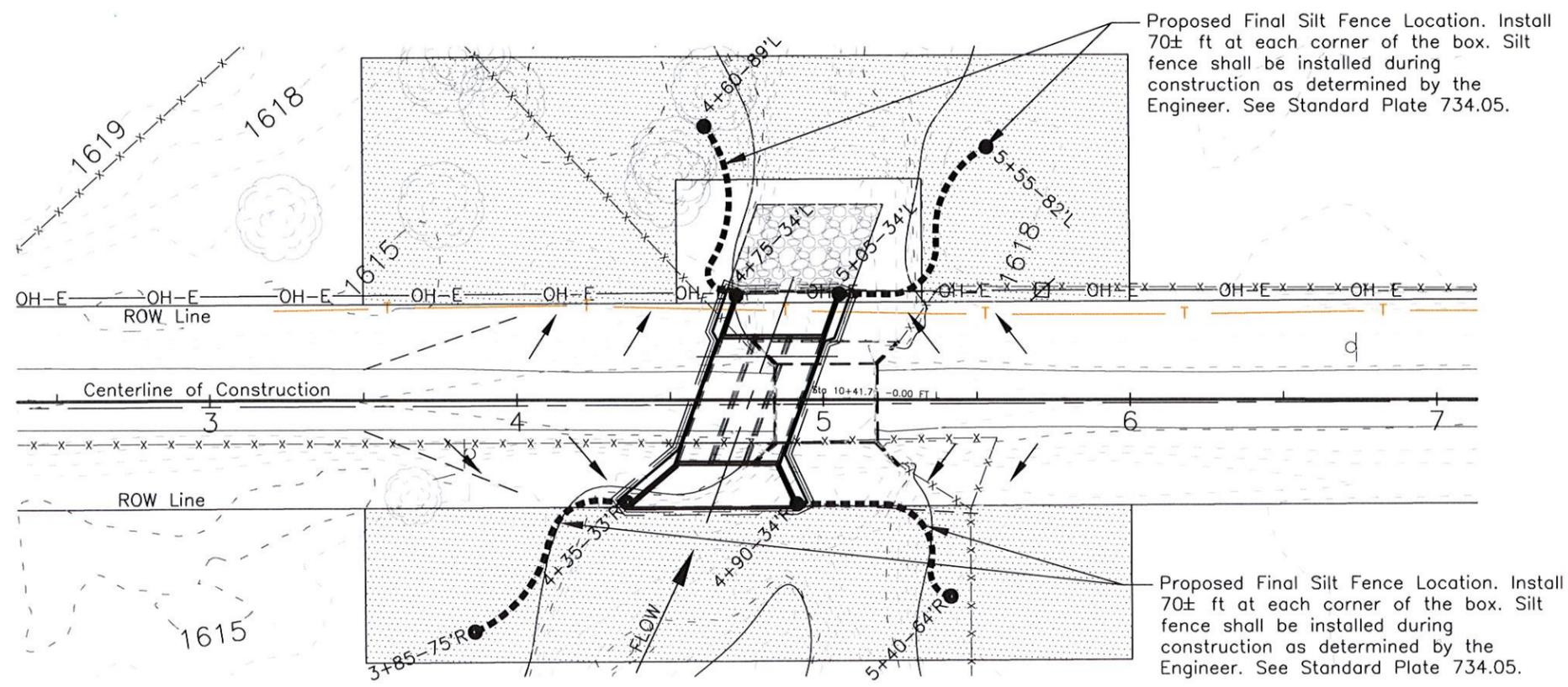
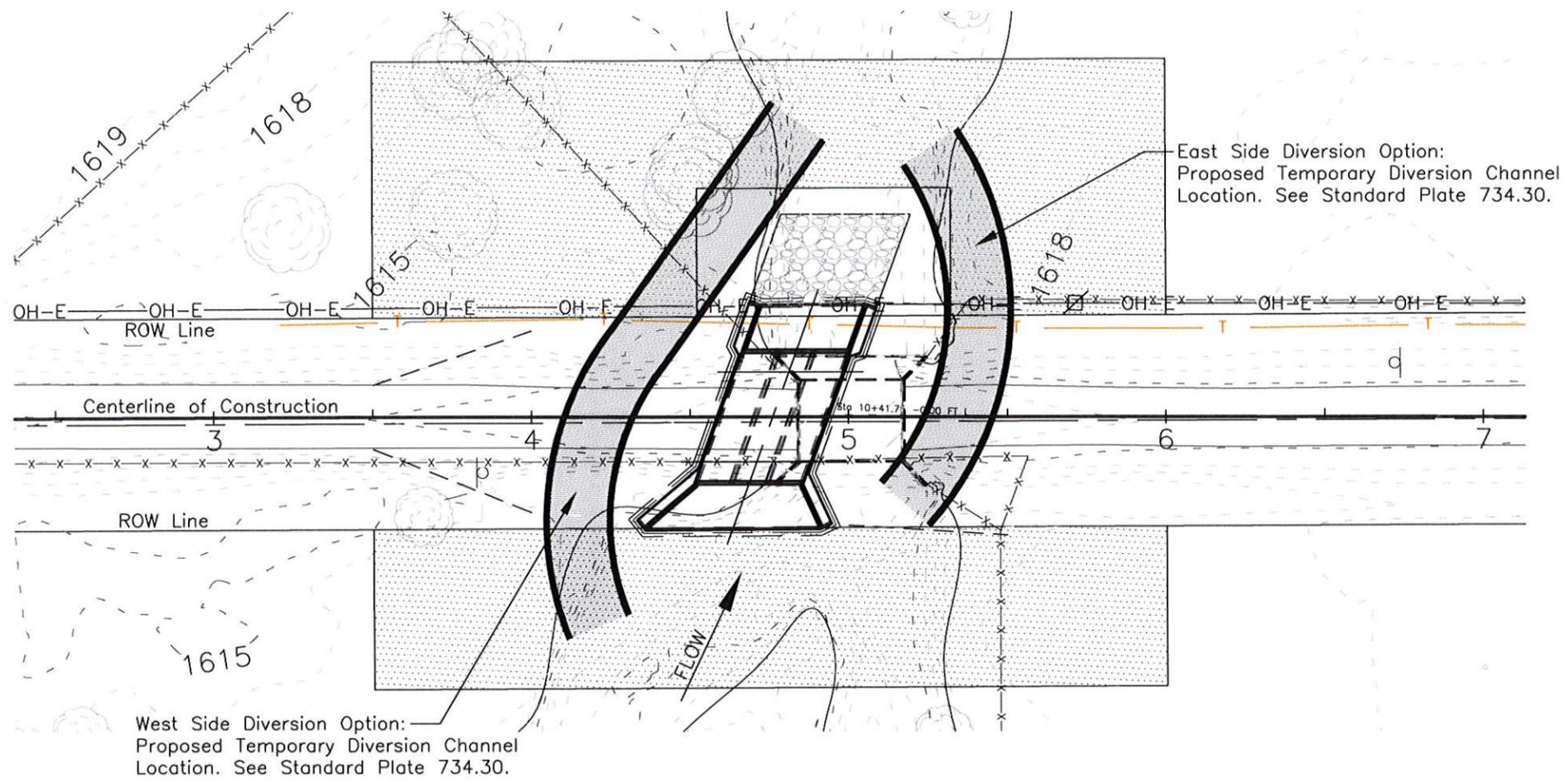
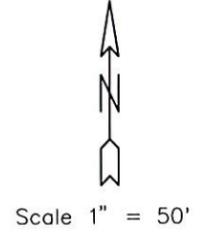
➤ **National Response Center Hotline**

- (800) 424-8802.

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	11	27

EROSION AND SEDIMENT CONTROL



FOR BIDDING PURPOSES ONLY

STATE OF DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	12	27

SE 1/4 34-108-51
 Dale E. Hammer
 514 S 4th Street
 Arlington, SD 57212
 Phone#: (605) 983-5233

5+00.0
 Remove Triple 10'x7'x40'
 RC Box Culvert CIP
 (Incidental Work, Structure)

4+76 (D.A. = 98.0 Sq. Mi.)
 (20° Skew L.H.F.)
 Install Triple-10'x7'x74'-9 1/2"
 RC Box Culvert (CIP)
 (See Sheets 15 to 26)

P.I. Sta. 8+40.23
 N:115979.22
 E:2774981.85
 Δ 00°45'30"R

C.P. #2
 Sta. 10+00.45
 N:115984.00
 E:2775142.00

BEGIN PROJECT BRO 8040(15) Lake County
 Sta. 3+50 = A Point 490.2' West & 2.1'
 North of the SE Corner of Sec. 34-T108N-R51W

END PROJECT BRO 8040(15) Lake County
 Sta. 6+00 = A Point 240.2' West & 1.1' North
 of the SE Corner of Sec. 34-T108N-R51W

**N 1/2 NE 1/4 3-107-51
 less N991' E660'**
 Roger L. & Barbara L. Orton
 22637 465th Ave.
 Rutland, SD 57057
 Phone#: (605) 483-3514

C.P. #1
 Sta. 0+00.00
 N:115941.37
 E:2774142.48

N991' E660' of
N 1/2 NE 1/4 3-107-51
 Allen L. & Peggy L. Herrick
 22617 464th Ave
 Rutland, SD 57057
 Phone#: (605) 586-4133

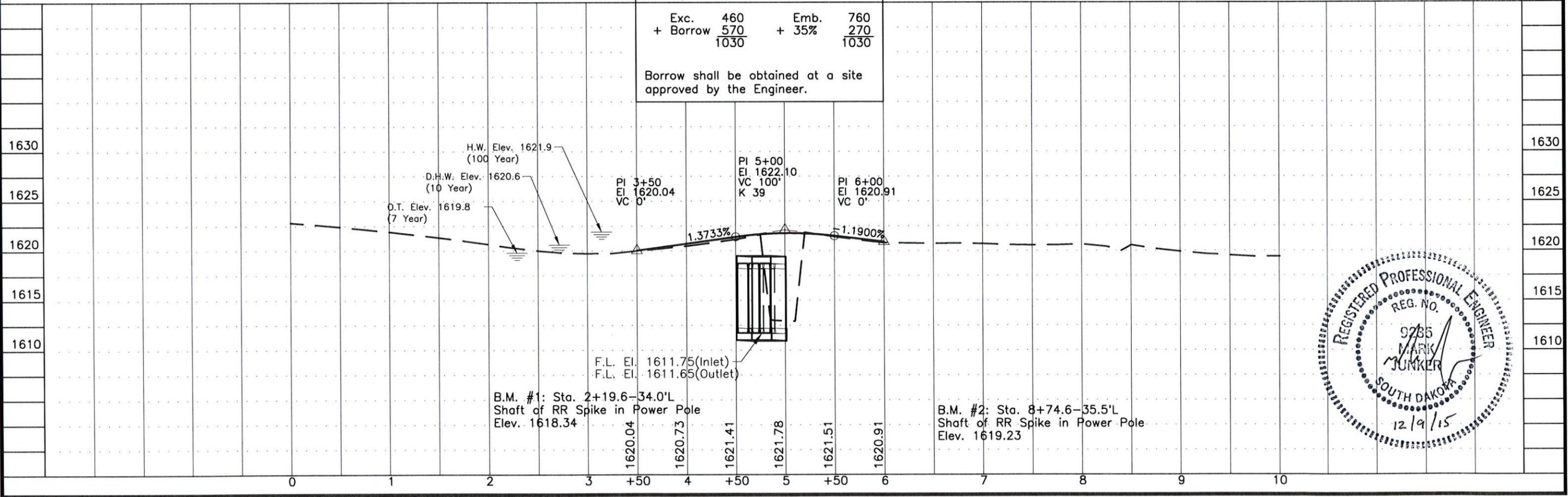
3+50 to 6+00 R
 Temporary Easement for
 Diversion Channel & Silt Fence
 containing 0.29± Acre

3+50 to 6+00 L
 Temporary Easement for
 Diversion Channel & Silt Fence
 containing 0.39± Acre

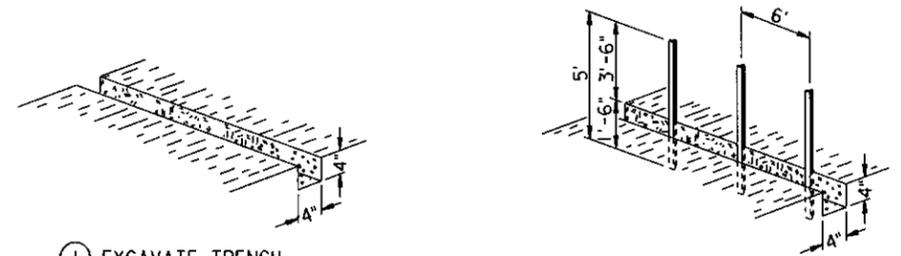
4+52 to 5+32 L
 Permanent ROW to be
 acquired by the County
 containing 0.07± Acre

SCALES:
 1" = 100' HOR
 1" = 10' VER

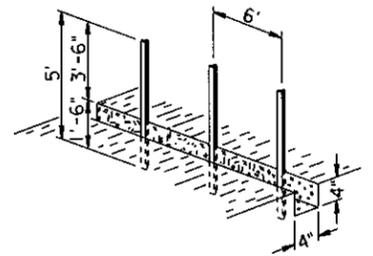
NOTE: Control Points and
 Benchmarks were checked and
 adjusted if needed on 3/15/13.



MANUAL HIGH FLOW SILT FENCE INSTALLATION



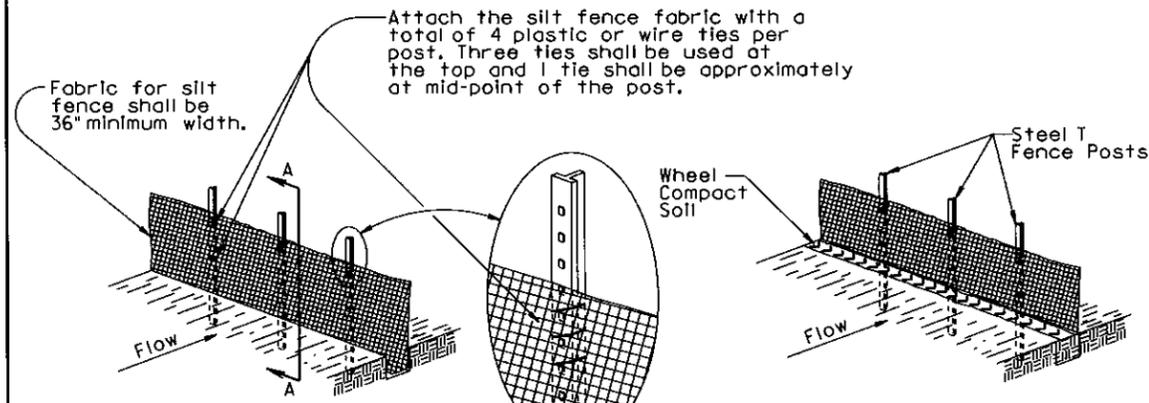
① EXCAVATE TRENCH



② DRIVE STEEL T FENCE POSTS

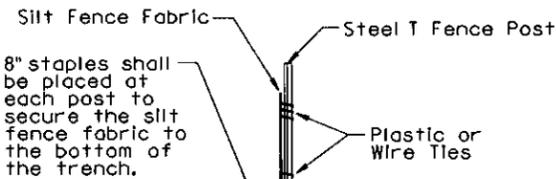
Attach the silt fence fabric with a total of 4 plastic or wire ties per post. Three ties shall be used at the top and 1 tie shall be approximately at mid-point of the post.

Fabric for silt fence shall be 36" minimum width.



③ ATTACH SILT FENCE FABRIC

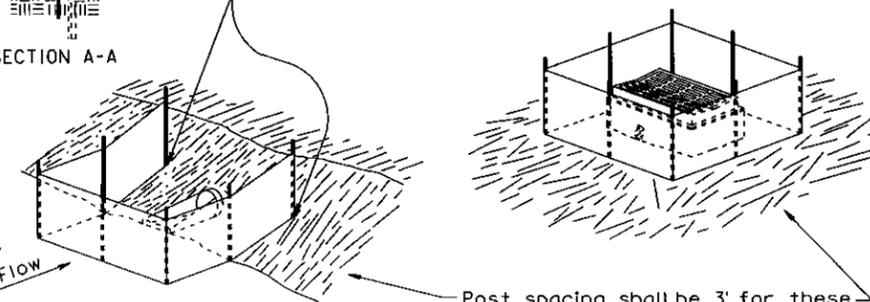
④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



8" staples shall be placed at each post to secure the silt fence fabric to the bottom of the trench.

SECTION A-A

The elevation at these locations shall be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.



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

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

December 23, 2003

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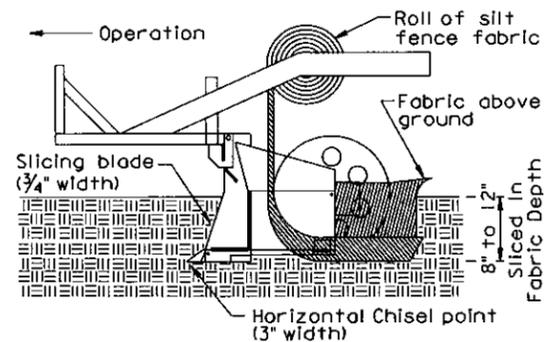
HIGH FLOW SILT FENCE

PLATE NUMBER
734.05

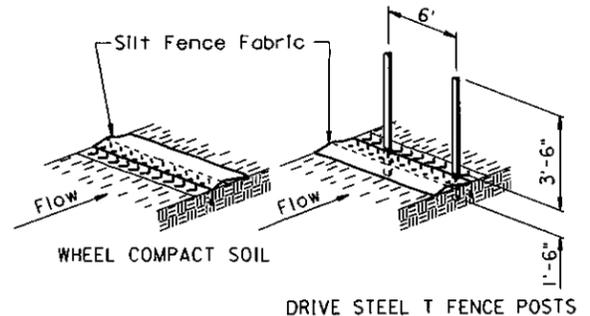
Sheet 1 of 2

Published Date: 4th Qtr. 2015

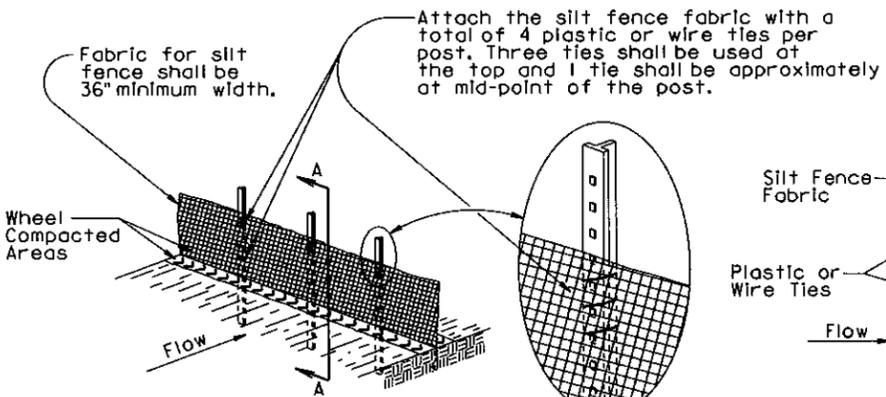
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



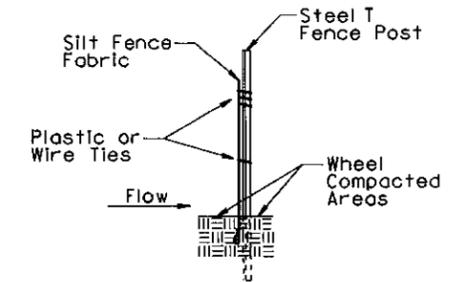
② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



③ ATTACH SILT FENCE FABRIC

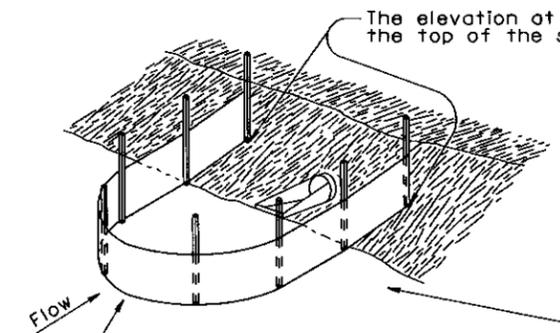
Attach the silt fence fabric with a total of 4 plastic or wire ties per post. Three ties shall be used at the top and 1 tie shall be approximately at mid-point of the post.

Fabric for silt fence shall be 36" minimum width.



SECTION A-A

The elevation at these locations shall be, at a minimum, higher than the top of the silt fence fabric at its lowest elevation.



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

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

GENERAL NOTE:

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

December 23, 2003

S
D
D
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T

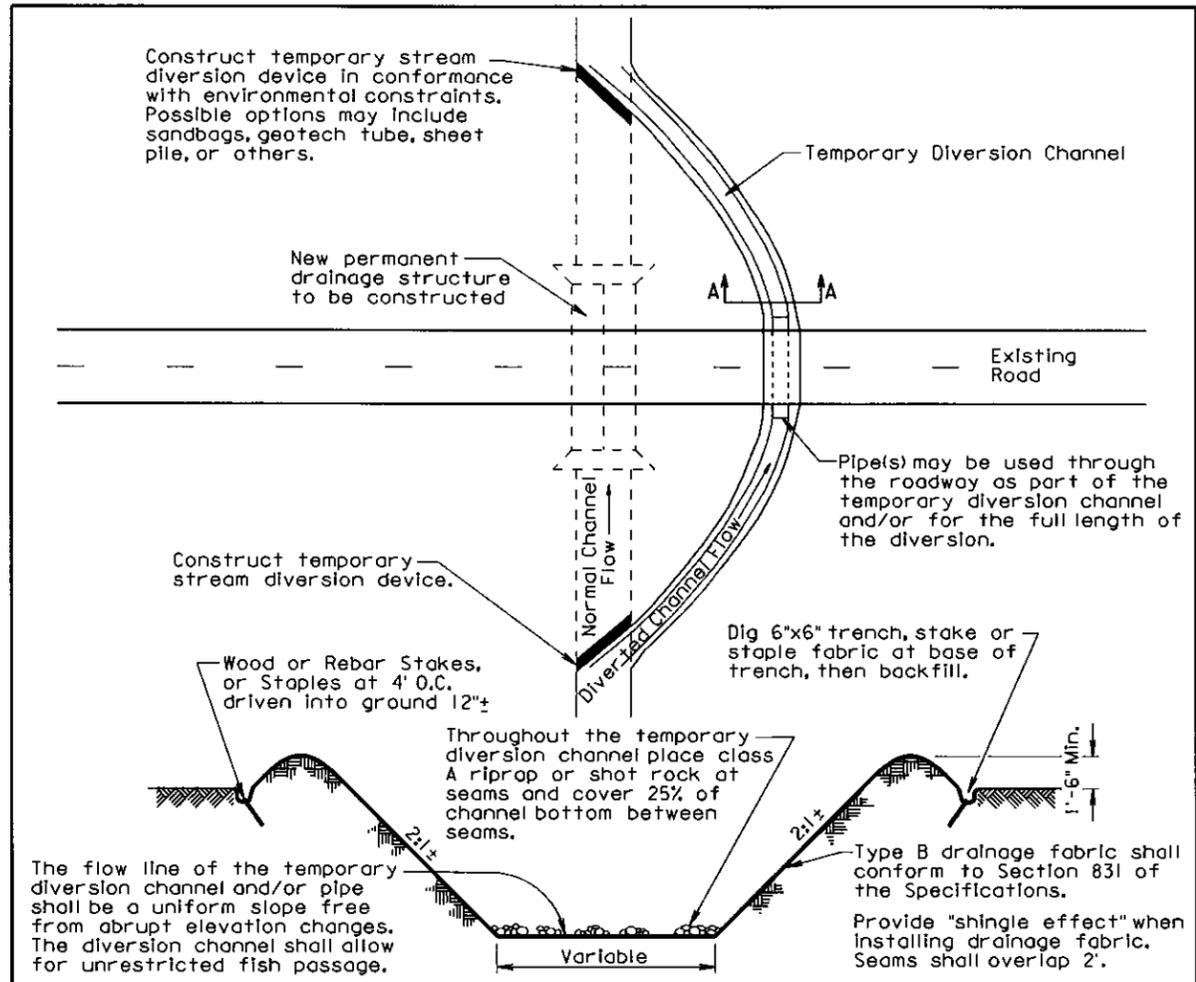
HIGH FLOW SILT FENCE

PLATE NUMBER
734.05

Sheet 2 of 2

Published Date: 4th Qtr. 2015

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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.

June 26, 2015

Published Date: 4th Qtr. 2015	S D D O T	TEMPORARY DIVERSION CHANNEL	PLATE NUMBER 734.30
			Sheet 1 of 1

B.M. #1: Sta. 2+19.6--34.0'L
Shaft of RR Spike in Power Pole
Elev. 1618.34

Vert. Datum = NAVD88
Horiz. Datum = NAD83

B.M. #2: Sta. 8+74.6--35.5'L
Shaft of RR Spike in Power Pole
Elev. 1619.23

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
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REVISED 03/22/16 MRJ

Sheet No. 1	General Drawing
Sheet No. 2	Notes & Undercut Details
Sheet Nos. 3 - 5	Inlet Details
Sheet Nos. 6 & 7	Outlet Details
Sheet Nos. 8 & 9	Inlet & Outlet Apron Details
Sheet Nos. 10 & 11	Barrel Section Details
Sheet No. 12	Standard Plates

Hydraulic Data

Q _d	2106 cfs
A _d	209 sq. ft.
V _d	8.9 fps
Q _F	2106 cfs
Q ₁₀₀	5566 cfs
Q _{OT, FR}	1669 cfs
V _{MAX}	9.4 fps

W.P.	Station	Offset	LorR
A	4+35.76	35.33'	R
B	4+90.92	35.05'	R
C	4+51.15	21.00'	R
D	4+85.56	21.00'	R
E	4+66.51	21.20'	L
F	5+00.85	21.00'	L
G	4+72.66	34.92'	L
H	5+04.96	35.47'	L

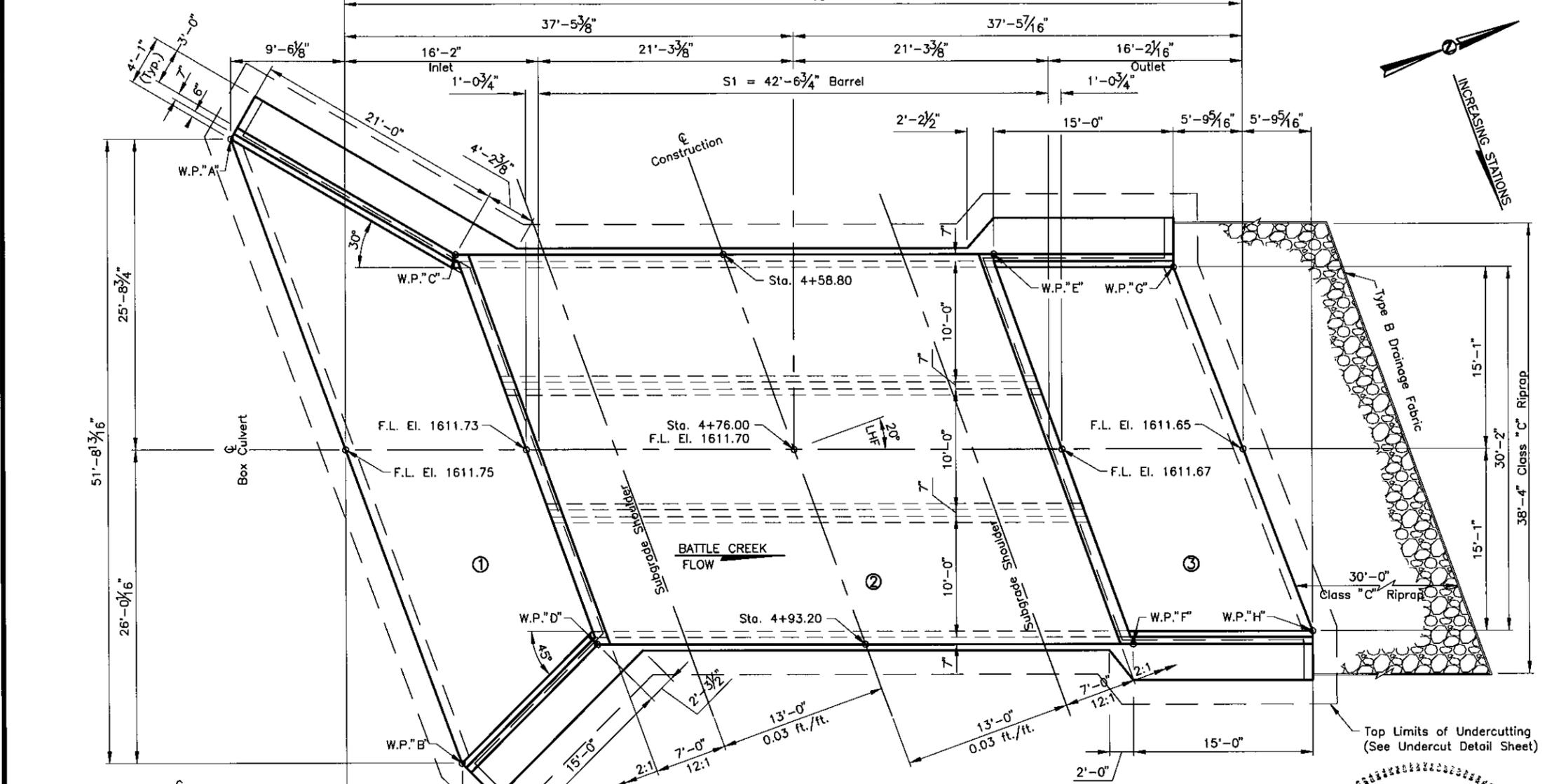
Q_d = design discharge for the proposed culvert based on 10 year frequency. Elev. 1620.6
 Q_{OTR} = overtopping discharge and frequency 7 yr. recurrence interval. El. 1619.8. Location: 200 Ft. West of the Box Culvert.
 Q_F = designated peak discharge for the basin approaching proposed project based on 10 year frequency.
 Q₁₀₀ = computed discharge for the basin approaching proposed project based on 100 year frequency, Elev. 1621.9.
 V_{max} = maximum computed outlet velocity for the proposed culvert, based on a 25 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.

ITEM	QUANTITY	UNIT
Class A45 Concrete, Box Culvert	164.5	Cu. Yd.
Reinforcing Steel	26,243	Lb.
Structure Excavation, Box Culvert	81	Cu. Yd.
Box Culvert Undercut	241	Cu. Yd.
Class C Riprap	160.0	Ton
Type B Drainage Fabric	180	Sq. Yd.



GENERAL DRAWING
FOR
3 - 10'x7' Box Culvert (CIP)
20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
Battle Creek BRO 8040(15)
Sta. 4+76 PCN 002B
Str. No. 40-219-060 HL-93
S.D. DEPT. OF TRANSPORTATION
Lake County
Plans by:
Aason Engineering Company, Inc.
Watertown, South Dakota

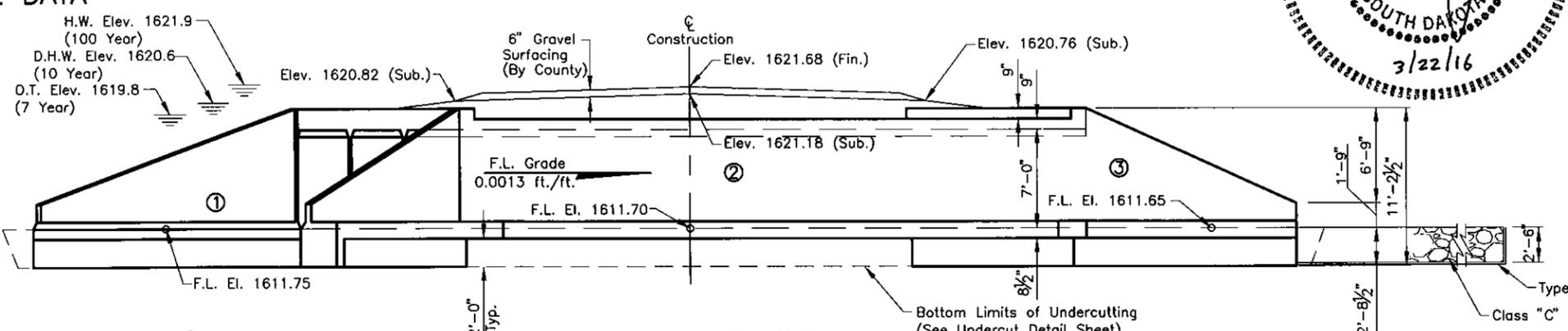
Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011	1
Approved: MRJ	Date: 12/2011	-120	of 12
Designer: MRJ	Date: 12/2011		



PLAN

PI 3+50	El 1620.04	VC 0
PI 4+76	El 1620.91	VC 0
PI 5+00	El 1622.10	VC 100'
PI 6+00	El 1620.91	VC 0

Grades: +1.3733% and -1.1900%



ELEVATION

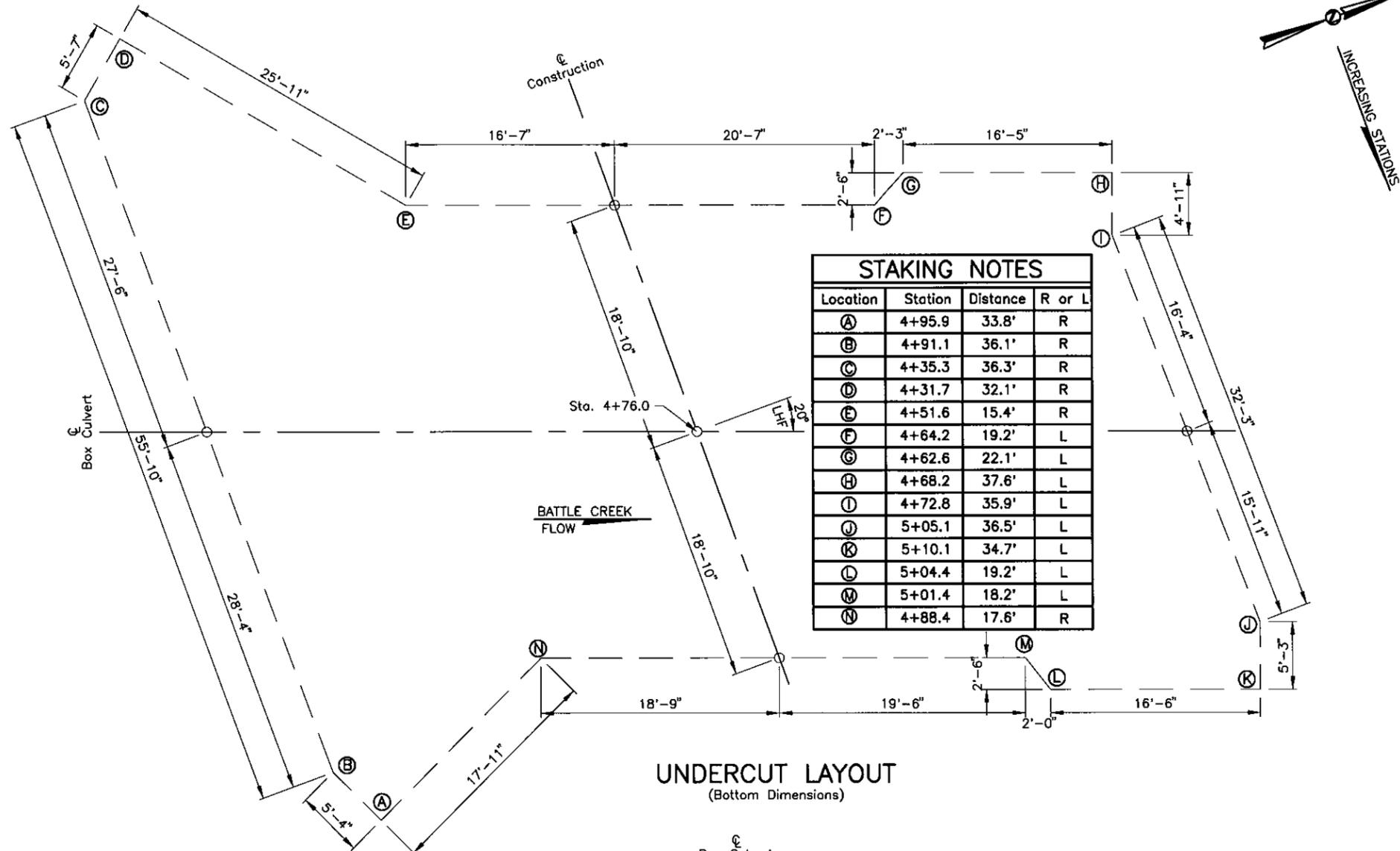
NOTE: The Box Culvert Flowline has been submerged 6" to aid migration of the Topeka Shiner during spawning period.

-X028-

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
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REVISED 03/22/16 MRJ



STAKING NOTES			
Location	Station	Distance	R or L
A	4+95.9	33.8'	R
B	4+91.1	36.1'	R
C	4+35.3	36.3'	R
D	4+31.7	32.1'	R
E	4+51.6	15.4'	R
F	4+64.2	19.2'	L
G	4+62.6	22.1'	L
H	4+68.2	37.6'	L
I	4+72.8	35.9'	L
J	5+05.1	36.5'	L
K	5+10.1	34.7'	L
L	5+04.4	19.2'	L
M	5+01.4	18.2'	L
N	4+88.4	17.6'	R

SPECIFICATIONS

Design Specs: AASHTO LRFD Bridge Design Specifications, Sixth Edition.

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

GENERAL NOTES

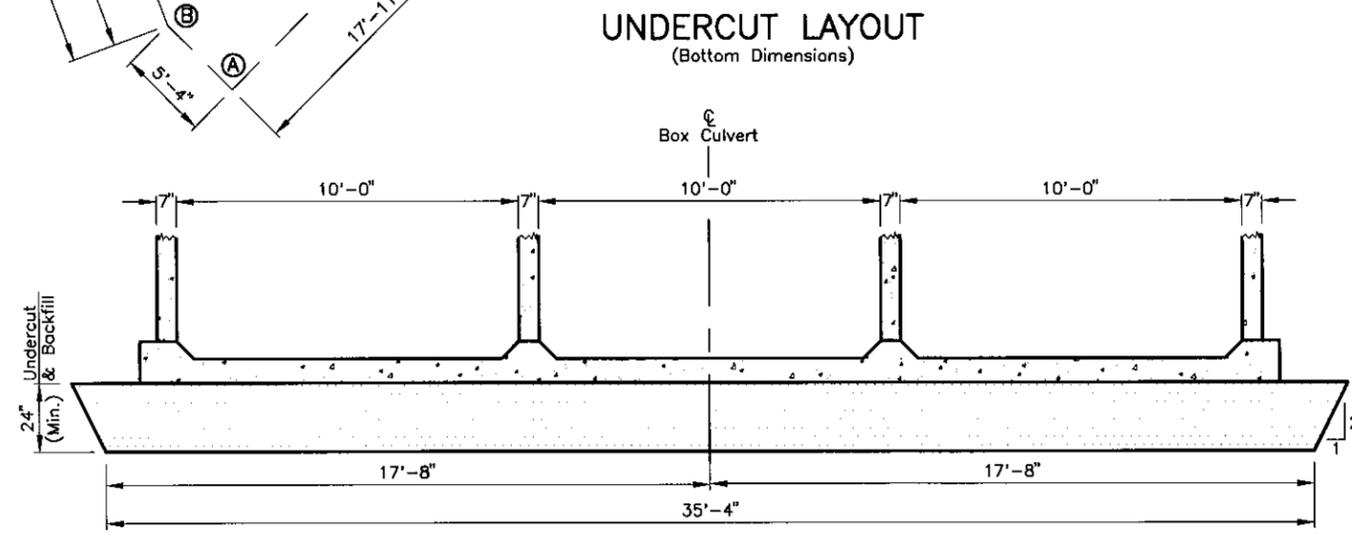
- Design Live Load: HL-93. No Construction loading in excess of legal loads was considered.
- The design of the barrel section is based on a minimum fill of 1 foot and includes all subsequent fill heights up to and including a minimum fill over the box of 5 feet (S1).
- All reinforcing steel shall conform to ASTM A615 Grade 60.
- All Exposed edges shall be chamfered 3/4".
- Use 1" Clear cover on all reinforcing steel except as shown.
- The Contractor shall imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.
- Care shall be taken to establish Working Points (W.P.) as shown on the wings.
- All concrete shall be class A45.
- Circled number in PLAN and ELEVATION Views on General Layout Sheet are Section I.D. Numbers (see SDDOT Materials Manual).
- Cost of Preformed Joint Material used in apron construction shall be incidental to the other contract items.
- The Contractor shall install fence anchors in each wingwall. See Standard Plate 620.16.

UNDERCUT BACKFILL NOTES

- Backfill material and Bedding material shall conform to Section 421 of the South Dakota Standard Specifications.
- Backfill shall be compacted in accordance with Section 421 of the South Dakota Standard Specifications.

BOX CULVERT BACKFILL NOTES

- The Contractor shall backfill the box culvert in accordance with Section 420 of the South Dakota Standard Specifications.



NOTES AND UNDERCUT DETAILS FOR

3 - 10'x7' Box Culvert (CIP)
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Battle Creek BRO 8040(15)
 Sta. 4+76 PCN 00ZB
 Str. No. 40-219-060 HL-93

S.D. DEPT. OF TRANSPORTATION Lake County			
Plans by: Aason Engineering Company, Inc. Watertown, South Dakota			
Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011	2
Approved: MRJ	Date: 12/2011	-120	of 12
Designer: MRJ	Date: 12/2011		

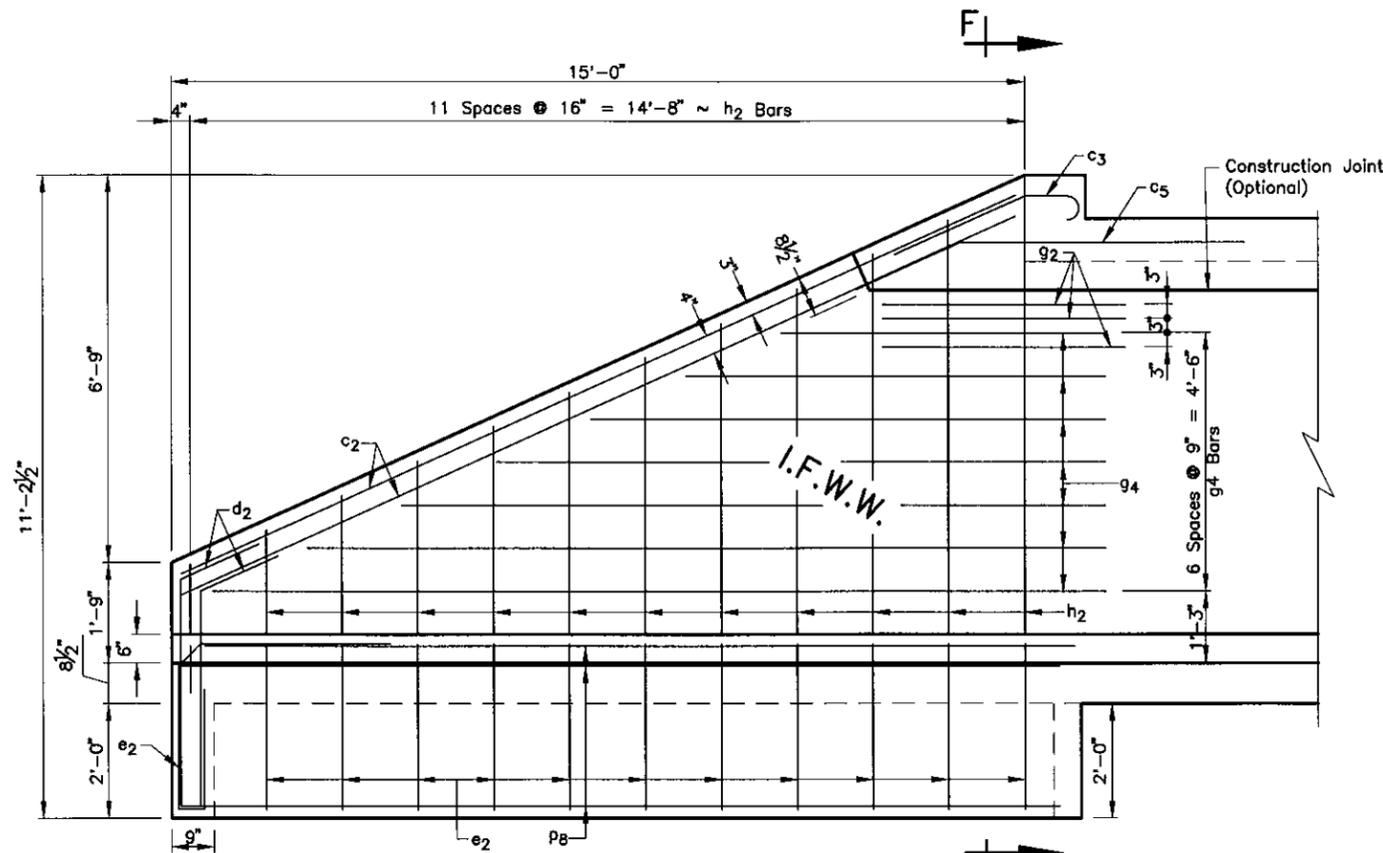


ESTIMATED QUANTITIES		
ITEM	QUANTITY	UNIT
Box Culvert Undercut	241	Cu. Yd.

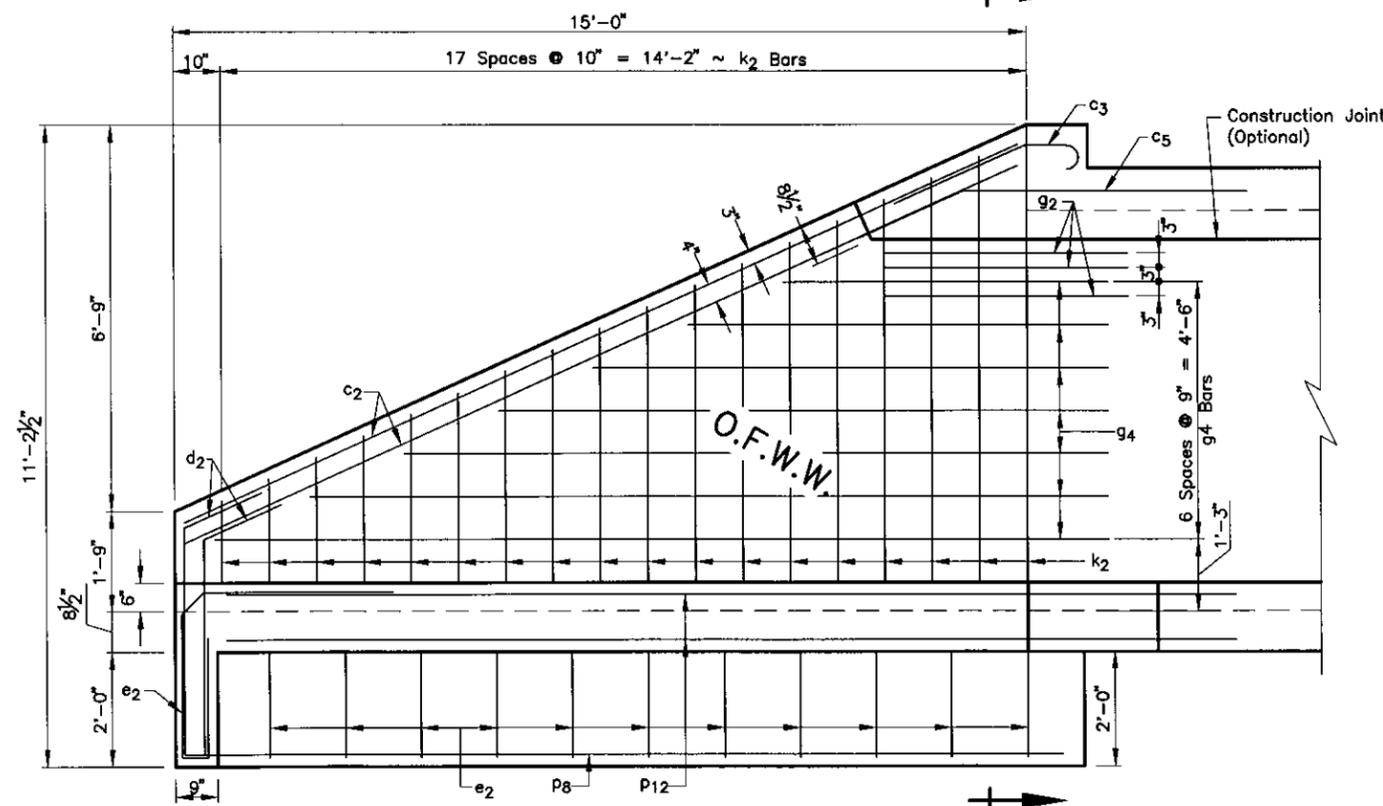
For payment, quantity is based on plan shown undercut dimensions and will not be measured unless the Engineer orders a change.

FOR BIDDING PURPOSES ONLY

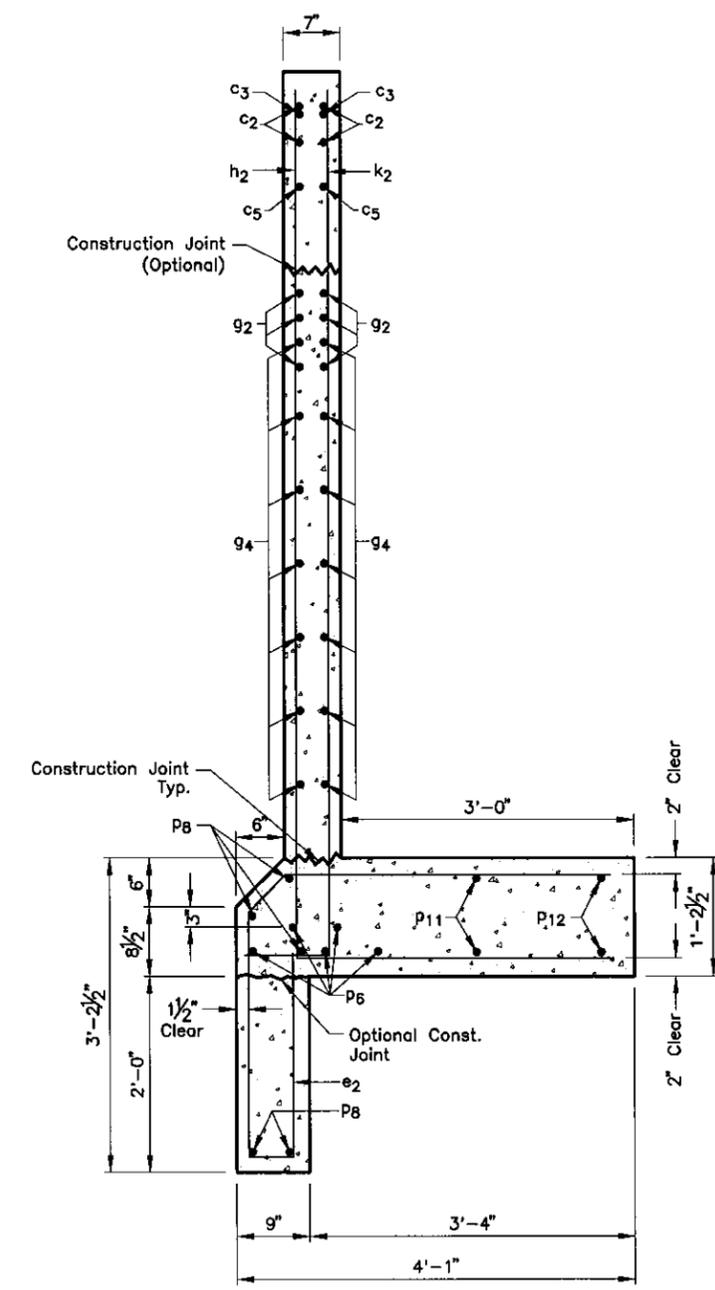
STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	18	27



ELEVATION A-A



ELEVATION A-A



SECTION F-F



NOTE: Use this sheet in conjunction with sheets 3 of 12.

15'-0" INLET WING DETAILS FOR

3 - 10'x7' Box Culvert (CIP)
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Battle Creek BRO 8040(15)
 Sta. 4+76 PCN 002B
 Str. No. 40-219-060 HL-93

S.D. DEPT. OF TRANSPORTATION
 Lake County

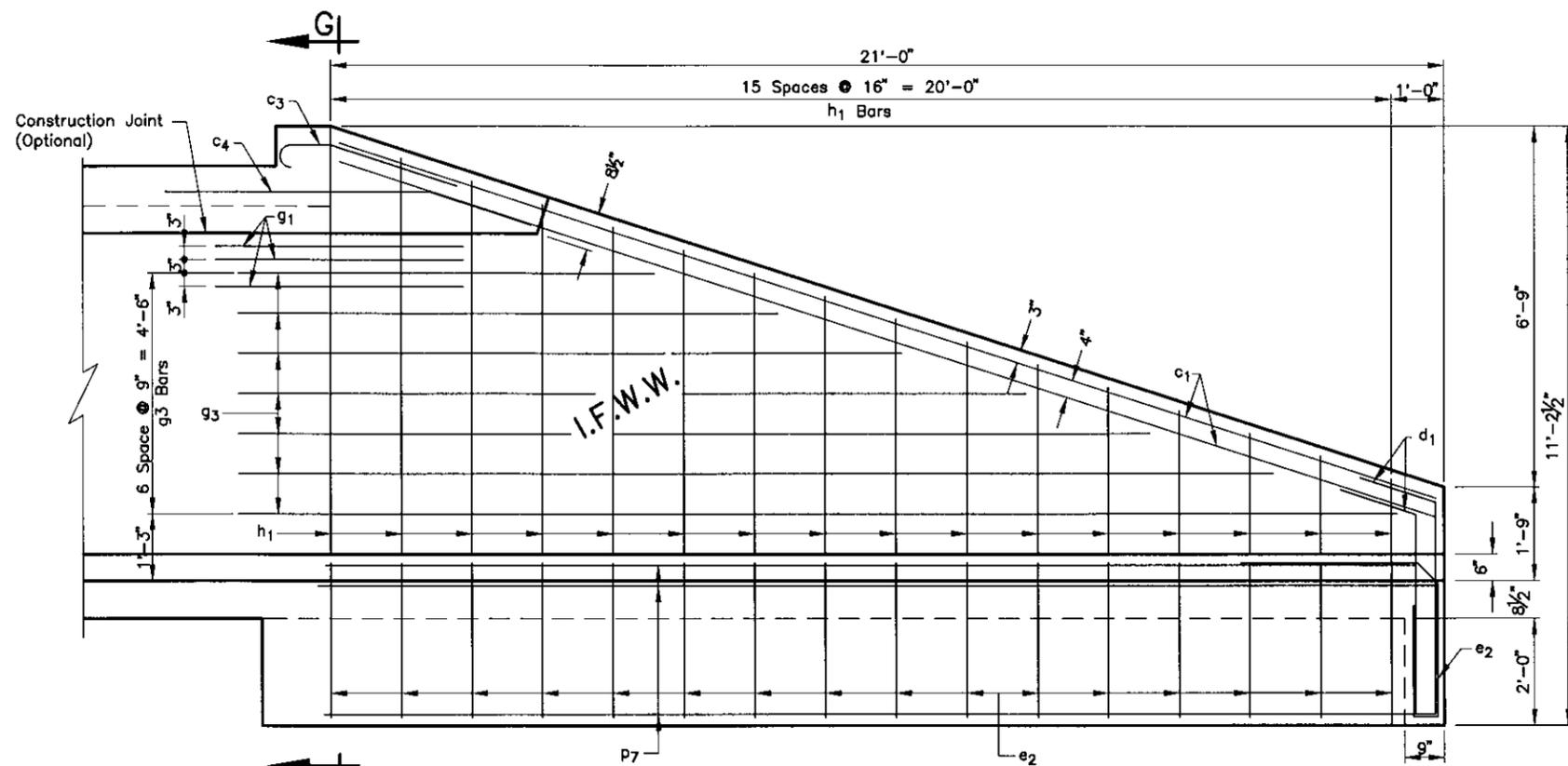
Plans by:
Aason Engineering Company, Inc.
 Watertown, South Dakota

LEGEND FOR PLACING RE-STEEL	
I.F.W.W. -	Inside Face of Wing Wall
O.F.W.W. -	Outside Face of Wing Wall

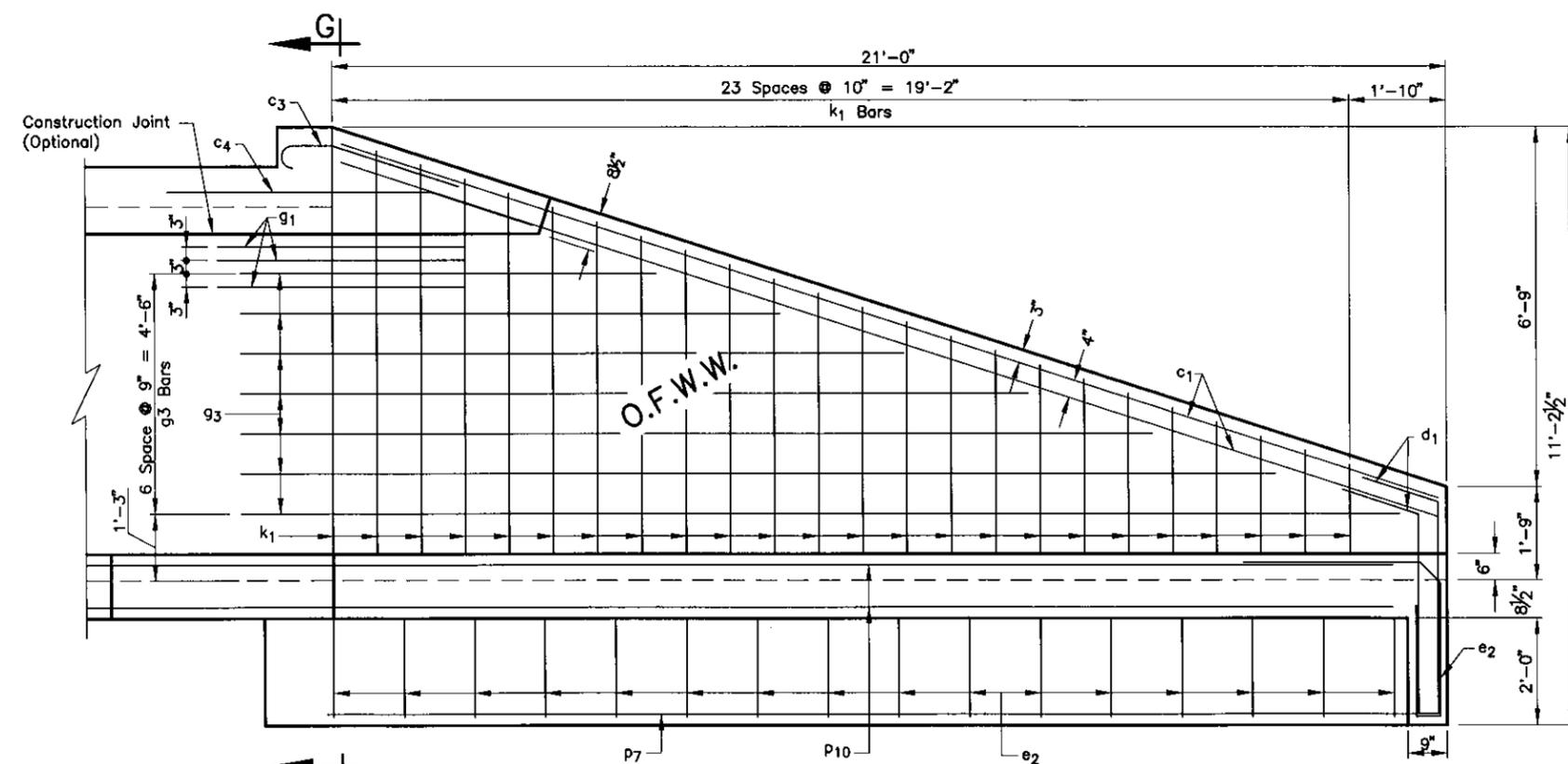
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Checked: RSD	Date: 12/2011	2011 -120	4
Approved: MRJ	Date: 12/2011		of 12
Designer: MRJ	Date: 12/2011		

FOR BIDDING PURPOSES ONLY

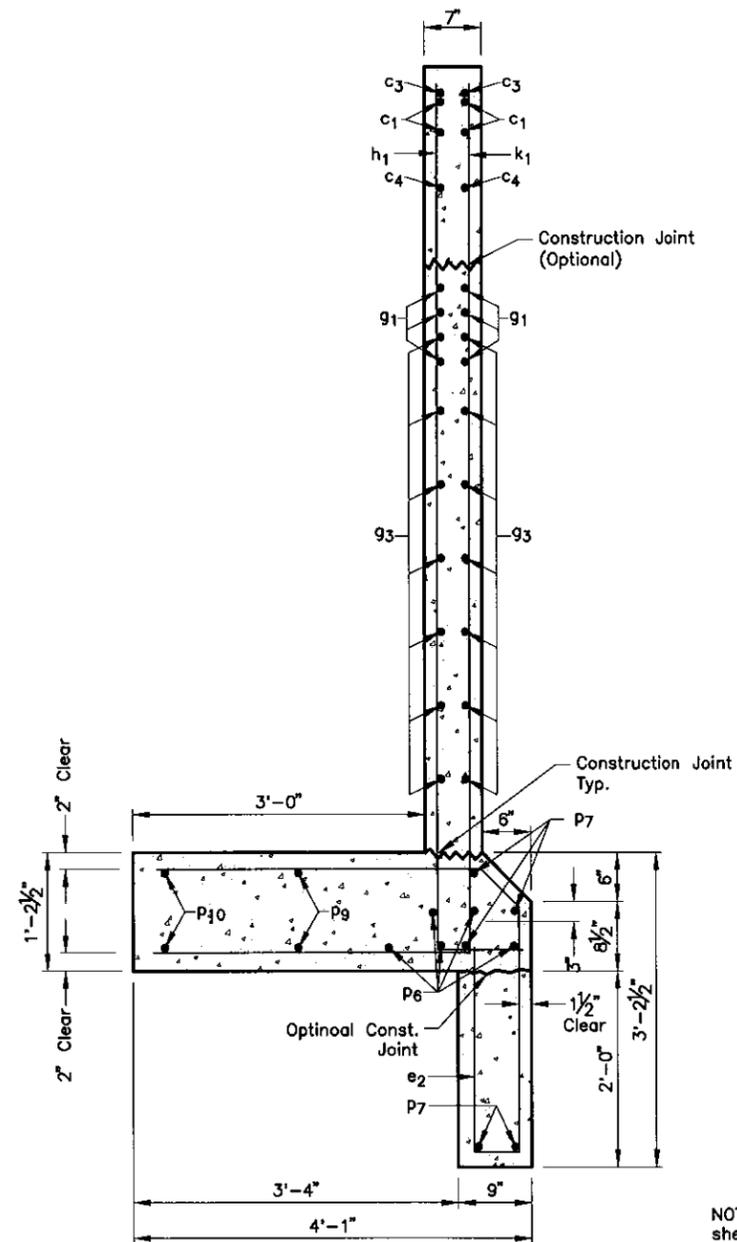
STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	19	27



ELEVATION B-B



ELEVATION B-B



SECTION G-G



NOTE: Use this sheet in conjunction with sheets 3 of 12.

21'-0" INLET WING DETAILS FOR

3 - 10'x7' Box Culvert (CIP)
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Battle Creek BRO 8040(15)
 Sta. 4+76 PCN 002B
 Str. No. 40-219-060 HL-93

S.D. DEPT. OF TRANSPORTATION
 Lake County

Plans by:
Aason Engineering Company, Inc.
 Watertown, South Dakota

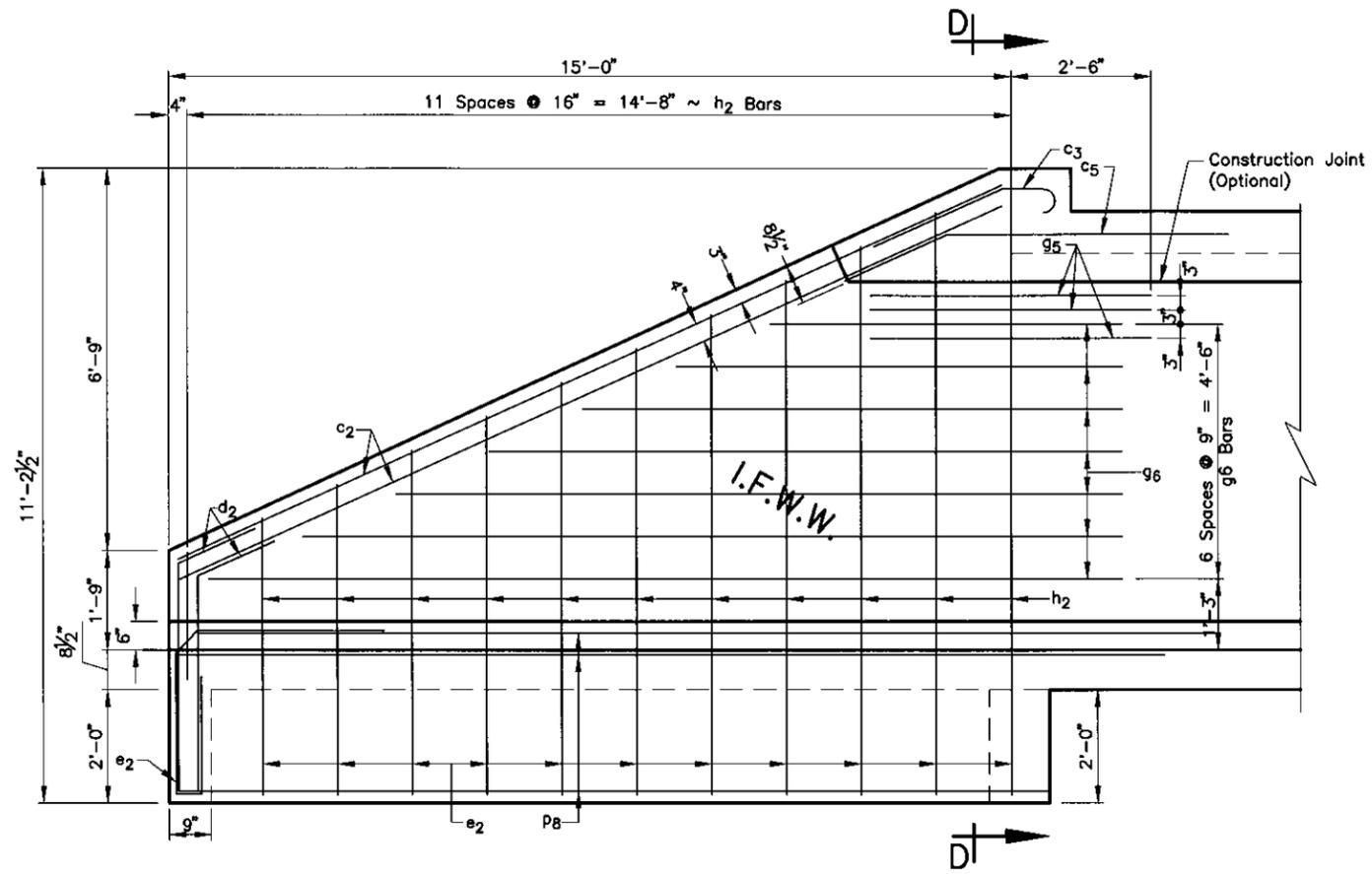
LEGEND FOR PLACING RE-STEEL

I.F.W.W. - Inside Face of Wing Wall
O.F.W.W. - Outside Face of Wing Wall

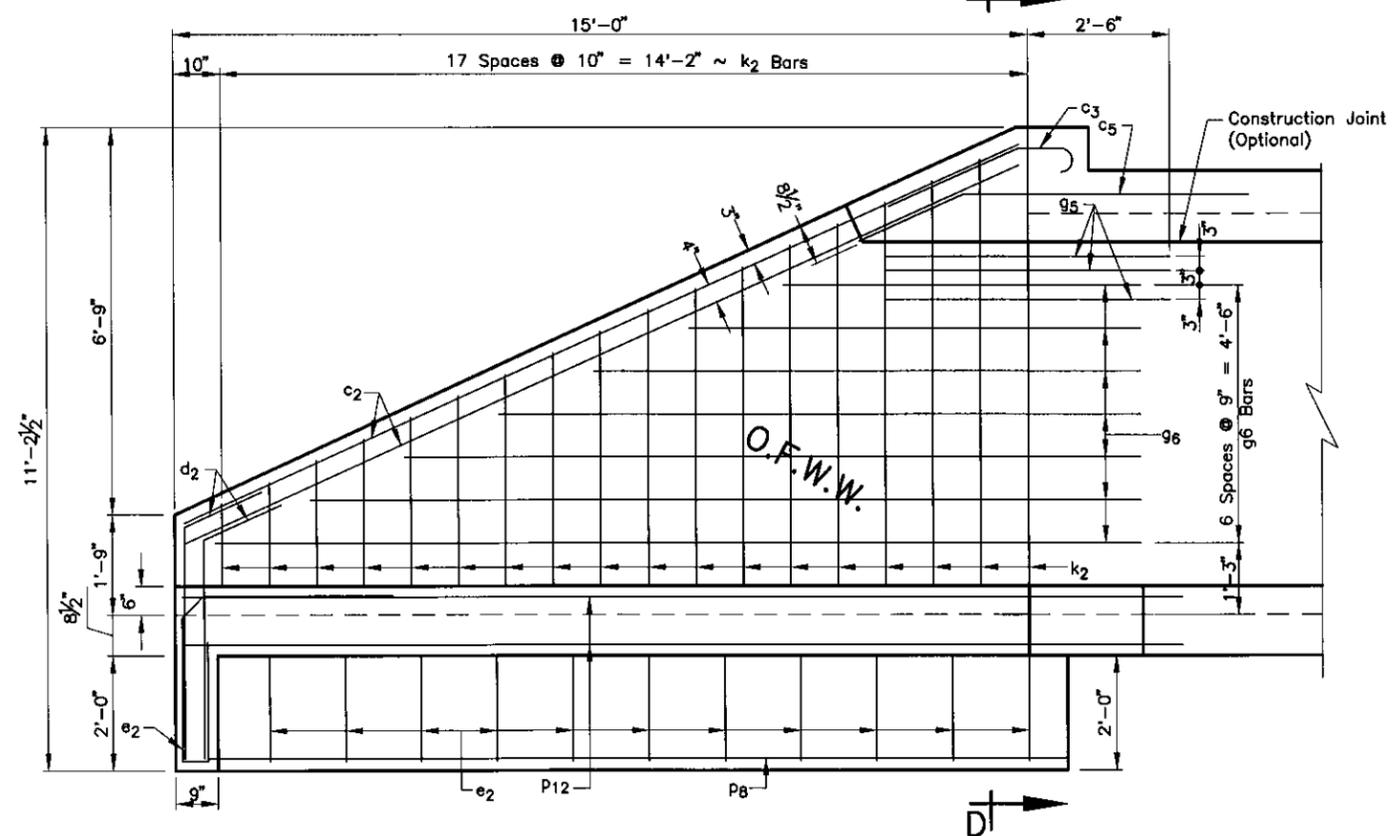
Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011 -120	5
Approved: MRJ	Date: 12/2011		of 12
Designer: MRJ	Date: 12/2011		

FOR BIDDING PURPOSES ONLY

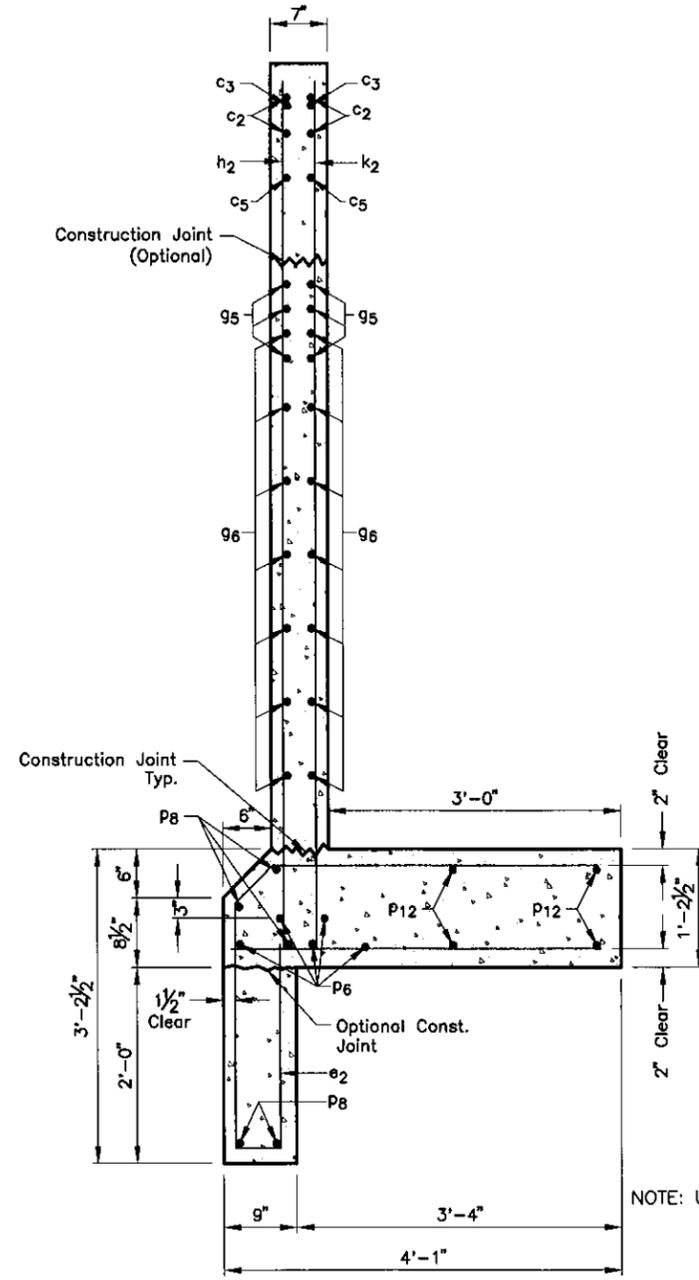
STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	21	27



ELEVATION A-A



ELEVATION A-A



SECTION D-D



NOTE: Use this sheet in conjunction with sheet 6 of 12.

**OUTLET DETAILS
FOR**

3 - 10'x7' Box Culvert (CIP)
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Battle Creek BR0 8040(15)
 Sta. 4+76 PCN 002B
 Str. No. 40-219-060 HL-93

S.D. DEPT. OF TRANSPORTATION
 Lake County

Plans by:
Aason Engineering Company, Inc.
 Watertown, South Dakota

Legend for Placing Re-Steel	
I.F.W.W. -	Inside Face of Wing Wall
O.F.W.W. -	Outside Face of Wing Wall

Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011 -120	7 of 12
Approved: MRJ	Date: 12/2011		
Designer: MRJ	Date: 12/2011		

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	22	27

REINFORCING SCHEDULE

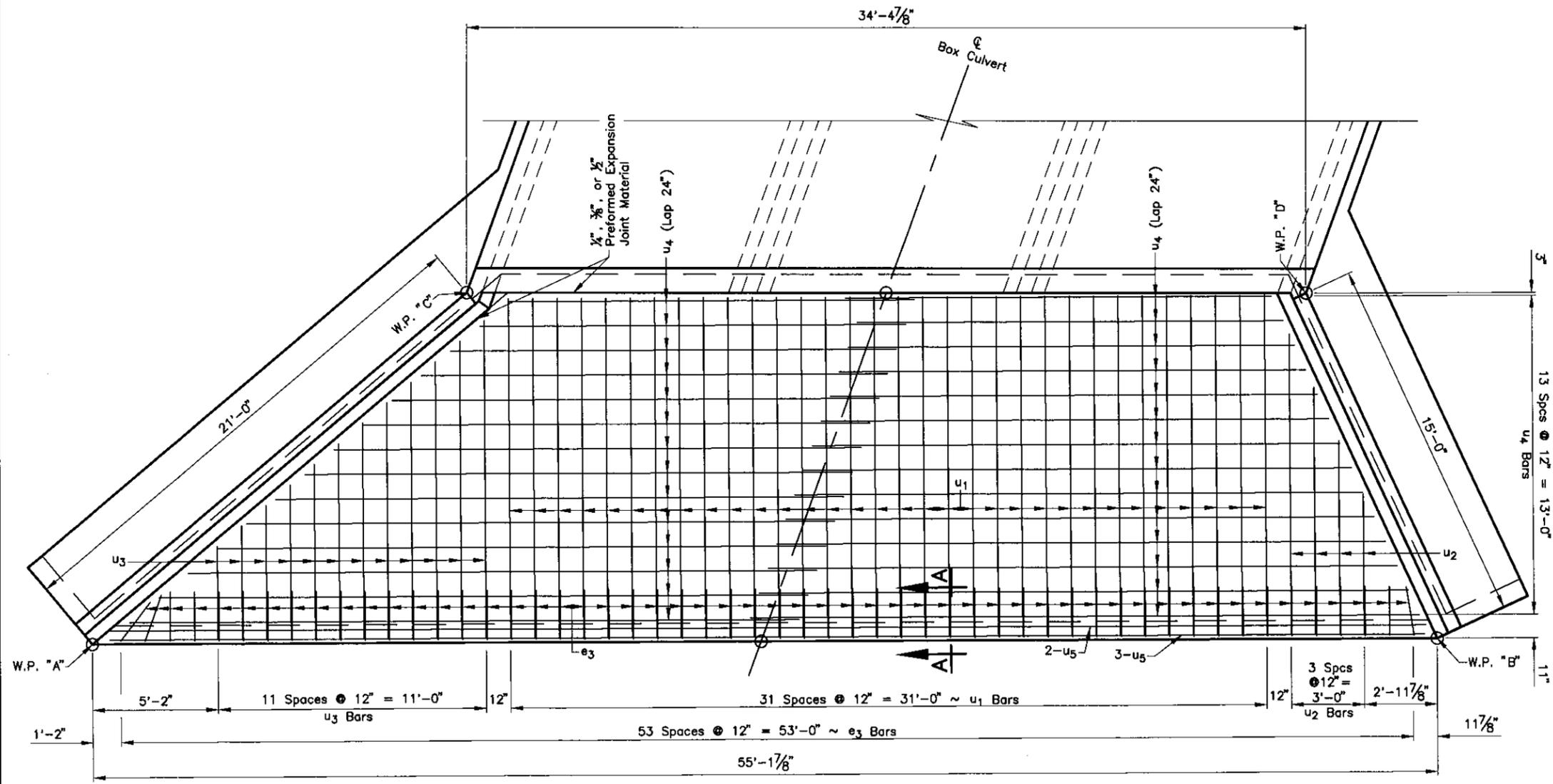
Mk.	No.	Size	Length	Type	Bending / Cutting Details
e ₃	54	4	7'-6"	S12	
u ₁	32	4	13'-9"	STR	
u ₂	2	4	18'-0"	STR	
u ₃	6	4	16'-8"	STR	
u ₄	7	4	44'-2"	STR	
u ₅	5	4	53'-11"	STR	

Note: All dimensions are out to out of bars.
 Δ See Cutting Diagram

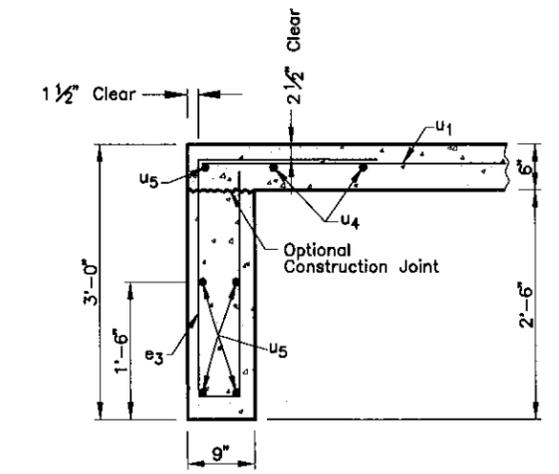
**ESTIMATED QUANTITIES
INLET APRON & CUTOFF WALL**

ITEM	QUANTITY	UNIT
Class A45 Concrete	15.2	Cu. Yd.
Reinforcing Steel	1042	Lb.
Structure Excavation, Box Culvert	15.2	Cu. Yd.

NOTE: Apron shall NOT be built monolithic with the box culvert.



PLAN



SECTION A-A

**INLET APRON
FOR
3 - 10'x7' Box Culvert (CIP)**
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Battle Creek BRO 8040(15)
 Sta. 4+76 PCN 002B
 Str. No. 40-219-060 HL-93

S.D. DEPT. OF TRANSPORTATION Lake County			
Plans by: Aason Engineering Company, Inc. Watertown, South Dakota			
Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011	8
Approved: MRJ	Date: 12/2011	-120	of 12
Designer: MRJ	Date: 12/2011		



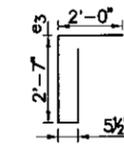
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	23	27

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
e3	30	4	7'-6"	S12
u6	30	4	14'-4"	STR
u7	18	4	31'-10"	STR

Bending Details

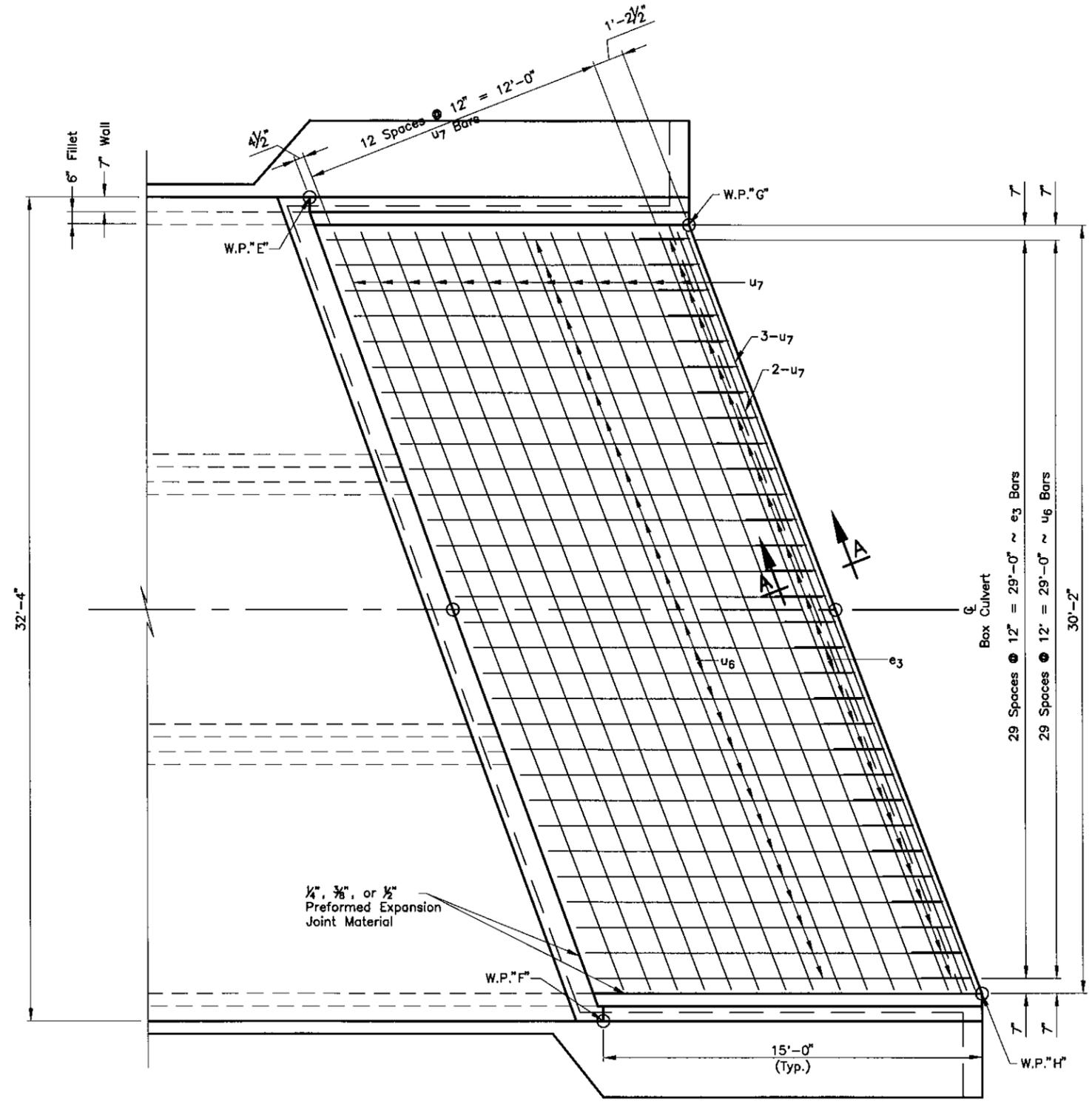


Type S12

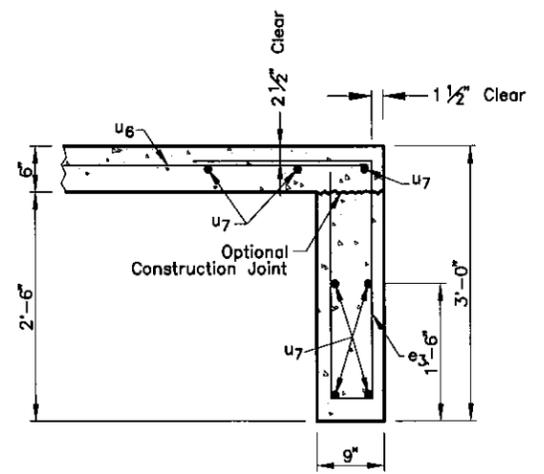
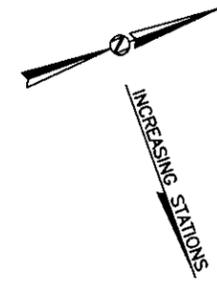
NOTE:
All dimensions are out
to out of bars.

ESTIMATED QUANTITIES OUTLET APRON & CUTOFF WALL		
ITEM	QUANTITY	UNIT
Class A45 Concrete	10.7	Cu. Yd.
Reinforcing Steel	820	Lb.
Structure Excavation, Box Culvert	10.7	Cu. Yd.

NOTE: Apron shall NOT be built monolithic with the box culvert.

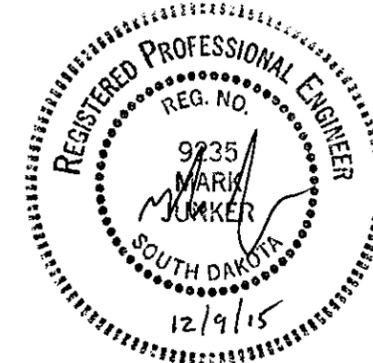


PLAN



SECTION A-A

**OUTLET APRON
FOR
3 - 10'x7' Box Culvert (CIP)**
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Battle Creek BRO 8040(15)
 Sta. 4+76 PCN 002B
 Str. No. 40-219-060 HL-93



S.D. DEPT. OF TRANSPORTATION Lake County			
Plans by: Aason Engineering Company, Inc. Watertown, South Dakota			
Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011 -120	9
Approved: MRJ	Date: 12/2011		of 12
Designer: MRJ	Date: 12/2011		

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT BRO 8040(15)	Sheet No. 24	Total Sheets 27
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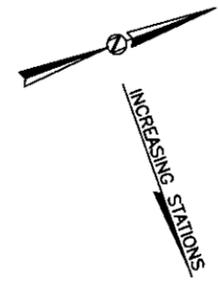
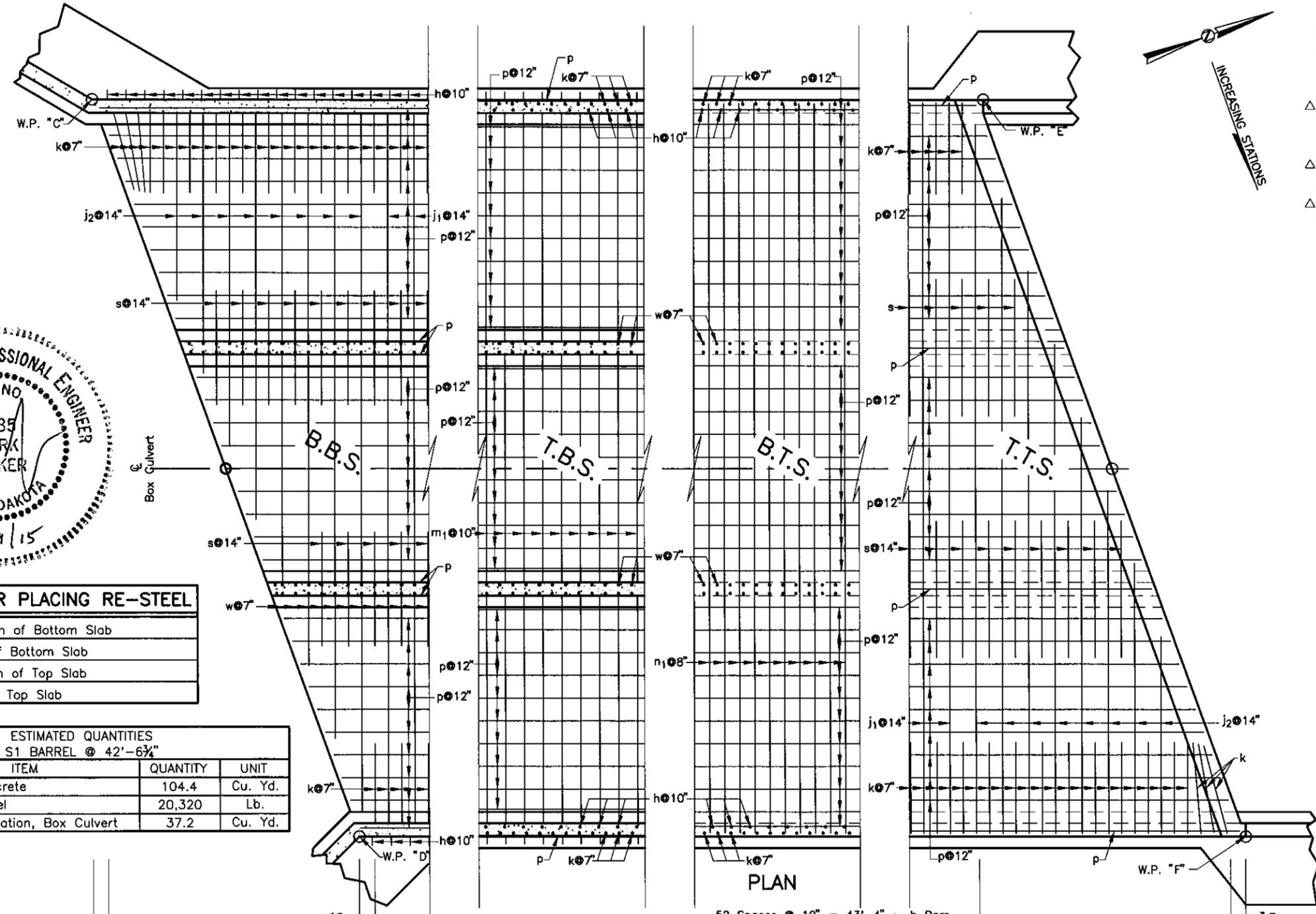


LEGEND FOR PLACING RE-STEEL

B.B.S. - Bottom of Bottom Slab
T.B.S. - Top of Bottom Slab
B.T.S. - Bottom of Top Slab
T.T.S. - Top of Top Slab

ESTIMATED QUANTITIES
S1 BARREL @ 42'-6 3/4"

ITEM	QUANTITY	UNIT
Class A45 Concrete	104.4	Cu. Yd.
Reinforcing Steel	20,320	Lb.
Structure Excavation, Box Culvert	37.2	Cu. Yd.



REINFORCING SCHEDULE

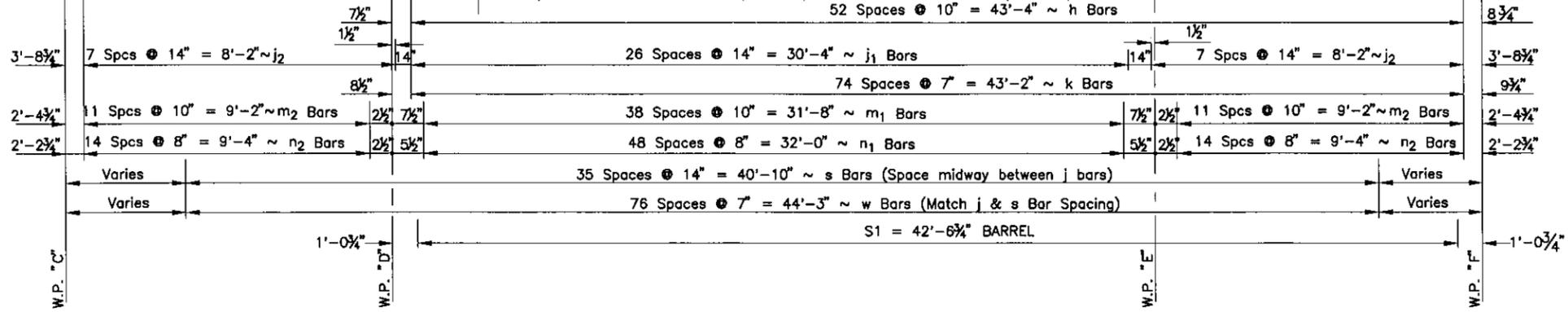
Mk.	No.	Size	Length	Type	Bending / Cutting Details
h	106	4	8'-7"	17A	
j1	54	6	32'-0"	STR	
j2	16	6	39'-9"	STR	
k	150	5	16'-0"	17	
m1	39	6	33'-0"	STR	
m2	12	6	37'-6"	STR	
n1	49	6	32'-0"	STR	
n2	15	6	34'-8"	STR	
p	160	4	44'-2"	STR	
s	144	6	6'-0"	STR	
w	154	4	18'-5"	S11A	

Contractor may use optional reinforcing steel splice, as shown. The cost of the additional reinforcing steel shall be borne by the Contractor.

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

NOTE: All dimensions are out to out of bars.
 Δ See Cutting Diagram

NOTE: This sheet is to be used in conjunction with Sheet 11 of 12.



BARREL DETAILS FOR
3 - 10'x7' Box Culvert (CIP)
 20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
 Bottle Creek BRO 8040(15)
 Sta. 4+76 PCN 002B
 Str. No. 40-219-060 HL-93

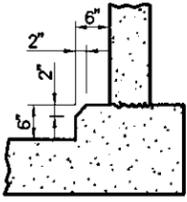
S.D. DEPT. OF TRANSPORTATION
 Lake County

Plans by:
Aason Engineering Company, Inc.
 Watertown, South Dakota

Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011	10
Approved: MRJ	Date: 12/2011	-120	of 12
Designer: MRJ	Date: 12/2011		

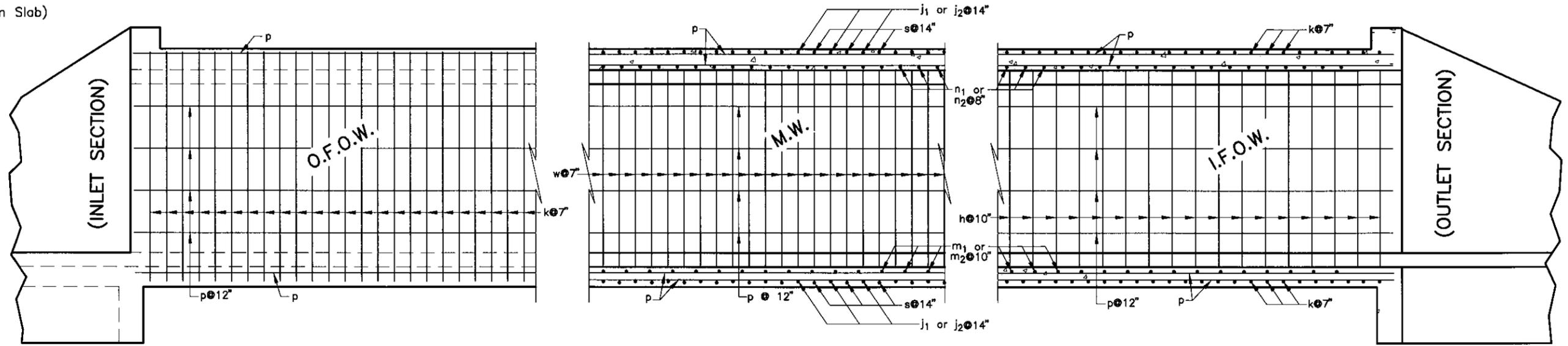
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	Sheet No.	Total Sheets
	BRO 8040(15)	25	27

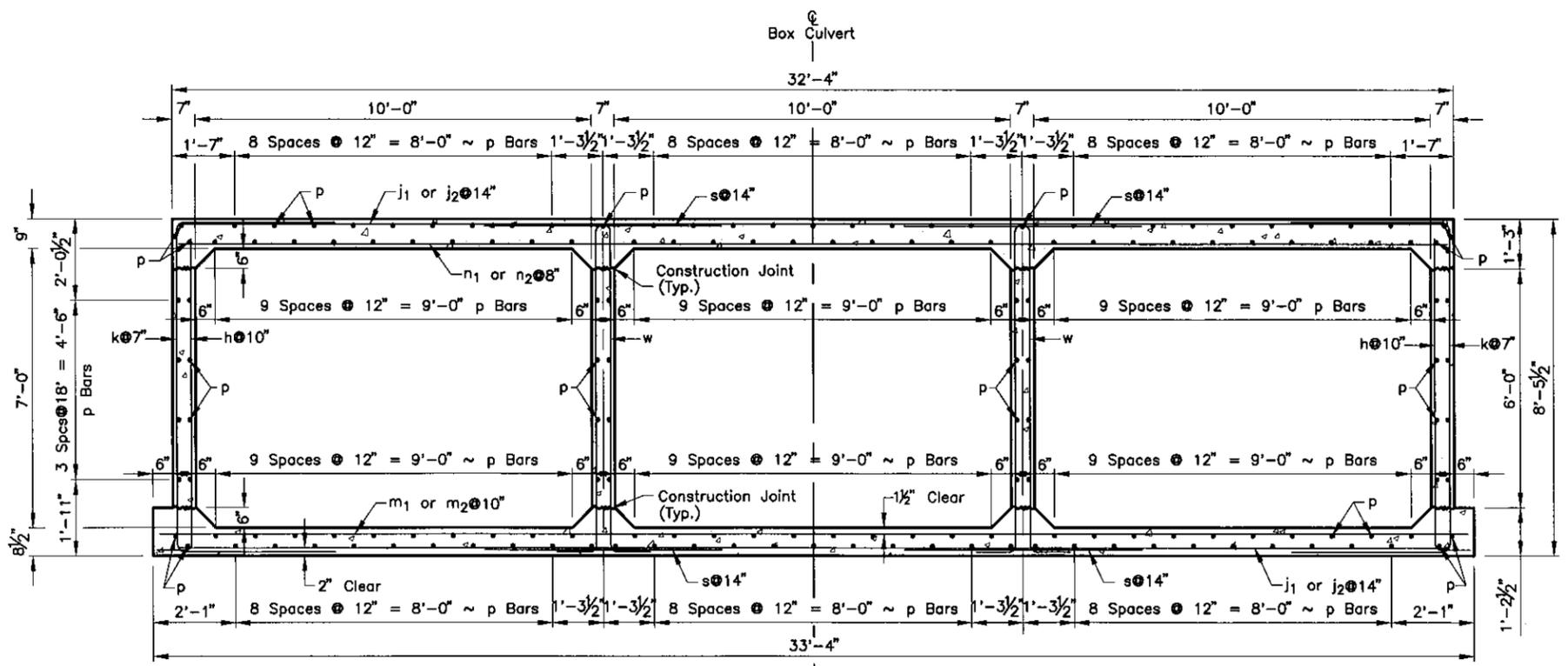


NOTE:
Contractor may form the optional full fillet with 2" chamfer, as detailed. The cost of the additional concrete shall be borne by the Contractor.

OPTIONAL FILLET DETAILS
(At Bottom Slab)



ELEVATION



S₁ BARREL SECTION
(5'-0" Max Fill)

LEGEND FOR PLACING RE-STEEL

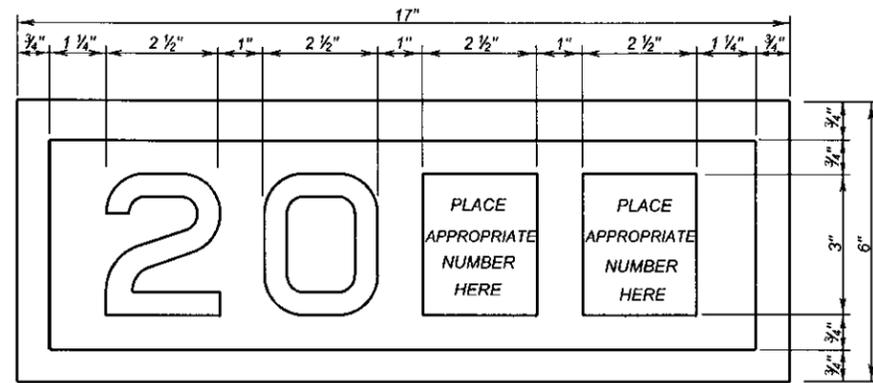
O.F.O.W. - Outside Face of Wall
M.W. - Middle Wall
I.F.O.W. - Inside Face of Wall



NOTE: Use this sheet in conjunction with sheet 10 of 12.

BARREL DETAILS
FOR
3 - 10'x7' Box Culvert (CIP)
20° L.H.F. Skew Sec. 3/34 T107N/T108N R51W
Battle Creek BRO 8040(15)
Sta. 4+76 PCN 002B
Str. No. 40-219-060 HL-93

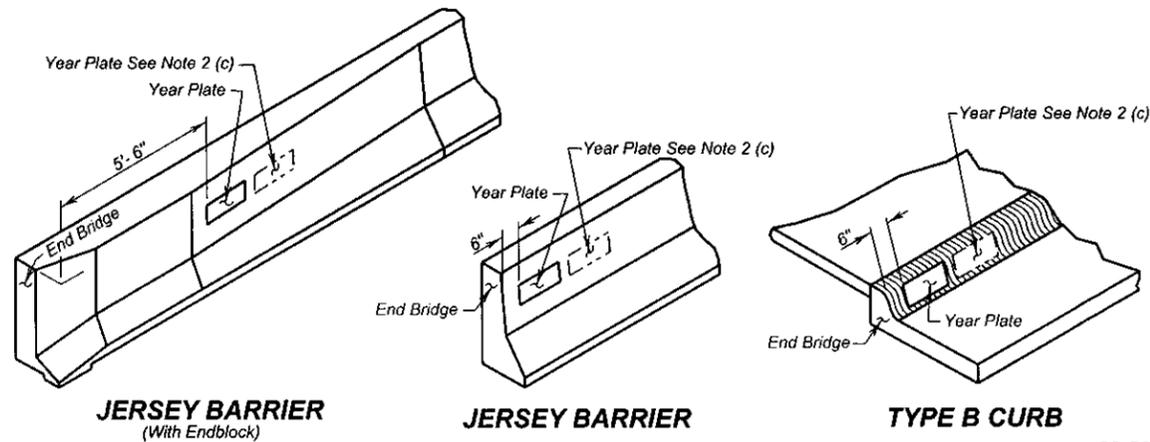
S.D. DEPT. OF TRANSPORTATION Lake County			
Plans by: Aason Engineering Company, Inc. Watertown, South Dakota			
Drawn: CAB	Date: 12/2011	File No:	Sheet No.
Checked: RSD	Date: 12/2011	2011 -120	11
Approved: MRJ	Date: 12/2011		of 12
Designer: MRJ	Date: 12/2011		



YEAR PLATE DETAILS

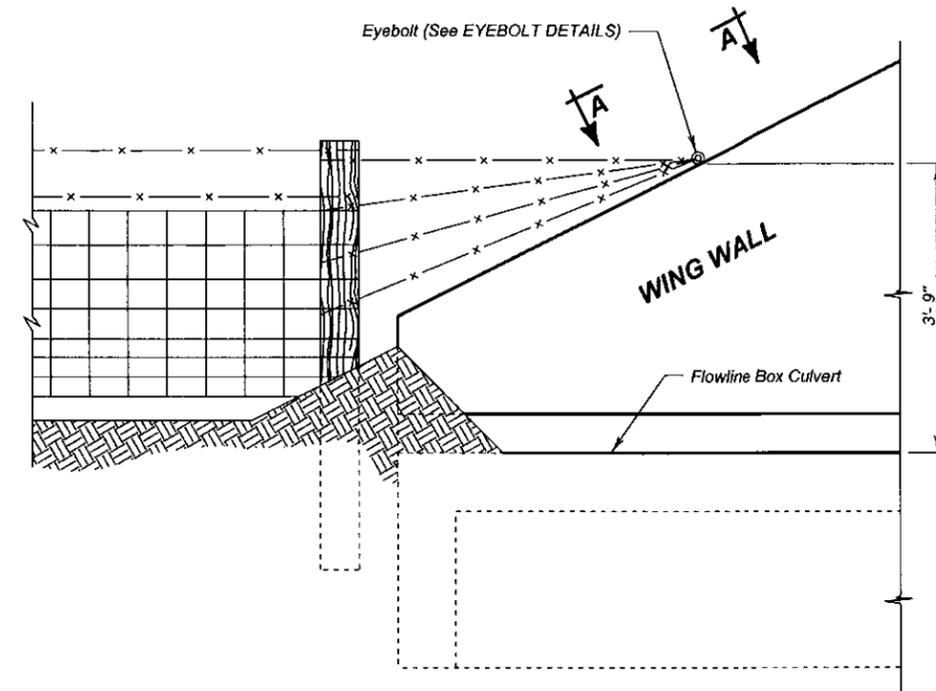
GENERAL NOTES:

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



June 26, 2012

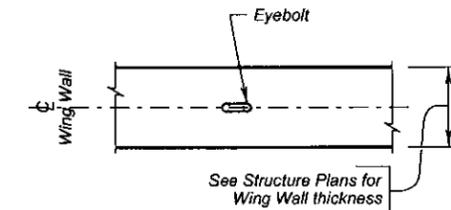
Published Date: 4th Qtr. 2015	S D D O T	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



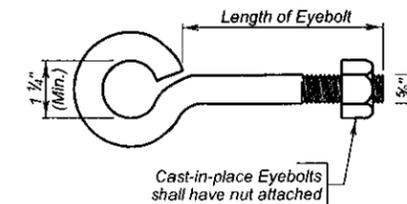
DETAIL FOR FENCE ANCHORS

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 3/8 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 3/8 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. 2015	S D D O T	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1

