STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0050(104)302 NH 0046(57)291	1	38

Plotting Date: 09/17/2015 Revised: 9-17-15 BTR

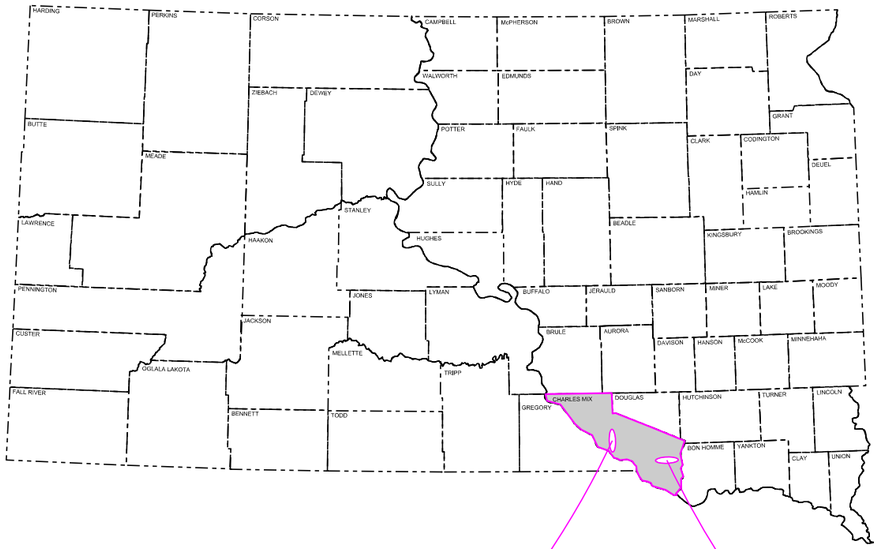
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT P 0050(104)302 & NH 0046(57)291 SD HIGHWAY 50 & 46 CHARLES MIX COUNTY

RCBC REPAIR, EROSION PROTECTION & ROW PLANS

PCN 03AG & PCN 03AH



PROJECT P 0050(104)302

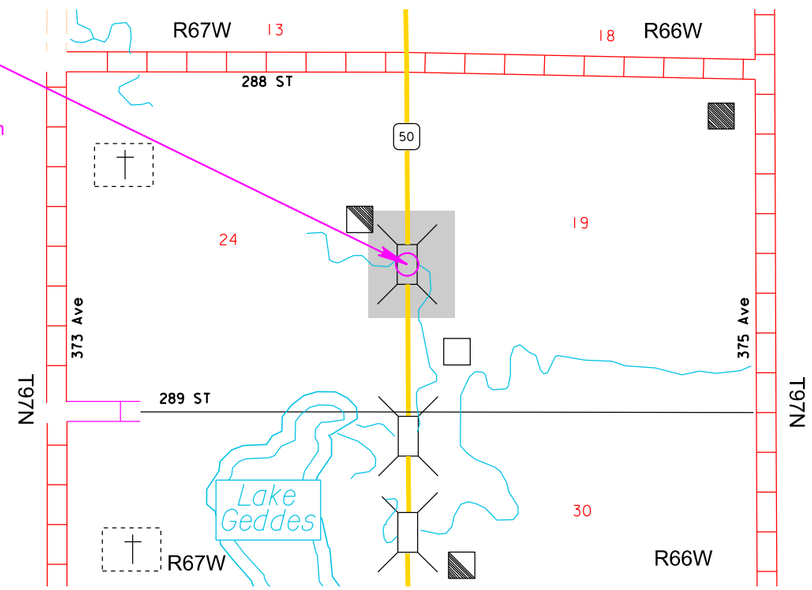
PROJECT NH 0046(57)291

INDEX OF SHEETS

1	General Layout W/Index
2-8	Estimate With General Notes & Tables
9	Hotizontal Alignment & Control Data Sheet
10	Topography Symbology & Legend
11-25	03AG Plan Sheet, Details, Cross Sections, & Original Plans
26-30	03AH Plan Sheet, Details, & Original Plans
31-38	Standard Plates

P 0050(104)302

Station 213+54 = 213+54 on
Project FAP 189 B. Approximately
2358.54' North and 37.42' West of the
SW corner of Sec 19 Township 97 North
Range 66 West of the 5th P.M.
MRM 302.81+0.00
Str. 12-300-206



DESIGN DESIGNATION

ADT (2012)	507
ADT (2032)	558
DHV	77
D	51%
T DHV	5.5%
T ADT	12%
V	70 mph

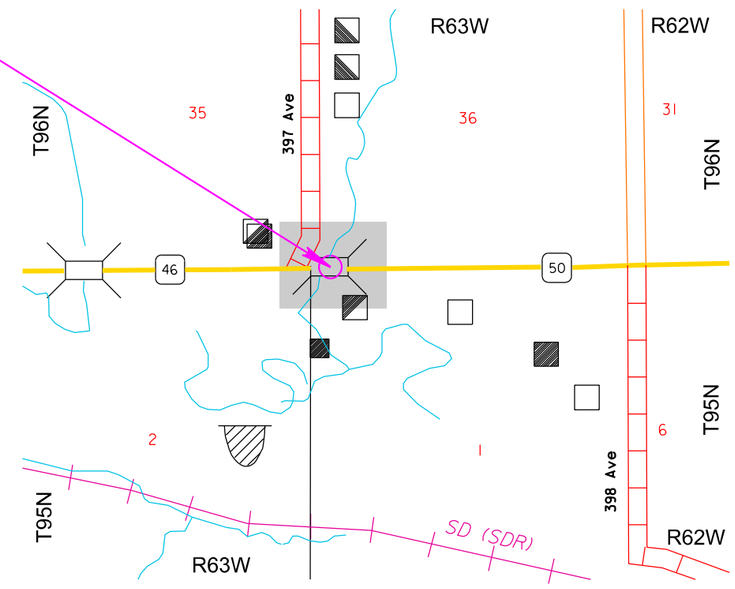
STORM WATER PERMIT

Major Receiving
Body of Water: Branch of Pease Creek
(Tributary to Missouri River)
Area Disturbed: 8,470 SqFt
Total Project Area: 19,000 SqFt
Approx. Begin Lat/Long 43.2043 , -98.7069

PROJECT P 0050(104)302
S.D. HIGHWAY 50
CHARLES MIX COUNTY
PCN 03AG

NH 0046(57)291

Station 78+65.00 = 78+65.00 on
Project F012-1(5) Approximately
66.04' West and 1.34' South of the
SW corner of Sec 36 Township 96 North
Range 63 West of the 5th P.M.
MRM 291.44+00.00
Str. 12-530-290



DESIGN DESIGNATION

ADT (2012)	1636
ADT (2032)	1801
DHV	249
D	51%
T DHV	7.4%
T ADT	16.3%
V	70 mph

STORM WATER PERMIT

Major Receiving
Body of Water: Choteau Creek
Area Disturbed: 4,000 SqFt
Total Project Area: 26,000 SqFt
Approx. Begin Lat/Long 43.0815 , -98.2488

PROJECT NH 0046(57)291
S.D. HIGHWAY 46/50
CHARLES MIX COUNTY
PCN 03AH

Plot Scale - 1:200
Plotted From - trsf12145
File - U:\rdprj\cmix03AG\title.dgn

03AG – GRADING ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0600	Remove Fence	138	Ft
110E1700	Remove Silt Fence	100	Ft
620E0020	Type 2 Right-of-Way Fence	138	Ft
620E1020	2 Post Panel	2	Each
634E0010	Flagging	10.0	Hour
634E0110	Traffic Control Signs	138	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0160	20" Diameter Erosion Control Wattle	100	Ft
734E0604	High Flow Silt Fence	100	Ft
734E0610	Mucking Silt Fence	7	CuYd
734E0620	Repair Silt Fence	25	Ft

03AG – STRUCTURE 12-300-206 ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E0010	Unclassified Excavation	447	CuYd
420E0200	Structure Excavation, Box Culvert	28	CuYd
421E0200	Box Culvert Undercut	25	CuYd
460E0120	Class A45 Concrete, Box Culvert	21.6	CuYd
460E0300	Breakout Structural Concrete	20.6	CuYd
480E0100	Reinforcing Steel	3,094	Lb
700E0310	Class C Riprap	751.7	Ton
831E0110	Type B Drainage Fabric	557	SqYd

03AH – GRADING ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0600	Remove Fence	103	Ft
110E1700	Remove Silt Fence	250	Ft
620E0020	Type 2 Right-of-Way Fence	103	Ft
620E1020	2 Post Panel	2	Each
634E0010	Flagging	10.0	Hour
634E0110	Traffic Control Signs	138	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0160	20" Diameter Erosion Control Wattle	250	Ft
734E0604	High Flow Silt Fence	250	Ft
734E0610	Mucking Silt Fence	17	CuYd
734E0620	Repair Silt Fence	63	Ft

03AH – STRUCTURE 12-530-290 ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
700E0210	Class B Riprap	206.1	Ton
831E0110	Type B Drainage Fabric	288	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT A: WETLANDS

Approximately 0.08 acres of wetlands will be impacted by the projects. Refer to plans for location and boundaries of the impacted wetlands. These unavoidable impacts to wetlands are less than 0.1 acres and the "*Statewide Wetland Finding for South Dakota Federal-Aid Highway Projects*" will apply.

Table of Impacted Wetlands

Wetland No.	Type	Station	Impact Left (Acres)	Impact Right (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
1	PEMC	213+54	0.08	0.00	0	0.08

Action Taken/Required:

Replacement of these 0.08 acres of wetland impacts will be completed through another wetland mitigation opportunity in a manner which considers FHWA's program-wide goal of 'net gain' of wetlands through enhancement, creation, and preservation.

The Project Engineer will notify the Environmental Office if the riprap work associated with the above location exceeds the area designated in the plans. The contact person is the Environmental Project Scientist of the SDDOT Environmental Office at 605-773-3268.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

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

Action Taken/Required:

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

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

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

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

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

Action Taken/Required:

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

COMMITMENT E: STORM WATER

Construction activities constitute structure activity in a stream.

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".

The Contractor shall adhere to the "Special Provision Regarding Storm Water Discharge to Waters of the United States within Indian Reservations".

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

Contractor Certification Form:

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

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

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

Action Taken/Required:

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

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

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

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

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.
SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

COMMITMENT J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S.

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

Action Taken/Required:

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

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

Plot Scale - 1:200
Plotted From - TRSF12139
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COMMITMENT J: CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN WATERWAYS OF THE U.S. (CONTINUED)

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

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

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

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

If an on-site traffic diversion or construction crossing is used at Sta. 213+54 or 78+65, the temporary crossing will need to be designed so it will not increase the Q_{100} water surface elevation. The Contractor shall submit the proposed temporary crossing geometric layout and structure size at Sta. 213+54 or 78+65 to the Project Engineer during the project preconstruction meeting. This information shall be forwarded to the SDDOT Hydraulics Office for review. Construction of the temporary crossing is not allowed until approval of the proposal is obtained from the Hydraulics Office.

Table of U.S. Waterways to Protect

Station	Waterway	Ordinary High Water Elevation
213+54	Branch of Pease Creek	1464.60 Upstream 1464.50 Downstream
78+65	Branch of Choteau Creek	1380.70

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.

EXCAVATION

Earthwork shall be paid for based on plans quantity. No measurement will be made unless agreed upon by the Engineer.

UTILITIES

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

BRACE PANELS FOR ROW FENCE

The E-Z Brace or an approved equal may be utilized as an alternate horizontal brace in the brace panels if approved by the Engineer. The E-Z Brace shall be attached to each wood post utilizing two 5/16" x 3" lag screws. Holes of appropriate diameter, based on wood post condition, shall be drilled before placement of lag screws. The following are contacts regarding the E-Z Brace:

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

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

TABLE OF FENCE QUANTITIES

Station	L/R	Right-of-Way Fence Type 2	2 Post Panel	Remove Fence
*212+92 to 214+30	L	138 (Ft)	2 (Each)	138 (Ft)
**77+35 to 78+38	R	103 (Ft)	2 (Each)	103 (Ft)

* Quantities for 03AG
** Quantities for 03AH

GENERAL MAINTENANCE OF TRAFFIC

Traffic control sign quantities shown are the total for both projects combined.

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W3-4	BE PREPARED TO STOP	4	48" x 48"	16	64
W20-1	ROAD WORK AHEAD	4	48" x 48"	16	64
W20-7	FLAGGER (symbol)	4	48" x 48"	16	64
W21-5	SHOULDER WORK	4	48" x 48"	16	64
G20-2	END ROAD WORK	4	36" x 18"	5	20
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			276

EROSION CONTROL

All areas disturbed not covered with concrete or rip rap shall be seeded and mulched. All costs associated with Mycorrhizal Inoculum, Permanent Seeding, and Mulching shall be incidental to the contract lump sum price for "Erosion Control".

The estimated disturbed area to require erosion control is 8,470 square feet on P 0050(104)302.

The estimated disturbed area to require erosion control is 4,000 square feet on P 0046(57)291.

Mycorrhizal Inoculum

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

Glomus intraradices	25%
Glomus aggregatu	25%
Glomus mosseae	25%
Glomus etunicatum	25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre.

The mycorrhizal inoculum shall be as shown below or an approved equal:

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

Permanent Seeding

The areas to be seeded consist of all newly graded areas within the project such as areas around newly constructed curb ramps.

Type C Permanent Seed Mixture shall consist of the following:

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

Plot Scale - 1:200
Plotted From - TRSF12139
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HIGH FLOW SILT FENCE

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

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

Silt fence is to be placed at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer before construction. Refer to Standard Plate 734.05 for details.

EROSION CONTROL WATTLE

Erosion control wattles shall be installed at the outlet ends of the culverts after seeding and remain on the project to decompose 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.

Erosion control wattles shall remain on the project to decompose.

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

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

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): Culvert replacement and riprap installation
- **Total Project Area** (in square feet) 26,000 Choteau Creek, 19,000 Branch of Pease Creek **(4.2 1.b.)**
- **Total Area To Be Disturbed** (square feet) 4,000 Choteau Creek, 8,470 Branch of Pease Creek **(4.2 1.b.)**
- **Existing Vegetative Cover (%)**
- **Soil Properties:** Silt Loam, depth to water table 36-60" **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Branch of Pease Creek, Choteau 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.)

- **Install silt fence and wattles where runoff leaves the site.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Remove and install box culverts and rip rap.**
- **Complete final grading.**
- **Complete topsoil placement.**
- **Seed and mulch areas disturbed by installation 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 ½ 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.

Plot Scale - 1:200
Plotted From - TRSF12139
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❖ CERTIFICATIONS

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

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

➢ **South Dakota Department of Transportation**

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

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

➢ **Prime Contractor**

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

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

Authorized Signature

❖ CONTACT INFORMATION

➢ **Contractor Information**:

- Prime Contractor Name: _____
- Contractor Contact Name: _____
- Address: _____
- _____
- 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.

Plot Scale - 1:200
Plotted From - TRSF12139
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HORIZONTAL ALIGNMENT & CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0050(104)302	9	38

Plotting Date: 09/04/2015

MAINLINE 03AG

Type	Station			Northing	Easting
POB	210+26.86			322011.355	2402097.236
		TL= 536.55	S 0°18'59" E		
POE	215+63.41			321474.818	2402100.198

MAINLINE 03AH

Type	Station			Northing	Easting
POB	76+36.09			279649.026	2525111.354
		TL= 465.33	N 89°02'05" E		
POE	81+01.42			279656.866	2525576.621

03AG

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP1	210+07	75' L	5/8"x2' Rebar & Cap Stamped "SDDOT CONTROL POINT" – 1' West of Brace Post – NE Corner of Approach NE Corner of East Approach – 290' North of Box	321968.978	2402172.764	1474.67
CP2	212+91	76' L	5/8" Rebar & Cap Stamped "SDDOT CONTROL POINT" – 66' North of Box – 1' West of East ROW Fence – Northeast of Structure	321747.623	2402174.371	1471.93
CP3	215+63	75' L	5/8" Rebar & Cap Stamped "SDDOT CONTROL POINT" – 1' West of East ROW Fence – Southeast of Structure	321475.693	2402174.788	1469.27

03AH

HORIZONTAL AND VERTICAL CONTROL POINTS

POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP1	79+17	162' L	5/8"x2' Rebar & Cap Stamped "SDDOT CONTROL POINT" – Middle of West 2 Posts of 3 PP North of Structure West Side of Channel	279815.748	2525389.430	1385.42
CP2	78+67	0' R	Duranail & Washer Stamped "SDDOT CONTROL PT" In Hwy 46 Centerline – At West Edge of Structure	279652.489	2525342.659	1399.82
CP3	N/A	N/A	5/8" Rebar & Cap Stamped "SDDOT CONTROL POINT" – 1' North of East Post of 3 PP – SE Corner of Approach – 360' +/- West of Structure	279549.486	2525000.369	1395.31

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/2011); epoch 2010.00; Geoid 12; SF = 0.9998662163 (PCN 03AG) 0.9998882498 (PCN 03AH)
The elevations shown on this sheet are based on NAVD 88

Plot Scale - 1:200
Plotted From - TRSF12139
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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Plotting Date: 09/04/2015

EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND

Anchor
Antenna
Approach
Assumed Corner
Azimuth Marker
BBQ Grill/ Fireplace
Bearing Tree
Bench Mark
Box Culvert
Bridge
Brush
Buildings
Bulk Tank
Cattle Guard
Cemetery
Centerline
Cistern
Clothes Line
Commercial Sign Double Face
Commercial Sign One Post
Commercial Sign Overhead
Commercial Sign Two Post
Concrete Symbol
Creek Edge
Curb/Gutter
Curb
Dam Grade/Dike/Levee
Deck Edge
Ditch Block
Doorway Threshold
Drainage Profile
Drop Inlet
Edge Of Asphalt
Edge Of Concrete
Edge Of Gravel
Edge Of Other
Edge Of Shoulder
Elec. Trans./Power Jct. Box
Fence Barbwire
Fence Chainlink
Fence Electric
Fence Misc.
Fence Rock
Fence Snow
Fence Wood
Fence Woven
Fire Hydrant
Flag Pole
Flower Bed
Gas Valve Or Meter
Gas Pump Island
Grain Bin
Guardrail
Guide Sign One Post
Guide Sign Two Post
Gutter
Guy Pole
Haystack

Hedge
Highway R.O.W. Marker
Interstate Close Gate
Iron Pin
Irrigation Ditch
Lake Edge
Lawn Sprinkler
Mailbox
Manhole Electric
Manhole Gas
Manhole Misc
Manhole Sanitary Sewer
Manhole Storm Sewer
Manhole Telephone
Manhole Water
Merry-Go-Round
Microwave Radio Tower
Misc. Line
Misc. Property Corner
Misc. Post
Overhang Or Encroachment
Overhead Utility Line — OH —
Parking Meter
Pipe With End Section
Pipe With Headwall
Pipe Without End Section
Playground Slide
Playground Swing
Power And Light Pole
Power And Telephone Pole
Power Meter
Power Pole
Power Pole And Transformer
Power Tower Structure
Propane Tank
Property Pipe
Property Pipe With Cap
Property Stone
Public Telephone
Railroad Crossing Signal
Railroad Milepost Marker
Railroad Profile
Railroad R.O.W. Marker
Railroad Signs
Railroad Switch
Railroad Track
Railroad Trestle
Rebar
Rebar With Cap
Reference Mark
Regulatory Sign One Post
Regulatory Sign Two Post
Retaining Wall
Riprap
River Edge
Rock And Wire Baskets
Rockpiles
Satellite Dish
Septic Tank

Shrub Tree
Sidewalk
Sign Face
Sign Post
Slough Or Marsh
Spring
Stream Gauge
Street Marker
Subsurface Utility Exploration Test Hole
Telephone Fiber Optics — T/F —
Telephone Junction Box
Telephone Pole
Television Cable Jct Box
Television Tower
Test Wells/Bore Holes
Traffic Signal
Trash Barrel
Tree Belt
Tree Coniferous
Tree Deciduous
Tree Stumps
Triangulation Station
Underground Electric Line — P —
Underground Gas Line — G —
Underground High Pressure Gas Line — HG —
Underground Sanitary Sewer — S —
Underground Storm Sewer — S —
Underground Tank
Underground Telephone Line — T —
Underground Television Cable — TV —
Underground Water Line — W —
Warning Sign One Post
Warning Sign Two Post
Water Fountain
Water Hydrant
Water Meter
Water Tower
Water Valve
Water Well
Weir Rock
Windmill
Wingwall
Witness Corner

State and National Line
County Line
Section Line
Quarter Line
Sixteenth Line
Property Line
Construction Line
R. O. W. Line
New R. O. W. Line
Cut and Fill Limits
Control of Access
New Control of Access
Proposed ROW (After Property Disposal)

Plot Scale - 1:200
Plotted From - TRSF12139
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0050(104)302	11	38

Plotting Date: 09/04/2015 Revision: 06/02/2015 AR

212+41 - 49' R
Retain 18" - 60' RCP
& 2 Safety Ends

213+54
Retain Triple 8'x4' - 65' RCBC
& Inlet Wingwalls

213+54 L
Take Out Portion of Triple 8'x4' RCBC Drop Chute
(Breakout Structural Concrete)

213+54 L
Install Triple 8'x4' - 25'-0" x 19'-6 3/4" Drop Chute

213+54 - 58' to 114' L
Install Class C Riprap - 751.7 Tons
& Type B Drainage Fabric - 557 SY

Sec. 19 - T97N - R66W

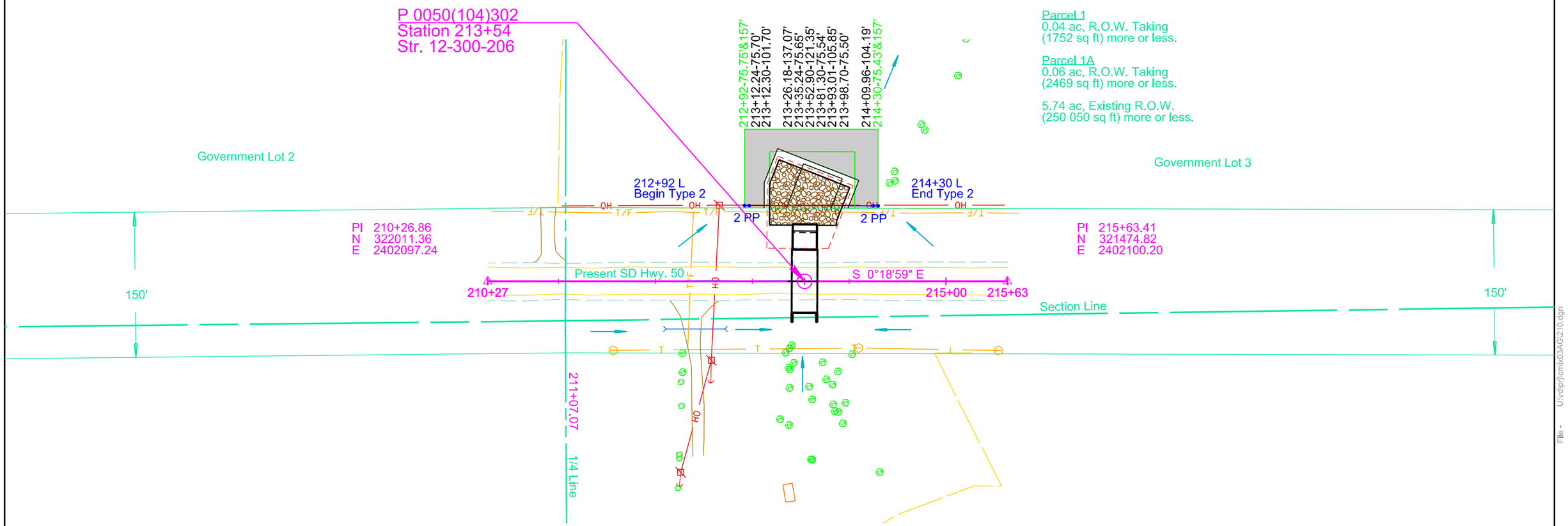
Thomas W. Biddle & Sandra G. Biddle

The W1/2 SW1/4
of Section 19 - Township 97 North -
Range 66 West of the 5th P.M.

Parcel 1
0.04 ac, R.O.W. Taking
(1752 sq ft) more or less.

Parcel 1A
0.06 ac, R.O.W. Taking
(2469 sq ft) more or less.

5.74 ac, Existing R.O.W.
(250 050 sq ft) more or less.



Sec. 24 - T97N - R67W

Parcel 1
213+18 to 214+06 L
Temporary Easement for
Riprap Placement
(3380 sq ft), more or less

Parcel 1A
212+92 to 214+30 L
Temporary Easement for
Riprap Placement
(5878 sq ft), more or less

Plot Scale - 1:100
Plotted From - TRSF12139
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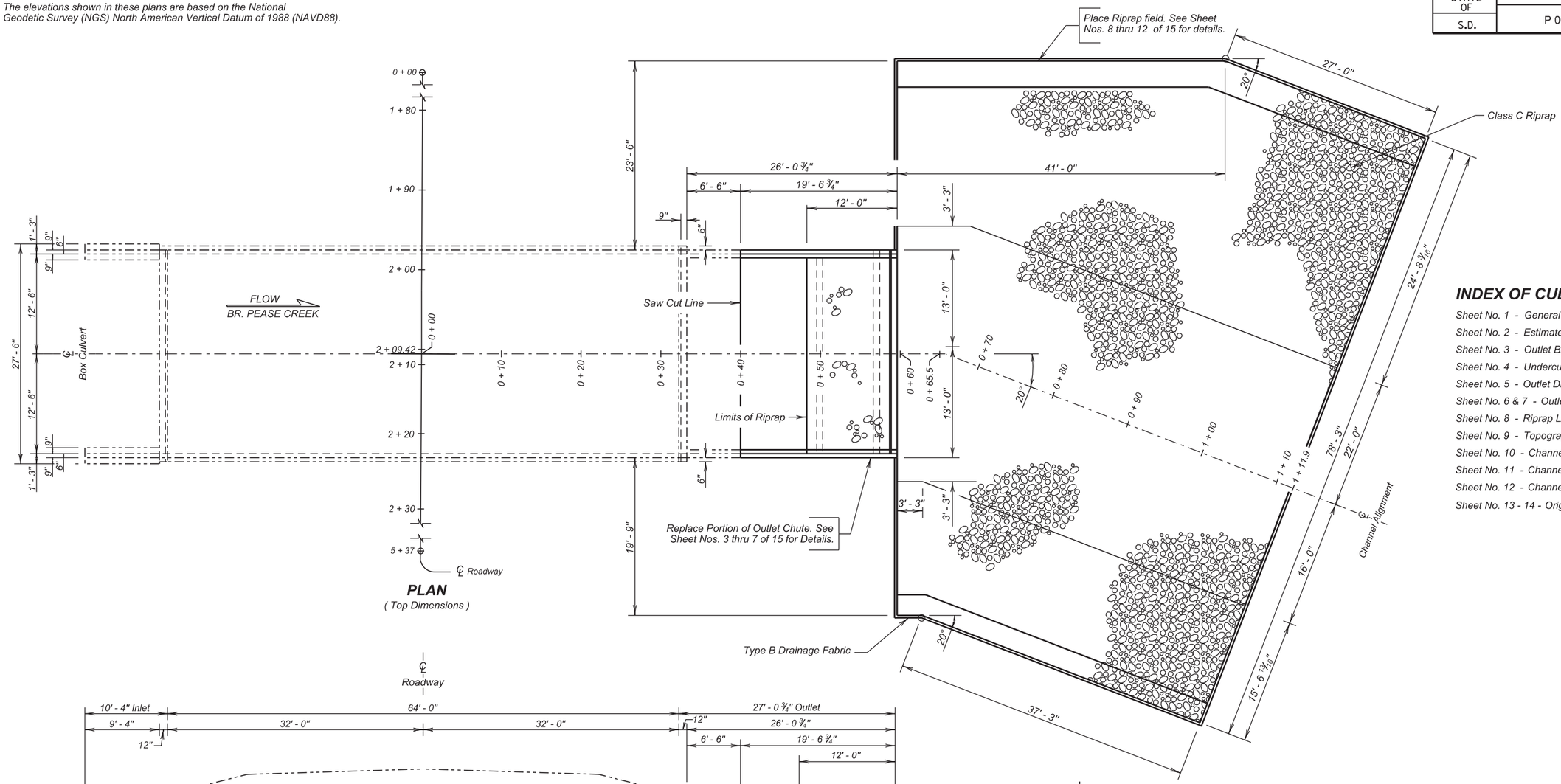
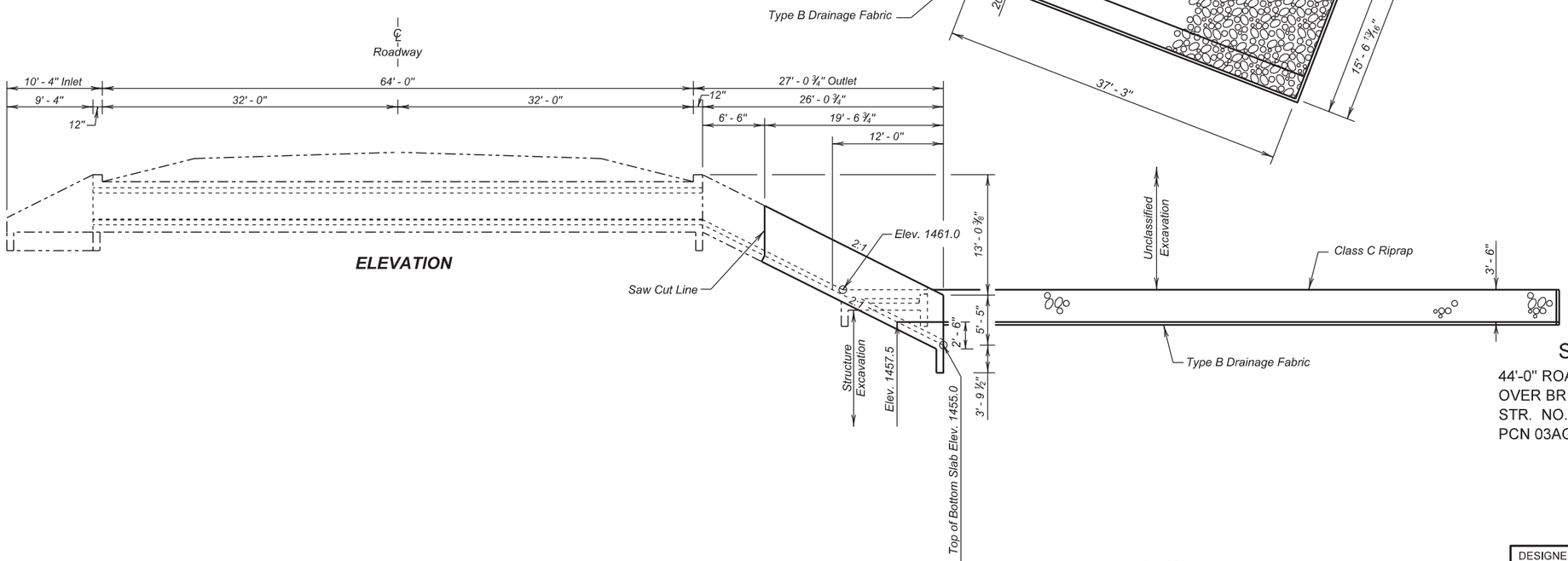
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	12	38

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



PLAN
(Top Dimensions)



ELEVATION

INDEX OF CULVERT SHEETS -

Sheet No. 1 - General Drawing for Upgrading
Sheet No. 2 - Estimate of Structure Quantities and Notes
Sheet No. 3 - Outlet Breakout Details
Sheet No. 4 - Undercut Details
Sheet No. 5 - Outlet Drop Chute Details
Sheet No. 6 & 7 - Outlet Drop Chute Details (Continued)
Sheet No. 8 - Riprap Layout
Sheet No. 9 - Topography and Control Points for Riprap Placement
Sheet No. 10 - Channel Cross Sections
Sheet No. 11 - Channel Cross Sections (Continued)
Sheet No. 12 - Channel Cross Sections (Continued)
Sheet No. 13 - 14 - Original Construction Plans

GENERAL DRAWING FOR UPGRADING

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206
PCN 03AG

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Goeden
CMIX03AG	03AGRA01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
120E0010	Unclassified Excavation	447	CuYd
420E0200	Structure Excavation, Box Culvert	28	CuYd
421E0200	Box Culvert Undercut	25	CuYd
460E0120	Class A45 Concrete, Box Culvert	21.6	CuYd
460E0300	Breakout Structural Concrete	20.6	CuYd
480E0100	Reinforcing Steel	3094	Lb
700E0310	Class C Riprap	751.7	Ton
831E0110	Type B Drainage Fabric	557	SqYd

SPECIFICATIONS

1. Design Specifications: AASHTO Standard Specifications for Highway Bridges 2002 Edition using Working Stress Design.

2. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2015 Edition and required provisions, supplemental specifications and special provisions as included in the Proposal.

DETAILS AND DIMENSIONS OF EXISTING BOX CULVERT

All details and dimensions of the existing box culvert, contained in these plans, are based on the original construction plans and shop plans. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary as-built dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF STRUCTURE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown in the plans.

1. Breakout the existing drop chute to the limits shown on the plans.

2. Place new drop chute according these plans.

3. Reshape the channel and place drainage fabric and riprap to the limits shown in the plans.

GENERAL CONSTRUCTION

1. All mild reinforcing steel shall conform to ASTM A615, Grade 60.

2. All exposed concrete corners and edges shall be chamfered 3/4" unless noted otherwise in the plans. Match existing chamfer if the existing chamfer differs.

3. Use 2" clear cover on all reinforcing steel except as shown otherwise.

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

5. Surfaces of fresh concrete at construction joints shall be rough floated sufficiently to consolidate the surface. All construction joints shall be cleaned of surface laitance, curing compounds and other foreign materials prior to placing fresh concrete against the joint.

6. Backfill material for undercut shall be Base Course material and shall conform to Section 260 of the Construction Specifications. Compaction of the Base course shall be governed by the Specific Density method.

BREAKOUT STRUCTURAL CONCRETE

1. The existing drop chute shall be broken out to the limits shown on the plans. Breakout limits shall be defined with a 3/4" deep sawcut (unless specified otherwise in these plans), where practical, as approved by the Engineer. Reinforcing steel that is exposed and is scheduled for use in the new construction shall be cleaned and straightened to the satisfaction of the Engineer.

2. All broken out concrete and discarded reinforcing bars shall be disposed of by the Contractor. Any disposal of the discarded material shall be in accordance with the Environmental Commitments.

3. The contract unit price per cubic yard for "Breakout Structural Concrete" shall include breaking out concrete, cleaning, straightening existing reinforcing steel and disposal of all broken out material.

RIPRAP

1. The Class C Riprap shall be constructed to the configuration, limits and elevations shown in the plans.

2. The cost of excavation for placement of the riprap shall be incidental to the contract unit price for "Class C Riprap". Additional excavation, as shown in the plans, shall be included in the contract unit price per cubic yard for "Unclassified Excavation."

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

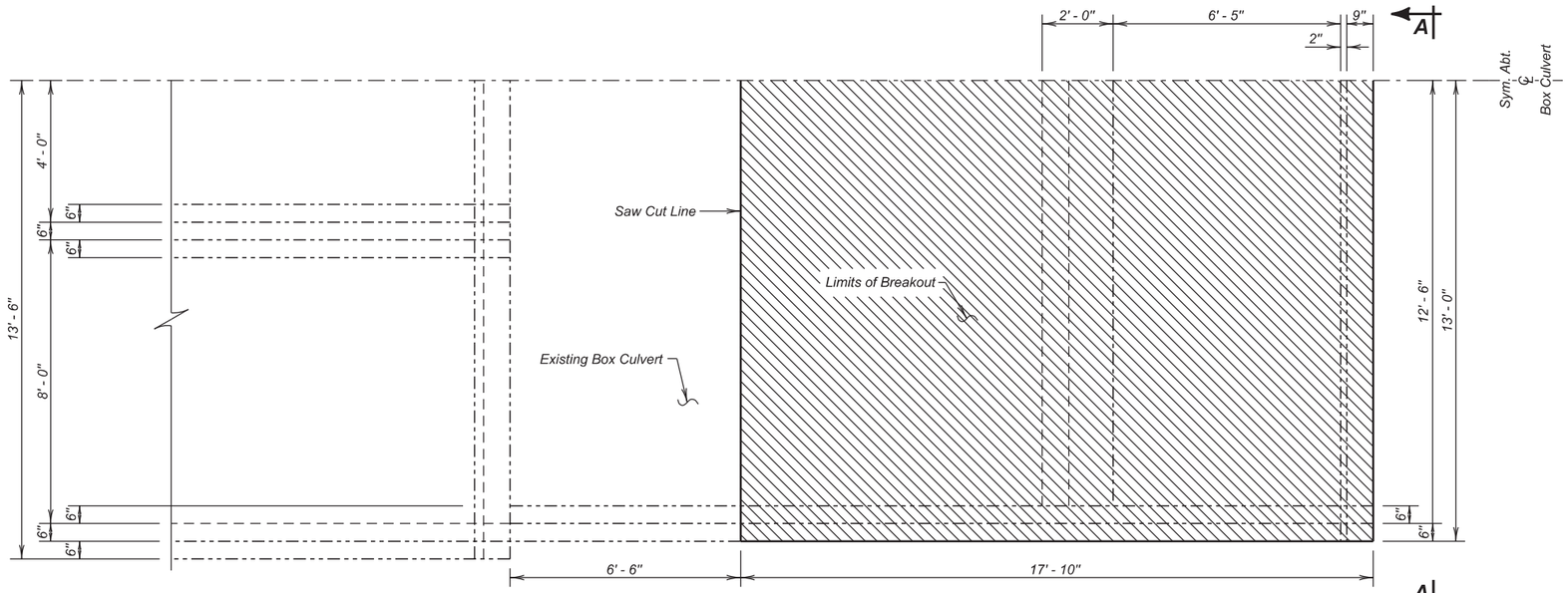
SPECIAL 3 - 8' x 4' BOX CULVERT

STR. NO. 12-300-206

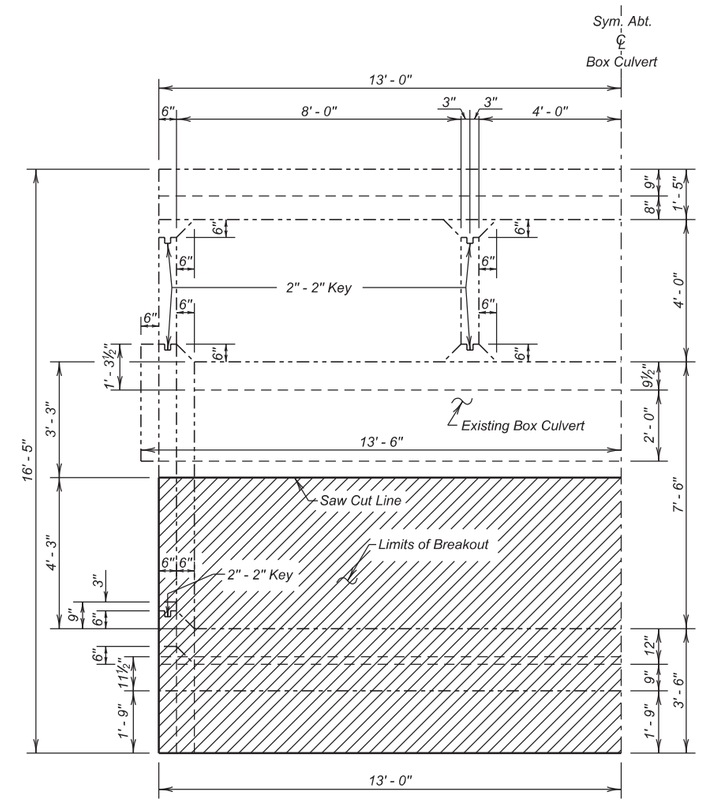
NOVEMBER 2015

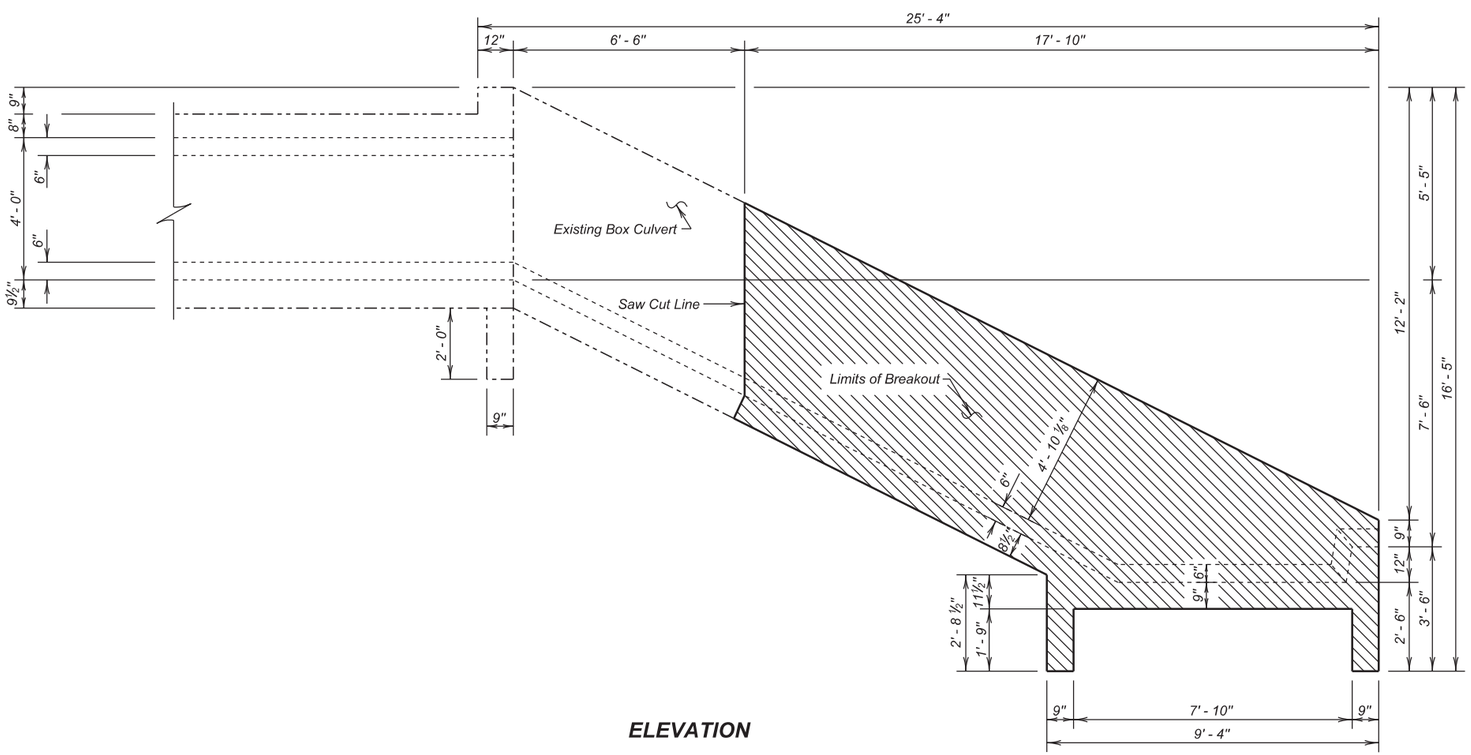
DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KSK	Kevin N. Goeden
CMIX03AG	03AGRA02		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	14	38



HALF SEC. PLAN





ELEVATION

Breakout Structural Concrete

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Breakout Structural Concrete	Cu. Yd.	20.6

OUTLET BREAKOUT DETAILS

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

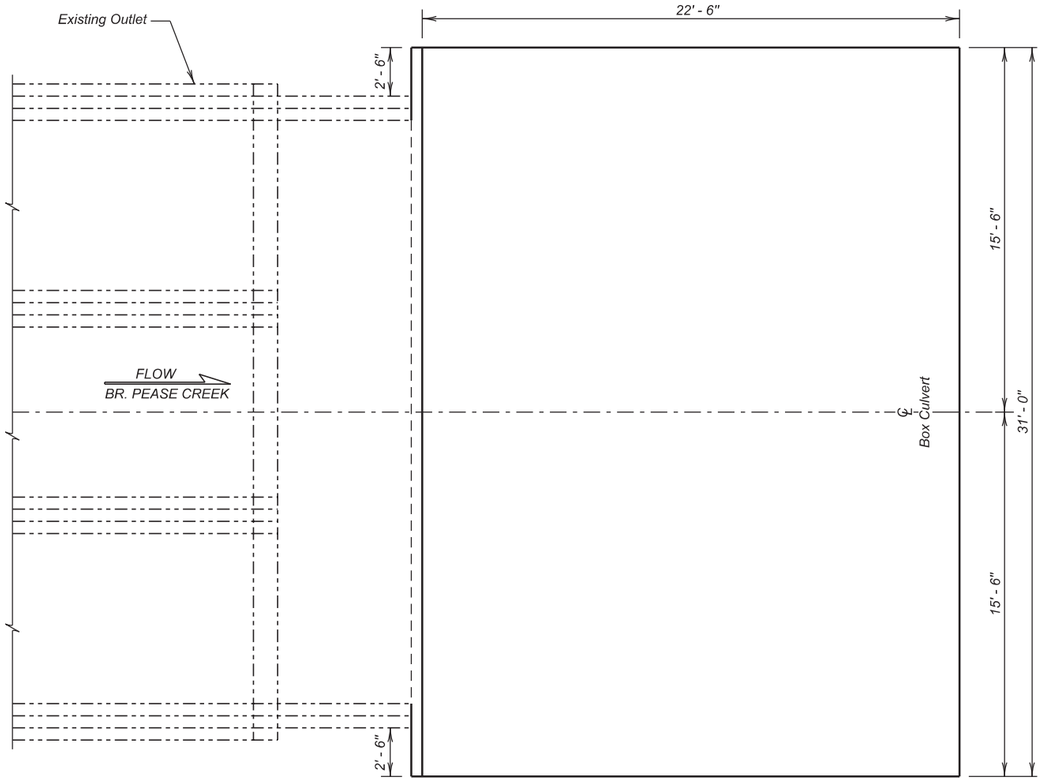
44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

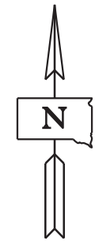
CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

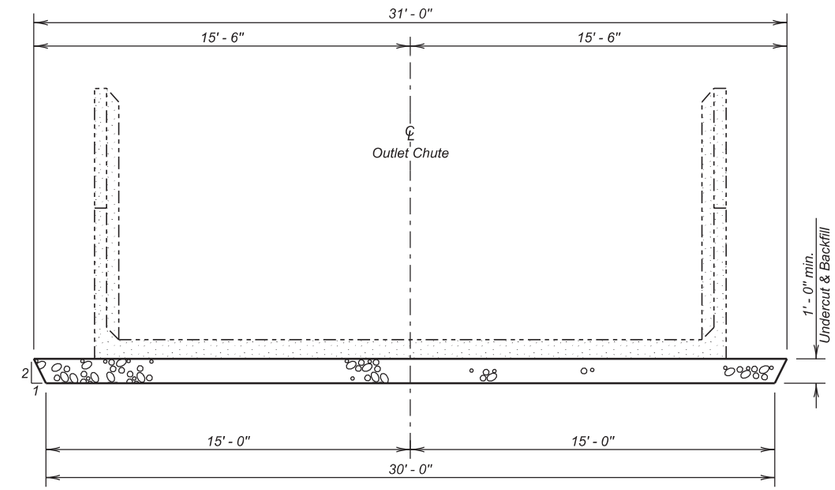
DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Boeden
CMIX03AG	03AGRA03		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	15	38

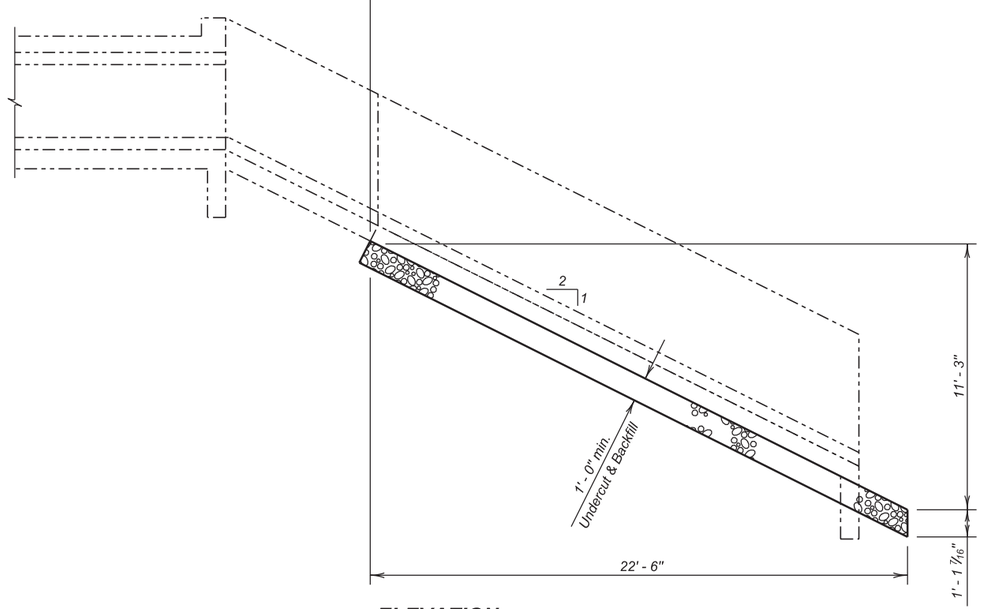


PLAN
(Top Dimensions)





TYPICAL SELECTION
(For Limits of Undercut)



ELEVATION

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
⌀ Box Culvert Undercut	Cu. Yd.	25

⌀ *For payment, quantity is based on plan shown under cut dimensions and will not be measured unless the Engineer orders a change*

UNDERCUT DETAILS
FOR
SPECIAL 3 - 8' X 4' BOX CULVERT

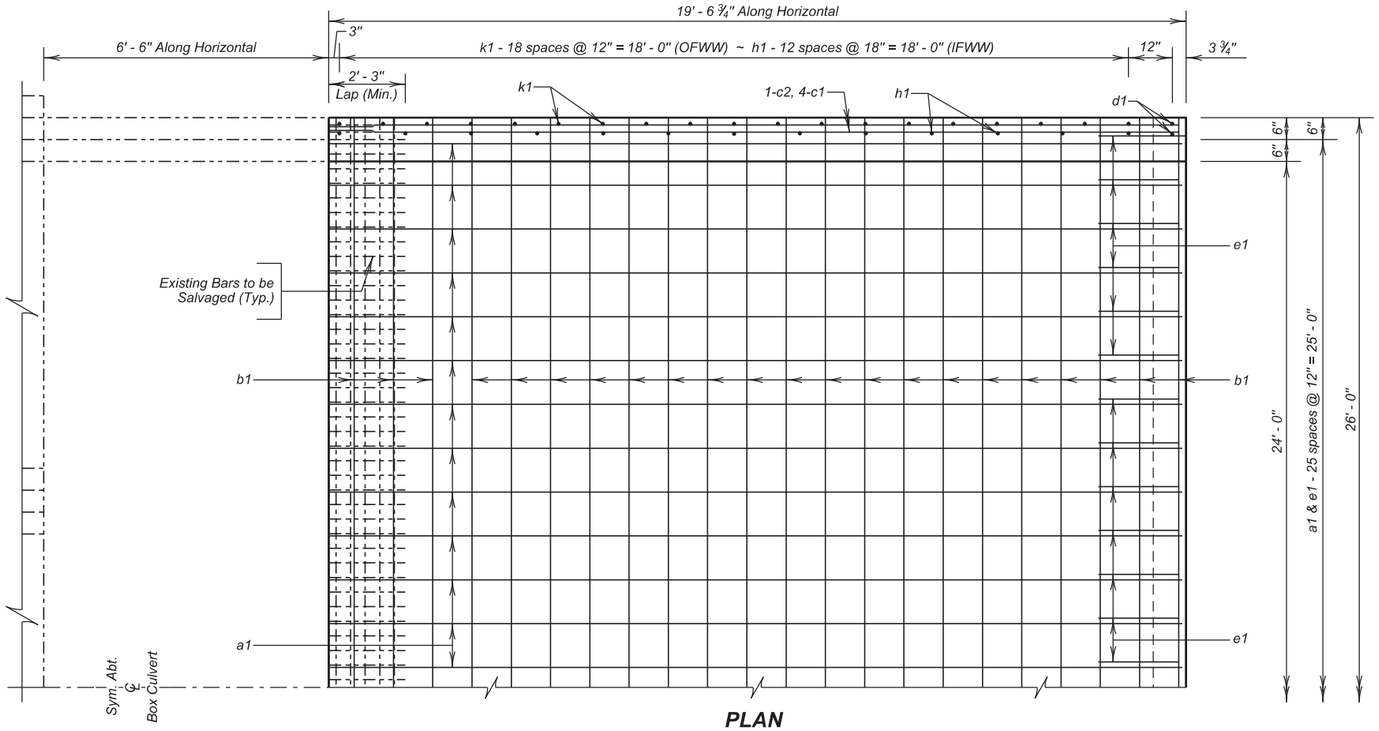
44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

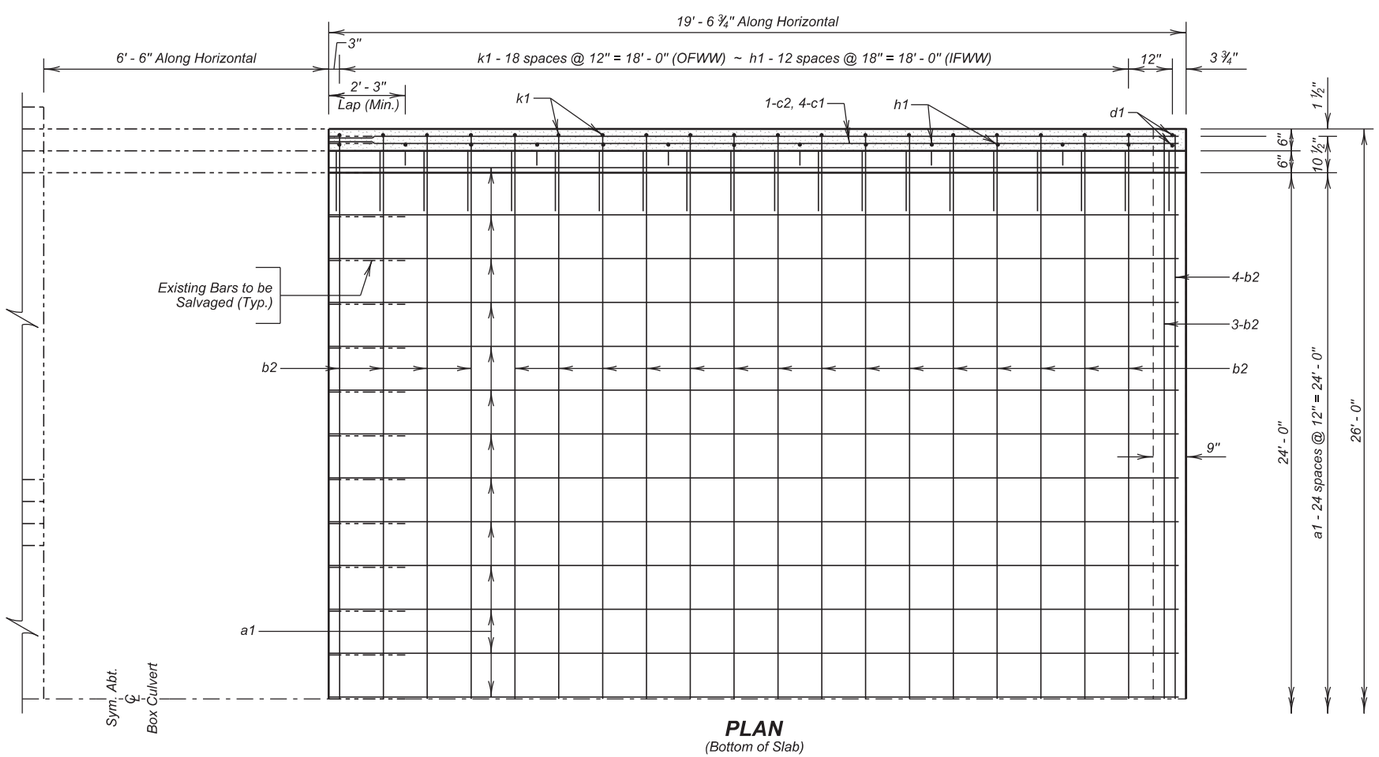
CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Goeden
CMIX03AG	03AGRA04		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	16	38



PLAN
(Top of Slab)



PLAN
(Bottom of Slab)

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

OUTLET DROP CHUTE DETAILS

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

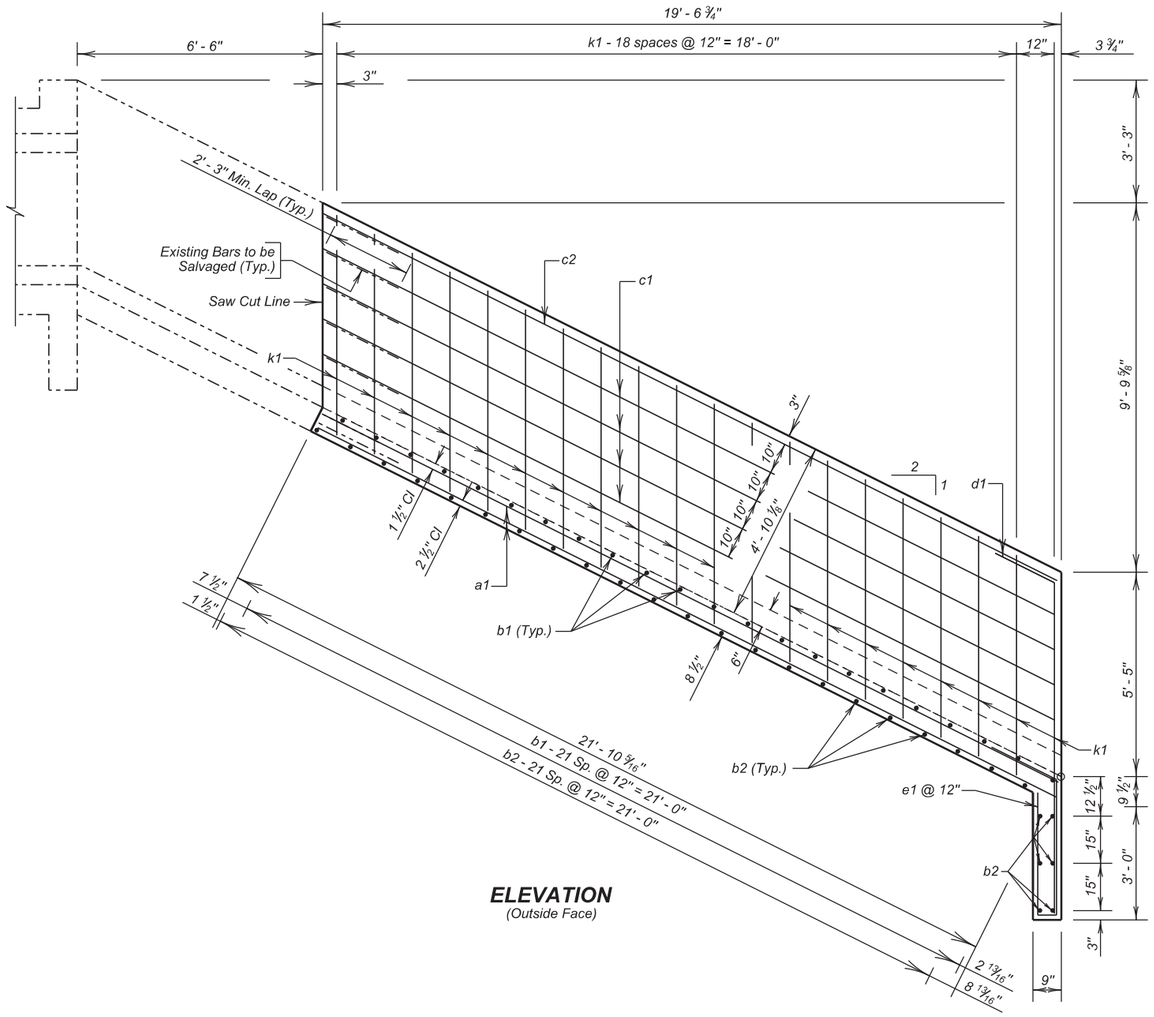
44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

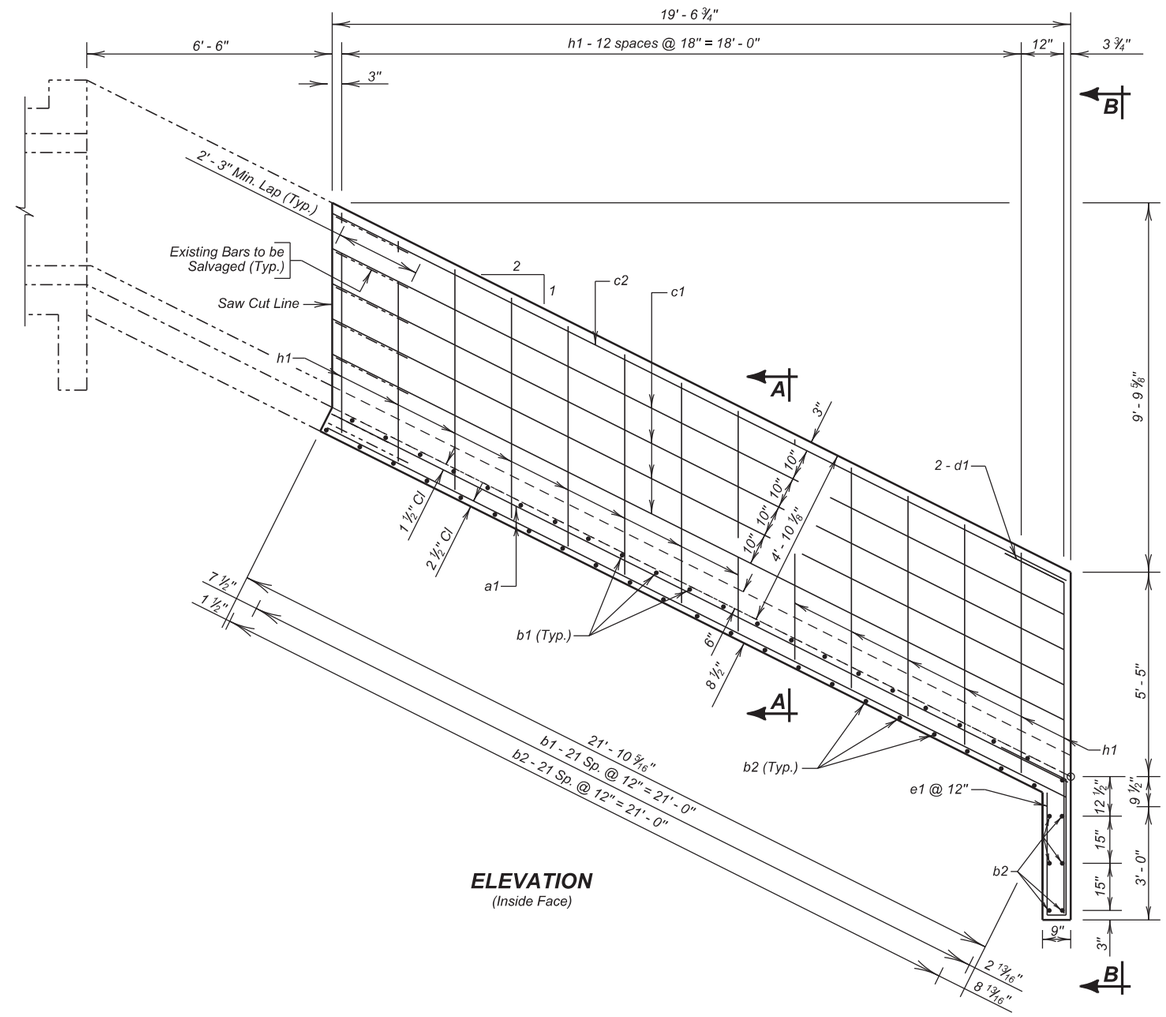
CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Goeden
CMIX03AG	03AGRA05		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050(104)302	17	38



ELEVATION
(Outside Face)



ELEVATION
(Inside Face)

Use this sheet in conjunction with Sheet No. 7 of 14.

OUTLET DROP CHUTE DETAILS (CONTINUED)

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050(104)302

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

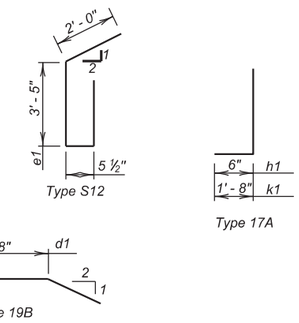
DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Coeden BRIDGE ENGINEER
CMIX03AG	03AGRA06		

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	18	38

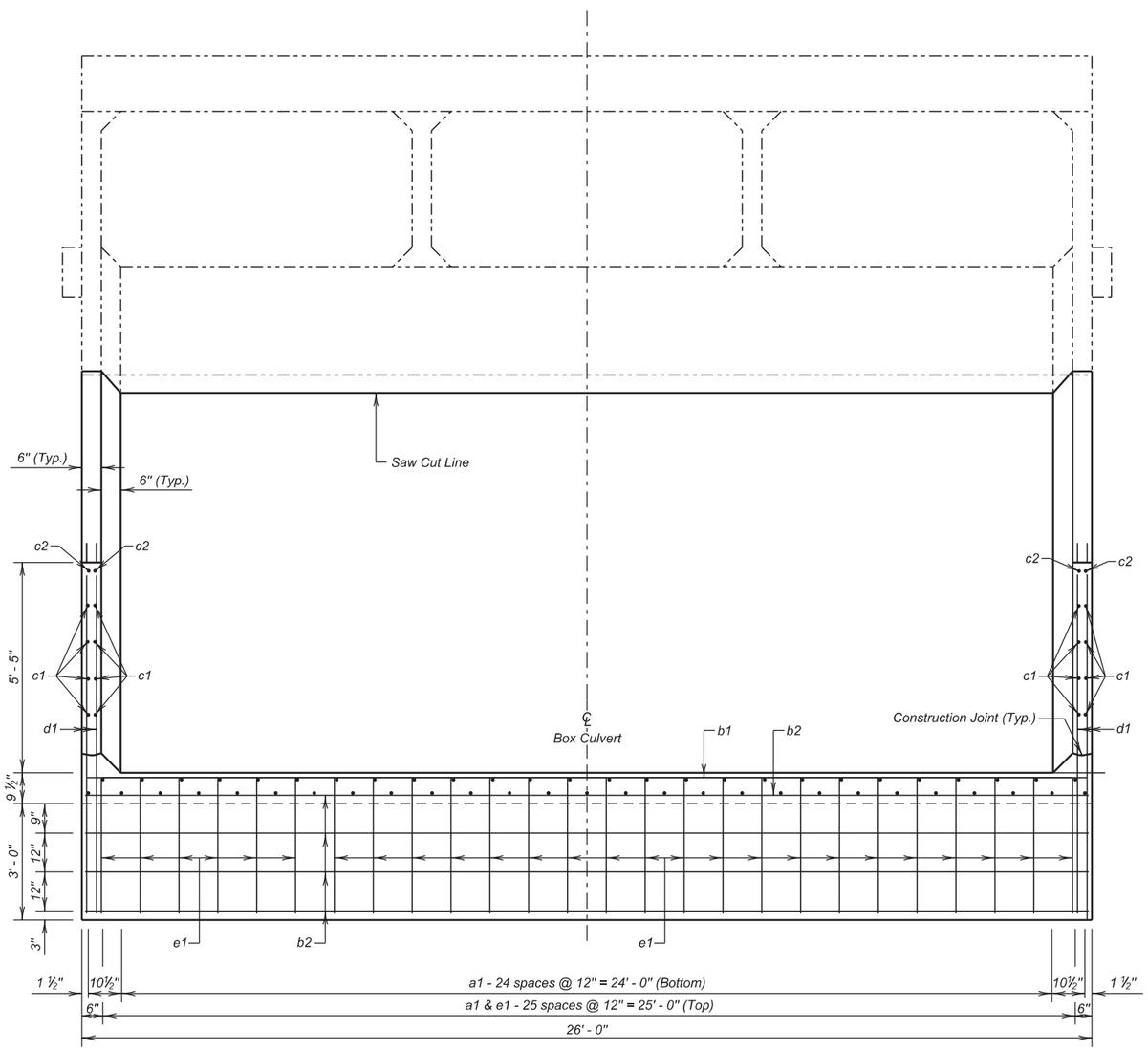
REINFORCING SCHEDULE
(For One Outlet)

Mk.	No.	Size	Length	Type
a1	53	4	21' - 6"	Str.
b1	20	4	25' - 9"	Str.
b2	26	6	25' - 9"	Str.
c1	16	5	21' - 6"	Str.
c2	4	6	21' - 6"	Str.
d1	4	5	10' - 8"	19B
e1	26	4	8' - 9"	S12
h1	26	4	6' - 3"	17A
k1	38	4	7' - 6"	17A

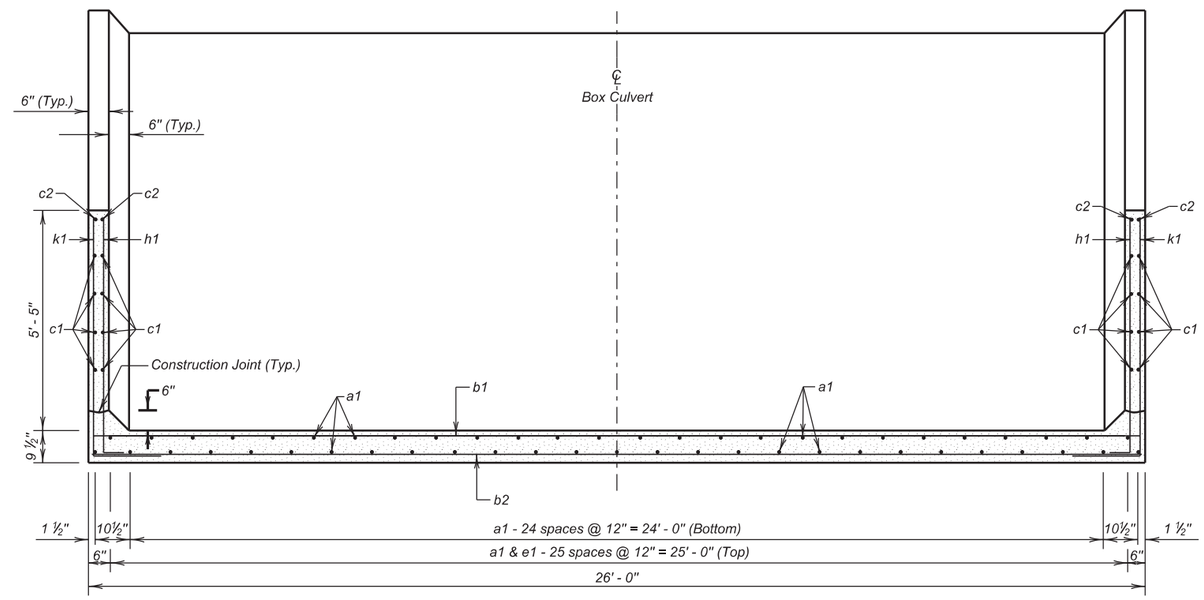
Bending Details



NOTES:
All dimensions are out to out of bars.



VIEW B - B



SECTION A - A

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu Yd	21.6
Reinforcing Steel	Lb	3094
Structure Excavation, Box Culvert	Cu Yd	28

OUTLET DROP CHUTE DETAILS (CONTINUED)

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

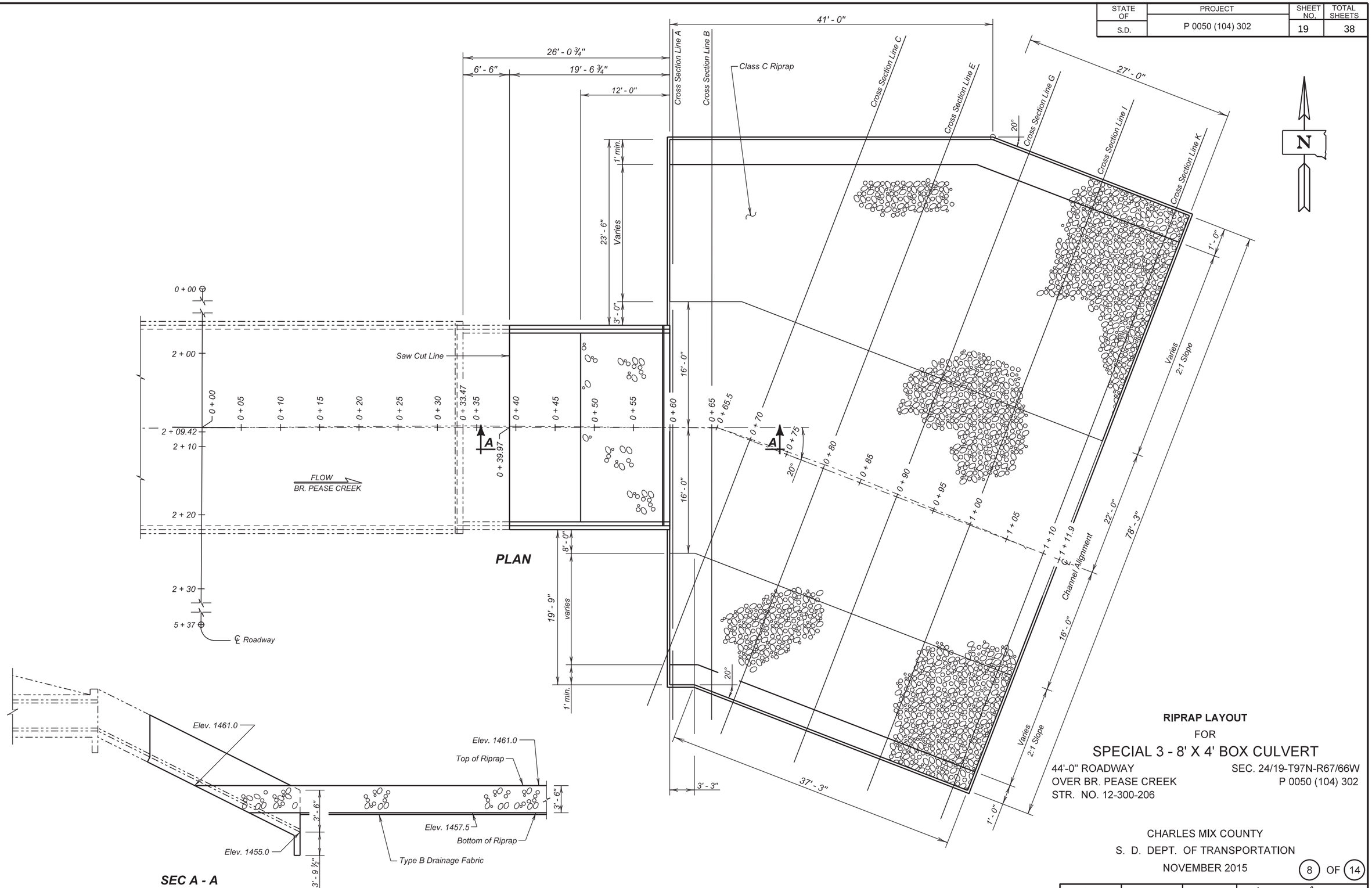
44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Goeden
CMIX03AG	03AGRA07		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	19	38



RIPRAP LAYOUT

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

8 OF 14

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Goeden
CMIX03AG	03AGRA08		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	20	38

EXISTING TOPOGRAPHY SYMBOLOGY

T/F — Telephone Fiber Optics

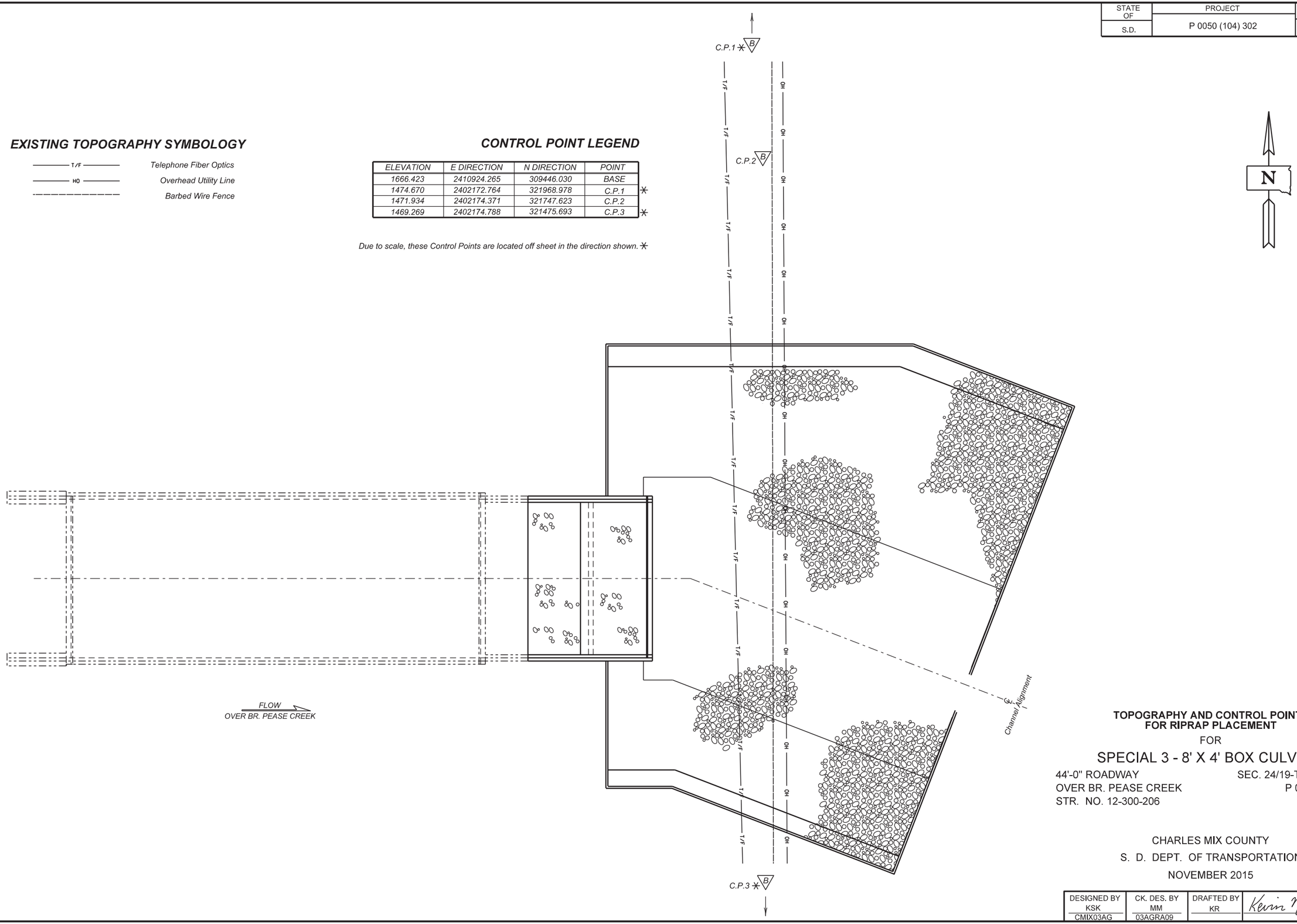
HO — Overhead Utility Line

Barbed Wire Fence

CONTROL POINT LEGEND

ELEVATION	E DIRECTION	N DIRECTION	POINT
1666.423	2410924.265	309446.030	BASE
1474.670	2402172.764	321968.978	C.P.1 ✳
1471.934	2402174.371	321747.623	C.P.2
1469.269	2402174.788	321475.693	C.P.3 ✳

Due to scale, these Control Points are located off sheet in the direction shown. ✳



TOPOGRAPHY AND CONTROL POINTS FOR RIPRAP PLACEMENT

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

44'-0" ROADWAY
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

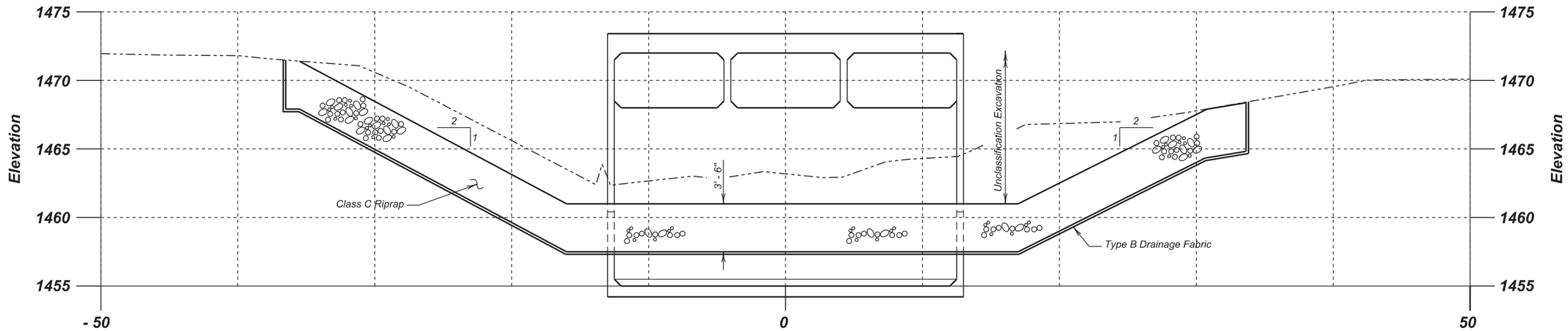
CHARLES MIX COUNTY

S. D. DEPT. OF TRANSPORTATION

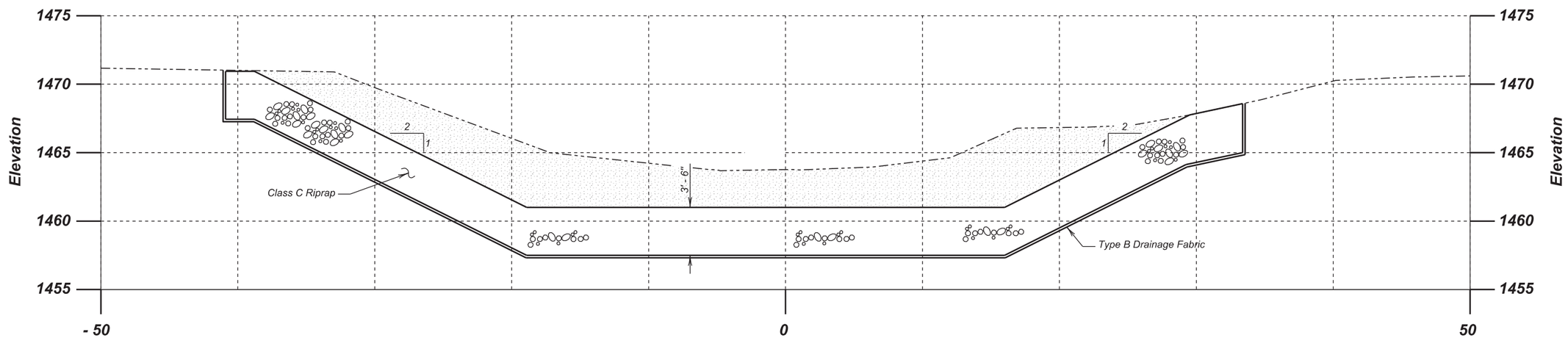
NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Goeden
CMIX03AG	03AGRA09		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	21	38



CROSS SECTION A (0+60)



CROSS SECTION C (0+70)

Existing Ground Line

Class C Riprap
Excavation Incidental to Riprap

Unclassified Excavation

CHANNEL CROSS SECTIONS

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

OVER BR. PEASE CREEK — SEC. 24/19-T97N-R67/66W

STR. NO. 12-300-206 — P 0050 (104) 302

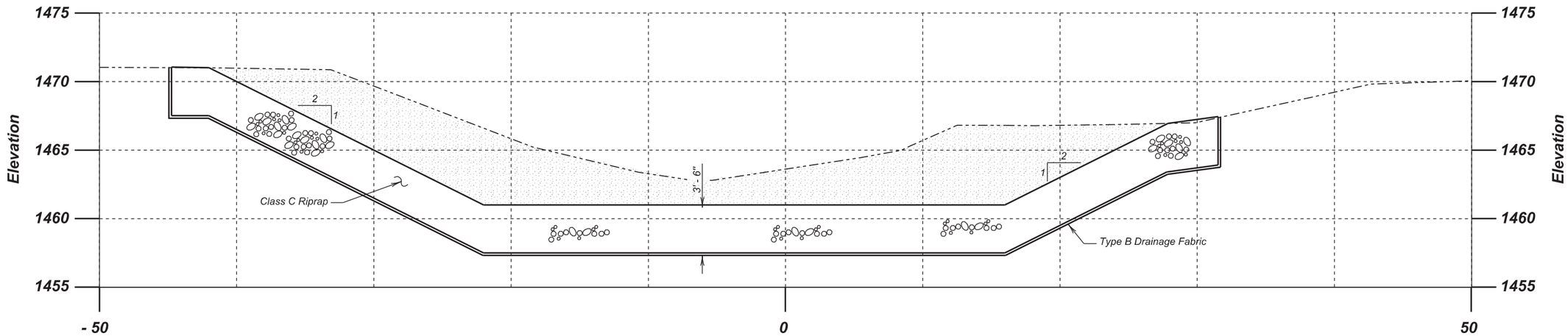
CHARLES MIX COUNTY

S. D. DEPT. OF TRANSPORTATION

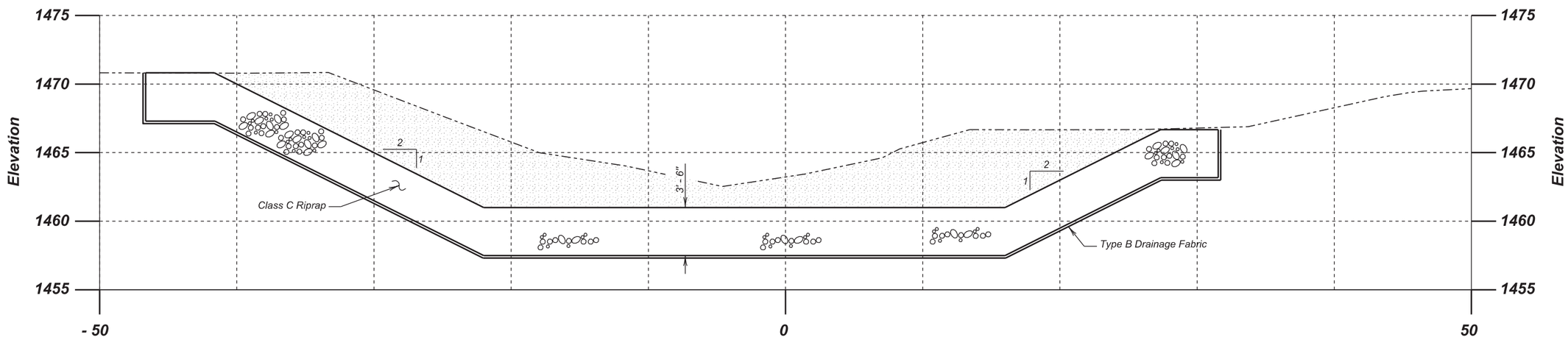
NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Goeden
CMIX03AG	03AGRA10		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	22	38



CROSS SECTION E (0+80)



CROSS SECTION G (0+90)

Existing Ground Line

Class C Riprap
Excavation Incidental to Riprap

Unclassified Excavation

CHANNEL CROSS SECTIONS

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

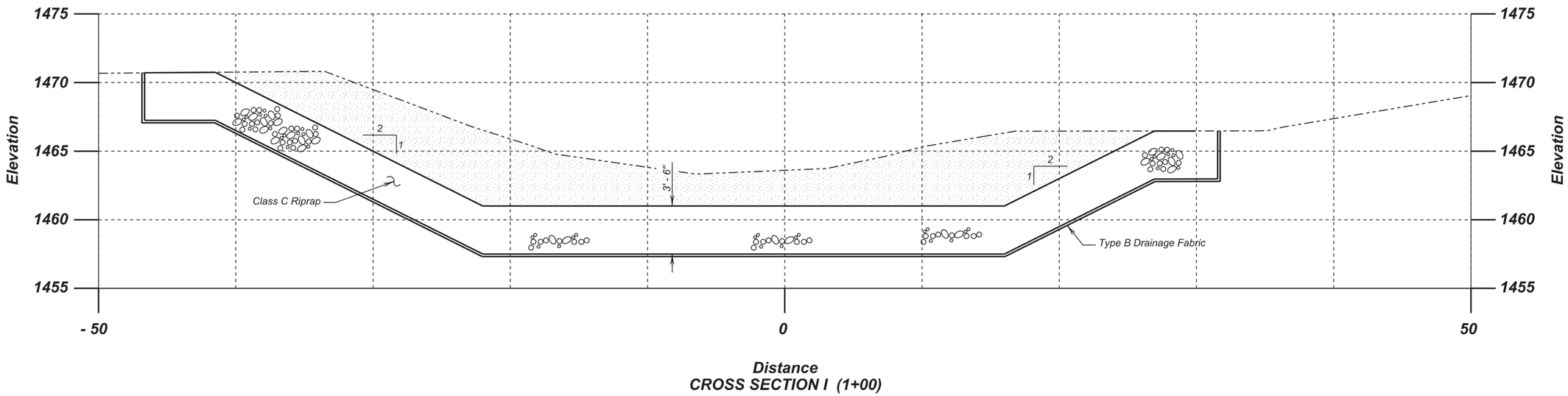
OVER BR. PEASE CREEK
STR. NO. 12-300-206

SEC. 24/19-T97N-R67/66W
P 0050 (104) 302

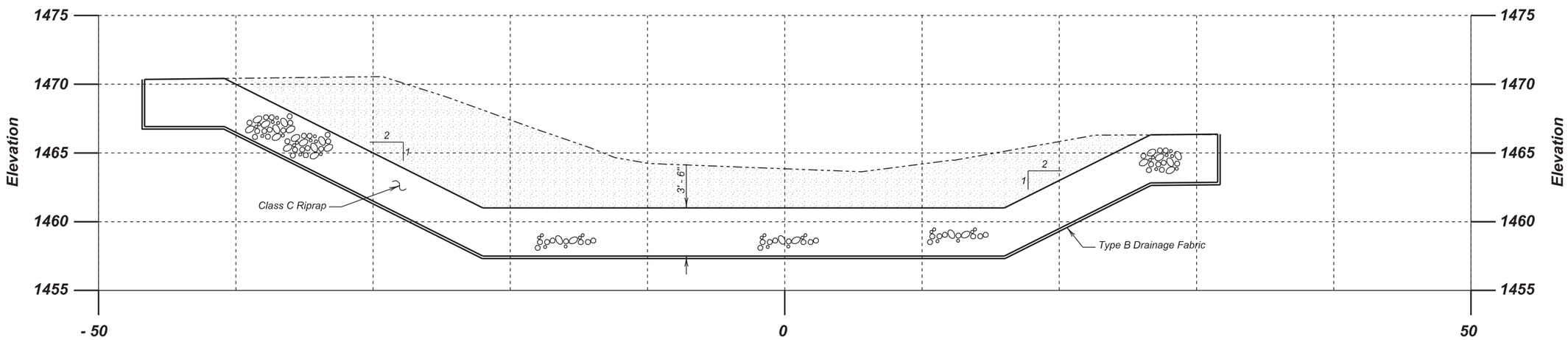
CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Goeden
CMIX03AG	03AGRA11		BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0050 (104) 302	23	38



CROSS SECTION I (1+00)



CROSS SECTION K (1+10)

Existing Ground Line

Class C Riprap
Excavation Incidental to Riprap

Unclassified Excavation

ESTIMATED QUANTITIES

	ITEM	UNIT	QUANTITY
#	Class C Riprap	Ton	751.7
	Type B Drainage Fabric	Sq. Yd.	557
	Unclassified Excavation	CuYd	447

For estimating purposes only, a factor of 1.4 tons/cu. yd. was used to convert cu. yd. to tons.

CHANNEL CROSS SECTIONS (CONTINUED)

FOR

SPECIAL 3 - 8' X 4' BOX CULVERT

OVER BR. PEASE CREEK — SEC. 24/19-T97N-R67/66W

STR. NO. 12-300-206 — P 0050 (104) 302

CHARLES MIX COUNTY

S. D. DEPT. OF TRANSPORTATION

NOVEMBER 2015

DESIGNED BY	CK. DES. BY	DRAFTED BY	
KSK	MM	KR	Kevin N. Boeden
CMIX03AG	03AGRA12		BRIDGE ENGINEER

STATE OF S.D.	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0050 (104) 302	24	38

INDEX OF CULVERT SHEETS

Sheet No.1 General Drawing and Quantities.
Sheet No.2 Outlet Details and Quantities.
Sheet No.3 Det. for Std. 3-8'x4' Box Culvert - L-3-8'x4'

SPECIFICATION NOTE:-

Use current South Dakota Standard Specifications for Roads and Bridges.

GENERAL NOTES.-

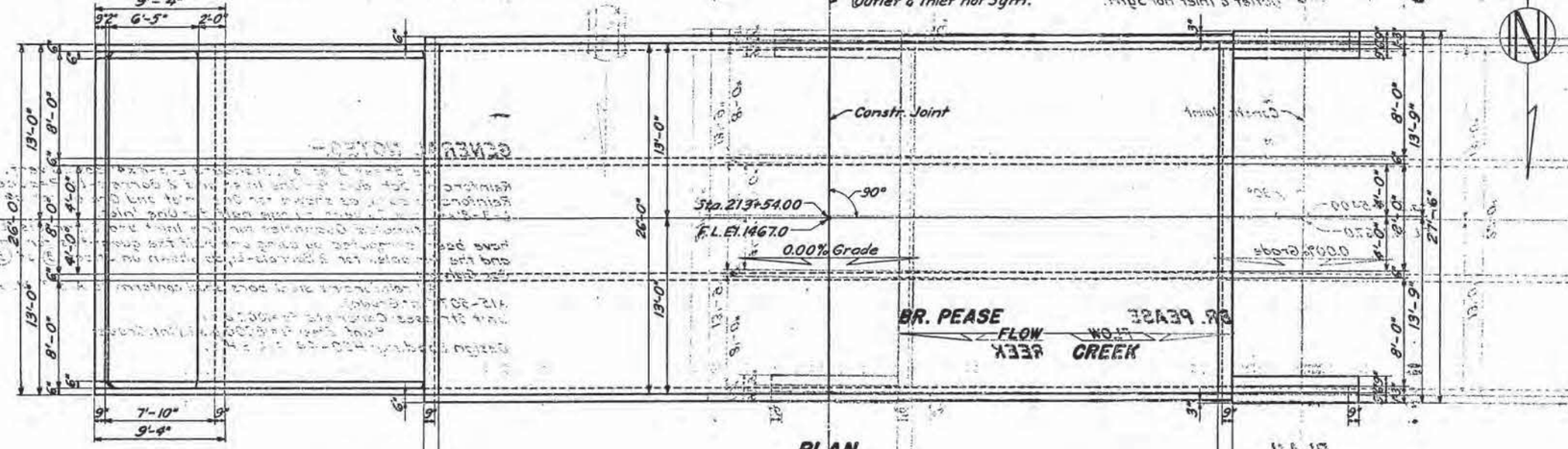
See Sheet 3 of 3, Standard L-3-8'x4' Box Culvert, for Details and Reinforcing Schedule for One Inlet and 2 Barrels-L1. Reduce the number of Reinforcing Bars, as shown for One Inlet and One Outlet on Sheet 3 of 3, Standard L-3-8'x4' Box Culvert, by one half for One Inlet.

Estimated Quantities for One Inlet and 2 Barrels-L1 as shown on this sheet have been computed by using one half the quantities for One Inlet and one Outlet and the Variables for 2 Barrels-L1, as shown on Sheet 3 of 3, Standard L-3-8'x4' Box Culvert.

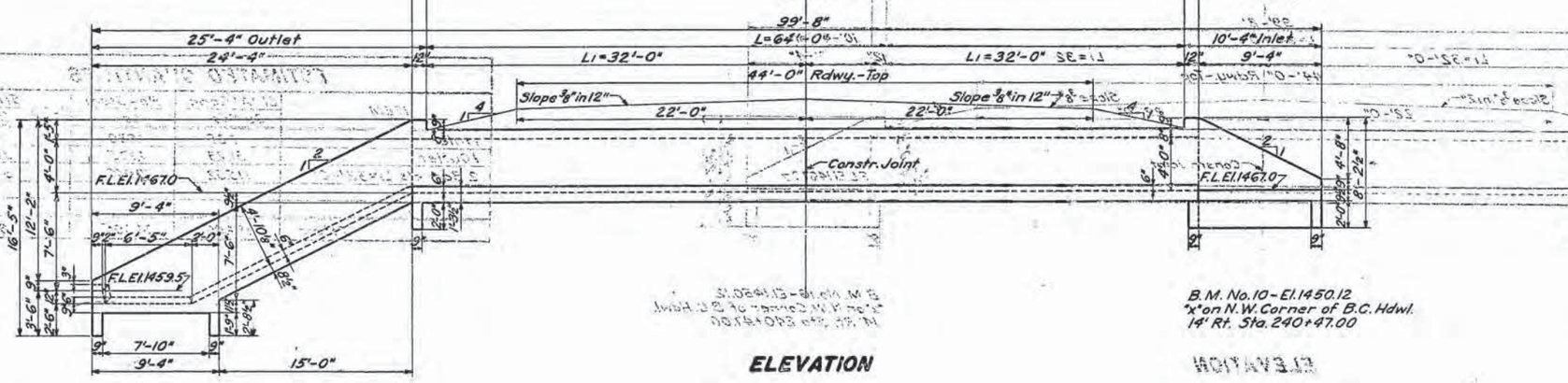
All reinforcing steel bars shall conform to A.S.T.M. A305-50T and A15-50T (Int.Grade).

Unit Stresses: Concrete fc=1000 p.s.i.
Reinf. Steel fs=18000 p.s.i. (Int. Grade)

Design Loading: H20-44 A.A.S.H.O.



PLAN



ELEVATION

B.M. No.9-El.1473.13
Iron Pin & G.S.
94' Lt. Sta. 211+00

B.M. No.10-El.1450.12
"x" on N.W. Corner of B.C. Hdwl.
14' Rt. Sta. 240+47.00

ESTIMATED QUANTITIES

ITEM	Cl. "A" Conc. Cu. Yds.	Re-Steel Lbs.	Str. Exc. Cu. Yds. (Below F.L.)
1 Inlet	7.25	1,080	4.5
1 Outlet	31.28	6,175	32.0
2 Barrels L1=32'-0"	115.52	18,040	50.5
Totals	154.00	24,305	87.0

25.31

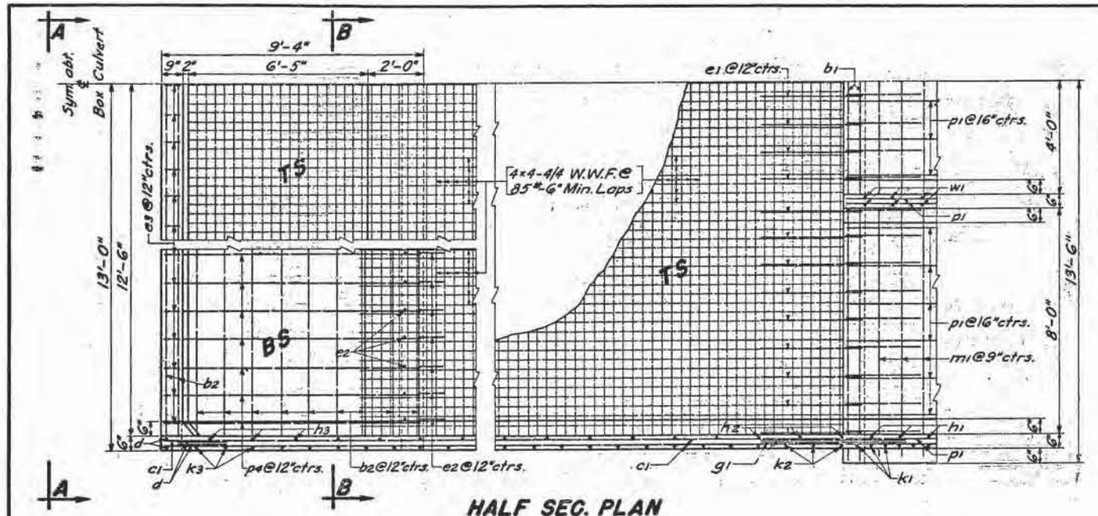
ORIGINAL CONSTRUCTION PLANS

GENERAL DRAWING AND QUANTITIES
FOR
SPECIAL 3-8'x4' BOX CULVERT
OVER BR. PEASE CREEK SEC.24/19-T97N-R67/66W
STA. 213+54.00 F189B (STATE WORK)
STR. NO. 12-300-206 CHARLES MIX COUNTY
SOUTH DAKOTA H 20-44
STATE HIGHWAY COMMISSION
JAN. 1954

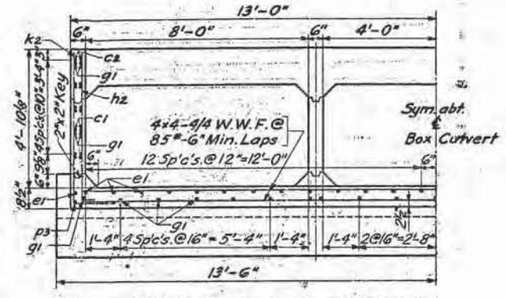
-X028-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	R.K.		BRIDGE ENGINEER

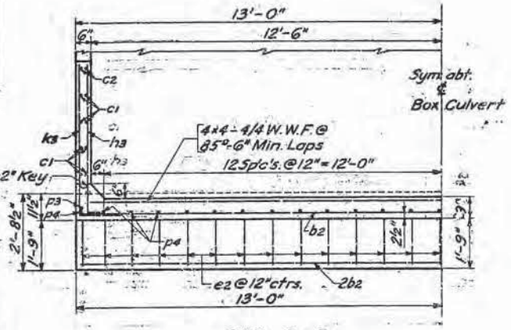
STATE OF S.D.	PROJECT P 0050 (104) 302	SHEET NO. 25	TOTAL SHEETS 38



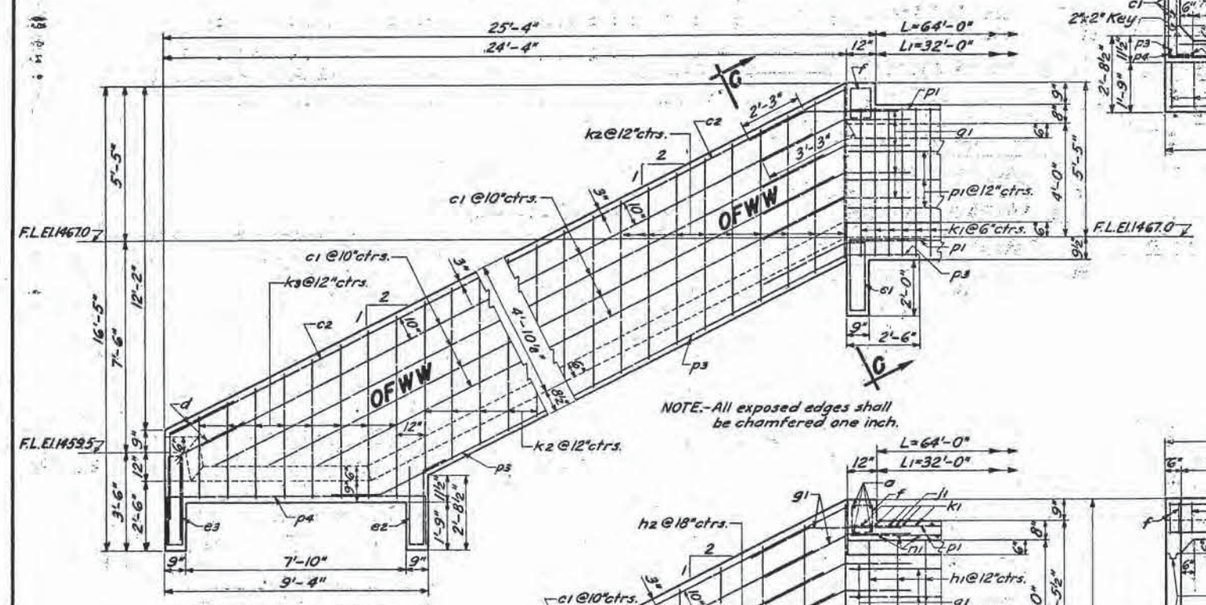
HALF SEC. PLAN



SEC. C-C



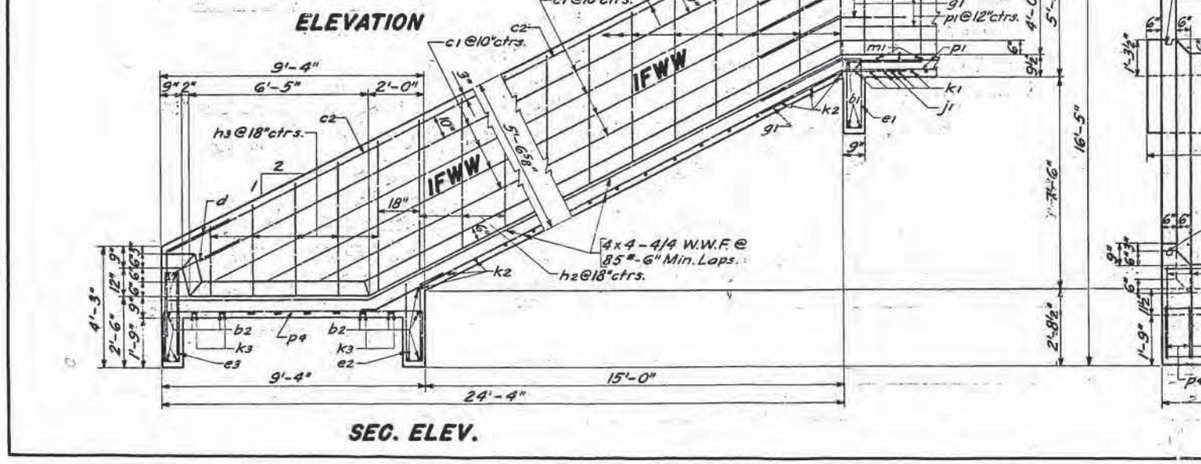
SEC. B-B



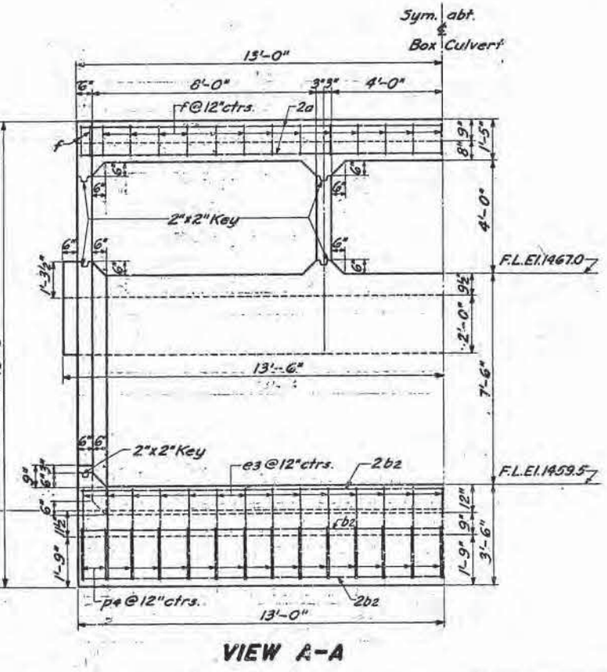
ELEVATION

NOTE.- All exposed edges shall be chamfered one inch.

NOTE.- 1½" edge distance except as shown.



SEC. ELEV.

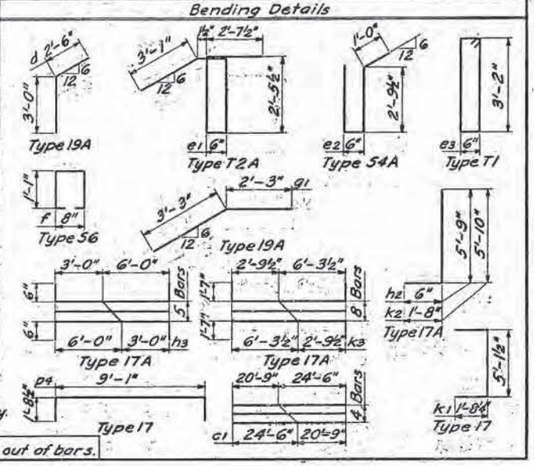


VIEW A-A

REINFORCING SCHEDULE
(For 1 Outlet only)

Mk.	No.	Size	Length	Type
a	4	6	25'-9"	Str.
b1	4	6	26'-9"	Str.
b2	17	6	25'-9"	Str.
c1	8	5	45'-3"	Str.
d	8	5	5'-6"	19A
e1	28	4	11'-9"	T2A
e2	27	4	7'-3"	S4A
e3	27	4	8'-0"	T1
f	29	4	3'-3"	S6
g1	41	5	5'-6"	19A
h2	22	4	6'-3"	17A
h3	5	4	10'-0"	17A
k1	2	4	8'-6"	17
k2	32	4	7'-6"	17A
k3	8	4	12'-3"	17A
*p3	2	4	22'-0"	Str.
p4	27	4	12'-6"	17
c2	4	6	26'-9"	Str.
	-			

Bending Details



*Bend in field where necessary.

NOTE: Dimensions are out to out of bars.

LEGEND FOR PLACING RE-STEEL
(For 1 Outlet only)

OFWW-Outside Face Wing Wall	TS-Top of Slab
IFWW-Inside Face Wing Wall	BS-Bottom of Slab

NOTE:-
Details, Reinforcing Schedule and Estimated Quantities for one Outlet as shown on this sheet, shall supersede the corresponding portions shown on sheet 3 of 3, Standard L-3-8'x4' Box Culvert.

ESTIMATED QUANTITIES
(For 1 Outlet only)

Class "A" Concrete	Cu. Yds.	31.23
*Reinforcing Steel	Lbs.	4175
Structure Ex. (Below F.L.)	Cu. Yds.	32.0

*Includes weight of 4x4-4/4 W.W.F. @ 85# per 100 Sq. Ft. Required 1270 Sq. Ft. = 1080#.

ORIGINAL CONSTRUCTION PLANS

OUTLET DETAILS AND QUANTITIES
FOR
SPECIAL 3-8'x4' BOX CULVERT
OVER BR. PEASE CREEK SEC. 24/19-T97N-R67/66W
STA. 213+54.00 **F 189 B (STATE WORK)**
CHARLES MIX COUNTY
STR. NO. 12-300-206 **SOUTH DAKOTA** **H20-44**
STATE HIGHWAY COMMISSION
JAN. 1954 (14) OF (14)

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	R.K.		BRIDGE ENGINEER

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0046(57)291	26	38

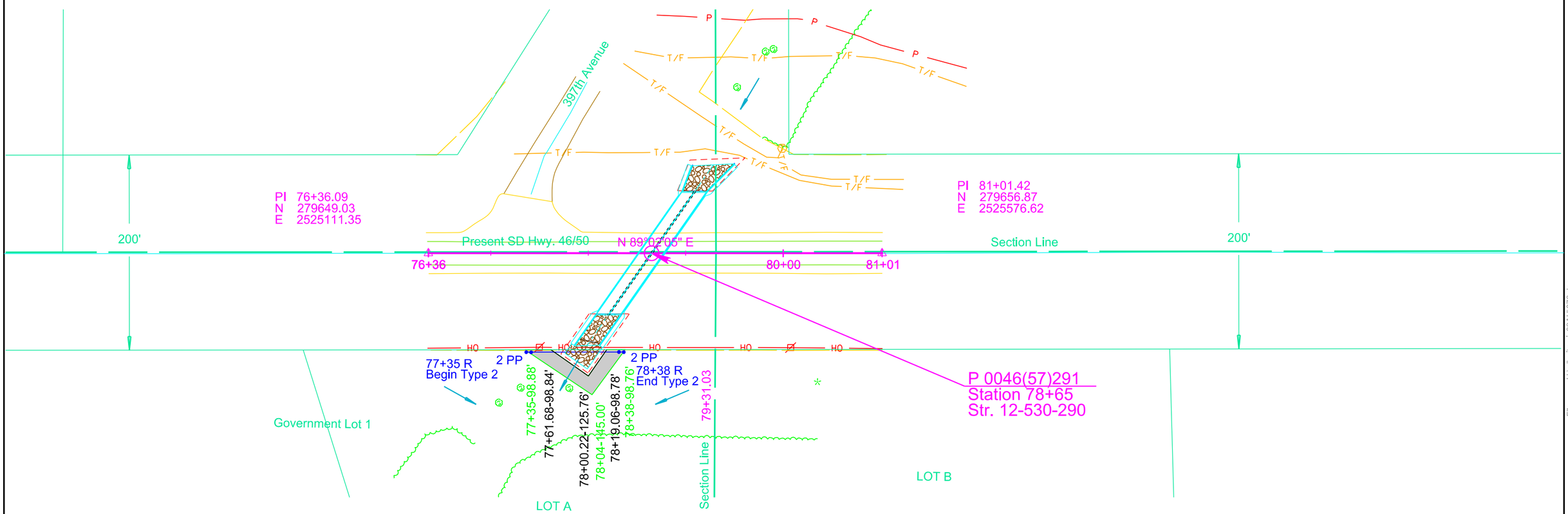
Plotting Date: 09/04/2015

78+54
Retain Twin 10'x10' - 154' RCBC
& Wingwalls

78+65
Take Out Inlet & Outlet Aprons
(Incidental Work, Structure)

77+76 R to 78+14 R
Install Class B Riprap - 104.7 Tons
& Type B Drainage Fabric - 147 SY

78+97 L to 79+49 L
Install Class B Riprap - 101.4 Tons
& Type B Drainage Fabric - 141 SY



Wayne A. Scherr & Candyce J. Scherr

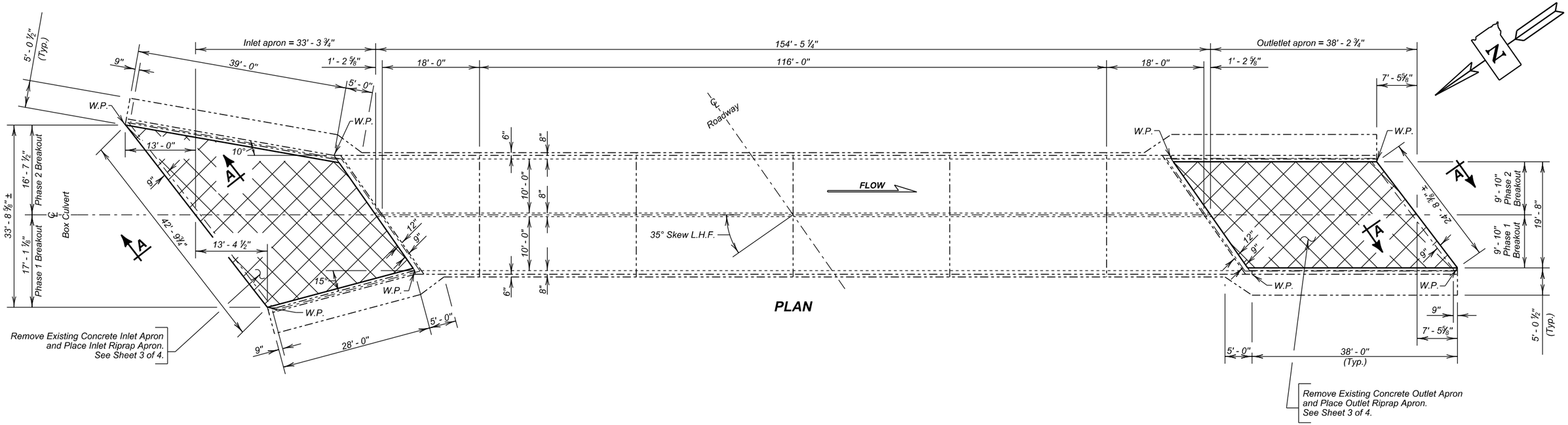
Lot A of Duncanson's Subdivision in
NE1/4 NE1/4 of Section 2 -
Township 95 North - Range 63 West
of the 5th P.M.

Parcel 1
0.02 ac, R.O.W. Taking
(773 sq ft) more or less.

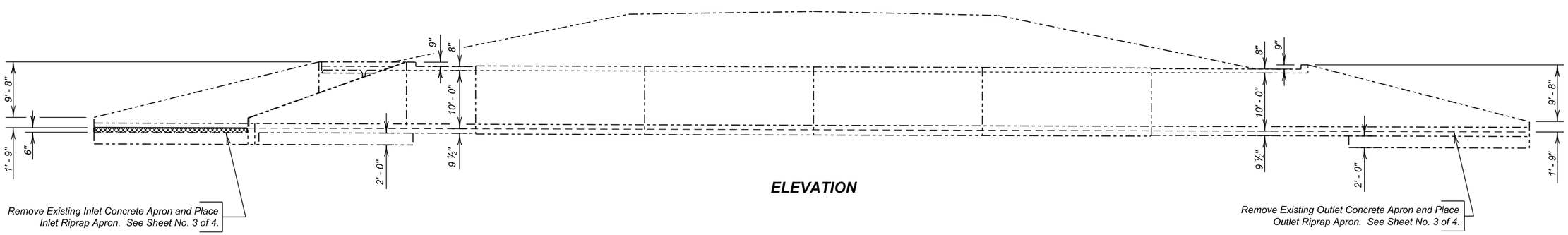
Parcel 1
77+35 to 78+38 R
Temporary Easement for
Riprap Placement
(1606 sq ft), more or less

Plot Scale - 1:100
Plotted From - TRSF12139
File - U:\rdp\jcmlx03AH\076.dgn

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0046(57)291	27	38



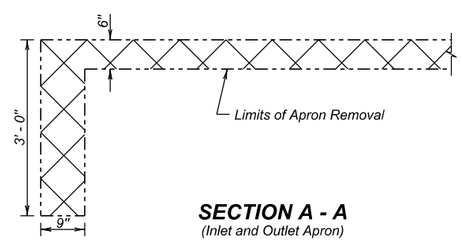
PLAN



ELEVATION

INDEX OF BRIDGE SHEETS

Sheet No. 1 - General Layout and Breakout Details
Sheet No. 2 - Estimate of Structural Quantities and Notes
Sheet No. 3 - Riprap Apron Details
Sheet No. 4 - Original Construction Plans



SECTION A - A
(Inlet and Outlet Apron)

Limits of Apron Removal

GENERAL LAYOUT AND BREAKOUT DETAILS
FOR
SPECIAL 2 - 10' X 10' BOX CULVERT

OVER TRIB CHOTEAU CRK — 35°L.H.F. SKEW
STR. NO. 12-530-290 — SEC. 35/2-T96N-R68W
PCN 03AH — P 0046(57)291

CHARLES MIX COUNTY
S. D. DEPT. OF TRANSPORTATION
MAY 2014

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Goeden
CMIX03AH	03AHBC01		BRIDGE ENGINEER

ESTIMATE OF STRUCTURE QUANTITIES

ITEM NO.	DESCRIPTION	QUANTITY	UNIT
250E0030	Incidental Work, Structure	LumpSum	LS
700E0210	Class B Riprap	206.1	Ton
831E0110	Type B Drainage Fabric	288	SqYd

SPECIFICATIONS

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

DETAILS AND DIMENSIONS OF EXISTING BOX CULVERT

All details and dimensions of the existing box culvert, contained in these plans, are provided as information only. It is the Contractor's responsibility to inspect and verify the actual field conditions and any necessary dimensions affecting the satisfactory completion of the work required for this project.

SCOPE OF BRIDGE WORK & SEQUENCE OF OPERATIONS

All work on this structure shall be accomplished with the traffic control shown in the plans.

1. Install Temporary Water Barrier and Sediment Control.
2. Divert stream flow away from the Phase 1 area of construction.
3. Remove the existing concrete inlet apron and concrete outlet apron within the areas designated for Phase 1 construction.
4. Reshape inlet apron and outlet apron beds to accommodate riprap within the areas designated for Phase 1 of construction.
5. Install riprap apron at the inlet and outlet of the box culvert for Phase 1 of construction.
6. Divert stream flow away from the Phase 2 area of construction and perform steps 3 through 5 for the second phase of construction.

INCIDENTAL WORK, STRUCTURE

This work shall consist of removing and disposal of the existing concrete inlet and outlet aprons as shown on the plans. All discarded material shall be disposed of in accordance with the Environmental Commitments.

CONTROLLED DENSITY FILL

1. The concrete walkway along the edge of the inlet and outlet of the riprap apron shall be controlled density fill material. This material shall be in accordance to Section 464 except as specified in these notes.
2. Cost for furnishing and installing the Controlled Density Fill, including sandbags, labor, material, equipment and incidentals necessary to complete the work shall be incidental to the contract unit price per ton for Class B Riprap.

ESTIMATE OF STRUCTURE QUANTITIES AND NOTES

FOR

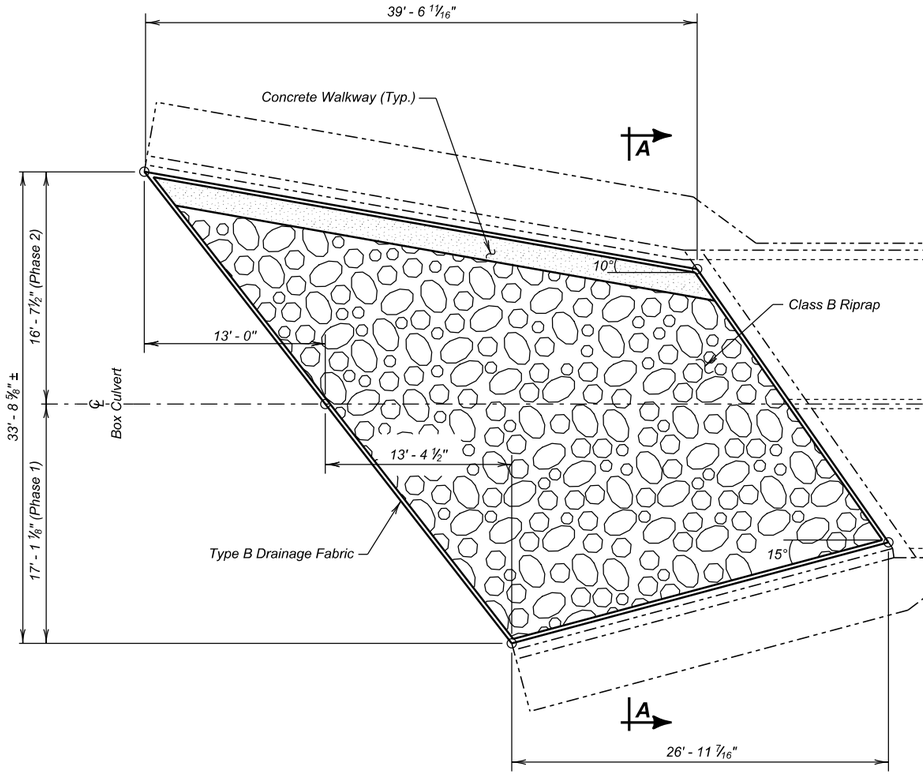
SPECIAL 2 - 10' X 10' BOX CULVERT

STR. NO. 15-530-290

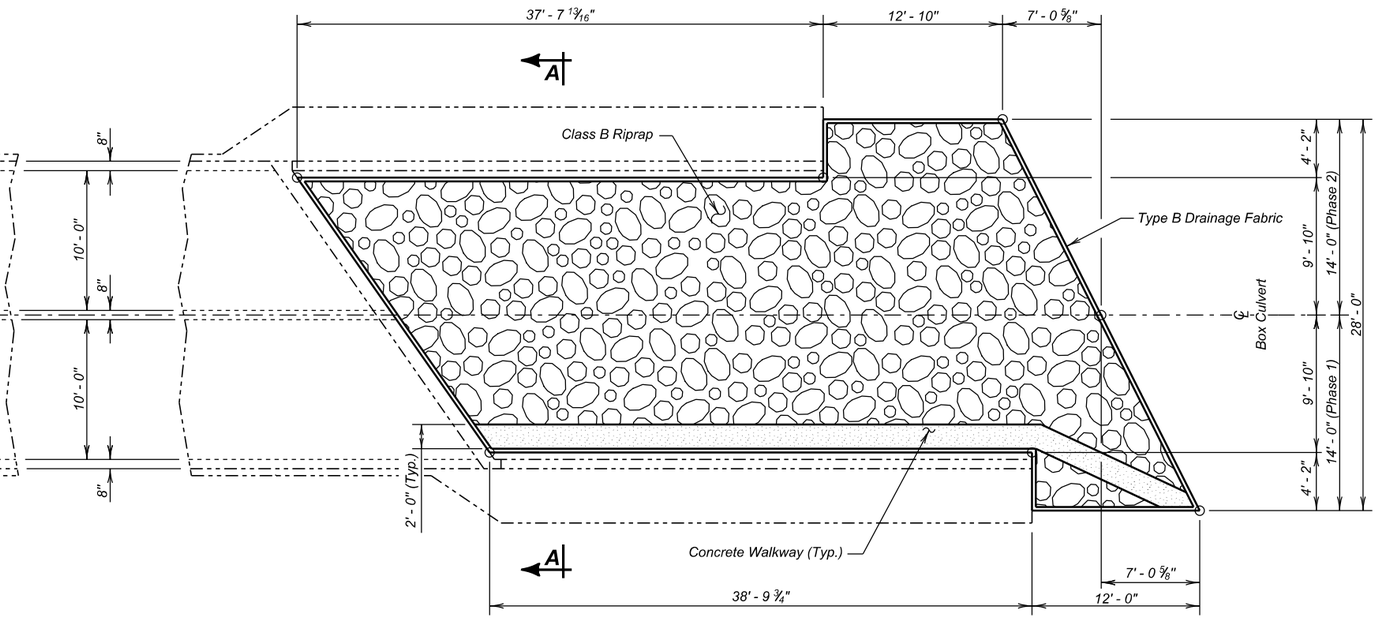
MAY 2014

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Goeden
CMIX03AH	03AHBC02		BRIDGE ENGINEER

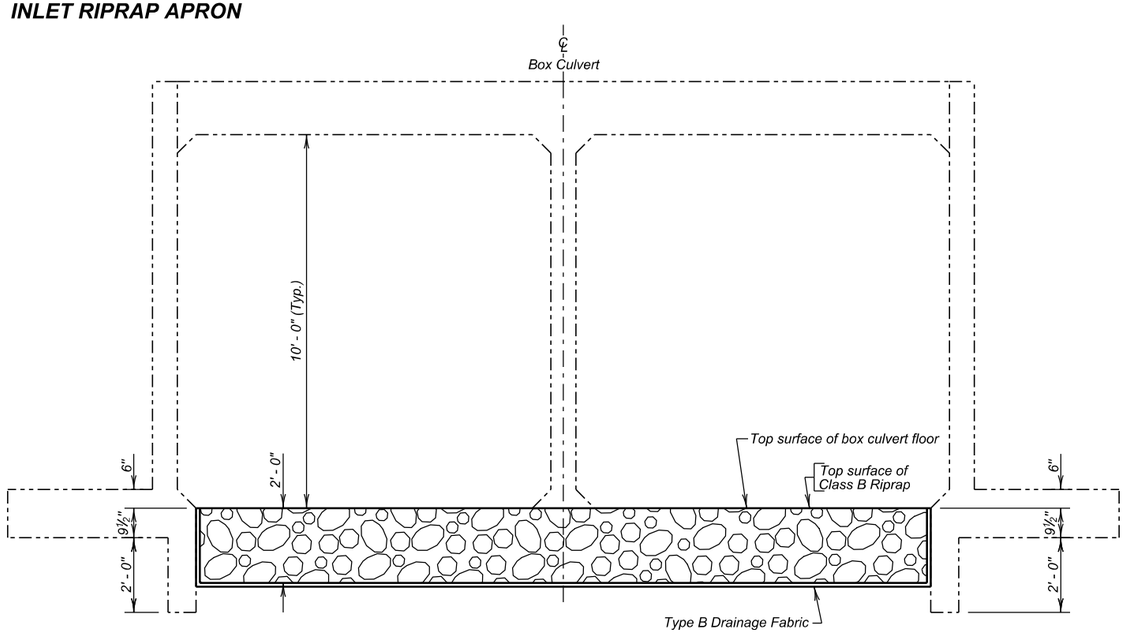
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0046(57)291	29	38



INLET RIPRAP APRON



OUTLET RIPRAP APRON



SECTION A - A

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY Phase I	QUANTITY Phase 2
Incidental Work, Structure	LS	LumpSum	LumpSum
⊕ ⊛ Class B Riprap	Ton	101.4	104.7
Type B Drainage Fabric	Sq.Yd.	141	147

⊛ For estimating purposes only, a factor of 1.4 ton/cu. yd. was used to convert Cu. Yds to Tons

⊕ For Informational purposes only, the above bid item includes the following quantities of Controlled Density Fill (based on a walkway thickness of 2.0 ft):

Phase 1: 8.2 Cu. Yd. Phase 2: 5.8 Cu. Yd.

RIPRAP APRON DETAILS

FOR

SPECIAL 2 - 10' X 10' BOX CULVERT

OVER TRIB CHOTEAU CRK — 35°L.H.F. SKEW

STR. NO. 12-530-290 — SEC. 35/2 - T96N - R68W

PCN 03AH — P 0046(57)291

CHARLES MIX COUNTY

S. D. DEPT. OF TRANSPORTATION

MAY 2014

DESIGNED BY	CK. DES. BY	DRAFTED BY	
MM	KSK	KR	Kevin N. Goeden
CMIX03AH	03AHCC03		BRIDGE ENGINEER

-X028-

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	P 0046(57)291	30	38

INDEX OF CULVERT SHEETS—

Sheet No. 1 – General Drawing, Apron Details, and Quantities
Sheet No. 2 – Inlet Details
Sheet No. 3 – Outlet Details
Sheet No. 4 – Barrel Section Details (S2)
Sheet No. 5 – Subsurface Investigations

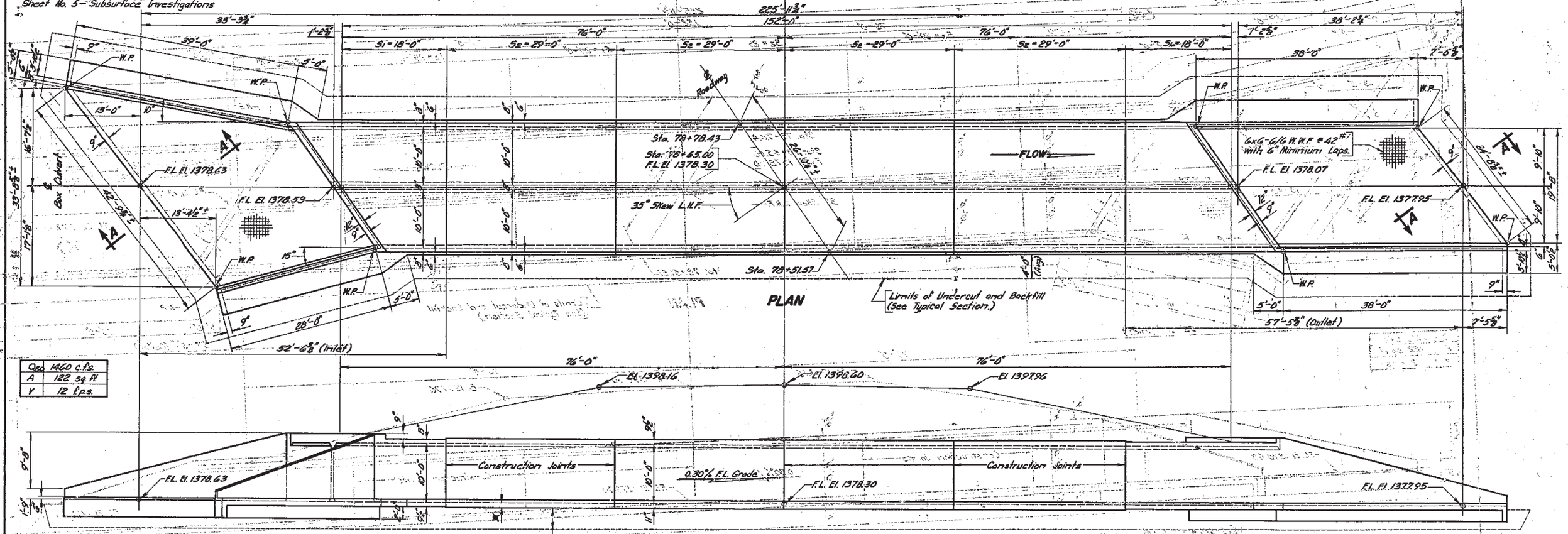
B.M. No. 4 – El. 1391.56
Rebar & Gds.
211' Lt. Sta. 77+81

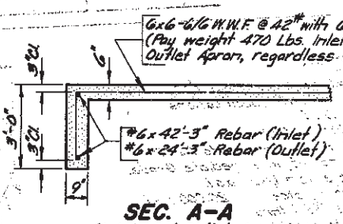
B.M. No. 5 – El. 1422.98
Rebar & Gds.
130' Rt. Sta. 104+76.0

Box Culvert

SPECIFICATION NOTE—

Use South Dakota Standard Specifications for Roads and Bridges, 1963 Edition, approved as Standard September 21, 1964, and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.





SEC. A–A

(Inlet and Outlet Apron)

NOTE: Aprons shall NOT be built monolithic with Box Culvert

3'-6"± Undercut (See Typical Section and Plan). To be paid for as Unclassified Excavation. Any variations from these dimensions, as shown, shall be approved and directed by the ENGINEER.

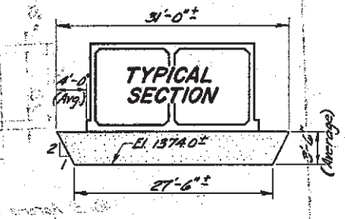
ESTIMATED QUANTITIES

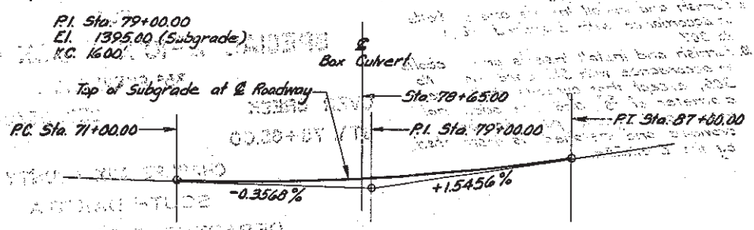
ITEM	Cl. "A" Conc. Cu. Yds.	Reinf. Steel Lbs.	Excavation – Cu. Yds. Struct.	Excavation – Cu. Yds. Unclass.	Granular Backfill (Pit Run) Cu. Yds.	
1-Inlet	71.8	11,285	5.7			
1-Outlet	75.9	11,755	6.1			
4-S2 Sections @ 29'-0"	257.8	50,400	—			
1-Inlet Apron	19.4	595	3.0			
1-Outlet Apron	15.6	455	1.7			
Totals	440.5	74,490	16.5	2443	+ 982	*INCIDENTAL WORK

*No Structure Excavation will be allowed from F.L. to bottom of bottom of slabs.
#Pit Run granular material shall be obtained from a source as approved by the ENGINEER. Measurement for payment shall be same as authorized Unclassified Excavation for undercut. Granular material shall be compacted as specified for Ordinary Compaction. Unclassified Excavation for undercut shall be wasted in areas as directed by the ENGINEER.
△Includes 1461 Cu. Yds. as shown on Grading Plans, and 982 Cu. Yds. of Undercut.
*INCIDENTAL WORK: In place on ℄ Sta. 78+66 is a twin 10'x6'x24' reinforced concrete Box Culvert with flared wing walls. The Box is on 0° skew. Break down and remove the entire twin Box Culvert structure including the bottom slab, as directed by the ENGINEER. All broken concrete and materials shall be disposed of as directed by the ENGINEER.

GENERAL NOTES—

1. All exposed edges shall be chamfered 1".
2. Design Specifications: A.A.S.H.O. Specifications for Highway Bridges, 1965.
3. Design Loading: HS 20-44 A.A.S.H.O.
4. All Reinforcing Steel shall conform to A.S.T.M. Specifications A305 and A15, Intermediate Grade.
5. Unit Stresses: Concrete fc = 1,600 p.s.i.
   Reinforcing Steel fs = 20,000 p.s.i.
6. See NOTES on Sheets No. 1 thru 5.
7. Care shall be taken to establish Working Points (W.P.) on wings as shown.
8. The design of the barrel section is based on a maximum fill, over the box, of 5 ft. (S1) and 10 ft. (S2).
9. Furnish and install Inserts and Eyebolts in accordance with Standard Plate No. 307.
10. Furnish and install Inserts and Eyebolts in accordance with Standard Plate No. 306, except that eyebolts shall have a diameter of ⅝", and one additional insert and eyebolt per wing be provided and installed as instructed by the ENGINEER.





SUBGRADE CURVE DATA

ORIGINAL CONSTRUCTION PLANS

STR. NO. 12-530-290

GENERAL DRAWING, APRON DETAILS, AND QUANTITIES

FOR

SPECIAL 2-10'X10' BOX CULVERT

35° SKEW L.H.F.

OVER CREEK — SEC. 35/2-T96N-R63W

STA. 78+65.00 — F 012-1(5)

CHARLES MIX COUNTY

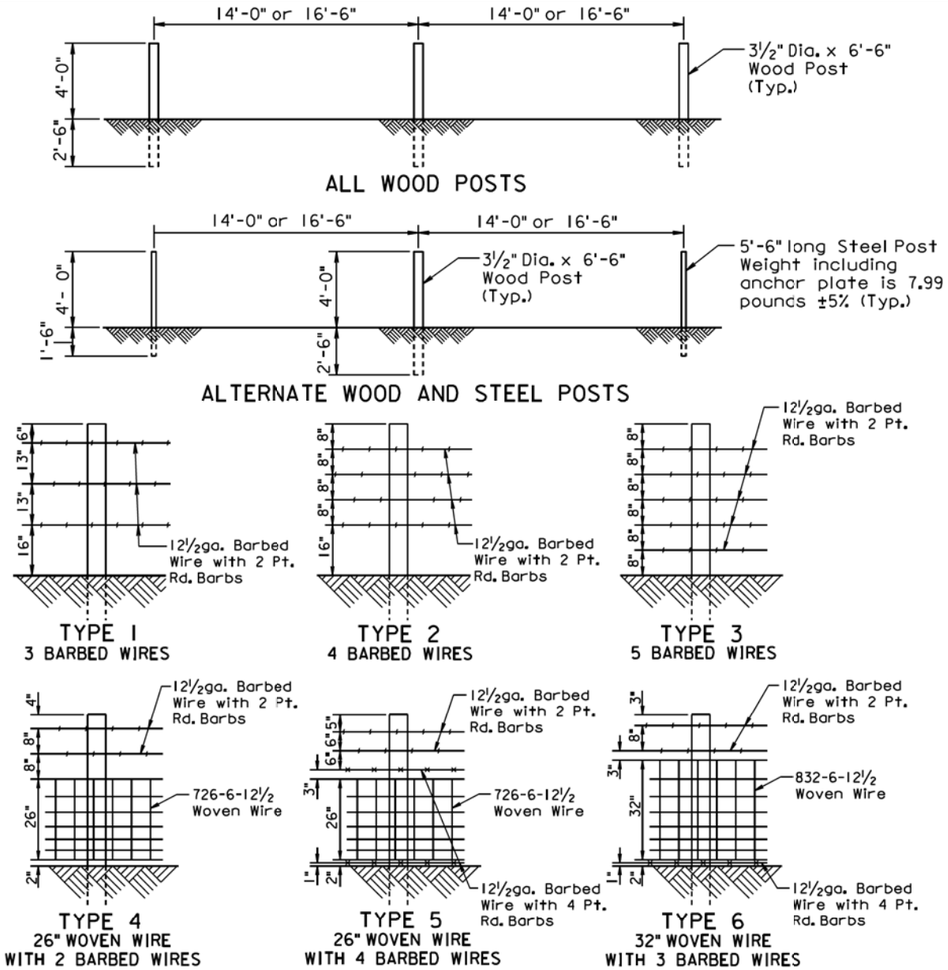
SOUTH DAKOTA — HS 20-44

DEPARTMENT OF HIGHWAYS

NOV. 1967 — 4 OF 4

-X028-

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED
	L.G.	H.A.	BRIDGE ENGINEER



TYPE OF FENCE		LINE POST SPACING	BARBED WIRE		WOVEN WIRE
TYPE	DESCRIPTION		WIRE GAGE	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
1	3 Barbed Wires	16'-6"	12½	2 Point Round	—
2	4 Barbed Wires	16'-6"	12½	2 Point Round	—
3	5 Barbed Wires	16'-6"	12½	2 Point Round	—
4	26" Woven Wire with 2 Barbed Wires	14'-0"	12½	2 Point Round	726-6-12½
5	26" Woven Wire with 4 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 2 wires with 4 Pt. Rd.	726-6-12½
6	32" Woven Wire with 3 Barbed Wires	14'-0"	12½	2 wires with 2 Pt. Rd. 1 wire with 4 Pt. Rd.	832-6-12½

GENERAL NOTES:

Fence types designated on the plans that are followed by the letter S shall have smooth (barbless) wires.

When type 5S or 6S is designated the bottom wire may be barbed, smooth, or left off.

All degrees of curvature stated for fence are at centerline of roadway.

September 14, 2009

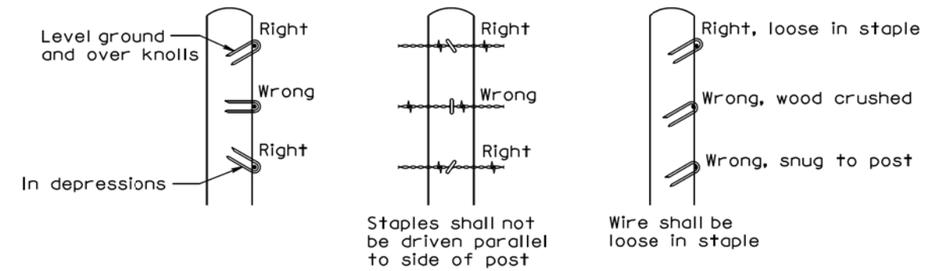
Published Date: 3rd Qtr. 2015

SDDOT

RIGHT-OF-WAY FENCE

PLATE NUMBER 620.01

Sheet 1 of 1



STAPLE INSTALLATION

GENERAL NOTES:

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

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

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

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

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

December 23, 2004

Published Date: 3rd Qtr. 2015

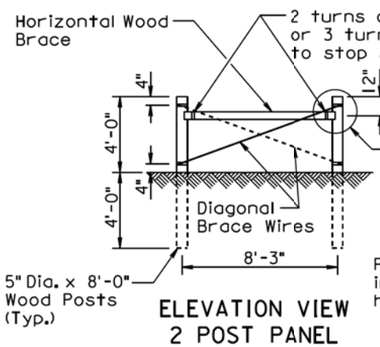
SDDOT

STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES

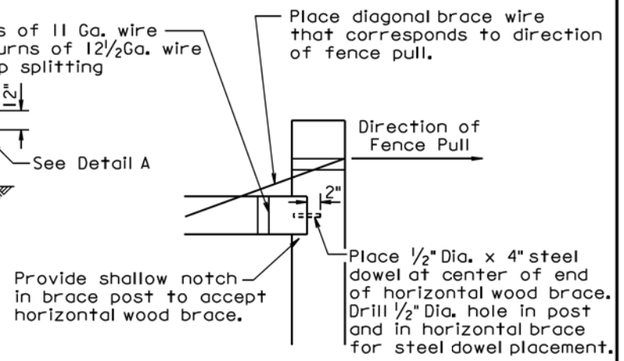
PLATE NUMBER 620.02

Sheet 1 of 1

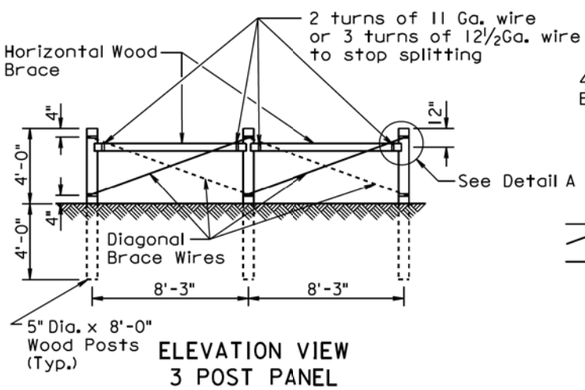
Plot Scale - 1:200
- Plotted From - TRSF12139
File - ...\prj\cmix03AG\s62001s62002.dgn



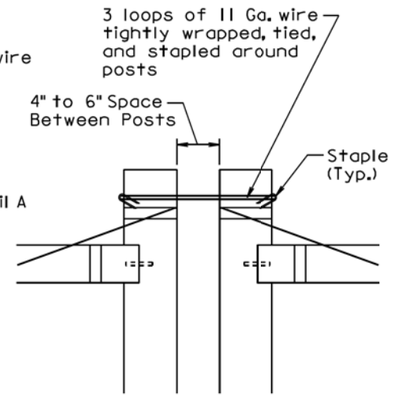
ELEVATION VIEW
2 POST PANEL



DETAIL A



ELEVATION VIEW
3 POST PANEL



DETAIL B

GENERAL NOTES:

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

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

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

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

December 23, 2004

Published Date: 3rd Qtr. 2015	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 1 of 3

SPACING OF 2 POST PANELS WITHIN CURVES	
DEGREE OF CURVE	SPACING OF 2 POST PANEL
less than 3°15'	** 1320'
3°15' and greater	**At P.C., P.T., and at every 1320' between P.C. and P.T.

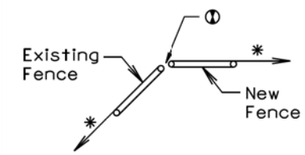
GENERAL NOTE:

All degrees of curvature stated for fence are at centerline of roadway.

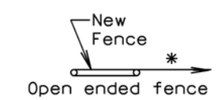
* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

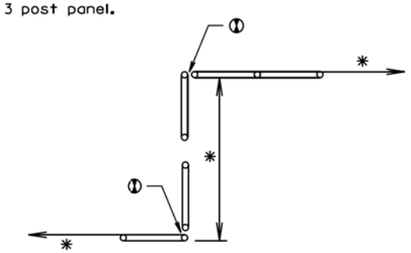
** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

① See Detail B on Sheet 1 of 3.

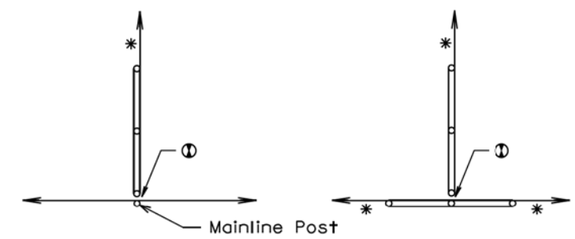


BEGIN OR END FENCE
(where new fence ties into existing fence)

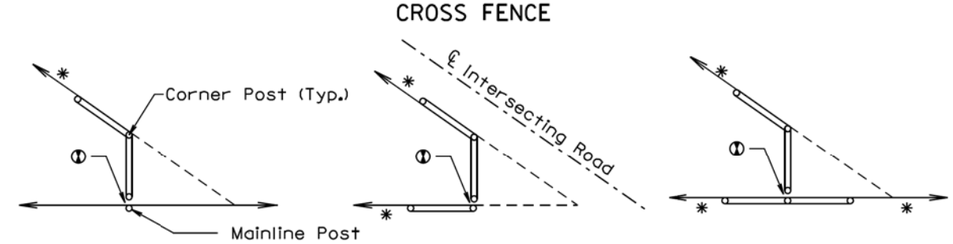




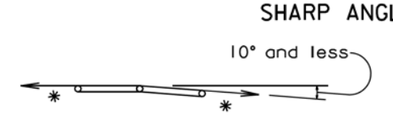
SHORT JOGS IN FENCE



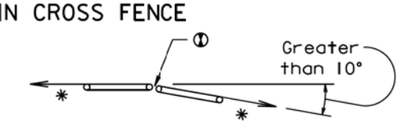
CROSS FENCE



SHARP ANGLES IN CROSS FENCE



Additional fence panel is NOT required when an angle in the mainline fence is 10° and less.



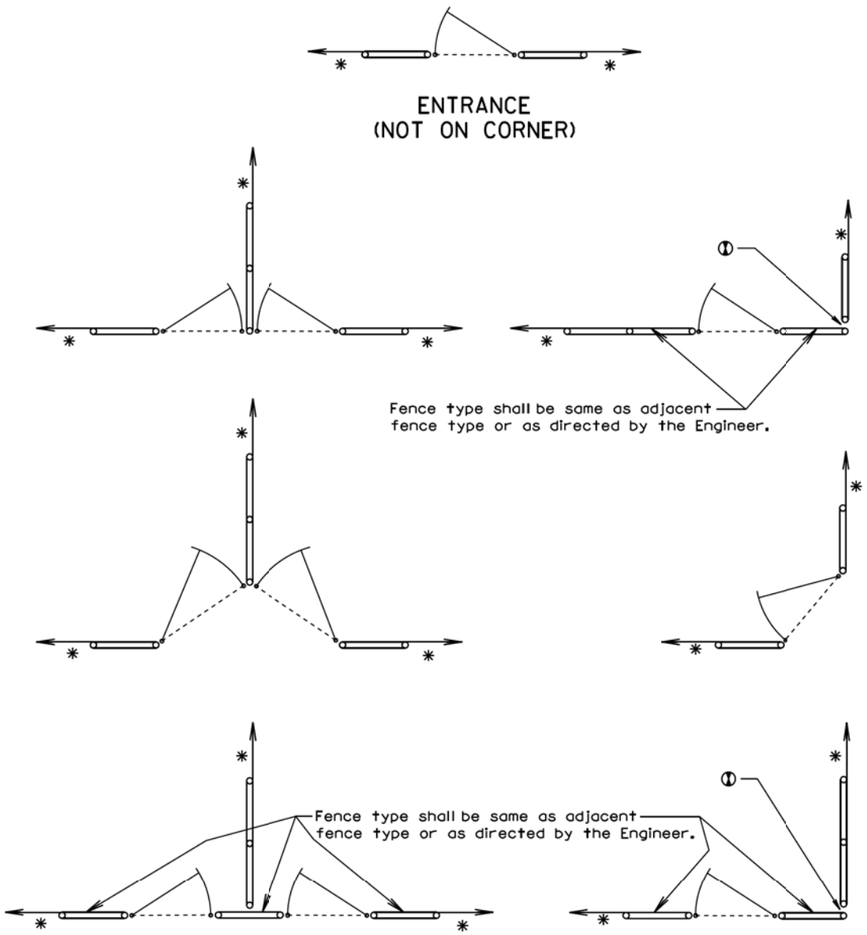
Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

December 23, 2004

Published Date: 3rd Qtr. 2015	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3

Plot Scale - 1:200
- Plotted From - TRSF12139
File - ...\cmix03A\gis\62003_1s\62003_2.dgn



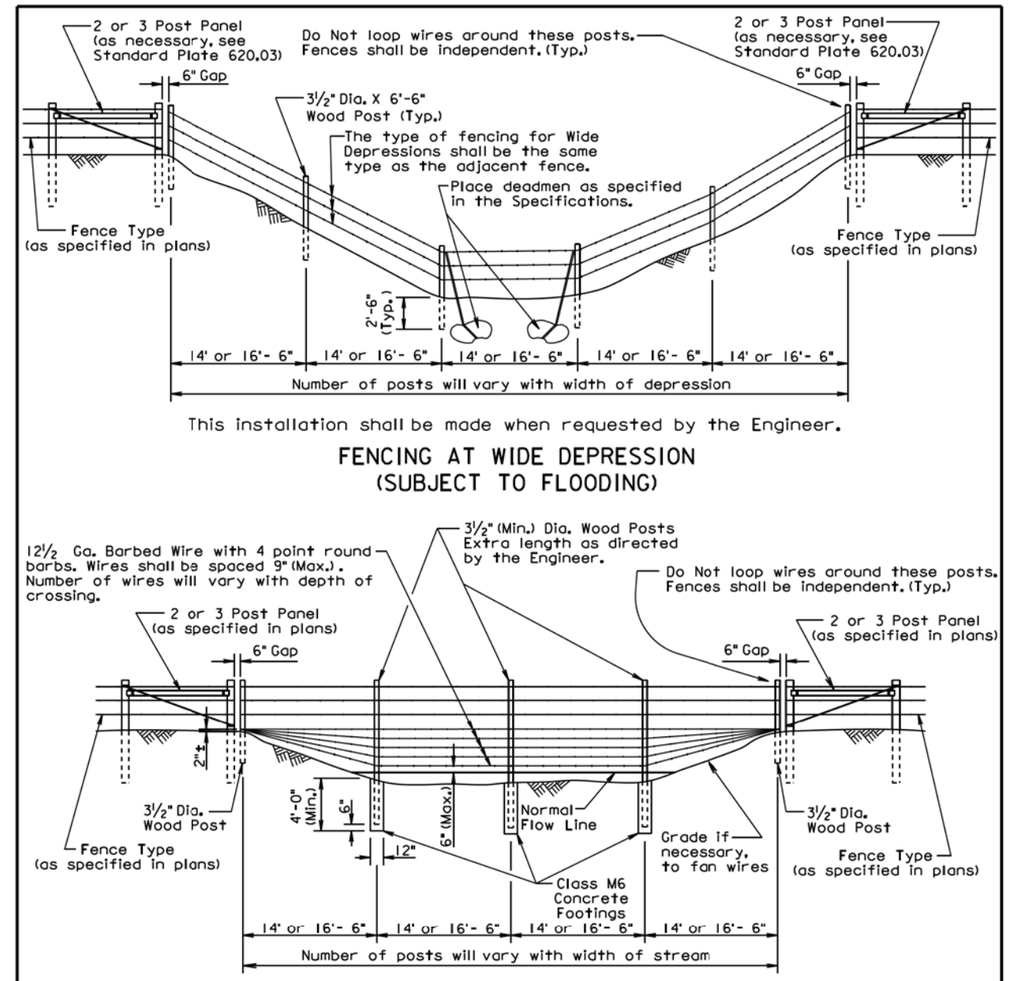
GATES

✱ If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

① See Detail B on Sheet 1 of 3.

December 23, 2004

Published Date: 3rd Qtr. 2015	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 3 of 3



GENERAL NOTES:

There will be no extra payment for the additional work and materials required to construct the fencing at the wide depression(s) and/or the fencing at the stream crossing(s). The deadmen shall be paid for in accordance with 620.5 A. of the Specifications.

Measurement and payment for the fencing at the wide depression(s) and/or the fencing at the stream crossing(s) shall be at the contract unit price per foot for the corresponding Right-of-Way fence bid item.

February 14, 2015

Published Date: 3rd Qtr. 2015	SDDOT	FENCING AT WIDE DEPRESSION(S) AND STREAM CROSSING(S)	PLATE NUMBER 620.10 Sheet 1 of 1

Plot Scale - 1:200
- Plotted From - TRSF12139
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The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

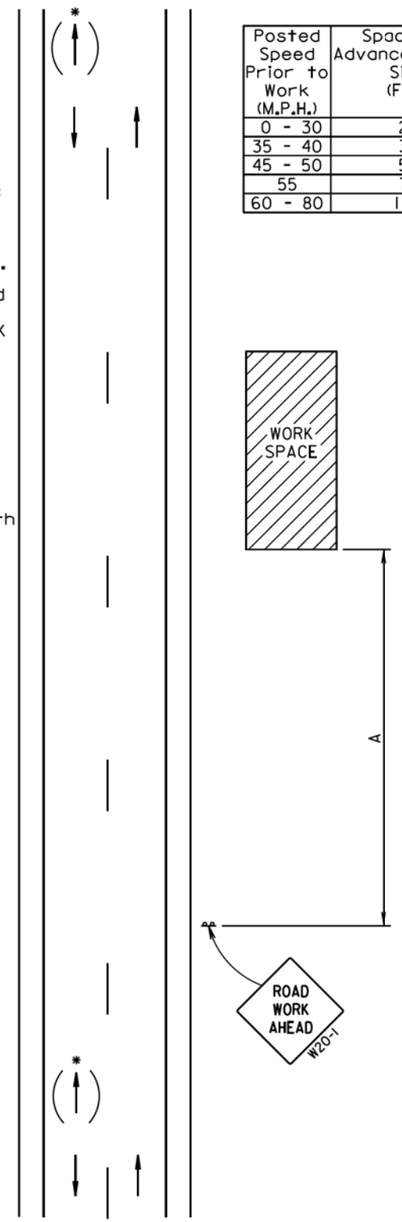
The signs illustrated shall be used where there are distracting situations; such as: vehicles parked on shoulder, vehicles accessing the work site via the highway, and equipment traveling on or crossing the roadway to perform work operations.

The ROAD WORK AHEAD sign may be replaced with other appropriate signs, such as the SHOULDER WORK sign. The SHOULDER WORK sign may be used for work adjacent to the shoulder.

* If the work space is on a divided highway, an advance warning sign should also be placed on the left side of the directional roadway.

For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 80	1000



April 15, 2015

Published Date: 3rd Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

PLATE NUMBER 634.01

Sheet 1 Of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	180	25
35 - 40	350	320	25
45 - 50	500	600	50
55	750	660	50
60 - 65	1000	780	50

■ Channelizing Device

END ROAD WORK G20-2

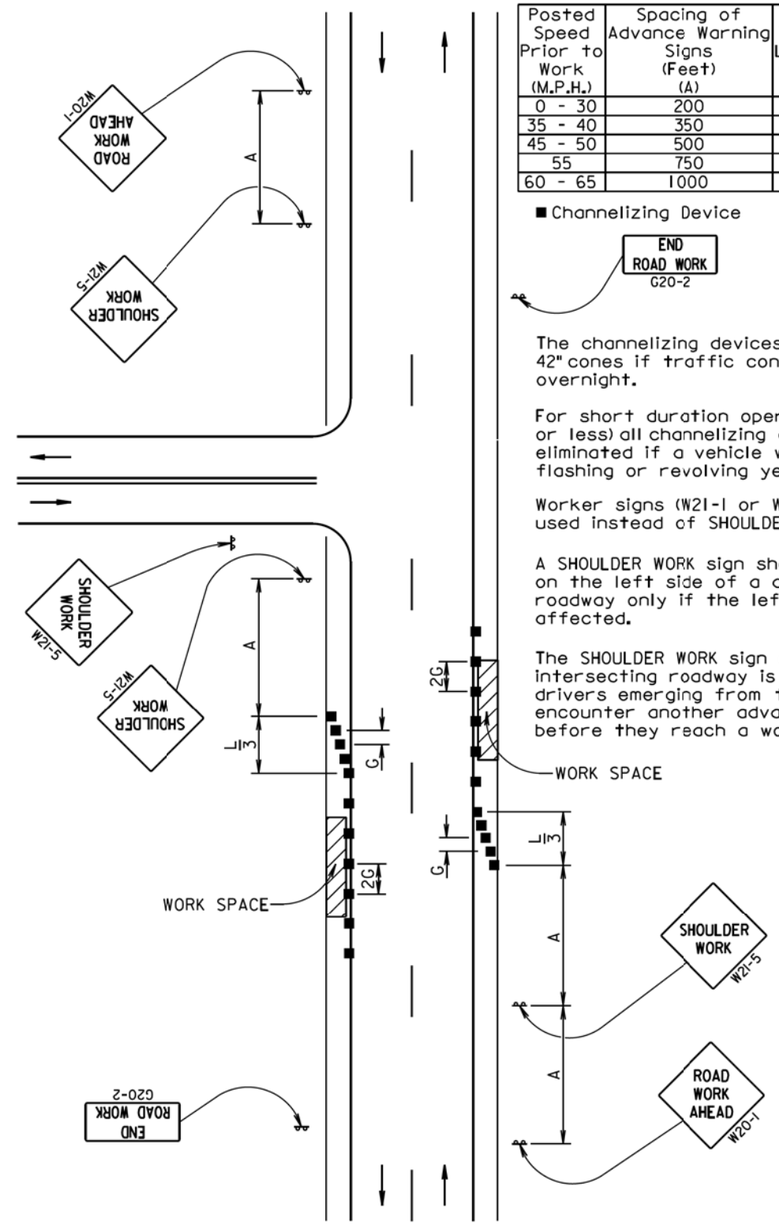
The channelizing devices shall be drums or 42" cones if traffic control must remain overnight.

For short duration operations (1 hour or less) all channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.

Worker signs (W21-1 or W21-1a) may be used instead of SHOULDER WORK signs.

A SHOULDER WORK sign should be placed on the left side of a divided or one-way roadway only if the left shoulder is affected.

The SHOULDER WORK sign on an intersecting roadway is not required if drivers emerging from that roadway will encounter another advance warning sign before they reach a work activity area.



September 22, 2014

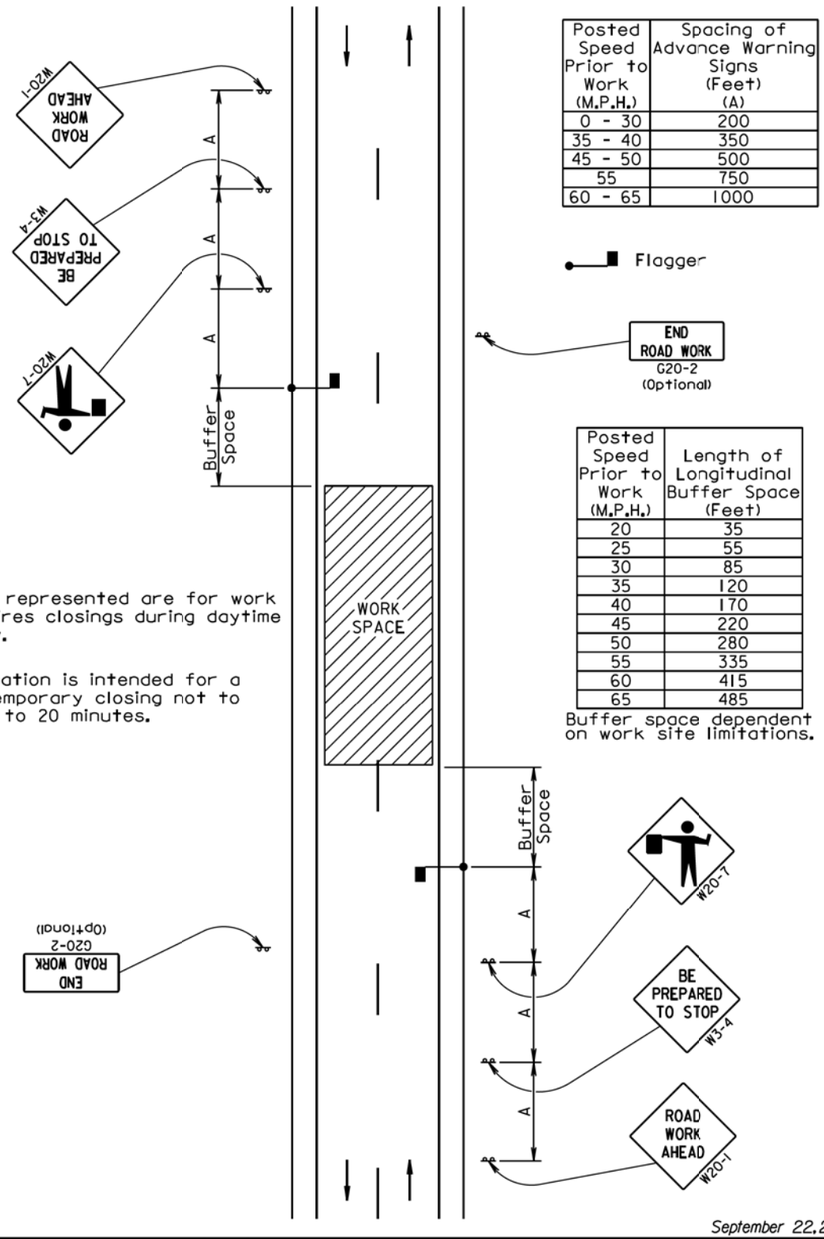
Published Date: 3rd Qtr. 2015

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER 634.03

Sheet 1 of 1



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000

Flagger

END ROAD WORK
G20-2
(Optional)

Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	35
25	55
30	85
35	120
40	170
45	220
50	280
55	335
60	415
65	485

Buffer space dependent on work site limitations.

Conditions represented are for work that requires closings during daytime hours only.

This application is intended for a planned temporary closing not to exceed 15 to 20 minutes.

September 22, 2014

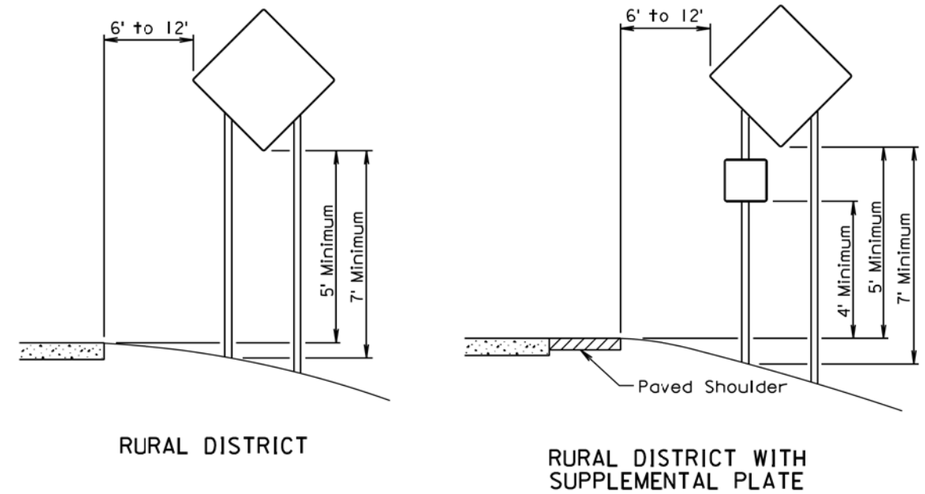
Published Date: 3rd Qtr. 2015

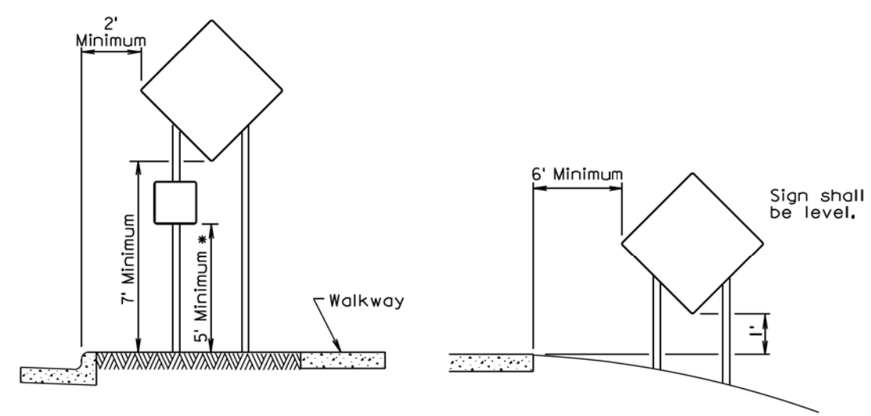
SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES TEMPORARY ROAD WORK

PLATE NUMBER 634.30

Sheet 1 of 1





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

September 22, 2014

Published Date: 3rd Qtr. 2015

SDDOT

CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)

PLATE NUMBER 634.85

Sheet 1 of 1

Plot Scale - 1:200

- Plotted From - TRSF12139

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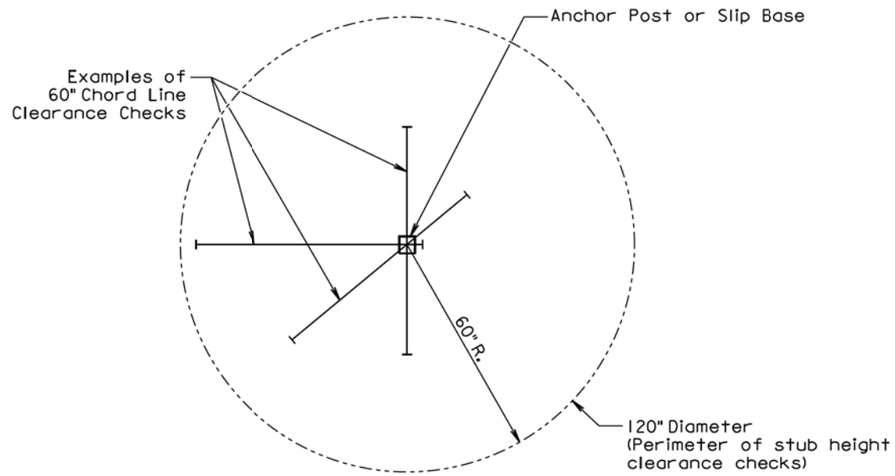
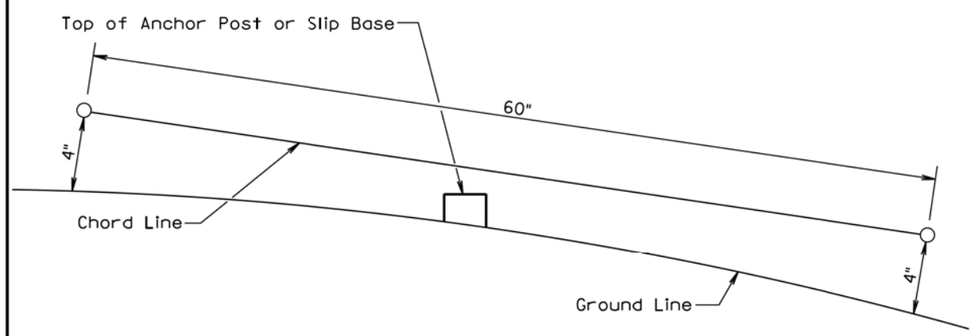


PLAN VIEW

(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: 3rd Qtr. 2015	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	***PLATE NUMBER*** *634.99*
			Sheet 1 of 1

Plot Scale - 1:200

- Plotted From - TRSF12139

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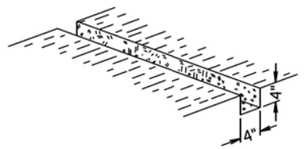
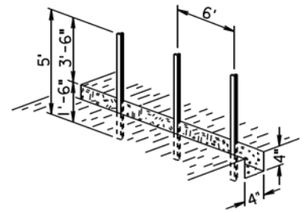
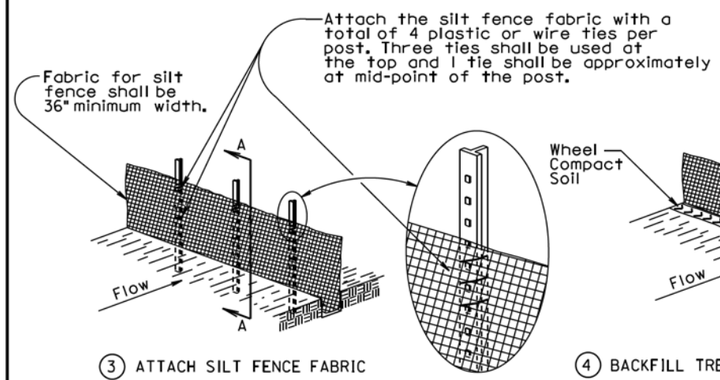
MANUAL HIGH FLOW SILT FENCE INSTALLATION



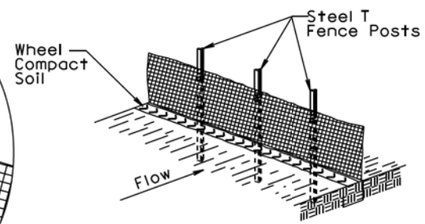
① EXCAVATE TRENCH



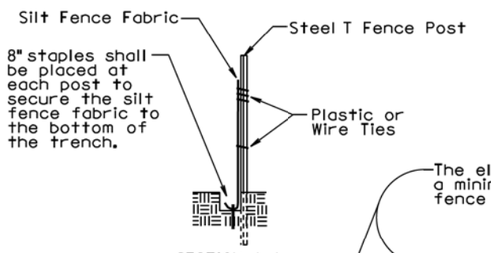
② DRIVE STEEL T FENCE POSTS



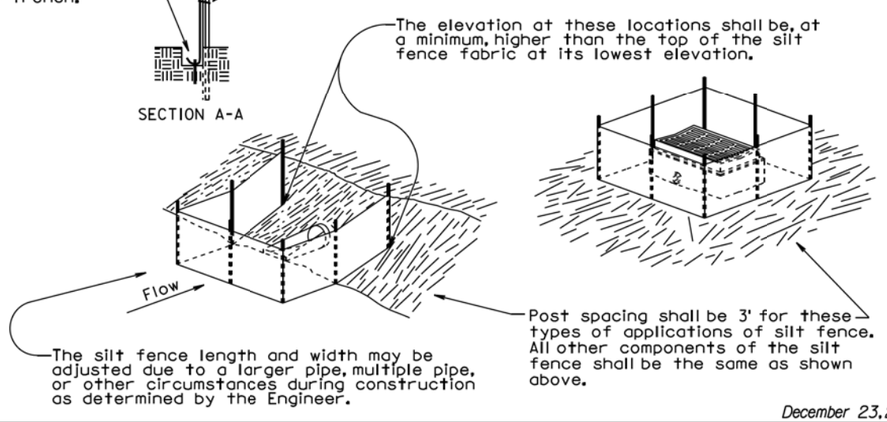
③ ATTACH SILT FENCE FABRIC



④ BACKFILL TRENCH AND WHEEL COMPACT SOIL



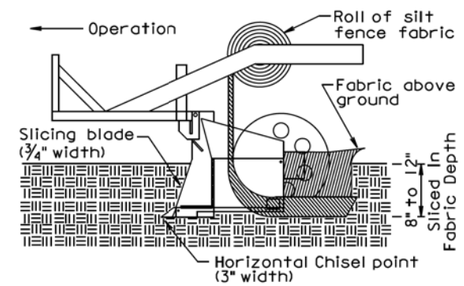
SECTION A-A



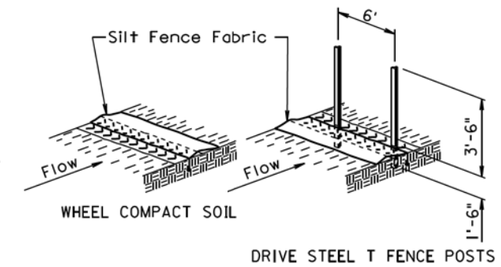
December 23, 2003

Published Date: 3rd Qtr. 2015	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

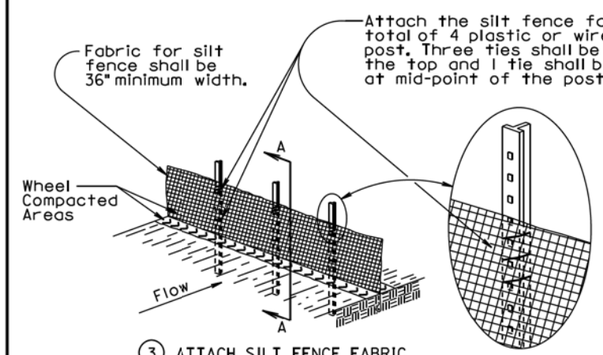
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



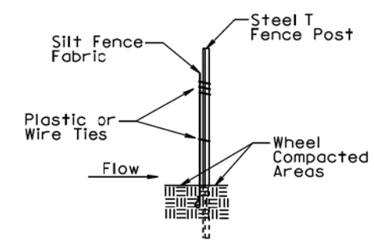
① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



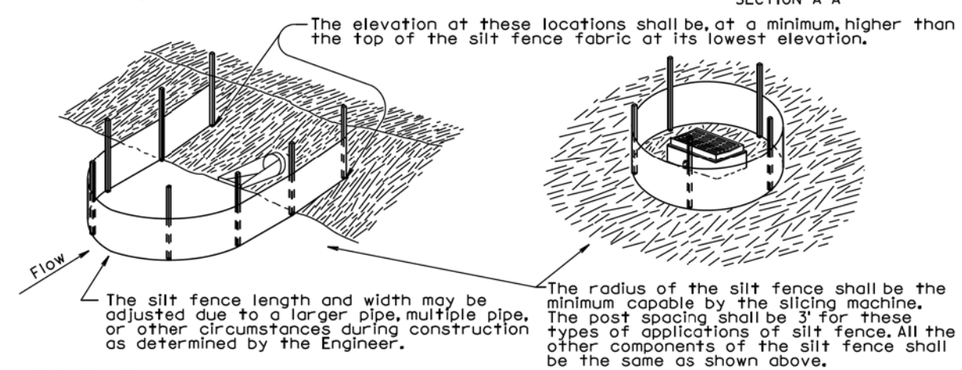
② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



③ ATTACH SILT FENCE FABRIC



SECTION A-A



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

Published Date: 3rd Qtr. 2015	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

Plot Scale - 1:200
Plotted From - TRSF12139
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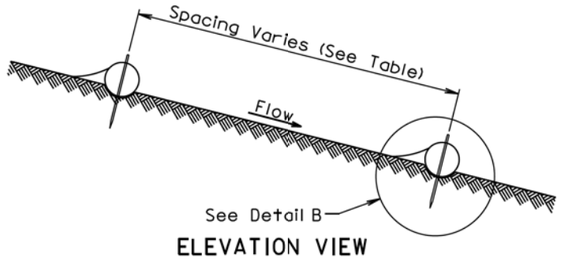
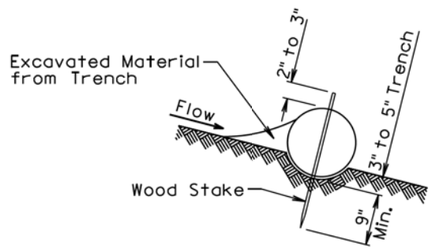
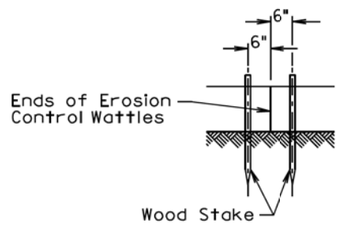


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

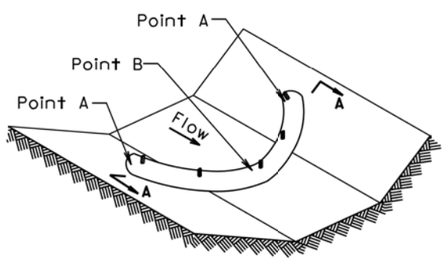
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



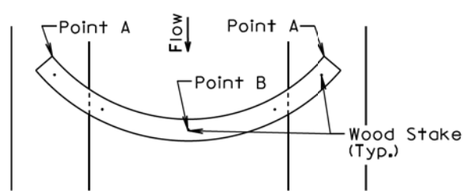
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

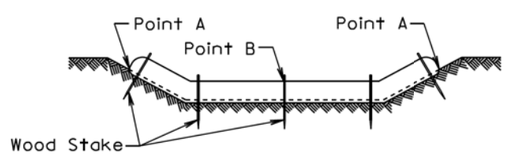


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

DITCH INSTALLATION	
Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

December 23, 2004

Published Date: 3rd Qtr. 2015	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

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 ½". 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

Published Date: 3rd Qtr. 2015	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

Plot Scale - 1:200
- Plotted From - TRSF12139
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