SDDOT
LOCAL ROADS PLAN

Chapter 9
Non-Section Plan Examples

Most local government projects fall under the non-section method for plans assembly. The order of plan sheets can be found in Chapter 18 of the SDDOT Road Design Manual under the 'Non-Section Method' section. Links to the most current bid items, downloadable files, standard plates, and the CADD Procedures Manual can be found in the 'Introduction' section.

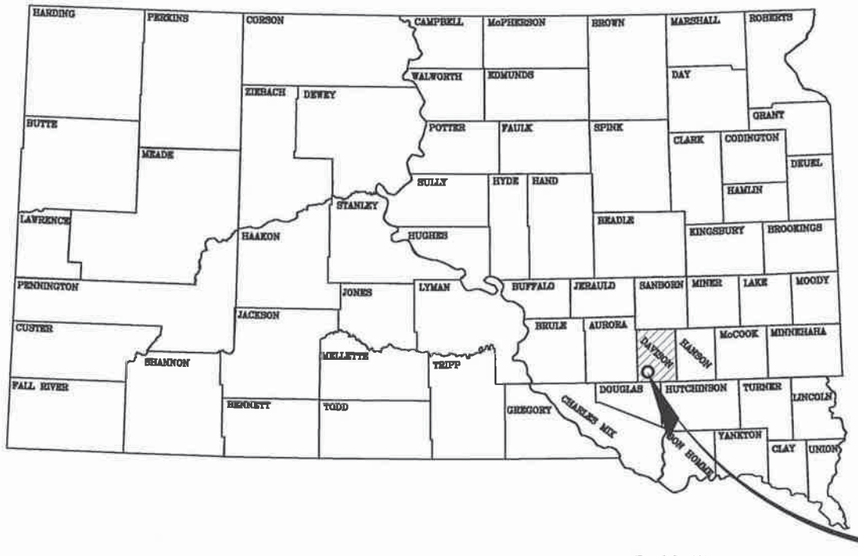
https://dot.sd.gov/doing-business

Examples of Non-Section plans for LGA projects can be found on the following pages:

- 3 thru 68 – Grading & Surfacing Non-Section Plans
- 69 thru 111 – Structure Non-Section Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	1	65

Plotting Date: 24-FEB-2012



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECT P 6042(02)
DAVISON COUNTY

Grading, Box Culvert, and Asphalt Paving
PCN 01P0

INDEX OF SHEETS

DESIGN DESIGNATION

ADT (2007) – 125
ADT (2027) – 178
DHV – 25
D – 50%
T DHV – 1.8%
T ADT – 3.98%
v = 55 mph

STORM WATER PERMIT
Area Disturbed 16.3 Acres
Major Stream: Twelve Mile Creek

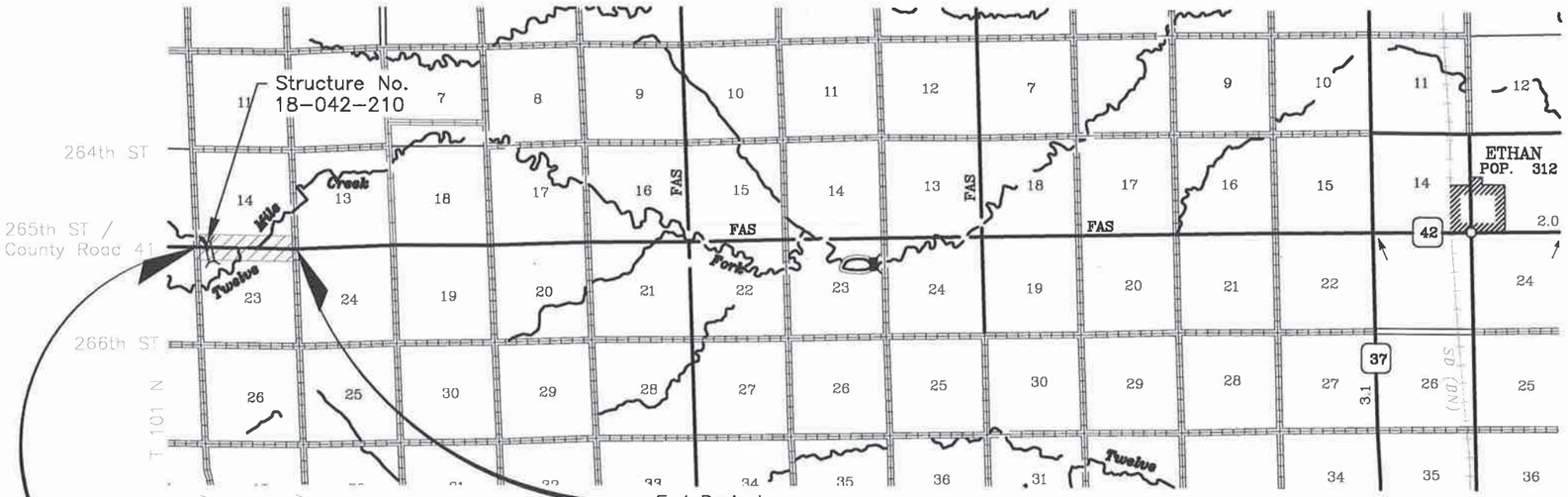
Beginning of Project
Lat: N43°32'29.98"
Long: W98°14'37.39"

Scales

PLAN		1"=100 (RURAL)
PROFILE (RURAL)	HORIZONTAL:	1"=100'
	VERTICAL:	1"=20'
CROSS SECTIONS	HORIZONTAL:	1"=30' (RURAL)
	VERTICAL:	1"=20' (RURAL)

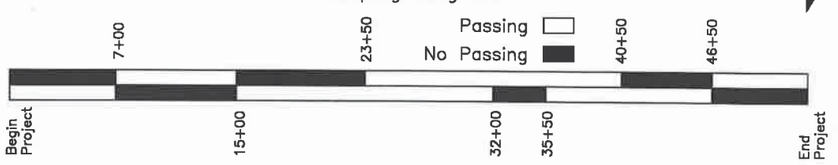
LEGEND

STATE LINE
COUNTY LINE
SECTION LINE
QUARTER LINE
SIXTEENTH LINE
PROPERTY LINE
CONSTRUCTION LINE
R. O. W. LINE
WORK LIMITS
CUT & FILL LIMMITS
ELECTRIC LINE
TELEPHONE LINE
WIRE FENCE
ROW FENCE
TEMPORARY FENCE
UNDERGROUND ELECTRIC
UNDERGROUND TELE/FO
ELECTRIC TERMINAL
TELEPHONE TERMINAL
SIGN
POWER POLE
DECIDUOUS TREE
CONIFEROUS TREE
BENCHMARK
Class B Rip Rap
Type B Drainage Fabric



This striping diagram is for informational purposes only. Actual striping for passing/no passing zones should be determined by field verified procedures.

Striping Diagram



GROSS LENGTH	5329.00 FEET	1.09 MILES
LENGTH OF EXCEPTIONS	0 FEET	0.00 MILES
NET LENGTH	5329.00 FEET	1.09 MILES

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	2	65

ESTIMATE OF QUANTITIES

INDEX OF QUANTITY SHEETS

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

GRADING & SURFACING

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0030	Maintenance of Traffic Diversion	1	Lump Sum
009E0010	Mobilization	1	Lump Sum
100E0100	Clearing	1	Lump Sum
110E5450	Salvage Riprap	37	CuYd
120E0010	Unclassified Excavation	67,889	CuYd
120E1000	Muck Excavation	500	CuYd
120E2000	Undercutting	12,586	CuYd
120E6100	Water for Embankment	683	MGal
120E6200	Water for Granular Material	124	MGal
250E0020	Incidental Work, Grading	1	Lump Sum
260E1010	Base Course	10,327	Ton
320E0006	PG 64-22 Asphalt Binder	180	Ton
320E1050	Class E Asphalt Concrete	2,831	Ton
320E3000	Compaction Sample	3	Each
330E0010	MC-70 Asphalt for Prime	23.4	Ton
330E0100	SS-1h or CSS-1h Asphalt for Tack	4	Ton
330E1000	Blotting Sand for Prime	75	Ton
600E0200	Type II Field Laboratory	1	Each

EROSION CONTROL

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
110E1690	Remove Sediment	5	CuYd
230E0010	Placing Topsoil	7,651	CuYd
700E0210	Class B Riprap	4,156	Ton
730E0202	Type B Permanent Seed Mixture	315	Lb
732E0100	Mulching	38	Ton
732E0250	Fiber Mulching	400	Lb
734E0101	Type 1 Erosion Control Blanket	1,000	SqYd
734E0103	Type 3 Erosion Control Blanket	1,600	SqYd
734E0140	Erosion Bale	30	Each
734E0154	12" Diameter Erosion Control Wattle	2,100	Ft
734E0165	Remove and Reset Erosion Control Wattle	500	Ft
734E0510	Shaping for Erosion Control Blanket	872	Ft
734E0604	High Flow Silt Fence	5,100	Ft
734E0610	Mucking Silt Fence	350	CuYd
734E0620	Repair Silt Fence	1,275	Ft
734E0900	Temporary Diversion Channel and/or Pipe	1	Each
831E0110	Type B Drainage Fabric	3,138	SqYd

STRUCTURE

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	43	CuYd
421E0200	Box Culvert Undercut	184	CuYd
560E0142	10'x10' Precast Concrete Box Culvert, Furnish	102	Ft
560E0143	10'x10' Precast Concrete Box Culvert, Install	102	Ft
560E1142	10'x10' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E1143	10'x10' Precast Concrete Box Culvert End Section, Install	2	Each
831E0110	Type B Drainage Fabric	260	SqYd

TRAFFIC CONTROL & PAVEMENT MARKING

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
633E1400	Pavement Marking Paint, 4" White	10,400.0	Ft
633E1405	Pavement Marking Paint, 4" Yellow	5,160.0	Ft
634E0100	Traffic Control	1,342	Unit
634E0120	Traffic Control, Miscellaneous	1.0	Lump Sum

PIPE

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
450E2304	18" RCP Safety End, Furnish	4	Each
450E2307	18" RCP Safety End, Install	4	Each
450E2308	24" RCP Safety End, Furnish	2	Each
450E2311	24" RCP Safety End, Install	2	Each
450E4759	18" CMP 16 Gauge, Furnish	138	Ft
450E4760	18" CMP, Install	138	Ft
450E4769	24" CMP 16 Gauge, Furnish	156	Ft
450E4770	24" CMP, Install	156	Ft
450E5406	18" CMP Safety End, Furnish	6	Each
450E5407	18" CMP Safety End, Install	6	Each
450E5410	24" CMP Safety End, Furnish	6	Each
450E5411	24" CMP Safety End, Install	6	Each

FENCE

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
620E0020	Type 2 Right-of-Way Fence	12,090	Ft
620E0510	Type 1 Temporary Fence	5,255	Ft
620E1020	2 Post Panel	61	Each
620E1030	3 Post Panel	23	Each

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TABLE OF PIPE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	3	65

	Reinforced Concrete Pipe (RCP)				Corrugated Metal Pipe (CMP) – 16 gauge			
	Circular		Safety End		Circular		Safety End	
Station – Offset L/R	18" CL 2-Ft	24" CL 2-Ft	18" Each	24" Each	18" Ft	24" Ft	18" Each	24" Each
0+00-29'-28'L&R				2				
0+00-12'-34'R to 0+33-40'R						46		2
9+33 to 9+81-41'L						48		2
11+19 to 11+67-41'L						48		2
16+77 to 17+23-41'L					46		2	
18+66 to 19+12-41'L					46		2	
45+19 to 45+65-41'R					46		2	
52+46-23' R to 52+46-21'L			2					
52+58-23'R to 53+05 -24'L			2					
Totals:			**4**	**2**	**138**	**156**	**6**	**6**
BID ITEM NUMBER - Furn			**450E2304**	**450E2308**	**450E4759**	**450E4769**	**450E5406**	**450E5410**
BID ITEM NUMBER - Install			**450E2307**	**450E2311**	**450E4760**	**450E4770**	**450E5407**	**450E5411**

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TABLE OF FENCE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	4	65

Post Sequence
Fence shall be constructed using alternate wood and steel posts unless otherwise noted.

Station to Station		Side	Right of Way Fence					Fence Panels		Gates – not a bid item					Temporary Fence		Fence Reset (Ft)	Remove Fence (Ft)
			Type 2 (Ft)	Type 3 (Ft)	Type 3M (Ft)	Type 6 (Ft)	Type 6M (Ft)	2 Post Each	3 Post Each	Barb Wire 24' (each)	Barb Wire 32' (each)	Barb Wire 36' (each)	Woven Wire 24' (each)	Woven Wire 36' (each)	Type 1 (Ft)			
0+31.7	7+28.6	L	743					2	3									
7+28.6	14+86.8	L	944					13	3			2						
14+86.8	22+65	L	1,311					12	1			3						
22+65	40+54.8	L	1,844					5	2									
40+54.8	52+28.8	L	1,261					2	4									
0+29	11+25	L																1,288
11+79	22+28	L																1,262
22+96	52+27	L																3,045
0+36.5	7+78.4	R	1,029					10	3									
7+78.4	21+71	R	1,615					7	2									
21+71	52+32.1	R	3,343					10	5			1						
0+37.2	52+51.9	R													5,255			
2+61	22+30	R																2,075
22+81	45+00	R																2,306
26+49		R															Remove & Reset Steel Gate	
45+70	52+34	R																706
TOTALS			**12,090**					**61**	**23**	**6**					**5,255**			**10,682**
Bid Item Numbers			620E0020					620E1020	620E1030						620E0510			**Incidental (Clearing)**

Numerous railroad ties are in place as fence corners on the south side of the project. These shall be removed and stockpiled for the landowner as part of Incidental Work, Clearing.

REGISTERED PROFESSIONAL ENGINEER
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GRADING NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	5	65

WORK TO BE PERFORMED BY DAVISON COUNTY

The County will perform the following items without Federal Participation:

1. Arrange for Right Of Way and temporary and permanent easements.
2. Arrange for Utility adjustments.
3. Arrange for Permanent signing.
4. Removal of silt fence when vegetation has become established in areas where permanent seeding is required.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. Water for Granular Material is estimated at 10 gallons of water per cubic yard of Aggregate Base Course.

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

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

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

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

RESTRICTED WORK AREA

The Contractor's work limits shall be confined to the area bounded within the Temporary Construction Easement Areas and Right-of-way. These will be marked in the field prior to beginning topsoil removal.

TYPE II FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only.

The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. All costs associated with the phone including purchasing, installation, disconnection, monthly line charges, local and long distance calls, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments) shall be incidental to the contract unit price per each for "Type II Field Laboratory

UTILITIES

Central Electric has a 7,200 volt, 3-phase main feeder line along the length of this project, mostly in private land. Two road crossing will be required, one at each end of the project. Central Electric should have this work complete by mid-may and should not impact the Contractor's schedule.
Contact Brian Bulge at 996-7516 for further information.

Santel Communications has two lines along the length of this project, one of which is a fiber optic line. They are located on the south side of the road, one in the ditch and one near the old right of way line. Both lines will need to be relocated. Contact Mark Wilson at 796-4411 for more information.

CLEARING

Before clearing activities begin, the Contractor shall contact the Engineer ensure Temporary Construction Easement limits and daylight lines are staked. If the trees or shrubs that are suppose to remain within the limits of work are damaged or destroyed by the Contractor, the Contractor shall replace them with the same size and type at the Contractor's expense. Clearing shall include all trees, shrubs, stumps, and root balls within the project work limits. Extra large trees located very close to the outside limits of work limits can be reviewed with the Engineer and landowners on a case by case basis. Otherwise, trees to be removed are called out as shown on the Plan and Profile sheets. Trees and shrubs to be removed are so indicated by lighter shading versus existing trees to remain.

Table of Tree and Shrub Removals – Incidental to Clearing

STA	Offset	L/R
0+60 to 0+74	45'	R
0+79 to 1+13	35-36'	R
1+72 to 2+37	36-38'	R
1+98	46'	L
2+41	36'	L
4+42	75'	L
4+43	46'	R
4+53	20'	L
4+61	46'	R
5+18 to 6+60	50-60'	R
5+19 to 6+05	60'	R
6+15	51'	L
6+81 to 7+44	59	R
22+63	49'	L
22+76	28'	L
30+91 to 32+10	45-66'	L
32+73 to 33+32	55-105'	L
33+99	35'	L
34+28	34'	L

REMOVE FENCE

All existing right of way fence shall be removed. Prior to beginning fence removal, Contractor shall coordinate with Engineer and review all locations where existing right of way fence will be removed, assess gates, accesses, and rail road tie posts. All fence removal is considered incidental to Clearing.

Table of Fence Removal – Incidental to Clearing

STA to STA	Offset	L/R
0+29 to 11+25	17' to 160'	L
2+61 to 22+30	25' to 120'	R
11+79 to 22+28	19' to 147'	L
22+81 to 45+00	25' to 120'	R
22+96 to 52+27	33' to 91'	L
45+70 to 52+34	35' to 80'	R

Numerous railroad ties are in place as fence corners on the south side of the project. These shall be removed and stockpiled for the landowner as part of Incidental Work, Clearing.

ARCHAEOLOGICAL SITE

Two weeks prior to commencing grading operations, the Contractor shall contact Jim Donohue, State Archaeological Research Center (SARC), at 605-394-1936, so that a qualified archaeologist can stake an archaeological site (39DV55). This site is in the vicinity of the project north of the existing box culvert (STA 8+00, Left) and outside the construction limits. The archaeologist will delineate an area not to be disturbed and the Engineer will set lath and flagging for this area as designated "keep out".

WATER SOURCE

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

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

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

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2/24/12

GRADING NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	6	65

WORK AFFECTING WATERWAYS WATER QUALITY

Surface Water Quality

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

Twelve Mile Creek and the North Branch of Twelve Mile Creek are classified as a warm water, semi permanent fisheries with a total suspended solids standard of 150 milligrams/liter.

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

Surface Water Discharge

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

Twelve Mile Creek and the North Branch of Twelve Mile Creek are classified as a warm water, semi permanent fishery with a Surface Water Discharge standard of 150 milligrams/liter total suspended solids.

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

Storm Water

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

A major component of the storm water construction permit is development and implementation of a storm water pollution prevention plan (SWPPP). This plan is a joint effort and responsibility of the DOT and the Contractor. The SWPPP is a dynamic document and is to be available on-site at all times. Information on storm water requirements and SWPPP are available on the following websites:
DOT: http://www.sddot.com/pe/projdev/environment_stormwater.asp
DENR: http://www.denr.sd.gov/des/sw/stormwater.aspx

A. SEASONAL WORK RESTRICTIONS

The State of South Dakota has designated warm water fisheries associated with this project. Placement of fill and/or in-stream work should not take place during the Seasonal Work Restriction to avoid conflicts with spawning fish. If flows during this time are nonexistent or extremely low, the seasonal use restriction may not be applicable. The Contractor shall not conduct in-stream work during the Seasonal Work Restriction without prior approval from the Environmental Project Scientist of the DOT Environmental Office, 605-773-3268.

TABLE OF WARM WATER FISHERIES

Stream Name	Stream Classification	Seasonal Work Restriction
Twelve Mile Cr	Warm Water	April 1 to June 30
N Branch Twelve Mile Creek	Warm Water	April 1 to June 30

B. CONSTRUCTION PRACTICES FOR STREAMS INHABITED BY TOPEKA SHINER

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

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

TABLE OF PROTECTED WATERWAYS (TOPEKA SHINER STREAMS)

Station	Stream Name
4+50	N Branch Twelve Mile Creek
8+20	N Branch Twelve Mile Creek
22+55	Twelve Mile Creek
31+50	Twelve Mile Creek

C. CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN PROTECTED WATERWAYS

No excavation shall be made below the ordinary high water elevation in Protected Waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting; and the natural streambed shall not be disturbed without permission from the Engineer. Refer to the Table of Protected Waterways 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) to prevent return of such material to the waterway.

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

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

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

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

HISTORICAL PRESERVATION OFFICE CLEARANCES

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

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

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

WASTE DISPOSAL SITE

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

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

REGISTERED PROFESSIONAL ENGINEER
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SOUTH DAKOTA
2/24/12

GRADING NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	7	65

WASTE DISPOSAL SITE - CONTINUED

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

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project.

   Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74.27:10:06.

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

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

SHRINKAGE FACTOR: Embankment +30%

TABLE OF EXCAVATION QUANTITIES BY BALANCES

		Excavation	* Undercut	Total Excavation	** Waste	** Haul
Station to	**Station**	**(CuYd)**	**(CuYd)**	**(CuYd)**	**(CuYd)**	
West End		175	455	630		
0+00	11+14	10,007	2,620	12,627		65,660
11+14	33+23	25,246	3,657	28,903		204,344
33+23	37+18	4,439	1,023	5,463		27,752
37+18	53+29	11,515	4,376	15,891	9,544	54,188
East End		175	455	630		
	Totals	**51,557**	**12,586**	**64,143**	**9,544**	**351,944**

* The quantities for these items are in the Estimate of Quantities under their respective bid items.

** The quantities for these items are for information only.

TABLE OF UNCLASSIFIED EXCAVATION (CuYd)

Excavation	51,557
Undercut	12,586
Box Culvert Installation	3,746
Total	67,889

Plan quantities will be used for final payment unless changes are approved by the Engineer and then the respective bid items will be adjusted accordingly.

Note that Box Culvert Undercut is not included in this table and is paid under its own item.

Stockpiling topsoil estimated at 7,651 cubic yards is accounted for in this unclassified excavation table. Placing Topsoil is included under the bid items and notes for Erosion Control. Waste (earthen materials only) shall be used to fill in the stock dam located right of STA 32+00. See note below. Also, waste shall be used to rebuild six field approaches estimated at 200 cubic yards each.

UNDERCUTTING

In all cut sections, the earthen sub-grade shall be undercut 2 feet below finished sub-grade. The undercut material or other suitable material, as directed by the Engineer, shall be replaced and re-compacted to the density specified for the section being constructed. All sub-grade shall be compacted to at least 95% maximum dry density. Moisture conditioning may be required.

Shallow embankment sections, fills less than 2 feet in height measured at the finished subgrade shoulders, shall be undercut to assure a minimum 2 foot height of earth embankment for the entire width of roadbed. The upper 6 inches of undercut material that consists of topsoil with a high humus content shall be used as topsoil, placed in the fill-slopes outside the shoulders of the earthen subgrade, or placed in the lower portion (below 4 feet) of fills which are over 4 feet in height. The remaining undercut soil and soil obtained from adjacent excavation (excluding upper 6 inches) shall then be replaced and compacted to the density specified for the section being constructed.

A disk designed and constructed for construction purposes shall be in use as per Section 120.3, Standard Specifications.

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

HAUL

Included in the estimate of quantities is Haul. It is not a pay item and is for information purposes only. Quantity calculated (CuYdSta) for moving unclassified excavation material to the locations where it is needed throughout the earthwork balance.

MUCK EXCAVATION

500 cubic yards of Muck Excavation is included for bidding purposes. Muck Excavation may be encountered during the removal of the existing box culvert and associated channel realignment. Muck Excavation is assumed to be required for the stock dam and area inside the roadway prism. This is assumed to be 2,760 square feet x 2 feet deep or, 204 cubic yards.

Ordinary excavation and removal of the existing box culvert is being paid for under the item Incidental Work-Grading. If the areas designated as muck excavation can be removed with similar equipment and procedures as used for unclassified excavation, the material shall be measured and paid for as "Unclassified Excavation".

Excavating muck trapped by a silt fence or wattle shall be paid for under Mucking Silt Fence.

Muck excavation consists of the removal of highly organic and/or highly saturated material. Highly organic muck material shall not be used in the embankment but may be used as topsoil. Non-organic muck material may be used as embankment outside of the fill subgrade shoulder if it is properly handled and dried prior to placement in the embankment.

Field measurement of all muck excavation will be made and agreed to in the field prior to performing muck excavation. Engineer orders additional excavation, or when the Engineer determines, in accordance with Section 120.3.A.1 of the Standard Specifications, that the classification of excavation be changed.

INCIDENTAL WORK, GRADING

This bid item shall cover work associated with the removal of existing pipe culvert at approaches and grading associated with building 6 new approaches. Note that 200 cubic yards of additional unclassified excavation for each approach is included under Unclassified Excavation for this purpose. Final location of field approaches will be determined in the field based on land owner preferences. Farm field approaches shall comply with Standard Detail 320.10.

Davison County will remove all signs prior to construction. Davison County will also set new signs prior to opening to traffic. There are 19 existing signs including stop signs and street signs, some or all of which will be removed at the discretion of the County. However, the stop signs (4) may be temporarily needed during traffic control operations so they will need to be removed and reset by the Traffic Control subcontractor as required. Also, the street name signs (2) located at each end of the project may be removed and reset as part of incidental work or the County may choose to install new ones as part of their full signage installation.

GRADING NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	8	65

TABLE OF TRAFFIC SIGN REMOVALS TO SALVAGE
For reference only. Signs removed by County.

STA - Offset	Remarks
0+24.6 - 34.4'R	STOP –See Traffic Control
0+28.5- 33'L	STOP – See Traffic Control
1+23 - 20' R	ROAD BREAKUP
1+28.9-20.3'R	265th St/ 398th Ave
5+35.1-20.7'R	SPEED LIMIT 55
9+91.9-39.6'R	NO PASSING ZONE
16+48.2-19'R	NO PASSING ZONE
21+85.4-24.5'R	NO PASSING ZONE
22+74.6-17.1'R	NO PASSING ZONE
22+74.2-14.4'L	SPEED LIMIT 55
27+88.9-21.2'R	THINK: DRIVE SAFELY
28.28.4-20.2'L	STOP
29+43.7-17.3'L	265th St/ 399th Ave
48+13.3-23.1'R	STOP
51+35.5-33.4'R	THINK: DRIVE SAFELY
51+89.52-19.7'L	TRUCKS 40 MPH/ROAD BREAKUP
52+55.7-39.8'L	STOP – See Traffic Control
53+11.2-47.6'R	STOP – See Traffic Control
53+25.6-37.9'L	265th St/ 399th Ave

47 Delineators are on the project of which the County will also remove.

Minor grading around proposed culvert extensions is also considered as incidental work on Intersections plan sheet. See Pipe Table for more information on extensions and proposed culverts.

TABLE OF CULVERT REMOVALS AND FIELD APPROACHES

Station	Remarks
0+00 R	Take out 24" RCP
11+22 L	Take out 37' of 18" CMP, field entr.
12+56 L	Take out 44' of 18" CMP, rebuild field entr.
15+00 L	Rebuild field entr.
16+98 L	Take out 40" of 18" CMP
16+98 L	Take out 26' of 18" CMP, rebuid field entr.
18+87 L	Take out 42' of 18" CMP, rebuild field entr.
45+40 R	Take out 40' of 18" CMP, rebuilt field entr.

INCIDENTAL WORK, GRADING (removal of existing box culvert)

Station	Remarks
8+22	Remove existing 10' x 10' RCBC Keep in place until new box completed

This bid item shall also cover all costs associated with the removal of the existing 10'x10' RCBC including back fill and compaction. Compaction of sub-grade shall occur at least every 2' while obtaining at least 95% of maximum dry density throughout the back fill. Compaction of earth embankment and box culvert backfill material shall be governed by the Specified Density method.

For bidding purposes, the existing box culvert is a 10' x 10' cast in place box culvert with flared wing walls in good condition approximately 50 feet long and is buried to its invert approximately 15 deep as measured from the bottom of the undercut.

SALVAGE RIPRAP

Starting at STA 6+36 and 32' R, an old riprap apron shall be salvaged for later use on site. This area is estimated to be 1000 square feet and the uneven and washed out riprap appears to be approximately 1 feet deep. No field measurements will be made and the basis of payment to salvage this riprap is based on 37 cubic yards.

FILL IN MAN-MADE STOCKDAM

Approximately 1,955 cubic yards of waste excavation shall be used for filling in the man made stock dam located right of STA 31+00 to STA 32+50. The existing surface area of the pool is 6,600 square feet and is estimated to be 8 feet deep from Elev 1517.7'. This is considered incidental to excavation operations whereby wasted excavated material shall be used to backfill.

During back fill of this stock dam, ordinary compaction procedures shall apply as progress is made and the subgrade begins to firm and support construction equipment. Formal compaction to 92% standard proctor density by mechanical means shall be done in two foot lifts. The last foot of subgrade fill and topsoil shall not be compacted. Filling stock dam shall not be used as an on-site waste receptacle for garbage, debris, etc. No deleterious material other than native soils shall be placed as fill into the stock dam. It is assumed that pumping will be required for draw down. Any pumping will be incidental to other bid items. Pump discharge area shall not cause erosion or sediment transport. Use existing or new erosion control items as necessary.

At the bottom of the ponded area and within the limits of roadway construction, Muck Excavation is assumed to be required. This is assumed to be 2,760 square feet x 2 feet deep or, 204 cubic yards.

EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Included in the quantity of Unclassified Excavation are 3,746 cubic yards of excavation for installation of reinforced concrete box culverts.

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

The excavation quantities for installation of reinforced concrete box culverts are not included with the earthwork balance quantities on the plans profile sheets. The quantities computed for excavation of the reinforced concrete box culverts are based on the limits shown in the drawing below. For pipe bedding material, see Section 421 of Standard Specifications. Compaction of earth embankment and box culvert backfill material shall be governed by the Specified Density method.

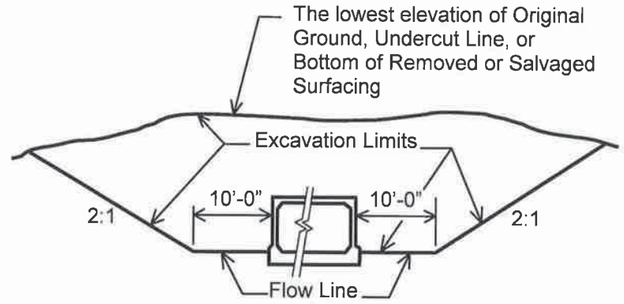


TABLE OF EXCAVATION FOR REINFORCED CONCRETE BOX CULVERT INSTALLATION

Station	Quantity (CuYd)
7+86	3,746
Total:	3,746

INSLOPE TRANSITIONS

Inslope transitions will be required at various drainage structures and stream channel changes. Refer to Standard Plate 120.05 for details. Inslope transitions have been accounted for in the mass haul and grading calculations as shown in the Table of Excavation Quantities By Balances.

TABLE OF INSLOPE TRANSITIONS

Station	L/R	Comment
4+40	L	No inslope change, CH-CH #1
6+75	L/R	Proposed Box Culvert
9+25	L/R	Back to typical
19+00	L	No Inslope change, Back Slope to 4:1
21+50	L/R	Existing Box Culvert
23+50	L/R	Back to typical
28+55	L	No inslope change, CH-CH #2
33+25	L	Back to Typical

GRADING NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	9	65

Revised 3/16/12: SRS

SALVAGED ITEMS

All salvaged items noted on the plans shall be salvaged for future highway use and hauled to the Davison County Highway shop as directed by the Engineer. The County wants all CMP pipe salvaged. See Table of Pipe Quantities. Care shall be taken not to damage the structural properties of the items during dismantling and transporting. All broken concrete and materials not salvaged shall be disposed of in accordance with the Standard Specifications. All costs for salvaging and transporting the items shall be incidental to the contract lump sum price for "Incidental Work, Grading". Before preparing his/her bid, the Contractor shall make a visual inspection of the project to verify the extent of the work and material involved.

CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 ⅔-inch X ½-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch X 1-inch or 5-inch X 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

PIPE FOR APPROACHES and INTERSECTING ROADS

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

TRAFFIC DETOUR – MAINTENANCE OF TRAFFIC DIVERSION

A 3-mile detour will be required during construction and shall be installed according to these plans. Maintenance (occasional blading and retrieval on the graveled portions) of the 3 mile detour will be the Contractor's responsibility during construction and shall be included within the "Maintenance of Traffic Diversion" bid item. For bidding purposes, the Contractor shall assume that one complete maintenance operation will be required.

Davison County will supply road base material as needed. Road defects within the detour and other safety concerns shall be brought to the Engineer's attention immediately. Cross-slopes of existing gravel roads on detour shall be maintained to be between 3% and 4% while maintaining a center crown.

Installation and removal of the traffic detour shall meet all requirements as set forth in the South Dakota Surface Water Quality Standards. As the detour route is over existing county and township roads, no impacts to water quality are expected.

Adjacent landowners will require access into their fields during construction. The contractor shall coordinate with adjacent landowners and make every reasonable accommodation to provide access into their fields.

EXISTING GRANULAR BASE

This is an information note. The existing roadway is comprised of approximately 1 inch of reclaimed asphaltic road seal that has been ground into the top four inches of the existing aggregate base course. There is approximately 12 to 13 inches of this mixture of aggregate base course in place through the length of this project. Tree sap was used in the past as a bonding agent. For this reason, the existing aggregate base course cannot be used to supplement the new aggregate base course and may only be used as ordinary material under unclassified excavation operations and shall be treated as ordinary sub-grade. This material cannot be used where aggregate base or pipe bedding material is specified. However, the re-use of this material as back fill is encouraged. Normal undercutting procedures and compaction procedures shall be followed.

TYPE 2 RIGHT-OF-WAY FENCE

Right-of-way fence shall be installed as shown in the plans in accordance to Section 620 of the Standard Specifications and the standard plates. Brace panels shall be paid per each. Right-of-way fence will be measured and paid on a per foot basis including lengths of brace panels and wire gates.

Right-of-way fence shall be Type 2 with alternating wood and steel posts. The posts shall be placed within 1 foot of the right-of-way line on the land owner's property. The Owner's Representative and/or the Engineer will stake the corner post locations.

Final land negotiations with landowners may alter final locations of permanent right of way fence and whether it is installed on a given parcel. For bidding purposes, it is assumed that all landowners will want new right of way fence installed.

TYPE 1 TEMPORARY FENCE

Temporary fence shall be installed on the south side (right of station line) of the project along the temporary construction easement line. This is on land owned by Sigmund and Neugebauer starting at STA 0+35.95 to STA 52+49.52. See ROW Layout sheets.

Temporary Construction Easement locations will be staked in the field by the Engineer. Pull posts, braces, and gates will be installed and maintained as required and will be considered incidental to the price per foot of Type 1 Temporary Fence. Existing access shall be perpetuated at existing approaches.

Any loss or damages experienced by landowners due to failure in temporary fence will be the Contractor's responsibility. Price per foot bid includes installation, maintenance, and removal. Landowner requests to change locations of gates and accesses will be paid for per foot of Remove Fence and installation of new Type 1 Temporary Fence.
only.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHAWN R. SCHULTZ
SOUTH DAKOTA
2/24/12

SURFACING NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	10	65

BASE COURSE

Base Course shall consist of crushed material. A blend of Crushed recycled asphalt concrete and virgin materials may be used so long as materials comply with specifications and materials are preapproved by the Engineer. Base Course shall be from a contractor supplied source.

Base Course shall be placed to the dimensions and thickness indicated on the Typical Sections. Base Course shall be placed over prepared and approved subgrade after compaction of the undercut.

A quantity of 1,200 tons of base course has been added for bidding purposes in the event that unstable subgrade is encountered and requires further processing beyond ordinary undercutting, scarification, compaction, and moisture conditioning. Such digouts will be reviewed with the Engineer by the Contractor prior to proceeding with the use of this extra base course. Plan quantities for drainage fabric may be adjusted accordingly if needed. Weight tickets specific to this use of base course will be separate from regular base course within the **9"** section.

CLASS E ASPHALT CONCRETE

Virgin mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1. All other requirements for Class E shall apply.

The asphalt binder used in the mixture shall be PG 58-28, PG 58-34, PG 64-22, PG 64-28 or PG 64-34 Asphalt Binder.

Rates of Materials - The Estimate of Quantities is based on the following quantities of materials per station:

BASE COURSE

Crushed Aggregate	162.75 tons
Water for Granular Material	1.95 MGal
MC-70 Asphalt for Prime	0.42 tons (32' wide or 0.3 gal / sq yd)
Blotting Sand for Prime	1.33 tons (24' wide at 10 lbs / sq yd)

CLASS E ASPHALT CONCRETE – 1st and 2nd 1.5" LIFTS

Crushed Aggregate	25.22 tons
PG 64-22 Asphalt Binder	1.61 tons
Total	26.83 tons per station

Tack Coat	0.07 tons

Tack coat (SS-1h or CSS-1h Emulsified Asphalt) shall be applied prior to each lift at the rate of 0.07 tons applied 31 feet wide (0.05 gallons per square yard).

Additional quantities have been included for paving 5' into the approaches as per Standard Plate 320.10.

PAVEMENT MARKING PAINT

The pavement marking paint and glass beads shall be furnished and applied by the Contractor. Materials shall meet the requirements of Sections 633, 980 and 981 of the Standard Specifications. All materials shall be applied as per manufacturer's recommendations. Pavement markings shall be installed in accordance with the most current edition of the Manual on Uniform Traffic Control Devices (MUTCD).

Glass beads in accordance with Section 981 shall be applied at the rate of 8 lbs/Gallon of paint. The cost of glass beads will be incidental to the cost per foot for "Pavement Marking Paint".

Measurement and payment for furnishing and applying the painted pavement marking will be made to the nearest foot. The approximate paint application rates for one pass on a 4" wide stripe shall be as follows:

Yellow .... 250 feet per Gallon
White .... 250 feet per Gallon

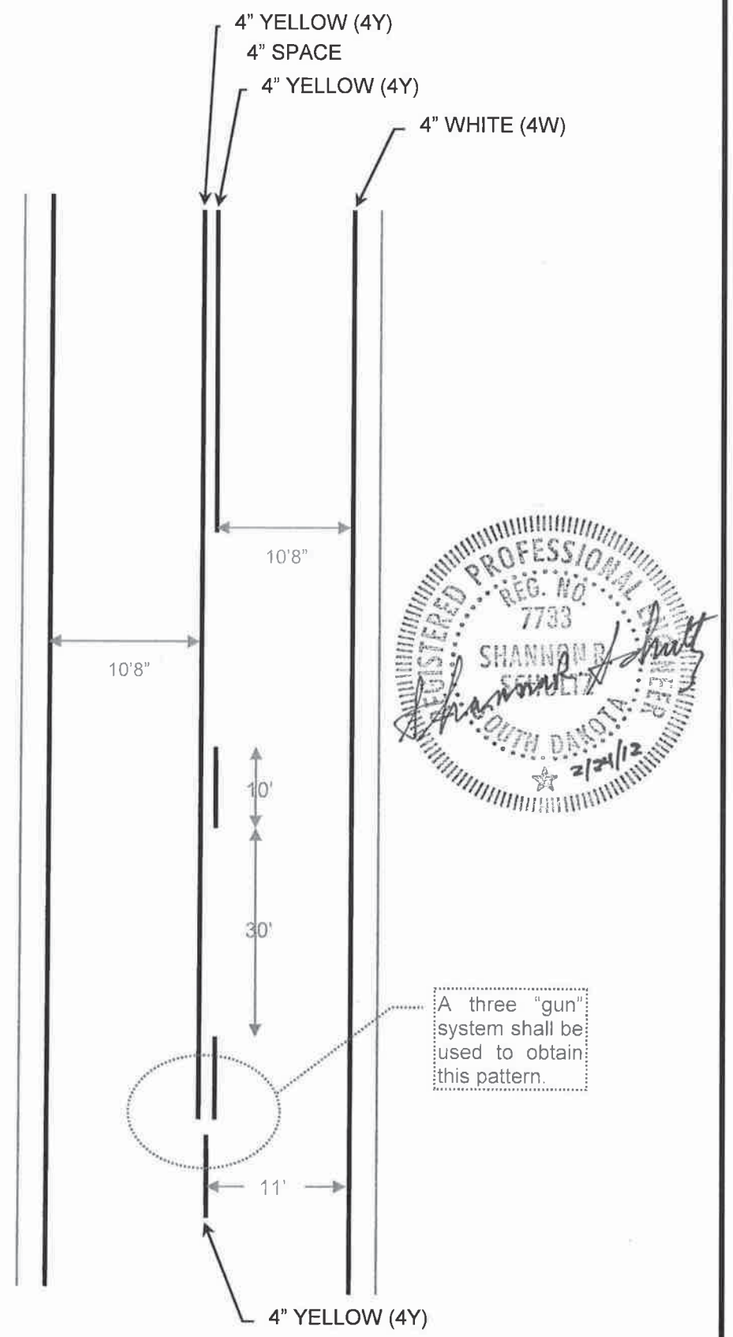
Traffic Control shall be incidental to the cost of application. The striper and advance and trailing warning vehicle shall be equipped with flashing amber lights or advance warning arrow panel if not done while project is under detour phase of traffic control.

The Contractor shall coordinate with the Engineer prior to the application of the permanent pavement markings. Permanent pavement markings shall not be placed without the approval of the Engineer. All materials shall be applied per manufacturer's recommendations. Surface shall be swept, broomed, or vacuumed clean prior to painting.

Pavement marking paint application shall be completed no sooner than 48 hours after completion of Asphalt Concrete Paving. The application of Permanent Pavement Marking shall be completed within 10 calendar days following the completion of the asphalt pavement.

Station	WB/ EB/ C	Length of Section (Ft)	Quantity (Ft of paint) 4Y	Quantity (Ft of paint) 4W
0+40 to 7+00	WB	660 - solid	660	
7+00 to 15+00	WB	800-skips	200	
15+00 to 23+50	WB	850-solid	850	
23+50 to 32+00	C	850-skips	210	
32+00 to 35+50	WB	350-skips	90	
35+50 to 40+50	C	500-skips	130	
40+50 to 46+50	WB	600-solid	600	
46+50 to 52+40	WB	590-skips	150	
0+40 to 52+00	WB	5,200-solid		5,200
0+40 to 7+00	EB	660-skips	170	
7+00 to 15+00	EB	800-solid	800	
15+00 to 23+50	EB	850-skips	210	
23+50 to 32+00	C	See above	- 0 -	
32+00 to 35+50	EB	350	350	
35+50 to 40+50	C	See above	- 0 -	
40+50 to 46+50	EB	600-skips	150	
46+50 to 52+40	EB	590-solid	590	
0+40 to 52+00	EB	5,200		5,200
		Total:	5,160	10,400

WB = striping for westbound lane
EB – striping for eastbound lane
C = single skip down centerline for both lanes



EROSION CONTROL NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	11	65

PLACE TOPSOIL

The estimated amount of topsoil to be removed and replaced is 7,651 CuYd. All cost associated with removing and replacing the topsoil along areas to be resurfaced shall be incidental to the bid unit price per cubic yard of Placing Topsoil. Excavation of topsoil is accounted for the Unclassified Excavation quantities. Topsoil shall be stripped and stockpiled on site conveniently for placing. No topsoil is to leave the project area.

Soil borings show that there is approximately 6 inches of topsoil available and considered suitable for topping in-slopes, ditches, and back-slopes. This thickness of topsoil is considered to hold true for right-of-way area outside the back-slopes and in-slopes of the present grade. This includes low-velocity areas under the Type 3 Erosion Control Blanket prior to seeding.

DRILLS

In addition to the drills specified in Section 730 of the Standard Specifications, other types of drills including no-till drills will be allowed as long as they have baffles, partitions, agitators, or augers which keep the seed distributed throughout the seed box and the seed is planted at a depth of ¼" to ½" .

PERMANENT SEEDING

The areas to be seeded comprise of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation. All permanent seed shall be planted in the topsoil at a depth of ¼" to ½".

All seed broadcast must be raked or dragged in (incorporated) within the top ¼" to ½" of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods. Type B Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
Canada Wildrye	Mandan	2
	Total:	18

MULCHING (GRASS HAY OR STRAW)

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project. Mulch rate is 4,000 pounds per acre placed uniformly after seeding followed immediately by punching in accordance with Standard Specification 732.

An additional 2.5 tons of Grass Hay or Straw Mulch has been added to the Estimate of Quantities for temporary erosion control on areas determined by the Engineer during construction for temporary stabilization.

EROSION BALES

Erosion bales for restraining the flow of water and sediment shall be placed at locations determined by the Engineer during construction. Refer to Standard Plate 734.02 for details.

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

A quantity of 30 Erosion Bales has been included in the Estimate of Quantities for bidding purposes in the event that additional temporary sediment control measures are needed. Plan and Profile sheets do not call for Erosion Bales.

EROSION CONTROL WATTLE

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

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

REMOVE EROSION CONTROL WATTLE

Erosion control wattles shall be removed BY COUNTY FORCES when vegetation is established. Some or all of the erosion control wattles may be left on the project until vegetation is established.

REMOVE AND RESET EROSION CONTROL WATTLE

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for "Remove and Reset Erosion Control Wattle". If a wattle location continues to wash out or fail, other erosion control measures shall be explored such as Erosion Bales or Silt Fence.

HIGH FLOW SILT FENCE

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

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

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

An additional 82 feet of high flow silt fence has been added to the Estimate of Quantities for temporary sediment control.

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

Product	Manufacturer
Curlex Sediment Log AEC Premier Straw Wattles	American Excelsior Company Arlington, TX Phone: 1-800-777-7645 **www.amerexcel.com**
Aspen Excelsior Logs and Excel Straw Logs	Western Excelsior Corporation Mancos, CO Phone: 1-800-833-8573 **www.westernexcelsior.com**
Earth Saver Rice Straw Wattles	R.H. Dyck Inc. Winters, CA Phone: 1-866-928-8537 **www.earth-savers.com**
Amber Waves Straw Wattles	GroNatural Winsted, MN Phone: 1-320-485-2800 **www.gronatural.com**
EarthTec Erosion Control Wattles	EarthTec/the Dukes, Inc. Devils Lake, ND Phone: 1-701-662-6666
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Stenlog	Erosion Control Blanket Riverton, MB Phone: 1-866-280-7327 **www.erosioncontrolblanket.com**
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 **www.wintersexcelsior.com**
Patriot Wood Fiber Logs and Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-480-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHANNON M. SCHULTZ
SOUTH DAKOTA
2/24/12

EROSION CONTROL NOTES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 6042 (02)	12	65

TABLE OF 12" DIAMETER EROSION CONTROL WATTLE

Station	L/R	Quantity (Ft)
1+00	R&L	60
1+50	R&L	60
2+00	R	30
2+50	R	30
3+00	R	30
3+50	R	30
4+00	R	30
4+50	R	30
5+00	R	30
5+75	R	30
6+50	R	30
7+25	R	30
7+90	R	30
8+25	L	30
8+50	R	30
9+00	R&L	60
9+50	L	30
10+00	R&L	60
10+50	R&L	60
11+50	R	30
13+00	L	30
15+50	R&L	60
16+25	R&L	60
17+00	R	30
17+50	R&L	60
18+00	R&L	60
18+50	R&L	60
18+90	R&L	60
19+30	R&L	60
19+70	R&L	60
20+10	R&L	60
20+50	R&L	60
20+90	R&L	60
21+30	R&L	60
21+75	R	30
22+00	L	30
22+50	L	30
23+00	R	30
35+00	R&L	60
35+75	R&L	60
36+50	R&L	60
37+25	R&L	60
38+00	L	60
42+00	L&R	60
45+00	R&L	60
48+00	R&L	60
52+00	R&L	60
		2,160

TABLE OF HIGH FLOW SILT FENCE

Station	L/R	Location	Quantity (Ft)
0+00-33' to -17'	R	Inlet protection on pipe	30
1+84 to 7+58	L		617
6+52 to 7+92	R		175
7+11 to 7+77	R		67
7+74 to 7+80	L		75
8+12 to 9+99	R		214
8+26 to 9+14	R		90
11+63 to 15+53	R		396
21+72 to 22+13	R		82
22+52 to 34+98	R		1,042
22+93 to 35+26	L		1,268
37+88 to 42+07	L		420
52+40 to 52+66	R	Inlet protection on pipe	42
		Additional Quantity:	82
		Total:	**4,600**

MUCKING SILT FENCE

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

REMOVE SILT FENCE

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

TYPE 3 EROSION CONTROL BLANKET

Type 3 Erosion control blanket shall be installed as per the typical sections shown for the channel changes at the locations noted in the table and at locations determined by the Engineer during construction.

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

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

The Contractor shall install erosion control blanket according to the manufacturer's installation instructions. An additional quantity of 42 square yards of Type 3 Erosion Control Blanket has been added to the Estimate of Quantities for temporary erosion control.

TABLE OF EROSION CONTROL BLANKET

Station to	Station	L/R	Location	Type	Quantity (SqYd)
4+46	5+54	L	bed protection on CH CH	3	123
6+51	8+07	R	ditch protection	3	260
6+75	7+55	L	ditch protection	3	128
7+66	9+27	L	ditch protection	3	268
8+18	9+49	R	ditch protection	3	218
21+25	22+88	L	ditch protection	3	284
22+19	23+53	R	ditch protection	3	220
23+17	23+54	L	ditch protection	3	57
			Additional Quantity:	3	42
			Total Type 3 Erosion Control Blanket:		**1,600**

For bidding purposes, a quantity 1000 Sq Yd of Type 1 Erosion Control Blanket has been added for the purpose of providing improved seedbed on slopes 3:1 and steeper and where ordinary mulching cannot be performed.

For bidding purposes, a quantity of 400 pounds of Fiber Mulching has been added for the purpose of providing an alternative to standard mulch in areas where slopes are 3:1 or steeper where ordinary mulching cannot be performed.

SHAPING FOR EROSION CONTROL BLANKET

The ditches shall be shaped for the erosion control blanket as specified on Standard Plate 734.01.

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

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TABLE OF TEMPORARY DIVERSION CHANNEL

The Contractor shall construct a temporary diversion channel in accordance with Standard Plate 734.30 at the locations listed in the following table.

Station	Quantity (Each)
8+22	1
Total:	1

The intent is to allow the North Branch of Twelve Mile Creek to continue to run through the existing box culvert as the diversion channel while the new box culvert is being installed. Therefore, work to build and maintain the temporary diversion channel should be minimal. Care shall be taken to protect the integrity of the subgrade and pipe bedding, back fill and compaction, of the new box culvert. Creek water shall not flow at any time through the area of the new box culvert installation until the culvert is 100% installed, sections tied and adjacent slopes have been back filled, compacted, fabric and rip-rap protection installed.

TABLE OF RIPRAP AND DRAINAGE FABRIC

Station	L/R	Class **B** Riprap (Ton)	Type **B** Drainage Fabric (SqYd)
4+25 to 5+75	L	349	235
6+75 to 9+25	R	442	307
6+75 to 9+25	L	400	278
7+43 to 7+73	L	85	59
8+00 to 8+25	R	56	39
21+26 to 23+50	R	464	322
22+00 to 23+50	L	220	153
28+55 to 33+25	L	2,140	1,485
RCBC Pad		--	260
	Total:	**4,156**	**3,138**

EROSION CONTROL NOTES

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STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

❖ **SITE DESCRIPTION (4.2 1)**

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☒ Filling
  - ☒ Cutting and filling
  - ☐ Other (describe):
- **Total Project Area** 17.5 **(4.2 1.b.)**
- **Total Area To Be Disturbed** 17.5 **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 12.5
- **Soil Properties:** AASHTO Soil or USDA-NRCS Soil Series Classification A-6(7), A-4(3) or CL, ML-CL **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Twelve Mile 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 perimeter protection where runoff sheets from the site.**
- **Clearing and grubbing.**
- **Install channel and ditch bottom protection.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install utilities, storm sewers, curb and gutter.**
- **Install inlet and culvert protection after completing storm drainage and other utility installations.**
- **Complete final grading.**
- **Install channel and ditch bottom protection.**
- **Complete final paving.**
- **Reseed areas disturbed by removal activities**.

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

(Check all that apply)

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

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

- **Wetland Avoidance**

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

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

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

- **Other Storm Water Controls (4.2 2.c., (1) and (2))**
  - **Waste Disposal**

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

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

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

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

- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
  - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $^1/_3$ of the height of the silt fence.
  - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
  - Check dams will be inspected for stability. Sediment will be removed when depth reaches 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.

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❖ **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.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
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SOUTH DAKOTA
2/24/12

EROSION CONTROL NOTES

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❖ **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.

❖ **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.

Tom Lehrkamp

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

➢ **Prime Contractor**

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

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

Authorized Signature

❖ **CONTACT INFORMATION**

➢ **Contractor Information**:

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

➢ **Erosion Control Supervisor**

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

➢ **SDDOT Project Engineer**

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

➢ **SD DENR Contact Spill Reporting**
- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➢ **SD DENR Contact for Hazardous Materials.**
- (605) 773-3153

➢ **National Response Center Hotline**
- (800) 424-8802.

REGISTERED PROFESSIONAL ENGINEER REG. NO. 7733 SHANNON R. SCHULTZ SOUTH DAKOTA 2/24/12

Shannon R Schultz

TRAFFIC CONTROL NOTES

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GENERAL MAINTENANCE OF TRAFFIC

1. Installation of traffic control shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) 2009 Edition unless otherwise modified in the plans.

2. The Contractor shall notify the engineer 7 days prior to start of construction and before any substantial traffic control change so that a press release can be issued. The Contractor shall notify the engineer 48 hours in advance of all other traffic control changes.

   Installation of traffic control shall not be made before 8:30 AM on the day of the closure.

3. Removing, relocating, salvaging, and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Davison County. The Contractor shall notify Rusty Weinberg Davison County Highways (605-995-8625) 72 hours in advance to schedule signs to be removed.

   Additionally, the Contractor shall notify the County 14 calendar days prior to opening to traffic to allow time for installation of permanent signage. The sign installation area must also have final grading completed so the County's one call markings are not disturbed. If the one call markings are disturbed the County will require 7 additional working days to have the one call remarked. If the Contractor fails to notify the County within the specified time period, the Contractor shall be responsible for temporary signage until the permanent signage is installed by the County.

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

5. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the County, and to the satisfaction of the Engineer.

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

7. Installation, maintenance, relocation and removal of Type I and II barricades, cones, vertical panels, drums, barricade warning lights, watchmen, tubular markers and flags shall be included in the lump sum price bid for "Traffic Control Miscellaneous".

8. The Contractor or designated traffic control subcontractor shall ensure the adequacy, legibility, and reflectivity of each sign and device. Sign washing shall be considered incidental to Traffic Control and required as directed by the Engineer.

9. The Contractor shall provide temporary access routes for residences and businesses located in the construction area unless otherwise noted in the plans. Temporary routes and drives shall be considered incidental to all items of the project and therefore no separate measurement and payment shall be made.

10. Flagger warning signs shall be installed when using flaggers to direct traffic. Flaggers shall wear appropriate safety clothing and shall use a Stop/Slow paddle. Payment for flagging will be at the contract unit price per hour if a bid item has been included. If no bid item is included, flagging shall be incidental to "Traffic Control, Miscellaneous".

TRAFFIC DETOUR

A 3-mile detour will be required during construction and shall be installed according to these plans and the traffic diversion shall be constructed according to Section 4.4.A. of the Standard Specifications. Maintenance (occasional blading and retrieval) of the 3 mile detour will be the Contractor's responsibility during construction which will be paid for as the lump sum bid item "Maintenance of Traffic Diversion". Davison County will provide and deliver all new on detour route gravel surfacing as needed. Serious road defects within the detour shall be brought to the Engineer's attention immediately. All traffic accidents on detour and within project area shall be immediately reported to the local authorities or by dialing 911.

For bidding purposes, contractor shall assume one full maintenance operation will be required during construction.

Detour shall be kept in good working condition and free of construction debris. Flashing beacons on traffic control signs should be inspected daily to ensure proper functioning throughout the night.

Installation and removal of the traffic diversion shall meet all requirements as set forth in the South Dakota Surface Water Quality Standards. As the detour route is over existing county and township roads, no impacts to water quality are expected.

Adjacent landowners will require access into their fields during construction. The contractor shall coordinate with adjacent landowners and shall make reasonable accommodations to provide access into their fields.

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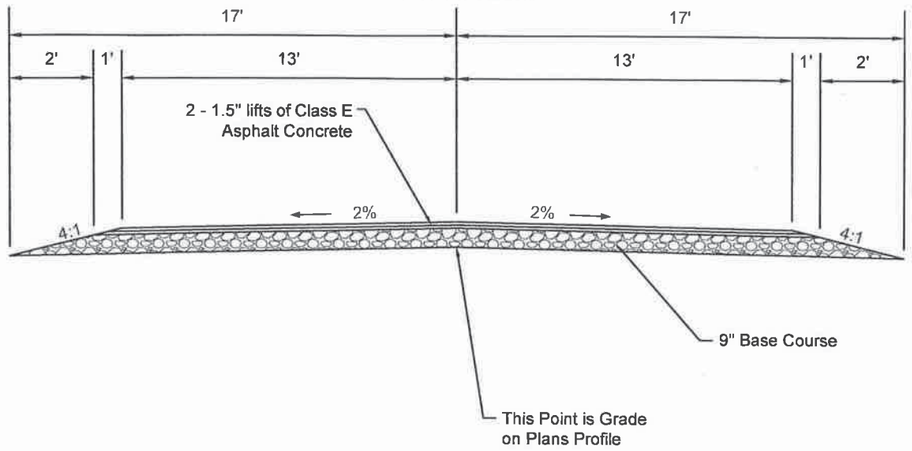
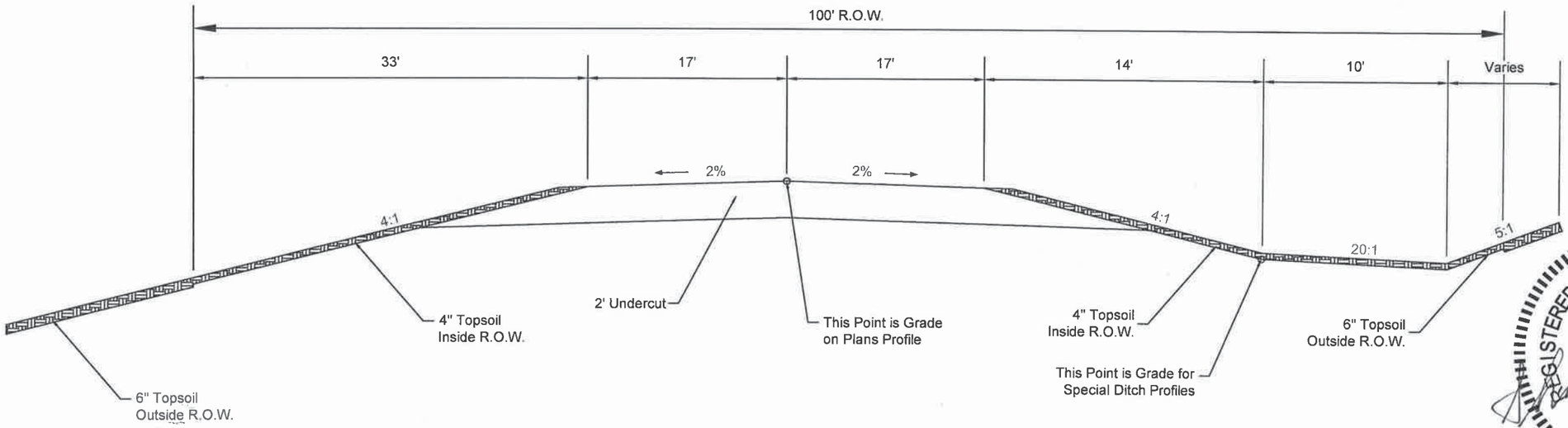
TYPICAL SURFACING SECTION

STATION
0+00.0 to 53+29.0



TYPICAL GRADING SECTION

STATION
0+17.5 to 4+39.8
5+54.1 to 6+75.0
9+25.0 to 19+00.0
23+50.0 to 28+55.0
33+25.0 to 52+56.8



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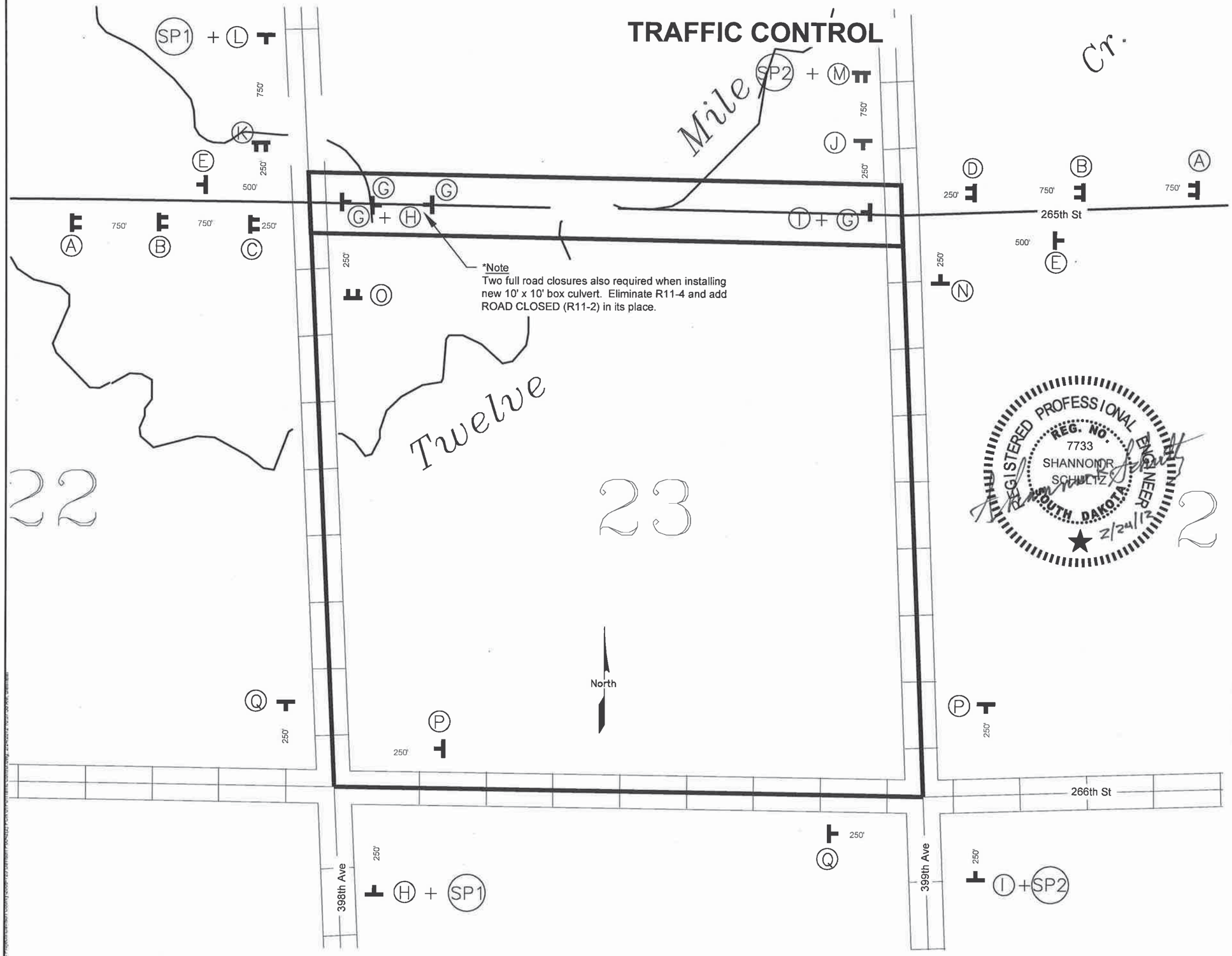
TRAFFIC CONTROL



Legend

Sign Location

Project Limits

Detour Route

NOTES:

All Ground Mounted Support signs shall remain in place until all construction is complete.

Posts used for the mounting of construction signs shall yield upon impact to minimize hazards to motorists.

If a two–part post assembly is used, the connection must conform to FHWA breakaway sign support requirements.

Construction signs shall not block the view of existing signs.

Spacing of Fixed Location Signs Shall be as follows:

Suggested Advance Warning Sign Spacing

Road Type	*Distance Between Signs***		
	A	*B*	*C*
Urban (low speed)*	*30 (100)*	*30 (100)*	*30 (100)*
Urban (high speed)*	*100 (350)*	*100 (350)*	*100 (350)*
Rural	*150 (500)*	*150 (500)*	*150 (500)*
Expressway/Freeway	*300 (1,000)*	*450 (1,500)*	*800 (2,640)*

*Speed category to be determined by highway agency.

**Distances are shown in meters (feet). The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The third sign is the first one in a three–sign series encountered by a driver approaching a temporary traffic control zone).

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

NOTE: The signs labeled as A and G will be located near the one of the two structures that is being constructed at the time.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHANNON R. SCHULTZ
SOUTH DAKOTA
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	20	65

TRAFFIC CONTROL

Ⓐ

W20-3a 36" x 36"

Ⓑ

W20-2 36" x 36"

Ⓒ

W20-3 36" x 36"

M4-8 24" x 12"

M5-1 21" x 15"

Ⓓ

W20-3 36" x 36"

M4-8 24" x 12"

M5-1 21" x 15"

Ⓔ

M4-8A 24" x 18"

R11-2 48" x 30"

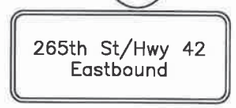
Ⓗ

M4-10 48" x 18"

Ⓘ

M4-10 48" x 18"

SP1



Special #1 60"x30"

SP2

Special #2 60"x30"

Ⓛ

W20-2 36" x 36"

Ⓜ

W20-2 36" x 36"

Ⓙ

M4-8 24" x 12"

M6-3 21" x 15"

R3-1 24" x 30"

Ⓚ

M4-8 24" x 12"

M6-3 21" x 15"

R3-2 24" x 30"

Ⓞ

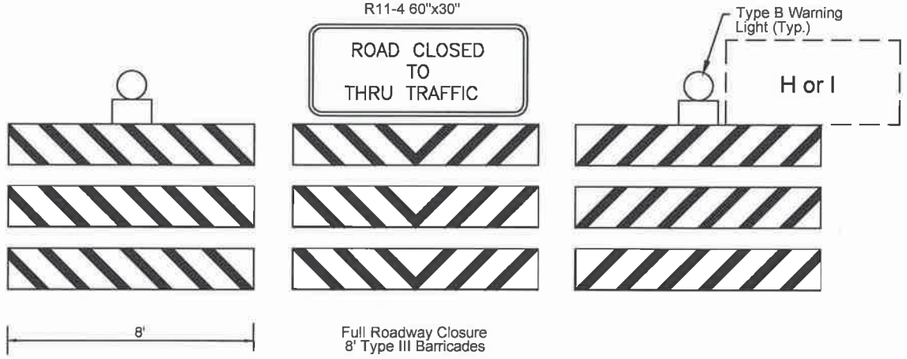
R3-1 24" x 30"

Ⓝ

R3-2 24" x 30"

Ⓖ

Set on Type III Barricades
R11-4 60"x30"



Full Roadway Closure
8' Type III Barricades

Ⓟ

M4-8 24" x 12"

M5-1 21" x 15"

Ⓠ

M4-8 24" x 12"

M5-1 21" x 15"

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	21	65

TRAFFIC CONTROL

ITEMIZED LIST FOR TRAFFIC CONTROL					
SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
M6-3	21" x 15"	DIRECTION ARROW - SINGLE VERTICAL AHEAD	2	6	12
M4-8	24" x 12"	DETOUR	6	6	36
M4-8A	24" x 18"	END DETOUR	2	9	18
M4-10	48" x 18"	DIRECTION ARROW - LEFT OR RIGHT	4	22	88
M5-1	21" x 15"	ADVANCE TURN 90 DEGREE - LEFT OR RIGHT	6	6	36
R3-1	24" x 30	NO RIGHT TURN SYMBOL	2	21	42
R3-2	24" x 30"	NO LEFT TURN SYMBOL	2	21	42
R11-2	48" x 30"	ROAD CLOSED	2	27	54
R11-4	60 " x 30"	ROAD CLOSED TO THRU TRAFFIC	2	30	60
SPECIAL#1	60" x 30"	265th ST/HWY 42 EASTBOUND	2	30	60
SPECIAL#2	60" x 30"	265th ST/HWY 42 WESTBOUND	2	30	60
W20-2	36" x 36"	DETOUR AHEAD	4	27	108
W20-3a	36" x 36"	ROAD CLOSED AHEAD	2	27	54
		TYPE III BARRICADE - 8 FT. SINGLE SIDED	12	56	672
				TOTAL UNITS	1342

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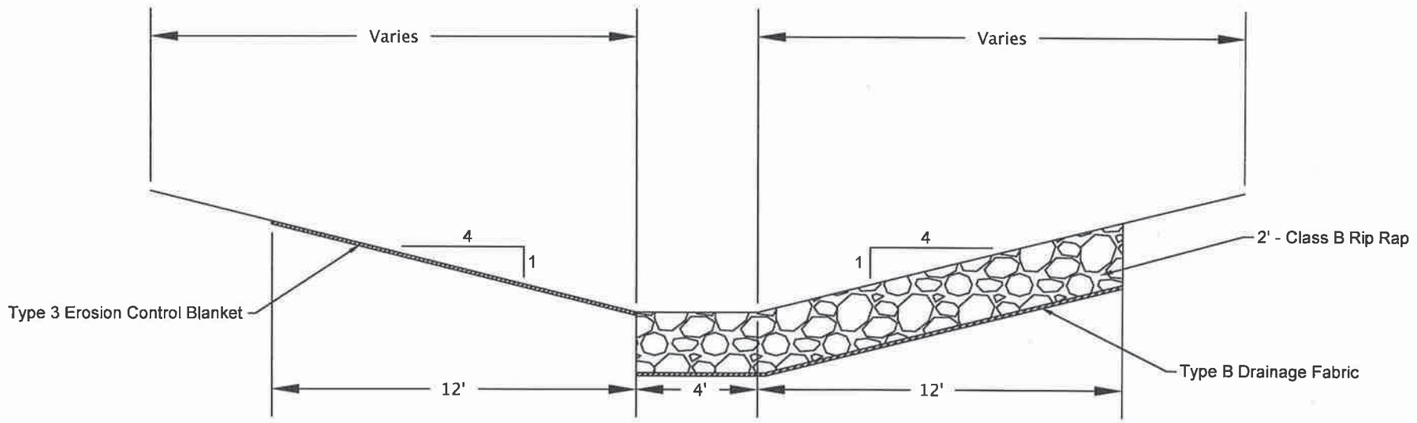
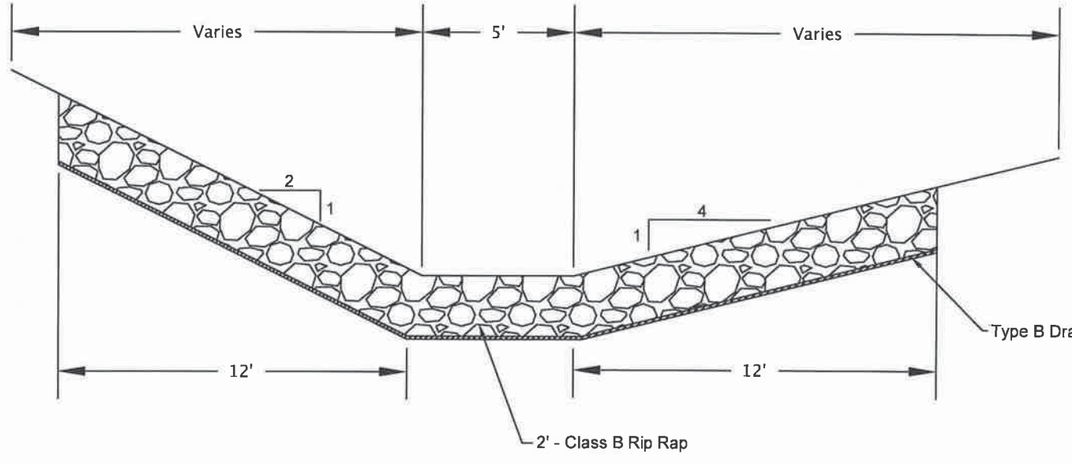
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	22	65

EROSION CONTROL

CH-CH #1
Typical Section
Sta. 4+39 to Sta. 5+54



CH-CH #2
Typical Section
Sta. 28+55 to Sta. 33+25



North

Scale: 1" = 5'
Date: 2/15/2012

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	23	65

EROSION CONTROL

Erosion Control Wattle (10' Each)

High Flow Silt Fence

Class B Rip Rap

Type 3 Erosion Control Blanket

Sta. 0+00-33' to 0+00-17'R
Install 30' of High Flow Silt Fence as inlet protection for culvert

Sta. 1+84 to 7+58 L
Install 617' of High Flow Silt Fence

CH-CH #1
Sta. 4+25-75'L to Sta. 5+75-67'L
Install 235 SyYd Type B Drainage Fabric
Install 349 Tons Class B Riprap

Sta. 4+46 to Sta. 5+54 L
Install 123 SqYd Type III Erosion Control Blanket

Sta. 6+52 to 7+92 R
Install175' of High Flow Silt Fence

Sta. 7+00 to Sta. 9+00 LEFT.
Do not disturb archaelogical site 39DV55

Sta. 6+51 to 8+07 R
Install 260 SqYd of Type III Erosion Control Blanket

Sta. 6+75 to Sta. 7+55 L
Install 128 SqYd Type III Erosion Control Blanket

Sta. 7+11 to Sta. 7+77 R
Install 67' of High Flow Silt Fence

Sta. 7+66 to Sta. 9+27 L
Install 268 Sqyd Type III Erosion Control Blanket

6+75 to 9+25L
Install 278 SqYd Class B Drainage Fabric
Install 400 Tons Class B Riprap

Sta. 7+74 to 7+80 L
Install 75' of High Flow Silt Fence

Sta. 8+12 to 9+99 R
Install 214' of High Flow Silt Fence

Sta. 8+18 to Sta. 9+49 R
Install 218 Sqyd Type III Erosion Control Blanket

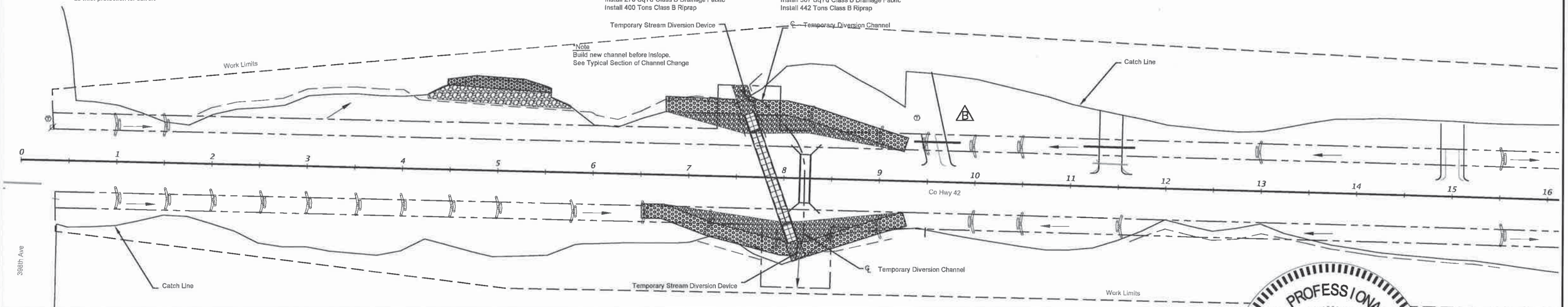
Sta. 8+26 to Sta. 9+14 R
Install 90' of High Flow Silt Fence

6+75 to 9+25R
Install 307 SqYd Class B Drainage Fabric
Install 442 Tons Class B Riprap

Sta. 7+43-96' to 7+73-60'L
Install 59 SqYd Type B Drainage Fabric
Install 85 Tons Type B Riprap

Sta. 8+00-60' to 8+25-83'R
Install 39 SqYd Type B Drainage Fabric
Install 56 Tons Type B Riprap

Sta. 11+63 to 15+53 R
Install 396' of High Flow Silt Fence



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2/24/12

North

Scale: 1" = 100'

Sta. 21+26 to 23+50R
Install 322 SqYd of Type B Drainage Fabric
Install 464 Tons Class B Riprap

Sta. 22+00 to 23+50R
Install 153 SqYd of Type B Drainage Fabric
Install 220 Tons Class B Riprap

Sta. 21+25 to 22+86 L
Install 284 SqYd of Type III Erosion Control Blanket

Sta. 21+72 to 22+13 R
Install 82' of High Flow Silt Fence

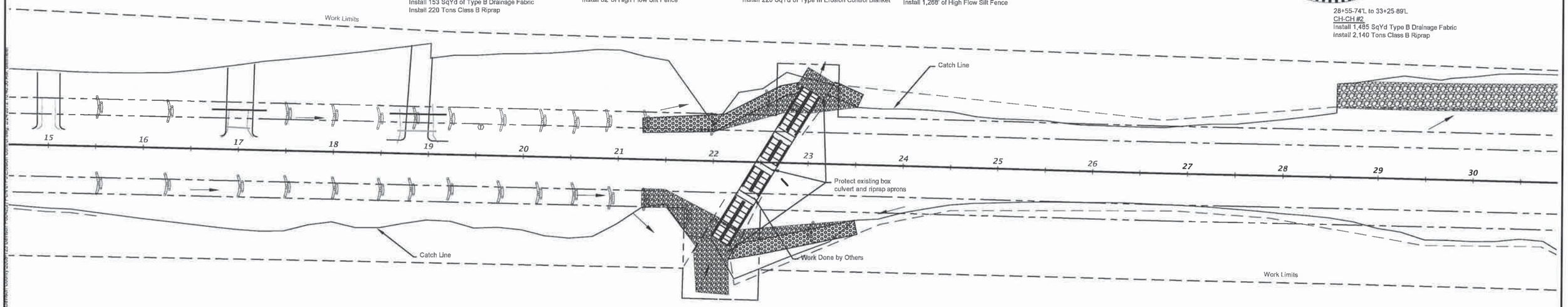
Sta. 23+17 to 23+54 L
Install 57 SqYd of Type III Erosion Control Blanket

Sta. 22+19 to 23+53 R
Install 220 SqYd of Type III Erosion Control Blanket

Sta. 22+52 to 34+98 R
Install 1,042' of High Flow Silt Fence

Sta. 22+93 to 35+26 L
Install 1,268' of High Flow Silt Fence

28+55-74'L to 33+25-89'L
CH-CH #2
Install 1,485 SqYd Type B Drainage Fabric
Install 2,140 Tons Class B Riprap



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	24	65

EROSION CONTROL

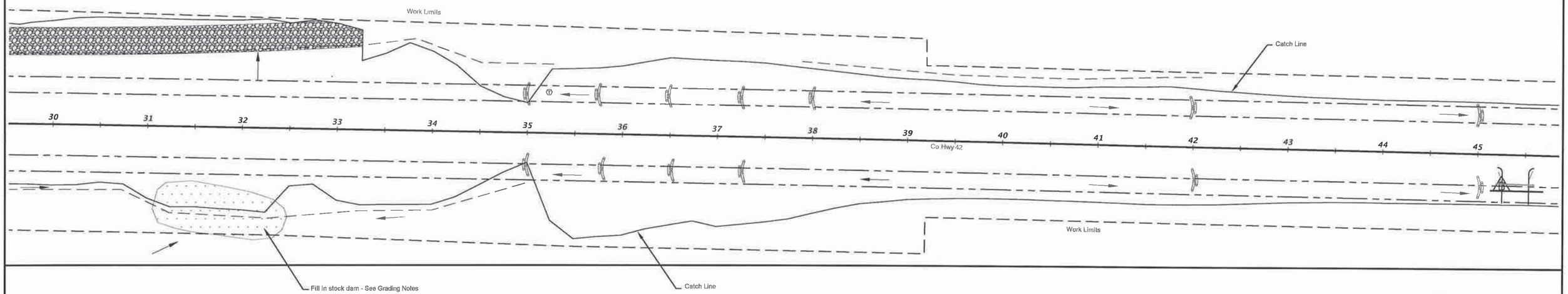
Erosion Control Wattle (10' Each)

High Flow Silt Fence

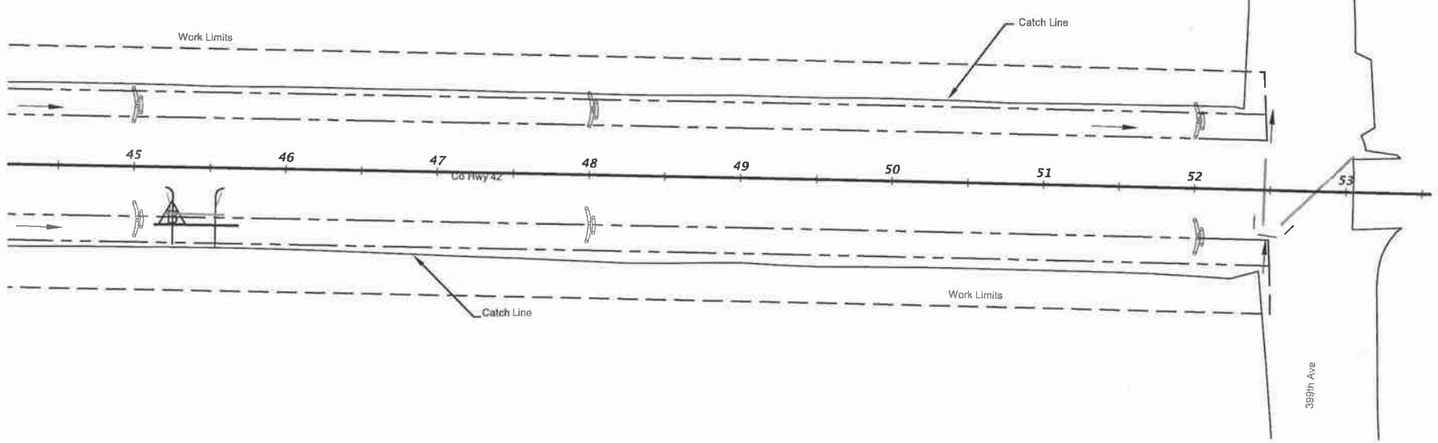
Class B Rip Rap

Type 3 Erosion Control Blanket

Sta. 37+88 to 42+07 L
Install 420' of High Flow Silt Fence



Sta. 52+40 to 52+66 R
Install 42' of High Flow Silt Fence
(Inlet Protection)



North

Scale: 1" = 100'

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SOUTH DAKOTA
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	25	65

CONTROL DATA

CONTROL POINTS					
CP #	STATION	OFFSET	DESCRIPTION	N	E
1	9+87.23	70.95'L	Rebar w/ Cap & Guards	100,000.0000	100,000.0000
300	45+25.34	32.85'R	Rebar w/ Cap & Guards	99,882.87	103,535.07

NOTE: Bench Mark Datum = NAVD 1988

*Note: These control points will be destroyed by proposed grading. New control points will be established prior to beginning the project. These new control points will appear in the as built drawings.
- CDI will perform all construction staking and observation.
- Copies of as built drawings will be furnished to County and Area Offices.

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STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	26	65

HORIZONTAL ALIGNMENT DATA

Horizontal Alignment List					
	STATION			N	E
POINT					
TYPE	TAN LENGTH	STATION	BEARING	NORTH (Y)	EAST (X)
PT		0+00.00		99952.260	99011.380
	2586.030		S 88° 39'15" E		
PC		25+86.03		99891.524	101596.697
	LC=88.316		CD=0°8'50"		
	RC=17188.734		DC=0°17'40"		
PI		26+30.19			
PT		26+74.35		99889.677	101684.994
	2605.925		S 88°56'54.98" E		
PC		52+80.27		99841.860	104290.480

LEGEND

PI = Point of Intersection	POB = Point of Beginning
PC = Point of Curve	POE = Point of Ending
PRC = Point of Reverse Curve	
PT = Point of Tangent	
LC = Length of Curve	
RC = Radius of Curve	
CD = Curve Deflection	
DC = Degree of Curve	

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SOUTH DAKOTA
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Take Out Trees at the Following Locations:
(Clearing)
0+60 to 0+74-45'R
1+98-46'L
2+41-36'L
4+42-75'L
4+43-46'R
4+53-20'L
4+61-46'R
5+18 to 6+60-50'R to 60'R
5+19 to 6+05-60'R
6+15-51'L
6+82 to 7+44-45'R to 59'R

Take Out Fence at the following locations:
(Incidental Work, Clearing)
0+29 to 11+27 - 16' to 160' L
2+61 to 22+30 - 25' to 120' R
11+79 to 22+28 - 19' to 147' L

Sta. 0+00-29'-28'L
Install 2-24" RCP
Safety Ends

Sta. 0+00-24'R Remove
24" RCP
(Incidental Work, Grading)

Sta. 0+00-12'-34'R to 0+33-40'R
Install 24"-46' CMP
w/ 2 Safety Ends

Take Out Shrubs at the following locations:
(Clearing)
0+79-36'R to 1+13-35'R
1+72-38'R to 2+37-36'R

4+39L to 5+54L
CH-CH #1
(see Cross Section)

4+25L to 5+79L
Install Class B Rip Rap
Install Type B Drainage Fabric
Install Type III Erosion Control Blanket
CH-CH #1
(see Erosion Control)

5+35-21'L to 9+42-40'R
Take Out Signs
(Incidental Work, Grading)
Install Type III Erosion Control Blanket
4+46 - 5+54L
6+51 - 8+07R
6+75 - 7+55L
7+66 - 9+27L
8+18 - 9+49R
(see Erosion Control)

6+36-32'R to 7+55-57'R
Take Out Rip Rap
(Salvage Rip Rap)

7+00 to 9+00 LEFT
do not disturb
archaeological site 39DV55.

7+68-51'L to 8+05- 51'R
Install 10'x10'-108' Precast Concrete Box Culvert w/ End Sections
(see Structure Plans)
Install Class B Rip Rap
Install Class B Drainage Fabric
(see Erosion Control)

8+22-25'L to 26'R
Take Out Existing 10'x10' RCBC
(Incidental Work, Grading)

9+33-41'L to 9+81-41'L
Install 24"-48' CMP w/
2 Safety Ends
(Rebuild Field Entrance)

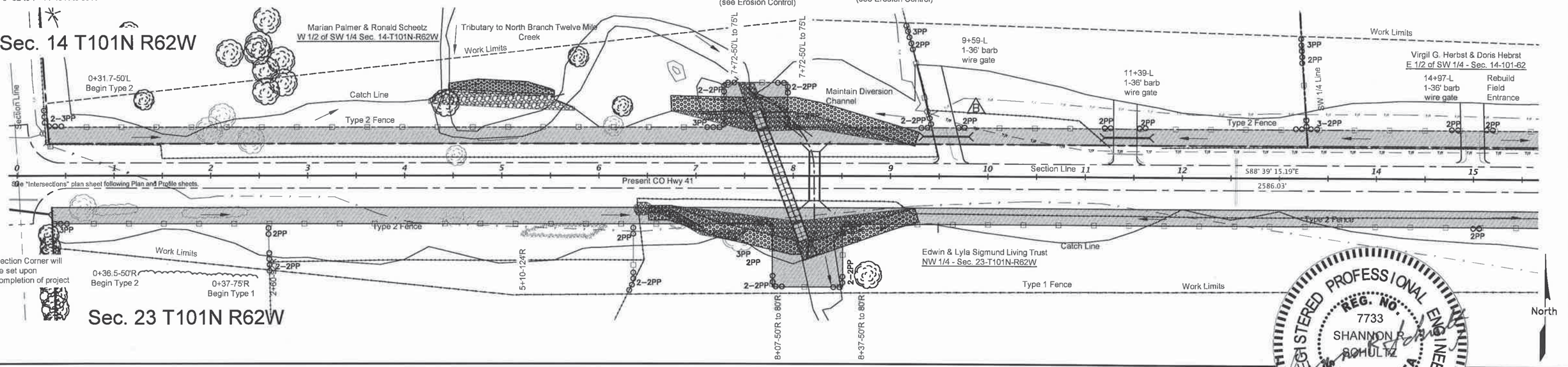
Install Class B Riprap
Install Class B Drainage Fabric
6+75 to 9+25L/R
(see Erosion Control)

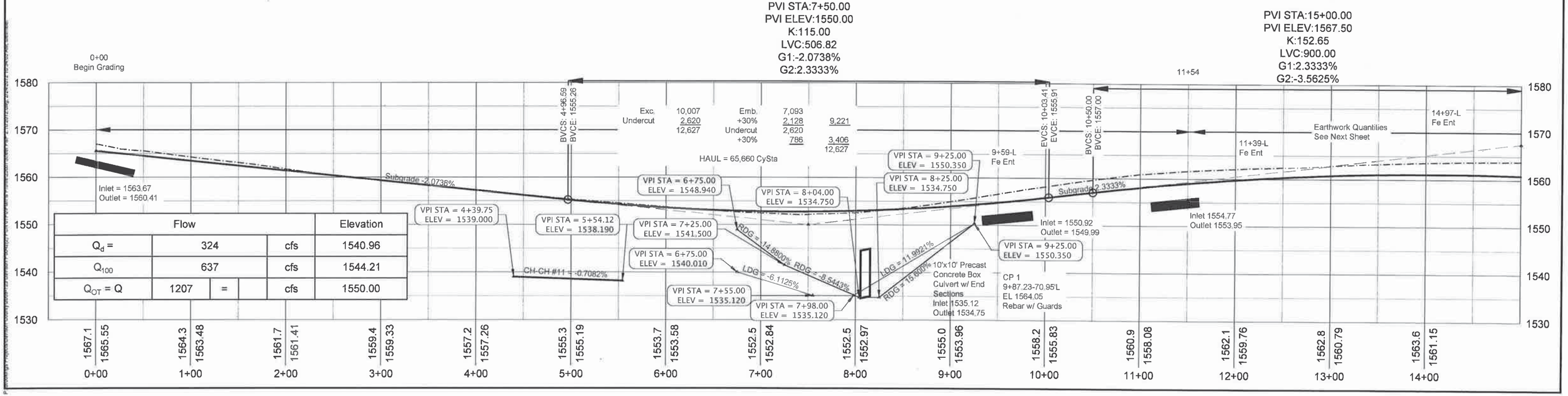
11+22 to 11+59-24'L
Take Out 18"-37' CMP
(Incidental Work, Grading)

12+56
Take Out 18"-44' CMP
(Incidental Work, Grading)

11+19 to 11+67-41'L
Install 24"-48' CMP w/
2 Safety Ends
(Rebuild Field Entrance)

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	27	65





SCALES:
1" = 100' HOR
1" = 20' VER

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	28	65

Take Out Signs at the Following Locations:
(Incidental Work, Grading)
16+49-19'R
21+85-25'R
22+74-14'L
22+75-17'R
27+89-54'R
28+26-20'L
29+44-17'L

16+98-23'L
Take out 18"-26' CMP
(Incidental Work, Grading)

16+77 to 17+23-41'L
Install 18"-46' CMP
w/ 2 Safety Ends
(Rebuild Field Entrance)

18+87-24'L
Take out 18"-42' CMP
(Incidental Work, Grading)

18+66 to 19+12-41'L
Install 18"-46' CMP
w/ 2 Safety Ends
(Rebuild Field Entrance)

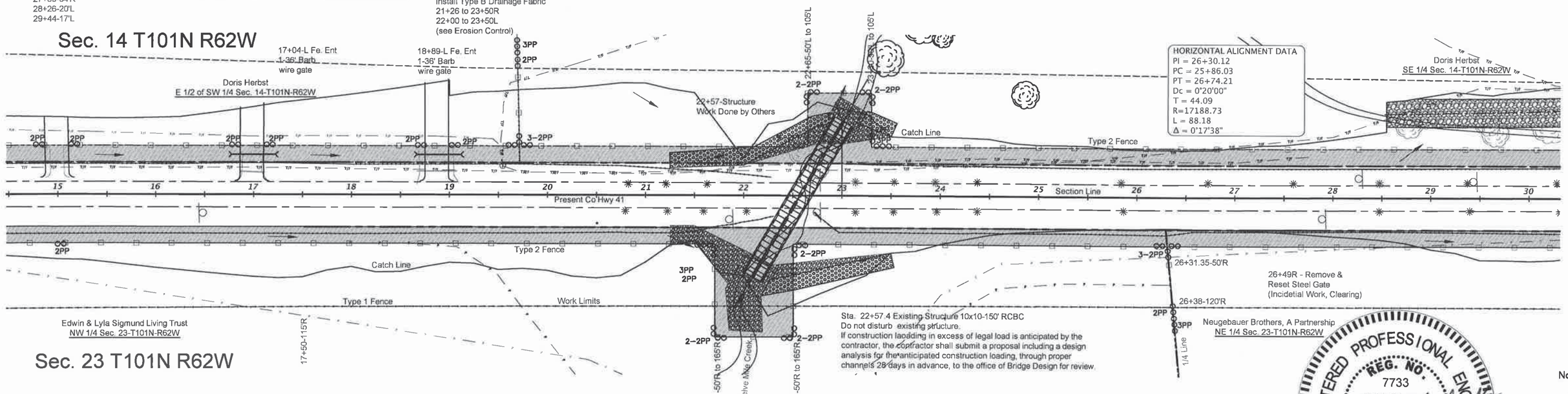
Install Type III Erosion Control Blanket
21+25 - 22+88L
22+19 - 23+53R
23+17 - 23+54L
(see Erosion Control)

Install Class B Riprap
Install Type B Drainage Fabric
21+26 to 23+50R
22+00 to 23+50L
(see Erosion Control)

22+09-83.8'R to 23+01-76.2'L
Protect Twin 10x10-150' RCBC

Take Out Trees at the following locations:
(Clearing)
22+63-49'L
22+76-28'L

Take Out Fence at the following locations:
(Incidental Work, Clearing)
22+81 to 45+00 - 25' to 120' R
22+96 to 52+27 - 33' to 91' L



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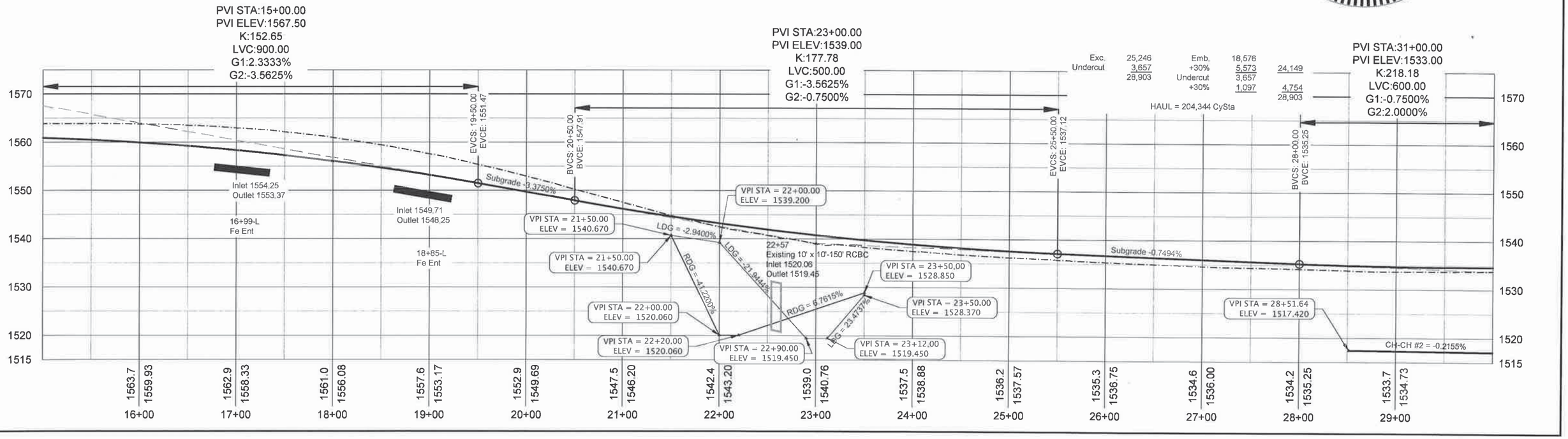
2/24/12

SCALES:
1" = 100' HOR
1" = 20' VER



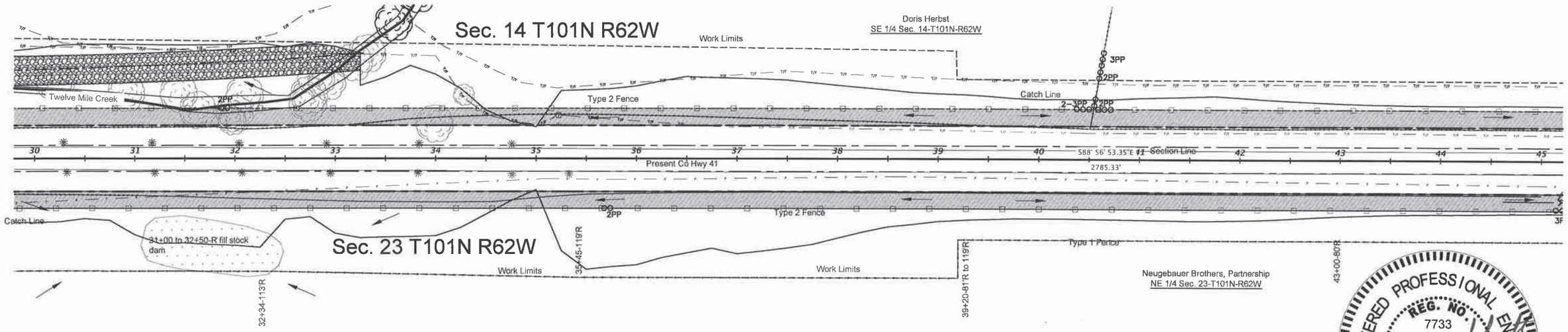
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	29	65

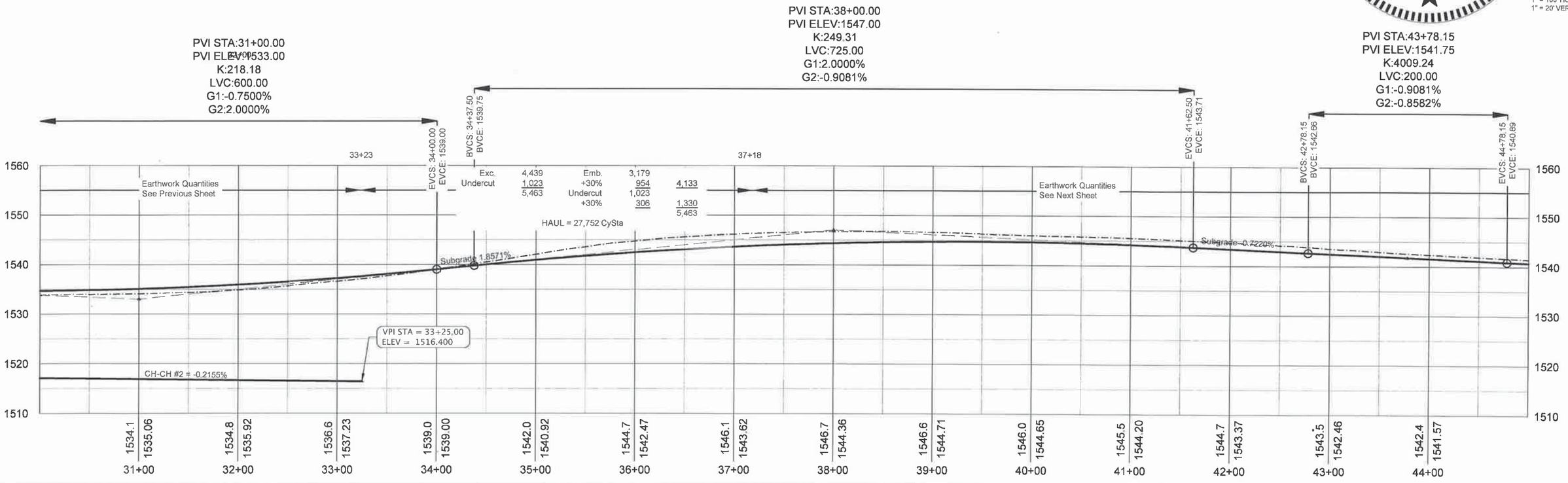
28+55L to 33+25L
CH-CH #2
(see Cross-Sections)

28+55L to 33+25L
Install Class B Riprap
Install Class B Drainage Fabric
CH-CH #2
(see Erosion Control)

Take Out Trees at the following locations:
(Clearing)
30+91 to 32+10-45'L to 66'L
32+73 to 33+32-55'L to 105"L
33+99-35'L
34+28-34'L

31+08 to 32+36
Muck Excavation = 204 CuYds
Fill in Stock Dam





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2/24/12

SCALES:
1" = 100' HOR
1" = 20' VER

Take out Signs at the following locations: (Incidental Work, Grading)
48+13-23'R
51+35-33'R
51+90-20'L
55+56-40'L
53+13-47'R
53+24-39'L

Take Out Fence
45+70 to 52+34 - 35' to 80' R
(Incidental Work, Clearing)

45+41-50'R
Fe Ent
Install 1-36' barb wire gate

45+40-31'R
Take Out 18"-40'CMP
(Incidental Work, Grading)

45+19 to 45+65-41"R
Install 18"-46' CMP
w/ 2 Safety Ends
(Rebuild Field Entrance)

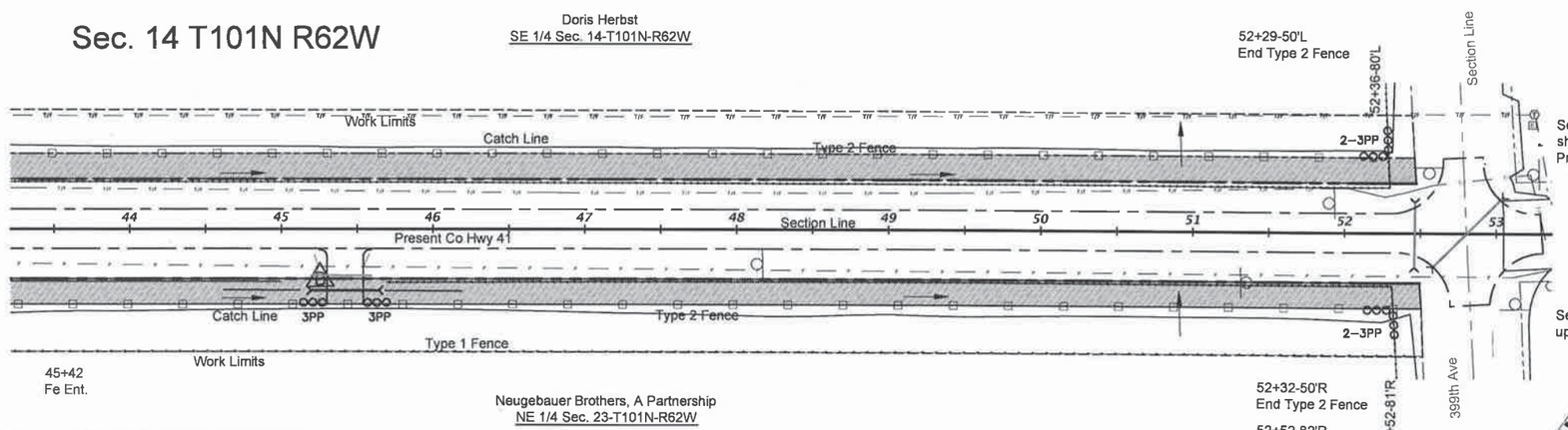
Sta. 52+46-23'R to 52+46-21'L
Install 2-18" RCP Safety Ends

Sta. 52+58-23'R to 53+05-24'L
Install 2-18" RCP Safety Ends

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	30	65

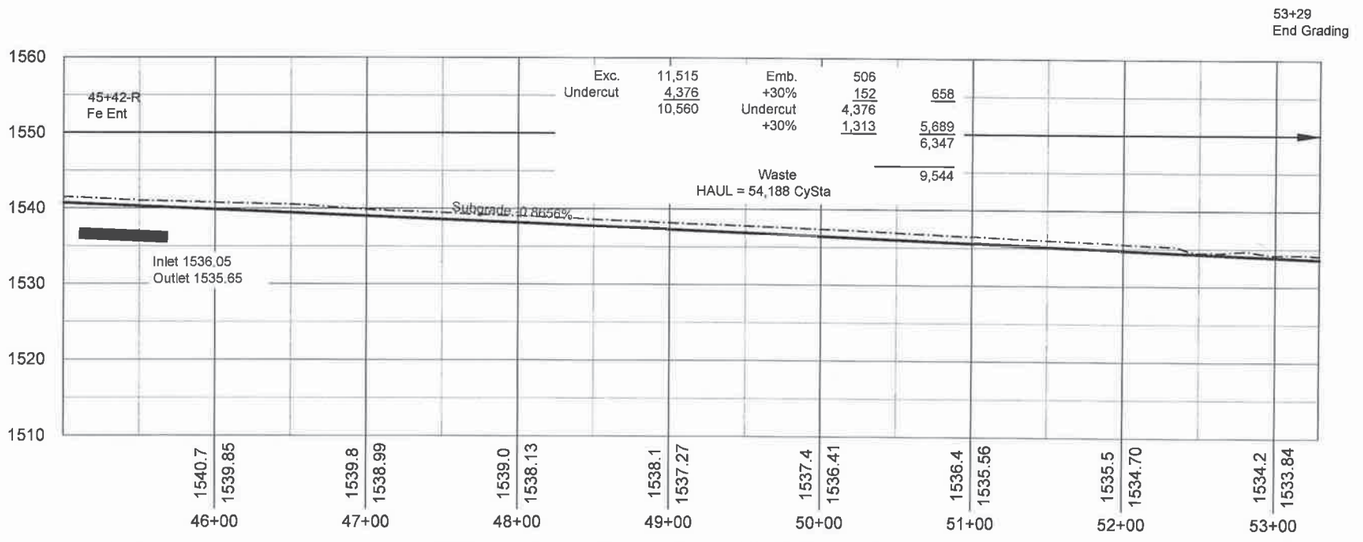
Sec. 14 T101N R62W

Doris Herbst
SE 1/4 Sec. 14-T101N-R62W



Neugebauer Brothers, A Partnership
NE 1/4 Sec. 23-T101N-R62W

Sec. 23 T101N R62W



North

SCALES:
1" = 100' HOR
1" = 20' VER

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	31	65

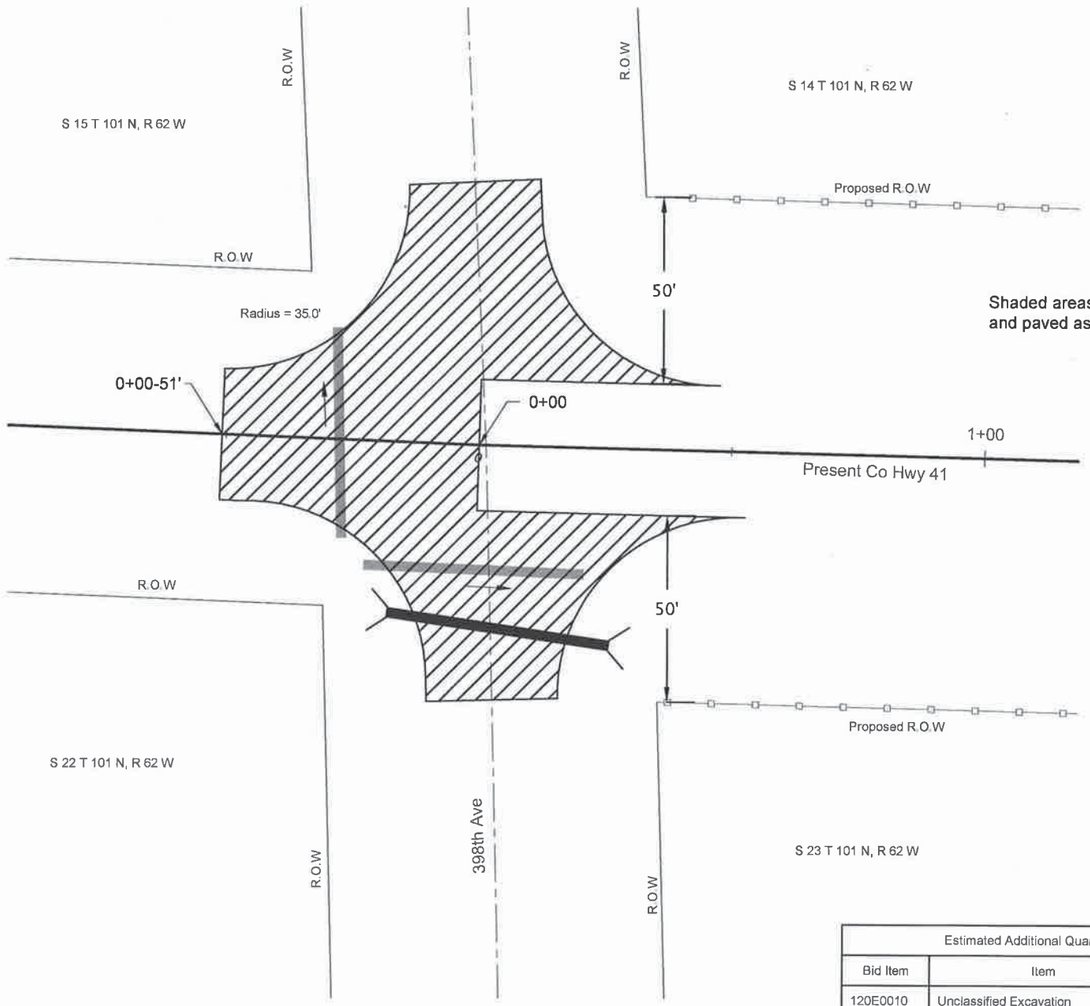
INTERSECTIONS

West Intersection

Sta. 0+00-24'R Remove
24" RCP
(Incidental Work, Grading)

Sta. 0+00-29'-28' L & R
Install 2-24" RCP Safety Ends

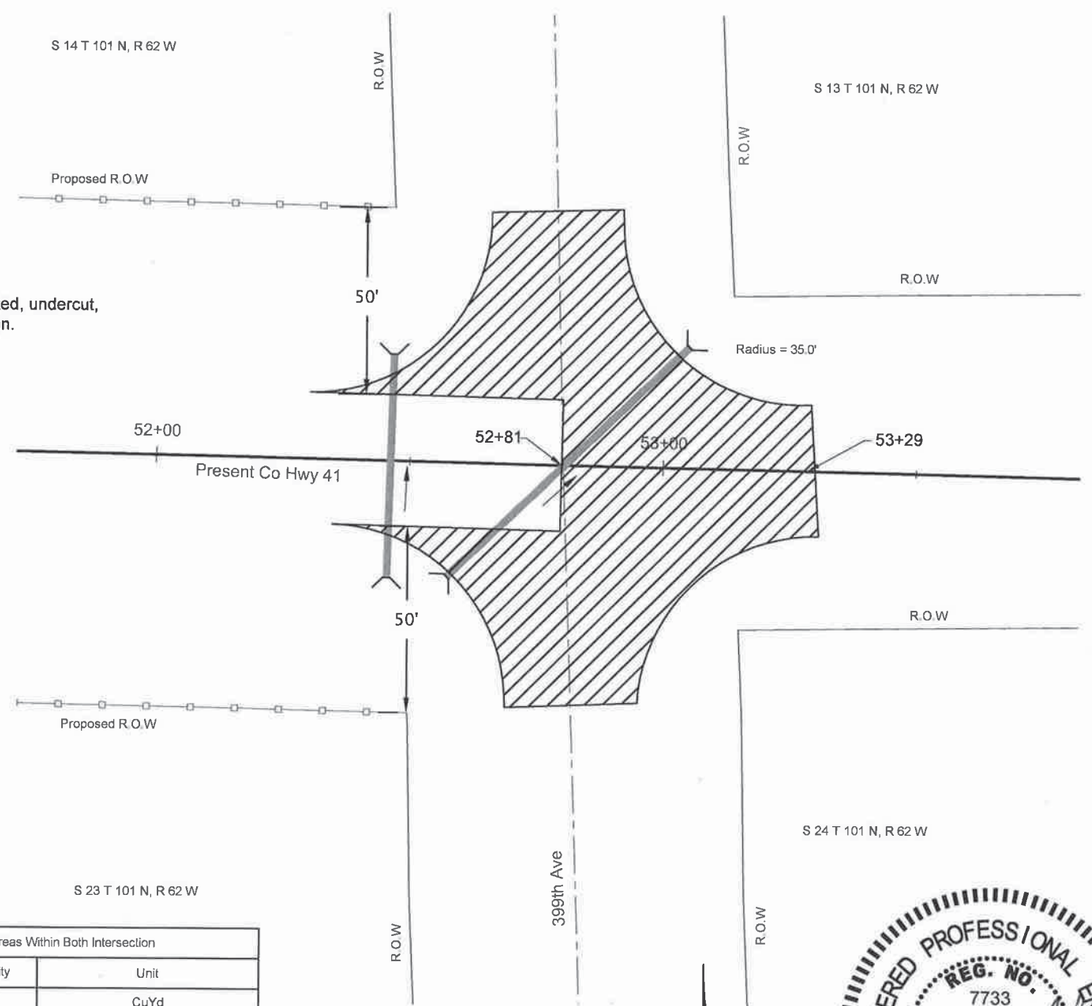
Sta. 0+00-12'-34'R to 0+33-40'R
Install 24"-46' CMP w/ Safety Ends
IE East = 1560.41
IE West = 1563.67



East Intersection

Sta. 52+46-23'R to 52+46-21'L
Install 2-18" RCP Safety Ends

Sta. 52+58-22.63'R to 53+05-24'L
Install 2-18" RCP Safety Ends



Shaded areas shall be excavated, undercut, and paved as per typical section.

Estimated Additional Quantities within Shaded Areas Within Both Intersection			
Bid Item	Item	Quantity	Unit
120E0010	Unclassified Excavation	350	CuYd
120E2000	2' Undercut	910	CuYd (includes 30% shrinkage)
260E1010	9" Base Course	532	Ton
320E0006	PG 64-22 Asphalt Binder	9.7	Ton
320E1050	Class E Asphalt Concrete	167	Ton
330E0010	MC-70 Asphalt for Prime	1.2	Ton
330E0100	SS-1h or CSS1-h Asphalt for Tack	0.2	Ton
330E1000	Blotting Sand for Prime	5	Ton

North

Horizontal: 1" = 30'
Date : 2/15/2012

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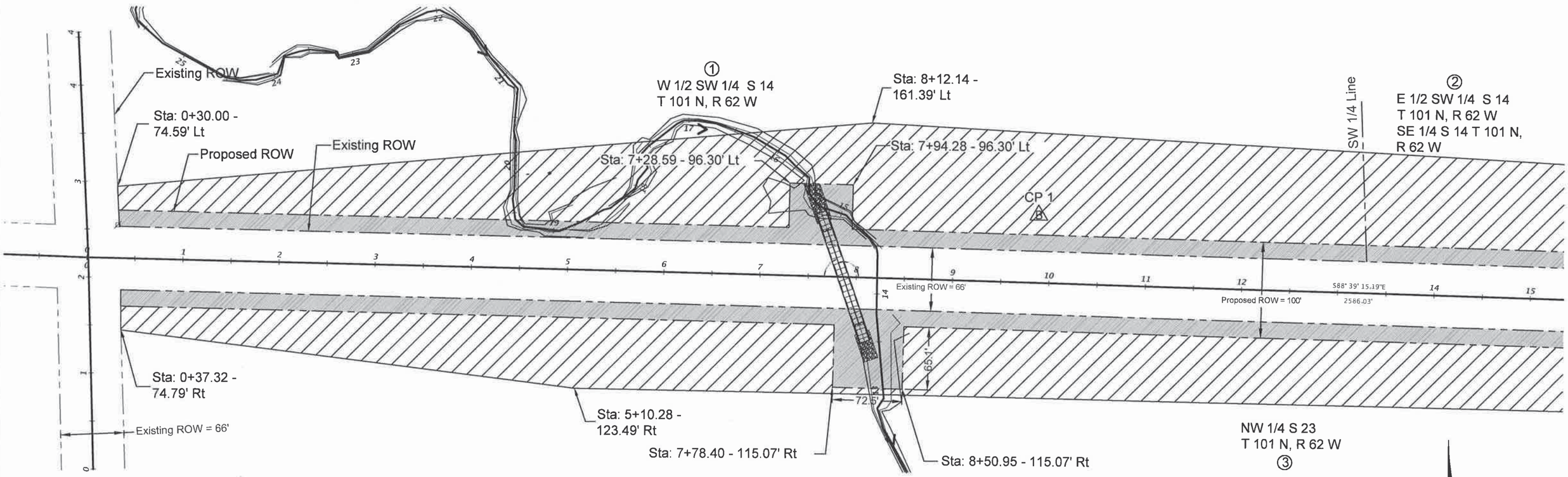
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	32	65

ROW LAYOUT



Dedicated ROW

Construction Easement

CP 1 - Sta: 9+87.23, 70.95' Lt, Elev - 1564.05
N - 100,000.00, E - 100,000.00, Rebar with Cap and Guards

Table of Right-Of-Way and Easements

NUMBER	STATION	SIDE	TYPE	AREA (Sq. Ft)	OWNER	DESCRIPTION
1	Sta: 0+32.91 to Sta: 13+29.11	L	ROW	25,077.65	Marian Palmer & Ronald Scheetz	W 1/2 SW 1/4 S 14 T 101 N R 62 W
1	Sta: 0+32.91 to Sta: 13+29.11	L	Easement	103,501.23	Marian Palmer & Ronald Scheetz	W 1/2 SW 1/4 S 14 T 101 N R 62 W
2	Sta: 13+29.11 to Sta: 52+47.13	L	ROW	70,196.96	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
2	Sta: 13+29.11 to Sta: 52+47.13	L	Easement	226,962.98	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
3	Sta: 0+35.95 to Sta: 26+29.60	R	ROW	56,388.68	Edwin and Lyla Sigmund Living Trust	NW 1/4 S 23 T 101 N R 62 W
3	Sta: 0+35.95 to Sta: 26+29.60	R	Easement	155,366.49	Edwin and Lyla Sigmund Living Trust	NW 1/4 S 23 T 101 N R 62 W

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHANNON R. SCHULTZ
SOUTH DAKOTA
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	33	65

ROW LAYOUT

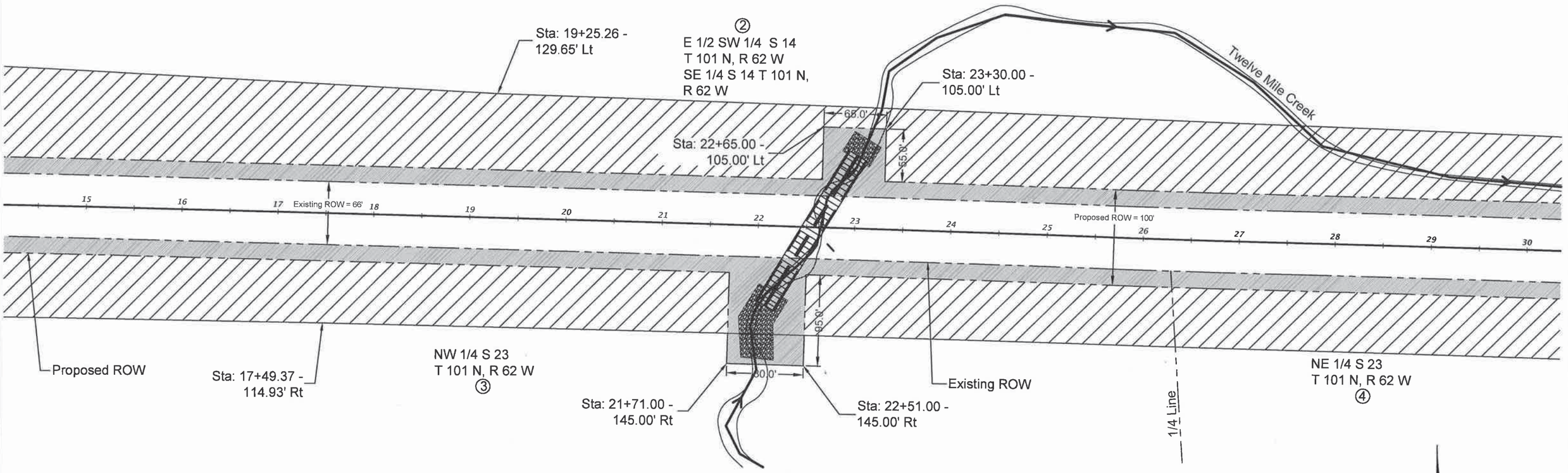


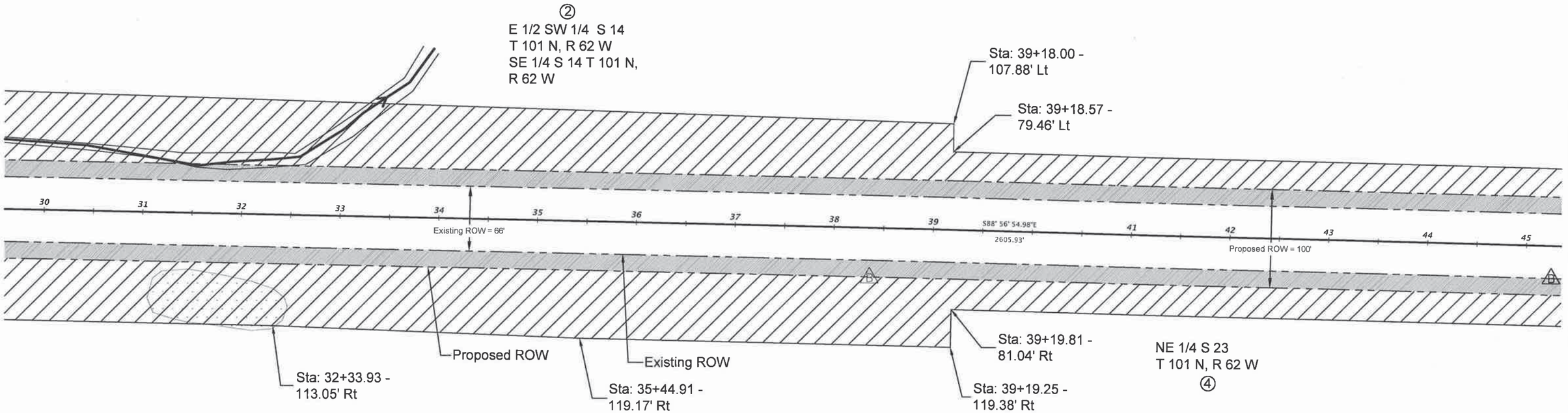
Table of Right-Of-Way and Easements

NUMBER	STATION	SIDE	TYPE	AREA (Sq. Ft)	OWNER	DESCRIPTION
2	Sta: 13+29.11 to Sta: 52+47.13	L	ROW	70,196.96	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
2	Sta: 13+29.11 to Sta: 52+47.13	L	Easement	226,962.98	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
3	Sta: 0+35.95 to Sta: 26+29.60	R	ROW	56,388.68	Edwin and Lyla Sigmund Living Trust	NW 1/4 S 23 T 101 N R 62 W
3	Sta: 0+35.95 to Sta: 26+29.60	R	Easement	155,366.49	Edwin and Lyla Sigmund Living Trust	NW 1/4 S 23 T 101 N R 62 W
4	Sta: 26+29.60 to Sta: 52+49.52	R	ROW	44,542.41	Neugebauer Brothers, A Partnership	NE 1/4 S 23 T 101 N R 62 W
4	Sta: 26+29.60 to Sta: 52+49.52	R	Easement	125,883.76	Neugebauer Brothers, A Partnership	NE 1/4 S 23 T 101 N R 62 W

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHANNON R. SCHULTZ
SOUTH DAKOTA
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	34	65

ROW LAYOUT



Dedicated ROW

Construction Easement

North

Scale: 1" = 100'

Table of Right-Of-Way and Easements

NUMBER	STATION	SIDE	TYPE	AREA (Sq. Ft)	OWNER	DESCRIPTION
2	Sta: 13+29.11 to Sta: 52+47.13	L	ROW	70,196.96	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
2	Sta: 13+29.11 to Sta: 52+47.13	L	Easement	226,962.98	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
4	Sta: 26+29.60 to Sta: 52+49.52	R	ROW	44,542.41	Neugebauer Brothers, A Partnership	NE 1/4 S 23 T 101 N R 62 W
4	Sta: 26+29.60 to Sta: 52+49.52	R	Easement	125,883.76	Neugebauer Brothers, A Partnership	NE 1/4 S 23 T 101 N R 62 W

REGISTERED PROFESSIONAL ENGINEER
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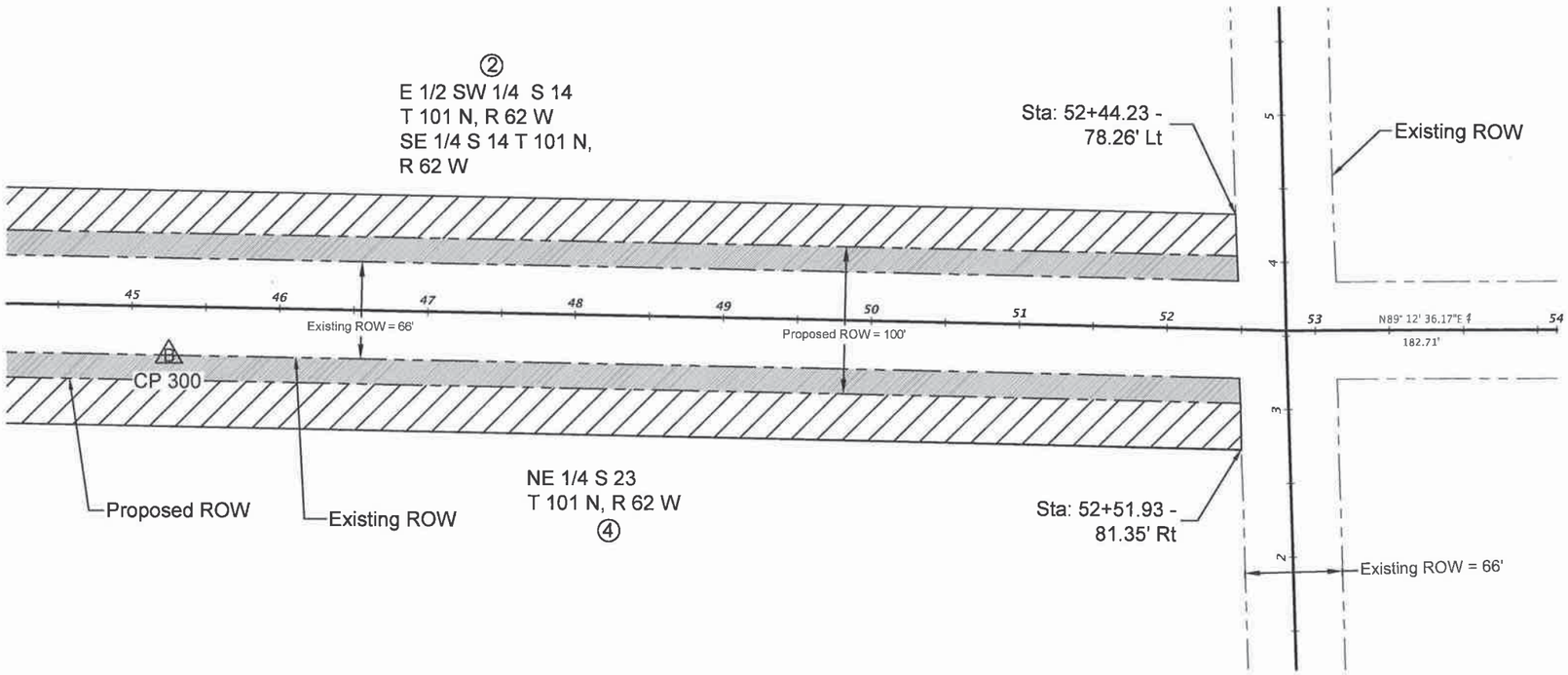
SHANNON R. SCHULTZ
SOUTH DAKOTA
2/24/12

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	35	65

ROW LAYOUT



Dedicated ROW

Construction Easement

CP 300 - Sta: 45+25.34, 32.85' Rt, Elev - 1539.49
N - 99,822.87, E - 103,535.07, Rebar with Cap and Guards

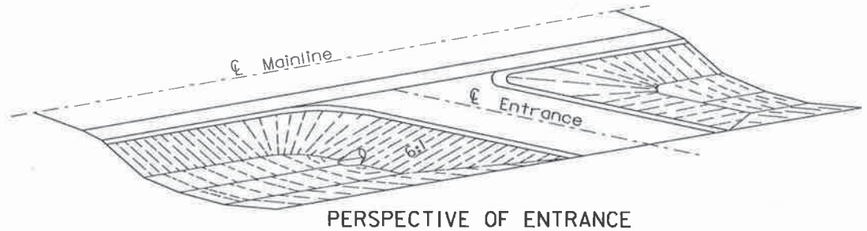
North

Scale: 1" = 100'

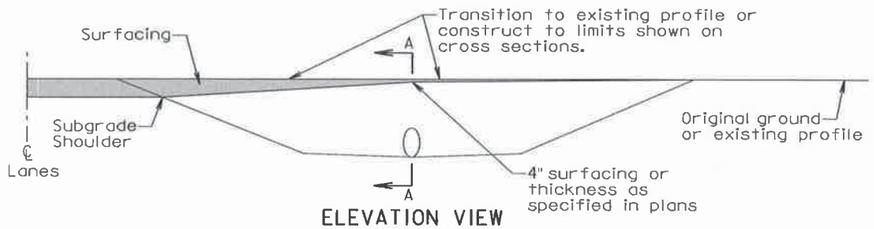
Table of Right-Of-Way and Easements

NUMBER	STATION	SIDE	TYPE	AREA (Sq. Ft)	OWNER	DESCRIPTION
2	Sta: 13+29.11 to Sta: 52+47.13	L	ROW	70,196.96	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
2	Sta: 13+29.11 to Sta: 52+47.13	L	Easement	226,962.98	Doris Herbst	SE 1/4 S 14 T101N R62W, E 1/2 SW 1/4 S 14 T 101 N R 62 W
4	Sta: 26+29.60 to Sta: 52+49.52	R	ROW	44,542.41	Neugebauer Brothers, A Partnership	NE 1/4 S 23 T 101 N R 62 W
4	Sta: 26+29.60 to Sta: 52+49.52	R	Easement	125,883.76	Neugebauer Brothers, A Partnership	NE 1/4 S 23 T 101 N R 62 W

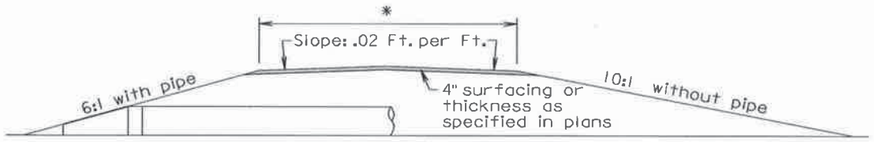
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHANNON R. SCHULTZ
SOUTH DAKOTA
2/24/12



PERSPECTIVE OF ENTRANCE



ELEVATION VIEW (ENTRANCE)



SECTION A-A (ENTRANCE)

*The finished surfacing width is stated elsewhere in the plans. The subgrade width is 4' wider than the finished surfacing width unless stated otherwise in the plans.

GENERAL NOTES:

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

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

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

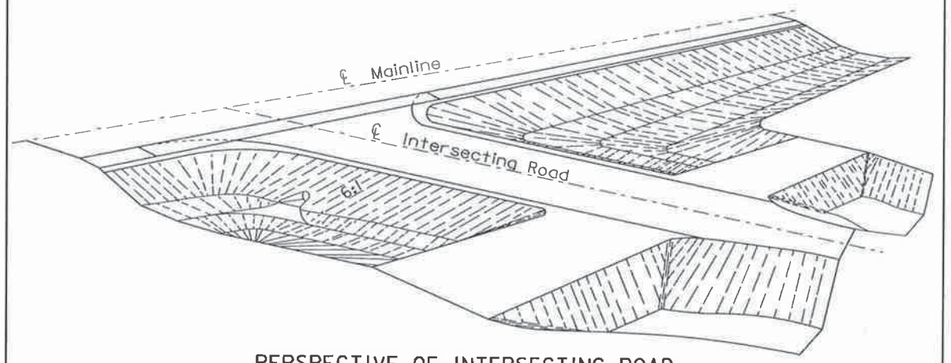
The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

For entrances other than intersecting roads, the radii shall be 15' unless stated otherwise in the plans.

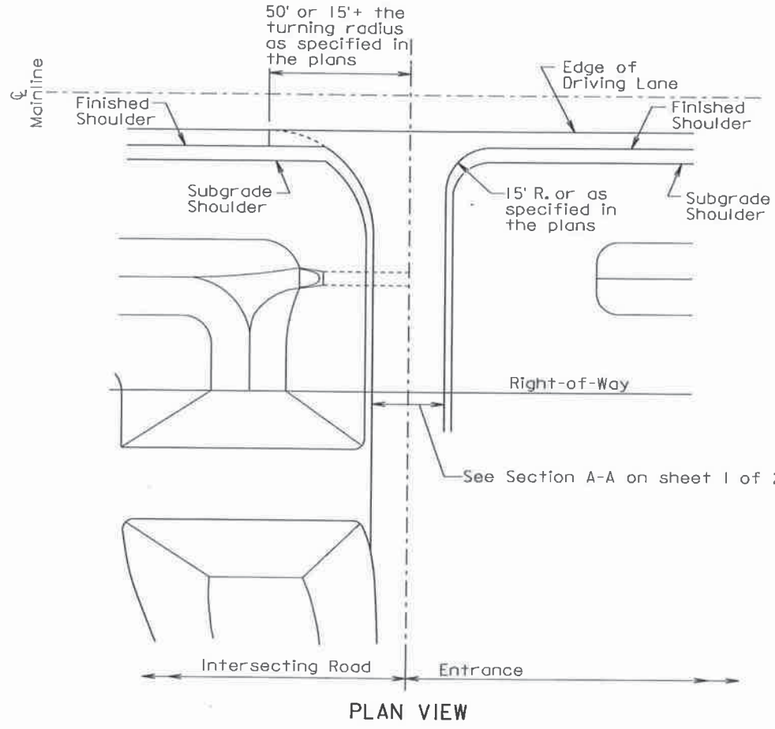
The turning radii shall be 35' for intersecting roads unless stated otherwise in the plans.

December 23, 2010

Published Date: 1st Qtr. 2012	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 1 of 2



PERSPECTIVE OF INTERSECTING ROAD



PLAN VIEW

December 23, 2010

Published Date: 1st Qtr. 2012	SDDOT	INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 120.01
			Sheet 2 of 2

Published Date: 1st Qtr. 2012

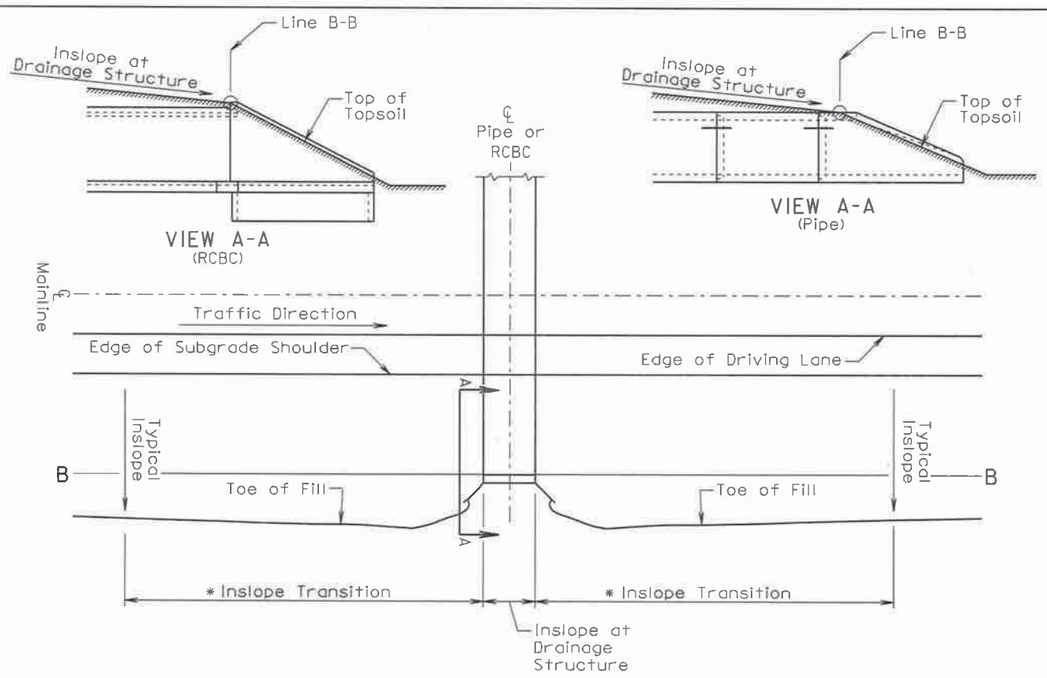
SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 1 of 2

February 14, 2011



TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

This Type 1 Inslope Transition is used when the specified inslope at the drainage structure is flatter than the typical inslope and the inslope at the drainage structure is between a 4:1 slope and 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from the typical inslope to the inslope at the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone shall be transitioned gradually to the slope necessary adjacent to the RCBC wing wall or pipe culvert end section within the transition length necessary for the transition within the clear zone.

Published Date: 1st Qtr. 2012

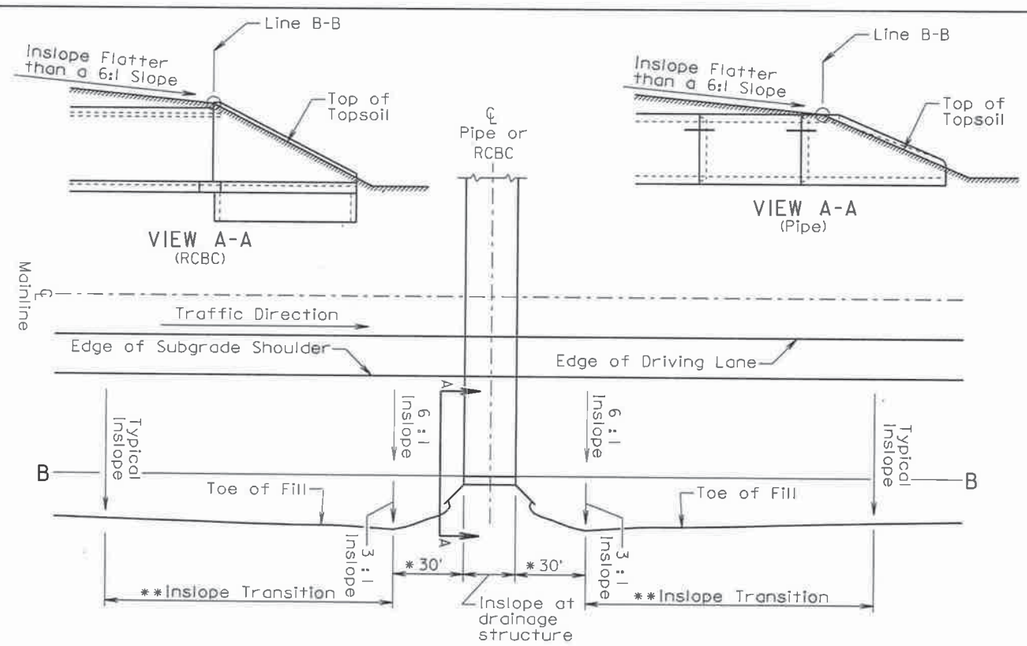
SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 2 of 2

February 14, 2011



TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope.

Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.

* Transition from inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope.

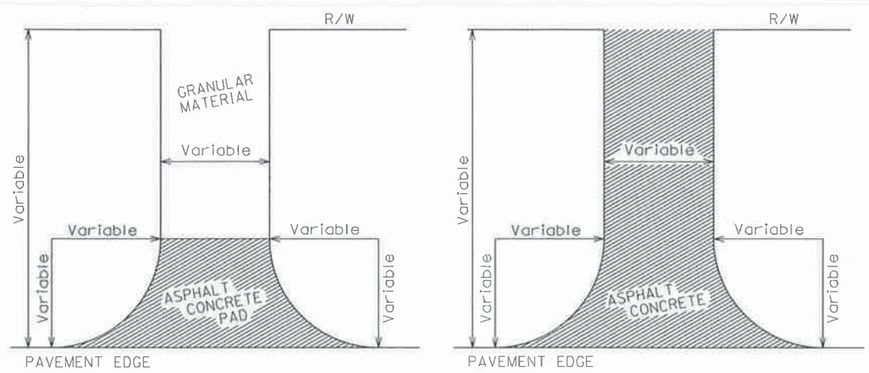
** Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone shall be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone.

STATE OF SOUTH DAKOTA

PROJECT P 6042 (02)

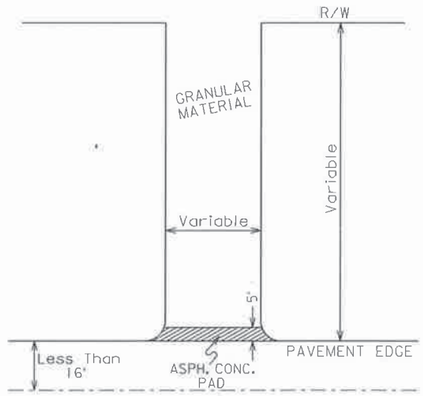
SHEET NO. 37

TOTAL SHEETS 65



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



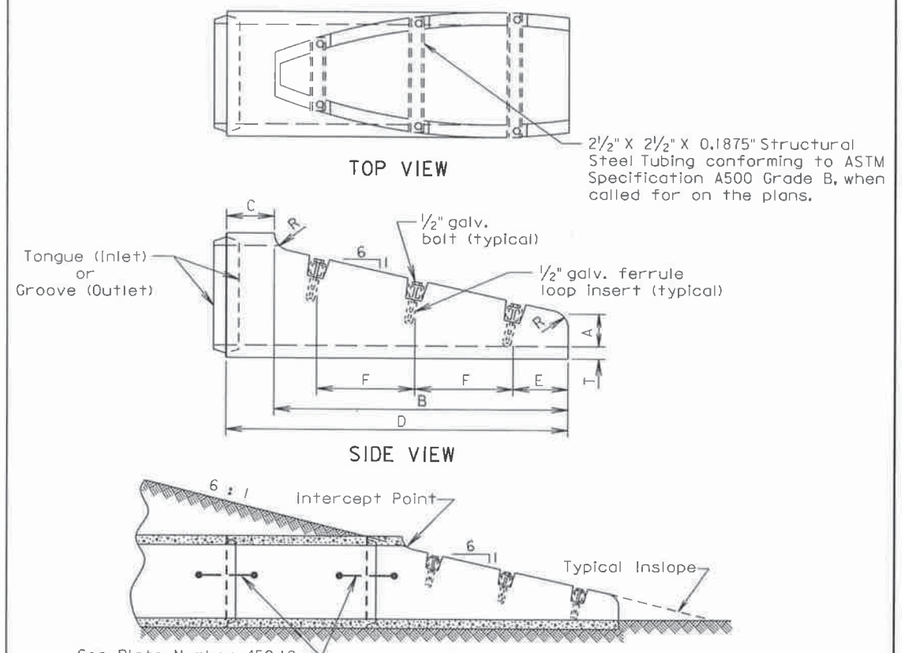
ENTRANCE

The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH OR WITHOUT SHOULDER

March 31, 2000

Published Date: 1st Qtr. 2012	SDDOT	RESURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.10
			Sheet 1 of 1



TOP VIEW

SIDE VIEW

SLOPE DETAIL

Dia. (In.)	T (In.)	R (In.)	A (In.)	B (In.)	C (In.)	D (In.)	E (In.)	F (In.)	No. Sections	No. Bars
FOR CIRCULAR PIPE										
15	2¼	3	6	48	9	57	6	18	1	3
18	2½	3	6	69	9	78	9	24	1	3
•24	3	3	6	111	9	120	6	24	1 or 2	5
FOR ARCH PIPE										
••18	2½	1	6	39	33	72	6	24	1	2

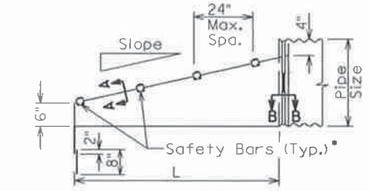
•The use of 2 sections must be an approved design.
••Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

Lengths of concrete pipe shown on Plan Sheets are between Safety Ends only.
Safety ends without bars are acceptable with or without the bar notches.
Bars shall be galvanized after fabrication according to ASTM 123.

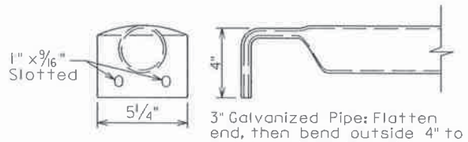
March 31, 2000

Published Date: 1st Qtr. 2012	SDDOT	R. C. P. SAFETY ENDS WITH OR WITHOUT BARS	PLATE NUMBER 450.12
			Sheet 1 of 1



SIDE ELEVATION

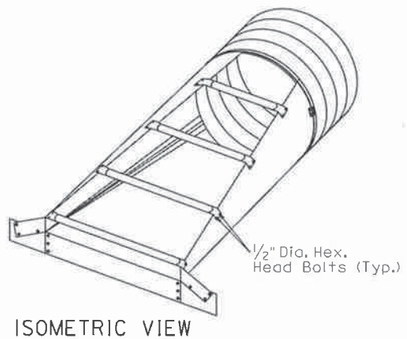
*Number of bars required will vary depending on the length of the End Section.



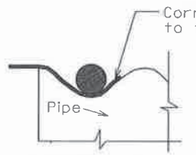
3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

DETAIL OF SAFETY BARS

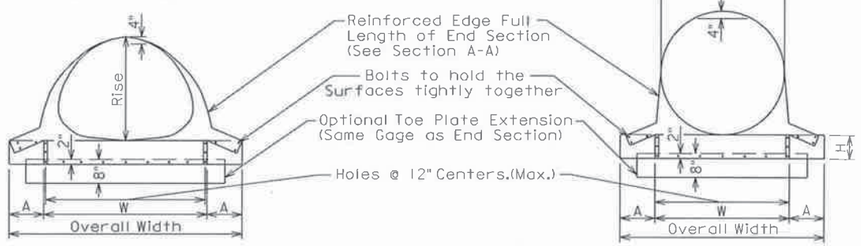
SECTION A-A



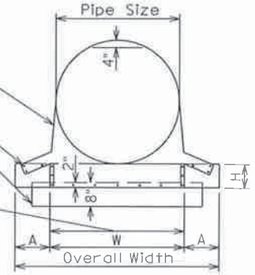
ISOMETRIC VIEW



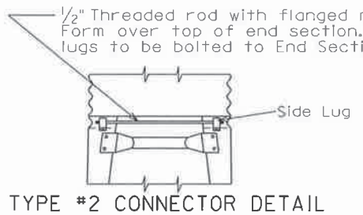
SECTION B-B



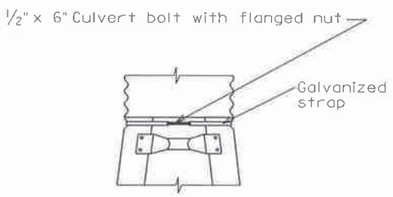
FRONT VIEW



FRONT VIEW



TYPE #2 CONNECTOR DETAIL
For 30" and Larger
21" x 15" and Larger



TYPE #1 CONNECTOR DETAIL
15" Through 24"

March 31, 2000

Published Date: 1st Qtr. 2012	SDDOT	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 1 of 2

ARCH C.M.P. SAFETY ENDS

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

CIRCULAR C.M.P. SAFETY ENDS

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

GENERAL NOTES:

Safety bars shall be attached to safety ends over 24" in diameter only.

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

Safety bars shall be fabricated from steel pipe conforming to the requirements of ASTM A-53 Schedule 40 Specifications.

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

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

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

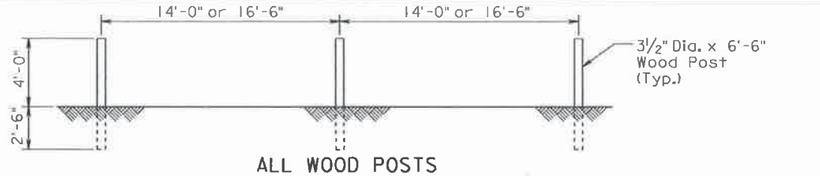
Installation shall be performed in accordance with the Standard Specifications.

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

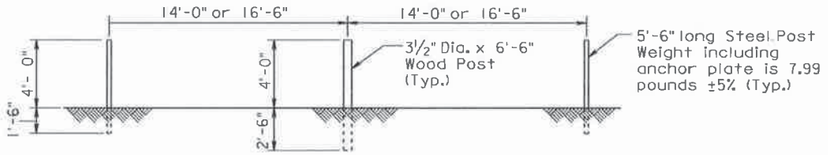
March 31, 2000

Published Date: 1st Qtr. 2012	SDDOT	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 Of 2

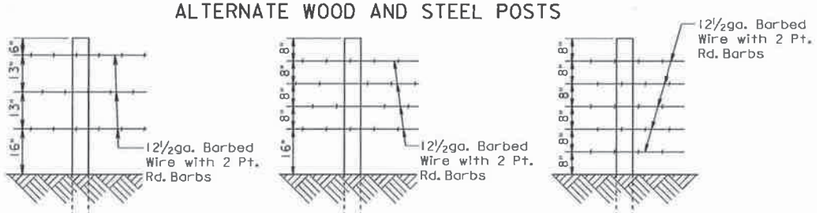
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	40	65



ALL WOOD POSTS



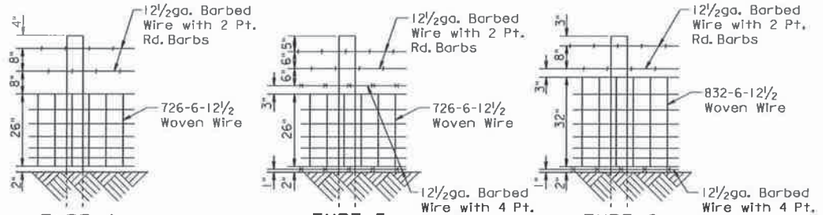
ALTERNATE WOOD AND STEEL POSTS



TYPE 1
3 BARBED WIRES

TYPE 2
4 BARBED WIRES

TYPE 3
5 BARBED WIRES



TYPE 4
26" WOVEN WIRE
WITH 2 BARBED WIRES

TYPE 5
26" WOVEN WIRE
WITH 4 BARBED WIRES

TYPE 6
32" WOVEN WIRE
WITH 3 BARBED WIRES

TYPE OF FENCE		LINE POST SPACING	BARBED WIRE		WOVEN WIRE
			WIRE GAGE	NUMBER AND SHAPE OF BARBS	STYLE OR DESIGN NO.
TYPE	DESCRIPTION				
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:

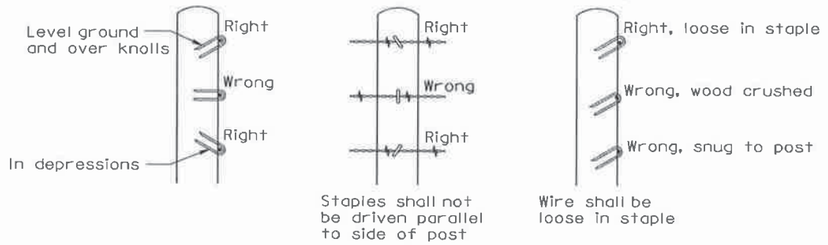
Fence types designated on the plans that are followed by the letter S shall have smooth (barbless) wires.

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: 1st Qtr. 2012	SDDOT	RIGHT-OF-WAY FENCE	PLATE NUMBER 620.01
			Sheet 1 of 1



Staples shall not be driven parallel to side of post

Wire shall be loose in staple

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.

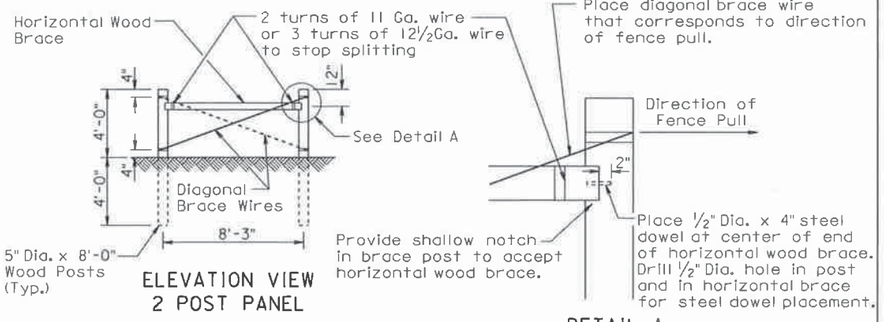
Right-of-Way fence other than on Interstate Projects shall be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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.

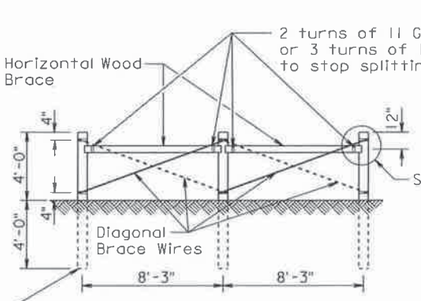
December 23, 2004

Published Date: 1st Qtr. 2012	SDDOT	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02
			Sheet 1 of 1

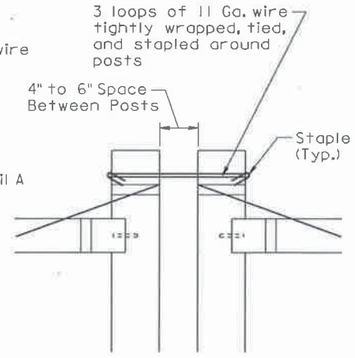


ELEVATION VIEW
2 POST PANEL

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: 1st Qtr. 2012	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.

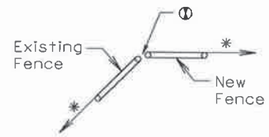
GENERAL NOTE:

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

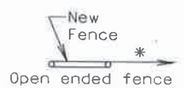
* If fence length is less than 600' to next corner use a 2 post panel.
If fence length is greater than 600' to next corner use a 3 post panel.

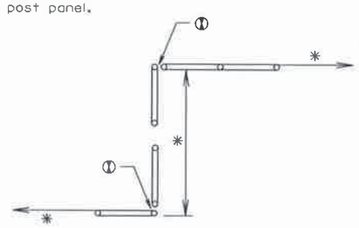
** Fence lengths greater than 1320' and less than 2640' place 2 Post Panel approximately at midpoint.

① See Detail B on Sheet 1 of 3.

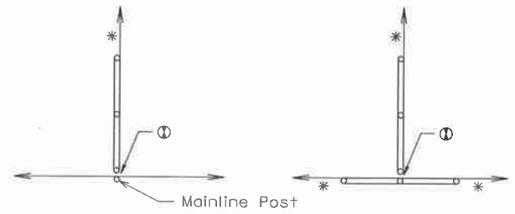


BEGIN OR END FENCE
(where new fence ties into existing fence)

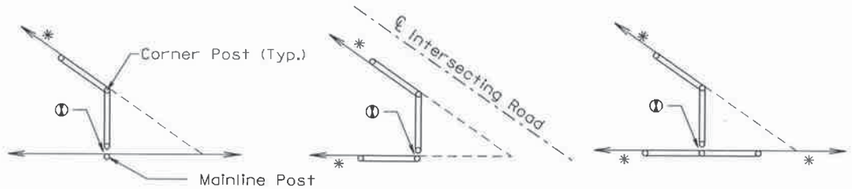




SHORT JOGS IN FENCE

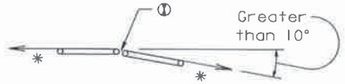


CROSS FENCE



SHARP ANGLES IN CROSS FENCE

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

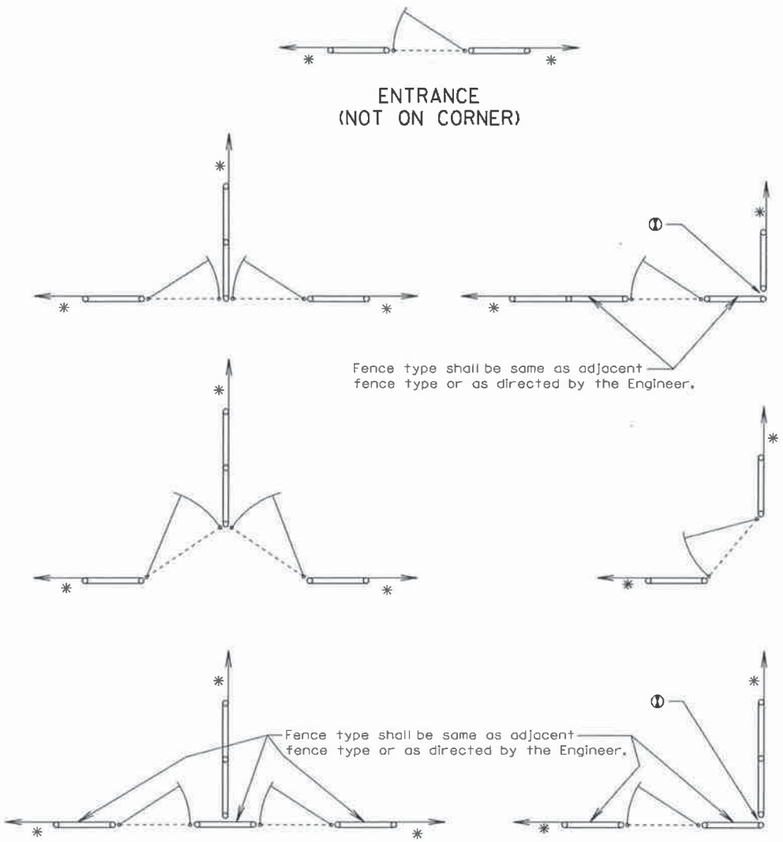


Additional fence panel is required when an angle in the mainline fence is greater than 10°.

ANGLES IN MAINLINE FENCE

December 23, 2004

Published Date: 1st Qtr. 2012	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 2 of 3



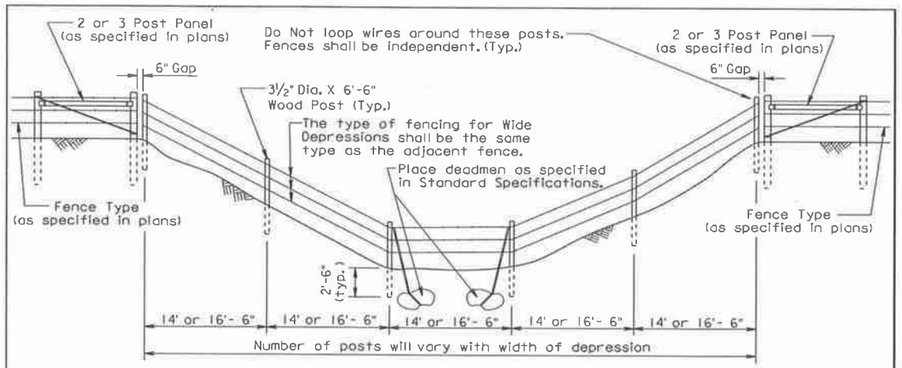
GATES

* 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.

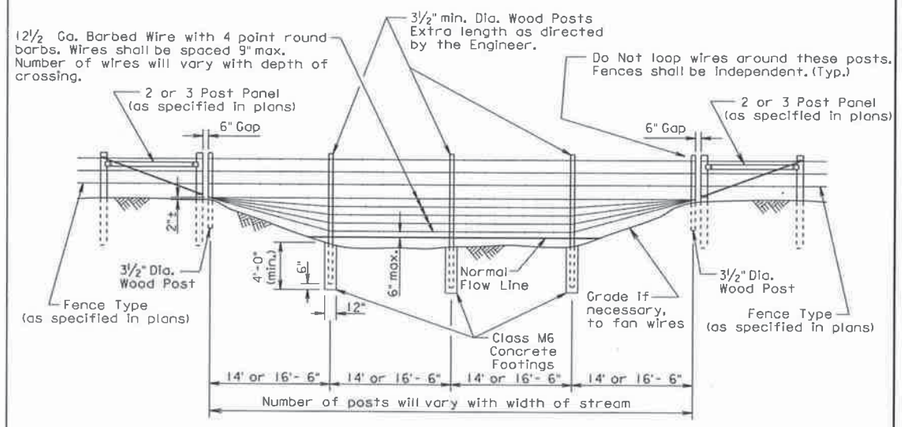
December 23, 2004

Published Date: 1st Qtr. 2012	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03
			Sheet 3 of 3



This installation shall be made when requested by the Engineer.

FENCING AT WIDE DEPRESSION
(SUBJECT TO FLOODING)



This installation shall be made only when stated in the plans.

FENCING AT STREAM CROSSING

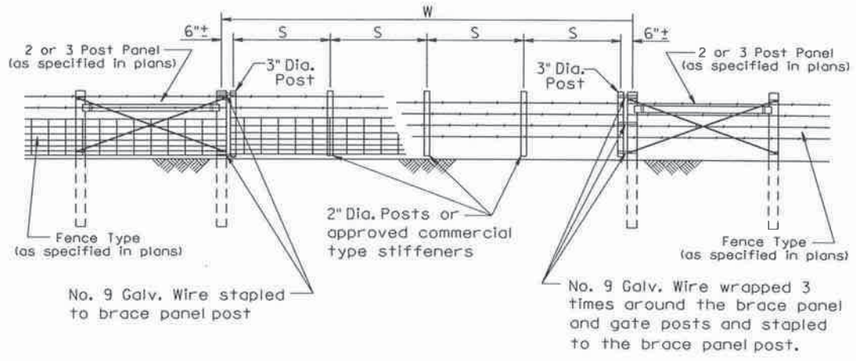
GENERAL NOTES:

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).

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.

December 23, 2004

Published Date: 1st Qtr. 2012	SDDOT	FENCING AT WIDE DEPRESSION(S) AND STREAM CROSSING(S)	PLATE NUMBER 620.10
			Sheet 1 of 1



W Gate Width (ft.)	S Post Spacing
16	3 @ 5'-0" ±
20	4 @ 4'-9" ±
24	4 @ 5'-9" ±
30	5 @ 5'-10" ±
40	6 @ 6'-6" ±

GENERAL NOTES:

Creosote treatment of the gate posts will not be accepted.

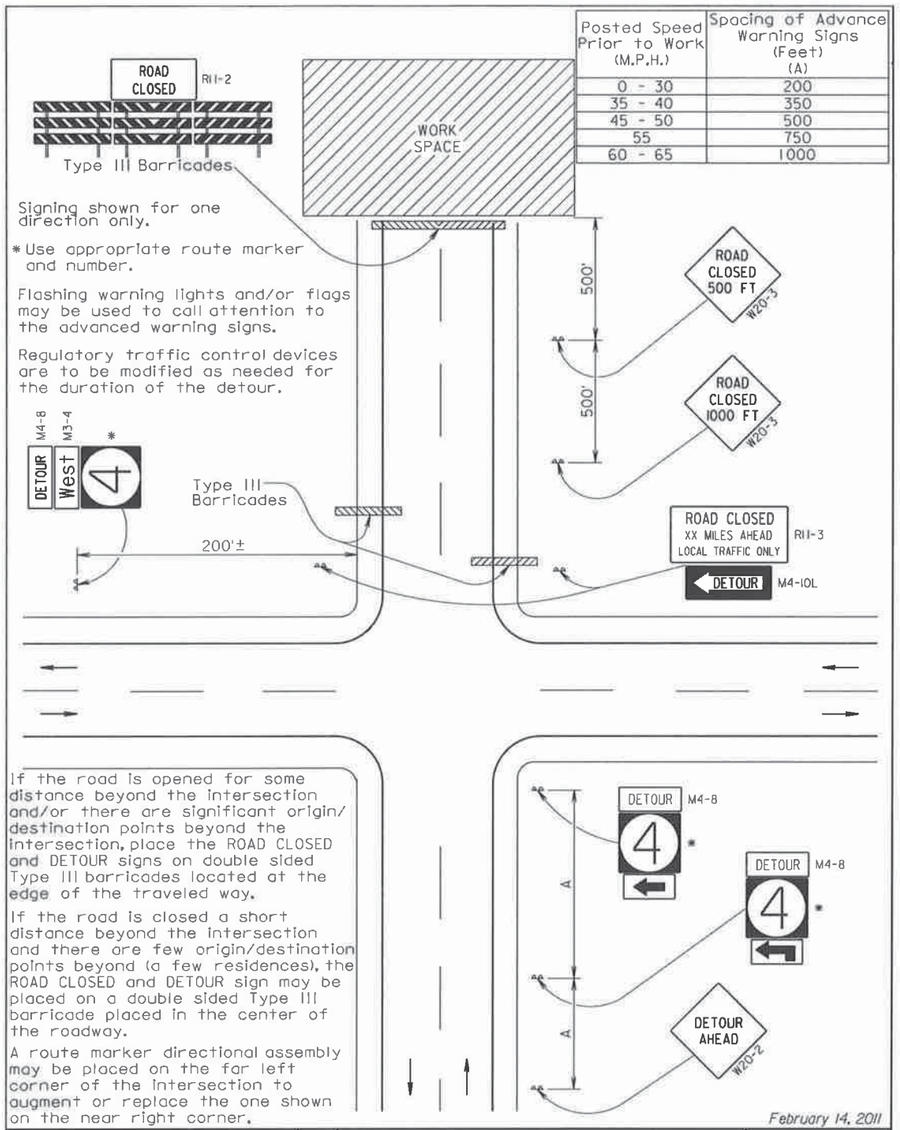
The type of fencing in the gate shall be of the same type as specified for the adjacent Right-of-Way fence.

All costs for furnishing and constructing the wire gate(s) shall be incidental to the contract unit price per Ft for the respective Right-of-Way fence bid item.

March 31, 2000

Published Date: 1st Qtr. 2012	SDDOT	WIRE GATES	PLATE NUMBER 620.20
			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



Signing shown for one direction only.

* Use appropriate route marker and number.

Flashing warning lights and/or flags may be used to call attention to the advanced warning signs.

Regulatory traffic control devices are to be modified as needed for the duration of the detour.

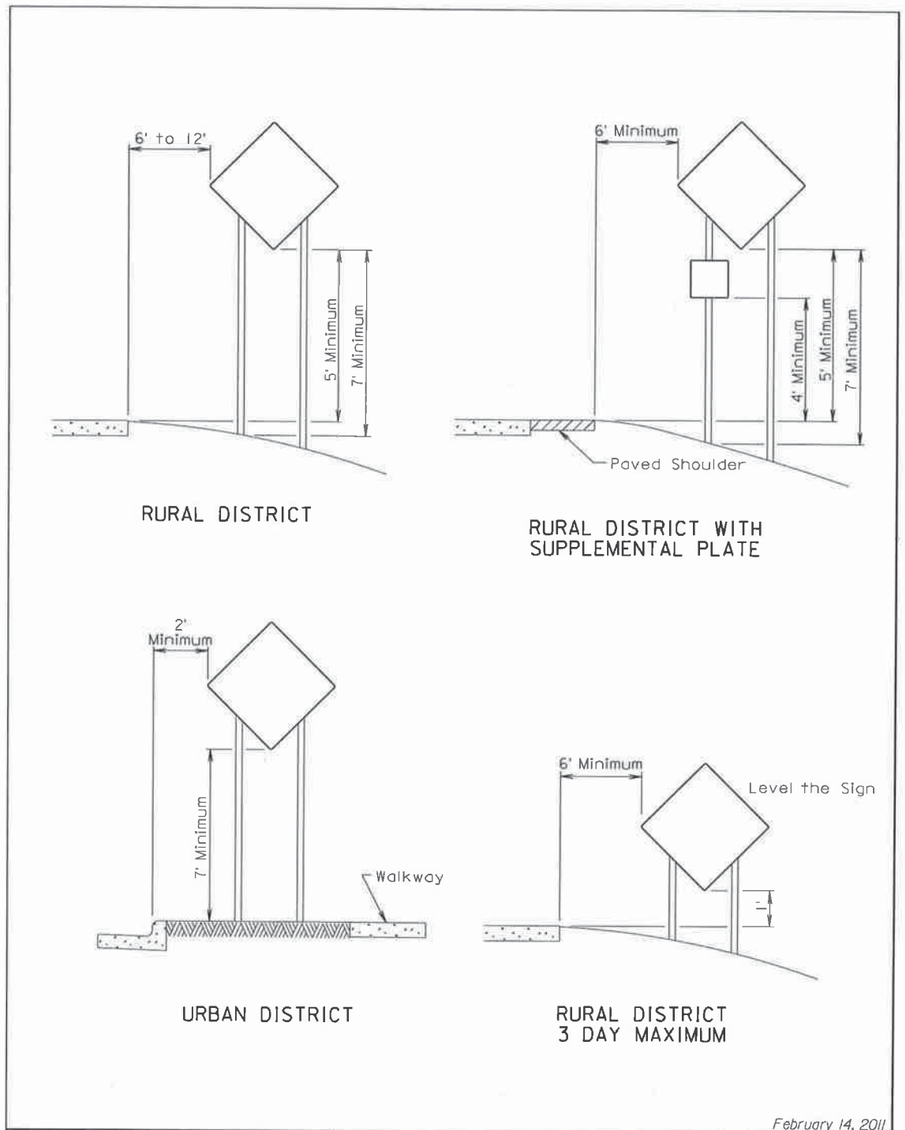
If the road is opened for some distance beyond the intersection and/or there are significant origin/destination points beyond the intersection, place the ROAD CLOSED and DETOUR signs on double sided Type III barricades located at the edge of the traveled way.

If the road is closed a short distance beyond the intersection and there are few origin/destination points beyond (a few residences), the ROAD CLOSED and DETOUR sign may be placed on a double sided Type III barricade placed in the center of the roadway.

A route marker directional assembly may be placed on the far left corner of the intersection to augment or replace the one shown on the near right corner.

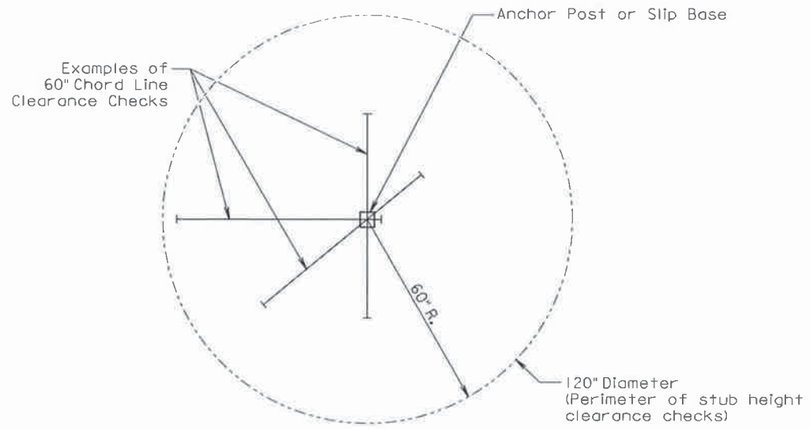
February 14, 2011

Published Date: 4th Qtr. 2011	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES ROAD CLOSED WITH OFF-SITE DETOUR	PLATE NUMBER 634.29 Sheet 1 of 1



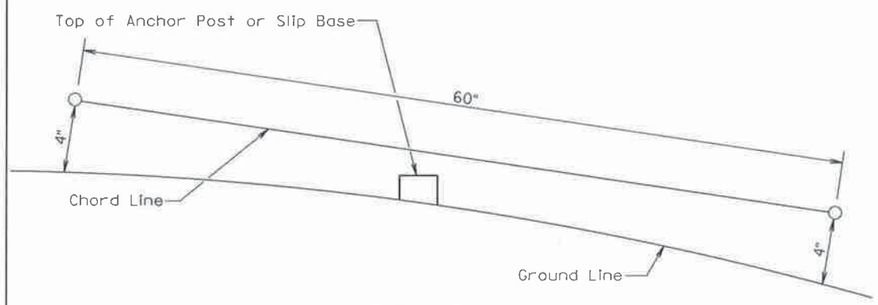
February 14, 2011

Published Date: 1st Qtr. 2012	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85 Sheet 1 of 1



PLAN VIEW

(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

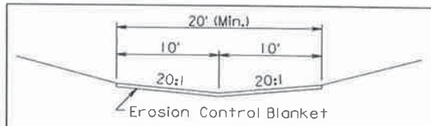
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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

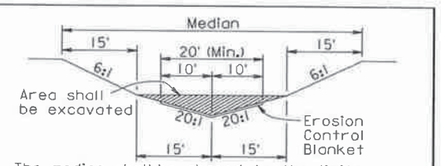
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

Published Date: 1st Qtr. 2012	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

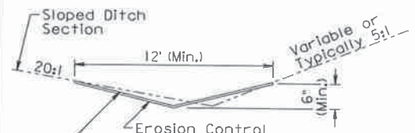


STANDARD DITCH SECTION

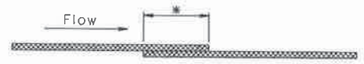


The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



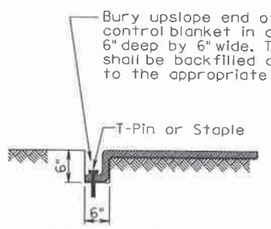
SLOPED DITCH SECTION



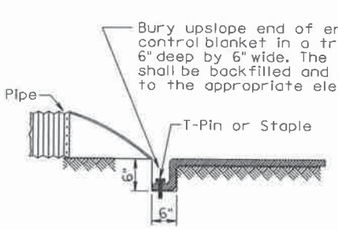
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

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

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

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

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

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

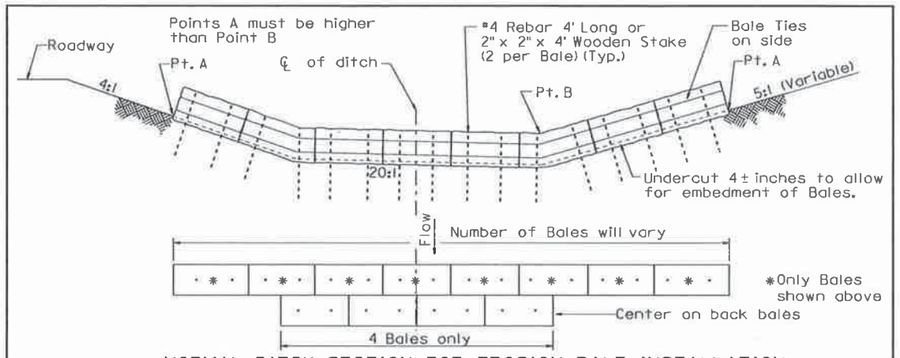
After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

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

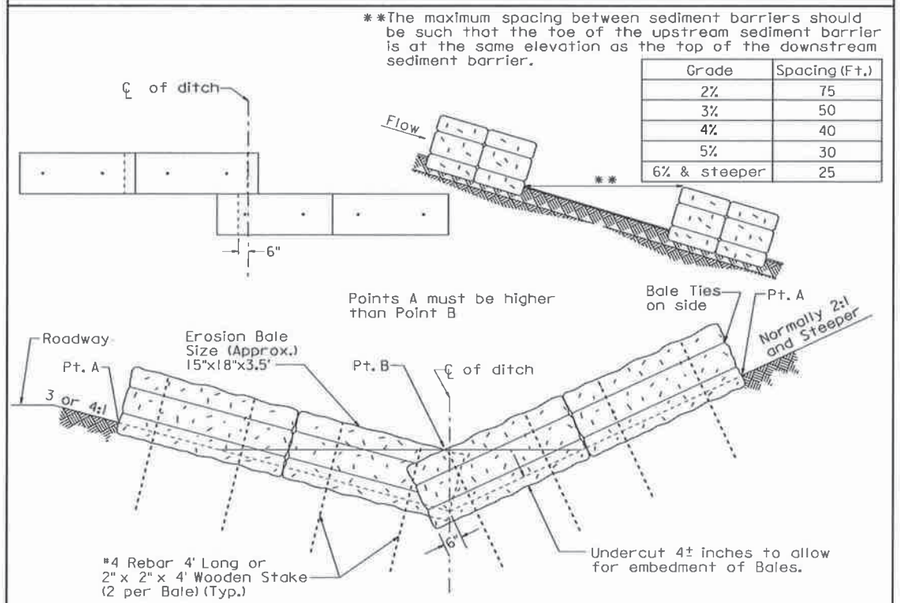
December 23, 2004

Published Date: 1st Qtr. 2012	SDDOT	EROSION CONTROL BLANKET	PLATE NUMBER 734.01
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	46	65



NORMAL DITCH SECTION FOR EROSION BALE INSTALLATION



Grade	Spacing (Ft.)
2%	75
3%	50
4%	40
5%	30
6% & steeper	25

EROSION BALE INSTALLATION
(This Ditch Section and Erosion Bale Installation Typically Used in Black Hills)

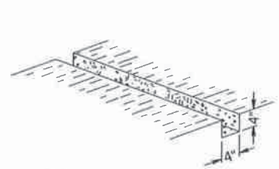
GENERAL NOTES:

The erosion bale sediment barrier must be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed sediment barrier to a minimum depth of 4 inches. After the bales are staked with rebar or wood stakes, the excavated soil must be backfilled against the sediment barrier. The sediment barrier must be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale.

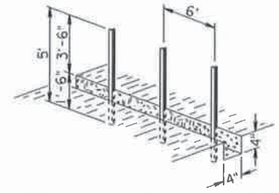
March 28, 2001

Published Date: 1st Qtr. 2012	SDDOT	EROSION BALES	PLATE NUMBER 734.02
			Sheet 1 of 1

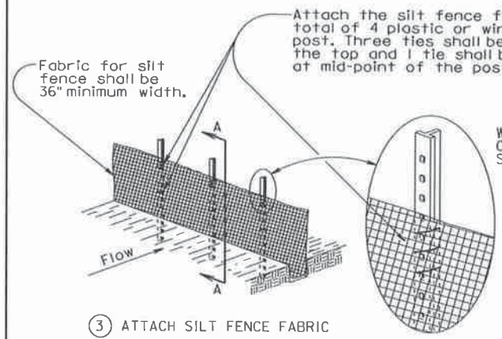
MANUAL HIGH FLOW SILT FENCE INSTALLATION



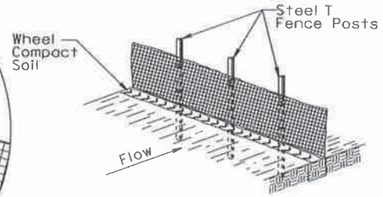
(1) EXCAVATE TRENCH



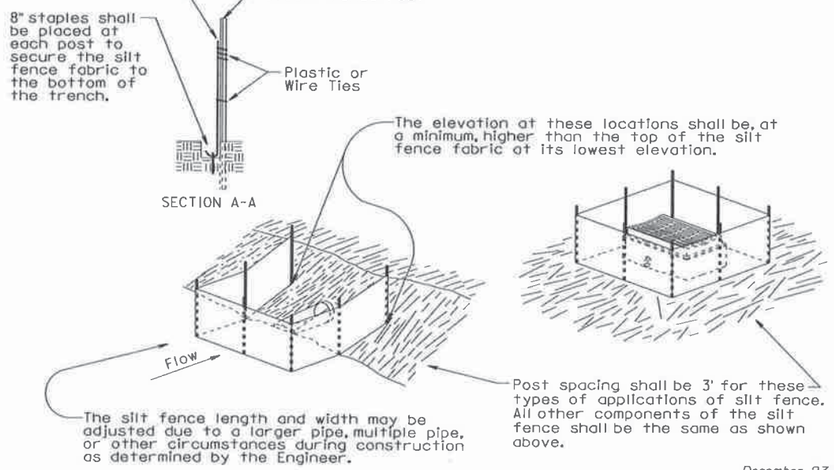
(2) DRIVE STEEL T FENCE POSTS



(3) ATTACH SILT FENCE FABRIC



(4) BACKFILL TRENCH AND WHEEL COMPACT SOIL

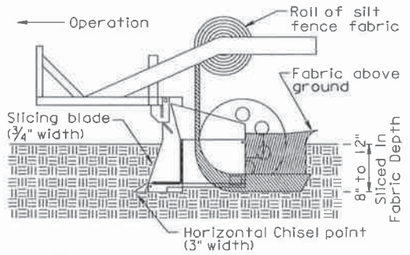


December 23, 2003

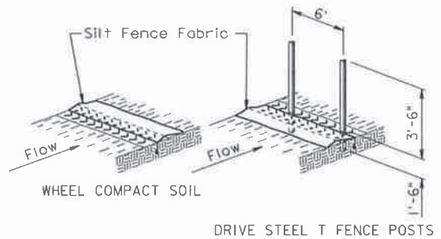
Published Date: 1st Qtr. 2012	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	47	65

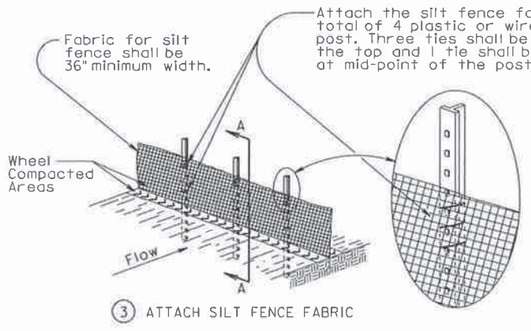
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



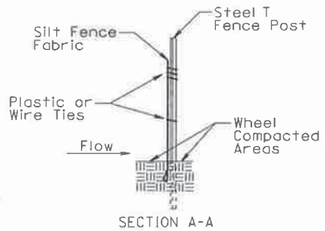
(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



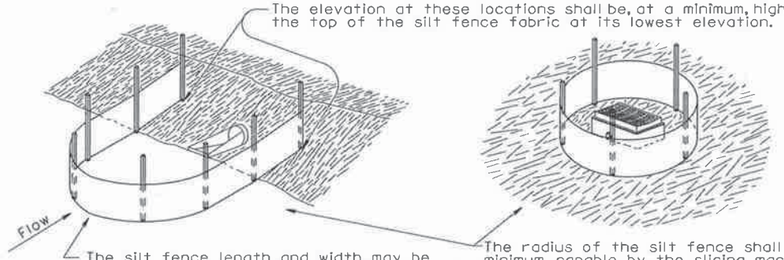
(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



(3) ATTACH SILT FENCE FABRIC



SECTION A-A

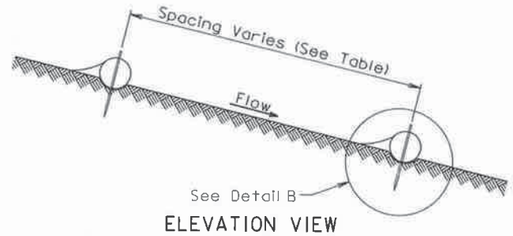


GENERAL NOTE:

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.

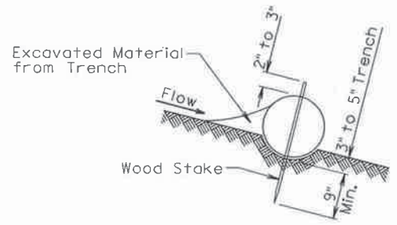
December 23, 2003

Published Date: 1st Qtr. 2012	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

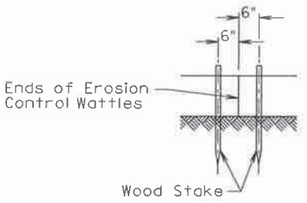


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

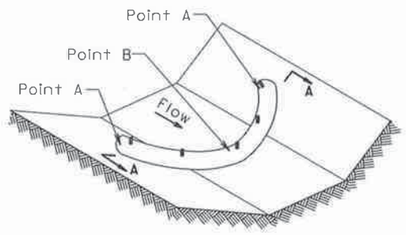
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



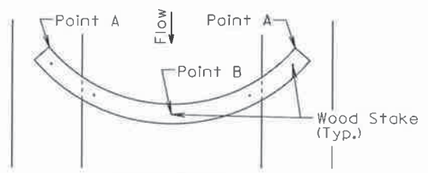
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

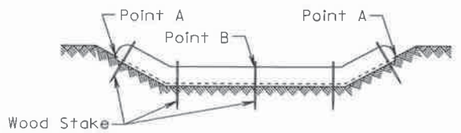


ISOMETRIC VIEW
DITCH INSTALLATION



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: 1st Qtr. 2012	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.

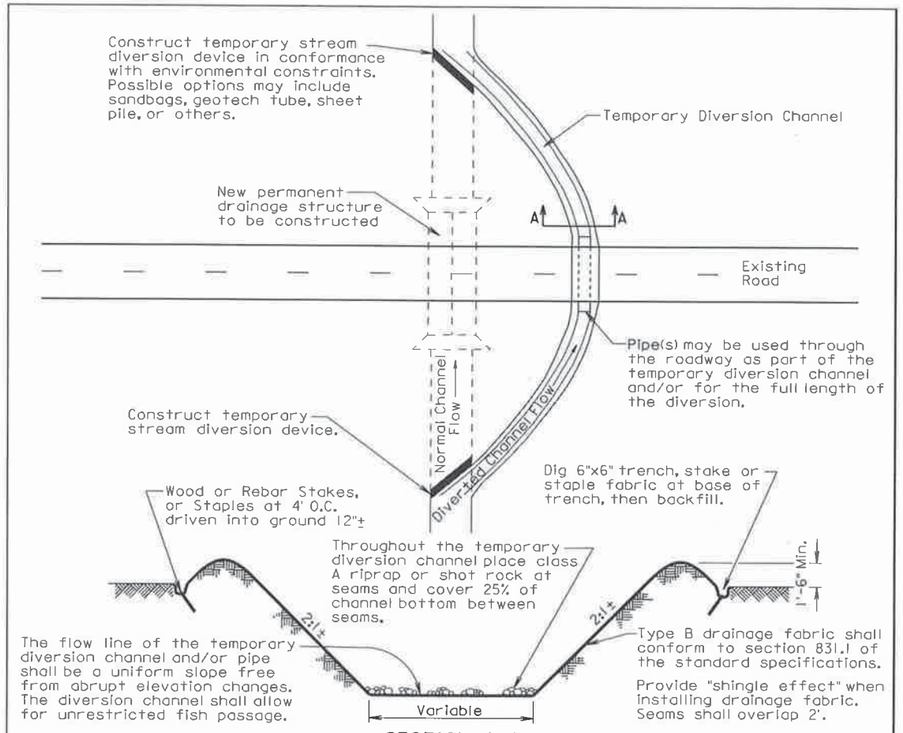
Sediment removal, disposal, or necessary shaping shall be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping shall be incidental to the contract unit price per cubic yard for "Remove Sediment".

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: 1st Qtr. 2012	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2



SECTION A-A

TEMPORARY DIVERSION CHANNEL

GENERAL NOTES:

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

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

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

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

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

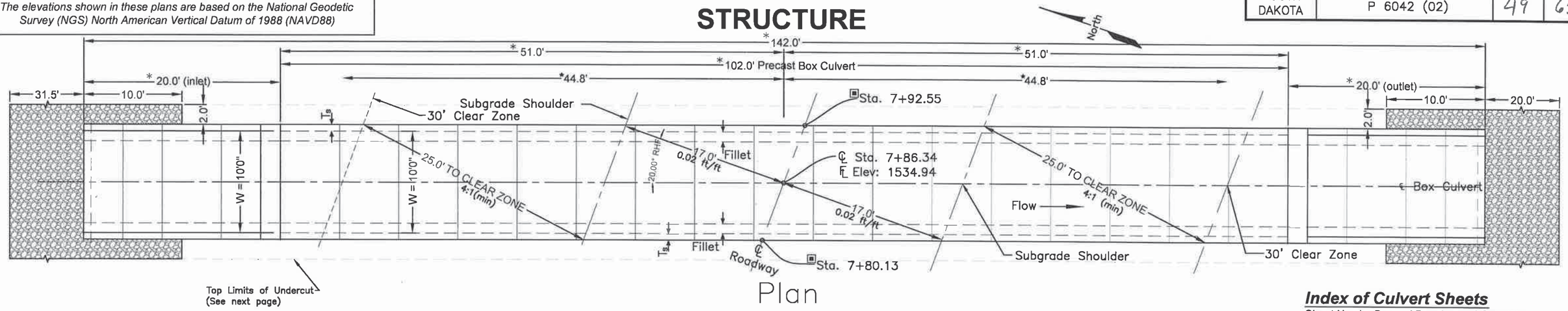
December 23, 2004

Published Date: 1st Qtr. 2012	SDDOT	TEMPORARY DIVERSION CHANNEL	PLATE NUMBER 734.30
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	49	65

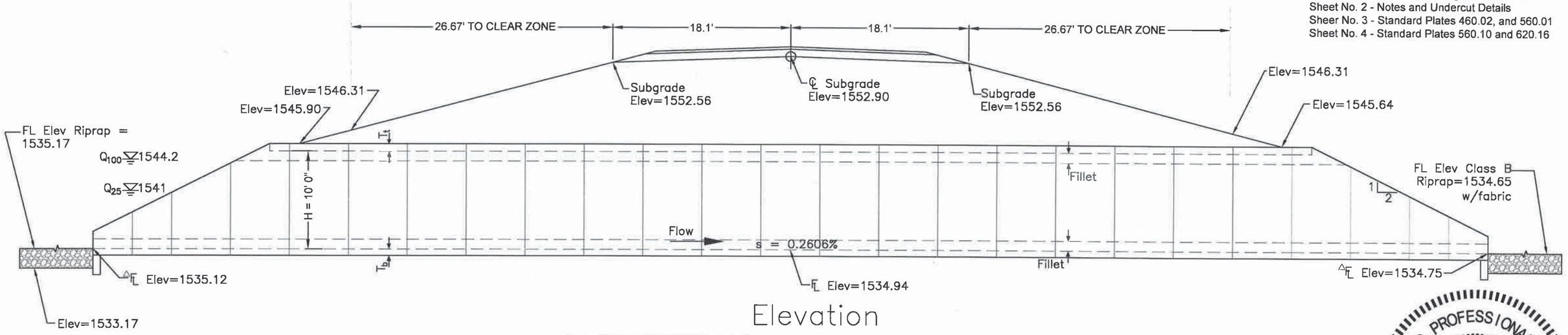
The elevations shown in these plans are based on the National Geodetic Survey (NGS) North American Vertical Datum of 1988 (NAVD88)

STRUCTURE

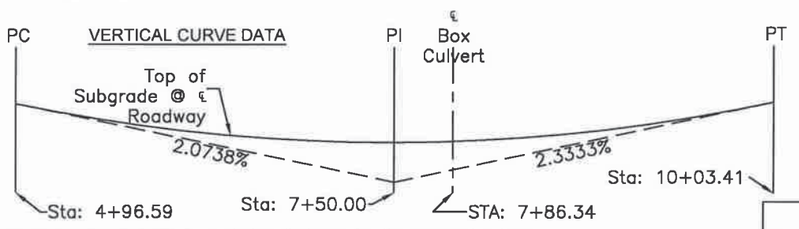


Plan

Index of Culvert Sheets



Elevation



HYDRAULIC DATA	
Q_d	324 cfs
A_d	33.8 sq ft
V_d	9.58 fps
Q_F	637 cfs
Q_{100}	637 cfs
Q_{QT}	1270 cfs
V_{max}	12.7 fps

Q_d = design discharge for the proposed culvert based on 25 year frequency. El. 1541.
Q_{QT} =overtopping discharge and frequency 1207 cfs for >200 year recurrence interval. El. 1550.00. Location at centerline of 265th Street at Sta:7+50.
Q_F = designated peak discharge for the basin approaching proposed project based on 100 year frequency.
Q_{100} =computed discharge for the basin approaching proposed project based on 100 year frequency. El. 1544.2
V_{max} =maximum computed outlet velocity for the proposed culvert, based on a 100 year frequency.

LEGEND	
W	Width of Opening
H	Height of Opening
T_t	Thickness of Top Slab
T_b	Thickness of Bottom Slab
T_s	Thickness of Side Wall

Typical 6' Section of 10' x 10' RCBC weighs 28,100 lbs but may vary based on fabricator.
* Dimensions may vary with fabricator. See Shop Plans for actual installation length.
★ Minimum distance to satisfy clear zone.
△ Based on dimensions shown.
▣ Based on 8" walls.

ESTIMATED QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
420E0200	Structure Excavation, Box Culvert	43	CuYd
421E0200	Box Culvert Undercut	184	CuYd
560E0142	10'x10' Precast Concrete Box Culvert, Furnish	102	Ft
560E0143	10'x10' Precast Concrete Box Culvert, Install	102	Ft
560E1142	10'x10' Precast Concrete Box Culvert End Section, Furnish	2	Each
560E1143	10'x10' Precast Concrete Box Culvert End Section, Install	2	Each

For RipRap and Type B Drainage Fabric quantities, see table on Sheet 14.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7733
SHANNON R. SCHULTZ
STATE OF SOUTH DAKOTA
02/24/12

GENERAL DRAWING AND QUANTITIES FOR 10' X10' BOX CULVERT (PRECAST)

STA = 7+86.34
OVER N BRANCH TWELVE MILE CR
STR. NO. 18-042-210
PCN 01P0

20.00° R.H.F. SKEW
SEC. 14/24-T101N-R62W
P 6042 (02)
HL -93 Loading

DAVISON COUNTY
FEBRUARY 2012

PLANS BY :
CIVIL DESIGN INC, BROOKINGS, SD 2009-123

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
SRS	DAF/SRS	CLB	

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	50	65

STRUCTURE

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

GENERAL NOTES
Design shall be in accordance with Section 560 of the South Dakota Standard Specifications with the following criteria:

1. Box culvert and box culvert end section design shall conform to the AASHTO LRFD Bridge Design Specifications, 2010 Edition.

2. Design Live Load: HL-93. No construction loading in excess of legal load is anticipated. If construction loading in excess of legal load is anticipated by the Contractor, the Contractor shall submit a proposal including a design analysis for the anticipated construction loading, through the proper channels, to the Office of Bridge Design for approval. Upon approval, the construction load shall not be applied until the depth of fill over the box culvert as required by analysis has been placed. At a minimum, 4 ft. of fill shall be placed over the box culvert prior to applying the construction load. All costs associated with accommodating any construction loads shall be borne by the Contractor.

3. The design of the barrel sections shall be based on a minimum fill height of 2 feet and include all subsequent fill heights up to and including the maximum fill height over the box culvert of 15 feet.

4. Minimum inside corner fillet shall be 6 in.

5. Minimum precast barrel section length shall be 4 ft.

6. Lift holes shall be plugged with an approved non-shrinkable grout.

7. The Fabricator shall imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.

8. Installation of the precast sections shall be in accordance with the final approved shop plans.

DESIGN MIX OF CONCRETE

1. Mix shall be as per fabricator's design, however minimum compressive strength shall not be less than 4500 p.s.i. at 28 days.

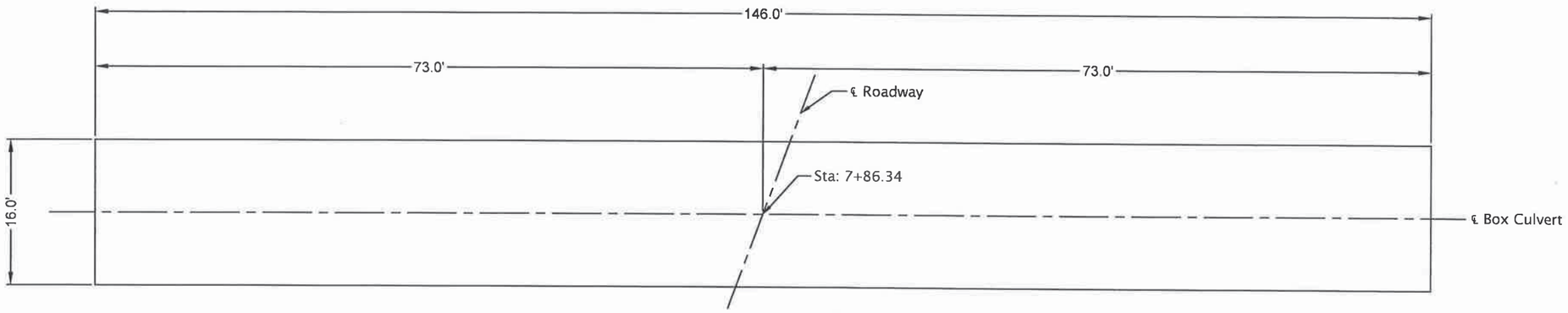
2. Type II cement is required.

SHOP PLANS

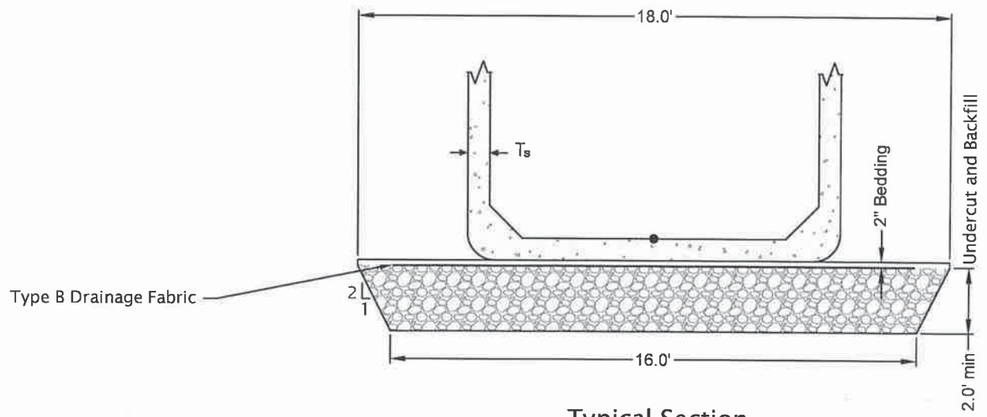
1. The fabricator shall initially submit 3 copies of the shop plans to Civil Design Inc, located at 609 Main Avenue South, Brookings, SD 57006 for review.

2. After review by Civil Design Inc, one copy with any revisions noted will be sent to both the Office of Bridge Design and the Fabricator. The Fabricator shall then send seven corrected copies back to Civil Design Inc.

3. After review by Civil Design Inc, six copies will be sent back to the Bridge Construction Engineer, South Dakota Department of Transportation, who will review them, arrange for fabrication inspection, authorize fabrication, and distribute the shop drawings.



Undercut Layout
(Bottom Dimensions)



Typical Section
(For Limits of Undercut)

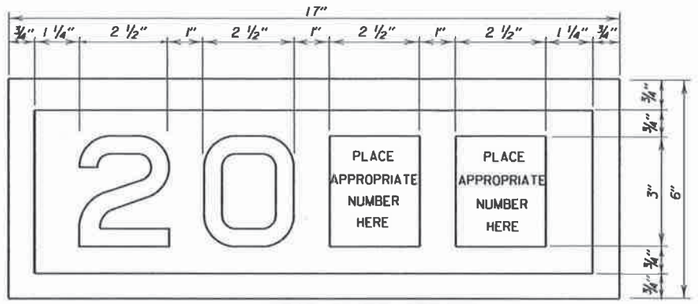
NOTES AND UNDERCUT DETAILS FOR 10' X10' BOX CULVERT (PRECAST)

STA = 7+86.34
OVER N BRANCH TWELVE MILE CR
STR. NO. 18-042-210

20.00° R.H.F. SKEW
SEC. 14/24-T101N-R62W
P 6042 (02)
HL-93 LOADING

DAVISON COUNTY
FEBRUARY 2012

DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY
SRS	DAF/SRS	CLB	



YEAR PLATE DETAILS

NOTES:

1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (½) inch in depth.

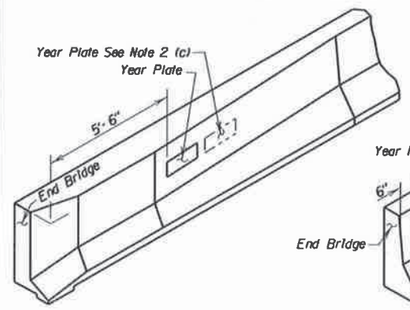
2. Year plates shall be located on structure (s) as follows:

   a. On cast-in-place box culverts the year plates shall be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.

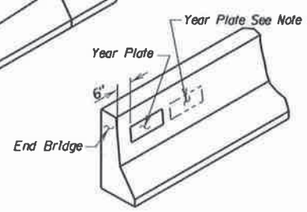
   b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'- 6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.

   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.

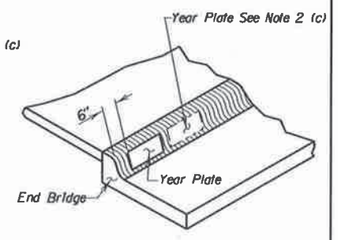
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to the other contract items.



JERSEY BARRIER
(With Endblock)



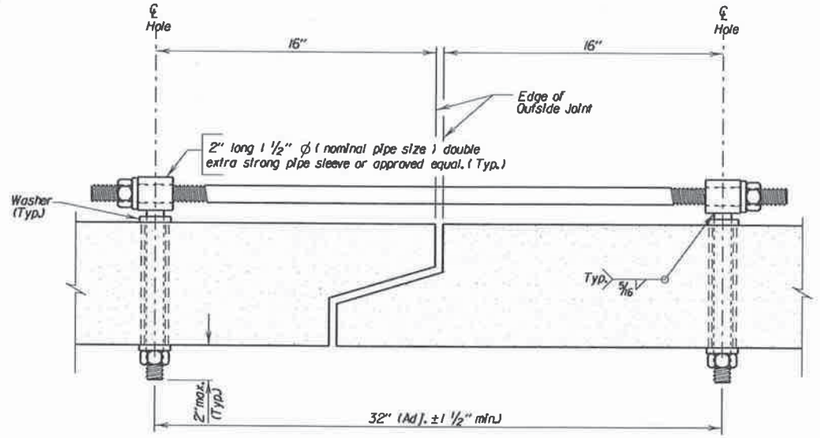
JERSEY BARRIER



TYPE B CURB

March 31, 2000

Published Date: 1st Qtr. 2012	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 of 1



TIE BOLT ASSEMBLY

GENERAL NOTES:

1. All holes for tie bolts shall be cast-in-place, 16 in. from outside edge of joint. Cast in inserts or sleeves, if used, shall be made of a corrosion resistant material.

2. Ties shall be 1" ϕ and conform to the requirements of ASTM A36. Nuts shall be heavy hex in conformance with ASTM A563. Washers shall conform to ASTM F436, Type 1. The welded pipe sleeve shall conform to ASTM A53, Grade B.

3. Welding and weld inspection shall be in conformance with the current edition of the AWS D1.1 Structural Steel Welding Code.

4. Tie Bolt Assembly shall be galvanized in accordance with ASTM A153.

5. Tie Bolt Assembly details may vary from that shown, but alternate tie bolt assemblies are subject to testing to demonstrate equal strength. Submit details, through proper channels, to the Office of Bridge Design for approval.

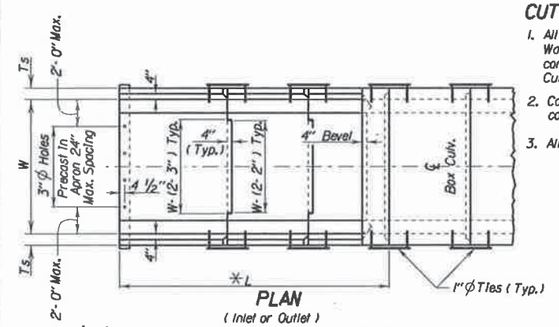
6. All costs for furnishing and installing the precast box culvert tie bolt assembly shall be incidental to the contract unit price per foot for the corresponding "Precast Concrete Box Culvert, Furnish" bid item.

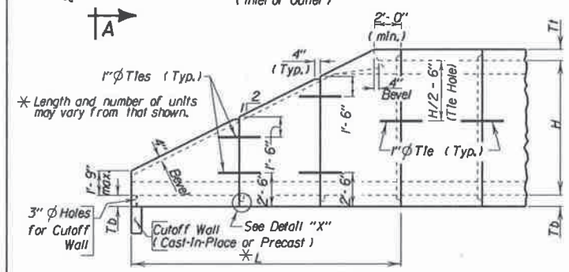
April 25, 2006

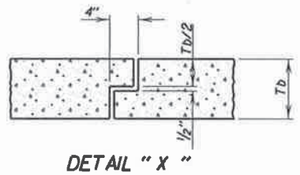
Published Date: 1st Qtr. 2012	SDDOT	PRECAST BOX CULVERT TIE BOLT ASSEMBLY DETAILS	PLATE NUMBER 560.01
			Sheet 1 of 1

CUTOFF WALL

1. All costs associated with furnishing and installing the Cutoff Wall, whether precast or cast-in-place, shall be incidental to the contract unit price per each for the corresponding "Precast Box Culvert End Section, Furnish" bid item.
2. Concrete for cast-in-place cutoff wall shall be Class M6 concrete in accordance with the Standard Specifications.
3. All reinforcing steel shall conform to ASTM A615 Grade 60.

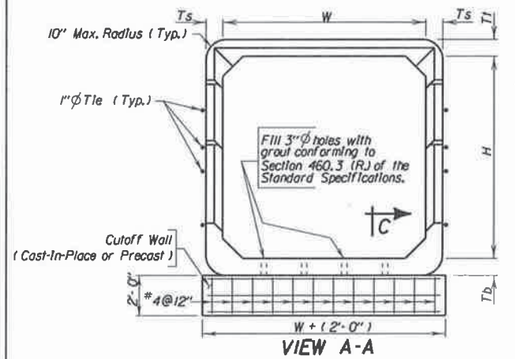


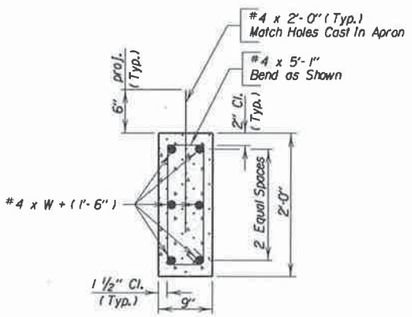




DETAIL "X"

NOTE: Joint details may vary from that shown, according to the manufacturer's design. Submit details with shop plans for approval.





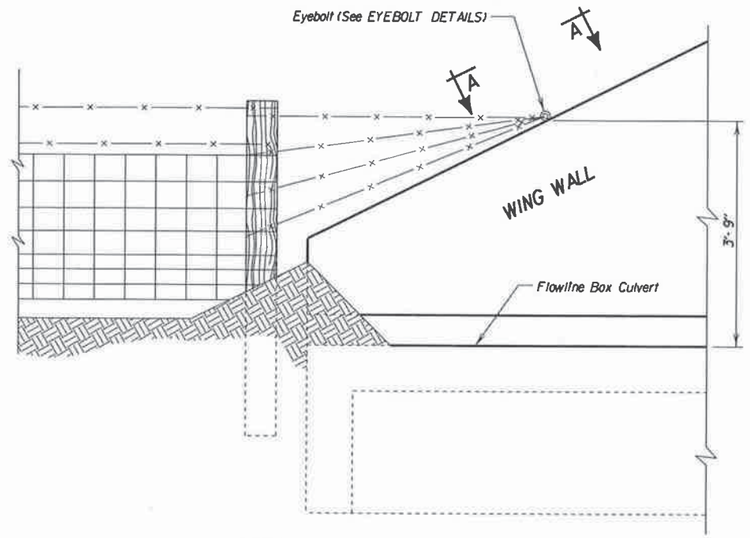
LEGEND

W = Width of Opening
H = Height of Opening
T1 = Thickness of Top Slab
Tb = Thickness of Bottom Slab
Ts = Thickness of Side Wall
L = Length of End Section

NOTE:
See GENERAL DRAWING for W and H dimensions.
T1, Tb, and Ts dimensions shall be furnished by the Contractor.

April 25, 2006

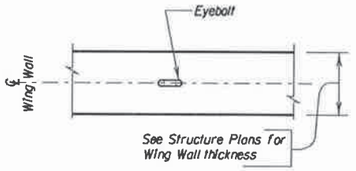
Published Date: 1st Qtr. 2012	SDDOT	PRECAST SINGLE BOX CULVERT SLOPED END SECTION DETAILS WITH 2'-0" CUTOFF WALL	PLATE NUMBER 560.10
			Sheet 1 of 1



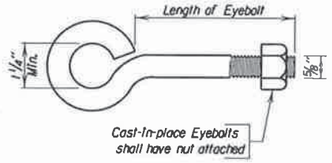
DETAIL FOR FENCE ANCHORS

GENERAL NOTES:

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



VIEW A - A

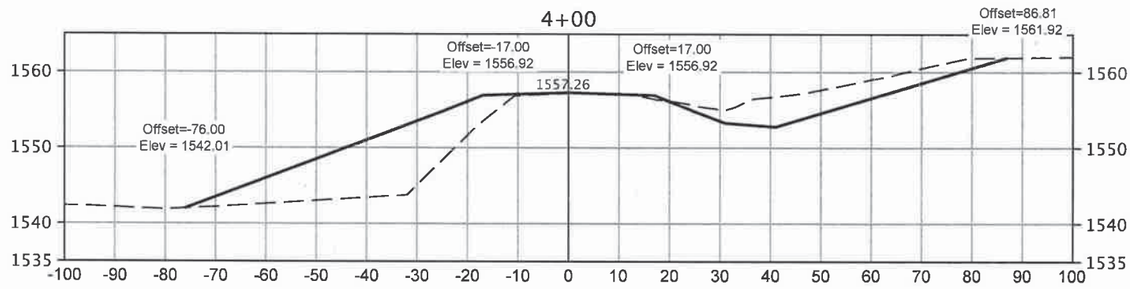


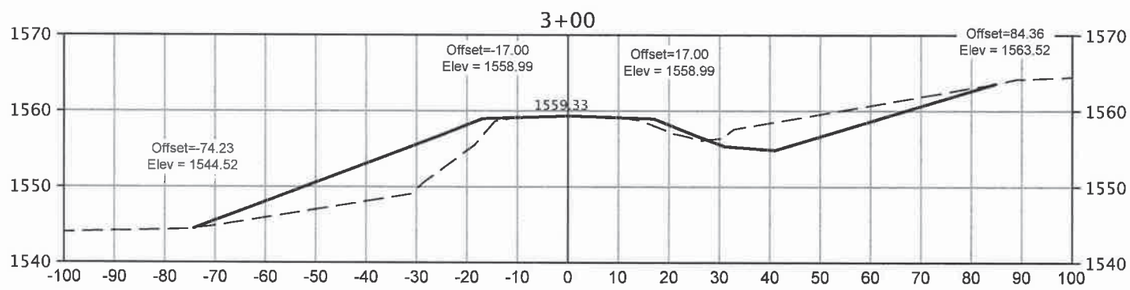
EYEBOLT DETAILS

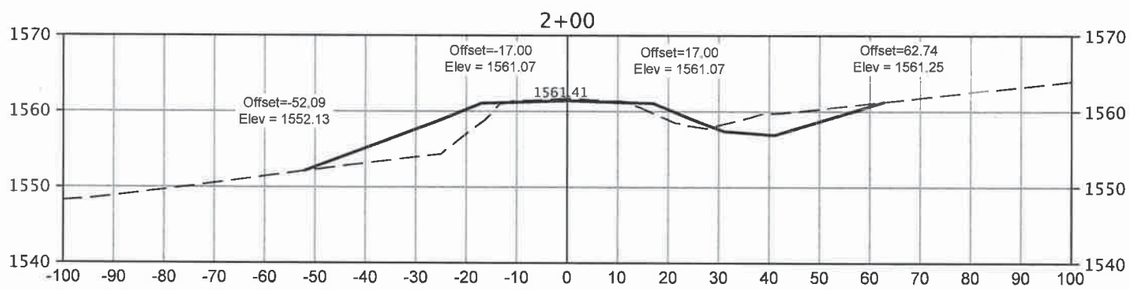
April 25, 2006

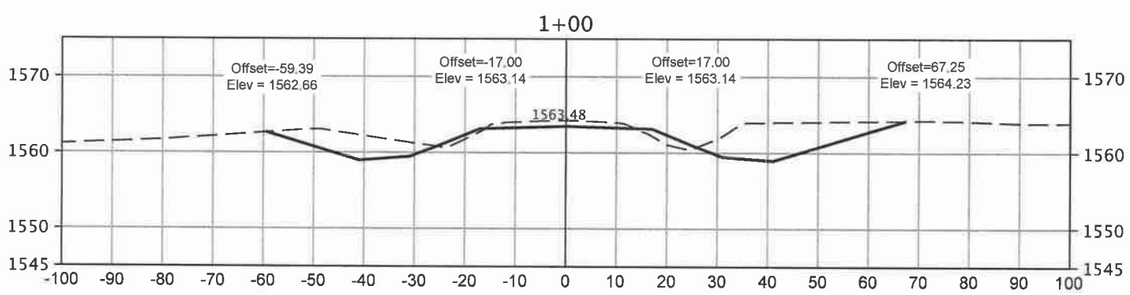
Published Date: 1st Qtr. 2012	SDDOT	FENCE ANCHORS FOR BOX CULVERT WING WALLS	PLATE NUMBER 620.16
			Sheet 1 of 1

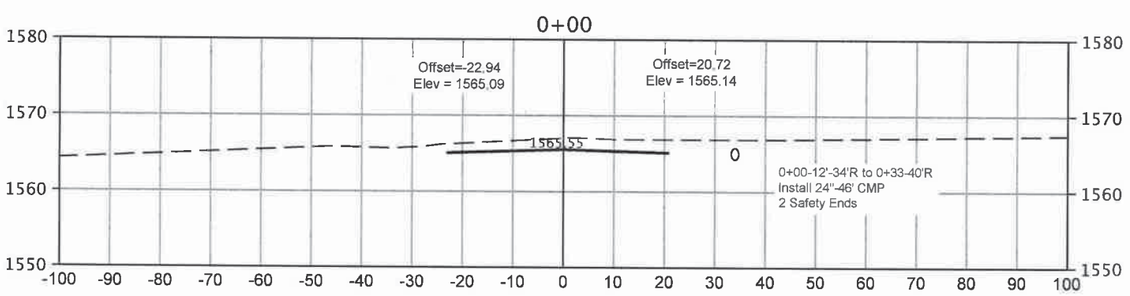
CROSS SECTIONS











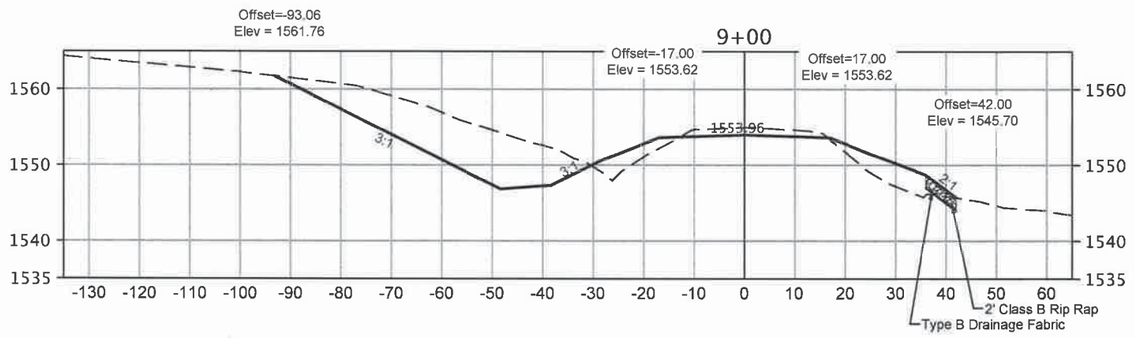
Subgrade

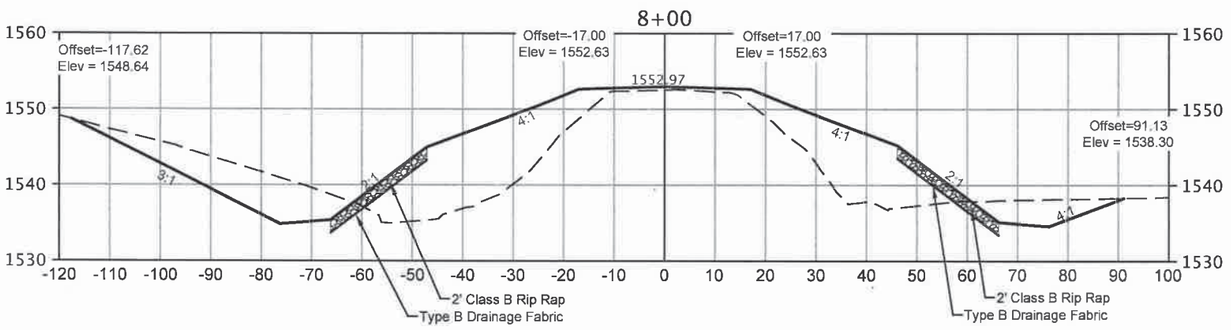
Existing Ground

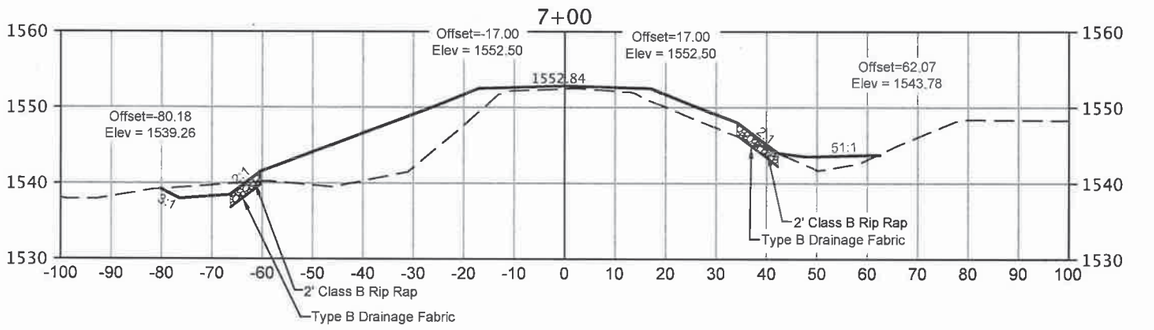
REGISTERED PROFESSIONAL ENGINEER
SHANNON R. SCHULTZ
REG. NO. 7733
SOUTH DAKOTA
2/24/12

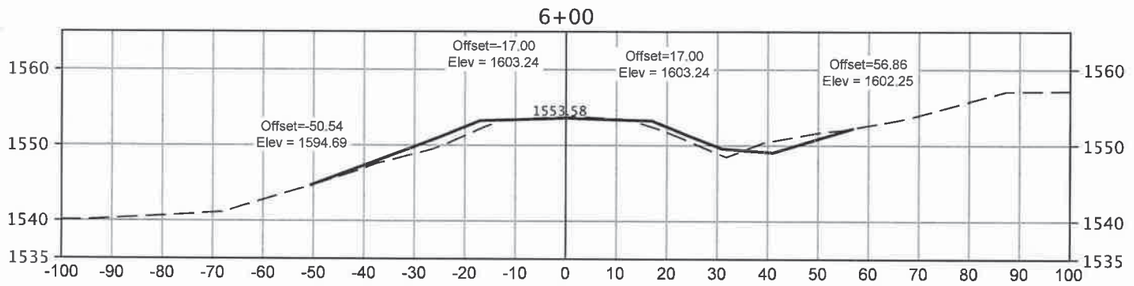
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	53	65

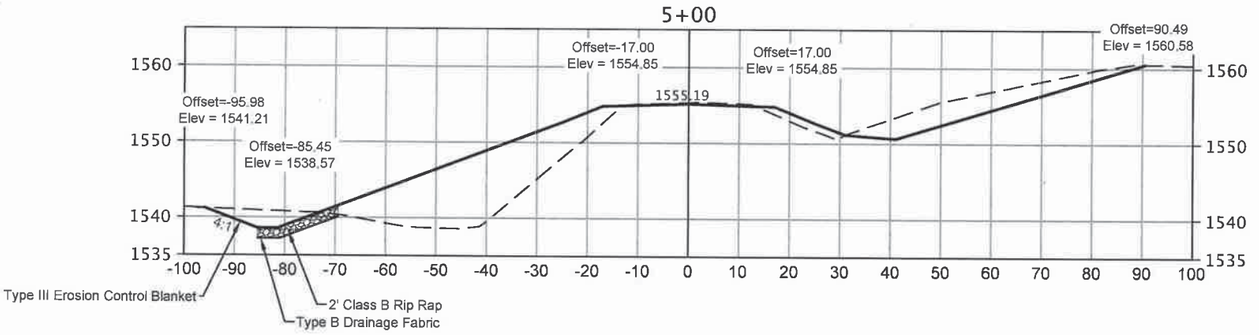
CROSS SECTIONS









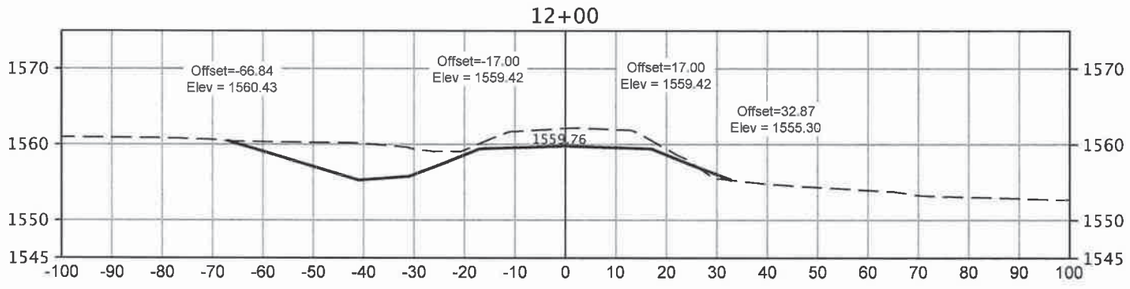


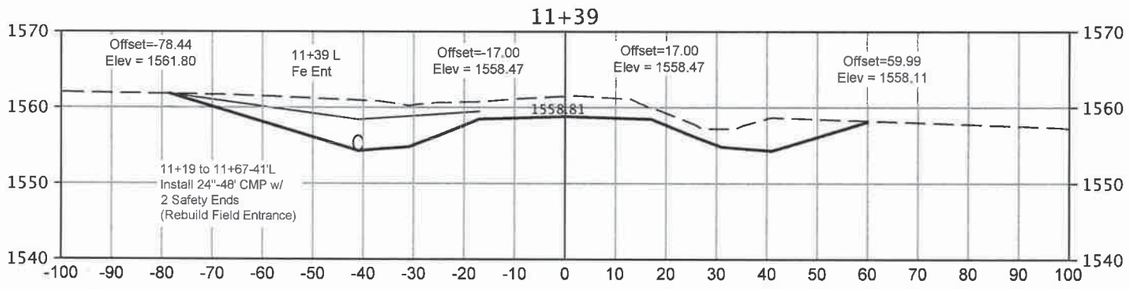
Subgrade

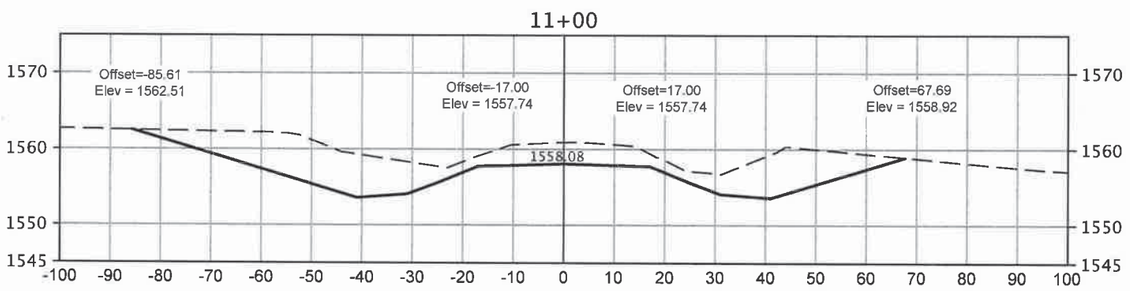
Existing Ground

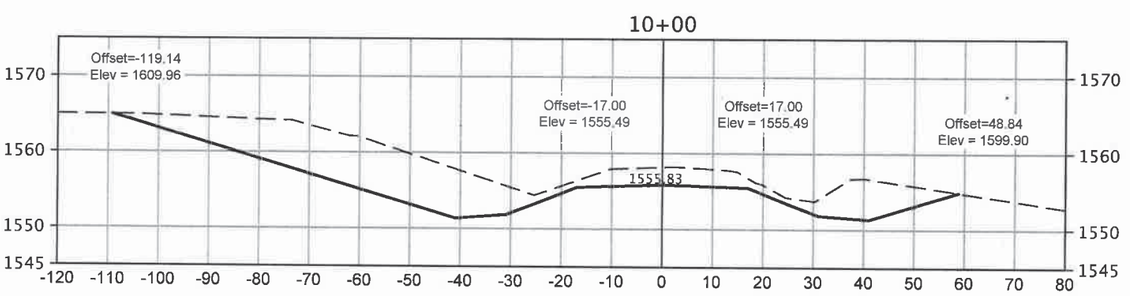
STATE OF SOUTH DAKOTA	PROJECT
	P 6042 (02)
SHEET NO.	54
TOTAL SHEETS	65

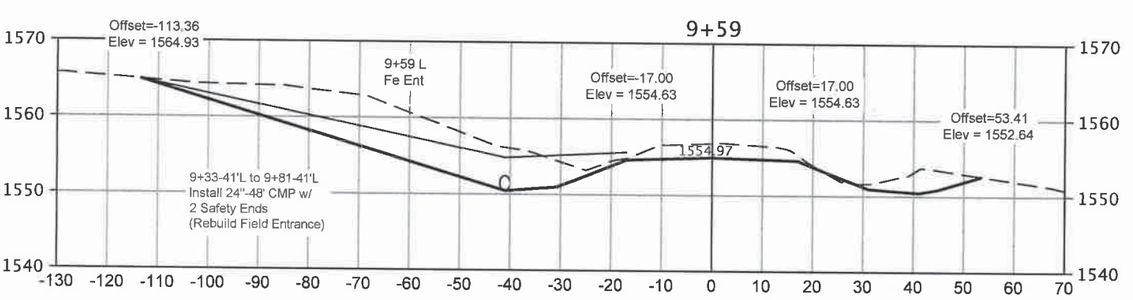
CROSS SECTIONS









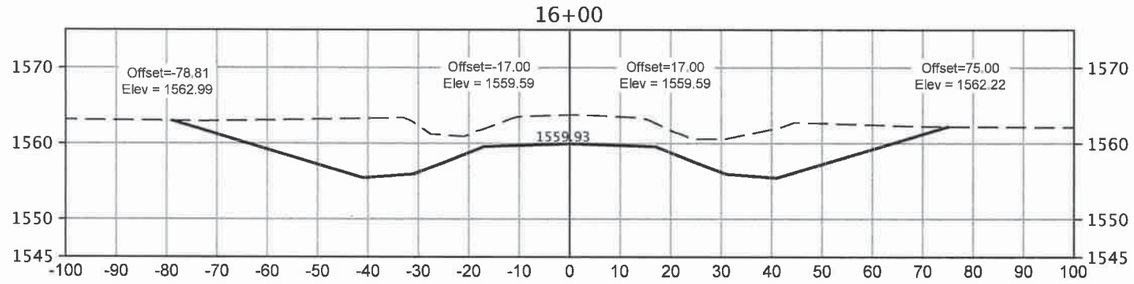


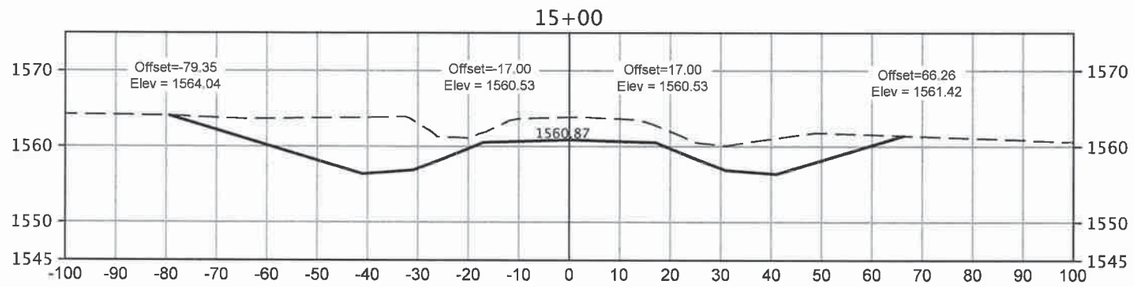
Subgrade

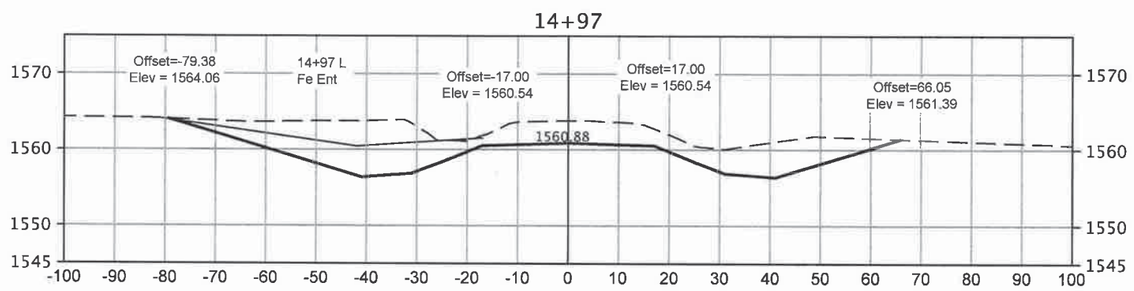
Existing Ground

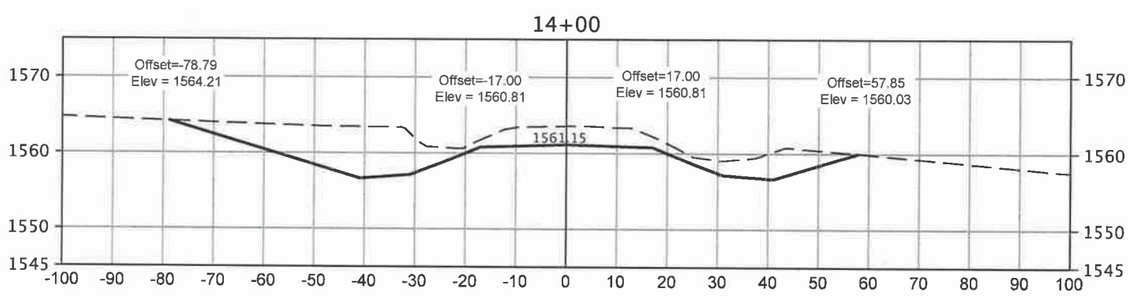
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	55	65

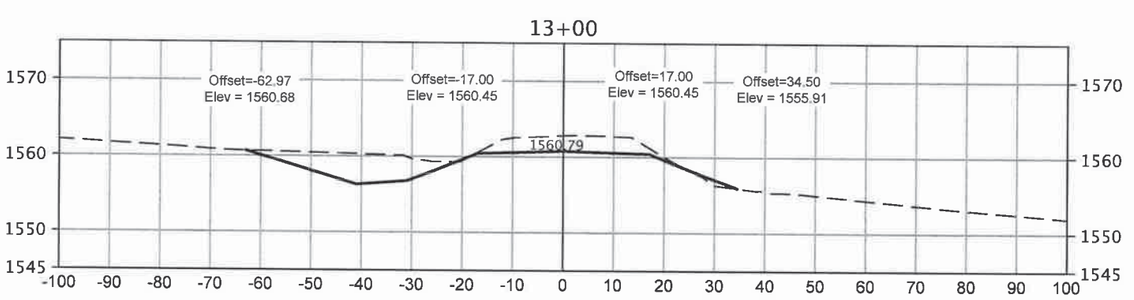
CROSS SECTIONS









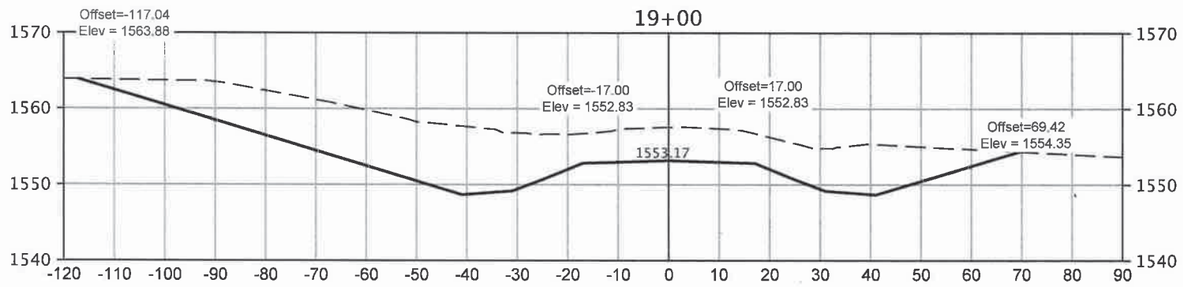


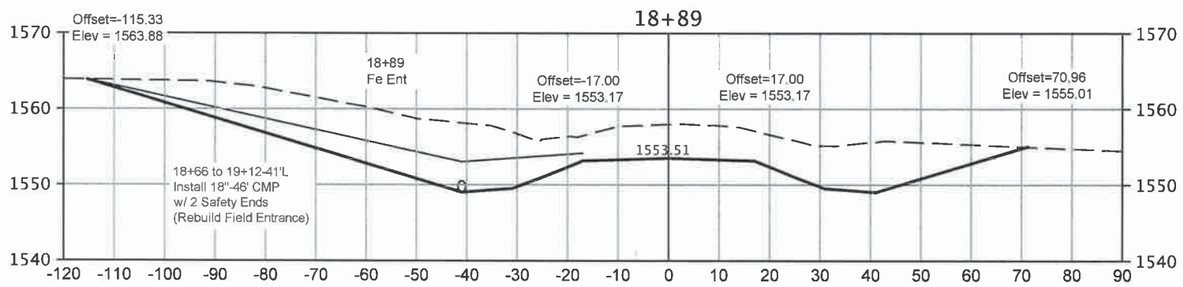
Subgrade

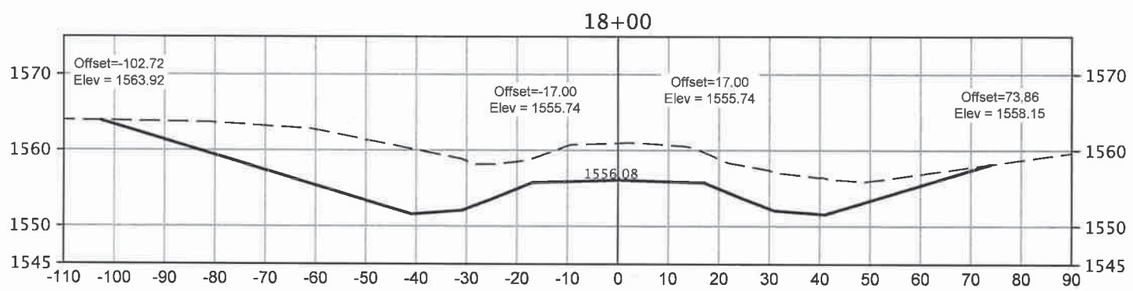
Existing Ground

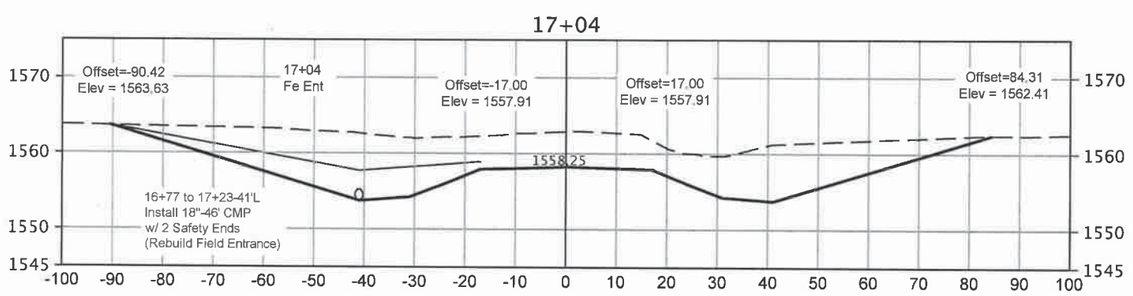
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	56	65

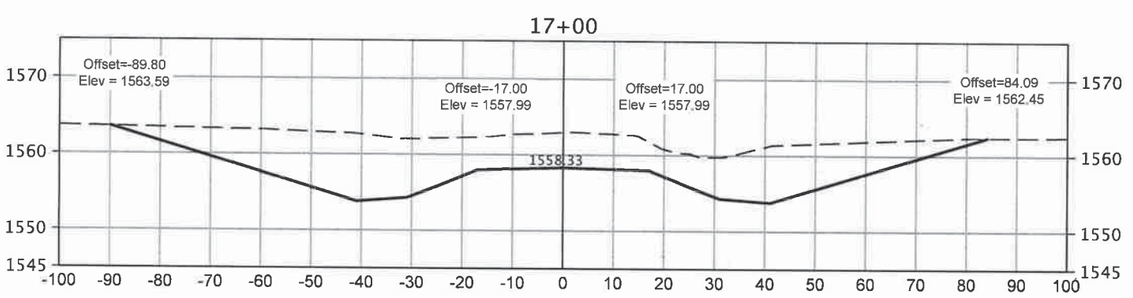
CROSS SECTIONS









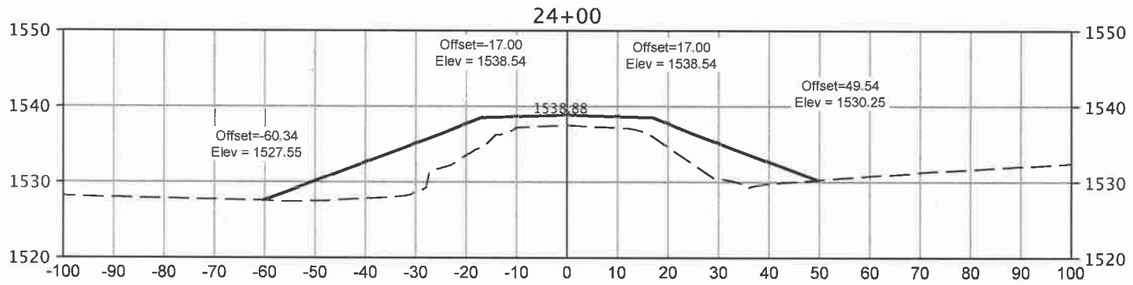


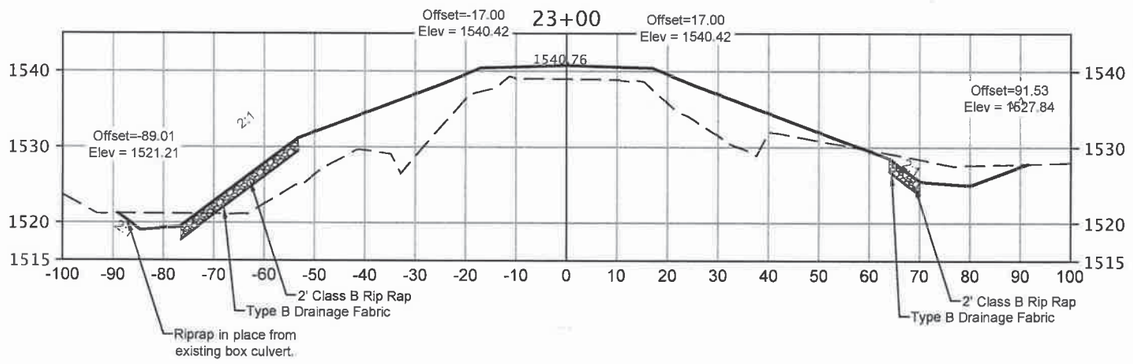
Subgrade

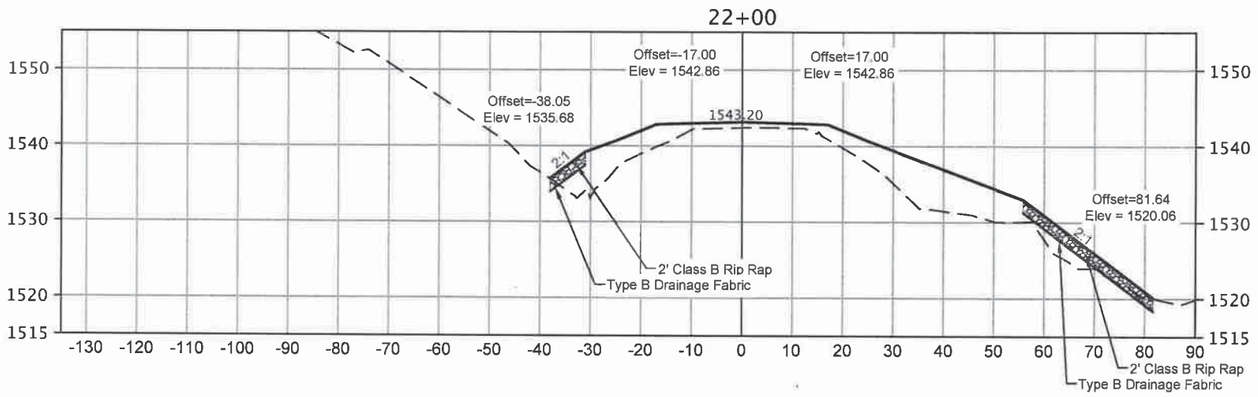
Existing Ground

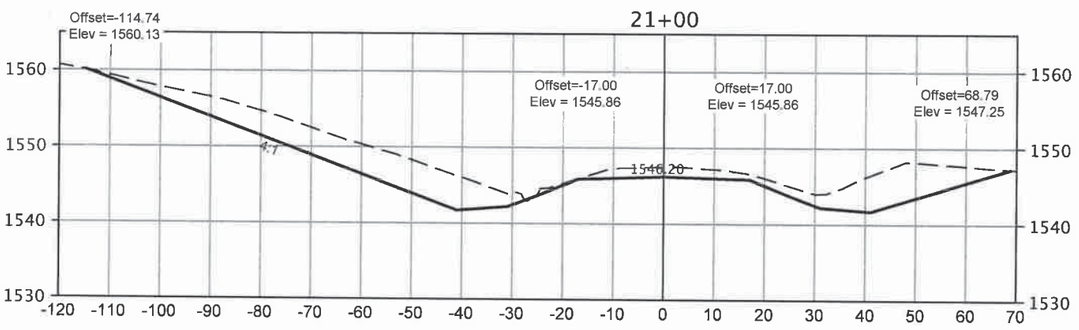
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	57	65

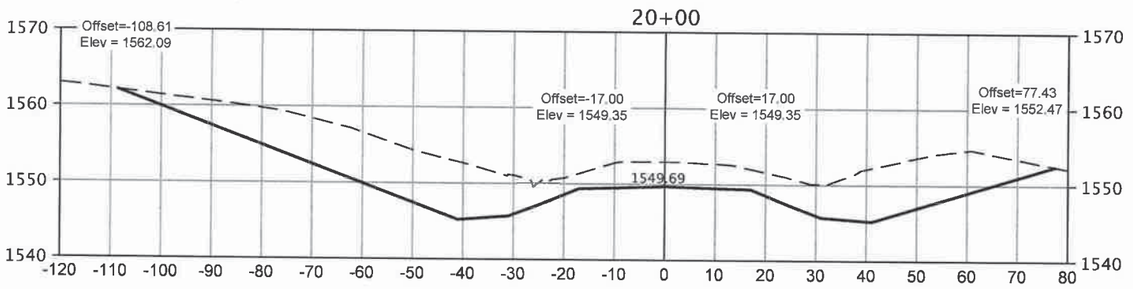
CROSS SECTIONS









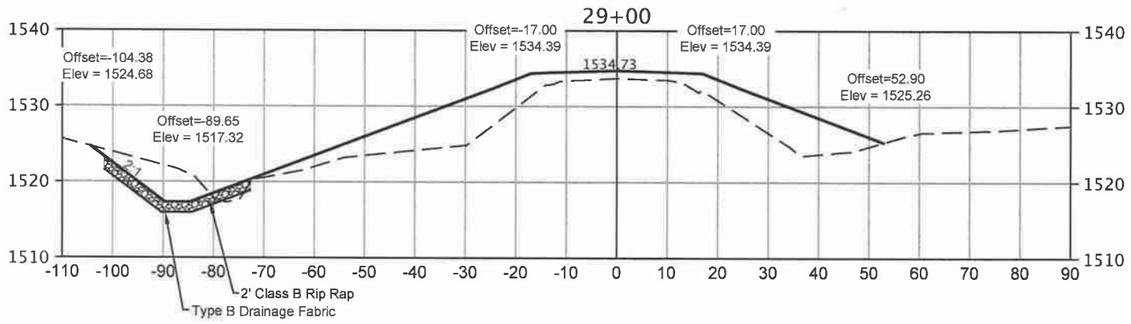


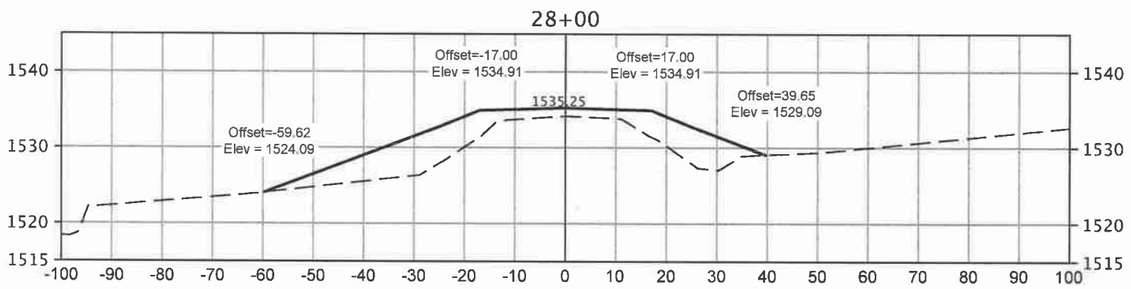
Subgrade

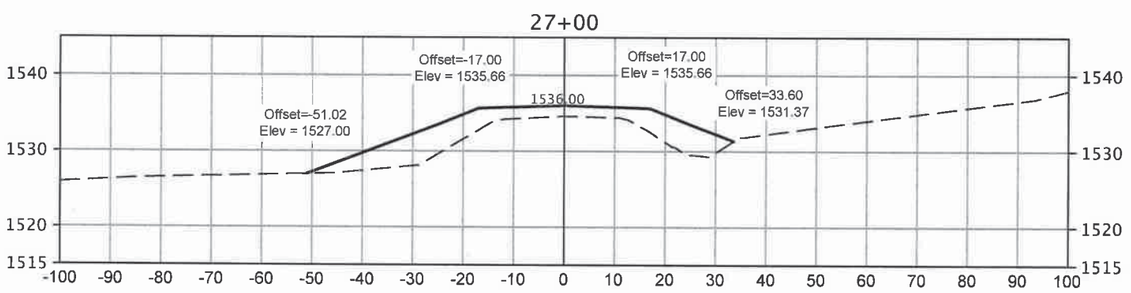
Existing Ground

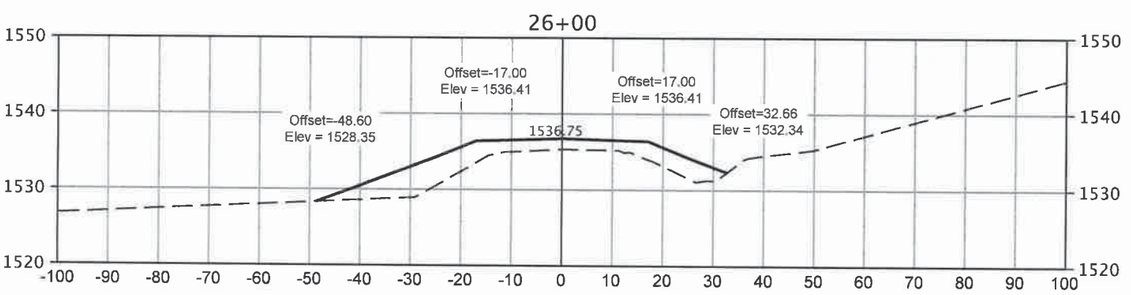
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	58	65

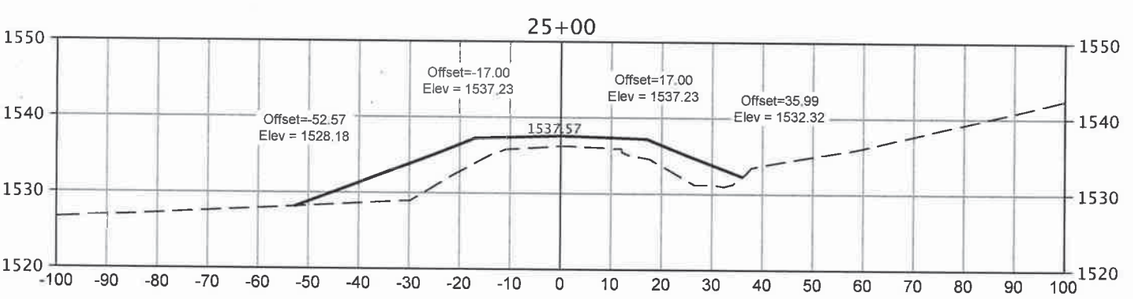
CROSS SECTIONS









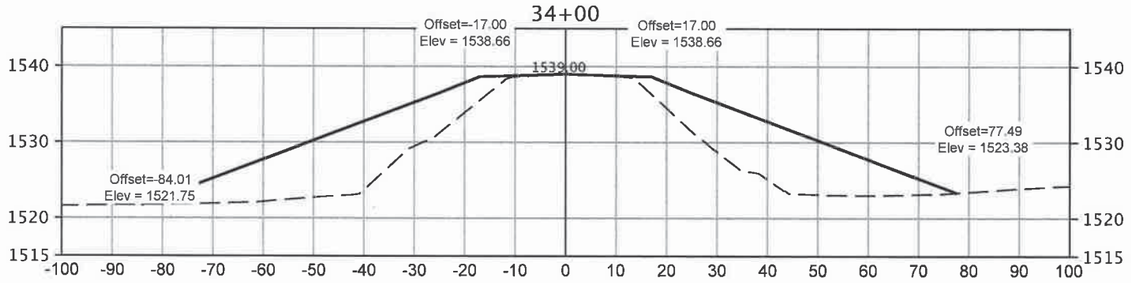


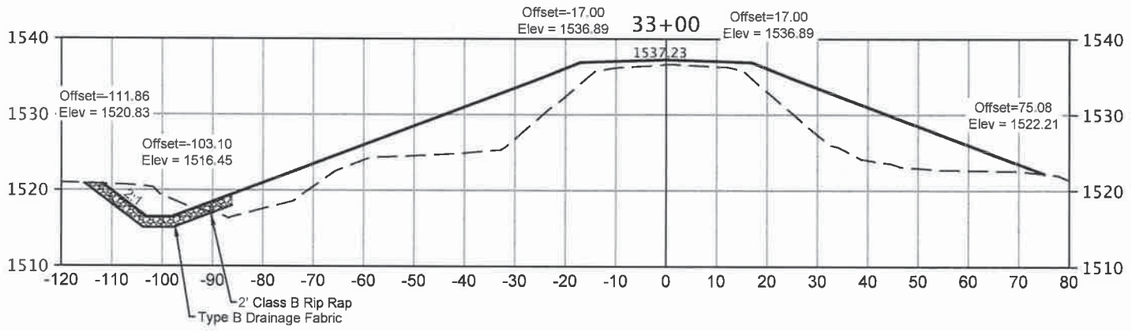
Subgrade

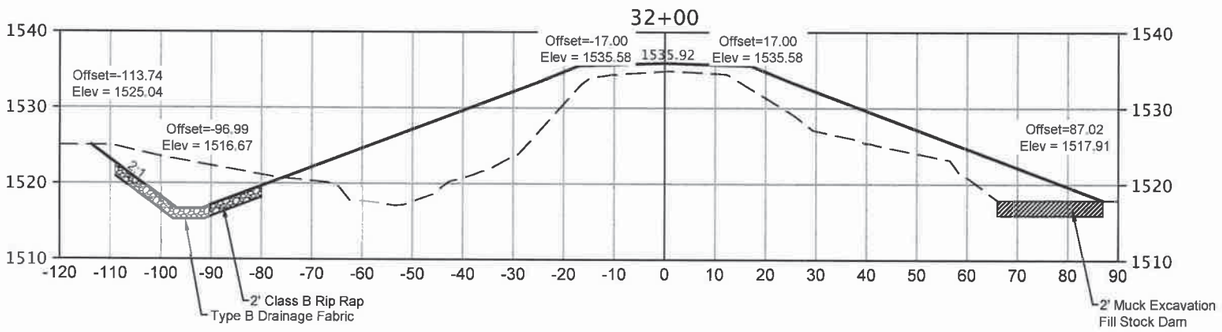
Existing Ground

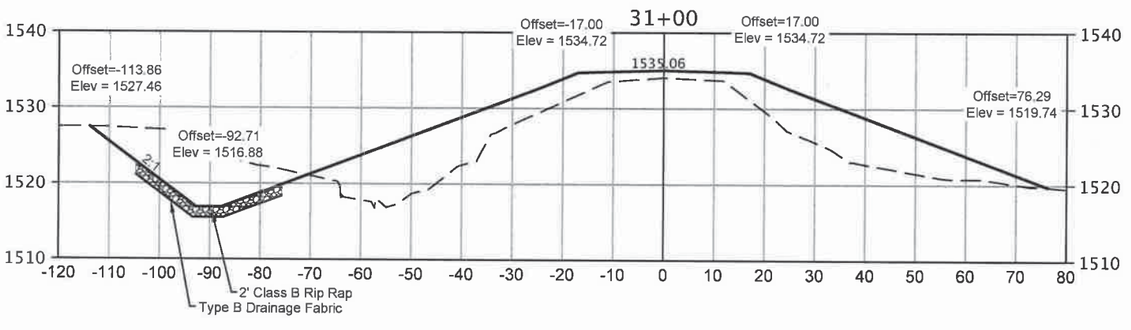
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	59	65

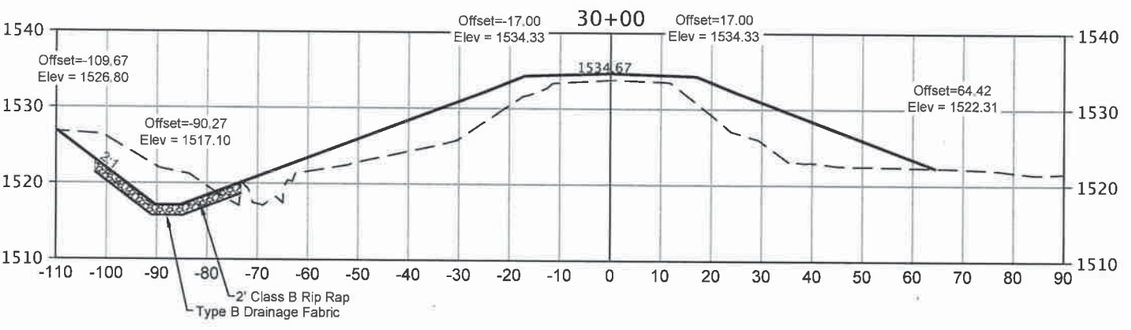
CROSS SECTIONS









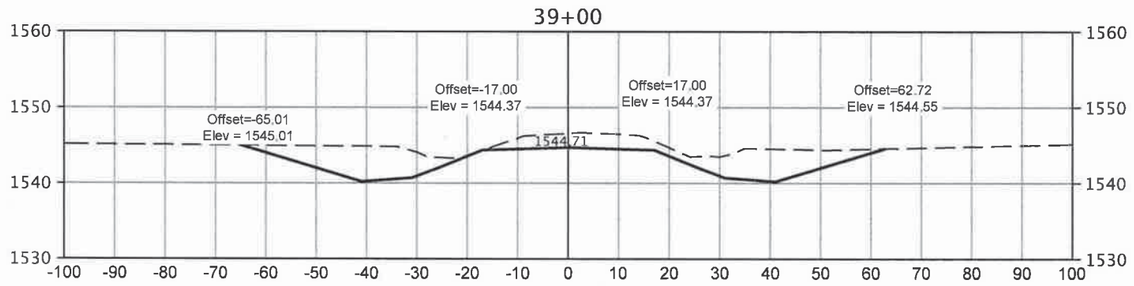


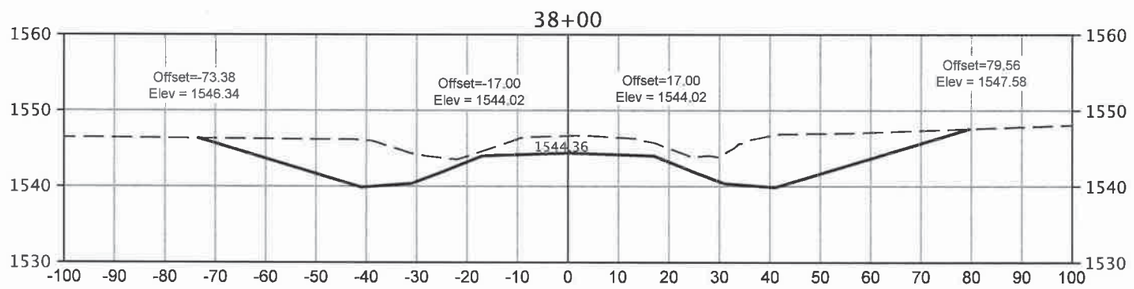
Subgrade

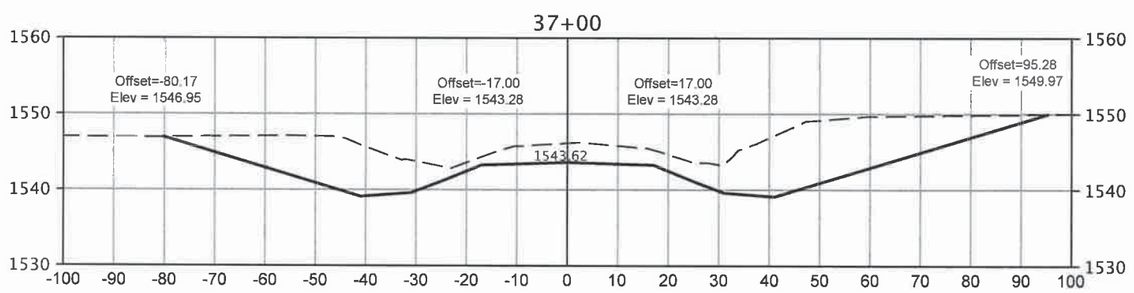
Existing Ground

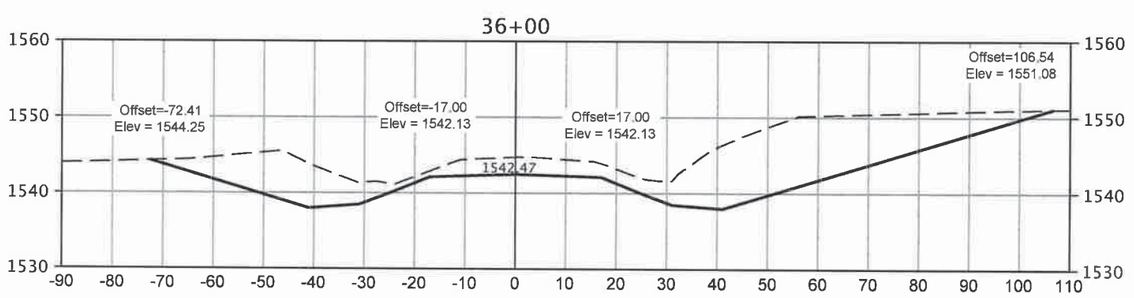
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	66	65

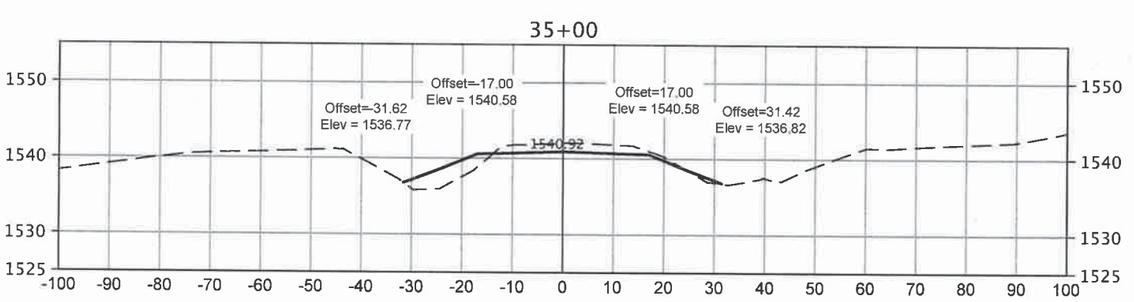
CROSS SECTIONS











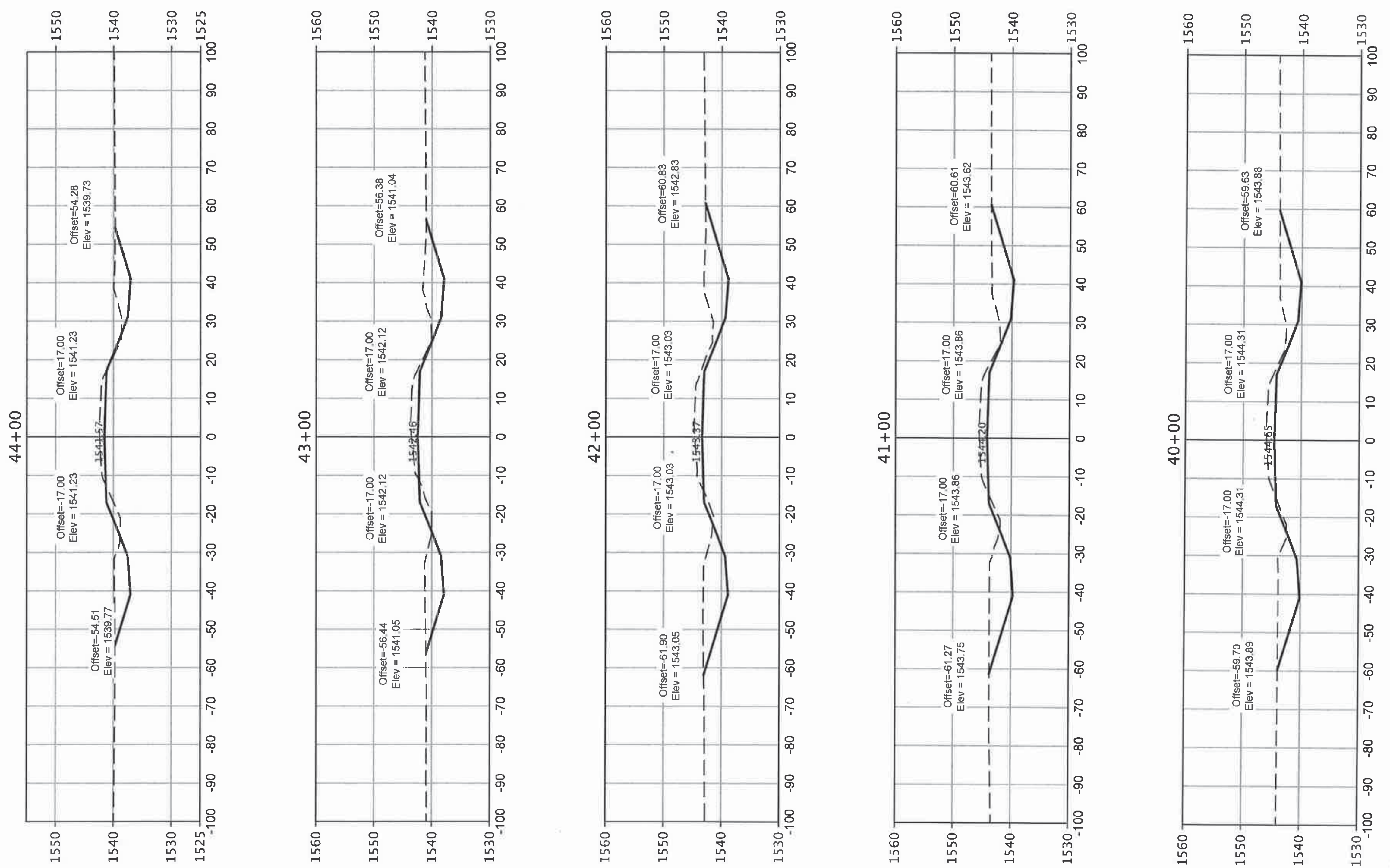
Subgrade

Existing Ground

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	61	65

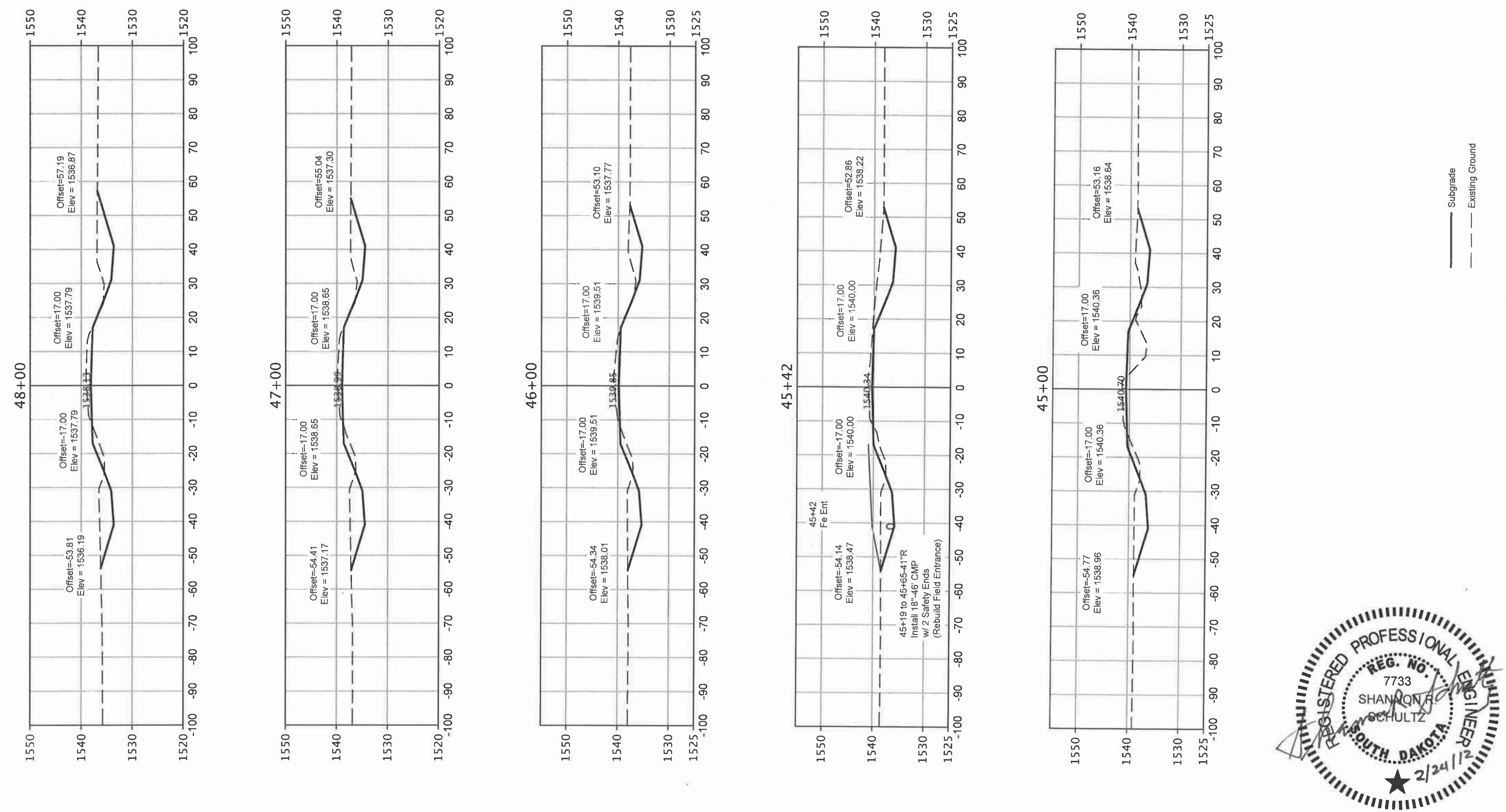
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	62	65

CROSS SECTIONS

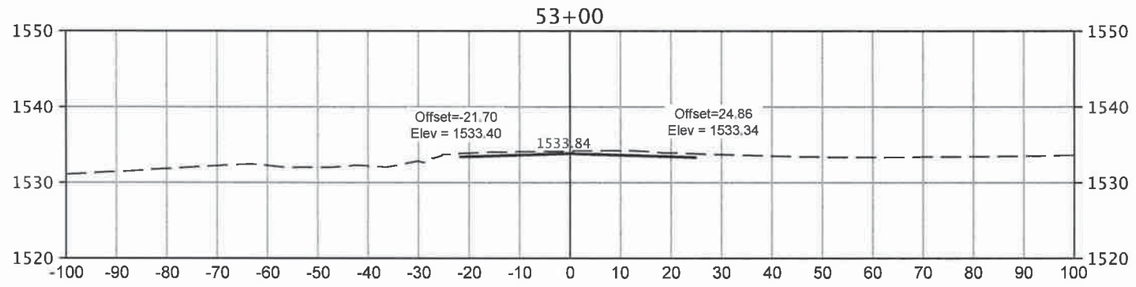


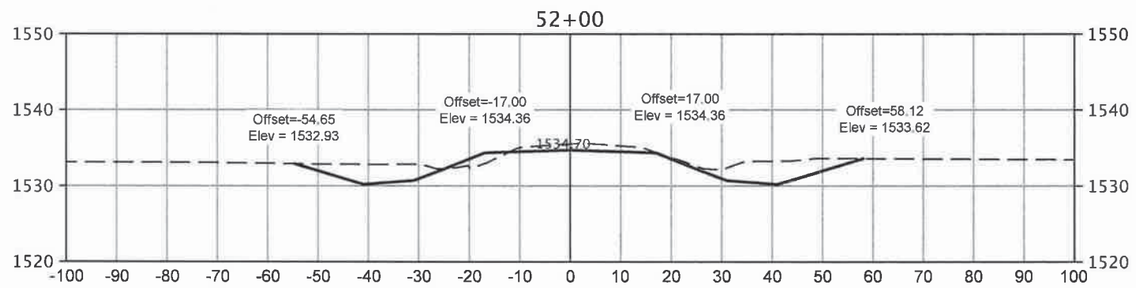
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	63	65

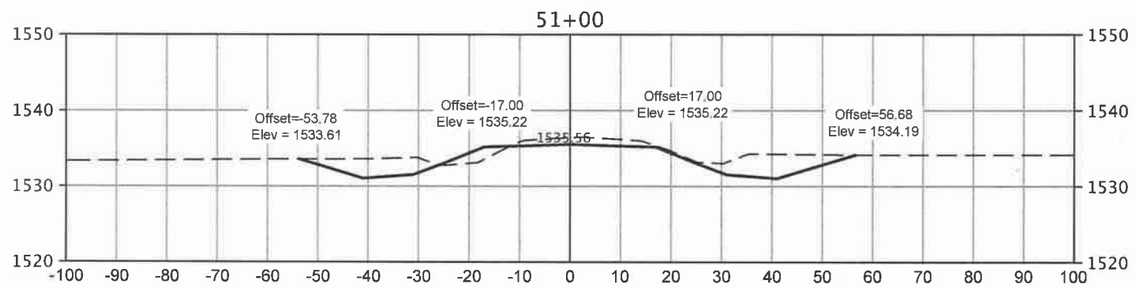
CROSS SECTIONS

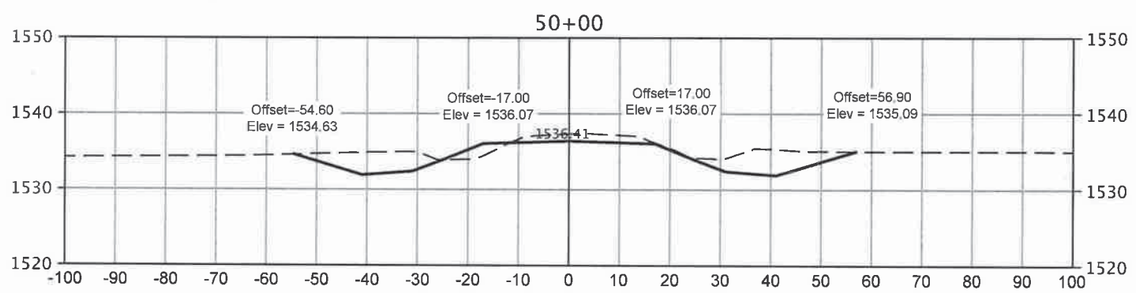


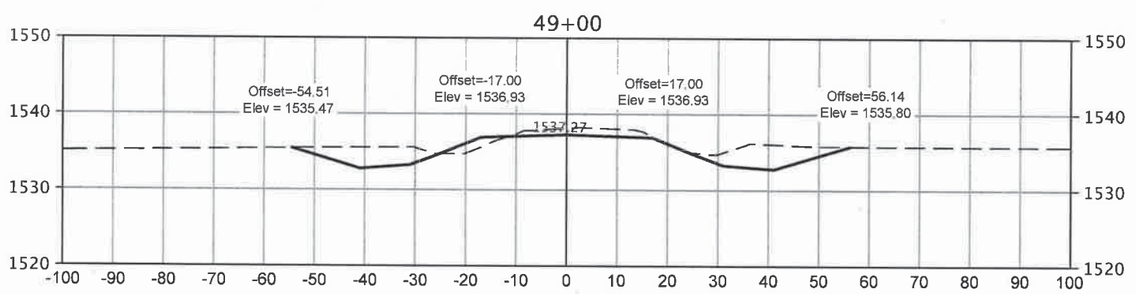
CROSS SECTIONS











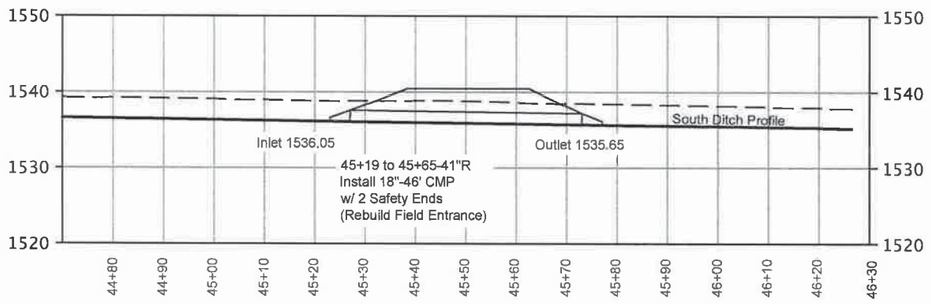
Subgrade

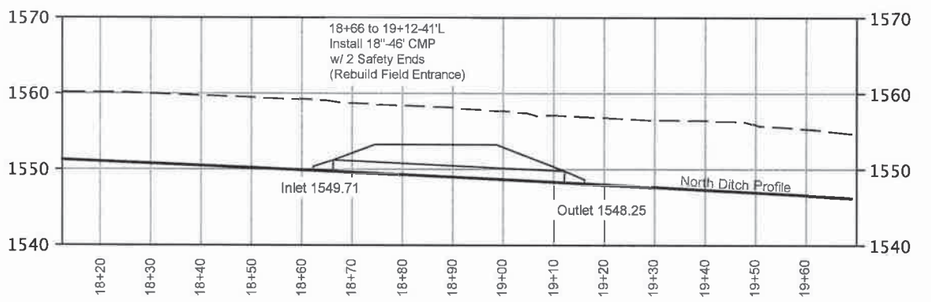
Existing Ground

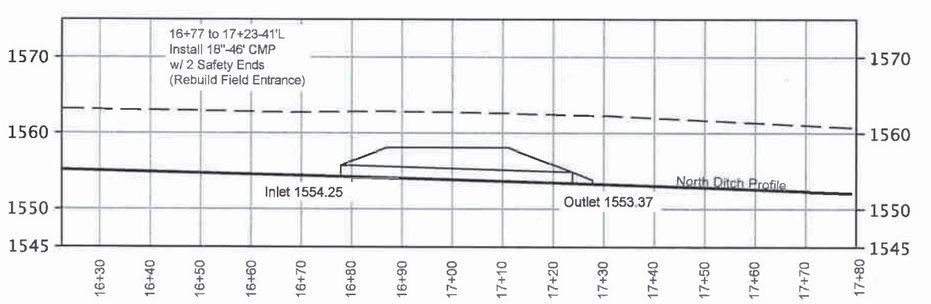
REGISTERED PROFESSIONAL ENGINEER
SHANNON R. SCHULTZ
7733
REG. NO.
SOUTH DAKOTA
2/24/12

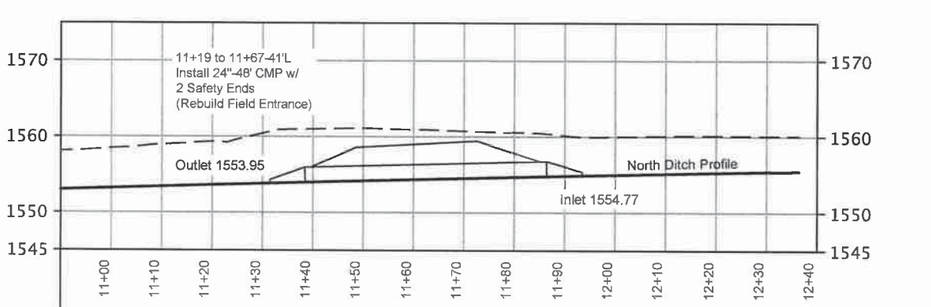
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	64	65

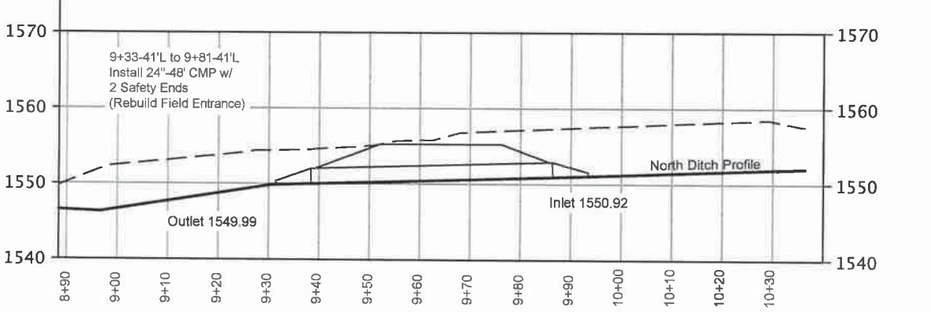
PIPE SECTIONS

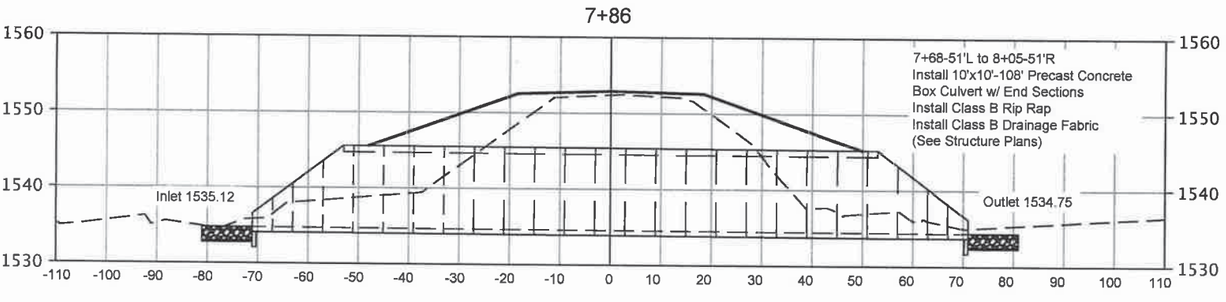


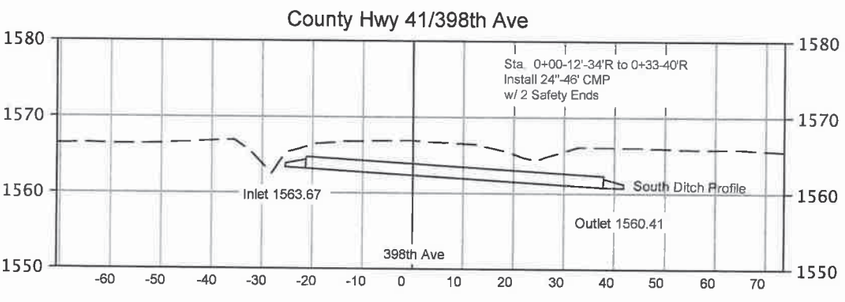








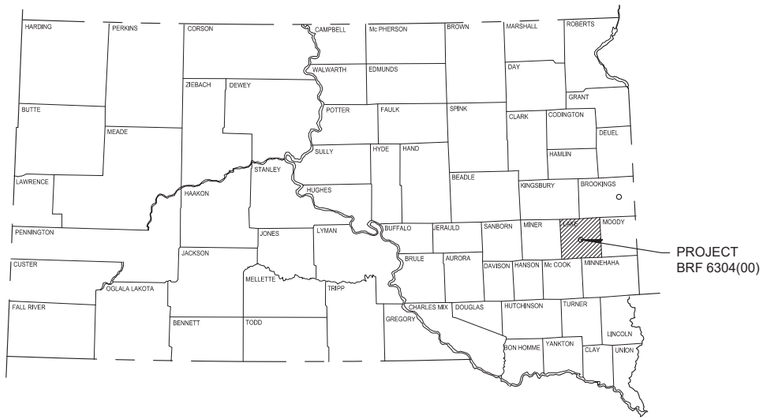




Existing Ground

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 6042 (02)	65	65

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	1	42

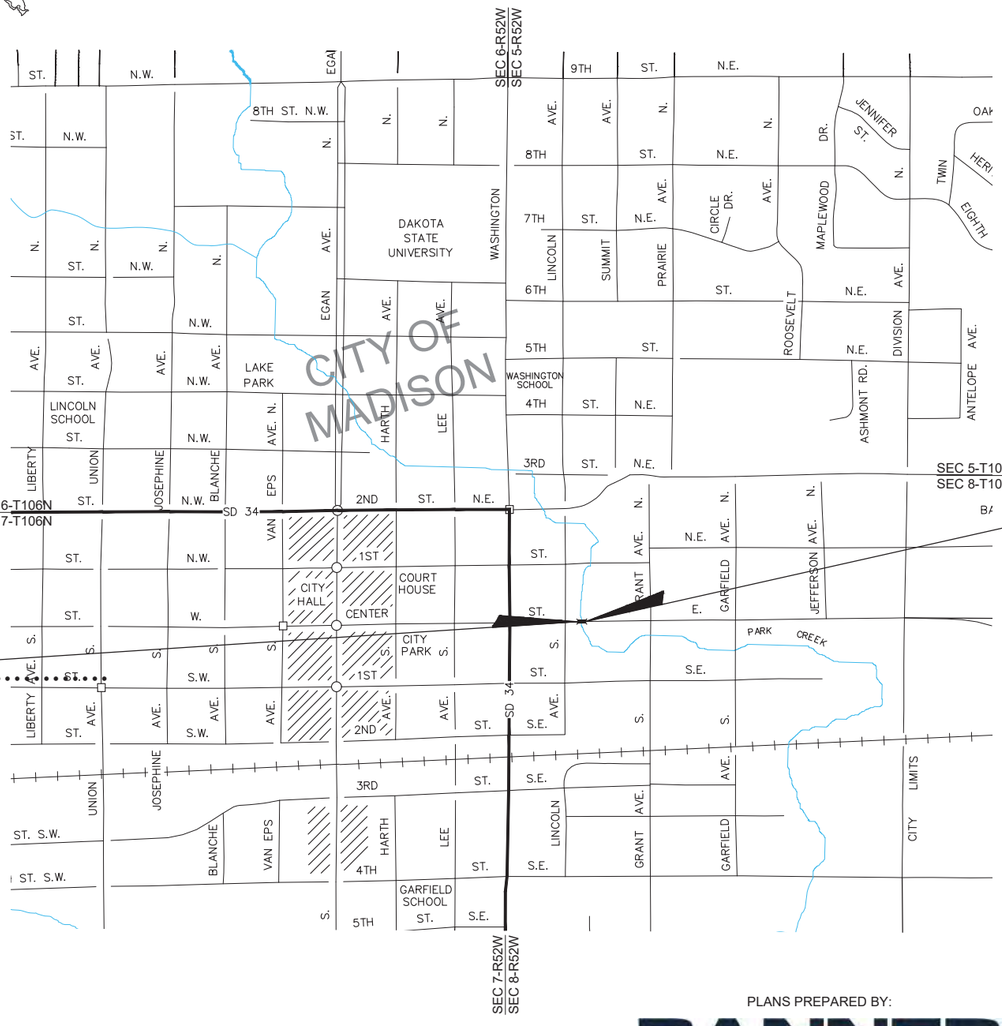


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

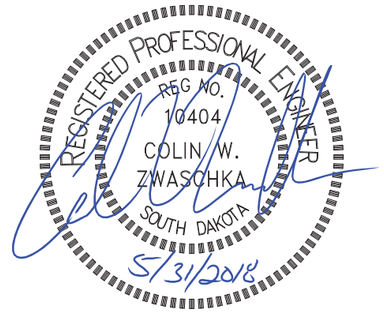
PROJECT BRF 6304(00)
LAKE COUNTY
STRUCTURE AND APPROACH GRADING
STRUCTURE NO. 40-131-132
PCN 02EG

INDEX OF SHEETS



BEGIN PROJECT BRF 6304(00)
STA. 9+00
EAST OF SW CORNER OF
SEC. 8 - T106N - R52W

END PROJECT BRF 6304(00)
STA. 11+00
EAST OF SW CORNER OF
SEC. 8 - T106N - R52W



STORM WATER PERMIT
MAJOR RECEIVING BODY OF WATER: PARK CREEK
AREA DISTURBED: 0.29 ACRES
TOTAL PROJECT AREA: 0.50 ACRES

DESIGN DESIGNATION

STR. NO. 40-131-132	
REINF. CONC. BOX CULVERT	
ADT (2016)	630
ADT (2036)	745
DHV	83
T. DHV	1.5%
T. ADT	3.4%
D	50%

SCALES

LAYOUT	1 INCH = 1.25 MILES
PLAN	1 INCH = 40 FEET
PROFILE	HORIZONTAL 1 INCH = 40 FT. VERTICAL 1 INCH = 10 FT.

PLANS PREPARED BY:
BANNER
engineering a better community
BAI# 22540.01.00

GRADING

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	134	Ft
110E0530	Remove Storm Sewer Pipe	40	Ft
110E1010	Remove Asphalt Concrete Pavement	206.9	SqYd
110E1140	Remove Concrete Sidewalk	36.3	SqYd
110E1700	Remove Silt Fence	164	Ft
110E1960	Remove Valve Box *	1	Each
110E1965	Remove Gate Valve *	1	Each
110E1970	Remove Water Main *	110	Ft
110E7065	Remove Channel Rock Wall	64	Ft
120E0010	Unclassified Excavation	1,707	CuYd
120E0600	Contractor Furnished Borrow Excavation	866	CuYd
230E0010	Placing Topsoil	129	CuYd
260E1010	Base Course	238.8	Ton
320E1200	Asphalt Concrete Composite *	79.1	Ton
450E0143	24” RCP Class 3, Furnish	40	Ft
450E0150	24” RCP, Install	40	Ft
451E0012	12” PVC Encasement Pipe *	36	Ft
451E0656	6” PVC Restrained Joint Water Main *	110	Ft
451E3006	6” Pipe Bend *	4	Each
451E3606	6” Pipe Sleeve *	1	Each
451E4206	6” Gate Valve with Box *	1	Each
451E4620	Concrete for Casing, Blocks, and Cradles *	1	CuYd
451E4905	Trench Stabilization Material *	20.6	Ton
530E0440	Channel Wall	330	SqFt
634E0110	Traffic Control Signs	81.5	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0265	Type 3 Barricade, 6’ Double Sided	1	Each
634E0280	Type 3 Barricade, 8’ Single Sided	6	Each
634E2000	Longitudinal Pedestrian Barricade	20	Ft
634E2015	Temporary Pedestrian Access Route	1	LS
634E2020	Temporary Curb Ramp	1	Each
634E2025	Longitudinal Pedestrian Barrier	320	Ft
650E0060	Type B66 Concrete Curb and Gutter *	200	Ft
651E0040	4” Concrete Sidewalk *	1308	SqFt
734E0010	Erosion Control	Lump Sum	LS
734E0602	Low Flow Silt Fence	316	Ft
734E0610	Mucking Silt Fence	22	CuYd
734E0620	Repair Silt Fence	79	Ft
734E0847	Sediment Control at Type S Reinforced Concrete Drop Inlet	24	Ft
734E5010	Sweeping	32	Hour
831E0200	Woven Separator Fabric	412	SqYd

* Non-participating item

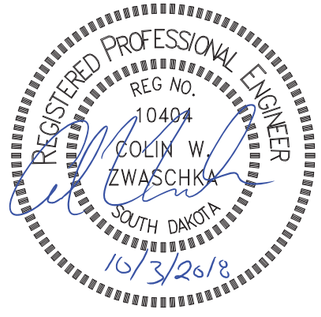
STRUCTURE 40-131-132

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
250E0030	Incidental Work, Structure	Lump Sum	LS
420E0200	Structure Excavation, Box Culvert	85	CuYd
421E0200	Box Culvert Undercut	117	CuYd
460E0120	Class A45 Concrete, Box Culvert	184.2	CuYd
470E0120	Steel Pedestrian Railing on Sidewalk	109	Ft
480E0100	Reinforcing Steel	24,244	Lb
621E0300	Chain Link fence for Bridge Sidewalk	109	Ft
700E0210	Class B Riprap	22.3	Ton
831E0110	Type B Drainage Fabric	38	SqYd

SPECIFICATIONS

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

The City of Madison Specification for Water Main Construction shall be referred to for the construction of the water main. The requirement that the Contractor shall utilize an independent testing agency to inspect and test the trench subgrade and backfill compaction as stated in Section WM-17.3 Compaction of Backfill shall be waived; the City will contract directly with the South Dakota Department of Transportation for this service. The specification can be found here: https://cityofmadisonsd.com/media/files/Engineering/Specs/WATER%20SPECS%20(updated%201-26-2018)%20-1.pdf .



ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified 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 Local Government Assistance (LGA) Office at 773-8180.

Additional guidance on SDDOT’s Environmental Commitments can be accessed through the Environmental Procedures Manual found at: http://www.sddot.com/resources/Manuals/EnvironProcManual.pdf

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the LGA Office at 605-773-8180 to determine whether an environmental analysis and/or resource agency coordination is necessary.

COMMITMENT C: WATER SOURCE

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species waters within South Dakota without prior approval from the SDDOT LGA Office. Thoroughly wash all construction equipment to prevent and control the introduction and spread of invasive species into the project vicinity.

Action Taken/Required:

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

Additional information and mapping of Aquatic Invasive Species in South Dakota can be accessed at: http://sdleastwanted.com/maps/default.aspx.

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

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

Action Taken/Required:

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

COMMITMENT D2: SURFACE WATER DISCHARGE

The DENR General Permit for Temporary Discharge is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as cold water permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as cold water permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to section 3.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in section 2.2 of the permit.

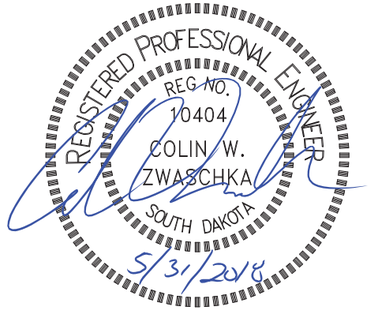
Refer to Commitment D1: Surface Water Quality for stream classification.

Action Taken/Required:

If construction dewatering is required, the Contractor will obtain the General Permit for Temporary Discharge Activities from the DENR Surface Water Program, 605-773-3351.
http://denr.sd.gov/des/sw/swqformsandpermits.aspx

The Contractor will provide a copy of the approved permit to the Project Engineer prior to proceeding with any dewatering activities. The approved permit must be kept on-site and as part of the project records.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DENR monthly. Additional information can be found at http://denr.sd.gov/des/sw/WhatisaDMR.aspx



COMMITMENT E: STORM WATER

Construction activities constitute 1 acre or more of earth disturbance and/or work in a waterway.

Action Taken/Required:

The DENR General Permit for Storm Water Discharges Associated with Construction Activities is required for construction activity disturbing one or more acres of earth and work in a waterway. The SDDOT is the owner of this permit and will submit the NOI to DENR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DENR letter of approval is received.

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

The Contractor will complete the DENR Contractor Certification Form prior to the pre-construction meeting. The form certifies under penalty of law that the Contractor understands and will comply with the terms and conditions of the permit for this project. Work may not begin on this project until this form is signed and submitted to DENR.

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

The Contractor is advised that permit coverage may also be required for off-site activities, such as borrow and staging areas, which are the responsibility of the Contractor.

Storm Water Pollution Prevention Plan

The Storm Water Pollution Prevention Plan (SWPPP) will be developed prior to the submittal of the NOI and will be implemented for all construction activities for compliance with the permit. The SWPPP must be kept on-site and updated as site conditions change. Erosion control measures and best management practices will be implemented in accordance with the SWPPP.

The Storm Water, Erosion, and Sediment Control Inspection Report Form DOT 298, will be used for site inspections and to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents and retained for a minimum of three years.

The inspection will include disturbed areas of the construction site that have not been finally stabilized, areas used for storage materials, structural control measures, and locations where vehicles enter or exit the site. These areas will be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPPP will be observed to ensure that they are operating correctly and sediment is not tracked off of the site.

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

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

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

EPA: https://www.epa.gov/npdes

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor will 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 Public ROW.

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

The waste disposal site(s) will 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 will apply:

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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) will be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The Corps of Engineers 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 a cultural resource review prior to scheduling the pre-construction meeting. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

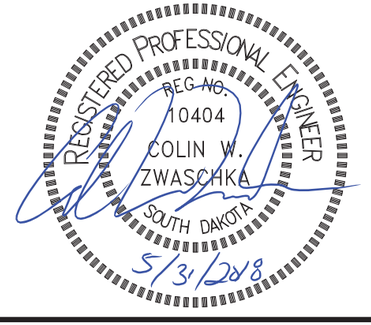
The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources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

The Contractor will provide ARC with the following: a topographical map or aerial view of 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT LGA Environmental Office to determine an appropriate course of action.

SHPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will 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 must be taken to ensure that the waterways of the U.S. are not impacted.

Action Taken/Required:

Excavation will not occur below the ordinary high water elevation in waterways outside of caissons, cribs, cofferdams, steel piling, or sheeting. The natural streambed will 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. Any structure work over or within the waterway shall be constructed according to Section 7.21 C of the Specifications.

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

The construction of temporary work platforms, crossings, or berms below the ordinary high water elevation will be allowed if 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 will be removed with minimal disturbance to the streambed. Proper construction practices will be used to minimize increases in suspended solids and turbidity in the waterway.

Bridge berms, wing dams, traffic diversions, channel reconstruction, stream diversions, grading, etc. will 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 Contractor's construction operations will be constructed with an adequate drainage structure size and minimum fill height to reduce the potential for upstream flooding. The Contractor will be responsible for sizing the temporary drainage structure for these crossings.

Table of U.S. Waterways to Protect

Station	Waterway	Ordinary High Water Elevation
9+98.93	Park Creek	1663.30

Stream channel excavation within "Waters of the US" is subject to USACE regulatory jurisdiction. Stream channel excavation cannot exceed the permitted quantities and/or surface area. The 404 Permit is included in the Special Provisions.

The Contractor will take all precautions necessary to prevent any incidental discharges associated with the excavation and hauling of material from the stream channel. This pertains to any excavation operations such as, foundation, pier, or abutment excavation, channel cleanout, excavation for riprap protection, and removal of any temporary fill associated with construction activities.

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

Action Taken/Required:

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

CITY RESPONSIBILITIES

The City will provide, install, and/or coordinate as necessary the following items without federal participation:

1. Obtain right-of-way and temporary and permanent easements.
2. Coordinate the removal and reinstallation of light pole located at Sta. 9+71.50 – 21'LT.
3. Furnish and install new permanent signing.
4. Remove silt fence when vegetation has been established in permanently seeded areas.

Prior to construction of the project, existing traffic signs within project limits will be removed, relocated, covered, and/or salvaged as necessary, by the City of Madison Maintenance Forces. The Contractor shall notify the City a minimum of 48 hours prior to commencing construction.

Contact information for City of Madison:
City Engineer – Chad Comes (605) 256-7514

SEQUENCE OF OPERATIONS

1. Install temporary traffic control signing.
2. Install sediment control at structure and inlets.
3. Remove existing bridge structures.
4. Remove and store topsoil.
5. Install utilities and storm sewer.
6. Grade roadway.
7. Construct new structure.
8. Install surfacing.
9. Adjust sediment control at structure and inlets.
10. Place topsoil.
11. Reseed areas disturbed by construction activities.
12. Complete remaining project items.
13. Remove temporary traffic control signing.

Any changes to the Sequence of Operations require approval from 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.

SD One Call shall be notified at 1-800-781-7474 a minimum of 48 hours prior to commencing construction. The Contractor shall likewise contact the City of Madison prior to commencing construction. Utilities from the following utility owners are known to exist at this site:

East River Electric Power Cooperative
211 South Harth Avenue
Madison, SD 57042
Phone: (605) 256-8058

City of Madison - Electric
116 W Center Street
Madison, SD 57042
Phone: (605) 256-7521

City of Madison - Water & Wastewater
401 S Highland Avenue
Madison, SD 57042
Phone: (605) 256-7515

Northwestern Energy
1232 22nd Avenue
Brookings, SD 57006
Phone: (605) 695-3349

Vast Broadband
106 Egan Avenue North
Madison, SD 57042
Phone: (605) 427-7455

MidContinent Communications
3507 South Duluth Avenue
Sioux Falls, SD 57105
(605) 274-8545

CenturyLink
125 S Dakota Avenue
Sioux Falls, SD 57104
Phone: (866) 963-6665

TRAFFIC CONTROL

The Contractor shall follow the plans provided, unless an alternate plan is submitted by the Contractor and approved by the Engineer prior to any work. The submitted plan shall comply with MUTCD requirements.

SHEETING FOR TRAFFIC CONTROL SIGNS

All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R1-2), DO NOT ENTER (R5-1), and WRONG WAY (R5-1a) signs shall conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors shall conform to the requirements of ASTM D4956 Type IV.

GENERAL MAINTENANCE OF TRAFFIC

All costs, labor and materials to furnish, install and remove the traffic control for the traffic control items discussed below shall be included in the contract lump sum price for “Traffic Control, Miscellaneous.”

- Traffic shall be maintained in accordance with Section 4.5 of the Specifications. Traffic control shall be installed in accordance with the Manual of Uniform Traffic Control Devices (MUTCD) and standard plates located herein.
- The Contractor shall coordinate with the City of Madison to have all permanent signs placed prior to opening the roadway to traffic.

Work activities during non-daylight hours are subject to prior approval from the Engineer.

The traffic control signs designated on the standard plates shall be maintained by the Contractor in a satisfactory manner. No sign shall be improperly displayed or left in place inappropriately.

The bottom of signs on portable or temporary supports shall not be less than seven (7) feet above the pavement in urban areas and one foot above the pavement in rural areas. Portable sign supports may be used as long as the duration is less than three (3) days. If the duration is more than three (3) days, the signs shall be on fixed location, breakaway supports.

TEMPORARY PEDESTRIAN ACCESS ROUTE

A Temporary Pedestrian Access Route (TPAR) shall be provided when crosswalks, sidewalks, or other pedestrian facilities are blocked, closed, or relocated. A TPAR may consist of a combination of existing and/or temporary pedestrian facilities. The TPAR shall be kept free of any obstructions and hazards, such as holes, debris, mud, snow, construction equipment, traffic control signing, stored materials, etc.

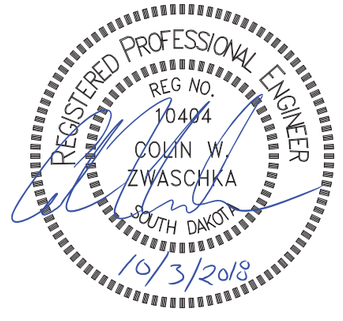
The Contractor shall notify the Engineer at least 72 hours prior to start of any construction operation that will necessitate a change in pedestrian access. Pedestrian traffic signal displays controlling a crosswalk that is closed shall be covered or removed.

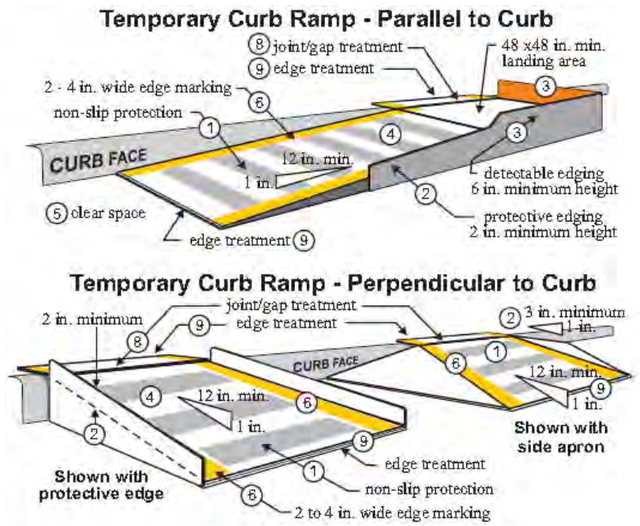
TEMPORARY CURB RAMP

Temporary Curb Ramps should be firm, stable, and have a non-slip surface. They shall not warp or buckle and should be made of materials strong enough to support a weight of 800 pounds. Temporary Curb Ramps shall also be color contrasting and contain marked edges so they are noticeable by pedestrians who have visual impairments. Lateral joints or gaps between surfaces shall be a maximum of 0.5 inches in width. Temporary Curb Ramps shall include detectable warning panels.

Temporary Curb Ramps shall be the full width of the temporary pedestrian access route, with a recommended width of 60” and a minimum width of 48”. Temporary Curb Ramps shall have a maximum slope of 1:12 and have free draining surfaces with a maximum cross slope of 2 percent. Handrails on Temporary Curb Ramps are not required unless the curb ramp has a rise exceeding 6” and a length exceeding 72”.

All costs shall be incidental to the contract unit price per each for “Temporary Curb Ramp”.





1. Curb ramps shall be 48 inch minimum width with a firm, stable, and non-slip surface.
2. Protective edging with a 2 inch minimum height shall be installed when the curb ramp or landing platform has a vertical drop of 6 inches or greater or has a side apron slope steeper than 1:33 (33%). Protective edging should be considered when curb ramps or landing platforms have a vertical drop of 3 inches or more.
3. Detectable edging with 6 inches minimum height and contrasting color shall be installed on all curb ramp landings where the walkway changes direction (turns).
4. Curb ramps and landings should have a 1:50 (2%) maximum cross slope.
5. A minimum clear space of 48 inch x 48 inch minimum shall be provided above and below the curb ramp, with a 60 inch x 60 inch clear space preferred.
6. 6. The curb ramp walkway edge shall be marked with a contrasting color 2 to 4 inch wide marking. The marking is optional where color contrasting edging is used.
7. Water flow in the gutter system shall have minimal restriction.
8. Lateral joints or gaps between surfaces shall be less than 0.5 inches in width.
9. Changes between surface heights should not exceed 0.5 inches. Lateral edges should be vertical up to 0.25 inches in height, and beveled at 1:2 between 0.25 inches and 0.5 inches in height.

LONGITUDINAL PEDESTRIAN BARRICADE

Longitudinal Pedestrian Barricades should not be used to provide positive protection for pedestrians.

Barricade rail supports may not project into pedestrian routes more than 4 inches from the face of the barricade. To prevent any tripping hazard to pedestrians, ballast shall be located behind or internal to the device.

When Longitudinal Pedestrian Barricades are combined in a series, the maximum gap between devices that do not interlock shall be one inch. Joints between devices that do interlock shall be closed and flush to prevent canes or small wheels from being trapped and to facilitate safe hand trailing. When used as a sidewalk closure mechanism, Longitudinal Pedestrian Barricade must run the entire width of the sidewalk. Longitudinal Pedestrian Barricade should provide a color contrasting pattern. Black should not be used to color any base on a device. The devices should comply with the general color and stripe pattern requirements of Section 6F.68 of the MUTCD.

Longitudinal Pedestrian Barricade shall have continuous bottom and top surfaces. A gap height or opening from the walkway surface up to a maximum of 2 inches is allowed for drainage purposes. The top edge of the bottom portion shall be a minimum of 8 inches above the walkway. The top of the top portion shall be between 34 and 38 inches above the walkway. The top surface shall be smooth to allow safe hand trailing. Both upper and lower surfaces shall share a common vertical plane.

All costs shall be incidental to the contract unit price per foot for “Longitudinal Pedestrian Barricade”.

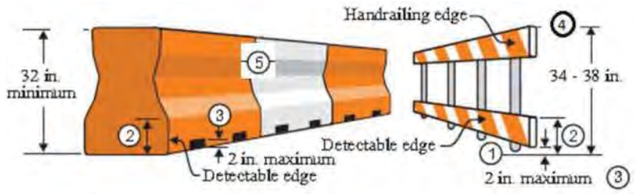
LONGITUDINAL PEDESTRIAN BARRIER

When exposed to vehicular traffic, Longitudinal Pedestrian Barrier shall be crashworthy, and the bottom and top surfaces of the traffic side of devices shall have retroreflective sheeting or delineation for improved nighttime visibility.

When Longitudinal Pedestrian Barriers are combined in a series, the maximum gap between devices that do not interlock shall be one inch. Joints between devices that do interlock should be closed and flush to prevent canes or small wheels from being trapped and to facilitate safe hand trailing. Channelizing devices should provide a color contrasting pattern. Black should not be used to color any base on a device. The devices should comply with the general color and stripe pattern requirements of Chapter 6F of the MUTCD.

Longitudinal Pedestrian Barriers shall have continuous bottom and top surfaces. The lower edge of the bottom portion shall be a maximum of 2 inches above the walkway. The top edge of the bottom portion shall be a minimum of 8 inches above the walkway. The top of the top portion shall be a minimum of 32 inches above the walkway. The top surface shall be smooth to allow safe hand trailing.

All costs shall be incidental to the contract unit price per foot for “Longitudinal Pedestrian Barrier”.



Longitudinal Pedestrian Barrier Longitudinal Pedestrian Barricade

1. Barricade rail supports may not extend into the pedestrian walkway more than 4 inches from the face of the barricade.

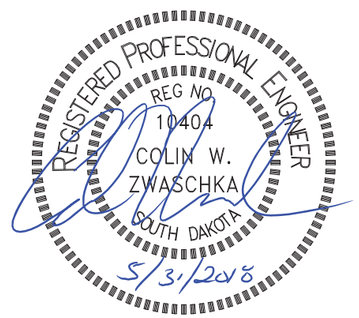
2. The top edge of the bottom portion shall be a minimum of 8 inches above the walkway.

3. Devices shall not block water drainage from the walkway. A gap height or opening from the walkway surface up to a maximum of 2 inches in height is allowed for drainage purposes.

4. The top edge of the Longitudinal Pedestrian Barricade is to be used as a guiderail to provide visual and tactile guidance to pedestrians along a designated route. The top surface should have a minimum width of 0.5 inches to allow the hand to feel the surface. The surface should be smooth and free of any sharp or abrasive elements to allow safe hand trailing.

5. Longitudinal Pedestrian Barrier used to provide positive protection from traffic to pedestrians should be crashworthy.

6. When either device is combined in a series, the maximum gap between devices that do not interlock shall be 1 inch. Joints between devices that do interlock should be closed and flush to prevent canes or small wheels from being trapped and to facilitate safe hand trailing.



CLEARING

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

SURFACING THICKNESS DIMENSIONS

Material will be placed evenly, at the rates shown in the plans, even though the thickness may vary from that shown on the typical section.

At those locations where material must be placed to achieve required elevations, quantities may be varied to achieve the required elevations, as approved by the Engineer.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 8.6 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation."

The estimated cubic yards of excavation and/or embankment required for constructing the bridge berm(s) and shape channel(s) is included in the earthwork balance notes on the profile sheets.

The plan quantity of Unclassified Excavation will be the basis for payment for this item.

TABLE OF EXCAVATION QUANTITIES

Roadway Excavation	=	46	CuYd
Topsoil Stripping	=	129	CuYd
Box Culvert/Wall Excavation	=	1532	CuYd
TOTAL	=	1707	CuYd

SHRINKAGE FACTOR

Embankment plus 30 percent.

CONTRACTOR FURNISHED BORROW EXCAVATION

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

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

PLACING TOPSOIL

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

The thickness will be approximately 6 inches.

The estimated amount of salvaged topsoil required to cover the disturbed areas to the specified depth is 129 cubic yards.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
9+41		9+85	L	74.3
9+41		9+85	R	75.4
10+15		10+55	L	37.5
10+15		10+27	R	19.7
			Total:	206.9

TABLE OF CONCRETE CURB AND GUTTER REMOVAL

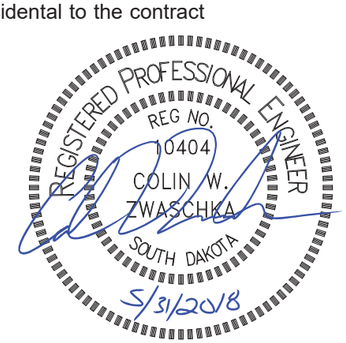
Station	to	Station	L/R	Quantity (Ft)
9+41		9+84	L	43
9+41		9+81	R	40
10+15		10+55	L	40
10+15		10+27	R	11
			Total:	134

TABLE OF SIDEWALK REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
9+41		9+85	L	22.6
10+09		10+33	L	12.3
10+35		10+38	R	1.4
			Total:	36.3

WATER FOR GRANULAR MATERIAL

Water for Granular Material is estimated at the rate of 10 gallons of water per cubic yard of Base Course. The estimated quantity of Water for Granular Material is 1.1 MGal. No separate payment will be made for the Water for Granular Material and all costs associated shall be incidental to the contract unit price per ton for "Base Course."



STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections shall be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even.

Lift holes in the reinforced concrete pipe shall be plugged with grout.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, and junction boxes where storm sewers run parallel to and within 10 feet horizontally from existing or proposed water mains.

Watertight joints are required where reinforced concrete pipes, drop inlets, manholes, or junction boxes cross water mains and are separated a distance of 18 inches or less, above or below, the water main.

If watertight joints are required then the watertight joints shall extend for a distance of 10 feet beyond the water main. This measurement shall be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals shall conform to the following requirements:

1. Reinforced Concrete Pipe (Circular): Gasketed pipe shall conform to the requirements of ASTM C443 and the gasket shall be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe shall be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2' wide by 6" thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

2. Reinforced Concrete Pipe (Arch): Gasketed pipe shall conform to the requirements of ASTM C443 and the gasket shall be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints shall be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric shall conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop shall be from the list below.

3. Drop Inlets, Manholes, and Junction Boxes: Joints shall be sealed with one of the following methods:

   A. A flexible strip seal placed in the joints conforming to the requirements of ASTM C990 and the perimeter encased with a minimum 2' wide by 6" thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.

   B. A hydrophilic flexible water stop seal placed in the joints and a 1-foot wide strip of fabric wrapped around the perimeter of the pipe. The fabric shall conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop shall be from the list below.

   C. A self-adhesive external joint seal wrap. The seal wrap shall be from the list below.

STORM SEWER (continued)

Approved List of Self-adhesive Joint Wrap

Product	Manufacturer
Mar Mac Seal Wrap	Mar Mac Construction Products McBee, SC 843-335-5909 www.marmac.com
ConWrap CS-217	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 conseal.com

Approved List of Hydrophilic Flexible Water Stop Seal:

Product	Manufacturer
Waterstop RX	Cetco Hoffman Estates, IL 800-527-9948 www.cetco.com
Conseal CS-231	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) shall be installed in accordance with the manufacturer's recommendations.

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, and for plugging the lift holes shall be incidental to the contract unit price per foot for the corresponding pipe bid item.

Storm sewer bedding material shall be incidental to the contract unit price per foot for "24" RCP, Install."

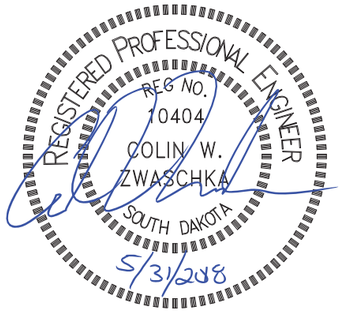


TABLE OF TYPE B66 CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
9+41		10+55	L	114
9+41		10+27	R	86
			Total:	200

TABLE OF 4" CONCRETE SIDEWALK

Station	to	Station	L/R	Quantity (SqFt)
9+00		10+38	R	747.2
9+41		10+27	L	560.3
			Total:	1307.5

The Contractor shall install 4" concrete surfacing between the concrete sidewalk and the parapet of the box culvert. This concrete surfacing is designated as "Non-ADA Sidewalk" on the plan sheet and the quantity is included in the estimated quantity for "4" Concrete Sidewalk."

EROSION CONTROL

The estimated area requiring erosion control is 7,000 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, mulching, and watering shall be incidental to the contract lump sum price for "Erosion Control".

The limits of erosion control work will be determined by the Engineer during construction.

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 20,000 live propagules of mycorrhizal fungi per 1,000 square feet. All costs of inoculating the seed shall be incidental to the contract lump sum price for "Erosion Control."

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 www.mycorrhizae.com
AM 120 Multi Species Blend	Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

Fertilizing

Application of fertilizer will not be required on this project.

Permanent Seeding

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and temporary easements under cultivation.

Type D Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 SqFt)
Kentucky Bluegrass	Avalanche, Appalachian, Wildhorse, Blue Bonnet	1.4
Perennial Ryegrass	Turf Type Varieties	1.4
Creeping Red Fescue	Epic, Boreal	1.4
Chewings Fescue	Ambrose, K2, VNS, Zodiac	1.4
Alkali Grass	Fults, Fults II, Quill, Salty	1.4
	Total:	7

* Seed rate shall be doubled for hydroseeding.

Hydraulic Straw Mulch

Hydraulic straw mulch shall be applied after hydroseeding and before water for vegetation. Areas designated for hydraulic straw mulch application do not require a grass hay or straw mulch application. The application rate is 3,000 pounds per acre.

The hydraulic straw mulch shall be from the list below or an approved equal:

Product	Manufacturer
HydroStraw, HydroStraw Guar Plus Formulation, or HydroStraw BFM	HydroStraw, LLC Manteno, IL Phone: 1-800-545-1755 hydrostraw.com
HydroGold	Verdyol Riverton, Manitoba Canada Phone: 1-866-280-7327 www.bioticearth.com

EROSION CONTROL (Cont.)

Water for Vegetation

Water for vegetation consists of applying water to seeded areas to enhance germination and/or root growth. When watering, use the following guidelines:

Immediately after seeding:

- Keep the topsoil moist but not excessively wet until the seed has germinated.
- Water a minimum of 3 days a week for 2 weeks preferably watering 2 or 3 times a day in small quantities.
- Use fine spray and low pressure to avoid topsoil wash and to prevent uncovering buried seeds.

After emergence:

- Topsoil shall be kept thoroughly moistened by sprinkling, as necessary, for 6 weeks. After the 6-week period, an inspection shall be made to determine if grass is established enough to suspend watering. Continue watering until grass has been thoroughly established.
- Never apply water at a rate faster than the topsoil can absorb.
- Water during early morning hours or early evening hours.
- Do not water when rain is forecasted for the area.
- If rainfall occurs, suspend watering according to rainfall amount.

STREET SWEEPING

Vehicle tracking of sediment from the construction site shall be minimized. Street sweeping shall be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto the street.

The Contractor shall use a pickup broom having integral self-contained storage to clean the roadway. The pickup broom used shall be a minimum of 6 feet wide and have working gutter brooms.

At a minimum, sweeping will be required prior to opening any segment or roadway to traffic.

All costs for cleaning the roadway with a pickup broom shall be incidental to the contract unit price per hour for “Sweeping”.

LOW FLOW SILT FENCE

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

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

Low flow silt fence shall be placed as shown on the plan sheets and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

SEDIMENT CONTROL AT TYPE S REINFORCED CONCRETE DROP INLETS

The sediment control device provided shall be from the list shown below. Refer to Standard Plate 734.11 for details.

Product	Manufacturer
Dandy Curb	Dandy Products Inc. Dublin, OH Phone: 1-800-591-2284 www.dandyproducts.com
Gutterbuddy	ACF Environmental Richmond, VA Phone: 1-800-448-3636 www.acfenvironmental.com
Curb Inlet Guard	ECTEC Environmental Systems LLC Alameda, CA Phone: 1-866-521-0724 www.ertecsystems.com
EZ-ClipGuard	Flo-Water, LLC West Des Moines, IA Phone: 1-515-577-6763 www.flo-water.net
12” Compost Filter Sock	Dioten Engineering, Inc. Rapid City, SD Phone: 1-605-430-7213
12” Silt Sock	Aspen Ridge Lawn and Landscaping,LLC Rapid City, SD Phone: 1-605-415-0695 www.siltsocksd.com
GeoCurve	GeoSolutions, Inc. Austin, TX Phone: 1-512-445-0796 www.geosolutionsinc.com

RESTRAINED JOINT WATER MAIN CONSTRUCTION

The Contractor shall refer to the Special Provisions to reference the City of Madison Specifications for Water Main Construction.

All watermains shall have a minimum of 6.0 feet of cover based on the final pavement grade above the watermain unless shown otherwise on the plans. The final grade above the watermain shall be based on the profile sheets shown in the plans.

The Contractor shall be responsible for completing all connections on the new water main to the existing water main. Cost of the work, including furnishing and installing retainer glands, shall be incidental to the contract unit price per each fitting used for the connection.

The Contractor shall be careful not to damage water valve boxes. Any damage to valve boxes, including misalignment of boxes, due to carelessness of the contractor shall be repaired by the contractor at no cost to the owner.

All new and existing valve boxes designated to remain shall be adjusted to match grade of new surfacing. Adjustment of valve boxes shall be considered incidental to project costs.

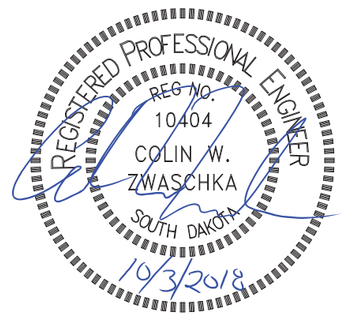
All salvaged watermain appurtenances shall remain the property of the City of Madison.

Watermain bedding material shall be used at locations where the proposed watermain is placed beneath street pavement and as directed by the Engineer. Cost for water main bedding shall incidental to the contract unit price per foot for “6” PVC Restrained Joint Water Main.”

Included in the estimate of quantities is 20.6 ton of Trench Stabilization Material. This material shall be used when it is necessary to stabilize the bottom of the trench and as directed by the Engineer.

Payment for casing pipe spacers and end seals shall be incidental to the contract unit price per foot for “12” PVC Encasement Pipe”. No separate measurement will be made for these appurtenances.

The Contractor shall discharge and dispose of water in an approved manner. If groundwater is encountered and dewatering is necessary, all costs associated with the labor, equipment, and materials for dewatering the project shall be incidental to the contract unit price per foot for pipe installation. All pipe shall be laid in a dry location.



RESTRAINED JOINT WATER MAIN SHOP DRAWINGS

The Contractor shall submit the following shop drawings for the following items that pertain to water main construction:

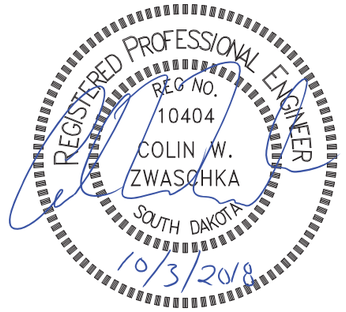
- Encasement Pipe and Appurtenances
- Restrained Joint Water Main Pipe
- Fittings
- Valve
- Valve Box
- Bedding Material Gradation
- Trench Stabilization Material Gradation
- Tracer Wire

UTILITY TRENCH COMPACTION TESTING

The City of Madison will contract with the South Dakota Department of Transportation to inspect and test utility trench backfill as stated in the City of Madison Specification for Water Main Construction. Test results shall be provided to the City of Madison Engineering Department promptly.

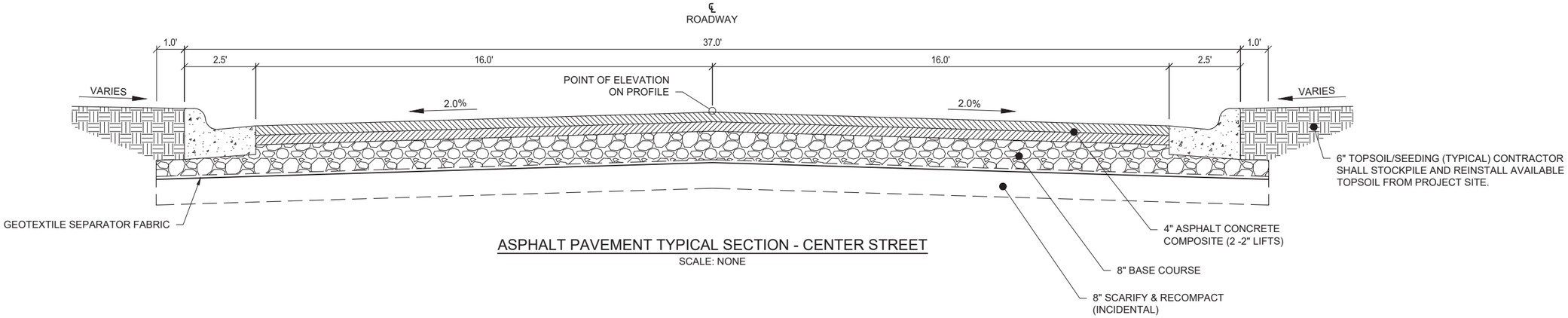
CONTROL DATA

Point	Station	Offset	Northing	Easting	Elevation
BM #1	9+02.55	40.78' R	625851.46	2817029.67	1665.77
BM #2	11+04.24	31.69' L	625768.10	2816832.21	1662.63
Note: All BMs are 5/8” Rebar w/ Plastic CP Caps					



STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	11	42

TYPICAL STREET SECTION



ASPHALT PAVEMENT TYPICAL SECTION - CENTER STREET

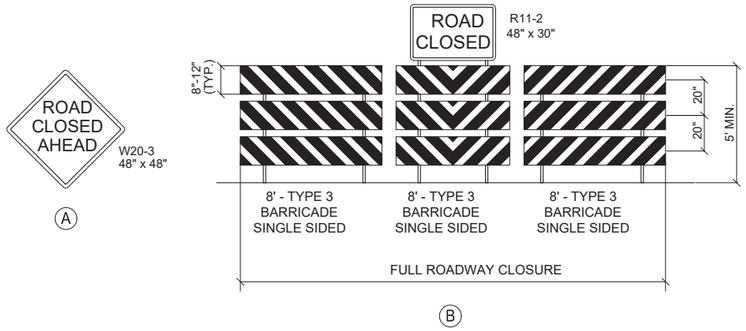
SCALE: NONE

REGISTERED PROFESSIONAL ENGINEER
REG NO. 9608
RICHARD S. UCKERT
SOUTH DAKOTA
5/31/18

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	12	42

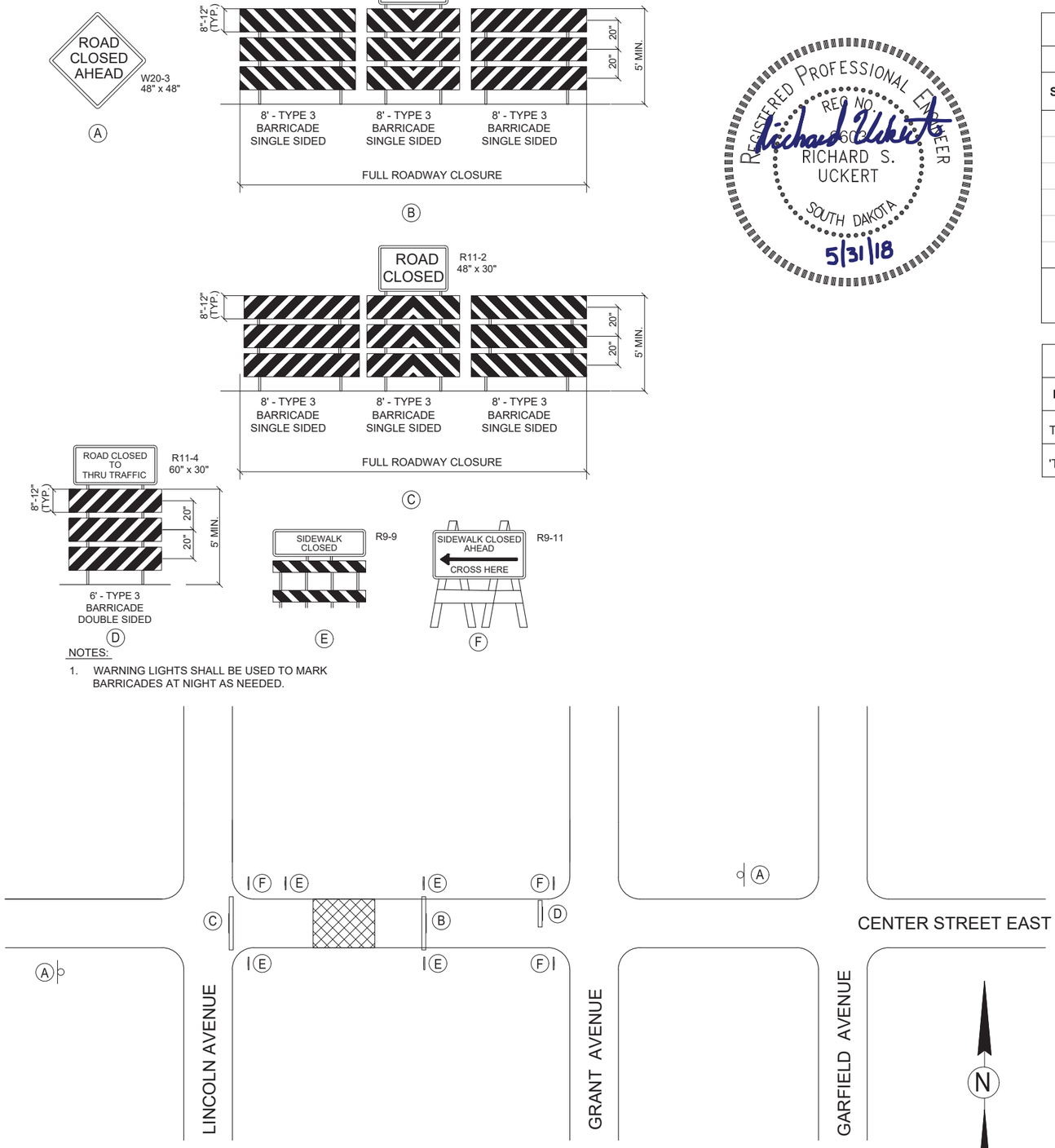
TRAFFIC CONTROL PLAN

FIXED LOCATION SIGNAGE



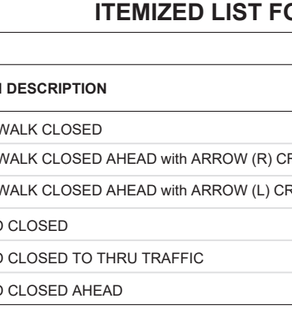
NOTES:

1. WARNING LIGHTS SHALL BE USED TO MARK BARRICADES AT NIGHT AS NEEDED.



ROAD CLOSURE DETAIL

SCALE: NONE



ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

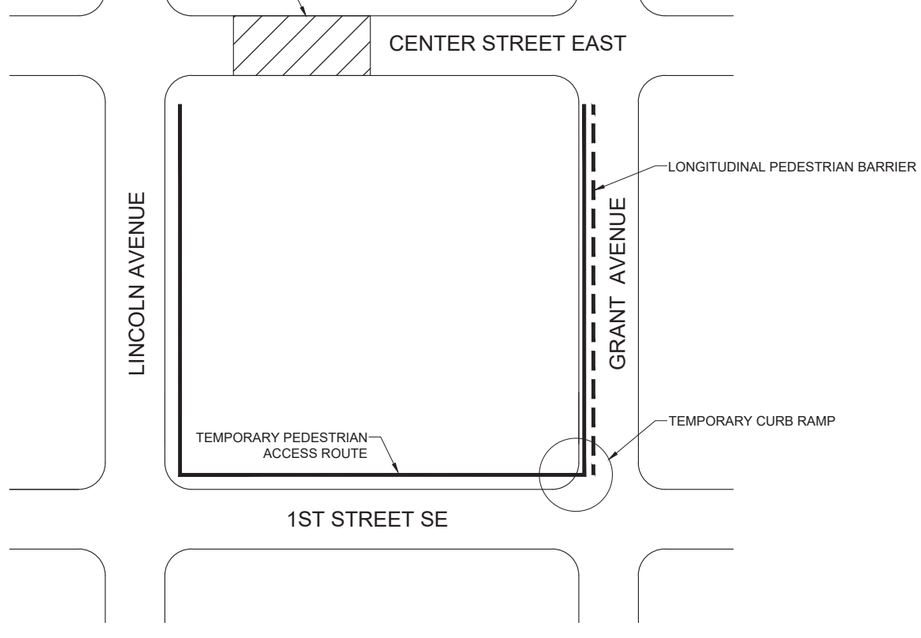
		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R9-9	SIDEWALK CLOSED	4	24" x 12"	2.0	8.0
R9-11	SIDEWALK CLOSED AHEAD with ARROW (R) CROSS HERE	1	24" x 18"	3.0	3.0
R9-11	SIDEWALK CLOSED AHEAD with ARROW (L) CROSS HERE	2	24" x 18"	3.0	6.0
R11-2	ROAD CLOSED	2	48" x 30"	10.0	20.0
R11-4	ROAD CLOSED TO THRU TRAFFIC	1	60" x 30"	12.5	12.5
W20-3	ROAD CLOSED AHEAD	2	48" x 48"	16.0	32.0
				CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS (SQFT)	**81.5**

TYPE 3 BARRICADES

ITEM DESCRIPTION	QUANTITY
TYPE 3 BARRICADE, 6' DOUBLE SIDED	1 EACH
'TYPE 3 BARRICADE, 8' SINGLE SIDED	6 EACH

NOTE:

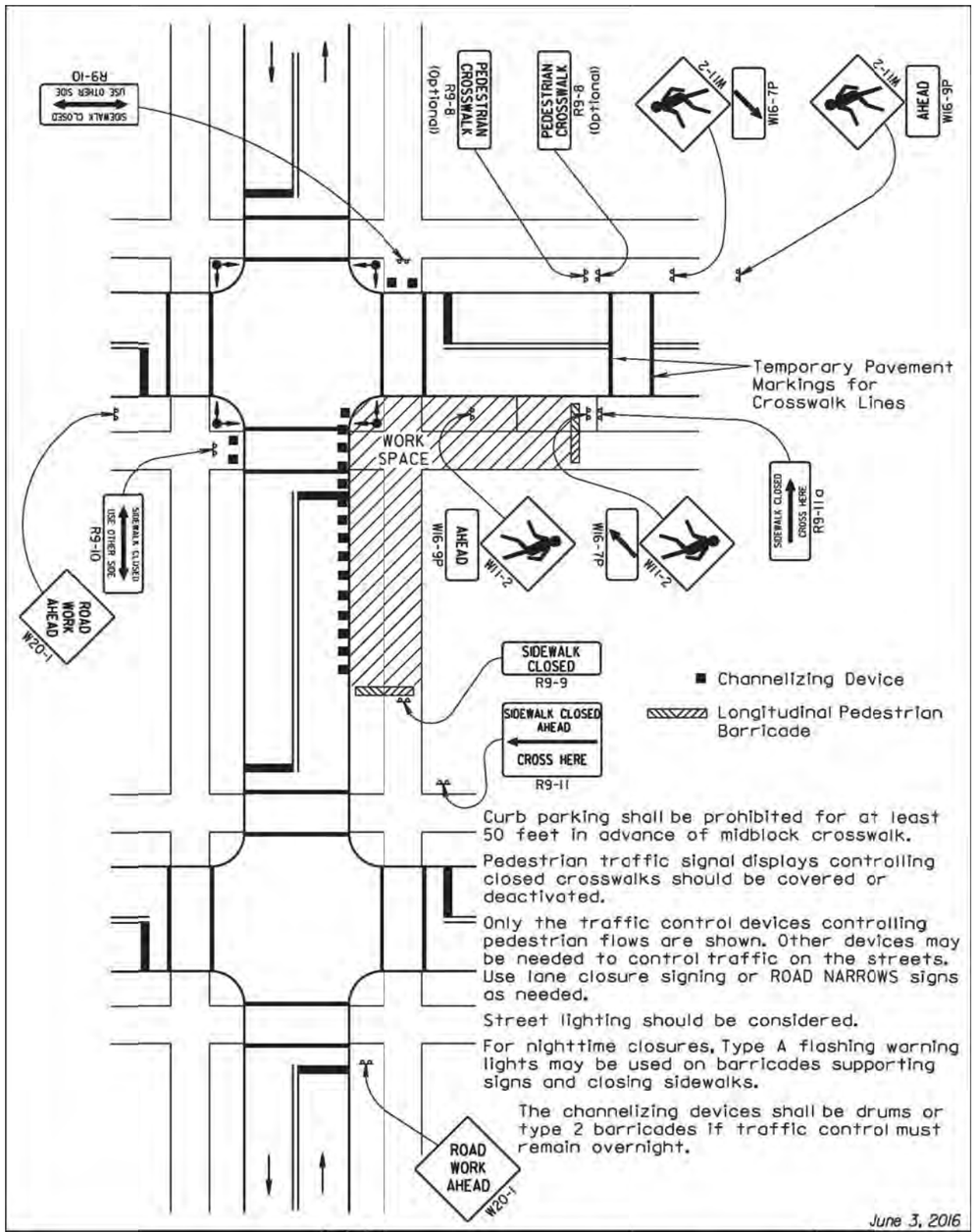
THE ABOVE SIGNS SHALL CONFORM WITH THE LATEST EDITIONS OF THE MUTCD AND THE STANDARD HIGHWAY SIGNS MANUAL.



TEMPORARY PEDESTRIAN ACCESS ROUTE

SCALE: NONE

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	13	42



Curb parking shall be prohibited for at least 50 feet in advance of midblock crosswalk.

Pedestrian traffic signal displays controlling closed crosswalks should be covered or deactivated.

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs as needed.

Street lighting should be considered.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks.

The channelizing devices shall be drums or type 2 barricades if traffic control must remain overnight.

June 3, 2016

Published Date: 2nd Qtr. 2018	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES SIDEWALK CLOSURES AND PEDESTRIAN DETOURS	PLATE NUMBER 634.33 Sheet 1 of 1

Only the traffic control devices controlling pedestrian flows are shown. Other devices may be needed to control traffic on the streets. Use lane closure signing or ROAD NARROWS signs, as needed.

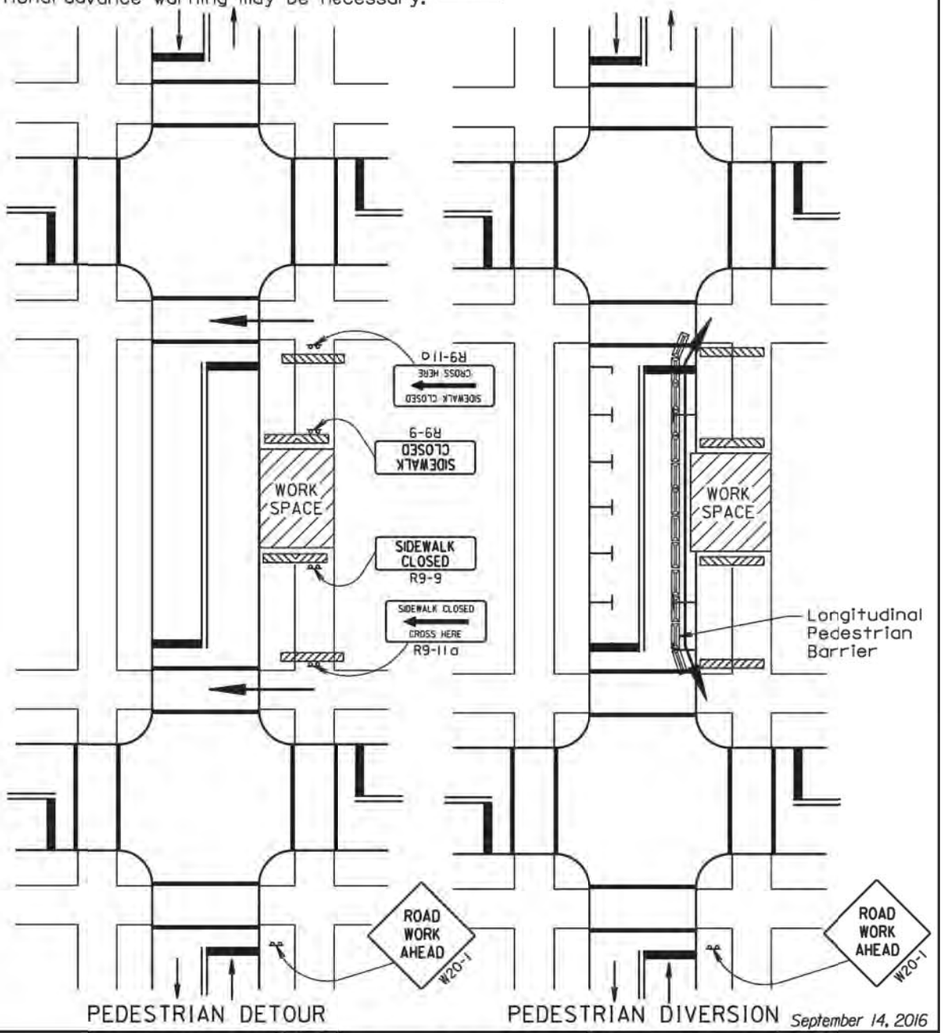
Signs may be placed along a temporary diversion to guide or direct pedestrians. Examples include KEEP RIGHT and KEEP LEFT signs.

Additional advance warning may be necessary.

For nighttime closures, Type A flashing warning lights may be used on barricades supporting signs and closing sidewalks. Type C steady-burn lights may be used on channelizing devices separating the temporary pedestrian diversion from vehicular traffic.

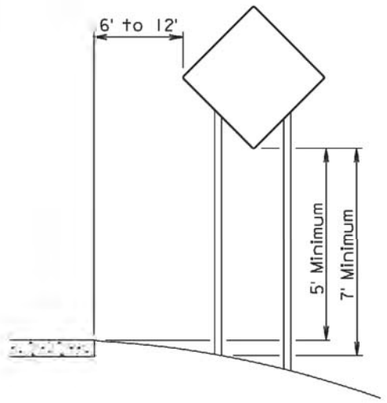
Street lighting should be considered.

Longitudinal Pedestrian Barricade and

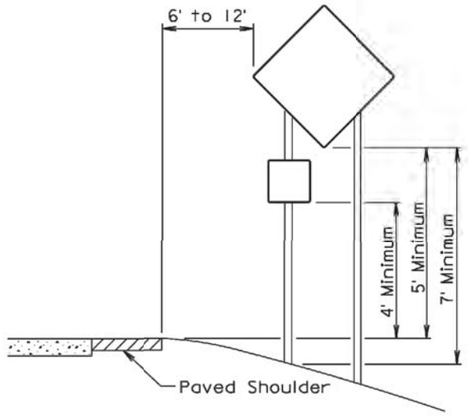


September 14, 2016

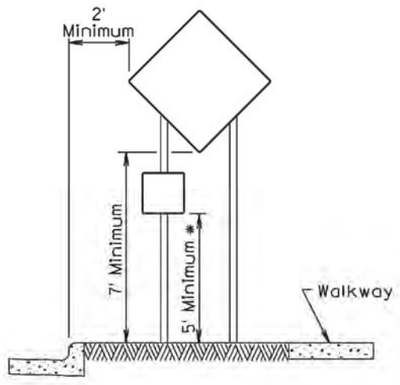
Published Date: 2nd Qtr. 2018	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES PEDESTRIAN DETOUR AND PEDESTRIAN DIVERSION	PLATE NUMBER 634.34 Sheet 1 of 1



RURAL DISTRICT

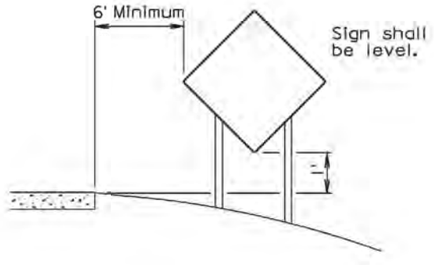


RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT

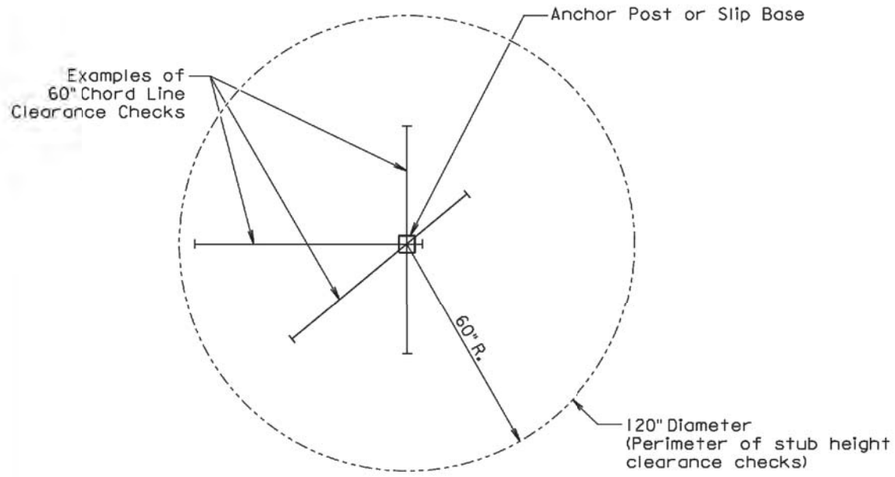
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



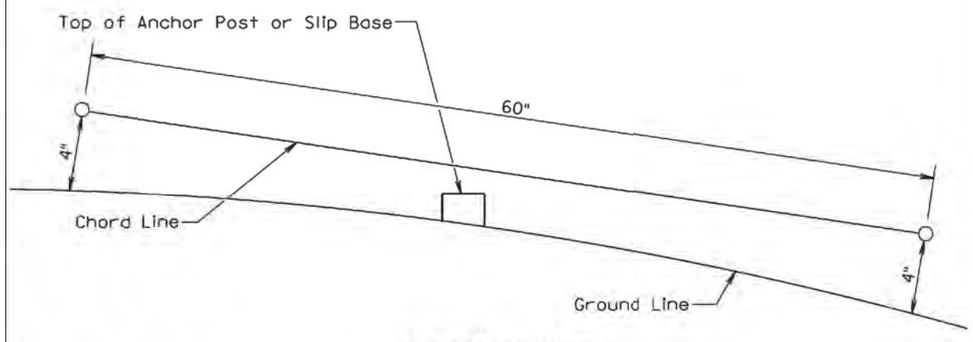
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22,2014

Published Date: 2nd Qtr. 2018	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 2nd Qtr. 2018	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	15	42

STA. 9+40 - 40' LT. TO 70' LT. TO
STA. 10+55 - 40' LT. TO 70' LT.
TEMPORARY EASEMENT FOR CONSTRUCTION
OF TRIPLE 9' x 6' REINFORCED CONCRETE
BOX CULVERT CONTAINING 0.05 ACRES,
MORE OR LESS.

STA. 9+65 - 40' LT. TO 55' LT. TO
STA. 10+25 - 40' LT. TO 55' LT.
PERMANENT EASEMENT FOR CONSTRUCTION
OF TRIPLE 9' x 6' REINFORCED CONCRETE
BOX CULVERT CONTAINING 0.02 ACRES,
MORE OR LESS.

STA. 9+75 - 40' RT. TO 53' RT. TO
STA. 10+20 - 40' RT. TO 53' RT.
PERMANENT EASEMENT FOR CONSTRUCTION
OF TRIPLE 9' x 6' REINFORCED CONCRETE
BOX CULVERT CONTAINING 0.01 ACRES,
MORE OR LESS.

STA. 9+60 - 40' RT. TO 65' RT. TO
STA. 10+20 - 65' RT. TO 53' RT. TO
STA. 10+30 53' RT TO 40' RT.
TEMPORARY EASEMENT FOR CONSTRUCTION
OF TRIPLE 9' x 6' REINFORCED CONCRETE
BOX CULVERT CONTAINING 0.02 ACRES,
MORE OR LESS.

STA. 9+85 TO STA. 10+07 - LT.
INSTALL CLASS B RIPRAP & TYPE
B DRAINAGE FABRIC
(SEE STRUCTURE PLANS).

STA. 9+89 TO STA. 10+14 - LT.
INSTALL CLASS B RIPRAP & TYPE
B DRAINAGE FABRIC
(SEE STRUCTURE PLANS).

CITY OF MADISON
116 W. CENTER ST.
MADISON, SD 57042
(605) 256-7515

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CITY OF MADISON
116 W. CENTER ST.
MADISON, SD 57042
(605) 256-7515

JAY & LOIS NIEDERT
509 E. CENTER ST.
MAILING ADDRESS:
622 N. EGAN AVE.
MADISON, SD 57042
(605) 256-6866

STA. 9+84 TO STA. 10+15
REMOVE IN-PLACE 3 - 10' x 5'
REINFORCED CONCRETE BOX CULVERT
AND CONCRETE SLAB SIDEWALK

STA. 9+98.93
INSTALL TRIPLE 9' x 6' REINFORCED
WITH CHANNEL WALLS AS SHOWN ON
CHANNEL WALL DETAILS SHEET
(DRAINAGE AREA = 24.9 SQ. FT.)

SEC. 8-T106N-R52W

SEC. 8-T106N-R52W

BEGIN PROJECT
STR. NO. 40-131-132
STA. 9+00

END PROJECT
STR. NO. 40-131-132
STA. 11+00

CENTER STREET EAST
BITUMINOUS ROAD

LINCOLN AVENUE

30' R.O.W.

30' R.O.W.

40' R.O.W.

40' R.O.W.

℄ ROADWAY

WORKING LIMITS

WORKING LIMITS

CLASS B RIPRAP

CLASS B RIPRAP

CHANNEL WALLS

CHANNEL WALLS

FLOW

24" ST

6" W

6" W

STA. 9+40 - 40' LT.
STA. 9+40 - 70' LT.

STA. 9+65 - 40' LT.
STA. 9+65 - 55' LT.

STA. 10+25 - 40' LT.
STA. 10+25 - 55' LT.

STA. 10+55 - 40' LT.
STA. 10+55 - 70' LT.

STA. 9+60 - 40' RT.
STA. 9+60 - 65' RT.

STA. 9+75 - 40' RT.
STA. 9+75 - 53' RT.

STA. 10+20 - 40' RT.
STA. 10+20 - 53' RT.

STA. 10+20 - 53' RT.
STA. 10+20 - 65' RT.

STA. 10+30 - 40' RT.
STA. 10+30 - 53' RT.

B.M. No. 1

B.M. No. 2

POT 7+00
POT 8+00
POT 9+00
10+00
POT 11+00
POT 12+00
13+00

BENCHMARK No. 1
STA. 9+02 - 41' RT.
5/8" REBAR W/ CAP
EL. = 1665.77

BENCHMARK No. 2
STA. 11+04 - 32' LT.
5/8" REBAR W/ CAP
EL. = 1662.63

STA. 9+50
ELEV. = 1664.44
(FINISHED GRADE)

STA. 10+25
ELEV. = 1663.37
(FINISHED GRADE)

EXISTING ROADWAY PROFILE

NEW ROADWAY PROFILE (FINISHED GRADE)

S=-1.43%

H.W. EL. = 1665.8
(100 YEAR)

D.H.W. EL. = 1664.7
(10 YEAR)

REPLACEMENT STRUCTURE

℄ FL. EL. = 1655.53

ROADWAY PROFILE

LEGEND:

W — WATERMAIN	POWER POLE
S — SANITARY SEWER	CONTROL POINT
ST — STORM SEWER	GATE VALVE
G — UNDERGROUND GAS LINE	CURB STOP
UGF — UNDERGROUND FIBER OPTIC	FIRE HYDRANT
UGE — UNDERGROUND ELECTRIC	LIGHT POLE
OHE — OVERHEAD ELECTRIC LINE	POWER POLE
WORKING LIMITS	TELEPHONE PEDESTAL
PROPERTY LINE	STORM SEWER MANHOLE
CENTERLINE	SANITARY SEWER MANHOLE
SILT FENCE	MISCELLANEOUS MANHOLE
1663 EXISTING CONTOURS	SIOUX FALLS DROP INLET
BUILDINGS	SHRUB
	TREE

EXCAVATION =	1,707 C.Y.	
		1,707 C.Y.
EMBANKMENT =		666 C.Y.
+30%	=	200 C.Y.
TOPSOIL	=	129 C.Y.
WASTE	=	712 C.Y.
		1,707 C.Y.

FLOW		ELEV.
Q_d =	2680 CFS	1664.7
Q_{100} =	4620 CFS	1665.8
$Q_{O.T.} = Q_1$	480 CFS	1661.5

THE HYDRAULIC DATA CONTAINED IN THESE PLANS IS VALID ONLY IF THE OVERFLOW SECTION IS MAINTAINED. ALTERATION OF THE OVERFLOW SECTION WILL REQUIRE RE-ANALYSIS OF THE HYDRAULICS AT THE SITE TO DETERMINE ITS EFFECT ON PUBLIC SAFETY.

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
5/31/2018

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	16	42

REMOVAL PLAN

LEGEND:

- W — WATERMAIN
- S — SANITARY SEWER
- ST — STORM SEWER
- G — UNDERGROUND GAS LINE
- UGF — UNDERGROUND FIBER OPTIC
- UGE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC LINE
- WORKING LIMITS
- PROPERTY LINE
- CENTERLINE
- SILT FENCE
- 1663 — EXISTING CONTOURS
- BUILDINGS
- CONCRETE SIDEWALK REMOVAL
- CONCRETE CURB & GUTTER REMOVAL
- CONCRETE ASPHALT SURFACING REMOVAL

- POWER POLE
- CONTROL POINT
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- LIGHT POLE
- POWER POLE
- TELEPHONE PEDESTAL
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- MISCELLANEOUS MANHOLE
- SIOUX FALLS DROP INLET
- SHRUB
- TREE

N

20' 10' 0 20' 40'

NOTE:

REFER TO STRUCTURAL PLANS FOR BOX CULVERT, PEDESTRIAN BRIDGE, AND RETAINING WALL REMOVALS.

LINCOLN AVENUE

CENTER STREET

7+00 8+00 9+00 10+00 11+00 12+00 13+00

REGISTERED PROFESSIONAL ENGINEER
REG NO. 9607
RICHARD S. UCKERT
SOUTH DAKOTA
5/31/18

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	17	42

SURFACING PLAN

LEGEND:

- W — WATERMAIN
- S — SANITARY SEWER
- ST — STORM SEWER
- G — UNDERGROUND GAS LINE
- UGF — UNDERGROUND FIBER OPTIC
- UGE — UNDERGROUND ELECTRIC
- OHE — OVERHEAD ELECTRIC LINE
- WORKING LIMITS
- PROPERTY LINE
- CENTERLINE
- SILT FENCE
- 1663 — EXISTING CONTOURS
- BUILDINGS

SURFACING LEGEND:

SW	SIDEWALK
ME	MATCH EXISTING
TC	TOP OF CURB

- POWER POLE
- CONTROL POINT
- GATE VALVE
- CURB STOP
- FIRE HYDRANT
- LIGHT POLE
- POWER POLE
- TELEPHONE PEDESTAL
- STORM SEWER MANHOLE
- SANITARY SEWER MANHOLE
- MISCELLANEOUS MANHOLE
- SIOUX FALLS DROP INLET
- SHRUB
- TREE
- PROPOSED ASPHALT CONCRETE SURFACING
- PROPOSED CURB & GUTTER
- PROPOSED SIDEWALK
- PROPOSED SIDEWALK (NON ADA ACCESSIBLE)

N

20' 10' 0 20' 40'

LINCOLN AVENUE

CENTER STREET

7+00 8+00 9+00 10+00 11+00 12+00 13+00

PERMANENT EASEMENT

TEMPORARY EASEMENT

STA. 9+80.2 - 23.0' LT.
SW: 1664.17

STA. 10+15.1 - 23.1' LT.
SW: 1663.63

STA. 9+64.1 - 39.3' LT.
SW: 1664.38

STA. 10+31.2 - 39.0' LT.
SW: 1663.25

STA. 9+41.1 - 39.5' LT.
SW - ME: 1664.59

STA. 10+33.3 - 39.0' LT.
SW - ME:1663.22

STA. 9+41.1 - 34.8' LT.
SW - ME:1664.58

STA. 10+33.3 - 34.5' LT.
SW - ME: 1663.22

STA. 9+62.1 - 34.7' LT.
SW: 1664.43

STA. 10+17.0 - 18.5' LT.
TC: 1663.58

STA. 10+55.2 - 18.5' LT.
TC - ME:1663.05

STA. 9+41.1 - 18.5' LT.
TC: 1664.64

STA. 9+78.3 - 18.5' LT.
TC: 1664.12

STA. 10+19.6 - 18.5' RT.
TC: 1663.48

STA. 9+80.8 - 18.5' RT.
TC: 1664.07

STA. 10+26.8 - 18.5' RT.
TC-ME: 1663.36

STA. 8+99.9 - 32' RT.
SW - ME: 1665.53

STA. 9+41.1 - 18.5' RT.
TC-ME: 1664.64

STA. 10+31.2 - 29.9' RT.
SW: 1664.26

STA. 9+66.3 - 33.1' RT.
SW: 1664.57

STA. 9+41.1 - 32.7' RT.
SW: 1664.92

STA. 10+38.3 - 30.1' RT.
SW - ME: 1664.40

STA. 10+38.2 - 34.9' RT.
SW - ME: 1664.16

STA. 8+99.9 - 36.5' RT.
SW - ME: 1665.50

STA. 9+41.1 - 37.3' RT.
SW: 1664.97

STA. 10+29.4 - 34.8' RT.
SW: 1664.34

STA. 9+68.2 - 37.8' RT.
SW: 1664.62

STA. 9+82.8 - 23.2' RT.
SW: 1664.12

STA. 10+17.6 - 23.1' RT.
SW: 1663.53

TEMPORARY EASEMENT

PERMANENT EASEMENT

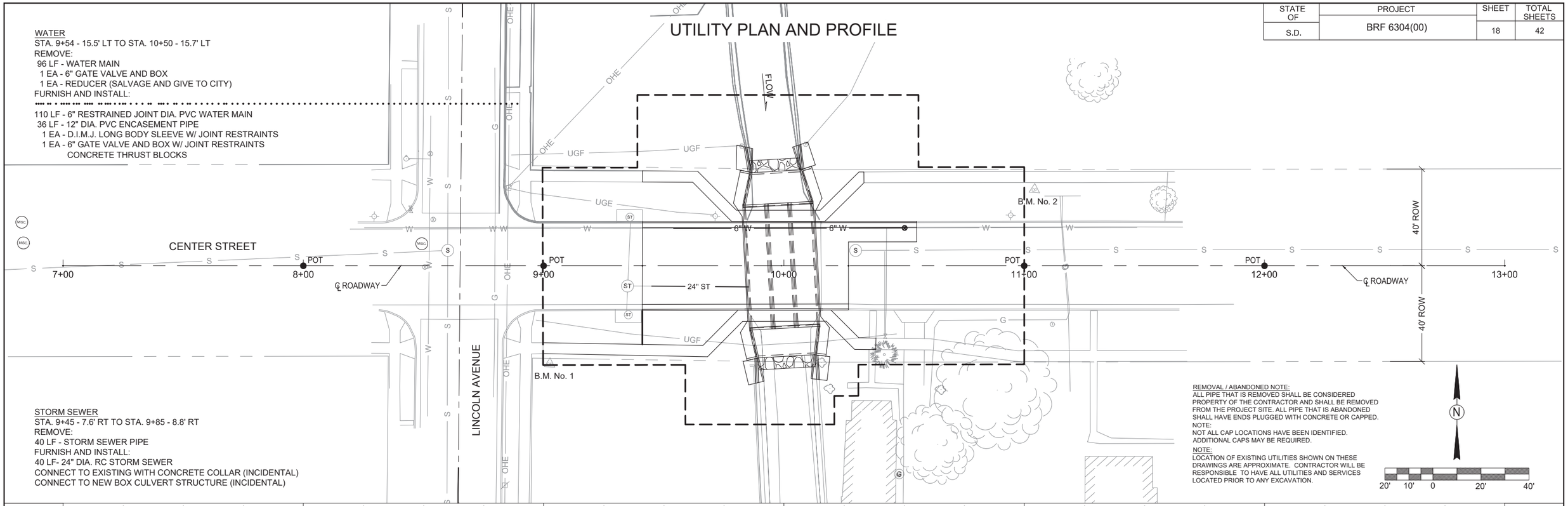
REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9603
RICHARD J. UCKERT
SOUTH DAKOTA
5/31/18

UTILITY PLAN AND PROFILE

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	18	42

WATER
STA. 9+54 - 15.5' LT TO STA. 10+50 - 15.7' LT
REMOVE:
96 LF - WATER MAIN
1 EA - 6" GATE VALVE AND BOX
1 EA - REDUCER (SALVAGE AND GIVE TO CITY)
FURNISH AND INSTALL:
110 LF - 6" RESTRAINED JOINT DIA. PVC WATER MAIN
36 LF - 12" DIA. PVC ENCASEMENT PIPE
1 EA - D.I.M.J. LONG BODY SLEEVE W/ JOINT RESTRAINTS
1 EA - 6" GATE VALVE AND BOX W/ JOINT RESTRAINTS
CONCRETE THRUST BLOCKS

STORM SEWER
STA. 9+45 - 7.6' RT TO STA. 9+85 - 8.8' RT
REMOVE:
40 LF - STORM SEWER PIPE
FURNISH AND INSTALL:
40 LF- 24" DIA. RC STORM SEWER
CONNECT TO EXISTING WITH CONCRETE COLLAR (INCIDENTAL)
CONNECT TO NEW BOX CULVERT STRUCTURE (INCIDENTAL)

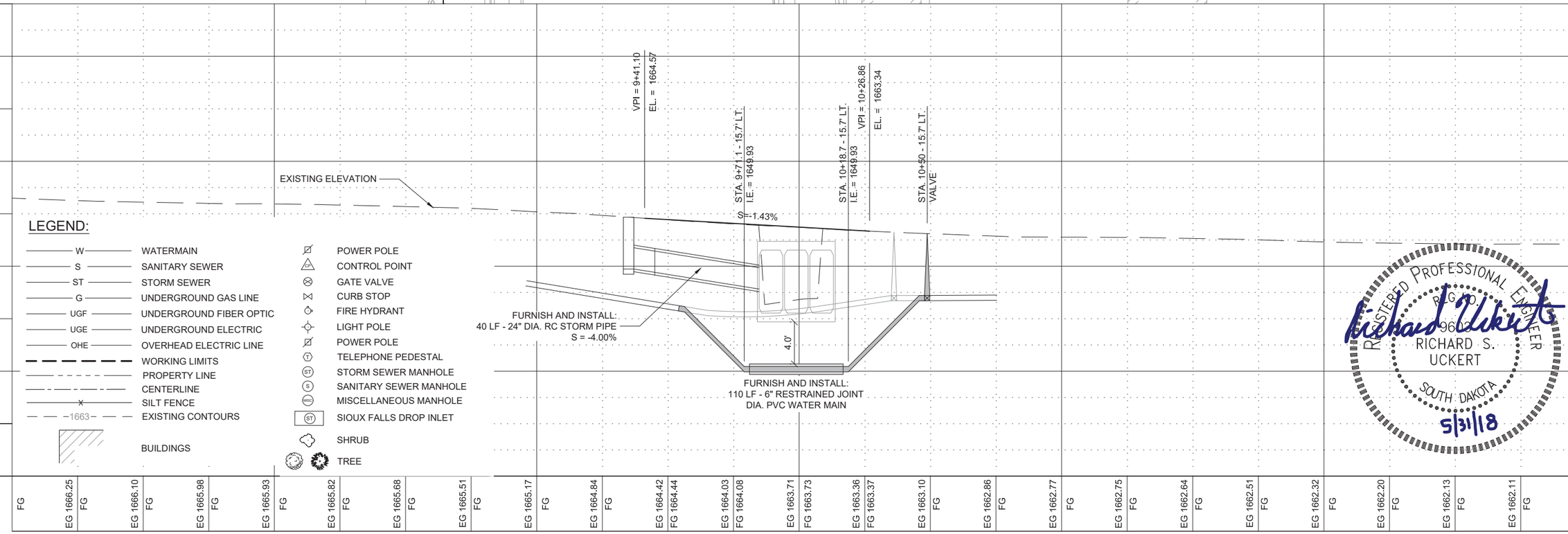


REMOVAL / ABANDONED NOTE:
ALL PIPE THAT IS REMOVED SHALL BE CONSIDERED PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE. ALL PIPE THAT IS ABANDONED SHALL HAVE ENDS PLUGGED WITH CONCRETE OR CAPPED.
NOTE:
NOT ALL CAP LOCATIONS HAVE BEEN IDENTIFIED. ADDITIONAL CAPS MAY BE REQUIRED.

NOTE:
LOCATION OF EXISTING UTILITIES SHOWN ON THESE DRAWINGS ARE APPROXIMATE. CONTRACTOR WILL BE RESPONSIBLE TO HAVE ALL UTILITIES AND SERVICES LOCATED PRIOR TO ANY EXCAVATION.

N

20' 10' 0 20' 40'



LEGEND:

W — WATERMAIN	POWER POLE
S — SANITARY SEWER	CONTROL POINT
ST — STORM SEWER	GATE VALVE
G — UNDERGROUND GAS LINE	CURB STOP
UGF — UNDERGROUND FIBER OPTIC	FIRE HYDRANT
UGE — UNDERGROUND ELECTRIC	LIGHT POLE
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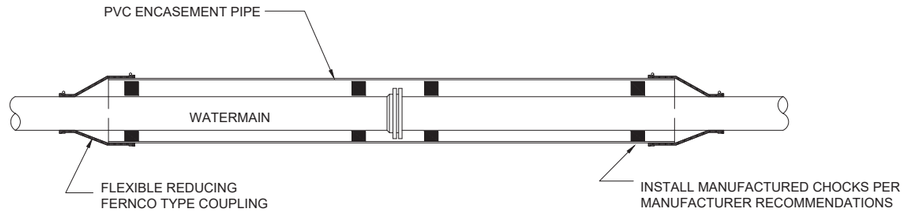
WORKING LIMITS	TELEPHONE PEDESTAL
PROPERTY LINE	STORM SEWER MANHOLE
CENTERLINE	SANITARY SEWER MANHOLE
SILT FENCE	MISCELLANEOUS MANHOLE
–1663– EXISTING CONTOURS	SIOUX FALLS DROP INLET
BUILDINGS	SHRUB
	TREE

REGISTERED PROFESSIONAL ENGINEER
RICHARD S. UCKERT
9602
SOUTH DAKOTA
5/31/18

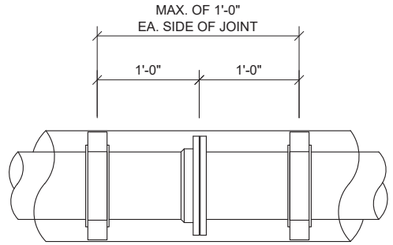
SPECIAL DETAILS

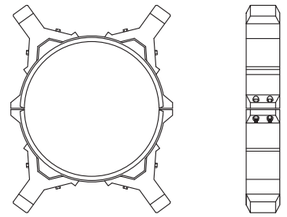
STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	19	42



WATERMAIN SHALL BE ENCASED WHEN THE
WATERMAIN CROSSES UNDER OR WITHIN 18"

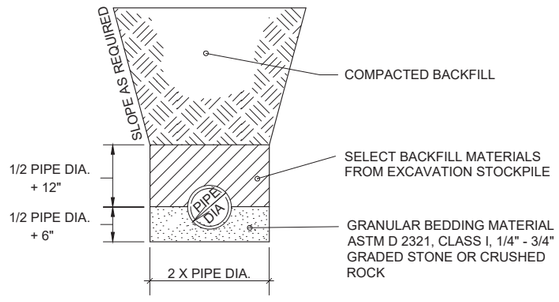
PVC ENCASEMENT PIPE
SCALE: NONE





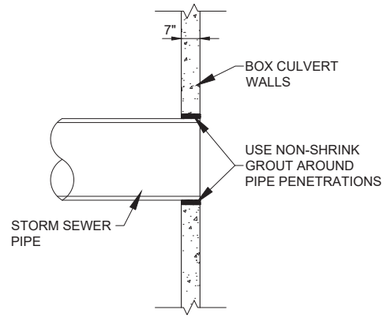
MANUFACTURED CHOCK DETAIL
SCALE: NONE

NOTE:
COST BACKFILL MATERIAL IS
INCIDENTAL TO THE COST OF
THE PIPE.

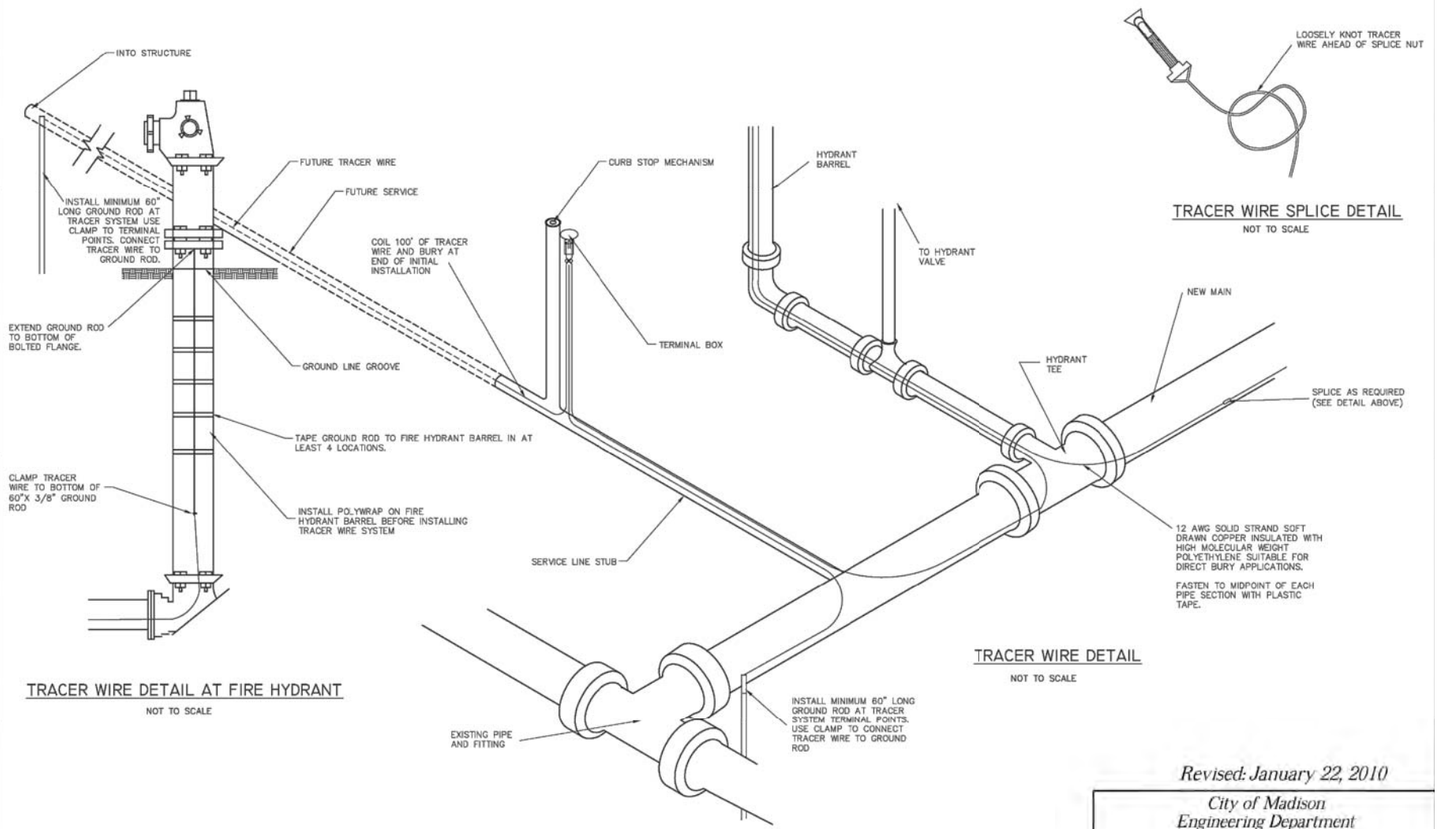


BEDDING DETAIL FOR RCP
SCALE: NONE

NOTE:
EDGE OF PIPE TO SIT FLUSH
WITH BOX CULVERT WALL WITHIN



CONNECTION BETWEEN STORM SEWER PIPE AND BOX CULVERT WALLS
SCALE: NONE



TRACER WIRE DETAIL AT FIRE HYDRANT

NOT TO SCALE

TRACER WIRE DETAIL

NOT TO SCALE

TRACER WIRE SPLICE DETAIL

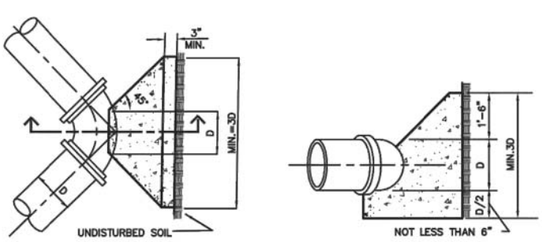
NOT TO SCALE

Revised: January 22, 2010

City of Madison
Engineering Department
Waterline
Tracer Wire System

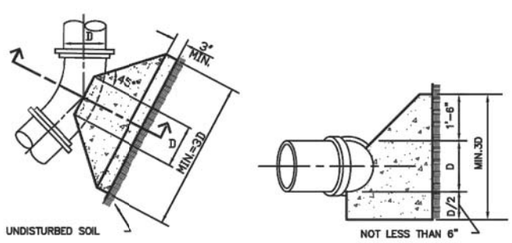
MADISON Engineering Department

PO Box 308
116 W. Center Street
Madison, SD 57042
Phone: (605)256-7514
Fax: (605)256-7511



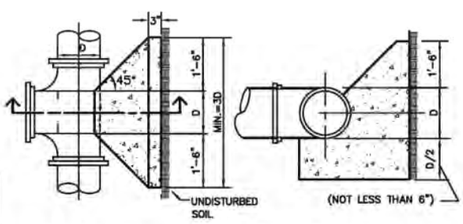
PLAN VIEW SECTION VIEW

90 - DEGREE BEND



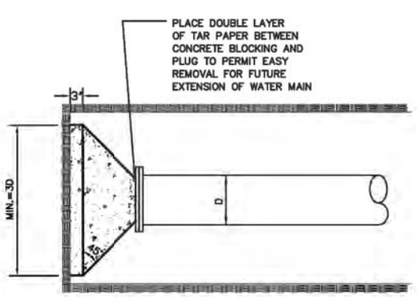
PLAN VIEW SECTION VIEW

11 1/4 - DEGREE, 22 1/2 - DEGREE AND 45 - DEGREE BENDS



PLAN VIEW SECTION VIEW

TEE



S.J. PLUG

CONCRETE THRUST BLOCK

Revised: April 2008

City of Madison
Engineering Department
Concrete Thrust Block
Bends and Tees

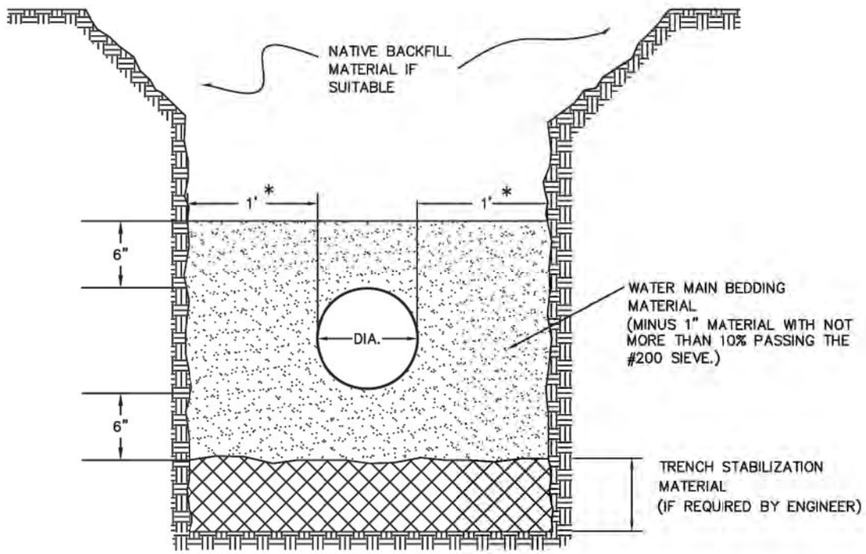
MADISON Engineering Department

PO Box 308
116 W. Center Street
Madison, SD 57042
Phone (605)256-7514
Fax: (605)256-7511

STATE OF S.D.	PROJECT	SHEET	TOTAL SHEETS
	BRF 6304(00)	20	42

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	21	42

WATER MAIN BEDDING DETAIL



PIPE SIZE DIAMETER	TRENCH WIDTH	TRENCH HEIGHT	TRENCH AREA	PIPE AREA	WATER MAIN BEDDING MAT. AREA	WATER MAIN BEDDING MAT. TONS/LF
4"	28"	16"	3.11 SQ.FT.	.09 SQ.FT.	3.02 SQ.FT.	0.21
6"	30"	18"	3.75 SQ.FT.	.20 SQ.FT.	3.55 SQ.FT.	0.25
8"	32"	20"	4.44 SQ.FT.	.35 SQ.FT.	4.10 SQ.FT.	0.29
10"	34"	22"	5.19 SQ.FT.	.55 SQ.FT.	4.65 SQ.FT.	0.33
12"	36"	24"	6.00 SQ.FT.	.79 SQ.FT.	5.22 SQ.FT.	0.37
16"	40"	28"	7.78 SQ.FT.	1.40 SQ.FT.	6.38 SQ.FT.	0.45
20"	44"	32"	9.78 SQ.FT.	2.18 SQ.FT.	7.60 SQ.FT.	0.53
24"	48"	36"	12.00 SQ.FT.	3.14 SQ.FT.	8.86 SQ.FT.	0.62
30"	60"	42"	17.50 SQ.FT.	4.91 SQ.FT.	12.59 SQ.FT.	0.88

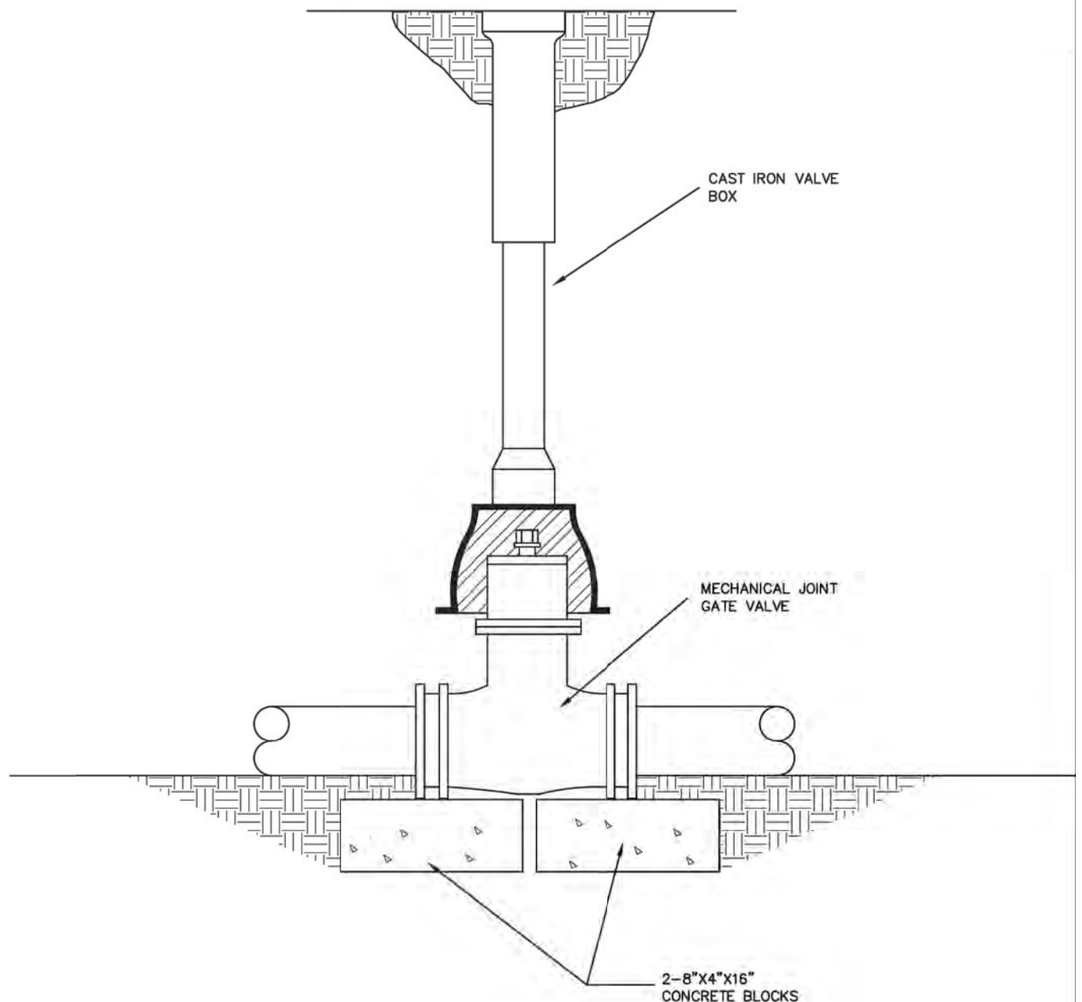
* IF >30" USE DIA./2 ON EACH SIDE OF WATER MAIN PIPE.
* LENGTH BASED ON ONE (1) FOOT OF MAIN.

Revised: November 2015

City of Madison
Engineering Department
Water Main
Bedding Detail

PO Box 308
116 W. Center Street
Madison, SD 57042
Phone: (605)256-7514
Fax: (605)256-7511

Page:

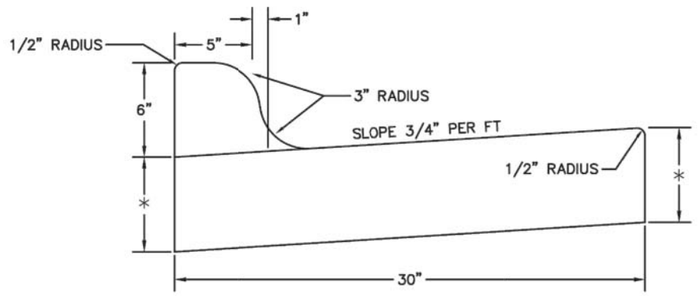


Revised: April 2008

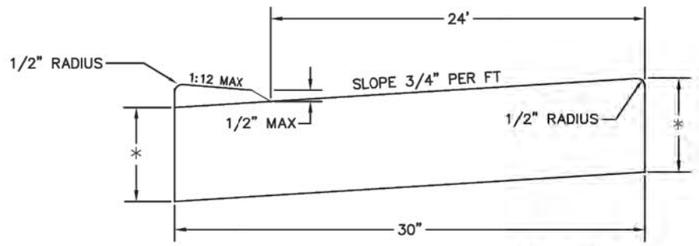
City of Madison
Engineering Department
Gate Valve
Installation Drawing

PO Box 308
116 W. Center Street
Madison, SD 57042
Phone: (605)256-7514
Fax: (605)256-7511

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	22	42

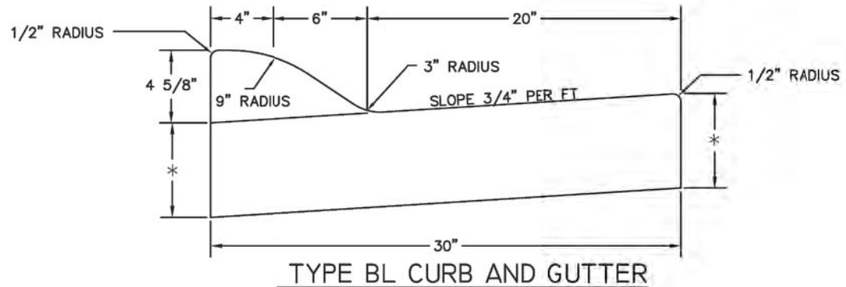


TYPE B66 STANDARD CURB AND GUTTER



DROP TYPE CURB AND GUTTER

SEE PLATE NUMBER 650.04 FOR CURB OPENING REQUIREMENTS WHEN CURB AND GUTTER IS POURED IN LIEU OF FILLETS AT INTERSECTIONS.



TYPE BL CURB AND GUTTER

(OPTIONAL IN CUL-DE-SACS ONLY)

* THICKNESS SHALL BE EQUAL TO THE DEPTH OF THE ADJOINING PAVEMENT BUT NOT LESS THAN 6".

GENERAL

ON PCC PAVEMENT A LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS SHALL BE USED WHEN CURB AND GUTTER IS POURED SEPARATELY.

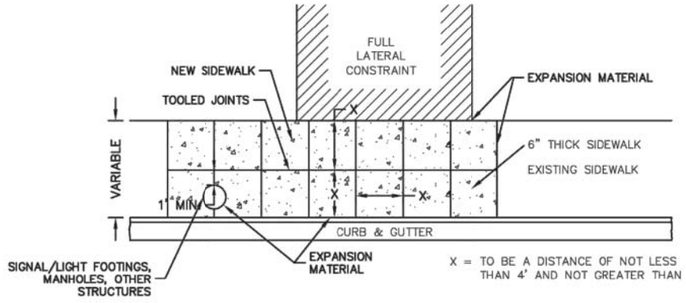
M-6 CONCRETE SHALL BE USED IN THE CONSTRUCTION OF THE CURB AND GUTTER.

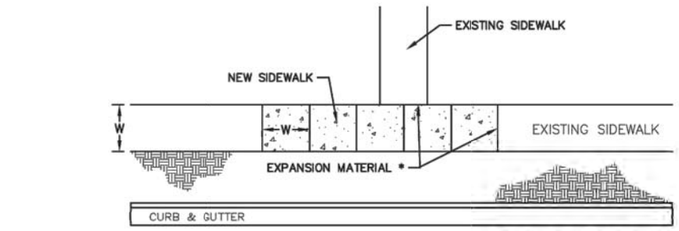
Revised: April 2008

City of Madison
Engineering Department
Typical Curb and Gutter
Cross Sections

MADISON Engineering Department

PO Box 308
116 W. Center Street
Madison, SD 57042
Phone (605)256-7514
Fax (605)256-7511

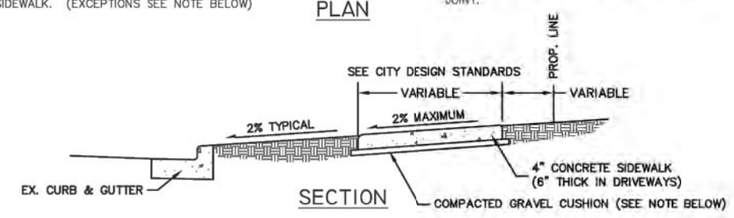




W = THE WIDTH OF THE SIDEWALK JOINT SPACING SHOULD BE EQUAL TO THE WIDTH OF THE SIDEWALK. (EXCEPTIONS SEE NOTE BELOW)

EXPANSION JOINTS SHALL BE PLACED AT 50 FOOT INTERVALS, OR TO THE NEAREST TOOLED JOINT.

PLAN



SECTION

NOTES:

LOCATION OF SIDEWALK FROM CURB LINE WILL VARY, HOWEVER, IN MOST INSTANCES THE SIDEWALK WILL BE LOCATED OFF THE PROPERTY LINE. VERIFY SIDEWALK LOCATIONS WITH THE CITY ENGINEERS OFFICE BEFORE PROCEEDING.

ALL SIDEWALKS SHALL HAVE A 4' MINIMUM WIDE PATH WHICH WILL SERVE AS THE PEDESTRIAN ACCESS ROUTE. THIS PEDESTRIAN ACCESS ROUTE SHALL BE CLEAR OF ALL OBSTRUCTIONS SUCH AS LIGHT POLES, SIGNAL POLES, METER POSTS, ETC. ADDITIONALLY, THE MAXIMUM CROSS SLOPE ON THE PEDESTRIAN ACCESS ROUTE IS 2%. POSITIVE DRAINAGE MUST BE MAINTAINED ON ALL SIDEWALKS.

SIDEWALK PLACED DIRECTLY BEHIND THE CURB AND GUTTER SHALL BE A MINIMUM OF 6" IN DEPTH.

ISOLATION JOINTS SHALL EITHER INTERSECT STRUCTURES OR BE A MINIMUM ONE FOOT CLEAR OF STRUCTURE.

CONTRACTION JOINTS SHALL BE FORMED AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK. WHEN THE DISTANCE DOES NOT WORK OUT TO AN EVEN NUMBER OF SPACES, THE DISTANCE BETWEEN JOINTS SHOULD BE ADJUSTED SO THAT ALL THE JOINTS LOOK UNIFORM.

THE SUBGRADE ON WHICH THE CONCRETE IS TO BE LAID SHALL BE COMPACTED AND OF THE PROPER DEPTH TO OBTAIN THE DESIRED THICKNESS. THE GRADE SHALL BE FREE OF VEGETATION, BRICK, ASPHALT, BROKEN CONCRETE, AND ANY OTHER ITEM THAT MAY BE DETRIMENTAL TO THE NEW CONCRETE.

Revised: April 2008

City of Madison
Engineering Department
Sidewalk and Approach
Plan and Section

MADISON Engineering Department

PO Box 308
116 W. Center Street
Madison, SD 57042
Phone (605)256-7514
Fax (605)256-7511

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	BRF 6304(00)	23	42

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

SITE DESCRIPTION (4.2 1)

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☐ Filling
  - ☒ Cutting and filling
  - ☐ Other (describe):
- **Total Project Area** 0.50 acres **(4.2 1.b.)**
- **Total Area To Be Disturbed** 0.29 acres **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 34%
- **Soil Properties:** AASHTO Soil Classification A-7-6 **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodie**s: Park 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 stabilized construction entrance(s).**
- **Install perimeter protection where runoff sheets from the site.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Install temporary diversion channel and sediment control at structure and inlets.**
- **Remove existing structure.**
- **Install utilities and storm sewer.**
- **Construct new structure.**
- **Adjust sediment control at structure and in ditches.**
- **Grade roadway, boulevard and temporary easement areas.**
- **Complete final paving and curb and gutter installation.**
- **Place topsoil.**
- **Reseed areas disturbed by construction 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 Facility
  - ☒ 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 Erosion Control Supervisor 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 facilities on the site. These areas must be self-contained and not connected to any storm water outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

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

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

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

- **Spill Response (4.2 2 c.(2))**

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

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

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.

Tom Schmidt

_____

Authorized Signature (See the General Permit, Section 6.9.1.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.

_____

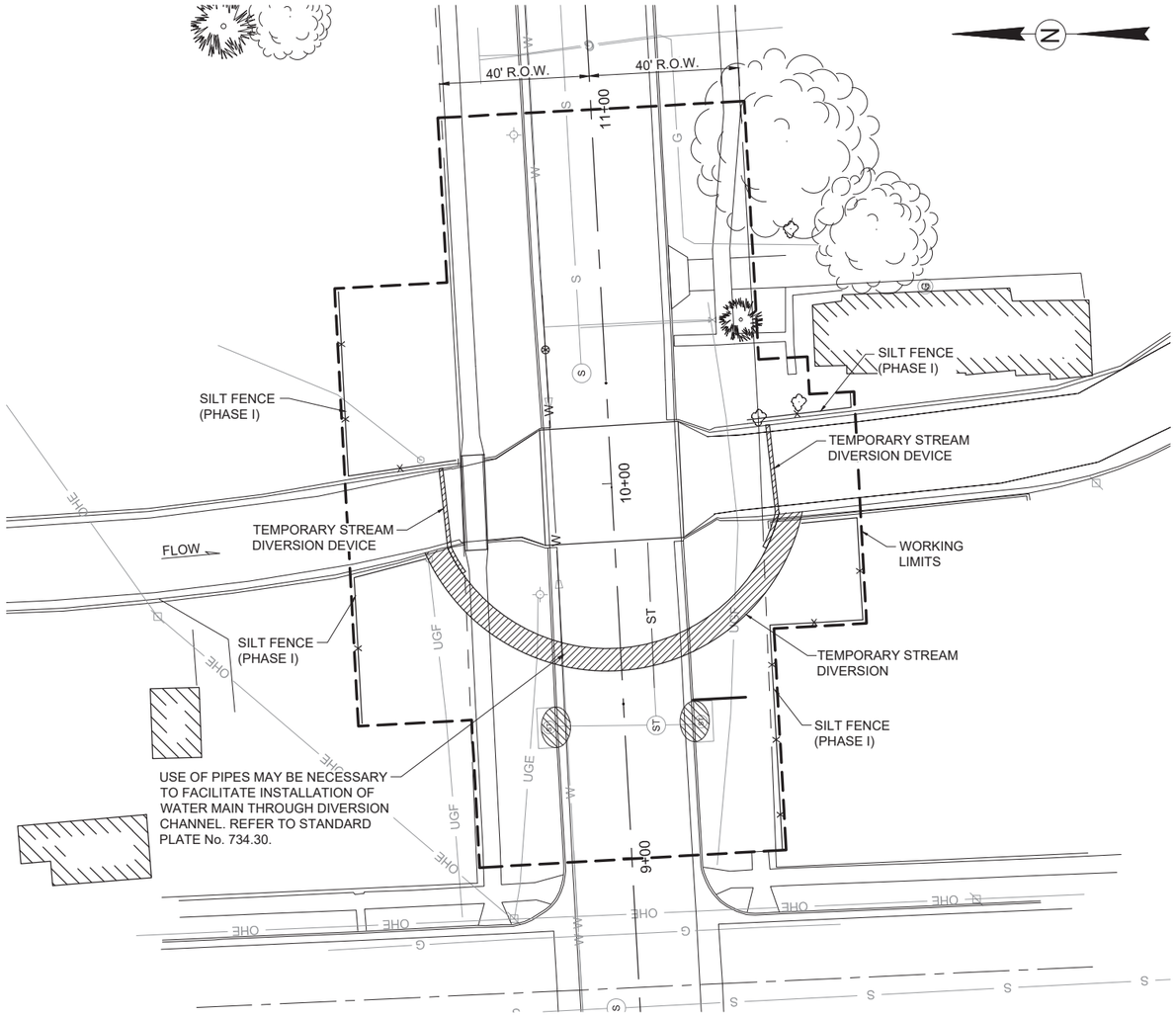
Authorized Signature

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.

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	26	42

Revised 10/03/2018



PHASE I:

1. CONTRACTOR SHALL COORDINATE REMOVAL AND REINSTALLATION OF LIGHT POLE AT STA. 9+72 - 20' LT.
2. INSTALL CONSTRUCTION ENTRANCE PER PLAN NOTES.
3. DIVERT THE DRAINAGE TO CONSTRUCT CULVERT. A POSSIBLE SCENARIO, BY PROVIDING A TEMPORARY DIVERSION, IS SHOWN. WATER BARRIERS OR DIVERSION DEVICES SHALL BE CONSTRUCTED OF AN APPROVED MATERIAL. EARTH BERMS ARE NOT ACCEPTABLE SINCE THEIR REMOVAL CAUSES SILTATION PROBLEMS.
4. INSTALL SILT FENCE AND TEMPORARY STREAM DIVERSION AS SHOWN IN PHASE I PLAN AND AS DIRECTED BY THE ENGINEER. SILT FENCE SHALL BE INSTALLED AS PER STANDARD PLATE No. 734.04.
5. REMOVE EXISTING STRUCTURE AND INSTALL TRIPLE 9' x 6' REINFORCED CONCRETE BOX CULVERT.
6. INSTALL SEDIMENT CONTROL AT TYPE S REINFORCED CONCRETE DROP INLETS (2).
7. DURING ROCK WALL REMOVAL, TEMPORARILY RELOCATE SILT FENCE TO ACCOMMODATE WORK (INCIDENTAL).

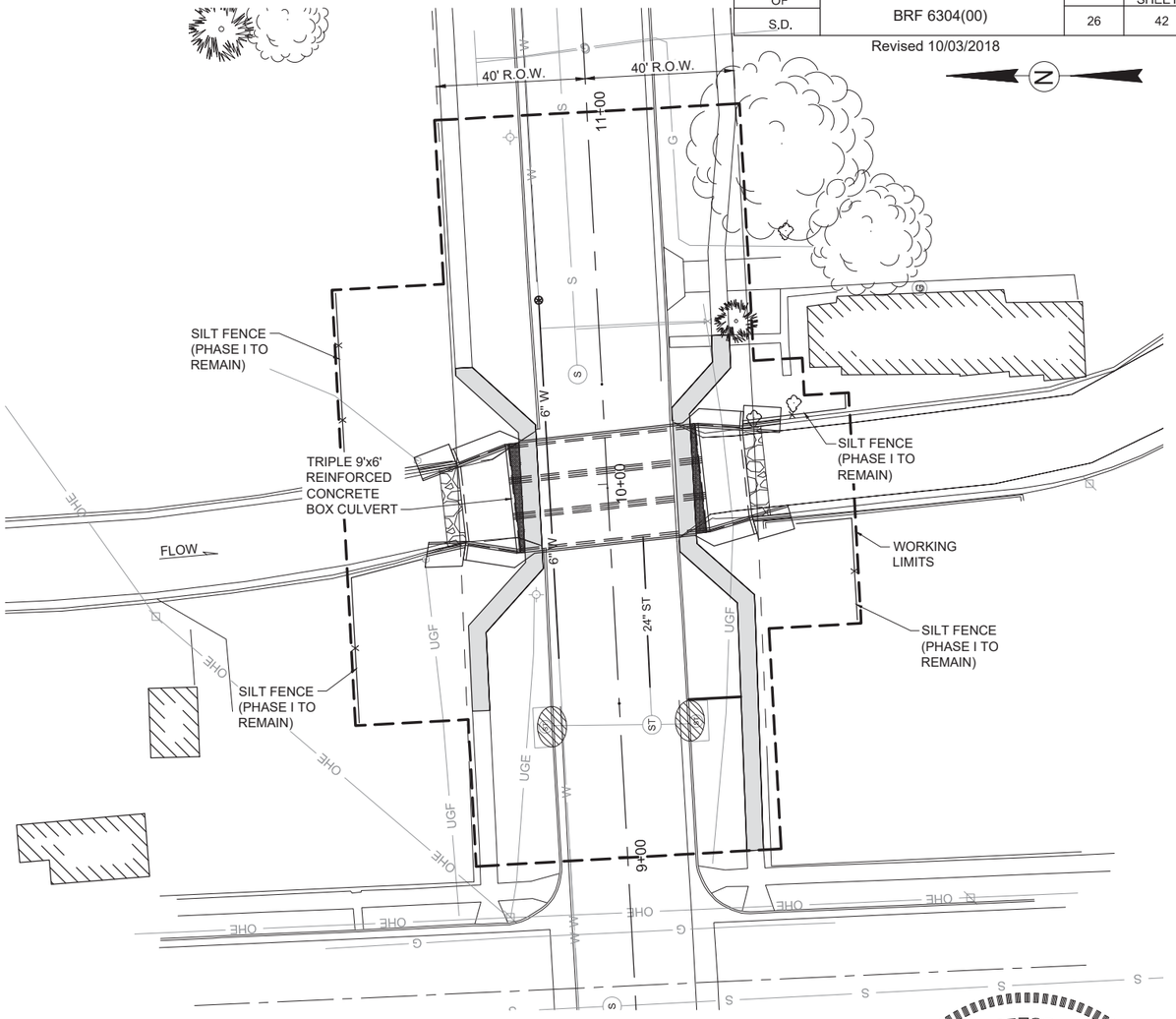
INSTALL SILT FENCE LOCATIONS (PHASE I):

STATION	QUANTITY (FT.)
9+40 - 70' LT. TO 9+85 - 40' LT.	69
9+00 - 40' RT. TO 9+86 - 40' RT.	137
10+08 - 40' LT. TO 10+55 - 70' LT.	78
10+15 - 37' RT. TO 10+21 - 65' RT.	32
TOTAL (PHASE I) :	316 FT.

LEGEND:

CONSTRUCTION LIMITS
SILT FENCE (PHASE I)
INLET PROTECTION

TEMPORARY STREAM DIVERSION / EROSION & SEDIMENT CONTROL (PHASE I)



PHASE II:

1. REMOVE SILT FENCE AT LOCATIONS SHOWN IN TABLE BELOW.
2. ADJUST SILT FENCE AS SHOWN IN PHASE II PLAN AND AS DIRECTED BY THE ENGINEER TO ACCOMMODATE BOX CULVERT/ ROCK WALL INSTALLATION.
3. SILT FENCE SHALL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED IN SEEDED AREAS.
4. REMOVE SEDIMENT CONTROL AT TYPE S REINFORCED CONCRETE DROP INLETS (2).

REGISTERED PROFESSIONAL ENGINEER
REG NO.
10404
COLIN W.
ZWASCHKA
SOUTH DAKOTA
10/3/2018

REMOVE SILT FENCE LOCATIONS (PHASE II):

STATION	QUANTITY (FT.)
9+00 - 40' RT. TO 9+60 - 65' RT.	85
TOTAL (PHASE II) :	85 FT.

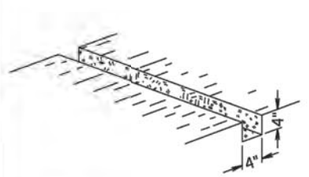
LEGEND:

CONSTRUCTION LIMITS
SILT FENCE (PHASE I TO REMAIN)
INLET PROTECTION

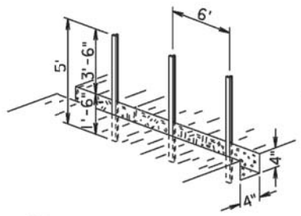
EROSION & SEDIMENT CONTROL (PHASE II)

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	27	42

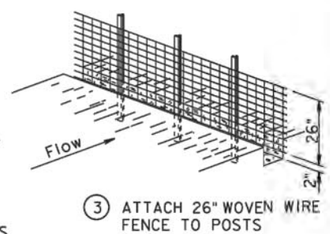
MANUAL LOW FLOW SILT FENCE INSTALLATION



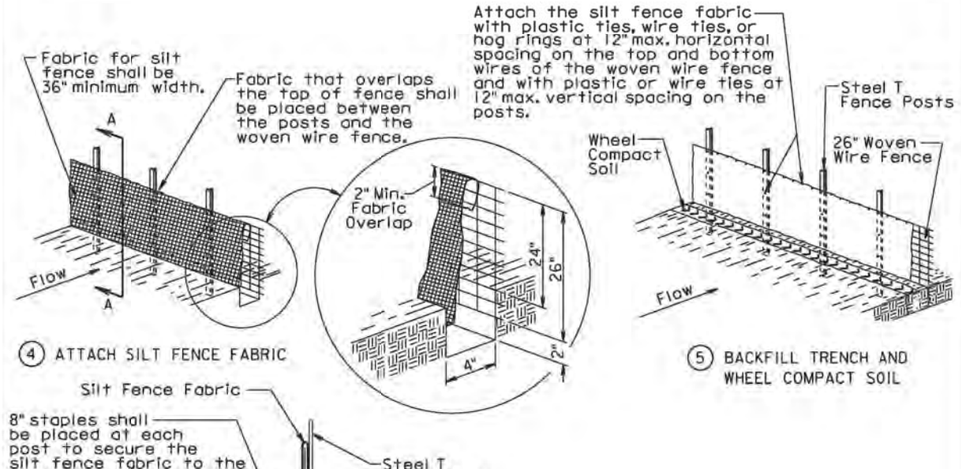
(1) EXCAVATE TRENCH



(2) DRIVE STEEL T FENCE POSTS

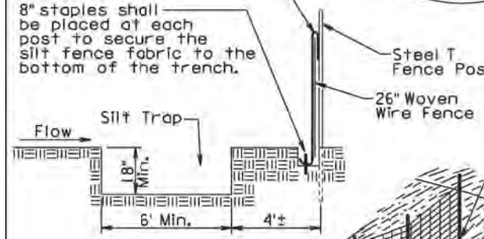


(3) ATTACH 26" WOVEN WIRE FENCE TO POSTS

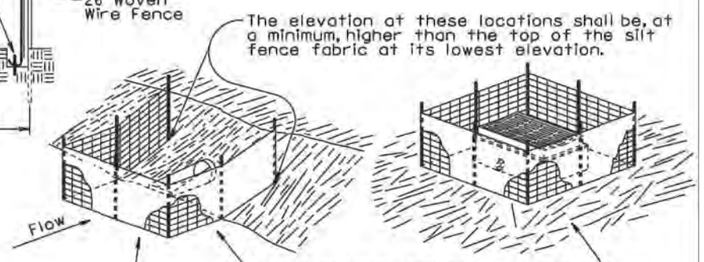


(4) ATTACH SILT FENCE FABRIC

(5) BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A

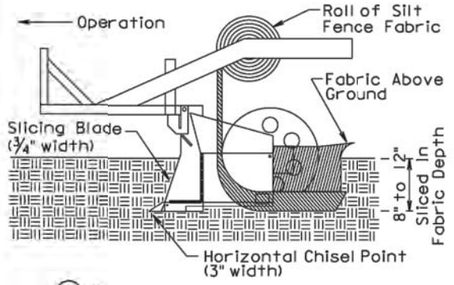


The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

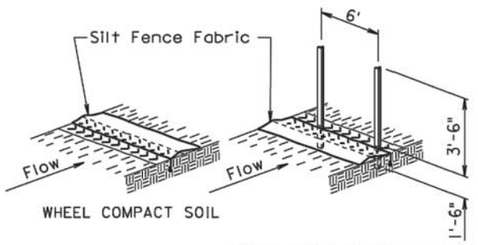
December 23, 2003

Published Date: 2nd Qtr. 2018	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

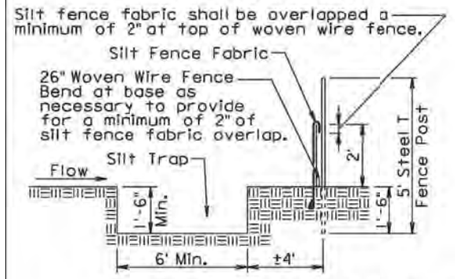
MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION

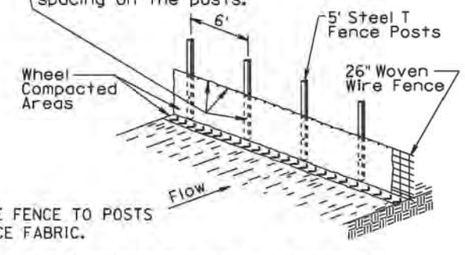


(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

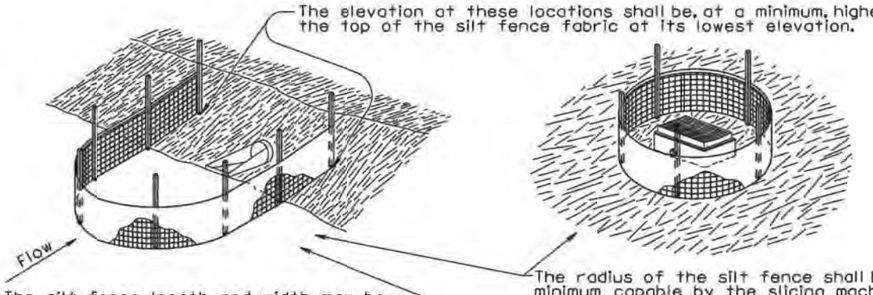


(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.





(3) ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.



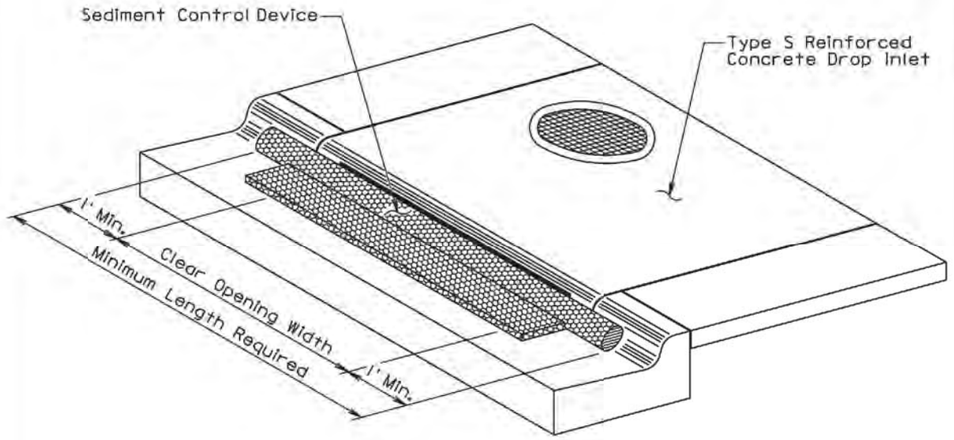
GENERAL NOTES:

A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

If a trench can not be dug or the silt fence fabric can not be sliced 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: 2nd Qtr. 2018	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 2 of 2



ISOMETRIC VIEW

GENERAL NOTES:

The type of sediment control device shown is for illustrative purposes only.

The type of sediment control device used shall be one of the types as specified in the plans.

The sediment control device shall be placed at the drop inlets according to the manufacturers' installation instructions.

The sediment control at inlet for type S reinforced concrete drop inlet shall be placed at locations stated in the plans or at locations determined by the Engineer.

The Contractor shall inspect and maintain the sediment control device once every week and within 24 hours after every rainfall event. The Contractor shall maintain the sediment control device by removing the device, removing accumulated sediment, and resetting the device.

The removed sediment shall be placed at a location away from the drop inlet where the sediment will not be washed back into the drop inlet or other storm sewer system.

Payment for the "Sediment Control at Type S Drop Inlet" shall be based on the minimum length required at the drop inlets. Some of the sediment control devices specified in the plans will have to be longer due to available length.

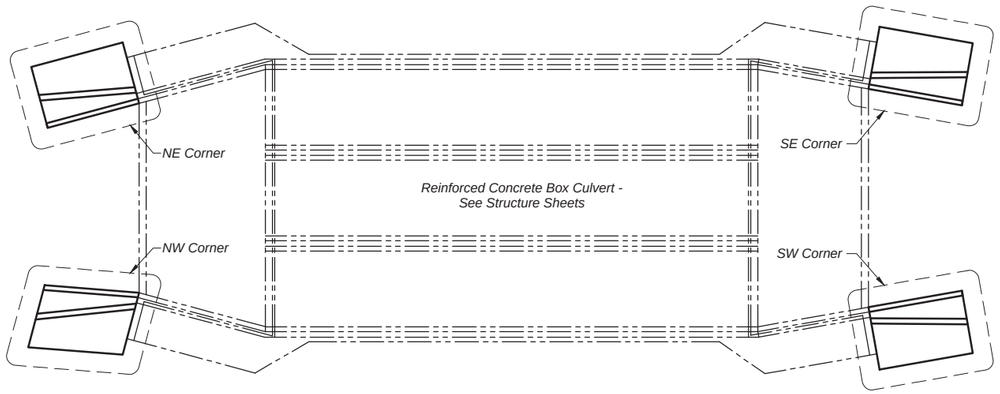
All costs for furnishing, installing, inspecting, maintaining, removing, and resetting the sediment control device at the drop inlet including labor, equipment, and materials shall be incidental to the contract unit price per foot for "Sediment Control at Type S Reinforced Concrete Drop Inlet".

September 14, 2005

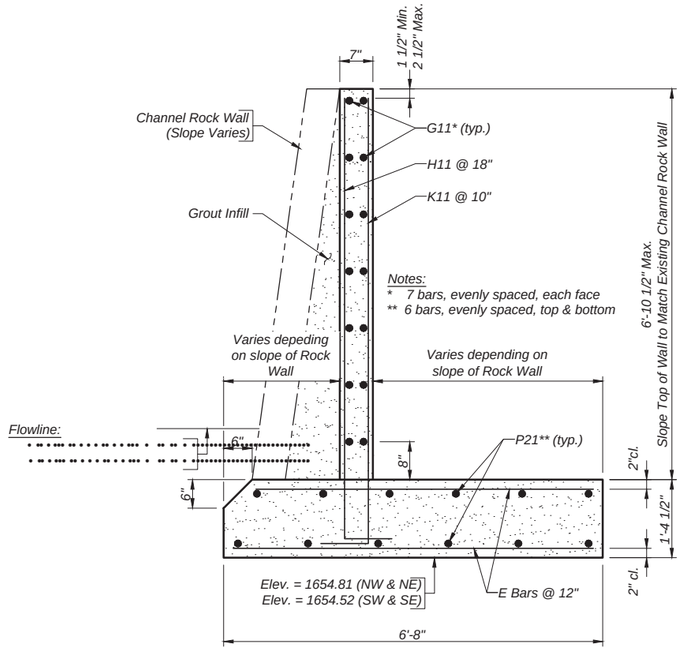
Published Date: 2nd Qtr. 2018	SDDOT	***SEDIMENT CONTROL AT INLETS FOR TYPE S REINFORCED CONCRETE DROP INLETS***	*PLATE NUMBER* 734.11 *Sheet 1 of 1*

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	29	42

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



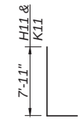
OVERALL PLAN



CHANNEL WALL SECTION

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type	Bending Details
E11	40	4	6'-0"	Str.	
E12	40	4	6'-3"	Str.	
G11	56	4	9'-9"	Str.	
☐ H11	28	4	8'-9"	17A	
☐ K11	48	4	8'-9"	17A	
P21	48	4	9'-9"	Str.	



Type 17A

Notes:
All dimensions are out to out of bars.
Quantities shown are for two (2) inlet and two (2) outlet channel walls.
☐ Cut in field as necessary.

ESTIMATED QUANTITIES

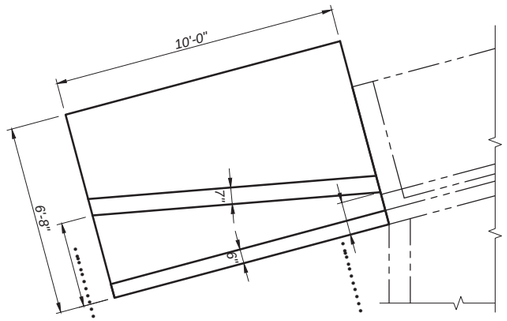
ITEM	UNIT	QUANTITY
Remove Channel Rock Wall	Ft.	64
Channel Wall	Sq. Ft.	330

Items 1 thru 3 are approximate quantities contained in Channel Wall and are for information only.

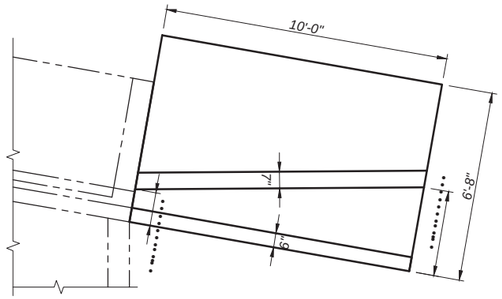
1. 19.4 Cu.Yd. Class A45 Concrete, Box Culvert.
2. 1449 Lb. Reinforcing Steel
3. 137.7 Cu.Yd. Structure Excavation, Box Culvert

CHANNEL WALL:

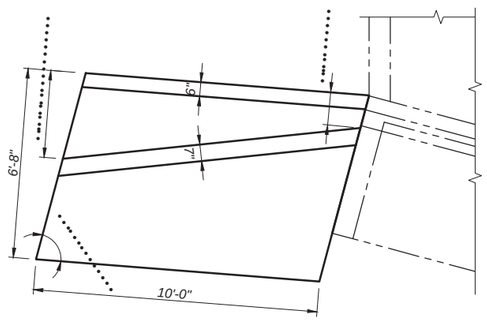
1. Height of channel walls shall vary to match top of wingwall and top of existing channel rock wall elevation.
2. The removal limits of the existing channel rock wall was assumed to be from the existing structure to 10 ft. beyond the ends of the new wingwalls. This length may be increased or decreased as determined by the engineer in the field.
3. The Contractor shall remove and salvage the existing rock channel wall. Excess rock deemed salvageable and not used to reconstruct rock channel wall shall be placed neatly in the right-of-way as directed by the Engineer to be picked up by the City of Madison for future maintenance use. The costs associated with removal and salvaging of the existing rock wall shall be incidental to the contract unit price per foot for "Remove Channel Rock Wall."
4. The Contractor shall rebuild the channel rock wall between the end of the box culvert wingwall and the undisturbed channel wall. Reinforced concrete cantilevered retaining walls shall be constructed between the end of the box culvert wingwall and the undisturbed channel rock wall. The salvaged rock from the rock wall shall be installed on top of the retaining wall footing. The rock fascia shall be vertical at the end of the box culvert wingwall and shall be warped to match the slope of the undisturbed wall. All costs associated with excavation for, and construction of, the retaining wall and resetting the rock fascia shall be incidental to the contract unit price per square foot for "Channel Wall".
5. The reset channel fascia rocks shall be positioned to interlock with the existing channel rocks at the ends of the reconstructed channel walls.



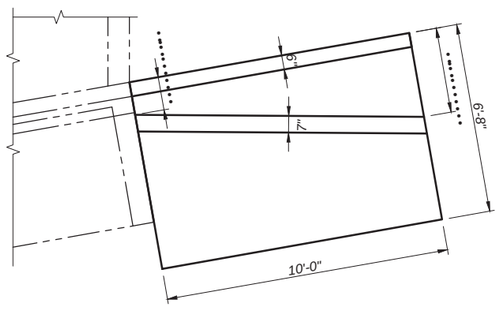
PARTIAL PLAN - NE CORNER



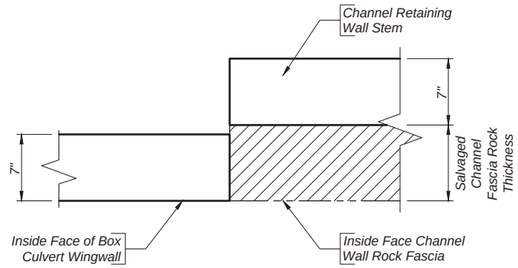
PARTIAL PLAN - SE CORNER



PARTIAL PLAN - NW CORNER

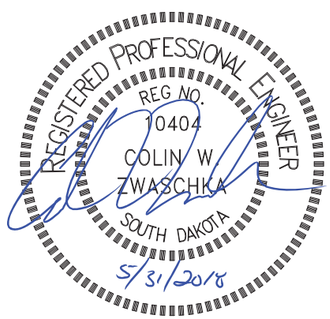


PARTIAL PLAN - SW CORNER



DETAIL - WINGWALL-TO-CHANNEL WALL TRANSITION

NOTE:
Inside face of channel fascia rocks shall be installed flush with the inside face of wingwall.



GENERAL DRAWING AND QUANTITIES

FOR

ROCK FACED CHANNEL WALL

STA. ~~SEC. 8-T106N-R52W~~

STA. ~~BRF 6804(00)~~

PCN 02EG

LAKE COUNTY (MADISON)

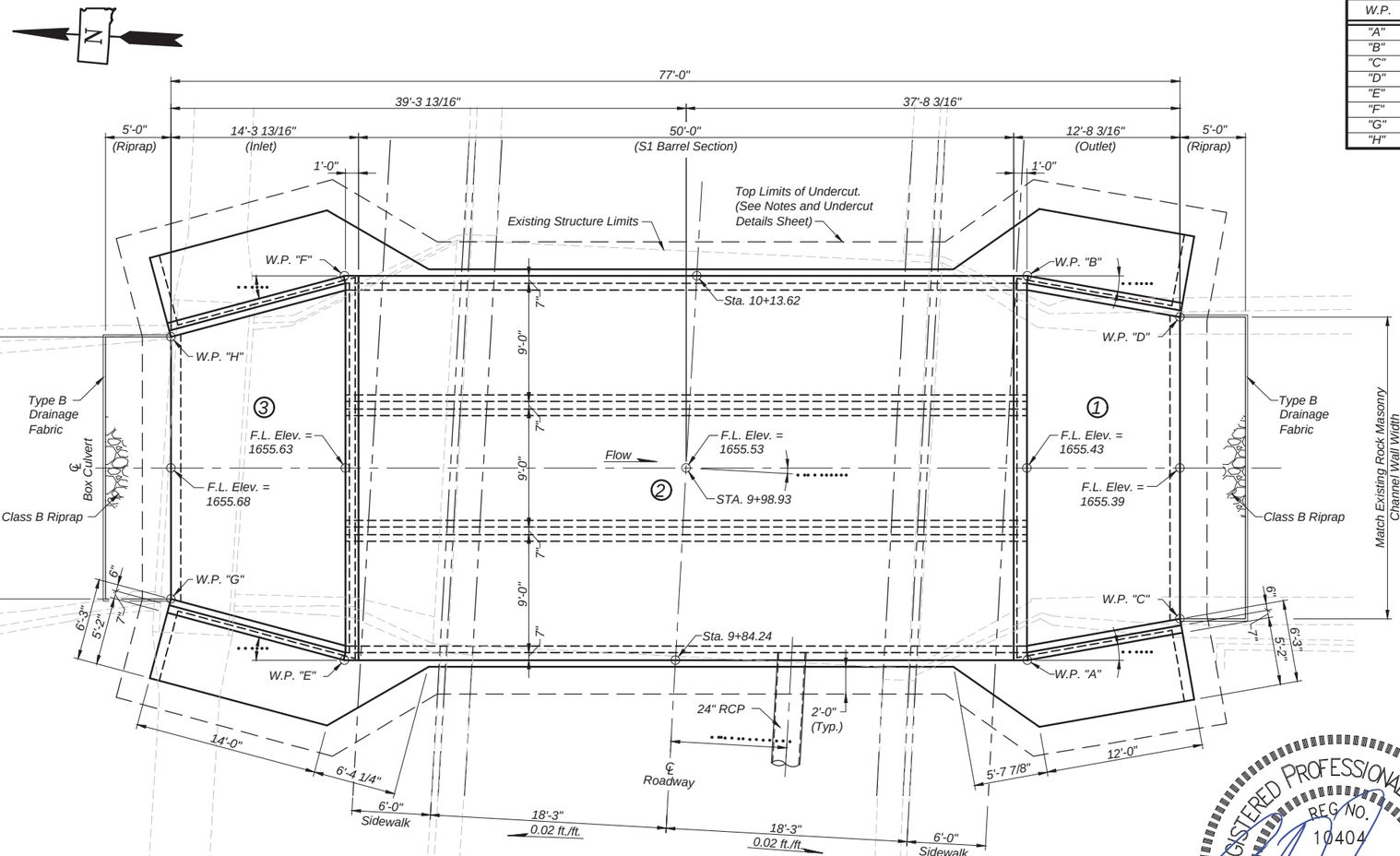
S. D. DEPT. OF TRANSPORTATION

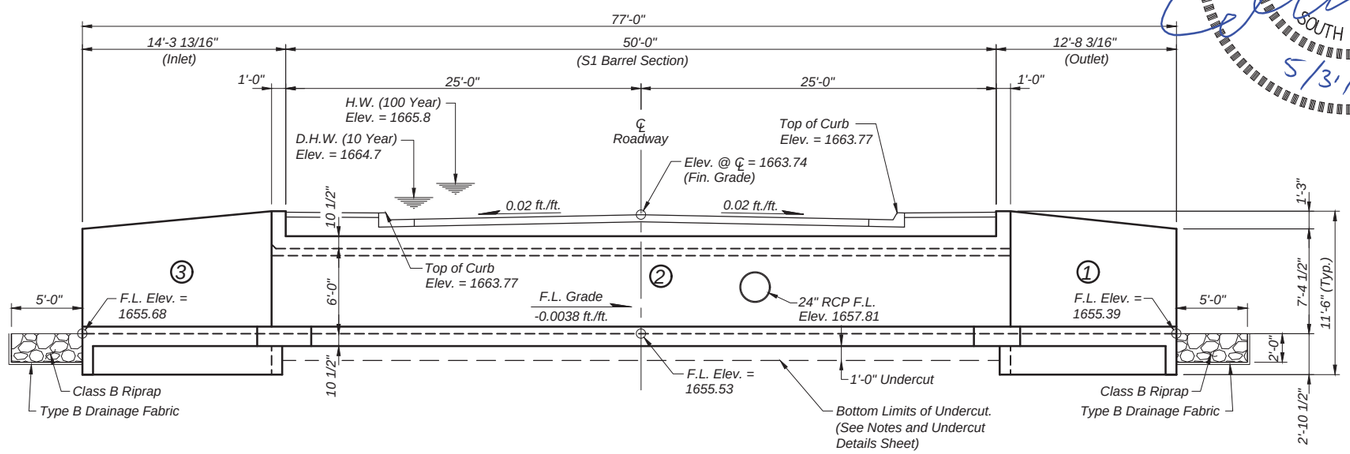
MAY 2018

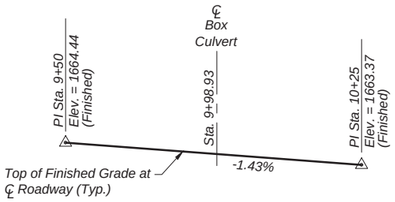
1 OF 1

BANNER engineering a better community

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	CRZ	SAN	BRIDGE ENGINEER







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

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	30	42

PLAN

TABLE OF WORKING POINTS

W.P.	STATION	OFFSET
"A"	9+85.73	26.82' RT.
"B"	10+15.01	25.20' RT.
"C"	9+89.52	38.26' RT.
"D"	10+12.51	36.99' RT.
"E"	9+82.84	25.23' LT.
"F"	10+12.13	26.85' LT.
"G"	9+86.77	38.71' LT.
"H"	10+06.74	39.81' LT.

-X028-

INDEX OF CULVERT SHEETS-

- Sheet No. 1 - General Drawing and Quantities
- Sheet No. 2 - Notes and Undercut Details
- Sheet No. 3 - Inlet and Outlet Apron Details
- Sheet No. 4 - Inlet Details
- Sheet No. 5 - Outlet Details
- Sheet No. 6 - Standard S1 Barrel End Section Details
- Sheet No. 7 - Standard S1 Barrel End Section Details
- Sheet No. 8 - Standard S1 Barrel End Section Details
- Sheet No. 9 - Standard S1 Barrel End Section Details
- Sheet No. 10 - Standard S1 Barrel End Section Details
- Sheet No. 11 - Special Pedestrian Railing Details
- Sheet No. 12 - Standard Plate No. 460.02

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Class A45 Concrete, Box Culvert	Cu. Yd.	184.2
Reinforcing Steel	Lb.	24,244
Structure Excavation, Box Culvert	Cu. Yd.	85
⌀ Box Culvert Undercut	Cu. Yd.	117
≠ Class B Riprap	Ton	22.3
Type B Drainage Fabric	Sq. Yd.	38
Steel Pedestrian Railing on Sidewalk	Ft.	109
Chain Link Fence for Bridge Sidewalk	Ft.	109

≠ For estimating purposes only, a factor of 1.4 Tons per Cubic Yard was used to convert Cubic Yards to Tons.

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

GRADE LINE DATA

HYDRAULIC DATA

Qd	2680 cfs
Ad	166 sq. ft.
Vd	1.3 fps
Qf	2680 cfs
Q_{100}	4620 cfs
$Q_{O.T.fr.}$	480 cfs
V_{MAX}	3.2 fps

Qd = Design discharge for the proposed culvert or bridge based on 10 year frequency. Elev. = 1664.7

$Q_{O.T.fr.}$ = Overtopping discharge and frequency 19 year recurrence interval, Elev. [illegible]

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

Q_{100} = Computed discharge for the basin approaching proposed project based on 100 year frequency Elev. = 1665.8.

V_{MAX} = Maximum computed outlet velocity for the proposed culvert or bridge, based on a 1.4 year frequency.

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

REG NO. 10404
COLIN W. ZWASCHKA
5/31/2018

ELEVATION

GENERAL DRAWING AND QUANTITIES

FOR

3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — [illegible] SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

① OF ⑫

-X028-

BANNER
engineering a better community

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	31	42

SPECIFICATIONS

1. *DESIGN SPECIFICATIONS: AASHTO LRFD Bridge Design Specifications, 7th edition, with 2015 and 2016 interims.*
2. *CONSTRUCTION SPECIFICATIONS: South Dakota Standard Specifications for Roads and Bridges, 2015 edition and required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.*

GENERAL NOTES

1. *DESIGN LIVE LOAD: HL-93. No construction loading in excess of legal load was considered.*
2. *The design of the Barrel Section is based on a minimum fill height of one (1) foot and includes all subsequent fill heights up to and including the maximum fill height of five (5) feet (S1).*
3. *DESIGN MATERIAL STRENGTHS: Concrete: f'c = 4500 p.s.i.*
   Reinforcing Steel: fy = 60,000 p.s.i.
4. *All concrete shall be Class A45 conforming to Section 460.*
5. *All reinforcing steel shall conform to ASTM A615 Grade 60.*
6. *All exposed edges shall chamfered 3/4" inch.*
7. *Use 1 inch clear cover on all reinforcing steel EXCEPT as shown.*
8. *The contractor shall imprint on the structure the date of construction as specified and detailed on Standard Plate No. 460.02.*
9. *Care shall be taken to establish Working Points (W.P.) as shown on the wings.*
10. *Circled numbers in plan and elevation views on the general drawing are section I.D. Numbers (See SDDOT Materials Manual).*
11. *Cost of preformed expansion joint filler used in apron construction shall be incidental to other contract items.*
12. *Compaction of earth embankment and Box Culvert backfill shall be governed by the Specified Density Method.*
13. *The 24" RCP shall be installed by trenching it in after the Box Culvert has been backfilled to the top of the top slab.*

SUBSURFACE CONDITIONS

Subsurface conditions consist of the following:

Station	Offset	Elevation	Material Description	Groundwater
9+85	19.5 ft. Rt.	1663.2 - 1657.7	Brown silt-clay with gravel layers	1654.8
		1657.7 - 1644.2	Coarse Sand and Gravel	
10+20	17.0 ft. Lt.	1663.7 - 1658.7	Brown silt-clay with gravel layers	1654.7
		1658.7 - 1644.7	Coarse Sand and Gravel	

Dewatering will be required for construction of the RCBC.

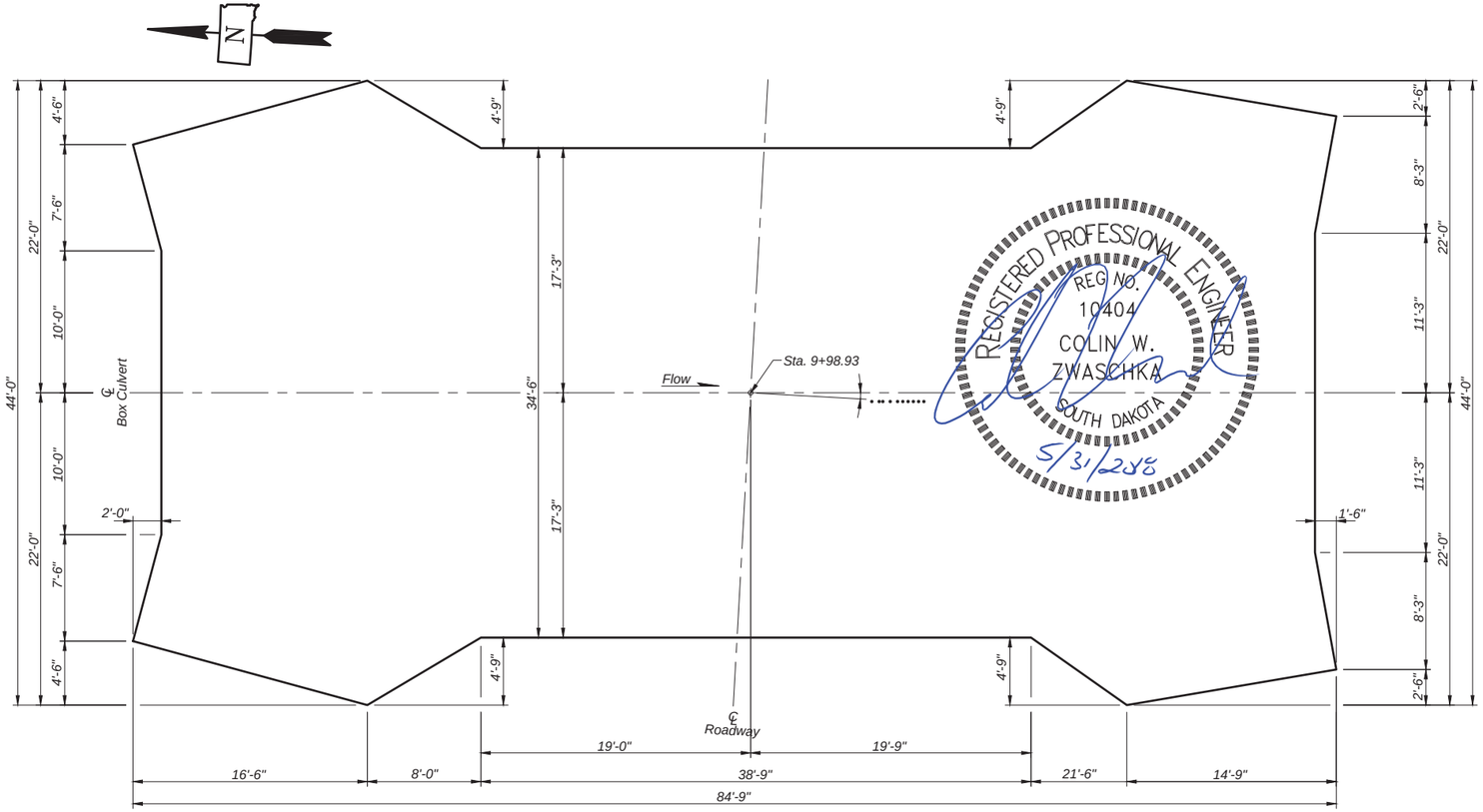
The Contractor shall use shoring or excavation techniques that minimize the amount of undermining of the rock masonry channel walls located both upstream and downstream of the existing structure during undercutting procedures. Any voids created under the rock masonry walls during construction of the RCBC shall be filled with a controlled density fill. This work is incidental to other bid items.

INCIDENTAL WORK, STRUCTURE

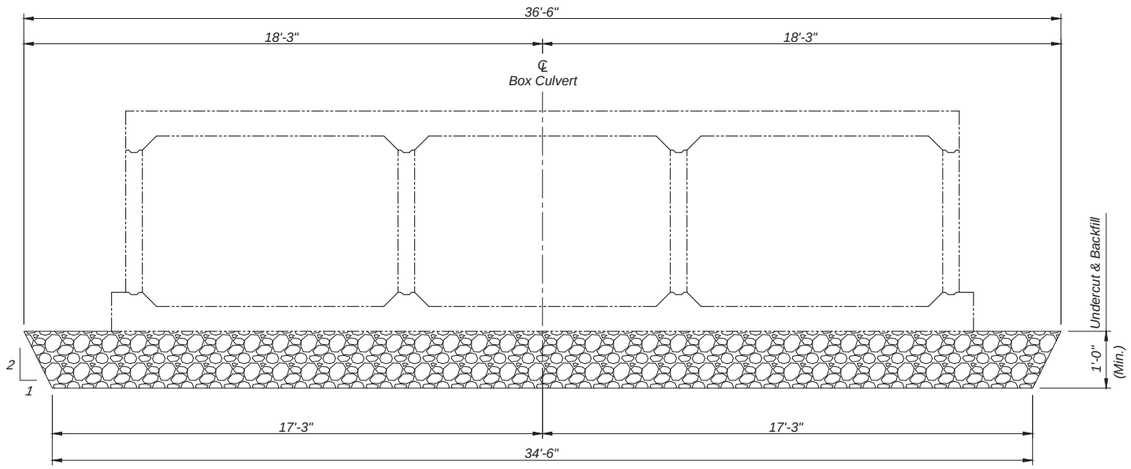
1. *In place from Sta. 9+84 to 10+15 of the mainline is a triple 10'x5' reinforced concrete box culvert (37.0' barrel length) and a single span 25.2' long x 6.1' wide reinforced concrete slab sidewalk supported on concrete masonry walls.*
2. *The Contractor shall remove the reinforced concrete box culvert structure, the reinforced concrete slab sidewalk, and the concrete masonry channel walls in their entirety, or as directed by the Engineer. All portions of the structures not salvaged for future highway related use shall be disposed of by the Contractor at a site provided by the Contractor and approved by the Engineer in accordance with Environmental Commitments found in the grading plans.*
3. *During demolition of the structure, efforts shall be taken to prevent material from falling into the stream. Under no circumstances is asphalt allowed to fall into the creek.*
4. *The foregoing is a general descriptionof the in place structures and should not be construed to be complete in all details. Before preparing the bid, it shall be the responsibility of the Contractor to make a visual inspection of the structures to verify the extent of the work and materials involved.*

NOTICE - LEAD BASED PAINT

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



UNDERCUT LAYOUT
(Bottom Dimensions)



TYPICAL SECTION
(For Limits of Undercut)

ESTIMATED QUANTITIES		
ITEM	*UNIT*	*QUANTITY*
Ø *Box Culvert Undercut*	*Cu. Yd.*	*117*

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

NOTES AND UNDERCUT DETAILS

FOR

3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — ~~SKEW~~ R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

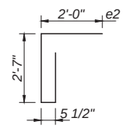
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

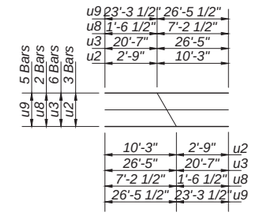
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	32	42

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
e2	43	4	7'-6"	S12
u1	20	4	12'-9"	Str.
☑ u2	3	4	13'-0"	Str.
u3	6	4	47'-0"	Str.
u4	1	4	20'-0"	Str.
u5	2	4	19'-9"	Str.
u6	3	4	19'-6"	Str.
u7	23	4	11'-3"	Str.
☑ u8	2	4	8'-9"	Str.
u9	5	4	49'-9"	Str.
u10	1	4	23'-0"	Str.
u11	2	4	22'-9"	Str.
u12	3	4	22'-6"	Str.

Bending Details

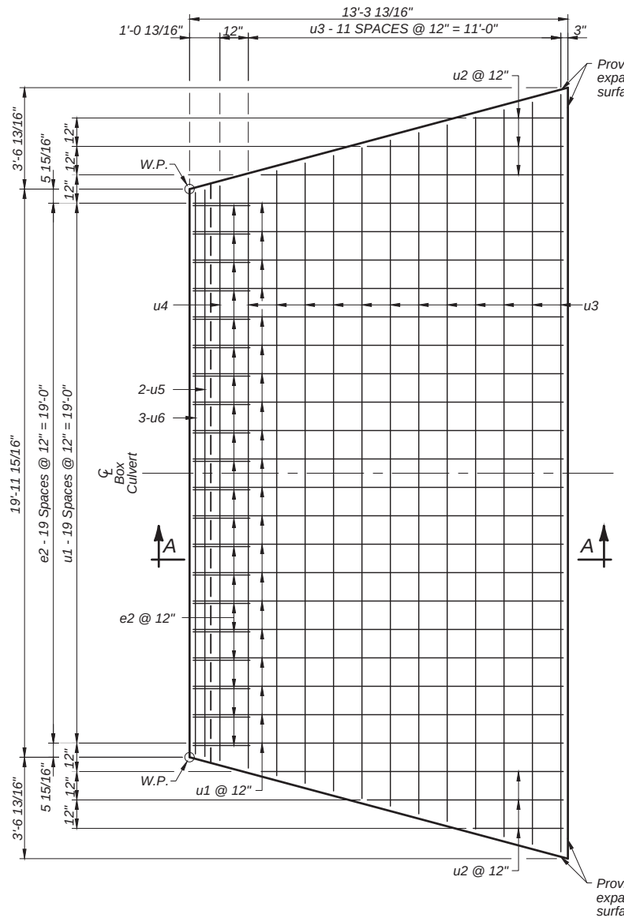




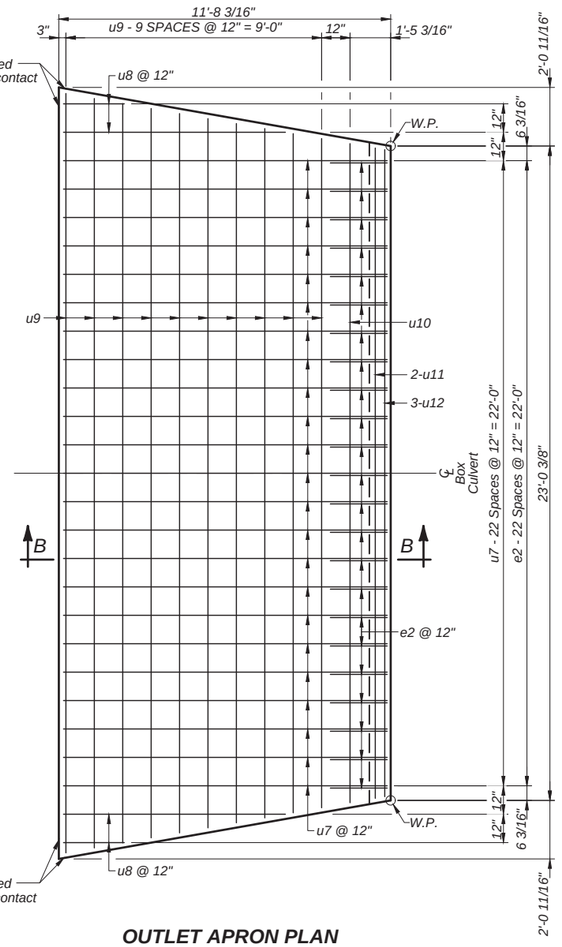
NOTES:
All dimensions are out to out of bars.
☑ See cutting diagram.

ESTIMATED QUANTITIES

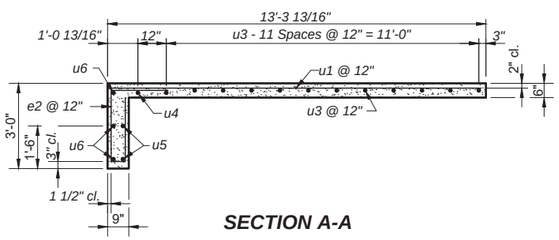
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet Apron	7.2	564	7.2
Outlet Apron	7.0	557	7.0



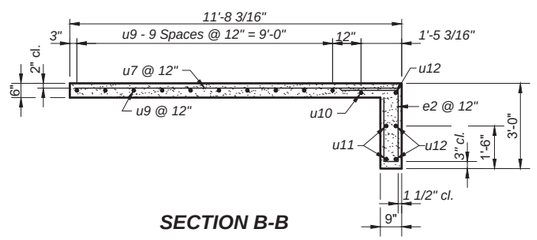
INLET APRON PLAN



OUTLET APRON PLAN



SECTION A-A



SECTION B-B

INLET AND OUTLET APRON DETAILS

FOR

3 - 9' x 6' BOX CULVERT

OVER PARK CREEK
STA. 9+98.93
STR. NO. 40-131-132
PCN 02EG

•••••SKEW R.H.F.
SEC. 8-T106N-R52W
BRF 6304(00)
HL-93

LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

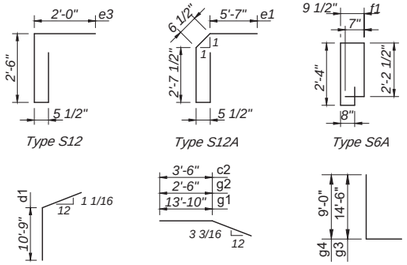
REGISTERED PROFESSIONAL ENGINEER
REG NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
5/31/2018

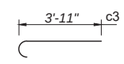
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	33	42

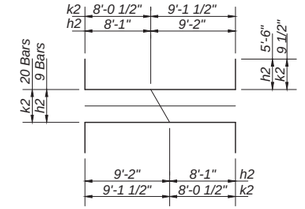
REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
a1	7	6	29'-0"	Str.
b1	4	6	28'-3"	Str.
c1	8	5	14'-0"	Str.
c2	4	5	7'-0"	19B
* c3	4	5	4'-6"	1A
d1	8	5	12'-6"	19B
e1	46	5	12'-0"	S12A
e3	29	4	7'-3"	S12
f1	30	4	7'-3"	S6A
g1	24	5	16'-0"	19B
g2	12	5	5'-0"	19B
* g3	4	5	15'-3"	17A
* g4	4	5	9'-9"	17A
☑ h2	9	4	28'-3"	17A
☑ k2	20	5	18'-9"	17A
p3	10	6	7'-0"	Str.
* p4	10	4	16'-6"	Str.
* p5	4	4	19'-3"	Str.
* p6	4	4	22'-3"	Str.
* p7	4	4	25'-3"	Str.

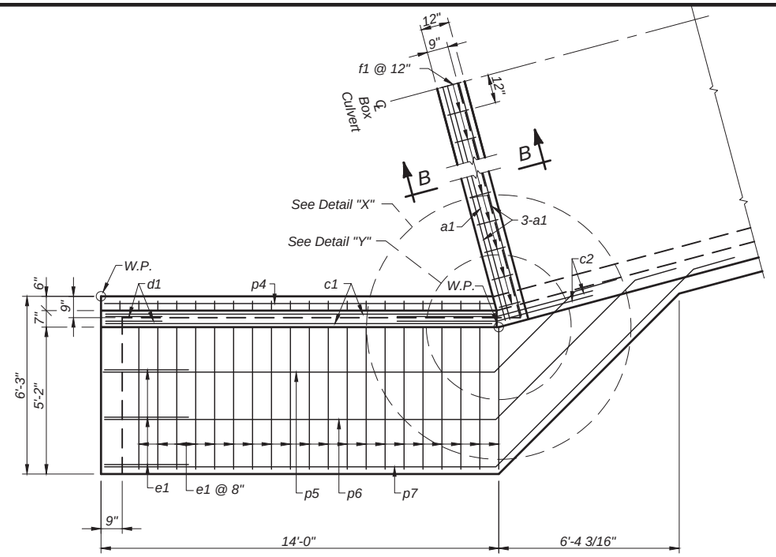
Bending Details



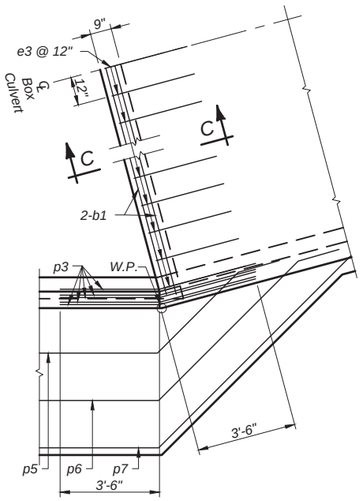




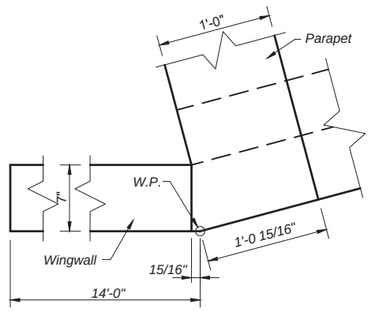
NOTES:
All dimensions are out to out of bars.
☑ See cutting diagram.
* Bend in field as necessary.



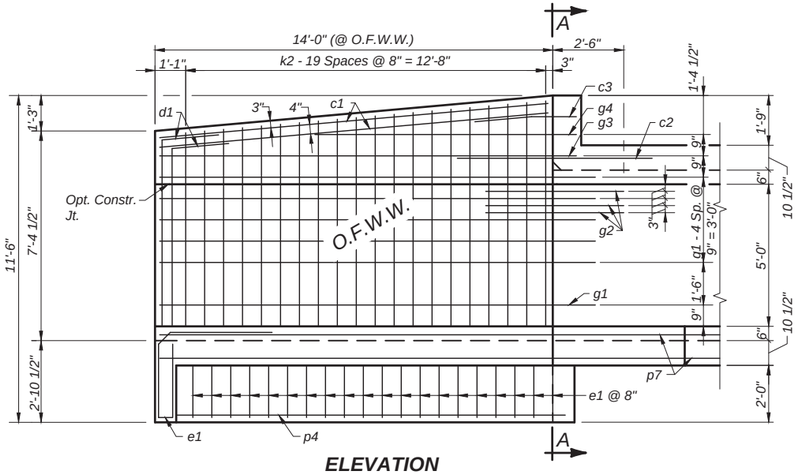
HALF PLAN



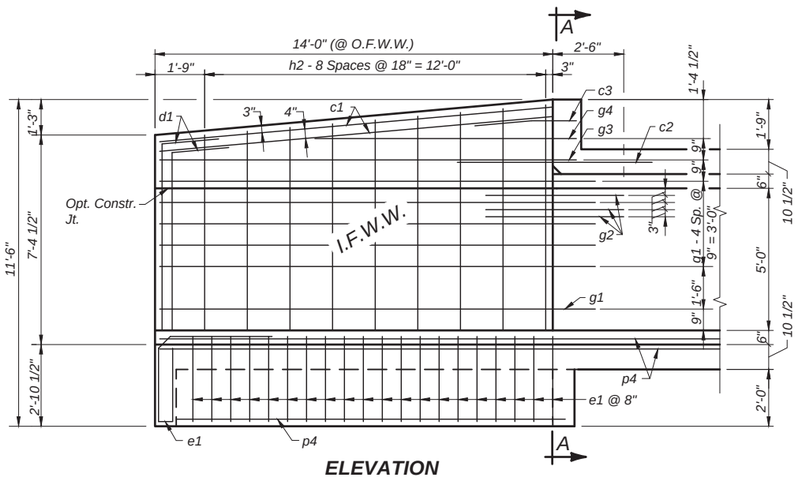
DETAIL "X"
(AT BOTTOM SLAB)



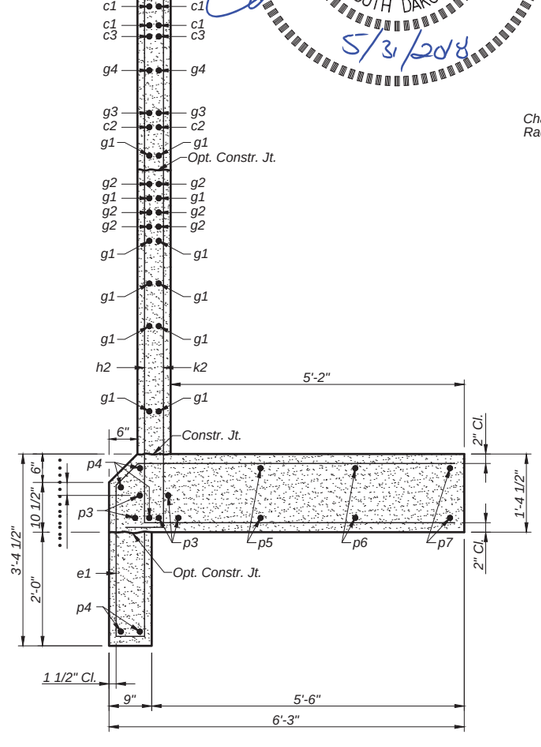
DETAIL "Y"
(AT TOP SLAB)



ELEVATION

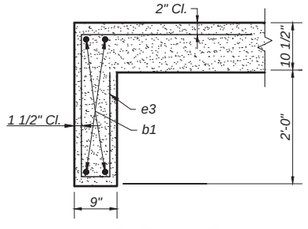


ELEVATION

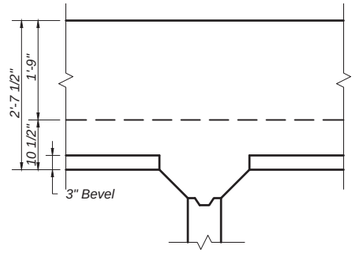


SECTION A-A

SECTION B-B
(AT TOP SLAB)



SECTION C-C
(AT BOTTOM SLAB)



VIEW D-D
(AT INTERIOR WALL)

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Inlet	23.0	3127	11.3

LEGEND FOR PLACING RE-STEEL

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

INLET DETAILS

FOR

3 - 9' x 6' BOX CULVERT

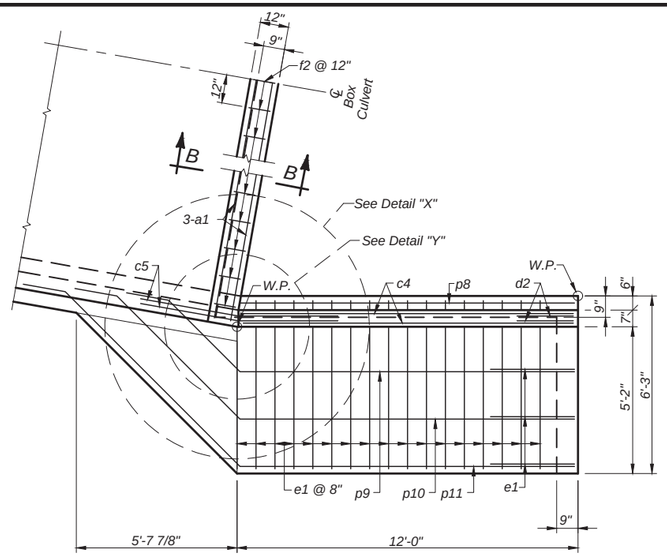
OVER PARK CREEK
STA. 9+98.93
STR. NO. 40-131-132
PCN 02EG

SKEW R.H.F.
SEC. 8-T106N-R52W
BRF 6304(00)
HL-93

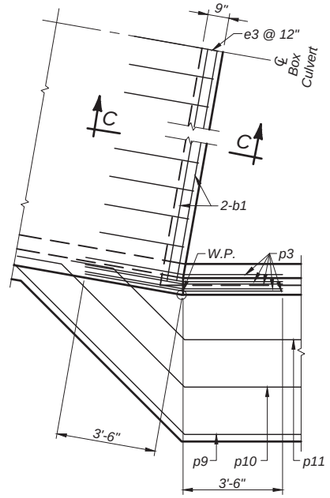
LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

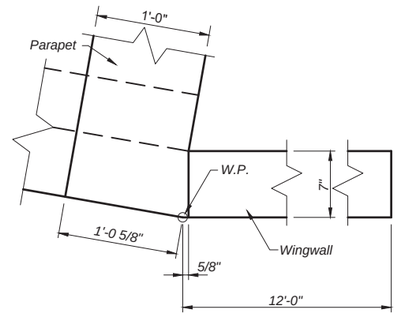
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	34	42



HALF PLAN



DETAIL "X"
(AT BOTTOM SLAB)

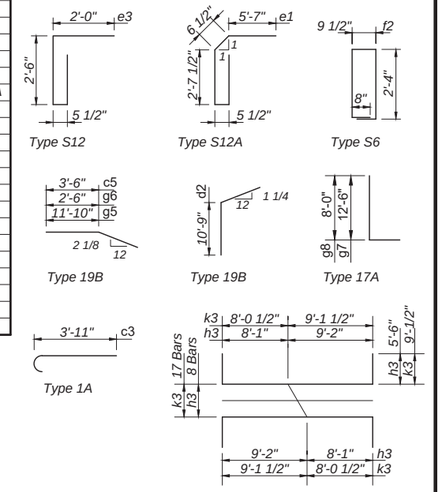


DETAIL "Y"
(AT TOP SLAB)

REINFORCING SCHEDULE

	Mk.	No.	Size	Length	Type
	a1	6	6	29'-0"	Str.
	b1	4	6	28'-3"	Str.
*	c3	4	5	4'-6"	1A
	c4	8	5	12'-0"	Str.
	c5	4	5	7'-0"	19B
	d2	8	5	12'-6"	19B
	e1	40	5	12'-0"	S12A
	e3	29	4	7'-3"	S12
	f2	30	4	6'-9"	S6
	g5	24	5	14'-0"	19B
	g6	12	5	5'-0"	19B
*	g7	4	5	13'-3"	17A
*	g8	4	5	8'-9"	17A
⍁	h3	8	4	28'-3"	17A
⍁	k3	17	5	18'-9"	17A
	p3	10	6	7'-0"	Str.
*	p8	10	4	14'-6"	Str.
*	p9	4	4	17'-0"	Str.
*	p10	4	4	19'-6"	Str.
*	p11	4	4	22'-0"	Str.

Bending Details



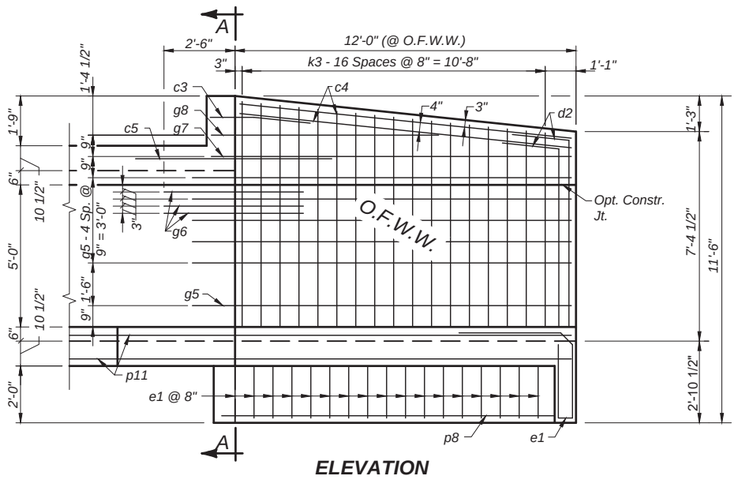
NOTES:
All dimensions are out to out of bars.
⍁ *See cutting diagram.*
* *Bend in field as necessary.*

ESTIMATED QUANTITIES

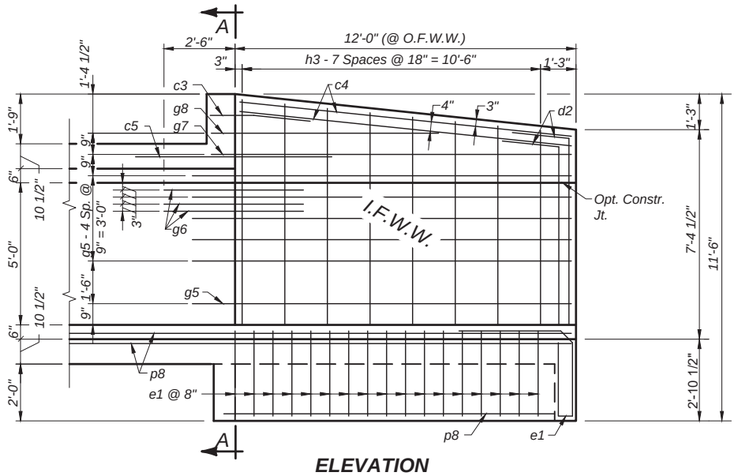
ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
Outlet	20.7	2806	10.2

LEGEND FOR PLACING RE-STEEL

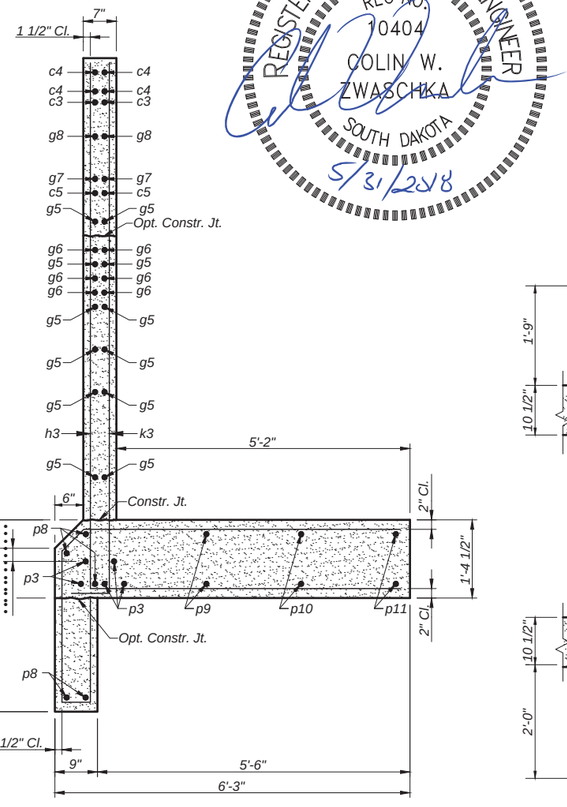
O.F.W.W. - Outside Face of Wing Wall
I.F.W.W. - Inside Face of Wing Wall
W.P. - Working Point



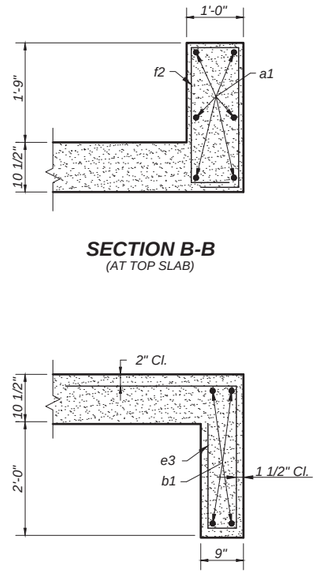
ELEVATION



ELEVATION



SECTION A-A



SECTION B-B
(AT TOP SLAB)

SECTION C-C
(AT BOTTOM SLAB)

OUTLET DETAILS

FOR

3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

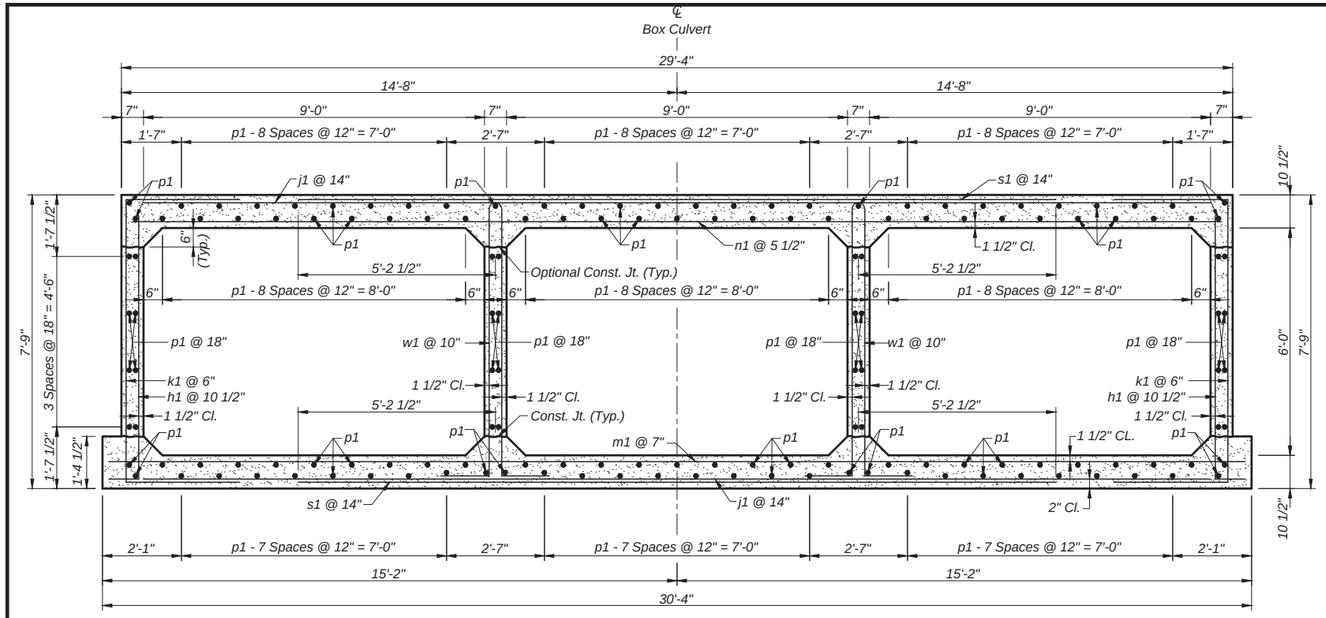
LAKE COUNTY (MADISON)

S. D. DEPT. OF TRANSPORTATION

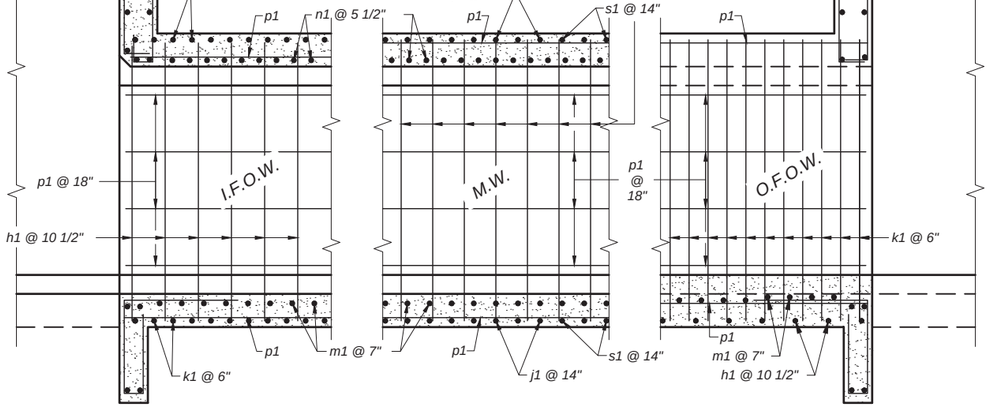
MAY 2018

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

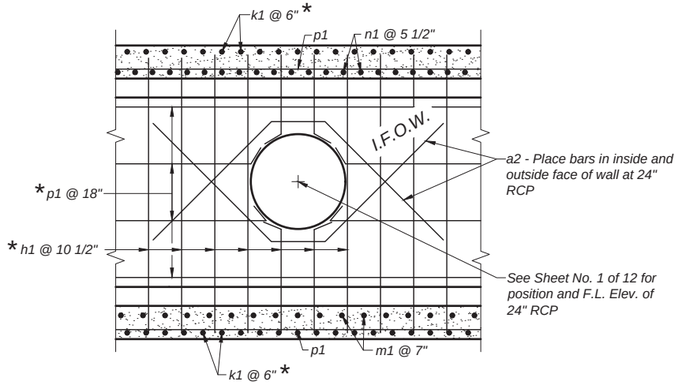
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	35	42



S1 BARREL SECTION
(5'-0" Maximum Fill)

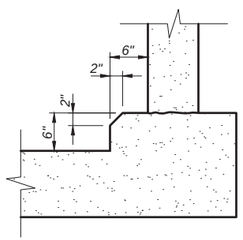


ELEVATION



* NOTE:
Cut and bend h1, k1, and p1 bars as required to place 24" CMP thru barrel wall.

ELEVATION
(Showing typ. steel revision at pipe location)

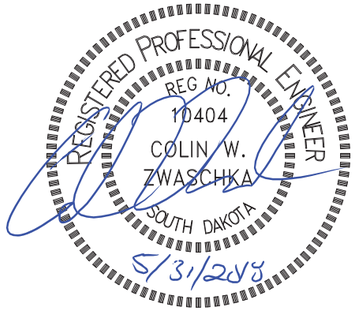


OPTIONAL FILLET DETAIL
(At Bottom Slab)

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

LEGEND FOR PLACING RE-STEEL

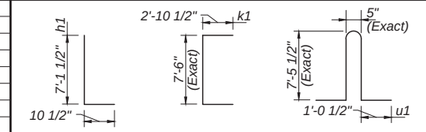
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab
B.T.S. - Bottom of Top Slab
T.T.S. - Top of Top Slab
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall
M.W. - Middle Wall
W.P. - Working Point

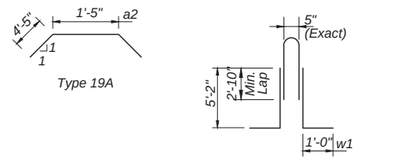


REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
h1	120	4	8'-0"	17A
j1	86	5	28'-3"	Str.
k1	208	4	13'-3"	17
m1	86	4	30'-0"	Str.
n1	109	4	29'-0"	Str.
p1	148	4	51'-6"	Str.
s1	84	5	20'-0"	Str.
w1	126	4	17'-3"	S11A
PIPE INLET				
a2	4	5	10'-3"	19A

Bending Details





Note:
All dimensions are out to out of bars.

Request for addition of reinforcing 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.

ESTIMATED QUANTITIES

ITEM	Class A45 Concrete, Box Culvert	Reinforcing Steel	Structure Excavation, Box Culvert
UNIT	Cu. Yd.	Lb.	Cu. Yd.
1 - Standard S1 Barrel End Section	126.3	17,190	49.2

NOTE:
Use this sheet in conjunction with sheets 7, 8, 9 & 10 of 12.

STANDARD S1 BARREL END SECTION DETAILS

FOR

3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

LAKE COUNTY (MADISON)

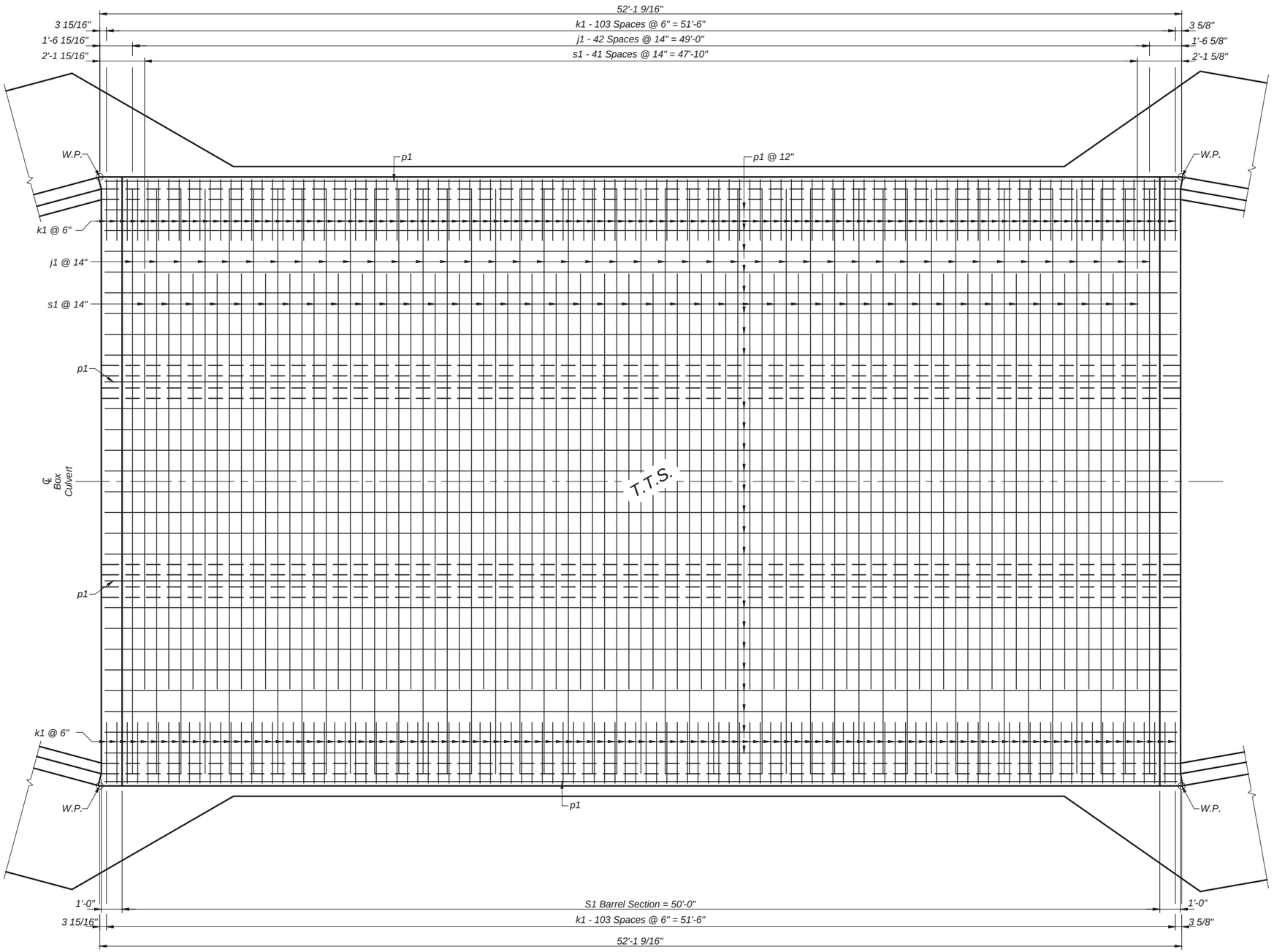
S. D. DEPT. OF TRANSPORTATION

MAY 2018

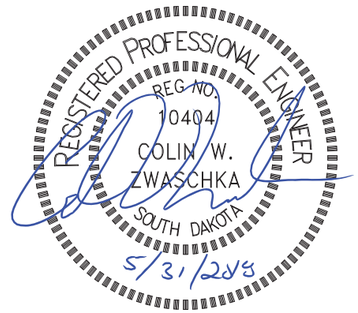
6 OF 12

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	36	42



TOP OF TOP SLAB PLAN



LEGEND FOR PLACING RE-STEEL
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab
B.T.S. - Bottom of Top Slab
T.T.S. - Top of Top Slab
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall
M.W. - Middle Wall
W.P. - Working Point

NOTE:
Use this sheet in conjunction with sheets 6, 8, 9 & 10 of 12.

STANDARD S1 BARREL END SECTION DETAILS

FOR

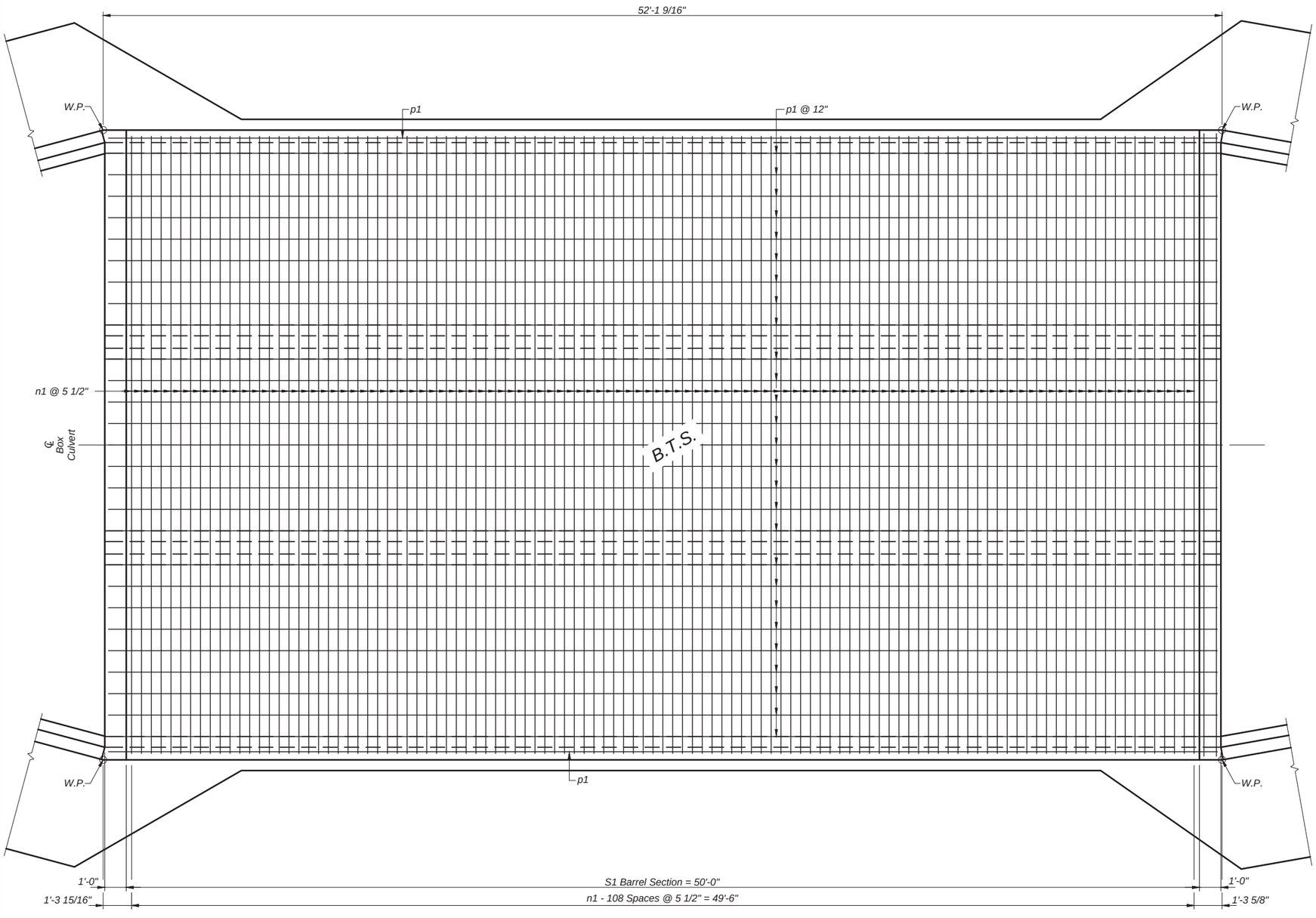
3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	37	42



BOTTOM OF TOP SLAB PLAN

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
5/31/2018

LEGEND FOR PLACING RE-STEEL
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab
B.T.S. - Bottom of Top Slab
T.T.S. - Top of Top Slab
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall
M.W. - Middle Wall
W.P. - Working Point

NOTE:
Use this sheet in conjunction with sheets 6, 7, 9 & 10 of 12.

STANDARD S1 BARREL END SECTION DETAILS

FOR

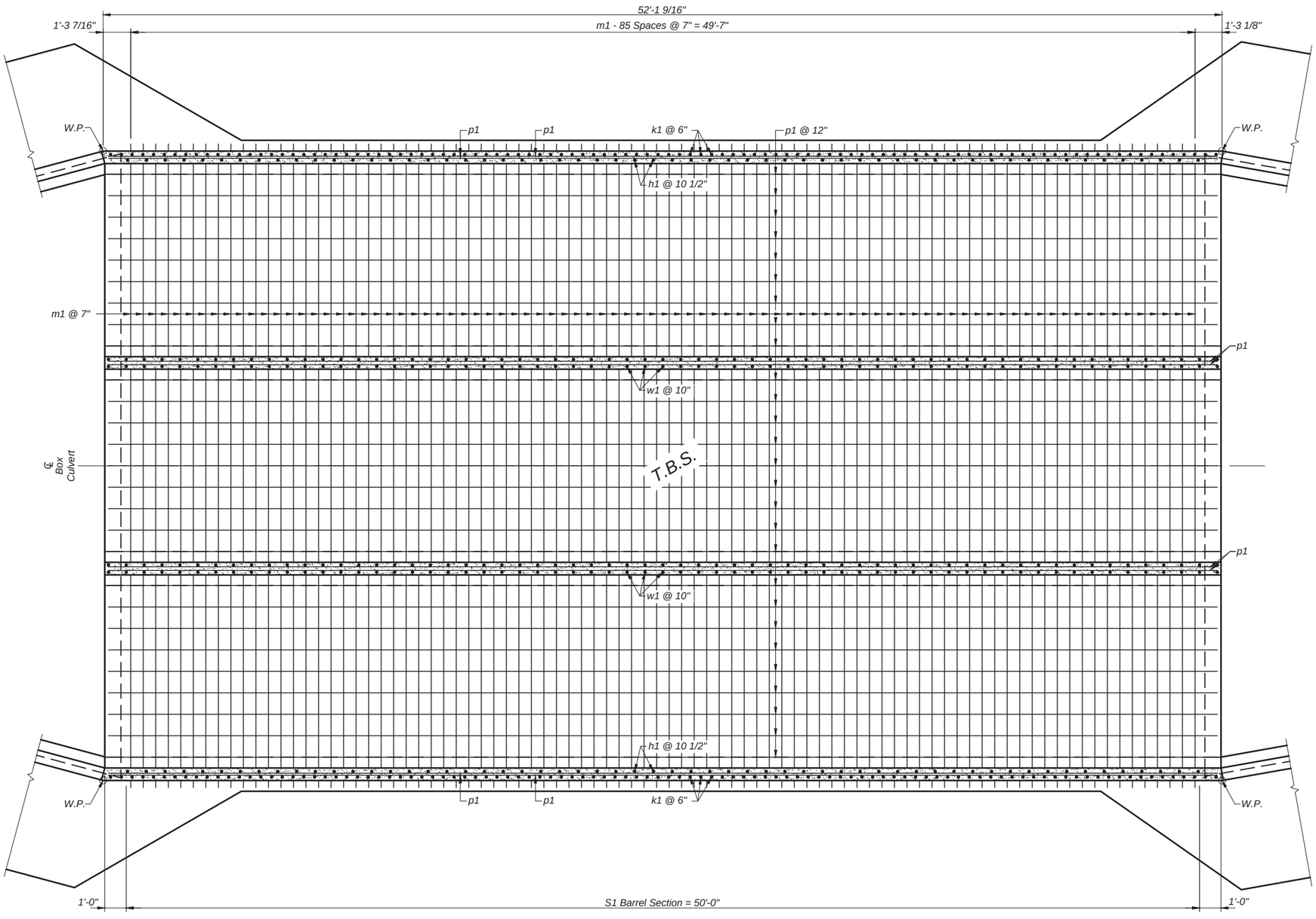
3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	38	42



TOP OF BOTTOM SLAB PLAN

REGISTERED PROFESSIONAL ENGINEER
REG NO. 10404
COLIN W. ZWASCHKA
SOUTH DAKOTA
5/31/2018

LEGEND FOR PLACING RE-STEEL
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab
B.T.S. - Bottom of Top Slab
T.T.S. - Top of Top Slab
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall
M.W. - Middle Wall
W.P. - Working Point

NOTE:
Use this sheet in conjunction with sheets 6, 7, 8 & 10 of 12.

STANDARD S1 BARREL END SECTION DETAILS

FOR

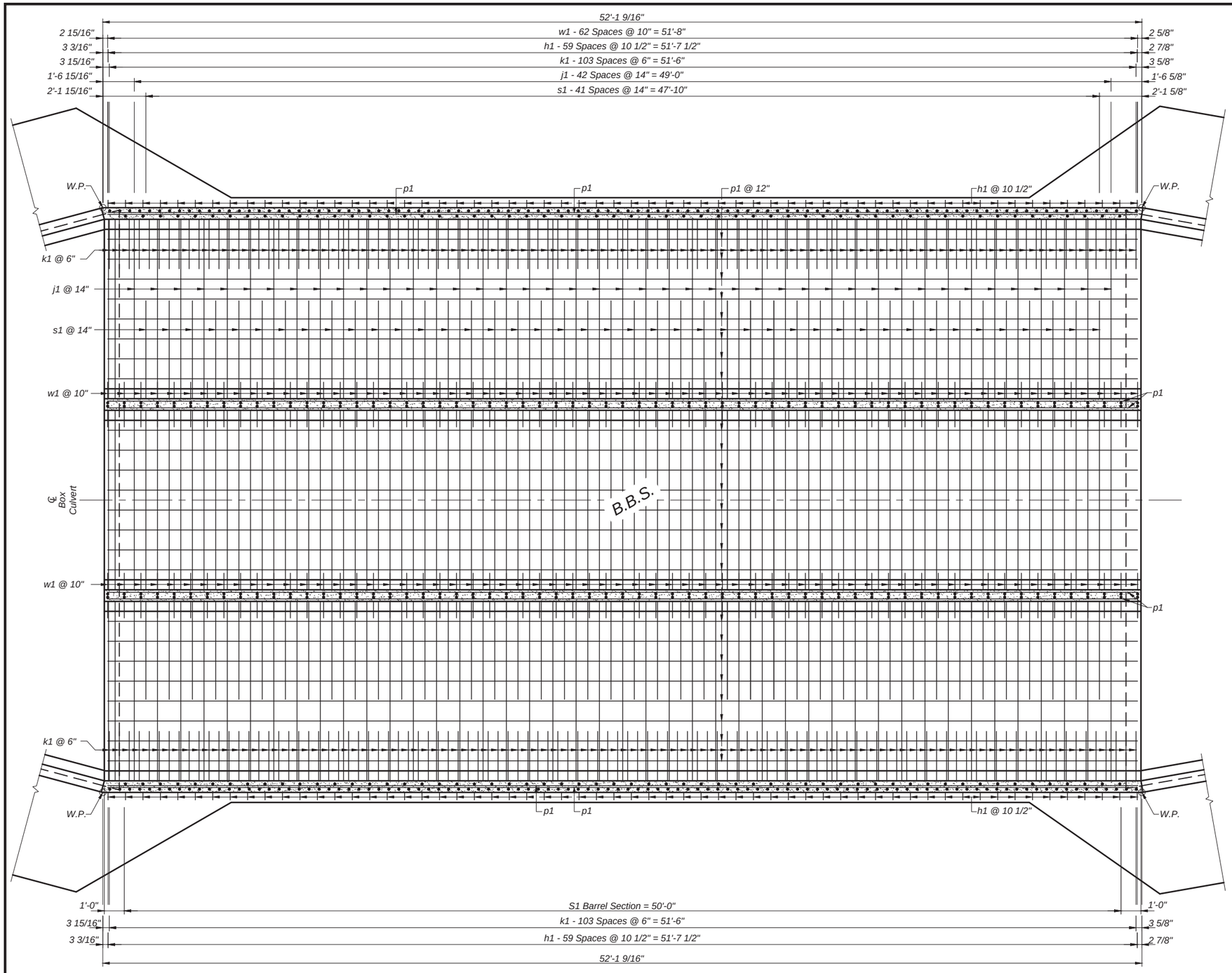
3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

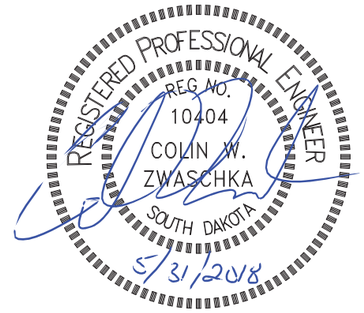
LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	39	42



BOTTOM OF BOTTOM SLAB PLAN



LEGEND FOR PLACING RE-STEEL
T.B.S. - Top of Bottom Slab
B.B.S. - Bottom of Bottom Slab
B.T.S. - Bottom of Top Slab
T.T.S. - Top of Top Slab
O.F.O.W. - Outside Face of Outside Wall
I.F.O.W. - Inside Face of Outside Wall
M.W. - Middle Wall
W.P. - Working Point

NOTE:
Use this sheet in conjunction with sheets 6, 7, 8 & 9 of 12.

STANDARD S1 BARREL END SECTION DETAILS

FOR

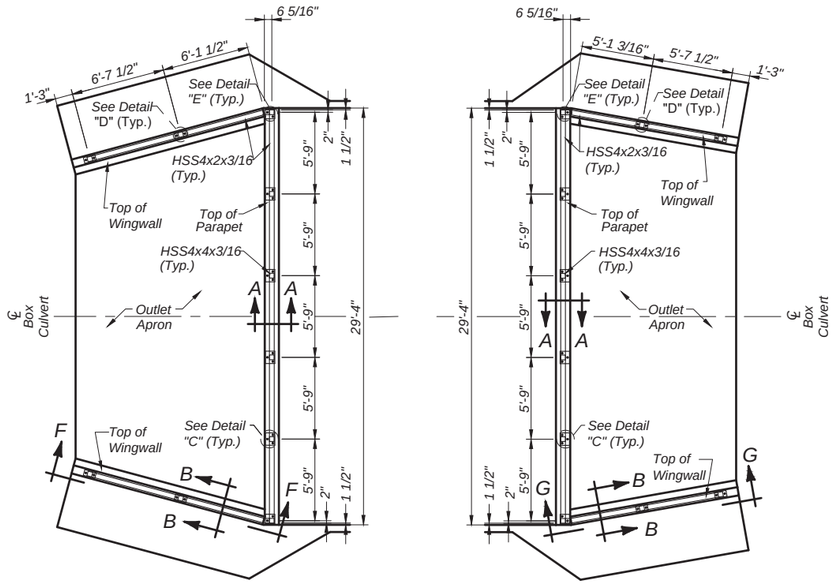
3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

LAKE COUNTY (MADISON)
S. D. DEPT. OF TRANSPORTATION
MAY 2018

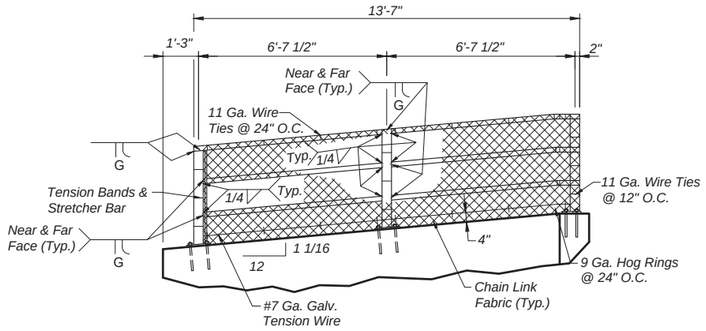
DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	BRF 6304(00)	40	42

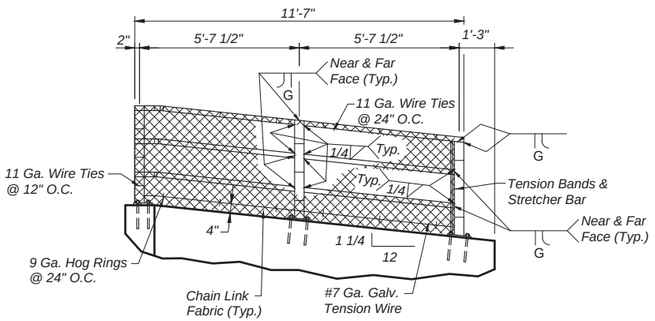


INLET PLAN

OUTLET PLAN



SECTION F-F



SECTION G-G

CHAIN LINK FENCE:

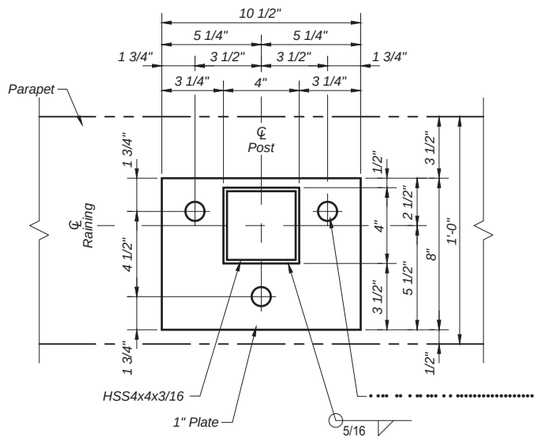
1. The chain link fence fabric and supports shall conform to the South Dakota Standard Specifications Section 930 as modified by the following notes.
2. The chain link fence fabric, wire ties, and miscellaneous hardware shall be galvanized and conform to AASHTO M181. The fence fabric shall be Type IV9 gauge wire woven in a 2 inch diamond mesh. Knuckled selvag shall be used on the top and bottom of the fence fabric.
3. A dark brown thermally extruded poly vinyl chloride coating shall be applied to the fence fabric, wire ties and all miscellaneous hardware.
4. The item "Chain Link Fence for Bridge Sidewalk" shall be paid for by the lineal foot. This payment shall be full compensation for furnishing all materials, labor, tools and equipment necessary or incidental to the construction of the chain link fence including chain link fence fabric, wire ties, and miscellaneous hardware, all to satisfactorily complete this work.

STEEL RAILING:

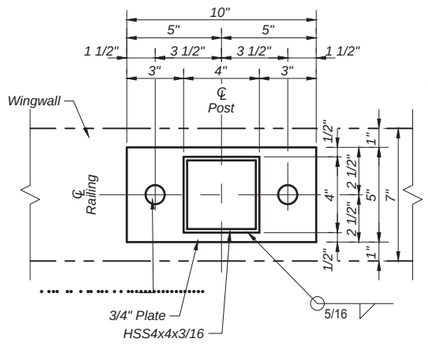
1. All railing posts shall be built vertical. Silicone seal around base plates if not flush with concrete.
2. All structural steel parts for railing shall conform to ASTM A500, Grade B. Material less than 1/4" thick may be ASTM A1011, Grade 36. Rail post base plates shall conform to ASTM A709, Grade 36.
3. All anchor bolts and nuts for railing shall conform to ASTM A307. Washers shall conform to ASTM F436 and all components shall be galvanized in accordance with ASTM A153 or ASTM F2329, as applicable. The bolts shall be hex head "Structural" type with heavy hex nuts and round washers.
4. All anchor bolts shall be tightened to a torque of 120 ft.-lbs. (approximate without the use of a calibrated torque wrench.)
5. All steel railing shall be painted in accordance with Section 411 of the South Dakota Standard Specifications and the color shall be an approved brown (Federal Standard 595B color 30045).
6. Welding and weld inspection shall be done in accordance with AWS D1.1.
7. The costs of structural steel, welding, weld inspection, painting and galvanizing shall be incidental to the contract unit price per foot for "Steel Pedestrian Railing on Sidewalk."
8. The fabricator shall submit shop plans in accordance with the specifications. Send shop plan submittals to Banner Associates, Inc., 409 22nd Ave. S., P.O. Box 298, Brookings, SD 57006-0298 (colinz@bannerassociates.com). After review, corrections (if necessary), and approval by Banner Associates, Inc., The Office of Bridge Design will review the submittals, authorize fabrication, arrange for fabrication inspection, and distribute the shop drawings.

SECTION A-A

SECTION B-B



DETAIL "C"



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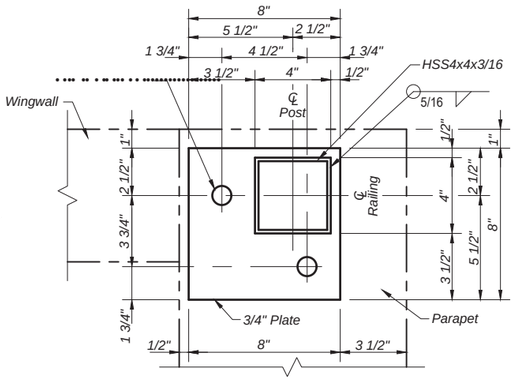

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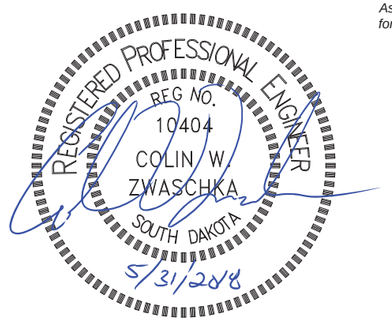


ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Steel Pedestrian Railing on Sidewalk	Ft.	109
Chain Link Fence for Bridge Sidewalk	Ft.	109

SPECIAL PEDESTRIAN RAILING DETAILS

FOR

3 - 9' x 6' BOX CULVERT

OVER PARK CREEK — SKEW R.H.F.
STA. 9+98.93 — SEC. 8-T106N-R52W
STR. NO. 40-131-132 — BRF 6304(00)
PCN 02EG — HL-93

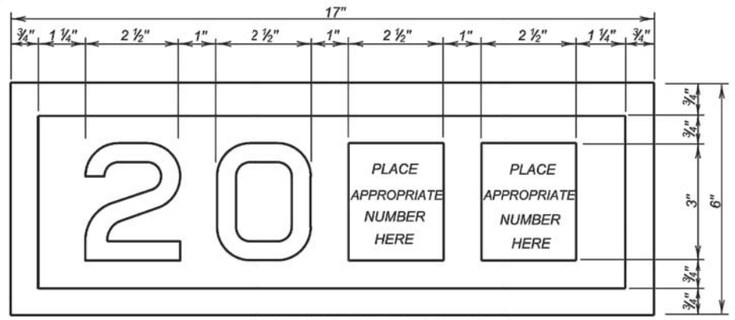
LAKE COUNTY (MADISON)

S. D. DEPT. OF TRANSPORTATION

MAY 2018

11 OF 12

DESIGNED BY	CK. DES. BY	DRAFTED BY	
CWZ	DJW	SAN	BRIDGE ENGINEER



YEAR PLATE DETAILS

GENERAL NOTES:

1. Year plates of the general dimensions shown shall be constructed on all box culverts and bridges. The year plates shall be constructed in reverse and attached to the forms in such a manner that the finished imprint in the concrete does not exceed one-half (½) inch in depth.

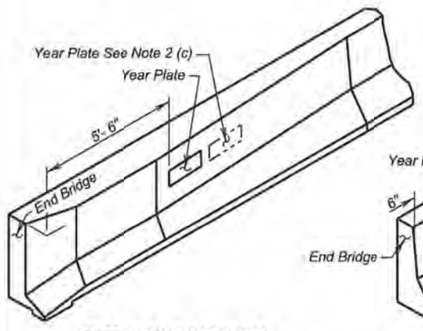
2. Year plates shall be located on structure (s) as follows:

   a. On cast-in-place box culverts the year plates shall be four and one - half (4 ½) inches below the top of the upstream parapet wall and centered laterally on the upstream face. On precast box culverts the year plate shall be centered laterally on the upstream face of the top slab. Where an extended interior wall interferes with this location, the year plate shall be centered in an adjacent barrel.

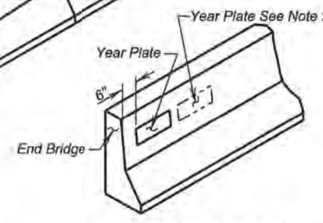
   b. On bridges with six (6) inch curbs or "Jersey" shaped barriers with no endblocks, the year plate shall be centered vertically on the curb face approximately six (6) inches from the end of the bridge, or as designated by the Engineer. On bridges with "Jersey" shaped barrier endblocks, the year plate shall be centered on the upper sloped portion of the barrier approximately 5'- 6" from the end of the bridge, or as designated by the Engineer. There shall be one year plate at each end of the bridge on opposite sides.

   c. When the plans specify that both the original date of construction and the date of reconstruction are to be shown, one date shall be placed as listed above and the other located adjacent to it. Both year plates shall be shown at each end of the bridge on opposite sides.

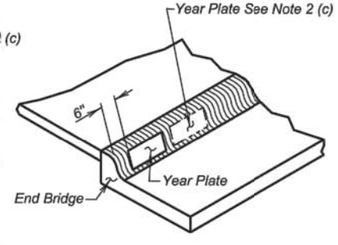
3. There will be no separate measurement or payment made for year plates on box culverts and bridges. All costs for this work shall be incidental to other contract items.



JERSEY BARRIER
(With Endblock)



JERSEY BARRIER



TYPE B CURB

June 26, 2012

Published Date: 2nd Qtr. 2018	SDDOT	YEAR PLATE DETAILS	PLATE NUMBER 460.02
			Sheet 1 Of 1

STATE OF	PROJECT	SHEET	TOTAL SHEETS
S.D.	BRF 6304(00)	42	42