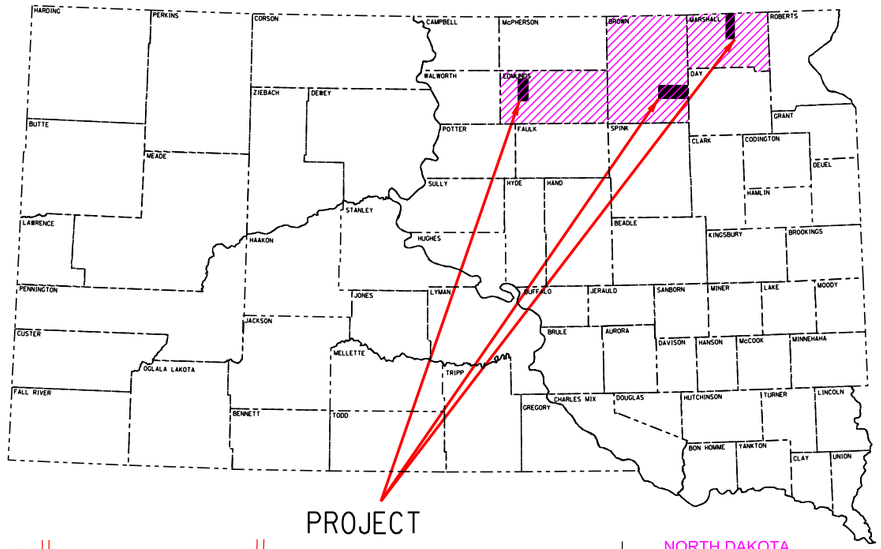
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(224)	1	28
Plotting Date: 07/22/2024			

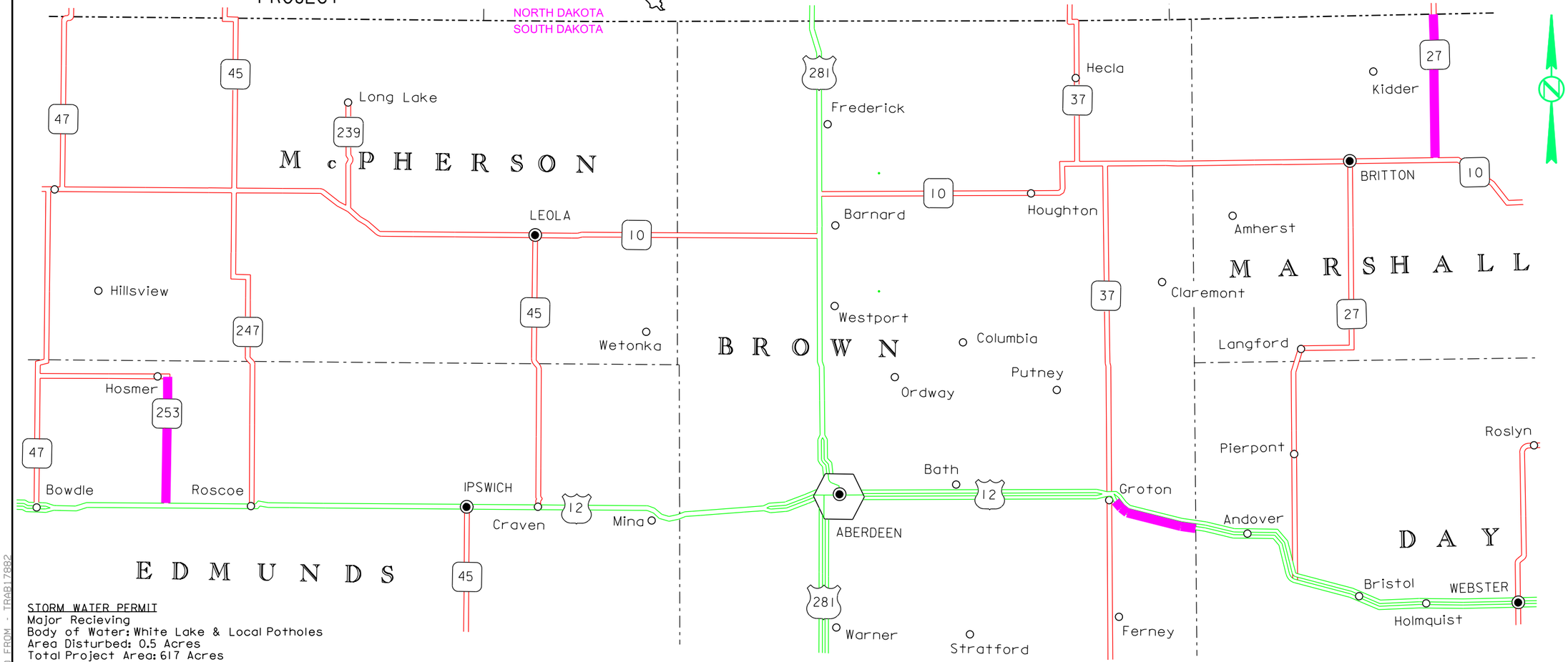
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT NH-P 0011(224)
U.S. HIGHWAY 12
S.D. HIGHWAYS 27 & 253
BROWN, EDMUNDS & MARSHALL COUNTIES

CULVERT CLEANING, LINING AND REPAIR
PCN 06EG



INDEX OF SHEETS



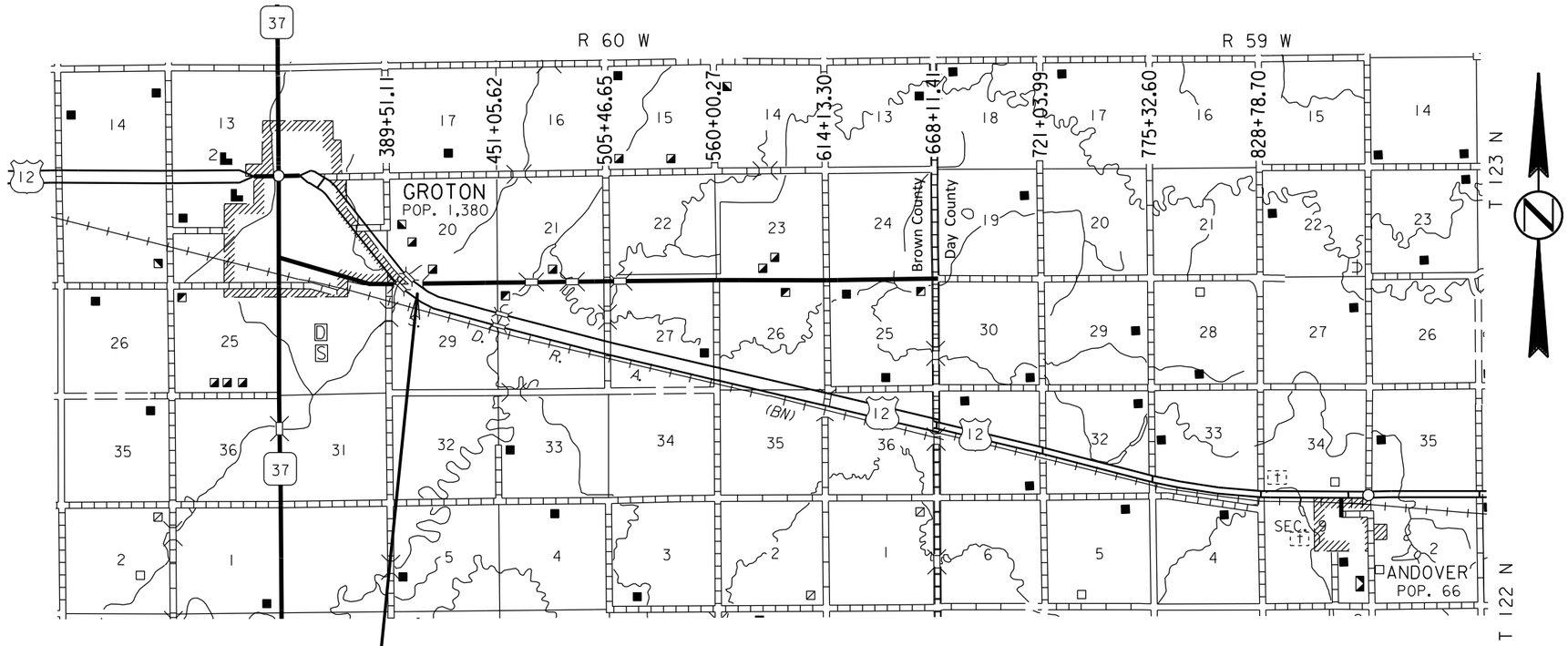
STORM WATER PERMIT
Major Recieving
Body of Water: White Lake & Local Potholes
Area Disturbed: 0.5 Acres
Total Project Area: 617 Acres
Approx. Begin Lat/Long:
U.S. 12: 45°26'34.55"N, 98°4'44.28"W
S.D. 27: 45°56'6.90"N, 97°37'28.20"W
S.D. 253: 45°34'43.47"N, 99°27'40.34"W

Highway Segment with Culvert Work

September 18, 2024

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(224)	2	28
Plotting Date: 04/19/2024			

US 12 EB & WB
BROWN COUNTY



Culvert ID = 10338
Sta. 403+00 EB
Sta. 80+92 WB
MRM 310.66 +0.04
24" RCP & CMP

DESIGN DESIGNATION

AADT (2022)	1806
AADT (2042)	2395
DHV	266
D	50%
DHV T%	13.3%
ADT T%	29.3%
V	60 MPH

PLOT SCALE - 1:6660

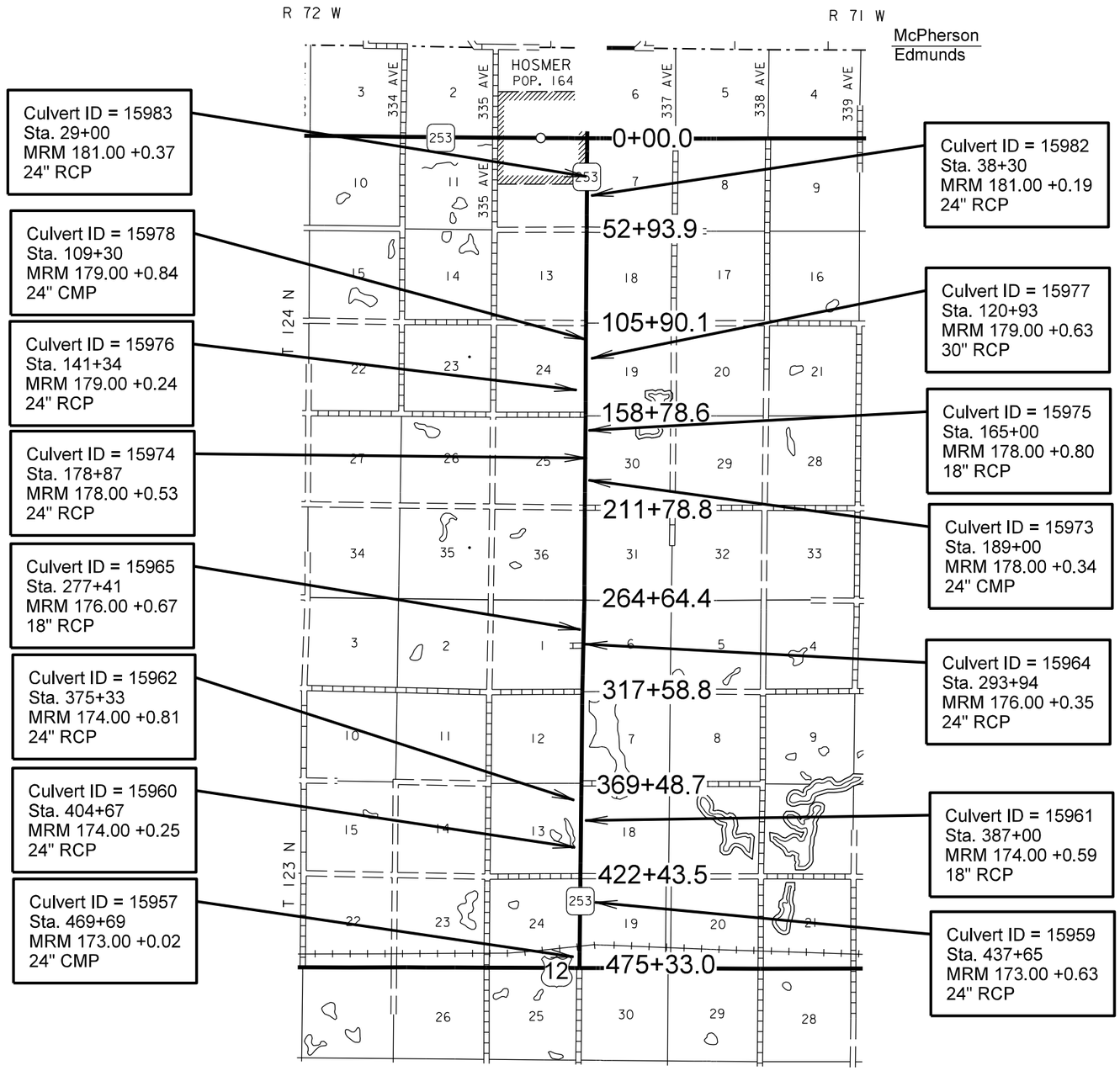
PLOTTED FROM - TRAB17882

PLOT NAME - 2

FILE - ...\US12 EB TITLE SHEET.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(224)	3	28

SD 253
EDMUNDS COUNTY



DESIGN DESIGNATION

AADT (2022)	236
AADT (2042)	312
DHV	37
D	50%
DHV T%	6.8%
AADT T%	15.0%
V	65 MPH

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	NH-P 0011(224)	4	28

SD 27
MARSHALL COUNTY

Culvert to have Joints Sealed and Void Filled

Culvert to be Cleaned and Lined

Culvert ID = 14785
Sta. 11+02
MRM 246.00+0.42
60" RCP

Culvert ID = 14782
Sta. 104+63
MRM 244.00+0.65
42" RCP ARCH

Culvert ID = 14781
Sta. 120+90
MRM 244.00+0.34
TRIPPLE 54" RCP ARCH

Culvert ID = 14779
Sta. 187+00
MRM 243.00+0.09
54" RCP ARCH

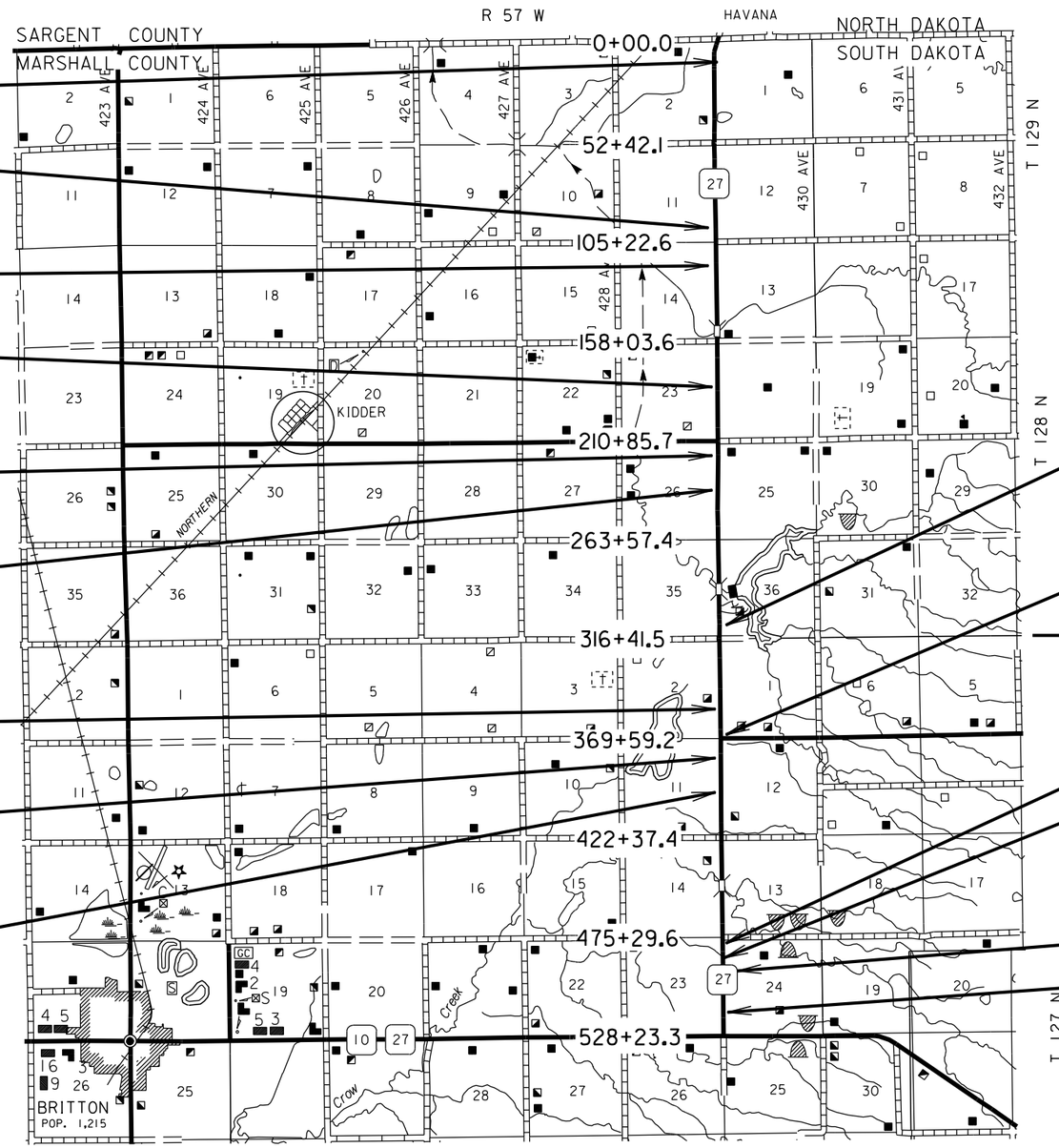
Culvert ID = 14778
Sta. 211+46
MRM 242.00+0.66
TWIN 60" RCP ARCH

Culvert ID = 14777
Sta. 237+64
MRM 242.00+0.16
42" RCP ARCH

Culvert ID = 14770
Sta. 351+60
MRM 240.00+0.02
42" RCP

Culvert ID = 14768
Sta. 375+61
MRM 239.00+0.56
54" RCP ARCH

Culvert ID = 14766
Sta. 393+25
MRM 239.00+0.22
54" RCP ARCH



Culvert ID = 14773
Sta. 300+01
MRM 241.00+0.00
18" RCP

Culvert ID = 14769
Sta. 368+80
MRM 239.00+0.68
30" RCP

Culvert ID = 14761
Sta. 475+90
MRM 237.00+0.65
24" RCP

Culvert ID = 14760
Sta. 484+55
MRM 237.00+0.49
24" RCP

Culvert ID = 14759
Sta. 490+55
MRM 237.00+0.38
30" RCP

Culvert ID = 14756
Sta. 516+52
MRM 236.66+0.17
42" RCP ARCH

DESIGN DESIGNATION

AADT (2022)	615
AADT (2042)	723
DHV	80
D	50%
DHV T%	15.5%
ADT T%	31.8%
V	65 MPH

PLOT SCALE - 1:7695

PLOTTED FROM - TRAB17892

PLOT NAME - 4

FILE - ...\EDMS0EEG\SD27 TITLE SHEET.DGN

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(224)	5	28

Estimate of Quantities

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	60	Ft
110E0510	Remove Pipe End Section	10	Each
110E1690	Remove Sediment	1.2	CuYd
110E1700	Remove Silt Fence	250	Ft
110E7500	Remove Pipe for Reset	12	Ft
110E7510	Remove Pipe End Section for Reset	2	Each
230E0020	Contractor Furnished Topsoil	100	CuYd
450E2008	18" RCP Flared End, Furnish	2	Each
450E2009	18" RCP Flared End, Install	2	Each
450E2016	24" RCP Flared End, Furnish	13	Each
450E2017	24" RCP Flared End, Install	13	Each
450E2024	30" RCP Flared End, Furnish	2	Each
450E2025	30" RCP Flared End, Install	2	Each
450E4699	Tie Bolts for RCP	212	Each
450E4769	24" CMP 16 Gauge, Furnish	40	Ft
450E4770	24" CMP, Install	40	Ft
450E5215	24" CMP Flared End, Furnish	5	Each
450E5216	24" CMP Flared End, Install	5	Each
450E8300	Culvert Joint Cleaning	1,453.8	Ft
450E8305	Repair Culvert Joint	1,453.8	Ft
450E8310	Chemical Grout Void Fill	1,139.0	Gal
* 450E8900	Cleanout Pipe Culvert	8	Each
450E8910	Cleanout for Culvert Treatment	16	Each
450E9000	Reset Pipe	12	Ft
450E9001	Reset Pipe End Section	2	Each
450E9518	18" Cured in Place Pipe	250	Ft
450E9524	24" Cured in Place Pipe	1,121	Ft
450E9526	30" Cured in Place Pipe	160	Ft
450E9630	42" Cured in Place Arch Pipe	99	Ft
634E0010	Flagging	75.0	Hour
634E0110	Traffic Control Signs	610.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Board	2	Each
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	500	Ft
734E0602	Low Flow Silt Fence	1,000	Ft
734E0610	Mucking Silt Fence	70	CuYd
734E0620	Repair Silt Fence	250	Ft

*** - Denotes Non-Participating**

SPECIFICATIONS

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

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. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf >

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

COMMITMENT A: AQUATIC RESOURCES

COMMITMENT A1: WETLANDS

Temporary wetland impacts will not be mitigated as original contours and elevations will be re-established. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits and easements shown in the plans.

COMMITMENT B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D1: SURFACE WATER QUALITY

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. 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 Agriculture and Natural Resources (DANR), 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 DANR 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 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

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

Action Taken/Required:

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the SDDANR using the following form:

< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_AddTempInfoFillable.pdf >

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information 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 DANR monthly. Additional information can be found at:

< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.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 DANR General Permit for Stormwater 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 DANR 15 days prior to project start in order to obtain coverage under the General Permit. Work can begin once the DANR 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 DANR 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 DANR.

The form can be found at:
< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_CGPAppendixCCA2018Fillable.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 DOT 298 Form 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 the site.

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

SDDOT: < https://dot.sd.gov/doing-business/environmental/stormwater >

DANR:< https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/stormwater/default.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 Agriculture 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 Environmental Office and 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 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 not to exceed the duration of the project. Prior to project completion, the waste will 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: HISTORIC PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historic 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 in 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 within 150 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

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

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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TABLE OF MAINLINE PIPE CULVERT REPAIRS

Culvert #	Inventory #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type	Per Original Plans: Culvert Length (Ft)	Per Original Plans: Culvert End Type	Per Original Plans: Direction of Flow	Remove Pipe: Culvert (Ft)	Remove Pipe: for Reset (Ft)	Remove Pipe: End Section (Each)	Remove Pipe: End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	Furnish and Install: 24" RCP Flared End (Each)	Furnish and Install: 30" RCP Flared End (Each)	Furnish and Install: 24" CMP (Ft)	Furnish and Install: 24" CMP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Clean-out Pipe Culvert (Each)	Clean out for Treatment (Each)	Culvert Joint Cleaning (Ft)	Repair Culvert Joint (Ft)	Chemical Grout Void Fill (Gallons)	Tie Bolts for RCP (Each)	Cured in Place Pipe: 18" (Ft)	Cured in Place Pipe: 24" (Ft)	Cured in Place Pipe: 30" (Ft)	Cured in Place Pipe: 42" Arch (Ft)	Height of Fill from Top of Pipe to Top of Road (Ft)	Pipe Condition for Design	Repair Comments
US 12 EB & WB																																	
10338	310.66	0.04	403+00 EB 80+92 WB	L	24"	CMP RCP	216	Flared ?	SW			1						1				1						226			8.0	Fully Deteriorated	Clean and Line. Replace left CMP end treatment. This culvert had a median drain. (Culvert 2/3 full of water Fall 2023.) EBL was used to determine cover depth over culvert.
				R				Flared																									
SD 253																																	
15983	181.00	0.37	29+00	L	24	RCP	92		Equalizer	6					1							1						92			5.4	Partially Deteriorated	Remove 6' of barrel section on each end. Install flared end on both ends. Clean & Install Liner.
				R						6					1																		
15982	181.00	0.19	38+30	L	24"	RCP	102		Equalizer	6					1						1										7.0	Partially Deteriorated	Remove end section of pipe believed to be 6' in length. Install Flared Ends. Clean and video pipe to see if more repairs are required. (Culvert submerged Fall 2023.)
				R						6					1																		
15978	179.00	0.84	109+30	L	24"	CMP	142		Equalizer	2							10				1	1					138			3.4	Fully Deteriorated	Cut-off damaged and excess barrel end section at both ends. Length may vary from what is indicated. Clean & Line Culvert. (Culvert submerged Fall 2023.) Unable to find East End of Culvert thus unable to determine actual culvert length.
				R						2							10																
15977	179.00	0.63	120+93	L	30"	RCP	92	Flared	East		6		1						6	1	1										8.4	Partially Deteriorated	Reset Flared End and 6' of barrel section on both ends. Clean and video culvert to see if additional repairs are required. (1' water in culvert Fall 2023.)
				R				Flared			6		1						6	1													
15976	179.00	0.24	141+34	L	24"	RCP	64	Flared	East			1			1							1					69			4.9	Partially Deteriorated	Replace East Flared End. Clean & Line Culvert.
				R				Flared																									
15975	178.00	0.80	165+00	L	18"	RCP	78	Flared	East												1										7.2	Partially Deteriorated	Clean and video culvert. From video determine if additional repairs are required. (Culvert submerged Fall 2023.)
				R				Flared																									
15974	178.00	0.53	178+87	L	24"	RCP	102	Flared	East												1										9.8	Partially Deteriorated	Clean and video culvert. From video determine if additional repairs are required. (Culvert submerged Fall 2023.)
				R				Flared																									

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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TABLE OF MAINLINE PIPE CULVERT REPAIRS

Culvert #	Inventory #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type	Per Original Plans: Culvert Length (Ft)	Per Original Plans: Culvert End Type	Per Original Plans: Direction of Flow	Remove Pipe: Culvert (Ft)	Remove Pipe: for Reset (Ft)	Remove Pipe: End Section (Each)	Remove Pipe: End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	Furnish and Install: 24" RCP Flared End (Each)	Furnish and Install: 30" RCP Flared End (Each)	Furnish and Install: 24" CMP (Ft)	Furnish and Install: 24" CMP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Clean-out Pipe Culvert (Each)	Clean out for Treatment (Each)	Culvert Joint Cleaning (Ft)	Repair Culvert Joint (Ft)	Chemical Grout Void Fill (Gallons)	Tie Bolts for RCP (Each)	Cured in Place Pipe: 18" (Ft)	Cured in Place Pipe: 24" (Ft)	Cured in Place Pipe: 30" (Ft)	Cured in Place Pipe: 42" Arch (Ft)	Height of Fill from Top of Pipe to Top of Road (Ft)	Pipe Condition for Design	Repair Comments
SD 253 Cont.																																	
	15973	178.00	0.34	189+00	L	24"	CMP	78		Equalizer	4								1			1						71			4.4	Fully Deteriorated	Cut off 4' of excess barrel section on each end. (Field measured culvert length = 78.7') install flared end on both ends. Clean and line culvert. (1/2 Ft water in culvert Fall 2023.)
					R						4								1														
	15965	176.00	0.67	277+41	L	18"	RCP	60	Flared	?												1					68				5.0	Partially Deteriorated	Replace West Flared End. Clean and install liner.
					R				Flared			1		1																		
	15964	176.00	0.35	293+94	L	24"	RCP	112		Equalizer	6				1							1									8.0	Partially Deteriorated	Remove end section of pipe believed to be 6' in length. Install Flared Ends. Clean and video pipe to see if more repairs are required. (Culvert submerged Fall 2023.)
					R						6				1																		
	15962	174.00	0.81	375+33	L	24"	RCP	62	Flared	West												1					67				4.7	Partially Deteriorated	Replace West Flared End. Clean and line culvert.
					R				Flared			1			1																		
	15961	174.00	0.59	387+00	L	18"	RCP	70	Flared	SW												1					78				6.0	Partially Deteriorated	Clean and Install Liner.
					R				Flared																								
	15960	174.00	0.25	404+67	L	24"	RCP	62	Flared	West												1					67				4.9	Partially Deteriorated	Clean and Install Liner.
					R				Flared																								
	15959	173.00	0.63	437+65	L	24"	RCP	82		Equalizer	6				1							1									5.5	Partially Deteriorated	Remove end section of pipe believed to be 6' in length. Install Flared Ends. Clean and video pipe to see if more repairs are required. (Culvert submerged Fall 2023.)
					R						6				1																		
	15957	173.00	0.02	469+69	L	24"	CMP	84		Equalizer							10	1			1	1					80				5.5	Fully Deteriorated	Install Flared Ends on both ends. There may be excess culvert section to remove prior to installing flared ends and lining. (Field measured culvert length = 80.1') Clean and line culvert. (Culvert submerged Fall 2023.)
					R												10	1															

TABLE OF MAINLINE PIPE CULVERT REPAIRS

Inventory Culvert #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type		Culvert Length (Ft)	Culvert End Type	Direction of Flow	Remove Pipe: Culvert (Ft)	for Reset (Ft)	End Section (Each)	End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	24" RCP Flared End (Each)	30" RCP Flared End (Each)	24" CMP (Ft)	24" CMP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Clean-out Pipe Culvert (Each)	Clean out for Treat-ment (Each)	Culvert Joint Cleaning (Ft)	Repair Culvert Joint (Ft)	Chemical Grout Void Fill (Gallons)	Tie Bolts for RCP (Each)	Cured in Place Pipe: 18" (Ft)	24" (Ft)	30" (Ft)	42" Arch (Ft)	Height of Fill from Top of Pipe to Top of Road (Ft)	Pipe Condition for Design	Repair Comments
SD 27																																	
14785	246.00	0.42	11+02	L R	60"	RCP	50	Flared Flared	West?														157.0	157.0	133	20							Tie and seal all 10 Joints. Void fill center 6 joints.
14782	244.00	0.65	104+63	L R	42"	RCP Arch	52	Flared Flared	West														109.9	109.9	85	20							Tie and seal all 10 Joints. Void fill center 6 joints.
14781	244.00	0.34	120+90	L R	54"	RCP Arch	40	Flared Flared	West														113.0	113.0	84	16							Tie and seal all 8 joints, Void fill center 6 joints.
14781	244.00	0.34	120+90	L R	54"	RCP Arch	40	Flared Flared	West														113.0	113.0	84	16							Tie and seal all 8 joints, Void fill center 6 joints.
14781	244.00	0.34	120+90	L R	54"	RCP Arch	40	Flared Flared	West														113.0	113.0	84	16							Tie and seal all 8 joints, Void fill center 6 joints.
14779	243.00	0.09	187+00	L R	54"	RCP Arch	42	Flared Flared	West														113.0	113.0	88	16							Tie and seal all 8 joints, Void fill center 6 joints.
14778	242.00	0.66	211+46	L R	60"	RCP Arch	44	Flared Flared															141.3	141.3	117	18							Tie and seal all 9 joints. Void fill center 7 joints.
14778	242.00	0.66	211+46	L R	60"	RCP Arch	44	Flared Flared															141.3	141.3	117	18							Tie and seal all 9 joints. Void fill center 7 joints.

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TABLE OF MAINLINE PIPE CULVERT REPAIRS

Culvert #	Inventory #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type	Per Original Plans: Culvert Length (Ft)	Per Original Plans: Culvert End Type	Per Original Plans: Direction of Flow	Remove Pipe: Culvert (Ft)	Remove Pipe: for Reset (Ft)	Remove Pipe: End Section (Each)	Remove Pipe: End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	Furnish and Install: 24" RCP Flared End (Each)	Furnish and Install: 30" RCP Flared End (Each)	Furnish and Install: 24" CMP (Ft)	Furnish and Install: 24" CMP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Clean-out Pipe Culvert (Each)	Clean out for Treatment (Each)	Culvert Joint Cleaning (Ft)	Repair Culvert Joint (Ft)	Chemical Grout Void Fill (Gallons)	Tie Bolts for RCP (Each)	Cured in Place Pipe: 18" (Ft)	Cured in Place Pipe: 24" (Ft)	Cured in Place Pipe: 30" (Ft)	Cured in Place Pipe: 42" Arch (Ft)	Height of Fill from Top of Pipe to Top of Road (Ft)	Pipe Condition for Design	Repair Comments
SD 27 Cont.																																	
14777	14777	242.00	0.16	237+64	L	42"	50	Flared	West														109.9	109.9	82	20						Partially Deteriorated	Tie and seal all 10 joints. Void fill center 6 joints.
					R	RCP Arch		Flared																									
14773	14773	241.00	0.00	300+01	L	18"	56	Flared	West			1		1								1					64				4.4	Partially Deteriorated	Replace East Flared End. Clean & Line Culvert.
					R	RCP		Flared																									
14770	14770	240.00	0.02	351+60	L	42"	44	Flared	West														87.9	87.9	72	16						Partially Deteriorated	Tie and seal all 8 Joints. Void fill center 6 joints.
					R	RCP		Flared																									
14769	14769	239.00	0.68	368+80	L	30"	50	Flared	West													1							53		3.0	Partially Deteriorated	Replace West Flared End. Clean & Line Culvert.
					R	RCP		Flared				1				1																	
14768	14768	239.00	0.56	375+61	L	54"	44	Flared	West														127.2	127.2	92	18						Partially Deteriorated	Tie and seal all 9 joints. Void fill center 7 joints.
					R	RCP Arch		Flared																									
14766	14766	239.00	0.22	393+25	L	54"	48	Flared	West														127.2	127.2	101	18						Partially Deteriorated	Tie and seal all 9 joints. Void fill center 7 joints.
					R	RCP Arch		Flared																									
14761	14761	237.00	0.65	475+90	L	24"	56	Flared	West													1						60			4.1	Partially Deteriorated	Replace West Flared End. Clean & Line Culvert.
					R	RCP		Flared				1			1																	
14760	14760	237.00	0.49	484+55	L	24"	56	Flared	West			1			1							1						61			4.2	Partially Deteriorated	Replace both Flared Ends. Clean & Line Culvert.
					R	RCP		Flared				1			1																	

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TABLE OF MAINLINE PIPE CULVERT REPAIRS

Culvert #	MRM	+ Disp	Station	Side	Per Original Plans: In Place Culvert Size and Type	Per Original Plans: Culvert Length (Ft)	Per Original Plans: Culvert End Type	Per Original Plans: Direction of Flow	Remove Pipe: Culvert (Ft)	Remove Pipe: for Reset (Ft)	Remove Pipe: End Section (Each)	Remove Pipe: End Section for Reset (Each)	Furnish and Install: 18" RCP Flared End (Each)	Furnish and Install: 24" RCP Flared End (Each)	Furnish and Install: 30" RCP Flared End (Each)	Furnish and Install: 24" CMP (Ft)	Furnish and Install: 24" CMP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Clean-out Pipe Culvert (Each)	Clean out for Treatment (Each)	Culvert Joint Cleaning (Ft)	Repair Culvert Joint (Ft)	Chemical Grout Void Fill (Gallons)	Tie Bolts for RCP (Each)	Cured in Place Pipe: 18" (Ft)	Cured in Place Pipe: 24" (Ft)	Cured in Place Pipe: 30" (Ft)	Cured in Place Pipe: 42" Arch (Ft)	Height of Fill from Top of Pipe to Top of Road (Ft)	Pipe Condition for Design	Repair Comments
SD 27 Cont.																																
14759	237.00	0.38	490+55	L	30"	RCP	58	Flared			1				1						1							62		4.0	Partially Deteriorated	Replace East Flared End. Clean & Line Culvert.
				R				Flared	West																							
14756	236.66	0.17	516+52	L	42"	RCP Arch	92	Flared													1								99	9.3	Partially Deteriorated	Clean & Install liner.
				R				Flared	West																							
Additional Quantity of Cured in Place Pipe Liner is included with the assumption that some culverts that are shown to be only cleaned will also require a liner.																										40	190	45				
								TOTAL	**60**	**12**	**10**	**2**	**2**	**13**	**2**	**40**	**5**	**12**	**2**	**8**	**16**	**1453.8**	**1453.8**	**1139**	**212**	**250**	**1121**	**160**	**99**			

Left and Right based upon project station, thus Left is East (North) side and Right is West (South) side.

In place Culvert Markers shall be removed and reset when performing Culvert Work. Cost to remove and reset Culvert Markers shall be incidental to the various culvert contract items.

SCOPE OF WORK

Work on this project involves replacing pipe culvert end sections, cleaning and inspection of pipe culverts. Sealing of joints between RCP culvert sections and void filling is required. Lining of the pipe culverts is also anticipated.

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor will contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

SEQUENCE OF OPERATIONS

The Contractor will submit to the Area Engineer a minimum of 1 week prior to the Preconstruction Meeting a detailed plan of how the pipe culvert repair, cleaning and inspection will be staged. The plan will show how the Contractor is going to maintain traffic at each pipe culvert site, where equipment is going to be stored, the total length of the work space if a lane of traffic needs to be closed to traffic, and the methods used to prevent material removed from the pipe culverts from entering the waterway. These plans will be approved by the Area Engineer prior to starting work on the pipe culvert cleaning and inspection.

Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence will be submitted for review a minimum of one week prior to potential implementation.

TRAFFIC CONTROL

The roadways will remain open to traffic at all times.

On a 2 lane roadway, one lane of traffic may be closed during work hours, with traffic control being handled with the use of Flaggers as per Standard Plate 634.23. The length of a work zone will be limited to 1 culvert site and there will be a minimum of 1000 Ft between work zones. If 2 culverts are within 200 Ft of each other it can be considered 1 work site. If work can safely be performed from the shoulder of the roadway or beyond the shoulder, traffic control will be as per Standard Plate 634.03.

On a divided multilane roadway, one lane of traffic in each direction may be closed during working hours, with traffic control being handled as per Standard Plate 634.64. If work can safely be performed from the shoulder of the roadway or beyond the shoulder, traffic control will be as per Standard Plate 634.03.

Flaggers and FLAGGER symbol signs (per standard plate 634.23) will be in place when work activities or equipment present a hazard to workers, through traffic, or encroaches into driving lanes open to traffic, which will then be closed to traffic.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will accommodate vehicles up to 16 feet wide through the work area at all times.

Traffic control devices will be placed beyond the surfaced edge of the roadway when not in use.

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

All construction operations will be conducted in the general direction of traffic movement.

If there is a discrepancy between the traffic control plans, standard plates, and the MUTCD, whichever is more stringent will be used, as determined by the Engineer.

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

TRAFFIC CONTROL SIGNS

Sufficient traffic control devices have been included in these plans to sign two workspaces as per Standard Plate 634.03 and two workspaces as per Standard Plate 634.23. If the Contractor elects to work on additional locations simultaneously, the cost for additional traffic control devices will be incidental to the contract unit price per square foot for TRAFFIC CONTROL SIGNS.

Sufficient traffic control devices have been included in these plans to simultaneously sign both the EB and WB lanes on U.S. Highway 12 as per Standard Plate 634.64.

FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

It is required that the flaggers be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for FLAGGING

CLEANOUT PIPE CULVERTS

The contract item CLEANOUT PIPE CULVERT is included in this contract for use at those locations where water and sediment levels did not allow for any type of visual inspection inside of the culvert. The Table of Mainline Pipe Culvert Repairs indicate locations where this contract item will be utilized.

Cleanout of pipe culverts will be done in advance of pipe culvert repair operations, as indicated in the Table of Mainline Pipe Culvert Repairs. Following cleaning, pipe inspection will be completed with a CCTV camera. The inspection will determine any deviations in the vertical and horizontal alignments, location and size of any gaps in joints, and location of any damage.

The pipe culvert cleaning and inspection will be scheduled such that there is adequate time to evaluate what repairs are required and allow for ordering and delivery of pipe culvert repair materials.

Material in all existing pipe culverts will be cleaned out by water flushing or other approved methods.

Material removed from the pipe culverts will become the property of the Contractor for disposal.

The Contractor will implement appropriate sediment control measures prior to water flushing in order to prevent discharges from the project boundaries.

Pipe culverts may need to be dewatered to allow for CCTV inspection.

The pipe culvert will be cleaned to the satisfaction of the Engineer and the cleaning will be adequate to determine pipe condition and potential repair techniques.

Refer to the Special Provision for Glass Reinforced Plastic (GRP) Ultraviolet Light (UV) Cured In Place Pipe (CIPP) Liner regarding requirements for the CCTV Camera and inspection.

All costs to dewater, clean pipes, dispose of removed materials and CCTV camera inspect pipe culverts will be incidental to the contract unit price per each for CLEANOUT PIPE CULVERT.

The contract item CLEANOUT PIPE CULVERT will be paid for a maximum of one time for each pipe culvert.

When the contract item CLEANOUT PIPE CULVERT is indicated at a culvert site, the SDDOT will not be responsible for any materials that were ordered prior to the culvert being cleaned and CCTV inspected.

CLEANOUT FOR CULVERT TREATMENT

The contract item CLEANOUT FOR CULVERT TREATMENT will be paid for a maximum of one time for each pipe culvert. The contract item CLEANOUT FOR CULVERT TREATMENT will not be paid for if during the contract work item CLEANOUT PIPE CULVERTS, it is determined that culvert lining is not possible. In addition, the contract item CLEANOUT FOR CULVERT TREATMENT will not be paid if after the initial cleanout (paid as CLEANOUT PIPE CULVERTS) a 2nd cleanout effort is not necessary to line the pipe.

ENGINEER DRAWING AND DESIGN CALCULATION SUBMITTALS

The Contractor will submit the engineering drawing and design calculations for the culvert liners, as required by the various culvert lining Special Provision in Adobe PDF format.

Adobe PDF submittals will be sent to the following email addresses:

Scott.Schneider@state.sd.us
Michael.Welch@state.sd.us

RCP AND CMP CULVERT REPAIRS FOR MAINLINE PIPE CULVERTS

The Contractor is encouraged to thoroughly investigate the culvert repair sites prior to bidding. Prior to working on the sites that are inundated with water, a complete dewatering plan will be submitted for approval to the Engineer. No separate payment for dewatering will be made.

Resetting and replacement of RCP and CMP will be completed prior to culvert lining.

All pipe and end treatments designated for removal will become the property of the Contractor for his disposal.

When necessary to remove end sections of CMP culverts, they may be cut with a torch. If the pipe culvert is cut the damaged area will be painted with a galvanizing paint approved by the Engineer. All costs associated with cutting and painting will be incidental to the various contract items.

The Contractor is advised of the risk of lead exposure when cutting galvanized paint. The Contractor should plan his/her operations accordingly, and inform employees of hazards of lead exposure.

Prior to culvert repair work the Contractor will remove and stockpile all of the in place topsoil from the construction areas. On completion of construction operations this salvaged topsoil will be spread evenly over the newly constructed embankment inslopes. Removal and replacement of topsoil will be incidental to the various culvert contract items.

CORRUGATED METAL PIPE

Corrugated metal pipes will 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 will 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.

For pipe segments of 10' or less, helical spun pipe with rolled ends will not be required. Riveted pipe will be allowed.

The gauge of the corrugated metal ends will match the thickest gauge of corrugated metal pipe it is connected to. When connecting to an existing culvert, the gauge of the corrugated metal ends will be 14 gauge.

CORRUGATED METAL PIPE END SECTION REPLACEMENT

A linear footage quantity of CMP, at several locations, has been shown in the Table of Mainline Pipe Culvert Repairs. At these locations it is anticipated that the ends of the CMP culvert are heavily deteriorated, while the middle portion of the CMP culvert is still in such a condition that lining is possible. The end segments of the CMP culvert will be replaced with new CMP, while retaining the middle portion of the CMP culvert.

The extent of CMP culvert replacement will be determined through CCTV inspection and excavation into the inslope of the roadway. At several locations excavation is anticipated to be necessary in order to locate heavily deteriorated CMP culvert ends.

The extent of excavation and CMP culvert replacement will be limited to the inslope and will not go under the mainline driving surface or the shoulders of the roadway. If excavation is required, the culvert site will be left in such a condition as not to create a hazard until final repairs are completed.

Upon determining the CMP culvert is in such a condition that lining is possible, the Engineer will determine the length of CMP that will need to be installed. This may vary significantly from what is shown in the Table of Mainline Pipe Culvert Repairs.

The replacement CMP culvert will be butted up and attached to the in-place CMP culvert, as approved by the Engineer. The liner will then be installed through the entire length of the in-place CMP and the replacement CMP culvert sections that were added.

The cost of excavation will be included in the various contract items for culvert repair.

In the event that excavation has occurred and it is determined the CMP culvert condition is such that it cannot be lined but has some degree of functionality, replacement CMP culvert will be butted up and attached to the in-place CMP culvert, as approved by the Engineer.

In the event that excavation has occurred and it is determined the CMP culvert condition is such that it cannot be lined and the culvert is not functioning, no CMP culvert replacement will be installed.

Compaction of the reconstructed inslope will be to the satisfaction of the Engineer.

TABLE OF MAINLINE PIPE CULVERT REPAIR

Pipe culvert lengths shown in the Table of Mainline Pipe Culvert Repairs were obtained from the original grading plans and were not verified in the field. Length of CIPP liners shown in plans are based upon field measurements.

It is the Contractors responsibility to investigate each pipe culvert pipe repair site to determine the pipe culvert size and length, along with other information needed to prepare a bid.

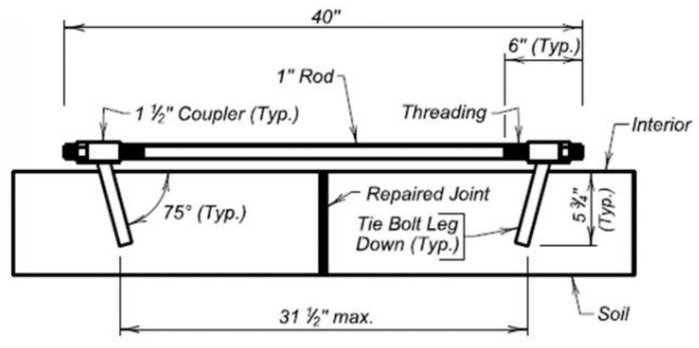
Locating of culverts may require more than a visual inspection. Metal detectors, probing rods and excavation may be required to locate the culverts. Stationing from grading plans for the culverts and nearby section line roadways are shown in the plans to help locate the culverts, however the exact installation location may not match what was shown in the grading plans.

The U.S. Highway 12 Culvert at MRM 310.66 +0.04 has a drain connection. The typical T section connecting the median drain to the mainline cross pipe is an 18” RCP. The contractor will be responsible for providing on opening in the liner at this T section. The opening in the liner must match the size of the connecting pipe and provide for a smooth finished surface that will not catch any debris.

TIE BOLTS FOR REINFORCED CONCRETE PIPE AND CATTLE PASSES

Joints for the concrete pipe and cattle passes, as listed in the Table of Mainline Pipe Culvert Repairs will have tie bolts installed on the inside of the culvert. The Contractor will drill holes at an angle as to cause the legs of the tie bolt to bind against the outside face of the hole upon tie bolt tightening. Bending of the tie bolt legs may need to be done to achieve this. Prior to inserting the tie bolt, the Contractor will fill the hole with epoxy resin. The epoxy resin mixture will be of a type for bonding steel to hardened concrete and will conform to AASHTO M235 Type IV, (Equivalent to ASTM C881, Type IV). The Contractor will allow the resin to properly set-up prior to the final tightening of the tie bolts.

Cost for drilling tie bolt holes, epoxy resin, connections, and furnishing and installing the tie bolts for reinforced concrete pipe and cattle pass will be incidental to the contract unit price per each for TIE BOLTS FOR RCP.



SEDIMENT CONTROL

Sediment control may be required if water is flowing through the pipe culvert at the time of cleaning. Otherwise, sediment control is not anticipated.

The Contractor will implement appropriate sediment control measures prior to water flushing in order to prevent discharges beyond the project boundaries.

Wattles and Silt Fence have been provided in the Estimate of Quantities and will be used to capture pipe cleanout material. Placement of the wattles and Silt Fence will be as directed by the Engineer.

CONTRACTOR FURNISHED TOPSOIL

On SD 253 several culverts are being shortened as the culvert barrel section extends past the inslope. These culverts will have flared ends installed following the shortening. A quantity of 100 Cu.Yd. of CONTRACTOR FURNISHED TOPSOIL has been included in the Estimate of Quantities should additional fill material be needed to blend the flared ends with the inslope.

Contractor furnished topsoil will be free from stones, coarse gravel, or similar objects larger than 3/4 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, liter, or any other material which may be harmful to plant growth will not be allowed. Organic material will be decomposed.

All costs to furnish and place the Contractor furnished topsoil will be incidental to the contract unit price per cubic yard for CONTRACTOR FURNISHED TOPSOIL.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment will be installed at locations noted in the table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.04 for details.

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

Erosion control wattles will remain on the project to decompose.

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

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

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

LOW FLOW SILT FENCE

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

http://apps.sd.gov/HC60ApprovedProducts/main.aspx

Low flow silt fence will be placed at the 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.

TABLE OF LOW FLOW SILT FENCE

Route and MRM	Location	Quantity (Ft)
US 12 – 310.66 +0.04 L & R	Protect Wetland	100
SD 253 – 181.00 +0.19 L & R	Protect Wetland	100
SD 253 – 179.00 +0.84 L & R	Protect Wetland	100
SD 253 – 179.00 +0.63 L & R	Protect Wetland	100
SD 253 – 178.00 +0.34 R	Protect Wetland	50
SD 253 – 176.00 +0.35 L & R	Protect Wetland	100
SD 253 – 173.00 +0.63 L & R	Protect Wetland	100
SD 253 – 173.00 +0.02 L & R	Protect Wetland	100
	Additional Quantity:	250
	Total:	1000

EROSION CONTROL

The areas to be seeded consist of areas at pipe culvert locations where resetting or replacement of pipe culvert sections or end treatments are required. In addition, any location where vegetation was destroyed, such that quick revegetation is not expected will be reseeded.

The estimated area requiring erosion control is 0.5 Acre. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, and seeding will 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.

Type C Permanent Seed Mixture will be used on this project.

Application of fertilizer will not be required on this project.

Type C Permanent Seed Mixture will consist of the following:

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

REINFORCED CONCRETE PIPE JOINT REPAIR AND VOID GROUTING

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REINFORCED CONCRETE PIPE JOINT REPAIR AND VOID GROUTING

The Contractor will provide a notarized statement, from the Manufacturer, that the products used for culvert joint repair meet the specified requirements, along with the Manufacturer's current product specification and installation instructions.

The Contractor will be an Approved Contractor of the Manufacturer of the specified product and will provide written certification from the Manufacturer attesting to their Approved Contractor status.

All product documentation and Contractor submittals must be submitted to the Engineer prior to or at the preconstruction conference. The Contractor must have the Engineer's approval prior to commencing any of this work.

The Contractor will follow the Manufacturer's installation instructions and specifications throughout the repair process

Temperature of the specified products is critical from the point of pumping to the point of injection. All polyurethanes react faster at higher temperatures. Drum heaters and heated hoses are required when ambient or ground temperatures are below 70 degrees Fahrenheit. The optimum hose temperature will vary with the weather conditions and the particular job site conditions with the minimum hose temperature being 75 degrees Fahrenheit and the maximum hose temperature being 95 degrees Fahrenheit and the drum temperature not to exceed 90 degrees Fahrenheit.

The Contractor will provide worker and inspector safety protective gear in accordance with the manufacturer, including but not limited to chemical goggles, face shields, eye wash system and NBR gloves.

The Contractor will provide safe storage and handling of materials prior to delivery and at the project site. All material installation, handling and storage will be in accordance with the Manufacturer's recommendations.

The Contractor will visit the project to determine the extent of culvert joints to be cleaned and filled, prior to bidding.

Culvert Joint Cleaning and Repair Culvert Joint quantities will be based upon the following table showing circumference of joints based upon culvert size and shape.

Pipe Diameter (In)	Round Pipe Circumference per Joint (Ft)	Arch Pipe Circumference per Joint (Ft)
36	9.4	
42	11.0	11.0
48	12.6	12.6
54	14.1	14.0
60	15.7	15.8
66	17.3	
72	18.8	19.0
78	20.4	
84	22.0	
4'x6' Cattle Pass		18.3

CULVERT JOINT CLEANING

This work will consist of cleaning of the culvert joints, washing the entire culvert and joints with a high-pressure washer, and if needed, wire brush cleaning of each joint to be repaired as directed by the Engineer. The entire culvert will be clean and dry and most notably the specified joints will be thoroughly cleaned to the satisfaction of the Engineer using a power washer with water pressure of at least 2500 psi. The culvert must be in a clean condition so that no deleterious material is trapped in the joints that are being repaired. The Contractor will dispose of all debris removed from the culverts during the cleaning operation as approved by the Engineer.

All costs for equipment, material and labor for the culvert joint cleaning work will be incidental to the contract unit price per foot for CULVERT JOINT CLEANING. Culvert Pipe Cleaning will be measured to the nearest 0.1 foot of joint which is cleaned for joint repair.

REPAIR CULVERT JOINT

The culvert joints will be repaired in accordance with the Chemical Grout Manufacturer's directions to prevent future infiltration/exfiltration of soils and water and to keep the chemical grout from expanding back into the structure during injection.

The culvert joint will be repaired with a sealant comprised of water reactive hydrophilic polyurethane resin and dry oil free oakum. All grout will be injected under such pressure so as not to damage the existing drainage structure or roadway structure.

The Contractor will submit to the Engineer for approval a detailed procedure for the installation of the polyurethane grout.

The work will include, but is not limited to sealing each pipe joint with a hydrophilic polyurethane grout meeting the following specifications:

GEL FOAM II (Saturated Oakum Rope Joint Packing) as manufactured by Green Mountain International, LLC or equal.

ULTRA (Single Component Grout for Joint Injection) as manufactured by Green Mountain International, LLC or equal.

Excess grout and oakum will be trimmed from the interior face of the joint prior to applying the UV Protection (Gel Coat). The epoxy gel coat compound will be as recommended by the Manufacturer for both surface sealing and protecting the hydrophilic grout from UV exposure. The epoxy gel compound will be mixed and handled in accordance with the Manufacturer's recommendations and will meet the following requirements:

Epoxy gel sealant compounds manufactured by Green Mountain Grouts, LLC or equal.

All costs for all equipment, material and labor required to complete the work will be incidental to the contract unit price per foot for REPAIR CULVERT JOINT. Completion of the work includes initial saturated oakum rope packing of each joint, follow up injection of grout into the back side of each joint, trimming the excess grout and oakum from the interior face of the joint, application of the epoxy gel coat and site clean-up. Payment will be made per 0.1 foot of culvert joint repaired.

DUAL COMPONENT CHEMICAL GROUT FOR VOID FILLING

The external voids surrounding the culvert will be filled with an injected high expansion chemical grout compound. Holes will be strategically drilled as required and grout injected throughout the structure to effectively fill all voids that have developed outside of the structure due to the infiltration of external soils and materials into the culvert and "piping" (water running outside and under the structure due to separated joints). It is the Contractor's responsibility to locate reinforcing bars and conduit prior to drilling any grout holes. All grout will be injected under such pressure so as not to damage the existing drainage structure or roadway structure. All joints will be appropriately cleaned and sealed, with appropriate recommended cure time, prior to the injection of the void grouting. After completion of the void filling, all holes will be properly sealed.

The typical method consists of placing a layer of chemical grout behind or around the structure. The Contractor will submit for approval by the Engineer a detailed grouting plan showing the spacing, orientation and depth of the grout holes, as well as type of polyurethane grout to be used, range of gel times, equipment, mixing procedures, recommended injection pressure, technique for monitoring grout travel and any other pertinent information. The grouting plan should address the prevention of overfilling and prevention of damage to structures or roadway. The Contractor will submit this detailed procedure for the installation of the expansion grout to the Engineer for approval. The holes are drilled with a rotary percussion hammer drill using a sharp masonry bit with a minimum diameter of 3/8 inch to a maximum diameter of 5/8 inch. Care must be taken to prevent holes from causing damage to reinforcing bars or utility conduits. Drilled holes should be vacuumed and flushed. Use injection grout and methods as recommended by Manufacturer.

Injection can be monitored by either applicator's visual inspection or by pumping a specific amount of injection grout into each hole. The work will start at the inlet end of the pipe and proceed downstream to the outlet. Inject bottom row every other hole. When material appears at the adjacent port, discontinue injection at entry port and begin injection at the adjacent port. Continue injection process section by section from bottom of pipe to top of pipe in a continuous manner to next pipe section. Injection pressure will vary from 200 psi to 3000 psi depending on the width of the joint, thickness of the structure, and condition of the concrete.

REINFORCED CONCRETE PIPE JOINT REPAIR AND VOID GROUTING

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(224)	17	28

DUAL COMPONENT CHEMICAL GROUT FOR VOID FILLING CONTINUED

The Contractor must supply the Engineer with three (3) prior job references of projects where they have successfully injected urethane resin for subgrade void filling applications, or soil stabilization.

In lieu of three (3) prior job references the Contractor will:

a) Obtain hands on training from the supplier on the installation procedures,
and

b) Have the supplier on site to provide training to Contractor's staff. Supplier will be present for at least two complete pipe culvert repairs and until the Engineer is satisfied that Contractor's staff is competent in performing this work.

The chemical grout will be a dual component hydrophobic polyurethane grout compound which is non-flammable and non-toxic when cured.

The chemical grout mixture will have expansion properties listed in the data sheets of greater than eighteen (18) times its original volume and cure to rigid closed cell polyurethane foam. The grout will expand to fill any voids and must bond to the exterior surface of the structure. The chemical grout will be Mountain Grout U 4.0 dual component polyurethane grouts as manufactured by Green Mountain International LLC or equal.

All costs for equipment, material, and labor required to fill external voids surrounding the culvert will be incidental to the contract unit price per gallon for CHEMICAL GROUT VOID FILL. Any overfilling of voids that results in damage to overlying pavement, highway user ride quality, or drainage structure integrity will be corrected and paid for by the Contractor. All corrections will be approved by the Engineer. Payment will be to the 0.1 gallon of chemical grout used, prior to expansion of the material.

A calibrated metering device will be used to measure the chemical grout and to assure proper mixing ratio of components.

After the grout cures, excess material will be removed flush with the pipe interior wall and the pipe left clean.

STORMWATER POLLUTION PREVENTION PLAN CHECKLIST

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

5.3 (2): STAFF TRAINING/SWPPP IMPLEMENTATION

To promote stormwater management awareness specific for this project, the Contractor's Erosion Control Supervisor should provide correspondence of how the SWPPP will be implemented. The Contractor's Erosion Control Supervisor is responsible for providing this information at the preconstruction meeting, and subsequently completing an attendance log, which should identify site-specific implementation of the SWPPP and the names of the personnel who attended the preconstruction meeting. Documentation of the preconstruction meeting will be filed with the SWPPP documents.

5.3 (3): DESCRIPTION OF CONSTRUCTION ACTIVITIES

- **5.3 (3a): Project Limits** (See Title Sheet)
- **5.3 (3a): Project Description** (See Title Sheet)
- **5.3 (4): Site Map(s)** (See Title Sheet and Plans)
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☐ Excavation/borrow
  - ☐ Grading and shaping
  - ☐ Filling
  - ☐ Other (describe):
- **5.3 (3b): Total Project Area** 617 Acres
- **5.3 (3b): Total Area to be Disturbed** 0.5 Acres
- **5.3 (3c): Maximum Area Disturbed at One Time**
- **5.3 (3d): Existing Vegetative Cover (%)** 90
- **5.3 (3d): Description of Vegetative Cover** Typical East River native and introduced roadside vegetation.
- **5.3 (3e): Soil Properties:** AASHTO Soil Classification A-4, A-6, A-7-5, A-7-6
- **5.3 (3f): Name of Receiving Water Body/Bodies** White Lake and local potholes.
- **5.3 (3g): Location of Construction Support Activity Areas**

5.3 (3h): ORDER OF CONSTRUCTION ACTIVITIES

- **Special sequencing requirements (**see sheet).

The Contractor will enter the Estimated Start Date.

Description	Estimated Start Date
Install stabilized construction entrance(s).	
Install perimeter protection where runoff may exit site.	
Install perimeter protection around stockpiles.	
Install channel and ditch bottom protection.	
Clearing and grubbing.	
Remove and stockpile topsoil.	
Stabilize disturbed areas.	
Clean, repair and install culvert liners.	
Install inlet and culvert protection after completing storm drainage installations.	
Final grading.	
Removal of protection devices.	
Reseed areas disturbed by removal activities.	

5.3 (5): DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES

All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report. Include the technical reasoning for selecting each control. (check all that apply)

Perimeter Controls (See Detail Plan Sheets)

Description	Estimated Start Date
☐ Natural Buffers (within 50 ft of Waters of State)	
☒ Silt Fence	
☒ Erosion Control Wattles	
☐ Temporary Berm / Windrow	
☐ Floating Silt Curtain	
☐ Stabilized Construction Entrances	
☐ Entrance/Exit Equipment Tire Wash	
☐ Other:	

Structural Erosion and Sediment Controls

Description	Estimated Start Date
☒ Silt Fence	
☐ Temporary Berm/Windrow	
☒ Erosion Control Wattles	
☐ Temporary Sediment Barriers	
☐ Erosion Bales	
☐ Temporary Slope Drain	
☐ Turf Reinforcement Mat	
☐ Riprap	
☐ Gabions	
☐ Rock Check Dams	
☐ Sediment Traps/Basins	
☐ Culvert Inlet Protection	
☐ Transition Mats	
☐ Median/Area Drain Inlet Protection	
☐ Curb Inlet Protection	
☐ Interceptor Ditch	
☐ Concrete Washout Facility	
☐ Work Platform	
☐ Temporary Water Barrier	
☐ Temporary Water Crossing	
☐ Permanent Stormwater Ponds	
☐ Permanent Open Vegetated Swales	
☐ Natural Depressions to allow for Infiltration	
☐ Sequential Systems that combine several practices	
☐ Other:	

Dust Controls

Description	Estimated Start Date
☐ Tarps & Wind impervious fabrics	
☐ Watering	
☐ Stockpile location/orientation	
☐ Dust Control Chlorides	
☐ Other	

Dewatering BMPs

Description	Estimated Start Date
☐ Sediment Basins	
☐ Dewatering bags	
☐ Weir tanks	
☐ Temporary Diversion Channel	
☐ Other:	

Stabilization Practices (See Detail Plan Sheets)

(Stabilization measures will begin the following work day whenever earth disturbing activity on any portion of the site has temporarily or permanently ceased. Temporary stabilization will be completed as soon as practicable but no later than 14 days after initiating soil stabilization activities (**3.18**))

Description	Estimated Start Date
☐ Vegetation Buffer Strips	
☐ Temporary Seeding (Cover Crop Seeding)	
☒ Permanent Seeding	
☐ Sodding	
☐ Planting (Woody Vegetation for Soil Stabilization)	
☐ Mulching (Grass Hay or Straw)	
☐ Fiber Mulching (Wood Fiber Mulch)	
☐ Soil Stabilizer	
☐ Bonded Fiber Matrix	
☐ Fiber Reinforced Matrix	
☐ Erosion Control Blankets	
☐ Surface Roughening (e.g. tracking)	
☐ 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.

5.3 (6): PROCEDURES FOR INSPECTIONS

- Inspections will be conducted at least once every 7 days.
- 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 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 and 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.

5.3 (7): POST CONSTRUCTION STORMWATER MANAGEMENT

Stormwater management will be handled by temporary controls outlined in "DESCRIPTION AND MAINTENANCE OF CONTROL MEASURES" above, and any permanent controls needed to meet permanent stormwater management needs in the post construction period will be shown in the plans and noted as permanent.

5.3 (8): POLLUTION PREVENTION PROCEDURES

5.3 (8a): Spill Prevention and Response Procedures

➢ **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/or 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.

- Hazardous Materials
  - Products will be kept in original containers unless the container is not resealable and provide secondary containment as applicable.
  - 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 stormwater system or stormwater 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 stormwater runoff.

➢ **Spill Control Practices**

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.

➢ **Spill Response**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into stormwater runoff and conveyance systems. If the release has impacted on-site stormwater, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens stormwater 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 SDDANR.
- Personnel with primary responsibility for spill response and cleanup 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.

5.3 (8b): WASTE MANAGEMENT PROCEDURES

➢ **Waste Disposal**

- All liquid waste materials will be collected and stored in approved sealed containers. 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. The Contractor is responsible for ensuring 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 Contractor 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 which must be secured to prevent tipping and serviced in a timely manner by a licensed waste management Contractor or as required by any local regulations.

5.3 (9): CONSTRUCTION SITE POLLUTANTS

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 heading "POLLUTION PREVENTION PROCEDURES" (check all that apply).

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

Product Specific Practices

- **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 stormwater. 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 stormwater outlet of the site. Upon completion of construction, the area at the washout facility will be properly stabilized.

5.3 (10): NON-STORMWATER DISCHARGES

The following non-stormwater 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.

5.3 (11): INFEASIBILITY DOCUMENTATION

If it is determined to be infeasible to comply with any of the requirements of the Stormwater Permit, the infeasibility determination must be thoroughly documented in the SWPPP.

7.0: 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 SDDANR immediately **if any one of the following** conditions exists:
  - The release or spill threatens or is able to threaten waters of the state (surface water or ground water)
  - The release or spill causes an immediate danger to human health or safety
  - The release or spill exceeds 25 gallons
  - The release or spill causes a sheen on surface water
  - The release or spill of any substance that exceeds the ground water quality standards of ARSD Chapter 74:54:01
  - The release or spill of any substance that exceeds the surface water quality standards of ARSD Chapter 74:51:01
  - The release or spill of any substance that harms or threatens to harm wildlife or aquatic life
  - The release or spill is required to be reported according to Superfund Amendments and Reauthorization Act (SARA) Title III List of Lists, Consolidated List of Chemicals Subject to Reporting Under the Emergency Planning and Community Right to Know Act, US Environmental Protection Agency.

- To report a release or spill, call SDDANR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central Standard Time). To report the release after hours, on weekends or holidays, call South Dakota Emergency Management at 605-773-3231. Reporting the release to SDDANR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, you must also contact local authorities to determine the local reporting requirements for releases. A written report of the unauthorized release of any regulated substance, including quantity discharged, and the location of the discharge will be sent to SDDANR within 14 days of the discharge.

5.4: SWPPP CERTIFICATIONS

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

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

➢ **South Dakota Department of Transportation**

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

_____

Authorized Signature (See the General Permit, Section 7.4 (1))

➢ **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

The following personnel are duly authorized representatives and have signatory authority for modifications made to the SWPPP:

➢ **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: _____

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

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

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

➢ **SDDANR Stormwater Contact Information**
- SDDANR Stormwater (800) 737-8676
- Surface Water Quality Program (605) 773-3351

5.5: REQUIRED SWPPP MODIFICATIONS

➢ **5.5 (1): Conditions Requiring SWPPP Modification**

The SWPPP must be modified, including the site map(s), in response to any of the following conditions:

- When a new operator responsible for implementation of any part the SWPPP begins work on the site.
- When changes to the construction plans, sediment and erosion control measures, or any best management practices on site that are no longer accurately reflected in the SWPPP. This includes changes made in response to corrective actions triggered by inspections.
- To reflect areas on the site map where operational control has been transferred (including the date of the transfer) or has been covered under a new permit since initiating coverage under this general permit.
- If inspections by site staff, local officials, SDDANR, or U.S. EPA determine that SWPPP modifications are necessary for compliance with the Stormwater Permit.
- To reflect any revisions to applicable federal, state, or local requirements that affect the control measures implemented at the site.
- If approved by the Secretary, to reflect any changes in chemical water treatment systems or controls, including the use of a different water treatment chemical, age rates, different areas, or methods of application.

➢ **5.5 (2): Deadlines for SWPPP Modification**

Any required revisions to the SWPPP must be completed within 7 calendar days following any of the items listed above.

➢ **5.5 (3): Documentation of Modifications to the Plan**

All SWPPP modification records are required to be maintained showing the dates of when the modification occurred. The records must include the name of the person authorizing each change and a brief summary of all changes.

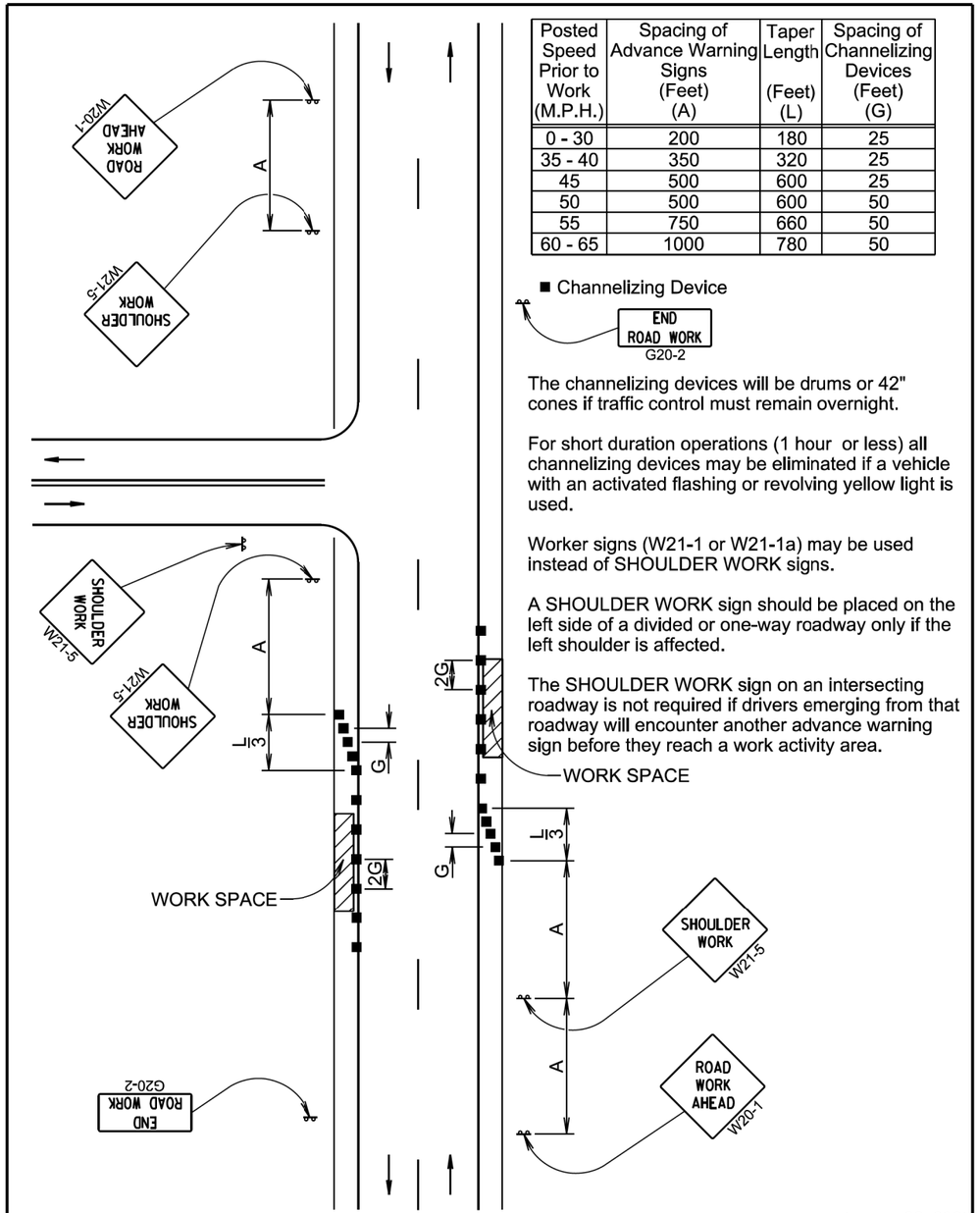
➢ **5.5 (4): Certification Requirements**

All modifications made to the SWPPP must be signed and certified as required in Section 7.4.

➢ **5.5 (5): Required Notice to Other Operators**

If there are multiple operators at the site, the Contractor's Erosion Control Supervisor must notify each operator that may be impacted by the change to the SWPPP within 24 hours.

When modifications as described above occur, the SWPPP will be modified to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP using the DOT 298 form and drawings on the plan will be modified to reflect the needed changes. Copies of the DOT 298 forms and the SWPPP will be retained on site in a designated place for review throughout the course of the project. A copy of the DOT 298 form will be given to the Contractor Erosion Control Supervisor and a copy will be emailed to the SDDOT Environmental Section in accordance with the DOT 298 Form.



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

■ Channelizing Device

END ROAD WORK
G20-2

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

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

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

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

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

January 22, 2021

Published Date: 2025	SDDOT	WORK ON SHOULDERS	PLATE NUMBER 634.03 Sheet 1 of 1

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

Flagger

■ Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) will be displayed in advance of the liquid asphalt areas.

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

The channelizing devices will be drums or 42" cones.

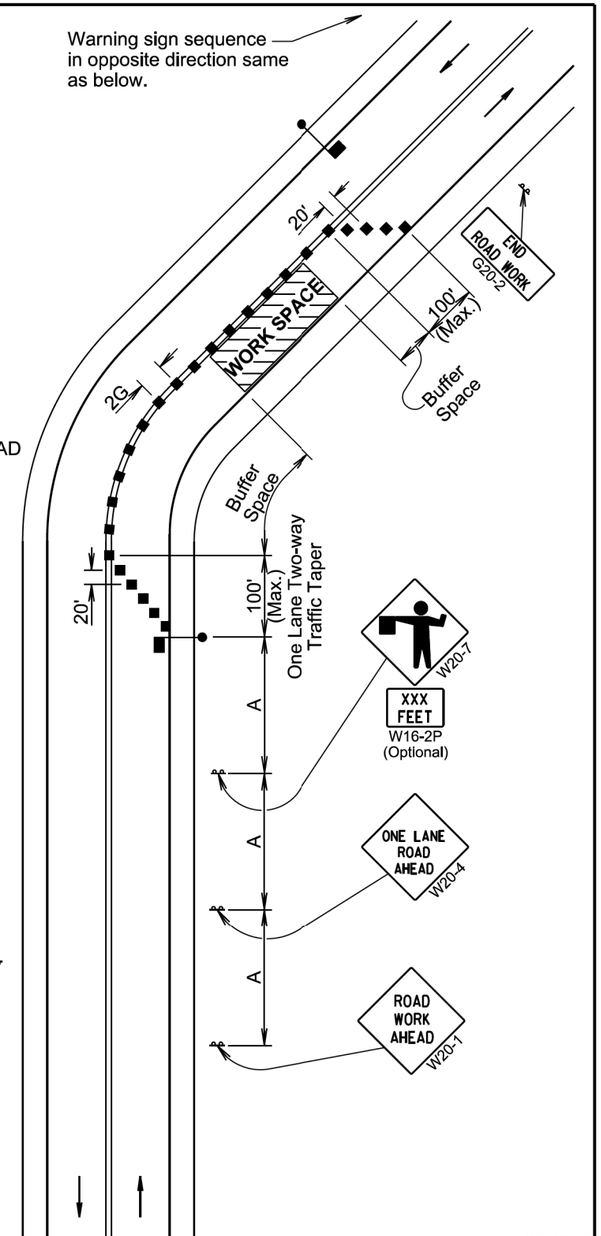
Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

END ROAD WORK
G20-2

Channelizing devices and flaggers will be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

The length of A may be adjusted to fit field conditions.



January 22, 2021

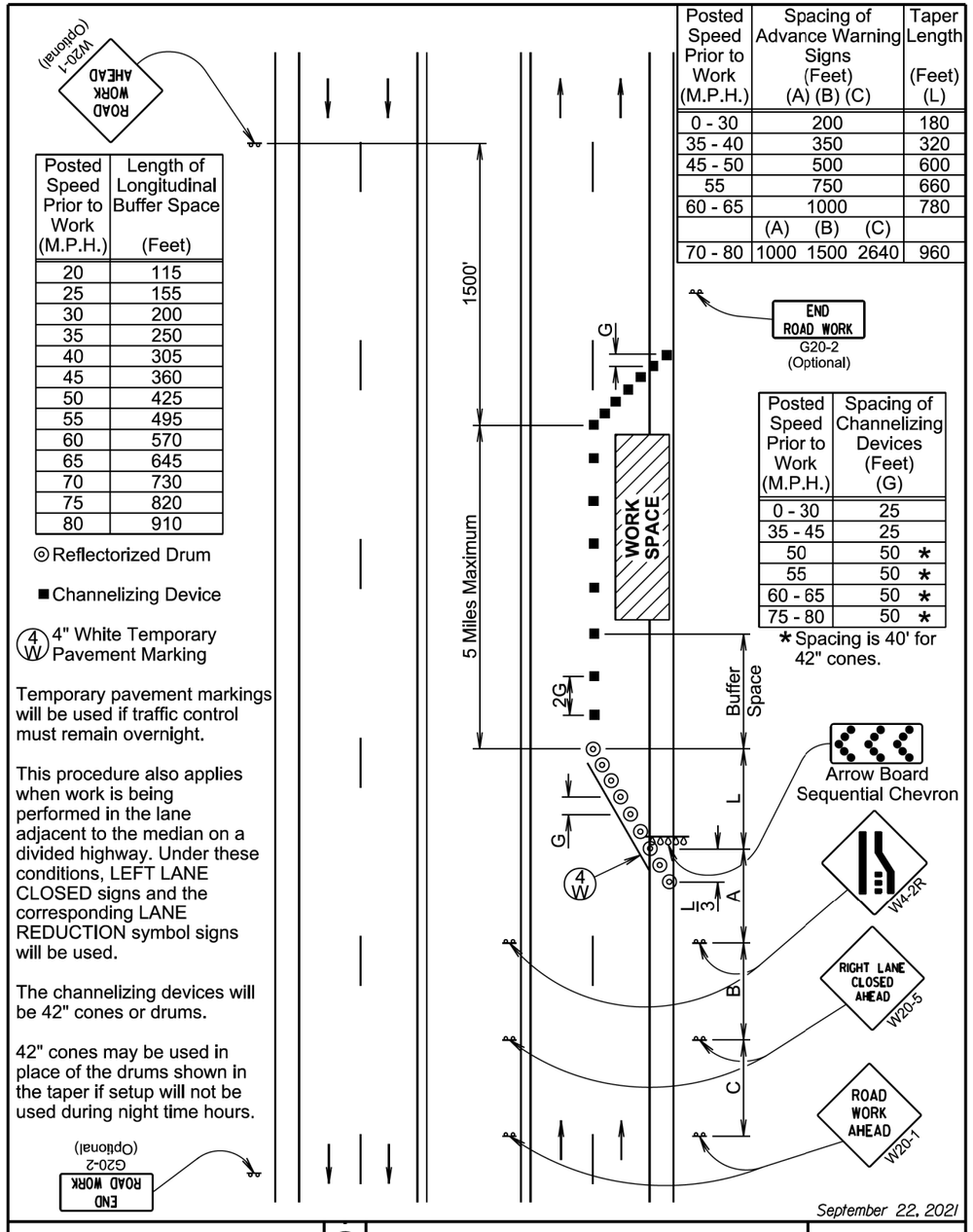
Published Date: 2025	SDDOT	LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23 Sheet 1 of 1

PLOT SCALE - 1:200

PLOT NAME - 5

FILE - ...\PRJ\EDMS06EG\63403_&_63423.DGN

PLOTTED FROM - TRAB17882



Posted Speed Prior to Work (M.P.H.)	Length of Longitudinal Buffer Space (Feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820
80	910

◎ Reflectorized Drum

■ Channelizing Device

(4 W) 4" White Temporary Pavement Marking

Temporary pavement markings will be used if traffic control must remain overnight.

This procedure also applies when work is being performed in the lane adjacent to the median on a divided highway. Under these conditions, LEFT LANE CLOSED signs and the corresponding LANE REDUCTION symbol signs will be used.

The channelizing devices will be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

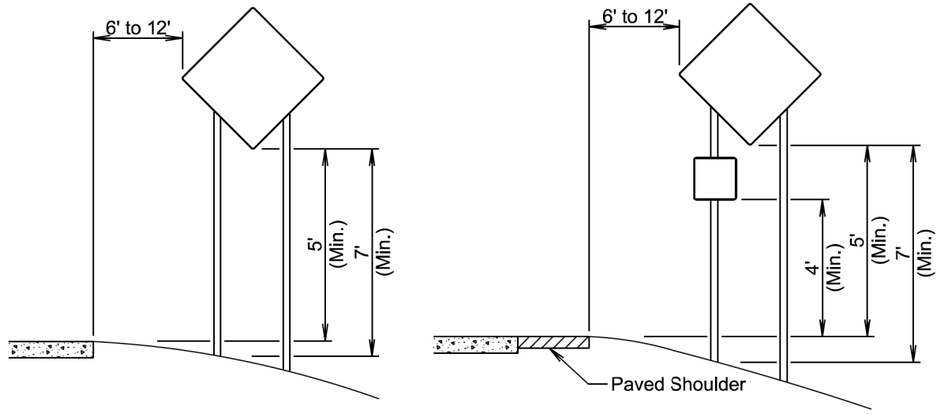
Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600
55	750	660
60 - 65	1000	780
	(A) (B) (C)	
70 - 80	1000 1500 2640	960

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	25
35 - 45	25
50	50 *
55	50 *
60 - 65	50 *
75 - 80	50 *

* Spacing is 40' for 42" cones.

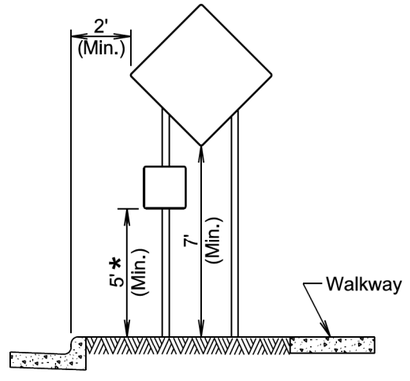
September 22, 2021

Published Date: 2025	SDDOT	LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
			Sheet 1 of 1



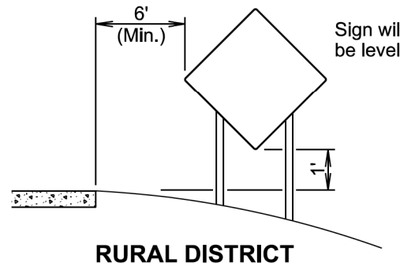
RURAL DISTRICT

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)

January 22, 2021

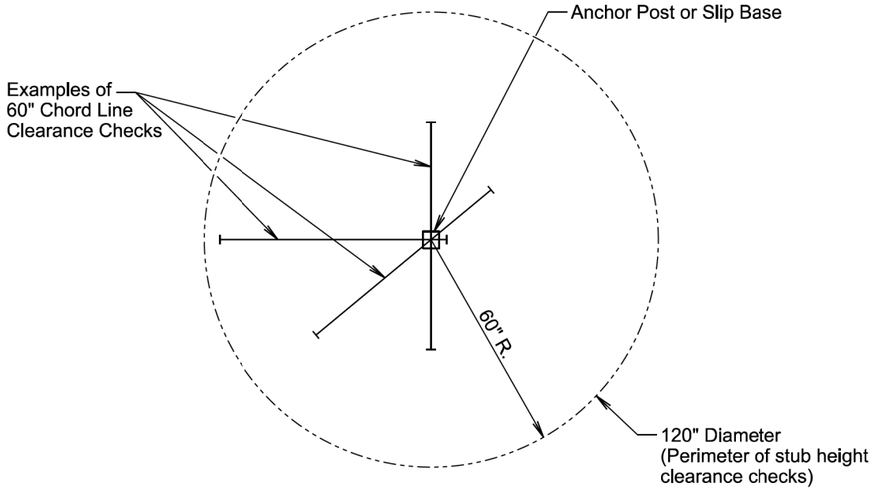
Published Date: 2025	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1

PLOT SCALE - 1:200

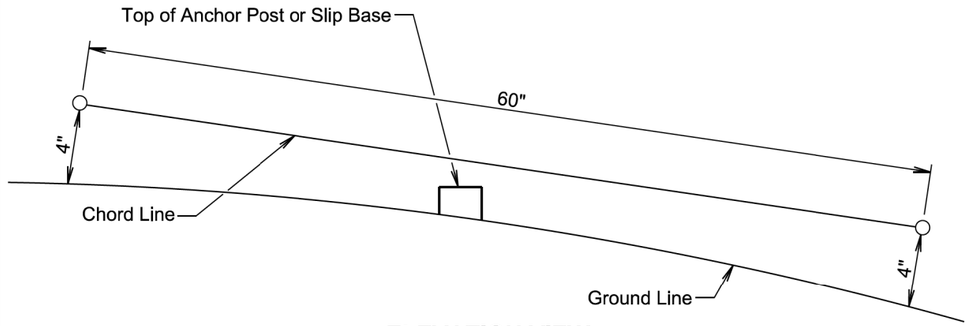
PLOT NAME - 6

FILE - ...\PRJ\EDMS06EG\63464_&_63485.DGN

-PLOTTED FROM - TRAB17882



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

The top of anchor posts and slip bases WILL 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 will 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.

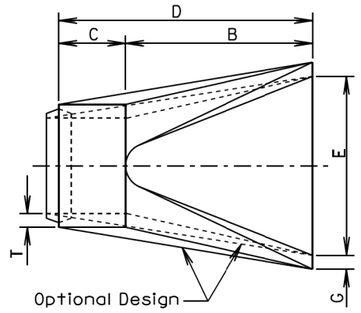
January 22, 2021

Published Date: 2025	SDDOT	***BREAKAWAY SUPPORT STUB CLEARANCE***	*PLATE NUMBER* 634.99
			Sheet 1 of 1

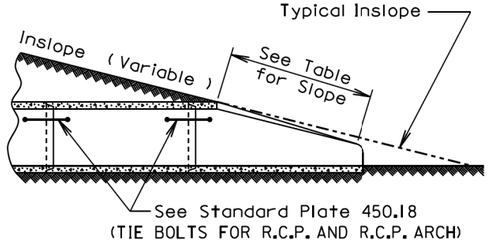
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH-P 0011(224)	25	28

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

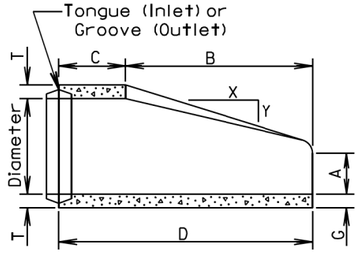
		CONVENTIONAL ROAD				EXPRESSWAY / INTERSTATE			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	16.0		4	48" x 48"	16.0	64.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0		48" x 48"	16.0	
W20-5	LEFT or RIGHT LANE CLOSED AHEAD		48" x 48"	16.0		4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0	2	48" x 24"	8.0	16.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			274.0	EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			336.0



TOP VIEW



SLOPE DETAIL

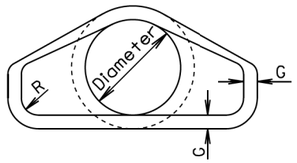


LONGITUDINAL SECTION

GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



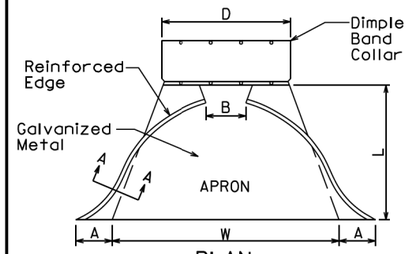
END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4:1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3:1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4:1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5:1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5:1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5:1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5:1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5:1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5:1	5	24	72	26	98	84	5	1 1/2
54	8240	2:1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9:1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7:1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8:1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8:1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6:1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5:1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

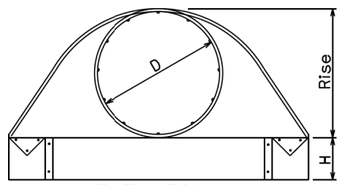
June 26, 2015

Published Date: 2025	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1

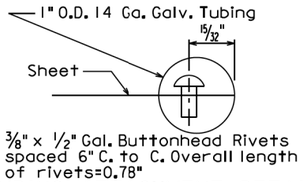
Alternate Type Connector Sections may be used with approval of the Engineer.



PLAN



ELEVATION

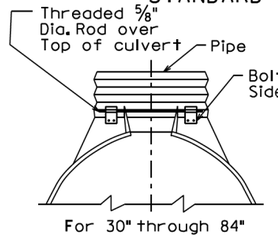


3/8" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

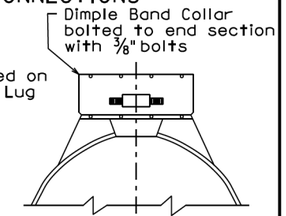
TUBING ATTACHMENT DETAILS
SECTION A-A

Dia. D (in.)	Ga.	DIMENSIONS (in.) A	B	H	L	W	Approx. Slope	Body
12	16	6	6	6	21	24	2 1/2:1	1 Pc.
15	16	7	8	6	26	30	2 1/2:1	1 Pc.
18	16	8	10	6	31	36	2 1/2:1	1 Pc.
21	16	9	12	6	36	42	2 1/2:1	1 Pc.
24	16	10	13	6	41	48	2 1/2:1	1 Pc.
30	14	12	16	8	46	60	2 1/2:1	1 Pc.
36	14	14	19	9	51	72	2 1/2:1	2 Pc.
42	12	16	22	11	60	84	2 1/2:1	2 Pc.
48	12	18	27	12	69	90	2 1/4:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1 3/4:1	3 Pc.
66	12	18	36	12	87	120	1 1/2:1	3 Pc.
72	12	18	39	12	87	126	1 1/3:1	3 Pc.
78	12	18	42	12	87	132	1 1/4:1	3 Pc.
84	12	18	45	12	87	138	1 1/6:1	3 Pc.

STANDARD CONNECTIONS

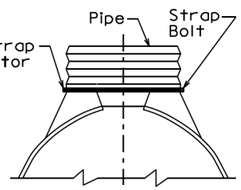


For 30" through 84"

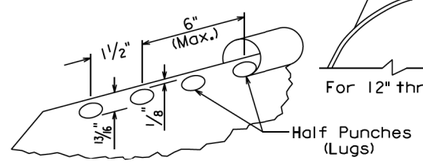


Alternate for all sizes

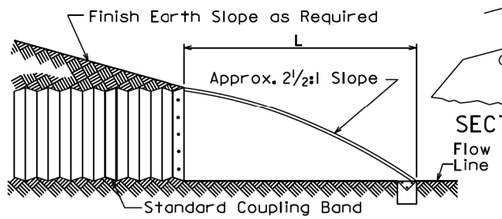
NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



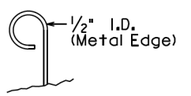
For 12" through 24" only



SECTION A-A (alternate)



TYPICAL CROSS-SECTION



SECTION A-A (alternate)

GENERAL NOTES:

All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

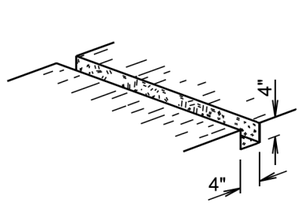
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

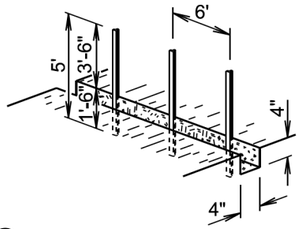
March 31, 2000

Published Date: 2025	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1

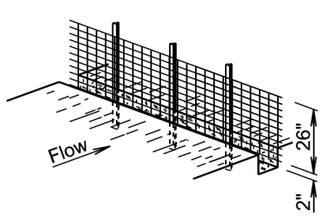
MANUAL LOW FLOW SILT FENCE INSTALLATION



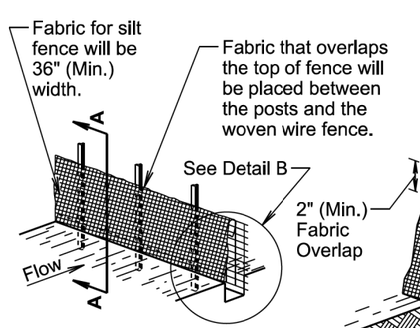
① EXCAVATE TRENCH



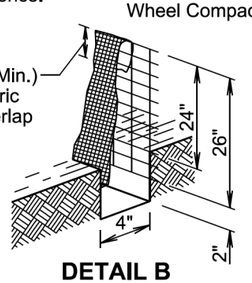
② DRIVE STEEL T FENCE POSTS



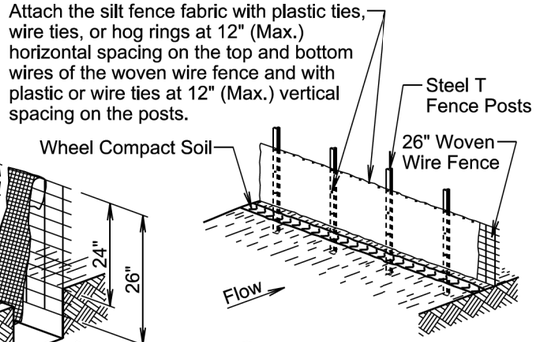
③ ATTACH 26" WOVEN WIRE FENCE TO POSTS



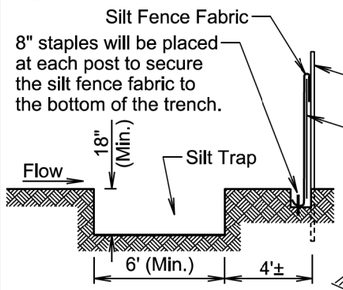
④ ATTACH SILT FENCE FABRIC



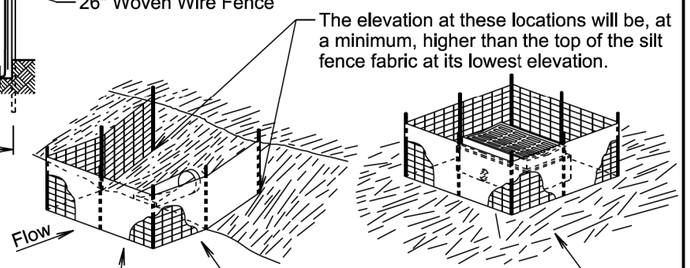
DETAIL B



⑤ BACKFILL TRENCH AND WHEEL COMPACT SOIL



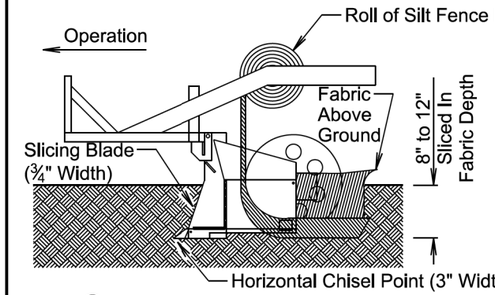
SECTION A-A



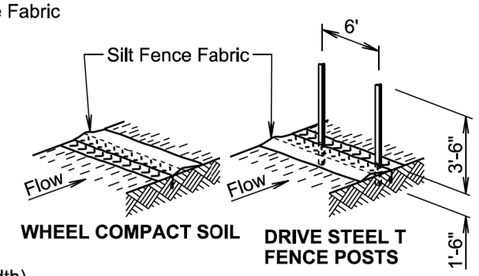
February 14, 2020

Published Date: 2025	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

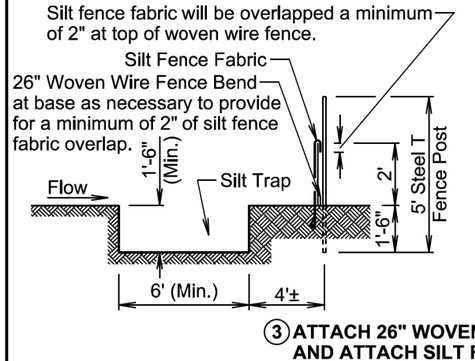
MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION

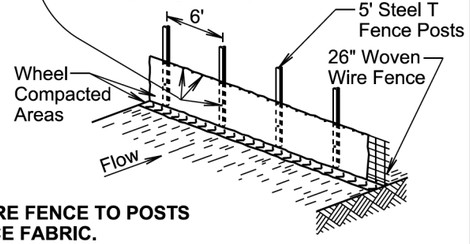


① INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

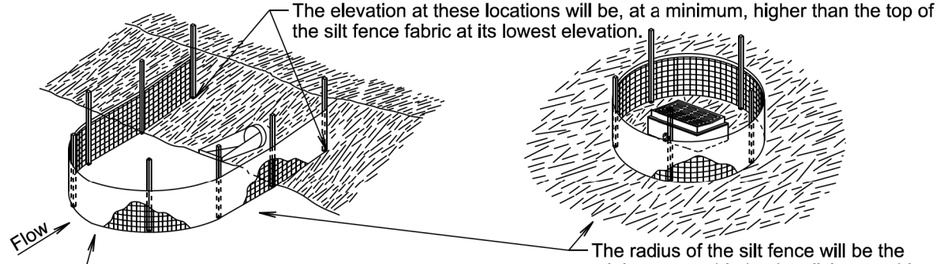


② WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.





③ ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.



GENERAL NOTES:

A silt trap will be provided when specified by a plan note. All costs for constructing the silt trap will 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 will be provided on top of the extra length of silt fence fabric to prevent underflow.

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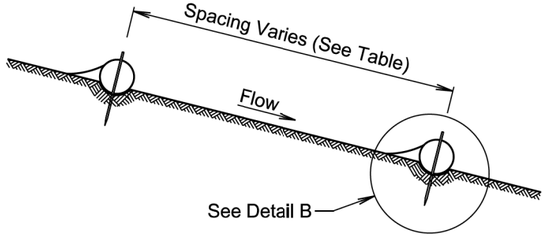
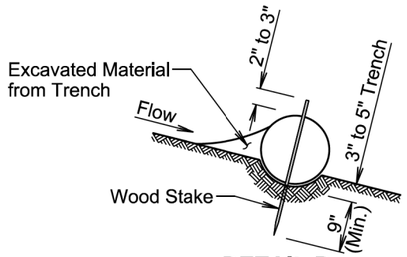
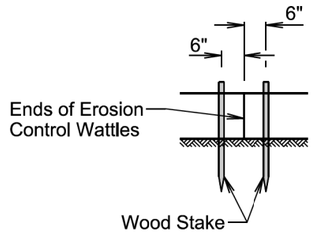


ELEVATION VIEW
(Cut or Fill Slope Installation)

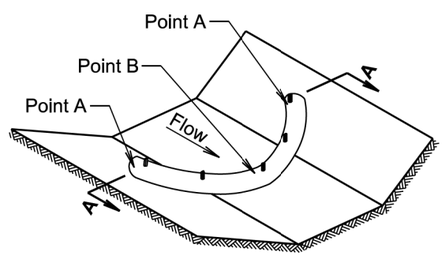
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft.)
1:1	10
2:1	20
3:1	30
4:1	40



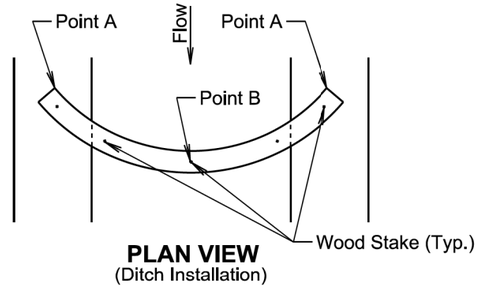
DETAIL B
(Typical of All Installations)



DETAIL C
(See General Notes)

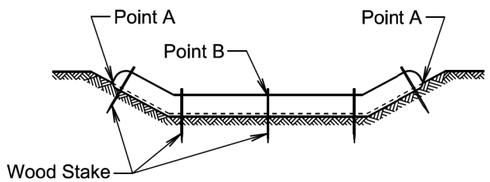


ISOMETRIC VIEW
(Ditch Installation)



PLAN VIEW
(Ditch Installation)

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



SECTION A-A

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GENERAL NOTES:

At cut or fill slope installations, wattles will 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 will 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 will 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 will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

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

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will 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 will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

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

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