STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	1	26
Plotting Date: 21-MAY-2009			

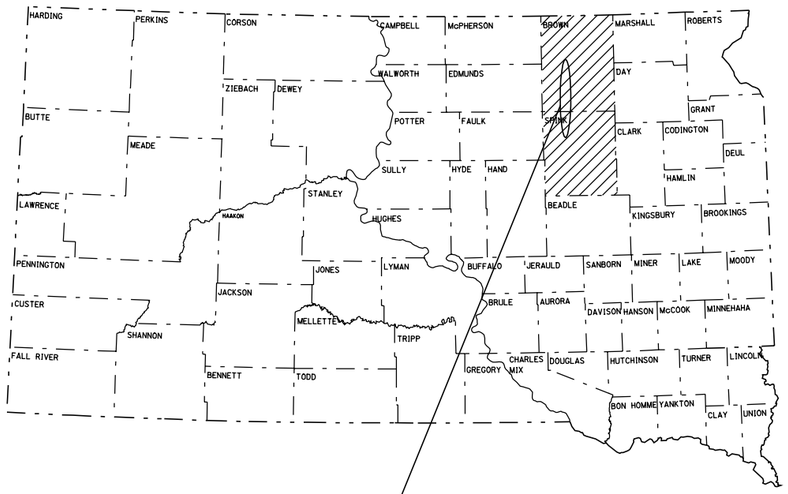
STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

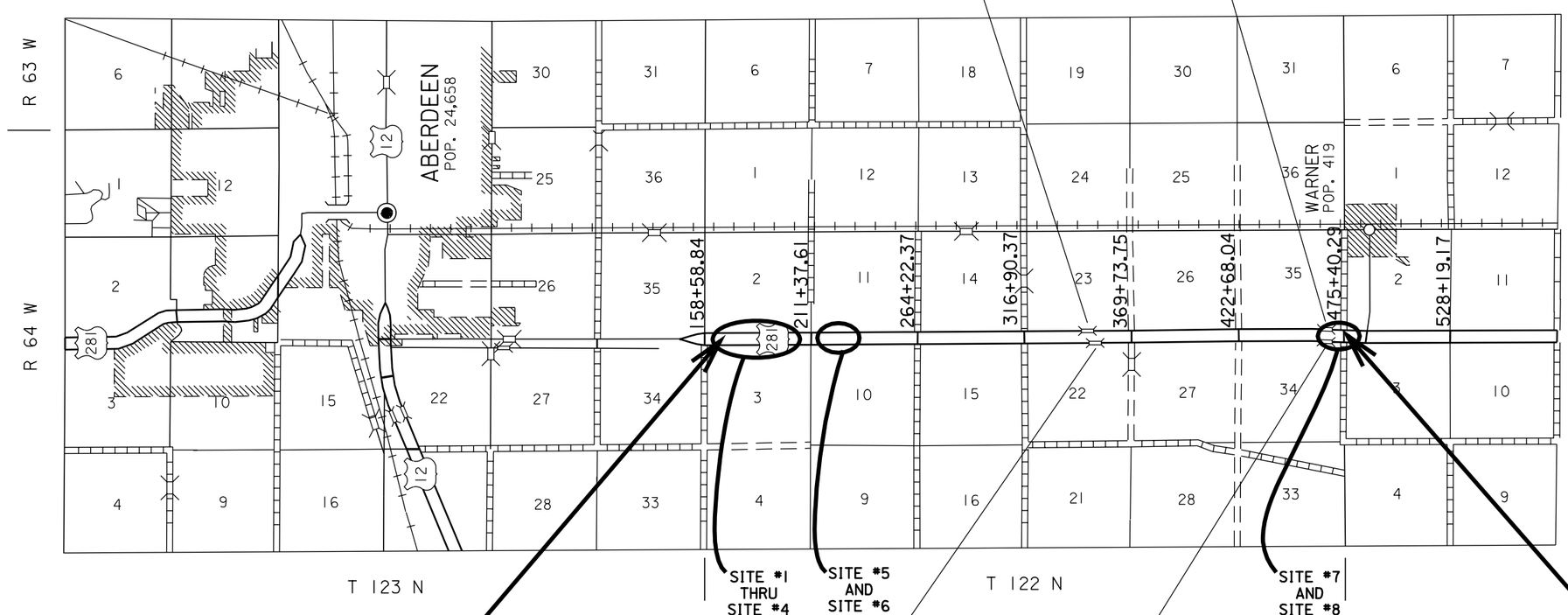
PROJECT 281 S-151 & 281 N-151
U.S. HIGHWAY NO. 281
BROWN & SPINK COUNTIES

REPLACE MAINLINE CROSS PIPE AND PIPE REPAIR

PCN ilfz & ilg0

INDEX OF SHEETS





Str. No. 07-101-397
Sta. 347+62.27 to Sta. 349+34.71
Continuous Concrete Bridge
172.4' = 0.033 Miles
MRM 187.65

Str. No. 07-101-418
Sta. 464+22.50 to Sta. 465+77.50
Continuous Concrete Bridge
155.0' = 0.029 Miles
MRM 185.44

BEGIN PROJECT
Sta. 164+40
MRM 191.00 +0.105

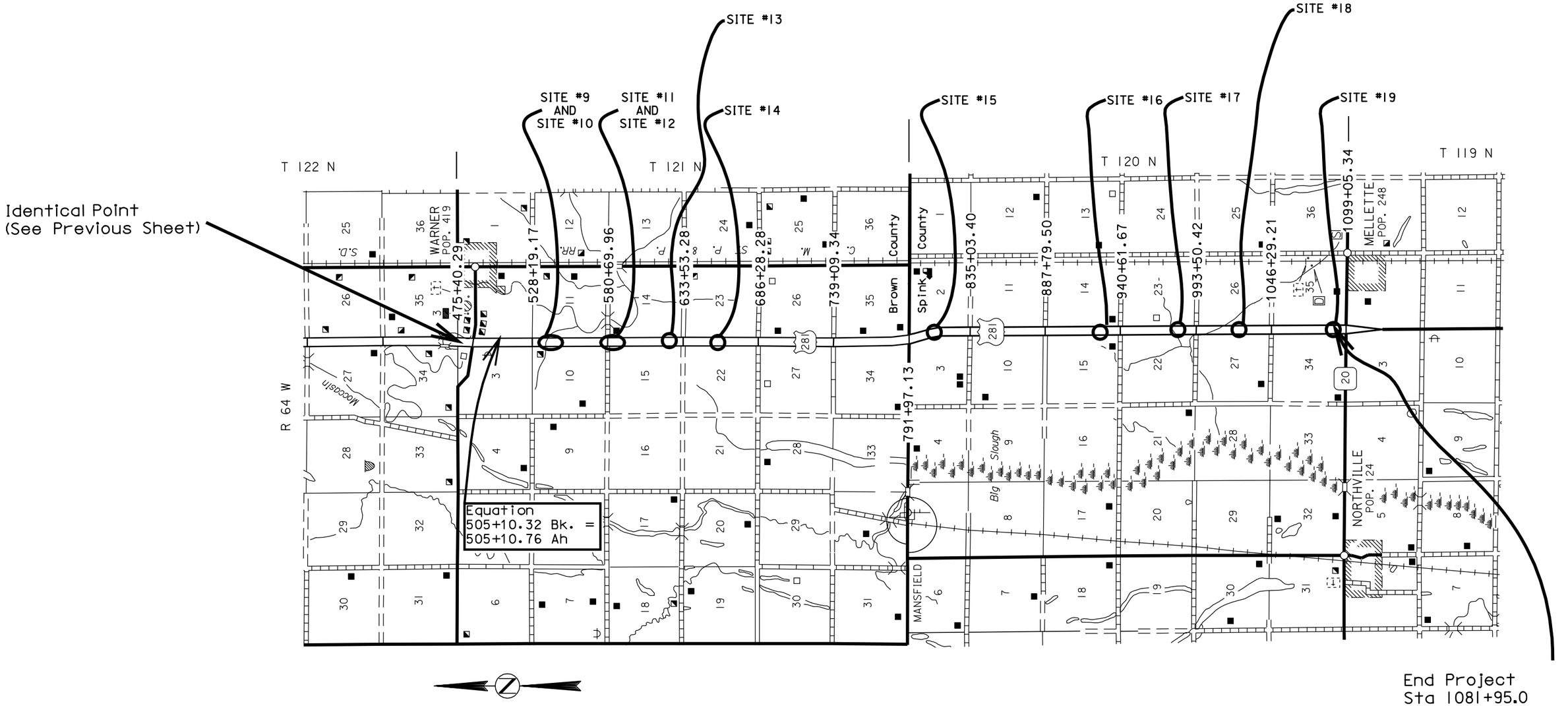
Str. No. 07-100-397
Sta. 348+25.29 to Sta. 349+97.73
Continuous Concrete Bridge
172.4' = 0.033 Miles
MRM 187.65

Str. No. 07-100-418
Sta. 464+22.50 to Sta. 465+77.50
Continuous Concrete Bridge
155.0' = 0.029 Miles
MRM 185.44

Identical Points
(See Next Sheet)

STORM WATER PERMIT

Major Stream: Moccasin Creek
Area Disturbed: 0.1 Acre
Project Area: 1 Acre



ESTIMATE OF QUANTITIES

BID ITEM NUMBER	DESCRIPTION	PROJECT NUMBER		TOTAL QUANTITY	UNITS
		281 S-151 PCN i1fz (US 281 SBL)	281 N-151 PCN i1g0 (US 281 NBL)		
009E0010	Mobilization	Lump Sum	Lump Sum	Lump Sum	LS
110E0500	Remove Pipe Culvert	4	-	4	Ft
110E1010	Remove Asphalt Concrete Pavement	133	130	263	SqYd
110E1700	Remove Silt Fence	300	300	600	Ft
110E7500	Remove Pipe for Reset	30	6	36	Ft
110E7510	Remove Pipe End Section for Reset	7	3	10	Each
120E0010	Unclassified Excavation	600	600	1200	CuYd
120E0600	Contractor Furnished Borrow	777	742	1519	CuYd
230E0020	Placing Contractor Furnished Topsoil	20	20	40	CuYd
250E0010	Incidental Work	Lump Sum	-	Lump Sum	LS
250E0020	Incidental Work, Grading	Lump Sum	Lump Sum	Lump Sum	LS
260E1010	Base Course	90	90	180	Ton
320E1200	Asphalt Concrete Composite	46	45	91	Ton
421E0100	Pipe Culvert Undercut	216	216	432	CuYd
450E0142	24" RCP Class 2, Furnish	90	90	180	Ft
450E0150	24" RCP, Install	90	90	180	Ft
450E0182	36" RCP Class 2, Furnish	340	340	680	Ft
450E0190	36" RCP, Install	340	340	680	Ft
450E0700	RCP Tee, Furnish	2	2	4	Each
450E0701	RCP Tee, Install	2	2	4	Each
450E2028	36" RCP Flared End, Furnish	4	4	8	Each
450E2029	36" RCP Flared End, Install	4	4	8	Each
450E2200	24" RCP Sloped End, Furnish	1	1	2	Each
450E2201	24" RCP Sloped End, Install	1	1	2	Each
450E4759	18" CMP, 16 Gauge, Furnish	-	30	30	Ft
450E4760	18" CMP, Install	-	30	30	Ft
450E5211	18" CMP Flared End, Furnish	-	2	2	Each
450E5212	18" CMP Flared End, Installed	-	2	2	Each
450E9000	Reset Pipe	30	6	36	Ft
450E9001	Reset Pipe End Section	7	3	10	Each
634E0010	Flagging	50	50	100	Hour
634E0100	Traffic Control	453	453	906	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	Lump Sum	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	1	2	Each
634E0610	4" Temporary Pavement Marking Tape, Type 2	1800	1800	3600	Ft
670E4210	Type N Grate	2	2	4	Each
730E0100	Cover Crop Seeding	1	1	2	Bu
734E0010	Erosion Control	Lump Sum	Lump Sum	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	40	40	80	Ft
734E0602	Low Flow Silt Fence	300	300	600	Ft
734E0610	Mucking Silt Fence	21	21	42	CuYd
734E0620	Repair Silt Fence	75	75	150	Ft

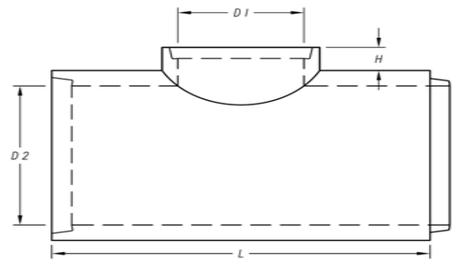
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	4	26

TABLE OF QUANTITIES

SITE NO.	STATION	IN PLACE			REMOVE PIPE CULVERT	REMOVE PIPE FOR RESET	REMOVE PIPE END SECTION FOR RESET	FURNISH AND INSTALL							RESET PIPE	RESET PIPE END SECTION	UNCLASSIFIED EXCAVATION	CONTRACTOR FURNISHED BORROW	PLACING CONTRACTOR FURNISHED TOPSOIL	ASPHALT CONCRETE COMPOSITE	BASE COURSE	TYPE N GRATE	REMARKS
		PIPE TYPE	PIPE SIZE	LENGTH				36" RCP CLASS 2	24" RCP CLASS 2	18" CMP 16 GAUGE	18" CMP FLARED END	24" RCP SLOPED END	36" RCP FLARED END	RCP TEE									
				(FT)	(FT)	(FT)	(EACH)	(FT)	(FT)	(FT)	(EACH)	(EACH)	(EACH)	EACH	(FT)	(FT)	(CU YD)	(CU YD)	(CU YD)	(TON)	(TON)	(EACH)	
1	164+48	CMP	36"	180				170					2	1			240	284	8	18	35	1	Remove in place CMP including Median Drain and install 36" RCP mainline Cross Pipe, Tee and Type N Grate
2	178+00	CMP	36"	180				170					2	1			240	284	8	18	35	1	Remove in place CMP including Median Drain and install 36" RCP mainline Cross Pipe, Tee and Type N Grate
3	191+48	CMP	36"	180				170					2	1			240	284	8	18	35	1	Remove in place CMP including Median Drain and install 36" RCP mainline Cross Pipe, Tee and Type N Grate
4	204+50	CMP	36"	180				170					2	1			240	284	8	18	35	1	Remove in place CMP including Median Drain and install 36" RCP mainline Cross Pipe, Tee and Type N Grate
5	236+90	RCP	18"			18	1								18	1				1	5		Remove and Reset Flared End & 18' of pipe
6	239+49	CMP	24"	180					180			2					240	346	8	18	35		Remove in place CMP and install 24" RCP mainline Cross Pipe
7	467+00 LT	CMP	18"		2					20	1												Needs 2' cut off end, then extend 20' w/FE
8	476+24 LT	CMP	18"		2					10	1												Needs 2' cut off end, then extend 10' w/FE
9	537+02 RT & LT																	2					Fill hole on both outside shoulder inslopes
10	544+00 LT	RCP	18"				1									1							Remove & Reset 18" FE
11	579+90 RT	RCP	18"			6	1								6	1							Remove & Reset 18" FE & 6' Section
12	590+00 RT																	35					Fill hole in ditch bottom
13	626+75 RT	RCP	24"			6	1								6	1							Remove & Reset 24" FE & 6' Section
13	655+12 RT	RCP	36"				1									1							Remove & Reset 36" FE
14	655+12 LT	RCP	36"			6	1								6	1							Remove & Reset 36" FE & 6' Section
15	809+50 RT	RCP	18"				1									1							Remove & Reset 18" FE
16	931+24 RT	RCP	48" Arch																				Repair pipe per Incidental Work note
17	981+20 RT	RCP	18"				1									1							Remove & Reset 18" FE
18	1022+00 RT	RCP	18"				1									1							Remove & Reset 18" FE
19	1082+00 LT	RCP	18"				1									1							Remove & Reset 18" FE
Additional Quantities																							
				TOTAL	4	36	10	680	180	30	2	2	8	4	36	10	1200	1519	40	91	180	4	

RCP Tee shall have a D1 dimension of 24" and a D2 dimension of 36" with a Length of 6'.

Removal of Culverts at Sites 1 through 4 and Site 6 is paid for by the contract item INCIDENTAL WORK, GRADING.

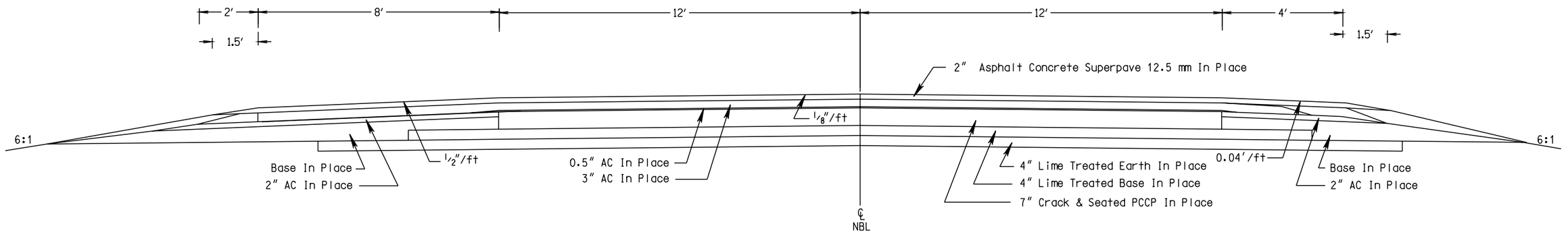


STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	5	26
Plotting Date: 30-APR-2009			

IN PLACE TYPICAL SURFACING SECTION

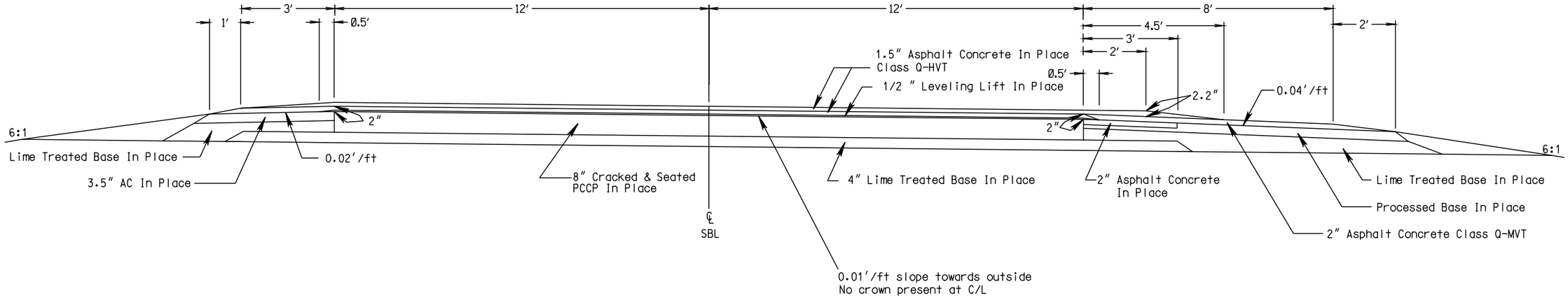
Sta 164+48, 178+00, 191+48, 204+50 and 239+49

NBL - Sta 145+37.28 to Sta 506+00



SBL-Sta 145+74.84 to Sta 346+51.52

SBL-Sta 351+75.70 to Sta 462+58.71



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	6	26
Plotting Date: 16-APR-2009			

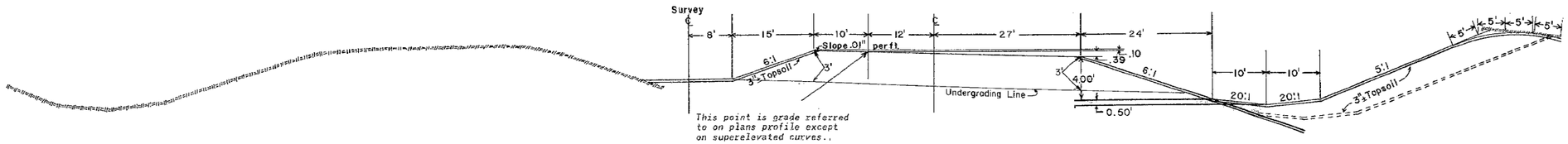
FED. HWY. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
" 8 "	S.D.	RFO85-7(13)	11	216

07319

See Notes on Sheet No. 4 Regarding Topsoil.

TYPICAL GRADING SECTIONS

STATION 146+00 TO 347+50 SOUTHBOUND LANES
STATION 359+00 TO 463+00 SOUTHBOUND LANES

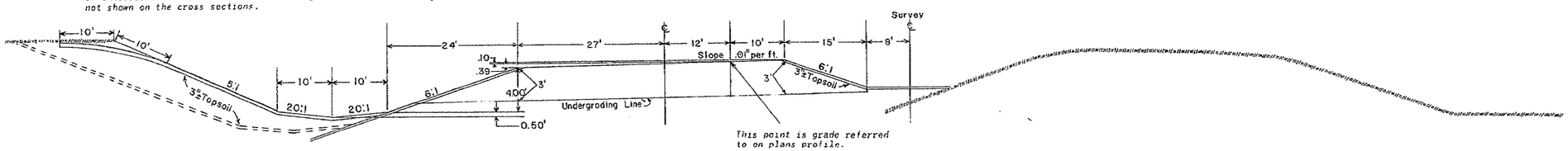


This point is grade referred to on plans profile except on superelevated curves..

At locations where natural ground slopes away from the cut backslopes, a 10 foot level section is to be provided and rounded as shown below. These roundings are not shown on the cross sections.

The tops of all earth backslopes flatter than 2:1 shall be rounded 10 feet on backslopes and 10 feet on natural ground beyond the point of intersection of backslope and natural ground. These roundings are not shown on the cross sections.

STATION 494+00 TO 633+53.28 NORTHBOUND LANES



This point is grade referred to on plans profile.

Where special ditch grades are used variable ditch depth is to be obtained by varying the width of the inslopes as shown above.

ORIGINAL TYPICAL GRADING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	7	26
Plotting Date: 16-APR-2009			

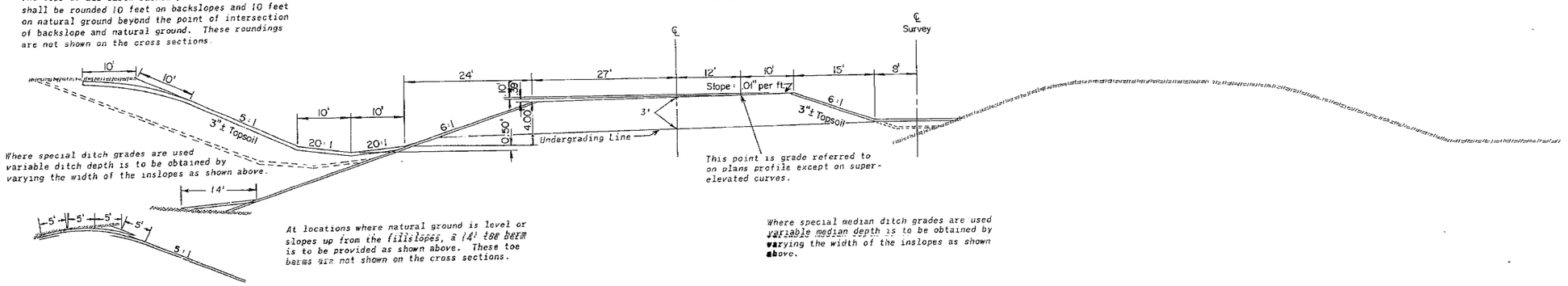
FED. HWY. ADMIN. NO.	STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
8	S.D.	TOF 0281(11)13	8	205

07326

See Notes on Sheet No. 4 Regarding Topsoil.

TYPICAL GRADING SECTION

STATION 633+53.28 to 1116+00 NORTHBOUND LANES
(FROM STATION 787+00± TO 800+00±, GRADING AND TEMPORARY SURFACING OF N. B. LANE WERE DONE ON A PREVIOUS CONTRACT)



The tops of all earth backslopes flatter than 2:1 shall be rounded 10 feet on backslopes and 10 feet on natural ground beyond the point of intersection of backslope and natural ground. These roundings are not shown on the cross sections.

Where special ditch grades are used variable ditch depth is to be obtained by varying the width of the inslopes as shown above.

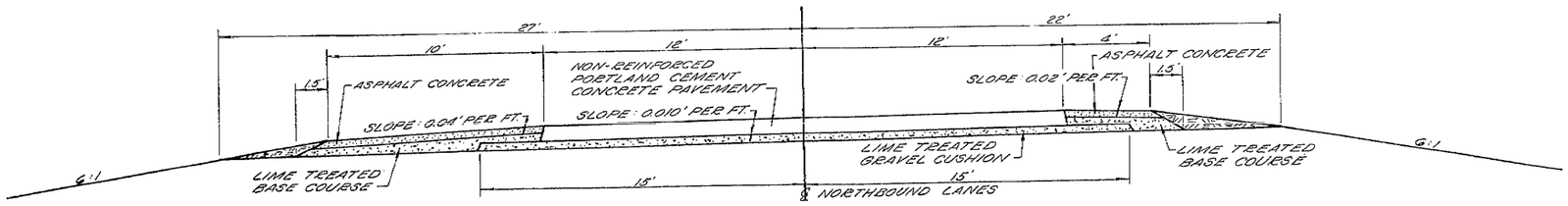
At locations where natural ground is level or slopes up from the fillslopes, a 14' toe berm is to be provided as shown above. These toe berms are not shown on the cross sections.

At locations where natural ground slopes away from the cut backslopes, a 10 foot level section is to be provided and rounded as shown above. These roundings are not shown on the cross sections.

This point is grade referred to on plans profile except on super-elevated curves.

Where special median ditch grades are used variable median depth is to be obtained by varying the width of the inslopes as shown above.

TYPICAL SECTION SHOWING ULTIMATE ROADBED IMPROVEMENT



SPECIFICATIONS

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

SEQUENCE OF OPERATIONS

The following Sequence shall be used for this project. The Contractor may submit an alternate Sequence of Operations for consideration by the Area Engineer. An alternate Sequence of Operations shall be submitted to the Area Engineer a minimum of 2 weeks prior to the preconstruction meeting.

1. Install traffic control
2. Install sandbag dike
3. Saw cut pavement to full depth
4. Remove pavement
5. Unclassified excavation
6. Incidental work grading (pipe removal)
7. Undercut pipe
8. Install pipe
9. Backfill pipe
10. Place base course
11. Place asphalt concrete composite
12. Switch traffic control and repeat steps 2 thru 10 as shown above for both Northbound & Southbound lanes
13. Complete remaining pipe repair as shown in the table
14. Remove traffic control

One lane of traffic shall be maintained in each direction at all times. All construction activities will be half width at a time. The replacement of the pipe shall progress from west to east across US #281. All excess material shall be removed from the project by nightfall. All excavated areas shall be backfilled by nightfall. Asphalt Concrete Composite shall be placed before the lane can be open to traffic.

UTILITIES

Fiber optic cable exists along US #281 within the project limits.

GENERAL NOTES

All waste and excess material generated from the various construction activities, which will adversely effect SDDOT maintenance operations, shall be removed from the ROW as determined by the Engineer.

TRAFFIC CONTROL

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost of this work shall be incidental to the various contract bid items unless otherwise specified in the plans. Delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

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

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

Traffic approaching the project from intersecting roadways, streets, and approaches must be adequately accommodated. Major intersections or large commercial entrances may require additional signing, flaggers, and channelizing devices on a temporary basis until work activities pass these areas.

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

Traffic Control units, as shown in the Estimate of Quantities, are estimates. Contractor's operation may require adjustments in quantities, either more or less. Payment will be for those signs actually ordered by the Engineer and used.

WORK AFFECTING WATERWAYS

A. WATER QUALITY

Surface Water Quality

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

Surface Water Discharge

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

Storm Water

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

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

B. CONSTRUCTION PRACTICES FOR TEMPORARY WORKS IN PROTECTED WATERWAYS

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

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

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

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

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

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

PIPE INSTALLATION - SITES 1 THROUGH 4 AND 6

Before construction activities can begin, the area around the pipe inlet and outlets shall be blocked with sandbags wrapped in 6 mil polyethylene sheeting and dewatered. The pipe shall be installed in dry bedding.

The use of the excavated fill material to be used as a dike will not be allowed.

All joints in the RC pipe shall have Mastic and a 1' wide strip of Drainage Fabric Type A installed around the entire circumference of the pipe.

The bottom two thirds of the RC pipe shall be backfilled with a fine aggregate conforming to Section 800 of the Standard Specifications. The fine aggregate backfill under the haunches of the RC pipe shall be compacted using a spud vibrator. Upon completion of compaction of the haunches, the pipe backfill can resume with the final compaction on the fine aggregate being with a vibratory plate compactor or equivalent compaction equipment to the satisfaction of the Engineer.

Fine aggregate shall only be used on the section of roadway under the asphalt surface. Contractor Furnished Borrow shall be used on the inslopes and in the median.

All costs associated with sandbagging, joint mastic, drainage fabric and fine aggregate shall be incidental to the contract unit prices for the various pipe contract items.

HISTORICAL PRESERVATION OFFICE CLEARANCES

To obtain SHPO clearance, a cultural resources survey may need to be conducted by a qualified archaeologist. The Contractor shall arrange and pay for this survey. In lieu of a cultural resources survey, the Contractor could request a literature search on the site and provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that no artifacts have been found on the site. Jim Donohue, State Archaeological Research Center at 605-394-1937 shall be contacted for a literature search.

If borrow material is furnished from within the current geographical reservation boundaries or historic boundaries of the Lake Traverse, Yankton, or Flandreau-Santee reservations, the Contractor shall obtain THPO (Tribal Historical Preservation Office) clearance from the Tribal Cultural Resources Officer. This requirement is in addition to the SHPO clearance. If no Tribal contact exists, the required SHPO clearance shall suffice, with documentation of Tribal contact efforts provided to SHPO.

To facilitate SHPO and THPO responses, the Contractor should submit a cultural resources survey report or the results of the literature search along with a legal description of the site, a topographical map with the site clearly marked, and evidence of prior site disturbance to Terrence G. Keller, DOT Environmental Supervisor, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3721). Allow 30 days from the date this information is submitted to the Environmental Supervisor for SHPO approval. The Contractor is responsible for obtaining all required permits and clearances for the borrow and/or waste disposal site(s) prior to commencing construction activities at the borrow and/or waste disposal site(s). The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

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

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

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

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

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

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

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

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

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

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

ASPHALT CONCRETE REMOVAL

Asphalt concrete removal shall be accomplished on one-half of the roadway at a time in accordance with Standard Plate 634.63 and as directed by the Engineer. Type III barricade(s) shall be placed at each repair site whenever pavement is removed.

The limits of the removal area may be sawed full depth (asphalt concrete and PCC Pavement), half roadway width, up to 3 calendar day prior to beginning of asphalt concrete removal and installation of the RC Pipe. Asphalt concrete removal and asphalt concrete composite placement shall be completed half-roadway width at a time. There are seven to eight inches of PCC Pavement under the asphalt concrete which shall be removed in conjunction with the asphalt concrete. All costs associated with the removal/disposal of asphalt concrete and PCC pavement shall be incidental to the contract unit price per square yard for REMOVE ASPHALT CONCRETE PAVEMENT.

TABLE OF ASPHALT CONCRETE REMOVAL

Station to	Station	L/R (Feet)	Quantity (SqYd)
164+45	164+51	78	52
178+97	179+03	78	52
191+45	191+51	78	52
204+47	204+53	78	52
* 236+87	236+93	5	3
239+46	239+52	78	52
		Total:	263

*Asphalt Concrete Removal at this location is limited to the shoulder of the roadway.

UNCLASSIFIED EXCAVATION

At the pipe locations on US #281, the Contractor will be required to remove the existing asphalt concrete, PCC pavement, subbase, and subgrade to the limits shown on the Culvert Installation Detail in these plans.

Subgrade material shall be removed to a 6' width.

All material generated from removal of the subbase and subgrade shall become the property of the contractor. The plan shown quantity will be the basis of payment. All costs associated with disposing of this waste material shall be incidental to the contract unit price per cubic yard for UNCLASSIFIED EXCAVATION.

INCIDENTAL WORK, GRADING

A minimum of 3” of topsoil shall be salvaged and stockpiled prior to the unclassified excavation for pipe replacement. Limits of this work, depth of salvage, and the stockpile location will be directed by the Engineer. Following completion of construction, the soil shall be shaped in the ditch section around the median drain to allow for the proper drainage. Then the topsoil shall be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 40 CuYd.

All costs associated with shaping the ditch sections, removing and replacing the topsoil and removal/disposal of the CM pipe and median drains shall be incidental to the lump sum price for INCIDENTAL WORK , GRADING.

TABLE OF INCIDENTAL WORK, GRADING

Station	L/R	Remarks
164+48	L & R	Take out 180’ 36” CMP & Median Drain
178+00	L & R	Take out 180’ 36” CMP & Median Drain
191+48	L & R	Take out 180’ 36” CMP & Median Drain
204+50	L & R	Take out 180’ 36” CMP & Median Drain
239+49	L & R	Take out 180’ 24” CMP

PIPE CULVERT UNDERCUT - SITES 1 THROUGH 4 AND 6

The earthen subgrade shall be undercut 2’ feet below the earthen subgrade surface at each pipe location. The Contractor Furnished Borrow, shall then be placed and compacted in accordance with Section 421.3 of the Standard Specifications. The undercut material will become the property of the Contractor for his disposal. All costs associated with the undercut and disposal of material shall be incidental to the contract unit price per cubic yard for Pipe Culvert Undercut.

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

TABLE OF PIPE CULVERT UNDERCUT

The Table of Pipe Culvert Undercut is intended to be used to establish an estimated quantity of Pipe Culvert Undercut for bidding purposes only. The table includes undercut for 24 inch and 36 inch pipe culverts. The depth of undercut is an estimate at a minimum of two feet and the actual depth necessary shall be determined during construction. All pipe shall be undercut in accordance with Section 421 of the Standard Specifications.

Station	Undercut Depth (Ft)	Quantity (CuYd)
164+48	2	86
178+00	2	86
191+48	2	86
204+50	2	86
239+49	2	88
	Total:	432

CONTRACTOR FURNISHED BORROW

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

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

Ditch repair at station 590+00 RT shall require the contractor to remove and stockpile a minimum of 3” of topsoil prior to placing the contractor furnished borrow. Upon completion of the contractor furnished borrow material; the topsoil shall spread evenly over the disturbed areas. All costs associated with the removal and replacement of topsoil at this location shall be incidental to the contract unit price per cubic yard of CONTRACTOR FURNISHED, BORROW.

CORRUGATED METAL PIPE

Corrugated metal pipes shall have 2 ⅔-inch X ½-inch corrugations for 42-inch and smaller round pipe.

When it is necessary to remove a damaged culvert ends, the culvert may be cut with a torch. If the culvert is cut with a torch, it shall be painted with a galvanizing paint approved by the Engineer.

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.

All costs of removing damaged portions of culverts and painting shall be incidental to the contract unit price per foot for REMOVE PIPE CULVERT.

INCIDENTAL WORK

The pipe repair at station 931+24 RT shall consist of removing and stockpiling the topsoil and unclassified excavation halfway down the pipe around the RCP joint that has been separated. Upon completion of the unclassified excavation the Contractor shall grout on the inside of the pipe (full circumference) at the separated joint. Then the Contractor shall drill holes in the RC pipe to tie the two pipe sections together with tie bolts. See Standard Plate 450.18. After the grout has ample time to cure, the Contractor shall place Drainage Fabric Type A over the joint, and then place the unclassified excavation and topsoil. All costs associated with this work shall be incidental to the contract lump sum price for INCIDENTAL WORK.

BASE COURSE

Aggregate for Base Course shall conform to the Standard Specifications; except that the density requirement shall be to the satisfaction of the Engineer.

ASPHALT CONCRETE COMPOSITE

The Asphalt Concrete Composite shall be placed in the area removed for Pipe Replacement in accordance with the Culvert Installation Detail.

Asphalt Concrete Composite shall be paver laid in lifts not exceeding 2.0” in depth.

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements of the Standard Specifications for Class E, Type 1 or Class Q2 Hot Mixed Asphalt Concrete specifications.

All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

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

16” Rumble Strips shall be installed in the median and outside shoulder as indicated on Standard Plates 320.20 and 320.21. All costs associated with installing 16” Rumble Strips shall be incidental to the contract unit price per ton for ASPHALT CONCRETE COMPOSITE.

TABLE OF GRINDING 16” RUMBLE STRIPS INTO ASPHALT CONCRETE

Station to Station	Length (Ft)
164+45 to 164+51 RT & LT – NB & SBL’S	24
178+97 to 179+03 RT & LT – NB & SBL’S	24
191+45 to 191+51 RT & LT – NB & SBL’S	24
204+47 to 204+53 RT & LT – NB & SBL’S	24
239+46 to 239+52 RT & LT – NB & SBL’S	24
Total	120

PLACING CONTRACTOR FURNISHED TOPSOIL

It is anticipated that a larger volume of topsoil will be needed for the inslopes than can be salvaged from the existing inslopes. The Contractor will be required to furnish and place 3 inches of topsoil on roadway inslopes and areas as determined by the Engineer during construction.

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

PERMANENT SEEDING

The areas to be seeded comprise of those areas disturbed for pipe installation and ditch restoration.

All permanent seed shall be planted in the topsoil at a depth of ¼" to ½".

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

All costs associated with seeding shall be incidental to the lump sum price for EROSION CONTROL. The estimate area for seeding is 0.11 acres.

Type C Permanent Seed Mixture shall consist of the following:

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

DRILLS

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

MULCHING (GRASS HAY OR STRAW)

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project. All costs associated with mulching shall be incidental to the lump sum price for EROSION CONTROL. The estimated area for mulch is 0.11 acres.

FERTILIZING

Application of fertilizer will not be required on this project.

COVER CROP SEEDING

Cover crop seeding may be used on this project as a temporary erosion control measure. The actual limits and use of cover crop seeding shall be determined by the Engineer during construction.

LOW FLOW SILT FENCE

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

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

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

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

TABLE OF LOW FLOW SILT FENCE

Station	L/R	Quantity (Ft)	Remarks
164+48	L & R	100	Around inlet and outlet of pipe
178+00	L & R	100	Around inlet and outlet of pipe
191+48	L & R	100	Around inlet and outlet of pipe
204+50	L & R	100	Around inlet and outlet of pipe
239+49	L & R	100	Around inlet and outlet of pipe
Additional Quantities		100	
TOTAL		600	

MUCKING SILT FENCE

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

REMOVE SILT FENCE

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

EROSION CONTROL WATTLE

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

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

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

Product	Manufacturer
Earth Saver Rice Straw Wattles	R.H. Dyck Inc. Winters, CA Phone: 1-866-928-8537 www.earth-savers.com
Amber Waves Straw Wattles	Limpert Environmental Litchfield, MN Phone: 1-320-693-2565 www.limpertenvironmental.com
Stenlog	ECB Bioproducts St. Andrews, MB Phone: 1-866-317-3346 www.erosioncontrolblanket.com
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexcelsior.com
Patriot Wood Fiber Logs and Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-480-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

TABLE OF EROSION CONTROL WATTLE

Station	Diameter (Inch)	Location	Quantity (Ft)
164+48	12	Around Median Drain	20
178+00	12	Around Median Drain	20
191+48	12	Around Median Drain	20
204+50	12	Around Median Drain	20
		Total:	80

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	12	26

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST

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

❖ SITE DESCRIPTION (4.2 1)

- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - ☐ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☐ Filling
  - ☐ Cutting and filling
  - ☐ Other (describe):
- **Total Project Area** 1.0 Acre **(4.2 1.b.)**
- **Total Area To Be Disturbed** 0.11 Acre **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 50
- **Soil Properties:** AASHTO Soil A-2, A-3, A-4, A-6, A-7 Classification **(4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Moccasin Creek **(4.2 1.e.)**

❖ ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)

(Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)

- **See Sequence of Operations**

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

(Check all that apply)

- **Stabilization Practices (See Detail Plan Sheets)**
  - ☒ Temporary or Permanent Seeding
  - ☐ Sodding
  - ☐ Planting
  - ☒ Mulching (Straw or Cellulose Fiber)
  - ☐ Erosion Control Blankets or Mats
  - ☐ Vegetation Buffer Strips
  - ☐ Roughened Surface (e.g. tracking)
  - ☐ Gabions-Gabion Mattress
  - ☐ Other
- **Structural Temporary Erosion and Sediment Controls**
  - ☒ Silt Fence
  - ☐ Straw Bale Check
  - ☐ Temporary Berm
  - ☐ Temporary Slope Drain
  - ☒ Straw Wattles or Rolls
  - ☐ Diversion Channels/Swales
  - ☐ Channel Liners (TRM)
  - ☐ Stone Rip Rap Sheet
  - ☐ Rock Check Dams
  - ☐ Sediment Traps/Basins
  - ☒ Inlet Protection
  - ☒ Outlet Protection
  - ☐ Surface Inlet Protection
  - ☐ Curb Inlet Protection
  - ☐ Stabilized Construction Entrances
  - ☐ Other
- **Wetland Avoidance**

  Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☒ No ☐ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.
- **Storm Water Management (4.2 2.b., (1) and (2))**

  Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.
- **Other Storm Water Controls (4.2 2.c., (1) and (2))**
  - **Waste Disposal**

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

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

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

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

- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
  - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $^1/_3$ of the height of the silt fence.
  - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
  - Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
  - All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
  - Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
  - The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance,
  -
  -
  -
- **Maintenance and Inspection Practices(Continued)**
  - repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ Non-Storm Water Discharges (3.0)

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

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

❖ Materials Inventory (4.2. 2.c.(2))

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

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

❖ **Spill Prevention (4.2 2.c.(2))**

➢ **Material Management**

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

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

➢ **Product Specific Practices (6.8)**

- Petroleum Products
  All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.
- Fertilizers
  Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.
- Paints
  All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.
- Concrete Trucks
  Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

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

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

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

➢ **Spill Response (4.2 2 c.(2))**

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

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
-
-
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
-
- Personnel with primary responsibility for spill response and clean up will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

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

➢ A reportable spill is a quantity of 25 gallons or more or any spill of oil which: 1) violates water quality standards, 2) produces a "sheen" on a surface water, or 3) causes a sludge or emulsion must be reported immediately to the National Response Center .

➢ Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the SD DENR.

❖ **Construction Changes (4.4)**

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

❖ CERTIFICATIONS

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

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

➢ South Dakota Department of Transportation

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

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

➢ Prime Contractor

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

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

Authorized Signature

❖ CONTACT INFORMATION

➢ Contractor Information:

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

➢ Erosion Control Supervisor

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

➢ SDDOT Aberdeen Area Engineer

- Name: Phil Dwight
- Business Address: Box 1767 (2735 West Highway 12)
- Job Office Location: 2733 West Highway 12, Aberdeen
- City: Aberdeen State: SD Zip: 57402-1767
- Office Phone: 605-626-7885 Field: Cell: Fax: 605-626-2233

➢ SD DENR Contact Spill Reporting

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

➢ SD DENR Contact for Hazardous Materials.

- (605) 773-3153

➢ National Response Center Hotline

- (800) 424-8802.

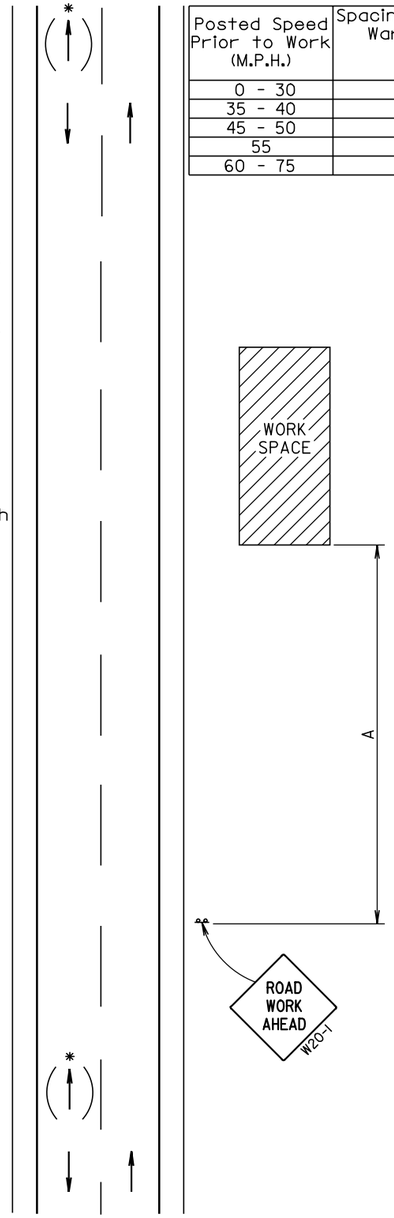
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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

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

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

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



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 75	1000

July 1, 2005

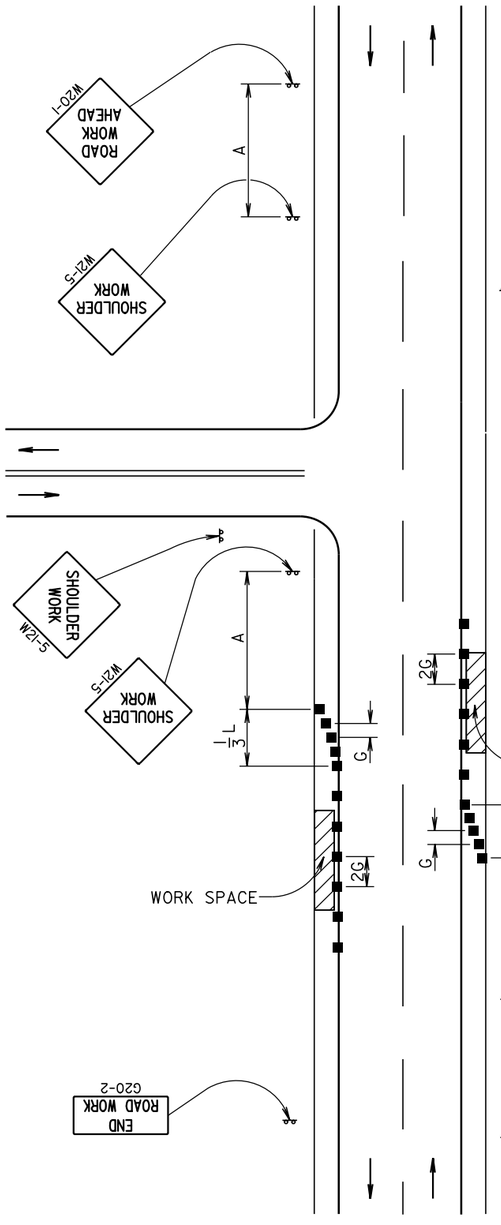
Published Date: 2nd Qtr. 2009

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK BEYOND THE SHOULDER

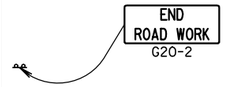
PLATE NUMBER 634.01

Sheet 1 of 1



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

■ Channelizing Device



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

For short duration operations (1 hour or less) all signs and 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.

July 1, 2005

Published Date: 2nd Qtr. 2009

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
WORK ON SHOULDERS

PLATE NUMBER 634.03

Sheet 1 of 1

Plotting Date: 20-MAY-2009

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 - 30	25	180
35 - 40	25	320
45 - 50	50	600
55	50	660
60 - 65	50	780
70 - 75	50	900

▪ Channelizing Device

* Speed appropriate for location.

4" white temporary pavement marking tape for right lane closures and 4" yellow temporary pavement marking tape for left lane closures or temporary road markers at 5' spacing shall be installed when the lane is closed for a period of 24 hours or more.

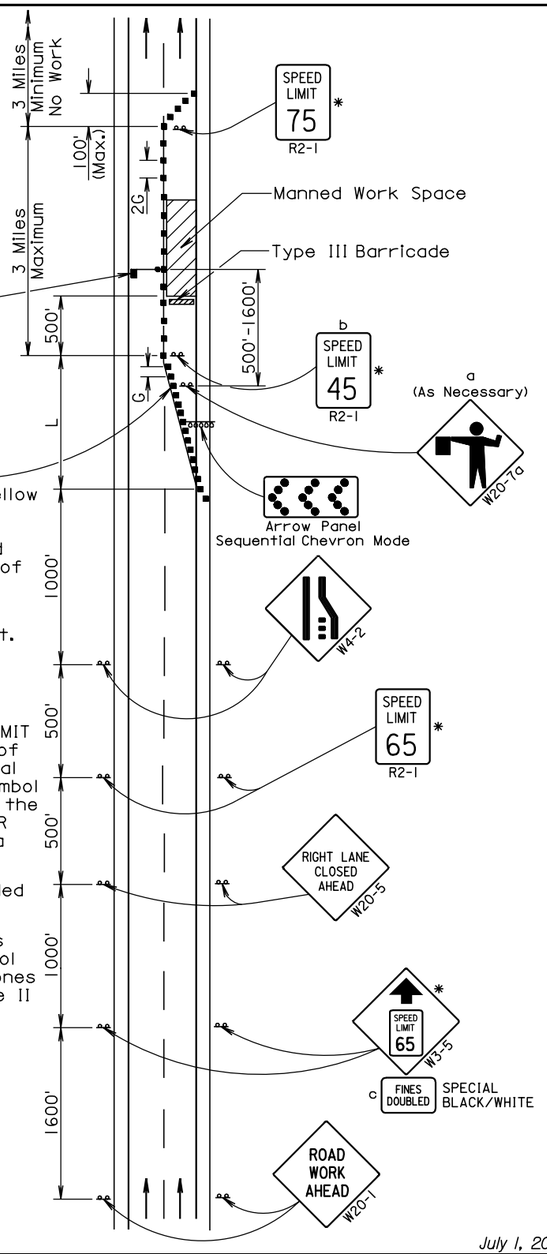
Signs a, b, and c shall be removed or covered when workers are not present.

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

If the spacing between manned work spaces is 1 mile or greater, a SPEED LIMIT 65(*) sign shall be posted at the end of the first manned work space. Additional SPEED LIMIT 45(*) sign(s) and FLAGGER symbol sign(s) shall be installed in advance of the next manned work space(s). The FLAGGER sign shall be used whenever there is a Flagger present.

Left mounted advance signs on undivided highways are not required.

The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. 42" cones may be used in lieu of drums or type II barricades only along the centerline.



July 1, 2005

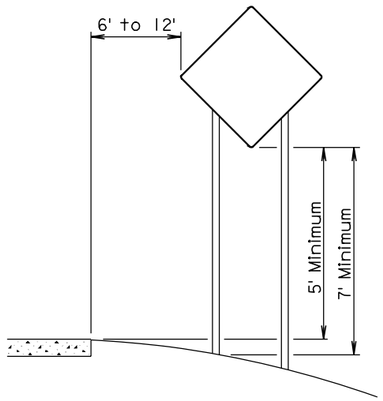
Published Date: 2nd Qtr. 2009

SDDOT

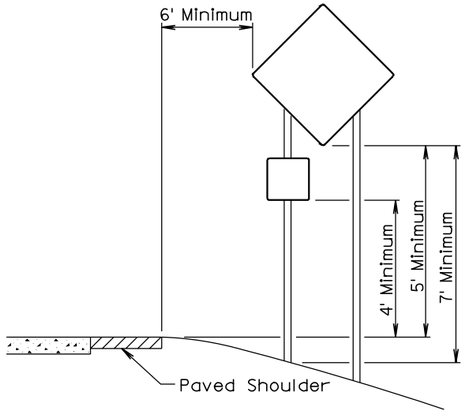
MANNED WORK SPACE SIGNING FOR DIVIDED AND UNDIVIDED HIGHWAYS

PLATE NUMBER 634.63

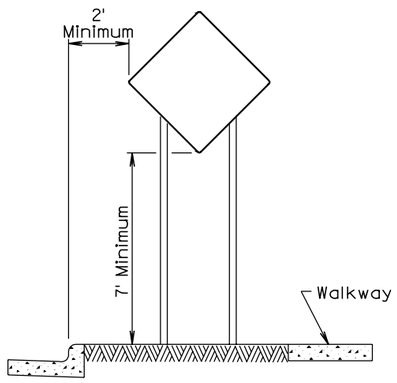
Sheet 1 of 1



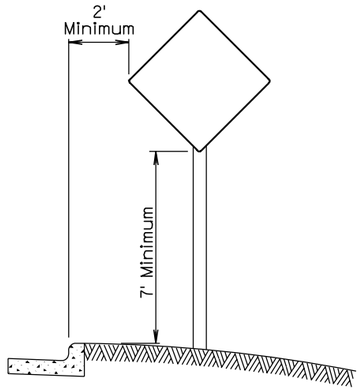
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT



URBAN DISTRICT

December 23, 2003

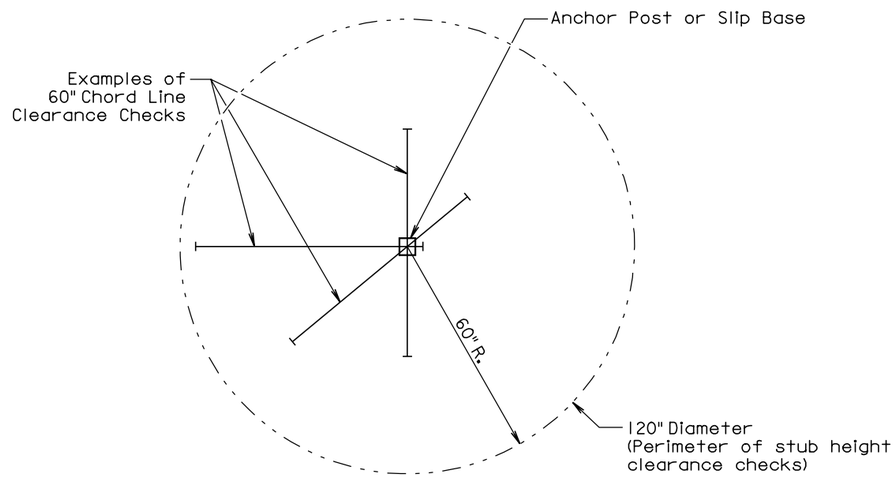
Published Date: 2nd Qtr. 2009

SDDOT

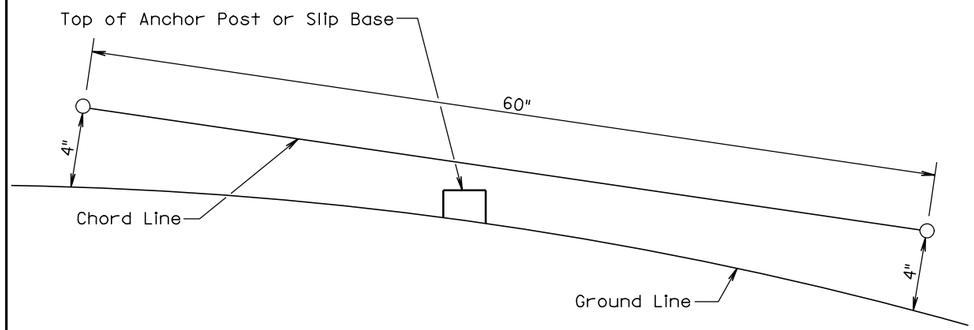
BREAKAWAY SIGN SUPPORTS
(Typical Construction Signing)

PLATE NUMBER 634.85

Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

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

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

July 1, 2005

Published Date: 2nd Qtr. 2009

SDDOT

BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER 634.99

Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	18	26

ITEMIZED LIST FOR TRAFFIC CONTROL

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
R2-1	30" x 36"	SPEED LIMIT ##	4	23	92
W3-5	48" x 48"	SPEED REDUCTION AHEAD	2	34	68
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	5	34	170
W20-5	48" x 48"	LT. OR RT. LANE CLOSED #### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W20-7b	48" x 48"	BE PREPARED TO STOP	2	34	68
W21-5	48" x 48"	SHOULDER WORK	1	34	34
R2-FD	30" x 24"	FINES DOUBLED	2	18	36
*****	*****	TYPE III BARRICADE - 8 FT. SINGLE SIDED	5	40	200
				TOTAL UNITS	**906**

If a sign is required on a project and not listed in the above inventory, the units per sign will be determined as follows:
Signs 36" x 36" will be measured at 27 units each and signs 48" x 48" will be measured at 34 units each, otherwise:
If a sign measures less than 25" high and 25" wide the units per sign will be computed as sign size (sq ft) x 3.
If a sign measures between 23H" and 37H" the units per sign will be computed as sign size (sq ft) x 1.2 +15.

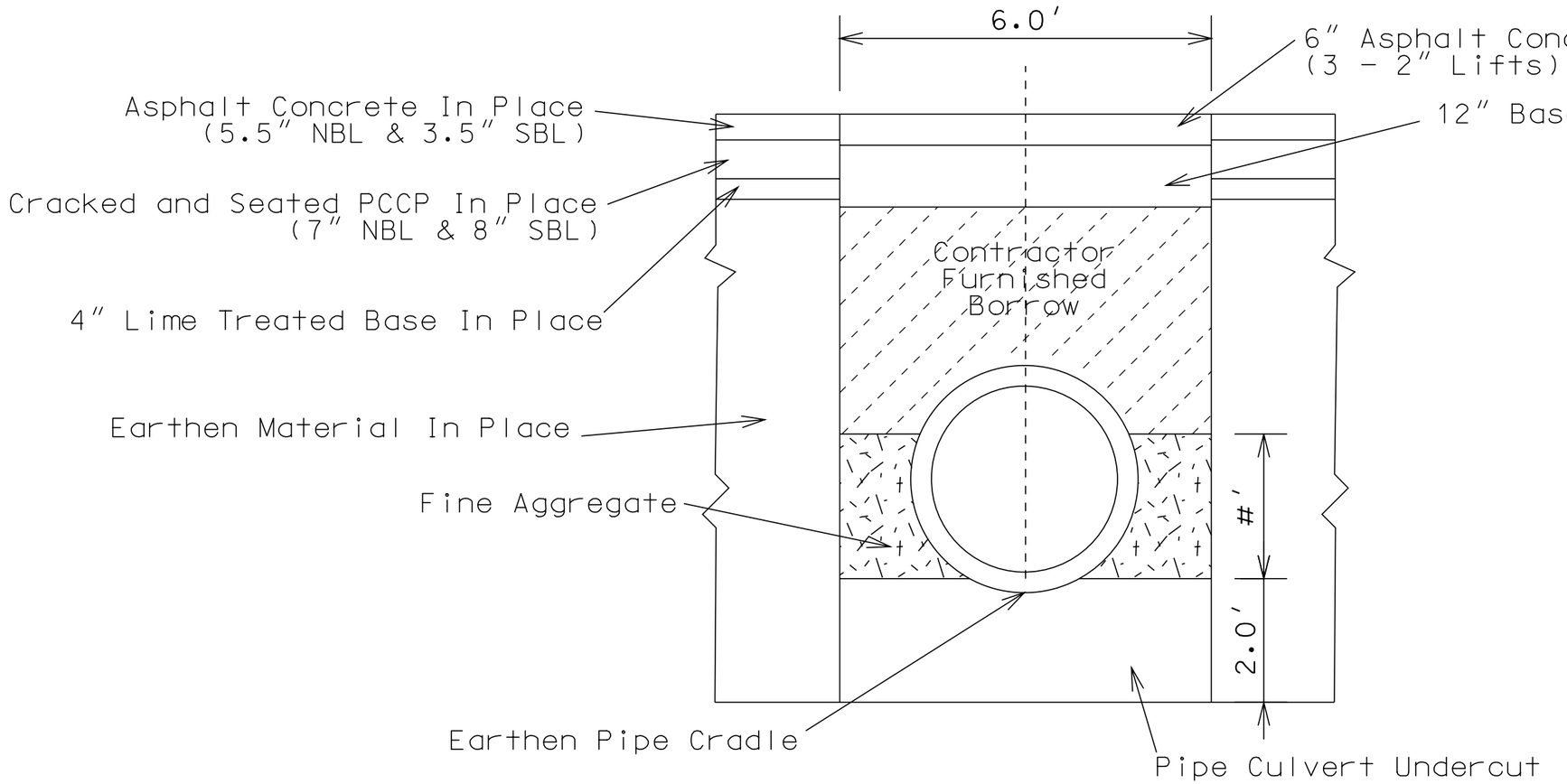
PLOT SCALE - 2.2100001:1.000000

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
		19	26

Plotting Date: 21-MAY-2009

CULVERT INSTALLATION DETAIL

Sta 164+48, 178+00, 191+48, 204+50 and 239+49



- 2/3 Pipe Height

PLOT NAME - I1FZ_TYPICAL_SECTIONS1
FILE - U:\REGIONA\PRJ\BRWN\I1FZ\I1FZ_TYPICAL_SECTIONS.DGN
PLOTTED FROM - TRAB17882

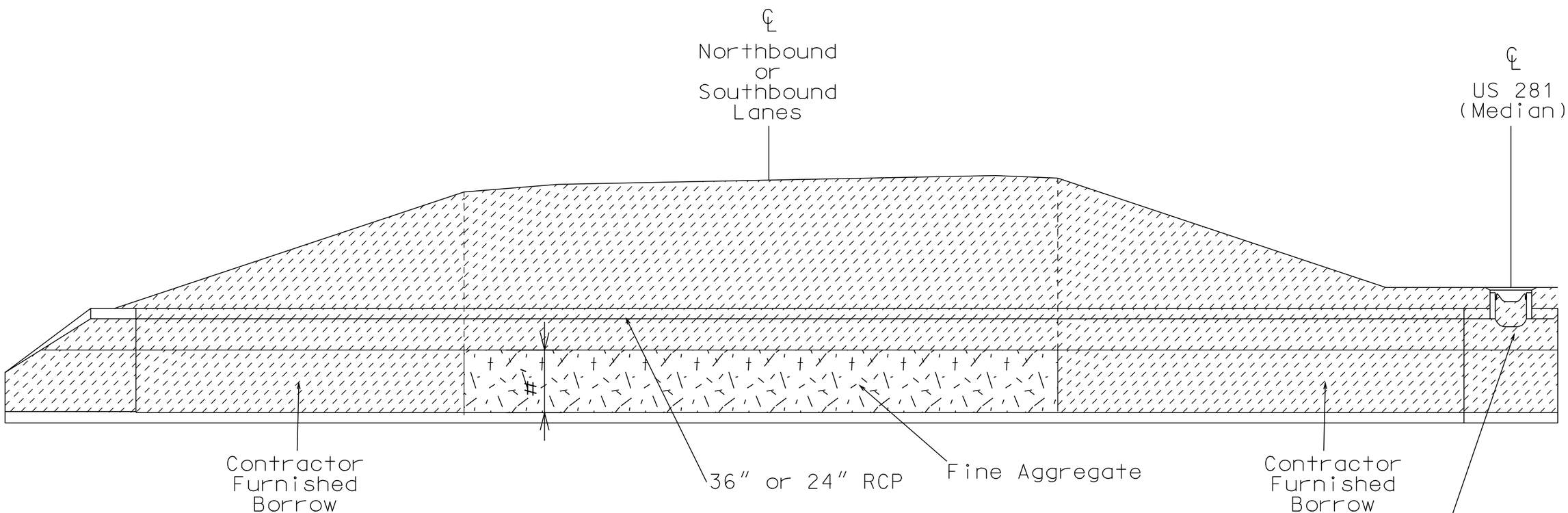
PLOT SCALE - 6.630000:1.000000

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	281 S-151 & 281 N-151	20	26
Plotting Date: 21-MAY-2009			

CULVERT INSTALLATION DETAIL

Sta 164+48, 178+00, 191+48, 204+50 and 239+49

Detail symmetrical around Centerline of US 281

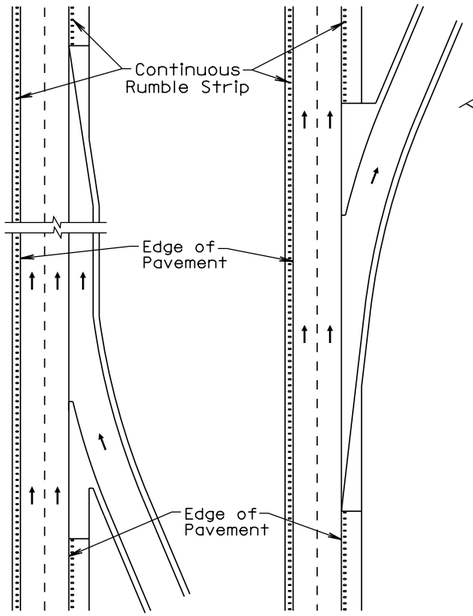


- 2/3 Pipe Height

PLOTTED FROM - TRAB17882

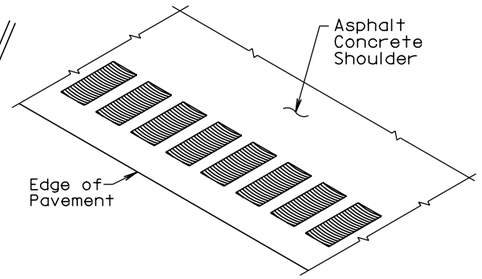
PLOT NAME - I1FZ_TYPICAL_SECTIONS4

FILE - U:\REGIONA\PRJ\BRWN11FZ\11FZ_TYPICAL_SECTIONS.DGN

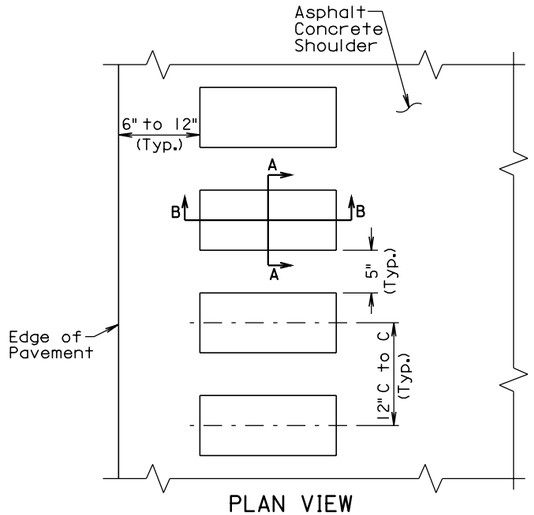


ENTRANCE RAMP EXIT RAMP

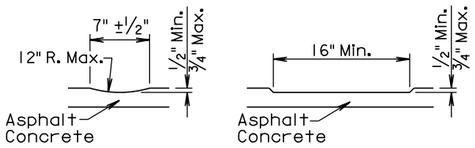
LOCATIONS



PERSPECTIVE OF TYPICAL
ASPHALT CONCRETE RUMBLE STRIP



PLAN VIEW
TYPICAL ASPHALT CONCRETE RUMBLE STRIP



SECTION A-A SECTION B-B

GENERAL NOTES:

Rumble strips shall be constructed on all asphalt concrete shoulders.

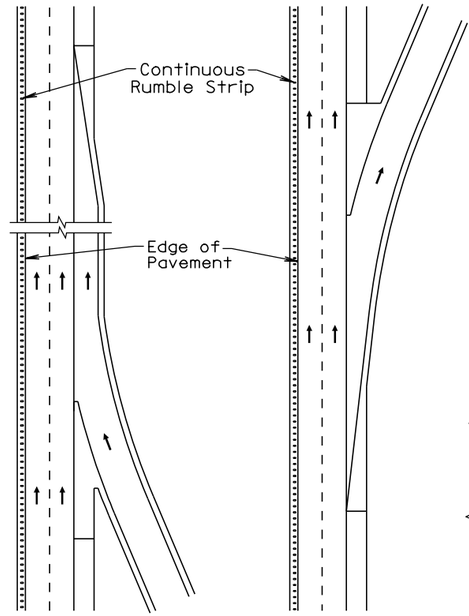
A rumble strip shall be constructed on the asphalt concrete shoulder by milling continuous indentations in the asphalt concrete. The rumble strip shall receive a flush seal with the shoulder flush sealing or asphalt surface treatment.

Prior to constructing the rumble strip the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

Measurement of the rumble strip shall be to the nearest 0.1 of a mile for each shoulder. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 16" Rumble Strip in Asphalt Concrete".

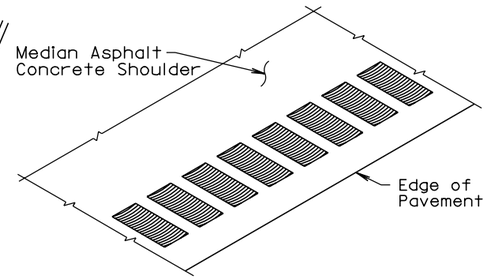
September 14, 2005

Published Date: 2nd Qtr. 2009	SDDOT	16" RUMBLE STRIP ON ASPHALT CONCRETE SHOULDERS	PLATE NUMBER 320.20
			Sheet 1 of 1

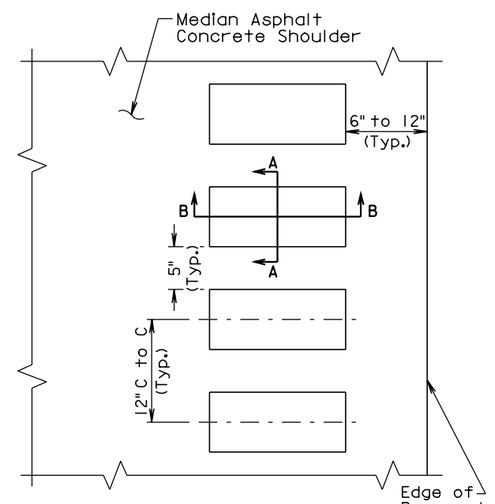


ENTRANCE RAMP EXIT RAMP

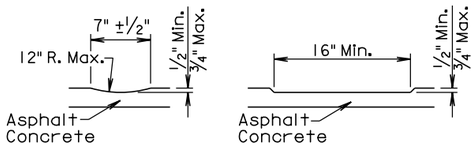
LOCATIONS



PERSPECTIVE OF TYPICAL
ASPHALT CONCRETE RUMBLE STRIP



PLAN VIEW
TYPICAL ASPHALT CONCRETE RUMBLE STRIP



SECTION A-A SECTION B-B

GENERAL NOTES:

Rumble strips shall be constructed on the median asphalt concrete shoulder.

A rumble strip shall be constructed on the median asphalt concrete shoulder by milling continuous indentations in the asphalt concrete. The rumble strip shall receive a flush seal with the shoulder flush sealing or asphalt surface treatment.

Prior to constructing the rumble strip the Contractor shall submit to the Engineer, for approval, the proposed method of constructing the rumble strip.

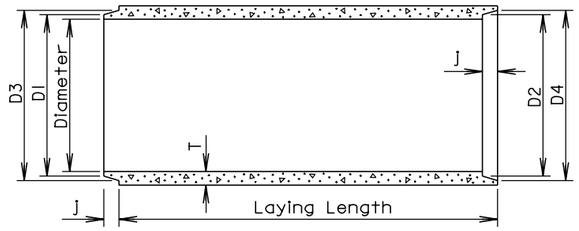
Measurement of the rumble strip shall be to the nearest 0.1 of a mile. Payment for constructing the rumble strip shall be at the contract unit price per mile for "Grind 16" Rumble Strip in Asphalt Concrete".

September 14, 2005

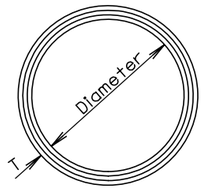
Published Date: 2nd Qtr. 2009	SDDOT	16" RUMBLE STRIP ON MEDIAN ASPHALT CONCRETE SHOULDER	PLATE NUMBER 320.21
			Sheet 1 of 1

TOLERANCES IN DIMENSIONS

Diameter: ±1.5% for 24" Dia. or less and ±1% or 3/8" whichever is more for 27" Dia. or greater.
Diameters at Joints: ±3/16" for 30" Dia. or less and ±1/4" for 36" or greater.
Length of joint (J): ±1/4".
Wall thickness (T): not less than design T by more than 5% or 3/16", whichever is greater.
Laying length: shall not underrun by more than 1/2".



LONGITUDINAL SECTION



END VIEW

GENERAL NOTES:

Construction of R. C. P. shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

Not more than 2 four foot sections shall be permitted near the ends of any culvert. Four foot lengths shall be used only to secure the required length of culvert.

Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	3 1/4	3	29 1/4	29 5/8	30 1/4	30 5/8
30	384	3 1/2	3 1/4	32 3/8	32 3/4	33 1/2	33 7/8
36	524	4	3 3/4	38 3/4	39 1/4	40	40 1/2
42	685	4 1/2	4	45 1/8	45 5/8	46 1/2	47
48	867	5	4 1/2	51 1/2	52	53	53 1/2
54	1070	5 1/2	4 1/2	57 7/8	58 3/8	59 3/8	59 7/8
60	1296	6	5	64 1/4	64 3/4	66	66 1/2
66	1542	6 1/2	5 1/2	70 5/8	71 1/8	72 1/2	73
72	1810	7	6	77	77 1/2	79	79 1/2
78	2098	7 1/2	6 1/2	83 3/8	83 7/8	85 5/8	86 1/8
84	2410	8	7	89 3/4	90 1/4	92 1/8	92 5/8
90	2740	8 1/2	7	95 3/4	96 1/4	98 1/8	98 5/8
96	2950	9	7	102 1/8	102 5/8	104 1/2	105
102	3075	9 1/2	7 1/2	109	109 1/2	111 1/2	112
108	3870	10	7 1/2	115 1/2	116	118	118 1/2

March 31, 2000

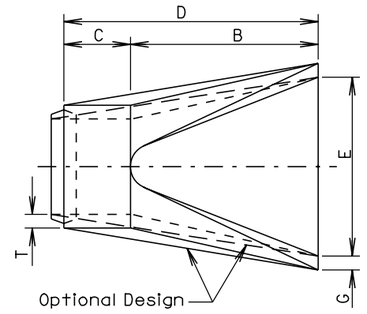
Published Date: 2nd Qtr. 2009

SDDOT

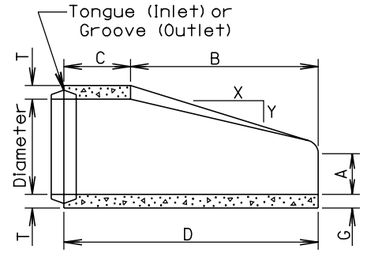
REINFORCED CONCRETE PIPE

PLATE NUMBER 450.01

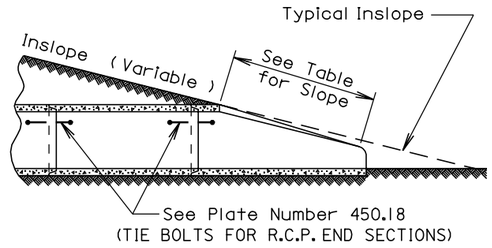
Sheet 1 of 1



TOP VIEW



LONGITUDINAL SECTION

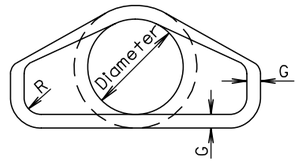


SLOPE DETAIL

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 Standard Specifications for Roads and Bridges.



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

March 31, 2000

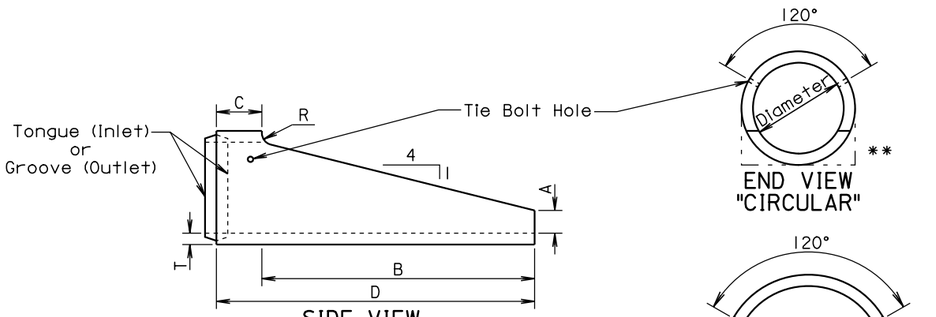
Published Date: 2nd Qtr. 2009

SDDOT

R. C. P. FLARED ENDS

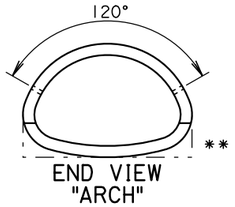
PLATE NUMBER 450.10

Sheet 1 of 1



SIDE VIEW

END VIEW
"CIRCULAR"



END VIEW
"ARCH"

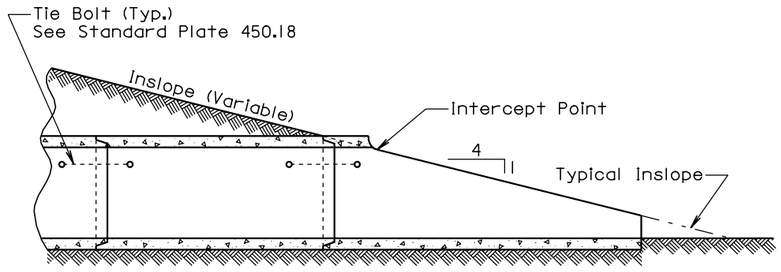
Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3½	7½	90	12	102	3½
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3½	7½	60	12	72	3½
* 36	4½	8⅝	66	30	96	0
* 42	4½	10	77¼	18¾	96	0

ALTERNATE

Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3½	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3½	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.



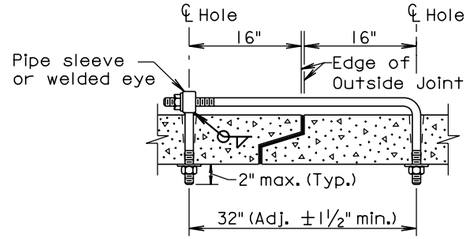
SECTION
(Along Centerline of Pipe)

GENERAL NOTE:

The length of concrete pipe shown in the construction plans is between sloped ends.

September 22, 2006

Published Date: 2nd Qtr. 2009	SDDOT	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13 Sheet 1 of 1

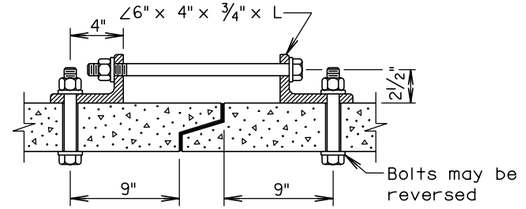


ADJUSTABLE EYE BOLT TIE

GENERAL NOTES:

Tie bolts to be furnished with 2 washers and 2 nuts except for the ⅝" rod which has unthreaded legs.

Use ⅝" rod diameter and ⅝" thread diameter for pipe wall thickness of 2" to 3¼".
Use 11/16" rod diameter and ¾" thread diameter for pipe wall thickness of 3½" to 6½".
Use 29/32" rod diameter and 1" thread diameter for pipe wall thickness of 7" and larger.

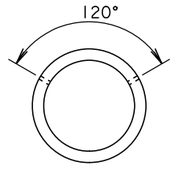


ANGLE AND BOLT TIE

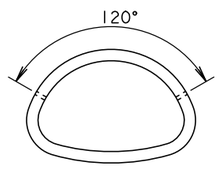
GENERAL NOTES:

L = 4" for ¾" Bolt. L = 6" for 1" Bolt.

Use 3/4" Tie Bolts for pipe diameters less than 48".



END VIEW
"CIRCULAR"



END VIEW
"ARCH"

GENERAL NOTES:

In lieu of Tie Bolts detailed above, Tecktonius Fasteners or other type Tie Bolt connections may be installed if approved by the Engineer.

There will be no separate measurement or payment for Tie Bolts.

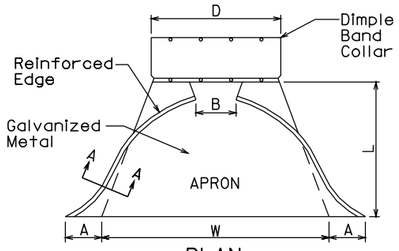
The cost of the Tie Bolts shall be incidental to the contract unit price per Foot for the corresponding Bid Item for R.C.P. and/or R.C.P. Arch.

The first three Sections (both inlet and outlet) on R.C.P. and R.C.P. Arch up to and including the 78" diameter or equivalent pipe shall be tied with Tie Bolts. Pipe sizes above 78" diameter or equivalent diameter shall have all Sections tied. Each End Section is considered as one section.

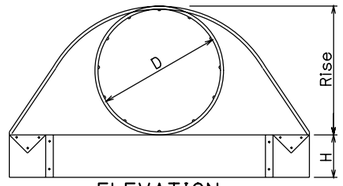
March 31, 2000

Published Date: 2nd Qtr. 2009	SDDOT	TIE BOLTS FOR R.C.P. END SECTIONS	PLATE NUMBER 450.18 Sheet 1 of 1

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



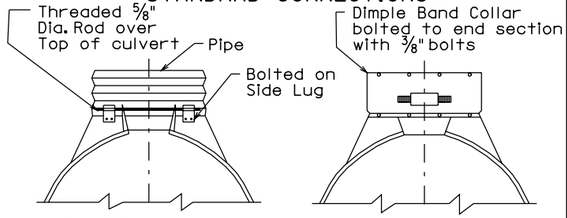
PLAN



ELEVATION

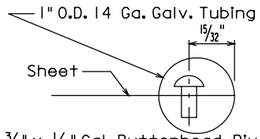
Dia. D (In.)	Ga.	DIMENSIONS (In.) A	B	H	L	W	Approx. Slope	Body
12	16	6	6	6	21	24	2½:1	1 Pc.
15	16	7	8	6	26	30	2½:1	1 Pc.
18	16	8	10	6	31	36	2½:1	1 Pc.
21	16	9	12	6	36	42	2½:1	1 Pc.
24	16	10	13	6	41	48	2½:1	1 Pc.
30	14	12	16	8	46	60	2½:1	1 Pc.
36	14	14	19	9	51	72	2½:1	2 Pc.
42	12	16	22	11	60	84	2½:1	2 Pc.
48	12	18	27	12	69	90	2¼:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1¾:1	3 Pc.
66	12	18	36	12	87	120	1½:1	3 Pc.
72	12	18	39	12	87	126	1⅓:1	3 Pc.
78	12	18	42	12	87	132	1¼:1	3 Pc.
84	12	18	45	12	87	138	1⅙:1	3 Pc.

STANDARD CONNECTIONS



For 30" through 84"

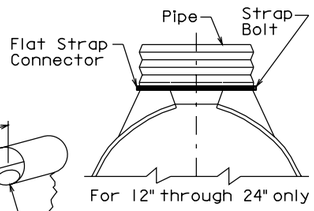
Alternate for all sizes



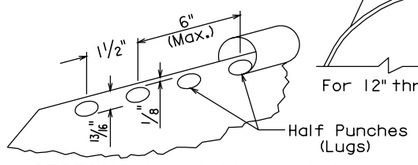
3/8" x 1/2" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

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

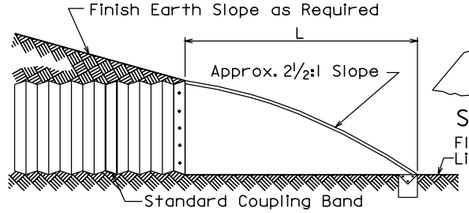
TUBING ATTACHMENT DETAILS
SECTION A-A



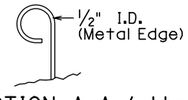
For 12" through 24" only



SECTION A-A (alternate)



TYPICAL CROSS-SECTION



SECTION A-A (alternate)

GENERAL NOTES:

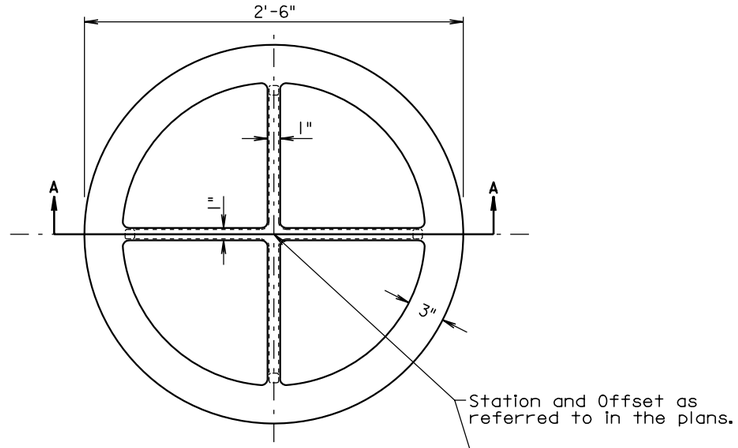
All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.

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 2½" x 2½" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

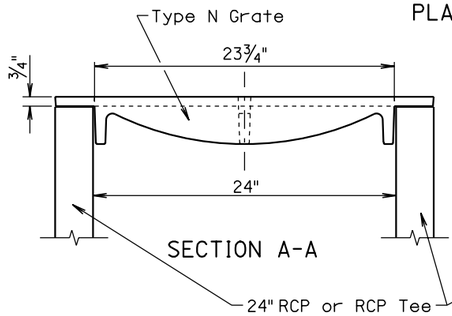
Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

March 31, 2000

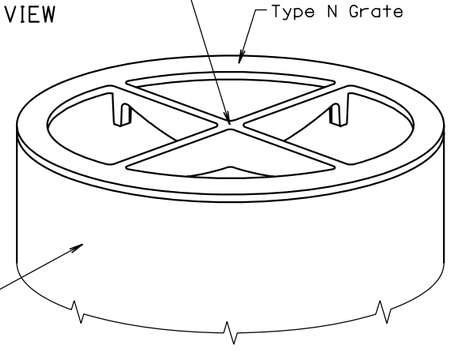
Published Date: 2nd Qtr. 2009	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1



PLAN VIEW



SECTION A-A



PERSPECTIVE VIEW

GENERAL NOTES:

The 24" RCP or RCP Tee shall be placed at the location and elevation as detailed elsewhere in the plans. The end of the 24" RCP or RCP Tee directly under the Type N Grate shall be cut to a smooth and level line. The Type N Grate shall be properly seated as approved by the Engineer.

The approximate weight of the Type N Grate is 88 pounds.

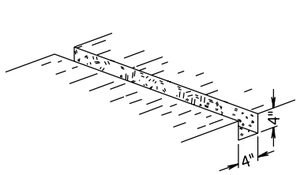
February 10, 2003

Published Date: 2nd Qtr. 2009	SDDOT	TYPE N GRATE FOR MEDIAN DRAIN	PLATE NUMBER 670.70
			Sheet 1 of 1

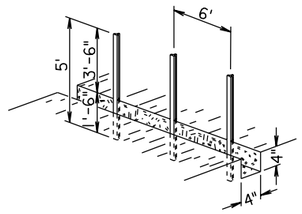
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	281 S-151 & 281 N-151	25	26

Plotting Date: 21-APR-2009

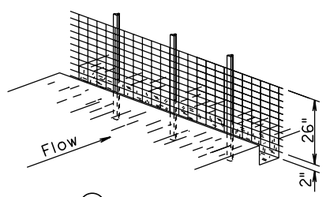
MANUAL LOW FLOW SILT FENCE INSTALLATION



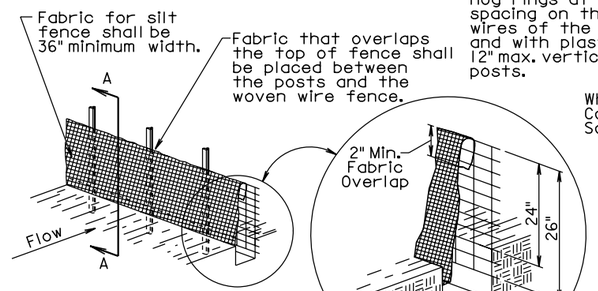
(1) EXCAVATE TRENCH



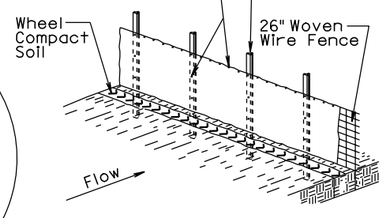
(2) DRIVE STEEL T FENCE POSTS



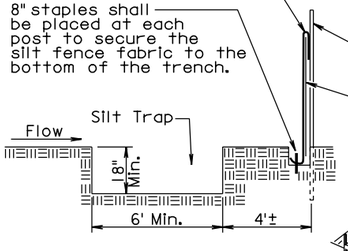
(3) ATTACH 26" WOVEN WIRE FENCE TO POSTS



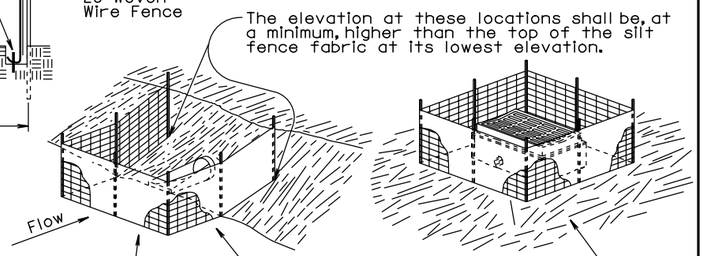
(4) ATTACH SILT FENCE FABRIC



(5) BACKFILL TRENCH AND WHEEL COMPACT SOIL



SECTION A-A



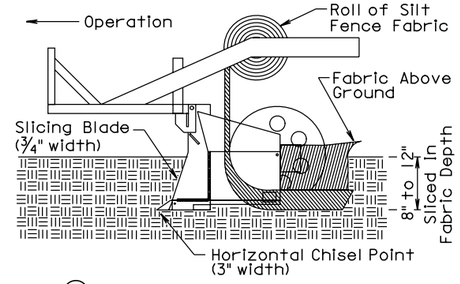
The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

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

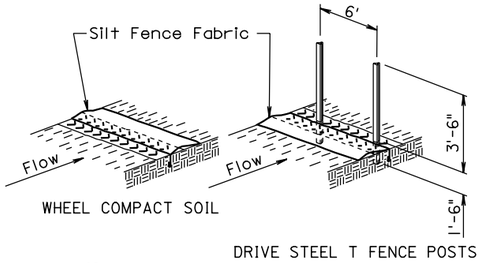
December 23, 2003

Published Date: 2nd Qtr. 2009	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 1 of 2

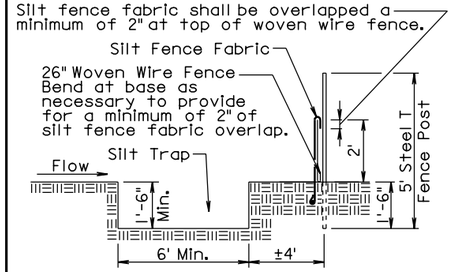
MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION

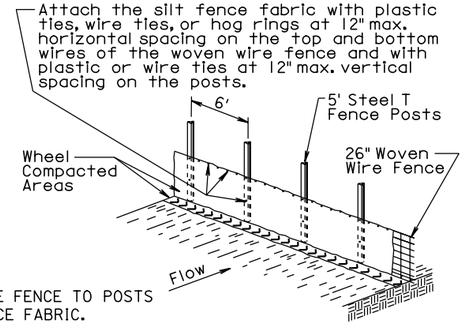


(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.

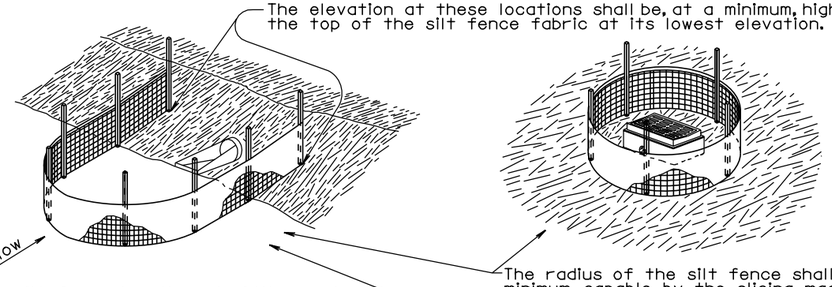


(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.





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



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

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

GENERAL NOTES:

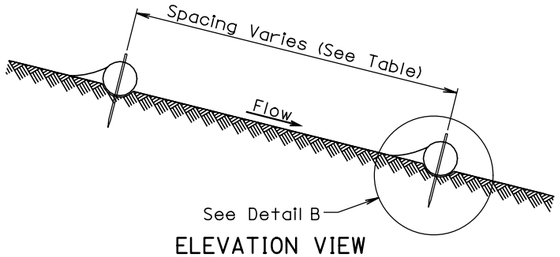
A silt trap shall be provided when specified by a plan note. All costs for constructing the silt trap shall be incidental to the contract unit price per cubic yard for "Silt Trap".

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

December 23, 2003

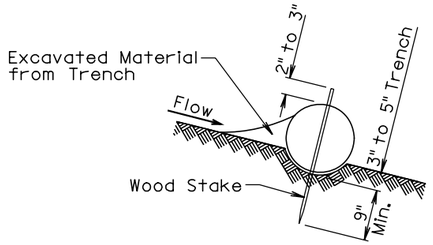
Published Date: 2nd Qtr. 2009	SDDOT	LOW FLOW SILT FENCE AND SILT TRAP	PLATE NUMBER 734.04
			Sheet 2 of 2

Username - trabl7882

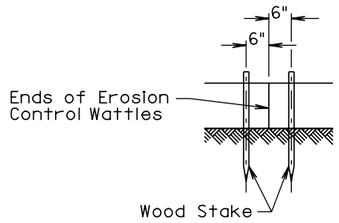


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

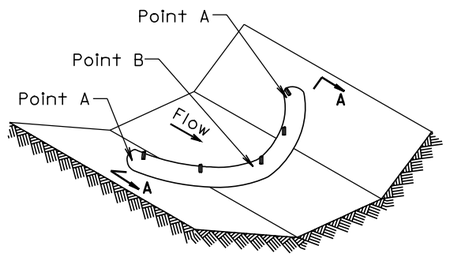
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



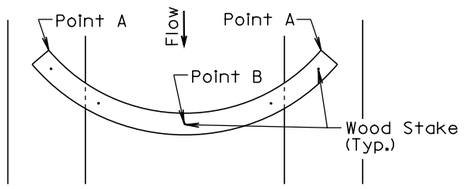
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

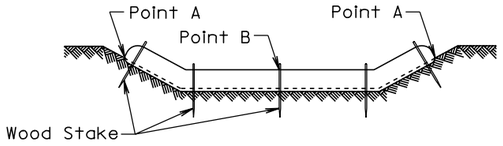


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 2nd Qtr. 2009

SDDOT

EROSION CONTROL WATTLE

PLATE NUMBER 734.06

Sheet 1 of 2

GENERAL NOTES:

At cut or fill slope installations, wattles shall be installed along the contour and perpendicular to the water flow.

At ditch installations, point A must be higher than point B to ensure that water flows over the wattle and not around the ends.

The Contractor shall dig a 3" to 5" trench, install the wattle tightly in the trench so that daylight can not be seen under the wattle, and then compact the soil excavated from the trench against the wattle on the uphill side. See Detail B.

The stakes shall be 1"x2" or 2"x2" wood stakes, however, other types of stakes such as rebar may be used only if approved by the Engineer. The stakes shall be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles shall be 3' to 4'.

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than ½". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

All costs for furnishing and installing the erosion control wattles including labor, equipment, and materials shall be incidental to the contract unit price per foot for the corresponding erosion control wattle bid item.

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

December 23, 2004

Published Date: 2nd Qtr. 2009

SDDOT

EROSION CONTROL WATTLE

PLATE NUMBER 734.06

Sheet 2 of 2