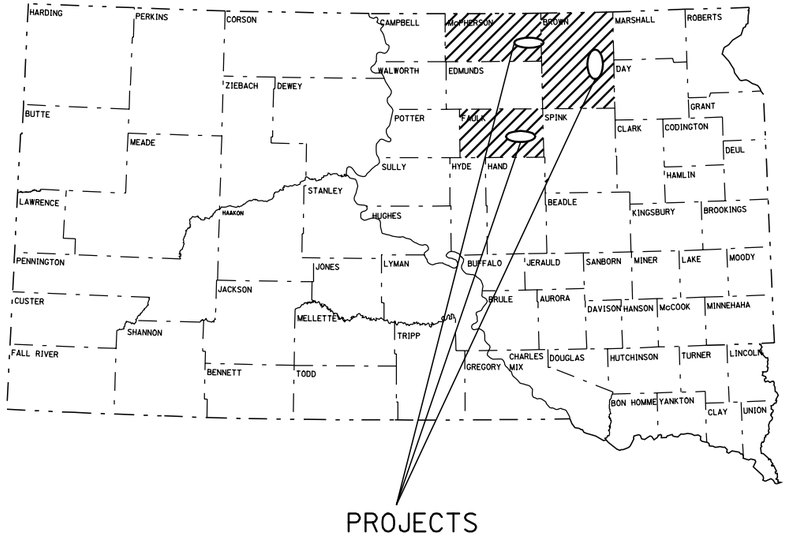
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	1	29
Plotting Date: 16-SEP-2010			



PROJECTS

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECTS 037–151, 045–152 212–152, & 010–152

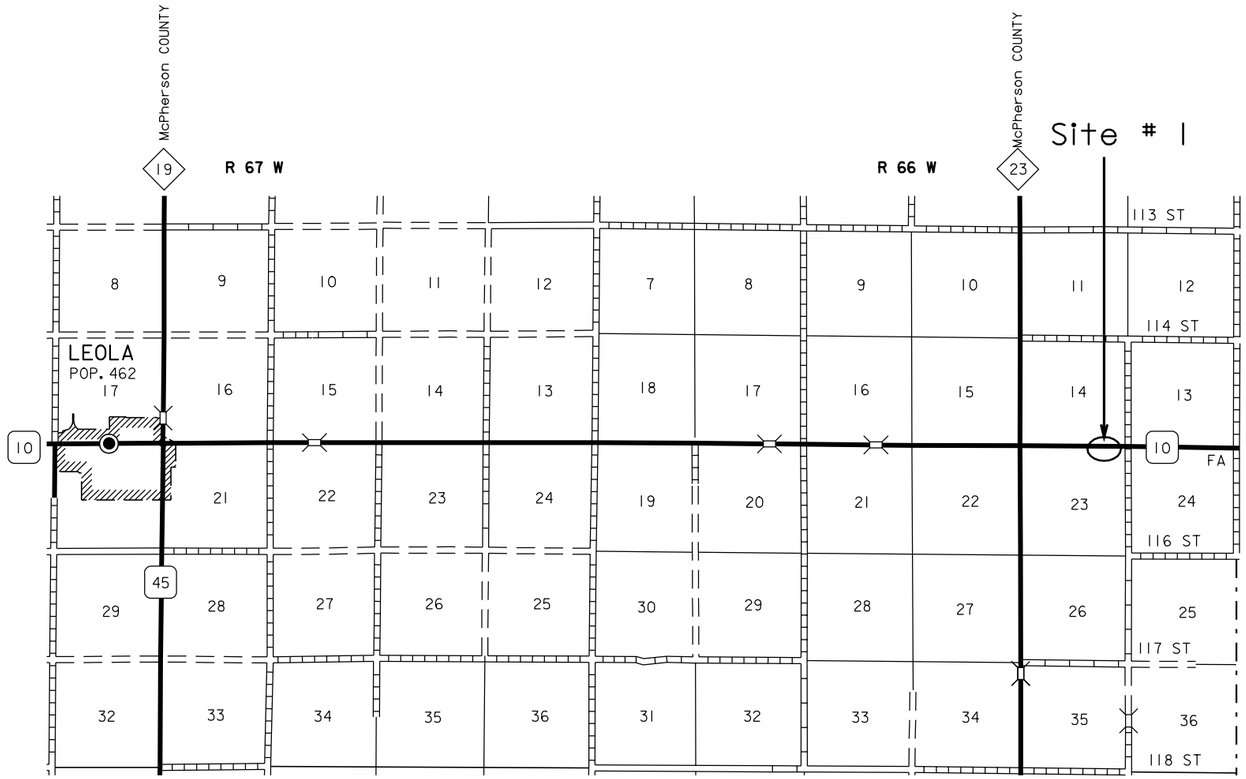
SD HIGHWAY 37, 45, 10, and U.S. HIGHWAY 212

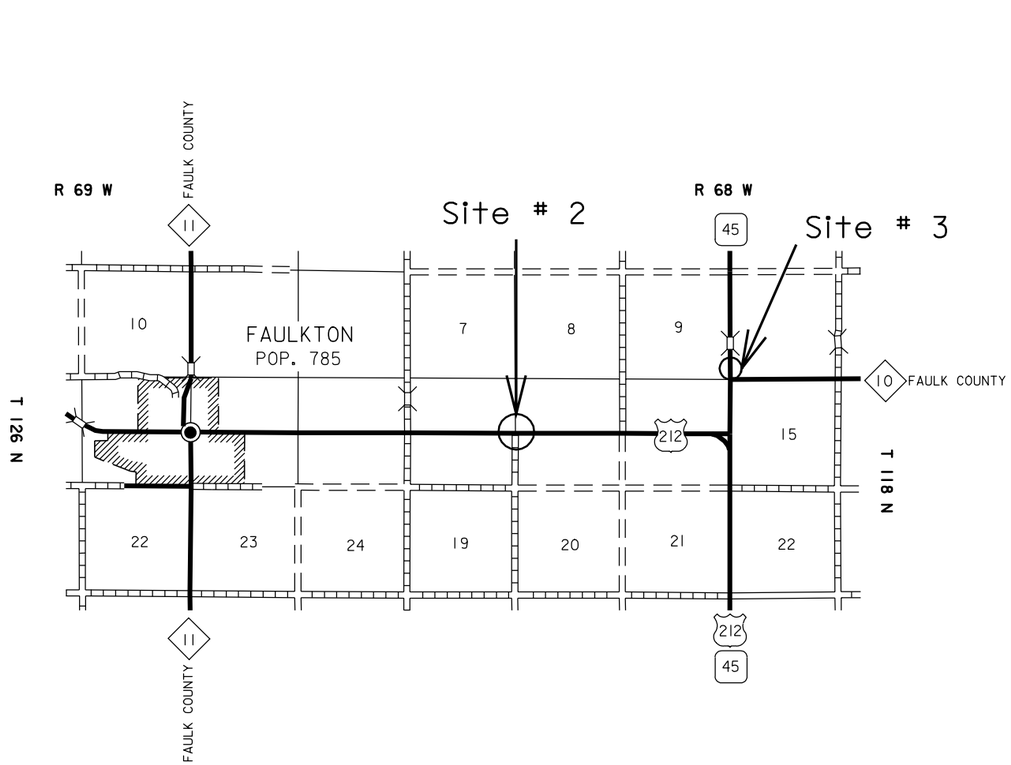
BROWN, FAULK, AND MCPHERSON COUNTIES

REPLACE MAINLINE CROSS PIPE AND PIPE REPAIR

PCN 1lzt, 1lzu, 1lzv, and 1lzw

INDEX OF SHEETS





STORM WATER PERMIT

Major Receiving
Body of Water: S. Fork Snake Creek
Mud Creek & Unnamed Creek
Area Disturbed: .11 Acre
Total Project Area: 1.0 Acre

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	2	29

Site #4

Site #5

Site #6

Site #7

Site #8

Site #9

T 124 N

T 123 N

T 122 N

R 60 W

R 61 W

126 ST | 127 ST | 128 ST | 129 ST | 130 ST | 131 S | 131 ST | 132 ST | 133 ST | 134 ST | 135 ST | 136 ST | 137 ST | 138 ST | 139 ST | 140 S | 140 ST | 141 ST | 142 ST | 143 ST

409 AVE | 408 AVE | 407 AVE | 404 AVE

GROTON
POP. 1,356

FERNEY

37 | 12

PLOTTED FROM - TRAB12245

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	3	29

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	DESCRIPTION	PROJECT NUMBER				TOTAL QUANTITY	UNITS
		037-151 PCN i1zt (SD 37)	045-152 PCN i1zu (SD 45)	212-152 PCN i1zv (US 212)	010-152 PCN i1zw (SD 10)		
009E0010	Mobilization	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	62	0	0	34	96	SqYd
110E7500	Remove Pipe for Reset	12	0	0	0	12	Ft
110E7510	Remove Pipe End Section for Reset	2	0	0	0	2	Each
110E7802	Remove Fence for Reset	0	0	155	0	155	Ft
120E0010	Unclassified Excavation	251	141	130	79	601	CuYd
120E0600	Contractor Furnished Borrow	118	0	100	79	297	CuYd
230E0020	Placing Contractor Furnished Topsoil	0	40	0	0	40	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	LS
260E1010	Base Course	51	0	0	40	91	Ton
421E0100	Pipe Culvert Undercut	27	0	0	19	46	CuYd
450E0122	18" RCP Class 2, Furnish	62	0	0	0	62	Ft
450E0130	18" RCP, Install	62	0	0	0	62	Ft
450E0142	24" RCP Class 2, Furnish	52	0	0	0	52	Ft
450E0150	24" RCP, Install	52	0	0	0	52	Ft
450E2008	18" RCP Flared End, Furnish	2	0	0	0	2	Each
450E2009	18" RCP Flared End, Install	2	0	0	0	2	Each
450E2016	24" RCP Flared End, Furnish	2	0	0	0	2	Each
450E2017	24" RCP Flared End, Install	2	0	0	0	2	Each
450E3042	42" RCP Arch Class 2, Furnish	48	0	0	0	48	Ft
450E3050	42" RCP Arch, Install	48	0	0	0	48	Ft
450E4516	42" RCP Arch Flared End, Furnish	2	0	0	0	2	Each
450E4517	42" RCP Arch Flared End, Install	2	0	0	0	2	Each
450E4759	18" CMP 16 Gauge, Furnish	92	0	80	0	172	Ft
450E4760	18" CMP, Install	92	0	80	0	172	Ft
450E4769	24" CMP 16 Gauge, Furnish	0	0	62	0	62	Ft
450E4770	24" CMP, Install	0	0	62	0	62	Ft
450E4789	36" CMP 16 Gauge, Furnish	0	122	0	0	122	Ft
450E4790	36" CMP, Install	0	122	0	0	122	Ft
450E4820	54" CMP, Install	0	0	0	56	56	Ft
450E5010	18" CMP Elbow, Furnish	0	0	1	0	1	Each
450E5011	18" CMP Elbow, Install	0	0	1	0	1	Each
450E5015	24" CMP Elbow, Furnish	0	0	2	0	2	Each
450E5016	24" CMP Elbow, Install	0	0	2	0	2	Each
450E5025	36" CMP Elbow, Furnish	0	2	0	0	2	Each
450E5026	36" CMP Elbow, Install	0	2	0	0	2	Each
450E5100	CMP Tee, Furnish	0	0	1	0	1	Each
450E5101	CMP Tee, Install	0	0	1	0	1	Each
450E5215	24" CMP Flared End, Furnish	0	0	1	0	1	Each
450E5216	24" CMP Flared End, Install	0	0	1	0	1	Each
450E5236	54" CMP Flared End, Install	0	0	0	2	2	Each
450E5306	18" CMP Sloped End, Furnish	4	0	0	0	4	Each
450E5307	18" CMP Sloped End, Install	4	0	0	0	4	Each
450E5318	36" CMP Sloped End, Furnish	0	1	0	0	1	Each
450E5319	36" CMP Sloped End, Install	0	1	0	0	1	Each
450E5405	18" CMP Safety End with Bars, Furnish	0	0	1	0	1	Each
450E5407	18" CMP Safety End, Install	0	0	1	0	1	Each
450E8014	24" RCP to CMP Transition, Furnish	0	0	1	0	1	Each
450E8015	24" Pipe Transition, Install	0	0	1	0	1	Each
450E9000	Reset Pipe	12	0	0	0	12	Ft
450E9001	Reset Pipe End Section	2	0	0	0	2	Each
620E0520	Type 2 Temporary Fence	0	500	0	0	500	Ft
620E1020	2 Post Panel	0	1	0	0	1	Each
620E4100	Reset Fence	0	155	0	0	155	Ft
632E2510	Type 2 Object Marker Back to Back	12	2	2	2	18	Each
634E0010	Flagging	70	0	0	30	100	Hour
634E0100	Traffic Control	---------- 948 ----------				948	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	LS
634E0610	4" Temporary Pavement Marking Tape Type 2	6000	0	0	2000	8000	Ft
734E0010	Erosion Control	Lump Sum	Lump Sum	Lump Sum	Lump Sum	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	0	400	0	0	400	Ft
734E0604	High Flow Silt Fence	0	200	0	0	200	Ft
734E0610	Mucking Silt Fence	0	20	0	0	20	CuYd
734E0620	Repair Silt Fence	0	30	0	0	30	Ft

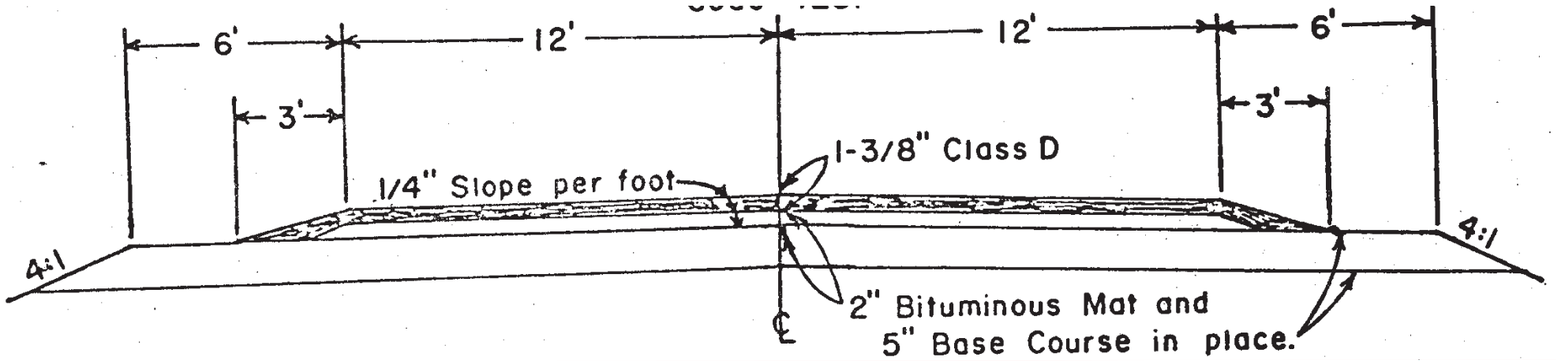
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	4	29

SITE NO.	IN PLACE					REMOVE PIPE FOR RESET	REMOVE PIPE END SECTION FOR RESET	FURNISH AND INSTALL PIPE																		INSTALL ONLY		RESET PIPE	RESET PIPE END SECTION	REMARKS
	LOCATION	MRM	PIPE TYPE	PIPE SIZE	LENGTH			18" RCP CLASS 2	24" RCP CLASS 2	42" RCP ARCH CLASS 2	18" RCP FLARED END	24" RCP FLARED END	42" RCP ARCH FLARED END	18" CMP 16 GAUGE	24" CMP 16 GAUGE	36" CMP 16 GAUGE	18" CMP SLOPED END	18" CMP SAFETY END WITH BARS	18" 15 DEGREE CMP ELBOW	24" CMP FLARED END	24"CMP 15 DEGREE ELBOW	24"X24"X18" CMP TEE	24" RCP to CMP TRANSITION	36" CMP SLOPED END	36" CMP 30 DEGREE ELBOW	36" CMP 65 DEGREE ELBOW	54" CMP ARCH 16 GAUGE	54" CMP ARCH FLARED END			
					(FT)	(FT)	(EACH)	(FT)	(FT)	(FT)	(EACH)	(EACH)	(EACH)	(FT)	(FT)	(FT)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(EACH)	(FT)	(EACH)	(FT)	(EACH)	
1	SD 10	268.18	CMP	54"	56																					56	2			State Furnished Pipe, Remove inplace 54" Arch CMP and Install 54" Arch CMP
2	SD 212	270.17	CMP	18" & 24"	80 & 62 Respectively									80	62			1	1	1	2	1	1								Remove inplace 18" & 24" CMP downspout and install 18" & 24" CMP downspout
3	SD 45	149.34	CMP	36"	122											122								1	1	1					Remove inplace 36" CMP downspout and install 36" CMP downspout
4	SD 37	214.75	RCP	36"		12	2																						12	2	Remove & Reset End Sections & 2-6' sections,clean out pipe
5	SD 37	208.65	CMP	18"	60									60			2														Remove inplace 18" CMP and install 18" CMP
6	SD 37	206.38	CMP	18"	32									32			2														Remove inplace 18" CMP and install 18" CMP
7	SD 37	205.67	RCP	18"	60			62			2																				Remove inplace 18" RCP and install 18" RCP; Raise pipe 1'
8	SD 37	205.31	RCP	24"	52				52			2																			Remove inplace 24" RCP and install 24" RCP
9	SD 37	198.9	RCP	42"	48					48			2																		Remove inplace 42" Arch RCP and install 42" Arch RCP
				TOTAL	**430**	**12**	**2**	**62**	**52**	**48**	**2**	**2**	**2**	**172**	**62**	**122**	**4**	**1**	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**56**	**2**	**12**	**2**	

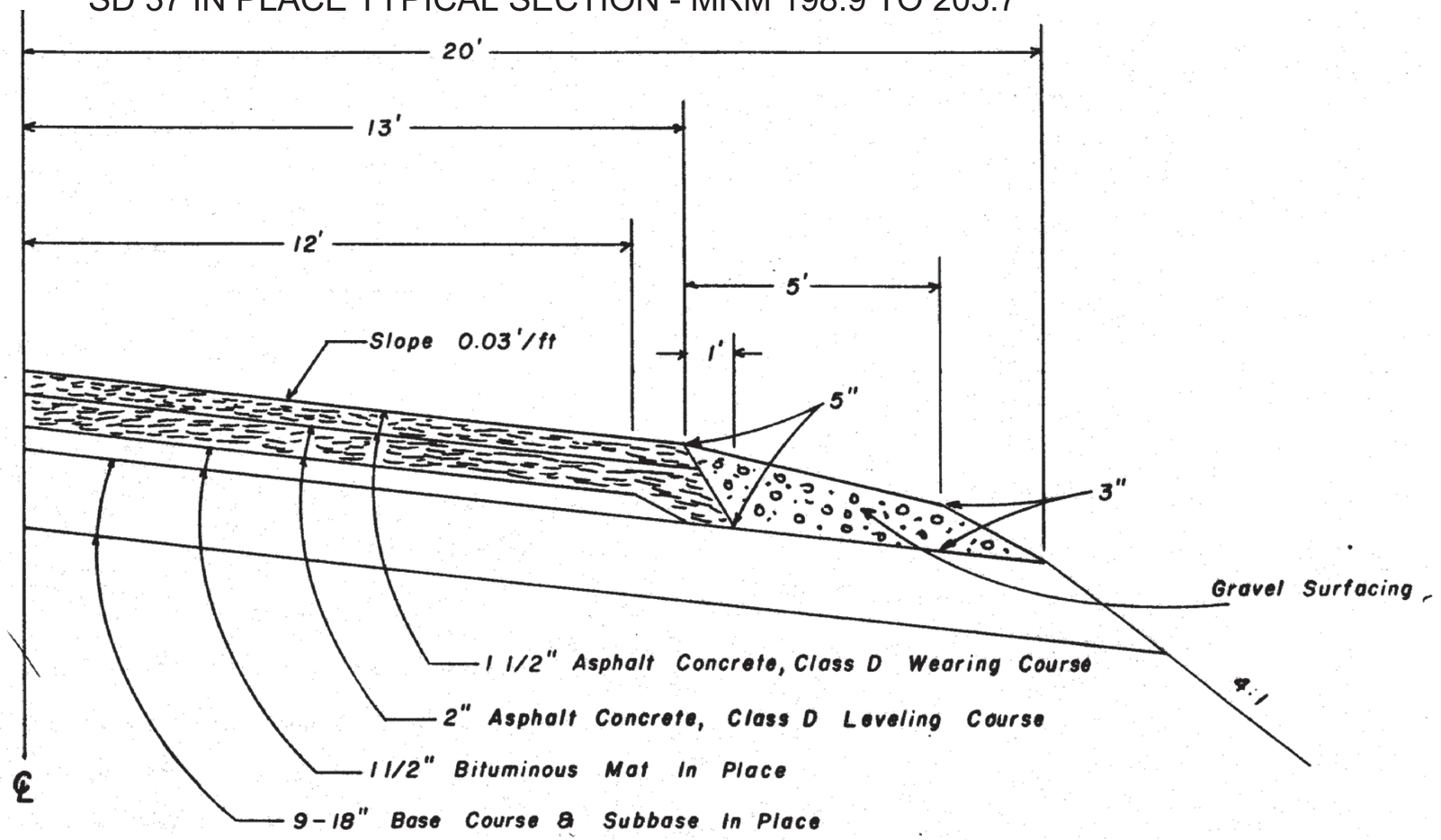
PLOTTED FROM - TRAB12245

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	5	29

SD 10 IN PLACE TYPICAL SECTION - MRM 268.18



SD 37 IN PLACE TYPICAL SECTION - MRM 198.9 TO 205.7



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 (if water is present)
3. Saw cut pavement to full depth
4. Remove pavement
5. Unclassified excavation
6. Undercut pipe
7. Install pipe
8. Backfill pipe
9. Place base course
10. Switch traffic control and repeat steps 2 thru 10 as shown above for the adjacent lane
11. Complete remaining pipe repair as shown in the table
12. Remove traffic control

The Contractor will be required to start on the transverse cross pipe on SD 37 & then move to the downspout on SD 45. These five locations are important to complete this fall, if time allows more work can be done elsewhere. All construction activities will be half width at a time. The replacement of the pipe shall progress from east to west across SD 37, north to south on SD 10. All excess material shall be removed from the project by nightfall. All excavated areas shall be backfilled by nightfall. The Aberdeen Maintenance personnel shall place the asphalt concrete. The Contractor shall be required to work on one site at a time.

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.

UTILITIES

Utilities are not planned to be affected on this project. 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 shall contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

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.

The intent for transverse pipe replacement on SD 37 & SD 10 is to use flaggers as per standard plate 634.23. If an event occurs out of the Contractors control and the trench cannot be backfilled completely, refer to standard plate 634.25 or as directed by the Engineer.

Highways SD 45 & US 212 refer to the standard plate 634.03.

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.

The Contractor shall be required to move the signs to each location. The signs shall be paid for once, all costs associated with installation, removing, transporting and resetting the signs shall be incidental to the lump sum price for TRAFFIC CONTROL, MISCELLANEOUS.

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.

WATER SOURCE

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

The DOT Environmental Office contact person is Ryan Huber, 605-773-3568. The WATER SOURCE plan note does not relieve the Contractor of his/her responsibility to obtain the necessary permits from other agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE).

PIPE INSTALLATION – SITES 1 THRU 9

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. At the present time all locations are dry.

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

All joints in the RC pipe shall be tied as per standard plate 450.18, have Mastic and a 1' wide strip of Drainage Fabric Type A installed around the entire circumference of the pipe.

Contractor Furnished Borrow (clay) shall be used as backfill.

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

HISTORICAL PRESERVATION OFFICE CLEARANCES

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

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

To facilitate SHPO or THPO responses, the Contractor should submit a records search or cultural resources survey report to Tom Lehmkuhl, DOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). Allow 30 days from the date this information is submitted to the Environmental Engineer for SHPO/THPO approval. The Contractor is responsible for obtaining all required permits and clearances for staging areas, borrow sites, waste disposal sites, and all material processing sites. The Contractor shall provide the required permits and clearances to the Engineer at the preconstruction meeting.

WASTE DISPOSAL SITE

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

Construction/demolition debris may not be disposed of within the 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 634.23 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, up to 3 calendar day prior to beginning of asphalt concrete removal and installation of the RC Pipe. Asphalt concrete removal shall be completed half-roadway width at a time. All costs associated with the removal/disposal of asphalt concrete pavement shall be incidental to the contract unit price per square yard for REMOVE ASPHALT CONCRETE PAVEMENT.

TABLE OF ASPHALT CONCRETE REMOVAL

MRM	Width (Ft)	L/R (Ft)	Quantity (SqYd)
198.899 (SD37)	8.5	28	26
205.311 (SD37)	6	28	19
205.665 (SD37)	5.5	28	17
268.182 (SD10)	11	28	34
		Total:	96

UNCLASSIFIED EXCAVATION

At the pipe locations the Contractor will be required to remove the existing subbase, subgrade and existing pipe to the limits shown on the Culvert Installation Detail in these plans.

Subgrade material shall be removed to allow for 2' of clearance on each side of the pipe being installed.

All material generated from the removal of subbase, subgrade and pipe 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 and pipe shall be incidental to the contract unit price per cubic yard for UNCLASSIFIED EXCAVATION.

TABLE OF UNCLASSIFIED EXCAVATION

MRM	Width (Ft)	Length (Ft)	Depth (Ft)	Quantity (CuYd)
268.182 (SD 10)	8.5	56	4.5	79
270.166 (SD212)	5.5	142	4.5	130
149.340 (SD45)	7.0	121	4.5	141
214.752 (SD37)	7.0	12	5.0	16
208.654 (SD37)	5.5	60	2.5	31
206.376 (SD37)	5.5	32	2.5	16
205.665 (SD37)	5.5	64	5.0	65
205.311 (SD37)	6.0	52	5.0	57
198.899 (SD37)	7.5	48	5.0	66
		Total:		601

REMOVE AND REPLACE TOPSOIL

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 pipe end 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 shall be incidental to the lump sum price for REMOVE AND REPLACE TOPSOIL.

PLACING CONTRACTOR FURNISHED TOPSOIL

The Contractor will be required to furnish and place 4 inches of topsoil on roadway inslopes at the location on SD 45 (MRM 149.340) 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.

PIPE CULVERT UNDERCUT - SITES 1& 7-9

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 18", 24", 42" and 54 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.

MRM	Undercut Depth (Ft)	Quantity (CuYd)
198.899 (SD37)	2	12
205.311 (SD37)	2	8
205.665 (SD37)	2	7
268.182 (SD10)	2	19
	Total:	46

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.

TABLE OF CONTRACTOR FURNISHED BORROW

MRM	Quantity (CuYd)
268.182 (SD10)	79
149.340 (SD 45)	100
205.665 (SD37)	37
205.311 (SD37)	35
198.899 (SD37)	46
TOTAL	297

CORRUGATED METAL PIPE

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

STATE FURNISHED 54" CMP

Furnish cost to the State for the 54" CM Arch Pipe is $61.18 per foot. Furnish cost for the 54" CM Arch Flared End is $755.30 per each. Furnish cost for the one required 54" CM Arch Band is $122.36. The contractor is required to pay excise tax on state furnished materials.

The 54" corrugated metal pipe and flared ends for SD 10 (MRM 268.182) will be furnished by the DOT. The Contractor shall be required to transport the pipe and ends from the Leola Maintenance yard to the project. All costs associated with loading and hauling the pipe shall be incidental to the contract unit prices for the various pipe contract items.

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.

TABLE OF BASE COURSE

MRM	Quantity (Ton)
268.182 (SD10)	40
205.665 (SD37)	15
205.311 (SD37)	15
198.899 (SD37)	21
TOTAL	91

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.

Special Permanent Seed Mixture 1 shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Intermediate Wheatgrass	Chief, Oahe, Slate	8
Western Wheatgrass	Flintlock, Rodan, Rosana	4
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Big Bluestem	Bison, Bonilla, Champ, Pawnee, Sunnyview	3
Oats or Spring Wheat: April through July; Winter Wheat: August through November		10
	Total:	28

All costs associated with seeding shall be incidental to the lump sum price for EROSION CONTROL. The estimate area for seeding is 0.55 acres.

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. Mulching shall only be required on SD 45 & US 212. Mulching shall be applied at the rate of 92 lbs per 100 square feet. All costs associated with mulching shall be incidental to the lump sum price for EROSION CONTROL. The estimated area for mulch is 0.4 acres.

FERTILIZING

Application of fertilizer will not be required on this project.

HIGH FLOW SILT FENCE

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

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

High flow silt fence shall be placed on SD 45 at the location noted in the table and at locations that will minimize siltation of adjacent streams, lakes, dams, or drainage areas as determined by the Engineer during construction. Refer to Standard Plate 734.05 for details.

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

TABLE OF HIGH FLOW SILT FENCE

MRM	L/R	Quantity (Ft)	Remarks
149.340	R	100	Around outlet of pipe
Additional Quantities		100	
TOTAL		200	

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.

REMOVE AND RESET FENCE

The Contractor shall be required to remove and reset 155’ of fence at SD 45 MRM 149.340. The fence is five feet tall and consists of 2’6” of woven wire on the bottom and five strands of barb wire on top. It is used to secure buffalo in a pasture. The Contractor shall provide and install 11 – 8’ – 4” treated wood posts when resetting the fence; these will replace the existing posts. The Contractor shall notify the property owner before removing & resetting the fence. The contact information is Bill Melius, 16084 SD Hwy 45, Faulkton, SD 57438. Phone information is business (605-598-4586) & cell (605-216-1291). All costs associated with removing, resetting and providing the treated wood posts shall be incidental to the contract unit price per foot for REMOVE AND RESET FENCE.

2 POST PANEL

The Contractor shall be required to install the 2 post panel on SD 45 MRM 149.340. All costs associated with furnishing and installation of the 2 post panel shall be incidental to the contract unit price per each for 2 POST PANEL.

TYPE 2 TEMPORARY FENCE

The Contractor shall be required to install and remove 500’ of temporary fence at SD 45 MRM149.340 as directed by the Engineer. All costs associated with installation and removal of the temporary fence shall be incidental to the contract unit price per foot for TYPE 2 TEMPORARY FENCE.

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

TABLE OF EROSION CONTROL WATTLE

MRM	Diameter (Inch)	Location	Quantity (Ft)
149.340 (SD 45)	12	Inslope	400
		Total:	400

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** .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** S. Fork Snake Creek, Mud Creek, Unnamed 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 Seeding (Cover Crop Seeding)
  - ☐ Permanent Seeding
  - ☐ Sodding
  - ☐ Planting (Woody Vegetation for Soil Stabilization)
  - ☒ Mulching (Grass Hay or Straw)
  - ☐ Hydraulic Mulch (Wood Fiber Mulch)
  - ☐ Soil Stabilizer
  - ☐ Bonded Fiber Matrix
  - ☐ Erosion Control Blankets or Mats
  - ☐ Vegetation Buffer Strips
  - ☐ Roughened Surface (e.g. tracking)
  - ☐ Dust Control
  - ☐ Other
- **Structural Temporary Erosion and Sediment Controls**
  - ☒ Silt Fence
  - ☐ Floating Silt Curtain
  - ☐ Straw Bale Check
  - ☐ Temporary Berm
  - ☐ Temporary Slope Drain
  - ☒ Straw Wattles or Rolls
  - ☐ Turf Reinforcement Mat
  - ☐ Rip Rap
  - ☐ Gabions
  - ☐ Rock Check Dams
  - ☐ Sediment Traps/Basins
  - ☐ Inlet Protection
  - ☐ Outlet Protection
  - ☐ Surface Inlet Protection (Area Drain)
  - ☐ Curb Inlet Protection
  - ☐ Stabilized Construction Entrances
  - ☐ Entrance/Exit Equipment Tire Wash
  - ☐ Interceptor Ditch
  - ☐ Concrete Washout Area
  - ☐ Temporary Diversion Channel
  - ☐ Work Platform
  - ☐ Temporary Water Barrier
  - ☐ Temporary Water Crossing
  - ☐ Other
- **Wetland Avoidance**
  Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☒ No ☐ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.
- **Storm Water Management (4.2 2.b., (1) and (2))**
  Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.
- **Other Storm Water Controls (4.2 2.c., (1) and (2))**
  - **Waste Disposal**
    All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
  - **Hazardous Waste**
    All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
  - **Sanitary Waste**
    Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ **Maintenance and Inspection (4.2 3. and 4.2 4.)**
- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
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  - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $^1/_3$ of the height of the silt fence.
  - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
  - Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
  - All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
  - Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
  - The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ **Non-Storm Water Discharges (3.0)**
The following non-storm water discharges are anticipated during the course of this project (check all that apply).
- ☐ Discharges from water line flushing.
- ☐ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☒ Uncontaminated ground water associated with dewatering activities.

❖ **Materials Inventory (4.2. 2.c.(2))**
The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).
- ☒ Concrete and Portland Cement
- ☐ Detergents
- ☐ Paints
- ☒ Metals
- ☒ Bituminous Materials
- ☐ Petroleum Based Products
- ☐ Cleaning Solvents
- ☐ Wood
- ☐ Cure
- ☐ Texture
- ☐ Chemical Fertilizers
- ☐ Other

❖ **Spill Prevention (4.2 2.c.(2))**

➢ **Material Management**

▪ Housekeeping

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

▪ Hazardous Materials

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

➢ **Product Specific Practices (6.8)**

▪ Petroleum Products
All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.

▪ Fertilizers
Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.

▪ Paints
All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.

▪ Concrete Trucks
Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

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

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

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

➢ **Spill Response (4.2 2 c.(2))**

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

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

❖ **Spill Notification**

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

➢ A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:

- The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
- The discharge causes an immediate danger to human health or safety.
- The discharge exceeds 25 gallons.
- The discharge causes a sheen on surface water.
- The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:54:01.
- The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:54:01.
- The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
- The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ **Construction Changes (4.4)**

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

❖ CERTIFICATIONS

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

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

➢ South Dakota Department of Transportation

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

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

➢ Prime Contractor

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

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

Authorized Signature

❖ CONTACT INFORMATION

➢

➢ Contractor Information:

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

➢ Erosion Control Supervisor

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

➢ SDDOT Project Engineer

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

➢ SD DENR Contact Spill Reporting

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

➢ SD DENR Contact for Hazardous Materials.

- (605) 773-3153

➢ National Response Center Hotline

- (800) 424-8802.

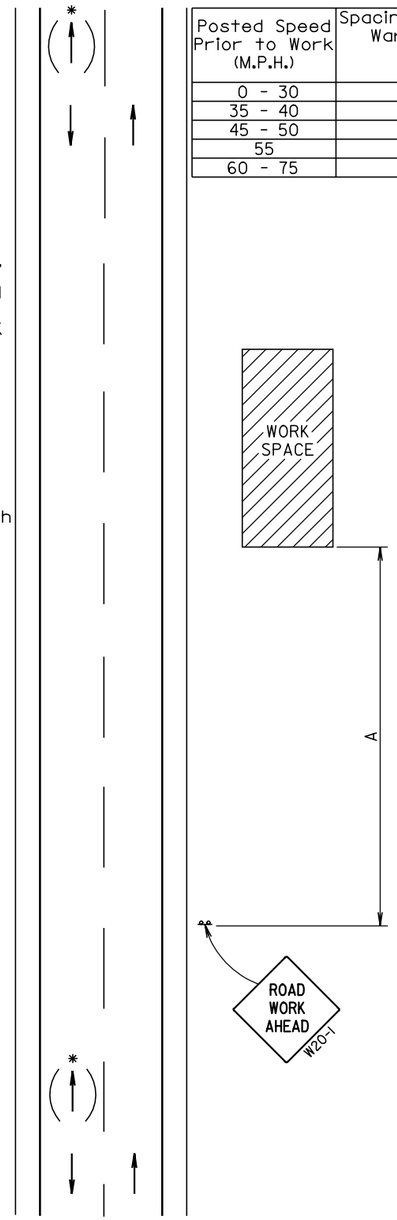
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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.

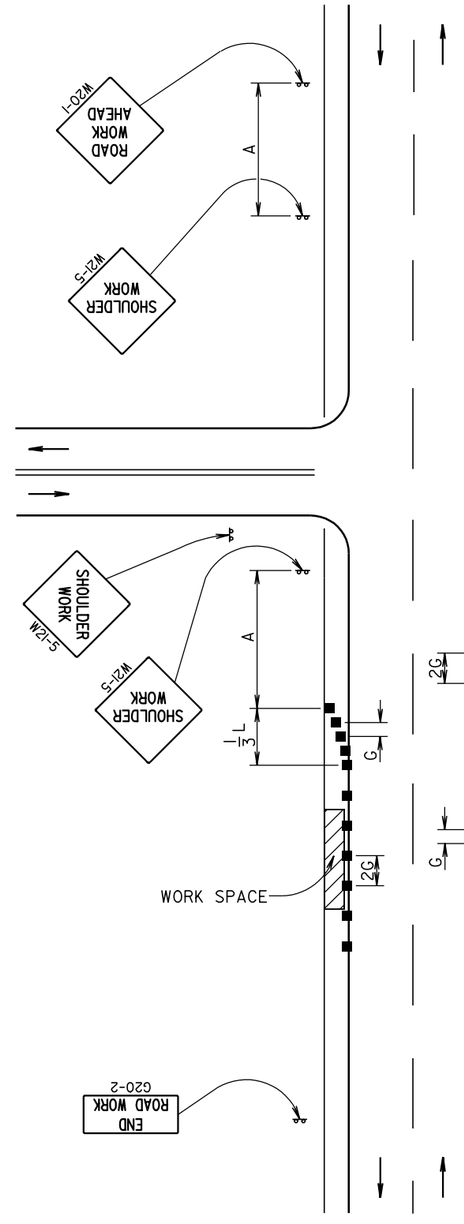
For short term, short duration, or mobile operations, all signs and channelizing devices may be eliminated if a vehicle with an activated flashing or revolving yellow light is used.



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

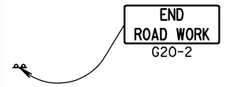
July 1, 2005

Published Date: 3rd Qtr. 2010	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: 3rd Qtr. 2010	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS	PLATE NUMBER 634.03 Sheet 1 of 1

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Spacing of Channelizing Devices (Feet) (G)
0 - 30	200	25
35 - 40	350	25
45 - 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) shall 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.

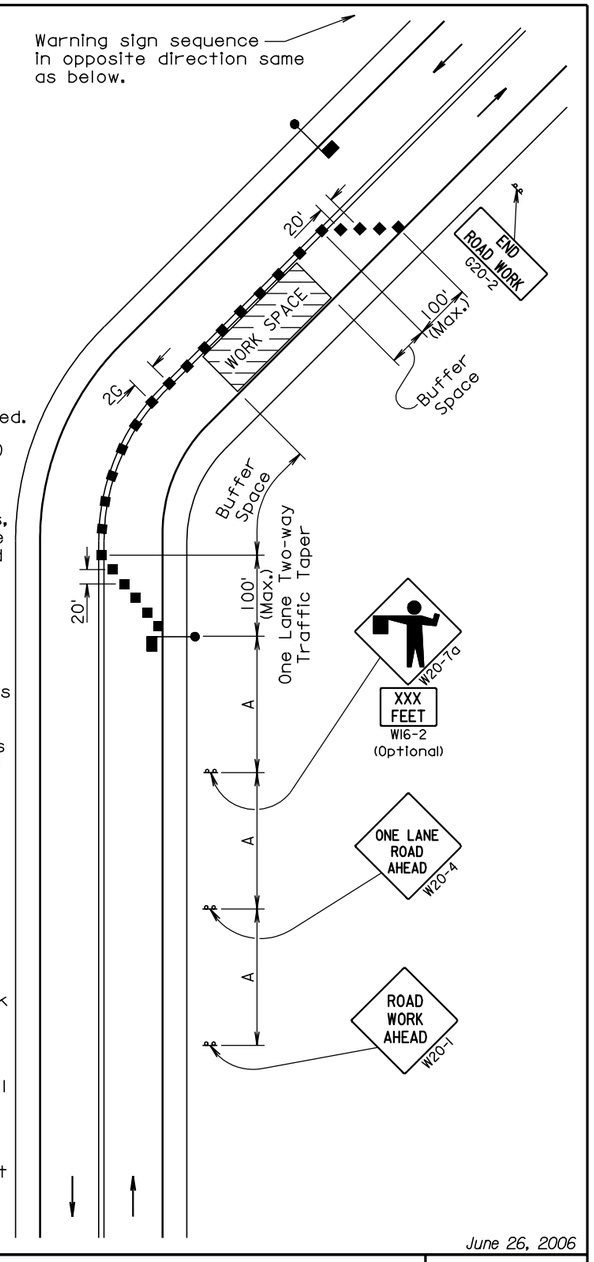
The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. During daylight hours, 42" cones may be used in lieu of drums or type II barricades along the centerline.

END ROAD WORK G20-2

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

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

The buffer space shall be a sufficient length so that the channelizing devices are visible to approaching traffic.



June 26, 2006

Published Date: 3rd Qtr. 2010

SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER 634.23

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 - 50	500	50
55	750	50
60 - 65	1000	50

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

The buffer space length may be adjusted due to sight distance limitations and other work site limitations.

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

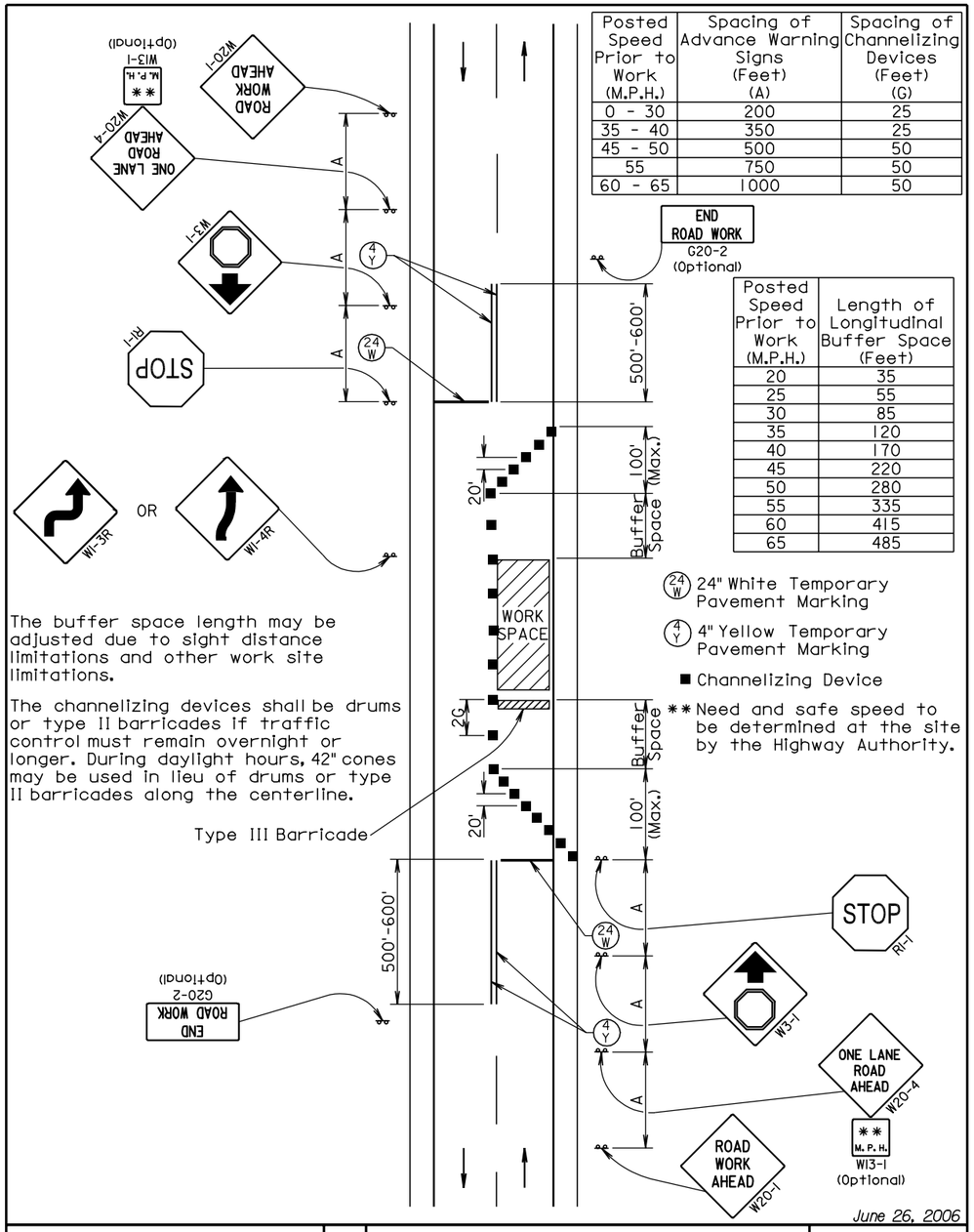
Type III Barricade

(24W) 24" White Temporary Pavement Marking

(4Y) 4" Yellow Temporary Pavement Marking

■ Channelizing Device

** Need and safe speed to be determined at the site by the Highway Authority.



June 26, 2006

Published Date: 3rd Qtr. 2010

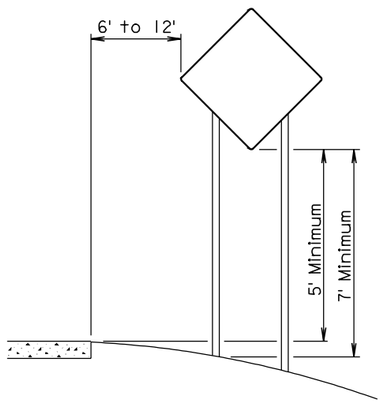
SDDOT

GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE USING STOP SIGNS

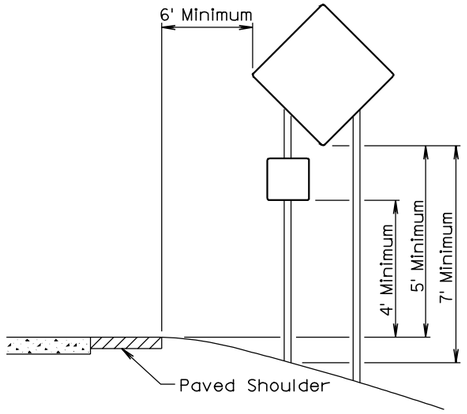
PLATE NUMBER 634.25

Sheet 1 of 1

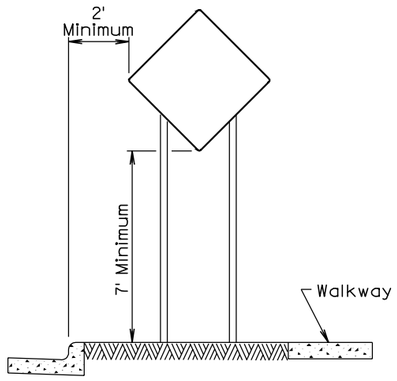
Username - trabl2245



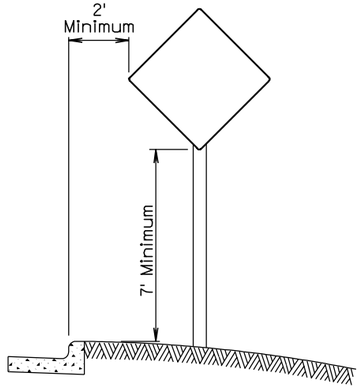
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



URBAN DISTRICT



URBAN DISTRICT

December 23, 2003

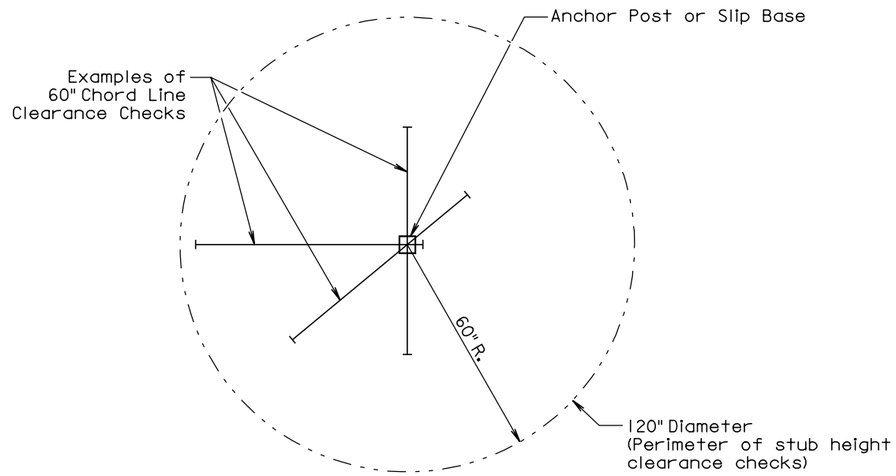
Published Date: 3rd Qtr. 2010

SDDOT

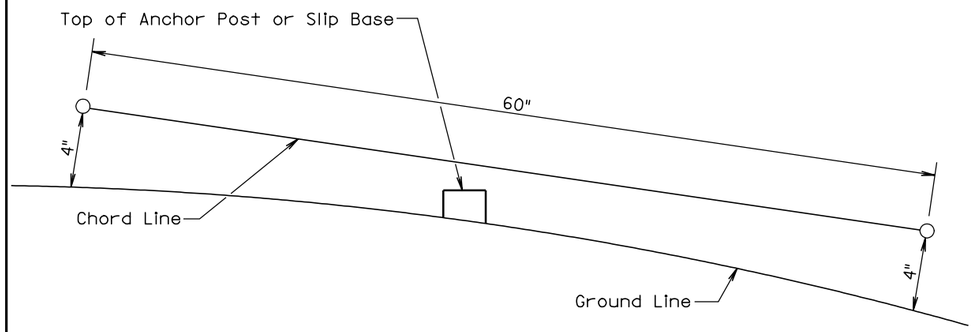
BREAKAWAY SIGN SUPPORTS
(Typical Construction Signing)

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: 3rd Qtr. 2010

SDDOT

BREAKAWAY SUPPORT STUB CLEARANCE

PLATE NUMBER 634.99

Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	16	29

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
R1-1	48" x 48"	STOP	2	34	68
W1-3	48" x 48"	REVERSE TURN SIGN (RIGHT)	1	34	34
W3-1	48" x 48"	STOP AHEAD (SYMBOL)	2	34	68
W8-1	36" x 36"	BUMP	8	27	216
W8-7	36" x 36"	LOOSE GRAVEL	8	27	216
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD #### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W21-5	48" x 48"	SHOULDER WORK	2	34	68
*****	*****	TYPE III BARRICADE - 8 FT. SINGLE SIDED	1	40	40
				TOTAL UNITS	**948**

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:

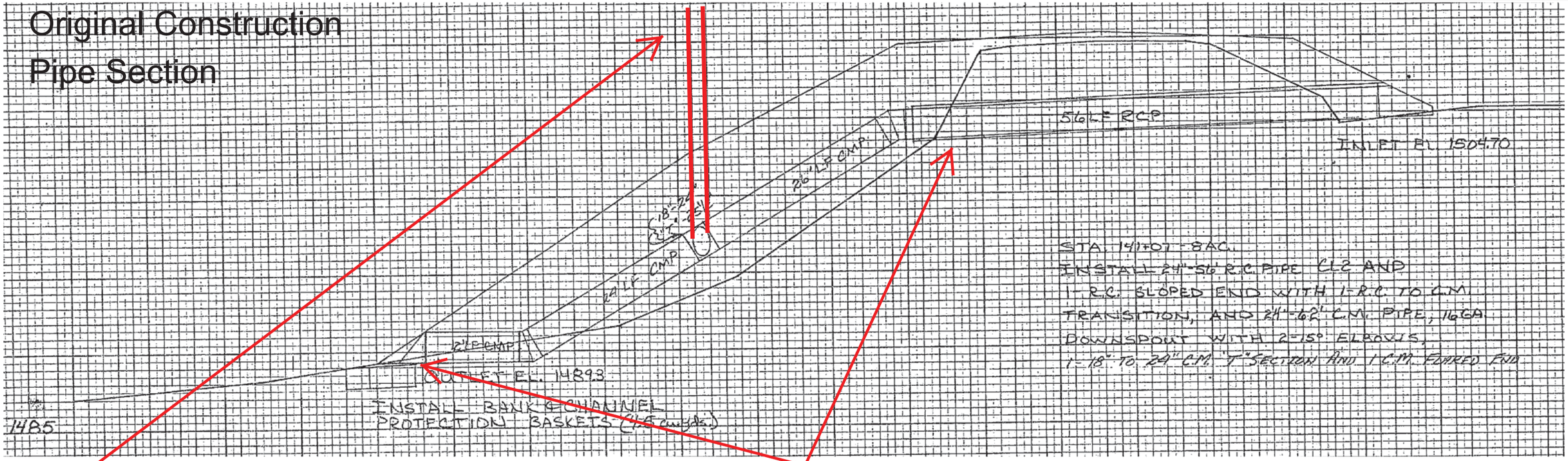
If a sign measures less than 25" high and 25" wide the units per sign will be computed as sign size (sq ft) x 3.

If a sign measures between 23H" and 37H" the units per sign will be computed as sign size (sq ft) x 1.2 +15.

Downspout Replacement US 212 @ MRM 270.166

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	17	29

Original Construction
Pipe Section

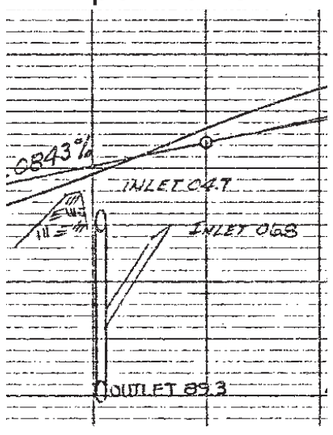


Replace 24" CM Flared End, 24"-12' CMP, 24"-15 Deg Elbow, 24"-24' CMP, 24"x24"x18" CM Tee, 24"-26' CMP, 24"-15 Deg Elbow and 24" RCP to CMP Transition.

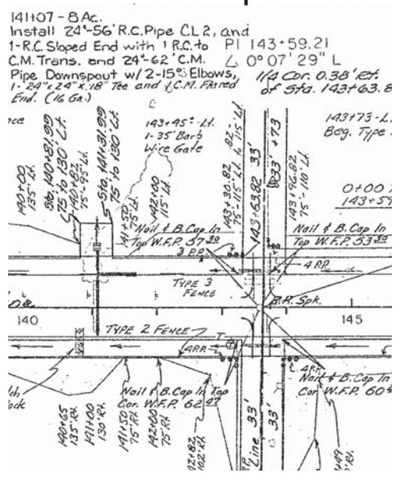
Replace 18"-80' CMP and 18" CM Safety End w/Bars. Contractor shall expose the 18" CM Pipe and verify pipe length prior to ordering the 18" CMP.

Original Construction Plans do not provide details for this pipe and due to pipe size, access into pipe to verify length is not possible.

Original Construction
Pipe Profile

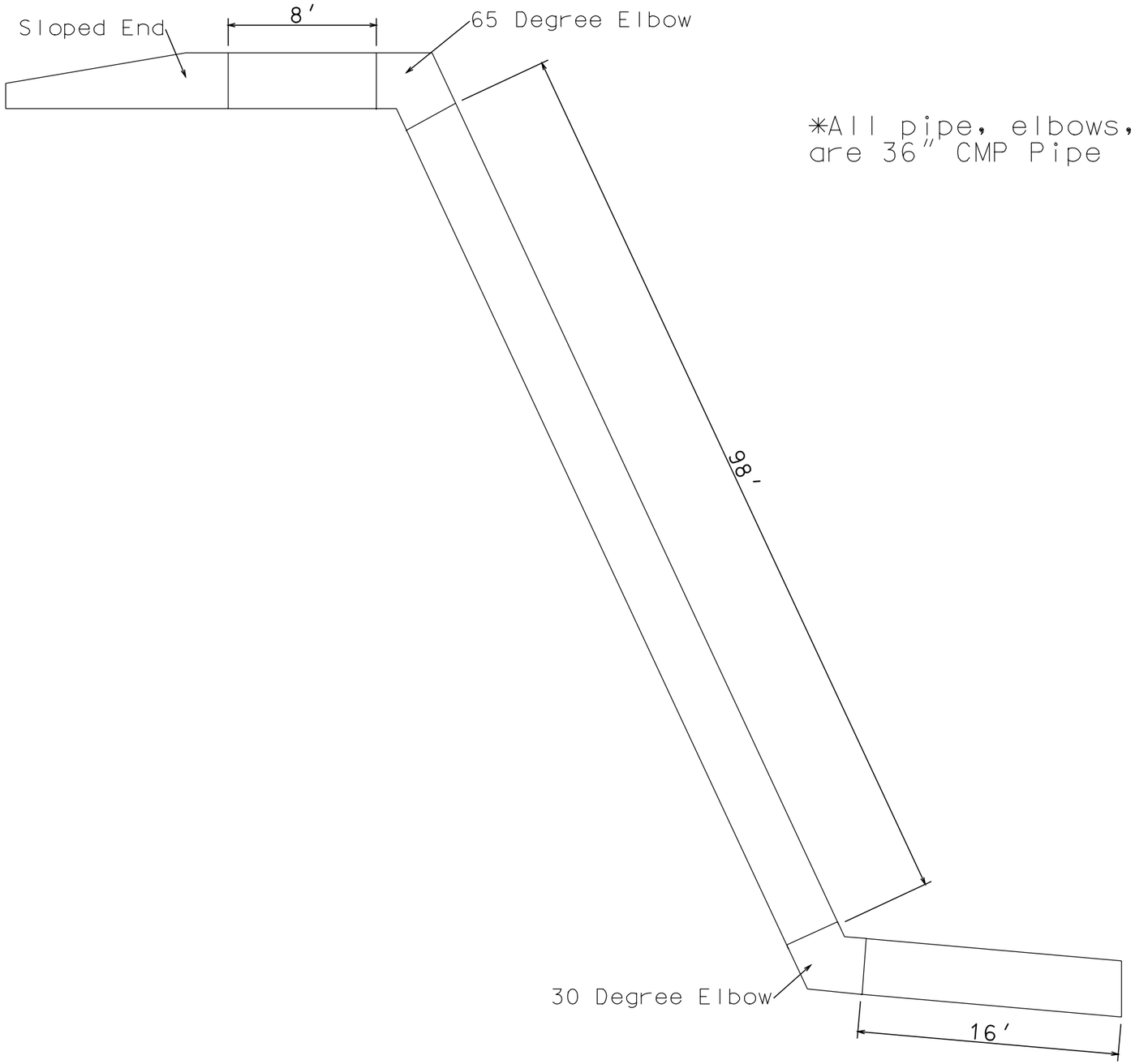


Original Construction
Plan Sheet Pipe Detail



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	18	29
Plotting Date:			

CULVERT INSTALLATION DETAIL
SD 45 (Site 3)

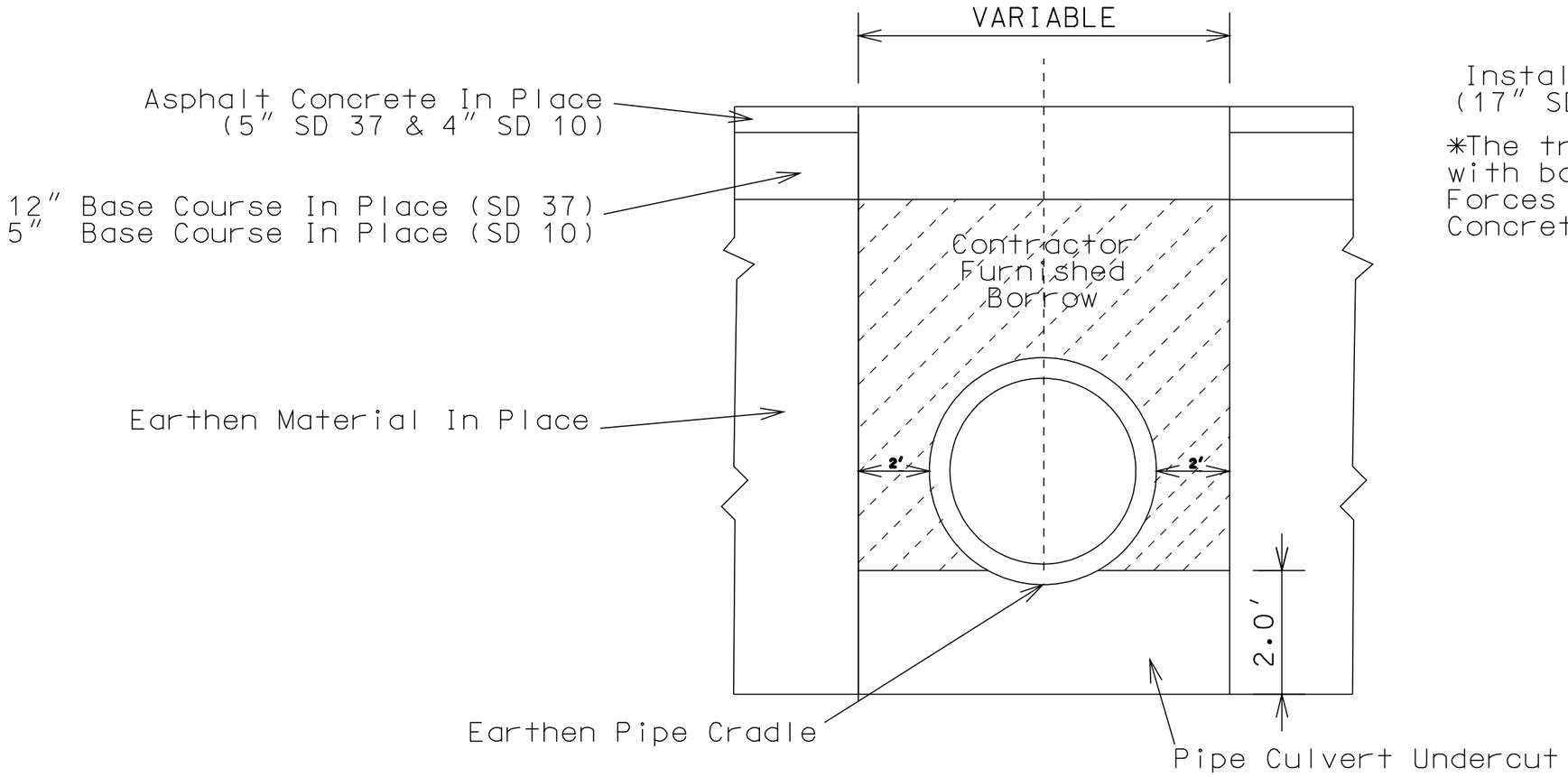


*All pipe, elbows, and sloped ends are 36" CMP Pipe

PLOT SCALE - 2.2100001:1.000000

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	037-151, 045-152 212-152 & 010-152	19	29
Plotting Date:			

CULVERT INSTALLATION DETAIL



Install Base Course
(17" SD 37 & 9" SD 10)

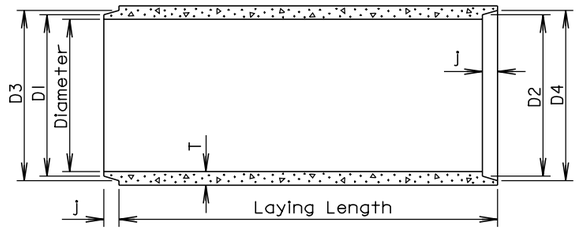
*The trench will be filled flush with base course and State Forces will pave with Asphalt Concrete at a later date.

PLOTTED FROM - TRAB12245

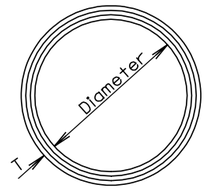
FILE - N:\ABERDEEN\DESIGN\CURRENTDESIGNS\PIPE REPAIR 2010\PIPEREPAIR2010.DGNOT NAME - PIPEREPAIR20101

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:

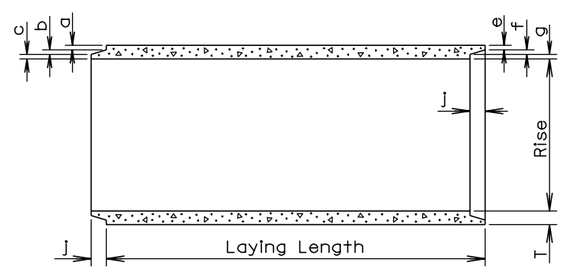
Construction of R. C. P. shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

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.

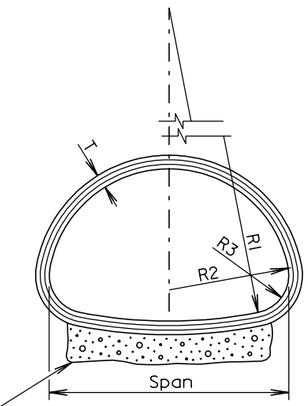
Diam. (in.)	Approx. Wt. /Ft. (lb.)	T (in.)	J (in.)	D1 (in.)	D2 (in.)	D3 (in.)	D4 (in.)
12	92	2	1 3/4	13 1/4	13 5/8	13 7/8	14 1/4
15	127	2 1/4	2	16 1/2	16 7/8	17 1/4	17 5/8
18	168	2 1/2	2 1/4	19 5/8	20	20 3/8	20 3/4
21	214	2 3/4	2 1/2	22 7/8	23 1/4	23 3/4	24 1/8
24	265	3	2 3/4	26	26 3/8	27	27 3/8
27	322	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: 3rd Qtr. 2010	SDDOT	REINFORCED CONCRETE PIPE	PLATE NUMBER 450.01
			Sheet 1 of 1



LONGITUDINAL SECTION



END VIEW

TOLERANCES IN DIMENSIONS

Radial dimensions at joints: ±1/8 " for 65" span or less and ±1/4 " for longer spans.
Rise and Span: ±2% of tabular values.
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".

Gravel Bedding Material shall be supplied for 102" to 169" spans. It shall be placed to a thickness of 6" (min.) x 85% of the Span x Length of culvert and shall conform to the gradation requirements for gravel surfacing except material may be screened or may be plan provided material.

* Size (in.)	Approx. Wt./Ft. (lb.)	Rise (in.)	Span (in.)	T (in.)	a (in.)	b (in.)	c (in.)	j (in.)	e (in.)	f (in.)	g (in.)	R1 (in.)	R2 (in.)	R3 (in.)
18	170	13 1/2	22	2 1/2	1 3/8	3/8	3/4	2	1 1/8	3/8	1	27 1/2	13 3/4	5 1/4
24	320	18	28 1/2	3 1/2	1 5/8	1/2	1 3/8	3	1 3/8	1/2	1 5/8	40 11/16	14 3/4	4 5/8
30	450	22 1/2	36 1/4	4	1 13/16	5/8	1 9/16	3 1/2	1 9/16	5/8	1 13/16	51	18 3/4	6 1/8
36	600	26 5/8	43 3/4	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	62	22 1/2	6 1/2
42	740	31 5/16	51 1/8	4 1/2	2	3/4	1 3/4	4	1 3/4	3/4	2	73	26 1/4	7 3/4
48	890	36	58 1/2	5	2 1/4	3/4	2	5	2	3/4	2 1/4	84	30	8 7/8
54	1100	40	65	5 1/2	2 1/2	3/4	2 1/4	5	2 1/4	3/4	2 1/2	92 1/2	33 3/8	10
60	1400	45	73 1/2	6	3 5/16	3/4	1 15/16	5	2 3/4	3/4	2 1/2	105	37 1/2	11
72	1900	54	88	7	3 13/16	1	2 3/16	6	3 1/4	1	2 3/4	126	45	13 5/16
84	2500	62	102	8	4 1/8	1	2 7/8	6	3 1/2	1	3 1/2	162 1/2	52	14 1/2
96	3300	78	122 3/8	9	4 1/2	1	3 1/2	7	4	1	4	218	62	20
108	4200	88	138 1/2	10	5	1	4	7	4 1/2	1	4 1/2	269	70	22
120	5100	96 7/8	154	11	5 1/2	1	4 1/2	7	5	1	5	301 3/8	78	24
132	5100	106 1/2	168 3/4	10		1	4	7	4 1/2	1	4 1/2	329	85 5/8	26 7/8

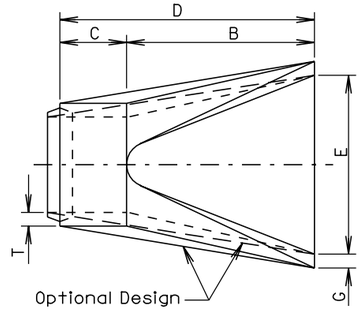
* Equivalent Diameter of Circular R. C. P.

GENERAL NOTES:

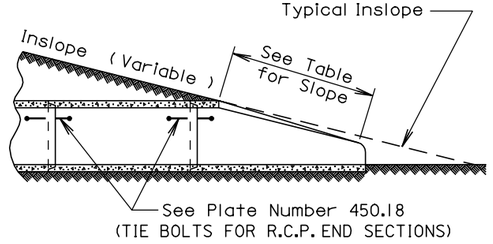
Construction of R.C.P. Arch shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges. Not more than 2 four foot sections shall be permitted near the ends of any culvert. Four foot lengths shall be used only to secure the required length of culvert.

March 31, 2000

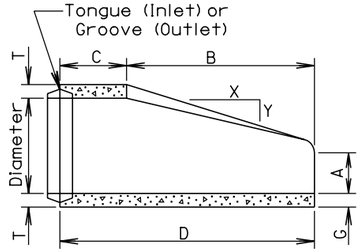
Published Date: 3rd Qtr. 2010	SDDOT	REINFORCED CONCRETE PIPE ARCH	PLATE NUMBER 450.02
			Sheet 1 of 1



TOP VIEW



SLOPE DETAIL

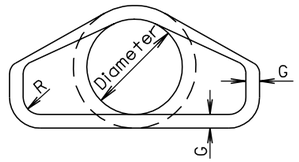


LONGITUDINAL SECTION

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 Standard Specifications for Roads and Bridges.

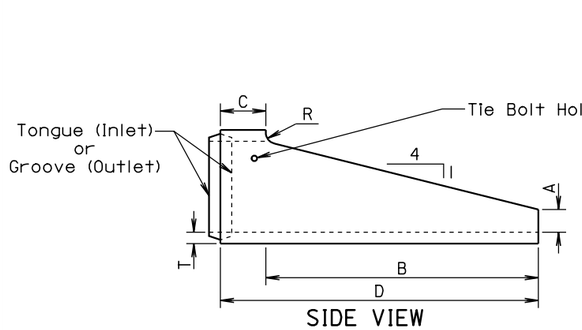


END VIEW

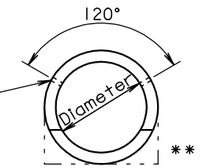
Dia. (In.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (In.)	A (In.)	B (In.)	C (In.)	D (In.)	E (In.)	G (In.)	R (In.)
12	530	2.4: 1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4: 1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3: 1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4: 1	2 3/4	9	36	37 1/2	73 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

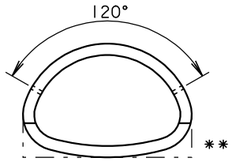
Published Date: 3rd Qtr. 2010	SDDOT	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
			Sheet 1 of 1



SIDE VIEW



END VIEW
"CIRCULAR"



END VIEW
"ARCH"

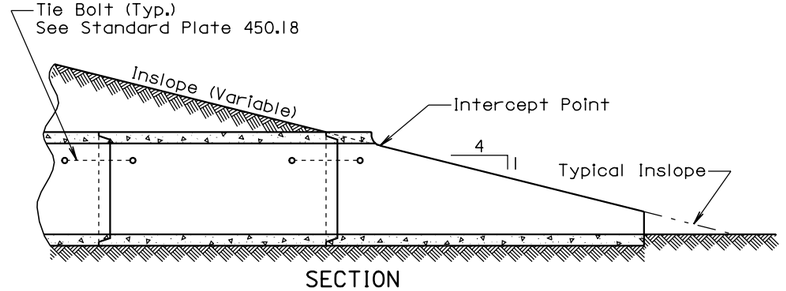
Dia. (In.)	T (In.)	A (In.)	B (In.)	C (In.)	D (In.)	R (In.)
FOR CIRCULAR PIPE						
24	3	6	72	12	84	3
30	3 1/2	7 1/2	90	12	102	3 1/2
FOR ARCH PIPE						
* 24	3	6	48	12	60	3
* 30	3 1/2	7 1/2	60	12	72	3 1/2
* 36	4 1/2	8 5/8	66	30	96	0
* 42	4 1/2	10	77 1/4	18 3/4	96	0

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	3 1/2	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3 1/2	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.

** Acceptable Flat Bottom Alternate.



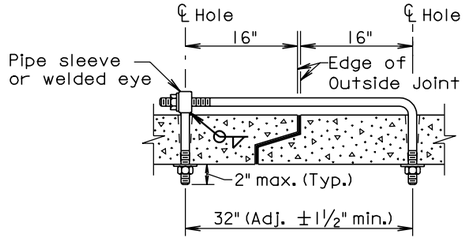
SECTION
(Along Centerline of Pipe)

GENERAL NOTE:

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

September 22, 2006

Published Date: 3rd Qtr. 2010	SDDOT	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13
			Sheet 1 of 1

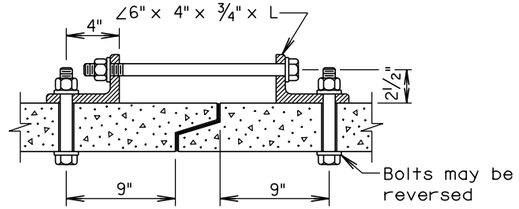


ADJUSTABLE EYE BOLT TIE

GENERAL NOTES:

Tie bolts to be furnished with 2 washers and 2 nuts except for the 9/16" rod which has unthreaded legs.

Use 9/16" rod diameter and 5/8" 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.

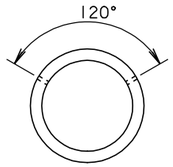


ANGLE AND BOLT TIE

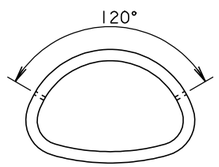
GENERAL NOTES:

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.

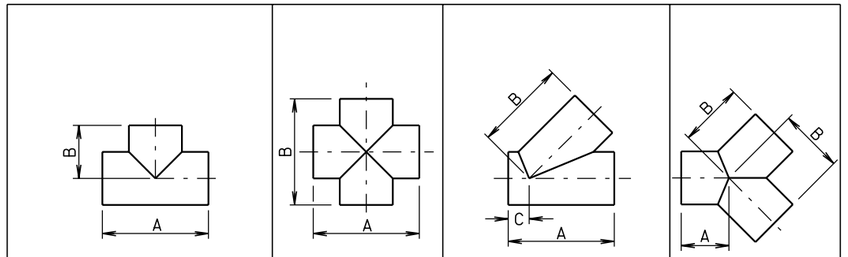
There will be no separate measurement or payment for Tie Bolts.

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: 3rd Qtr. 2010	SDDOT	TIE BOLTS FOR R.C.P. END SECTIONS	PLATE NUMBER 450.18
			Sheet 1 of 1



	Tee			Cross			45° Lateral				45° Wye		
Diameter	A	B	L	A	B	L	A	B	C	L	A	B	L
Inches	Feet			Feet			Feet		Inches	Feet	Feet		
12	4	2	6	4	4	8	4	2	17	6	2	2	6
15	4	2	6	4	4	8	4	4	18	8	2	2	6
18	4	2	6	4	4	8	4	4	13	8	2	2	6
21	4	2	6	4	4	8	6	4	22	10	2	2	6
24	4	2	6	4	4	8	6	4	23	10	2	2	6
27	4	2	6	4	4	8	6	4	20	10	2	2	6
30	4	2	6	4	4	8	6	4	21	10	2	2	6
33	6	4	10	6	6	12	6	6	19	12	2	3	8
36	6	4	10	6	6	12	8	6	19	14	2	3	8
42	6	4	10	6	6	12	8	6	21	14	2	3	8
48	6	4	10	6	6	12	10	8	28	18	2	3	8
54	6	4	10	6	6	12	10	8	23	18	4	4	12
60	8	4	12	8	8	16	12	10	30	22	4	4	12
66	8	4	12	8	8	16	12	10	32	22	4	4	12
72	8	4	12	8	8	16	14	10	45	24	4	5	14
78	10	6	16	10	10	20	14	10	46	24	4	5	14
84	10	6	16	10	10	20	16	12	47	28	4	5	14
90	10	6	16	10	10	20	16	12	49	28	4	5	14
96	10	6	16	10	10	20	16	12	50	28	4	6	16

FABRICATED LENGTHS FOR TEES, CROSSES, AND WYES FOR ALL CORRUGATIONS

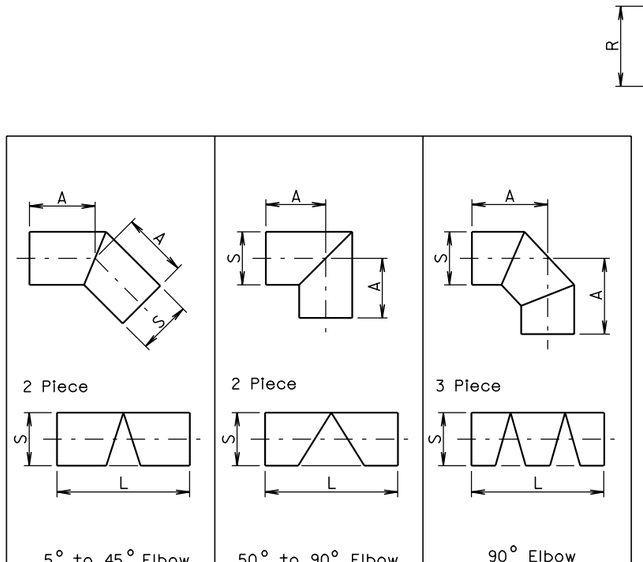
GENERAL NOTES:

All dimensions shown are nominal.

L = Linear Feet of C.M.P. required to fabricate fitting.

June 26, 2001

Published Date: 3rd Qtr. 2010	SDDOT	C.M.P. FABRICATED LENGTHS FOR TEES, CROSSES, AND WYES	PLATE NUMBER 450.33
			Sheet 1 of 1



Equivalent Round Diameter	Span	Rise	45° Elbow 2 Piece		90° Elbow 2 Piece		90° Elbow 2 Piece	
	S	R	A	L	A	L	A	L
Inches	Inches		Inches	Feet	Inches	Feet	Inches	Feet
15	18	11	20	4	27	6	31	6
18	22	13	20	4	25	6	30	6
21	25	16	19	4	24	6	29	6
24	29	18	18	4	34	8	28	6
30	36	22	16	4	30	8	38	8
36	43	27	27	6	38	10	35	8
42	50	31	25	6	35	10	45	10
48	58	36	24	6	43	12	42	10
54	65	40	34	8	52	14	52	12
60	72	44	33	8	60	16	62	14
66	79	49	43	10	56	16	60	14
72	85	53	42	10	56	18	70	16

FABRICATED ELBOW LENGTHS

GENERAL NOTES:

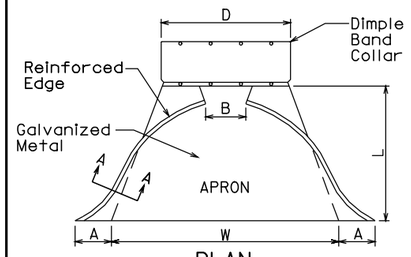
All dimensions shown are nominal.

L = Linear Feet of C.M.P. Arch required to fabricate fitting.

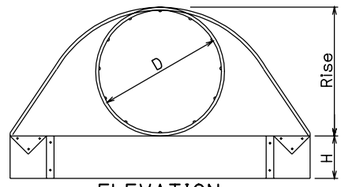
June 26, 2001

Published Date: 3rd Qtr. 2010	SDDOT	C.M.P. ARCH FABRICATED LENGTHS FOR ELBOWS	PLATE NUMBER 450.34
			Sheet 1 of 1

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



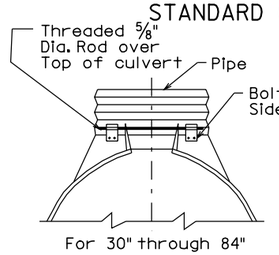
PLAN



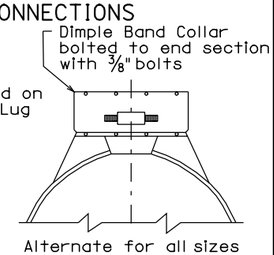
ELEVATION

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.

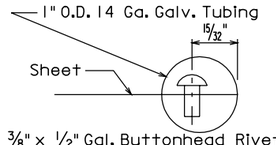
STANDARD CONNECTIONS



For 30" through 84"



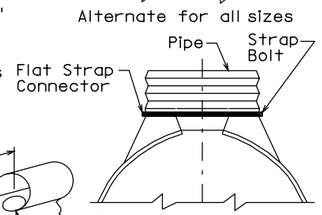
Alternate for all sizes



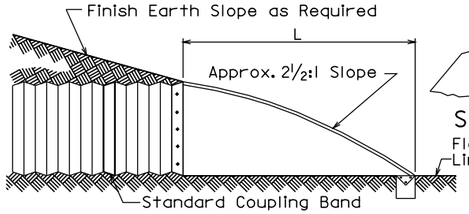
⅜" x ½" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

TUBING ATTACHMENT DETAILS
SECTION A-A

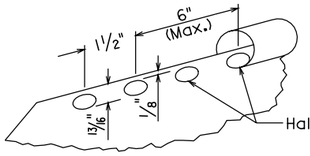
NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



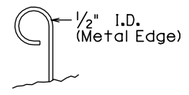
For 12" through 24" only



TYPICAL CROSS-SECTION



SECTION A-A (alternate)



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 ⅜" Dia. galvanized rivets or bolts.

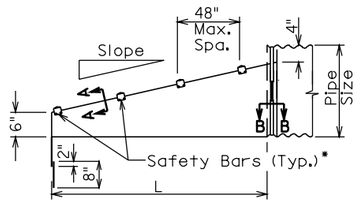
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x ¼" for 60" through 72" diameters and 2½" x 2½" x¼" for 78" and 84" diameters. The angles shall be attached by ⅜" diameter galvanized nuts and bolts.

Rivets and Bolts shall be ⅜" 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

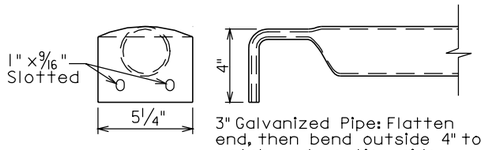
Published Date: 3rd Qtr. 2010	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1

Username - trabl2245



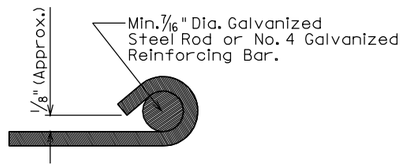
SIDE ELEVATION

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

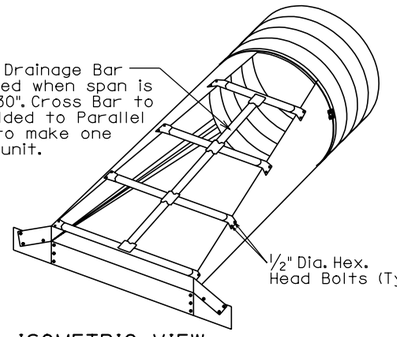


3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

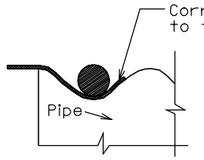
DETAIL OF SAFETY BARS



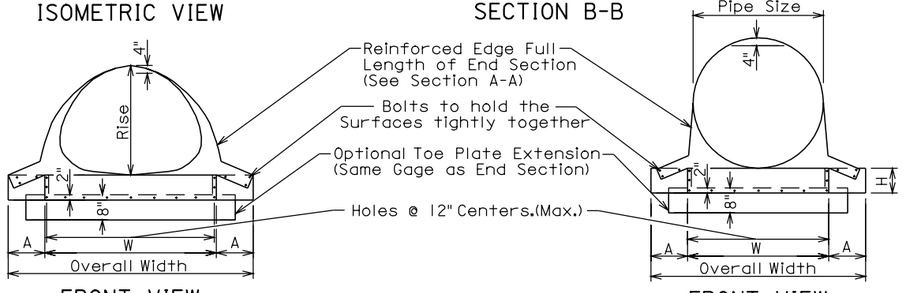
SECTION A-A



ISOMETRIC VIEW

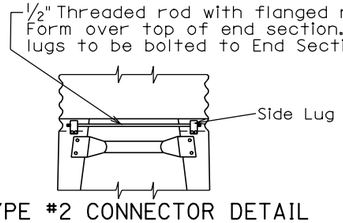


SECTION B-B

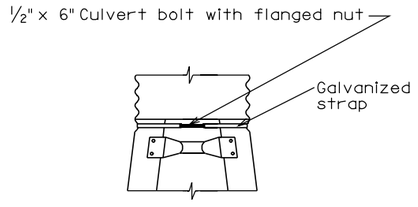


FRONT VIEW

FRONT VIEW



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



TYPE #1 CONNECTOR DETAIL
15" Through 24"

March 31, 2000

Published Date: 3rd Qtr. 2010	SDDOT	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 1 of 2

ARCH C.M.P. SLOPED ENDS

Equv. Dia. (In.)	(Inches) Span	Rise	Min. Thick. In.	Gage	Dimensions (Inches) A	H	W	Overall Width	L Dimensions Slope	Length (In.)
18	21	15	.064	16	8	6	27	43	4:1	20
21	24	18	.064	16	8	6	30	46	4:1	32
24	28	20	.064	16	8	6	34	50	4:1	40
30	35	24	.079	14	12	9	41	65	4:1	56
36	42	29	.109	12	12	9	48	72	4:1	76
42	49	33	.109	12	16	12	55	87	4:1	92
48	57	38	.109	12	16	12	63	95	4:1	112
54	64	43	.109	12	16	12	70	102	4:1	132
60	71	47	.109	12	16	12	77	109	4:1	148
72	83	57	.109	12	16	12	89	121	4:1	188

CIRCULAR C.M.P. SLOPED ENDS

Pipe Dia. (In.)	Min. Thick. In.	Gage	Dimensions (Inches) A	H	W	Overall Width	L Dimensions Slope	Length (In.)
15	.064	16	8	6	21	37	4:1	20
18	.064	16	8	6	24	40	4:1	32
21	.064	16	8	6	27	43	4:1	44
24	.064	16	8	6	30	46	4:1	56
30	.109	12	12	9	36	60	4:1	80
36	.109	12	12	9	42	66	4:1	104
42	.109	12	16	12	48	80	4:1	128
48	.109	12	16	12	54	86	4:1	152
54	.109	12	16	12	60	92	4:1	176
60	.109	12	16	12	66	98	4:1	200

GENERAL NOTES:

Safety bars shall be attached to sloped ends over 30" in diameter only.

Sloped ends shall be fabricated from galvanized steel and shall conform to the requirements of the Standard Specifications.

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

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

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

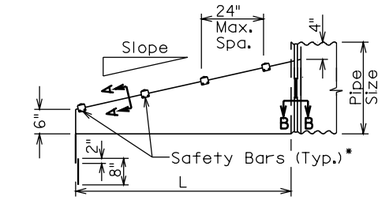
When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Standard Specifications.

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

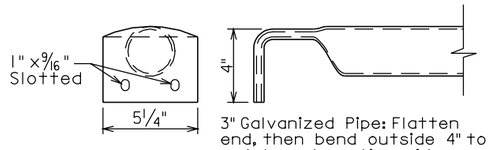
March 31, 2000

Published Date: 3rd Qtr. 2010	SDDOT	C. M. P. SLOPED ENDS	PLATE NUMBER 450.37
			Sheet 2 of 2

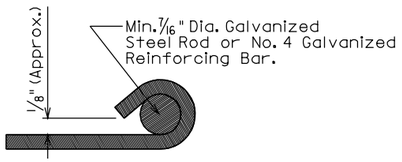


SIDE ELEVATION

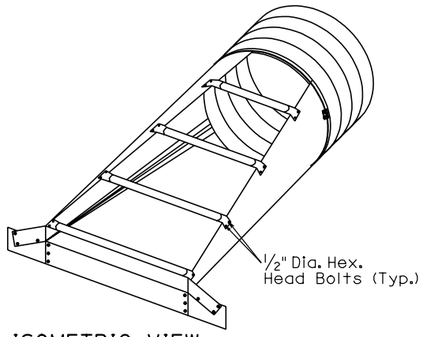
* Number of bars required will vary depending on the length of the End Section.



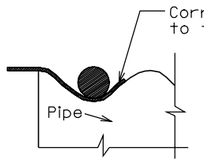
DETAIL OF SAFETY BARS



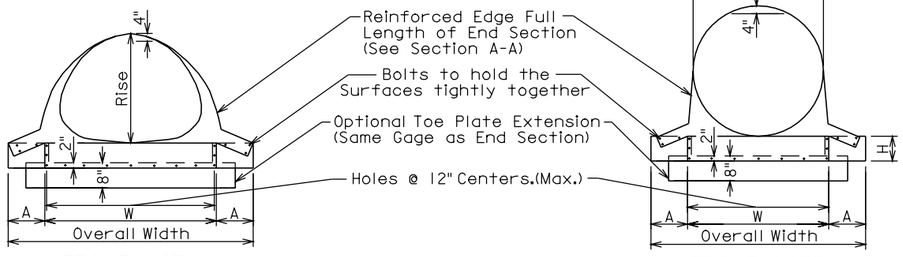
SECTION A-A



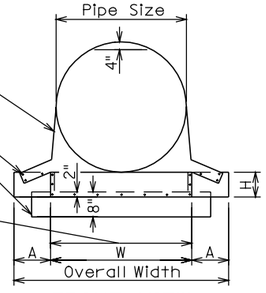
ISOMETRIC VIEW



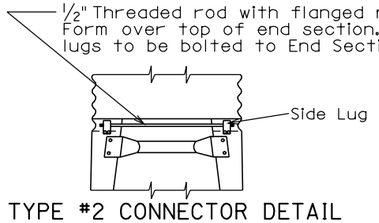
SECTION B-B



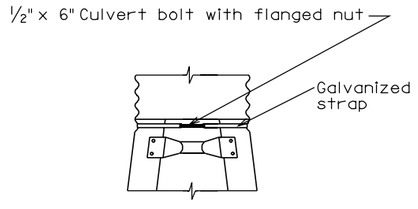
FRONT VIEW



FRONT VIEW



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



TYPE #1 CONNECTOR DETAIL
15" Through 24"

March 31, 2000

Published Date: 3rd Qtr. 2010	SDDOT	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 1 of 2

ARCH C.M.P. SAFETY ENDS

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

CIRCULAR C.M.P. SAFETY ENDS

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

GENERAL NOTES:

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

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

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

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

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

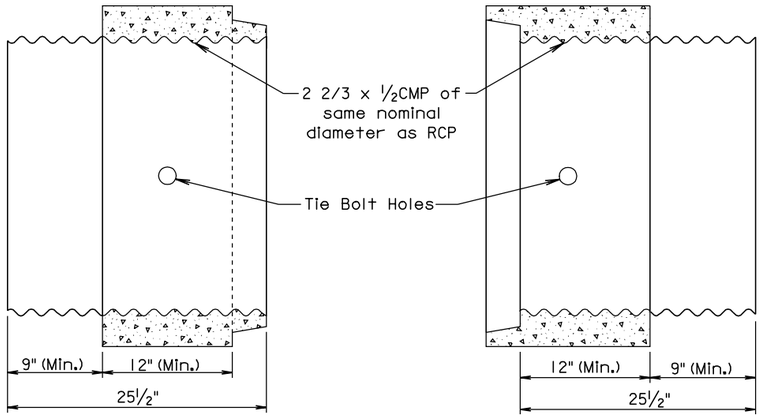
When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Standard Specifications.

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

March 31, 2000

Published Date: 3rd Qtr. 2010	SDDOT	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 Of 2



INLET
(CMP to RCP Transition)

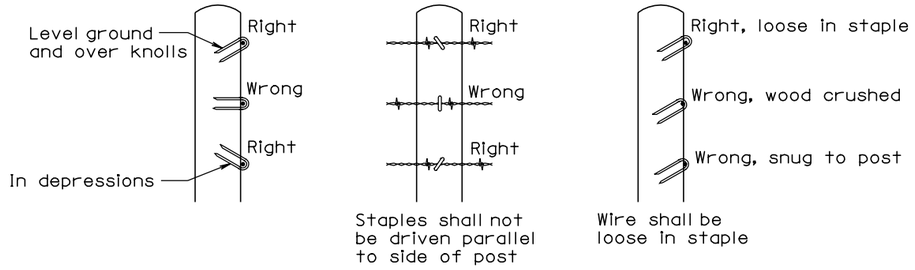
OUTLET
(RCP to CMP Transition)

GENERAL NOTE:

Arch pipe transitions shall be fabricated similar to the round transition shown above.

March 31, 2000

Published Date: 3rd Qtr. 2010	SDDOT	C.M.P. TO R.C.P. TRANSITION AND R.C.P. TO C.M.P. TRANSITION	PLATE NUMBER 450.50 Sheet 1 of 1



STAPLE INSTALLATION

GENERAL NOTES:

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

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

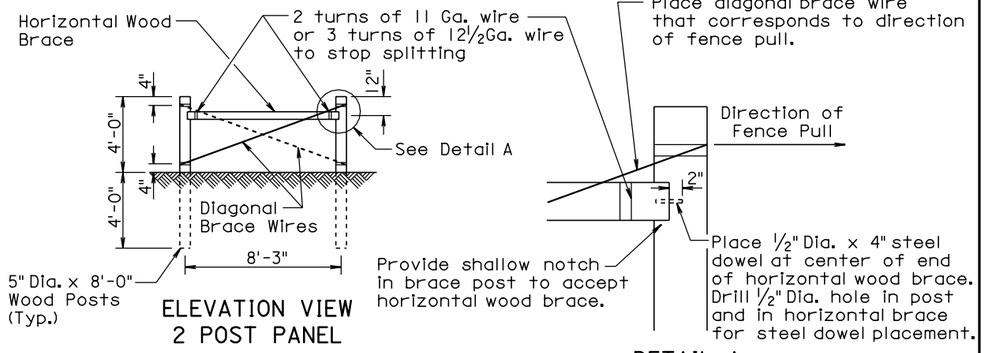
Right-of-Way fence other than on Interstate Projects shall be constructed within one foot of the Right-of-Way on the Landowner's side except at bridge openings, cattle passes, and as otherwise directed by the Engineer.

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

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

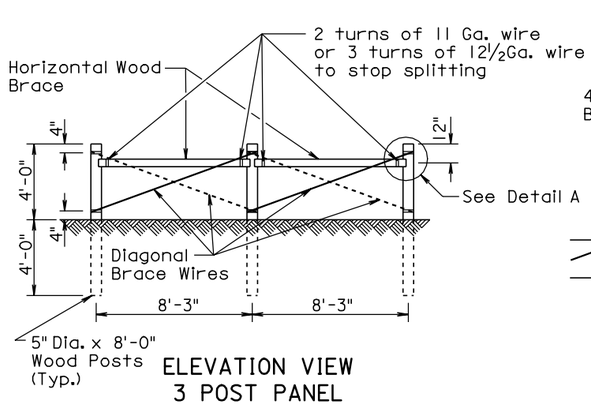
December 23, 2004

Published Date: 3rd Qtr. 2010	SDDOT	STAPLE INSTALLATION AND GENERAL RIGHT-OF-WAY FENCE NOTES	PLATE NUMBER 620.02 Sheet 1 of 1

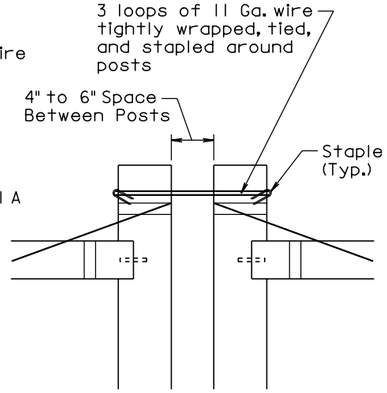


ELEVATION VIEW
2 POST PANEL

DETAIL A



ELEVATION VIEW
3 POST PANEL



DETAIL B

GENERAL NOTES:

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

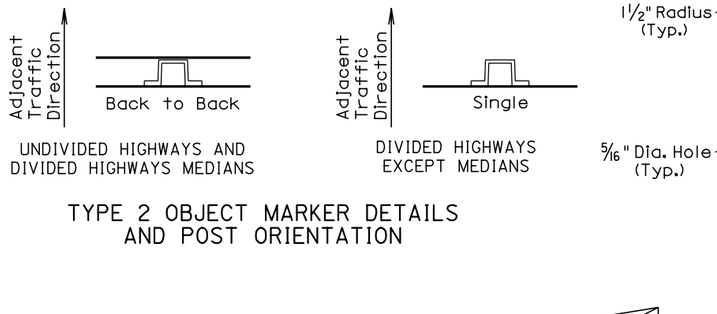
Two Post Panels shall be installed at any sharp vertical angle crest points and as directed by the Engineer.

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

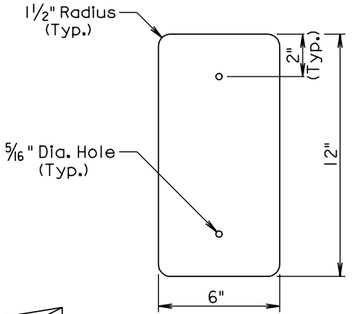
Diagonal brace wires shall be fabricated with 4 strands of 9 Ga. galvanized wire twisted tight. The diagonal brace wires shall be installed in accordance with the direction of the fence pull. Two diagonal brace wires are required if fence pull is in both directions.

December 23, 2004

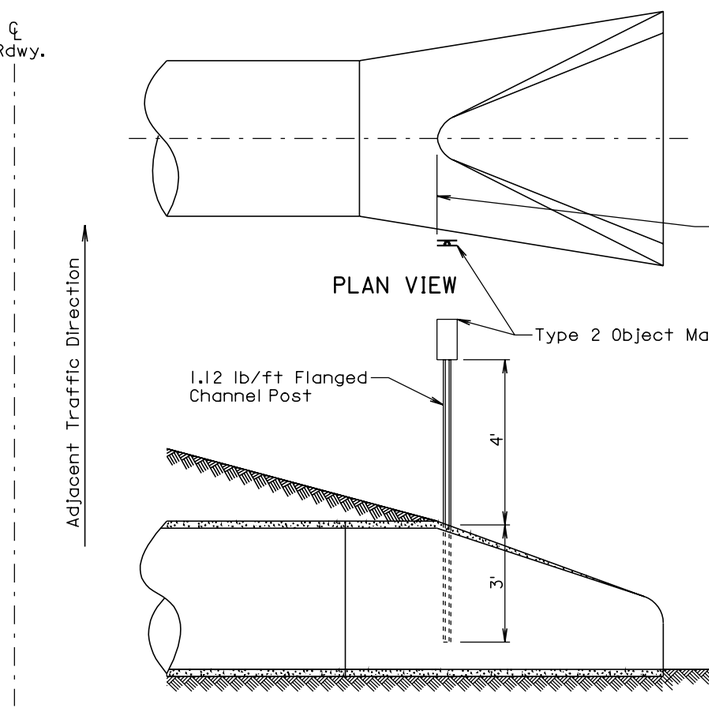
Published Date: 3rd Qtr. 2010	SDDOT	BRACE PANELS AND APPLICATIONS OF BRACE PANELS	PLATE NUMBER 620.03 Sheet 1 of 3



TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION



TYPE 2 OBJECT MARKER DETAIL
⅞" to 1⅛" grip range
¼" twin rivet (single and back to back)



PLAN VIEW

ELEVATION

GENERAL NOTES:

The type 2 object markers shall conform to Standard Specifications Section 982.2 I.

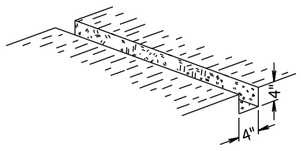
The 1.12 lb/ft flanged channel post shall conform to Standard Specifications Section 982.2 I. 6.

Payment for the type 2 object markers shall be in conformance with Standard Specification Section 632.5 C.

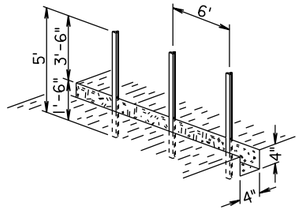
June 26, 2006

Published Date: 3rd Qtr. 2010	SDDOT	TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES	PLATE NUMBER 632.10 Sheet 1 of 1

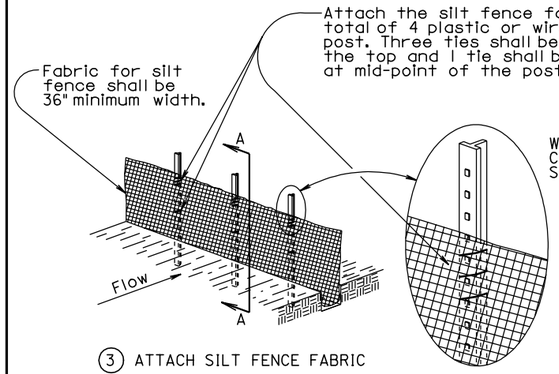
MANUAL HIGH FLOW SILT FENCE INSTALLATION



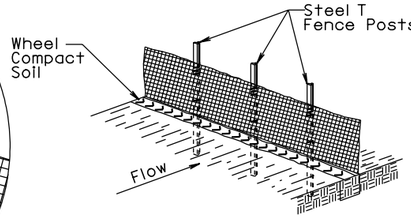
(1) EXCAVATE TRENCH



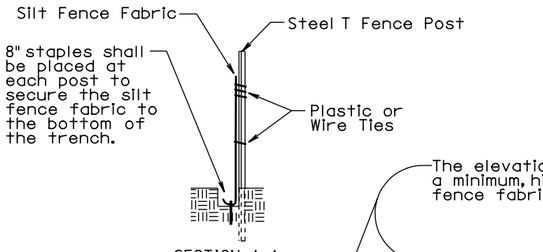
(2) DRIVE STEEL T FENCE POSTS



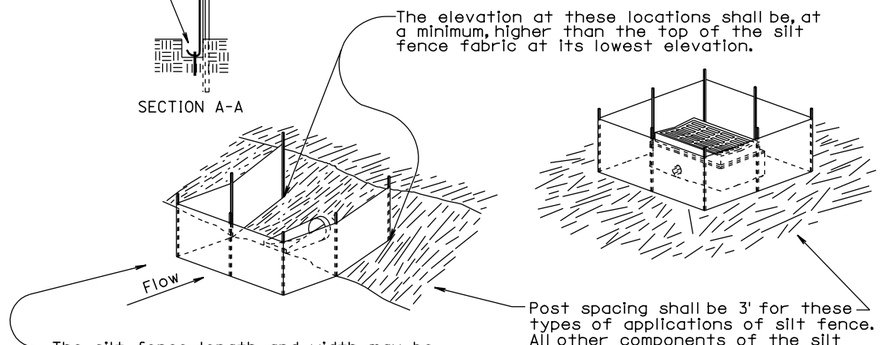
(3) ATTACH SILT FENCE FABRIC



(4) BACKFILL TRENCH AND WHEEL COMPACT SOIL



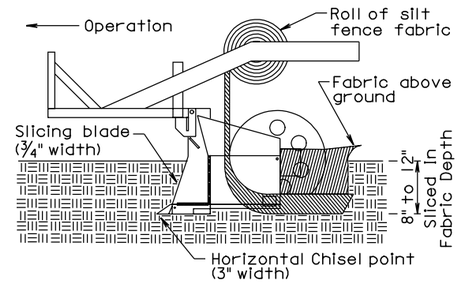
SECTION A-A



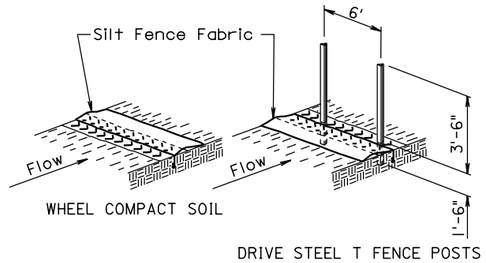
December 23, 2003

Published Date: 3rd Qtr. 2010	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 1 of 2

MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



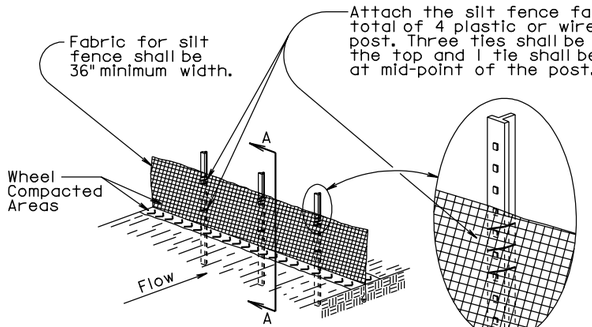
(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



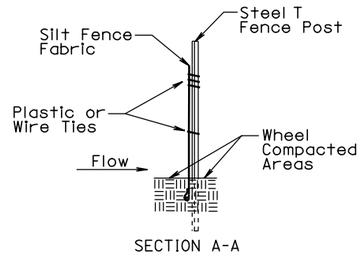
WHEEL COMPACT SOIL

DRIVE STEEL T FENCE POSTS

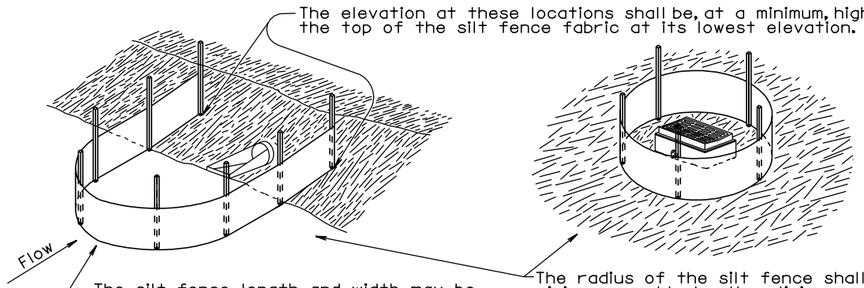
(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



(3) ATTACH SILT FENCE FABRIC



SECTION A-A

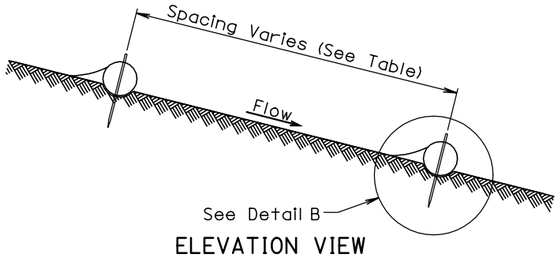


GENERAL NOTE:

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

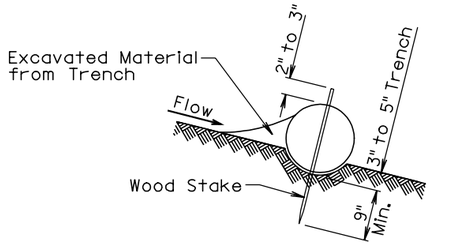
December 23, 2003

Published Date: 3rd Qtr. 2010	SDDOT	HIGH FLOW SILT FENCE	PLATE NUMBER 734.05
			Sheet 2 of 2

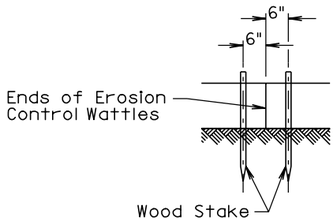


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

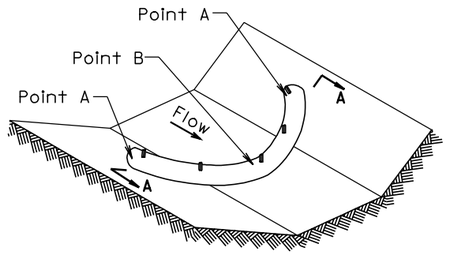
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



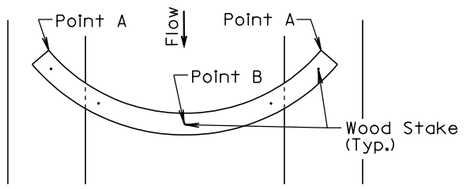
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

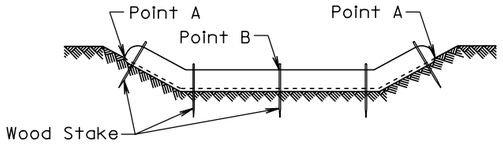


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 3rd Qtr. 2010	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

December 23, 2004

Published Date: 3rd Qtr. 2010	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2