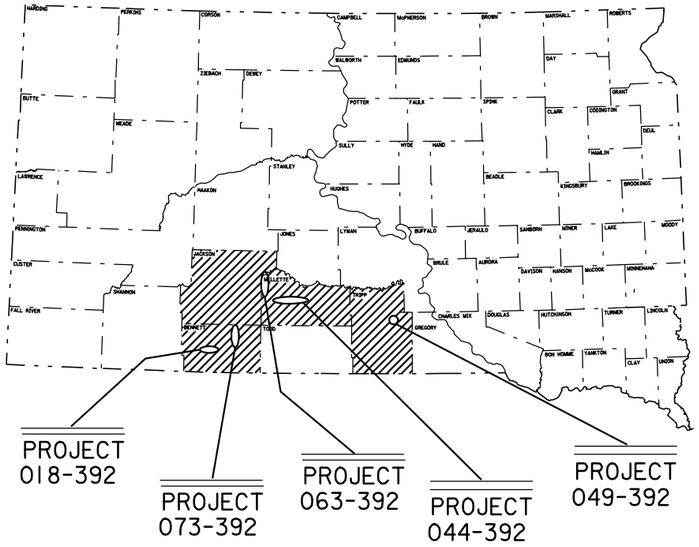
STATE OF SD	PROJECT	SHEET NO.	TOTAL SHEETS
	044-392, +...	1	20



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

PROJECT 044–392, 073–392, 063–392, 049–392, & 018–392
SD44, SD73, SD63, SD49, & US18
MELLETTE, BENNETT, JACKSON, & TRIPP COUNTIES

PIPE REPAIR, EROSION REPAIR, AND OUTLET PROTECTION
PCN IINN, IINP, IINJ, IINK, IINL, & IINM

INDEX OF SHEETS

044-392 PCN IINN
MELLETTE COUNTY
DESIGN DESIGNATION

ADT (2009)	345
ADT (2029)	565
DHV	85
D	50%
T DHV	3.0%
T ADT	6.7%

044-392 PCN IINP
MELLETTE COUNTY
DESIGN DESIGNATION

ADT (2009)	290
ADT (2029)	485
DHV	75
D	50%
T DHV	5.7%
T ADT	12.5%

073-392 PCN IINJ
BENNETT COUNTY
DESIGN DESIGNATION

ADT (2009)	420
ADT (2029)	575
DHV	90
D	50%
T DHV	9.8%
T ADT	21.6%

063-392 PCN IINK
MELLETTE COUNTY
DESIGN DESIGNATION

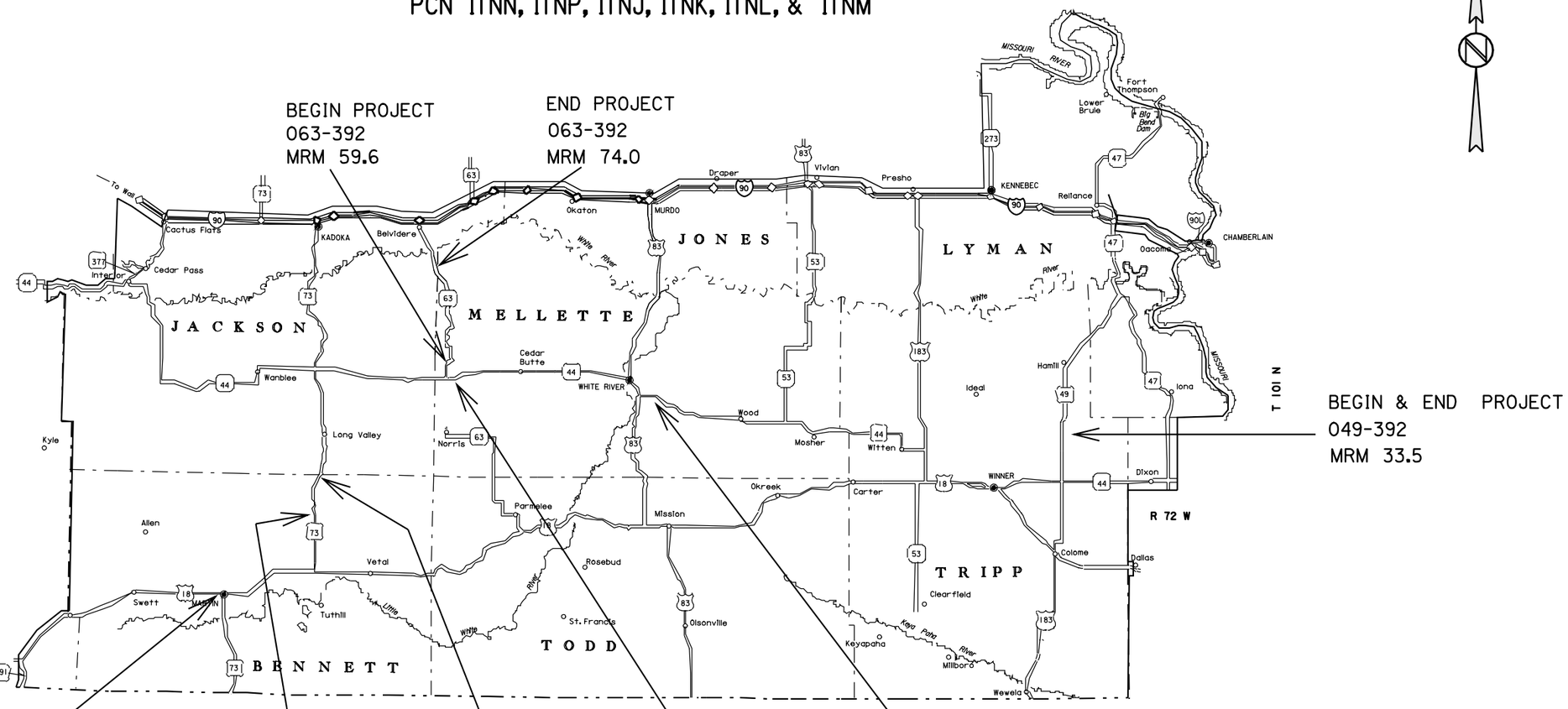
ADT (2009)	65
ADT (2029)	105
DHV	15
D	50%
T DHV	5.6%
T ADT	12.4%

049-392 PCN IINL
TRIPP COUNTY
DESIGN DESIGNATION

ADT (2009)	590
ADT (2029)	785
DHV	120
D	50%
T DHV	6.9%
T ADT	15.1%

018-392 PCN IINM
BENNETT COUNTY
DESIGN DESIGNATION

ADT (2009)	1290
ADT (2029)	1700
DHV	260
D	50%
T DHV	5.2%
T ADT	11.4%



STORMWATER PERMIT
None Required

ESTIMATE OF QUANTITIES

44-392 PCN I1NN

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0510	Remove Pipe End Section	2	Each
110E7510	Remove Pipe End Section for Reset	2	Each
120E0600	Contractor Furnished Borrow	216	CuYd
250E0010	Incidental Work	Lump Sum	LS
450E5219	30" CMP Flared End, Furnish	1	Each
450E5220	30" CMP Flared End, Install	1	Each
450E5231	48" CMP Flared End, Furnish	1	Each
450E5232	48" CMP Flared End, Install	1	Each
450E9001	Reset Pipe End Section	2	Each
634E0010	Flagging	60	Hour
634E0100	Traffic Control	114	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0210	Class B Riprap	232.1	Ton
730E0210	Type F Permanent Seed Mixture	7	Lb
732E0100	Mulching	0.2	Ton
734E0154	12" Diameter Erosion Control Wattle	450	Ft
831E0110	Type B Drainage Fabric	309	SqYd

044-392 PCN I1NP

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
120E0600	Contractor Furnished Borrow	63	CuYd
634E0010	Flagging	20	Hour
634E0100	Traffic Control	112	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
730E0210	Type F Permanent Seed Mixture	2	Lb
732E0100	Mulching	0.1	Ton
734E0131	Type 1 Turf Reinforcement Mat	133.4	SqYd
734E0510	Shaping for Erosion Control Blanket	100	Ft

073-392 PCN I1NJ

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E7510	Remove Pipe End Section for Reset	1	Each
120E0600	Contractor Furnished Borrow	373	CuYd
450E9001	Reset Pipe End Section	1	Each
634E0010	Flagging	20	Hour
634E0100	Traffic Control	114	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
730E0210	Type F Permanent Seed Mixture	5	Lb
732E0100	Mulching	0.3	Ton
734E0131	Type 1 Turf Reinforcement Mat	293.3	SqYd
734E0154	12" Diameter Erosion Control Wattle	150	Ft
734E0510	Shaping for Erosion Control Blanket	220	Ft

063-392 PCN I1NK

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0510	Remove Pipe End Section	1	Each
120E0600	Contractor Furnished Borrow	659	CuYd
450E5814	36" CMP Arch Flared End, Furnish	1	Each
450E5815	36" CMP Arch Flared End, Install	1	Each
634E0010	Flagging	20	Hour
634E0100	Traffic Control	114	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
730E0210	Type F Permanent Seed Mixture	6	Lb
732E0100	Mulching	0.3	Ton
734E0131	Type 1 Turf Reinforcement Mat	1,393.3	SqYd
734E0154	12" Diameter Erosion Control Wattle	150	Ft
734E0510	Shaping for Erosion Control Blanket	960	Ft

ESTIMATE OF QUANITIES (CONTINUED)

049-392 PCN I1NL

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
120E0600	Contractor Furnished Borrow	20	CuYd
450E5255	84" CMP Flared End, Furnish	1	Each
450E5256	84" CMP Flared End, Install	1	Each
634E0010	Flagging	20	Hour
634E0100	Traffic Control	112	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0210	Class B Riprap	31.1	Ton
730E0210	Type F Permanent Seed Mixture	1	Lb
732E0100	Mulching	0.1	Ton
734E0154	12" Diameter Erosion Control Wattle	100	Ft
831E0110	Type B Drainage Fabric	47	SqYd

018-392 PCN I1NM

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
120E4100	Reprofiling Ditch	13.0	Sta
250E0010	Incidental Work	Lump Sum	LS
634E0010	Flagging	20	Hour
634E0100	Traffic Control	114	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
730E0210	Type F Permanent Seed Mixture	8	Lb
732E0100	Mulching	0.6	Ton
734E0131	Type 1 Turf Reinforcement Mat	21.3	SqYd
734E0154	12" Diameter Erosion Control Wattle	200	Ft
734E0510	Shaping for Erosion Control Blanket	16	Ft

SPECIFICATIONS

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

GENERAL MAINTENANCE OF TRAFFIC

The Sign Tabulation was based on the units from Standard Plate Numbers 634.01, 634.03, and 634.23. The Contractor shall be allowed to work in only one work area. The Contractor may submit a proposal, for the Engineer's approval at the preconstruction meeting, to work in multiple work areas. Traffic Control devices moved between work sites on the same project will be paid for only once.

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

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

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.

All construction operations shall be conducted in the general direction of traffic movement. All signs shall be mounted on portable supports. 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 three (3) days. If the duration is more than three (3) days, the signs shall be on fixed supports.

GENERAL MAINTENANCE OF TRAFFIC (CONTINUED)

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

Traffic control signs furnished will be paid for only once. The cost of moving signs within project limits or from project to project shall be incidental to the contract unit price per unit for "Traffic Control".

Additional standard signs, as ordered by the Engineer, shall be available within two (2) working days. Failure to provide signs within this time limit will result in liquidated damages being assessed in the amount of $100.00 per calendar day. Payment for additional signs will be paid for using the contract unit price per unit for "Traffic Control".

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 furnish, install and maintain Truck Crossing signs. The exact number and location will be determined on construction. Payment shall be incidental to the contract unit price per unit for "Traffic Control" and will be paid for once on the project.

UTILITIES

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

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 Project Engineer to determine modifications that will be necessary to avoid utility impacts.

PIPE NOTES

The Contractor is responsible for verifying the size of each pipe prior to ordering any pipe. The Contractor shall obtain the approval of the Engineer before ordering any pipe.

Pipe culverts that are removed and not reset shall become the property of the Contractor. Pipe culverts shall be disposed of as per the waste disposal site notes and shall not be in view from the project upon completion of the project.

The excavation required to expose existing pipe and ends will be incidental to the contract unit prices for Remove Pipe Culvert, Remove Pipe End Section for Reset, and corresponding pipe install bid items.

When it is necessary to remove damaged CMP or a damaged CMP end, it may be cut with a torch. If the pipe is cut with a torch, it shall be painted with a galvanizing paint approved by the Engineer. The cost of removing damaged portions of CMP shall be incidental to the contract lump sum price for "Incidental Work".

TIE BOLTS FOR RCP

Tie Bolts shall be installed at the inlet and outlet on the first three sections of new/reset culvert and on new/reset culvert ends (requires connection from existing culvert to new end section).

For informational purposes: Field drilling will be required to install the tie bolts on reset culvert, on reset culvert ends and on existing culvert when installing a new/reset end section.

Cost for removing tie bolts, drilling tie bolt holes and furnishing and installing tie bolts shall be incidental to the contract unit prices for installing or resetting RCP Culverts and End Sections. Existing tie bolts may be salvaged and reused if condition is acceptable to the Engineer.

CONTRACTOR FURNISHED BORROW

Contractor Furnished Borrow shall be required to fill in scour holes and other erosion as noted in the scope of work for the individual repair sites. All fill material shall meet with the approval of the Engineer. Borrow Areas within the right-of-way may be available with prior approval of 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 unless the Engineer orders changes. The Contractor is responsible for obtaining all required permits and clearances for the borrow site.

Prior to placement of fill material, the Contractor will be required to remove 3 inches of topsoil and replace it on the newly constructed embankments. Payment for the above shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow".

All work shall be accomplished within the right-of-way.

Once a work site is opened up at a given location, work shall proceed in a continuous matter to minimize the potential for erosion.

It is anticipated that water for compaction will not be required. When, in the opinion of the Engineer, the fill material is dry, water may be ordered and placed to the satisfaction of the

CONTRACTOR FURNISHED BORROW (CONTINUED)

Engineer. The cost of water shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow".

Compaction of the fill material shall be to the satisfaction of the Engineer.

HISTORICAL PRESERVATION 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 (605-773-3721). 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.

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

TYPE F PERMANENT SEED MIXTURE

All disturbed areas within the right-of-way shall be seeded with Type F Permanent Seed Mixture.

Permanent Seeding will be measured and paid for where embankment work is accomplished.

Seeding of borrow areas within the right-of-way will be required as specified above but will not be measured for payment. Restoration of borrow areas outside the right-of-way will be as per agreement with the landowner and will not be paid for.

Hand seeding devices approved by the Engineer will be allowed. All seed broadcast, including the use of a hydroseeder, must be raked or dragged in (incorporated) with the top 1/4 to 1/2 inch of topsoil to the satisfaction of the Engineer.

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Flintlock, Rodan, Rosana	7
Green Needlegrass	Lodorm	4
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	3
Blue Grama	Bad River, Willis	2
Oats or Spring Wheat: April through July; Winter Wheat: August through November		10
	Total:	26

FERTILIZING

Application of fertilizer will not be required on this project.

MULCHING (HAY OR STRAW)

Following permanent seeding, mulch consisting of grass hay or straw shall be blown on at the rate of 2 tons per acre and punched in on slopes 3:1 and flatter and on 2:1 slopes where equipment can be operated without rutting the slope due to slippage.

Bales shall be inspected for noxious weeds by the County Weed Supervisor in which the bales are to be used. This shall be done prior to construction activities. The Contractor shall provide written verification from the County Weed Supervisor stating the bales are free of noxious weeds.

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

An additional 1 ton of Grass Hay or Straw Mulch has been added to the Estimate of Quantities for temporary erosion control on areas determined by the Engineer during construction for temporary stabilization.

EROSION CONTROL WATTLES

Erosion control wattles for restraining the flow of runoff and sediment shall be installed 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.

A quantity of 100 feet of 12” Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control around excavation and/or borrow piles and the pipe ends while pipe clean our work is being completed. This quantity has been added to the SD44 quantities; however, they may be used elsewhere throughout the project as directed by the Engineer.

EROSION CONTROL WATTLES (CONTINUED)

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	Limpert Environmental Litchfield, MN Phone: 1-320-693-2565 www.limpertenvironmental.com
Bio Logs	Flaxtech, LLC Rock Lake, ND Phone: 1-866-444-3529
Stenlog	ECB Bioproducts St. Andrews, MB Phone: 1-866-317-3346 www.erosioncontrolblanket.com
Winters Wattles	Winters Excelsior Company Birmingham, AL Phone: 1-800-248-7237 www.wintersexcelsior.com
Patriot Wood Fiber Logs and Patriot Straw Wattles	Patriot Environmental Products, Inc. Mesa, AZ Phone: 1-480-345-7293 www.digitaldesigncore.com/patriot/WattleSpecs.pdf

TABLE OF INCIDENTAL WORK

Hwy	MRM	Rt/Lt	Description
SD44	174.4	Rt	Install Earthen Check Dams
US18	148.9	Rt	Clean Out of Mainline Pipes
			Install Scour Stop

TABLE OF CLASS B RIPRAP

Hwy	MRM	Rt/Lt	Ton
SD44	174.4	Rt	104.6
SD44	179.4	Lt	108.9
SD44	180.2	Lt	18.6
SD49	33.5	Rt	31.1
		Total:	263.2

TABLE OF TYPE B DRAINAGE FABRIC

Hwy	MRM	Rt/Lt	Sq.Yds.
SD44	174.4	Rt	145
SD44	179.4	Lt	131
SD44	180.2	Lt	33
SD49	33.5	Rt	47
		Total:	356

SHAPING FOR TYPE 1 TURF REINFORCEMENT MAT

The ditches shall be shaped for the turf reinforcement mat as specified on Standard Plate 734.01.

All costs for shaping the ditches for turf reinforcement mat including labor and equipment shall be incidental to the contract unit price per foot for “Shaping for Erosion Control Blanket”.

TABLE OF SHAPING FOR TYPE 1 TURF REINFORCEMENT MAT

Hwy	MRM	Rt/Lt	Length(Ft)
SD44	201.0	Lt	50
SD44	203.3	Rt	50
SD73	36.0	Lt	220
SD63	59.6	Rt & Lt	95
SD63	60.9	Rt	85
SD63	69.2	Rt	610
SD63	69.3	Rt	170
US18	148.9	Rt	16
		Total:	1296

TYPE 1 TURF REINFORCEMENT MAT

Turf Reinforcement Mat shall be installed at locations shown in the table and at locations determined by the Engineer during construction. The Contractor shall use a turf reinforcement mat from the approved products list. The approved product list for turf reinforcement mat may be viewed at the following internet site:

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

Installation of the Turf Reinforcement Mat shall be according to the manufacturer’s installation instructions.

TABLE OF TYPE 1 TURF REINFORCEMENT MAT

Hwy	MRM	Rt/Lt	Sq.Yds.
SD44	201.0	Lt	66.7
SD44	203.3	Rt	66.7
SD73	36.0	Lt	293.3
SD63	59.6	Rt	60.0
SD63	59.6	Lt	66.7
SD63	60.9	Rt	226.7
SD63	69.2	Rt	813.3
SD63	69.3	Rt	226.7
US18	148.9	Rt	21.3
		Total:	1841.4

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.

All construction/demolition debris generated by this project shall be cleaned up and disposed by the Contractor.

The waste disposal site(s) shall be managed and reclaimed in accordance with the following from the Administrative Rules of South Dakota (Solid Waste) Article 74:27 administered by the Department of Environmental 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 SITE (CONTINUED)

Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. 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.

SCOPE OF WORK

SD44 MRM 174.4 to 203.3

MRM 174.4 The site work on the right consists of shaping the existing scour as described per plan notes and details. Type B Drainage Fabric and Class B Riprap shall be place as per plan notes and details. The riprap placement shall end two feet from the existing right-of-way fence. Two earthen check dams shall be installed at a location in the ditch as determined in the field by the Engineer. The earthen check dams shall be built according to Standard Plate 734.03 except Contractor Furnished Borrow will be used in place of the rock. Payment for installing the earthen check dams shall be incidental to the contract lump sum price for “Incidental Work”. Excess dirt removed from this area shall be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project. There is no work required on the left side. All disturbed areas will be seeded and mulched.

MRM 179.4 This site consists of triple 66” RCP with flared ends. The site work on the right consists of removing and resetting the end sections of the existing 66” RCP at the middle and east locations. The 3’ wide x 3’ long x 1’ deep scour hole located at the east pipe shall be filled in with Contractor Furnished Borrow and the 8’ wide x 31’ long x 3’ deep washout located at the middle pipe shall be filled in with Contractor Furnished Borrow. The inlet channel shall be shaped to allow drainage to the existing pipes. The site work on the left consists of removing and salvaging the existing gabion rock from the middle and east pipe locations. Type B Drainage Fabric and Class B Riprap shall be placed to volume of 42’ wide x 20’ long x 2.5’ deep on the left at the middle and east pipe locations. The salvaged gabion rock shall be incorporated with the Class B Riprap. The outlet channel shall be shaped to allow for drainage away from the existing pipes. Payment for salvaging the gabion rock and shaping the inlet & outlet channels shall be incidental to the contract unit price per ton for “Class B Riprap”. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 180.2 There is no work required on the right side. The site work on the left consists of removing and salvaging the existing gabion rock from the end of the 42” RCP. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12’ wide x 12’ long x 2.5’ deep on the left. The salvaged gabion rock shall be incorporated with the Class B Riprap. The outlet channel shall be shaped to allow for drainage away from the existing pipe. Payment for salvaging the gabion rock and shaping the outlet shall be incidental to contract unit price per ton for “Class B Riprap”. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 181.1 The site work on the right consists of filling the 10’ wide x 10’ long x 2’ scour hole at the inlet end of the 48” CMP with Contractor Furnished Borrow. The inlet channel shall be shaped to allow drainage to the inlet pipe as directed by the Engineer. The site work on the left consists of reshaping the ditch from the pipe outlet to the fence. Excess dirt removed from this area shall be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project. Payment for shaping the inlet and outlet channel shall be incidental to the contract unit price per cubic yard for “Contractor Furnished Borrow”. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 186.7 There is no work required on the right side. The site work on the left consists of removing the end section of the existing 48” CMP and installing a new 48” CMP Flared End. The 10’ wide x 10’ long x 3’ deep scour hole at the outlet shall be filled in with Contractor Furnished Borrow. The ditch section shall be shaped to allow for drainage as directed by the Engineer. Payment for shaping the outlet shall be incidental to the contract unit price per cubic yard for “Contractor Furnished Borrow”. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 195.8 There is no work required on the right side. The site work on the left consists of removing the end section of the existing 30” CMP and installing a new 30” CMP Flared End. The 12’ wide x 25’ long x 3’ deep washout shall be filled in with Contractor Furnished Borrow and shall be shaped to allow for drainage as directed by the Engineer. Payment for shaping the outlet channel shall be incidental to the contract unit price per cubic yard for “Contractor Furnished Borrow”. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 201.0 There is no work required on the right side. The site work on the left consists of filling in the 12’ wide x 30’ long x 3’ deep washout in the left ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12’ wide x 50’ long over the repair area. The channel shall be shaped to allow for drainage. All disturbed areas will be seeded and mulched.

MRM 203.3 The site work on the right consists of filling in the 7’ wide x 30’ long x 3’ deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12’ wide x 50’ long over the repair area. The channel shall be shaped to allow for drainage. There is no work required on the left side. All disturbed areas will be seeded and mulched.

SCOPE OF WORK (CONTINUED)

SD73 MRM 35.9 to 36.8

MRM 35.9 The site work on the right consists of placing Contractor Furnished Borrow around the 24" RCP Sloped End. The area around the pipe end and ditch shall be shaped to reestablish drainage. The site work on the left consists of placing Contractor Furnished Borrow around the 24" RCP Sloped End. The area around the pipe end and ditch shall be shaped to reestablish drainage as directed by the Engineer. Payment for shaping the slope and ditch shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow". Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 36.0 There is no work required on the right side. The site work on the left consists of filling in the 10' wide x 200' long x 4' deep washout in the left ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12' wide x 220' long over the repair area. All disturbed areas will be seeded and mulched.

MRM 36.3 There is no work required on the right side. The site work on the left consists of filling in the 8' wide x 8' long x 3' deep scour hole and the area around the cattle pass end section with Contractor Furnished Borrow. The channel shall be shaped to allow for drainage as directed by the Engineer. Payment for shaping the ditch section and around the cattle pass end section shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow". Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 36.8 There is no work required on the right side. The site work on the left consists of removing and resetting the 24" CMP end section. The 10' wide x 40' long x 4' deep washout in the left ditch shall be filled in with Contractor Furnished Borrow. The ditch and channel shall be shaped to allow for drainage as directed by the Engineer. Payment for shaping the ditch and channel shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow". Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

SD63 MRM 59.6 to 74.0

MRM 59.6 The site work on the right consists of filling in the 6' wide x 35' long x 3' deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12' wide x 45' long over the repair area. The site work on the left consists of filling in the 5' wide x 40' long x 4' deep washout in the left ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12' wide x 50' long over the repair area. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 60.9 The site work on the right consists of filling in the 20' wide x 75' long x 6' deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 24' wide x 85' long over the repair area. There is no work required on the left side. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 69.2 The site work on the right consists of filling in the 4' wide x 600' long x 2' deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12' wide x 610' long over the repair area. There is no work required on the left side. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 69.3 The site work on the right consists of removing the existing 36" CMP Arch end section from the south pipe and installing a new 36" CMP Arch flared end. The existing scour hole shall be filled with Contractor Furnished Borrow. The Contractor shall fill in the 5' wide x 160' long x 3' deep washout in the right ditch with Contractor Furnished Borrow. Type 1 Turf Reinforcement Mat shall be placed 12' wide x 170' long over the repair area that leads to twin 36" CMP Arch. The site work on the left consists of reshaping the ditch from the twin pipe to the fence. Excess dirt removed from this area shall be disposed of by the Contractor or used as Contractor Furnished Borrow at other locations throughout the project. Payment for shaping the inlet and outlet channel shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow". Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

MRM 74.0 The site work on the right consists of filling in the 4' wide x 20' long x 2' deep scour hole at the inlet end of the 30" CMP in the right ditch with Contractor Furnished Borrow. The inlet channel shall be shaped to allow drainage to the inlet pipe as directed by the Engineer. Payment for shaping the inlet shall be incidental to the contract unit price per cubic yard for "Contractor Furnished Borrow". There is no work required on the left side. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

SCOPE OF WORK (CONTINUED)

SD49 MRM 33.5

MRM 33.5 The site work on the right consists of installing a new 84” CMP Flared End. The existing end section has separated from the pipe end and shall be disposed of by the Contractor. Type B Drainage Fabric and Class B Riprap shall be placed to a volume of 12’ wide x 20’ long x 2.5’ deep on the right. The site work on the left consists of filling in the scour hole at the inlet end of the 84” CMP with Contractor Furnished Borrow. The inlet and outlet channels shall be shaped to allow drainage to and from the respective ends. Payment for disposing the end section, shaping the inlet and outlet channel shall be incidental to the contract unit price per ton for “Class B Riprap”. The existing scour hole shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

US18 MRM 148.7 to 148.9

MRM 148.7 to 148.9 The site work on the right consists of reshaping the existing ditch bottom to a width of 10 feet and length of 1,300 feet. The ditch sides shall be shaped to match into the newly shaped ditch bottom. All costs associated with reshaping the existing ditch, including labor, excavation, equipment, and incidentals shall be paid for by the station at the contract unit price for “Reprofiling Ditch”. Material in the transverse mainline pipes shall be cleaned out by water flushing or other approved methods. The Contractor shall install an approved Erosion & Sediment BMP’s at the outlets of the pipe being cleaned to capture sediment. The clean-out shall be done to the satisfaction of the Engineer. The Sediment from the pipes and excess dirt removed from the ditch reshaping shall be disposed of by the Contractor or used for Contractor Furnished Borrow at other locations throughout the project. All costs associated with the cleaning of the existing pipe, including labor, excavation, equipment, and incidentals shall be paid for at the contract lump sum price for “Incidental Work”. At the outlet of the 36” CMP located at Station 367+84, Type 1 Turf Reinforcement Mat & Scour Stop or an approved equivalent shall be installed to a width of 12 feet and a length of 16 feet. The Contractor shall install the Scour Stop according to manufacturer’s installation instructions. All costs associated with the installation of the Scour Stop, including labor, excavation, equipment, material, and incidentals shall be paid for at the contract lump sum price for “Incidental Work”. There is no work required on the left side. Scour holes and erosion shall be filled in with Contractor Furnished Borrow. All disturbed areas will be seeded and mulched.

SUMMARY OF QUANTITIES (FOR INFORMATION ONLY)

Installation Quantity by Location (MRM)	SD44									
Bid Item Description	**174.4**	**179.4**	**180.2**	**181.1**	**186.7**	**195.8**	**201.0**	**203.3**	**Quantity**	**Unit**
Mobilization									0.20	LS
Remove Pipe End Section					1	1			2	Each
Remove Pipe End Section for Reset		2							2	Each
Contractor Furnished Borrow	125	28	11	7	11	33	40	23	279	CuYd
Incidental Work	0.50								0.50	LS
30" CMP Flared End, Furnish						1			1	Each
30" CMP Flared End, Install						1			1	Each
48" CMP Flared End, Furnish					1				1	Each
48" CMP Flared End, Install					1				1	Each
Reset Pipe End Section		2							2	Each
Flagging	10	10	10	10	10	10	10	10	80	Hour
Traffic Control									226	Unit
Traffic Control, Miscellaneous									0.50	LS
Class B Riprap	104.6	108.9	18.6						232.1	Ton
Type F Permanent Seed Mixture	2	1	1	1	1	1	1	1	9	Lb
Mulching									0.3	Ton
Type 1 Turf Reinforcement Mat							66.7	66.7	133.4	SqYd
12" Diameter Erosion Control Wattle	200	50	50	50	50	50			450	Ft
Shaping for Erosion Control Blanket							50	50	100	Ft
Type B Drainage Fabric	145	131	33						309	SqYd

The 12” Diameter Erosion Control Wattle quantity for MRM 174.4 includes the additional 100 ft of length that shall be used for temporary erosion and sediment control throughout the project. Locations of temporary erosion and sediment control will be determined by the Engineer.

Installation Quantity by Location (MRM)	SD73					
Bid Item Description	**35.9**	**36.0**	**36.3**	**36.8**	**Quantity**	**Unit**
Mobilization	0.05	0.05	0.05	0.05	0.20	LS
Remove Pipe End Section for Reset				1	1	Each
Contractor Furnished Borrow	10	296	7	59	373	CuYd
Reset Pipe End Section				1	1	Each
Flagging					20	Hour
Traffic Control					114	Unit
Traffic Control, Miscellaneous					0.10	LS
Type F Permanent Seed Mixture	1	2	1	1	5	Lb
Mulching					0.3	Ton
Type 1 Turf Reinforcement Mat		293.3			293.3	SqYd
12" Diameter Erosion Control Wattle	50		50	50	150	Ft
Shaping for Erosion Control Blanket		220			220	Ft

SUMMARY OF QUANTITIES (FOR INFORMATION ONLY) (CONTINUED)

Installation Quantity by Location (MRM)	SD63						
Bid Item Description	**59.6**	**60.9**	**69.2**	**69.3**	**74.0**	**Quantity**	**Unit**
Mobilization						0.20	LS
Remove Pipe End Section				1		1	Each
Contractor Furnished Borrow	53	333	178	89	6	659	CuYd
36" CMP Arch Flared End, Furnish				1		1	Each
36" CMP Arch Flared End, Install				1		1	Each
Flagging						20	Hour
Traffic Control						114	Unit
Traffic Control, Miscellaneous						0.10	LS
Type F Permanent Seed Mixture	1	2	1	1	1	6	Lb
Mulching						0.3	Ton
Type 1 Turf Reinforcement Mat	126.6	226.7	813.3	226.7		1393.3	SqYd
12" Diameter Erosion Control Wattle				100	50	150	Ft
Shaping for Erosion Control Blanket	95	85	610	170		960	Ft

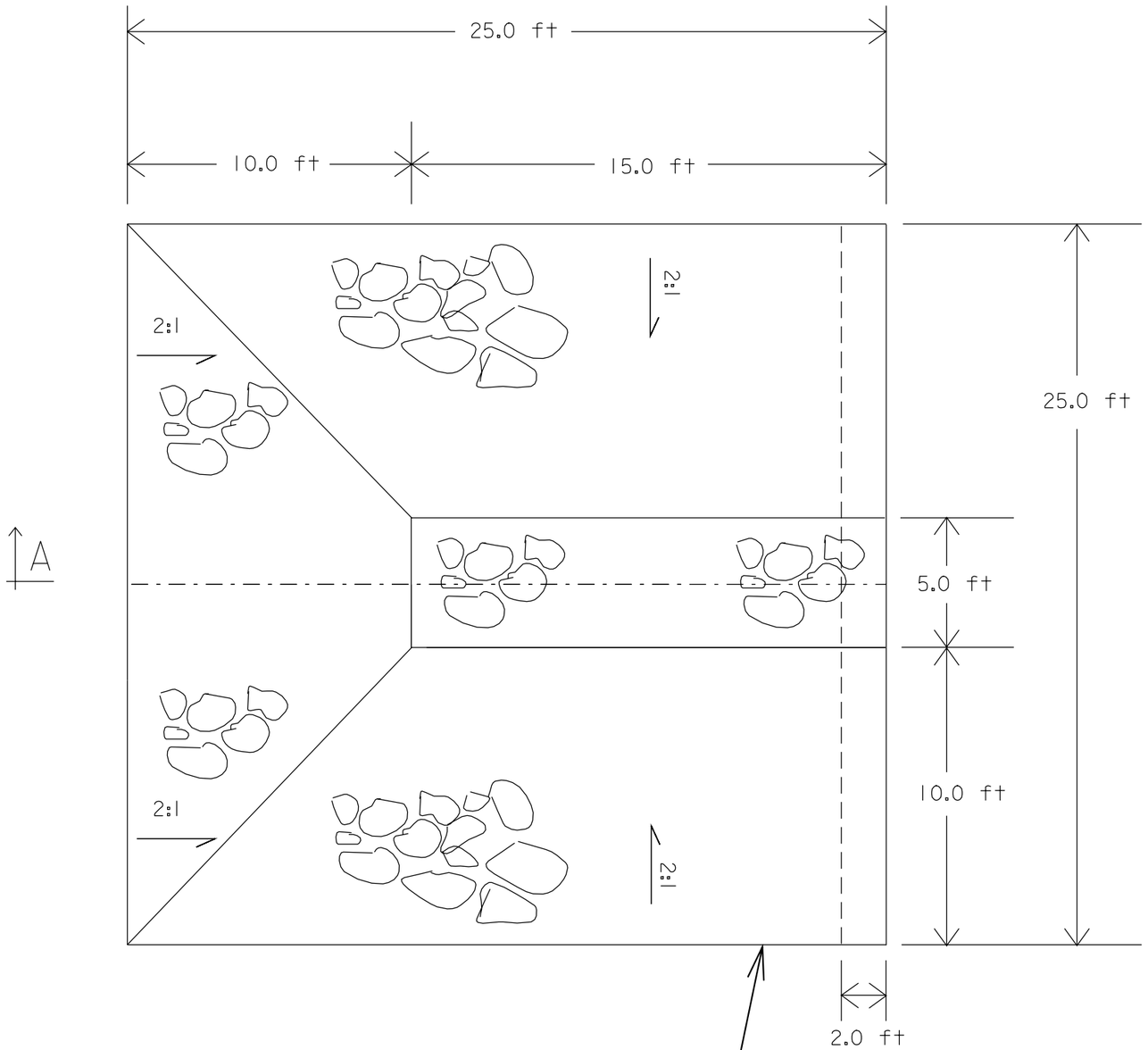
Installation Quantity by Location (MRM)	SD49		
Bid Item Description	**33.5**	**Quantity**	**Unit**
Mobilization		0.20	LS
Contractor Furnished Borrow	20	20	CuYd
84" CMP Flared End, Furnish	1	1	Each
84" CMP Flared End, Install	1	1	Each
Flagging		20	Hour
Traffic Control		112	Unit
Traffic Control, Miscellaneous		0.10	LS
Class B Riprap	31.1	31.1	Ton
Type F Permanent Seed Mixture	1	1	Lb
Mulching	0.1	0.1	Ton
12" Diameter Erosion Control Wattle	100	100	Ft
Type B Drainage Fabric	47	47	SqYd

Installation Quantity by Location (MRM)	US18		
Bid Item Description	**148.8**	**Quantity**	**Unit**
Mobilization	0.20	0.20	LS
Reprofiling Ditch	13.0	13.0	Sta
Incidental Work	0.50	0.50	LS
Flagging		20	Hour
Traffic Control	114	114	Unit
Traffic Control, Miscellaneous	0.20	0.20	LS
Type F Permanent Seed Mixture	8	8	Lb
Mulching	0.6	0.6	Ton
Type 1 Turf Reinforcement Mat	21.3	21.3	SqYd
12" Diameter Erosion Control Wattle	200	200	Ft
Shaping for Erosion Control Blanket	16	16	Ft

STATE OF SD	PROJECT	SHEET NO.	TOTAL SHEETS
	044-392, +...	13	20

INSLOPE RESTORATION & RIPRAP

Plan View



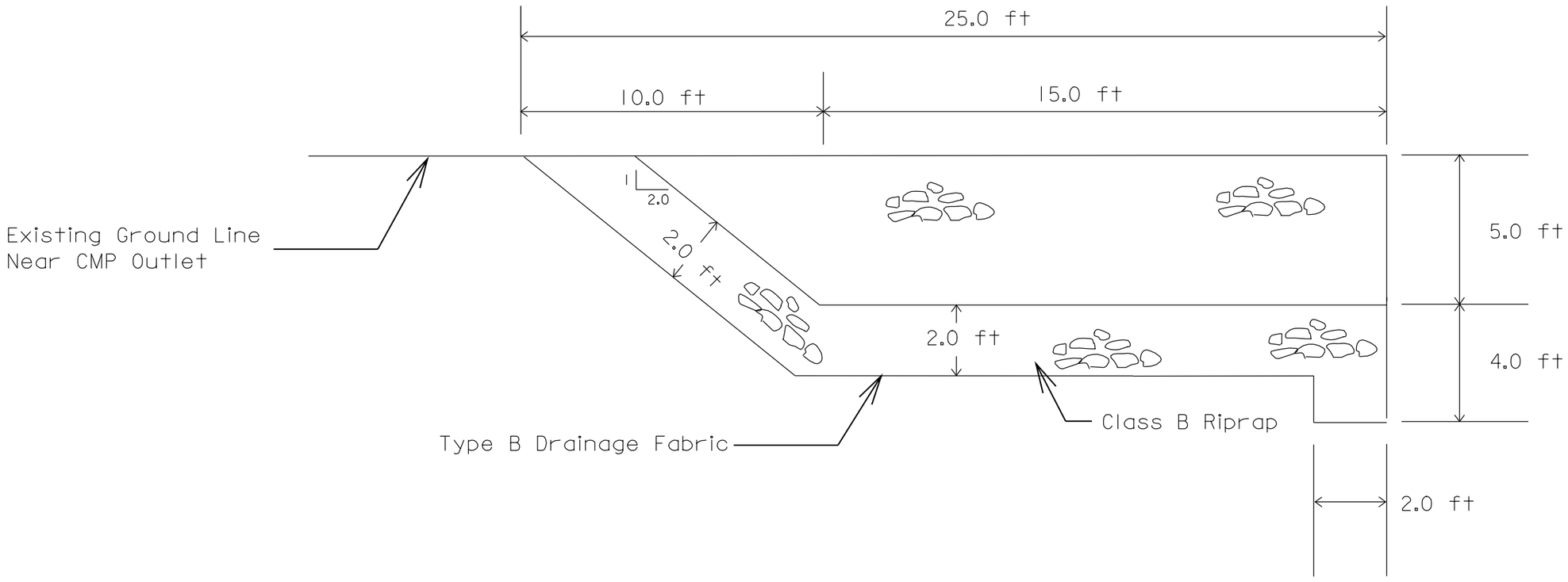
NOTE: SD44 MRM 174.4 Right Ditch

This sheet to be used in conjuction with Sheet 14

STATE OF SD	PROJECT	SHEET NO.	TOTAL SHEETS
	044-392, +...	14	20

INSLOPE RESTORATION & RIPRAP

Typical Section

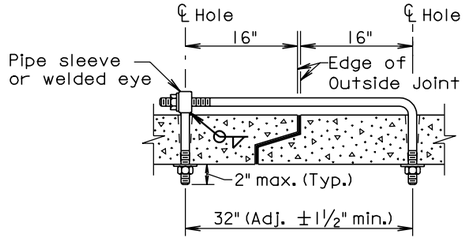


SEC. A-A

NOTE: SD44 MRM 174.4 Right Ditch

STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
SD	044-392, +…	15	20

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	4	17	68
W8-6	48" x 48"	TRUCK CROSSING	2	34	68
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	6	34	204
W20-4	48" x 48"	ONE LANE ROAD #### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
W21-3	48" x 48"	ROAD MACHINERY AHEAD	2	34	68
W21-5	48" x 48"	SHOULDER WORK	4	34	136
			TOTAL UNITS		**680**

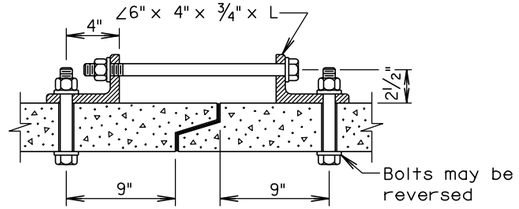


ADJUSTABLE EYE BOLT TIE

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.

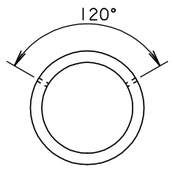


ANGLE AND BOLT TIE

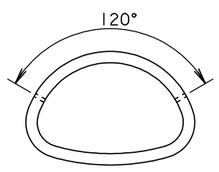
GENERAL NOTES:

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.

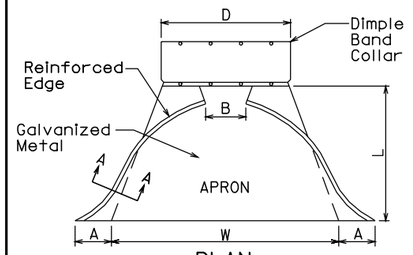
The cost of the Tie Bolts shall be incidental to the contract unit price per Foot for the corresponding Bid Item for R.C.P. and/or R.C.P. Arch.

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.

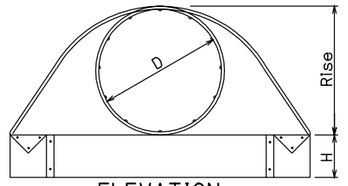
March 31, 2000

Published Date: 1st Qtr. 2011	SDDOT	TIE BOLTS FOR R.C.P. END SECTIONS	PLATE NUMBER 450.18
			Sheet 1 of 1

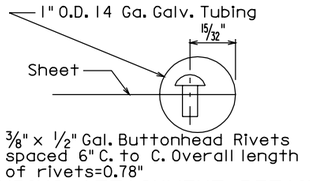
Alternate Type Connector Sections may be used with approval of the Engineer.



PLAN



ELEVATION

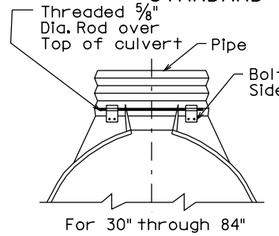


⅜" x ½" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

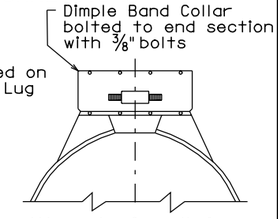
TUBING ATTACHMENT DETAILS

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

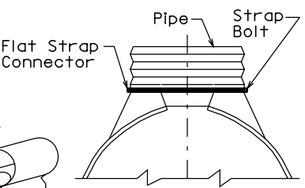


For 30" through 84"

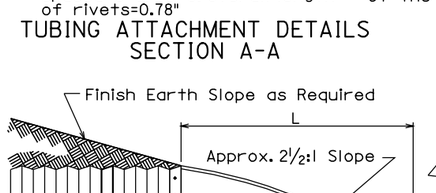


Alternate for all sizes

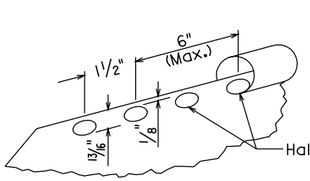
NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



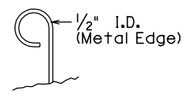
For 12" through 24" only



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.

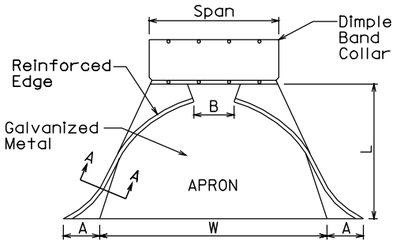
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x ¼" for 60" through 72" diameters and 2½" x 2½" x¼" for 78" and 84" diameters. The angles shall be attached by ⅜" diameter galvanized nuts and bolts.

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.

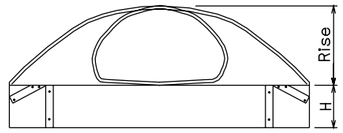
March 31, 2000

Published Date: 1st Qtr. 2011	SDDOT	C.M.P. FLARED ENDS	PLATE NUMBER 450.35
			Sheet 1 of 1

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



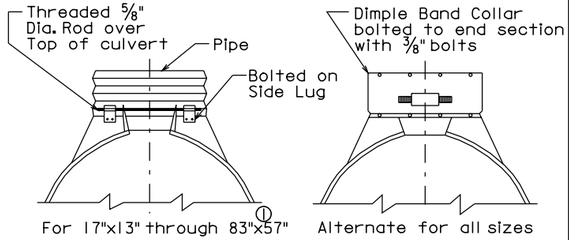
PLAN



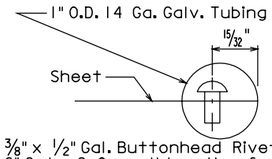
ELEVATION

Span x Rise (In.)x(In.)	Equiv. Dia. (In.)	Ga.	APPROX. DIMENSIONS (In.) A	B	H	L	W	Approx. Slope	Body
17x13	15	16	7	9	6	19	30	2½:1	1 Pc.
21x15	18	16	7	10	6	23	36	2½:1	1 Pc.
24x18	21	16	8	12	6	28	42	2½:1	1 Pc.
28x20	24	16	9	14	6	32	48	2½:1	1 Pc.
35x24	30	14	10	16	6	39	60	2½:1	1 Pc.
42x29	36	14	12	18	8	46	75	2½:1	1 Pc.
49x33	42	12	13	21	9	53	85	2½:1	2 Pc.
57x38	48	12	16	26	12	63	90	2½:1	2 Pc.
64x43	54	12	18	30	12	70	102	2¼:1	2 Pc.
71x47	60	12	18	33	12	77	114	2¼:1	3 Pc.
77x52	66	12	18	36	12	77	126	2:1	3 Pc.
83x57	72	12	18	39	12	77	133	2:1	3 Pc.

STANDARD CONNECTIONS



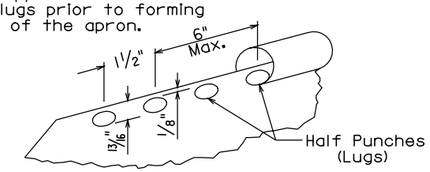
① For 17" through 28" span pipe-arches a flat strap connector may be used in place of the rod connection. Strap connector shall be 1" wide, 12 ga. strap with standard 6" long x ½" dia. bond bolt and nut.



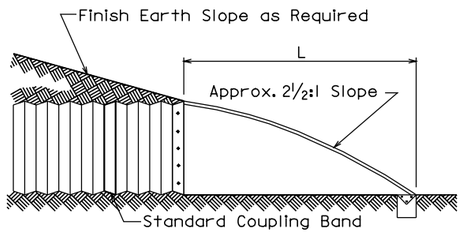
3/8" x ½" Gal. Buttonhead Rivets spaced 6" C. to C. Overall length of rivets=0.78"

TUBING ATTACHMENT DETAILS
SECTION A-A

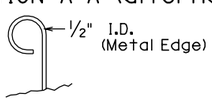
NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.



SECTION A-A (alternate)



TYPICAL CROSS-SECTION



SECTION A-A (alternate)

GENERAL NOTES:

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

For 77" x 52" and 83" x 57" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for both the 77" x 52" size and the 83" x 57" size. The angles shall be attached by 3/8" Dia. galvanized nuts and bolts.

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

March 31, 2000

Published Date: 1st Qtr. 2011	SDDOT	C.M.P. ARCH FLARED ENDS	PLATE NUMBER 450.36
			Sheet 1 of 1

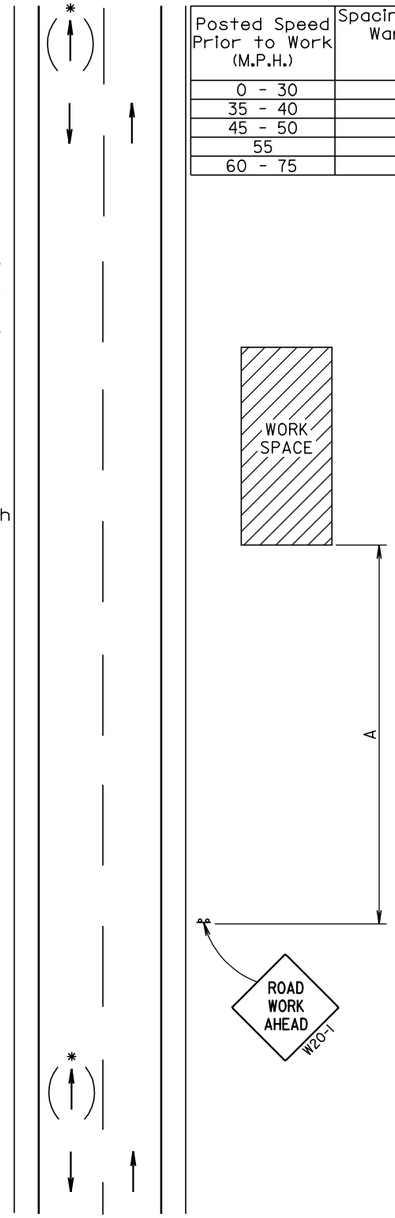
The signs illustrated are not required if the work space is behind a barrier, more than 2 feet behind the curb, or 15 feet or more from the edge of any roadway.

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: 1st Qtr. 2011	SDDOT	GUIDES FOR TRAFFIC CONTROL DEVICES WORK BEYOND THE SHOULDER	PLATE NUMBER 634.01
			Sheet 1 of 1

Username - trpr25289

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

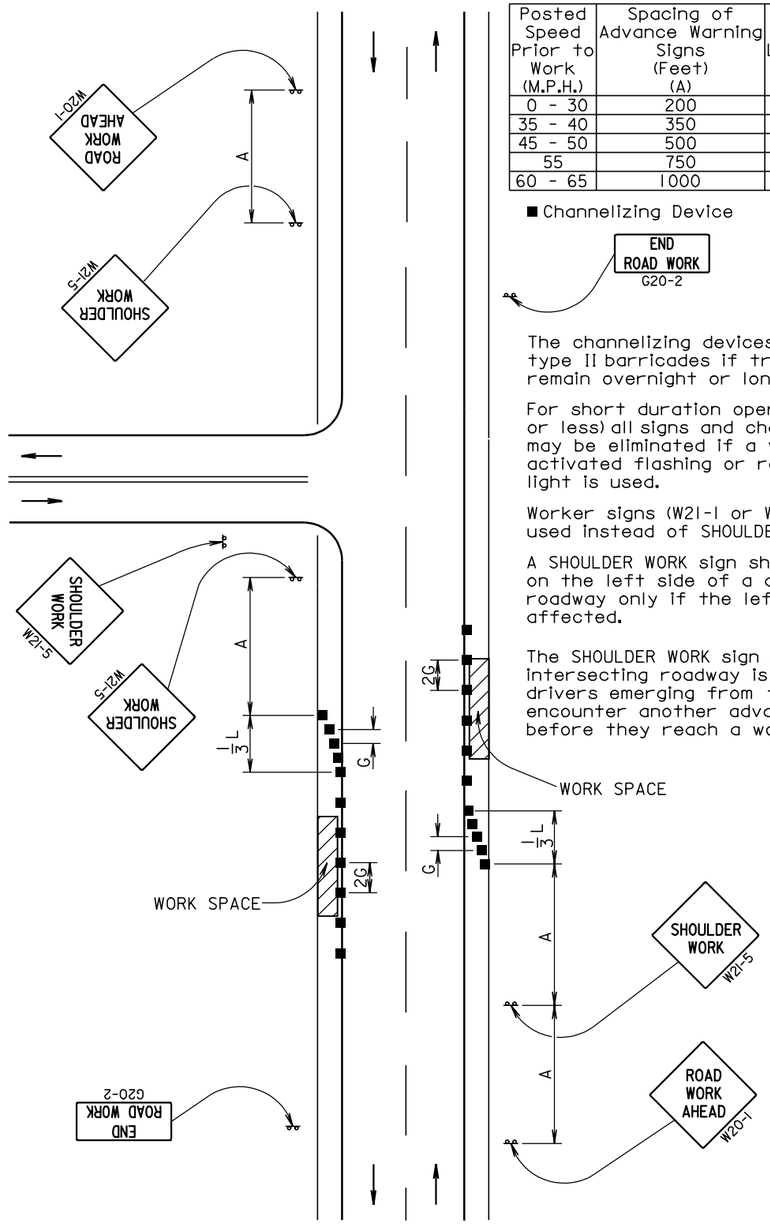
The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer.

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: 1st Qtr. 2011

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

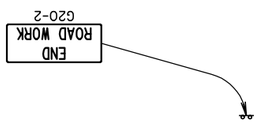
For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

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.

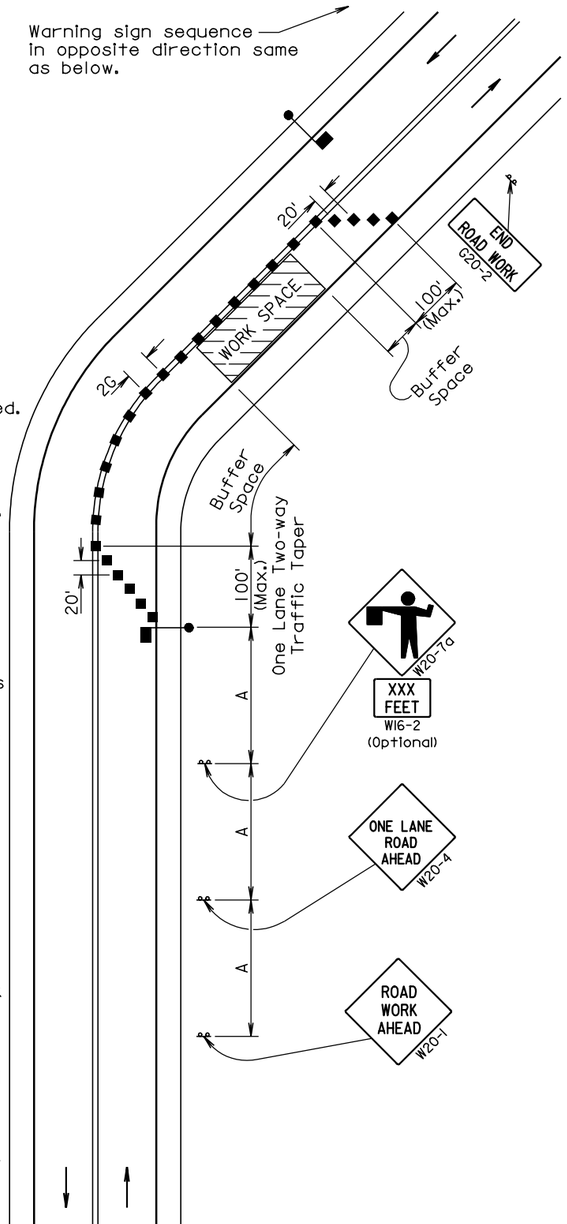
The channelizing devices shall be drums or type II barricades if traffic control must remain overnight or longer. During daylight hours, 42" cones may be used in lieu of drums or type II barricades along the centerline.



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

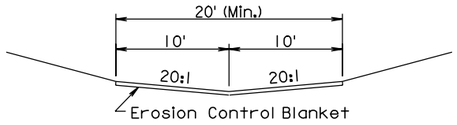
Published Date: 1st Qtr. 2011

SDDOT

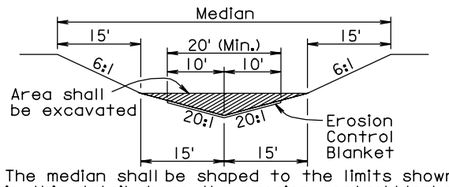
GUIDES FOR TRAFFIC CONTROL DEVICES
LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER 634.23

Sheet 1 of 1

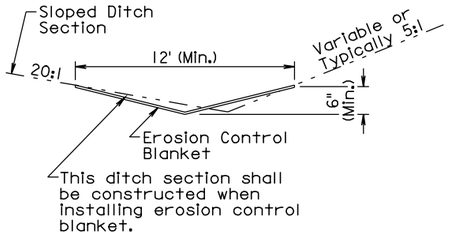


STANDARD DITCH SECTION

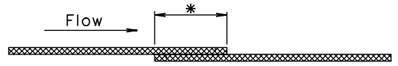


The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



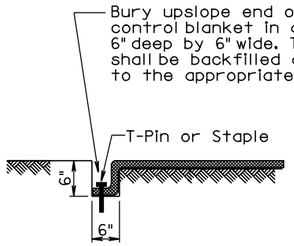
SLOPED DITCH SECTION



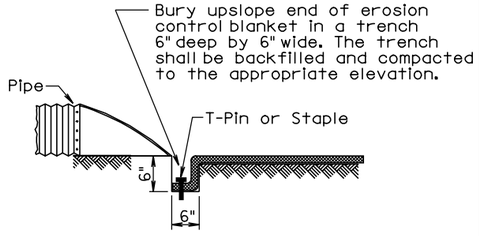
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

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

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

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

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

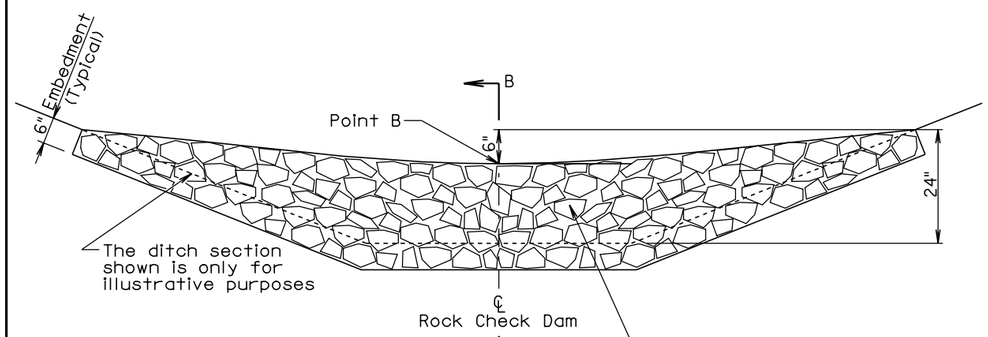
The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.

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

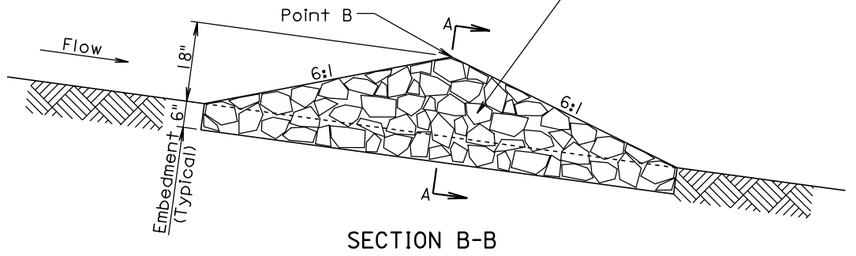
All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

December 23, 2004

Published Date: 1st Qtr. 2011	SDDOT	EROSION CONTROL BLANKET	PLATE NUMBER 734.01 Sheet 1 of 1

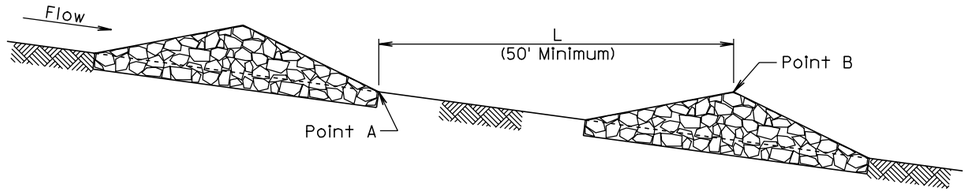


SECTION A-A



SECTION B-B

The rock shall be as specified in the plans.



SECTION ALONG CENTERLINE OF ROCK CHECK DAMS

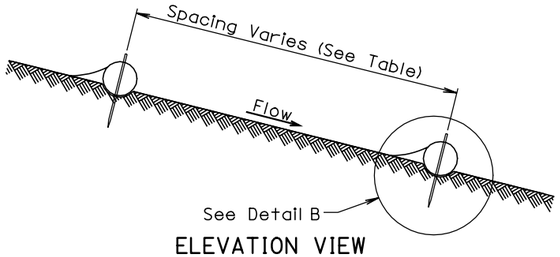
GENERAL NOTES:

The elevation of Point A and Point B shall be the same. The distance L is the distance required such that Point A and Point B are at the same elevation.

All costs for constructing the Rock Check Dam including labor, equipment, excavation, and rock shall be incidental to the contract unit price per cubic yard for "Rock Check Dam".

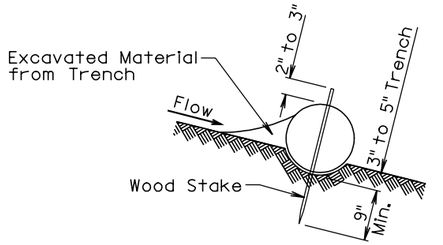
March 28, 2001

Published Date: 1st Qtr. 2011	SDDOT	ROCK CHECK DAM	PLATE NUMBER 734.03 Sheet 1 of 1

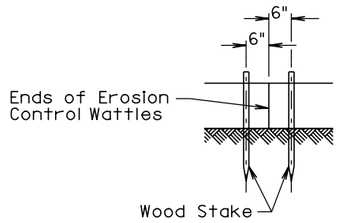


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

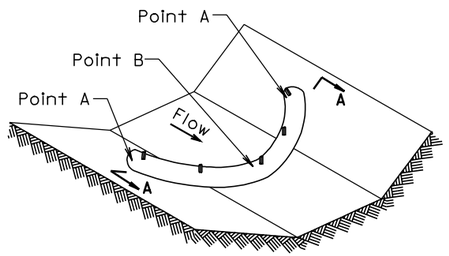
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



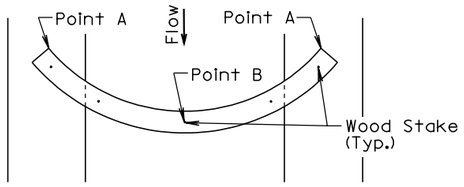
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

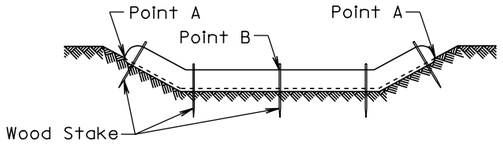


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

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



SECTION A-A

December 23, 2004

Published Date: 1st Qtr. 2011	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

December 23, 2004

Published Date: 1st Qtr. 2011	SDDOT	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2