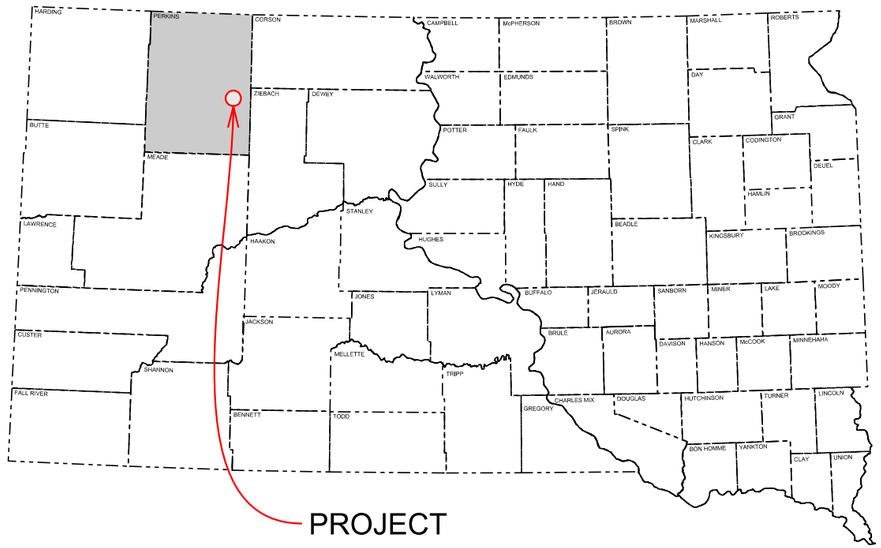


STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

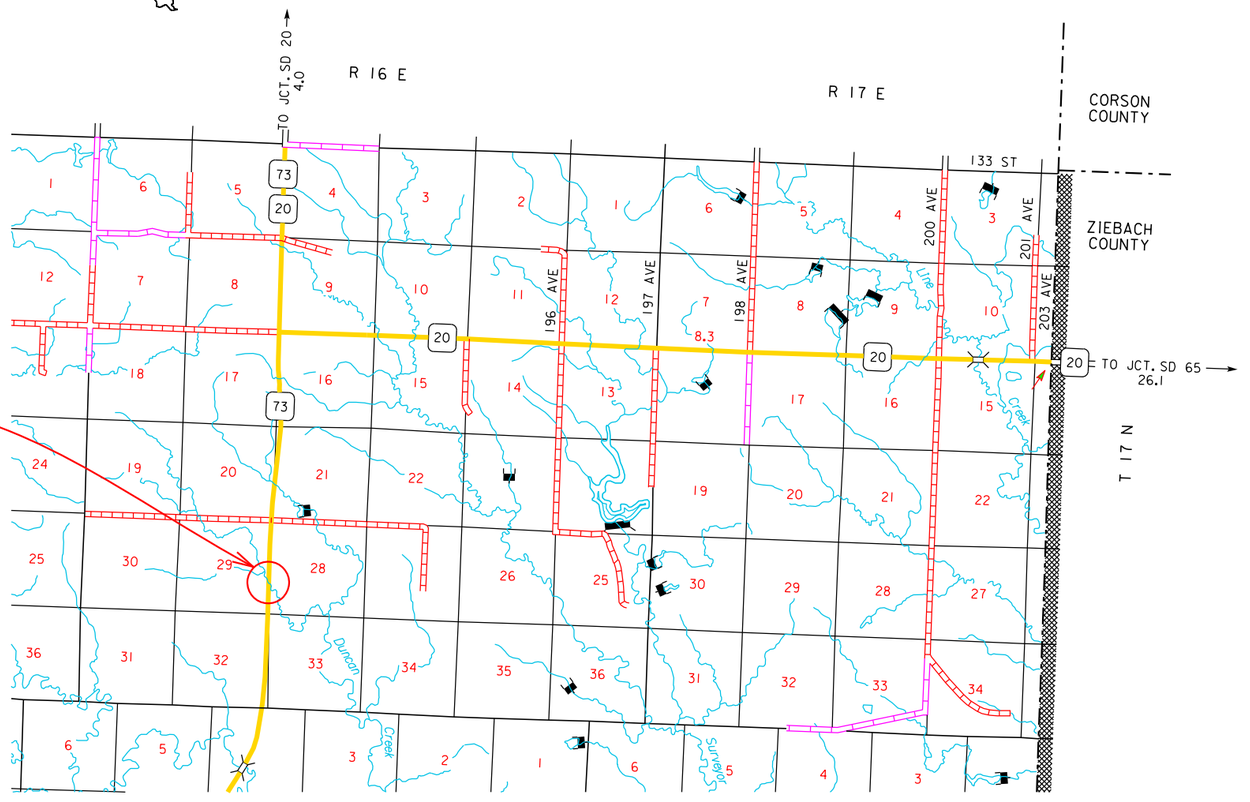
PROJECT 073-472
SD HIGHWAY 73
PERKINS COUNTY

PIPE REPAIR
PCN i3kn

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	1	20

Plotting Date: 07/01/2014

INDEX OF SHEETS



DESIGN DESIGNATION

ADT (2013)	396
ADT (2033)	500
DHV	85
D	51 %
T DHV	13.9 %
T ADT	30.6 %
V	65 MPH

STORM WATER PERMIT

Major Receiving
Body of Water: Tributary to Duncan Creek
Area Disturbed: 0.2 Ac
Total Project Area: 0.2 Ac
Approx. Begin Lat/Long: 45.393605,-102.169317

Plot Scale - 1:200
Plotted From - trrc11610
File - ...ttitle.dgn

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	2	20

ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E1700	Remove Silt Fence	50	Ft
110E7500	Remove Pipe for Reset	80	Ft
110E7510	Remove Pipe End Section for Reset	2	Each
120E0010	Unclassified Excavation	3,438	CuYd
230E0020	Placing Contractor Furnished Topsoil	100	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1030	Base Course, Salvaged	277.8	Ton
270E0110	Salvage and Stockpile Granular Material	277.8	Ton
420E0400	Structure Excavation, Miscellaneous	3	CuYd
421E0100	Pipe Culvert Undercut	130	CuYd
450E9000	Reset Pipe	80	Ft
450E9001	Reset Pipe End Section	2	Each
462E0100	Class M6 Concrete	5.0	CuYd
480E0100	Reinforcing Steel	696	Lb
632E2510	Type 2 Object Marker Back to Back	2	Each
634E0010	Flagging	40	Hour
634E0100	Traffic Control	1,660	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
700E0310	Class C Riprap	82.0	Ton
720E1015	Bank and Channel Protection Gabion	36.0	CuYd
734E0010	Erosion Control	Lump Sum	LS
734E0604	High Flow Silt Fence	200	Ft
734E0610	Mucking Silt Fence	14	CuYd
734E0620	Repair Silt Fence	50	Ft
734E5005	Dewatering	Lump Sum	LS
831E0110	Type B Drainage Fabric	78	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

An Environmental Commitment is a measure that SDDOT commits to implement in order to avoid, minimize, and/or mitigate a real or potential environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency mentioned below with permitting authority can influence a project if perceived environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office. The environmental commitments associated with this project are as follows:

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

The Contractor shall not withdraw water with equipment previously used outside the State of South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment before entering South Dakota to reduce the risk of invasive species introduction into the project vicinity.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site.

COMMITMENT H: WASTE DISPOSAL SITE

The Contractor shall furnish a site(s) for the disposal of construction and/or demolition debris generated by this project.

Action Taken/Required:

Construction and/or demolition debris may not be disposed of within the 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 Project 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 and/or 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 and/or 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.

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

The SDDOT has obtained concurrence with the State Historical Preservation Office (SHPO or THPO) for all work included within the project limits and all designated option borrow sites provided within the plans.

Action Taken/Required:

All earth disturbing activities not designated within the plans require review of cultural resources impacts. This work includes, but is not limited to: staging areas, borrow sites, waste disposal sites, and all material processing sites.

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

The Contractor shall provide ARC 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 artifacts have not been found on the site.

The Contractor shall submit the records search or cultural resources survey report and if the location of the site is within the current geographical or historic boundaries of any South Dakota reservation to SDDOT Environmental Engineer, 700 East Broadway Avenue, Pierre, SD 57501-2586 (605-773-3180). SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

If evidence for cultural resources is uncovered during project construction activities, then such activities shall cease and the Project Engineer shall be immediately notified. The Project Engineer will contact the SDDOT Environmental Engineer in order to determine an appropriate course of action.

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands, threatened and endangered species, or waterways. The Contractor shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting

COMMITMENT N: SECTION 404 PERMIT

The SDDOT has obtained a Section 404 Permit from the US Army Corps of Engineers for the permanent actions associated with this project.

Action Taken/Required:

The Contractor shall comply with all requirements contained in the Section 404 permit.

The Contractor shall also be responsible for obtaining a Section 404 permit for any dredge, excavation, or fill activities associated with staging areas, borrow sites, waste disposal sites, or material processing sites that affect wetlands or waters of the United States.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	4	20

WORK DISCRIPTION

Work on this project will proceed in accordance with the Sequence of Operations. Work will consist of the following:

1. Remove 120" RC Pipe for reset.
2. Undercut Pipe
3. Construct Inlet and Outlet Headwalls and reset 120" RC Pipe
4. Riprap & Bank and Channel Protection Gabions
5. Placing Base Course, Salvage

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 10 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 34 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

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

UTILITIES

The Contractor shall be responsible for locating and protecting any utility that would conflict with any work. 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.

The Contract shall be responsible for protecting the utility in the area of the Bank and Channel Protection Gabions installation area. Any damage done to a utility will be the Contractor's responsibility to repair.

SAWING EXISTING SURFACING

Where new asphalt concrete is placed adjacent to existing asphalt concrete the existing asphalt concrete (except cold milled areas) shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

TABLE OF ASPHALT CONCRETE PAVEMENT REMOVAL

Station	to	Station	Quantity (SqYd)
1436+09		1437+11	214.6
		Total:	214.6

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown in the plans. At those locations where material must be placed to achieve a required elevation, plans tonnages may be varied to achieve the required elevation.

TABLE OF UNCLASSIFIED EXCAVATION

Exc. for Deep Pipe Removal	3438
Total	3438

Plan quantities shall be used for final payment for the Unclassified Excavation quantity.

EXCAVATION FOR DEEP PIPE REMOVAL

Included in the quantity of "Unclassified Excavation" are 1534 cubic yards of excavation for removal of deep pipes. Deep pipes are existing mainline pipes at depths of 10 feet or greater (measured from the flow line to the lowest elevation of either the existing ground line, undercut line, or bottom of removed or salvaged surfacing).

All work necessary to excavate and backfill the deep pipes including labor, equipment, and incidentals shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation". Payment for deep pipe excavation shall be based only on plans quantity and measurement of these excavation quantities during construction shall not be performed.

The quantities computed for excavation of the deep pipes are based on the limits shown in the drawing below. The drawing shows a box culvert for illustration purposes only; the limits are similar for a pipe.

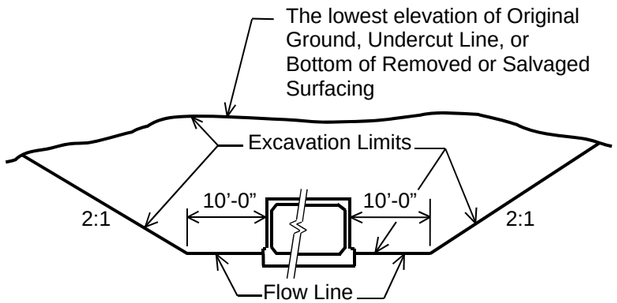


TABLE OF EXCAVATION FOR DEEP PIPE REMOVAL

Station	Type	Quantity (CuYd)
1436+60	Pipe	3438
	Total:	3438

TABLE OF PIPE CULVERT

	Reinforced Concrete Circular 120"			
Station	Remove Pipe for Reset Ft	Reset Pipe Ft	Remove Pipe End Section for Reset Each	Reset End Section Each
1436+60	80	80	2	2
Total:	80	80	2	2

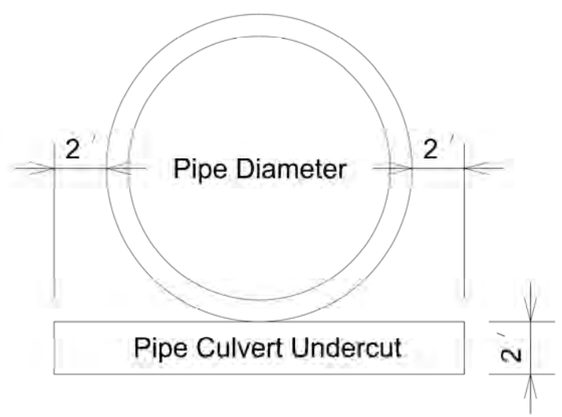
TABLE OF PIPE CULVERT UNDERCUT

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 depth of undercut is an estimate and the actual depth necessary shall be determined during construction. Pipe culvert undercut shall be 2 feet below the bottom of the pipe. The undercut shall be backfilled with the Box Culvert Undercut Backfill in accordance with the Standard Specifications (Section 421).

Station	Undercut Depth (Ft)	Quantity (CuYd)
1436+60	2	130.0
	Total:	130.0

The table contains the rate of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the drawing below and conforms to the Standard Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

Pipe Diameter (In)	Round Pipe Undercut Rate for 1' Depth (CuYd/Ft)
120	1.16



RESET PIPE & RESET PIPE END SECTION

The Contractor shall reset the pipe in accordance with Standard Specifications (Section 450 Concrete Culvert Installation).

Where Tie Bolts are missing or to badly damaged to be reused the Contractor shall furnish new Tie Bolts. It is estimated there are 6 missing Tie Bolts. All cost for furnishing the Tie Bolts shall be incidental to Reset Pipe and Reset Pipe End Section.

All cost for resetting the 120" RC Pipe and Resetting the 120" Sectional Ends including, drainage fabric, construction adhesive, preformed mastic, and connection devices shall be incidental the contract unit price per foot for "Reset Pipe" and the contract unit price per each for "Reset Pipe End Section". Payment will also be full compensation for necessary bedding operations, cost of selecting and placing backfill, furnishing and installing required granular or other bedding materials, and labor, equipment and all incidentals required.

CONCRETE PIPE COLLARS

Where the existing pipe joint (male-female ends) are damaged the Contractor shall place a 2' wide by 6" thick M6 concrete collar around the outside of the connection and damaged area. The concrete collar shall be reinforced with 6x6 W2.9 x W2.9 wire mesh.

It is estimated at 40 Sq.Ft. of concrete pipe collars will be need for the repair areas the actual repair area necessary shall be determined during construction..

All costs for constructing the concrete collars including materials and labor shall be incidental to the contract unit price per foot for the corresponding pipe bid item.

TABLE OF BANK AND CHANNEL PROTECTION GABIONS

Station	L/R	Quantity (CuYd)
1436+60	R	36.0
	Total:	36.0

TABLE OF DRAINAGE FABRIC

Station	L/R	Type B Drainage Fabric (SqYd)	Class C RipRap (Ton)
1436+60	L	78	82
	Totals:	78	82

TEMPORARY WORKS

Temporary works may be necessary during the removal and installation of the pipe. No payment will be made for temporary works. All costs involved in designing, constructing, and removing temporary works shall be incidental to the other contract items.

DEWATERING

Dewatering will be necessary to create a dry work area to complete the pipe installation. All costs associated with Dewatering the work area shall be incidental to the contract unit price per Lump Sum for "Dewatering".

BASE COURSE, SALVAGED

Base Course, Salvaged shall be obtained from the material produced on this project and may be used without further testing.

All other requirements of the Standard Specifications for Base Course shall apply.

Water for compaction shall be incidental to contract unit price per ton for "Base Course, Salvaged". Compaction shall be to the satisfaction of the Engineer.

The contract unit price per ton for Base Course, Salvaged shall include loading, placing and compacting the salvaged material.

TABLE OF BASE COURSE, SALVAGED

Station	to	Station	Quantity (Ton)
1436+09		1437+11	277.8
			277.8

REMOVE AND REPLACE TOPSOIL

Prior to the culvert removal, a 4" depth of topsoil shall be salvaged and stockpiled. The stockpile location will be directed by the Engineer. Following completion of construction, topsoil shall be spread evenly over the disturbed areas.

All cost associated with removing and replacing the topsoil shall be incidental to the lump sum price for "Remove and Replace Topsoil".

PLACING CONTRACTOR FURNISHED TOPSOIL

It is anticipated that a larger volume of topsoil will be needed for the new grade than can be salvaged from the existing grade. The Contractor will be required to furnish and place 4 inches of topsoil on roadway inslopes and areas as determined by the Engineer during construction.

All costs to furnish and place the topsoil shall be incidental to the contract unit price per cubic yard for "Placing Contractor Furnished Topsoil".

EROSION CONTROL

The contract lump sum price for Erosion Control shall include all material, equipment, and labor necessary to seed, mycorrhizal inoculum, fertilizer and fiber mulch all areas disturbed by construction of this project. The Engineer, at the time of construction, shall determine limits of the Erosion Control work. The estimated area to be seeded is approximately 0.05 acre.

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum shall consist of mycorrhizal fungi spores and mycorrhizal fungi-infected root fragments in a solid carrier. The carrier may include organic materials, calcinated clay, or other materials consistent with application and good plant growth. The supplier shall provide certification of the fungal species claimed and the live propagule count. The inoculum shall include the following fungal species:

Glomus intraradices	25%
Glomus aggregatu	25%
Glomus mosseae	25%
Glomus etunicatum	25%

All seed shall be inoculated by the seed supplier with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract lump sum price for "Erosion Control".

The mycorrhizal inoculum shall be from the list below or an approved equal:

Product	Manufacturer
MycoApply	Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 http://www.mycorrhizae.com/

FERTILIZING

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer shall have a minimum guaranteed analysis of 4-6-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 3.2%, a minimum of 6% (P_2O_5) available phosphate, a minimum of 4% (K_2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer shall be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer shall have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer shall also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The all-natural slow release fertilizer shall be applied according to the manufacturer's application recommendations.

The application rate is 1,500 pounds per acre.

The all-natural slow release fertilizer shall be from the list below or an approved equal:

Product	Manufacturer
Sustane	Sustane Corporate Headquarters Cannon Falls, Minnesota Phone: 1-800-352-9245 http://www.sustane.com/

PERMANENT SEEDING

The areas to be seeded comprise of all newly graded areas within the project limits except for the top of roadways.

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.

The varieties listed for the seed mixture are preferred varieties. Native harvest seed will be allowed.

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 May; Winter Wheat: August through November		10
	Total:	26

FIBER MULCHING

Fiber mulch shall be applied in a separate operation following permanent seeding.

Fiber mulch shall be applied at the rate of 2000 pounds per acre.

The Contractor shall allow the fiber mulch to cure a minimum of 18 hours prior to watering or any storm event to ensure proper cohesion between the soil and fiber particles.

The fiber mulch provided shall be from the approved product list. The approved product list for fiber mulch may be viewed at the following internet site:

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

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

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

TABLE OF HIGH FLOW SILT FENCE

Station	L/R	Location	Quantity (Ft)
1436+60	L	Pipe Inlet	100
1436+60	R	Pipe Outlet	100
		Total:	0

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 all of the silt fence may be left on the project until vegetation is established.

SEQUENCE OF OPERATIONS

1. Set up traffic control using Detour Signing.
2. Remove pipe for reset.
3. Undercut pipe, reset RC pipe, and build embankment to an elevation to carry one lane of traffic over pipe.
4. Remove Detour signing.
5. Set up traffic control using Standard Plate 634.25.
6. Building embankment and place Base Course, Salvaged to an elevation to carry traffic by July 30, 2014.
7. Install End Sections, cutoff walls, riprap and gabions.
8. Place bump marker, Bump sign and Loose Gravel sign.
9. Remove traffic control.

TRAFFIC CONTROL – GENERAL NOTES

1. The Contractor will be allowed to close the road for 1 week. Pipe repair work shall be done with the road closed to traffic until the pipe is backfilled to an elevation that will allow one lane of traffic to cross over the pipe.

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

3. Unless otherwise stated in these plans, no work will be allowed during hours of darkness. Hours of darkness are defined as ½ hour after sunset until ½ hour before sunrise.

4. Storage of vehicles and equipment shall be as near the right-of-way 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 of 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.

5. Existing guide, route, informational logo, regulatory, and warning signs shall be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including but not limited to, traffic signal heads, delineation, and signing shall be the responsibility of the Contractor. Non-applicable signing and all traffic control devices shall be covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 48 hours. The cost of removing or covering non-applicable signs shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

6. Construction signing mounted on portable supports shall not be used for a duration of more than 3 days, unless approved by the Engineer. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted, breakaway supports.

7. The quantity of traffic control units paid for will be for the greatest number of installations per sign in place at any one time regardless of the number of set-ups on the project.

8. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

9. All materials and equipment shall be stored a minimum distance of 30' from the traveled way during nonworking hours.

10. The Contractor shall provide documentation that all breakaway sign supports comply with FHWA NCHRP 350 or MASH crash-worthy requirements. The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

11. The Contractor shall be required to have a person available 24 hour/day, 7 days/week to maintain traffic control devices. The name and cellular telephone number of this individual shall be given to the Engineer at the preconstruction meeting.

12. The Contractor or designated traffic control subcontractor shall make night inspections at the initial set up of traffic control and every week thereafter to ensure the adequacy, legibility and reflectivity of each sign and device. A written summary of each inspection shall be given to the Engineer within 24 hours after completion of the inspection. The cost for the nighttime inspection work shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

13. Vehicles working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions. The amber light shall be mounted on the uppermost part of the Contractor's vehicle. Lights must have peak intensity within the range of 40 to 400 candelas and must flash at 75 ± 15 flashes per minute. Vehicle flasher/hazard lights are not acceptable. All haul trucks shall be equipped with a second flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights shall be incidental to the various related contract bid items.

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

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

16. Temporary Road Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers and shifts will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

17. Drums are required in all lane closure tapers.

18. If inappropriate/conflicting pavement markings exist, the markings shall be removed and replaced with applicable temporary pavement markings when the work duration is more than 3 days. When the work duration is less than 3 days, the channelizing devices in the area where the pavement markings conflict shall be placed at a spacing of ½ G. Pavement marking removals shall be paid for at the contract unit price for Remove Pavement Marking, 4" or equivalent. Temporary pavement marking shall be paid for at the contract unit bid price for Temporary Pavement Marking. The additional channelizing devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

19. Bump Signs (W8-1, black on orange) with appropriate Advisory Speed Plaque (W13-1P, black on orange) shall be placed 500' in advance of the bump or as approved by the Engineer for adequate sight distance. Type I Object Markers (orange - 18"x18") shall be placed at the bump location.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	8	20

BUMP MARKERS

Bump markers shall be placed adjacent to the bump location.

After placing the bump markers, “Bump” warning signs with the appropriate speed advisory plates shall be placed 500 feet to 750 feet in advance of the bump location in rural areas, or 250 feet to 500 feet in advance of the bump location in urban areas. These distances may be adjusted by the Engineer if local conditions do not allow the placement of warning signs within the specified areas.

The steel delineator post shall be 1.12 lb/ft flanged channel post for ground mounted installation. If the duration is less than 3 days, the Type 1 Object Marker can be installed on temporary supports.

Payment for bump markers shall be incidental to the contract lump sum price for “Traffic Control, Miscellaneous”.

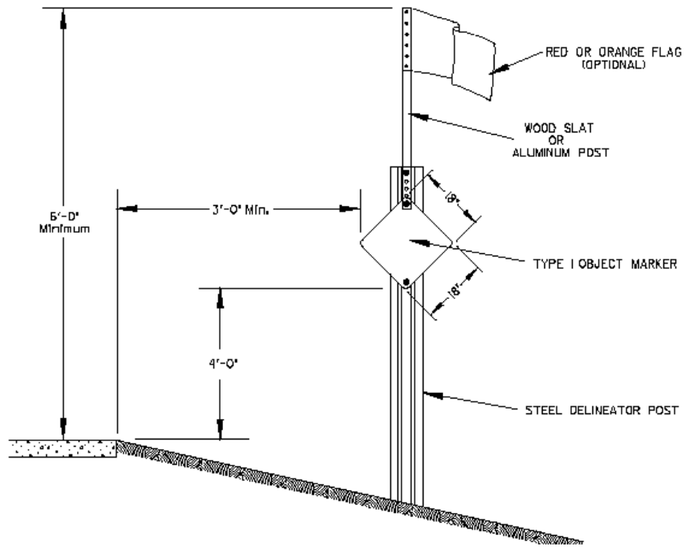


TABLE OF TRAFFIC CONTROL DEVICES

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	2	17	34
R1-1	30" x 30"	STOP	2	21	42
R11-2	48" x 30"	ROAD CLOSED	2	27	54
R11-3	60" x 30"	ROAD CLOSED ## MILES AHEAD LOCAL TRAFFIC ONLY	2	30	60
W1-2	48" x 48"	LEFT OR RIGHT CURVE ARROW	1	34	34
W3-1	48" x 48"	STOP AHEAD (SYMBOL)	2	34	68
W8-1	48" x 48"	BUMP	2	34	68
W8-7	48" x 48"	LOOSE GRAVEL	2	34	68
W13-1P	30" x 30"	ADVISORY SPEED PLATE	2	21	42
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	2	34	68
W20-3	48" x 48"	ROAD CLOSED #### 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
SPECIAL	96" x 84"	ROAD CLOSED USE ALT. ROUTE	6	87	522
SPECIAL		FLAGS	6	10	60
*****		TYPE III BARRICADE - 6 FT. DOUBLE SIDED	8	42	336
				TOTAL UNITS	**1660**

FLAGS

Flags shall be installed on traffic control signs as detailed in the plans and as directed by the Engineer. Payment for the flags shall be 10 traffic control units per each flag. Payment will be full compensation for all costs associated to furnish, install, maintain (including replacement as required by the Engineer at no cost to the Department), and remove flag.

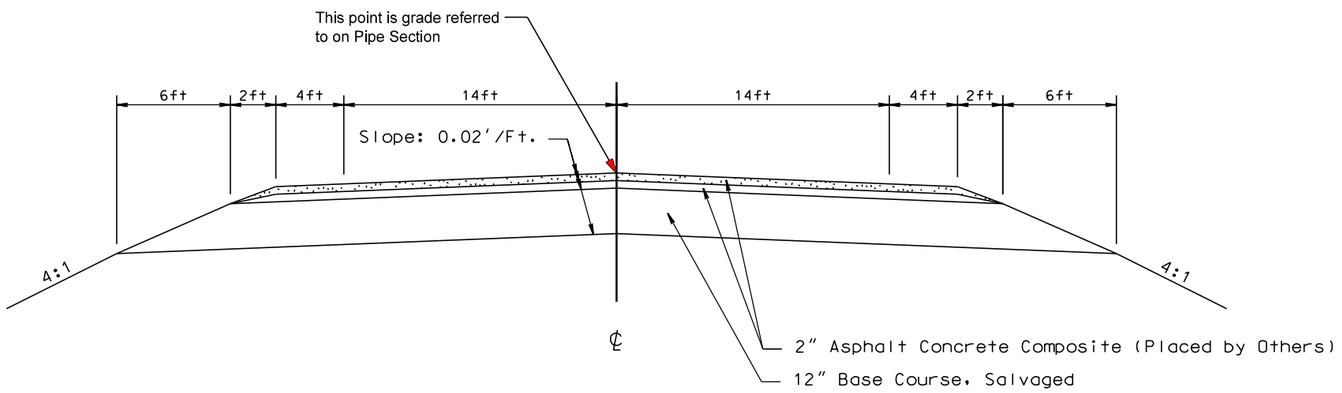
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	9	20

Plotting Date: 07/01/2014

TYPICAL SECTION

Pipe Removal Surfacing Typical

Sta. 1436+09 to Sta. 1437+11



Plot Scale - 1:8

Plotted From - trrc11610

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EXISTING TOPOGRAPHY SYMBOLOGY AND LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	10	20

Plotting Date: 07/01/2014

Plot Scale - 1:200

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Commercial Sign Double Face
- Commercial Sign One Post
- Commercial Sign Overhead
- Commercial Sign Two Post
- Concrete Symbol
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Deck Edge
- Ditch Block
- Doorway Threshold
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Elec. Trans./Power Jct. Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Misc.
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Guide Sign One Post
- Guide Sign Two Post
- Gutter
- Guy Pole
- Haystack
- Hedge
- Highway R.O.W. Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Misc
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Misc. Line
- Misc. Property Corner
- Misc. Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad R.O.W. Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Regulatory Sign One Post
- Regulatory Sign Two Post
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Subsurface Utility Exploration Test Hole
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Warning Sign One Post
- Warning Sign Two Post
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner

- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Property Line
- Construction Line
- R. O. W. Line
- New R. O. W. Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)

Plotted From - trrc11610

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	11	20

Plotting Date: 07/01/2014

1436+60
Remove for Reset 80'-120"RCP
Remove for Reset 2 Sectional Ends

1436+60 (3.5 Sq Mi)
Reset 80'-120"RCP
Reset 2 Sectional Ends

1436+60 L
Install Headwall (Inlet)

1436+60 R
Install Headwall (Outlet)

1436+60 L
Install 10'(wide) x 36' x 3'(deep)
Class C Riprap Around Inlet
(82 tons)

1436+60 R
Install 18'x 18'x 3' Gabions
(36.0 CuYd)

1436+60 L
Install Type B Drainage Fabric
(78.0 SqYd)

Sec. 32 - T17N - R16E

Sec. 29 - T17N - R16E

PI 1418+94.93
Del 0°02'34" L

1418+94.93

33'
33'

Storm's. Inc.
the SE1/4 of Section 29 - Township 17 North -
Range 16 East of the B.H.M.

1436+45
47.65' & 78'

1436+76
47.68' & 78'

Present SD Hwy 73

N1°28'35"E Section Line

100'

1410+00
1415+00
1420+00
1425+00
1430+00
1435+00
1440+00

T/F

3/1

Section Line

33'
33'

1436+45
52.35' & 82'

1436+76
52.32' & 82'

Sec. 33 - T17N - R16E

David Lensegrav & Rhonda Lensegrav
the SW1/4 of Section 28 - Township 17 North -
Range 16 East of the B.H.M.

Sec. 28 - T17N - R16E

Plot Scale - 1:200

Plotted From - trc11610

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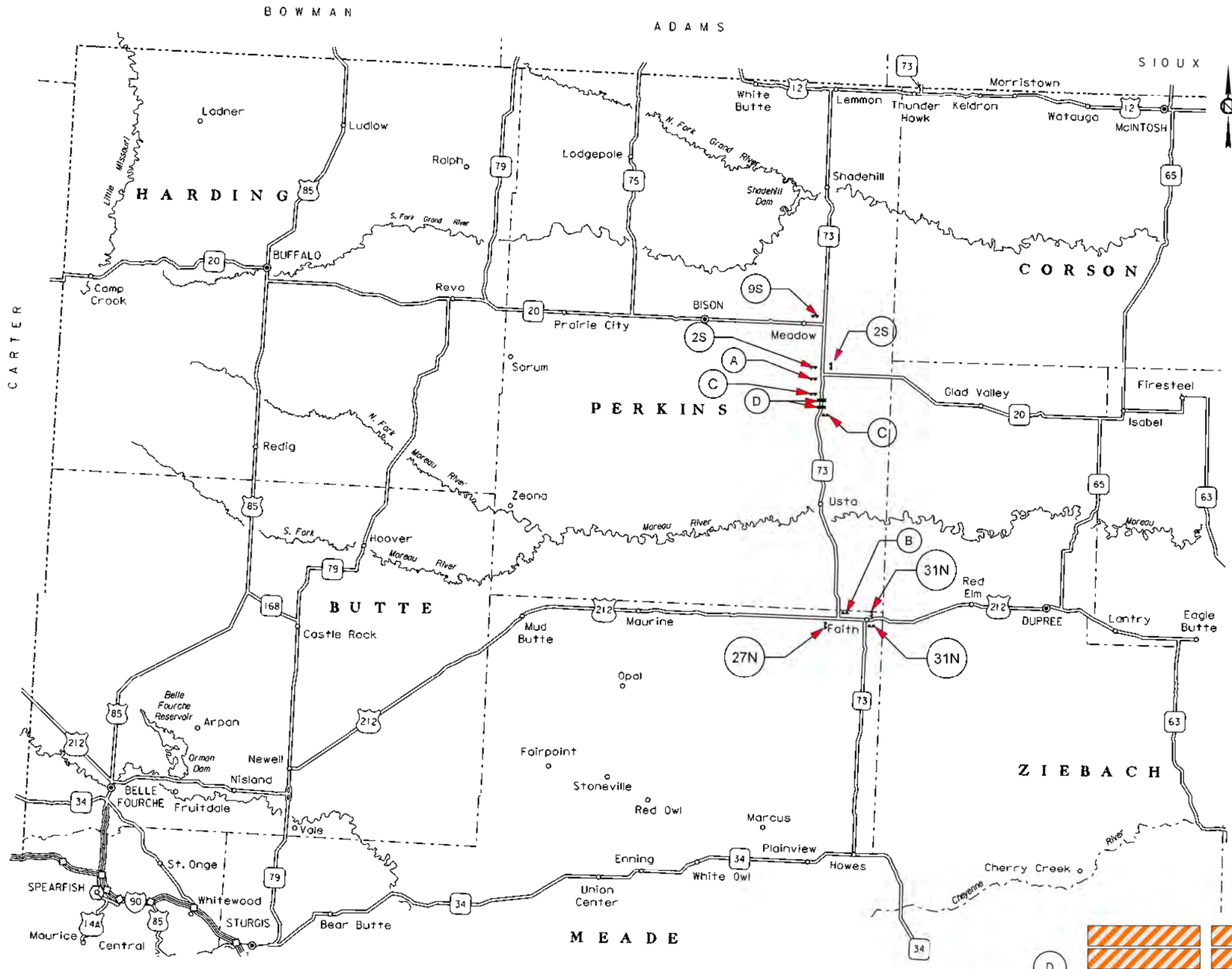
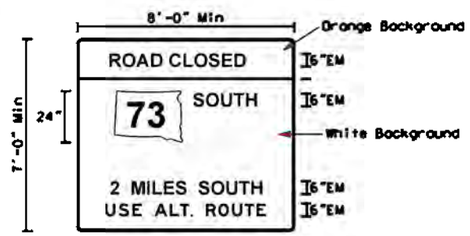
DETOUR SIGNING

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	073-472	12	20

Plotting Date: 07/01/2014

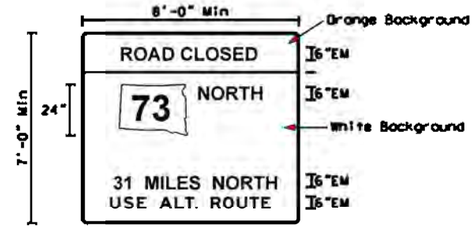




XXS

(XXS = Miles South)

A

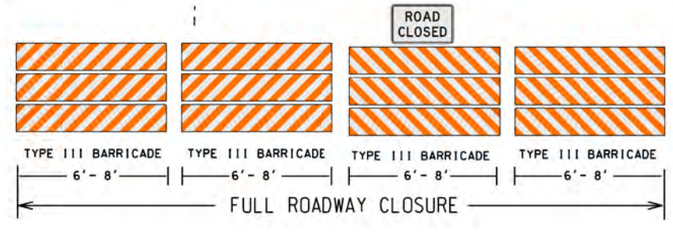


XXN

(XXN = Miles North)

B

C



D

Plot Scale - 1:200

Plotted From - trc11610

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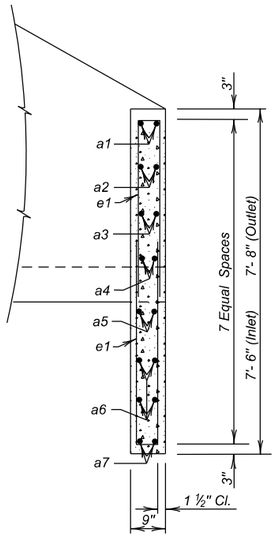
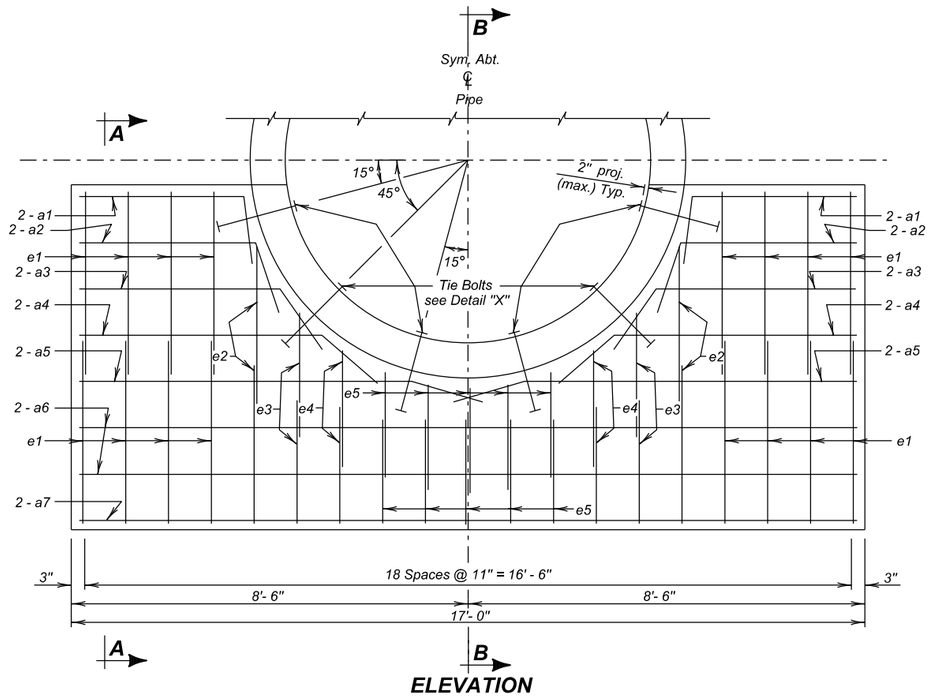
STATE OF	PROJECT	SHEET NO.	TOTAL SHEETS
S.D.	073-472	13	20



SEC. A - A

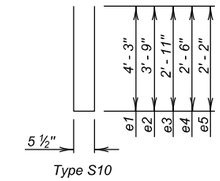


ELEVATION

REINFORCING SCHEDULE
(For One Inlet or One Outlet Headwall)

Mk.	No.	Size	Length	Type
✳ a1	4	5	4' - 9"	Str.
✳ a2	4	4	4' - 9"	Str.
✳ a3	4	4	5' - 6"	Str.
✳ a4	4	4	6' - 6"	Str.
✳ a5	4	4	8' - 6"	Str.
a6	4	4	16' - 9"	Str.
a7	2	5	16' - 9"	Str.
e1	16	4	9' - 0"	S10
e2	4	4	8' - 0"	S10
e3	4	4	6' - 3"	S10
e4	4	4	5' - 6"	S10
e5	10	4	4' - 9"	S10

Bending Details



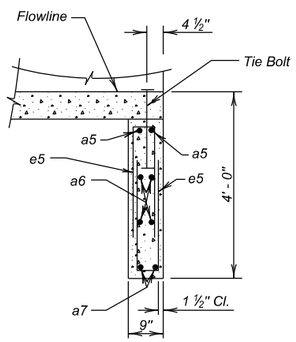
NOTE: All dimensions are out to out of bars.
✳ Bend in field as necessary to fit.

SPECIFICATIONS -

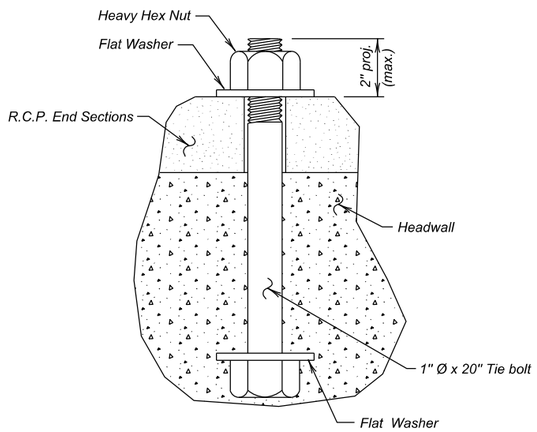
1. Construction Specifications: South Dakota Standard Specifications for Roads and Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and Special Provisions as included in the Proposal.

GENERAL NOTES -

1. Concrete shall be Class M6 in conformance with Section 462.
2. Reinforcing Steel shall conform to ASTM A615 Grade 60.
3. Use 1 ½" clear cover on all reinforcing steel except as shown.
4. All exposed edges shall be chamfered ¾".
5. Tie Bolts shall be 1" Ø x 20" A307 bolts with heavy hex nuts and 2 washers. Bolts, nuts and washers shall be galvanized in accordance with ASTM A153 and ASTM F2329 as applicable. Six bolts, or equivalent as approved by the Engineer, are required for each headwall. Embed bolts in concrete headwall as detailed.
6. Provide 1 ¼" Ø holes in RCP Sectional Ends for tie bolts. Sleeves, if used, shall be made of a corrosion resistant material.
7. Headwall dimensions and quantities shown are based on S. D. Standard Plate No. 450.16. For RCP Sectional Ends with differing dimensions, adjust headwall as required and submit revised details to the Office of Bridge Design, thru proper channels, for approval. Minimum headwall depth below Flowline is 4' - 0". Payment will be for plans quantities unless changes are ordered by the Engineer.
8. All costs for furnishing and installing the galvanized Tie Bolts and associated hardware shall be incidental to the other contract items.



SEC. B - B



DETAIL "X"

INFORMATIONAL QUANTITIES
(for one headwall)

ITEM	Class M6 Concrete	Reinforcing Steel	★ Structure Excavation, Misc.
UNIT	Cu. Yd.	Lb.	Cu. Yd.
96" R.C.P. (Inlet)	2.7	348	1.5
96" R.C.P. (Outlet)	2.7	348	1.5
108" R.C.P. (Inlet)	2.6	348	1.5
108" R.C.P. (Outlet)	2.6	348	1.5
120" R.C.P. (Inlet)	2.5	348	1.5
120" R.C.P. (Outlet)	2.5	348	1.5

★ Quantity based on neat line excavation to the dimensions of the headwall below the bottom of the pipe. Payment will be for plans quantity regardless of actual volume excavated.

STANDARD HEADWALL DETAILS
(WITH 4'- 0" CUTOFF WALL)
FOR
96" TO 120" R.C.P.
0° SKEW
S. D. DEPT. OF TRANSPORTATION
FEBRUARY 2010

PLANS BY :
OFFICE OF BRIDGE DESIGN, SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

DESIGNED BY	CK. DES. BY	DRAFTED BY	
		GW	Kevin N. Goeden BRIDGE ENGINEER

Published Date: 2nd Qtr. 2014

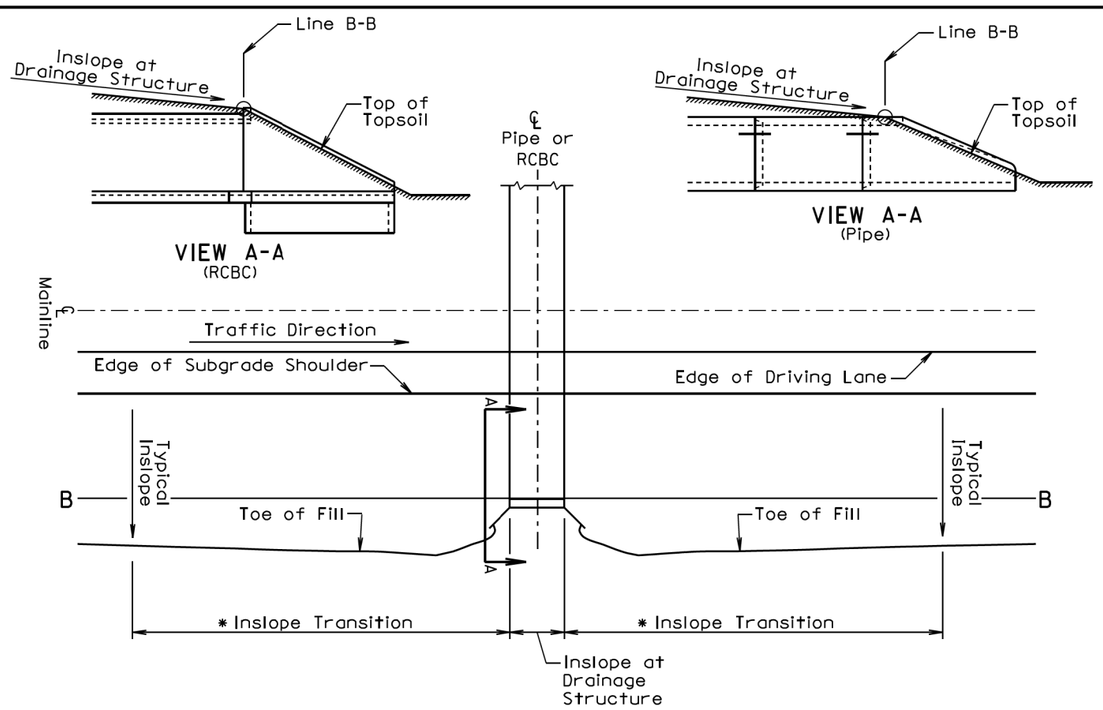
SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 1 of 2

February 14, 2011



TYPE 1 INSLOPE TRANSITION

GENERAL NOTES:

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

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

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

Published Date: 2nd Qtr. 2014

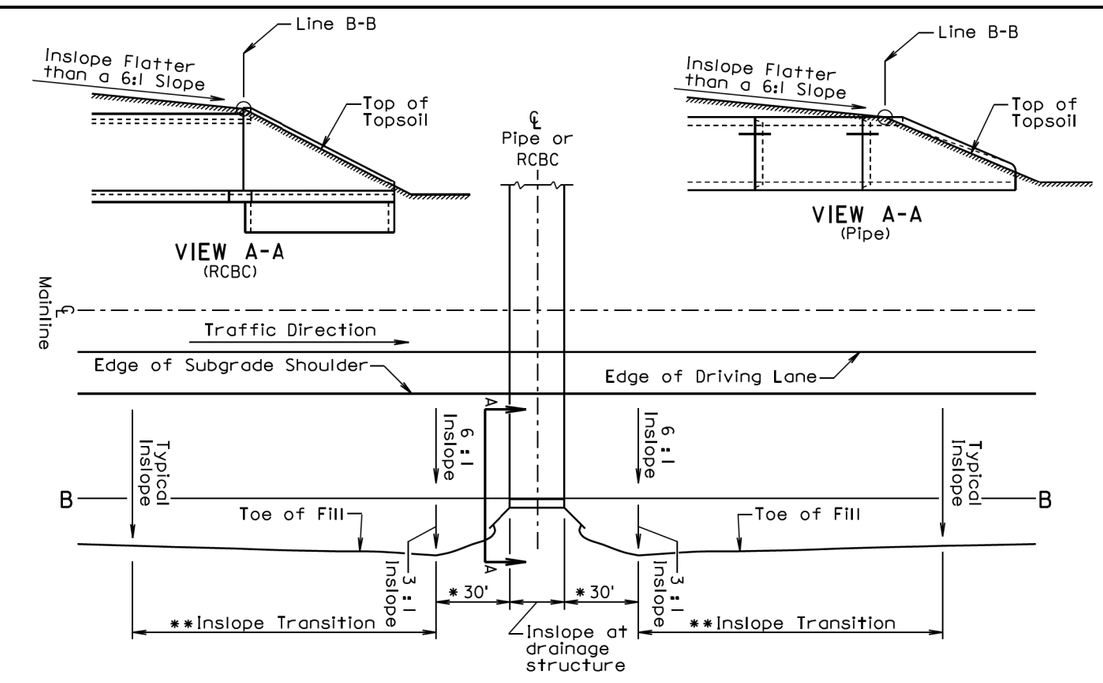
SDDOT

INSLOPE TRANSITIONS AT PIPE CULVERTS OR REINFORCED CONCRETE BOX CULVERTS

PLATE NUMBER 120.05

Sheet 2 of 2

February 14, 2011



TYPE 2 INSLOPE TRANSITION

GENERAL NOTES:

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

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

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

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

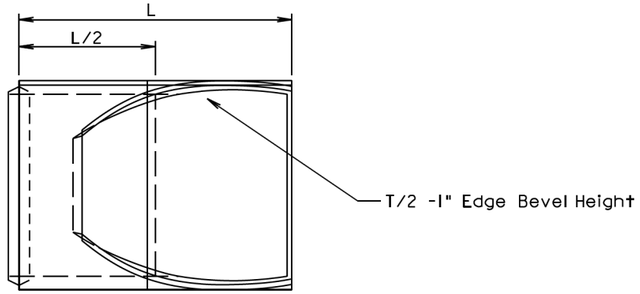
Plotting Date: 07/01/2014

STATE OF SOUTH DAKOTA

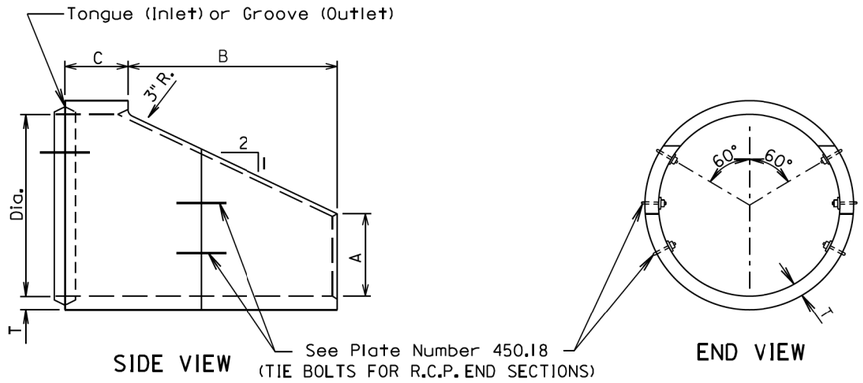
PROJECT 073-472

SHEET 14

TOTAL SHEETS 20



TOP VIEW



SIDE VIEW

END VIEW

Dia.	T	L	INLET END			OUTLET END		
			A	B	C	A	B	C
(in.)	(in.)	(ft.)	(in.)	(in.)	(in.)	(in.)	(in.)	(in.)
96	9	12	42	104	40	44	99	45
108	10	16	42	128	64	44	123	69
120	11	16	42	152	40	44	147	45

GENERAL NOTES:

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

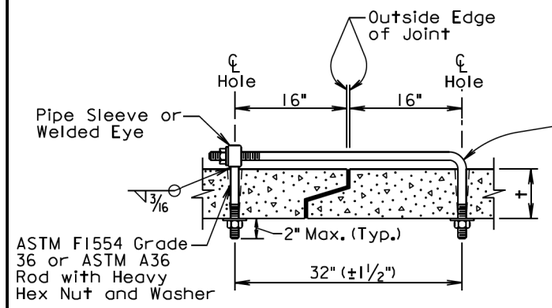
Reinforcement per Class 2 RCP with double reinforcement in the upper 120 degrees of the full barrel portion.

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

March 31, 2000

Published Date: 2nd Qtr. 2014	SDDOT	***R. C. P. SECTIONAL ENDS***	***PLATE NUMBER 450.16*** *Sheet 1 of 1*

Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3 1/4	5/8	3/4
3 1/2 - 6 1/2	3/4	1
≥ 7	1	1 1/4



ADJUSTABLE EYE BOLT TIE

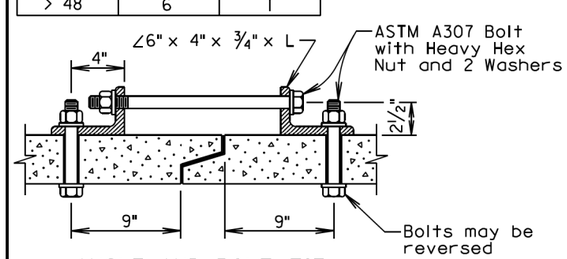
GENERAL NOTES:

Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.

Galvanize adjustible eye bolt tie assembly in accordance with ASTM A153.

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1



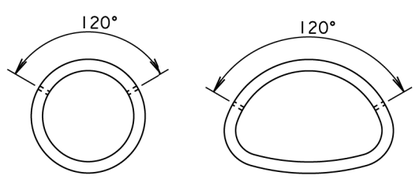
ANGLE AND BOLT TIE

GENERAL NOTES:

Angles shall conform to ASTM A36.

Bolts shall conform to ASTM A307. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.

Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.



END VIEW "CIRCULAR"

END VIEW "ARCH"

GENERAL NOTES:

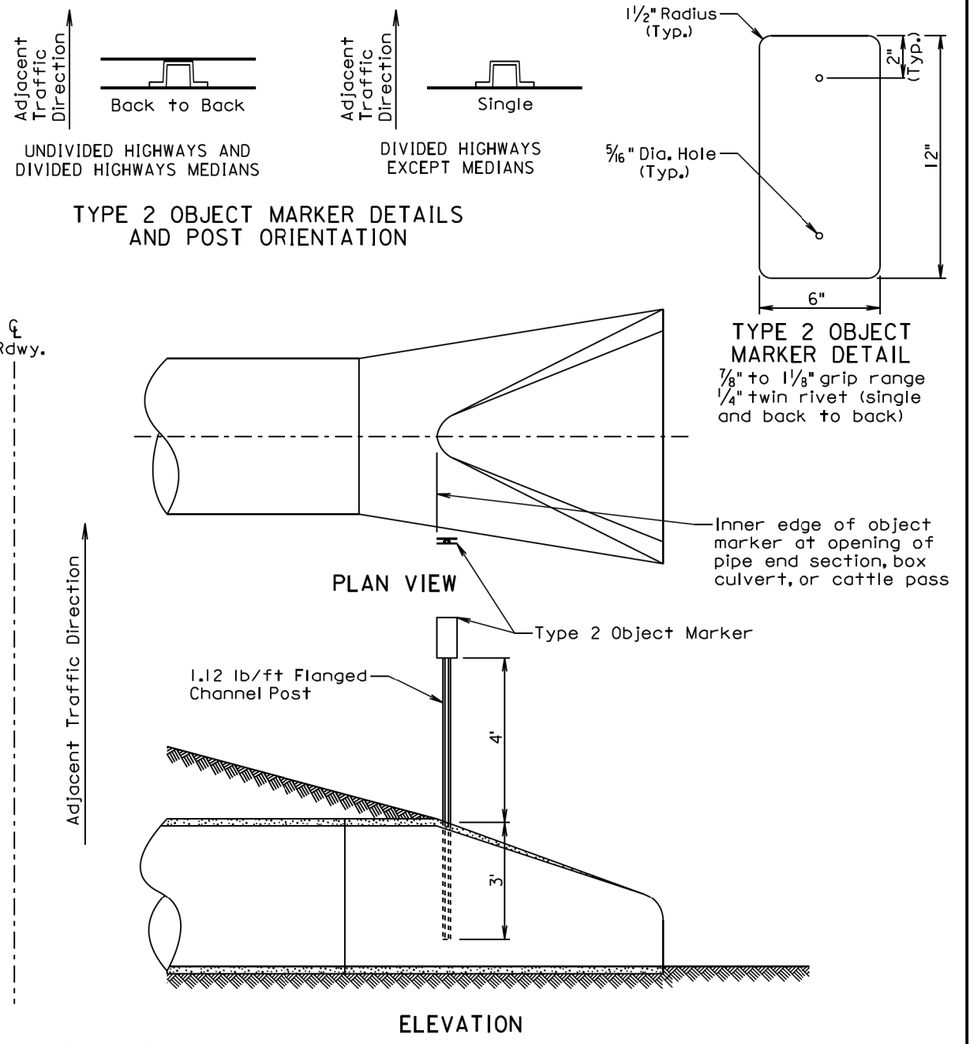
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch shall be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manhole, and junction boxes shall be tied with tie bolts.

There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts shall be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.

February 28, 2013

Published Date: 2nd Qtr. 2014	SDDOT	***TIE BOLTS FOR R.C.P. AND R.C.P. ARCH***	***PLATE NUMBER 450.18*** *Sheet 1 of 1*



GENERAL NOTES:

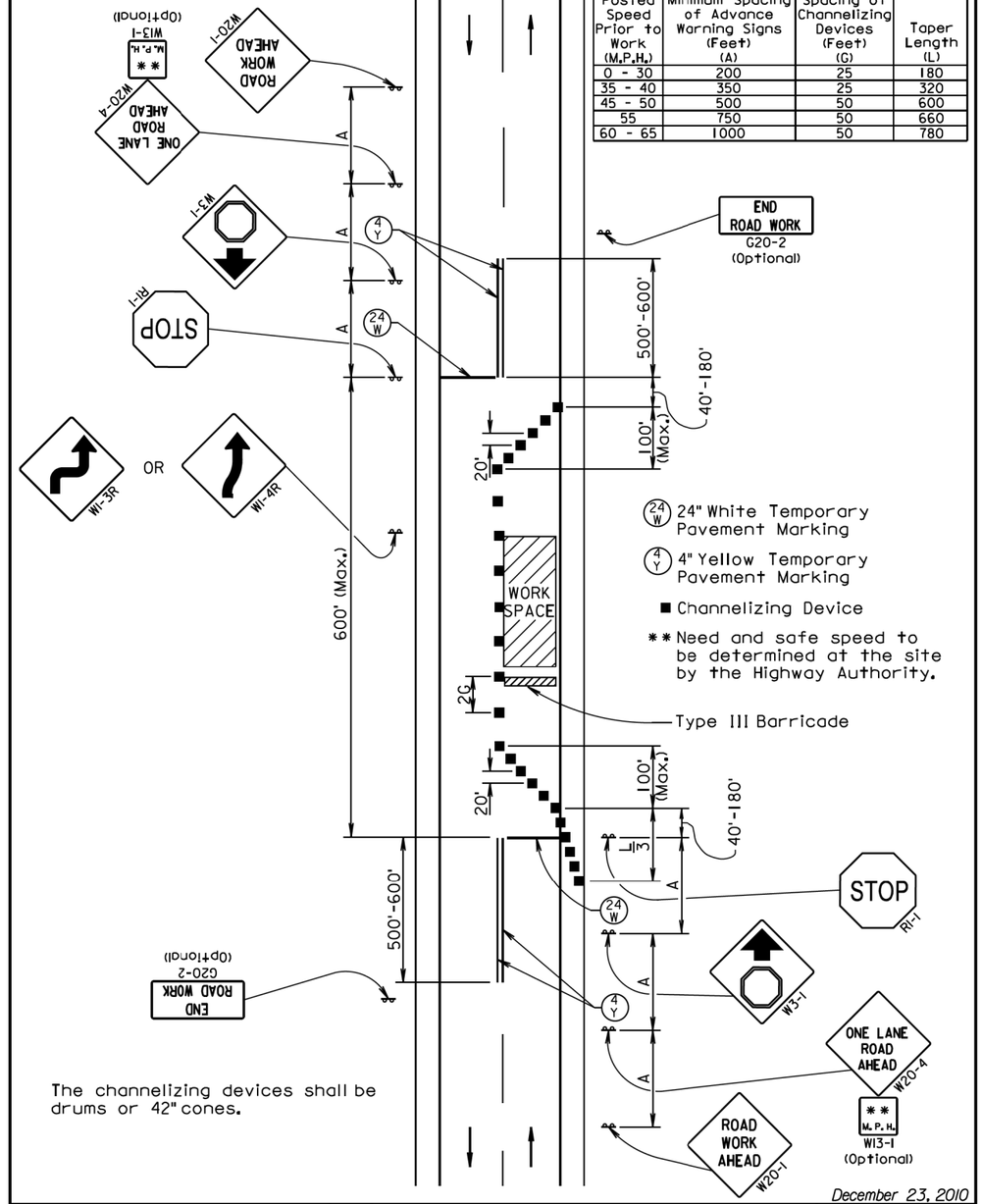
The type 2 object markers shall conform to Standard Specifications Section 982.2 I.

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.

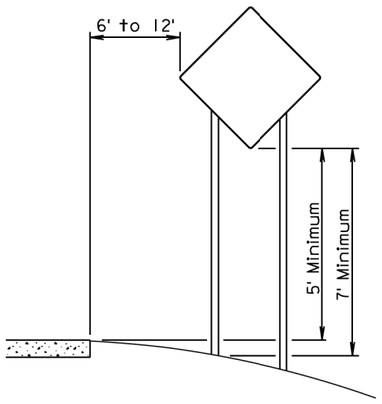
June 26, 2006

Published Date: 2nd Qtr. 2014	SDDOT	***TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES***	*PLATE NUMBER* 632.10
			Sheet 1 of 1

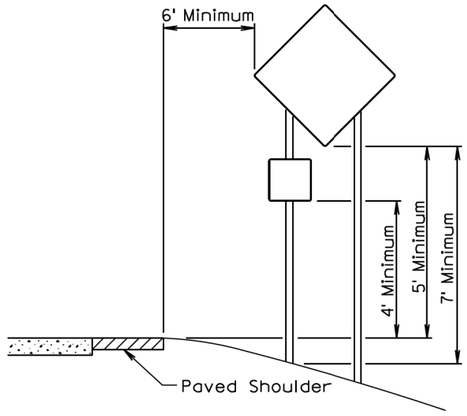


December 23, 2010

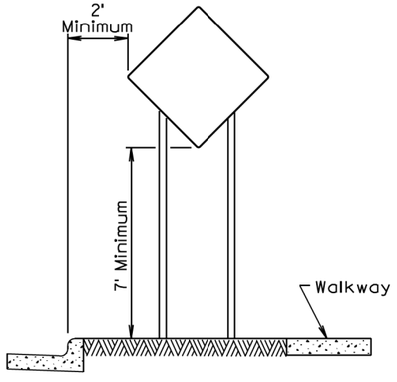
Published Date: 2nd Qtr. 2014	SDDOT	***GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE USING STOP SIGNS***	*PLATE NUMBER* 634.25
			Sheet 1 of 1



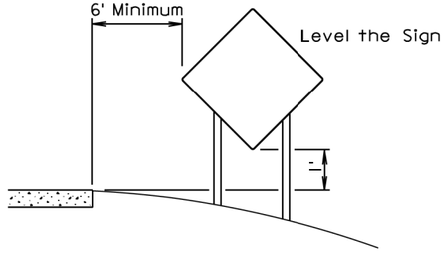
RURAL DISTRICT



RURAL DISTRICT WITH SUPPLEMENTAL PLATE



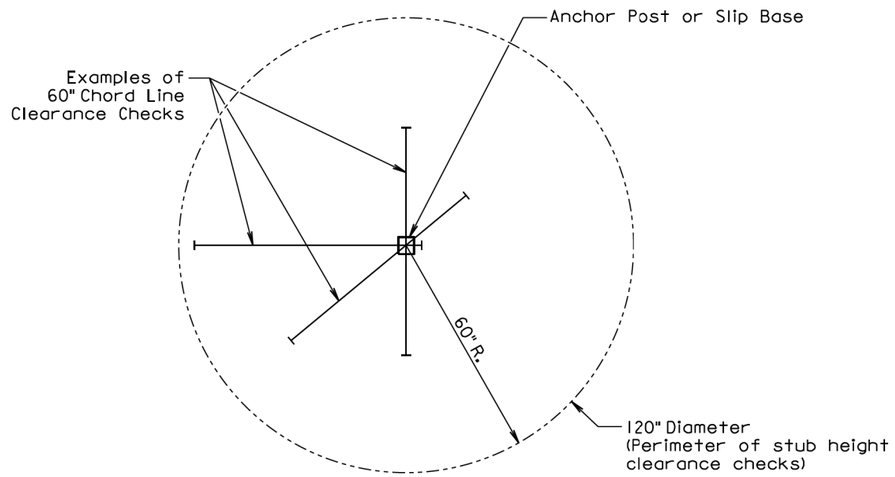
URBAN DISTRICT



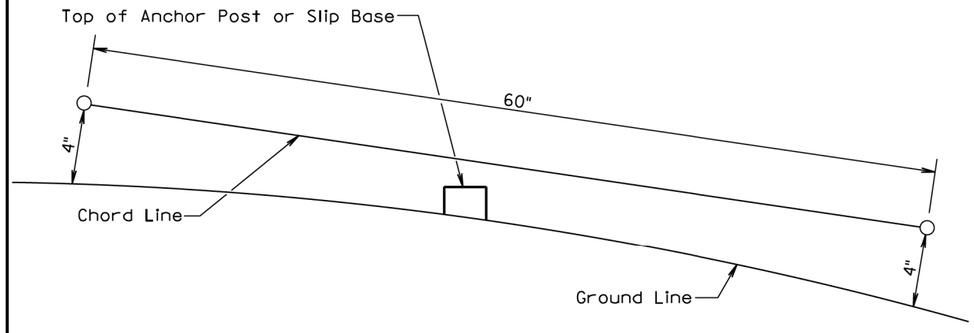
RURAL DISTRICT
3 DAY MAXIMUM

February 14, 2011

Published Date: 2nd Qtr. 2014	SDDOT	CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)	PLATE NUMBER 634.85
			Sheet 1 of 1



PLAN VIEW
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

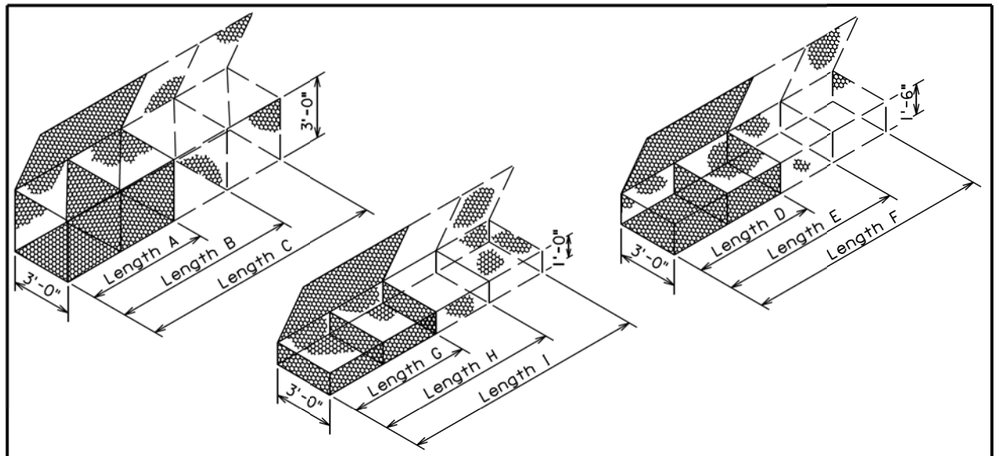
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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

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

July 1, 2005

Published Date: 2nd Qtr. 2014	SDDOT	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



GABION DETAILS

STANDARD SIZES

SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY, Cu. Yd.
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

Above Dimensions subject to mill tolerances.

GENERAL NOTES:

Lacing and internal connecting wire shall be 0.0866 inch diameter steel wire ASTM A641 Class 3 soft temper measured after galvanizing and for PVC coated gabions shall be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1 ½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

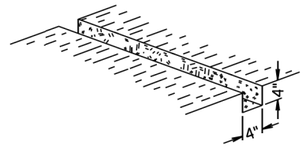
Wire lacing or interlocking type fasteners shall be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions shall be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing shall conform to ASTM A641-92 Class 3 coating. Fasteners shall also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions shall be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction shall not exceed 6 inches. All fasteners shall be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

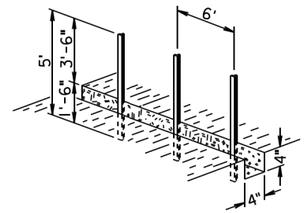
June 26, 2001

Published Date: 2nd Qtr. 2014	SDDOT	***BANK AND CHANNEL PROTECTION GABIONS***	***PLATE NUMBER*** 720.01 *Sheet 1 of 1*

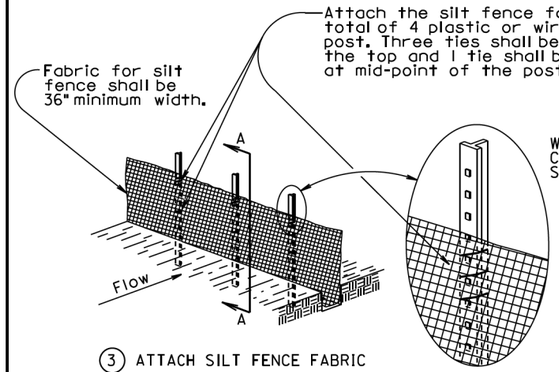
MANUAL HIGH FLOW SILT FENCE INSTALLATION



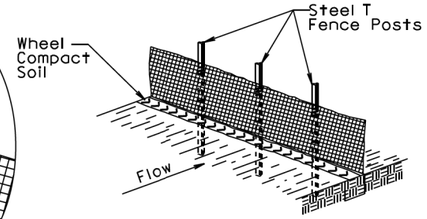
(1) EXCAVATE TRENCH



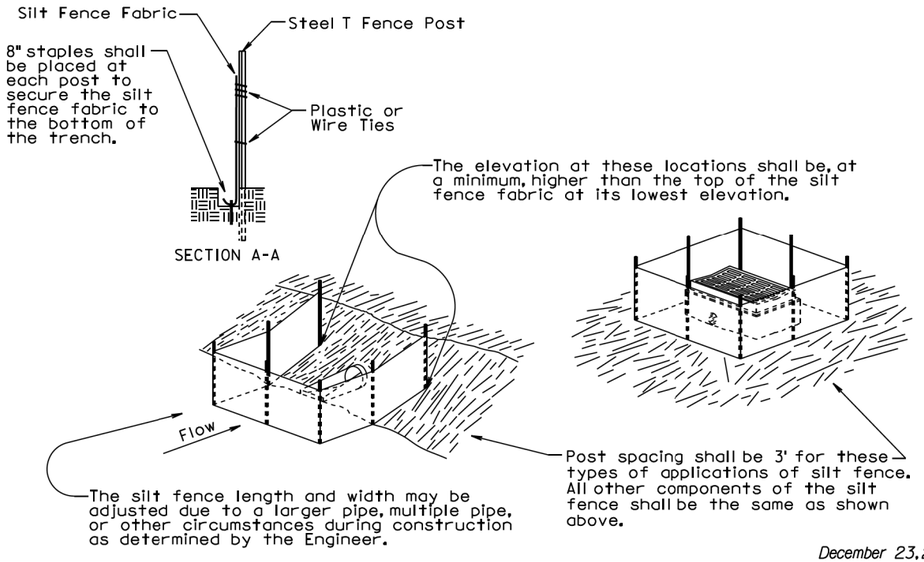
(2) DRIVE STEEL T FENCE POSTS



(3) ATTACH SILT FENCE FABRIC



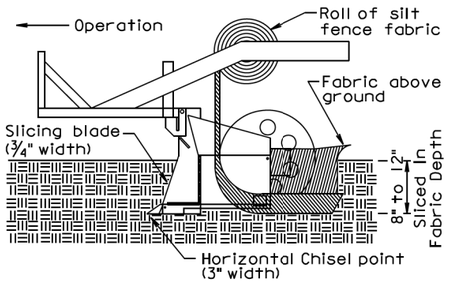
(4) BACKFILL TRENCH AND WHEEL COMPACT SOIL



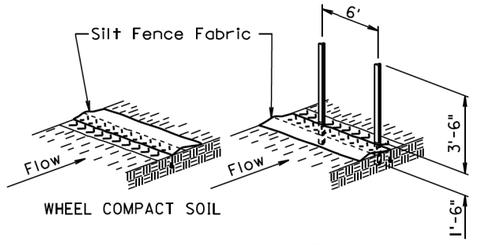
December 23, 2003

Published Date: 2nd Qtr. 2014	SDDOT	***HIGH FLOW SILT FENCE***	***PLATE NUMBER*** 734.05 *Sheet 1 of 2*

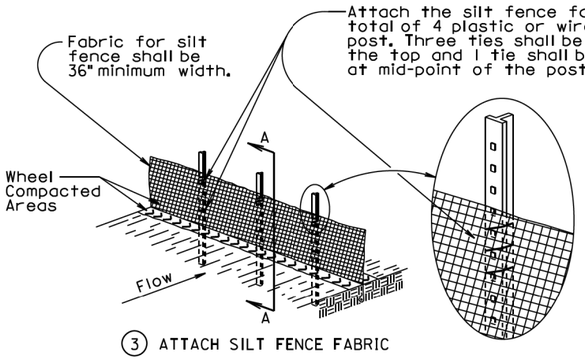
MACHINE SLICED HIGH FLOW SILT FENCE INSTALLATION



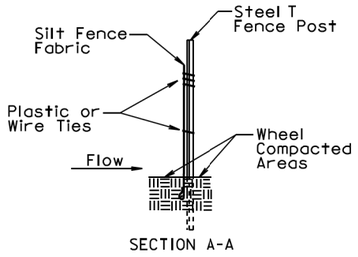
(1) INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.



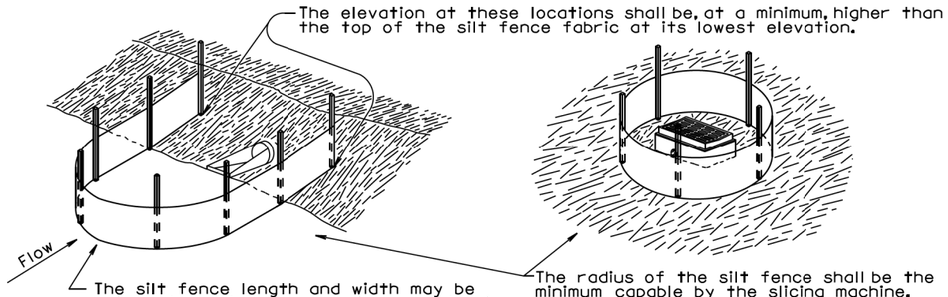
(2) WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



(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: 2nd Qtr. 2014	SDDOT	***HIGH FLOW SILT FENCE***	***PLATE NUMBER*** *734.05*
			Sheet 2 of 2

Plotting Date: 07/01/2014

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	073 472	20	20

1436+60-L
Install Headwall (Inlet)

1436+60-L
Install 10'x3' around Inlet
Class C Riprap
(82 Ton)
Install Type B Drainage Fabric
(78.0 SqYd)

1436+60
Remove for Reset 120" - 80' RCP
& Remove for Reset 2 Sectional Ends

1436+60 (3.5 Sq Miles)
Reset 120" - 80' RCP
& Reset 2 Sectional Ends

1436+60-R
Install Headwall (Outlet)

1436+60-R
Bank & Channel Protection Gabions
(36.0 CuYd)