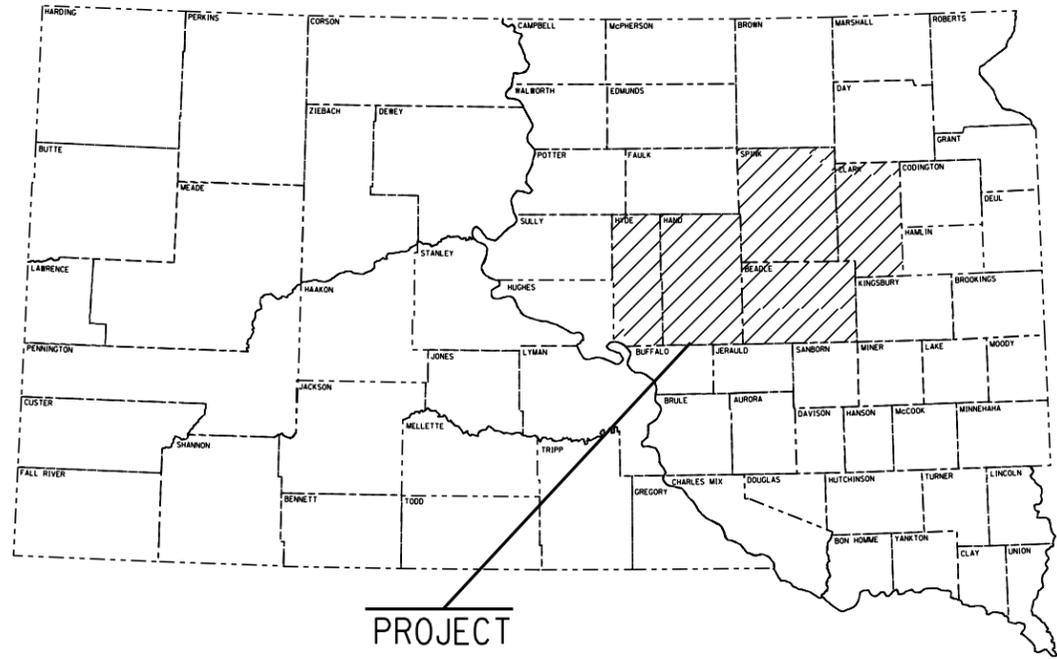


PLOT SCALE - 1:65936.2

PLOTTED FROM - TRAB1222



STATE OF SOUTH DAKOTA
 DEPARTMENT OF TRANSPORTATION
 PLANS FOR PROPOSED

PROJECT NH-P 0013(22)
US HIGHWAY 14 & 281
SD HIGHWAY 20, 25, 37, 45, 47
HYDE, HAND, BEADLE, SPINK,
& CLARK COUNTIES

CULVERT REPAIR
 PCN 040V

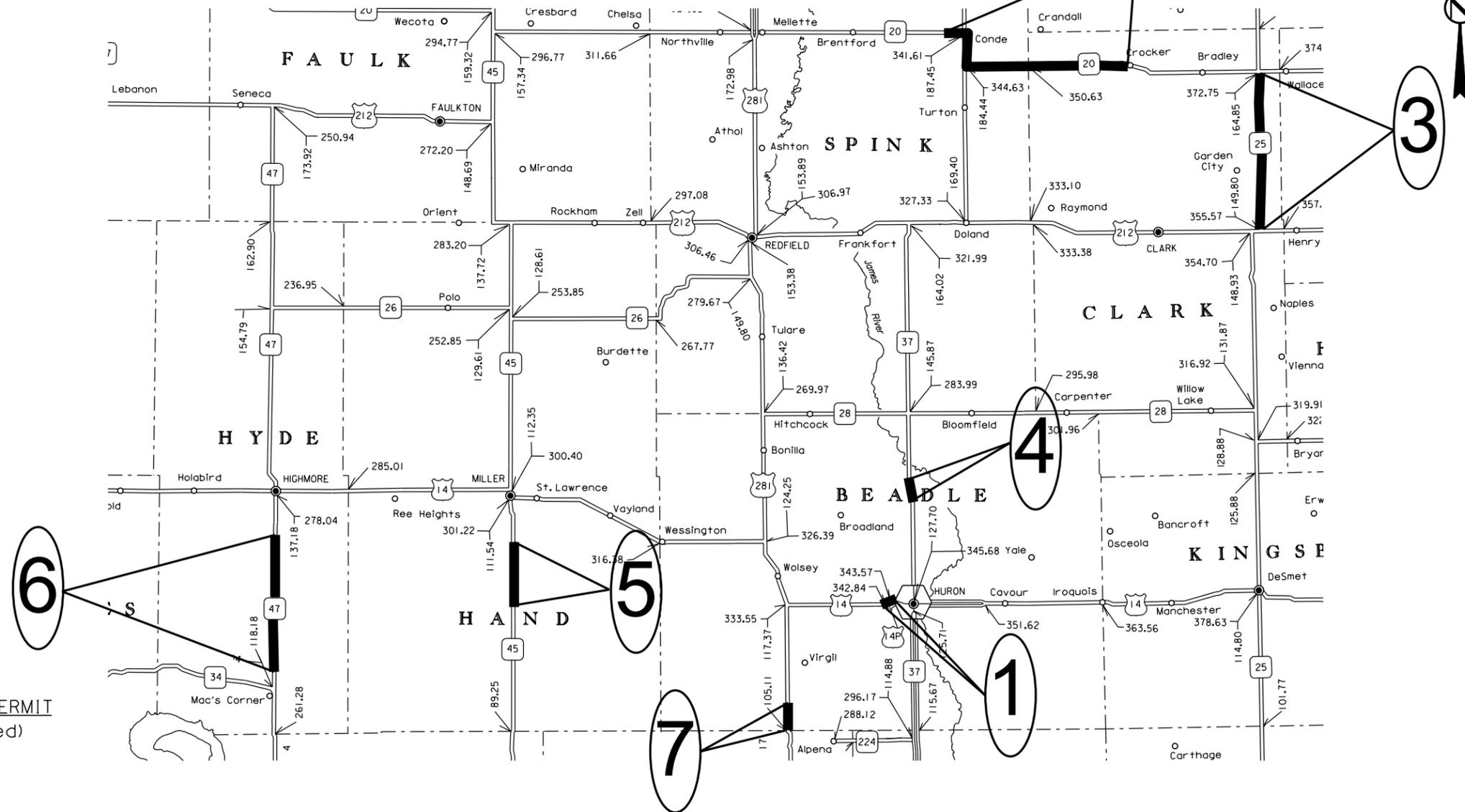
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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INDEX OF SHEETS

- Sheet 1: Title Sheet W/Layout Map
- Sheet 2-3: Environmental Commitments & Estimate of Quantities
- Sheet 4-5: Table of Mainline Culvert Work
- Sheet 6-7: Plan Notes
- Sheet 8-10: Traffic Control
- Sheet 11-13: Standard Plates



STORM WATER PERMIT
 (None Required)

4

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ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT P 0013(22)	SHEET NO. 2	TOTAL SHEETS 13
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ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E0510	Remove Pipe End Section	9	Each
110E1693	Remove Erosion Control Wattle	30	Ft
110E7500	Remove Pipe for Reset	340	Ft
110E7510	Remove Pipe End Section for Reset	56	Each
120E0600	Contractor Furnished Borrow	66	CuYd
450E2008	18" RCP Flared End, Furnish	9	Each
450E2009	18" RCP Flared End, Install	9	Each
* 450E8900	Cleanout Pipe Culvert	12	Each
450E9000	Reset Pipe	340	Ft
450E9001	Reset Pipe End Section	56	Each
634E0010	Flagging	50	Hour
634E0100	Traffic Control	680	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	150	Ft
734E0165	Remove and Reset Erosion Control Wattle	40	Ft

* - Denotes Non-Participating

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 B: FEDERALLY THREATENED, ENDANGERED, AND PROTECTED SPECIES

COMMITMENT B2: WHOOPING CRANE

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

Action Taken/Required:

Harassment or other measures to cause the Whooping Crane to leave the site is a violation of the Endangered Species Act. If a Whooping Crane is sighted roosting in the vicinity of the project, borrow 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 B4: BALD EAGLE

Bald eagles are known to occur in this area.

Action Taken/Required:

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

COMMITMENT C: WATER SOURCE

Revised 2/19/14 B.S.

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.

The Contractor shall not withdraw water directly from streams of the James, Big Sioux, and Vermillion watersheds without prior approval from the SDDOT Environmental Office.

Action Taken/Required:

The Contractor shall obtain the necessary permits from the regulatory agencies such as the Department of Environment and Natural Resources (DENR) and the United States Army Corps of Engineers (COE) prior to executing water extraction activities.

COMMITMENT D: WATER QUALITY STANDARDS

COMMITMENT D2: SURFACE WATER DISCHARGE

Action Taken/Required:

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

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.

ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
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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.

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.

Table of Mainline Culvert Work

Segment	Highway	MRM	Type	Side of Road	Size	Placing Contractor Furnished Borrow (Cu YD)	Remove Pipe For Reset (Ft)	Remove Pipe End Section (Each)	Remove Pipe End Section For Reset (Each)	18" RCP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Cleanout Pipe Culvert (Each)	Comments
Segment 1	US 14	343.57 + 0.118	RCP	Rt.	18"		8		2		8	2	1	Long Culvert (Divided Hwy.) / Clean out Ditch
			Twin	Lt.			8		2		8	2		
	Sub Totals						0	16	0	4	0	16	4	1
Segment 2	SD 20	345.00 + 0.604	RCP Arch	Rt.	60"	10	16		2		16	2		
			Twin	Lt.		10	16		2		16	2		
	SD 20	346.00 + 0.935	RCP	Rt.	36"						0	0	1	Clean Out Ditch
				Lt.							0	0		Clean Out Ditch
	SD 20	357.00 + 0.758	RCP	Rt.	24"						0	0	1	Clean Out Ditch
				Lt.							0	0		Clean Out Ditch
	SD 20	360.33 + 0.011	RCP	Rt.	18"			4		1	4	1	1	Clean Out Ditch
				Lt.				4		1	4	1		Clean Out Ditch
	SD 20	362.00 + 0.891	RCP	Rt.	18"			6		1	6	1		
				Lt.				6		1	6	1		
Sub Totals						20	52	0	8	0	52	8	3	
Segment 3	SD 25	150.00 + 0.920	RCP	Rt.	24"		4		1		4	1		
				Lt.			4		1		4	1		
	SD 25	151.00 + 0.376	RCP	Rt.	24"	5	12		1		12	1		
				Lt.		5	12		1		12	1		
	SD 25	151.00 + 0.766	RCP	Rt.	24"		8		1		8	1		
				Lt.			4		1		4	1		
	SD 25	151.00 + 0.905	RCP	Rt.	24"		12		1		12	1		
				Lt.			12		1		12	1		
	SD 25	153.00 + 0.041	RCP	Rt.	18"		4		1		4	1		
				Lt.			4		1		4	1		
	SD 25	155.00 + 0.08	RCP	Rt.	18"		4	1		1	4	0		
				Lt.			4	1		1	4	0		
	SD 25	156.00 + 0.977	RCP	Rt.	24"		8		1		8	1		
				Lt.			4		1		4	1		
	SD 25	157.00 + 0.103	RCP	Rt.	18"		4	1		1	4	0		
				Lt.			4		1		4	1		
	SD 25	157.00 + 0.306	RCP	Rt.	18"		4	1		1	4	0		
				Lt.			4	1		1	4	0		
SD 25	157.00 + 0.767	RCP	Rt.	18"		4		1		4	1	1	Clean Out Ditch	
			Lt.			4		1		4	1		Clean Out Ditch	
SD 25	159.00 + 0.184	RCP	Rt.	18"			4		1	4	1			
			Lt.				8		1	8	1			

Table of Mainline Culvert Work

Segment	Highway	MRM	Type	Side of Road	Size	Placing Contractor Furnished Borrow (Cu YD)	Remove Pipe For Reset (Ft)	Remove Pipe End Section (Each)	Remove Pipe End Section For Reset (Each)	18" RCP Flared End (Each)	Reset Pipe (Ft)	Reset Pipe End Section (Each)	Cleanout Pipe Culvert (Each)	Comments
Segment 3	SD 25	160.00 + 0.044	RCP	Rt.	18"		4	1		1	4	0		
				Lt.			4		1		4	1		
	SD 25	160.00 + 0.228	RCP	Rt.	18"		4		1		4	1	1	Clean Out Ditch
				Lt.			4		1		4	1		Clean Out Ditch
	SD 25	160.00 + 0.512	RCP	Rt.	18"		8		1		8	1		
				Lt.			8		1		8	1		
	SD 25	162.00 + 0.353	RCP	Rt.	24"	10	4		1		4	1	1	Clean Out Ditch
				Lt.		5	4		1		4	1		Clean Out Ditch
	SD 25	162.00 + 0.613	RCP	Rt.	24"		4		1		4	1	1	Clean Out Ditch
				Lt.			4		1		4	1		Clean Out Ditch
	SD 25	162.00 + 0.966	RCP	Rt.	24"				1		0	1		
				Lt.					1		0	1		
					Sub Totals	25	180	7	29	7	180	29	5	
Segment 4	SD 37	138.00 + 0.668	RCP	Rt.	36"	10	8		1		8	1	1	Dewatering will be required/Clean Out Ditch
				Lt.		10	8		1		8	1		
					Sub Totals	20	16	0	2	0	16	2	1	
Segment 5	SD 45	99.00 + 0.550	RCP	Rt.	18"		4		1		4	1	1	Clean Out Ditch
				Lt.			4		1		4	1		Clean Out Ditch
	SD 45	101.00 + 0.229	RCP	Rt.	24"		6		1		6	1		
				Lt.			6		1		6	1		
	SD 45	103.00 + 0.408	RCP	Rt.	18"		6	1		1	6	0		
			Lt.			6		1		6	1			
				Sub Totals	0	32	1	5	1	32	5	1		
Segment 6	SD 47	120.13 + 0.547	RCP	Rt.	18"		6		1		6	1		
				Lt.			6		1		6	1		
	SD 47	123.00 + 0.852	RCP	Rt.	24"		6		1		6	1		
				Lt.			6		1		6	1		
	SD 47	130.00 + 0.667	RCP	Rt.	18"		6		1		6	1		
			Lt.			6		1		6	1			
				Sub Totals	0	36	1	6	0	36	6	0		
Segment 7	US 281	105.11 + 0.033	RCP Arch	Rt.	42"		4		1		4	1	1	Clean Out Ditch
				Lt.			4		1		4	1		Clean Out Ditch
					Sub Totals	0	8	0	2	0	8	2	1	
				Grand Totals	65	340	9	56	8	340	56	12		

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SCOPE OF WORK

Work on this project entails repairing concrete pipe culverts where individual pipe culvert sections have become separated from the adjacent culvert section. Concrete pipe culvert sections shall be removed, cleaned, realigned, reset, tie bolts installed and the roadway inslope restored.

SEQUENCE OF OPERATIONS

The following Sequence of Operations shall be adhered to. Any changes must be approved in writing by the Area Engineer prior to changes being made.

1. Install signing prior to start of work.
2. Place erosion control, as applicable.
3. Excavate to expose culvert sections.
4. Remove, clean, realign, reset and tie culvert sections.
5. Restore the roadway inslopes.
6. Seed the disturbed inslopes.

COORDINATION OF WORK

Segments 1 and 6 will be under contract for asphalt resurfacing. The Contractor shall coordinate work with the asphalt resurfacing Contractor. The Contractor shall contact the Huron Area Office to obtain contact information for the resurfacing Contractors.

UTILITIES

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor shall contact the Engineer to determine modifications that will be necessary to avoid utility impacts.

TRAFFIC CONTROL

Sufficient sign quantities have been included in the Itemized List for Traffic Control for 2 work zones. Most culvert repair sites will require signing as depicted on Standard Plate 634.03. For the traffic control layout shown on Standard Plate 634.03, the maximum work zone length shall be 2.0 miles.

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

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

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

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

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

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

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.

Moving signs from one Segment to another is incidental to Traffic Control and will not be considered for additional payment.

No more than a maximum of two work zones will be considered for payment.

RCP CULVERT REPAIRS FOR MAINLINE CULVERTS

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

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

Tie bolts shall be installed at all joint locations where existing pipe sections and end treatments are being reset or installed new this includes adjacent in place pipe section. This may require drilling holes into the existing pipe sections and end treatments. Tie bolts shall be installed in accordance with Standard Plate No. 450.18. New RCP culvert installations shall have all the joint locations tied together with tie bolts.

Prior to culvert repair work the Contractor shall remove and stockpile all of the in place topsoil from the construction areas. On completion of construction operations this salvaged topsoil shall be spread evenly over the newly constructed embankment inslopes. Removal and replacement of topsoil will not be measured for payment but shall be incidental to the contract unit prices for the various culvert contract items.

Compaction of inslope embankments shall be to the satisfaction of the Engineer.

It is not anticipated that water for compaction will be required. However, if in the opinion of the Engineer the fill material is extremely dry, water may be ordered and placed to the satisfaction of the Engineer. All costs for any added water shall be incidental to the contract unit prices for the various culvert contract items.

Haul of embankment material on established traveled roadways shall be limited to trucks or small scrapers hauling legal loads and which do not sustain damage to the roadway, as approved by the Engineer. Hauling of material in the roadway ditches will not be allowed.

Additional excavation may be required to ensure positive drainage into and out of extended culverts. Excavated material may be incorporated into the inslope embankment.

The Contractor shall be responsible for restoration of any areas disturbed outside the limits of the work area.

Joints between concrete pipe culvert sections shall be protected against infiltration as indicated in Section 450.3.A of the Standard Specifications. If an existing concrete pipe culvert section has a damaged joint or there is poor alignment of the joints, 2 layers of drainage fabric shall be placed over the joint.

Culvert barrel and culvert end treatments that are to be removed and reset shall be cleaned prior to resetting. There will be no payment of the contract item Cleanout Pipe Culvert to clean sections of culverts that are removed and reset.

CLEANOUT PIPE CULVERTS

At those culvert locations where Cleanout Pipe Culvert is required, as indicated on the Table of Mainline Culvert Work, the ditches at the inlet and outlet shall also be cleaned.

Cleanout of pipe culverts shall be done in advance of culvert repair operations. At those locations where further evaluation of culvert repairs are required, the culvert cleaning shall be scheduled such that there is adequate time to evaluate what repairs are required and allow for ordering and delivery of culvert materials.

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

It is the responsibility of the Contractor to visit the sites to determine the extent of culvert cleaning work required.

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

PIPE MARKERS

At all locations where pipe work is done the pipe marker shall be removed and reset according to Standard Plate 632.10.

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DITCH CLEANOUT

Ditch cleanout is required at all locations where the Table of Mainline Culvert Work indicates Cleanout Pipe Culvert is required. There shall be no specific contract item for ditch cleanout. Ditch cleanout shall be included in the contract unit prices for CLEANOUT PIPE CULVERT, and the various culvert contract items.

Ditch cleanout shall include cleaning of the culvert end treatment apron which is typically a Flared End on this project. There will be no payment of the contract item Cleanout Pipe Culvert if all that is required is cleaning of the culvert end treatment apron.

Ditch cleanout shall extend from the end of the culvert to within 1 foot of the Right-of-Way (ROW) Line. The bottom of the ditch cleanout shall be a minimum of 10 feet wide and the side slopes on the channel shall be 20:1 or flatter. For those locations where there is no channel from the inlet/outlet of the culvert to the ROW Line ditch cleanout shall be completed such that there is a flat area of 100 Square Feet created at the inlet/outlet and the sides slopes around the flat area shall be 20:1 or flatter.

CULVERTS REQUIRING FURTHER EVALUATION

Several of the culverts on this project were plugged, buried, or underwater at the time of the culvert inspection in June of 2013, thus it was not possible to determine the extent of work required. Those culverts that are plugged and/or buried shall be cleaned. After cleaning the Engineer shall inspect the culverts to determine what, if any repairs are required. Repairs may include resetting or replacement of the culvert using the appropriate contract items. The Engineer shall have a minimum of 5 working days after the culvert is cleaned to inspect the culvert, determine what repairs are required, and provide instruction to the Contractor on work to perform at each culvert location. Any work ordered by the Engineer will be paid for at the appropriate contract unit price for the work being performed.

CONTRACTOR FURNISHED BORROW

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

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

EROSION CONTROL WATTLE

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

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

A quantity of **150** feet of 12" Diameter Erosion Control Wattles has been included to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels and as an alternative to low flow or high flow silt fence at wetland areas adjacent to the highway.

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

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

REMOVE EROSION CONTROL WATTLE

Erosion control wattles shall be removed when vegetation is established. Some or all of the erosion control wattles may be left on the project until vegetation is established.

REMOVE AND RESET EROSION CONTROL WATTLE

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for REMOVE AND RESET EROSION CONTROL WATTLE.

PERMANENT SEEDING

The areas to be seeded comprise of all disturbed areas within the project limits.

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.

Type C Permanent Seed Mixture shall be used at all locations. The estimated area to seed is **1.4** Acres.

All costs to seed the disturbed areas shall be incidental to the contract lump sum price for EROSION CONTROL.

Type C Permanent Seed Mixture shall consist of the following:

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

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:

<i>Glomus intraradices</i>	25%
<i>Glomus aggregatu</i>	25%
<i>Glomus mosseae</i>	25%
<i>Glomus etunicatum</i>	25%

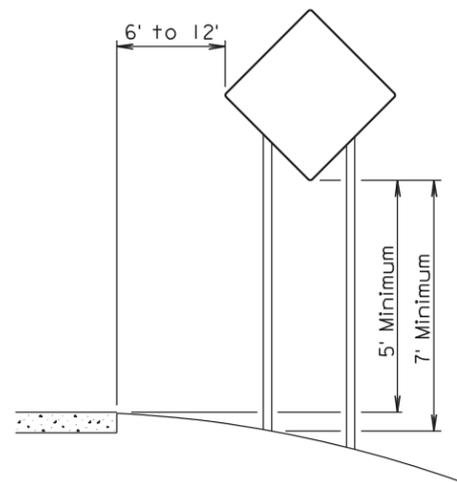
All seed shall be inoculated with a minimum of 100,000 live propagules of mycorrhizal fungi per acre. All costs of inoculating the seed shall be incidental to the contract lump sum price for EROSION CONTROL.

MULCHING (GRASS HAY OR STRAW)

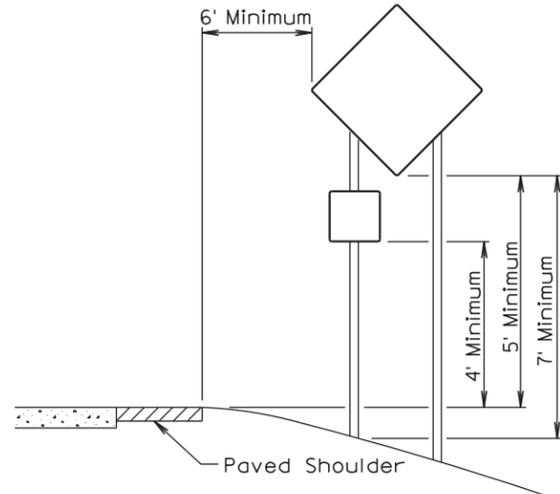
Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project.

The areas to be mulched comprise of all disturbed areas within the project limits.

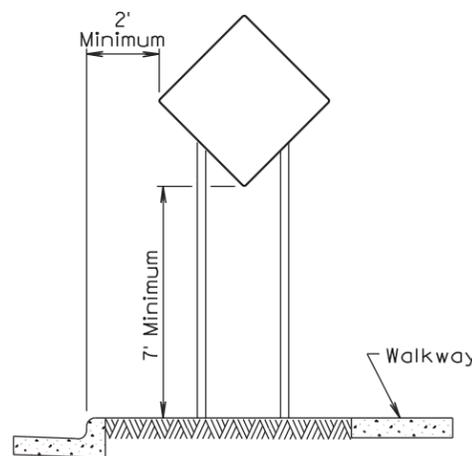
All costs to mulch the disturbed areas shall be incidental to the contract lump sum price for EROSION CONTROL.



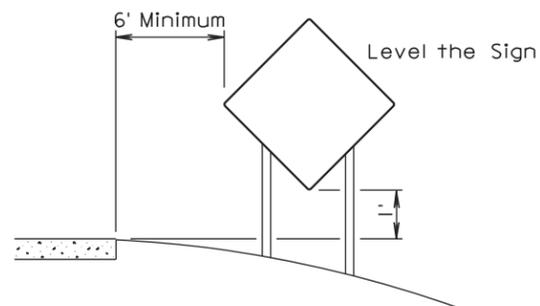
RURAL DISTRICT



RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



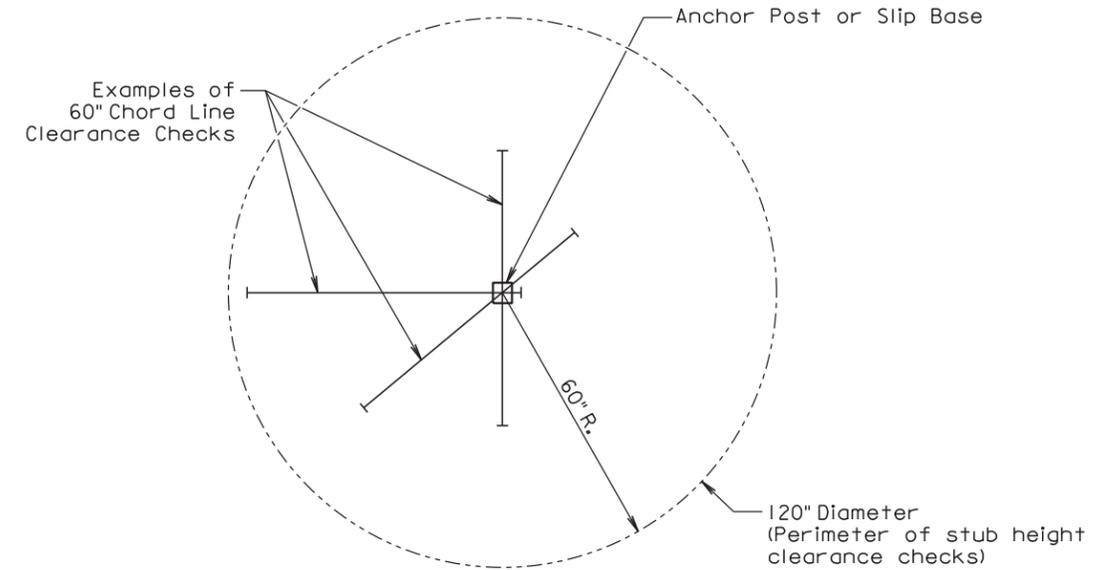
URBAN DISTRICT



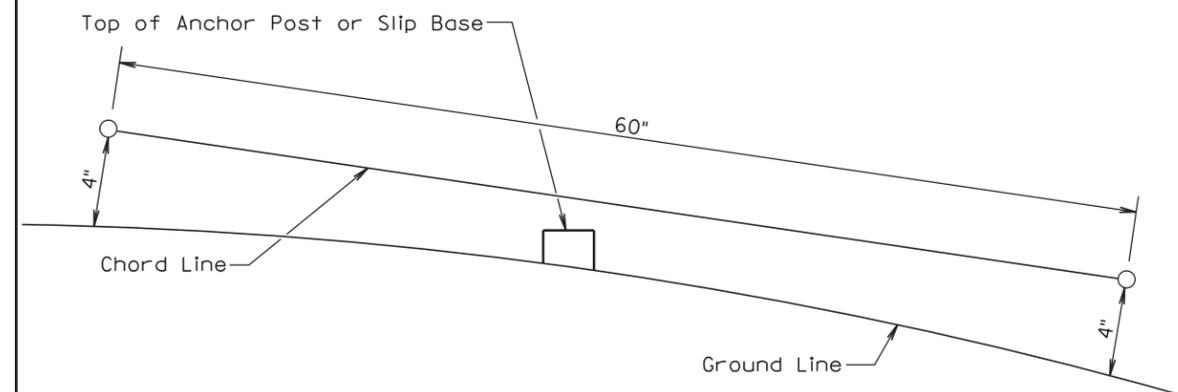
RURAL DISTRICT
3 DAY MAXIMUM

February 14, 2011

Published Date: 1st Qtr. 2014	S D D O T	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: 1st Qtr. 2014	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0013(22)	10	13
Plotting Date: 02/03/2014			

ITEMIZED LIST FOR TRAFFIC CONTROL - CONVENTIONAL ROADS

SIGN CODE	SIGN SIZE	DESCRIPTION	NUMBER REQUIRED	UNITS PER SIGN	UNITS
G20-2	36" x 18"	END ROAD WORK	4	17	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	4	34	136
W20-7	48" x 48"	FLAGGER	4	34	136
W21-5	48" x 48"	SHOULDER WORK	4	34	136
TOTAL UNITS					680

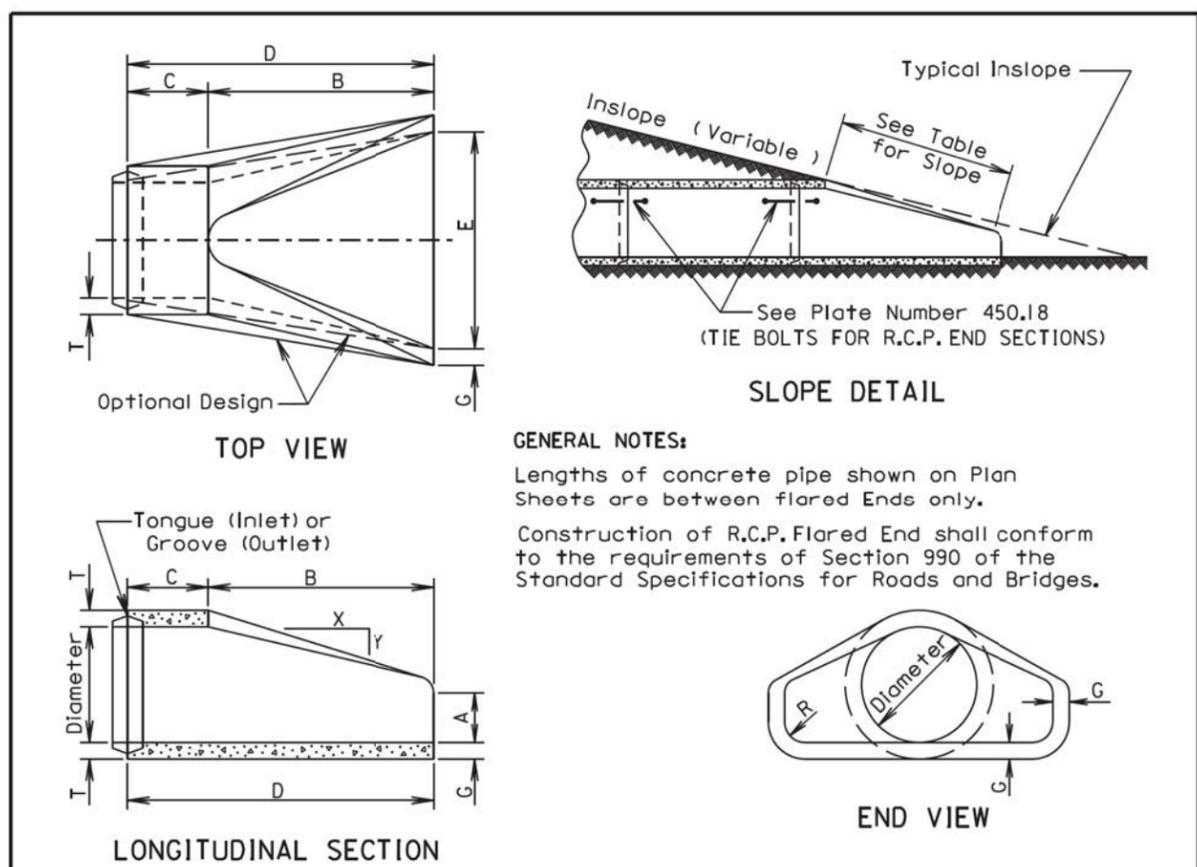
If a sign is required on a project and not listed in the above inventory, the units per sign will be determined as follows:
Signs 36" x 36" will be measured at 27 units each and signs 48" x 48" will be measured at 34 units each, otherwise:
If a sign measures less than 25" high and 25" wide the units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

Plotting Date: 02/03/2014

PLOT SCALE - 1:200

PLOT NAME - 1

FILE - ... \450.10 & 450.13.DGN

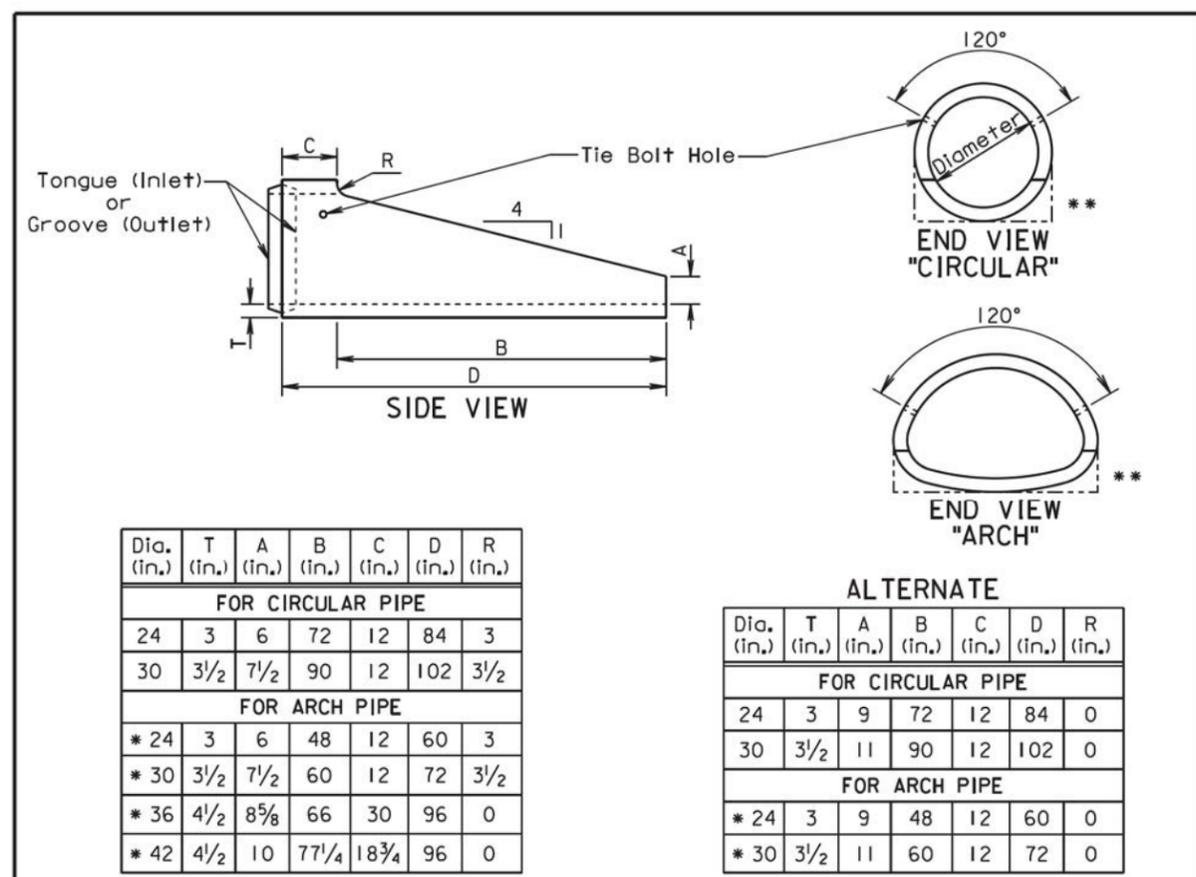


GENERAL NOTES:
Lengths of concrete pipe shown on Plan Sheets are between flared Ends only.
Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Standard Specifications for Roads and Bridges.

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

March 31, 2000

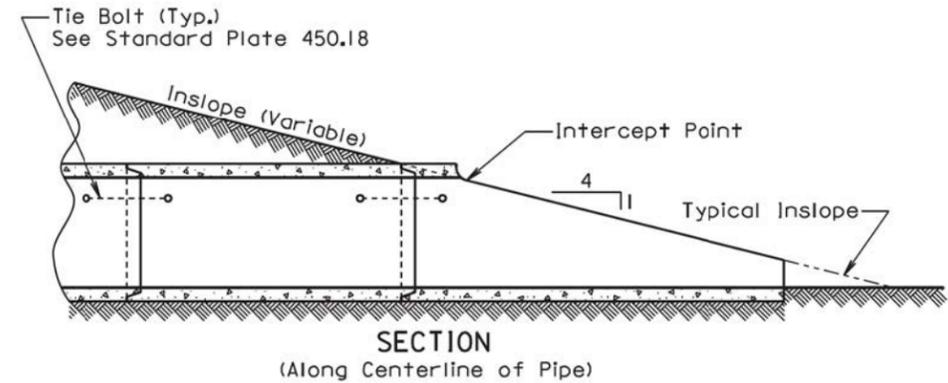
S D D O T	R. C. P. FLARED ENDS	PLATE NUMBER 450.10
	Published Date: 1st Qtr. 2014	Sheet 1 of 1



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

Dia. (in.)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	R (in.)
ALTERNATE FOR CIRCULAR PIPE						
24	3	9	72	12	84	0
30	3 1/2	11	90	12	102	0
FOR ARCH PIPE						
* 24	3	9	48	12	60	0
* 30	3 1/2	11	60	12	72	0

* Equivalent Diameter of Circular R.C.P.
** Acceptable Flat Bottom Alternate.



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

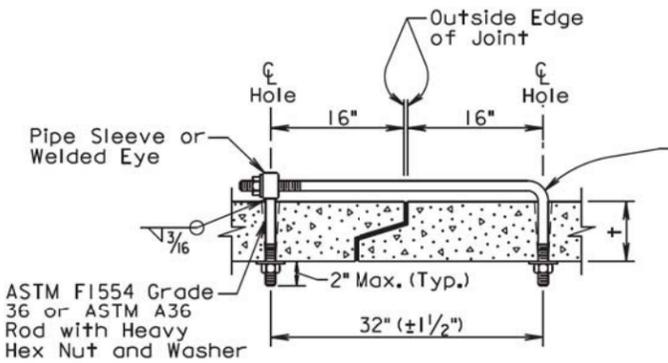
September 22, 2006

S D D O T	R. C. P. SLOPED ENDS	PLATE NUMBER 450.13
	Published Date: 1st Qtr. 2014	Sheet 1 of 1

Plotting Date: 02/03/2014

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

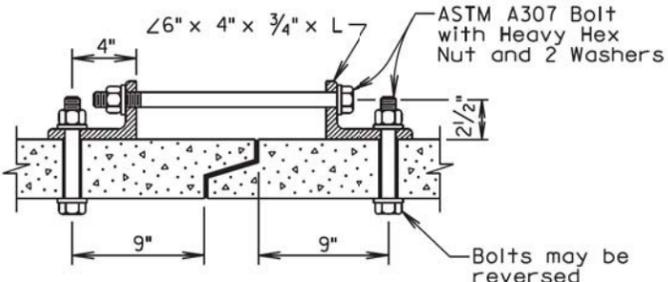
GENERAL NOTES:
 Tie bolts shall conform to ASTM F1554 Grade 36 or ASTM A36. Nuts shall be heavy hex conforming to ASTM A563. Washers shall conform to ASTM F436.
 Pipe Sleeve shall conform to ASTM A500 or A53, Grade B.
 Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.



ADJUSTABLE EYE BOLT TIE

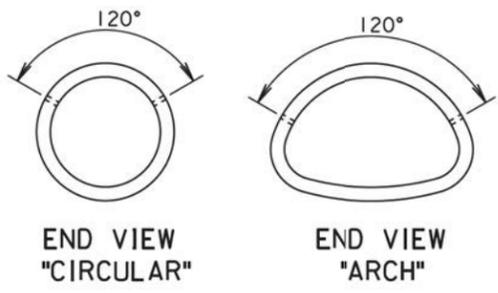
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1

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.



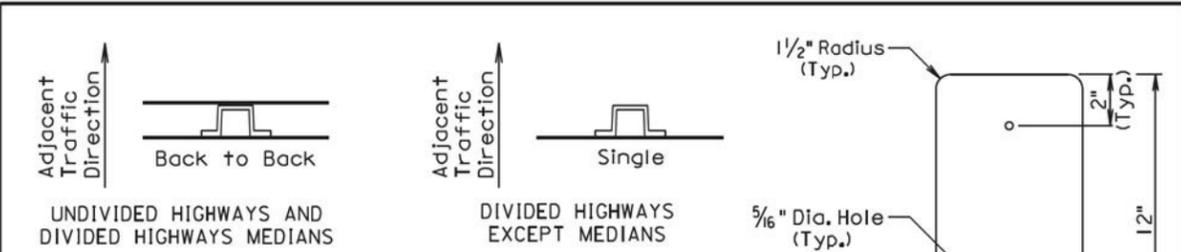
ANGLE AND BOLT TIE

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.

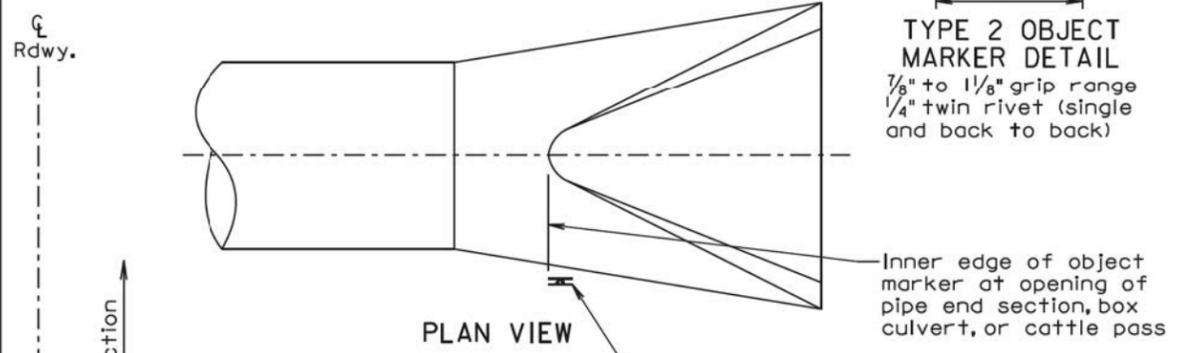


February 28, 2013

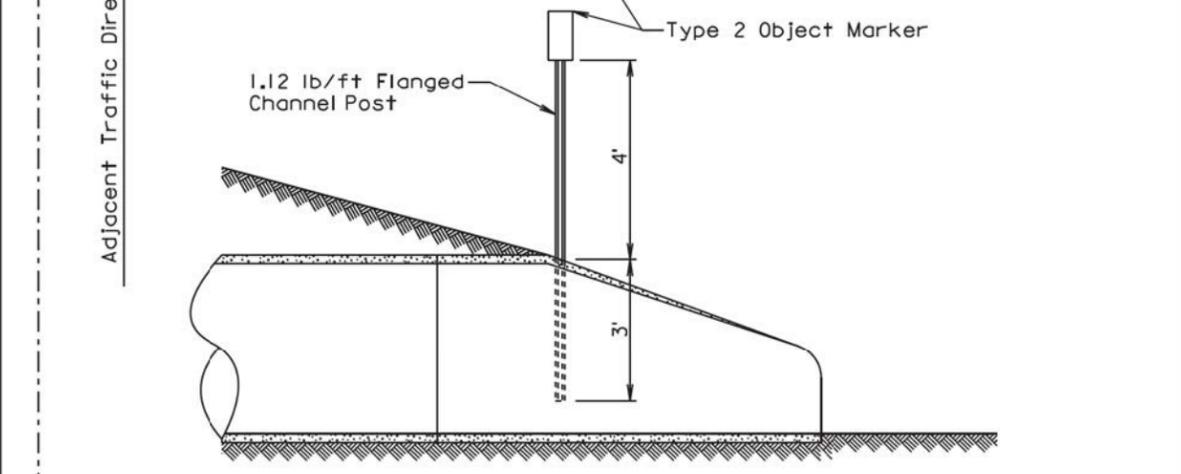
Published Date: 1st Qtr. 2014	S D D O T	TIE BOLTS FOR R.C.P. AND R.C.P. ARCH	PLATE NUMBER 450.18
			Sheet 1 of 1



TYPE 2 OBJECT MARKER DETAILS AND POST ORIENTATION



PLAN VIEW



ELEVATION

GENERAL NOTES:
 The type 2 object markers shall conform to Standard Specifications Section 982.2 I.
 The 1.12 lb/ft flanged channel post shall conform to Standard Specifications Section 982.2 I.6.
 Payment for the type 2 object markers shall be in conformance with Standard Specification Section 632.5 C.

June 26, 2006

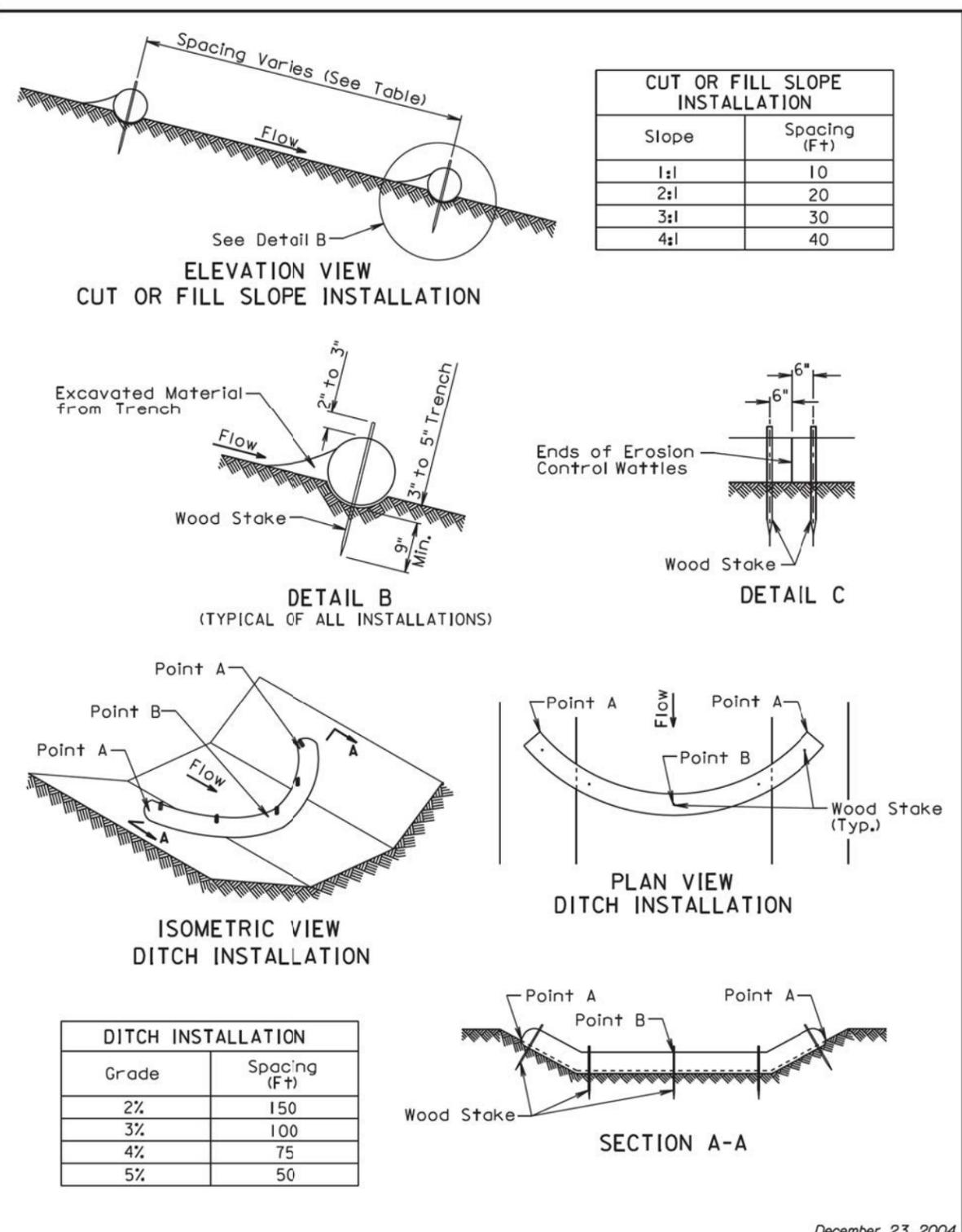
Published Date: 1st Qtr. 2014	S D D O T	TYPE 2 OBJECT MARKER INSTALLATION AT PIPE CULVERTS, BOX CULVERTS, AND CATTLE PASSES	PLATE NUMBER 632.10
			Sheet 1 of 1

PLOT SCALE - 1:200

-PLOTTED FROM - TRAB1222

PLOT NAME - 2

FILE - ... \450.18 & BLANK.DGN



December 23, 2004

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 1 of 2

Published Date: 1st Qtr. 2014

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 1/2". 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

S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
		Sheet 2 of 2

Published Date: 1st Qtr. 2014

PLOT SCALE - 1:200

-PLOTTED FROM - TRAB12222

PLOT NAME - 8

FILE - ... \734.06 & 734.06.DGN