

STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED  
**PROJECT 010-152**  
**SD HIGHWAY 10**  
**MCPHERSON &**  
**BROWN COUNTIES**

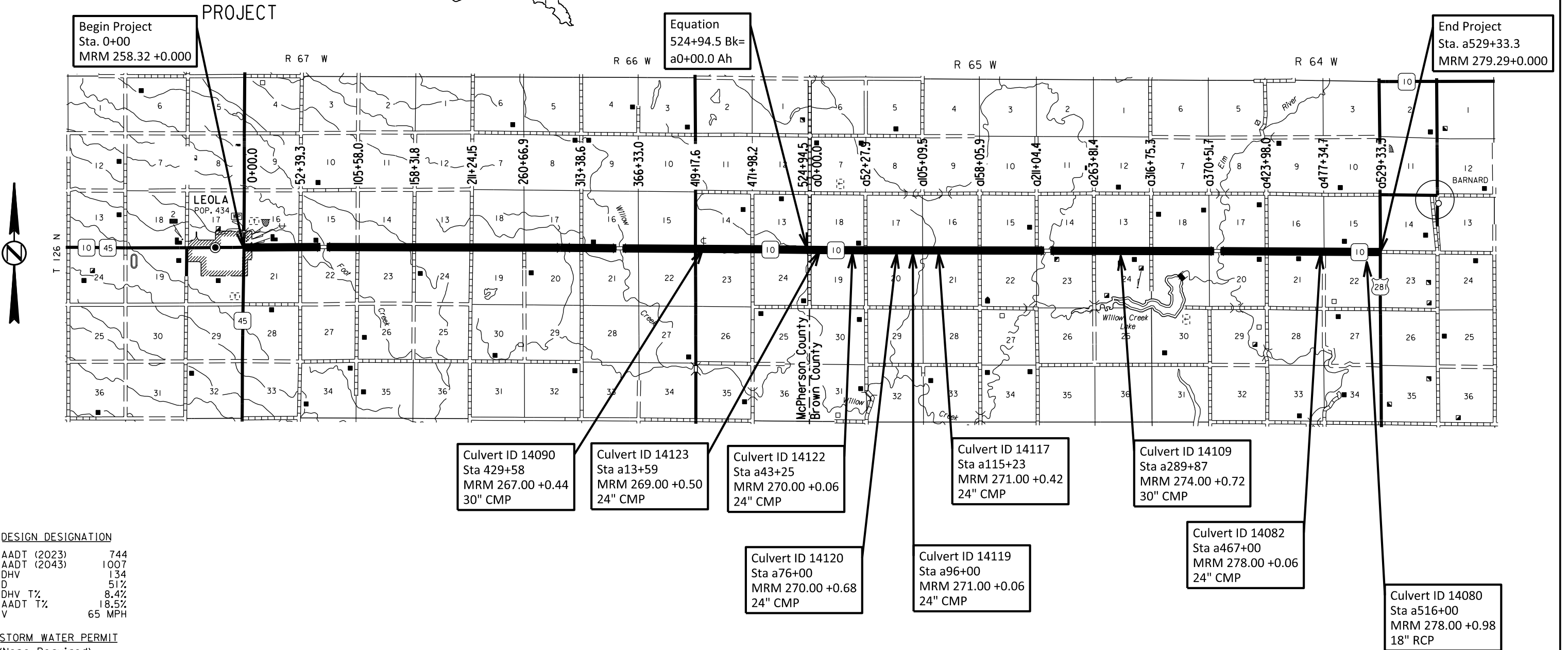
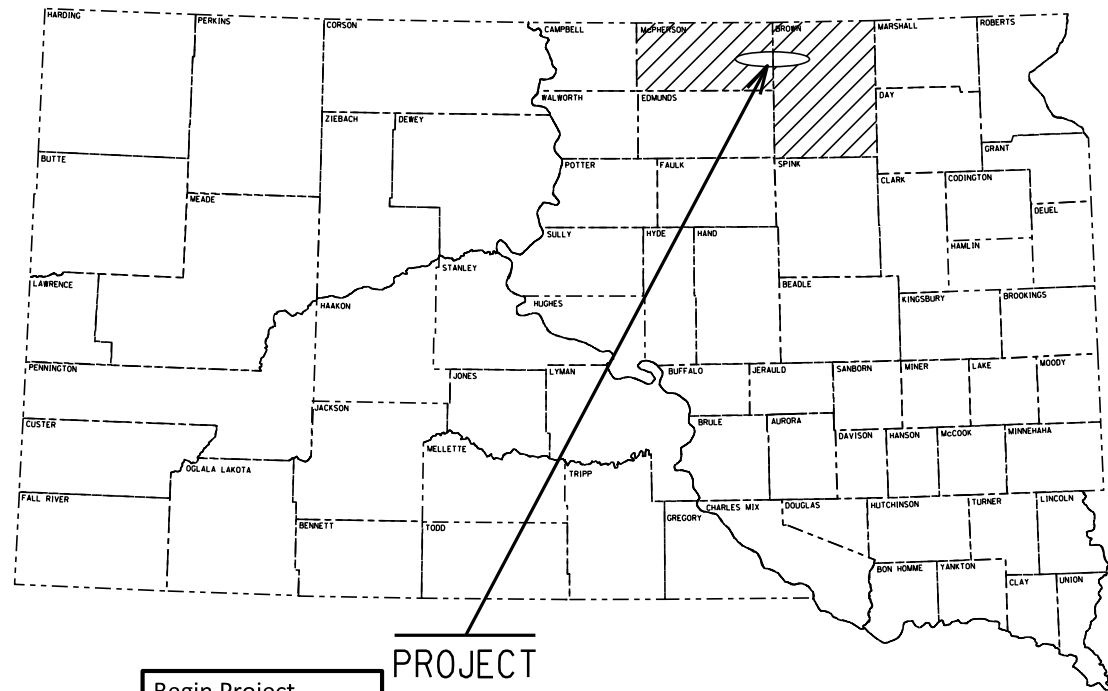
CLEAN AND LINE CULVERTS  
PCN i7PT

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	010-152	1	16

Plotting Date:

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PLOTTED FROM - TRAB17882

DESIGN DESIGNATION

AADT (2023)	744
AADT (2043)	1007
DHV	134
D	51%
DHV T%	8.4%
AADT T%	18.5%
V	65 MPH

STORM WATER PERMIT  
(None Required)

# ESTIMATE OF QUANTITIES AND ENVIRONMENTAL COMMITMENTS

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## Estimate of Quantities

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
110E0500	Remove Pipe Culvert	101	Ft
110E0510	Remove Pipe End Section	1	Each
110E1690	Remove Sediment	1.0	CuYd
110E1700	Remove Silt Fence	150	Ft
110E7500	Remove Pipe for Reset	8	Ft
230E0020	Contractor Furnished Topsoil	50	CuYd
450E2008	18" RCP Flared End, Furnish	1	Each
450E2009	18" RCP Flared End, Install	1	Each
450E4769	24" CMP 16 Gauge, Furnish	68	Ft
450E4770	24" CMP, Install	68	Ft
450E5215	24" CMP Flared End, Furnish	12	Each
450E5216	24" CMP Flared End, Install	12	Each
450E5219	30" CMP Flared End, Furnish	4	Each
450E5220	30" CMP Flared End, Install	4	Each
450E8900	Cleanout Pipe Culvert	6	Each
450E8910	Cleanout for Culvert Treatment	8	Each
450E9000	Reset Pipe	8	Ft
450E9524	24" Cured in Place Pipe	472	Ft
450E9526	30" Cured in Place Pipe	152	Ft
634E0010	Flagging	50.0	Hour
634E0110	Traffic Control Signs	274.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	400	Ft
734E0602	Low Flow Silt Fence	550	Ft
734E0610	Mucking Silt Fence	38	CuYd

## SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

## ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified 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. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

## 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 pits, or staging areas associated with the project, cease construction activities in the affected area until the Whooping Crane departs and immediately 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

The Contractor will not withdraw water with equipment previously used outside the State of South Dakota or previously used in aquatic invasive species (AIS) positive waters within South Dakota without prior approval from the SDDOT Environmental Office. To prevent and control the introduction and spread of invasive species into the project vicinity, all equipment will be power washed with hot water ( $\geq 140$  °F) and completely dried for a minimum of 7 days prior to subsequent use. South Dakota administrative rule 41:10:04:02 forbids the possession and transport of AIS; therefore, all attached dirt, mud, debris and vegetation must be removed and all compartments and tanks capable of holding standing water must be drained. This includes, but is not limited to, all equipment, pumps, lines, hoses and holding tanks.

The Contractor will 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 will obtain the necessary permits from the regulatory agencies such as the South Dakota Department of Agriculture and Natural Resources (DANR) and the United States Army Corps of Engineers (USACE) prior to water extraction activities.

Additional information and mapping of water sources impacted by Aquatic Invasive Species in South Dakota can be accessed at:

< <https://sdleastwanted.sd.gov/maps/default.aspx> >

< [South Dakota Administrative Rule 41:10:04 Aquatic Invasive Species: https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04](https://sdlegislature.gov/rules/DisplayRule.aspx?Rule=41:10:04) >

**COMMITMENT D: WATER QUALITY STANDARDS**

**COMMITMENT D1: SURFACE WATER QUALITY**

This project may be in the vicinity of multiple streams and wetlands. These waters are considered waters of the state and are protected under Administrative Rules of South Dakota (ARSD) Chapter 74:51. Special construction measures may have to be taken to ensure that this water body is not impacted.

**Action Taken/Required:**

The Contractor is advised that the South Dakota Surface Water Quality Standards, administered by the South Dakota Department of Agriculture and Natural Resources (DANR), apply to this project. Special construction measures will be taken to ensure the above standard(s) of the surface waters are maintained and protected.

**COMMITMENT D2: SURFACE WATER DISCHARGE**

The DANR General Permit for Temporary Discharge is required for temporary dewatering and discharges to waters of the state. The effluent limit for total suspended solids will be 90 mg/L 30-day average. The effluent limit applies to discharges to all waters of the state except discharges to waters classified as cold water permanent fish life propagation waters according to the ARSD 74:51:01:45. For discharges to waters of the state classified as cold water permanent fish life propagation waters, the effluent limit for total suspended solids will be 53 mg/L daily maximum.

The permittee has the option of completing effluent testing or implementing a pollution prevention plan for compliance with this permit. If the permittee develops a pollution prevention plan instead of total suspended solids sampling, the plan must be developed and implemented prior to discontinuing total suspended solids sampling. Refer to Section 4.0 of the permit. If any pollutants are suspected of being discharged, a sample must be taken for those parameters listed in Section 3.4 of the permit.

Refer to Commitment D1: Surface Water Quality for stream classification.

**Action Taken/Required:**

If construction dewatering is required and this project is not required to be covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the Contractor will obtain the General Permit for Temporary Discharge Activities from the DANR Surface Water Program, 605-773-3351.

Effluent monitoring, as a result of dewatering activities, will be summarized for each month and recorded on a separate Discharge Monitoring Report (DMR) and submitted to DANR monthly. Additional information can be found at:

<  
<https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/swdpermitting/Ereporting.aspx>>

**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 will 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 Public ROW.

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

The waste disposal site(s) will 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 Environmental Office and the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with 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 not to exceed the duration of the project. Prior to project completion, the waste will 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) will be incidental to the various contract items.

**COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES**

State Historic Preservation Office (SHPO or THPO) concurrence has not been obtained for this project.

**Action Taken/Required:**

All earth disturbing activities require a cultural resource review prior to scheduling the pre-construction meeting. This work includes but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. 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 if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view in 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 will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. 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.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

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**COMMITMENT N: SECTION 404 PERMIT**

The SDDOT has obtained a Section 404 Permit from the USACE for the permanent actions associated with this project.

**Action Taken/Required:**

The Contractor will comply with all requirements contained in the Section 404 Permit.

The Contractor will also be responsible for obtaining a Section 404 Permit for any dredge, excavation, or fill activities associated with material sources, storage areas, waste sites, and Contractor work sites outside the plan work limits that affect wetlands, floodplains, or waters of the United States.

### SD 10 TABLE OF MAINLINE CULVERT WORK

Inventory #	MRM	+ Disp	Station	Side	Per Original Plans			Remove Pipe			Furnish and Install				Reset Pipe	Cleanout Pipe Culvert	Cleanout for Treatment	Cured in Place Pipe		Height of Fill from Top of Pipe to Top of Road	Pipe Condition for Design	Repair Comments	
					In Place Culvert Size and Type	Culvert Length (Ft)	Culvert End Type	Direction of Flow	Culvert (Ft)	for Reset (Ft)	End Section (Each)	18" RCP Flared End (Each)	24" CMP (Ft)	24" CMP Flared End (Each)				30" CMP Flared End (Each)	24" (Ft)				30" (Ft)
14090	267.00	0.44	429+58	Lt Rt	30" CMP	78		Equalizer	4					1		1	1		70	4.6	Fully Deteriorated	Clean and verify that lining is possible. Should be able to shorten each end by 4'. Install Flared Ends if able to line.	
14123	269.00	0.50	a 13+59	Lt Rt	24" CMP	84		Equalizer	2					1		1		80		6.1	Fully Deteriorated	Remove 2' of barrel section on each end, Clean, add Flared Ends and Line	
14122	270.00	0.06	a 43+25	Lt Rt	24" CMP	78		Equalizer	2					1		1		73		4.4	Fully Deteriorated	Remove 2' of barrel section on each end, Clean, add Flared Ends and line	
14120	270.00	0.68	a 76+00	Lt Rt	24" CMP	80		Equalizer	4					1		1		65		4.3	Fully Deteriorated	Remove 4' on each end, Clean and determine if lining is possible. Install new Flared Ends if able to line. (Measured length of culvert is only 73'.)	
14119	271.00	0.06	a 96+00	Lt Rt	24" CMP	80		Equalizer	12			10	1			1	1	70		5.1	Fully Deteriorated	Clean and verify that lining is possible. If lining is possible, remove 12' +/- of barrel section on north side and 3' on south side. 10' of CMP has been included for the north end and new Flared Ends for this location if it is determined that lining is possible. This 10' of CMP is set up as the north 6' to 8' seems to be severally bent out of shape. (Measured length of culvert is only 73'.)	
14117	271.00	0.42	a 115+23	Lt Rt	24" CMP	70		Equalizer	20			20	1			1	1	86		8.4	Fully Deteriorated	Clean out culvert and determine if lining is possible. 20' of CMP on North end and 10' of CMP on south end and FE's are included for this location if it is determined that lining is possible. This 20' & 10' CMP is set up with the assumption that the ends of the culvert barrel are rusted out, but the culvert under the main roadway is still in such a condition that lining is possible. (Measured length of culvert is 86'.)	
14109	274.00	0.72	a 289+87	Lt Rt	30" CMP	86			2					1		1		82		5.9	Fully Deteriorated	Remove 2' of barrel section on each end, clean, install Flared Ends and Line.	
14082	278.00	0.06	a 467+00	Lt Rt	24" CMP	98		Equalizer	14			14	1			1	1	98		7.8	Fully Deteriorated	Clean out culvert and determine if lining is possible. 14' of CMP and FE are included for each end for this location if it is determined that lining is possible. This 14' of CMP is set up with the assumption that the ends of the culvert barrel are rusted out, but the culvert under the main roadway is still in such a condition that lining is possible.	

### SD 10 TABLE OF MAINLINE CULVERT WORK

Inventory #	MRM	+ Disp	Station	Side	Per Original Plans		Remove Pipe					Furnish and Install			Cured in Place Pipe		Height of Fill from Top of Pipe to Top of Road (Ft)	Pipe Condition for Design	Repair Comments					
					In Place Culvert Size and Type	Culvert Length (Ft)	Culvert End Type	Direction of Flow	Culvert (Ft)	for Reset (Ft)	End Section (Each)	18" RCP Flared End (Each)	24" CMP (Ft)	24" CMP Flared End (Each)	30" CMP Flared End (Each)	Reset Pipe (Ft)				Cleanout Pipe Culvert (Each)	Cleanout for Treatment (Each)	24" (Ft)	30" (Ft)	
																								TOTAL
14080	278.00	0.98	a 516+00	Lt Rt	18" RCP	78	Flared Flared			8	1	1						8	1			6.6	Partially Deteriorated	Clean out 90% plugged culvert. Replace North Flared End. Evaluate repairs needed after cleanout, amount of reset pipe is a guess.
					<b>TOTAL</b>		<b>101</b>	<b>8</b>	<b>1</b>	<b>1</b>	<b>68</b>	<b>12</b>	<b>4</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>472</b>	<b>152</b>						

Left and Right based upon project station, thus Left is North side and Right is South side.

In place Culvert Markers shall be removed and reset when performing Culvert Work. Cost to remove and reset Culvert Markers shall be incidental to the various culvert contract items.

Original grading plans indicate that CMP culverts were installed without any end treatment. If an end treatment is found to be on the CMP culverts, removal of the end treatment will be considered incidental to the various contract items.

Initial Inspection held on 10-11-24 & 10-15-24. Above table produced from that inspection.

Culvert type and size obtained from a combination of visual inspection and original construction plans. Additional repair may be required at time of construction.

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### SCOPE OF WORK

Work on this project involves cleaning and inspection of pipe culverts. Lining of the pipe culverts is also anticipated along with replacing/resetting pipe culvert end sections.

### UTILITIES

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

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

### SEQUENCE OF OPERATIONS

The Contractor will submit to the Area Engineer a minimum of 1 week prior to the Preconstruction Meeting a detailed plan of how the pipe culvert repair, cleaning and inspection will be staged. The plan will show how the Contractor is going to maintain traffic at each pipe culvert site, where equipment is going to be stored, the total length of the work space if a lane of traffic needs to be closed to traffic, and the methods used to prevent material removed from the pipe culverts from entering the waterway. These plans will be approved by the Area Engineer prior to starting work on the pipe culvert cleaning and inspection.

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 will be submitted for review a minimum of one week prior to potential implementation.

### GENERAL TRAFFIC CONTROL

The roadways will remain open to traffic at all times.

On a 2 lane roadway, one lane of traffic may be closed during work hours, with traffic control being handled with the use of Flaggers as per Standard Plate 634.23. The length of a work zone will be limited to 1 culvert site and there will be a minimum of 1000 Ft between work zones. If 2 culverts are within 200 Ft of each other it can be considered 1 work site. If work can safely be performed from the shoulder of the roadway or beyond the shoulder, traffic control will be as per Standard Plate 634.03.

Flaggers and FLAGGER symbol signs (per standard plate 634.23) will be in place when work activities or equipment present a hazard to workers, through traffic, or encroaches into driving lanes open to traffic, which will then be closed to traffic.

Traffic will be maintained on the driving lanes. Use of the shoulder as a driving lane will not be permitted. Any damage to the shoulder due to rerouted traffic or Contractor's equipment will be repaired at no expense to the Department.

The Contractor will accommodate vehicles up to 16 feet wide through the work area at all times.

Traffic control devices will be placed beyond the surfaced edge of the roadway when not in use.

Existing guide, route, informational logo, regulatory, and warning signs will be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging, and resetting of existing traffic control devices, including delineation, will be the responsibility of the Contractor. Cost for this work will be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost will be replaced by the Contractor at no cost to the State.

All temporary traffic control sign locations will be set in the field by the Contractor and verified by the Engineer prior to installation.

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

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

Unless otherwise stated in these plans, work will not be allowed during hours of darkness.

Fixed location signing placed more than 4 calendar days prior to the start of construction will be covered or laid down until the time of construction. The covers must be approved by the Engineer prior to installation. The cost of materials, labor, and equipment necessary to complete this work will be incidental to other contract items. No separate payment will be made.

All fixed location signs, sign posts, and breakaway bases will be removed within 7 calendar days following pavement marking.

### TRAFFIC CONTROL SIGNS

Sufficient traffic control devices have been included in these plans to sign two workspaces as per Standard Plate 634.03 and two workspaces as per Standard Plate 634.23. If the Contractor elects to work on additional locations simultaneously, the cost for additional traffic control devices will be incidental to the contract unit price per square foot for TRAFFIC CONTROL SIGNS.

### FLAGGING

Operations will be conducted so that the traveling public will not have to wait longer than 15 minutes at the flagger station.

It is required that the flaggers be able to communicate with one another. If an emergency vehicle needs to pass through the project, the Contractor will be required to expedite traffic movement. All costs associated with this will be incidental to the contract unit price per hour for FLAGGING

### CLEANOUT PIPE CULVERTS

The contract item CLEANOUT PIPE CULVERT is included in this contract for use at those locations where water and sediment levels did not allow for any type of visual inspection inside of the culvert. The SD 10 Table of Mainline Culvert Work indicate locations where this contract item will be utilized.

Cleanout of pipe culverts will be done in advance of pipe culvert repair operations, as indicated in the SD 10 Table of Mainline Culvert Work. Following cleaning, pipe inspection will be completed with a CCTV camera. The inspection will determine any deviations in the vertical and horizontal alignments, location and size of any gaps in joints, and location of any damage.

The pipe culvert cleaning and inspection will be scheduled such that there is adequate time to evaluate what repairs are required and allow for ordering and delivery of pipe culvert repair materials.

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

Material removed from the pipe culverts will become the property of the Contractor for disposal.

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

Pipe culverts may need to be dewatered to allow for CCTV inspection.

The pipe culvert will be cleaned to the satisfaction of the Engineer and the cleaning will be adequate to determine pipe condition and potential repair techniques.

Refer to the Special Provision for Glass Reinforced Plastic (GRP) Ultraviolet Light (UV) Cured In Place Pipe (CIPP) Liner regarding requirements for the CCTV Camera and inspection.

All costs to dewater, clean pipes, dispose of removed materials and CCTV camera inspect pipe culverts will be incidental to the contract unit price per each for CLEANOUT PIPE CULVERT.

The contract item CLEANOUT PIPE CULVERT will be paid for a maximum of one time for each pipe culvert.

**When the contract item CLEANOUT PIPE CULVERT is indicated at a culvert site, the SDDOT will not be responsible for any materials that were ordered prior to the culvert being cleaned and CCTV inspected.**

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### **CLEANOUT FOR CULVERT TREATMENT**

The contract item CLEANOUT FOR CULVERT TREATMENT will be paid for a maximum of one time for each pipe culvert. The contract item CLEANOUT FOR CULVERT TREATMENT will not be paid for if during the contract work item CLEANOUT PIPE CULVERTS, it is determined that culvert lining is not possible. In addition, the contract item CLEANOUT FOR CULVERT TREATMENT will not be paid if after the initial cleanout (paid as CLEANOUT PIPE CULVERTS) a 2<sup>nd</sup> cleanout effort is not necessary to line the pipe.

### **ENGINEER DRAWING AND DESIGN CALCULATION SUBMITTALS**

The Contractor will submit the engineering drawing and design calculations for the culvert liners, as required by the various culvert lining Special Provision in Adobe PDF format.

Adobe PDF submittals will be sent to the following email addresses:

[Scott.Schneider@state.sd.us](mailto:Scott.Schneider@state.sd.us)  
[Michael.Welch@state.sd.us](mailto:Michael.Welch@state.sd.us)

### **RCP AND CMP CULVERT REPAIRS FOR MAINLINE PIPE 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 will be submitted for approval to the Engineer. No separate payment for dewatering will be made.

Resetting and replacement of RCP and CMP will be completed prior to culvert lining.

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

Tie bolts will be installed at all joint locations where existing pipe sections and end treatments are being reset or installed new. Tie bolts will also be installed, as indicated in the Table of Mainline Culvert Work, on the inside of the culverts to tie existing culvert section together. This may require drilling holes into the existing pipe sections and end treatments. Tie bolts will be installed in accordance with Standard Plate No. 450.18. New RCP culvert installations will have all the joint locations tied together with tie bolts.

Prior to culvert repair work the Contractor will remove and stockpile all of the in place topsoil from the construction areas. On completion of construction operations this salvaged topsoil will be spread evenly over the newly constructed embankment inslopes. Removal and replacement of topsoil will be incidental to the various culvert contract items.

When necessary to remove end sections of CMP culverts, they may be cut with a torch. If the pipe culvert is cut the damaged area will be painted with a galvanizing paint approved by the Engineer. All costs associated with cutting and painting will be incidental to the various contract items.

The Contractor is advised of the risk of lead exposure when cutting galvanized paint. The Contractor should plan his/her operations accordingly, and inform employees of hazards of lead exposure.

### **CORRUGATED METAL PIPE**

Corrugated metal pipes will have 2 3/8-inch x 1/2-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes will have 3-inch x 1-inch or 5-inch x 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

For pipe segments of 10' or less, helical spun pipe with rolled ends will not be required. Riveted pipe will be allowed.

The gauge of the corrugated metal ends will match the thickest gauge of corrugated metal pipe it is connected to. When connecting to an existing culvert, the gauge of the corrugated metal ends will be 14 gauge.

### **CORRUGATED METAL PIPE END SECTION REPLACEMENT**

A linear footage quantity of CMP, at several locations, has been shown in the SD 10 Table of Mainline Culvert Work. At these locations it is anticipated that the ends of the CMP culvert are heavily deteriorated, while the middle portion of the CMP culvert is still in such a condition that lining is possible. The end segments of the CMP culvert will be replaced with new CMP, while retaining the middle portion of the CMP culvert.

The extent of CMP culvert replacement will be determined through CCTV inspection and excavation into the inslope of the roadway. At several locations excavation is anticipated to be necessary in order to locate heavily deteriorated CMP culvert ends.

The extent of excavation and CMP culvert replacement will be limited to the inslope and will not go under the mainline driving surface or the shoulders of the roadway. If excavation is required, the culvert site will be left in such a condition as not to create a hazard until final repairs are completed.

Upon determining the CMP culvert is in such a condition that lining is possible, the Engineer will determine the length of CMP that will need to be installed. This may vary significantly from what is shown in the SD 10 Table of Mainline Culvert Work.

The replacement CMP culvert will be butted up and attached to the in-place CMP culvert, as approved by the Engineer. The liner will then be installed through the entire length of the in-place CMP and the replacement CMP culvert sections that were added.

The cost of excavation will be included in the various contract items for culvert repair.

In the event that excavation has occurred and it is determined the CMP culvert condition is such that it cannot be lined but has some degree of functionality, replacement CMP culvert will be butted up and attached to the in-place CMP culvert, as approved by the Engineer.

In the event that excavation has occurred and it is determined the CMP culvert condition is such that it cannot be lined and the culvert is not functioning, no CMP culvert replacement will be installed.

Compaction of the reconstructed inslope will be to the satisfaction of the Engineer.

### **TABLE OF MAINLINE PIPE CULVERT REPAIR**

Pipe culvert lengths shown in the SD 10 Table of Mainline Culvert work were obtained from the original grading plans and were not verified in the field. Length of CIPP liners shown in plans are based upon field measurements.

It is the Contractors responsibility to investigate each pipe culvert pipe repair site to determine the pipe culvert size and length, along with other information needed to prepare a bid.

All culverts have at least 1 culvert marker in place and all culvert ends were located for preparation of these plans, however, locating of culverts may require more than a visual inspection. Metal detectors, probing rods and excavation may be required to locate the culverts, especially if water is present. Stationing from grading plans for the culverts and nearby section line roadways are shown in the plans to help locate the culverts, however the exact installation location may not match what was shown in the grading plans.

### **SEDIMENT CONTROL**

Sediment control may be required if water is flowing through the pipe culvert at the time of cleaning. Otherwise, sediment control is not anticipated.

The Contractor will implement appropriate sediment control measures prior to water flushing in order to prevent discharges beyond the project boundaries.

Wattles and Silt Fence have been provided in the Estimate of Quantities and will be used to capture pipe cleanout material. Placement of the wattles and Silt Fence will be as directed by the Engineer.

### **CONTRACTOR FURNISHED TOPSOIL**

Several culverts are being shortened as the culvert barrel section extends past the inslope. These culverts will have flared ends installed following the shortening. A quantity of 50 Cu.Yd. of CONTRACTOR FURNISHED TOPSOIL has been included in the Estimate of Quantities should additional fill material be needed to blend the flared ends with the inslope.

Contractor furnished topsoil will be free from stones, coarse gravel, or similar objects larger than 3/4 inch in diameter. Brush, stumps, roots, wood, objectionable weeds, litter, or any other material which may be harmful to plant growth will not be allowed. Organic material will be decomposed.

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



**EROSION CONTROL WATTLE**

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

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

Erosion control wattles will remain on the project to decompose.

12" Diameter Erosion Control Wattles have been added 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 will be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

**LOW FLOW SILT FENCE**

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

<http://apps.sd.gov/HC60ApprovedProducts/main.aspx>

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

**TABLE OF LOW FLOW SILT FENCE**

MRM	Location	Quantity (Ft)
267.00 +0.44 L & R	Protect Wetland & Waterway	80
270.00 +0.68 L & R	Protect Wetland	80
271.06 +0.06 L & R	Protect Wetland	80
271.00 +0.42 L & R	Protect Wetland	80
274.00 +0.72 L & R	Protect Wetland	80
278.00 +0.06 L & R	Protect Wetland	80
	Additional Quantity:	70
	Total:	550

**EROSION CONTROL**

The areas to be seeded consist of areas at pipe culvert locations where resetting or replacement of pipe culvert sections or end treatments are required. In addition, any location where vegetation was destroyed, such that quick revegetation is not expected will be reseeded.

The estimated area requiring erosion control is 1/2 Acre. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, and seeding will be incidental to the contract lump sum price for EROSION CONTROL.

The limits of erosion control work will be determined by the Engineer during construction.

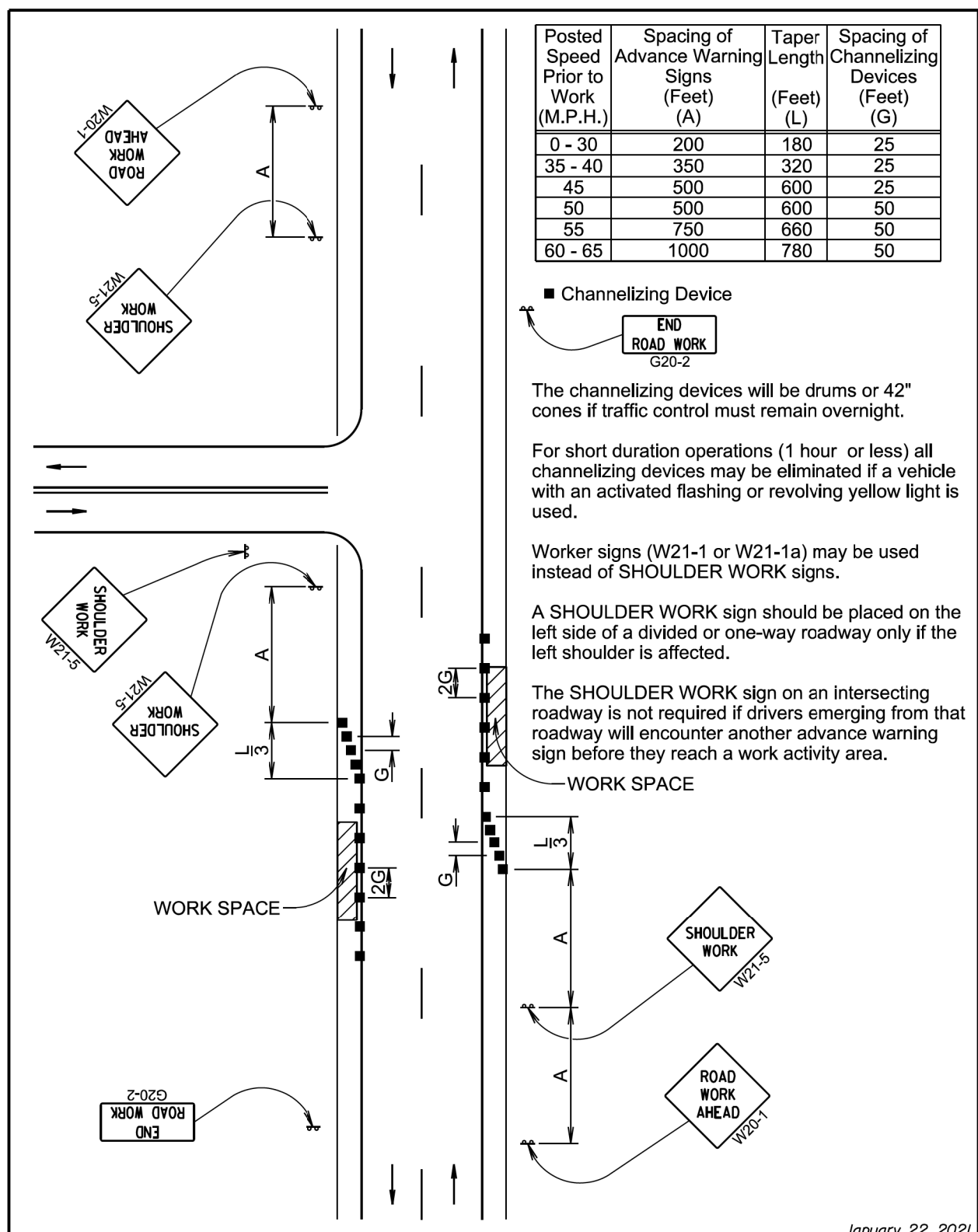
Type C Permanent Seed Mixture will be used on this project.

Application of fertilizer will not be required on this project.

Type C Permanent Seed Mixture will consist of the following:

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

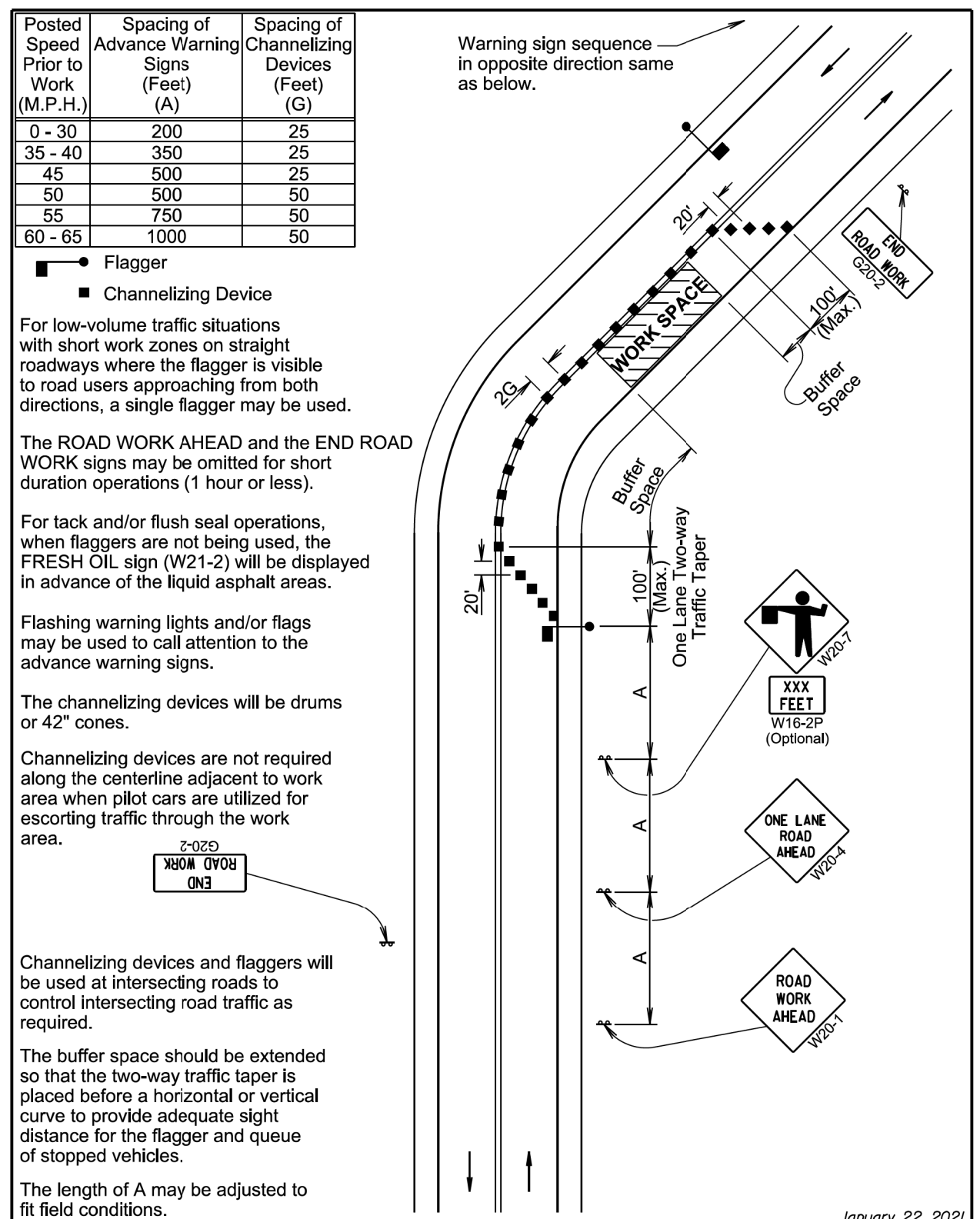
PLOT SCALE - 1:200



January 22, 2021

<b>S D D O T</b>	<b>WORK ON SHOULDERS</b>	PLATE NUMBER <b>634.03</b>
		Sheet 1 of 1

Published Date: 2025



January 22, 2021

<b>S D D O T</b>	<b>LANE CLOSURE WITH FLAGGER PROVIDED</b>	PLATE NUMBER <b>634.23</b>
		Sheet 1 of 1

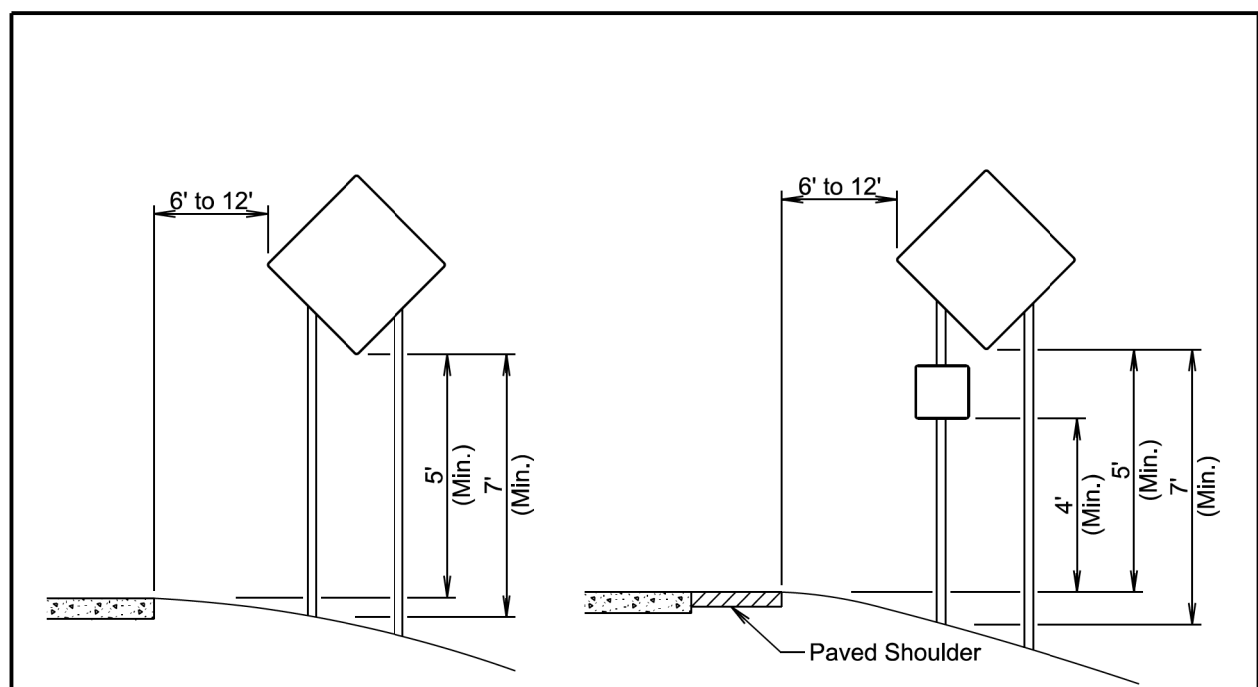
Published Date: 2025

PLOT NAME - 2  
FILE - ... \PRJ\MCPI17PT\63403\_&.63423.DGN

PLOT SCALE - 1:200

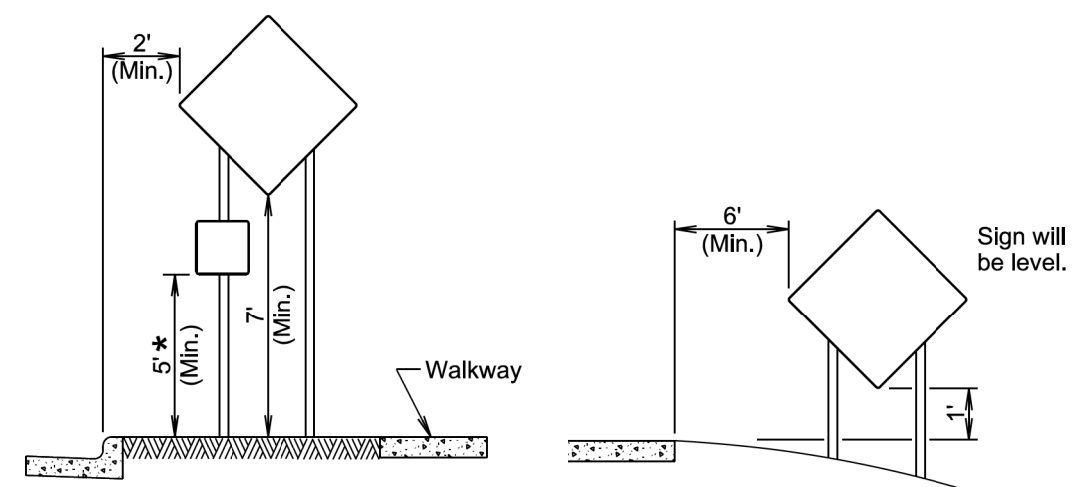
PLOT NAME - 3

FILE - ... \PRJ\NCPH17PT\63464\_ &\_ 63465.DGN



**RURAL DISTRICT**

**RURAL DISTRICT WITH SUPPLEMENTAL PLATE**



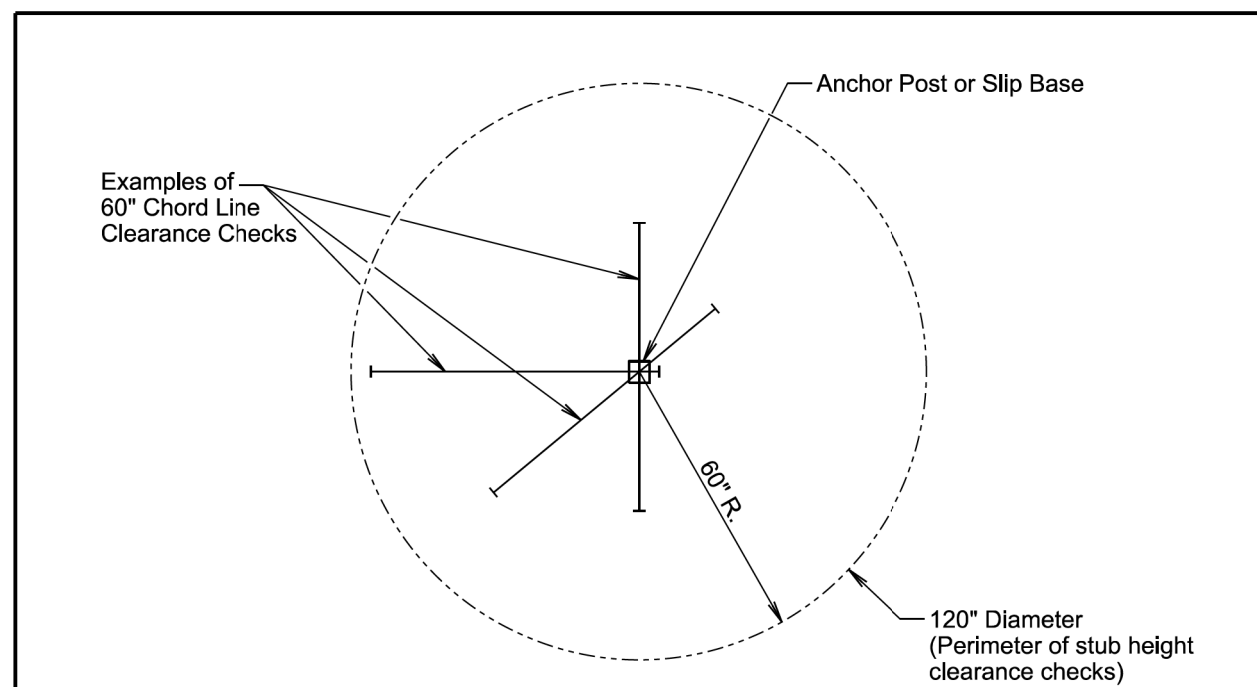
**URBAN DISTRICT**

**RURAL DISTRICT 3 DAY MAXIMUM**  
(Not applicable to regulatory signs)

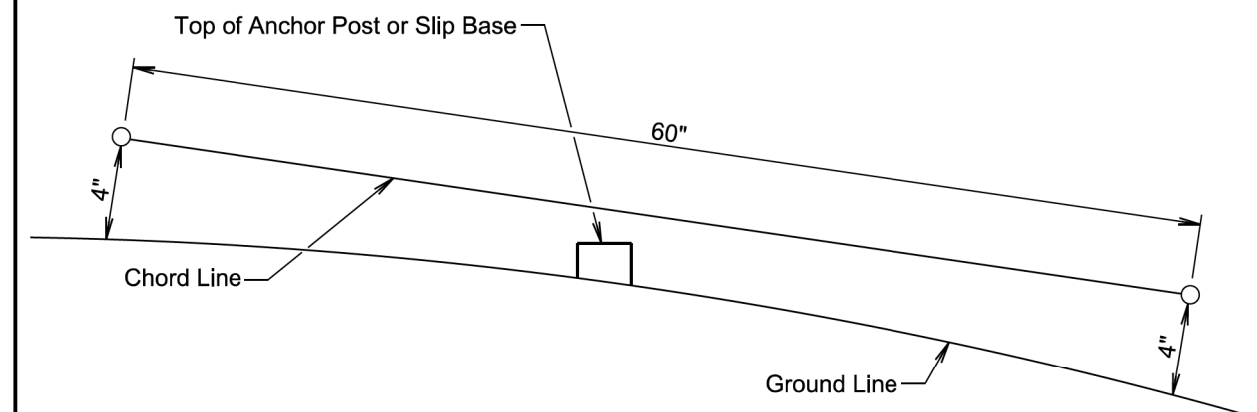
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

<b>Published Date: 2025</b>	<b>S D D O T</b>	<b>CRASHWORTHY SIGN SUPPORTS</b> (Typical Construction Signing)	PLATE NUMBER <b>634.85</b>
			Sheet 1 of 1



**PLAN VIEW**  
(Examples of stub height clearance checks)



**ELEVATION VIEW**

**GENERAL NOTES:**

The top of anchor posts and slip bases WILL 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 will 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.

January 22, 2021

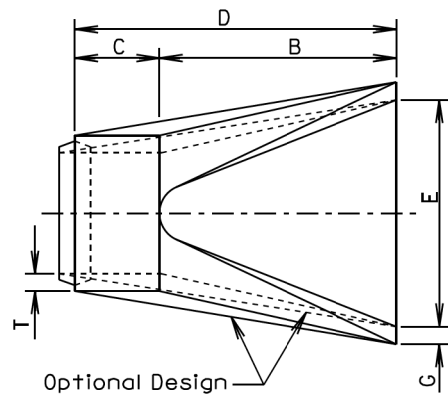
<b>Published Date: 2025</b>	<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER <b>634.99</b>
			Sheet 1 of 1

-PLOTTED FROM - TRAB17882

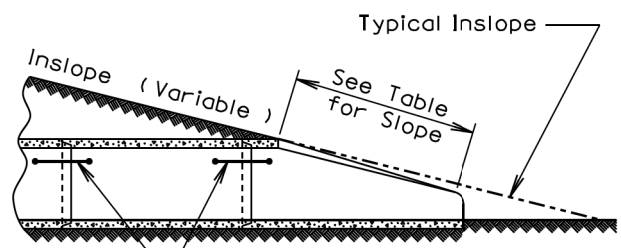
### ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
W21-5	SHOULDER WORK	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
		<b>CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT 274.0</b>			

Plotting Date: 01/07/2025



TOP VIEW

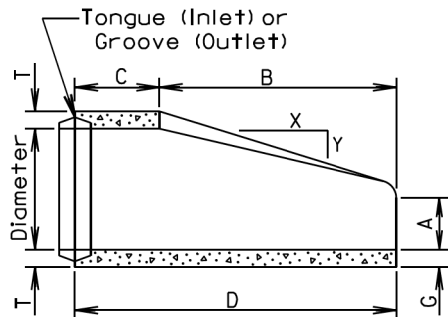


SLOPE DETAIL

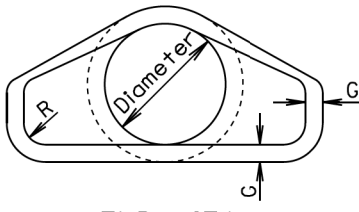
**GENERAL NOTES:**

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

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



LONGITUDINAL SECTION



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4:1	2	4	24	48 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

June 26, 2015

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**R. C. P. FLARED ENDS**

PLATE NUMBER  
450.10

Sheet 1 of 1

Published Date: 2025

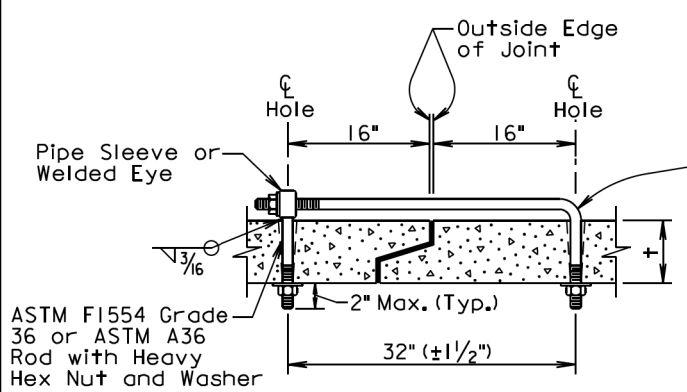
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3/4	5/8	3/4
3/2-6/2	3/4	1
≥ 7	1	1 1/4

**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

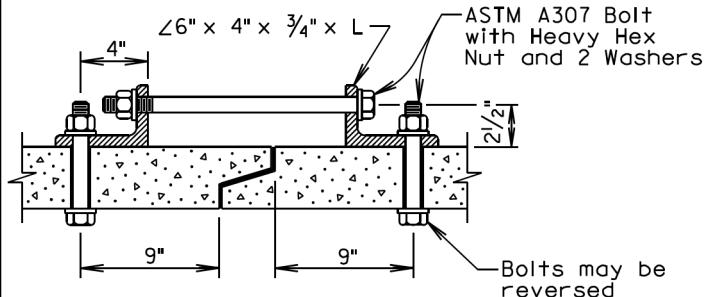
Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1

**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.



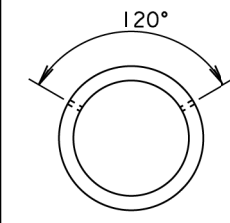
ANGLE AND BOLT TIE

**GENERAL NOTES:**

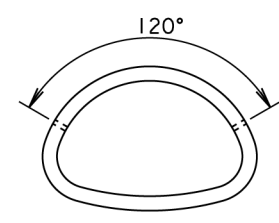
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

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.



END VIEW "CIRCULAR"



END VIEW "ARCH"

February 28, 2013

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**TIE BOLTS FOR R.C.P. AND R.C.P. ARCH**

PLATE NUMBER  
450.18

Sheet 1 of 1

Published Date: 2025

Plotting Date: 01/07/2025

PLOT SCALE - 1:200

PLOT NAME - 5

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

Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2 1/2:1	1 Pc.
15	16	7	8	6	26	30	2 1/2:1	1 Pc.
18	16	8	10	6	31	36	2 1/2:1	1 Pc.
21	16	9	12	6	36	42	2 1/2:1	1 Pc.
24	16	10	13	6	41	48	2 1/2:1	1 Pc.
30	14	12	16	8	46	60	2 1/2:1	1 Pc.
36	14	14	19	9	51	72	2 1/2:1	2 Pc.
42	12	16	22	11	60	84	2 1/2:1	2 Pc.
48	12	18	27	12	69	90	2 1/4:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1 3/4:1	3 Pc.
66	12	18	36	12	87	120	1 1/2:1	3 Pc.
72	12	18	39	12	87	126	1 1/3:1	3 Pc.
78	12	18	42	12	87	132	1 1/4:1	3 Pc.
84	12	18	45	12	87	138	1 1/6:1	3 Pc.

**STANDARD CONNECTIONS**

For 30" through 84"      Alternate for all sizes      For 12" through 24" only

**TUBING ATTACHMENT DETAILS SECTION A-A**

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

**TYPICAL CROSS-SECTION**

Finish Earth Slope as Required  
Approx. 2 1/2:1 Slope  
Flow Line  
Standard Coupling Band

**SECTION A-A (alternate)**

Half Punches (Lugs)  
1/2" I.D. (Metal Edge)

**GENERAL NOTES:**

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

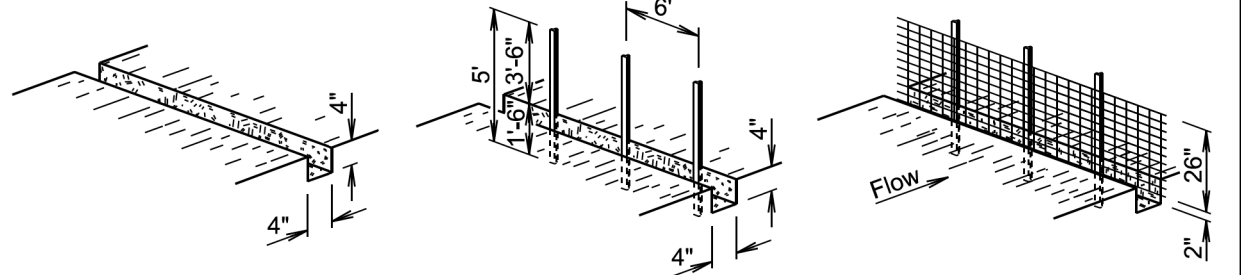
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.

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

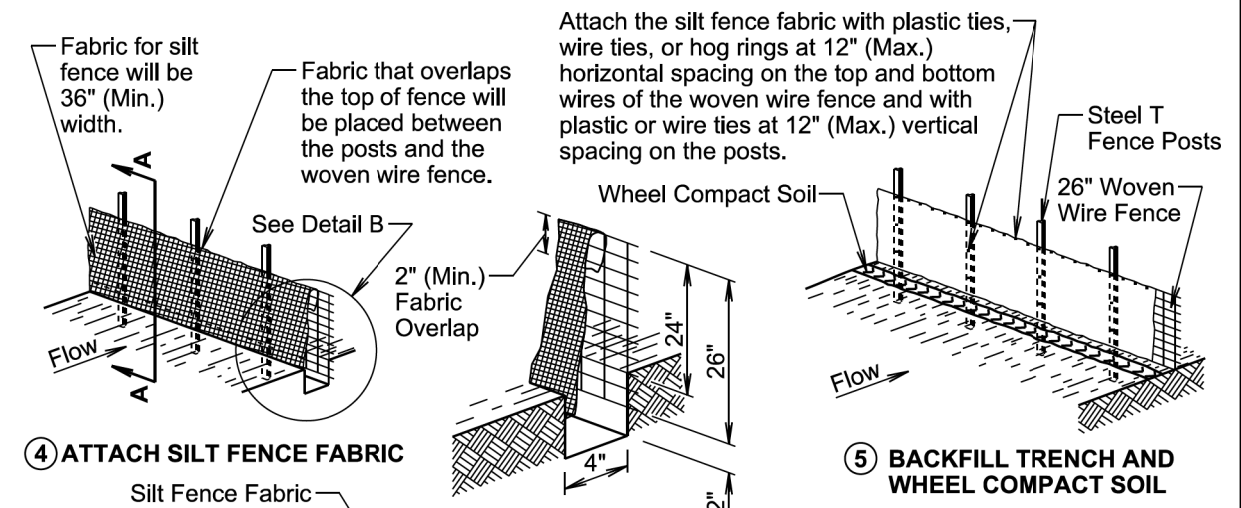
March 31, 2000

<b>S D D O T</b>	<b>C.M.P. FLARED ENDS</b>	PLATE NUMBER <b>450.35</b>
	Published Date: 2025	Sheet 1 of 1

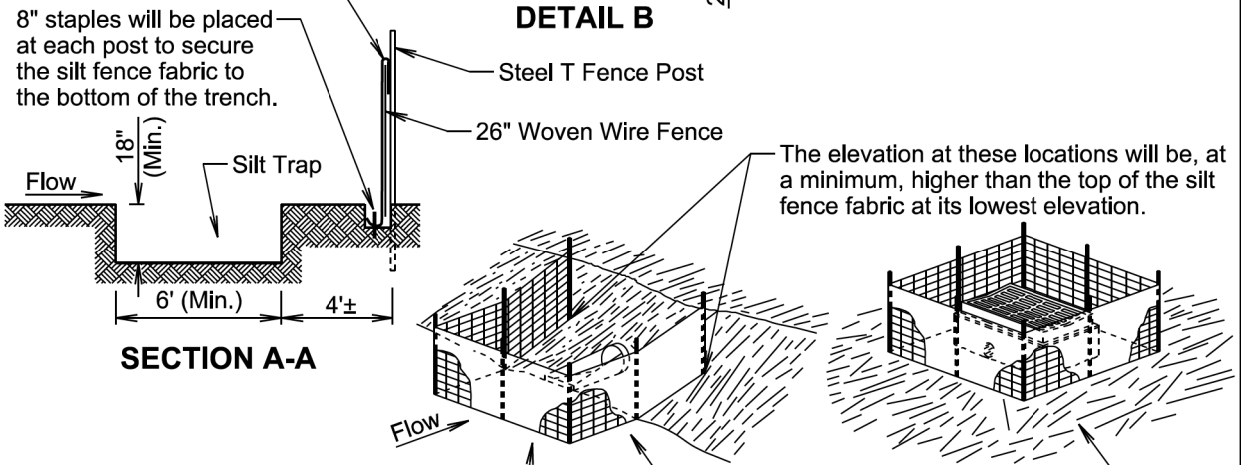
### MANUAL LOW FLOW SILT FENCE INSTALLATION



- EXCAVATE TRENCH
- DRIVE STEEL T FENCE POSTS
- ATTACH 26" WOVEN WIRE FENCE TO POSTS



- ATTACH SILT FENCE FABRIC
- BACKFILL TRENCH AND WHEEL COMPACT SOIL



#### SECTION A-A

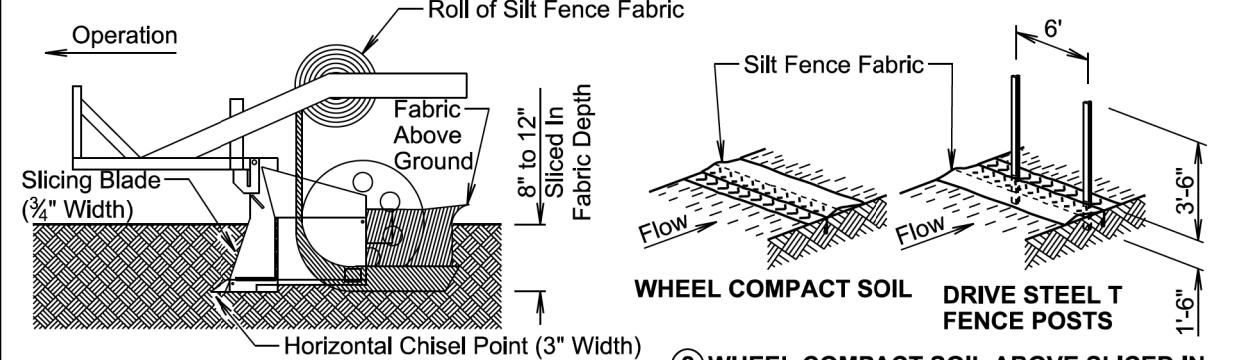
The silt fence length and width may be adjusted due to a larger pipe, multiple pipe, or other circumstances during construction as determined by the Engineer.

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

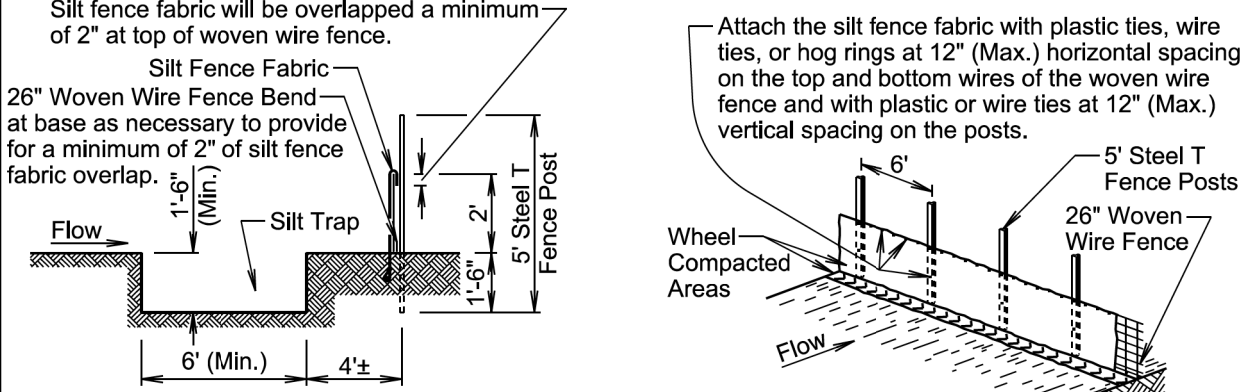
February 14, 2020

<b>S D D O T</b>	<b>LOW FLOW SILT FENCE AND SILT TRAP</b>	PLATE NUMBER <b>734.04</b>
	Published Date: 2025	Sheet 1 of 2

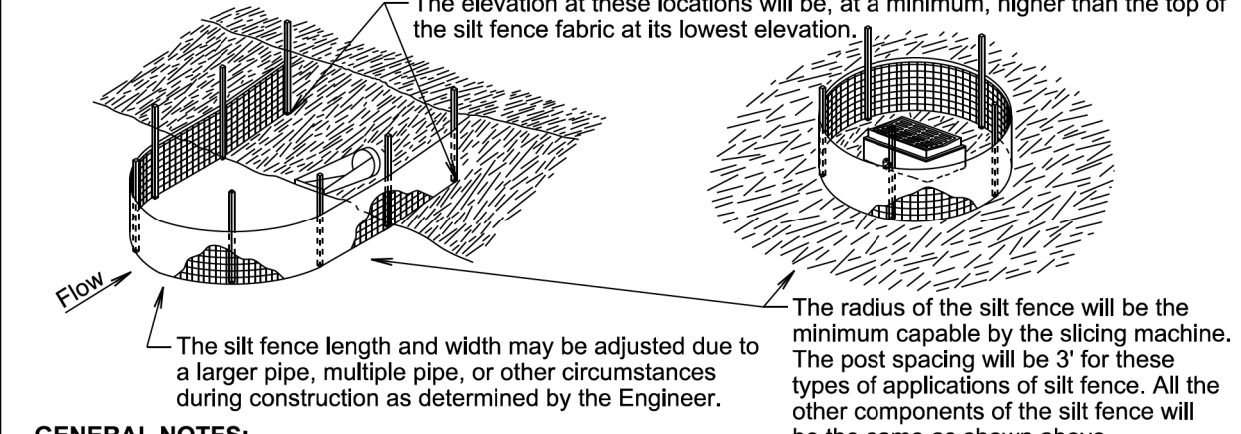
### MACHINE SLICED LOW FLOW SILT FENCE INSTALLATION



- INSTALL SILT FENCE FABRIC BY MACHINE SLICING METHOD.
- WHEEL COMPACT SOIL ABOVE SLICED IN PORTION OF FABRIC AND THEN DRIVE STEEL T FENCE POSTS.



- ATTACH 26" WOVEN WIRE FENCE TO POSTS AND ATTACH SILT FENCE FABRIC.



#### GENERAL NOTES:

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

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

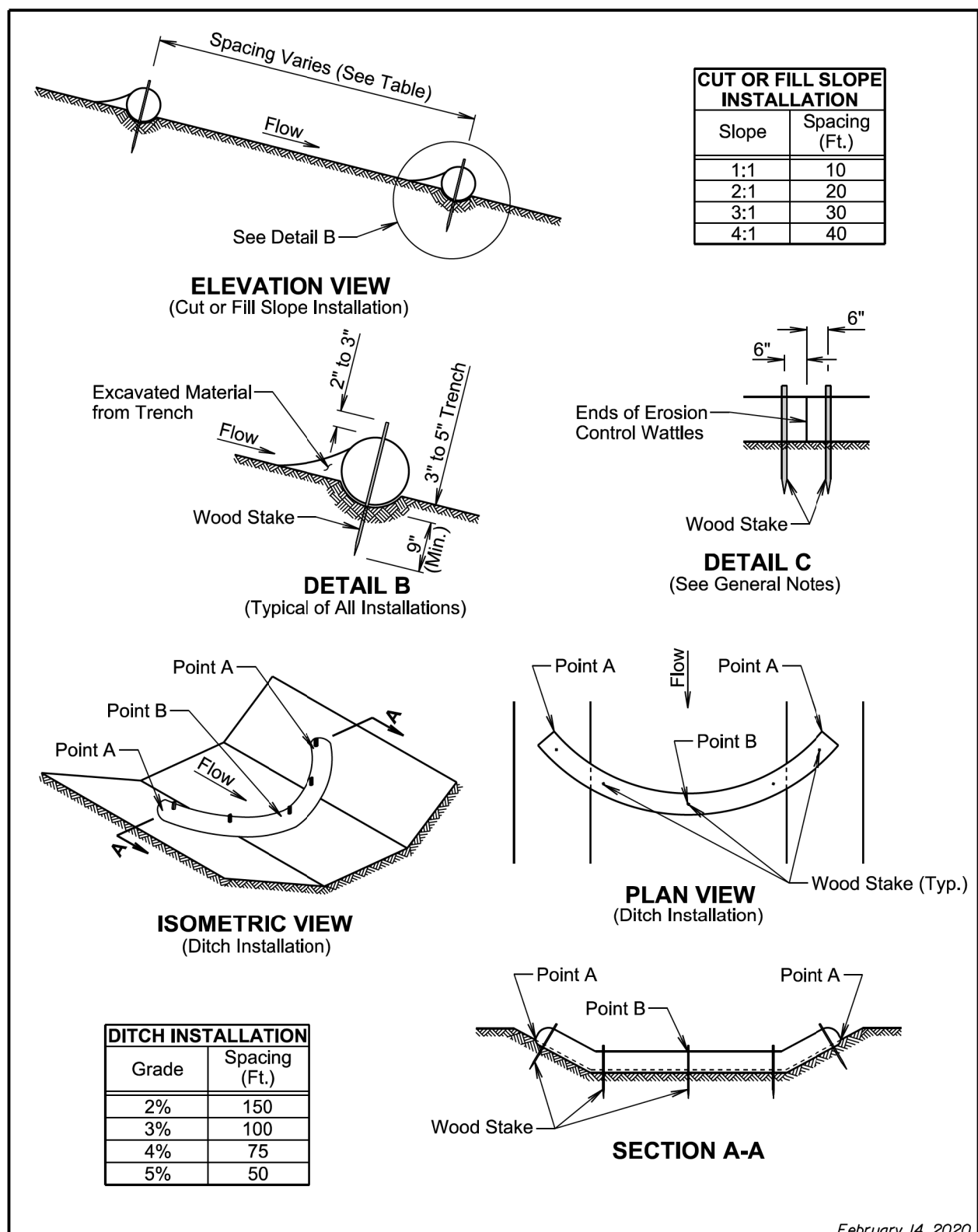
February 14, 2020

<b>S D D O T</b>	<b>LOW FLOW SILT FENCE AND SILT TRAP</b>	PLATE NUMBER <b>734.04</b>
	Published Date: 2025	Sheet 2 of 2

PLOT SCALE - 1:200

PLOT NAME - 6

FILE - ... \PRJ\MCPI17PT\73406\_&-73406.DGN



February 14, 2020

February 14, 2020

Published Date: 2025	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 1 of 2

Published Date: 2025	S D D O T	EROSION CONTROL WATTLE	PLATE NUMBER 734.06
			Sheet 2 of 2

**GENERAL NOTES:**

At cut or fill slope installations, wattles will 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 will 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 will 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 will be placed 6" from the ends of the wattles and the spacing of the stakes along the wattles will be 3' to 4'.

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

The Contractor and Engineer will inspect the erosion control wattles in accordance with the storm water permit. The Contractor will remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

Sediment removal, disposal, or necessary shaping will be as directed by the Engineer. All costs for removing accumulated sediment, disposal of sediment, and necessary shaping will 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 will be incidental to the contract unit price per foot for the corresponding erosion control wattle contract item.

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

-PLOTTED FROM - TRAB17882