



STORM WATER PERMIT None Required

NO. SHEETS	SOUTH
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Ζ 123

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0020	Construction and Maintenance of Detour(s)	Lump Sum	LS
009E0010	Mobilization	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	192.0	SqYd
110E1700	Remove Silt Fence	15	Ft
120E0600	Contractor Furnished Borrow Excavation	270	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
250E0020	Incidental Work, Grading	Lump Sum	LS
260E1010	Base Course	192.8	Ton
260E6010	Granular Material	82.0	Ton
320E1200	Asphalt Concrete Composite	57.5	Ton
421E0100	Pipe Culvert Undercut	23	CuYd
450E0192	42" RCP Class 2, Furnish	58	Ft
450E0200	42" RCP, Install	58	Ft
450E2032	42" RCP Flared End, Furnish	2	Each
450E2033	42" RCP Flared End, Install	2	Each
634E0010	Flagging	15.0	Hour
634E0110	Traffic Control Signs	176.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	2	Each
634E0600	4" Temporary Pavement Marking Tape Type I	2,344	Ft
634E1210	State Furnished Portable Changeable Message Sign	3	Each
734E0010	Erosion Control	Lump Sum	LS
734E0602	Low Flow Silt Fence	60	Ft
734E0610	Mucking Silt Fence	5	CuYd
831E0300	Reinforcement Fabric (MSE)	221	SqYd

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: <<u>https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf</u>>

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 A: WETLANDS

All efforts to avoid and minimize wetland impacts from the project have resulted in approximately 0.423 acres of wetlands (includes temporary and permanent) becoming impacted.

Table of Impacted Wetlands

Wetland No.	Station	Perm. Impact Left (Acres)	Perm. Impact Right (Acres)	Temp. Impact Left (Acres)	Temp. Impact Right (Acres)	Total Impac (Acres
1	121+00	0.001	0.00	0.239	0.183	0.423

Action Taken/Required:

Permanent impacts identified in the Table of Impacted Wetlands will not be mitigated as impacts are to USACE unregulated wetlands and/or less than one-tenth of an acre. Temporary impacts identified in the Table of Impacted Wetlands will not be mitigated as original contours and elevations will be re-established as designated in plans. Prior to initiating temporary work in wetlands, the Contractor will submit a plan to the Project Engineer in accordance with Section 7.21 D of the Specifications.

The Contractor will notify the Project Engineer if additional easement is needed to complete work adjacent to any wetland. The Project Engineer will obtain an appropriate course of action from the Environmental Office before proceeding with construction activities that affect any wetlands beyond the work limits shown in the plans.

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 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 (≥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.

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: < <u>http://sdleastwanted.com/maps/default.aspx ></u>

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

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	025-151	2	21

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.

< http://denr.sd.gov/des/sw/swgformsandpermits.aspx >

If construction dewatering is required and this project is currently covered under a General Permit for Stormwater Discharges Associated with Construction Activities, the contractor will need to submit the dewatering information to the SDDANR using the following form:

< http://denr.sd.gov/des/sw/eforms/AddTempInfoFillable.pdf >

The Contractor will provide a copy of the approved permit or the submitted dewatering information to the Project Engineer prior to proceeding with any dewatering activities. The approved permit or submitted dewatering information must be kept on-site and as part of the project records.

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: < http://denr.sd.gov/des/sw/WhatisaDMR.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:

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

obtained for this project.

Action Taken/Required:

All earth disturbing activities not designated within the plans 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 gualified 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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SOUTH DAKOTA	025-151	3	21

State Historic Preservation Office (SHPO or THPO) concurrence has not been

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.

STATE OF	PROJECT	SHEET	TOTAL SHEETS
SOUTH DAKOTA	025-151	4	21

SCOPE OF WORK

Work on this project involves replacement of an existing CMP culvert with the installation of 42" RCP.

Work will be completed the one-half roadway width at one time and be open to traffic.

SEQUENCE OF OPERATIONS

Mainline culvert replacement will be done half width.

The following will be the sequence of operations for replacing a mainline culvert: 1. Place erosion control.

- 2. Widen shoulder (Construction & Maintenance of Detours).
- 3. Sawcut and remove asphalt surfacing one half roadway width.
- 4. Excavate to remove in place culvert.
- 5. Undercut for new culvert sections.
- 6. Install new culvert sections.
- 7. Place subbase and base course to allow traffic to return to roadway.
- 8. Repeat Steps 2 thru 7 for the 2nd half of the roadway.

The Contractor will be allowed to place the Asphalt Concrete Composite after the entire culvert placement has been completed.

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

GENERAL TRAFFIC CONTROL

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.

State furnished message boards will be placed outside Lake City on SD 10, in Webster on US 12 and just outside Roslyn on SD 25 notifying the traveling public that the roadway will be narrowed ahead. The Project Engineer will call the Region Traffic Engineer to set up delivery of message boards and to program with an appropriate message prior to the start of the project.

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

All haul trucks will be equipped with an additional flashing amber light that is visible from the backside of the haul truck. The costs for the flashing amber lights will be incidental to the various related contract items.

The Contractor will be required to widen the shoulders with borrow material and base course surfacing as shown in the plans to maintain traffic through the project site. Changes to the location or geometry of the shoulder widening as shown in the plans is subject to approval by the Project Engineer. All costs to temporarily widen the roadway at the culvert replacement site will be incidental to the contract lump sum price for CONSTRUCTION AND MAINTENANCE OF DETOUR(S). At a minimum, the widening will be constructed so that no part of the in-slope is steeper than 3:1 and that a minimum of 12" of base course surfacing is placed to accommodate traffic.

The construction of temporary shoulder widening may require the installation of temporary drainage structures. The Contractor will be responsible for adequately sizing the temporary drainage structure to reduce the potential for upstream flooding at the crossing. Costs to provide temporary drainage structures will be incidental to the contract lump sum price for CONSTRUCTION AND MAINTENANCE OF DETOUR(S).

Upon completion of the new culvert installation, any excess material used for temporary widening that is no longer required will be removed from the project. All costs to remove the temporary widening will be incidental to the contract unit price for CONSTRUCTION AND MAINTENANCE OF DETOUR(S).

CONTRACTOR FURNISHED BORROW EXCAVATION

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

Contractor Furnished Borrow Excavation will be used to build out the shoulders for Construction and Maintenance of Detour(s).

Restoration of the Contractor Furnished Borrow Excavation site will be the responsibility of the Contractor.

WATER FOR COMPACTION OF GRANULAR MATERIALS

Cost of water for compaction of the granular material will be incidental to the contract unit price for the various contract items. Six percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

REINFORCEMENT FABRIC (MSE)

221 square yards of Reinforcement Fabric (MSE) is included in the materials quantities for bidding purposes. This quantity is assumed to cover approximately 188 square yards. The bid quantity has been increased by 15% to account for overlaps.

The top of the subgrade will be prepared by smoothing the surface of the subgrade to minimize any ruts, ridges, and depressions. Any rocks or other protrusions that might damage the fabric will be removed. The fabric will be unrolled perpendicular to the centerline and overlapped a minimum of 2 feet.

The fabric will be placed as taut as possible with minimal wrinkles. Placement will be done so that subsequent granular cover material does not shove, wrinkle or distort the in place fabric. The overlaps will be shingled in a manner that assures granular material will not be forced under the fabric during backfilling operations. The fabric may be held in place with small piles of granular material or staples. No traffic will be allowed on the uncovered fabric.

Granular material will be dumped at least 20 feet behind the leading edge of the backfill and pushed into place with a loader or dozer from the covered areas to the uncovered areas. The granular material will be compacted to 97% maximum dry density as determined by the Specified Density Method.

The fabric will conform to the specification for Geotextiles and Impermeable Plastic Membrane, Reinforcement Fabric (MSE) (Section 831 of the Specifications). The fabric will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

Fabric will be paid for at the contract unit price per square yard for REINFORCEMENT FABRIC (MSE). Payment quantities will be based on the area covered plus 15%. Overlaps are accounted for the additional 15%. Payment will be full compensation for furnishing and installing the fabric only. Granular backfill materials will be paid for under separate bid items.

TABLE OF MAINLIN QUANTITIES

	GRANULAR MATERIAL FOR CULVERT BEDDING & UNDERCUT	BASE COURSE FOR SURFACING (18" DEPTH)	TOTAL
STATION	(Ton)	(Ton)	(TON)
121+00	82.0	192.8	274.8

STATE OF	PROJECT	SHEET	TOTAL
 SOUTH DAKOTA	025-151	5	21

TABLE OF MAINLINE CULVERT REPLACEMENT EXCAVATION

MAINLINE CULVERT REPLACEMENT

Pipe culvert on SD 25 at Sta. 121+00 (MRM 191.10) will be installed in accordance with the following notes and as shown on the Culvert Replacement Detail.

If the site requires more substantial dewatering than can be accomplished with sandbags, it will be necessary to construct dikes/cofferdams in order to provide dry installation of the pipe. The Contractor may propose alternate methods of installation for the Engineer's approval. If alternate methods are proposed, the Contractor will submit a written plan with detail to the Engineer a minimum of one week prior to the preconstruction meeting. All costs associated with furnishing, constructing, backfilling and removal of the dikes will be incidental to various contract unit prices for pipe.

After the existing pipe has been removed, the new pipe culvert will be undercut to a minimum depth of 1 foot. The depth of undercut is an estimate and the actual depth necessary will be determined during construction. The Engineer will determine how much undercut will be done in accordance with Section 421 of the specifications but will not reduce the undercut to less than 1 foot in depth.

Due to the presence of water, select fill material for backfilling the undercut area will conform to the gradation requirements of Section 421.2 A. All other requirements of Section 421 will apply.

Pipe culverts will be bedded in accordance with Section 450.3 F.2. Class B Bedding with the following exceptions. The excavated area will extend 2 feet from the outermost diameter on both sides of the pipe with the back of the excavated area being sloped 3:1 upward to the top of the roadway surface. Select fill material for Class B Bedding will conform to the gradation requirements of Base Course in Section 882.

After the minimum testing requirements of M.S.T.R Section 4.1.F.3.a.1 (SDDOT Materials Manual) have been met, the minimum density testing requirements will be one test per zone. Each zone from the top of the pipe to the top of the subgrade will be 2 feet in depth. Moisture testing will remain as per M.S.T.R.

The remainder of the pipe culvert excavation will be backfilled with soils taken from the pipe removal excavation or other suitable material as approved by the Engineer. The backfill will be benched into 3:1 excavation slope. Compaction of the backfill material will be governed by the Specified Density Method.

After the new pipe has been backfilled to the top of the subgrade, a 12" depth of Base Course and 5" (2-2.5" lifts) depth of asphalt concrete composite will be placed as a patch matching the existing asphalt concrete.

All costs to remove and dispose of asphalt concrete pavement, including full depth saw cutting of the asphalt concrete pavement, will be incidental to the contract unit price per square yard to REMOVE ASPHALT CONCRETE PAVEMENT. All excavation necessary for Class B Bedding and the pipe installation will be incidental to the contract unit price per foot for the corresponding pipe installation contract items. The excavation of material for pipe culvert undercut will be paid for at the contract unit price per cubic yard for PIPE CULVERT UNDERCUT.

The select fill material used for backfilling the pipe culvert undercut and Class B Bedding will be paid for at the contract unit price per ton for GRANULAR MATERIAL. The 3" layer of bedding material to form the cradle in the pipe foundation will be incidental to the corresponding pipe installation contract items.

Asphalt concrete pavement will be placed full width over the culvert replacement. Full width will consist of 32' width of mainline and shoulders and a 2.5' sluff on each side. The cost for asphalt concrete composite installed over the pipe replacement will be paid for at the contract unit price per ton for ASPHALT CONCRETE COMPOSITE.

Pipe flowline will match that of existing pipe. This may require that ditches be excavated in each direction from the pipe ends to maintain proper water flow through the pipe. The excavated material will become the property of the Contractor for his disposal. All costs associated with this work will be incidental to the contract lump sum price for INCIDENTAL WORK, GRADING,

PIPE CULVERT UNDERCUT

	Undercut Depth	Quantity	
Station	(Ft)	(CuYd)	
121+00	1	22.7	
	Total:	22.7	

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



SHRINKAGE FACTOR: Embankment +40%

TEMPORARY PAVEMENT MARKINGS

Temporary pavement marking for stop bars will consist of 4" temporary pavement marking tape type I. Placement of each 24" white stop bar will be accomplished by placing six pieces of 4" x 12' tape adjacent to one another. Each workspace requires two stop bars which is equivalent of approximately 144' of 4" tape. (1 workspace at 144' = 144'). Temporary pavement marking tape type I will be required for centerline markings as shown on standard plate 634.25.

PERMANENT PAVEMENT MARKINGS

Permanent pavement markings will be installed by state forces. The Engineer will contact the Region Traffic Engineer to coordinate permanent pavement marking installation.

REMOVE AND REPLACE TOPSOIL

Topsoil will be salvaged and stockpiled prior to starting the culvert replacement site. Limits of this work, depth of salvage, and stockpile location will be directed by the Engineer. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

An estimated 65 cubic yards of topsoil removal and replacement is anticipated for this project. All costs associated with removing and replacing the topsoil will be incidental to the contract lump sum price for REMOVE AND REPLACE TOPSOIL.

STATE OF	PROJECT	SHEET	TOTAL
COLITI			SHEETS
DAKOTA	025-151	6	21

EROSION CONTROL

The estimated area requiring erosion control is 0.8 acres. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, fertilizing, and mulching 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.

MYCORRHIZAL INOCULUM

Mycorrhizal inoculum will 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 will provide certification of the fungal species claimed and the live propagule count. The inoculum will include the following fungal species:

- 25% Glomus intraradices
- 25% Glomus aggregatum or deserticola
- 25% Glomus mosseae
- 25% Glomus etunicatum

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

The mycorrhizal inoculum will be as shown below or an approved equal:

Product

MycoApply

Manufacturer

Mycorrhizal Applications, Inc. Grants Pass, OR Phone: 1-866-476-7800 www.mycorrhizae.com

AM 120 Multi Species Blend

Reforestation Technologies Int. Gilroy, CA Phone: 1-800-784-4769 www.reforest.com

FERTILIZING

The Contractor will apply an all-natural slow release fertilizer prior to seeding or placing sod. The all-natural fertilizer will have a minimum guaranteed analysis of 4-4-4 and be USDA Certified BioBased. It should provide a minimum of 4% (N) nitrogen with a minimum water insoluble nitrogen (WIN) fraction of 2.07%, a minimum of 4% (P2O5) available phosphate, a minimum of 4% (K2O) soluble potash, and a maximum carbon to nitrogen ratio (C:N ratio) of 5:1. The all-natural fertilizer will be free of weed-seed and pathogens accomplished through thermophilic composting, and not mechanical or chemical sterilization, to assure presence of beneficial soil microbiology. The fertilizer will have a near neutral pH, a low salt index, a low biological oxygen demand, contain organic humic and fulvic acids, and have high aerobic organism counts. The fertilizer will also be stable, free of bad odors, and be unattractive as a food source for animals. It should also be in a granular form that is easily spread.

The fertilizer will be applied at a rate of 1,500 pounds per acre in accordance with the manufacturer's recommended method of application.

The all-natural slow release fertilizer will be as shown below or an approved equal:

> Product Sustane

Perfect Blend

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

Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 www.perfect-blend.com

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways, temporary easements under cultivation, and areas designated to be sod.

Type B Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	7
Switchgrass	Dacotah, Forestburg, Nebraska 28, Pathfinder, Summer, Sunburst, Trailblazer	3
Indiangrass	Holt, Tomahawk, Chief, Nebraska 54	3
Big Bluestem	Bison, Bonilla, Champ, Sunnyview, Rountree, Bonanza	3
Canada Wildrye	Mandan	2
	Total:	18

MULCHING (GRASS HAY OR STRAW)

Grass Hay or Straw Mulch will be utilized for temporary erosion control on areas determined by the Engineer during construction.

If the Contractor uses a no-till drill, mulch may be applied prior to seeding and the mulch can then be punched into the soil by the no-till drill. If the Contractor uses this process, the no-till drill seeding will be completed immediately following the mulch application and the mulch will be punched into the soil at a 3-inch depth.

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.

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ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

		CONVENTIONAL ROAD			
SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
W1-4	REVERSE CURVE (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque)	2	30" x 30"	6.3	12.6
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CON TRAFFIC	VENTIONAL	ROAD GNS SQFT	176.0

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HORIZONTAL ALIGNMENT DATA

MAINLINE

Type	Station		North	ing	Easting
POB	115+99.65			605980.861	2607247.908
		TL= 1002.75	s 1°52'39" E		
POE	126+02.40			604978.650	2607280.761

	HORIZONTAL AND VERTICAL CONTROL POINTS							
POINT	POINT STATION OFFSET DESCRIPTION NORTHING EASTING ELEVATION							
138			Reference Mark near approach N of Pipe - SBL	606215.4500	2607225.6360	1842.5890		
139			Reference Mark near approach S of Pipe - NBL	604386.3560	2607313.8350	1843.6550		

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/11); epoch 2010; Geoid 2012a; SF = 0.99999999

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LEGEND

Anchor		←
Antenna		<u>خ</u> ,
Approach		
Assumed Corner		?
Azimuth Marker		
BBQ Grill/ Fireplace		A
Bearing Tree		ഞ
Bench Mark		A
Box Culvert		_
Bridge		
Bruch		57531
Diusii		02034
Buildings		
Bulk Tank		
Cattle Guard		
Cemetery		+
Centerline		
Cistern		C
Clothes Line		
Commercial Sign Double Face		
Commercial Sign One Post		þ
Commercial Sign Overhead		loool
Commercial Sign Two Post		B
Concrete Symbol		р Дар
Control Point		A
Creek Edge		
Curb/Guiler		
Dam Grade/Dike/Levee		
Deck Edge		
Ditch Block		
Doorway Threshold		
Drainage Profile		
Drop Inlet		
Edge Of Asphalt		
Edge Of Concrete		
Edge Of Gravel		
Edge Of Other		
Edge Of Shoulder		
Electric Transformer/Power Junctio	n Box	®
Fence Barbwire		
Fence Chainlink		
Fence Electric		
Fence Miscellaneous	<u> </u>	
Fence Rock	ĺmm	mmm
Fonce Snow		
Fence Show		
Fire Hydrant		
Flag Pole		r
Flower Bed		7777
Gas Valve Or Meter		0
Gas Pump Island		<u> </u>
Grain Bin		GB
Guardrail		~~~
Guide Sign One Post		þ
Guide Sign Two Post		þ
Gutter		
Guy Pole		P
Havetack		Ψ ()
rayotaon		***

Hedge	6223
Highway ROW Marker	
Interstate Close Gate	<u>`</u>]
Iron Pin	\odot
Irrigation Ditch	
Lake Edge	
Lawn Sprinkler	
Mailbox	۵
Manhole Electric	Ø
Manhole Gas	0
Manhole Miscellaneous	Ø
Manhole Sanitary Sewer	0
Manhole Storm Sewer	0
Manhole Telephone	0
Manhole Water	0
Merry-Go-Round	*
Microwave Badio Tower	↑ ↑
Miscellaneous Line	т
Miscellaneous Property Corner	
Miscellaneous Post	<u> </u>
Overhang Or Encroachment	
Overhang Of Encloachment	— он —
Derking Motor	9
Parking Meler	
Pedestrian Push Button Pole	0
Pipe with End Section	
Pipe Without End Section	~
Playground Slide	
Playground Swing	X-+-K ⊥
Power And Light Pole	- 🛨 -
Power And Telephone Pole	—
Power Meter	•
Power Pole	
Power Pole And Transformer	- Ò -
Power Tower Structure	Å
Propane Tank	
Property Pipe	\odot
Property Pipe With Cap	۲
Property Stone	PS
Public Telephone	a
Railroad Crossing Signal	-🖓
Railroad Milepost Marker	
Railroad Profile	
Railroad ROW Marker	
Railroad Signs	þ
Railroad Switch	
Railroad Track	
Railroad Trestle	
Rebar	Æ
Rebar With Cap	\triangle
Reference Mark	æ
Regulatory Sign One Post	þ
Regulatory Sign Two Post	0 0
Retaining Wall	
Riprap	$\alpha\alpha\alpha\alpha$
River Edge	
Rock And Wire Baskets	
Rockpiles	<i>43</i> 80
Satellite Dish	4

Septic Tank	Ψ
Shrub Tree	4
Sidewalk	
Sign Face	
Sign Post	0
Slough Or Marsh	<u>allhu — — allhu</u> <u>allhu =</u>
Spring	Ø
Stream Gauge	ø
Street Marker	<u> </u>
Subsurface Utility Exploration Test Hole	•
Telephone Fiber Optics	— T/F —
Telephone Junction Box	Ō
Telephone Pole	Ø
Television Cable Jct Box	0
Television Tower	夲
Test Wells/Bore Holes	۸
Traffic Signal	
Trash Barrel	0
Tree Belt	~~~~
Tree Coniferous	*
Tree Deciduous	0
Tree Stumps	A
Triangulation Station	۸
Underground Electric Line	— P —
Underground Gas Line	— G —
Underground High Pressure Gas Line	— HG —
Underground Sanitary Sewer	— s —
Underground Storm Sewer	= s =
Underground Tank	<u> </u>
Underground Telephone Line	— т —
Underground Television Cable	— TV —
Underground Water Line	— w —
Warning Sign One Post	þ
Warning Sign Two Post	ρ
Water Fountain	l
Water Hydrant	CÞ
Water Meter	۲
Water Tower	
Water Valve	0
Water Well	\odot
Weir Rock	
Windmill	8
Wingwall	
Witness Corner	(()

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



Drainage Arrow

Remove Concrete Pavement

Remove Concrete Driveway Pavement

Remove Asphalt Concrete Pavement

Remove Concrete Sidewalk

Remove Concrete Median Pavement

Remove Concrete Curb and/or Gutter

Detectable Warning Pedestrian Push Button Pole and 30" x 48" Clear Space with 1.5% slope







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121+00 Take Out 24" - 82' CMP & 2 Flared Ends

121+00 Install 42'' - 58' RCP & 2 Flared Ends

Sec. 13 - T123N - R56W







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DRAWINGS NOT TO SCALE







-PLOTTED FROM - TRAB10200

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	DAKOTA	Date: 08/	025-151	16	21	
** Inslope Transition ** Inslope Transition ** Inslope at drainage structure	XOLO CO CO CO CO CO CO CO CO CO CO CO CO CO	This Type 2 Inslope Transition is used when the specified inslope at the pipe or RCBC is flatter than a 6:1 slope. Line B-B represents the clear zone line, the location where soil intercepts the parapet on an RCBC, the location where the soil intercepts the parapet on an RCBC, the location where the soil intercepts the top of the pipe adjacent to the opening of the pipe end section, or may represent a change in slope.	 * Transition from Inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope. * Transition from Inslope at drainage structure to a 6 : 1 inslope and 3:1 inslope. * Transition from typical inslope to the inslopes adjacent to the drainage structure. Within the clear zone (area from edge of subgrade shoulder to line B-B) use 100' length for each 1:1 slope change. Example: transition from a 4:1 to a 6:1 would require a 200' length transition. The typical inslope outside of the clear zone will be transitioned to a 3:1 inslope within the transition length necessary for the transition within the clear zone. 			FILE \PRJ\DayIGJL\STD PLATES3.DGN PLOT NAME - 7





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