

				TOTAL
	STATE OF SOUTH	PROJECI	SHEET	SHEETS
	DAKOTA	079 N-492 & 071-492	1	24
	Plotting Date:	05/20/2013		
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# **ESTIMATE OF QUANTITIES – HWY 79**

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
270E0210	Haul and Stockpile Granular Material	198.0	Ton
320E1200	Asphalt Concrete Composite	213.0	Ton
332E0010	Cold Milling Asphalt Concrete	1,893	SqYd
633E1400	Pavement Marking Paint, 4" White	890	Ft
633E1405	Pavement Marking Paint, 4" Yellow	710	Ft
634E0010	Flagging	40	Hour
634E0100	Traffic Control	544	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Panel	1	Each

#### **ESTIMATE OF QUANTITIES – HWY 71**

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
110E6230	Remove W Beam Guardrail for Reset	100.0	Ft
110E6240	Remove W Beam to Thrie Beam Guardrail Transition for Reset	4	Each
110E6270	Remove W Beam Guardrail Flared End Terminal for Reset	4	Each
120E0010	Unclassified Excavation	3,255	CuYd
120E2000	Undercutting	2,220	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1030	Base Course, Salvaged	1,760.0	Ton
270E0042	Salvage Asphalt Mix and Granular Base Material	1,781.0	Ton
270E0210	Haul and Stockpile Granular Material	21.0	Ton
320E1200	Asphalt Concrete Composite	384.0	Ton
630E2110	Beam Guardrail Post and Block	64	Each
630E5160	Reset W Beam Rail	100.0	Ft
630E5190	Reset W Beam to Thrie Beam Guardrail Transition	4	Each
630E5207	Reset W Beam Guardrail Flared End Terminal	4	Each
633E1400	Pavement Marking Paint, 4" White	1,000	Ft
633E1405	Pavement Marking Paint, 4" Yellow	625	Ft
634E0010	Flagging	80	Hour
634E0100	Traffic Control	958	Unit
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
734E0010	Erosion Control	Lump Sum	LS
734E0154	12" Diameter Erosion Control Wattle	240	Ft

# **SPECIFICATIONS**

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

## ENVIRONMENTAL COMMITMENTS

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

# **COMMITMENT B2: WHOOPING CRANE**

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

#### **Action Taken/Required:**

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

#### **COMMITMENT C: WATER SOURCE**

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

#### Action Taken/Required:

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

# **COMMITMENT D: WATER QUALITY STANDARDS**

# **COMMITMENT D2: SURFACE WATER DISCHARGE**

solids.

solids.

#### Action Taken/Required:

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

# **COMMITMENT E: STORM WATER**

# Action Taken/Required:

pollutants from the construction site.

STATE OF	PROJECT	SHEET	TOTAL	
SOUTH DAKOTA	079 N-492 & 071-492	2	24	

The Hat Creek is classified as warm water semi-permanent fishery with a Surface Water Discharge standard of 90 milligrams/liter total suspended

The Beaver Creek is classified as a cold water permanent fishery with a Surface Water Discharge standard of 30 milligrams/liter total suspended

Construction activities constitute less than 1 acre of disturbance.

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

# COMMITMENT H: WASTE DISPOSAL SITE

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

# **Action Taken/Required:**

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

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

The waste disposal site(s) shall not be located in a wetland, within 200 feet of surface water, or in an area that adversely affects wildlife, recreation, aesthetic value of an area, or any threatened or endangered species, as approved by the Project Engineer.

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials shall be buried in a trench completely separate from wood debris. The final cover over the construction and/or demolition debris shall consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the State ROW shall be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor shall control the access to waste disposal sites not within the State ROW through the use of fences, gates, and placement of a sign or signs at the entrance to the site stating "No Dumping Allowed".

2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period of time not to exceed the duration of the project. Prior to project completion, the waste shall be removed from view of the ROW or buried and the waste disposal site reclaimed as noted above.

The above requirements will not apply to waste disposal sites that are covered by an individual solid waste permit as specified in SDCL 34A-6-58, SDCL 34A-6-1.13, and ARSD 74:27:10:06.

Failure to comply with the requirements stated above may result in civil penalties in accordance with South Dakota Solid Waste Law, SDCL 34A-6-1.31.

All costs associated with furnishing waste disposal site(s), disposing of waste, maintaining control of access (fence, gates, and signs), and reclamation of the waste disposal site(s) shall be incidental to the various contract items.

# COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

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

# Action Taken/Required:

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

The Contractor shall arrange and pay for a cultural resource survey and/or records search. The Contractor has the option to contact Jim Donohue, State Archaeological Research Center (ARC) at 605-394-1741 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor shall provide ARC with the following: a topographical map or aerial view on which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

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

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

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

# COMMITMENT R: FIRE PREVENTION IN THE BLACK HILLS AREA

This project is located within the confines of the Black Hills Forest Fire Protection Boundary.

# Action Taken/Required:

The Contractor shall adhere to the "Special Provision for Fire Plan".

#### WORK DESCRIPTION HWY 79

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

1. 2.

# WORK DESCRIPTION HWY 71

1. 2. Undercutting 3. 4.

# UTILITIES

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

Any damage done to a utility will be the Contractor's responsibility to repair.

# **GRADING OPERATIONS – HWY 71**

	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
		079 N-492 & 071-492	3	24

Cold Milling Asphalt Concrete Asphalt Concrete Resurfacing

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

> Cold Milling Asphalt Concrete Asphalt Concrete Resurfacing Remove & Reset Guardrail

Water for Embankment is estimated at the rate of 10 gallons of water per cubic vard of Embankment minus Waste. The estimated quantity of Water for Embankment is 24 MGal. No separate payment will be made for the Water for Embankment and all costs associated shall be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

## SHRINKAGE FACTOR: Embankment +10%

# **TABLE OF EXCAVATION QUANTITIES BY BALANCES – HWY 71**

	l		*	**	Total
		Excavation	Undercut	Borrow	Excavation
Station to	Station	(CuYd)	(CuYd)	(CuYd)	(CuYd)
23+77	25+77.03	14	910	78	1002
29+19.97	32+20	79	1310	53	1442
	Totals:	93	2220	131	2444

\* The quantities for these items are in the Estimate of Quantities under their respective bid items.

\*\* Salvaged asphalt and granular mix will be used as borrow and is included in the estimate of quantities for Base Course, Salvaged.

# TABLE OF UNCLASSIFIED EXCAVATION – Hwy 71

Excavation Undercut Salvaged Asphalt Mix and Granular Base Material (from cut sections)	93 2220 942
Total	3255

Iotal

# PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity shall be used for final payment.

The quantity of Topsoil from the cuts will be paid for at the contract Lump Sum price for "Remove & Replace Topsoil".

The Excavation quantities from the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed.

## **UNDERCUTTING – HWY 71**

In all cut sections the earthen subgrade shall be undercut 2 feet below the earthen subgrade surface. The undercut material or other suitable material, as directed by the Engineer, shall then be replaced and compacted to the density specified for the section being constructed.

The plan shown quantity will be the basis of payment. However, if there are additional areas of undercut other than what is shown in the plans, the Engineer shall direct removal of these areas and the additional areas will be measured according to the Engineer.

# TABLE OF UNDERCUTTING – Hwy 71

		Quantity
Station to	Station	(CuYd)
23+77	25+77.03	910
29+19.97	32+20	1310
	- Total:	2220

# SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL – HWY 71

An estimated 1,781 tons (942 Cubic Yards) of asphalt mix and granular base material shall be salvaged from the entire length of the project (including guardrail widening) and stockpiled at a site furnished by the Contractor and satisfactory to the Engineer.

The quantity of salvage asphalt mix and granular base material may vary from the plans. No adjustment will be made to the contract unit price for variations of the quantity of "Salvage and Stockpile Asphalt Mix and Granular Base Material."

It is estimated that there are 169 cubic yards of salvageable material per station. This rate was used to compute the unclassified excavation quantities. The rate of salvageable material is based on a 36 foot width. It is estimated that there are 119 cubic yards of additional salvageable material from guardrail widening.

An estimated 1,760 tons of salvaged asphalt and granular mix will be used as Base Course, Salvaged.

The remainder of the salvaged asphalt and granular mix an estimated 21 tons shall be hauled and stockpiled at SDDOT Hot Springs maintenance yard at 27660 US Hwy 385 as directed by the Engineer.

# TABLE OF GUARDRAIL – HWY 71

	Remove W	Remove W Beam to Thrie	Remove W Beam Guardrail	Beam		Reset W Beam to Trie	Reset W Beam
	Guardrail	Transition for	Terminal for	Post &	Reset W	Transition	Flared End
Location	for Reset	Reset	Reset	Block	Beam Rail	Rail	Terminal
	(Ft)	(Each)	(Each)	(Each)	(Ft)	(Each)	(Each)
Structure No. 24-201-297							
Begin Bridge Lt.	25	1	1	16	25	1	1
Begin Bridge Rt.	25	1	1	16	25	1	1
End Bridge Lt.	25	1	1	16	25	1	1
End Bridge Rt.	25	1	1	16	25	1	1
Total:	100	4	4	64	100	4	4

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	079 N-492 & 071-492	4	24

# SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

# SAWING IN EXISTING SURFACING

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

# WATER FOR COMPACTION

No separate payment will be made for the Water for Granular Material and all costs associated shall be incidental to the contract unit price per ton of "Base Course, Salvaged". Four percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer

# COLD MILLING ASPHALT CONCRETE - HWY 79

Loose material resulting from the cold milling shall be immediately picked up, hauled and stockpiled at SDDOT Hot Springs maintenance yard at 27660 US Hwy 385 as directed by the Engineer.

Cold Milling Asphalt Concrete shall be performed as shown in the typical sections. The milling depths might vary due to irregularities in the surface.

Cold milling asphalt is estimated to produce 198 tons (105 Cubic Yards) of salvaged asphalt concrete material.

All cost for hauling and stockpiling the asphalt mix shall be incidental to the contract unit price for "Haul & Stockpile Granular Material".

# BASE COURSE, SALVAGED – HWY 71

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

All other requirements for Base Course, Salvaged shall apply.

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

An estimated 131 cubic yards (262 tons) of salvaged asphalt and granular mix will be used as borrow and is included in the estimate of quantities for Base Course, Salvaged.

The cost for hauling, and placing the salvaged base course shall be incidental to the contract unit price for "Base Course, Salvaged".

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

## ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements of the Standard Specifications for Class E, Type 1

All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

The asphalt binder used in the mixture shall be PG 64-22, PG 64-28 or PG 64-34 Asphalt Binder.

## TABLE OF ASPHALT QUANTITIES – HWY 79

Station to	Station	Length	Cold Milling	Asphalt Concrete Composite
			Sq Yd	Ton
66+15.50	70+20.50	405	1080	121.5
72+50.50	75+55.50	305	813	91.5
	Total:	710	1893	213.0

# TABLE OF ASPHALT QUANTITIES - HWY 71

Station to	Station	Length	Water for Granular Material	Base Course, Salvaged	Asphalt Concrete Composite
			ivigai	Ion	Ion
23+77.00	25+77.03	200.03	8.1	674.7	138.8
29+19.97	32+20.00	300.03	10.6	884.0	208.2
Additional S Adjacent to	Surfacing Guardrail				
at Bridge En	ds		2.4	201.3	37.0
	Total:	500.06	21.1	1760.0	384.0

	STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
SO DAM	DAKOTA	079 N-492 & 071-492	5	24

# **RATES OF MATERIALS - SD HWY 79**

The Estimate of Surfacing Quantities is based on the following quantities of materials per station.

# <u>Sta. 66+15.5 to Sta. 70+20.5</u> <u>Sta. 72+50.5 to Sta. 75+55.5</u>

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.058 ton applied 24 feet wide (Rate = 0.05 gallon per square yard).

Asphalt Concrete Composite- 2" LIFT at a rate of 30 tons

# FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.086 ton applied 36 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 0.977 tons applied 22 feet wide (Rate = 8 lbs. per square yard).

# **RATES OF MATERIALS - SD HWY 71**

The Estimate of Surfacing Quantities is based on the following quantities of materials per station.

#### <u>Sta. 23+77 to Sta. 25+77.03</u> <u>Sta. 29+19.97 to Sta. 32+20</u>

Base Course, Salvaged Asphalt & Granular Mix at a rate of 259 tons.

Water for Granular Material at the rate of 3.1 M. Gallons.

MC-70 Asphalt for Prime at the rate of 0.634 ton applied 48 feet wide (Rate = 0.30 gallon per square yard).

Blotting Sand for Prime at the rate of 1.334 tons applied 24 feet wide (Rate = 10 lbs. per square yard).

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.094 ton applied 39 feet wide (Rate = 0.05 gallon per square yard).

Asphalt Concrete Composite– 1<sup>ST</sup> LIFT at a rate of 34.69 tons

SS-1h or CSS-1h Asphalt for Tack at the rate of 0.094 ton applied 39 feet wide (Rate = 0.05 gallon per square yard).

Asphalt Concrete Composite– 2<sup>nd</sup> LIFT at a rate of 34.69 tons

FLUSH SEAL

SS-1h or CSS-1h Asphalt for Flush Seal at the rate of 0.091 ton applied 38 feet wide (Rate = 0.05 gallon per square yard).

Sand for Flush Seal at the rate of 0.977 tons applied 22 feet wide (Rate = 8 lbs. per square yard).

## REMOVE AND REPLACE TOPSOIL - HWY 71

Prior to beginning resurfacing operations, a 4" depth of topsoil shall be bladed down the respective inslopes and left in a windrow 11'+/- from the subgrade shoulder. Following completion of resurfacing operations, topsoil shall be bladed back up the inslope to the point indicated on the typical section.

The estimated amount of topsoil to be removed and replaced is 140 CuYd.

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

# EROSION CONTROL - HWY 71

The contract lump sum price for Erosion Control shall include all material, equipment, and labor necessary to seed (including mycorrhizal inoculum), fertilizer and fiber mulch all areas disturbed by construction of this project. The Engineer, at the time of construction, shall determine limits of the Erosion Control work. The estimated area to be seeded is approximately 11,000 Square Feet.

# **MYCORRHIZAL INOCULUM**

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

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

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

# **FERTILIZING**

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

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

The application rate is 34 pounds per 1000 Square Feet.

The all-natural slead

Product

Sustane

	STATE OF	PROJECT	SHEET	TOTAL SHEETS
S D/	SOUTH DAKOTA	079 N-492 & 071-492	6	24

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

ne

Manufacturer

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

# **PERMANENT SEEDING**

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

All permanent seed shall be planted in the topsoil at a depth of 1/4" to 1/2".

All seed broadcast must be raked or dragged in (incorporated) within the top  $\frac{1}{4}$ " to  $\frac{1}{2}$ " of topsoil when possible. This requirement may be waived by the Engineer during construction when raking or dragging is deemed not feasible by conventional methods.

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

Type F Permanent Seed Mixture shall consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/1000 SqFt)
Western Wheatgrass	Flintlock, Rodan, Rosana	2.5
Green Needlegrass	Lodorm	1.5
Sideoats Grama	Butte, Killdeer, Pierre, Trailway	1
Blue Grama	Bad River, Willis	1
Oats or Spring Wheat: April through May;		3
Winter Wheat: August through November		
	Total:	9

## FIBER MULCHING

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

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

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

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

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

## TABLE OF FIBER MULCHING

				Quantity
Station	to	Station	L/R	( Lb)
23+77		25+77	L/R	202
29+20		32+20	L/R	303
			Total:	505

# **EROSION CONTROL WATTLE – HWY 71**

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

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

Erosion control wattles shall remain on the project until vegetation has been established.

An additional quantity of 12" Diameter Erosion Control Wattles has been added to the Estimate of Quantities for temporary erosion and sediment control in highway ditch channels.

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

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

## TABLE OF EROSION CONTROL WATTLE - HWY 71

		Diameter		Quantity
Station	L/R	(Inch)	Location	(Ft)
24+27	L/R	12	ditch	60
25+77	L/R	12	ditch	60
29+20	L/R	12	ditch	60
30+70	L/R	12	ditch	60

Total: 240

STATE OF	PROJECT	SHEET	TOTAL SHEETS
DAKOTA	079 N-492 & 071-492	7	24

# **SEQUENCE OF OPERATIONS – HWY 79**

Variations from this sequence shall be submitted to the Engineer for approval.

- 1. Set up traffic control.
- 2. Complete cold milling asphalt concrete.
- 3. Complete asphalt concrete paving.
- 4. Complete Pavement Marking.
- 5. Remove Traffic Control.

# **SEQUENCE OF OPERATIONS – HWY 71**

Variations from this sequence shall be submitted to the Engineer for approval.

## Phase 1:

- 1. Set up traffic control.
- 2. Remove Guardrail for reset in lane closed to traffic.
- 3. Complete cold milling asphalt concrete & salvage granular material.
- 4. Undercut lane.
- 5. Distribute and compact Base Course, Salvaged.

#### Phase 2:

- 1. Set up traffic control.
- 2. Remove Guardrail for reset in lane closed to traffic.
- 3. Complete cold milling asphalt concrete & salvage granular material.
- 4. Undercut lane.
- 5. Distribute and compact Base Course, Salvaged.
- 6. Complete asphalt concrete paving.
- 7. Reset guardrail.
- 8. Restore disturbed areas affected by construction.
- 9. Complete Pavement Marking.
- 10. Remove Traffic Control.

# **SEQUENCE OF OPERATIONS – GENERAL NOTES**

- 1. Requests to deviate from the sequence of operations shall be submitted in writing to the Engineer for review. Approval of an alternate sequence of operations will only be allowed when the proposed changes meet with the Department's intent for traffic control and sequencing of the work. An alternate sequence shall be submitted for review a minimum of one week prior to potential implementation.
- 2. Unless otherwise stated in these plans, no work will be allowed during hours of darkness. Hours of darkness are defined, as 1/2 hour after sunset until 1/2 hour before sunrise.
- 3. Storage of vehicles and equipment shall be as near the right-of-way as possible. Contractor's employees should mobilize at a location off the right-of-way and arrive at the work sites in a minimum number of vehicles necessary to perform the work. Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage of the vegetation, surfacing, embankment, delineators, and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.
- Existing guide, route, informational logo, regulatory, and warning 4. signs shall be temporarily reset and maintained during construction. Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Non-applicable signing shall be covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 36 hours. The cost of removing or covering non-applicable signs shall be incidental to the contract lump sum price for, Traffic Control, Miscellaneous.
- 5. Construction signing mounted on portable supports shall not be used for a duration of more than 3 days, unless approved by the Engineer. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location, ground mounted, breakaway supports.
- 6. If inappropriate/conflicting pavement markings exist, the markings shall be removed and replaced with applicable temporary pavement markings when the work duration is more than 3 days. When the work duration is less than 3 days, the channelizing devices in the area where the pavement markings conflict shall be placed at a spacing of 1/2 G. Pavement marking removals shall be paid for at the contract unit price for Remove Pavement Marking, 4" or equivalent. Temporary pavement marking shall be paid for at the contract unit bid price for Temporary Pavement Marking. The additional channelizing devices shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.
- 7. The quantity of Signs paid for will be for the greatest number of installations per sign in place at any one time regardless of the number of set-ups on the project.
- 8. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

# **SEQUENCE OF OPERATIONS – GENERAL NOTES (Cont.)**

STATE OF	PROJECT	SHEET	TOTAL
SOUTH DAKOTA	079 N-492 & 071-492	8	24

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

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

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

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

13. Vehicles working in traffic or alongside traffic shall be equipped with a flashing amber light visible from all directions. The amber light shall be mounted on the uppermost part of the contractor's vehicle. Lights must have peak intensity within the range of 40 to 400 candelas and must flash at  $75 \pm 15$  flashes per minute. Vehicle flasher/hazard lights are not acceptable.

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

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

16. Temporary Road Markers shall be used for lane closure tapers or lane shift tapers. Temporary Road Markers used for tapers and shifts will not be measured for payment and will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

17. Drums are required in all lane closure tapers.

18. The Contractor shall place Bump signs where appropriate. Bump Signs (48"x48") shall be placed 500' in advance of the bump or as approved by the Engineer for adequate sight distance. All signs shall be orange/black on orange.

19. At no time during grading operations shall a vertical drop-off of greater than 3" be left overnight adjacent to the traveled way. The Contractor shall utilize embankment material to ensure a 3" vertical drop-off is not exceeded. The slope of the embankment material shall not exceed a 3:1 within 30' of the traveled way.

# TABLE OF TRAFFIC CONTROL DEVICES – Hwy 71

SIGN CODE	SIGN SIZE	DESCRIPTION	NUM BER REQUIRED	UNITS PER SIGN	
G20-2	36" x 18"	END ROAD WORK	2	17	34
R1-1	30" x 30"	STOP	2	21	42
R2-1	24" x 30"	SPEED LIMIT ##	3	18	54
R2-6aP	24" x 18"	FINES DOUBLE	2	7	14
W1-4	48" x 48"	REVERSE CURVE SIGN (LEFT OR RIGHT)	1	34	34
W3-1	48" x 48"	STOP AHEAD (SYMBOL)	2	34	68
W3-4	48" x 48"	BE PREPARED TO STOP	2	34	68
W3-5	48" x 48"	REDUCED SPEED LIMIT A HEAD	2	34	68
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W8-1	48" x 48"	BUMP	2	34	68
W8-11	48" x 48"	UNEV EN LANES	2	34	68
W13-1P	30" x 30"	ADVISORY SPEED PLATE	2	21	42
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	2	34	68
W20-4	48" x 48"	ONE LANE ROAD #### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	2	34	68
****		TYPE III BARRICADE - 6 FT. DOUBLE SIDED	3	42	126
	TOTAL UNITS 958				

# TABLE OF TRAFFIC CONTROL DEVICES - Hwy 79

SIGN CODE	SIGN SIZE	DESCRIPTION	NUM BER REQUIRED	units Per Sign	UNITS
G20-2	36" x 18"	END ROAD WORK	4	17	68
W4-2	48" x 48"	LEFT OR RIGHT LANE ENDS (SYMBOL)	2	34	68
W8-1	48" x 48"	BUMP	2	34	68
W8-11	48" x 48"	UNEV EN LANES	2	34	68
W20-1	48" x 48"	ROAD WORK #### FT. OR AHEAD	5	34	170
W20-5	48" x 48"	LT. OR RT. LANE CLOSED #### FT. OR AHEAD	2	34	68
W20-7a	48" x 48"	FLAGGER	1	34	34
TOTAL UNITS				544	

## PERMANENT PAVEMENT MARKING

All materials shall be applied as per manufacturer's recommendations.

Application of permanent pavement marking shall be completed within 7 days following completion of final surfacing.

All costs involved in furnishing and application of the pavement marking paint and glass beads shall be incidental to the contract unit price per foot for Pavement Marking Paint, White and Pavement Marking Paint, Yellow.

Striper and advance and trailing warning vehicles shall be equipped with flashing amber lights or advance warning arrow panels operated in a caution mode.

# **RATES OF APPLICATION - HWY 79**

Centerline skip striping (white) – 4.6 gallons per mile. Edgeline striping (white) – 16.9 gallons per mile. \* Edgeline striping (yellow) – 16.9 gallons per mile. \* Glass Beads - 8 lbs per gallon

\* Rate is for single edge line.

# **RATES OF APPLICATION - HWY 71**

Centerline skip striping (yellow) – 4.6 gallons per mile. Edgeline striping (white) – 33.8 gallons per mile. \*\* Glass Beads - 8 lbs per gallon

\*\* Rate is for both edge line.

STATE OF	PROJECT	SHEET	TOTAL SHEETS
DAKOTA	079 N-492 & 071-492	9	24





# FIXED SIGN LOCATIONS



	STATE OF	PROJECT	SHEET	TOTAL SHEETS
	SOUTH DAKOTA	079 N-492 & 071-492	12	24
	Plotting Date:	05/20/2013		
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# FIXED SIGN LOCATIONS



STATE OF	PROJECT	SHEET	TOTAL SHEETS
DAKOTA	079 N-492 & 071-492	13	24
Plotting Date:	05/20/2013		

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#### Hwy 71 (Str. 24-201-297) Asphalt Approach Profiles South Approach 8 spaces @ 25' = 200 ' Top of Finished Grade ∠ El 22.46 El 22.38 · El 22.43 El 22.37 🔨 El 22.38 🔨 El 22.37 El 22.38 El 22.38 🗸 EI 22.37 / EI 22.38 El 22.37 ∠ EI 22.36 EI 22.36 El 22.36 <sup>4</sup> El 22.36 ⁄ El 22.34 El 22.31 El 22.31 Existing Grade EI 22.26 El 22.19 EI 22.08 350' 325' 300' 225' 275' 250' 200' 100' 175' 150' 125' 75' 25' 50' & PROFILE North Approach 12 spaces @ 25' = 300 ' / El 21.53 / EI 21.54 29+19.97 End Approach Slab ∠EI 21.45 End Bridge Begin Approach Slab / El 21.40 ∠EI 21.38 EI 21.33 EI 21.35 / El 21.13 EI 21.27 EI 21.20 EI 21.13 El 21.06 EI 20.84 EI 20.98 EI 20.90 Top of Finished Grade EI 20.82 / El 20.60 EI 20.73 El 20.64 4 ∠ EI 20.44 El 20.54 EI 20.30 El 20.43 *<i>Q* **PROFILE** El 20.26 NOTE: Add 3500 to all elevations shown on profiles Existing Grade 100' 125' 150' 175' 200' 225' 250' 275' 300' 25' 75' 50'













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Plotted From - trrc11610





- Plotted From - trrc11610

	STATE OF		PROJ	ECT	SHEET	TOTAL SHEETS
	SOUTH DAKOTA	079 N-492 & 071-492		19	24	
	Plotting Date:	05/2	20/2013			
<ul> <li>2 4:1 inslope</li> <li>3 2:1 inslope or flatter, or inslope as specified in plans</li> <li>3 2:1 inslope or flatter, or inslope as specified in plans</li> <li>4 Same slope as roadway cross slope</li> <li>5 Same slope as roadway cross slope</li> <li>6 Same slope as roadway cross slope</li> <li>6 Same slope as roadway cross slope</li> <li>7 Same slope as roadway cross slope</li> </ul>	The W beam guardrail flared and terminal shall be installed according to the manufacturer's installation instructions. The W beam guardrail flared and terminal shall be installed according to the manufacturer's installation instructions.	reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.	Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard on the SD Standard SD Standard on the SD Stand	Consider the standard of the same type used elsewhere on the project or shall be as specified in the plans. Consider the specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline considered in the plans. Constant of the same thickness as the mainline constant of the plans. Constant of the same thickness as the mainline constant of the plans. Constant of the same thickness as the mainline Constant of the plans. Constant of the same thickness as the mainline Constant of the plans. Constant of the plans. Constant of the same thickness as the mainline Constant of the plans. Constant of the plan	19	24
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At cut or fill slope installations, wattles shall be insperpendicular to the water flow.
At ditch installations, point A must be higher than p flows over the wattle and not around the ends.
The Contractor shall dig a 3" to 5" trench, install the that daylight can not be seen under the wattle, and from the trench against the wattle on the uphill sid
The stakes shall be 1"x2" or 2"x2" wood stakes, however rebar may be used only if approved by the Engineer 6" from the ends of the wattles and the spacing of shall be 3' to 4'.
Where installing running lengths of wattles, the Cont wattle tightly against the first and shall not overlo
The Contractor and Engineer shall inspect the erosic week and within 24 hours after every rainfall event Contractor shall remove, dispose, or reshape the accu necessary as determined by the Engineer.
Sediment removal, disposal, or necessary shaping shal All costs for removing accumulated sediment, disposal shaping shall be incidental to the contract unit price Sediment".
All costs for furnishing and installing the erosion co equipment, and materials shall be incidental to the co for the corresponding erosion control wattle bid ite
All costs for removing the erosion control wattle fr equipment, and materials shall be incidental to the co "Remove Erosion Control Wattle".

GENERAL NOTES:

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Published Date: 2nd Qtr. 2013		

Plotted From - trrc11

STATE OF DAKOTA         PROJECT         SHEET         Top Divisional           Plotting Date:         0520/2013           be installed along the contour and than point B to ensure that water is.         0520/2013           bill the wattle tightly in the trench so le, and then compact the soil excavated shill side. See Detail B.         000           wever. other types of stakes such as igneer. The stakes shall be placed ing of the stakes shall be placed ing of the stakes along the wattles         e Contractor shall butt the second overlap the ends. See Detail C.           erosion control wattles once every event greater than 1/2*. The is accumulated sediment when         g shall be as directed by the Engineer. isposel of sediment, and necessary t price per cubic yard for "Remove           sion control wattles including labor, the contract unit price per foot bid item.         the from the project including labor, the contract unit price per foot for							
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