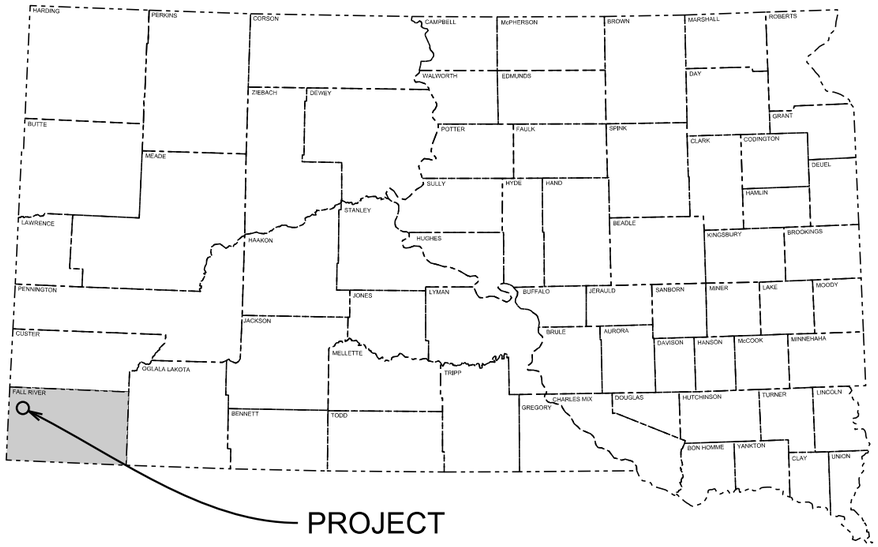



STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

# PROJECT 018-492
# US HIGHWAY 18
# FALL RIVER COUNTY

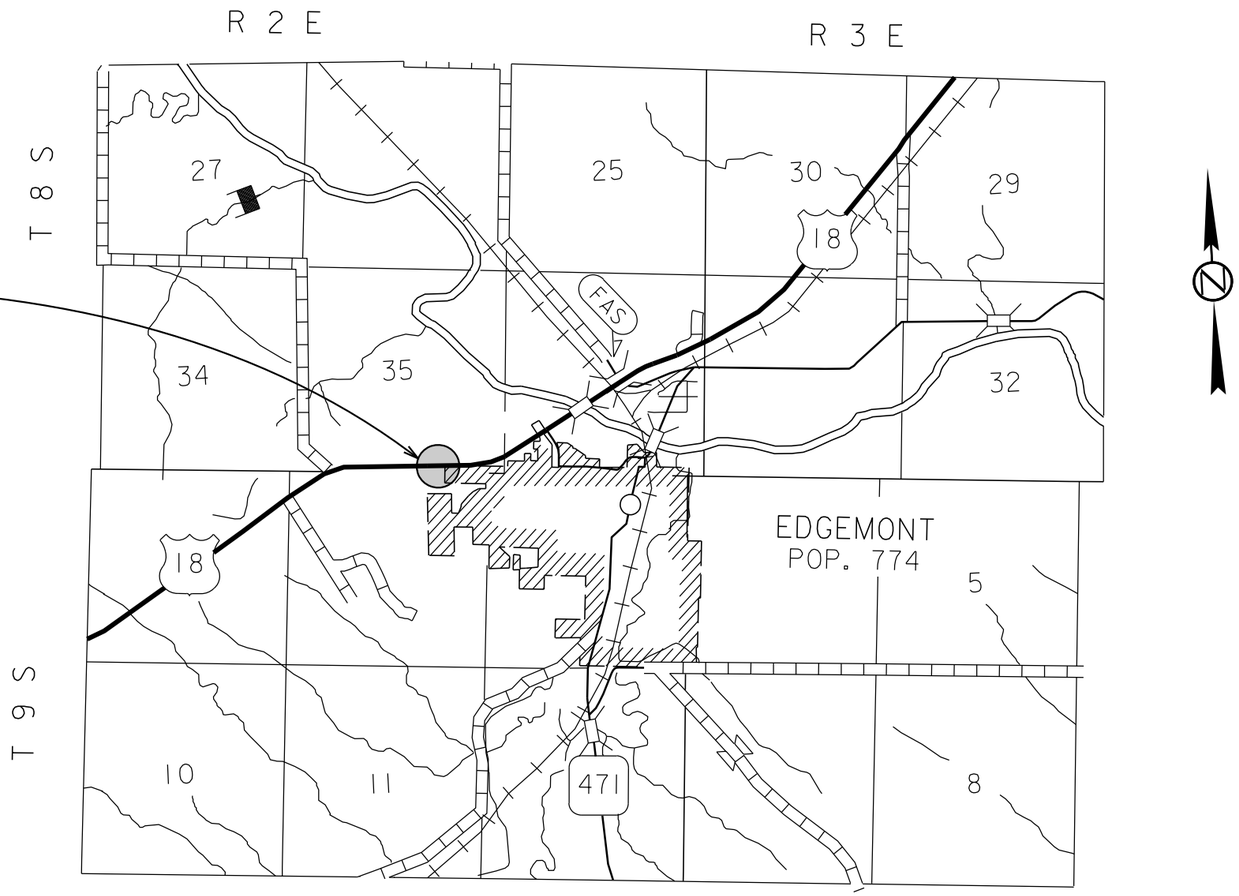
ASPHALT AND SUBGRADE REPAIR
PCN i74g

| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|---|---|---|---|
| | 018-492 | 1 | 10 |

Plotting Date: 03/02/2023

INDEX OF SHEETS






PROJECT 018-492
US Highway 18
MRM 11.50

DESIGN DESIGNATION

| | |
|---|---|
| AADT (2022) | 1741 |
| AADT (2042) | 2587 |
| DHV | 494 |
| D | 51 % |
| DHV T% | 11.6% |
| AADT T% | 25% |
| V | 65 mph |

STORM WATER PERMIT
None Required

Plot Scale - 1:200
Plotted From - TRRC12608
File - ...\0000 title.dgn

## ESTIMATE OF QUANTITIES

| BID ITEM NUMBER | ITEM | QUANTITY | UNIT |
|---|---|---|---|
| 009E0010 | Mobilization | Lump Sum | LS |
| 110E1010 | Remove Asphalt Concrete Pavement | 489.0 | SqYd |
| 110E1100 | Remove Concrete Pavement | 667.0 | SqYd |
| 120E0010 | Unclassified Excavation | 205 | CuYd |
| 230E0100 | Remove and Replace Topsoil | Lump Sum | LS |
| 260E1010 | Base Course | 467.0 | Ton |
| 320E1200 | Asphalt Concrete Composite | 245.1 | Ton |
| 633E1220 | High Build Waterborne Pavement Marking Paint, 4" White | 300 | Ft |
| 633E1222 | High Build Waterborne Pavement Marking Paint, 4" Yellow | 250 | Ft |
| 634E0010 | Flagging | 80.0 | Hour |
| 634E0110 | Traffic Control Signs | 272.0 | SqFt |
| 634E0120 | Traffic Control, Miscellaneous | Lump Sum | LS |
| 634E0275 | Type 3 Barricade | 2 | Each |
| 634E0600 | 4" Temporary Pavement Marking Tape Type I | 144 | Ft |
| 634E0640 | Temporary Pavement Marking | 2,200 | Ft |
| 634E1215 | Contractor Furnished Portable Changeable Message Sign | 2 | Each |
| 734E0010 | Erosion Control | Lump Sum | LS |
| 734E0154 | 12" Diameter Erosion Control Wattle | 60 | Ft |
| 831E0300 | Reinforcement Fabric (MSE) | 667 | 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: <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 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:
< 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 >

## 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 Environment 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 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) will be incidental to the various contract items.

## COMMITMENT I: HISTORIC PRESERVATION OFFICE CLEARANCES

State Historic Preservation Office (SHPO or THPO) concurrence is needed for any earth disturbing activities outside the project limits.

**Action Taken/Required:**

All earth disturbing activities outside the project limits 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.

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

## PAVEMENT REMOVAL

**Removal of Existing Asphalt Concrete Pavement**

Existing asphalt concrete above the existing PCCP will be paid for at the contract unit price per square yard for Remove Asphalt Concrete Pavement.

**Remove Concrete Pavement**

In addition to the asphalt concrete removal 40’ length of full width PCC pavement adjacent to the asphalt concrete will be removed and replaced. Removal of this PCC pavement and PCC pavement below the asphalt concrete pavement will be paid for at the unit price per square yard for Remove Concrete Pavement.

The Contractor will dispose of all removed concrete pavement and asphalt concrete at a site approved by the Engineer.

## UNCLASSIFIED EXCAVATION

Unclassified Excavation of the existing gravel surfacing will be removed from the roadway to the limits shown on the typical section to allow for placement of the new surfacing.

The material will be wasted at a site approved by the Engineer.

Payment will be based on plans quantity. Further measurements will not be made unless there is a change made in the limits of work.

## WATER FOR COMPACTION

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

## SURFACING THICKNESS DIMENSIONS

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

## FLUSH SEAL

Application of flush seal will be completed within 10 working days following completion of the asphalt concrete surfacing.

## REINFORCEMENT FABRIC (MSE)

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

Seams in the geotextile shall be overlapped a minimum of 2 feet and shingled to prevent granular material being forced under the fabric. No equipment will be allowed on the geotextile until the granular material has been placed. Granular material shall be dumped. Pushed into place, and compacted to specified density.

Geotextile will be paid for at the contract unit price per square yard for Reinforcement Fabric (MSE). Payment quantities will be based on area covered plus 15%. Payment will be full compensation for furnishing and install the geotextile.

## TABLE OF QUANTITIES

| Total Length | Length of PCCP to Repair | Length of Asphalt Concrete Overlay and PCCP to Repair | Remove Concrete Pavement | Remove Asphalt Concrete Pavement | Uncl. Exc. | Base Course | Asphalt Concrete Composite | Reinf. Fabric (MSE) |
|---|---|---|---|---|---|---|---|---|
| Ft | Ft | Ft | SqYd | SqYd | CuYd | Ton | Ton | SqYd |
| 150 | 40 | 110 | 667 | 489 | 205 | 467 | 245.1 | 667 |

## REMOVE AND REPLACE TOPSOIL

Prior to beginning resurfacing and subgrade repair operations a 4” depth of topsoil will be removed or bladed down the respective inslope and left in a windrow a maximum of 10’ from the edge of the existing shoulder. Following completion of construction, topsoil will be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 38 CuYd.

All costs associated with removing and replacing the topsoil along areas to be resurfaced will be incidental to the contract lump sum price for Remove and Replace Topsoil.

## EROSION CONTROL

The estimated area requiring erosion control is 3,000 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, mycorrhizal inoculum, fertilizing, and fiber 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 unit price lump sum for the Erosion Control.

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

| Product | Manufacturer |
|---|---|
| MycoApply | Mycorrhizal Applications, Inc.<br>Grants Pass, OR<br>Phone: 1-866-476-7800<br>www.mycorrhizae.com |
| Perfect Blend | Perfect Blend, LLC<br>Bellevue, WA<br>Phone: 1-866-456-8890<br>www.perfect-blend.com |
| AM 120 Multi Species Blend | Reforestation Technologies Int.<br>Gilroy, CA<br>Phone: 1-800-784-4769<br>www.reforest.com |

### Fertilizing

The Contactor will apply an all-natural slow release fertilizer prior to seeding or placin 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 | Manufacturer |
|---|---|
| Sustane | Sustane Corporate Headquarters<br>Cannon Falls, Minnesota<br>Phone: 1-800-352-9245<br>www.sustane.com |

### Permanent Seeding

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

Type F 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 |
| Green Needlegrass | Lodorm, AC Mallard Ecovar | 4 |
| Sideoats Grama | Butte, Pierre | 3 |
| Blue Grama | Bad River | 2 |
| Oats or Spring Wheat: April through May;<br>Winter Wheat: August through November | | 10 |
| | Total: | 26 |

### Fiber Mulching

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

An additional 2% by weight of tackifier will be added to the fiber mulch product selected from the approved product list. If the product selected has guar gum tackifier included, then the additional 2% of tackifier will be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier will be synthetic.

The Contractor will 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.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials will be incidental to the contract lump sum price for Erosion Control.

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

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

## EROSION CONTROL WATTLE

Included in the Estimate of Quantities is 60 ft of erosion control wattles for restraining the flow of runoff and sediment. Erosion control wattles will be installed in the ditch bottom on both sides of the road and 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.

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

## SEQUENCE OF OPERATIONS

1. Set up Traffic Control.
2. Remove concrete pavement and perform unclassified excavation.
3. Install Reinforcement Fabric (MSE).
4. Install base course.
5. Complete asphalt concrete surfacing.
6. Switch traffic control and complete 2 through 5.
7. Complete Flush Seal,
8. Complete pavement marking.
9. Remove traffic control.

Traffic will be controlled using the Standard Plate 634.25.

The intent of the plan sequence of operations is to have the least amount of impact on the traveling public.

Contractor requests to deviate from the sequence of operations will 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 will be submitted for review a minimum of one week prior to potential implementation.

## 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.

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.

At no time will a vertical drop-off of greater than 3 inches be left overnight adjacent to the traveled way. The Contractor will utilize embankment material to ensure a 3-inch vertical drop-off is not exceeded. The slope of the embankment material will not be steeper than a 4:1 within 30 feet of the traveled way.

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.

If inappropriate or conflicting pavement markings exist, the markings will 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 will be placed at one-half of the normal channelizing device spacing. Pavement marking removals will be incidental to the contract unit price per foot for Remove Pavement Marking, 4" or equivalent. Temporary pavement marking will be paid for at the contract unit price per mile/foot for Temporary Pavement Marking. The additional channelizing devices will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

## TRAFFIC CONTROL FOR ASPHALT CONCRETE RESURFACING

The Contractor will need to install LOOSE GRAVEL (W8-7) signs with advisory speed plaques (W13-1P) in areas where loose sand is present during the flush seal operation. LOOSE GRAVEL signs have been included in these plans for this.

## CONTACTOR FURNISHED PORTABLE CHANGEABLE MESSAGE SIGN

One week prior to starting work affecting the traveling public, portable changeable message signs (PCMS) will be installed to notify drivers of the construction. The Contractor will program the portable changeable message signs with the following message:

ONE LANE ROAD AHEAD
BE PREPARED TO STOP

This message will only display when there is a one lane road ahead. One week prior to starting work, it should say, "ROAD WORK BEGINS XX/XX/23; EXPECT DELAYS".

Contractor Furnished Portable Changeable Message Signs will be located as directed by the Engineer

## TABLE OF TRAFFIC CONTROL DEVICES

| | | 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 |
| W3-4 | BE PREPARED TO STOP | 2 | 48" x 48" | 16.0 | 32.0 |
| W8-7 | LOOSE GRAVEL | 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 |
| W21-2 | FRESH OIL | 2 | 48" x 48" | 16.0 | 32.0 |
| G20-2 | END ROAD WORK | 2 | 36" x 18" | 4.5 | 9.0 |
| | | CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT | | | 272.0 |

| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|---|---|---|---|
| | 018-492 | 6 | 10 |

## TEMPORARY PAVEMENT MARKING

Temporary flexible vertical markers (tabs) will be required on the top lift of asphalt concrete surfacing.

Covers on the tabs will be sufficiently secured to prevent traffic from dislodging the cover and when removed, the covers will be properly disposed of. The Contractor will remove and properly dispose of the tabs after permanent pavement marking is applied. Method of removal will be nondestructive to the road surface and will be accomplished within one week of completion of the permanent pavement marking.

Any temporary flexible vertical markers (tabs) with covers removed before the flush seal will be replaced prior to application of the flush seal. Full reflectivity of all temporary flexible vertical markers (tabs) is required at all times. The Contractor will be required to replace any missing or non-reflective tabs at no additional cost to the State.

Two applications of temporary pavement marking are included in the estimate of quantities for completion the final asphalt concrete lift and uncovering the temporary flexible vertical markers (tabs) after application of the flush seal.

If the flush seal is eliminated, the application of the temporary pavement marking on top of the flush seal will be eliminated. No adjustment in the contract unit price for Temporary Pavement Marking will be made because of a variation in quantities.

In the absence of a signed lane closure, FLAGGER (W20-7) symbol signs and flaggers, or a shadow vehicle with rotating yellow lights or strobe lights will be positioned on the shoulder in advance of workers for both directions of traffic during the installation and removal of the temporary flexible vertical markers (tabs). A ROAD WORK AHEAD (W20-1) sign, a WORKER (W21-1) symbol sign or a BE PREPARED TO STOP (W3-4) sign will be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work must be approved by the Engineer.

Prior to nightfall, tabs will be required to mark centerline on segments of roadway where existing centerline markings have been removed and new markings have not been installed.

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 an equivalent of approximately 144’ of 4” tape (1 workspaces at 144’ = 144’). Temporary pavement marking on centerline will consist of temporary flexible vertical markers (tabs) or temporary raised pavement markers and will be used as depicted on standard plate 634.25 when the stop condition must remain in place during nighttime hours, 9:00 pm to 6:00 am (Estimate 1 workspaces remaining during nighttime hours x 2,200’ per workspace = 2,200’).

## TABLE OF PAVEMENT MARKING

| High Build Waterborne Pavement Marking Paint, 4" White | High Build Waterborne Pavement Marking Paint, 4" Yellow | Temporary Pavement Marking | 4" Temporary Pavement Marking Tape Type 1 |
|---|---|---|---|
| Ft | Ft | Ft | Ft |
| 300 | 250 | 2200 | 144 |

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## HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

All materials will be applied as per manufacturer’s recommendations. High build waterborne pavement marking paint will conform to the supplemental specifications for Section 980.1 B.

Reflective media will consist of glass beads.

High Build Waterborne Pavement Marking Paint applied after October 15 must be formulated as cold-weather waterborne paint. Cold weather waterborne paint will meet the requirements of Section 980.1 C.

## RATES OF MATERIALS FOR HIGH BUILD WATERBORNE PAVEMENT MARKING PAINT

Solid 4” line = 22.5 Gals/Mile
Dashed 4” line = 6.2 Gal/Mile
Glass Beads = 8 Lbs/Gal.

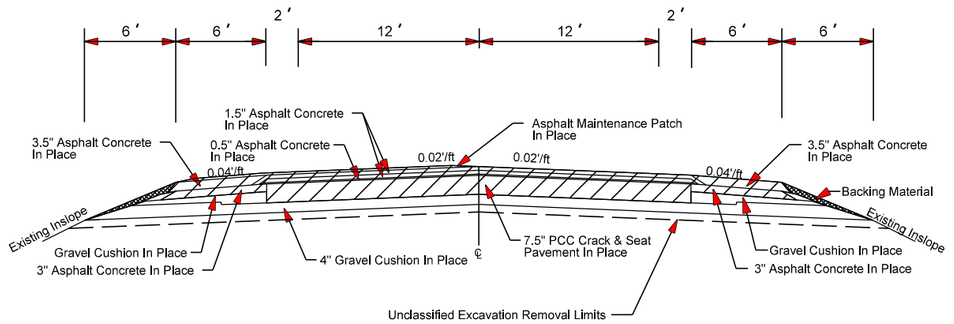
All cost for materials, labor and equipment necessary to furnish and install the pavement markings will be incidental to the contract unit price for the respective High Build Waterborne Pavement Marking Paint items.

# TYPICAL SURFACING SECTION

| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|---|---|---|---|
| | 018-492 | 7 | 10 |

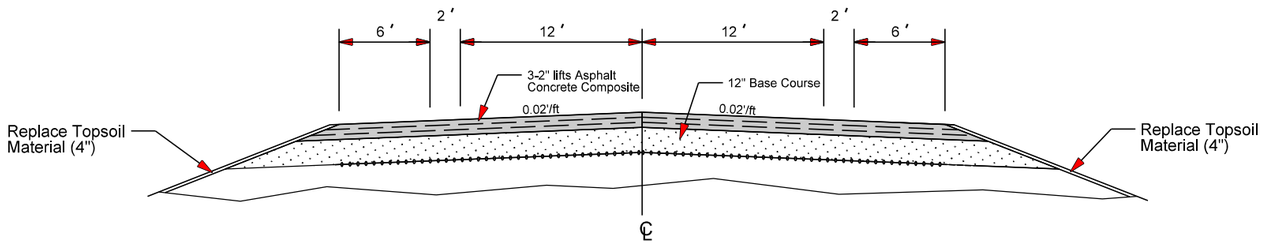
Plotting Date: 03/02/2023

In Place




Remove Concrete Pavement

Roadway Reconstruction Section




3-2" lifts Asphalt Concrete Composite

12" Base Course

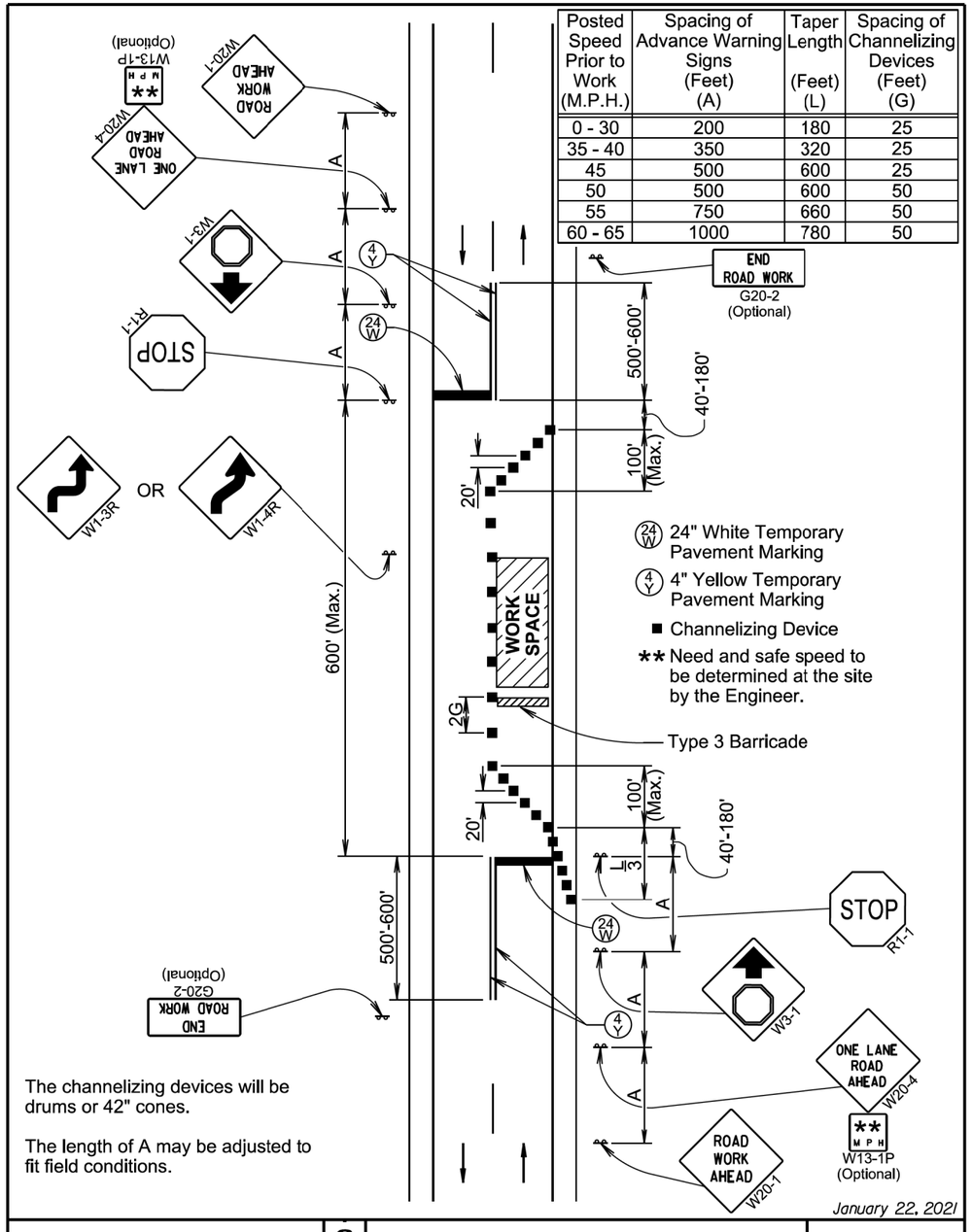
Reinforcement Fabric (MSE)

Plot Scale - 1:10

Plotted From - TRRC12608

File - ...\0000 typ.dgn

| Posted Speed Prior to Work (M.P.H.) | Spacing of Advance Warning Signs (Feet) (A) | Taper Length (Feet) (L) | Spacing of Channelizing Devices (Feet) (G) |
|---|---|---|---|
| 0 - 30 | 200 | 180 | 25 |
| 35 - 40 | 350 | 320 | 25 |
| 45 | 500 | 600 | 25 |
| 50 | 500 | 600 | 50 |
| 55 | 750 | 660 | 50 |
| 60 - 65 | 1000 | 780 | 50 |




24 W 24" White Temporary Pavement Marking

4 Y 4" Yellow Temporary Pavement Marking

■ Channelizing Device

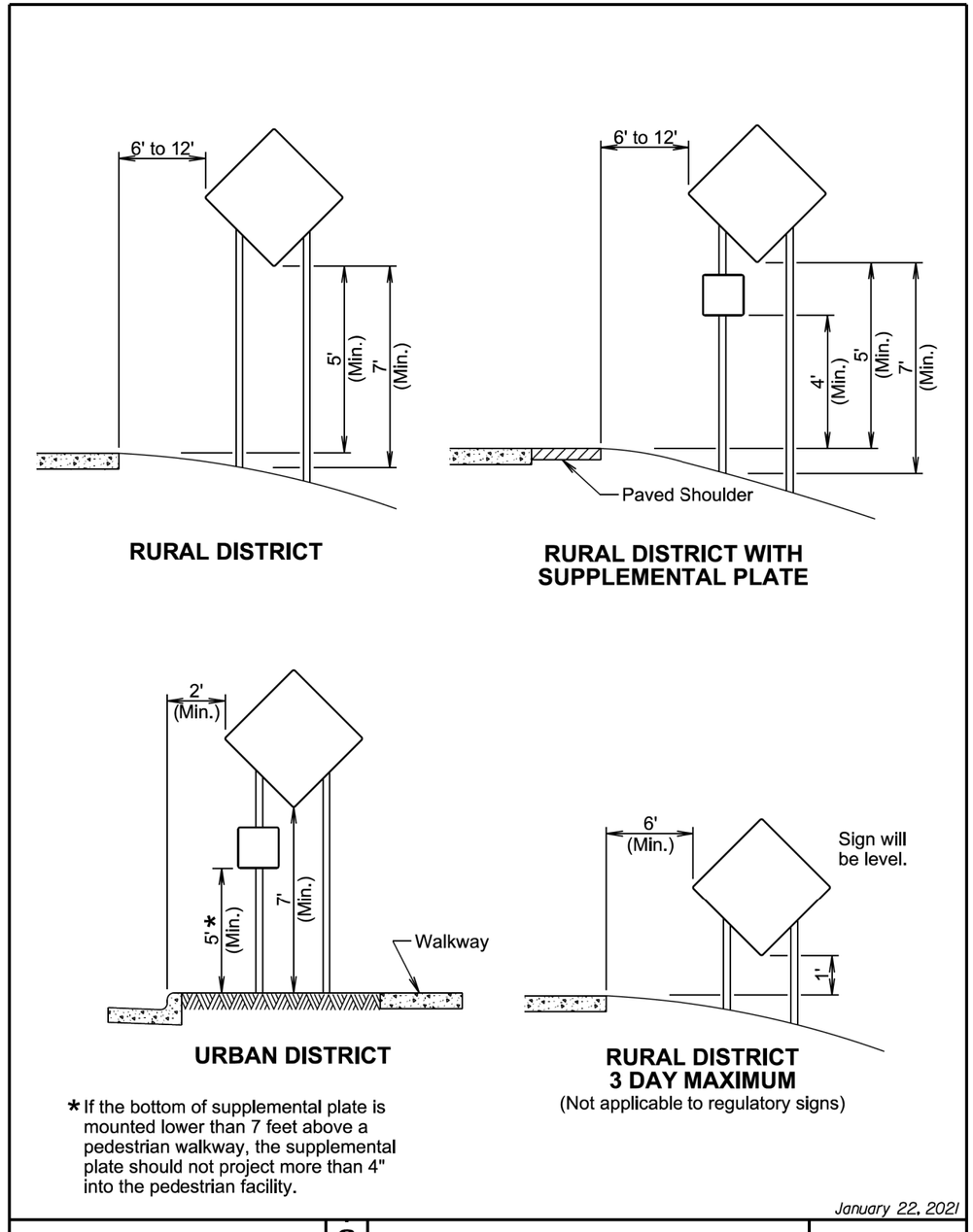
** Need and safe speed to be determined at the site by the Engineer.

The channelizing devices will be drums or 42" cones.

The length of A may be adjusted to fit field conditions.

January 22, 2021

| Published Date: 1st Qtr. 2023 | SDDOT | LANE CLOSURE USING STOP SIGNS | PLATE NUMBER 634.25 |
|---|---|---|---|
| | | | Sheet 1 of 1 |




**RURAL DISTRICT**

**RURAL DISTRICT WITH SUPPLEMENTAL PLATE**

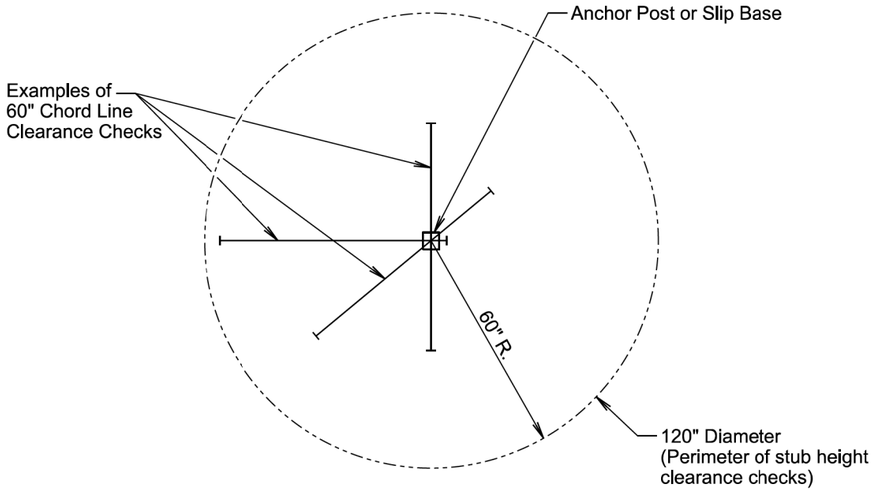
**URBAN DISTRICT**

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

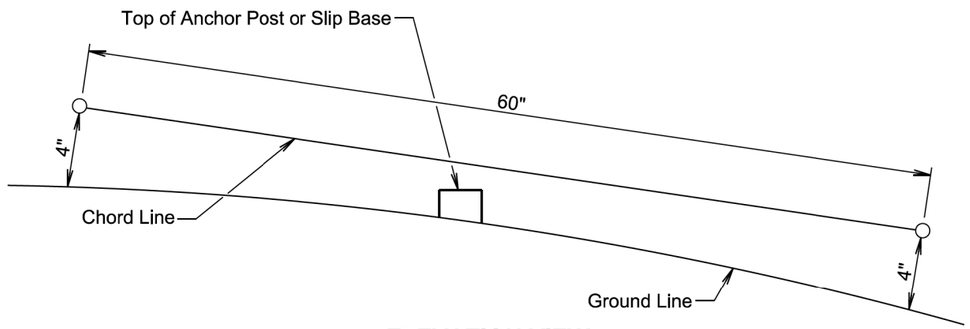
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.

January 22, 2021

| Published Date: 1st Qtr. 2023 | SDDOT | CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing) | PLATE NUMBER 634.85 |
|---|---|---|---|
| | | | Sheet 1 of 1 |




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




**ELEVATION VIEW**

**GENERAL NOTES:**

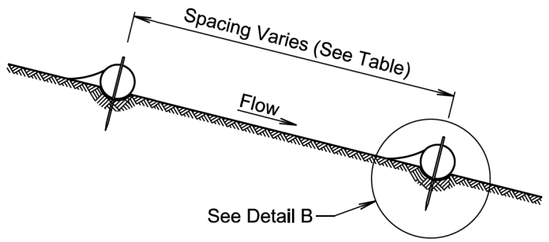
The top of anchor posts and slip bases WILL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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.

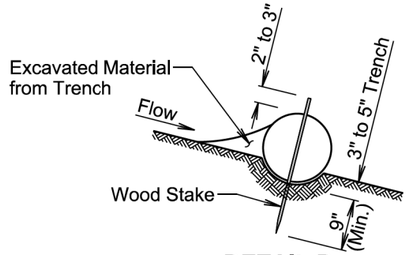
January 22, 2021

| | | | |
|---|---|---|---|
| Published Date: 1st Qtr. 2023 | SDDOT | BREAKAWAY SUPPORT STUB CLEARANCE | PLATE NUMBER 634.99<br>Sheet 1 of 1 |

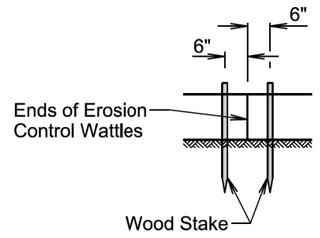



**ELEVATION VIEW**
(Cut or Fill Slope Installation)

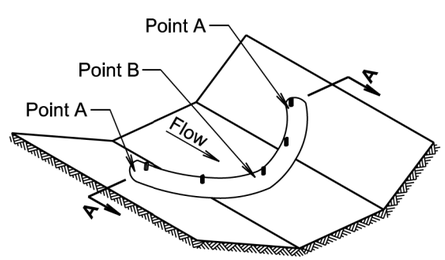
| CUT OR FILL SLOPE INSTALLATION | |
|---|---|
| Slope | Spacing (Ft.) |
| 1:1 | 10 |
| 2:1 | 20 |
| 3:1 | 30 |
| 4:1 | 40 |



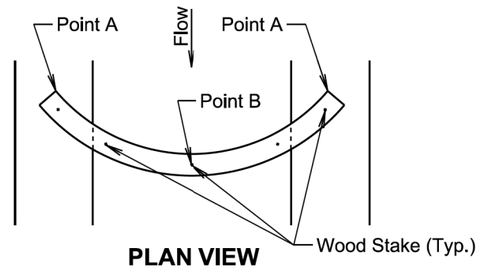

**DETAIL B**
(Typical of All Installations)




**DETAIL C**
(See General Notes)

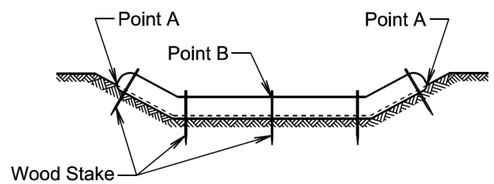



**ISOMETRIC VIEW**
(Ditch Installation)




**PLAN VIEW**
(Ditch Installation)

| DITCH INSTALLATION | |
|---|---|
| Grade | Spacing (Ft.) |
| 2% | 150 |
| 3% | 100 |
| 4% | 75 |
| 5% | 50 |




**SECTION A-A**

February 14, 2020

| | | | |
|---|---|---|---|
| Published Date: 1st Qtr. 2023 | SDDOT | EROSION CONTROL WATTLE | PLATE NUMBER 734.06<br>Sheet 1 of 2 |

| STATE OF SOUTH DAKOTA | PROJECT | SHEET | TOTAL SHEETS |
|---|---|---|---|
| | 018-492 | 10 | 10 |

Plotting Date: 03/02/2023

Plot Scale - 1:200

**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".

*February 14, 2020*

| | | | |
|---|---|---|---|
| ***Published Date: 1st Qtr. 2023*** | SDDOT | ***EROSION CONTROL WATTLE*** | ***PLATE NUMBER*** *734.06* |
| | | | *Sheet 2 of 2* |

Plotted From - TRRC12608

File - ...\0000 stdPlates.dgn