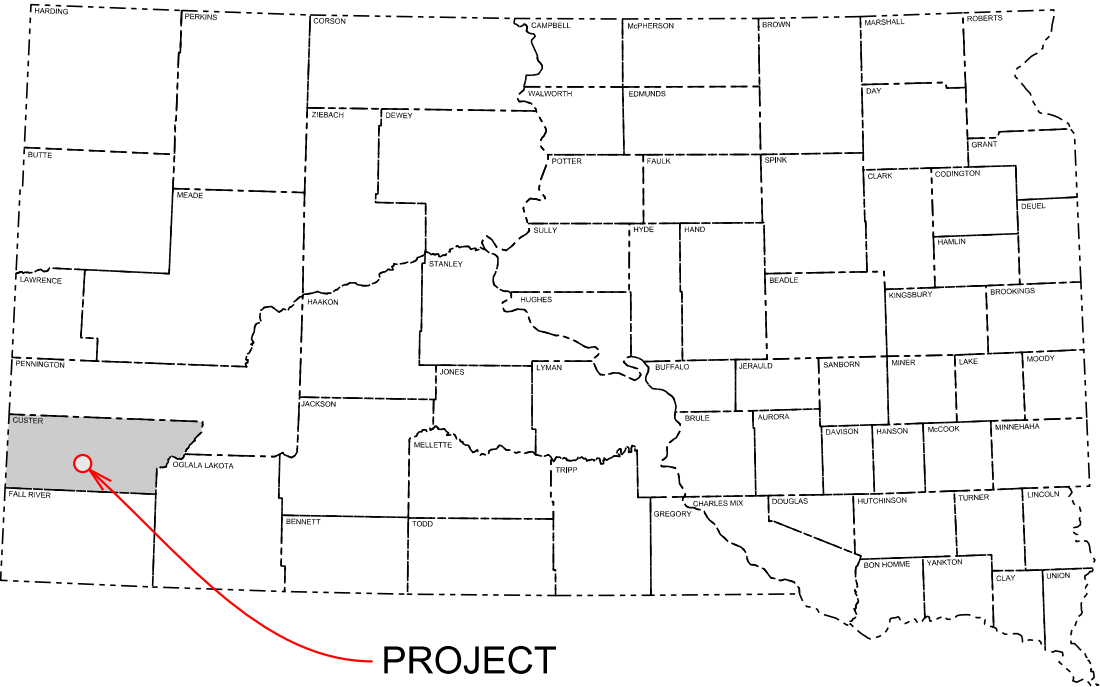


Plot Scale - 1:200

Plotted From - TRR014610



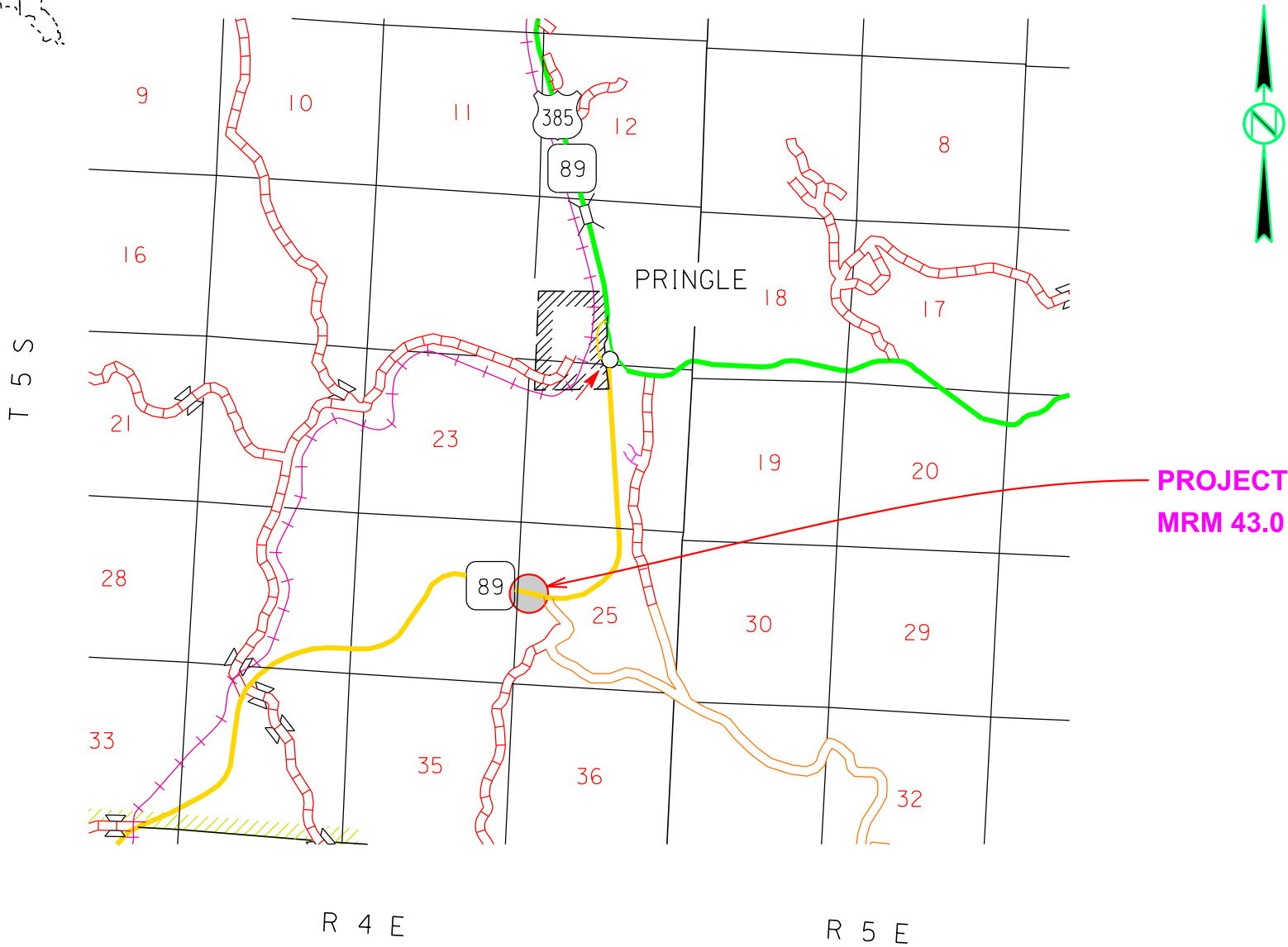
STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION  
PLANS FOR PROPOSED  
**PROJECT 089-492**  
**SD HIGHWAY 89**  
**CUSTER COUNTY**  
CULVERT REPAIR  
PCN i59j

| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET | TOTAL<br>SHEETS |
|-----------------------------|---------|-------|-----------------|
|                             | 089-492 | 1     | 10              |

Plotting Date: 06/04/2018

INDEX OF SHEETS

|      |                                      |
|------|--------------------------------------|
| 1    | General Layout with Index            |
| 2-5  | Estimate with General Notes & Tables |
| 6    | Plan Sheet                           |
| 7    | Pipe Section                         |
| 8-10 | Standard Plates                      |



DESIGN DESIGNATION

|             |        |
|-------------|--------|
| AADT (2017) | 1031   |
| AADT (2037) | 1253   |
| DHV         | 318    |
| D           | 51 %   |
| DHV T%      | 3 %    |
| AADT T%     | 6.6 %  |
| V           | 65 mph |

STORM WATER PERMIT

None Required

| BID ITEM<br>NUMBER | ITEM                                   | QUANTITY | UNIT |
|--------------------|--|----------|------|
| 009E0010           | Mobilization                           | Lump Sum | LS   |
| 110E0500           | Remove Pipe Culvert                    | 20       | Ft   |
| 120E0600           | Contractor Furnished Borrow Excavation | 3        | CuYd |
| 230E0100           | Remove and Replace Topsoil             | Lump Sum | LS   |
| 450E4769           | 24" CMP 16 Gauge, Furnish              | 20       | Ft   |
| 450E4770           | 24" CMP, Install                       | 20       | Ft   |
| 634E0010           | Flagging                               | 40.0     | Hour |
| 634E0110           | Traffic Control Signs                  | 137.0    | SqFt |
| 634E0120           | Traffic Control, Miscellaneous         | Lump Sum | LS   |
| 734E0010           | Erosion Control                        | Lump Sum | LS   |
| 734E0102           | Type 2 Erosion Control Blanket         | 71       | 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 Section A 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. 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: <http://www.sddot.com/resources/Manuals/EnvironProcManual.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 Office at 605-773-3098 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

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 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:

- Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench completely 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”.
- 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) will be incidental to the various contract items.

**COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES**

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

**Action Taken/Required:**

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

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another qualified archaeologist, to obtain either a records search or a cultural resources survey. A record search might be sufficient for review if the site was previously surveyed; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

The Contractor will provide ARC with the following: a topographical map or aerial view of 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 will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office 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.

**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”.

**UTILITIES**

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

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.

**CONTRACTOR FURNISHED BORROW EXCAVATION**

The Contractor shall 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 material shall be 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.

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

**REMOVE PIPE CULVERT**

The Contractor shall remove 20’ of the existing corrugated metal pipe at MRM 43.0 + 0.469 L. The remaining CM pipe at this location shall be retained. Any damage to the remaining CMP shall be replaced by the Contractor at no cost to the State. All removed items shall become the property of the Contractor for their disposal.

**CORRUGATED METAL PIPE**

The corrugated metal pipe shall be place at the elevations of the existing pipe that is being removed.

Corrugated metal pipes shall have 2 ⅔-inch x ½-inch corrugations for 42-inch and smaller round pipe and 48-inch and smaller arch pipe unless otherwise stated in the plans. Corrugated metal pipes shall have 3-inch x 1-inch or 5-inch x 1-inch corrugations for 48-inch and larger round pipe and 54-inch and larger arch pipe unless otherwise stated in the plans.

The gauge of the corrugated metal elbows and ends shall match the thickest gauge of corrugated metal pipe it is connected to.

**PIPE FOR DOWNSPOUTS**

High density polyethylene pipe may be substituted for 36-inch and smaller pipe downspouts at no additional cost to the State. All necessary connections, transitions, and anchoring methods shall be in accordance with the manufacturer’s recommendations and be approved by the Engineer. Bedding and backfill material and installation procedures shall conform to the manufacturer’s design requirements.

If high density polyethylene pipe, corrugated polypropylene pipe, or steel reinforced polyethylene pipe are provided, then the end sections shall be metal, be compatible, and conform to the type of end section as shown in the plans.

**CONCRETE PIPE CONNECTIONS**

A concrete collar shall then be poured around the pipe in the area of the connection.

Connections to existing pipe shall be made by placing a 2’ wide by 6" thick M6 concrete collar around the outside of the connection. The concrete collar shall be reinforced with 6x6 W2.9 x W2.9 wire mesh.

All costs for constructing the concrete collars including materials and labor shall be incidental to the contract unit price per foot for the corresponding pipe bid item.

**REMOVE AND REPLACE TOPSOIL**

Prior to the culvert removal, a 4" depth of topsoil shall be salvaged and stockpiled. The stockpile location will be directed by the Engineer. Following completion of construction, topsoil shall be spread evenly over the disturbed areas.

The estimated amount of topsoil to be removed and replaced is 7 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

The estimated area requiring erosion control is 600 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, fertilizing, and mulching shall 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 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:

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

All seed shall 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 shall be incidental to the contract lump sum price for “Erosion Control”.

The mycorrhizal inoculum shall be from the list below or an approved equal:

| Product   | Manufacturer  |
|-----------|---|
| MycoApply | Mycorrhizal Applications, Inc.<br>Grants Pass, OR<br>Phone: 1-866-476-7800<br><a href="http://www.mycorrhizae.com/">http://www.mycorrhizae.com/</a> |

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 4-4-4 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 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 fertilizer shall 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 shall 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><a href="http://www.sustane.com">www.sustane.com</a> |
| Perfect Blend | Perfect Blend, LLC<br>Bellevue, WA<br>Phone: 1-866-456-8890<br><a href="http://www.perfect-blend.com">www.perfect-blend.com</a>            |

Permanent Seeding

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

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          | 7                                       |
| Green Needlegrass  | Lodorm                            | 4                                       |
| Sideoats Grama   | Butte, Killdeer, Pierre, Trailway | 3                                       |
| Blue Grama   | Bad River, Willis                 | 2                                       |
| Oats or Spring Wheat: April through May; Winter Wheat: August through November |                                   | 10                                      |
| Total:   |                                   | 26                                      |

EROSION CONTROL BLANKET

Erosion control blanket shall be installed 16 feet wide at the locations noted in the table and at locations determined by the Engineer during construction.

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

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

TABLE OF EROSION CONTROL BLANKET

| MRM                                   | L/R | Location | Type | Quantity (SqYd) |
|---------------------------------------|-----|----------|------|-----------------|
| 43.0 + 0.469 L                        | L   | Inslope  | 2    | 71              |
| Total Type 2 Erosion Control Blanket: |     |          |      | 71              |

TRAFFIC CONTROL – GENERAL NOTES

Any damage to the shoulder shall be repaired by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

Unless otherwise stated in these plans, no work will be allowed during hours of darkness.

Existing guide, route, informational logo, regulatory, warning signs and delineation shall be temporarily reset and maintained during construction as directed by the Engineer. Removing, relocating, salvaging and resetting of the above items shall be the responsibility of the Contractor.

Non-applicable traffic control devices shall be completely covered or removed during periods of inactivity. Periods of inactivity shall be defined as no work taking place for a period of more than 2 calendar days.

All regulatory signs shall have a minimum mounting height of 5' in rural locations, even when mounted on portable supports.

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

The Contractor shall provide installation details at the preconstruction meeting for all breakaway sign support assemblies.

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

All construction operations shall 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 shall be used, as determined by the Engineer.

Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

TABLE OF TRAFFIC CONTROL DEVICES

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS

| SIGN<br>CODE | SIGN DESCRIPTION    | CONVENTIONAL ROAD                                  |           |                  |      |
|--------------|---------------------|--|-----------|------------------|------|
|              |                     | NUMBER   | SIGN SIZE | SQFT<br>PER SIGN | SQFT |
| W3-4         | BE PREPARED TO STOP | 2  | 48" x 48" | 16.0             | 32.0 |
| W20-1        | ROAD WORK AHEAD     | 2  | 48" x 48" | 16.0             | 32.0 |
| W20-7        | FLAGGER (symbol)    | 2  | 48" x 48" | 16.0             | 32.0 |
| W21-5        | SHOULDER WORK       | 2  | 48" x 48" | 16.0             | 32.0 |
| G20-2        | END ROAD WORK       | 2  | 36" x 18" | 4.5              | 9.0  |
|              |                     | CONVENTIONAL ROAD<br>TRAFFIC CONTROL SIGNS<br>SQFT |           |                  |      |
|              |                     | 137.0  |           |                  |      |

Plot Scale - 1:80

Plotted From - TRR014610

|                             |         |       |                 |
|-----------------------------|---------|-------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET | TOTAL<br>SHEETS |
|                             | 089-492 | 6     | 10              |

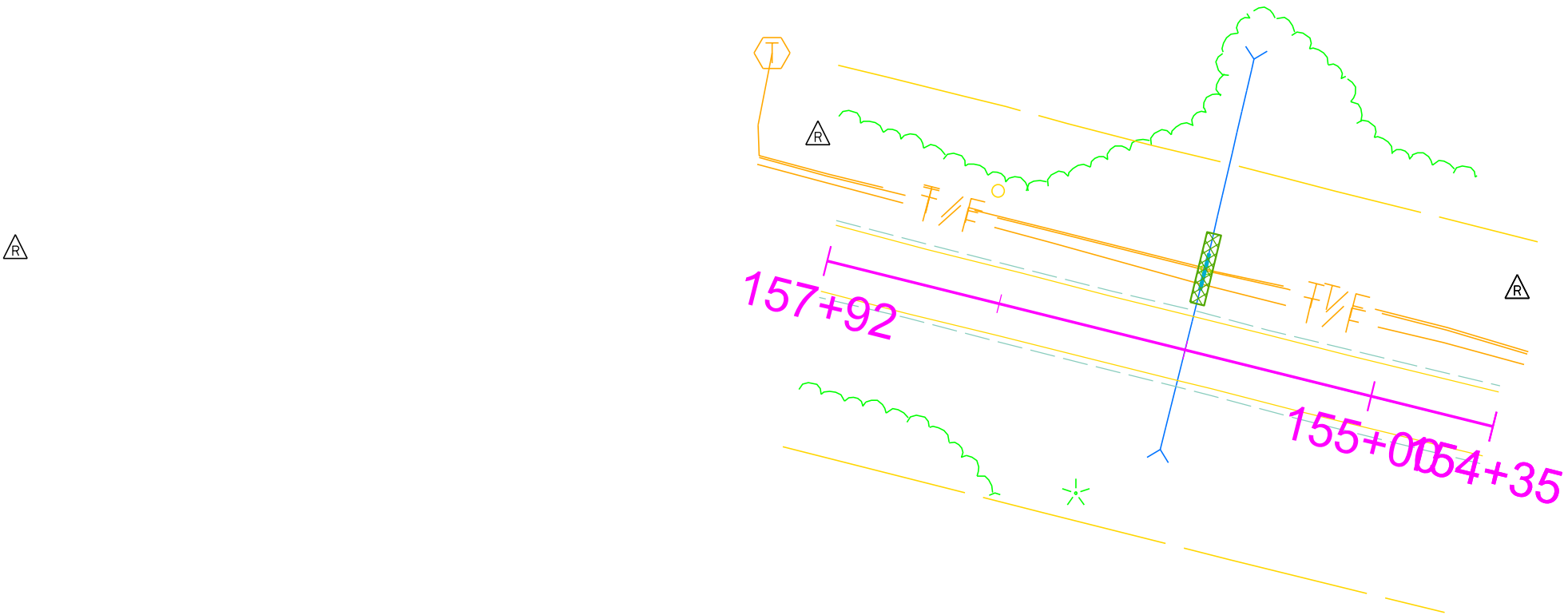
Plotting Date: 06/04/2018

MRM 43.0 + 0.469

MRM 43.0 + 0.469 L  
Remove 24" CMP - 20'

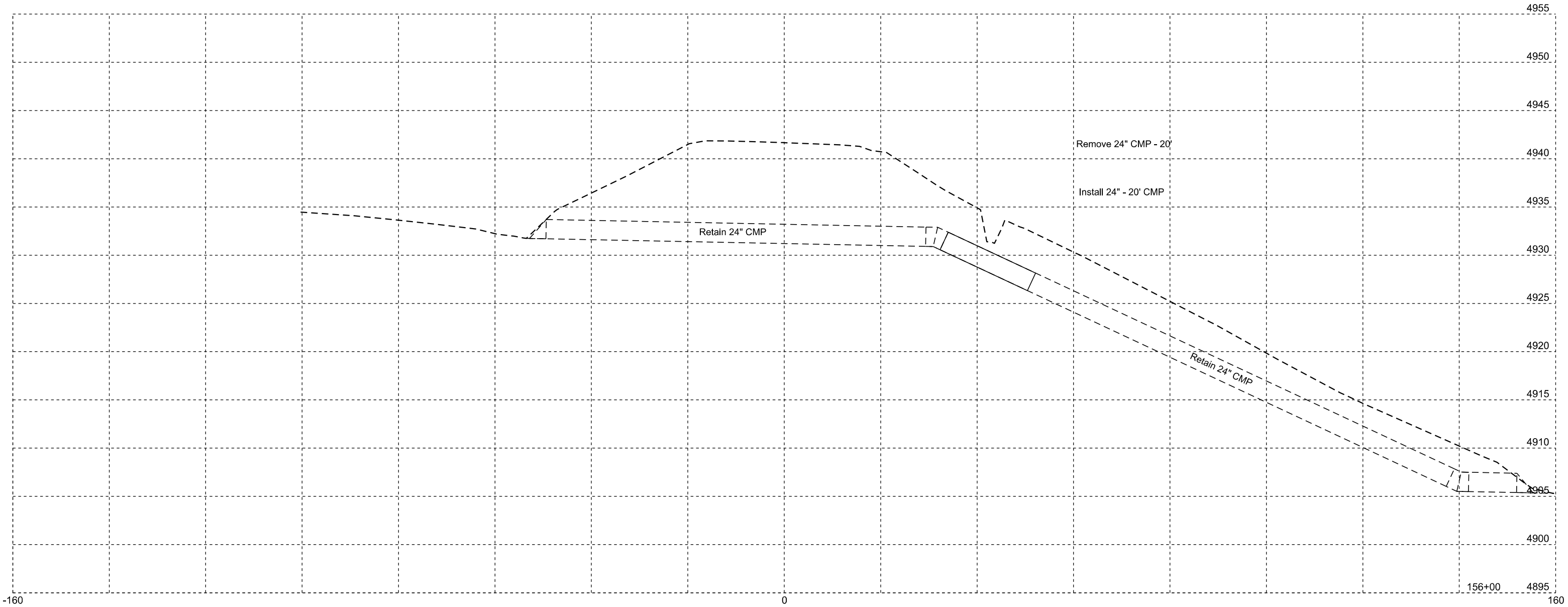
MRM 43.0 + 0.469 L  
Install 24" - 20' CMP

Install Type 2 Erosion Control Blanket  
MRM 43.0 + 0.469 L Inslope 71 SqYd



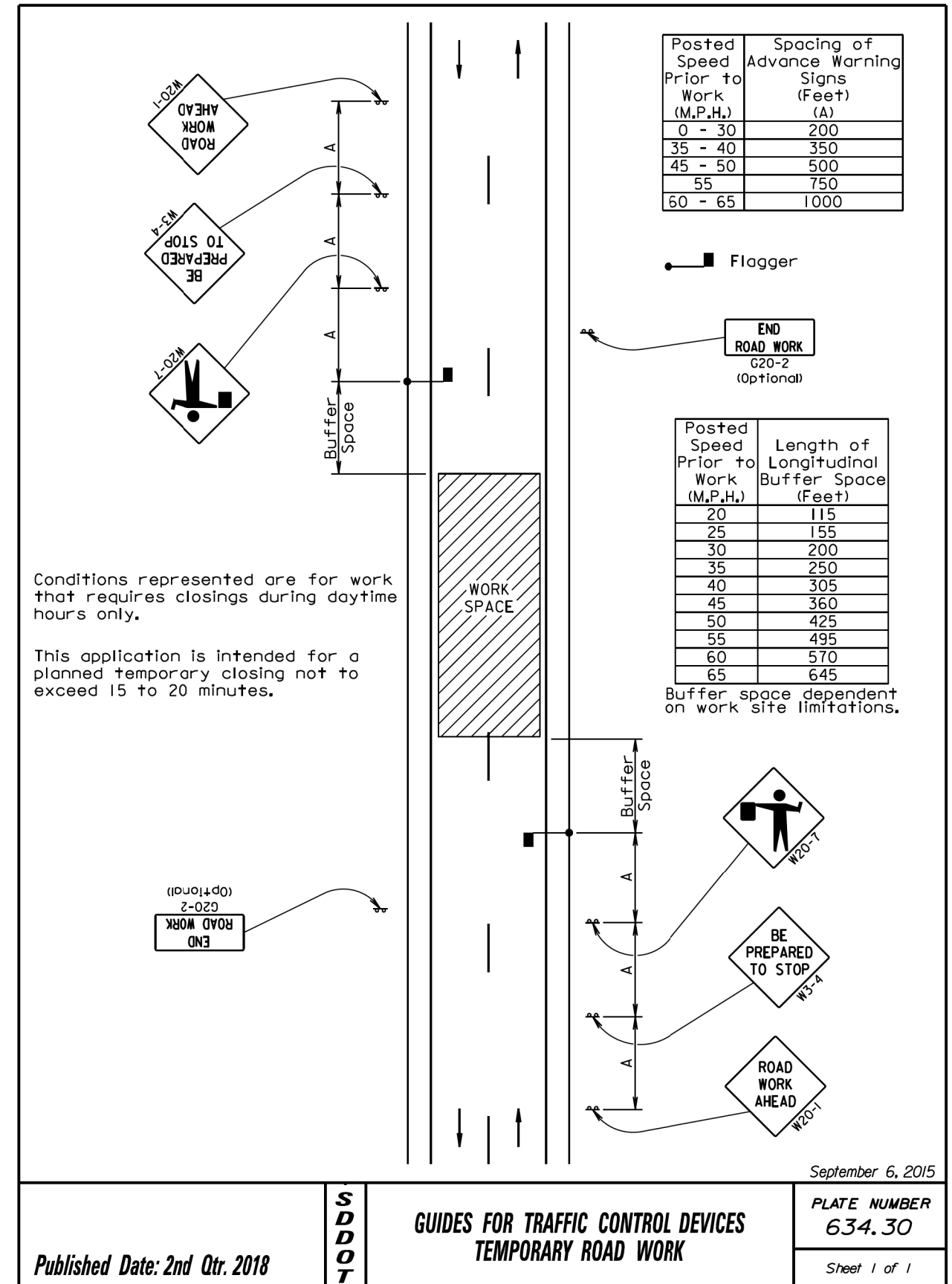
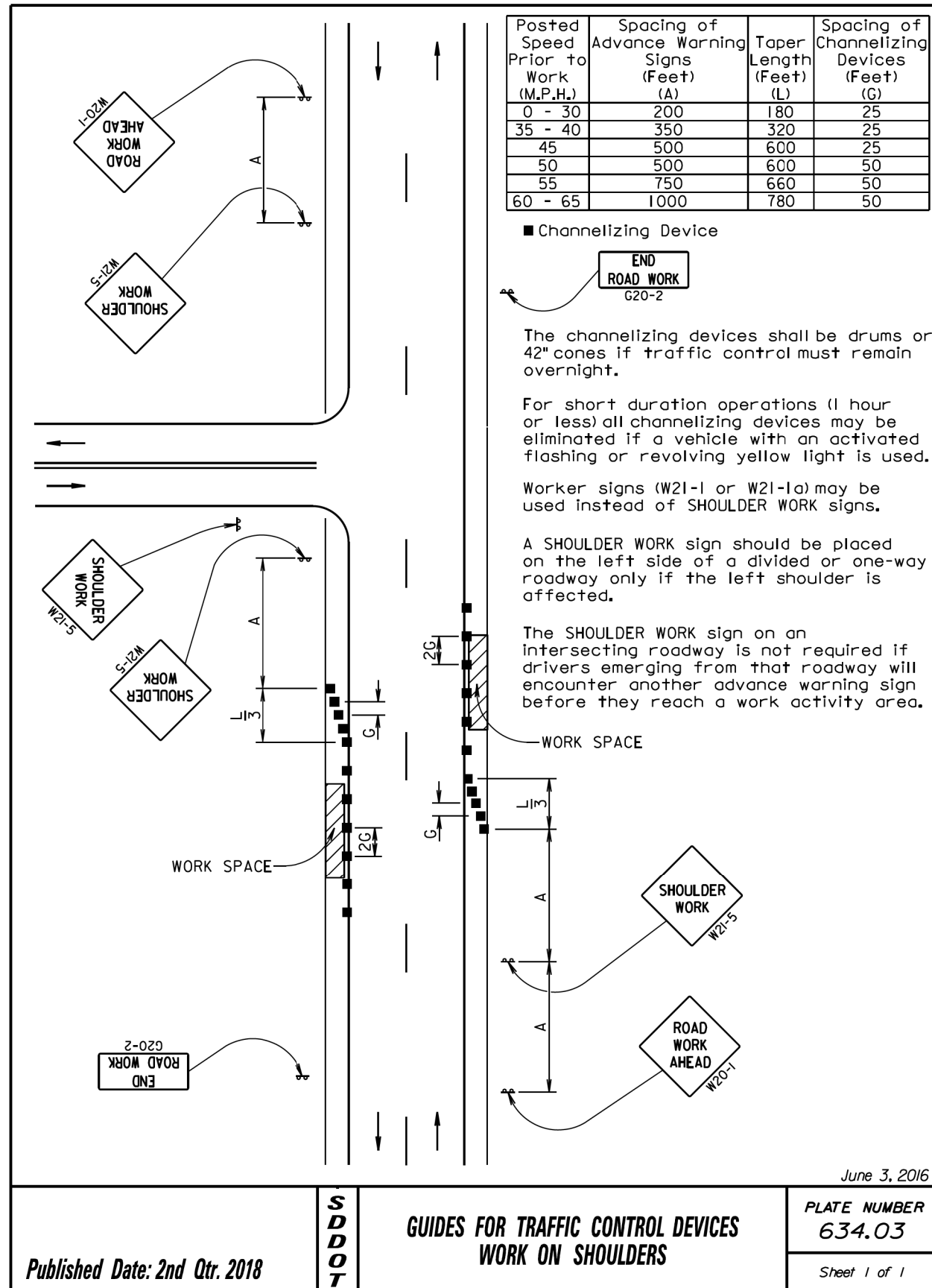
 Type 2 Erosion Control Blanket

|                             |         |       |                 |
|-----------------------------|---------|-------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET | TOTAL<br>SHEETS |
|                             | 089-492 | 7     | 10              |



|                             |         |       |                 |
|-----------------------------|---------|-------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET | TOTAL<br>SHEETS |
|                             | 089-492 | 8     | 10              |

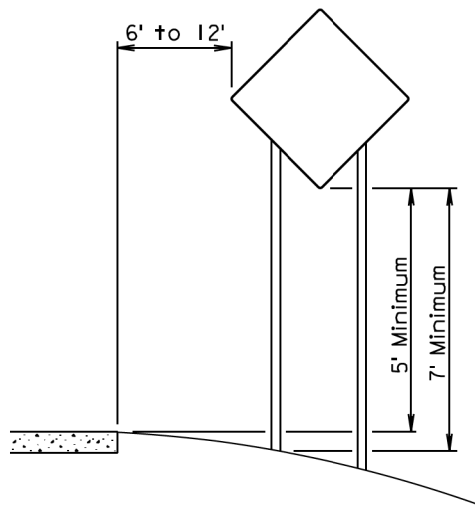
Plotting Date: 06/04/2018



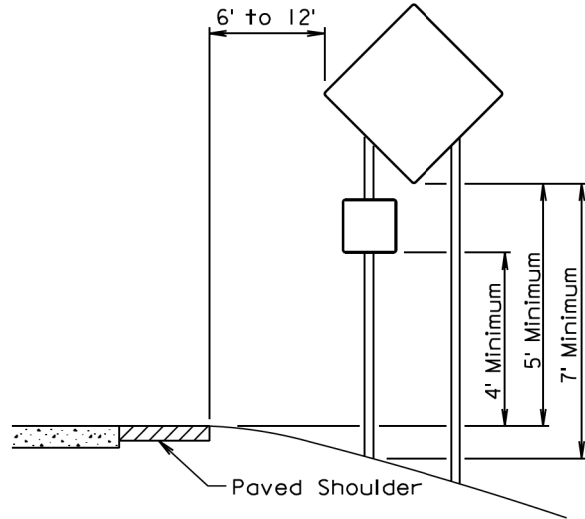


|                             |         |       |                 |
|-----------------------------|---------|-------|-----------------|
| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET | TOTAL<br>SHEETS |
|                             | 089-492 | 9     | 10              |

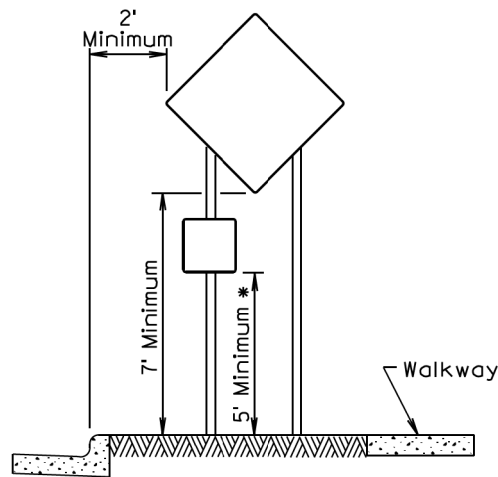
Plotting Date: 06/04/2018



RURAL DISTRICT

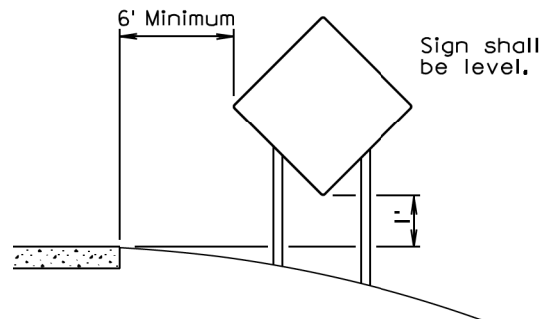


RURAL DISTRICT WITH  
SUPPLEMENTAL PLATE



URBAN DISTRICT

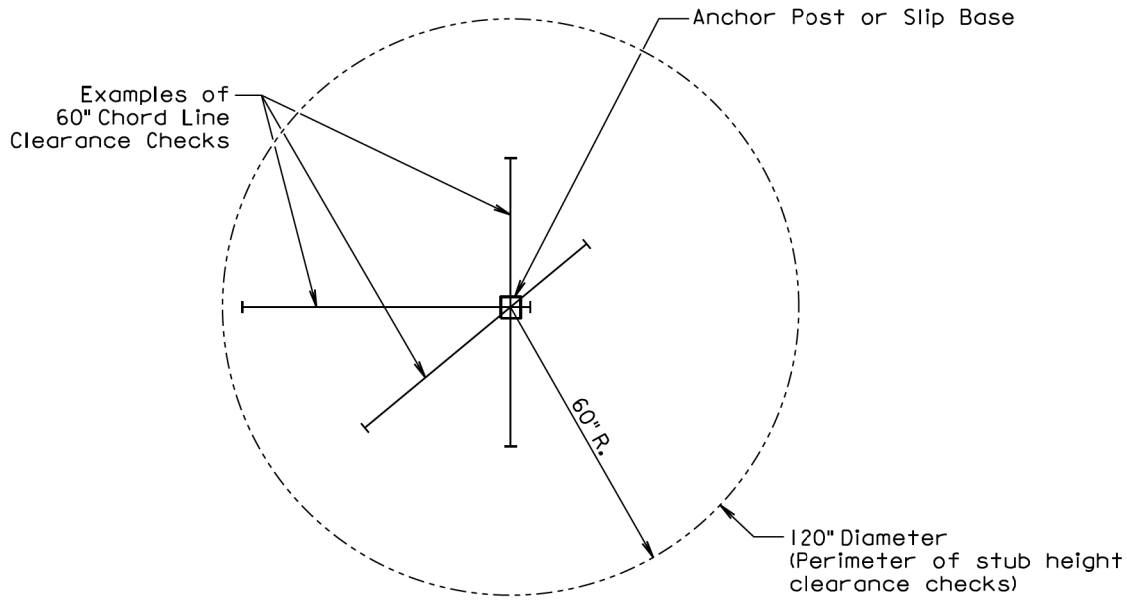
\* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



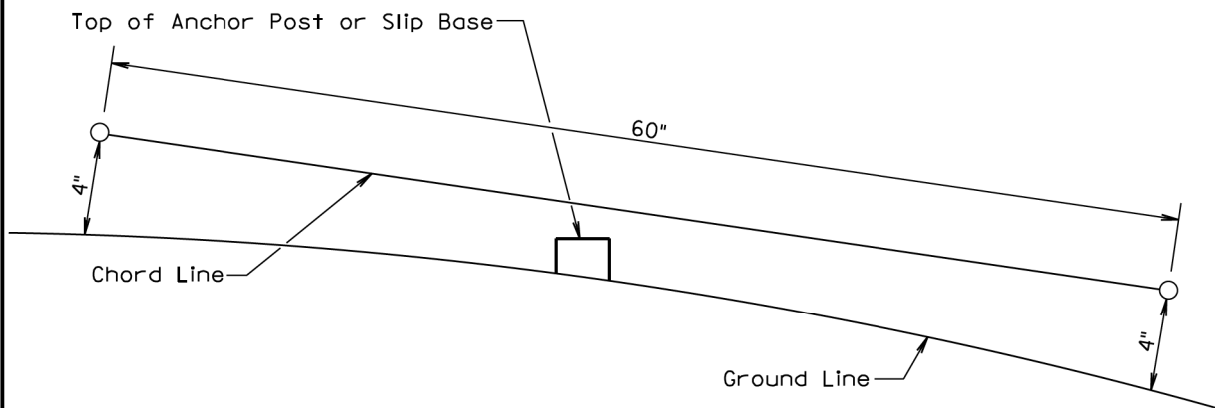
RURAL DISTRICT  
3 DAY MAXIMUM  
(Not applicable to regulatory signs)

September 22, 2014

|                               |                       |   |                        |
|-------------------------------|-----------------------|---|------------------------|
| Published Date: 2nd Qtr. 2018 | S<br>D<br>D<br>O<br>T | CRASHWORTHY SIGN SUPPORTS<br>(Typical Construction Signing) | PLATE NUMBER<br>634.85 |
|                               |                       |   | Sheet 1 of 1           |



PLAN VIEW  
(Examples of stub height clearance checks)



ELEVATION VIEW

GENERAL NOTES:

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

At locations where there is curb and gutter adjacent to the breakaway sign support, the stub height shall be a maximum of 4" above the ground line at the localized area adjacent to the breakaway support stub.

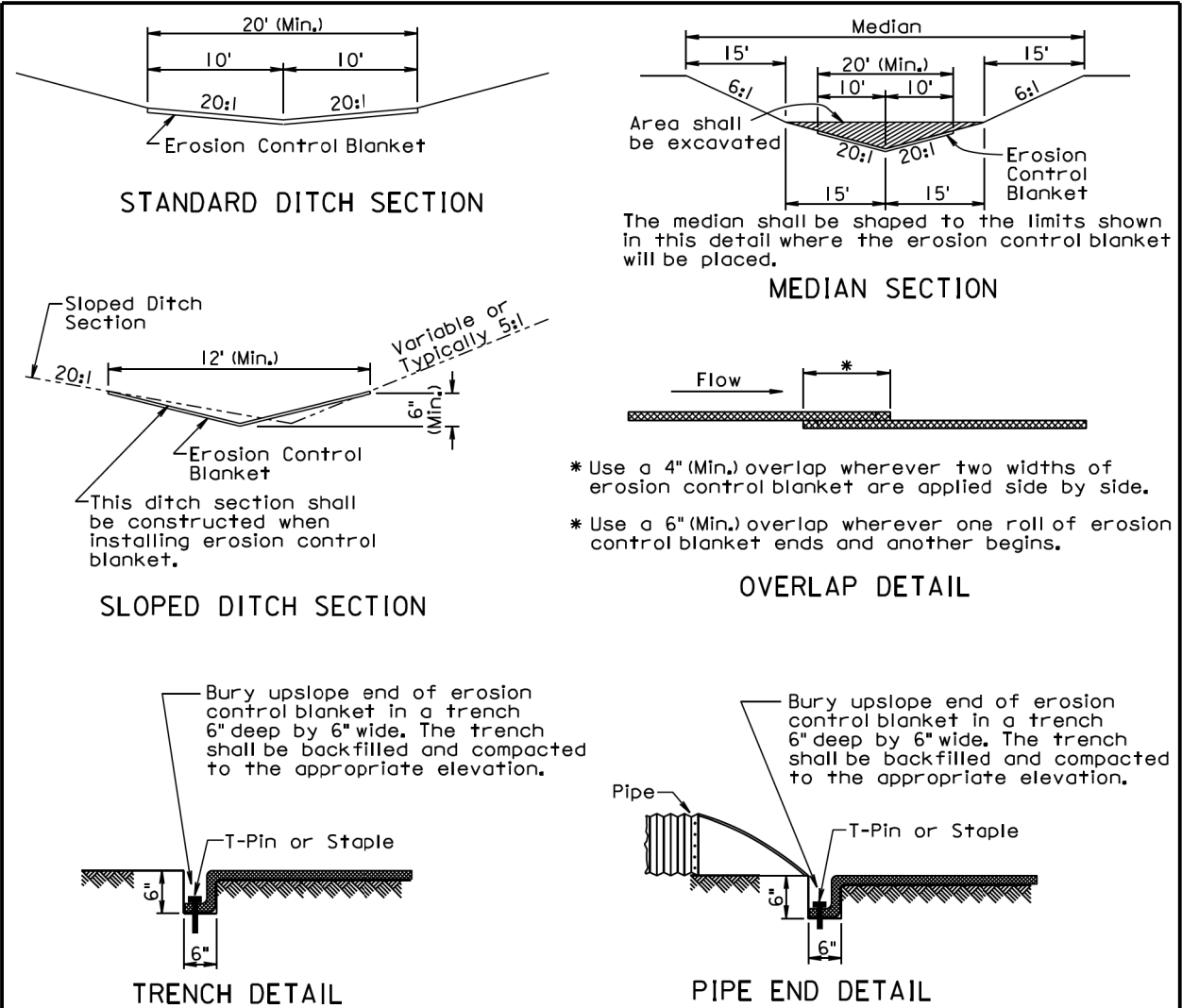
The 4" stub height clearance is not necessary for U-channel lap splices where the support is designed to yield (bend) at the base.

July 1, 2005

|                               |                       |                                  |                        |
|-------------------------------|-----------------------|----------------------------------|------------------------|
| Published Date: 2nd Qtr. 2018 | S<br>D<br>D<br>O<br>T | BREAKAWAY SUPPORT STUB CLEARANCE | PLATE NUMBER<br>634.99 |
|                               |                       |                                  | Sheet 1 of 1           |

| STATE OF<br>SOUTH<br>DAKOTA | PROJECT | SHEET | TOTAL<br>SHEETS |
|-----------------------------|---------|-------|-----------------|
|                             | 089-492 | 10    | 10              |

Plotting Date: 06/04/2018



**GENERAL NOTES:**

Prior to placement of the erosion control blanket, the areas shall be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" wide by 6" deep. There shall be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

December 23, 2004

|                                      |                                  |                                |                        |
|--------------------------------------|----------------------------------|--------------------------------|------------------------|
| <i>Published Date: 2nd Qtr. 2018</i> | <b>S<br/>D<br/>D<br/>O<br/>T</b> | <b>EROSION CONTROL BLANKET</b> | PLATE NUMBER<br>734.01 |
|                                      |                                  |                                | Sheet 1 of 1           |