

Plot Scale - 1:200

Plotted From - TRR012608

Plotted From -

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION
PLANS FOR PROPOSED

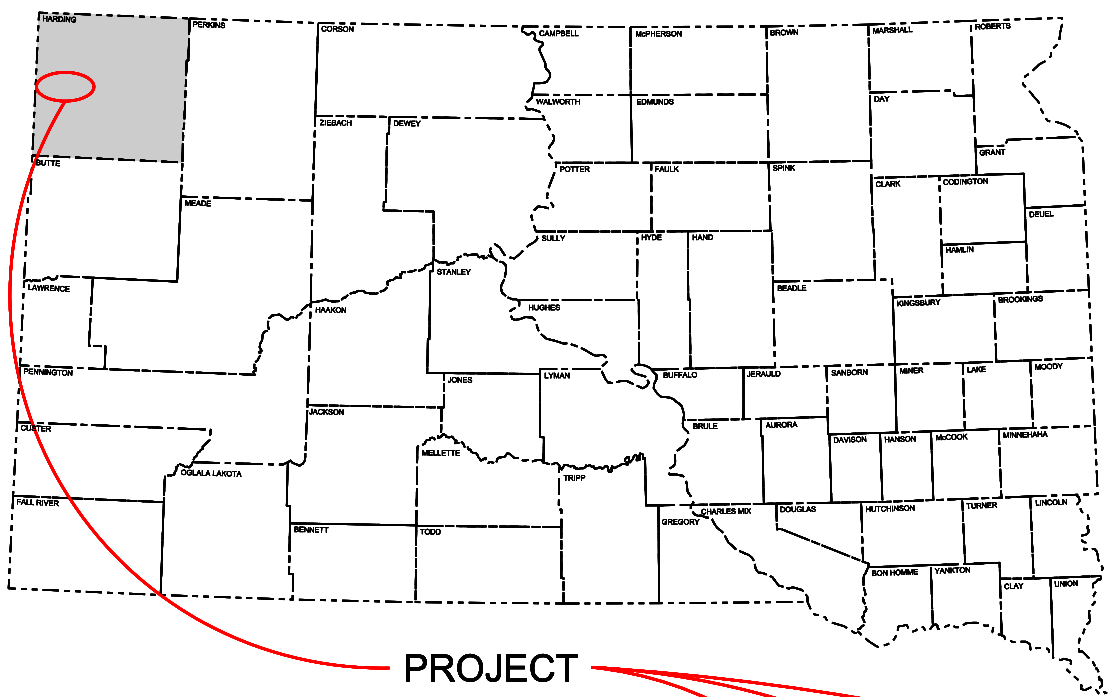
PROJECT 020-471
SD HIGHWAY 20
HARDING COUNTY
ASPHALT CONCRETE REPAIR
PCN i5ek

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	1	18

Plotting Date: 08/15/2018

INDEX OF SHEETS

1	General Layout with Index
2-6	Estimate with General Notes & Tables
7-9	Typical Sections
10	Plan Sheet
11-12	Special Details
13	Fixed Location Signs
14-18	Standard Plates

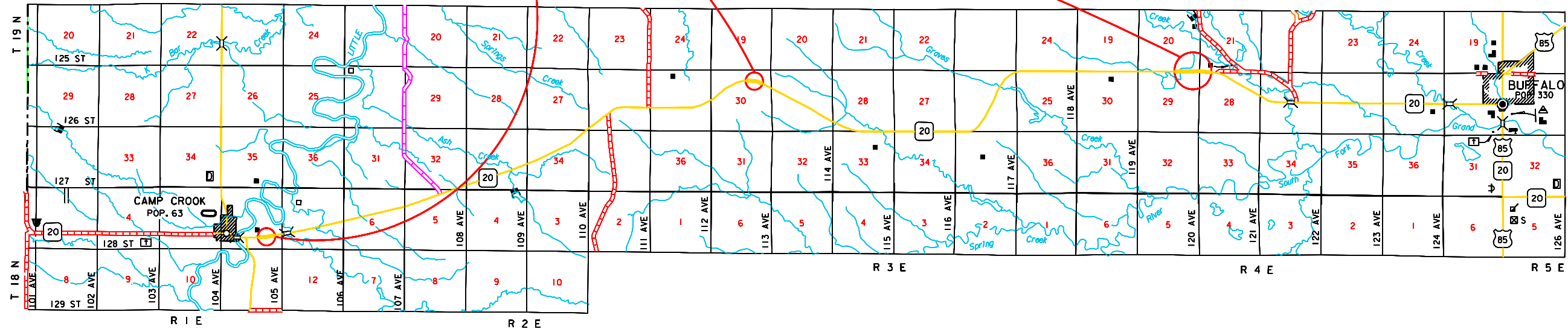


PROJECT

MRM 4.580 - 4.640
MRM 4.830 - 4.960

MRM 22.550 - 23.000

MRM 14.550 - 14.650



DESIGN DESIGNATION

AADT (2017)	136
AADT (2037)	162
DHV	25
D	50%
DHV T%	5.6%
AADT T%	12.3%
V	65 mph

STORM WATER PERMIT

None Required

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0010	Unclassified Excavation	830	CuYd
230E0100	Remove and Replace Topsoil	Lump Sum	LS
260E1010	Base Course	1,780.8	Ton
320E1200	Asphalt Concrete Composite	2,015.3	Ton
332E0010	Cold Milling Asphalt Concrete	14,178	SqYd
430E0700	Precast Concrete Headwall for Drain	8	Each
633E1400	Pavement Marking Paint, 4" White	9,180	Ft
633E1405	Pavement Marking Paint, 4" Yellow	6,885	Ft
634E0010	Flagging	480.0	Hour
634E0020	Pilot Car	240.0	Hour
634E0110	Traffic Control Signs	625.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0275	Type 3 Barricade	6	Each
634E0600	4" Temporary Pavement Marking Tape Type I	5,376	Ft
634E0640	Temporary Pavement Marking	13,770	Ft
680E0240	4" Corrugated Polyethylene Drainage Tubing	128	Ft
680E0440	4" Slotted Corrugated Polyethylene Drainage Tubing	104	Ft
680E2500	Porous Backfill	37.9	Ton
730E0210	Type F Permanent Seed Mixture	3	Lb
731E0100	Fertilizing	150	Lb
732E0250	Fiber Mulching	200	Lb
734E0154	12" Diameter Erosion Control Wattle	240	Ft
831E0110	Type B Drainage Fabric	148	SqYd
831E0300	Reinforcement Fabric (MSE)	1,956	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 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 waters within South Dakota without prior approval from the SDDOT Environmental Office. Thoroughly wash all construction equipment to prevent and control the introduction and spread of invasive species into the project vicinity.

Action Taken/Required:

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

Additional information and mapping of Aquatic Invasive Species in South Dakota can be accessed at: <http://sdleastwanted.com/maps/default.aspx>.

COMMITMENT E: STORM WATER

Construction activities constitute less than 1 acre of disturbance.

Action Taken/Required:

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

The waste disposal site(s) will be managed and reclaimed in accordance with the following from the General Permit for Construction/Demolition Debris Disposal Under the South Dakota Waste Management Program issued by the Department of 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 not designated within the plans require a cultural resource review prior to scheduling the pre-construction meeting. This work includes, but is not limited to: Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas.

The Contractor will arrange and pay for a record search and when necessary, a cultural resource survey. The Contractor has the option to contact the state Archaeological Research Center (ARC) at 605-394-1936 or another 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.

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.

Utilities within the limits of the proposed construction shall be adjusted by the owner unless otherwise indicated in these plans.

COLD MILLING ASPHALT CONCRETE

The Los Angeles Abrasion Loss value on the aggregate used for the in place asphalt concrete on SD20 is approximately 27. This value was obtained from the average of the natural aggregates in the area.

Salvaged asphalt concrete material from cold milling shall become the property of the Contractor.

UNCLASSIFIED EXCAVATION FOR UNDERDRAIN CONSTRUCTION AND BASE REPAIR

Unclassified Excavation is provided on the project for removing surfacing material and to install the underdrains and repair the base. The excavation material shall be handled as waste and disposed of in accordance with the Environmental Commitment notes.

All excavation along the existing surfacing edge shall be performed, so that a shoulder drop off does not exist adjacent to lanes open to the traveling public. The Contractor shall provide a temporary 3:1 slope adjacent to the existing surfacing if the excavation and placement of material cannot be completed prior to nightfall. All costs associated with providing and removing this temporary slope shall be incidental to the various bid items on the project.

All costs for removing and disposing of the existing surfacing and waste material shall be incidental to the contract unit price per cubic yard for Unclassified Excavation.

Plans quantity shall be the basis of payment for the Unclassified Excavation quantity. If changes are made in the field during construction, measurements shall be taken and the quantity shall be adjusted accordingly.

WATER FOR COMPACTION

Water for Granular Material shall be provided at a rate of 20 gallons per cubic yard of Base Course.

The cost of water for compaction of the Base Course shall be incidental to the contract unit price per CuYd for Base Course.

Four percent, plus or minus, moisture will be required at the time of compaction unless otherwise directed by the Engineer.

SUBGRADE REPAIR AND UNDERDRAINS

The Asphalt Concrete where the subgrade repair work is planned shall be sawcut.

Material shall be excavated to 2' below the original top of the pavement. Where underdrain installations are planned, trenches shall be excavated an additional 2' wide by 2' deep.

All costs for excavating and disposing of this material shall be incidental to the contract unit price per cubic yard for Unclassified Excavation.

The Corrugated Polyethylene Drainage Tubing within the limits of the porous backfill shall be perforated and wrapped with Type B Drainage Fabric.

In areas of the trench where the perforated tubing is placed, the trench shall be lined with Type B Drainage Fabric. The wrapped perforated tubing shall then be placed in the bottom of the trench. The trench shall then be filled with porous Backfill and Type B Drainage Fabric shall be wrapped over the top of the Porous Backfill.

Base Course shall be placed to a depth 4" below the milled surface. Two of the three 2" lifts of Asphalt Concrete Composite shall be placed on top of the Base Course.

Density shall be to the satisfaction of the Engineer.

The final lift of 2" Asphalt Concrete Composite will be placed during the overlay of the milled area.

The Corrugated Polyethylene Drainage Tubing crossing the shoulder which outlets to the inslope shall be solid-walled (or non-perforated).

The Contactor shall saw cut the asphalt shoulder for installation of the drainage tubing. The non-perforated drainage tubing shall be backfilled with material that was removed from the trench.

All costs associated with installation of the drainage tubing through the shoulder shall be incidental to the contract unit price per foot 4" Corrugated Polyethylene Drainage Tubing.

All tubing shall be paid under the contract unit price per foot for 4" Corrugated Polyethylene Drainage Tubing or 4" Slotted Corrugated Polyethylene Drainage Tubing.

SURFACING THICKNESS DIMENSIONS

Plan tonnage will be applied even though the thickness may vary from that shown in the plans. At those locations where material must be placed to achieve a required elevation, plans tonnages may be varied to achieve the required elevation.

FLUSH SEAL

SS-1h or CSS-1h Emulsified Asphalt and sand for Flush Seal shall be applied 30 feet wide.

Table of Materials Quantities													
Location	Length	Width	Cold Milling Asphalt Concrete	Unclassified Excavation	Reinforcement Fabric (MSE)	Type B Drainage Fabric	Porous Backfill	Base Course	Asphalt Concrete Composite	4" Corrugated Polyethylene Drainage Tubing	4" Slotted Corrugated Polyethylene Drainage Tubing	Precast Concrete Headwall for Drain	
MRM	(Ft)	(Ft)	(SqYd)	(CuYd)	SqYd	(SqYd)	(Ton)	(Ton)	(Ton)	(Ft)	(Ft)	(Each)	Description
4.58 to 4.64	520	30	1733.3						195				2" AC Mill and Overlay
4.82 to 4.96	940	30	3133.3						352.6				2" AC Mill and Overlay
14.55 to 14.65	550	32	711.1	830	1956	148	37.9	1780.8	500	128	104	8	See details for Unclassified Excavation and Surfacing
22.55 to 23.00	2580	30	8599.9						967.7				2" AC Mill and Overlay
Total			14178	830	1956	148	37.9	1780.8	2015.3	128	104	8	

TRAFFIC CONTROL – GENERAL NOTES

The Contractor shall submit a Sequence of Operations to the Engineer for approval one week prior to the pre-construction meeting. 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.

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.

Temporary Flexible Vertical Markers (Tabs) shall be used for lane closure tapers or lane shift tapers and shall be installed at 5' spacing. Tabs used for tapers will not be measured for payment. All costs associated to furnish, install, maintain (including replacement as required by the Engineer at no added cost to the Department), and remove all markers will be incidental to the contract lump sum price for Traffic Control, Miscellaneous.

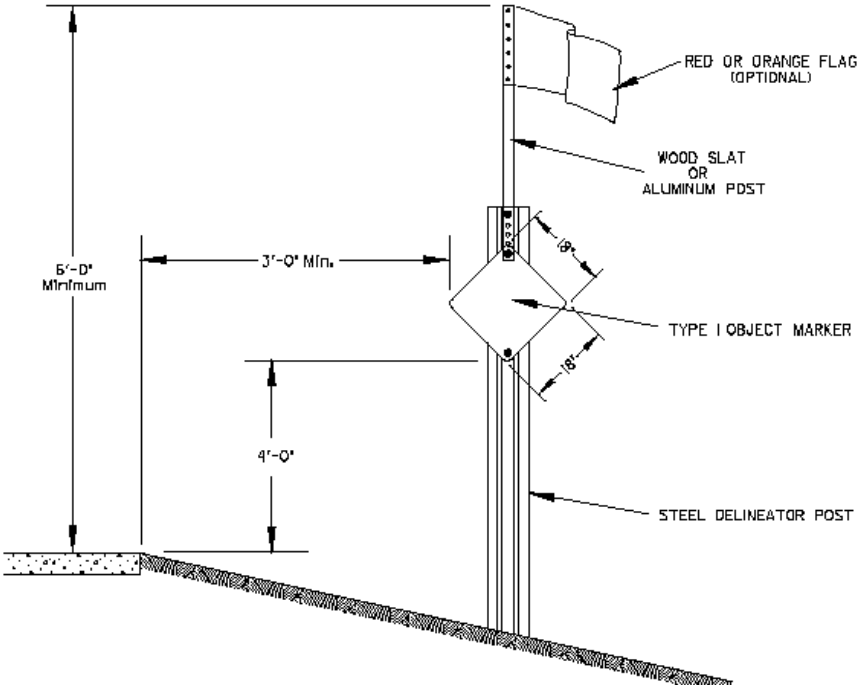
SHEETING FOR TRAFFIC CONTROL SIGNS

All fluorescent orange background material on traffic control signs, all temporary delineators, and all temporary STOP (R1-1), YIELD (R1-2), DO NOT ENTER (R5-1), and WRONG WAY (R5-1a) signs shall conform to the requirements of ASTM D4956 Type IX or XI. All other traffic control signs and background colors shall conform to the requirements of ASTM D4956 Type IV.

BUMP MARKERS

Bump markers shall be placed adjacent to the bump location.

After placing the bump markers, "Bump" warning signs with the appropriate speed advisory plates shall be placed 500 feet to 750 feet in advance of the bump location in rural areas, or 250 feet to 500 feet in advance of the bump location in urban areas. These distances may be adjusted by the Engineer if local conditions do not allow the placement of warning signs within the specified areas. The steel delineator post shall be 1.12 lb/ft flanged channel post for ground mounted installation. If the duration is less than 3 days, the Type 1 Object Marker can be installed on temporary supports. All costs for bump markers shall be incidental to the contract lump sum price for Traffic Control, Miscellaneous.



INVENTORY OF TRAFFIC CONTROL DEVICES

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
R4-7	KEEP RIGHT (symbol)	2	24" x 30"	5.0	10.0
W1-3	REVERSE TURN (L or R)	2	48" x 48"	16.0	32.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W8-1	BUMP	4	48" x 48"	16.0	64.0
W8-7	LOOSE GRAVEL	2	48" x 48"	16.0	32.0
SPECIAL	WINDROW	2	48" x 48"	16.0	32.0
W13-1P	ADVISORY SPEED (plaque) (20 MPH)	4	30" x 30"	6.3	25.2
W20-1	ROAD WORK AHEAD	8	48" x 48"	16.0	128.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
W20-7	FLAGGER (symbol)	6	48" x 48"	16.0	96.0
W21-3	ROAD MACHINERY AHEAD	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	8	36" x 18"	4.5	36.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS 625.6 SQFT			

TEMPORARY PAVEMENT MARKING

The Contractor shall place temporary pavement marking. Temporary pavement marking paint shall be used on the milled surface. Temporary Temporary Flexible Vertical Markers (Tabs) shall be used on the finished asphalt surface. Temporary pavement markings for the centerline of the roadway throughout the full length of the project shall meet the requirements of Section 634 of the Specifications. Covers on tabs shall be removed prior to opening the roadway to normal traffic flow.

The Contractor shall use protective marker covers.

The Contractor shall be responsible for maintaining a visible and reflective centerline throughout the project. Any marking covered or damaged shall be replaced prior to the end of the day. All costs associated with this work shall be incidental to the contract unit price per foot for Temporary Pavement Marking.

Flagger symbol signs (W20-7) and flaggers, or a shadow vehicle equipped with high-intensity rotating, flashing, oscillating or strobe lights shall be positioned on the roadway shoulder in advance of the workers for the installation of temporary road markers. The traffic control device used shall be moved to provide proper warning of the work operation. A ROAD WORK AHEAD (W20-1) sign, a worker symbol sign (W21-1) or a BE PREPARED TO STOP (W3-4) sign shall be mounted on the rear of the shadow vehicle. The method of traffic control used by the Contractor for this work shall be approved by the Engineer.

All costs for temporary pavement marking including furnishing, applying, uncovering, maintenance and removal of tabs shall be incidental to the contract unit price per mile for Temporary Pavement Marking.

PERMANENT PAVEMENT MARKING

The Contractor shall survey and mark the location of no passing zones prior to covering pavement marking.

The Contractor shall repaint all of the existing pavement marking paint including centerline, edge line, lane lines, etc. The Contractor shall provide a copy of the pavement marking inventory to the Engineer.

Application of permanent pavement marking may begin 7 calendar days following completion of the fog seal and shall be completed within 14 calendar days following completion of the fog seal.

Striper and advance and trailing warning vehicles shall be equipped with flashing amber or arrow panel warning lights.

All costs associated with this work shall be incidental to the contract unit price per foot for Pavement Marking Paint, 4" White or Yellow.

RATES OF APPLICATION

Centerline striping (yellow) – 25.0 gallons per mile. *
4" Edgeline striping (white) - 33.8 gallons per mile. **
Glass Beads – 8 lbs. per gallon of paint

* Rate is a Region average. The actual gallons used will vary depending upon the number of No Passing Zones.

** Rate is for both edge lines.

Table of Pavement Marking					
Location	Length	4" Temporary Pavement Marking Tape Type 1	Temporary Pavement Marking	Pavement Marking Paint, 4" White	Pavement Marking Paint, 4" Yellow
MRM	(Ft)	(Ft)	(Ft)	(Ft)	(Ft)
4.62	520	1344	1560	1040	780
4.804	940	1344	2820	1880	1410
14.596	550	1344	1650	1100	825
22.775	2580	1344	7740	5160	3870
Total		5376	13770	9180	6885

REMOVE AND REPLACE TOPSOIL

Prior to beginning underdrain construction, a 4" depth of topsoil shall be bladed to the side on the respective inslopes and left in a windrow at the edge of the work limits. Following completion of underdrain construction, topsoil shall be bladed back over the inslopes to the point indicated on the typical section.

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

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 unit price per pound for the corresponding permanent seed mixture.

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

Product

MycoApply

Manufacturer

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

AM 120 Multi Species Blend

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

FERTILIZING

The Contractor 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 Cannon Falls, Minnesota Phone: 1-800-352-9245 www.sustane.com
Perfect Blend	Perfect Blend, LLC Bellevue, WA Phone: 1-866-456-8890 www.perfect-blend.com

PERMANENT SEEDING

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

Type F Permanent Seed Mixture shall 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; Winter Wheat: August through November		10
Total:		26

FIBER MULCHING

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

An additional 2% by weight of tackifier shall 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 shall be guar gum. If the product selected has synthetic tackifier included, then the additional 2% of tackifier shall be synthetic.

Fiber mulch shall be applied at the rate of 2,000 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.

All costs for the additional tackifier added to the fiber mulch including labor, equipment, and materials shall be incidental to the contract unit price per pound for Fiber Mulching.

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>

EROSION CONTROL WATTLE

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 to decompose.

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:

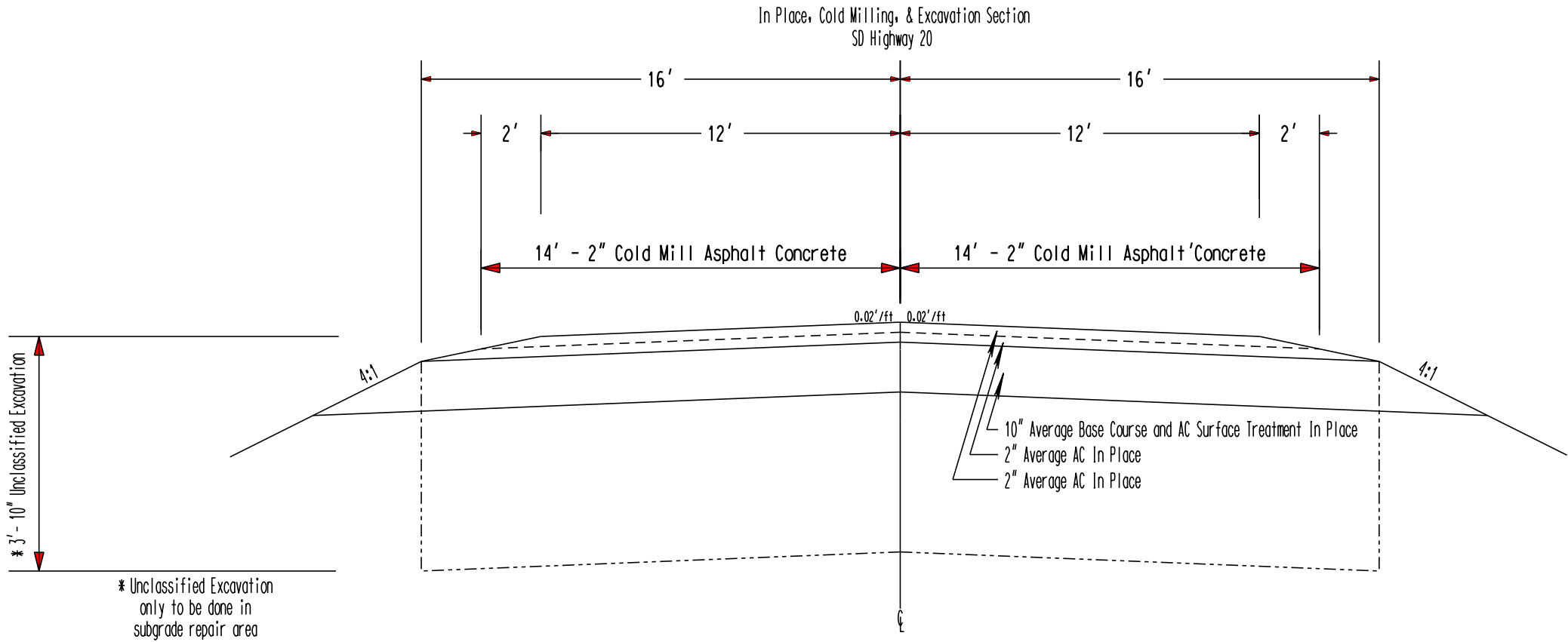
<http://sddot.com/business/certification/products/Default.aspx>

Table of Erosion Control				
	Type F Permanent Seed Mixture		Fiber Mulching	12" Erosion Control Wattles
Location	(Lb)	Fertilizing (Lb)	(Lb)	(Ft)
MRM	3	150	200	240

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	7	18

Plotting Date: 08/15/2018

TYPICAL SECTIONS



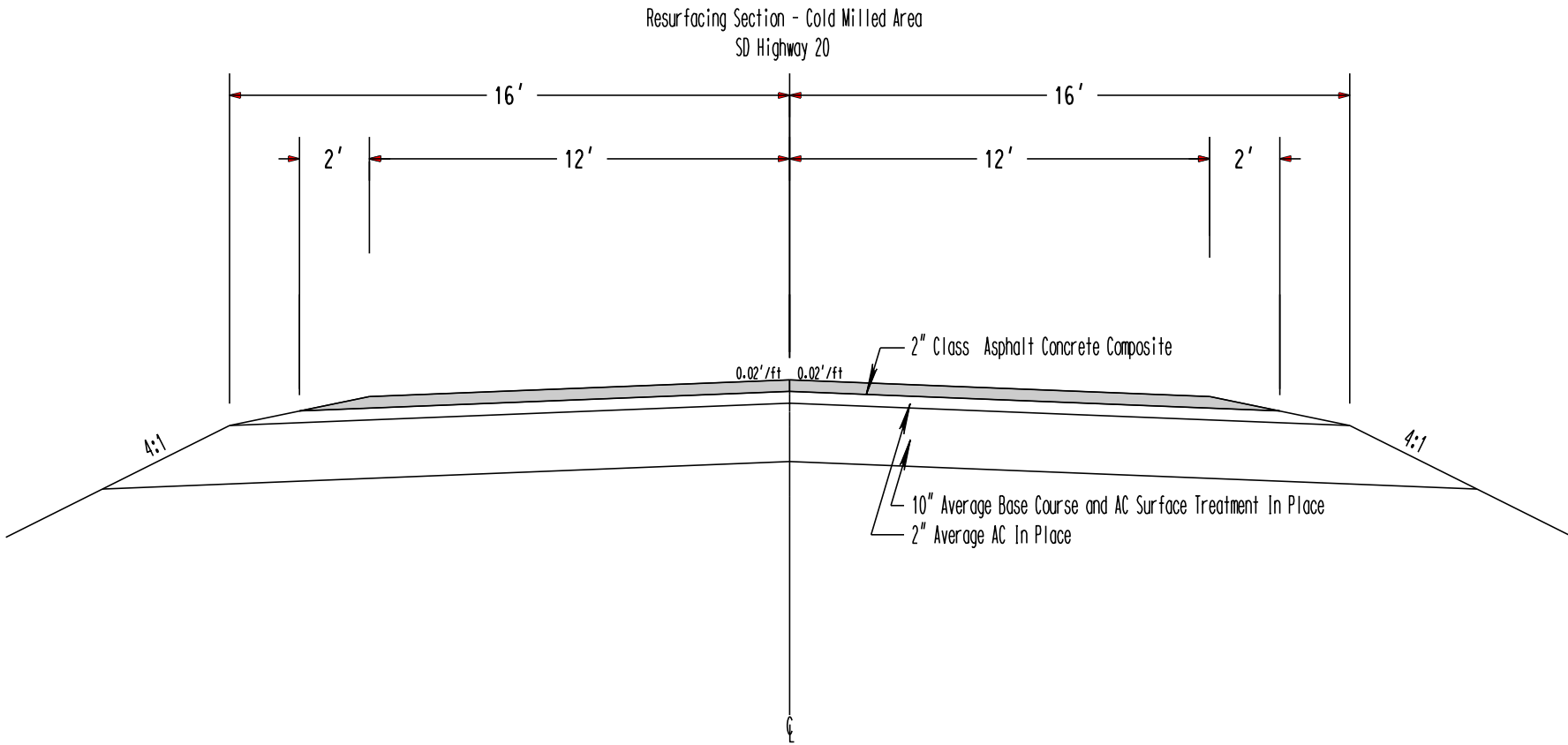
PLOT SCALE - 1"=4.84'

PLOTTED FROM - TRRC12608

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	8	18

Plotting Date: 08/15/2018

TYPICAL SECTIONS



PLOT NAME - 3

FILE - ... \DESIGN\TYP.DGN

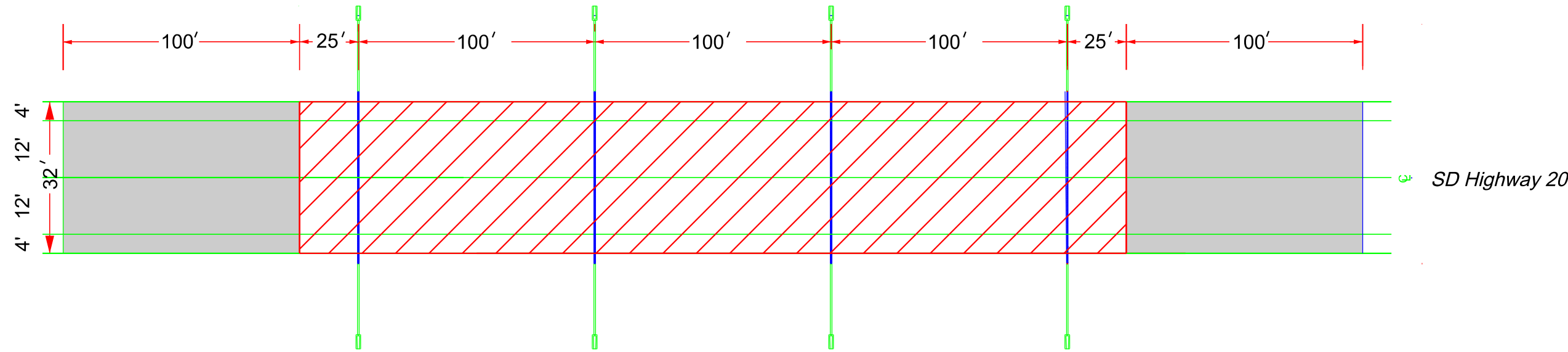
UNCLASSIFIED EXCAVATION AND SURFACING DETAILS

MRM 22.550 to MRM 23.000

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	10	18

Plotting Date: 08/15/2018

(Not to scale)



- 4" Slotted Corrugated Polyethylene Drainage Tubing
- 4" Corrugated Polyethylene Drainage Tubing and Precast Concrete Headwall
- Asphalt Concrete Composite Overlay
- Digout 2' deep and replace with 1.5' Base Course and 6" of Asphalt Concrete Composite (final 2" lift of the 6" AC composite to be completed with overlay)

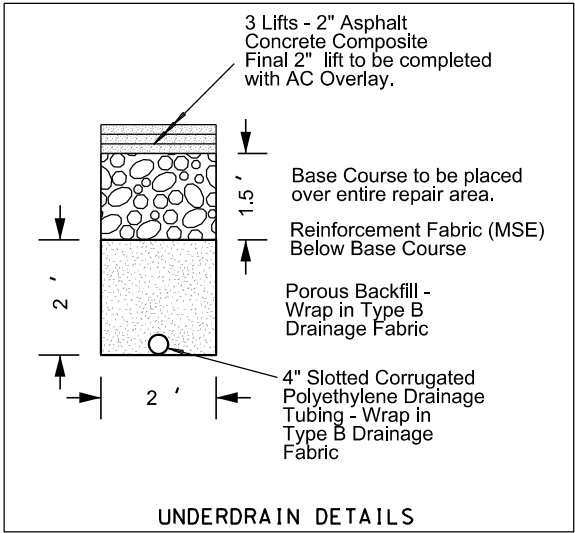
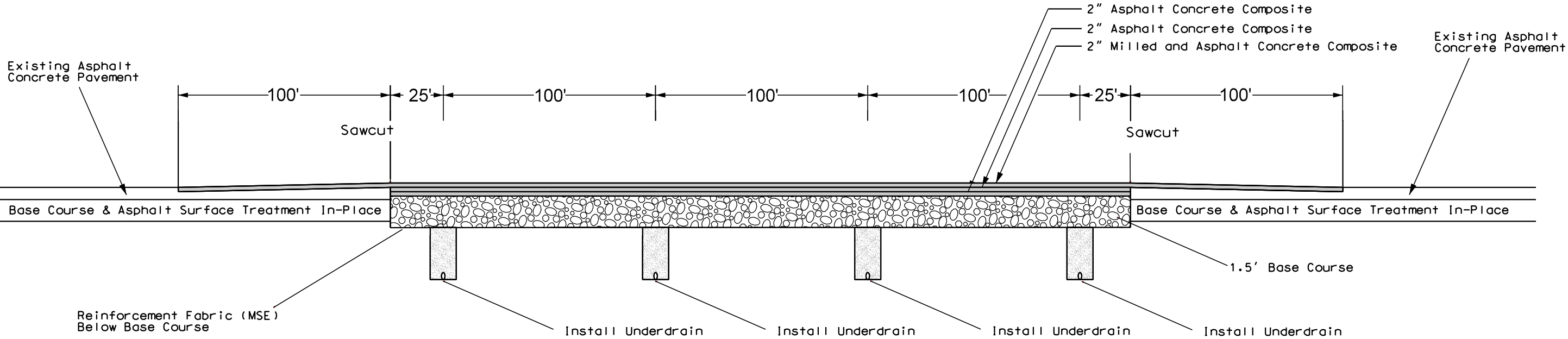
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	11	18

Plotting Date: 08/15/2018

Unclassified Excavation and Surfacing

LONGITUDINAL SECTION ALONG CENTERLINE - SD HIGHWAY 20

MRM 14.55 to MRM 14.65
Asphalt Concrete Pavement Repair
(Not to Scale)



Plot Scale - 1/4"

Plotted From - TRRC12608

Plotted From -

File - ...Design\SubgradeRepair.dgn

PLOT SCALE - 1:25

PLOTTED FROM - TRRC12608

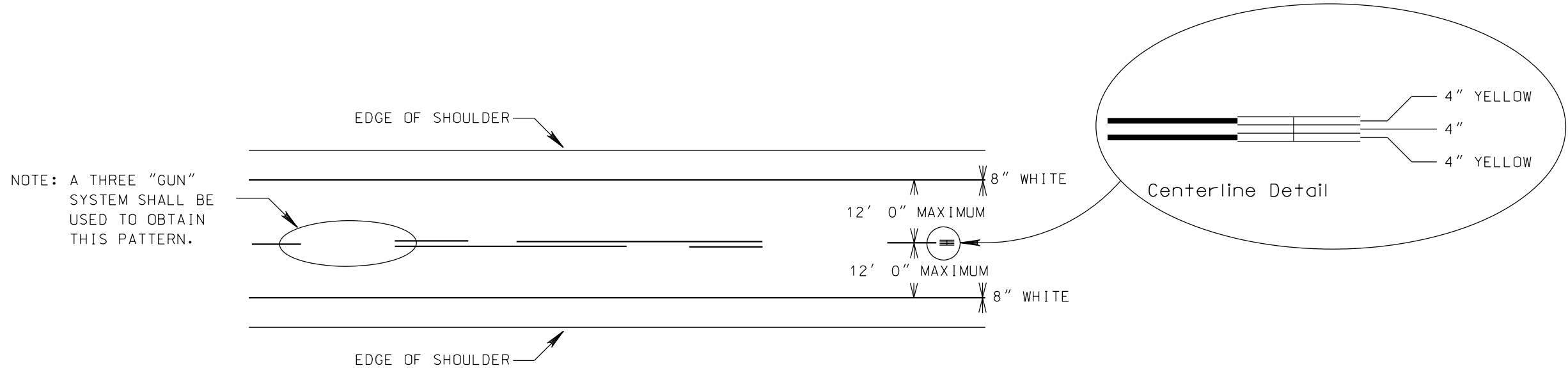
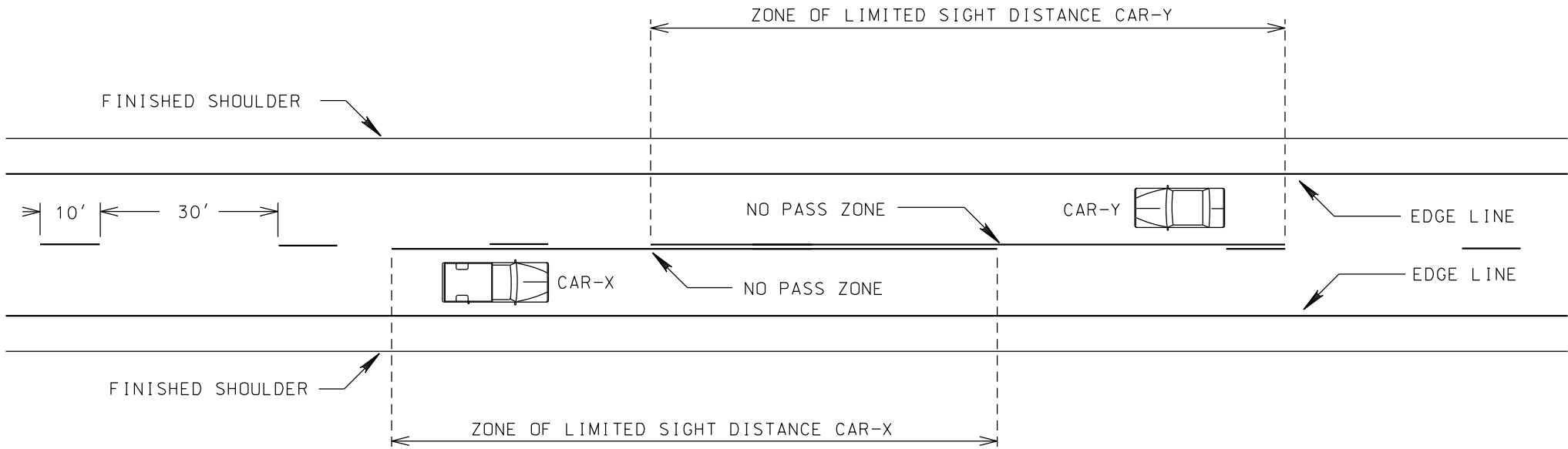
GENERAL PAVEMENT MARKING LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	12	18

Plotting Date: 08/15/2018

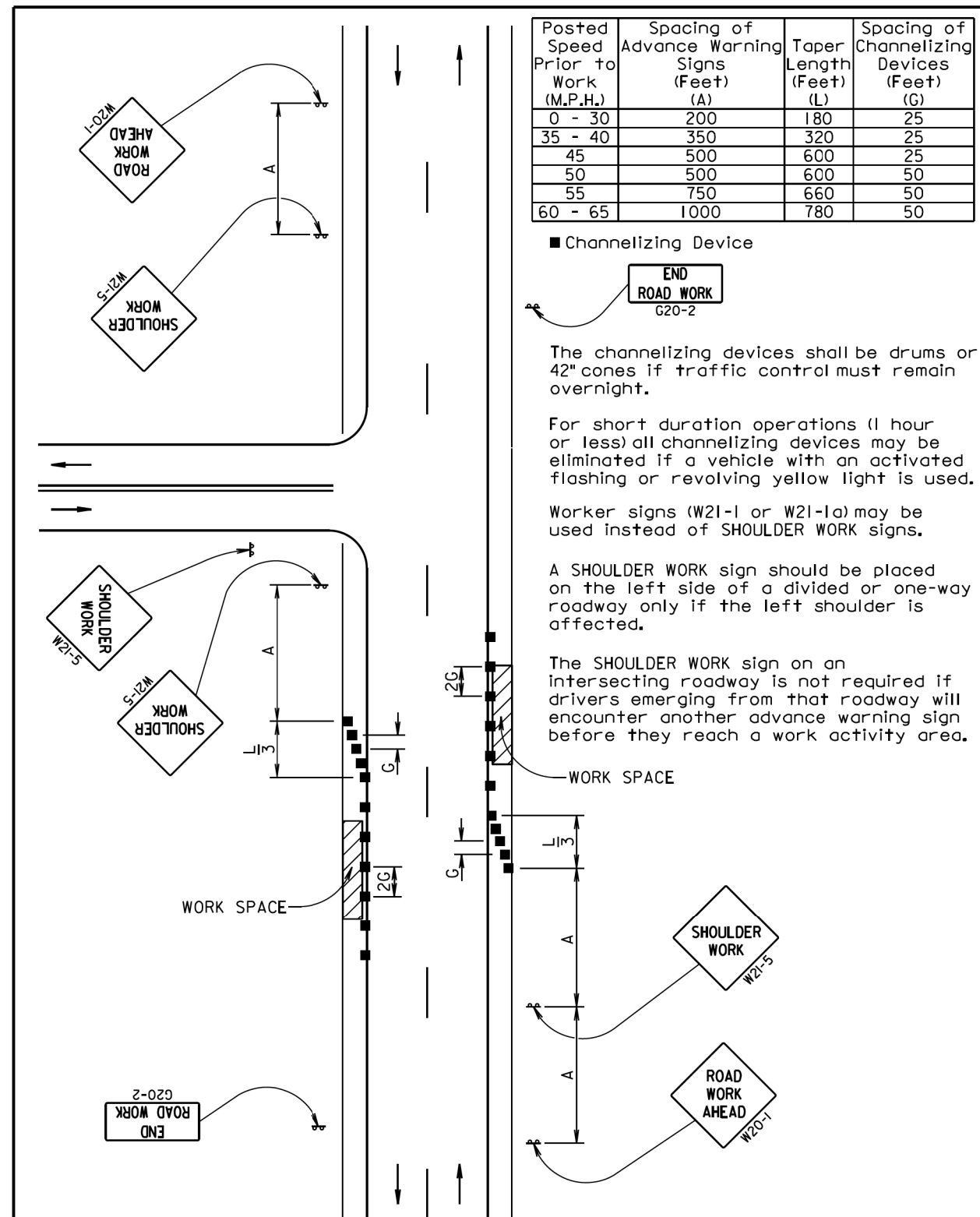
PLOT NAME - 7

FILE - ... \DESIGN\PAV\PAV.MARK.DGN



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	15	18

Plotting Date: 08/15/2018



June 3, 2016

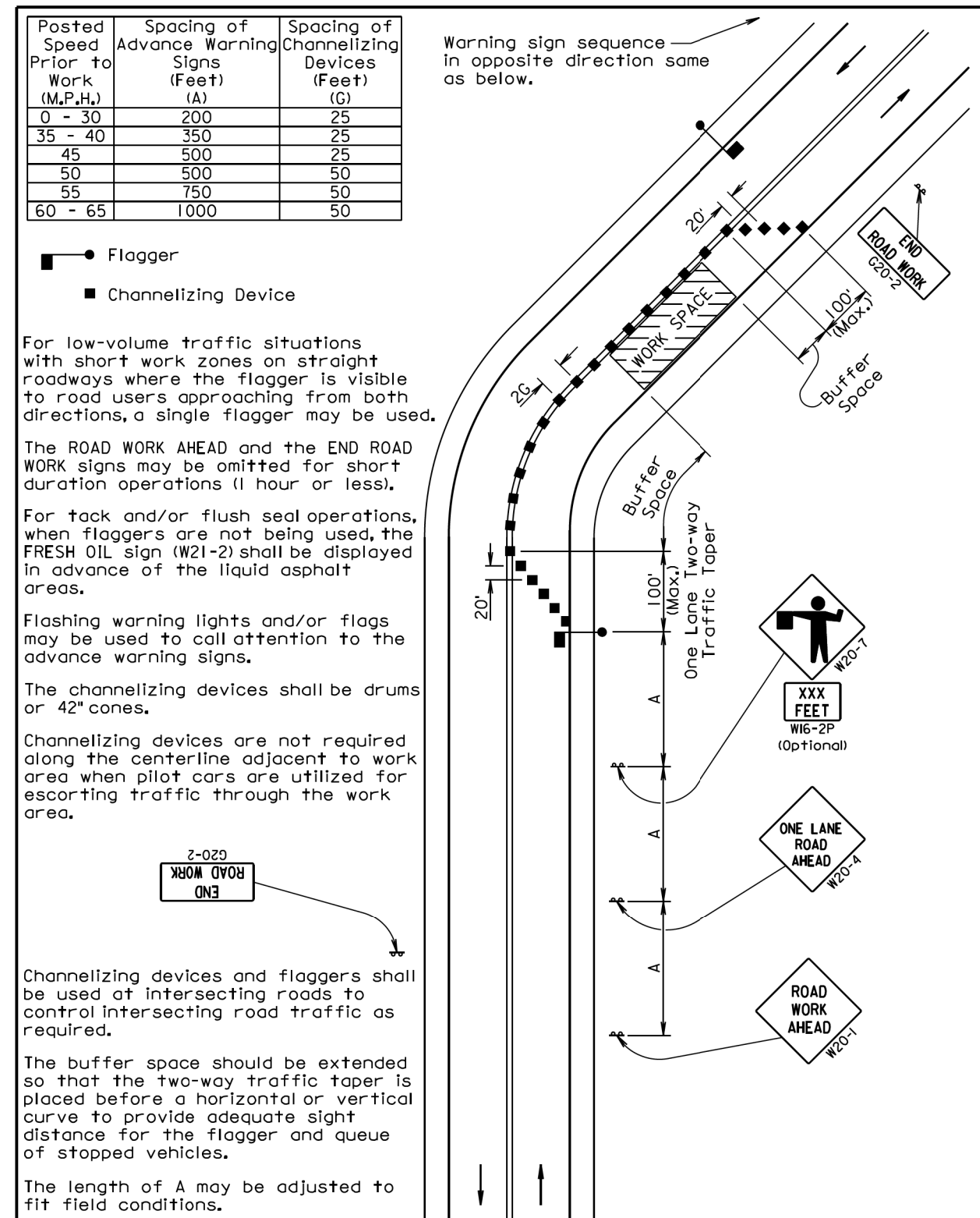
Published Date: 3rd Qtr. 2018

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GUIDES FOR TRAFFIC CONTROL DEVICES WORK ON SHOULDERS

PLATE NUMBER
634.03

Sheet 1 of 1



June 3, 2016

Published Date: 3rd Qtr. 2018

SDOT

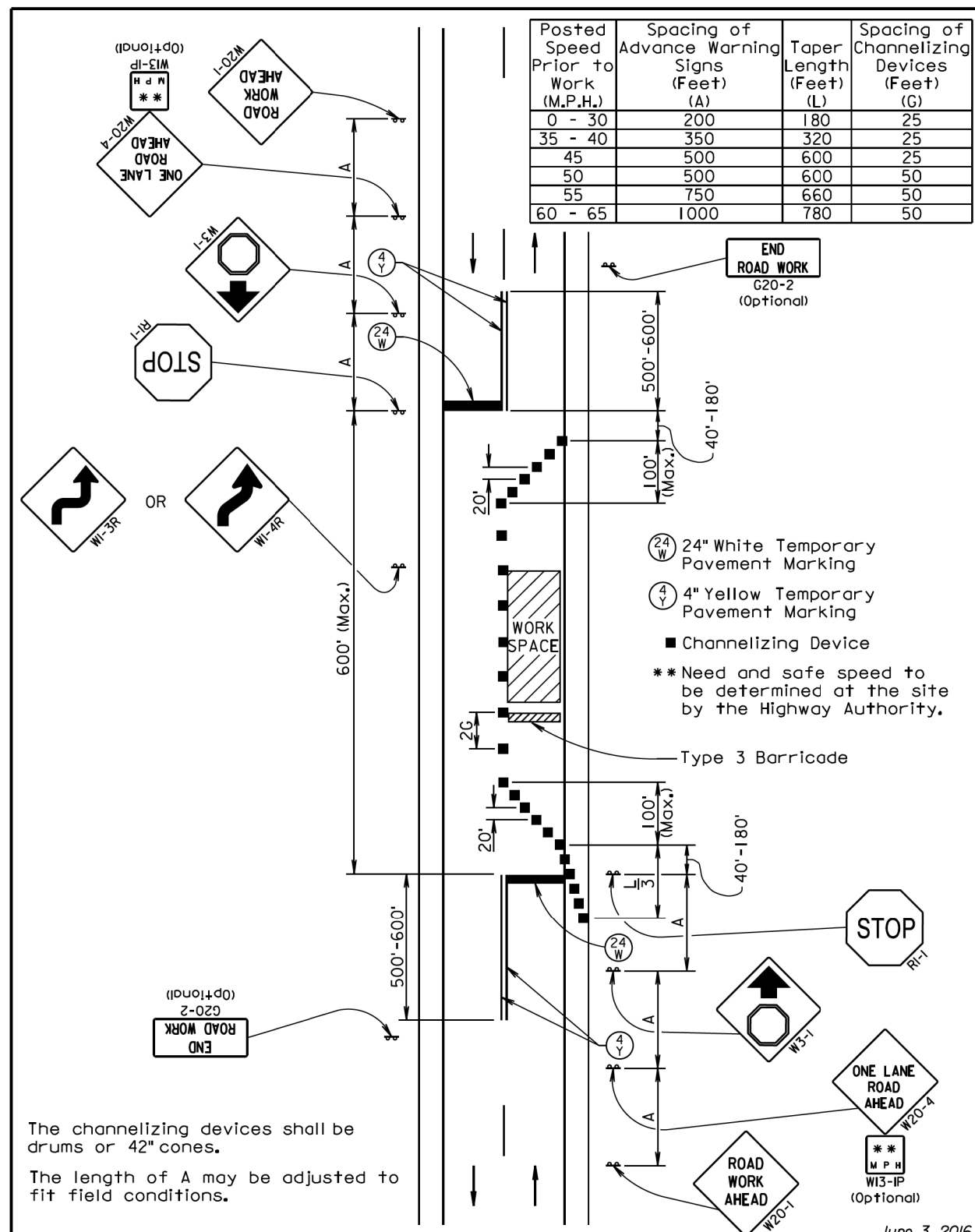
GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED

PLATE NUMBER
634.23

Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	16	18

Plotting Date: 08/15/2018



June 3, 2016

Published Date: 3rd Qtr. 2018

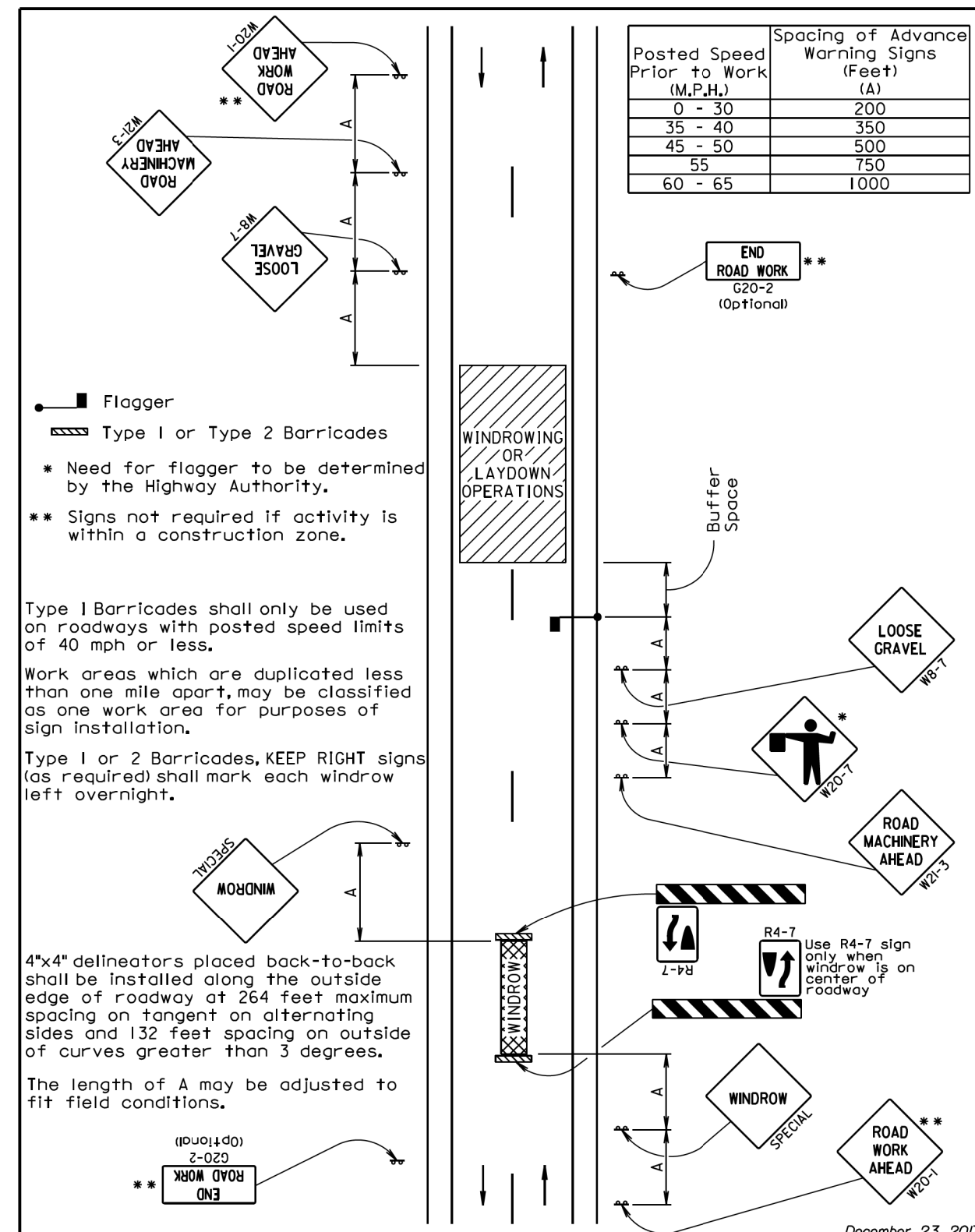
SDOT

GUIDES FOR TRAFFIC CONTROL DEVICES

LANE CLOSURE USING STOP SIGNS

PLATE NUMBER
634.25

Sheet 1 of 1



December 23, 2017

Published Date: 3rd Qtr. 2018

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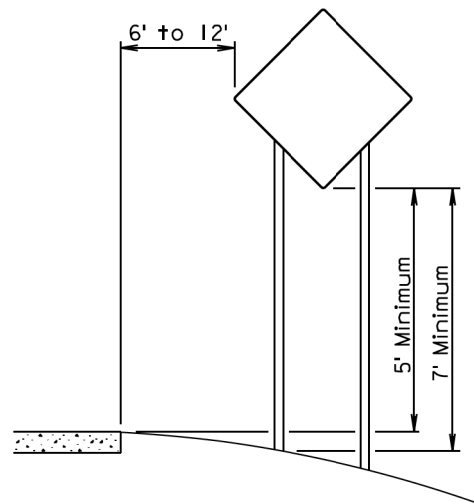
GUIDES FOR TRAFFIC CONTROL DEVICES WINDROWING OR LAYDOWN OPERATION

PLATE NUMBER
634.27

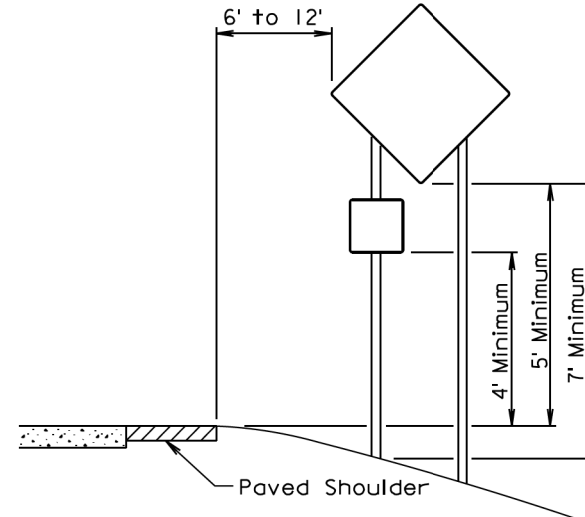
Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	020-471	17	18

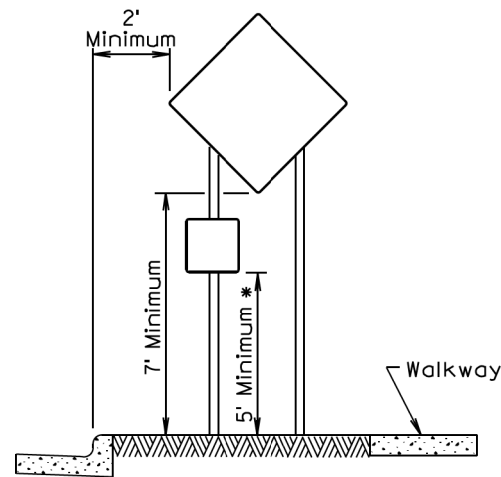
Plotting Date: 08/15/2018



RURAL DISTRICT

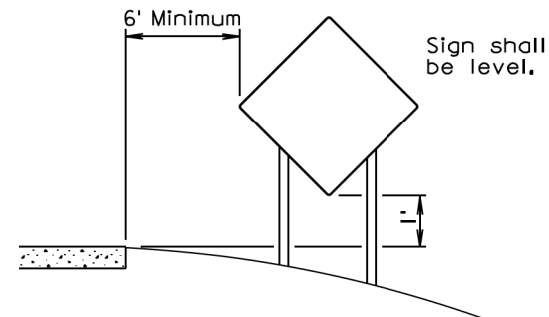


RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

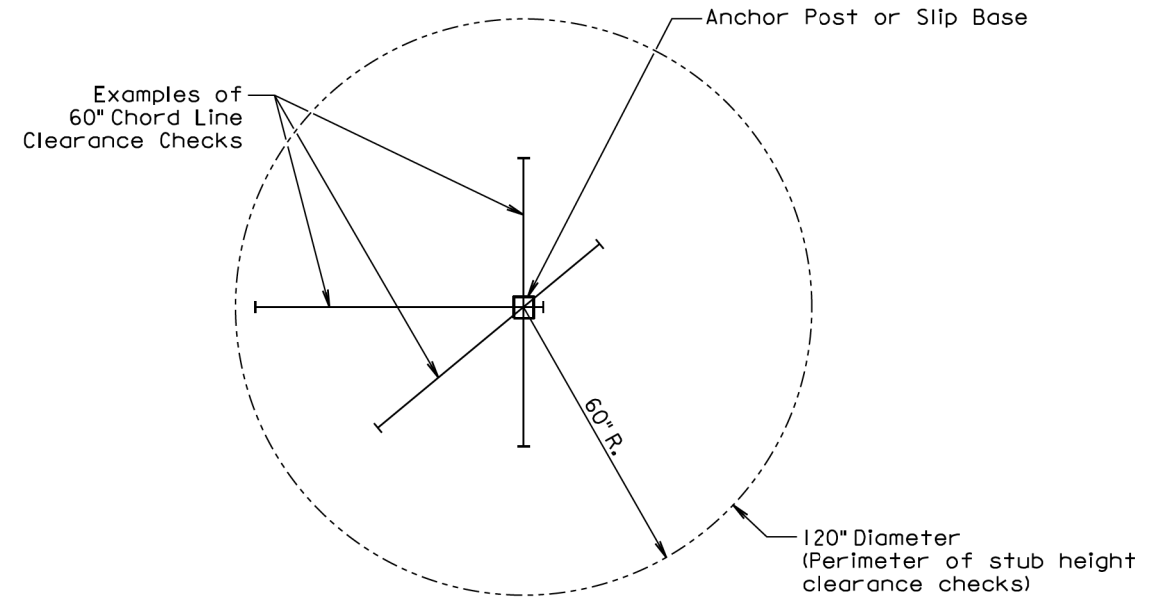
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



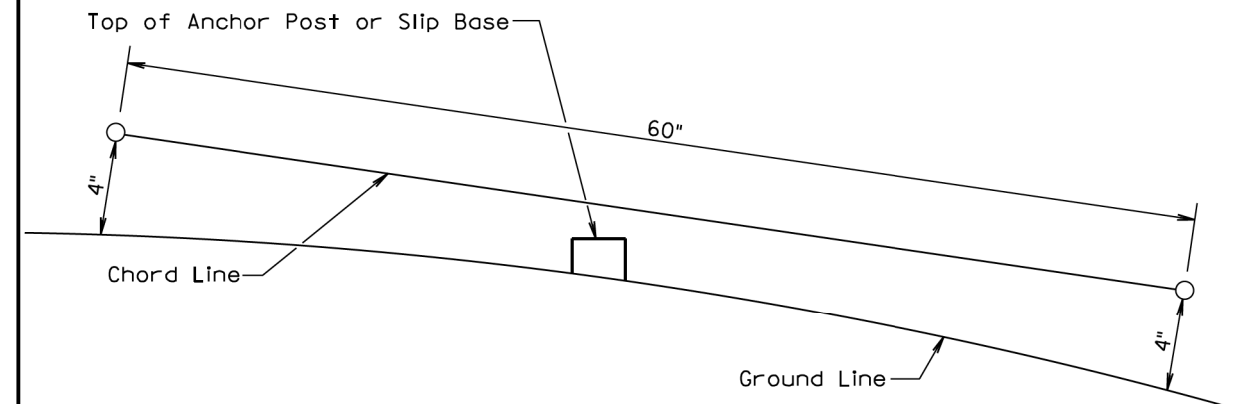
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 3rd Qtr. 2018	S D D O T	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:

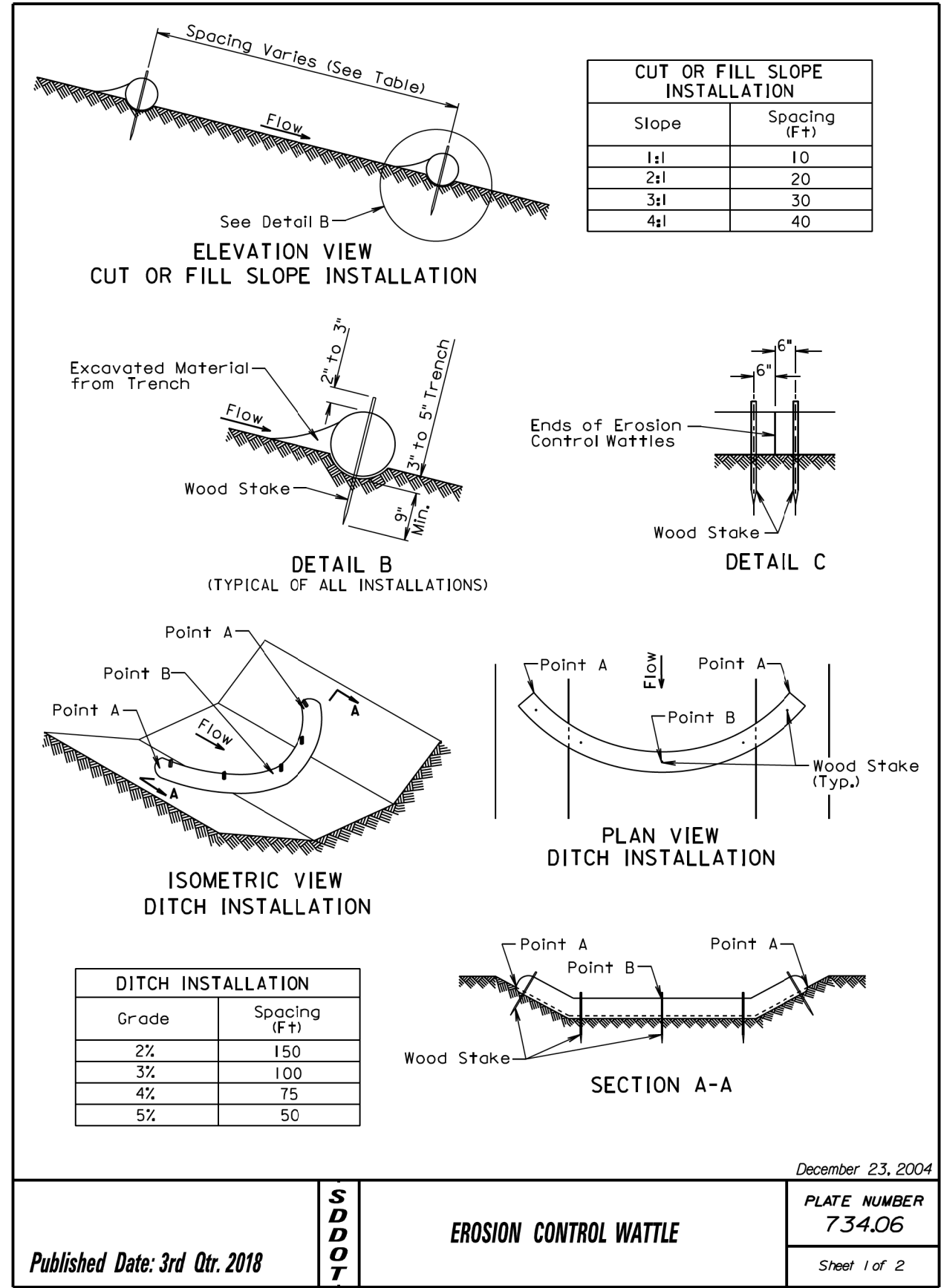
The top of anchor posts and slip bases SHALL NOT extend above a 60" chord line within a 120" diameter circle around the post with ends 4" above the ground.

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: 3rd Qtr. 2018	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1



GENERAL NOTES:

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

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

The Contractor and Engineer shall inspect the erosion control wattles once every week and within 24 hours after every rainfall event greater than 1/2". The Contractor shall remove, dispose, or reshape the accumulated sediment when necessary as determined by the Engineer.

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

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

