

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED

PROJECT 016WB-452
U.S. HIGHWAYS 16B
PENNINGTON COUNTY

PCC Pavement Grinding
PCN i5ea

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016WB-452	1	8

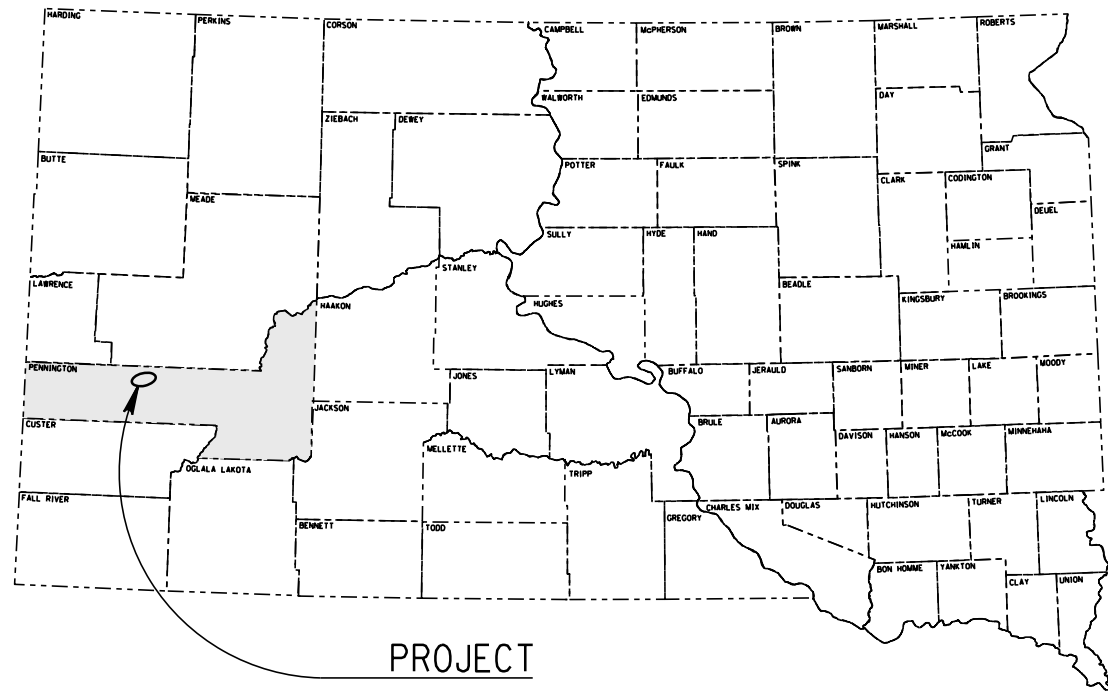
Plotting Date: 08/17/2018

INDEX OF SHEETS

- Sheet 1: Title Sheet
- Sheet 2 - 4: Plan Notes and Quantities
- Sheet 5 - 6: PCCP Grinding Limits
- Sheet 7 - 8: Standard Plates



Plot Scale - 1:200

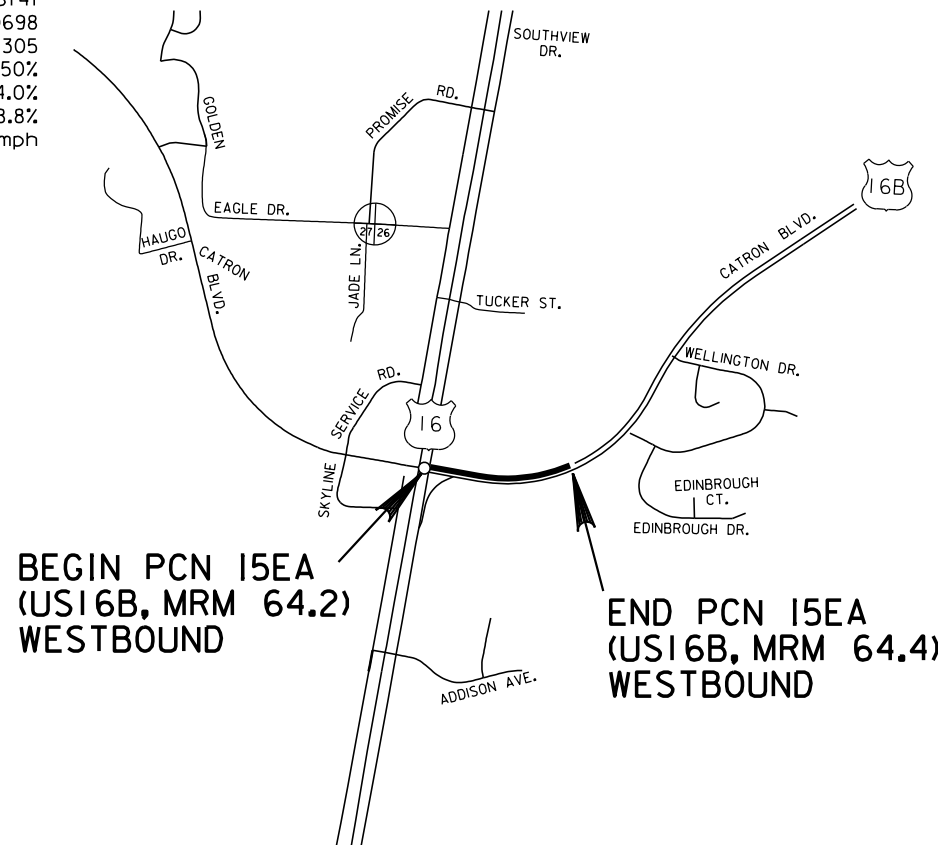


RAPID CITY
PENNINGTON COUNTY

Sec. 26 T1N R7E

US16B Westbound

ADT (2017)	6141
ADT (2037)	10698
DHV	1305
D	50%
T DHV	4.0%
T ADT	8.8%
V	60 mph



STORM WATER PERMIT
None Required

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ESTIMATE OF QUANTITIES (PCN i5ea, US16B)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016WB-452	2	8

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
380E6510	Grinding PCC Pavement	1,274.0	SqYd
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	176.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0420	Type C Advance Warning Arrow Board	1	Each
734E0847	Sediment Control at Type S Reinforced Concrete Drop Inlet	20	Ft

SPECIFICATIONS

Standard Specifications for Roads and Bridges, 2015 Edition and Required Provisions, Supplemental Specifications, and Special Provisions as included in the Proposal.

ENVIRONMENTAL COMMITMENTS

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

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

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

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

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

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

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

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

All earth disturbing activities not designated within the plans require review of cultural resources impacts. 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 shall arrange and pay for a cultural resource survey and/or records search. 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; however, a cultural resources survey may need to be conducted by a qualified archaeologist.

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

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

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

SHPO/THPO review does not relieve the Contractor of the responsibility for obtaining any additional permits and clearances for 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 shall provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

GRINDING PCC PAVEMENT

The US16B PCC Pavement grinding is needed to create a uniform surface texture. The old pavement marking grooving conflicts with the new pavement marking that was installed. The PCC Pavement grinding depth shall be no greater than the existing depth of grooving for pavement marking. The Contractor may need to increase the depth of grinding over the old pavement marking grooving to create a uniform surface texture. The old pavement marking grooving shall not be visible to the traveling public upon completion of the work as approved by the Project Engineer.

CONSTRUCTION REQUIREMENTS

1. Equipment: Grinding of PCC pavement shall be accomplished using diamond blades mounted on a self-propelled machine designed specifically for diamond grinding and texturing pavement. The equipment shall weigh a minimum of 35,000 pounds including the grinding head and be of a size that will grind a strip at least 4 feet wide in a single pass. The effective wheel base of the machine shall be no less than 12 feet. The effective wheel base is defined as the distance from the front wheel assembly transverse pivot point to the transverse pivot point of the profile/depth control/ground drive wheels.

The equipment shall be such that it will not strain or damage the underlying pavement surface. Grinding equipment that causes raveling, aggregate fractures, spalls, or disturbance of the transverse or longitudinal joints shall not be permitted. The equipment shall have a positive means of vacuuming the grinding residue from the pavement surface, leaving the surface in a clean, near-dry condition.

2. Methods and Procedures: Substantially, the entire surface of the pavement shall be ground and textured until the surface of both sides of the transverse joints and cracks are within 1/16 inch on each side of the joint or crack. The finished texture shall be uniform. Extra depth grinding to eliminate minor depressions in order to provide texturing to the entire pavement surface is not required. Structures shall not be ground.

The grinding shall be performed in a longitudinal direction. Grinding shall begin and end at lines normal to the pavement centerline at the project limits. Passes of the grinding head shall not overlap more than 1 inch. No unground surface area between passes will be permitted. The area ground shall not be left smooth or polished.

Adequate cross slope drainage shall be maintained. Lateral drainage shall be achieved by maintaining a constant cross slope between grinding extremities in each lane. The finished cross slope shall match the pre-grind cross slope.

3. Final Surface Finish: The cross slope shall have no depressions or misalignment of slope greater than 1/4 inch in ten feet when measured with a 10-foot straightedge placed perpendicular to the centerline. The difference between adjacent grinding passes shall not exceed 1/8 inch. Areas of deviation shall be reground. Straightedge requirements will not apply across longitudinal joints or outside the ground area. Shoulder, auxiliary, or ramp lane grinding shall transition from the edge of the mainline as required to provide drainage leaving no more than a 3/16 inch ridge and an acceptable riding surface.

The grinding process shall produce a pavement surface true in grade and uniform in appearance with longitudinal line-type texture. The line-type texture shall contain corrugations parallel to the centerline and present a narrow ridge corduroy type appearance. The peaks of the ridges shall be 1/8 inch ± 1/16 inch higher than the bottom of the grooves with evenly spaced ridges. The Engineer may require removal of unbroken fins at the Contractor's expense.

The existing pavement contains limestone coarse aggregate, the grinding head must be stacked to optimize the width of the land area between grooves after completion of the grinding. The land area between grooves for limestone shall be 0.095 to 0.110 inch. The presence of some fins after grinding will be acceptable to help achieve the optimal land area.

It is the Contractor's responsibility to select the number of blades per foot to be used to provide the proper surface finish for the aggregate type and concrete present on the project. The number of blades used for grinding shall range between 50 and 60 blades per foot as necessary to provide the designated texture. Harder aggregates may require the use of 55 to 60 blades per foot.

The Contractor may be required to make multiple passes with the equipment to meet the specifications.

It is the Contractor's responsibility to determine the proper sequence of operations to meet the specifications. If multiple passes of the grinding equipment are required, the area will only be considered for payment once. A minimum of 95% of any 100 foot section of pavement surface shall be textured. Depressed pavement areas due to subsidence or other localized causes will be exempted from texture requirements.

4. Removal of Residue: The Contractor shall establish a positive means for vacuuming the grinding residue from the pavement surface leaving the surface in a clean, near-dry condition. Solid residue shall be removed from the pavement surfaces before being blown by traffic action or wind. Residue shall not be permitted to flow across lanes used by public traffic. Residue and wastewater shall not be expelled on the roadway or shoulder surface. Residue shall be disposed of in a manner that will prevent residue, whether in solid or slurry form, from reaching any waterway in a concentrated state. Residue may continuously flow on adjacent dry vegetated roadway slopes or ditches within the right-of-way. A flexible drag hose shall be attached to the discharge end of the slurry pipe to minimize splashing of slurry placed on roadway slopes or ditches. If the Engineer determines that the slurry is going to enter a waterway, drainage facility, or curb & gutter section, the slurry shall be placed in storage tanks and deposited in settling basins, spread over flat vegetated areas, or filtered by other means approved by the Engineer at no additional cost.

The Contractor shall satisfactorily remove grinding material or wastes prior to returning traffic to the roadway. If a significant amount of residue remains after grinding, the Engineer may require flushing be done in a manner and in sufficient quantity to assure that slurry produced by the pavement grinding is not deposited on vehicles. The Contractor's proposed method of flushing the roadway should produce acceptable results, which will be based on a driving surface that will not create a nuisance for the public. All costs for flushing roadway shall be incidental to the contract unit price per square yard for Grinding PCC Pavement.

TABLE OF GRINDING PCC PAVEMENT (US16B, i5EA)

Sta. to	Sta.	L	W AVG.		Grinding PCC Pavement SqYd
		FT	FT		
2+83	8+00	517	10	Driving Lane	574
8+00	14+00	600	10.5	Driving Lane	700
					1274

ITEMIZED LIST FOR TRAFFIC CONTROL SIGNS (US16B, i5ea)

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
W4-2	LEFT or RIGHT LANE ENDS (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-5	LEFT or RIGHT LANE CLOSED 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	48" x 24"	8.0	16.0
				EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT	176.0

ARROW BOARDS

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	1 Each

TRAFFIC CONTROL – GENERAL NOTES

- 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 and shifts 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.

SEDIMENT CONTROL AT INLETS

The sediment control devices shall be placed in a "L" shape or as directed by the Engineer to prevent any slurry debris from entering the inlet during grinding operations.

The sediment control device provided shall be from the list shown below.

Product	Manufacturer
Dandy Curb	Dandy Products Inc. Dublin, OH Phone: 1-800-591-2284 www.dandyproducts.com
Gutterbuddy	ACF Environmental Richmond, VA Phone: 1-800-448-3636 www.acfenvironmental.com
Curb Inlet Guard	ECTEC Environmental Systems LLC Alameda, CA Phone: 1-866-521-0724 www.ertecsystems.com
EZ-ClipGuard	Flo-Water, LLC West Des Moines, IA Phone: 1-515-577-6763 www.flo-water.net
12" Compost Filter Sock	Dioten Engineering, Inc. Rapid City, SD Phone: 1-605-430-7213
12" Silt Sock	Aspen Ridge Lawn and Landscaping, LLC Rapid City, SD Phone: 1-605-415-0695 www.siltsocksd.com
GeoCurve	GeoSolutions, Inc. Austin, TX Phone: 1-512-445-0796 www.geosolutionsinc.com

TABLE OF SEDIMENT CONTROL AT INLETS (US16B, i5e9)

MRM	L/R	Sediment Control at Type S Reinforced Concrete Drop Inlet
64.360	R	5
64.320	R	5
64.280	R	5
64.240	R	5
Totals:		20

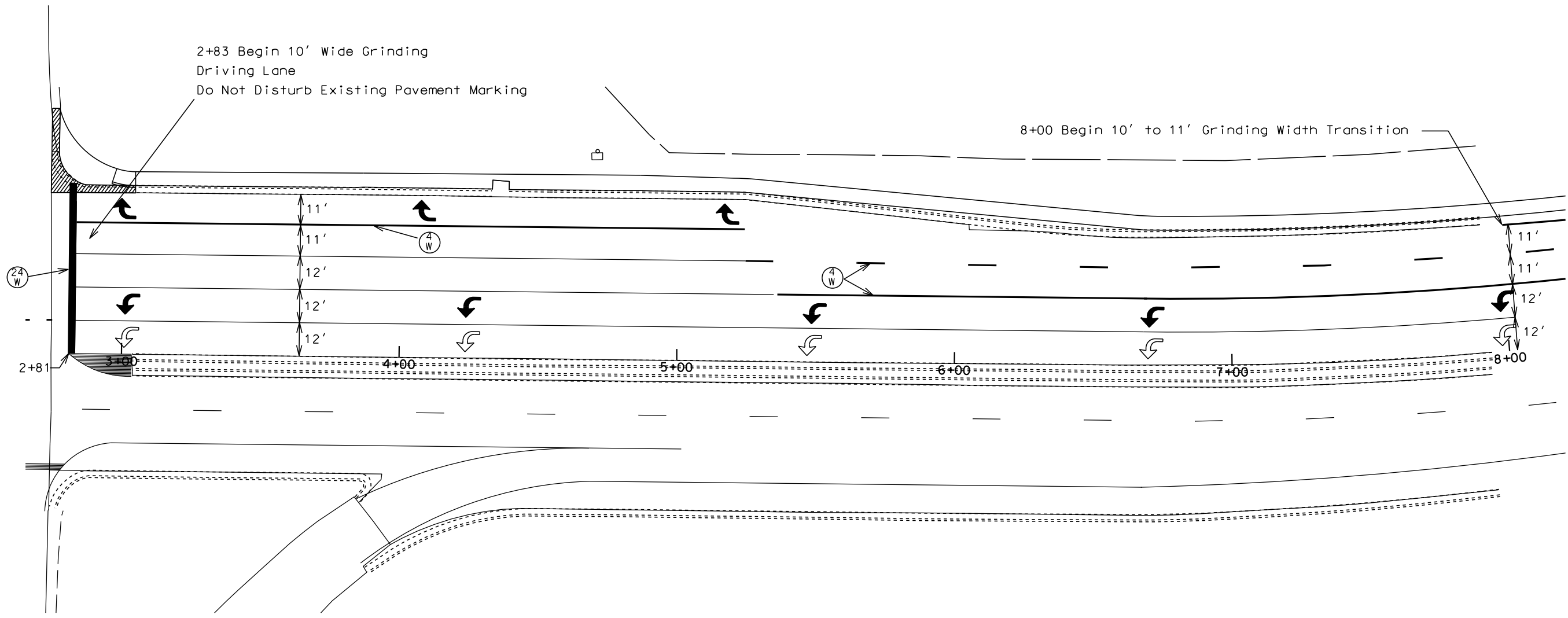
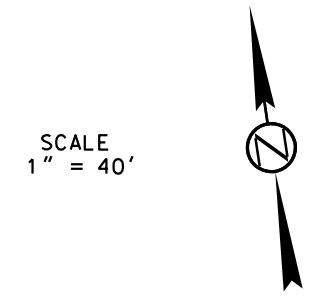
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016WB-452	5	8

Plotting Date: 08/17/2018

PCCP GRINDING LIMITS

US HWY 16B

- Ⓞ Existing Plastic Pavement Marking, 4" White
- Ⓞ Existing Plastic Pavement Marking, 4" Yellow
- Ⓞ Existing Plastic Pavement Marking, 24" White



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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	016WB-452	6	8

Plotting Date: 08/17/2018

PCCP GRINDING LIMITS

US HWY 16B

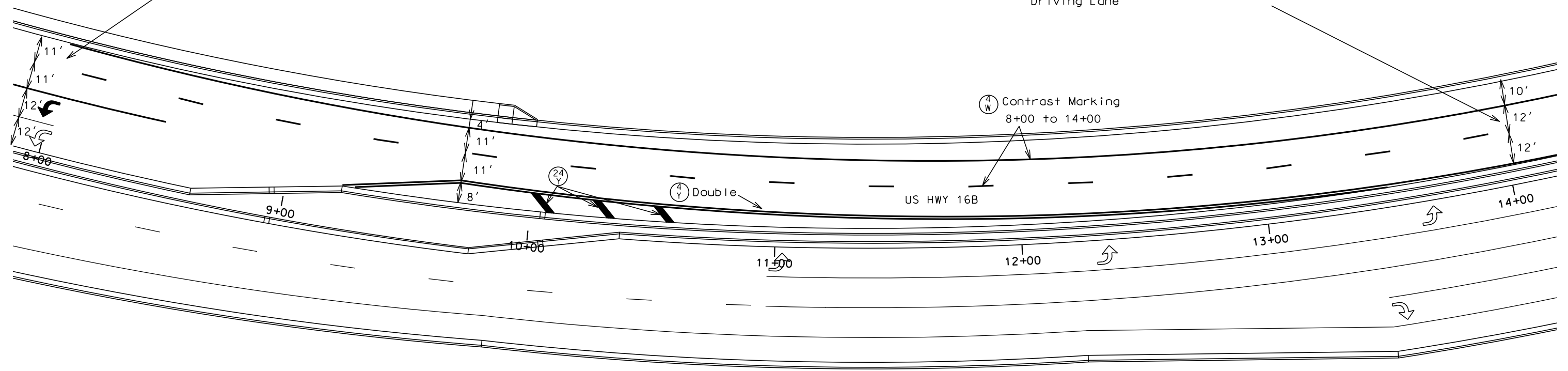
- Ⓞ⁴ W Existing Plastic Pavement Marking, 4" White
- Ⓞ⁴ Y Existing Plastic Pavement Marking, 4" Yellow
- Ⓞ²⁴ Y Existing Plastic Pavement Marking, 24" Yellow

SCALE
1" = 40'



8+00 Begin 10' to 11' Grinding Width Transition
Do Not Disturb Existing Pavement Marking

14+00 End 10' to 11' Grinding Width Transition
Driving Lane

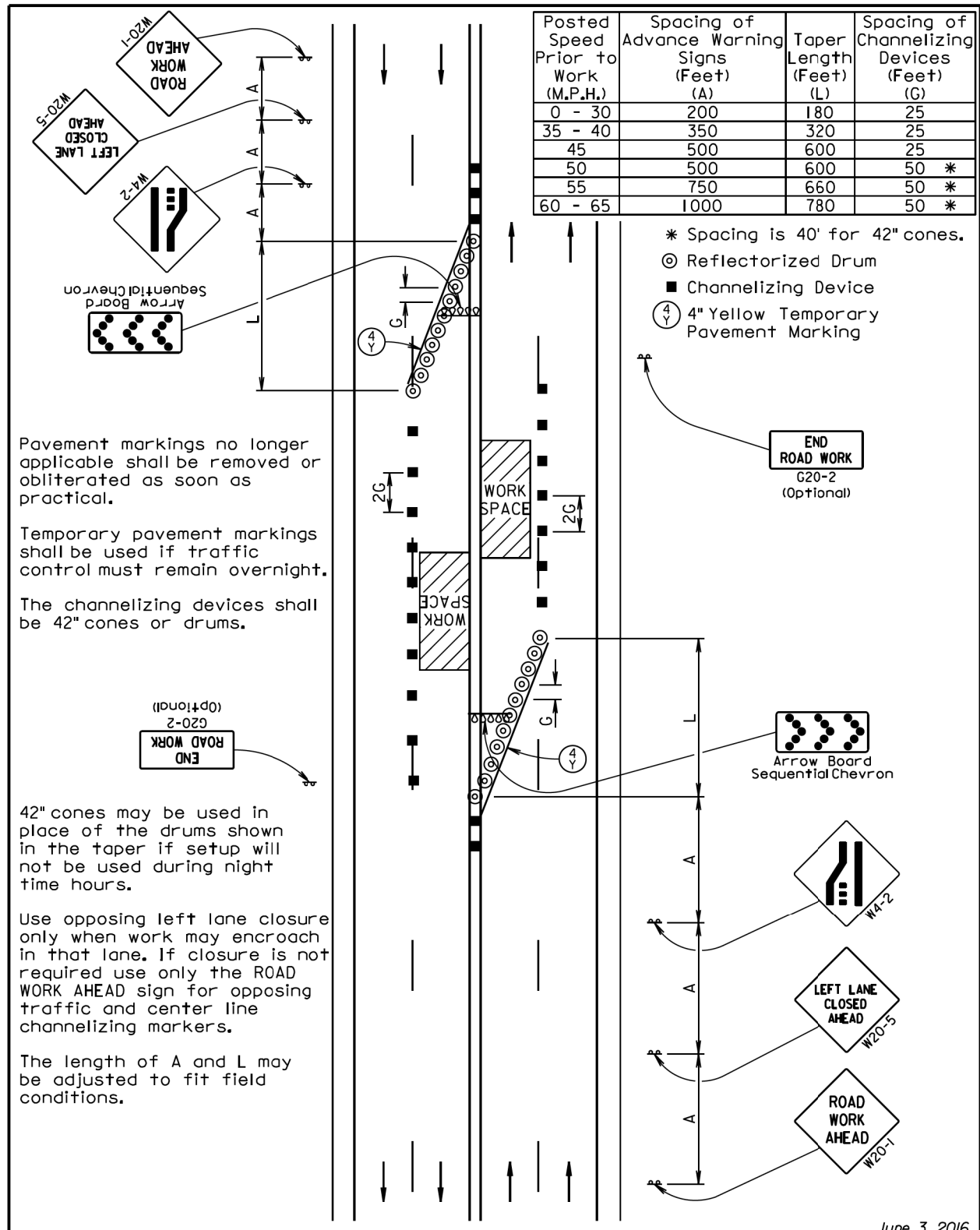


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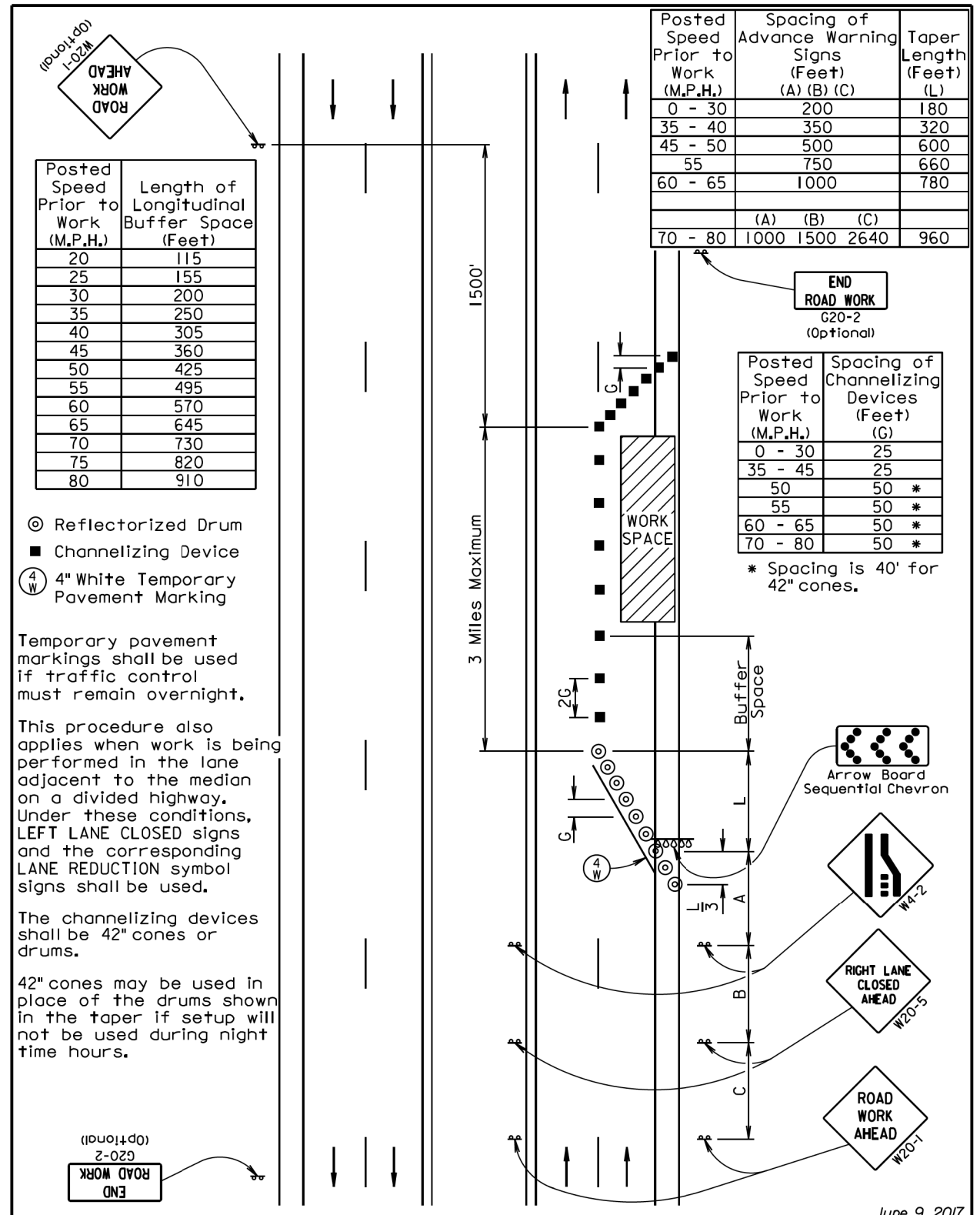
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June 3, 2016

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES 4-LANE UNDIVIDED, LEFT LANE CLOSED	PLATE NUMBER 634.48
	Published Date: 2nd Qtr. 2018	Sheet 1 of 1



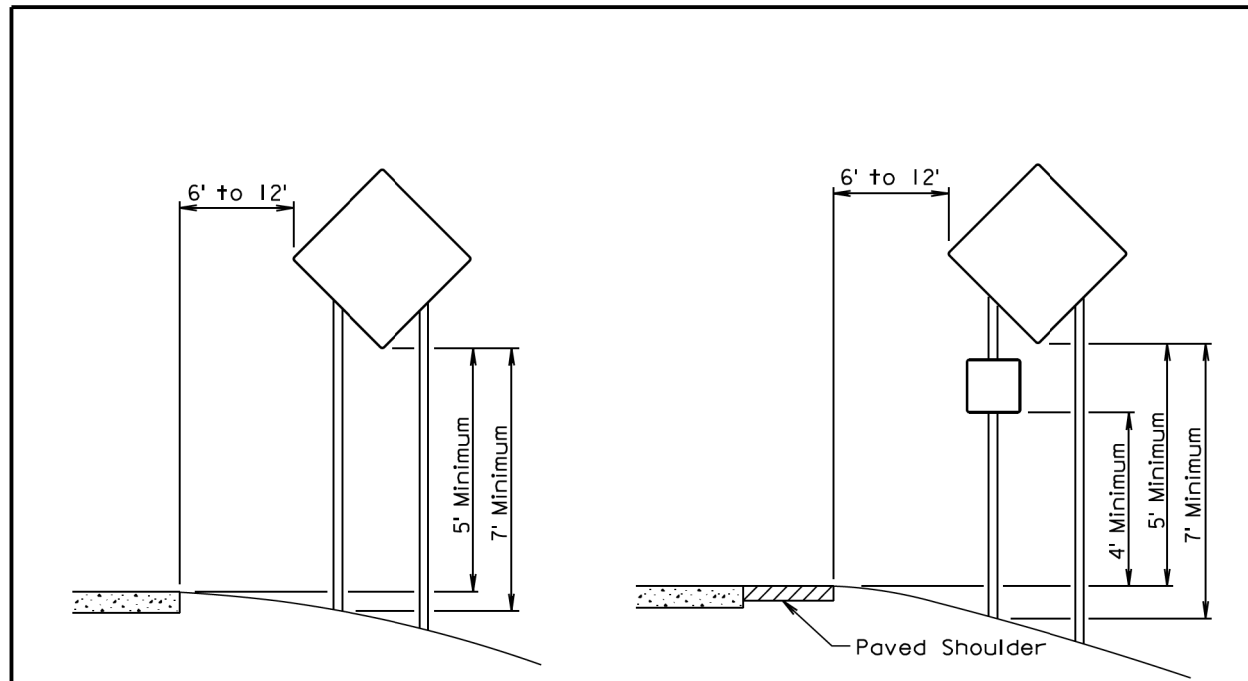
June 9, 2017

S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITHOUT BARRIER	PLATE NUMBER 634.64
	Published Date: 2nd Qtr. 2018	Sheet 1 of 1

Plotted From - trc11951

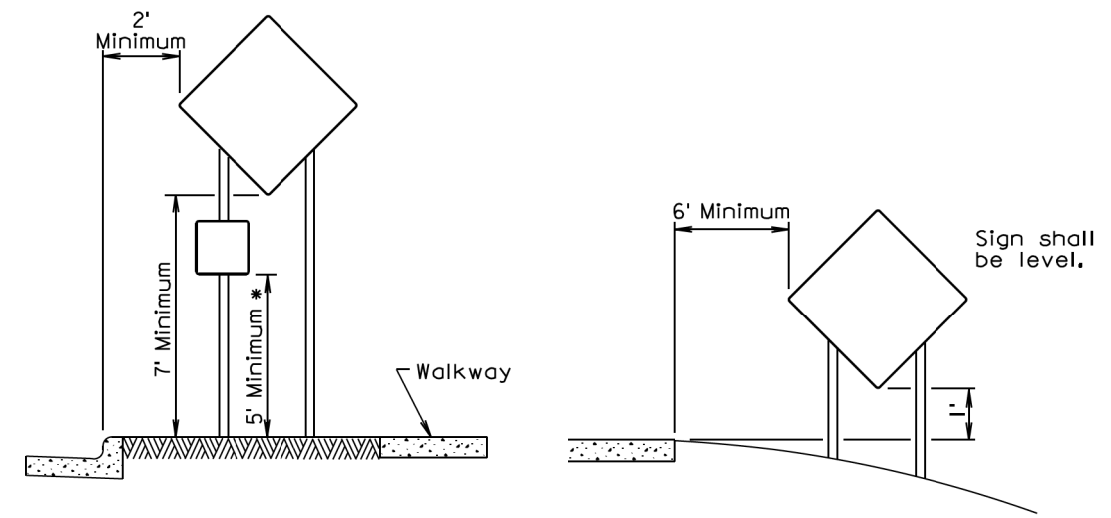
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RURAL DISTRICT

RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

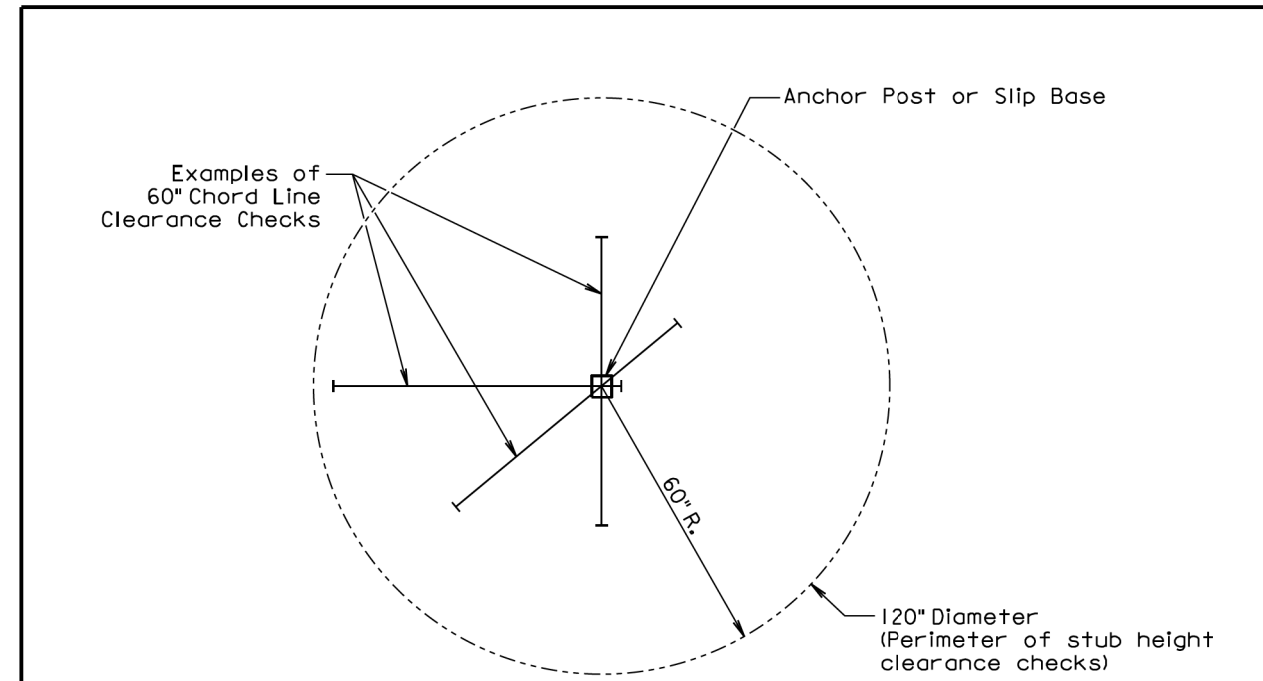
RURAL DISTRICT
3 DAY MAXIMUM

* 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.

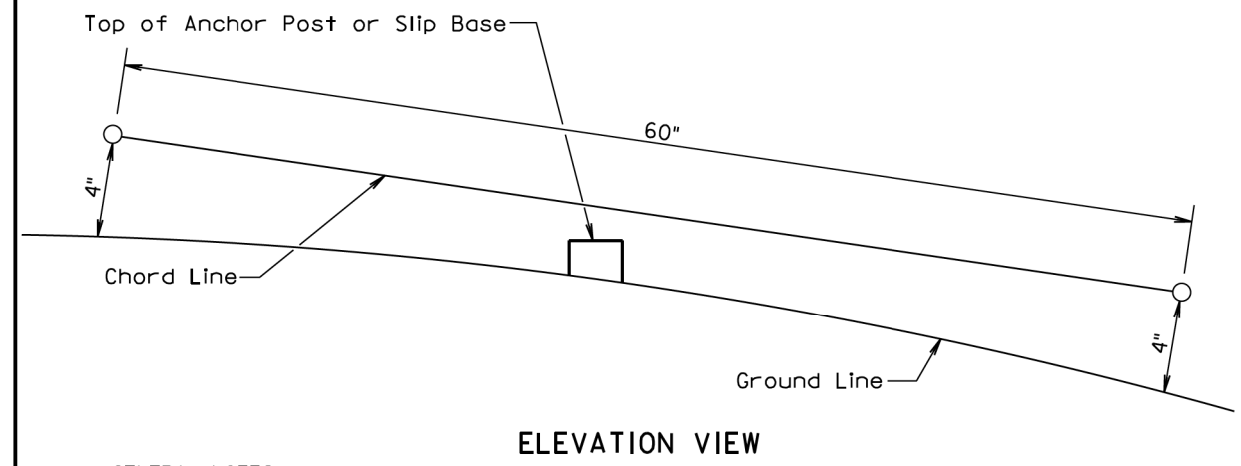
(Not applicable to regulatory signs)

September 22, 2014

SD DOT Published Date: 2nd Qtr. 2018	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

SD DOT Published Date: 2nd Qtr. 2018	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
		Sheet 1 of 1

Plotted From: - trc11951

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