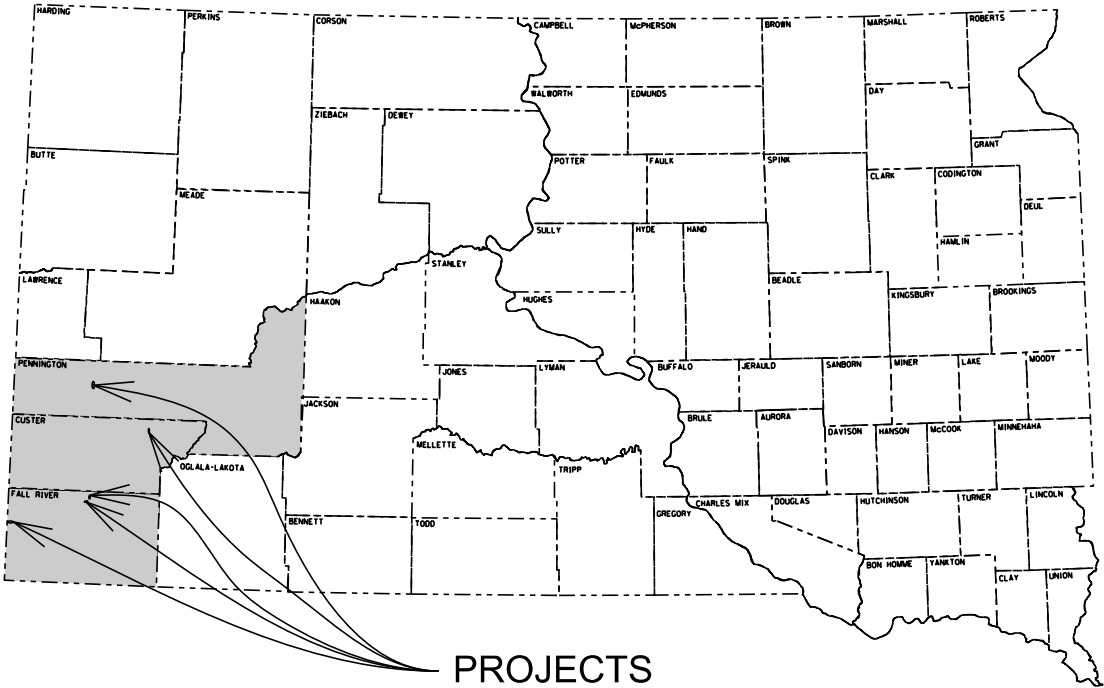


PLOT SCALE - 1:200

PLOTTED FROM - TRRC11610



PROJECTS

- ① 018 - 492, PCN i58u
MRM 0.0 to MRM 10.3
DESIGN DESIGNATION

ADT (2017)	1158
ADT (2037)	1467
DHV	373
D	51%
T DHV	13.3%
T ADT	29.3%
V	65 MPH
- ② 018 - 492, PCN i58v
MRM 39.5 to MRM 39.5
DESIGN DESIGNATION

ADT (2017)	3475
ADT (2037)	4403
DHV	1118
D	51%
T DHV	1.3%
T ADT	2.8%
V	25 MPH
- ③ 385 - 492, PCN i58w
MRM 36.9 to MRM 36.9
DESIGN DESIGNATION

ADT (2017)	2165
ADT (2037)	2743
DHV	433
D	51%
T DHV	2.9%
T ADT	6.3%
V	35 MPH
- ④ 385 - 491, PCN i58x
MRM 95.0 to MRM 96.6
DESIGN DESIGNATION

ADT (2017)	2159
ADT (2037)	3133
DHV	495
D	51%
T DHV	1.5%
T ADT	3.2%
V	55 MPH
- ⑤ 079 - 492, PCN i58y
MRM 59.2 to MRM 59.6
DESIGN DESIGNATION

ADT (2017)	2042
ADT (2037)	2918
DHV	356
D	50%
T DHV	6.7%
T ADT	14.8%
V	65 MPH

Storm Water Permit
No Permit Required

STATE OF SOUTH DAKOTA
DEPARTMENT OF TRANSPORTATION

PLANS FOR PROPOSED
PROJECTS 018-492, 018-492,
385-491, 385-492, & 079N-492
US HIGHWAYS 18 & 385
& SD HIGHWAY 79N
PENNINGTON, FALL RIVER
& CUSTER COUNTIES

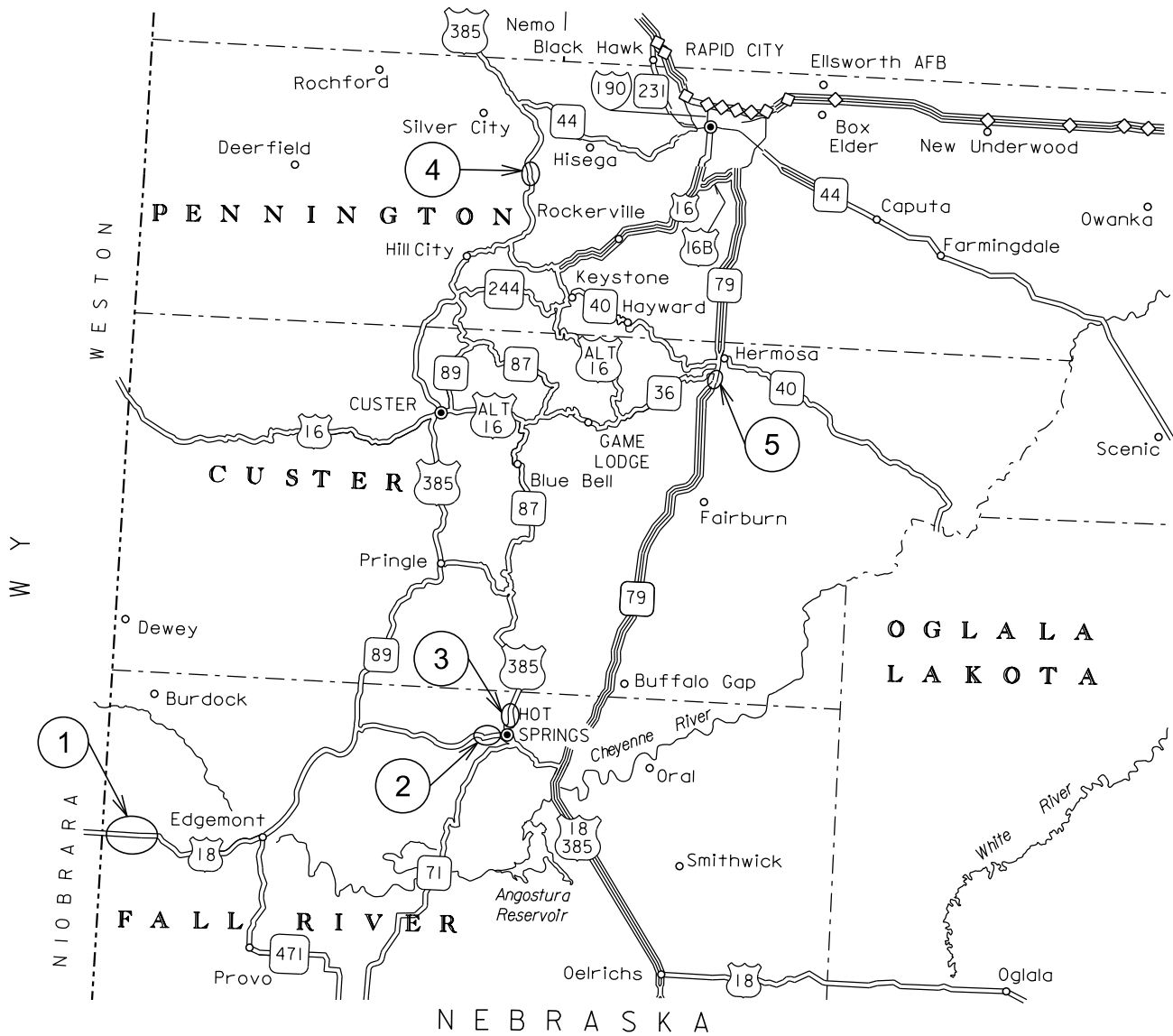
PCC PAVEMENT REPAIR
PCNs i58u, i58v, i58w, i58x & i58y

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492		
		1	21

Plotting Date: 05/08/2018

INDEX OF SHEETS

Sheet 1	Title Sheet
Sheets 2 - 9	Estimate of Quantities & Plan Notes
Sheet 10	PCCP Repair Details
Sheet 11	Subgrade Repair Detail
Sheet 12	Mobile Operation Detail
Sheets 13 - 21	Standard Plates



PLOT NAME - 1

FILE - ... \I58U TITLE.DGN

ESTIMATE OF QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	2	21

PCN i58u

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	42	CuYd
260E2010	Gravel Cushion	29.4	Ton
260E5000	Shot Rock	157.0	Ton
320E1200	Asphalt Concrete Composite	10.0	Ton
380E5030	Nonreinforced PCC Pavement Repair	407.6	SqYd
380E6000	Dowel Bar	220	Each
380E6110	Insert Steel Bar in PCC Pavement	281	Each
430E0700	Precast Concrete Headwall for Drain	2	Each
633E1400	Pavement Marking Paint, 4" White	400	Ft
633E1405	Pavement Marking Paint, 4" Yellow	400	Ft
634E0010	Flagging	80.0	Hour
634E0110	Traffic Control Signs	498.6	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	3	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	40	Ft
831E0300	Reinforcement Fabric (MSE)	181	SqYd

PCN i58v

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	43	CuYd
260E2010	Gravel Cushion	21.3	Ton
260E5000	Shot Rock	63.4	Ton
380E5030	Nonreinforced PCC Pavement Repair	48.0	SqYd
380E6000	Dowel Bar	24	Each
380E6110	Insert Steel Bar in PCC Pavement	34	Each
633E1400	Pavement Marking Paint, 4" White	60	Ft
633E1405	Pavement Marking Paint, 4" Yellow	60	Ft
634E0010	Flagging	8.0	Hour
634E0110	Traffic Control Signs	105.0	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	2	Each
634E0420	Type C Advance Warning Arrow Board	2	Each
831E0300	Reinforcement Fabric (MSE)	152	SqYd

PCN i58w

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	48	CuYd
260E2010	Gravel Cushion	27.3	Ton
260E5000	Shot Rock	77.3	Ton
380E5030	Nonreinforced PCC Pavement Repair	61.3	SqYd
380E6000	Dowel Bar	24	Each
380E6110	Insert Steel Bar in PCC Pavement	107	Each
430E0700	Precast Concrete Headwall for Drain	2	Each
633E1400	Pavement Marking Paint, 4" White	60	Ft
633E1405	Pavement Marking Paint, 4" Yellow	60	Ft
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	163.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	1	Each
650E0080	Type B68 Concrete Curb and Gutter	20	Ft
680E0240	4" Corrugated Polyethylene Drainage Tubing	88	Ft
831E0300	Reinforcement Fabric (MSE)	194	SqYd

PCN i58x

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	118	CuYd
260E2010	Gravel Cushion	53.9	Ton
260E5000	Shot Rock	160.1	Ton
320E1200	Asphalt Concrete Composite	6.0	Ton
380E5030	Nonreinforced PCC Pavement Repair	115.0	SqYd
380E6000	Dowel Bar	33	Each
380E6110	Insert Steel Bar in PCC Pavement	120	Each
430E0700	Precast Concrete Headwall for Drain	2	Each
633E1400	Pavement Marking Paint, 4" White	120	Ft
633E1405	Pavement Marking Paint, 4" Yellow	240	Ft
633E1425	Pavement Marking Paint, 12" Yellow	30	Ft
634E0010	Flagging	80.0	Hour
634E0110	Traffic Control Signs	163.4	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	1	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	60	Ft
831E0300	Reinforcement Fabric (MSE)	393	SqYd

PCN i58y

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
120E0100	Unclassified Excavation, Digouts	60	CuYd
260E2010	Gravel Cushion	30.2	Ton
260E5000	Shot Rock	89.4	Ton
320E1200	Asphalt Concrete Composite	3.0	Ton
380E5030	Nonreinforced PCC Pavement Repair	62.7	SqYd
380E6000	Dowel Bar	36	Each
380E6110	Insert Steel Bar in PCC Pavement	88	Each
430E0700	Precast Concrete Headwall for Drain	2	Each
633E1400	Pavement Marking Paint, 4" White	60	Ft
633E1405	Pavement Marking Paint, 4" Yellow	120	Ft
634E0010	Flagging	40.0	Hour
634E0110	Traffic Control Signs	326.3	SqFt
634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
634E0285	Type 3 Barricade, 8' Double Sided	4	Each
634E0420	Type C Advance Warning Arrow Board	1	Each
680E0240	4" Corrugated Polyethylene Drainage Tubing	40	Ft
831E0300	Reinforcement Fabric (MSE)	222	SqYd

SPECIFICATIONS

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

ENVIRONMENTAL COMMITMENTS

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. 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.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	3	21

COMMITMENT H: WASTE DISPOSAL SITE

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

Action Taken/Required:

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

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

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench 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".

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) will be incidental to the various contract items.

COMMITMENT I: HISTORICAL PRESERVATION OFFICE CLEARANCES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	4	21

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 S: FIRE PREVENTION IN THE BLACK HILLS AREA

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

Action Taken/Required:

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

TABLE OF SUBGRADE REPAIR

PCN i58u

US Hwy 18 MRM 0.0 to MRM 10.30 - Table of Subgrade Repair						
			Unclassified Excavation, Digouts	Shot Rock	Gravel Cushion	MSE Fabric
MRM	Displacement	Location	Cu Yd	Tons	Tons	Sq Yd
0	0.972	WB	14.0	52.0	9.4	61.3
0	0.987	WB	28.0	105.0	20.0	120.0
		Total	42	157.0	29.4	181.3

PCN i58v

US Hwy 18 MRM 39.5 - Table of Subgrade Repair						
			Unclassified Excavation, Digouts	Shot Rock	Gravel Cushion	MSE Fabric
MRM	Displacement	Location	Cu Yd	Tons	Tons	Sq Yd
38.69	0.852	EBPL	42.7	63.4	21.3	152.0
		Total	43	63.4	21.3	152.0

PCN i58w

US 385 MRM 36.9 - Table Subgrade Repair						
			Unclassified Excavation, Digouts	Shot Rock	Gravel Cushion	MSE Fabric
MRM	Displacement	Location	Cu Yd	Tons	Tons	Sq Yd
36.92	0.017	NB Shoulder	12.0	26.9	9.5	67.6
36.92	0.017	NBDL	11.9	16.8	5.9	42.2
36.92	0.017	SBDL	11.9	16.8	5.9	42.2
36.92	0.017	SB Shoulder	11.9	16.8	5.9	42.2
		Total	48	77.3	27.3	194.2

PCN i58x

US Hwy 385 MRM 95.0 to MRM 96.6 - Table of Subgrade Repair						
			Unclassified Excavation, Digouts	Shot Rock	Gravel Cushion	MSE Fabric
MRM	Displacement	Location	Cu Yd	Tons	Tons	Sq Yd
96	0.002	SB	21.1	31.4	10.6	73.3
96	0.009	NB	52.2	62.7	21.1	146.7
96	0.009	CL	4.4	6.6	2.2	17.3
96	0.027	SB	22.2	33.0	11.1	86.7
96	0.027	CL	17.8	26.4	8.9	69.3
		Total	118	160.1	53.9	393.3

PCN i58y

SD 79N MRM 59.2 to 59.6 - Table of Subgrade Repair						
			Unclassified Excavation, Digouts	Shot Rock	Gravel Cushion	MSE Fabric
MRM	Displacement	Location	Cu Yd	Tons	Tons	Sq Yd
59	0.300	NBPL	7.4	11.0	3.7	28.9
59	0.310	NBPL	23.7	35.2	11.9	84.4
59	0.314	NBPL	14.8	22.0	7.4	57.8
59	0.500	NBPL	7.1	10.6	3.6	25.3
59	0.516	NBPL	7.1	10.6	3.6	25.3
		Total	60	89.4	30.2	221.7

SUBGRADE REPAIR

Included in the Estimate of Quantities is Unclassified Excavation, Digouts for the necessary removal of unstable material.

Backfill shall be Shot Rock and Gravel Cushion installed in accordance with the detail for Subgrade Repair.

The MSE fabric shall be placed on the bottom and the sides of the excavated subgrade. Additional fabric shall be provided to allow for wrapping the top of the shot rock backfill. Shot rock shall be placed in lifts not to exceed 8 inches. The shot rock shall be watered and compacted by at least 4 complete vibratory roller passes per lift.

When the shot rock backfill has reached a compacted depth of 1.5 feet, the shot rock shall be covered with MSE fabric. Gravel Cushion shall be placed on top of the MSE fabric.

Included in the Estimate of Quantities is 4" Corrugated Polyethylene Drainage Tubing and Precast Concrete Headwalls which may be used at the discretion of the engineer.

The Corrugated Polyethylene Drainage Tubing within the limits of the shot rock shall be perforated and wrapped with the MSE Fabric. The Corrugated Polyethylene Drainage Tubing crossing the shoulder which outlets to the in-slope shall be solid-walled (or non-perforated). The slope of the pipe shall be at least 1%. All tubing shall be incidental to the contract unit price per foot for 4" Corrugated Polyethylene Drainage Tubing.

The Contactor shall saw cut the asphalt shoulder for installation of the drainage tubing. The drainage tubing shall be backfilled with material that was removed from the trench. 6" of Gravel Cushion shall be placed on top of the trench backfill. 3" of Asphalt Concrete Composite shall be placed on top of the Gravel Cushion.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	5	21

SHOT ROCK

Shot Rock shall consist of broken or crushed ledge rock produced from blasting or quarrying operations. Shot Rock material utilized in subgrade stabilization shall be less than 8" in diameter with a nominal size of 4". Gypsum may not be used as Shot Rock.

Compaction shall be to the satisfaction of the Engineer. Acceptance of Shot Rock material shall be visually inspected and may be used without further testing as directed by the Engineer.

ASPHALT CONCRETE COMPOSITE

A Flush Seal will not be required on the asphalt concrete patching.

Locations and quantities of asphalt repair are subject to change. The exact locations of replacement will be determined in the field by the Engineer. The Engineer reserves the right to adjust quantities and/or add locations at no additional cost to the state.

EXISTING PCC PAVEMENT

The existing pavement US Hwy 18 (PCN i58u) & US 385 (PCN i58w) is 8" Nonreinforced PCC Pavement with limestone aggregate. The existing pavement US Hwy 18 (PCN i58v) is 7" Nonreinforced PCC Pavement with limestone aggregate. The existing pavement US Hwy 385 (PCN i58x) is 7.5" Nonreinforced PCC Pavement with limestone aggregate. The existing pavement SD Hwy 79 (PCN i58y) is 9.5" Nonreinforced PCC Pavement with limestone aggregate. Longitudinal joints are reinforced with No. 5x30" deformed tie bars spaced 30" to 48" center to center. Transverse joints are reinforced with 1 ¼" steel dowel bars spaced 12" center to center.

RESTORATION OF GRAVEL CUSHION

An inspection of the gravel cushion subgrade shall be made after removing concrete from each pavement replacement area. Areas of excess moisture shall be dried to the satisfaction of the Engineer. Loose and excess material shall be removed. Each replacement area shall be leveled and compacted to the satisfaction of the Engineer.

If additional gravel cushion material is required, the Contractor shall furnish, place and compact gravel cushion to the satisfaction of the Engineer.

All costs associated with this work, except where digouts are required, shall be incidental to the contract unit price per square yard for "Nonreinforced PCC Pavement Repair".

NONREINFORCED PCC PAVEMENT REPAIR

Locations and size (length or width) of concrete repair areas are subject to change in the field, at the discretion of the Engineer. There will be no increase in the contract unit price for these changes. Payment will be based on the actual area replaced.

Existing concrete pavement shall be sawed full depth at the beginning and end of the PCCP repair areas. When either the beginning or end of a PCCP repair area falls close to an existing joint or crack, the PCCP repair area shall be extended to eliminate the existing joint or crack. Where possible, new working joints shall be adjacent to existing working joints.

Existing concrete pavement in the replacement areas shall be removed by the lift out method or by means that minimize damage to the base and sides of remaining in place concrete. All removed material shall be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor’s operations shall be removed and replaced at the Contractor’s expense.

If the pavement replacement area is entirely on either side of the existing contraction joint, the location of one of the working joints will be at the original location.

Upon removal of the concrete, the Engineer shall inspect for existing tie bars along the longitudinal joint to determine if tie bar installation will be required.

Concrete placed adjacent to asphalt shoulders shall be formed full depth to match the width of existing concrete pavement. Asphalt shoulders adjacent to concrete pavement replacements shall be repaired with Asphalt Concrete Composite. If rumble strips exist, they shall be formed in the asphalt to match existing.

At repair locations where the new working joint is not opposite the existing working joint, the Contractor shall place a ¼ inch preformed asphalt expansion joint material along the longitudinal joint from the existing working joint to the new working joint. The expansion joint material shall meet the requirements of AASHTO M33. Cost for this material shall be incidental to the contract unit price per square yard for “Nonreinforced PCC Pavement Repair”.

All joints (longitudinal and transverse) through and around the repair areas shall be sawed and sealed with Hot Poured Elastic Joint Sealer.

Saw cuts that extend beyond the repair area shall be minimized and filled with Hot Pour Elastic Joint Sealant at the Contractor’s expense.

New pavement thickness shall match existing pavement thickness.

The slump requirement will be limited to 3" maximum after water reducer is added and the concrete shall contain 4.5% to 7.0% entrained air. Coarse aggregate shall be crushed ledge rock, Size No. 1, unless an alternative gradation is approved by the concrete engineer as part of the mix design submittal. The concrete mixture shall contain a minimum of 50% coarse aggregate by weight. The concrete mix shall contain at least 600 lbs. of type I, II or III cement per cubic yard. The minimum 28 day compressive strength shall be 4,000 psi. The Contractor is responsible for the mix design used. The Contractor may need to modify the mix design to meet contract time requirements on the project. The Contractor shall submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

NONREINFORCED PCC PAVEMENT REPAIR (Cont.)

The use of a high range water reducer at manufacturer's recommended dosage will be required.

Concrete shall be cured with white pigmented curing compound applied as soon as practical at a rate of 125 square feet per gallon. Concrete shall be cured for a minimum of 48 hours before opening to traffic. The 48 hours is based upon a concrete surface temperature of 60 degrees Fahrenheit or higher throughout the cure period. If the concrete temperature falls below 60 degrees Fahrenheit, the cure time shall be extended or other measures shall be taken, at no additional cost to the State. In addition to the curing requirements, strength of 4,000 psi must be obtained prior to opening to traffic.

The initial contraction joint sawing shall be performed as soon practical to avoid random cracking.

All costs for performing this work including sawing and removing concrete, furnishing and placing concrete, #5 tie bars cast in place, curing, sawing and sealing joints, labor, tools and equipment shall be incidental to the contract unit price per square yard for “Nonreinforced PCC Pavement Repair”.

STEEL BAR INSERTION

Locations and quantities of concrete repair are subject to change in the field at the discretion of the Engineer. The Contractor will be responsible for ordering the actual quantity of steel bars necessary to complete the work.

A rigid frame or mechanical device will be required to guide the drill to ensure proper horizontal and vertical alignment of the steel bars in the drilled holes.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492		
		6	21

TABLE OF PCCP REPAIR

PCN i58u

US Hwy 18 MRM 0.0 to MRM 10.30 - Table of Nonreinforced PCC Pavement Repair										
			Length	Width	8" Nonreinforced PCC Pavement Repair	No. 5 Deformed Tie Bar	No. 9 Deformed Tie Bar	1 ¼" Bar	Insert Steel Bar in PCC Pavement	Dowel Bar
MRM	Displacement	Location	Ft	Ft	SqYd	Each	Each	Each	Each	Each
0	0.972	WB	23	7	17.9	9	7	7	23	7
0	0.987	WB	45	8	40.0	13	8	8	29	24
1	0.151	WB	33	8	29.3	9	8	8	25	16
4	0.185	EB	36	8	32.0	10	16	0	26	24
7	0.498	EB	6	8	5.3	2	16	0	18	8
8	0.595	EB	39	8	34.7	10	8	8	26	16
8	0.678	EB	120	9	120.0	32	0	18	50	56
9	0.779	EB	98	8	87.1	26	8	8	42	48
9	0.897	EB	45	7	35.0	12	14	0	26	14
9	0.915	EB	8	7	6.2	2	14	0	16	7
				Total	407.6	125	99	57	281	220

PCN i58v

US Hwy 18 MRM 39.5 - Table of Nonreinforced PCC Pavement Repair										
			Length	Width	7" Nonreinforced PCC Pavement Repair	No. 5 Deformed Tie Bar	No. 9 Deformed Tie Bar	1 ¼" Bar	Insert Steel Bar in PCC Pavement	Dowel Bar
MRM	Displacement	Location	Ft	Ft	SqYd	Each	Each	Each	Each	Each
38.69	0.852	EBPL	36	12	48.0	10	12	12	34	24
				Total	48.0	10	12	12	34	24

PCN i58w

US 385 MRM 36.9 - Table of Nonreinforced PCC Pavement Repair										
			Length	Width	8" Nonreinforced PCC Pavement Repair	No. 5 Deformed Tie Bar	No. 9 Deformed Tie Bar	1 ¼" Bar	Insert Steel Bar in PCC Pavement	Dowel Bar
MRM	Displacement	Location	Ft	Ft	SqYd	Each	Each	Each	Each	Each
36.92	0.017	NB Shoulder	16	12	21.3	3	0	24	27	0
36.92	0.017	NBDL	10	12	13.3	2	12	12	26	7
36.92	0.017	SBDL	10	12	13.3	4	12	12	28	8
36.92	0.017	SB Shoulder	10	12	13.3	2	12	12	26	9
				Total	61.3	11	36	60	107	24

PCN i58x

US Hwy 385 MRM 95.0 to MRM 96.6 - Table of Nonreinforced PCC Pavement Repair										
			Length	Width	7.5" Nonreinforced PCC Pavement Repair	No. 5 Deformed Tie Bar	No. 9 Deformed Tie Bar	1 ¼" Bar	Insert Steel Bar in PCC Pavement	Dowel Bar
MRM	Displacement	Location	Ft	Ft	SqYd	Each	Each	Each	Each	Each
96	0.002	SB	15	15	25.0	4	0	30	34	0
96	0.009	NB	30	15	50.0	8	0	30	38	15
96	0.009	CL	6	6	4.0	2	6	6	14	0
96	0.027	SB	30	6	20.0	8	12	0	20	12
96	0.027	CL	24	6	16.0	2	6	6	14	6
				Total	115.0	24	24	72	120	33

PCN i58y

SD 79N MRM 59.2 to 59.6 - Table of Nonreinforced PCC Pavement Repair										
			Length	Width	9.5" Nonreinforced PCC Pavement Repair	No. 5 Deformed Tie Bar	No. 9 Deformed Tie Bar	1 ¼" Bar	Insert Steel Bar in PCC Pavement	Dowel Bar
MRM	Displacement	Location	Ft	Ft	SqYd	Each	Each	Each	Each	Each
59	0.300	NBPL	10	6	6.7	4	6	6	16	0
59	0.310	NBPL	20	12	26.7	10	0	18	28	6
59	0.314	NBPL	20	6	13.3	10	0	6	16	6
59	0.500	NBPL	6	12	8.0	2	0	12	14	12
59	0.516	NBPL	6	12	8.0	2	0	12	14	12
				Total	62.7	28	6	54	88	36

PERMANENT PAVEMENT MARKING – GENERAL NOTES

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

The Contractor shall repaint all the existing pavement marking paint including centerline, edge line, lane lines, arrows, gore areas, etc. The Contractor will be required to inventory and mark, with appropriately colored tabs, the extent and location of the existing word messages, turn arrows, stop bars, railroad crossings, pedestrian crossings, gore areas, etc. before the markings are obliterated. Locations of pavement marking tape shall be masked. The Contractor shall provide a copy of the pavement marking inventory to the Engineer. All costs associated with this work shall be incidental to the various pavement marking bid items.

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

WATERBORNE PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

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

This material shall consist of a durable high build, low VOC, fast drying, waterborne traffic paint with a 100% acrylic polymer (Dow DT-400 or Dow HD-21A or equivalent). The Contractor shall provide certification that the material is one of the following products or an equivalent as approved by the Operations Traffic Engineer:

- Diamond Vogel's Waterborne High Build Polymer Marking Paint
- Ennis-Flint’s High Build Polymer Marking Paint

No further testing of this material will be required. Reflective media consisting f glass beads as well as bonded core reflective elements shall be adhered to the paint.

The bonded core reflective elements shall contain either clear or yellow tinted microcrystalline ceramic beads bonded to the outer surface. All microcrystalline ceramic beads bonded to reflective elements shall have a minimum index of refraction of 1.8 when tested using the liquid oil immersion method.

RATES OF MATERIALS FOR WATERBORNE PAVEMENT MARKING PAINT WITH HIGH GRADE POLYMER

- Solid 4” line = 27.8 Gals/Mile
- Glass Beads = 5.3 Lbs/Gal.
- Composite Reflective Elements = 2.1 Lbs/Gal.

Pavement Marking Paint shall be Waterborne Pavement Marking Paint with High Grade Polymer. All cost for materials, labor and equipment necessary to furnish and install the pavement markings shall be incidental to the contract unit price per foot for “Pavement Marking Paint, 4” White or Yellow and 12” Yellow”.

TABLE OF PAVEMENT MARKING QUANTITIES

PCN	Highway	4" Pavement Marking Paint, White (Ft.)	4" Pavement Marking Paint, Yellow (Ft.)	12" Pavement Marking Paint, Yellow (Ft.)	For Information only	
					Waterborne Pavement Marking Paint, White	Waterborne Pavement Marking Paint, Yellow
					Gal	Gal
i58u	US 18	400	400	0	2.1	2.1
i58v	US 18	60	60	0	0.3	0.3
i58w	US 385	60	60	0	0.3	0.3
i58x	US 385	120	240	30	0.6	1.7
i58y	SD 79	60	120	0	0.3	0.6
Totals:					3.6	5.0

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492		
		8	21

TRAFFIC CONTROL – GENERAL NOTES

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.

No work will be allowed during hours of darkness as defined by the Specifications.

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.

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

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.

At no time shall mainline traffic be exposed to differential elevations in traveling lanes due either to milling or paving operations. All lanes that are milled or paved shall be left closed until the adjacent lane is completed in a similar manner with no drop offs. All transitions shall be paved for a smooth ride as approved by the Engineer.

The Contractor shall keep the portion of the project being used by public traffic in a condition that will adequately and safely accommodate traffic.

Road Work Ahead (W20-1) signs shall be placed at applicable intersecting roads and as directed by the Engineer.

PCN i58u – A maximum of 4 overnight traffic control setups will be allowed at one time. Locations shall be chosen so spacing can be maximized between setups. For example, first setups 1) MRM 0.972 and 0.987, 2) MRM 7.498, 3) MRM 8.678, and 4) MRM 9.897 and 9.915. The second setups 1) MRM 1.151, 2) MRM 4.185, 3) MRM 8.595, and 4) MRM 9.779. Any one closure cannot exceed 600’ as shown on Standard Plate 634.25. Additional flagger setups may be used in addition to the 4 overnight setups for sawing if needed.

INVENTORY OF TRAFFIC CONTROL DEVICES

PCN i58u

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	8	30"	5.2	41.6
W1-3	REVERSE TURN (L or R)	4	48" x 48"	16.0	64.0
W3-1	STOP AHEAD (symbol)	8	48" x 48"	16.0	128.0
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	8	48" x 48"	16.0	128.0
W20-7	FLAGGER (symbol)	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		498.6			

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	3 Each

PCN i58v

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
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		105.0			

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	2 Each

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	2 Each

PCN i58w

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
W1-3	REVERSE TURN (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		163.4			

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	1 Each

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492		
		9	21

PCN i58x

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	2	30"	5.2	10.4
W1-3	REVERSE TURN (L or R)	1	48" x 48"	16.0	16.0
W3-1	STOP AHEAD (symbol)	2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD	2	48" x 48"	16.0	32.0
W20-4	ONE LANE ROAD AHEAD	2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)	2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK	2	36" x 18"	4.5	9.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT			
		163.4			

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	1 Each

PCN i58y

SIGN CODE	SIGN DESCRIPTION	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT	NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R2-1	SPEED LIMIT <u>45</u>		24" x 30"	5.0		2	36" x 48"	12.0	24.0
R2-1	SPEED LIMIT <u>65</u>		24" x 30"	5.0		2	36" x 48"	12.0	24.0
R3-7L	LEFT LANE MUST TURN LEFT	1	30" x 30"	6.3	6.3				
W3-5	SPEED REDUCTION AHEAD (MPH)		48" x 48"	16.0		4	48" x 48"	16.0	64.0
W4-2	LEFT or RIGHT LANE ENDS (symbol)		48" x 48"	16.0		2	48" x 48"	16.0	32.0
W20-1	ROAD WORK AHEAD		48" x 48"	16.0		5	48" x 48"	16.0	80.0
W20-5	LEFT or RIGHT LANE CLOSED AHEAD		48" x 48"	16.0		2	48" x 48"	16.0	32.0
W20-7	FLAGGER (symbol)		48" x 48"	16.0		2	48" x 48"	16.0	32.0
G20-2	END ROAD WORK		36" x 18"	4.5		4	48" x 24"	8.0	32.0
		CONVENTIONAL ROAD TRAFFIC CONTROL SIGNS SQFT				EXPRESSWAY / INTERSTATE TRAFFIC CONTROL SIGNS SQFT			
		6.3				320.0			

ITEM DESCRIPTION	QUANTITY
Type 3 Barricade, 8' Double Sided	4 Each

ITEM DESCRIPTION	QUANTITY
Type C Advance Warning Arrow Board	1 Each

SEQUENCE OF OPERATIONS

1. Set up traffic control to close one lane.
2. Complete concrete repair.
3. Install Permanent Pavement Marking.
4. Remove traffic control.

OVERWIDTH TRAFFIC

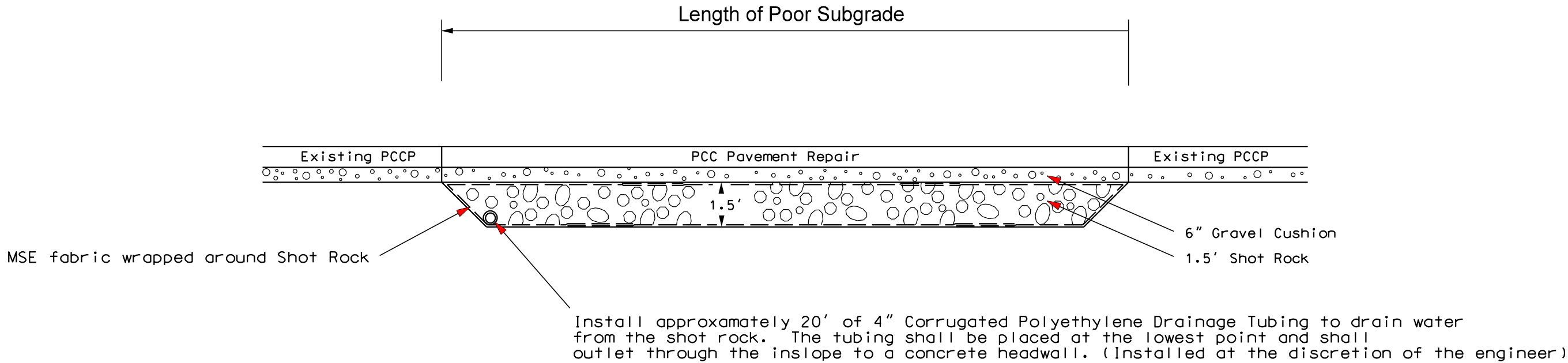
The Contractor shall maintain a minimum width of 16’ for the travel lanes at all times.

PRESS RELEASE ANNOUNCEMENTS

The SDDOT will prepare a Press Release to be released 5 days prior to any phase change or any other major change that affects traffic flow. The SDDOT will be responsible to keep law enforcement, emergency services, and the traveling public notified of changes in project access. The Contractor shall provide the Engineer with pertinent information 7 days prior to any phase change or any other major changes that affect traffic flow.

Subgrade Repair Detail

LONGITUDINAL SECTION ALONG CENTERLINE



STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	12	21

Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies.

Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.

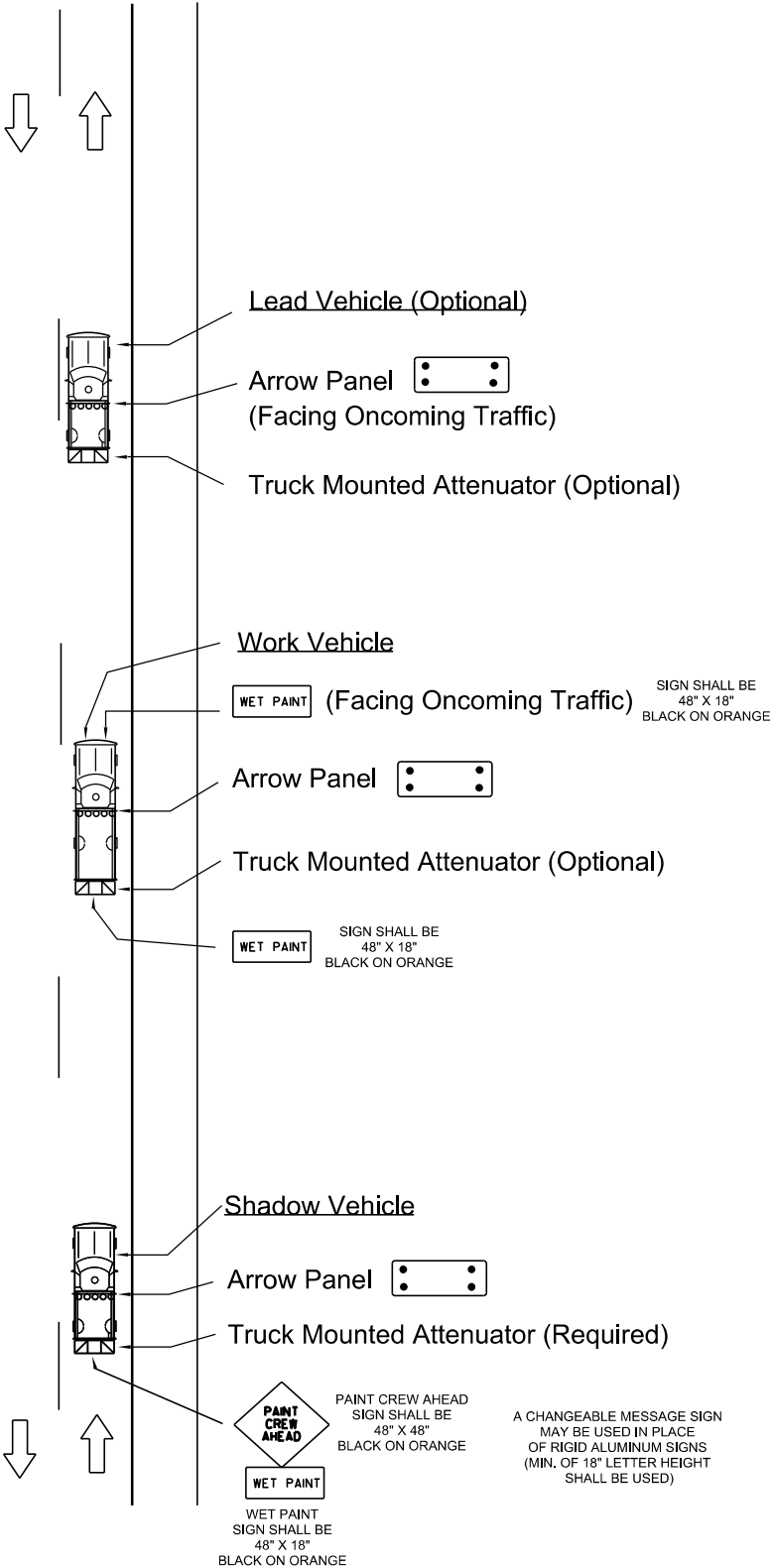
Shadow and Work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow panels.

Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights

When an arrow panel is used, it shall be used in the caution mode.

Marching Diamonds are acceptable.

Arrow panels shall, as a minimum, be Type B, with a size of 60" x 30".



GUIDES FOR TRAFFIC CONTROL DEVICES MOBILE OPERATIONS ON 2-LANE ROAD

MOBILE: Intermittent & Continuous Moving

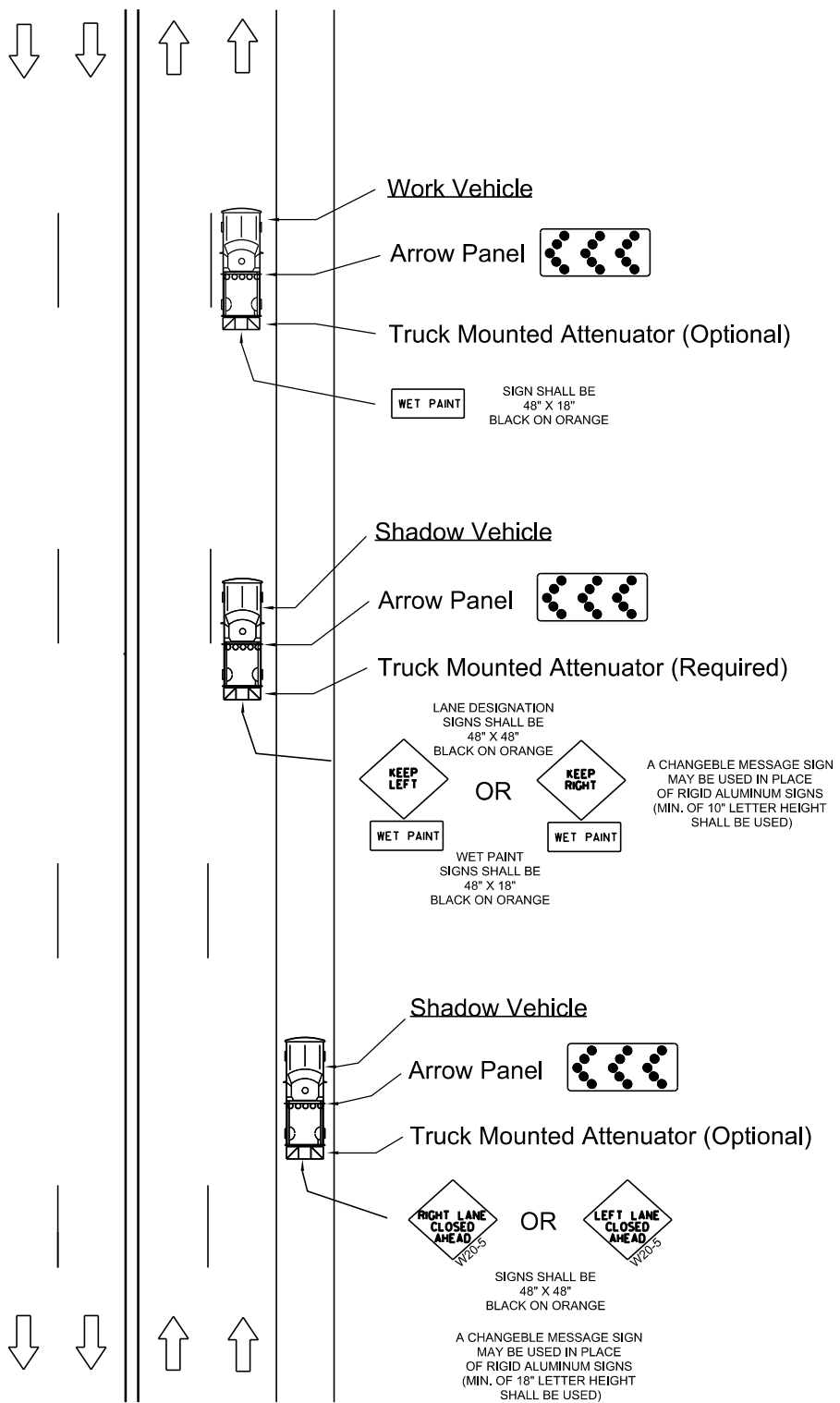
Vehicle-mounted signs shall be mounted in a manner such that they are not obscured by equipment or supplies.

Sign legends on vehicle-mounted signs shall be covered or turned from view when work is not in progress.

Shadow and Work vehicles shall display high-intensity rotating, flashing, oscillating, or strobe lights, flags, signs, or arrow panels.

Vehicle hazard warning signals shall not be used instead of the vehicle's high-intensity rotating, flashing, oscillating, or strobe lights

Arrow panels shall, as a minimum, be Type B, with a size of 60" x 30".

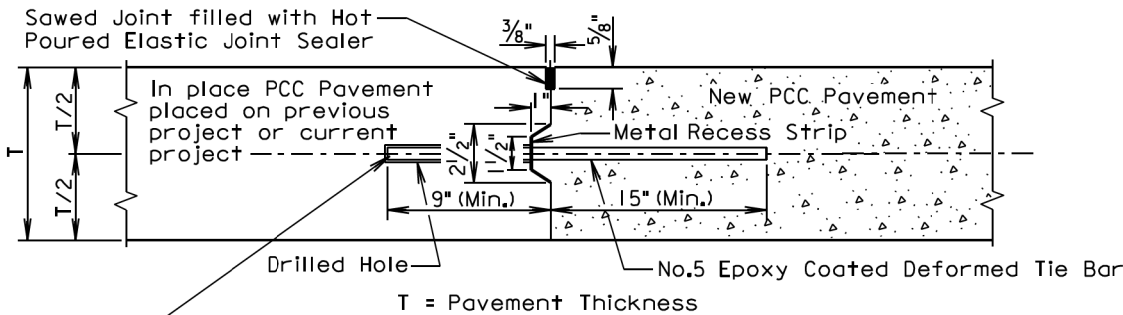


GUIDES FOR TRAFFIC CONTROL DEVICES MOBILE OPERATIONS ON 4-LANE DIVIDED

MOBILE: Intermittent & Continuous Moving

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

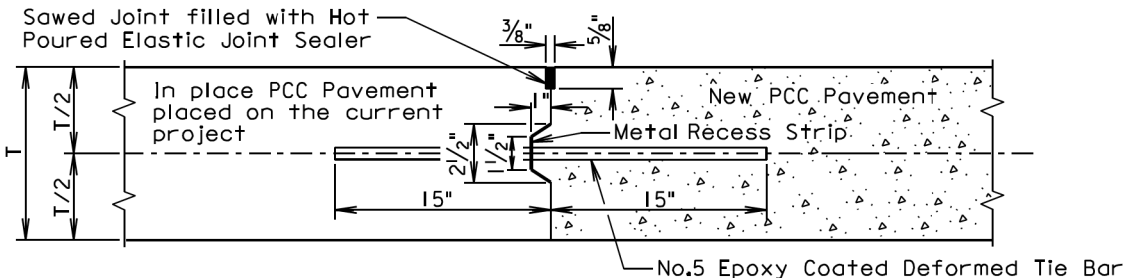
(DRILLED IN BARS)



T = Pavement Thickness
The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(INSERTED OR FORMED IN BARS)



GENERAL NOTES (For the details above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following tables:

Tie Bar Spacing 48" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

Tie Bar Spacing 30" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
5' to 7'	2
7.5' to 9.5'	3
10' to 12'	4
12.5' to 14.5'	5
15' to 17'	6
17.5' to 19.5'	7
20' to 22'	8

The tie bars shall be placed a minimum of 15 inches from transverse contraction joints.

The required number of tie bars as shown in the table shall be uniformly spaced within each panel. The uniformly spaced tie bars shall be spaced a maximum of 48 inches center to center for a female keyway and shall be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing shall apply to tie bars within each panel.

The keyway illustrated in the above details depict a female keyway.

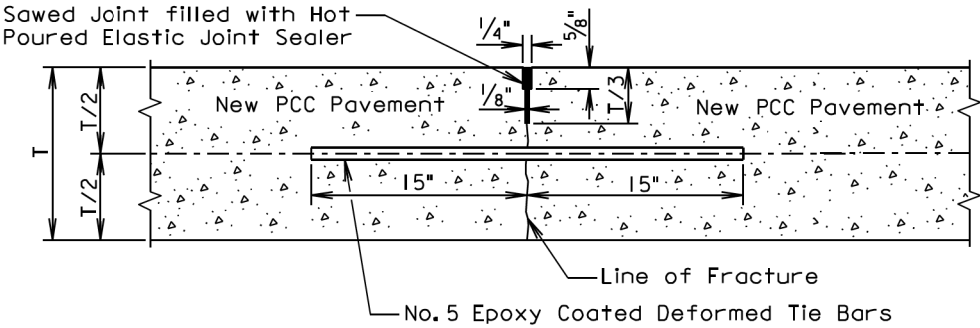
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip shall be used. When concrete pavement is slip formed, a metal recess strip is not required.

August 31, 2013

Published Date: 1st Qtr. 2018	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
			Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS

(POURED MONOLITHICALLY)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following tables:

Tie Bar Spacing 48" Maximum	
Transverse Contraction Joint Spacing	Number of Tie Bars
6.5' to 10'	2
10.5' to 14'	3
14.5' to 18'	4
18.5' to 22'	5

The tie bars shall be placed a minimum of 15 inches from the transverse contraction joints.

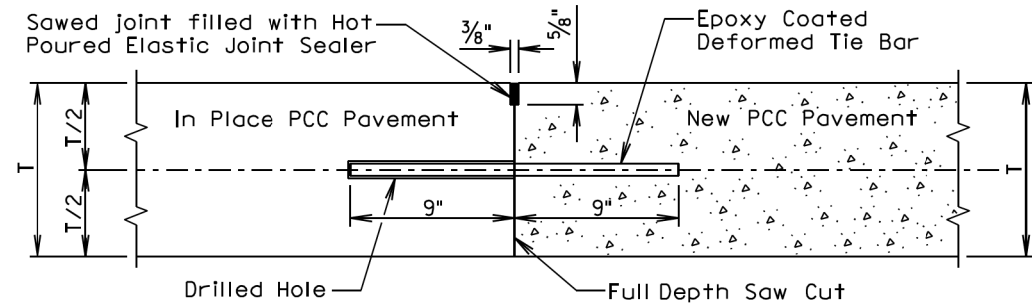
The required number of tie bars as shown in the table shall be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing shall apply to tie bars within each panel.

The first saw cut to control cracking shall be a minimum of 1/3 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the hot poured elastic joint sealer is necessary.

August 31, 2013

Published Date: 1st Qtr. 2018	S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
			Sheet 2 of 2

DETAIL A TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

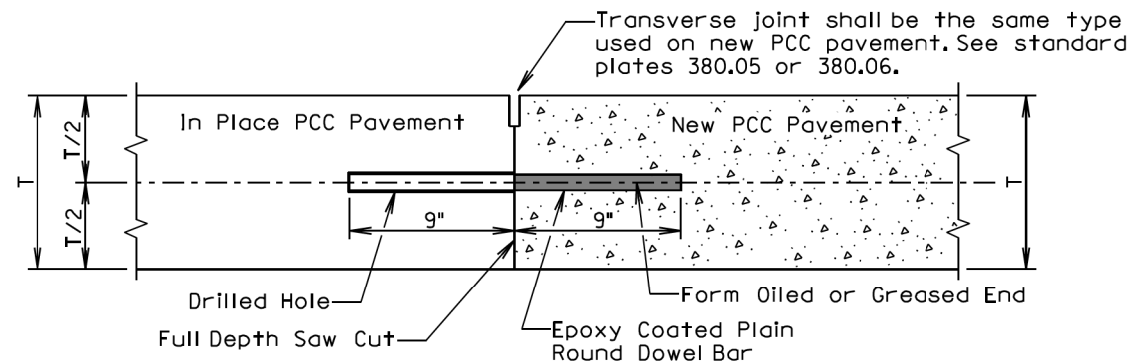
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

See sheet 2 of 2 of this standard plate to determine if Detail A shall be used.

The tie bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

No. 9 epoxy coated deformed tie bars shall be used in 10 inch thickness and less PCC Pavement and No. 11 epoxy coated deformed tie bars shall be used in 10.5 inch thickness and greater PCC Pavement. The tie bar spacing shall be 18 inches center to center and shall be a minimum of 3 inches and a maximum of 9 inches from the pavement edges.

DETAIL B TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project or current project.

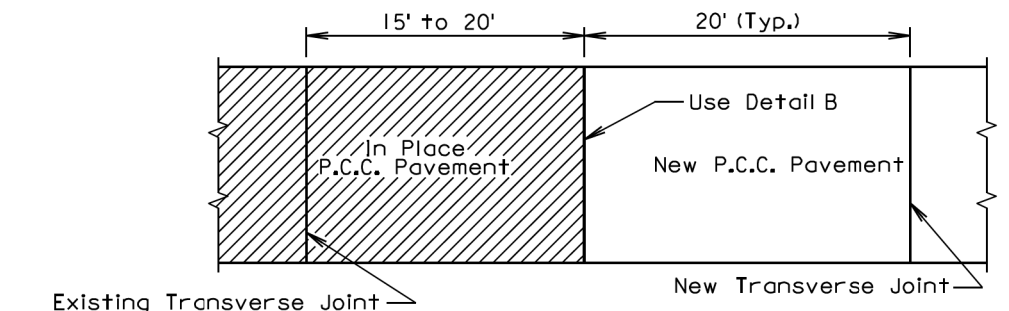
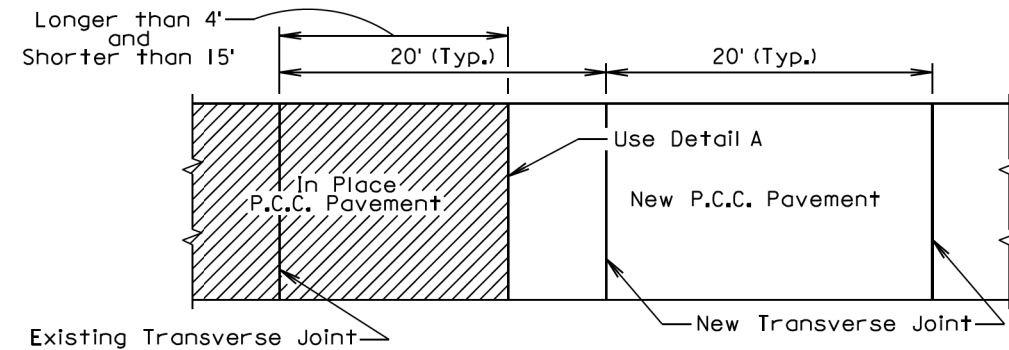
See sheet 2 of 2 of this standard plate to determine if Detail B shall be used.

The plain round dowel bars shall be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive.

The epoxy coated plain round dowel bar size, number, and spacing shall be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars shall be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

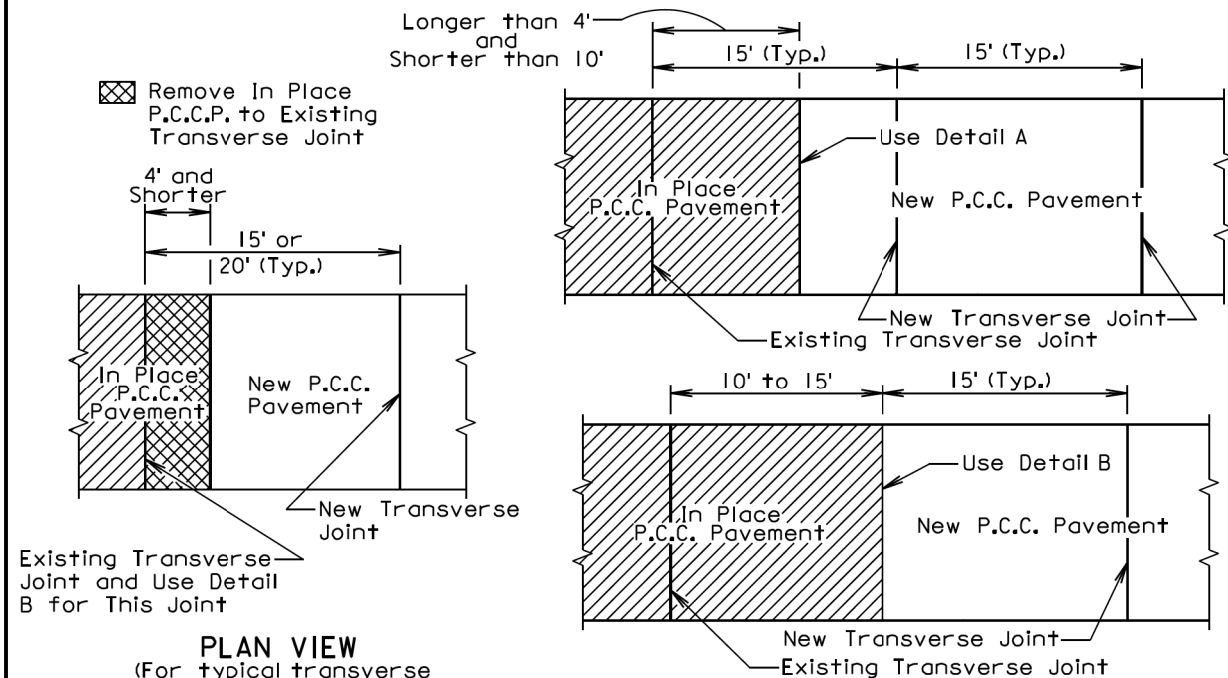
September 6, 2013

Published Date: 1st Qtr. 2018	S D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
			Sheet 1 of 2



PLAN VIEW

(For typical transverse joint spacing of 20' on the current project)



PLAN VIEW

(For typical transverse joint spacing of 15' or 20' on the current project)

PLAN VIEW

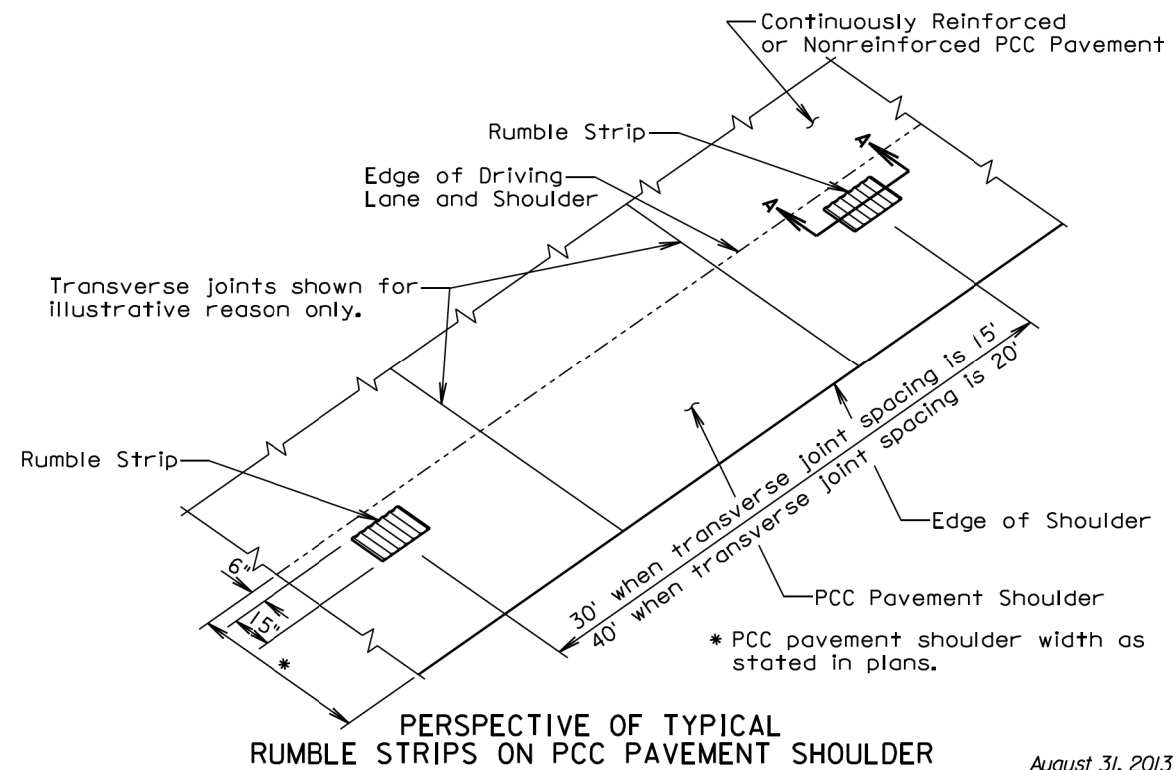
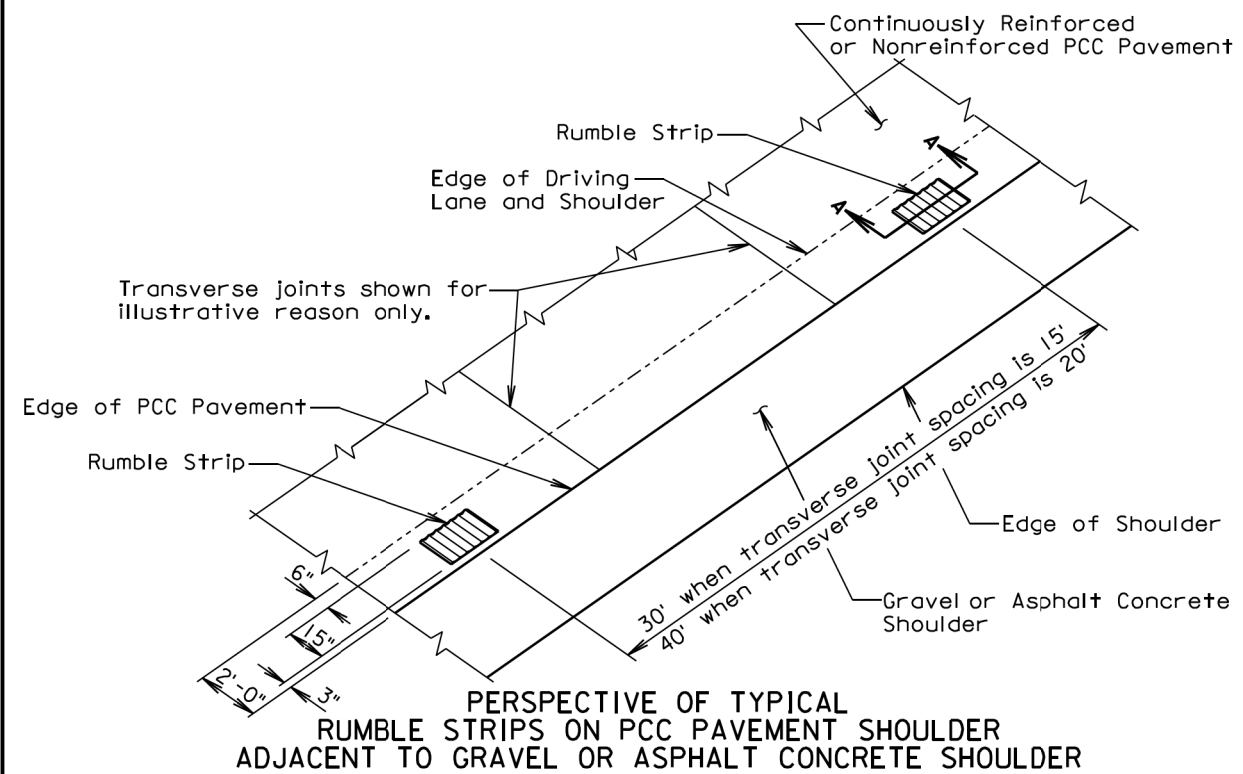
(For typical transverse joint spacing of 15' on the current project)

September 6, 2013

Published Date: 1st Qtr. 2018	S D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
			Sheet 2 of 2

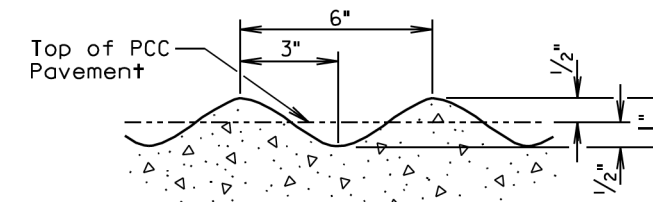
STATE OF SOUTH DAKOTA	PROJECT 018-492, 079N-492, 385-491 & 385-492	SHEET 16	TOTAL SHEETS 21
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Plotting Date: 04/16/2018

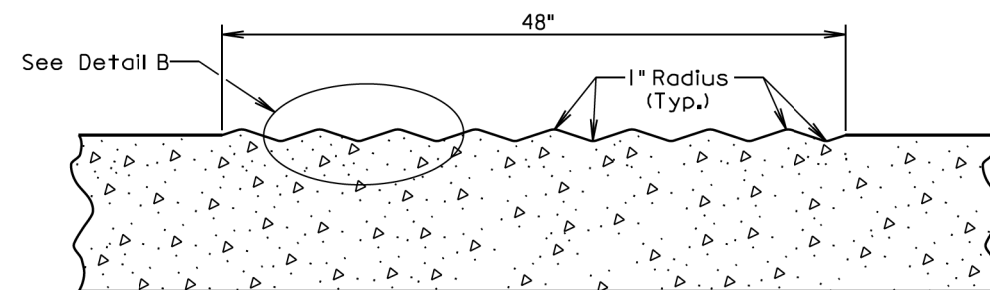


August 31, 2013

Published Date: 1st Qtr. 2018	S D D O T	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.15
			Sheet 1 of 2



DETAIL B



SECTION A-A

GENERAL NOTES:

The rumble strips shall be evenly spaced and shall not coincide with any transverse contraction joints.

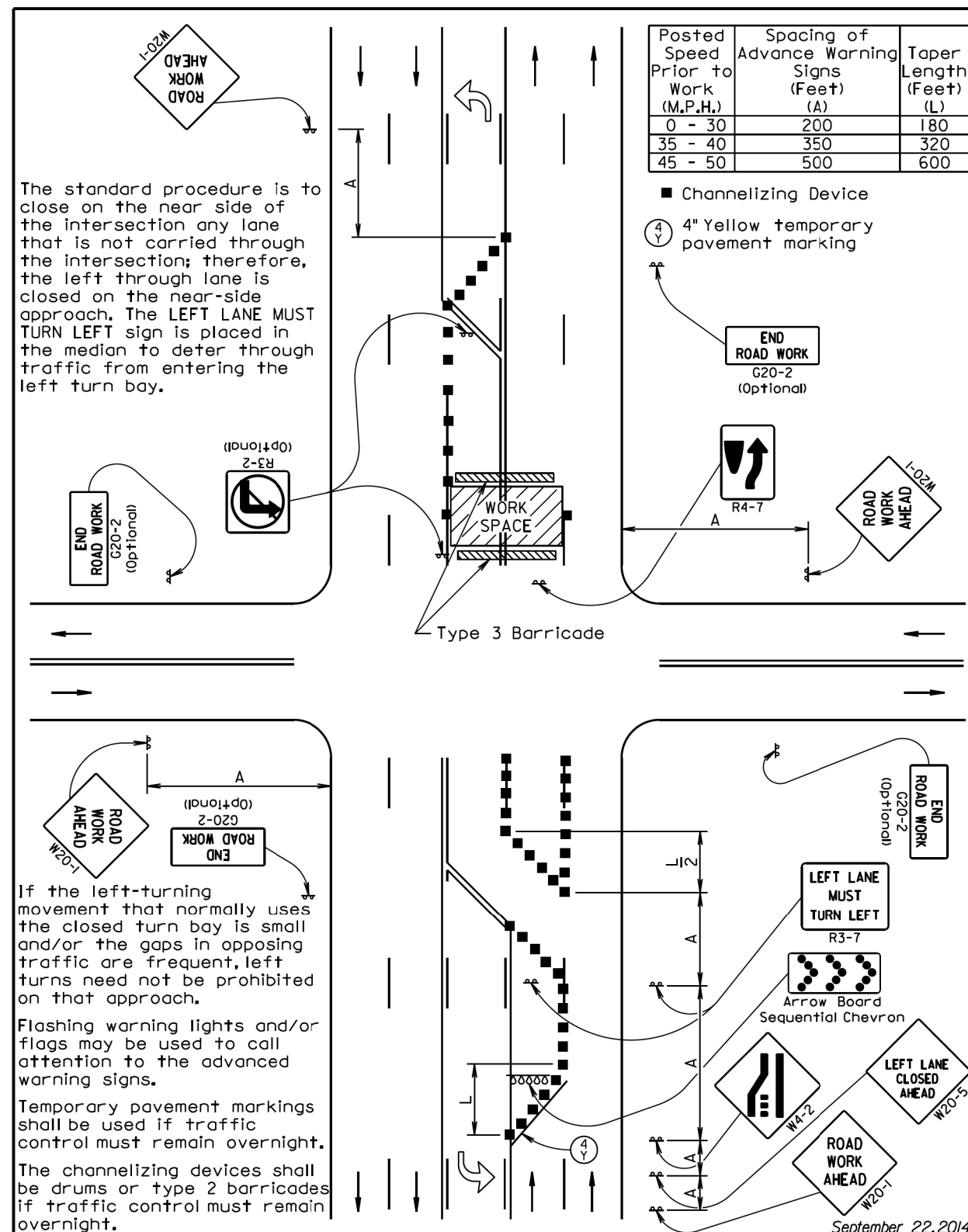
The rumble strips shall NOT be placed along areas adjacent to entrance ramps, exit ramps, and gore areas.

Payment for constructing the PCC Pavement Rumble Strips shall be incidental to the contract unit price per square yard for the corresponding PCC Pavement bid item.

August 31, 2013

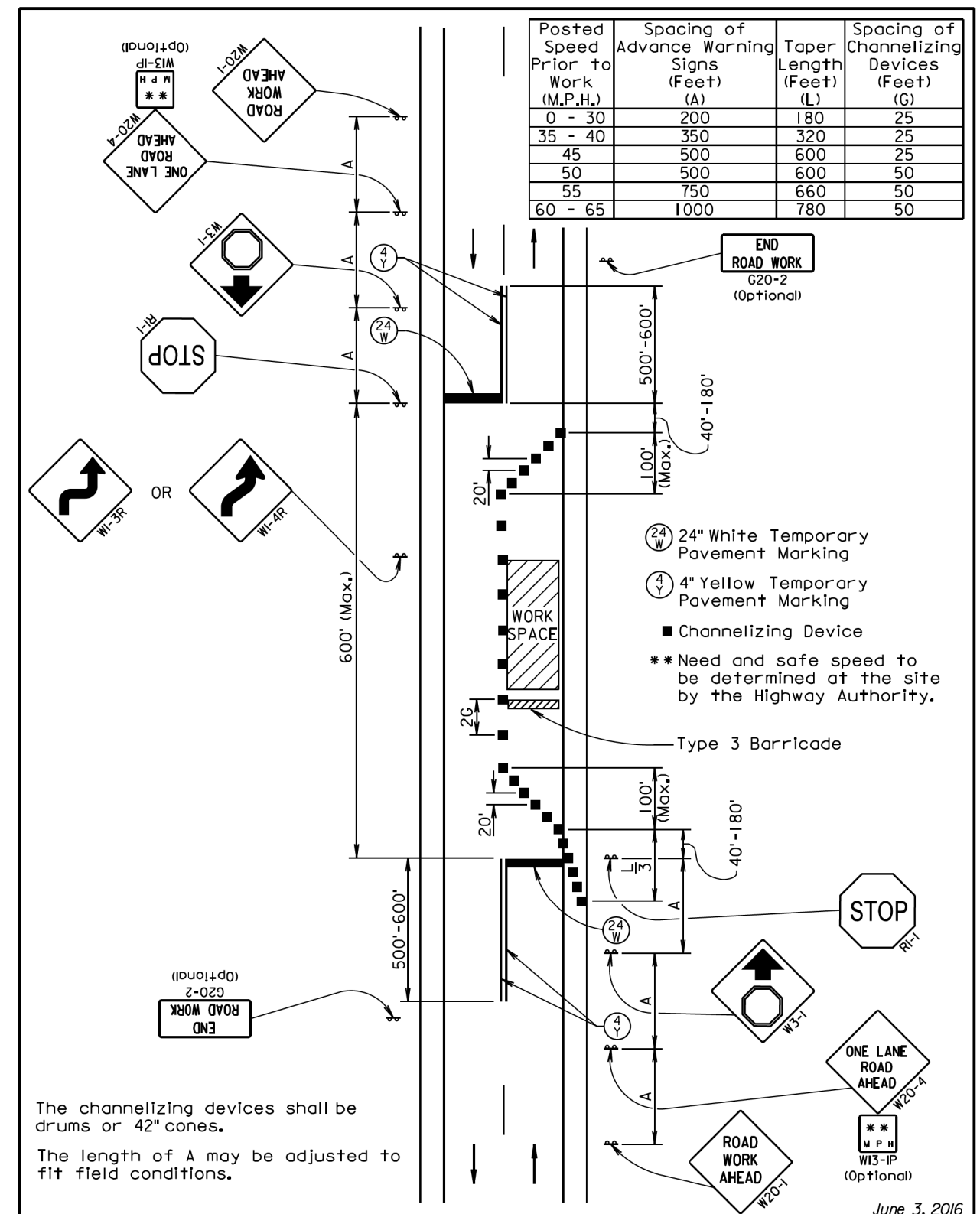
Published Date: 1st Qtr. 2018	S D D O T	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.15
			Sheet 2 of 2

Plotting Date: 04/16/2018



Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A)	Taper Length (Feet) (L)
0 - 30	200	180
35 - 40	350	320
45 - 50	500	600

■ Channelizing Device
④ 4" Yellow temporary
Y pavement marking



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

24" White Temporary Pavement Marking

④ 4" Yellow Temporary Pavement Marking

- Channelizing Device

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

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

- Flagger
- Channelizing Device

For low-volume traffic situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger may be used.

The ROAD WORK AHEAD and the END ROAD WORK signs may be omitted for short duration operations (1 hour or less).

For tack and/or flush seal operations, when flaggers are not being used, the FRESH OIL sign (W21-2) shall be displayed in advance of the liquid asphalt areas.

Flashing warning lights and/or flags may be used to call attention to the advance warning signs.

The channelizing devices shall be drums or 42" cones.

Channelizing devices are not required along the centerline adjacent to work area when pilot cars are utilized for escorting traffic through the work area.

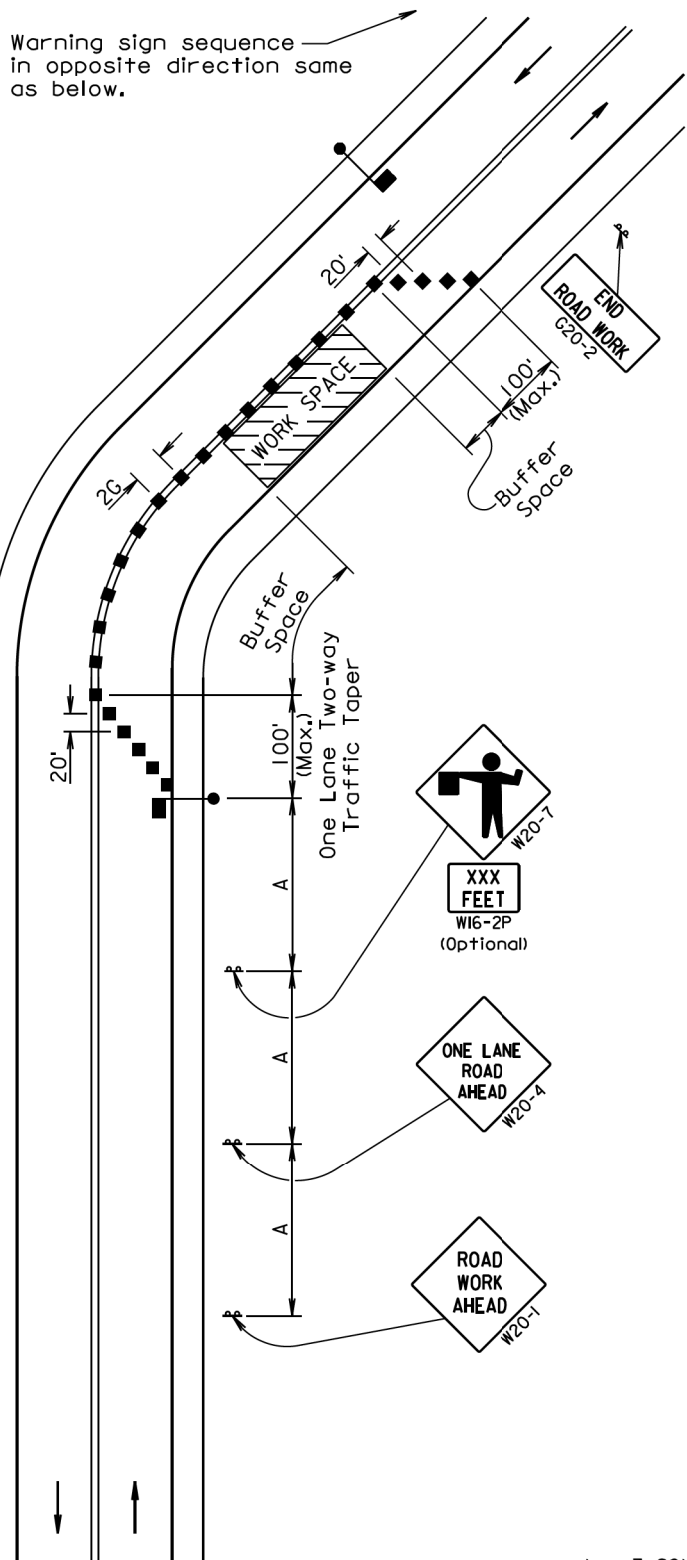
END
ROAD WORK
G20-2

Channelizing devices and flaggers shall be used at intersecting roads to control intersecting road traffic as required.

The buffer space should be extended so that the two-way traffic taper is placed before a horizontal or vertical curve to provide adequate sight distance for the flagger and queue of stopped vehicles.

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

Warning sign sequence in opposite direction same as below.



June 3, 2016

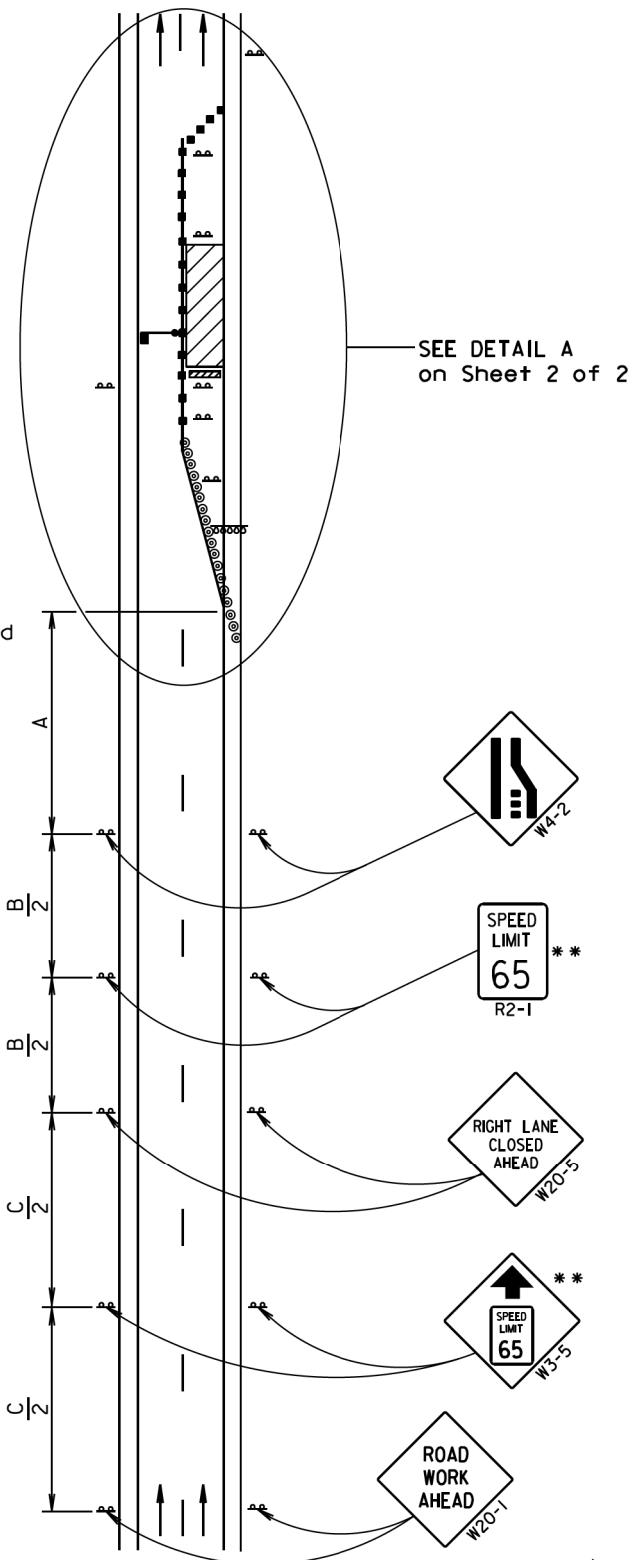
Published Date: 1st Qtr. 2018	S D D O T	GUIDES FOR TRAFFIC CONTROL DEVICES LANE CLOSURE WITH FLAGGER PROVIDED	PLATE NUMBER 634.23
		Sheet 1 of 1	

Posted Speed Prior to Work (M.P.H.)	Spacing of Advance Warning Signs (Feet) (A) (B) (C)
0 - 30	200
35 - 40	350
45 - 50	500
55	750
60 - 65	1000
	(A) (B) (C)
70 - 80	1000 1500 2640

- ** Speed appropriate for location.
- Reflectorized Drum
- Channelizing Device

ROAD WORK AHEAD sign is only required in advance of the first lane closure.

High speed is defined as having a posted speed limit greater than 45 mph.



June 3, 2016

Published Date: 1st Qtr. 2018	S D D O T	WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS	PLATE NUMBER 634.63
		Sheet 1 of 2	

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	19	21

Plotting Date: 04/16/2018

Posted Speed Prior to Work (M.P.H.)	Spacing of Channelizing Devices (Feet) (G)	Taper Length (Feet) (L)
0 - 30	25	180
35 - 40	25	320
45	25	600
50	50 *	600
55	50 *	660
60 - 65	50 *	780
70 - 80	50 *	960

* Spacing is 40' for 42" cones.

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**Speed appropriate for location.

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***Use speed limit designated for the condition when workers are present in the work space. Signs shall be covered or removed when workers are not present.

Flagger (As Necessary)

© Reflectorized Drum

- Channelizing Device

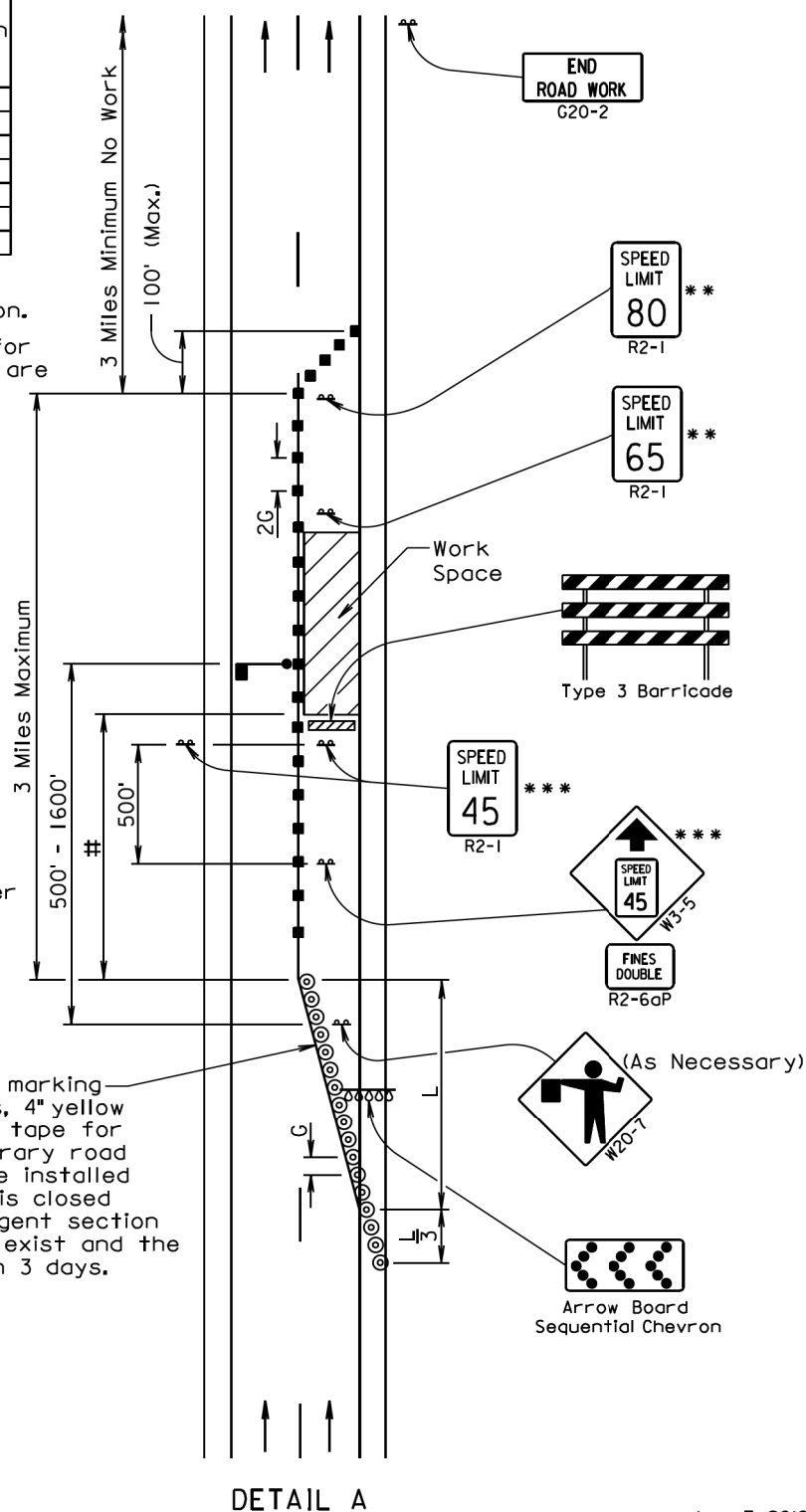
The Work Space shall be a minimum of 500' from the end of the taper.

The FLAGGER sign shall be used whenever there is a Flagger present.

The channelizing devices shall be 42" cones or drums.

42" cones may be used in place of the drums shown in the taper if setup will not be used during night time hours.

4" white temporary pavement marking tape for right lane closures, 4" yellow temporary pavement marking tape for left lane closures, or temporary road markers at 5' spacing shall be installed in the taper when the lane is closed overnight, and along the tangent section where the skip lines do not exist and the lane is closed for more than 3 days.



June 3, 2016

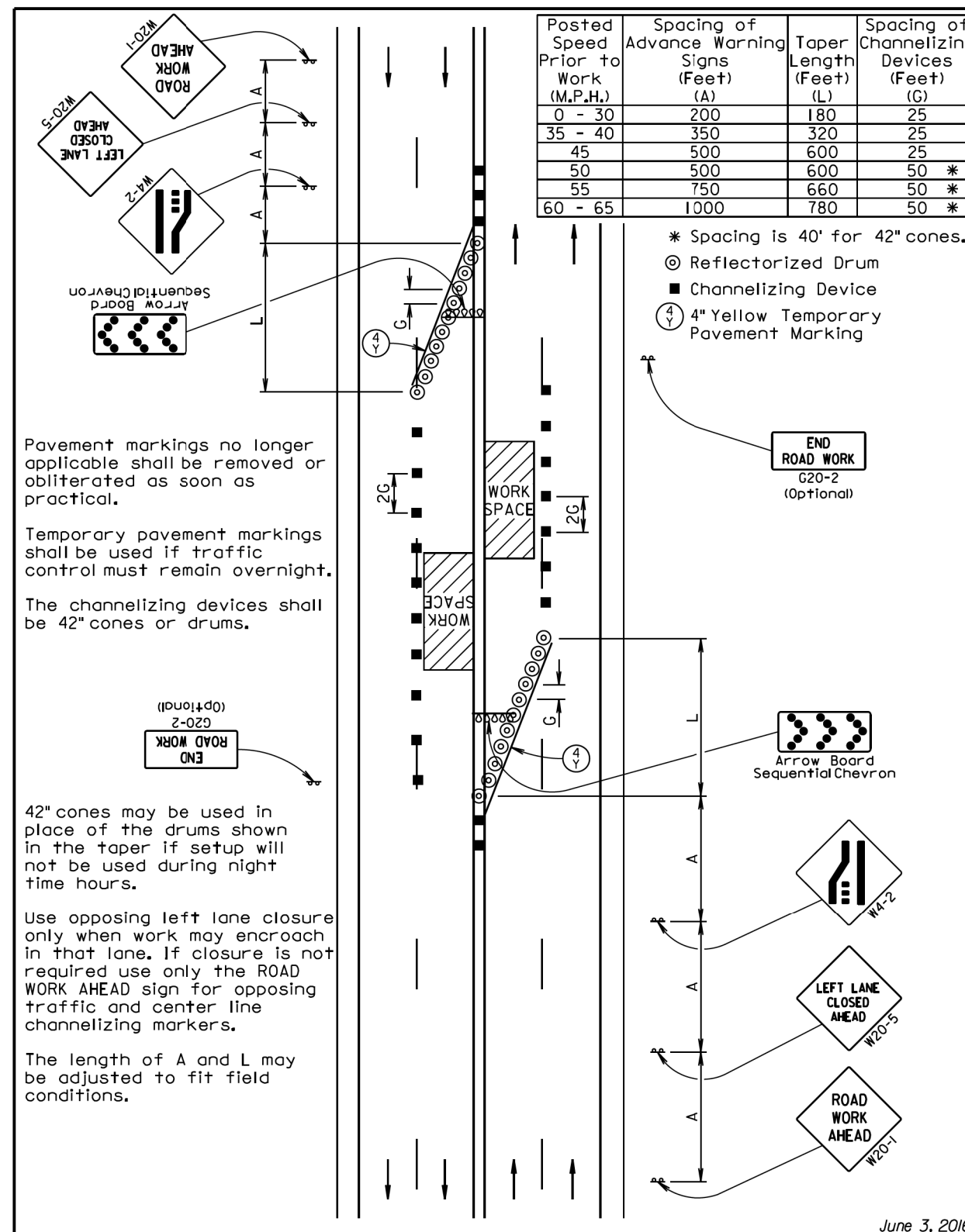
SDDOT

WORK ZONE SPEED REDUCTION FOR INTERSTATE AND HIGH SPEED MULTI-LANE HIGHWAYS

Published Date: 1st Qtr. 2018

PLATE NUMBER
634.63

Sheet 2 of 2



June 3, 2016

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GUIDES FOR TRAFFIC CONTROL DEVICES

4-LANE UNDIVIDED, LEFT LANE CLOSED

Published Date: 1st Qtr. 2018

PLATE NUMBER
634.48

Sheet 1 of 1

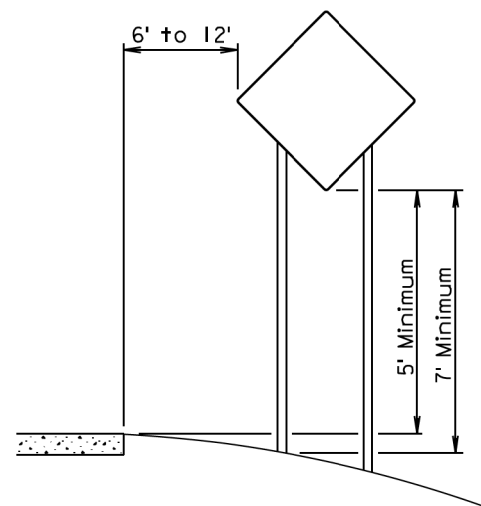
Plot Scale - 1:200

TRRC-1610

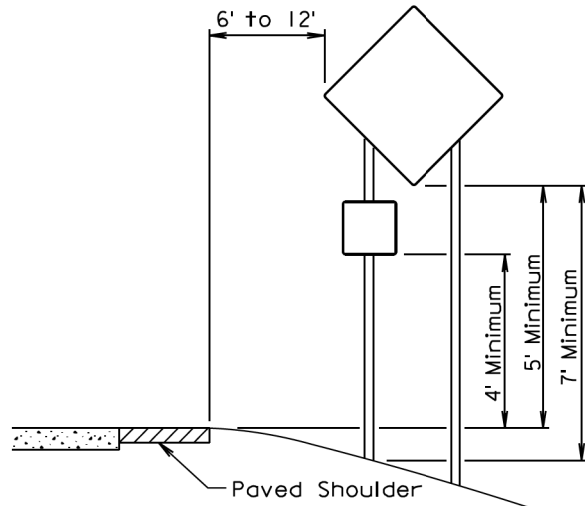
- Plotted From -

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-492, 079N-492, 385-491 & 385-492	20	21

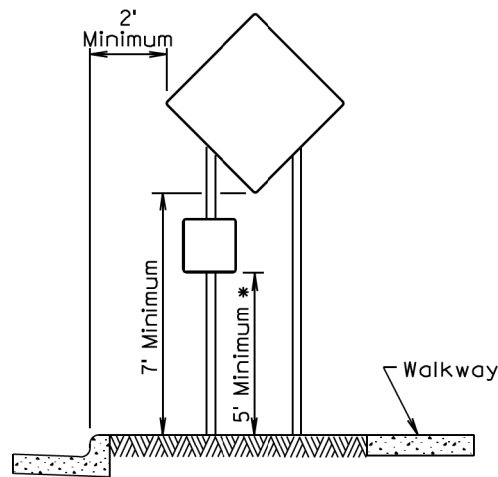
Plotting Date: 04/16/2018



RURAL DISTRICT

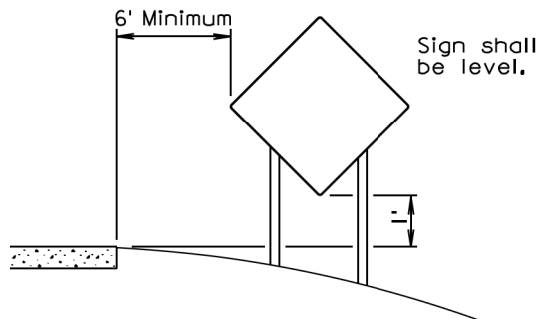


RURAL DISTRICT WITH
SUPPLEMENTAL PLATE



URBAN DISTRICT

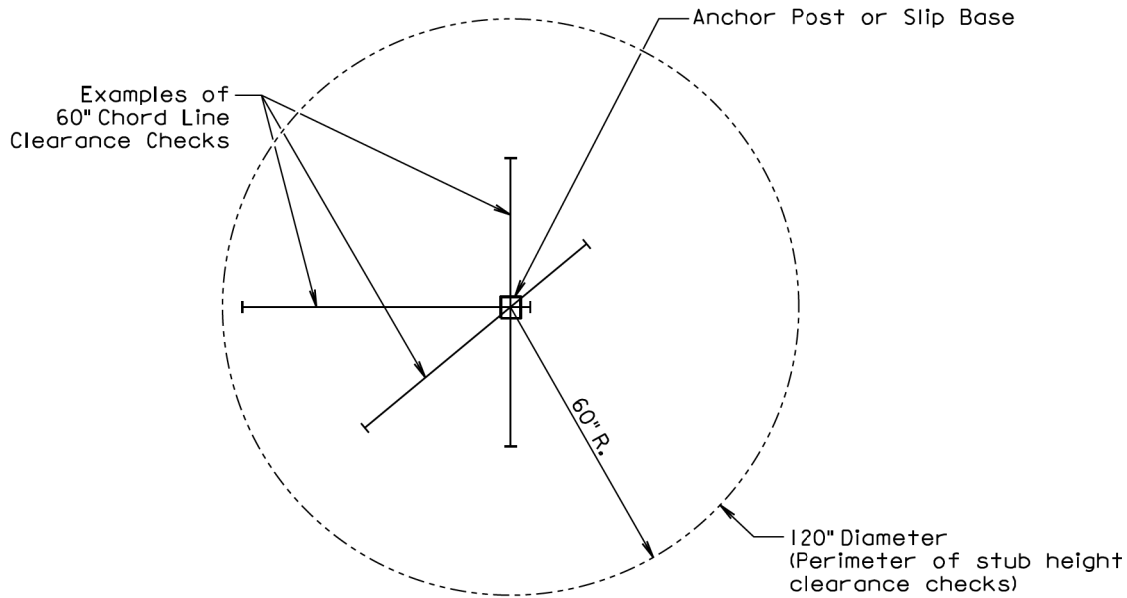
* If the bottom of supplemental plate is mounted lower than 7 feet above a pedestrian walkway, the supplemental plate should not project more than 4" into the pedestrian facility.



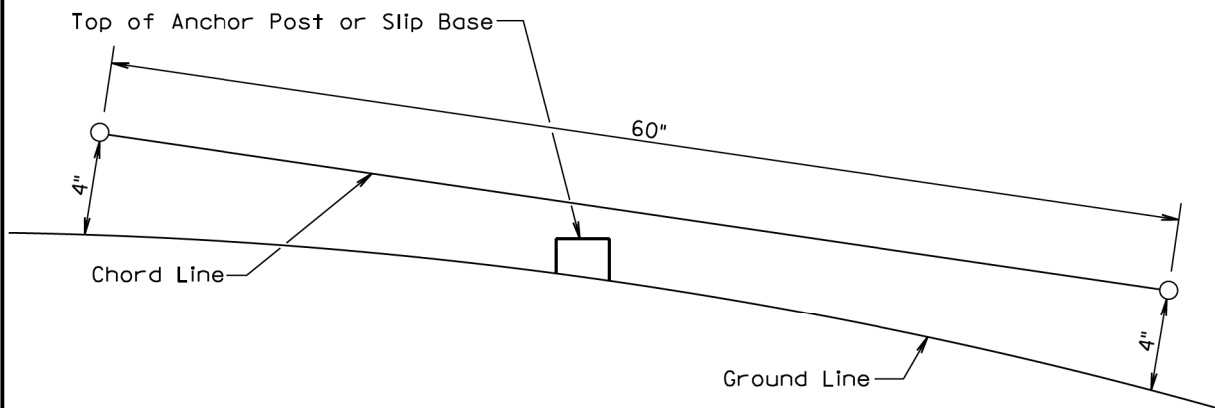
RURAL DISTRICT
3 DAY MAXIMUM
(Not applicable to regulatory signs)

September 22, 2014

Published Date: 1st 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.

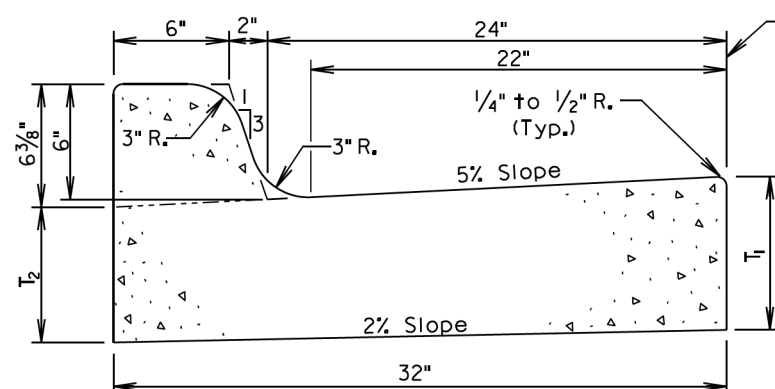
July 1, 2005

Published Date: 1st Qtr. 2018	S D D O T	BREAKAWAY SUPPORT STUB CLEARANCE	PLATE NUMBER 634.99
			Sheet 1 of 1

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEET
	018-492, 079N-492, 385-491 & 385-492	21	21

Plotting Date: 04/16/2018



—The stated radii on the plans and cross sections refer to this line and it shall also be the basis for horizontal linear foot measurement and payment.

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 ⁷ / ₁₆	0.057	17.7
B67	7	6 ¹ / ₁₆	0.065	15.4
B68	8	7 ¹ / ₁₆	0.073	13.7
B68.5	8.5	7 ⁹ / ₁₆	0.077	13.0
B69	9	8 ¹ / ₁₆	0.081	12.3
B69.5	9.5	8 ⁹ / ₁₆	0.085	11.7
B610	10	9 ¹ / ₁₆	0.090	11.2
B610.5	10.5	9 ⁹ / ₁₆	0.094	10.7
B611	11	10 ¹ / ₁₆	0.098	10.2
B611.5	11.5	10 ⁹ / ₁₆	0.102	9.8
B612	12	11 ¹ / ₁₆	0.106	9.4

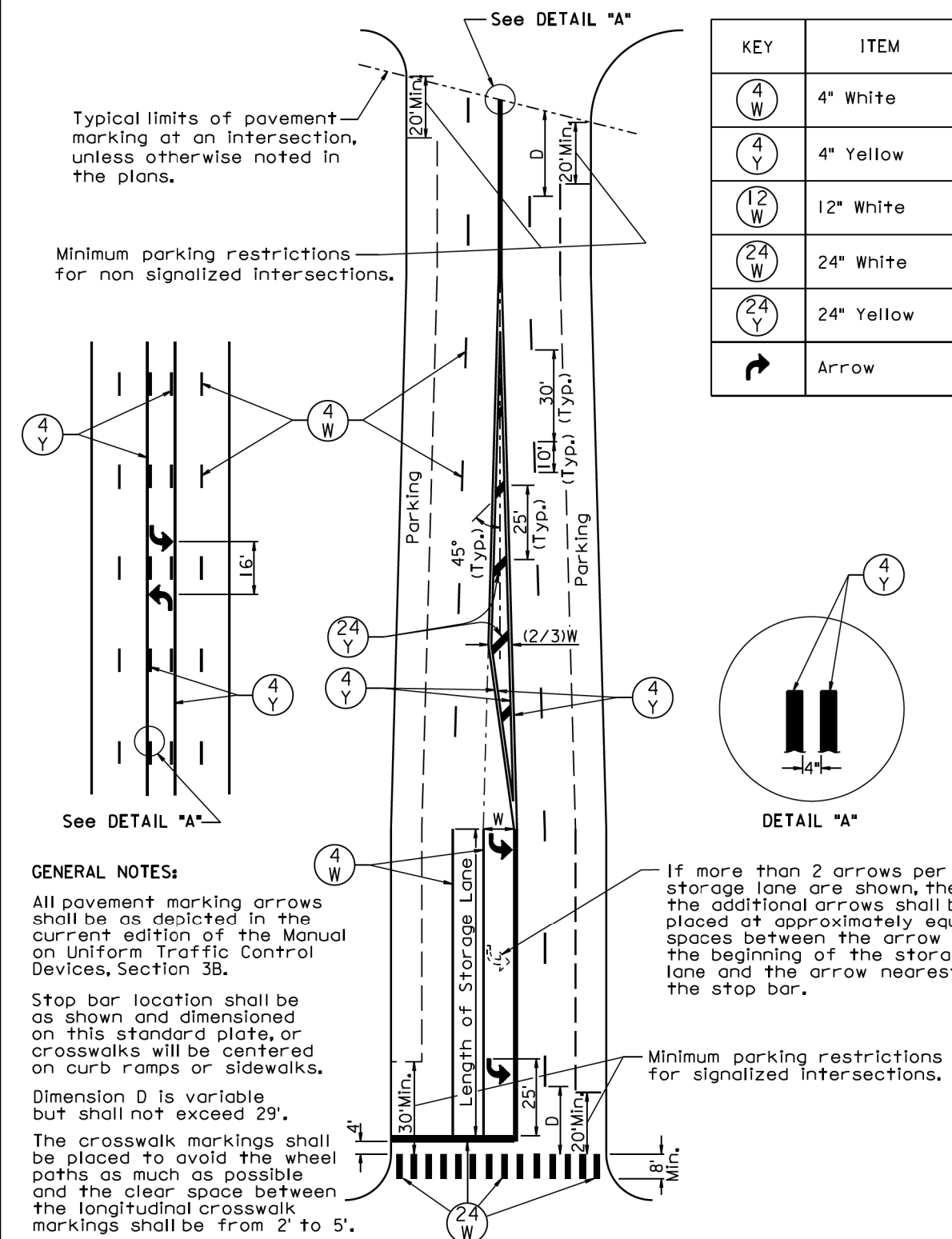
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

See Standard Plate 650.90 for expansion and contraction joints in the curb and gutter.

September 6, 2008

Published Date: 1st Qtr. 2018	S D D O T	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
			Sheet 1 of 1



GENERAL NOTES:

All pavement marking arrows shall be as depicted in the current edition of the Manual on Uniform Traffic Control Devices, Section 3B.

Stop bar location shall be as shown and dimensioned on this standard plate, or crosswalks will be centered on curb ramps or sidewalks.

Dimension D is variable
but shall not exceed 29'.

The crosswalk markings shall be placed to avoid the wheel paths as much as possible and the clear space between the longitudinal crosswalk markings shall be from 2' to 5'

— If more than 2 arrows per storage lane are shown, then the additional arrows shall be placed at approximately equal spaces between the arrow at the beginning of the storage lane and the arrow nearest the stop bar.

- Minimum parking restrictions for signalized intersections.

September 14, 2011

Published Date: 1st Qtr. 2018	S D D O T	PAVEMENT MARKINGS FOR ADJACENT INTERSECTIONS AND CENTER TURN LANE	September 14, 2018
			PLATE NUMBER 633.01 Sheet 1 of 1