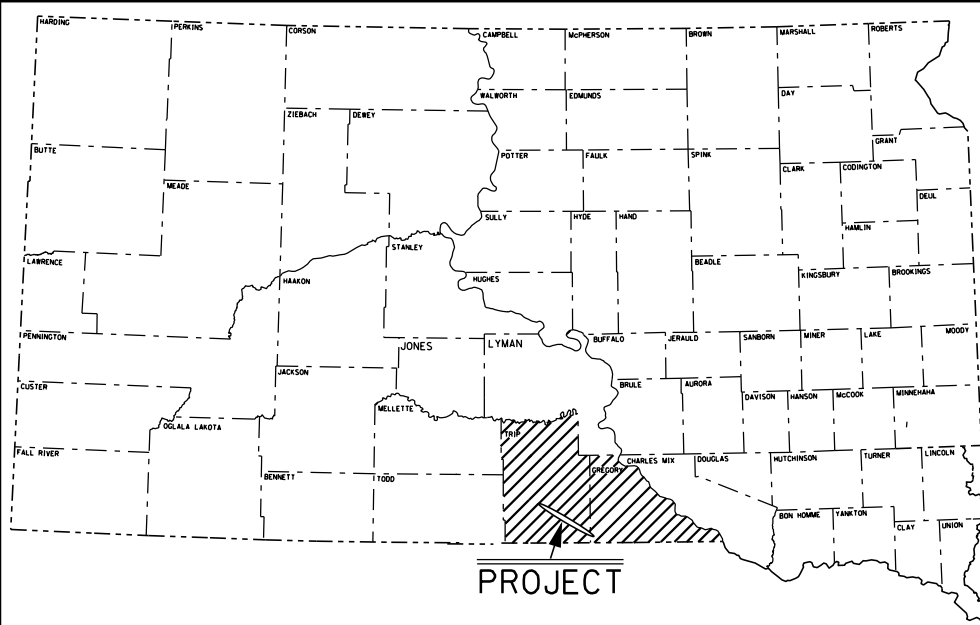


PLOT SCALE - 1:25516.3

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STATE OF SOUTH DAKOTA  
DEPARTMENT OF TRANSPORTATION

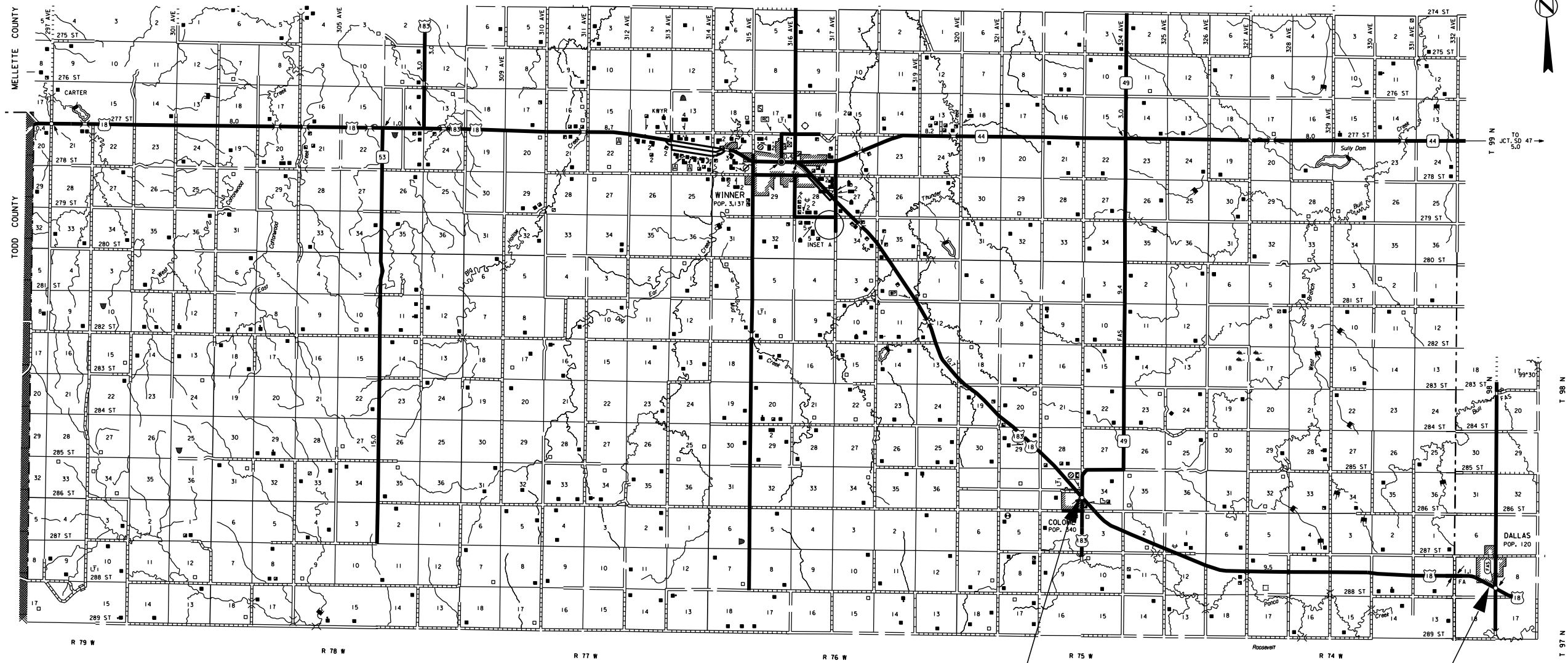
PLANS FOR PROPOSED  
**PROJECT 018-392**  
**TRIPP & GREGORY COUNTIES**  
Full Depth Concrete Repair  
PCN 16P0

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-392	1	16

Plotting Date: 03/14/2022

INDEX OF SHEETS

Sheet No.1	Title Sheet
Sheet Nos.2-6	Estimate of Quantities Environmental Commitments Plan Notes & Sign Tabulation
Sheet No.7	FullDepth Repair Table
Sheet Nos.8-11	Joint Details
Sheet Nos.12-16	Standard Plates



DESIGN DESIGNATION

US 18

ADT (2021)	1197
ADT (2041)	1624
DHV	191.0
D	50%
T DHV	5.6%
T ADT	12.2%
V	65 MPH

GROSS LENGTH 54,542.4 FEET 10.330 MILES

BEGIN PROJECT  
MRM 263.34 + 0.000

END PROJECT  
MRM 273.71 + 0.000

STORM WATER PERMIT  
NO PERMIT REQUIRED

FILE - ... \WORKING\16P0 TITLE SHEET.DGN

**Estimate of Quantities**

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
* 009E0010	Mobilization	Lump Sum	LS
* 380E5030	Nonreinforced PCC Pavement Repair	319.9	SqYd
* 380E6000	Dowel Bar	140	Each
* 380E6110	Insert Steel Bar in PCC Pavement	293	Each
* 390E0100	Saw and Seal Joint	602	Ft
* 634E0110	Traffic Control Signs	288.0	SqFt
* 634E0120	Traffic Control, Miscellaneous	Lump Sum	LS
* 634E0275	Type 3 Barricade	4	Each
* 634E0600	4" Temporary Pavement Marking Tape Type I	15,264	Ft

\* - Denotes Non-Participating

**SPECIFICATIONS**

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

**ENVIRONMENTAL COMMITMENTS**

The SDDOT is committed to protecting the environment and uses Environmental Commitments as a communication tool for the Engineer and Contractor to ensure that attention is given to avoid, minimize, and/or mitigate an environmental impact. Environmental commitments to various agencies and the public have been made to secure approval of this project. An agency with permitting authority can delay a project if identified environmental impacts have not been adequately addressed. Unless otherwise designated, the Contractor's primary contact regarding matters associated with these commitments will be the Project Engineer. During construction, the Project Engineer will verify that the Contractor has met Environmental Commitment requirements. These environmental commitments are not subject to change without prior written approval from the SDDOT Environmental Office.

Additional guidance on SDDOT's Environmental Commitments can be accessed through the Environmental Procedures Manual found at: <https://dot.sd.gov/media/documents/EnvironmentalProceduresManual.pdf>

For questions regarding change orders in the field that may have an effect on an Environmental Commitment, the Project Engineer will contact the Environmental Engineer at 605-773-3180 or 605-773-4336 to determine whether an environmental analysis and/or resource agency coordination is necessary.

Once construction is complete, the Project Engineer will review all environmental commitments for the project and document their completion.

**COMMITMENT 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 B4: BALD EAGLE**

Bald eagles are known to occur in this area.

**Action Taken/Required:**

If a nest is observed within one mile of the project site, notify the Project Engineer immediately so that he/she can consult with the Environmental Office for an appropriate course of action.

**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.

## ENVIRONMENTAL COMMITMENTS - CONTINUED

### 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) 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 Agriculture and Natural Resources.

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

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

1. Construction and/or demolition debris consisting of concrete, asphalt concrete, or other similar materials will be buried in a trench separate from wood debris. The final cover over the construction and/or demolition debris will consist of a minimum of 1 foot of soil capable of supporting vegetation. Waste disposal sites provided outside of the Public ROW will be seeded in accordance with Natural Resources Conservation Service recommendations. The seeding recommendations may be obtained through the appropriate County NRCS Office. The Contractor will control the access to waste disposal sites not within the Public ROW with fences, gates, and placement of a sign or signs at the entrance to the site stating, "No Dumping Allowed".
2. Concrete and asphalt concrete debris may be stockpiled within view of the ROW for a period not to exceed the duration of the project. Prior to project completion, the waste will 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 Historic 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 in which the site is clearly outlined, site dimensions, project number, and PCN. If applicable, provide evidence that the site has been previously disturbed by farming, mining, or construction activities with a landowner statement that artifacts have not been found on the site.

The Contractor will submit the cultural resources survey report to SDDOT Environmental Office, 700 East Broadway Avenue, Pierre, SD 57501-2586. SDDOT will submit the information to the appropriate SHPO/THPO. Allow **30 Days** from the date this information is submitted to the Environmental Engineer for SHPO/THPO review.

In the event of an inadvertent discovery of human remains, funerary objects, or if evidence of cultural resources is identified during project construction activities, then such activities within 100 feet of the inadvertent discovery will immediately cease and the Project Engineer will be immediately notified. The Project Engineer will contact the SDDOT Environmental Office, who will contact the appropriate SHPO/THPO within 48 hours of the discovery to determine an appropriate course of action.

The Contractor is responsible for obtaining any additional permits and clearances for Contractor furnished material sources, material processing sites, stockpile sites, storage areas, plant sites, and waste areas that affect wetlands, threatened and endangered species, or waterways. The Contractor will not utilize a site known or suspected of having contaminated soil or water. The Contractor will provide the required permits and clearances to the Project Engineer at the preconstruction meeting.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	018-392	4	16

### **SEQUENCE OF OPERATIONS**

The Contractor shall submit a proposed sequence of operations for the Engineer's review and approval at least two weeks prior to the preconstruction meeting.

The Contractor shall plan their work to allow passage of normal traffic up to sixteen feet in width and traffic shall be maintained through the project at all times.

Once work that inconveniences traffic has commenced on a site, it shall be pursued in a near continuous, expeditious manner to its completion. Any work that restricts the motorist from driving the posted speed limit, reduces existing roadway width, or causes a potentially unsafe condition due to Contractor operations such as frequent movement of equipment or materials on or through the project, is considered to be an inconvenience to traffic.

Six separate Temporary Traffic Control Setups will be required to complete the work on the six sites within this Contract. The anticipated setups are detailed in the Table of PCC Pavement Repair on sheet 8 of the plans. The Contractor will be allowed to work on up to two separate sites simultaneously and only two setups will be paid for as part of this Contract. Traffic Control Signs may be required to be utilized more than once within this Contract to satisfy the requirement of six separate setups needed.

### **GENERAL MAINTENANCE OF TRAFFIC**

The Contractor may perform work on the roadway during daylight hours only, unless additional hours are approved by the Engineer.

All traffic control sign locations shall be set in the field by the Contractor and verified by the Engineer prior to installation.

Removing, relocating, covering, salvaging and resetting of existing traffic control devices, including delineation, shall be the responsibility of the Contractor. Cost for this work shall be incidental to the contract unit prices for the various items unless otherwise specified in the plans. Any delineators and signs damaged or lost shall be replaced by the Contractor at no cost to the State.

Indiscriminate driving and parking of vehicles within the right-of-way will not be permitted. Any damage to the vegetation, surfacing, embankment, delineators and existing signs resulting from such indiscriminate use shall be repaired and/or restored by the Contractor, at no expense to the State, and to the satisfaction of the Engineer.

The bottom of signs on portable or temporary supports shall not be less than seven feet above the pavement in urban areas and one foot above the ground in rural areas. Construction signing that remains in the same location for more than 3 days shall be mounted on fixed location supports, unless approved by the Engineer. If the duration is more than 3 days the signs shall meet the minimum mounting heights of 5 foot for rural areas and 7 foot for urban areas. Additional standard signs, as ordered by the Engineer, shall be available within 2 working days. Payment for additional signs will be paid using the contract unit price per square foot for Traffic Control Signs.

Channelizing devices in a series shall be of the same type. Channelizing drums shall be of a two part construction with breakaway bases. The Contractor may use 42" Grabber Cones for longitudinal delineation only. All tapers and lane transitions shall be accomplished utilizing drums.

Type III Barricades 8' wide shall mark both ends of the construction work area within each closure.

Traffic Control Signs, as shown in the Estimate of Quantities, are estimated based on a total of two traffic control setups for the contract. The Contractor's sequence of operation may require adjustments in quantities, either more or less. Payment will be made only for the maximum number of individual signs in use at any one time, actually ordered by the Engineer. Traffic Control signs may be required to be utilized more than once within this Contract to satisfy the requirement of six separate site setups needed. All costs associated with utilizing the same signs multiple times to complete the work within this Contract shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

### **TEMPORARY PAVEMENT MARKING**

After completion of applicable site work, Temporary Flexible Vertical Markers (Tabs) shall be installed as per Specifications to mark centerline and edge lines throughout the repair area. For informational purposes only, the estimated length of repair areas requiring temporary pavement marking tabs is 181 feet. Payment for placing the Temporary Flexible Vertical Markers (Tabs) shall be incidental to the contract lump sum price for "Traffic Control, Miscellaneous".

Approximately 144 feet of 4 inch white temporary pavement marking tape, type 1, (24" stop bar reduced to 4" equivalent) and 2,400 feet of 4 inch yellow temporary pavement marking tape, type 1, will be required per site. Temporary Flexible Vertical Markers (Tabs) may be used in lieu of the Temporary Pavement Marking Tape for the 2400' of 4" yellow at each site. The Contractor will be paid only once for tape/tab placement at each site. The Contractor is responsible for maintaining and cleaning the tape/tabs throughout the duration of the project and for removing all temporary pavement marking tape/tabs when it is no longer required. All costs for the installation, maintenance and removal of tape/tabs shall be paid for at the contract unit price per foot for "4" Temporary Pavement Marking Tape Type 1".

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	018-392	5	16

### **PERMANENT PAVEMENT MARKING**

No permanent pavement marking paint will be required.

### **RESTORATION OF GRAVEL CUSHION**

An inspection of the granular 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 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 at no additional cost to the State.

Cost for this work shall be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

### **NONREINFORCED PCC PAVEMENT REPAIR**

Locations, size (length or width) and type of concrete repair are subject to change in the field. The Engineer will determine location, size, and type of each concrete repair area at the time of construction. Payment shall be based on actual area replaced.

Existing concrete pavement shall be sawed full depth on all sides 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.

Saw cuts that extend beyond the repair area shall be minimized and filled with a non-shrinkage mortar mix at the Contractor's expense.

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 shall be at the original location. Any existing dowel bar assemblies shall be sawed off or removed.

At repair locations where the new working joint is not opposite the existing working joint, the Contractor shall place a 1/4" 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 in accordance with the details shown in these plans. Refer to Saw and Seal Joints notes.

New pavement thickness shall be 8.0" at all locations.

Concrete shall meet the requirements of Section 380, except as modified by the following notes:

The fine aggregate shall be screened over a one-inch square-opening screen just prior to introduction into the concrete paving mix if required by the Engineer.

The slump requirement shall be limited to 3" maximum after water reducer is added and the concrete shall contain 4.5% to 7.0% entrained air. The concrete mix shall contain a minimum of 50% coarse aggregate by weight. Coarse aggregate shall be crushed ledge rock, Size No. 1 unless an alternative gradation is approved by the Concrete Engineer. The concrete mix shall contain at least 650 lbs. of Type I or II cement or 600 lbs. of Type 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 shall submit a mix design and supporting documentation for approval at least 2 weeks prior to use.

The 28 day compressive strength acceptance shall be in accordance with Section 460.3 B except if the Contractor utilizes the option to core as specified in Section 460.3 B, all cost for the coring and compressive testing shall be borne by the Contractor and the Department will not reimburse the Contractor for coring and compressive testing.

The use of a water reducer at manufacturer's recommended dosage shall be required.

Concrete shall be cured with white pigmented curing compound (AASHTO M148, Type 2) 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° F or higher throughout the cure period. If the concrete temperature falls below 60° F, 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, a strength of 3,500 psi must be attained prior to opening to traffic.

Insulation blankets will be used to cover concrete at intersecting streets, driveways and areas designated by the Engineer to expedite the curing of the concrete. Concrete shall be covered with suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. Insulation blanket shall have an R-value of at least 0.5, as rated by the manufacturer. Insulation blanket shall be left in place, except for joint sawing operations, until the 3,500 psi is attained. Insulation blanket shall be overlapped on to the existing concrete by 4'. The initial contraction joint sawing shall be performed as soon as practical after placement to avoid random cracking. Covering repair areas with insulation blankets may be waived during periods of hot weather upon approval of the Engineer.

Cost for performing the aforementioned work including sawing, removal of existing pavement, furnishing and placing concrete, 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 shall be responsible for ordering the actual quantity of steel bars necessary to complete the work.

The Contractor shall insert the steel bars (1¼ inch x 18 inch epoxy coated plain round dowel bar for transverse contraction joints, No. 9 x 18” epoxy coated deformed tie bars for transverse construction joints, and No. 5 x 24” epoxy coated deformed tie bars for longitudinal joints) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

Plain round dowel bars shall be cut to the specified length by sawing and shall be free from burring or other deformations. Shearing shall not be permitted.

Epoxy coated plain round steel bars shall be installed on 12 inch centers in the transverse joint. The first steel bar shall be placed a minimum of 3 inches and a maximum of 6 inches from the outside edge of the slab.

Epoxy coated No. 9 deformed steel bars shall be inserted on 18 inch centers in the transverse joint. The first steel bar shall be placed a minimum of 3 inches and a maximum of 9 inches from the outside edge of the slab.

Epoxy coated No. 5 deformed steel bars shall be inserted on 30 inch centers in the longitudinal joint and shall be placed a minimum of 15 inches from the existing transverse contraction joint.

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

Cost for the epoxy resin adhesive, steel bars, drilling of holes, applying the adhesive, installing the steel bars into the drilled holes and all other items incidental to the installation of the steel bars shall be incidental to the contract unit price per each for Insert Steel Bar in PCC Pavement.

**SAW AND SEAL JOINTS**

All longitudinal and transverse joints at concrete repair areas shall be sawed and sealed.

Joints shall not be sealed unless they are thoroughly clean and dry. Cleaning shall be accomplished by sand blasting and other tools as necessary. Just prior to sealing, each joint shall be blown out using a jet of compressed air to remove all traces of dust.

Transverse contraction and construction joints shall be sealed with Low Modulus Silicone Sealant. Longitudinal joints at centerline may be sealed with either Low Modulus Silicone Sealant or Hot Poured Elastic Joint Sealer.

Cost for sawing and sealing of the longitudinal and transverse joints, including backer rod, shall be incidental to the contract unit price per foot for Saw and Seal Joint.

**ITEMIZED LIST FOR TRAFFIC CONTROL**

SIGN CODE	SIGN DESCRIPTION	CONVENTIONAL ROAD			
		NUMBER	SIGN SIZE	SQFT PER SIGN	SQFT
R1-1	STOP	4	30"	5.2	20.8
W1-4	REVERSE CURVE (L or R)	2	48" x 48"	16.0	32.0
W3-1	STOP AHEAD (symbol)	4	48" x 48"	16.0	64.0
W13-1P	ADVISORY SPEED (plaque)	4	30" x 30"	6.3	25.2
W20-1	ROAD WORK AHEAD	4	48" x 48"	16.0	64.0
W20-4	ONE LANE ROAD AHEAD	4	48" x 48"	16.0	64.0
G20-2	END ROAD WORK	4	36" x 18"	4.5	18.0
		<b>CONVENTIONAL ROAD</b>			
		<b>TRAFFIC CONTROL SIGNS</b>			<b>288.0</b>

**TYPE 3 BARRICADES**

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

**TABLE OF PCC PAVEMENT REPAIR**

Reference Point	Description	Repair Size		Nonreinforced PCC Pavement Repair (8.0") Sq Yd	Dowel Bar Each	Insert Steel Bar In PCC Pavement			Saw and Seal Joint Ft	Comments
		Length Ft	Width Ft			Each				
						#5	#9	1 1/4"		
268.95	WB Lane	43'	15'	71.7	45	18	20		118	<b>Set Up #1</b> -two tied joints East and West ends and 3 working joints with dowel bar baskets
268.95	WB Lane	12'	5'	6.7	5	4	3		22	Two tied joints and one working joint with dowel bar basket. NE corner of previous repair
269.36	EB Lane	36'	15'	60.0	30	14	10	15	96	<b>Set Up #2</b> – one tied joint West end, one working joint with drilled dowels East end and two working joints with dowel bar baskets
269.40	WB Lane	10'	15'	16.7	15	4	20		55	Two tied joints East and West ends and one working joint with dowel bar basket
269.41	EB & WB Lane	23'	30'	76.7	30	9	20	30	113	One tied joint West end, one working joint East end with drilled dowels and one working joint with dowel bar baskets. (Full Width)
269.43	WB Lane	25'	15'	41.7	15	9	10	15	70	One working joint West end with drilled dowels, on tied joint West end and one working joint with dowel bar basket
270.03	EB Lane	15'	9'	15.0		6		18	33	<b>Set Up #3</b> – Two working joints with drilled dowels East and West ends. Partial Panel to the outside edge of slab
270.90	WB Lane	7'	6'	4.7		6	4	6	26	<b>Set Up #4</b> – One tied joint West end, one working joint with drilled dowels East end. Partial Panel to Centerline
272.38	EB Lane	7' (6' at CL and 8' at edge)	15'	11.7		3	10	15	36	<b>Set Up #5</b> – One working joint West end with drilled dowels and one tied joint East end
273.68	WB Lane	15'	9'	15.0		6		18	33	<b>Set Up #6</b> – Two working joints on East and West ends. Partial Panel to the outside edge.
				319.9	140	79	97	117	602	

**Note: Quantities provided are for information only. Actual quantities to be determined on construction. Reference points above are not to be associated with MRM displacements.**

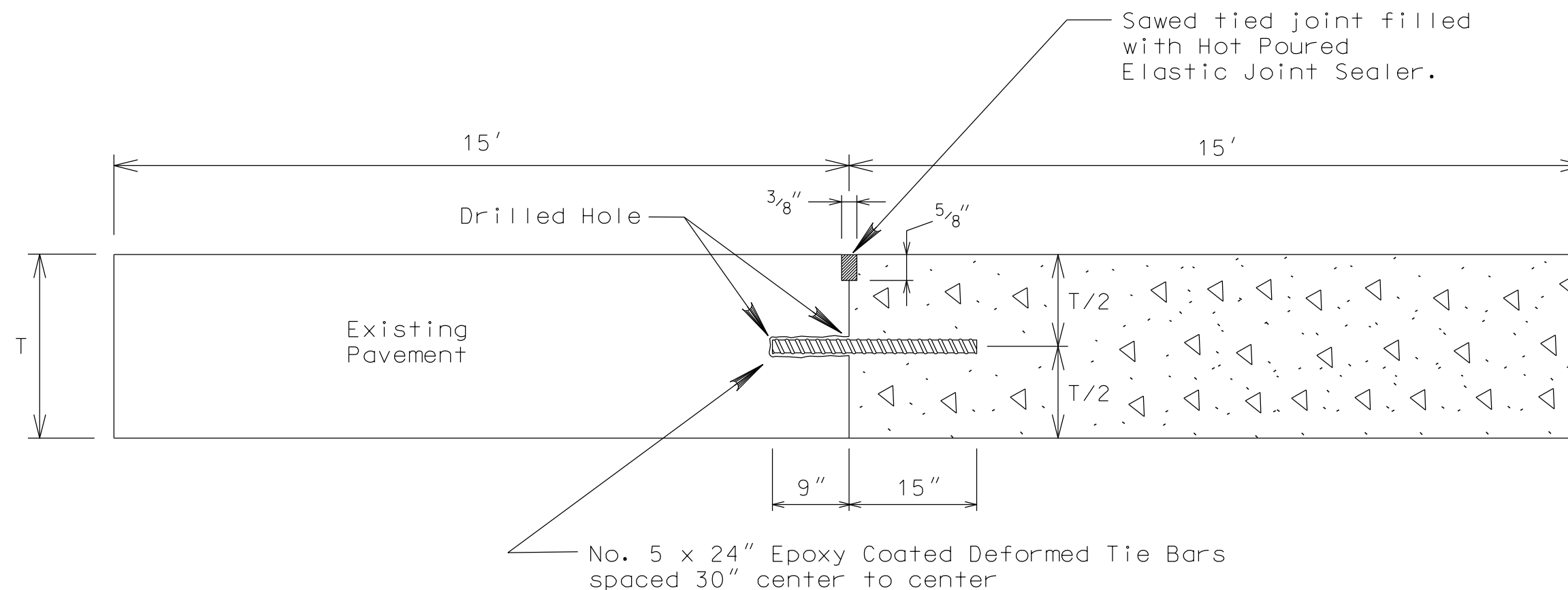


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-392	8	16

Plotting Date: 03/04/2022

# PCC PAVEMENT REPAIR, NONREINFORCED

## LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



T = New existing and new pavement thickness.

Bar embedded a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

Cost for furnishing and installing drilled in centerline tie bars shall be included in the contract unit price per each for Install Steel Bar in PCC Pavement.

PLOT SCALE - 1:6.4

PLOTTED FROM - IRWJINT29

PLOT NAME - 1

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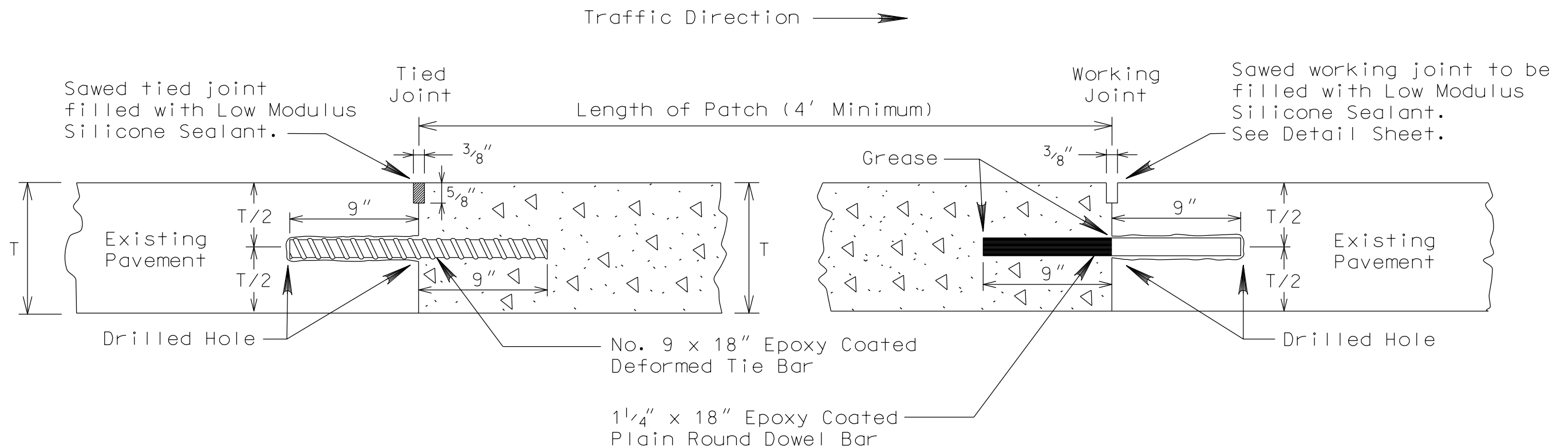


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-392	9	16

Plotting Date: 03/04/2022

# PCC PAVEMENT REPAIR, NONREINFORCED

## STEEL BAR INSTALLATION (ONE TIED JOINT AND ONE WORKING JOINT)



T = Existing and new pavement thickness.

Bar embedded to a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Cost for furnishing and installing steel bars (deformed tie and plain round dowel) shall be included in the contract unit price per each for Install Steel Bar in PCC Pavement.

PLOT SCALE - 1:6.4

PLOTTED FROM - IRWJINT29

PLOT NAME - 1

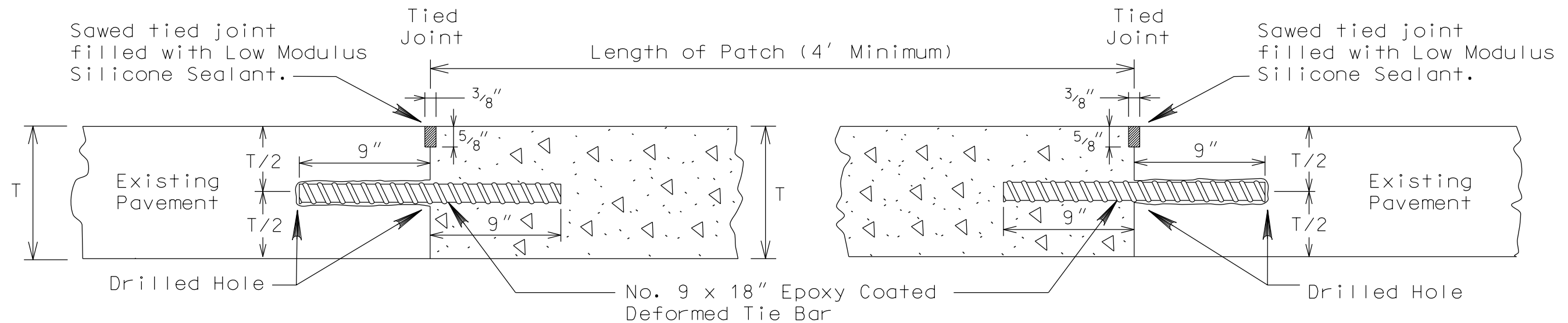
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-392	10	16

Plotting Date: 03/04/2022

# PCC PAVEMENT REPAIR, NONREINFORCED

## DEFORMED TIE BAR INSTALLATION (TWO TIED JOINTS)



T = Existing and new pavement thickness.

Bar embedded to a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

Cost for furnishing and installing epoxy coated deformed tie bars shall be included in the contract unit price per each for Install Steel Bar in PCC Pavement.

PLOT SCALE - 1:6.4

PLOT NAME - 1

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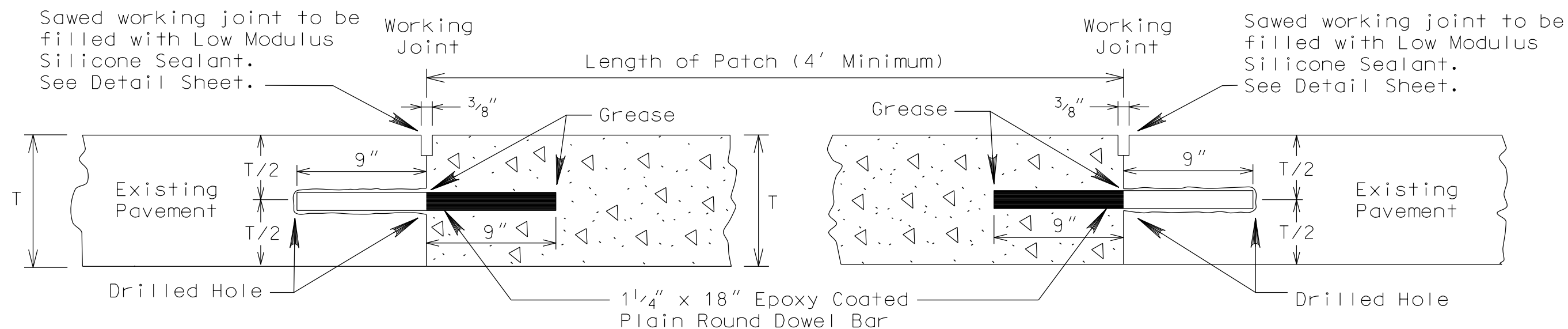
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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	018-392	11	16

Plotting Date: 03/04/2022

# PCC PAVEMENT REPAIR, NONREINFORCED

## PLAIN ROUND DOWEL BAR INSTALLATION (TWO WORKING JOINTS)



T = Existing and new pavement thickness.

Bar embedded to a minimum depth of 9 inches into the existing pavement by utilizing an epoxy resin adhesive.

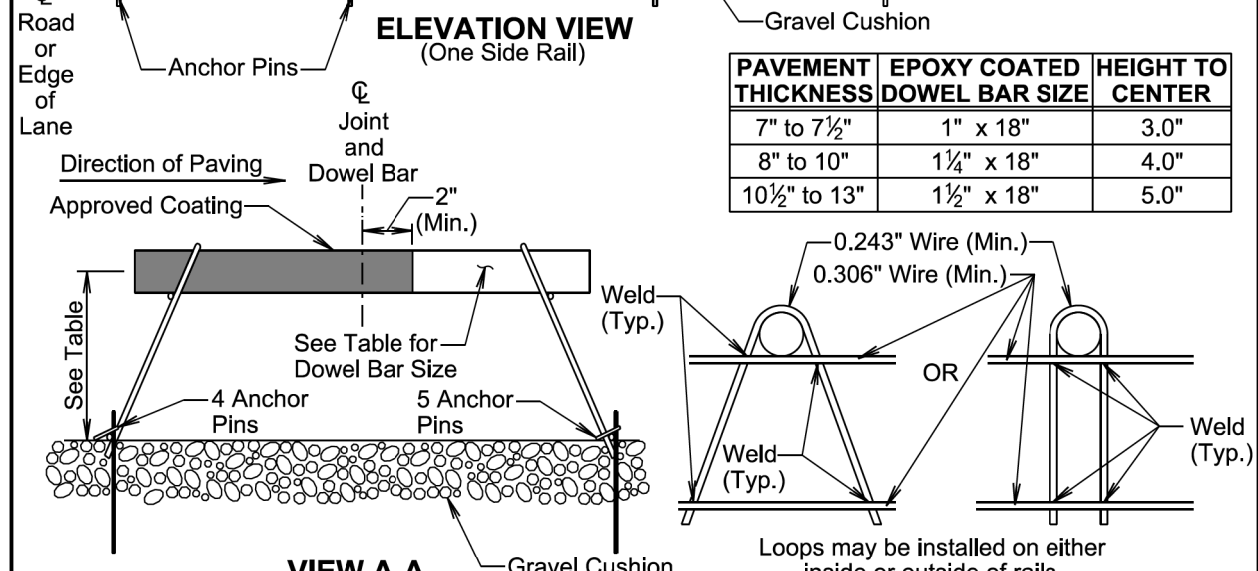
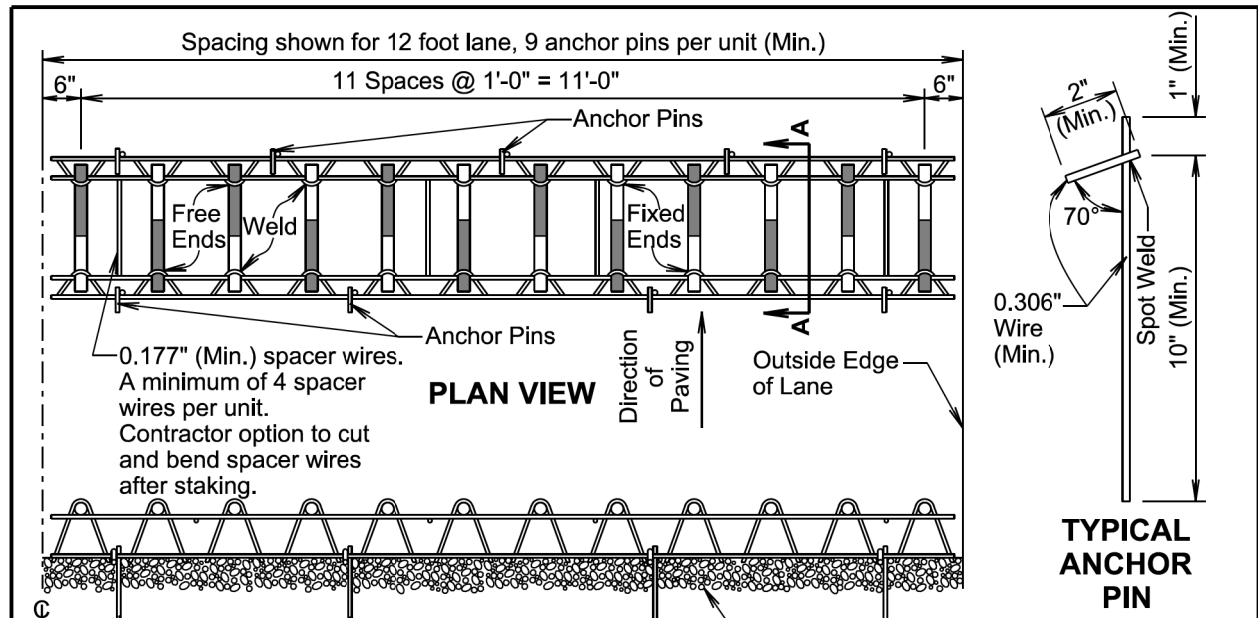
Cost for furnishing and installing epoxy coated plain round dowel bars shall be included in the contract unit price per each for Install Steel Bar in PCC Pavement.

PLOT SCALE - 1:6.4

PLOTTED FROM - IRWJINT29

PLOT NAME - 1

FILE - ... \WORKING\TWORKING.DGN



PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"

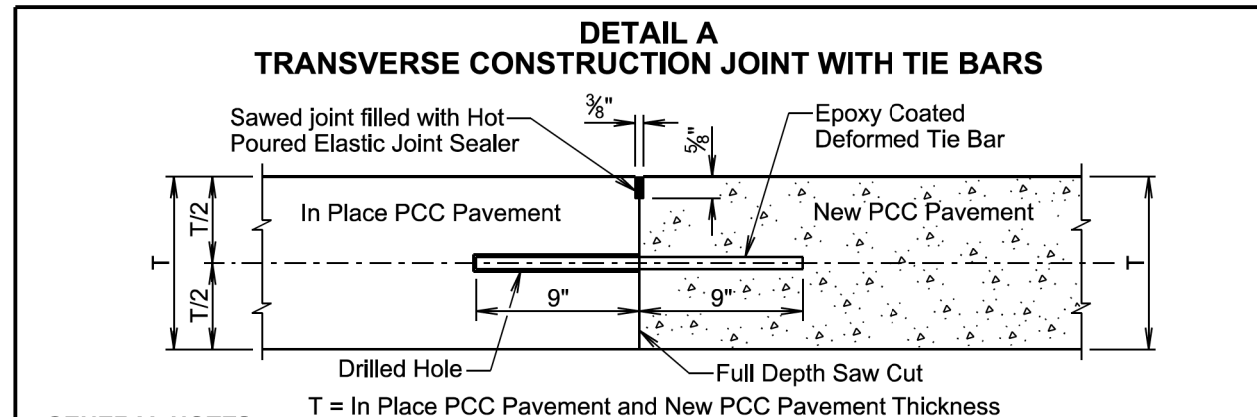
**GENERAL NOTES:**

- Longitudinal joint tie bars will be placed a minimum of 15 inches from the transverse contraction joint.
- Centerline of individual dowel bars will be parallel to top of subgrade  $\pm 1/8$  inch in 18 inches and to all other dowel bars in the assembly  $\pm 1/16$  inch in 18 inches.
- Centerline of individual dowel bars will be parallel to the centerline of the roadway  $\pm 1/2$  inch in 18 inches.
- The transverse contraction joints will be sawed perpendicular to the centerline of the roadway and the dowel bars will be centered on the sawed joint  $\pm 1$  inch.
- Supporting devices as shown on this sheet, or equivalent as approved by the Engineer, will be used to maintain proper horizontal and vertical alignment of the dowel bars.

June 26, 2019

<b>S D D O T</b>	<b>PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS</b>	PLATE NUMBER 380.01
	<b>12 Bar Assembly on Granular Base Material</b>	Sheet 1 of 1

Published Date: 1st Qtr. 2022



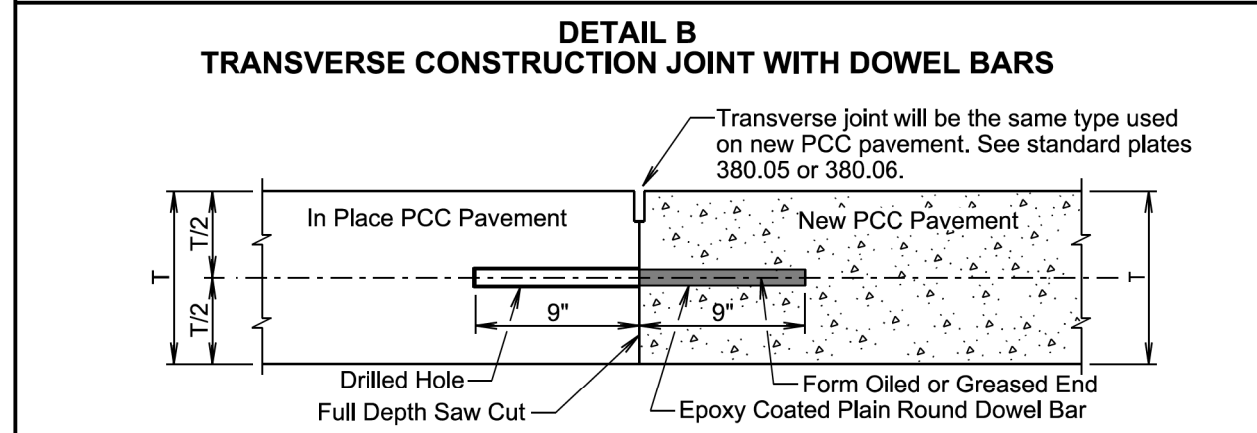
**GENERAL NOTES:**

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 will be used.

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



**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 will be used.

The plain round dowel bars will 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 will 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 will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

June 26, 2019

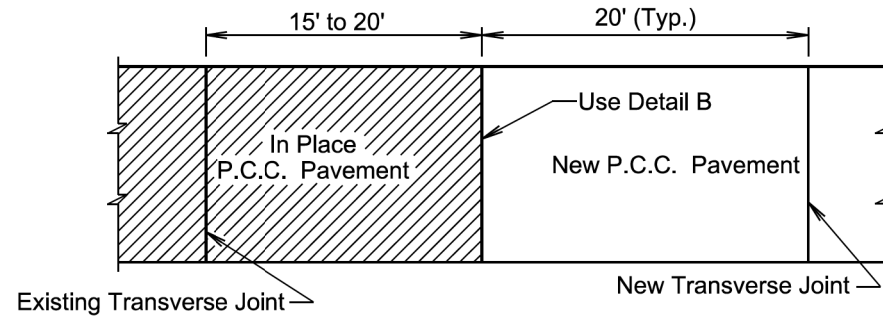
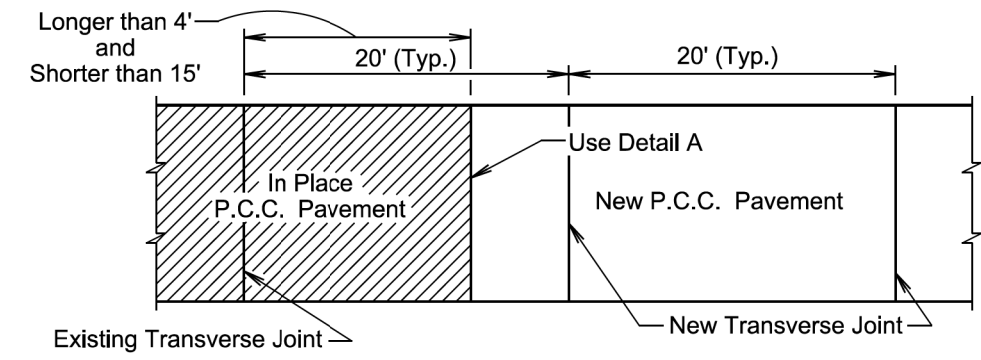
<b>S D D O T</b>	<b>PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS</b>	PLATE NUMBER 380.08
	<b>Published Date: 1st Qtr. 2022</b>	Sheet 1 of 2

Plot Scale - 1:200

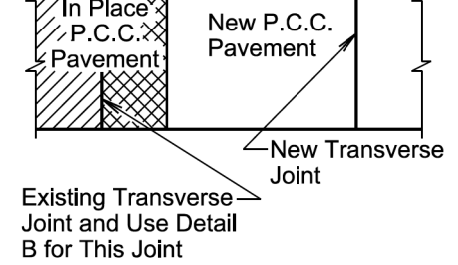
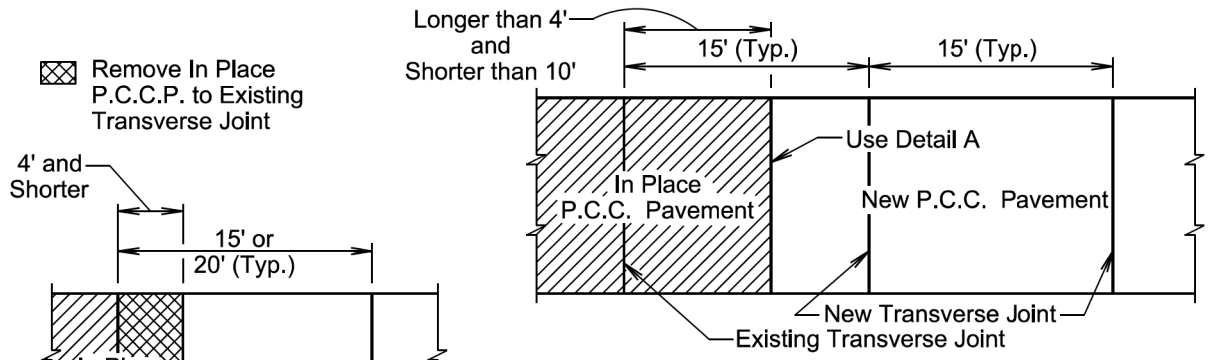
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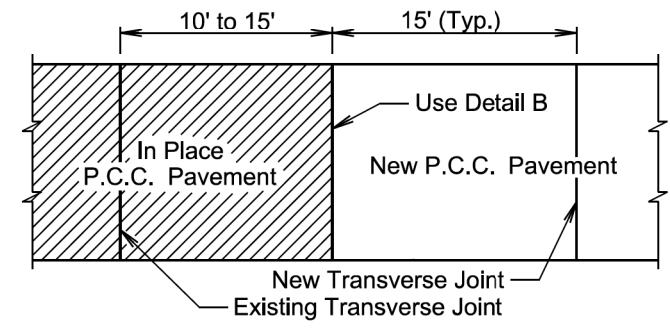
Plot Scale - 1:200



**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)

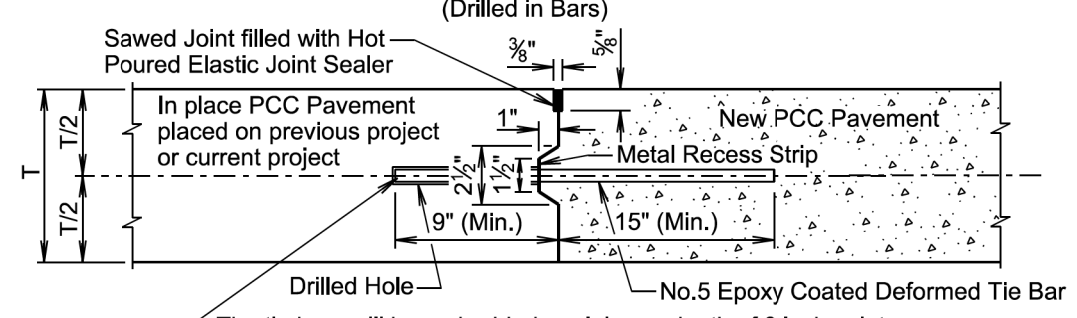


**PLAN VIEW**  
(For typical transverse joint spacing of 15' on the current project)

June 26, 2019

S D D O T  Published Date: 1st Qtr. 2022	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
		Sheet 2 of 2

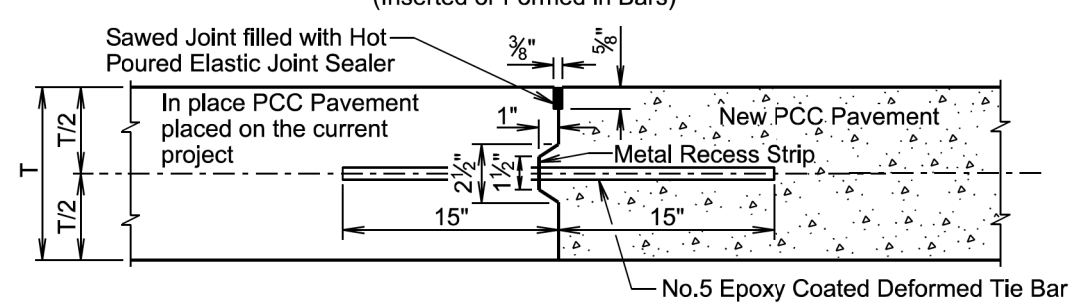
**LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS**  
(Drilled in Bars)



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

T = Pavement Thickness

**LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS**  
(Inserted or Formed in Bars)



**GENERAL NOTES** (For the details above):

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

Transverse Contraction Joint Spacing	Number of Tie Bars
5' to 7'	2
7.5' to 10'	3
10.5' to 14'	4
14.5' to 18'	5
18.5' to 22'	6

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 will be placed a minimum of 15 inches from transverse contraction joints.

The required number of tie bars as shown in the table will be uniformly spaced within each panel. The uniformly spaced tie bars will be spaced a maximum of 48 inches center to center for a female keyway and will be spaced a maximum of 30 inches center to center for a vertical face and male keyway. The maximum tie bar spacing will 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 will be used. When concrete pavement is slip formed, a metal recess strip is not required.

June 26, 2019

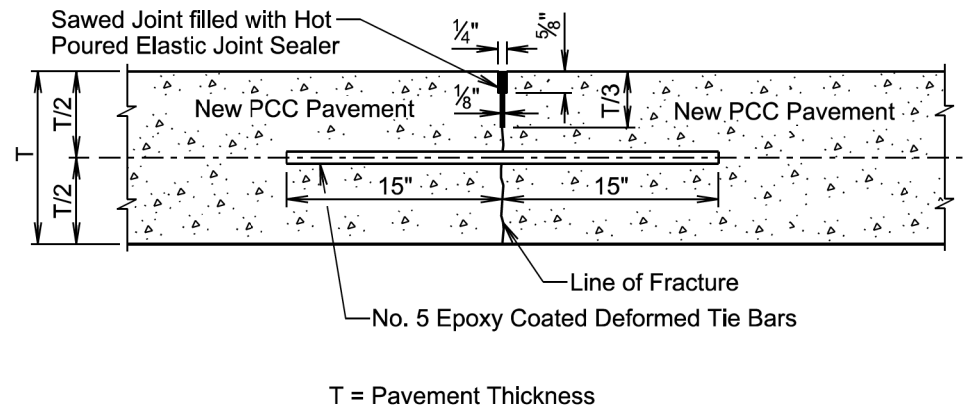
S D D O T  Published Date: 1st Qtr. 2022	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
		Sheet 1 of 2

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### SAWED LONGITUDINAL JOINT WITH TIE BARS

(Poured Monolithically)



T = Pavement Thickness

**GENERAL NOTES** (For the detail above):

The epoxy coated deformed tie bars will be spaced in accordance with the following table:

<b>TIE BAR SPACING 48" MAXIMUM</b>	
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

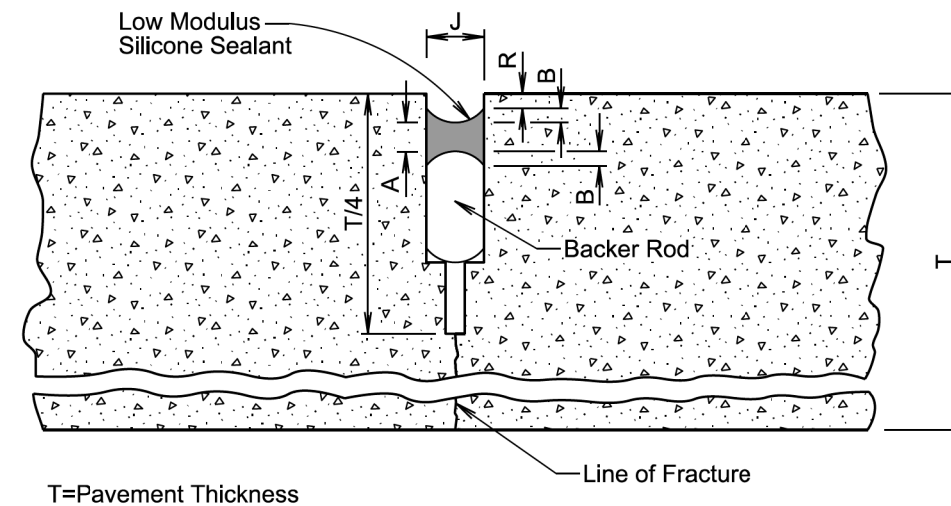
The tie bars will be placed a minimum of 15 inches from the transverse contraction joints.

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

The first saw cut to control cracking will 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.

June 26, 2019

<b>Published Date: 1st Qtr. 2022</b>	<b>S D D O T</b>	<b>PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS</b>	PLATE NUMBER <b>380.10</b>
		Sheet 2 of 2	



T = Pavement Thickness

**LOW MODULUS SILICONE SEALANT ALLOWABLE CONSTRUCTION TOLERANCES**

J=3/8"				
A (Min.) (in.)	A (Max.) (in.)	B (Min.) (in.)	B (Max.) (in.)	R (in.)
3/16	5/16	1/8	1/4	1/4
J=1/2"				
A (Min.) (in.)	A (Max.) (in.)	B (Min.) (in.)	B (Max.) (in.)	R (in.)
3/16	3/8	1/8	1/4	1/4
J=5/8"				
A (Min.) (in.)	A (Max.) (in.)	B (Min.) (in.)	B (Max.) (in.)	R (in.)
1/4	7/16	1/8	5/16	1/4
J=3/4"				
A (Min.) (in.)	A (Max.) (in.)	B (Min.) (in.)	B (Max.) (in.)	R (in.)
5/16	1/2	3/16	3/8	5/16
J=1"				
A (Min.) (in.)	A (Max.) (in.)	B (Min.) (in.)	B (Max.) (in.)	R (in.)
3/8	5/8	3/16	1/2	5/16

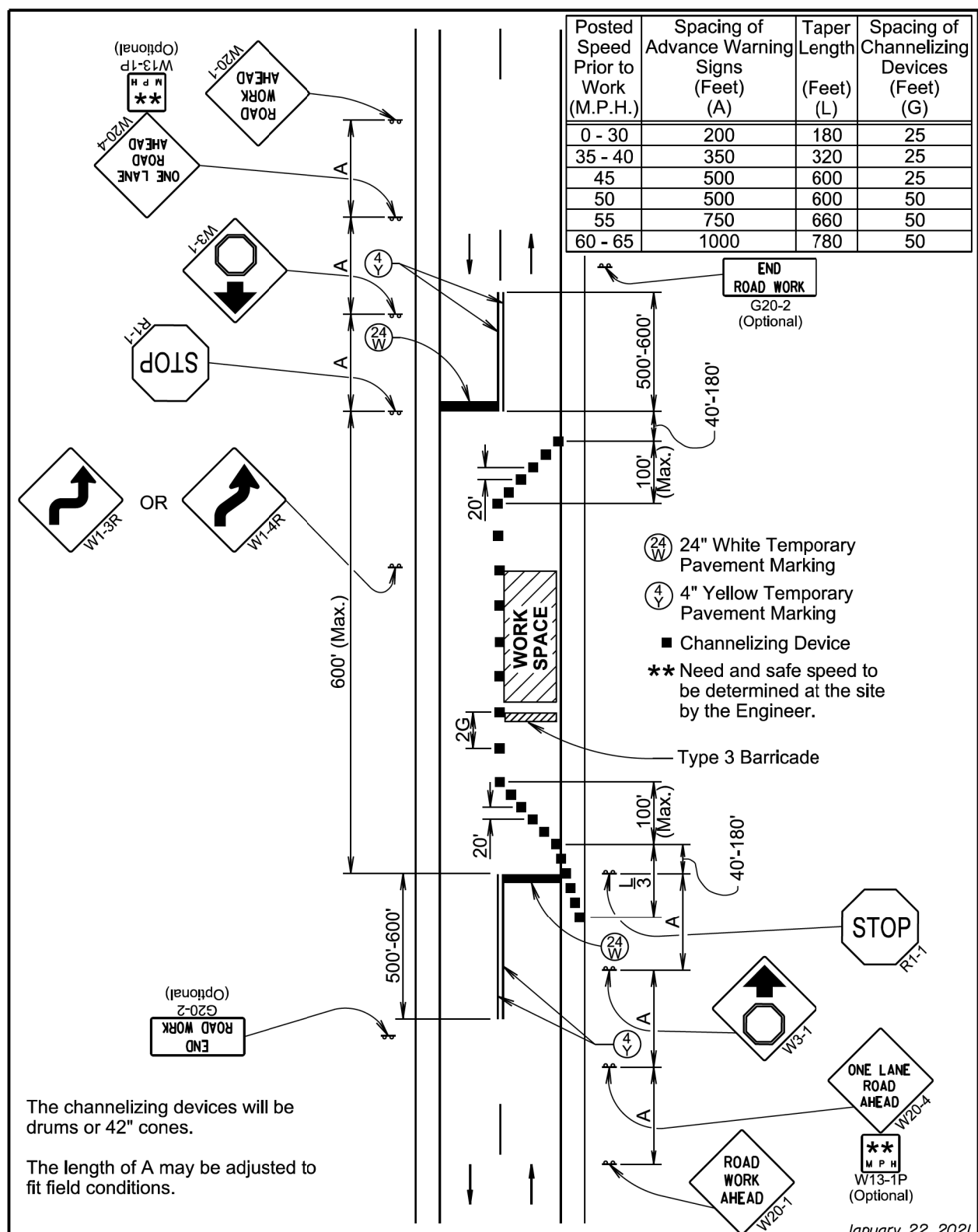
**GENERAL NOTE:**

The backer rod will be a nonmoisture absorbing resilient material approximately 25% larger in diameter than the width of the joint to be sealed.

June 26, 2019

<b>Published Date: 1st Qtr. 2022</b>	<b>S D D O T</b>	<b>RESEAL PCC PAVEMENT JOINT (SILICONE)</b>	PLATE NUMBER <b>380.13</b>
		Sheet 1 of 1	

Plot Scale - 1:200

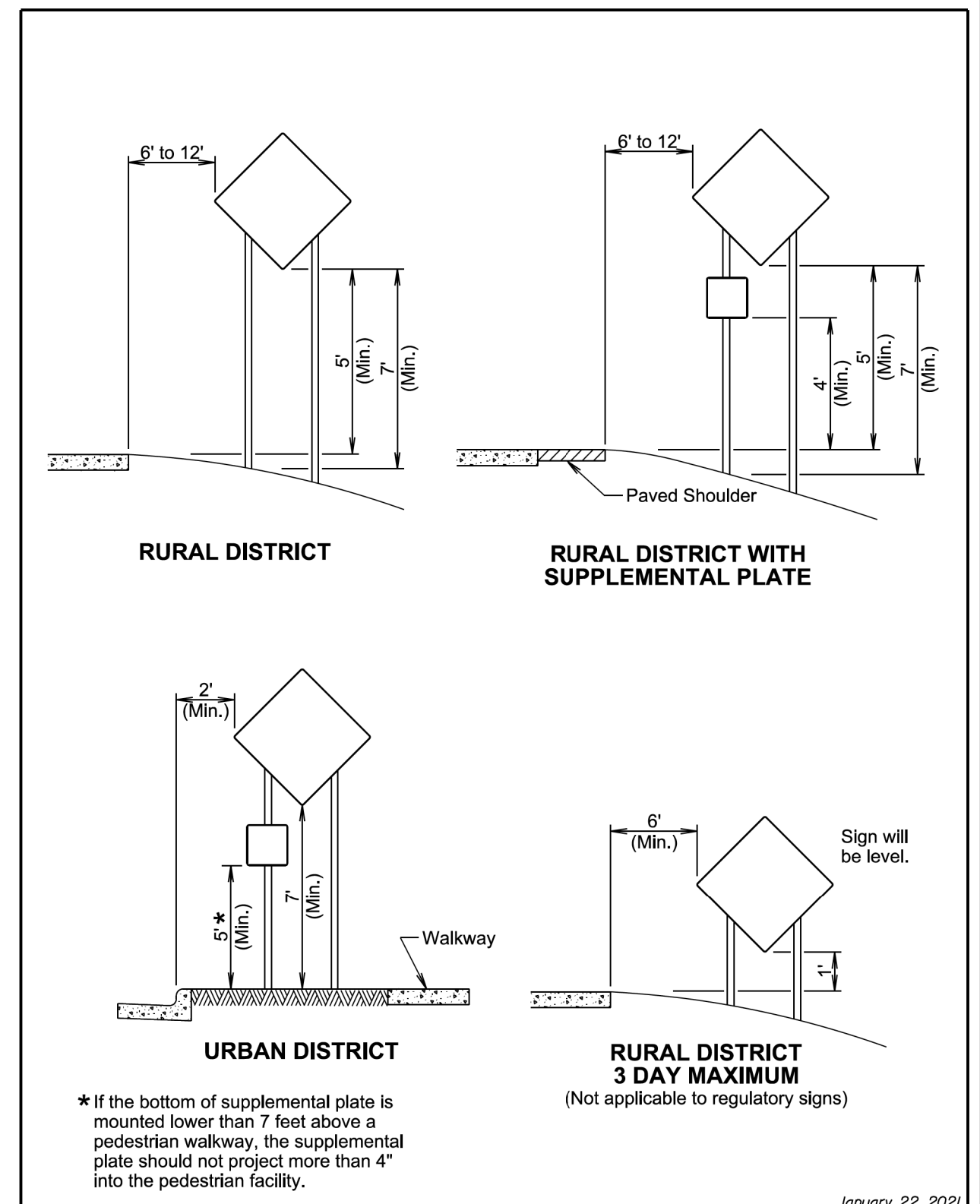


The channelizing devices will be drums or 42" cones.

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

January 22, 2021

<b>S D D O T</b>	<b>LANE CLOSURE USING STOP SIGNS</b>	PLATE NUMBER <b>634.25</b>
	<i>Published Date: 1st Qtr. 2022</i>	Sheet 1 of 1



January 22, 2021

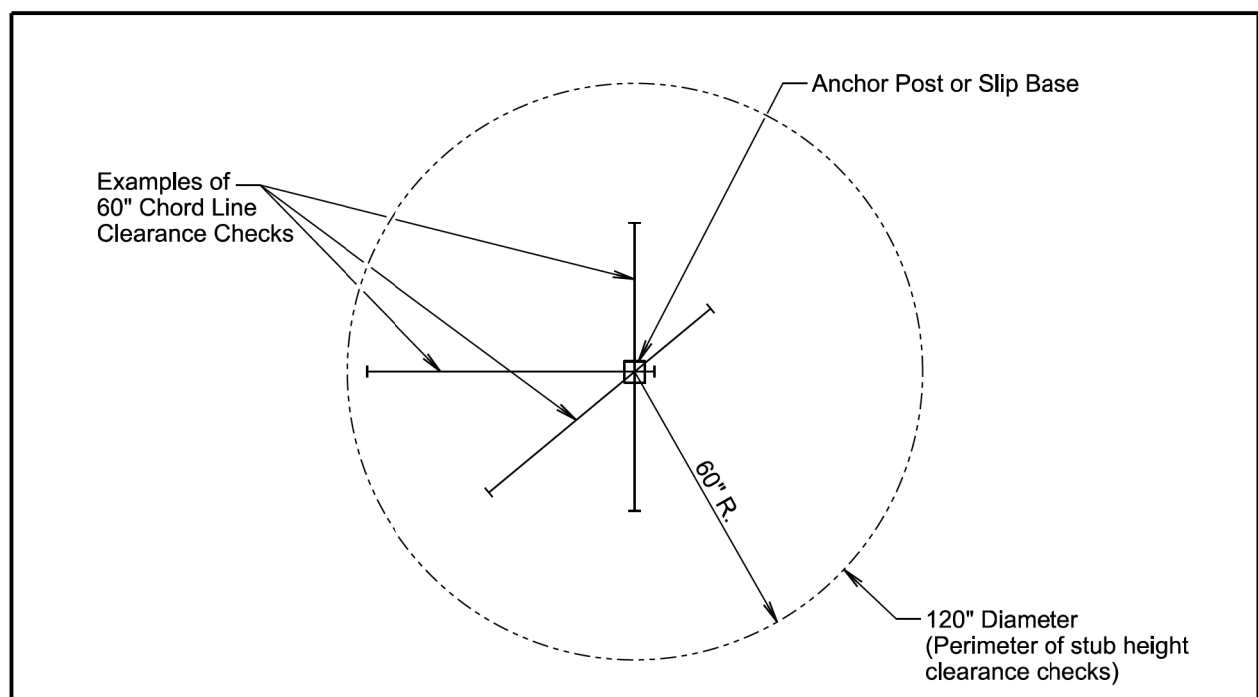
<b>S D D O T</b>	<b>CRASHWORTHY SIGN SUPPORTS (Typical Construction Signing)</b>	PLATE NUMBER <b>634.85</b>
	<i>Published Date: 1st Qtr. 2022</i>	Sheet 1 of 1

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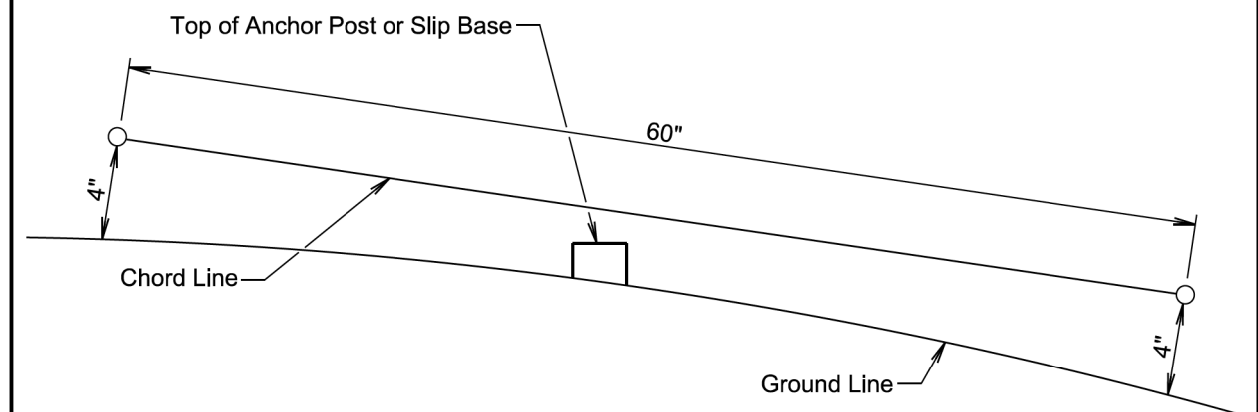
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**PLAN VIEW**  
(Examples of stub height clearance checks)



**ELEVATION VIEW**

**GENERAL NOTES:**

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

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

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

January 22, 2021

<b>S D D O T</b>	<b>BREAKAWAY SUPPORT STUB CLEARANCE</b>	PLATE NUMBER <b>634.99</b>
		Sheet 1 of 1

*Published Date: 1st Qtr. 2022*

- Plotted From - TRW11NT29

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