

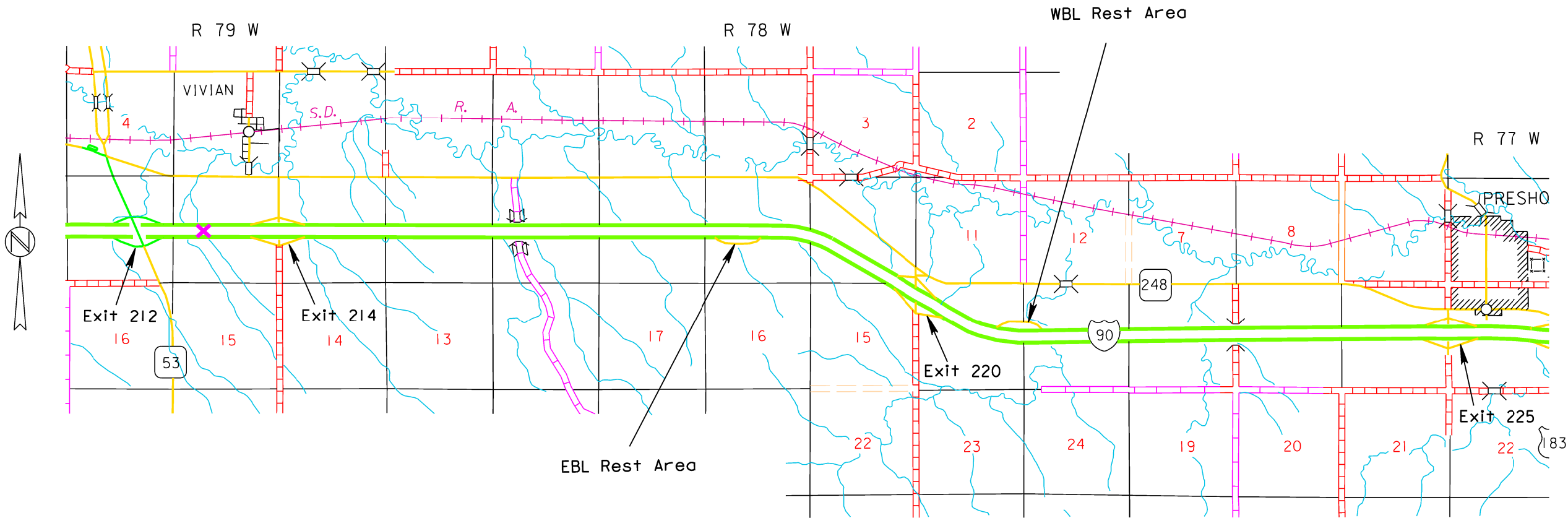
SECTION F: SURFACING PLANS

STATE OF SOUTH DAKOTA	PROJECT IM 0905(115)218	SHEET F1	TOTAL SHEETS F24
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Plotting Date: 03/09/2021

INDEX OF SHEETS

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PLOT SCALE - 1"=7920'

PLOTTED FROM - TRPR25289

FILE - ...\\WORKING\\0515 TITLE.DGN

PLOT NAME - 1

SECTION F – ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E0720	Extra Work, Utilities	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	656	Ft
110E1140	Remove Concrete Sidewalk	426.7	SqYd
380E3540	8" PCC Approach Pavement	81.6	SqYd
380E5030	Nonreinforced PCC Pavement Repair	696.4	SqYd
380E6000	Dowel Bar	669	Each
380E6110	Insert Steel Bar in PCC Pavement	1,359	Each
380E6302	Reseal PCC Pavement Joint - Hot Pour	300	Ft
380E6310	Seal Random Cracks in PCC Pavement	300	Ft
600E0200	Type II Field Laboratory	1	Each
650E0090	Type B69 Concrete Curb and Gutter	656	Ft
651E0060	6" Concrete Sidewalk	3,840	SqFt
651E7000	Type 1 Detectable Warnings	28	SqFt
734E0010	Erosion Control	Lump Sum	LS

TYPE II FIELD LABORATORY

The lab will be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection will be provided with a multi-port wireless router. The internet connection will be a minimum speed of 5 Mbps unless limited by job location and approved by the DOT. Prior to installing the wireless router, the Contractor will submit the wireless router’s technical data to the Area Office to check for compatibility with the state’s computer equipment. The internet connection is intended for state personnel usage only. The Contractor’s personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer. These items will be incidental to the contract unit price per each for “Type II Field Laboratory”.

UTILITIES

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

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25; the Contractor will contact the Project Engineer to determine if project changes are necessary to avoid utility impacts.

EXTRA WORK, UTILITIES

The Existing Dump Stations at Sta. 435+40.86 R, along with the Non-Potable Water at Sta. 435+35.52 R and Fresh Water at Sta. 434+82.83 R will be removed and capped. The Contractor will inspect the site prior to the bid letting in order to determine the material and labor necessary to complete the work. All costs involved in capping the dump station will be incidental to the contract lump sum price for “Extra Work, Utilities”.

Station	L/R	Remarks
435+40.86	R	Dump Station
435+35.52	R	Non-Potable Water Spigot
434+82.83	R	Fresh Water Spigot

SCOPE OF PAVEMENT RESTORATION WORK AT THE REST AREA

The pavement restoration portion of this project at the Vivian Rest Area consists of full depth replacement of nonreinforced Concrete Pavement (NRCP), Spall Repair, Sealing Random Cracks and Curb & Gutter Repair in areas where concrete pavement blowups or major failures have occurred.

CONTRACTOR ON SITE STORAGE

The Contractor will be allowed a storage zone in the NW corner of the EB rest area parking lot. The storage area is to be fenced off with orange snow fence and grabber cones. The storage area size and exact location will be approved by the Engineer.

EXISTING NRC PAVEMENT

The existing pavement is 9” NRC Pavement.

Existing contraction joints vary but are generally spaced at approximately 12’. Longitudinal joints have keyways, some of which are reinforced with No. 4 x 30” deformed tie bars spaced 48” center to center.

RESTORATION OF GRAVEL CUSHION

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

If additional gravel cushion material is required, the Contractor will furnish, place and compact gravel cushion to the satisfaction of the Engineer at no additional cost to the State.

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

NONREINFORCED PCC PAVEMENT REPAIR – GENERAL

New pavement thickness will equal existing pavement thickness (TN = T).

Locations and size (length or width) of concrete repair areas are subject to change in the field, at the discretion of the Engineer, at no additional cost to the state. Payment will be based on actual area replaced.

Existing concrete pavement will be sawed full depth at the beginning and end of the NRCP repair areas. When either the beginning or end of a NRCP repair area falls close to an existing joint or crack, the NRCP repair area will be extended to eliminate the existing joint or crack. For this project, new working joints will remain in the same location as existing working joints.

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

Existing concrete pavement in the replacement areas will be removed by the lift out method or by means that minimize damage to the base and sides of

remaining in place concrete. Removed material will be removed from within the right-of-way by the end of the workday. Damage to adjacent concrete caused by the Contractor’s operations will be removed and replaced at the Contractor’s expense.

The initial contraction joint sawing will be performed as soon as practical after placement to avoid random cracking.

Joints (longitudinal and transverse) through and around the repair areas will be sawed and sealed in accordance with the details shown in these plans. Refer to Saw and Seal Joints notes.

NONREINFORCED PCC PAVEMENT REPAIR

Concrete will meet the requirements stated in Section 380 of the specifications.

A strength of 3,500 psi must be attained prior to opening traffic.

Cost for performing the aforementioned work including sawing and removing concrete, furnishing and placing concrete, sawing and sealing joints, labor, tools and equipment will be included in the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

STEEL BAR INSERTION

The Contractor will insert the Steel Bars (1 ¼ x 18” epoxy coated plain round dowel bars, No. 9 X 18 inch and No. 5 X 30 inch epoxy coated deformed tie bars) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

The steel bars will be cut to the specified length by sawing or shearing and will be free from burring or other deformations.

Epoxy coated plain round steel bars will be inserted on 18-inch centers in the transverse joint. The first steel bar will 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 will be inserted on 18-inch centers in the transverse joint. The first steel bar will 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 will be inserted on 30-inch centers in the longitudinal joint and will be placed a minimum of 15 inches from the existing transverse contraction joint.

SAW AND SEAL JOINTS

Longitudinal and transverse joints at concrete repair areas will be sawed and sealed.

Joint sealing will conform to Section 380.3 P.

Longitudinal and transverse joints will be sealed with Hot Pour Elastic Joint Sealer.

Cost for sawing and sealing of the longitudinal construction joint and both transverse joints will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

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RESEAL PCC PAVEMENT JOINT

Existing longitudinal and transverse joints will be cleaned and resealed for the full width of the joint with Hot Poured Elastic Joint Sealer.

Joints will not be sealed unless they are thoroughly clean and dry. Cleaning will be accomplished by sandblasting and other tools as necessary. Sand blasting of both sides of the vessel will be accomplished simultaneously with a mechanical device approved by the Engineer. Just prior to sealing, each joint will be blown out using a jet of compressed air to remove all traces of dust.

Final joint width is to be kept as narrow as possible and may only be widened to provide a clean surface. Each joint will not be widened more than 1/8 inch if sawing is utilized to prepare the joint for sealant. If sawing is used this may require 2 passes with the saw, one pass for each side of the joint.

In certain areas the transverse joint may be wider than the original construction. It may be necessary to provide backer rod in the wide areas. Any additional cost to perform this work will be at no additional cost to the State. The Contractor will be responsible to verify joint widths prior to establishing the contract unit price.

It is not essential that all of the sealant be removed. Remaining sealant adhering to the sides may remain in place if the Engineer determines that it is not detrimental to the joint.

Cost for cleaning and resealing longitudinal and transverse joints will be included in the contract unit price per foot for Reseal PCC Pavement Joint – Hot Pour.

SEALING RANDOM CRACKS AND MISCELLANEOUS REPAIR AREAS IN PCC PAVEMENT

Only those random cracks and miscellaneous repair areas in the existing concrete pavement with joints that are open and accept water and incompressible materials as selected by the Engineer shall be sealed with hot pour elastic joint sealant.

Miscellaneous repair areas will consist of small holes, spalled areas, corner cracks, etc. that require sealing and were not addressed in the concrete repair portion of the project.

Each random crack or miscellaneous repair area shall be initially cleaned by flushing with water or compressed air. Just prior to sealing, the sides of the crack shall be cleaned by sandblasting the reservoir blown clean with compressed air or flushed with water.

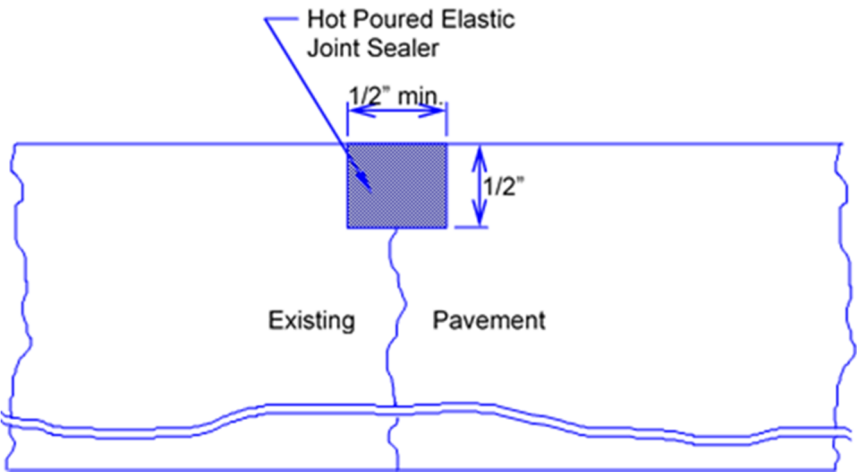
The hot poured elastic joint sealant shall be placed in the crack or miscellaneous repair area with equipment and by methods that insure complete

and uniform filling. Backer rod may be required to be used in wider random cracks.

The Contractor shall minimize the installation of excessive sealant in the cracks and miscellaneous repair areas. No over banding of the sealant is required. Excessive sealant will be removed by the Contractor at no expense to the Department and as directed by the Engineer.

The sealing of random cracks and miscellaneous repair areas will be measured to the nearest 0.1 foot of random cracks sealed and miscellaneous repair areas accepted on the project.

All costs for cleaning and sealing random cracks and miscellaneous repair area shall be incidental to the contract unit price per foot for SEAL RANDOM CRACKS IN PCC PAVEMENT.



CONCRETE CURB AND GUTTER

Areas to be replaced will be designated by the Engineer.

Existing concrete curb and gutter will be removed and replaced as detailed in these plans or as directed by the Engineer. If the end of any section to be removed does not fall on an existing joint, a sawed joint (3" to 4" deep) must be made to provide a vertical face with the new joint.

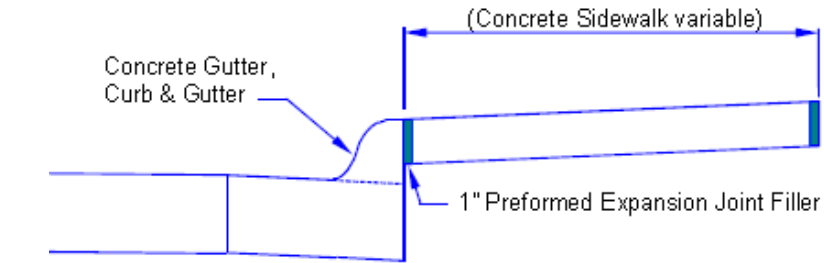
Existing foundation material will be shaped and compacted to a firm, uniform bearing surface, conforming to the existing section or established grades as set by the Engineer. Unsuitable foundation material will be removed and replaced as directed.

Cost for labor, equipment, material and incidentals required for excavation and providing cushion material will be incidental to the contract unit prices for the various items.

Curb and Gutter will be tied to existing PCC pavement with drilled in No. 5 x 24" epoxy coated deformed tie bars spaced 30" center to center or by salvaged in place tie bars. Also, two No. 5 x 24" epoxy coated deformed tie bar will be drilled into the existing curb and gutter at each end of the replacement area. Refer to the notes for STEEL BAR INSERTION.

Cost for this work will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

The Contractor will satisfactorily restore disturbed areas adjacent to the new concrete placement to the satisfaction of the Engineer. Cost for this restoration work will be incidental to the contract unit prices for the various items.



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TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

Station	to	Station	L/R	Quantity (Ft)
427+68.56		434+06.98	L	640.0
434+03.98		434+09.98	R	6.0
278+20		284+00	R	10.0
Total:				656.0

TABLE OF SIDEWALK REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
427+68.56		433+69.19	L	426.7
Total:				426.7

TABLE OF TYPE B69 CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
427+68.56		434+06.98	L	640.0
434+03.98		434+09.98	R	6.0
278+20		284+00	R	10.0
Total:				656.0

TYPE 1 DETECTABLE WARNINGS

Detectable warnings will be in compliance with the Americans with Disabilities Act regulations.

The detectable warnings will be installed according to the manufacturer's installation instructions.

A concrete thickness equal to the adjacent concrete sidewalk thickness and 2 inches of granular cushion material will be placed below the Type 1 Detectable Warnings. When concrete is placed below the detectable warnings then the concrete thickness will be transitioned at the rate of 1" per foot to match the adjacent concrete sidewalk thickness.

The detectable warnings will be a brick red color for application in concrete curb ramps. Cast iron plates may be a natural patina (weathered steel).

TYPE 1 DETECTABLE WARNINGS (Continued)

Type 1 Detectable Warning Panels will be one of the following products:

Type 1 Detectable Warnings	
Product	Manufacturer
Detectable Warning Plate Cast Iron Plate	Neenah Foundry Company Neenah, WI 800-558-5075 http://www.neenahfoundry.com/
Detectable Warning Plate Cast Iron Plate	Deeter Foundry Lincoln, NE 800-234-7466 http://www.deeter.com/
Detectable Warning Plate Cast Iron Plate(No Coating)	East Jordan Iron Works, Inc. 301 Spring Street East Jordan, MI 49727 800-626-4653 http://www.ejiw.com
Iron Dome Cast Iron Detectable Warning Tile	ADA Solutions, Inc. 323 Andover Street Suite 3 Wilmington, MA 01887 800-372-0519 https://adatile.com
TufTile (wet-set) Cast Iron Replaceable Tile	TufTile 1200 Flex Court Lake Zurich, IL 60047 888-960-8897 http://www.tuftile.com/
Pre-Manufactured Detectable Warning Paver Concrete Panel	M.R. Castings, Inc. PO Box 34232 Omaha, NE 68134 402-510-3279 http://mrcastings.com/
ADA Arcis Tactile Detectable Warning Tile Concrete Panel Reinforced with Stainless Steel Prestress Strands	Arcis Corporation 10680 NW 289 th Place PO Box 1250 North Plains, Oregon 97133 503-647-5042 http://www.arcis-corp.com/#/tactile/
CASTinTACT Concrete Panel Reinforced with Stainless Steel Prestress Strands	MASCO Mason Supply 6018 234 th St SE Woodinville, Washington 98072 425-487-6161 http://www.castintact.com

CASTinTACT 3 Concrete Panel Enhanced with Microsilica and Fiber Reinforced	MASCO Mason Supply 6018 234 th St SE Woodinville, Washington 98072 425-487-6161 http://www.castintact.com
TufTile (wet-set) Polymer Replaceable Tile	TufTile 1200 Flex Court Lake Zurich, IL 60047 888-960-8897 http://www.tuftile.com/
Alertcast Composite Replaceable Cast in Place	Cape Fear Systems, III, LLC 215 South Water Street, Suite 103 Wilmington, NC 28401 877-232-6287 http://www.alerttile.com/
Detectable Warning Tile Composite Replaceable Wet-Set	ADA Solutions, Inc. North Billerica, MA 01862 800-372-0519 http://www.adatile.com
Access Tile Composite Replaceable Cast in Place	Access Products Inc. 241 Main Street, Suite 100 Buffalo, NY 14203 888-679-4022 http://www.accesstile.com/
Armorcast Detectable Warning Tile Composite Replaceable Wet-Set	Armorcast Products Company 13230 Saticoy Street North Hollywood, CA 91605 818-982-3600 http://www.armorcastprod.com/

TABLE OF TYPE 1 DETECTABLE WARNINGS

Station	L/R	Quantity (SqFt)
431+62.37	30.25'L	28
Total:		28

TABLE OF 8" PCC APPROACH PAVEMENT

Station	L/R	Opening (Ft)	Quantity (SqYd)
434+40.91	L	18	81.6
Total:			81.6

TABLE OF 6" CONCRETE SIDEWALK

Station	to	Station	L/R	Quantity (SqFt)
427+68.56		433+69.19	L	3840
Total:				3840

EROSION CONTROL

The estimated area requiring erosion control is 720 square feet. All costs for the erosion control work for furnishing, placing, and maintaining erosion control including equipment, labor, seeding, and mulching will be incidental to the contract lump sum price for "Erosion Control".

The limits of erosion control work will be determined by the Engineer during construction.

Type C Permanent Seed Mixture will consist of the following:

Grass Species	Variety	Pure Live Seed (PLS) (Pounds/Acre)
Western Wheatgrass	Arriba, Flintlock, Rodan, Rosana, Walsh	16
Canada Wildrye	Mandan	2
Total:		18

1:200
Plot Scale -

Plotted From -
TRPR14419

LEGEND

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Anchor		Mailbox		Subsurface Utility Exploration Test Hole		State and National Line	
Antenna		Manhole Electric		Telephone Fiber Optics		County Line	
Approach		Manhole Gas		Telephone Junction Box		Section Line	
Assumed Corner		Manhole Miscellaneous		Telephone Pole		Quarter Line	
Azimuth Marker		Manhole Sanitary Sewer		Television Cable Jct Box		Sixteenth Line	
BBQ Grill/ Fireplace		Manhole Storm Sewer		Television Tower		Property Line	
Bearing Tree		Manhole Telephone		Test Wells/Bore Holes		Construction Line	
Bench Mark		Manhole Water		Traffic Sign Double Face		ROW Line	
Box Culvert		Merry-Go-Round		Traffic Sign One Post		New ROW Line	
Bridge		Microwave Radio Tower		Traffic Sign Two Post		Cut and Fill Limits	
Brush/Hedge		Miscellaneous Line		Traffic Signal		Control of Access	
Buildings		Miscellaneous Property Corner		Trash Barrel		New Control of Access	
Bulk Tank		Miscellaneous Post		Tree Belt		Proposed ROW	
Cattle Guard		Overhang Or Encroachment		Tree Coniferous		(After Property Disposal)	
Cemetery		Overhead Utility Line		Tree Deciduous			
Centerline		Parking Meter		Tree Stumps			
Cistern		Pedestrian Push Button Pole		Triangulation Station		Drainage Arrow	
Clothes Line		Pipe With End Section		Underground Electric Line			
Concrete Symbol		Pipe With Headwall		Underground Gas Line		Remove Concrete Pavement	
Control Point		Pipe Without End Section		Underground High Pressure Gas Line		Remove Concrete Driveway Pavement	
Creek Edge		Playground Slide		Underground Sanitary Sewer		Remove Asphalt Concrete Pavement	
Curb/Gutter		Playground Swing		Underground Storm Sewer		Remove Concrete Sidewalk	
Curb		Power And Light Pole		Underground Tank		Remove Concrete Median Pavement	
Dam Grade/Dike/Levee		Power And Telephone Pole		Underground Telephone Line		Remove Concrete Curb and/or Gutter	
Deck Edge		Power Meter		Underground Television Cable			
Ditch Block		Power Pole		Underground Water Line			
Doorway Threshold		Power Pole And Transformer		Water Fountain			
Drainage Profile		Power Tower Structure		Water Hydrant			
Drop Inlet		Propane Tank		Water Meter			
Edge Of Asphalt		Property Pipe		Water Tower			
Edge Of Concrete		Property Pipe With Cap		Water Valve			
Edge Of Gravel		Property Stone		Water Well			
Edge Of Other		Public Telephone		Weir Rock			
Edge Of Shoulder		Railroad Crossing Signal		Windmill			
Electric Transformer/Power Junction Box		Railroad Milepost Marker		Wingwall			
Fence Barbwire		Railroad Profile		Witness Corner			
Fence Chainlink		Railroad ROW Marker					
Fence Electric		Railroad Signs					
Fence Miscellaneous		Railroad Switch					
Fence Rock		Railroad Track					
Fence Snow		Railroad Trestle					
Fence Wood		Rebar					
Fence Woven		Rebar With Cap					
Fire Hydrant		Reference Mark					
Flag Pole		Retaining Wall					
Flower Bed		Riprap					
Gas Valve Or Meter		River Edge					
Gas Pump Island		Rock And Wire Baskets					
Grain Bin		Rockpiles					
Guardrail		Satellite Dish					
Gutter		Septic Tank					
Guy Pole		Shrub Tree					
Haystack		Sidewalk					
Highway ROW Marker		Sign Face					
Interstate Close Gate		Sign Post					
Iron Pin		Slough Or Marsh					
Irrigation Ditch		Spring					
Lake Edge		Stream Gauge					
Lawn Sprinkler		Street Marker					

CONTROL DATA

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HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP I 90 221.72				570547.3950	2019575.6070	1838.2400
CP I 90 220.2				572521.6330	2011899.4570	1911.9560
CP I 90 218.74				575743.8300	2005480.2520	1868.6040

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00
Geoid 12A; SF = 0.9998348873
The elevations shown on this sheet are based on NAVD 88.

HORIZONTAL ALIGNMENT DATA

EB Rest Area 1

Type	Station	Northing	Easting
POB	262+91.16	575488.992	2001945.259
PI	263+90.61	575484.109	2002044.585
TL = 99.45		S 87^11'08" E	
PI	264+93.17	575479.113	2002147.027
TL = 102.56		S 87^12'29" E	
PI	265+92.65	575474.271	2002246.390
TL = 99.48		S 87^12'37" E	
PI	266+92.62	575469.196	2002346.232
TL = 99.97		S 87^05'25" E	
PI	267+92.70	575464.424	2002446.197
TL = 100.08		S 87^16'01" E	
PI	268+47.25	575461.559	2002500.674
TL = 54.55		S 86^59'22" E	
PI	268+92.55	575459.583	2002545.924
TL = 45.29		S 87^29'58" E	
PI	269+95.81	575451.342	2002648.863
TL = 103.27		S 85^25'22" E	
PI	270+97.08	575438.931	2002749.361
TL = 101.26		S 82^57'36" E	
PI	273+08.03	575398.742	2002956.456
TL = 210.96		S 79^01'04" E	
PI	274+15.65	575372.415	2003060.800
TL = 107.61		S 75^50'21" E	
PI	274+94.08	575353.003	2003136.792
TL = 78.43		S 75^40'13" E	
PI	275+14.15	575348.482	2003156.341
TL = 20.06		S 76^58'42" E	
PI	275+53.92	575342.517	2003195.663
TL = 39.77		S 81^22'27" E	
PI	276+33.49	575328.906	2003274.068
TL = 79.58		S 80^09'06" E	
PI	276+91.90	575322.648	2003332.134
TL = 58.40		S 83^50'56" E	
PI	277+51.17	575320.719	2003391.371
TL = 59.27		S 88^08'06" E	
PI	277+93.70	575320.956	2003433.901
TL = 42.53		N 89^40'51" E	
PI	278+29.39	575318.530	2003469.517
TL = 35.70		S 86^06'12" E	
PI	279+10.34	575318.238	2003550.461
TL = 80.94		S 89^47'36" E	
PI	280+71.39	575318.310	2003711.508
TL = 161.05		N 89^58'28" E	
POE	282+57.22	575318.266	2003897.344
TL = 185.84		S 89^59'11" E	

EB Rest Area 2

Type	Station	Northing	Easting
POB	279+31.00	575403.133	2003571.083
PI	282+30.63	575403.502	2003870.711
TL = 299.63		N 89^55'46" E	
PI	285+30.78	575403.499	2004170.860
TL = 300.15		S 89^59'58" E	
PI	285+93.08	575403.246	2004233.165
TL = 62.31		S 89^46'02" E	
PI	286+12.26	575404.129	2004252.326
TL = 19.18		N 87^21'41" E	
PI	286+79.85	575414.034	2004319.182
TL = 67.59		N 81^34'22" E	
PI	287+93.72	575429.760	2004431.956
TL = 113.87		N 82^03'41" E	
PI	289+08.24	575443.680	2004545.628
TL = 114.52		N 83^01'06" E	
PI	290+25.43	575455.409	2004662.235
TL = 117.20		N 84^15'22" E	
PI	290+86.61	575460.678	2004723.182
TL = 61.17		N 85^03'32" E	
PI	291+83.40	575467.380	2004819.748
TL = 96.80		N 86^01'47" E	
PI	293+02.66	575473.563	2004938.846
TL = 119.26		N 87^01'41" E	
PI	294+18.16	575477.375	2005054.276
TL = 115.49		N 88^06'31" E	
PI	295+38.93	575480.067	2005175.016
TL = 120.77		N 88^43'22" E	
PI	296+53.77	575482.504	2005289.832
TL = 114.84		N 88^47'03" E	
PI	297+79.48	575485.197	2005415.517
TL = 125.71		N 88^46'21" E	
POE	298+99.94	575487.821	2005535.947

HORIZONTAL ALIGNMENT DATA

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WB Rest Area 1

Type		Station	Northing	Easting
POB		409+33.88	570914.806	2015382.531
PI		410+34.30	570875.805	2015475.069
	TL = 100.42	S 67^08'48" E		
PI		411+67.93	570826.513	2015599.274
	TL = 133.63	S 68^21'14" E		
PI		412+53.92	570796.638	2015679.906
	TL = 85.99	S 69^40'11" E		
PI		413+53.70	570763.022	2015773.858
	TL = 99.78	S 70^18'46" E		
PI		414+54.21	570731.676	2015869.352
	TL = 100.51	S 71^49'39" E		
PI		415+54.25	570703.504	2015965.345
	TL = 100.04	S 73^38'39" E		
PI		416+54.40	570676.458	2016061.771
	TL = 100.15	S 74^19'55" E		
PI		417+54.88	570650.968	2016158.964
	TL = 100.48	S 75^18'16" E		
PI		418+55.16	570628.973	2016256.800
	TL = 100.28	S 77^19'47" E		
PI		419+55.28	570609.596	2016355.035
	TL = 100.13	S 78^50'30" E		
PI		420+55.44	570593.132	2016453.826
	TL = 100.15	S 80^32'18" E		
PI		421+55.81	570580.014	2016553.334
	TL = 100.37	S 82^29'24" E		
PI		422+55.90	570570.004	2016652.930
	TL = 100.10	S 84^15'39" E		
PI		423+82.58	570561.510	2016779.323
	TL = 126.68	S 86^09'19" E		
PI		424+76.68	570558.643	2016873.374
	TL = 94.09	S 88^15'14" E		
POE		425+53.00	570557.978	2016949.693
	TL = 76.32	S 89^30'03" E		

WB Rest Area 2

Type		Station	Northing	Easting
POB		425+52.74	570609.509	2016949.693
PI		435+19.07	570609.509	2017916.021
	TL 966.33	N 90^00'00" E		
PI		435+62.45	570604.700	2017959.136
	TL = 43.38	S 83^38'08" E		
PI		436+07.91	570598.061	2018004.107
	TL = 45.46	S 81^36'08" E		
PI		436+54.25	570590.851	2018049.883
	TL = 46.34	S 81^02'57" E		
PI		436+81.04	570585.138	2018076.053
	TL = 26.79	S 77^41'07" E		
PI		438+00.83	570560.534	2018193.294
	TL = 119.79	S 78^08'53" E		
PI		439+20.90	570536.136	2018310.857
	TL = 120.07	S 78^16'33" E		
PI		440+21.29	570517.640	2018409.534
	TL = 100.40	S 79^23'01" E		
PI		441+21.46	570503.040	2018508.634
	TL = 100.17	S 81^37'09" E		
PI		441+81.94	570496.387	2018568.746
	TL = 60.48	S 83^41'04" E		
PI		442+82.04	570489.046	2018668.578
	TL = 100.10	S 85^47'40" E		
PI		444+11.46	570483.849	2018797.886
	TL = 129.41	S 87^41'54" E		
PI		445+22.28	570479.278	2018908.618
	TL = 110.83	S 87^38'10" E		
PI		446+42.20	570474.738	2019028.447
	TL = 119.91	S 87^49'49" E		
PI		447+42.88	570470.792	2019129.053
	TL = 100.68	S 87^45'14" E		
PI		448+62.92	570468.635	2019249.075
	TL = 120.04	S 88^58'13" E		
PI		449+63.25	570470.087	2019349.393
	TL = 100.33	N 89^10'15" E		
POE		450+22.73	570470.737	2019408.871
	TL = 59.48	N 89^22'26" E		

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. South Zone (NAD 83/11); epoch 2010.00; Geoid 12A; SF = 0.9998348873

Plot Scale - 1:40

Plotted From - TRPR25289

CURB AND GUTTER LAYOUT WESTBOUND REST AREA (VIVIAN)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(115)218	F9	F24

Plotting Date: 03/12/2021
Revised 3/12/21 SML

Note: All curb and gutter shown on this sheet is Type B69 except as noted.
All sidewalk is 6' wide except as noted.
* Turning Space with 1.5% Slope
** Curb Ramp with 7.5% slope and 1.5% Cross Slope

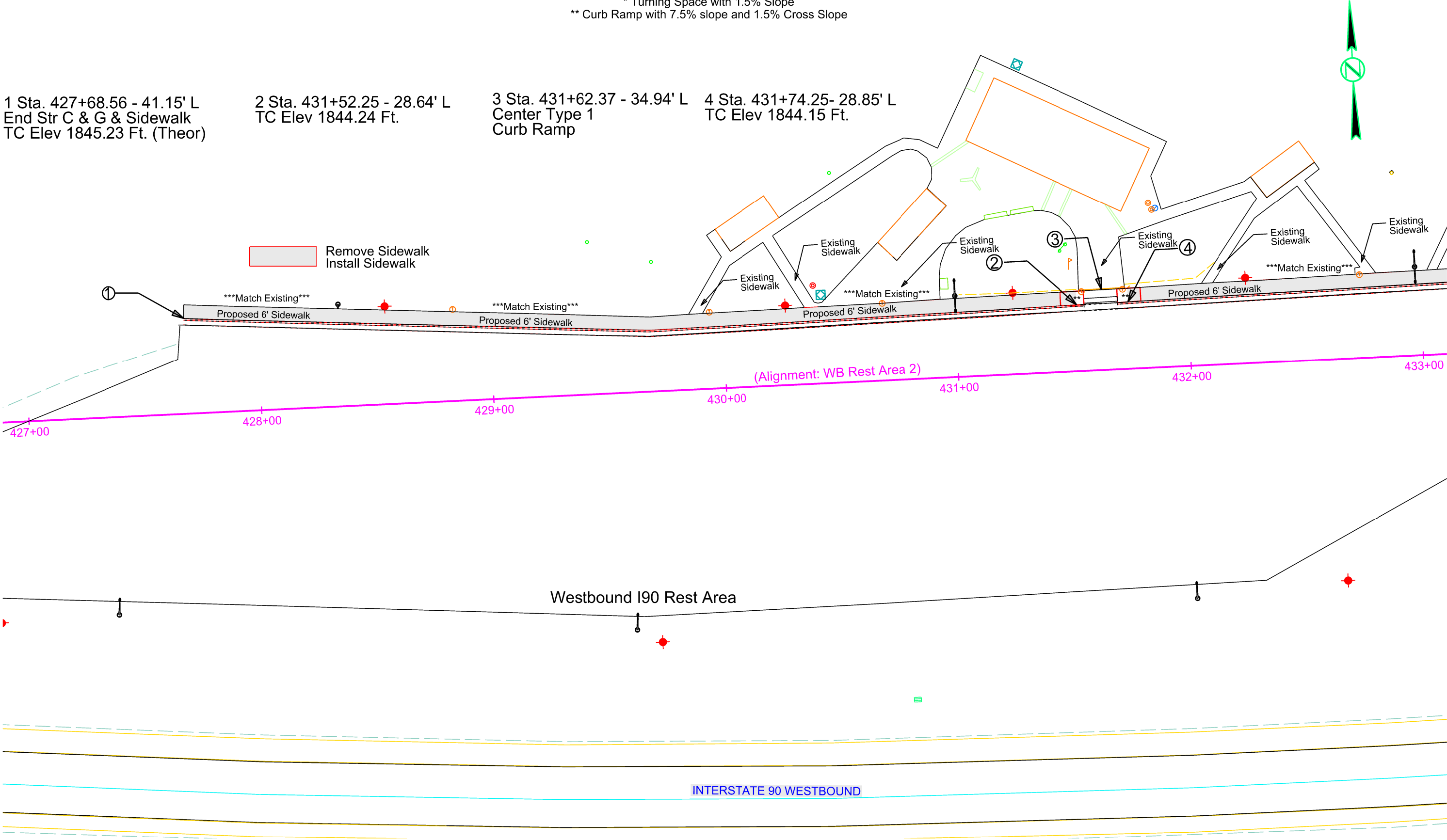
1 Sta. 427+68.56 - 41.15' L
End Str C & G & Sidewalk
TC Elev 1845.23 Ft. (Theor)

2 Sta. 431+52.25 - 28.64' L
TC Elev 1844.24 Ft.

3 Sta. 431+62.37 - 34.94' L
Center Type 1
Curb Ramp

4 Sta. 431+74.25 - 28.85' L
TC Elev 1844.15 Ft.

Remove Sidewalk
Install Sidewalk



File - ...\\Section F\\Working\\leg427c.dgn

CURB AND GUTTER LAYOUT

WESTBOUND REST AREA (VIVIAN)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(115)218	F10	F24

Plotting Date: 03/12/2021
Revised 3/12/21 SML

Note: All curb and gutter shown on this sheet is Type B69 except as noted.
All sidewalk is 6' wide except as noted.
* Turning Space with 1.5% Slope
** Curb Ramp with 7.5% slope and 1.5% Cross Slope

5 Sta. 433+69.19 - 31.58' L
End Str C & G & Sidewalk
TC Elev 1843.60 Ft. (Theor)

6 Sta. 434+06.98 - 31.63' L
End Str C & G Taper
TC Elev 1841.90 Ft. (Theor)

Sta. 434+82.83 - 25.78' R
Remove Cap Fresh Water Station

Sta. 435+35.52 - 27.2' R
Cap Non-Potable Water Station

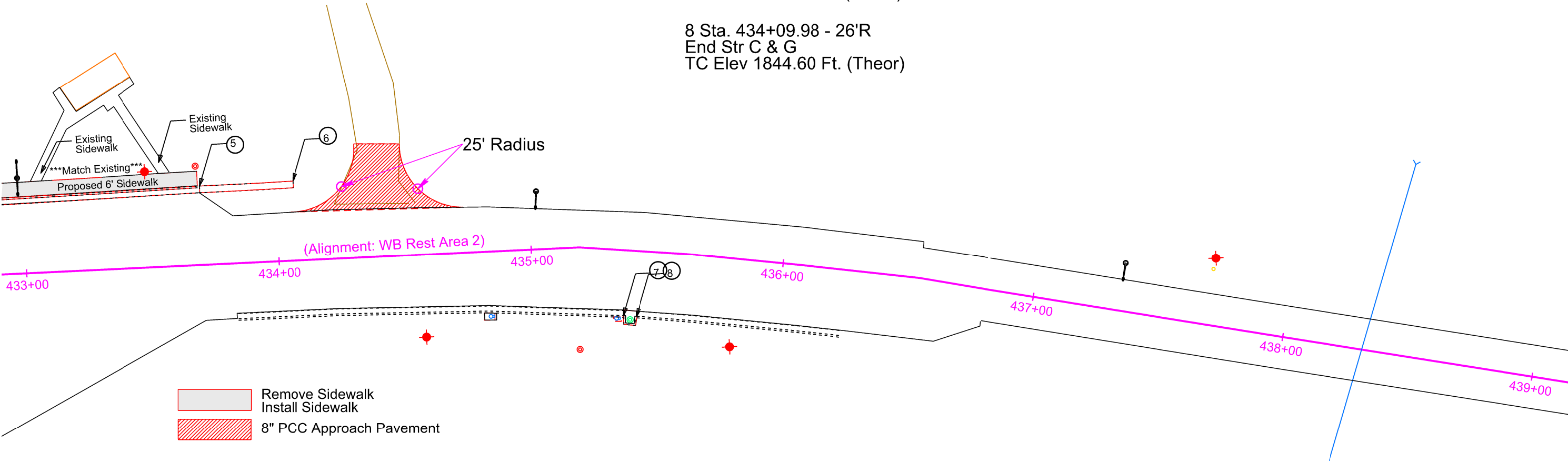
Sta. 434+40.91 - 44.69' L
Install 9" Non Reinforced
Approach Pavement

Sta. 435+40.86 - 26.82' R
Remove Curb and Gutter
Cap Dump Station

Sta. 435+40.86 - 26.82' R
Install 6' - B69 Curb and Gutter

7 Sta. 434+03.98 - 26'R
End Str C & G
TC Elev 1844.63 Ft. (Theor)

8 Sta. 434+09.98 - 26'R
End Str C & G
TC Elev 1844.60 Ft. (Theor)



Plot Scale - 1:40

Plotted From - TRPR25289

File - ...\\Section F\\Working\\cg433c.dgn

WESTBOUND PRESNO 220 REST AREA PCC REPAIR SURVEY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(115)218	F11	F24

Hole#	Joint#	Distance Ahead of Joint	Distance from South Edge of PCC to Center of Repair	Width	Length	SQYD	Dowel Bar (each)	No 9 Bars (Each)	No 5 Bars (Each)
1	3	0	6	12	4	5.33	8	8	1
2	3	0	18	12	4	5.33	8	8	2
3	10	0	6	12	4	5.33	8	8	1
4	10	0	18	12	4	5.33	8	8	2
5	14	0	12	4	4	1.78	2	2	2
6	22	0	12	4	4	1.78	2	2	2
7	22	0	24	4	4	1.78	2	2	2
8	22	14	41	12	10	13.33		16	3
9	23	0	12	4	4	1.78	2	2	2
10	23	0	24	4	4	1.78	2	2	2
11	24	0	12	4	4	1.78	2	2	2
12	25	0	12	4	4	1.78	2	2	2
13	25	0	22	4	4	1.78	2	2	2
14	26	0	12	4	4	1.78	2	2	2
15	26	0	22	4	4	1.78	2	2	2
16	26	11	67	12	4	5.33		16	1
17	27	0	6	12	5	6.67	8	8	1
18	27	0	18	12	5	6.67	8	8	2
19	27	0	46	4	4	1.78	2	2	2
20	28	0	6	12	4	5.33	8	8	1
21	28	0	18	12	4	5.33	8	8	2
22	28	0	50	4	4	1.78	2	2	2
23	29	0	6	12	4	5.33	8	8	1
24	29	0	18	12	4	5.33	8	8	2
25	29	0	70	4	4	1.78	2	2	2
26	30	0	12	12	4	5.33	8	8	2
27	30	0	24	12	4	5.33	8	8	2
28	30	0	60	4	4	1.78	2	2	2
29	31	0	18	16	4	7.11	10	10	2
30	31	0	98	4	4	1.78	2	2	2
31	32	0	6	14	4	6.22	9	9	1
32	32	0	22	4	4	1.78	2	2	2
33	32	0	96	4	4	1.78	2	2	2
34	32	0	108	4	4	1.78	2	2	2
35	33	0	12	5	4	2.22	3	3	2
36	33	0	24	5	4	2.22	3	3	2
37	33	0	70	4	4	1.78	2	2	2
38	33	0	94	4	4	1.78	2	2	2
39	33	12	42	12	4	5.33		16	2
40	33	18	54	12	8	10.67		16	6

Hole#	Joint#	Distance Ahead of Joint	Distance from South Edge of PCC to Center of Repair	Width	Length	SQYD	Dowel Bar (each)	No 9 Bars (Each)	No 5 Bars (Each)
41	33	18	66	12	8	10.67		16	6
42	34	0	6	4		0.00	2	2	
43	34	0	22	4	4	1.78	2	2	2
44	35	0	12	6	4	2.67	4	4	2
45	35	0	24	4	4	1.78	2	2	2
46	35	0	36	4	4	1.78	2	2	2
47	35	18	108	4	4	1.78		4	2
48	35	21	42	12	8	10.67		16	6
49	35	0	34	2	3	0.67	1	1	2
50	36	0	12	4	4	1.78	2	2	2
51	36	0	26	4	4	1.78	2	2	2
52	36	3	36	6	4	2.67		8	2
53	36	0	50	4	4	1.78	2	2	2
54	36	0	84	4	4	1.78	2	2	2
55	36	6	114	9	12	12.00		12	4
56	37	0	12	4	4	1.78	2	2	2
57	37	0	21	7	4	3.11	4	4	2
58	37	0	48	4	4	1.78	2	2	2
59	37	0	70	4	4	1.78	2	2	2
60	38	0	12	4	4	1.78	2	2	2
61	38	0	24	4	4	1.78	2	2	2
62	38	0	74	4	4	1.78	2	2	2
63	38	0	106	6	4	2.67	4	4	2
64	39	0	12	4	4	1.78	2	2	2
65	39	0	24	4	4	1.78	2	2	2
66	39	0	50	4	4	1.78	2	2	2
67	39	0	72	4	4	1.78	2	2	2
68	40	0	24	4	4	1.78	2	2	2
69	40	0	34	4	4	1.78	2	2	2
70	40	0	70	4	4	1.78	2	2	2
71	41	0	24	4	4	1.78	2	2	2
72	41	0	94	4	4	1.78	2	2	2
73	42	0	12	4	4	1.78	2	2	2
74	42	0	24	4	4	1.78	2	2	2
75	42	0	50	4	4	1.78	2	2	2
76	42	0	72	4	4	1.78	2	2	2
77	42	0	94	4	4	1.78	2	2	2
78	42	18	114	12	6	8.00		16	1
79	43	0	24	4	4	1.78	2	2	2
80	43	0	48	4	4	1.78	2	2	2
81	43	0	70	4	4	1.78	2	2	2
82	43	0	106	4	4	1.78	2	2	2
83	44	0	24	4	4	1.78	2	2	2
84	44	0	60	4	4	1.78	2	2	2

WESTBOUND PRESNO 220 REST AREA PCC REPAIR SURVEY (Continued)

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(115)218	F12	F24

Hole#	Joint#	Distance Ahead of Joint	Distance from South Edge of PCC to Center of Repair	Width	Length	SQYD	Dowel Bar (each)	No 9 Bars (Each)	No 5 Bars (Each)
85	44	0	72	4	4	1.78	2	2	2
86	44	0	96	4	4	1.78	2	2	2
87	44	0	108	4	4	1.78	2	2	2
88	45	0	24	4	4	1.78	2	2	2
89	45	0	46	4	4	1.78	2	2	2
90	45	0	72	4	4	1.78	2	2	2
91	45	0	96	4	4	1.78	2	2	2
92	46	0	26	4	4	1.78	2	2	2
93	46	0	70	4	4	1.78	2	2	2
94	46	0	94	4	4	1.78	2	2	2
95	47	0	84	4	4	1.78	2	2	2
96	47	0	96	4	4	1.78	2	2	2
97	48	0	22	4	4	1.78	2	2	2
98	48	0	50	4	4	1.78	2	2	2
99	48	0	70	4	4	1.78	2	2	2
100	48	0	94	4	4	1.78	2	2	2
101	49	0	26	4	4	1.78	2	2	2
102	49	0	84	4	4	1.78	2	2	2
103	49	0	96	4	4	1.78	2	2	2
104	50	0	22	4	4	1.78	2	2	2
105	50	0	50	4	4	1.78	2	2	2
106	50	0	84	4	4	1.78	2	2	2
107	50	0	84	4	4	1.78	2	2	2
108	51	0	24	4	4	1.78	2	2	2
109	51	0	50	4	4	1.78	2	2	2
110	51	0	94	4	4	1.78	2	2	2
111	51	0	108	5	4	2.22	3	3	2
112	52	0	24	4	4	1.78	2	2	2
113	52	0	94	4	4	1.78	2	2	2
114	53	0	22	4	4	1.78	2	2	2
115	53	0	46	4	4	1.78	2	2	2
116	53	0	96	4	4	1.78	2	2	2
117	53	0	108	4	4	1.78	2	2	2
118	54	0	5	4	4	1.78	2	2	2
119	54	0	17	5	4	2.22	3	3	2
120	54	0	67	4	4	1.78	2	2	2
121	54	0	72	4	4	1.78	2	2	2
122	54	0	84	6	6	4.00	4	4	4
123	54	0	96	4	4	1.78	2	2	2
124	54	11	5	12	20	26.67		16	7

Hole#	Joint#	Distance Ahead of Joint	Distance from South Edge of PCC to Center of Repair	Width	Length	SQYD	Dowel Bar (each)	No 9 Bars (Each)	No 5 Bars (Each)
125	54	9	11	12	4	5.33		16	2
126	55	0	67	4	4	1.78	2	2	2
127	55	0	77	4	4	1.78	2	2	2
128	55	0	91	4	4	1.78	2	2	2
129	56	0	23	4	4	1.78	2	2	2
130	56	0	45	4	4	1.78	2	2	2
131	56	0	69	6	4	2.67	4	4	2
132	56	0	79	4	4	1.78	2	2	2
133	57	0	12	4	4	1.78	2	2	2
134	57	0	50	4	4	1.78	2	2	2
135	57	0	60	4	4	1.78	2	2	2
136	57	0	72	4	4	1.78	2	2	2
137	58	0	26	4	4	1.78	2	2	2
138	58	0	50	4	4	1.78	2	2	2
139	58	0	62	4	4	1.78	2	2	2
140	59	0	4	6	6	4.00	4	4	2
141	59	0	12	4	4	1.78	2	2	2
142	59	0	28	4	4	1.78	2	2	2
143	59	0	40	4	4	1.78	2	2	2
144	60	0	17	4	4	1.78	2	2	2
145	60	0	31	4	4	1.78	2	2	2
146	60	0	41	4	4	1.78	2	2	2
147	61	0	13.67	4	4	1.78	2	2	2
148	61	0	27.67	4	4	1.78	2	2	2
149	61	0	37.67	4	4	1.78	2	2	1
150	62	0	20.67	4	4	1.78	2	2	2
151	63	0	26.67	4	4	1.78	2	2	2
152	64	0	32.67	4	4	1.78	2	2	2
153	64	17	40.67	36	10	40.00		48	6
154	65	0	26.67	4	4	1.78	2	2	2
155	66	0	26.67	4	4	1.78	2	2	2
156	67	0	26.67	4	4	1.78	2	2	2
157	68	0	26.67	4	4	1.78	2	2	2
158	68	18	8.67	4	4	1.78		4	2
159	70	0	26.67	4	4	1.78	2	2	2
160	71	0	26.67	4	4	1.78	2	2	2
161	72	0	26.67	4	4	1.78	2	2	2
162	73	0	26.67	4	4	1.78	2	2	2
163	74	0	24	4	4	1.78	2	2	2
164	76	0	24	4	4	1.78	2	2	2
165	77	0	12	4	4	1.78	2	2	2
166	80	0	12	4	4	1.78	2	2	2
167	93	0	12	4	4	1.78	2	2	2
168	96	0	12	6	4	2.67	4	4	2
TOTALS						268.22	256	392	173

EASTBOUND PRESHO 220 REST AREA PCC REPAIR SURVEY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(115)218	F13	F24

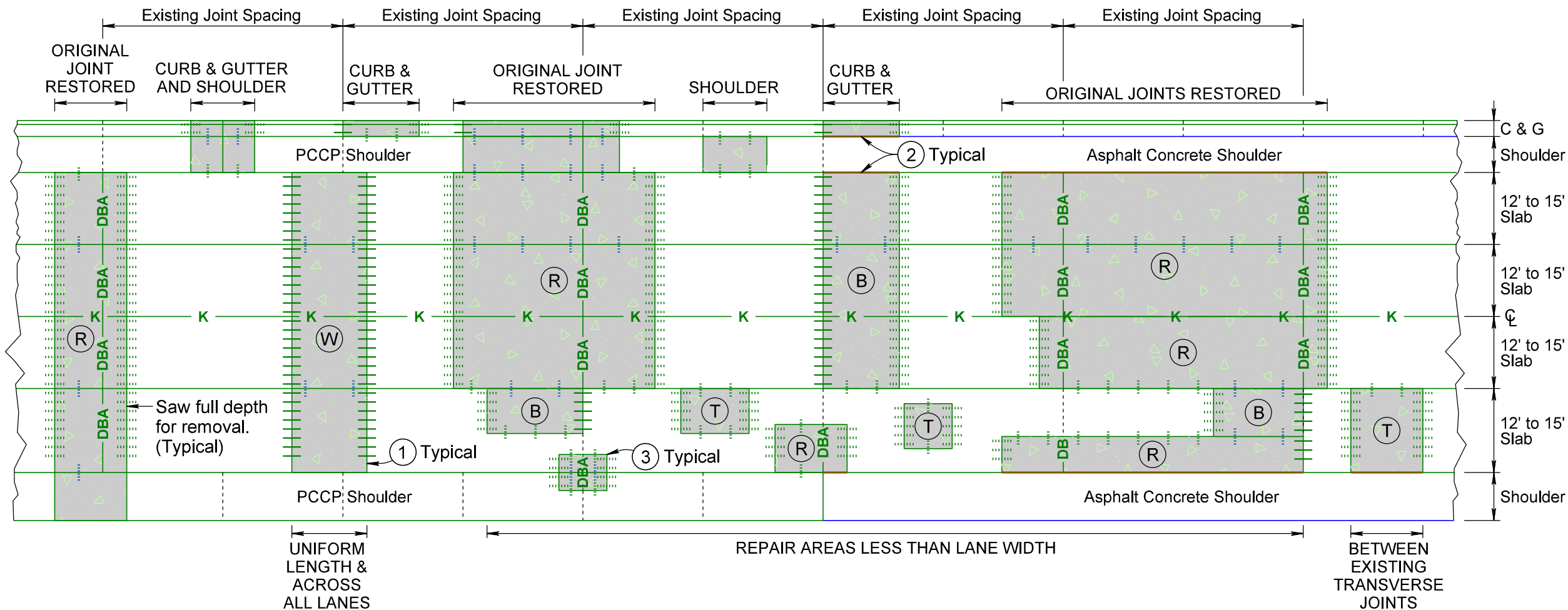
Hole#	Joint#	Distance Ahead of Joint	Distance from North Edge of PCC to Center of Repair	Width	Length	SQYD	Dowel Bar (Each)	No 9 Bar (Each)	No 5 Bar (Each)
1	1	0	12	4	4	1.78	3	3	2
2	11	0	12	4	4	1.78	3	3	2
3	12	0	12	4	4	1.78	3	3	2
4	13	0	12	4	4	1.78	3	3	2
5	14	0	12	4	4	1.78	3	3	2
6	16	0	12	4	4	1.78	3	3	2
7	23	5	18	12	10	13.33		16	6
8	27	0	14	4	4	1.78	3	3	2
9	27	15	63	4	5	2.22		6	1
10	36	2	45	6	4	2.67		8	2
11	36	18	84	4	4	1.78		6	2
12	37	18	94	4	4	1.78		6	2
13	38	12	90	6	12	8.00		8	8
14	38	12	102	6	12	8.00		8	8
15	38	12	114	4	14.67	6.52		6	10
16	42	0	108	4	4	1.78	3	3	2
17	44	10	78	20	12	26.67		26	8
18	46	18	72	4	4	1.78		6	2
19	47	18	105	6	4	2.67		8	2
20	49	2	74	4	4	1.78		6	2
21	53	0	30	12	4	5.33	8	8	2
22	53	0	42	12	4	5.33	8	8	2
23	54	2	106	4	4	1.78		6	2
24	55	0	82	4	4	1.78	3	3	2
25	60	7	4	4	8	3.56		6	6
26	60	10	16	12	5	6.67		16	2
27	60	9	28	12	4	5.33		16	2
28	61	10	5	10	5	5.56		14	1
29	61	7	17	12	4	5.33		16	2
30	63	13	24	9	4	4.00		12	2
31	64	2	2	4	4	1.78		4	1
32	67	8	7.33	14.67	8	13.04		20	3
33	71	0	7.33	14.67	20	32.60	10	10	7
34	76	2	24	7	4	3.11		10	2
35	78	18	16	4	4	1.78		6	2
36	80	0	16	4	4	1.78	3	3	2
37	83	0	12	4	4	1.78	3	3	2
38	84	0	12	4	4	1.78	3	3	2
39	95	6	18	4	12	5.33		6	8
40	95	6	6	4	12	5.33		6	8
TOTALS						204.38	62	310	129

NONREINFORCED PCC PAVEMENT REPAIR

UP TO FOUR LANE ROADWAY OR UP TO EIGHT LANE DIVIDED ROADWAY

TYPICAL REPAIR AREAS

STATE OF SOUTH DAKOTA	PROJECT IM 905(115)218	SHEET F14	TOTAL SHEETS F24
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KEY:

PCC Pavement Repair Area

PCC PAVEMENT REPAIR AREA TYPES:

- (W) Two Working Joints (Use only if repair is full roadway width and uniform length (across all lanes))
- (T) Two Tied Joints
- (B) One Working & One Tied Joint
- (R) Two Tied Joints with Original Joint Restored with Dowel Bar Assembly

Longitudinal Keyway Joints Without Bars

— K — Where a repair area intersects an existing longitudinal keyway joint without tie bars, the newly constructed joint should also be a keyway without tie bars.

Steel Bars for Transverse Joints

Pavement Thickness ≥ 10.5 "

- Drilled in $1\frac{1}{2}$ " x 18" epoxy coated plain round dowel bars spaced 18" center to center.
- Drilled in No. 11 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness ≥ 8.5 " and < 10.5 "

- Drilled in $1\frac{1}{4}$ " x 18" epoxy coated plain round dowel bars spaced 18" center to center.
- Drilled in No. 9 x 18" epoxy coated deformed tie bars spaced 18" center to center.

Pavement Thickness < 8.5 "

- Drilled in 1" x 18" epoxy coated plain round dowel bars spaced 18" center to center.
- Drilled in No. 8 x 18" epoxy coated deformed tie bars spaced 18" center to center.

DBA Dowel Bar Assembly

Steel Bars for Longitudinal Joints

- No. 5 x 30" epoxy coated deformed tie bars. Sawed Joint - spaced 48" center to center. Construction Joint - spaced 48" center to center.
- No. 5 x 24" epoxy coated deformed tie bars. Drilled In - spaced 30" center to center.

NOTES: Saw around repair areas full depth for removal.

- ① Where possible, transverse joints will be constructed/maintained full roadway width.
- ② Edges of repair areas will be formed to match the width of the existing concrete pavement.
- ③ Need for bars in small repair areas on/near the shoulder to be determined on a case-by-case basis, on construction by the Engineer.

PLOT SCALE - 1"=10'

PLOTTED FROM - JRM11N115

PLOT NAME - 1

FILE - ... \PRJ2021\WCK05HP\PATCH4.DGN

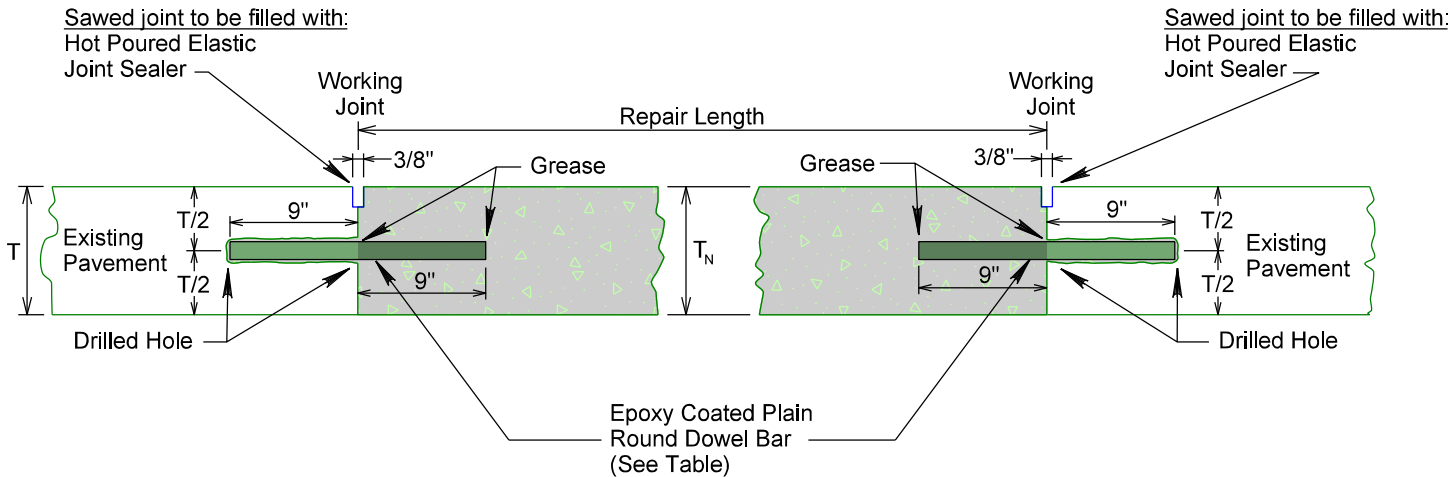
PLOT SCALE - 1/4"=1'-0"

PLOTTED FROM - TRML1INT15

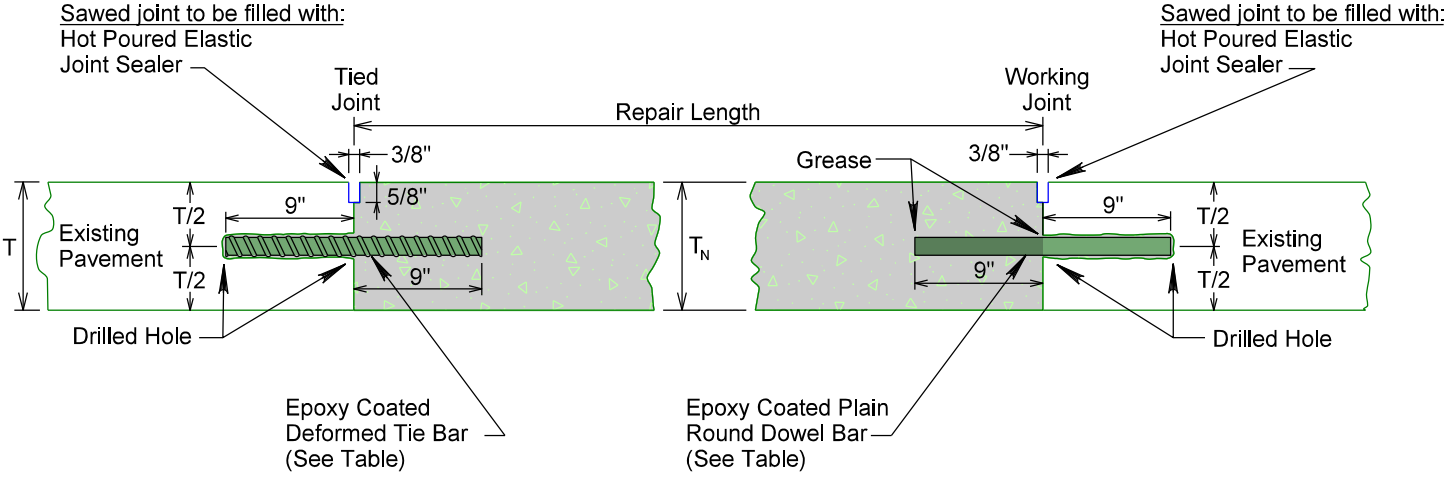
NONREINFORCED PCC PAVEMENT REPAIR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 905(115)218	F15	F24

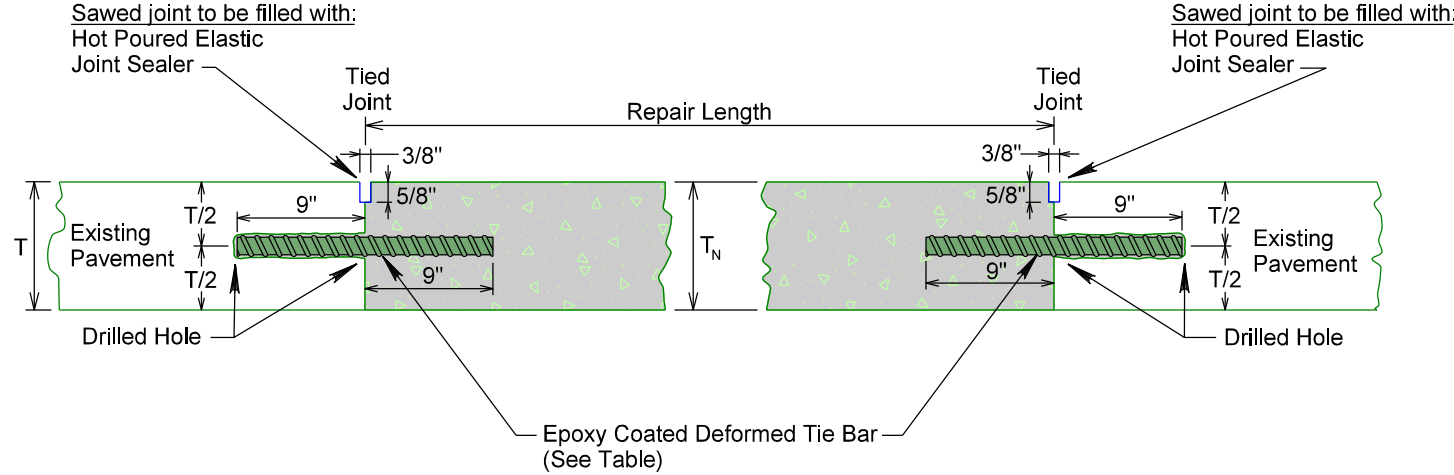
PLAIN ROUND DOWEL BAR INSERTION
TYPE W - (TWO WORKING JOINTS)



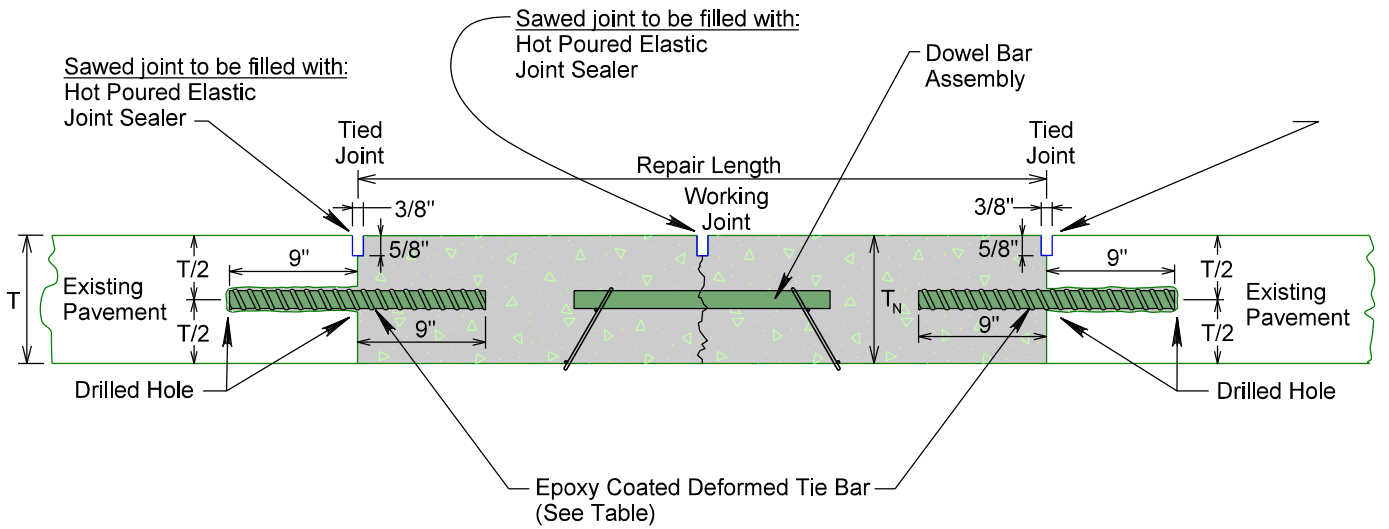
DEFORMED TIE BAR AND PLAIN ROUND DOWEL BAR INSERTION
TYPE B - (ONE TIED JOINT AND ONE WORKING JOINT)



DEFORMED TIE BAR INSERTION
TYPE T - (TWO TIED JOINTS)



DEFORMED TIE BAR INSERTION WITH DOWEL BAR ASSEMBLY
TYPE R - (TWO TIED JOINTS AND ONE WORKING JOINT - ORIGINAL JOINT RESTORED)



Existing Pavement Thickness	Epoxy Coated Deformed Tie Bar Size	Epoxy Coated Plain Round Dowel Bar Size
$T \geq 10.5"$	No. 11 x 18"	1 1/2" x 18"
$T \geq 8.5"$ & $T < 10.5"$	No. 9 x 18"	1 1/4" x 18"
$T < 8.5"$	No. 8 x 18"	1" x 18"

T = Existing pavement thickness.
 T_N = 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 inserting steel bars (deformed tie and plain round dowel) will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

Cost for furnishing and installing dowel bar assembly will be included in the contract unit price per each for Dowel Bar.

$T_N = T$
(top of new pavement will be flush with top of existing pavement)

PLOT NAME - 2

FILE - ... \PRJ2021\WCK05HP\BARS.DGN

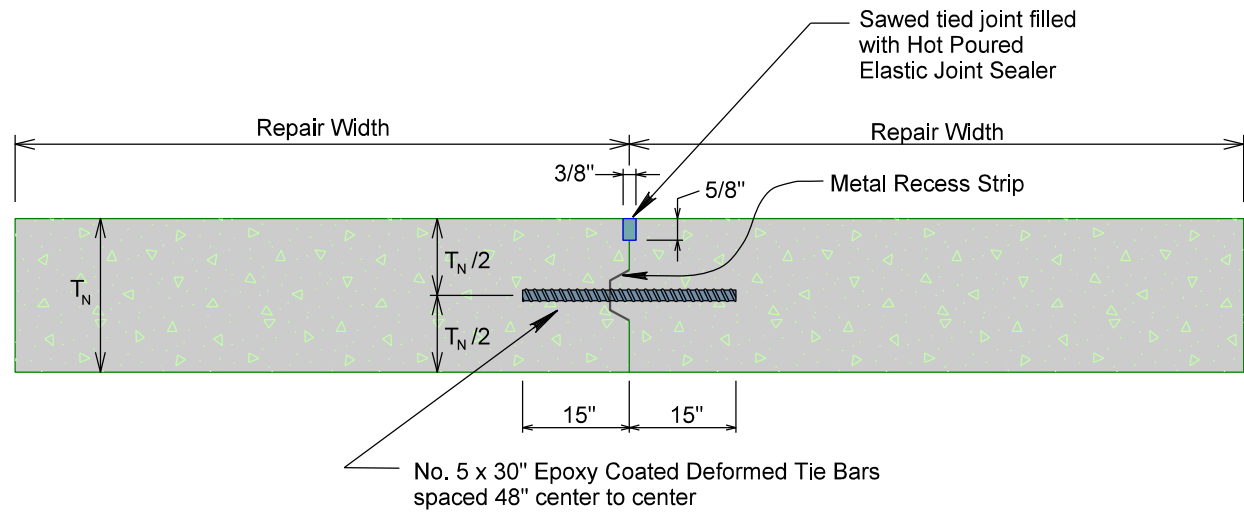
PLOT SCALE - 1:11.25

PLOTTED FROM - TRM11T15

NONREINFORCED PCC PAVEMENT REPAIR

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 905(115)218	F16	F24

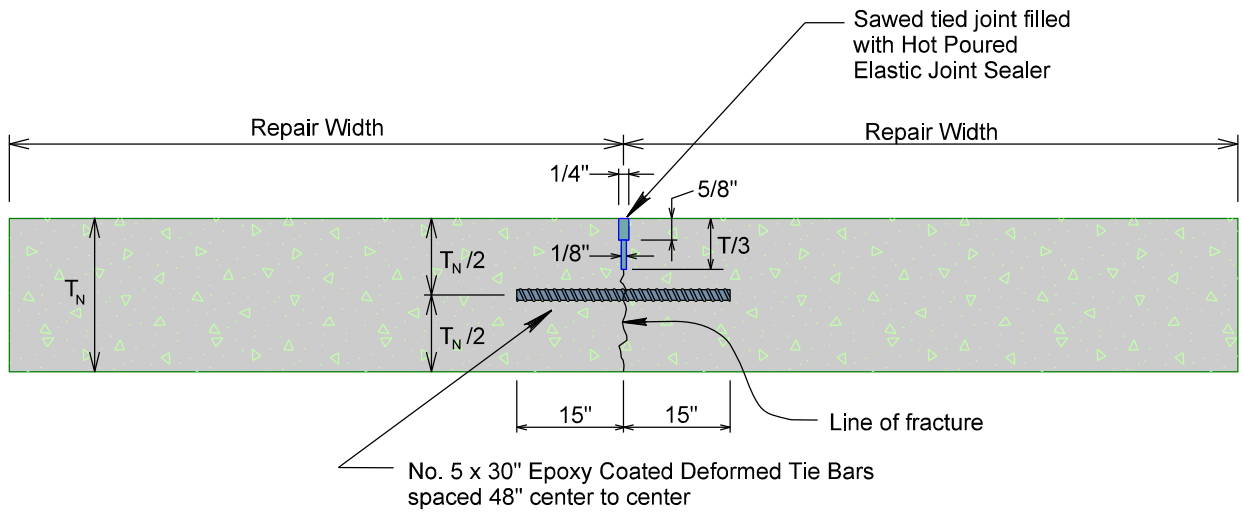
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS & KEYWAY



T_N = New pavement thickness.

Cost for furnishing and inserting tie bars will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

SAWED LONGITUDINAL JOINT

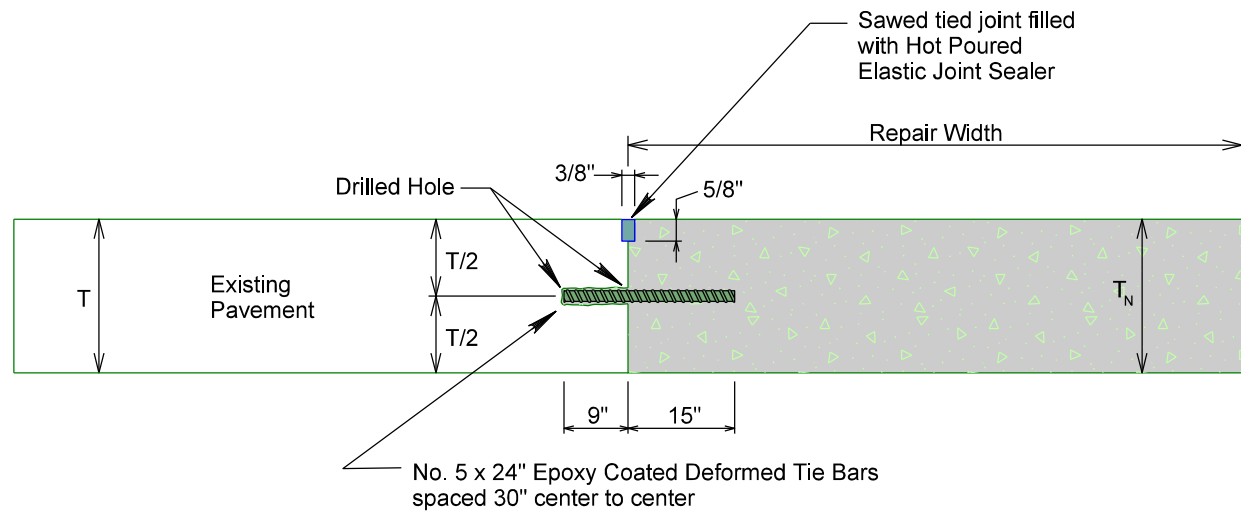


T_N = New pavement thickness.

The first saw cut to control cracking will be a minimum of 1/3 the depth of the pavement. Additional sawing for widening the saw cut will be necessary.

Cost for furnishing and inserting tie bars will be incidental to the contract unit price per square yard for Nonreinforced PCC Pavement Repair.

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



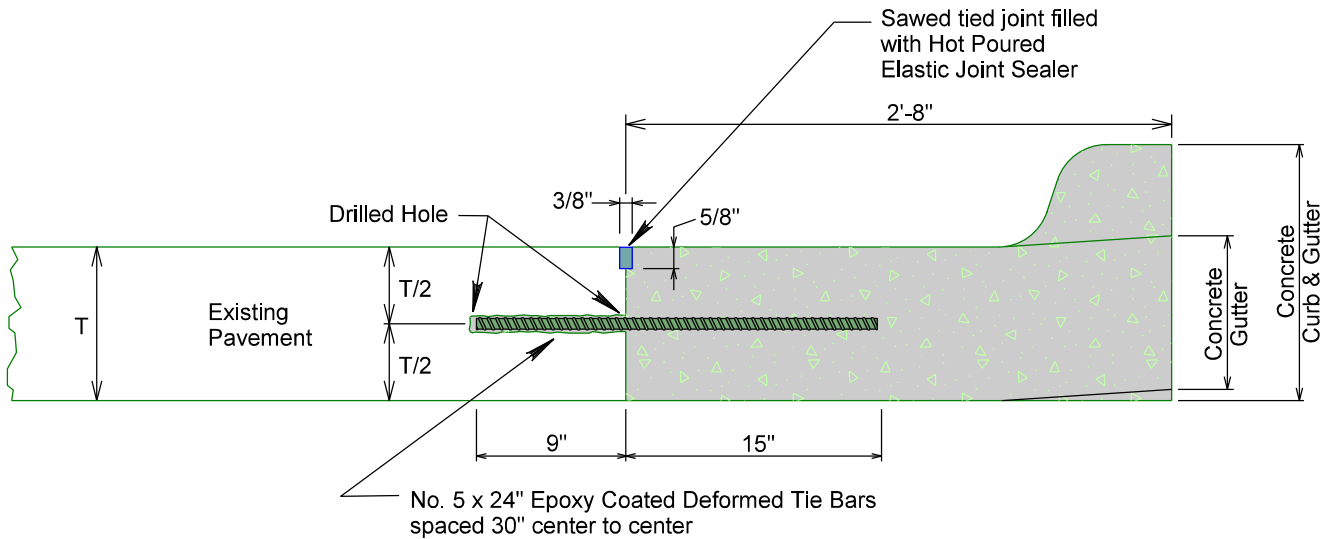
T = Existing pavement thickness.
 T_N = New pavement thickness.

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

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

Cost for furnishing and inserting drilled in tie bars will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

LONGITUDINAL CONSTRUCTION JOINT WITH DRILLED IN TIE BARS



T = Existing pavement thickness.

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

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

Cost for furnishing and inserting drilled in tie bars will be included in the contract unit price per each for Insert Steel Bar in PCC Pavement.

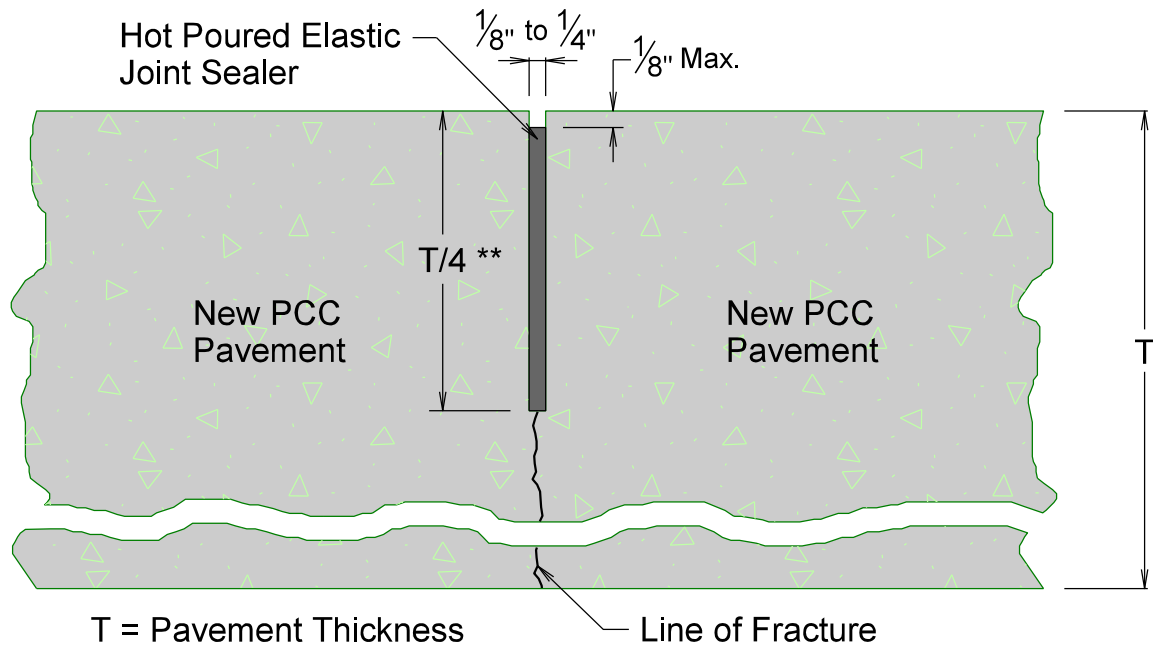
PLOT NAME - 3

FILE - ... \PRJ2021\MCCK05HP\BARS.DGN

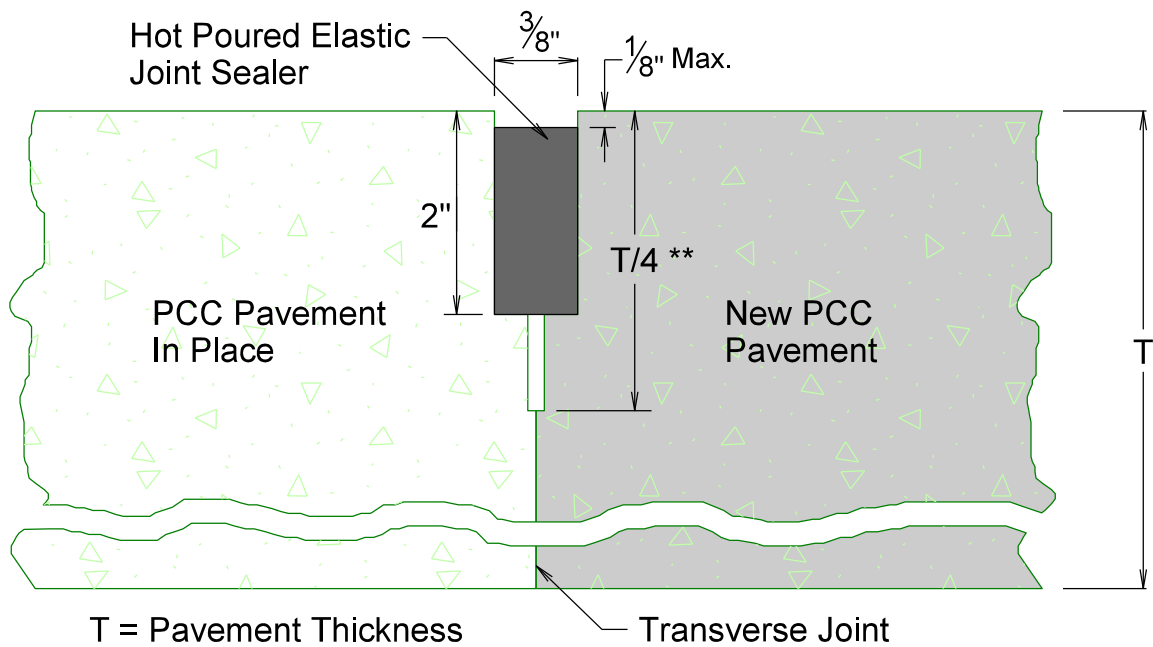
NONREINFORCED PCC PAVEMENT REPAIR
SAW & SEAL TRANSVERSE JOINTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 905(115)218	F17	F24

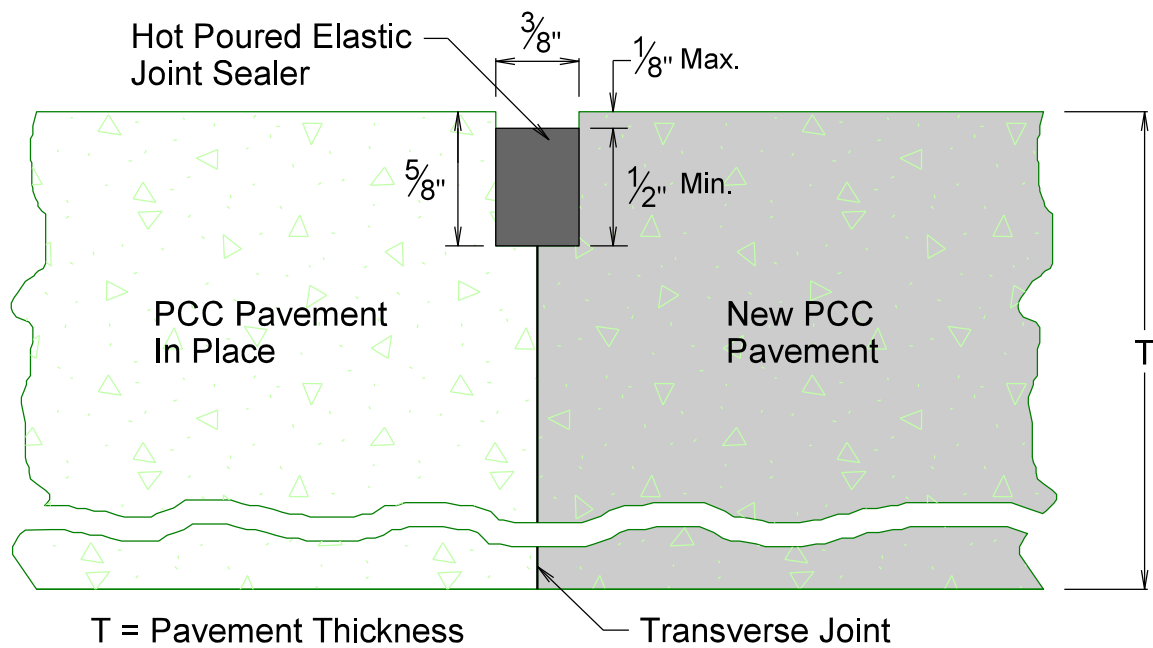
WITH HOT POURED ELASTIC JOINT SEALER
AT WORKING JOINTS ENTIRELY WITHIN REPAIR AREAS



WITH HOT POURED ELASTIC JOINT SEALER
AT WORKING JOINTS



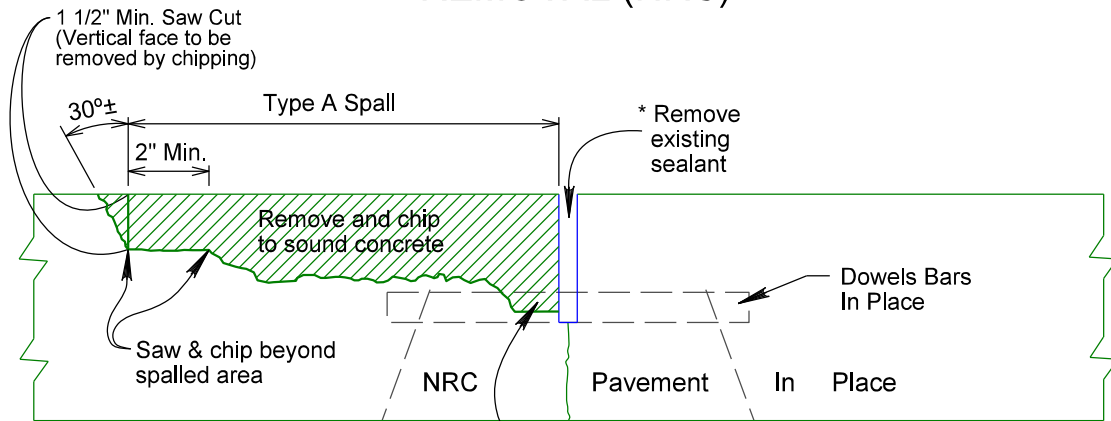
WITH HOT POURED ELASTIC JOINT SEALER
AT TIED JOINTS



** The saw cut to control cracking will be a minimum of 1/4 the thickness of the pavement.

REPAIR OF TYPE A SPALLS

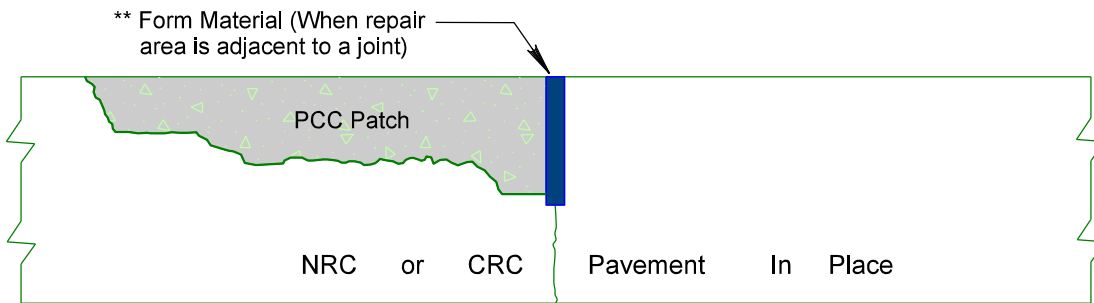
REMOVAL (NRC)



If Dowel Bar is exposed
coat the bar with duct tape
as a bond breaker

* Existing Sealant to be removed
is low modulus silicone sealant
with backer rod or hot poured
elastic joint sealer.

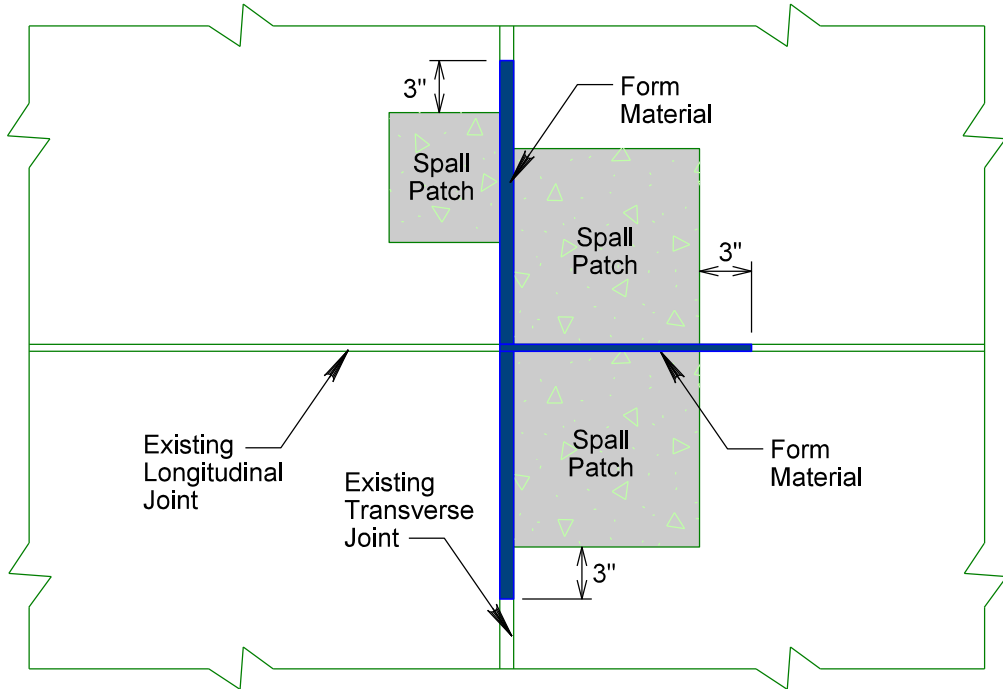
PATCHING



** Form Material will be removed by sawing or other means approved by the Engineer.
Spall repaired joints will then be sealed with Hot oured Elastic Joint Sealer.

REPAIR OF TYPE A SPALLS

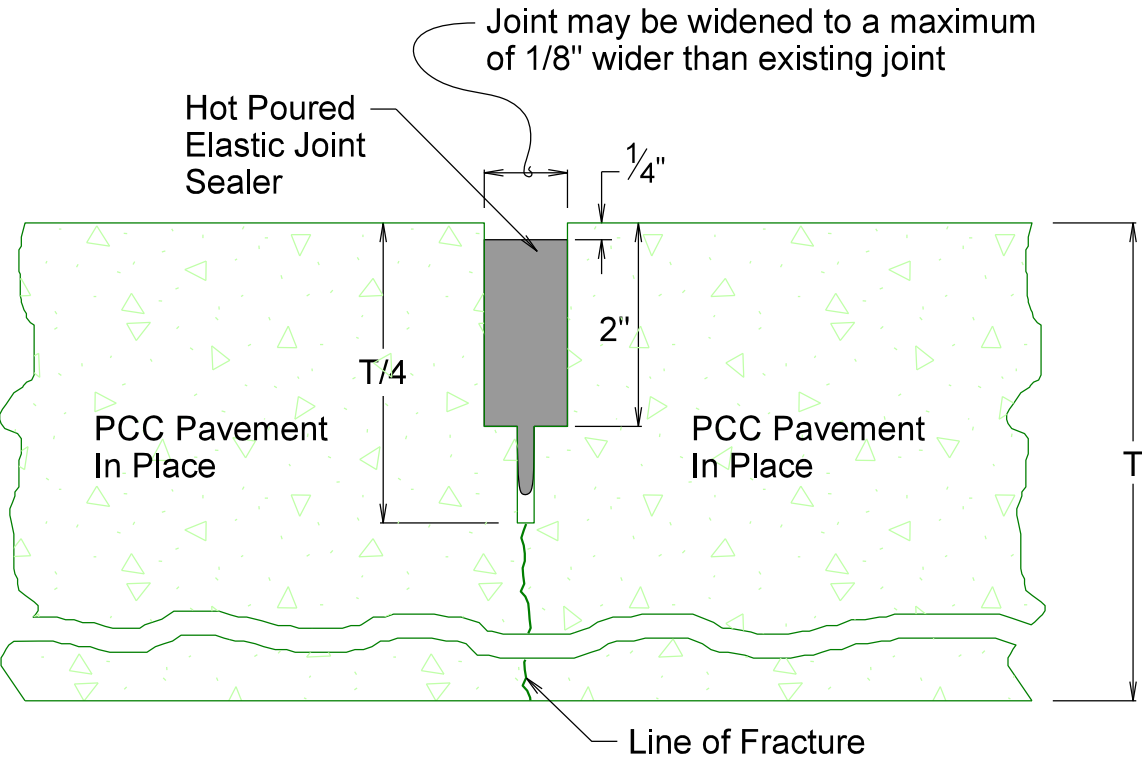
NRC SPALL PATCHES (PLAN VIEW)



RESEAL PCC PAVEMENT JOINTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 905(115)218	F19	F24

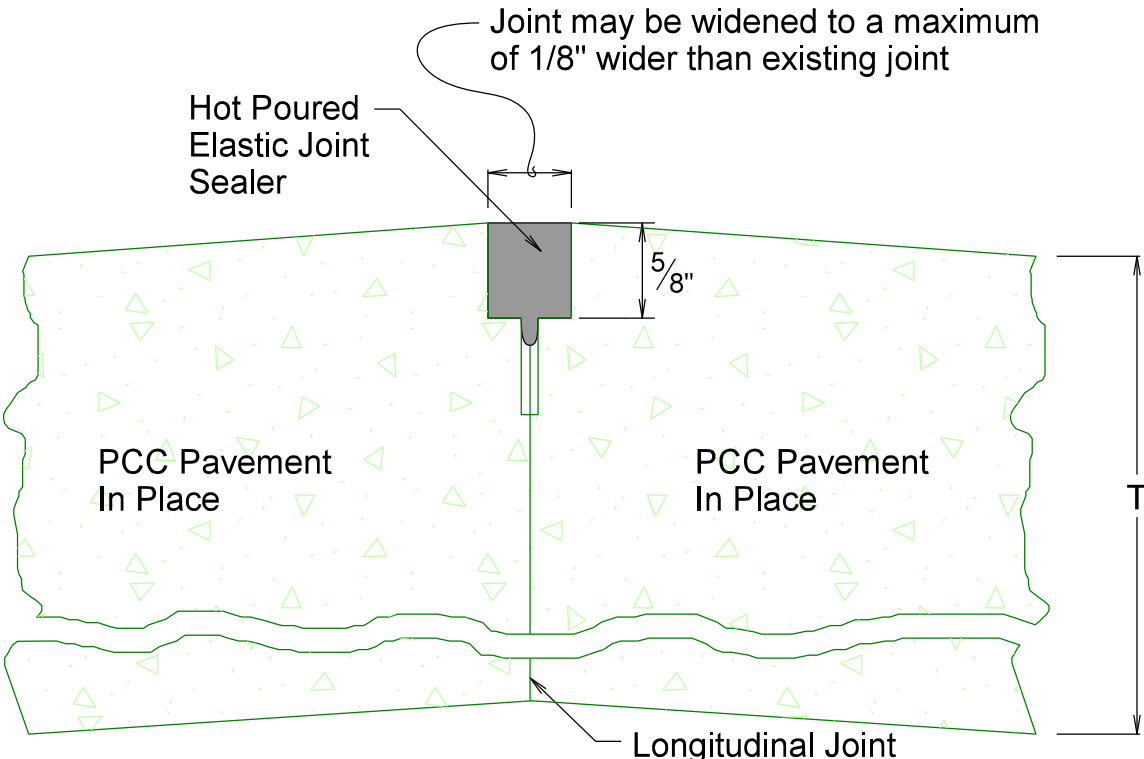
RESEAL TRANSVERSE JOINT WITH HOT POURED ELASTIC JOINT SEALER



T = Pavement Thickness

Additional sawing for widening the saw cut to provide the width for the installation of the Hot Poured Elastic Joint Sealer may be necessary.

RESEAL LONGITUDINAL JOINT WITH HOT POURED ELASTIC JOINT SEALER



T = Pavement Thickness

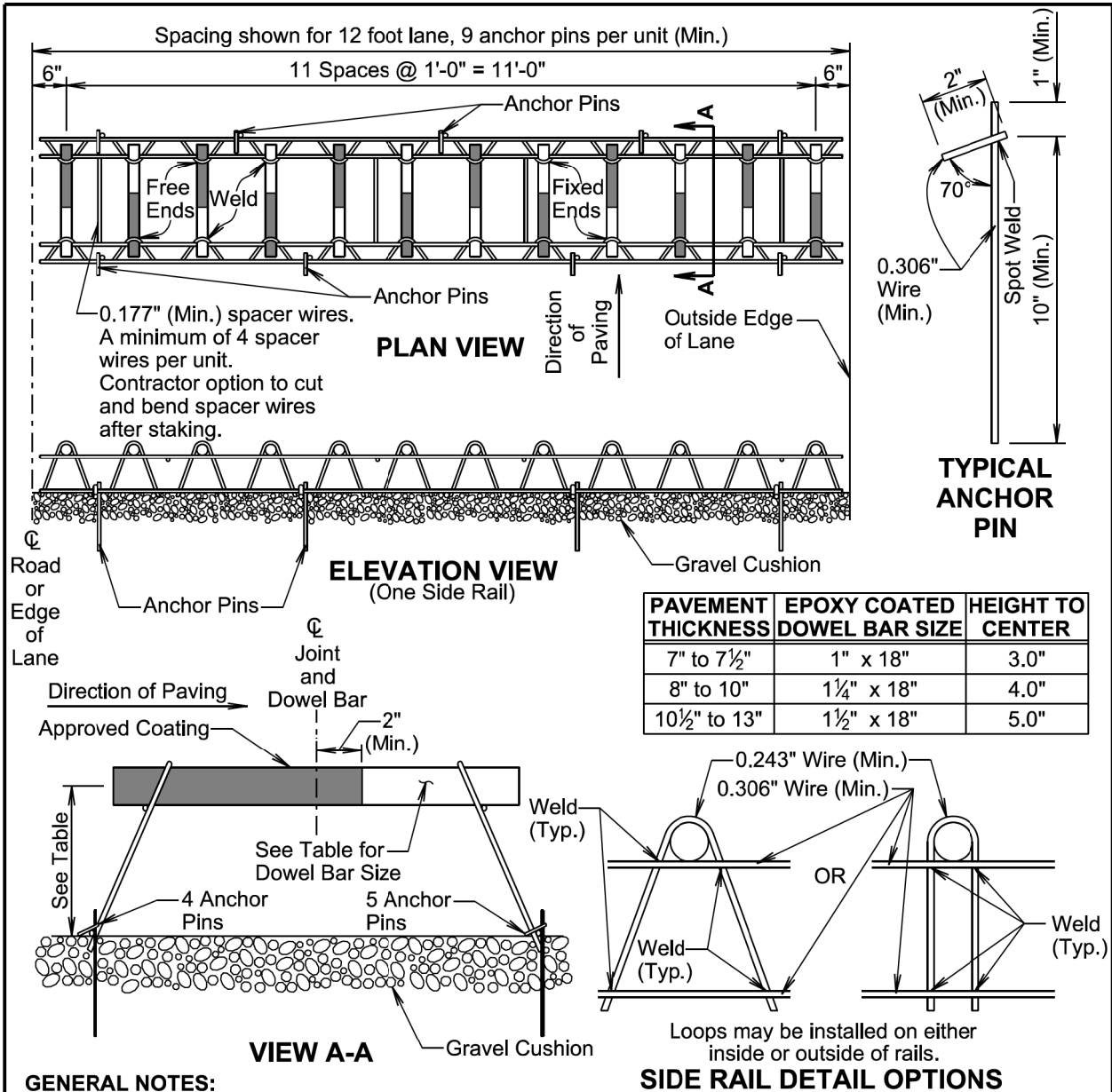
Additional sawing for widening the saw cut to provide the width for the installation of the Hot Poured Elastic Joint Sealer may be necessary.

PLOT SCALE - 1:0.12

PLOTTED FROM - TRM1INT15

PLOT NAME - 6

FILE - ... \MCK05HP\JOINT RESEALING.DGN



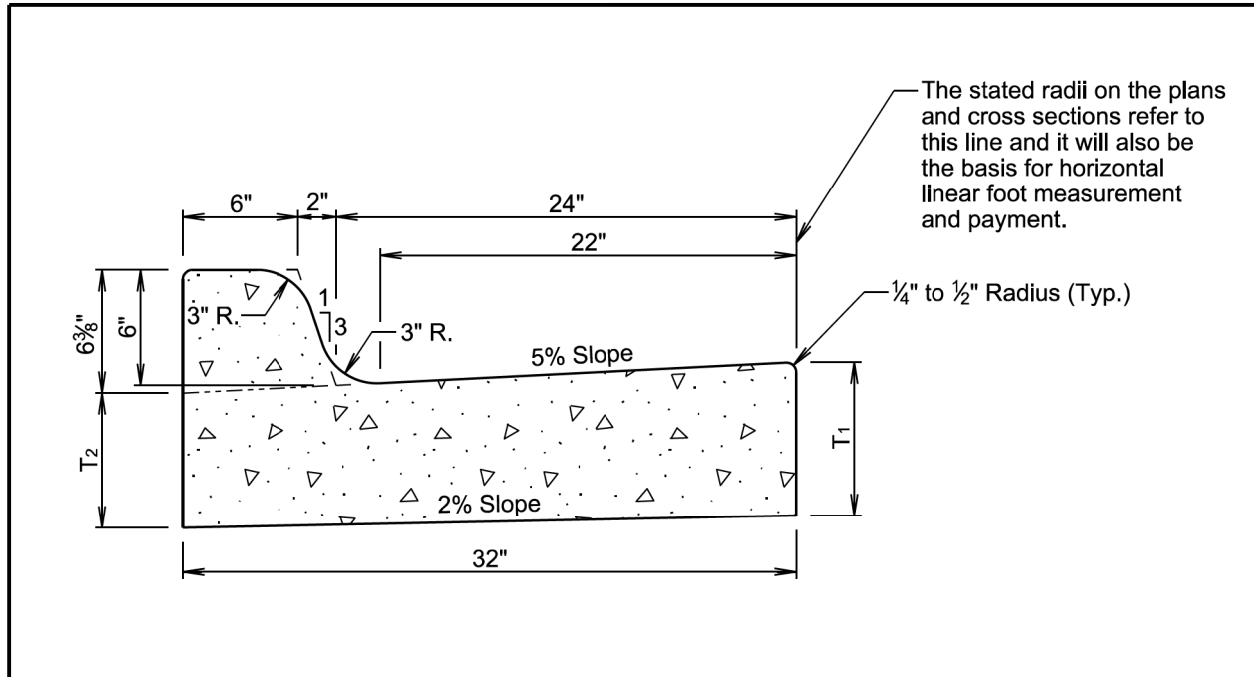
GENERAL NOTES:

- 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 ± 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

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

Published Date: 1st Qtr. 2021



TYPE B CONCRETE CURB AND GUTTER

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	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 will 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.

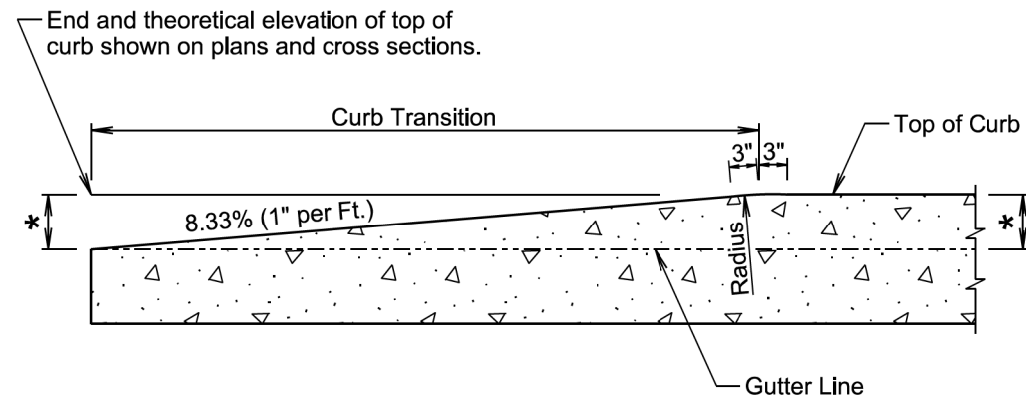
December 23, 2019

S D D O T	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
		Sheet 1 of 1

Published Date: 1st Qtr. 2021

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0905(115)218	F21	F24

Plotting Date: 03/08/2021

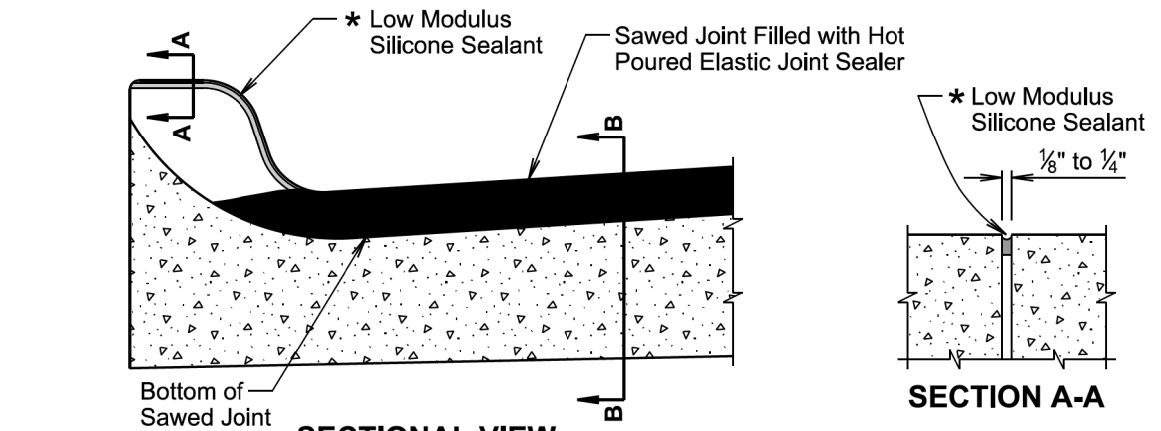


* Height of Curb

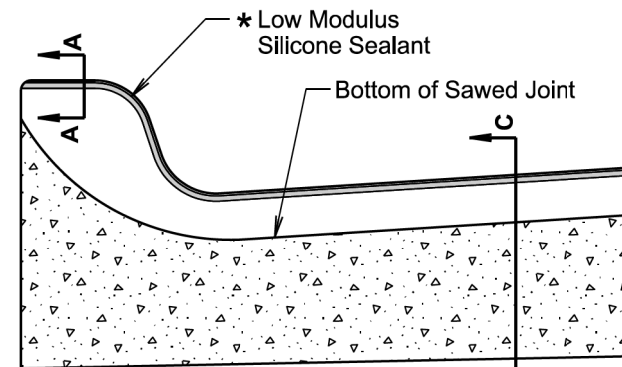
LONGITUDINAL SECTION
(Concrete Curb Taper)

December 23, 2019

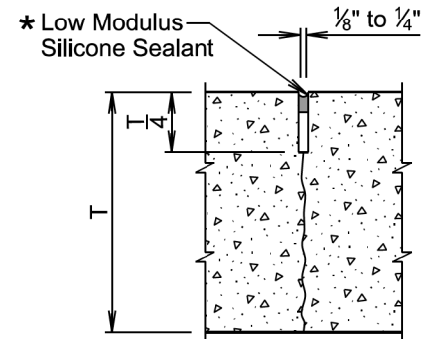
<i>Published Date: 1st Qtr. 2021</i>	S D D O T	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



SECTIONAL VIEW
(Curb and Gutter Placed Monolithic with
Adjacent Mainline PCC Pavement)



SECTIONAL VIEW
(Curb and Gutter not Placed Monolithic with
Adjacent Mainline PCC Pavement or Mainline
Surfacing is not PCC Pavement)



SECTION C-C

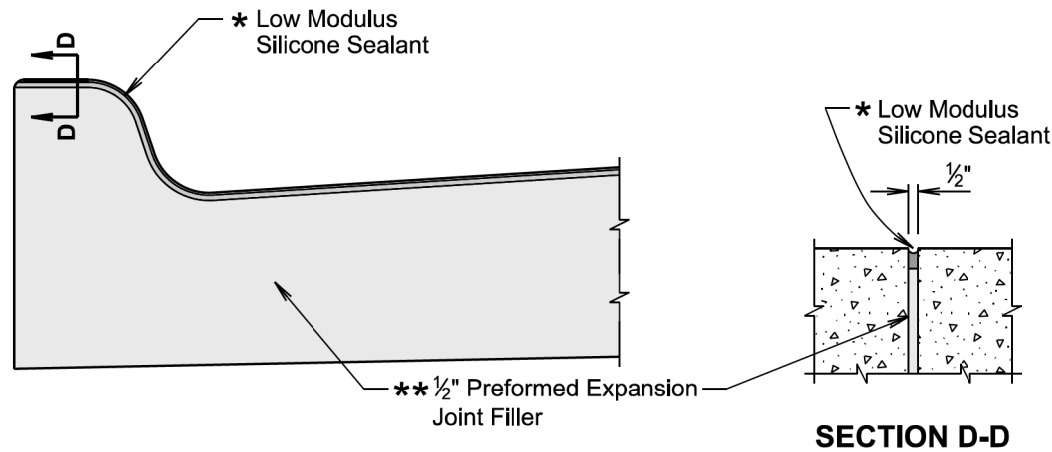
* The silicone sealant will be placed such
that it completely seals the joint and is
bonded to the sides of the clean joint as
approved by the Engineer.

December 23, 2019

<i>Published Date: 1st Qtr. 2021</i>	S D D O T	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 1 of 2

STATE OF SOUTH DAKOTA	PROJECT IM 0905(115)218	SHEET F22	TOTAL SHEETS F24
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Plotting Date: 03/08/2021



SECTIONAL VIEW
(Curb and Gutter at 1/2" Preformed
Expansion Joint Filler Location)

SECTION D-D

* The silicone sealant will be placed such that it completely seals the joint and is bonded to the sides of the clean joint as approved by the Engineer.

GENERAL NOTES:

For illustrative reason, only the type B curb and gutter is shown.

** A 1/2-inch preformed expansion joint filler will be placed transversely in the curb and gutter at the following locations:

At each junction between the radius return of curb and gutter, and curb and gutter which is parallel to the project centerline.

At each junction between new curb and gutter and existing curb and gutter.

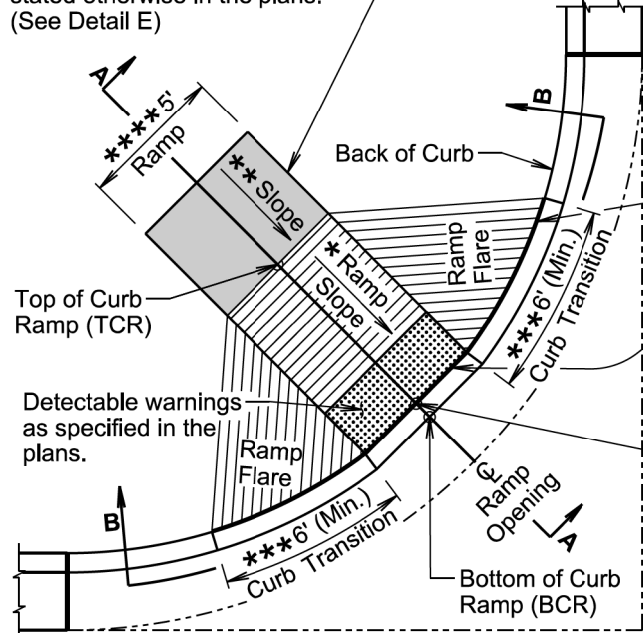
Transverse contraction joints will be constructed at 10 foot intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the concrete curb and gutter at each mainline PCC pavement transverse contraction joint location.

When concrete curb and gutter is not placed monolithically with the mainline PCC pavement or when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete curb and gutter will be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least 1/4 the thickness of the concrete and the joint will be sealed in accordance with the details shown above.

December 23, 2019

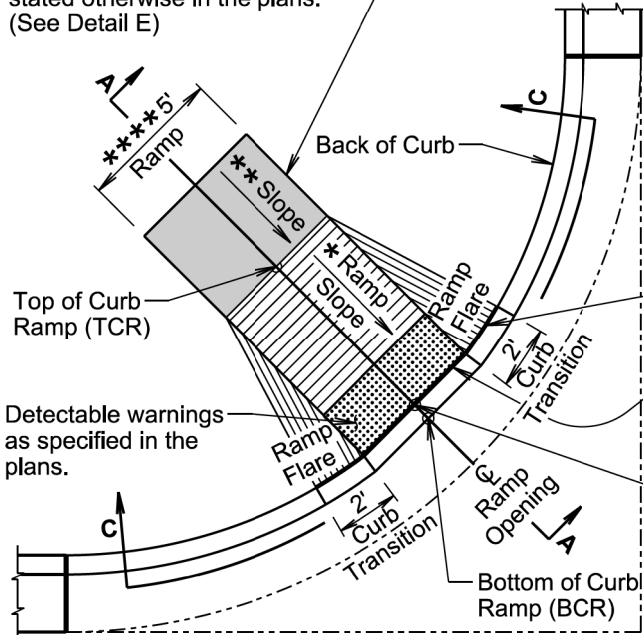
Published Date: 1st Qtr. 2021	S D D O T	JOINTS IN CONCRETE CURB AND GUTTER	PLATE NUMBER 650.90
			Sheet 2 of 2

The turning space is 5'x5' unless stated otherwise in the plans.
(See Detail E)



PLAN VIEW
(With 6+ Curb Transition)

The turning space is 5'x5' unless stated otherwise in the plans.
(See Detail E)

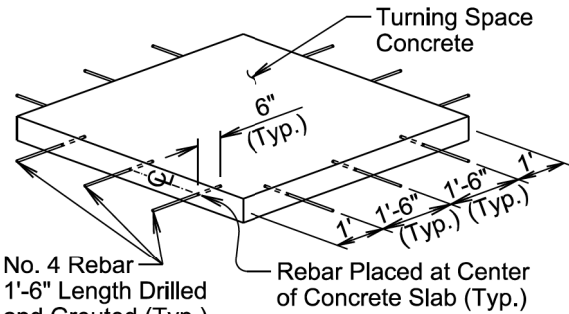


PLAN VIEW
(With 2' Curb Transition)

1/2" Preformed Expansion Joint Filler (See specifications and standard plate 651.75)

The edge of the curb and gutter concrete adjacent to the type 1 detectable warnings will be straight, but may be curved when using type 2 detectable warnings.

Reference point for location of curb ramp as shown in the plans.



**DETAIL E
ISOMETRIC VIEW**
(If turning space concrete is placed monolithic with surrounding concrete, then this detail is not necessary.)

1/2" Preformed Expansion Joint Filler (See specifications and standard plate 651.75)

The edge of the curb and gutter concrete adjacent to the type 1 detectable warnings will be straight, but may be curved when using type 2 detectable warnings.

Reference point for location of curb ramp as shown in the plans.

February 14, 2020

Published Date: 1st Qtr. 2021	S D D O T	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 1 of 3

STATE OF SOUTH DAKOTA	PROJECT IM 0905(115)218	SHEET F23	TOTAL SHEETS F24
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Plotting Date: 03/08/2021

Curb ramp slopes are designed at 7.5% unless stated otherwise in the plans. The curb ramp may have a maximum slope of 8.3% and will not exceed 15' in length unless stated otherwise in the plans.

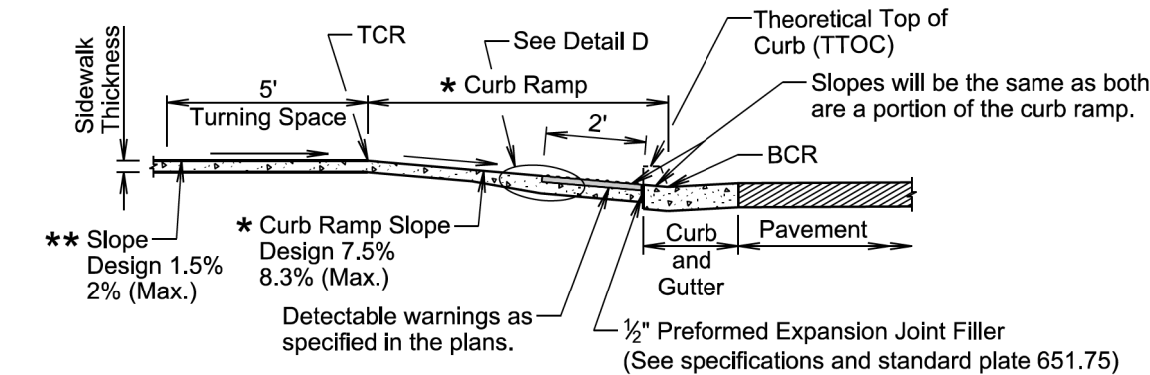
* The curb ramp length may be computed based on the intersection of a continuous 1.5% theoretical slope from theoretical top of curb (TTOC) with the curb ramp using a continuous 7.5% curb ramp slope. The elevation of point TCR will always be higher than the elevation of point TTOC unless specified otherwise in the plans. The curb ramp length dimension as shown in the plans will be adjusted as necessary to meet all slope and length requirements based on field geometrics.

The cross slope of the ramp will not be steeper than 2%. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

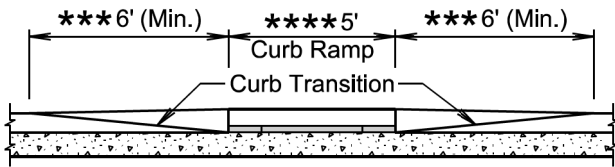
** The slope in the turning space will not be steeper than 2% in any direction of pedestrian travel. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

*** The curb transition will be a minimum of 6' long, a maximum of 10' long, and the curb transition slope will not be steeper than 10% unless stated otherwise in the plans. The curb transition length will be adjusted as necessary to meet slope and length requirements based on field geometrics.

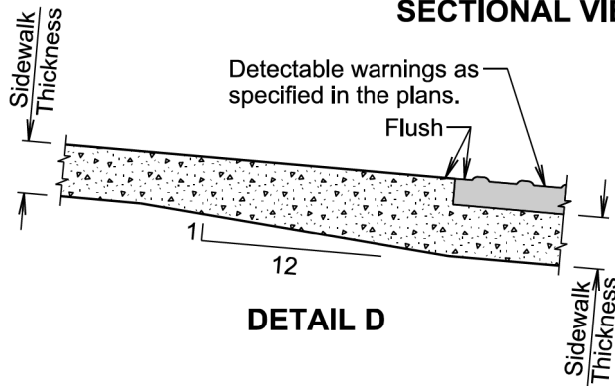
**** The ramp width is 5' unless stated otherwise in the plans.



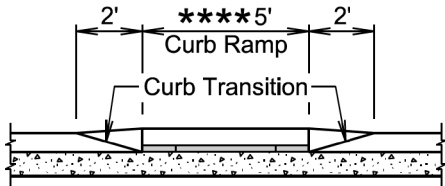
SECTION A-A



SECTIONAL VIEW B-B



DETAIL D



SECTIONAL VIEW C-C

February 14, 2020

Published Date: 1st Qtr. 2021	S D D O T	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 2 of 3

GENERAL NOTES:

For illustrative purpose only, type 1 detectable warnings are shown in the drawings.

For illustrative purpose only, PCC fillet sections are shown in the drawings. The curb ramp depicted on this standard plate may be used with a PCC fillet section or curb and gutter.

For illustrative purpose only, the curb ramp location is shown at the center of a PCC fillet section. The curb ramp will be placed at the location stated in the plans.

Sidewalk will not be placed adjacent to the curb ramp flares when a 2-foot curb transition is used unless shown otherwise in the plans.

* Care will be taken to ensure a uniform grade on the curb ramp, free of sags and short grade changes.

Surface texture of the curb ramp will be obtained by coarse brooming transverse to the slope of the curb ramp.

The normal gutter line profile will be maintained through the area of the ramp opening.

Joints will be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking.

Care will be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

The detectable warnings will be cut as necessary to fit the plan specified limits of the detectable warnings. Cost for cutting the detectable warnings will be incidental to the corresponding detectable warning contract item.

There will be no separate payment for curb ramps. The curb ramp will be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk contract item. The square foot area of the detectable warnings will be included in the measured and paid for quantity of sidewalk.

If rebar is placed in the turning space as depicted in detail E, the cost of the materials, labor, and equipment to furnish and install the rebar will be incidental to the contract unit price per square foot for the corresponding concrete sidewalk contract item.

The curb transitions and ramp opening will be measured and paid for at the contract unit price per foot for the corresponding curb and gutter contract item when curb and gutter is used. The curb transitions and ramp opening will be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section contract item when a PCC fillet section is used.

The type 1 detectable warnings will be measured to the nearest square foot. All costs for furnishing and installing the type 1 detectable warnings including labor, equipment, materials, and incidentals will be paid for at the contract unit price per square foot for "Type 1 Detectable Warnings".

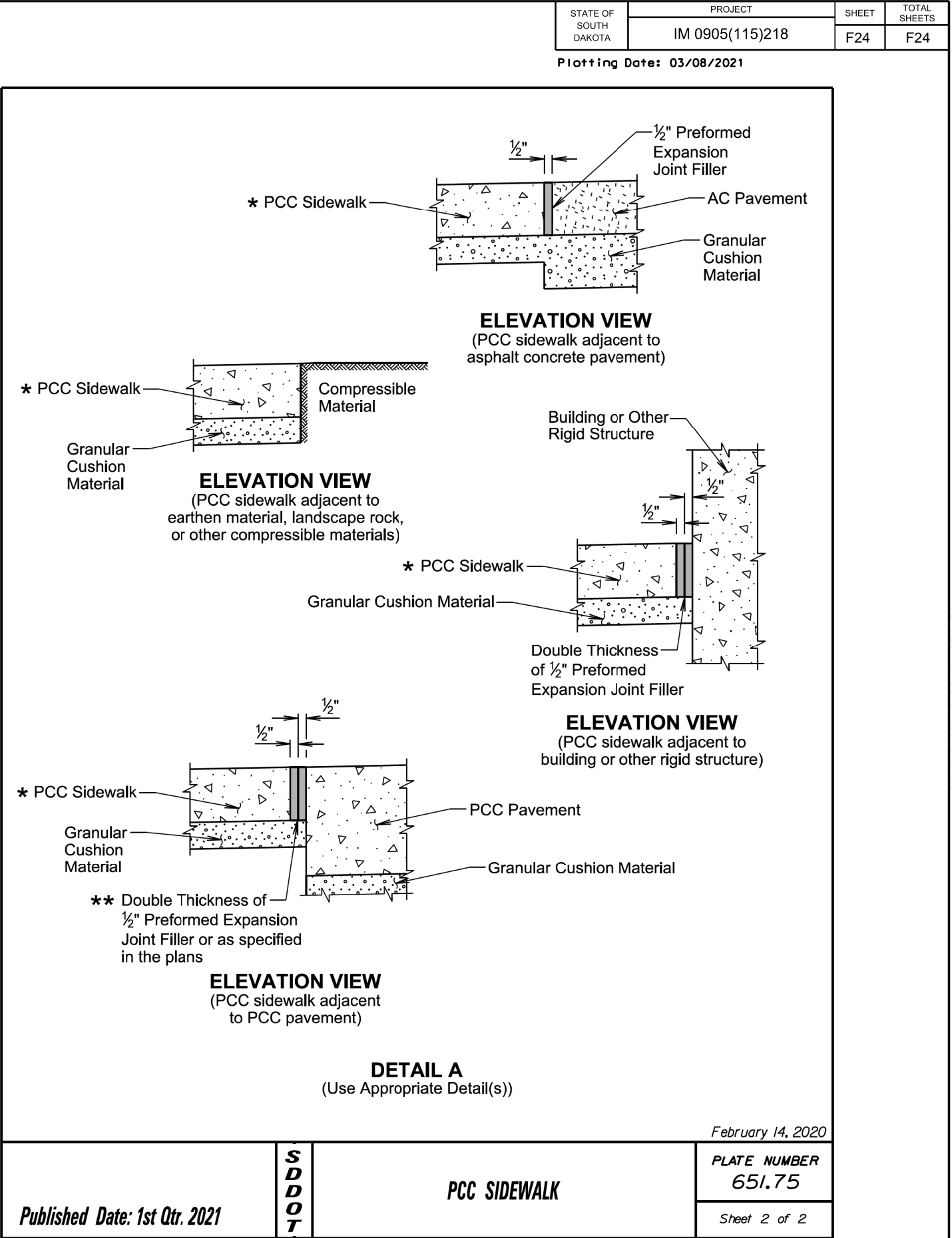
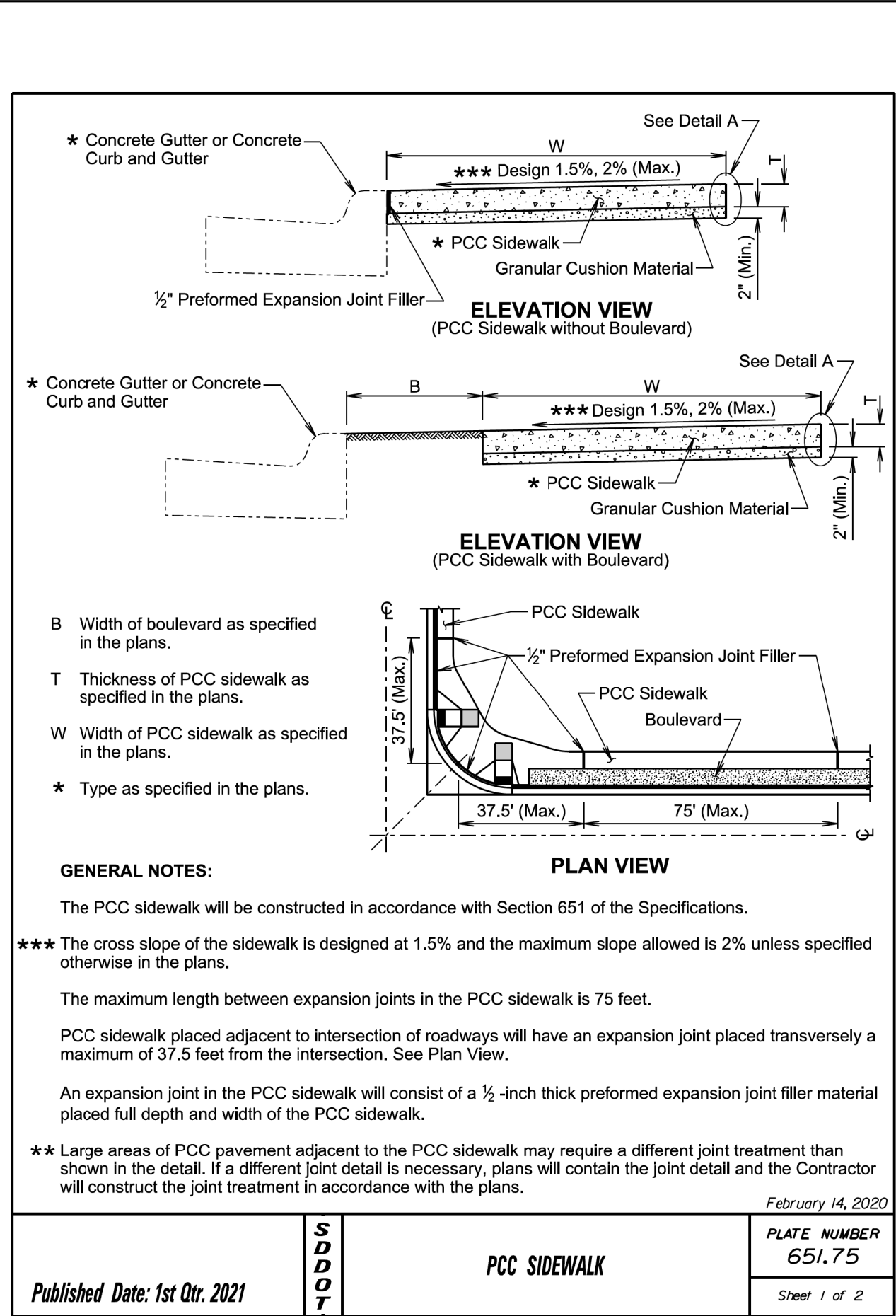
The type 2 detectable warnings will be measured to the nearest square foot. All costs for furnishing and installing the type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding will be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

February 14, 2020

Published Date: 1st Qtr. 2021	S D D O T	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 3 of 3

PLOT SCALE - 1:200

PLOTTED FROM - TRPR25289



FILE - ... \WORKING\STANDARD PLATES.DGN PLOT NAME - 1