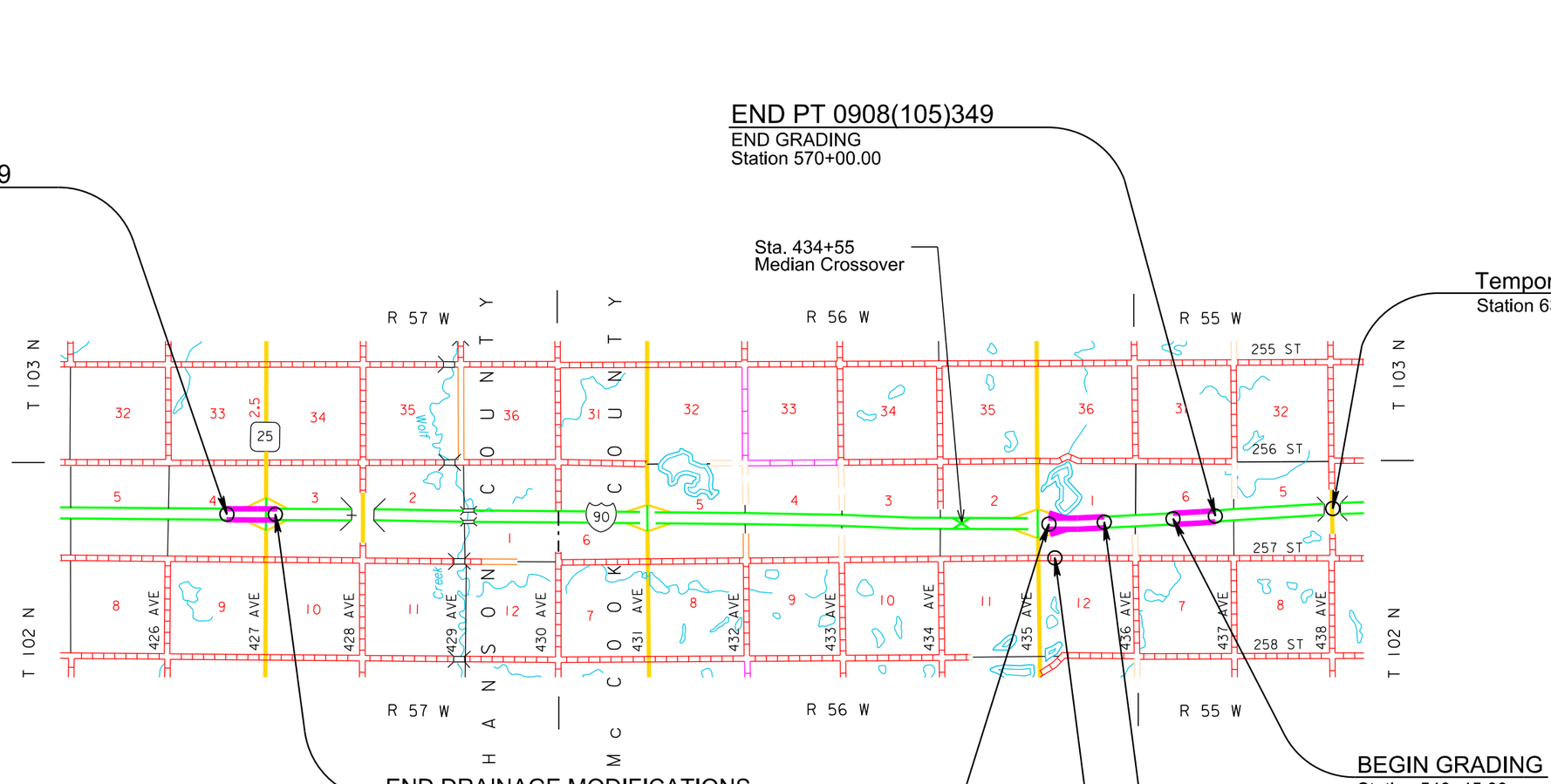
SECTION F: SURFACING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F1	F38

Plotting Date: 07/02/2024

INDEX OF SHEETS



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ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3320	Checker	Lump Sum	LS
110E7020	Remove Interim Crossover Closure for Reset	224	Ft
120E6200	Water for Granular Material	316.3	MGal
120E9000	Pit Run	4,685.7	Ton
260E1010	Base Course	3,456.0	Ton
260E2010	Gravel Cushion	18,254.2	Ton
320E1200	Asphalt Concrete Composite	1,508.4	Ton
380E0050	8" Nonreinforced PCC Pavement	4,476.1	SqYd
380E0100	10.5" Nonreinforced PCC Pavement	4,559.8	SqYd
380E0550	10.5"Continuously Reinforced PCC Pavement	28,484.0	SqYd
380E0800	PCC Shoulder Pavement	12,430.9	SqYd
380E6000	Dowel Bar	4,683	Each
380E6110	Insert Steel Bar in PCC Pavement	192	Each
450E4749	15" CMP 16 Gauge, Furnish	204	Ft
450E4750	15" CMP, Install	204	Ft
450E5005	15" CMP Elbow, Furnish	2	Each
450E5006	15" CMP Elbow, Install	2	Each
450E5402	15" CMP Safety End, Furnish	1	Each
450E5403	15" CMP Safety End, Install	1	Each
450E6119	15" Slotted CMP 16 Gauge, Furnish	260	Ft
450E6120	15" Slotted CMP, Install	260	Ft
451E3115	15" Pipe Cap	1	Each
462E0100	Class M6 Concrete	25.7	CuYd
464E0100	Controlled Density Fill	9.6	CuYd
629E9010	Interim Crossover Closure	368	Ft
629E9060	Reset Interim Crossover Closure	224	Ft
831E0210	Non-woven Separator Fabric	5,010	SqYd

EXISTING PCC PAVEMENT

EASTBOUND LANES: The existing mainline PCC Pavement is 10" Continuously Reinforced PCC Pavement (26' wide). Reinforced with No. 4 Transverse Deformed Steel Bars spaced at 42" c-to-c and No. 6 Longitudinal Deformed Steel Bars spaced at 6 ¼" c-to-c.

The existing acceleration/deceleration lanes is 10" Nonreinforced PCC Pavement (transverse joint spacing = 20'). Transverse joints have 1 ¼" Plain Round dowel Bars spaced at 18" c-to-c and longitudinal joints have No. 5 Epoxy Coated Deformed Tie Bars spaced at 30" c-to-c.

The aggregate in the existing PCC Pavement is quartzite.

WESTBOUND LANES: The existing mainline PCC Pavement is 10" Continuously Reinforced PCC Pavement (26' wide). Reinforced with No. 4 Transverse Deformed Steel Bars spaced at 48" c-to-c and No. 6 Longitudinal Deformed Steel Bars spaced at 6 ½" c-to-c.

The existing acceleration/deceleration lanes is 10" Nonreinforced PCC Pavement (transverse joint spacing = 20'). Transverse joints have 1 ¼" Plain Round dowel Bars spaced at 12" c-to-c and longitudinal joints have No. 5 Epoxy Coated Deformed Tie Bars spaced at 30" c-to-c.

The aggregate in the existing PCC Pavement is quartzite.

SURFACING THICKNESS DIMENSIONS

The plans shown spread rates will be applied even though the thickness may vary from that shown in the plans.

At those locations where material must be placed to achieve a required elevation, the depth/quantity may be varied to achieve the required elevation.

NON-WOVEN SEPARATOR FABRIC

Non-woven Separator Fabric has been included in the Estimate of Quantities for the median crossover. This fabric is to be used as a separator between the Pit Run material and the Base Course to prevent migration of fines from the Base Course into the Pit Run material. If the Pit Run material contains enough fines as placed to prevent the loss of material from the Base Course, the separator fabric may be eliminated by CCO. Non-woven Separator Fabric will conform to Section 831 of the Specifications.

TABLE OF NON-WOVEN SEPARATOR FABRIC

Location	Non-woven Separator Fabric (Sq.Yds.)
Median Crossover	
Sta. 424+55	5009.9

CONTROLLED DENSITY FILL FOR MEDIAN CROSSOVERS

Controlled Density Fill for median crossovers will be placed at the locations shown in the design layouts and the Table of Controlled Density Fill for Median Crossovers in accordance with Section 464.

Plans quantity will be the basis of measurement and payment unless changes are ordered by the Engineer.

TABLE OF CONTROLLED DENSITY FILL FOR MEDIAN CROSSOVERS

Location	Controlled Density Fill (Cu.Yds.)
Median Crossover	
Sta. 424+55	9.6

CLASS M6 CONCRETE

Class M6 Concrete will be placed at the locations shown in the design layouts and the Table of Class M6 Concrete in accordance with Section 462 for Class M Concrete.

Plans quantity will be the basis of measurement and payment unless changes are ordered by the Engineer.

TABLE OF CLASS M6 CONCRETE

Location	Class M6 Concrete (Cu.Yds.)
Median Crossover	
Sta. 424+55	25.7

INTERIM CROSSOVER CLOSURE

See Median Crossover Layouts and Standard Plate for placement and construction of the interim crossover closure.

TABLE OF INTERIM CROSSOVER CLOSURE

Location	Interim Crossover Closure (Ft)
Median Crossover	
Sta. 434+55	368

See Standard Plate 629.42

REMOVE AND RESET INTERIM CROSSOVER CLOSURE

The median crossover closure will be removed for reset and then reset when traffic is no longer being carried on the crossover.

TABLE OF REMOVE & RESET INTERIM CROSSOVER CLOSURE

Location	Interim Crossover Closure (Ft)
Median Crossover	
MRM 362.04	224

See Standard Plate 629.42

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite will include MC-70 Asphalt for Prime placed at the rate of 0.30 gallons per square yard. The Asphalt for Prime will be applied to the Base Course for the full width of the bottom layer of Asphalt Concrete Composite plus one foot additional on the outside shoulder.

Asphalt for Tack SS-1h or CSS-1h will be applied prior to each lift of Asphalt Concrete Composite. Asphalt for tack will be applied at a rate of 0.06 gallons per square yard on primed base course or new asphalt concrete pavement. The Asphalt for tack will be applied for the full width of the bottom layer of Asphalt Concrete Composite plus one-half foot additional on the outside shoulder.

The asphalt binder used in the mixture will be PG 58-34 or PG 64-34.

All other requirements in the Standard Specifications for Asphalt Concrete Composite will apply.

CHECKING SPREAD RATES

The Contractor will be responsible for checking the Base Course and Gravel Cushion spread rates and taking the weigh delivery tickets as the surfacing material arrives on the project and is placed onto the roadway.

The Contractor will compute the required spread rates for each typical surfacing section and create a spread chart prior to the start of material delivery and placement. The Engineer will review and check the Contractor's calculations and spread charts. The station to station spread will be written on each ticket as the surfacing material is delivered to the roadway.

At the end of each day's shift, the Contractor will verify the following:

- All tickets are present and accounted for,
- The quantity summary for each item is calculated,
- The amount of material wasted if any,
- Each day's ticket summary is marked with the corresponding 'computed by',
- The ticket summary is initialed and certified that the delivered and placed quantity is correct.

All daily tickets and the summary by item will be given to the Engineer no later than the following morning.

If the checker is not properly and accurately performing the required duties, the Contractor will correct the problem or replace the checker with an individual capable of performing the duties to the satisfaction of the Engineer. Failure to do so will result in suspension of the work.

The Department will perform depth checks. The Contractor will be responsible for placement of material to the correct depth unless otherwise directed by the Engineer. If the placed material is not within a tolerance of ±1/2 inch of the plan shown depth, the Contractor will correct the problem at no additional cost to the Department. Excess material above the tolerance will not be paid for. Achieving the correct depth may require picking up and moving material or other action as required by the Engineer. All costs for providing the Contractor furnished checker and performing all related duties will be incidental to the contract lump sum price for the "Checker". No allowances will be made to the contract lump sum price for Checker due to authorized quantity variations unless the quantities for the material being checked vary above or below the estimated quantities by more than 25 percent. Payment for the Checker will then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

10.5" and 8" NONREINFORCED PCC PAVEMENT

The fine aggregate will be screened over a 1-inch square opening screen just prior to introduction into the concrete paving mix. The Contractor will screen all of the aggregate to prevent the incorporation of foreign materials (i.e. mud balls) into the concrete mix.

The concrete mix will conform to the Special Provision for Contractor Furnished Mix Design for PCC Pavement.

There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement. Trimming will be performed as required by Section 380.3 C of the Specifications.

The location of joints, as shown and designated on the PCC Pavement Joint Layout(s) are only approximate locations to be used as a guide and to afford bidders a basis for estimating the construction cost of the joints. The final locations of the joints are to be designated by the Engineer during construction. Transverse contraction joints adjacent to 10.5" Continuously Reinforced Concrete will be spaced at 10' intervals. Transverse contraction joints in the 8" Nonreinforced PCC Pavement will be spaced at 13' intervals.

All ramps and acceleration/deceleration lanes will be longitudinally tined except for 6" along pavement marking locations. All other areas will be textured as directed by the Engineer.

Rumble Strips will be placed 15 inches wide 6 inches from the outside edge of the driving lane along all ramps and acceleration/deceleration lanes. Payment for forming rumble strips including labor, materials and incidentals will be incidental to the contract unit price per square yard for 10.5" or 8" Nonreinforced PCC Pavement. For informational purpose only, it is estimated that 1.22 miles of PCC Pavement rumble strip is required along Nonreinforced PCC Pavement.

The following locations will be tested for smoothness with a Contractor furnished and operated 25-foot California style profilograph in accordance with the Special Provision for PI PCC Pavement Smoothness with 0.2" Blanking Band:

Ramps:
Sta. 704+60 to Sta. 714+66.2, Ramp A
Sta. 809+01.5 to Sta. 815+06.7, Ramp B

Acceleration/Deceleration Lanes:
Sta. 488+97.9 to Sta. 507+30, I-90 EBL
Sta. 488+44.4 to Sta. 502+33.5, I-90 WBL

TRANSVERSE CONTRACTION JOINTS

See Standard Plate 380.04 for placement of Dowel Bars.

The transverse contraction joints will be perpendicular to the centerline. In multilane areas the transverse contraction joints will be perpendicular to the centerline and be in a straight line across the entire width of pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. All nonconforming transverse contraction joints will be removed at the Contractor's expense. Any method of placement that cannot produce these requirements will not be allowed.

10.5" CONTINUOUSLY REINFORCED CONCRETE PAVEMENT

Care will be taken not to cut, bend or otherwise damage the in place reinforcing steel. Damage to in place reinforcing steel or to in place concrete beyond the removal area will be replaced at the Contractor's expense, to the satisfaction of the Engineer.

The fine aggregate will be screened over a 1-inch square opening screen just prior to introduction into the concrete paving mix. The Contractor will screen all of the aggregate to prevent the incorporation of foreign materials (i.e. mud balls) into the concrete mix.

The concrete mix will conform to the Special Provision for Contractor Furnished Mix Design for PCC Pavement.

There will be no direct payment for trimming of the gravel cushion for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement. Trimming will be performed as required by Section 380.3 C of the Specifications.

The continuously reinforced concrete pavement shall be paved 26 feet wide. The concrete shall be placed with equipment operating from a preset grade line. All costs for reinforcing steel will be incidental to the contract unit price per square yard for 10.5" Continuously Reinforced Concrete Pavement.

All driving surfaces of the mainline paving will be longitudinally tined from 6" each side of centerline pavement markings to 6" inside the outside pavement markings. All other areas will be textured as directed by the Engineer.

Leave-Outs, Block-Outs or Temporary gaps in the continuously reinforced concrete pavement will not be allowed.

Rumble Strips will be placed 15 inches wide 6 inches from the outside edge of the driving lane, according to Standard Plate 380.53. Payment for forming rumble strips including labor, materials and incidentals shall be incidental to the contract unit price per square yard for 10.5" Continuously Reinforced PCC Pavement. For informational purpose only, it is estimated that 1.26 miles of PCC Pavement rumble strip is required for outside shoulder.

The following mainline pavement will be tested for smoothness with a Contractor furnished and operated 25-foot California style profilograph in accordance with Section 380.3.O.2 of the Specifications.

I-90 EBL – Sta. 479+55 to Sta. 507+30 (Driving and Passing Lanes)
I-90 WBL – Sta. 479+55 to Sta. 507+30 (Driving and Passing Lanes)
I-90 EBL – Sta. 548+45 to Sta. 570+00 (Driving and Passing Lanes)
I-90 WBL – Sta. 548+45 to Sta. 570+00 (Driving and Passing Lanes)

OUTSIDE PCC SHOULDER PAVEMENT

In lieu of an automatic subgrader operating from a preset grade line, a motor grader or other suitable equipment may be used to bring the gravel cushion to final grade prior to placement of the concrete.

The outside shoulder adjacent to the acceleration/deceleration lanes may be poured monolithic.

Transverse contraction joints will be spaced at 10’ intervals.

Provide a heavy carpet drag finish, a metal-tine finish will not be required on the shoulders. A metal-tine finish may be applied to the shoulders poured monolithic with the acceleration/deceleration lanes.

If the shoulders are poured monolithic with the acceleration/deceleration lanes pavement, a sawed joint with tie bars will be constructed between the acceleration/deceleration lanes pavement and the shoulders.

MEDIAN PCC SHOULDER PAVEMENT

In lieu of an automatic subgrader operating from a preset grade line, a motor grader or other suitable equipment may be used to bring the gravel cushion to final grade prior to placement of the concrete.

Provide a heavy carpet drag finish, a metal-tine finish will not be required on the shoulders.

Transverse contraction joints will be spaced at 10’ intervals.

Rumble Strips will be placed 1.5 feet wide 6 inches from the outside edge of the driving lane. Payment for forming rumble strips including labor, materials and incidentals will be incidental to the contract unit price per square yard for “PCC Shoulder Pavement”. For informational purpose only, it is estimated that 1.87 miles of PCC Pavement rumble strip is required for median shoulder.

STEEL BAR INSERTION

The Contractor will insert the Steel Bars (No. 6 x 72” Epoxy coated Deformed Tie Bar) into drilled holes in the existing concrete pavement. Anchoring of the steel bars in the drilled holes will conform to the Specifications.

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 deformed steel bars will be inserted between every other longitudinal bar in the transverse joint, see detail sheet for New CRC Pavement Placement Detail.

TABLE OF STEEL BAR INSERTION

LOCATION	QUANTITY OF BARS
I-90	No. 6 x 72”
Sta. 479+55 EBL	24
Sta. 507+30 EBL	24
Sta. 548+45 EBL	24
Sta. 570+00 EBL	24
Sta. 479+55 WBL	24
Sta. 507+30 WBL	24
Sta. 548+45 WBL	24
Sta. 570+00 WBL	24
Totals =	192

ALKALI SILICA REACTIVITY

The Department will use the running average of the last three or fewer known expansion test results for determining acceptability of the source. These expansion results are reported in the following table. Additional testing, when requested by the Contractor, will be performed by the Department at the Contractor's expense.

The values listed in the table are intended for use in bidding. If a previously tested pit by SDDOT with a test value less than 0.250 is discovered after letting to be 0.250 or greater, then the Department will accept financial responsibility if higher costs are incurred due to higher percent of fly ash requirement.

ALKALI SILICA REACTIVITY (CONTINUED)

Fine aggregate will conform to Section 800.2 D Alkali Silica Reactivity (ASR) Requirements.

Below is a list of known fine aggregate sources and the average corresponding 14-day expansion values (as of 8-30-2023):

Source	Location	Expansion Value
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.146
Concrete Materials - Vellek Pit	Yankton, SD	0.411**
Croell	Hot Springs, SD	0.089
Croell	Wasta, SD	0.212
Emme Sand & Gravel	Oneil, NE	0.217
Fisher S&G – Blair Pit	W of Vale, SD	0.171
Fisher S&G - Mickelson Pit	E of Nisland, SD	0.129
Fisher S&G - Vallery Pit	Nisland, SD	0.110
Fisher S&G	Rapid City, SD	0.092
Fisher S&G	Spearfish, SD	0.053
Fisher S&G	Wasta, SD	0.159
Fuchs	Pickstown, SD	0.275*
Henning – Tilstra Pit	Ash Creek, MN	0.199
Higman	Hudson, SD	0.187
Jensen	Herried, SD	0.276*
L.G. Everist	Akron, IA	0.257*
L.G. Everist	Brookings, SD	0.297*
L.G. Everist – Ode Pit	E Sioux Falls, SD	0.215
L.G. Everist – Nelson Pit	NE Sioux Falls, SD	0.156
L.G. Everist	Hawarden, IA	0.176
L.G. Everist	Summit, SD	0.184
Mark’s S&G – Moerke Pit	Underwood, MN	0.165
Morris – Birdsall	Blunt, SD	0.229
Morris - Leesman	Blunt, SD	0.231
Morris - Richards Pit	Onida, SD	0.188
Morris - Shawn’s Pit	E of Sturgis, SD	0.186
Northern Concrete Agg.	Rauville, SD	0.113
Northern Concrete Agg.	Luverne, MN	0.133
Opperman - Gunvordahl Pit	Burke, SD	0.363*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.230
Pete Lien & Sons	Creston, SD	0.158
Pete Lien & Sons	Oral, SD	0.157
Pete Lien & Sons	Wasta, SD	0.226
Simon Materials - Beltline Pit	Scottsbluff, NE	0.277*
Thorpe Pit	Britton, SD	0.098
Wagner Building Supplies	Pickstown (Wagner), SD	0.251*
Winter Brothers- Whitehead Pit	Brookings, SD	0.197

* These sources will require Type II cement with a fly ash content of 25% in the concrete mix.

** These sources will not be used.

POLY-ALPHA METHYLSTYRENE (AMS) MEMBRANE CURING COMPOUND

Provide poly-alpha methylstyrene liquid membrane curing compounds for spray application on portland cement concrete surfaces exposed to the air.

The AMS membrane curing compound will conform to section 821 of the Specifications and the following requirements:

1. The AMS membrane curing compound will be successfully reviewed by the Department before use.

2. Meets the requirements of ASTM C 309 for white pigmented Type 2, Class B.

3. The Engineer will not allow the use of curing compound that is over 1 year from the manufacture date.

4. Resin is 100 percent poly-alpha methylstyrene and formulated to maintain the specified properties of the following Table.

REQUIREMENTS FOR AMS MEMBRANE CURING COMPOUND	
Properties	**Range**
Total solids, % by weight of compound	≥ 42
% reflectance in 72 h (ASTM E 1247)	≥ 65
Loss of Water, kg/sq. m in 24 h (AASHTO T 155)	≤ 0.15
Loss of Water, kg/sq. m in 72 h (AASHTO T 155)	≤ 0.40
Settling Test, ml/100 ml in 72 h *	≤ 2
V.O.C. Content, g/L	≤ 350
Infrared Spectrum, vehicle	100% α methylstyrene
*Test in accordance with MNDOT method.	

The application will be in accordance with section 380.3 M plus the following:

Before application, agitate the curing compound as received in the shipping container to obtain a homogenous mixture. Protect membrane curing compounds from freezing before application. Handle and apply the membrane curing compound in accordance with the manufacturer‘s recommendations.

1. Apply curing compound homogeneously to provide a uniform, solid, white opaque coverage on all exposed concrete surfaces (equal to a white sheet of typing paper) at the time of application.

2. If the Engineer determines that the initial or corrective spraying result in unsatisfactory curing, the Engineer may require the Contractor to use the blanket curing method, at no additional cost to the Department.

POLY-ALPHA METHYLSTYRENE (AMS) MEMBRANE CURING COMPOUND (CONTINUED)

Use the fully-automatic, self-propelled mechanical power sprayer to apply the curing compound:

1. Operate the equipment to direct the curing compound to the surface from two different lateral directions.

2. If puddling, dripping, or non-uniform application occurs, suspend the operation to perform corrections as approved by the Engineer.

3. A re-circulating bypass system that provides for continuous agitation of the reservoir material.

4. Separate filters for the hose and nozzle.

5. Check valve nozzles.

6. Multiple or adjustable nozzle system that provides for variable spray patterns.

7. A spray-bar drive system that operates independently of the wheels or track drive system.

Equipment for hand spraying of odd width or shapes and surfaces exposed by form removal will be:

1. Used from two directions to ensure coverage equal to a white sheet of typing paper as visible from any direction immediately after spraying.

2. A re-circulating bypass system that provides for continuous agitation of the reservoir material.

3. Separate filters for the hose and nozzle.

4. Multiple or adjustable nozzle system that provides for variable spray patterns.

A recommended practice for using AMS membrane curing compound is to clean out the sprayer including tank and nozzles each day after use.

Payment for AMS membrane curing compound, including labor, materials and incidentals will be incidental to the contract unit price per square yard for 10.5” Continuously Reinforced PCC Pavement or 10.5” and 8” Nonreinforced PCC Pavement”.

TABLE OF PCC PAVEMENT

LOCATION			1½" Dowel Bars	1¼" Dowel Bars	10.5" Continuously Reinforced PCC Pavement	10.5" Nonreinforced PCC Pavement	PCC Shoulder Pavement			8" Nonreinforced PCC Pavement
							4' Median Shoulder	8' Outside Shoulder	6' Outside Shoulder	
Station	to	Station	each	each	sq. yds.	sq. yds.	sq. yds.	Sq. yds.	sq. yds.	sq. yds.
I-90 EBL										
479+55.0	to	488+97.7			2,723.4		419.0	838.0		
488+97.9	to	507+30.0	# 1,505		5,292.7	# 2,374.2	814.3		1,221.4	
548+45.0	to	570+00.0			6,225.6		957.8	1,915.6		
I-90 WBL										
479+55.0	to	488+44.4			2,569.4		395.3	790.6		
488+44.4	to	502+33.5	# 1,348		4,013.0	# 2,185.6	617.4		926.1	
502+33.5	to	507+30.0			1,434.3		220.7	441.3		
548+45.0	to	570+00.0			6,225.6		957.8	1,915.6		
Exit 357 Ramp A										
704+60.0	to	714+66.2		1,140						2,795.0
Exit 357 Ramp B										
809+01.5	to	815+06.7		690						1,681.1
		SUBTOTAL	2,853	1,830			4,382.3	5,901.1	2,147.5	
		TOTAL	4,683		28,484.0	4,559.8	12,430.9			4,476.1

Quantities for acceleration/deceleration lanes

TABLE OF MATERIAL QUANTITIES

LOCATION	WATER FOR GRANULAR MATERIAL	GRAVEL CUSHION	BASE COURSE	PIT RUN MATERIAL	ASPHALT CONCRETE COMPOSITE
	MGal	Ton	Ton	Ton	Ton
Rate A1	122.2	10,166.0			
Rate A2	14.6	1,234.2			
Rate A3	5.3	464.7			
Rate B1	15.8	1,330.1			
Rate B2	10.8	906.1			
Rate C1	5.1	417.8			
Rate C2	2.4	202.0			
Rate D1	21.4	1,785.9			
Rate D2	4.5	376.1			
Table of Additional Quantities	114.2	1,371.3	3,456.0	4,685.7	1,508.4
Total	316.3	18,254.2	3,456.0	4,685.7	1,508.4

RATES OF MATERIALS

The Estimate of Surfacing Quantities is based on the following quantities of materials per **STATION**.

I-90 MAINLINE – Rate A1

Sta. 479+55 to Sta. 488+97.7 EBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 479+55 to Sta. 488+44.4 WBL
Sta. 502+33.5 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 WBL

GRAVEL CUSHION 153.13 tons.

Water for Granular Material at the rate of 1.84 M. Gallons.

The exact proportions of these materials will be determined on construction.

I-90 OUTSIDE SHOULDER – Rate A2

Sta. 479+55 to Sta. 488+97.7 EBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 479+55 to Sta. 488+44.4 WBL
Sta. 502+33.5 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 WBL

GRAVEL CUSHION 18.59 tons.

Water for Granular Material at the rate of 0.22 M. Gallons.

The exact proportions of these materials will be determined on construction.

I-90 OUTSIDE SHOULDER WEDGE – Rate A3

Sta. 479+55 to Sta. 488+97.7 EBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 479+55 to Sta. 488+44.4 WBL
Sta. 502+33.5 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 WBL

GRAVEL CUSHION 7.00 tons.

Water for Granular Material at the rate of 0.08 M. Gallons.

The exact proportions of these materials will be determined on construction.

I-90 MEDIAN SHOULDER – Rate B1

Sta. 479+55 to Sta. 507+30 EBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 479+55 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 WBL

GRAVEL CUSHION 13.49 tons.

Water for Granular Material at the rate of 0.16 M. Gallons.

The exact proportions of these materials will be determined on construction.

I-90 MEDIAN SHOULDER WEDGE – Rate B2

Sta. 479+55 to Sta. 507+30 EBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 479+55 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 WBL

GRAVEL CUSHION 9.19 tons.

Water for Granular Material at the rate of 0.11 M. Gallons.

The exact proportions of these materials will be determined on construction.

I-90 ACCELERATION & DECELERATION LANES SHOULDER – Rate C1

Sta. 491+49.5 to Sta. 507+30 EBL
Sta. 491+49.8 to Sta. 502+33.5 WBL

GRAVEL CUSHION 15.68 tons.

Water for Granular Material at the rate of 0.19 M. Gallons.

The exact proportions of these materials will be determined on construction.

I-90 ACCELERATION & DECELERATION LANES SHOULDER WEDGE – Rate C2

Sta. 491+49.5 to Sta. 507+30 EBL
Sta. 491+49.8 to Sta. 502+33.5 WBL

GRAVEL CUSHION 7.58 tons.

Water for Granular Material at the rate of 0.09 M. Gallons.

The exact proportions of these materials will be determined on construction.

RAMP MAINLINE – Rate D1

Sta. 704+60 to Sta. 714+66.2, Ramp A
Sta. 809+01.5 to Sta. 815+06.7, Ramp B

GRAVEL CUSHION 110.83 tons.

Water for Granular Material at the rate of 1.33 M. Gallons.

The exact proportions of these materials will be determined on construction.

RAMP SHOULDER WEDGE – Rate D2

Sta. 704+60 to Sta. 714+66.2 Lt. & Rt. Shoulders, Ramp A
Sta. 809+01.5 to Sta. 815+06.7 Lt. & Rt. Shoulders, Ramp B
(Rate is for 1 shoulder only)

GRAVEL CUSHION 11.67 tons.

Water for Granular Material at the rate of 0.14 M. Gallons.

The exact proportions of these materials will be determined on construction.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F8	F38

TABLE OF ADDITIONAL QUANTITIES

LOCATION	WATER FOR GRANULAR MATERIAL	GRAVEL CUSHION	BASE COURSE	PIT RUN MATERIAL	ASPHALT CONCRETE COMPOSITE		
					1st Lift	2nd Lift	Top Lift
	MGal	Ton	Ton (Depth)	Ton	Ton (Depth)	Ton	Ton
Station to Station							
I-90 Gore Area							
488 + 97.9 to 491 + 49.5 EBL	6.3	527.4					
488 + 44.4 to 491 + 49.8 WBL	7.7	639.7					
I-90 Gore Area Outside Shoulder Wedge							
488 + 97.9 to 491 + 49.5 EBL	0.5	42.3					
488 + 44.4 to 491 + 49.8 WBL	0.6	51.4					
257th Street							
1 + 40 to 2 + 14	1.3	110.5					
Median Crossover @ Sta. 434+55	87.8		2,626.4	4,685.7	595.2	555.8	348.6
Guardrail Surfacing (See Section B for layout details)							
Str. # 31-150-125							
WBL Outside Shoulder	0.3		25.4 (11.3”)		4.8 (2”)		
EBL Outside Shoulder	0.3		21.5 (11.3”)		4.0 (2”)		
Str. # 44-050-127							
WBL Outside Shoulder	0.5		43.1 (18’)				
WBL Median Shoulder	1.8		149.5 (12.6” ave.)				
EBL Outside Shoulder	0.5		44.5 (18”)				
EBL Median Shoulder	1.8		146.0 (12.6” ave.)				
Str. # 44-080-125							
WBL Outside Shoulder	0.7		55.2 (15”)				
WBL Median Shoulder	1.7		142.9 (11.1” ave.)				
EBL Outside Shoulder	0.6		52.1 (15”)				
EBL Median Shoulder	1.8		149.4 (11.1” ave.)				
Totals =	114.2	1,371.3	3,456.0	4,685.7	1,508.4		

Application Rates: MC-70 Asphalt for Prime rate = 0.30 gallon per square yard
SS-1h or CSS-1h Asphalt for Tack rate = 0.06 gallon per square yard
SS-1h or CSS-1h Asphalt for Flush Seal rate = 0.05 gallon per square yard
Sand for Flush Seal rate = 8.00 lbs. per square yard

IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F9	F38

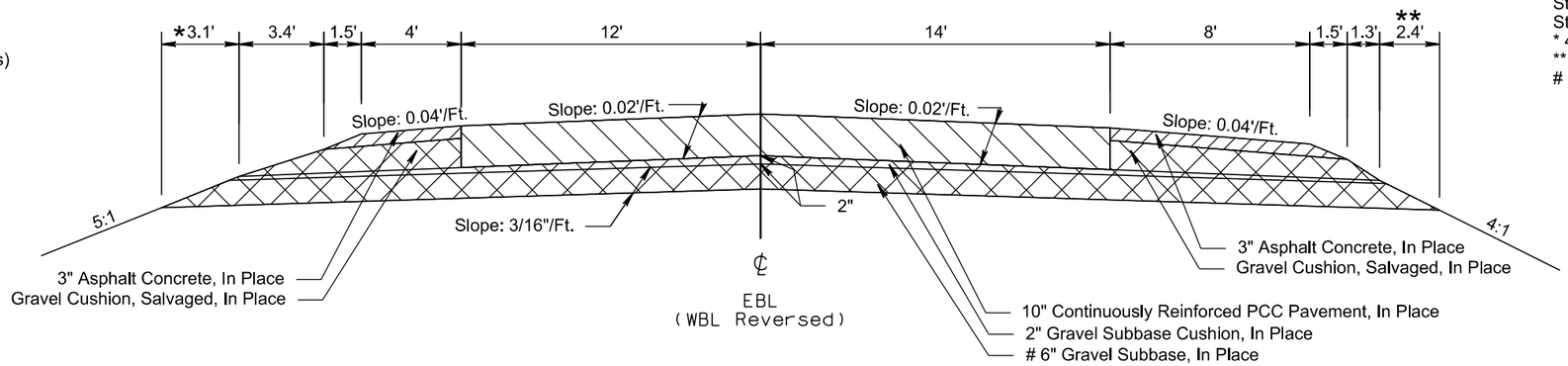
Plotting Date: 07/02/2024

Remove Asphalt Concrete Pavement
(See Section B for quantities)

Remove Concrete Pavement
(See Section B for quantities)

Unclassified Excavation
(See Section B for quantities)

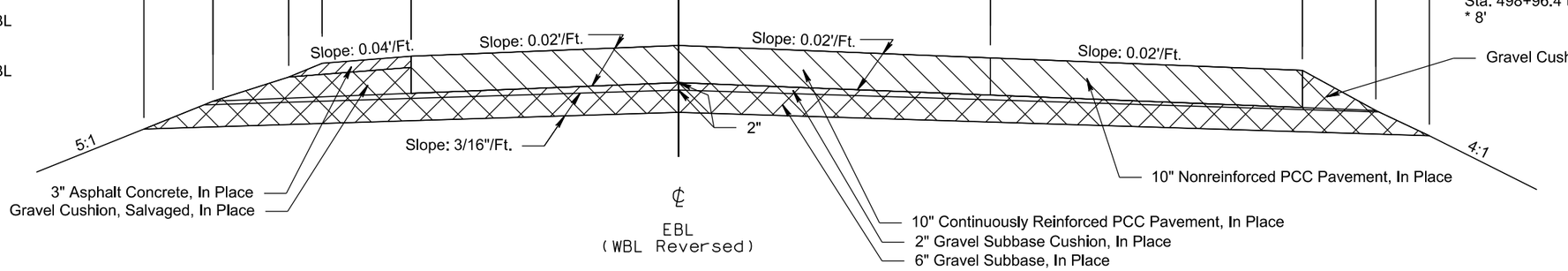
Sta. 479+55 to Sta. 488+03.9 EBL
Sta. 501+79.4 to Sta. 507+30 EBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 479+55 to Sta. 487+87.5 WBL
Sta. 496+85.7 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 WBL



Transitions:

Sta. 479+55 to Sta. 480+92.5 EBL & WBL
Sta. 551+92.5 to Sta. 568+92.5 EBL & WBL
* 4.5'
** 3.4'
# 9"

Sta. 488+03.9 to Sta. 501+79.4 EBL
Sta. 487+87.5 to Sta. 496+85.7 WBL



Transitions:

Sta. 487+87.5 to Sta. 488+98.6 WBL
* 41.3' to 25.5'

Sta. 488+98.6 to Sta. 495+69.1 WBL
* 25.5' to 8'

Sta. 495+69.1 to Sta. 496+85.7 WBL
* 8'

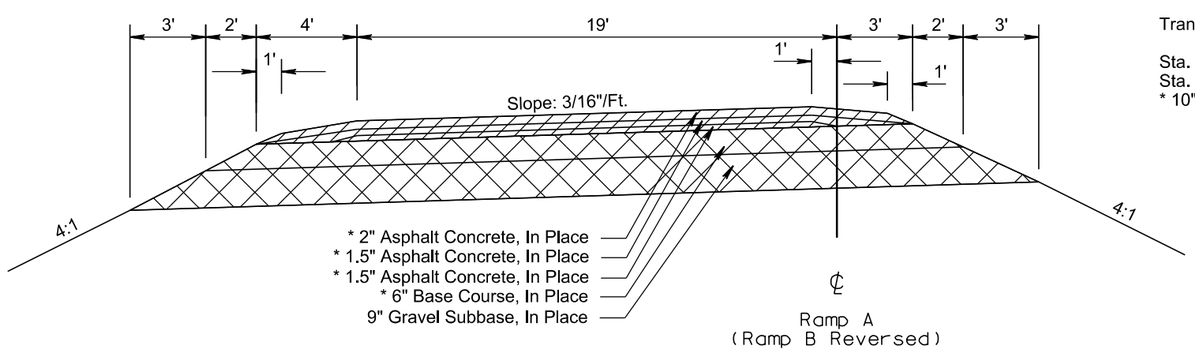
Transitions:

Sta. 488+03.9 to Sta. 491+07.3 EBL
* 38.8' to 14'

Sta. 496+67.1 to Sta. 498+96.4 EBL
* 14' to 8'

Sta. 498+96.4 to Sta. 501+79.4 EBL
* 8'

Sta. 704+60 to Sta. 714+09.5 Ramp A
Sta. 809+01.5 to Sta. 814+14 Ramp B



Transitions:

Sta. 713+84.1 to Sta. 714+09.5 Ramp A
Sta. 813+91.9 to Sta. 814+14 Ramp B
* 10" Nonreinforced PCC Pavement
and 1" Base Course

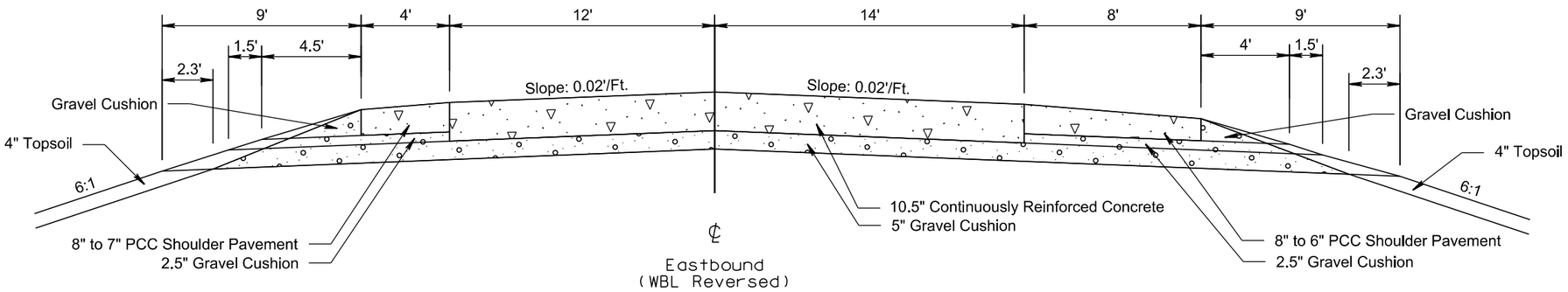
TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F10	F38

Plotting Date: 07/02/2024

I90 Exit 357 Mainline

Sta. 479+55 to Sta. 488+97.7 EBL
Sta. 479+55 to Sta. 488+44.4 WBL
Sta. 502+33.5 to Sta. 507+30 WBL
Sta. 548+45 to Sta. 570+00 EBL
Sta. 548+45 to Sta. 570+00 WBL



Transitions:

Sta. 488+97.9 to Sta. 491+49.5 EBL
* 34.9' to 18'
** 0'

Sta. 501+30.2 to Sta. 505+81.1 EBL
* 12' to 2'

Sta. 505+81.2 to Sta. 507+30 EBL
* 2'

Transitions:

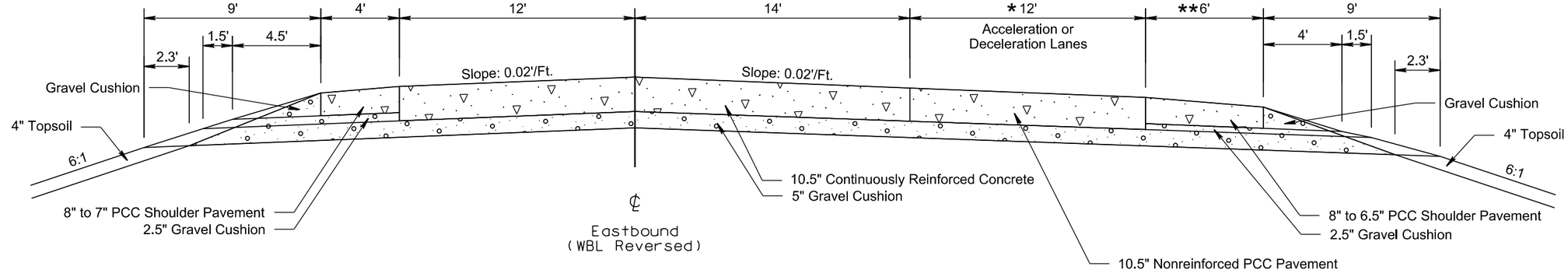
Sta. 488+44.4 to Sta. 491+49.8 WBL
* 40.7' to 18'
** 0'

Sta. 499+49.9 to Sta. 501+90 WBL
* 12' to 2'

Sta. 501+90 to Sta. 502+33.5 WBL
* 2'

I90 Exit 357 Mainline

Sta. 488+97.9 to Sta. 507+30 EBL
Sta. 488+44.4 to Sta. 502+33.5 WBL



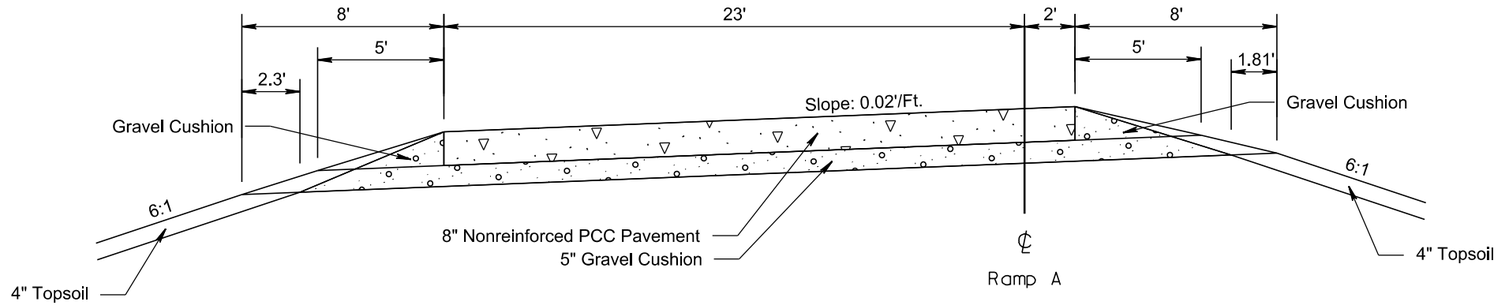
TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F11	F38

Plotting Date: 07/02/2024

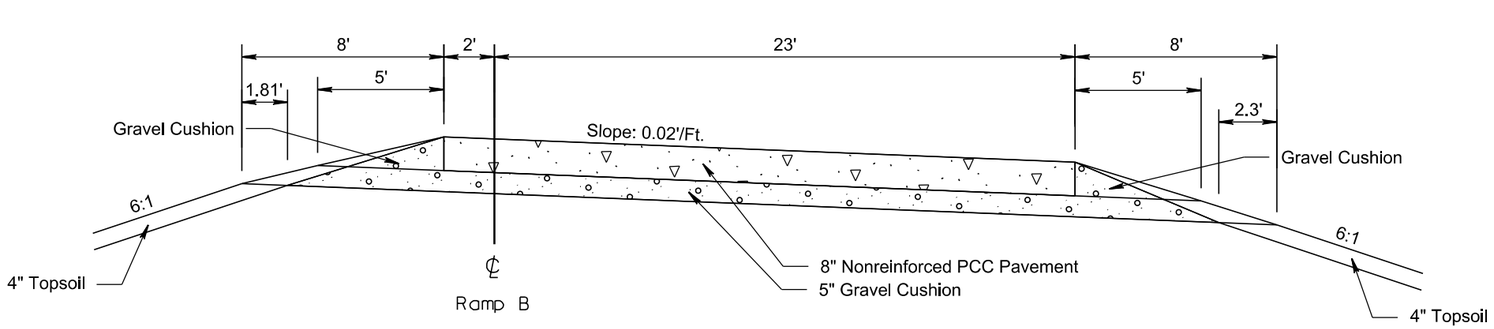
Exit 357 Ramp A

Sta. 704+60 to Sta. 714+66.2



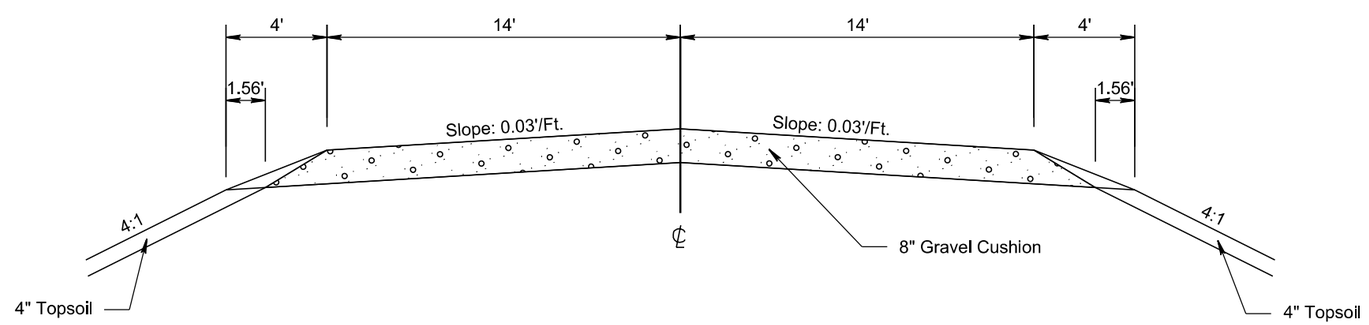
Exit 357 Ramp B

Sta. 809+01.50 to Sta. 815+06.7



257th Street

Sta. 1+40 to Sta. 2+14

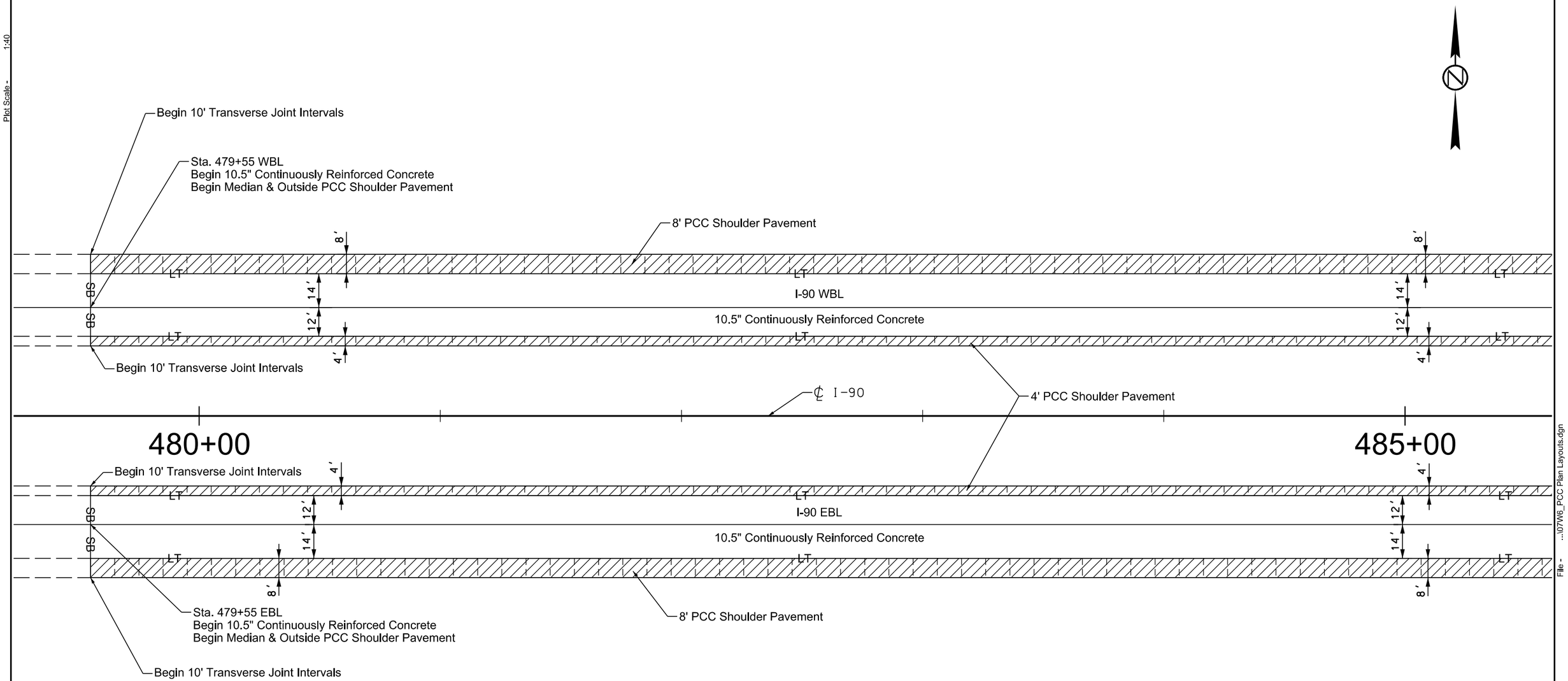


PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F12	F38

Plotting Date: 07/02/2024

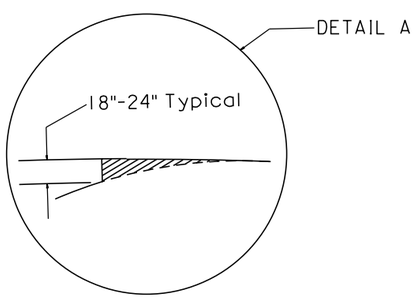
Scale 1 Inch = 40 Feet
Sheet 1 of 10 Sheets



LEGEND:

Longitudinal Joint With Tie Bars (Construction or Sawed) ———LT———LT———
10' Transverse Contraction Joints — — — — — — — — — — — — — — — — — —
Steel Bar Installation in Longitudinal or Transverse Joint ———SB———SB———
Areas to be poured monolithically with adjacent slab ⊕ (See Detail A)

Transverse contraction joints within these areas will not have dowel bar assemblies. All other transverse contraction joints will have dowel bar assemblies.



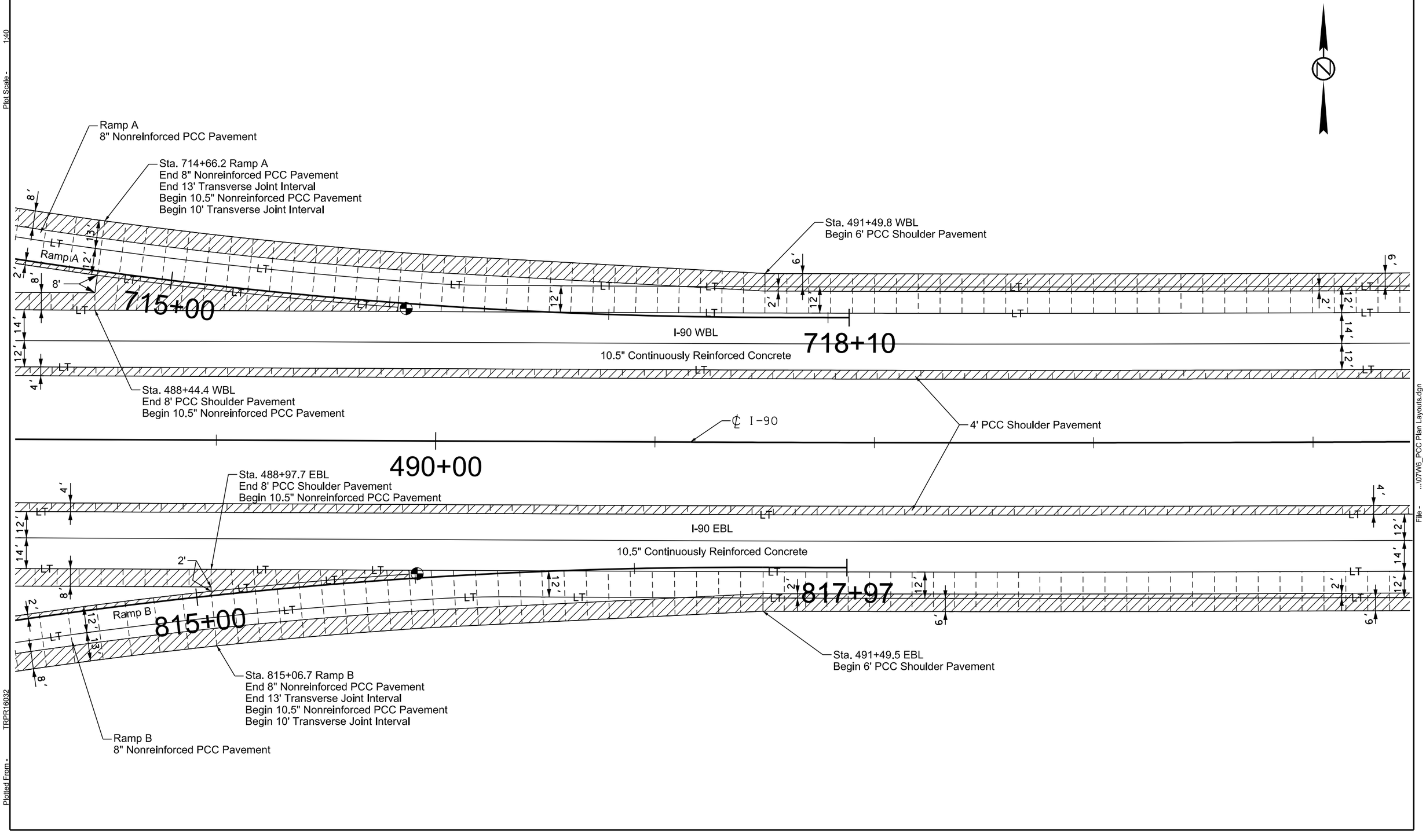
Plot Scale - 1:40
Plotted From - TRPR16032
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F13	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 2 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

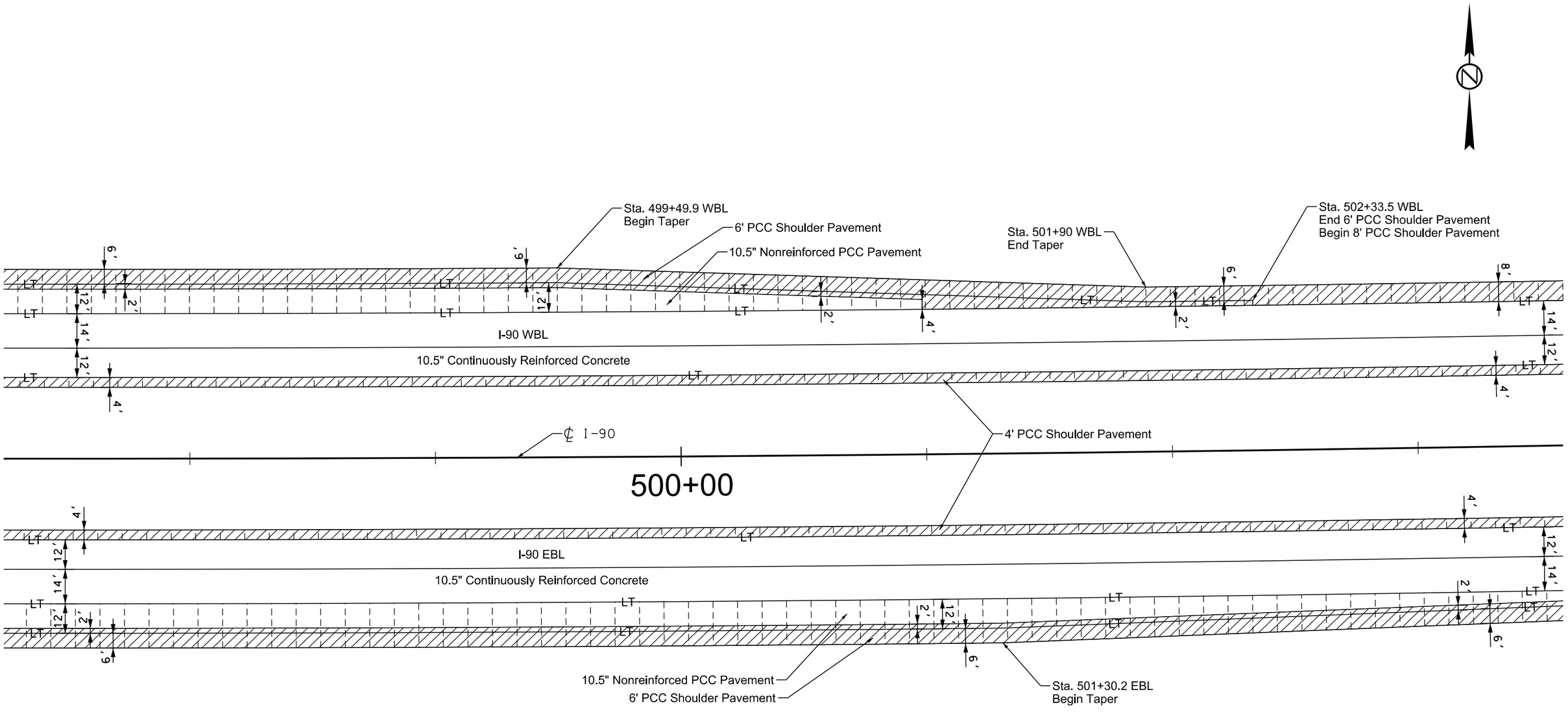
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F14	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 3 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

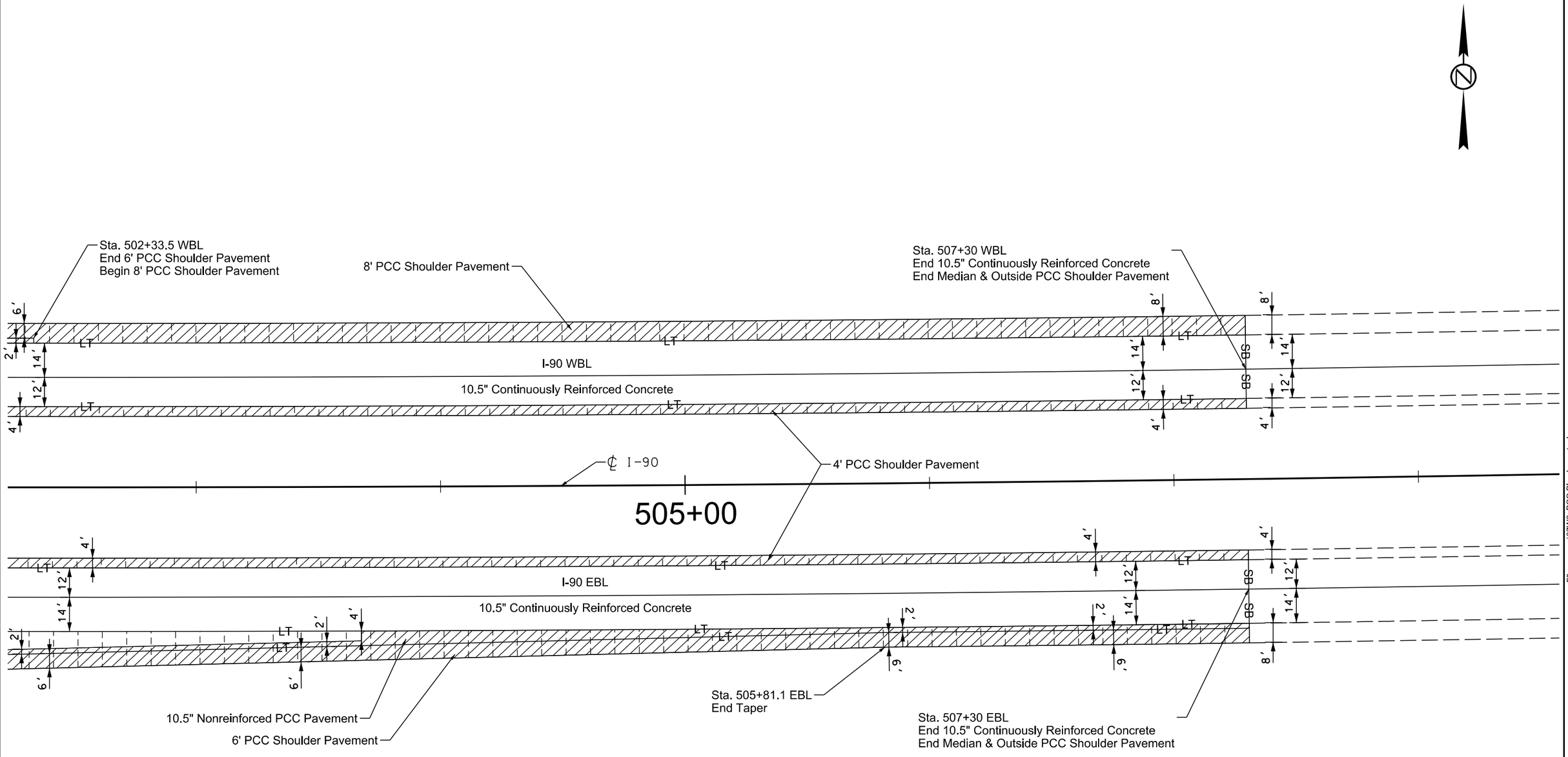
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F15	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 4 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

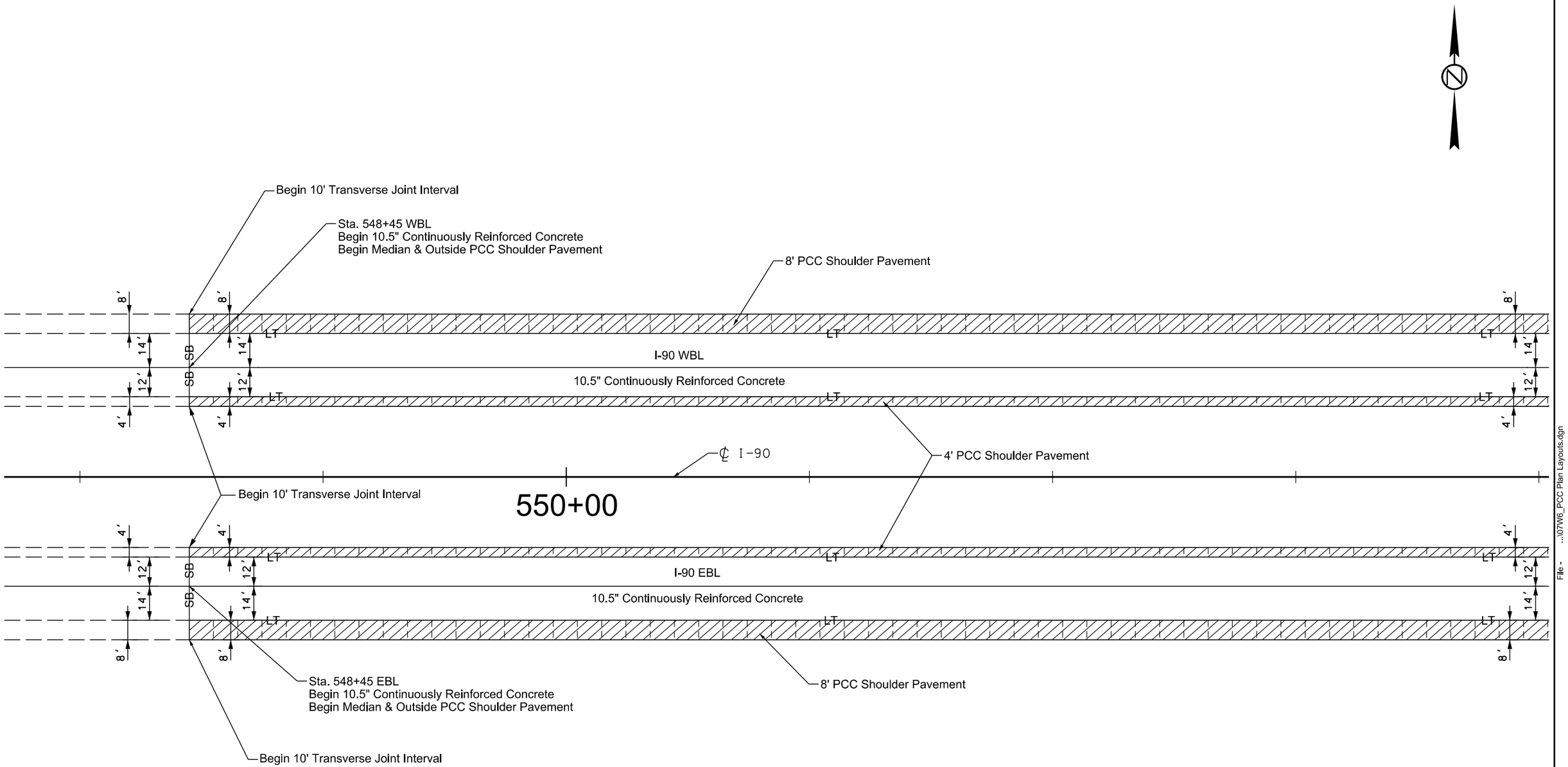
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F16	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 5 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

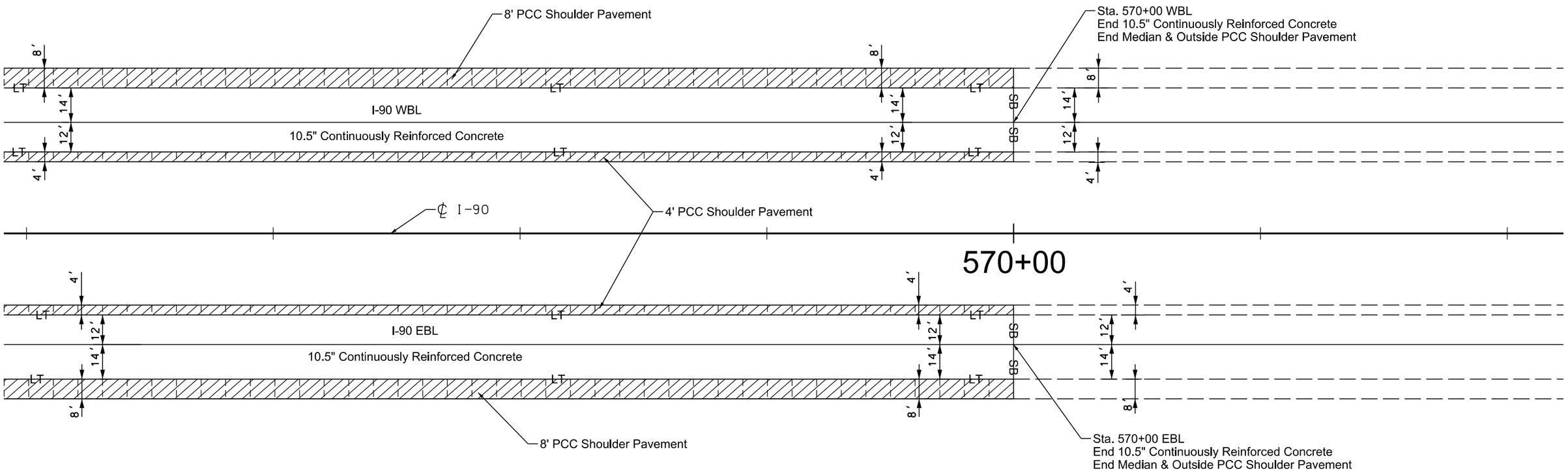
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F17	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 6 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

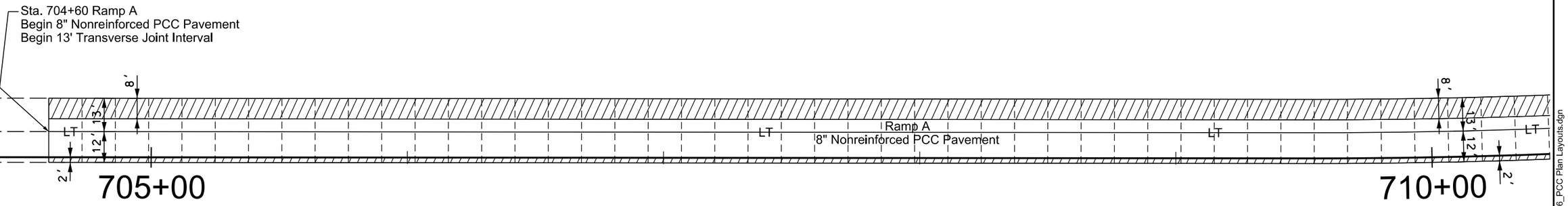
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F18	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 7 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

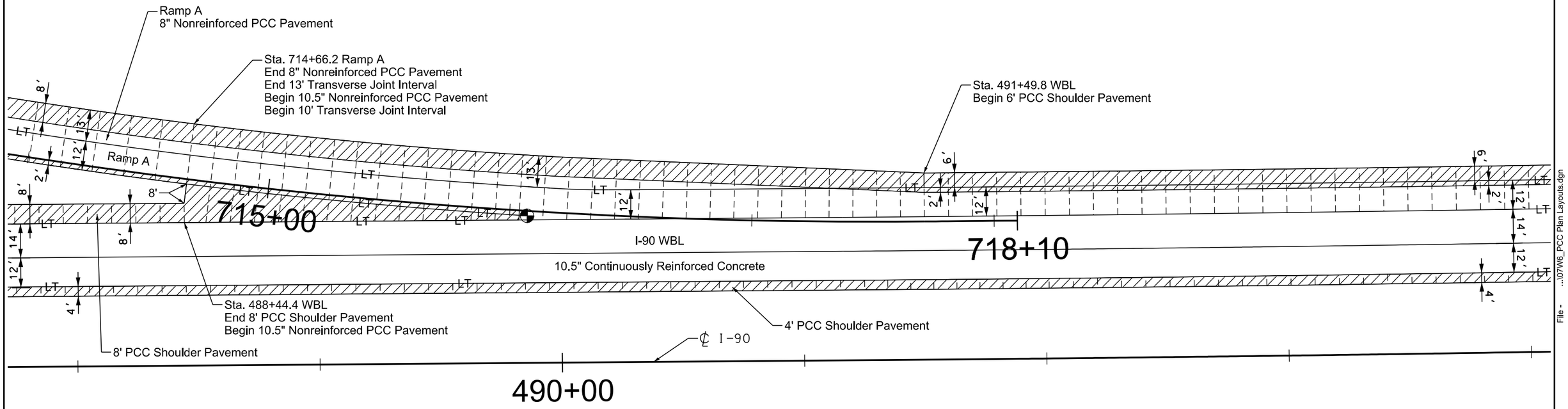
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F19	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 8 of 10 Sheets



Plot Scale - 1:40

Plotted From - TRPR16032

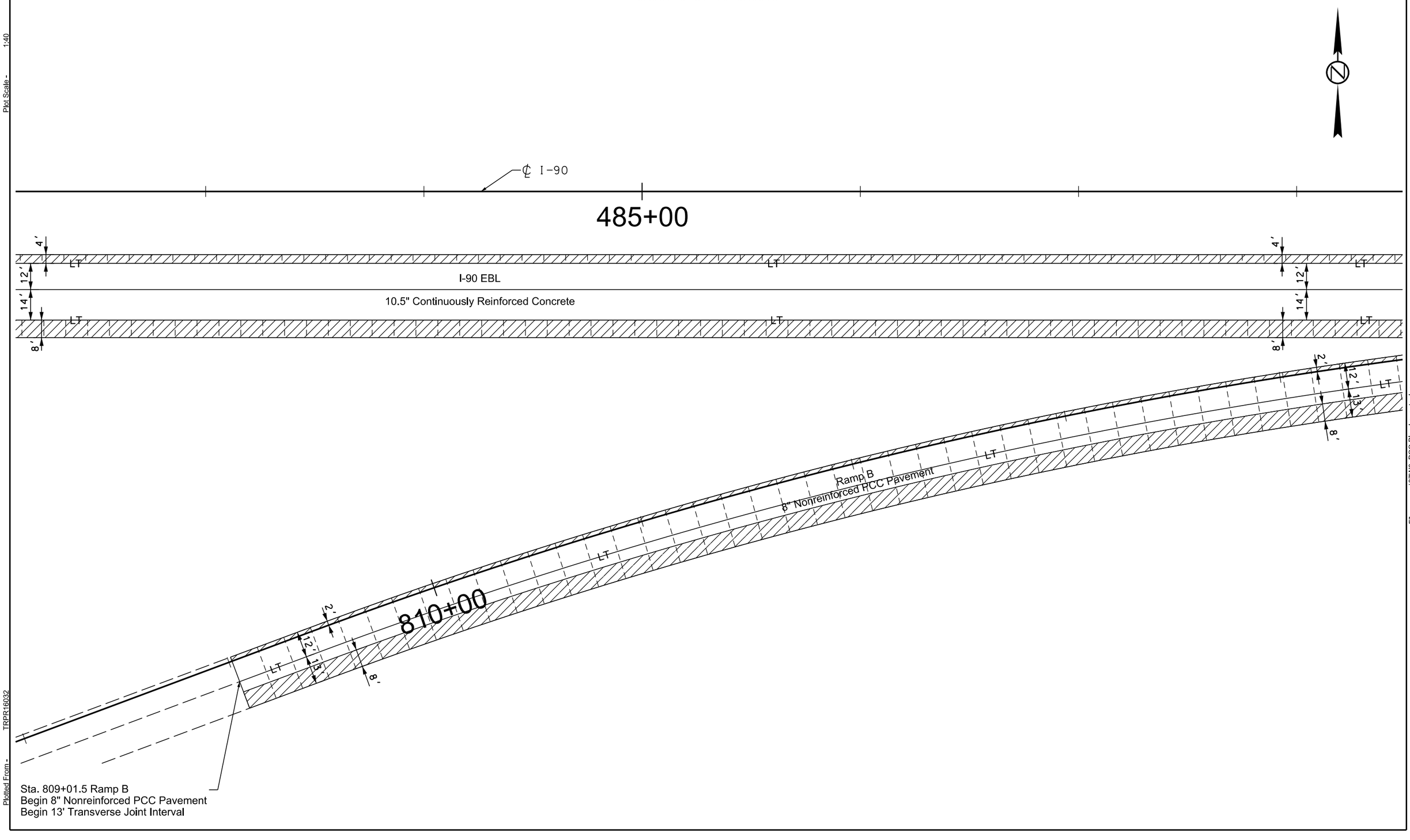
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F20	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 9 of 10 Sheets



Sta. 809+01.5 Ramp B
Begin 8" Nonreinforced PCC Pavement
Begin 13' Transverse Joint Interval

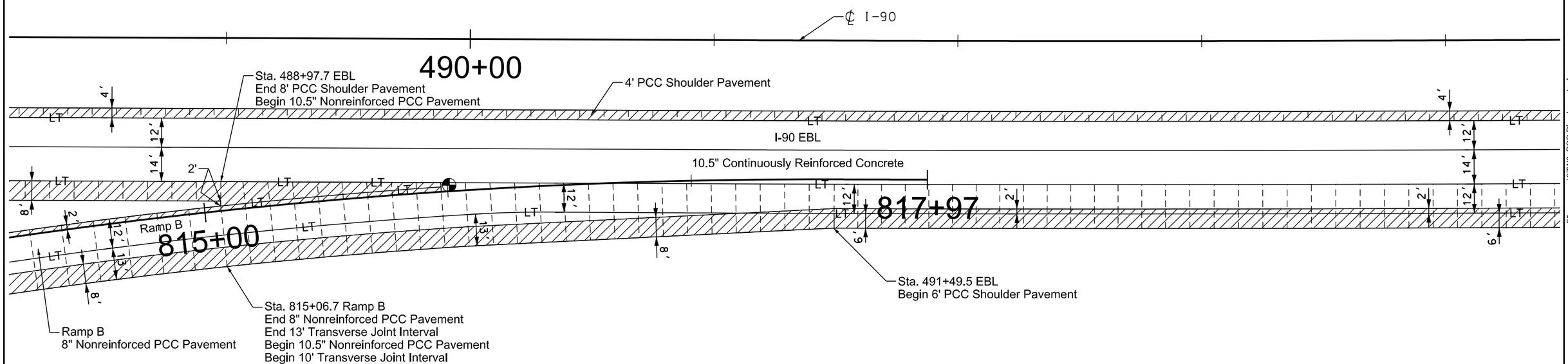
Plot Scale - 1:40
Plotted From - TRPR16032
File - ...\07W6_PCC Plan Layouts.dgn

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F21	F38

Plotting Date: 07/02/2024

Scale 1 Inch = 40 Feet
Sheet 10 of 10 Sheets

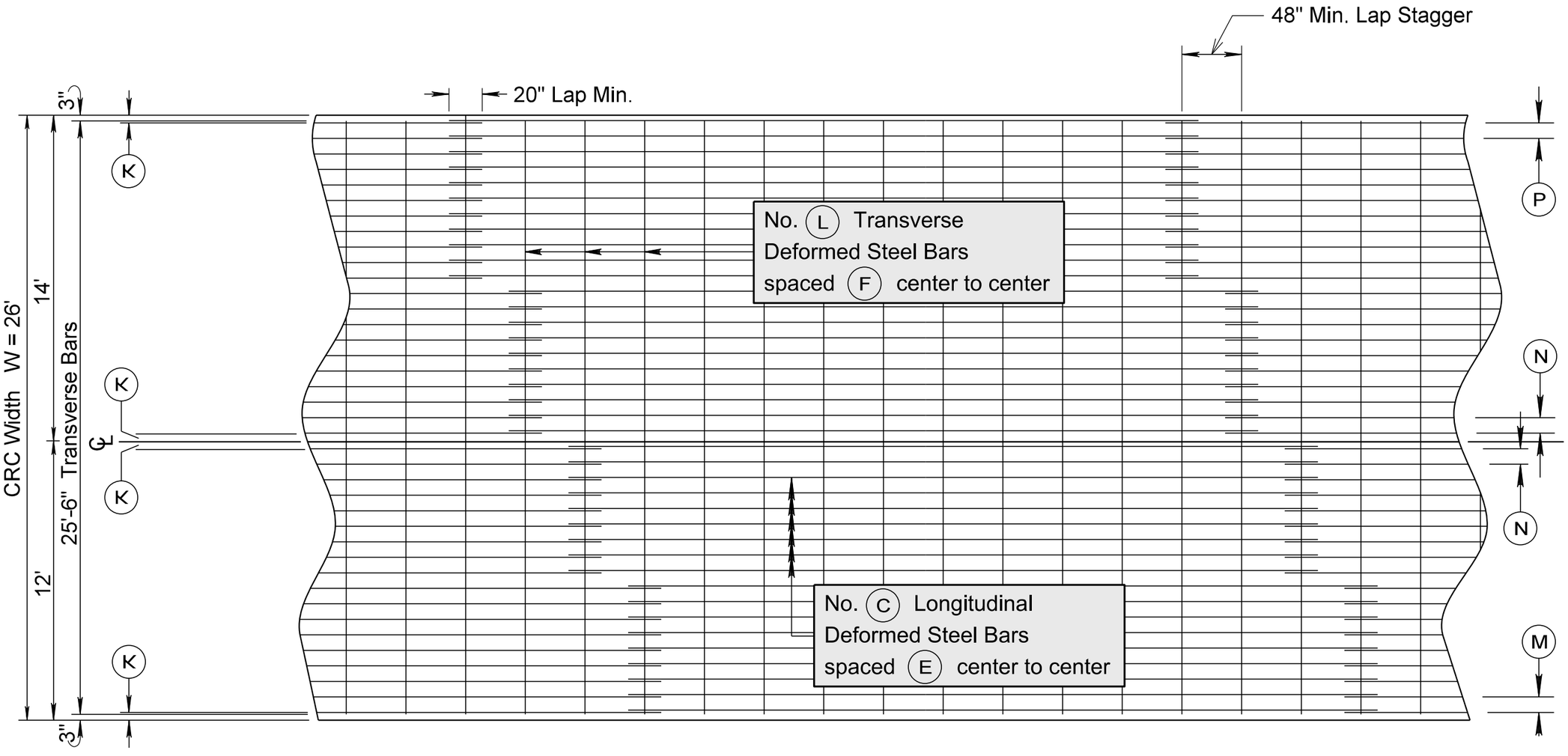


Plot Scale - 1:40

Plotted From - TRPR16032

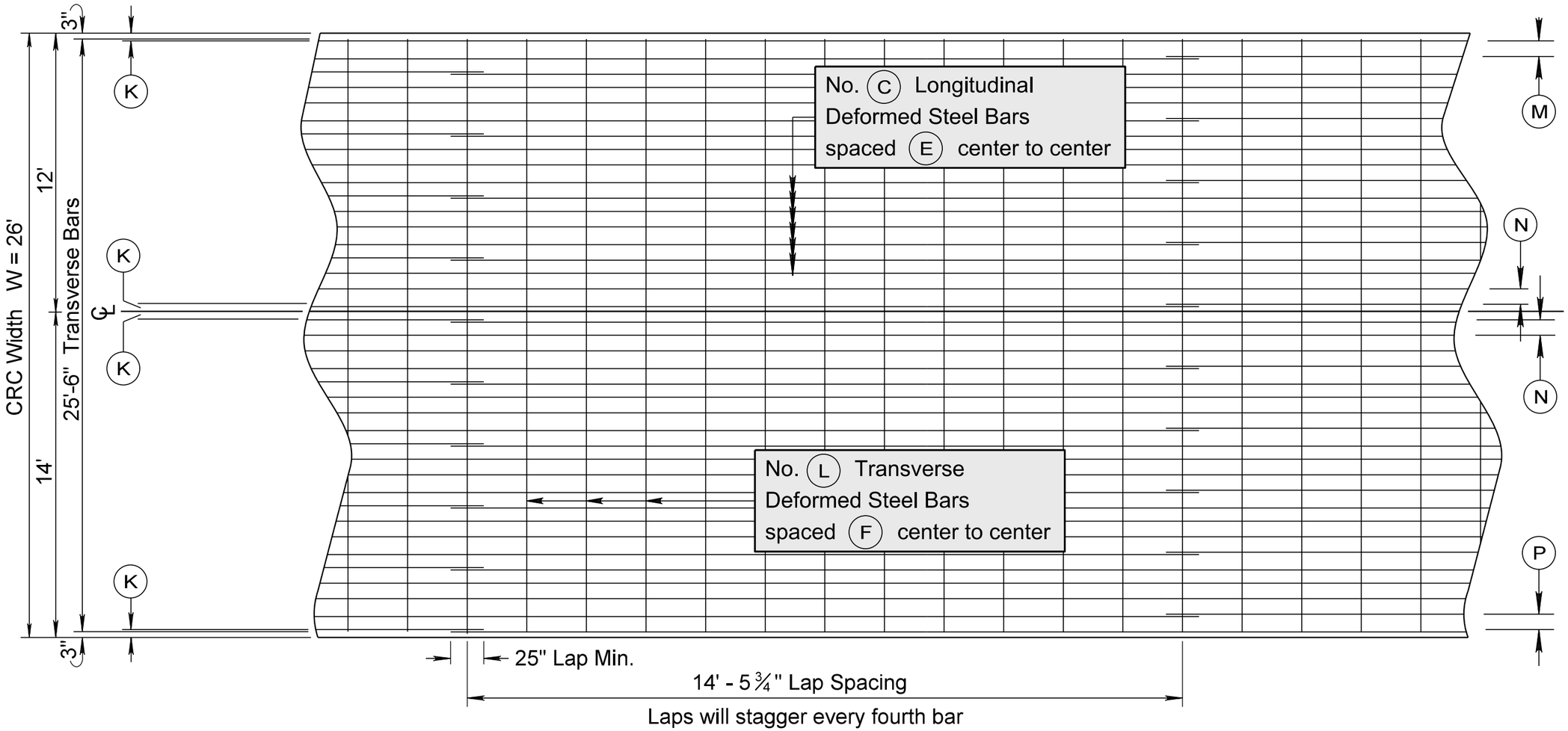
File - ...\07W6_PCC Plan Layouts.dgn

I-90 WBL
26' CRC PAVEMENT - IN PLACE



MITCHELL REGION INTERSTATE CRC PAVEMENT KEY & DIMENSIONS	Underlying Plans	CRC Depth	CRC Width	Longitudinal Steel Size	Longitudinal Steel Spacing	Transverse Steel Size	Transverse Steel Spacing	Perimeter Bar Spacing			
Location	PCN	T	W	C	E	L	F	K	M	N	P
I-90 WBL MRM 349.00 +0.673 to MRM 359.00 +0.801	5359	10"	26'	6	6½"	4	48"	3¾"	6½"	6½"	4½"

I-90 EBL
26' CRC PAVEMENT - IN PLACE

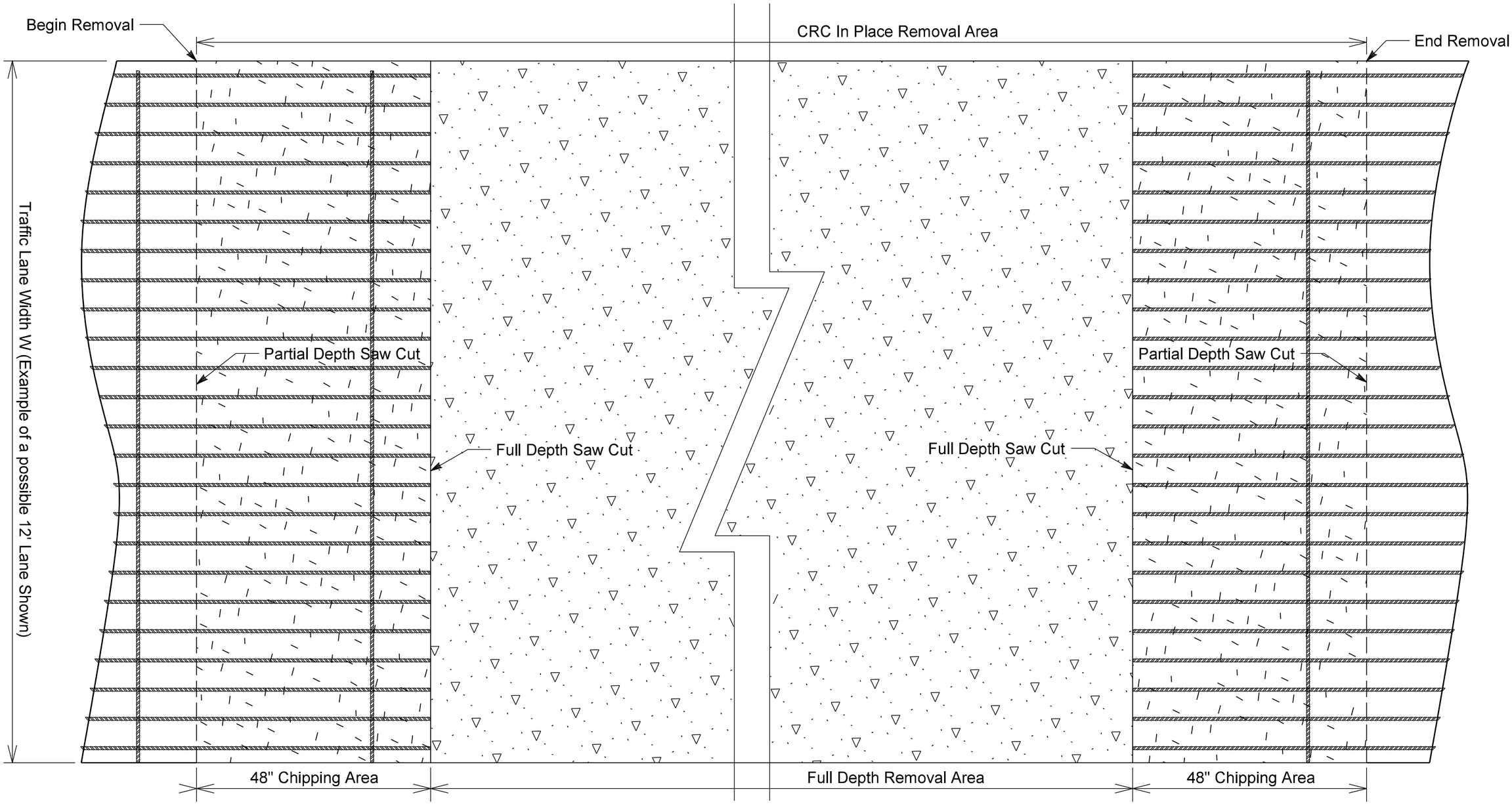


MITCHELL REGION INTERSTATE CRC PAVEMENT KEY & DIMENSIONS	Underlying Plans	CRC Depth	CRC Width	Longitudinal Steel Size (C)	Longitudinal Steel Spacing (E)	Transverse Steel Size (L)	Transverse Steel Spacing (F)	Perimeter Bar Spacing (K)	Perimeter Bar Spacing (M)	Perimeter Bar Spacing (N)	Perimeter Bar Spacing (P)
Location	PCN	T	W	C	E	L	F	K	M	N	P
I-90 EBL MRM 349.00 +0.673 to MRM 359.00 +0.801	3944	10"	26'	6	6¼"	4	42"	3"	6¾"	6¼"	5¾"

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F24	F38

Plotting Date: 07/02/2024

CRC PAVEMENT REMOVAL DETAIL



CRC REMOVAL AREA KEY

- Remove Concrete Retain Reinforcing Steel
- Remove Concrete Remove Reinforcing Steel

PLOT SCALE - 1:1.7

PLOT NAME - 17

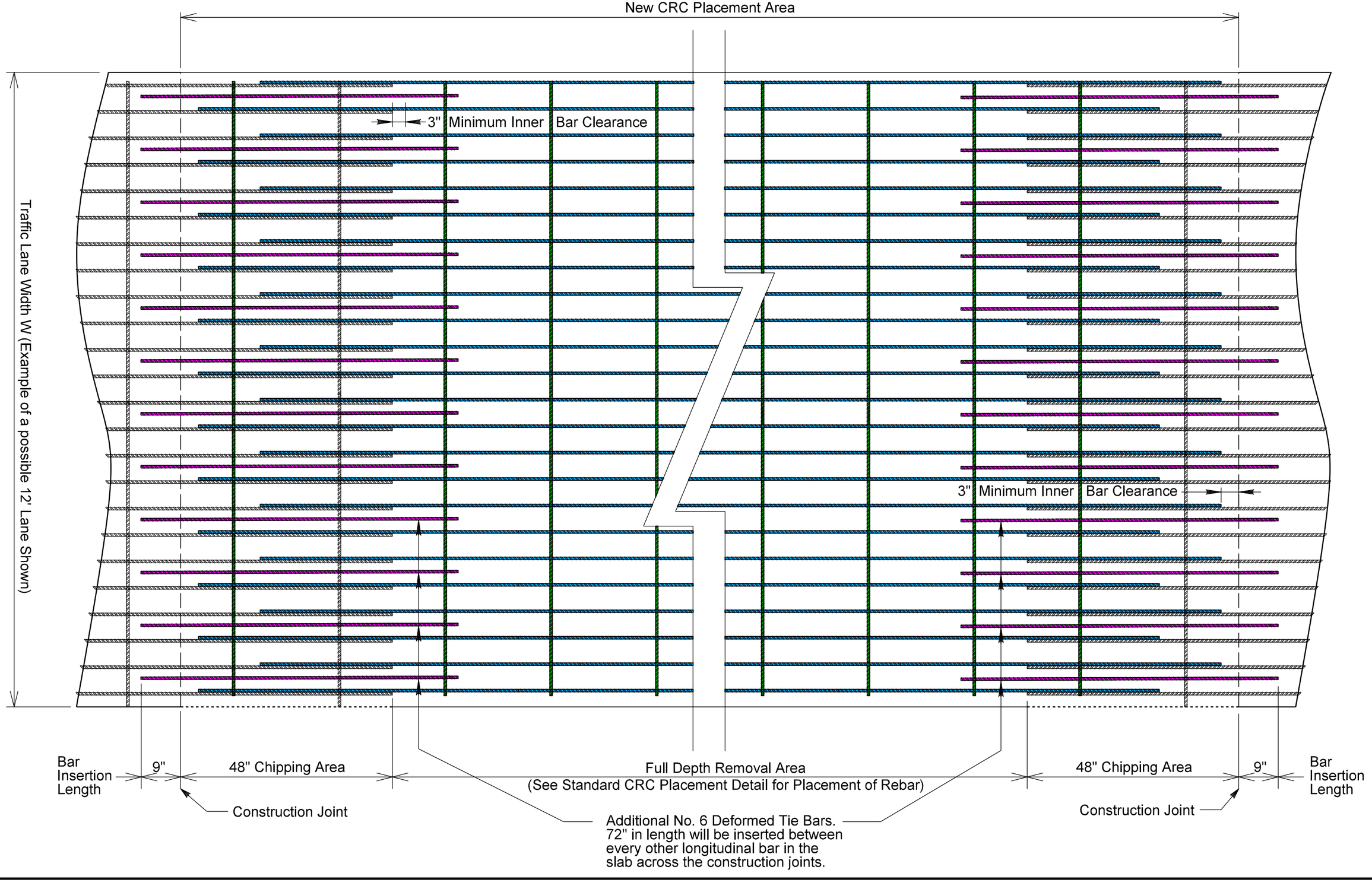
FILE - ...\CRC REMOVAL DETAILS 07W6.DGN

PLOTTED FROM - TRPR16032

NEW CRC PAVEMENT PLACEMENT DETAIL

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F25	F38

Plotting Date: 07/02/2024



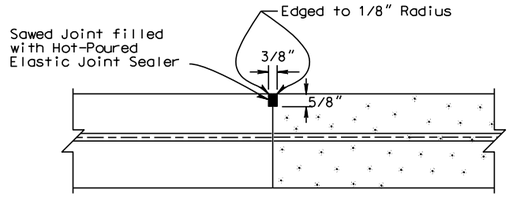
STANDARD CRC PLACEMENT DETAIL

I-90 WBL

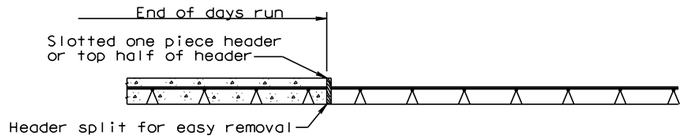
CRC Depth	CRC Width	Longitudinal Steel Size	Longitudinal Steel Spacing	Transverse Steel Size	Transverse Steel Spacing	Perimeter Bar Spacing (K)	(M)	(N)	(P)
T	W	(C)	(E)	(L)	(F)				
10"	26'	6	6½"	4	42"	3¾"	6½"	6½"	4½"

I-90 EBL

CRC Depth	CRC Width	Longitudinal Steel Size	Longitudinal Steel Spacing	Transverse Steel Size	Transverse Steel Spacing	Perimeter Bar Spacing (K)	(M)	(N)	(P)
T	W	(C)	(E)	(L)	(F)				
10"	26'	6	6¼"	4	42"	3"	6¾"	6¼"	5¾"

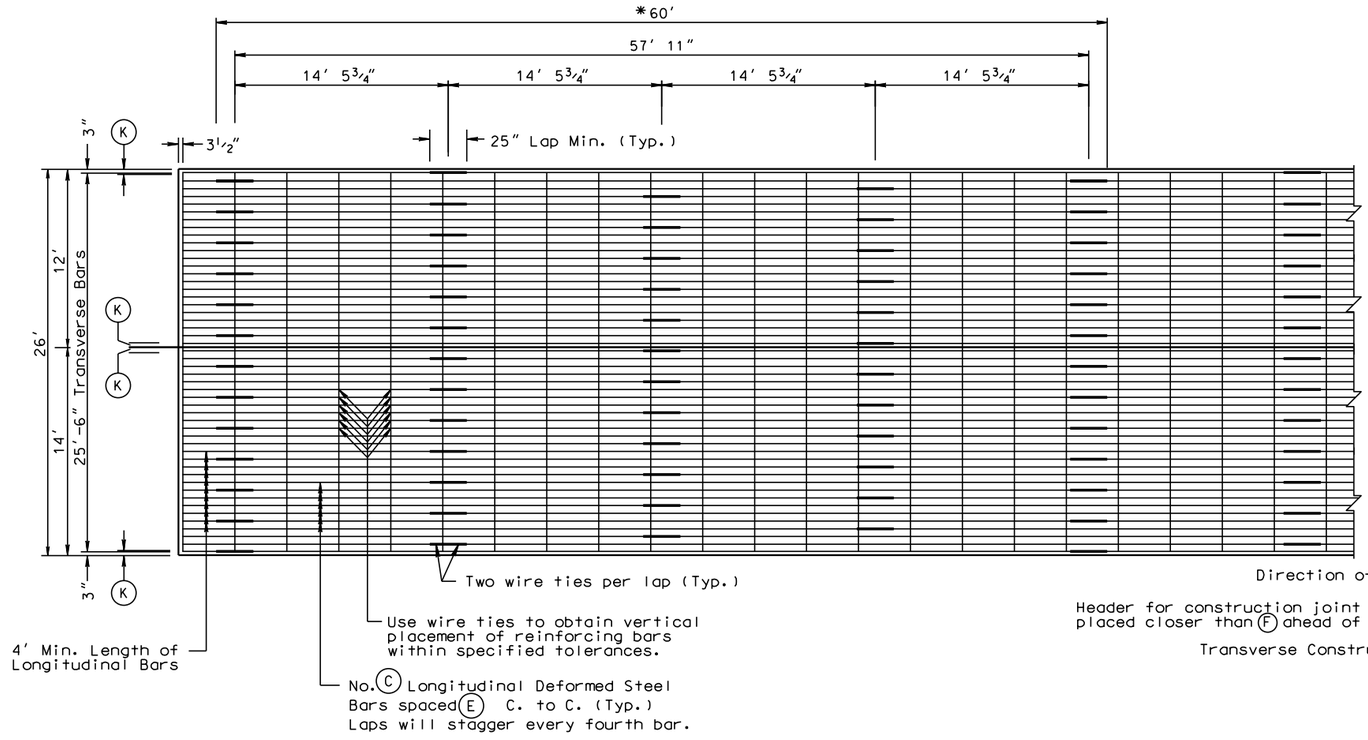


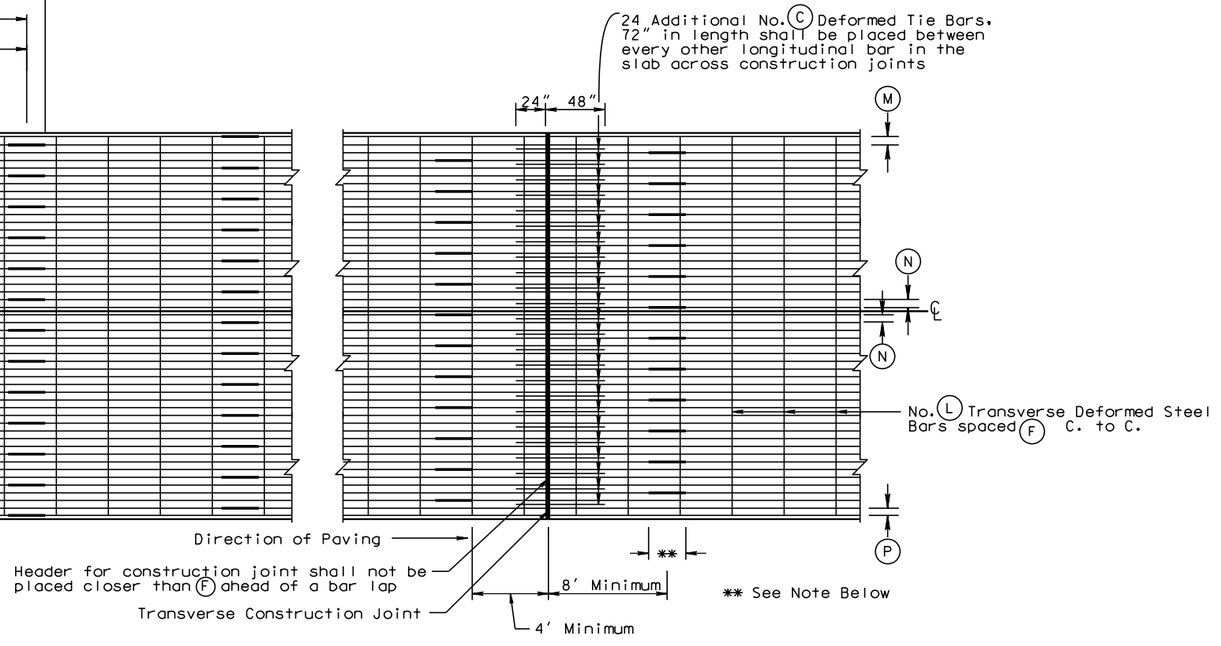
JOINT DETAIL FOR TRANSVERSE CONSTRUCTION JOINT



LONGITUDINAL SECTION FOR TRANSVERSE CONSTRUCTION JOINT

* Lap lengths are based on 60' rebar length





Note:

The center of the first lapping of longitudinal steel bars beyond a transverse construction joint will be at least eight (8) feet ahead of such joint.

The first lap pattern for the full width of the driving lanes beyond a transverse construction joint must be lapped a minimum distance of 36 inches. In Lieu of this a bar lapping with a minimum distance of 25 inches will be permitted provided that additional No. (C) steel bars, each six (6) feet long, are placed adjacent to and centered longitudinally at each longitudinally lapped bar for full width of the driving lanes and tied with a minimum of two wire ties per bar. This will require the use of additional No. (C) x 6' deformed steel bars.

When a transverse construction joint is made, no paving will be done in this area for twelve (12) hours.

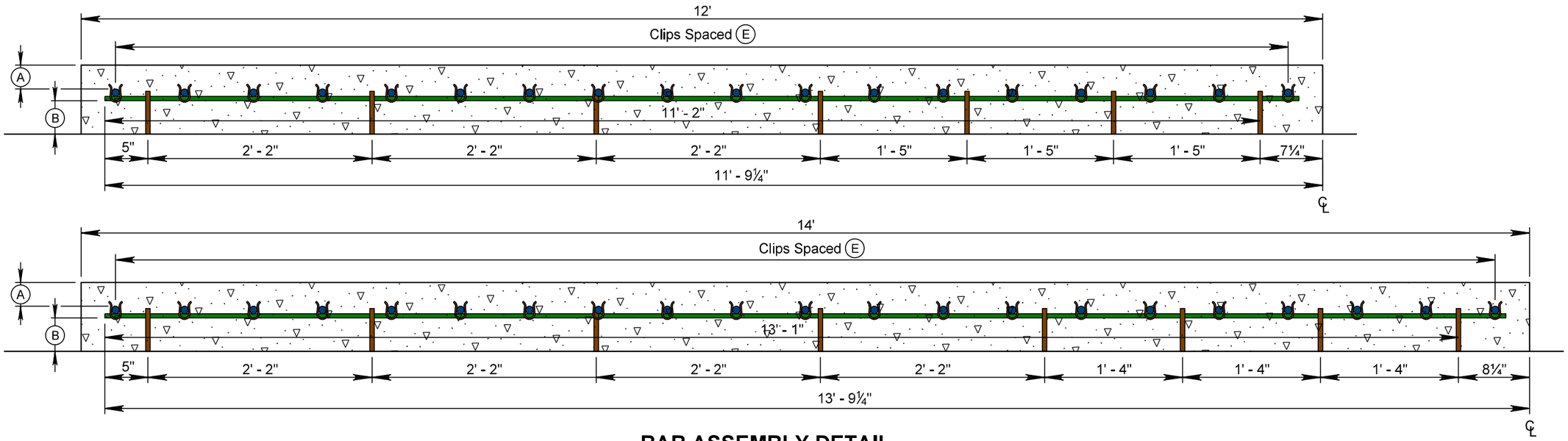
The length of the transverse deformed steel bars may vary +/- 2 inches.

The Contractor has the option of extending one side of the transverse bar a minimum of 15" beyond centerline or splicing the transverse steel bars, at centerline only, with No. 4 x 30" deformed steel tie bars.

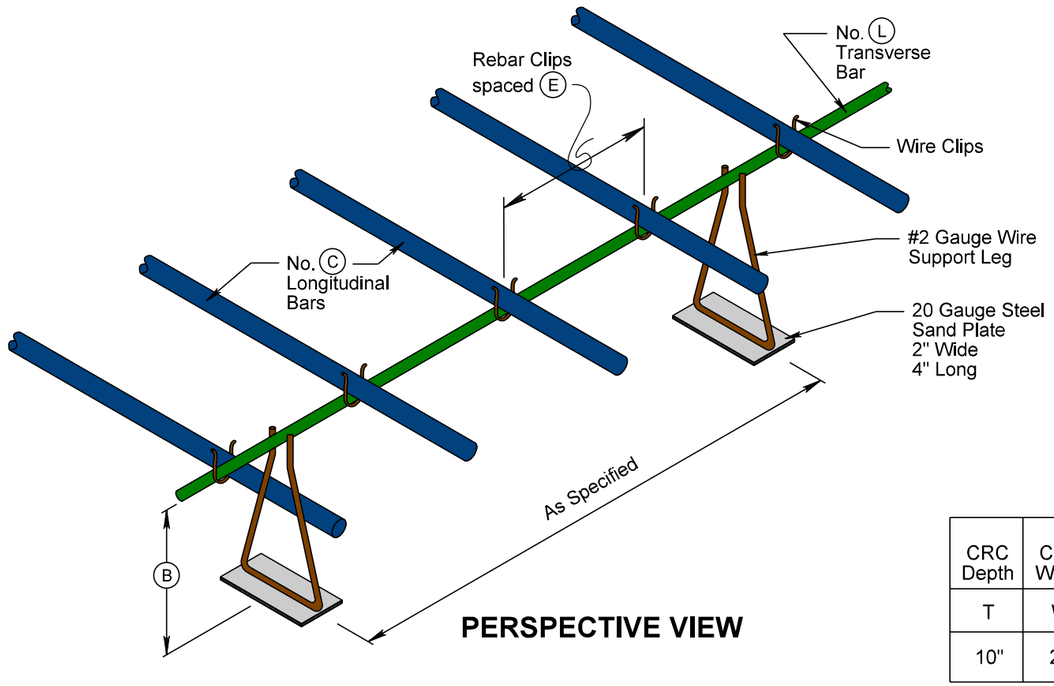
CRC PAVEMENT CHAIR DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F27	F38

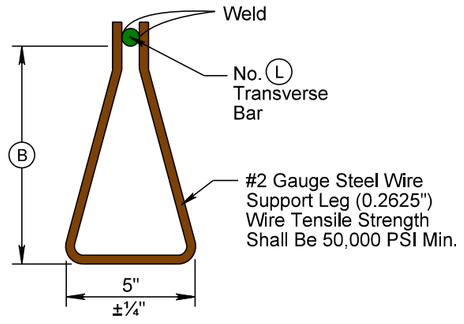
Plotting Date: 07/02/2024



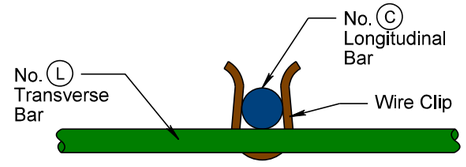
BAR ASSEMBLY DETAIL



PERSPECTIVE VIEW



CHAIR DETAIL



CLIP DETAIL

I-90 WBL

CRC Depth	CRC Width	Longitudinal Steel Size	Longitudinal Steel Spacing	Transverse Steel Size	Transverse Steel Spacing	Clearance Top	Clearance Bottom
T	W	(C)	(E)	(L)	(F)	(A)	(B)
10"	26'	6	6½"	4	42"	3½"	5¼"

I-90 EBL

CRC Depth	CRC Width	Longitudinal Steel Size	Longitudinal Steel Spacing	Transverse Steel Size	Transverse Steel Spacing	Clearance Top	Clearance Bottom
T	W	(C)	(E)	(L)	(F)	(A)	(B)
10"	26'	6	6¼"	4	42"	3½"	5¼"

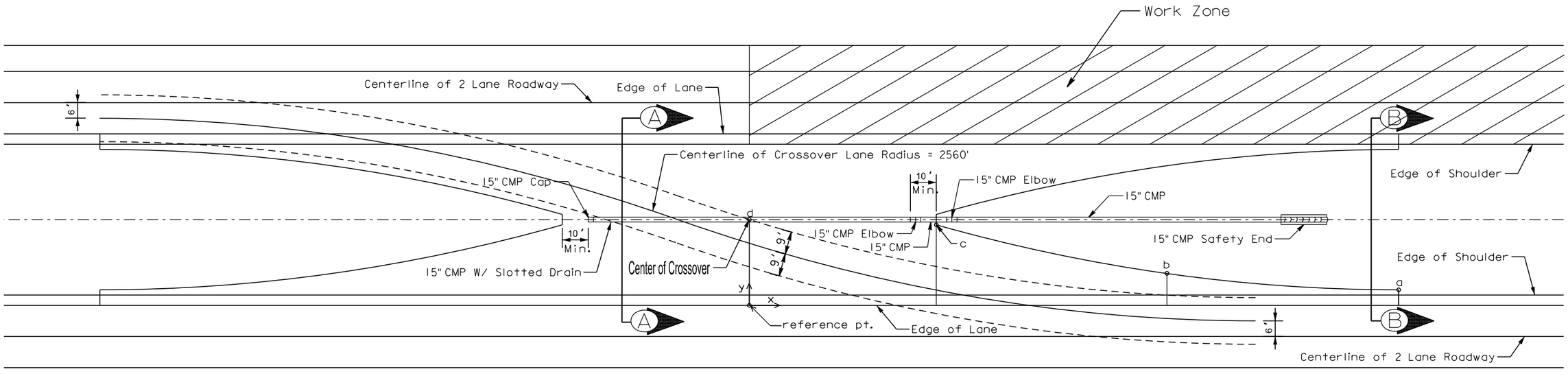
CROSSOVER LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F28	F38

Plotting Date: 07/02/2024

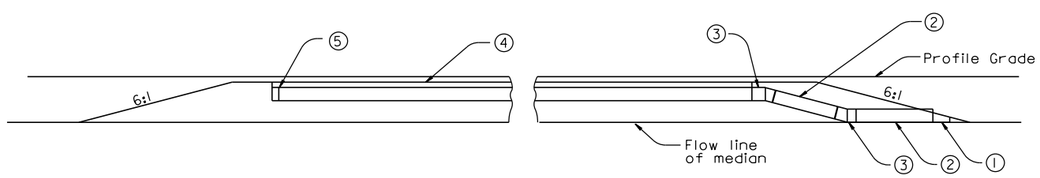
Sta. 434+55

	66' MEDIAN	
Point	(x)	(y)
a	500'	6.0'
b	321.6'	12.3'
c	144'	31.0'
d	0'	33.0'



Median Drainage Components

1. 15" CMP Safety End
2. 15" CMP, Length = 204' (200' & 4' between elbows)
3. 15" CMP 15° Elbows
4. 15" CMP Slotted Drain, Length = 260'
5. 15" CMP CAP



GENERAL NOTES:

The intent of this plan is to show the construction requirements for median crossovers for 66' median width.

Construction of median crossover shall conform to the requirement of Current Standard Specifications.

Slotted CMP Drains will be installed in multiples of ten feet.

Median Crossover located on grades requiring no through drainage.

Sections A-A & B-B depict the surfacing requirements.

Price bid for contract items shall be considered full compensation for furnishing all necessary materials and labor to construct the median crossover as detailed hereon.

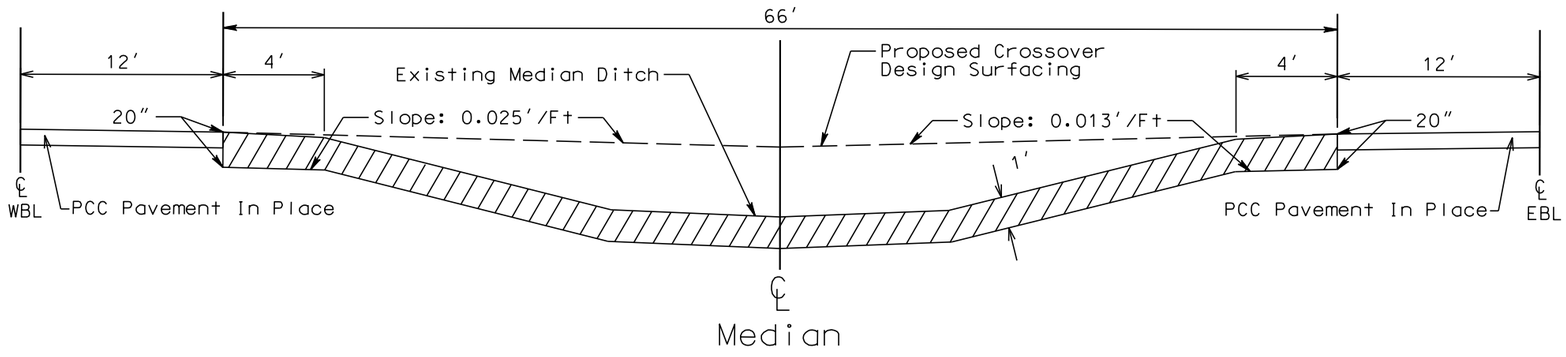
Plot Scale - 1:8

Plotted From - TRPR16032

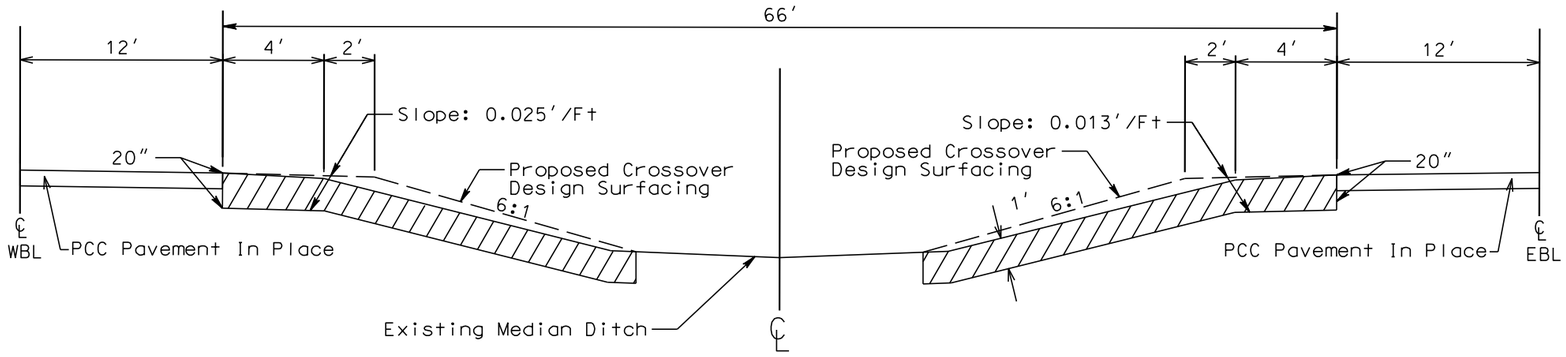
File - ...\hans07W6\Median Crossover.dgn

Unclassified Excavation

Sta. 434+55

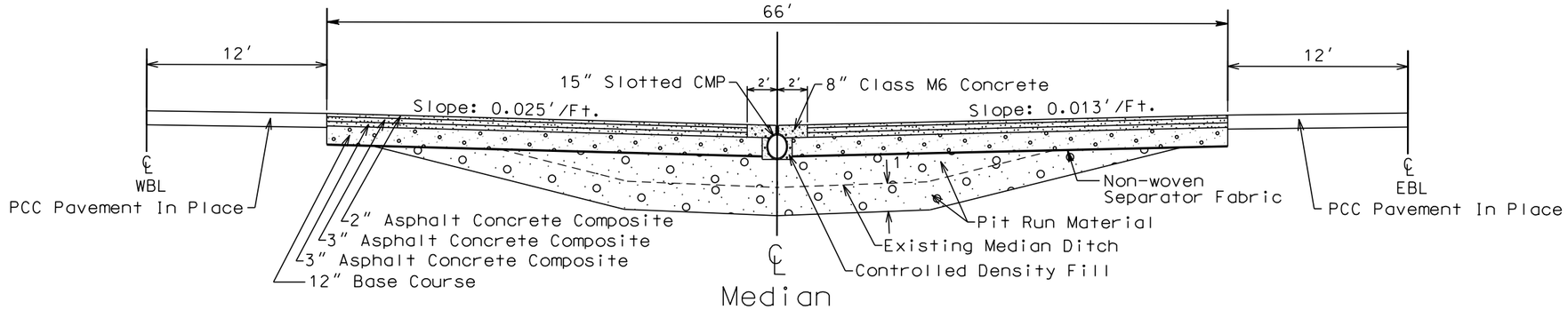


SECTION A-A

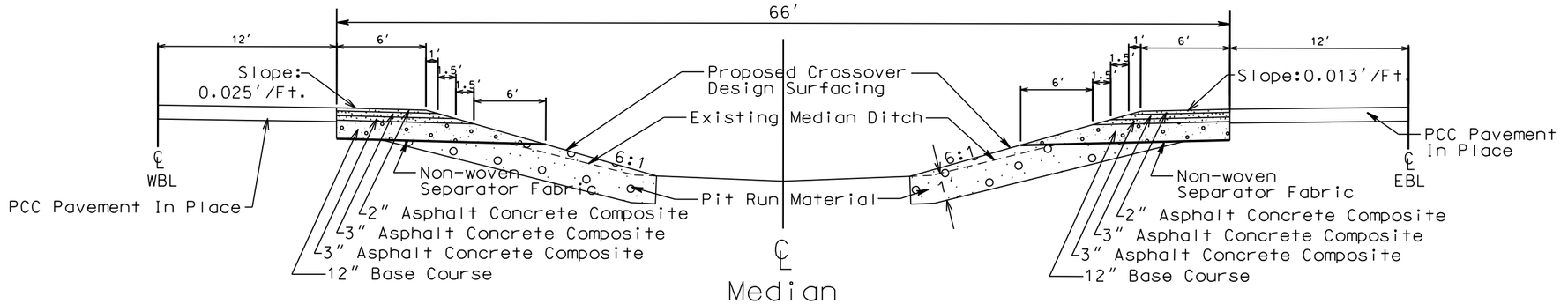


SECTION B-B

MEDIAN CROSSOVER



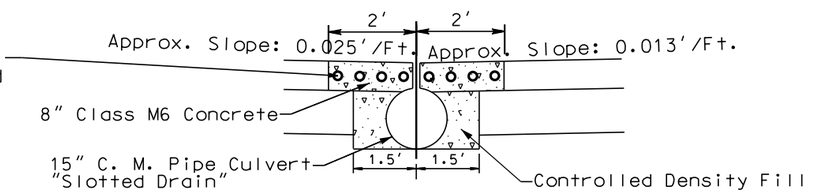
SECTION A-A



SECTION B-B

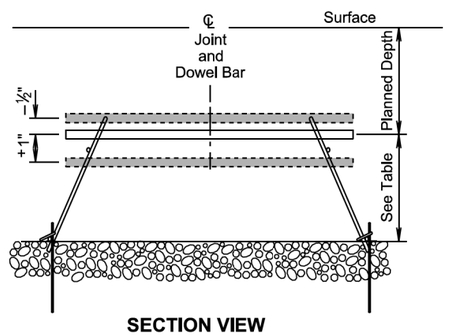
8 - #5 Epoxy Coated Reinforcing Steel Bars, spaced 5 5/8 " center-to-center and centered in the slab vertically. Minimum lap length is 25". The cost of the #5 Epoxy Coated Reinforcing Steel Bars shall be incidental to the contract unit price per cubic yard for Class M6 Concrete.

Detail for Epoxy Coated Bars in Class M6 Concrete



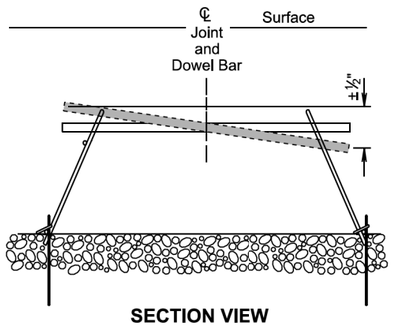
MEDIAN CROSSOVER

SHEET 2 OF 2 SHEETS



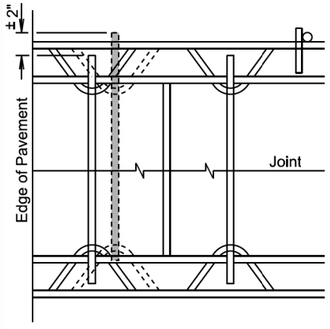
SECTION VIEW
VERTICAL TRANSLATION

Depth: mid-depth + 1 inch or – ½ inch



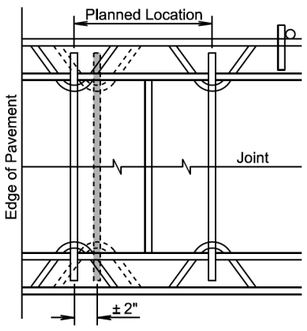
SECTION VIEW
VERTICAL TILT

Vertical rotational alignment: ½ inch over 18 inch



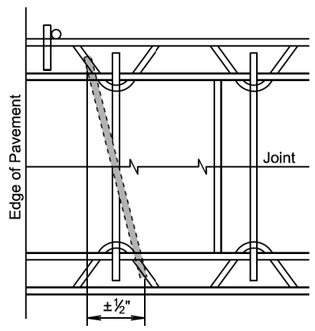
PLAN VIEW
LONGITUDINAL TRANSLATION

Longitudinal side shift: ± 2 inch for 18 inch bars



PLAN VIEW
HORIZONTAL TRANSLATION

Side shift ± 2 inch



PLAN VIEW
HORIZONTAL SKEW

Horizontal rotational alignment: ½ inch over 18 inch

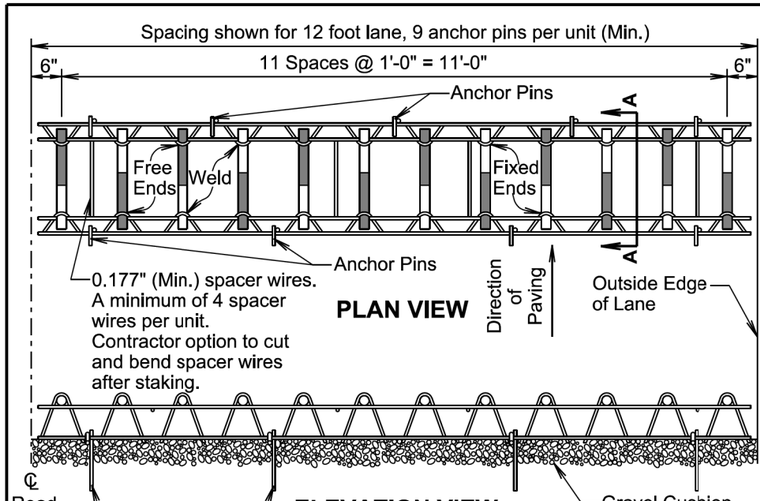
PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"

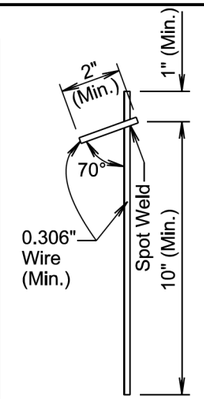
GENERAL NOTE:

The tolerances shown above represent the maximum deviation for acceptance of dowel bar placement.

November 19, 2022

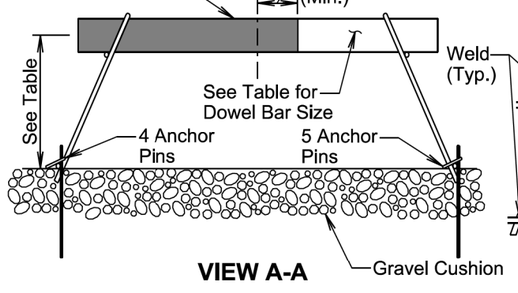
Published Date: 2025	SDDOT	**PCC PAVEMENT DOWEL BAR ALIGNMENT TOLERANCES**	PLATE NUMBER 380.01 Sheet 1 of 1



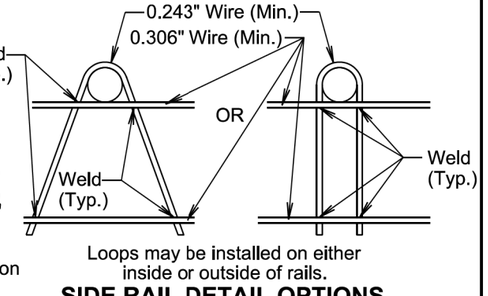


TYPICAL ANCHOR PIN

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"



VIEW A-A



Loops may be installed on either inside or outside of rails.

SIDE RAIL DETAIL OPTIONS

GENERAL NOTES:

Longitudinal joint tie bars will be placed a minimum of 15 inches from the transverse contraction joint.

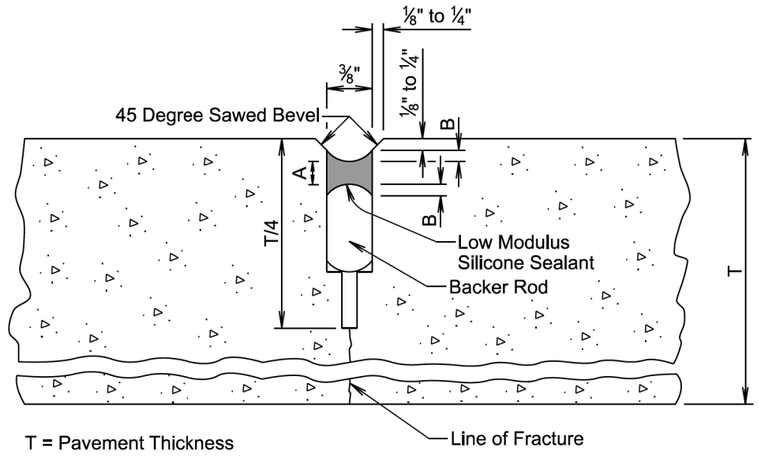
The transverse contraction joints will be sawed perpendicular to the centerline of the roadway. The transverse sawed joint will be centered over the dowel bars.

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.

All dowel bar alignment tolerances will be as shown in the PCC Pavement Dowel Bar Alignment Tolerances standard plate.

November 19, 2022

Published Date: 2025	SDDOT	**PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material**	PLATE NUMBER 380.04 Sheet 1 of 1



T = Pavement Thickness

LOW MODULUS SILICONE SEALANT ALLOWABLE CONSTRUCTION TOLERANCES			
A (Min.) (in.)	A (Max.) (in.)	B (Min.) (in.)	B (Max.) (in.)
3/16	5/16	⅛	¼

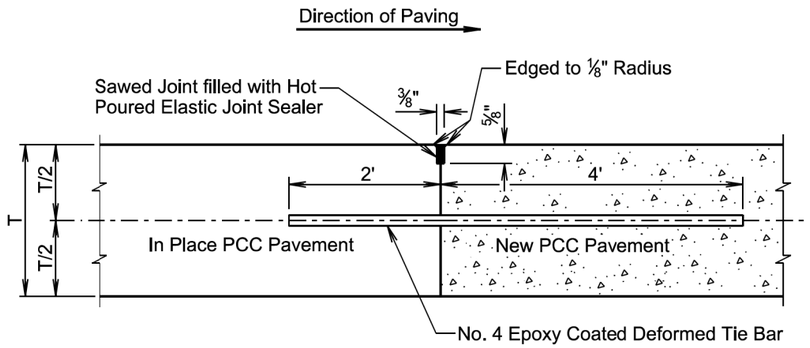
GENERAL NOTES:

The first saw cut to control cracking will be a minimum of ¼ the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the low modulus silicone joint sealant will be necessary.

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

November 19, 2022

Published Date: 2025	SDDOT	PCC PAVEMENT BEVELED TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.13
			Sheet 1 of 1



T = Pavement Thickness

GENERAL NOTES:

No. 4 epoxy coated deformed tie bars will be spaced 12 inches center to center and will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

The minimum distance between a transverse construction joint with tie bars and an adjacent transverse contraction joint will be 5 feet.

When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

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

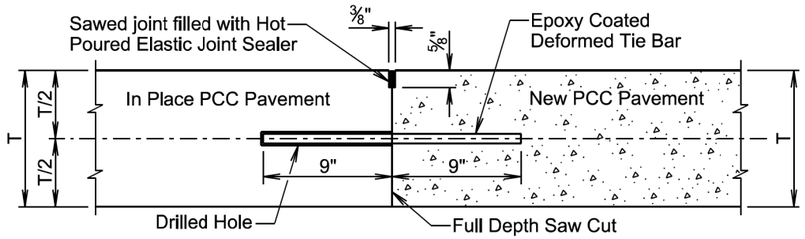
March 31, 2024

Published Date: 2025	SDDOT	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.14
			Sheet 1 of 1

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0908(105)349	F33	F38

Plotting Date: 07/02/2024

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

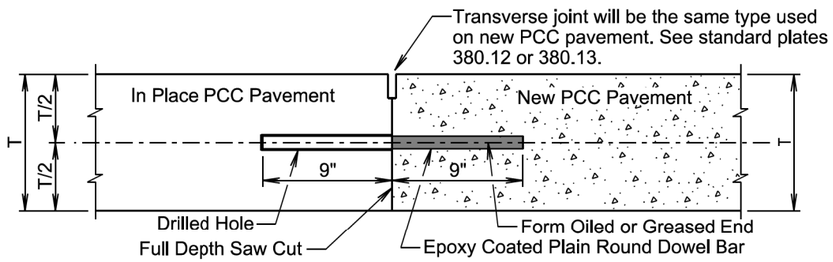
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

See sheet 2 of 2 of this standard plate to determine if Detail A 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 or a non-shrink grout.

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.

DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



GENERAL NOTES: T = In Place PCC Pavement and New PCC Pavement Thickness

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.

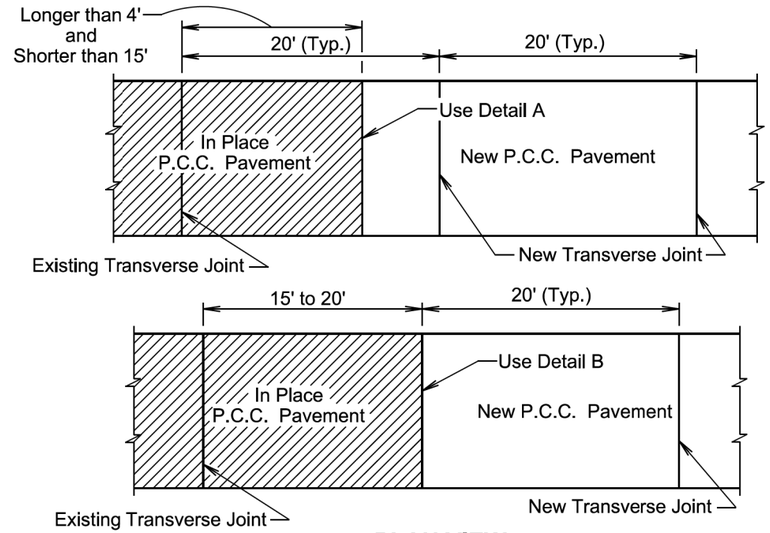
See sheet 2 of 2 of this standard plate to determine if Detail B will be used.

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 or a non-shrink grout.

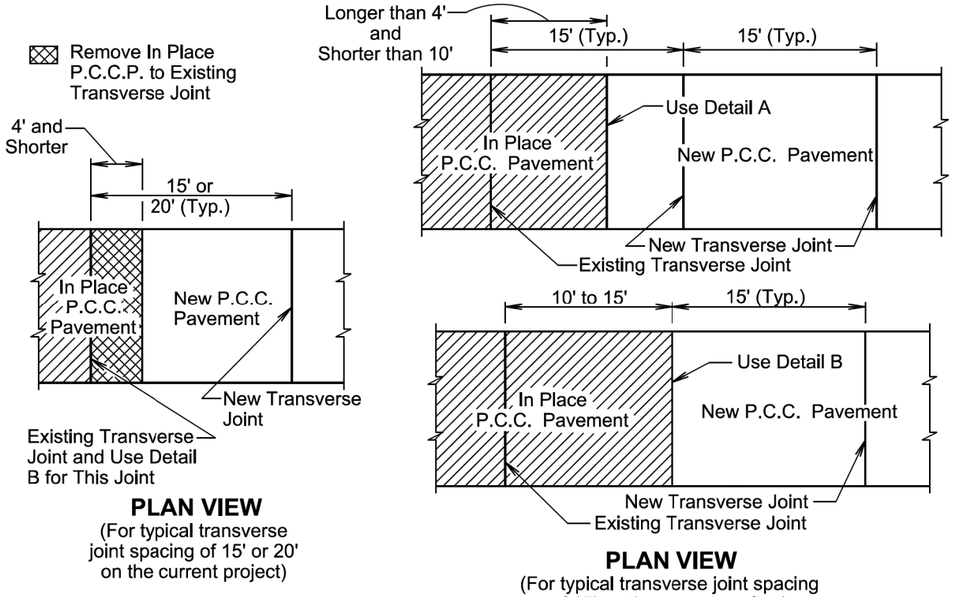
The epoxy coated plain round dowel bar size, number, and spacing will be the same as detailed on the corresponding dowel bar assembly standard plate (380.04, 380.05, 380.06, or 380.07). The epoxy coated plain round dowel bars will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

January 22, 2023

Published Date: 2025	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.15
			Sheet 1 of 2



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



PLAN VIEW
(For typical transverse joint spacings of 15' or 20' on the current project)

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

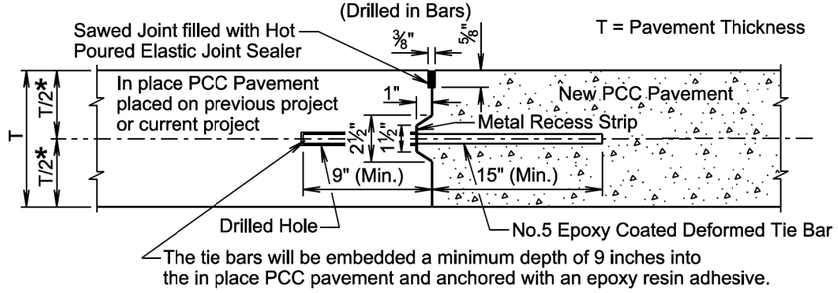
January 22, 2023

Published Date: 2025	SDDOT	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.15
			Sheet 2 of 2

Plot Scale - 1:200
Plotted From - TRPR16032
File - ...\StdPlateSection 07W6.dgn

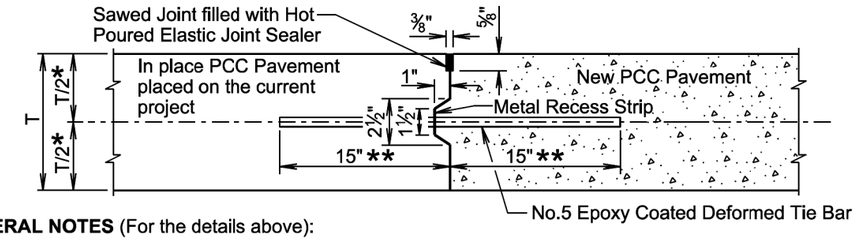
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(Drilled in Bars)



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:

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

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

The tie bars 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.

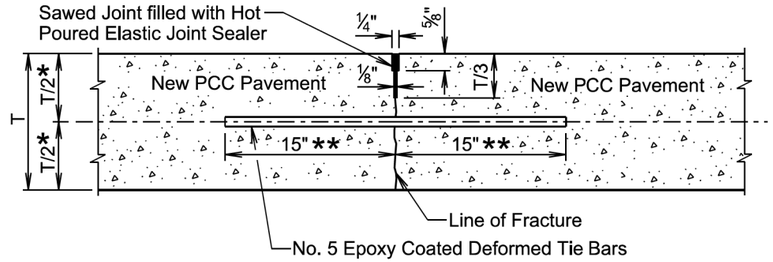
* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

Published Date: 2025	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.20
			Sheet 1 of 2

SAWED LONGITUDINAL JOINT WITH TIE BARS

(Poured Monolithically)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

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

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

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

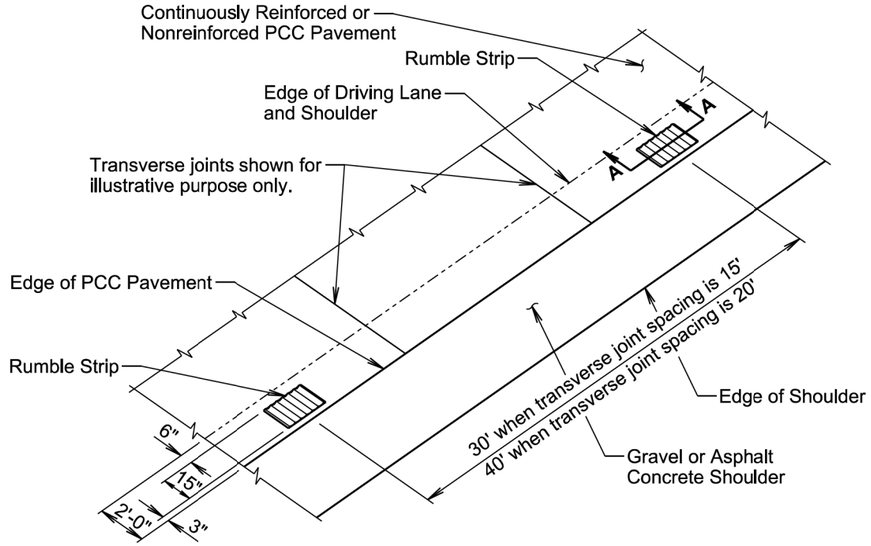
The required number of tie bars as shown in the table will be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing will apply to tie bars within each panel.

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.

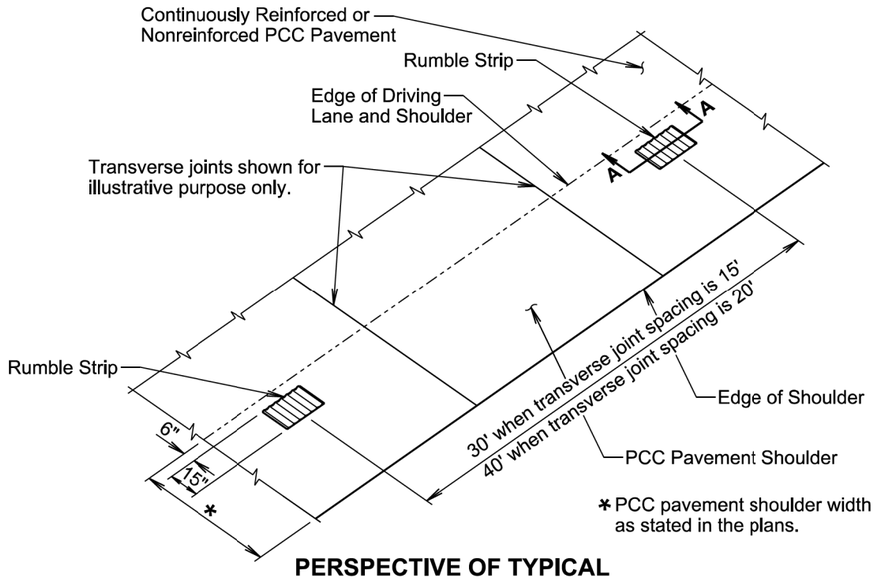
* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

Published Date: 2025	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.20
			Sheet 2 of 2



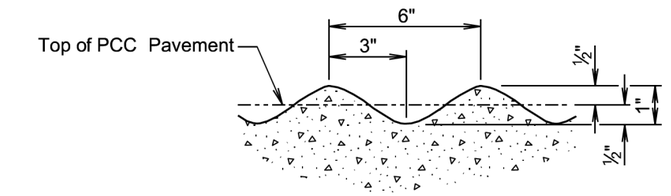
PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER ADJACENT TO GRAVEL OR ASPHALT CONCRETE SHOULDER



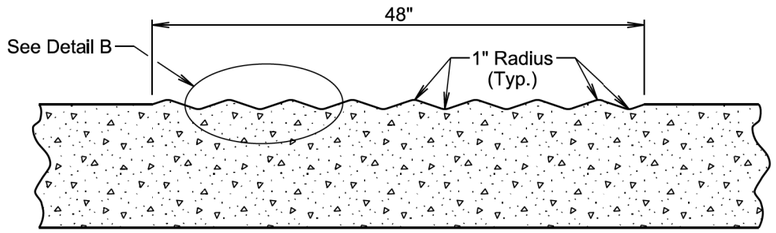
PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER

November 19, 2022

Published Date: 2025	SDDOT	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.53
			Sheet 1 of 2



DETAIL B



SECTION A-A

GENERAL NOTES:

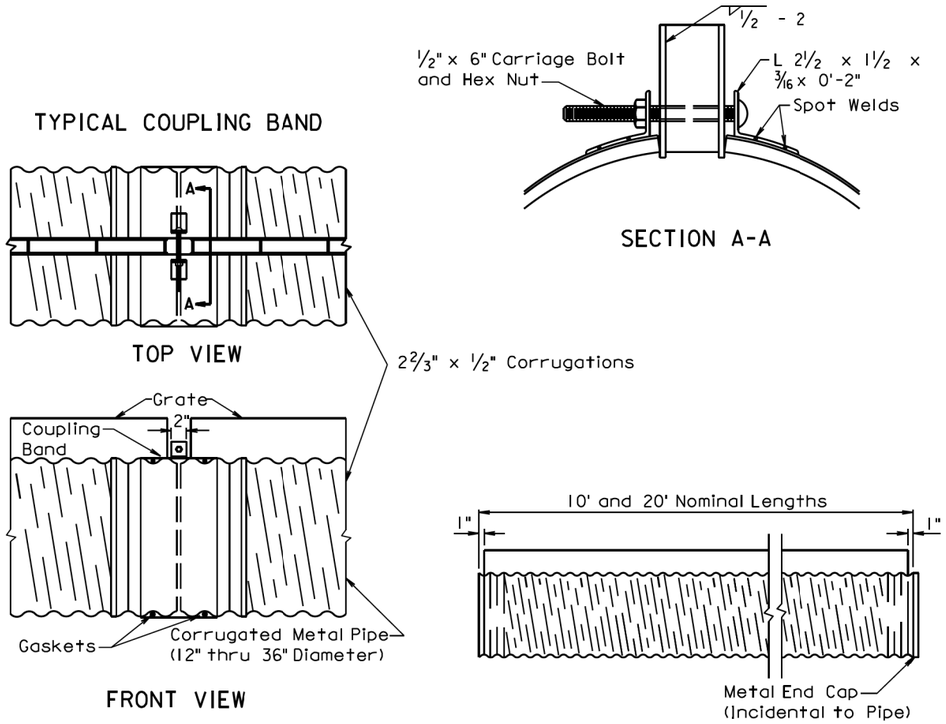
The rumble strips will be evenly spaced and will not coincide with any transverse contraction joints.

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

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

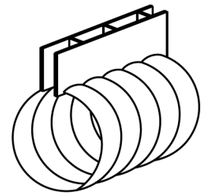
November 19, 2022

Published Date: 2025	SDDOT	RUMBLE STRIP ON PCC PAVEMENT SHOULDER	PLATE NUMBER 380.53
			Sheet 2 of 2



March 31, 2000

Published Date: 2025	SDDOT	SLOTTED C.M.P. DRAIN	PLATE NUMBER 450.31 Sheet 1 of 2



SLOTTED C.M.P. DRAIN

GENERAL NOTES:

A typical length of Slotted Drain is twenty (20) feet. Installation should be in multiples of ten (10) feet unless situations dictate otherwise.

All Slotted Drain materials and hardware shall be galvanized.

Metal end caps shall be provided for the closed end of each installation. The end caps shall be the same gage as the pipe.

All joints and end caps shall be watertight.

Close riveted soldered annular or continuously welded helical pipe shall be used and shall be watertight.

Units on which the spelter coating has been burned by welding or otherwise damaged in fabrication or during installation shall be regalvanized or painted with one full brush coat of zinc-rich paint conforming to Military Specification Mil-P-21035 or with at zinc-dust, zinc-oxide paint conforming to Federal Specification TT-P-641-B, Type III. Prior to painting, the surface shall be properly cleaned and approved.

Two gaskets will be required for each coupling band or joint and shall be rendered watertight by methods approved by the Engineer.

The slot shall be covered with an acceptable material during paving operations and/or installation of curb and gutter.

Anchors shall be ½" Dia. x 3" galvanized bolts and nuts. The nuts shall be welded to the slot at two (2) foot spacing. Bolts shall be added just prior to installation to avoid damage.

A trapezoidal design for spacer bars, either vertical or slanted, may be an alternate for the vertical bars shown on the details. The Slotted Drain with slanted spacer bars shall be installed with the slanted spacer bars oriented toward the flow.

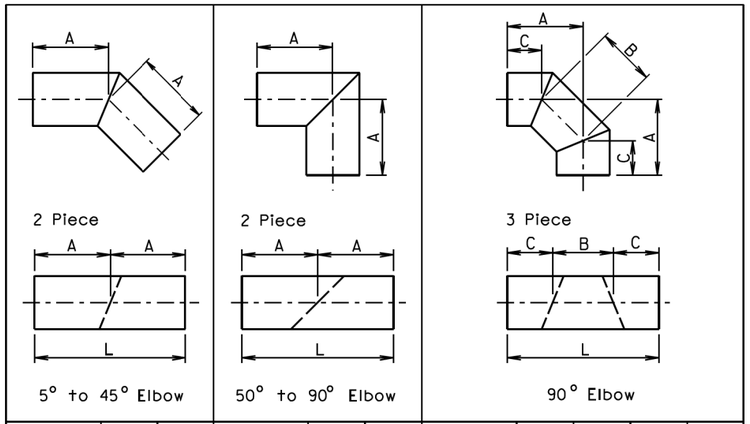
A Heel Guard (1/2 inch #13 expanded metal mesh) shall be furnished when called for in the plans and shall be welded to the grating before delivery to the project.

Slotted Drain will be measured along the centerline of the pipe. The length shall be the overall installed length from end to end including any coupling bands that may be between sections. The outlet pipe will be paid for as CMP and End Sections.

Slotted Drain will be paid for at the contract unit price per Foot of Slotted C.M.P. Payment will be full compensation for materials, labor, equipment, and incidentals required.

March 31, 2000

Published Date: 2025	SDDOT	SLOTTED C.M.P. DRAIN	PLATE NUMBER 450.31 Sheet 2 of 2



Diameter	A	L	Diameter	A	L	Diameter	A	B	C	L
Inches	Feet	Feet	Inches	Feet	Feet	Inches	Inches			Feet
12	1	2	12	2	4	12	25½	11	18½	4
15	1	2	15	2	4	15	26½	12	18	4
18	1	2	18	2	4	18	27	14	17	4
21	2	4	21	2	4	21	27	15	16½	4
24	2	4	24	2	4	24	27½	16	16	4
27	2	4	27	2	4	27	27½	17	15½	4
30	2	4	30	3	6	30	40	19	26½	6
33	2	4	33	3	6	33	40	20	26	6
36	2	4	36	3	6	36	40½	21	25½	6
42	2	4	42	3	6	42	41	23	24½	6
48	2	4	48	4	8	48	53½	26	35	8
54	3	6	54	4	8	54	54	28	34	8
60	3	6	60	4	8	60	54½	31	32½	8
66	3	6	66	4	8	66	54	33	31½	8
72	3	6	72	5	10	72	67½	36	42	10
78	3	6	78	5	10	78	68	39	40½	10
84	3	6	84	5	10	84	68½	41	39½	10
90	3	6	90	6	12	90	70	46	37	10
96	3	6	96	6	12	96	82	46	49	12

FABRICATED ELBOW LENGTHS FOR ALL CORRUGATIONS

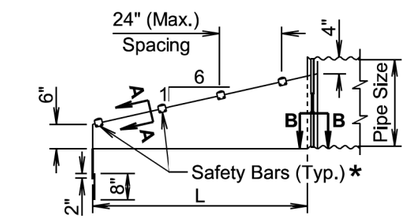
GENERAL NOTES:

All dimensions shown are nominal.

L = Linear Feet of C.M.P. required to fabricate fitting.

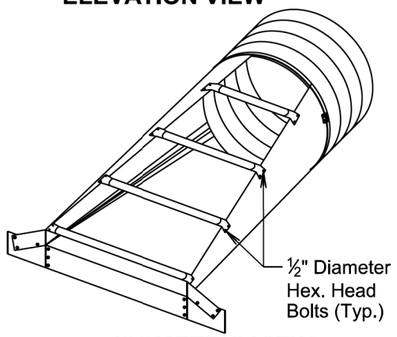
June 26, 2001

Published Date: 2025	SDDOT	C.M.P. FABRICATED LENGTHS FOR ELBOWS	PLATE NUMBER 450.32
			Sheet 1 of 1

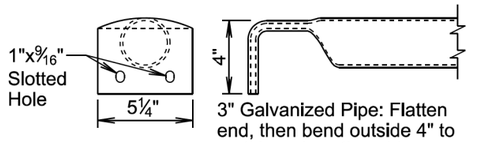


*Number of bars required will vary depending on the length of the end section.

ELEVATION VIEW

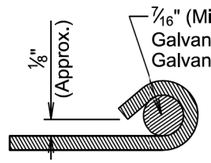


ISOMETRIC VIEW

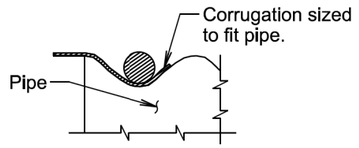


3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

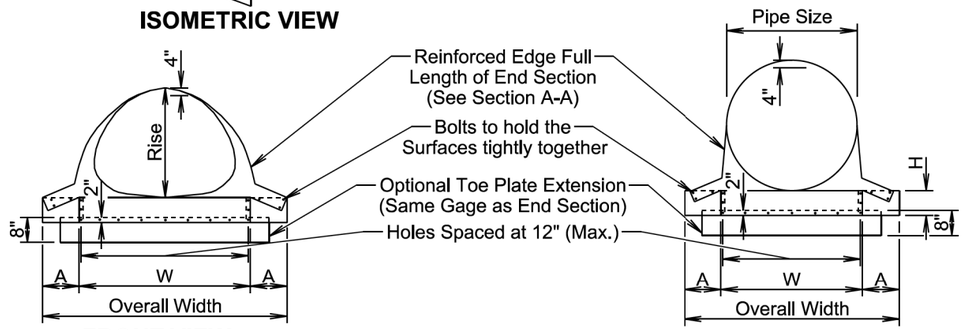
DETAIL OF SAFETY BARS



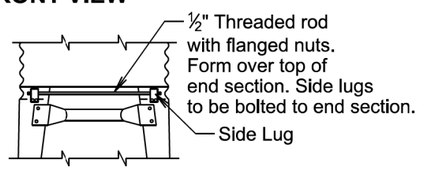
SECTION A-A



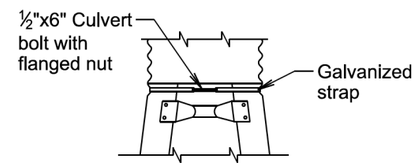
SECTION B-B



FRONT VIEW **FRONT VIEW**



TYPE #2 CONNECTOR DETAIL
(For 30" and Larger)
(For 21"x15" and Larger)



TYPE #1 CONNECTOR DETAIL
(For 15" Through 24")

August 31, 2022

Published Date: 2025	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 1 of 2

ARCH C.M.P. SAFETY ENDS										
Equlv. Dia. (Inch)	(Inches)		(Min.) Thick.		Dimensions (Inches)				L Dimensions	
	Span	Rise	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
18	21	15	.064	16	8	6	27	43	6:1	30
21	24	18	.064	16	8	6	30	46	6:1	48
24	28	20	.064	16	8	6	34	50	6:1	60
30	35	24	.079	14	12	9	41	65	6:1	84
36	42	29	.109	12	12	9	48	72	6:1	114
42	49	33	.109	12	16	12	55	87	6:1	138
48	57	38	.109	12	16	12	63	95	6:1	168
54	64	43	.109	12	16	12	70	102	6:1	198
60	71	47	.109	12	16	12	77	109	6:1	222
72	83	57	.109	12	16	12	89	121	6:1	282

CIRCULAR C.M.P. SAFETY ENDS								
Pipe Dia. (Inch)	(Min.) Thick.		Dimensions (Inches)				L Dimensions	
	Inch	Gage	A	H	W	Overall Width	Slope	Length (Inch)
15	.064	16	8	6	21	37	6:1	30
18	.064	16	8	6	24	40	6:1	48
21	.064	16	8	6	27	43	6:1	66
24	.064	16	8	6	30	46	6:1	84
30	.109	12	12	9	36	60	6:1	120
36	.109	12	12	9	42	66	6:1	156
42	.109	12	16	12	48	80	6:1	192
48	.109	12	16	12	54	86	6:1	228
54	.109	12	16	12	60	92	6:1	264
60	.109	12	16	12	66	98	6:1	300

GENERAL NOTES:

Safety bars will be provided when specified in the plans.

Safety ends will be fabricated from galvanized steel conforming to the requirements of the Specifications.

Safety bars will be fabricated from steel schedule 40 pipe in conformance with ASTM A53, grade B or HSS 3.5x.216 in conformance with ASTM A500, grade B.

Slotted holes for safety bar attachment will be provided for all end sections.

Attachment to circular pipes 15" through 24" diameter will be made with Type #1 straps. All other sizes will be attached with Type #2 rods and lugs.

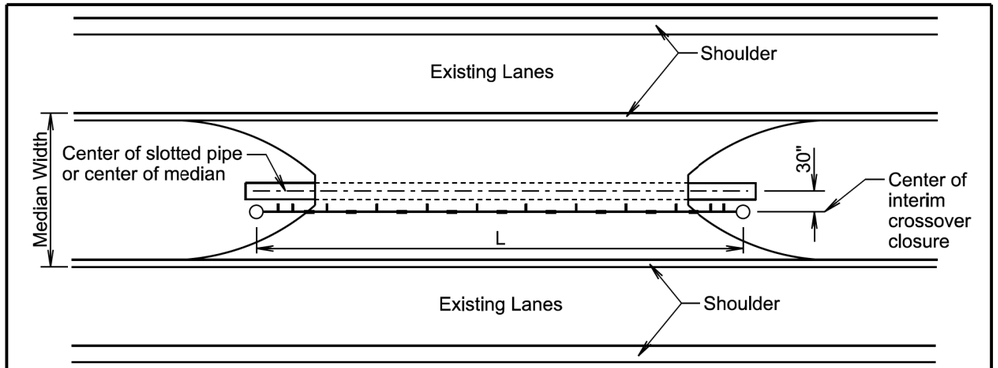
When stated in the plans, optional toe plate extension will be punched and bolted to end section apron lip with ⅜" diameter galvanized bolts. Steel for toe plate extension will be same gauge as end section. Dimensions will be overall width less 6" by 8" high.

Installation will be performed in accordance with the Specifications.

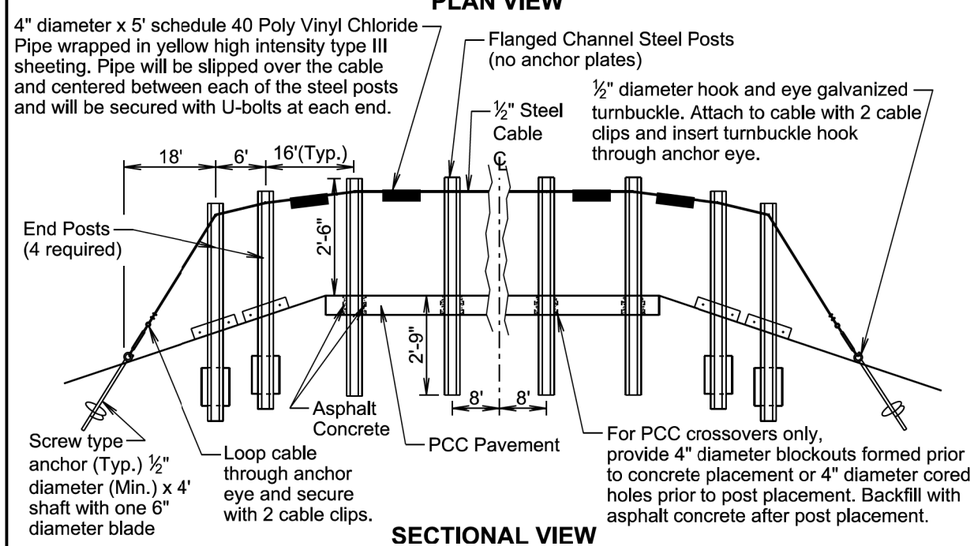
Cost of all work and materials required for fabrication and installation of safety ends will be incidental to the bid items for the various sizes of safety ends.

August 31, 2022

Published Date: 2025	SDDOT	C.M.P. SAFETY ENDS	PLATE NUMBER 450.38
			Sheet 2 of 2



PLAN VIEW



SECTIONAL VIEW

MEDIAN WIDTH	NO. OF PVC PIPES	NO. OF U-BOLTS	NO. OF FLANGED CHANNEL STEEL POSTS	NO. OF BLOCKOUTS OR CORED HOLES (PCC CROSSOVERS)	PAY LENGTH L
60' and 66'	11	18	10	10	224'
80'	9	14	8	8	192'

GENERAL NOTES:

All costs for materials, backfilling holes with asphalt concrete, labor, equipment, and incidentals necessary to construct the interim crossover closure will be incidental to the contract unit price per foot for "Interim Crossover Closure". The costs of coring holes or providing blockouts in the surfacing will be incidental to the surfacing bid item(s).

The Interim Crossover Closure will be constructed using 3 cable guardrail posts with hook bolts. For specific details of the 3 cable guardrail hardware and installation see standard plate 629.01.

September 14, 2018

Published Date: 2025	SDDOT	INTERIM CROSSOVER CLOSURE	PLATE NUMBER 629.42
			Sheet 1 of 1