Section F: Surfacing Plans

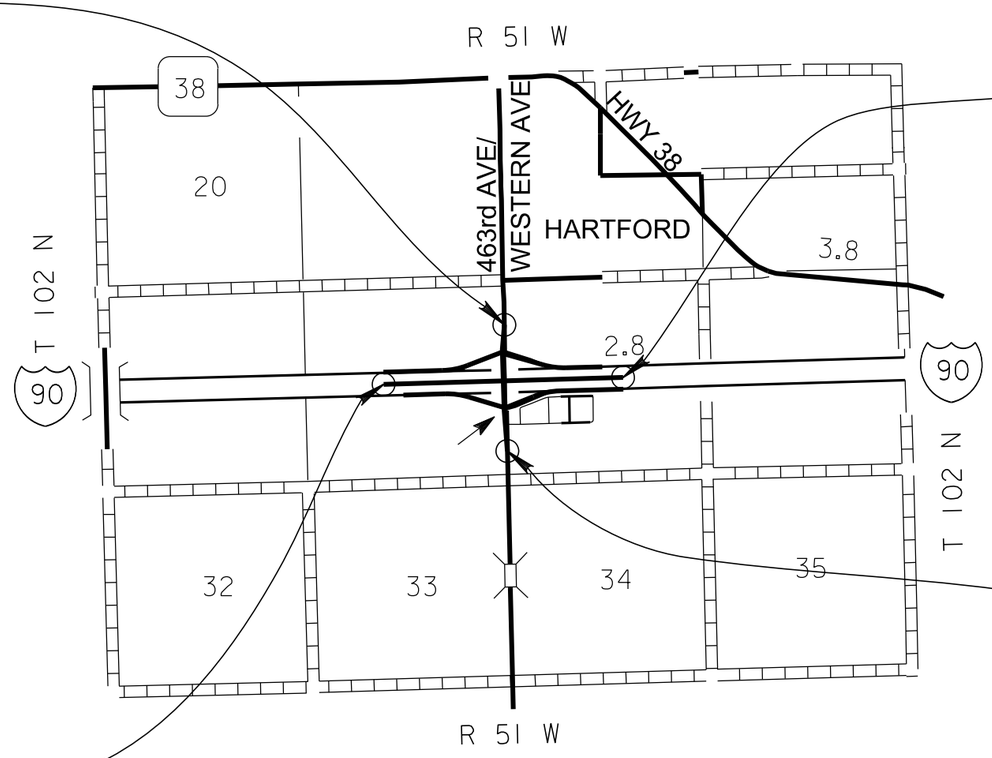
FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F1	F39

Plotting Date: 07/18/2024

INDEX OF SHEETS

END IM 0909(92)387
END GRADING
STA. 28+84.42



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END GRADING
STA. 583+05.13

BEGIN IM 0909(92)387
BEGIN GRADING
STA. 2+00.00

BEGIN IM 0909(92)387
BEGIN GRADING
STA. 519+62.08

REVISED 12 August, 2024 - BAH

SECTION F – ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
004E0050	Remove Traffic Diversion(s)	Lump Sum	LS
120E6200	Water for Granular Material	222.8	MGal
260E1010	Base Course	6,767.3	Ton
260E2030	Gravel Cushion, Salvaged	11,084.8	Ton
260E3010	Gravel Surfacing	684.1	Ton
320E1200	Asphalt Concrete Composite	2,891.8	Ton
380E0070	9" Nonreinforced PCC Pavement	27,846.0	SqYd
380E6000	Dowel Bar	12,999	Each
380E6110	Insert Steel Bar in PCC Pavement	60	Each
410E2600	Membrane Sealant Expansion Joint	86.6	Ft
600E0300	Type III Field Laboratory	1	Each

SCALE

The Contractor will provide a computerized scale with the capability of printing weigh tickets for weighing the Base Course and Gravel Cushion, Salvaged material. Cost for providing the computerized scale with printouts will be incidental to various contract items.

BUSINESS ENTRANCE CLOSURES

It is anticipated that there may be 4 ramps, 2 intersecting streets, and 1 driveways that will require a blockout to maintain access. The business entrances designated by the Engineer will not be closed for more than 24 consecutive hours with no alternate entrance into the business. The Contractor may use Fast Track Concrete, paving during nonbusiness hours, or any option approved by the Engineer to achieve this requirement. See Special Provision for Contract Time.

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.

TYPE III FIELD LABORATORY

Substitution of a cellular telephone for the hard-wired touch-tone telephone is not allowed, as state personnel need the ability to download information over direct phone lines. The phone is intended for state personnel usage only. Contractor personnel are prohibited from using this phone unless pre-approved by the Project Engineer. Reimbursement will not be made for fees associated with the purchase, installation, disconnection, monthly line charges, and incidentals involved in the installation, maintenance, and disconnection of the phone (including attachments). These items will be incidental to the contract unit price per each for “Type III Field Laboratory”.

WATER FOR COMPACTION

A minimum of 4% moisture will be required at the time of compaction unless otherwise directed by the Engineer.

BASE COURSE

An additional 300 tons of Base Course has been added to the estimate for maintenance of traffic to be used at the direction of the Engineer.

GRAVEL CUSHION, SALVAGED

The Gravel Cushion, Salvaged will be obtained from the stockpile site(s) provided by the Contractor from the salvaged material produced on this project and may be used without further gradation testing.

All other requirements for Gravel Cushion, Salvaged will apply.

GRAVEL SURFACING

The gravel surfacing will be placed on the project as closely following completion of grading the roadbed as feasible.

SALVAGED MATERIAL

The quantity of salvaged granular material may vary from the plans. The Contractor will be required to use all of the salvaged material on this project.

INTERSECTING ROADS AND ENTRANCES

In areas where granular material has been placed adjacent to the existing asphalt concrete, the Contractor will be required to remove the granular material to a depth below the existing asphalt concrete to allow for the placement of the new asphalt concrete. New asphalt concrete will be placed flush with the existing asphalt concrete. The existing granular material removed will be placed on the entrances, intersecting roads or other locations as directed by the Engineer.

All costs to remove and place the granular material including labor, equipment and incidentals will be incidental to the various related contract items.

ASPHALT CONCRETE COMPOSITE

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 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.

An additional 100 tons of Asphalt Concrete Composite has been added to the estimate for maintenance of traffic to be used at the direction of the Engineer.

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

RAMP DETOURS

Ramp detours will be constructed according to the layouts provided in these plans.

The maximum horizontal degree of curve will be 6°45', the distance from where the inside edge of the ramp detour intersects the in-place ramp will be between 150 and 250 lineal feet from the gore area, and the vertical alignment will be constructed to provide adequate stopping sight distance. Any existing drainage impacted by the ramp detours will be addressed. All costs associated with the temporary modification of an existing drainage will be incidental to the various contract items needed to construct the ramp detours. The Engineer will have final approval of the horizontal and vertical alignment of the ramp detours.

Any pipe necessary to drain water under the ramp detours are considered incidental to the ramp detour and will be incidental to the various contract items for the ramp detour. The Contractor is responsible for sizing the pipe and providing appropriate end sections as directed by the Engineer.

See Section D, Erosion and Sediment Control Plans, for removing and replacing topsoil.

REMOVE RAMP DETOURS

Upon completion of the project the Median Crossovers, Ramp Detours, and Temporary Ramps at Exit 387 will be removed. The asphalt concrete, granular material and pit run material will be disposed of by the Contractor as approved by the Engineer. All culverts and pipe end sections will become the property of the Contractor.

Cost for removing the asphalt concrete and granular material and removal of culverts and pipe end sections will be incidental to the contract lump sum price for “Remove Traffic Diversion(s)”.

TRANSVERSE CONTRACTION JOINTS

Unless specified otherwise in the PCC Pavement Joint Layout Sheets or elsewhere in the plans, the typical joint spacing for the 9” Nonreinforced PCC Pavement will be 14’.

See Standard Plate 380.01 for placement of Dowel Bars. The transverse construction joints will be handled in accordance with Standard Plate 380.04.

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.

9" 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.

A minimum of 7 pavement blockouts may be required at various locations on this project to facilitate traffic during the paving activity.

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.

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement. The transverse construction joints will be handled in accordance with Standard Plate 380.15.

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.

All driving surfaces of the mainline paving, including ramps will be longitudinally tined from 6" each side of centerline pavement markings to 6" inside the outside pavement markings. Areas with concrete curb and gutter without pavement markings will be longitudinally tined to within 2 to 3 feet of the face of the curb. All other areas will be textured as directed by the Engineer.

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:

Mainline	Sta. 5+84.09 to Sta. 15+26.01
	Sta. 19+22.01 to Sta. 28+84.42
Ramp A	Sta. 5+74.06 to Sta. 13+35.43
Ramp B	Sta. 1+15.50 to Sta. 13+90.56
Ramp C	Sta. 13+87.88 to Sta. 23+71.88
Ramp D	Sta. 19+07.72 to Sta. 31+73.16

ALKALI SILICA REACTIVITY

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.

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 preceding 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.

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.

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 “9" Nonreinforced PCC Pavement”.

STEEL BAR INSERTION

The Contractor will insert the Steel Bars (1-1/4” x 18 inch epoxy coated plain round steel bars) 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 plain round steel bars will be inserted on 12-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.

TABLE OF STEEL BAR INSERTION

LOCATION		QUANTITY OF BARS
Ramp A Sta. 13+35.43	14.84' Lt. to 00.16' Rt.	15
Ramp B Sta. 13+90.56	00.26' Lt. to 14.74' Rt.	15
Ramp C Sta. 13+87.77	00.00' Lt. to 15.00' Rt.	15
Ramp D Sta. 19+07.72	15.00' Lt. to 00.00' Rt.	15
	Totals:	60

RATES OF MATERIALS

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

WESTERN AVE – MAINLINE

Sta. 5+84.09 to Sta. 15+26.01
Sta. 19+22.01 to Sta. 28+84.42.00

Gravel Cushion, Salvaged 138.08 tons

Water for Granular Material at the rate of 1.66 MGal

RAMPS

Ramp A Sta. 5+74.06 to Sta. 13+35.43
Ramp B Sta. 1+15.50 to Sta. 13+90.56
Ramp C Sta. 13+87.88 to Sta. 23+71.88
Ramp D Sta. 19+07.72 to Sta. 31+73.16

Gravel Cushion, Salvaged 101.40 tons

Water for Granular Material at the rate of 1.22 MGal

WEDGE ADJACENT TO PCC PAVEMENT

RAMPS (Inside Shoulder)

Ramp A Sta. 5+74.06 to Sta. 13+35.43 Rt.
Ramp B Sta. 1+15.50 to Sta. 13+90.56 Lt.
Ramp C Sta. 13+87.88 to Sta. 23+71.88 Lt.
Ramp D Sta. 19+07.72 to Sta. 31+73.16 Rt.

Gravel Cushion, Salvaged 10.46 tons

Water for Granular Material at the rate of 0.13 MGal

RAMPS (Outside Shoulder)

Ramp A Sta. 5+74.06 to Sta. 13+35.43 Lt.
Ramp B Sta. 1+15.50 to Sta. 13+90.56 Rt.
Ramp C Sta. 13+87.88 to Sta. 23+71.88 Rt.
Ramp D Sta. 19+07.72 to Sta. 31+73.16 Lt.

Gravel Cushion, Salvaged 9.62 tons

Water for Granular Material at the rate of 0.12 MGal

PREPARATION FOR PARKING LOT & DRIVEWAY PAVEMENTS

The foundation will be excavated, shaped, and compacted to a firm, uniform bearing surface. Unsuitable foundation material will be removed and replaced as directed by the Engineer. The foundation will be thoroughly moistened immediately prior to placing the PCC Pavement. Moisture will be applied without forming pools of water.

Granular material will be placed to the depth specified and satisfactorily compacted.

Payment for any excavation will be incidental to the contract unit price of the surfacing material.

PROTECTION OF BRIDGE JOINTS

It may be necessary to use special methods and equipment to remove/place material as close as practical to structure appurtenances. Also, the Contractor will mask all expansion joints prior to any removal/placement of material near the joints. The joints will be protected throughout completion of the work. Once the masking has been removed any loose material contained within the joint will be cleaned from the joint. Any damage to the expansion joints along with any existing structure appurtenances will be repaired by the Contractor to the satisfaction of the Engineer at no cost to the Department. All costs related to this work will be incidental to various contract items.

FOR BIDDING PURPOSES ONLY

TABLE OF NONREINFORCED PCC PAVEMENT

Location			Description	9" Nonreinforced PCCP	1 - 1/2" Dowel Bars
Station		Station		sq. yds.	each
Western Ave					
2+00.00	to	4+69.09		1,038.5	583
4+69.09	to	5+84.09		484.0	292
5+84.09	to	15+26.01		3,767.7	2,496
15+26.01	to	15+74.01		210.1	110
18+76.01	to	19+22.01		201.9	110
19+22.01	to	28+84.42		3,849.7	2,557
Ramps					
0+18.77	to	1+13.00	Ramp A	817.7	182
1+13.00	to	4+23.79	Ramp A	1,174.1	552
4+23.79	to	5+74.06	Ramp A	489.9	195
5+74.06	to	13+35.43	Ramp A	2109.1	810
0+18.90	to	1+15.50	Ramp B	638.3	146
1+15.50	to	13+90.56	Ramp B	3,535.3	1,365
13+87.88	to	23+71.88	Ramp C	2,727.7	1,050
23+71.88	to	25+22.15	Ramp C	495.1	212
25+22.15	to	27+27.85	Ramp C	390.0	168
26+26.34	to	27+28.86	Ramp C	823.8	169
19+07.72	to	31+73.16	Ramp D	3,509.1	1,350
31+73.16	to	32+74.04	Ramp D	726.9	142
Intersecting Streets					
Sta. 5+27 Rt.				318.7	180
Drives					
Sta. 26+73 Lt.				538.4	330
			TOTALS:	27,846.0	12,999

TABLE OF CROSSOVERS AND TEMPORARY SURFACING FOR TRAFFIC CONTROL

Location - Description	Water for Granular	Base Course	Asphalt Concrete Composite 1st / 2nd / 3rd
	MGal	Ton	Ton
Temporary Surfacing for Traffic Control			
Mainline Sta. 1+27.41 to Sta. 11+94.05	11.5	957.2	255.6 / 255.6
Mainline Sta. 19+60.51 to Sta. 21+44.23	0.3	22.0	5.9 / 5.9
Mainline Sta. 22+57.57 to Sta. 29+57.47	7.3	604.2	161.3 / 161.3
Temporary Ramps			
Ramp G	18.2	1,516.3	214.1 / 214.1 / 214.1
Ramp H	17.2	1,437.5	204.4 / 204.4 / 204.4
Median Crossovers			
I90 Sta. 535+00 (WB Lanes)	7.9	658.4	123.5 / 103.8
I90 Sta. 566+00 (WB Lanes)	12.0	997.3	191.9 / 162.9
Totals:	74.4	6,192.9	2,683.2

TABLE OF ADDITIONAL QUANTITIES

Location - Description	Water for Granular Material	Gravel Cushion, Salvaged	Gravel Surfacing	Base Course	Asphalt Concrete Composite
	(MGal)	(Ton)	(Ton)	(Ton)	(Ton)
463rd Ave / Western Ave					
Sta. 2+00 to Sta. 4+69.09 - Transition Area	4.9	412.0			
Sta. 4+69.09 to Sta. 5+84.09 - Transition Area	2.4	199.8			
Sta. 15+26.01 to Sta. 15+74.01 - Transition Area	0.8	70.6			
Sta. 18+76.01 to Sta. 19+22.01 - Transition Area	0.8	66.3			
Frontage Road					
Sta. 0+21.57 to Sta. 8+96.07	8.2		684.1		
Ramp A					
Sta. 0+18.77 to Sta. 1+13 - Transition Area	3.2	270.3			
Sta. 1+13 to Sta. 4+23.79 - Transition Area	5.5	459.1			
ML Sta. 4+23.79 to Sta. 5+74.06 - Transition Area	2.4	202.0			
Ramp B					
Sta. 0+18.90 to Sta. 1+15.50 - Transition Area	2.6	213.0			
Ramp C					
Sta. 23+71.88 to Sta. 25+22.15 - Transition Area	2.4	202.0			
Sta. 25+22.15 to Sta. 26+26.34 - Transition Area	1.8	153.9			
Sta. 26+26.34 to Sta. 27+27.85 - Transition Area	3.3	272.4			
Ramp D					
Sta. 31+73.16 to Sta. 32+74.05 - Transition Area	3.0	251.6			
Guardrail Surfacing					
Begin Bridge Lt.	0.8	29.3		41.0	12.4
Begin Bridge Rt.	0.7	24.0		33.6	10.2
End Bridge Lt.	0.8	28.2		39.5	11.9
End Bridge Rt.	0.8	28.2		39.4	11.9
5' Asphalt Concrete Tie-In					
Mainline Sta. 1+95 to sta. 2+00	0.1			10.0	4.6
Drives					
Sta. 1+55 Rt.	0.3			23.7	16.8
Intersecting Streets					
Sta. 5+26 Rt	1.5	115.6		11.2	5.8
Sta. 5+26 Lt	0.6			53.0	22.2
Business Entrances					
Sta. 26+73 Lt	3.3	254.4		23.0	12.8
Totals:	45.8	3,252.7		274.4	108.6

TABLE OF MATERIALS QUANTITIES

FOR BIDDING PURPOSES ONLY

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Location - Description	Water for Granular Material	Base Course	Gravel Cushion, Salvaged	Gravel Surfacing	Asphalt Concrete Composite	9" Nonreinforced PCC Pavement	Dowel Bar	Insert Steel Bar in PCC Pavement	Membrane Sealant Expansion Joint
	(MGal)	(Ton)	(Ton)	(Ton)	(Ton)	(SqYd)	(Each)	(Each)	(Ft)
Mainline: 463rd Ave / Western Ave									
Rates of Materials	32.0		2,625.7						
Table of Nonreinforced Pavement						9,551.9	6,148		
Table of Crossovers and Temporary Surfacing for Traffic Control	19.1	1,583.4			845.6				
Table of Additional Quantities	9.0	10.0	748.7		4.6				
Membrane Sealant Expansion Joint Plan Sheet									86.6
Frontage Road									
Table of Additional Quantities	8.2			684.1					
Ramp A									
Rates of Materials	11.1		924.8						
Table of Steel Bar Insertion								15	
Table of Nonreinforced Pavement						4,590.8	1,739		
Table of Additional Quantities	11.1		931.4						
Ramp B									
Rates of Materials	18.6		1,548.9						
Table of Steel Bar Insertion								15	
Table of Nonreinforced Pavement						4,173.6	1,511		
Table of Additional Quantities	2.6		213.0						
Ramp C									
Rates of Materials	14.4		1,195.4						
Table of Steel Bar Insertion								15	
Table of Nonreinforced Pavement						4,436.6	1,599		
Table of Additional Quantities	7.5		628.3						
Ramp D									
Rates of Materials	18.5		1,537.3						
Table of Steel Bar Insertion								15	
Table of Nonreinforced Pavement						4,236.0	1,492		
Table of Additional Quantities	3.0		251.6						
Ramp G									
Table of Crossovers and Temporary Surfacing for Traffic Control	18.2	1,516.3			642.3				
Ramp H									
Table of Crossovers and Temporary Surfacing for Traffic Control	17.2	1,437.5			613.2				
Ramp Detours (I90)									
Table of Crossovers and Temporary Surfacing for Traffic Control	19.9	1,655.7			582.1				
Guardrail Surfacing									
Table of Additional Quantities	3.1	153.5	109.7		46.4				
Drives									
Table of Nonreinforced Pavement						538.4	330		
Table of Additional Quantities	0.3	23.7			16.8				
Intersecting Streets									
Table of Nonreinforced Pavement						318.7	180		
Table of Additional Quantities	2.1	64.2	115.6		28.0				
Business Entrances									
Table of Additional Quantities	3.3	23.0	254.4		12.8				
Misc. Notes	3.6	300.0			100.0				
Totals:	222.8	6,767.3	11,084.8	684.1	2,891.8	27,846.0	12,999	60	86.6

IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F8	F39

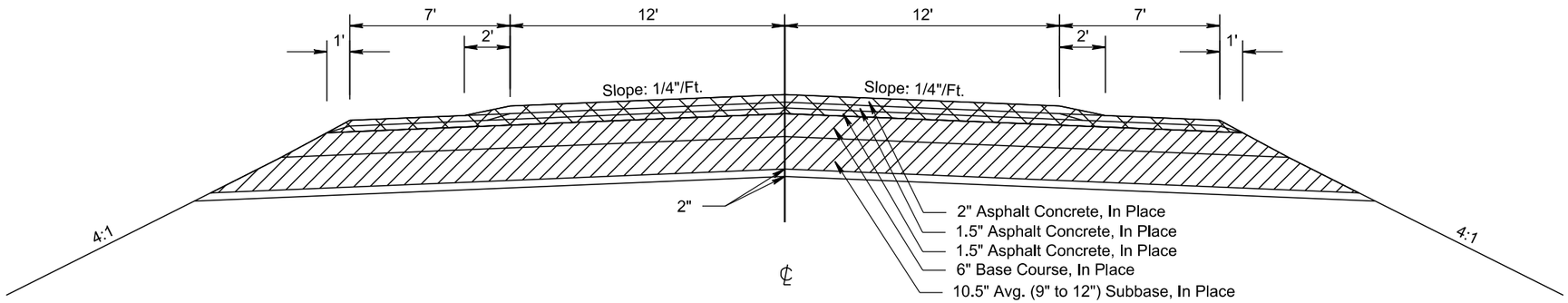
Plotting Date: 07/18/2024

Remove Asphalt Concrete Pavement
(See Section B)

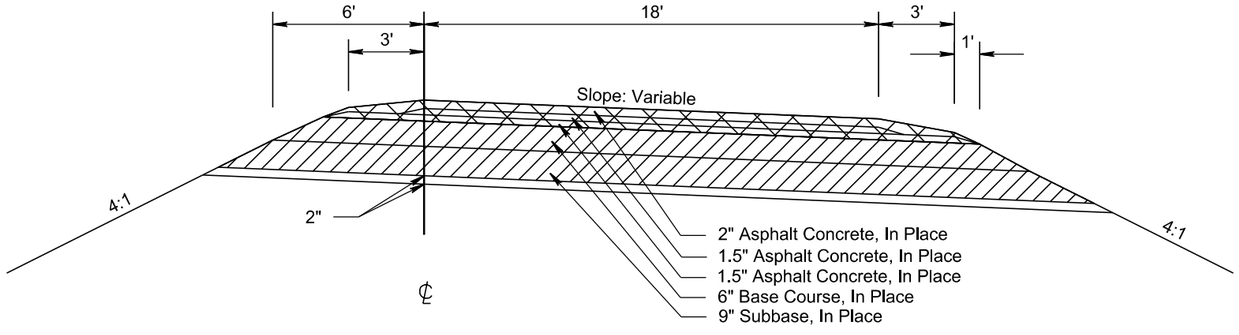
Salvage and Stockpile Granular Material
(See Section B)

Bridge Exception:
Sta. 16+00.70 to Sta. 18+51.91

463rd Ave./ Western Ave.
Sta. 2+00 to Sta. 28+84.42



Ramps
Ramp A: Sta. 1+13.00 to Sta. 13+35.43
Ramp B: Sta. 1+15.50 to Sta. 13+90.56
Ramp C: Sta. 13+87.77 to Sta. 26+26.34
Ramp D: Sta. 19+07.72 to Sta. 31+73.16

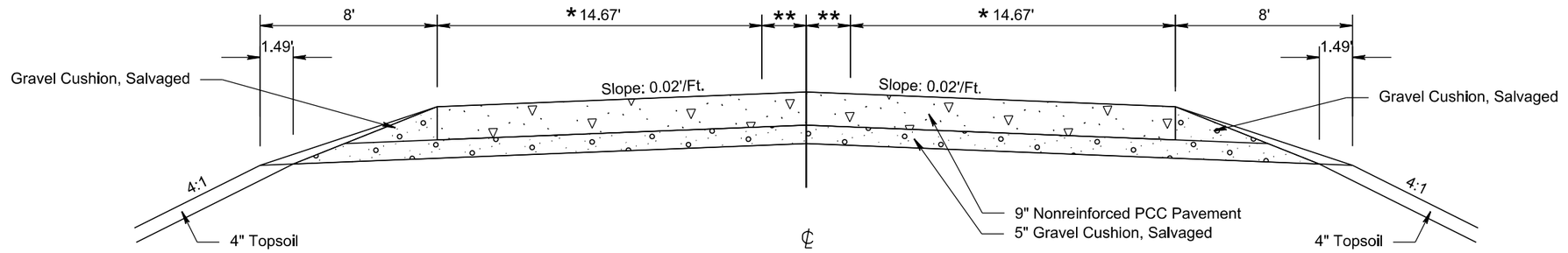


TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F9	F39

Plotting Date: 07/18/2024

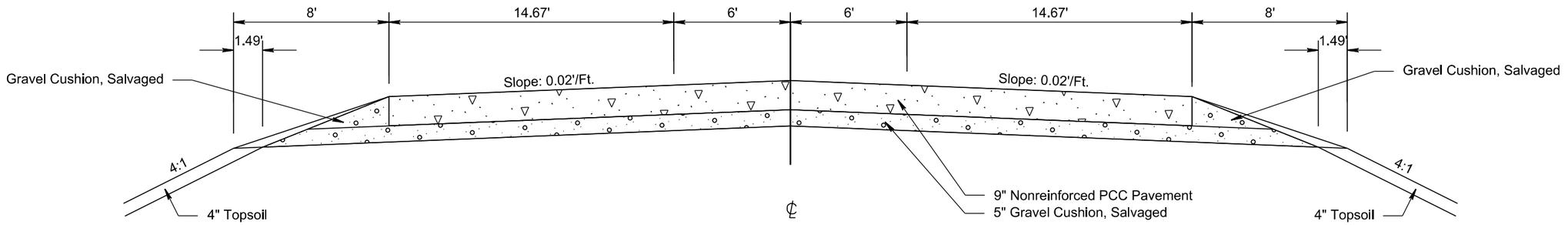
463rd Ave./ Western Ave.
Sta. 2+00 to Sta. 4+69.09



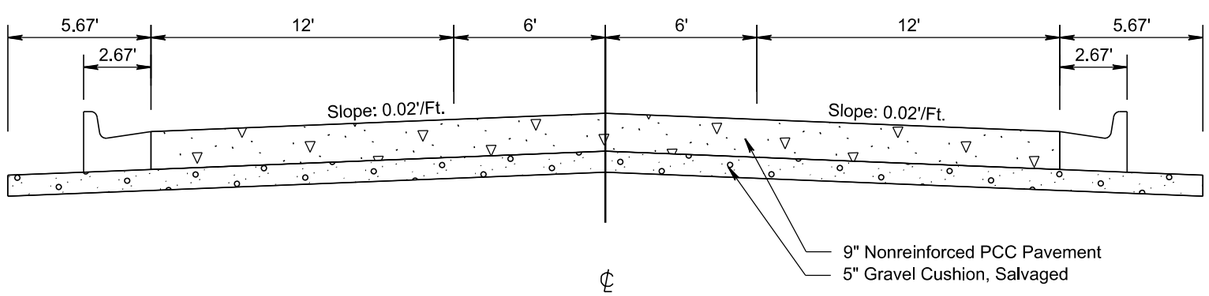
Transitions:
Sta. 2+00.00 to Sta. 2+65.09
* 14.00' to 15.61'
** 0'

Sta. 2+65.09 to Sta. 4+69.09
** 0.94' to 6.00'

463rd Ave./ Western Ave.
Sta. 4+69.09 to Sta. 5+84.09



463rd Ave./ Western Ave.
Sta. 5+84.09 to Sta. 15+74.01
Sta. 18+76.01 to Sta. 28+84.42

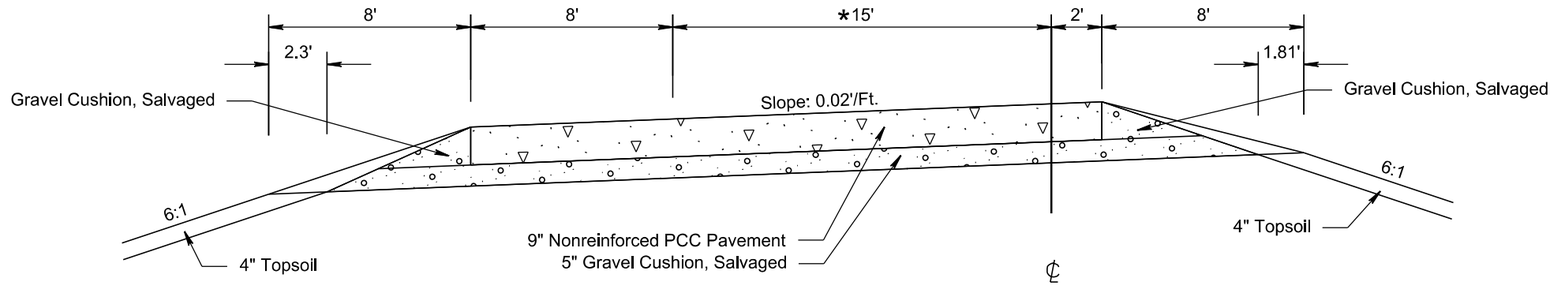


TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F10	F39

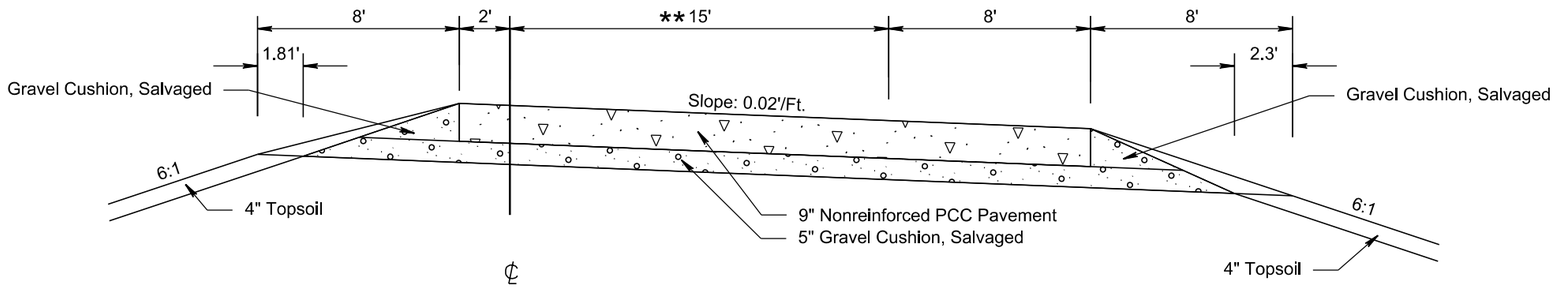
Plotting Date: 07/18/2024

Ramp A: Sta. 1+13.00 to Sta. 13+35.43
Ramp D: Sta. 19+07.72 to Sta. 31+73.16



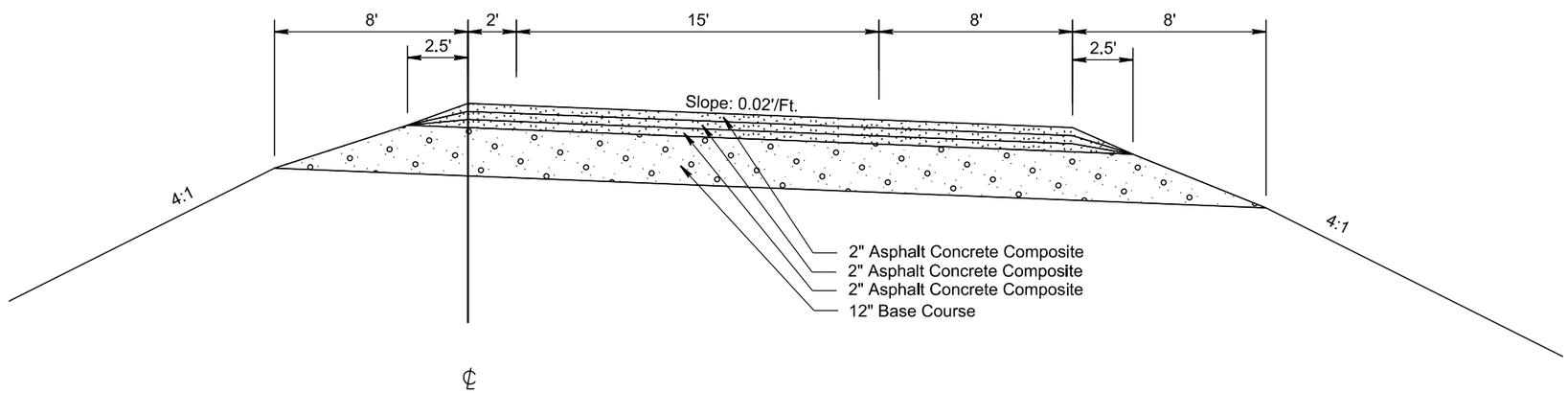
* Ramp A Transitions:
Sta. 1+13.00 to Sta. 4+23.79 - 24'
Sta. 4+23.79 to Sta. 5+74.06 - 24' to 15'

Ramp B: Sta. 1+15.50 to Sta. 13+90.56
Ramp C: Sta. 13+87.77 to Sta. 26+26.34



** Ramp C Transitions:
Sta. 23+71.94 to Sta. 25+22.21 - 15' to 24'
Sta. 25+22.21 to Sta. 26+26.34 - 24'

Temporary Ramp G: Sta. 0+67.31 to Sta. 8+60.44
Temporary Ramp H: Sta. 1+34.66 to Sta. 9+16.95



TYPICAL SURFACING SECTIONS

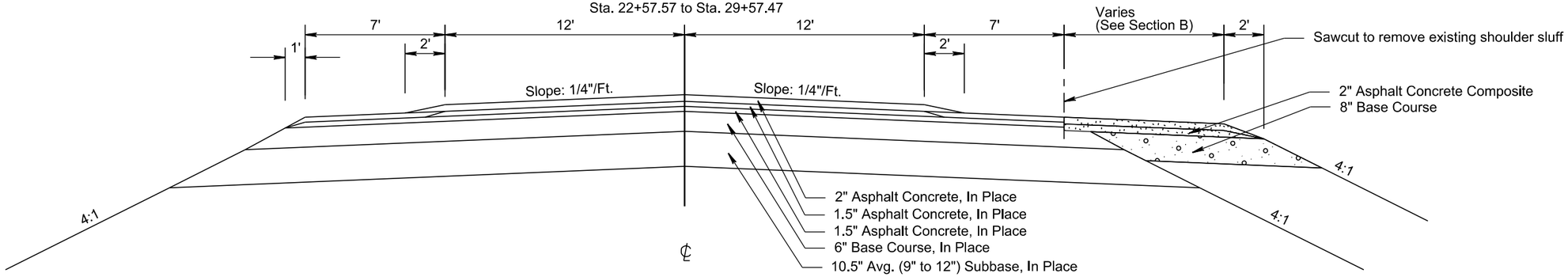
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F11	F39

Plotting Date: 07/18/2024

TEMPORARY SURFACING FOR TRAFFIC CONTROL

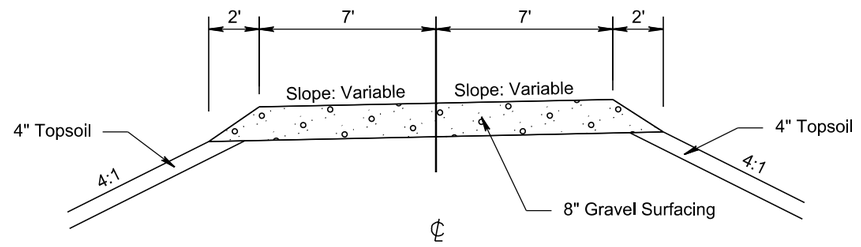
Western Ave

Sta. 1+27.41 to Sta. 11+94.05
Sta. 19+60.51 to Sta. 21+44.23
Sta. 22+57.57 to Sta. 29+57.47



Frontage Road

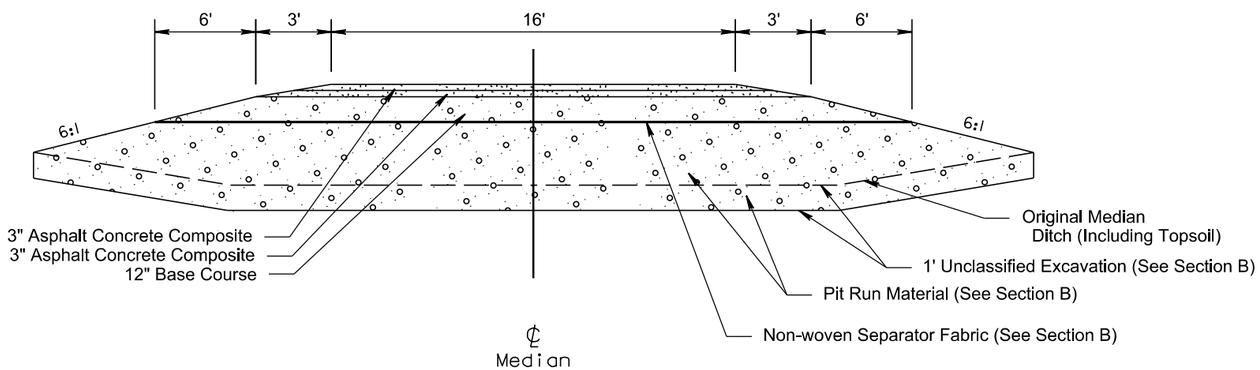
Sta. 0+21.57 to Sta. 0+75.00
Sta. 0+75.00 to Sta. 3+50.00 (Reversed)
Sta. 3+50.00 to Sta. 8+96.07



MEDIAN CROSSOVERS

I90

Sta. 533+99.22 Lt. to Sta. 538+67.37 Rt.
Sta. 562+75.16 Rt. to Sta. 569+41.52 Lt.



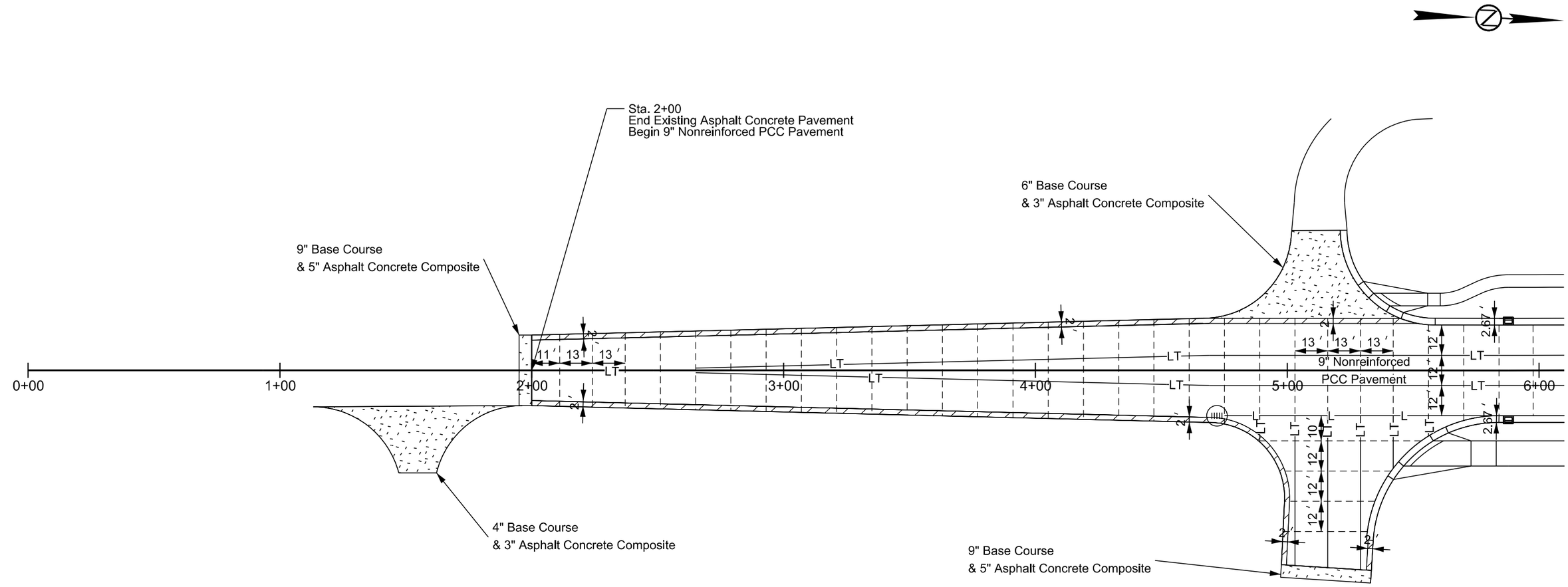
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F12	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 1 of 17 Sheets

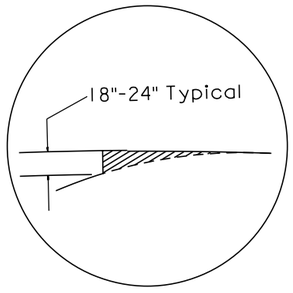


LEGEND:

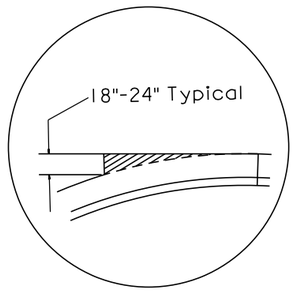
Longitudinal Joint Without Tie Bars (Construction or Sawed) ———L———L———
Longitudinal Joint With Tie Bars (Construction or Sawed) ———LT———LT———
Transverse Contraction Joint —
Steel Bar Installation in Longitudinal or Transverse Joint ———SB———SB———
Areas to be poured monolithically with adjacent slab ⊕ (See Detail A)
Areas to be poured monolithically with adjacent curb and gutter ⊕ (See Detail B)
Reinforce panel with #4 Rebar centered on adjacent joint (See Detail C)

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

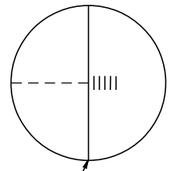
Fillet areas will be reinforced with #4 rebar 24 inches on center both directions. Cost for furnishing and placing the rebar will be incidental to the contract unit price per square yard for 9" NONREINFORCED PCC PAVEMENT (See Detail X). No dowel bar assemblies will be placed in these areas.



DETAIL A

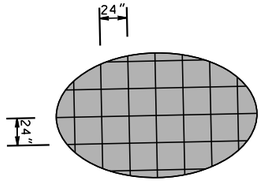


DETAIL B



5 - #4 x 30" Rebar
12" Center to Center.
6" from joint and
centered (Typical)

DETAIL C



DETAIL X

Plot Scale - 1:40
Plotted From - TRPR18388A
File - ...\minn06G8\06G8 PCC Layouts.dgn

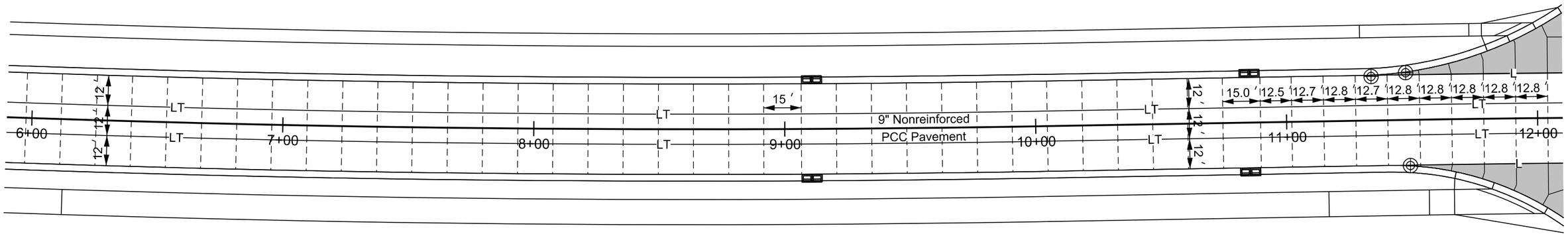
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F13	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 2 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlnn06G8\06G8 PCC Layouts.dgn

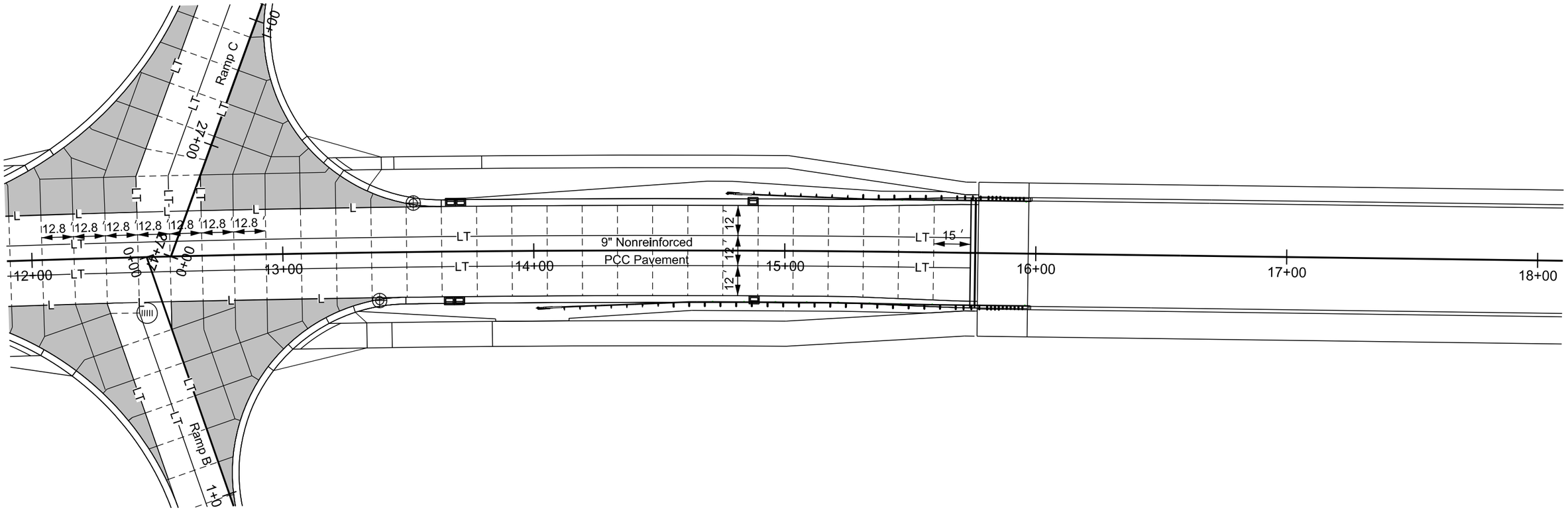
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F14	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 3 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\minn06G8\06G8 PCC Layouts.dgn

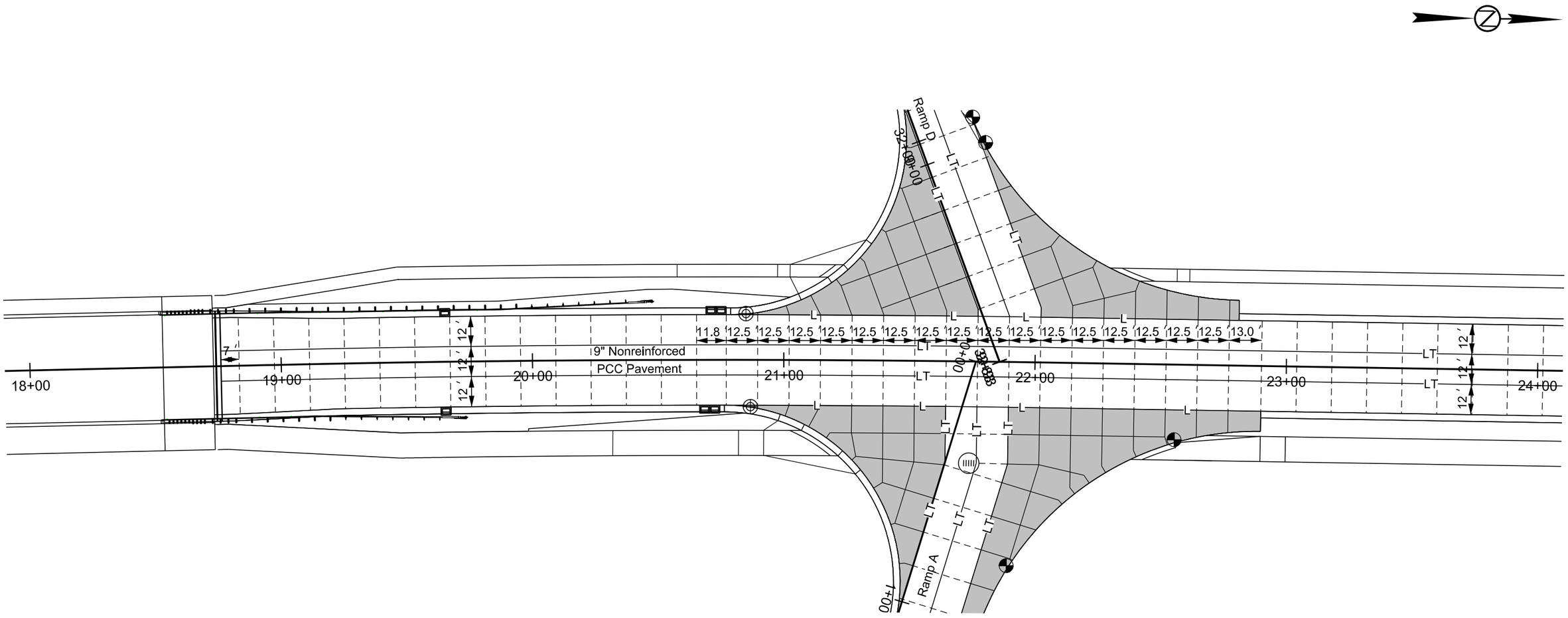
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F15	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 4 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlnn06G8\06G8 PCC Layouts.dgn

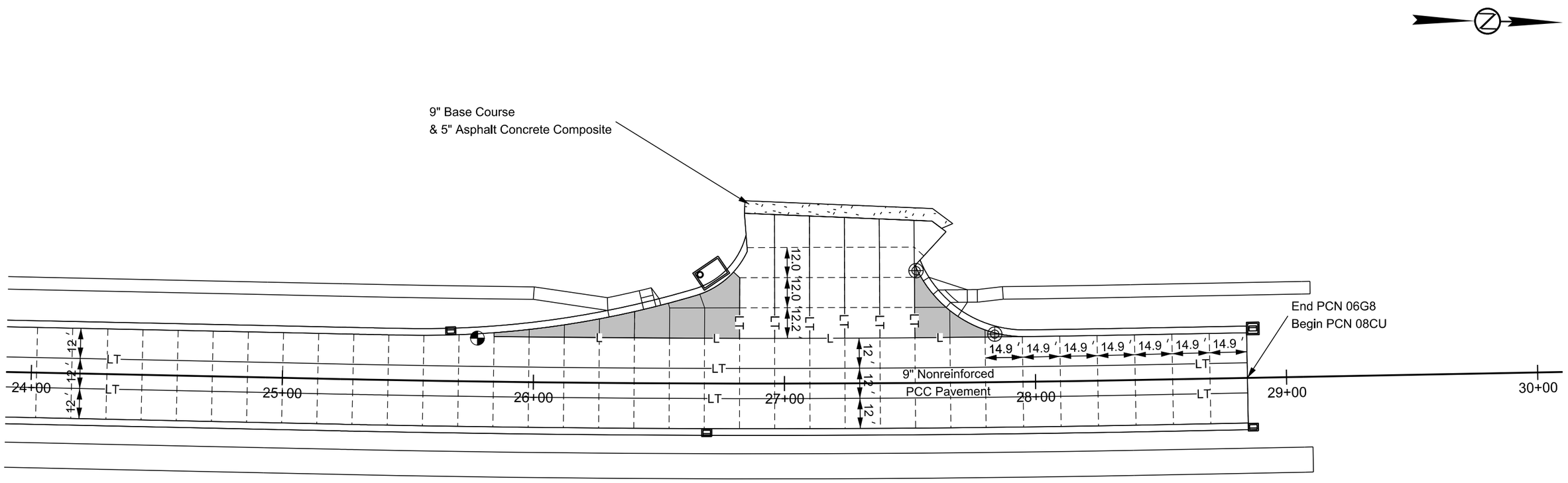
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F16	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 5 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlnn06G8\06G8 PCC Layouts.dgn

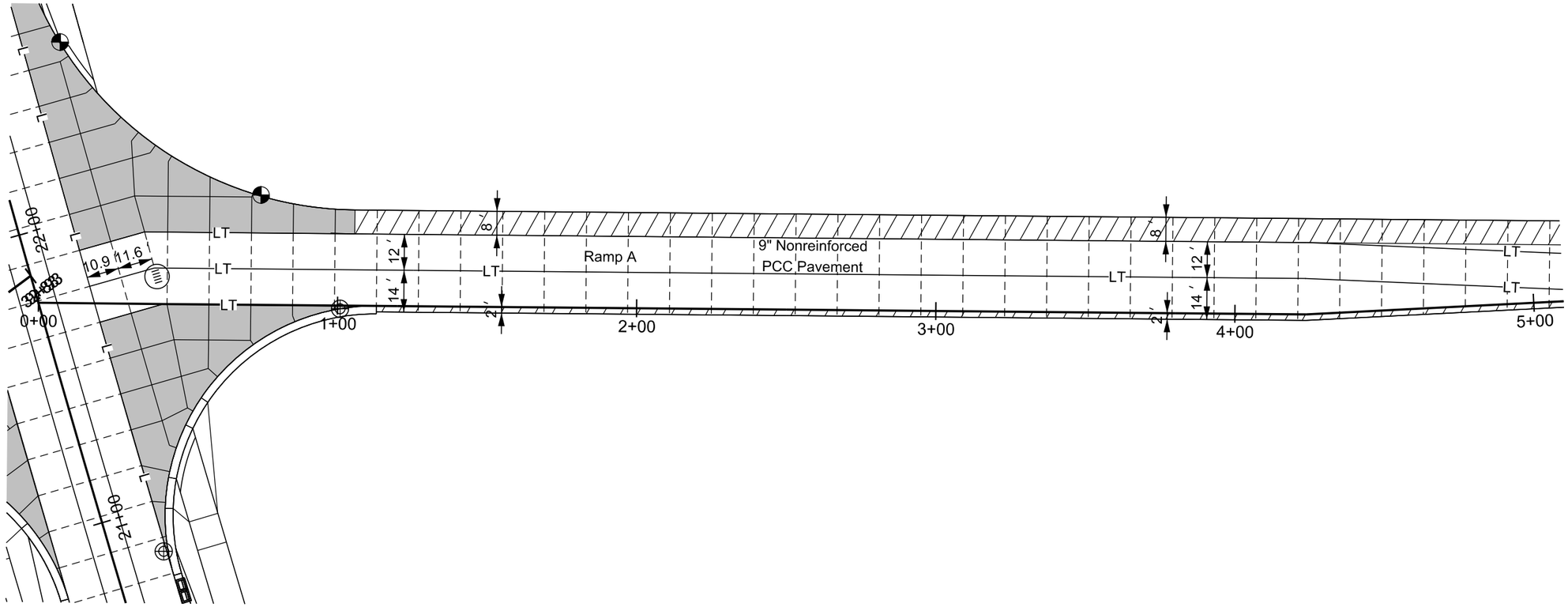
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F17	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 6 of 17 Sheets



LEGEND:

Longitudinal Joint Without Tie Bars (Construction or Sawed) ——L——L——
Longitudinal Joint With Tie Bars (Construction or Sawed) ——LT——LT——
Transverse Contraction Joint — — — — — — — — — — — — — — — — — —
Steel Bar Installation in Longitudinal or Transverse Joint ——SB——SB——
Areas to be poured monolithically with adjacent slab (See Detail A)
Areas to be poured monolithically with adjacent curb and gutter (See Detail B)
Reinforce panel with #4 Rebar centered on adjacent joint (See Detail C)

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

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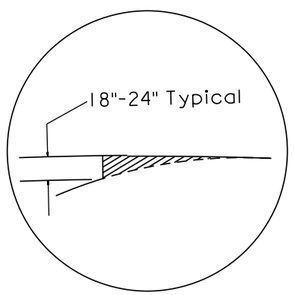
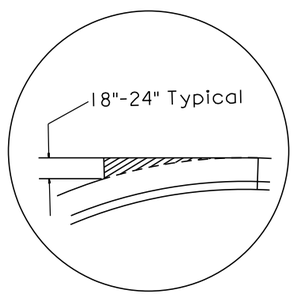
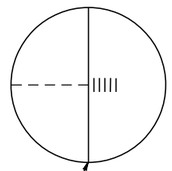


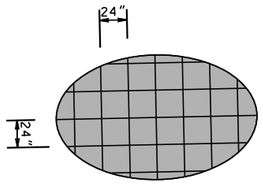
DETAIL A



DETAIL B


5 - #4 x 30" Rebar
12" Center to Center.
6" from joint and
centered (Typical)

DETAIL C



DETAIL X

Plot Scale - 1:40
Plotted From - TRPR18388A
File - ...\minn06G8\06G8 PCC Layouts.dgn

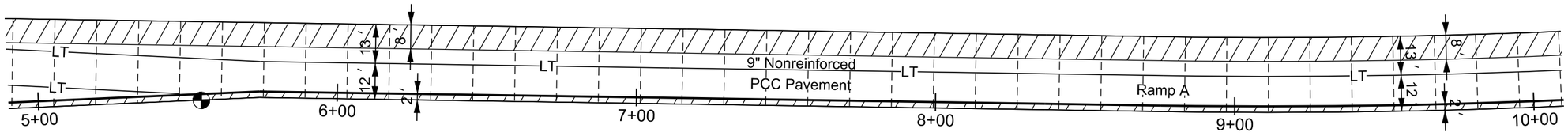
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F18	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 7 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\minn06G8\06G8 PCC Layouts.dgn

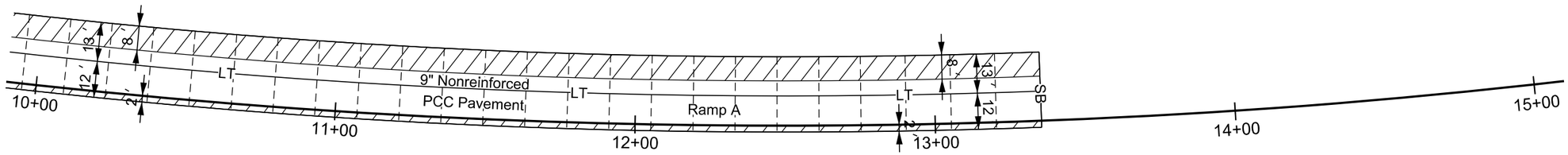
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F19	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 8 of 17 Sheets



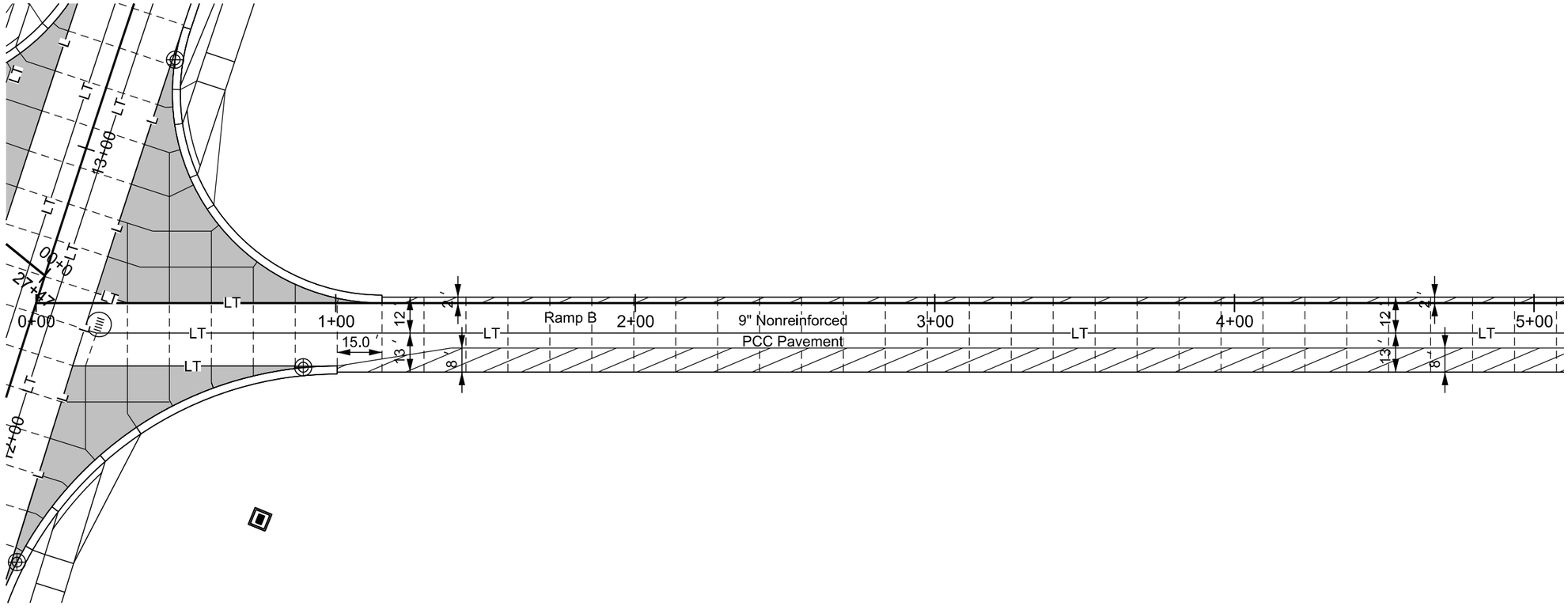
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F20	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 9 of 17 Sheets



LEGEND:

Longitudinal Joint Without Tie Bars (Construction or Sawed) ——L——L——
Longitudinal Joint With Tie Bars (Construction or Sawed) ——LT——LT——
Transverse Contraction Joint — — — — — — — — — — — — — — — —
Steel Bar Installation in Longitudinal or Transverse Joint ——SB——SB——
Areas to be poured monolithically with adjacent slab (See Detail A)
Areas to be poured monolithically with adjacent curb and gutter (See Detail B)
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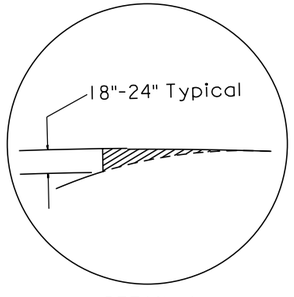
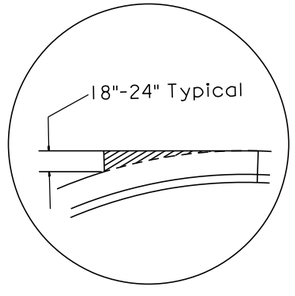
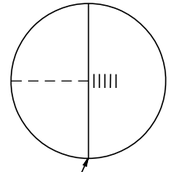


DETAIL A

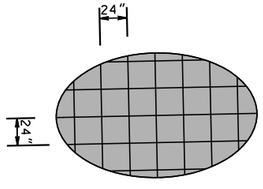


DETAIL B



5 - #4 x 30" Rebar
12" Center to Center.
6" from joint and
centered (Typical)

DETAIL C



DETAIL X

Plot Scale - 1:40
Plotted From - TRPR18388A
File - ...\mlmn06G8\06G8 PCC Layouts.dgn

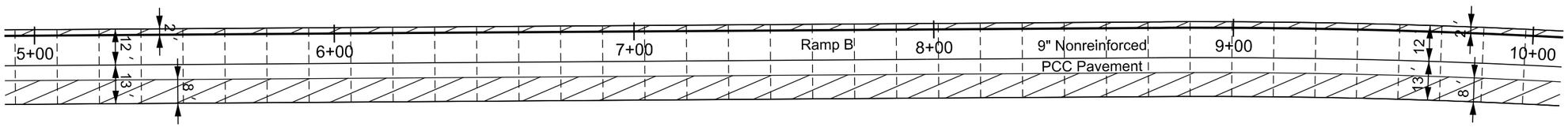
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F21	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 10 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlnn06G8\06G8 PCC Layouts.dgn

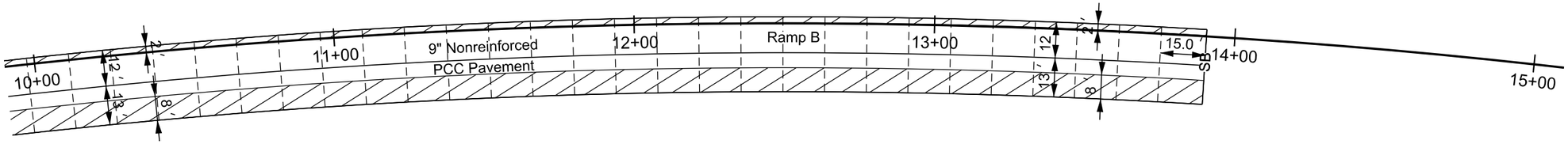
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F22	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 11 of 17 Sheets



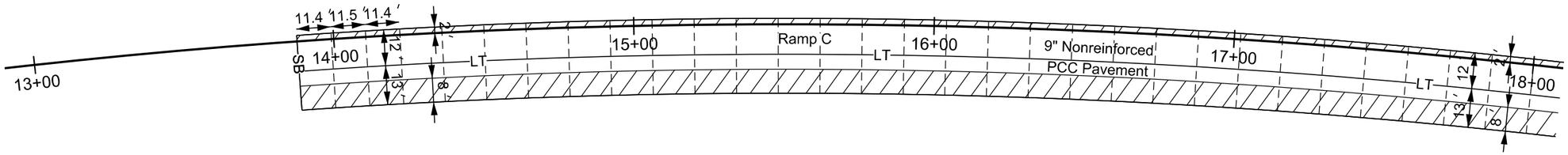
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F23	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 12 of 17 Sheets



LEGEND:

Longitudinal Joint Without Tie Bars (Construction or Sawed) ——L——L——
Longitudinal Joint With Tie Bars (Construction or Sawed) ——LT——LT——
Transverse Contraction Joint — — — — — — — — — — — — — — — — — —
Steel Bar Installation in Longitudinal or Transverse Joint ——SB——SB——
Areas to be poured monolithically with adjacent slab (See Detail A)
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Reinforce panel with #4 Rebar centered on adjacent joint (See Detail C)

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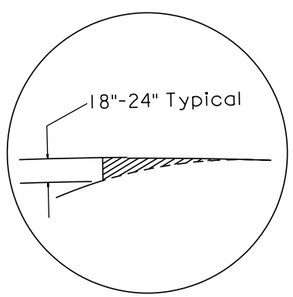
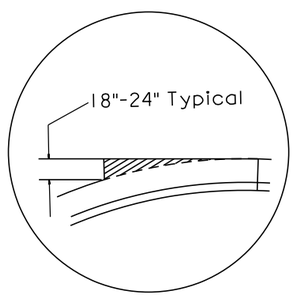
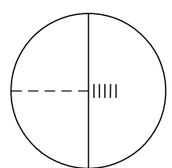


DETAIL A

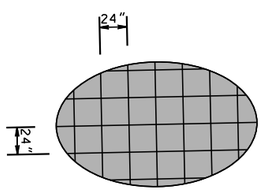


DETAIL B



5 - #4 x 30" Rebar
12" Center to Center.
6" from joint and
centered (Typical)

DETAIL C



DETAIL X

Plot Scale - 1:40
Plotted From - TRPR18388A
File - ...\minn06G8\06G8 PCC Layouts.dgn

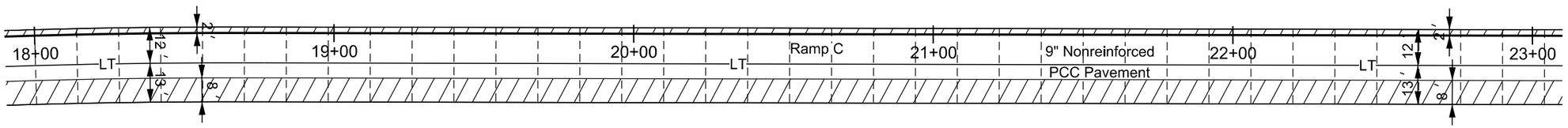
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F24	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 13 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlnn06G8\06G8 PCC Layouts.dgn

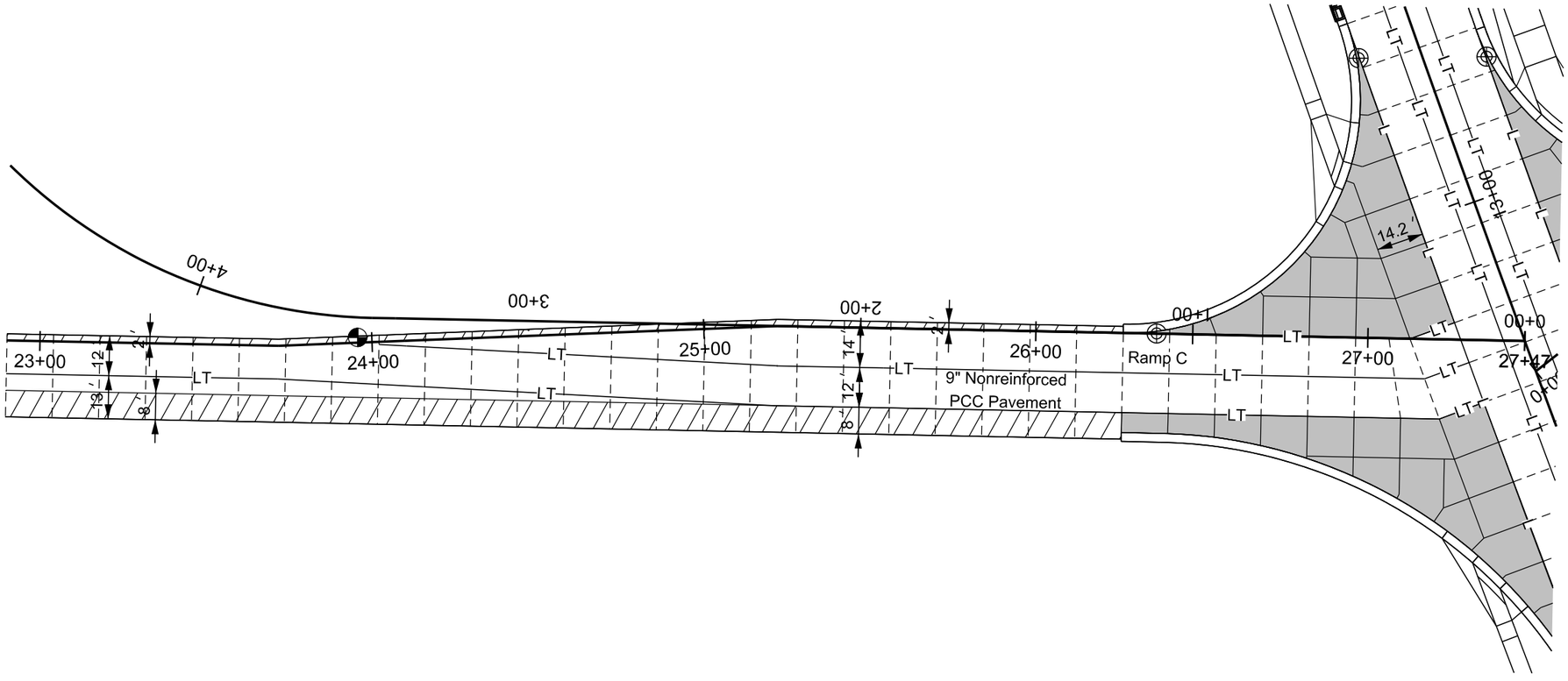
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F25	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 14 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlmn06G8\06G8 PCC Layouts.dgn

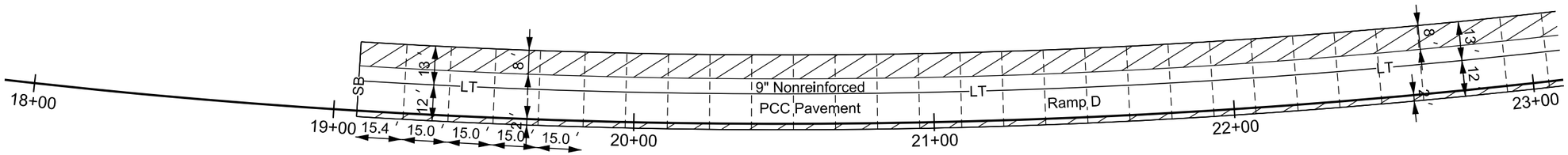
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F26	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 15 of 17 Sheets

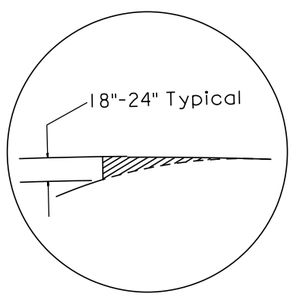


LEGEND:

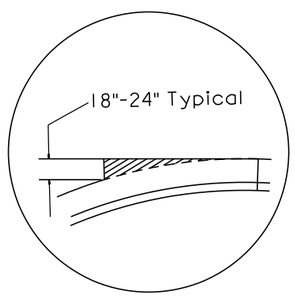
Longitudinal Joint Without Tie Bars (Construction or Sawed) ———L———L———
Longitudinal Joint With Tie Bars (Construction or Sawed) ———LT———LT———
Transverse Contraction Joint —
Steel Bar Installation in Longitudinal or Transverse Joint ———SB———SB———
Areas to be poured monolithically with adjacent slab (See Detail A)
Areas to be poured monolithically with adjacent curb and gutter (See Detail B)
Reinforce panel with #4 Rebar centered on adjacent joint (See Detail C)

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

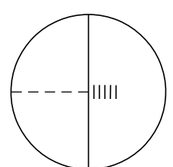
Fillet areas will be reinforced with #4 rebar 24 inches on center both directions. Cost for furnishing and placing the rebar will be incidental to the contract unit price per square yard for 9" NONREINFORCED PCC PAVEMENT (See Detail X). No dowel bar assemblies will be placed in these areas.



DETAIL A

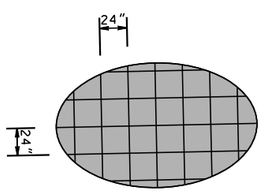


DETAIL B



5 - #4 x 30" Rebar
12" Center to Center.
6" from joint and
centered (Typical)

DETAIL C



DETAIL X

Plot Scale - 1:40
Plotted From - TRPR18388A
File - ...\minn06G8\06G8 PCC Layouts.dgn

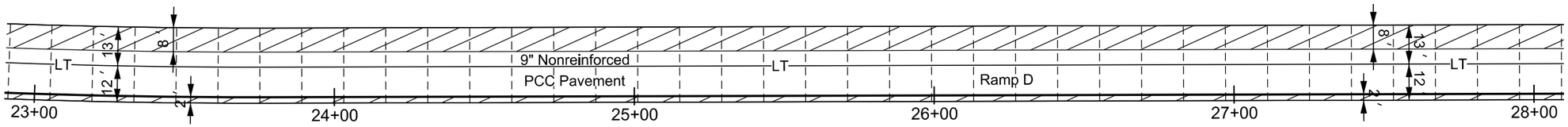
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F27	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 16 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\minn06G8\06G8 PCC Layouts.dgn

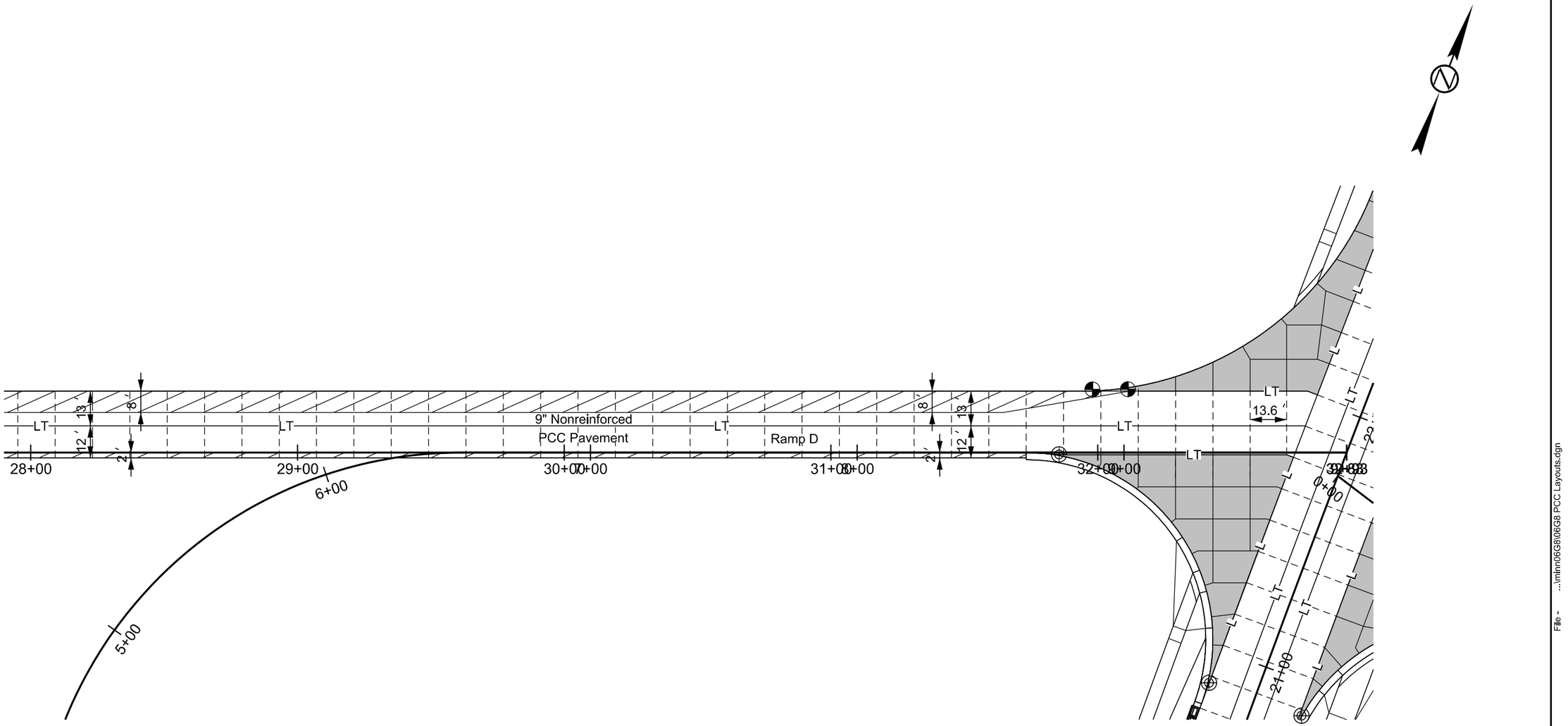
PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F28	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 17 of 17 Sheets



Plot Scale - 1:40

Plotted From - TRPR18388A

File - ...\mlnn06G8\06G8 PCC Layouts.dgn

DRIVING SURFACE TRANSITION DETAILS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F29	F39

Plotting Date: 07/18/2024

Remove Asphalt Concrete Pavement.
See Section B - Grading.

Salvage and Stockpile
Granular Material.
See Section B - Grading.

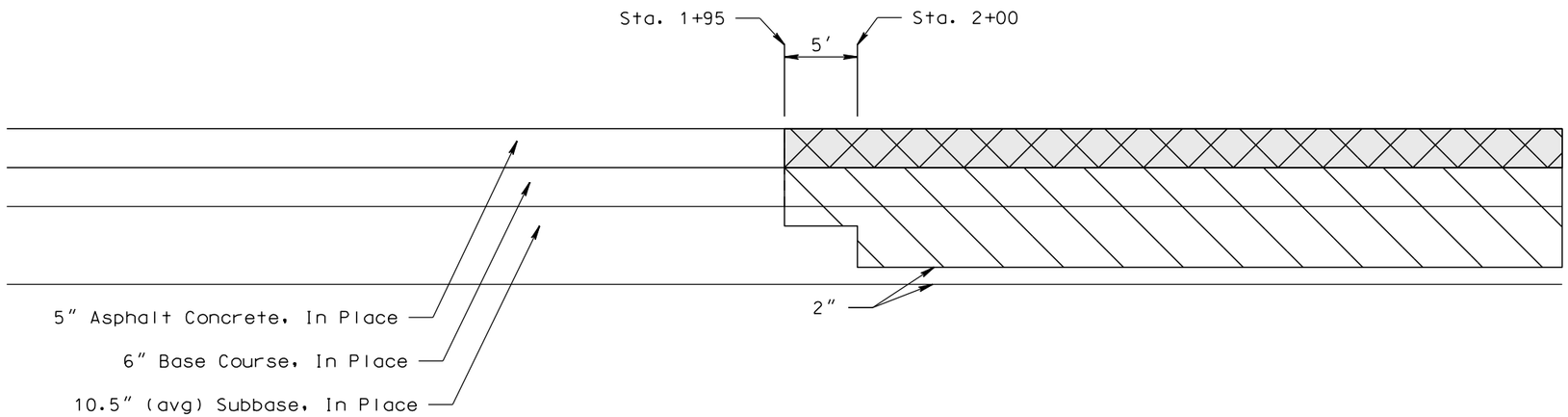
Sheet 1 of 1 Sheets

NOT TO SCALE

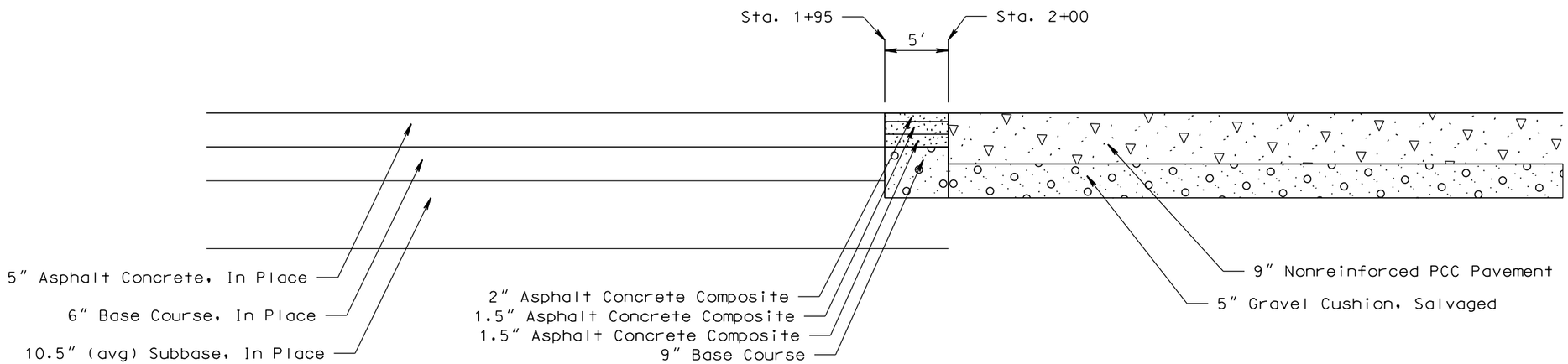
See TYPICAL SURFACING SECTIONS
located elsewhere in these plans for
additional removal and surfacing details.

463rd AVE. / WESTERN AVE.

LONGITUDINAL SECTION SHOWING MATERIAL TO BE REMOVED AT BEGINNING OF PROJECT



LONGITUDINAL SECTION SHOWING SURFACING AT BEGINNING OF PROJECT



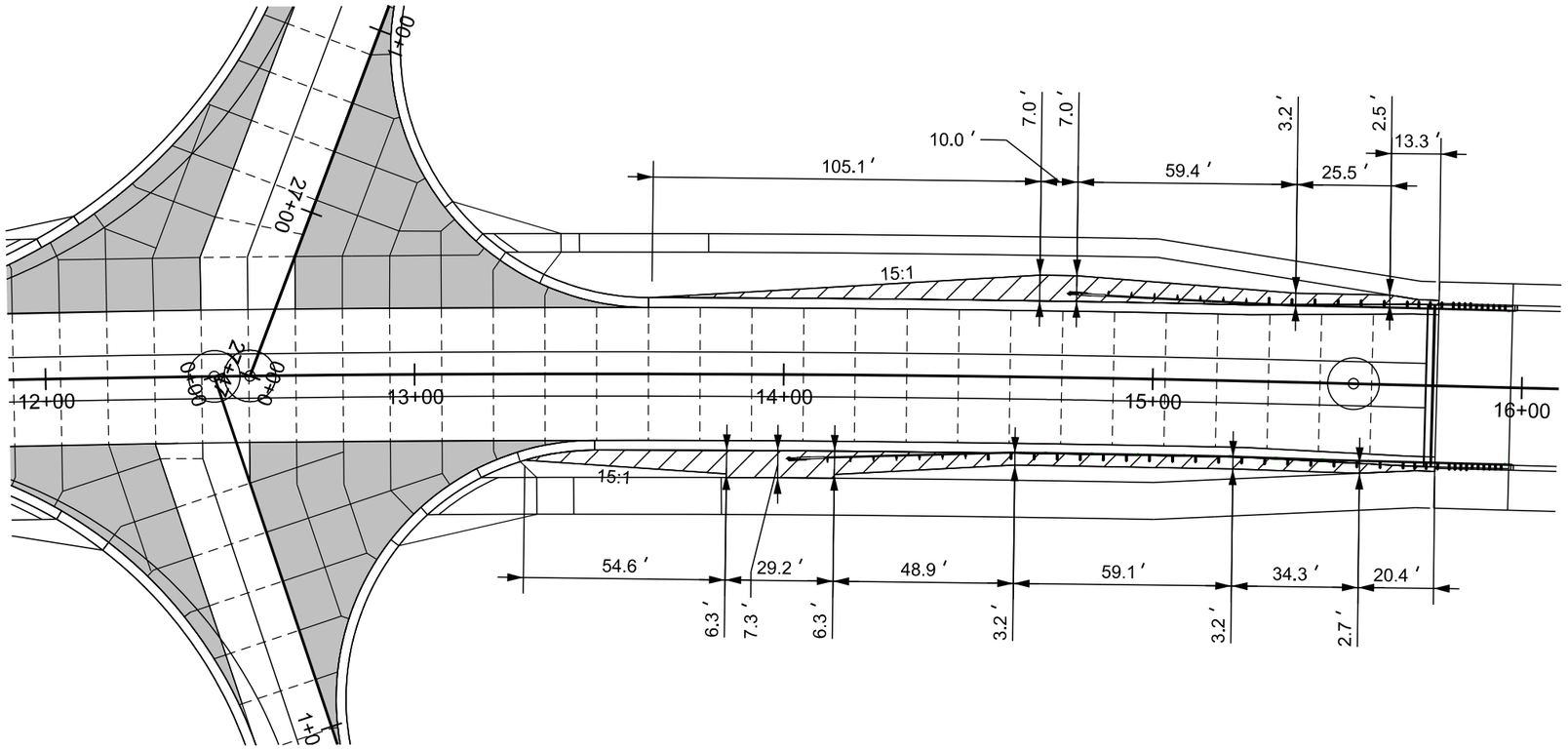
GUARDRAIL SURFACING LAYOUTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F30	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 1 of 2 Sheets

5" Gravel Cushion, 7" Base Course,
& 2" Asphalt Concrete Composite



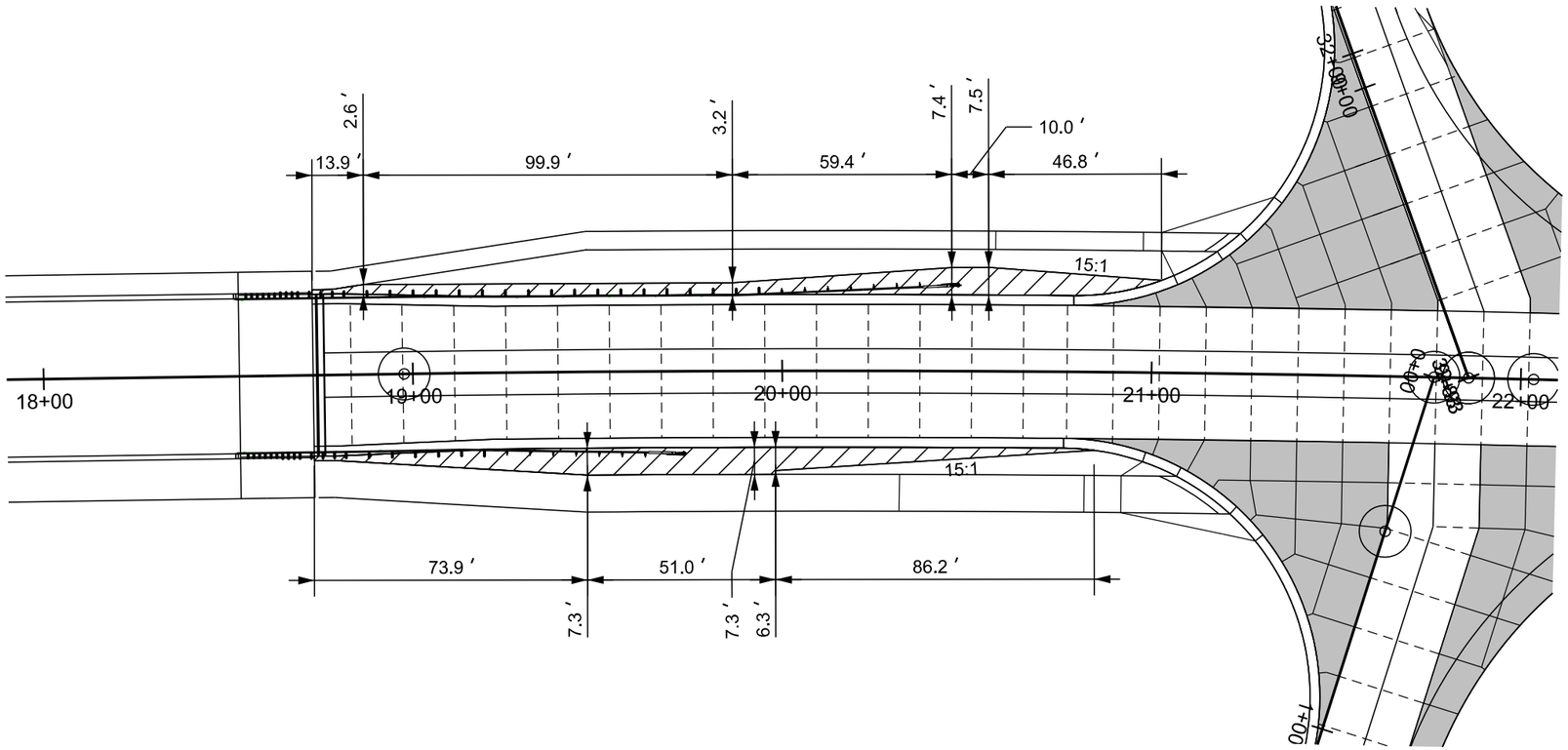
GUARDRAIL SURFACING LAYOUTS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F31	F39

Plotting Date: 07/18/2024

Scale 1 Inch = 40 Feet
Sheet 2 of 2 Sheets

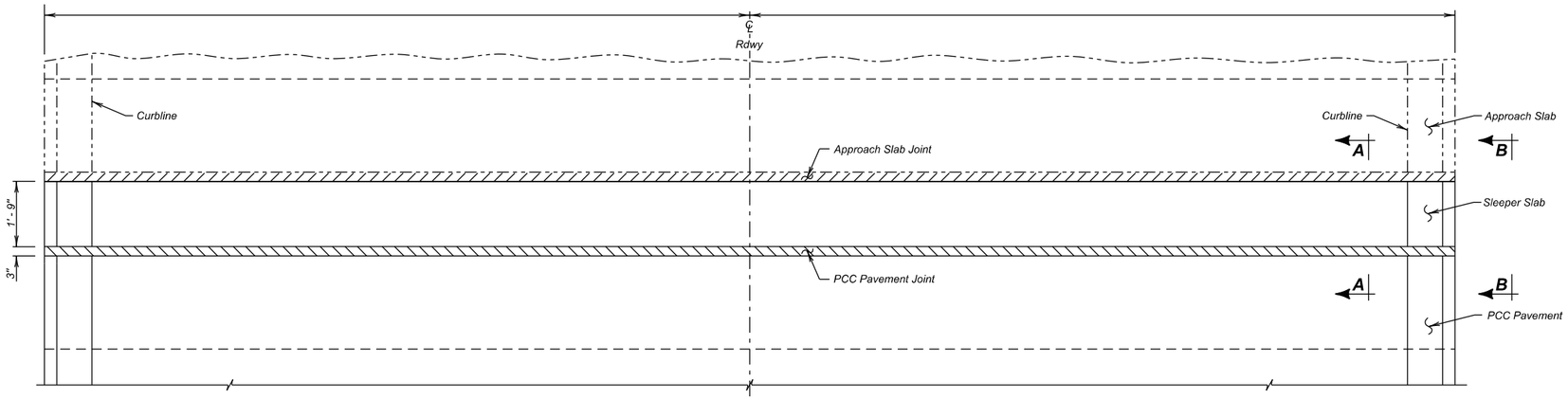
5" Gravel Cushion, 7" Base Course,
& 2" Asphalt Concrete Composite



Membrane Sealant Expansion Joint

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F32	F39

Plotting Date: 07/18/2024



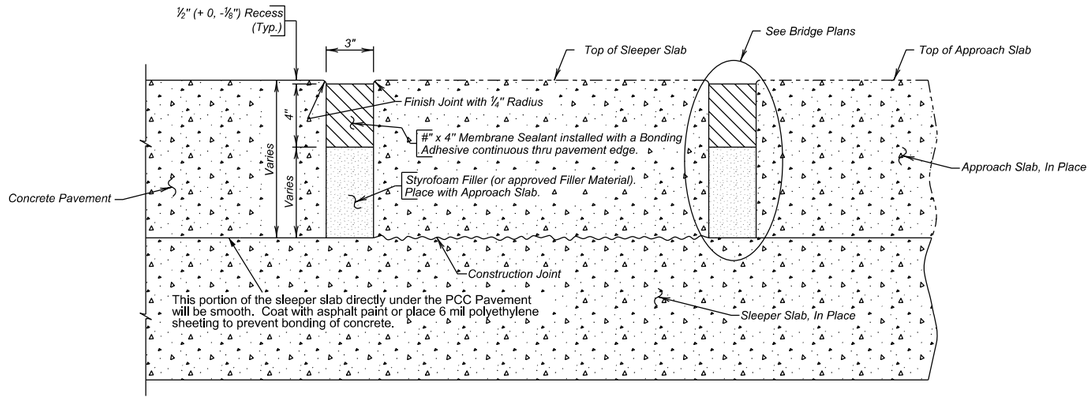
PLAN

ESTIMATED QUANTITIES

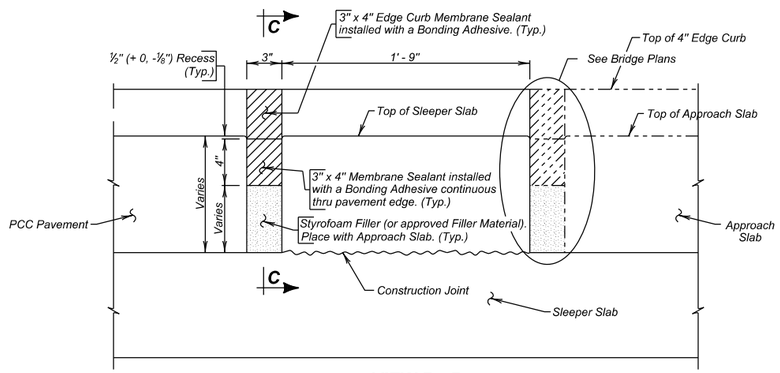
Location	WIDTH INCHES	QUANTITY FEET
463rd Ave. / Western Ave.		
Sta. 15+73.76	3	43.3
Sta. 18+76.01	3	43.3
	TOTAL	86.6

GENERAL NOTES

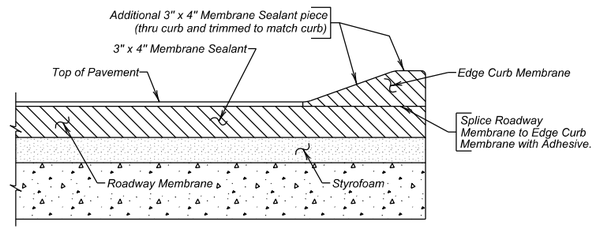
1. The Membrane Sealant will be on the approved product list for Membrane Sealant Expansion Joints.
2. The manufacturer will supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension will be as recommended by the sealant manufacturer, however, in no case will the precompressed dimension exceed 75% of the joint opening width. The foam sealant will be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
3. The membrane sealant will provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension.
4. The membrane sealant will be supplied in pieces a minimum of 5 feet in length. The foam sealant will be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete will be approved by the membrane sealant manufacturer.
6. Adhesive used to join adjacent pieces of the membrane sealant will be as recommended by the manufacturer.
7. If styrofoam filler material is used in the construction, it will be closed cell and water-tight as approved by the Engineer.
8. The minimum ambient air temperature at the time of joint installation and adhesive curing will be 40° F.
9. A technical representative of the membrane sealant manufacturer will be present at the jobsite during installation. The technical representative will be knowledgeable in the correct procedures for the preparation and installation of the joint material to ensure the Contractor installs the joint to the manufacturers' recommendations.
10. Surfaces that will be in contact with the membrane sealant will be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the surface. At a minimum, two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the surface will be required. Cleaning of the surfaces with solvents, wire brushing, or grinding will not be permitted.
11. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface will be air blasted. The air compressor used for joint cleaning will be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent surfaces must be dry and clean. The contact surfaces for the joint will be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
12. Individual spliced sections will be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer will submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
13. Traffic will not be allowed on the joint until the bonding adhesive has had time to cure, as recommended by the manufacturer.
14. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
15. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item will be full compensation for furnishing all the required materials in place, including labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.



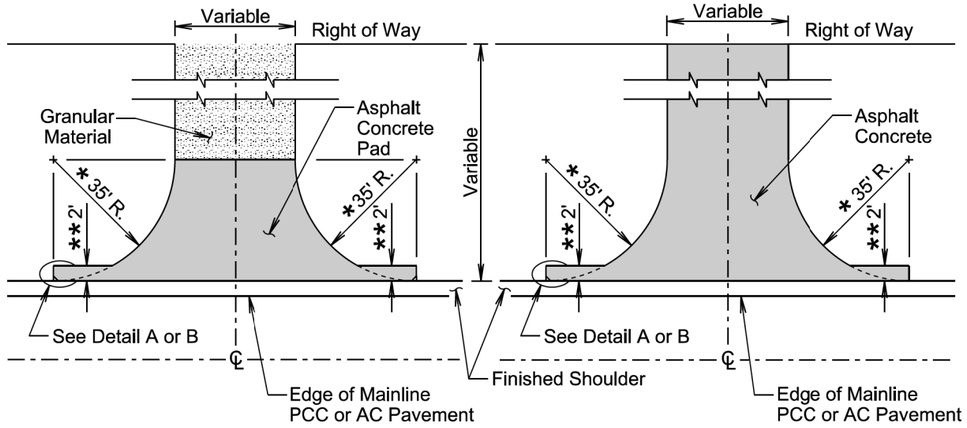
SEC. A - A



VIEW B - B



SEC. C - C



PLAN VIEW
(Intersecting Road)
(No Asphalt Concrete Surfacing Beyond Right of Way)

PLAN VIEW
(Intersecting Road)
(Asphalt Concrete Surfacing Beyond Right of Way)

GENERAL NOTES:

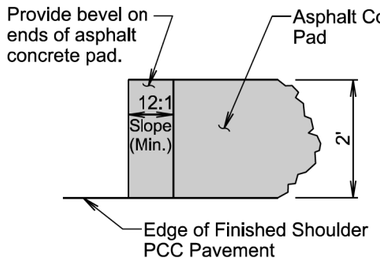
The precise construction limits for situations other than shown above will be determined by the Engineer during construction.

* For new construction, 35' radius typical or as specified in the plans. For resurfacing projects, radius is variable depending on existing conditions.

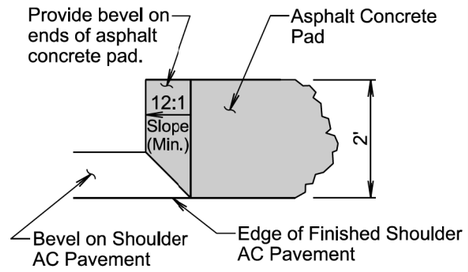
** The Contractor may adjust the screed of the paver during mainline paving operations to provide the 2-foot asphalt concrete pad or the Contractor may provide the 2-foot asphalt concrete pad during paving of the intersecting roads as shown above. The Engineer may eliminate the 2-foot asphalt concrete pads if the Engineer, in the Engineer's sole discretion, determines the pads are infeasible to construct due to site specific reasons including, but not limited to; existing inslope configuration, borrow and material availability, and right-of-way constraints.

August 27, 2020

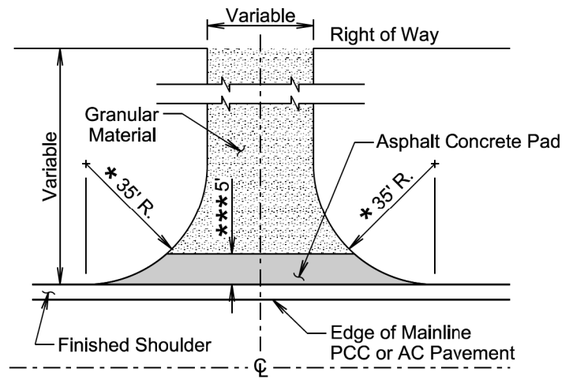
Published Date: 2025	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 1 of 2



DETAIL A
(Typ. for Projects with PCC Pavement on Shoulder)



DETAIL B
(Typ. for Projects with AC Pavement on Shoulder)

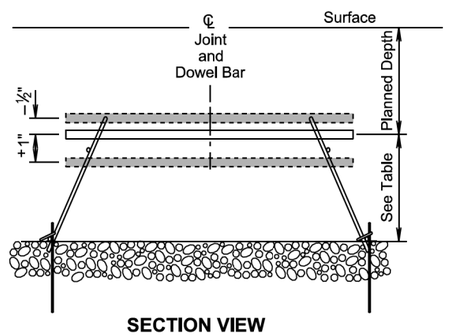


PLAN VIEW
(Entrance)

*** Not required if finished shoulder width is 4' or greater.

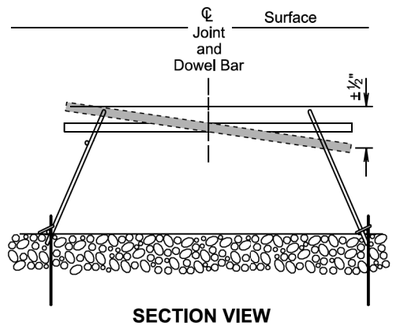
August 27, 2020

Published Date: 2025	SDDOT	SURFACING OR RESURFACING OF INTERSECTING ROADS AND ENTRANCES (MAINLINE AND SHOULDERS: PCC OR AC PAVEMENT)	PLATE NUMBER 320.04 Sheet 2 of 2



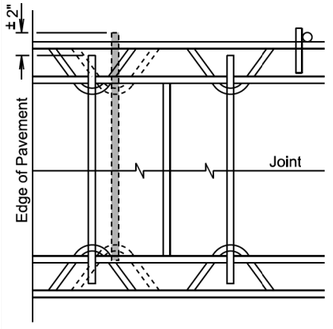
SECTION VIEW
VERTICAL TRANSLATION

Depth: mid-depth + 1 inch or – ½ inch



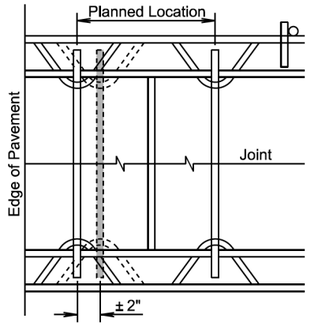
SECTION VIEW
VERTICAL TILT

Vertical rotational alignment: ½ inch over 18 inch



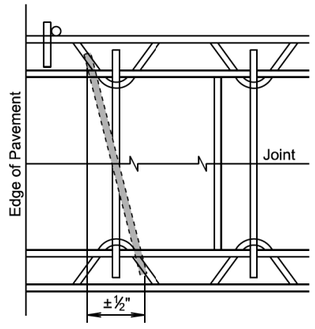
PLAN VIEW
LONGITUDINAL TRANSLATION

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

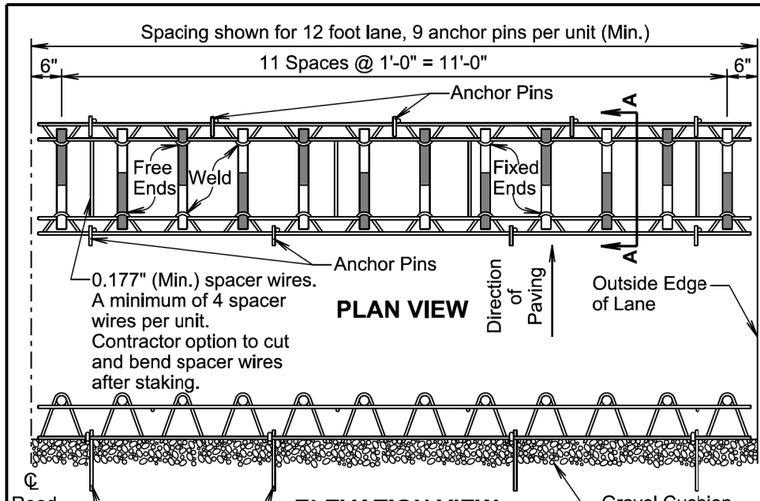
PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"

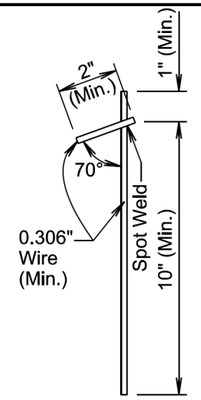
GENERAL NOTE:

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

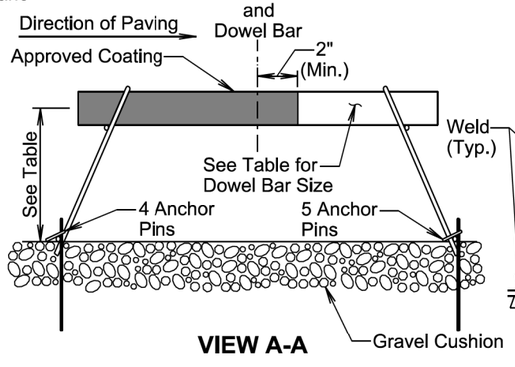
November 19, 2022

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

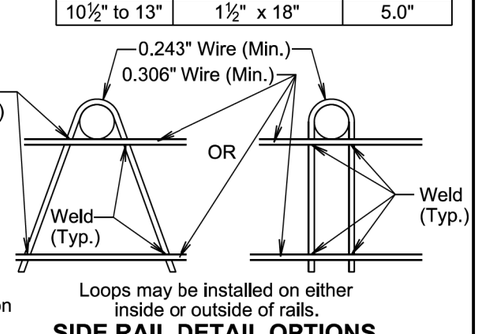




TYPICAL ANCHOR PIN



VIEW A-A



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

SIDE RAIL DETAIL OPTIONS

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

GENERAL NOTES:

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

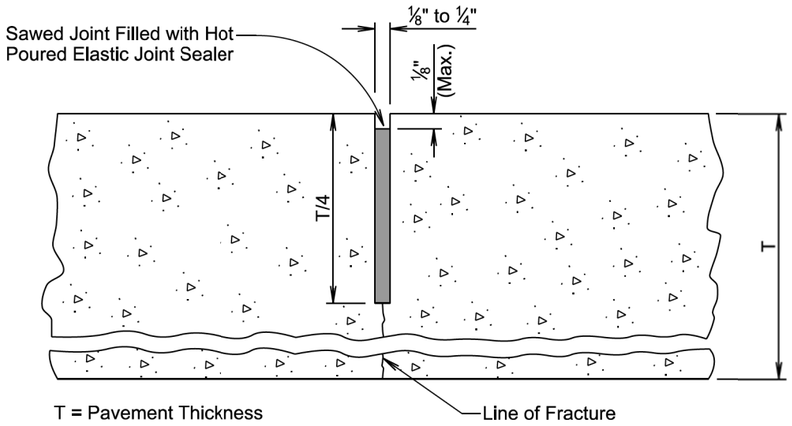
The transverse contraction joints will be sawed perpendicular to the centerline of the roadway. The transverse sawed joint will be centered over the dowel bars.

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*



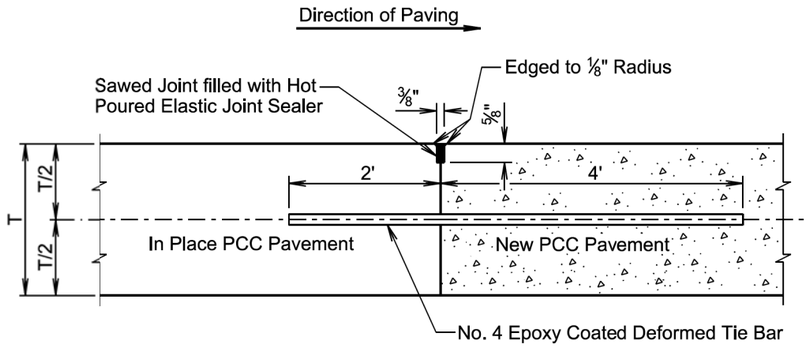
GENERAL NOTES:

If an early entrance saw cut does not develop the full transverse crack, then the saw cut to control cracking will be a minimum ¼ of the thickness of the pavement.

All hot poured elastic joint sealer material spilled on the surface of the concrete pavement will be removed as soon as the material has cooled. The extent of removal of material will be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material will be borne by the Contractor.

November 19, 2022

Published Date: 2025	SDDOT	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.12
			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.

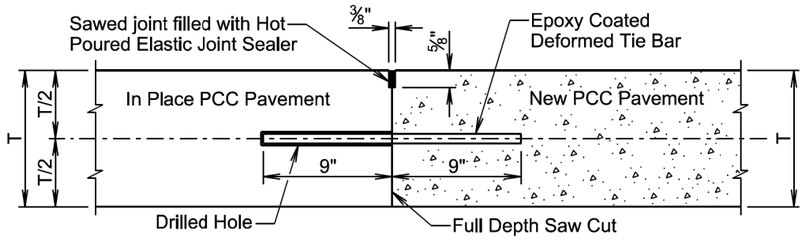
When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

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

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

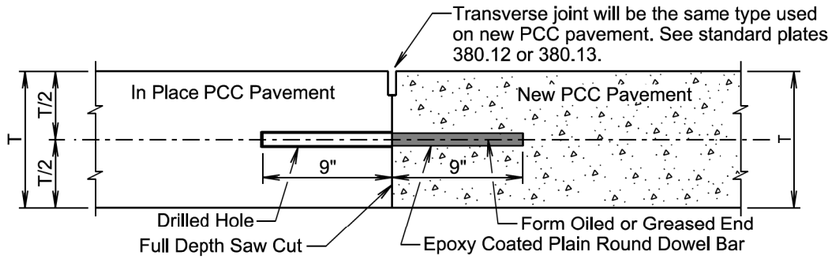
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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

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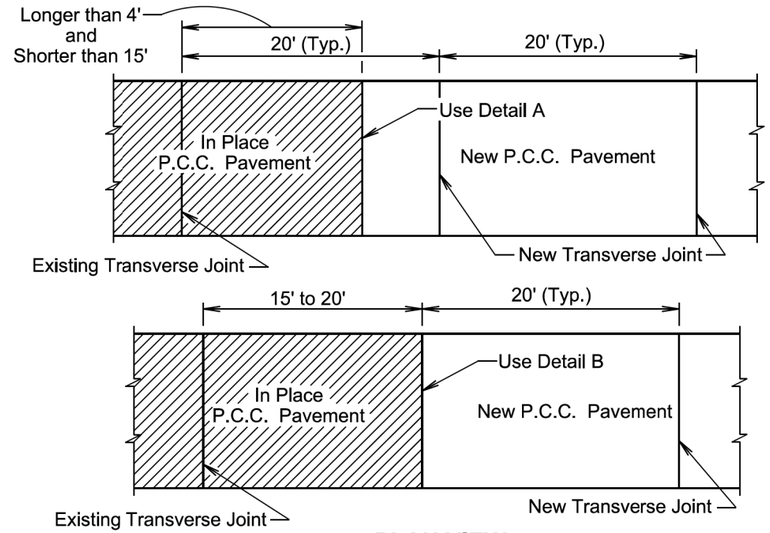
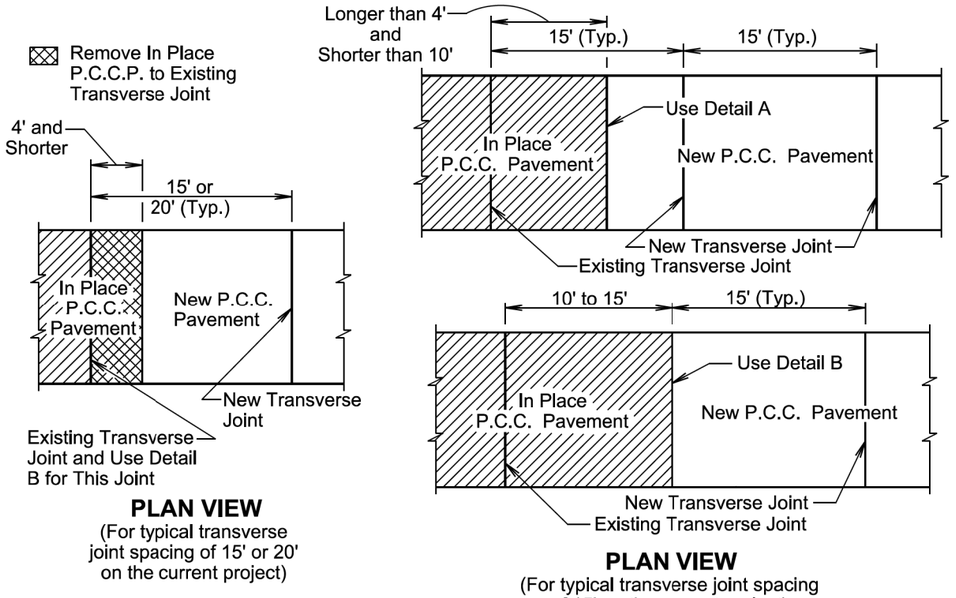


PLAN VIEW
(For typical transverse joint spacing of 20' on the current project)



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

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

January 22, 2023

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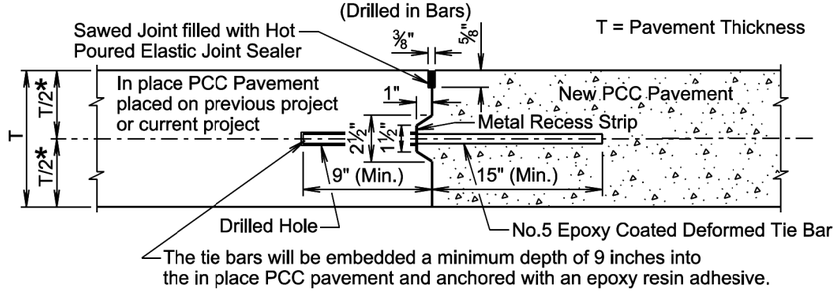
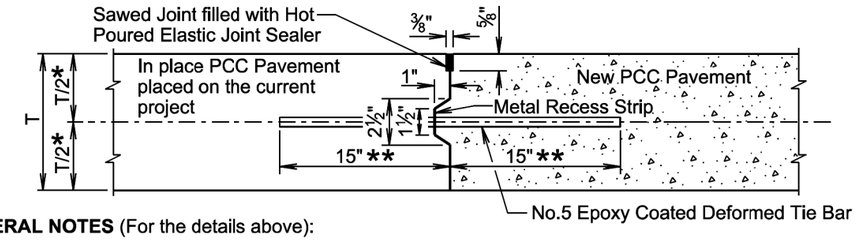
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0909(92)387	F37	F39

Plotting Date: 07/18/2024

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

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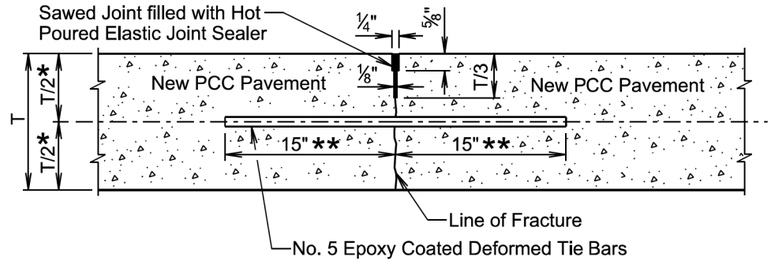
SAWED LONGITUDINAL JOINT WITH TIE BARS
(Poured Monolithically)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

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

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.

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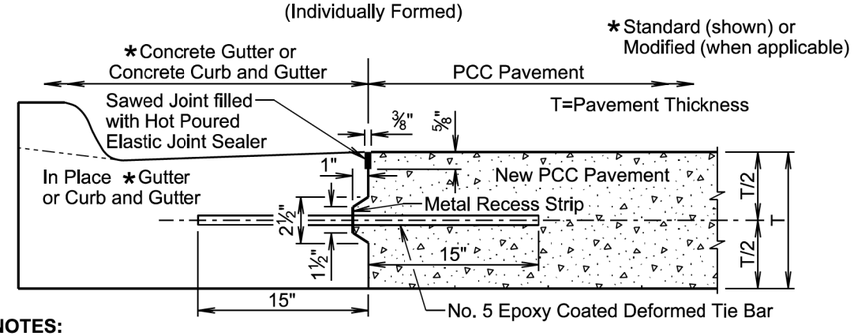
LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(Individually Formed)



GENERAL NOTES:

No. 5 epoxy coated deformed tie bars will be spaced 48 inches center to center. The tie bars will be placed a minimum of 15 inches from existing transverse contraction joints. The keyway shown above is a female keyway.

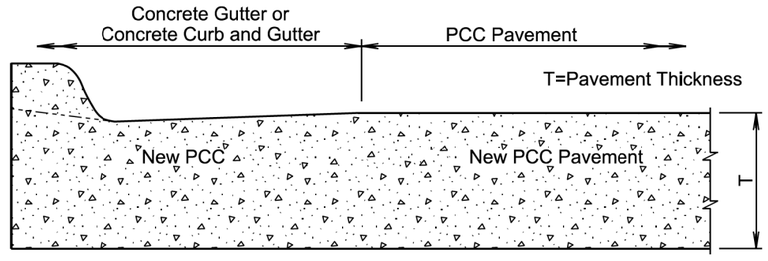
The keyway is optional and is not required. When concrete pavement is formed and a keyway is provided, a metal recess strip will be used. When concrete pavement is slip formed, a metal recess strip is not required.

The transverse contraction joints in the concrete gutter or concrete curb and gutter will be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter will be 1½ inches deep if formed in fresh concrete using a suitable grooving tool. If a saw is used to cut the transverse contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete gutter or concrete curb and gutter.

Standard curb and gutter may not be placed monolithically with PCC pavement if the mainline lane width is greater than 12 feet.

The term "In Place *Gutter or Curb and Gutter" in the above drawing indicates that the in place *concrete gutter and concrete curb and gutter was placed on the current project.

POURED MONOLITHICALLY (Standard Concrete Curb and Gutter)



GENERAL NOTES:

The mainline curb and gutter may be placed monolithically with the PCC pavement if the mainline lane width is less than or equal to 12 feet. If this method of construction is used, the tie bars and the sawed joint between the curb and gutter and the PCC pavement will be eliminated.

The gutter or curb and gutter will be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter will be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter will be the slope designated for the type of gutter or curb and gutter to be constructed. The bottom slope of the gutter or curb and gutter will be constructed at the same slope as the mainline concrete pavement.

March 31, 2024

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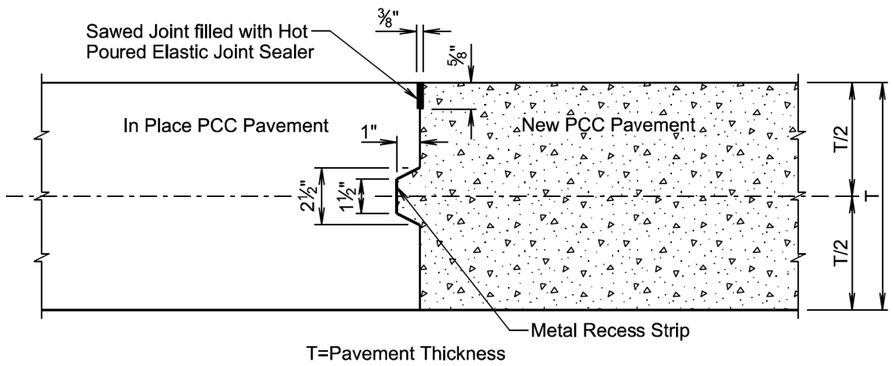
LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS

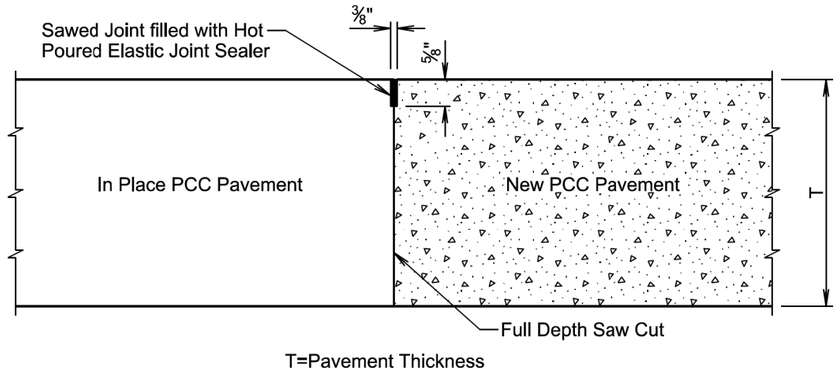


GENERAL NOTES:

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

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS



GENERAL NOTE:

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

November 19, 2022

Published Date: 2025	SDDOT	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.22
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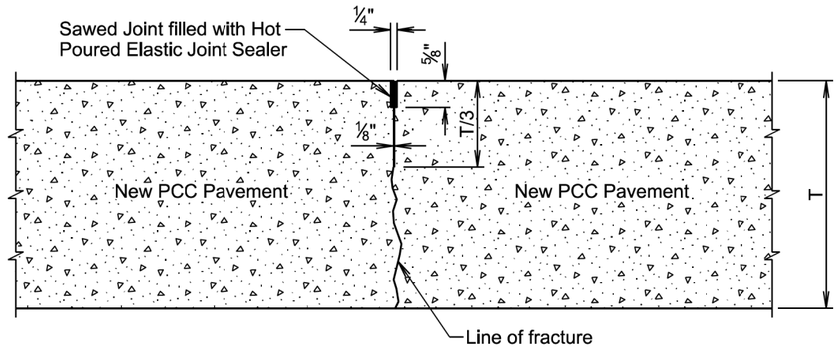
SAWED LONGITUDINAL JOINT WITHOUT TIE BARS



T=Pavement Thickness

GENERAL NOTE:

The first saw cut to control cracking will be a minimum of ⅓ 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 will be necessary.

November 19, 2022

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