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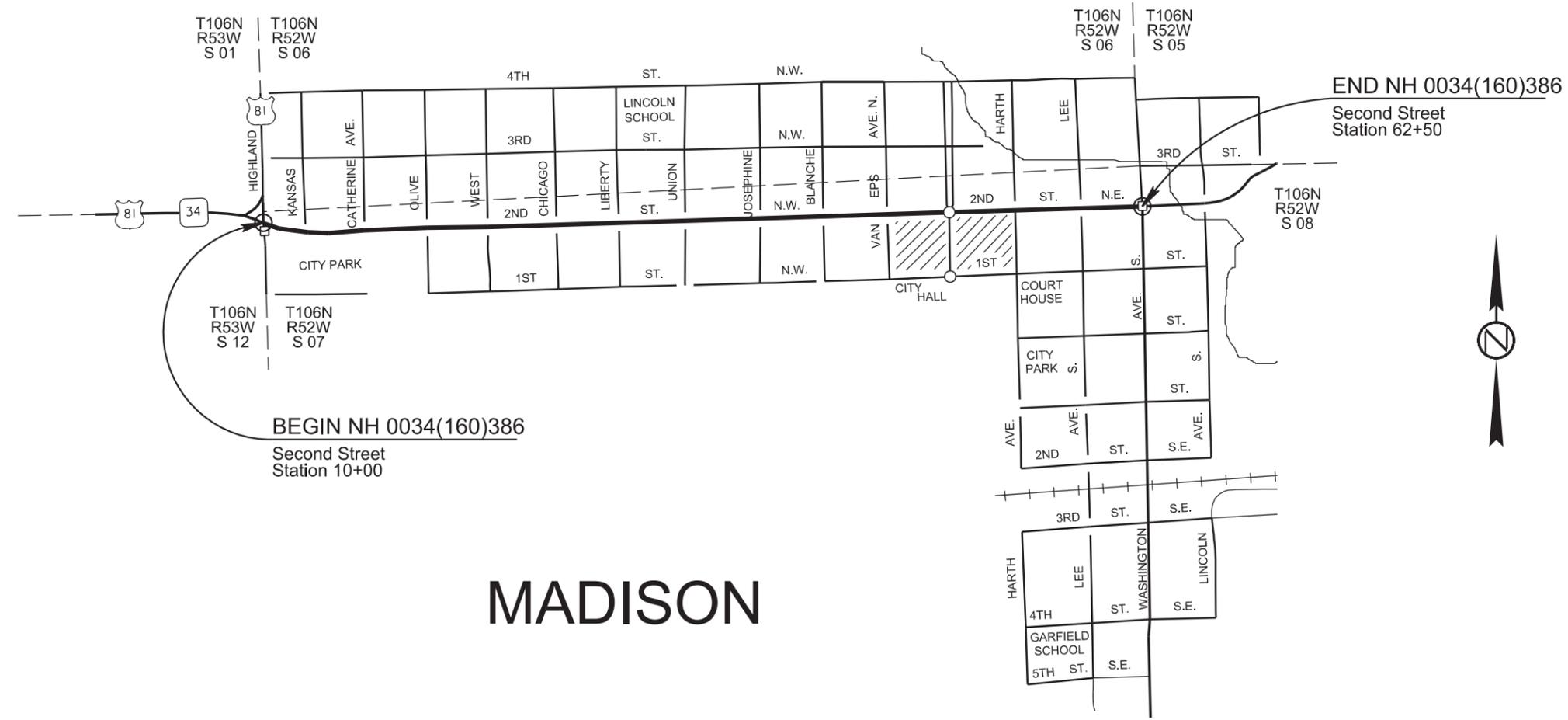
STATE OF SOUTH DAKOTA	PROJECT NH 0023(160)386	SHEET F1	TOTAL SHEETS F21
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Plotting Date: 10/20/2015

Section F: Surfacing Plans

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MADISON

PLOT SCALE - 1:200

PLOTTED FROM - TRPR18388

PLOT NAME - 1

FILE - U:\MS\PR\LAKE02R6\TITLE.F.DGN

SECTION F- ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
120E6200	Water for Granular Material	179.8	MGal
260E2010	Gravel Cushion	2,170.0	Ton
260E2030	Gravel Cushion, Salvaged	12,797.9	Ton
* 260E6000	Granular Material, Furnish	28,143.5	Ton
* 270E0200	Blend, Haul, and Stockpile Granular Material	56,287.0	Ton
320E1200	Asphalt Concrete Composite	1,051.8	Ton
380E0060	8.5" Nonreinforced PCC Pavement	36,149.4	SqYd
380E3020	6" PCC Driveway Pavement	348.9	SqYd
380E3040	8" PCC Driveway Pavement	859.7	SqYd
380E5010	Fast Track Concrete	247.8	SqYd
380E6000	Dowel Bar	21,703	Each
380E6110	Insert Steel Bar in PCC Pavement	222	Each

* - Denotes Non-Participating

SURFACING THICKNESS DIMENSIONS

Plans tonnage will be applied even though the thickness may vary from that shown on the plans.

At those locations where material must be placed to achieve a required elevation, plans tonnage may be varied to achieve the required elevation.

EXISTING PCC PAVEMENT

The existing concrete pavement on mainline, is 7" Nonreinforced PCC Pavement with plain joints spaced at 20'.

The coarse aggregate in the existing PCC Pavement is quartzite.

Locations for concrete removal are provided in the REMOVE CONCRETE PAVEMENT table in Section B.

RECLAIMED CONCRETE AGGREGATE

Portland cement concrete pavement (RCA) removed from mainline within the project limits may be crushed and reused as granular material provided it meets the requirements for the granular material it is replacing.

All in place rebar shall be separated and removed from the RCA.

There is an estimated 11,670.6 tons of PCC Pavement on this project that can be crushed and reused. This quantity is based on a unit weight of 118 lbs. per cubic foot for the reclaimed concrete aggregate.

The Contractor shall dispose of the material (including existing rebar) not utilized on the project at a site approved by the Engineer.

Payment for the reclaimed concrete aggregate will be at the contract unit price per ton for granular material that it is replacing.

SPECIFICATIONS FOR GEOGRID REINFORCEMENT**Geotextile Specification:**

The geogrid will conform to the specifications for Geotextiles and Impermeable Plastic Membrane, MSE Geotextile Fabric (Section 831 of the Specifications). The geotextile will be on the Approved Products List for this material or will be certified by the supplier to meet this specification prior to installation.

Geogrid will be paid for at the contract unit price per square yard for Reinforcement Fabric (MSE). Payment quantities will be based on the area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the geogrid only. Refer to Section B for quantity and additional requirements.

Granular Material:

Granular Material will conform to the specifications for Aggregates for Granular Bases and Surfacing, Gravel Cushion (Section 882 of the Specifications). Included in the Table of Additional Quantities are 2,170 tons of Gravel Cushion for use in this application. This quantity is based on 1 foot of coverage for 3,444 square yards of subgrade. Granular Material will be paid for at the contract unit price for Gravel Cushion. Payment will be full compensation for furnishing and placing this material.

Included in the Table of Additional Quantities are 26.4 Mgals. of Water for Granular Material for compaction of the Gravel Cushion.

GRANULAR MATERIAL FURNISH

Granular Material shall be furnished by the Contractor for use in blending with the state furnished salvaged asphalt mix material located in the northeast corner of the Madison DOT shop site in the SE1/4 of Section 16, Township 106 North, Range 52 West of the 5th P.M, Lake County, South Dakota.

The Granular Material shall be Gravel Cushion meeting the requirements of Section 882.

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BLEND, HAUL AND STOCKPILE GRANULAR MATERIAL

An estimated 28,143.5 tons (for information purposes only – 18,756.2 Tons in Stockpile A and 9,387.3 Tons in Stockpile B) of state furnished salvaged asphalt mix material shall be blended with 28,143.5 tons of Granular Material, Furnish and hauled and stockpiled at a site in the Madison DOT shop site approved by the Engineer. The state furnished stockpile(s) of salvaged asphalt mix material are located in the northeast corner of the Madison DOT shop site in the SE1/4 of Section 16, Township 106 North, Range 52 West of the 5th P.M, Lake County, South Dakota.

The Contractor shall use a portable platform scale, stationary commercial scale, stationary commercial plant, portable plant scale, or a belt scale to control the blending and weighing of the salvage material with Contractor furnished granular material.

Calibrated conveyor(s) shall be used to provide a uniform blending of the materials. Material shall be blended prior to incorporation into the pile.

The salvaged asphalt material in Stockpile A have been stockpiled since the summer of 2015 and the salvaged asphalt material in Stockpile B have been stockpiled since the summer of 2014. These materials shall be crushed so that the maximum particle size will not exceed 1-1/2 inches (37.5mm) prior to blending with the Contractor furnished granular material. The state furnished salvaged asphalt mix material is royalty free to the Contractor.

Salvaged asphalt mix material shall be blended with granular material furnished at a rate of 50% salvaged asphalt mix material and 50% Granular Material, Furnished to obtain stockpile material. The use of a pugmill to blend the materials will be accepted.

No further testing of the blended material will be required

All costs for crushing the salvaged asphalt mix material, hauling, stockpiling, and blending the materials shall be incidental to the contract unit price per ton for "Blend, Haul and Stockpile Granular Material".

GRAVEL CUSHION, SALVAGED

Gravel Cushion, Salvaged estimated at 56,287 tons (for information purposes only) is available from the blended stockpile produced on this project and may be used without further testing. An estimated 12,797.9 tons will be used on this project.

All other requirements for Gravel Cushion, Salvaged shall apply.

8.5" NONREINFORCED PCC PAVEMENT

The aggregate may require screening as determined by the Engineer.

The concrete mix shall conform to the special provision for Contractor Furnished Mix Design for PCC Pavement.

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

A minimum of 24 pavement blockouts may be required at various locations on this project to facilitate traffic during the paving activity.

A construction joint will be sawed whenever new concrete pavement is placed adjacent to existing concrete pavement.

The transverse contraction joints shall be perpendicular to the centerline as detailed in the Special Plate for PCC Pavement Dowel Bar Assembly for Transverse Contraction Joints – 11 Bar Assembly on Granular Base Material and Standard Plates 380.01 and 380.09. In multilane areas the transverse contraction joints shall be perpendicular to the centerline and be in a straight line across the width of the pavement. In special situations the Engineer may pre-approve transverse contraction joints that do not meet these requirements. All nonconforming transverse contraction joints that are not pre-approved shall be removed at the Contractor's expense. Any method of placement that cannot produce these requirements shall not be allowed to continue.

The surface of the mainline paving shall be a carpet drag finish.

ALKALI SILICA REACTIVITY

Fine aggregate shall conform to Section 800.2 D. Alkali Silica Reactivity (ASR) Requirements of the Specifications.

Below is a list of known fine aggregate sources and the average corresponding 14 day expansion values:

<u>Source</u>	<u>Location</u>	<u>Expansion Value</u>
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.170
Croell	Hot Springs, SD	0.089
Croell	Wasta, SD	0.212
Emme Sand & Gravel	Oneil, NE	0.217
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*
Higman	Akron, IA	0.203
Higman	Hudson, SD	0.187
Hilde	Madison, SD	0.116
Jensen	Herried, SD	0.276*
L.G. Everist	Brookings, SD	0.186
L.G. Everist	Hawarden, IA	0.166
L.G. Everist	Summit, SD	0.178
Morris	Blunt, SD	0.192
Morris - Richards Pit	Onida, SD	0.188
Myrl & Roys – Ode Pit	E Sioux Falls, SD	0.214
Myrl & Roys - Nelson Pit	NE Sioux Falls, SD	0.156
Northern Concrete Agg.	Rauville, SD	0.113
Northern Concrete Agg.	Luverne, MN	0.133
Opperman - Gunvordahl Pit	Burke, SD	0.362*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.239
Pete Lien & Sons	Creston, SD	0.158
Pete Lien & Sons	Oral, SD	0.129
Pete Lien & Sons	Wasta, SD	0.192
Thorpe Pit	Britton, SD	0.098
Wagner Building Supplies	Pickstown (Wagner), SD	0.241
Winter Brothers- Whitehead Pit	Brookings, SD	0.197

* These sources will require Type V cement in the concrete mix design and Class F (Modified) fly ash as specified.

The Department will use the running average of the last three known expansion test results or less for determining acceptability of source and the required Type of cement. 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 acceptable test values (less than 0.250) is discovered after letting to require Type V cement (greater than 0.250) the Department will accept financial responsibility for the change from Type II to Type V cement.

Type II or Type V cement will not change the requirement for the fly ash. The cost for either type of cement shall be subsidiary to the contract item.

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PAVEMENT SMOOTHNESS

The mainline driving lanes (not center turn lane) from Sta. 9+85.80 to Sta. 63+30.62 shall 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.

CURING OF CONCRETE

Portland Cement Concrete Pavement, Concrete Curb & Gutter, Concrete Gutter and Concrete Fillet will be cured with Linseed Oil Base Emulsion Compound.

FAST TRACK CONCRETE

At specific locations designated by the Engineer, Fast Tack Concrete may be used. The intent of the Fast Track Concrete is to insure the new pavement can be opened to traffic within 48 hours after placement.

Fast Track Concrete shall be constructed according to plan details and Standard Specifications for the 8.5" Nonreinforced PCC Pavement except as follows:

The Fast Track Concrete shall achieve a minimum compressive strength of 3800 psi in 48 hours. Use of a water reducer, accelerator, or a high range water reducer may be required to achieve the desired early strength. If any of these additives are used, they shall be compatible with all other ingredients of the mix. The minimum pounds of cement shall be 600 pounds per cubic yard of Type I, II, III, or V cement. In addition to the cement a minimum of 105 pounds per cubic yard of Fly Ash will be used in the mix. The coarse aggregate shall be a minimum of 53% of total aggregate weight per cubic yard. Coarse aggregate shall be crushed ledge rock, Size No. 1 or 15. The water cement ratio shall be as low as practical to achieve the desired results. The slump requirement will be limited to 4 inches maximum and the entrained air content shall be 4.5% to 7.0% after all admixtures are added and the concrete. The Contractor is responsible for the mix design used. The Contractor shall submit a mix design and supporting documentation to the Engineer for approval at least 2 weeks prior to use. The Department of Transportation's Office of Materials & Surfacing shall review and comment on the proposed mix design prior to its use.

Fast Track Concrete shall be cured with Linseed Oil Base Emulsion Compound. In addition, the concrete shall be immediately covered with a suitable insulation blanket consisting of a layer of closed cell polystyrene foam protected by at least one layer of plastic. The insulation blanket shall have an R-value of at least 0.5, as rated by the manufacturer. The insulation blanket shall be left in place, except for initial joint sawing operations, until the 3800 psi is attained. The initial contraction joint sawing shall be performed as soon as practical after placement to avoid random cracking.

The pavement may be opened to traffic, earlier than 48 hours, provided the compressive strength of 3800 psi has been attained. The final contraction joint sawing and sealing are not required at this time to open up pavement to traffic.

An estimated 36,149.4 square yards of 8.5" Nonreinforced PCC Pavement and 247.8 square yards of Fast Track Concrete is to be used on this project. If more or less Fast Track Concrete is used, an equal amount shall be subtracted from or added to the total for 8.5" Nonreinforced PCC Pavement. All costs for Fast Track Concrete shall be incidental to the contract unit price per square yard for FAST TRACK CONCRETE.

TABLE OF PCC PAVEMENT

Location	8.5" Nonreinforced PCC Pavement SqYd	Fast Track Concrete SqYd
Mainline		
Sta. 9+85.80 to Sta. 15+00	3,265.7	154.6
Sta. 15+00 to Sta. 42+56.93	16,694.7	---
Sta. 42+56.93 to Sta. 43+39.66	503.8	---
Sta. 43+39.66 to Sta. 61+56.85	11,105.1	---
Sta. 61+56.85 to Sta. 63+30.62	763.4	---
Intersecting Streets		
Sta. 10+00 L.	68.1	---
Sta. 10+00 R.	393.2	93.2
Sta. 12+48 L	100.4	---
Sta. 16+10 L.	90.7	---
Sta. 19+72 L.	89.3	---
Sta. 19+72 R.	90.2	---
Sta. 23+41 L.	89.7	---
Sta. 23+41 R.	89.3	---
Sta. 27+20 L.	88.4	---
Sta. 27+20 R.	88.5	---
Sta. 31+01 L.	88.4	---
Sta. 31+01 R.	89.0	---
Sta. 34+83 R.	89.5	---
Sta. 34+93 L.	91.9	---
Sta. 39+15 R.	90.5	---
Sta. 39+21 L.	92.8	---
Sta. 42+98 L.	90.8	---
Sta. 42+98 R.	89.1	---
Sta. 46+68 L.	88.4	---
Sta. 46+68 R.	136.0	---
Sta. 50+45 L.	178.2	---
Sta. 50+45 R.	174.8	---
Sta. 54+23 L.	74.4	---
Sta. 54+31 R.	100.5	---
Sta. 57+97 L.	88.2	---
Sta. 58+08 R.	90.4	---
Sta. 61+74 R.	856.0	---
Sta. 61+77 L.	120.0	---
Total:	36,149.4	247.8

See PCC Pavement Joint Layouts located elsewhere in these plans, for the locations of 8.5" Nonreinforced PCC Pavement and Fast Track Concrete.

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TABLE OF DOWEL BARS

Location	1 ¼" x 18" 11 Bar Assembly Each	1 ¼" x 18" 12 Bar Assembly Each
Mainline		
Sta. 9+85.80 to Sta. 15+00	2,017	---
Sta. 15+00 to Sta. 42+56.93	10,410	---
Sta. 42+56.93 to Sta. 43+39.66	383	---
Sta. 43+39.66 to Sta. 61+56.85	6,875	---
Sta. 61+56.85 to Sta. 63+30.62	525	---
Intersecting Streets		
Sta. 10+00 L.	30	---
Sta. 10+00 R.	144	86
Sta. 12+48 L	---	24
Sta. 16+10 L.	---	32
Sta. 19+72 L.	---	32
Sta. 19+72 R.	---	32
Sta. 23+41 L.	---	32
Sta. 23+41 R.	---	32
Sta. 27+20 L.	---	32
Sta. 27+20 R.	---	24
Sta. 31+01 L.	---	32
Sta. 31+01 R.	---	32
Sta. 34+83 R.	---	32
Sta. 34+93 L.	---	32
Sta. 39+15 R.	---	32
Sta. 39+21 L.	---	32
Sta. 42+98 L.	---	24
Sta. 42+98 R.	---	32
Sta. 46+68 L.	---	32
Sta. 46+68 R.	---	48
Sta. 50+45 L.	---	59
Sta. 50+45 R.	---	65
Sta. 54+23 L.	---	24
Sta. 54+31 R.	---	36
Sta. 57+97 L.	---	24
Sta. 58+08 R.	---	32
Sta. 61+74 R.	---	385
Sta. 61+77 L.	---	40
Totals	20,384	1,319

STEEL BAR INSERTION

The Contractor shall insert the Steel Bars (1 1/4" x 18 inch epoxy coated plain round steel bars, No. 9 x 18 inch epoxy coated deformed steel bars and No. 5 x 24 inch epoxy coated deformed steel bars) into drilled holes in the existing concrete pavement.

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

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

Epoxy coated deformed steel bars shall be inserted on 18 inch centers in the transverse joint. The first steel bar shall be placed a minimum of 3 inches and a maximum of 9 inches from the outside edge of the slab.

Epoxy coated deformed steel bars shall be inserted on 30 inch centers in the longitudinal joint and shall be placed a minimum of 15 inches from the existing transverse contraction joint.

TABLE OF STEEL BAR INSERTION

Location	1 1/4" x 18" Plain Round Steel Bar	No. 9 x 18" Deformed Steel Bar	No. 5 x 24" Deformed Steel Bar
	Each	Each	Each
Mainline			
Sta. 9+04.80 – 53.3' L to Sta. 9+14.70 – 69.3' L	---	---	6
S9+24.95 – 39.6' L to Sta. 9+32.70 – 48.8' L	---	---	5
Sta. 9+41.50 – 15.6' L to Sta. 9+54.57 – 16.2' L	---	---	5
Sta. 9+58.63 – 37.8' L to Sta. 9+62.97 – 25.1' L	---	---	5
Sta. 9+58.71 – 41.1' R to Sta. 10+08.75 – 76.4' R	---	---	24
Sta. 9+85.80 – 16.3' L to 37.8' R	54	---	---
Sta. 9+86.50 – 57.9' L to Sta. 10+05.74 – 16.3' L	---	---	16
Sta. 10+08.80 – 75.2' R to Sta. 10+41.01 – 59.8' R	36	---	---
Sta. 10+41.01 – 59.8' R to Sta. 10+71.64 – 133.7' R	---	---	31
Sta. 9+86.50 – 57.9' L to Sta. 9+95.50 – 62.1' L	---	7	---
Sta. 62+40.96 – 0' L to 26' L	---	17	---
Sta. 63+30.62 – 0' R to 24.2' R	---	16	---
Totals:	90	40	92

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Revised 12-08-2105 LLH

6" & 8" PCC DRIVEWAY PAVEMENT

The concrete for the 6" & 8" PCC driveway pavement shall comply with the requirements of the specifications for Class M6 concrete unless otherwise stated in the plans.

Contraction joints in the 6" & 8" PCC driveway pavement shall be 1½ inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint shall be at least ¼ the thickness of the approach pavement.

All costs for furnishing and placing the 6" & 8" PCC driveway pavement and constructing the expansion and contraction joints including labor, equipment and materials including the earthen backfill shall be incidental to the contract unit price per square yard for "6" PCC Driveway Pavement" or "8" PCC Driveway Pavement" accordingly.

All costs for excavation required for placing the 6" & 8" PCC driveway pavement and granular material shall be incidental to the contract unit price per cubic yard for "Unclassified Excavation".

All costs for furnishing and placing the granular material shall be incidental to the contract unit price per ton for "Gravel Cushion, Salvaged".

TABLE OF PCC DRIVEWAY PAVEMENT

Location	L or R	6" PCC Driveway Pavement	8" PCC Driveway Pavement
		SqYd	SqYd
Sta. 21+29.8 to Sta. 21+70.3	R	130.3	---
Sta. 25+12.3 to Sta. 25+28.3	L	23.5	---
Sta. 25+32.6 to Sta. 25+54	R	11.9	---
Sta. 25+79.7 to Sta. 25+98.8	L	33.6	---
Sta. 28+70.6 to Sta. 28+86.7	L	21.0	---
Sta. 29+10.8 to Sta. 29+26.7	L	33.7	---
Sta. 31+98.5 to Sta. 32+14.5	L	18.9	---
Sta. 32+78.2 to Sta. 32+90.2	L	24.0	---
Sta. 40+94.8 to Sta. 41+34.8	R	---	43.5
Sta. 41+12 to Sta. 41+48	L	---	123.2
Sta. 41+65.1 to Sta. 42+63.7	L	---	196.0
Sta. 43+37.1 to Sta. 46+35.1	R	---	143.3
Sta. 44+77.3 to Sta. 46+30.4	L	---	159.7
Sta. 47+07.3 to Sta. 48+58.6	R	---	108.3
Sta. 47+50.9 to Sta. 48+41.1	L	---	21.1
Sta. 52+08.2 to Sta. 52+44	R	---	35.8
Sta. 53+26.4 to Sta. 53+33.4	R	---	7.0
Sta. 55+93.2 to Sta. 56+42.9	R	20.4	---
Sta. 56+20.4 to Sta. 56+43.9	L	18.2	---
Sta. 56+56 to Sta. 56+75.6	L	13.4	---
Sta. 58+73.1 to Sta. 56+12.1	L	---	21.7
Totals:		348.9	859.7

See PCC Pavement Joint Layouts for additional details showing limits of work.

RATES OF MATERIALS

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

MAINLINE

Sta. 15+00 to Sta. 42+56.93

GRAVEL CUSHION, SALVAGED

Crushed Material 180.37 tons

Water for Granular Material at the rate of 2.16 M. Gallons.

MAINLINE

Sta. 43+39.66 to Sta. 61+56.85

GRAVEL CUSHION, SALVAGED

Crushed Material 181.83 tons

Water for Granular Material at the rate of 2.18 M. Gallons.

TABLE OF ADDITIONAL QUANTITIES

Location	Water For Granular Material MGal	Gravel Cushion Ton	Gravel Cushion, Salvaged Ton	Asphalt Concrete Composite Ton
Mainline				
Sta. 9+85.80 to Sta. 15+00	12.5	---	1,038.2	---
Sta. 42+56.93 to Sta. 43+39.66	1.8	---	150.1	---
Sta. 61+56.85 to Sta. 63+30.62	2.7	---	226.7	---
Areas for Geogrid Reinforcement	26.4	2,170	---	---
Intersecting Streets				
Sta. 10+00 L.	0.2	---	19.6	---
Sta. 10+00 R.	1.7	---	138.3	1.8
Sta. 12+48 L	0.6	---	46.2	16.6
Sta. 16+10 L.	0.5	---	41.5	16.7
Sta. 19+72 L.	0.5	---	44.7	21.0
Sta. 19+72 R.	0.5	---	42.1	16.9
Sta. 23+41 L.	0.5	---	44.6	20.7
Sta. 23+41 R.	0.5	---	45.3	22.1
Sta. 27+20 L.	0.7	---	55.4	37.1
Sta. 27+20 R.	0.6	---	51.3	31.0
Sta. 31+01 L.	0.6	---	49.4	28.6
Sta. 31+01 R.	0.5	---	41.5	16.8
Sta. 34+83 R.	0.5	---	42.0	17.2
Sta. 34+93 L.	0.6	---	50.4	28.5

TABLE OF ADDITIONAL QUANTITIES – CONTINUED

	Water For Granular Material MGal	Gravel Cushion Ton	Gravel Cushion, Salvaged Ton	Asphalt Concrete Composite Ton
Intersecting Streets - Continued				
Sta. 39+15 R.	0.5	---	41.8	16.3
Sta. 39+21 L.	0.6	---	52.3	27.2
Sta. 42+98 L.	0.6	---	49.7	27.3
Sta. 42+98 R.	0.5	---	41.6	16.7
Sta. 46+68 L.	0.6	---	53.6	30.3
Sta. 46+68 R.	0.7	---	61.1	31.3
Sta. 50+45 L.	0.9	---	77.2	35.9
Sta. 50+45 R.	0.8	---	68.1	34.5
Sta. 54+23 L.	0.4	---	36.8	13.6
Sta. 54+31 R.	0.7	---	55.5	31.3
Sta. 57+97 L.	0.5	---	41.4	16.6
Sta. 58+08 R.	0.6	---	46.1	22.0
Sta. 61+74 R.	4.1	---	340.8	162.5
Sta. 61+77 L.	0.6	---	53.0	21.3
Drives				
Sta. 13+56 L.	0.1	---	8.8	---
Sta. 14+38 L.	---	---	4.9	---
Sta. 17+98 L.	0.1	---	6.2	---
Sta. 21+51 R.	0.1	---	8.8	---
Sta. 21+59 L.	0.1	---	6.2	---
Sta. 25+19 L.	0.1	---	6.2	---
Sta. 25+45 R.	0.1	---	6.9	---
Sta. 25+87 L.	0.1	---	6.2	---
Sta. 28+77 L.	---	---	4.9	---
Sta. 29+20 L.	---	---	4.9	---
Sta. 32+05 L.	0.1	---	6.2	---
Sta. 32+81 L.	0.1	---	6.2	---
Sta. 33+81 R.	0.1	---	6.2	---
Sta. 35+68 R.	0.1	---	8.8	---
Sta. 37+30 R.	0.1	---	6.2	---
Sta. 37+32 L.	0.1	---	6.2	---
Sta. 39+40 – 70' L.	0.1	---	7.4	---
Sta. 41+15 R.	0.1	---	8.8	---
Sta. 41+30 L.	0.1	---	8.2	---
Sta. 42+10 L.	0.1	---	8.8	---
Sta. 43+71 L.	0.1	---	9.3	---
Sta. 44+20 R.	0.1	---	9.3	---
Sta. 44+77 R.	0.1	---	9.3	---
Sta. 44+97 L.	0.2	---	13.2	---
Sta. 45+34 R.	0.1	---	9.3	---
Sta. 46+51 – 75' L.	0.2	---	18.5	---
Sta. 47+42 R.	0.1	---	7.2	---
Sta. 47+87 L.	0.1	---	10.3	---
Sta. 48+39 R.	0.2	---	13.2	---
Sta. 48+50 L.	0.1	---	9.3	---
Sta. 49+06 L.	0.1	---	12.0	---
Sta. 52+39 R.	0.1	---	9.3	---

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0023(160)386	F6	F21

TABLE OF ADDITIONAL QUANTITIES - CONTINUED

Location	Water For Granular Material MGal	Gravel Cushion Ton	Gravel Cushion, Salvaged Ton	Asphalt Concrete Composite Ton
Drives – Continued				
Sta. 52+43 L.	0.1	---	10.8	---
Sta. 52+97 R.	0.1	---	9.3	---
Sta. 53+00 L.	0.1	---	9.3	---
Sta. 53+75 R.	0.1	---	7.3.8	---
Sta. 56+20 R.	0.2	---	14.9	---
Sta. 56+27 L.	0.1	---	7.3	---
Sta. 56+77 L.	0.1	---	11.3	---
Sta. 58+93 L.	0.2	---	13.0	---
Sta. 59+91 R.	0.1	---	7.9	---
Sta. 60+33 R	0.1	---	8.9	---
Sta. 60+39 L.	0.2	---	13.2	---
Sta. 61+46 – 121.5' R.	0.1	---	9.3	---
Sta. 61+98 – 115.5' R.	0.2	---	13.2	---
Sta. 62+85 R.	0.1	---	8.8	---
Areas Beyond Sidewalk/Drives	11.0	---	922.7	290
Below Barrier Type Median PCC Pavement				
ML Sta. 10+50 R to Sta. 11+63.92 R	0.3	---	24.5	---
Intersecting Street – ML 50+45 L	---	---	3.4	---
Below & Adjacent to Curb & Gutter				
ML Sta. 9+10 – 63' L	---	---	1.7	---
ML Sta. 9+29.1 – 44.2' L	---	---	1.4	---
ML Sta. 9+48 – 15.9' L	---	---	1.4	---
ML Sta. 9+60.8 – 31.5' L	---	---	1.4	---
ML Sta. 9+87.6 – 54' R	0.1	---	6.5	---
Totals:	80.4	2,170	4,521.0	1,051.8

See Typical Surfacing Sections and PCC Pavement Joint Layouts for additional details showing limits of work and depths of surfacing.

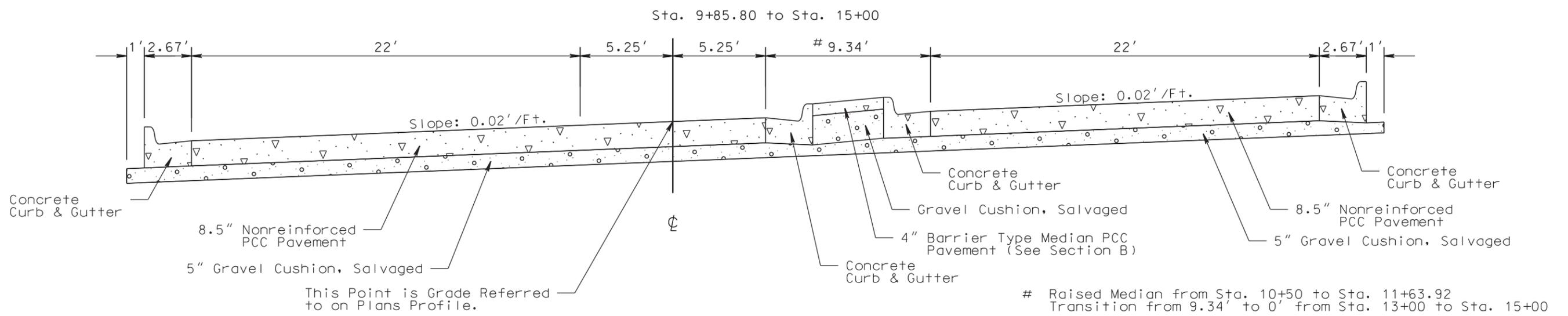
TYPICAL SURFACING SECTIONS

FOR BIDDING PURPOSES ONLY

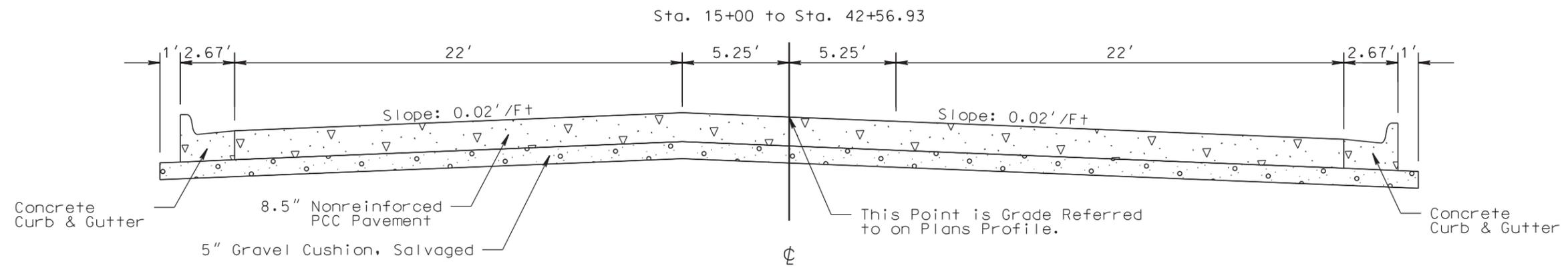
STATE OF SOUTH DAKOTA	PROJECT NH 0023(160)386	SHEET F7	TOTAL SHEETS F21
Plotting Date: 10/20/2015			

PLOT SCALE - 1+6.00001

PLOT NAME - 2



Superelevation Transition from Sta. 12+50 to Sta. 13+67
Crown Transition from Sta. 14+00 to Sta. 15+00 - 0' L. to 5.25' L.



PLOTTED FROM - TRP18388

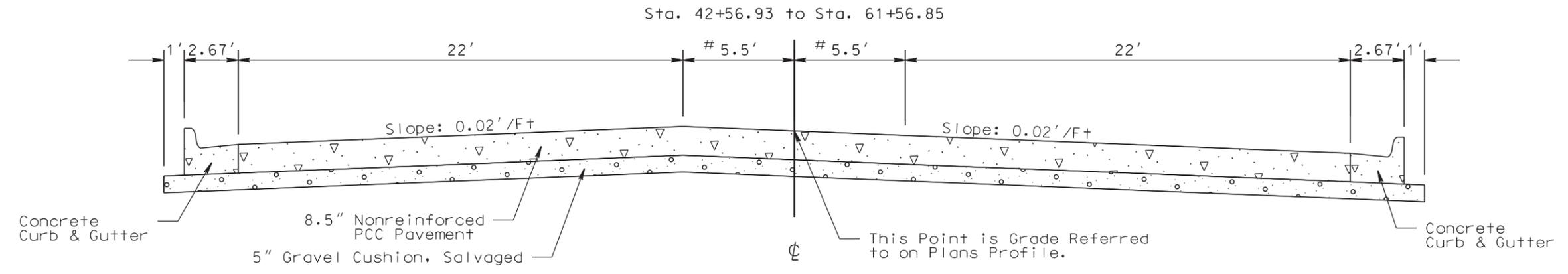
FILE - ... \02R6 TYPICAL SECTIONS.DGN

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0023(160)386	F8	F21

Plotting Date: 10/20/2015

See PCC Pavement Joint Layouts, located elsewhere in these plans, for additional details showing the surfacing limits from Sta. 61+56.85 to Sta. 63+30.62.



Transition from 5.25' to 5.5' from Sta. 42+56.93 to Sta. 43+39.66

PLOT SCALE - 1:6.00001

PLOTTED FROM - TRPR18388

PLOT NAME - 3

FILE - ... \02R6 TYPICAL SECTIONS.DGN

PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT NH 0023(160)386	SHEET F9	TOTAL SHEETS F21
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Plotting Date: 10/20/2015

Scale 1 Inch = 40 Feet
Sheet 1 of 6 Sheets

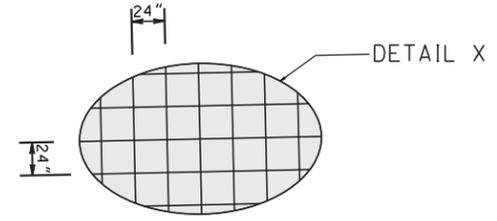
LEGEND:

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

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

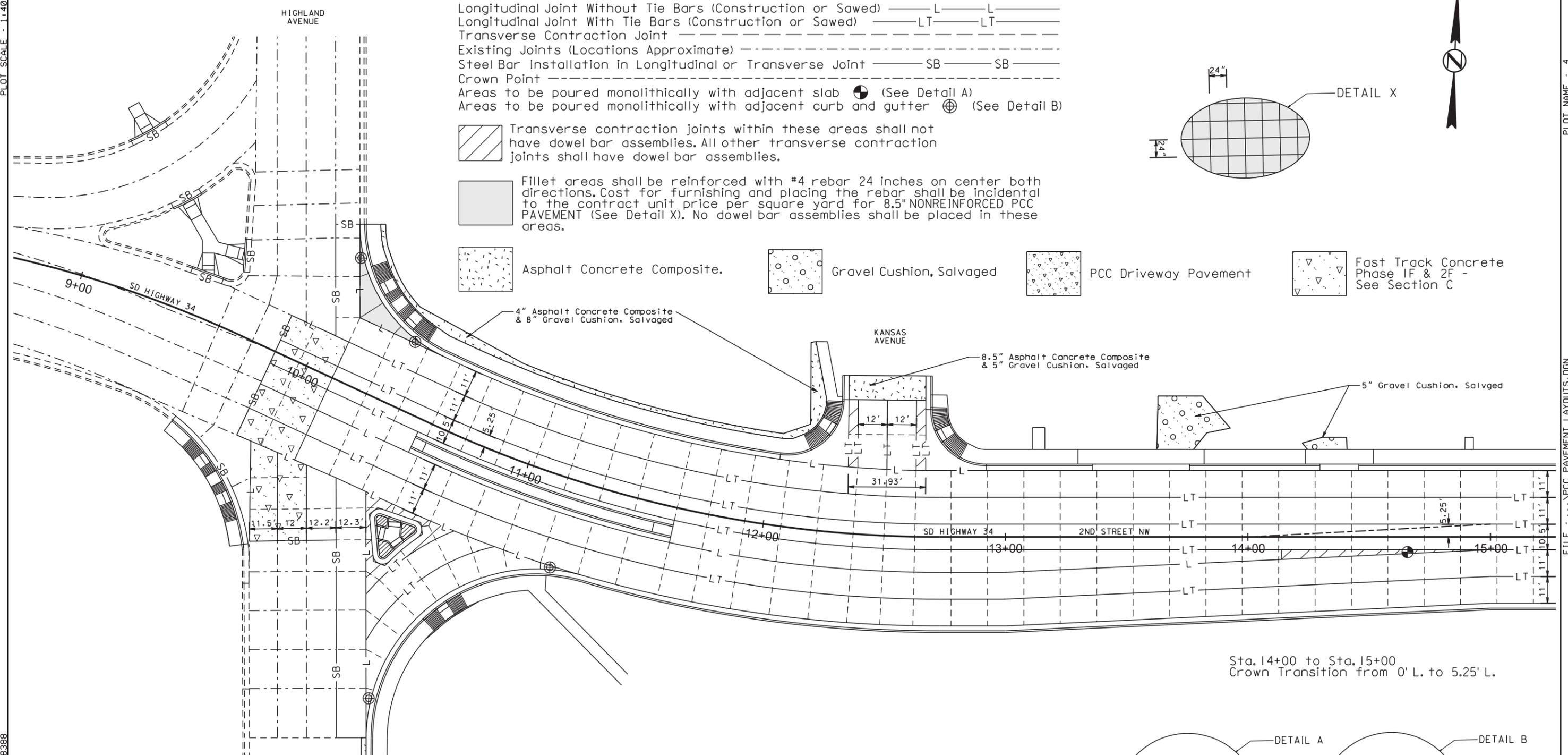
Fillet areas shall be reinforced with #4 rebar 24 inches on center both directions. Cost for furnishing and placing the rebar shall be incidental to the contract unit price per square yard for 8.5" NONREINFORCED PCC PAVEMENT (See Detail X). No dowel bar assemblies shall be placed in these areas.

- Asphalt Concrete Composite.
- Gravel Cushion, Salvaged
- PCC Driveway Pavement
- Fast Track Concrete Phase 1F & 2F - See Section C



PLOT SCALE - 1:40

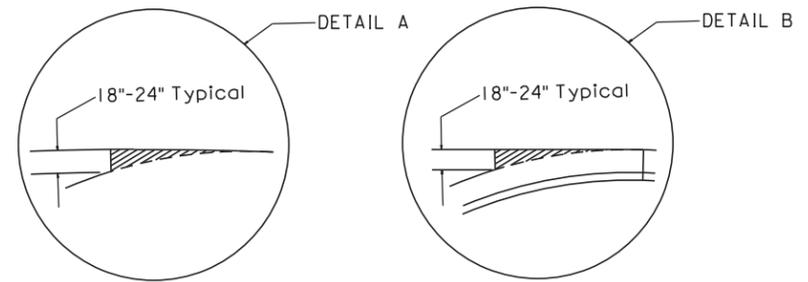
PLOT NAME - 4



LOCATION OF CONCRETE PAVEMENT JOINTS

The location of joints, as shown and/or designated on pcc pavement joint layout sheets are only approximate locations to be used as a guide in the final location of the joints and to afford bidders a basis for estimating the construction cost of the joints. The final location of the joints are to be designated by the Engineer during construction.

Sta. 14+00 to Sta. 15+00
Crown Transition from 0' L. to 5.25' L.



PLOTTED FROM - TRPR18388

FILE - ... \PCC PAVEMENT LAYOUTS.DGN

PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0023(160)386	F10	F21

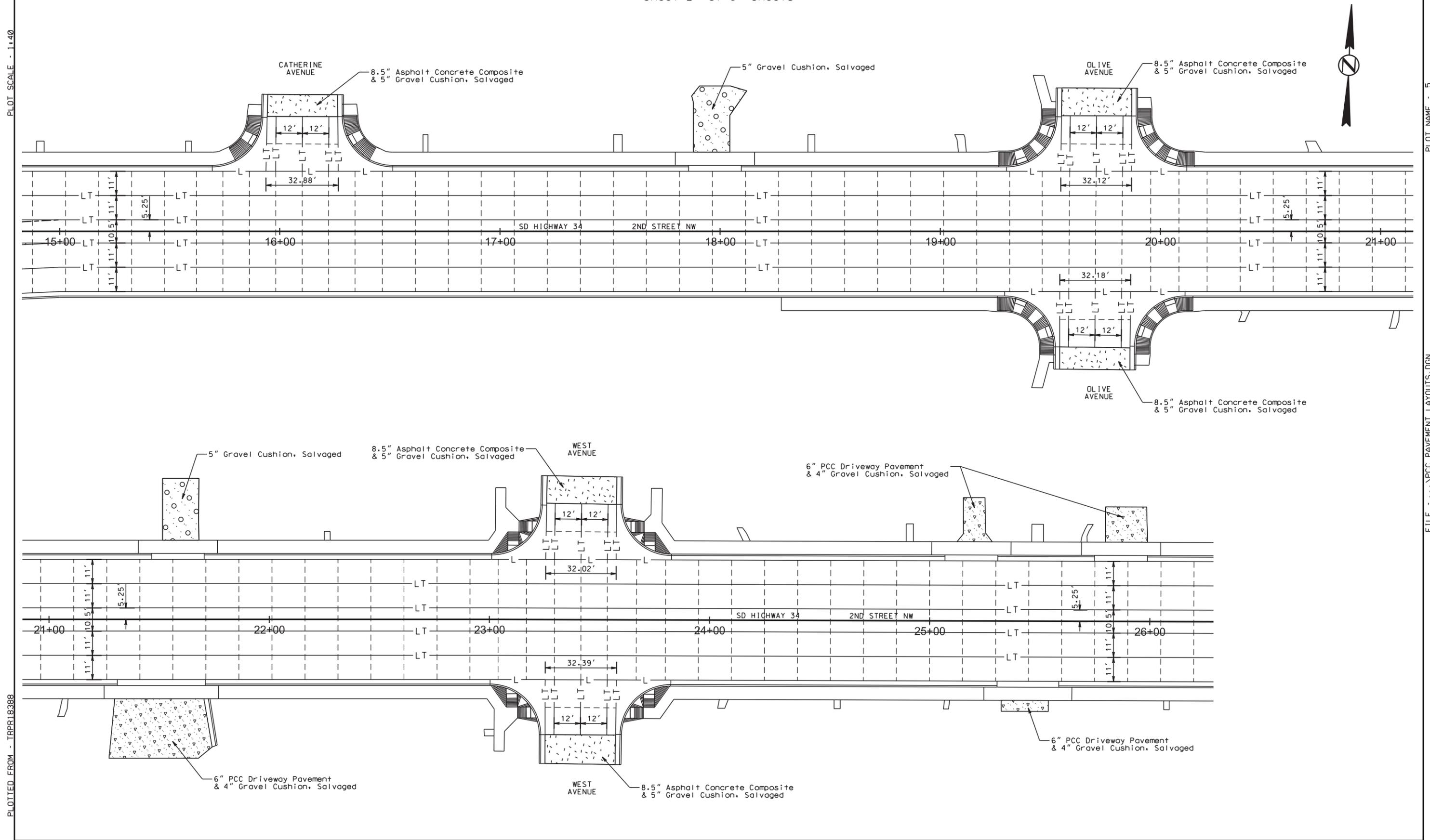
Plotting Date: 10/20/2015

Scale 1 Inch = 40 Feet
Sheet 2 of 6 Sheets

PLOT SCALE - 1:40

PLOT NAME - 5

FILE - ... \PCC PAVEMENT LAYOUTS.DGN



PLOTTED FROM - TRPR18388

PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0023(160)386	F11	F21

Plotting Date: 10/20/2015

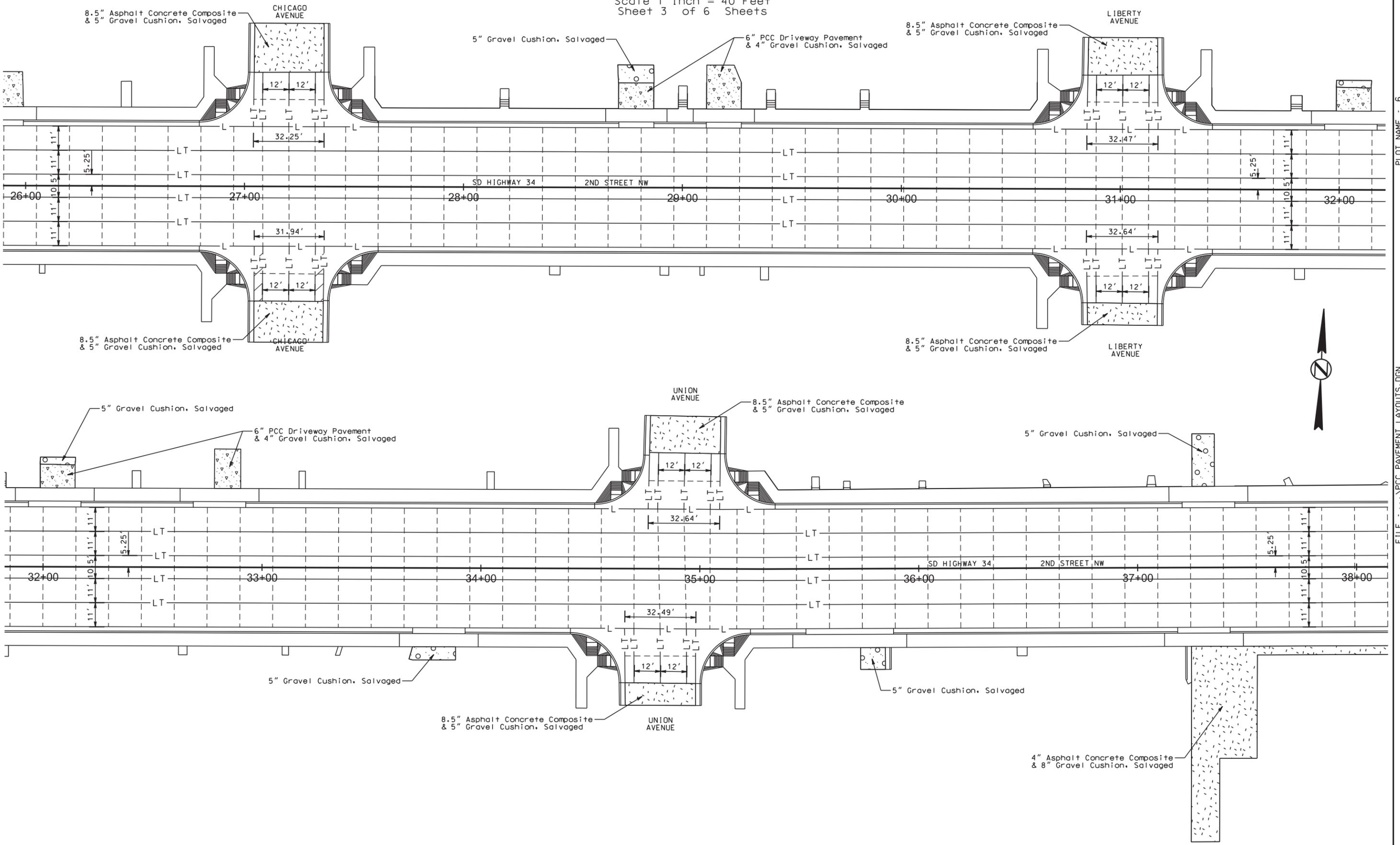
Scale 1 Inch = 40 Feet
Sheet 3 of 6 Sheets

PLOT SCALE - 1:40

PLOT NAME - 6

PLOTTED FROM - TRPR18388

FILE - ... PCC PAVEMENT LAYOUTS.DGN



PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	NH 0023(160)386	F12	F21

Plotting Date: 10/20/2015

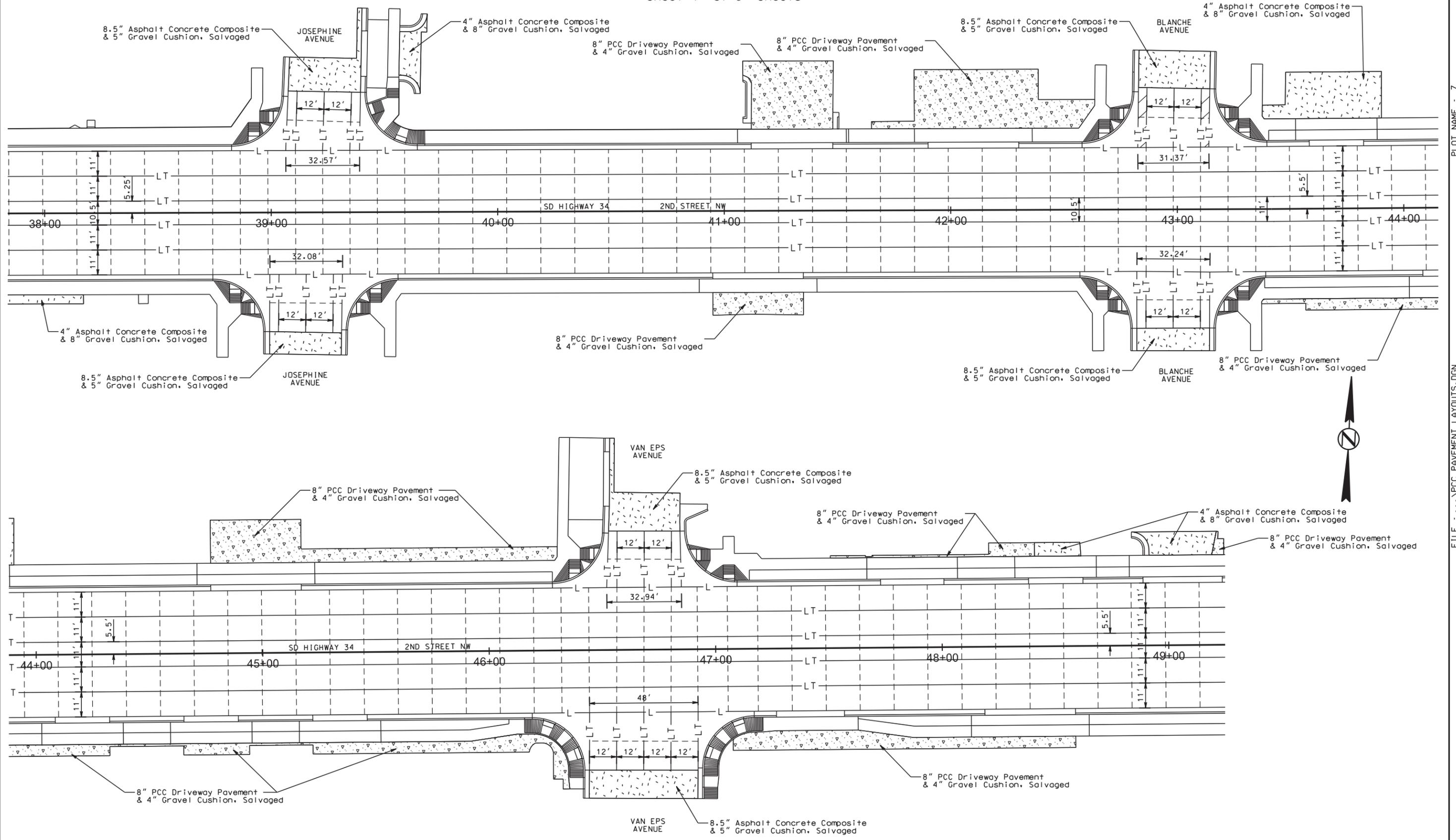
Scale 1 Inch = 40 Feet
Sheet 4 of 6 Sheets

PLOT SCALE - 1:40

PLOT NAME - 7

PLOTTED FROM - TRP18388

FILE - ...PCC PAVEMENT LAYOUTS.DGN



PCC PAVEMENT JOINT LAYOUT

FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT NH 0023(160)388	SHEET F13	TOTAL SHEETS F21
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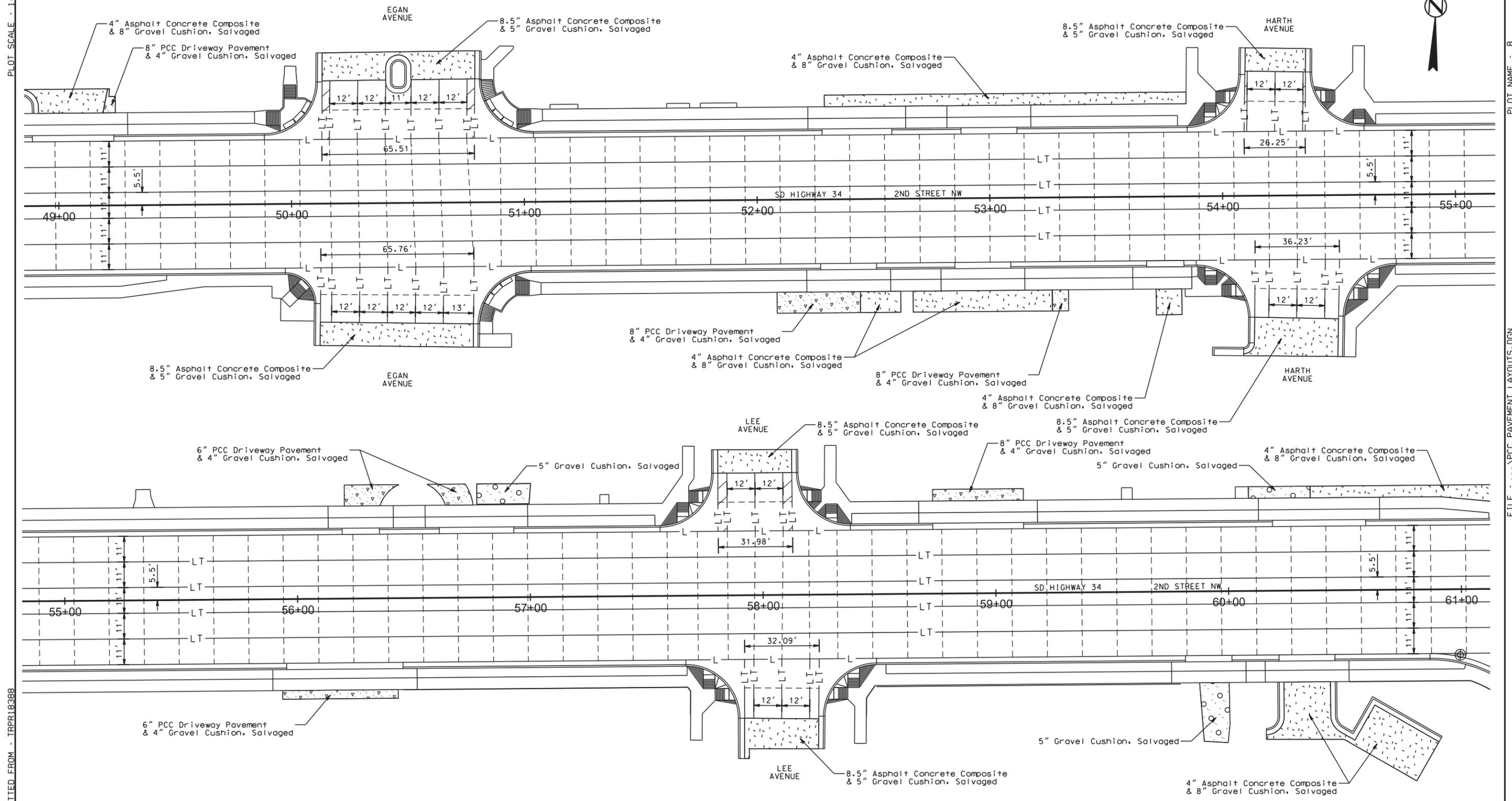
Plotting Date: 10/20/2015

Scale 1 Inch = 40 Feet
Sheet 5 of 6 Sheets

PLOT SCALE - 1:40

PLOT NAME - 8

FILE - ... PCC PAVEMENT LAYOUTS.DGN



PLOTTED FROM - TRPR18388

PCC PAVEMENT JOINT LAYOUT FOR BIDDING PURPOSES ONLY

STATE OF SOUTH DAKOTA	PROJECT NH 0023(160)386	SHEET F14	TOTAL SHEETS F21
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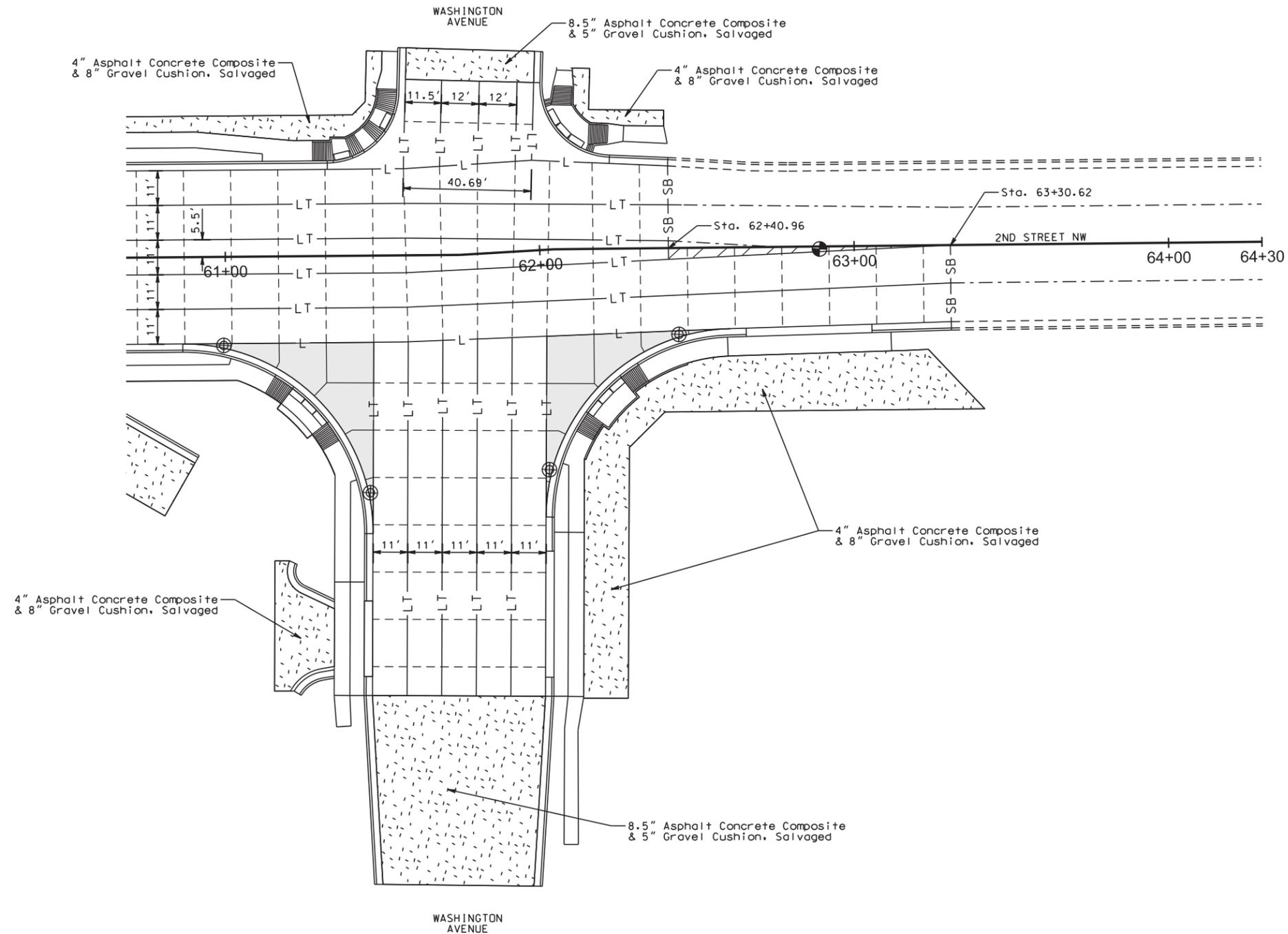
Plotting Date: 10/20/2015

Scale 1 Inch = 40 Feet
Sheet 6 of 6 Sheets

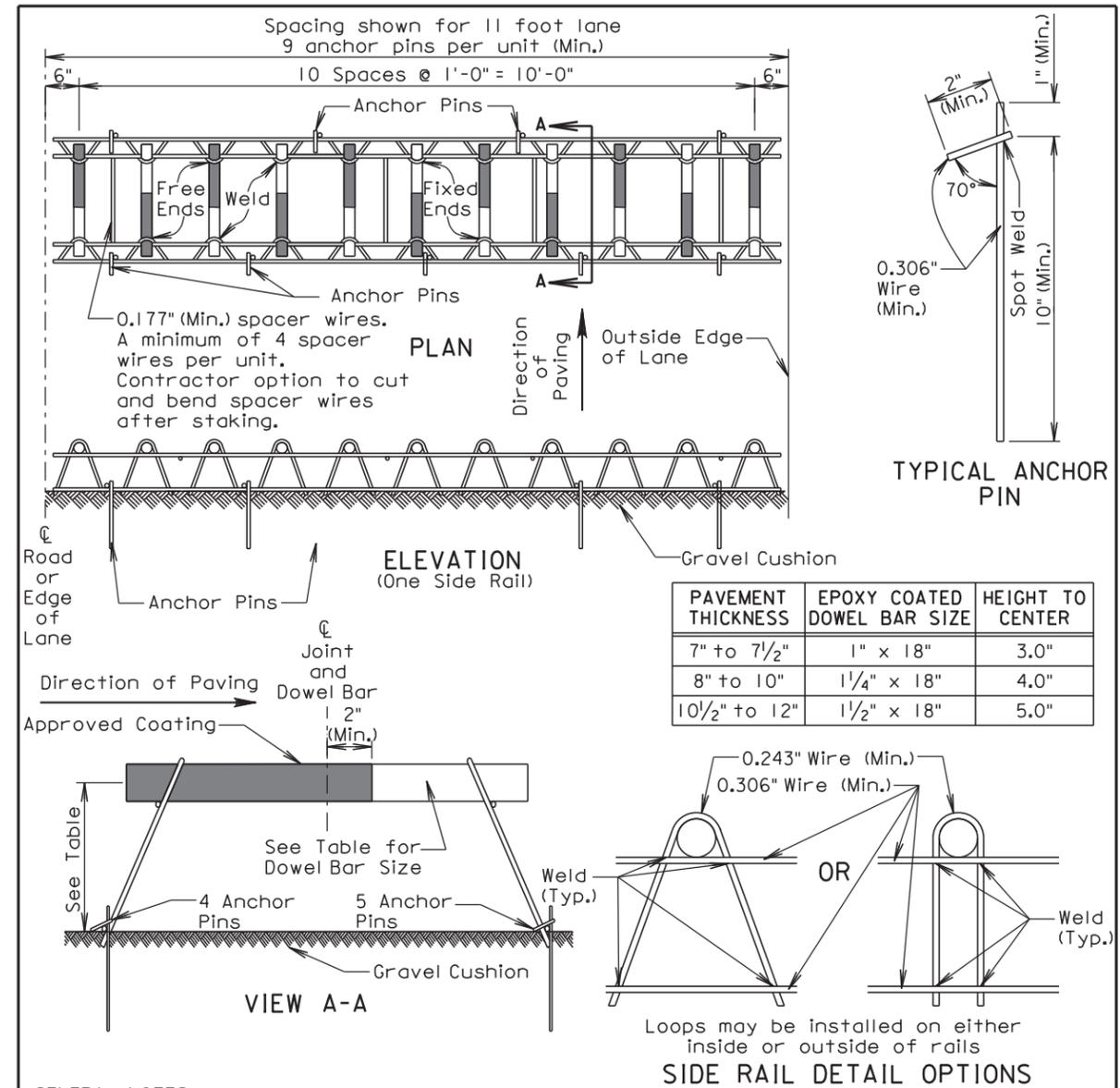
PLOT SCALE - 1:40

PLOT NAME - 9

FILE - ... \PCC PAVEMENT LAYOUTS.DGN



PLOTTED FROM - TRPR18388



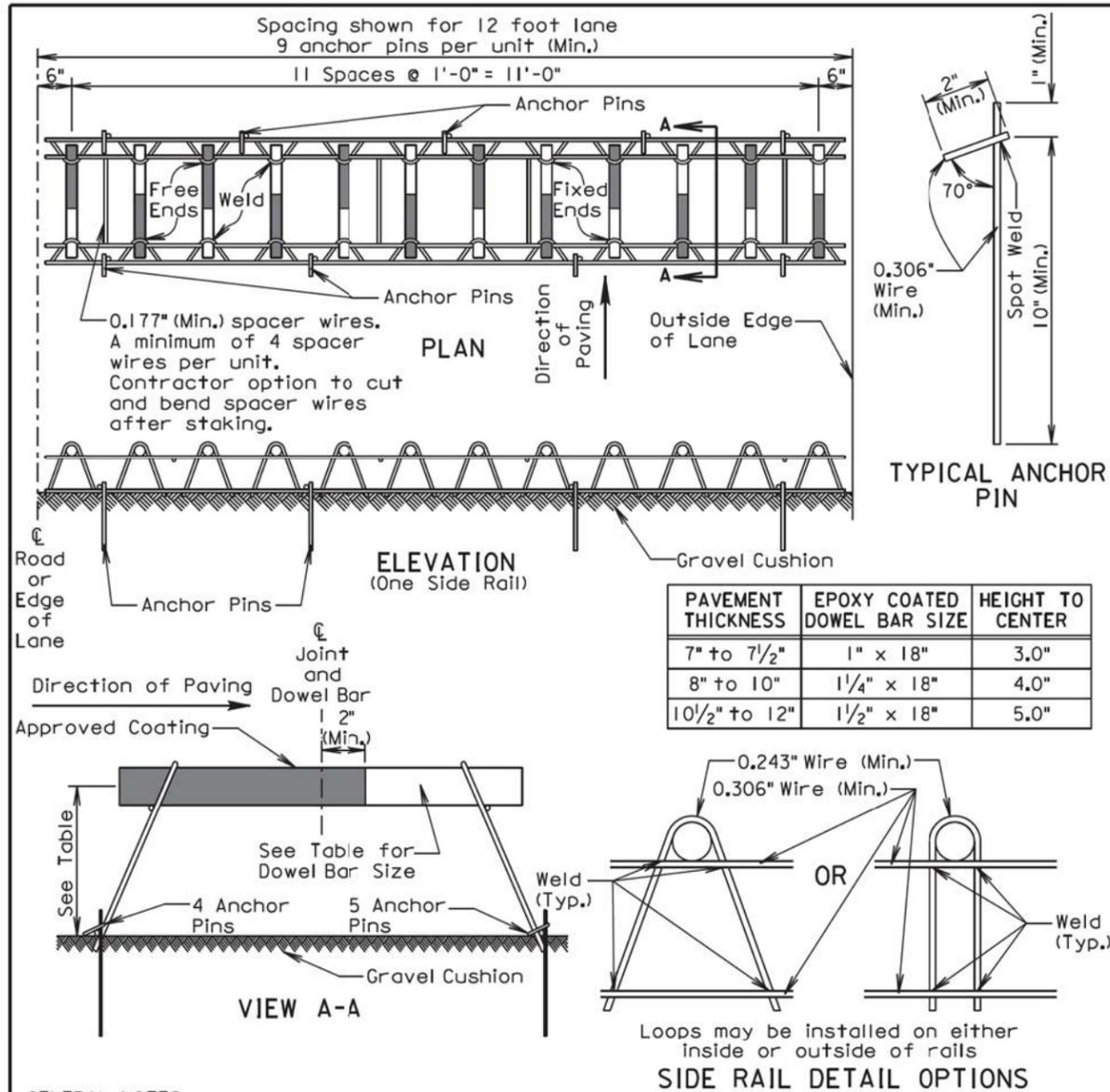
GENERAL NOTES:

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

**PCC PAVEMENT DOWEL BAR ASSEMBLY
FOR TRANSVERSE CONTRACTION JOINTS
11 Bar Assembly on Granular Base Material**

**SPECIAL
DETAIL**

Sheet 1 of 1



GENERAL NOTES:

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

Centerline of individual dowel bars shall be parallel to top of subgrade $\pm 1/8$ inch in 18 inches and to all other dowel bars in the assembly $\pm 1/16$ inch in 18 inches.

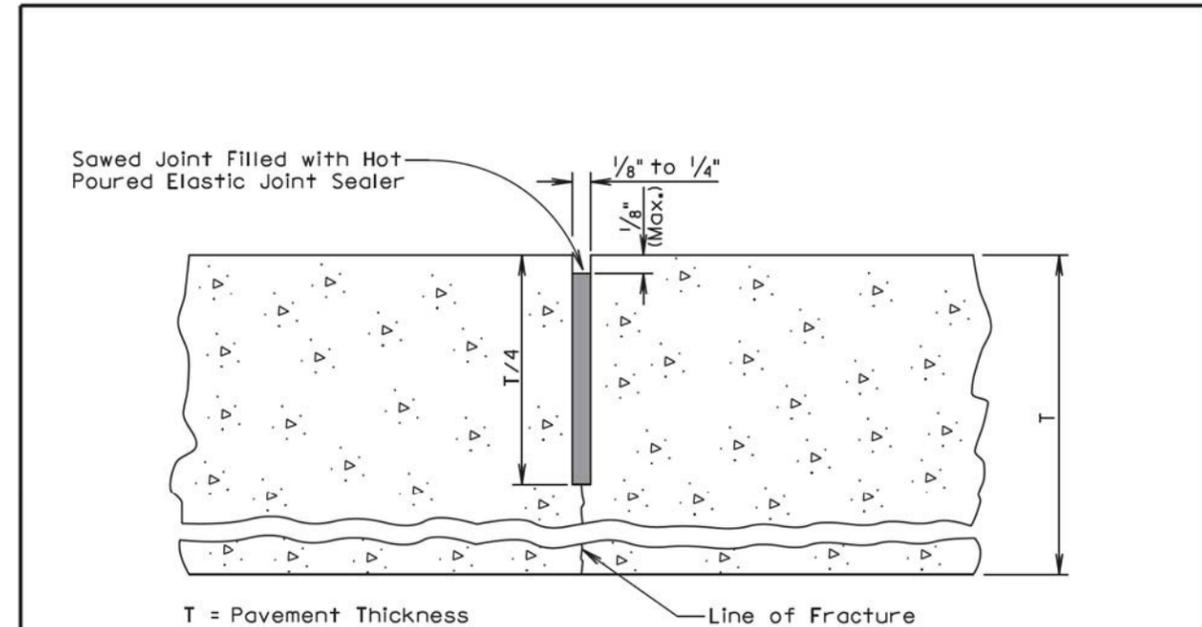
Centerline of individual dowel bars shall be parallel to the centerline of the roadway $\pm 1/2$ inch in 18 inches.

The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

Supporting devices as shown on this sheet, or equivalent as approved by the Engineer, shall be used to maintain proper horizontal and vertical alignment of the dowel bars.

August 30, 2013

S D D O T Published Date: 3rd Qtr. 2015	PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material	PLATE NUMBER 380.01
		Sheet 1 of 1



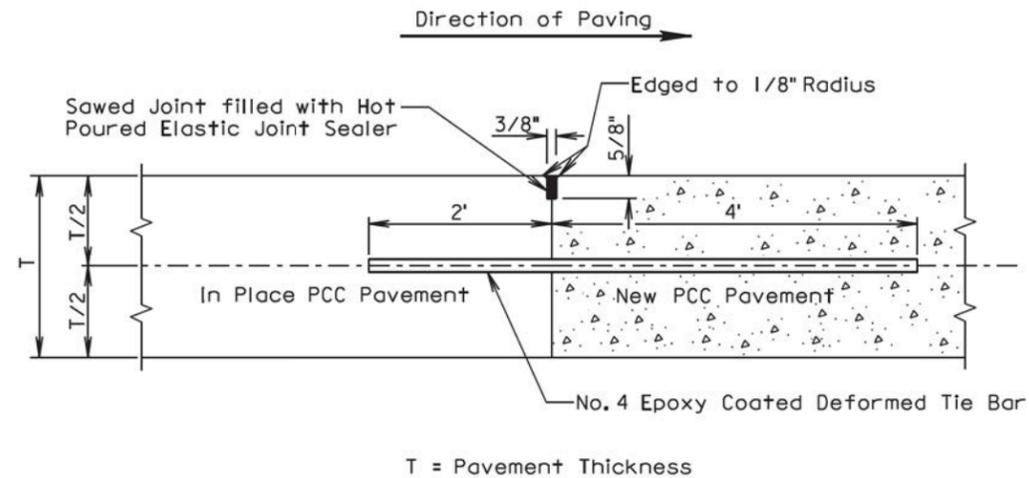
GENERAL NOTES:

If an early entrance sawcut does not develop the full transverse crack, then the saw cut to control cracking shall be a minimum of $1/4$ the thickness of the pavement.

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

June 26, 2015

S D D O T Published Date: 3rd Qtr. 2015	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.05
		Sheet 1 of 1



GENERAL NOTES:

No. 4 epoxy coated deformed tie bars shall be spaced 12 inches center to center and shall 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 shall be 5 feet.

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

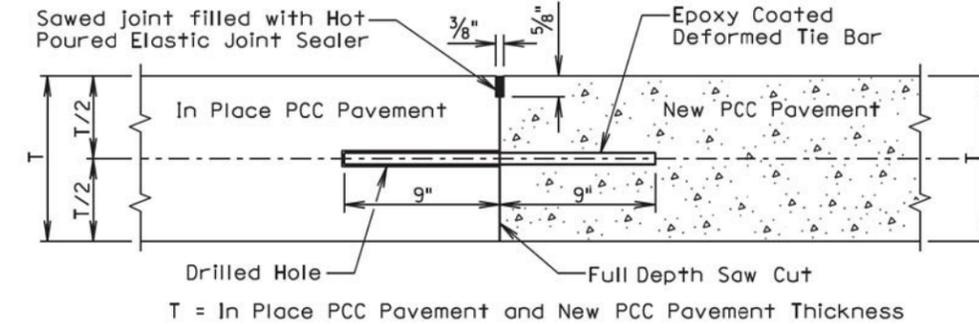
A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

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

June 26, 2013

S D D O T	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.07
	Published Date: 3rd Qtr. 2015	Sheet 1 of 1

**DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS**



GENERAL NOTES:

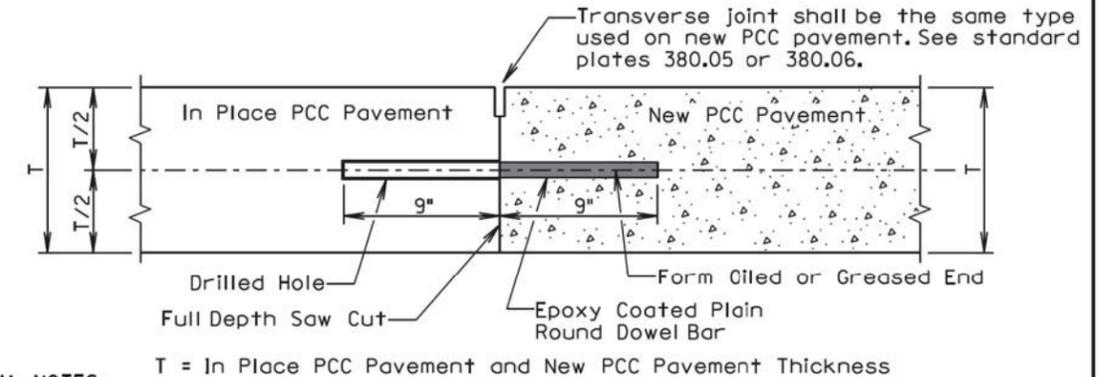
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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

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

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

**DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS**



GENERAL NOTES:

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

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

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

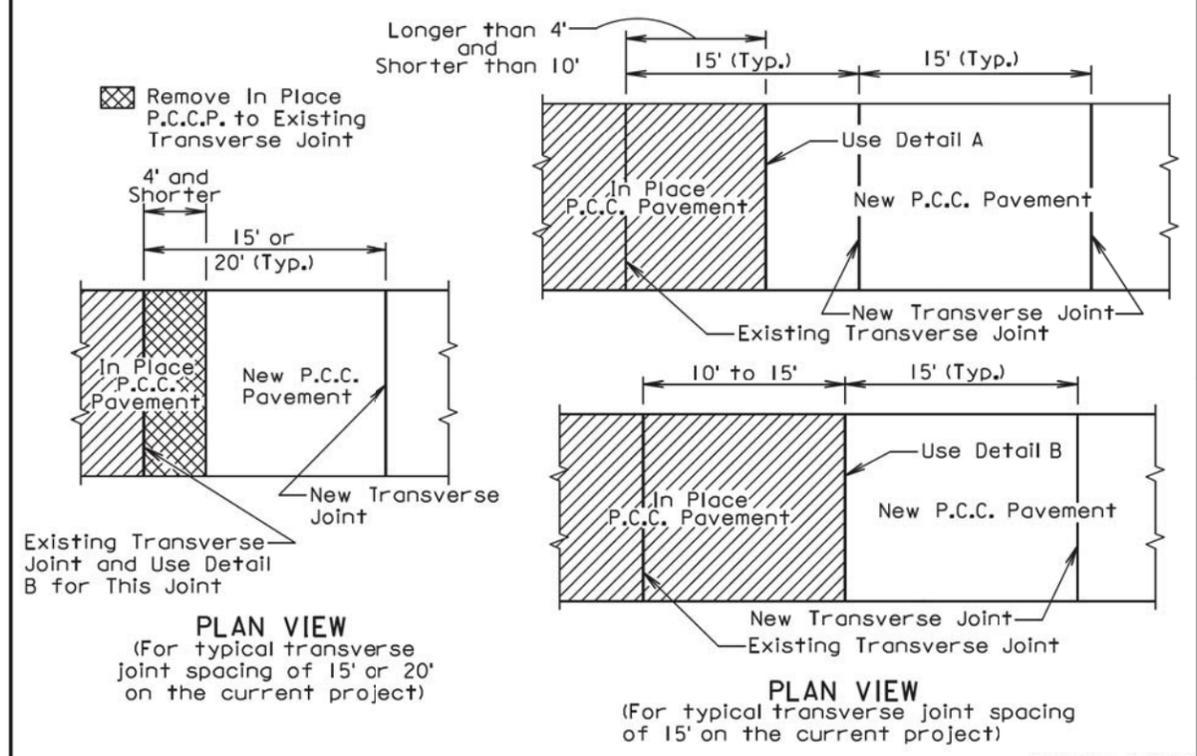
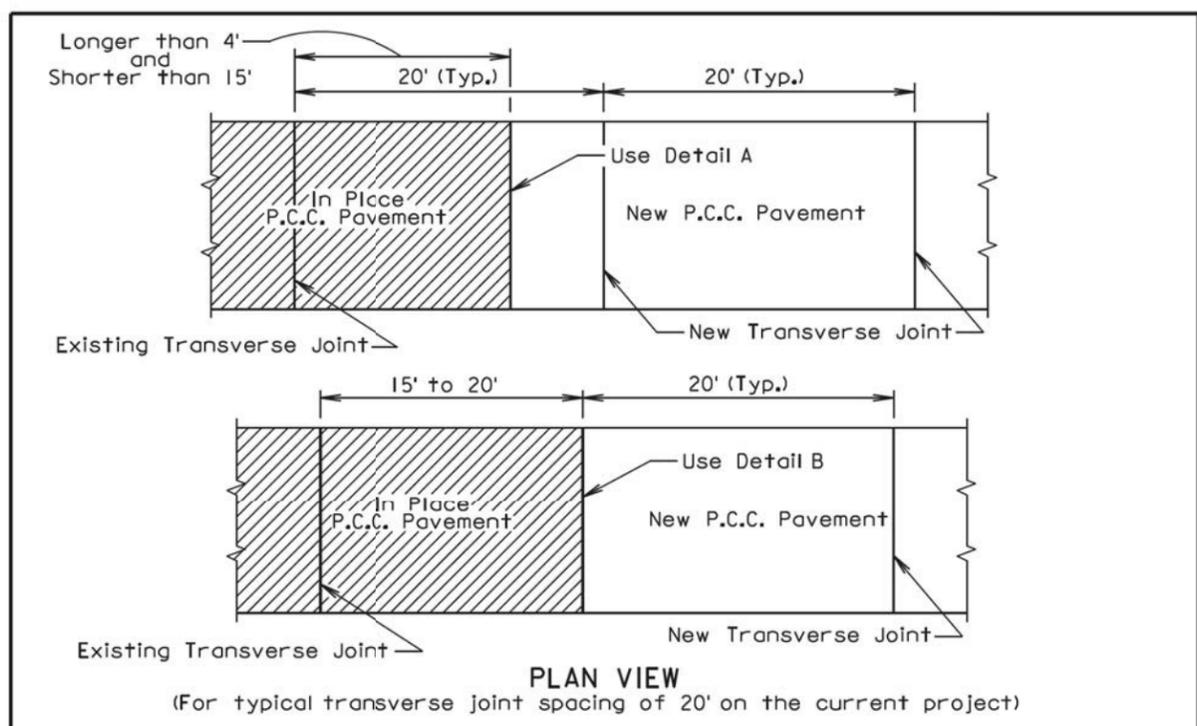
The epoxy coated plain round dowel bar size, number, and spacing shall be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars shall be a minimum of 3 inches and a maximum of 6 inches from the pavement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

September 6, 2013

S D D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
	Published Date: 3rd Qtr. 2015	Sheet 1 of 2

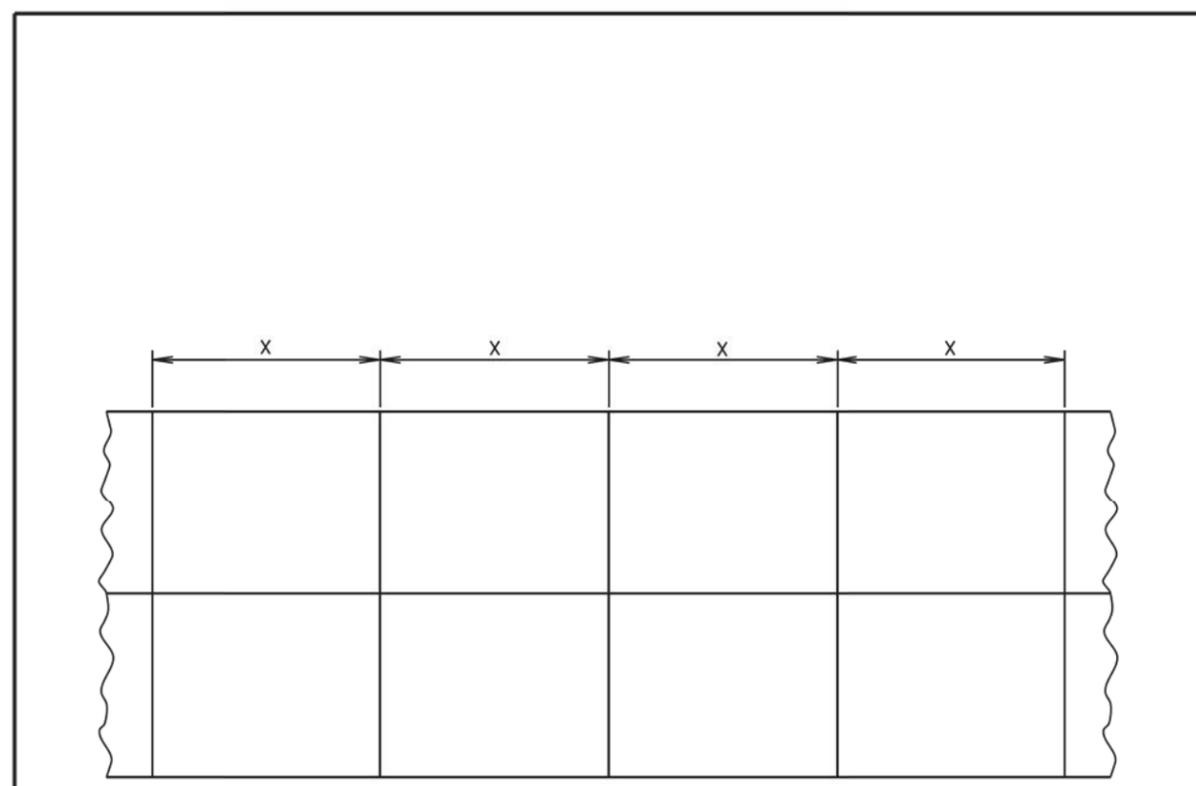
PLOT SCALE - 1:200

PLOT NAME - 13



September 6, 2013

Published Date: 3rd Qtr. 2015	S D D O T	PCC PAVEMENT TRANSVERSE CONSTRUCTION JOINTS WITH TIE BARS OR DOWEL BARS	PLATE NUMBER 380.08
			Sheet 2 of 2



PCCP Thickness	Transverse Contraction Joint Spacing (X)
8" to 9.5"	15'
10" and Thicker	20'

August 31, 2013

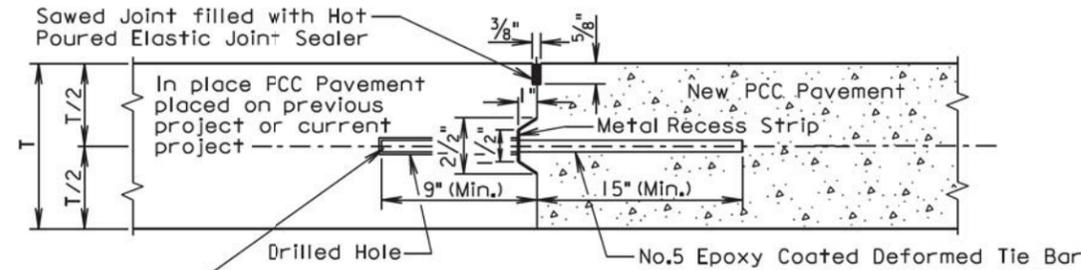
Published Date: 3rd Qtr. 2015	S D D O T	PCC PAVEMENT TYPICAL CONTRACTION JOINT SPACING	PLATE NUMBER 380.09
			Sheet 1 of 1

PLOTTED FROM - TRPR18388

FILE - ... \PRJ\LAKE02R6\STD\PLATEPAGE3.DGN

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

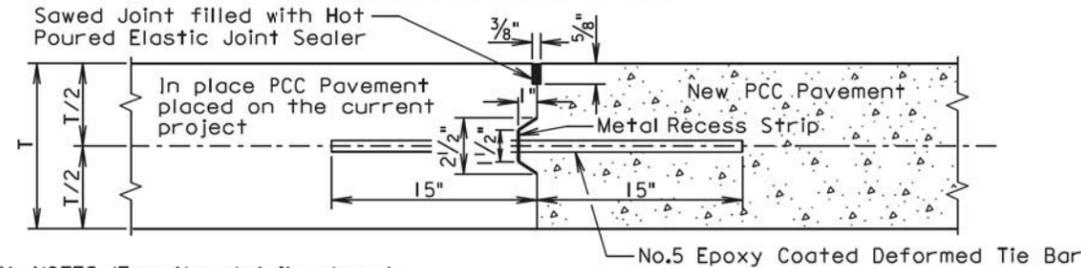
(DRILLED IN BARS)



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

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

(INSERTED OR FORMED IN BARS)



GENERAL NOTES (For the details above):

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

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

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

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

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

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

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

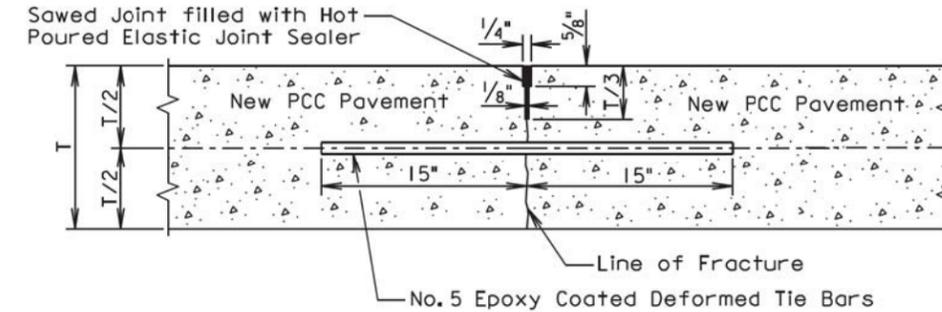
August 31, 2013

S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
		Sheet 1 of 2

Published Date: 3rd Qtr. 2015

SAWED LONGITUDINAL JOINT WITH TIE BARS

(POURED MONOLITHICALLY)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

The epoxy coated deformed tie bars shall be spaced in accordance with the following 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 shall be placed a minimum of 15 inches from the transverse contraction joints.

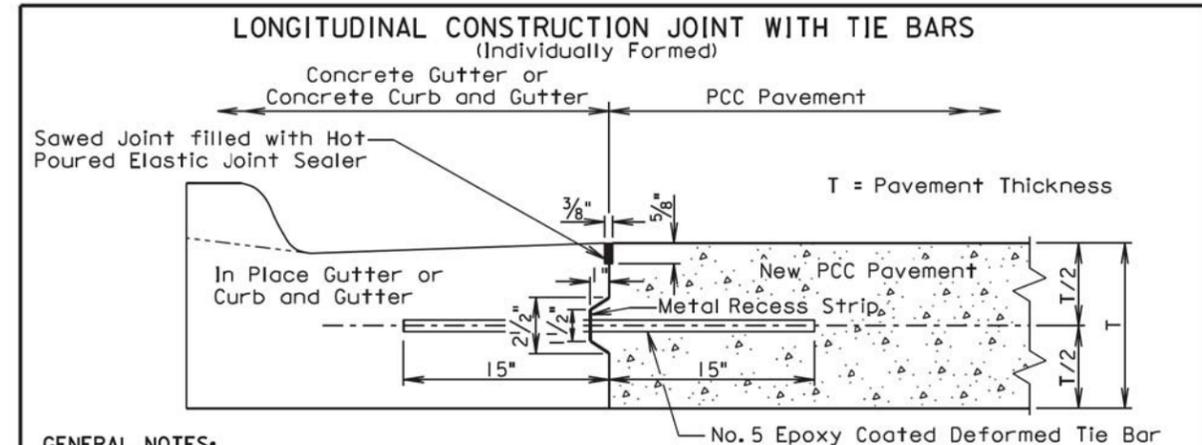
The required number of tie bars as shown in the table shall be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing shall apply to tie bars within each panel.

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

August 31, 2013

S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
		Sheet 2 of 2

Published Date: 3rd Qtr. 2015



GENERAL NOTES:

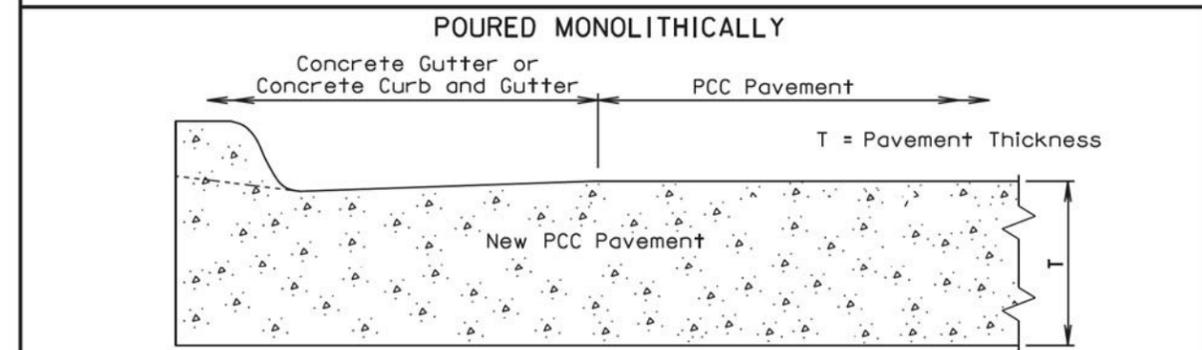
No. 5 epoxy coated deformed tie bars shall be spaced 48 inches center to center. The keyway shown above is a female keyway.

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

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

The transverse contraction joints in the concrete gutter or concrete curb and gutter shall be placed at each mainline PCC pavement transverse contraction joint. The transverse contraction joints in the concrete gutter or the concrete curb and gutter shall be 1 1/2 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 shall be at least 1/4 the thickness of the concrete gutter or concrete curb and gutter.

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.



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 shall be eliminated.

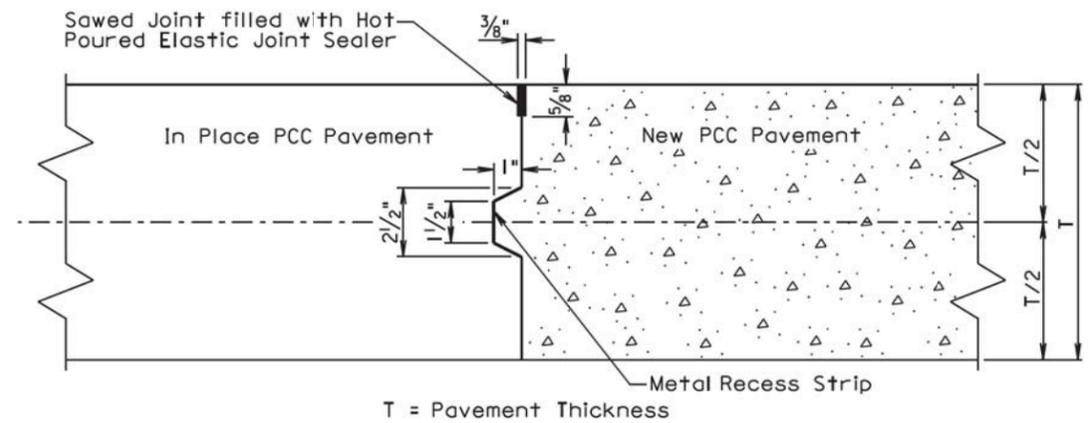
The gutter or curb and gutter shall be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter shall be sawed and sealed same as the transverse contraction joints in the PCC pavement.

The slope of the gutter shall 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 shall be constructed at the same slope as the mainline concrete pavement.

June 26, 2013

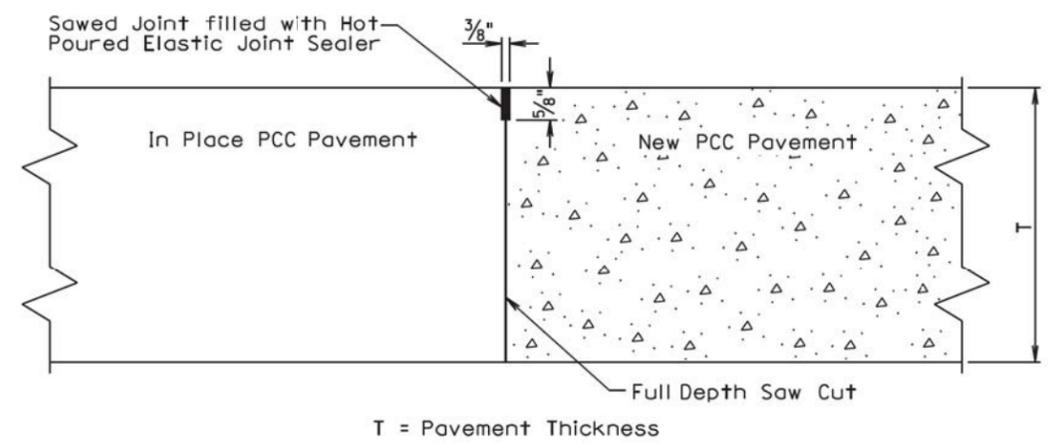
S D D O T Published Date: 3rd Qtr. 2015	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.11
		Sheet 1 of 1

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS



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



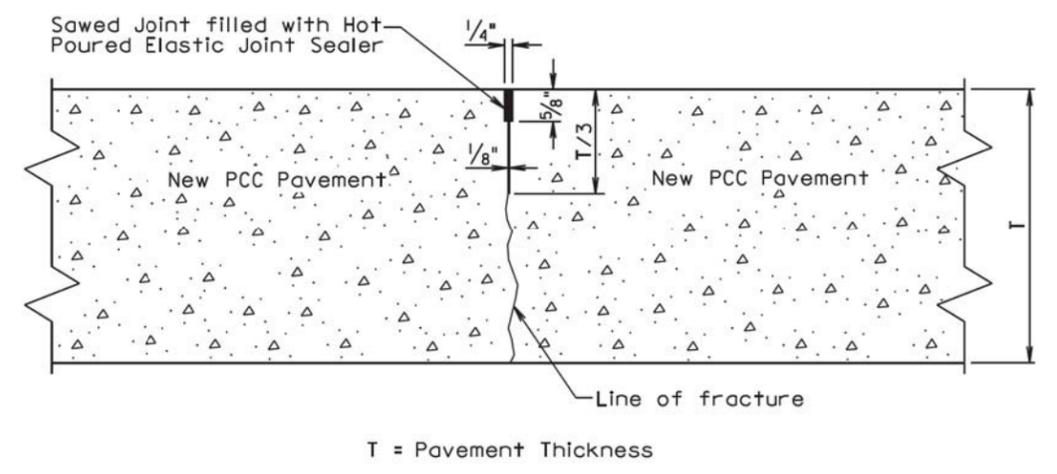
GENERAL NOTE:
 The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

September 14, 2001

S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.12
		Sheet 1 of 2

Published Date: 3rd Qtr. 2015

SAWED LONGITUDINAL JOINT WITHOUT TIE BARS



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

September 14, 2001

S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITHOUT TIE BARS	PLATE NUMBER 380.12
		Sheet 2 of 2

Published Date: 3rd Qtr. 2015