

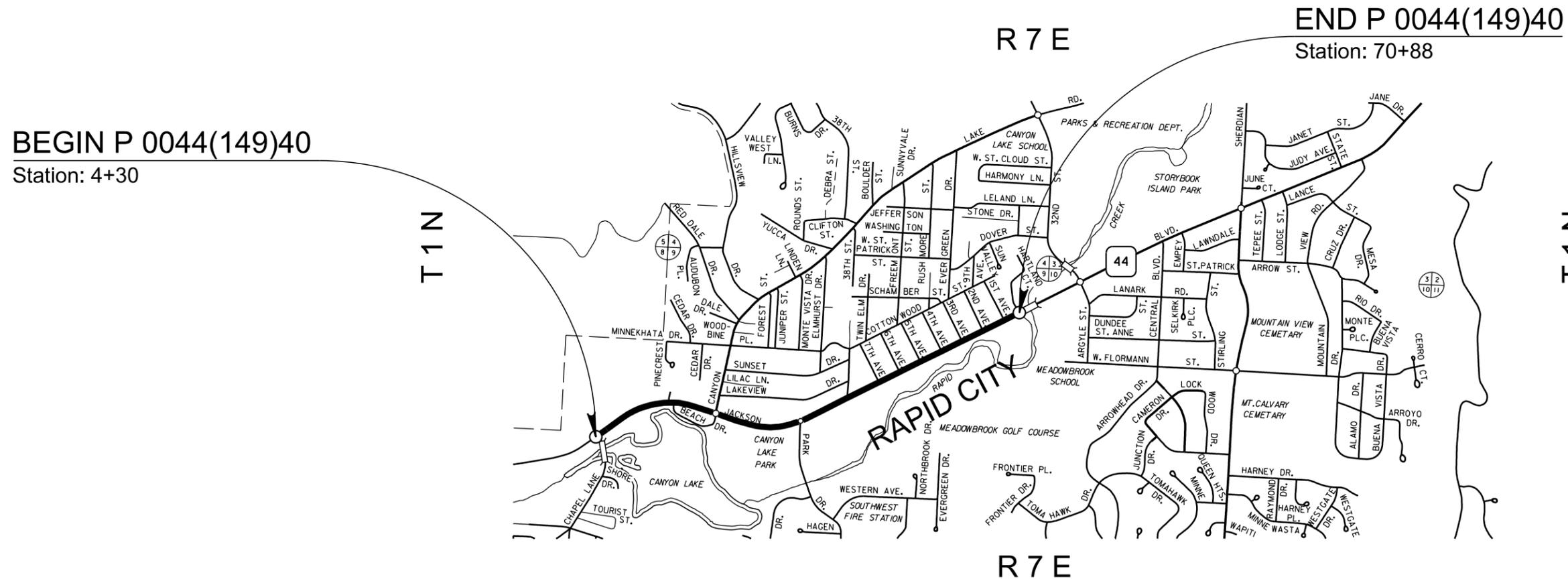
SECTION F: SURFACING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F1	F34

Plotting Date: 05/13/2014

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PLOT SCALE - 1:200

PLOTTED FROM - TRPR16032

PLOT NAME - 1

FILE - ... \PRJ\PENNG25\TITLE F 6925.DGN

SECTION F ESTIMATE OF QUANTITIES – P 0044(149)40, PCN 6925

Bid Item Number	Item	Quantity	Unit
009E3320	Checker	Lump Sum	LS
110E1640	Remove Granular Material	7,245.9	CuYd
120E6200	Water for Granular Material	275.3	MGal
260E0010	Subbase	5,063.8	Ton
260E2060	Gravel Cushion, Modified	17,886.0	Ton
320E1200	Asphalt Concrete Composite	1,087.7	Ton
320E2000	Maintenance Patching	50.0	Ton
320E2500	Asphalt Concrete Curb	280	Ft
380E0070	9" Nonreinforced PCC Pavement	40,619.0	SqYd
380E3020	6" PCC Driveway Pavement	1,089.9	SqYd
380E5010	Fast Track Concrete	2,232.3	SqYd
380E6000	Dowel Bar	25,339	Each
380E6110	Insert Steel Bar in PCC Pavement	80	Each
380E9010	Temporary Gravel Crossing	5	Each
831E0300	MSE Geotextile Fabric	9,243	SqYd

SECTION F ESTIMATE OF QUANTITIES – P 0044(00)40, PCN 04QJ

Bid Item Number	Item	Quantity	Unit
120E6200	Water for Granular Material	18.3	MGal
260E2060	Gravel Cushion, Modified	1,523.2	Ton
320E1200	Asphalt Concrete Composite	735.4	Ton
380E0070	9" Nonreinforced PCC Pavement	706.8	SqYd
380E5030	Nonreinforced PCC Pavement Repair	41.0	SqYd
380E6000	Dowel Bar	396	Each
380E6110	Insert Steel Bar in PCC Pavement	33	Each

Bid items for P 0044(00)40, PCN 04QJ will be 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.

SAWING IN EXISTING SURFACING

Where new Portland Cement Concrete Pavement (PCCP) or new asphalt concrete is placed adjacent to existing asphalt concrete or PCCP, the existing pavement shall be sawed full depth to a true line with a vertical face. No separate payment shall be made for sawing.

TABLE OF IN-PLACE SURFACING

STATION	OFFSET (Ft)	Left or Right	EXISTING THICKNESSES		
			PCCP (In)	Asphalt Mix (In)	BASE (In)
6+50	20.0	Rt.		5.0	19.0 *
12+00	21.0	Rt.	9.0		7.25
18+00	19.5	Rt.	9.0		7.0
24+00	27.0	Lt.	8.75		8.0
31+00	20.0	Lt.	9.0		8.0
38+00	21.0	Lt.	9.0		8.25
43+00	20.0	Rt.	9.0		6.5
51+50	20.0	Rt.	9.0		15.0 *
59+50	20.0	Rt.	8.75		15.25 *
67+00	20.0	Rt.	8.75		15.25 *

TABLE OF IN-PLACE SURFACING (CONTINUED)

* Depth to bottom of the base was not able to be accurately determined because of underlying gravels. A total depth of 24 inches at these sites was used for calculating the surfacing thicknesses shown in this table. The base depth average of the remaining borings (7.5 ") was used to estimate the excavation quantities. This is closer to the listed thickness in the Needs Book and should provide a better estimate of usable salvage.

REMOVE GRANULAR MATERIAL

Location of Removal Areas	* Remove Granular Material
	CuYds
SD 44 Mainline	
Sta. 4+30 to Sta. 8+43.5	617.0
Sta. 8+43.5 to Sta. 70+88	6,263.7
Miscellaneous Areas	365.2
TOTAL	7,245.9

* Plans quantity will be the basis of measurement and payment for the above mentioned work. Refer to the typical sections for location and depth of granular material.

RECLAIMED MATERIAL

Asphalt Concrete Pavement removed from within the project limits may be crushed and reused as Gravel Cushion, Modified provided it is blended at a ratio not exceeding 1 part asphalt concrete material to 1 part either virgin granular material, granular material removed from project, or reclaimed concrete aggregate. Quantity is based on a unit weight of 1.89 tons per cubic yard for the reclaimed asphalt concrete aggregate. Refer to typical sections for location and depth of Asphalt Concrete Removal

Portland Cement Concrete Pavement removed from within the project limits may be crushed and reused as Gravel Cushion, Modified or Subbase. Quantity is based on a unit weight of 118 lbs. per cubic foot for the reclaimed concrete aggregate. Refer to typical sections for location and depth of PCCP Removal.

Granular Material removed from within the project limits may be reused as Gravel Cushion, Modified or Subbase. Quantity is based on a unit weight of 1.89 tons per cubic yard for the reclaimed granular aggregate. Refer to the typical sections for location and depth of granular material.

Reclaimed material to be used Gravel Cushion, Modified or Subbase on this project must meet plan note requirements and the Engineer's approval. All costs associated with the placement of reclaimed material shall be incidental to the contact unit price per ton for Gravel Cushion, Modified or Subbase.

Reclaimed Material that remains after the final surfacing has been brought to the typical section shall be disposed of by the Contractor at a site approved by the Engineer. The Contractor will be required to remove the excess material to the satisfaction of the Engineer at no additional cost to the State.

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RECLAIMED MATERIAL (For informational purposes only)

Location of Removal Areas	Reclaimed Material
	Tons
Remove Asphalt Concrete	
Mainline - Sta. 4+30 to Sta. 8+43.5	583.1
Miscellaneous Areas (Int. St., Driveways)	1,052.6
Remove Granular Material	
Mainline - Sta. 4+30 to Sta. 8+43.5	1,166.1
Mainline - Sta. 8+43.5 to Sta. 70+88	11,838.4
Miscellaneous Areas (Int. St., Driveways)	690.2
Remove PCC Pavement	
Mainline - Sta. 8+43.5 to Sta. 70+88	13,816.0
Miscellaneous Areas (Curb & Gutter)	129.1
Miscellaneous Areas (Driveways)	77.7
TOTAL	29,353.2

GRAVEL CUSHION, MODIFIED

Gravel Cushion, Modified shall be furnished by the Contractor and/or may be produced from the reclaimed material removed from the project per the plan note requirements.

If the asphalt concrete removed from the project is used, the Contractor shall establish a percentage (± 5% tolerance) for each material to be blended during production of the Gravel Cushion, Modified. The stockpile(s) shall be uniformly blended at a Contractor furnished site.

Gravel Cushion, Modified shall conform to the following gradation:

Sieve	% Passing
Passing 1"	100%
Passing 3/4"	80-100%
Passing 1/2"	68-91%
Passing No. 4	46-70%
Passing No. 8	34-58%
Passing No. 40	13-35%
Passing No. 200	3.0-12.0%

All other requirements for Gravel Cushion shall apply.

ASPHALT CONCRETE COMPOSITE

Mineral aggregate for the Asphalt Concrete Composite shall conform to the requirements for Class E, Type 1. All other requirements in the Standard Specifications for Asphalt Concrete Composite shall apply.

The asphalt binder used in the mixture shall be PG 64-22, PG 64-28, or PG 64-34 Asphalt Binder.

Asphalt Concrete Composite will be paid for at the contract unit price per ton. Payment shall be full compensation for furnishing and installing the Asphalt Concrete Composite.

MANHOLE BOX-OUT DETAILS

The Contractor shall construct box-outs for all manholes in the 9.0" Concrete Pavement according to the Box-Out Detail. Locations of Proposed Manholes and water valve boxes are shown in Section B.

CHECKING SPREAD RATES

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

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

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

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

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

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

The Department will perform depth checks. The Contractor shall be responsible for placement of material to the correct depth unless otherwise directed by the Engineer. If the placed material is not within a tolerance of $\pm 1/2$ inch of the plan shown depth, the Contractor shall correct the problem at no additional cost to the Department. Excess material above the tolerance will not be paid for. Achieving the correct depth may require picking up and moving material or other action as required by the Engineer.

All costs for providing the Contractor furnished checker and performing all related duties shall be incidental to the contract lump sum price for the CHECKER. No allowances will be made to the contract lump sum price for CHECKER due to authorized quantity variations unless the quantities for the material being checked vary above or below the estimated quantities by more than 25 percent. Payment for the Checker shall then be increased or decreased by the same proportion as the placed material quantity bears to the estimated material quantity.

ALKALI SILICA REACTIVITY

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

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.

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

TABLE OF KNOWN FINE AGGREGATE SOURCES

<u>Source</u>	<u>Location</u>	<u>Expansion Value</u>
Bachman	Winner, SD	0.335*
Birdsall S&G	Creston, SD	0.158
Birdsall S&G	Oral, SD	0.131
Birdsall S&G	Wasta, SD	0.170
Bitterman	Delmont, SD	0.314*
Concrete Materials	Corson, SD	0.170
Croell – Cheyenne River Pit	Hot Springs, SD	0.089
Emme Sand & Gravel	Oneil, NE	0.217
Fischer S&G	Rapid City, SD	0.092
Fischer S&G	Spearfish, SD	0.053
Fuchs	Pickstown, SD	0.275*
Higman	Akron, IA	0.198
Higman	Hudson, SD	0.187
Hilde	Madison, SD	0.116
Jensen	Herried, SD	0.276*
L.G. Everist	Brookings, SD	0.153
L.G. Everist	Hawarden, IA	0.166
L.G. Everist	Summit, SD	0.141
Morris	Blunt, SD	0.192
Morris - Richards pit	Onida, SD	0.188
Myrl & Roys Paving-Nelson Pit	Sioux Falls, SD	0.158
Northern Concrete Agg.	Rauville, SD	0.104
Northern Concrete Agg.	Luverne, MN	0.124
Opperman - Gunvordahl Pit	Burke, SD	0.337*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.226
Thorpe Pit	Britton, SD	0.098
Wagner Building Supplies	Wagner, SD	0.241
Wasta Sand & Gravel	Wasta, SD	0.159

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

9.0" NONREINFORCED CONCRETE PAVEMENT

The fine aggregate may require screening as determined by the Engineer.

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

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 bring the Gravel Cushion, Modified to final grade prior to placement of concrete. There will be no direct payment for trimming of the Gravel Cushion, Modified for PCC pavement. The trimming will be considered incidental to the related items required for PCC Pavement. Trimming shall be performed as required by Section 380.3 C. of the Standard Specifications.

A minimum of 1 pavement blockouts may be required at various locations on this project to facilitate traffic during the paving activity.

The vibration monitoring device requirement of Section 380.3.B.4 for contracts which have a minimum of 50,000 square yards will not be required for this project.

The surface of the mainline paving shall be finished with a heavy carpet drag only.

Automatic dowel bar inserters will not be allowed on this project.

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 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.

In addition to traditional field inspection of reinforcement, a Ground Penetrating Radar (GPR) unit may be used to verify reinforcement locations in the hardened concrete. The GPR may be used anytime prior to the Acceptance of Field Work being issued. All costs related to corrective measures, including but not limited to concrete removal or cutting of reinforcement, price deducts, and delays to the project schedule shall be the responsibility of the Contractor.

TABLE OF 9.0" NONREINFORCED PCC PAVEMENT

Locations		9.0" Nonreinforced PCC Pavement or Fast Track Concrete (SqYd)
Station	to Station	
Mainline		
4+30.0	to 7+68.5	2,198.3
7+68.5	to 68+54.0	37,160.3
68+54.0	to 70+88.0	1,284.9
Intersecting Streets		
Sta. 7+57 Rt.		384.6
Sta. 18+94 Rt.		92.2
Sta. 24+94.77 Lt.		847.7
Sta. 24+94.77 Rt.		131.0
Sta. 36+81 Rt.		434.4
Sta. 44+74 Lt.		115.8
Sta. 49+19 Lt.		81.7
Sta. 52+38 Lt.		41.3
Sta. 55+63 Lt.		81.4
Sta. 58+78 Lt.		74.7
Sta. 62+02 Lt.		95.3
Sta. 65+17 Lt.		89.2
Sta. 68+37 Lt.		87.2
Entrances		
Sta. 7+57 Lt.		62.1
Sta. 11+04 Lt.		65.1
Sta. 13+15 Rt.		58.5
Sta. 15+25 Lt.		68.2
Sta. 55+64 Rt.		51.2
Sta. 61+00 Rt.		53.0
TOTAL		43,558.1

TABLE OF 6" DRIVEWAY PAVEMENT

Placement Locations	6" Driveway Pavement (SqYd)
Sta. 26+04 Lt.	206.5
Sta. 35+62 Lt.	300.3
Sta. 36+28 Lt.	143.3
Sta. 36+77 Lt.	80.3
Sta. 38+06 Lt.	55.6
Sta. 38+81 Lt.	116.1
Sta. 39+98 Lt.	47.1
Sta. 46+75 Lt.	86.7
Sta. 51+50 Lt.	5.9
Sta. 57+40 Lt.	12.4
Sta. 65+17 Lt. – Ah.	11.6
Sta. 67+40 Lt.	19.4
Sta. 68+51 Lt. – Ah.	4.7
TOTAL	1,089.9

PAVEMENT SMOOTHNESS

The following locations shall be tested for smoothness with a Contractor furnished and operated 25 foot California style profilograph in accordance with the Special Provision for PCC Pavement Smoothness.

SD44 - Sta. 4+30 to Sta. 70+88 - Driving Lanes

BLOCKOUT AREAS

It is anticipated that there will be a minimum of 2 pavement blockouts required to maintain traffic flow. These areas designated by the Engineer will not be closed for more than 24 consecutive hours with no alternate route. The Contractor may use Fast Track Concrete or any option approved by the Engineer to achieve this requirement. Failure to comply with this requirement will necessitate liquidated damages being assessed at a rate of \$500 for each calendar day per each intersection area that remains closed past the aforementioned time limit.

Additional locations designated by the Engineer may also require Fast Track Concrete.

TABLE OF BLOCKOUT AREAS

Station	L/R	Description
18+94	R	Beach Drive
55+64	R	Meadowbrook Golf Course

FAST TRACK CONCRETE

At specific locations (intersecting streets, driveways, & blockouts) designated by the Engineer, Fast Track Concrete may be used. The intent of the Fast Track Concrete is to insure the new pavement can be opened to traffic within 24 hours after placement.

Fast Track Concrete shall be constructed according to plan details and Standard Specifications for the 9.0" Nonreinforced PCC Pavement except as follows:

The Fast Track Concrete shall be designed to achieve a minimum compressive strength of 3800 psi in 24 hours. If the concrete does not attain a compressive strength of 3800 psi within 24 hours after placement, that section of concrete pavement shall be paid for as 9.5" Nonreinforced PCC Pavement. 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 to 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.

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FAST TRACK CONCRETE (CONTINUED)

Fast Track Concrete shall be cured with Linseed Oil Base Emulsion Curing 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 24 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 41,325.8 square yards of 9.0" Nonreinforced PCC Pavement and 2,232.3 square yards of Fast Track Concrete are 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 9.0" 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 FAST TRACK CONCRETE AREAS

Placement Locations (See PCC Pavement Layout Sheets)	Fast Track PCC Pavement (SqYd)
Mainline	
Sta. 7+57 Rt.	707.5
Sta. 24+94.8 Rt.	448.0
Sta. 24+94.8 Lt.	408.1
Sta. 36+81 Rt.	668.7
TOTAL:	2,232.3

TIE BARS AND LONGITUDINAL JOINTS

The use of automatic tie bar inserters will only be allowed on the vertical edge of longitudinal construction joints. The use of automatic tie bar inserters will not be allowed on sawed longitudinal joints.

Tie bars or tie bar baskets shall be held in the specified position parallel to the slab surface and perpendicular to the centerline by a supporting device. Tie bars or tie bar baskets shall be securely staked to the roadbed and shall hold the bar at the correct spacing, alignment, and elevation.

Tie bars will not require supports if inserted into the side of the pavement during slip form paving of the longitudinal construction joint operation. Failure to acquire the correct tie bar locations in the construction joint shall require the bars to be corrected and a change made to the operation which may include drilling and epoxy bars or other methods as approved by the Engineer.

The final position of each tie bar shall be within the following tolerances:

-- Vertical Placement: $\pm T/6$ for any part of the tie bar (T = slab thickness)

-- Transverse Placement (side shift): ± 3 inches when measured perpendicular to the longitudinal joint line

If the tie bar does not meet the requirements and tolerances specified, corrective action shall be performed at the Contractor's expense to the satisfaction of the engineer.

TABLE OF DOWEL BARS

Location	1 1/4" Dowel Bars
	(Each)
Sta. 4+30 to Sta. 70+88 Mainline	24,412
Intersecting Streets and Entrances	1,323
Total Dowel Bars	25,735

LOCATION OF CONCRETE PAVEMENT JOINTS

The location of joints, as shown on the "PCC Pavement Layout" sheets, are only approximate locations to be used as a guide in the final location of joints and to afford bidders a basis for estimating the construction costs of the joints. The final locations of the joints are to be designated by the Engineer during construction.

STEEL BAR INSERTION

The Contractor shall insert the Steel Bars (1 1/4 inch x 18 inch epoxy coated plain round dowel bars) into drilled holes in the existing concrete pavement. An epoxy resin adhesive must be used to anchor the steel bar in the drilled hole.

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

Epoxy resin adhesive shall be of the type intended for horizontal applications, and shall conform to the requirements of ASTM C 881, Type IV, Grade 3 (equivalent to AASHTO M235, Type IV, Grade 3).

The diameter of the drilled holes in the existing concrete pavement for the steel bars shall not be less than 1/8 inch nor more than 3/8 inch greater than the overall diameter of the steel bar. Holes drilled into the existing concrete pavement shall be located at mid-depth of the slab and true and normal. The drilled holes shall be blown out with compressed air using a device that will reach to the back of the hole to ensure that all debris or loose material has been removed prior to epoxy injection.

Mix the epoxy resin as recommended by the manufacturer and apply by an injection method approved by the Engineer. If an epoxy pump is utilized, it shall be capable of metering the components at the manufacturer's designated rate and be equipped with an automatic shut-off. The pump shall shut off when any of the components are not being metered at the designated rate. Fill the drilled holes 1/3 to 1/2 full of epoxy, or as recommended by the manufacturer, prior to insertion of the steel bar. Care shall be taken to prevent epoxy from running out of the horizontal holes prior to steel bar insertion. Rotate the steel bar during insertion to eliminate voids and ensure complete bonding of the bar. Insertion of the bars by the dipping method will not be allowed.

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

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 9 inches from the outside edge of the slab.

TABLE OF STEEL BAR INSERTION

LOCATION	1-1/4" x 18" Plain Round Dowel Bars
	Each
Sta. 7+57 Rt.	36
Sta. 24+94.8 Lt.	33
Sta. 70+88	44
Total	113

UNSTABLE SUBGRADE

Geotextile Specification

The geotextile will conform to the specification for Geotextiles and Impermeable Plastic Membrane, MSE Geotextile Fabric (Section 831.1 of the Standard 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.

Geotextile will be paid for at the contract unit price per sq. yd. for MSE Geotextile Fabric. Payment quantities will be based on area covered plus 15%. Overlaps are accounted for by the additional 15%. Payment will be full compensation for furnishing and installing the geotextile only. 9,243 sq. yds. of MSE Geotextile have been included in the materials quantities for bidding purposes. Granular backfill materials will be paid for under a different bid item.

Granular Material

Granular Material will conform to the specification for Aggregates for Granular Bases and Surfacing, Subbase (Section 882 of the Standard Specifications). Included in the Estimate of Quantities are 5,063.8 tons of Subbase and 60.8 MGal of Water for Granular Material for use in this application at locations to be designated by the Engineer. This quantity is based on 1 foot of coverage for 8,037.8 sq. yds. of subgrade. Granular Material will be paid for at the contract unit price per ton for Subbase. Payment will be full compensation for furnishing and placing this material.

A disk designed and constructed for construction purposes shall be in use as per Section 120.3, Standard Specifications.

MAINTENANCE OF MAINLINE SURFACE

The Contractor shall be required to maintain the surface with asphalt patching, at the Engineers discretion, while traffic is in a Head-to-Head configuration. The Contractor shall perform this work for the entire length and duration of the project. The contractor shall complete patching operations between the hours of 8:00 PM and 6:00 AM, and within 24 hours notification of an area needing patching. The contractor's plan shall be submitted to the engineer prior to patching operations.

The material used for Maintenance Patching shall conform to Section 320 of the SDDOT Standard Specifications for Asphalt Concrete Composite. Quantity for Maintenance Patching is estimated at 50 tons.

All costs for labor, equipment, and materials for pavement removals and patching to maintain the mainline surface for the length and duration of the project shall be incidental to the contract unit price per ton for Maintenance Patching.

The cost for installing and maintaining traffic control devices, and flagging hours shall be paid for by the corresponding bid items.

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TEMPORARY TRAFFIC CONTROL SURFACING

Included in the estimate of quantities are 5 Temporary Gravel Crossings to be used to maintain traffic to businesses, residences and other locations as directed by the Engineer, see Standard Plate 380.30. An estimated 1,000 tons of Gravel Cushion, Modified and 12.0 MGal of Water for Granular Material will be needed to construct the Temporary Gravel Crossings. All cost to construct and remove the Temporary Gravel Crossings shall be incidental to the contract unit price per each for Temporary Gravel Crossing.

At 9 pipe installation locations, temporary surfacing will be required. An estimated 137 tons of Asphalt Concrete Composite, 140 tons of Gravel Cushion, Modified, 1.7 MGal of Water for Granular Material, and 280 feet of Asphalt Concrete Curb shall be used at these locations as directed by the Engineer. The size of these areas and the quantity of material needed will vary from site to site.

RATES OF MATERIALS

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

SD 44 (MAINLINE)

Sta. 6+05.0 to Sta. 68+53.97

GRAVEL CUSHION, MODIFIED

Crushed Aggregate 210.99 Tons.

Water for Granular Material at the rate of 2.53 M. Gallons.

TABLE OF ADDITIONAL QUANTITIES

Location-Description	Water for Granular Material	Gravel Cushion, Modified	Asphalt Concrete Composite 1 st / 2 nd Lift
	MGal	Ton	Ton
Mainline Transition Areas			
Sta. 4+30.0 to Sta. 6+05.0	4.2	347.1	---
Sta. 68+53.97 to Sta. 70+88.0	5.4	446.4	---
Intersecting Streets			
Sta. 7+57 Rt.	1.4	119.8	---
Sta. 18+94 Rt.	2.6	215.3	46.1 / 36.9
Sta. 24+94.77 Lt.	4.1	341.4	---
Sta. 24+94.77 Rt.	3.2	264.5	54.8 / 43.9
Sta. 36+81 Rt.	4.2	353.7	52.7 / 42.1
Sta. 44+74 Lt.	1.7	140.5	24.9 / 20.0
Sta. 49+19 Lt.	2.7	225.3	51.6 / 41.3
Sta. 52+38 Lt.	2.6	216.0	47.3 / 37.9
Sta. 55+63 Lt.	2.2	183.8	41.9 / 33.5
Sta. 58+78 Lt.	2.5	210.9	47.4 / 38.0
Sta. 62+02 Lt.	1.4	116.3	21.5 / 17.2
Sta. 65+17 Lt.	1.6	133.7	25.5 / 20.4
Sta. 68+37 Lt.	1.9	157.5	30.4 / 24.3
Entrances – SD 44 (Jackson Blvd)			
Sta. 5+59 Lt.	0.1	8.1	1.8
Sta. 7+57 Lt.	0.6	50.6	9.3
Sta. 10+04 Lt.	0.5	38.9	6.4
Sta. 13+15 Rt.	0.4	37.4	4.9
Sta. 15+25 Lt.	1.1	93.5	20.0
Sta. 18+00 Lt.	2.0	169.4	71.3
Sta. 23+26 Lt.	0.5	39.9	15.0
Sta. 26+04 Lt.	0.6	50.7	---
Sta. 26+91 Lt.	0.3	24.8	7.9
Sta. 30+13 Lt.	0.1	11.0	---
Sta. 32+81 Lt.	0.1	9.3	1.5
Sta. 33+78 Lt.	0.1	8.9	1.7
Sta. 34+68 Lt.	0.3	22.6	8.4
Sta. 35+62 Lt.	0.8	67.0	---
Sta. 36+28 Lt.	0.4	34.0	---
Sta. 36+77 Lt.	0.2	20.8	---

TABLE OF ADDITIONAL QUANTITIES (CONTINUED)

Location-Description	Water for Granular Material	Gravel Cushion, Modified	Asphalt Concrete Composite 1 st / 2 nd Lift
	MGal	Ton	Ton
Entrances – SD 44 (Jackson Blvd)			
Sta. 38+06 Lt.	0.2	16.7	---
Sta. 38+81 Lt.	0.4	29.4	---
Sta. 39+98 Lt.	0.2	19.7	---
Sta. 40+94 Lt.	0.3	22.0	5.5
Sta. 42+55 Lt.	0.3	21.5	5.3
Sta. 46+75 Lt.	1.0	79.6	---
Sta. 47+74 Lt.	0.1	11.0	2.0
Sta. 48+31 Lt.	0.2	15.4	---
Sta. 49+19 Lt. – Ah.	0.4	36.4	---
Sta. 51+50 Lt.	0.1	9.6	---
Sta. 53+82 Lt.	0.3	22.6	---
Sta. 54+00 Rt.	---	3.7	---
Sta. 54+53 Lt.	0.3	25.2	---
Sta. 55+64 Rt.	0.3	25.4	5.1
Sta. 57+10 Lt.	0.2	15.9	---
Sta. 57+40 Lt.	0.1	9.2	---
Sta. 57+98 Lt.	0.1	10.0	---
Sta. 60+42 Lt.	0.3	23.3	---
Sta. 61+00 Rt.	0.2	18.3	3.7
Sta. 65+17 Lt.-Ah.	0.1	6.8	---
Sta. 67+40 Lt.	0.1	12.5	---
Sta. 68+51 Lt. – Ah.	0.1	4.7	---
Entrances – Canyon Lake Drive			
Sta. 2+71 Rt.	0.3	22.3	6.8
Sta. 2+71 Lt.	0.3	25.9	8.9
Sta. 3+36 Lt.	0.7	55.2	22.0
Sta. 3+70 Rt.	0.1	7.5	---
Existing to New Pavement Tie-ins *	16.3	1,360.0	679.0
TOTAL	73.0	6,084.5	1,686.1

Intersecting Streets: 9" PCC Pavement has 5" of Gravel Cushion, Modified and 4.5" Asphalt Concrete (2.5" and 2" lifts) has 9.5" of Gravel Cushion, Modified.

Entrances: 9" PCC Pavement has 5" of Gravel Cushion, Modified, 6" PCC Approach Pavement has 4" of Gravel Cushion, Modified, 3" Asphalt Concrete has 7" of Gravel Cushion, Modified, and granular material only has 10" of Gravel Cushion, Modified.

* 6" Asphalt Concrete Composite and 10" Gravel Cushion, Modified shall be used at locations directed by the Engineer.

TYPICAL IN PLACE SECTIONS

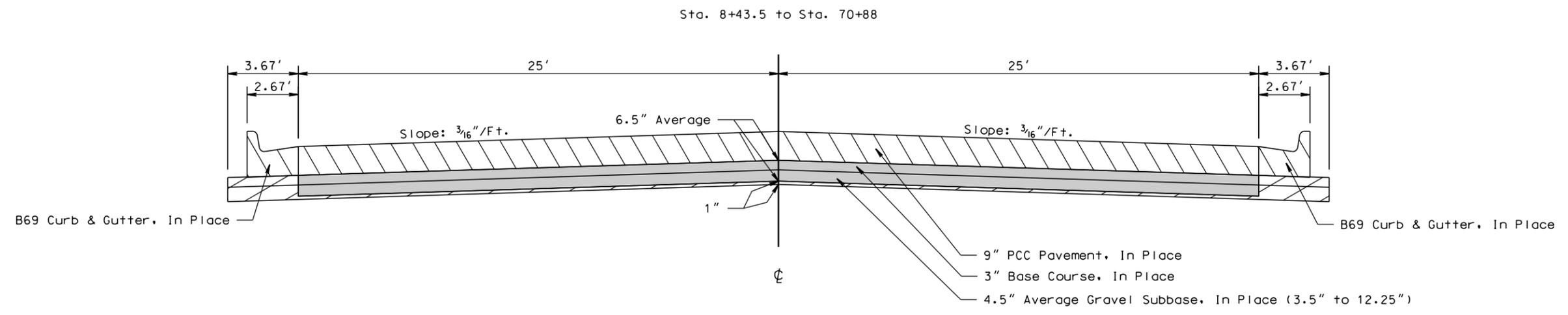
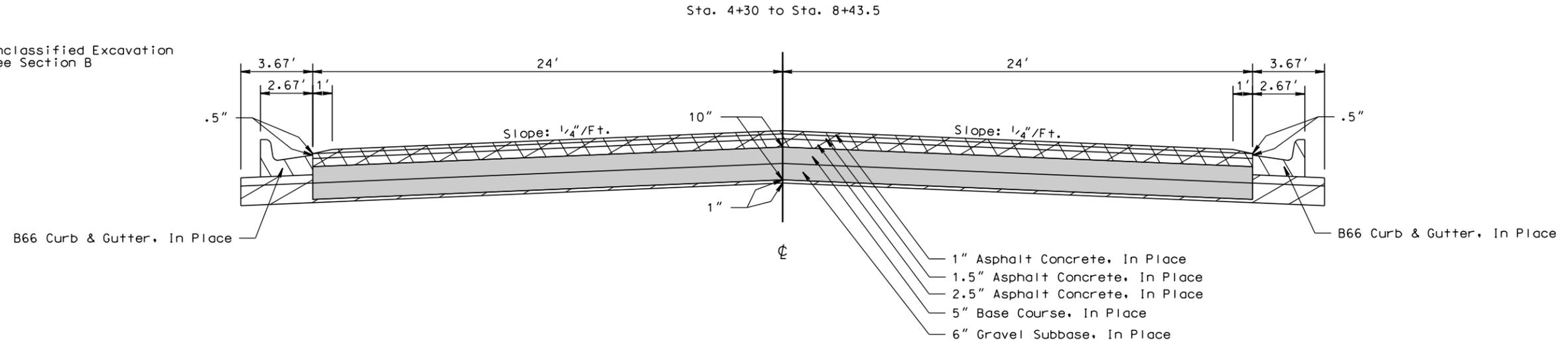
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F8	F34

Plotting Date: 05/13/2014

PLOT SCALE - 1+6.19298

PLOT NAME - 2

-  Remove Concrete Pavement
See Section B
-  Remove Asphalt Concrete Pavement
See Section B
-  Remove Granular Material
-  Unclassified Excavation
See Section B



PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 6925.DGN

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F9	F34

Plotting Date: 05/13/2014

Revised: 5 May 14, RML

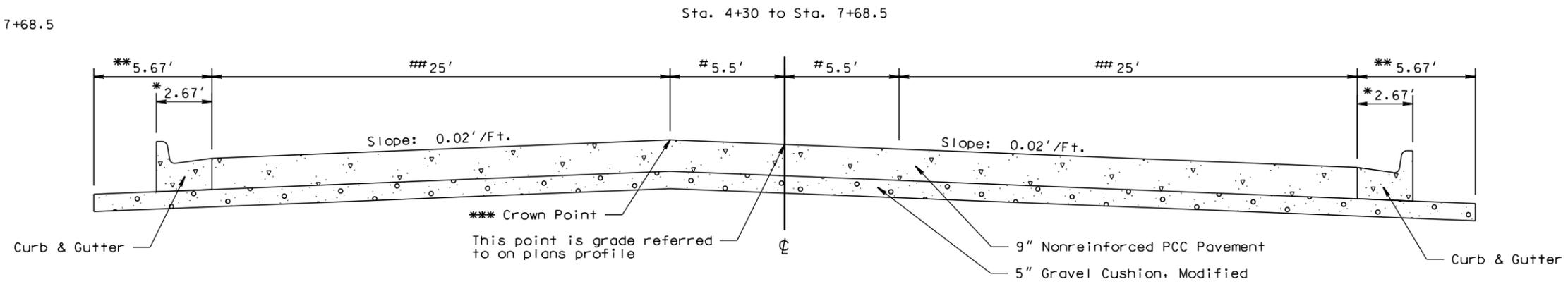
PLOT SCALE - 1+6.19298

PLOT NAME - 3

Transitions:

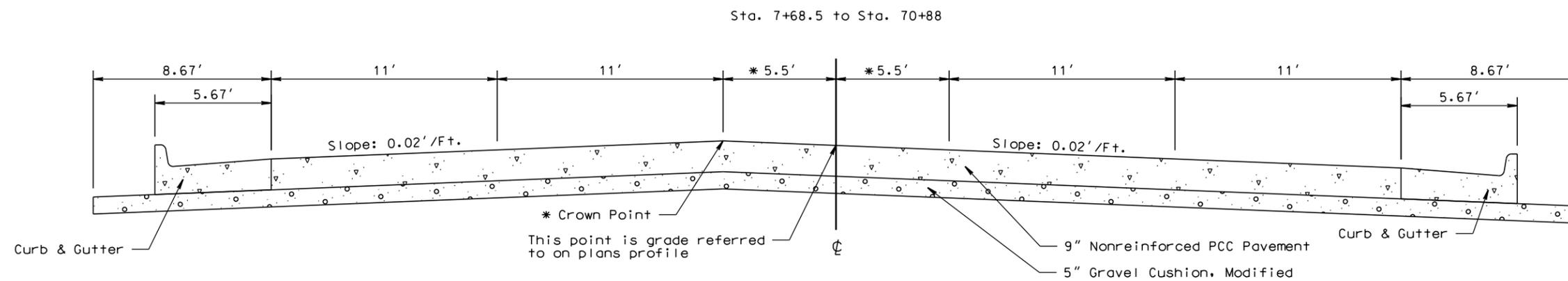
Sta. 4+30 to Sta. 6+05
 *** 0' to 5.5' Lt.
 # 6' to 5.5'
 ## 18' to 25'

Sta. 7+34.5 to Sta. 7+68.5
 * 2.67' to 5.67'
 ** 5.67' to 8.67'
 ## 25' to 22'



Transitions:

Sta. 68+53.97 to Sta. 70+88
 * 5.5 to 0'



PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 6925.DGN

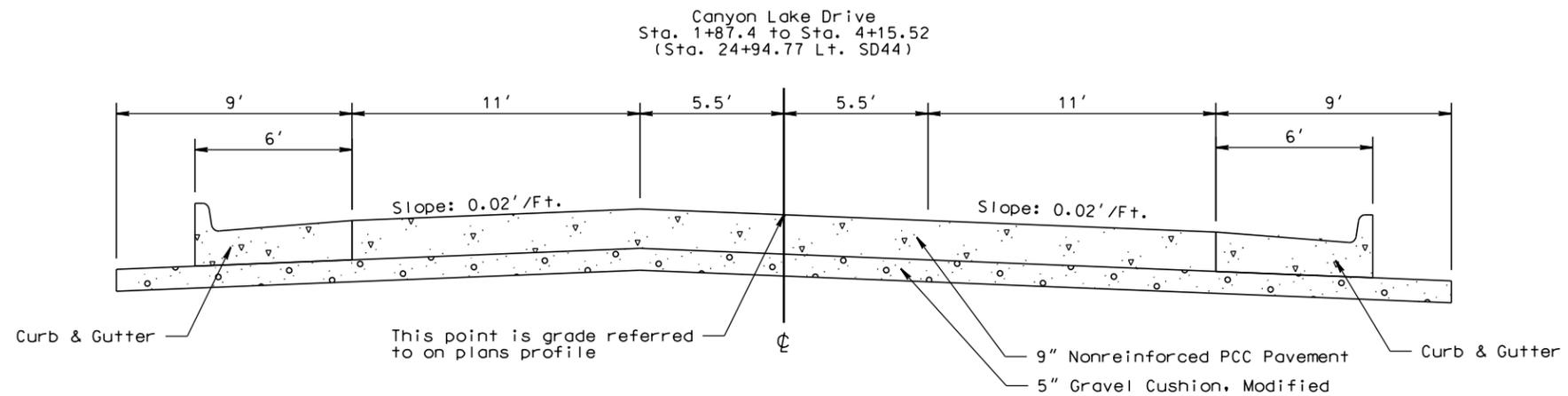
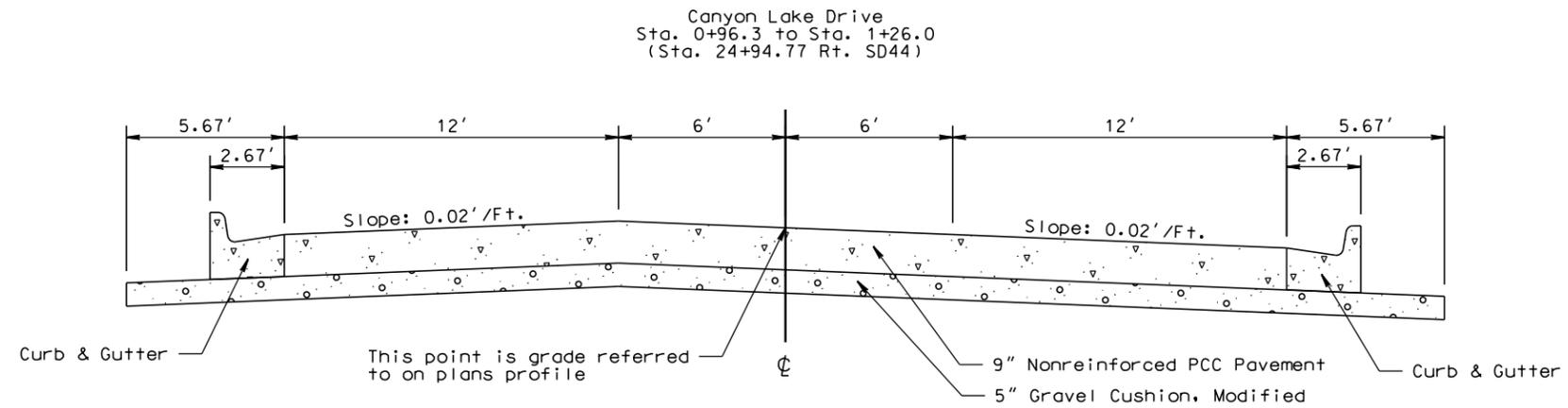
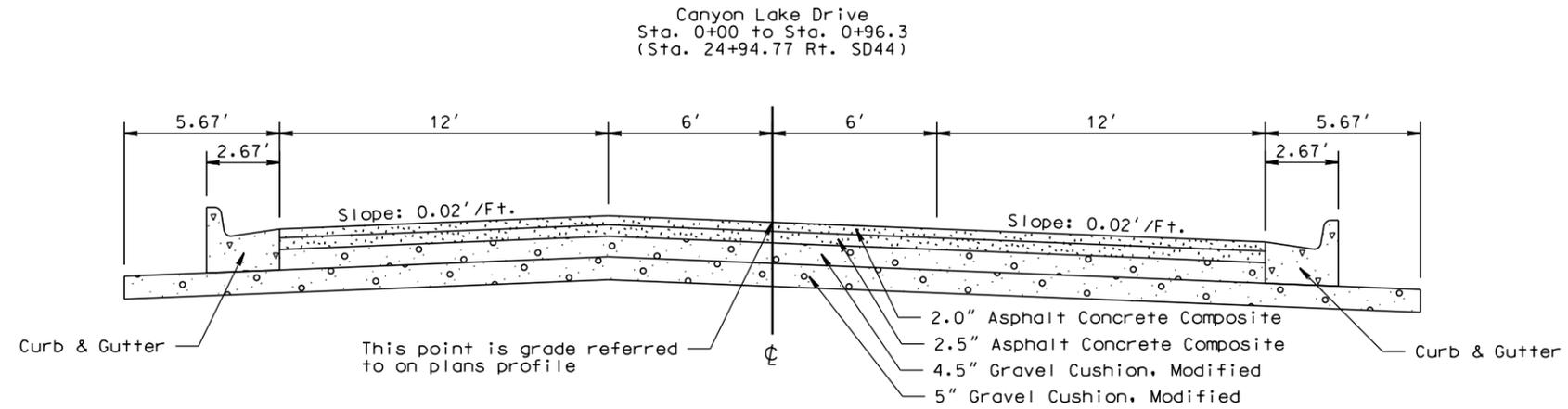
TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F10	F34

Plotting Date: 05/13/2014

PLOT SCALE - 1+6.19298

PLOT NAME - 4



PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 6925.DGN

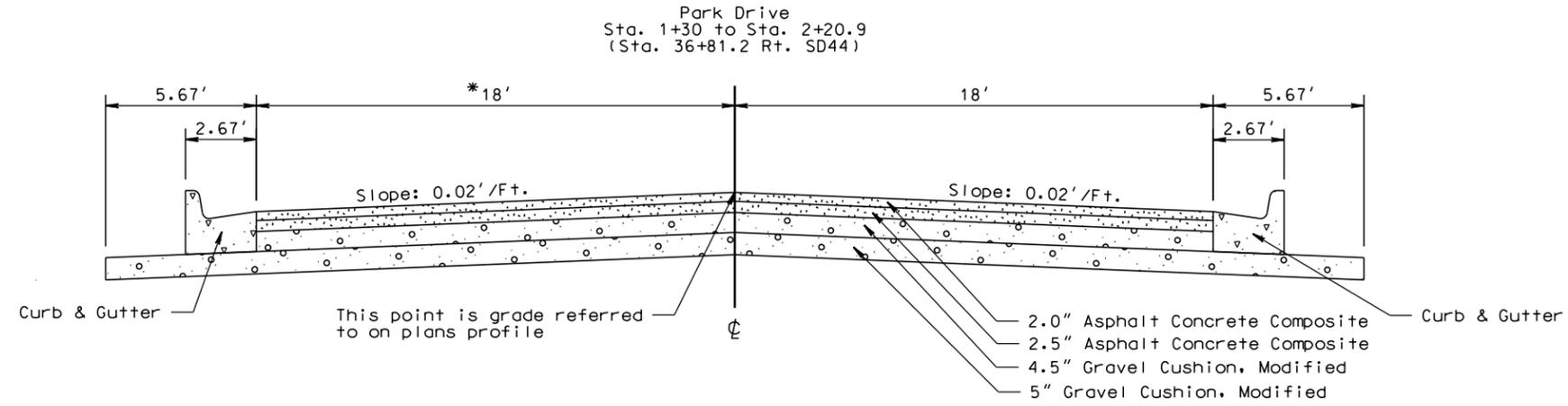
TYPICAL SURFACING SECTIONS

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Plotting Date: 05/13/2014

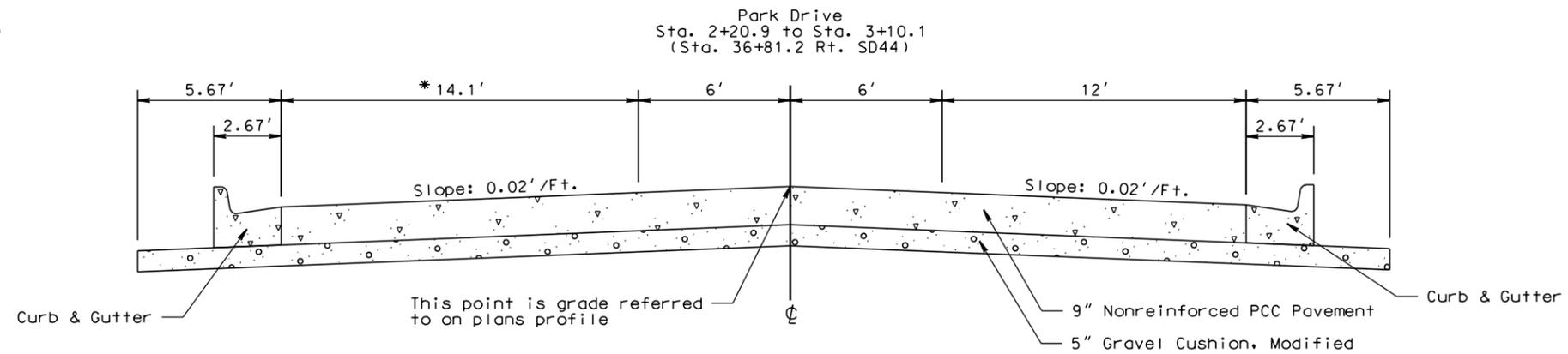
Transitions:

Sta. 1+78.1 to Sta. 2+20.9 (Park Dr.)
* 18.0' to 20.4'



Transitions:

Sta. 2+20.9 to Sta. 3+10.1 (Park Dr.)
* 14.4' to 26.9'



PCC PAVEMENT JOINT LAYOUT

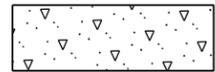
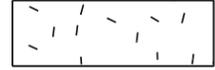
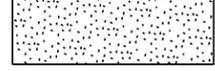
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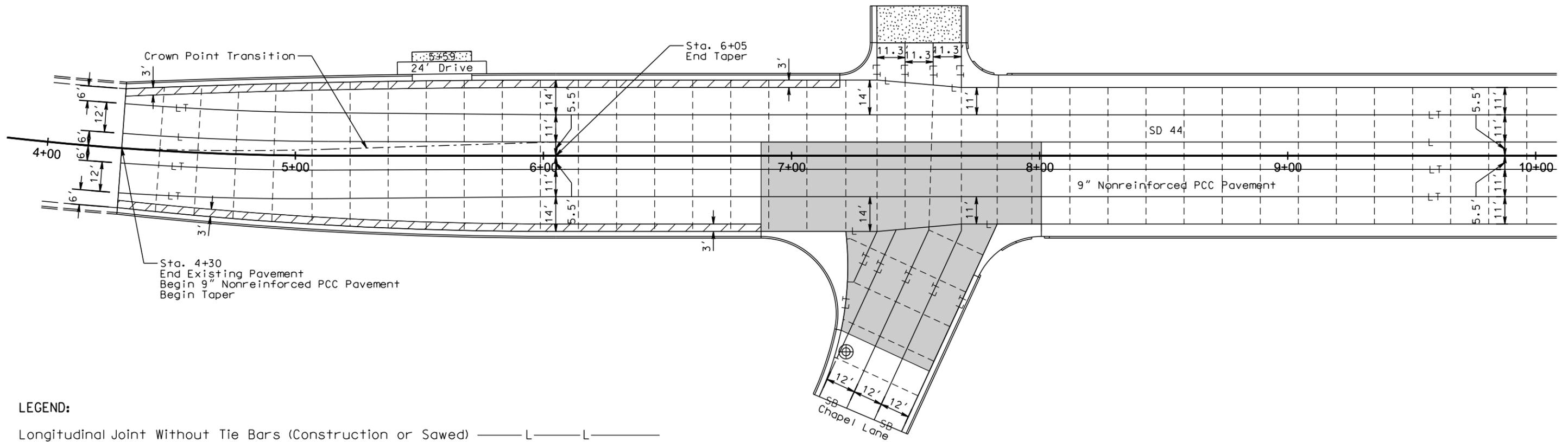
Plotting Date: 05/13/2014

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Sheet 1 of 12 Sheets

PLOT SCALE - 1:40

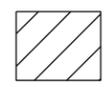
PLOT NAME - 6

-  6" Driveway Pavement
-  4.5" Asphalt Concrete Composite (2 Lifts)
-  3" Asphalt Concrete Composite
-  Gravel Cushion, Modified

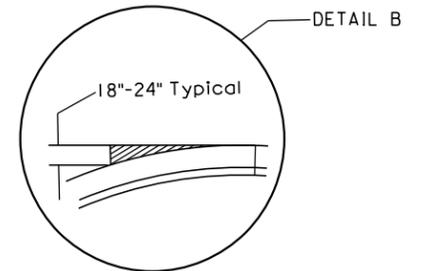
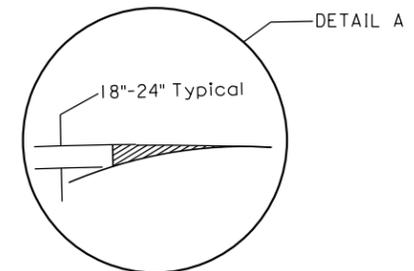


LEGEND:

- Longitudinal Joint Without Tie Bars (Construction or Sawed) — L — L —
- Longitudinal Joint With Tie Bars (Construction or Sawed) — LT — LT —
- Steel Bar Installation in Longitudinal or Transverse Joint — SB — SB —
- Transverse Contraction Joint - - - - -
- 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.

 Fast Track Concrete



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F13	F34

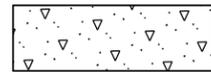
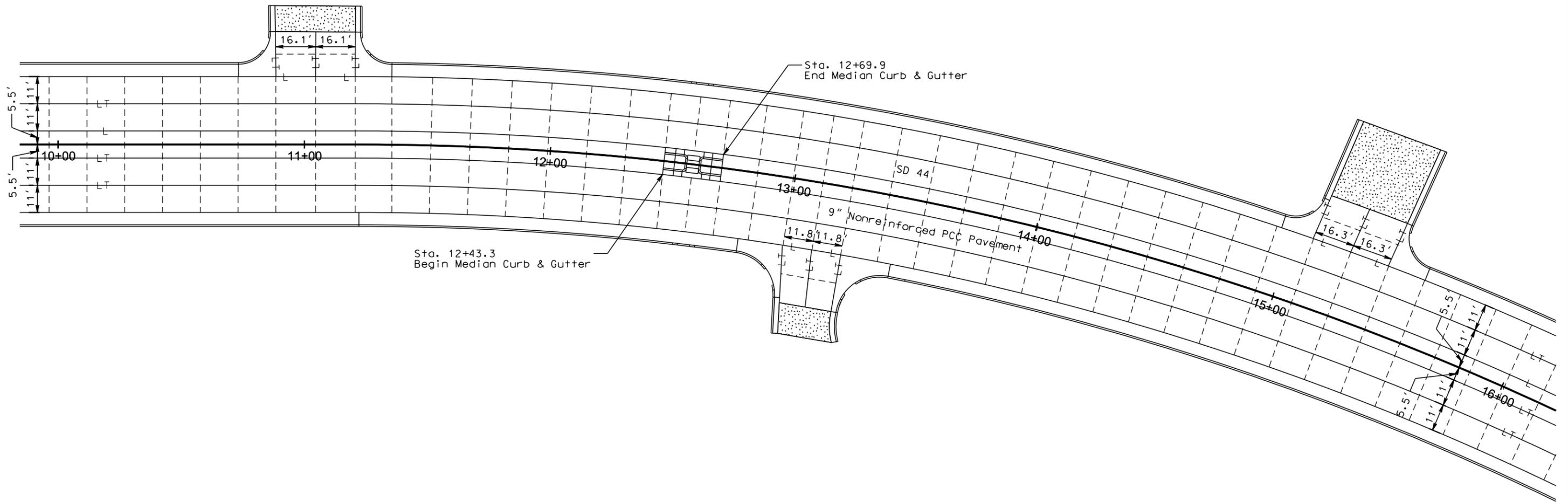
Plotting Date: 05/13/2014

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Sheet 2 of 12 Sheets



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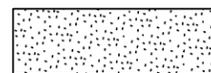
PLOT NAME - 7



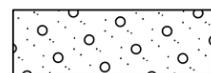
6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



Gravel Cushion, Modified

PLOTTED FROM - TRPR16032

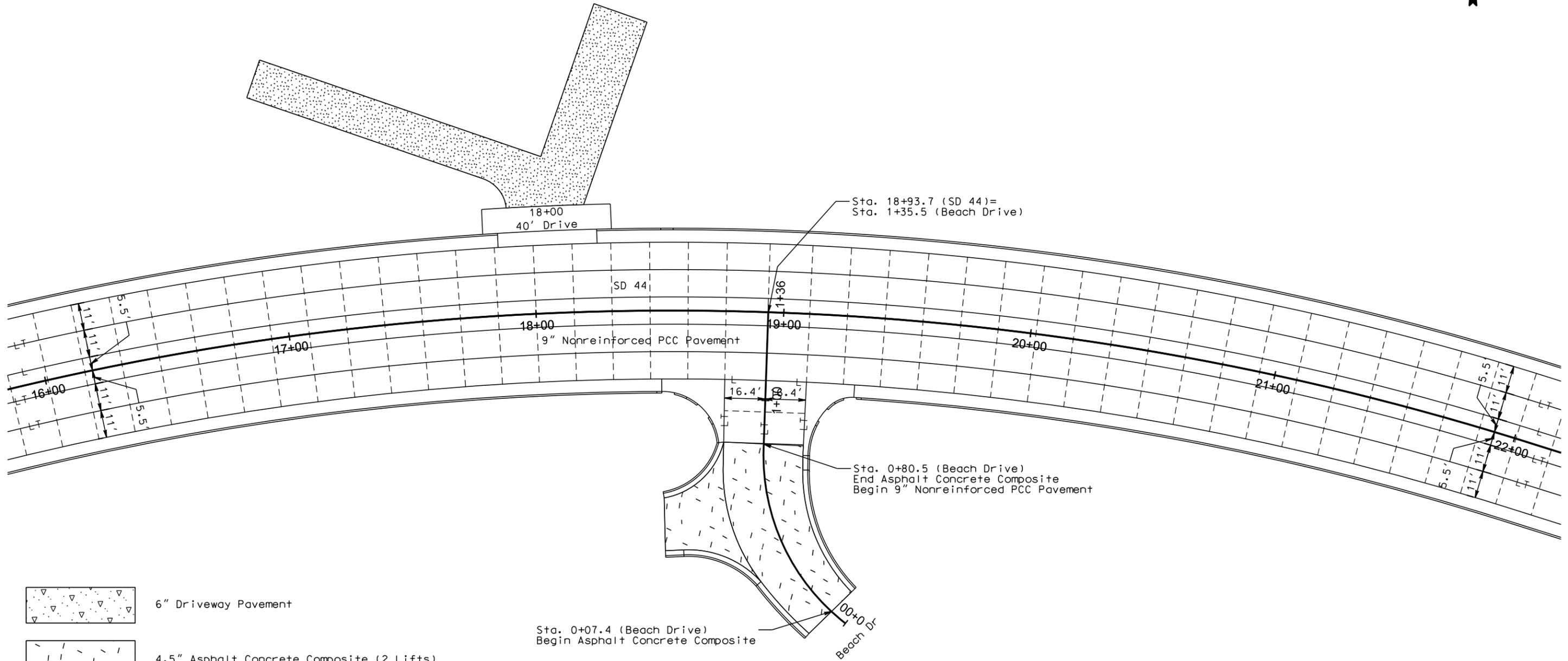
FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F14	F34

Plotting Date: 05/13/2014

Scale 1 Inch = 40 Feet
Sheet 3 of 12 Sheets



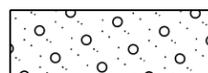
6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



Gravel Cushion, Modified

PLOT SCALE - 1:40

PLOTTED FROM - IRPR16032

PLOT NAME - 8

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F16	F34

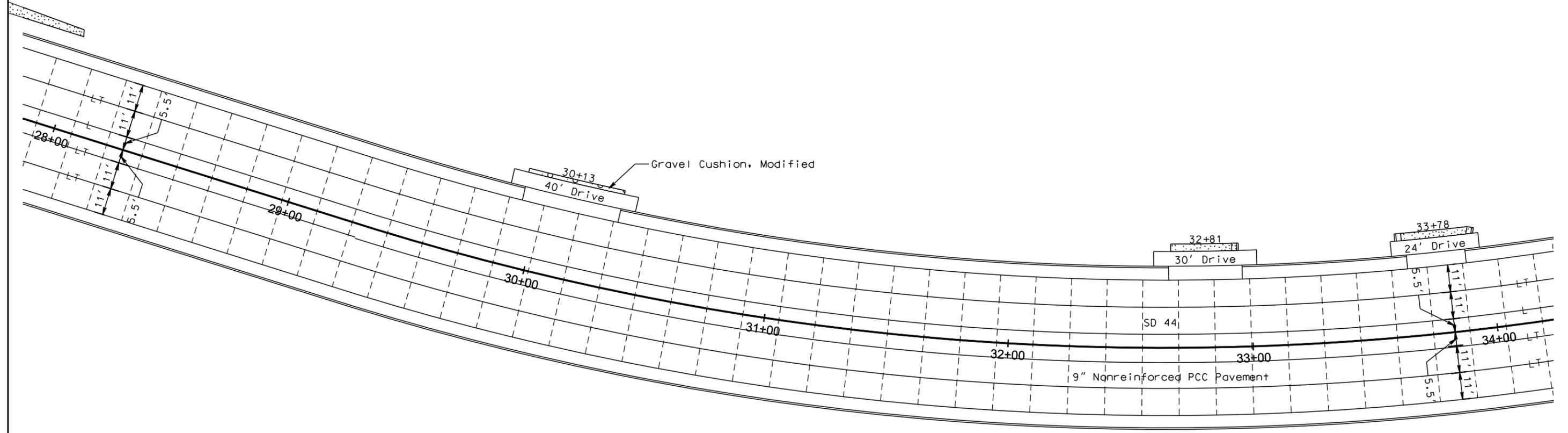
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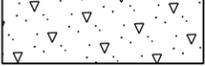
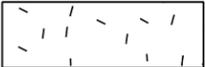
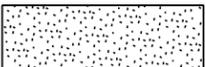
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Sheet 5 of 12 Sheets



PLOT SCALE - 1"=40'

PLOT NAME - 10



-  6" Driveway Pavement
-  4.5" Asphalt Concrete Composite (2 Lifts)
-  3" Asphalt Concrete Composite
-  Gravel Cushion, Modified

PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F17	F34

Plotting Date: 05/13/2014

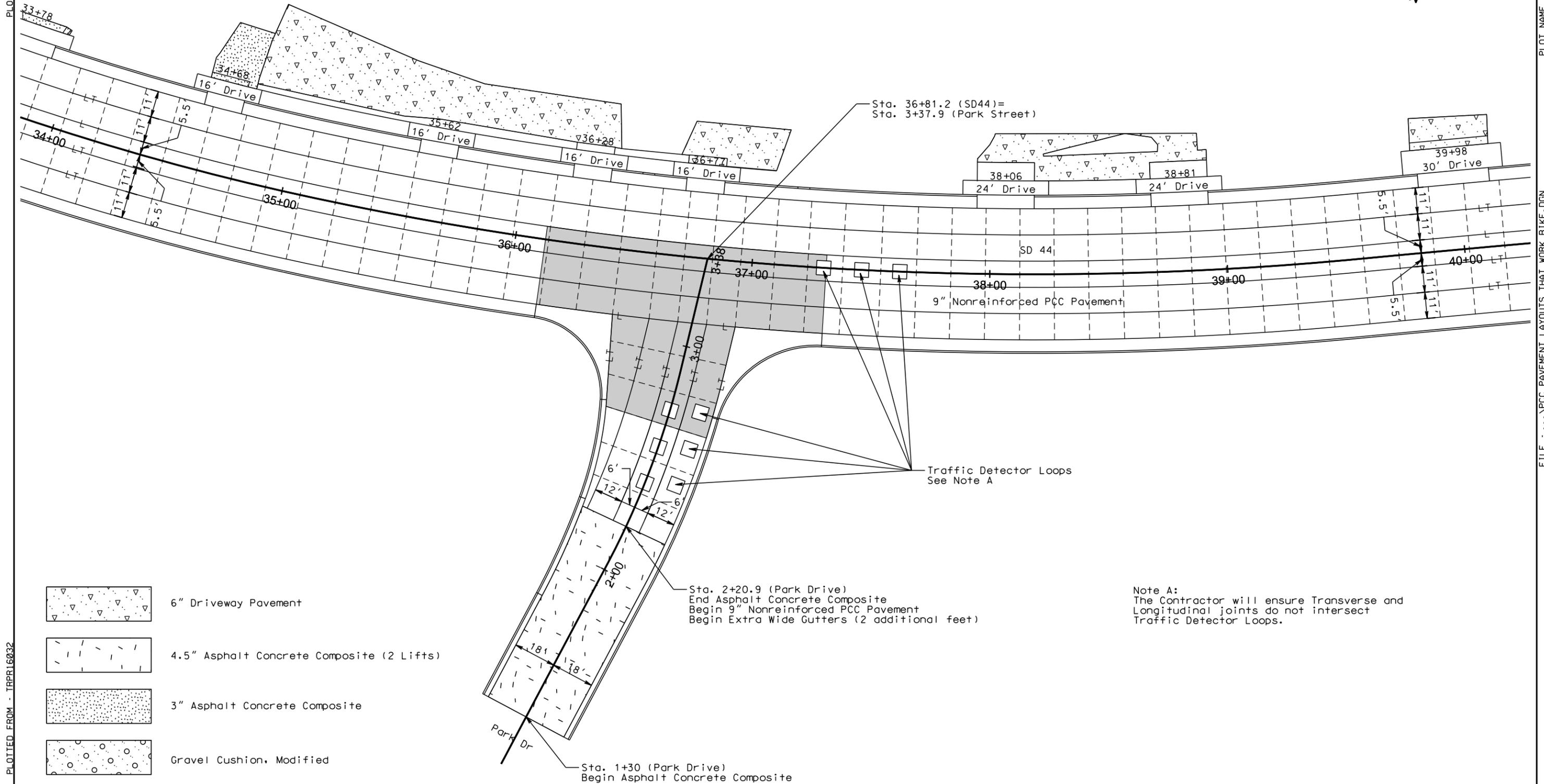
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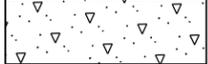
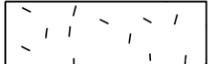
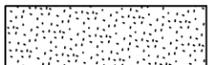


PLOT SCALE - 1:40

PLOT NAME - 11

FILE ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN



-  6" Driveway Pavement
-  4.5" Asphalt Concrete Composite (2 Lifts)
-  3" Asphalt Concrete Composite
-  Gravel Cushion, Modified

Traffic Detector Loops
See Note A

Sta. 2+20.9 (Park Drive)
End Asphalt Concrete Composite
Begin 9" Nonreinforced PCC Pavement
Begin Extra Wide Gutters (2 additional feet)

Sta. 1+30 (Park Drive)
Begin Asphalt Concrete Composite

Note A:
The Contractor will ensure Transverse and Longitudinal joints do not intersect Traffic Detector Loops.

PLOTTED FROM - TRPR16032

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F18	F34

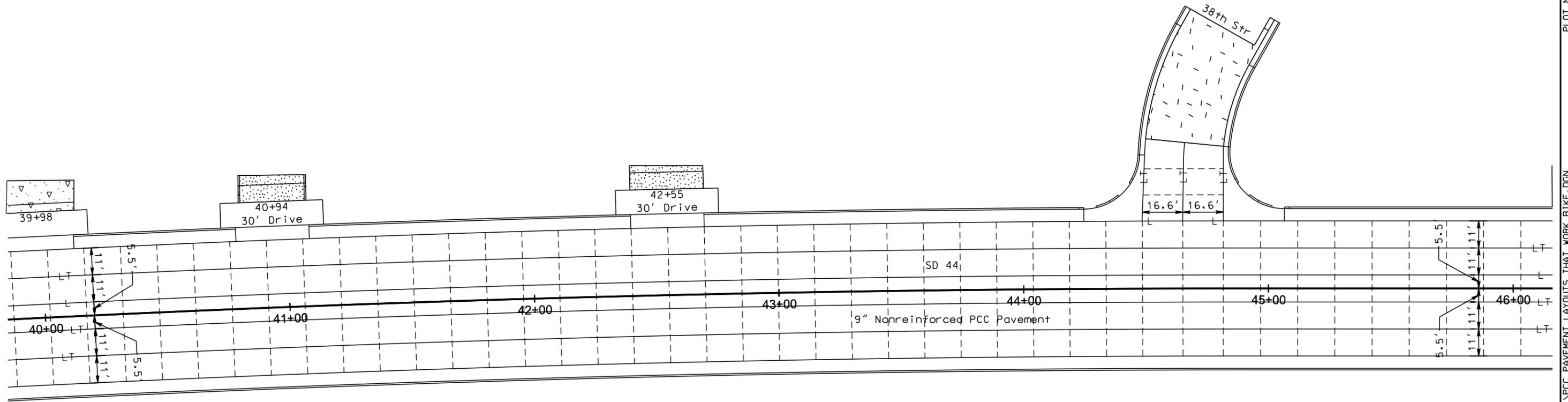
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Scale 1 Inch = 40 Feet
Sheet 7 of 12 Sheets

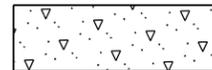


PLOT SCALE - 1:40

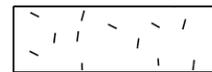
PLOT NAME - 12



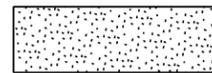
FILE ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN



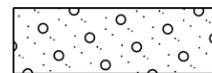
6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



Gravel Cushion, Modified

PLOTTED FROM - IRPR16032

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F19	F34

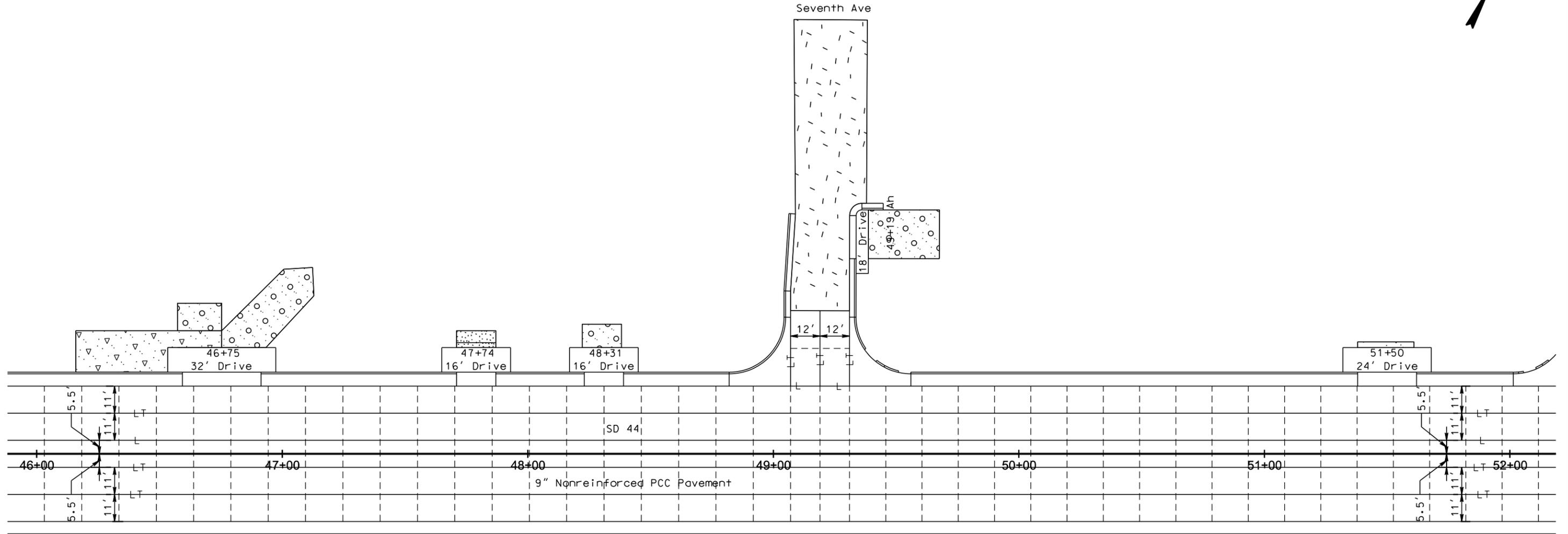
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Sheet 8 of 12 Sheets

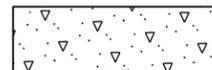


PLOT SCALE - 1:40

PLOT NAME - 13



FILE ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN



6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



Gravel Cushion, Modified

PLOTTED FROM - TRPR16032

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F20	F34

Plotting Date: 05/13/2014

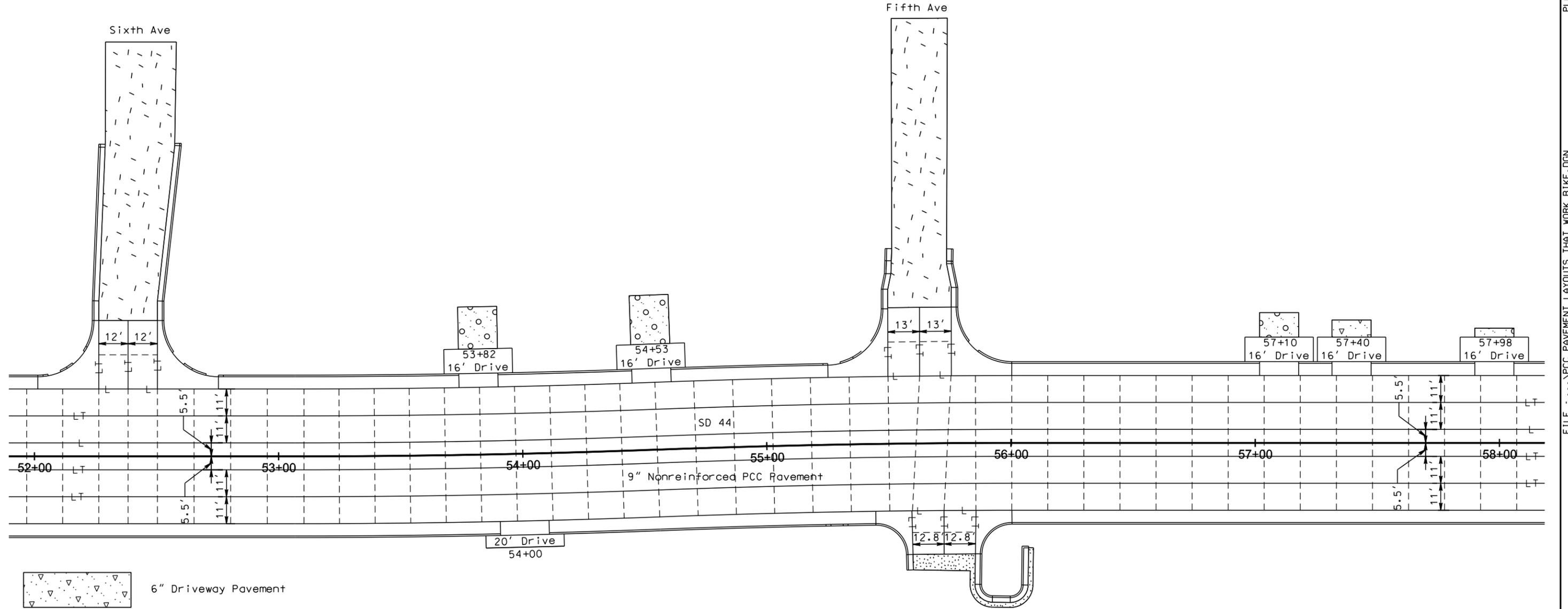
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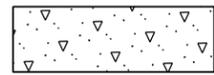
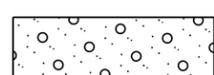
Scale 1 Inch = 40 Feet
Sheet 9 of 12 Sheets



PLOT SCALE - 1:40

PLOT NAME - 14



-  6" Driveway Pavement
-  4.5" Asphalt Concrete Composite (2 Lifts)
-  3" Asphalt Concrete Composite
-  Gravel Cushion, Modified

PLOTTED FROM - IRPR16032

FILE ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F21	F34

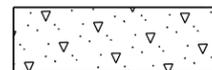
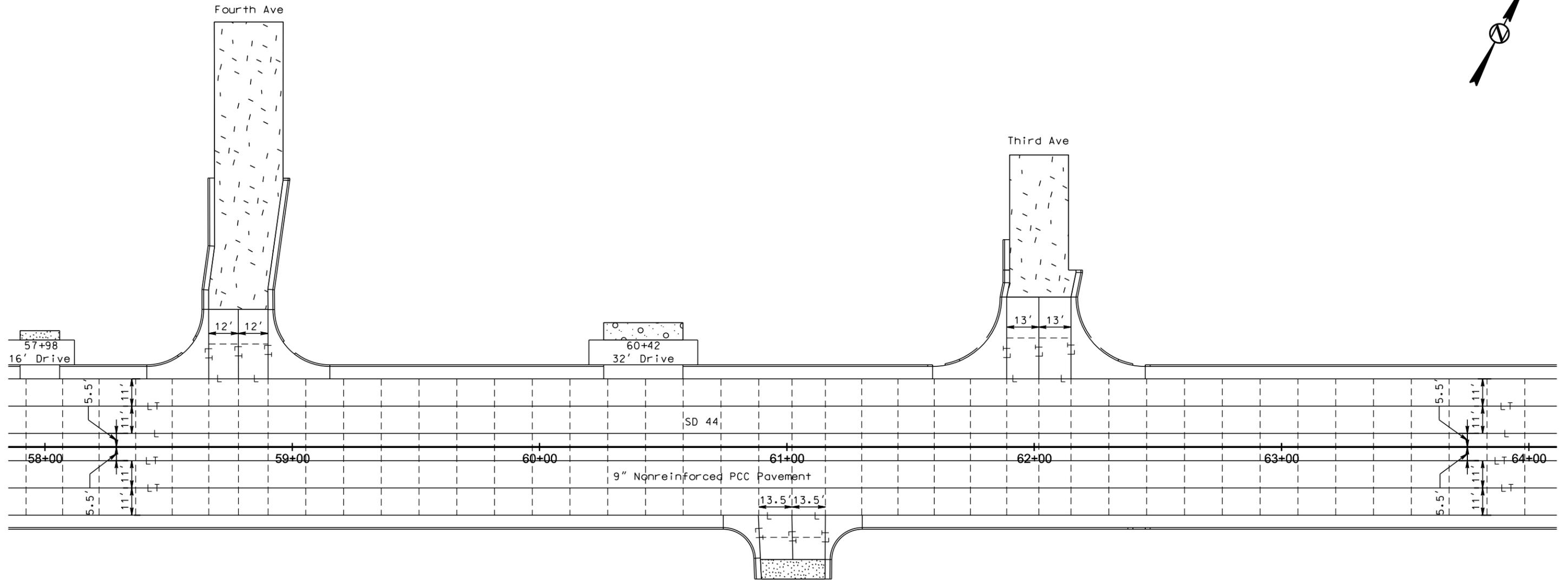
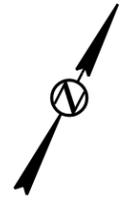
Plotting Date: 05/13/2014

Revised: 5 May 14, RML

Scale 1 Inch = 40 Feet
Sheet 10 of 12 Sheets

PLOT SCALE - 1:40

PLOT NAME - 15



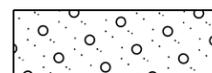
6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



Gravel Cushion, Modified

PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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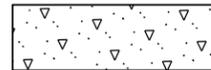
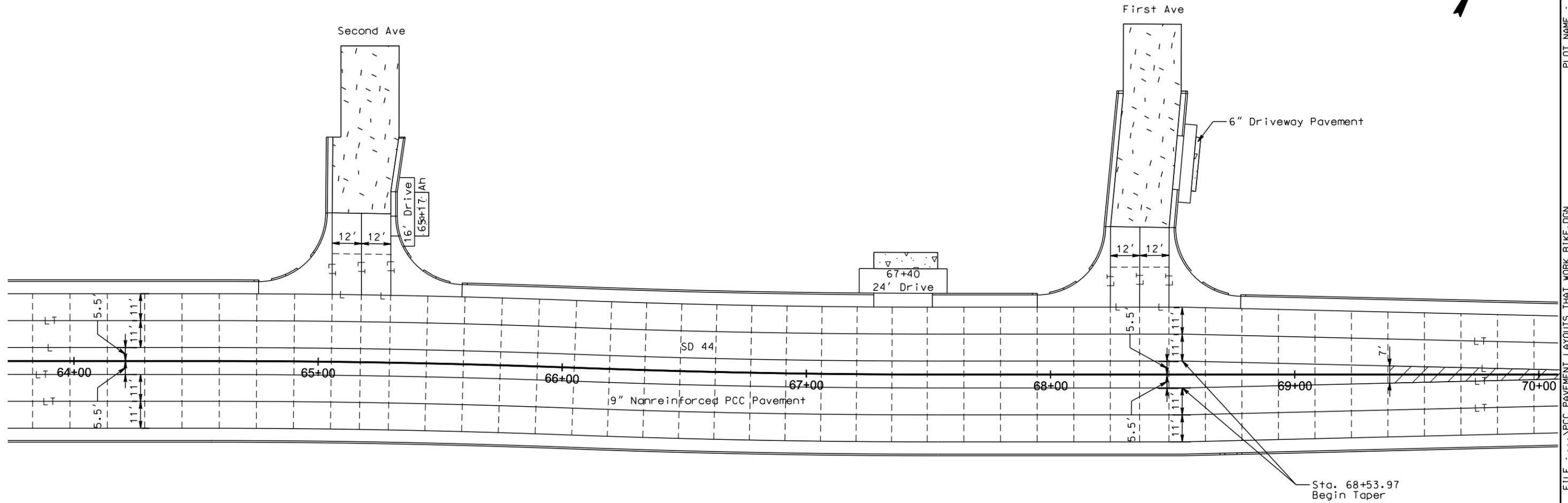
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Sheet 11 of 12 Sheets

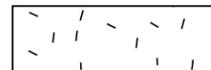


PLOT SCALE - 1:40

PLOT NAME - 16



6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



Gravel Cushion, Modified

PLOTTED FROM - IRPR16032

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F23	F34

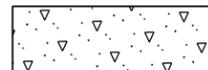
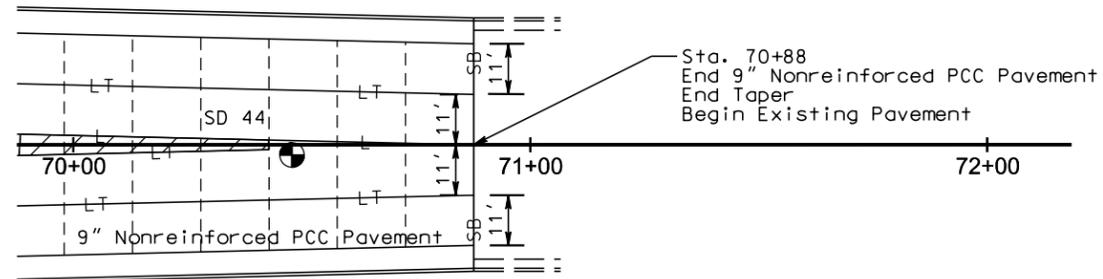
Plotting Date: 05/13/2014

Scale 1 Inch = 40 Feet
Sheet 12 of 12 Sheets



PLOT SCALE - 1:40

PLOT NAME - 17



6" Driveway Pavement



4.5" Asphalt Concrete Composite (2 Lifts)



3" Asphalt Concrete Composite



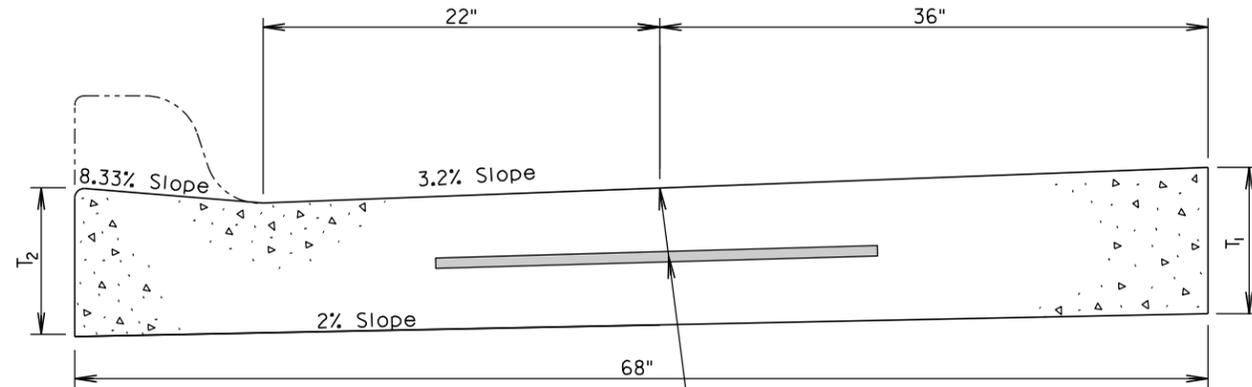
Gravel Cushion, Modified

PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUTS THAT WORK BIKE.DGN

DETAILS FOR SPECIAL TYPE P CONCRETE GUTTER

Sta. 7+68.5 to Sta. 70+88 SD 44

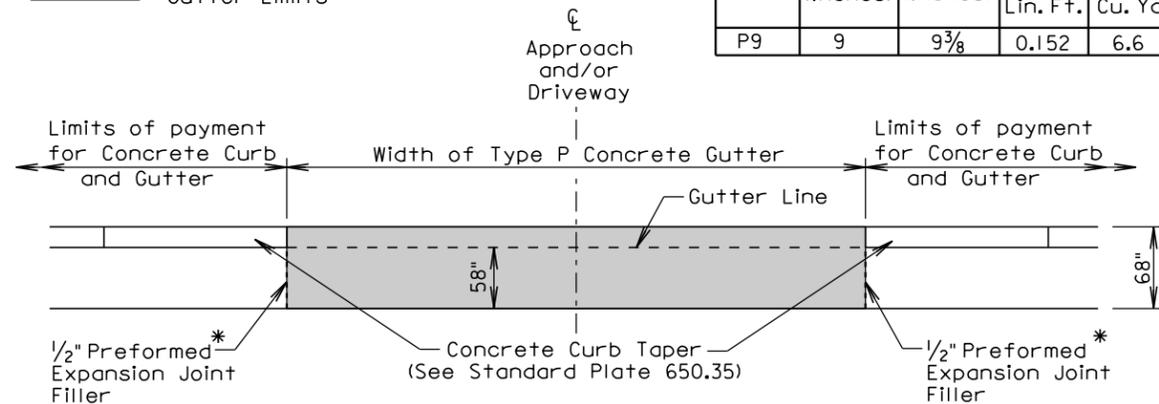


TRANSVERSE SECTION

If a joint is placed at this location, Tie bars shall be placed in accordance with a longitudinal joint with tie bar.

■ Type P Concrete Gutter Limits

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
P9	9	9 ³ / ₈	0.152	6.6



PLAN VIEW

* Joint will not be needed if concrete curb & gutter and type P concrete gutter is placed at the same time.

GENERAL NOTES:

The concrete for the Type P Concrete Gutter shall comply with the requirements of the Standard Specifications for Class M6 Concrete.

When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

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

When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter shall be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

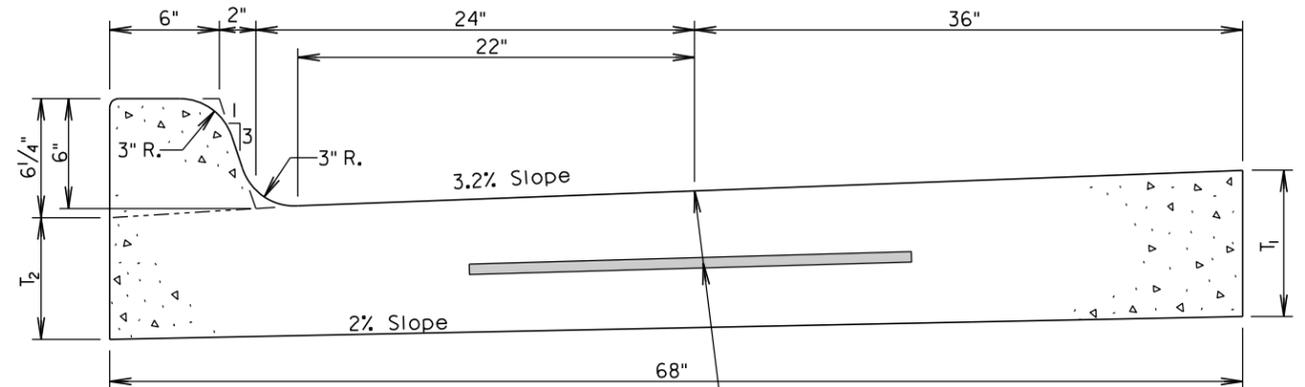
When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter shall be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F24	F34

Plotting Date: 05/13/2014

DETAILS FOR SPECIAL TYPE B CONCRETE CURB AND GUTTER

Sta. 7+68.5 to Sta. 70+88 SD 44



If a joint is placed at this location, Tie bars shall be placed in accordance with a longitudinal joint with tie bar.

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B69	9	8 ¹ / ₈	0.161	6.2

GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

A 1/2" preformed expansion joint filler shall be placed transversely in the curb and gutter at the following locations:

1. At each junction between the radius return of curb and gutter and curb and gutter which is parallel to the project centerline.
2. At each junction between new curb and gutter and existing curb and gutter.

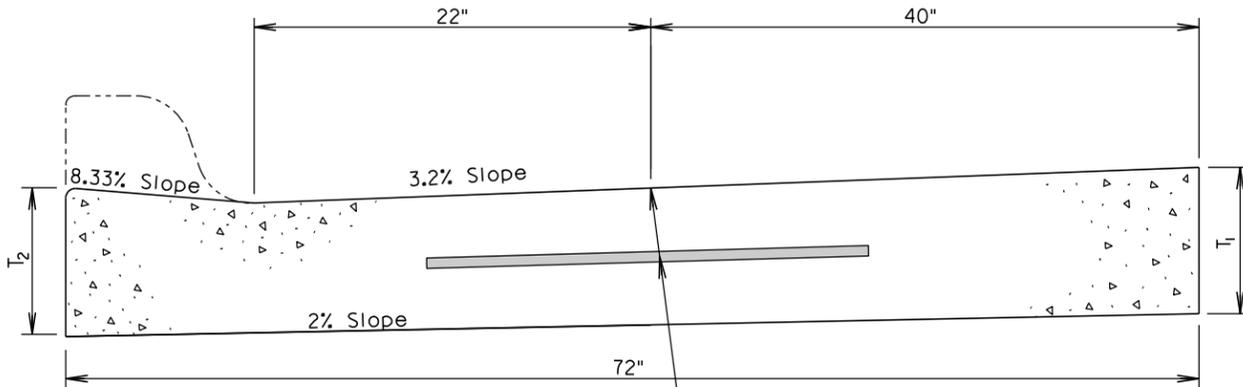
Transverse contraction joints shall be constructed at 10' intervals in the concrete curb and gutter except when the concrete curb and gutter is constructed adjacent to mainline PCC pavement. When concrete curb and gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint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

When concrete curb and gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete curb and gutter shall be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

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

DETAILS FOR SPECIAL TYPE P CONCRETE GUTTER

Sta. 1+87.4 to Sta. 4+15.52 Canyon Lake Drive

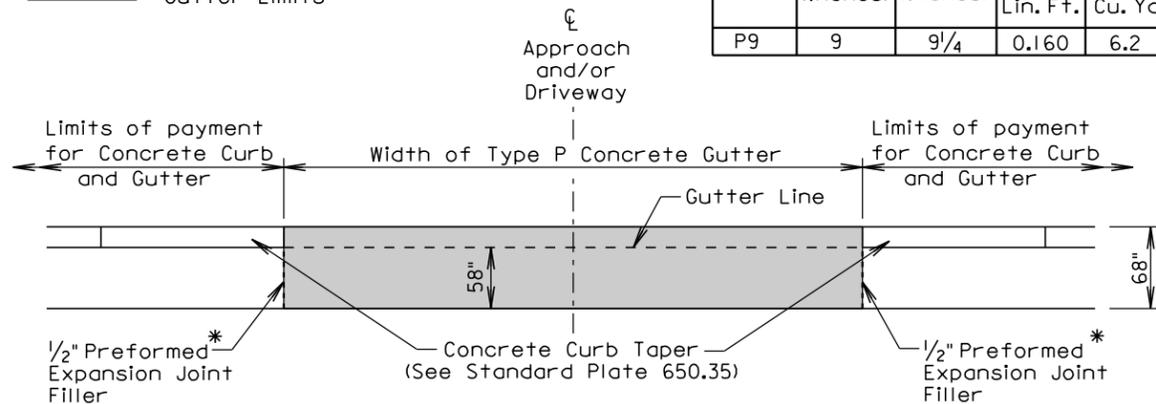


TRANSVERSE SECTION

If a joint is placed at this location, Tie bars shall be placed in accordance with a longitudinal joint with tie bar.

Type P Concrete Gutter Limits

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
P9	9	9 1/4	0.160	6.2



PLAN VIEW

* Joint will not be needed if concrete curb & gutter and type P concrete gutter is placed at the same time.

GENERAL NOTES:

The concrete for the Type P Concrete Gutter shall comply with the requirements of the Standard Specifications for Class M6 Concrete.

When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

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

When concrete gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete gutter shall be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

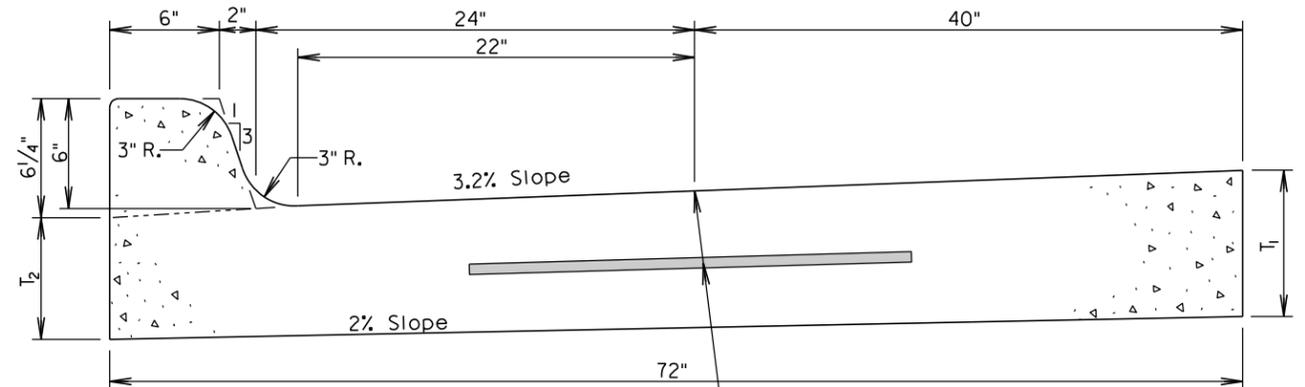
When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter shall be 1 1/2 inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is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

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40		

Plotting Date: 05/13/2014

DETAILS FOR SPECIAL TYPE B CONCRETE CURB AND GUTTER

Sta. 1+87.4 to Sta. 4+15.52 Canyon Lake Drive



If a joint is placed at this location, Tie bars shall be placed in accordance with a longitudinal joint with tie bar.

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B69	9	8 1/8	0.170	5.9

GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment shall be by one of the methods shown on Standard Plate 380.11.

A 1/2" preformed expansion joint filler shall be placed transversely in the curb and gutter at the following locations:

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

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

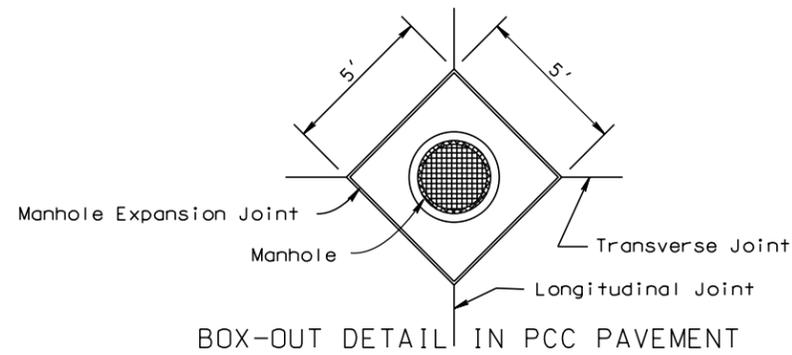
When concrete curb and gutter is placed monolithically with mainline PCC pavement, the transverse contraction joints in the concrete curb and gutter shall be sawed and sealed the same as the transverse contraction joints in the mainline PCC pavement.

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

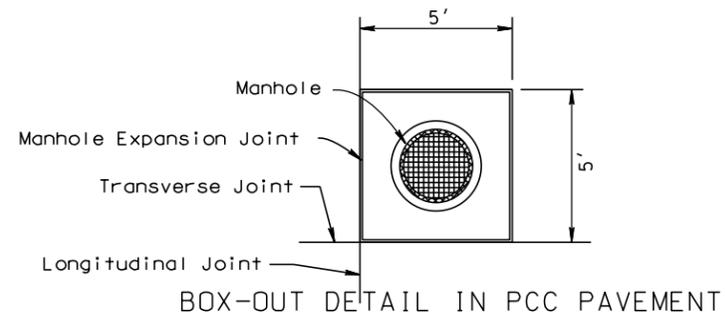
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F26	F34

Plotting Date: 05/13/2014

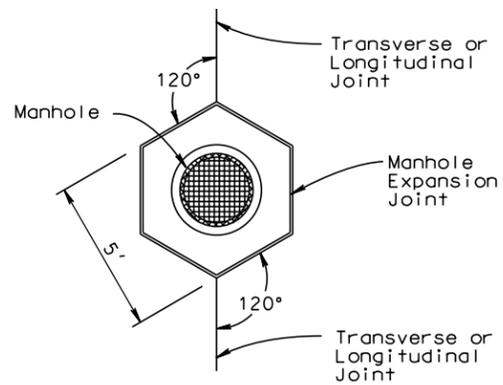
MANHOLE BOX - OUT DETAILS



Where the utility access is intersected by the longitudinal and transverse joints

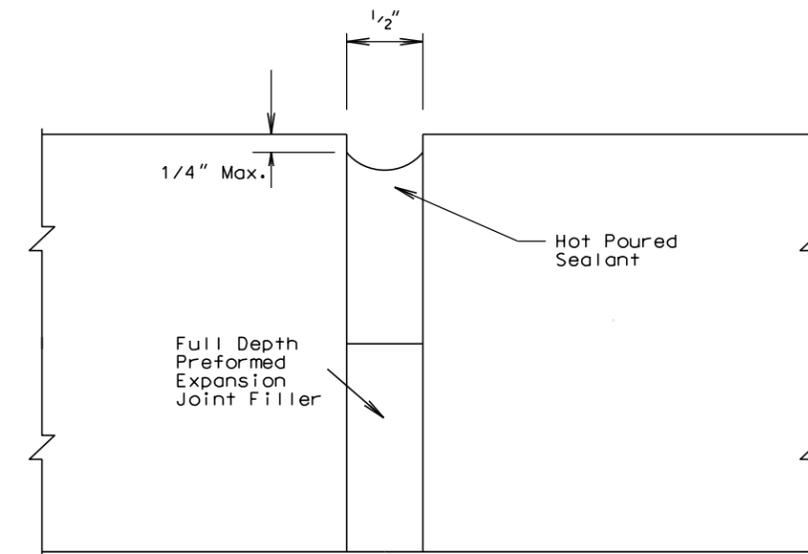


Where the utility access is offset from the longitudinal and transverse joints



Where no Longitudinal or Transverse joints are present or at Longitudinal or Transverse joint.

MANHOLE EXPANSION JOINT DETAIL

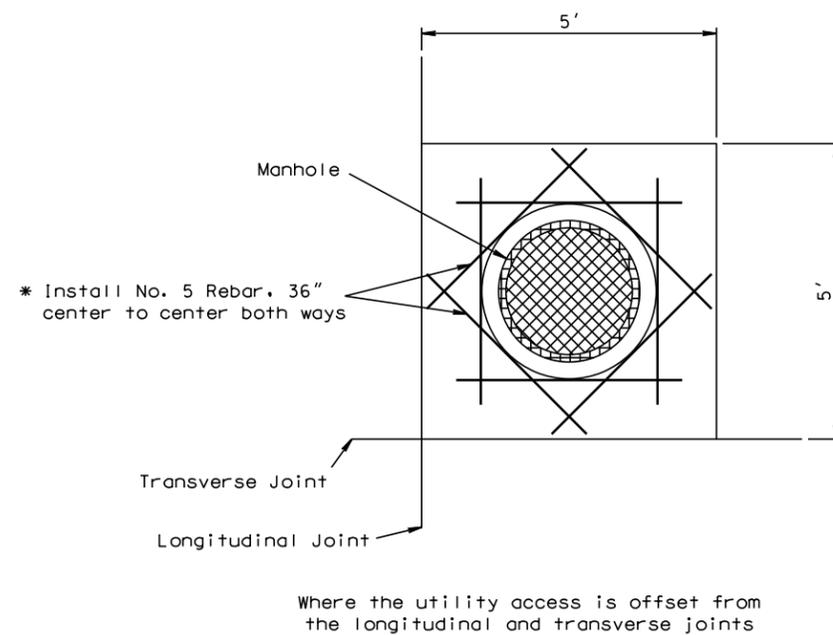
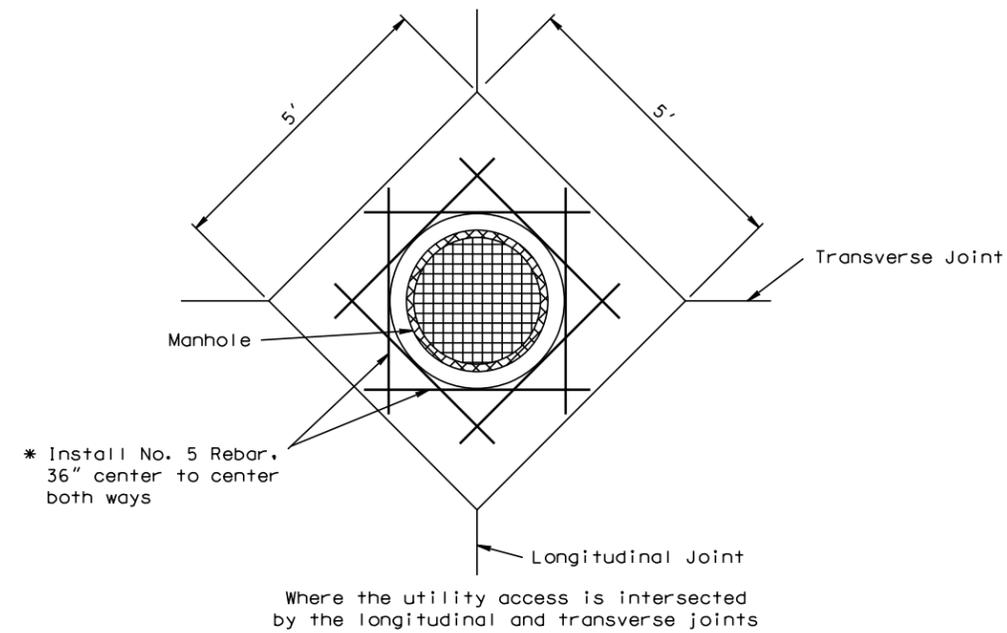


STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	P 0044(149)40 & P 0044(00)40	F27	F34

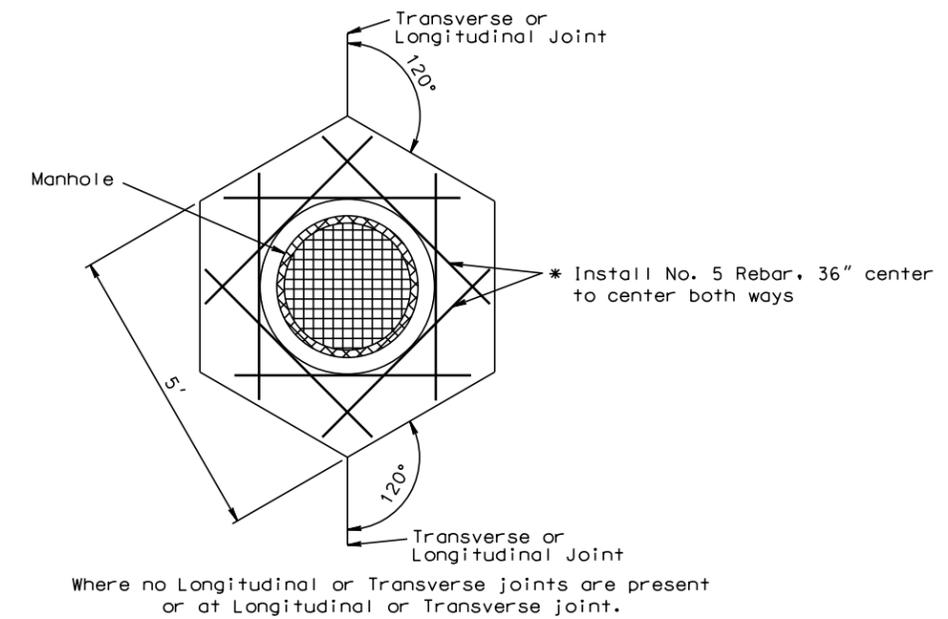
Plotting Date: 05/13/2014

MANHOLE BOX - OUT DETAILS

REBAR LAYOUTS IN PCC PAVEMENT WITH BOX-OUTS



REBAR LAYOUT IN PCC PAVEMENT WITH BOX-OUTS

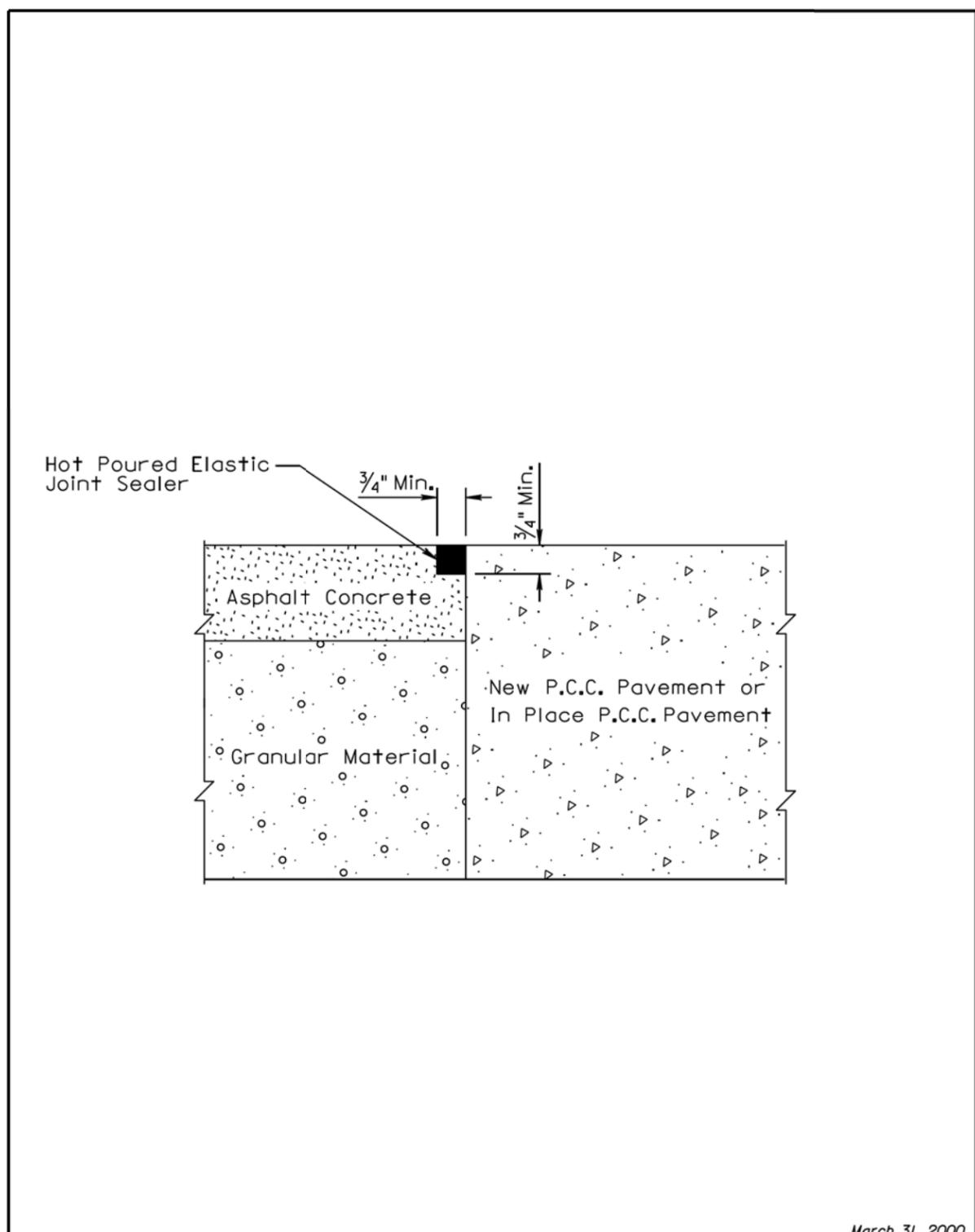


* All rebar will be placed at the midpoint depth of the PCC Pavement.
All cost associated with the installation of the rebar will be incidental to the contract unit price per square yard for the Nonreinforced PCC Pavement. When Box-Outs are used, the cost to construct them shall be incidental to the contract unit price per square yard for the Nonreinforced PCC Pavement

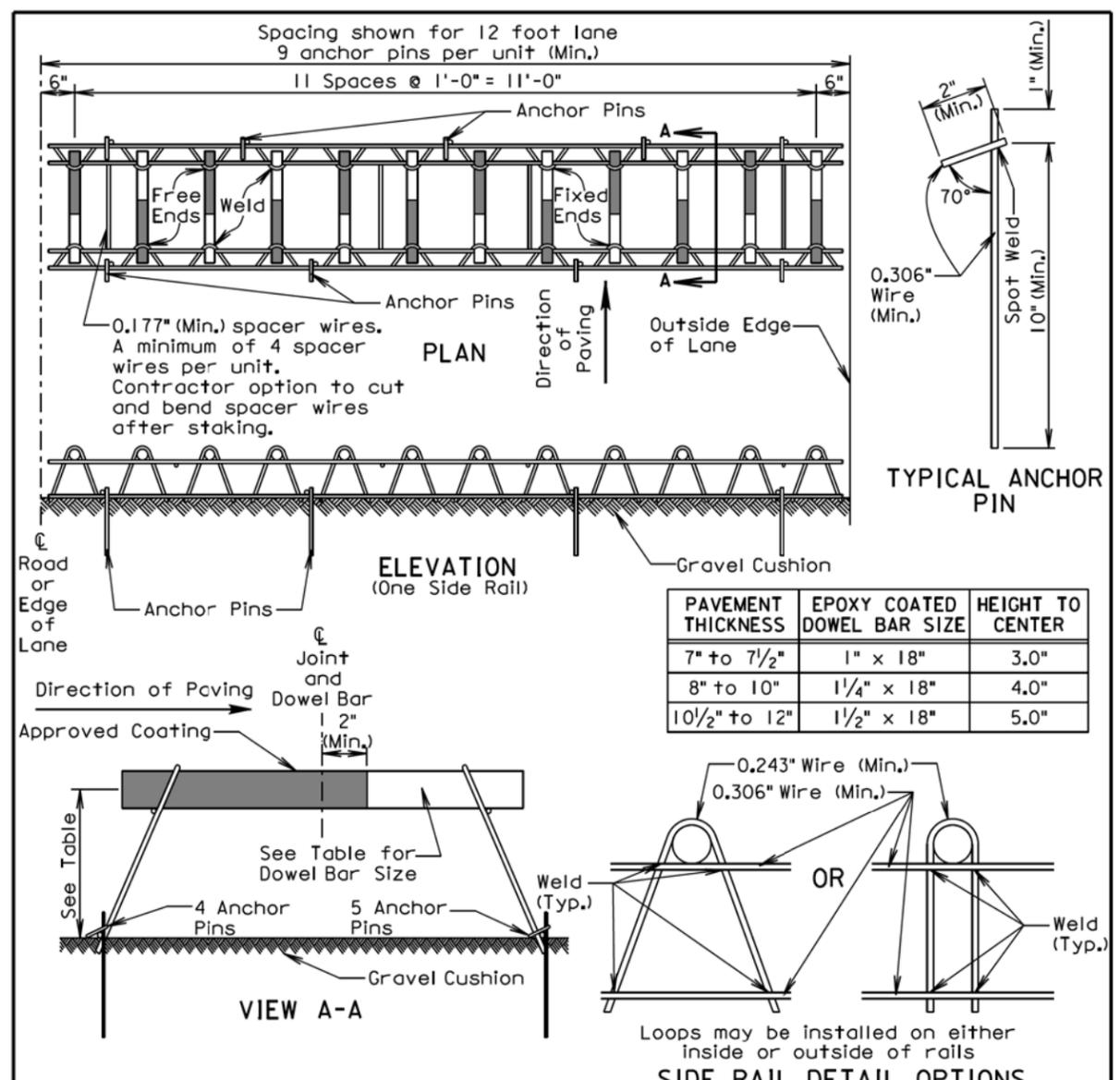
PLOT SCALE - 1:200

PLOT NAME - 22

FILE - ... \MS\PRJ\PENNG25\STOPLATE 1.DGN



S D D O T	ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT	PLATE NUMBER 320.15	March 31, 2000
	Published Date: 2nd Qtr. 2014	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.

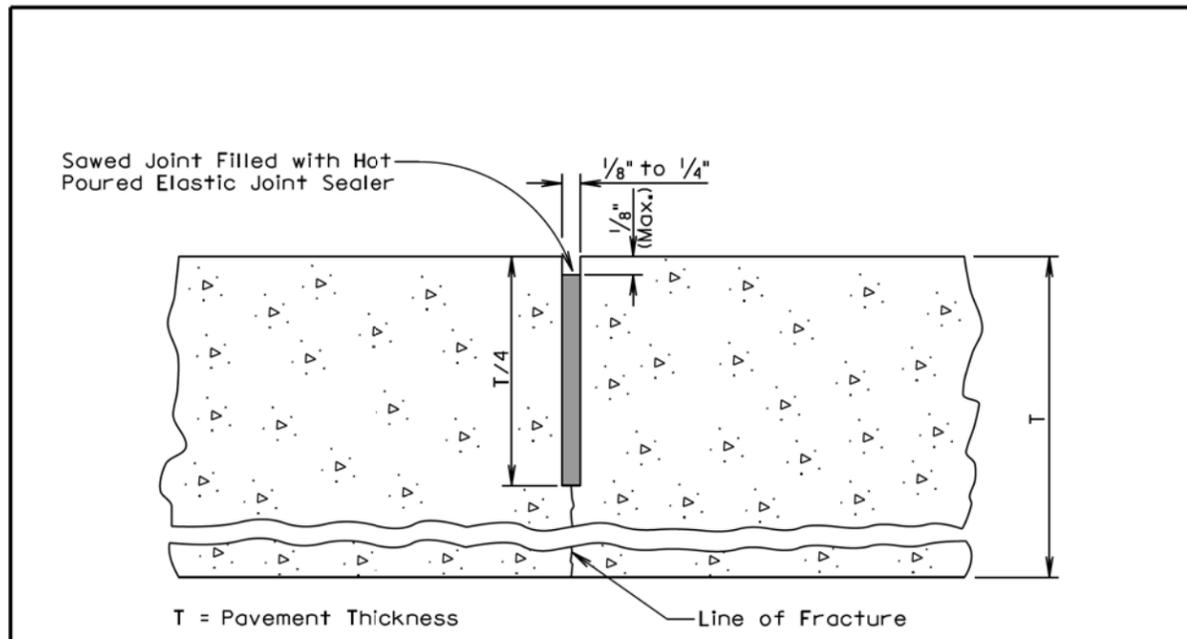
The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

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.

S D D O T	PCC PAVEMENT DOWEL BAR ASSEMBLY FOR TRANSVERSE CONTRACTION JOINTS 12 Bar Assembly on Granular Base Material	PLATE NUMBER 380.01	August 30, 2013
	Published Date: 2nd Qtr. 2014	Sheet 1 of 1	

-PLOTTED FROM - TRPR16032

PLOT SCALE - 1:200



GENERAL NOTES:

The saw cut to control cracking shall be a minimum of $\frac{1}{4}$ the thickness of the pavement.

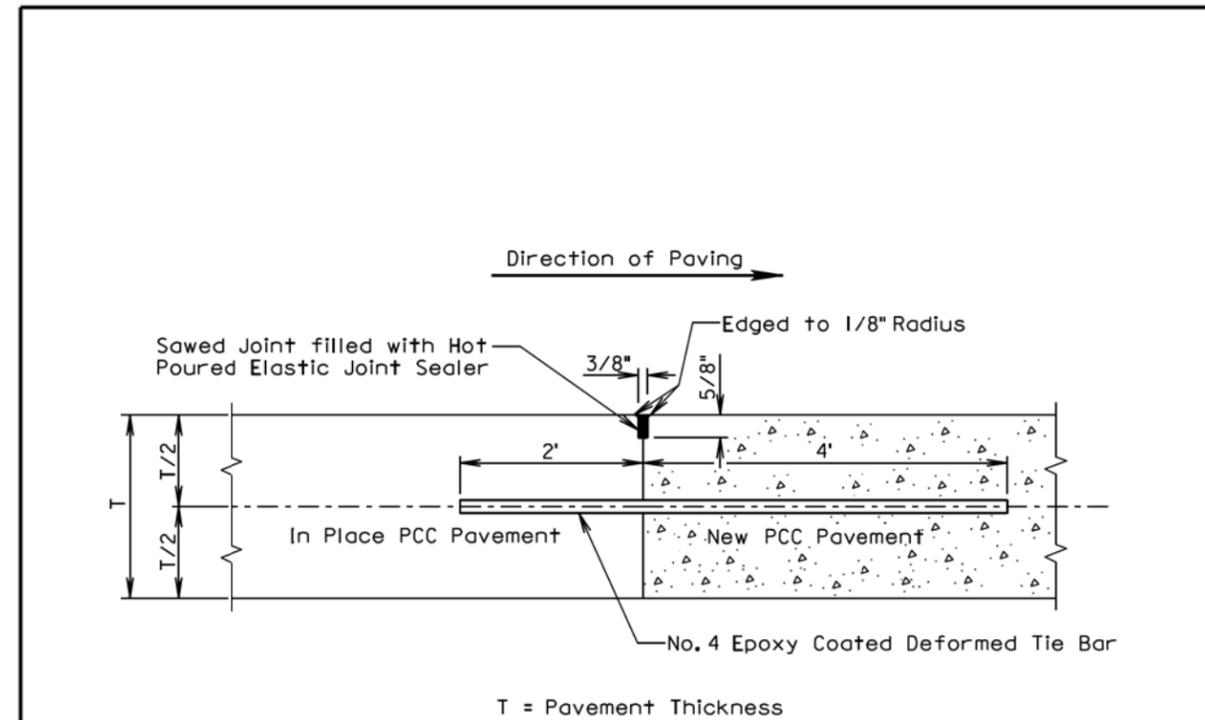
All hot poured elastic joint sealer material spilled on the surface of the concrete pavement shall be removed as soon as the material has cooled. The extent of removal of material shall be to the satisfaction of the Engineer. All costs for removal of the spilled joint sealer material shall be borne by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

June 26, 2013

S D D O T	PCC PAVEMENT TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.05
		Sheet 1 of 1

Published Date: 2nd Qtr. 2014

PLOT NAME - 23



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

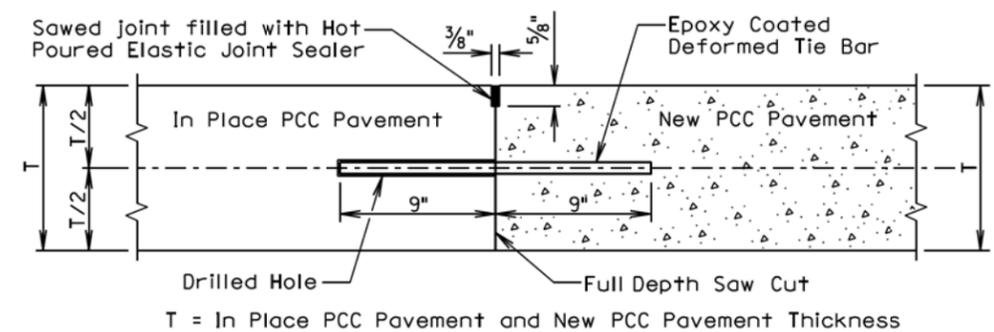
S D D O T	PCC PAVEMENT MID PANEL TRANSVERSE CONSTRUCTION JOINT	PLATE NUMBER 380.07
		Sheet 1 of 1

Published Date: 2nd Qtr. 2014

-PLOTTED FROM - TRPR16032

FILE - ... \MS\PRJ\PENNG925\STDPLATE 2.DGN

DETAIL A TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



GENERAL NOTES:

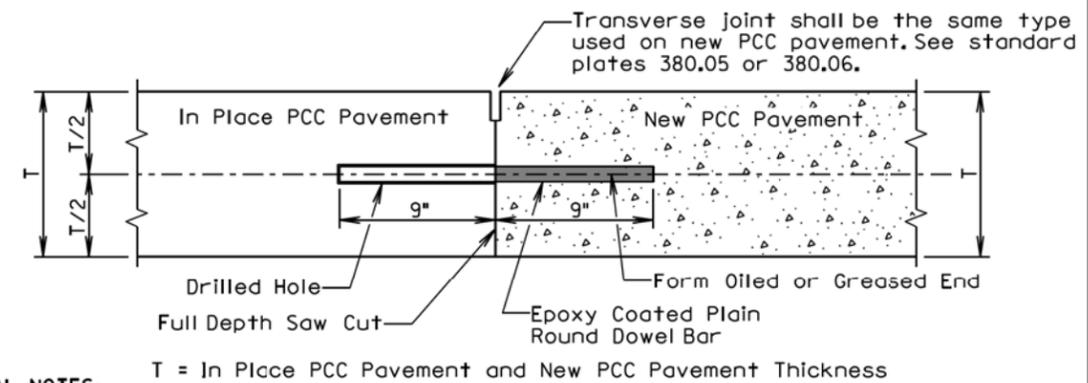
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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.

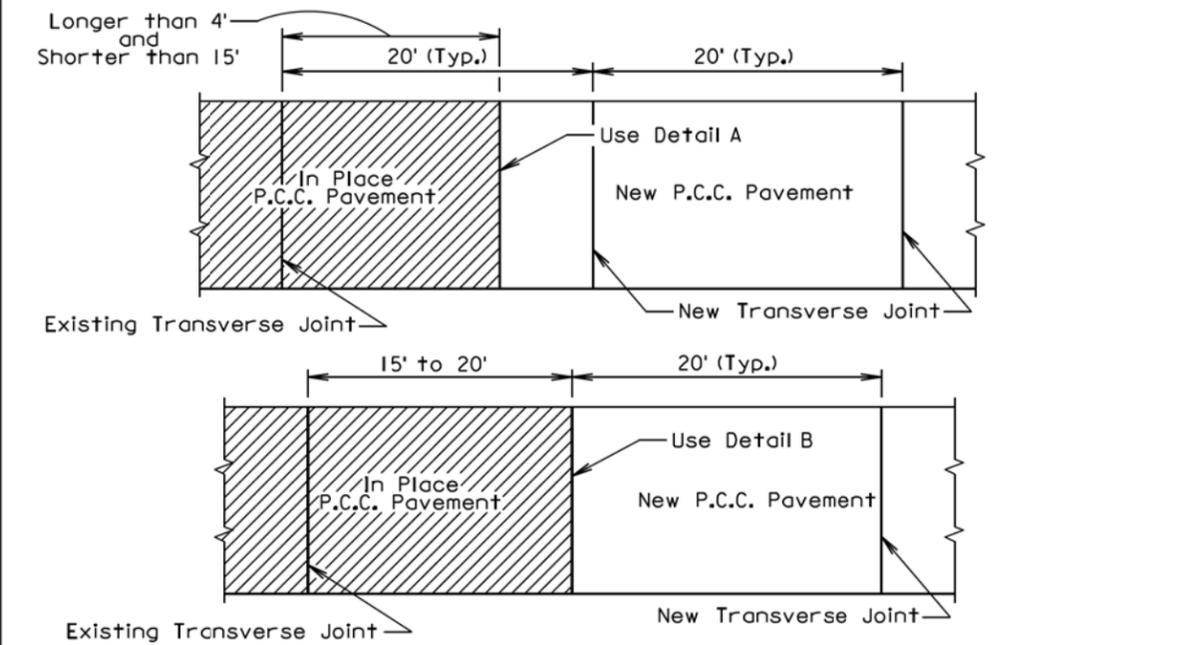
See sheet 2 of 2 of this standard plate to determine if Detail B shall be used.

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.

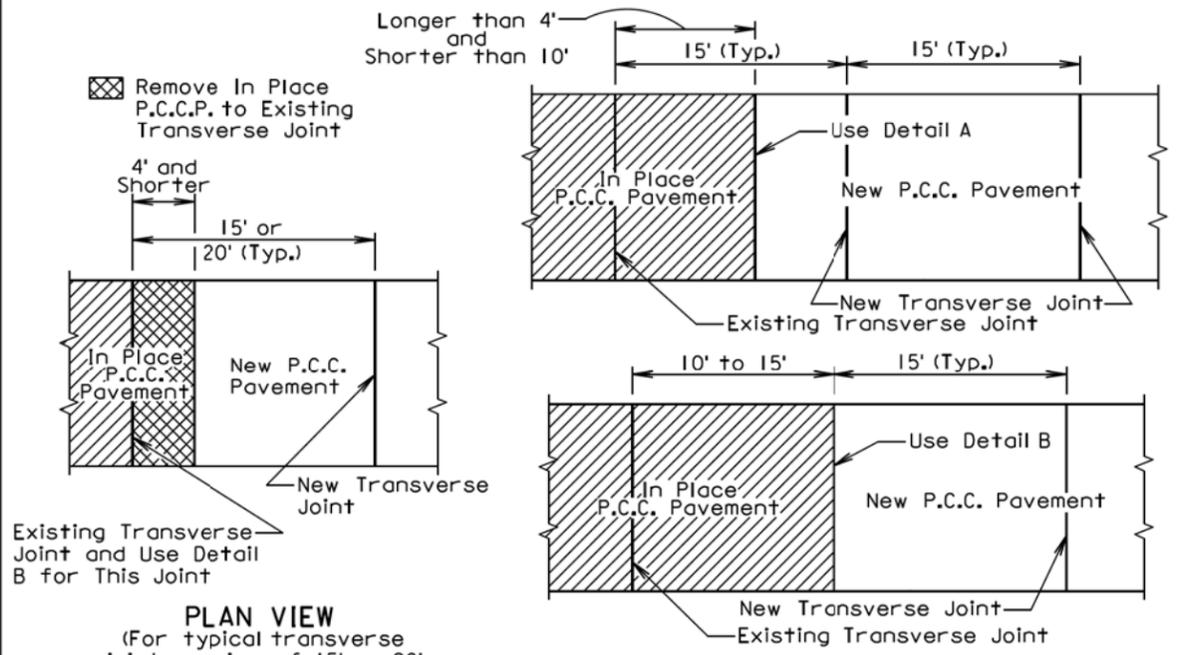
The epoxy coated plain round dowel bar size, number, and spacing shall be the same as detailed on the corresponding dowel bar assembly standard plate (380.01, 380.02, 380.03, or 380.04). The epoxy coated plain round dowel bars shall be a minimum of 3 inches and a maximum of 6 inches from the pavement 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: 2nd Qtr. 2014	Sheet 1 of 2



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)

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: 2nd Qtr. 2014	Sheet 2 of 2

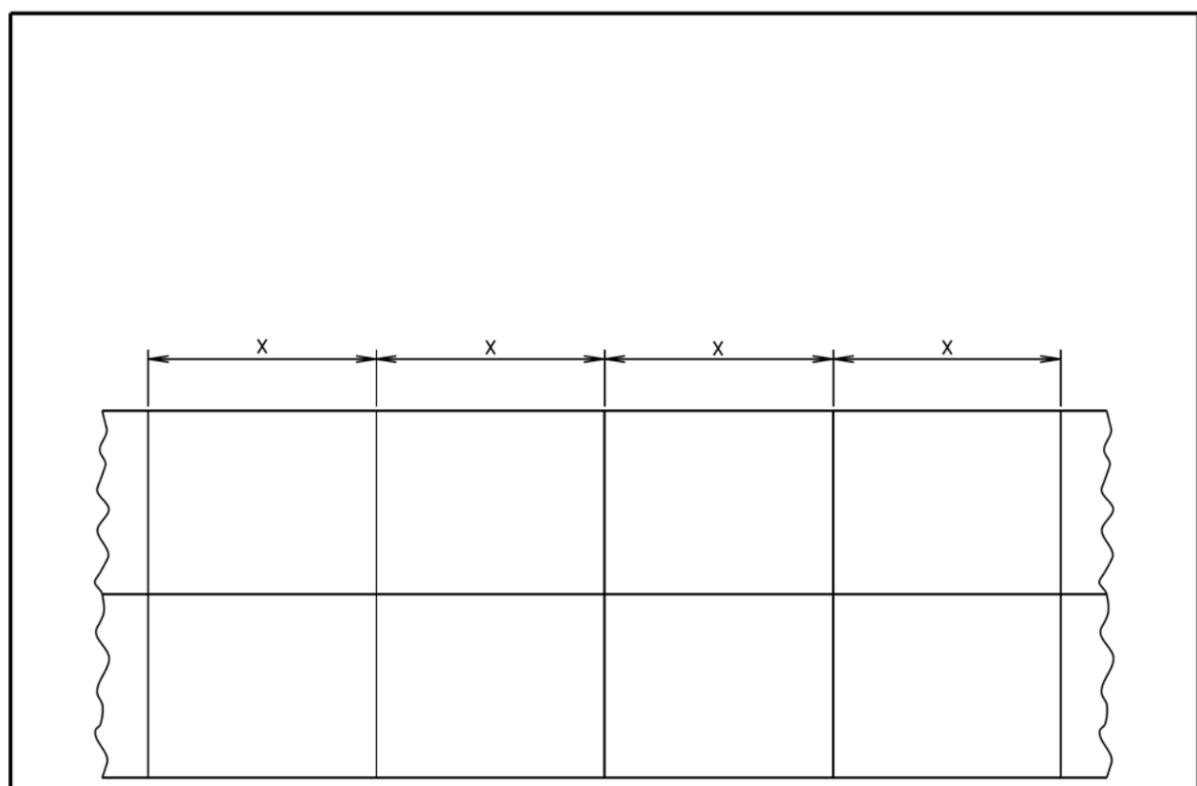
PLOT SCALE - 1:200

PLOTTED FROM - TRPR16032

PLOT NAME - 24

FILE - ... \MS\PRUN\PENNG25\STDPLATE 3.DGN

PLOT SCALE - 1:200



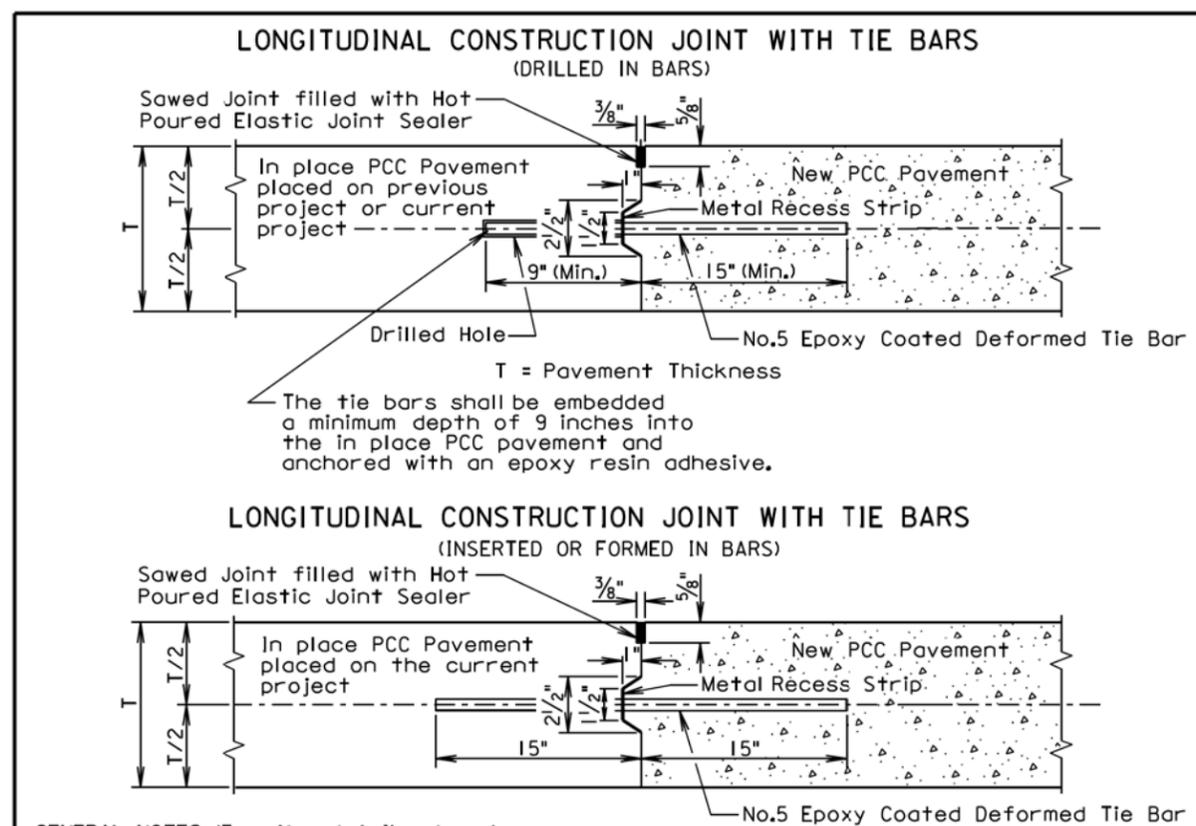
PCCP Thickness	Transverse Contraction Joint Spacing (X)
8" to 9.5"	15'
10" and Thicker	20'

August 31, 2013

S D D O T	PCC PAVEMENT TYPICAL CONTRACTION JOINT SPACING	PLATE NUMBER 380.09
		Sheet 1 of 1

Published Date: 2nd Qtr. 2014

PLOT NAME - 25



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

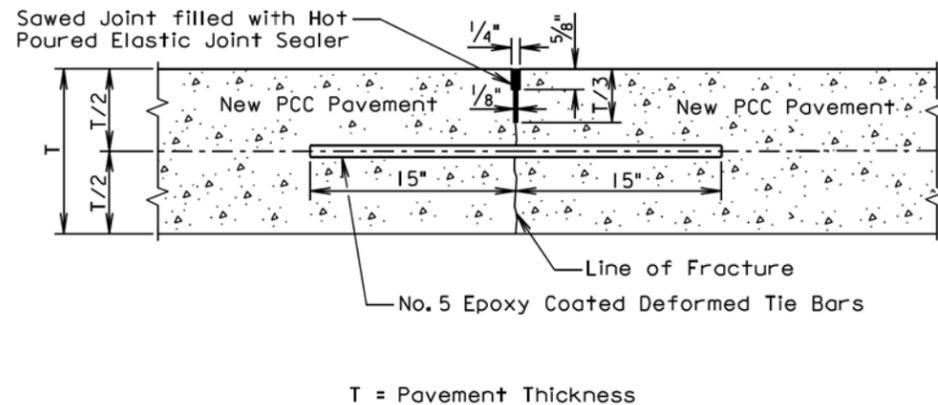
S D D O T	PCC PAVEMENT LONGITUDINAL JOINTS WITH TIE BARS	PLATE NUMBER 380.10
		Sheet 1 of 2

Published Date: 2nd Qtr. 2014

FILE - ... \MS\PRJ\PENNG25\STD\PLATE 4.DGN

-PLOTTED FROM - TRPR16032

SAWED LONGITUDINAL JOINT WITH TIE BARS (POURED MONOLITHICALLY)



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.

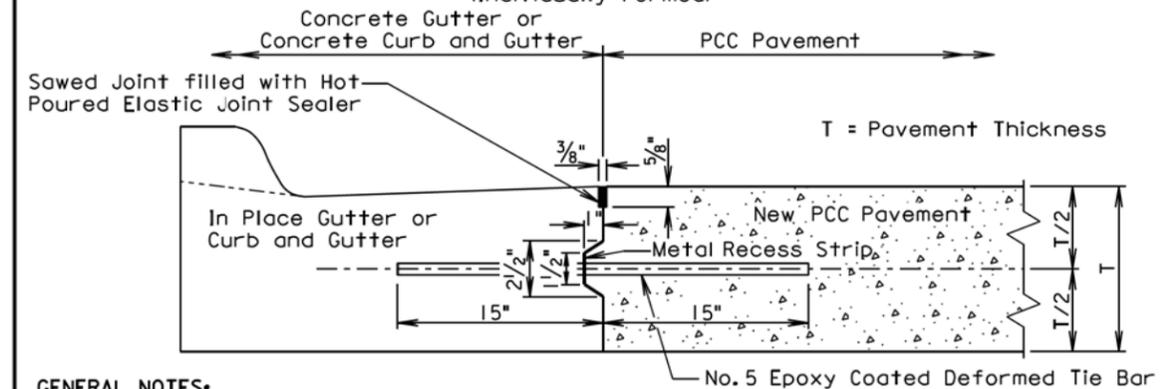
The required number of tie bars as shown in the table shall be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing shall apply to tie bars within each panel.

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
	<i>Published Date: 2nd Qtr. 2014</i>	Sheet 2 of 2

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS (Individually Formed)



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.

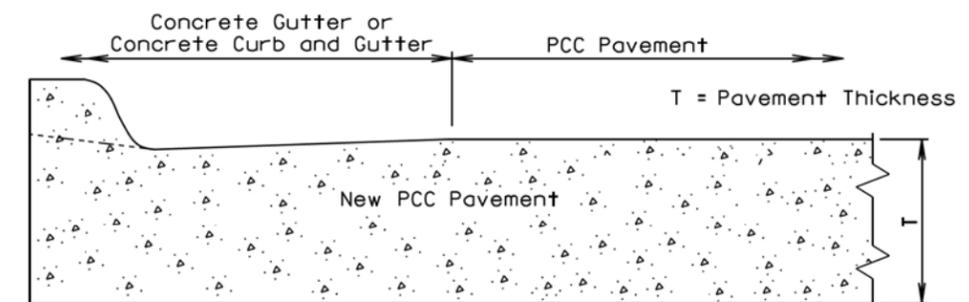
The tie bars shall be placed a minimum of 15 inches from existing transverse contraction joints.

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.

POURED MONOLITHICALLY



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.

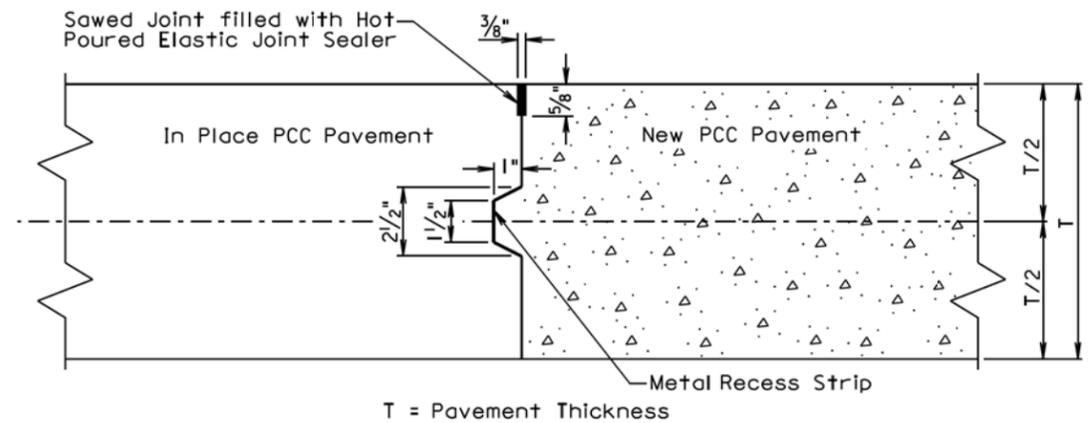
The gutter or curb and gutter shall be sawed transversely at each mainline transverse contraction joint. The transverse contraction joints in the gutter or curb and gutter shall be sawed and sealed same as the transverse contraction joints in the PCC pavement.

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	PCC PAVEMENT LONGITUDINAL CONSTRUCTION JOINTS WITH CONCRETE GUTTER OR CONCRETE CURB AND GUTTER	PLATE NUMBER 380.11
	<i>Published Date: 2nd Qtr. 2014</i>	Sheet 1 of 1

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS

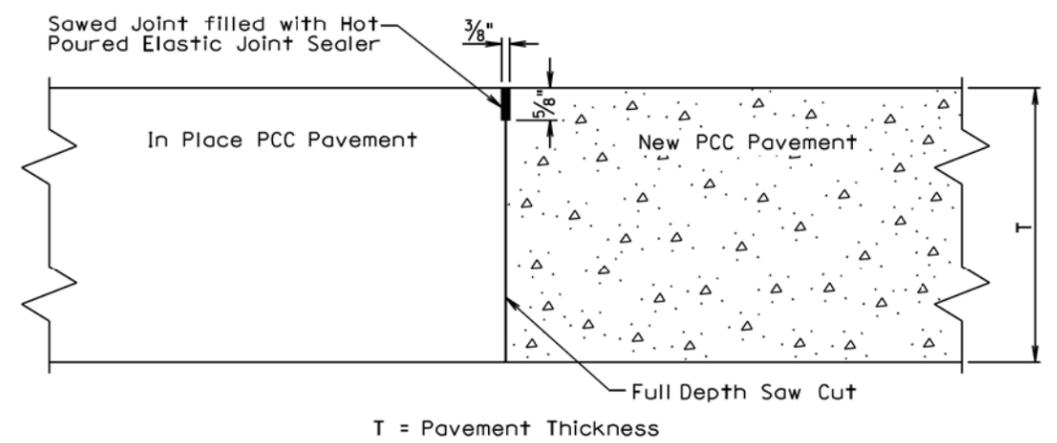


GENERAL NOTES:

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:

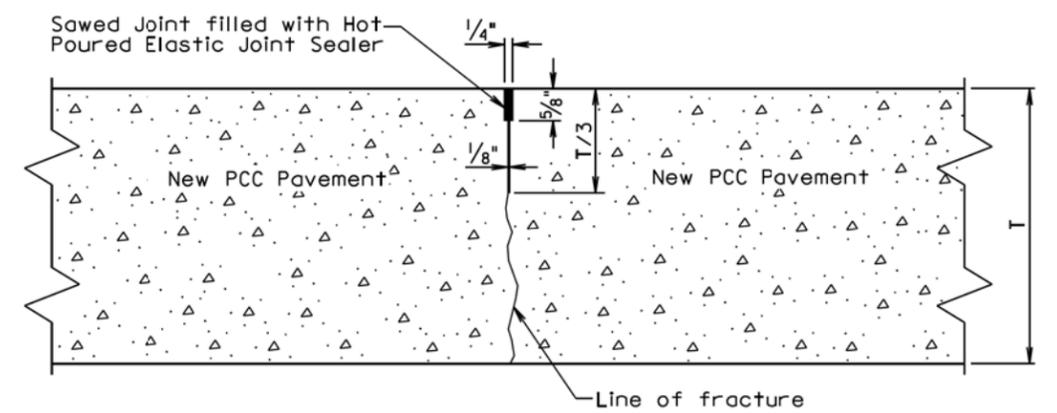
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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: 2nd Qtr. 2014

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

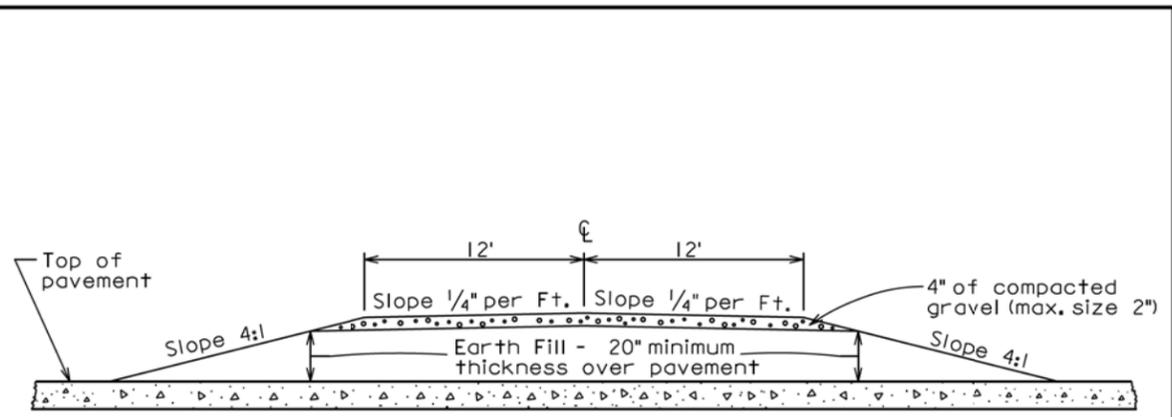
Published Date: 2nd Qtr. 2014

PLOT SCALE - 1:200

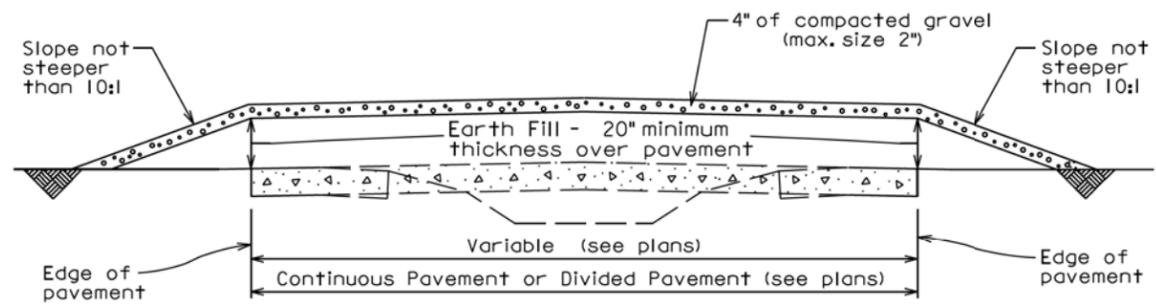
-PLOTTED FROM - TRPR16032

PLOT NAME - 27

FILE - ... \MS\PRJ\PENNG25\STOPLATE 6.DGN



TRANSVERSE SECTION OF CROSSING



LONGITUDINAL SECTION ALONG CENTERLINE OF CROSSING

GENERAL NOTES:

Temporary Earth Crossing shall be constructed and satisfactorily maintained in accordance with the details shown above. When the need for the crossing no longer exists the contractor shall, at the direction of the Engineer, remove the crossing and dispose of the materials therein to the satisfaction of the Engineer.

All costs for furnishing and placing all materials, labor, and equipment necessary for constructing and removing the Temporary Earth Crossing shall be incidental to the contract unit price per Each for "Temporary Earth Crossing."

When the plans specify that the fill over the pavement be entirely of gravel, instead of earth and gravel as shown by the details above, all except the upper 4 inches of the gravel may be pit run material. In these cases the item becomes "Temporary Gravel Crossing" instead of "Temporary Earth Crossing", but otherwise the requirements stated above for "Temporary Earth Crossing" shall apply.

March 31, 2000

S D D O T	TEMPORARY EARTH OR GRAVEL CROSSING	PLATE NUMBER 380.30
	Published Date: 2nd Qtr. 2014	Sheet 1 of 1