

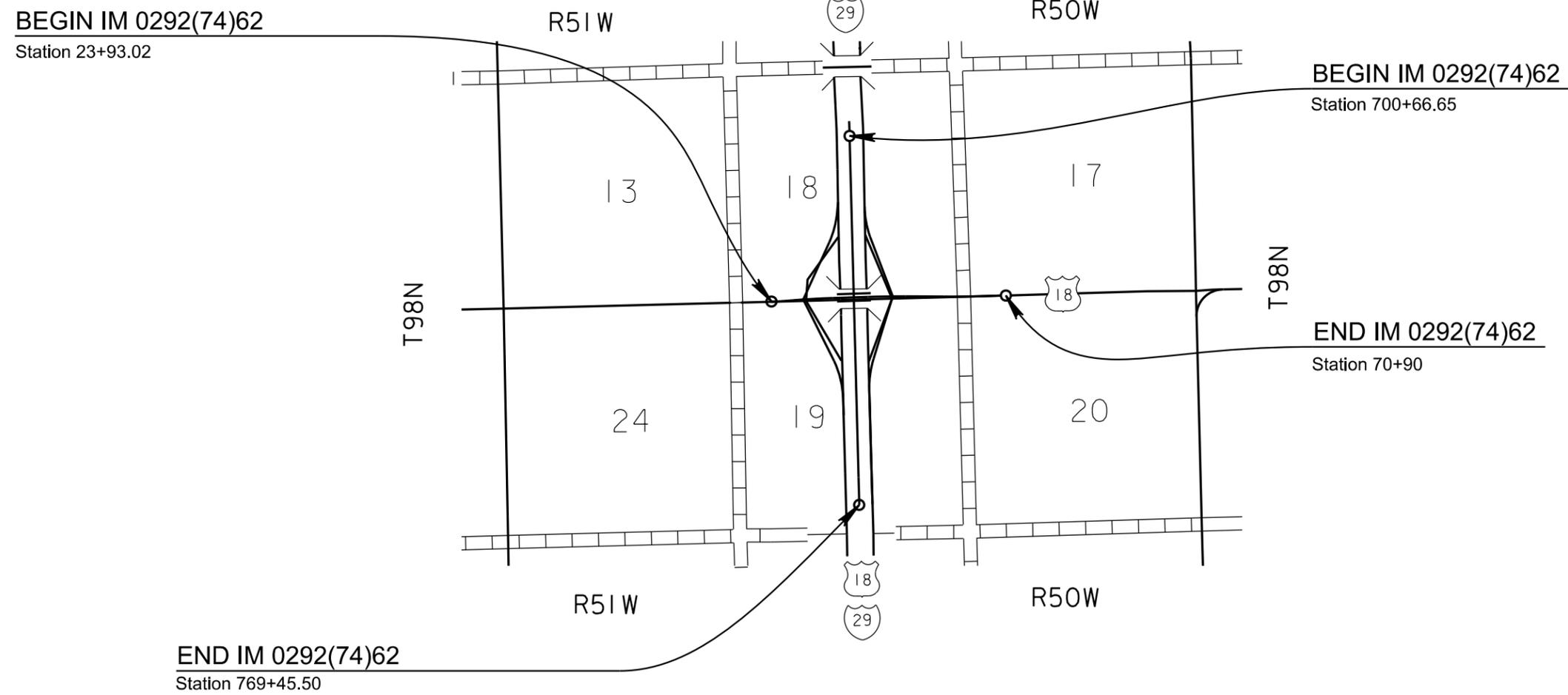
Section F: Surfacing Plans

STATE OF SOUTH DAKOTA	PROJECT IM 0292(74)62	SHEET F1	TOTAL SHEETS F60
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Plotting Date: 09/11/2014

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PLOT SCALE - 1:211.2

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SECTION F ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
120E6200	Water for Granular Material	390.2	MGal
260E1010	Base Course	3,116.0	Ton
260E1030	Base Course, Salvaged	7,456.4	Ton
260E2030	Gravel Cushion, Salvaged	18,948.5	Ton
260E2060	Gravel Cushion, Modified	2,990.7	Ton
320E1200	Asphalt Concrete Composite	5,603.9	Ton
320E5010	Saw and Seal Shoulder Joint	6,049	Ft
380E0050	8" Nonreinforced PCC Pavement	48,377.6	SqYd
380E1120	Miscellaneous PCC Pavement	65.4	SqYd
380E6000	Dowel Bar	27,186	Each
380E6110	Insert Steel Bar in PCC Pavement	3,972	Each
380E6510	Grinding PCC Pavement	1,646.1	SqYd
410E2600	Membrane Sealant Expansion Joint	104.0	Ft

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 asphalt concrete or new PCC Pavement is placed adjacent to existing asphalt concrete or existing PCC Pavement (end of project, end of ramps, ramp detours, crossovers), the existing pavement shall be sawed full depth to a true, straight vertical face. No separate payment shall be made for sawing.

REMOVE CONCRETE PAVEMENT

For informational purposes only, there is an estimated 7401.9 tons of PCC Pavement on this project that may be crushed and reused as Base Course or Gravel Cushion, Modified. Refer to Section B for location of Concrete Pavement Removal. This quantity is based on a unit weight of 118 lbs. per cubic foot for the reclaimed concrete aggregate.

SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL, (For informational purposes only)

See Section B for total quantity of Unclassified Excavation and Salvaged Asphalt Mix and Granular Base Material. See typical sections for located of Salvaged Asphalt Mix and Granular Base Material. This quantity is based on a unit weight of 1.89 tons per cubic yard salvaged material. Salvaged material will be reused as Base Course, Salvaged or Gravel Cushion, Salvaged.

SALVAGE AND STOCKPILE ASPHALT MIX AND GRANULAR BASE MATERIAL TABLE

Location of Removal Areas	Salvaged Asphalt Mix and Granular Base Material
	Tons
In Place Shoulder Removal for Traffic Control	
Sta. 29+10.0 to Sta. 33+72.9 Lt. (US18)	106.8
Sta. 53+87.9 to Sta. 72+82.9 Lt. (US18)	1,087.7
Sta. 70+90.0 to Sta. 71+83.0 Rt. (US18)	55.2
Sta. 728+54.3 to Sta. 732+31.8 NBL (I-29)	273.5
Sta. 727+79.3 to Sta. 732+08.3 SBL (I-29)	310.7
US18 Mainline	0
Sta. 23+93.0 to Sta. 31+17.1	2,262.5
Sta. 31+17.1 to Sta. 36+37.1	839.0
Sta. 36+37.1 to Sta. 40+70.4	1,052.9
Sta. 43+63.7 to Sta. 49+17.1	1,344.7
Sta. 49+17.1 to Sta. 55+17.1	1,625.6
Sta. 55+17.1 to Sta. 70+90.0	2,319.8
Gore Areas	0
NB On Ramp	507.5
NB Off Ramp	460.8
SB Off Ramp	152.9
SB On Ramp	566.4
I-29 Shoulders	0
Sta. 700+66.6 to Sta. 715+45.6 NBL (I-29)	1,071.4
Sta. 743+48.4 to Sta. 750+10.4 NBL (I-29)	479.5
Sta. 708+73.4 to Sta. 715+07.6 SBL (I-26)	459.5
Sta. 745+48.3 to Sta. 760+20.0 SBL (I-29)	1,066.1
In Place Ramps	0
NB On Ramp	2,305.3
NB Off Ramp	1,351.9
SB Off Ramp	2,632.0
SB On Ramp	2,411.1
Detours & Shoulder Widening/Strengthening for Traffic Control	0
Ramp E	* 1,737.9
Ramp F	1,603.9
Ramp G	1,969.0
Ramp H	* 2,326.0
Sta. 29+10.0 to Sta. 33+72.9 Lt. (US18)	237.1
Sta. 53+87.9 to Sta. 72+82.9 Lt. (US18)	714.2
Sta. 29+22.0 to Sta. 34+75.0 Rt. (US18)	* 170.9
Sta. 68+00.0 to Sta. 71+83.0 Rt. (US18)	* 106.2
Movable Concrete Barriers	71.8
TOTAL	33,679.8

* Material will be salvaged near the completion of the project, estimated at 4,341.0 tons (2,296.8 cu.yds.). Any salvaged material unavailable to be used by the Contractor on the project will be stockpiled at the SDDOT maintenance shop near Lennox, SD. The Contractor will ensure the salvaged material meets Base Course gradation specifications prior to stockpiling at the maintenance shop.

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SALVAGED MATERIAL

An estimated 33,679.8 tons (17,820.0 cu.yds.) will be salvaged during this operation. The salvaged material will be reused as Base Course, Salvaged or Gravel Cushion, Salvaged. An estimated 26,404.9 tons of salvaged material will be available for construction of the project due to an estimated 10 percent loss during the removal/replacement operation and salvaging operation near the completion of the project.

The quantity of salvaged material may vary from the plans. The Contractor will be required to construct the roadway according to the depths shown in typical sections. The Contractor will be required to use all available Base Course, Salvaged and Gravel Cushion, Salvaged on this project by decreasing or increasing the quantity of Base Course and Gravel Cushion, Modified necessary, or as directed by the Engineer.

No adjustment in the contract unit price for salvage material will be made because of a variation in salvaged material quantities, see Section B.

PLACEMENT OF SALVAGED MATERIAL TABLE

	Gravel Cushion, Modified and Gravel Cushion, Salvaged (tons)	Base Course and Base Course, Salvaged (tons)
Salvaged Material (tons)	18,948.5	7,456.4
Virgin Material (tons)	2,990.7	3116.0
Total (tons)	21,939.2	10,572.4

MAINTENANCE PATCHING OF EXISTING ROADWAY

The Contractor shall place Asphalt Concrete Composite on the mainline, shoulders, ramps, and gore areas, at the Engineers discretion. The Contractor will remove loose and broken pavement from the mainline and shoulders.

After Initial Patching is complete, the Contractor shall be responsible for maintaining the surface, throughout the length and duration of the project.

Cost for maintaining the mainline surface and shoulders for the length and duration of the project shall be incidental to the contract unit price per ton for Asphalt Concrete Composite.

TRIM MATERIAL

Material removed during the trimming operation may be hauled ahead to be placed on the grade, or hauled from the roadbed. Material hauled from the roadbed may be placed on shoulders. No additional payment will be made for handling, stockpiling, processing, or placement of trim material. Water added by road mix or plant mix methods will be paid at the contract unit price per MGal for Water for Granular Material.

GRAVEL CUSHION, MODIFIED

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

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.

GRAVEL CUSHION, SALVAGED

Gravel Cushion, Salvaged shall be obtained from the material produced on this project and may be used without further testing.

All other requirements for Gravel Cushion shall apply.

BASE COURSE

Base Course shall be furnished by the Contractor and/or may be produced from the material removed from the project per the plan note requirements.

All other requirements for Base Course shall apply.

BASE COURSE, SALVAGED

Base Course, Salvaged shall be obtained from the material produced on this project and may be used without further testing.

All other requirements of the Specifications for Base Course 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 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.

ALKALI SILICA REACTIVITY

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

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

Source	Location	Expansion Value
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.170
Croell	Quinn, SD	0.089
Emme Sand & Gravel	Oneil, NE	0.217
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	0.198
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 Paving- Nelson Pit	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.

8" NONREINFORCED CONCRETE PAVEMENT

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

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

The transverse contraction joints shall be perpendicular to the centerline as detailed in the standard plate for PCC Pavement Dowel Bar Assembly for Transverse Contraction Joints and PCC Pavement Transverse Contraction Joint Spacing. 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 shall be removed at the Contractor's expense. Any method of placement that cannot produce these requirements shall not be allowed to continue.

There will be no direct payment for trimming of the Gravel Cushion, Modified. 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.

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.

Concrete used in Portland cement concrete pavement shall conform to the Special Provision for Contractor Furnished Mix Design for PCC Pavement.

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:

- US18 Driving Lanes
 - Sta. 23+90.0 to Sta. 40+73.3 (US18)
 - Sta. 43+60.3 to Sta. 70+90.0 (US18)
- On Ramp Acceleration Lane, NBL
 - Sta. 15+78.6 to Sta. 23+58.7 (Ramp A)
- Off Ramp Deceleration Lane, NBL
 - Sta. 22+33.5 to Sta. 26+23.5 (Ramp B)
- Off Ramp Deceleration Lane, SBL
 - Sta. 15+93.3 to Sta. 21+15.4 (Ramp D)
- On Ramp Acceleration Lane, SBL
 - Sta. 7+05.0 to Sta. 14+85.0 (Ramp C)
- Ramps A
 - Sta. 0+33.4 to Sta. 13+07.8 (Ramp A)
- Ramps B
 - Sta. 29+25.4 to Sta. 40+46.2 (Ramp B)
- Ramps C
 - Sta. 17+57.4 to Sta. 31+97.4 (Ramp C)
- Ramps D
 - Sta. 0+27.9 to Sta. 15+93.3 (Ramp D)

8" NONREINFORCED CONCRETE PAVEMENT (CONTINUED)

The concrete shall be placed with equipment operating from a preset grade line.

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 any time 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.

8" NONREINFORCED PCC PAVEMENT	
LOCATION	8" NONREINFORCED PCC PAVEMENT SQ.YDS.
US18 Mainline	
Sta. 23+93.0 to Sta. 40+73.3	7,326.8
Sta. 43+60.3 to Sta. 70+90.0	16,066.0
Gore Areas	
NB On Ramp	2,174.5
NB Off Ramp	1,551.8
SB Off Ramp	1,805.3
SB On Ramp	2,179.0
Ramps	
Sta. 13+05.3 to Sta. 22+37.0 Ramp A	3,575.7
Sta. 12+53.3 to Sta. 27+98.0 Ramp B	3,136.6
Sta. 21+07.3 to Sta. 33+45.5 Ramp C	3,992.3
Sta. 30+47.4 to Sta. 45+14.7 Ramp D	4,373.5
Entrances	
Sta. 28+84 Lt.	267.6
Sta. 51+35 Rt.	643.4
Sta. 53+48 Rt.	456.9
Sta. 57+74 Lt.	431.3
Sta. 57+83 Rt.	397.2
TOTAL	48,377.6

MISCELLANEOUS NONREINFORCED PCC PAVEMENT

Miscellaneous Nonreinforced PCC Pavement will be used to replace the rumble strip removal areas along I-29 outside shoulder adjacent to the new gore areas. The PCC Pavement rumble strips will be milled to the following dimensions: 51" long x 15" wide x 3" deep (see detail sheet). An estimated 111 rumble strips will be required to be removed. Milled areas shall be sand blasted and cleaned to the satisfaction of the Engineer. Any forms used shall be approved the Engineer.

The fine aggregate for the Miscellaneous Nonreinforced PCC Pavement may require screening as determined by the Engineer. Fine aggregate shall conform to Section 800.2.D Alkali Silica Reactivity (ASR) Requirements of the Specifications.

Prior to placement of Miscellaneous Nonreinforced PCC Pavement, a grout bonding agent will be applied to all milled surfaces. All surfaces must be clean and surface dry. The grout bonding agent will be applied with a wire or stiff bristle brush. All horizontal and vertical surfaces will be coated. Excess grout will not be allowed to collect in pockets. The grout bonding agent will be placed immediately prior to the Miscellaneous Nonreinforced PCC Pavement to ensure the grout does not set. Any grout material that is allowed to set must be removed. After the Miscellaneous Nonreinforced PCC Pavement is placed, grout bonding agent will be applied along the edges of the repair to seal these areas. The design mix of the grout bonding agent is 2 parts Type 1 cement, 1 part water, and 1 part sand.

The concrete mix for the Miscellaneous Nonreinforced PCC Pavement shall be Class A45 with quartzite aggregate. The slump and air requirements will be according to section 460 for class A45 concrete. Class F Modified Fly Ash shall be substituted for 20 percent of the cement in accordance with Section 605 of the Specifications. A minimum concrete strength of 4,000 psi shall be obtained prior to opening to traffic and at 28 days. Two separate applications of curing compound shall be applied after concrete finishing.

Rumble strip removal and placement of Miscellaneous Nonreinforced PCC Pavement will be accomplished prior to new gore area paving.

Cost for rumble strip removal and placement of PCC Pavement shall be incidental to the contract unit price per square yard for Miscellaneous Nonreinforced PCC Pavement.

RUMBLE STRIP REMOVAL and MISCELLANEOUS NONREINFORCED PCC PAVEMENT		
Location	Rumble Strips (each)	Removal Area and Miscellaneous Nonreinforced PCC Pavement (sq.yds.)
Sta. 700+66.7 to Sta. 715+00.0 NBL	37	21.8
Sta. 742+92.5 to Sta. 750+10.4 NBL	18	10.6
Sta. 707+73.4 to Sta. 714+66.1 SBL	17	10.0
Sta. 744+72.8 to Sta. 760+20.0 SBL	39	23.0
TOTAL	111	65.4

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GRINDING PCC PAVEMENT

A 3' wide diamond grinder will be used on the outside edge of the I-29 mainline adjacent to the new gore areas. This work will be accomplished after the rumble strips have been removed and paved and prior to the paving of the new gore areas. The purpose of this work is to ensure the new gore areas will be paved adjacent to a smooth mainline roadway.

After grinding the existing pavement, the Contractor will ensure pavement markings are restored to standard plate specification and to the satisfaction of the Engineer.

Cost for grinding 3' of mainline and pavement markings shall be incidental to the contract unit price per square yard for Grinding PCC Pavement.

GRINDING PCC PAVEMENT	
Location	Grinding PCC Pavement (sq.yds.)
Sta. 700+66.7 to Sta. 717+17.6 NBL	550.3
Sta. 740+68.1 to Sta. 750+10.4 NBL	314.1
Sta. 707+73.4 to Sta. 714+66.1 SBL	230.9
Sta. 743+67.5 to Sta. 760+20.0 SBL	550.8
TOTAL	1,646.1

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 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 shall be tied to at least one stake.

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 or position 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.

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TRANSVERSE CONTRACTION JOINTS

See PCC Pavement Layouts sheets and standard plate for PCC Pavement Transverse Contraction Joint Spacing for joint spacing in Nonreinforced PCC Pavement.

Silicone sealing operations shall be suspended per Specifications for seasonal restrictions (Section 380.R.3). Hot poured elastic joint sealer may be temporarily placed during the seasonal restrictions of silicone sealing as approved by the Engineer. If hot poured elastic joint sealer is used, it will be removed the following year and replaced with silicone sealant. All costs associated with the placement and removal of the hot poured elastic joint sealer, any additional joint cleaning, sawing, and traffic control shall be at the Contractor's expense with no additional payment.

TABLE OF DOWEL BARS

Location	1 1/4" Bars Each
US18 Mainline	
Sta. 23+93.0 to Sta. 40+73.3	3,376
Sta. 43+60.3 to Sta. 70+90.0	7,764
I-29 Ramp	
Ramp A	2,123
Ramp B	1,866
Ramp C	2,356
Ramp D	2,601
Gore Areas	
NB On Ramp	1,850
NB Off Ramp	1,271
SB Off Ramp	944
SB On Ramp	1,851
Entrances	
Sta. 28+84 Lt.	144
Sta. 51+35 Rt.	376
Sta. 53+48 Rt.	244
Sta. 57+74 Lt.	208
Sta. 57+83 Rt.	212
TOTAL	27,186

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.

TINING

The surface of the mainline paving shall be longitudinally tined. All non string line machine tined areas shall be transverse tined.

STEEL BAR INSTALLATION

The Contractor shall insert the steel bars (1/4" x 18" epoxy coated plain round dowel bars and No. 5 x 24" epoxy coated deformed tie bars for longitudinal joints) 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 and shall be free from burring or other deformations. Shearing will not be permitted.

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.

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

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).

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 manufacturers 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 installation 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, installing the steel bars into the drilled holes and all other items incidental to the installation of the steel bars shall be incidental to the contract unit price per each for Insert Steel Bar in PCC Pavement.

TABLE OF STEEL BAR INSTALLATION

LOCATION*	#5 x 24" Deformed Tie Bars	1-1/4" x 18" Plain Round Dowel Bars
	each	each
Gore Area along I-29 Mainline		
NB On Ramp	1,320	---
NB Off Ramp	753	---
SB Off Ramp	554	---
SB On Ramp	1,321	---
Sta. 70+90 (US18)	---	24
SUBTOTAL	3,948	24
TOTAL	3,972	

MEMBRANE SEALANT EXPANSION JOINT

1. Install all membrane sealant expansion joints at the plan shown locations in conformance to the following notes.
2. The Membrane Sealant shall be one of membrane sealant types from the approved product list for Membrane Sealant Expansion Joints.
3. The manufacturer shall supply the membrane sealant in packaging that precompresses the membrane sealant. The precompressed dimension shall be as recommended by the sealant manufacturer to provide a water tight seal throughout a joint movement range of + 25% (minimum) from the specified joint opening dimension. In no case shall the precompressed dimension exceed 75% of the joint opening width. The foam sealant shall be slowly self expanding to permit workers ample time to install the membrane sealant before the membrane sealant exceeds the joint opening width.
4. The membrane sealant shall be supplied in pieces 5 feet in length or longer. The foam sealant shall be ultra-violet and ozone resistant.
5. The bonding adhesive used to attach the membrane sealant to the adjacent concrete shall be approved by the membrane sealant manufacturer.
6. Adhesive used to join adjacent pieces of the membrane sealant shall be as recommended by the manufacturer.
7. If Styrofoam filler material is used in the construction, it shall be closed cell and water-tight as approved by the Engineer.
8. Use plywood or other material to protect concrete adjacent to the joint from spalling before any equipment is moved across the joint. Any spall areas will be repaired at the Contractor's expense by breaking out and replacing adjacent concrete, as approved by the Engineer.
9. The minimum ambient air temperature at the time of joint installation and adhesive curing shall be 40° F.

MEMBRANE SEALANT EXPANSION JOINT (CONTINUED)

10. A technical representative of the membrane sealant manufacturer shall be present at the jobsite during installation. The technical representative shall be knowledgeable in the correct procedures for the preparation and installation of the joint material to insure the Contractor installs the joint to the Manufacturers recommendations.
11. The joint opening shall be constant width and shall have smooth vertical sides. Surfaces of material adjacent to the joint shall be at the correct grade and crown as approved by the Engineer.
12. Concrete surfaces that will be in contact with the membrane sealant shall be thoroughly cleaned by abrasive blasting to remove all laitance and contaminants (such as oil, curing compounds, etc.) from the concrete surface. At a minimum two passes of abrasive blasting with the nozzle held at an angle to within 1 to 2 inches of the a concrete surface will be required. Cleaning of the concrete surfaces with solvents, wire brushing, or grinding shall not be permitted.
13. After abrasive blasting, but immediately prior to membrane joint installation, the entire joint contact surface shall be air blasted. The air compressor used for joint cleaning shall be equipped with trap devices capable of providing moisture-free and oil-free air at a recommended pressure of 90 psi. To obtain complete bonding with the adhesive, the adjacent concrete surfaces must be dry and clean. The contact surfaces for the joint shall be visually inspected by the Engineer immediately prior to joint installation to verify the surface is dry and clean.
14. Individual spliced sections shall be installed as per the manufacturers' recommendations. The membrane joint sealant manufacturer shall submit a detailed installation procedure to the Engineer at least 5 days prior to joint installation for his review.
15. Traffic shall not be allowed on the joint for a minimum 3 hours unless otherwise directed by the Engineer.
16. The Membrane Sealant Expansion Joint will be measured in feet to the nearest one-tenth foot, complete in place. Measurement will be made of the overall horizontal length. The Membrane Sealant Expansion Joint will be paid for at the contract unit price per foot complete in place. Payment for this item shall be full compensation for furnishing all the required materials in place, inclusive of labor, equipment and incidentals necessary to complete the work in accordance with the plans and the foregoing specifications.

TABLE OF MEMBRANE SEALANT EXPANSION JOINT

LOCATION	LENGTH feet
Sta. 40+73.3 (US18)	52
Sta. 43+60.3 (US18)	52
TOTAL	104

RATES OF MATERIALS

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

RAMP MAINLINE

- Sta. 0+33.4 to Sta. 9+19.5 Ramp A
- Sta. 34+01.1 to Sta. 40+46.2 Ramp B
- Sta. 23+94.0 to Sta. 31+97.4 Ramp C
- Sta. 0+27.9 to Sta. 15+93.3 Ramp D

GRAVEL CUSHION, MODIFIED OR GRAVEL CUSHION, SALVAGED

Crushed Aggregate or Salvaged Material 110.83 Tons.

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

RAMP SHOULDER WEDGE AREAS (adjacent PCC Pavement)

- Sta. 0+33.4 to Sta. 13.07.8 Ramp A - Lt.
- Sta. 0+33.4 to Sta. 9+19.5 Ramp A - Rt.
- Sta. 26+23.5 to Sta. 40+46.2 Ramp B - Rt.
- Sta. 29+25.4 to Sta. 40+46.2 Ramp B - Lt.
- Sta. 14+85.0 to Sta. 31+97.4 Ramp C - Lt.
- Sta. 17+57.4 to Sta. 31+97.4 Ramp C - Rt.
- Sta. 0+27.9 to Sta. 22+85.9 Ramp D - Rt.
- Sta. 0+27.9 to Sta. 15+93.3 Ramp D - Lt.

GRAVEL CUSHION, MODIFIED OR GRAVEL CUSHION, SALVAGED

Crushed Aggregate or Salvaged Material 11.67 Tons.

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

US18 SHOULDER WEDGE AREAS (adjacent PCC Pavement)

- Sta. 23+93.0 to Sta. 40+73.3 Lt.
- Sta. 23+93.0 to Sta. 40+73.3 Rt.
- Sta. 43+60.3 to Sta. 46+20.0 Lt.
- Sta. 43+60.3 to Sta. 46+20.0 Rt.
- Sta. 67+00.0 to Sta. 70+90.0 Lt.
- Sta. 67+00.0 to Sta. 70+90.0 Rt.

GRAVEL CUSHION, MODIFIED OR GRAVEL CUSHION, SALVAGED

Crushed Aggregate or Salvaged Material 8.17 Tons.

Water for Granular Material at the rate of 0.10 M. Gallons.

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F6	F60

GORE AREA SHOULDERS - 6' wide

- Sta. 15+78.6 to Sta. 29+58.4 Ramp A
- Sta. 19+83.5 to Sta. 26+23.5 Ramp B
- Sta. 1+05.0 to Sta. 14+85.0 Ramp C

BASE COURSE OR BASE COURSE, SALVAGED

Crushed Aggregate or Salvaged Material 21.46 Tons.

Water for Granular Material at the rate of 0.26 M. Gallons.

ASPHALT CONCRETE COMPOSITE

Asphalt Concrete Composite 13.41 Tons

The exact proportions of this material will be determined on construction.

TABLE OF ADDITIONAL QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F7	F60

Revised: 11 Sep 14, RML

Location-Description	Water for Granular Material	Gravel Cushion, Modified Or Gravel Cushion, Salvaged	Base Course Or Base Course, Salvaged	Asphalt Concrete Composite 1 st / 2 nd Lift
	MGal	Ton	Ton	Ton
US18 Mainline				
Sta. 23+93.0 to Sta. 32+60.0	14.4	1,038.2	---	---
Sta. 32+60.0 to Sta. 40+73.3	16.1	1,345.1	---	---
Sta. 43+60.3 to Sta. 52+54.5	23.7	1,970.8	---	---
Sta. 52+54.5 to Sta. 70+90.0	48.7	4,046.3	---	---
Ramps				
Sta. 9+19.5 to Sta. 13+07.8 Ramp A	5.1	420.9	---	---
Sta. 29+25.4 to Sta. 34+01.1 Ramp B	6.3	520.6	---	---
Sta. 17+57.4 to Sta. 23+94.0 Ramp C	8.3	693.6	---	---
Gore Areas				
Sta. 13+07.8 to Sta. 29+58.4 Ramp A	13.3	1,111.7	---	---
Sta. 19+83.5 to Sta. 29+25.4 Ramp B	8.3	692.7	---	---
Sta. 1+05.0 to Sta. 17+57.4 Ramp C	13.4	1,116.2	---	---
Sta. 15+93.3 to Sta. 22+85.9 Ramp D	7.2	601.4	---	---
Extra Wide Sluff on US18				
Sta. 46+20.0 to Sta. 67+00.0 Lt.	5.9	499.5	---	---
Sta. 46+20.0 to Sta. 67+00.0 Rt.	5.8	485.8	---	---
I-29 Shoulder Surfacing				
Sta. 717+17.6 to Sta. 722+01.9 NBL	3.8	---	317.4	82.9
Sta. 738+11.6 to Sta. 740+68.1 NBL	2.0	---	168.1	43.9
Sta. 714+66.1 to Sta. 720+70.0 SBL	4.8	---	395.7	103.4
Sta. 738+70.1 to Sta. 743+67.9 SBL	3.9	---	326.2	85.4
US18 Intersecting Streets and Entrances				
Sta. 28+84 Lt. - entrance	1.0	83.4	---	---
Sta. 30+74 Rt. - entrance	2.4	---	203.7	58.2
Sta. 51+35 Rt. - entrance	2.3	194.7	---	---
Sta. 53+48 Rt. - entrance	1.8	148.7	---	---
Sta. 57+74 Lt. - entrance	1.6	132.6	---	---
Sta. 57+83 Rt. - entrance	1.5	122.1	---	---
Sta. 66+86 Lt. - intersecting street	2.0	---	165.4	41.9
Sta. 66+86 Rt. - intersecting street	1.9	---	155.2	38.4
Miscellaneous Areas				
Temporary Business Access	6.0	500.0	---	---
Movable Concrete Barriers	0.8	71.9	---	---
Maintenance Patching	---	---	---	100.0
Additional Surfacing for Guardrail				
Begin Bridge Lt.	0.5	---	42.8	9.4
Begin Bridge Rt.	0.7	---	59.9	13.2
End Bridge Lt.	0.7	---	58.8	13.0
End Bridge Rt.	0.5	---	42.6	9.4
I-29 SBL Median Shoulder	1.3	---	108.1	---
I-29 NBL Median Shoulder	1.3	---	108.1	---
US18 Shoulder Widening for Traffic Control				
Sta. 29+10.0 to Sta. 33+72.9 Lt.	2.8	---	234.4	136.1 / 127.6
Sta. 53+84.9 to Sta. 72+82.8 Lt.	14.5	---	1,211.7	715.9 / 680.8
Sta. 29+22.0 to Sta. 34+75.0 Rt.	1.2	---	98.1	64.1 / 53.1
Sta. 68+00.0 to Sta. 71+83.0 Rt.	1.0	---	84.8	51.6 / 43.9
Ramp Detours for Traffic Control				
Ramp E	14.5	---	1,210.4	268.2 / 248.0
Ramp F	17.4	---	1,452.7	339.7 / 321.9
Ramp G	21.8	---	1,818.0	423.8 / 401.2
Ramp H	19.0	---	1,580.7	350.0 / 323.2
TOTAL	305.5	14,641.1	9,842.8	5,457.1

PLOT SCALE - 1+6.19298

PLOTTED FROM - TRPR16032



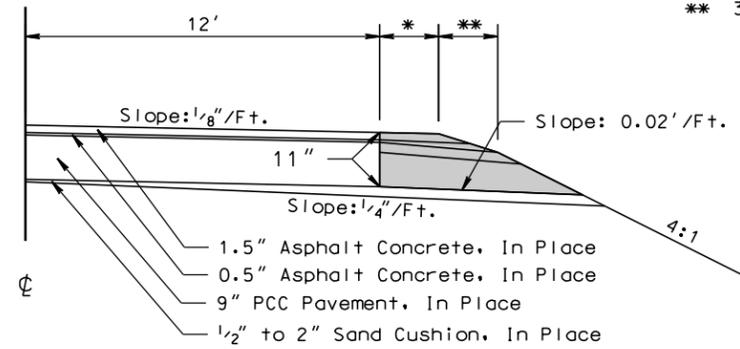
Salvage & Stockpile Asphalt Mix & Granular Base Material

SHOULDER WIDENING SECTIONS FOR TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT IM 0292(74)62	SHEET NO. F8	TOTAL SHEETS F60
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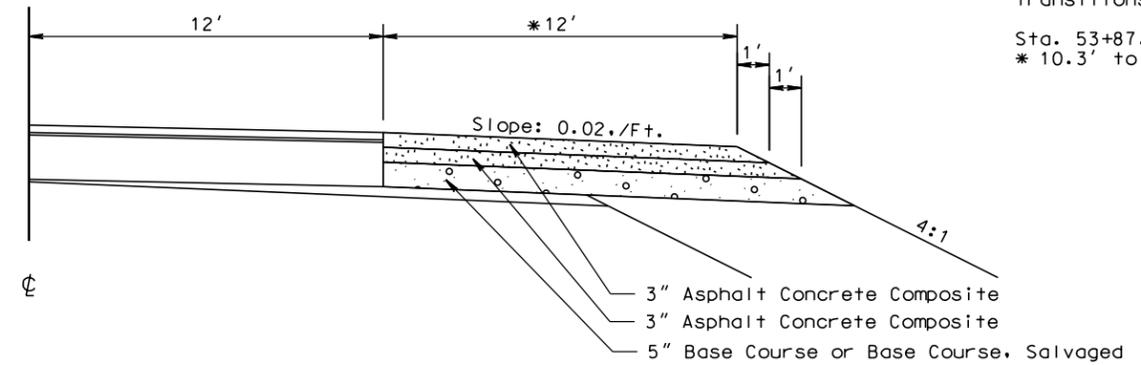
Plotting Date: 09/11/2014

In Place Typical Section
Shoulder Widening for Traffic Control
Sta. 53+87.9 to Sta. 55+17.1



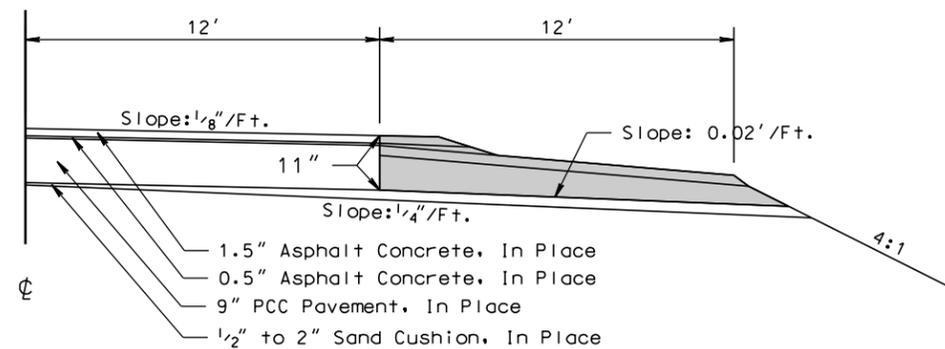
Transitions:
Sta. 53+87.9 to Sta. 55+17.1
* 6.7' to 8'
Sta. 53+87.9 to Sta. 55+17.1
** 3.6' to 4'

Surfacing Section
Shoulder Widening for Traffic Control
Sta. 53+87.9 to Sta. 55+17.1

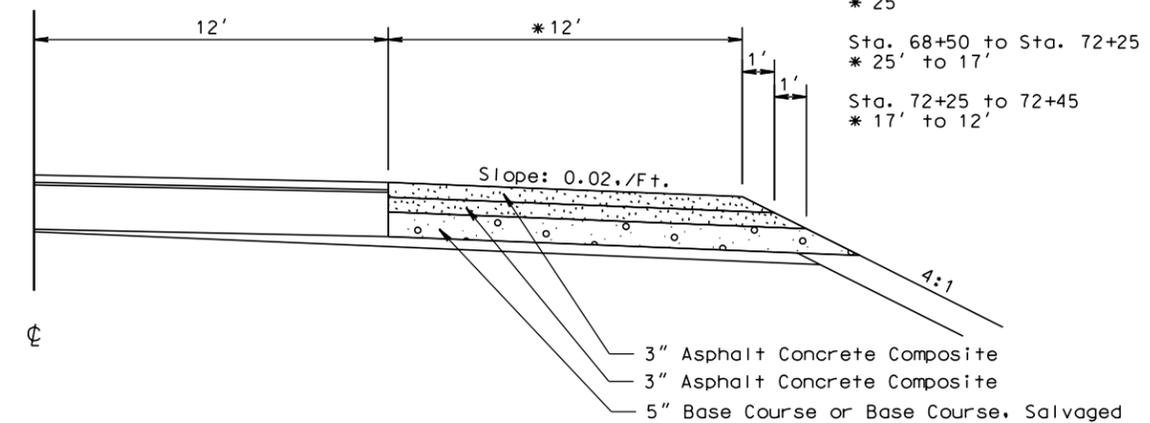


Transitions:
Sta. 53+87.9 to Sta. 55+17.1
* 10.3' to 12'

In Place Typical Section
Shoulder Widening for Traffic Control
Sta. 55+17.1 to Sta. 72+82.8 US18



Surfacing Section
Shoulder Widening for Traffic Control
Sta. 55+17.1 to Sta. 72+82.8 US18



Transitions:
Sta. 57+25 to Sta. 64+50
* 12' to 25'
Sta. 64+50 to 68+50
* 25'
Sta. 68+50 to Sta. 72+25
* 25' to 17'
Sta. 72+25 to 72+45
* 17' to 12'

PLOT NAME - 2

FILE - ... \TYPICAL SECTIONS 035A.DGN

SHOULDER WIDENING SECTIONS FOR TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F9	F60

Plotting Date: 09/11/2014

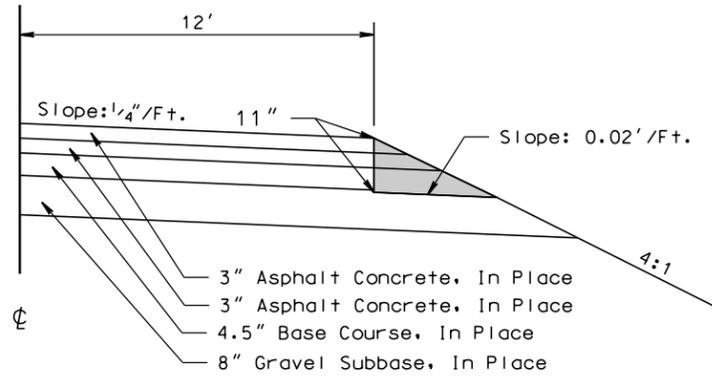
Salvage & Stockpile Asphalt
Mix & Granular Base Material

PLOT SCALE - 1+6.19298

PLOT NAME - 3

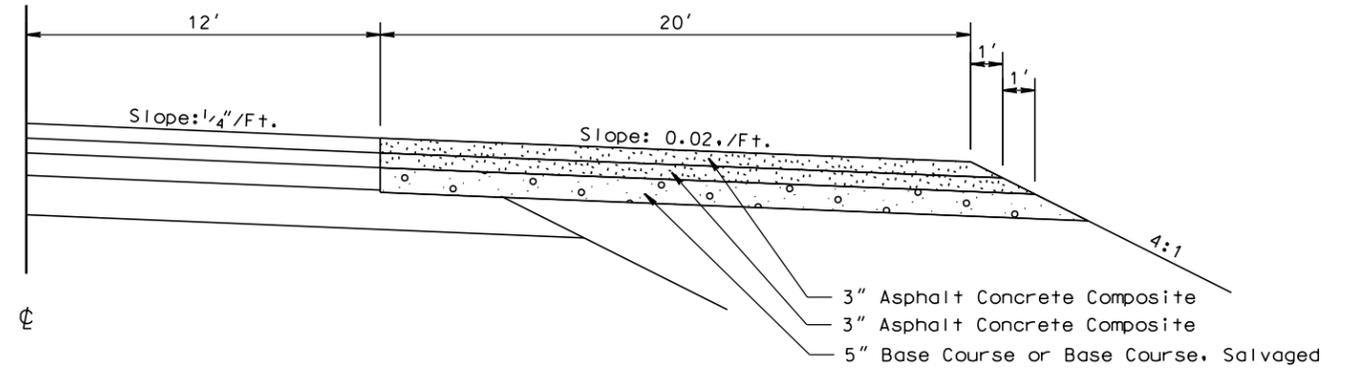
In Place Typical Section

Shoulder Widening for Traffic Control
Sta. 29+10 to Sta. 31+17.1 US18



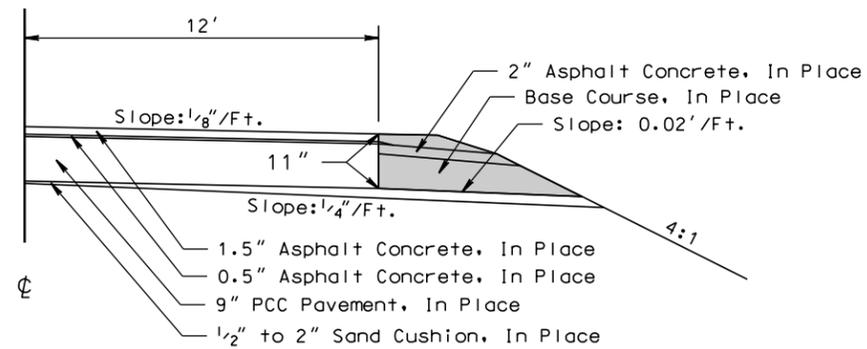
Surfacing Section

Shoulder Widening for Traffic Control
Sta. 29+10 to Sta. 31+17.1 US18



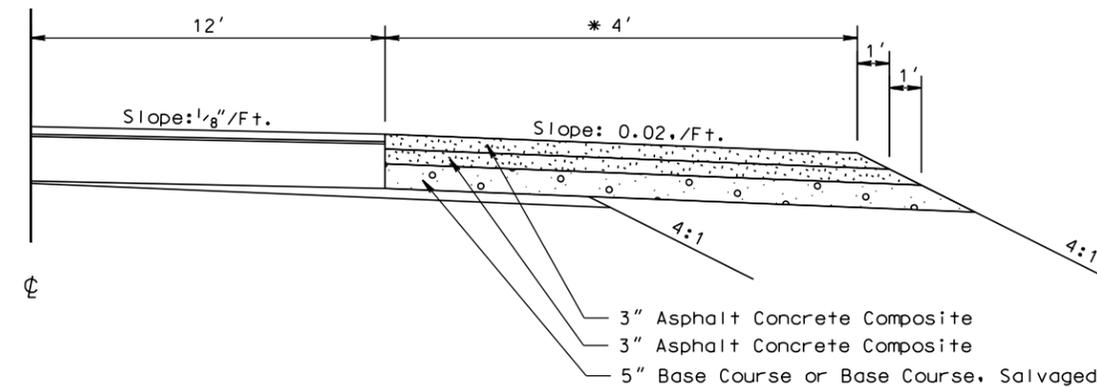
In Place Typical Section

Shoulder Widening for Traffic Control
Sta. 31+17.1 to Sta. 33+72.9 US18



Surfacing Section

Shoulder Widening for Traffic Control
Sta. 31+17.1 to Sta. 33+72.9 US18



Transition:

Sta. 31+17.1 to Sta. 33+25.0 US 18
* 20' to 4'

PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 035A.DGN

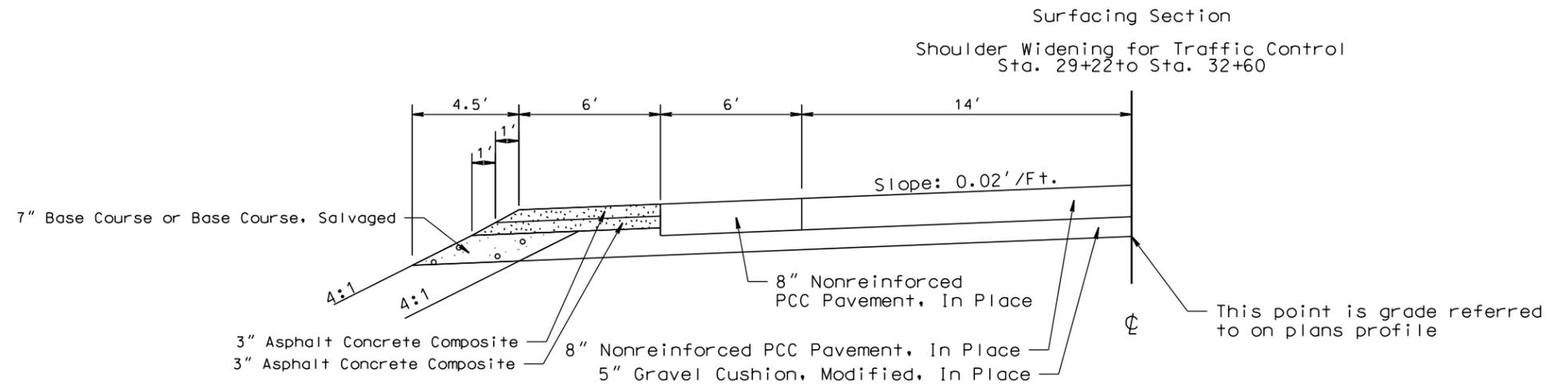
SHOULDER WIDENING SECTIONS FOR TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F10	F60

Plotting Date: 09/11/2014

PLOT SCALE - 1+6.19298

PLOT NAME - 4

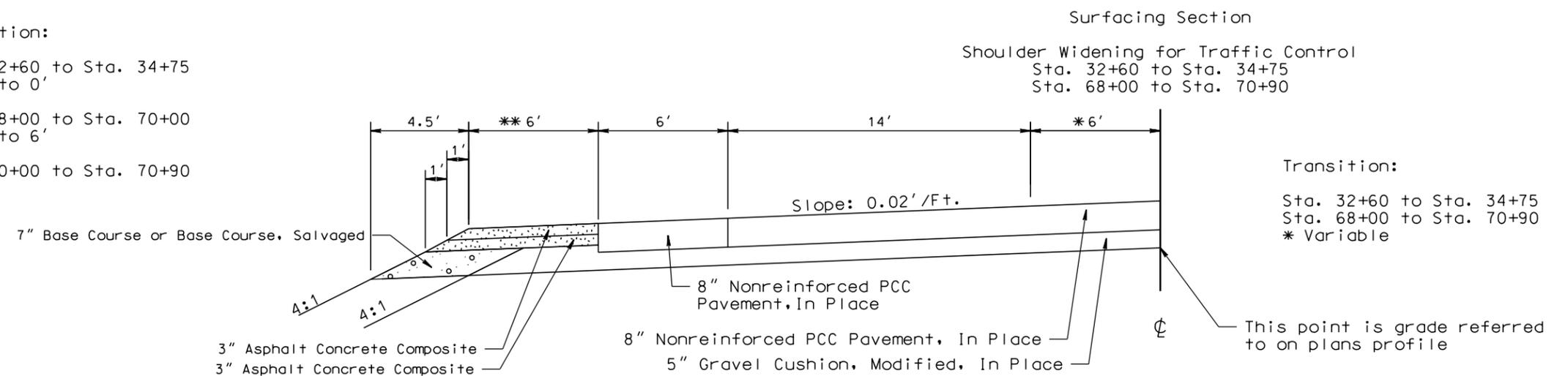


Transition:

Sta. 32+60 to Sta. 34+75
** 6' to 0'

Sta. 68+00 to Sta. 70+00
** 0' to 6'

Sta. 70+00 to Sta. 70+90
** 6'



PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 035A.DGN

SHOULDER WIDENING SECTIONS FOR TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F11	F60

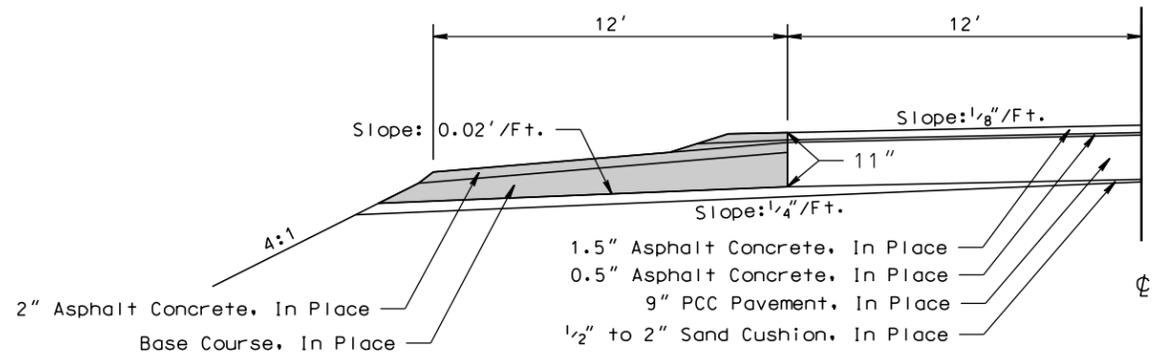
Plotting Date: 09/11/2014

Salvage & Stockpile Asphalt
Mix & Granular Base Material

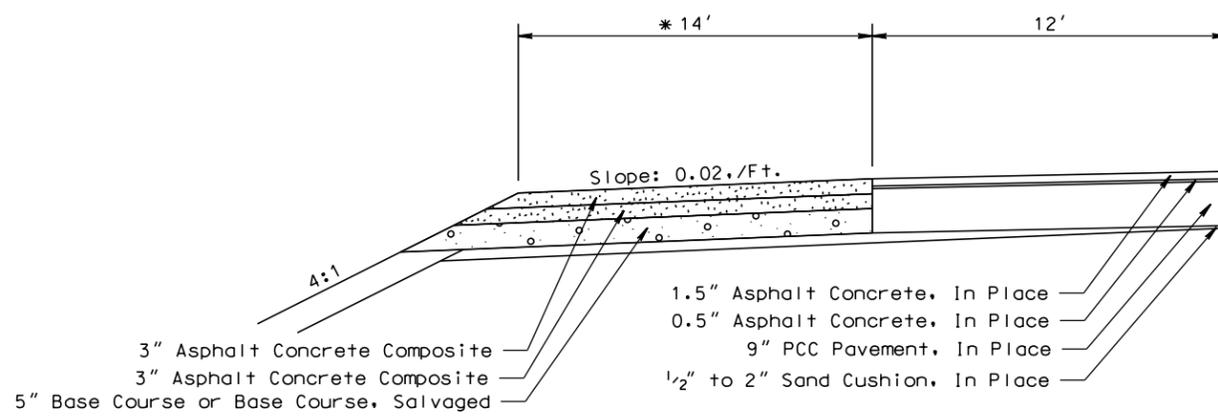
PLOT SCALE - 1+6.19298

PLOT NAME - 5

In Place Typical Section
Shoulder Widening for Traffic Control
Sta. 70+90 to Sta. 71+83 US18



Surfacing Section
Shoulder Widening for Traffic Control
Sta. 70+90 to Sta. 71+83 US18



Transitions:
Sta. 71+25 to Sta. 71+50
* 14' to 12'
Sta. 71+50 to Sta. 71+83
* 12'

PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 035A.DGN

TEMPORARY RAMP SECTIONS FOR TRAFFIC CONTROL

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F12	F60

Plotting Date: 09/11/2014

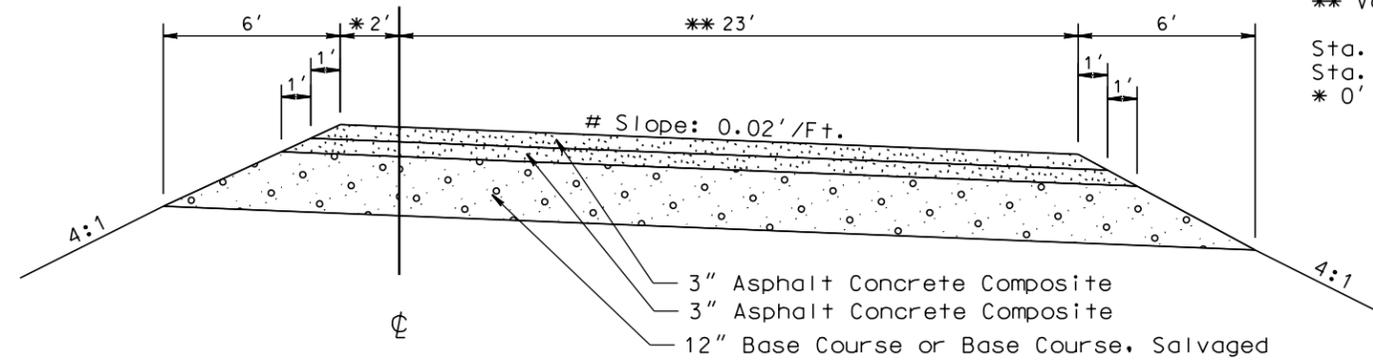
See Section B typicals and superelevation table

Temporary Ramp E
Sta. 0+111.5' to Sta. 7+68.6
Temporary Ramp H
Sta. 0+36.6 to Sta. 11+07.5

Transitions:

Sta. 0-111.5 to Sta. 2+66.9 Ramp E
Sta. 7+39.7 to Sta. 11+07.5 Ramp H
* Variable
** Variable

Sta. 6+50.3 to Sta. 7+68.6 Ramp E
Sta. 0+36.8 to Sta. 2+09.4 Ramp H
* 0'



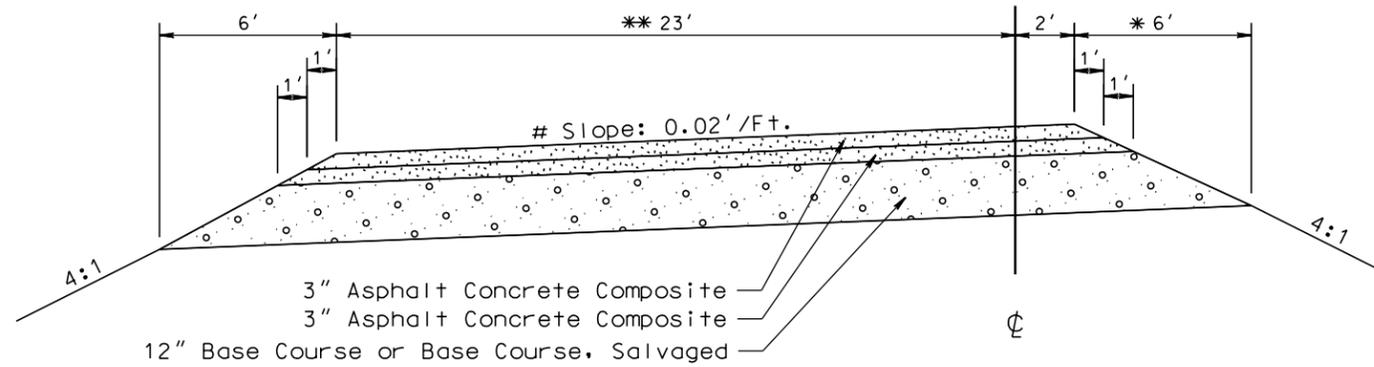
Temporary Ramp F
Sta. 0-34.3 to Sta. 7+49.2
Temporary Ramp G
Sta. 0+27.7 to Sta. 9+87.9

Transitions:

Sta. 0-34.3 to Sta. 2+76.3 Ramp F
Sta. 6+18.6 to Sta. 9+87.9 Ramp G
* Variable
** Variable

Sta. 5+96.5 to Sta. 7+49.2 Ramp F
* 6'

Sta. 0+27.7 to Sta. 2+07.6 Ramp G
* 5'



PLOT SCALE - 1+6.19298

PLOTTED FROM - TRPR16032

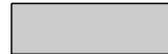
PLOT NAME - 6

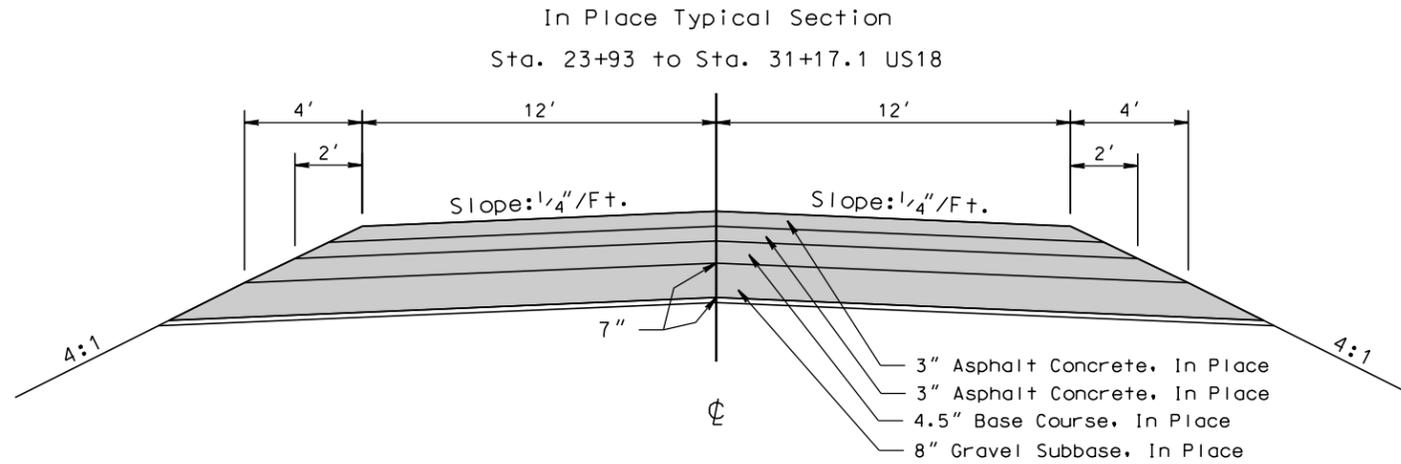
FILE - ... \TYPICAL SECTIONS 035A.DGN

IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F13	F60

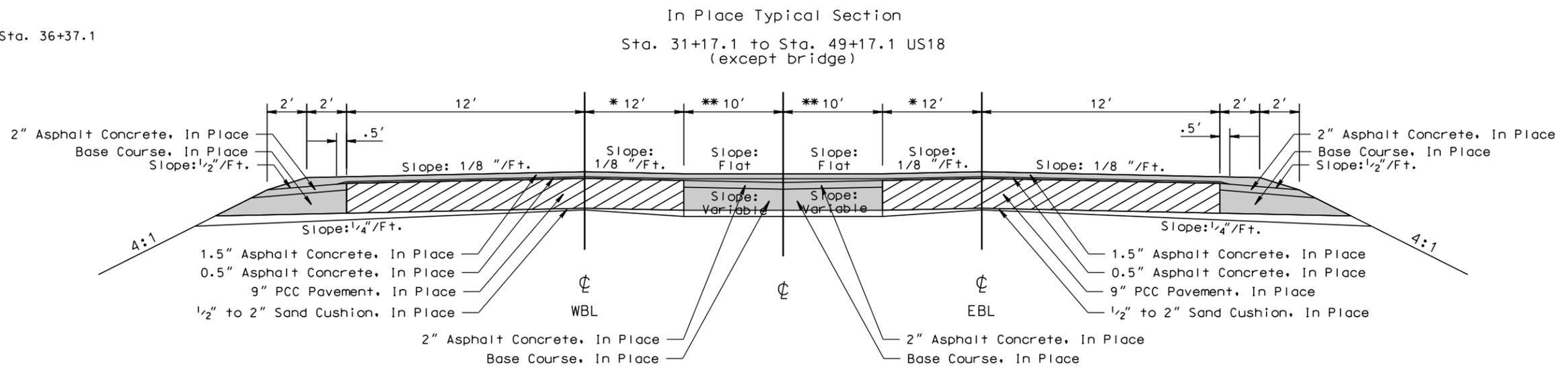
Plotting Date: 09/11/2014

-  Salvage & Stockpile Asphalt Mix & Granular Base Material
-  Remove Concrete Pavement



Transitions:

- Sta. 31+17.1 to Sta. 33+54.1
- * 0'
- ** 0' to 10'
- Sta. 33+54.1 to Sta. 36+37.1
- * 0' to 12'



IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F14	F60

Plotting Date: 09/11/2014

Salvage & Stockpile Asphalt Mix & Granular Base Material

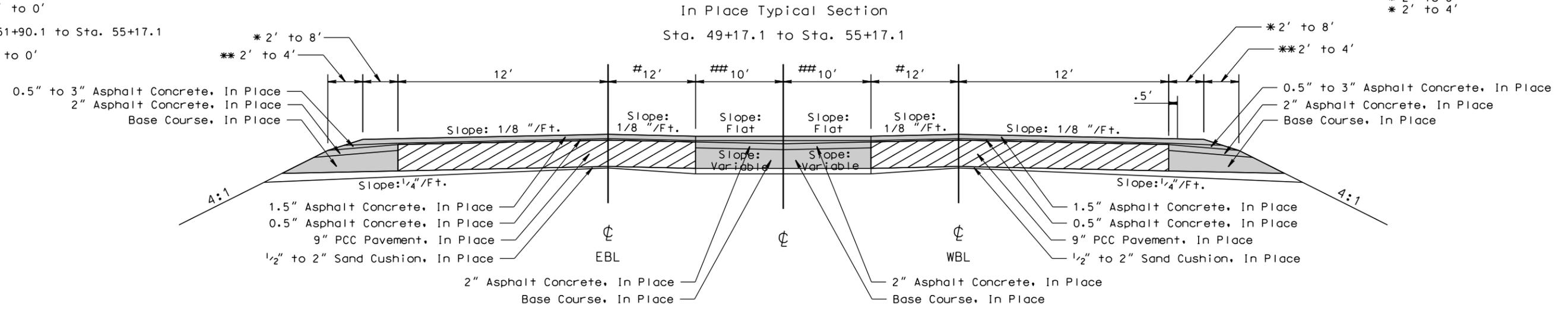
Remove Concrete Pavement

Transitions:

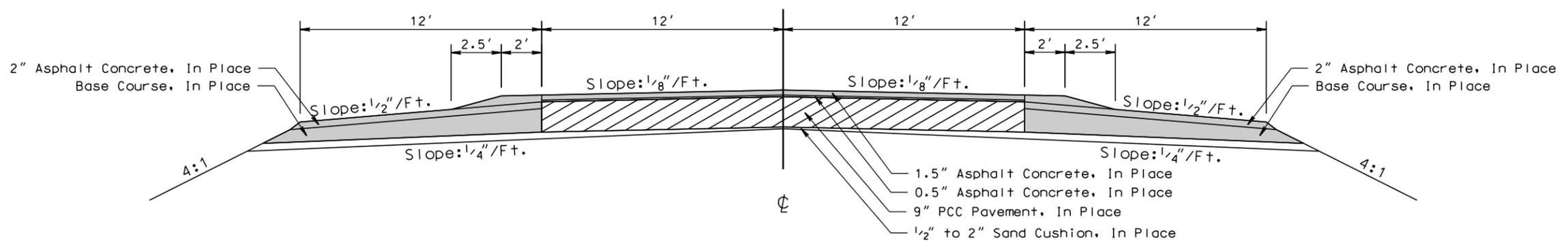
Sta. 49+17.1 to Sta. 51+90.1
 # 12'
 ## 10' to 0'
 Sta. 51+90.1 to Sta. 55+17.1
 ## 0'
 # 12' to 0'

Transitions:

Sta. 49+17.1 to Sta. 55+17.1
 * 2' to 8'
 * 2' to 4'



In Place Typical Section
Sta. 55+17.1 to Sta. 70+90 US18



PLOT SCALE - 1+6.19298

PLOT NAME - 8

FILE - ... \TYPICAL SECTIONS 035A.DGN

PLOTTED FROM - TRPR16032

IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F15	F60

Plotting Date: 09/11/2014

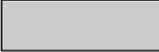
PLOT SCALE - 1+6.19298

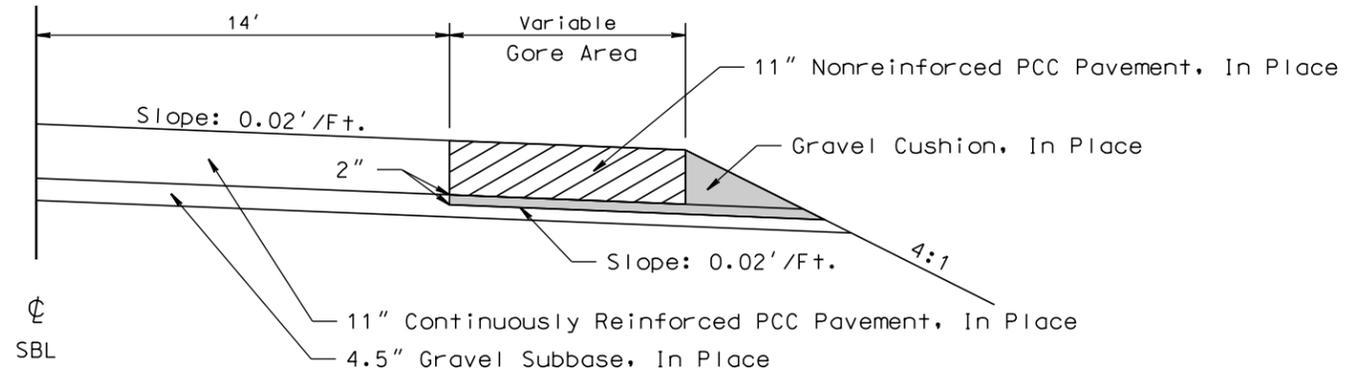
PLOT NAME - 9

FILE - ... \TYPICAL SECTIONS 035A.DGN

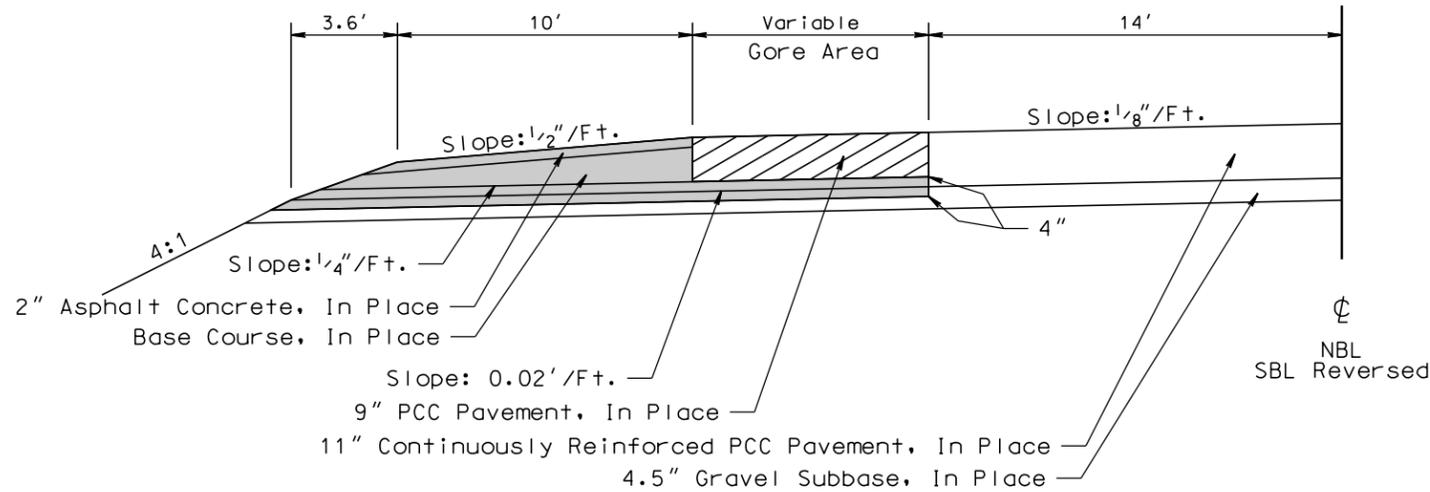
PLOTTED FROM - TRPR16032

I-29
Sta. 715+07.6 to Sta. 720+70.0 SBL Off Ramp

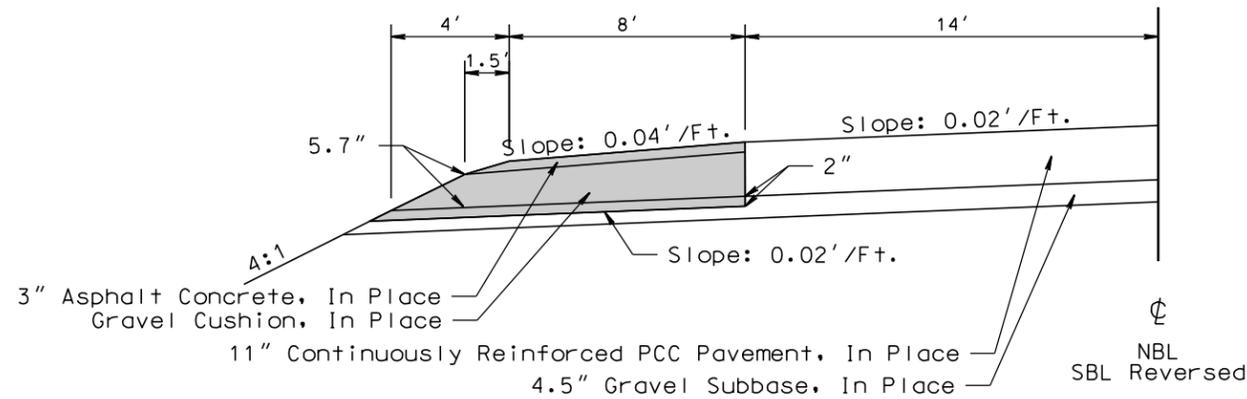
-  Salvage & Stockpile Asphalt Mix & Granular Base Material
-  Remove Concrete Pavement



I-29
Sta. 715+45.6 to Sta. 720+75.4 NBL On Ramp
Sta. 738+67.4 to Sta. 743+48.4 NBL Off Ramp
Sta. 739+57.0 to Sta. 745+48.3 SBL On Ramp



- I-29
- Sta. 700+66.6 to Sta. 715+45.6 NBL
 - Sta. 720+75.4 to Sta. 722+02.9 NBL
 - Sta. 728+54.3 to Sta. 732+31.8 NBL
 - Sta. 738+11.6 to Sta. 738+67.4 NBL
 - Sta. 743+48.4 to Sta. 750+10.4 NBL
 - Sta. 708+73.4 to Sta. 715+07.6 SBL
 - Sta. 727+79.3 to Sta. 732+08.3 SBL
 - Sta. 738+70.1 to Sta. 739+57.0 SBL
 - Sta. 745+48.3 to Sta. 760+20.0 SBL



IN PLACE TYPICAL SECTIONS

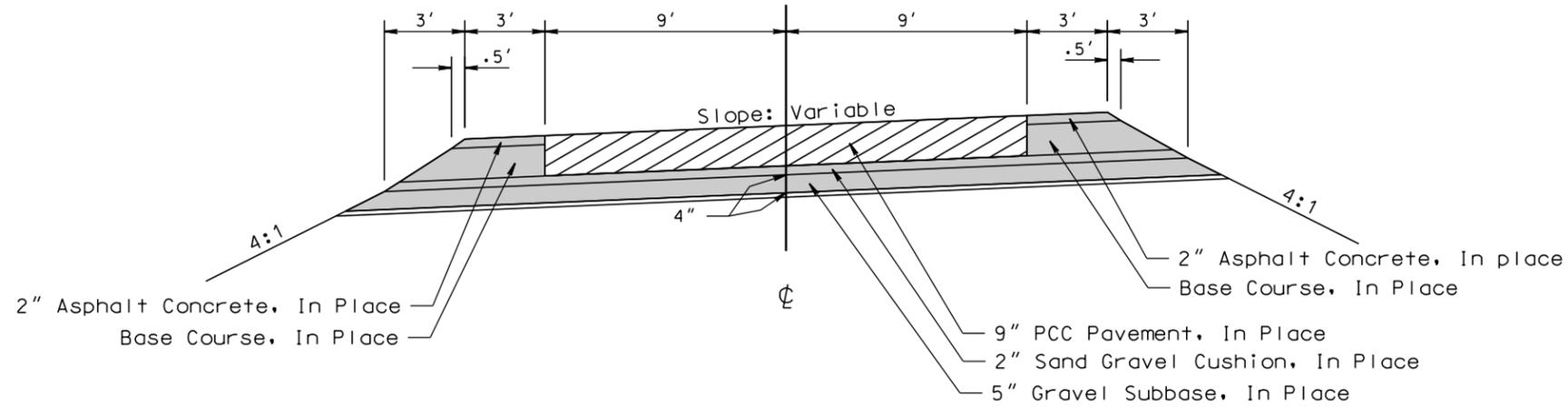
STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F16	F60

Plotting Date: 09/11/2014

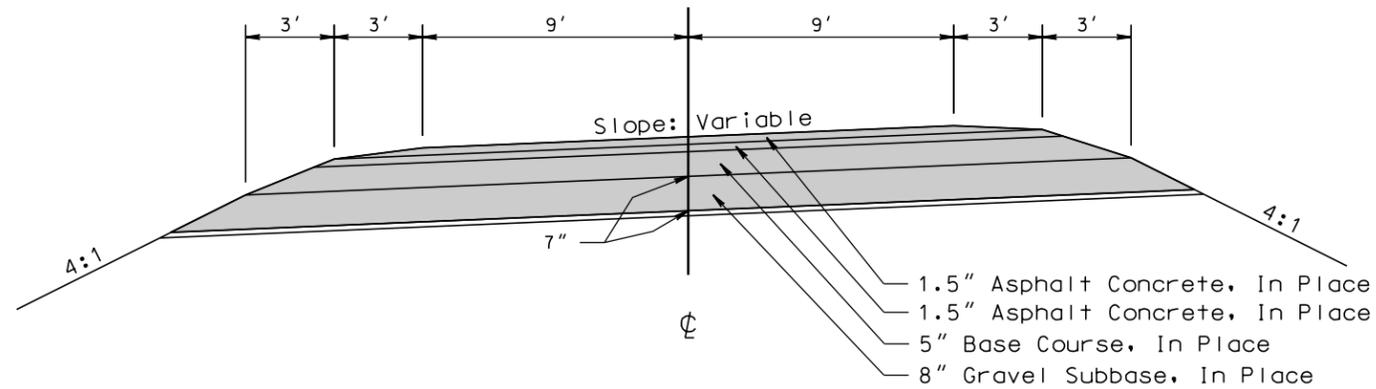
Salvage & Stockpile Asphalt Mix & Granular Base Material

Remove Concrete Pavement

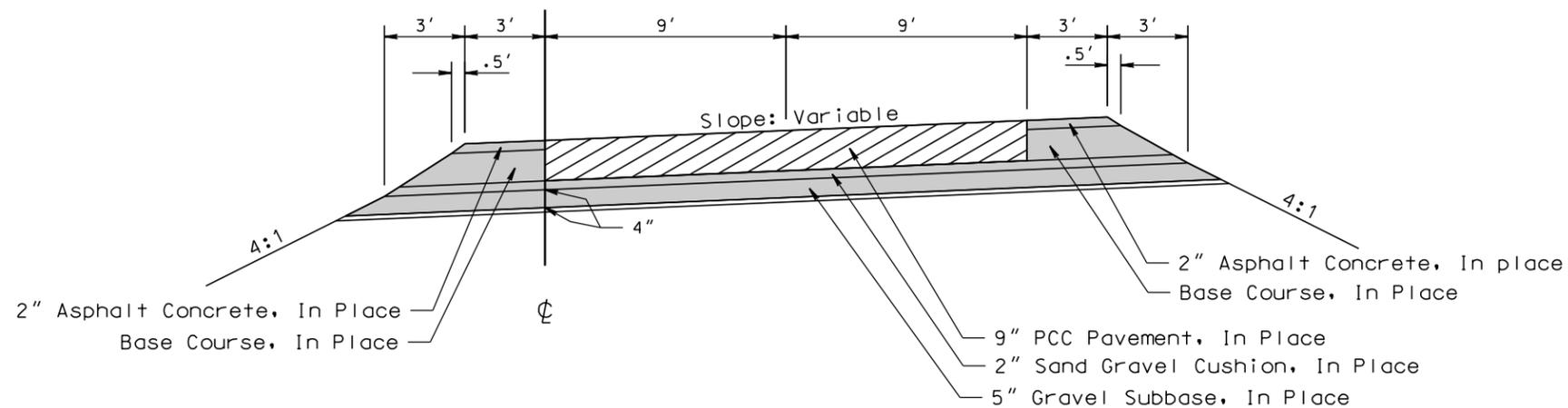
Sta. 0+79.9 to Sta. 2+05.1 NBL On Ramp



Sta. 2+05.1 to Sta. 10+41.8 NBL On Ramp



Sta. 0+37.0 to Sta. 9+28.9 NBL Off Ramp
Sta. 9+05.3 to Sta. 10+50.6 SBL On Ramp



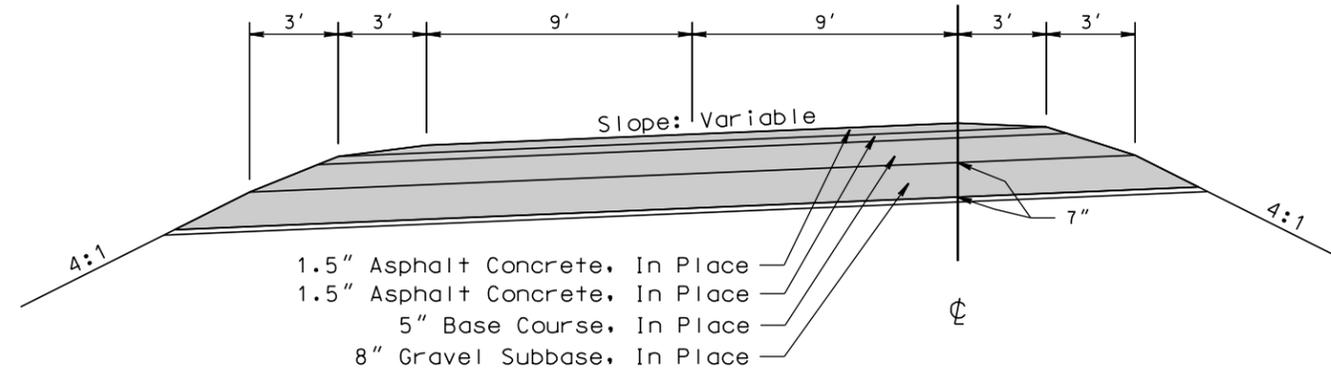
IN PLACE TYPICAL SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F17	F60

Plotting Date: 09/11/2014

Salvage & Stockpile Asphalt
Mix & Granular Base Material

Sta. 5+39.9 to Sta. 15+80.9 SBL Off Ramp
Sta. 0+38.8 to Sta. 9+05.3 SBL On Ramp



PLOT SCALE - 1+6.19298

PLOT NAME - 11

FILE - ... \TYPICAL SECTIONS 035A.DGN

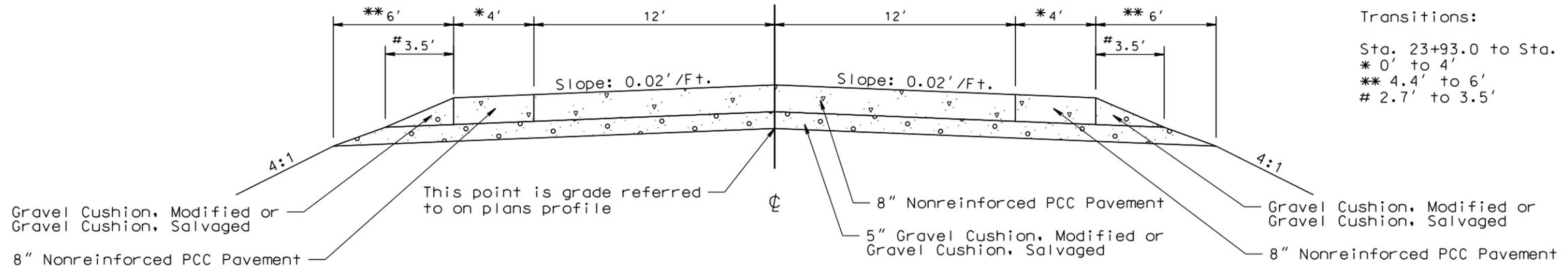
PLOTTED FROM - TRPR16032

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F18	F60

Plotting Date: 09/11/2014

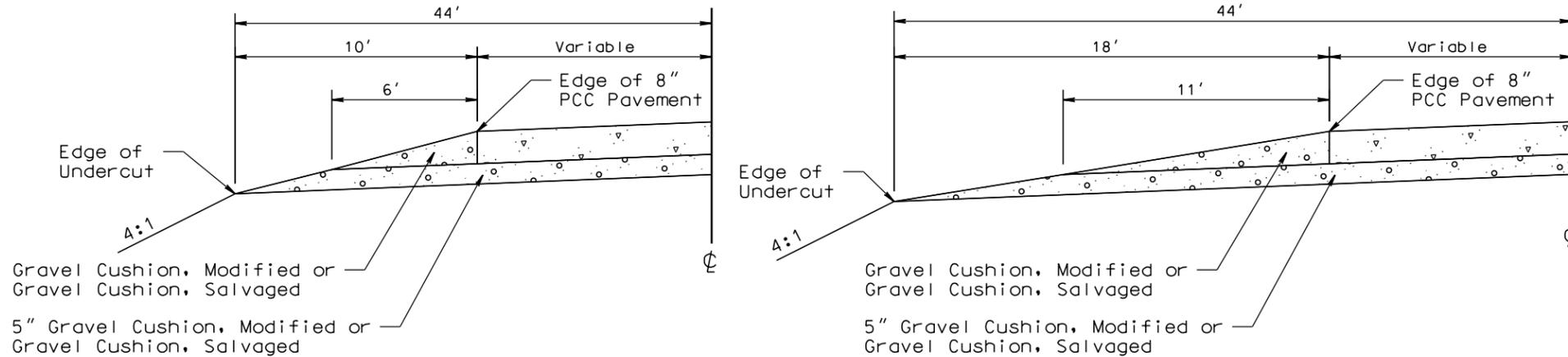
Sta. 23+93 to Sta. 32+60 US18



Extra Wide Sluff Details
 Sta. 46+20 to Sta. 67+00 US18
 (See Transition List on left side)

Transitions:

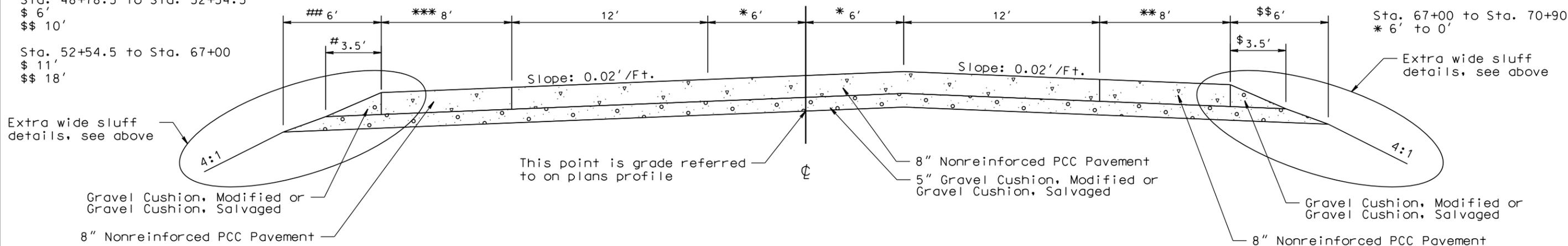
- Sta. 46+20 to Sta. 48+80.7
6'
10'
- Sta. 48+80.7 to Sta. 49+59.3
6' to 11'
10' to 18'
- Sta. 49+59.3 to Sta. 67+00
11'
18'
- Sta. 46+20 to Sta. 47+98.2
\$ 11'
\$\$ 18'
- Sta. 47+98.2 to Sta. 48+78.5
\$ 11' to 6'
\$\$ 18' to 10'
- Sta. 48+78.5 to Sta. 52+54.5
\$ 6'
\$\$ 10'
- Sta. 52+54.5 to Sta. 67+00
\$ 11'
\$\$ 18'



Transitions:

- Sta. 32+60 to Sta. 36+50
* 0' to 6'
** 4' to 8'
*** 4' to 8'
- Sta. 46+09.9 to Sta. 48+80.7
*** 16'
- Sta. 48+80.7 to Sta. 49+59.3
*** 16' to 8'
- Sta. 47+98.2 to Sta. 48+78.5
** 8' to 16'
- Sta. 48+78.5 to Sta. 52+54.5
** 16'
- Sta. 67+00 to Sta. 70+90
* 6' to 0'

Sta. 32+60 to Sta. 70+90 US18
 (Except Bridge)



PLOT SCALE - 1+6.19298

PLOTTED FROM - TRPR16032

PLOT NAME - 12

FILE - ... \TYPICAL SECTIONS 035A.DGN

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F19	F60

Plotting Date: 09/11/2014

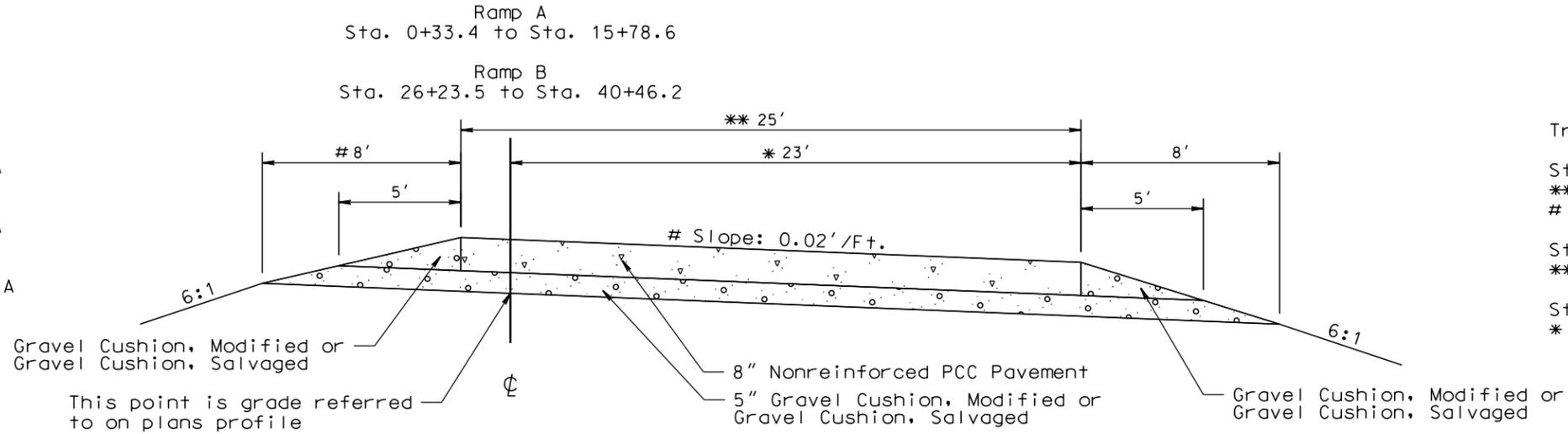
See Section B typicals and superelevation table

PLOT SCALE - 1+6.19298

PLOT NAME - 13

Transitions:

- Sta. 9+19.5 to Sta. 15+78.6 Ramp A * 23' to 20'
- Sta. 9+19.5 to Sta. 13+07.8 Ramp A ** 25' to 23.5'
- Sta. 13+07.8 to Sta. 15+78.6 Ramp A ** 35.5' to 18' # 0'



Transitions:

- Sta. 26+23.5 to Sta. 29+25.4 Ramp B ** 18' to 39.9' # 0'
- Sta. 29+25.4 to Sta. 34+01.1 Ramp B ** 23.9 to 25'
- Sta. 23+23.5 to Sta. 34+01.1 Ramp B * 20' to 23'

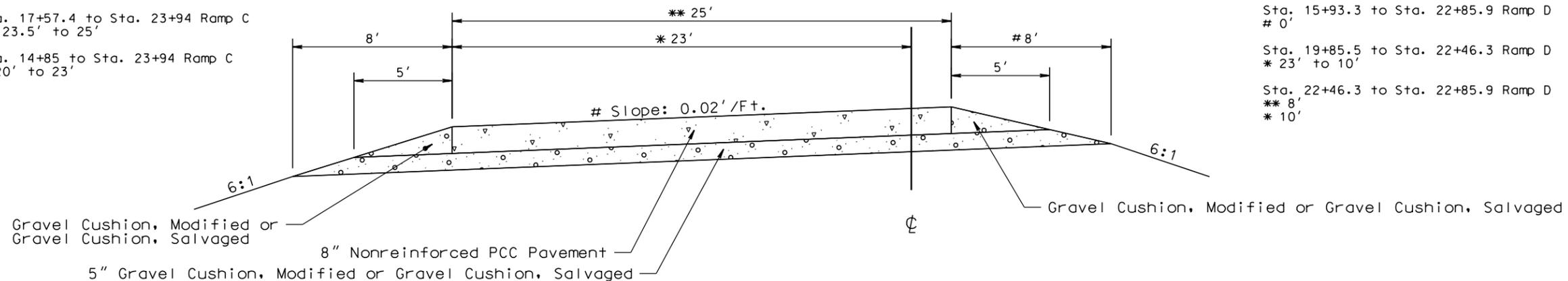
Transitions:

- Sta. 14+85 to Sta. 17+57.4 Ramp C ** 18' to 35.5' # 0'
- Sta. 17+57.4 to Sta. 23+94 Ramp C ** 23.5' to 25'
- Sta. 14+85 to Sta. 23+94 Ramp C * 20' to 23'

Ramp C
Sta. 14+85.0 to Sta. 31+97.4
Ramp D
Sta. 0+27.9 to Sta. 22+85.9

Transitions:

- Sta. 15+93.3 to Sta. 22+46.3 Ramp D ** 41.0' to 8''
- Sta. 15+93.3 to Sta. 22+85.9 Ramp D # 0'
- Sta. 19+85.5 to Sta. 22+46.3 Ramp D * 23' to 10'
- Sta. 22+46.3 to Sta. 22+85.9 Ramp D ** 8' * 10'



PLOTTED FROM - TRPR16032

FILE - ... \TYPICAL SECTIONS 035A.DGN

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 0292(74)62	F20	F60

Plotting Date: 09/11/2014

PLOT SCALE - 1+6.19298

PLOT NAME - 14

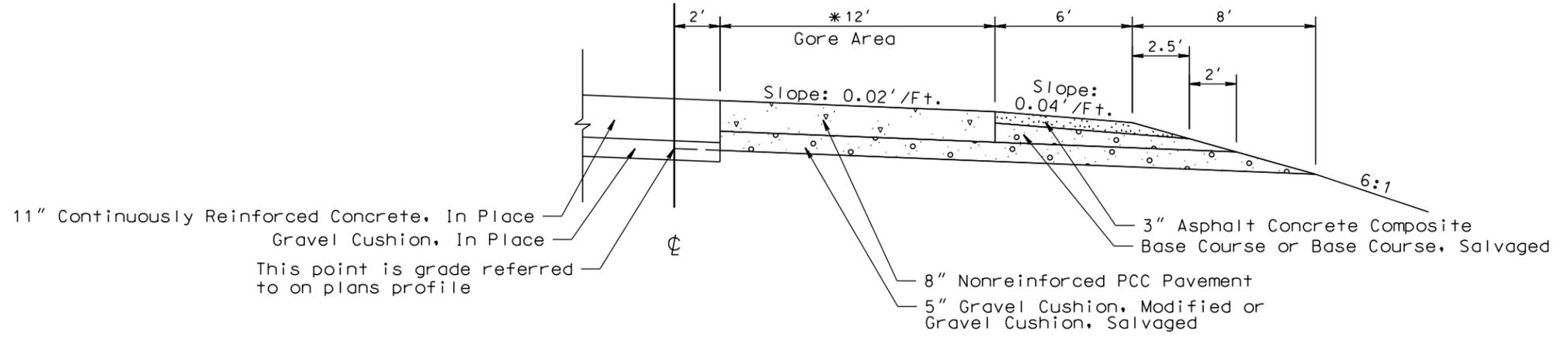
FILE - ... \TYPICAL SECTIONS 035A.DGN

Transitions:

- Sta. 23+58.7 to Sta. 28+57 Ramp A
* 12' to 2'
- Sta. 28+57 to Sta. 29+58.4 Ramp A
Sta. 19+83.5 to Sta. 20+25.1 Ramp B
* 2'
- Sta. 20+25.1 to Sta. 22+33.5 Ramp B
* 2' to 12'

Ramp A
Sta. 15+78.6 to Sta. 29+58.4

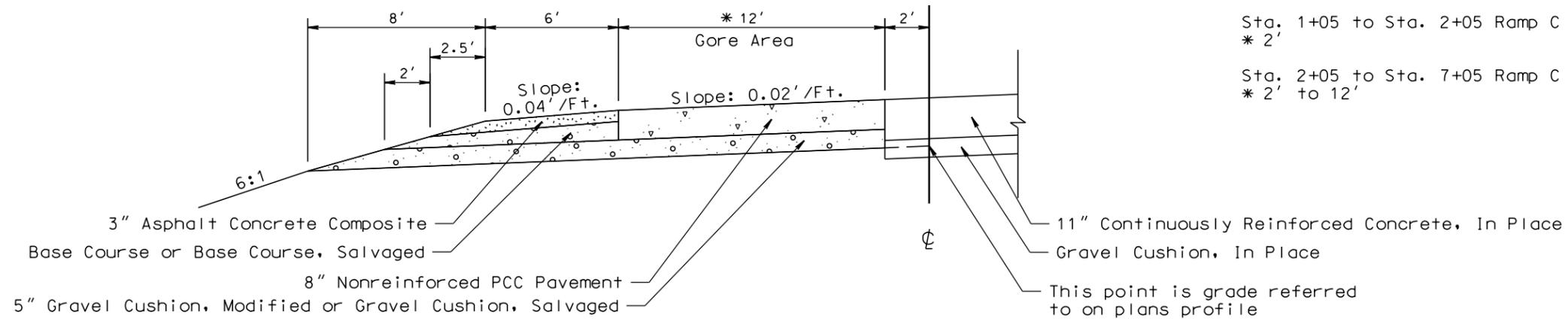
Ramp B
Sta. 19+83.5 to Sta. 26+23.5



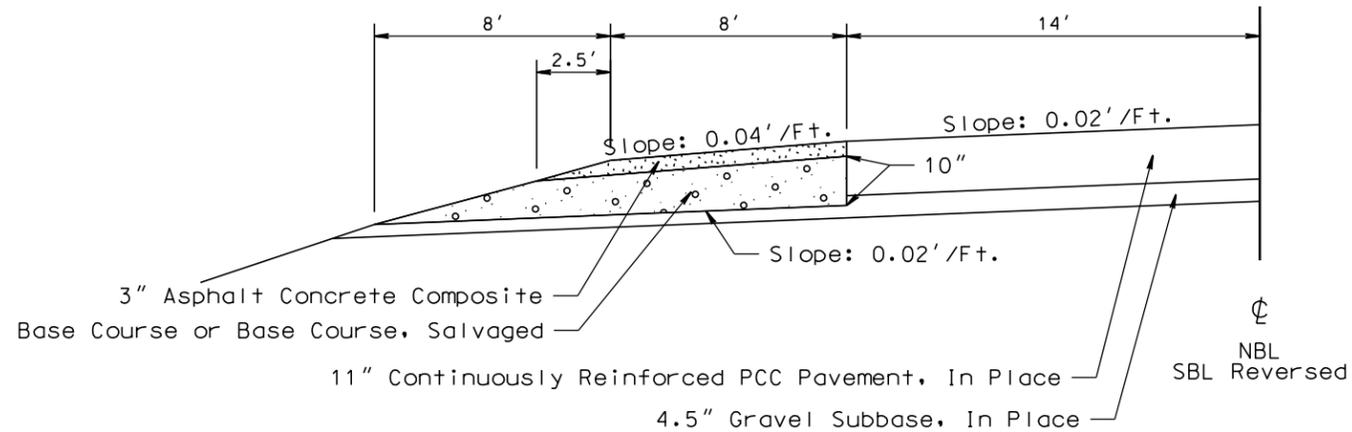
Ramp C
Sta. 1+05.0 to Sta. 14+85.0

Transitions:

- Sta. 1+05 to Sta. 2+05 Ramp C
* 2'
- Sta. 2+05 to Sta. 7+05 Ramp C
* 2' to 12'



I-29
Sta. 717+17.6 to Sta. 722+01.9 NBL
Sta. 738+11.6 to Sta. 740+68.1 NBL
Sta. 714+66.1 to Sta. 720+70.0 SBL
Sta. 738+70.1 to Sta. 743+67.9 SBL



PLOTTED FROM - TRPR16032

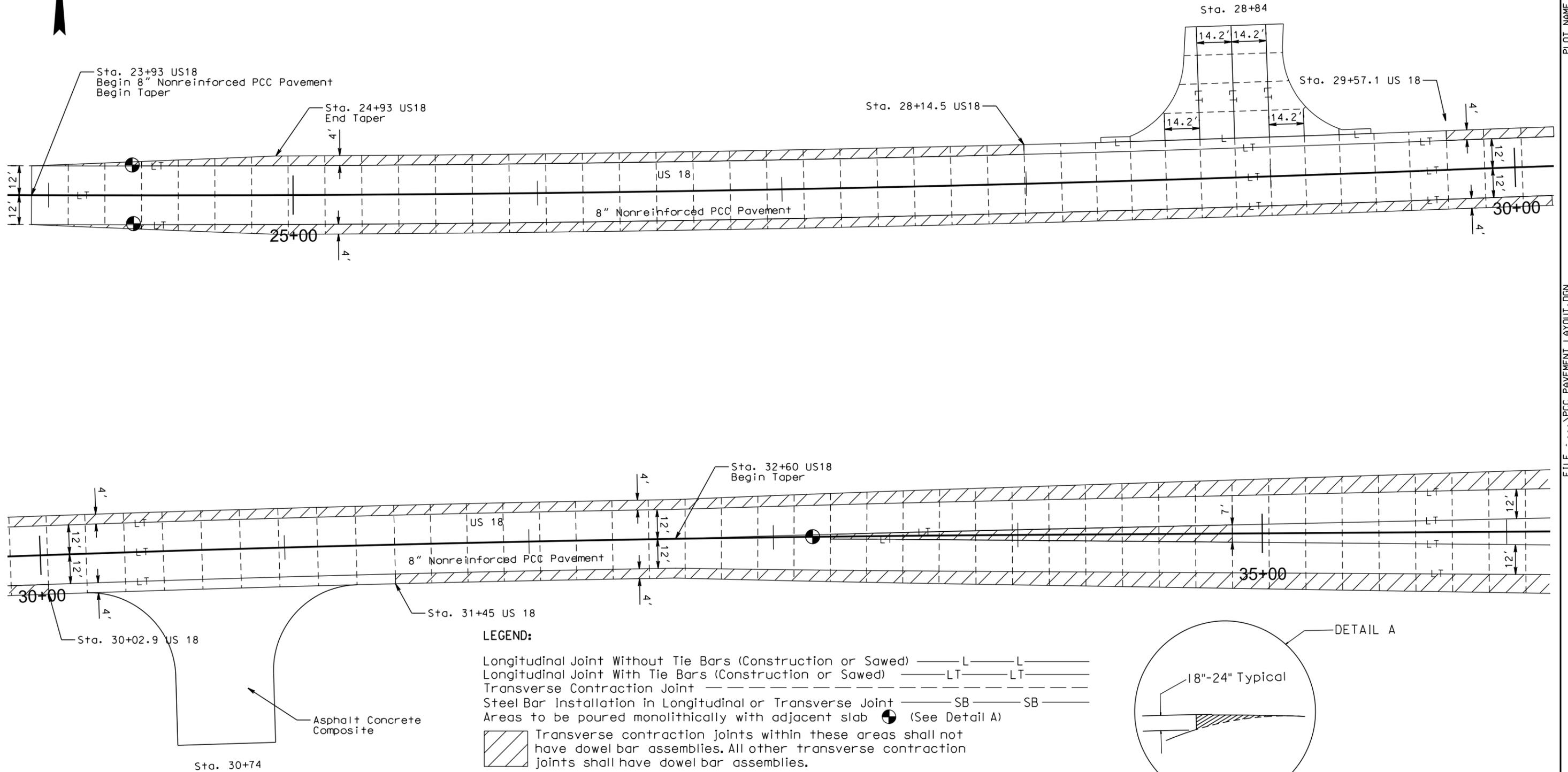
PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F21	F60

Plotting Date: 09/11/2014

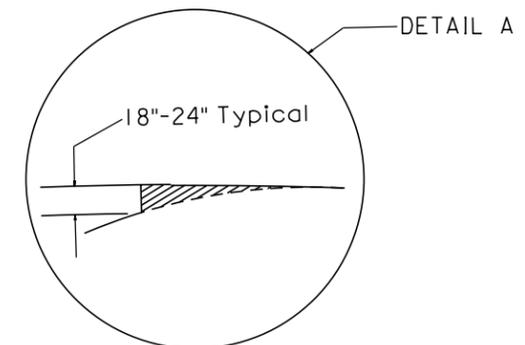
Scale 1 Inch = 40 Feet
Sheet 1 of 13 Sheets

PLOT SCALE - 1:40



LEGEND:

- Longitudinal Joint Without Tie Bars (Construction or Sawed) ——— L ——— L ———
- Longitudinal Joint With Tie Bars (Construction or Sawed) ——— LT ——— LT ———
- Transverse Contraction Joint ——— - - - - -
- Steel Bar Installation in Longitudinal or Transverse Joint ——— SB ——— SB ———
- Areas to be poured monolithically with adjacent slab ● (See Detail A)
- Transverse contraction joints within these areas shall not have dowel bar assemblies. All other transverse contraction joints shall have dowel bar assemblies.



PLOTTED FROM - TRPR16032

PLOT NAME - 15

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F22	F60

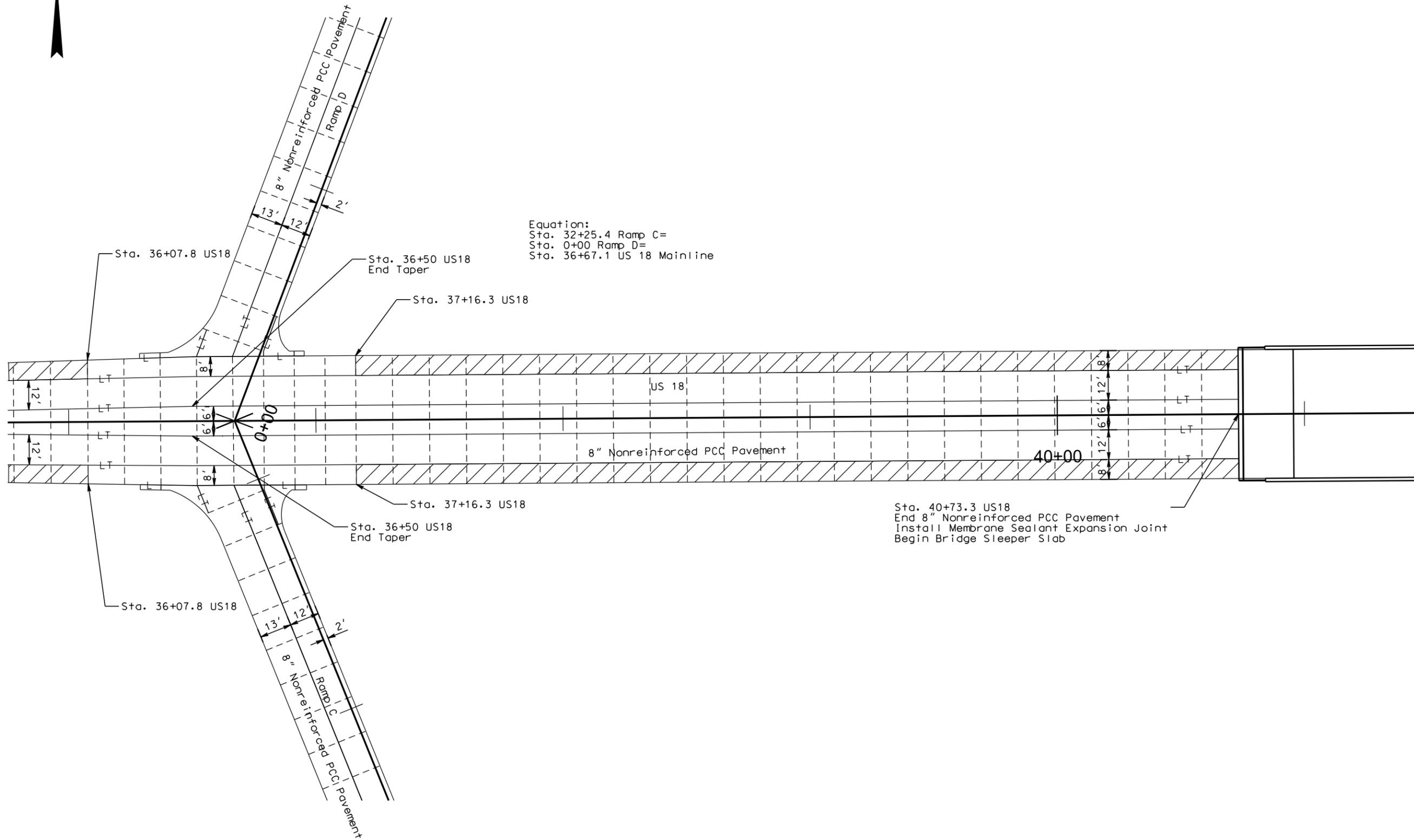
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 2 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 16



PLOTTED FROM - TRPR16032

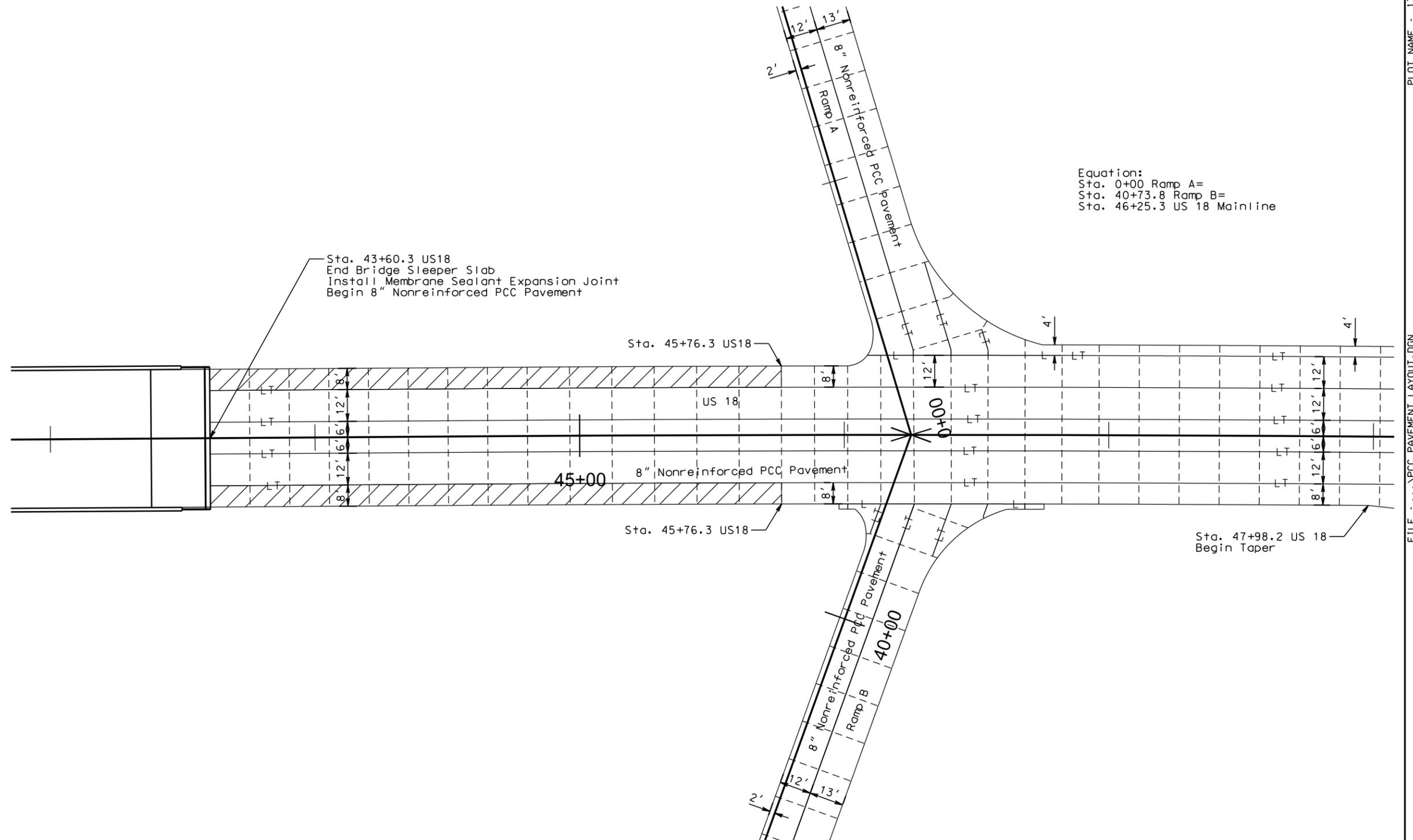
FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

Scale 1 Inch = 40 Feet
Sheet 3 of 13 Sheets

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F23	F60

Plotting Date: 09/11/2014



Equation:
Sta. 0+00 Ramp A=
Sta. 40+73.8 Ramp B=
Sta. 46+25.3 US 18 Mainline

PLOT SCALE - 1:40

PLOTTED FROM - TRPR16032

PLOT NAME - 17

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F24	F60

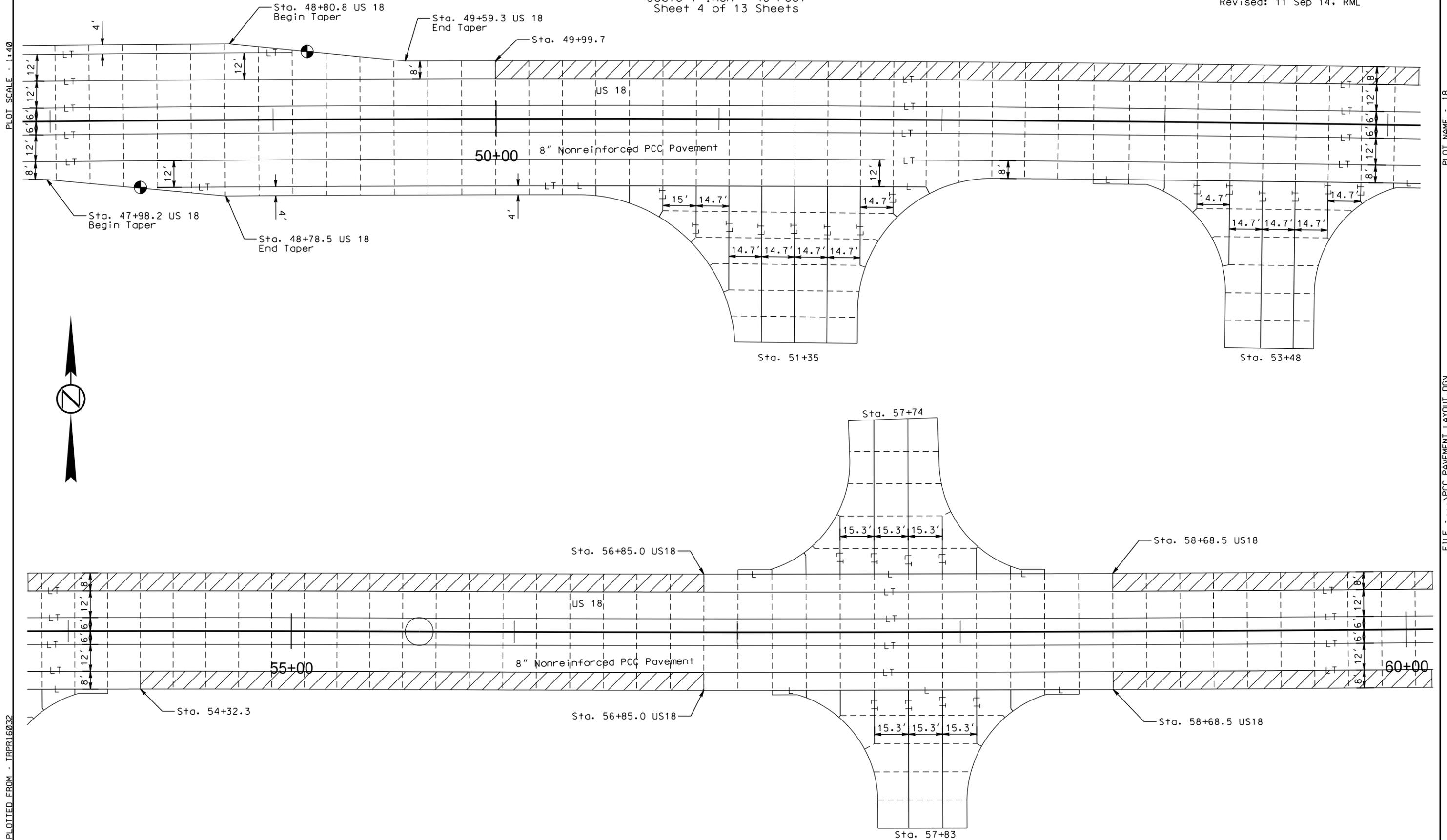
Plotting Date: 09/11/2014

Revised: 11 Sep 14, RML

Scale 1 Inch = 40 Feet
Sheet 4 of 13 Sheets

PLOT SCALE - 1:40

PLOT NAME - 18



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F25	F60

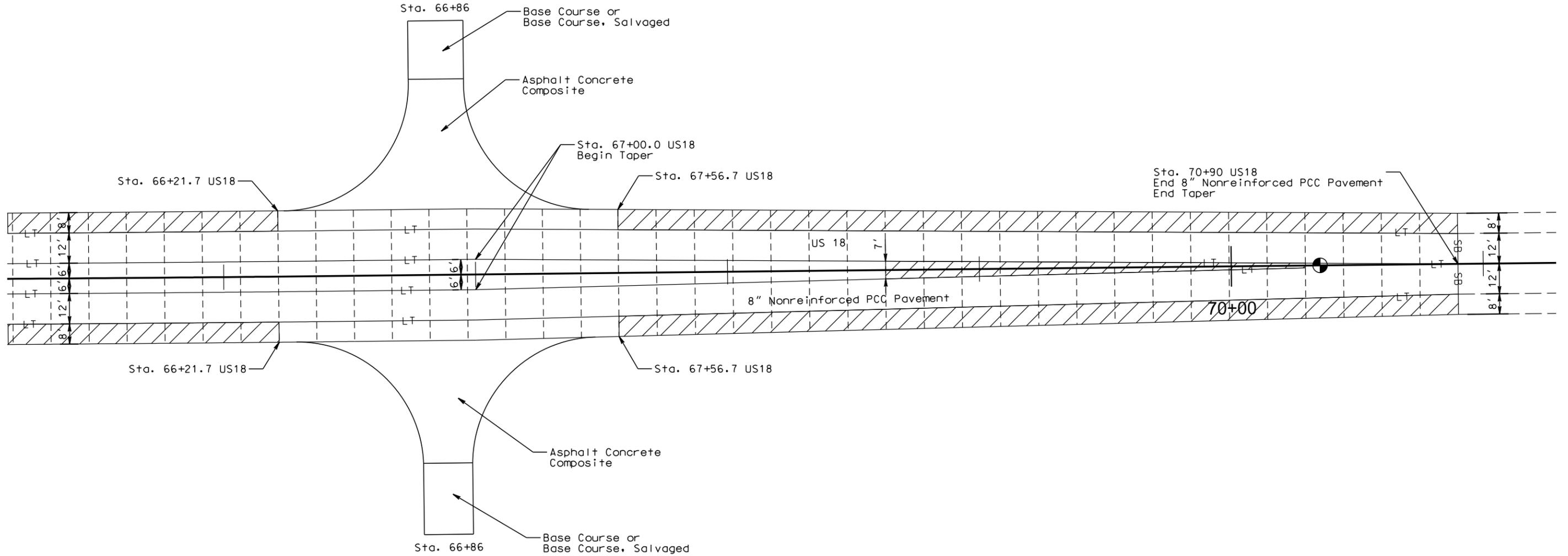
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 5 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 19



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F26	F60

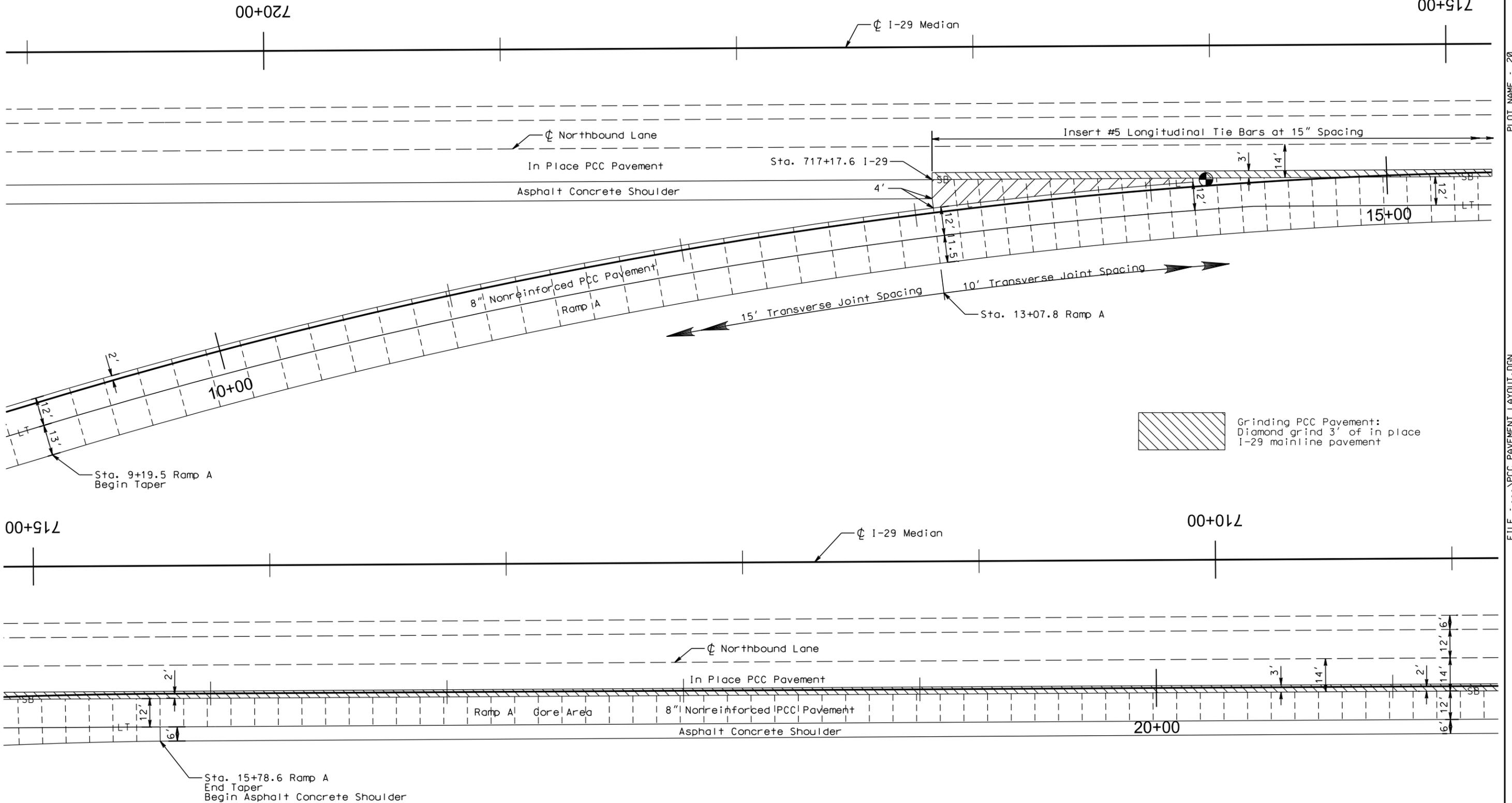
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 6 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 20



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F27	F60

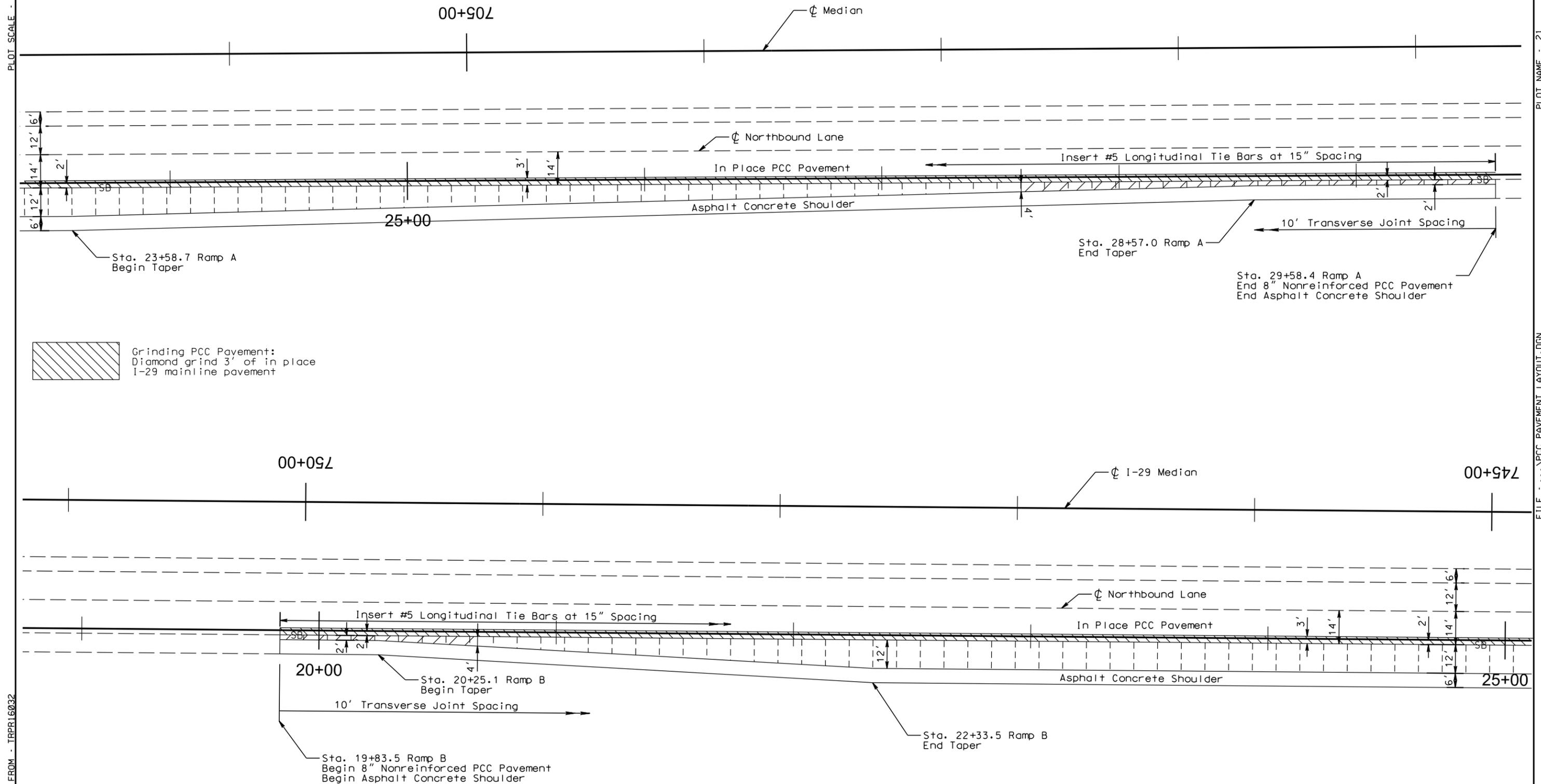
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 7 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 21



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F28	F60

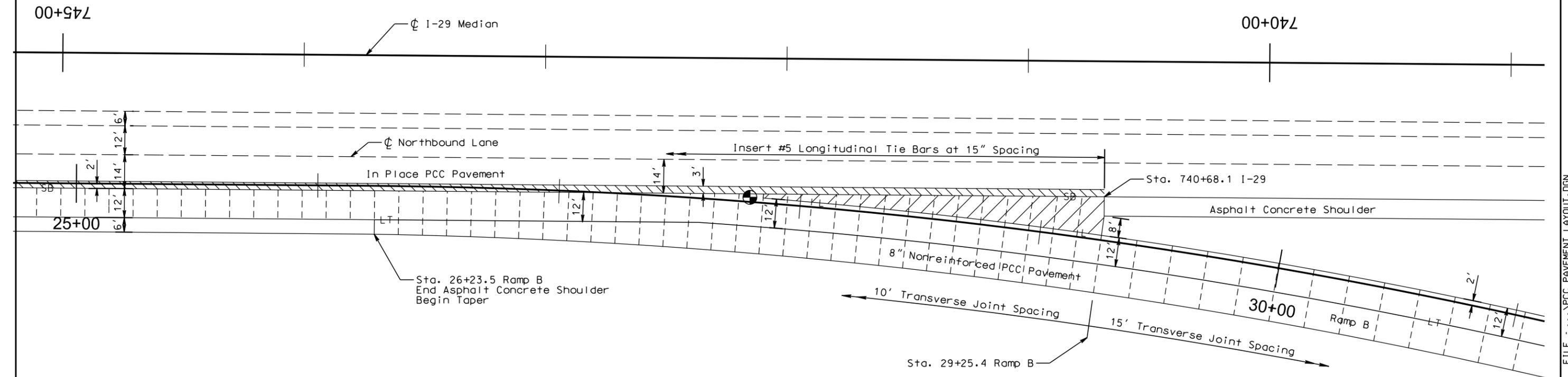
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 8 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 22



 Grinding PCC Pavement:
Diamond grind 3' of in place
I-29 mainline pavement

PLOTTED FROM - ITRP16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F29	F60

Plotting Date: 09/11/2014

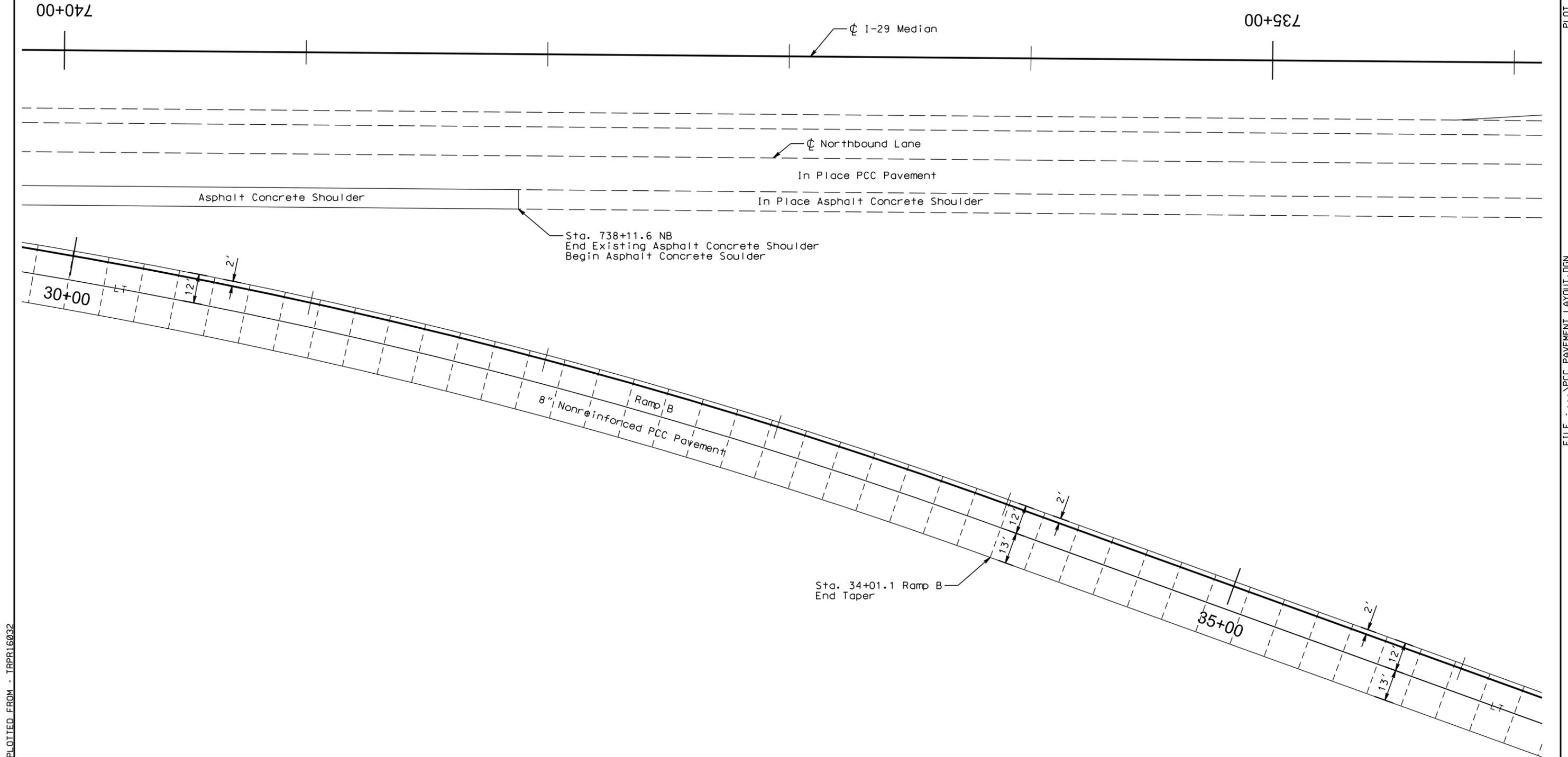
Scale 1 Inch = 40 Feet
Sheet 9 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 23

FILE - ... \PCC PAVEMENT LAYOUT.DGN



PLOTTED FROM - TRPR16032

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT IM 0292(74)62	SHEET F30	TOTAL SHEETS F60
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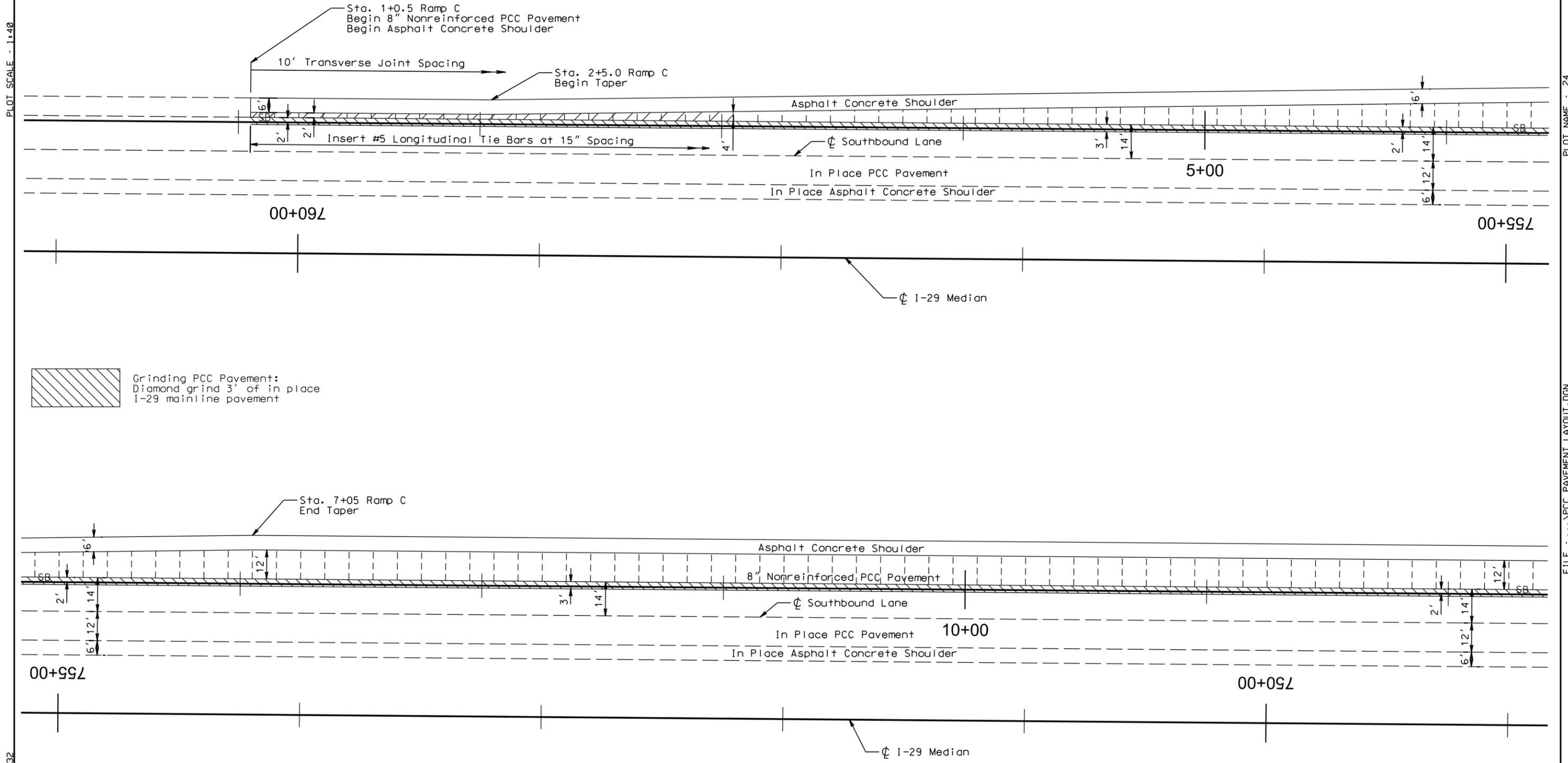
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 10 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 24



Grinding PCC Pavement:
Diamond grind 3' of in place
I-29 mainline pavement

PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT IM 0292(74)62	SHEET F31	TOTAL SHEETS F60
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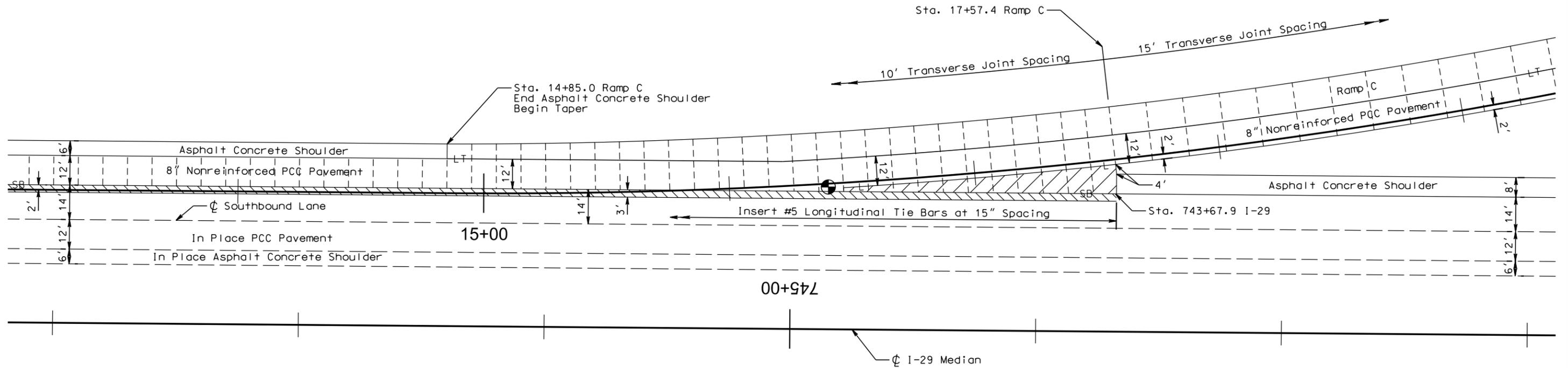
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 11 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 25



 Grinding PCC Pavement:
 Diamond grind 3' of in place
 I-29 mainline pavement

PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F32	F60

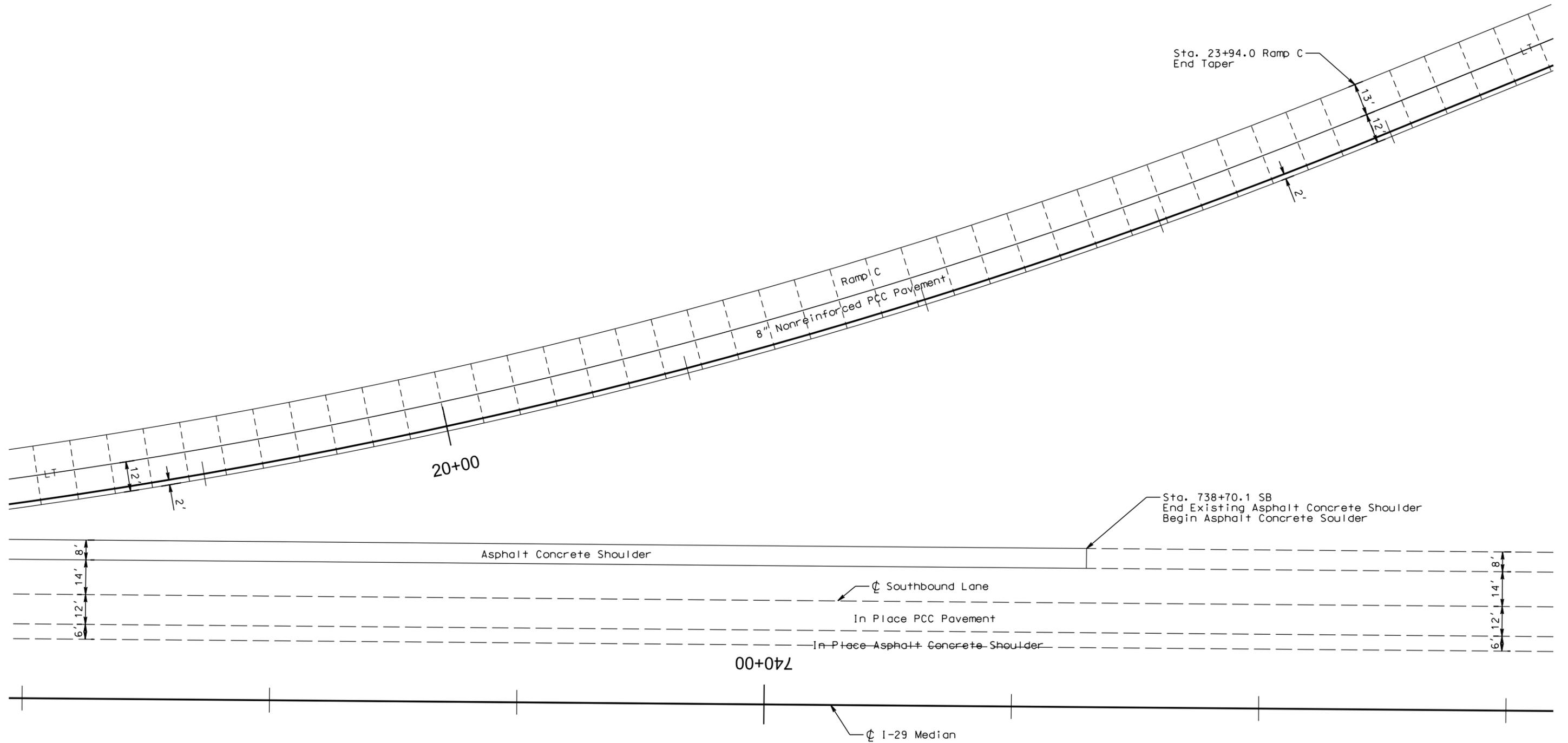
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 12 of 13 Sheets



PLOT SCALE - 1:40

PLOT NAME - 26



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

PCC PAVEMENT JOINT LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F33	F60

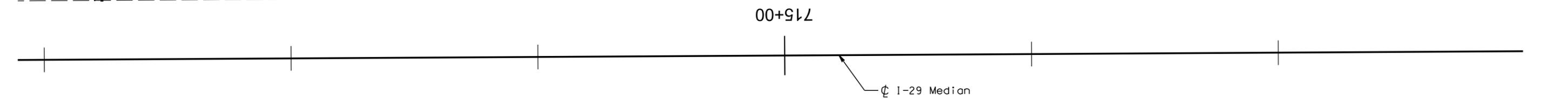
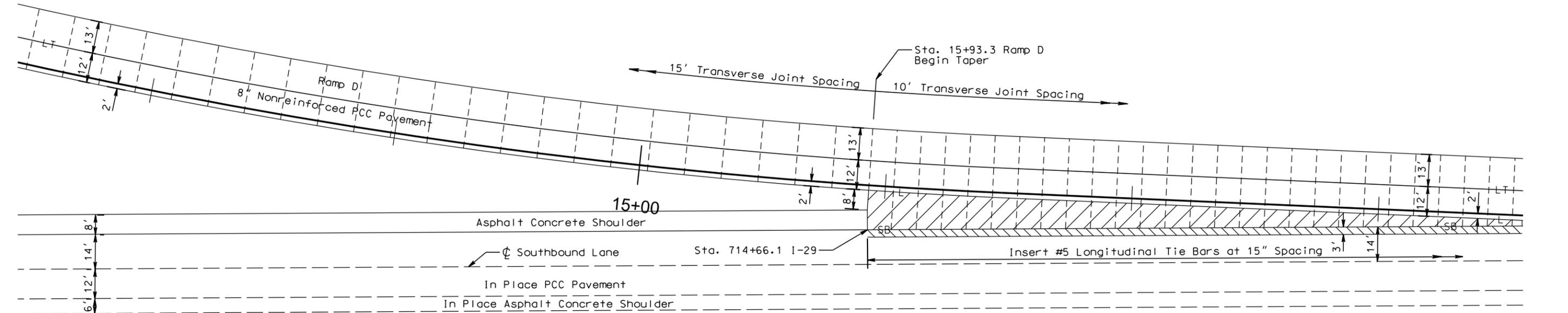
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 13 of 13 Sheets

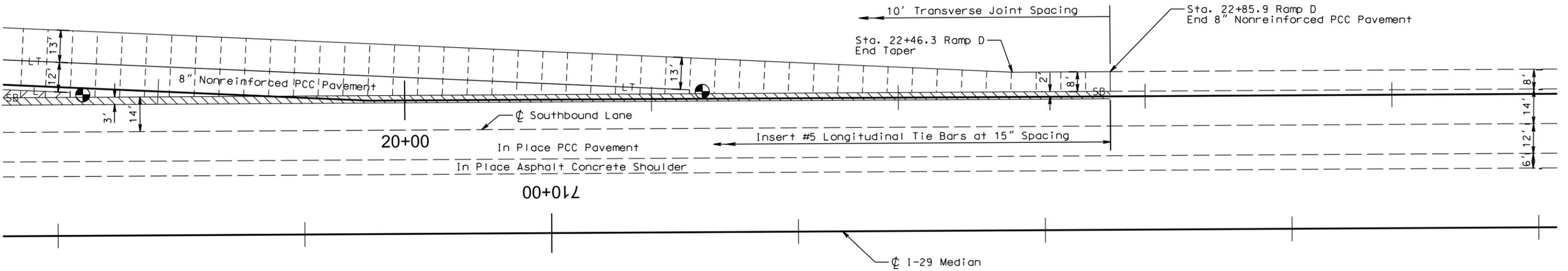


PLOT SCALE - 1:40

PLOT NAME - 27



Grinding PCC Pavement:
Diamond grind 3' of in place
I-29 mainline pavement



PLOTTED FROM - TRPR16032

FILE - ... \PCC PAVEMENT LAYOUT.DGN

IN PLACE SHOULDER REMOVAL AREAS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F34	F60

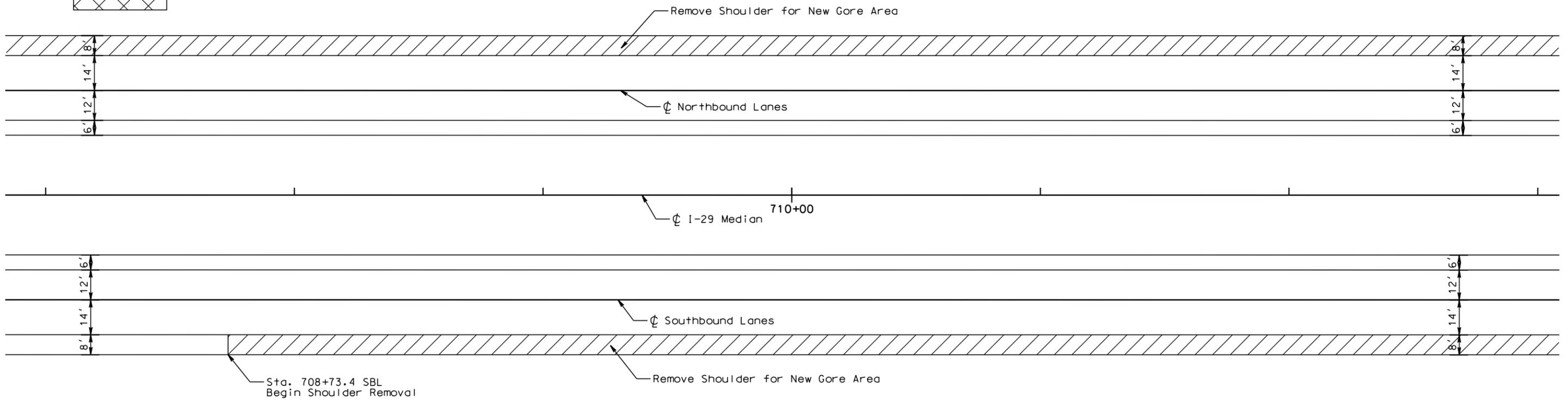
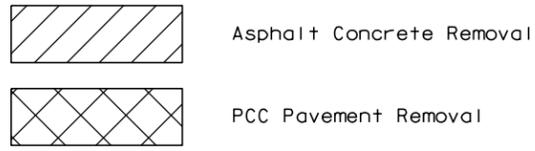
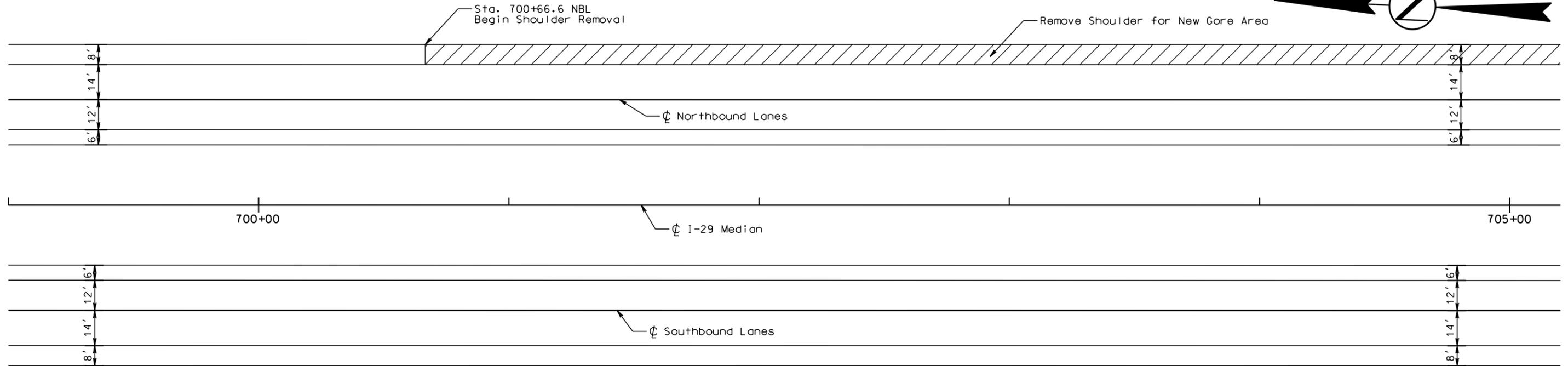
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 1 of 7 Sheets



PLOT SCALE - 1:40

PLOT NAME - 28



PLOTTED FROM - TRPR16032

FILE - ... \LINC035A\SHOULDER REMOVAL.DGN

IN PLACE SHOULDER REMOVAL AREAS

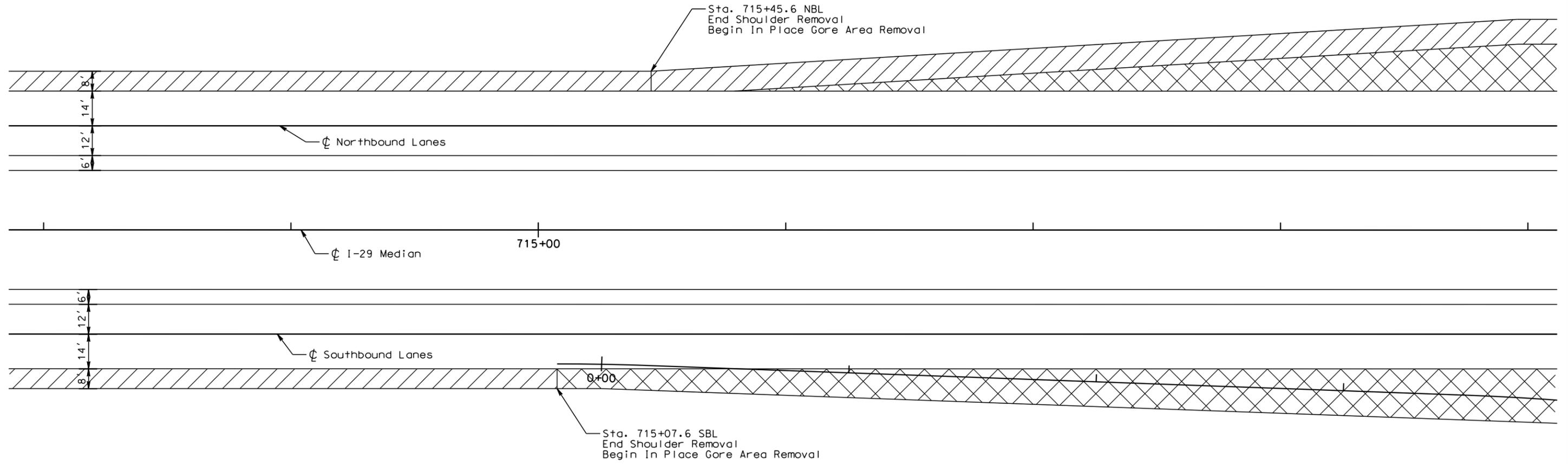
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F35	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 2 of 7 Sheets



-  Asphalt Concrete Removal
-  PCC Pavement Removal



PLOT SCALE - 1:40

PLOT NAME - 29

FILE - ... \LINC035A\SHOULDER REMOVAL.DGN

PLOTTED FROM - IRPR16032

IN PLACE SHOULDER REMOVAL AREAS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F36	F60

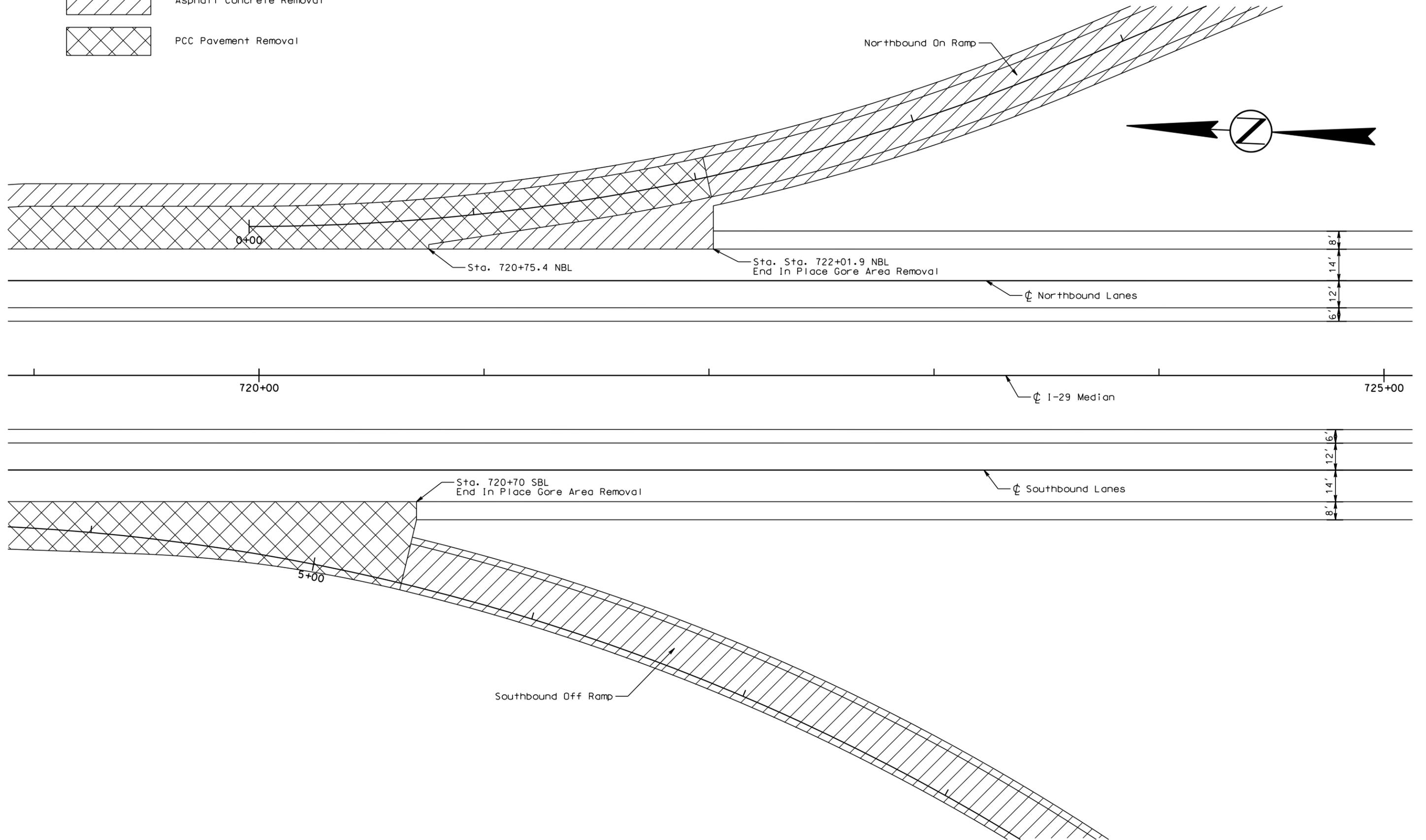
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 3 of 7 Sheets

-  Asphalt Concrete Removal
-  PCC Pavement Removal

PLOT SCALE - 1:40

PLOT NAME - 30



PLOTTED FROM - IRPR16032

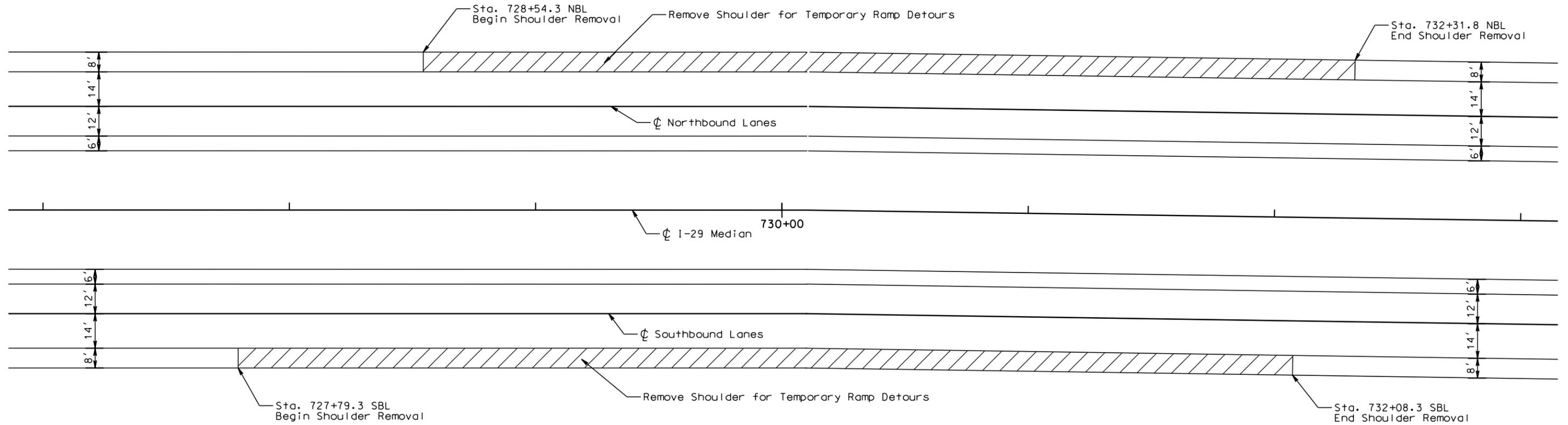
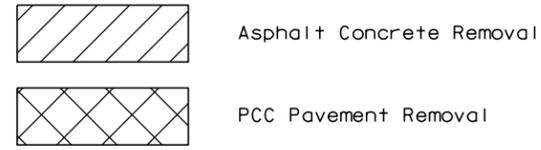
FILE - ... \LINC035A\SHOULDER REMOVAL.DGN

IN PLACE SHOULDER REMOVAL AREAS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F37	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 4 of 7 Sheets



PLOT SCALE - 1:40

PLOT NAME - 31

FILE - ... \LINC035A\SHOULDER REMOVAL.DGN

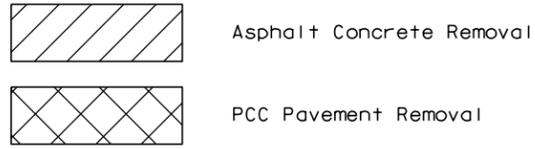
PLOTTED FROM - TRPR16032

IN PLACE SHOULDER REMOVAL AREAS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F38	F60

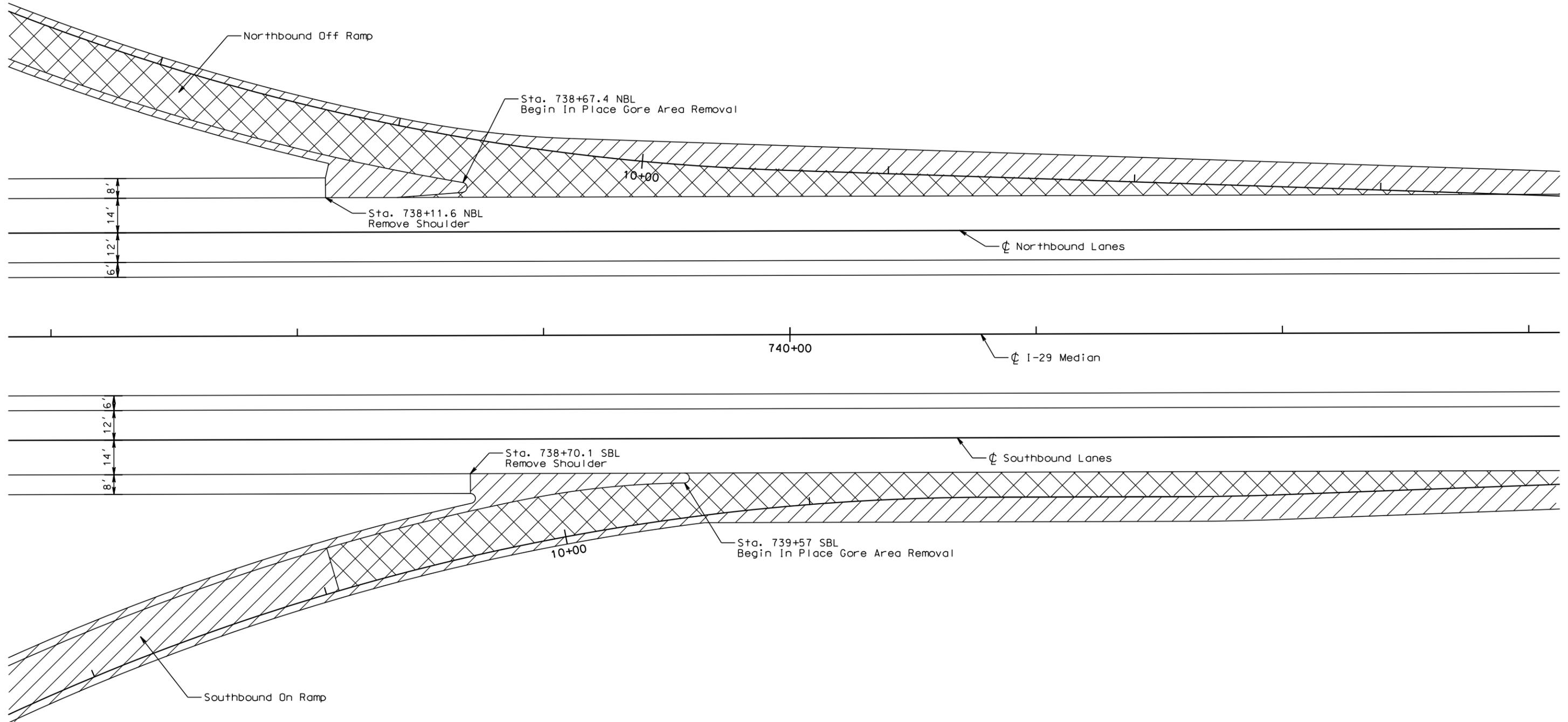
Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 5 of 7 Sheets



PLOT SCALE - 1:40

PLOT NAME - 32



PLOTTED FROM - TRPR16032

FILE - ... \LINC0356\SHOULDER REMOVAL.DGN

IN PLACE SHOULDER REMOVAL AREAS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F39	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 6 of 7 Sheets

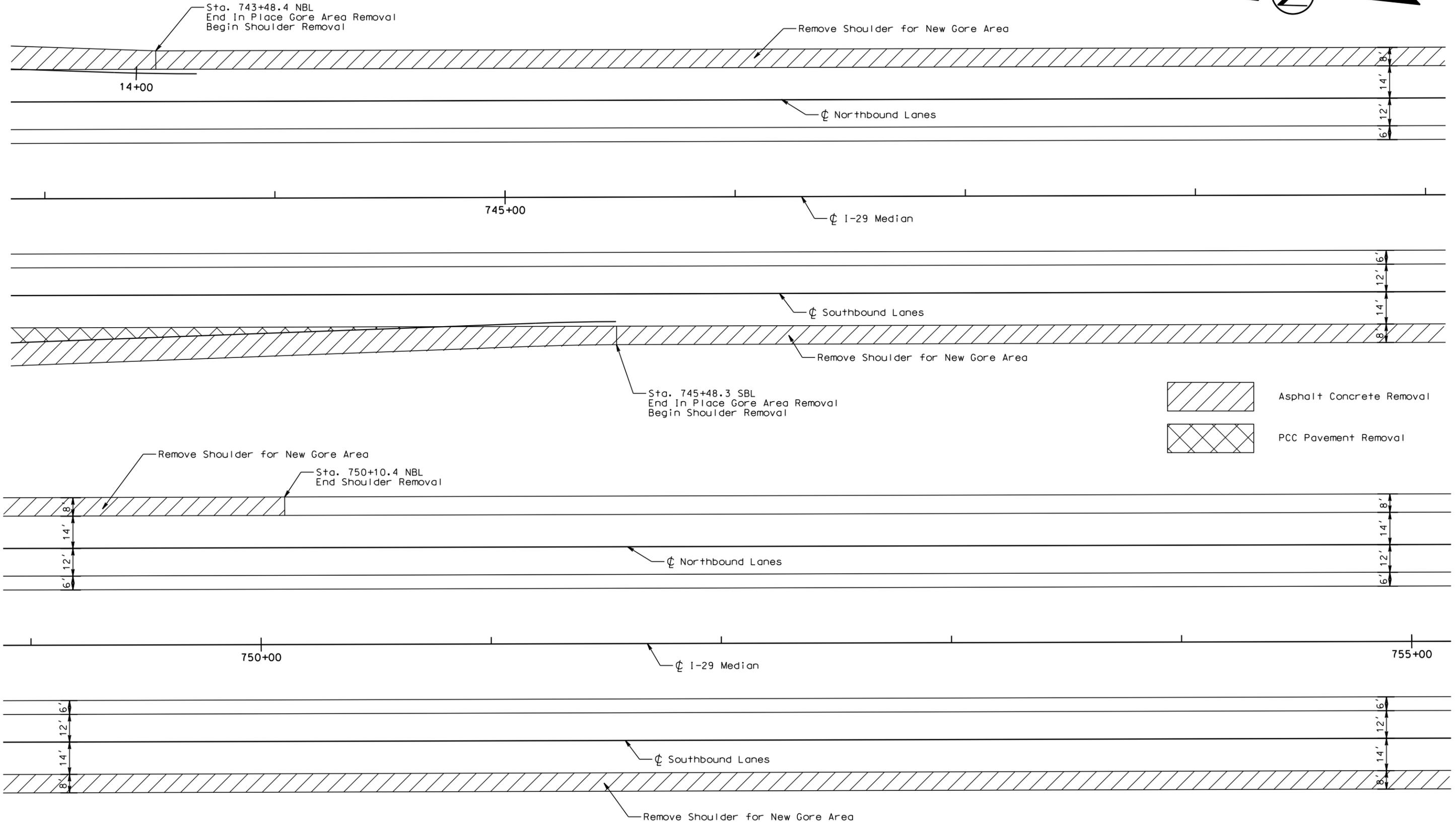


PLOT SCALE - 1:40

PLOTTED FROM - IRPR16032

PLOT NAME - 33

FILE - ... \LINC0356\SHOULDER REMOVAL.DGN



IN PLACE SHOULDER REMOVAL AREAS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F40	F60

Plotting Date: 09/11/2014

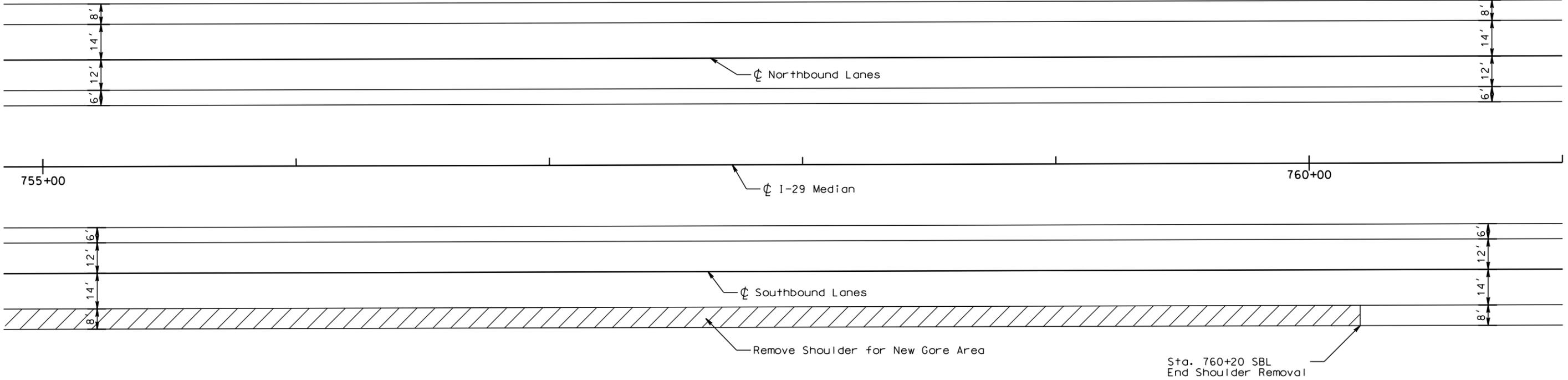
Scale 1 Inch = 40 Feet
Sheet 7 of 7 Sheets

-  Asphalt Concrete Removal
-  PCC Pavement Removal



PLOT SCALE - 1:40

PLOT NAME - 34



PLOTTED FROM - IRPR16032

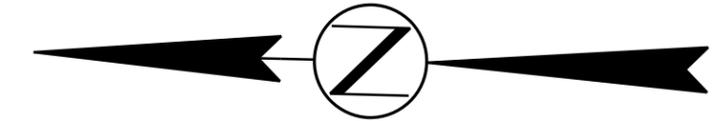
FILE - ... \LINC035A\SHOULDER REMOVAL.DGN

TEMPORARY RAMP DETOUR LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F41	F60

Plotting Date: 09/11/2014

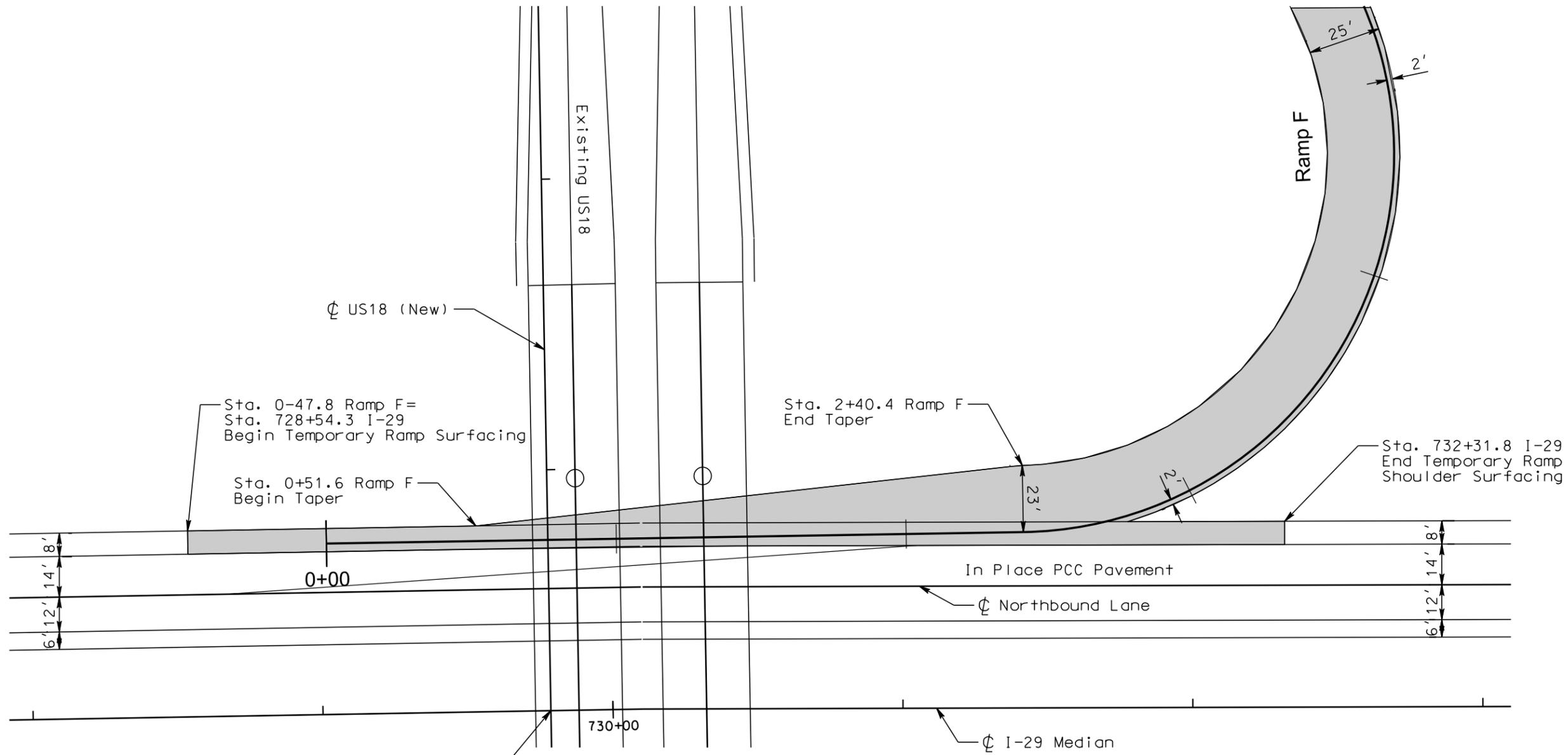
Scale 1 Inch = 60 Feet
Sheet 1 of 8 Sheets



6" Asphalt Concrete Composite
12" Base Course or Base Course, Salvaged

PLOT SCALE - 1:40

PLOT NAME - 35



Equation:
Sta. 42+17.1 US18 (New) =
Sta. 729+78.6 I-29

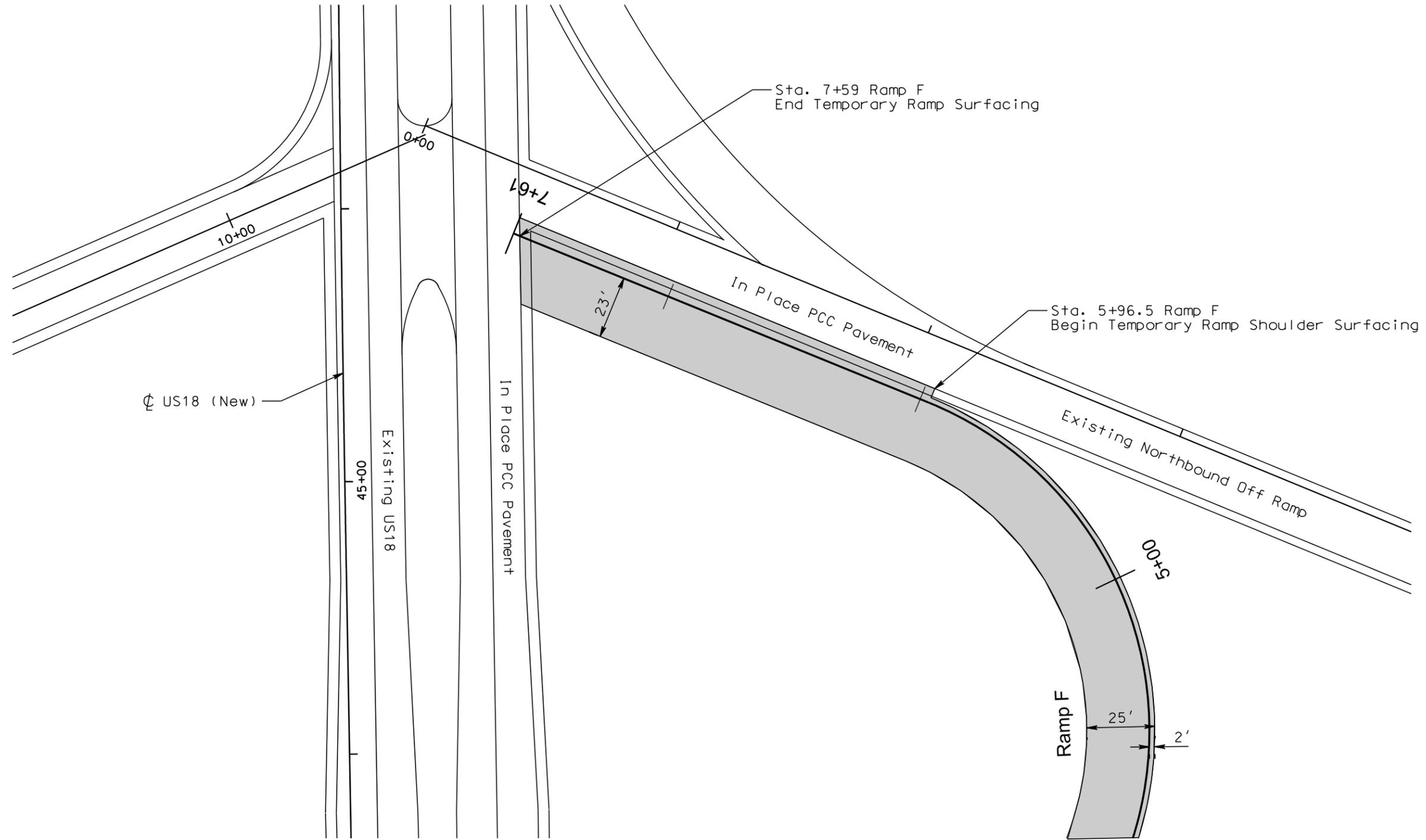
PLOTTED FROM - TRPR16032

FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

TEMPORARY RAMP DETOUR LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F42	F60
Plotting Date: 09/11/2014			

Scale 1 Inch = 60 Feet
Sheet 2 of 8 Sheets



PLOT SCALE - 1:40

PLOTTED FROM - IRPR16032

PLOT NAME - 36

FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

TEMPORARY RAMP DETOUR LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F43	F60

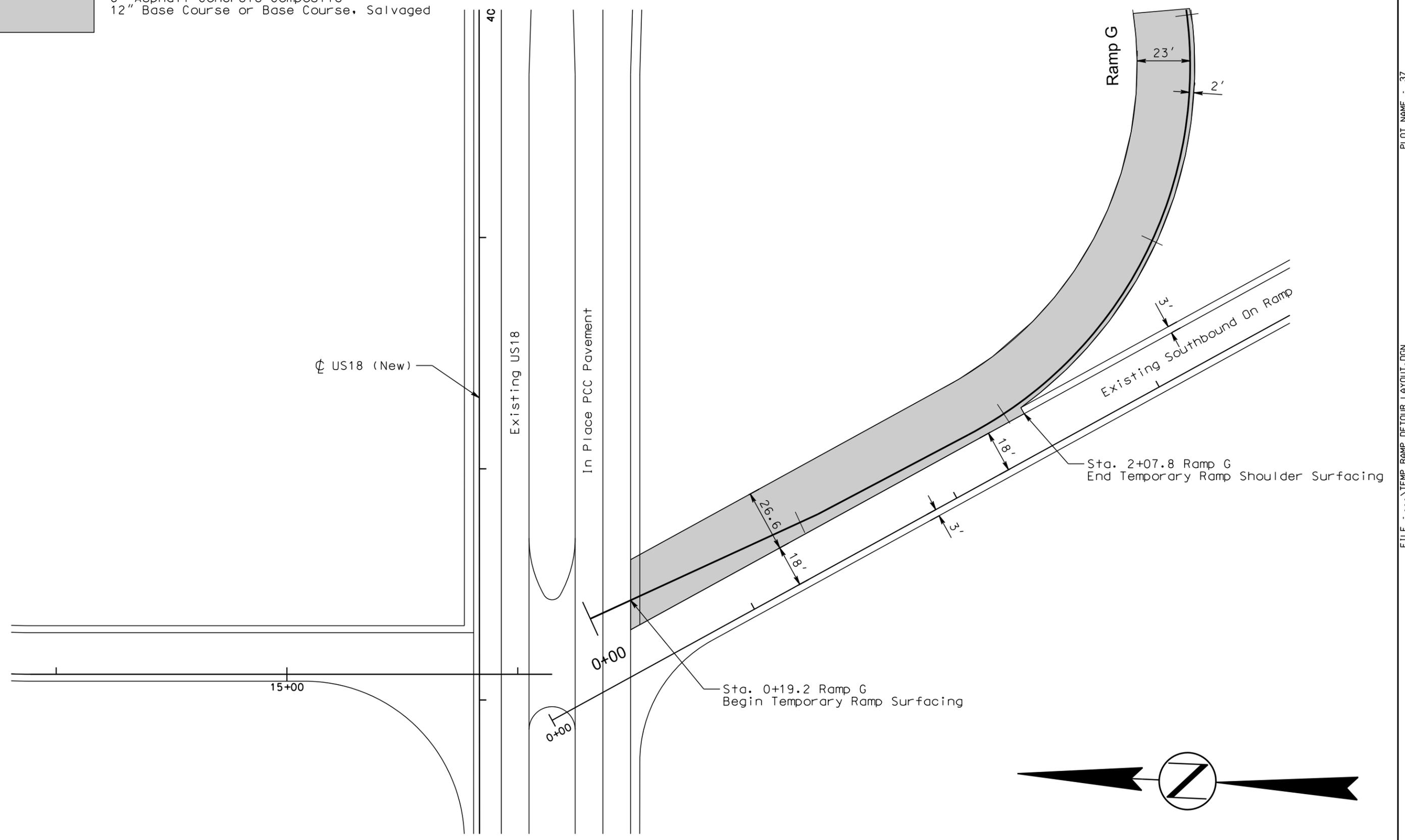
Plotting Date: 09/11/2014

Scale 1 Inch = 60 Feet
Sheet 3 of 8 Sheets

6" Asphalt Concrete Composite
12" Base Course or Base Course, Salvaged

PLOT SCALE - 1:40

PLOT NAME - 37



PLOTTED FROM - TRPR16032

FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

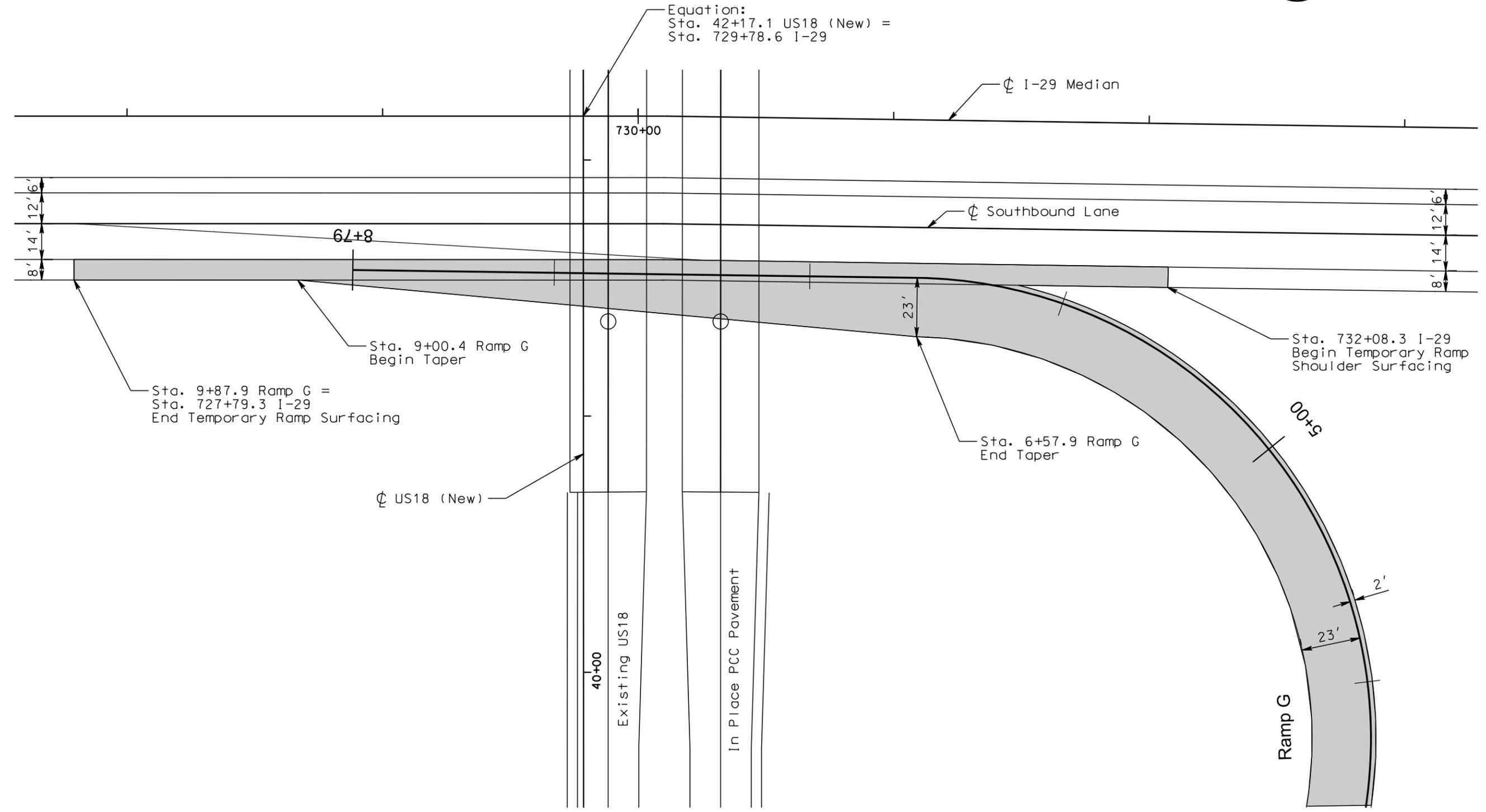
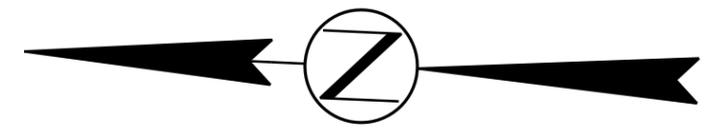
TEMPORARY RAMP DETOUR LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F44	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 60 Feet
Sheet 4 of 8 Sheets

6" Asphalt Concrete Composite
12" Base Course or Base Course, Salvaged



PLOT SCALE - 1:40

PLOT NAME - 38

FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

PLOTTED FROM - TRPR16032

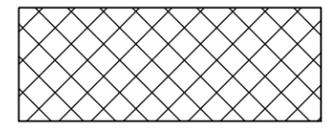
TEMPORARY RAMP DETOUR LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F45	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 60 Feet
Sheet 5 of 8 Sheets

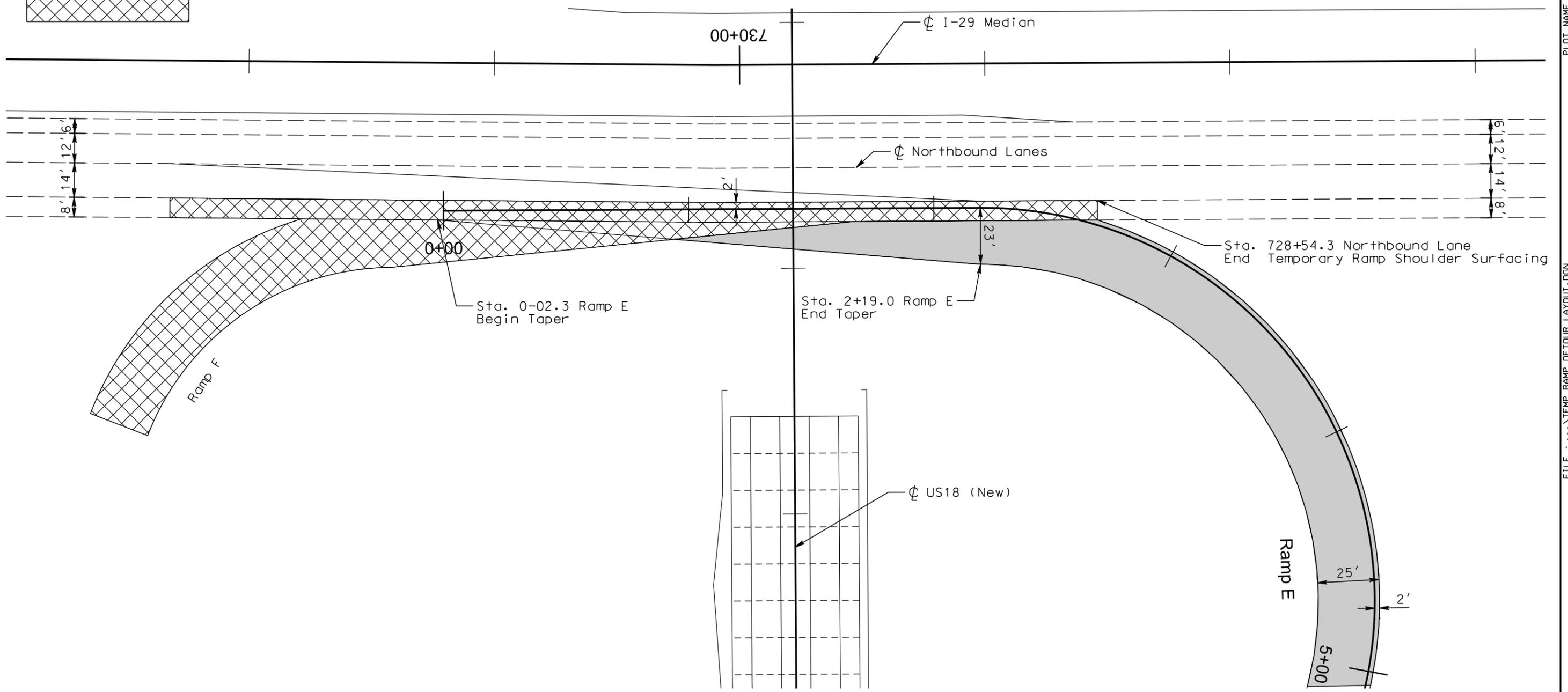

 6" Asphalt Concrete Composite
 12" Base Course or Base Course, Salvaged


 In Place Temporary Ramp Surfacing



PLOT SCALE - 1:40

PLOT NAME - 39



PLOTTED FROM - TRPR16032

FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

TEMPORARY RAMP DETOUR LAYOUT

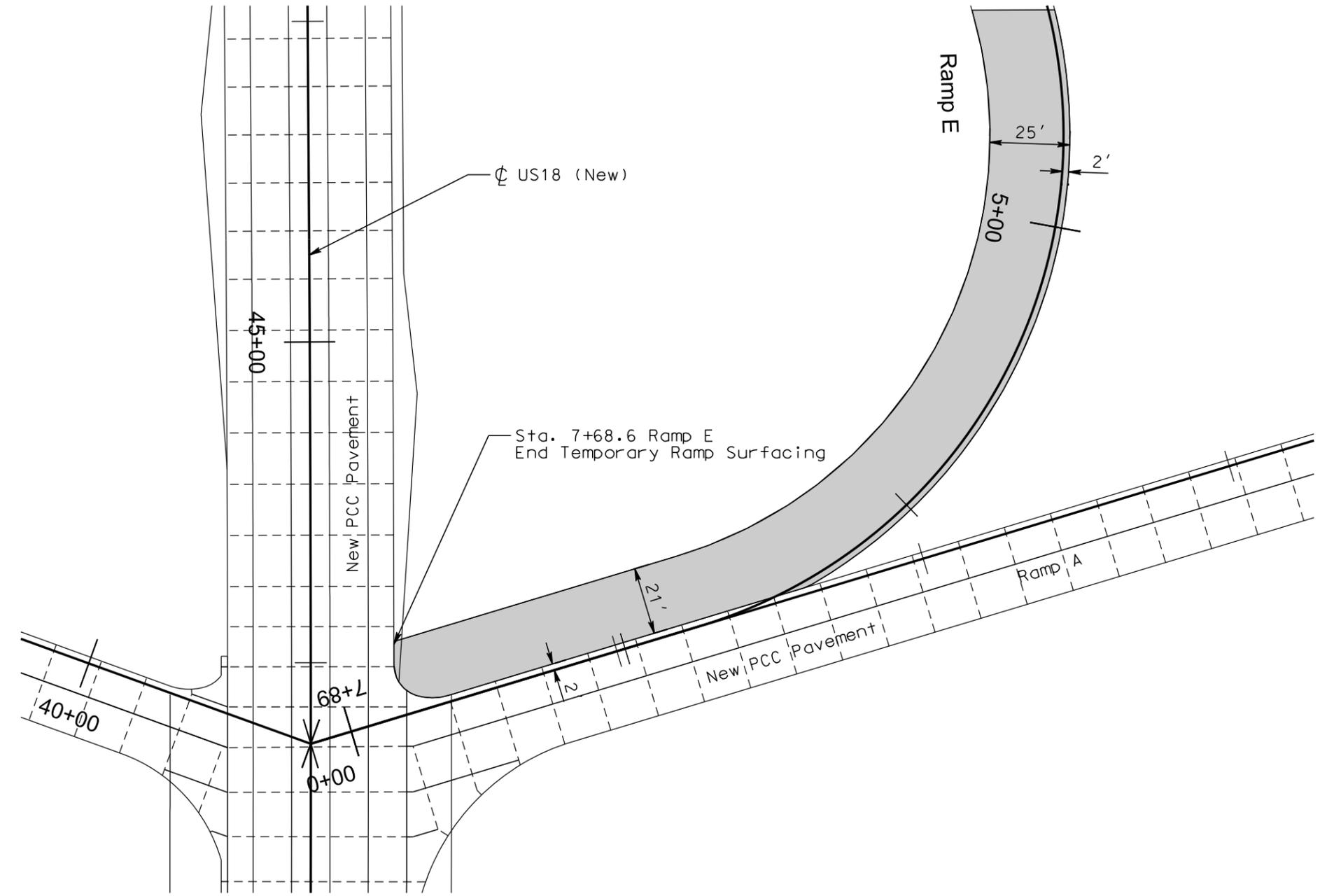
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F46	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 60 Feet
Sheet 6 of 8 Sheets



6" Asphalt Concrete Composite
12" Base Course or Base Course, Salvaged



PLOT SCALE - 1:40

PLOTTED FROM - TRPR16032

PLOT NAME - 40

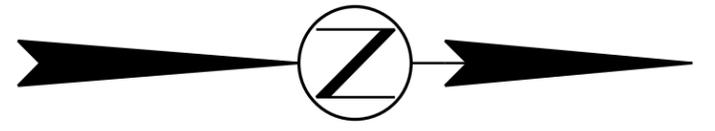
FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

TEMPORARY RAMP DETOUR LAYOUT

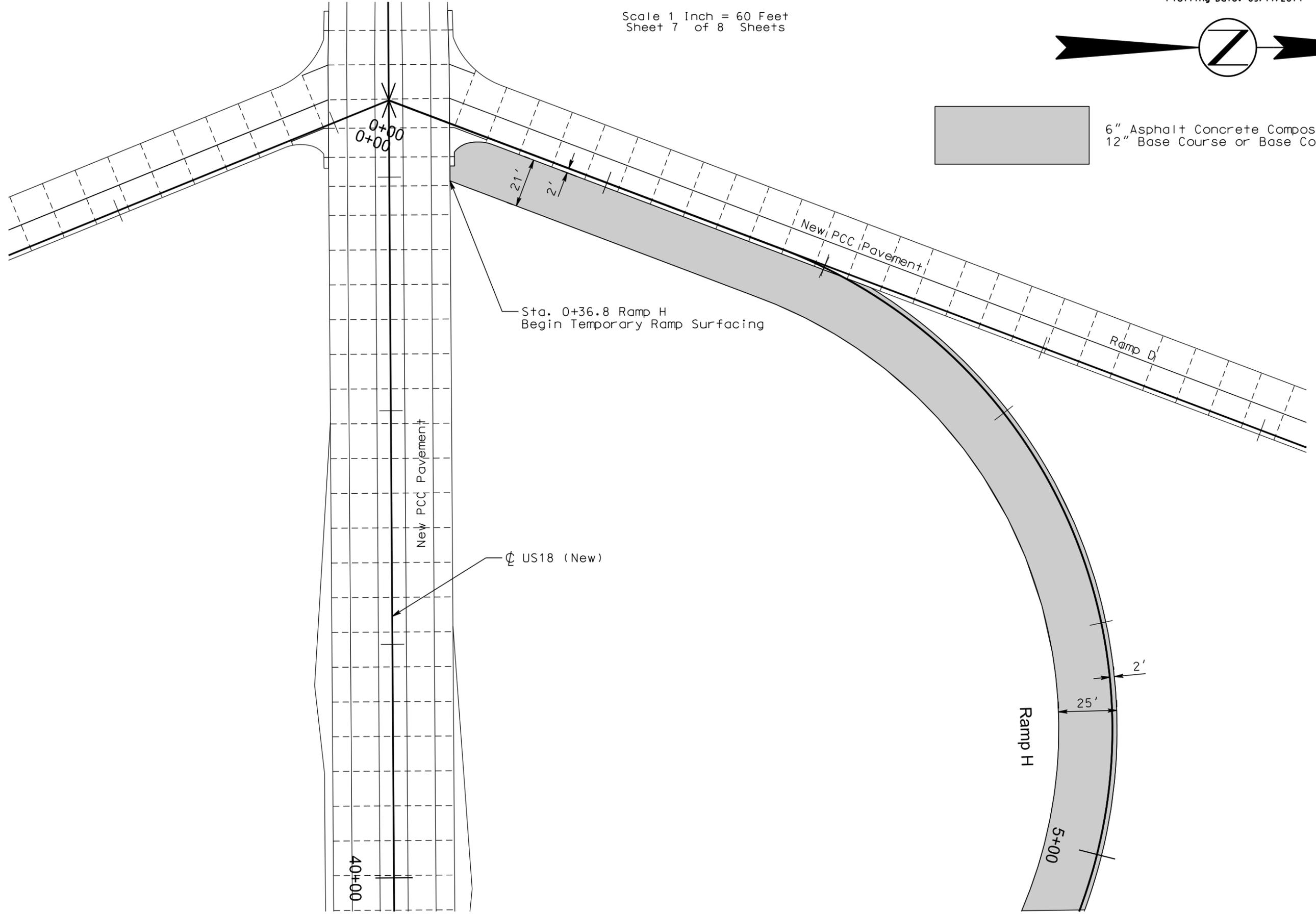
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F47	F60

Plotting Date: 09/11/2014

Scale 1 Inch = 60 Feet
Sheet 7 of 8 Sheets



6" Asphalt Concrete Composite
12" Base Course or Base Course, Salvaged



PLOT SCALE - 1:40

PLOTTED FROM - TRPR16032

PLOT NAME - 41

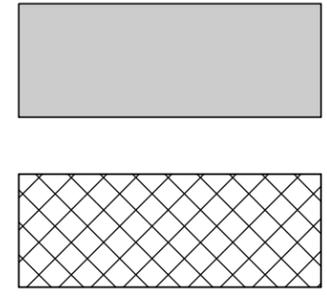
FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

TEMPORARY RAMP DETOUR LAYOUT

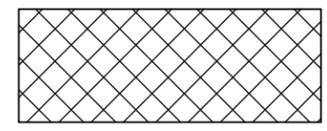
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F48	F60

Plotting Date: 09/11/2014

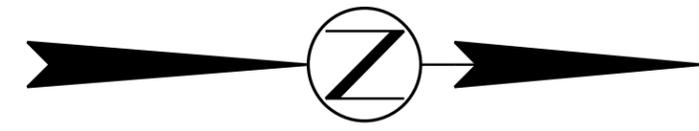
Scale 1 Inch = 60 Feet
Sheet 8 of 8 Sheets



 6" Asphalt Concrete Composite
 12" Base Course or Base Course, Salvaged

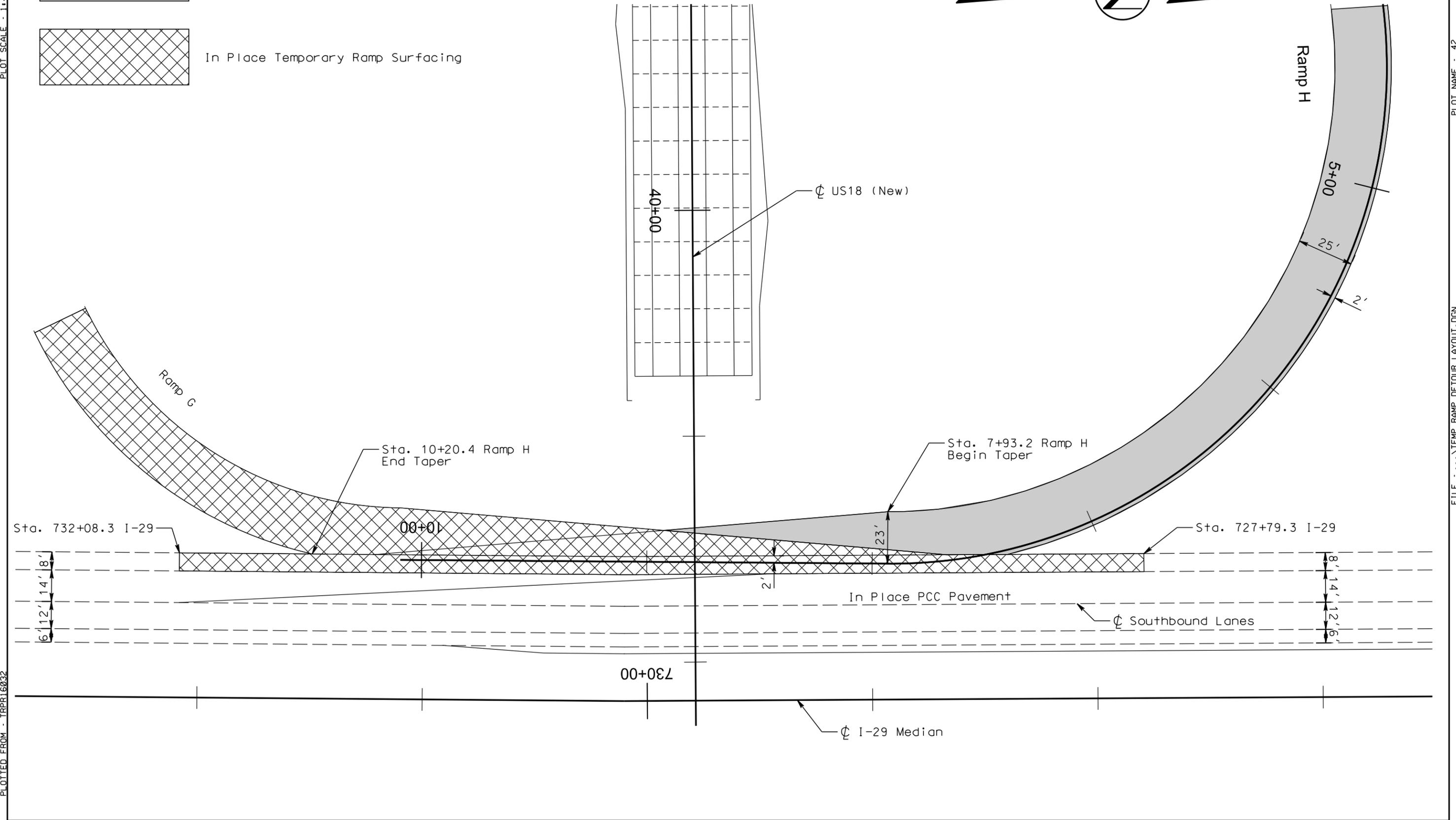


 In Place Temporary Ramp Surfacing



PLOT SCALE - 1:40

PLOT NAME - 42



PLOTTED FROM - TRPR16032

FILE - ... \TEMP RAMP DETOUR LAYOUT.DGN

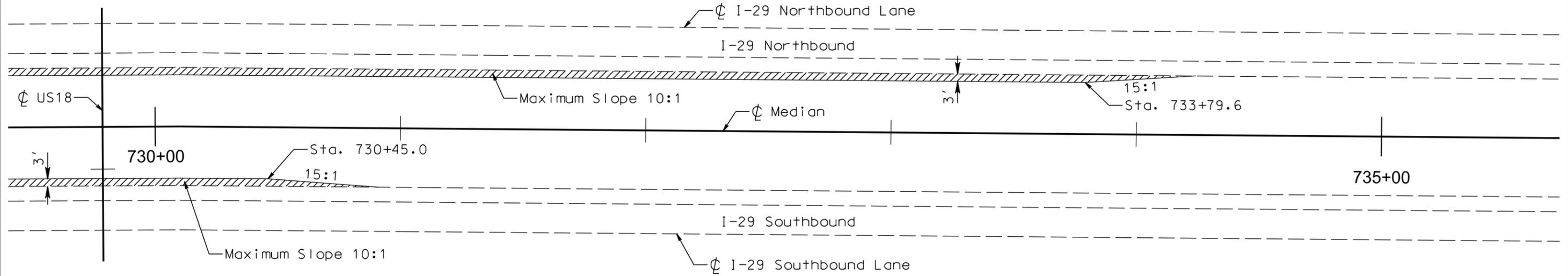
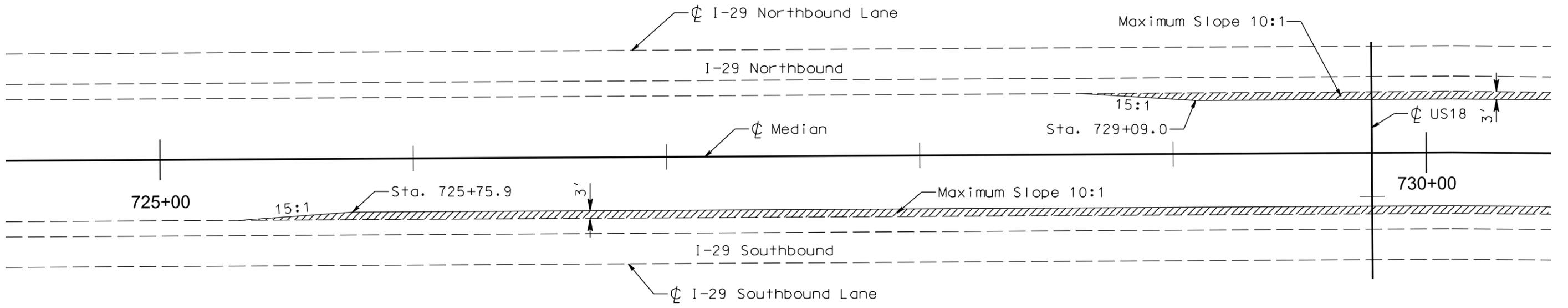
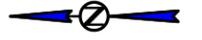
ADDITIONAL SURFACING FOR GUARDRAIL

STATE OF SOUTH DAKOTA	PROJECT IM 0292(74)62	SHEET F50	TOTAL SHEETS F60
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Plotting Date: 09/11/2014

Scale 1 Inch = 40 Feet
Sheet 2 of 2 Sheets

15" Base Course or Base Course, Salvaged



PLOT SCALE - 1:40

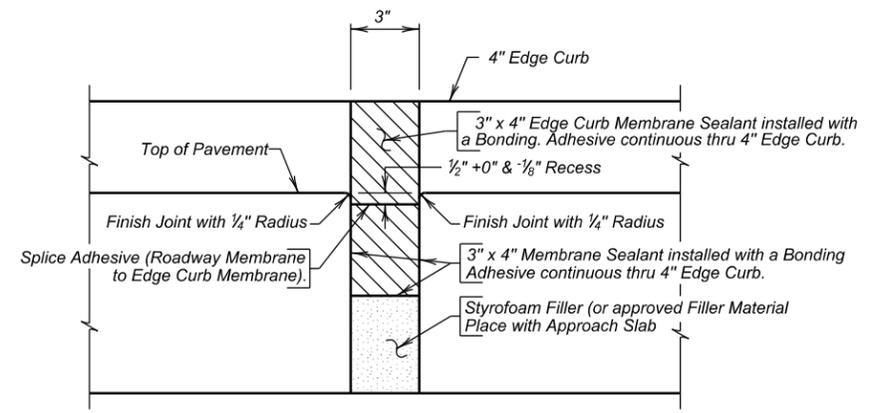
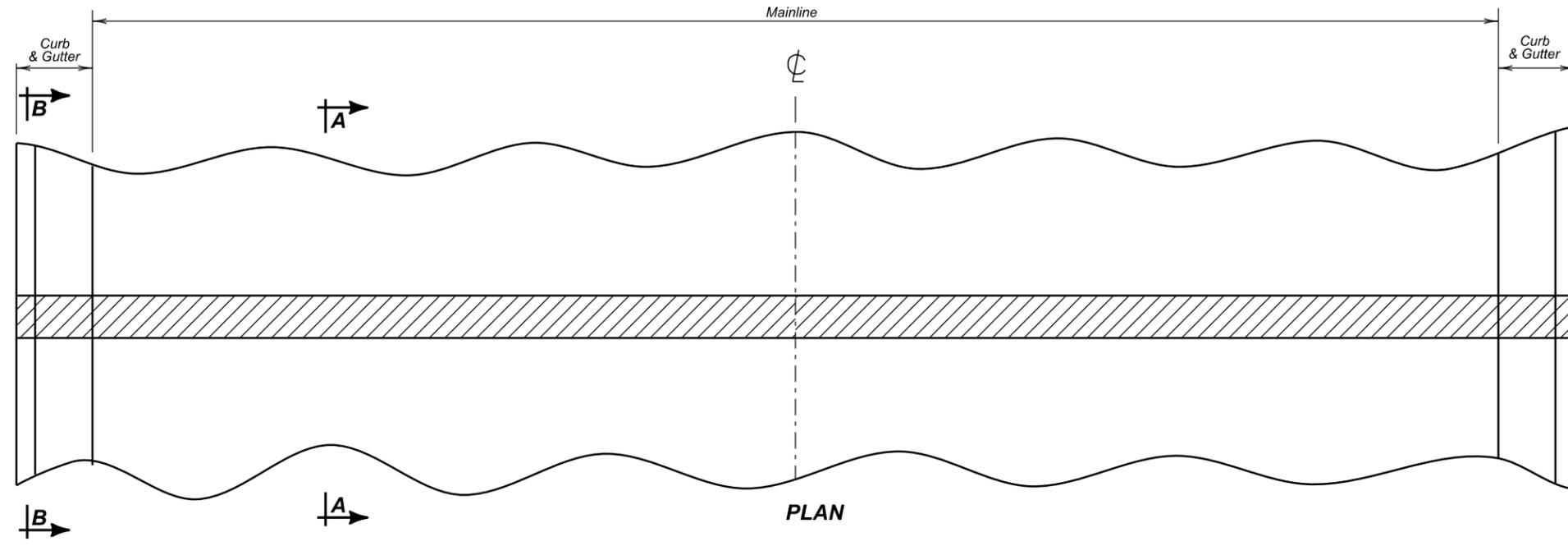
PLOT NAME - 44

FILE - ... \ADDITIONAL SURFACING FOR GUARDRAIL.DGN

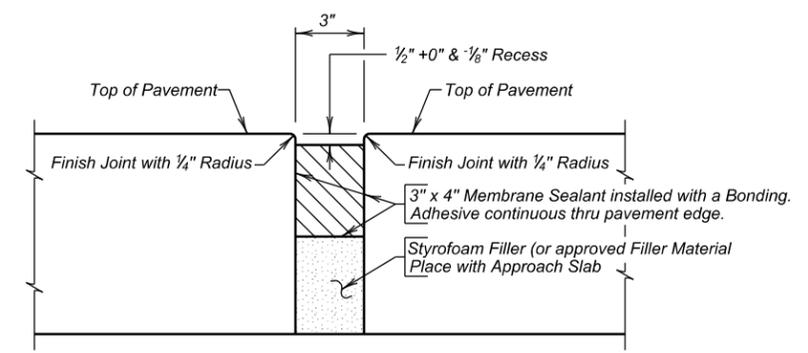
PLOTTED FROM - TRPR16032

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F51	F60

Plotting Date: 09/11/2014



SECTION B - B



SECTION A - A

**MEMBRANE SEALANT EXPANSION JOINT
DETAILS FOR
JOINT BETWEEN SLEEPER SLAB
AND PCC PAVEMENT**

PLOT SCALE - 1:0.16671

PLOTTED FROM - TRPR16032

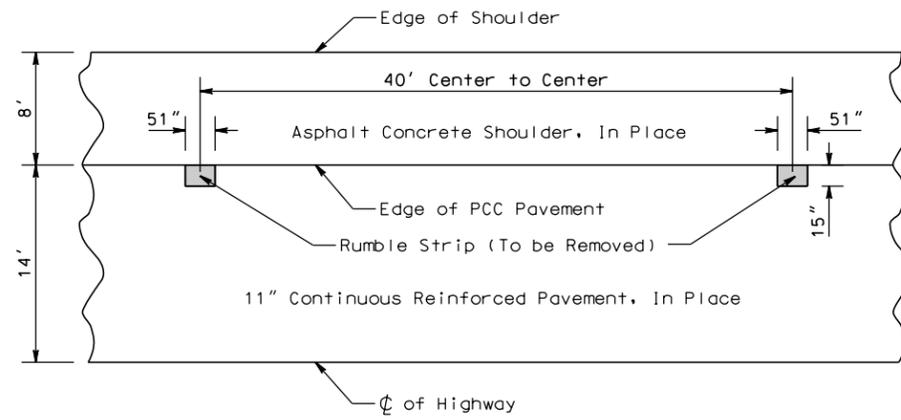
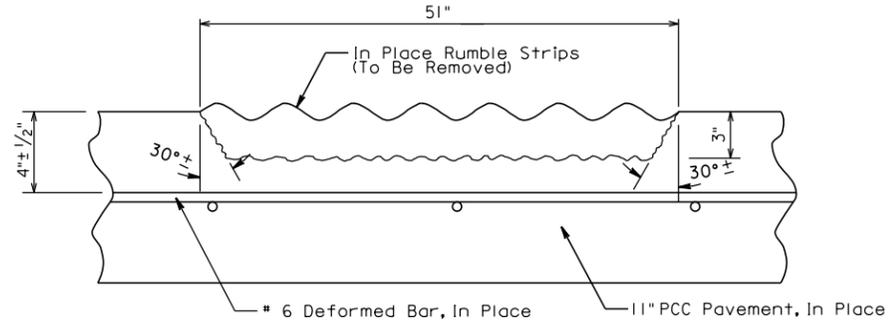
PLOT NAME - 45

FILE - ... MEMBRANE SEALANT JOINT DETAILS.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F52	F60

Plotting Date: 09/11/2014

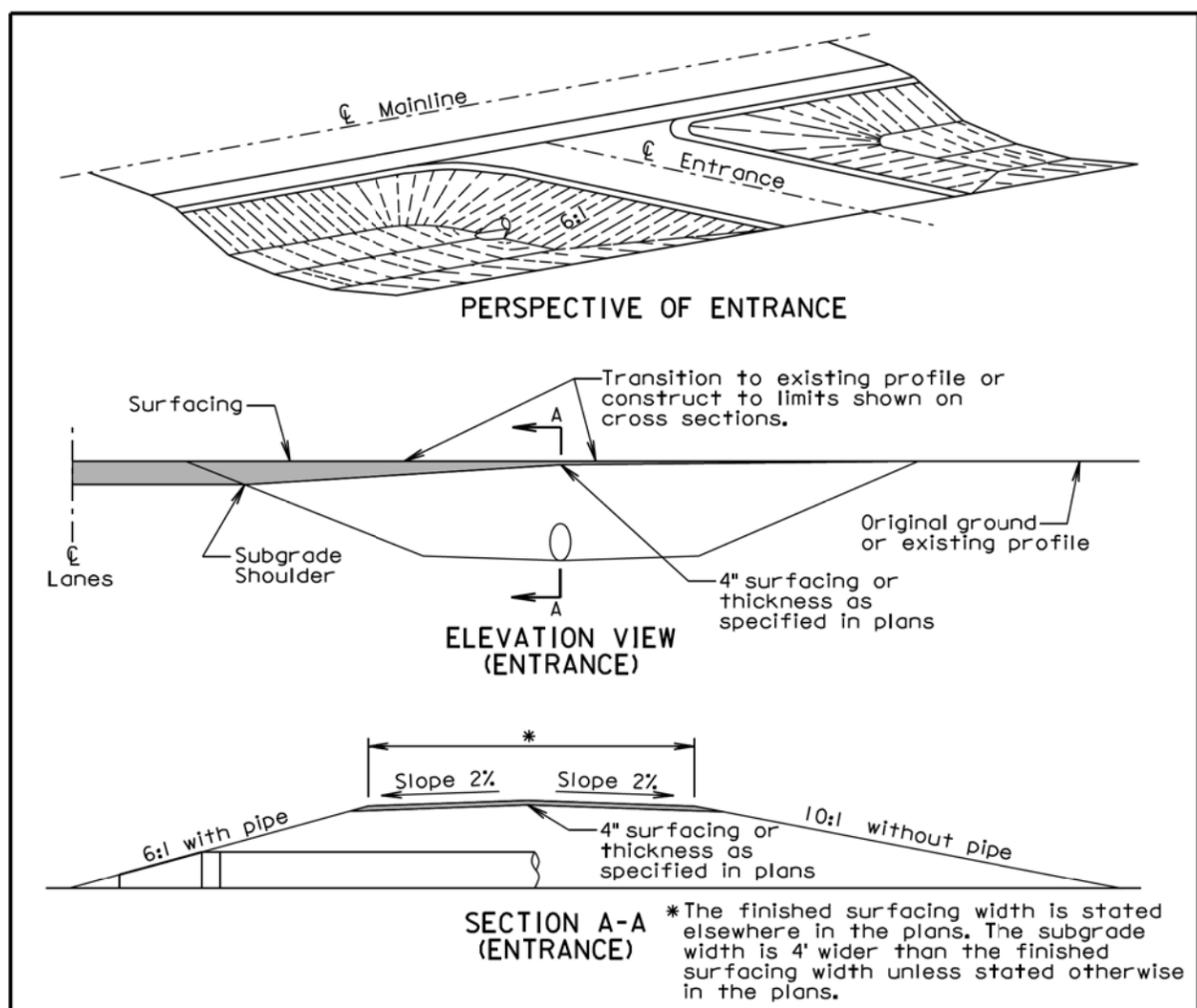
PCC PAVEMENT RUMBLE STRIP REMOVAL



PLOT SCALE - 1:200

PLOT NAME - 47

FILE - ...MS\PRJ\INC035A\STD\PLATE 1.DGN



GENERAL NOTES:

The ditch section shown above in the perspective and elevation view is only for illustrative purposes.

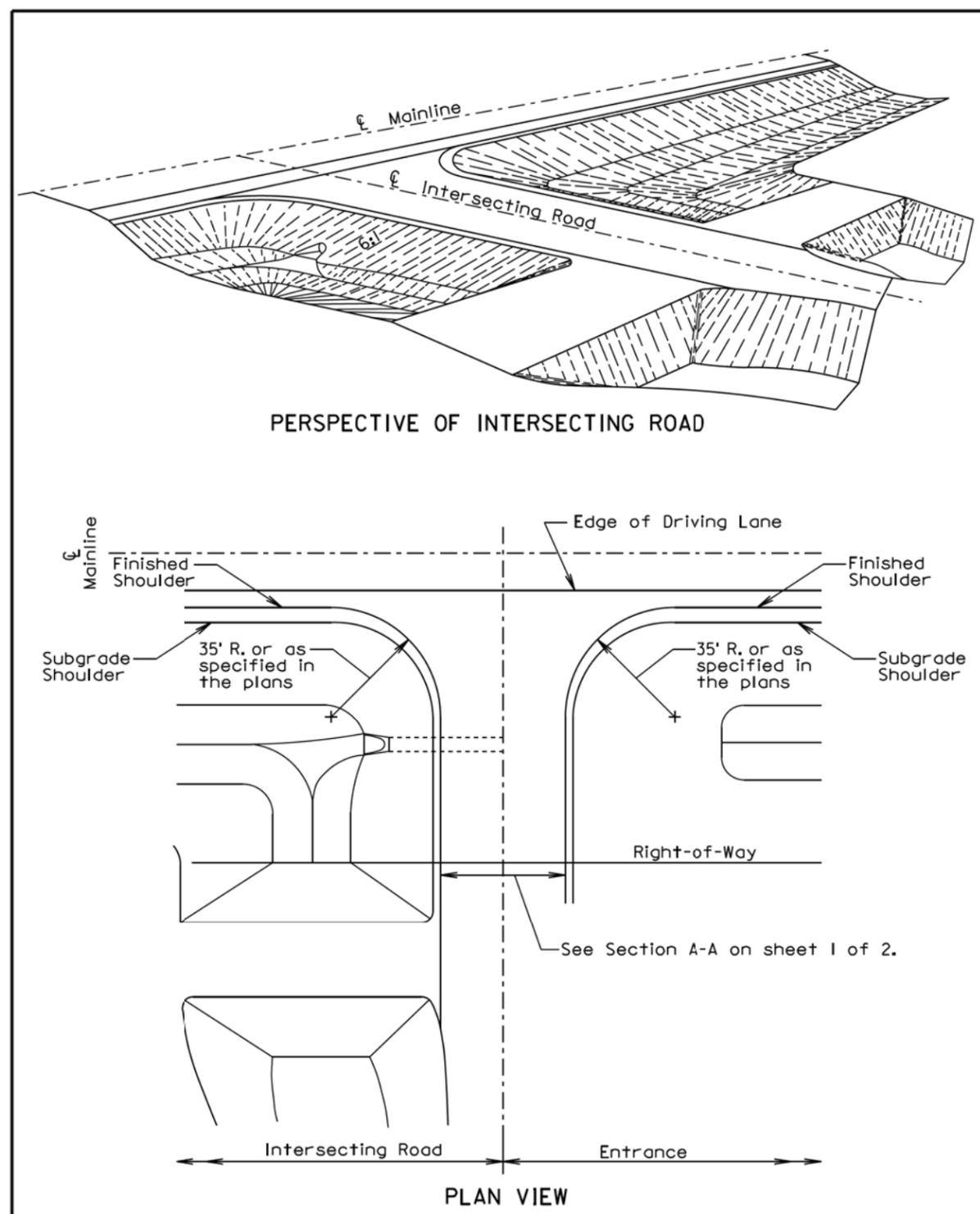
A 6:1 inslope shall be constructed for an entrance when a pipe is required. A 10:1 inslope shall be constructed when a pipe is not required.

Pipe lengths shall be adjusted if necessary during construction to obtain the 6:1 slopes. For grading projects, the pipe lengths are estimated typically using a 4" thickness of surfacing directly over the subgrade above the pipe.

The transition area between the mainline inslope and the approach inslope for entrances shall be rounded to eliminate an abrupt transition.

The turning radii shall be 35' for intersecting roads and entrances unless stated otherwise in the plans.

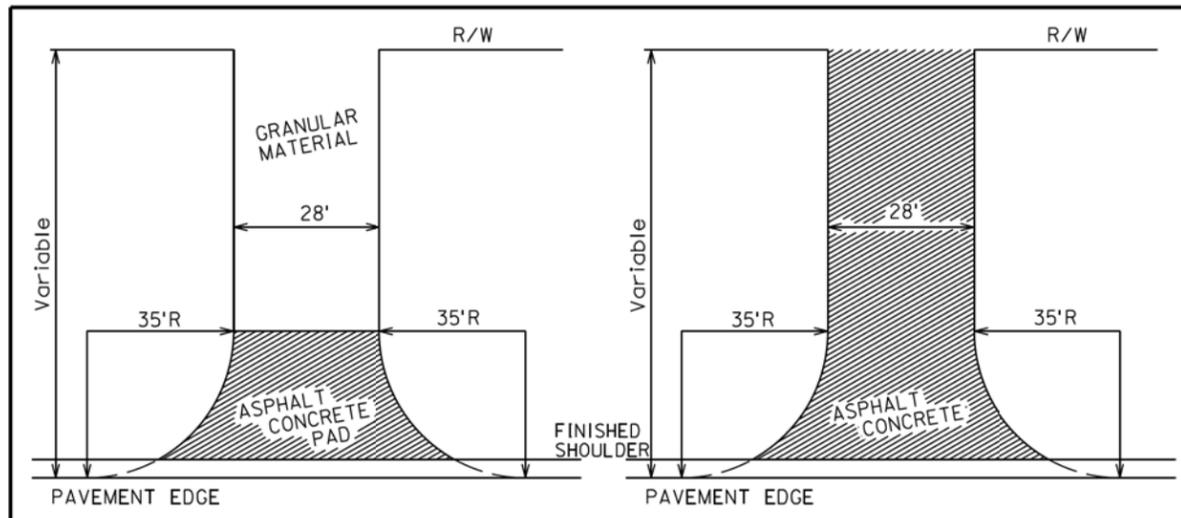
Published Date: 3rd Qtr. 2014	S D D O T	INTERSECTING ROADS AND ENTRANCES	September 6, 2013
			PLATE NUMBER 120.01
			Sheet 1 of 2



Published Date: 3rd Qtr. 2014	S D D O T	INTERSECTING ROADS AND ENTRANCES	September 6, 2013
			PLATE NUMBER 120.01
			Sheet 2 of 2

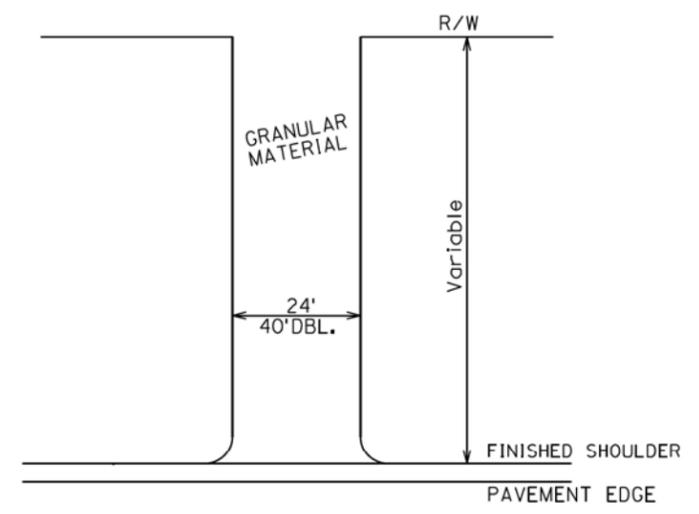
-PLOTTED FROM - TRPR16032

Plotting Date: 09/11/2014



INTERSECTING ROAD
NO ASPHALT CONCRETE SURFACING
BEYOND R/W

INTERSECTING ROAD
ASPHALT CONCRETE SURFACING
BEYOND R/W



ENTRANCE

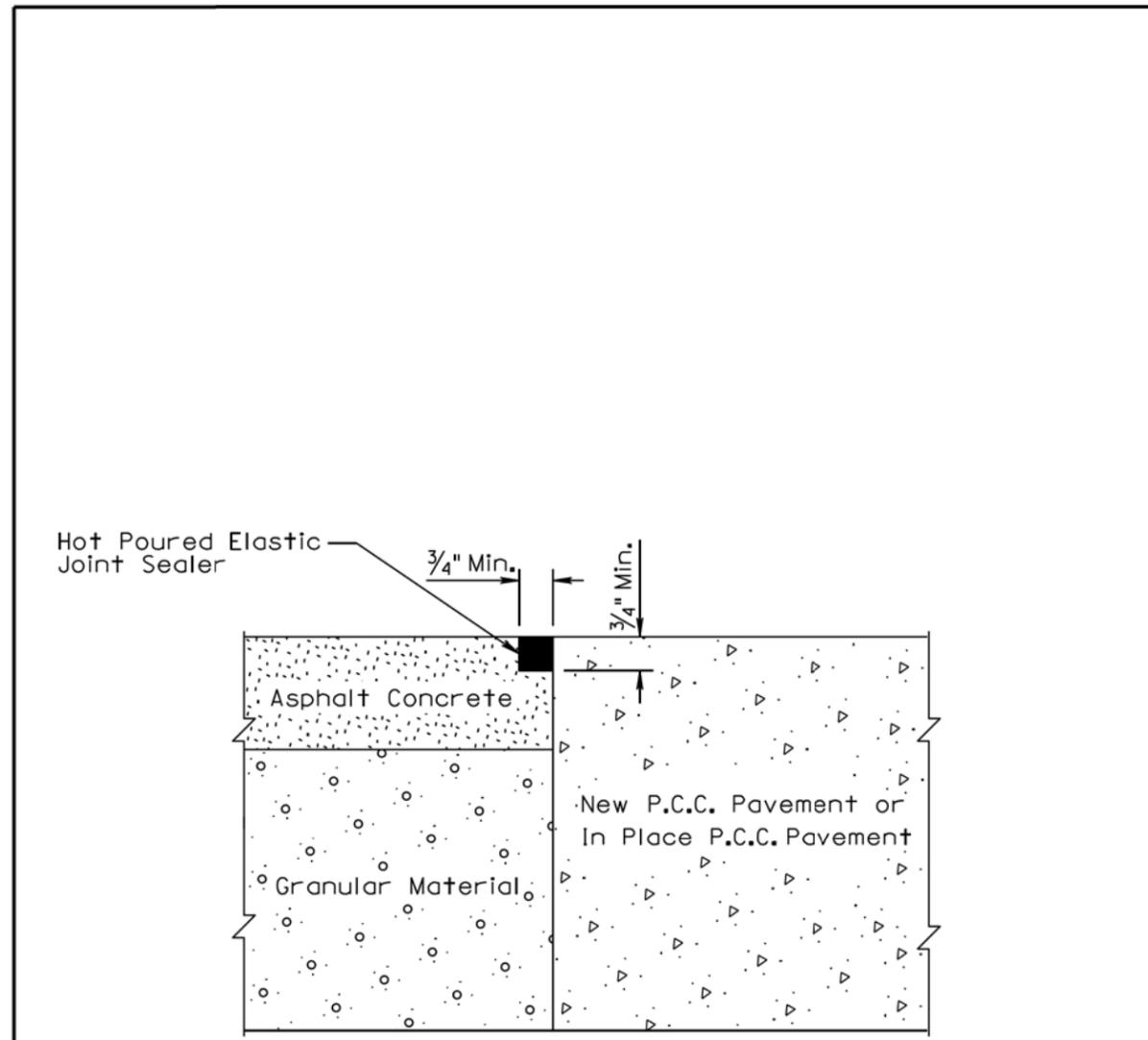
The surfacing details shown on this sheet are provided as a guide for surfacing these facilities. The precise construction limits for situations other than the standards shown will be determined by the Engineer, at the time of construction.

ROADWAY WITH SHOULDER

March 31, 2000

S D D O T	SURFACING OF INTERSECTING ROADS AND ENTRANCES	PLATE NUMBER 320.04
		Sheet 1 of 1

Published Date: 3rd Qtr. 2014



March 31, 2000

S D D O T	ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT	PLATE NUMBER 320.15
		Sheet 1 of 1

Published Date: 3rd Qtr. 2014

PLOT SCALE - 1:200

-PLOTTED FROM - TRPR16032

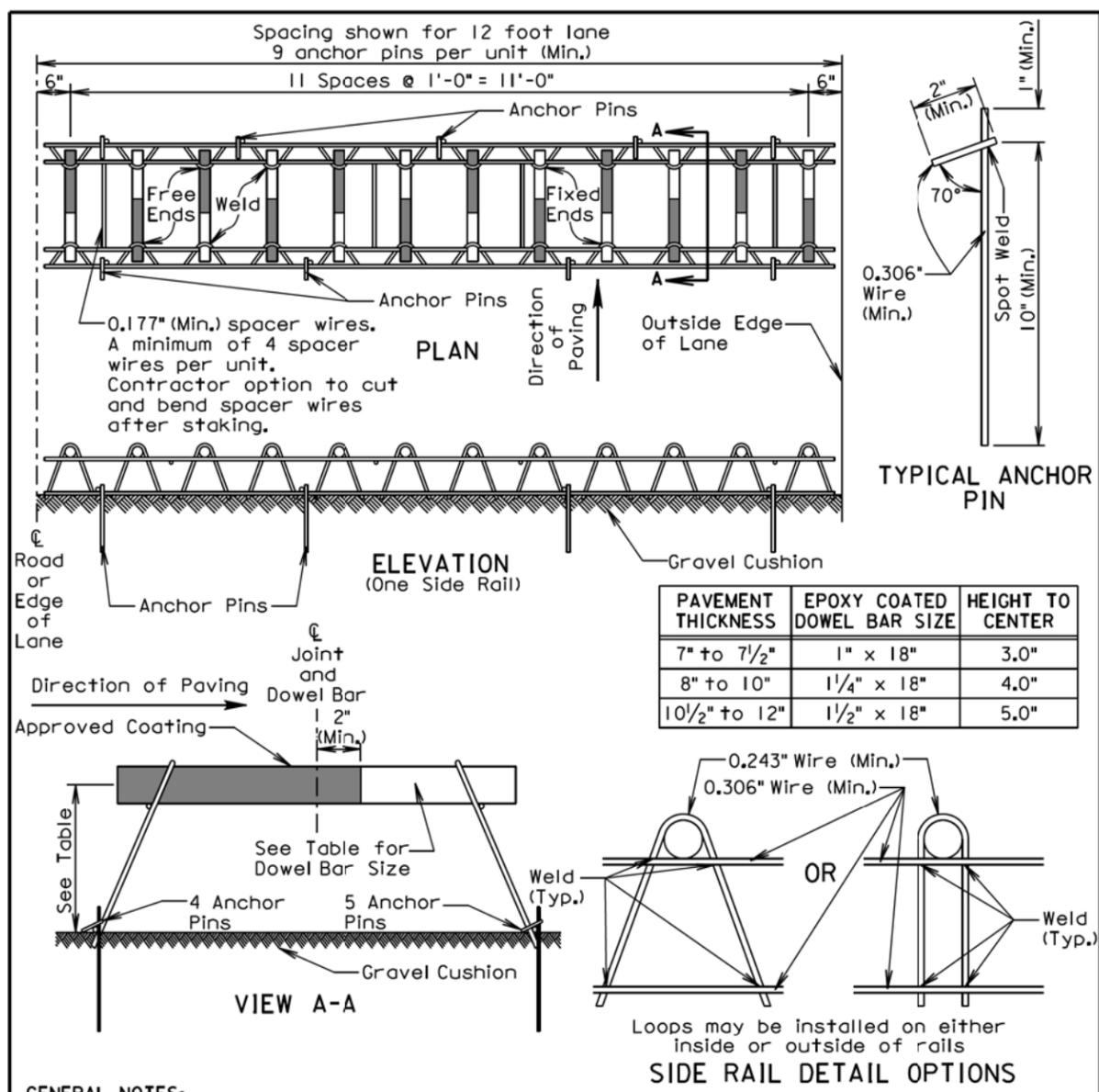
PLOT NAME - 48

FILE - ...MS\PRJ\INC035A\STDPLATE 2.DGN

Plotting Date: 09/11/2014

PLOT SCALE - 1:200

PLOT NAME - 49



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.

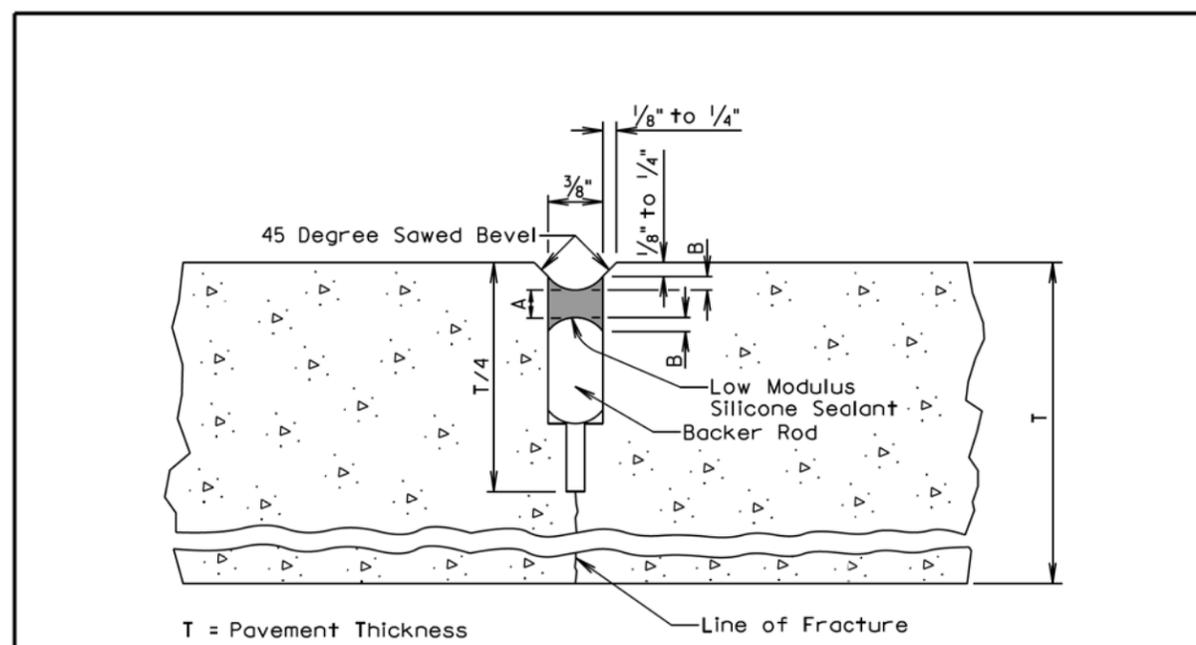
The transverse contraction joints shall be sawed perpendicular to the centerline of the roadway and the dowel bars shall be centered on the sawed joint ± 1 inch.

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

Published Date: 3rd Qtr. 2014



LOW MODULUS SILICONE SEALANT ALLOWABLE CONSTRUCTION TOLERANCES			
A (Min.) (In.)	A (Max.) (In.)	B (Min.) (In.)	B (Max.) (In.)
3/16	5/16	1/8	1/4

GENERAL NOTES:

The first saw cut to control cracking shall be a minimum of 1/4 the thickness of the pavement. Additional sawing for widening the saw cut to provide the width for the installation of the low modulus silicone joint sealant will be necessary.

The backer rod shall be a nonmoisture absorbing resilient material approximately 25% larger in diameter than the width of the joint to be sealed.

June 26, 2013

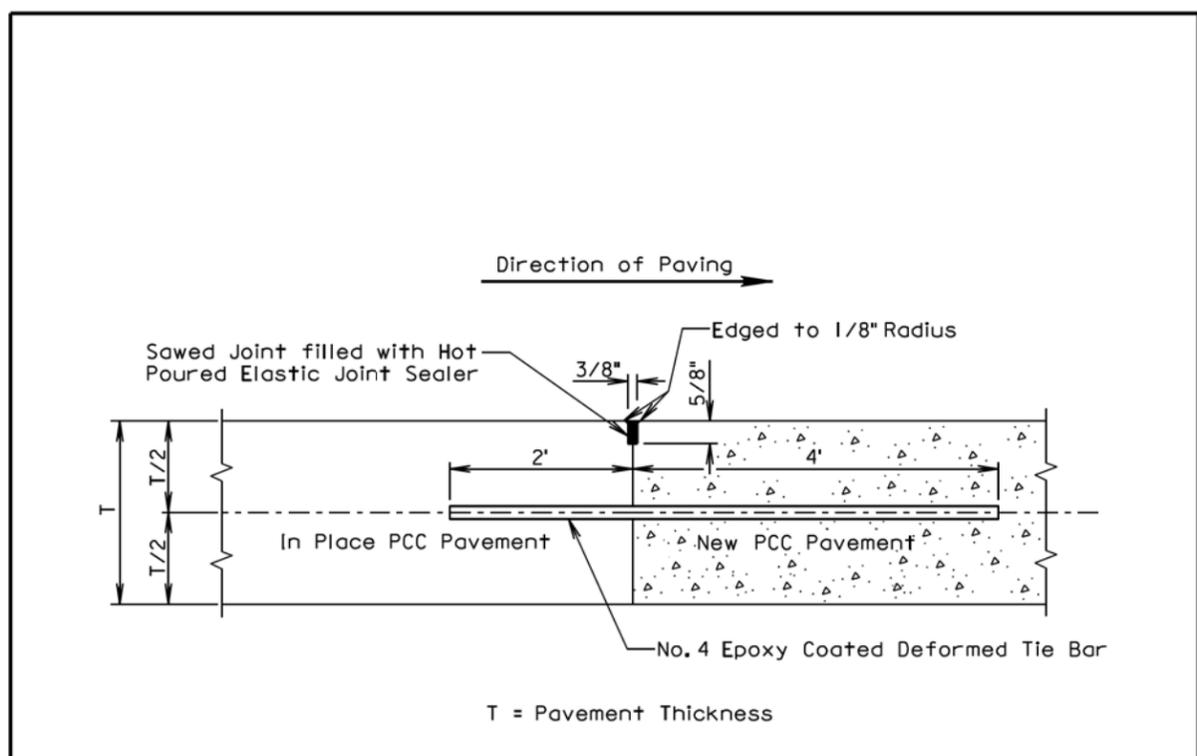
S D D O T	PCC PAVEMENT BEVELED TRANSVERSE CONTRACTION JOINT WITH OR WITHOUT DOWEL BAR ASSEMBLY	PLATE NUMBER 380.06
	12 Bar Assembly on Granular Base Material	Sheet 1 of 1

Published Date: 3rd Qtr. 2014

-PLOTTED FROM - TRPR16032

FILE - ... \MS\PRJ\INC035A\STDPLATE 3.DGN

PLOT SCALE - 1:200



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.

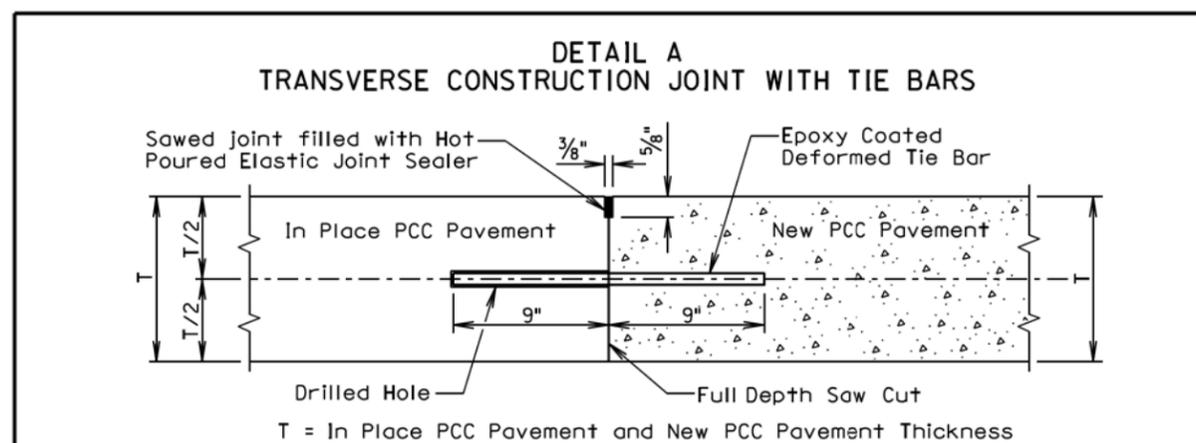
A transverse construction joint may be placed in lieu of the transverse contraction joint when shown in the plans.

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
	<i>Published Date: 3rd Qtr. 2014</i>	Sheet 1 of 1

PLOT NAME - 50



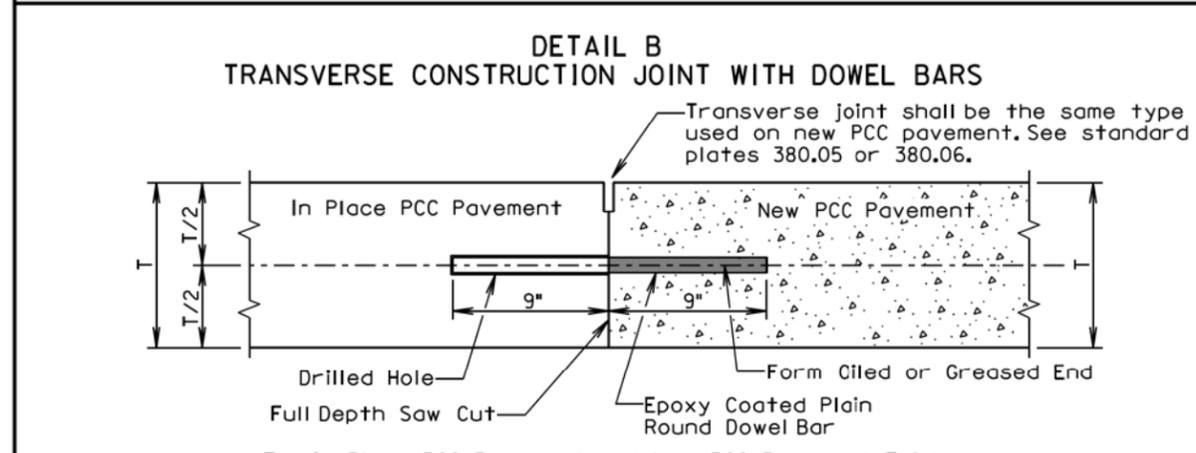
GENERAL NOTES:

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.



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
	<i>Published Date: 3rd Qtr. 2014</i>	Sheet 1 of 2

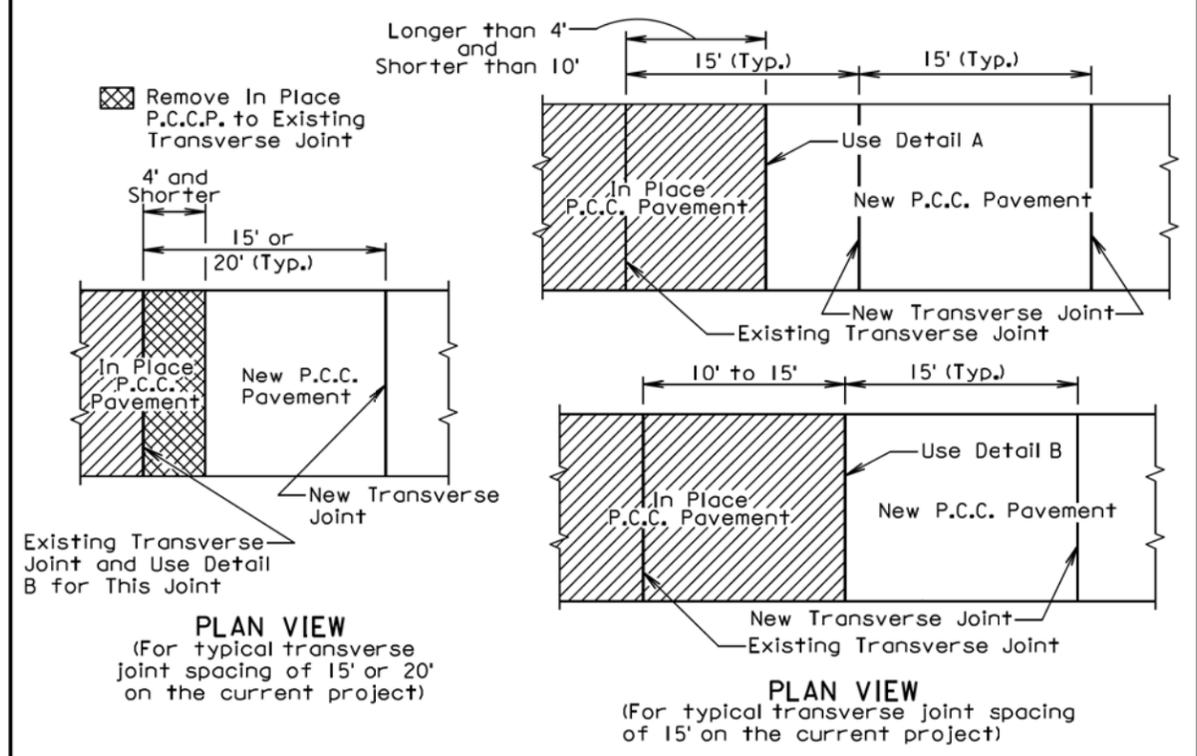
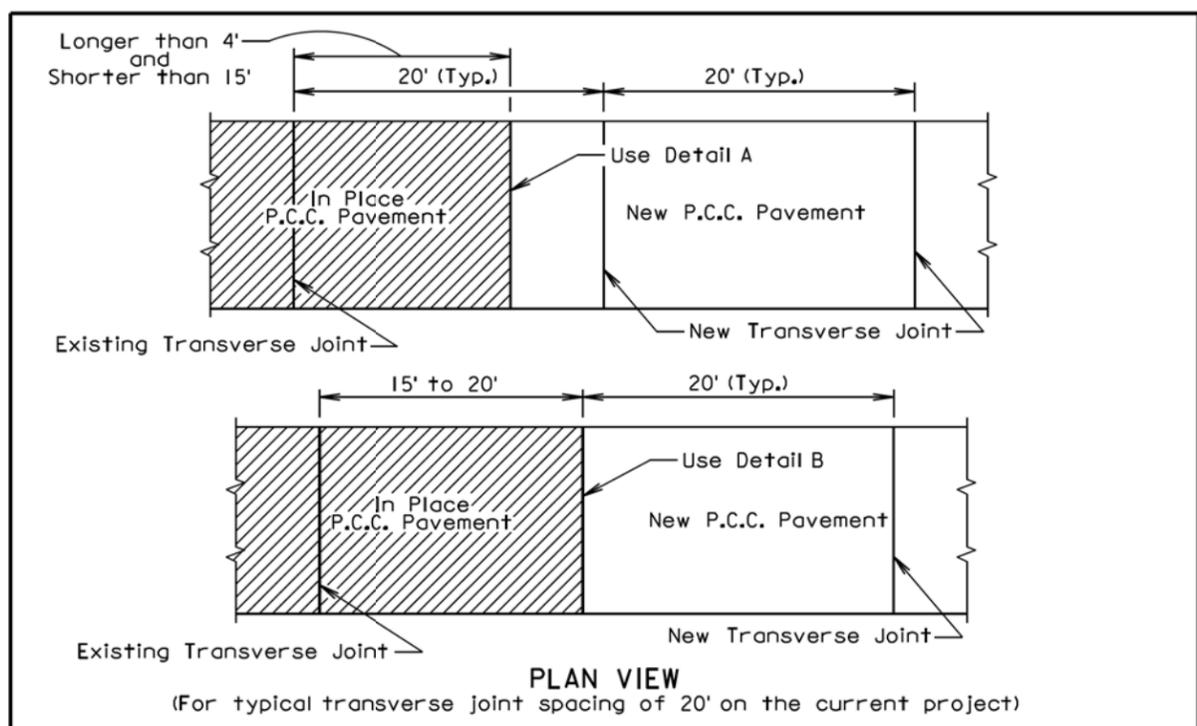
-PLOTTED FROM - TRPR16032

FILE - ... \MS\PRJ\JUL\INC035A\STDPLATE 4.DGN

Plotting Date: 09/11/2014

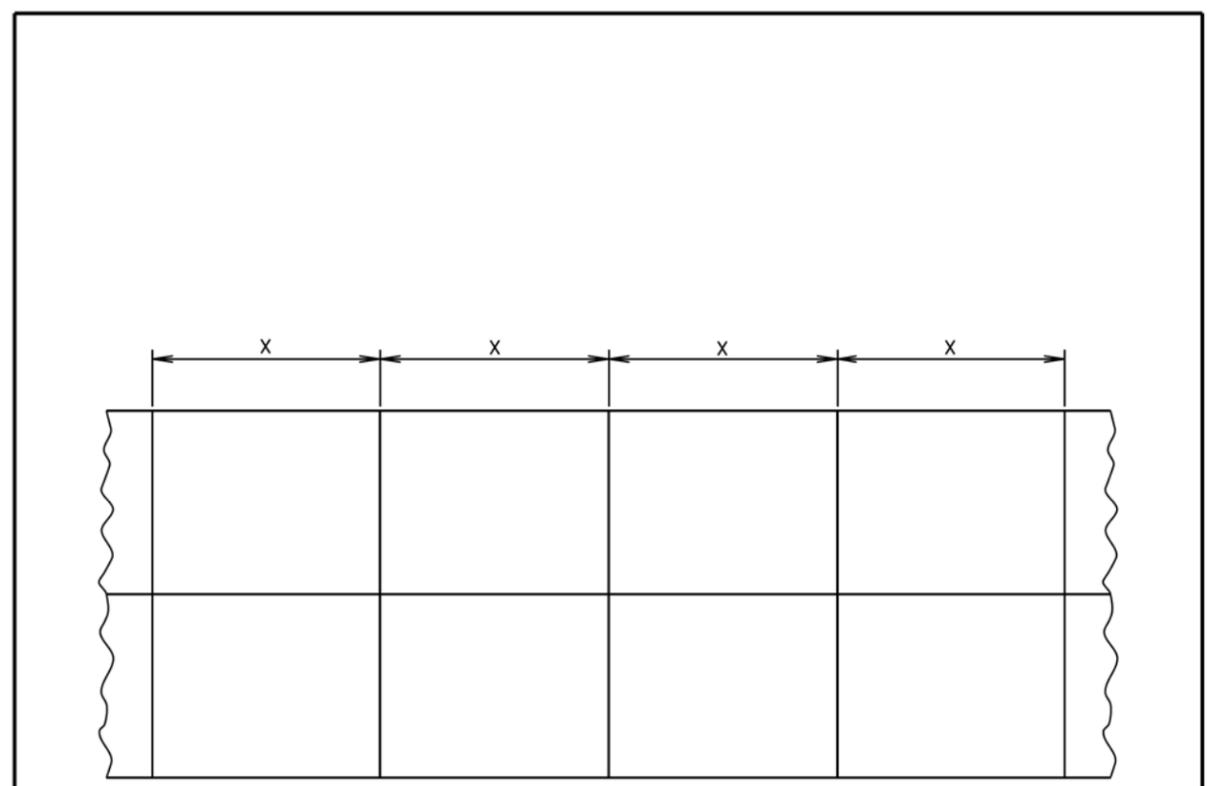
PLOT SCALE - 1:200

PLOT NAME - 51



September 6, 2013

Published Date: 3rd Qtr. 2014	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

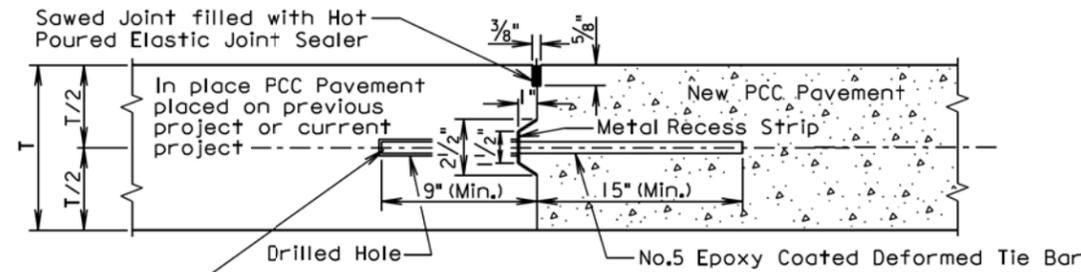
Published Date: 3rd Qtr. 2014	S D D O T	PCC PAVEMENT TYPICAL CONTRACTION JOINT SPACING	PLATE NUMBER 380.09
			Sheet 1 of 1

PLOTTED FROM - TRPR16032

FILE - ... \MS\PRJ\INC\035A\STDPLATE 5.DGN

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS

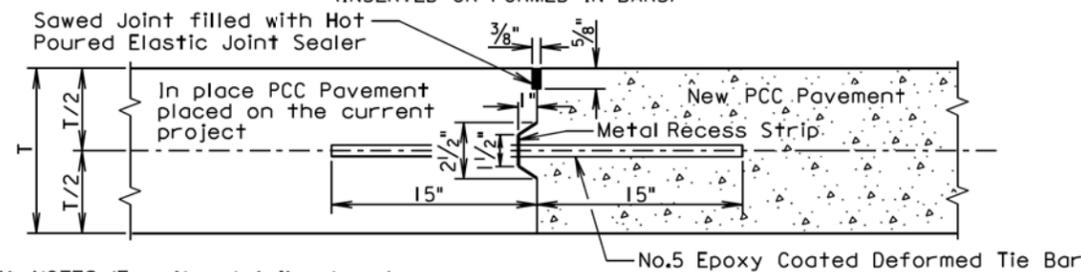
(DRILLED IN BARS)



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.

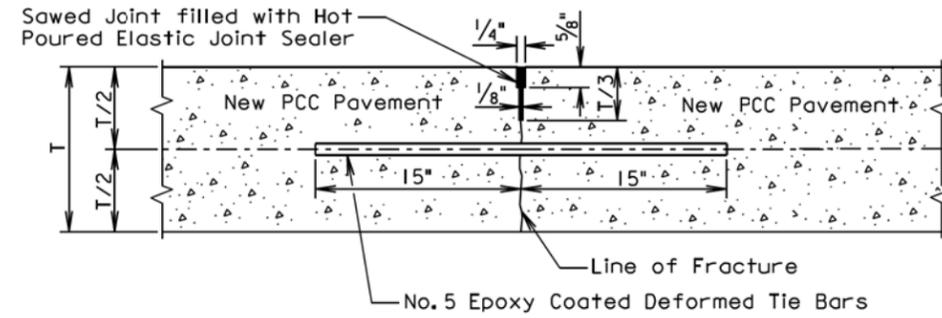
August 31, 2013

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

Published Date: 3rd Qtr. 2014

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.

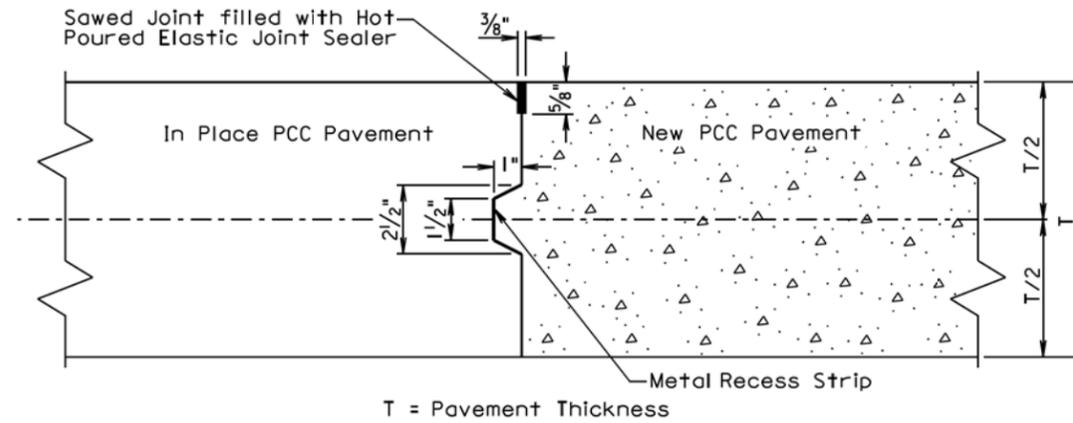
August 31, 2013

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

Published Date: 3rd Qtr. 2014

Plotting Date: 09/11/2014

LONGITUDINAL CONSTRUCTION JOINT WITHOUT TIE BARS

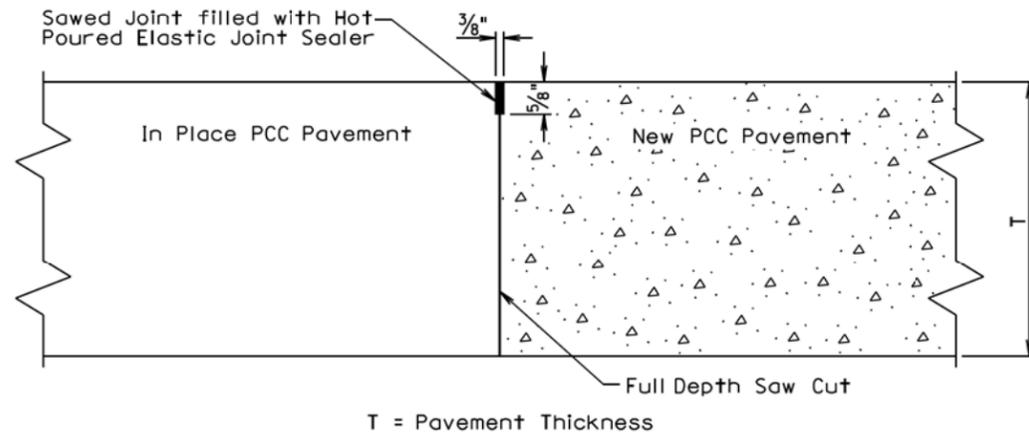


GENERAL NOTES:

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:

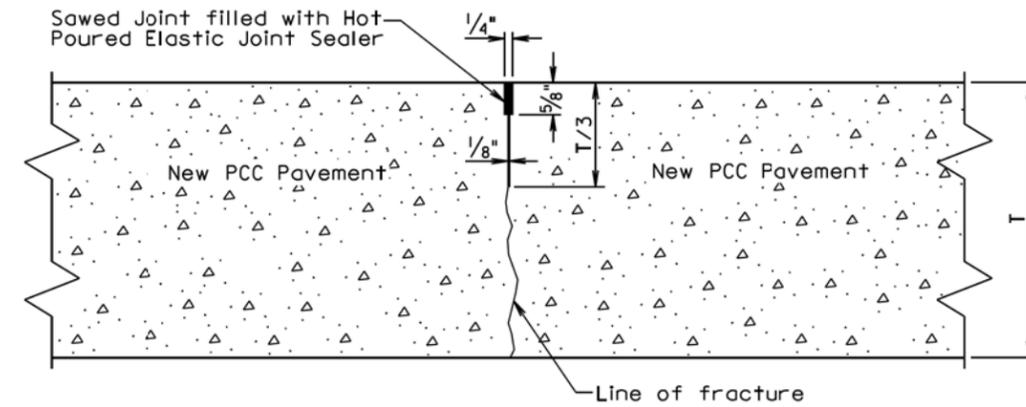
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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. 2014

SAWED LONGITUDINAL JOINT WITHOUT TIE BARS



T = Pavement Thickness

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. 2014

PLOT SCALE - 1:200

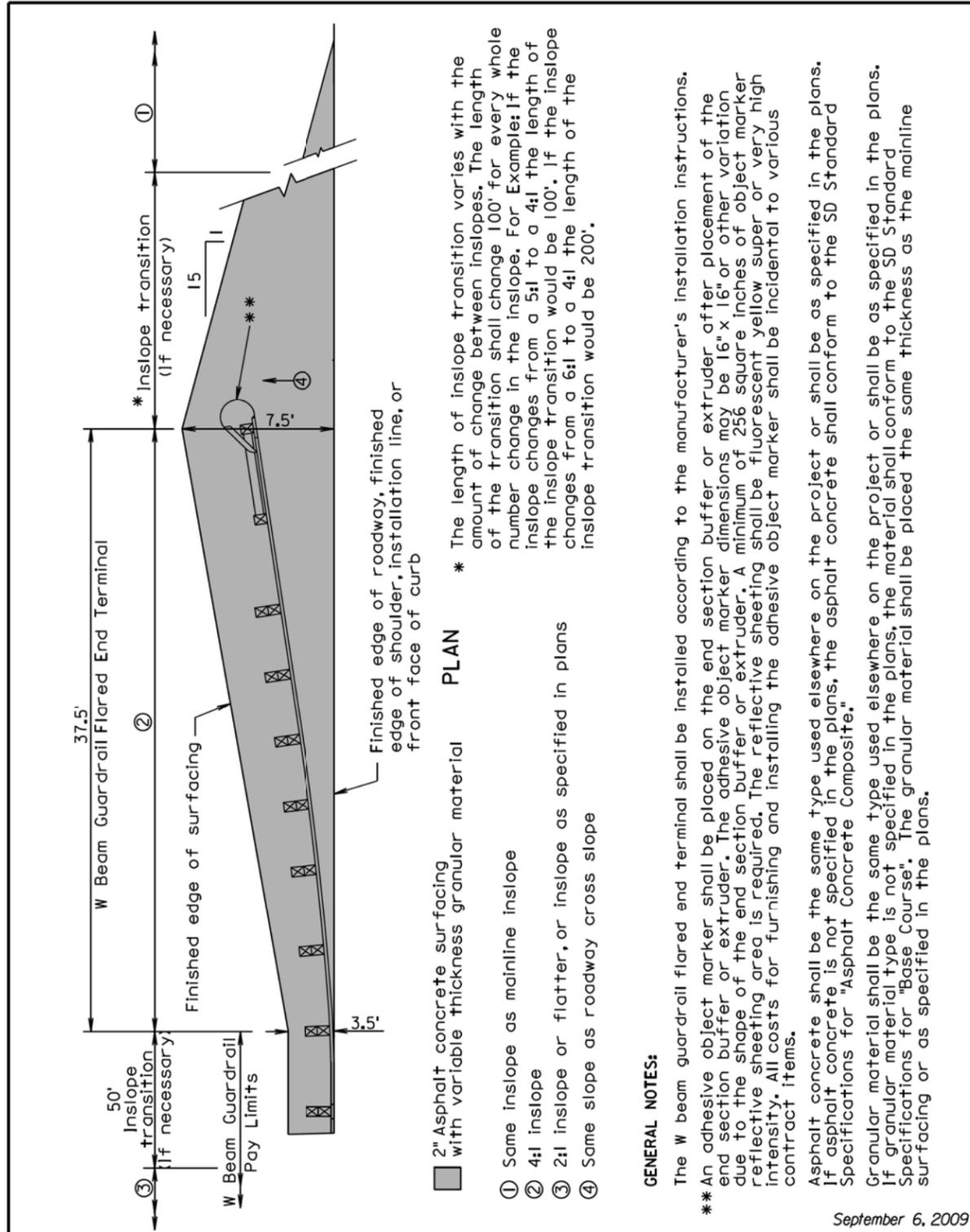
-PLOTTED FROM - TRPR16032

PLOT NAME - 53

FILE - ... \MS\PRJ\INC\035A\STDPLATE 7.DGN

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 0292(74)62	F60	F60

Plotting Date: 09/11/2014



**S
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T**

Published Date: 3rd Qtr. 2014

**EMBANKMENT AND SURFACING FOR
W BEAM GUARDRAIL FLARED END TERMINAL**

PLATE NUMBER
630.45

Sheet 1 of 1

September 6, 2009

- 2" Asphalt concrete surfacing with variable thickness granular material
- ① Same inslope as mainline inslope
- ② 4:1 inslope
- ③ 2:1 inslope or flatter, or inslope as specified in plans
- ④ Same slope as roadway cross slope

PLAN * The length of inslope transition varies with the amount of change between inslopes. The length of the transition shall change 100' for every whole number change in the inslope. For Example: If the inslope changes from a 5:1 to a 4:1 the length of the inslope transition would be 100'. If the inslope changes from a 6:1 to a 4:1 the length of the inslope transition would be 200'.

GENERAL NOTES:

The W beam guardrail flared end terminal shall be installed according to the manufacturer's installation instructions.

** An adhesive object marker shall be placed on the end section buffer or extruder after placement of the end section buffer or extruder. The adhesive object marker dimensions may be 16" x 16" or other variation due to the shape of the end section buffer or extruder. A minimum of 256 square inches of object marker reflective sheeting area is required. The reflective sheeting shall be fluorescent yellow super or very high intensity. All costs for furnishing and installing the adhesive object marker shall be incidental to various contract items.

Asphalt concrete shall be the same type used elsewhere on the project or shall be as specified in the plans. If asphalt concrete is not specified in the plans, the asphalt concrete shall conform to the SD Standard Specifications for "Asphalt Concrete Composite".

Granular material shall be the same type used elsewhere on the project or shall be as specified in the plans. If granular material type is not specified in the plans, the material shall conform to the SD Standard Specifications for "Base Course". The granular material shall be placed the same thickness as the mainline surfacing or as specified in the plans.