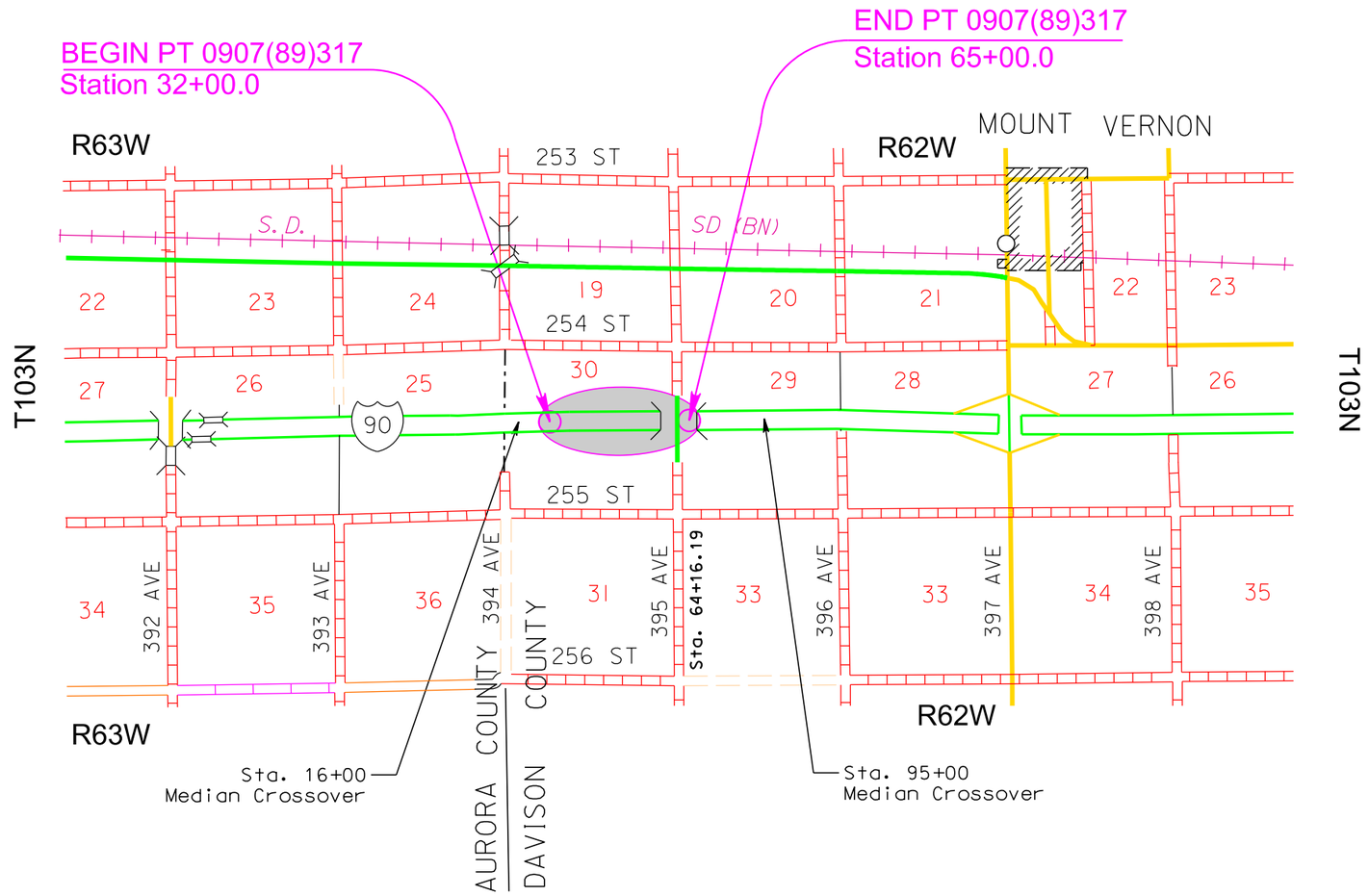
Section F: Surfacing Plans

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0907(89)317	F1	F29

Plotting Date: 04/16/2025

Revised: 16Apr25, RML

INDEX OF SHEETS



STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0907(89)317	F2	F29

Revised: 16Apr25, RML

ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E3320	Checker	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	1,304.9	SqYd
120E0010	Unclassified Excavation	4,876	CuYd
120E6200	Water for Granular Material	368.9	MGal
120E9000	Pit Run	8,083.1	Ton
260E1010	Base Course	8,721.8	Ton
260E2010	Gravel Cushion	13,926.0	Ton
320E1200	Asphalt Concrete Composite	4,970.5	Ton
320E5010	Saw and Seal Shoulder Joint	4,270	Ft
380E0120	11.5" Nonreinforced PCC Pavement	19,066.6	SqYd
380E0800	PCC Shoulder Pavement	10,266.6	SqYd
380E6000	Dowel Bar	10,512	Each
380E6110	Insert Steel Bar in PCC Pavement	96	Each
450E4749	15" CMP 16 Gauge, Furnish	1,442	Ft
450E4750	15" CMP, Install	1,442	Ft
450E5005	15" CMP Elbow, Furnish	4	Each
450E5006	15" CMP Elbow, Install	4	Each
450E5100	CMP Tee, Furnish	2	Each
450E5101	CMP Tee, Install	2	Each
450E5402	15" CMP Safety End, Furnish	4	Each
450E5403	15" CMP Safety End, Install	4	Each
450E6119	15" Slotted CMP 16 Gauge, Furnish	590	Ft
450E6120	15" Slotted CMP, Install	590	Ft
462E0100	Class M6 Concrete	52.9	CuYd
464E0100	Controlled Density Fill	21.8	CuYd
629E9010	Interim Crossover Closure	784	Ft
831E0210	Non-woven Separator Fabric	12,228	SqYd

SURFACING THICKNESS DIMENSIONS

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

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

EXISTING PCC PAVEMENT

Sta. 32+00 to Sta. 65+00 - The existing concrete is 10.5” Plain Jointed PCC Pavement. The existing transverse joints are perpendicular and are spaced at 20 feet. The aggregate in the existing Plain Jointed PCC Pavement is quartzite.

RECYCLED CONCRETE AGGREGATE (RCA)

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

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

There is an estimated 8,858.9 tons of PCC Pavement on this project that can be crushed and reused. This quantity is based on a unit weight of 118 lbs. per cubic foot for the recycled concrete aggregate.

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

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

UNCLASSIFIED EXCAVATION

An estimated 4,876.1 Cu.Yds. of Unclassified Excavation shall be plans quantity and will not be adjusted according to field measurements, see Typical Sections. Unclassified Excavation is removal of waste material. The Unclassified Excavation waste material shall become property of the Contractor.

TABLE OF UNCLASSIFIED EXCAVATION

Location of Removal Areas	Waste Material
	Cu.Yds.
Median Crossovers	
Sta. 16+00	2,631.2
Sta. 95+00	2,244.9
TOTAL	4,876.1

REMOVE ASPHALT CONCRETE PAVEMENT

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete was 26. This value was obtained from testing during construction of the in-place asphalt concrete.

An estimated 1,304.9 Square Yards of the in-place asphalt concrete surfacing will be removed from the existing highway at the crossover locations according to the in-place surfacing typical sections and wasted as directed by the Engineer.

The quantity of removed asphalt material is estimated from the in-place surfacing typical sections. This estimated quantity is not included in the unclassified excavation quantities.

TABLE OF ASPHALT CONCRETE REMOVAL

Location of Removal Areas	Removal Material
	Sq.Yds.
Median Crossovers	
Sta. 16+00	662.3
Sta. 95+00	642.6
TOTAL	1,304.9

PIT RUN MATERIAL

Pit Run material will be obtained from a granular source conforming to Section 120 of the Specifications.

Minimum compaction testing requirements will be one test per crossover location.

NON-WOVEN SEPARATOR FABRIC

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

TABLE OF NON-WOVEN SEPARATOR FABRIC

Location	Non-woven Separator Fabric (Sq.Yds.)
Median Crossover	
Sta. 16+00	6,415.3
Sta. 95+00	5,812.7
TOTAL =	12,228.0

CONTROLLED DENSITY FILL FOR MEDIAN CROSSOVERS

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

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

TABLE OF CONTROLLED DENSITY FILL FOR MEDIAN CROSSOVERS

Location	Controlled Density Fill (Cu.Yds.)
Median Crossover	
Sta. 16+00	10.7
Sta. 95+00	11.1
TOTAL =	21.8

CLASS M6 CONCRETE

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

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

TABLE OF CLASS M6 CONCRETE

Location	Class M6 Concrete (Cu.Yds.)
Median Crossover	
Sta. 16+00	26.0
Sta. 95+00	26.9
TOTAL =	52.9

INTERIM CROSSOVER CLOSURE

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

TABLE OF INTERIM CROSSOVER CLOSURE

Location	Interim Crossover Closure (Ft)
Median Crossover	
Sta. 16+00	384
Sta. 95+00	400
TOTAL =	784

See Standard Plate 629.42

CHECKING SPREAD RATES

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

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

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

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

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

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

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

ASPHALT CONCRETE COMPOSITE

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

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

11.5" NONREINFORCED PCC PAVEMENT

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

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

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

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

The location of joints, as shown and designated on the PCC Pavement Joint Layout(s) are only approximate locations to be used as a guide and to afford bidders a basis for estimating the construction cost of the joints. The final locations of the joints are to be designated by the Engineer during construction.

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

Rumble Strips will be placed 15 inches wide 6 inches from the outside edge of the driving lane. Payment for forming rumble strips including labor, materials and incidentals will be incidental to the contract unit price per square yard for "11.5" Nonreinforced PCC Pavement". Estimated length for both lanes = 6,600 feet.

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

Sta. 32+00 to Sta. 65+00 EB & WB Lanes

TRANSVERSE CONTRACTION JOINTS

See Standard Plate 380.04 for placement of Dowel Bars.

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

Spacing for Transverse Contraction Joints will be 15'.

PCC SHOULDER PAVEMENT

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

The median and outside shoulder may be poured monolithic with the mainline pavement. Transverse contraction joints will match mainline joints.

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

If the shoulders are poured monolithic with the mainline pavement a sawed joint with tie bars will be constructed between the mainline pavement and the shoulders.

Rumble Strips will be placed 1.5 feet wide 6 inches from the outside edge of the passing lane. Payment for forming rumble strips including labor, materials and incidentals will be incidental to the contract unit price per square yard for "PCC Shoulder Pavement". Estimated length for both lanes = 6,600 feet.

STEEL BAR INSERTION

The Contractor will insert the Steel Bars (1½ inch x 18-inch epoxy coated plain round bars) into drilled holes in the existing concrete pavement. Anchoring of the steel bars in the drilled holes will conform to the Specifications. The steel bars will be cut to the specified length by sawing or shearing and will be free from burring or other deformations.

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

TABLE OF STEEL BAR INSERTION

LOCATION	QUANTITY OF BARS
I-90	1 ½" x 18"
Sta. 32+00 EBL	24
Sta. 65+00 EBL	24
Sta. 32+00 WBL	24
Sta. 65+00 WBL	24
Totals =	96

ALKALI SILICA REACTIVITY

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

Below is a list of known fine aggregate sources and the average corresponding 14-day expansion values (as of 9-18-2024):

Source	Location	Expansion Value
Bachman	Winner, SD	0.335*
Bitterman	Delmont, SD	0.316*
Concrete Materials	Corson, SD	0.146
Concrete Materials - Vellek Pit	Yankton, SD	0.411**
Croell	Hot Springs, SD	0.089
Croell	Wasta, SD	0.212
Emme Sand & Gravel	Oneil, NE	0.217
Fisher S&G – Blair Pit	W of Vale, SD	0.171
Fisher S&G - Mickelson Pit	E of Nisland, SD	0.129
Fisher S&G - Vallery Pit	Nisland, SD	0.110
Fisher S&G	Rapid City, SD	0.092
Fisher S&G	Spearfish, SD	0.053
Fisher S&G	Wasta, SD	0.159
Fuchs	Pickstown, SD	0.275*
Henning – Tilstra Pit	Ash Creek, MN	0.199
Higman	Hudson, SD	0.187
Jensen	Herried, SD	0.276*
L.G. Everist	Akron, IA	0.257*
L.G. Everist	Brookings, SD	0.297*
L.G. Everist – Ode Pit	E Sioux Falls, SD	0.222
L.G. Everist – Nelson Pit	NE Sioux Falls, SD	0.156
L.G. Everist	Hawarden, IA	0.211
L.G. Everist	Summit, SD	0.184
Mark's S&G – Moerke Pit	Underwood, MN	0.165
Morris – Birdsall	Blunt, SD	0.229
Morris - Leesman	Blunt, SD	0.231
Morris - Richards Pit	Onida, SD	0.188
Morris - Shawn's Pit	E of Sturgis, SD	0.186
Northern Concrete Agg.	Rauville, SD	0.113
Northern Concrete Agg.	Luverne, MN	0.154
Opperman - Gunvordahl Pit	Burke, SD	0.363*
Opperman - Cahoy Pit	Herrick, SD	0.307*
Opperman - Jones Pit	Burke, SD	0.321*
Opperman - Randall Pit	Pickstown, SD	0.230
Pete Lien & Sons	Creston, SD	0.158
Pete Lien & Sons	Oral, SD	0.157
Pete Lien & Sons	Wasta, SD	0.255*
Simon Materials - Beltline Pit	Scottsbluff, NE	0.277*
Thorpe Pit	Britton, SD	0.098
Valley S&G – Van Beek Pit	Rock Valley, IA	0.228
Wagner Building Supplies	Pickstown (Wagner), SD	0.251*
Winter Brothers- Whitehead Pit	Brookings, SD	0.197

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

** These sources will not be used.

ALKALI SILICA REACTIVITY (CONTINUED)

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

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

POLY-ALPHA METHYLSTYRENE (AMS) MEMBRANE CURING COMPOUND

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4. Separate filters for the hose and nozzle.

5. Check valve nozzles.

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

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

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

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

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

3. Separate filters for the hose and nozzle.

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

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

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

Payment for AMS membrane curing compound, including labor, materials and incidentals will be incidental to the contract unit price per square yard for “11.5" Nonreinforced PCC Pavement” or “PCC Shoulder Pavement”.

TABLE OF PCC PAVEMENT

LOCATION			1½" Dowel Bars	11.5" Nonreinforced PCC Pavement	PCC Shoulder Pavement	
					8’ Outside Shoulder	6’ Median Shoulder
Station	to	Station	each	sq. yds.	Sq. yds.	sq. yds.
I-90 EBL						
32+00	to	65+00	5,256	9,533.3	2,933.3	2,200.0
I-90 WBL						
32+00	to	65+00	5,256	9,533.3	2,933.3	2,200.0
		SUBTOTAL			5,866.6	4,400.0
		TOTAL	10,512	19,066.6	10,266.6	

TABLE OF PIPE AND RELATED ITEMS

Location-Description	15” CMP (16 ga.),	15” CMP Elbow	15” CMP Safety End	15” Slotted CMP (16 ga.)	15” Pipe Cap (NABI)	CMP Tee
	Ft	Each	Each	Ft	Ft	Each
Median Crossovers						
Sta. 16+00	652	1	2	290	1	1
Sta. 95+00	790	3	2	300	1	1
Totals	1,442	4	4	590	2	2

NABI – Not A Bid Item, incidental to various pipe items

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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TABLE OF QUANTITIES

LOCATION			WATER FOR GRANULAR MATERIAL	GRAVEL CUSHION	BASE COURSE	PIT RUN MATERIAL	ASPHALT CONCRETE COMPOSITE	SAW AND SEAL SHOULDER JOINT (EB & WB Shoulders)
Station	to	Station	MGal	Tons	Tons	Tons	Tons / Lift	Feet
I-90 EBL MAINLINE								
32+00	to	65+00	63.4	5,280.0				
I-90 WBL MAINLINE								
32+00	to	65+00	63.4	5,280.0				
I-90 EBL Outside Shoulder								
32+00	to	65+00	10.2	858.0				
I-90 WBL Outside Shoulder								
32+00	to	65+00	10.2	858.0				
Granular Wedge adjacent PCCP								
I-90 EBL Outside Shoulder								
32+00	to	65+00	2.6	231.0				
I-90 WBL Outside Shoulder								
32+00	to	65+00	2.6	231.0				
Granular Wedge adjacent PCCP								
I-90 EBL Median Shoulder								
32+00	to	65+00	7.3	594.0				
I-90 WBL Median Shoulder								
32+00	to	65+00	7.3	594.0				
Crossovers								
Sta. 16+00			86.1		4,010.8	3,163.8	993.2 / 973.0 / 637.1	2,167.2
Sta. 95+00			101.8		3,554.5	4,919.3	897.5 / 878.5 / 574.8	2,102.8
Guardrail Surfacing								
Median Shoulder WBL			6.9		570.9			
Outside Shoulder WBL			0.7		57.1			
Median Shoulder EBL			4.4		362.8			
Outside Shoulder EBL			2.0		164.7		16.4	
TOTAL			368.9	13,926.0	8,721.8	8,083.1	4,970.5	4,270.0

TYPICAL SURFACING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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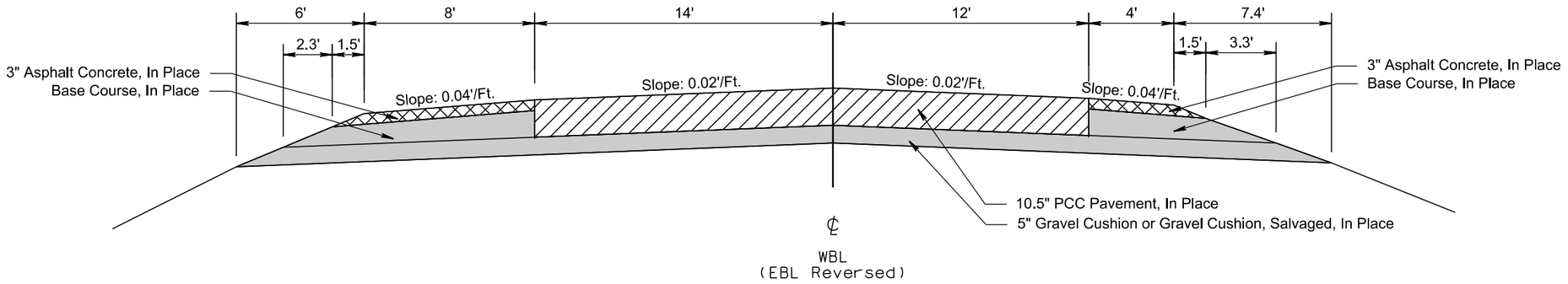
Plotting Date: 04/16/2025

Remove Concrete Pavement

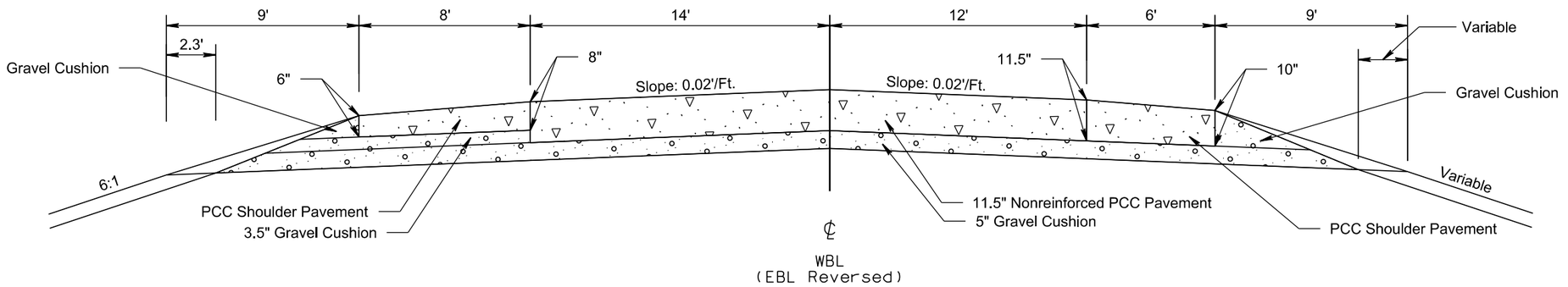
Remove Asphalt Concrete Pavement

Unclassified Excavation

Sta. 32+00 to Sta. 65+00



Sta. 32+00 to Sta. 65+00



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PLOT NAME - 2

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PCC PAVEMENT JOINT LAYOUT

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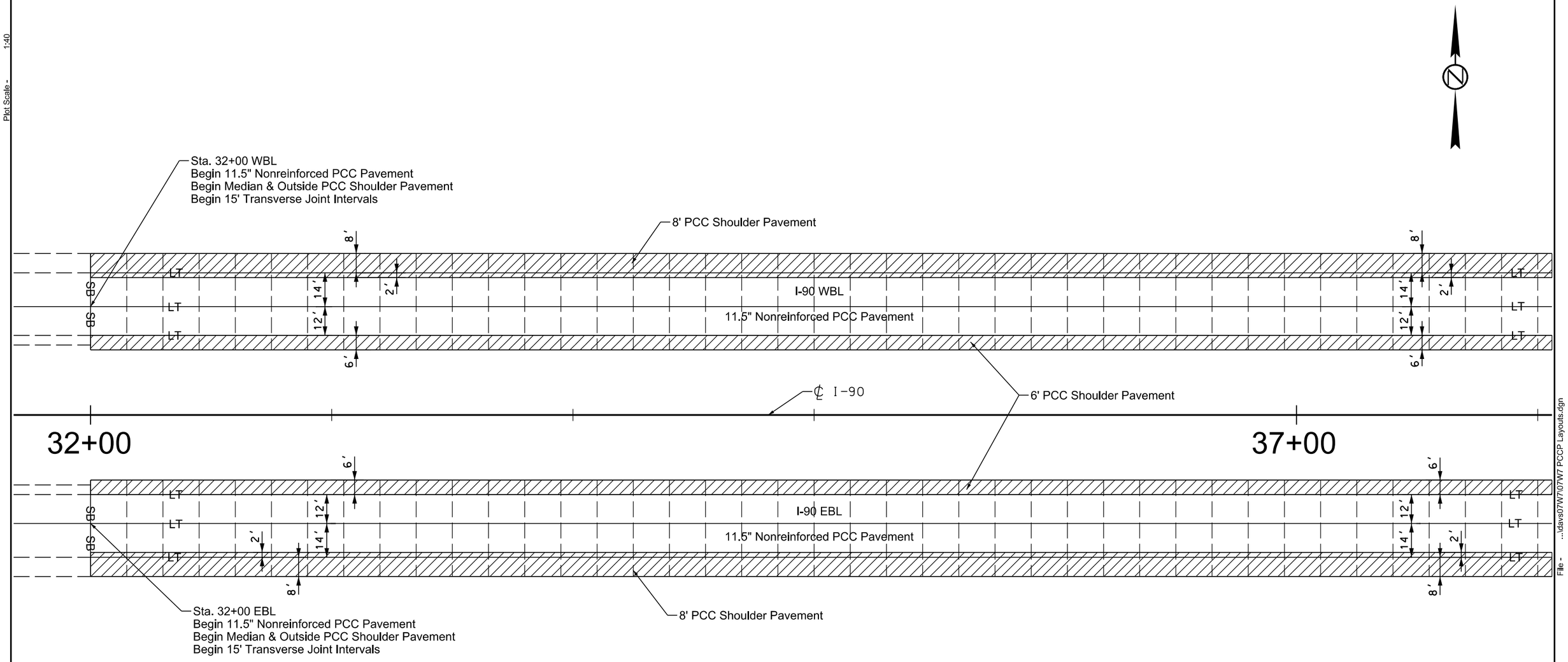
Plotting Date: 04/16/2025

Scale 1 Inch = 40 Feet
Sheet 1 of 2 Sheets



LEGEND:

Longitudinal Joint With Tie Bars (Construction or Sawed) ———LT———LT———
Transverse Contraction Joints — — — — — — — — — — — — — — — — — —
Steel Bar Installation in Longitudinal or Transverse Joint ———SB———SB———

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

Plotted From - TRPR16032

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PCC PAVEMENT JOINT LAYOUT

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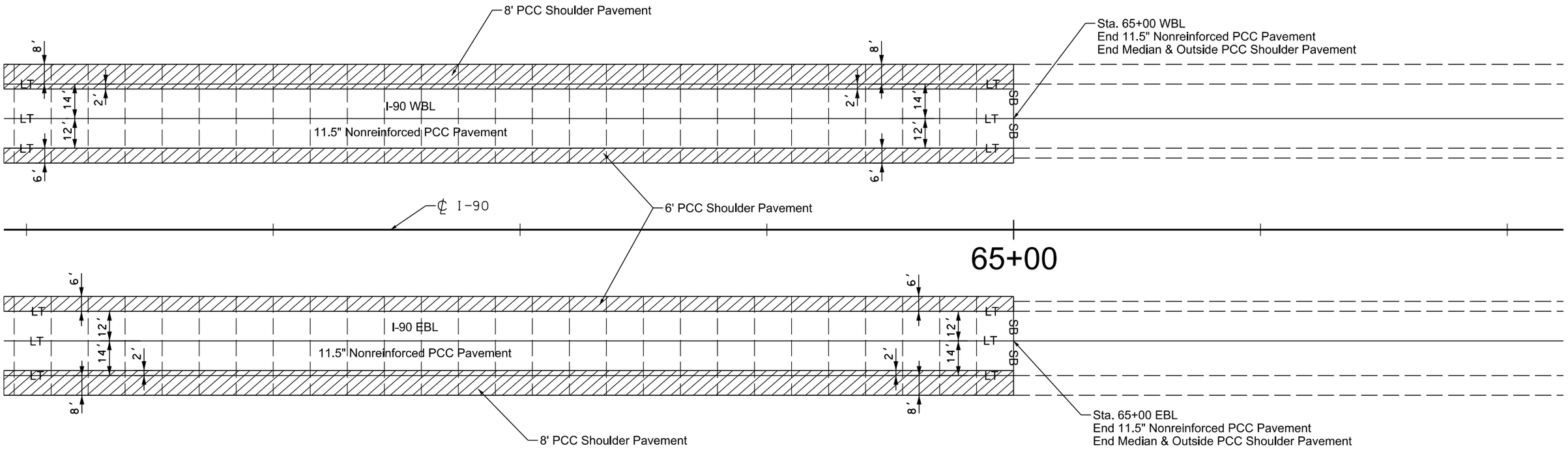
Scale 1 Inch = 40 Feet
Sheet 2 of 2 Sheets



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CROSSOVER LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
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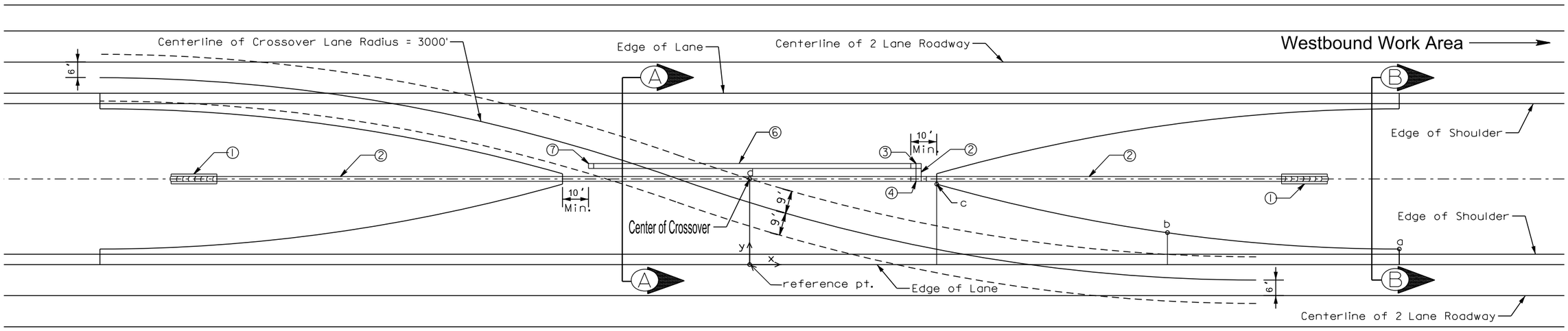
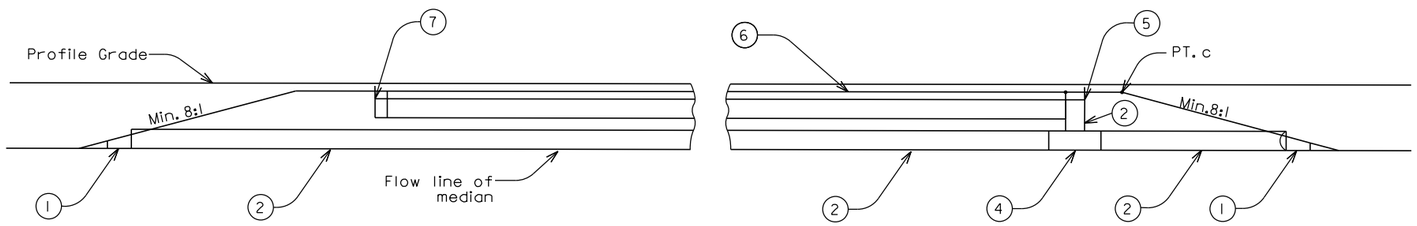
Sta. 16+00

	66' MEDIAN	
Point	(x)	(y)
a	541.8	6.0'
b	348.5	12.3'
c	156.0	31.0'
d	0'	33.0'





Median Drainage Components (each location)

1. 15" CM Safety End
2. 15" CMP, Estimated lengths = 472', 178', and 2' between 90° Elbow and Tee
4. 15" CM Tee
5. 15" CM 90° Elbow
6. 15" CM Slotted Drain, Length = 290'
7. 15" CM Cap

GENERAL NOTES:

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

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

Slotted CMP Drains will be installed in multiples of ten feet. Installation of gasketed lock seam helically corrugated pipe will be allowed. The Engineer may reject the pipe if defects are discovered.

Median Crossover located on grades requiring through drainage.

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

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

MEDIAN CROSSOVER

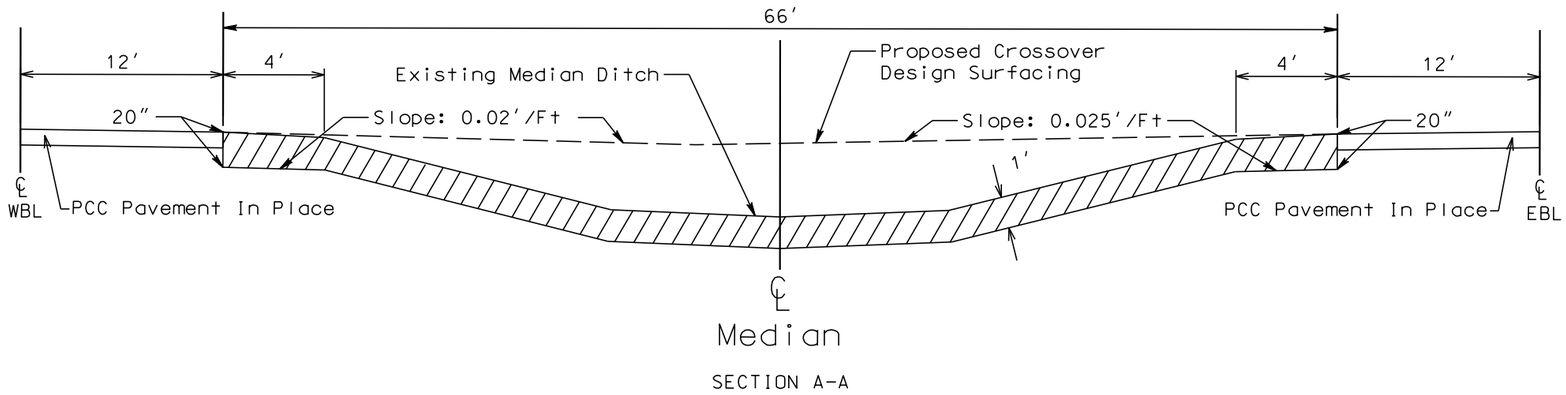
SHEET 1 OF 3 SHEETS

Plot Scale - 1:8

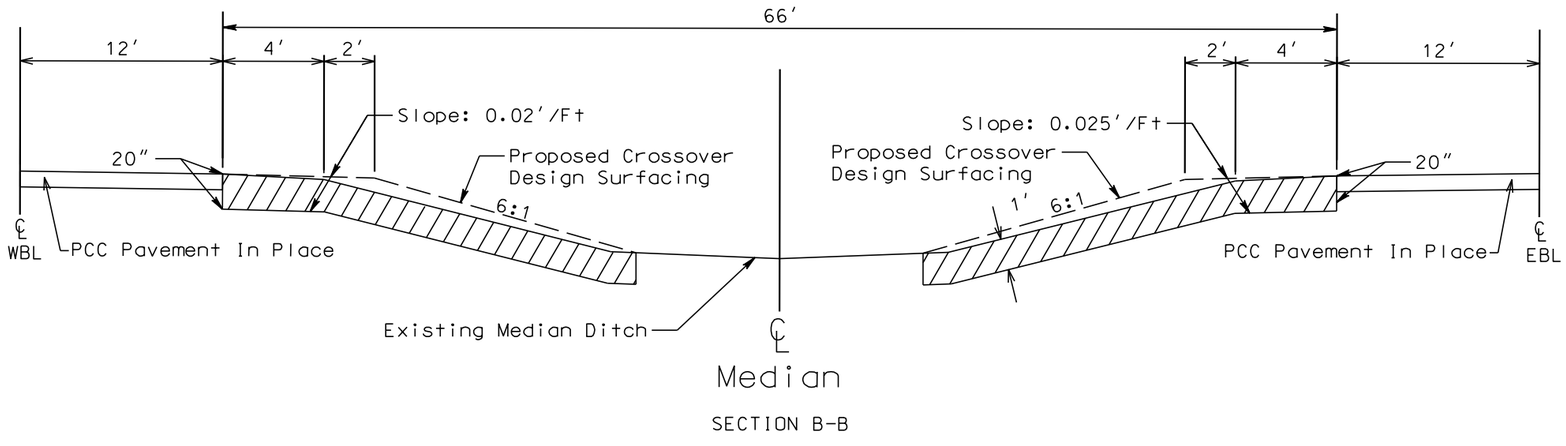
Plotted From - TRPR16032

File - ...\davs07W7\Median Crossover.dgn

Unclassified Excavation

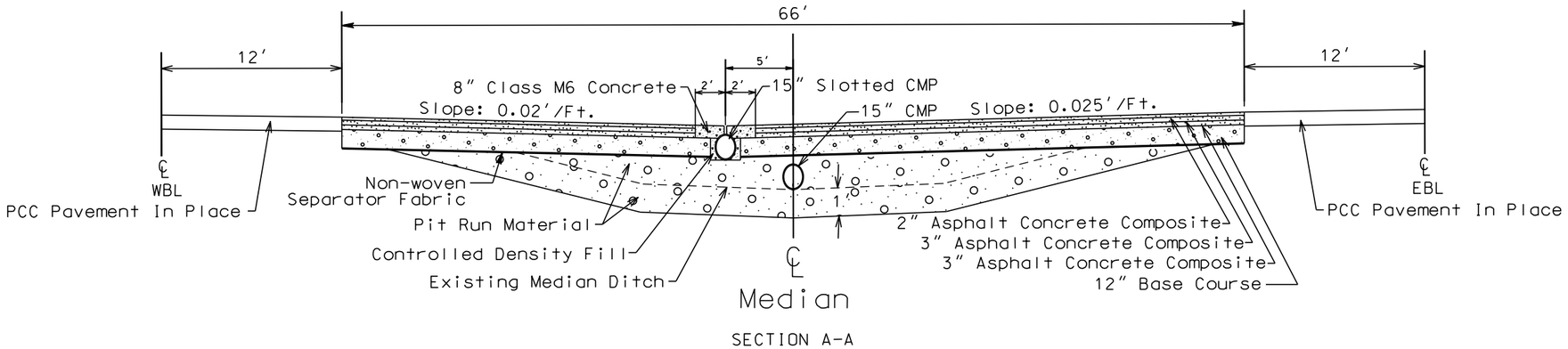


SECTION A-A

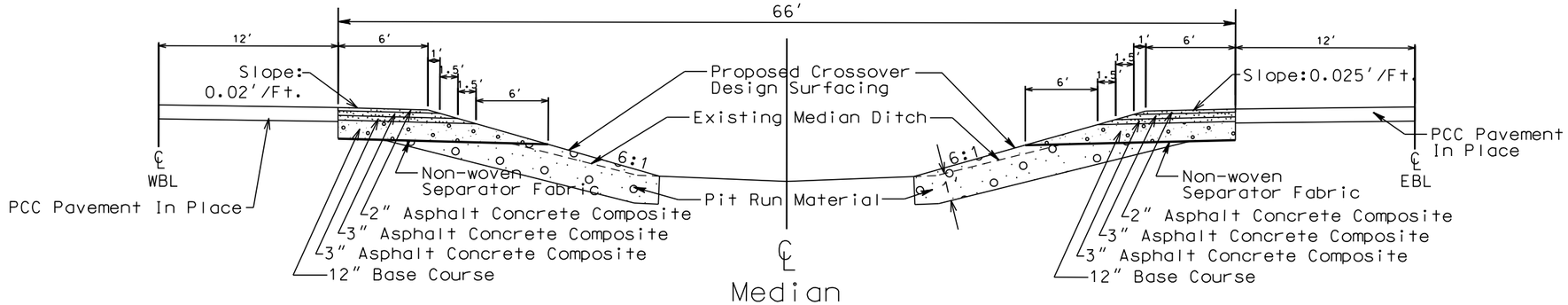


SECTION B-B

MEDIAN CROSSOVER
Sta. 16+00



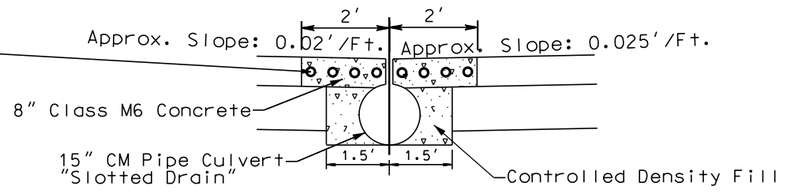
SECTION A-A



SECTION B-B

Detail for Epoxy Coated Bars in Class M6 Concrete

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



MEDIAN CROSSOVER
Sta. 16+00

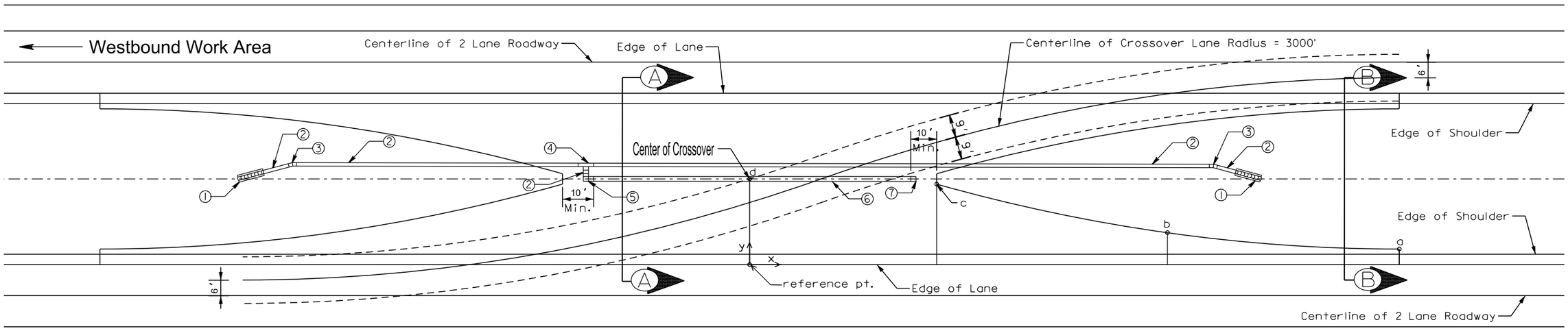
CROSSOVER LAYOUT

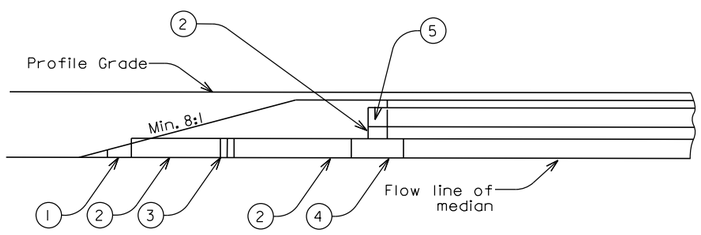
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0907(89)317	F13	F29

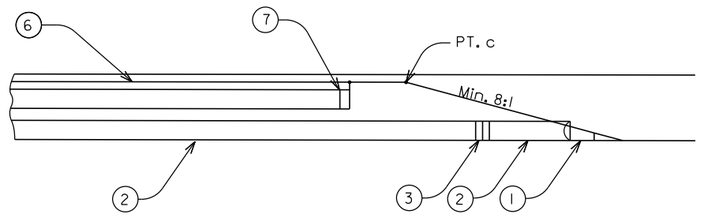
Plotting Date: 04/16/2025

Sta. 95+00

	60' MEDIAN	
Point	(x)	(y)
a	525.7	6.0'
b	344.4	11.5'
c	163.8	28.0'
d	0'	30.0'







Median Drainage Components (each location)

1. 15" CM Safety End
2. 15" CMP, Estimated lengths = 14', 228', 532', 14', and 2' between 90° Elbow and Tee
3. 15" CM 15° Elbow
4. 15" CM Tee
5. 15" CM 90° Elbow
6. 15" CM Slotted Drain, Length = 300'
7. 15" CM Cap

GENERAL NOTES:

The intent of this plan is to show the construction requirements for median crossovers for 60' median width.

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

Slotted CMP Drains will be installed in multiples of ten feet. Installation of gasketed lock seam helically corrugated pipe will be allowed. The Engineer may reject the pipe if defects are discovered.

Median Crossover located on grades requiring through drainage.

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

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

MEDIAN CROSSOVER

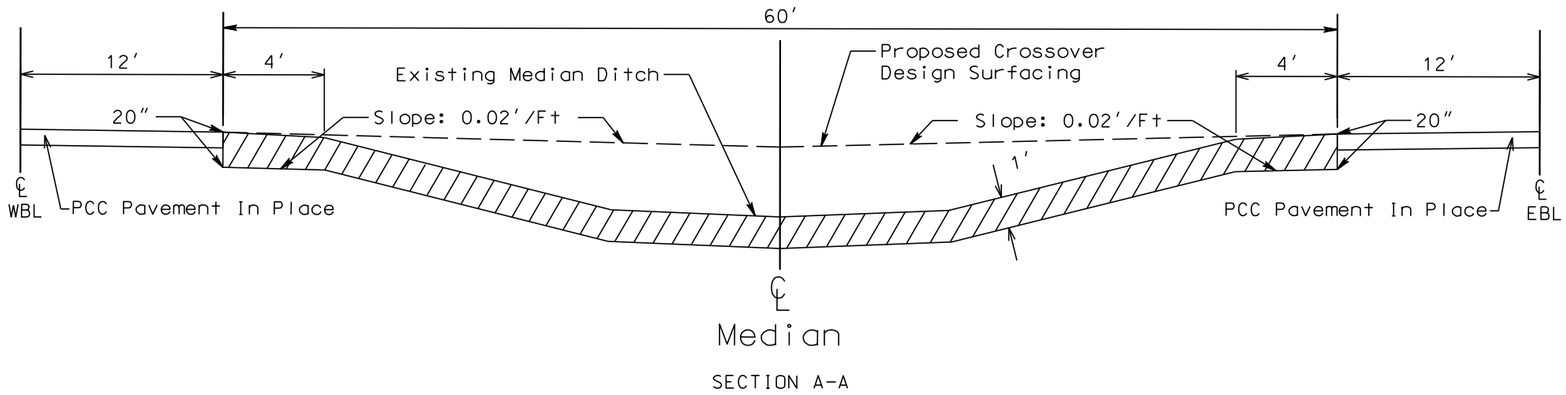
SHEET 1 OF 3 SHEETS

Plot Scale - 1:8

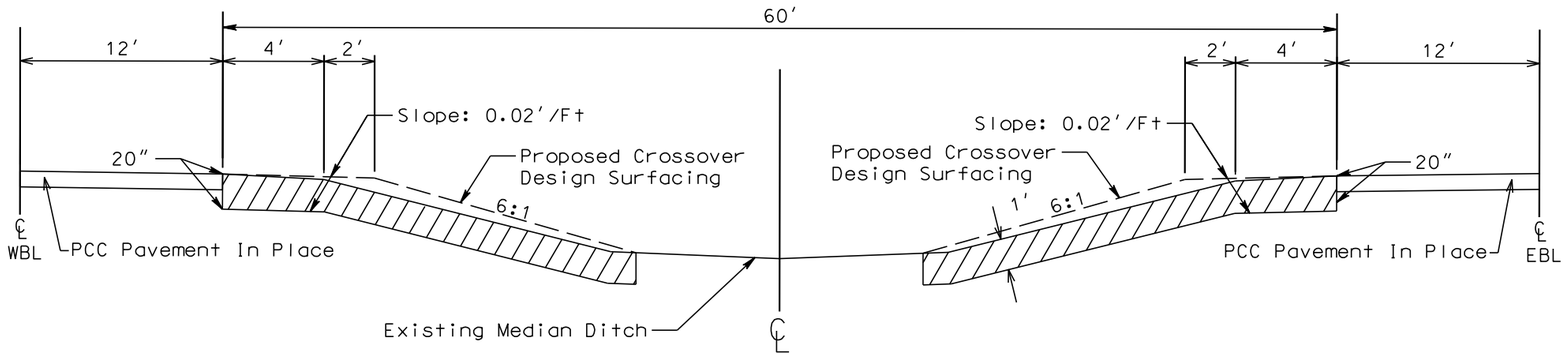
Plotted From - TRPR16032

File - ...\davs07W7\Median Crossover.dgn

Unclassified Excavation

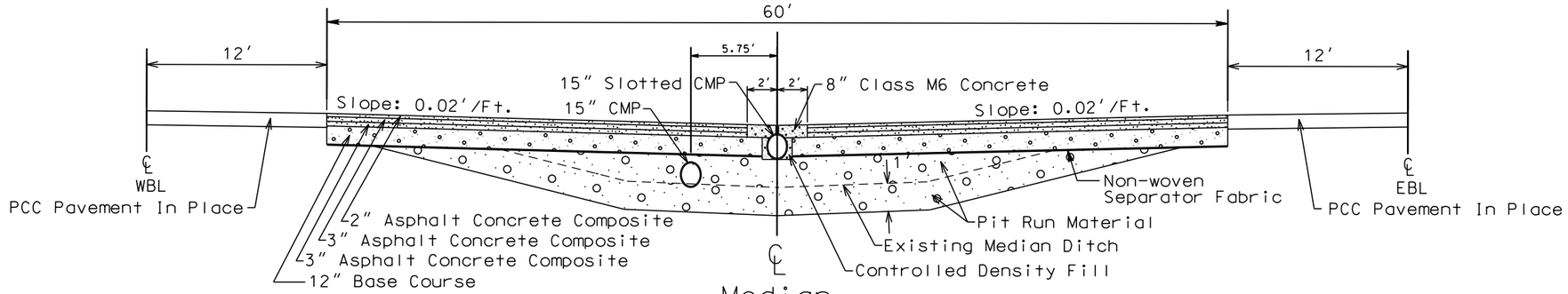


SECTION A-A

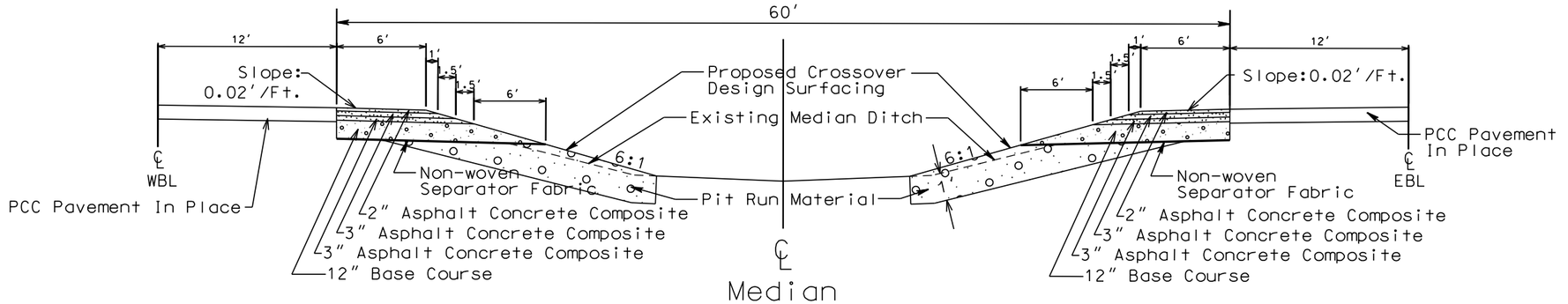


SECTION B-B

MEDIAN CROSSOVER
Sta. 95+00



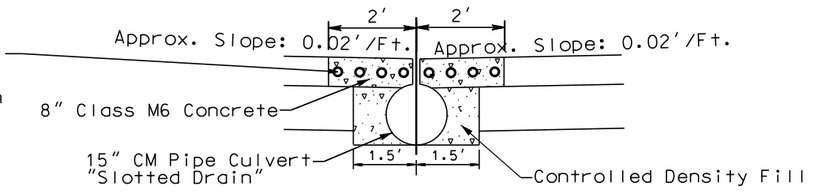
SECTION A-A



SECTION B-B

Detail for Epoxy Coated Bars in Class M6 Concrete

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



MEDIAN CROSSOVER
Sta. 95+00

GUARDRAIL LAYOUTS

Scale 1 Inch = 40 Feet
Sheet 1 of 2 Sheets

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0907(89)317	F16	F29

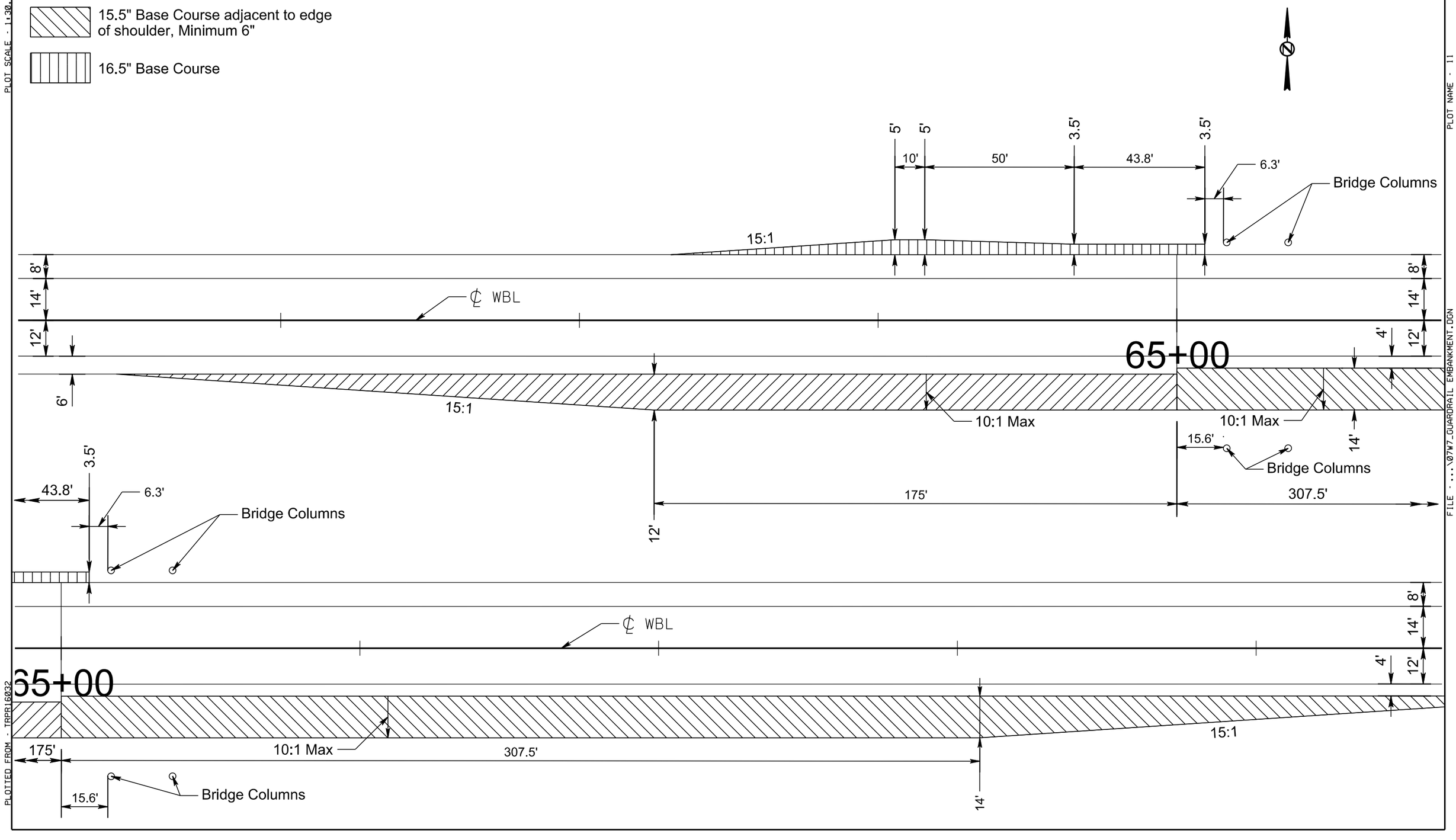
Plotting Date: 04/16/2025

Revised: 16Apr25, RML

16.5" Base Course adjacent to edge of shoulder, Minimum 6"

15.5" Base Course adjacent to edge of shoulder, Minimum 6"

16.5" Base Course



PLOT SCALE - 1:30.0391

PLOT NAME - 11

FILE - ...\07W7_GUARDRAIL_EMBANKMENT.DGN

PLOTTED FROM - TRPR16032

GUARDRAIL LAYOUTS

Scale 1 Inch = 40 Feet
Sheet 2 of 2 Sheets

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	PT 0907(89)317	F17	F29

Plotting Date: 04/16/2025

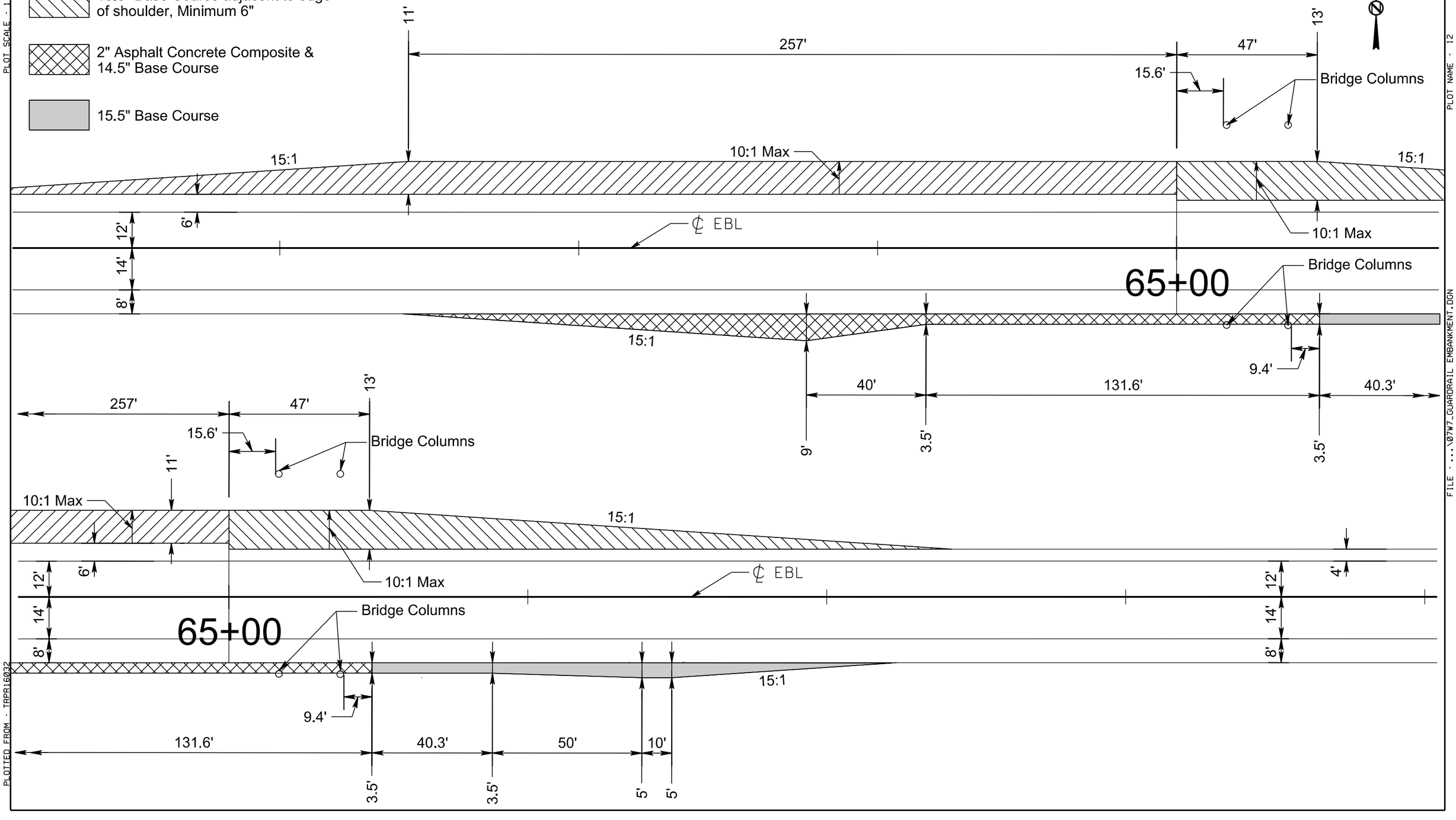
Revised: 16Apr25, RML

16.5" Base Course adjacent to edge of shoulder, Minimum 6"

15.5" Base Course adjacent to edge of shoulder, Minimum 6"

2" Asphalt Concrete Composite & 14.5" Base Course

15.5" Base Course

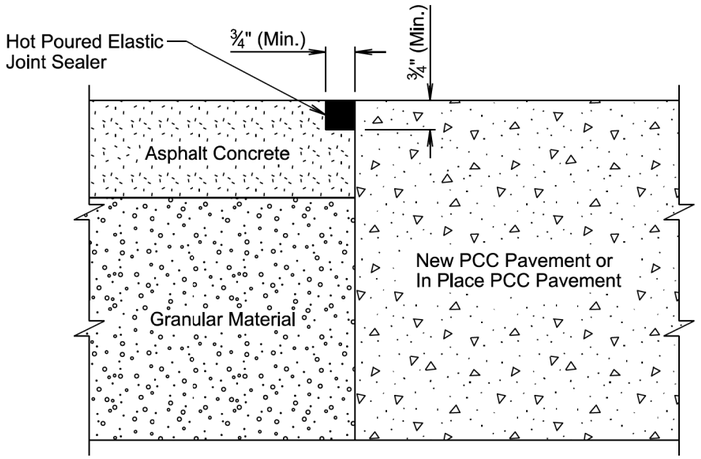


PLOT SCALE - 1:30.0391

PLOT NAME - 12

FILE - ...\07W7_GUARDRAIL EMBANKMENT.DGN

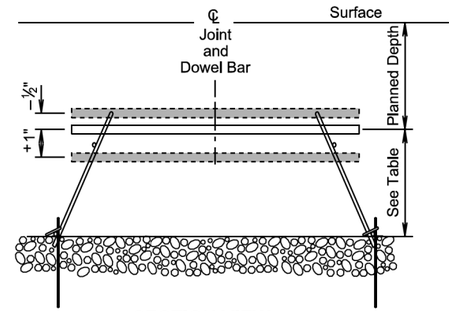
PLOTTED FROM - TRPR16032



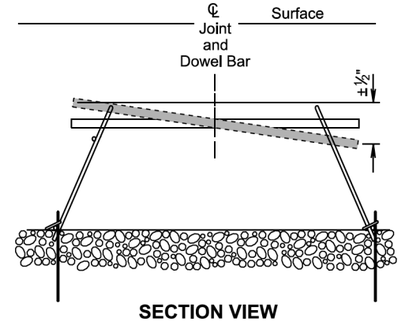
TRANSVERSE SECTION
(Asphalt Concrete Shoulder Joint)

September 14, 2019

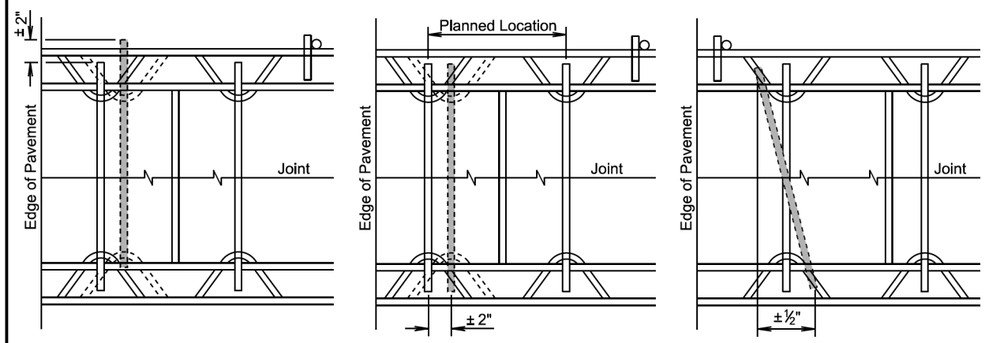
Published Date: 2025	SDDOT	ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT	PLATE NUMBER 320.15
			Sheet 1 of 1



SECTION VIEW
VERTICAL TRANSLATION
Depth: mid-depth + 1 inch or – ½ inch



SECTION VIEW
VERTICAL TILT
Vertical rotational alignment: ½ inch over 18 inch



PLAN VIEW
LONGITUDINAL TRANSLATION
Longitudinal side shift: ± 2 inch for 18 inch bars

PLAN VIEW
HORIZONTAL TRANSLATION
Side shift ± 2 inch

PLAN VIEW
HORIZONTAL SKEW
Horizontal rotational alignment: ½ inch over 18 inch

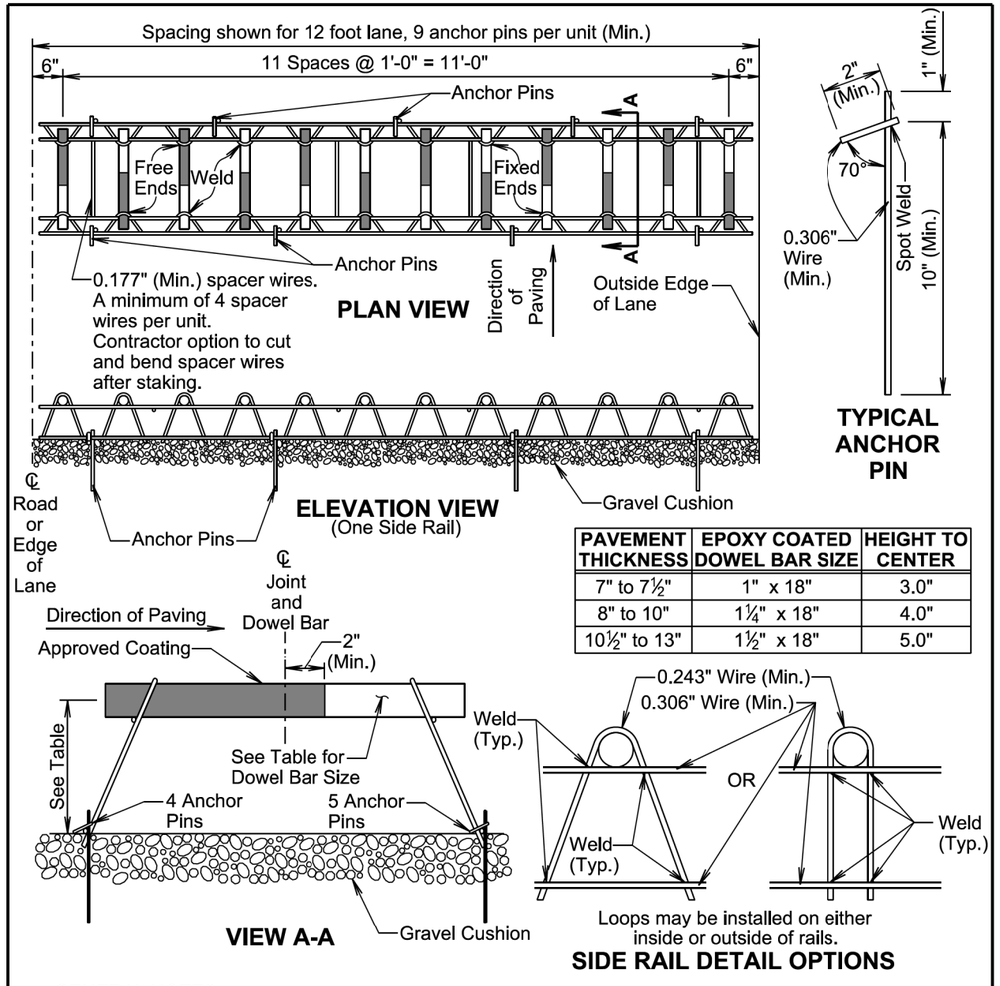
PAVEMENT THICKNESS	EPOXY COATED DOWEL BAR SIZE	HEIGHT TO CENTER
7" to 7½"	1" x 18"	3.0"
8" to 10"	1¼" x 18"	4.0"
10½" to 13"	1½" x 18"	5.0"

GENERAL NOTE:

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

November 19, 2022

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



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

GENERAL NOTES:

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

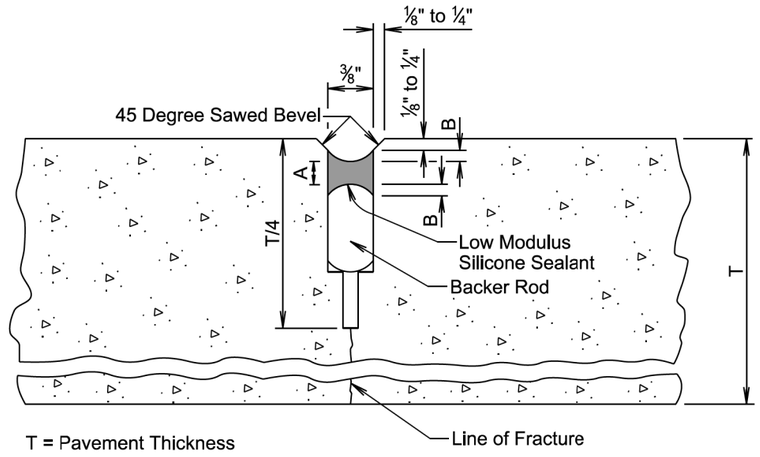
The transverse contraction joints will be sawed perpendicular to the centerline of the roadway. The transverse sawed joint will be centered over the dowel bars.

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

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

November 19, 2022

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



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

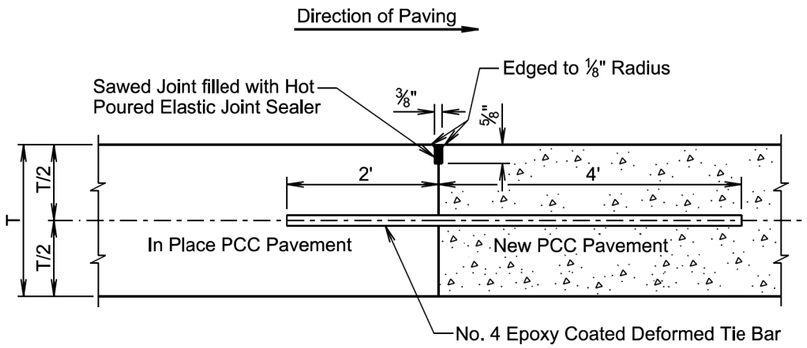
GENERAL NOTES:

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

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

November 19, 2022

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



T = Pavement Thickness

GENERAL NOTES:

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

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

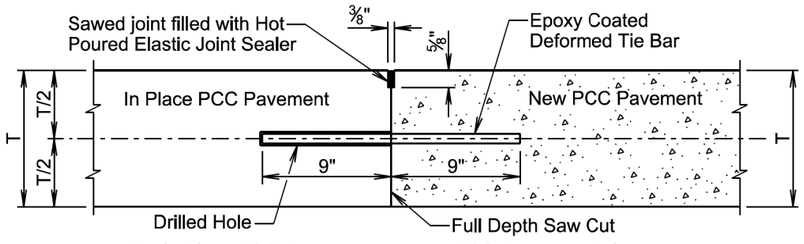
When a transverse construction joint is made, paving will not be allowed in this area for 12 hours.

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

March 31, 2024

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

DETAIL A
TRANSVERSE CONSTRUCTION JOINT WITH TIE BARS



T = In Place PCC Pavement and New PCC Pavement Thickness

GENERAL NOTES:

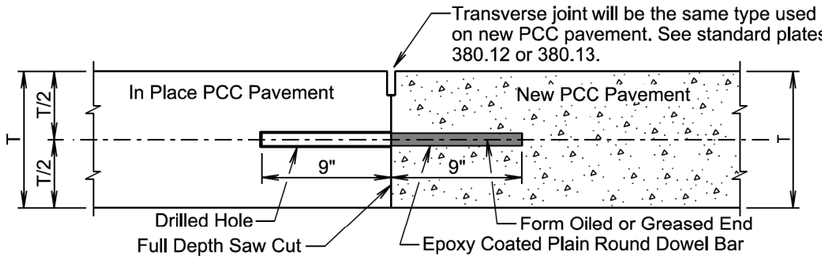
The term "In Place PCC Pavement" in the above drawing indicates that the in place PCC pavement was placed on a previous project.

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

The tie bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive or a non-shrink grout.

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

DETAIL B
TRANSVERSE CONSTRUCTION JOINT WITH DOWEL BARS



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

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

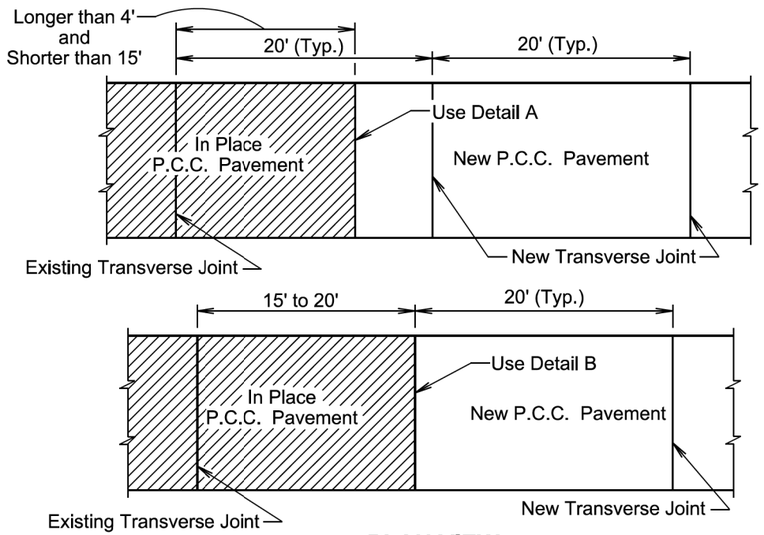
See sheet 2 of 2 of this standard plate to determine if Detail B will be used.

The plain round dowel bars will be embedded a minimum depth of 9 inches into the in place PCC pavement and anchored with an epoxy resin adhesive or a non-shrink grout.

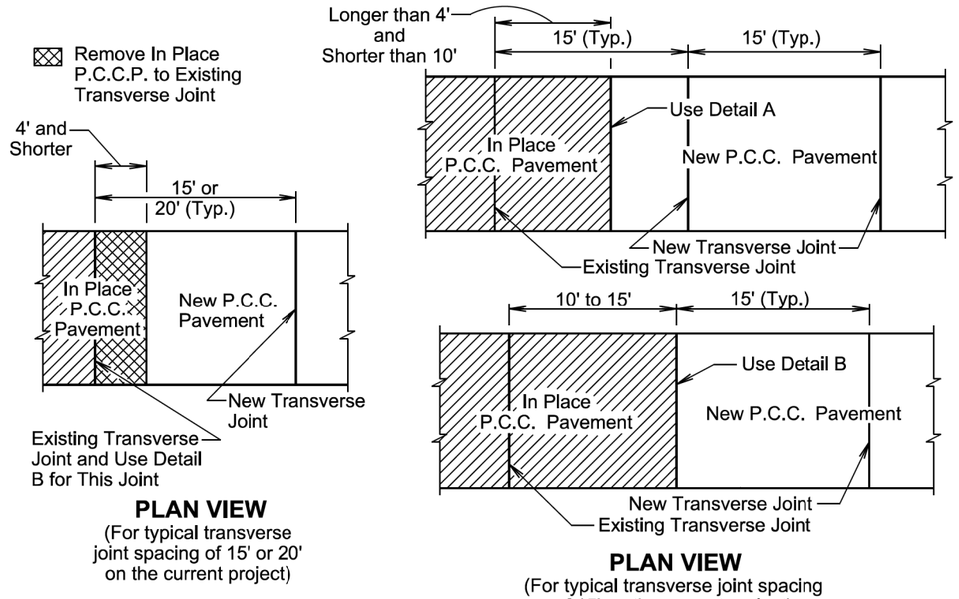
The epoxy coated plain round dowel bar size, number, and spacing will be the same as detailed on the corresponding dowel bar assembly standard plate (380.04, 380.05, 380.06, or 380.07). The epoxy coated plain round dowel bars will be a minimum of 3 inches and a maximum of 6 inches from the pavement edges.

January 22, 2023

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



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



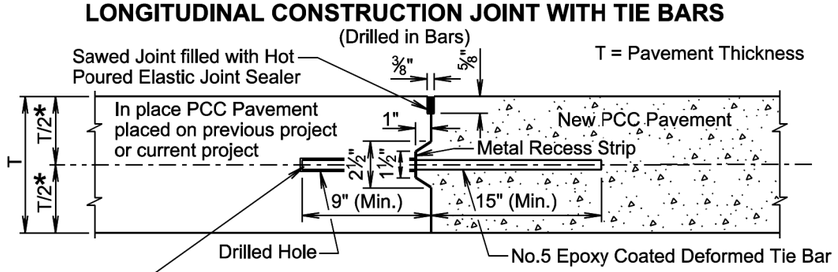
PLAN VIEW
(For typical transverse joint spacing of 15' or 20' on the current project)

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

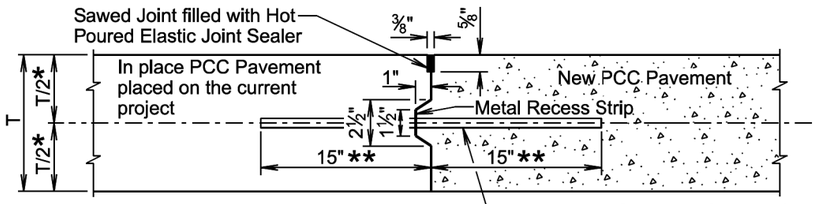
January 22, 2023

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

LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Drilled in Bars)



LONGITUDINAL CONSTRUCTION JOINT WITH TIE BARS
(Inserted or Formed in Bars)



GENERAL NOTES (For the details above):

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

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

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

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

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

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

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

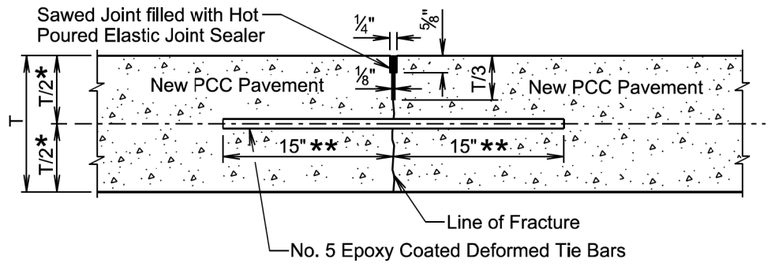
* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

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

SAWED LONGITUDINAL JOINT WITH TIE BARS

(Poured Monolithically)



T = Pavement Thickness

GENERAL NOTES (For the detail above):

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

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

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

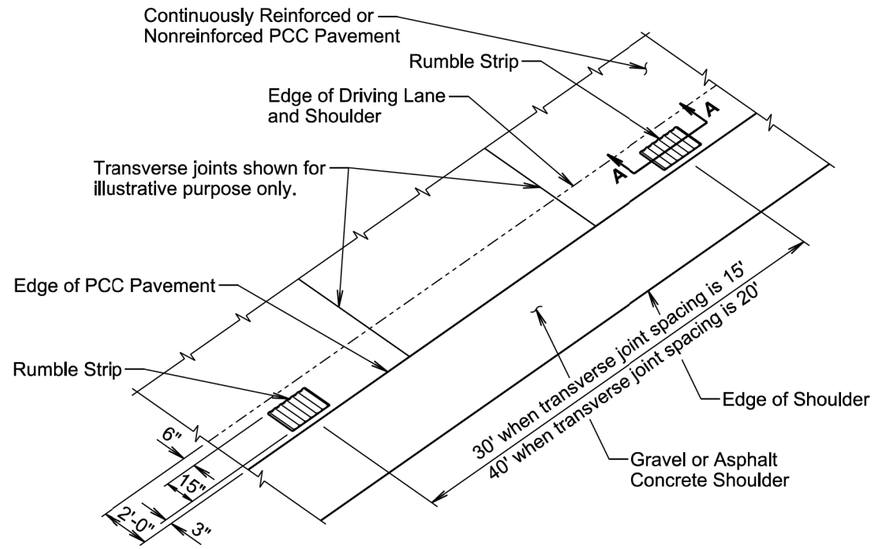
The required number of tie bars as shown in the table will be uniformly spaced within each panel with a maximum space of 48 inches center to center. The maximum tie bar spacing will apply to tie bars within each panel.

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

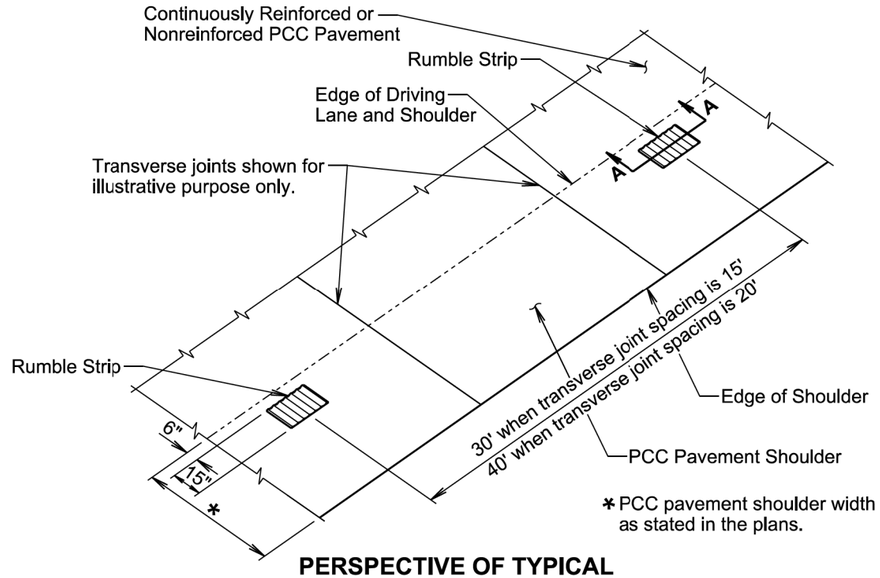
* The vertical placement tolerance for any part of the tie bar will be ± T/6.
** The transverse placement (side shift) tolerance will be ± 3 inches when measured perpendicular to the longitudinal joint line.

November 19, 2022

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



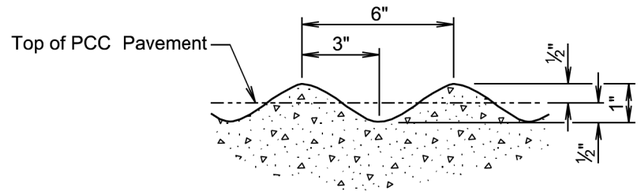
PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER ADJACENT TO GRAVEL OR ASPHALT CONCRETE SHOULDER



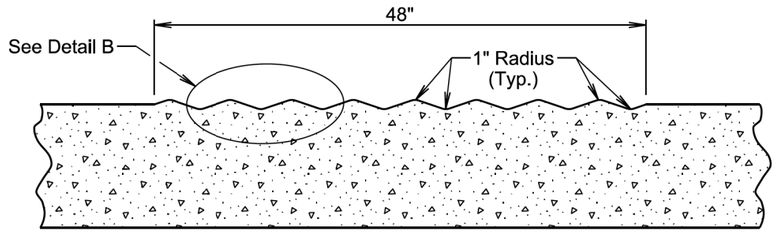
PERSPECTIVE OF TYPICAL RUMBLE STRIPS ON PCC PAVEMENT SHOULDER

November 19, 2022

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



DETAIL B



SECTION A-A

GENERAL NOTES:

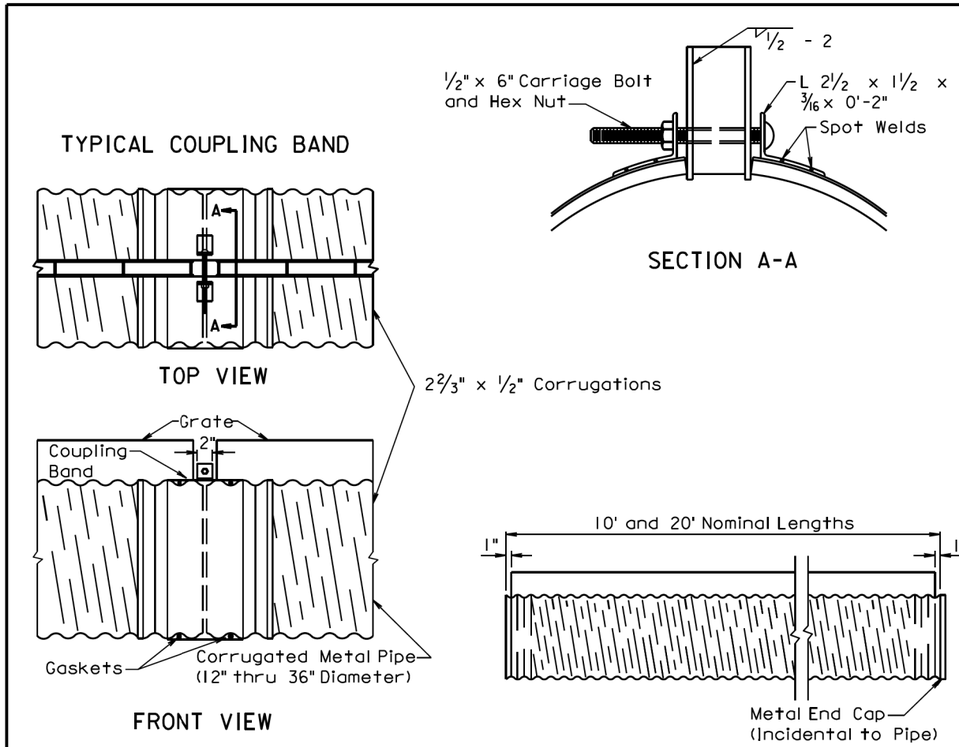
The rumble strips will be evenly spaced and will not coincide with any transverse contraction joints.

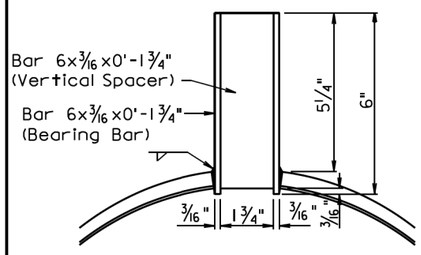
The rumble strips will NOT be placed along areas adjacent to entrance ramps, exit ramps, and gore areas.

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

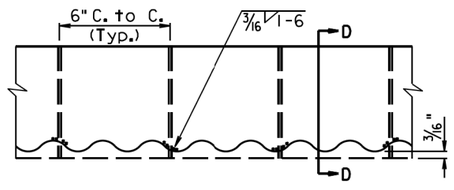
November 19, 2022

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





SECTION D-D



GRATE SLOT WELDING DETAIL

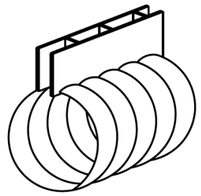
March 31, 2000

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

Plot Scale - 1:200

Plotted From - TRPR16032

File - ...\StdPlateSection 07W7.dgn



SLOTTED C.M.P. DRAIN

GENERAL NOTES:

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

All Slotted Drain materials and hardware shall be galvanized.

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

All joints and end caps shall be watertight.

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

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

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

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

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

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

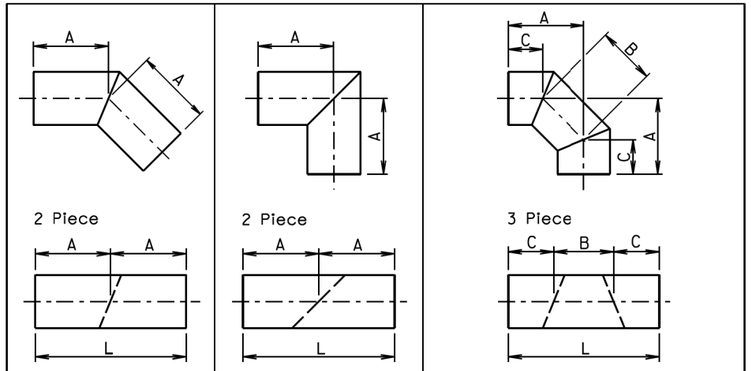
A Heel Guard (1/2 inch #13 expanded metal mesh) shall be furnished when called for in the plans and shall be welded to the grating before delivery to the project.

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

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

March 31, 2000

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



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

FABRICATED ELBOW LENGTHS FOR ALL CORRUGATIONS

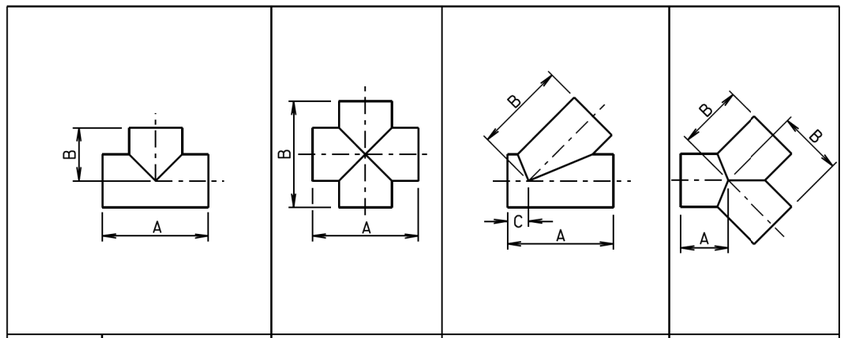
GENERAL NOTES:

All dimensions shown are nominal.

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

June 26, 2001

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



	Tee			Cross			45° Lateral				45° Wye		
Diameter	A	B	L	A	B	L	A	B	C	L	A	B	L
Inches	Feet			Feet			Feet		Inches	Feet	Feet		
12	4	2	6	4	4	8	4	2	17	6	2	2	6
15	4	2	6	4	4	8	4	4	18	8	2	2	6
18	4	2	6	4	4	8	4	4	13	8	2	2	6
21	4	2	6	4	4	8	6	4	22	10	2	2	6
24	4	2	6	4	4	8	6	4	23	10	2	2	6
27	4	2	6	4	4	8	6	4	20	10	2	2	6
30	4	2	6	4	4	8	6	4	21	10	2	2	6
33	6	4	10	6	6	12	6	6	19	12	2	3	8
36	6	4	10	6	6	12	8	6	19	14	2	3	8
42	6	4	10	6	6	12	8	6	21	14	2	3	8
48	6	4	10	6	6	12	10	8	28	18	2	3	8
54	6	4	10	6	6	12	10	8	23	18	4	4	12
60	8	4	12	8	8	16	12	10	30	22	4	4	12
66	8	4	12	8	8	16	12	10	32	22	4	4	12
72	8	4	12	8	8	16	14	10	45	24	4	5	14
78	10	6	16	10	10	20	14	10	46	24	4	5	14
84	10	6	16	10	10	20	16	12	47	28	4	5	14
90	10	6	16	10	10	20	16	12	49	28	4	5	14
96	10	6	16	10	10	20	16	12	50	28	4	6	16

FABRICATED LENGTHS FOR TEES, CROSSES, AND WYES FOR ALL CORRUGATIONS

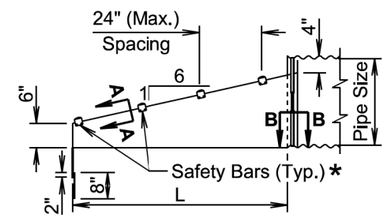
GENERAL NOTES:

All dimensions shown are nominal.

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

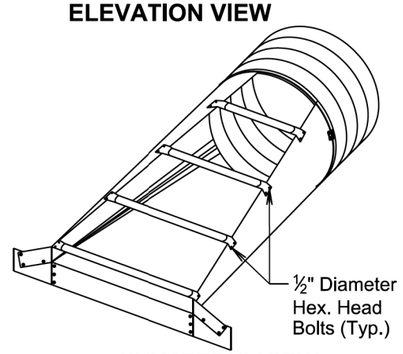
June 26, 2001

Published Date: 2025	SDDOT	C.M.P. FABRICATED LENGTHS FOR TEES, CROSSES, AND WYES	PLATE NUMBER 450.33 Sheet 1 of 1

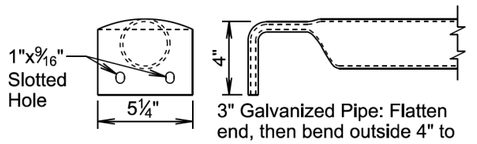


* Number of bars required will vary depending on the length of the end section.

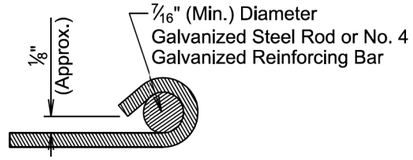
ELEVATION VIEW



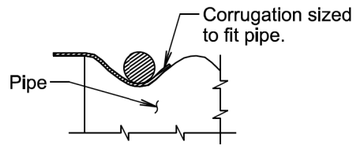
ISOMETRIC VIEW



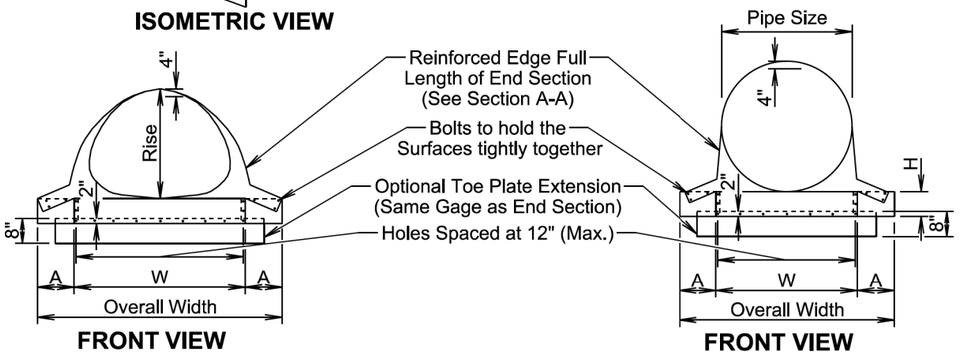
DETAIL OF SAFETY BARS



SECTION A-A

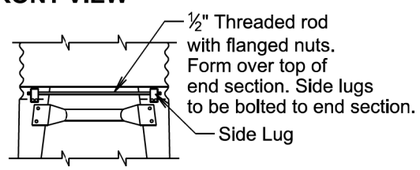


SECTION B-B

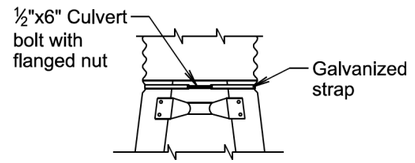


FRONT VIEW

FRONT VIEW



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



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

August 31, 2022

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

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

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

GENERAL NOTES:

Safety bars will be provided when specified in the plans.

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

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

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

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

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

Installation will be performed in accordance with the Specifications.

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

August 31, 2022

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

GENERAL NOTES:

Either flanged channel steel posts or S3x5.7 steel I beam posts will be used, but post type will be consistent thoughout the project. The S3x5.7 steel I beam post will be used for the end posts.

All costs associated with furnishing and constructing the 3 cable guardrail anchor assembly including the concrete anchor, cable anchor bracket, compensating device, steel turnbuckle cable assembly, and necessary hardware will be incidental to the contract unit price per each for "3 Cable Guardrail Anchor Assembly".

All costs associated with furnishing and constructing the 3 cable guardrail including posts, cable, cable splices, and hardware will be incidental to the contract unit price per foot for "3 Cable Guardrail".

The following table and criteria will apply to the arrangement of the Spring Cable End Assemblies (Compensation Devices) and Turnbuckle Cable End Assemblies:

LENGTH OF CABLE RUN	CRITERIA FOR ARRANGEMENT OF THE SPRING CABLE END ASSEMBLIES (COMPENSATION DEVICES) AND TURNBUCKLE CABLE END ASSEMBLIES
Less than 500'	Use turnbuckle on the approaching traffic end and compensating device on the other end of each individual cable, except in the W Beam to 3 Cable Transition where all compensating devices will be provided at the bridge ends.
Greater than 500' to 1000'	Use compensating device on each end of each individual cable.
Greater than 1000'	Start new run by interlacing at last parallel post as shown on sheet 2 of 6.

All Compensating Devices will be attached to the cable anchor bracket when one end of the run is attached to a bridge.

Compensating Devices must have a spring rate of 450 ± 50 pounds per inch and will have a total available travel of 6 inches minimum.

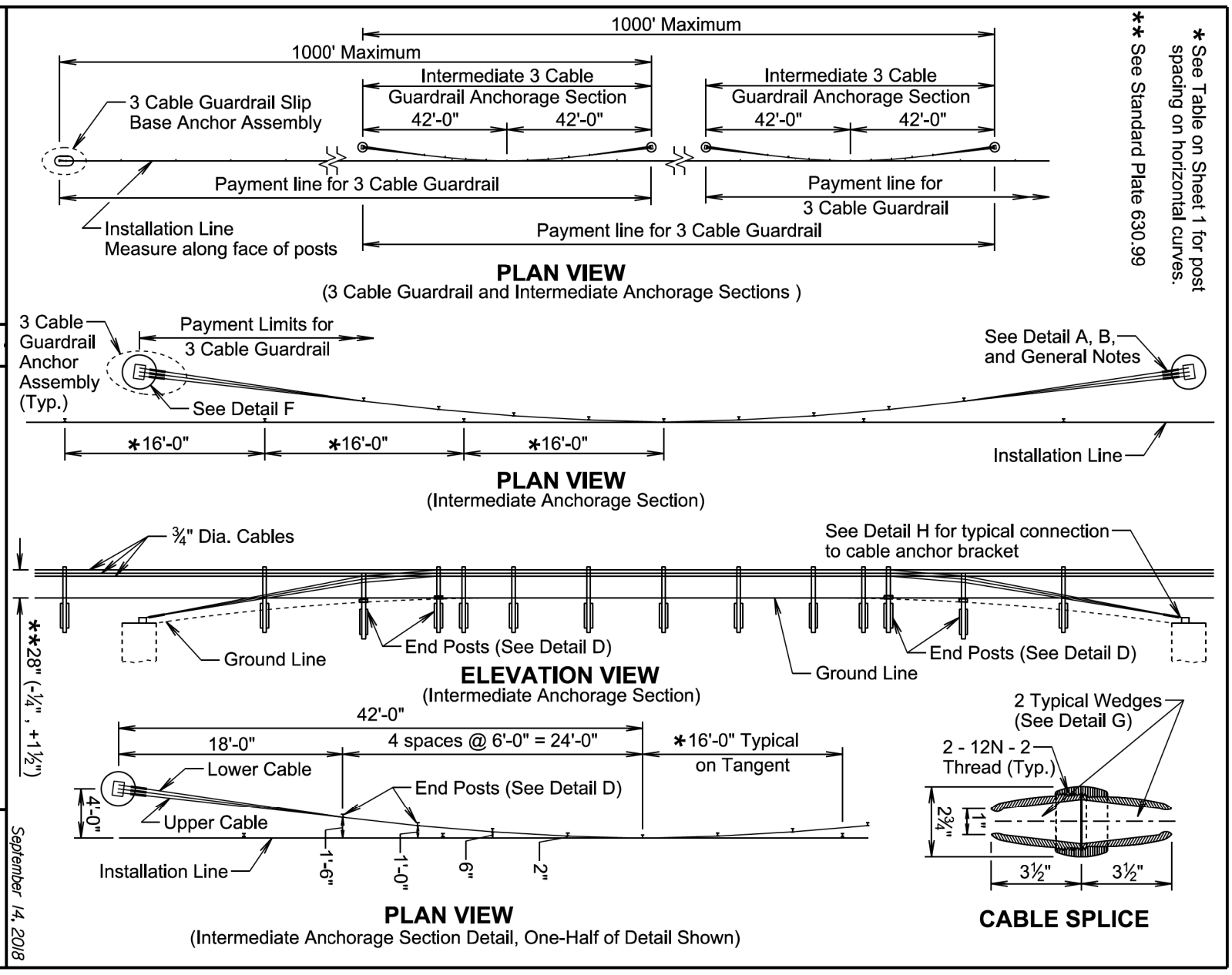
The cable will be retensioned after the initial 2 week pretension period in accordance with the following table:

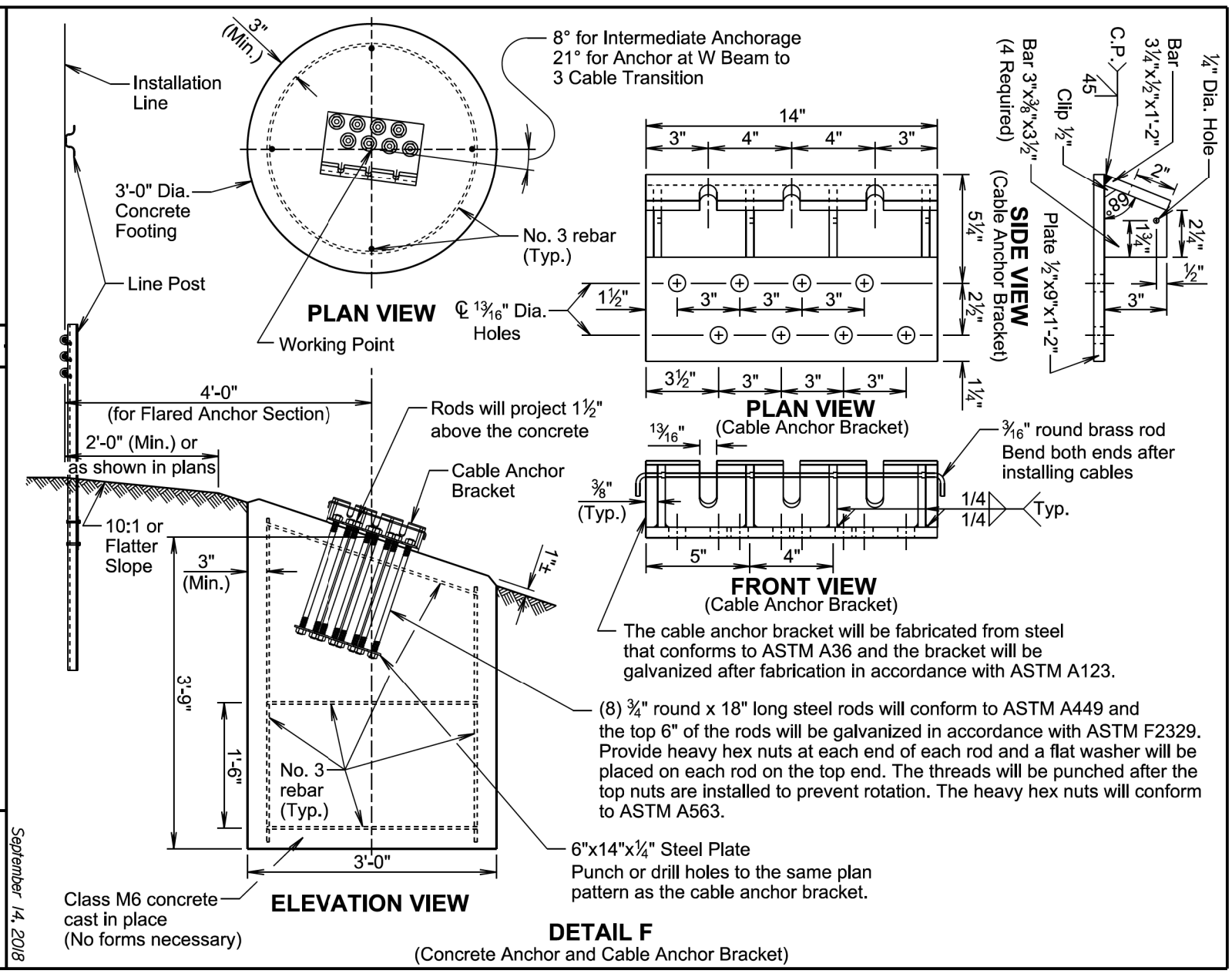
CABLE TENSIONING SPECIFICATIONS														
Temperature Range (Degree F)	-20 to -11	-10 to -1	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 99	100 to 109	110 to 120
Spring Compression (Inch)	4¼	4	3¾	3½	3¼	3	2¾	2½	2¼	2	1¾	1½	1¼	1

POST SPACING FOR HORIZONTAL CURVES	
Roadway ℄ Curvature	Maximum Post Spacing (Ft)
1° and Less	16
Greater than 1° to 8°	12
Greater than 8° to 13°	8
Greater than 13°	NOT ALLOWED

September 14, 2018

Published Date: 2025	SDDOT	***3 CABLE GUARDRAIL (LOW TENSION)***	***PLATE NUMBER*** *629.01* *Sheet 1 of 6*





Published Date: 2025

SDDOT

3 CABLE GUARDRAIL (LOW TENSION)

PLATE NUMBER 629.01

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Sheet 2 of 6

Sheet 3 of 6

Plotting Date: 04/16/2025

STATE OF SOUTH DAKOTA

PROJECT PT 0907(89)317

SHEET F27

TOTAL SHEETS F29

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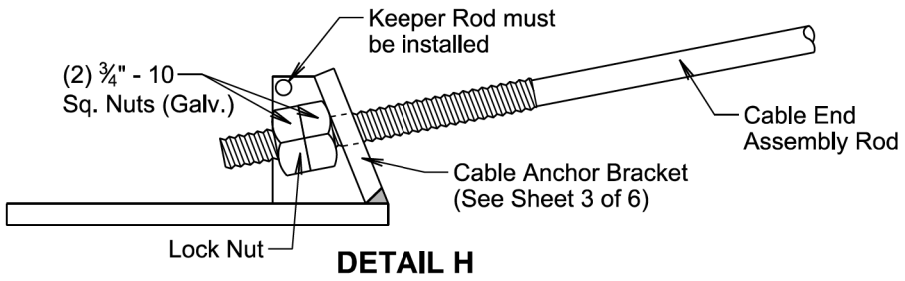
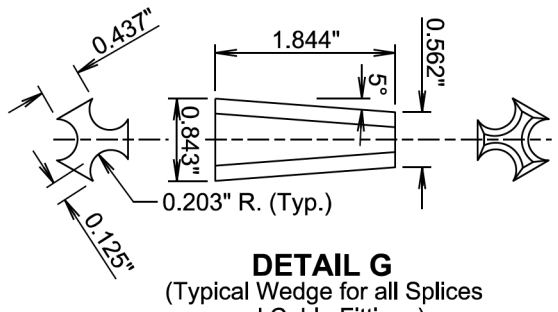
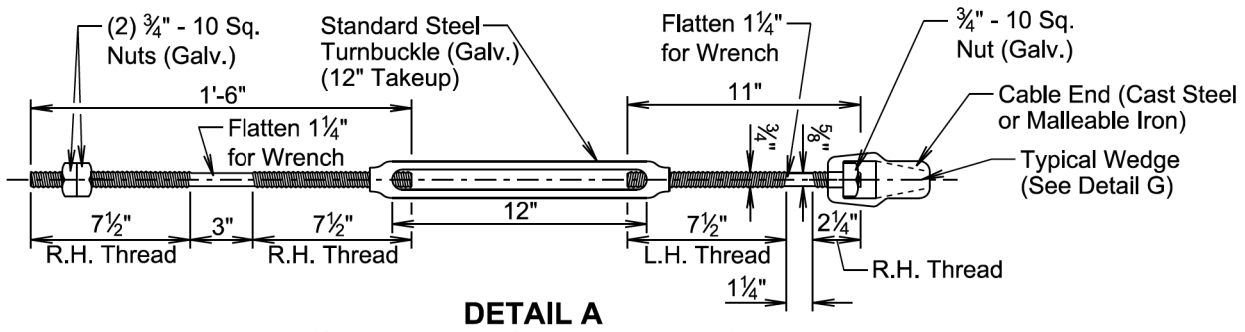


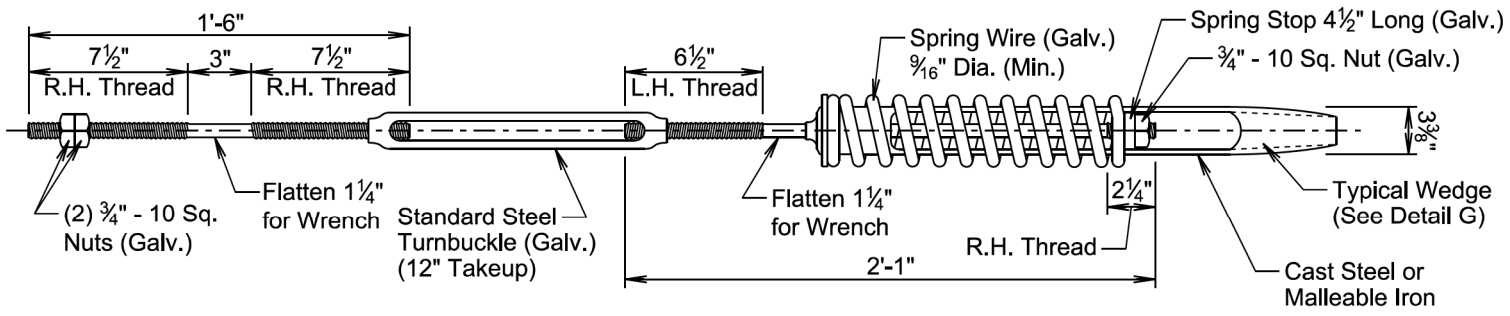
DETAIL H
(Cable End Assembly Rod Connection to Cable Anchor Bracket)



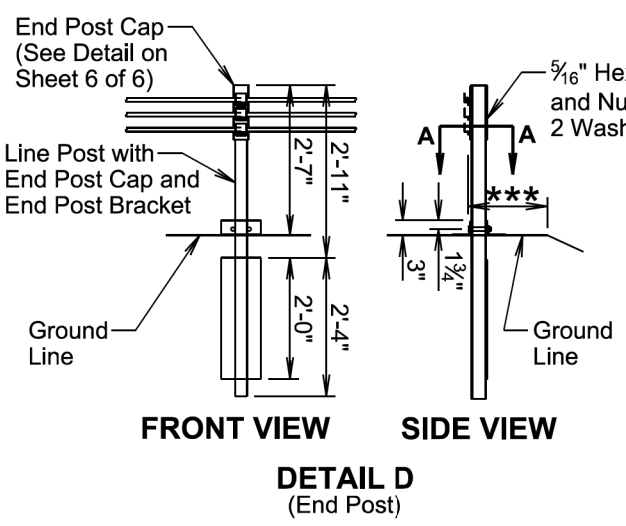
DETAIL G
(Typical Wedge for all Splices and Cable Fittings)



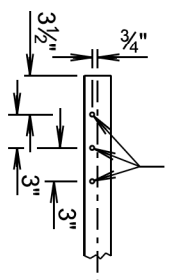
DETAIL A
(Steel Turnbuckle Cable End Assembly)
(Minimum Tensile Strength = 25,000 Lbs.)



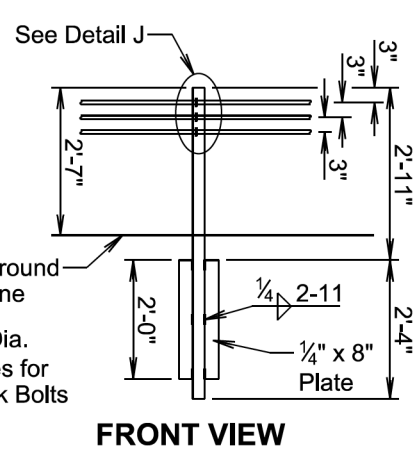
DETAIL B
(Spring Cable End Assembly with Turnbuckle)
(Compensating Device)

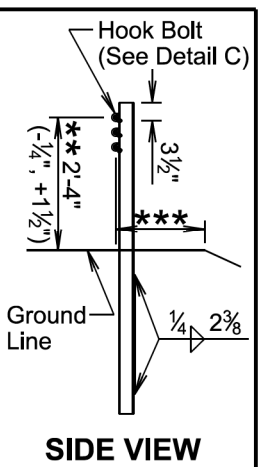


DETAIL D
(End Post)



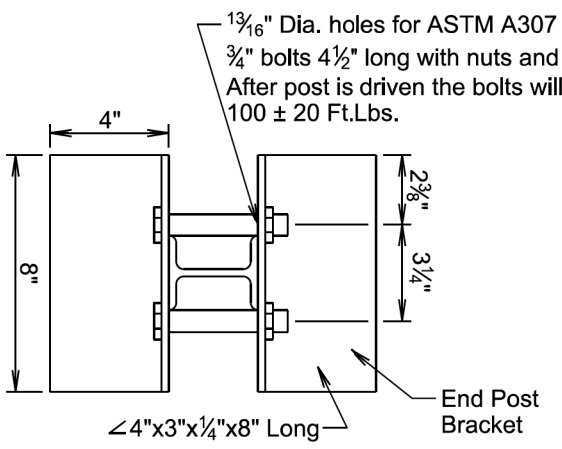
DETAIL J



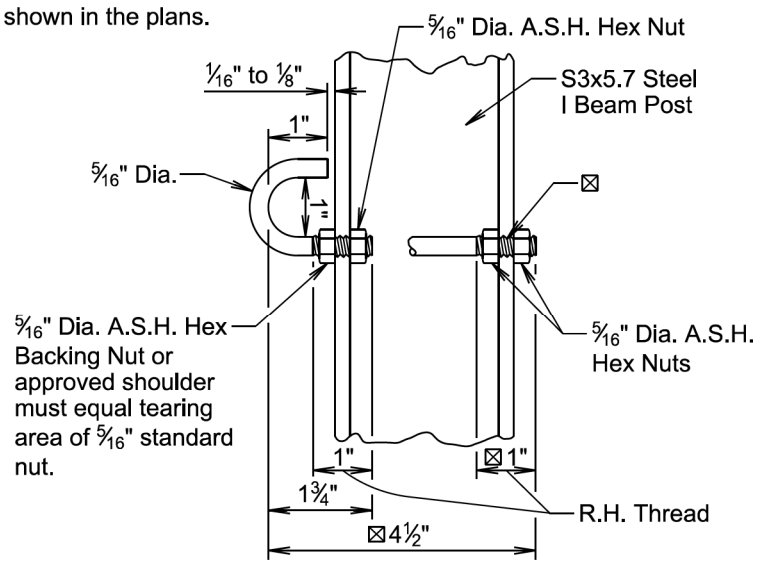


DETAIL E
(Line Post)

** See Standard Plate 630.99
*** 2' (Min.) or as shown in the plans.



SECTION A-A



DETAIL C
(Hook Bolt)

☒ Alternate Type Hook Bolt

S3x5.7 STEEL I BEAM POST FOR 3 CABLE GUARDRAIL

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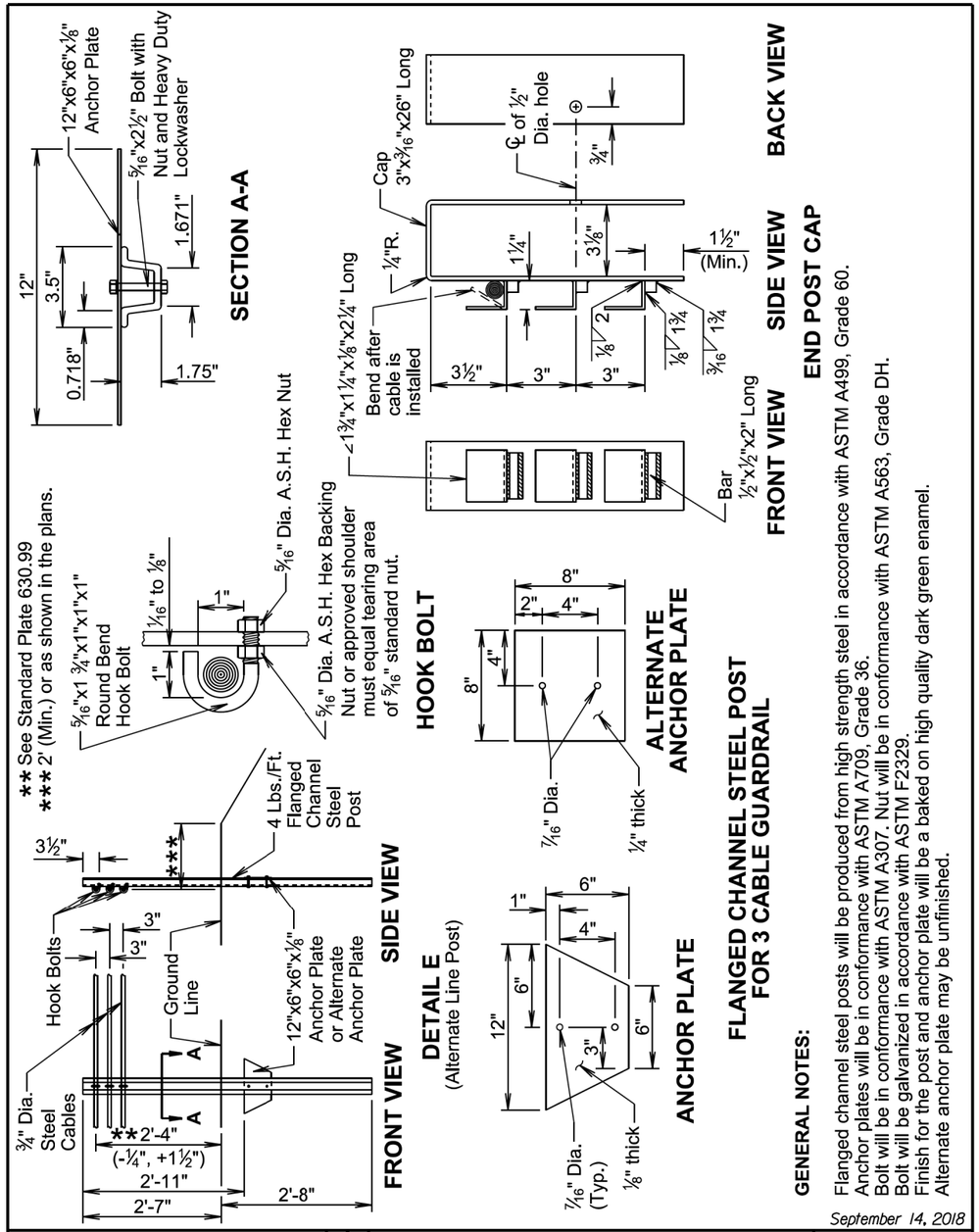
Published Date: 2025
SDDOT
3 CABLE GUARDRAIL (LOW TENSION)
PLATE NUMBER 629.01
Sheet 5 of 6
September 14, 2018

Plotting Date: 04/16/2025
STATE OF SOUTH DAKOTA
PROJECT PT 0907(89)317
SHEET F28
TOTAL SHEETS F29



GENERAL NOTES:

Flanged channel steel posts will be produced from high strength steel in accordance with ASTM A499, Grade 60.
Anchor plates will be in conformance with ASTM A709, Grade 36.
Bolt will be in conformance with ASTM A307. Nut will be in conformance with ASTM A563, Grade DH.
Bolt will be galvanized in accordance with ASTM F2329.
Finish for the post and anchor plate will be a baked on high quality dark green enamel.
Alternate anchor plate may be unfinished.

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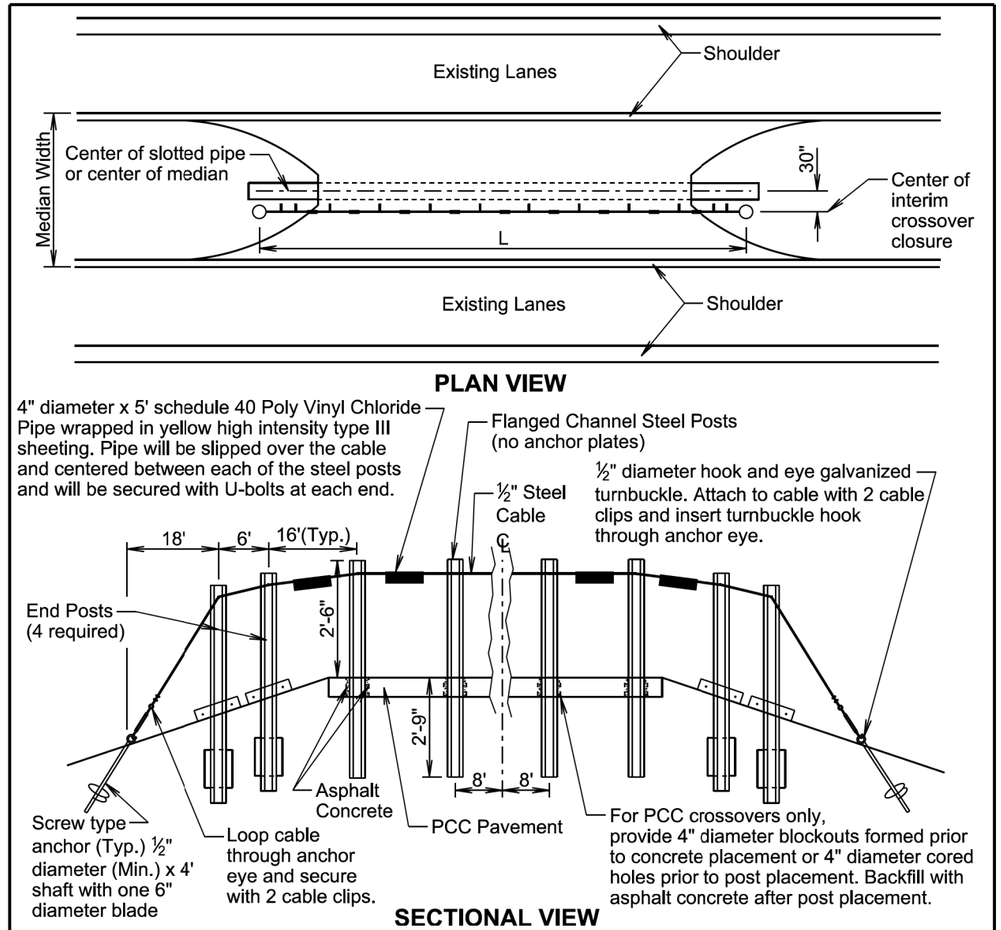

MEDIAN WIDTH	NO. OF PVC PIPES	NO. OF U-BOLTS	NO. OF FLANGED CHANNEL STEEL POSTS	NO. OF BLOCKOUTS OR CORED HOLES (PCC CROSSOVERS)	PAY LENGTH L
60' and 66'	11	18	10	10	224'
80'	9	14	8	8	192'

GENERAL NOTES:

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

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

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