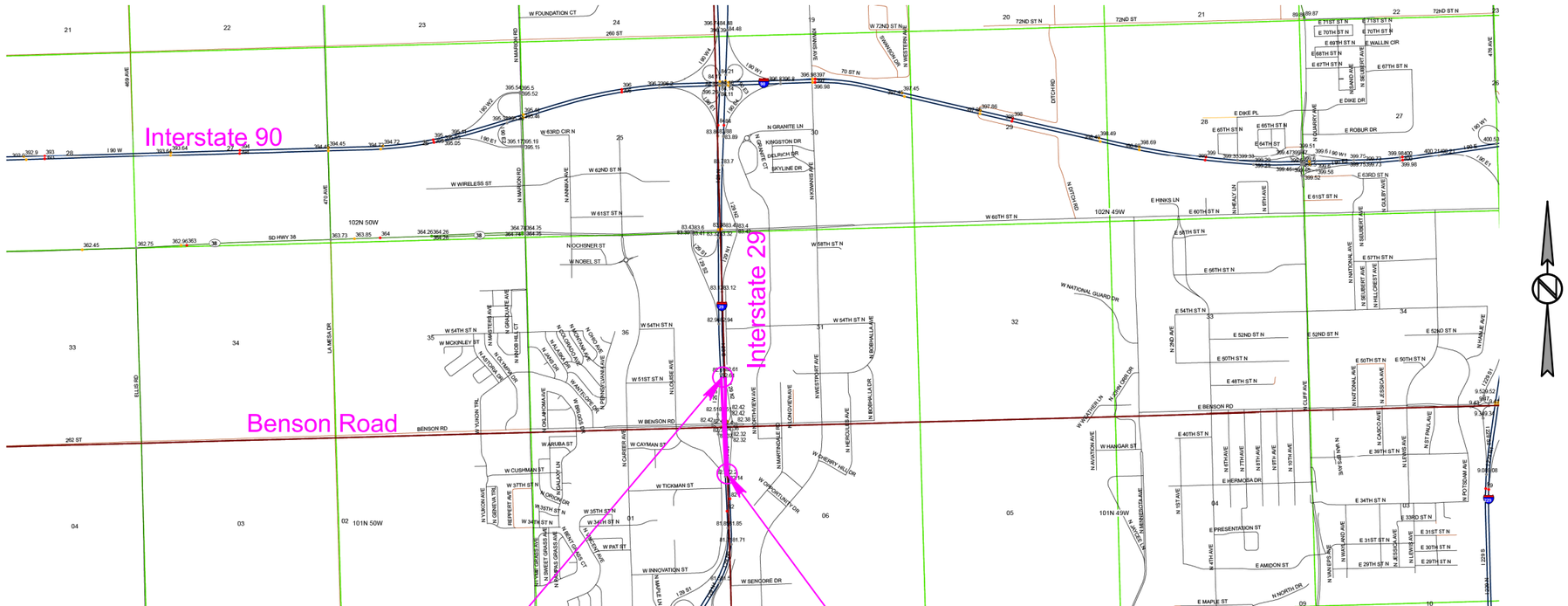
SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)82	F	1/20

Plotting Date: 10/05/2026

Section F: Surfacing Plans

INDEX OF SECTIONS

F1	General Layout with Index
F2 - F4	Estimate of Quantities, Notes, and Tables
F5 - F8	Legend and Median Crossover Layouts
F9 - F10	Median Crossover Details
F11 - F20	Standard Plates



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SECTION F ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3230	Grade Staking	0.336	Mile
009E3250	Miscellaneous Staking	0.168	Mile
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
110E1010	Remove Asphalt Concrete Pavement	290.0	SqYd
110E4106	Salvage High Tension 4 Cable Guardrail	1,744	Ft
110E4116	Salvage High Tension 4 Cable Guardrail Anchor Assembly	4	Each
110E6016	Remove High Tension 4 Cable Guardrail Anchor Assembly for Reset	1	Each
120E0010	Unclassified Excavation	1,102	CuYd
120E9000	Pit Run	4,628.4	Ton
260E1010	Base Course	2,232.8	Ton
320E1200	Asphalt Concrete Composite	1,322.0	Ton
450E4749	15" CMP 16 Gauge, Furnish	420	Ft
450E4750	15" CMP, Install	420	Ft
450E5005	15" CMP Elbow, Furnish	6	Each
450E5006	15" CMP Elbow, Install	6	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	240	Ft
450E6120	15" Slotted CMP, Install	240	Ft
462E0100	Class M6 Concrete	21.6	CuYd
464E0100	Controlled Density Fill	9.0	CuYd
629E0295	Reset High Tension Cable Guardrail Anchor Assembly	1	Each
629E9010	Interim Crossover Closure	832	Ft
831E0210	Non-woven Separator Fabric	3,877	SqYd

UTILITIES

The Contractor will contact the involved utility companies through South Dakota One Call (1-800-781-7474) prior to starting work. It will be the responsibility of the Contractor to coordinate work with the utility owners to avoid damage to existing facilities.

The Contractor will be aware that the existing utilities shown in the plans were surveyed prior to the design of this project and might have been relocated or replaced by a new utility facility prior to construction of this project, might be relocated or replaced by a new utility facility during the construction of this project, or might not require adjustment and may remain in its current location. The Contractor will contact each utility owner and confirm the status of all existing and new utility facilities. The utility contact information is provided elsewhere in the plans or bidding documents.

CONTROL OF ACCESS

If a Contractor's operations would require access to the interstate ROW in any location not currently designated as public access, prior approval must be obtained from the Department. All requests will be reviewed based on safety and construction sequencing. A Contractor will not assume that all requests will be granted.

The Contractor will be responsible for all safety control and signing measures.

Anytime Contractor operations have ceased for the day, any entrances approved in a control of access area will be closed by the Contractor.

The request for access will be provided in writing to the Engineer two weeks in advance of any proposed break in control of access.

SURFACING THICKNESS DIMENSIONS

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

REMOVE ASPHALT CONCRETE PAVEMENT

The Los Angeles Abrasion Loss value on the aggregate used for the in-place asphalt concrete is unknown.

An estimated 290 Square Yards (16.1 Cubic Yards) of the in-place asphalt concrete surfacing will be removed from the existing highway according to the in-place surfacing typical sections and wasted as directed by the Engineer. The remaining in-place granular material will be unclassified excavation or remain in place.

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.

UNCLASSIFIED EXCAVATION

Payment will be based on plans quantity. Further measurements will not be made unless there is a change made in the limits of work. Waste material will become the property of the Contractor for disposal.

TABLE OF UNCLASSIFIED EXCAVATION

	Waste Material
Location	CuYd
North Crossover: Sta. 184+92	542.8
South Crossover: Sta. 199+22	559.2
TOTAL:	1,102

WATER FOR COMPACTION

The cost of water for compaction of the granular material will be incidental to the various other contract items. A minimum of 4% moisture will be required at the time of compaction unless otherwise directed by the Engineer.

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 crossovers. 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.

Non-woven Separator Fabric will be paid for at the contract unit price per square yard of fabric placed. Payment for this item will be full payment for furnishing all equipment, labor and incidentals required to furnish and install the fabric.

TABLE OF NON-WOVEN SEPARATOR FABRIC

	Non-Woven Separator Fabric
Location	SqYd
North Crossover: Sta. 184+92	1,938.5
South Crossover: Sta. 199+22	1,938.5
TOTAL:	3,877

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 on the outside shoulder.

Asphalt for tack will be applied at a rate of 0.06 gallons per square yard on primed base course. The asphalt for tack will be applied for the full width of the subsequent layers of Asphalt Concrete Composite plus one-half foot additional on the shoulder

Application of Asphalt for Flush Seal will be required.

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FLUSH SEAL

Application of flush seal will be completed within 10 working days following completion of the asphalt concrete surfacing.

Application of flush seal may be eliminated by the Engineer. If the paved surface remains tight, the Engineer will notify the Contractor as soon as possible that the flush seal is unnecessary.

CONTROLLED DENSITY FILL

Controlled density fill will be placed at the locations shown in the Table of Controlled Density Fill in accordance with Section 464.

TABLE OF CONTROLLED DENSITY FILL

Location	Controlled Density Fill
	CuYd
Median Crossovers	
Sta. 184+92 (North Crossover)	4.5
Sta. 199+22 (South Crossover)	4.5
Total	9.0

CLASS M6 CONCRETE

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

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

TABLE OF CLASS M6 CONCRETE

Location	Class M6 Concrete
	CuYd
Median Crossovers	
Sta. 184+92 (North Crossover)	10.8
Sta. 199+22 (South Crossover)	10.8
Total	21.6

TABLE OF INTERIM CROSSOVER CLOSURES

	Length
Location	Ft
North Crossover: Sta. 184+92	416
South Crossover: Sta. 199+22	416
TOTAL:	832

SALVAGE HIGH TENSION 4 CABLE GUARDRAIL

In-place median guardrail is the Valtir (Trinity) – CASS S3 M10 high tension 4 cable guardrail system with a maximum post spacing of 10'-6". Shop drawings for the median guardrail are available upon request.

The cables, posts, post sleeves, soil plates, anchor assemblies, and hardware items will become the property of the State and will be removed, hauled, and neatly stacked at the SDDOT yard at 5316 W. 60th St. N. in Sioux Falls. The different guardrail runs will be kept separate from each other and labeled to allow for easy identification. Care will be taken not to damage any guardrail components during salvage operations. Any holes left after removal of the high tension cable guardrail will be backfilled with material furnished by the Contractor. All costs for removing, hauling, labeling, and stacking the guardrail and backfilling holes will be incidental to the contract unit price per foot for "Salvage High Tension 4 Cable Guardrail" or "Salvage High Tension 4 Cable Guardrail Anchor Assembly".

TABLE OF HIGH TENSION CABLE GUARDRAIL

Location of Median Guardrail	Salvage High Tension 4 Cable Guardrail	Salvage High Tension 4 Cable Guardrail Anchor Assembly	Remove High Tension 4 Cable Guardrail Anchor Assembly for Reset	Reset High Tension Cable Guardrail Anchor Assembly
	Ft	Each	Each	Each
Run #6: Sta. 180+66 to Sta. 186+08	542	2	-	-
Run #7: Sta. 186+81 to Sta. 190+44	364	2	-	-
Run #8: Sta. 193+62 to Sta. 202+00	838	-	1	1
Total	1,744	4	1	1

REMOVE AND RESET HIGH TENSION 4 CABLE GUARDRAIL ANCHOR ASSEMBLY

Delineation of the high tension cable guardrail anchor assembly will be in conformance with standard plate 632.40.

All costs for removing the High Tension 4 Cable Guardrail Anchor Assembly including all labor and equipment necessary will be incidental to the contract unit price per each for "Remove High Tension 4 Cable Guardrail Anchor Assembly for Reset". All costs for resetting the High Tension Cable Guardrail Anchor Assembly including all labor, equipment, and materials which include any new hardware, and all attachments to the anchor footing(s), will be incidental to the contract unit price per each for "Reset High Tension Cable Guardrail Anchor Assembly".

The Contractor will provide a signed letter of compliance to the Engineer upon completion of retensioning the high tension cable guardrail stating that the high tension cable barrier system has been tensioned in conformance to the manufacturer installation instructions and specifications. Cost for this work will be incidental to the contract unit price for "Reset High Tension Cable Guardrail Anchor Assembly".

The Contractor will check and adjust the tension of the cables a minimum of 3 weeks after installation and not longer than 6 weeks after installation. Cost for this work will be incidental to the contract unit price per foot for "Reset High Tension Cable Guardrail Anchor Assembly".

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TABLE OF MATERIALS QUANTITIES

Location	Water for Granular Material	Pit Run Material	Base Course	Asphalt Concrete Composite		
	* (Not a bid item)			1st Lift	2nd Lift	3rd Lift
	MGal	Ton	Ton	Ton	Ton	Ton
Median Crossovers						
Sta. 184+92 (North Crossover)	37.7	2,027.2	1,116.4	247.9	247.9	165.2
Sta. 199+22 (South Crossover)	44.6	2,601.2	1,116.4	247.9	247.9	165.2
Total	82.3	4,628.4	2,232.8	1,322.0		

* Not a Bid Item: Water for compaction of granular material is incidental to other bid items.

TABLE OF PIPE AND RELATED ITEMS

Location	Furnish and Install				
	15” CMP (16 ga)	15” CMP Elbow	15” CMP Tee	15” CMP Safety End	15” Slotted CMP (16 ga)
	Ft	Each	Each	Each	Ft
Median Crossovers					
Sta. 184+92 (North Crossover)	206	3	1	2	120
Sta. 199+22 (South Crossover)	214	3	1	2	120
Total	420	6	2	4	240

TABLE OF CONSTRUCTION STAKING (FOR INFORMATION ONLY)

(See Special Provision for Contractor Staking)

Location	Begin Station	End Station	Number of Lanes	Grade Staking					Misc. Staking
				Length (Ft)	Length (Mile)	Lane Factor	* Sets of Stakes	** Grade Staking Quantity (Mile)	Miscellaneous Staking (Mile)
Median Crossovers									
Sta. 184+92 (North Crossover)	182+93	187+39	2	446	0.084	1	2	0.168	0.084
Sta. 199+22 (South Crossover)	196+74	201+20	2	446	0.084	1	2	0.168	0.084
							TOTAL:	0.336	0.168

* 2 = Blue Top Grading Stakes and Paving Hub Stakes
** Grade Staking Quantity = Length x Lane Factor x Sets of Stakes

CONTROL DATA

Point	Station	Offset	Description	Northing	Easting	Elevation
CP1118	179+97.65	6.67’ R	Hub/Tack S. Side of Maint. Crossover	478529.255	2911895.769	1503.63
CP1117	228+27.81	0.62’ R	Pin/Cap S. Side of Maint. Crossover	473712.476	2912100.158	1446.65

HORIZONTAL ALIGNMENT DATA

Point Type	Station	Northing	Easting
POB	176+79.548	478847.140	2911882.135
PI	178+73.660	478653.426	2911894.543
PI	181+16.979	478410.597	2911909.993
PI	183+55.884	478172.122	2911924.308
PI	185+92.565	477935.872	2911938.598
PI	188+36.938	477691.989	2911954.056
PI	195+73.166	476957.195	2911999.985
PI	198+20.491	476710.353	2912015.432
PI	200+65.535	476465.780	2912030.619
PI	203+12.098	476219.743	2912046.711
PI	205+29.032	476003.197	2912059.689
POE	207+50.725	475781.982	2912074.253

[The coordinates shown above are based on the South Dakota State Plane Coordinate System, North Zone (NAD 83/2011); SF = 0.999839492.]

LEGEND

SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)82	F	5/20

Plotting Date: 10/05/2026

- Anchor
- Antenna
- Approach
- Assumed Corner
- Azimuth Marker
- BBQ Grill/ Fireplace
- Bearing Tree
- Bench Mark
- Box Culvert
- Bridge
- Brush
- Buildings
- Bulk Tank
- Cattle Guard
- Cemetery
- Centerline
- Cistern
- Clothes Line
- Control Point
- Commercial Sign Double Face
- Commercial Sign One Post
- Commercial Sign Overhead
- Commercial Sign Two Post
- Concrete Symbol
- Creek Edge
- Curb/Gutter
- Curb
- Dam Grade/Dike/Levee
- Deck Edge
- Ditch Block
- Doorway Threshold
- Drainage Profile
- Drop Inlet
- Edge Of Asphalt
- Edge Of Concrete
- Edge Of Gravel
- Edge Of Other
- Edge Of Shoulder
- Elec. Trans./Power Jct. Box
- Fence Barbwire
- Fence Chainlink
- Fence Electric
- Fence Misc.
- Fence Rock
- Fence Snow
- Fence Wood
- Fence Woven
- Fire Hydrant
- Flag Pole
- Flower Bed
- Gas Valve Or Meter
- Gas Pump Island
- Grain Bin
- Guardrail
- Guide Sign One Post
- Guide Sign Two Post
- Gutter
- Guy Pole
- Haystack
- Hedge
- Highway ROW Marker
- Interstate Close Gate
- Iron Pin
- Irrigation Ditch
- Lake Edge
- Lawn Sprinkler
- Mailbox
- Manhole Electric
- Manhole Gas
- Manhole Misc
- Manhole Sanitary Sewer
- Manhole Storm Sewer
- Manhole Telephone
- Manhole Water
- Merry-Go-Round
- Microwave Radio Tower
- Misc. Line
- Misc. Property Corner
- Misc. Post
- Overhang Or Encroachment
- Overhead Utility Line — OH —
- Parking Meter
- Pedestrian Push Button Pole
- Pipe With End Section
- Pipe With Headwall
- Pipe Without End Section
- Playground Slide
- Playground Swing
- Power And Light Pole
- Power And Telephone Pole
- Power Meter
- Power Pole
- Power Pole And Transformer
- Power Tower Structure
- Propane Tank
- Property Pipe
- Property Pipe With Cap
- Property Stone
- Public Telephone
- Railroad Crossing Signal
- Railroad Milepost Marker
- Railroad Profile
- Railroad R.O.W. Marker
- Railroad Signs
- Railroad Switch
- Railroad Track
- Railroad Trestle
- Rebar
- Rebar With Cap
- Reference Mark
- Regulatory Sign One Post
- Regulatory Sign Two Post
- Retaining Wall
- Riprap
- River Edge
- Rock And Wire Baskets
- Rockpiles
- Satellite Dish
- Septic Tank
- Shrub Tree
- Sidewalk
- Sign Face
- Sign Post
- Slough Or Marsh
- Spring
- Stream Gauge
- Street Marker
- Subsurface Utility Exploration Test Hole
- Telephone Fiber Optics — T/F —
- Telephone Junction Box
- Telephone Pole
- Television Cable Jct Box
- Television Tower
- Test Wells/Bore Holes
- Traffic Signal
- Trash Barrel
- Tree Belt
- Tree Coniferous
- Tree Deciduous
- Tree Stumps
- Triangulation Station
- Underground Electric Line — P —
- Underground Gas Line — G —
- Underground High Pressure Gas Line — HG —
- Underground Sanitary Sewer — S —
- Underground Storm Sewer — S —
- Underground Tank
- Underground Telephone Line — T —
- Underground Television Cable — TV —
- Underground Water Line — W —
- Warning Sign One Post
- Warning Sign Two Post
- Water Fountain
- Water Hydrant
- Water Meter
- Water Tower
- Water Valve
- Water Well
- Weir Rock
- Windmill
- Wingwall
- Witness Corner

- State and National Line
- County Line
- Section Line
- Quarter Line
- Sixteenth Line
- Sixty-Fourth Line
- Property Line
- Construction Line
- ROW Line
- New ROW Line
- Cut and Fill Limits
- Control of Access
- New Control of Access
- Proposed ROW (After Property Disposal)

- Drainage Arrow
- Remove Asphalt Concrete Pavement

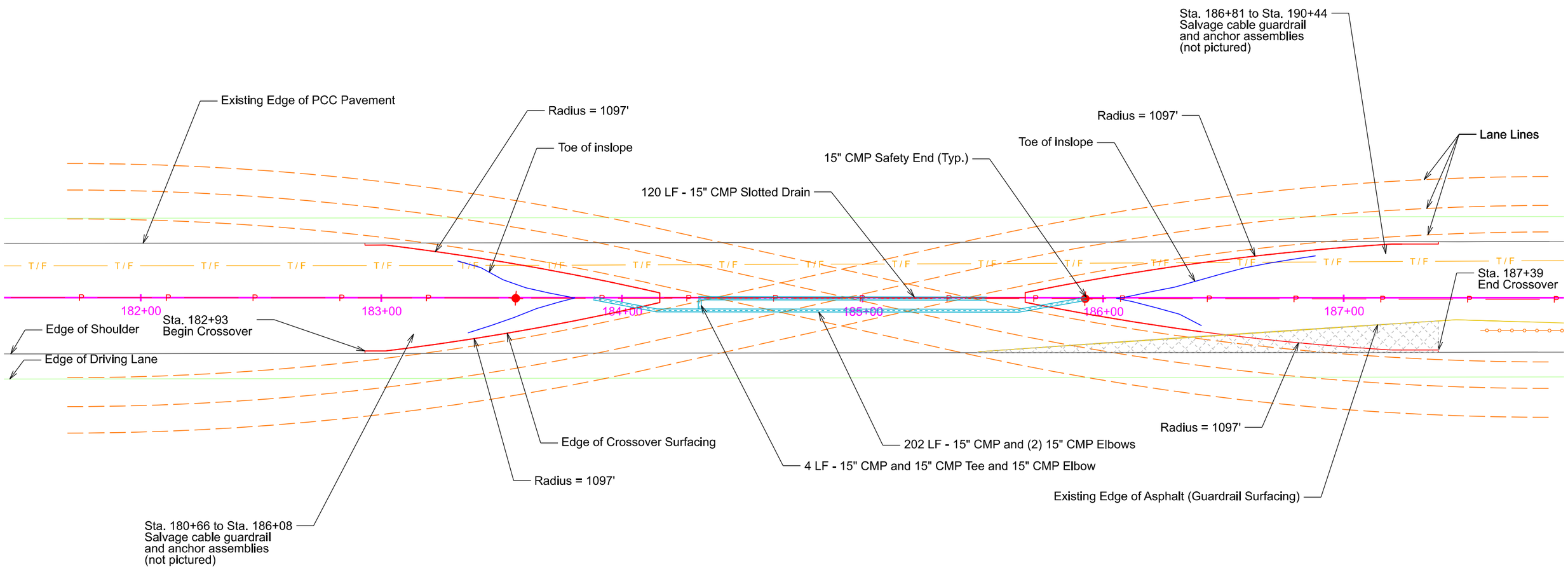
Remove Asphalt Concrete Pavement

CROSSOVER LAYOUT

SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)82	F	6/20

Plotting Date: 10/05/2026

NORTH CROSSOVER
Sta. 184+92



Plotted From - TRPR18388A

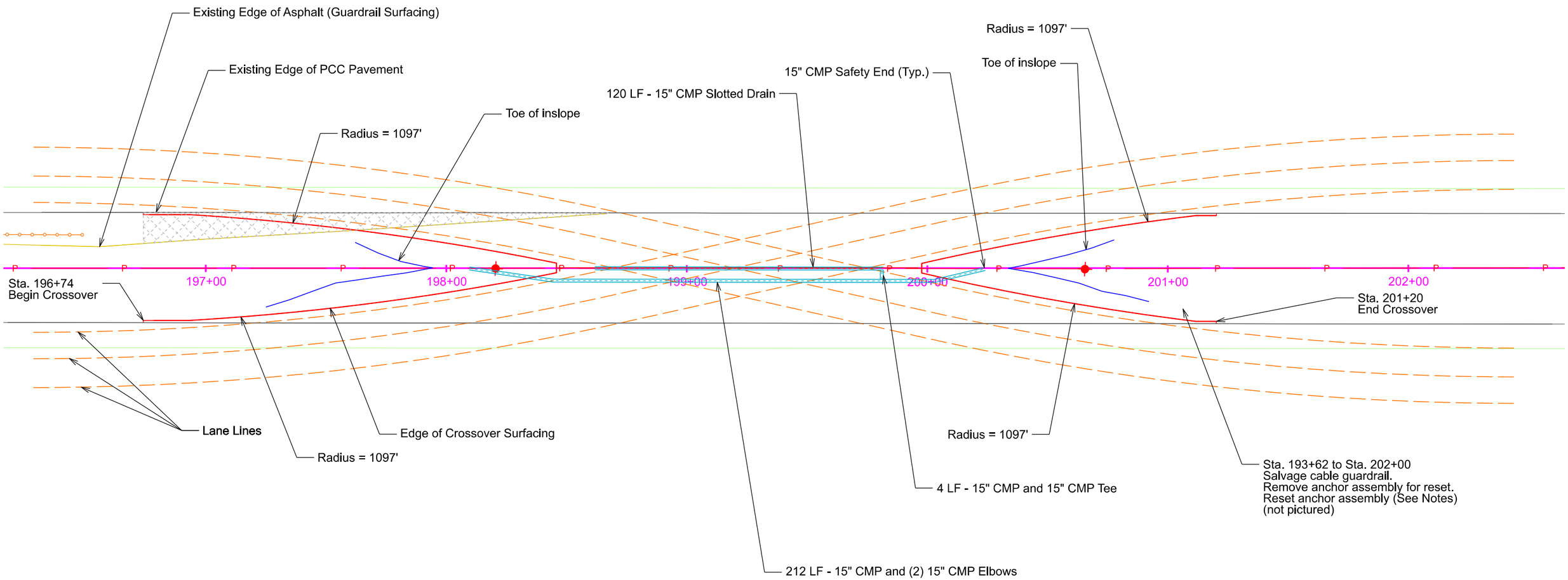
SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)82	F	7/20

Plotting Date: 10/05/2026

Remove Asphalt Concrete Pavement

CROSSOVER LAYOUT

SOUTH CROSSOVER
Sta. 199+22



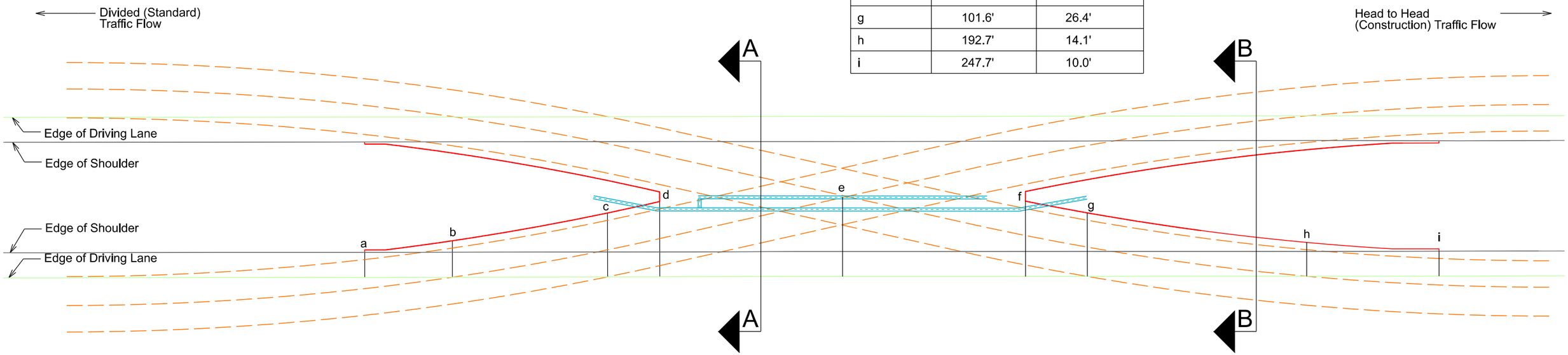
Plotted From - TRPR18388A

GENERIC CROSSOVER LAYOUT

SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)82	F	8/20

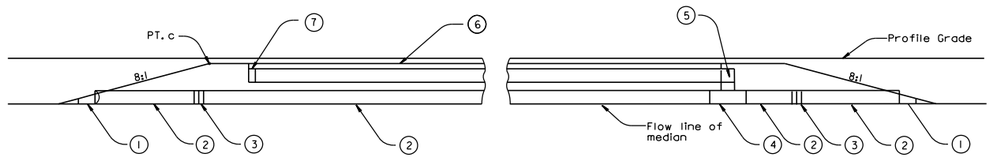
Plotting Date: 10/05/2026

45 MPH design speed crossover layout (66' Median)		
Point	(x)	(y)
a	-198.5'	10.0'
b	-162.1'	15.1'
c	-97.6'	26.6'
d	-75.9'	31.0'
e	0.0'	33.0'
f	75.9'	31.0'
g	101.6'	26.4'
h	192.7'	14.1'
i	247.7'	10.0'

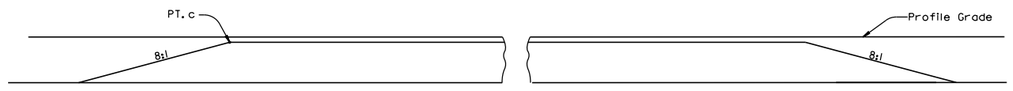


Median Drainage Components

1. 15" CMP Safety End
2. 15" CMP
3. 15" CMP 15° Elbow
4. 15" x15" x15" CMP Tee
5. 15" CMP 90° Elbow
6. 15" CMP Slotted Drain
7. 15" CMP Cap



TYPICAL SECTION - CASE #1



TYPICAL SECTION - CASE #2

GENERAL NOTES:

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

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

Alternate Drainage Configurations are shown for Crossovers located on grades or summits illustrated by (Case #1 and #2). Slotted CMP Drains will be installed in multiples of ten feet.

Case #1 Median Crossover located on grades requiring through drainage.

Case #2 Median Crossover located on grades requiring no through drainage.

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

Caps shall be absorbed in the contract unit price per linear foot of 15" Slotted C.M.P.

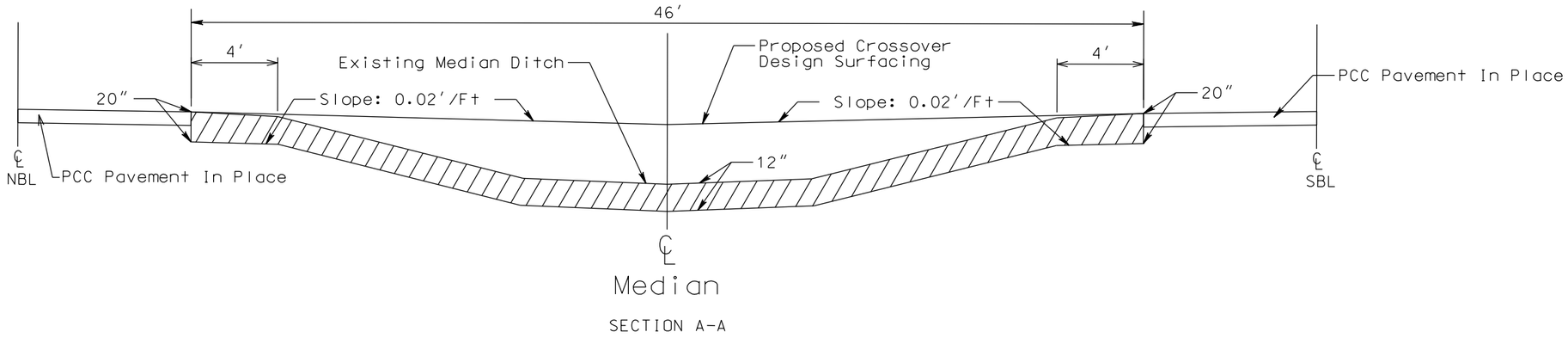
Price bid for contract items shall be considered full compensation for furnishing all necessary materials and labor to construct the median crossover as detailed hereon.

Plotted From - TRPR18388A

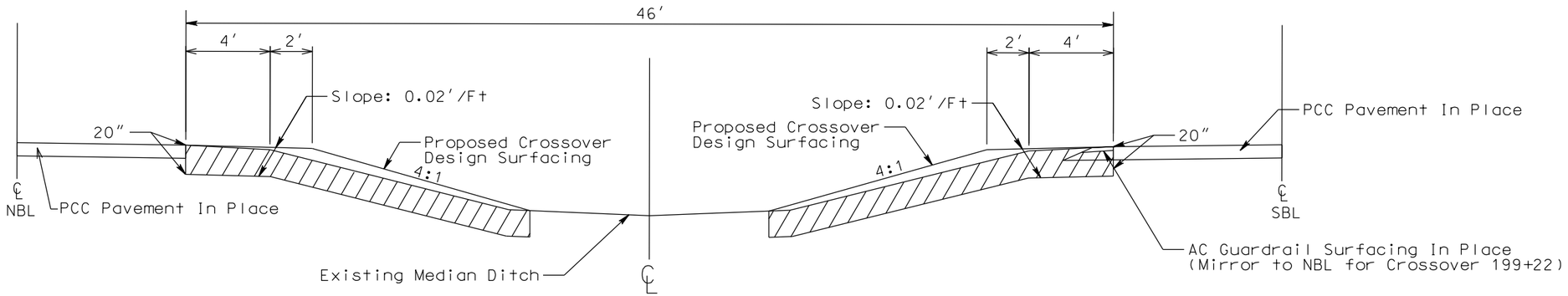
Unclassified Excavation

CROSSOVER DETAILS

Median Crossover
Sta. 184+92
Mirror for Sta. 199+22



SECTION A-A



SECTION B-B

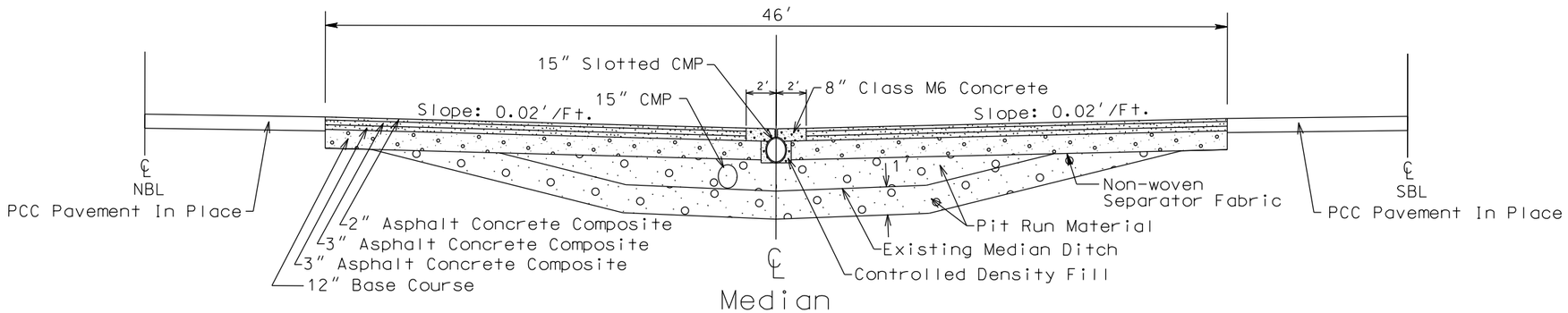
MEDIAN CROSSOVER

SD DOT | PROJECT: IM 0293(122)82 | SECTION: F | SHEET: 9/20
Plotting Date: 10/05/2026
Plotted From - TRPR18388A

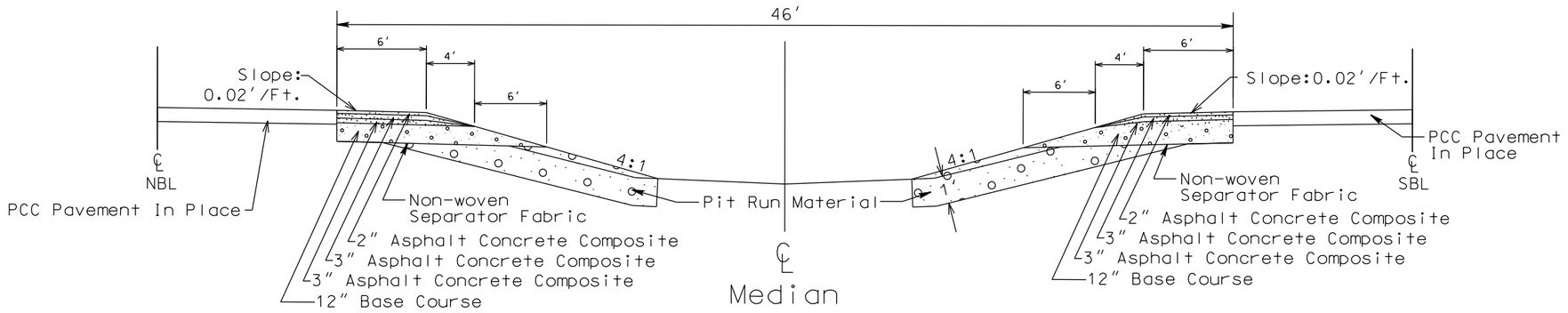
CROSSOVER DETAILS

SD DOT	PROJECT	SECTION	SHEET
	IM 0293(122)82	F	10/20

Plotting Date: 10/05/2026



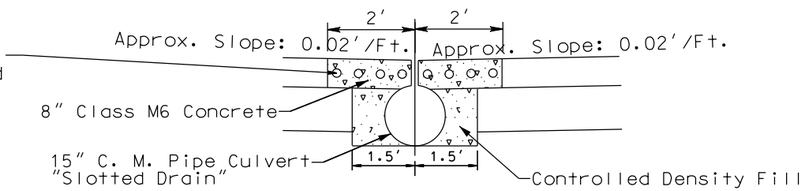
SECTION A-A



SECTION B-B

Detail for Epoxy Coated Bars
in Class M6 Concrete

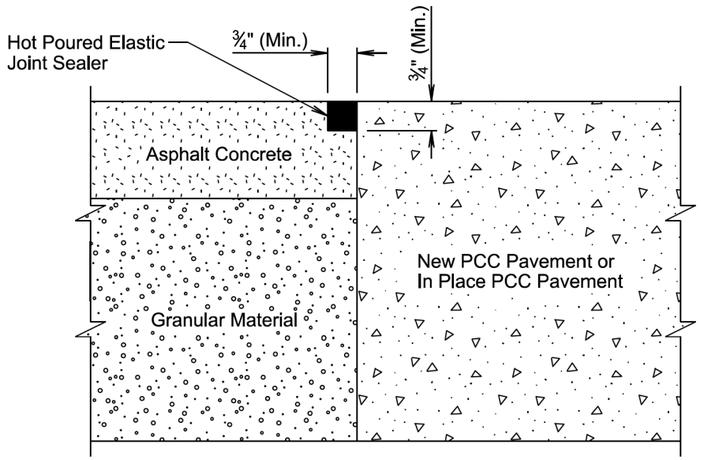
8 - #5 Epoxy Coated Reinforcing Steel Bars, spaced 5 5/8 " center-to-center and centered in the slab vertically. Minimum lap length is 25". The cost of the #5 Epoxy Coated Reinforcing Steel Bars shall be incidental to the contract unit price per cubic yard for Class M6 Concrete.



MEDIAN CROSSOVER

SHEET 2 OF 2 SHEETS

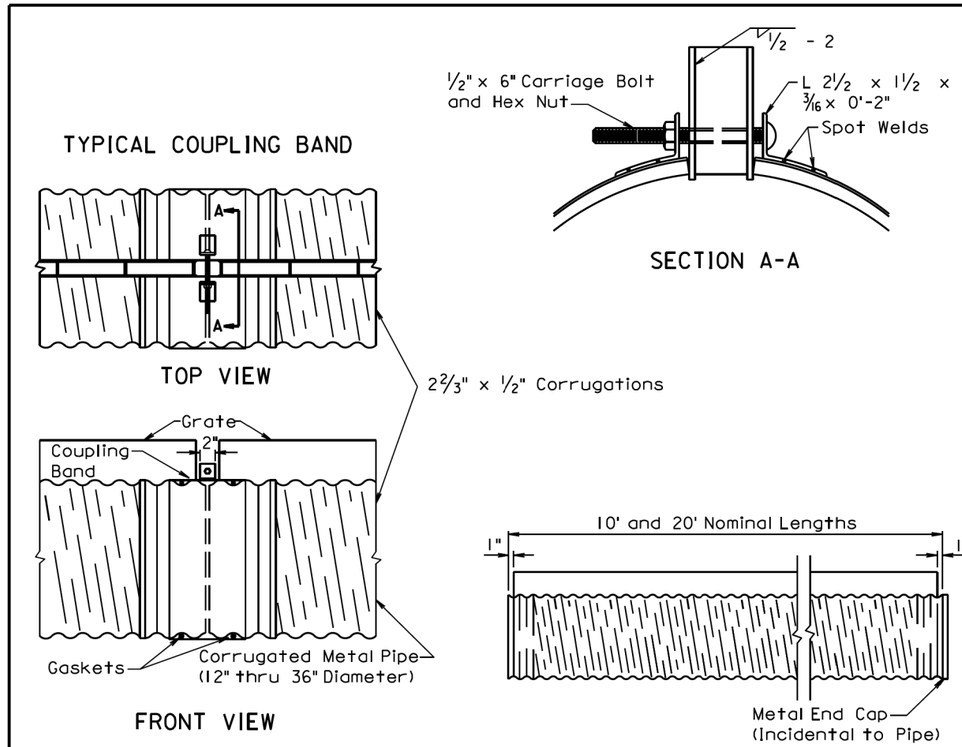
Plotted From - TRPR18388A

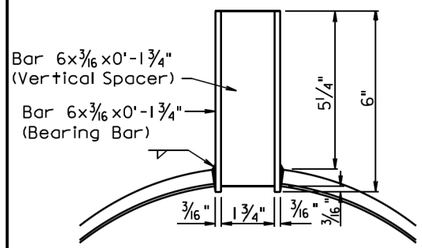


TRANSVERSE SECTION
(Asphalt Concrete Shoulder Joint)

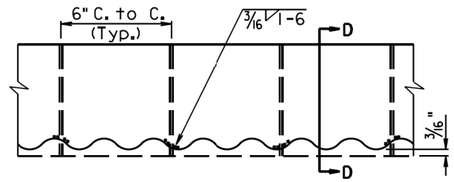
September 14, 2019

Published Date: 2027	SDDOT	***ASPHALT CONCRETE SHOULDER JOINT ADJACENT TO PCC PAVEMENT***	***PLATE NUMBER 320.15*** *Sheet 1 of 1*





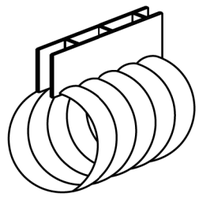
SECTION D-D



GRATE SLOT WELDING DETAIL

March 31, 2000

Published Date: 2027	SDDOT	***SLOTTED C.M.P. DRAIN***	***PLATE NUMBER 450.31*** *Sheet 1 of 2*



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.

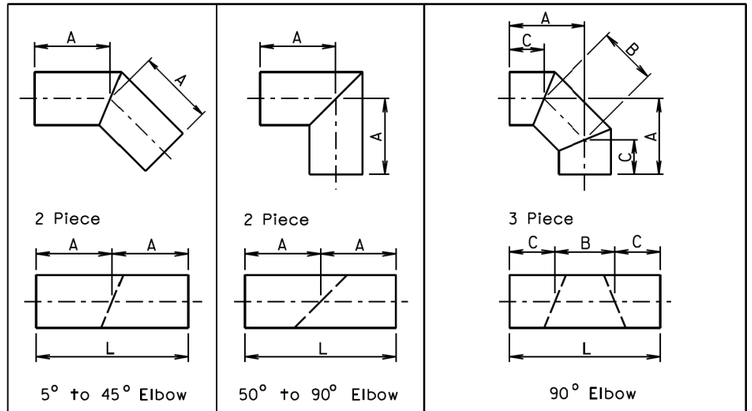
A Heel Guard (1/2 inch #13 expanded metal mesh) shall be furnished when called for in the plans and shall be welded to the grating before delivery to the project.

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: 2027	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

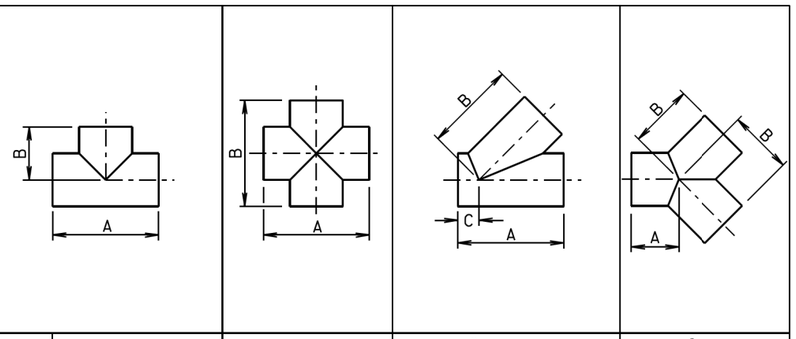
GENERAL NOTES:

All dimensions shown are nominal.

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

June 26, 2001

Published Date: 2027	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

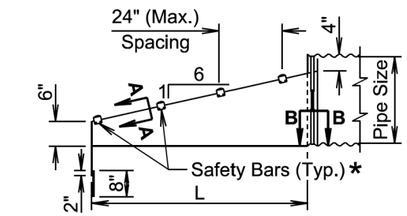
GENERAL NOTES:

All dimensions shown are nominal.

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

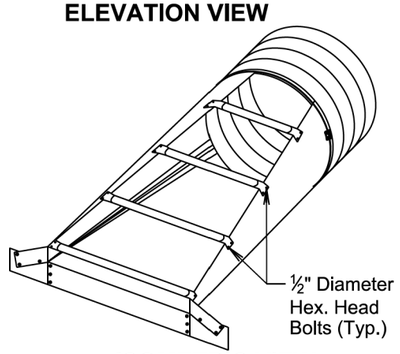
June 26, 2001

Published Date: 2027	SDDOT	C.M.P. FABRICATED LENGTHS FOR TEES, CROSSES, AND WYES	PLATE NUMBER 450.33
			Sheet 1 of 1

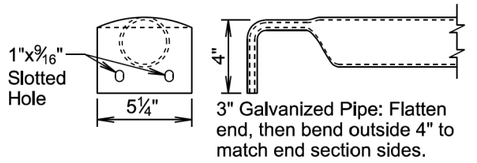


* Number of bars required will vary depending on the length of the end section.

ELEVATION VIEW

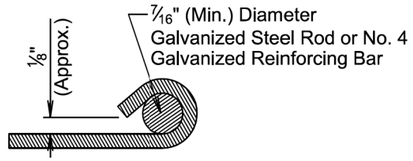


ISOMETRIC VIEW

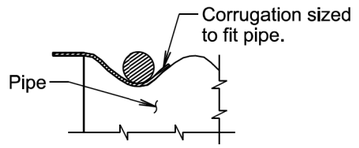


3" Galvanized Pipe: Flatten end, then bend outside 4" to match end section sides.

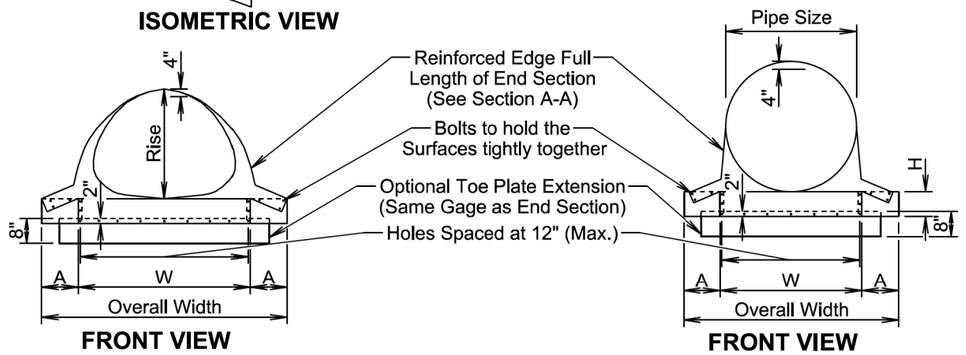
DETAIL OF SAFETY BARS



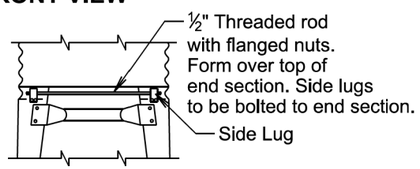
SECTION A-A



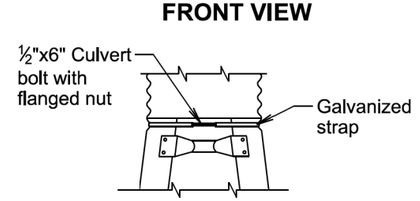
SECTION B-B



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")

April 8, 2025

Published Date: 2027	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 or C.

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.

April 8, 2025

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

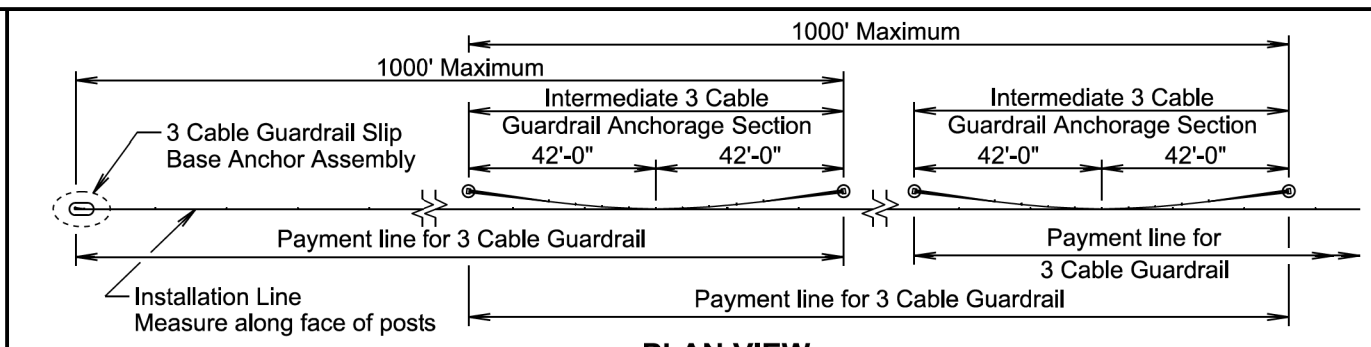
April 17, 2026

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Published Date: 2027

SDDOT

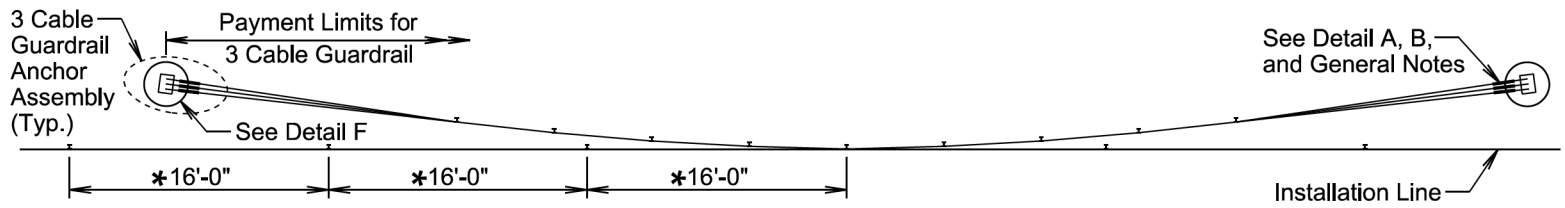
3 CABLE GUARDRAIL (LOW TENSION)



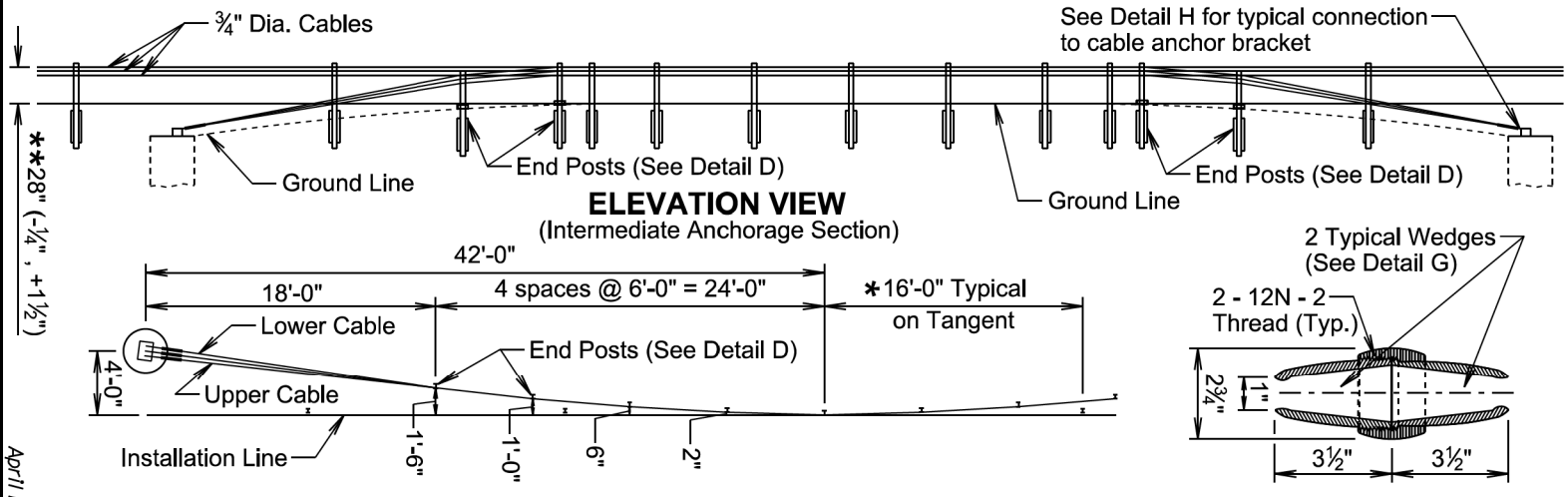
PLAN VIEW
(3 Cable Guardrail and Intermediate Anchorage Sections)

∗ See Table on Sheet 1 for post spacing on horizontal curves.

∗∗ See Standard Plate 630.99



PLAN VIEW
(Intermediate Anchorage Section)



ELEVATION VIEW
(Intermediate Anchorage Section)

PLAN VIEW
(Intermediate Anchorage Section Detail, One-Half of Detail Shown)

CABLE SPLICE

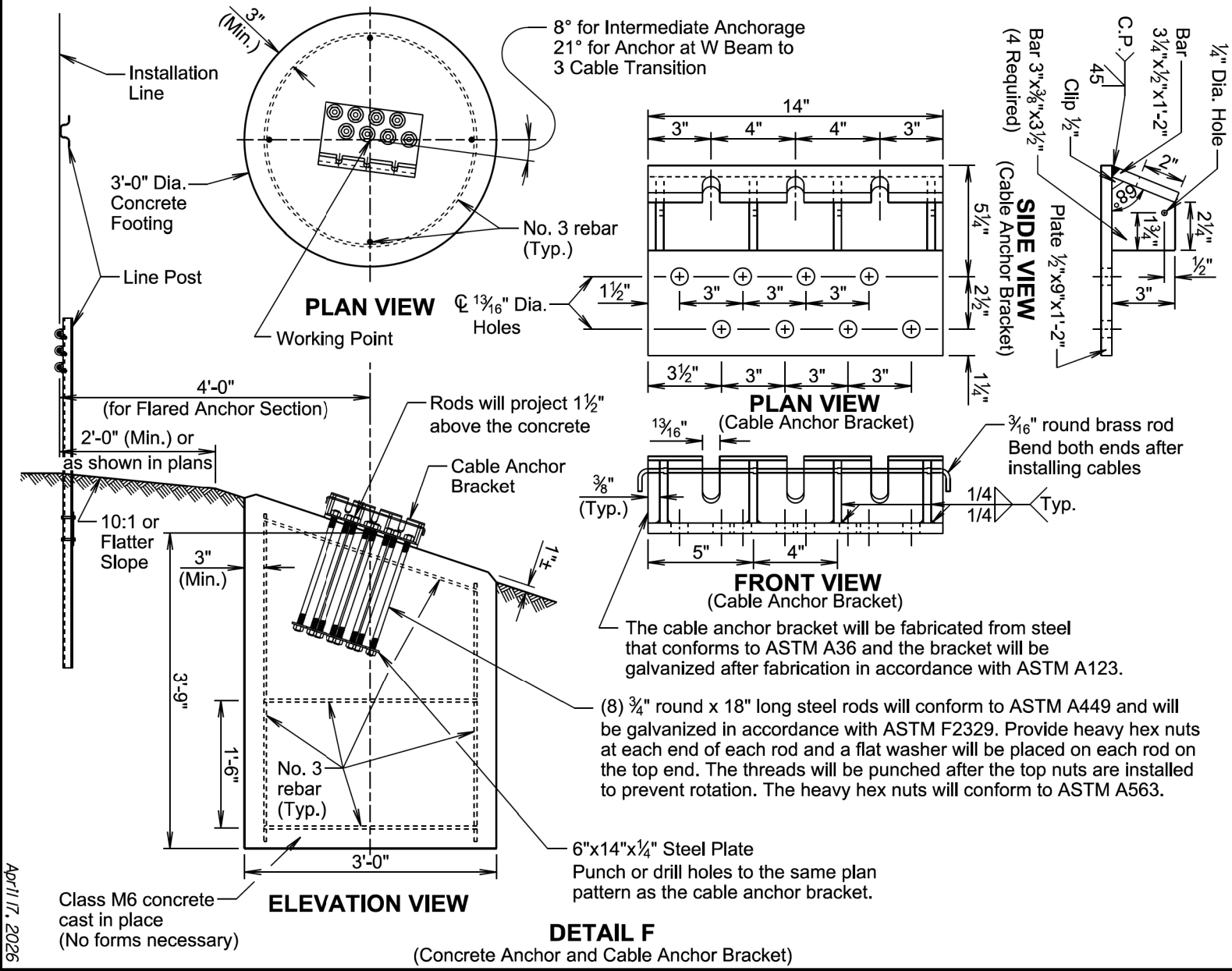
April 17, 2026

PLATE NUMBER 629.01

Published Date: 2027

SDDOT

3 CABLE GUARDRAIL (LOW TENSION)



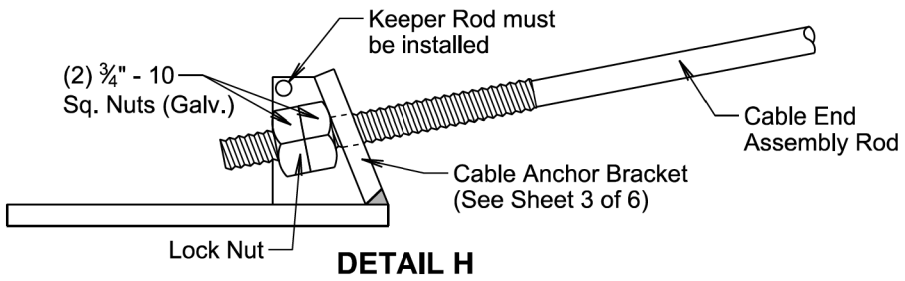
DETAIL F
(Concrete Anchor and Cable Anchor Bracket)

April 17, 2026

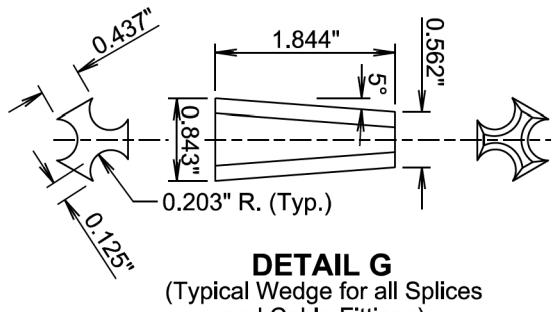
PLATE NUMBER 629.01

Plotting Date: 10/05/2026
SD DOT
PROJECT IM 0293(122)82
SECTION F
SHEET 15/20

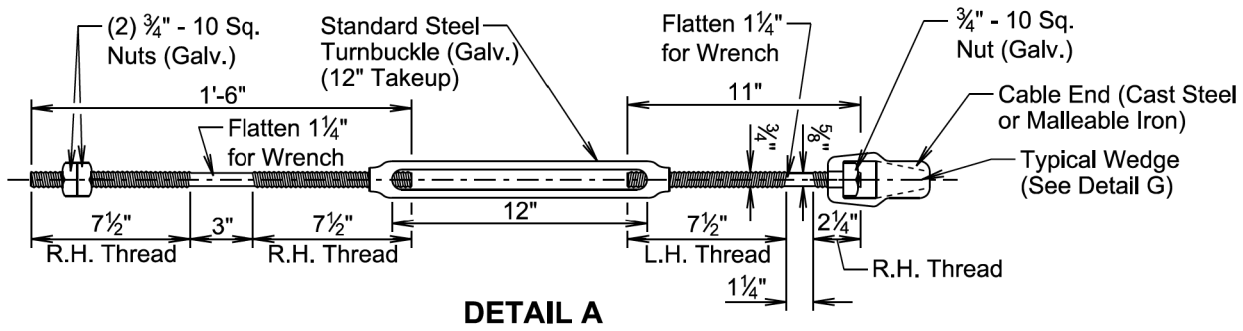
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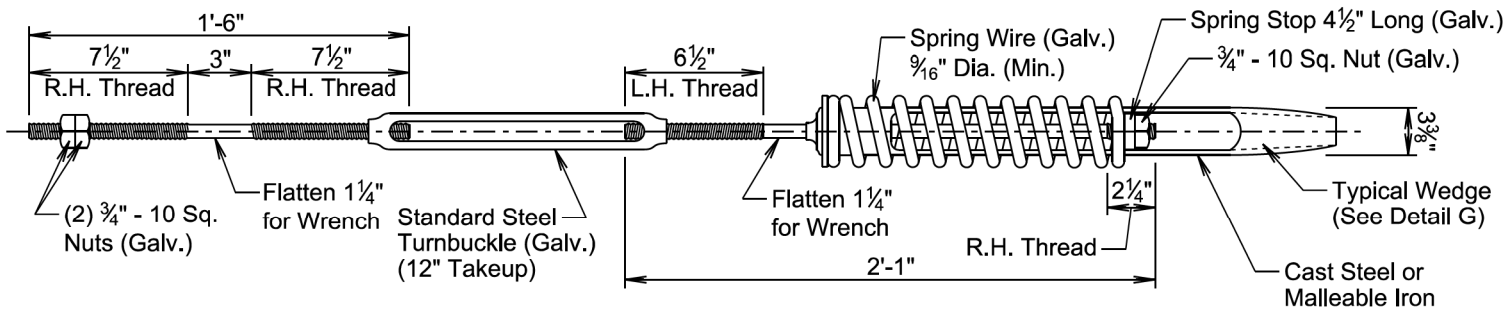
DETAIL H
(Cable End Assembly Rod Connection to Cable Anchor Bracket)



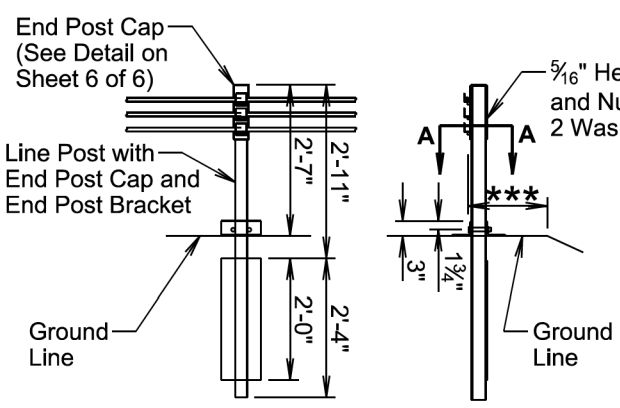
DETAIL G
(Typical Wedge for all Splices and Cable Fittings)



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



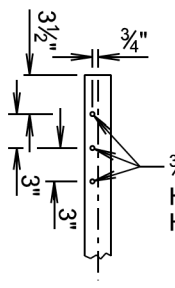
DETAIL B
(Spring Cable End Assembly with Turnbuckle)
(Compensating Device)



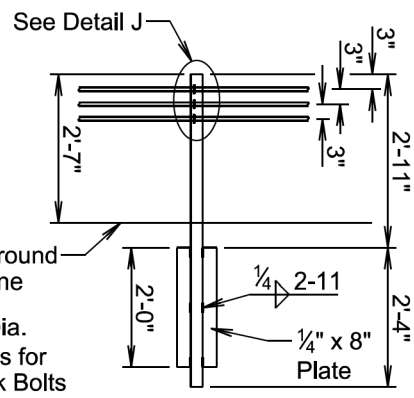
FRONT VIEW

SIDE VIEW

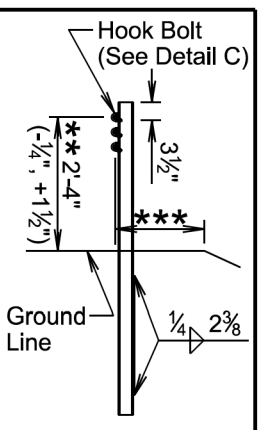
DETAIL D
(End Post)



DETAIL J



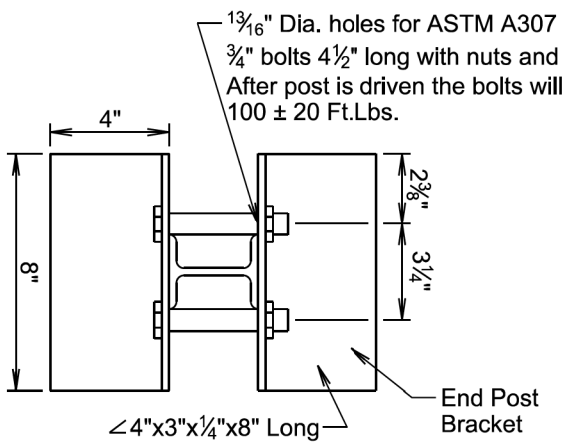
FRONT VIEW



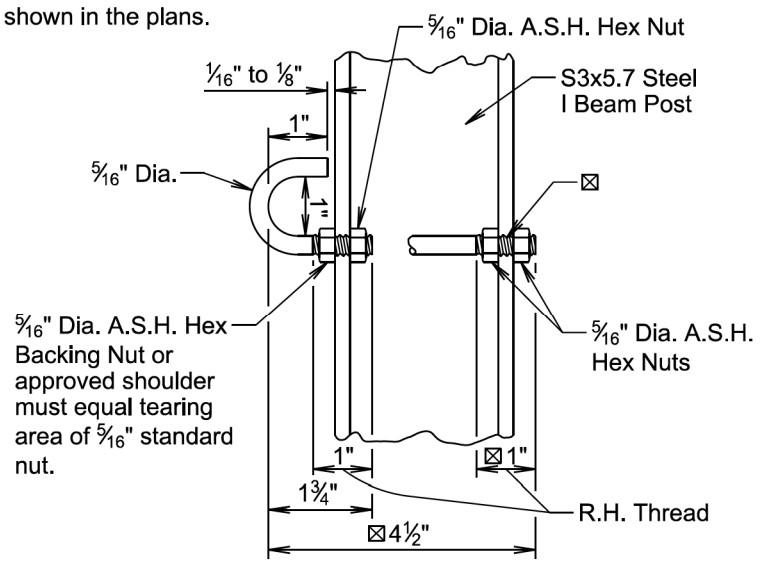
SIDE VIEW

DETAIL E
(Line Post)

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



SECTION A-A



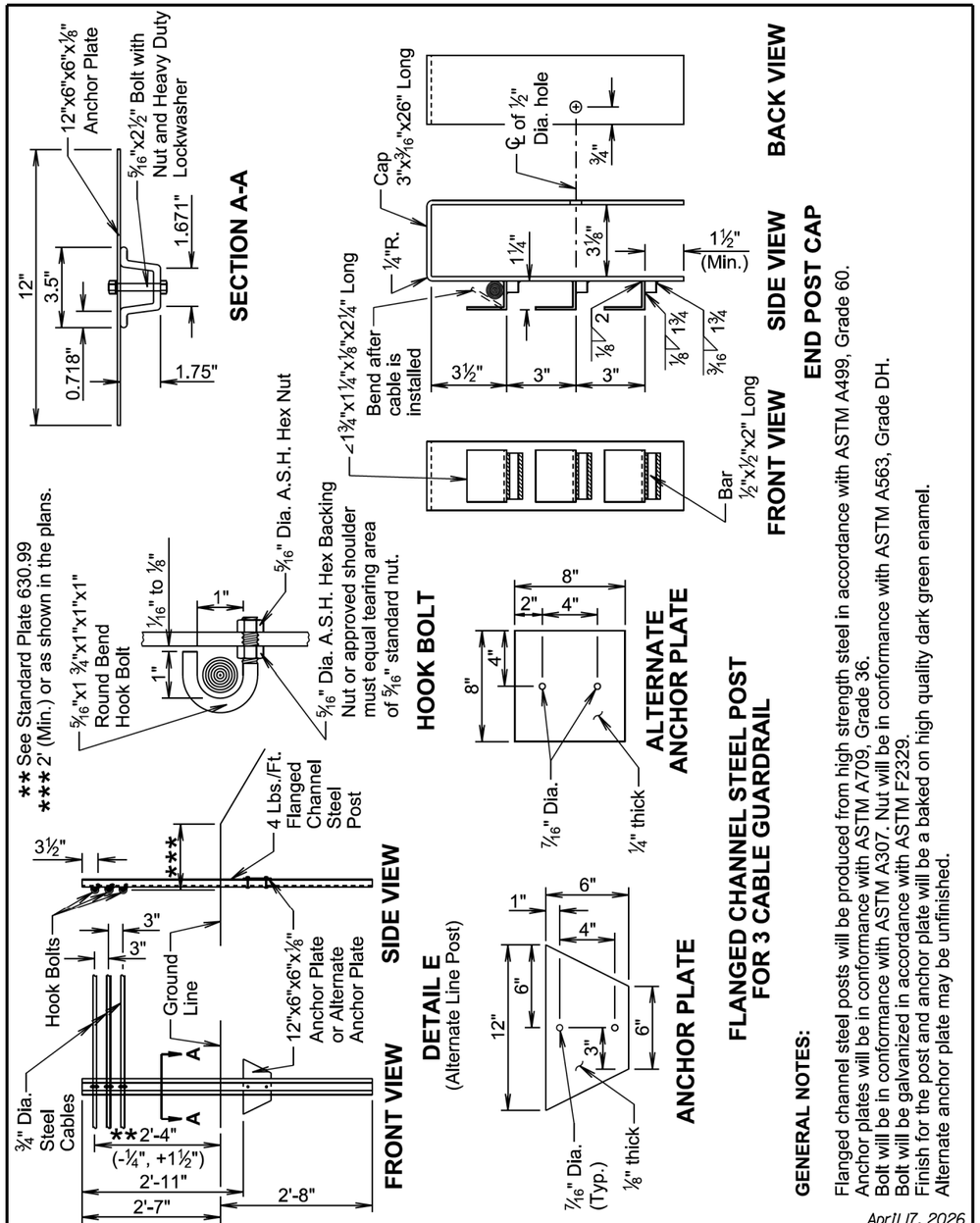
DETAIL C
(Hook Bolt)

☒ Alternate Type Hook Bolt

S3x5.7 STEEL I BEAM POST FOR 3 CABLE GUARDRAIL

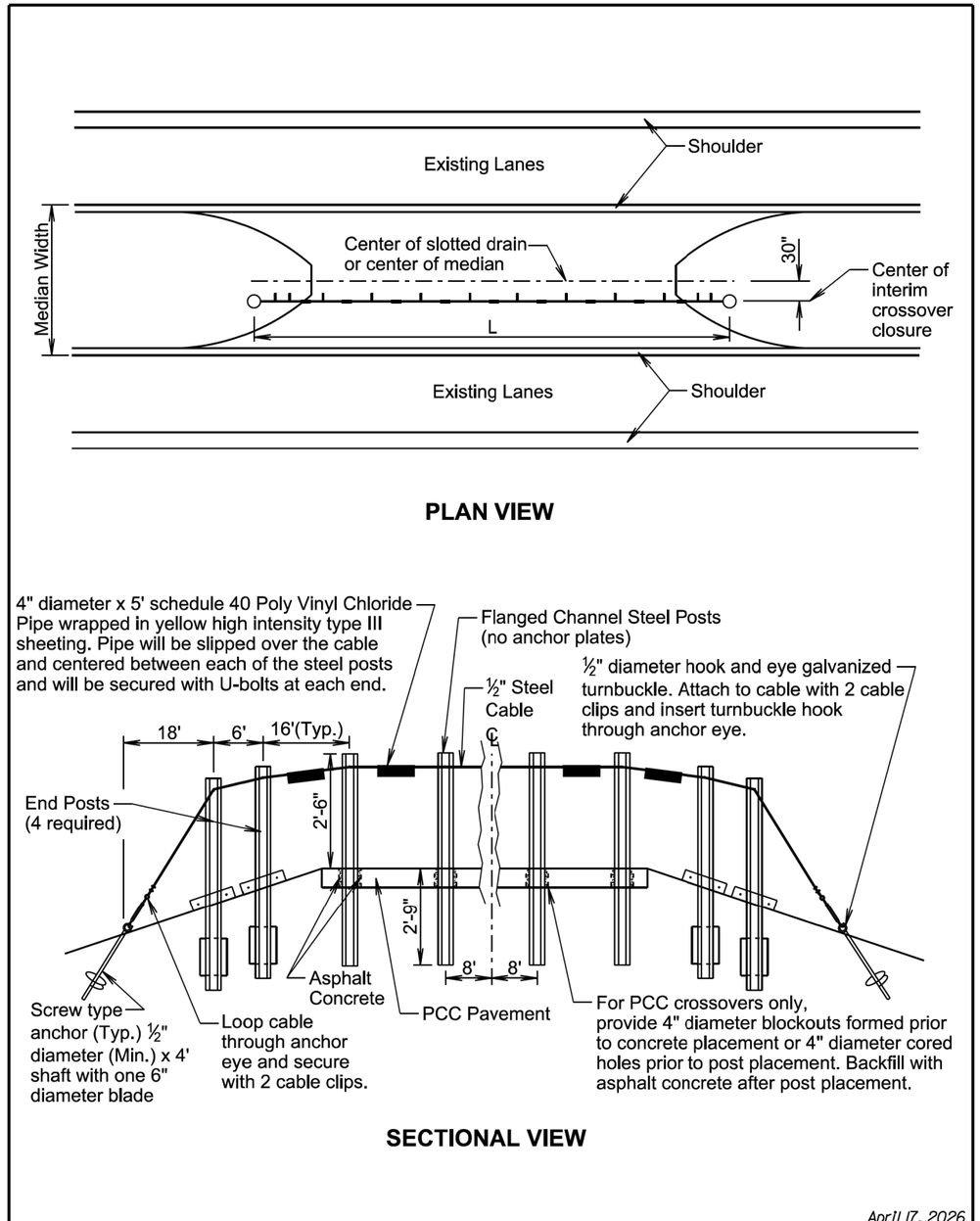
Published Date: 2027
SDDOT
3 CABLE GUARDRAIL (LOW TENSION)
PLATE NUMBER 629.01
Sheet 4 of 6
April 17, 2026
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SECTION F
SHEET 16/20



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			Sheet 6 of 6



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			Sheet 1 of 2

Crossover Type	Median Width	INFORMATIONAL QUANTITIES				Pay Length (L)
		PVC Pipes	U-Bolts	Flanged Channel Steel Posts	Blockouts or Cored Holes (PCC Crossovers)	
1	60' and 66'	15	30	14	14	288'
1	80'	13	26	12	12	256'
2	60' and 66'	23	46	22	22	416'
2	80'	19	38	18	18	352'

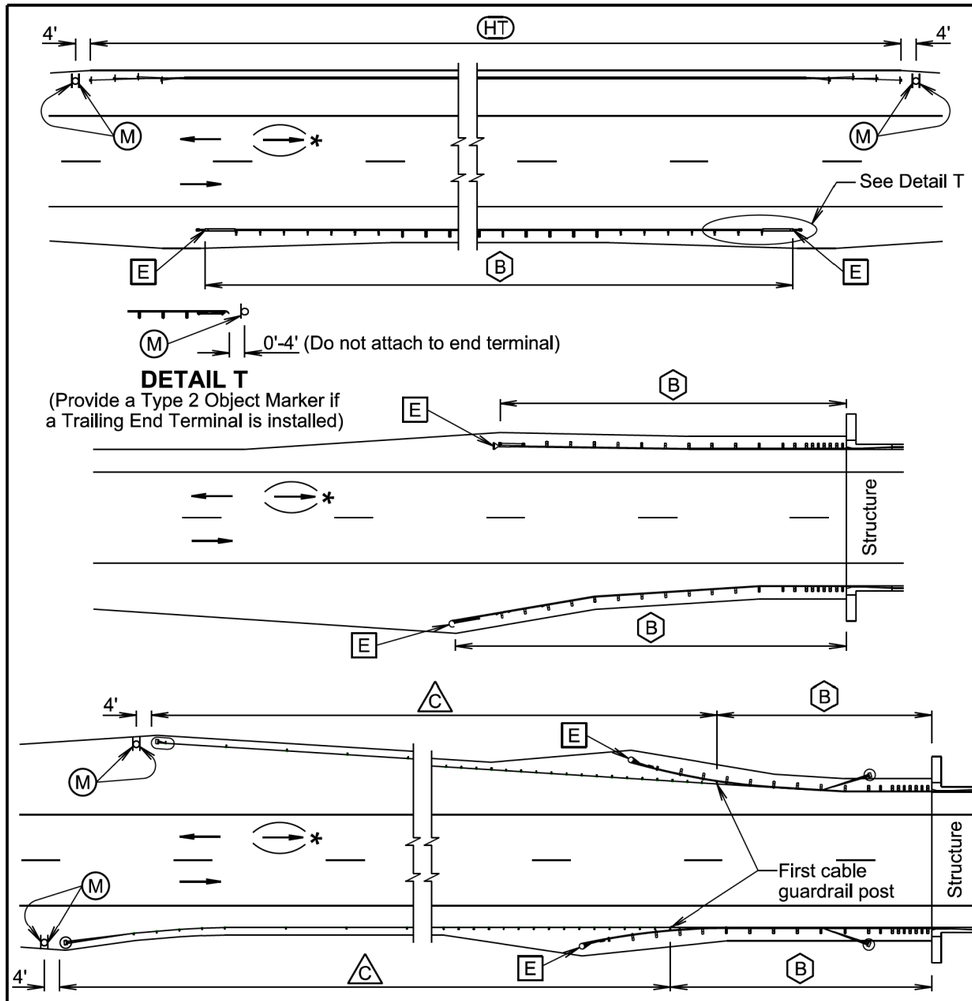
GENERAL NOTES:

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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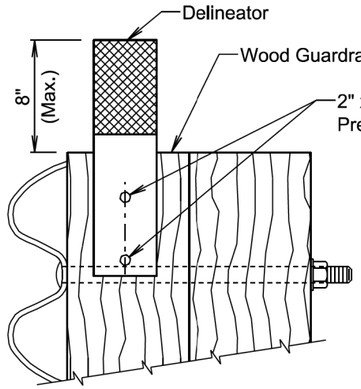
PLAN VIEW
(Typical Guardrail Layouts)

- (B) Steel Beam Guardrail Delineation
- (E) Guardrail End Terminal Object Marker
- (C) 3 Cable Guardrail (Low Tension) Delineation
- (HT) High Tension Cable Guardrail Delineation
- (M) Type 2 Object Marker

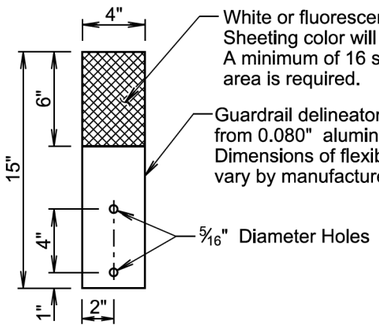
* For two-way traffic, install delineation at the opposite end of structure the same as shown. Back-to-back delineation is required for two-way traffic, single-sided delineation for one-way traffic.

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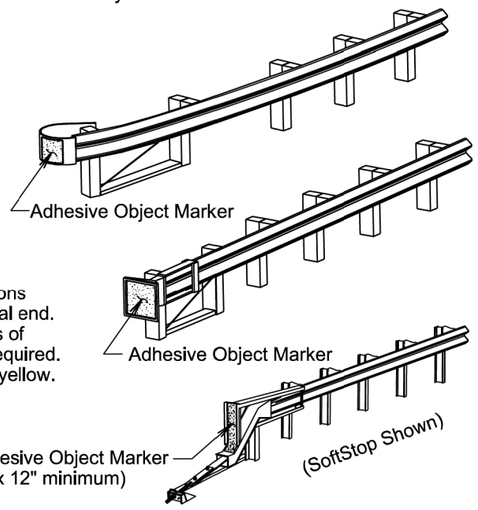
Published Date: 2027	SDDOT	DELINEATION OF GUARDRAIL	PLATE NUMBER 632.40
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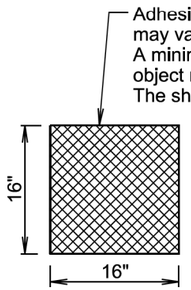


Ⓑ STEEL BEAM GUARDRAIL DELINEATION



DELINEATOR
(For Steel Beam Guardrail)



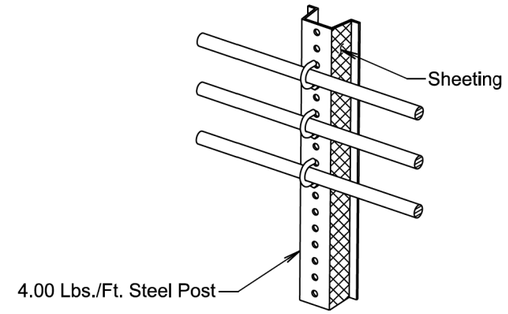


ADHESIVE OBJECT MARKER

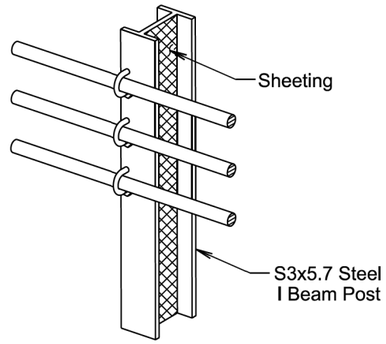
Ⓔ GUARDRAIL END TERMINAL OBJECT MARKER

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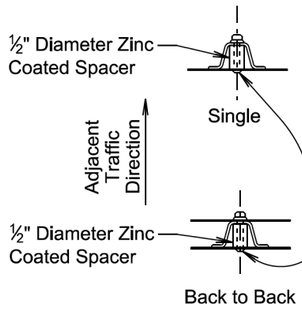
Published Date: 2027	SDDOT	DELINEATION GUARDRAIL	PLATE NUMBER 632.40
			Sheet 2 of 4



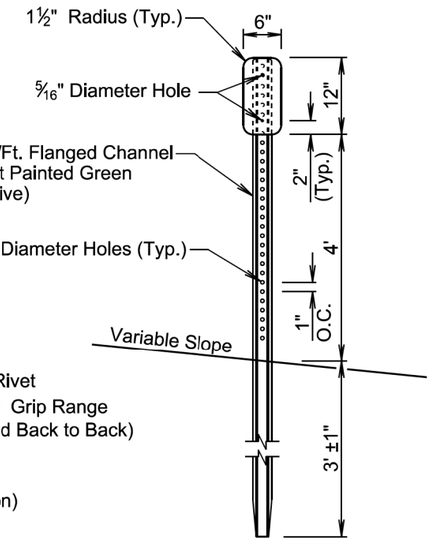
Ⓒ 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION



Ⓒ 3 CABLE GUARDRAIL (LOW TENSION) DELINEATION



PLAN VIEW
(Type 2 Object Marker Details and Post Orientation)



ELEVATION VIEW
Ⓜ (Type 2 Object Marker)
(For Marking 3 Cable Guardrail (Low Tension) Anchor, High Tension Cable Guardrail Anchor, and Trailing End Terminal)

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GENERAL NOTES:

The delineation of high tension cable guardrail will be reflective sheeting placed back to back on every third post cap or cable spacer. Maximum spacing of delineation will not exceed 35 feet. The sheeting will be type XI in conformance with ASTM D4956. The color of the reflective sheeting will be the same as the nearest pavement marking.

The delineators for steel beam guardrail and sheeting on 3 cable guardrail (low tension) posts will be covered with a minimum of 16 square inches of reflective sheeting. The reflective sheeting will be type XI in conformance with ASTM D4956. Along two-way roadways the sheeting will be on both sides of the delineators and guardrail posts and will be white in color. For one-way roadways the sheeting will only be required on the side facing traffic and the color will be the same as the nearest pavement marking, yellow on the left side of the roadway and white on the right side.

When steel beam guardrail is attached to a bridge the first delineator will be attached to the post nearest the bridge.

At bridges with guardrail less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object marker. The spacing between the delineators will be approximately one third of the length of the guardrail.

At bridges with guardrail 200 feet and greater in length, including bridges that have steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

Steel beam guardrail that is not attached to a bridge and is less than 200 feet in length, a minimum of 4 delineators will be placed in addition to the end terminal yellow object markers. The spacing between the delineators will be approximately one third of the length of the guardrail.

Steel beam guardrail that is not attached to a bridge and is 200 feet and greater in length, including steel beam guardrail transitioning to 3 cable guardrail (low tension), the delineators will be placed at a spacing of approximately 50 feet. Delineation will extend throughout the length of the guardrail system.

All costs for furnishing and installing single or back to back guardrail delineation on 3 cable guardrail and steel beam guardrail will be included in the contract unit price per each for "Guardrail Delineator".

All costs for furnishing and installing the reflective sheeting on the cable spacers or post caps for the high tension cable guardrail will be incidental to the respective high tension cable guardrail contract item.

An adhesive object marker will be placed on the end of the W beam guardrail or MGS end terminal. The adhesive object marker dimensions may vary due to the shape of the terminal end. A minimum of 256 square inches of object marker reflective sheeting area is required on end terminals with sufficient surface area. Other end terminals (SoftStop) will require an adhesive object marker with a minimum size of 6" x 12". The reflective sheeting will be fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the adhesive object marker will be incidental to various contract items.

A type 2 object marker will be placed such that the edges of the type 2 object marker and the 3 cable guardrail (low tension) anchor, high tension cable guardrail anchor, or the trailing end terminal that are nearest to the roadway will be installed in line with the same lateral offset from the traveled way at the location as noted on sheet 1 of this standard plate. The type 2 object marker (6" x 12") will have fluorescent yellow type XI sheeting in conformance with ASTM D4956. All costs for furnishing and installing the type 2 object marker including the steel post, 6" x 12" reflective panel, and hardware will be included in the contract unit price per each for "Type 2 Object Marker" for single-sided and "Type 2 Object Marker Back to Back" for back to back type 2 object markers.

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