

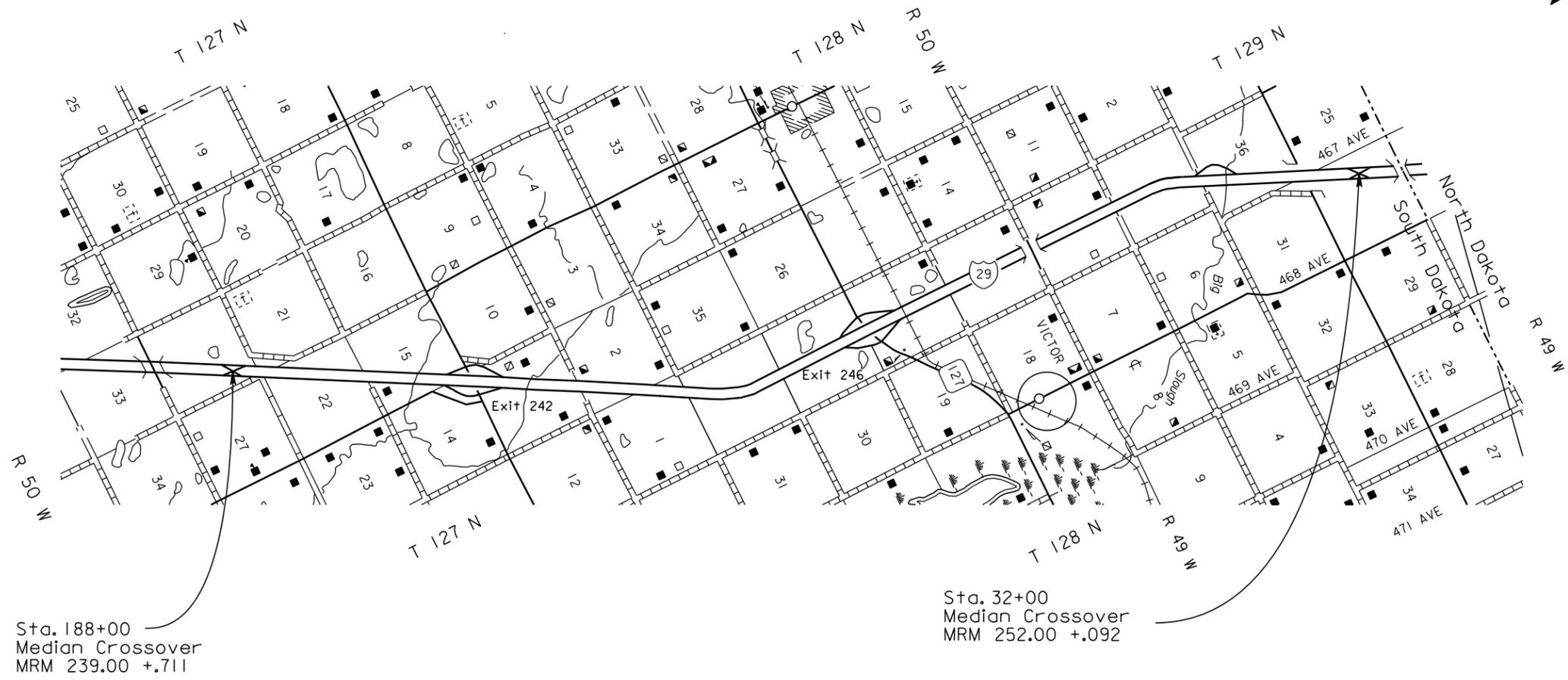
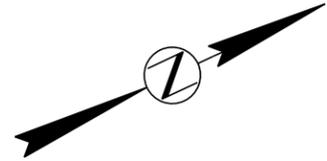
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 229(68)239	F1	F10

Plotting Date: 12/04/2014

Section F: Surfacing Plans

INDEX OF SHEETS

- F1 General Layout W/Index
- F2-F4 Estimate With General Notes & Tables
- F5-F6 Median Crossover Layout and Typical
- F7-F10 Standard Plates



Sta. 188+00
Median Crossover
MRM 239.00 +.711

Sta. 32+00
Median Crossover
MRM 252.00 +.092

PLOT SCALE - 1:7920

PLOTTED FROM - IRPR15123

PLOT NAME - 1

FILE - U:\MS\PR\PROB103\TITLE F.DGN

SECTION F ESTIMATE OF QUANTITIES

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
009E3250	Miscellaneous Staking	0.276	Mile
009E3300	Three Man Survey Crew	40.0	Hour
120E0010	Unclassified Excavation	3,233	CuYd
120E6200	Water for Granular Material	155.8	MGal
120E9000	Pit Run Material	7,970.2	Ton
260E1010	Base Course	5,002.2	Ton
320E0007	PG 64-28 Asphalt Binder	160.8	Ton
320E1050	Class E Asphalt Concrete	2,679.6	Ton
320E3000	Compaction Sample	3	Each
330E0100	SS-1h or CSS-1h Asphalt for Tack	2.6	Ton
330E0210	SS-1h or CSS-1h Asphalt for Flush Seal	1.2	Ton
330E2000	Sand for Flush Seal	22.0	Ton
450E4749	15" CMP 16 Gauge, Furnish	632	Ft
450E4750	15" CMP, Install	632	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	200	Ft
450E6120	15" Slotted CMP, Install	200	Ft
451E3115	15" Pipe Cap	2	Each
462E0100	Class M6 Concrete	17.8	CuYd
462E0200	Controlled Density Fill	7.2	CuYd
600E0200	Type II Field Laboratory	1	Each
629E9000	Crossover Closure	384	Ft
831E0210	Non-woven Geotextile Separator	9,317	SqYd

SURFACING THICKNESS DIMENSIONS

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

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

SAWING IN EXISTING SURFACING

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

UTILITIES

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

Utilities are not planned to be affected on this project. If utilities are identified near the improvement area through the SD One Call Process as required by South Dakota Codified Law 49-7A and Administrative Rule Article 20:25, the Contractor shall contact the Project Engineer to determine modifications that will be necessary to avoid utility impacts.

TYPE II FIELD LABORATORY

The lab shall be equipped with an internet connection such as DSL, cable modem, or other approved service. The internet connection shall be provided with a multi-port wireless router. The internet connection shall be a minimum speed of 512 Kb unless limited by job location and approved by the DOT. Prior to installing the wireless router the Contractor shall submit the wireless router's technical data to the Area Office to check for compatibility with the state's computer equipment. The internet connection is intended for state personnel usage only. The Contractor's personnel are prohibited from using the internet connection unless pre-approved by the Project Engineer.

PIT RUN MATERIAL

Pit Run material shall be obtained from a granular source and shall conform to the following gradation:

Sieve	% Passing
6"	100
#4	0-60
#200	0-20

Pit Run Material shall be compacted to 95% or greater of Maximum Dry Density as determined by the Specified Density Method in layers not exceeding 8 inches loose depth. If the material does not contain enough fines to allow for conventional density testing (SD 105 or SD 106), the material shall be compacted as specified for A-2-4(0) and A-3 soils. Minimum compaction testing requirements will be a minimum of one test per median crossover and ramp detour locations.

Pit Run material will be paid for at the contract unit price per ton. Payment will be full compensation for furnishing and placing materials, labor, equipment, test strips (if required), and all incidentals required.

Nonwoven Geotextile 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. Nonwoven Geotextile Separator Fabric will conform to Section 831, of the Specifications.

TABLE OF NON-WOVEN GEOTEXTILE SEPARATOR FABRIC

Location	Non-woven Geotextile Separator SqYds
Median Crossovers	
MRM 239.00 + .711	4,658.5
MRM 252.00 + .092	4,658.5
TOTAL	9,317.0

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 229(68)239	F2	F10

Revised: 04 Dec 14, LLR

CONTROLLED DENSITY FILL

Controlled density fill shall be placed at the locations shown in the Table of Controlled Density Fill.

Controlled density fill shall be a flowable mortar material. Material and mixing shall be in accordance with the Section 462 of the Specifications, except as modified below. The mix shall be as follows:

Mix Design:

Material	Rate per Cubic Yard
Portland Cement, Type I	100 Lb
Fine Aggregate	2,600 Lb
Coarse Aggregate	None
Water	60 Gal
Fly Ash, Type C	300 Lb

Alternative Mix Design with Controlled Low Strength Material (CLSM):

Material	Rate per Cubic Yard
Portland Cement, Type I	200 Lb
Fine Aggregate	2,600 Lb
Coarse Aggregate	None
Water	35 Gal
W.R. Grace - Darafill (or approved equal)	1 (3 oz.)* capsule (or equivalent)

* One 3oz. Darafill capsule or equivalent CLSM performance additive (foaming admixture).

The fine aggregate shall be natural sand consisting of mineral aggregate particles conforming to the following gradation requirements:

Passing a 3/8 Inch Sieve	100%
Passing a No. 200 Sieve	0-10%

Either mix shown above is designed to produce a minimum compressive strength of 100 psi. The Engineer may allow adjustments to the proportion of water at the site to provide the necessary consistency of the mix.

Controlled density fill shall be contained within the required limits with sandbags or other methods approved by the Engineer.

The Contractor shall prevent the flotation, uplift or movement of the culvert due to the buoyant force from the controlled density fill until the controlled density fill hardens. Overlying surfacing material shall not be placed sooner than four hours after placement of the controlled density fill.

Cost for furnishing and installing the controlled density fill, including sandbags, labor, material, equipment and incidentals necessary to complete the work shall be included in the contract unit price per cubic yard for Controlled Density Fill.

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

UNCLASSIFIED EXCAVATION

An estimated 3,233.4 CuYds 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
	CuYds
Median Crossovers	
MRM 239.00 + .711	1,616.7
MRM 252.00 + .092	1,616.7
TOTAL	3,233.4

TABLE OF CONTROLLED DENSITY FILL

Location	Controlled Density Fill
	CuYd
Median Crossovers	
MRM 239.00 + .711	3.6
MRM 252.00 + .092	3.6
TOTAL	7.2

TABLE OF CLASS M6 CONCRETE

Location	Class M6 Concrete
	CuYd
Median Crossovers	
MRM 239.00 + .711	8.9
MRM 252.00 + .092	8.9
TOTAL	17.8

CROSSOVER CLOSURES

See Special Details for placement and construction of the crossover closures.

TABLE OF CROSSOVER CLOSURES

Location	Crossover Closure
	Ft
Median Crossovers	
MRM 239.00 + .711	192
MRM 252.00 + .092	192
Totals	384

CLASS E ASPHALT CONCRETE

Mineral Aggregate for Class E Asphalt Concrete shall conform to the requirements for Class E, Type 1.

All other requirements for Class E shall apply.

TABLE OF ADDITIONAL QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET NO.	TOTAL SHEETS
	IM 229(68)239	F4	F10

Location-Description	Water for Granular Material	Base Course	Pit Run Material	Class E Asphalt Concrete 1 st / 2 nd / 3 rd Lift	PG 64-28 Asphalt Binder 1 st / 2 nd / 3 rd Lift	SS-1h or CSS-1h Asphalt for Tack 1 st / 2 nd Lift	SS-1h or CSS-1h Asphalt for Flush Seal	Sand for Flush Seal
	MGal	Ton	Ton	Ton	Ton	Ton	Ton	Ton
Median Crossovers								
MRM 239.00 + .711	77.9	2,501.1	3,985.1	530.0 / 497.0 / 312.8	31.8 / 29.8 / 18.8	-- / 0.7 / 0.6	0.6	11.0
MRM 252.00 + .092	77.9	2,501.1	3,985.1	530.0 / 497.0 / 312.8	31.8 / 29.8 / 18.8	-- / 0.7 / 0.6	0.6	11.0
Totals	155.8	5,002.2	7,970.2	2,679.6	160.8	2.6	1.2	22.0

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	CMP Tee
	Ft	Each	Each	Ft	Ft	Each
Median Crossovers						
MRM 239.00 + .711	316	3	2	100	1	1
MRM 252.00 + .092	316	3	2	100	1	1
Totals	632	6	4	200	2	2

TABLE OF CONSTRUCTION STAKING

(See Special Provision for Contractor Staking)

Location and Description	Length (Ft)	Miscellaneous Staking Quantity (Mile)
Median Crossovers		
MRM 239.00 + .711	728.0	0.138
MRM 252.00 + .092	728.0	0.138
Totals	1,456.0	0.276

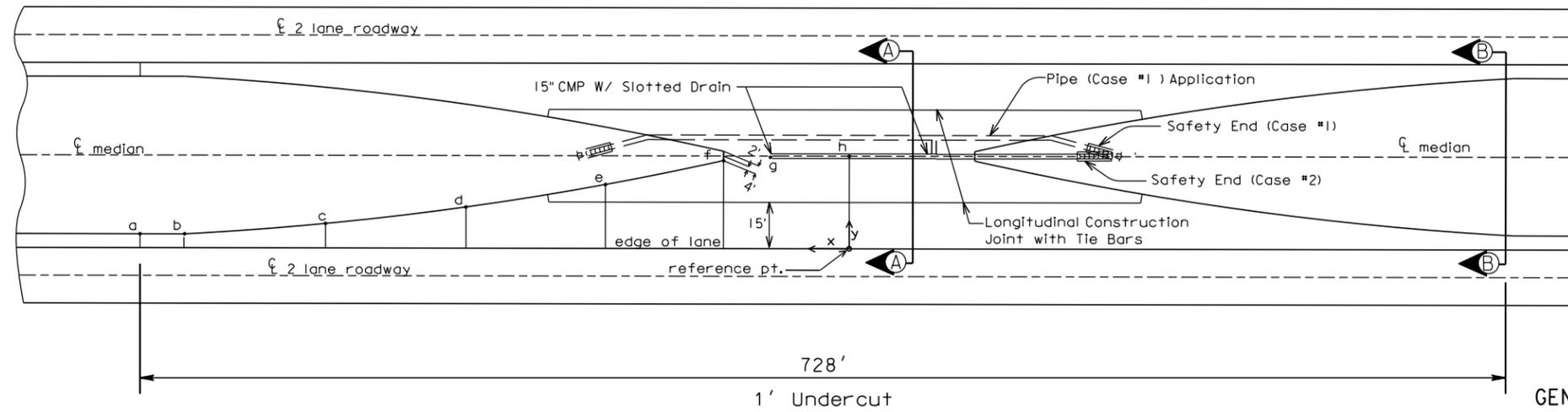
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PLOTTED FROM - TRPR15123

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 229(68)239	F5	F10

Plotting Date: 12/04/2014
Revised: 04 Dec 14, LLR

MRM 239.00 + .711 & MRM 252.00 + .092



80' MEDIAN		
Point	(x)	(y)
* a	364'	6.0'
b	364'	6.0'
c	286'	8.1'
d	208'	14.5'
e	131'	25.2'
f	65'	38.0'
g	48'	40.0'
h	0'	40.0'

(*) Point a - may vary to match on site pavement joints

GENERAL NOTES:

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

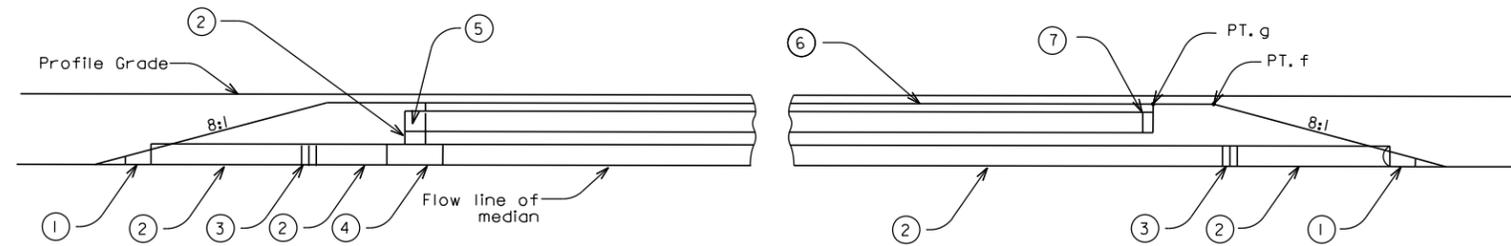
Construction of median crossover shall conform to the requirement of Current Specifications.

Alternate Drainage Configurations are shown for Crossovers located on summits or grades illustrated by (Case #1 and #2).

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

Case #2 Median Crossover located on summit or in a area not requiring through drainage.

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



Median Drainage Components (each location)

- ① 15" CM Safety End
- ② 15" CMP, Estimated lengths = 16', 88', 192', 16', and 4' 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 = 100'
- ⑦ 15" CM Cap

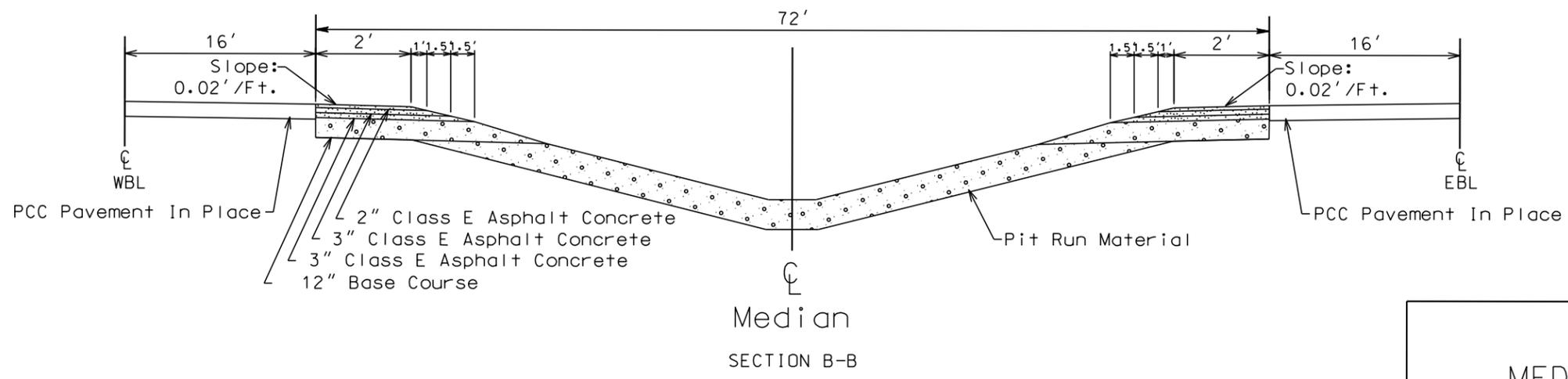
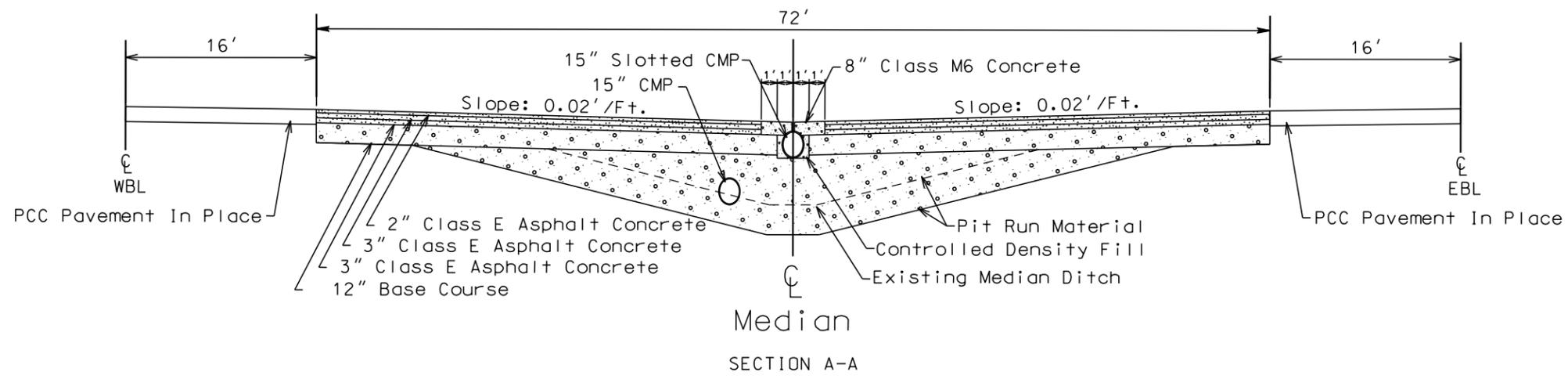
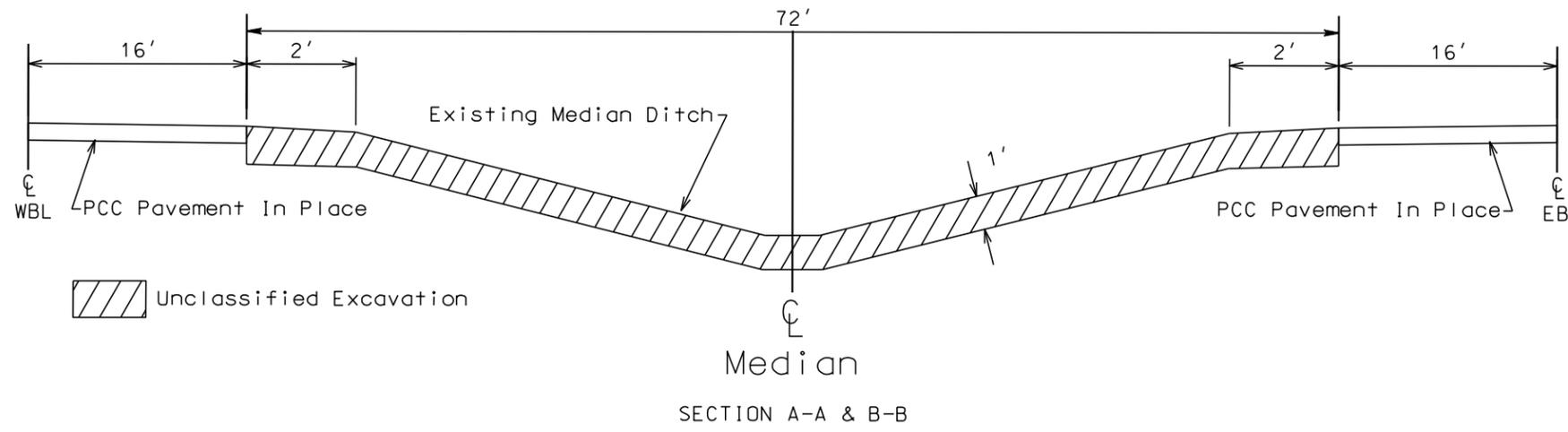
MEDIAN CROSSOVER

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STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	IM 229(68)239	F6	F10

Plotting Date: 12/04/2014
Revised: 04 Dec 14. LLR

MRM 239.00 + .711 & MRM 252.00 + .092



MEDIAN CROSSOVER

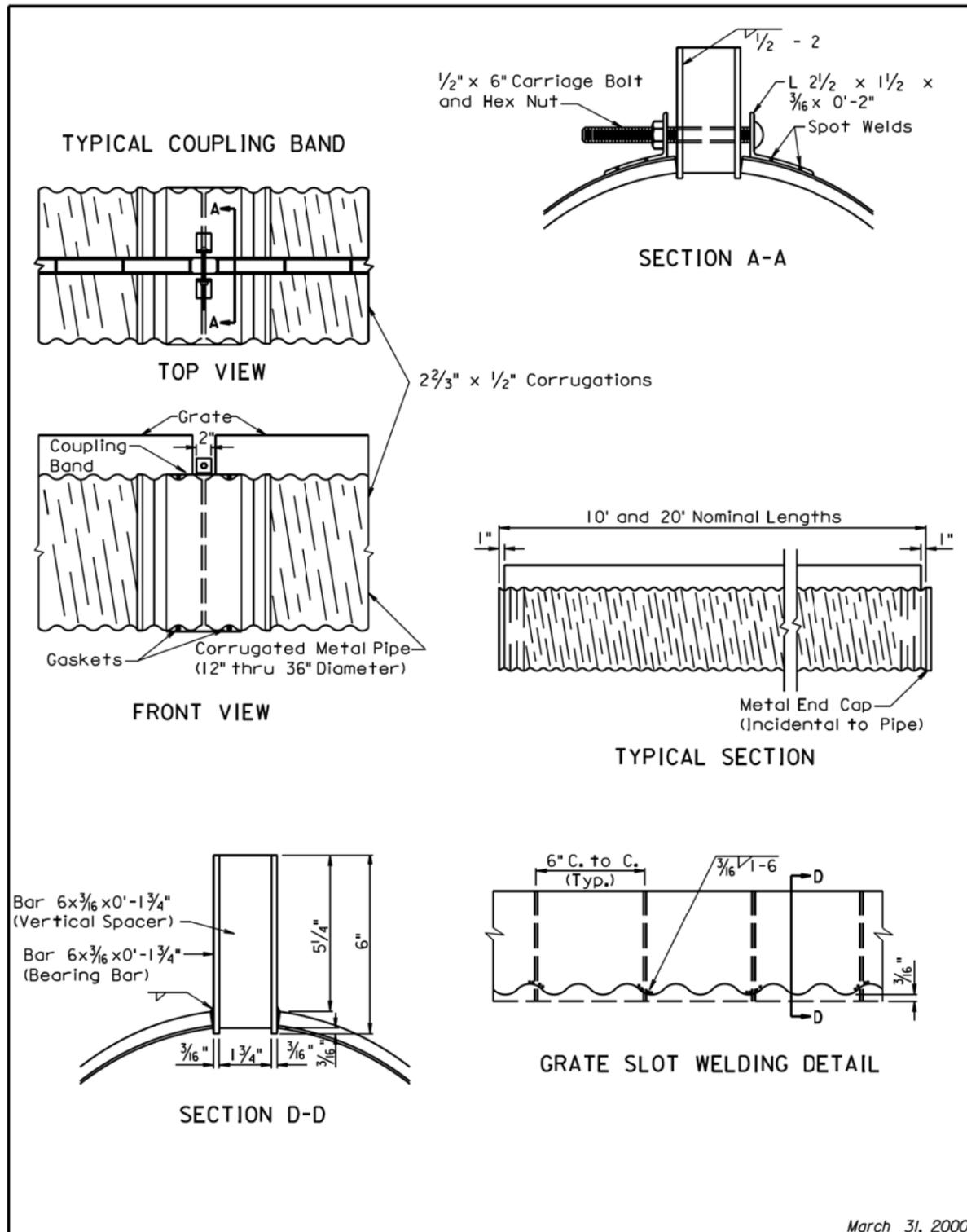
SHEET 2 OF 2 SHEETS

PLOT SCALE - 1:8.95752

PLOTTED FROM - TRPR15123

PLOT NAME - 3

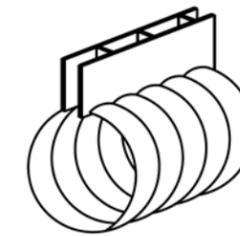
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March 31, 2000

S D D O T	SLOTTED C.M.P. DRAIN	PLATE NUMBER 450.31
		Sheet 1 of 2

Published Date: 4th Qtr. 2014



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 $\frac{1}{2}$ " 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.

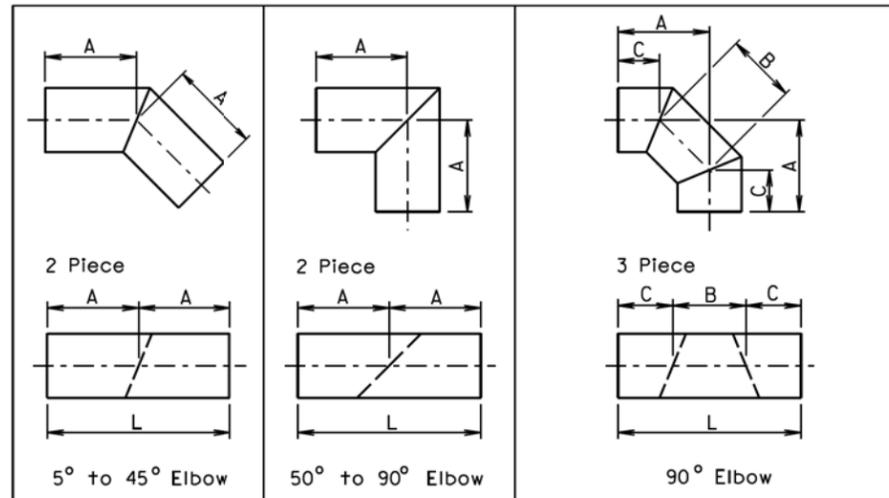
Slotted Drain will be measured along the centerline of the pipe. The length shall be the overall installed length from end to end including any coupling bands that may be between sections. The outlet pipe will be paid for as CMP and End Sections.

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

S D D O T	SLOTTED C.M.P. DRAIN	PLATE NUMBER 450.31
		Sheet 2 of 2

Published Date: 4th Qtr. 2014



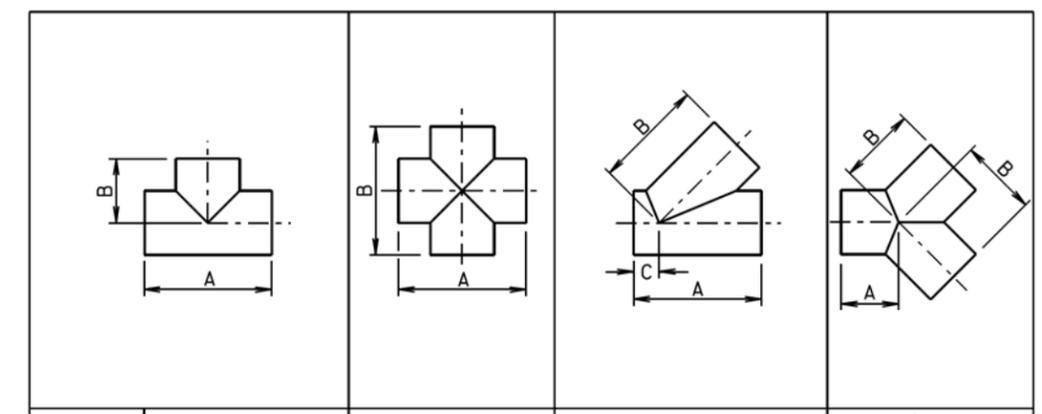
Diameter Inches	5° to 45° Elbow		50° to 90° Elbow			90° Elbow				
	A Feet	L Feet	Diameter Inches	A Feet	L Feet	Diameter Inches	A Inches	B Inches	C Inches	L Feet
12	1	2	12	2	4	12	25 1/2	11	18 1/2	4
15	1	2	15	2	4	15	26 1/2	12	18	4
18	1	2	18	2	4	18	27	14	17	4
21	2	4	21	2	4	21	27	15	16 1/2	4
24	2	4	24	2	4	24	27 1/2	16	16	4
27	2	4	27	2	4	27	27 1/2	17	15 1/2	4
30	2	4	30	3	6	30	40	19	26 1/2	6
33	2	4	33	3	6	33	40	20	26	6
36	2	4	36	3	6	36	40 1/2	21	25 1/2	6
42	2	4	42	3	6	42	41	23	24 1/2	6
48	2	4	48	4	8	48	53 1/2	26	35	8
54	3	6	54	4	8	54	54	28	34	8
60	3	6	60	4	8	60	54 1/2	31	32 1/2	8
66	3	6	66	4	8	66	54	33	31 1/2	8
72	3	6	72	5	10	72	67 1/2	36	42	10
78	3	6	78	5	10	78	68	39	40 1/2	10
84	3	6	84	5	10	84	68 1/2	41	39 1/2	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

S D D O T	C.M.P. FABRICATED LENGTHS FOR ELBOWS	PLATE NUMBER 450.32
	Published Date: 4th Qtr. 2014	Sheet 1 of 1



Diameter Inches	Tee			Cross			45° Lateral				45° Wye		
	A Feet	B Feet	L Feet	A Feet	B Feet	L Feet	A Feet	B Inches	C Feet	L Feet	A Feet	B Feet	L 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

S D D O T	C.M.P. FABRICATED LENGTHS FOR TEES, CROSSES, AND WYES	PLATE NUMBER 450.33
	Published Date: 4th Qtr. 2014	Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRPR15123

PLOT NAME - 5

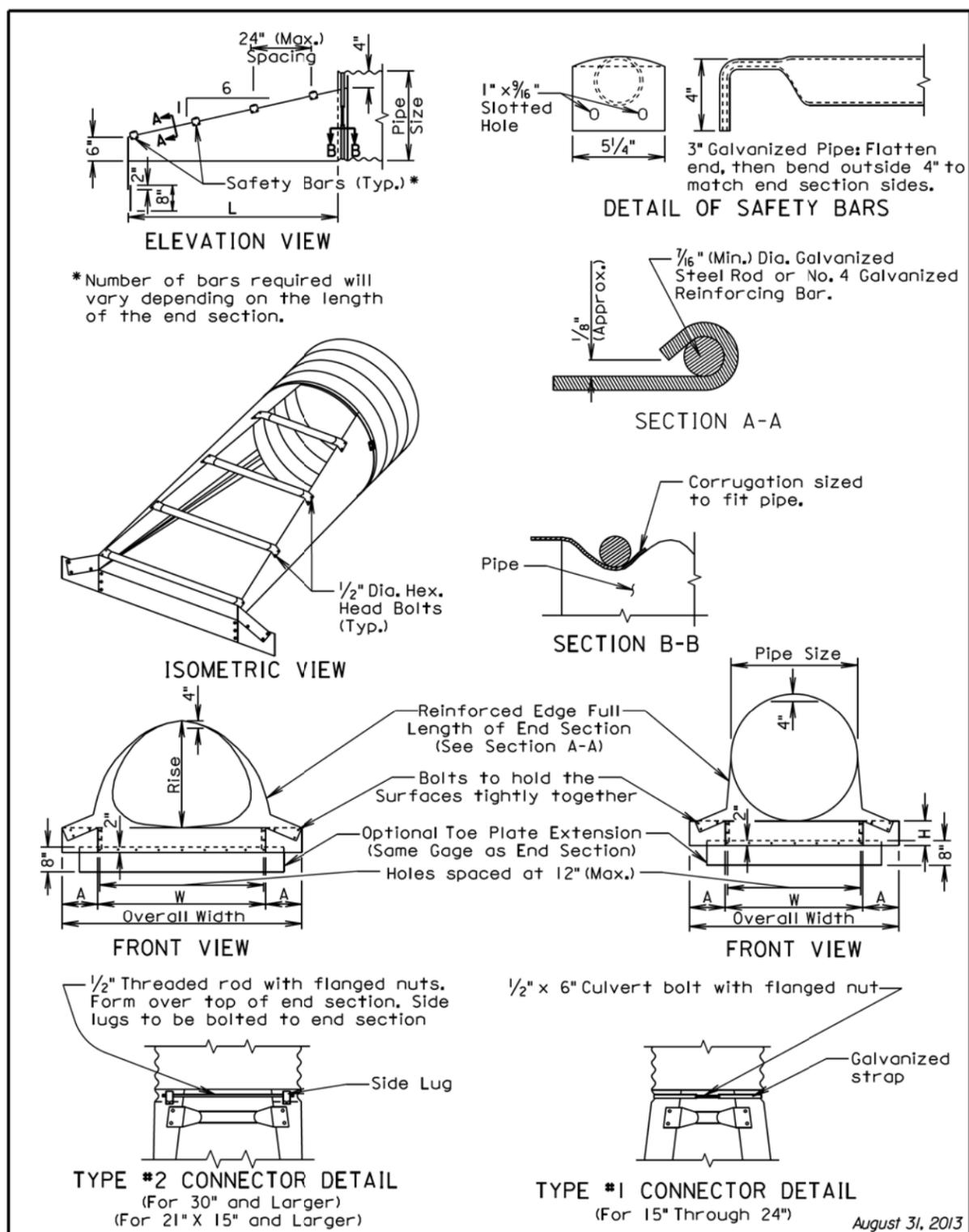
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Plotting Date: 12/04/2014

PLOT SCALE - 1:200

PLOT NAME - 6

FILE - ... \STANDARD PLATES\450.38.1&2.DGN



August 31, 2013

August 31, 2013

S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
		Sheet 1 of 2

Published Date: 4th Qtr. 2014

Equiv. Dia. (Inch)	(Inches)		Min. Thick. Inch	Dimensions (Inches)			Overall Width	L Dimensions		
	Span	Rise		Gage	A	H		W	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

Pipe Dia. (Inch)	Min. Thick. Inch	Dimensions (Inches)			L Dimensions			
		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 ends shall be fabricated from galvanized steel conforming to the requirements of the Standard Specifications.

Safety bars shall 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 shall be provided for all end sections.

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

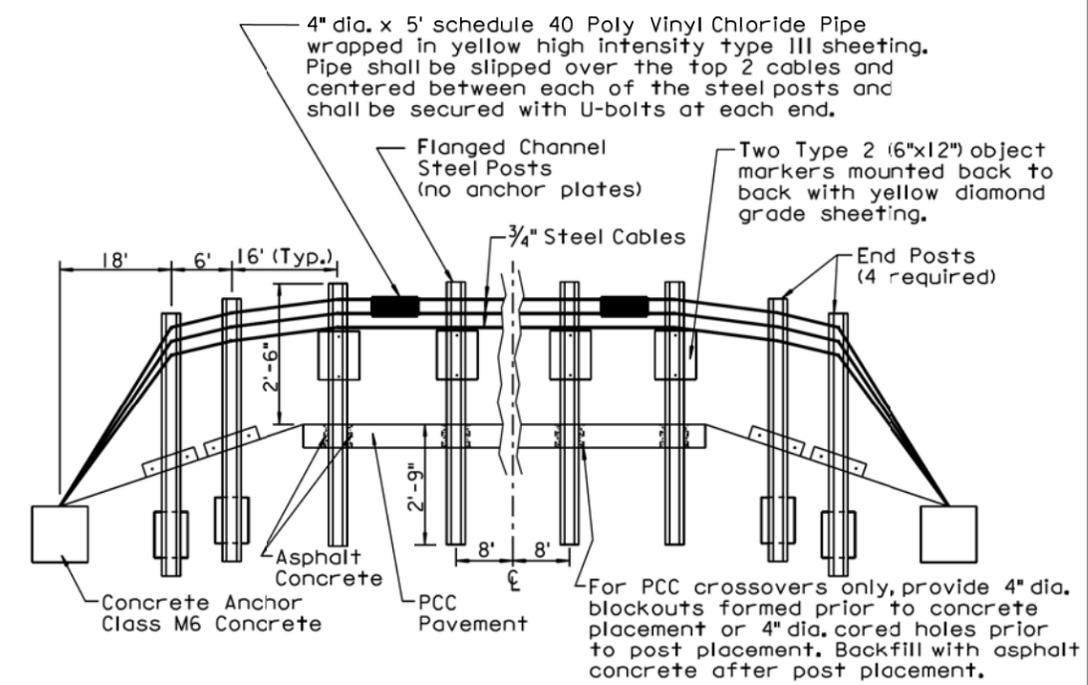
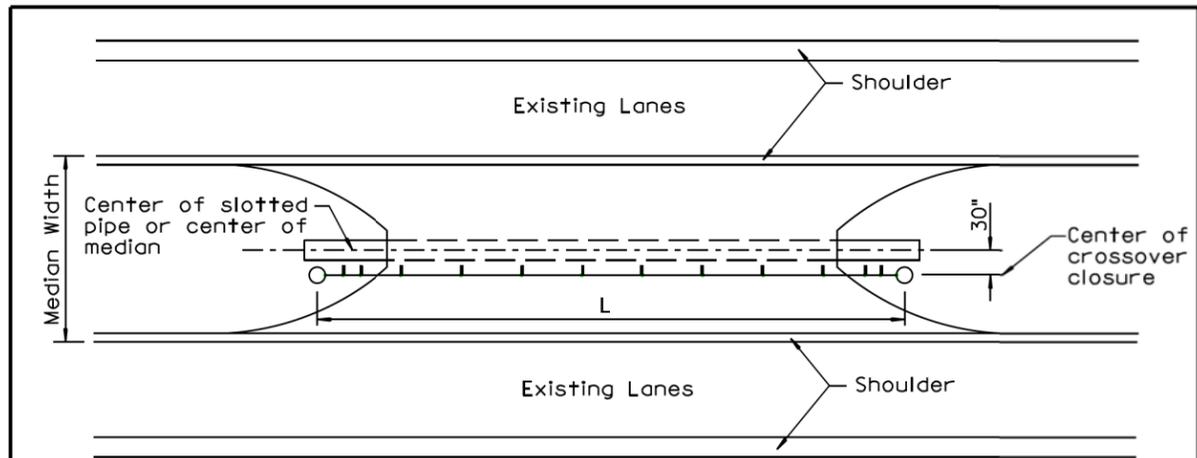
When stated in the plans, optional toe plate extension shall be punched and bolted to end section apron lip with 3/8" diameter galvanized bolts. Steel for toe plate extension shall be same gauge as end section. Dimensions shall be overall width less 6" by 8" high.

Installation shall be performed in accordance with the Standard Specifications.

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

S D D O T	C. M. P. SAFETY ENDS	PLATE NUMBER 450.38
		Sheet 2 of 2

Published Date: 4th Qtr. 2014



MEDIAN WIDTH	NO. OF PVC PIPES	NO. OF U-BOLTS	NO. OF FLANGED CHANNEL STEEL POSTS	NO. OF TYPE 2 OBJECT MARKERS	NO. OF BLOCKOUTS OR CORED HOLES (PCC CROSSOVERS)	PAY LENGTH L
60' and 66'	9	18	10	20	10	224'
80'	7	14	8	16	8	192'

GENERAL NOTES:
 All costs for materials, backfilling holes with asphalt concrete, labor, equipment, and incidentals necessary to construct the crossover closure shall be incidental to the contract unit price per Ft for "Crossover Closure". The costs of coring holes or providing blockouts in the surfacing shall be incidental to the surfacing bid item(s).
 The Crossover Closure shall be constructed using 3 cable guardrail hardware. For specific details of the 3 cable guardrail hardware and installation, see Standard Plate 629.01 sheets 1 through 6.
 March 31, 2000

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			Sheet 1 of 1

PLOT SCALE - 1:200

PLOTTED FROM - TRPR15123

PLOT NAME - 7

FILE - ... \STANDARD PLATES\629-40.DGN