

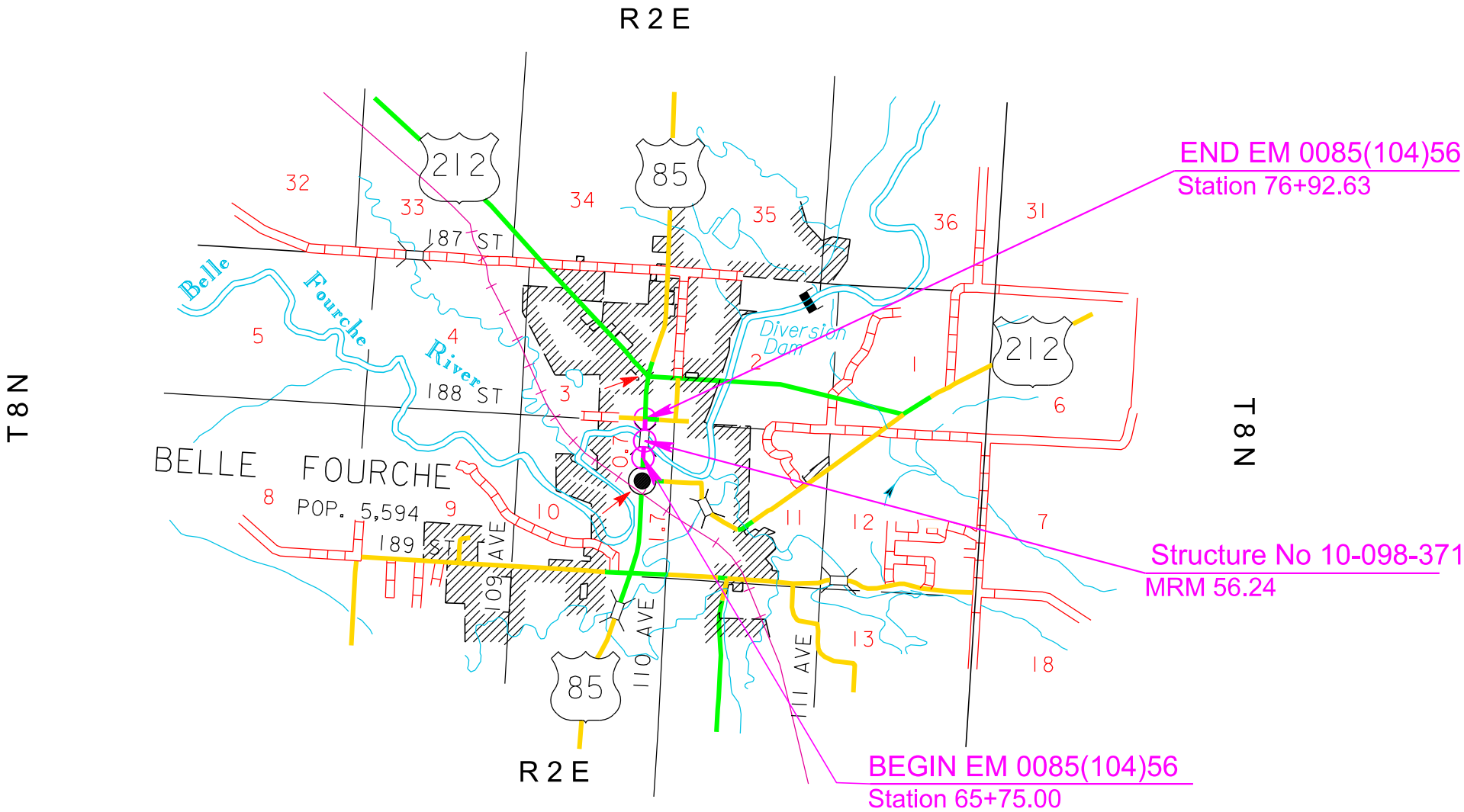
SECTION B: GRADING PLANS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B1	B43

Plotting Date: 02/06/2026

INDEX OF SHEETS

B1	General Layout with Index
B2-B8	Estimate with General Notes & Tables
B9	Pipe Quantities
B10-B11	Typical Grading Sections
B12	Horizontal Alignment Data
B13	Control Data
B14	Legend
B15-B20	Plan and Profile Sheets
B21-B22	Pavement Removal Layout
B23-B24	Curb and Gutter Layout
B25	Curb Ramp Layout
B26-B27	Lane Layout
B28-B44	Standard Plates



Plot Scale - 1:200

Plotted From - TRPR17190

1:200
Plot Scale -
TRPRt7190
Plotted From -

SECTION B ESTIMATE OF QUANTITIES

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
009E0010	Mobilization	Lump Sum	LS
009E3220	Reestablish Right-of-Way and Property Corner	27	Each
009E3230	Grade Staking	0.896	Mile
009E3245	Final Cross Section Survey	0.896	Mile
009E3250	Miscellaneous Staking	0.896	Mile
009E3280	Slope Staking	0.896	Mile
009E3290	Structure Staking	1	Each
009E3301	Engineer Directed Surveying/Staking	40.0	Hour
009E4200	Construction Schedule, Category II	Lump Sum	LS
100E0100	Clearing	Lump Sum	LS
110E0300	Remove Concrete Curb and/or Gutter	59	Ft
110E0400	Remove Drop Inlet	6	Each
110E1100	Remove Concrete Pavement	3,321.3	SqYd
110E1130	Remove Concrete Driveway Pavement	44.4	SqYd
110E1140	Remove Concrete Sidewalk	535.6	SqYd
120E0010	Unclassified Excavation	9,931	CuYd
120E0600	Contractor Furnished Borrow Excavation	145	CuYd
120E0900	Contaminated Material Excavation	100	CuYd
120E2000	Undercutting	2,427	CuYd
250E0020	Incidental Work, Grading	Lump Sum	LS
380E3540	8" PCC Approach Pavement	65.5	SqYd
380E4080	9.5" PCC Fillet Section	10.6	SqYd
450E0122	18" RCP Class 2, Furnish	152	Ft
450E0130	18" RCP, Install	152	Ft
450E0142	24" RCP Class 2, Furnish	104	Ft
450E0150	24" RCP, Install	104	Ft
450E2016	24" RCP Flared End, Furnish	1	Each
450E2017	24" RCP Flared End, Install	1	Each
450E4758	18" CMP 14 Gauge, Furnish	42	Ft
450E4760	18" CMP, Install	42	Ft
450E5010	18" CMP Elbow, Furnish	2	Each
450E5011	18" CMP Elbow, Install	2	Each
450E5211	18" CMP Flared End, Furnish	1	Each
450E5212	18" CMP Flared End, Install	1	Each
450E8009	18" RCP to CMP Transition, Furnish	1	Each
450E8010	18" Pipe Transition, Install	1	Each
451E6080	Adjust Water Valve Box	1	Each
650E0095	Type B69.5 Concrete Curb and Gutter	913	Ft
650E4695	Type P9.5 Concrete Gutter	40	Ft
651E0060	6" Concrete Sidewalk	5,314	SqFt
651E0560	6" Colored Concrete Sidewalk	179	SqFt
651E7000	Type 1 Detectable Warnings	20	SqFt
670E1010	2' x 3' Type B Drop Inlet	6	Each

SECTION B ESTIMATE OF QUANTITIES (CONTINUED)

BID ITEM NUMBER	ITEM	QUANTITY	UNIT
670E1200	Type B Frame and Grate	6	Each
670E5400	Precast Drop Inlet Collar	6	Each
720E1010	PVC Coated Bank and Channel Protection Gabion	4.5	CuYd
831E0110	Type B Drainage Fabric	15	SqYd
900E1150	Concrete Right of Way Marker	7	Each

BID ITEMS FROM ENVIRONMENTAL COMMITMENTS

The following bid item(s) provided in this section of plans come from the Environmental Commitments in Section A: Contaminated Material Excavation (Commitment L).

MACHINE CONTROL GRADING & MODEL INFORMATION

Electronic design files are made available by the SDDOT Bid Letting Office through the SDDOT's SharePoint Directory for Contractors. It is the Contractor's responsibility to verify the features listed as being incorporated in the model are actually included. If any discrepancy exists, the plans will govern over the provided electronic information, regardless of the features listed above.

Highway features not included in the roadway subgrade model xml file are the following: entrances, undercutting, muck excavation, and unstable excavation.

Other subgrade model xml files provided for this project includes the bridge berms top of riprap.

These files are provided for informational purposes only. The information shown in the plans will govern over the provided electronic information. The Contractor assumes the risk of error if the information is used for any purposes for which the information was not intended. The Contractor assumes all risk of any assumptions or manipulations made of the electronic information.

GRADING OPERATIONS

Water for Embankment is estimated at the rate of 15 gallons of water per cubic yard of Embankment minus Waste. The estimated quantity of Water for Embankment is 61 MGal. No separate payment will be made for the Water for Embankment and all costs associated will be incidental to the contract unit price per cubic yard of "Unclassified Excavation".

The estimated cubic yards of excavation and/or embankment required to construct outlet ditches, ditch blocks, and approaches are included in the earthwork balance notes on the profile sheets.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B2	B43

Plotting Date: 06/01/2026

The estimated excavation required for placing the Granular Bridge End Backfill and/or Bridge End Embankment, and for constructing the Bridge Berm(s) between bridge abutments and shaping the bridge waterway channel(s) are listed in the Table of Unclassified Excavation. Overburden Excavation for Riprap is not included in the Unclassified Excavation quantity. Refer to Section E for information regarding the Overburden Excavation for Riprap. The excavated material from the construction of the Bridge Berm(s) and shaping the bridge waterway channel(s) should be disposed of at a site provided by the Contractor and approved by the Engineer. This waste material is not included in the Waste shown in the Table of Excavation Quantities by Balances.

Special ditch grades and other sections of the roadway different than the typical section(s) will be constructed to the limits shown on the cross sections. If significant changes to the cross sections are necessary during construction, the Engineer will contact the Designer for the proposed change.

Generally, all shallow inlet and outlet ditches as noted on the plan sheets will be cut with a 10-foot wide bottom with 5:1 backslopes. However, the Engineer may direct the Contractor to adjust the ditch width for proper alignment with the drainage structure.

Temporary fence and/or permanent fence will be placed ahead of the grading operation unless otherwise directed by the Engineer.

GENERAL GEOLOGY

The project alignment is underlain by Quaternary Alluvium and Mowry Shale. The South Dakota Geologic Survey describes these deposits/formations as outlined below:

Quaternary Alluvium consists of clay to boulder sized clasts with locally abundant organic material.

Mowry Shale consists of black to gray, siliceous, fissile shale and siltstone containing bentonite layers and sparse sandstone dikes.

CLASSIFICATION OF EXCAVATION

Most of the materials encountered should be able to be excavated using conventional methods associated with normal Unclassified Excavation.

UTILITIES

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.

File - ...\\pjl\\Bure04\\G4\\Notes\\SectionB.dgn

1:200
Plot Scale -
Plotted From -

SHRINKAGE FACTOR: Embankment +25%

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B3	B43

Plotting Date: 11/19/2025

TABLE OF EXCAVATION QUANTITIES BY BALANCES

Station to	Station	Excavation	* Undercut	* Contractor Furnished Borrow Exc.	Total Excavation	** Haul
		(CuYd)	(CuYd)	(CuYd)	(CuYd)	(CuYdSta)
65+75.00	76+92.63	1,522	2,427	145	4,094	2,853
	Totals:	1,522	2,427	145	4,094	2,853

- * The quantities for these items are in the Estimate of Quantities under their respective contract items.
** The quantities for these items are for information only.

TABLE OF UNCLASSIFIED EXCAVATION

	(CuYd)
Excavation	1,522
Undercut	2,427
Topsoil	289
Exc. for Granular Bridge End Backfill and/or Bridge End Embankment	3,596
Exc. for Bridge Berm(s) between bridge abutments and channel shaping	2,097
Total:	9,931

PROCEDURES FOR DETERMINING UNCLASSIFIED EXCAVATION QUANTITY

When plan quantities are used for payment, the Unclassified Excavation quantity will be used for final payment and the plans quantity of Topsoil and salvaged surfacing items listed in the Table of Unclassified Excavation will not be adjusted according to field measurements.

The following paragraphs are general earthwork information and information in regard to computing the Unclassified Excavation quantity when final cross sections are taken in the field:

The Unstable Material Excavation quantity is included in the Excavation quantity listed in the Table of Unclassified Excavation. When finaling a project, the Unstable Material Excavation quantity will be added to the Excavation quantity to compute the Unclassified Excavation quantity.

The Topsoil quantity in the Table of Unclassified Excavation is an estimate. When finaling a project, the total quantity of field measured Topsoil will be used in place of the estimated Topsoil quantity. The quantity of Topsoil from the cuts will be paid for twice as Unclassified Excavation, as it will be in both the Excavation and Topsoil quantities. This will be full compensation for Excavation, which includes necessary undercutting to provide space for placement of topsoil.

The Excavation quantities from individual balances and the Table of Unclassified Excavation have been reduced by the volume of in place surfacing that will be removed and/or salvaged.

The volume of in place Concrete Surfacing removed will NOT be paid for as Unclassified Excavation.

The Excavation quantities from individual balances and the table above have been reduced by the volume of in place concrete pavement that will be removed.

When finaling a project, the estimated quantity of 833 cubic yards of Concrete Pavement removed from the cut sections will be subtracted from the Unclassified Excavation quantity for final payment. The quantity of Concrete Pavement from cut sections subtracted from the Unclassified Excavation quantity will be plans quantity and will not be adjusted according to field measurements.

HAUL

Included in the Table of Excavation Quantities by Balances is Haul. This is not a pay item and is for informational purposes only. Haul was not estimated for moving Contractor Furnished Borrow Excavation. The mass haul diagram is available as part of the bid package for use in figuring this haul.

Haul: Estimated quantity (CuYdSta) for moving unclassified excavation material to the locations where it is needed throughout the earthwork balance.

For Purpose of Extra Haul Computations:

Average Haul = (Haul + Out-of-Balance Haul)/Unclassified Excavation = 2,853/9,931 = 0.3 Sta.

Compensation for “Extra Haul” will not be made for haul distances less than 5 stations. When payment for “Extra Haul” is authorized, the distance used for “Extra Haul” calculations will be that in excess of 5 stations.

UNDERCUTTING

In all cut sections, the earthen subgrade will be undercut 2 feet below the earthen subgrade surface. The undercut will extend from behind the curb to behind the opposite curb as needed for paving operations. Shallow embankment sections, fills less than 2 feet in height measured at the finished subgrade shoulders, will be undercut to ensure a minimum 2-foot height of earth embankment for the entire width of the roadbed. The undercut material or other suitable material, as directed by the Engineer, will then be replaced and recompactd to the density specified for the section being constructed.

The upper 6 inches of undercut material that consists of topsoil with a high humus content will be used as topsoil, placed in the fill slopes outside the shoulders of the earthen subgrade, or placed in the lower portion (below 4 foot depth) in fills which are greater than 4 feet in height. The remaining undercut soil and soil obtained from adjacent excavation (excluding the upper 6 inches) will then be replaced and compacted to the density specified for the section being constructed.

The plan shown quantity will be the basis of payment. However, if there are additional areas of undercut other than what is shown in the plans, the Engineer will direct removal of these areas and the additional areas will be measured according to the Engineer.

File - ...\\pjl\\Bure04\\Notes\\SectionB.dgn

1:200
Plot Scale -
Plotted From -

TABLE OF UNDERCUTTING QUANTITIES

Station	to	Station	Description	Quantity (CuYd)
65+75		76+92.63	Mainline – US Hwy 85	2,427
Total:				2,427

CONTRACTOR FURNISHED BORROW EXCAVATION

The Contractor will provide a suitable site for Contractor furnished borrow excavation material. The Contractor is responsible for obtaining all required permits and clearances for the borrow site. The borrow material will be approved by the Engineer. The plans quantity for “Contractor Furnished Borrow Excavation” as shown in the Estimate of Quantities will be the basis of payment for this item.

Restoration of the Contractor furnished borrow excavation site will be the responsibility of the Contractor.

PIPE CULVERT UNDERCUT

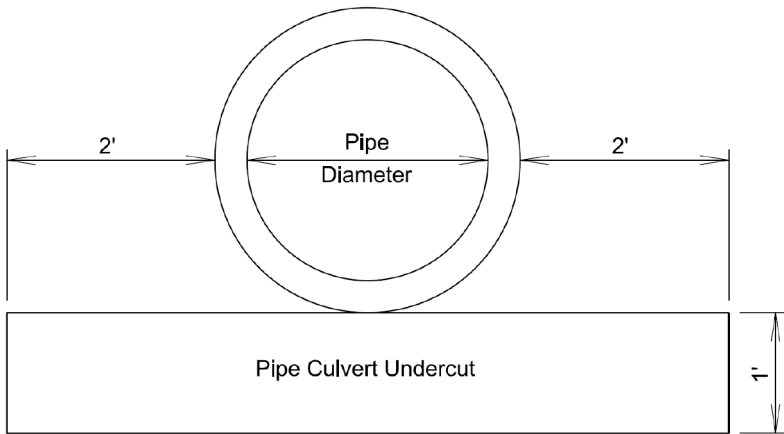
Pipe culvert undercut may be required for this project. The Engineer will determine which pipe will be undercut in accordance with Section 421 of the Specifications.

If pipe culvert undercut is required, the table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

The table below contains the rate for one-foot depth of pipe culvert undercut per foot of pipe length and should be used as an aid in determining the actual amount of undercut to be performed during construction. The table is derived from the drawing below and conforms to the Specifications. When calculating pipe culvert undercut, the length of pipe ends should be included in the overall pipe length.

Storm sewer and approach pipes do not require undercutting unless specified otherwise in these plans.

Pipe Diameter	Round Pipe Undercut Rate for 1’ Depth (CuYd/Ft)	Arch Pipe Undercut Rate for 1’ Depth (CuYd/Ft)
(In)		
24	0.2407	0.2577
30	0.2623	0.2847
36	0.2840	0.3110
42	0.3056	0.3337
48	0.3272	0.3596
54	0.3488	0.3827
60	0.3704	0.4105
66	0.3920	---
72	0.4136	0.4630
78	0.4352	---
84	0.4568	0.5123
90	0.4784	---



INCIDENTAL WORK, GRADING

Station	L/R	Remarks
65+95 to 66+13	R	Remove Landscape Blocks for Reset
65+95 to 66+13	R	Reset Landscape Blocks
66+04	R	Remove Tri-State Museum Sign for Reset
66+04	R	Reset Tri-State Museum Sign
68+26-26’ L to 68+26-25’ R		Take Out 18” – 50’ RCP
68+26-25’ R to 68+35-116’ R		Take Out 18” – 90’ RCP
74+67-24’ R to 75+18-26’ R		Take Out 18” – 48’ RCP
74+67-25’ L to 74+18-26’ L		Take Out 18” – 48’ RCP
74+67-25’ L to 74+67-25’ R		Take Out 24” – 50’ RCP
74+67-25’ L		Take Out 18” – 52’ CMP

REMOVAL OF EXISTING CONCRETE PAVEMENT
STA. 65+75.00 to STA. 68+33.65 and STA. 74+58.80 to STA. 76+92.63

Existing asphalt concrete and/or existing asphalt concrete patch work that was placed above the existing concrete pavement is included in the quantity for “Remove Concrete Pavement”. The Contractor will dispose of the concrete pavement and asphalt concrete at a site approved by the Engineer.

The existing concrete south of the bridge is 9.5” Non-Reinforced Plain Jointed PCC Pavement. The existing transverse joints are perpendicular and are spaced at 15 feet. The aggregate in the existing Plain Jointed PCC Pavement is Limestone.

The existing concrete north of the bridge is 8.5” Non-Reinforced 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 Limestone.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B4	B43

Plotting Date: 02/03/2026

TABLE OF CONCRETE PAVEMENT REMOVAL

Station	to	Station	Description	Quantity (SqYd)
65+75		68+34	Mainline Pavement Removal and Curb and Gutter Removal	1,759.9
74+59		76+93	Mainline Pavement Removal and Curb and Gutter Removal	1,561.4
Total:				3,321.3

TABLE OF CONCRETE CURB AND/OR GUTTER REMOVAL

Station	to	Station	L/R	Quantity (Ft)
65+61		65+75	L	59.3
Total:				59.3

TABLE OF CONCRETE DRIVEWAY PAVEMENT REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
75+33		75+73	R	22.1
76+32		76+73	L	22.3
Total:				44.4

TABLE OF SIDEWALK REMOVAL

Station	to	Station	L/R	Quantity (SqYd)
65+61		68+33	L	159.3
65+75		66+21	R	49.0
66+61		68+34	R	107.4
74+59		76+33	L	96.6
74+59		75+33	R	43.6
75+73		76+93	R	68.0
76+73		76+93	L	11.7
Total:				535.6

File - ...lpj\Bure04\G4\Notes\SectionB.dgn

1:200
Plot Scale -

Plotted From -
TRPR07190

TABLE OF DROP INLET REMOVAL

All costs for removal of the frame and grate assembly will be incidental to the contract unit price per each for "Remove Drop Inlet".

Station	L/R	Quantity (Each)
68+26	L	1
68+26	R	1
74+67	L	1
74+67	R	1
75+18	L	1
75+18	R	1
Total:		6

REINFORCED CONCRETE PIPE

High sulfate levels are likely to be encountered on this project. The type of cement will be either a Type V or a Type II with 20% to 25% Class F Modified Fly Ash substituted for cement in accordance with Section 605 of the Specifications. The Water/Cementitious material ratio will not exceed 0.45 as defined in Section 460.3 C of the Specifications. The mix will be as per the fabricator's design; however, minimum compressive strength will not be less than 4500 psi at 28 days. The pipe must be marked in an acceptable way to designate meeting requirements for sulfate resistance.

CORRUGATED METAL PIPE

Areas within the project have soils that are highly corrosive to steel. Corrugated metal pipe in these areas will be polymer coated 14 gauge steel as specified in the Table of Pipe Quantities. Any required connection bands, elbows, tees, crosses, wyes, reducers, and transitions will also be polymer coated. The connection bands will be 24 inches wide. All polymer coated corrugated metal pipe and components will be in conformance with AASHTO M245. Riveted pipe will not be allowed.

All damage to the polymer coating will be repaired in accordance with the manufacturer's recommendations prior to installation of the pipe.

All costs associated with the polymer coating including repair of polymer coating will be incidental to the corresponding CMP contract items.

Metal pipe end sections connected to polymer coated CMP will be aluminum-coated (Type 2) in accordance with AASHTO M36 as specified in the Table of Pipe Quantities. All costs associated for gauge, coating, and connections will be incidental to the corresponding CMP End Section contract items.

STORM SEWER

Reinforced concrete pipe may be bell and spigot. The pipe sections will be adjoined such that the ends are fully entered and the inner surfaces are reasonably flush and even.

Lift holes in the reinforced concrete pipe will be plugged with grout.

Watertight joints are required for reinforced concrete pipe, drop inlets, manholes, and junction boxes where storm sewers run parallel to and within 10 feet horizontally from existing or proposed water mains.

Watertight joints are required where reinforced concrete pipes, drop inlets, manholes, or junction boxes cross water mains and are separated a distance of 18 inches or less, above or below, the water main.

If watertight joints are required then the watertight joints will extend for a distance of 10 feet beyond the water main. This measurement will be from the sealed concrete joint to the outer most surface of the water main.

Watertight joint seals will conform to the following requirements:

- Reinforced Concrete Pipe (Circular): Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe will be sealed with a mastic joint seal conforming to the requirements of ASTM C990 and encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.
- Reinforced Concrete Pipe (Arch): Gasketed pipe will conform to the requirements of ASTM C443 and the gasket will be in conformance with Section 990 of the Specifications. Non-gasketed concrete pipe joints will be sealed with a hydrophilic flexible water stop seal and wrapped with a 1-foot wide strip of fabric above the cradle. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage Fabric. The hydrophilic flexible water stop will be from the list below.
- Drop Inlets, Manholes, and Junction Boxes: Joints will be sealed with one of the following methods:
 - A flexible strip seal placed in the joints conforming to the requirements of ASTM C990 and the perimeter encased with a minimum 2-foot wide by 6-inch thick M6 concrete collar reinforced with 6x6 W2.9 x W2.9 wire mesh.
 - A hydrophilic flexible water stop seal placed in the joints and a 1-foot wide strip of fabric wrapped around the perimeter of the pipe. The fabric will conform to the requirements of Section 831 of the Specifications for Type A Drainage
 - Fabric. The hydrophilic flexible water stop will be from the list below.
 - A self-adhesive external joint seal wrap. The seal wrap will be from the list below.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B5	B43

Plotting Date: 02/02/2026

Approved List of Self-adhesive Joint Wrap

Product	Manufacturer
Mar Mac Seal Wrap	Mar Mac Construction Products McBee, SC 843-335-5909 http://www.marmac.com
ConWrap CS-212	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com

Approved List of Hydrophilic Flexible Water Stop Seal:

Product	Manufacturer
Waterstop RX	Cetco Hoffman Estates, IL 800-527-9948 http://www.cetco.com
Conseal CS-231	Concrete Sealants, Inc. Tipp City, OH 800-332-7325 http://www.conseal.com

Gaskets and seals (mastic, waterstop, and seal wraps) will be installed in accordance with the Manufacturer's recommendations.

The cost for furnishing and installing all gaskets, mastic joint seal, water stop seal, seal wrap, concrete collars, and for plugging the lift holes will be incidental to the contract unit price per foot for the corresponding pipe contract item.

File - ...lp7\Bure04\Notes\SectionB.dgn

1:200
Plot Scale -

Plotted From -
TRPR17190

DROP INLETS

Where drop inlets are constructed within areas of curb and gutter, the Contractor will construct weep holes of at least 3 inches in diameter in the drop inlet walls. The weep holes will be constructed at the same elevation as the adjacent top of the earthen subgrade and will be maintained clean and open at all times until the permanent surfacing is placed. The drop inlets will be covered throughout construction operations as necessary with an Engineer approved cover to provide safe travel for motorists and to prevent materials from entering the storm sewer system. After the permanent surfacing has been placed, the Contractor will seal the weep holes with grout and remove all debris from the drop inlet. All costs involved with the coverings, weep holes, and removing debris from the drop inlets will be incidental to the contract unit prices for the components of the drop inlets.

The plan shown quantities of the 2' x 3' Type B Drop Inlet, Type B Frame and Grate, and Precast Drop Inlet Collar will be the basis of payment for these items.

If additions or reductions to the number of drop inlets are ordered by the Engineer, payment for the components required to construct the drop inlets will be made at the contract unit prices for the components of the drop inlets.

TABLE OF DROP INLETS AND QUANTITIES

Station	L / R	Drop Inlet Size	Drop Inlet Type	Precast Drop Inlet Collar (Each)	Frame and Grate/Lid Type
68+18.96	L	2'x3'	B	1	B
68+18.75	R	2'x3'	B	1	B
74+71.31	L	2'x3'	B	1	B
74+71.25	R	2'x3'	B	1	B
75+18.16	L	2'x3'	B	1	B
75+18.14	R	2'x3'	B	1	B
Totals:				6	
Total Type B Frame and Grate					6
Total 2 'x 3' Type B Drop Inlet					6

TABLE FOR ADJUSTMENT OF WATER VALVES

Station	Adjustment
76+81-42' R	Lower 0.19'

TABLE OF PVC COATED BANK AND CHANNEL PROTECTION GABIONS AND DRAINAGE FABRIC

Station	L/R	PVC Coated Bank and Channel Protection Gabion (CuYd)	Type B Drainage Fabric (SqYd)
74+67	L	4.5	15
Totals:		4.5	15

COLORED CONCRETE FOR SIDEWALK

The colored concrete will have the integral color Solomon Brick Red #417 or an equal approved by the Engineer.

ColorFlo Liquid Color
Color #417 Brick Red
Solomon Colors, Inc.
<http://www.solomoncolors.com>

Brick Red requires a rate of 12.50 pounds of Solomon ColorFlo #417 Red per cubic yard of concrete. The colored concrete must be cured according to the manufacturer's recommendations with two coats of a non-yellowing acrylic curing and sealing compound. The curing and sealing compound will meet ASTM C309. The curing and sealing product will produce a glossy or high gloss finish and be DECRA-SEAL or CS-309-30 or an approved equal.

DECRA-SEAL
W.R. Meadows, Inc.
1-800-342-5976
<http://www.wrmeadows.com>

White pigmented cure will not be used. The Contractor will protect the colored concrete to ensure white pigmented curing compound will not come in contact with the colored concrete. All costs for furnishing, handling, applying the curing and sealing compound, and liquid integral color, including the materials, equipment, labor, and incidentals necessary will be incidental to the contract unit price for "6" Colored Concrete Sidewalk

TABLE OF 6" COLORED CONCRETE SIDEWALK

Station	to	Station	L/R	Quantity (SqFt)
65+75.00		66+13.87	R	179.2
Total:				179.2

TABLE OF TYPE B69.5 CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
65.61.48		68+25.75	L	264.4
65+75.00		66+24.05	R	57.2
66+58.61		68+25.75	R	174.4
74+64.25		76+92.63	L	228.8
74+64.25		75+33.00	R	68.8
75+73.00		76+92.63	R	119.6
Total:				913.2

TABLE OF TYPE P9.5 CONCRETE CURB AND GUTTER

Station	to	Station	L/R	Quantity (Ft)
75+33.00		75+73.00	R	40.0
Total:				40.0

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B6	B43

Plotting Date: 08/31/2026 08/31/2026 RU

9.5" PCC FILLET SECTIONS

Payment for "9.5" PCC Fillet Section" will be based on plans quantity. If additions or reductions to the area of PCC fillet sections are ordered by the Engineer, payment will be made in accordance with the contract unit price per square yard for "9.5" PCC Fillet Section".

TABLE OF 9.5" PCC FILLET SECTION

Station	to	Station	L/R	Radius (Ft)	Quantity (SqYd)
66+09.28		66+24.05	R	15	5.34
66+58.61		66+73.76	R	15	5.31
Total:					10.6

TABLE OF 8" PCC APPROACH PAVEMENT

Station	L/R	Opening (Ft)	Type	Quantity (SqYd)
75+53.00	R	40	B	65.5
Total:				65.5

TABLE OF 6" CONCRETE SIDEWALK

Station	to	Station	L/R	Quantity (SqFt)
65+61.48		68+25.75	L	1,593.4
65+75.00		66+21.39	R	250.8
66+61.26		68+25.75	R	1,029.0
74+64.25		76+92.63	L	1,376.4
74+64.25		75+26.33	R	382.4
75+79.66		76+92.63	R	681.6
Total:				5,313.6

File - ...lpj\Bure04\Notes\SectionB.dgn

1:200
Plot Scale -
Plotted From -

TYPE 1 DETECTABLE WARNINGS

Detectable warnings will be in compliance with the Americans with Disabilities Act regulations.

The detectable warnings will be installed according to the manufacturer's installation instructions.

A concrete thickness equal to the adjacent concrete sidewalk thickness and 2 inches of granular cushion material will be placed below the Type 1 Detectable Warnings. When concrete is placed below the detectable warnings then the concrete thickness will be transitioned at the rate of 1" per foot to match the adjacent concrete sidewalk thickness.

The detectable warnings will be a brick red color for application in concrete curb ramps. Cast iron plates may be a natural patina (weathered steel).

Type 1 Detectable Warning Panels will be one of the following products:

Type 1 Detectable Warnings

Product	Manufacturer
Detectable Warning Plate Cast Iron Plate	Neenah Foundry Company Neenah, WI 800-558-5075 http://www.neenahfoundry.com/
Detectable Warning Plate Cast Iron Plate	Deeter Foundry Lincoln, NE 800-234-7466 http://www.deeter.com/
Detectable Warning Plate Cast Iron Plate(No Coating)	East Jordan Iron Works, Inc. 301 Spring Street East Jordan, MI 49727 800-626-4653 http://www.ejiw.com
Iron Dome Cast Iron Detectable Warning Tile	ADA Solutions, Inc. 323 Andover Street Suite 3 Wilmington, MA 01887 800-372-0519 https://adatile.com
TufTile (wet-set) Cast Iron Replaceable Tile	TufTile 1200 Flex Court Lake Zurich, IL 60047 888-960-8897 http://www.tuftile.com/
Advantage Tactile Detectable Warning Cast Iron Plate	Advantage Tactile Systems, Inc. 241 Main Street, Suite 100 Buffalo, NY 14203 800-679-4022 https://advantagetactile.com/

TABLE OF TYPE 1 DETECTABLE WARNINGS

Station	L/R	Quantity (SqFt)
66+18.62	37.72' R	10
66+64.80	37.76' R	10
Total:		20

TABLE OF SUPERELEVATION

Station	to	Station	
65+75.00		66+00.00	- Superelevation Transition To Match Existing Roadway
66+00.00		76+67.63	- Normal Crown Section
76+67.63		76+92.73	- Superelevation Transition To Match Existing Roadway

PUBLIC LANDS SURVEY SYSTEM, RIGHT OF WAY, AND PROPERTY CORNERS

The Contractor will have a Land Surveyor, licensed in the State of South Dakota, to set, reestablish or verify public land survey system (PLSS) corners, right of way (ROW) corners, and property corners as directed by the appropriate SDDOT Region Land Surveyor. It is estimated that 0 PLSS corners and 27 ROW and property corners will be set, reestablished, or verified for this project. The Contractor's Land Surveyor, under the direction of the Region Land Surveyor, will set, reestablish, or verify all corner monuments after surfacing and fencing operations are completed in accordance with the PUBLIC LANDS SURVEY SYSTEM CORNERS section and the RIGHT OF WAY AND PROPERTY CORNERS section in Chapter 8 of the SDDOT Survey Manual.

<<https://dot.sd.gov/doing-business/engineering-design-services/surveyors/>>

The SDDOT Region Land Surveyor will furnish the ROW corner caps, property corner caps, and guard posts for ROW corners in rural areas. All costs associated with furnishing and installing rebar, PLSS corner caps, and all other materials associated with setting, reestablishing, or verifying PLSS corners, ROW corners, and property corners in accordance with the SDDOT Survey Manual will be incidental to the contract unit price per each for "Reestablish Public Land Survey System Corner" and/or "Reestablish Right-of-Way and Property Corner".

CONCRETE RIGHT OF WAY MARKER

The Concrete Right of Way Marker and installation locations will conform to the details on standard plate 900.15. The exact location of the Right of Way. corners to be marked by Concrete Right of Way Markers can be found in the Set Corner Report and Set Corner Plans provided in the SharePoint Directory for Contractors. The Location Descriptions in the table below reference the Set Corner Report and Set Corner Plans. Install Concrete Right of Way Markers 10 feet from both sides of entrances that are centered on property lines without fence, so that a marker is not placed in the entrance.

TABLE OF CONCRETE RIGHT OF WAY MARKER

Location Description	Quantity (Each)
Set R.O.W. Corner 817	1
Set R.O.W. Corner 818	1
Set R.O.W. Corner 190	1
Found R.O.W. Corner 1076	1
Set R.O.W. Corner 189	1
Found Property Corner 1070	1
Found R.O.W. Corner 1122	1
Total:	7

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B7	B43

Plotting Date: 02/17/2026

Plotted From - TRPR17192
Plot Scale - 1:200

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B8	B43

Plotting Date: 11/19/2025

TABLE OF CONSTRUCTION STAKING
(See Special Provision for Contractor Staking)

					Grade Staking							
Roadway and Description	Begin Station	End Station	Number of Lanes	Length (Ft)	Length (Mile)	Lane Factor	*Sets of Stakes	**Grade Staking Quantity (Mile)	Miscellaneous Staking Quantity (Mile)	Slope Staking Quantity (Mile)	Final Cross Section Survey Quantity (Mile)	Structure Staking Quantity (Each)
US 85 (5 Lanes PCCP)	65+75	68+26	5	251	0.048	2.5	2	0.240	0.240	0.240	0.240	
US 85 (4 Lanes PCCP)	68+26	76+93	4	867	0.164	2	2	0.656	0.656	0.656	0.656	
Str. No. 10-098-371												1
							Totals:	0.896	0.896	0.896	0.896	1

- * 2 = Blue Top and Paving Hub Stakes (PCC Pavement)
- ** Grade Staking Quantity = (Length) x (Lane Factor) x (Sets of Stakes)

PIPE QUANTITIES

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B9	B43

Plotting Date: 02/02/2026

[illegible]

* Pipes denoted with an asterisk(*) indicate that the entire length or a portion of the pipe requires watertight joints in accordance with the STORM SEWER plan note.

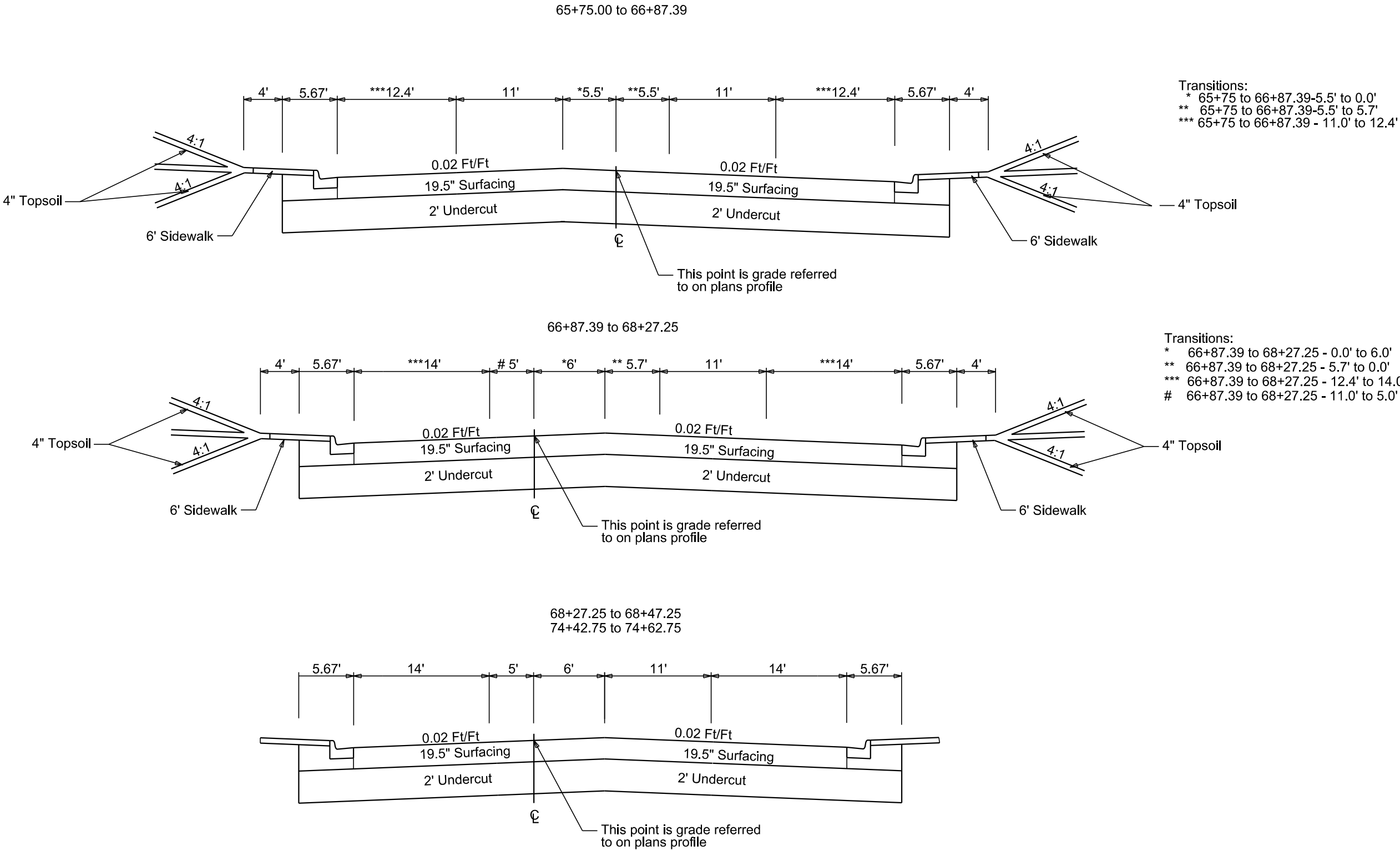
** These pipe and elbows will be polymer coated in accordance with the CORRUGATED METAL PIPE plan note.

*** These pipe ends will be aluminum-coated (Type 2) in accordance with the CORRUGATE METAL PIPE plan note.

TYPICAL GRADING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B10	B43

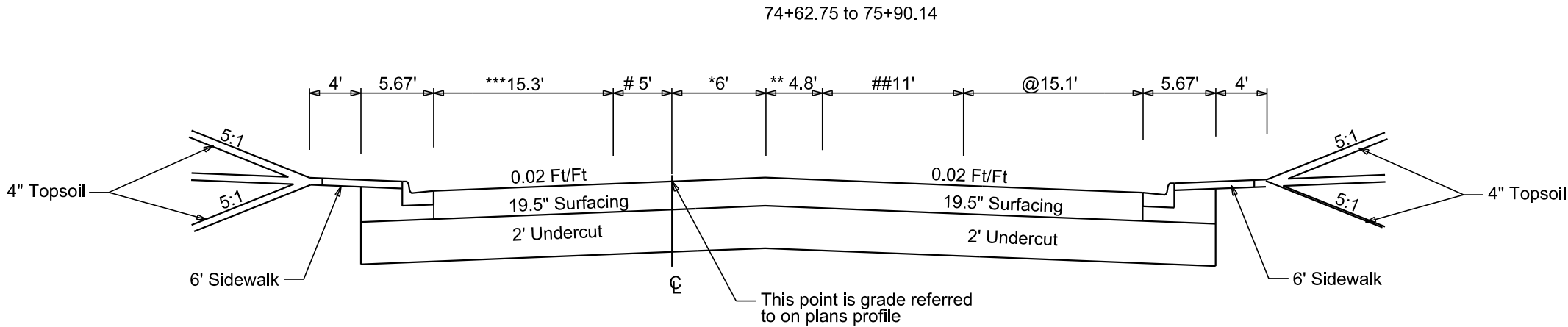
Plotting Date: 01/13/2026



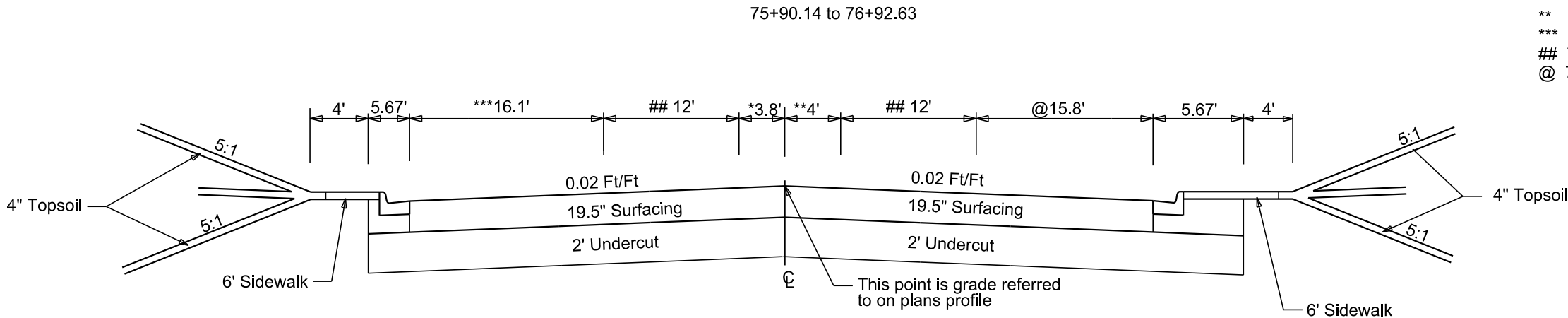
TYPICAL GRADING SECTIONS

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B11	B43

Plotting Date: 01/13/2026



Transitions:
* 74+62.75 to 75+90.14 - 6.0' to 0.0'
** 74+62.75 to 75+90.14 - 0.0' to 4.8'
*** 74+62.75 to 75+90.14 - 14.0' to 15.3'
74+62.75 to 75+90.14 - 5.0' to 11.6'
74+62.75 to 75+90.14 - 11.0' to 11.6'
@ 74+62.75 to 75+90.14 - 14.0' to 15.1'



Transitions:
* 75+90.14 to 76+92.63 - 0.0' to 3.8'
** 75+90.14 to 76+92.63 - 4.8' to 4.0'
*** 75+90.14 to 76+92.63 - 15.3' to 16.1'
75+90.14 to 76+92.63 - 11.6' to 12'
@ 75+90.14 to 76+92.63 - 15.1' to 15.8'

1:200

Plot Scale -

TRPR17190

Plotted From -

File - U:\rtp\j\Bute04\G4\typ.dgn

Plot Scale - 1:200

Plotted From - TRPR17192

HORIZONTAL ALIGNMENT DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B12	B43

Plotting Date: 11/19/2025

MAINLINE					
Type	Station			Northing	Easting
POB	64+38.00			330182.644	966407.642
		TL= 1292.00	N 2°29'38" E		
POE	77+30.00			331473.420	966463.862

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/2011); epoch 2010.00; Geoid 18; SF = 0.99981638

Plotted From - TRPR17190
Plot Scale - 1:200

CONTROL DATA

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B13	B43

Plotting Date: 02/17/2026

HORIZONTAL AND VERTICAL CONTROL POINTS						
POINT	STATION	OFFSET	DESCRIPTION	NORTHING	EASTING	ELEVATION
CP11	68+54	363' L	1" ALUM CAP	330614.516	966063.492	3017.09
CP3	69+87	255' R	PK NAIL ON SIDEWALK	330720.150	966686.171	3008.47
CP10	71+55	335' R	1" ALUM CAP	330883.899	966773.792	3027.66
CP12	76+13	40' L	1" ALUM CAP	331357.951	966418.847	3049.31

The coordinates shown on this sheet are based on the South Dakota State Plane Coordinate System. North Zone (NAD 83/2011); epoch 2010.00
Geoid 18; SF = 0.99981638
The elevations shown on this sheet are based on NAVD 88.

1:200
Plot Scale -
TRPR17192
Plotted From -

LEGEND

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B14	B43

Plotting Date: 11/19/2025

Anchor		Mailbox		Subsurface Utility Exploration Test Hole		State and National Line	
Antenna		Manhole Electric		Telephone Fiber Optics		County Line	
Approach		Manhole Gas		Telephone Junction Box		Section Line	
Assumed Corner		Manhole Miscellaneous		Telephone Pole		Quarter Line	
Azimuth Marker		Manhole Sanitary Sewer		Television Cable Jct Box		Sixteenth Line	
BBQ Grill/ Fireplace		Manhole Storm Sewer		Television Tower		Property Line	
Bearing Tree		Manhole Telephone		Test Wells/Bore Holes		Construction Line	
Bench Mark		Manhole Water		Traffic Sign Double Face		ROW Line	
Box Culvert		Merry-Go-Round		Traffic Sign One Post		New ROW Line	
Bridge		Microwave Radio Tower		Traffic Sign Two Post		Cut and Fill Limits	
Brush/Hedge		Miscellaneous Line		Traffic Signal		Control of Access	
Buildings		Miscellaneous Property Corner		Trash Barrel		New Control of Access	
Bulk Tank		Miscellaneous Post		Tree Belt		Proposed ROW	
Cattle Guard		Overhang Or Encroachment		Tree Coniferous		(After Property Disposal)	
Cemetery		Overhead Utility Line		Tree Deciduous			
Centerline		Parking Meter		Tree Stumps		Drainage Arrow	
Cistern		Pedestrian Push Button Pole		Triangulation Station			
Clothes Line		Pipe With End Section		Underground Electric Line		Remove Concrete Pavement	
Concrete Symbol		Pipe With Headwall		Underground Gas Line		Remove Concrete Driveway Pavement	
Control Point		Pipe Without End Section		Underground High Pressure Gas Line		Remove Asphalt Concrete Pavement	
Creek Edge		Playground Slide		Underground Sanitary Sewer		Remove Concrete Sidewalk	
Curb/Gutter		Playground Swing		Underground Storm Sewer		Remove Concrete Median Pavement	
Curb		Power And Light Pole		Underground Tank		Remove Concrete Curb and/or Gutter	
Dam Grade/Dike/Levee		Power And Telephone Pole		Underground Telephone Line			
Deck Edge		Power Meter		Underground Television Cable		Detectable Warning	
Ditch Block		Power Pole		Underground Water Line		Pedestrian Push Button Pole	
Doorway Threshold		Power Pole And Transformer		Water Fountain		and 30" x 48" Clear Space	
Drainage Profile		Power Tower Structure		Water Hydrant		with 1.5% slope	
Drop Inlet		Propane Tank		Water Meter			
Edge Of Asphalt		Property Pipe		Water Tower			
Edge Of Concrete		Property Pipe With Cap		Water Valve			
Edge Of Gravel		Property Stone		Water Well			
Edge Of Other		Public Telephone		Weir Rock			
Edge Of Shoulder		Railroad Crossing Signal		Windmill			
Electric Transformer/Power Junction Box		Railroad Milepost Marker		Wingwall			
Fence Barbwire		Railroad Profile		Witness Corner			
Fence Chainlink		Railroad ROW Marker					
Fence Electric		Railroad Signs					
Fence Miscellaneous		Railroad Switch					
Fence Rock		Railroad Track					
Fence Snow		Railroad Trestle					
Fence Wood		Rebar					
Fence Woven		Rebar With Cap					
Fire Hydrant		Reference Mark					
Flag Pole		Retaining Wall					
Flower Bed		Riprap					
Gas Valve Or Meter		River Edge					
Gas Pump Island		Rock And Wire Baskets					
Grain Bin		Rockpiles					
Guardrail		Satellite Dish					
Gutter		Septic Tank					
Guy Pole		Shrub Tree					
Haystack		Sidewalk					
Highway ROW Marker		Sign Face					
Interstate Close Gate		Sign Post					
Iron Pin		Slough Or Marsh					
Irrigation Ditch		Spring					
Lake Edge		Stream Gauge					
Lawn Sprinkler		Street Marker					

Plot Scale - 1"=40'

Plotted From - TRPR17190

68+47.25 to 74+42.75 (3314.8 sq mi)
Install 595'-6" Steel Girder Bridge
(See Section E)

68+18.96-19.90' L to 68+18.76-31.57' R
Install 18"-52' RCP
(Between Drop Inlets)

68+18.75-33.57' R to 68+30.12-91.91' R
Install 18"-12' RCP
Install 18"-42' CMP (30', & 12')
And 2-12.5° Elbows
& 1-18" RCP to CMP Outlet Transition
& 1 CMP Flared End
(Outlet from Drop Inlet)

Install 2'x3' Type B Drop Inlet
with 6" Concrete Collar and
Type B Frame and Grate
at the following locations:
68+18.96 - 20.90' L
68+18.75 - 32.57' R

68+26-26' L to 68+26-25' R
Take Out 18"-50' RCP
(Incidental Work, Grading)

68+26-25' R to 68+35-116' R
Take Out 18"-90' RCP
(Incidental Work, Grading)

68+56 to 74+36
Take Out 583.5' Bridge
Str. No. 10-098-371
(Incidental Work, Structure)
(See Section E)

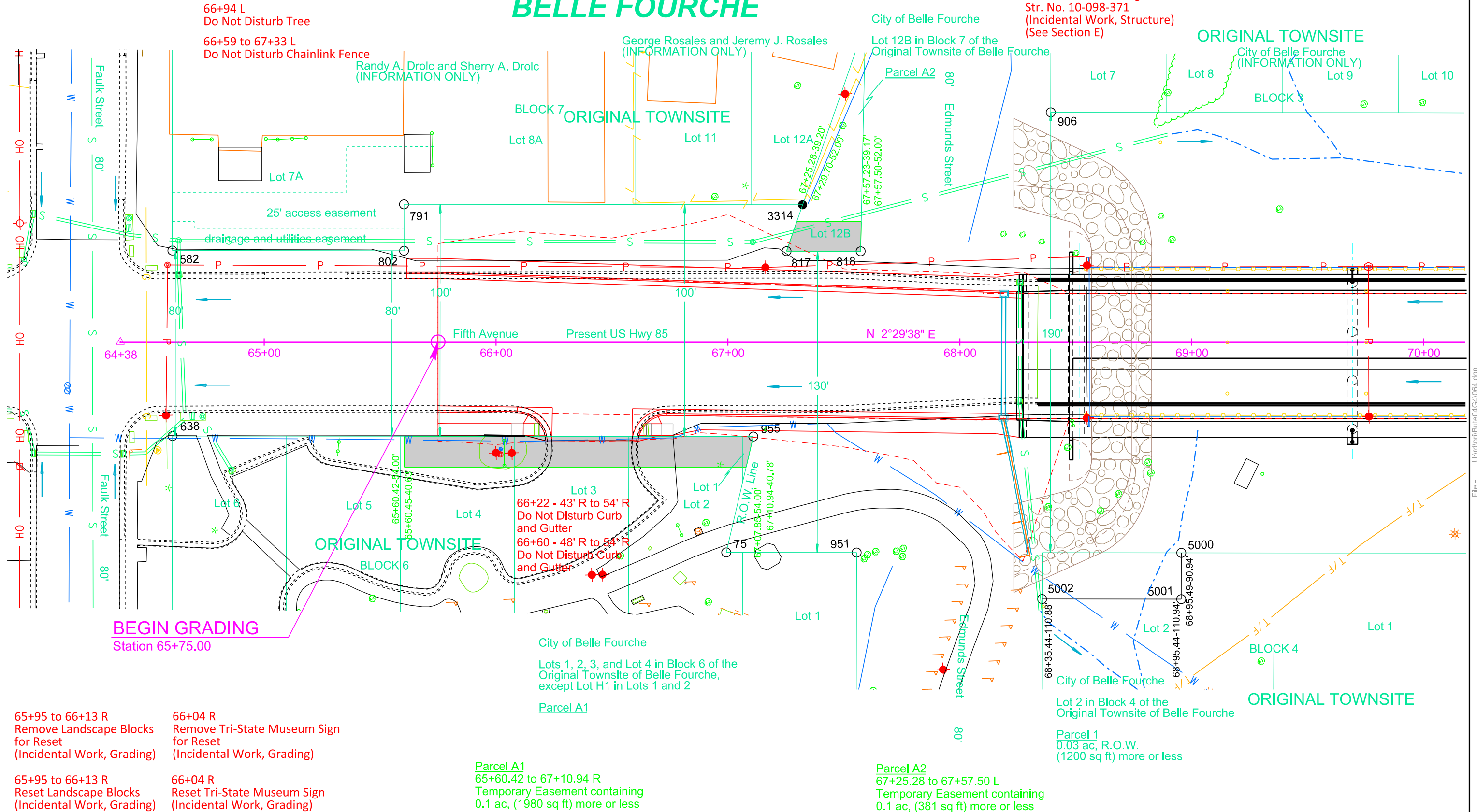
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B15	B43

Plotting Date: 02/17/2026

Remove Drop Inlets
with Frame and Grate
at the following locations:
68+26-26' L
68+26-25' R



BELLE FOURCHE



65+95 to 66+13 R
Remove Landscape Blocks
for Reset
(Incidental Work, Grading)

66+04 R
Remove Tri-State Museum Sign
for Reset
(Incidental Work, Grading)

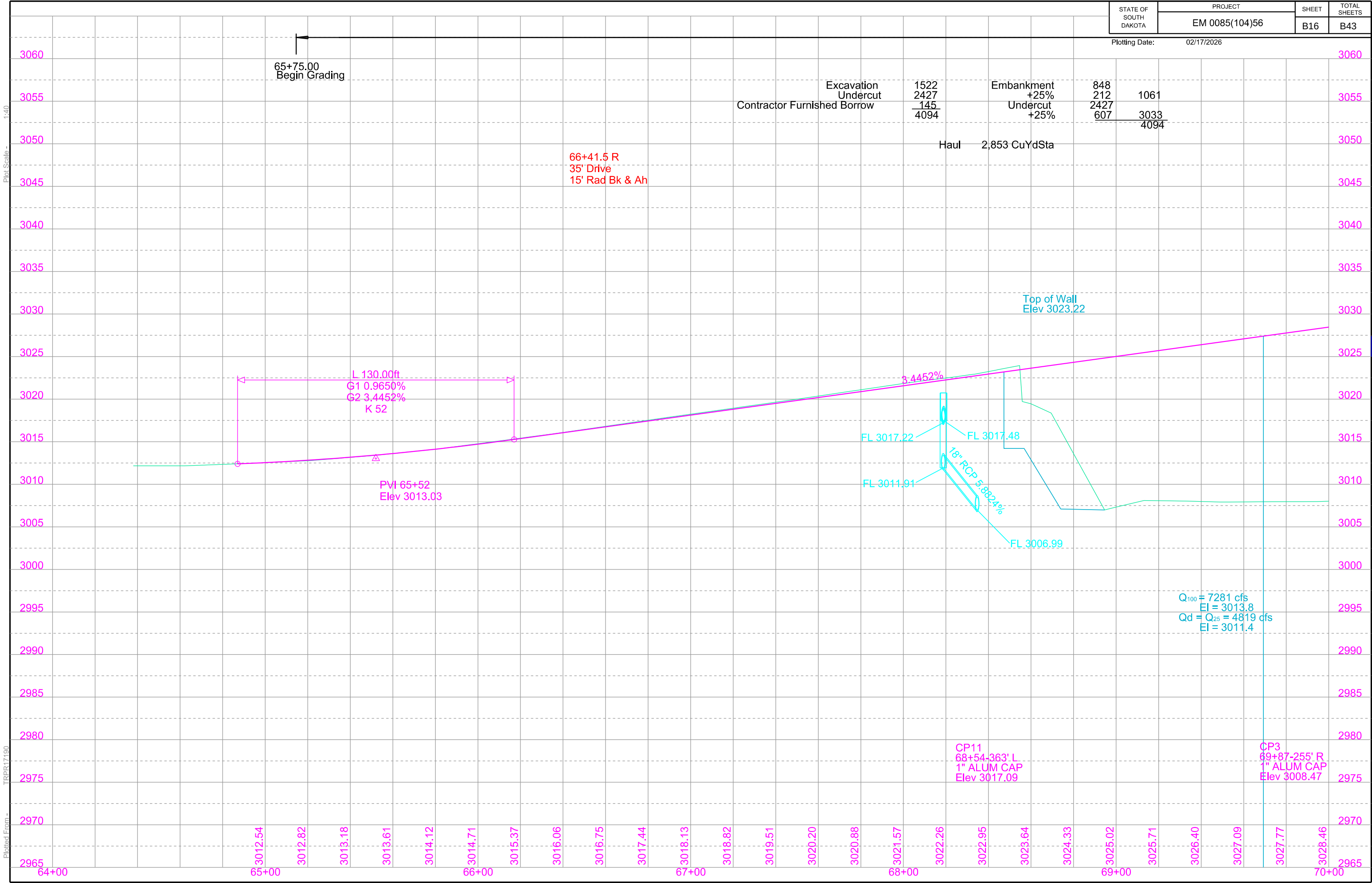
65+95 to 66+13 R
Reset Landscape Blocks
(Incidental Work, Grading)

66+04 R
Reset Tri-State Museum Sign
(Incidental Work, Grading)

Parcel A1
65+60.42 to 67+10.94 R
Temporary Easement containing
0.1 ac, (1980 sq ft) more or less

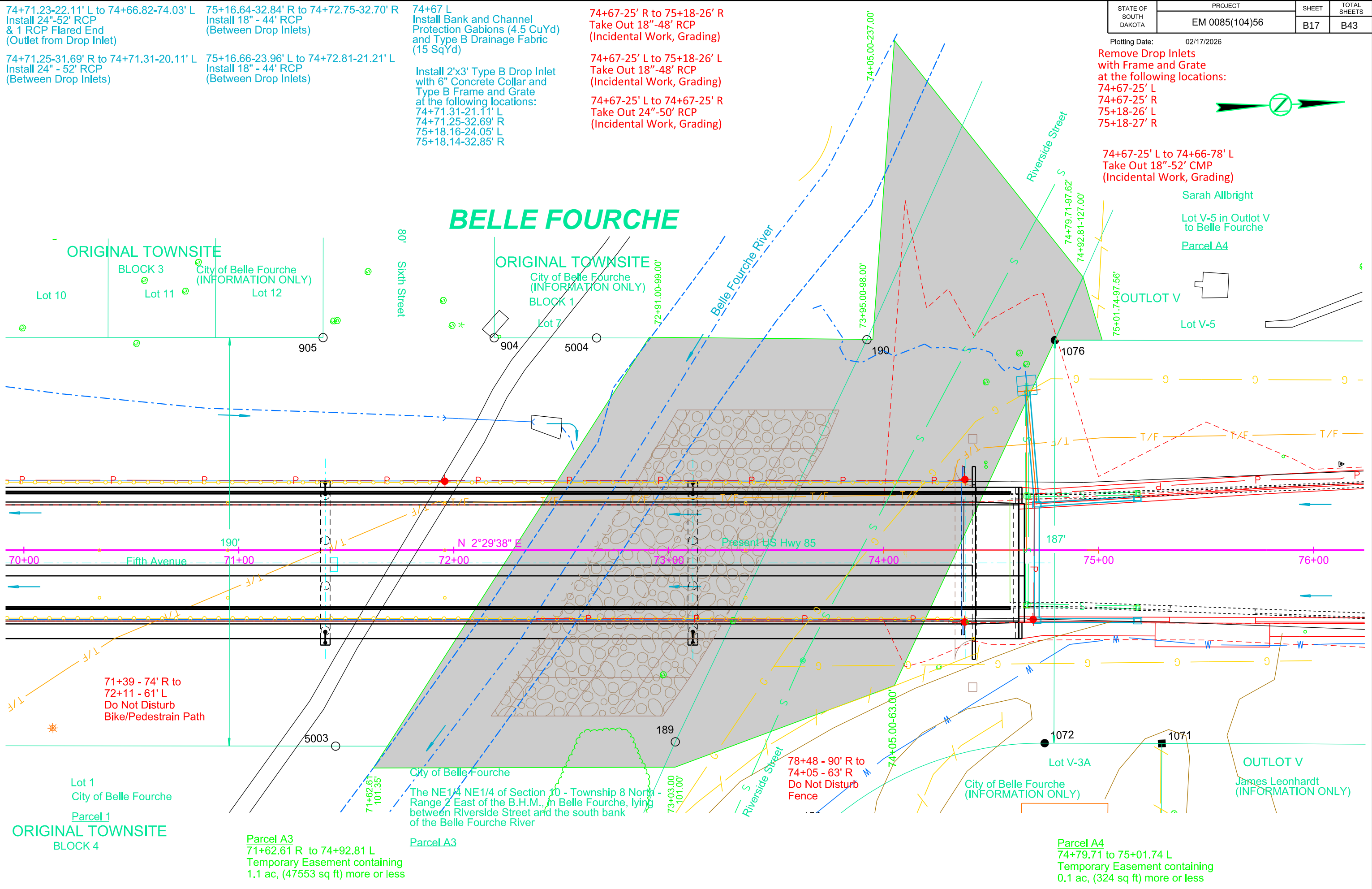
Parcel A2
67+25.28 to 67+57.50 L
Temporary Easement containing
0.1 ac, (381 sq ft) more or less

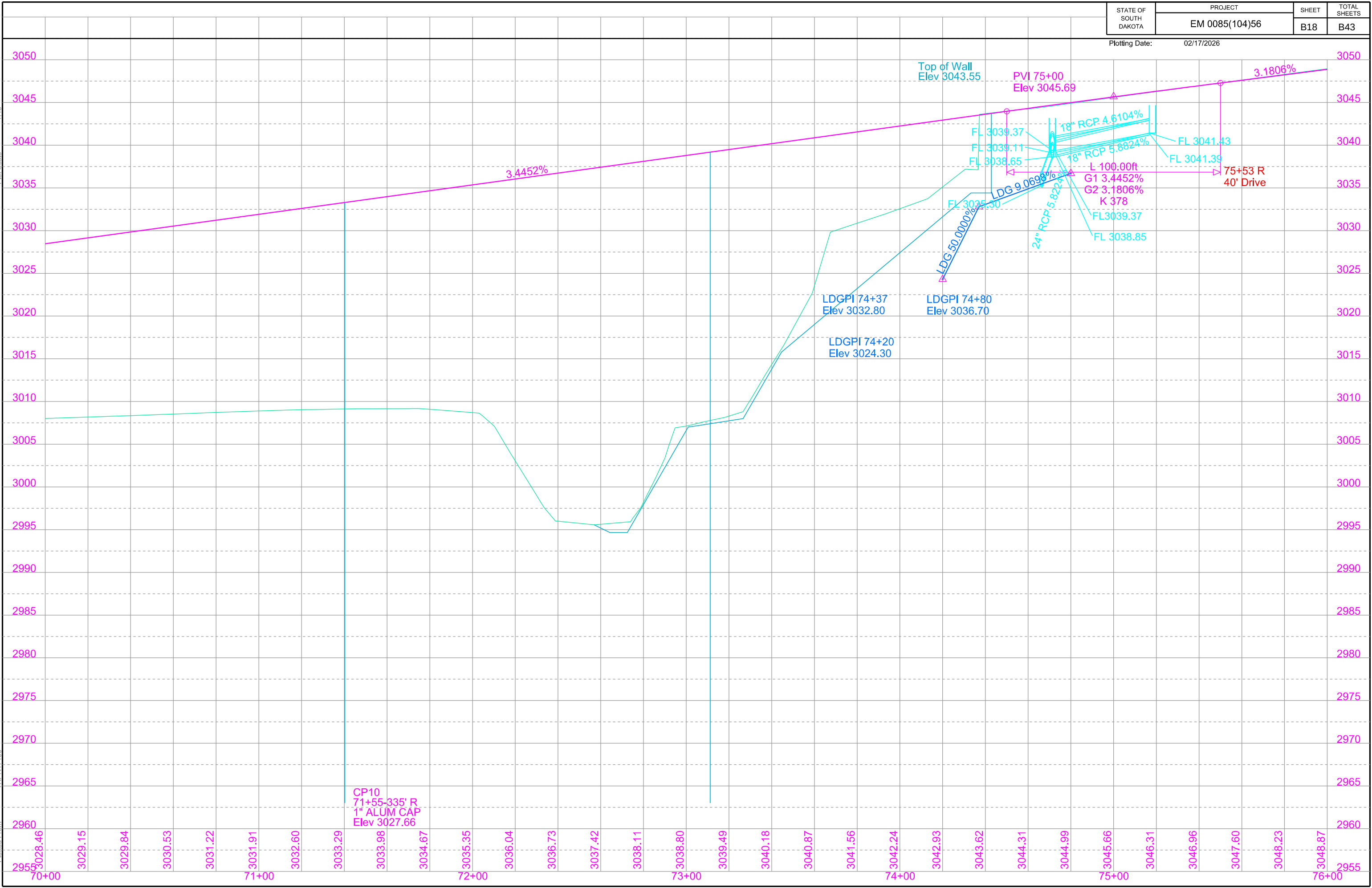
File - Untrd\proj\Bute04\G+1064.dgn



Plot Scale - 1"=40'

Plotted From - TRPR17190

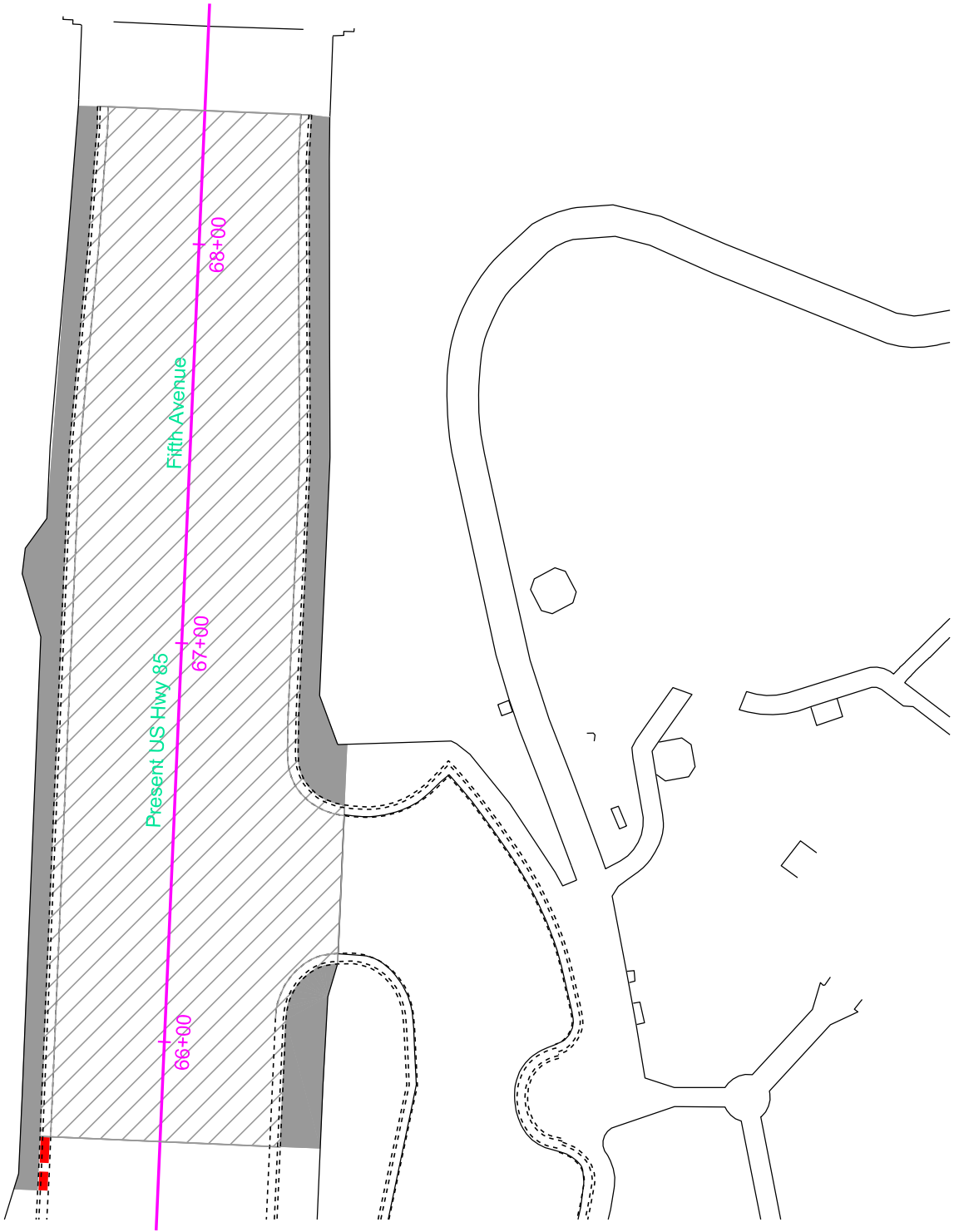




PAVEMENT REMOVAL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B21	B43

Plotting Date: 11/20/2025



- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Salvage Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement
- Remove Concrete Curb and/or Gutter

Plot Scale - 1:40

Plotted From - TRPR17190

Plotted From - TRPR17190 Plot Scale - 1"=40'

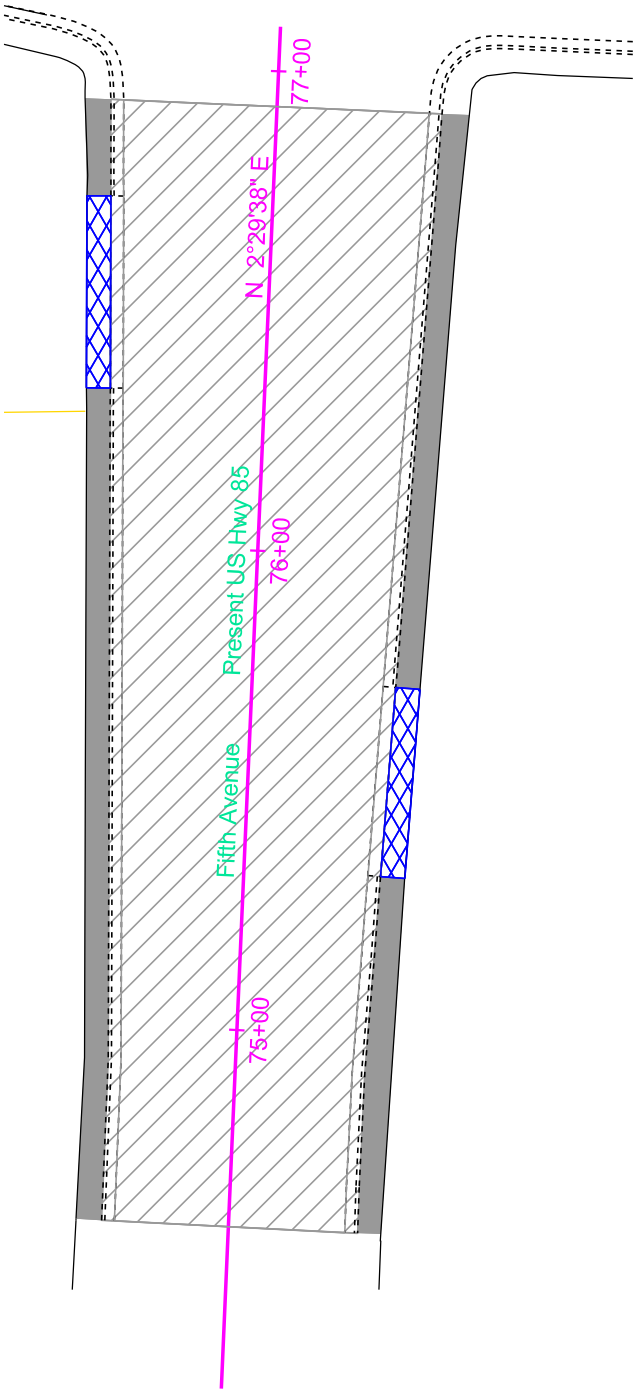
PAVEMENT REMOVAL LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B22	B43

Plotting Date: 11/20/2025

- Remove Concrete Pavement
- Remove Concrete Driveway Pavement
- Remove Asphalt Concrete Pavement
- Salvage Asphalt Concrete Pavement
- Remove Concrete Sidewalk
- Remove Concrete Median Pavement

Remove Concrete Curb and/or Gutter



CURB AND GUTTER LAYOUT

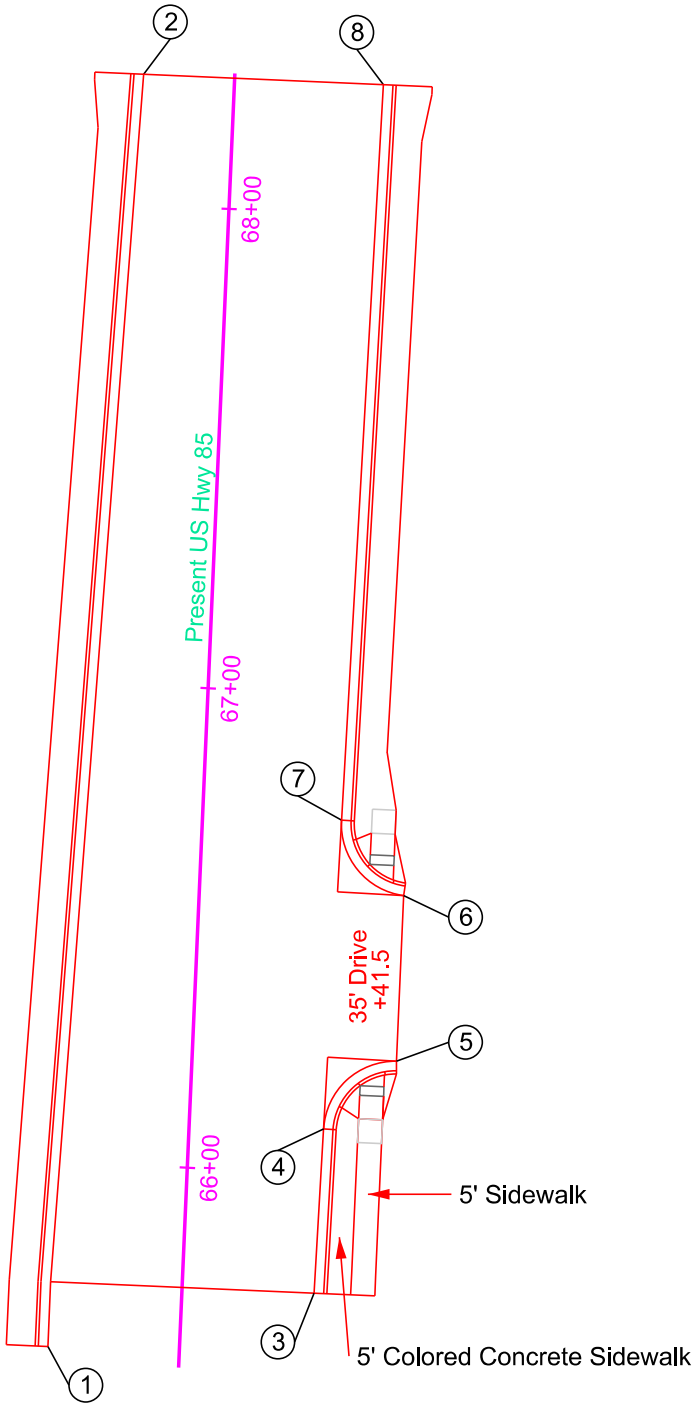
Note: All curb and gutter shown on this sheet is Type B69.5 except as noted.
All sidewalk is 6' wide except as noted.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B23	B43

Plotting Date: 02/03/2026



- 1 65+61.48-27.43' L
Begin Str C&G
TC Elev (Match Existing)
- 2 68+27.25-19.00' L
End Str C&G
TC Elev 3022.48 (Match Bridge)
- 3 65+75.00-27.51' R
Begin Str C&G
TC Elev (Match Existing)
- 4 66+09.28-28.01' R
End Str C&G
Begin 15' Rad Fillet
TC Elev 3014.85
- 5 66+24.05-42.06' R
End 15' Rad Fillet
TC Elev 3015.67 (Theor)
(Match Existing)
- 6 65+58.61-42.59' R
Begin 15' Rad Fillet
TC Elev 3016.84 (Theor)
(Match Existing)
- 7 66+73.76-28.97' R
End 15' Rad Fillet
Begin Str C&G
TC Elev 3017.05
- 8 68+27.25-31.00' R
End Str C&G
TC Elev 3022.48 (Match Bridge)



CURB AND GUTTER LAYOUT

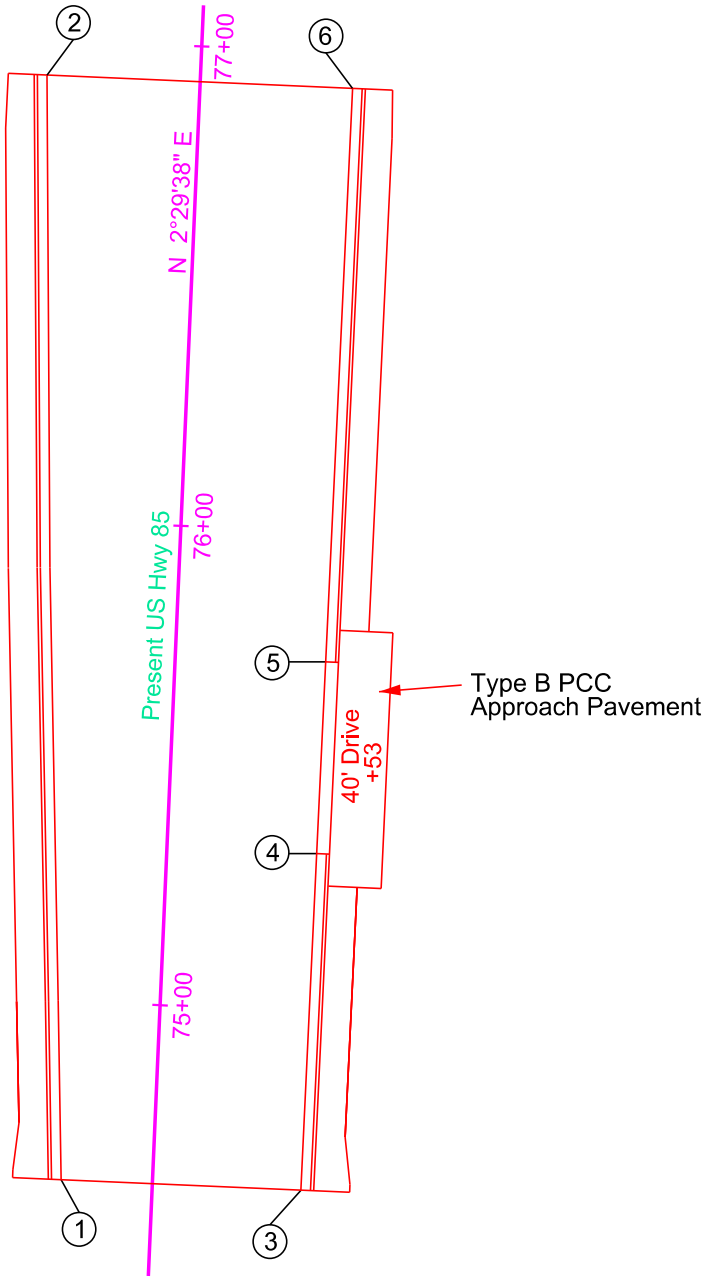
Note: All curb and gutter shown on this sheet is Type B69.5 except as noted.
All sidewalk is 6' wide except as noted.

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B24	B43

Plotting Date: 01/13/2026



- 1 74+62.75-19.00' L
Begin Str C&G
TC Elev 3044.48 (Match Bridge)
- 2 76+92.63-31.90' L
End Str C&G
TC Elev (Match Existing)
- 3 74+62.75-31.00' R
Begin Str C&G
TC Elev 3044.48 (Match Bridge)
- 4 75+33.00-31.30' R
End Str C&G
Begin Type P9.5 Gutter
TC Elev 3046.11 (Theor)
- 5 75+73.00-31.41' R
End Type P9.5 Gutter
Begin Str C&G
TC Elev 3047.32 (Theor)
- 6 76+92.63-31.80' R
End Str C&G
TC Elev (Match Existing)



1:20
Plot Scale -

Plotted From -
TRPR17190

CURB RAMP LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B25	B43

Plotting Date: 02/03/2026

LEGEND

- Detectable Warning
- Pedestrian Push Button Pole
and 30" x 48" Clear Space
with 1.5% slope

* Landing with 1.5% slope
** Curb Ramp with 7.5% slope and 1.5% cross slope



- 1 66+06.75-37.71' R
Back of Landing
- 2 66+11.75-37.72 R
End Ramp Slope
- 3 66+18.62-37.72' R
Center Type 2
Curb Ramp



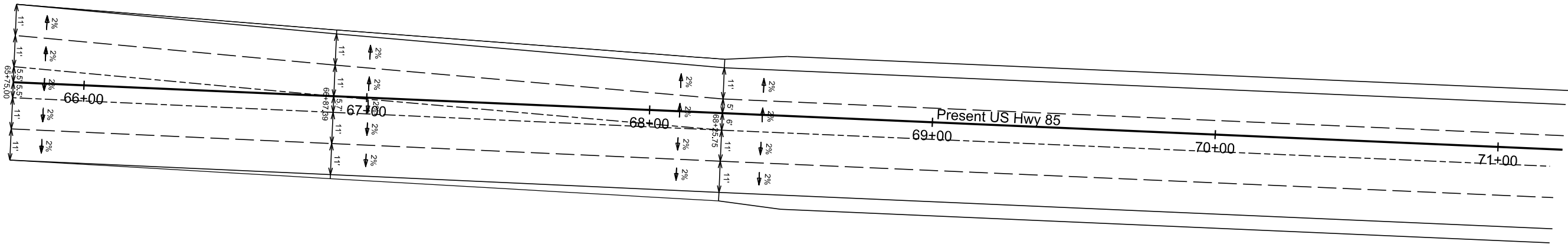
- 4 66+64.80-37.76' R
Center Type 2
Curb Ramp
- 5 66+71.33-37.77' R
End Ramp Slope
- 6 66+76.33-37.77' R
Back of Landing



LANE LAYOUT

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B26	B43

Plotting Date: 11/19/2025



Plot Scale - 1"=40'

Plotted From - TRPR17192

File - U:\roadproj\Bute04\G1064LL.dgn

Plotted From -

TRPR17192

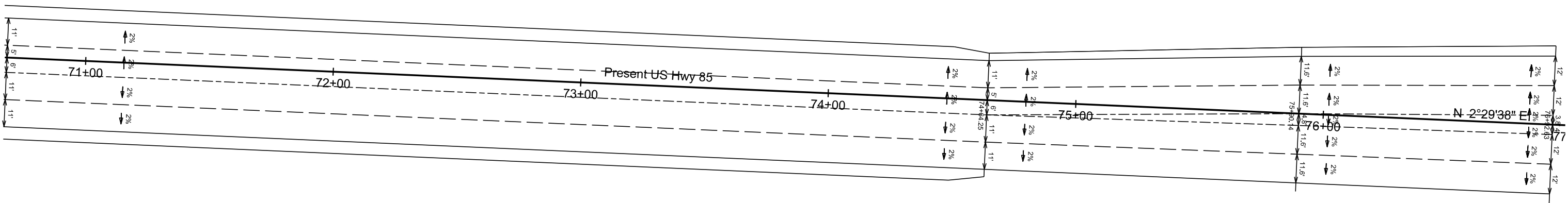
Plot Scale -

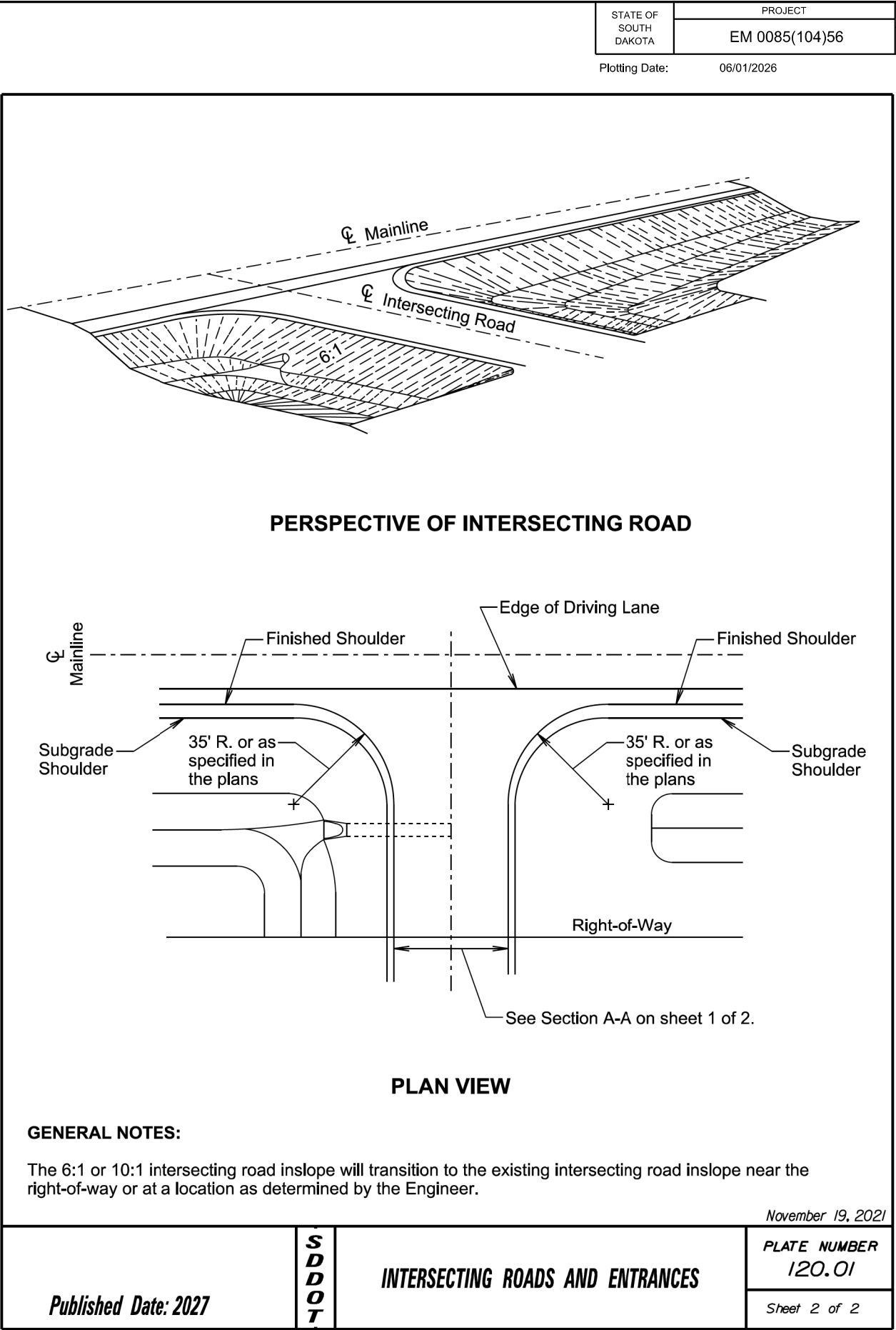
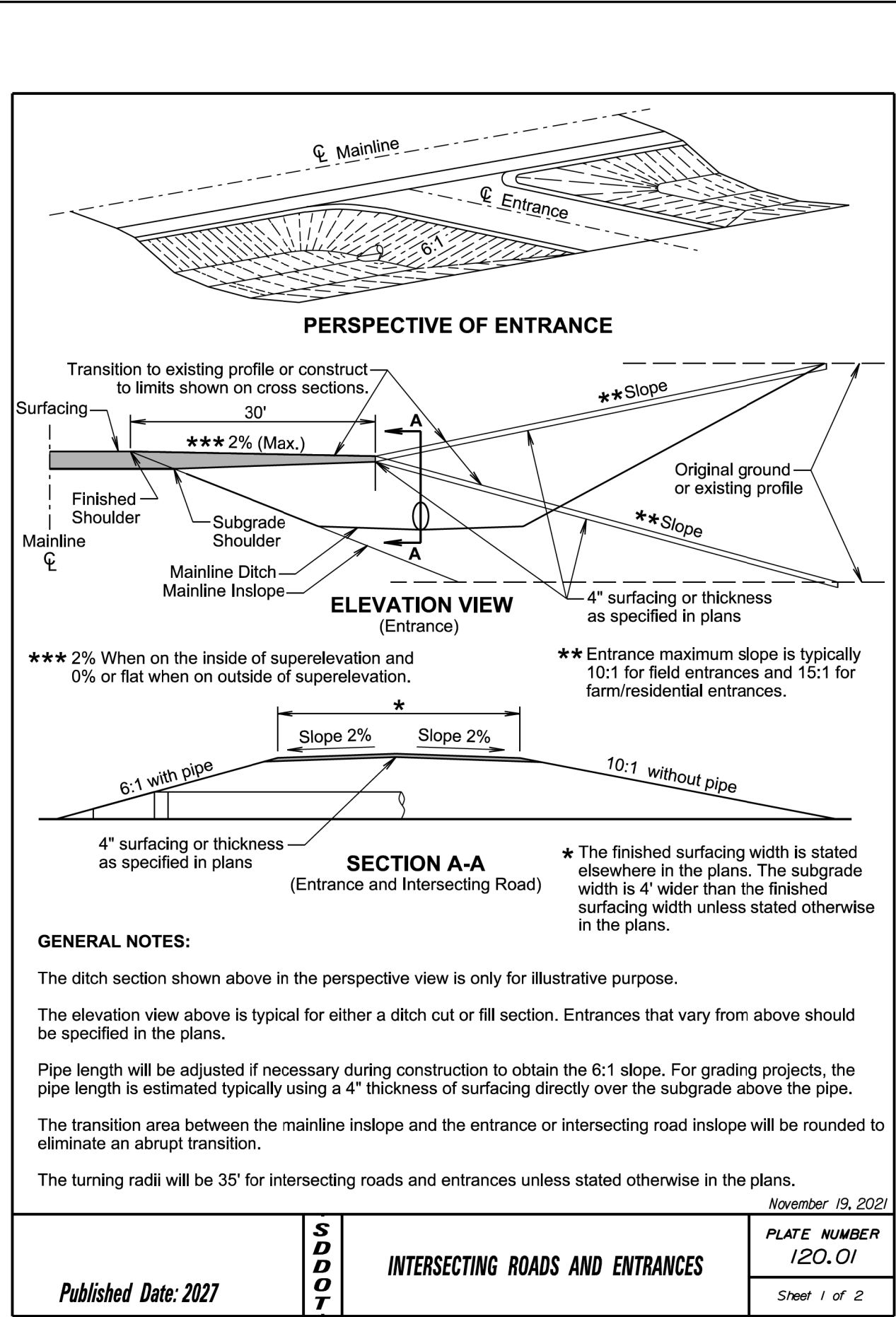
1:40

LANE LAYOUT

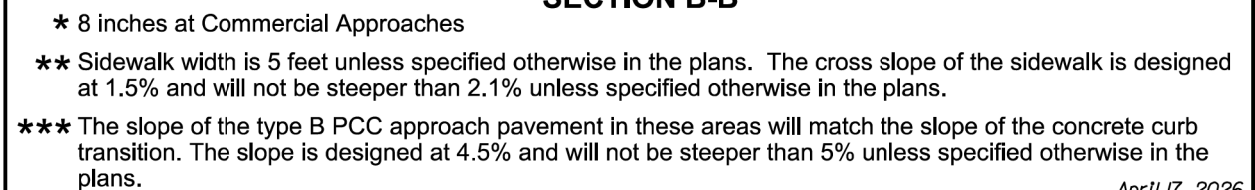
STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B27	B43

Plotting Date: 11/19/2025

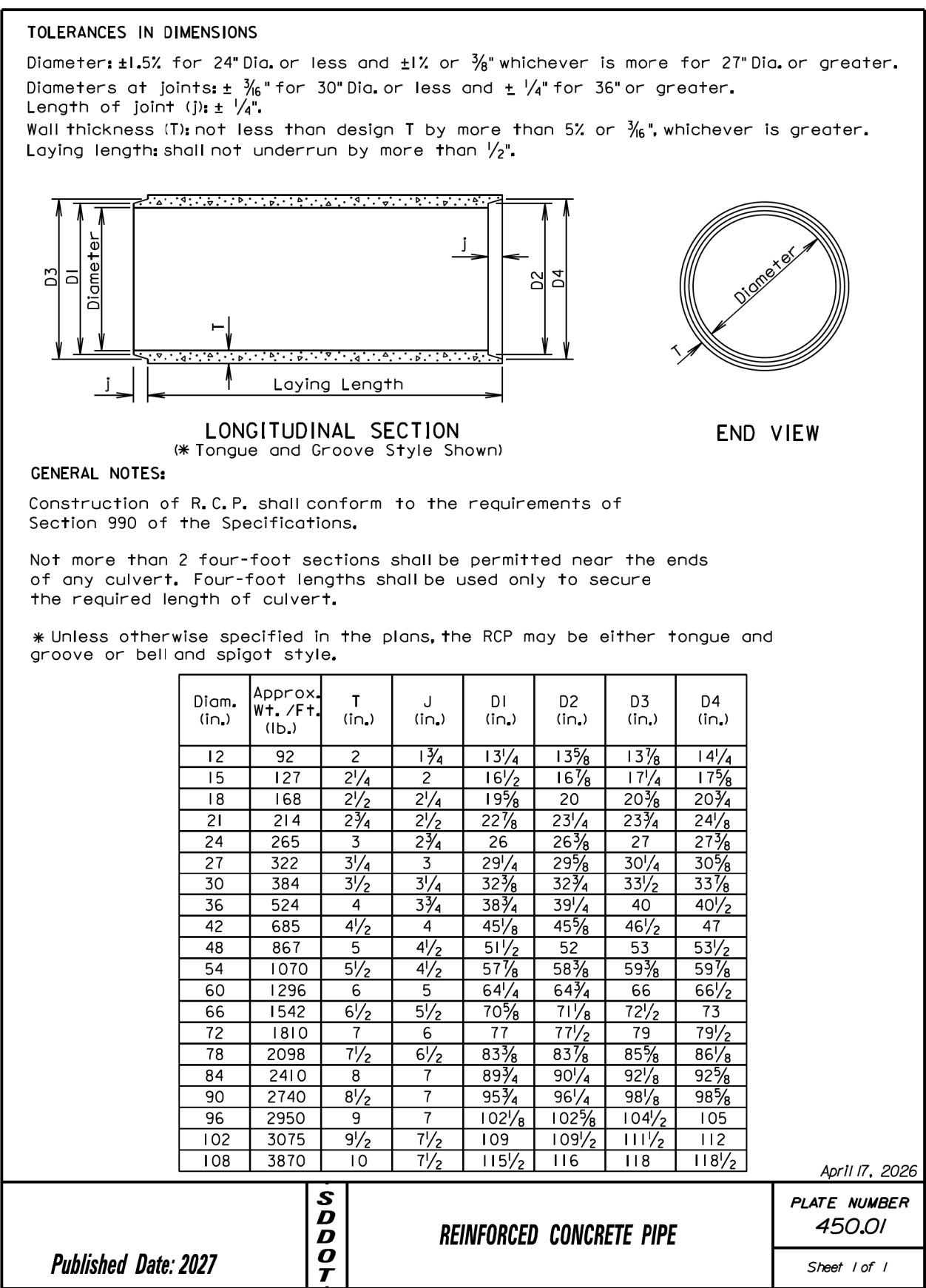
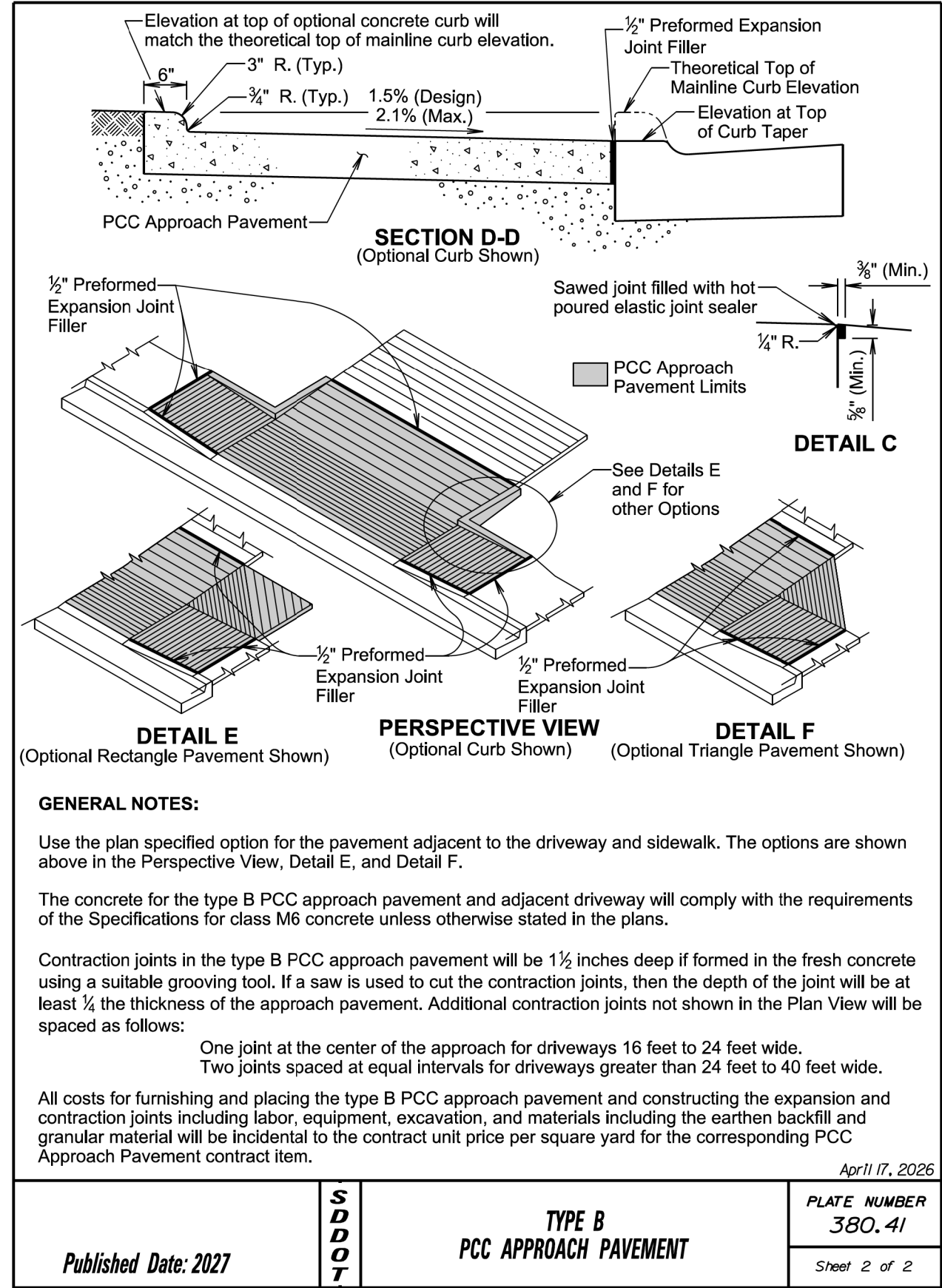


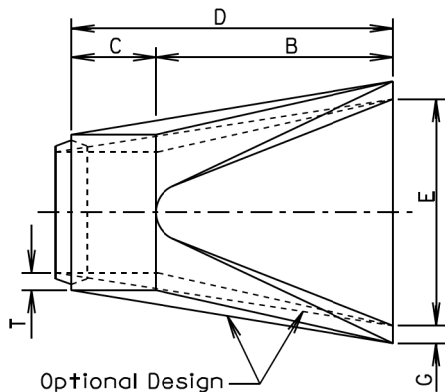


The cost for all materials, labor, and incidentals necessary to construct the PCC fillet section with curb and gutter will be incidental to the contract unit price per square yard for the corresponding PCC fillet section contract item.

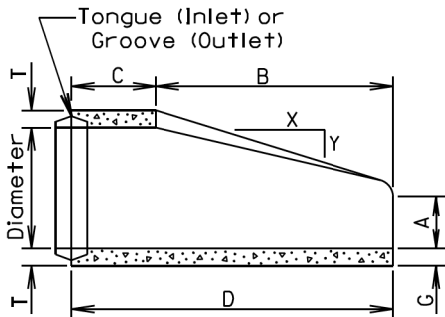


Published Date: 2027	S D D O T	TYPE B PCC APPROACH PAVEMENT	APRIL 17, 2025 PLATE NUMBER 380.41
			Sheet 1 of 2

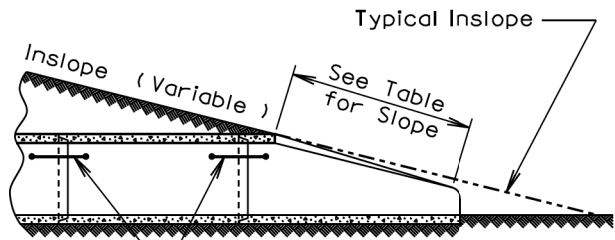




TOP VIEW



LONGITUDINAL SECTION



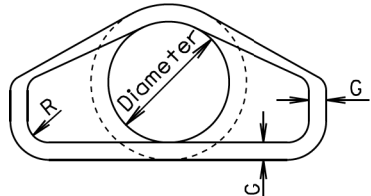
See Standard Plate 450.18
(TIE BOLTS FOR R.C.P. AND R.C.P. ARCH)

SLOPE DETAIL

GENERAL NOTES:

Lengths of concrete pipe shown on plan sheets are between flared ends only.

Construction of R.C.P. Flared End shall conform to the requirements of Section 990 of the Specifications.



END VIEW

Dia. (in.)	Approx. Wt. of Section (lbs.)	Approx. Slope (X to Y)	T (in.)	A (in.)	B (in.)	C (in.)	D (in.)	E (in.)	G (in.)	R (in.)
12	530	2.4: 1	2	4	24	48 7/8	72 7/8	24	2	1 1/2
15	740	2.4: 1	2 1/4	6	27	46	73	30	2 1/4	1 1/2
18	990	2.3: 1	2 1/2	9	27	46	73	36	2 1/2	1 1/2
21	1280	2.4: 1	2 3/4	9	36	37 1/2	73 1/2	42	2 3/4	1 1/2
24	1520	2.5: 1	3	9 1/2	43 1/2	30	73 1/2	48	3	1 1/2
27	1930	2.5: 1	3 1/4	10 1/2	49 1/2	24	73 1/2	54	3 1/4	1 1/2
30	2190	2.5: 1	3 1/2	12	54	19 3/4	73 3/4	60	3 1/2	1 1/2
36	4100	2.5: 1	4	15	63	34 3/4	97 3/4	72	4	1 1/2
42	5380	2.5: 1	4 1/2	21	63	35	98	78	4 1/2	1 1/2
48	6550	2.5: 1	5	24	72	26	98	84	5	1 1/2
54	8240	2: 1	5 1/2	27	65	33 1/4	98 1/4	90	5 1/2	1 1/2
60	8730	1.9: 1	6	35	60	39	99	96	5	1 1/2
66	10710	1.7: 1	6 1/2	30	72	27	99	102	5 1/2	1 1/2
72	12520	1.8: 1	7	36	78	21	99	108	6	1 1/2
78	14770	1.8: 1	7 1/2	36	90	21	111	114	6 1/2	1 1/2
84	18160	1.6: 1	8	36	90 1/2	21	111 1/2	120	6 1/2	1 1/2
90	20900	1.5: 1	8 1/2	41	87 1/2	24	111 1/2	132	6 1/2	6

June 26, 2015

S
D
D
O
T

R. C. P. FLARED ENDS

PLATE NUMBER
450.10

Sheet 1 of 1

Published Date: 2027

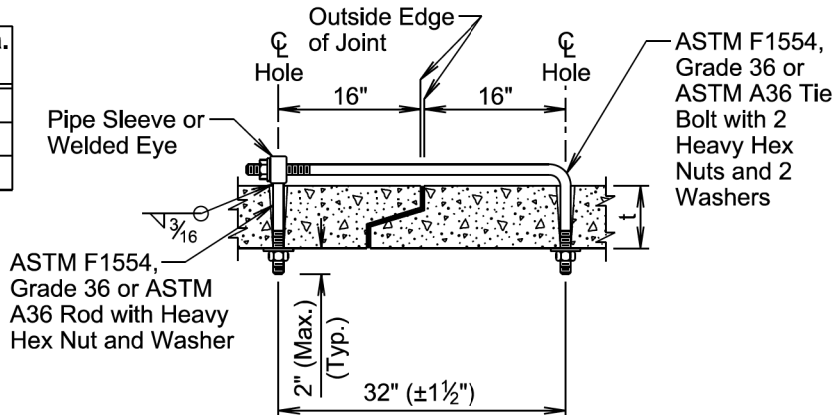
Wall "t" (in.)	Rod Dia. (in.)	Pipe Sleeve Dia. (nominal)
≤ 3 1/4	5/8	3/4
3 1/2-6 1/2	3/4	1
≥ 7	1	1 1/4

GENERAL NOTES:

Tie bolts will conform to ASTM F1554, Grade 36 or ASTM A36. Nuts will be heavy hex conforming to ASTM A563. Washers will conform to ASTM F436.

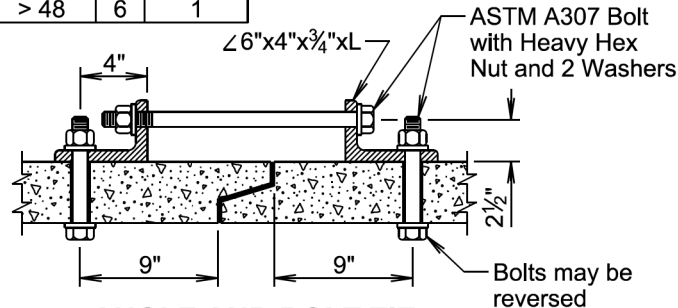
Pipe Sleeve will conform to ASTM A53, Grade B or ASTM A500, Grade B or C.

Galvanize adjustable eye bolt tie assembly in accordance with ASTM A153.



ADJUSTABLE EYE BOLT TIE

Pipe Dia. (in.)	"L" (in.)	Bolt Dia. (in.)
≤ 48	4	3/4
> 48	6	1



ANGLE AND BOLT TIE

GENERAL NOTES:

Angles will conform to ASTM A36.

Bolts will conform to ASTM A307. Nuts will be heavy hex conforming to ASTM A563. Washers will conform to ASTM F436.

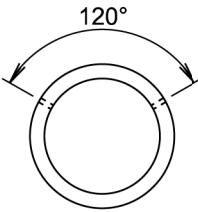
Galvanize angles, bolts, nuts, and washers in accordance with ASTM A153.

GENERAL NOTES:

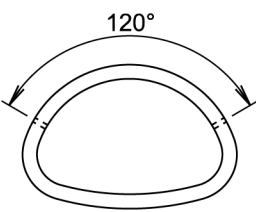
In lieu of the tie bolts detailed above other types of tie bolt connections may be installed as approved by the Office of Bridge Design.

All pipe sections of R.C.P. and R.C.P. Arch will be tied with tie bolts except for pipe located between drop inlets, manholes, and junction boxes. All pipe sections of pipes that only enter or exit drop inlets, manholes, and junction boxes will be tied with tie bolts.

There will be no separate measurement or payment for the tie bolts. The cost for furnishing and installing the tie bolts will be incidental to the contract unit price per foot for the corresponding bid item for R.C.P. or R.C.P. Arch.



END VIEW
(Circular)



END VIEW
(Arch)

April 8, 2025

S
D
D
O
T

TIE BOLTS FOR R.C.P. AND R.C.P. ARCH

PLATE NUMBER
450.18

Sheet 1 of 1

Published Date: 2027

2 Piece			2 Piece			3 Piece				
5° to 45° Elbow			50° to 90° Elbow			90° Elbow				
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

S
D
D
O
T

C.M.P. FABRICATED LENGTHS FOR ELBOWS

PLATE NUMBER
450.32

Sheet 1 of 1

Alternate Type Connector Sections may be used with approval of the Engineer.

PLAN

ELEVATION

TUBING ATTACHMENT DETAILS SECTION A-A

TYPICAL CROSS-SECTION

GENERAL NOTES:
All 3 pc. bodies shall have 12 Ga. sides and 10 Ga. center panels. Width of center panels shall be greater than 20% of the pipe periphery. Multiple panel bodies to have lap seams tightly joined by 3/8" Dia. galvanized rivets or bolts.
For 60" through 84" sizes, reinforced edges shall be supplemented with galvanized stiffener angles. The angles will be 2" x 2" x 1/4" for 60" through 72" diameters and 2 1/2" x 2 1/2" x 1/4" for 78" and 84" diameters. The angles shall be attached by 3/8" diameter galvanized nuts and bolts.
Rivets and Bolts shall be 3/8" Dia. Min. for 10 Ga. and 12 Ga. sheet, and 5/16" Dia. Min. for 14 Ga. and 16 Ga. sheets. Tighten nuts with torque wrench to 25 lbs. torque.

Dia. D (in.)	Ga.	DIMENSIONS (in.)					Approx. Slope	Body
		A	B	H	L	W		
12	16	6	6	6	21	24	2½:1	1 Pc.
15	16	7	8	6	26	30	2½:1	1 Pc.
18	16	8	10	6	31	36	2½:1	1 Pc.
21	16	9	12	6	36	42	2½:1	1 Pc.
24	16	10	13	6	41	48	2½:1	1 Pc.
30	14	12	16	8	46	60	2½:1	1 Pc.
36	14	14	19	9	51	72	2½:1	2 Pc.
42	12	16	22	11	60	84	2½:1	2 Pc.
48	12	18	27	12	69	90	2¼:1	2 Pc.
54	12	18	30	12	78	102	2:1	3 Pc.
60	12	18	33	12	84	114	1¾:1	3 Pc.
66	12	18	36	12	87	120	1½:1	3 Pc.
72	12	18	39	12	87	126	1½:1	3 Pc.
78	12	18	42	12	87	132	1¼:1	3 Pc.
84	12	18	45	12	87	138	1⅙:1	3 Pc.

STANDARD CONNECTIONS

For 30" through 84"

Alternate for all sizes

For 12" through 24" only

NOTE:
Tubing is slipped over the sheet and rivets or lugs prior to forming operations of the apron.

SECTION A-A (alternate)

SECTION A-A (alternate)

March 31, 2000

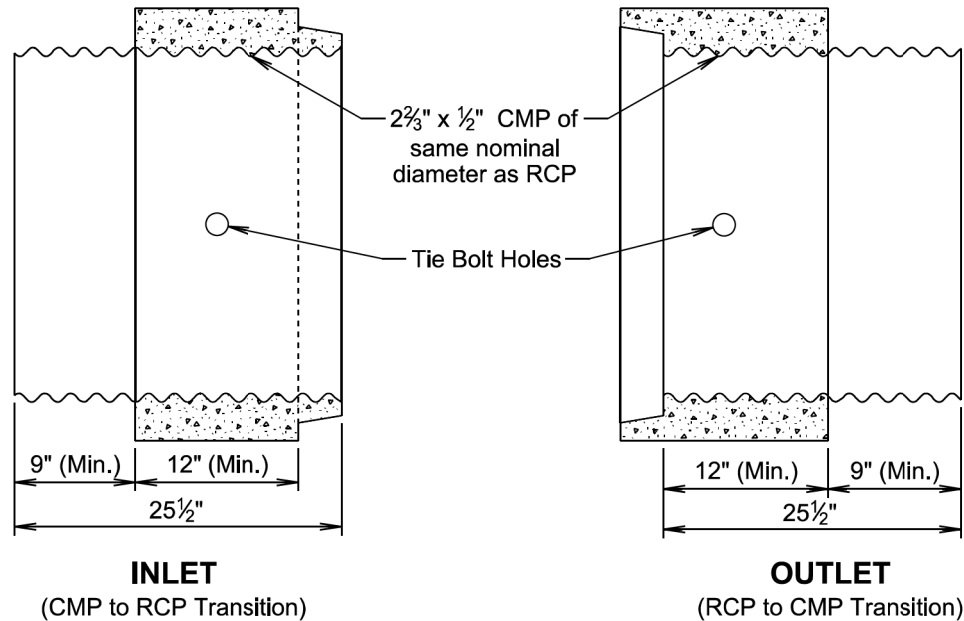
Published Date: 2027

S
D
D
O
T

C.M.P. FLARED ENDS

PLATE NUMBER
450.35

Sheet 1 of 1



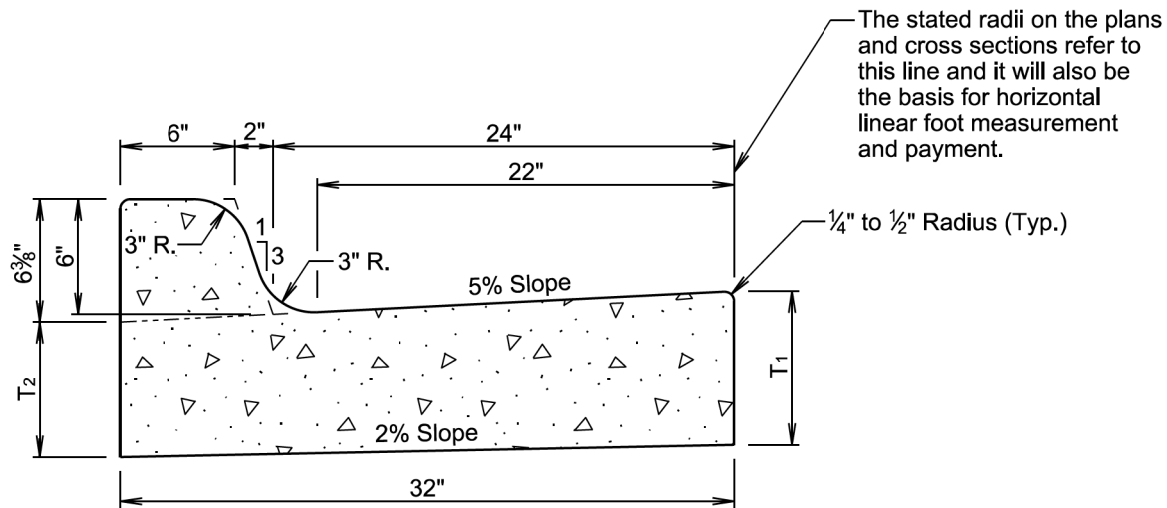
GENERAL NOTE:

Arch pipe transitions will be fabricated similar to the round transition shown above.

All pipe transitions will be precast as shown. Alternate designs other than shown will need to be approved by the Engineer.

November 19, 2022

Published Date: 2027	S D D O T	C.M.P. TO R.C.P. TRANSITION AND R.C.P. TO C.M.P. TRANSITION	PLATE NUMBER 450.50
			Sheet 1 of 1



TYPE B CONCRETE CURB AND GUTTER

Type	T ₁ (Inches)	T ₂ (Inches)	Cu. Yd. Per Lin. Ft.	Lin. Ft. Per Cu. Yd.
B66	6	5 1/16	0.057	17.7
B67	7	6 1/16	0.065	15.4
B68	8	7 1/16	0.073	13.7
B68.5	8.5	7 9/16	0.077	13.0
B69	9	8 1/16	0.081	12.3
B69.5	9.5	8 9/16	0.085	11.7
B610	10	9 1/16	0.090	11.2
B610.5	10.5	9 9/16	0.094	10.7
B611	11	10 1/16	0.098	10.2
B611.5	11.5	10 9/16	0.102	9.8
B612	12	11 1/16	0.106	9.4

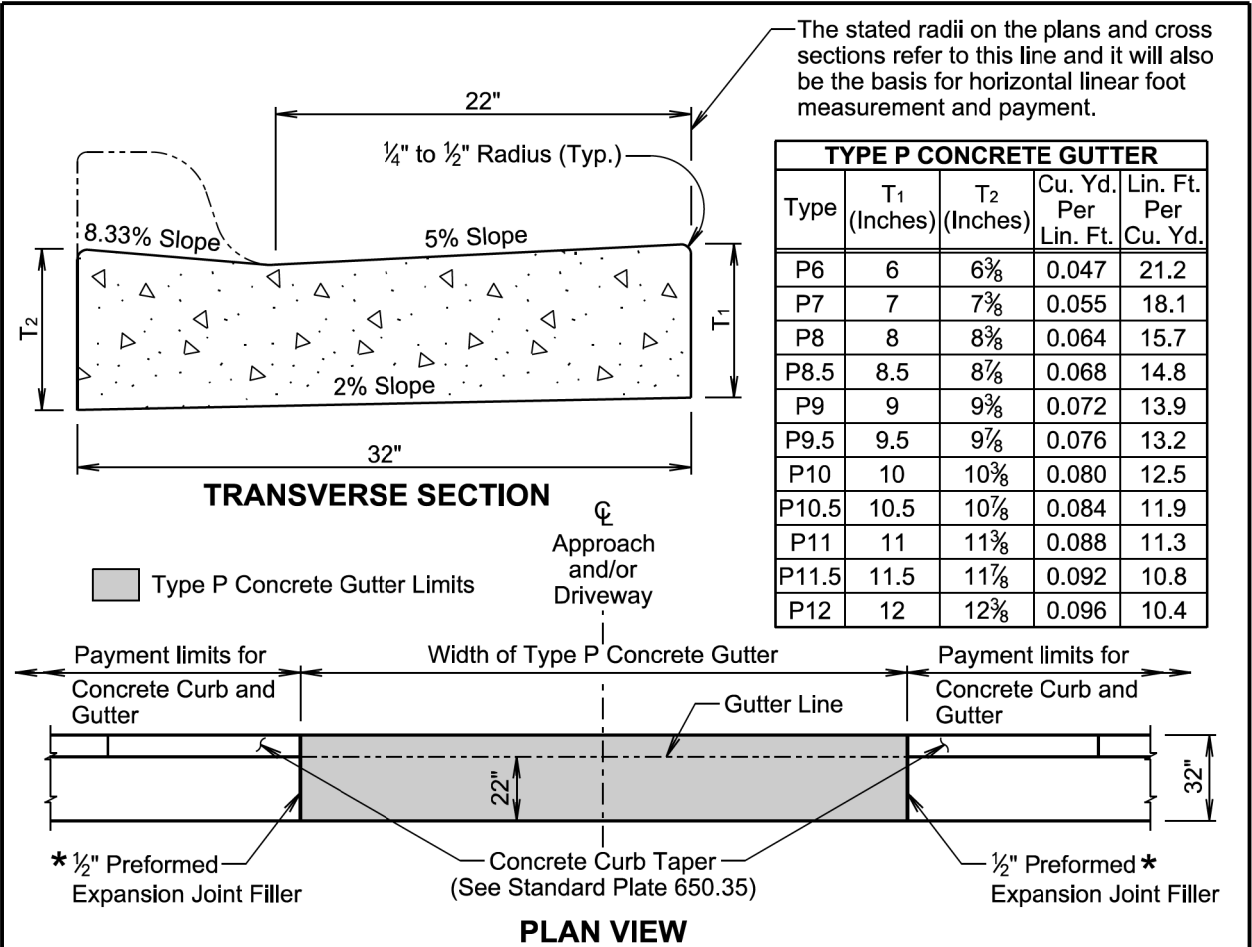
GENERAL NOTES:

When concrete curb and gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on standard plate 380.21.

See standard plate 650.90 for expansion and contraction joints in the curb and gutter.

January 22, 2023

Published Date: 2027	S D D O T	TYPE B CONCRETE CURB AND GUTTER	PLATE NUMBER 650.01
			Sheet 1 of 1



* Joint will not be needed if concrete curb and gutter and type P concrete gutter is placed at the same time. If the ½" preformed expansion joint filler is provided, then the joint will be sealed in accordance with standard plate 650.90.

GENERAL NOTES:

The concrete for the type P concrete gutter will comply with the requirements of the specifications for class M6 concrete.

When concrete gutter longitudinally adjoins new concrete pavement, the method of attachment will be by one of the methods shown on standard plate 380.21.

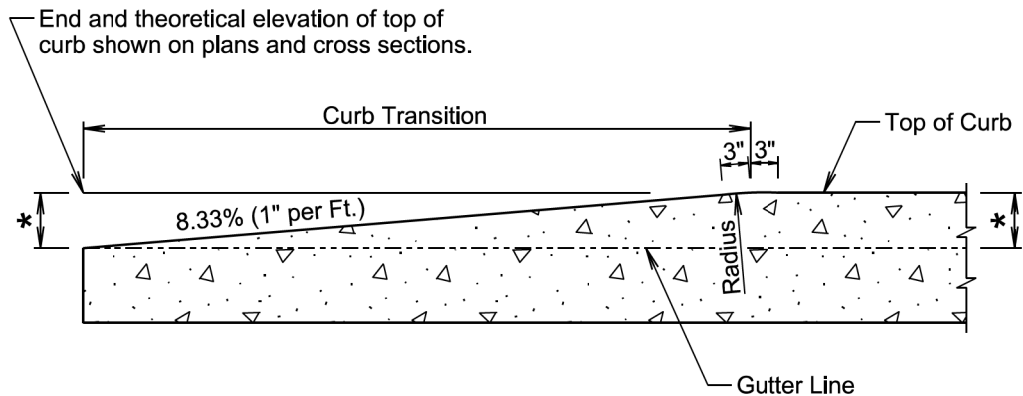
Transverse contraction joints will be constructed at 10-foot intervals in the concrete gutter except when concrete gutter is constructed adjacent to mainline PCC pavement. When concrete gutter is constructed adjacent to mainline PCC pavement, a transverse contraction joint will be constructed in the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

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

When concrete gutter is not placed monolithically with the mainline PCC pavement and when the adjacent mainline surfacing is not PCC concrete, the transverse contraction joints in the concrete gutter will be 1½ inches deep if formed in the fresh concrete using a suitable grooving tool. If a saw is used to cut the contraction joints, then the depth of the joint will be at least ¼ the thickness of the concrete.

January 22, 2023

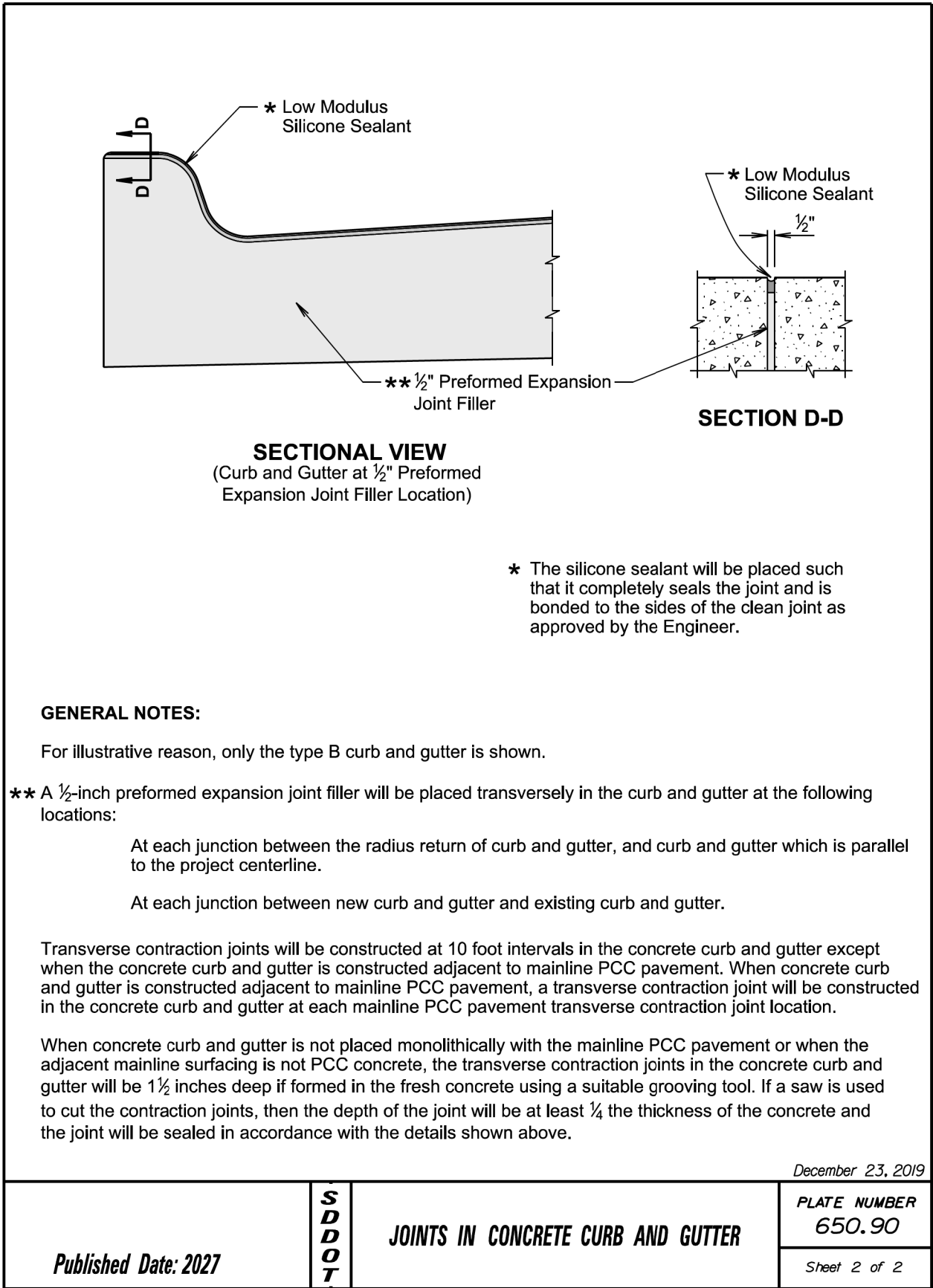
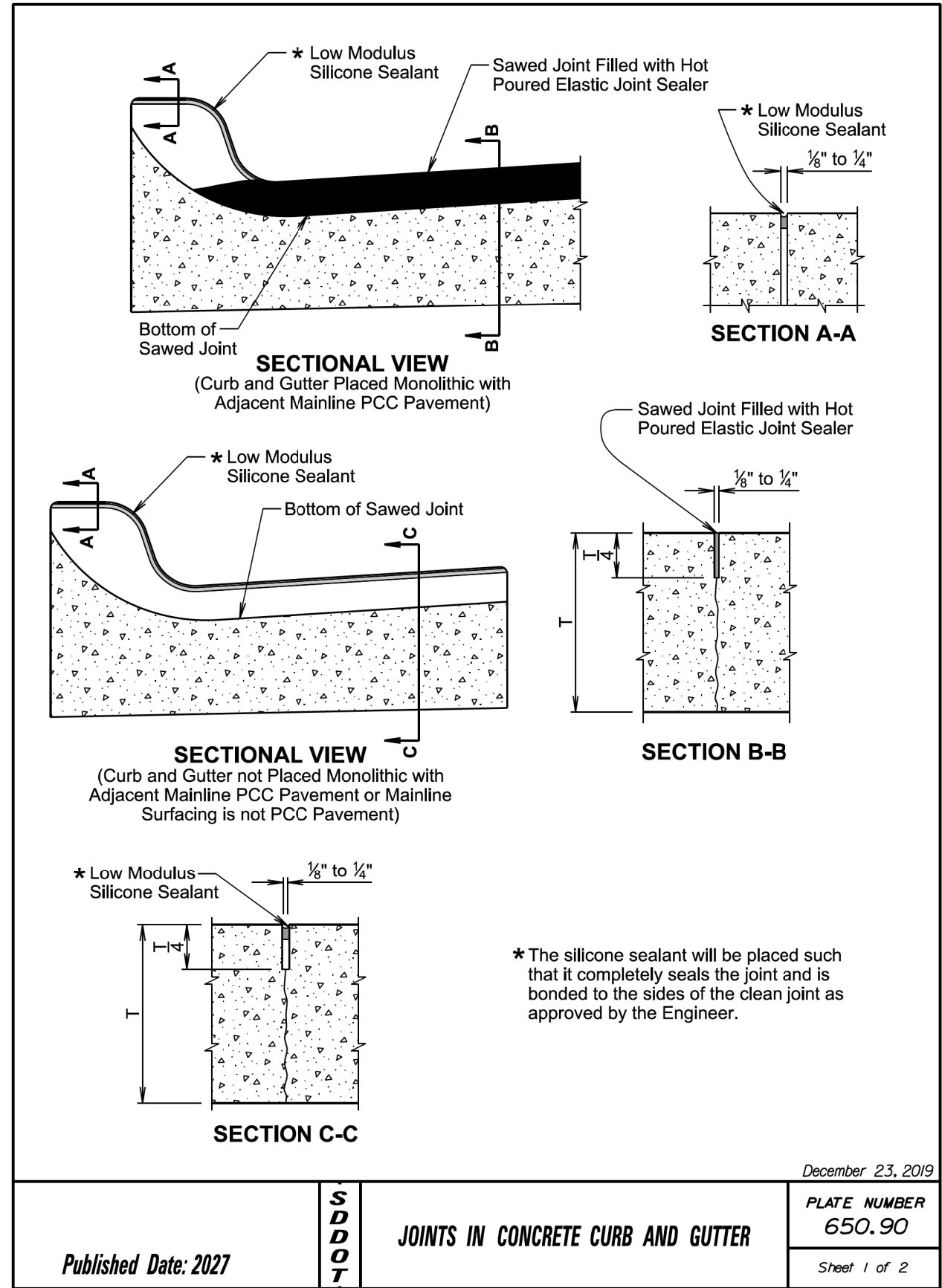
Published Date: 2027	S D D O T	TYPE P CONCRETE GUTTER	PLATE NUMBER 650.30
			Sheet 1 of 1



LONGITUDINAL SECTION
(Concrete Curb Taper)

December 23, 2019

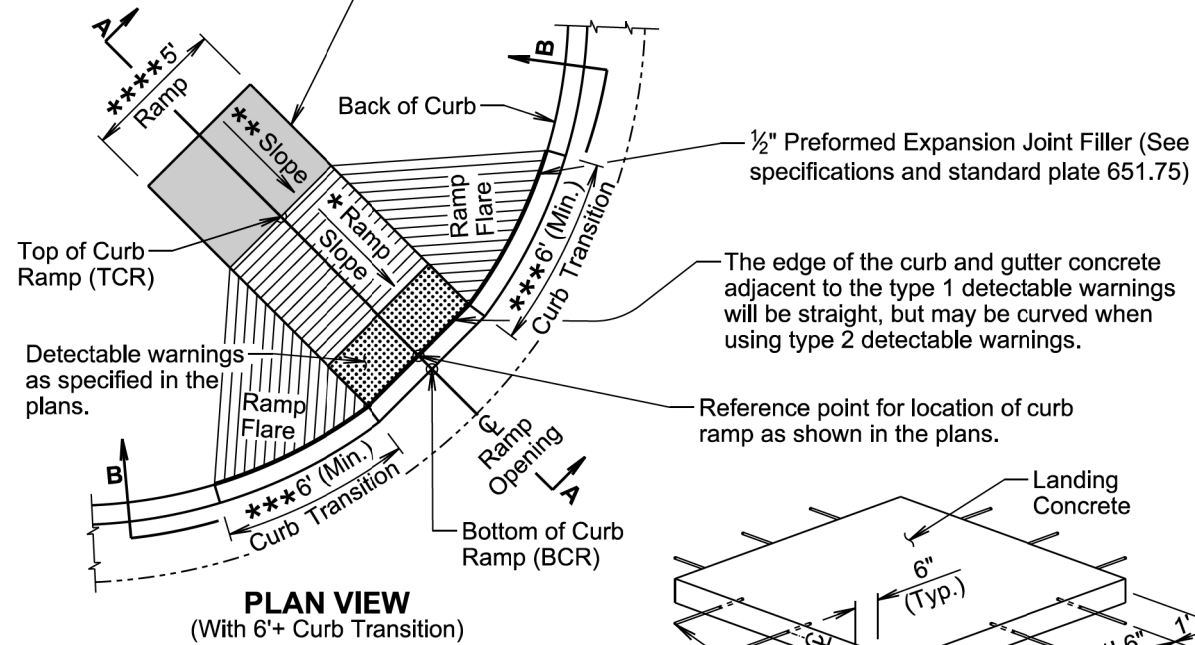
Published Date: 2027	S D D O T	CONCRETE CURB TAPER	PLATE NUMBER 650.35
			Sheet 1 of 1



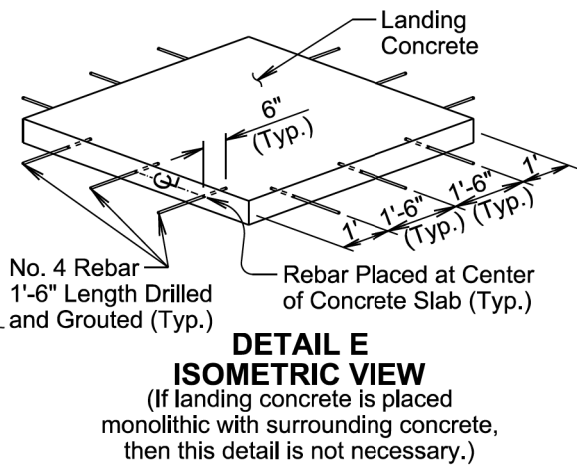
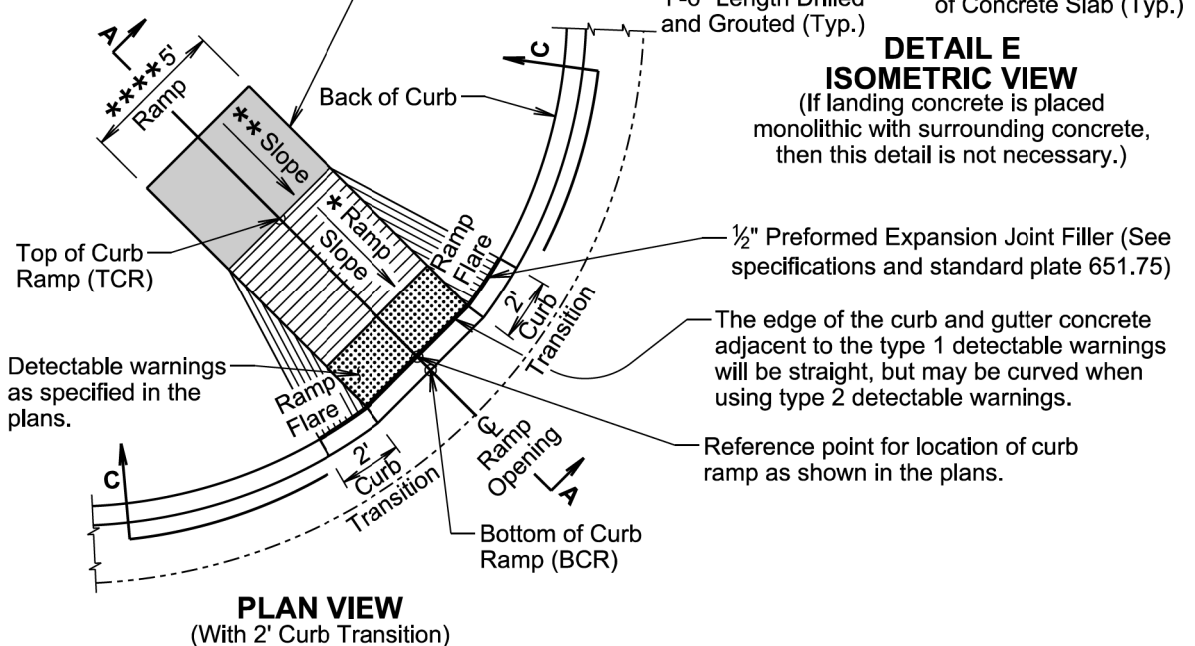
STATE OF SOUTH DAKOTA	PROJECT EM 0085(104)56	SHEET B37	TOTAL SHEETS B43
-----------------------------	---------------------------	--------------	------------------------

Plotting Date: 06/01/2026

The landing is 5'x5' unless stated otherwise in the plans.
(See Detail E)



The landing is 5'x5' unless stated otherwise in the plans.
(See Detail E)



April 8, 2025

Published Date: 2027	S D D O T	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 1 of 3

Curb ramp slopes are designed at 7.5% unless stated otherwise in the plans. The curb ramp may have a maximum slope of 8.3% and will not exceed 15' in length unless stated otherwise in the plans.

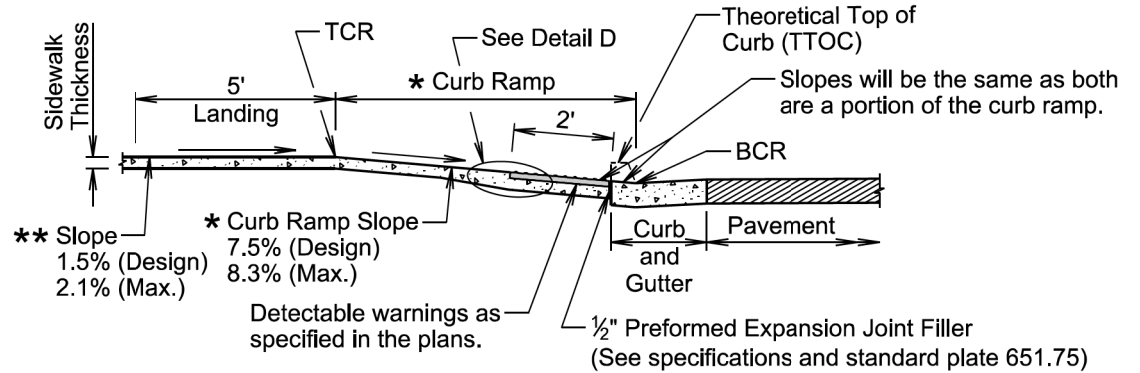
* The curb ramp length may be computed based on the intersection of a continuous 1.5% theoretical slope from theoretical top of curb (TTOC) with the curb ramp using a continuous 7.5% curb ramp slope. The elevation of point TCR will always be higher than the elevation of point TTOC unless specified otherwise in the plans. The curb ramp length dimension as shown in the plans will be adjusted as necessary to meet all slope and length requirements based on field geometrics.

The cross slope of the ramp will not be steeper than 2.1%. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

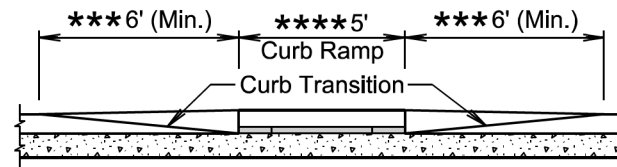
** The slope in the landing will not be steeper than 2.1% in any direction of pedestrian travel. Plans are designed using a 1.5% slope unless stated otherwise in the plans.

*** The curb transition will be a minimum of 6' long, a maximum of 10' long, and the curb transition slope will not be steeper than 10% unless stated otherwise in the plans. The curb transition length will be adjusted as necessary to meet slope and length requirements based on field geometrics.

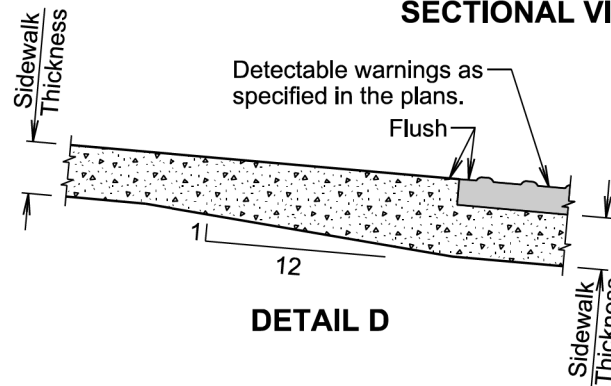
**** The ramp width is 5' unless stated otherwise in the plans.



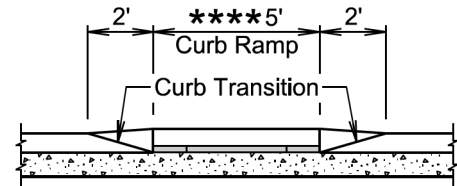
SECTION A-A



SECTIONAL VIEW B-B



DETAIL D



SECTIONAL VIEW C-C

April 8, 2025

Published Date: 2027	S D D O T	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 2 of 3

STATE OF SOUTH DAKOTA	PROJECT	SHEET	TOTAL SHEETS
	EM 0085(104)56	B38	B43

Plotting Date: 06/01/2026

GENERAL NOTES:

For illustrative purpose only, type 1 detectable warnings are shown in the drawings.

For illustrative purpose only, PCC fillet sections are shown in the drawings. The curb ramp depicted on this standard plate may be used with a PCC fillet section or curb and gutter.

The curb ramp will be placed at the location stated in the plans.

Sidewalk will not be placed adjacent to the curb ramp flares when a 2-foot curb transition is used unless shown otherwise in the plans.

* Care will be taken to ensure a uniform grade on the curb ramp, free of sags and short grade changes.

Surface texture of the curb ramp will be obtained by coarse brooming transverse to the slope of the curb ramp.

The normal gutter line profile will be maintained through the area of the ramp opening.

Joints will be sawed or tooled into the concrete adjacent to the detectable warnings to alleviate possible corner cracking.

Care will be taken to ensure that the surface of the detectable warnings are clean and maintains a uniform color.

The detectable warnings will be cut as necessary to fit the plan specified limits of the detectable warnings. Cost for cutting the detectable warnings will be incidental to the corresponding detectable warning contract item.

There will be no separate payment for curb ramps. The curb ramp will be measured and paid for at the contract unit price per square foot for the corresponding concrete sidewalk contract item. The square foot area of the detectable warnings will be included in the measured and paid for quantity of sidewalk.

If rebar is placed in the landing as depicted in detail E, the cost of the materials, labor, and equipment to furnish and install the rebar will be incidental to the contract unit price per square foot for the corresponding concrete sidewalk contract item.

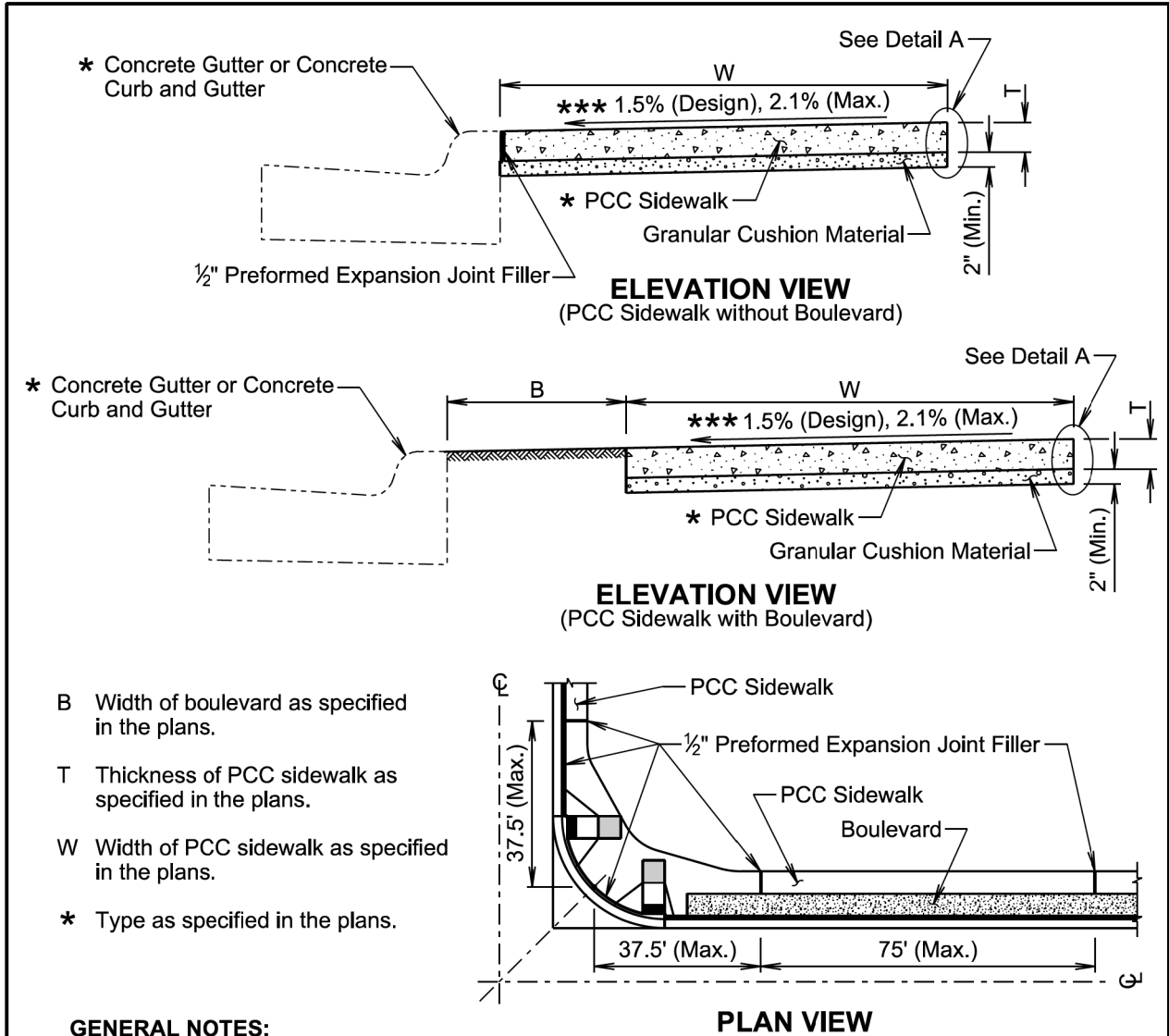
The curb transitions and ramp opening will be measured and paid for at the contract unit price per foot for the corresponding curb and gutter contract item when curb and gutter is used. The curb transitions and ramp opening will be measured and paid for at the contract unit price per square yard for the corresponding PCC fillet section contract item when a PCC fillet section is used.

Type 1 detectable warnings will be measured to the nearest square foot. All costs for furnishing and installing type 1 detectable warnings including labor, equipment, materials, and incidentals will be paid for at the contract unit price per square foot for "Type 1 Detectable Warnings".

Type 2 detectable warnings will be measured to the nearest square foot. All costs for furnishing and installing type 2 detectable warnings including labor, equipment, and materials, including adhesive, necessary sealant or grout, and necessary grinding will be paid for at the contract unit price per square foot for "Type 2 Detectable Warnings".

April 8, 2025

<i>Published Date: 2027</i>	S D D O T	TYPE 1 CURB RAMP (PERPENDICULAR CURB RAMP)	PLATE NUMBER 651.01
			Sheet 3 of 3



GENERAL NOTES:

The PCC sidewalk will be constructed in accordance with Section 651 of the Specifications.

*** The cross slope of the sidewalk is designed at 1.5% and the maximum slope allowed is 2.1% unless specified otherwise in the plans.

The maximum length between expansion joints in the PCC sidewalk is 75 feet.

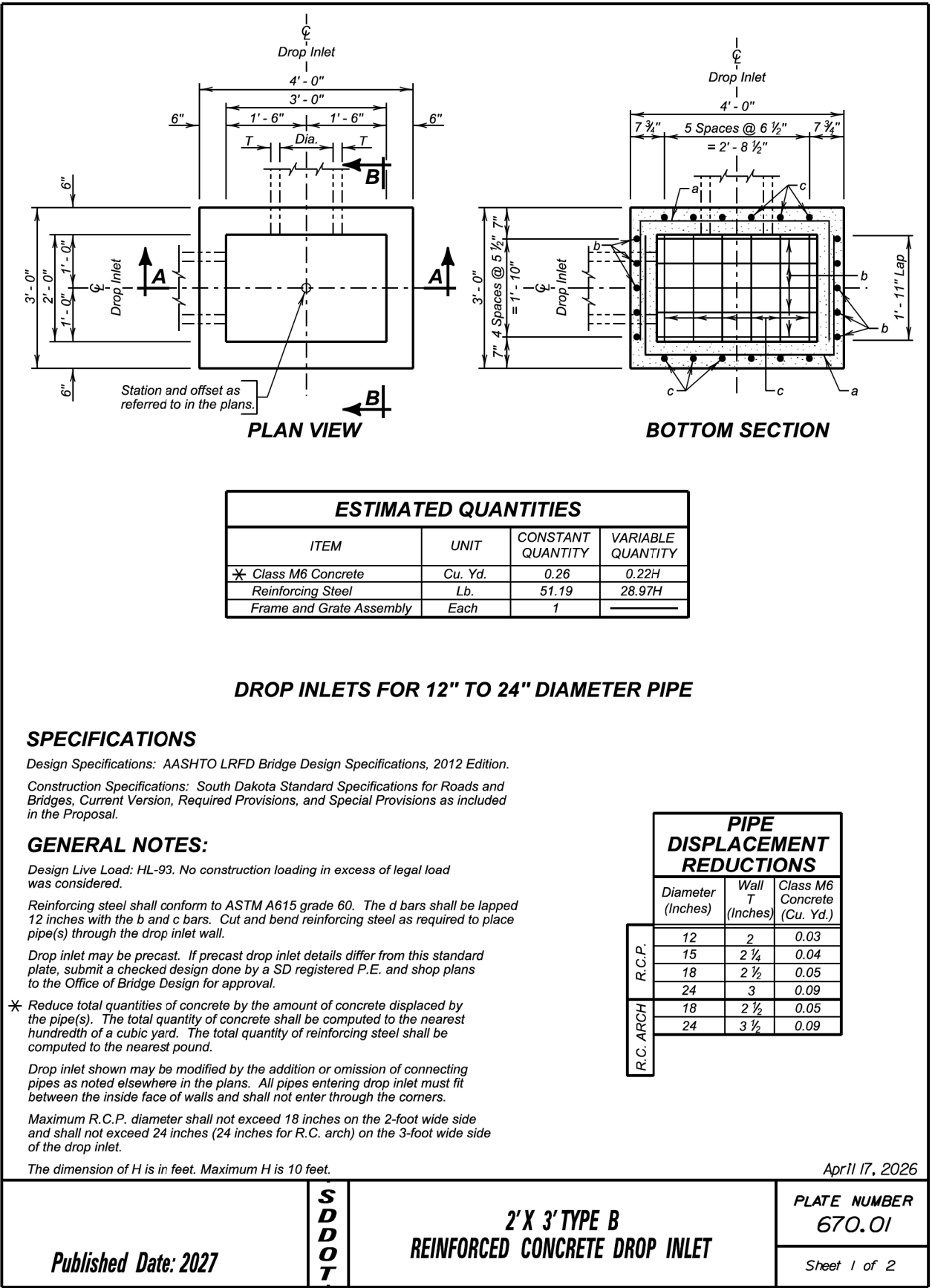
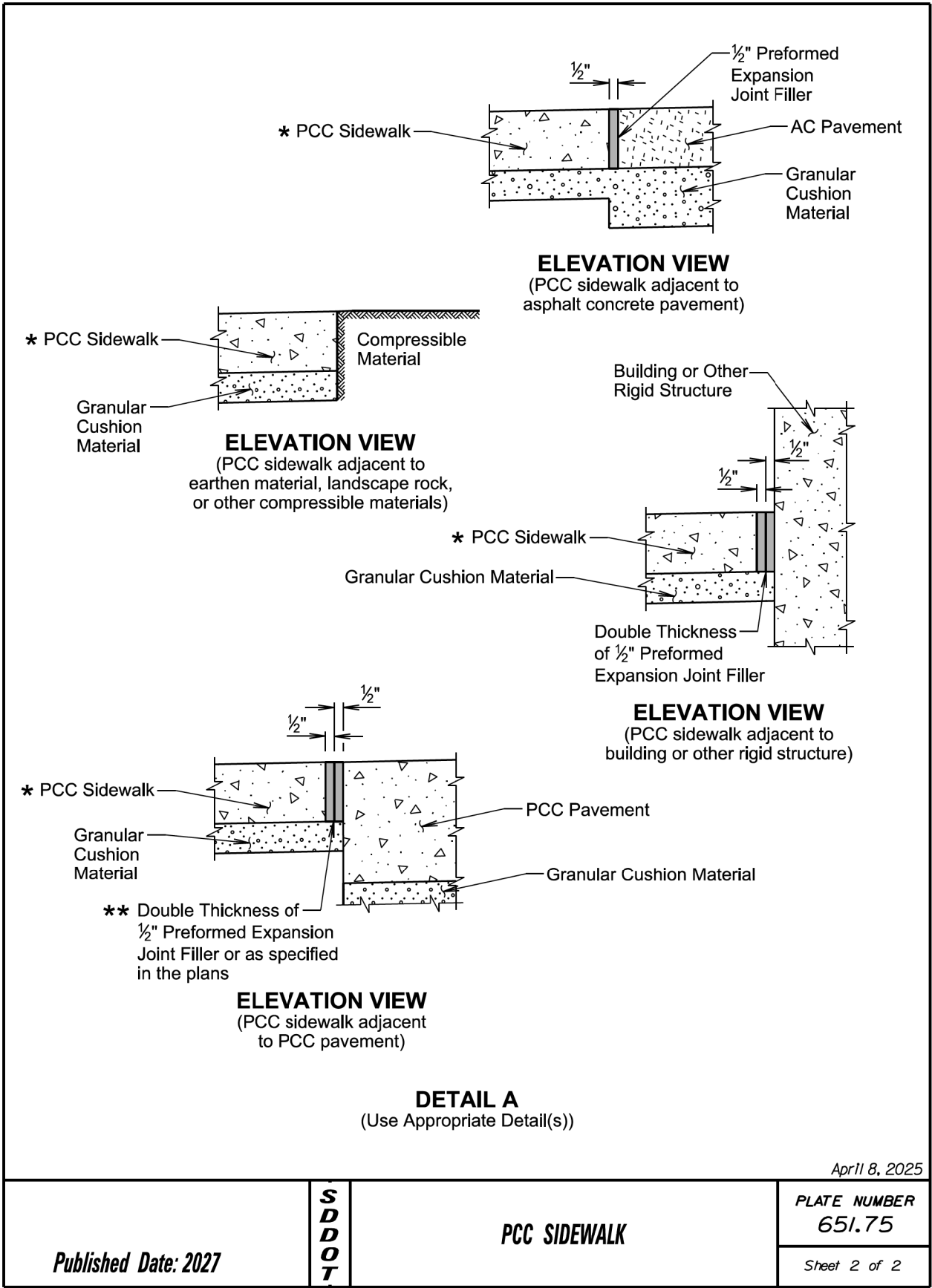
PCC sidewalk placed adjacent to intersection of roadways will have an expansion joint placed transversely a maximum of 37.5 feet from the intersection. See Plan View.

An expansion joint in the PCC sidewalk will consist of a 1/2 -inch thick preformed expansion joint filler material placed full depth and width of the PCC sidewalk.

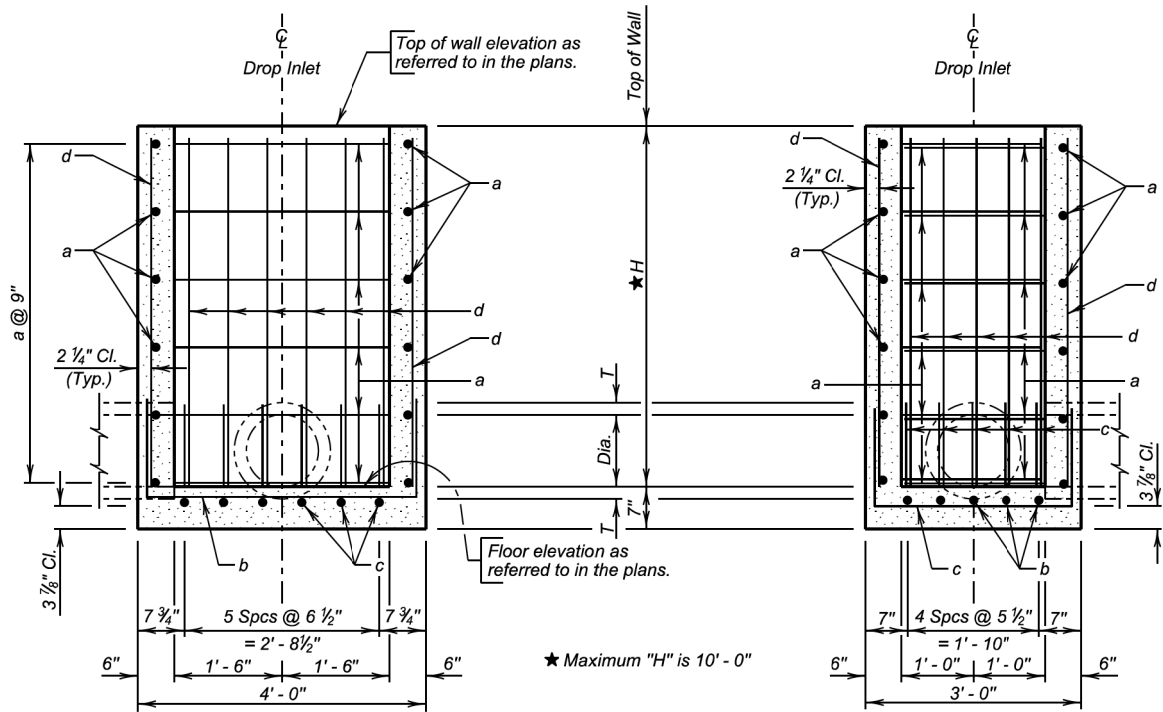
** Large areas of PCC pavement adjacent to the PCC sidewalk may require a different joint treatment than shown in the detail. If a different joint detail is necessary, plans will contain the joint detail and the Contractor will construct the joint treatment in accordance with the plans.

April 8, 2025

<i>Published Date: 2027</i>	S D D O T	PCC SIDEWALK	PLATE NUMBER 651.75
			Sheet 1 of 2



PIPE DISPLACEMENT REDUCTIONS			
	Diameter (Inches)	Wall T (Inches)	Class M6 Concrete (Cu. Yd.)
R.C.P.	12	2	0.03
	15	2 1/4	0.04
	18	2 1/2	0.05
	24	3	0.09
R.C. ARCH	18	2 1/2	0.05
	24	3 1/2	0.09



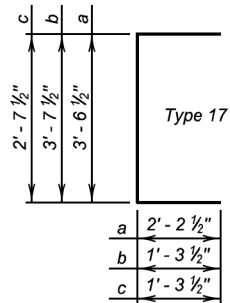
SEC. A - A

SEC. B - B

REINFORCING SCHEDULE

Mk.	No.	Size	Length	Type
a	2.67H	4	8' - 0"	17
b	5	5	6' - 3"	17
c	6	4	5' - 3"	17
d	22	4	H - 2"	Str.

NOTE:
All dimensions are out to out of bars.



April 17, 2026

Published Date: 2027

S
D
D
O
T

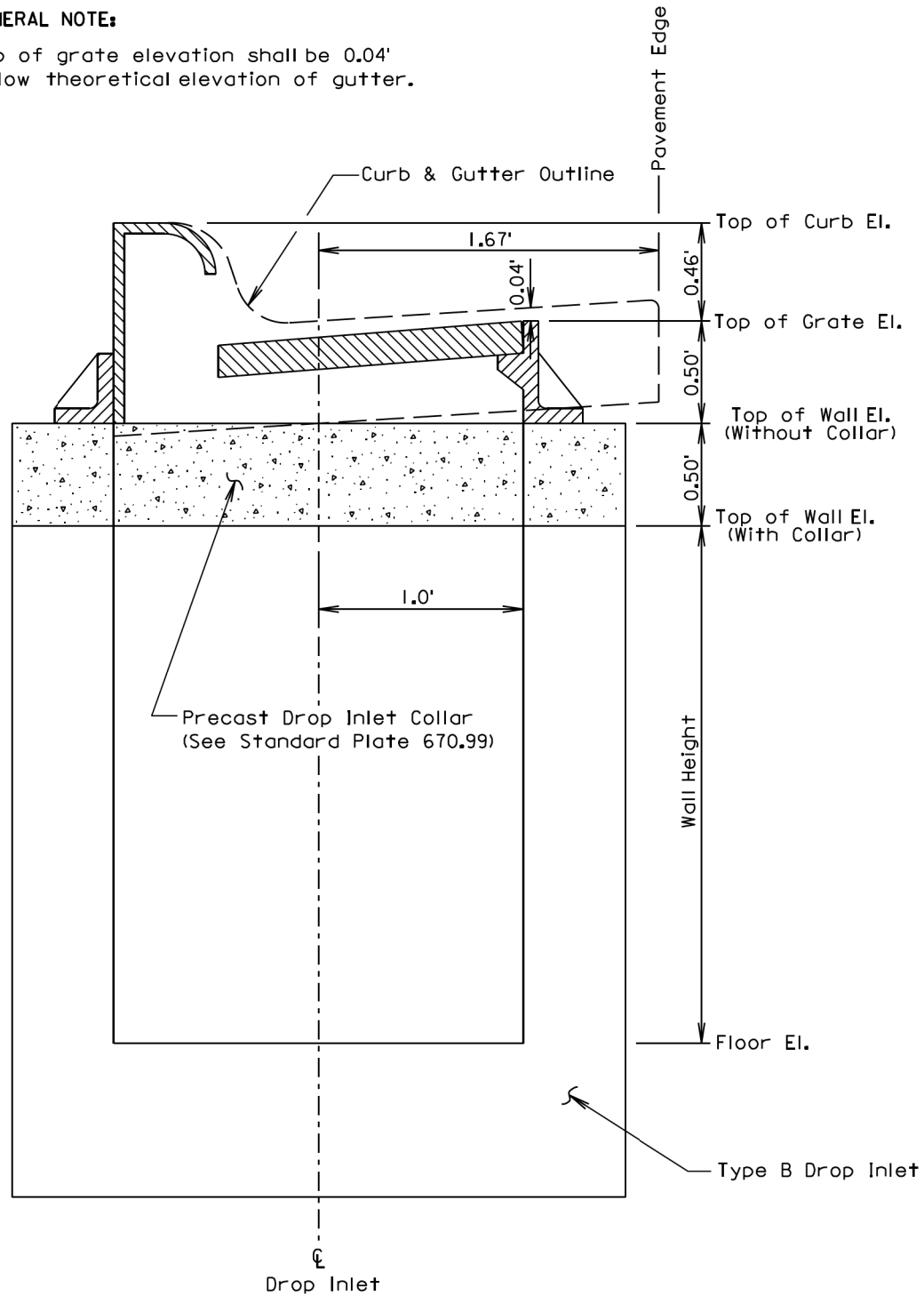
2' X 3' TYPE B
REINFORCED CONCRETE DROP INLET

PLATE NUMBER
670.01

Sheet 2 of 2

GENERAL NOTE:

Top of grate elevation shall be 0.04'
below theoretical elevation of gutter.



June 26, 2011

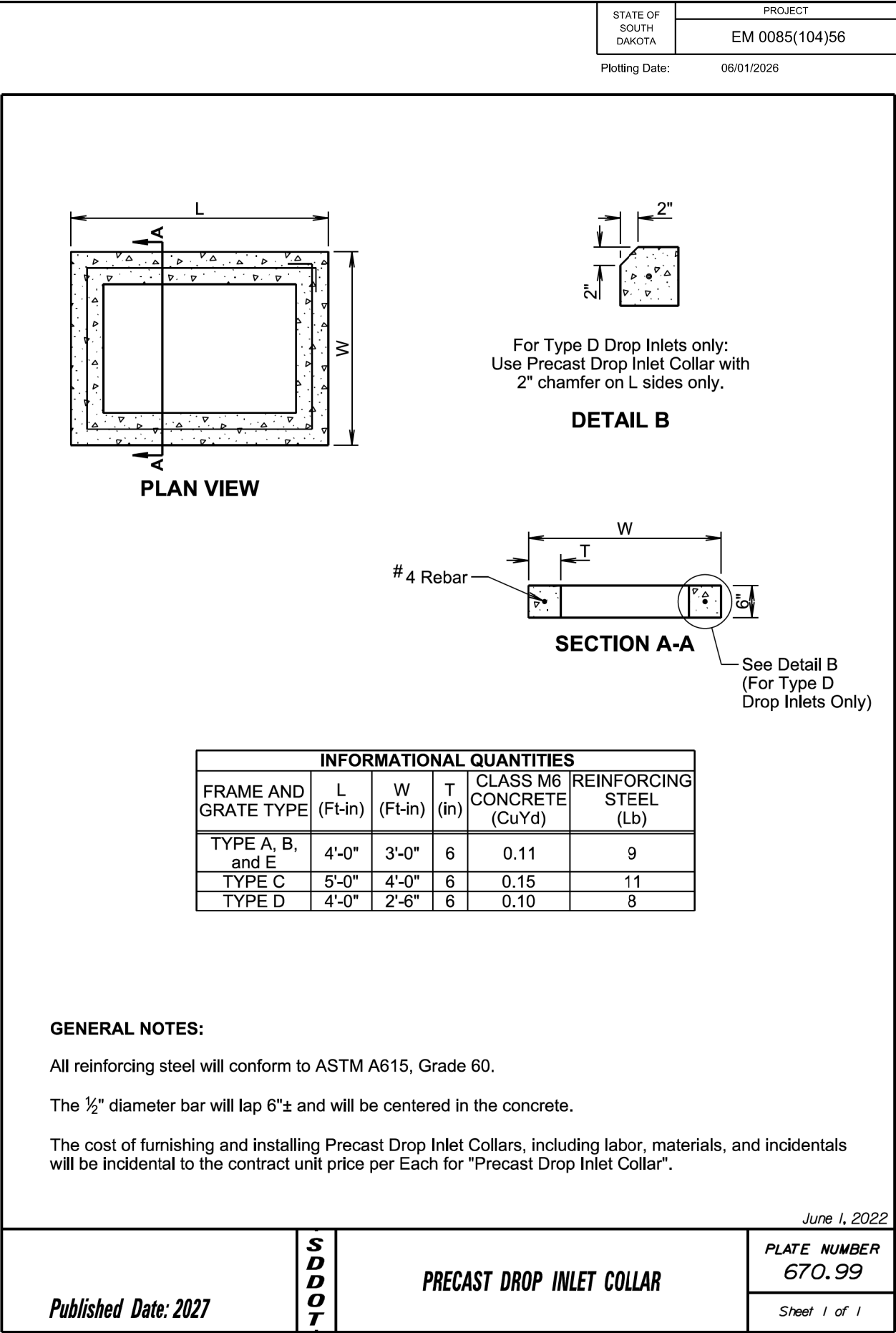
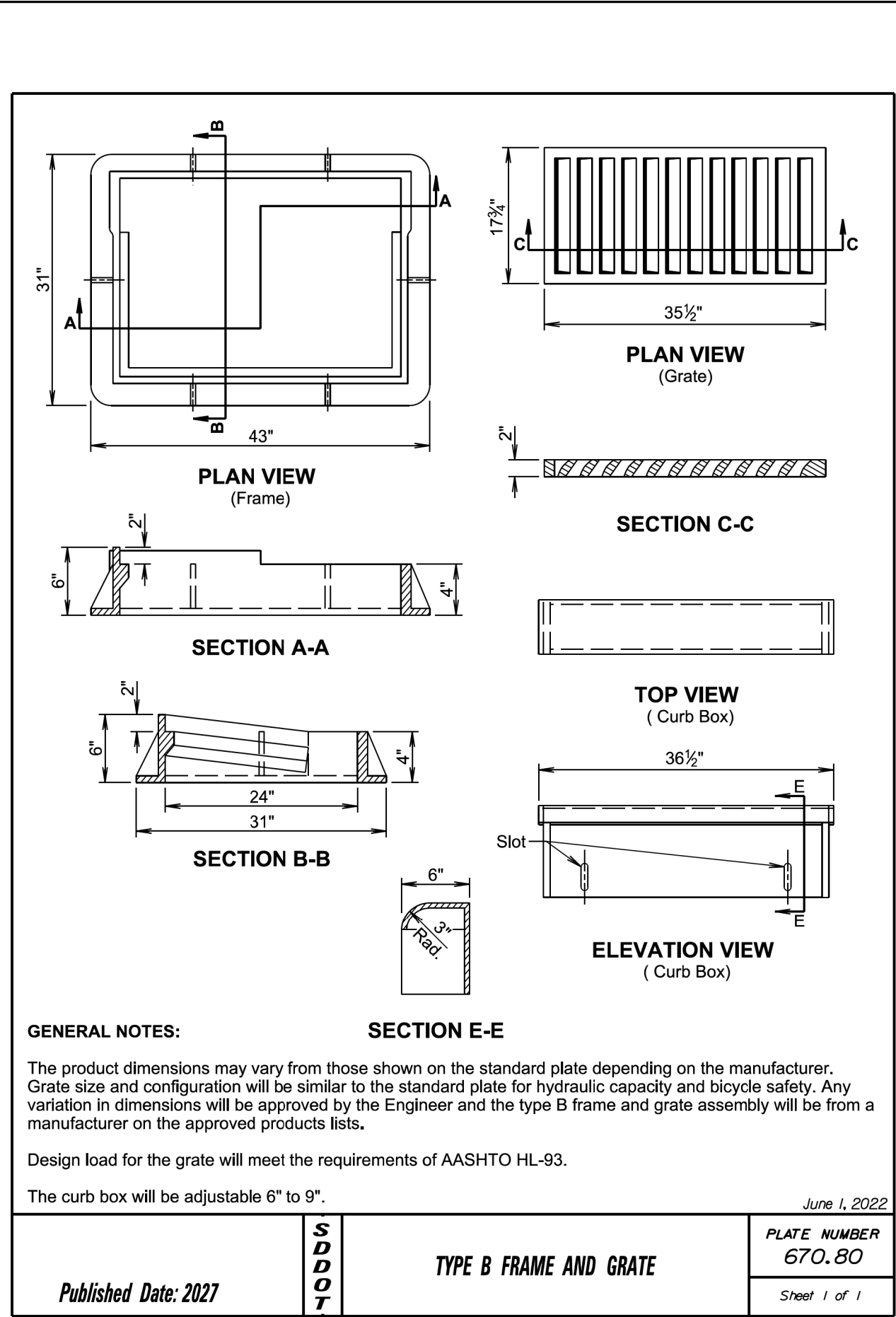
Published Date: 2027

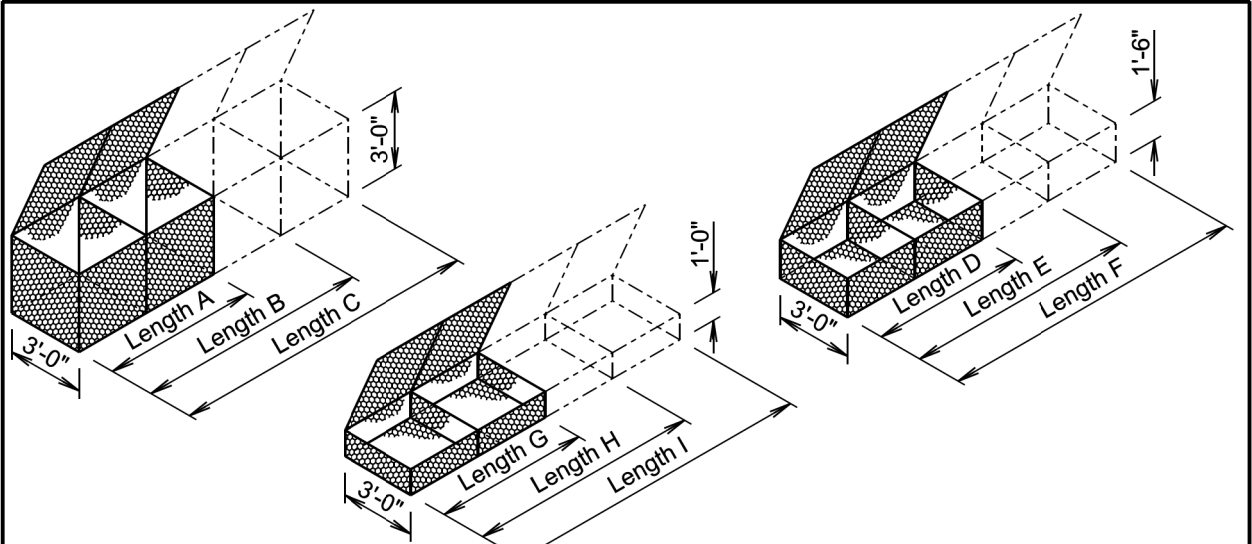
S
D
D
O
T

INSTALLATION OF TYPE B DROP INLET

PLATE NUMBER
670.75

Sheet 1 of 1





GABION DETAILS

STANDARD SIZES					
SIZE	LENGTH	WIDTH	HEIGHT	NUMBER OF CELLS	CAPACITY (Cu. Yd.)
A	6'-0"	3'-0"	3'-0"	2	2.0
B	9'-0"	3'-0"	3'-0"	3	3.0
C	12'-0"	3'-0"	3'-0"	4	4.0
D	6'-0"	3'-0"	1'-6"	2	1.0
E	9'-0"	3'-0"	1'-6"	3	1.5
F	12'-0"	3'-0"	1'-6"	4	2.0
G	6'-0"	3'-0"	1'-0"	2	0.7
H	9'-0"	3'-0"	1'-0"	3	1.0
I	12'-0"	3'-0"	1'-0"	4	1.3

GENERAL NOTES:

Above dimensions subject to mill tolerances.

Lacing and internal connecting wire will be 0.0866 inch diameter steel wire ASTM A641, Class 3 soft temper measured after galvanizing and for PVC coated gabions will be 0.0866 inch diameter steel wire measured after galvanizing but before PVC coating.

The lacing procedure is as follows:

1. Cut a length of lacing wire approximately 1½ times the distance to be laced but not exceeding 5 feet.
2. Secure the wire terminal at the corner by looping and twisting.
3. Proceed lacing with alternating single and double loops at a spacing not to exceed 6 inches.
4. Securely fasten the other lacing wire terminal.

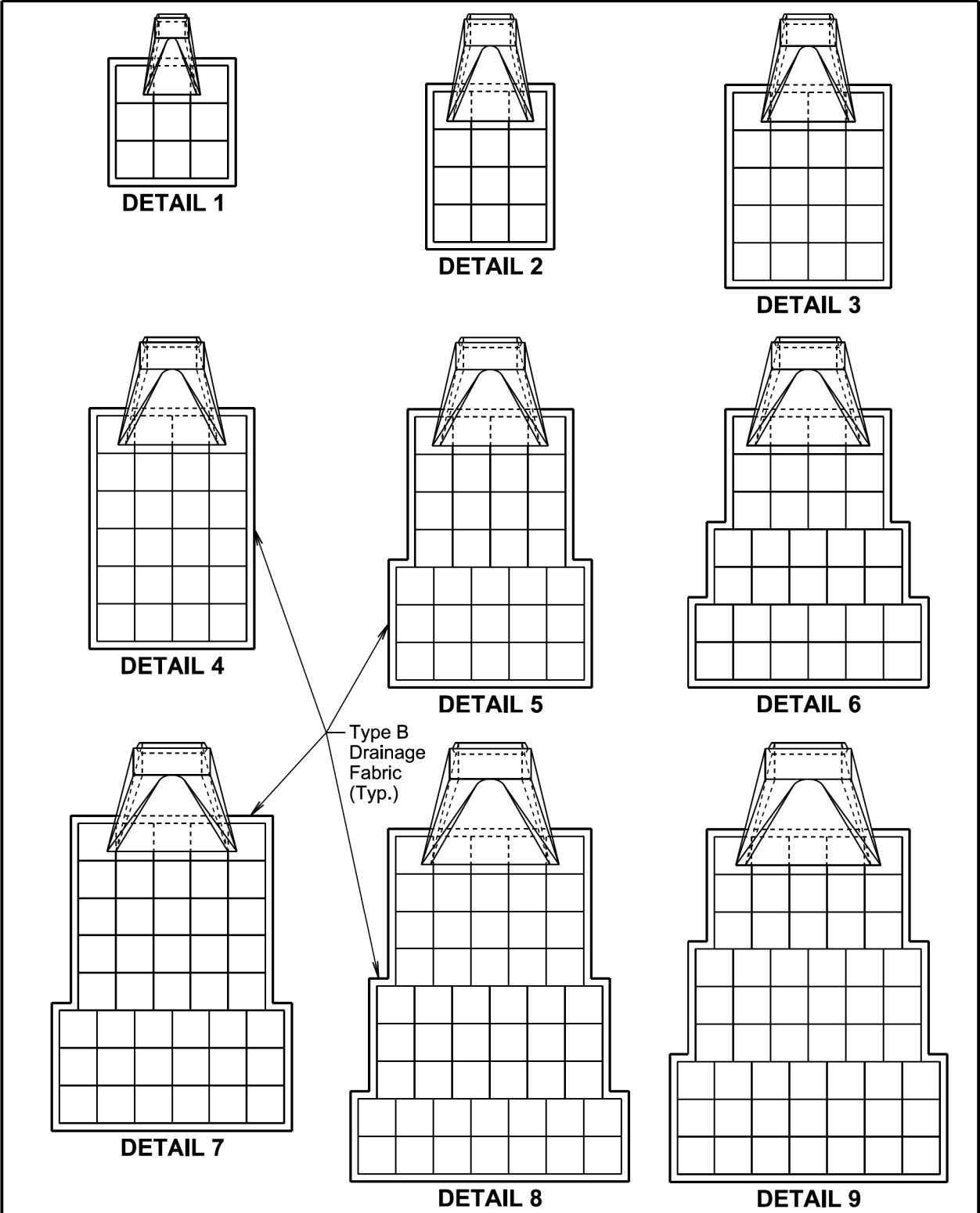
Wire lacing or interlocking type fasteners will be used for gabion assembly and final construction of gabion structures. Interlocking fasteners for galvanized gabions will be high tensile 0.120 inch diameter galvanized steel wire measured after galvanizing. The galvanizing will conform to ASTM A641-92, Class 3 coating. Fasteners will also be in accordance with ASTM A764, Class II, Type III.

Interlocking fasteners for PVC coated gabions will be high tensile 0.120 inch diameter stainless steel wire conforming to ASTM A313, Type 302, Class 1. The spacing of the interlocking fasteners during all phases of assembly and construction will not exceed 6 inches.

All fasteners will be placed where the mesh weaves around the selvage wire at the vertical and horizontal joints.

February 14, 2020

<i>Published Date: 2027</i>	S D D O T	BANK AND CHANNEL PROTECTION GABIONS	PLATE NUMBER
			720.01
			Sheet 1 of 1



February 14, 2020

<i>Published Date: 2027</i>	S D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER
			720.03
			Sheet 1 of 2

* ESTIMATED QUANTITIES			
Detail	Pipe Diameter (Inches)	Gabion (Cu. Yd.)	Type B Drainage Fabric (Sq. Yd.)
RCP, RCP Arch, CMP, and CMP Arch	1 12, 18, and 24	4.5	15
	2 30 and 36	6.0	19
	3 42	10.0	29
	4 48 and 54	12.0	34
	5 60	15.5	43
	6 66	17.0	47
	7 72	21.5	57
	8 78	26.0	68
	9 84	27.0	70

GENERAL NOTES:

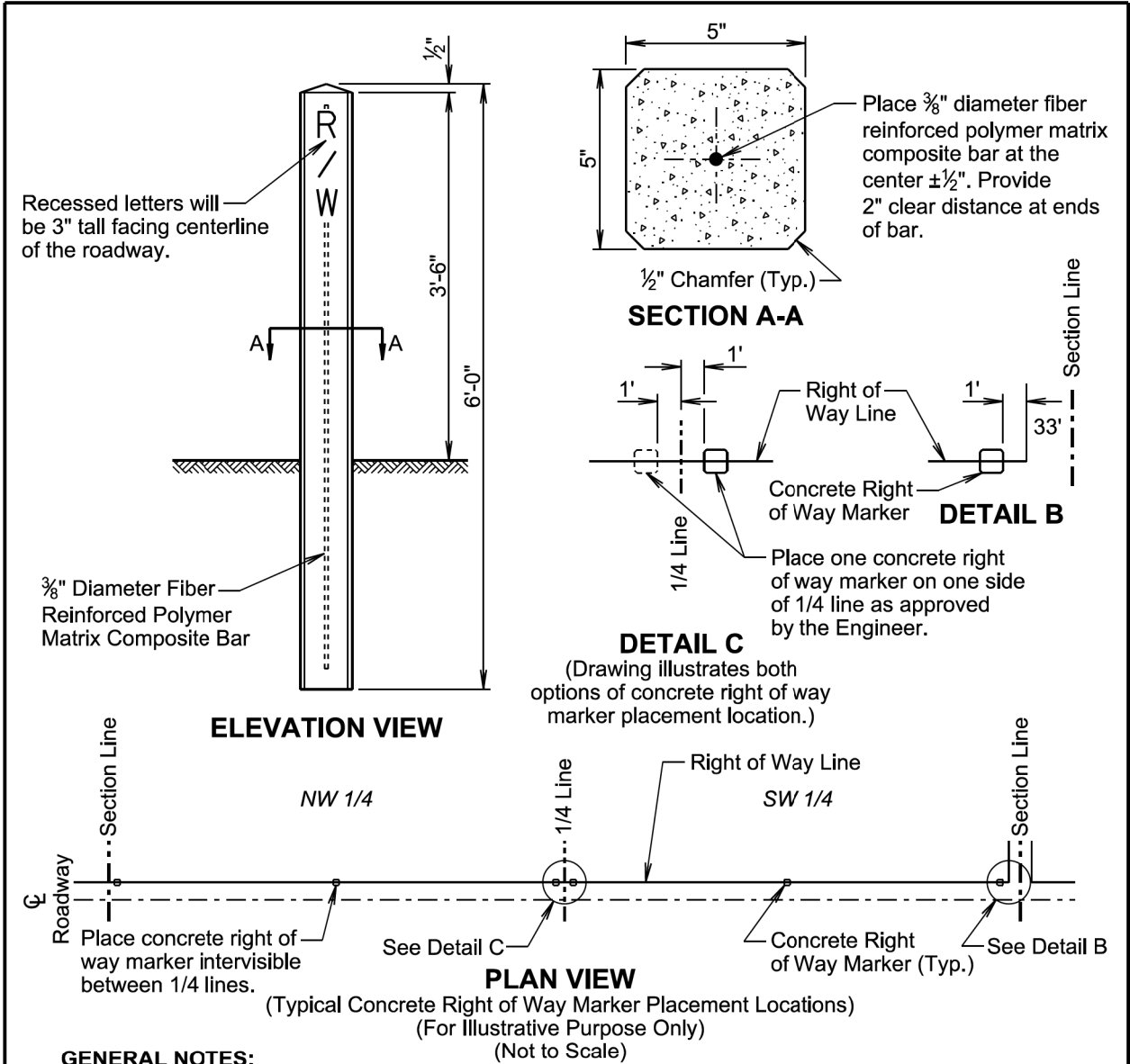
Gabions at outlets of CMP and RCP will be placed under the end section a distance of 2 feet from the outlet end. For CMP end section installations, the upper fabric of the gabions will be modified to accommodate the metal end section as approved by the Engineer.

- * Gabion and type B drainage fabric quantities on this standard plate are based on standard gabion sizes D, E, and F as depicted on standard plate 720.01.

Type B drainage fabric will be placed under the gabions and around the exterior sides (perimeter) of the gabions as approved by the Engineer. The type B drainage fabric will be in conformance with Section 831 of the Specifications. Measurement and payment of the type B drainage fabric will be in conformance with Section 720 of the Specifications.

February 14, 2020

Published Date: 2027	S D D O T	BANK AND CHANNEL PROTECTION GABION PLACEMENT UNDER PIPE END SECTIONS	PLATE NUMBER 720.03
			Sheet 2 of 2



GENERAL NOTES:

The concrete right of way markers will be set plumb and backfilled as approved by the Engineer.

Additional concrete right of way markers may need to be installed due to the terrain. Placement of additional concrete right of way markers must be approved by the Engineer prior to installation.

The concrete will be Class M6 in accordance with specifications Section 462.

The fiber reinforced polymer matrix composite bar will have a minimum of 130 ksi tensile strength, a minimum ultimate tensile load of 19,675 lbs, and a minimum tensile modulus of elasticity of 6.7x10⁶ psi in accordance with ASTM D7205. Bond strength will be a minimum of 2,047 psi in accordance with ACI 440.3R Part 2 B3. Minimum shear capacity will be 25.1 ksi in accordance with ASTM D7617.

All costs for furnishing and installing the concrete right of way marker including materials, labor, and equipment will be incidental to the contract unit price per each for "Concrete Right of Way Marker".

April 8, 2025

Published Date: 2027	S D D O T	CONCRETE RIGHT OF WAY MARKER	PLATE NUMBER 900.15
			Sheet 1 of 1